PCN

OS-PCN-2021-006-A

Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Published by ams-OSRAM AG
Tobelbader Strasse 30, 8141 Premstaetten, Austria
Phone +43 3136 500-0
ams-osram.com

01.08.2022

Dear Customer,

please review this **PCN** and provide your feedback in the **Customer approval form** (at the end of this PCN document) to your ams OSRAM sales partner before **07.09.2022** *).

Your prompt reply will help ams OSRAM to assure a smooth and well executed transition. If ams OSRAM does not hear from your side by the due date, we will assume your (if you are a Distributor: and your customer's) full acceptance to this proposed change and its implementation.

ams OSRAM understands the time requirements your organization needs to approve this PCN.
However, if you can provide ams OSRAM an estimated date your organization will have finalized this PCN review, ams OSRAM can use this date to plan continued production to secure your order needs during the transition time.

Your attention and response to this matter is highly appreciated.

Please direct your inquiries to your local Sales office.

*) ams OSRAM aligns with the widely recognized JEDEC/ECIA/IPC Joint Standard No. 46, which stipulates:

- Customers should acknowledge receipt of the PCN within 30 days of delivery of the PCN.
- Lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change.
- After acknowledgement, lack of additional response within the 90 day period constitutes acceptance of the change. If the customer requires additional time to perform sample testing, beyond the 90 day review period, an extension must be negotiated with the supplier.

Subject of change:	Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage	
Affected products:	LE UW S2WN; LE RTDCY S2WN; LE RTDUW S2WN; LE RTDUW S2WM; LE RTDUW S2WP; LE T Q8WP; KT CSLNM1.13 Refer to document 2_cip_OS-PCN-2021-006-A_ext	
Reason for change:	True Green: Continuous chip improvement leads to better optical and electrical device behavior. Blue: Secure continuous supply – lower risk of allocation Red: Introduction of next generation High Power Thinfilm chips	
Description of change:	New status True Green: Improve forward voltage characteristic Blue: Additional frontend production location Kulim Red: Optimization of intrinsic chip design For details refer to document 2_cip_OS-PCN-2021-006-A	
Product identification:	Date code	
Time schedule for PCN material: (after implementation of change):	Final qualification report:	01.08.2022
	Samples available:	01.08.2022
	Intended Start of delivery:	15.01.2023 *) *) or earlier if released by customer and upon mutual agreement
Time schedule for Pre-PCN material: (prior to implementation of change):	Last time order date (LTO):	31.10.2022 **) **) Lead time and LTO quantity shall be mutually agreed between OSRAM OS and customer.
	Last time delivery date (LTD):	31.03.2023 ***) ***) planned last date for delivery of products of current status
Assessment:	No change in fit / form / function or reliability for true green and blue	
Documentation:	Customer information package 2_cip_OS-PCN-2021-006-A_ext Qualification Report cip_OS-PCN-2021-006-A_Rel_ext	

Note:
Pre-PCN material: Products of current status, means before implementation of the changes as described in the PCN.
PCN material: Products with implementation of the changes as described in the PCN.

Customer approval form
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Please list product(s) affected in your application(s):

Please check the appropriate box below:

○ **Approval:** We agree with the proposed change and accept start of the shipment upon availability of PCN material	○ **Not relevant:** Change is not relevant for products in use.

○ **Change cannot be accepted:**

- ○ **We have objections:**
- ○ **We request following Information:**
- ○ **We request following Samples:**
- ○ **Expected approval date:**
- ○ **Volume requirements for Pre-PCN material:**

○ **Remarks:**

Sender:

Company:

Address / Location:

Signature: **Date:**

Please return this approval form to your Sales partner.

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Sensing is life

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Customer information package

Department
2022-08-01

Agenda

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Reason for change UX:3 chips

Item	Description
True Green	Continuous chip improvement leads to better optical and electrical device behavior.
	No change in fit / form / function or reliability
Blue	Additional frontend production location Kulim
	Secure continuous supply – lower risk of allocation
	Increase chip production capacity to meet growing market demand with frontend production at new location Kulim (Malaysia)
	All frontend locations (Regensburg, Penang and additionally Kulim) will be released for finished good assembly.
	No change in fit / form / function or reliability

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Reason for change Thinfilm chips

Item	Description
Red	Introduction of next generation High Power Thinfilm chips
	Optimization of intrinsic chip design
	No change in function or reliability

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Description of change

Item	Current status	New status
Blue - Additional frontend production location Kulim	Chip production in •Regensburg/ Germany •Penang / Malaysia	Chip production in •Regensburg/ Germany •Penang / Malaysia* •Kulim / Malaysia

*production location planned to be closed

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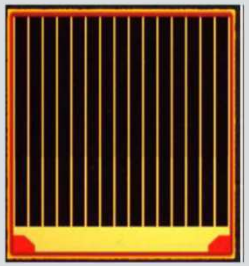
Description of change

Item	Current status	New status
LE RTDUW S2WM - Red Thinfilm chips Picture (exemplary)		
Height	120µm	120µm
Wafer diameter	150 mm (6“)	150 mm (6“)
Carrier	Si	Si

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Changes in the datasheets - Ordering Information

Item	Current status	New status
LE RTDUW S2WN	Type / Brightness [1] / Ordering Code LERTDUWS2WN-KBLA-1+MANA-P+AXAZ-P+MBNB-CQ — Q65112A5474 LERTDUWS2WN-KBLA-1+MAMB-P+AYAZ-P+NANB-CQ — Q65113A2303 LERTDUWS2WN-KBLA-1+MA-C+AXAY-T+MBNA-P — Q65113A2304 Q65112A5474 and Q65113A2303 contain true green 3+4 and deep blue 3+4 dominant wavelength and ultra white CQ color coordinate bins	Type / Brightness [1] / Ordering Code LERTDUWS2WN-KBLA-1+MANA-F+AXAZ-P+MBNB-CQ — Q65113A5080 LERTDUWS2WN-KBLA-1+MBNA-F+AYAZ-P+NANB-CQ — Q65113A5081 LERTDUWS2WN-KBLA-1+MBNA-C+AXAY-T+MBNA-P — Q65113A5135 Q65113A5080 and Q65113A5081 contain true green 3+4+7 and deep blue 3+4 dominant wavelength and ultra white CQ color coordinate bins

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Changes in the datasheets -Forward Current / Red

Item	Current status	New status
LE RTDUW S2WM	**Maximum Ratings** Parameter: Forward Current, T_S = 25 °C; Symbol: I_F; min. / max. Values • red: 100 mA / 1000 mA Values • true green: 100 mA / 1500 mA Values • deep blue: 100 mA / 1500 mA Values • ultra white: 100 mA / 1500 mA	Parameter: Forward Current, T_S = 25 °C; Symbol: I_F; min. / max. Values • red: 100 mA / 1500 mA Values • true green: 100 mA / 1500 mA Values • deep blue: 100 mA / 1500 mA Values • ultra white: 100 mA / 1500 mA

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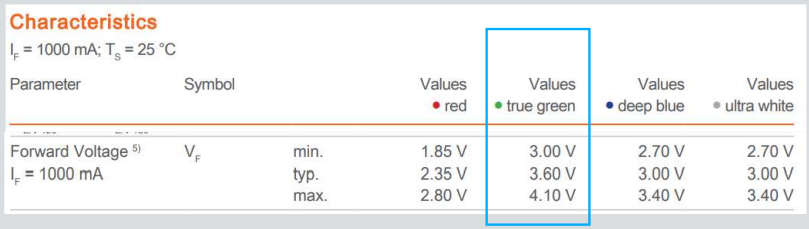
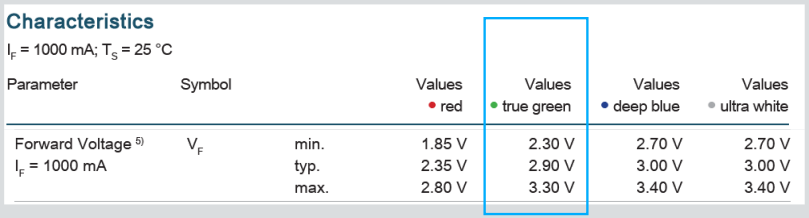
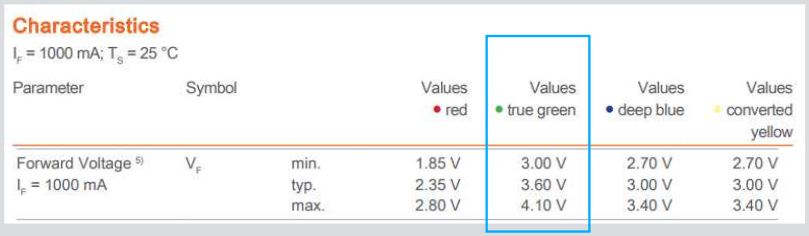
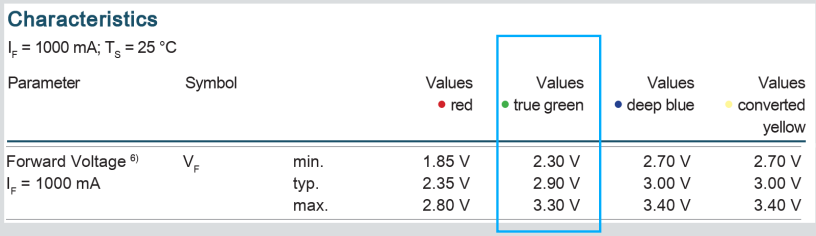
Changes in the datasheets -Forward Voltage / True Green

Item	Current status	New status
LE RTDUW S2WN		
LE RTDCY S2WN		

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Changes in the datasheets -Forward Voltage / Red /True Green

Item	Current status	New status
LE RTDUW S2WM	**Characteristics** I_F = 700 mA; T_S = 25 °C Parameter: Forward Voltage [5] I_F = 700 mA; Symbol: V_F Values • red: min. 2.10 V, typ. 2.20 V, max. 2.90 V Values • true green: min. 2.80 V, typ. 3.50 V, max. 4.00 V Values • deep blue: min. 2.70 V, typ. 3.00 V, max. 3.70 V Values • ultra white: min. 2.70 V, typ. 3.00 V, max. 3.70 V	**Characteristics** I_F = 700 mA; T_S = 25 °C Parameter: Forward Voltage [5] I_F = 700 mA; Symbol: V_F Values • red: min. 1.80 V, typ. 2.20 V, max. 2.70 V Values • true green: min. 2.15 V, typ. 2.75 V, max. 3.15 V Values • deep blue: min. 2.70 V, typ. 3.00 V, max. 3.70 V Values • ultra white: min. 2.70 V, typ. 3.00 V, max. 3.70 V
KT CSLNM1.13	**Characteristics** I_F = 1000 mA; T_S = 25 °C Parameter: Forward Voltage [3] I_F = 1000 mA; Symbol: V_F Values: min. 2.8 V, typ. 3.5 V, max. 4.1 V	**Characteristics** I_F = 1000 mA; T_S = 25 °C Parameter: Forward Voltage [4] I_F = 1000 mA; Symbol: V_F Values: min. 2.3 V, typ. 2.9 V, max. 3.3 V

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Changes in the datasheets -Forward Voltage / True Green

Item	Current status	New status
LE T Q8WP	**Characteristics** I_F = 1400 mA; T_S = 25 °C Parameter: Forward Voltage [5] I_F = 1400 mA; Symbol: V_F; min. 2.80 V; typ. 3.60 V; max. 4.00 V	**Maximum Ratings** Parameter: Forward Voltage [5] I_F = 1400 mA; Symbol: V_F; min. 2.20 V; typ. 2.80 V; max. 3.20 V
LE RTDUW S2WP	**Maximum Ratings** Parameter: Forward Voltage [5] I_F = 1400 mA; Symbol: V_F min. 1.90 V / 2.80 V / 2.80 V / 2.80 V typ. 2.35 V / 3.48 V / 3.00 V / 3.00 V max. 2.80 V / 4.00 V / 3.50 V / 3.50 V (Values: • red / • true green / • deep blue / • ultra white)	**Characteristics** I_F = 1400 mA; T_S = 25 °C Parameter: Forward Voltage [6] I_F = 1400 mA; Symbol: V_F min. 1.90 V / 2.20 V / 2.80 V / 2.80 V typ. 2.35 V / 2.80 V / 3.00 V / 3.00 V max. 2.80 V / 3.20 V / 3.50 V / 3.50 V (Values: • red / • true green / • deep blue / • ultra white)

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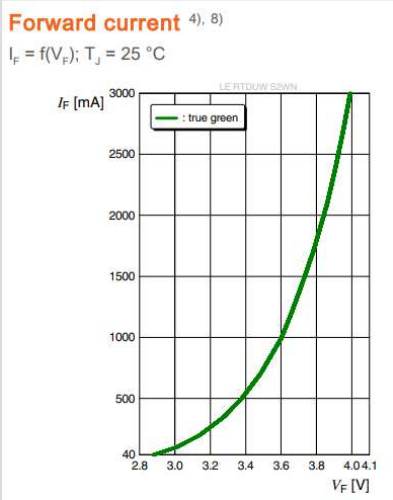
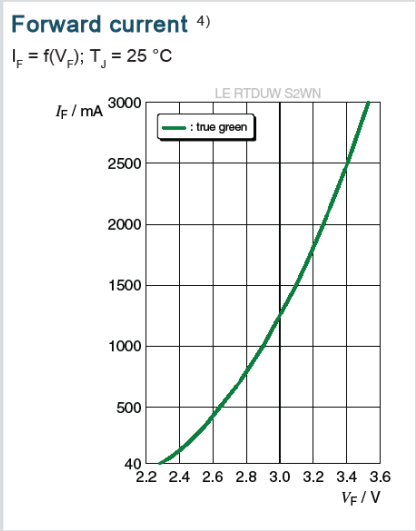
Changes in the datasheets - Forward current / True Green

Item	Current status	New status
LE RTDUW S2WN; LE RTDCY S2WN		

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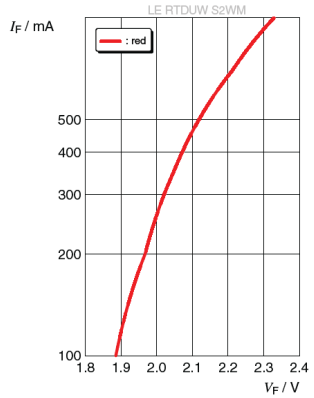
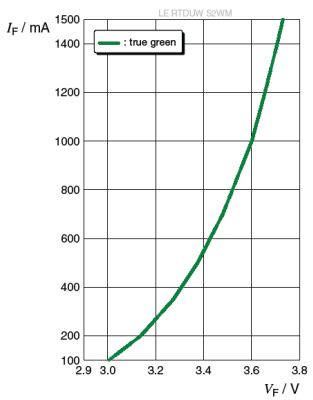
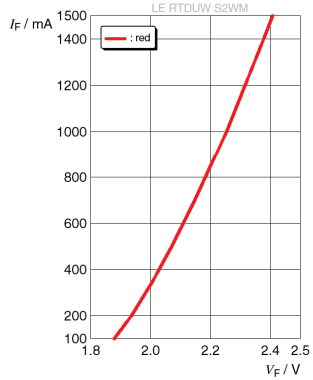
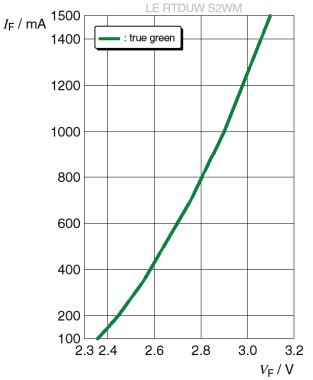
Changes in the datasheets - Forward current / Red ; True Green

Item	Current status	New status
LE RTDUW S2WM	**Forward current** [4] $I_F = f(V_F)$; T_J = 25 °C  **Forward current** [4], [8] $I_F = f(V_F)$; T_J = 25 °C 	**Forward current** [4] $I_F = f(V_F)$; T_J = 25 °C  **Forward current** [4] $I_F = f(V_F)$; T_J = 25 °C 

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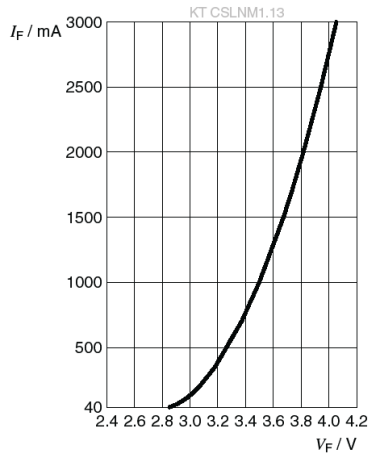
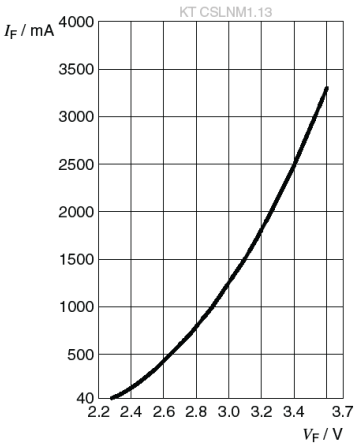
Changes in the datasheets - Forward current / True Green

Item	Current status	New status
KT CSLNM1.13	**Forward current** [5] $I_F = f(V_F)$; T_J = 25 °C 	**Forward current** [6] $I_F = f(V_F)$; T_J = 25 °C 

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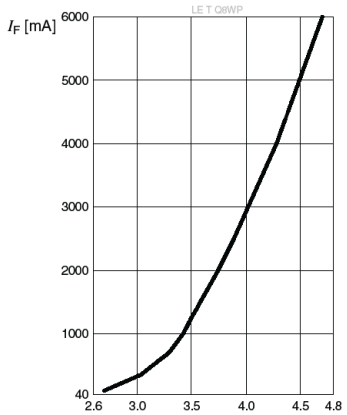
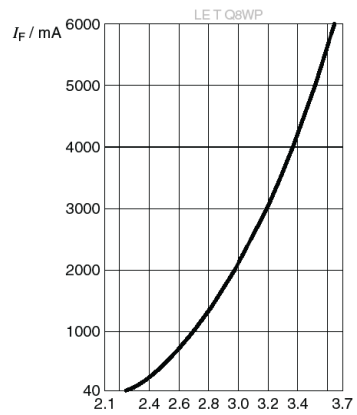
Changes in the datasheets - Forward current / True Green

Item	Current status	New status
LE T Q8WP	**Forward current** [4), 7)] $I_F = f(V_F)$; T_J = 25 °C 	**Forward current** [4)] $I_F = f(V_F)$; T_J = 25 °C 

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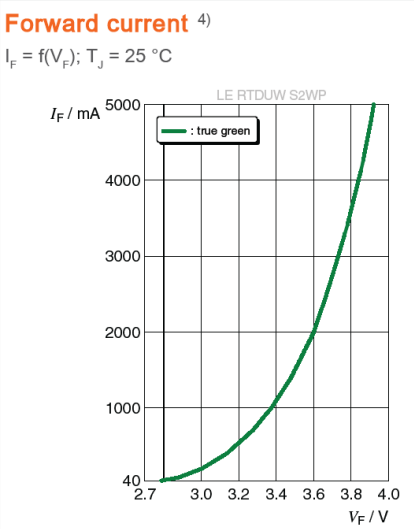
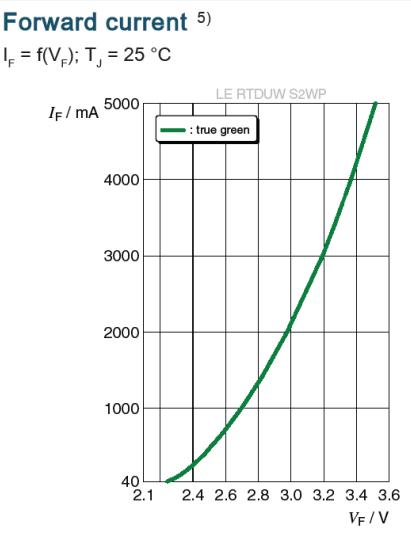
Changes in the datasheets - Forward current / True Green

Item	Current status	New status
LE RTDUW S2WP		

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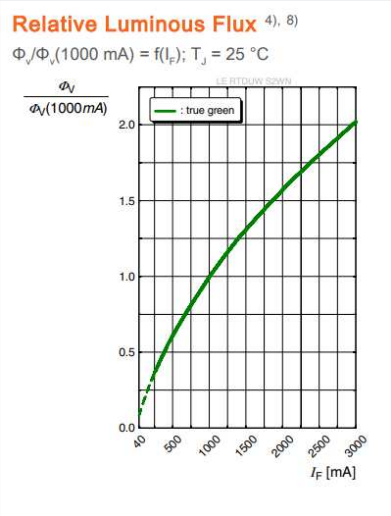
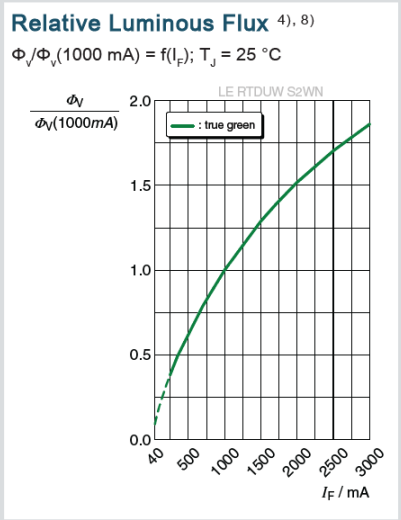
Changes in the datasheets - Relative Luminous Flux / True Green

Item	Current status	New status
LE RTDUW S2WN; LE RTDCY S2WN		

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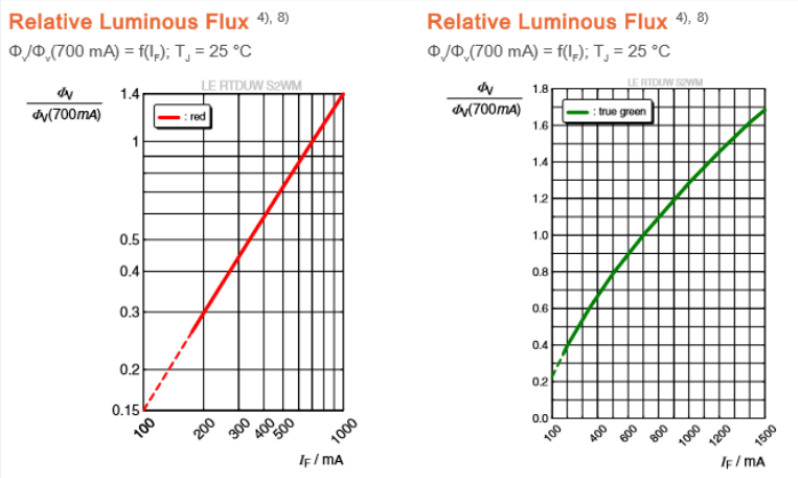
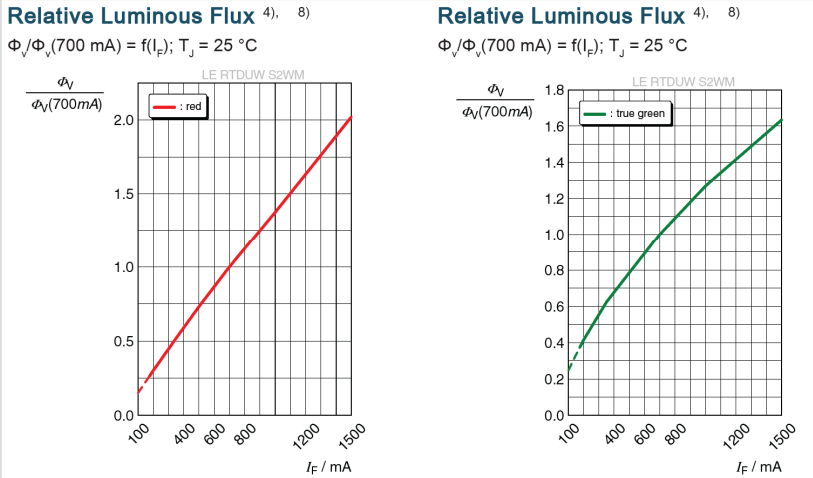
Changes in the datasheets - Relative Luminous Flux / Red ; True Green

Item	Current status	New status
LE RTDUW S2WM		

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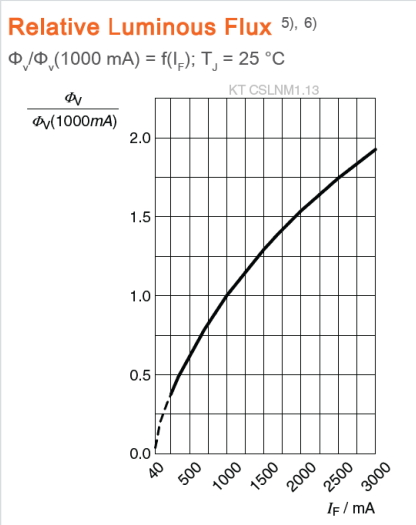
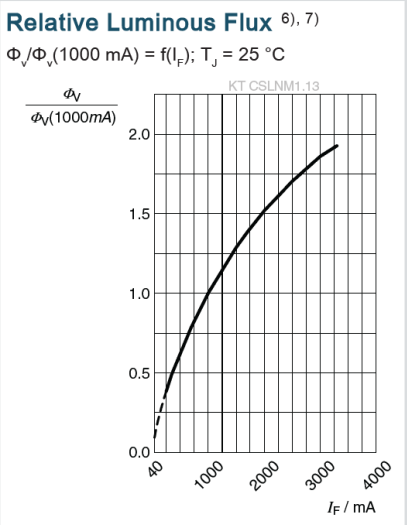
Changes in the datasheets - Relative Luminous Flux / True Green

Item	Current status	New status
KT CSLNM1.13		

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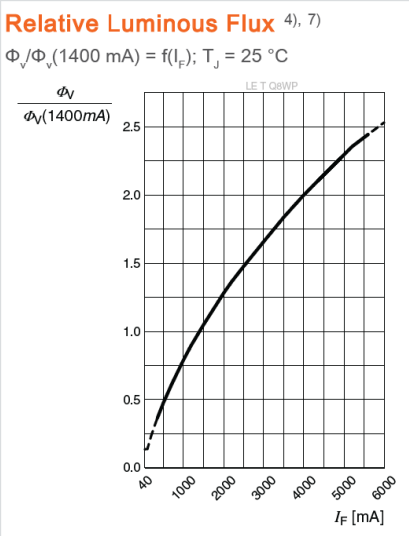
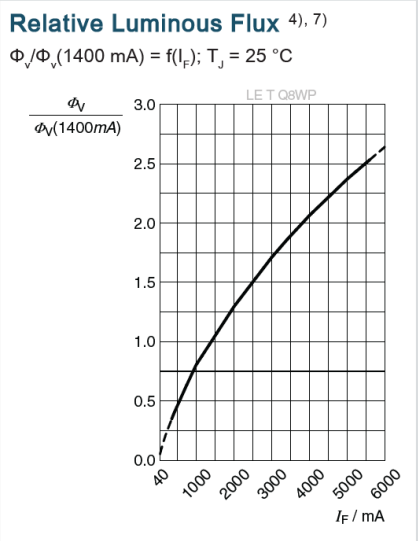
Changes in the datasheets - Relative Luminous Flux / True Green

Item	Current status	New status
LE T Q8WP		

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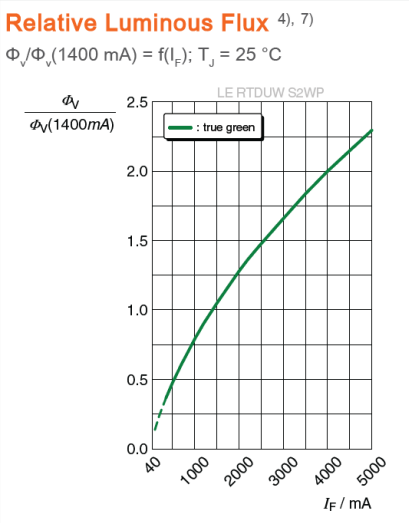
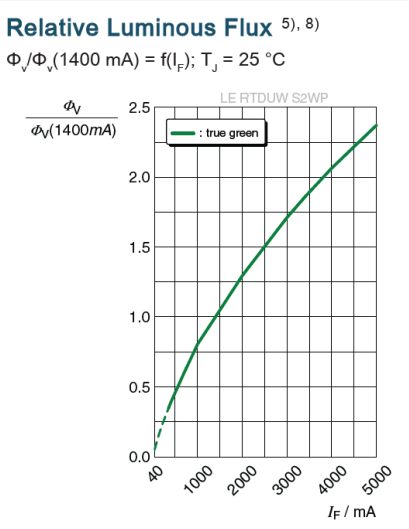
Changes in the datasheets - Relative Luminous Flux / True Green

Item	Current status	New status
LE RTDUW S2WP		

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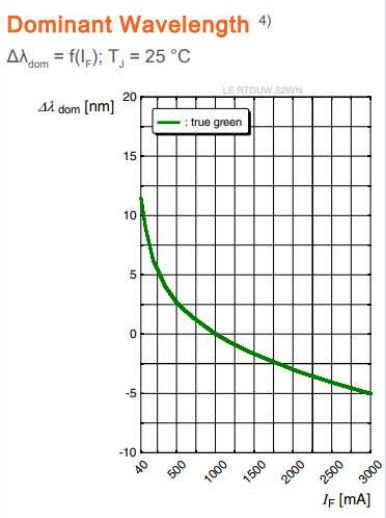
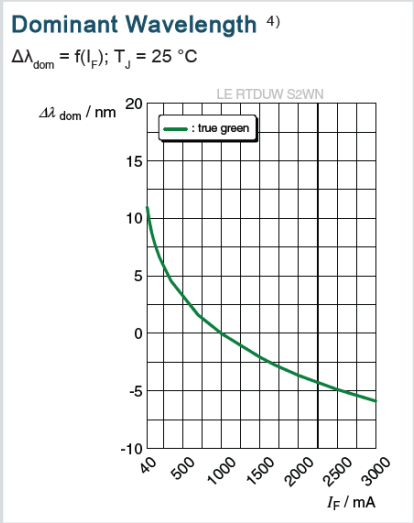
Changes in the datasheets - Dominant Wavelength / True Green

Item	Current status	New status
LE RTDUW S2WN; LE RTDCY S2WN		

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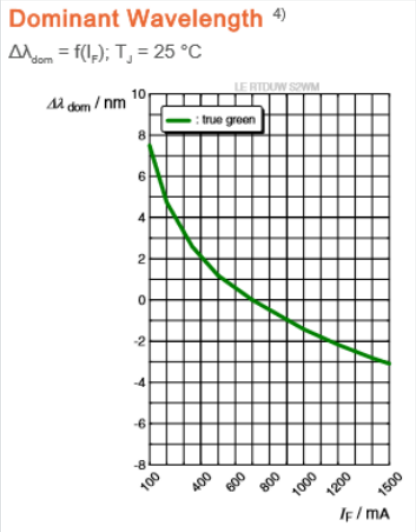
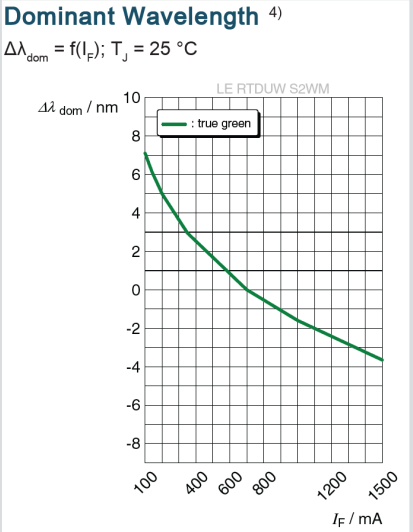
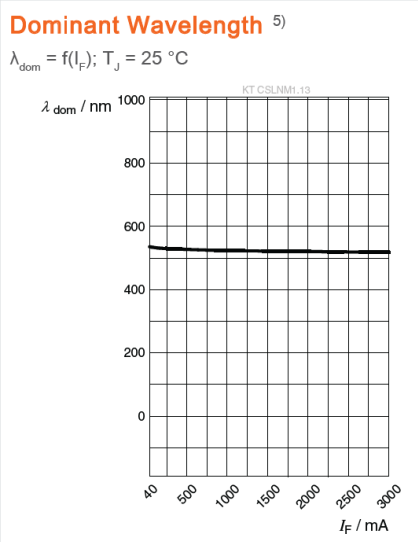
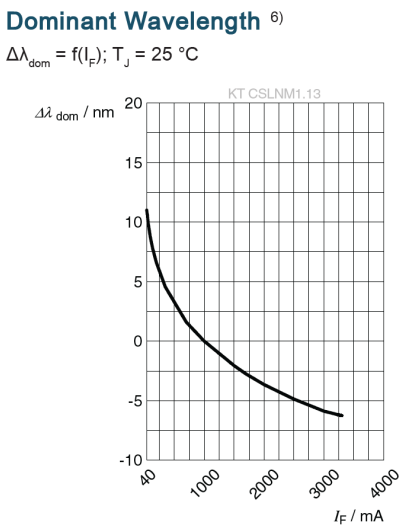
Changes in the datasheets - Dominant Wavelength / True Green

Item	Current status	New status
LE RTDUW S2WM		

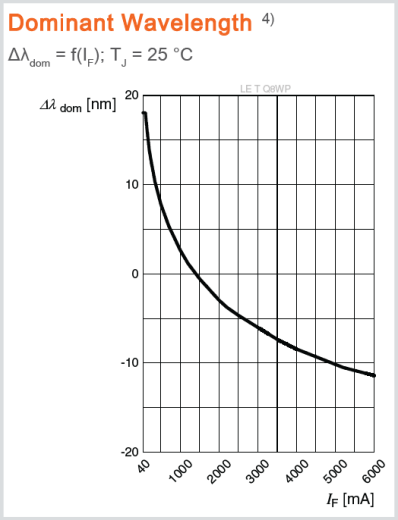
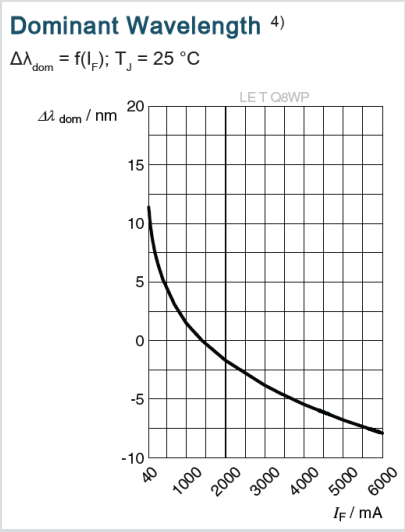
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Dominant Wavelength / True Green

Item	Current status	New status
KT CSLNM1.13		

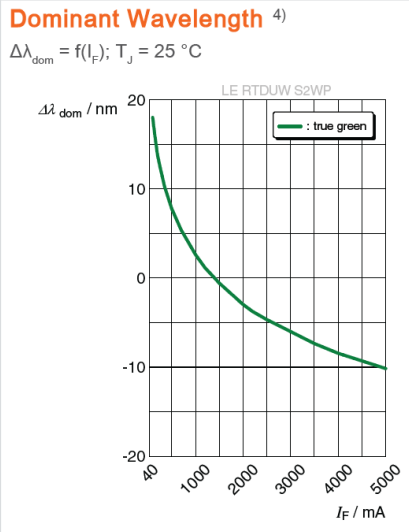
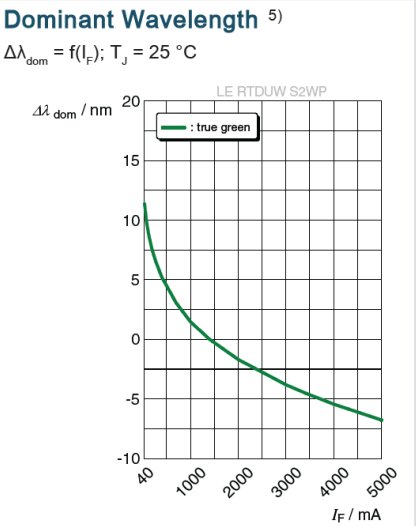
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Dominant Wavelength / True Green

Item	Current status	New status
LE T Q8WP		

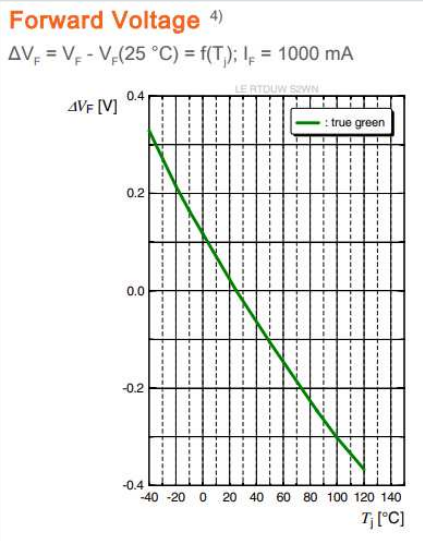
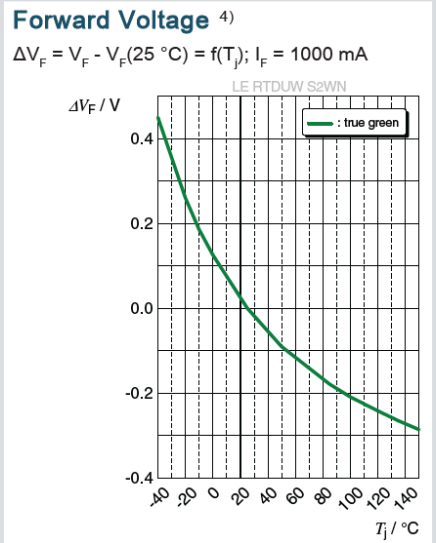
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Dominant Wavelength / True Green

Item	Current status	New status
LE RTDUW S2WP		

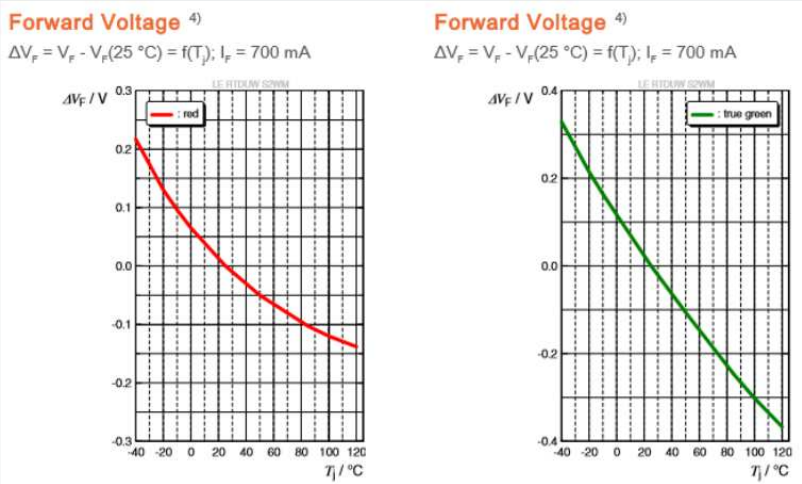
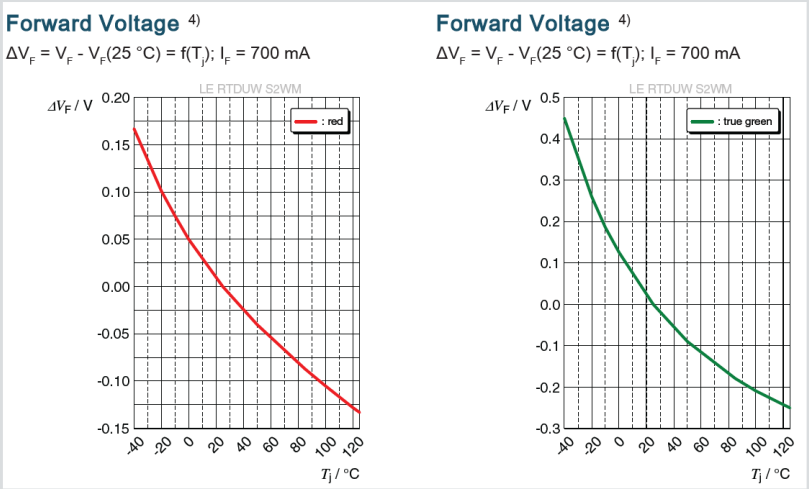
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Forward Voltage / True Green

Item	Current status	New status
LE RTDUW S2WN; LE RTDCY S2WN		

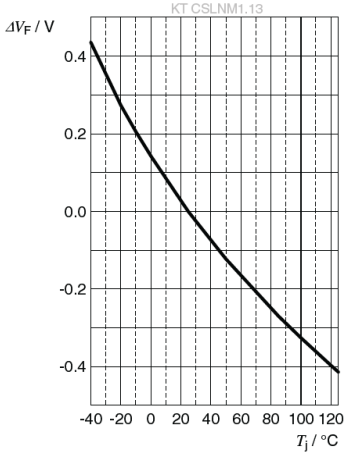
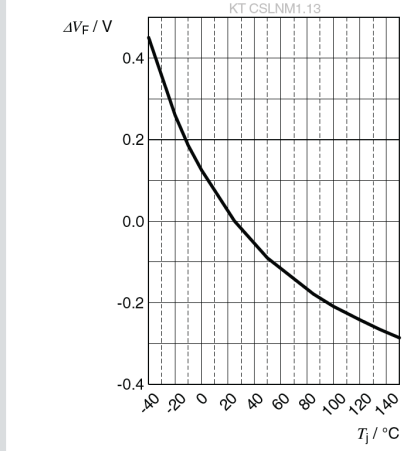
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Forward Voltage / Red ; True Green

Item	Current status	New status
LE RTDUW S2WM		

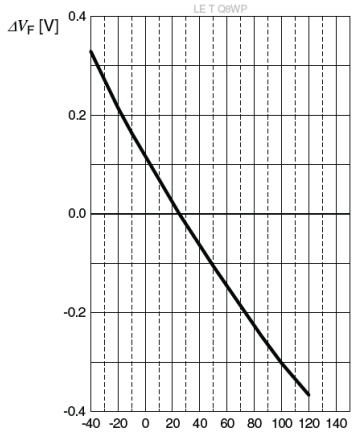
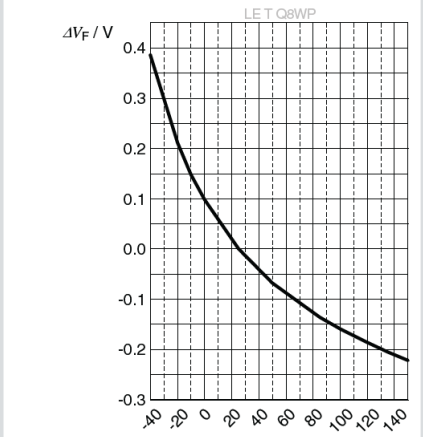
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Forward Voltage / True Green

Item	Current status	New status
KT CSLNM1.13	**Forward Voltage** 5) $\Delta V_F = V_F - V_F(25\ °C) = f(T_j);\ I_F = 1000\ mA$ 	**Forward Voltage** 6) $\Delta V_F = V_F - V_F(25\ °C) = f(T_j);\ I_F = 1000\ mA$ 

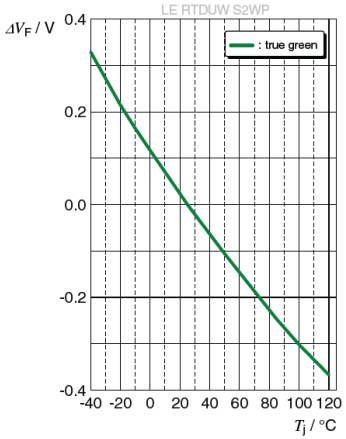
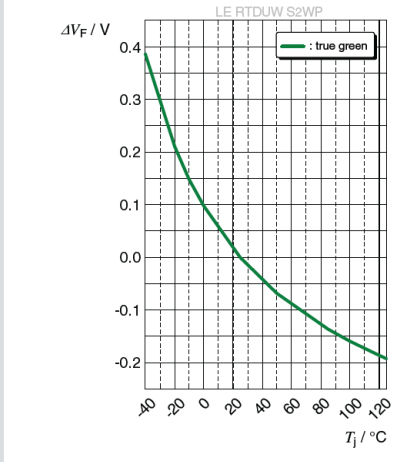
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Forward Voltage / True Green

Item	Current status	New status
LE T Q8WP	**Forward Voltage** 4) $\Delta V_F = V_F - V_F(25\,°C) = f(T_j)$; I_F = 1400 mA 	**Forward Voltage** 4) $\Delta V_F = V_F - V_F(25\,°C) = f(T_j)$; I_F = 1400 mA 

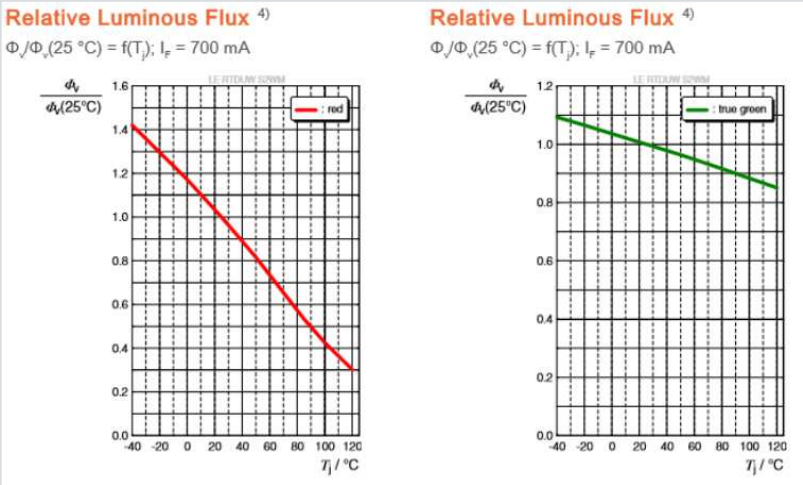
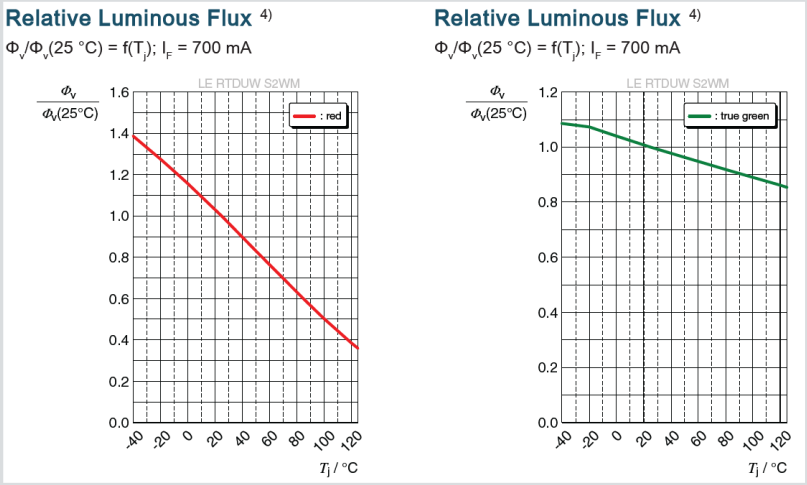
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Forward Voltage / True Green

Item	Current status	New status
LE RTDUW S2WP	**Forward Voltage** [4] $\Delta V_F = V_F - V_F(25\,°C) = f(T_j);\ I_F = 1400\ mA$ 	**Forward Voltage** [5] $\Delta V_F = V_F - V_F(25\,°C) = f(T_j);\ I_F = 1400\ mA$ 

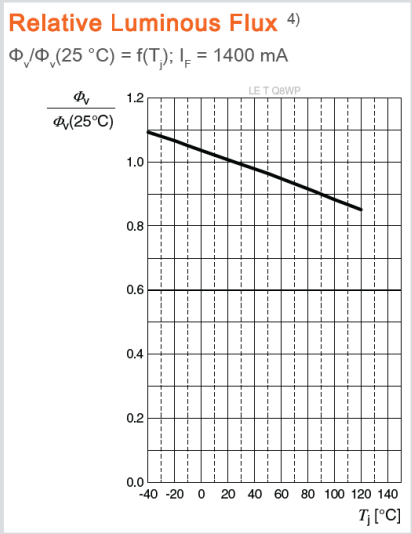
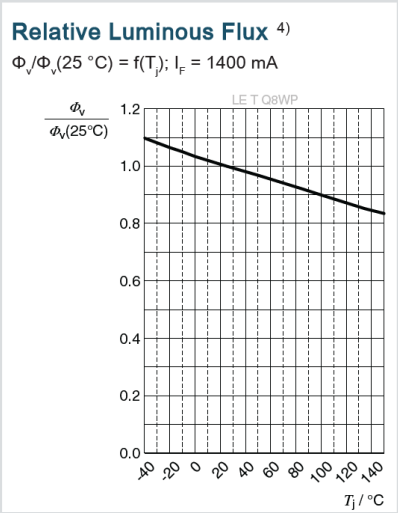
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Relative Luminous Flux / Red ; True Green

Item	Current status	New status
LE RTDUW S2WM		

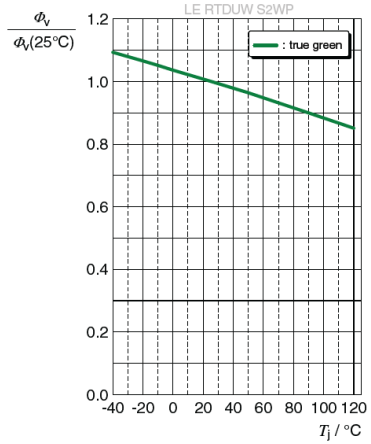
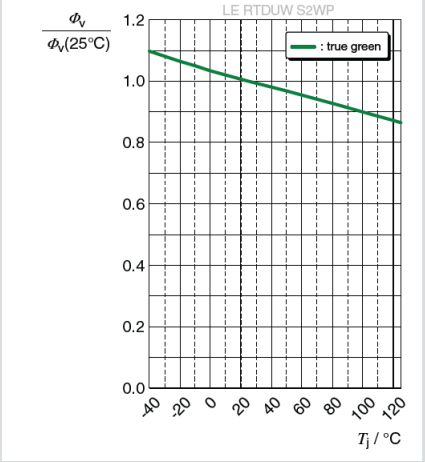
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Relative Luminous Flux / True Green.

Item	Current status	New status
LE T Q8WP		

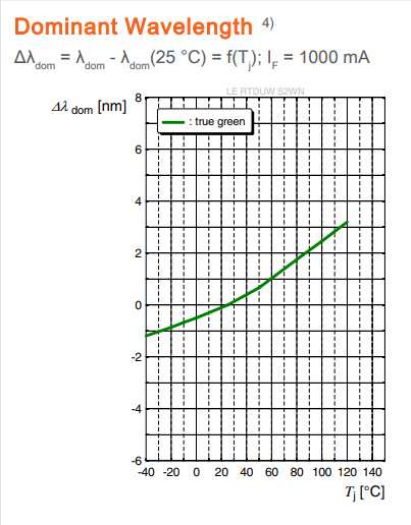
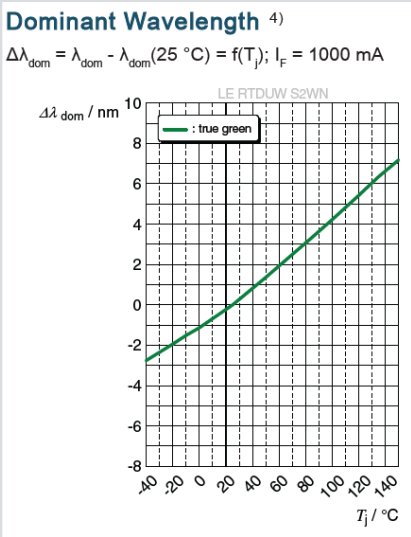
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Relative Luminous Flux / True Green

Item	Current status	New status
LE RTDUW S2WP	**Relative Luminous Flux** [4] $\Phi_v/\Phi_v(25\,°C) = f(T_j)$; I_F = 1400 mA 	**Relative Luminous Flux** [5] $\Phi_v/\Phi_v(25\,°C) = f(T_j)$; I_F = 1400 mA 

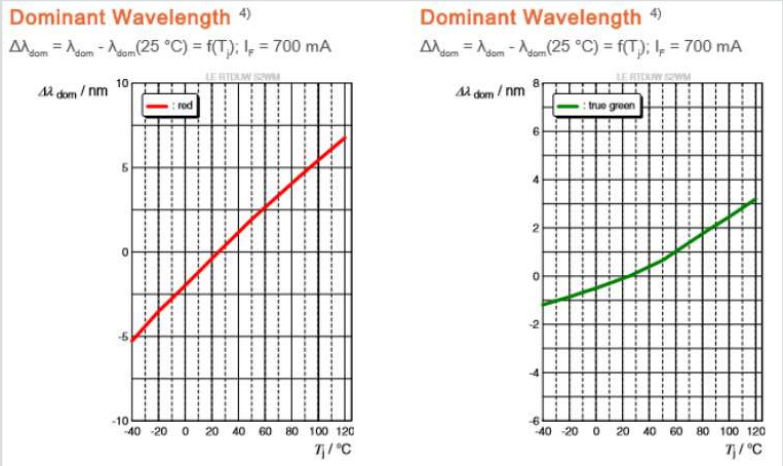
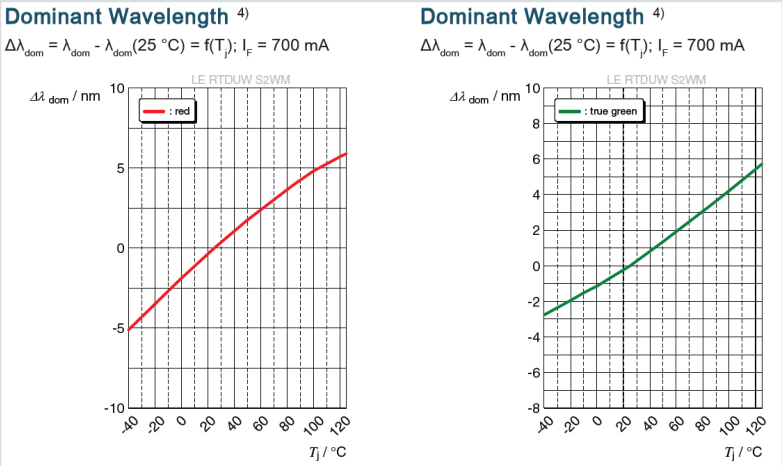
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Dominant Wavelength / True Green

Item	Current status	New status
LE RTDUW S2WN; LE RTDCY S2WN		

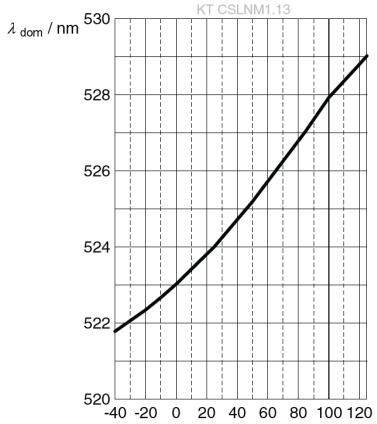
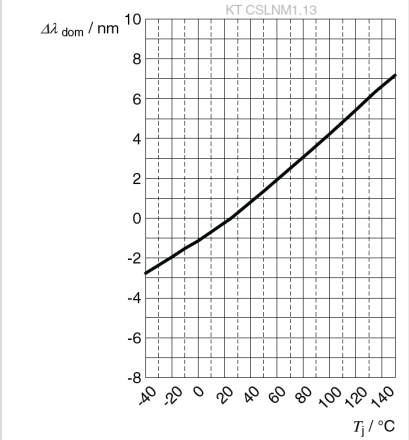
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Dominant Wavelength / Red ; True Green

Item	Current status	New status
LE RTDUW S2WM		

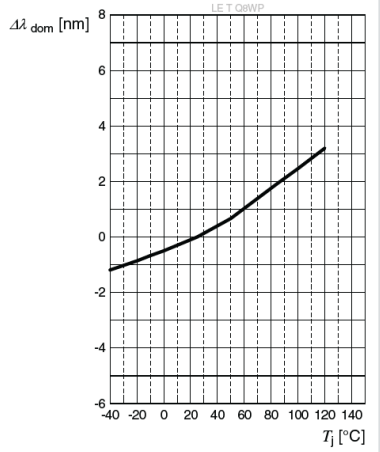
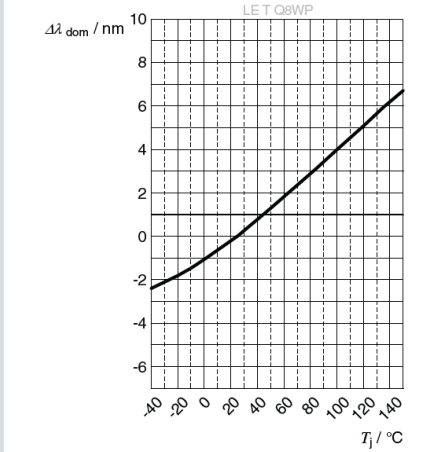
OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Dominant Wavelength / True Green

Item	Current status	New status
KT CSLNM1.13	**Dominant Wavelength** [5] $\lambda_{dom} = f(T_j)$; I_F = 1000 mA 	**Dominant Wavelength** [6] $\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j)$; I_F = 1000 mA 

OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

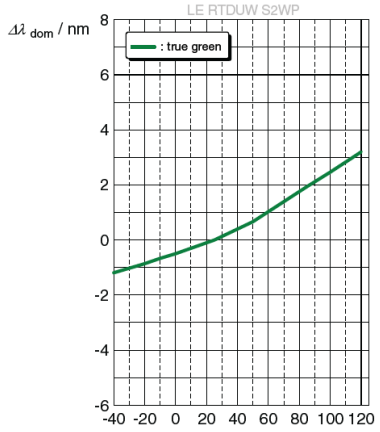
Changes in the datasheets - Dominant Wavelength / True Green

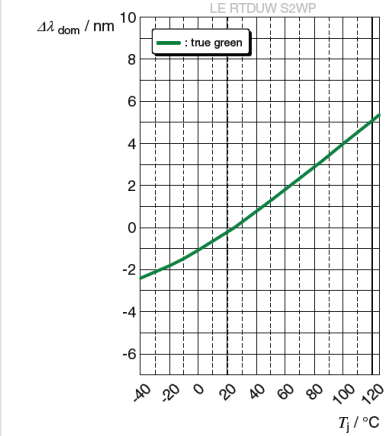
Item	Current status	New status
LE T Q8WP	**Dominant Wavelength** 4) $\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 1400\ mA$ 	**Dominant Wavelength** 4) $\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\ °C) = f(T_j);\ I_F = 1400\ mA$ 

OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Dominant Wavelength / True Green

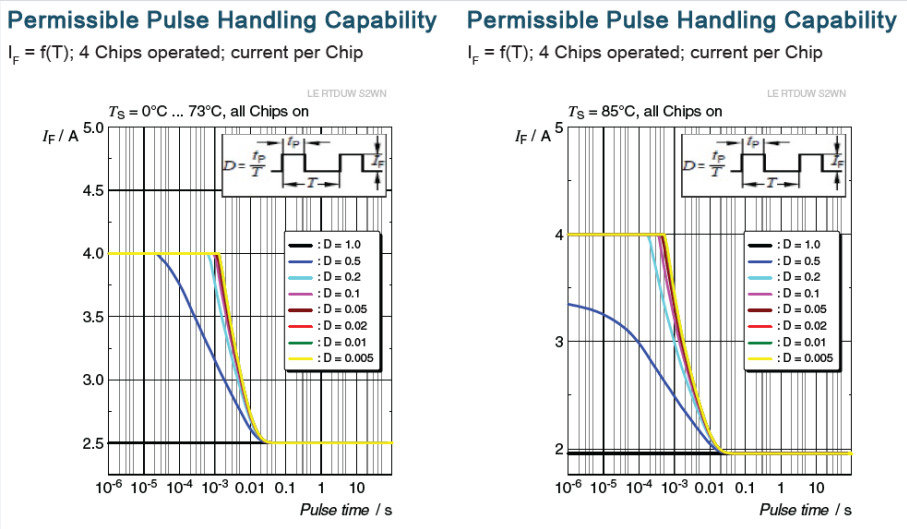
Item	Current status	New status
LE RTDUW S2WP	**Dominant Wavelength** 4) $\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\,°C) = f(T_j);\ I_F = 1400\ mA$	**Dominant Wavelength** 5) $\Delta\lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25\,°C) = f(T_j);\ I_F = 1400\ mA$





OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets - Permissible Pulse Handling Capability

Item	Current status	New status
LE RTDUW S2WN; LE RTDCY S2WN	N.A.	

OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Changes in the datasheets: Updated Datasheet Version

Product type	Data sheet version before PCN	Data sheet version after PCN
LE UW S2WN	1.2	1.3
LE RTDCY S2WN	1.10	1.11
LE RTDUW S2WN	1.9	1.10
LE RTDUW S2WM	1.5	1.6
LE RTDUW S2WP	1.13	1.14
LE T Q8WP	1.4	1.5
KT CSLNM1.13	1.1	1.2

Note: After PCN approval and shipment of new material, the new data sheet versions will be valid.
Latest version of data sheet is accessible on the ams OSRAM homepage.

OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

List of affected products

OSRAM OSTAR Stage; OSRAM OSTAR Projection Compact	Introduction of next generation High Power Thinfilm chips	True Green chip improvement	Blue - Additional frontend production
LE UW S2WN			✓
LE RTDCY S2WN		✓	✓
LE RTDUW S2WN		✓	✓
LE RTDUW S2WM	✓	✓	
LE RTDUW S2WP		✓	
LE T Q8WP		✓	
KT CSLNM1.13		✓	

OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

PCN Samples

OSRAM OSTAR Stage	OSRAM OSTAR Projection Compact
LE UW S2WN	LE T Q8WP
LE RTDCY S2WN	KT CSLNM1.13
LE RTDUW S2WN	
LE RTDUW S2WM	
LE RTDUW S2WP	

Color code: available on request

OS-PCN-2021-006-A
Product Upgrade of OSRAM OSTAR Projection Compact and OSRAM OSTAR Stage

Time schedule

for PCN material (after implementation of change):		
Final qualification report	01.08.2022	
Samples available	01.08.2022	
Intended Start of delivery	15.01.2023 *)	*) or earlier if released by customer and upon mutual agreement

for Pre-PCN material (prior to implementation of change):		
Last time order date (LTO)	30.10.2022 **)	**) Lead time and LTO quantity shall be mutually agreed between OSRAM OS and customer.
Last time delivery date (LTD)	31.03.2023 ***)	***) planned last date for delivery of products of current status

Note:
Pre-PCN material: Products of current status, means before implementation of the changes as described in the PCN.
PCN material: Products with implementation of the changes as described in the PCN.

Sensing is life

Qualification Report 220125C1

Subject	Qualification of Product Upgrade according to OS-PCN-2021-006-A
Date	01.08.2022
Tested device	LE RTDUW S2WN; LE RTDUW S2WM; LE RTDUW S2WP
Brand (including sub brands)	OSRAM OSTAR Stage; OSRAM OSTAR Projection Compact
Applies to	LE RTDUW S2WM; LE RTDUW S2WN; LE RTDCY S2WN; LE RTDUW S2WP; LE UW S2WN; LE T Q8WP; KT CSLNM1.13

ams-OSRAM AG
Tobelbader Strasse 30
8141 Premstaetten, Austria
Phone +43 3136 500-0
ams-osram.com

Pre-conditioning according to Jedec Level II **LE RTDUW S2WN**

Test Performed	Condition	Duration	Sample Size	Failures		
				El.	Opt.	Vis
Wet High Temperature Operating Life WHTOL *JESD22-A101*	T_A = 60°C; r.H.= 93% I_F = 2500mA	1000h	4x4	0	0	0
Temperature Cycling TC *JESD22-A104*	T_A = -40°C/+85°C 15min each extreme	1000c	4x10	0	0	0
High Temperature Operating Life HTOL *JESD22-A108*	T_A =55°C I_F = 3000mA *(Overstress for red)*	1000h	4x4	0	0	0
High Temperature Operating Life HTOL *JESD22-A108*	T_A =85°C I_F = 2000mA	1000h	4x4	0	0	0
Pulsed Operating Life PLT *JESD22-A108*	T_A = 55°C I_F =4000mA; tp = 4ms; D = 20% *(Overstress)*	1000h	4x4	0	0	0
Hydrogen Sulphide H2S *IEC 60068-2-43*	15ppm H2S 40°C/90%r.H.	336h	1x10	0	0	0
Flowing Mixed Gas FMG *IEC 60068-2-60*	T_A = 25°C, r.H.= 75% Test method 4	500h	1x10	0	0	0
Resistance to Solder Heat RSH *JESD22-A113*	Reflow soldering 260°C	3x	4x10	0	0	0
Wet High Temperature Storage WHTS *JESD22-A101*	T_A = 60°C; r.H.= 93%	500h	4x10	0	0	0

Note: Lot A = Control; Lot B;C;D = Eval

Failure criteria:

Electrical failures:	Vf (If =1000mA)	deep blue	> 3,40V; ± 10% from initial value
	Vf (If =1000mA) **Lot A**	true green	> 4,10V; ± 10% from initial value
	Vf (If =1000mA) **Lot B;C;D**	true green	> 3,3V; ± 10% from initial value
	Vf (If =1000mA)	red	> 2,80V; ± 10% from initial value
	Vf (If =1000mA)	ultra white	> 3,40V; ± 10% from initial value
Optical failures:	Iv (If =1000mA)		> ± 50% from initial value
	Cx/Cy (If =1000mA)		± 0.02 from initial value
Visual failures:	acc JEDEC JESD22-B101		

Conclusion: The tested devices representing the product family as stated in the applies to section fulfill the reliability requirements.

Pre-conditioning according to Jedec Level II **LE RTDUW S2WM**

Test Performed	Condition	Duration	Sample Size	Failures El.	Failures Opt.	Failures Vis
Wet High Temperature Operating Life WHTOL *JESD22-A101*	T_A = 60°C; r.H.= 93% I_F = 1000mA	1000h	4x10	0	0	0
Temperature Cycling TC *JESD22-A104*	T_A = -40°C/+85°C 15min each extreme	1000c	4x10	0	0	0
High Temperature Operating Life HTOL *JESD22-A108*	T_A = 85°C I_F = 1500mA	1000h	4x10	0	0	0
Resistance to Solder Heat RSH *JESD22-A113*	Reflow soldering 260°C	3x	4x10	0	0	0
Wet High Temperature Storage WHTS *JESD22-A101*	T_A = 60°C; r.H.= 93%	500h	4x10	0	0	0

Note: Lot A = Control; Lot B;C;D = Eval

Failure criteria:

Electrical failures:	Vf (If =700mA)	deep blue	> 3,70V; ± 10% from initial value
	Vf (If =700mA) **Lot A**	true green	> 4,0V; ± 10% from initial value
	Vf (If =700mA) **Lot B;C;D**	true green	> 3,15V; ± 10% from initial value
	Vf (If =700mA) **Lot A**	red	> 2,9V; ± 10% from initial value
	Vf (If =700mA) **Lot B;C;D**	red	> 2,7V; ± 10% from initial value
	Vf (If =700mA)	ultra white	> 3,70V; ± 10% from initial value
Optical failures:	Iv (If =700mA)	> ± 50% from initial value	
	Cx/Cy (If =700mA)	± 0.02 from initial value	
Visual failures:	acc JEDEC JESD22-B101		

Conclusion: The tested devices representing the product family as stated in the applies to section fulfill the reliability requirements.

Pre-conditioning according to Jedec Level II **LE RTDUW S2WP**

Test Performed	Condition	Duration	Sample Size	Failures El.	Failures Opt.	Failures Vis
Wet High Temperature Operating Life WHTOL *JESD22-A101*	T_A = 60°C; r.H.= 93% I_F = 3000mA	500h	2x4	0	0	0
Temperature Cycling TC *JESD22-A104*	T_A = -40°C/+85°C 15min each extreme	1000c	2x10	0	0	0
High Temperature Operating Life HTOL *JESD22-A108*	T_A =55°C I_F = 5000mA	1000h	2x4	0	0	0
High Temperature Operating Life HTOL *JESD22-A108*	T_A =85°C I_F = 2000mA	1000h	2x4	0	0	0
Resistance to Solder Heat RSH *JESD22-A113*	Reflow soldering 260°C	3x	2x10	0	0	0
Wet High Temperature Storage WHTS *JESD22-A101*	T_A = 60°C; r.H.= 93%	500h	2x10	0	0	0
Electrostatic Discharge HBM *ANSI/ESDA/ JEDEC JS-001*	Human Body Model	2000V	4x10	0	0	0

Note: Lot A = Control; Lot B;C;D = Eval

Failure criteria:

Electrical failures:	Vf (If =1400mA)	deep blue > 3,50V; ± 10% from initial value
	Vf (If =1400mA) **Lot A**	true green > 4,0V; ± 10% from initial value
	Vf (If =1400mA) **Lot B;C;D**	true green > 3,2V; ± 10% from initial value
	Vf (If =1400mA)	red > 2,80V; ± 10% from initial value
	Vf (If =1400mA)	ultra white > 3,50V; ± 10% from initial value
Optical failures:	Iv (If =1400mA)	> ± 50% from initial value
	Cx/Cy (If =1400mA)	± 0.02 from initial value
Visual failures:	acc JEDEC JESD22-B101	

Conclusion: The tested devices representing the product family as stated in the applies to section fulfill the reliability requirements.

Disclaimer

PLEASE CAREFULLY READ THE BELOW TERMS AND CONDITIONS BEFORE USING THE INFORMATION.
IF YOU DO NOT AGREE WITH ANY OF THESE TERMS AND CONDITIONS, DO NOT USE THE INFORMATION.

The Information contained in this Document does not constitute an independent warranty. The committed behavior is described in the Product data sheet and/or further, mutually agreed specifications.
Distribution of part or all of the contents of this Document to any 3rd party in any form without the prior permission of ams-OSRAM International GmbH is prohibited except in accordance with applicable mandatory law.

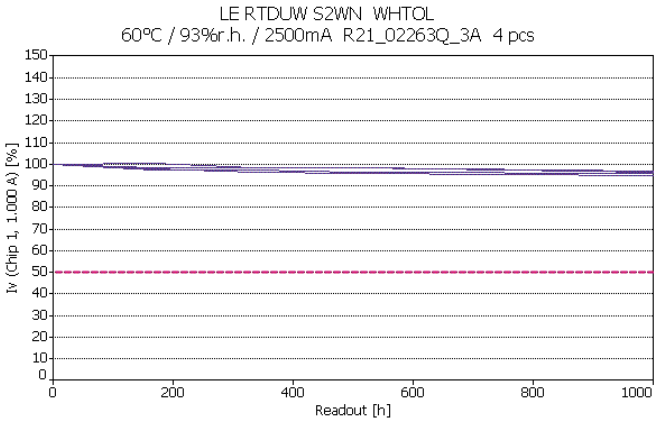
Further explanations:
Data: The Data used in this Document consider the reliability test results under the mentioned driving conditions only. For Product information on the maximum operating conditions and the OSRAM standard qualification profile please refer to the Product data sheet or contact your local sales partner.
Conditions: The conditions for the generation of the Data are as follows:
1. The Data and curves shown in this Document are based on experiments carried out under laboratory conditions on a random sample size of LED/IRED/Laser/Detector with readouts at discrete readout times (where applicable). Thus, the Data above represent a limited number of production lots only and may differ between different assembly lots over time (including chip or package changes). Thus, the behavior of the LED/IRED/Laser/Detector in the final application may differ from the Data. The behavior of the LED/IRED/Laser/Detector at conditions or readout times deviating from those stated above may not be deduced from the Data.
2. If applicable:
    a) Extended driving conditions:
    The tested driving conditions exceed the maximum limits stated in the Product data sheet. Therefore, a reduced lifetime or an accelerated degradation is expected. Failure limits noted in the Document refer to the testing condition according to the OSRAM standard Product qualification profile and not to the actual testing condition.
    b) Extended testing duration:
    The testing duration exceed the OSRAM standard qualification profile of the mentioned Product. Failure limits noted in the Document refer to the testing duration according to the OSRAM standard Product qualification profile and not to the actual testing duration.
    c) Exceeding standard qualification conditions – (Product data sheet limits not affected):
    The tested driving conditions exceed the OSRAM standard qualification profile of the mentioned Product. Therefore a reduced lifetime or an accelerated degradation is expected. Failure limits noted in the Document refer to the testing condition according to the OSRAM standard Product qualification profile and not to the actual testing condition.
3. For long term operation additional failure modes of the chip or package can occur which are not shown in this Document.
4. Possible differences in the thermal management of OSRAM and customer's setup may lead to a different aging behavior.

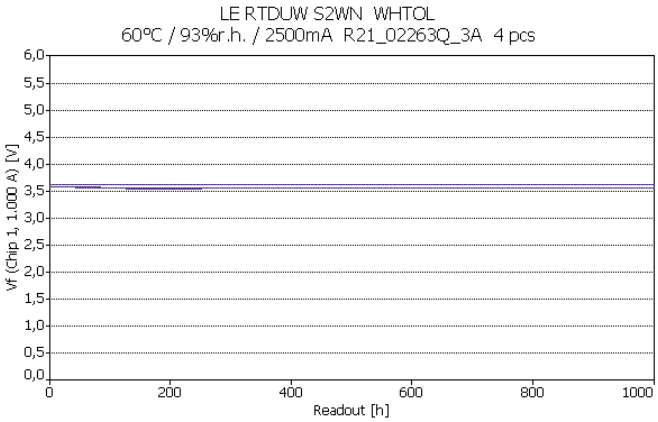
LE RTDUW S2WN

WHTOL 60°C/93%r.H; 2500mA

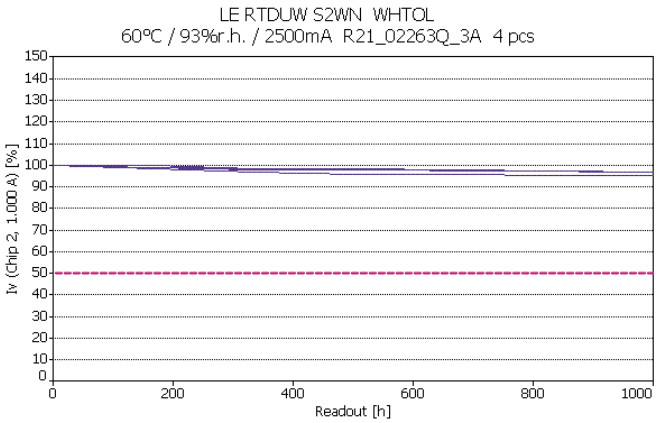
Lot A

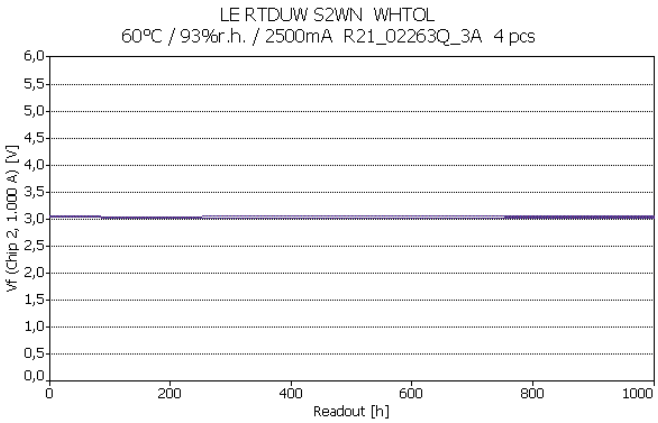
Deep blue chip





True green chip

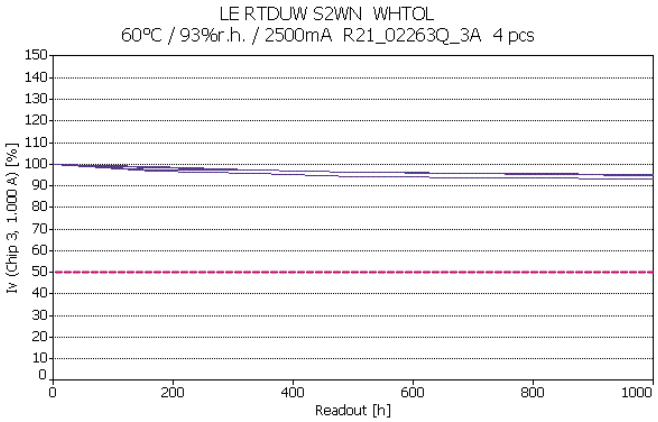


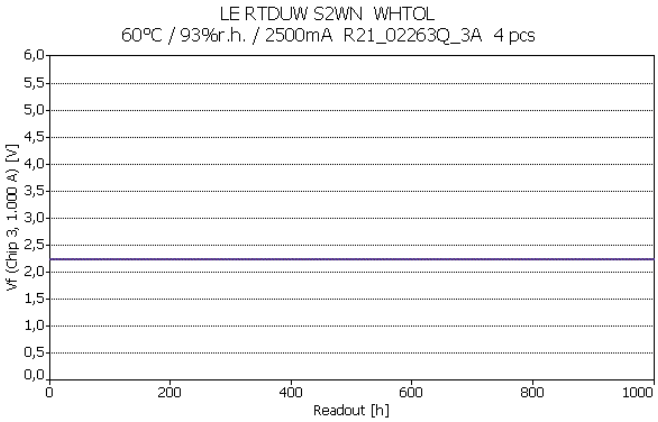


WHTOL 60°C/93%r.H; 2500mA

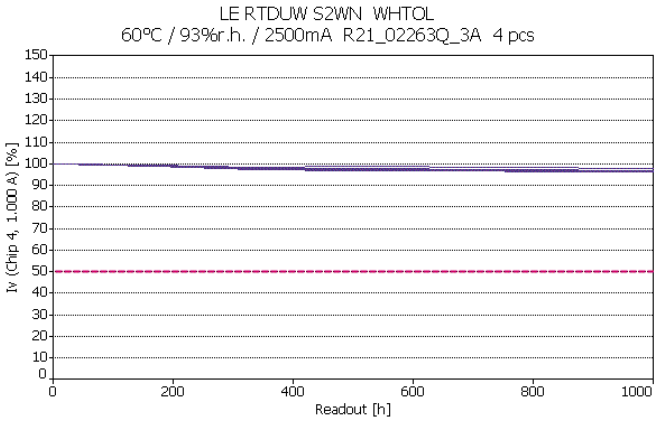
Lot A

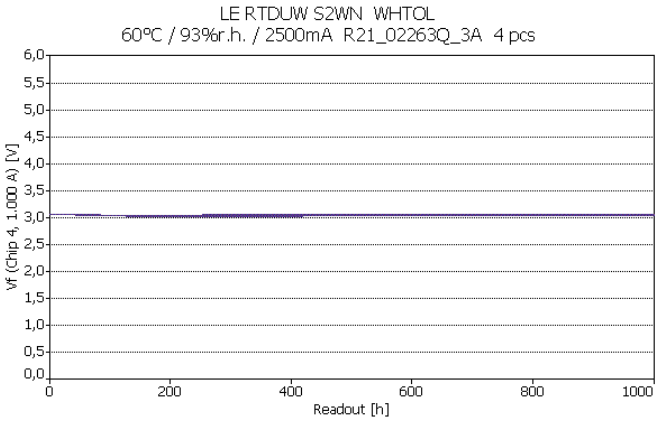
Red chip

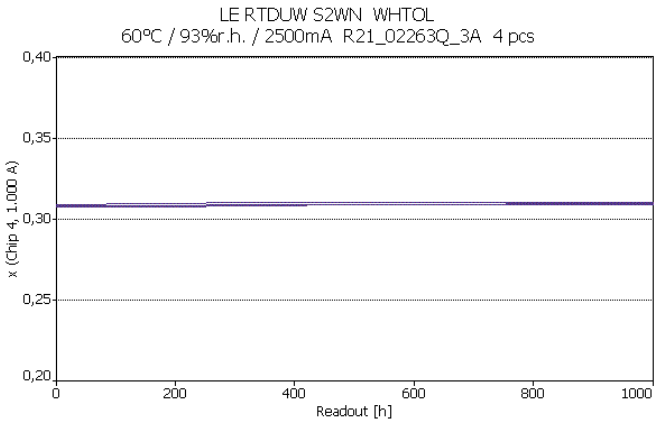


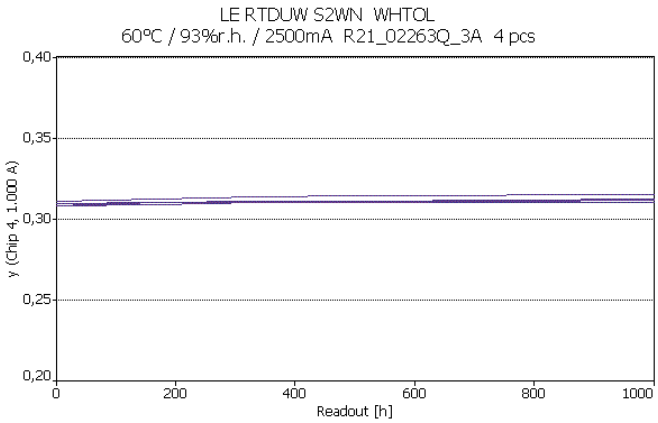


Ultra white chip





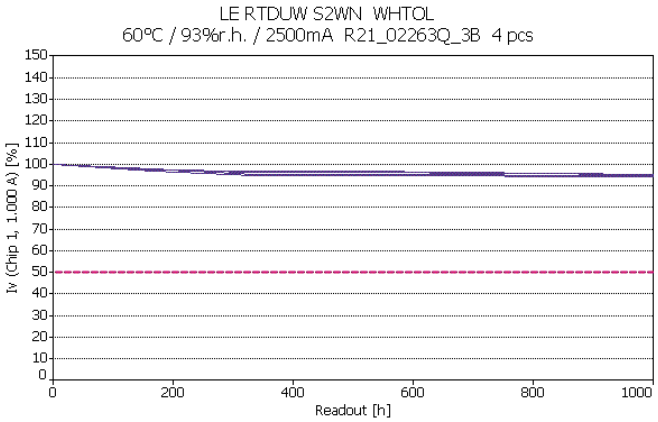


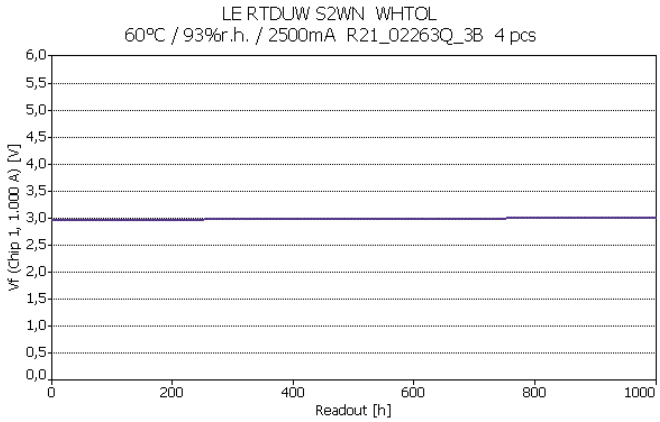


WHTOL 60°C/93%r.H; 2500mA

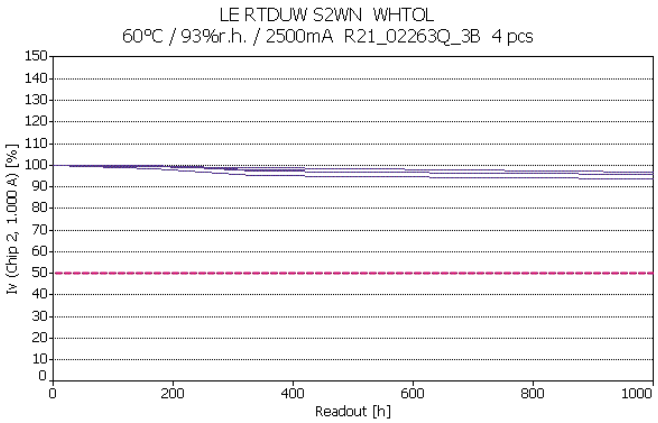
Lot B

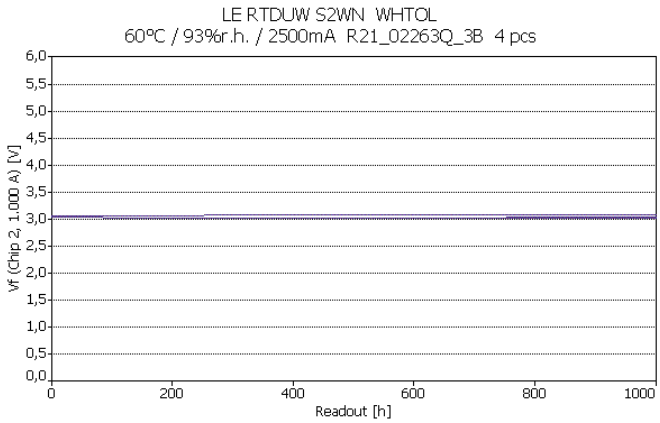
Deep blue chip





True green chip

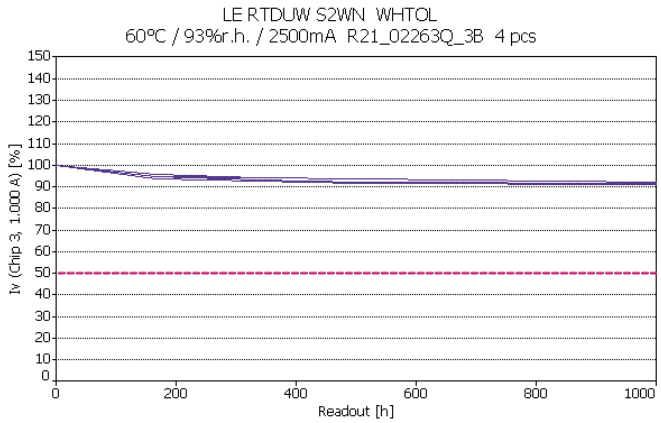


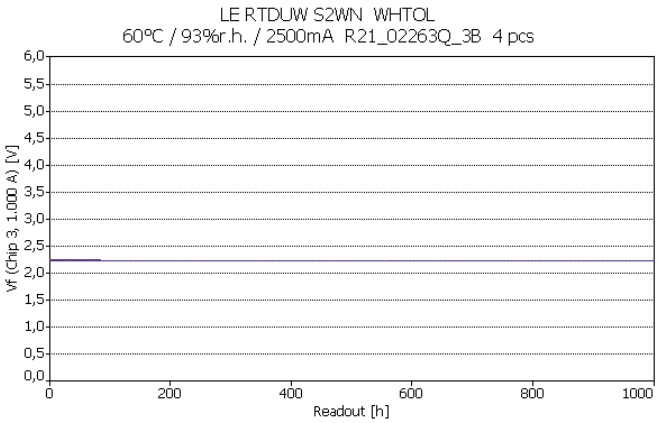


WHTOL 60°C/93%r.H; 2500mA

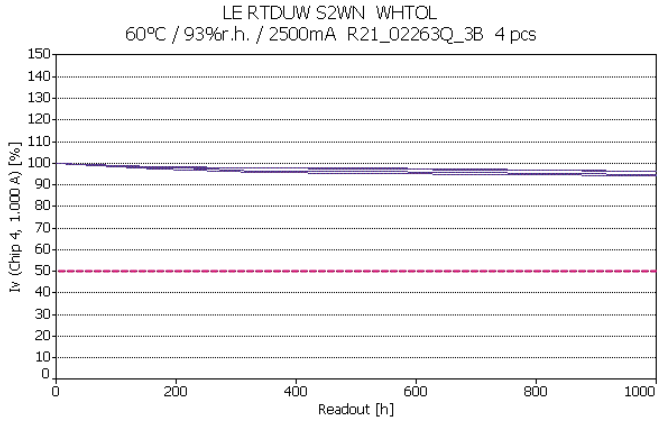
Lot B

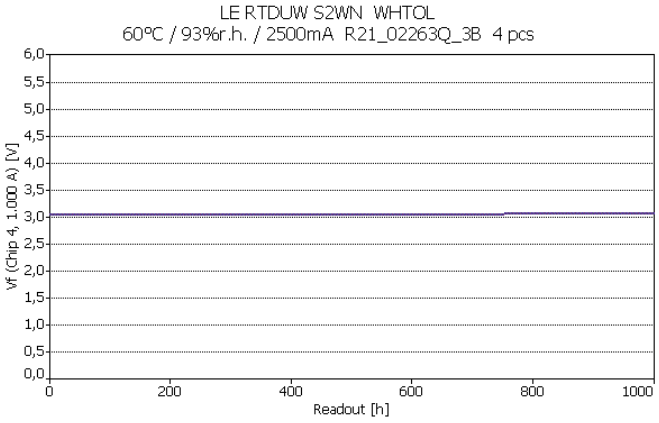
Red chip

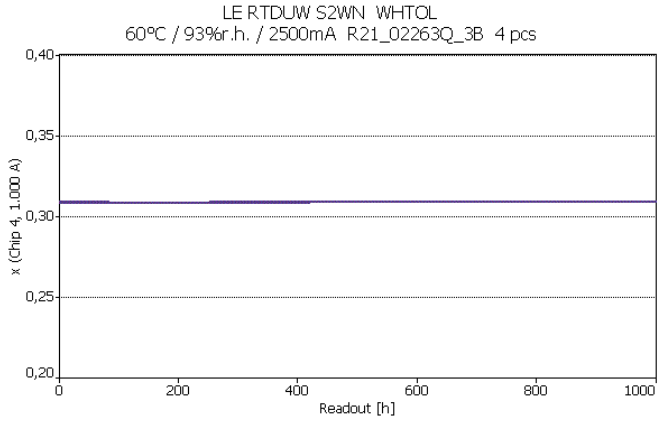


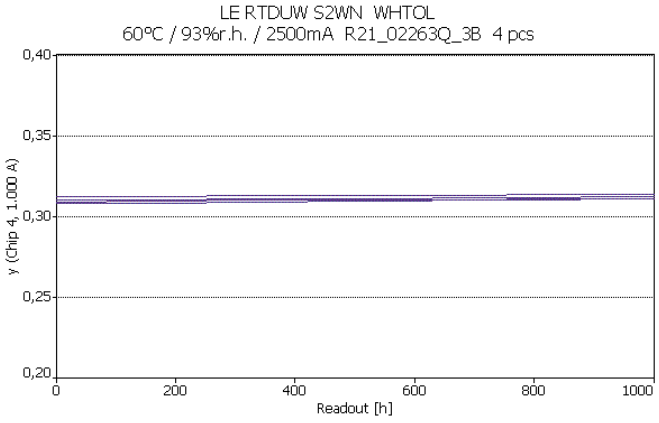


Ultra white chip





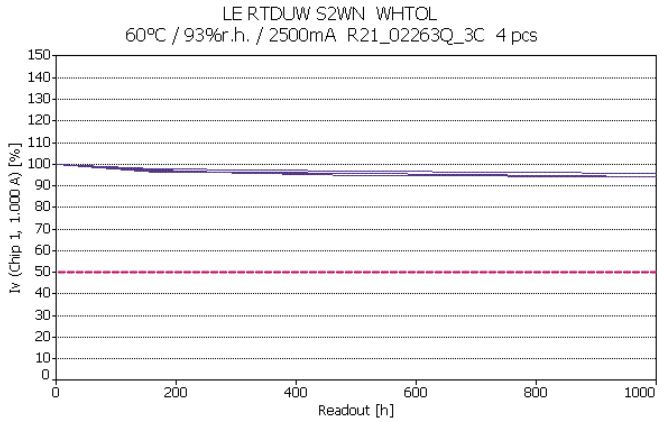


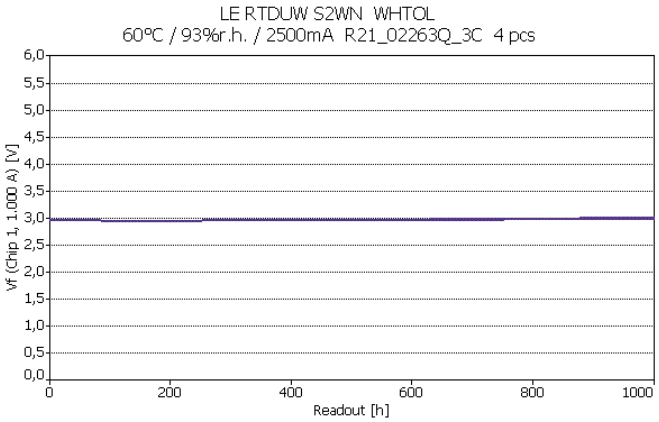


WHTOL 60°C/93%r.H; 2500mA

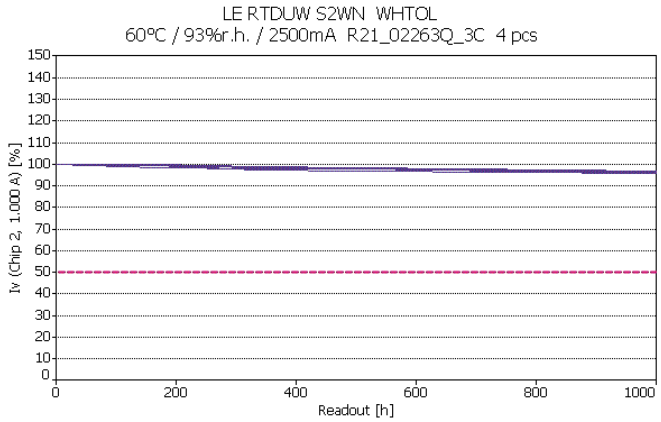
Lot C

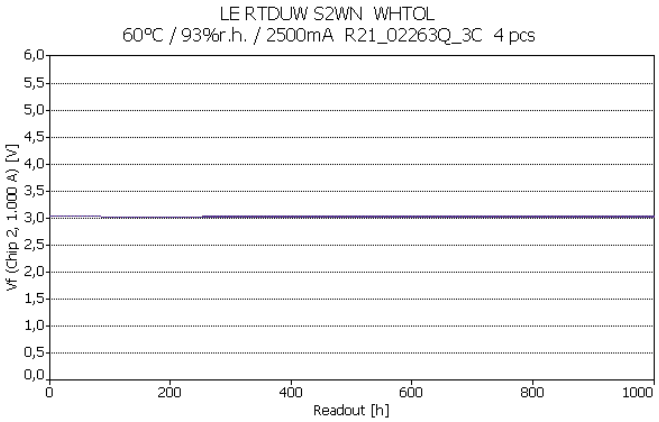
Blue deep chip





True green chip

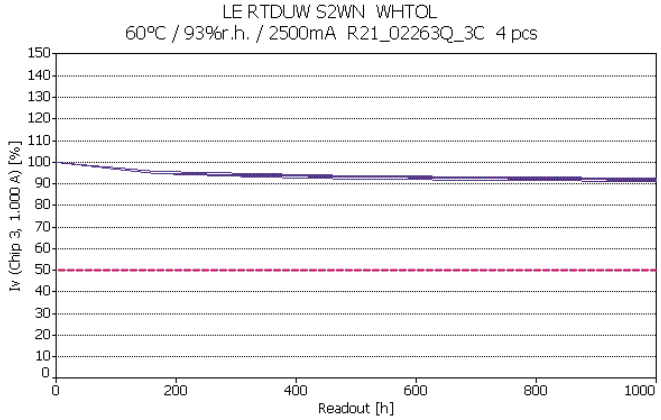


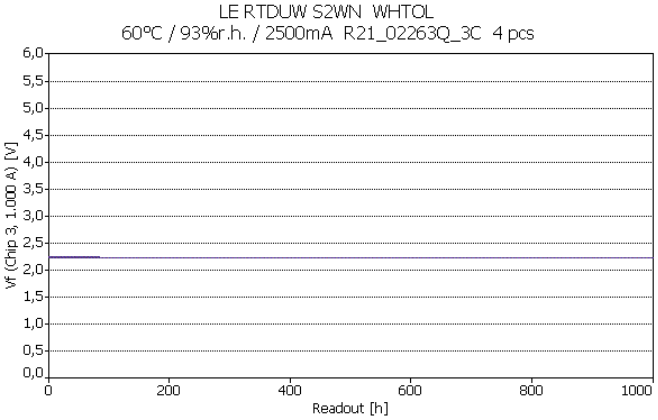


WHTOL 60°C/93%r.H; 2500mA

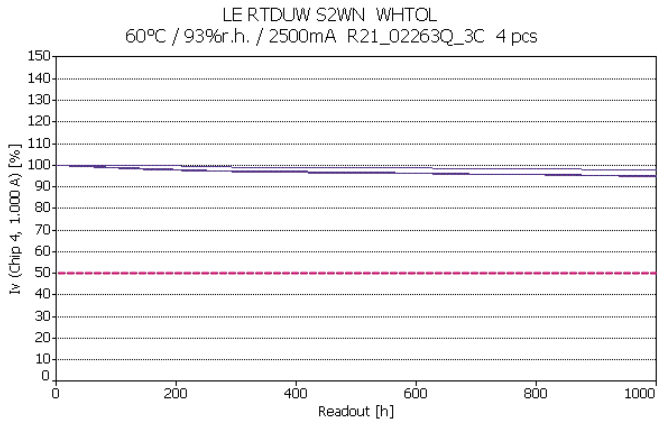
Lot C

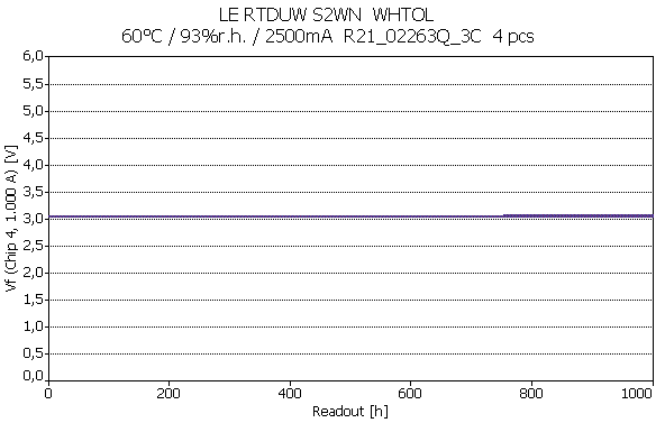
Red chip

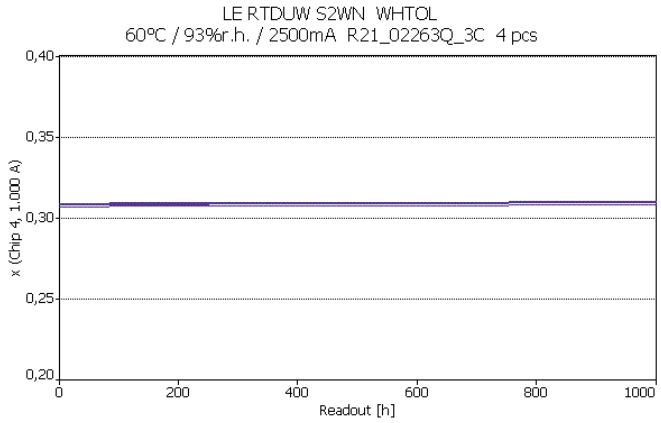


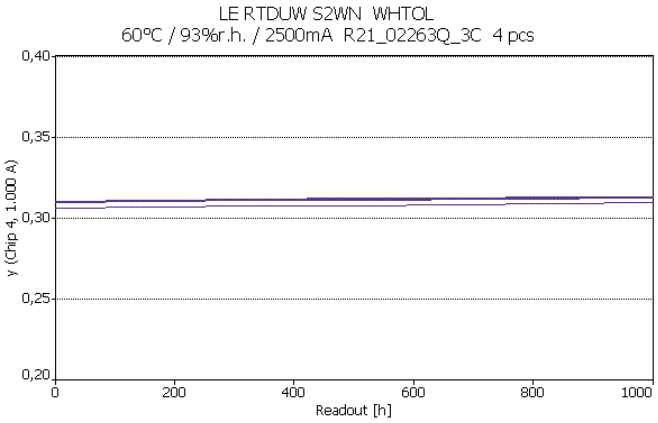


Ultra white chip





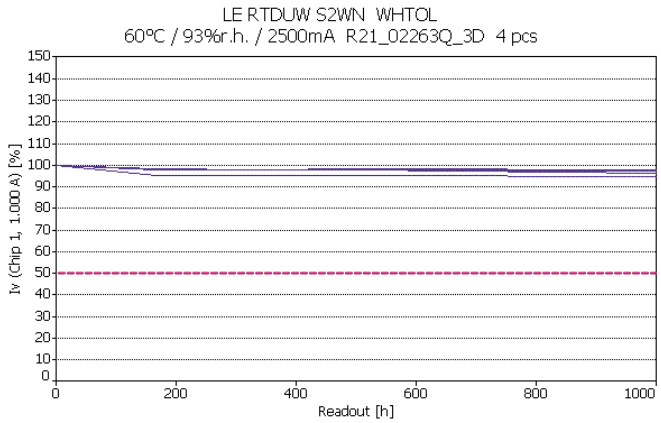


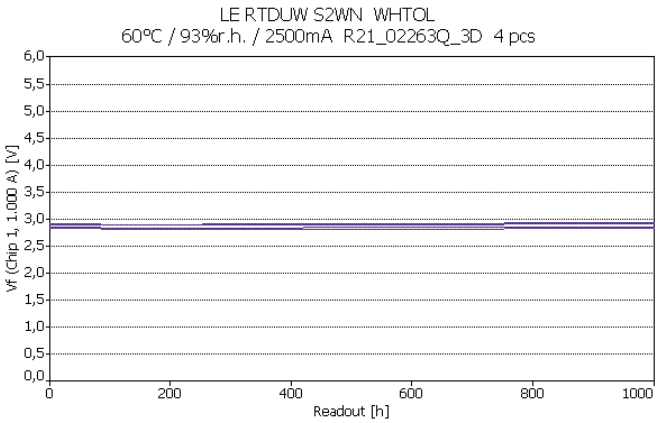


WHTOL 60°C/93%r.H; 2500mA

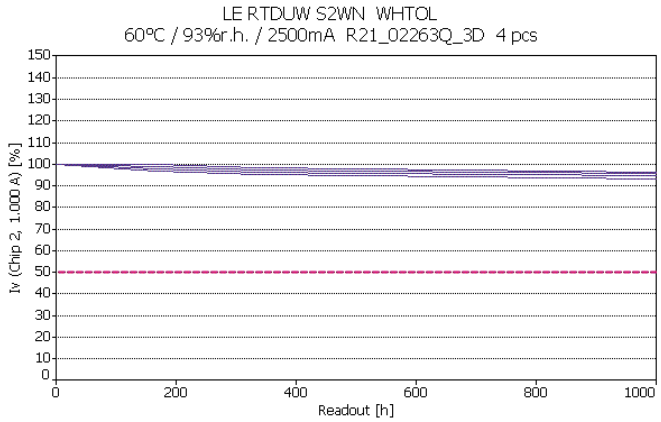
Lot D

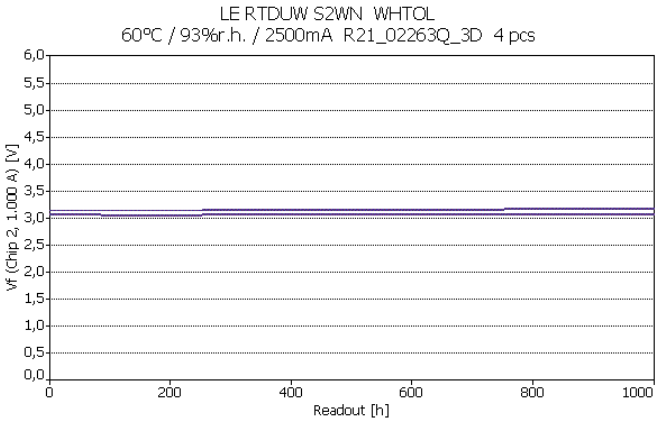
Deep blue chip





True green chip

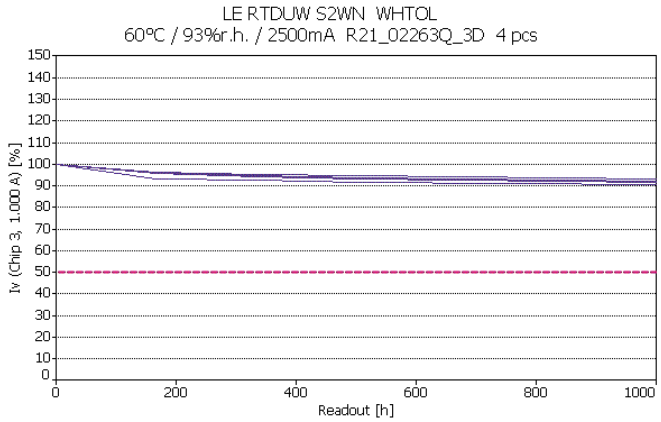


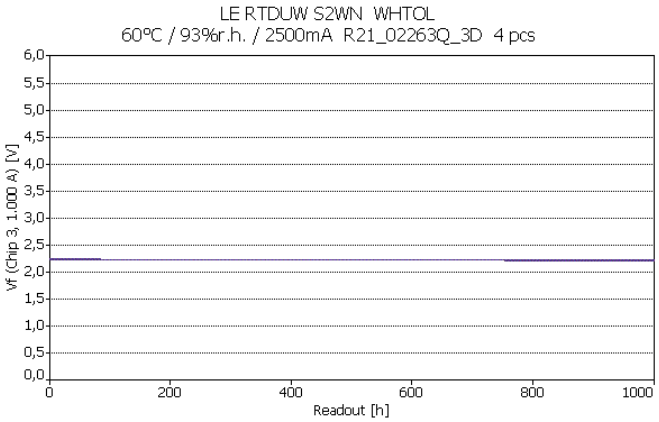


WHTOL 60°C/93%r.H; 2500mA

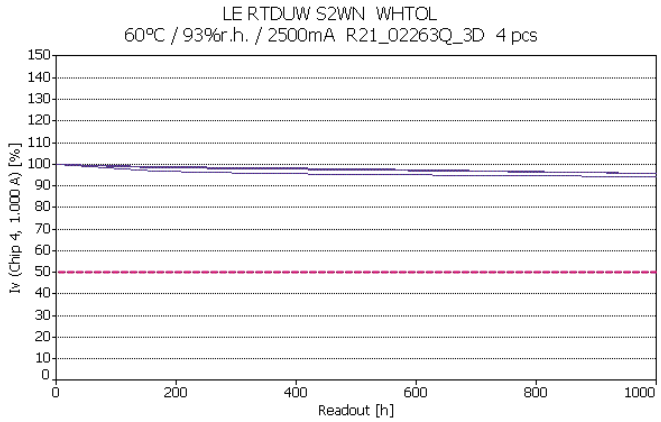
Lot D

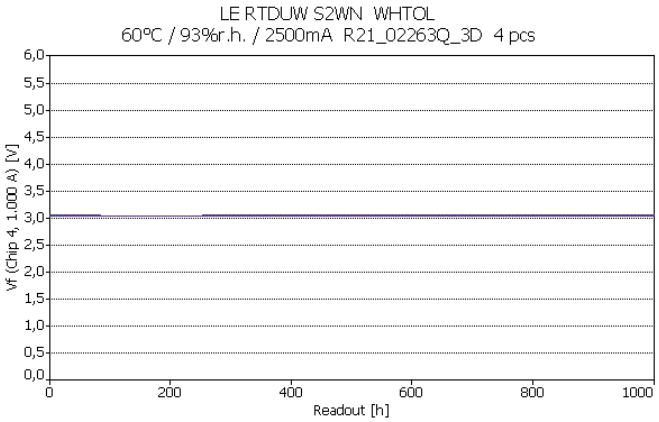
Red chip

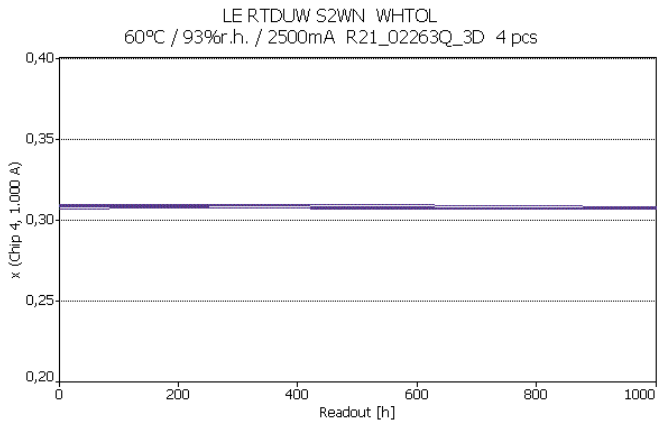


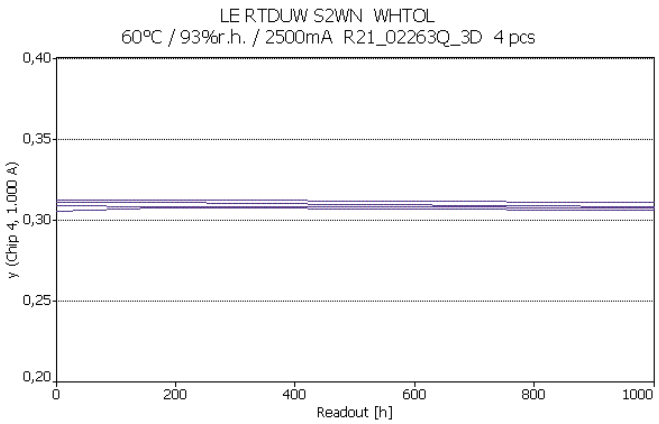


Ultra white chip





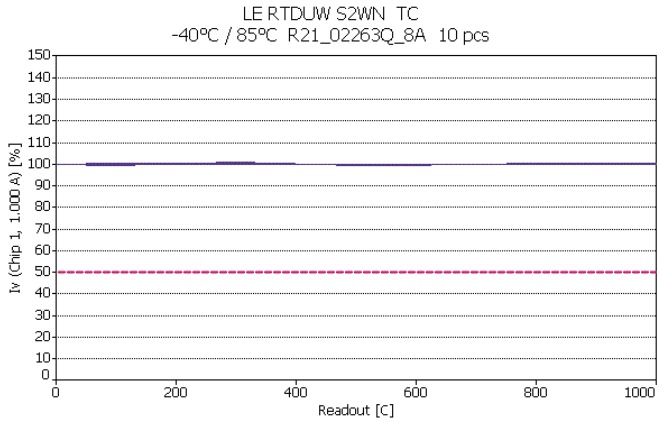


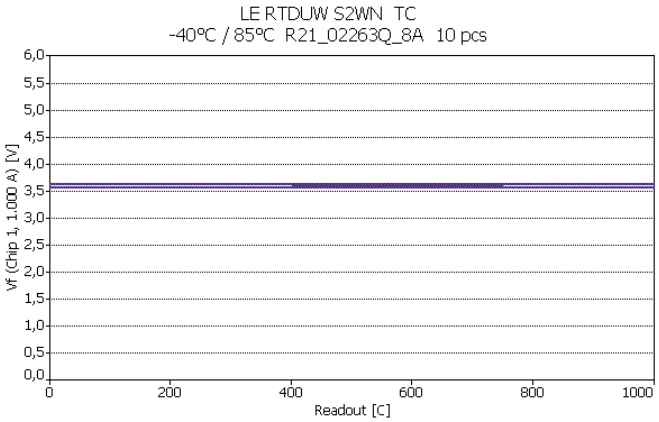


TC -40°C/85°C

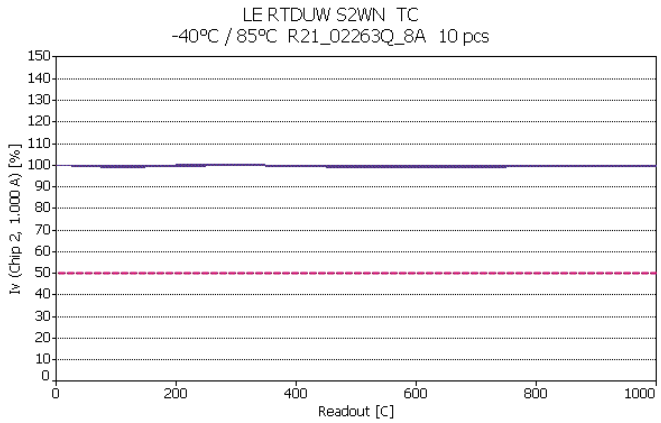
Lot A

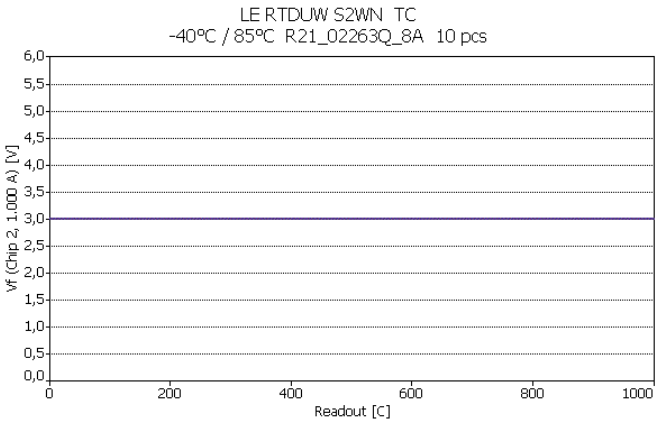
Deep blue chip





True green chip

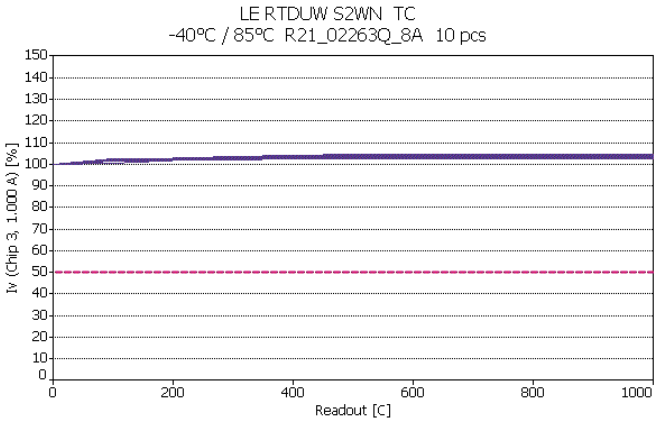


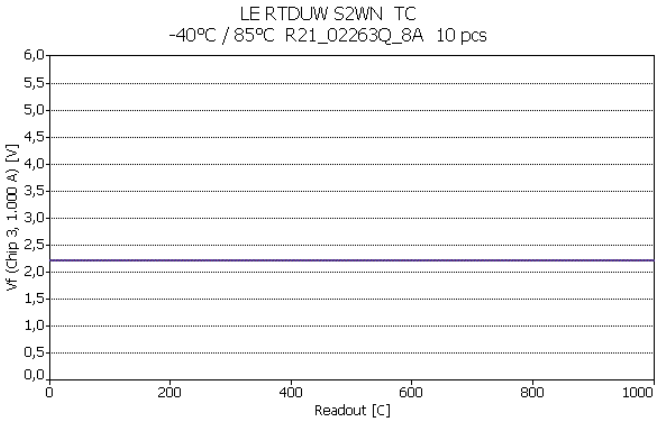


TC -40°C/85°C

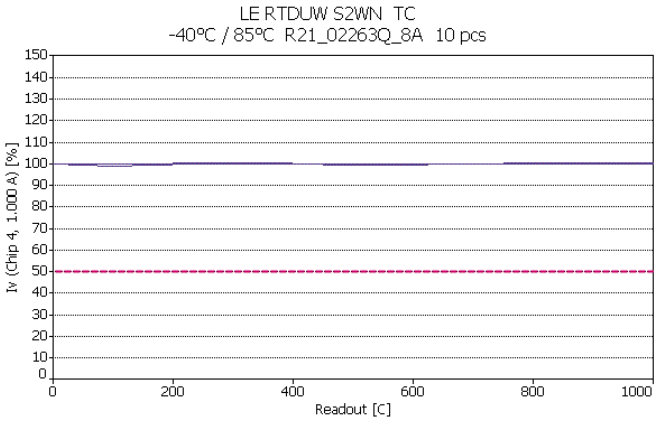
Lot A

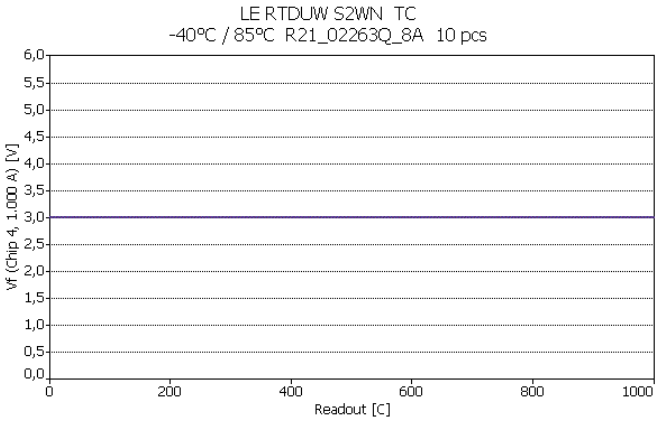
Red chip

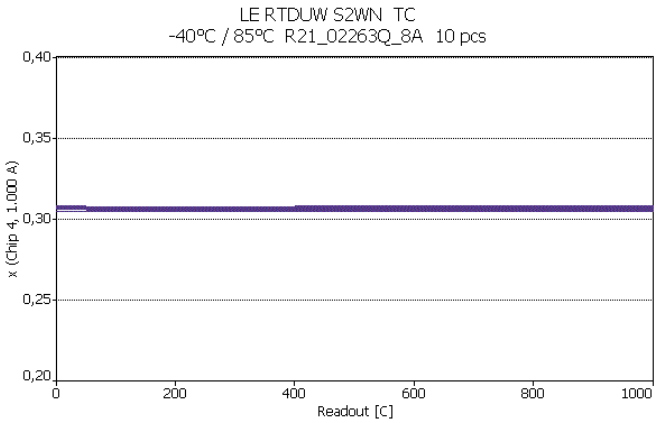


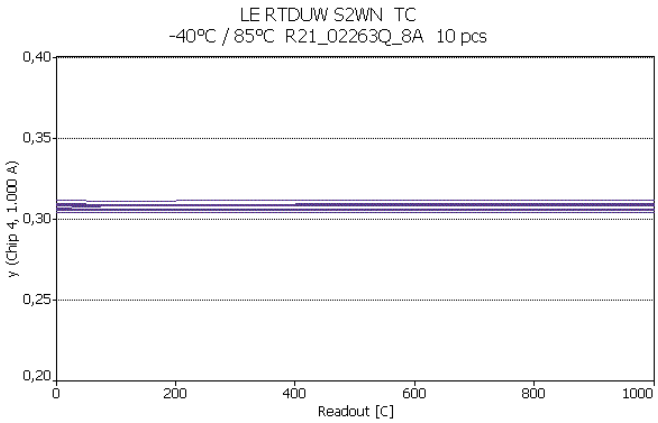


Ultra white chip





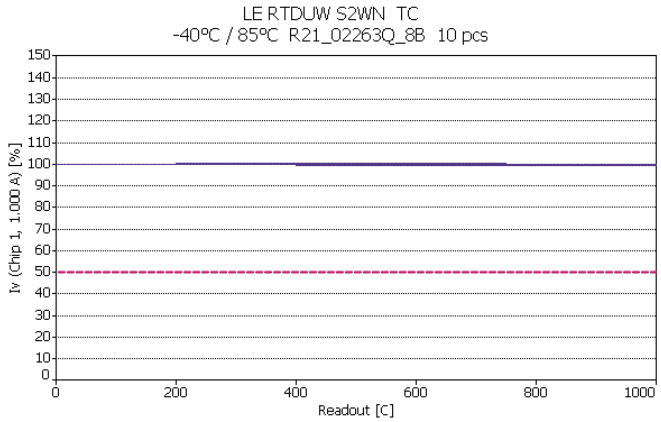


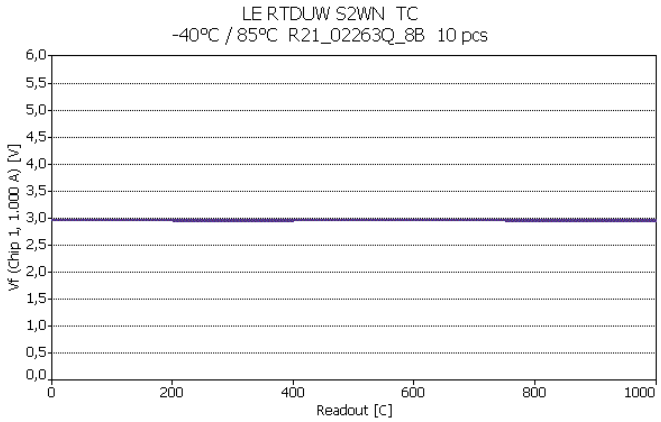


TC -40°C/85°C

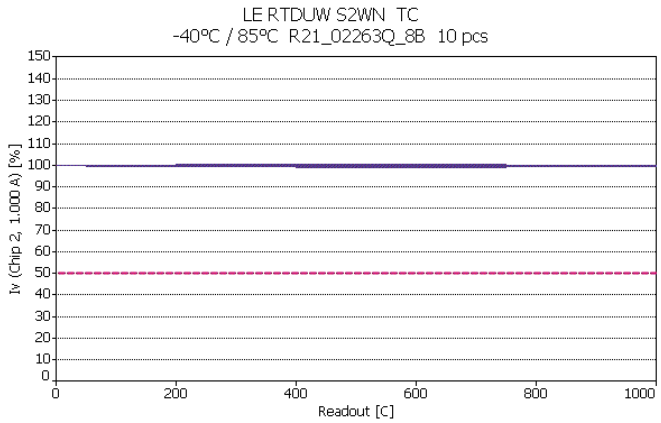
Lot B

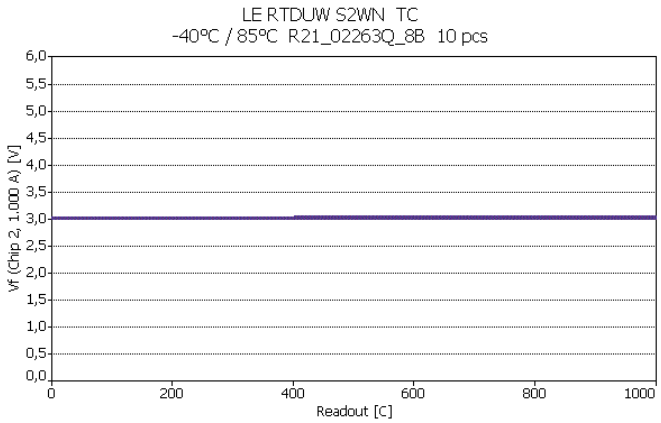
Deep blue chip





True green chip

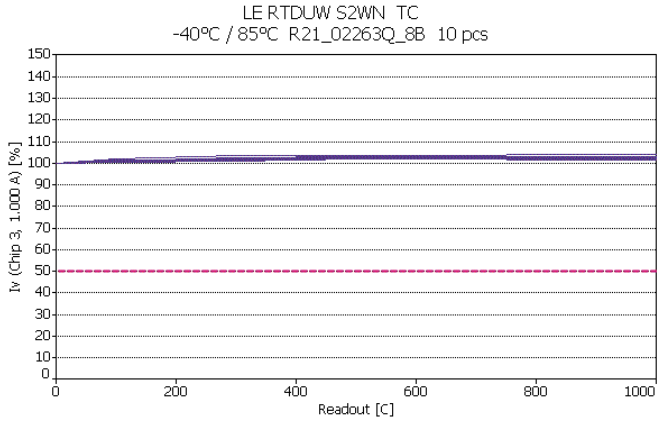


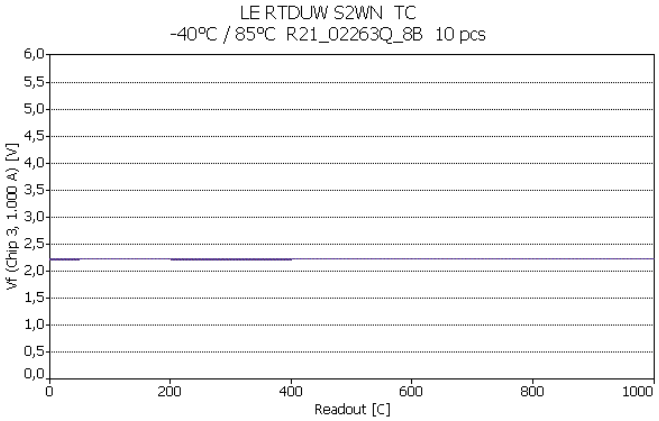


TC -40°C/85°C

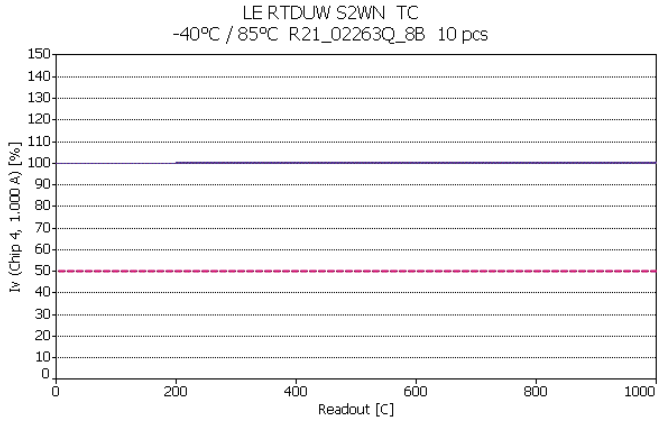
Lot B

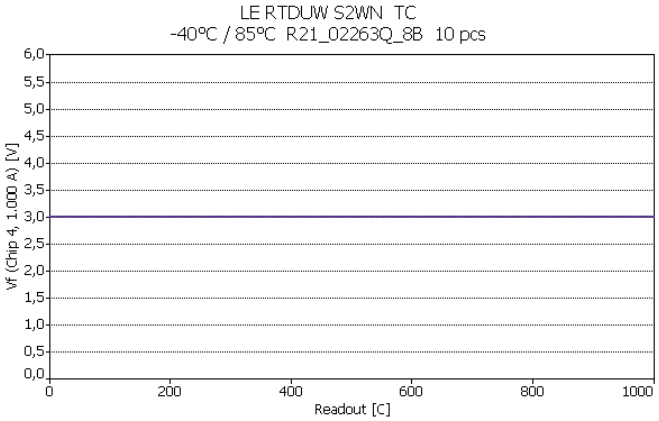
Red chip

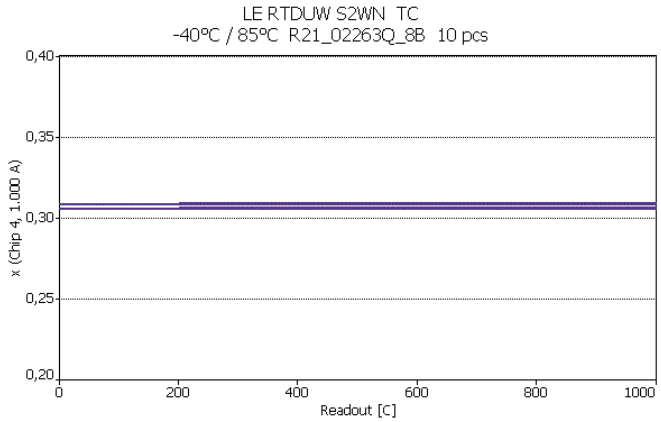


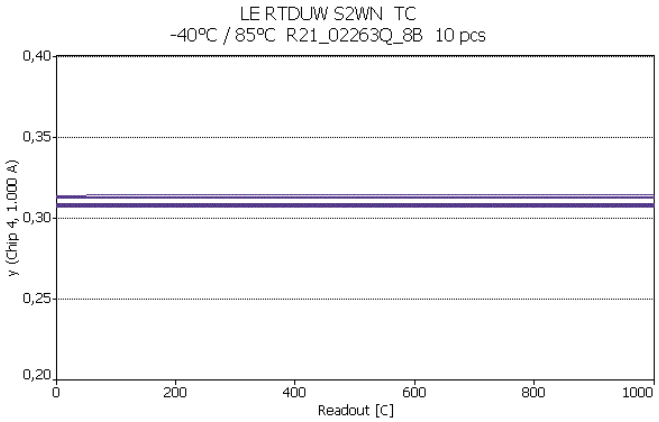


Ultra white chip





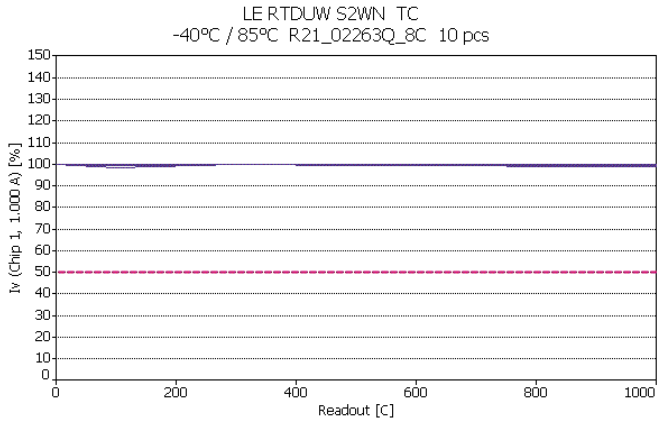


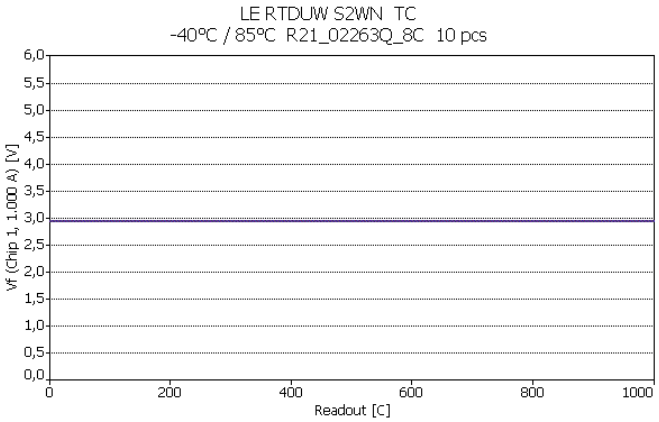


TC -40°C/85°C

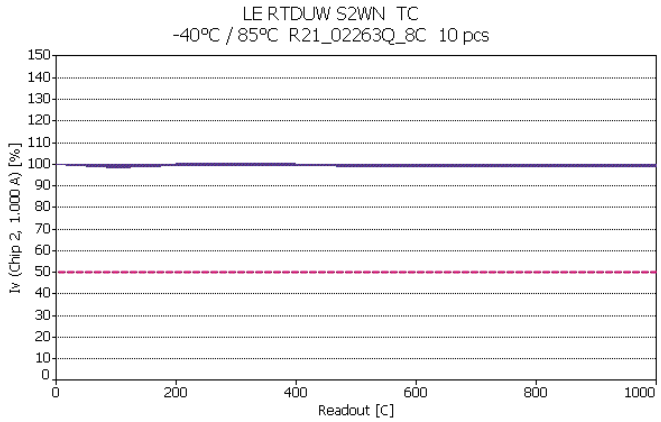
Lot C

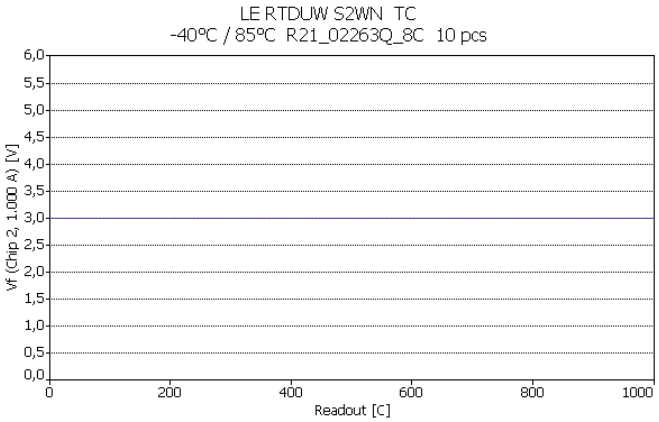
Blue deep chip





True green chip

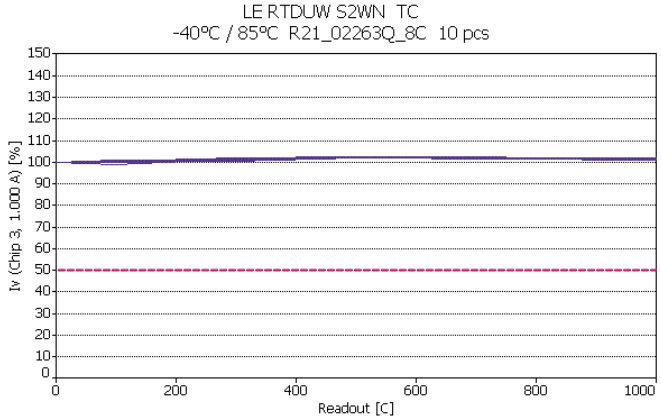


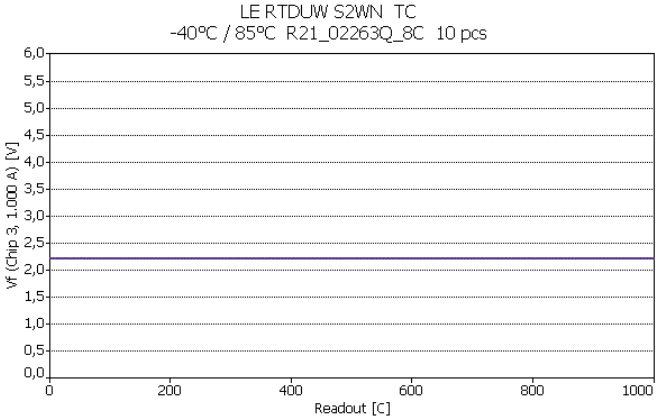


TC -40°C/85°C

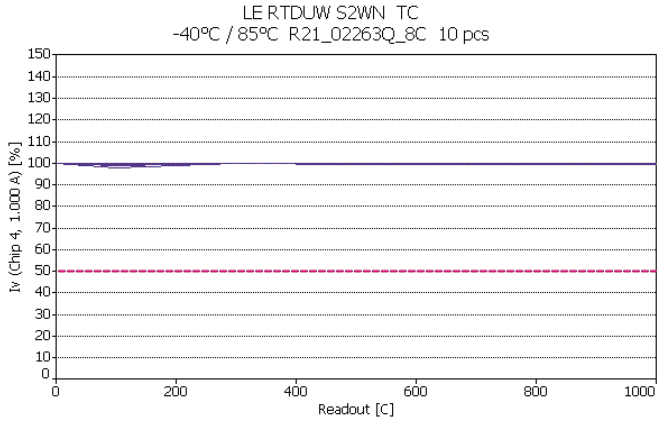
Lot C

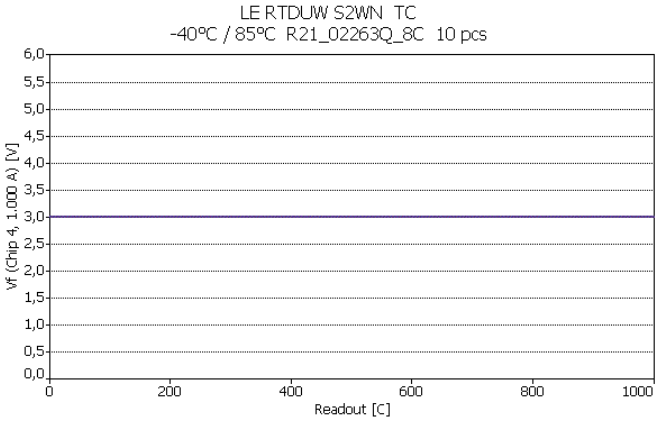
Red chip

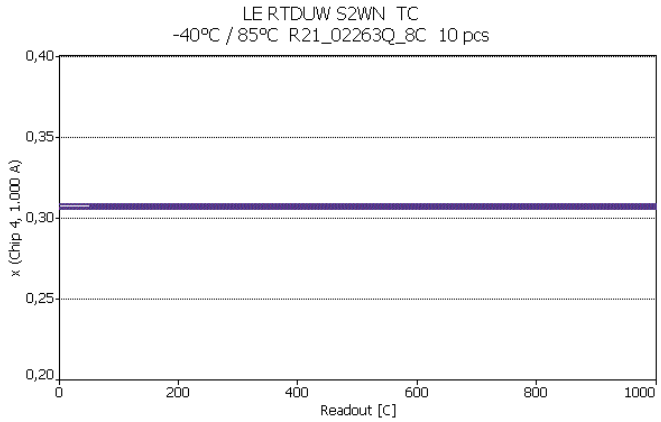


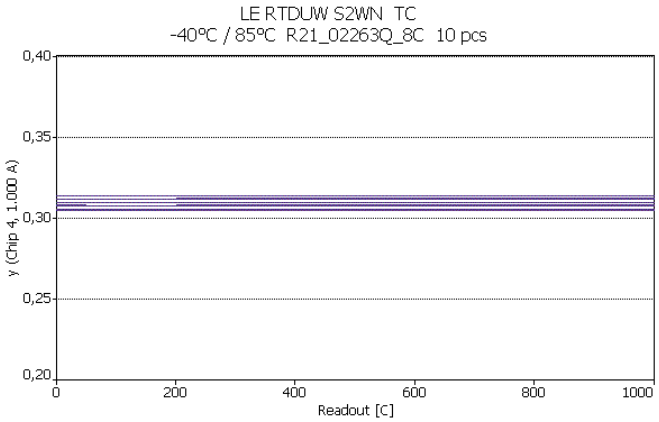


Ultra white chip





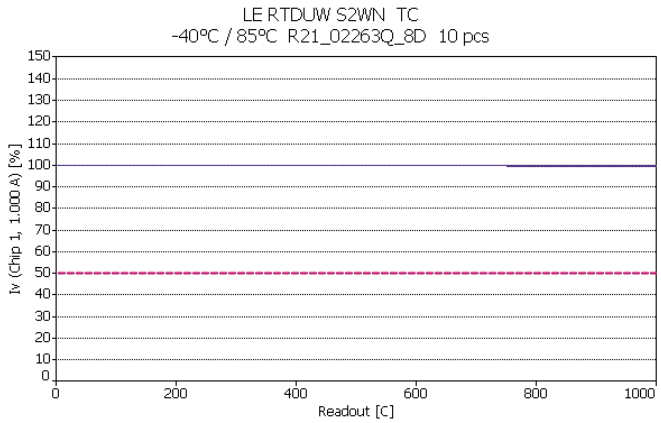


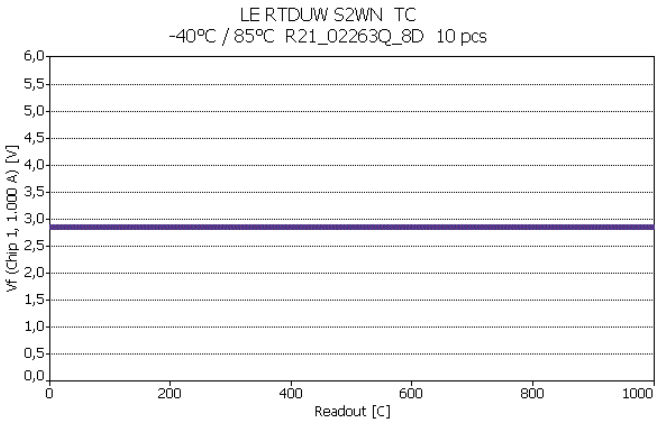


TC -40°C/85°C

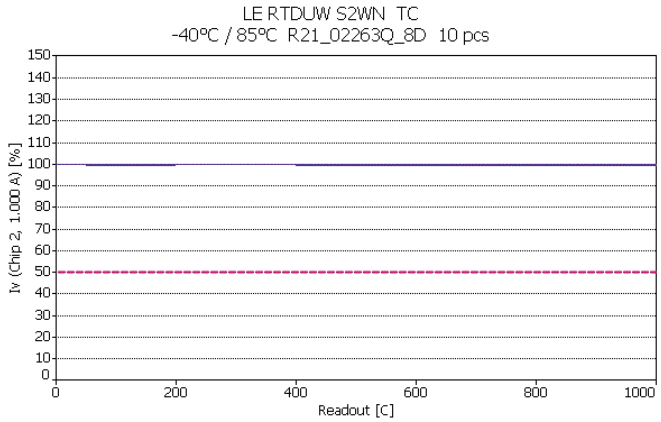
Lot D

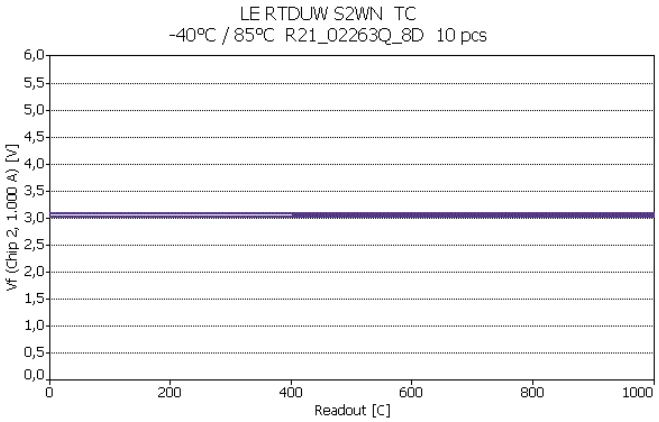
Deep blue chip





True green chip

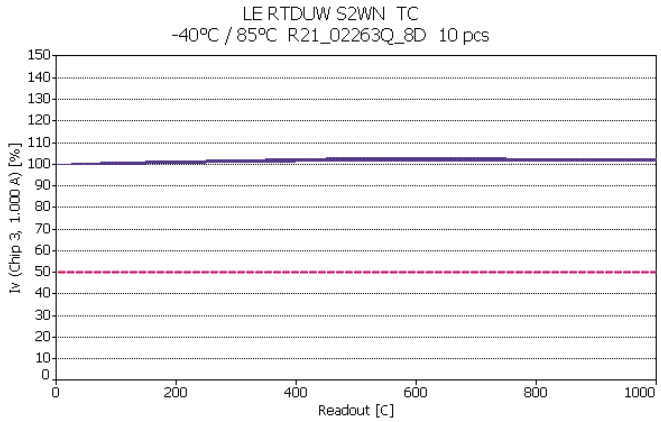


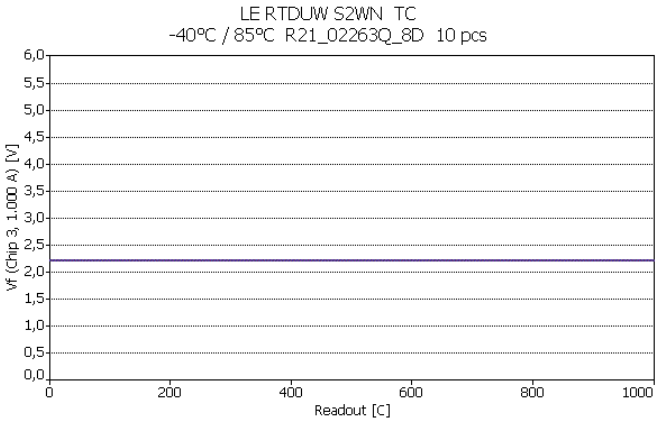


TC -40°C/85°C

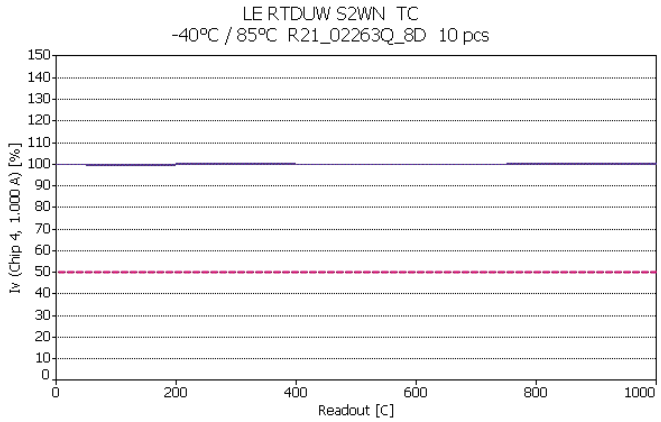
Lot D

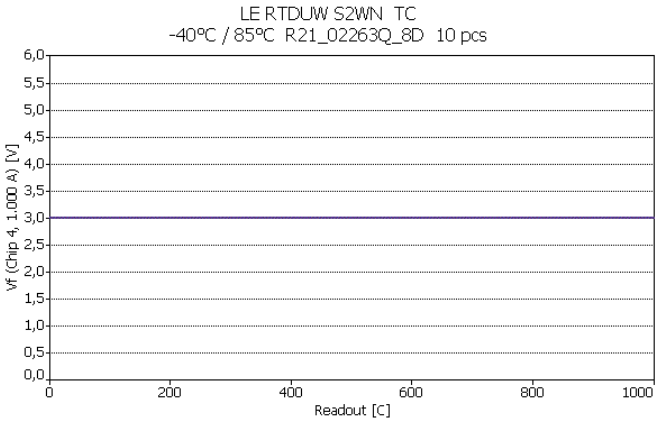
Red chip

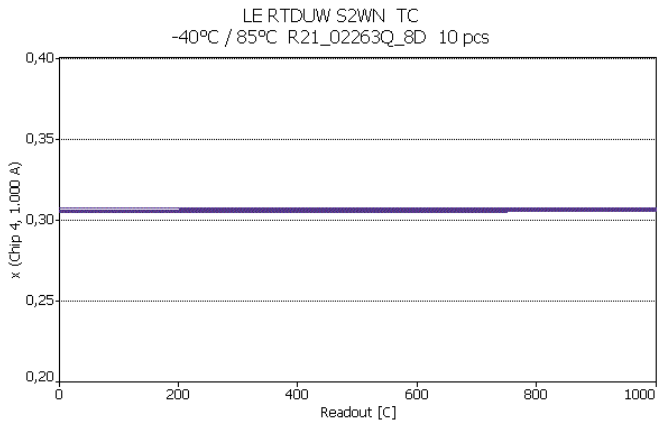


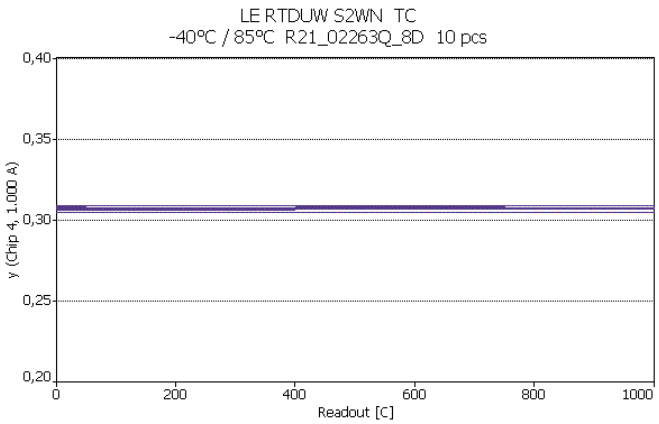


Ultra white chip





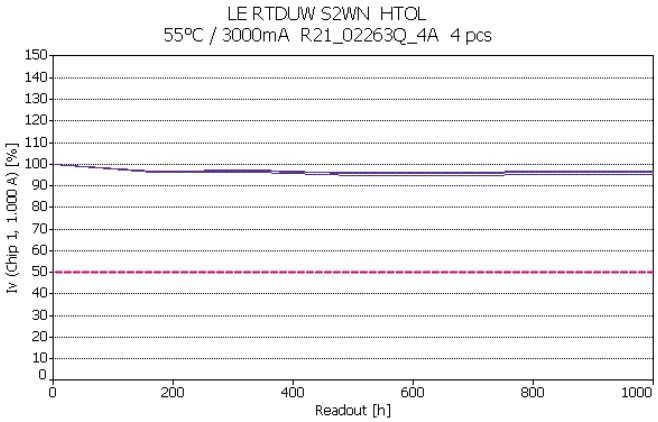


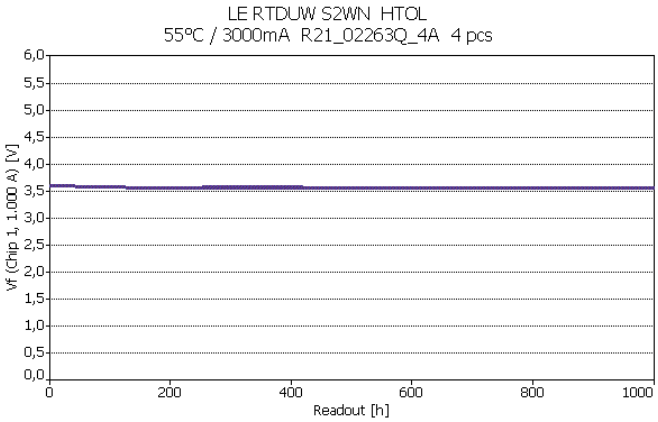


HTOL 55°C/3000mA

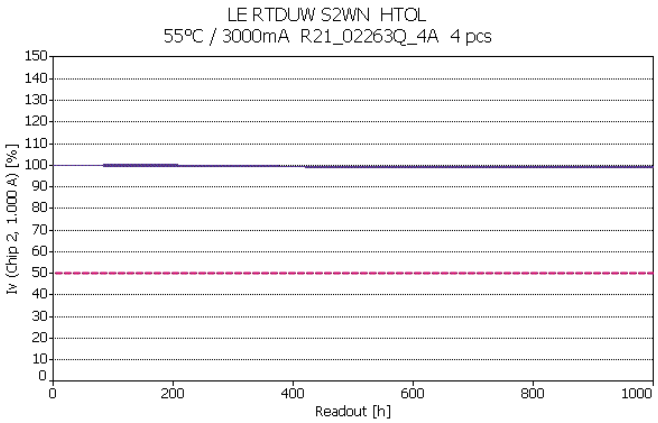
Lot A

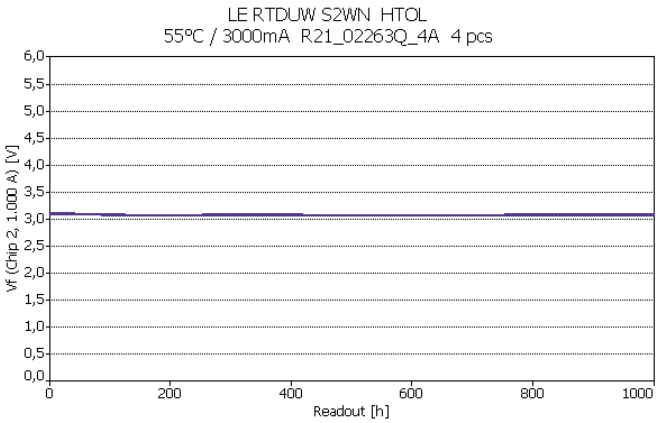
Deep blue chip





True green chip

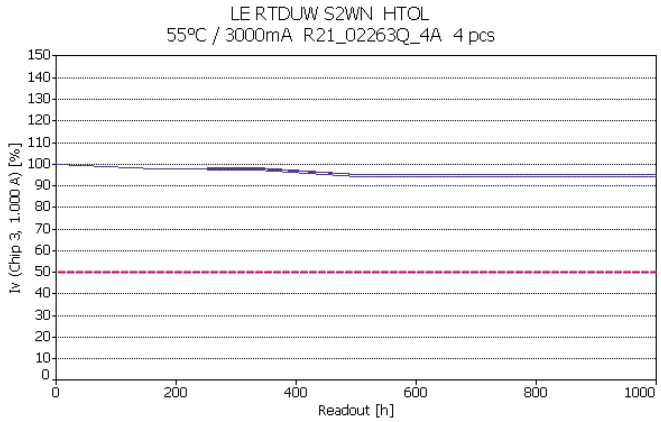


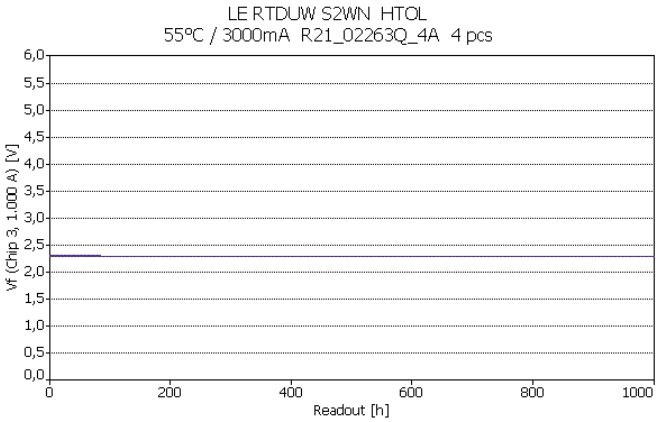


HTOL 55°C/3000mA

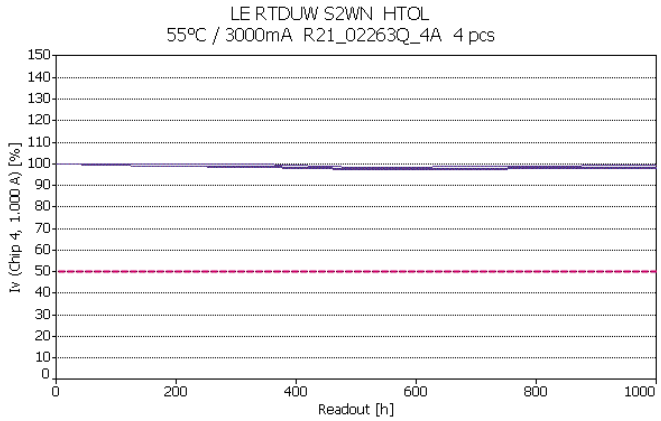
Lot A

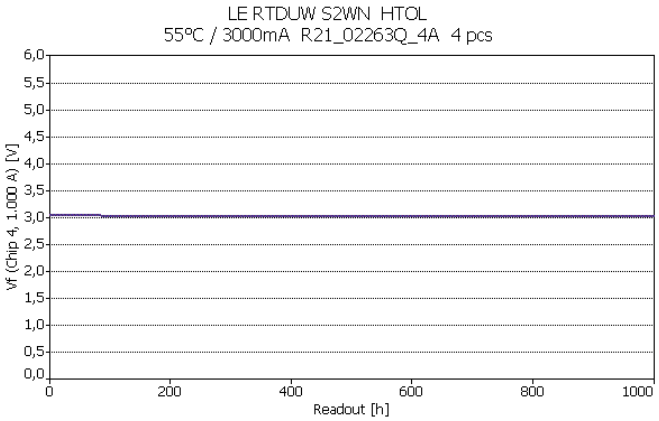
Red chip

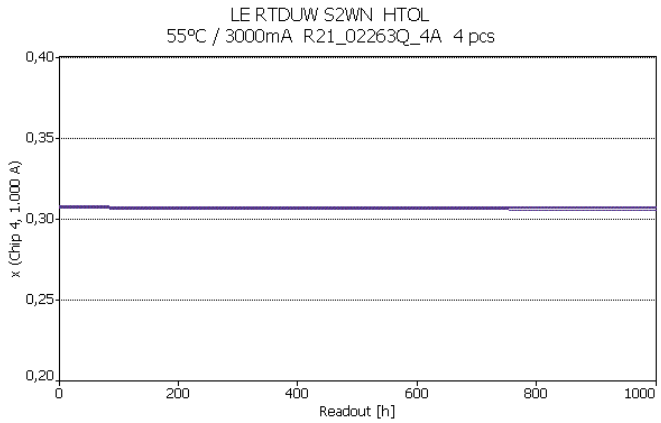


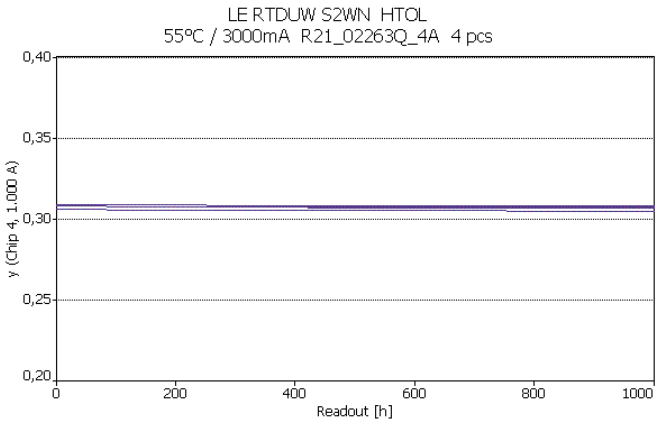


Ultra white chip





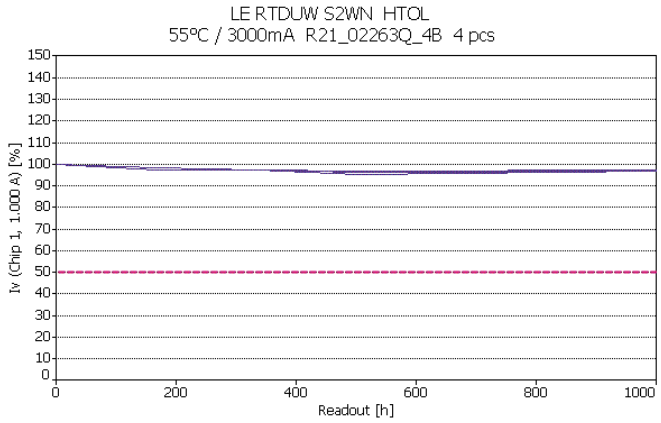


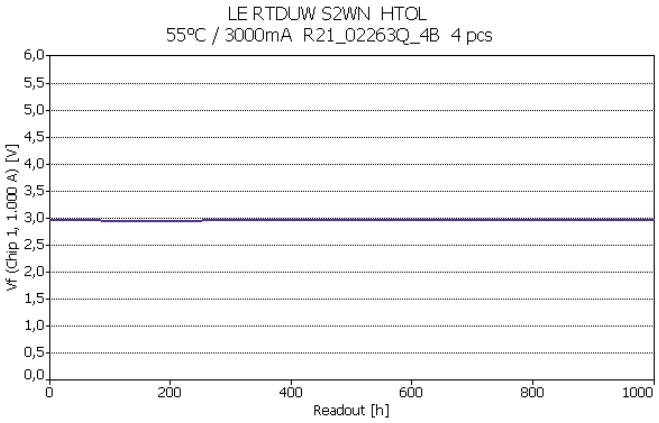


HTOL 55°C/3000mA

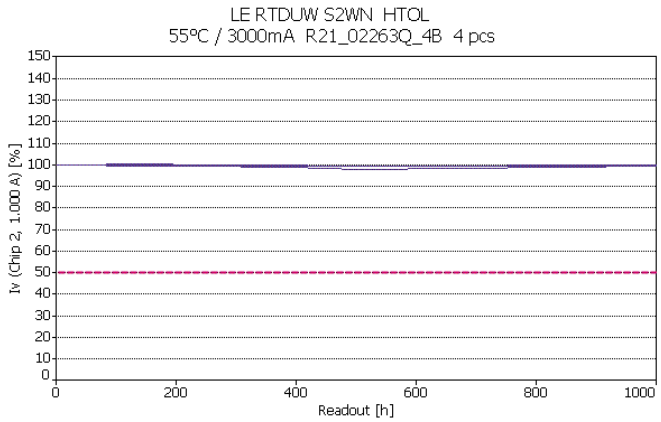
Lot B

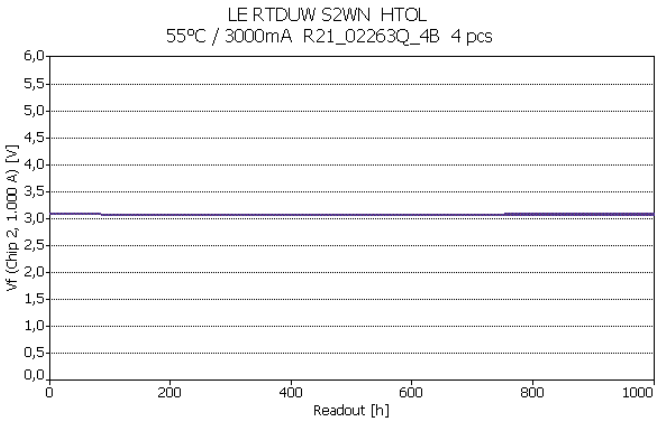
Deep blue chip





True green chip

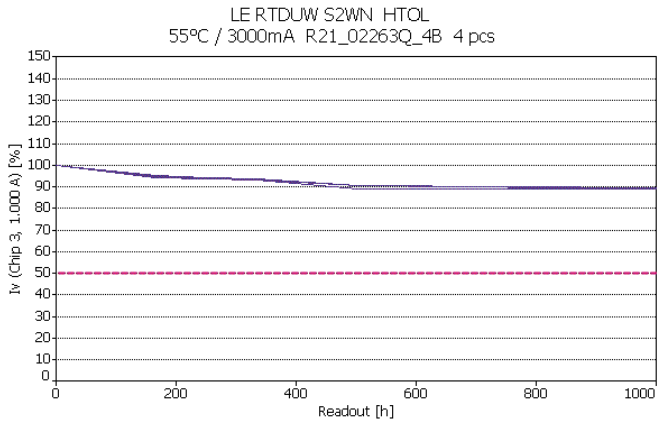


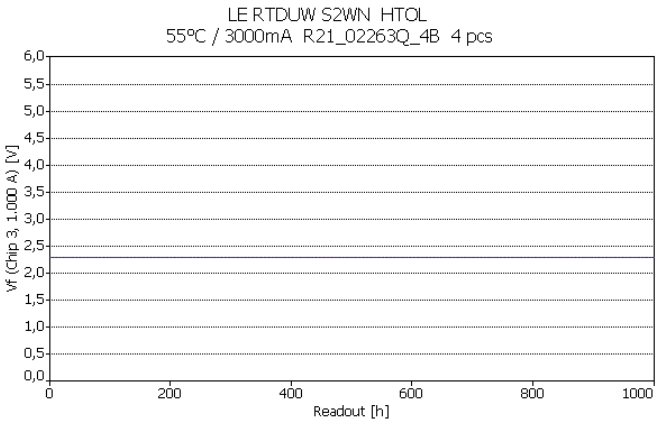


HTOL 55°C/3000mA

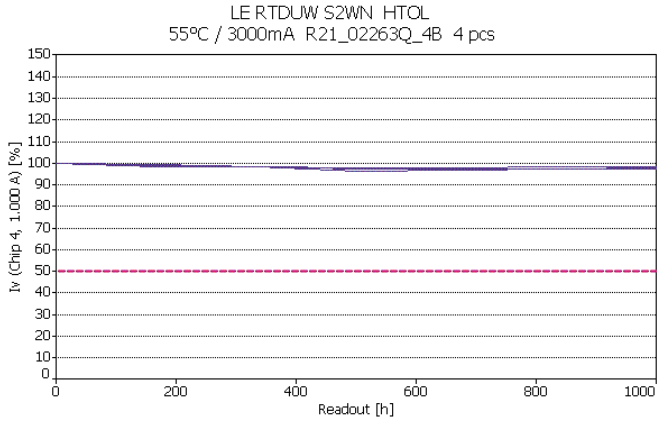
Lot B

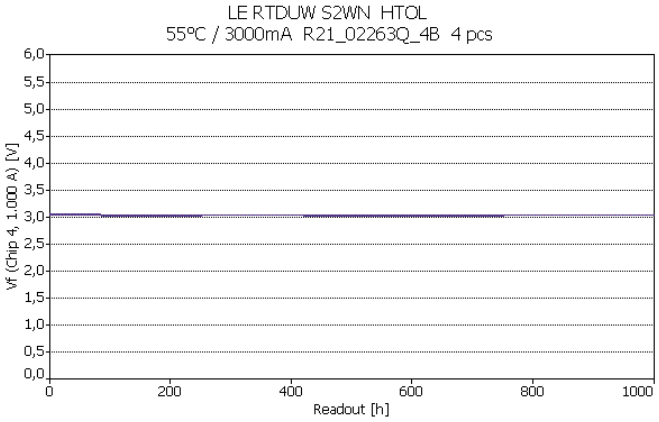
Red chip

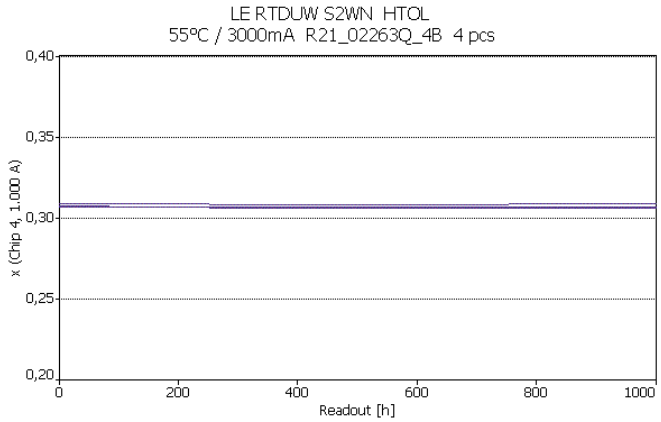


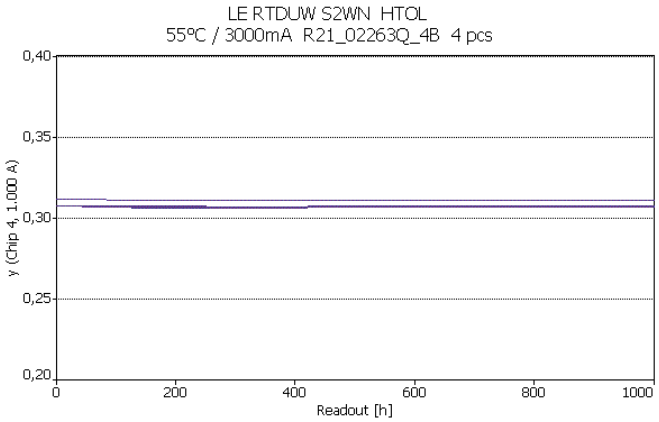


Ultra white chip





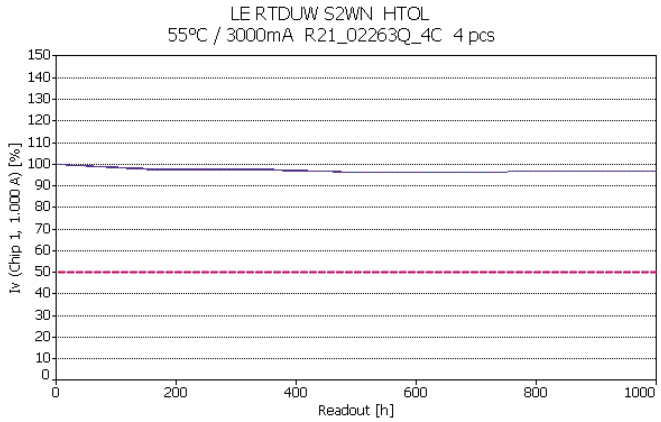


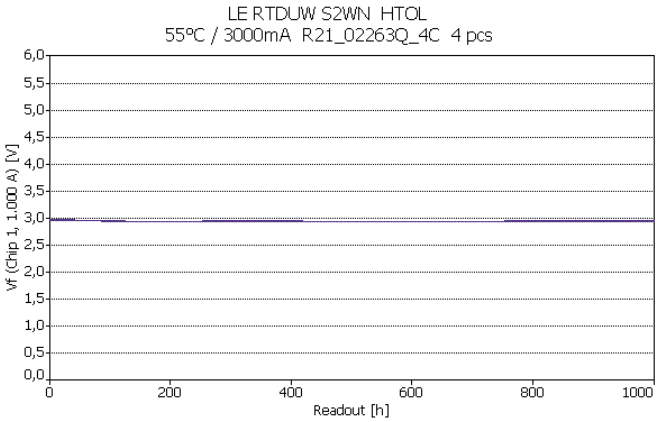


HTOL 55°C/3000mA

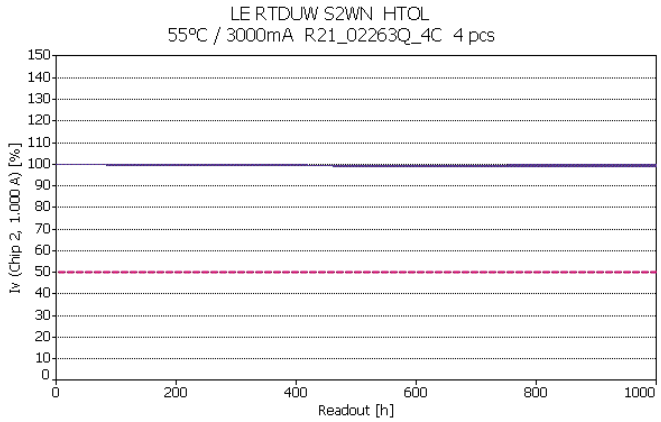
Lot C

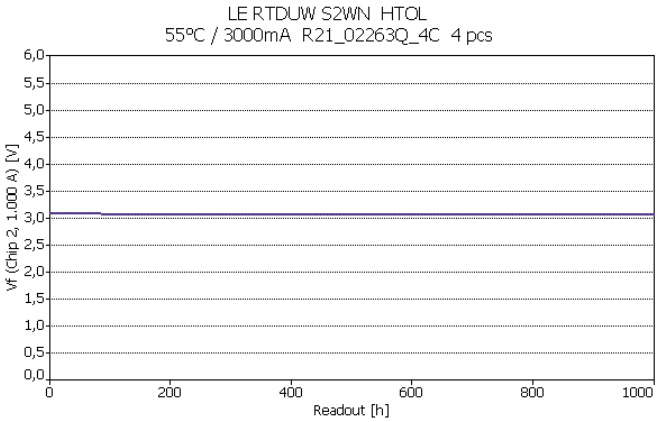
Blue deep chip





True green chip

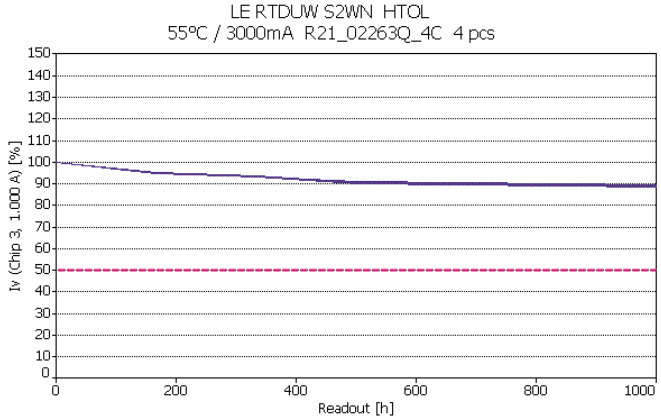


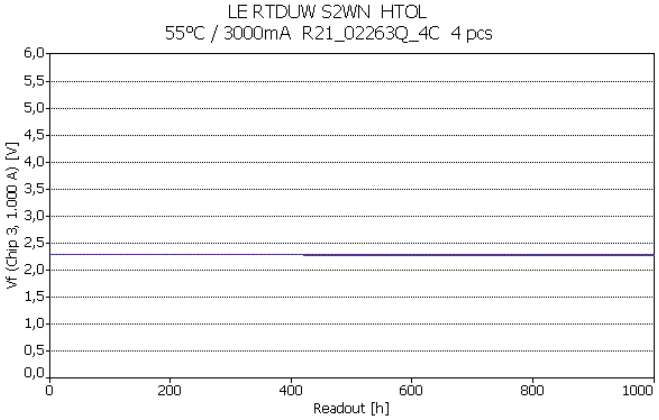


HTOL 55°C/3000mA

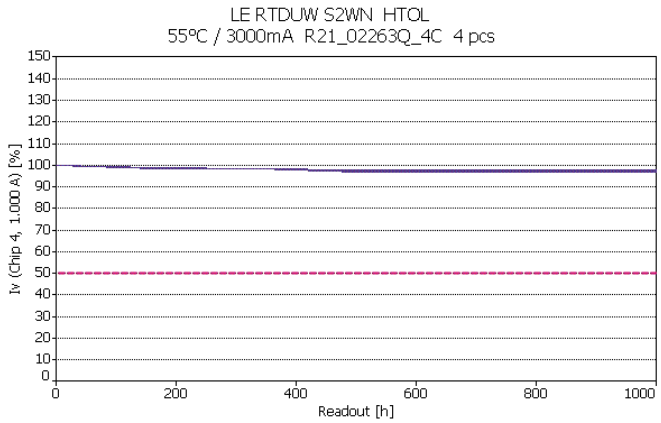
Lot C

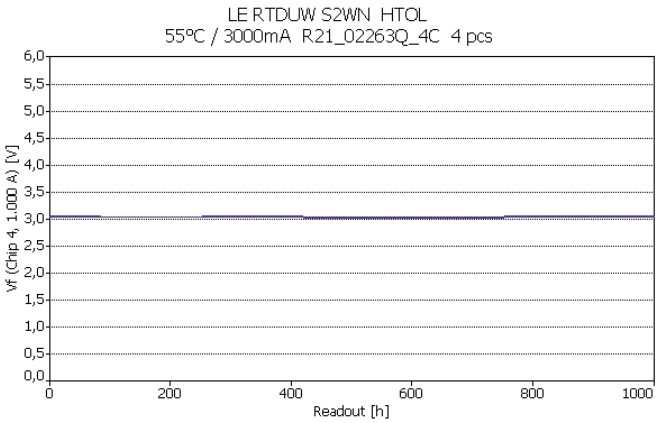
Red chip

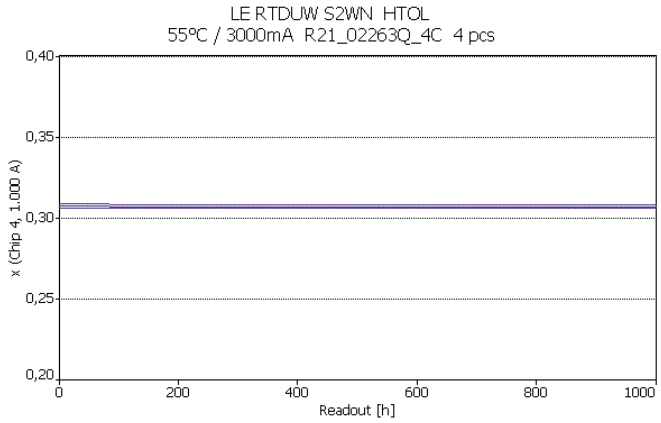


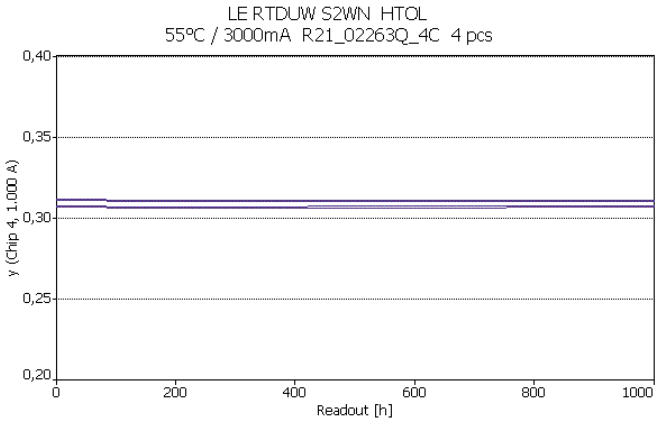


Ultra white chip





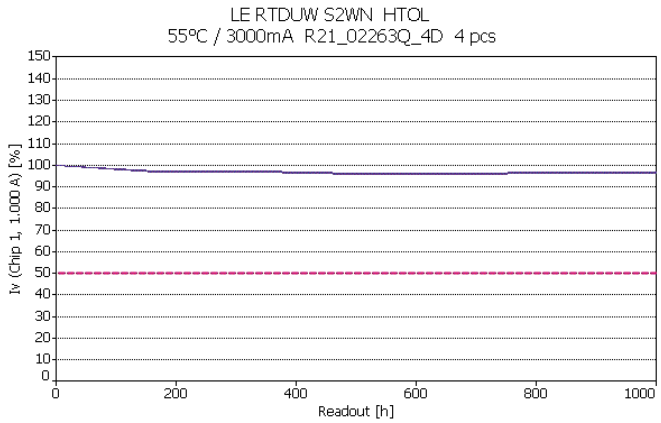


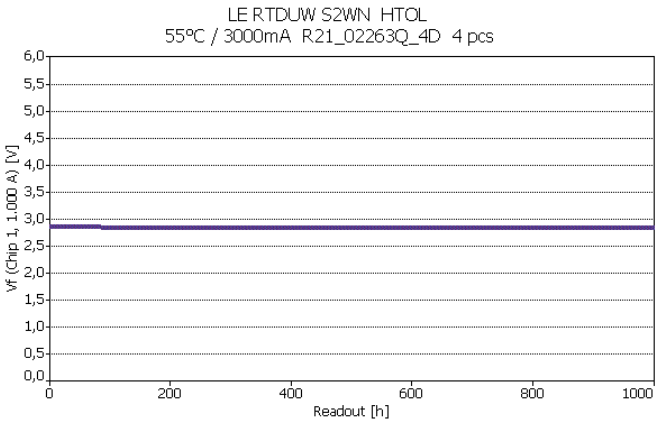


HTOL 55°C/3000mA

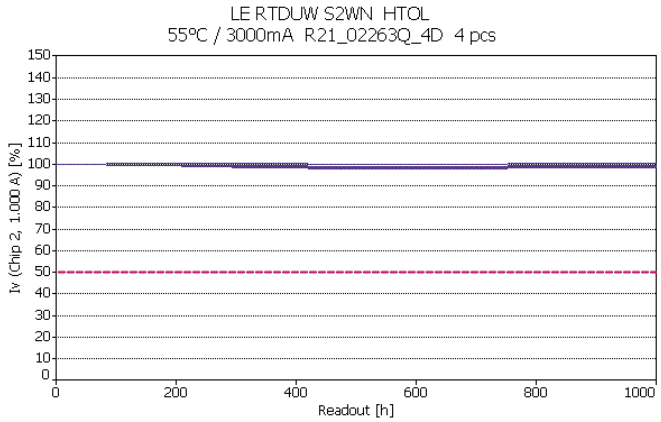
Lot D

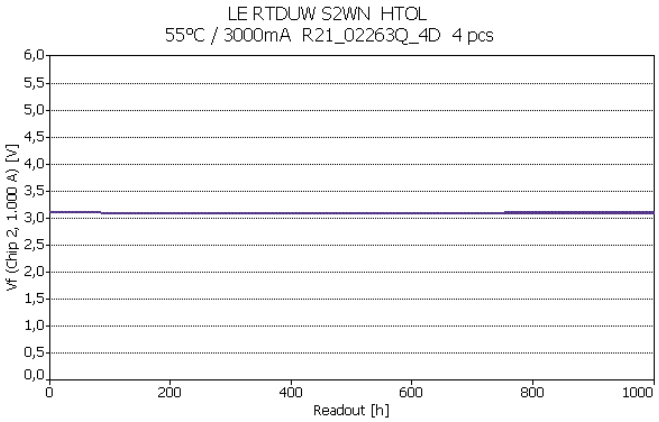
Deep blue chip





True green chip

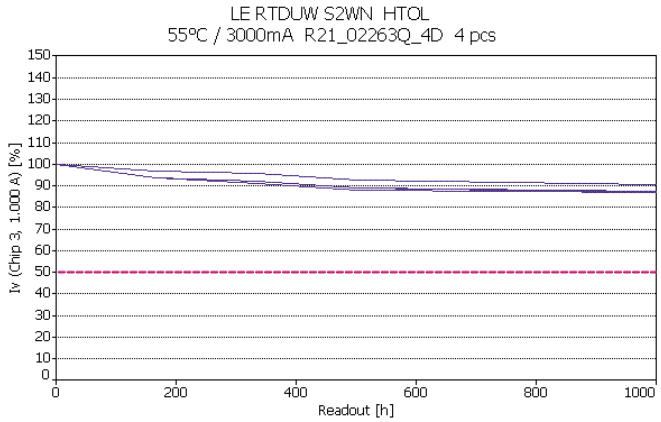


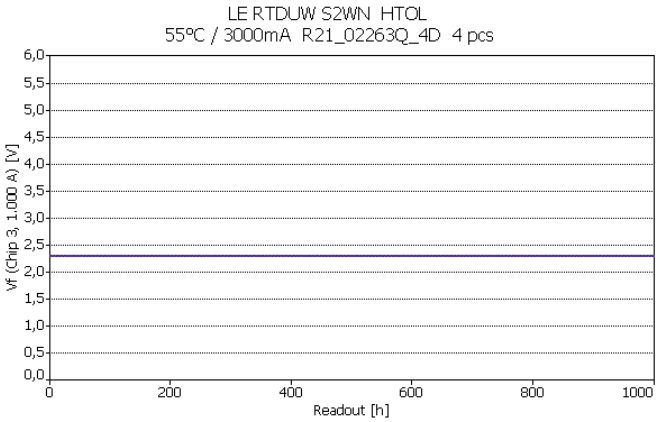


HTOL 55°C/3000mA

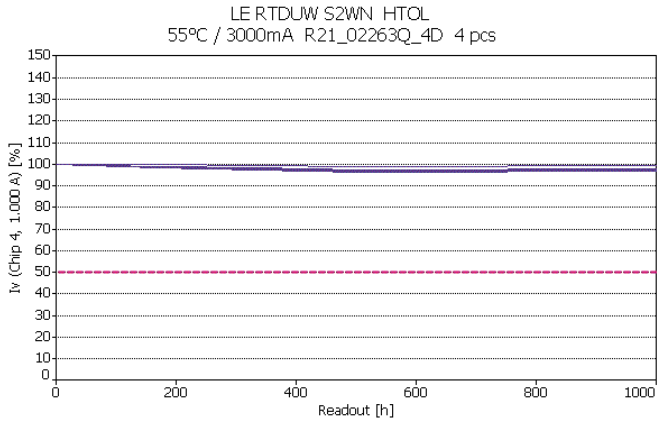
Lot D

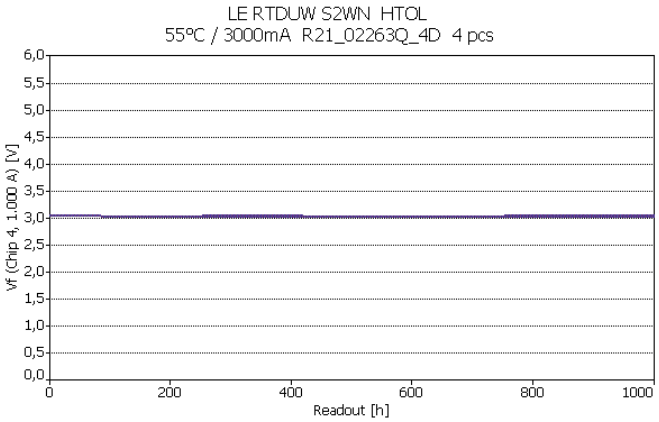
Red chip

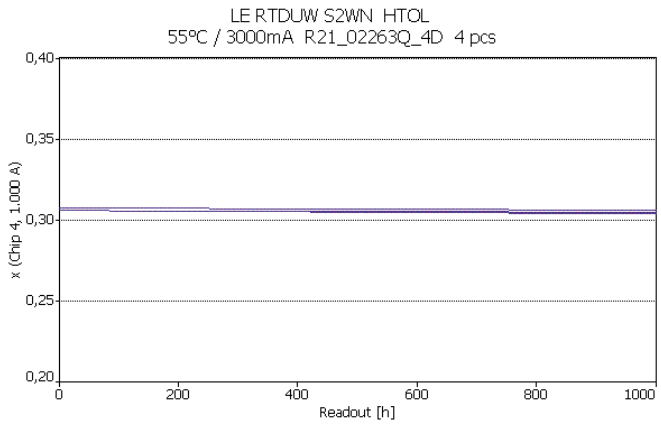


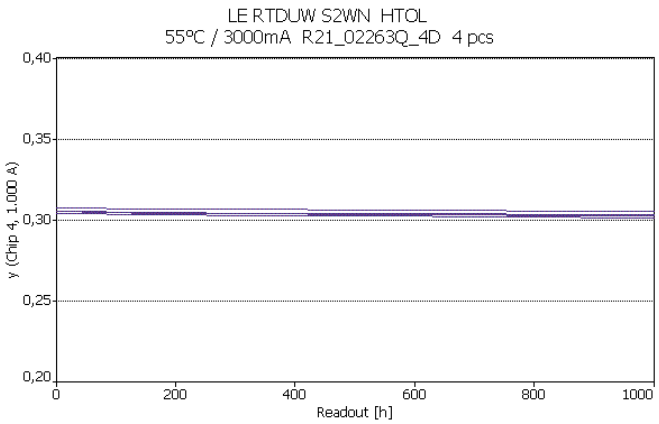


Ultra white chip





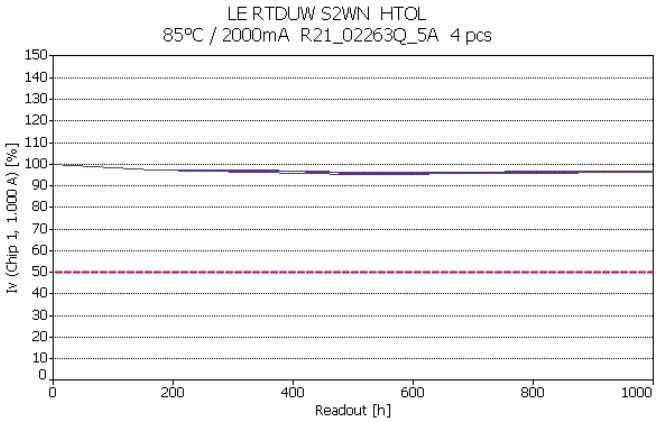


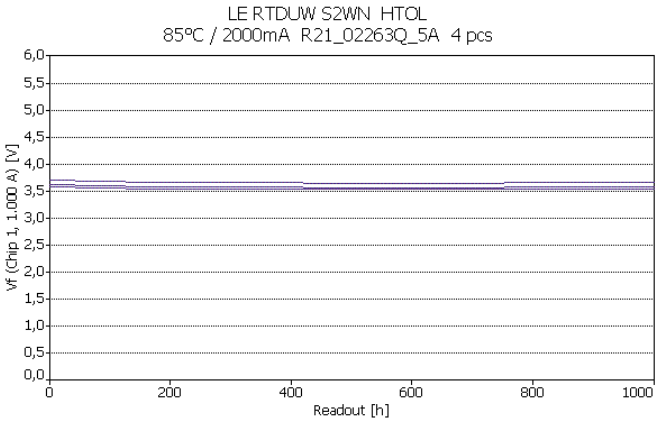


HTOL 85°C/2000mA

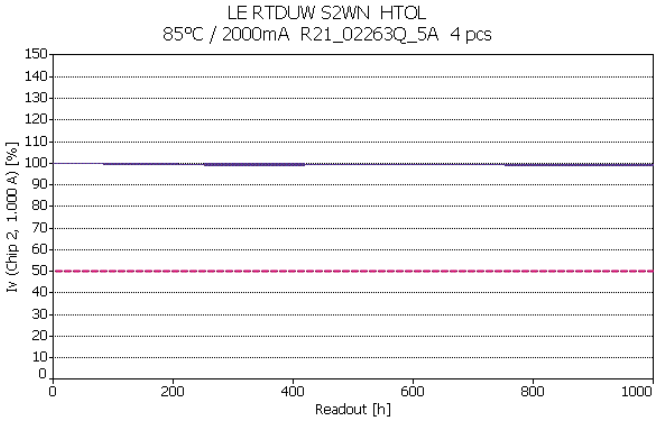
Lot A

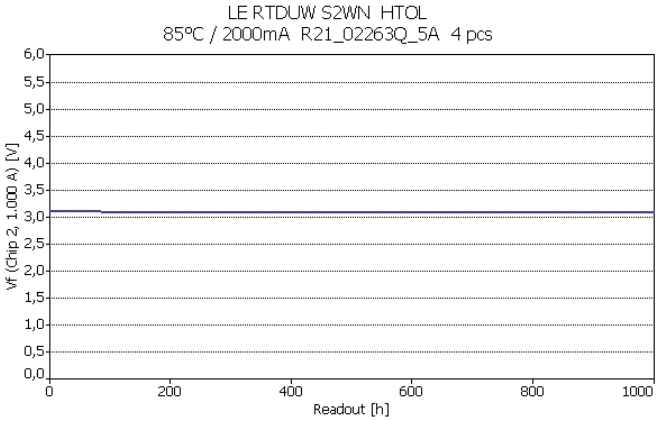
Deep blue chip





True green chip

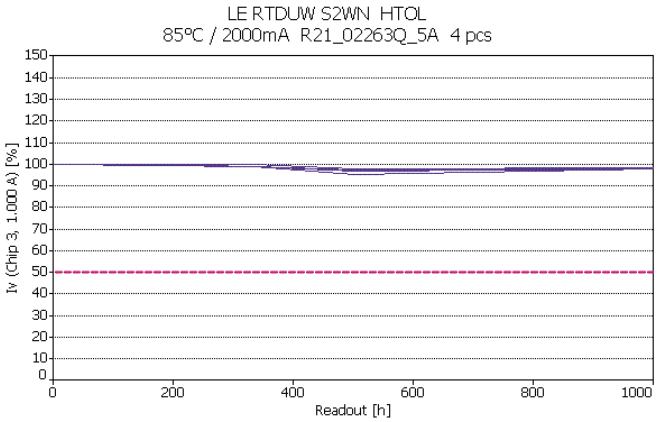


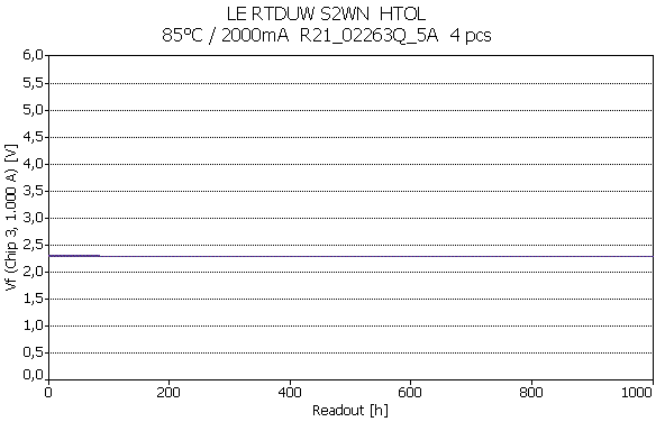


HTOL 85°C/2000mA

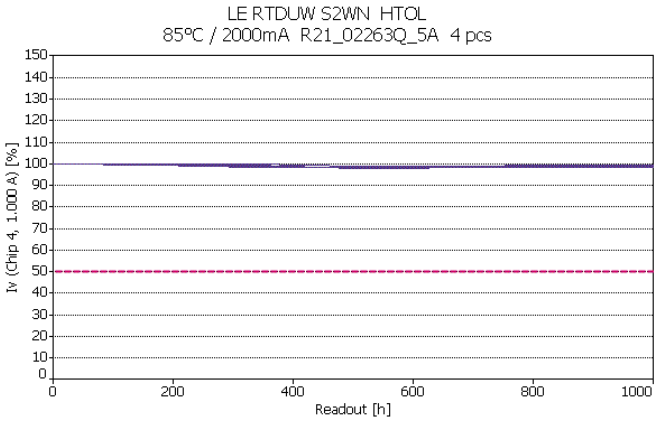
Lot A

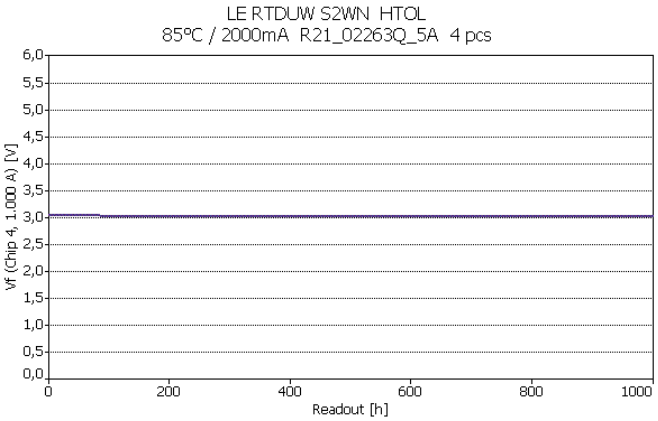
Red chip

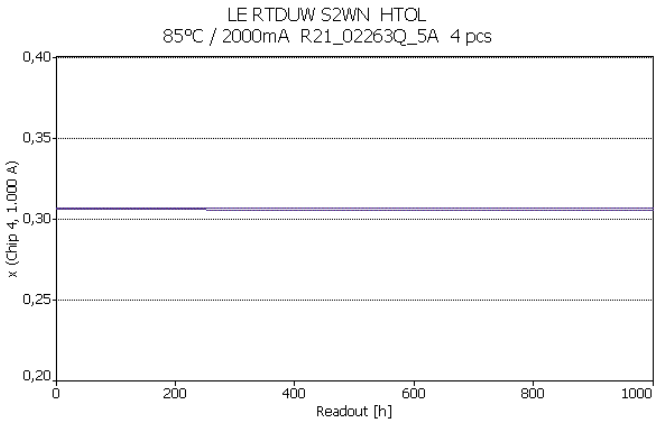


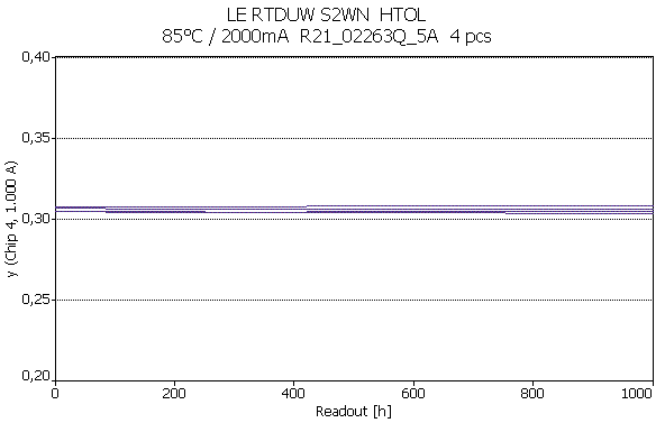


Ultra white chip





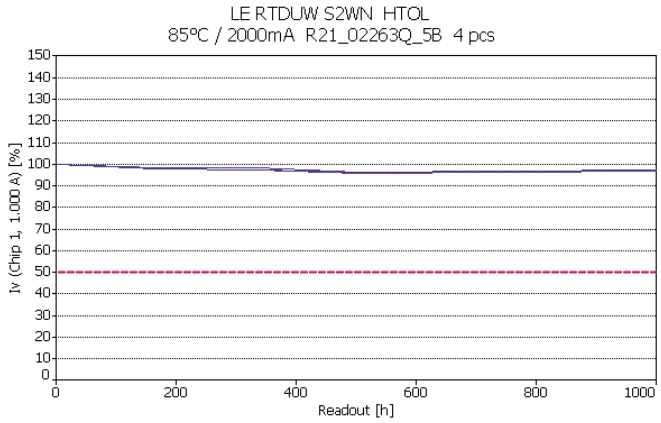


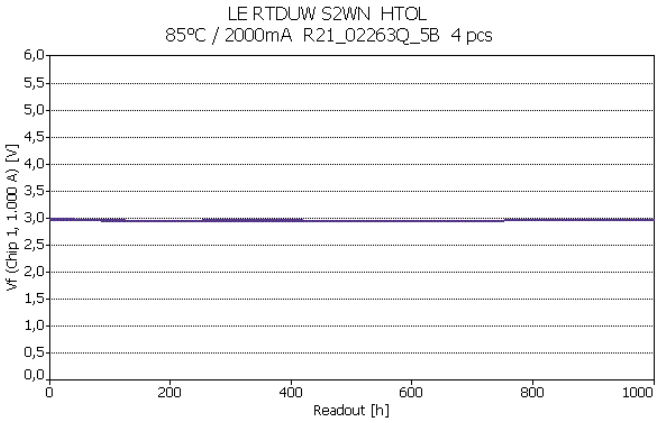


HTOL 85°C/2000mA

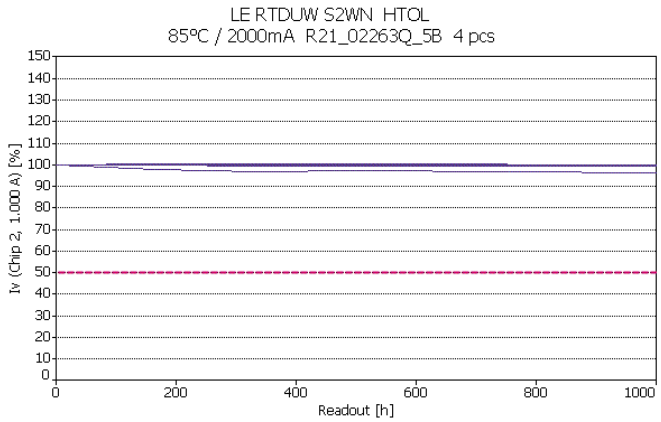
Lot B

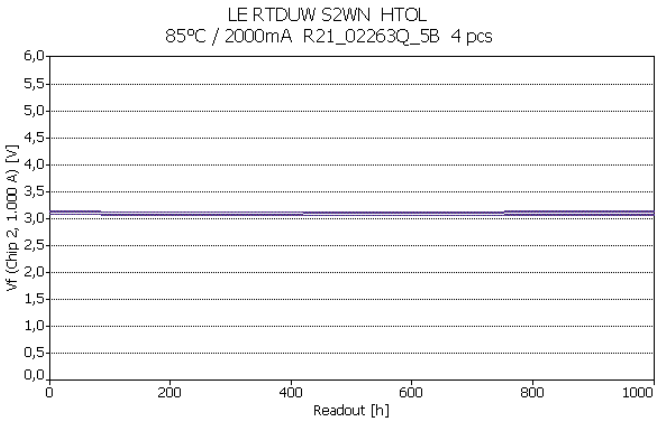
Deep blue chip





True green chip

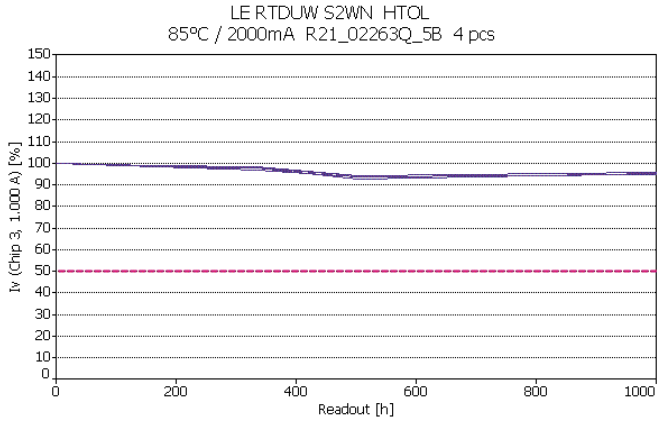


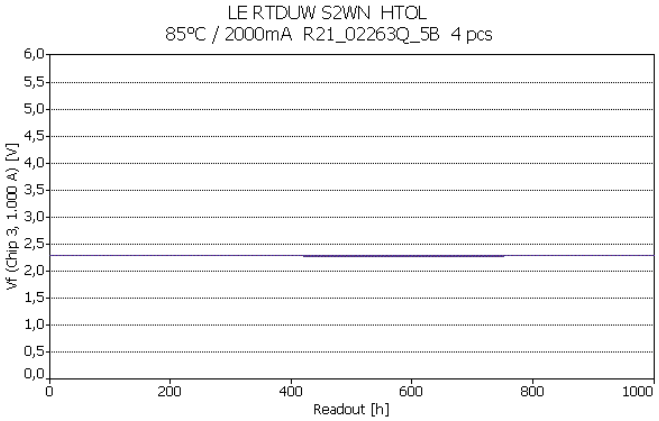


HTOL 85°C/2000mA

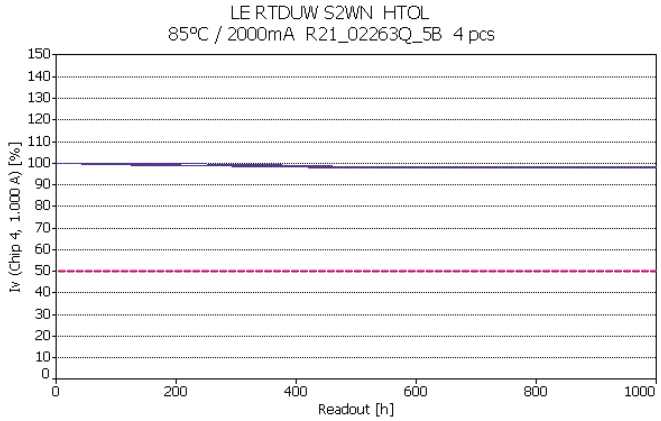
Lot B

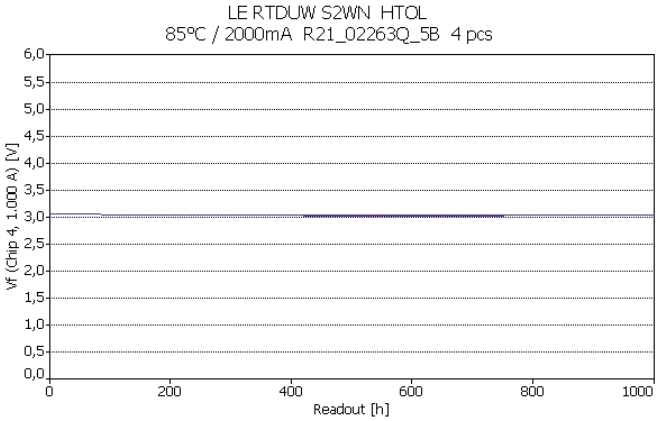
Red chip

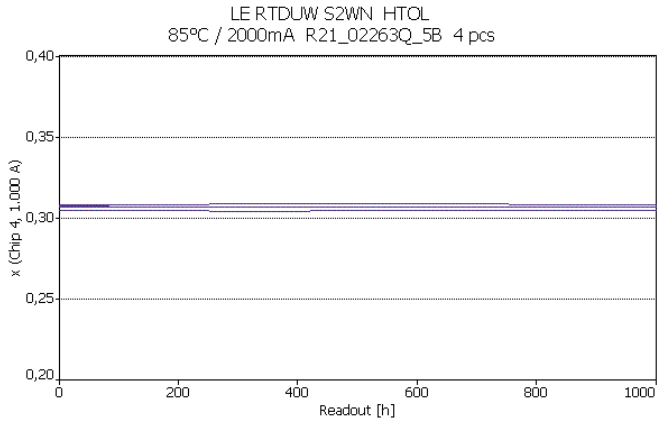


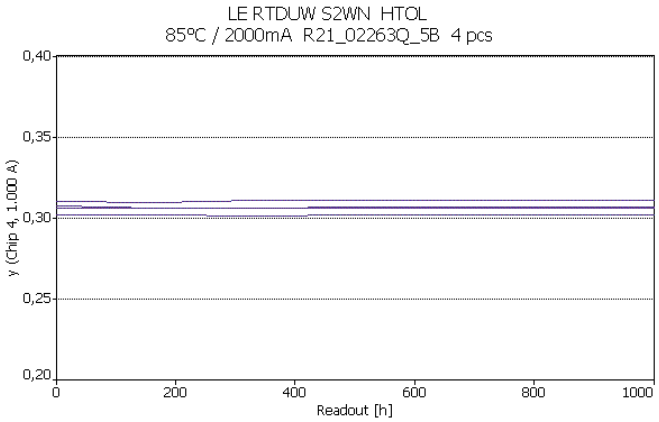


Ultra white chip





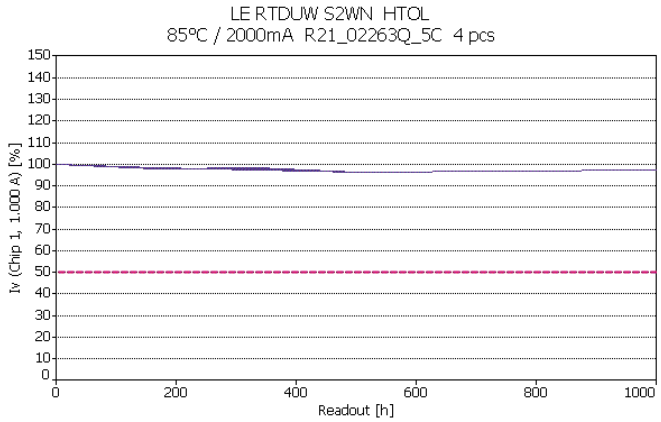


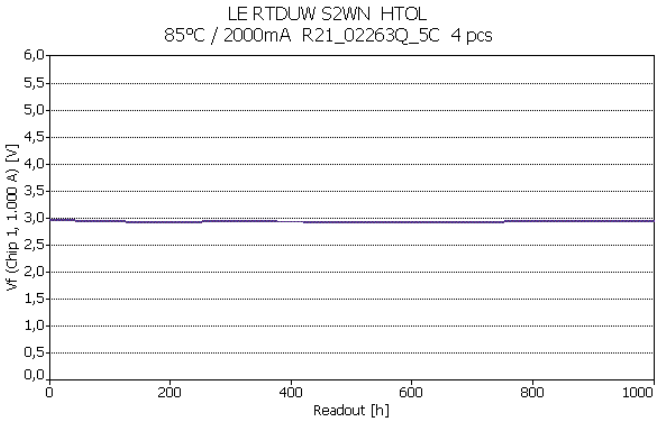


HTOL 85°C/2000mA

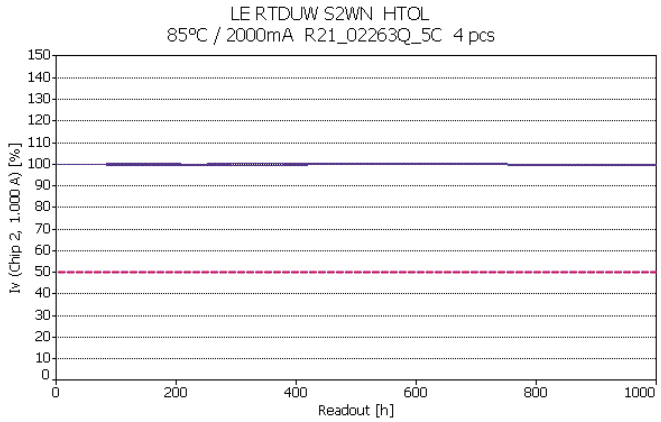
Lot C

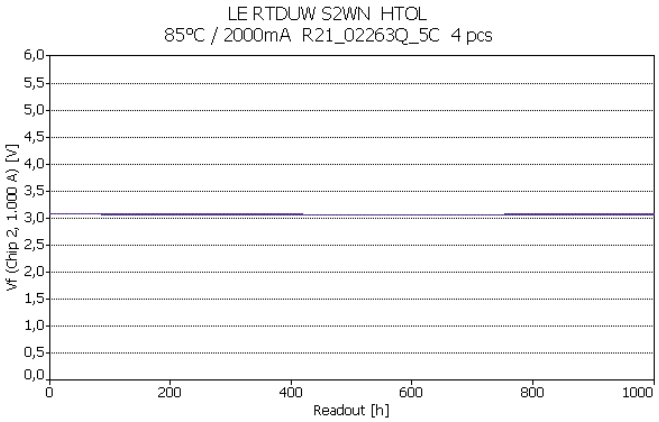
Blue deep chip





True green chip

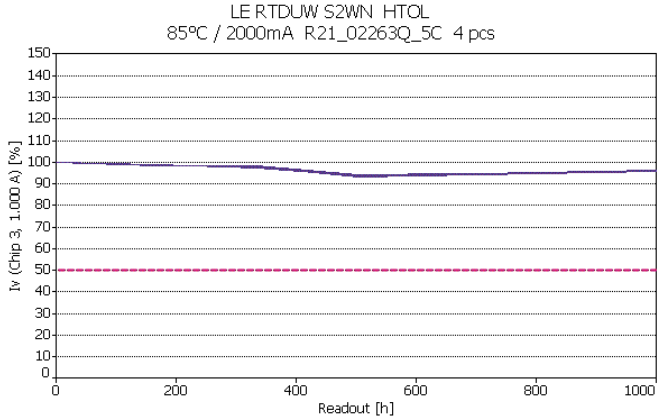


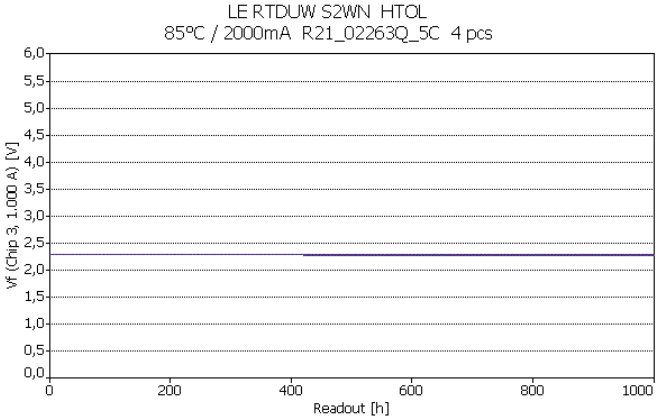


HTOL 85°C/2000mA

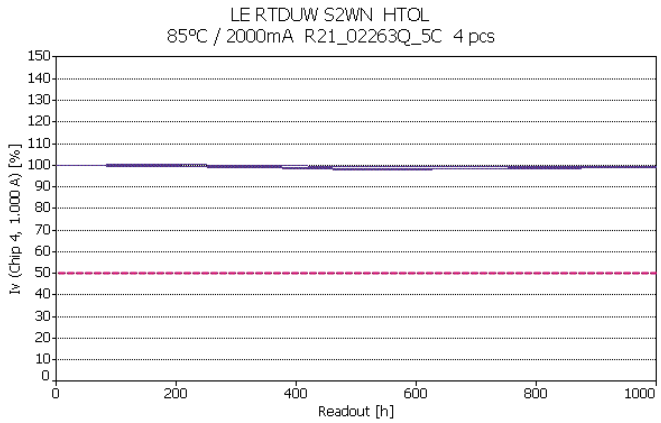
Lot C

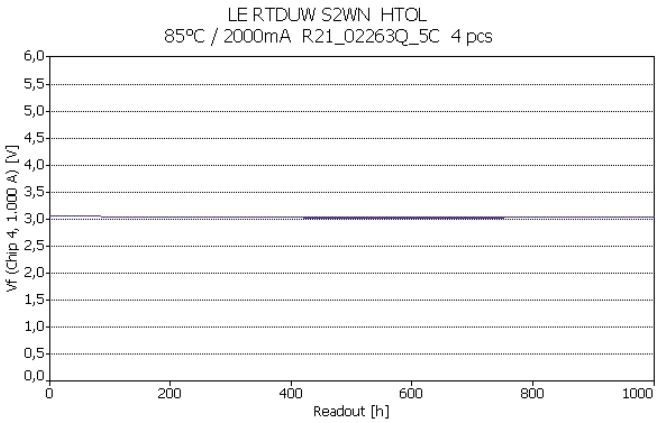
Red chip

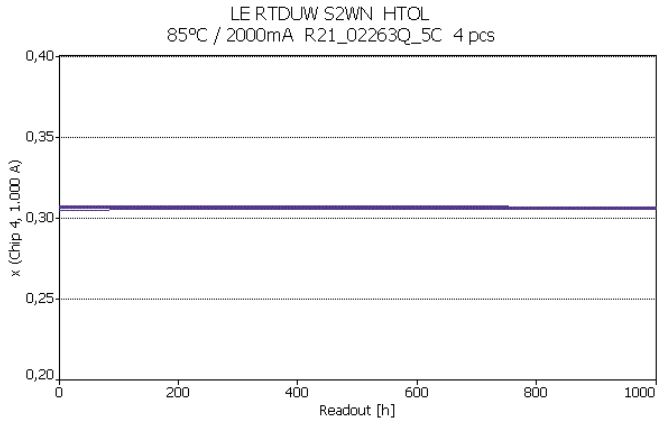


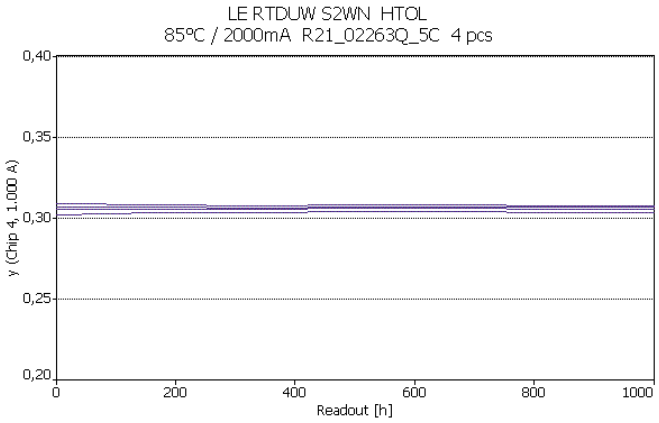


Ultra white chip





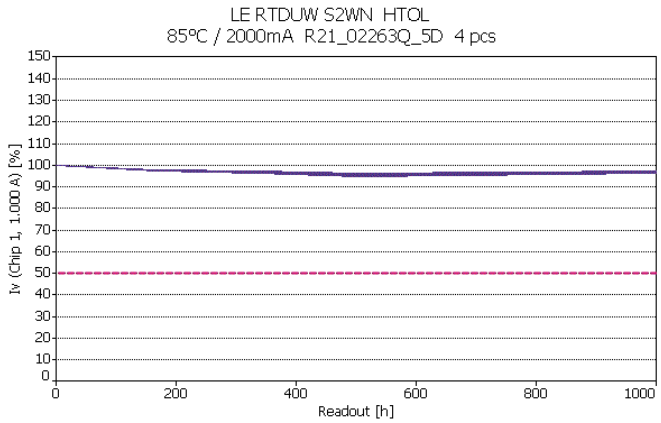


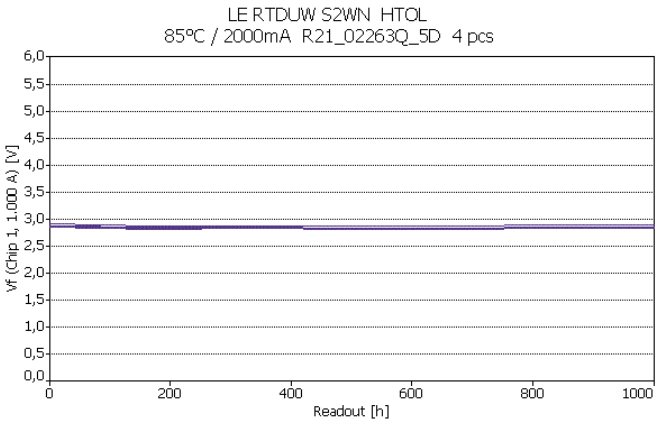


HTOL 85°C/2000mA

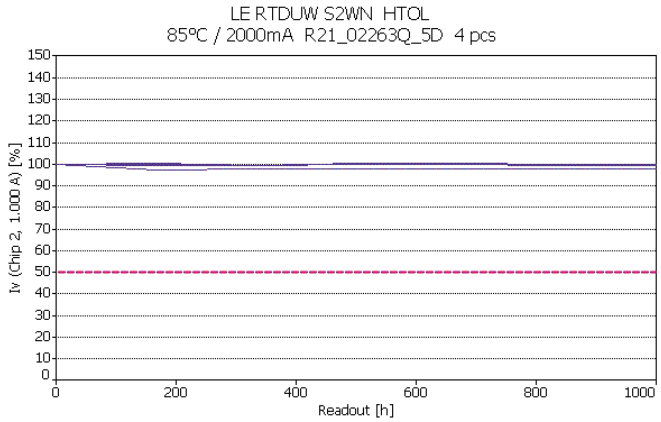
Lot D

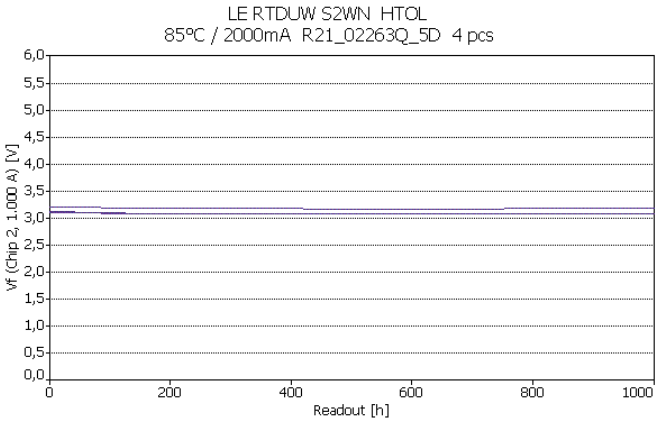
Deep blue chip





True green chip

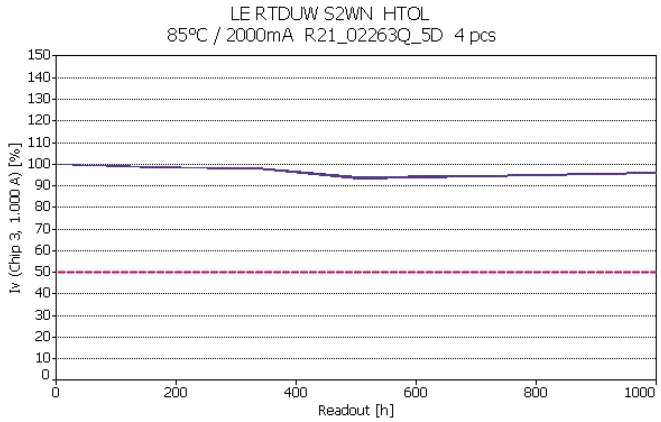


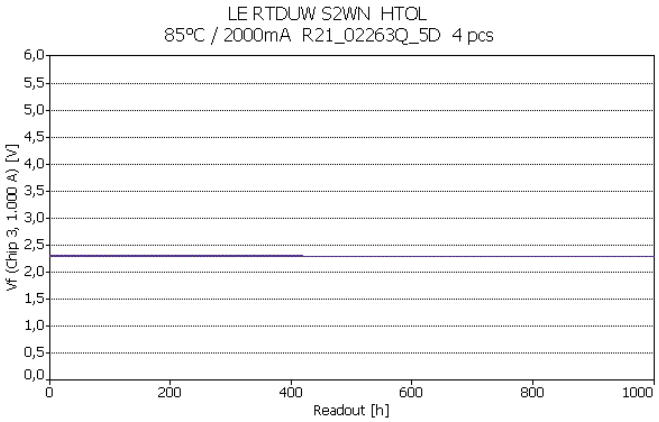


HTOL 85°C/2000mA

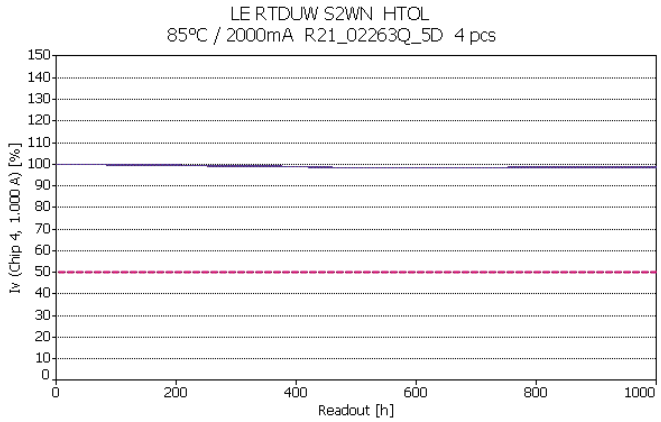
Lot D

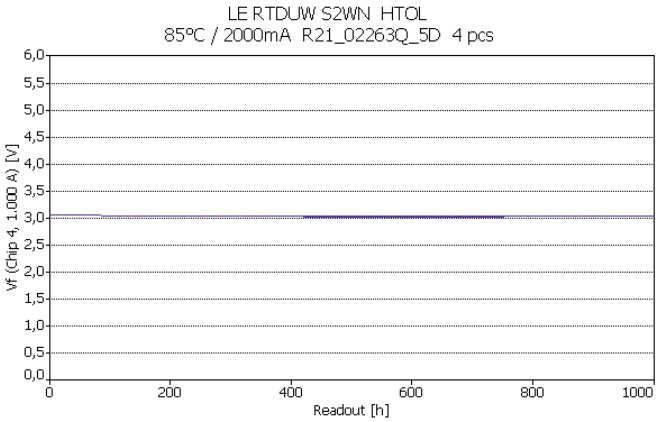
Red chip

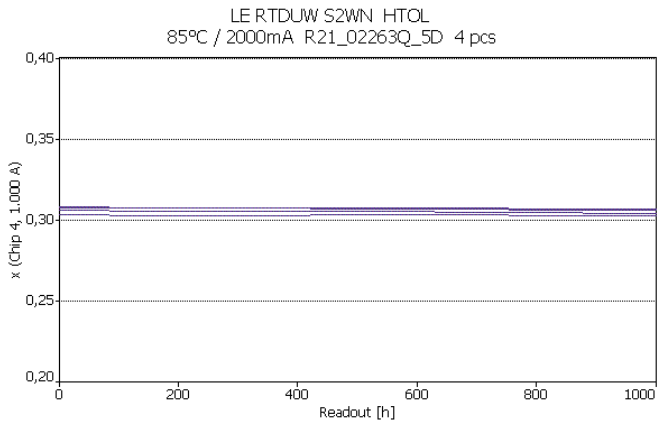


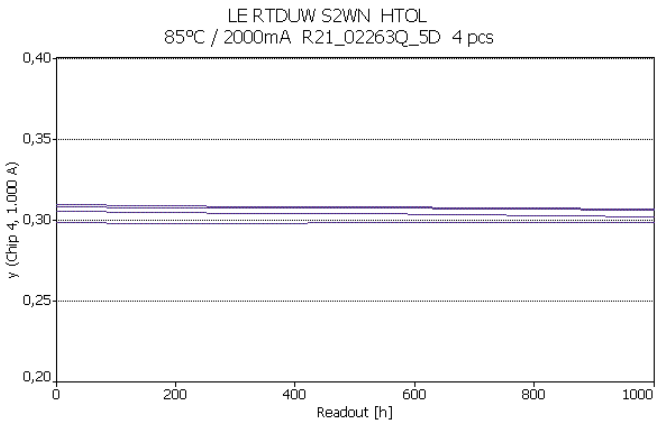


Ultra white chip





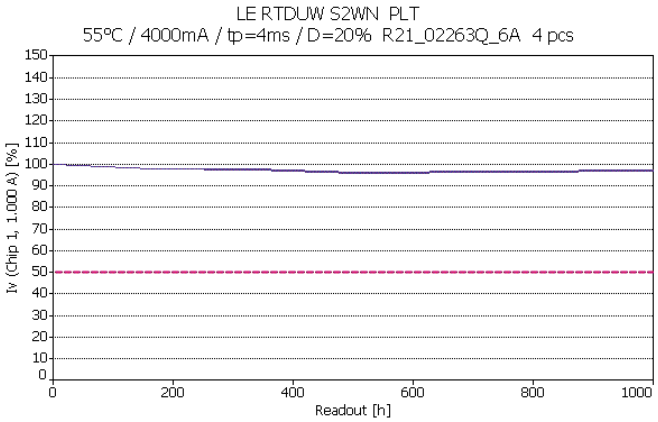


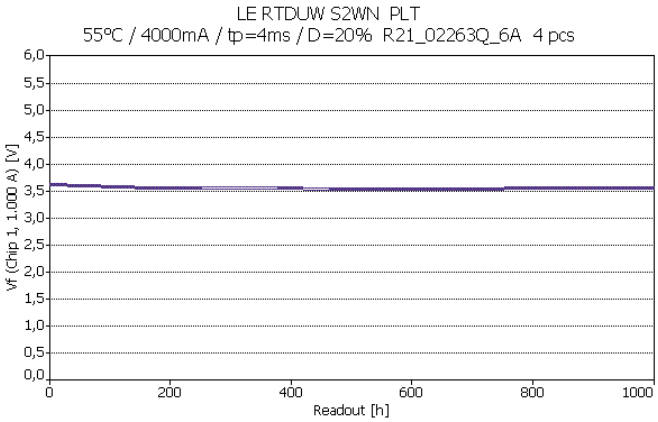


PLT 55°C/4000mA;tp=4ms;D=20%

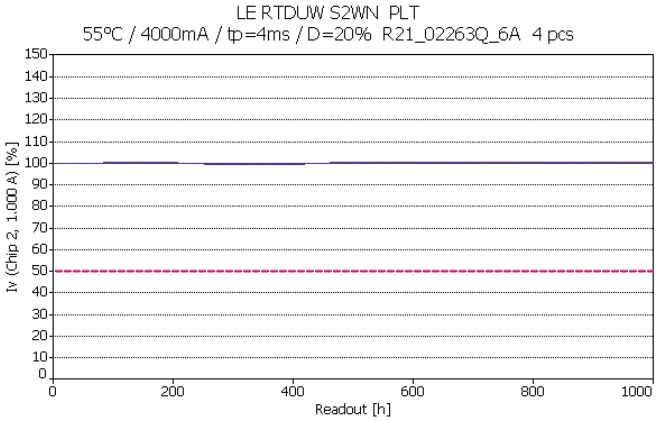
Lot A

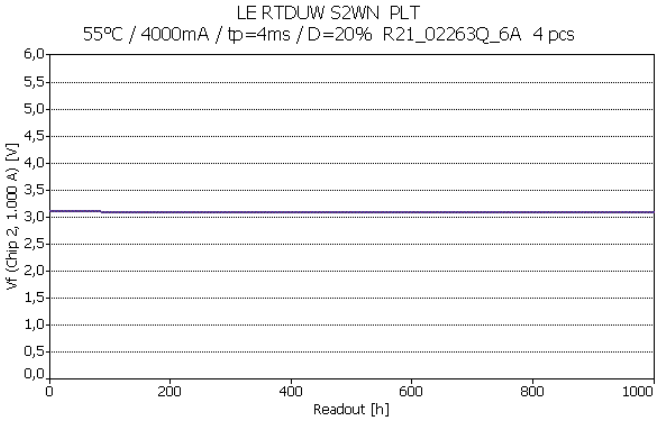
Deep blue chip





True green chip

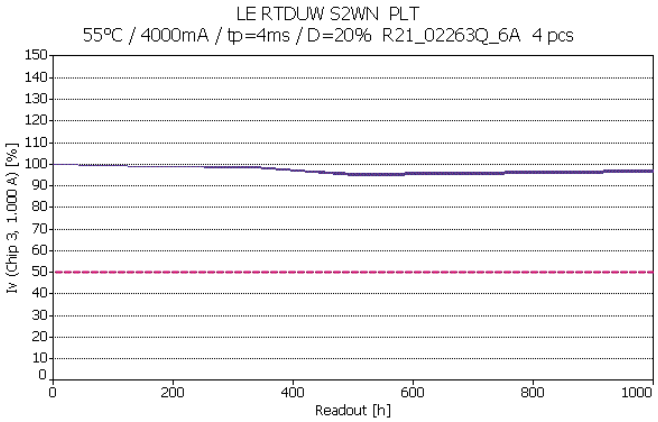


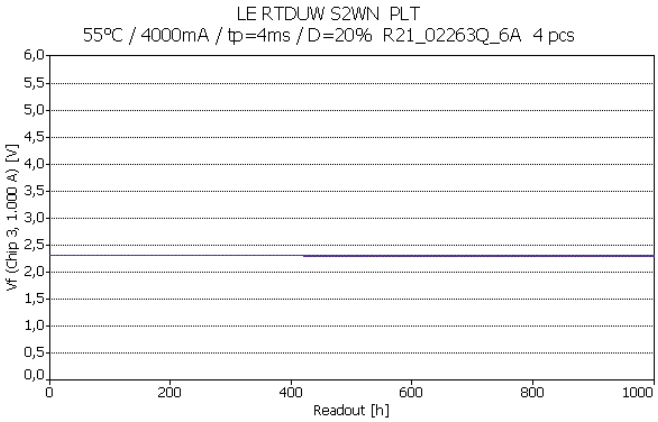


PLT 55°C/4000mA;tp=4ms;D=20%

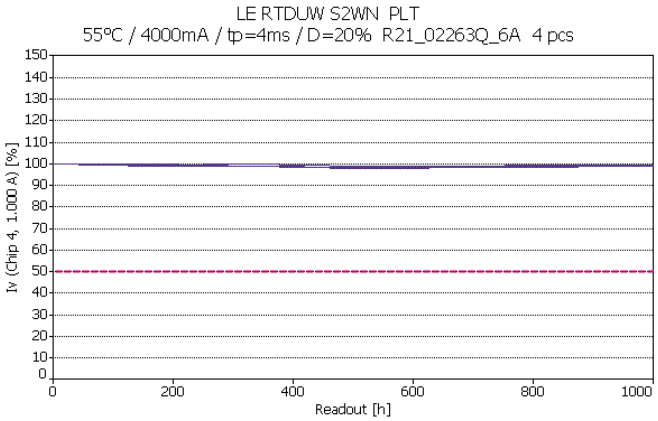
Lot A

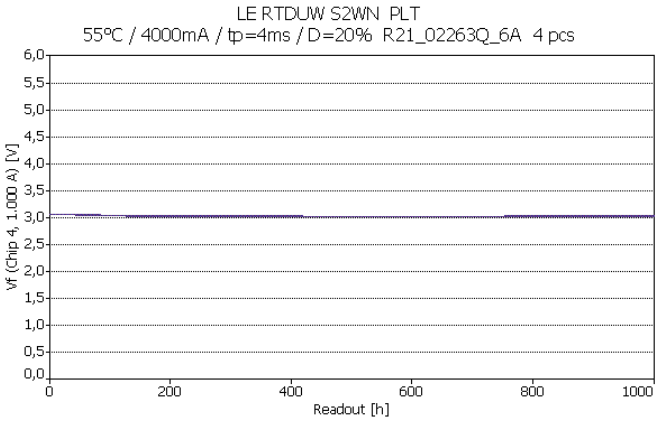
Red chip

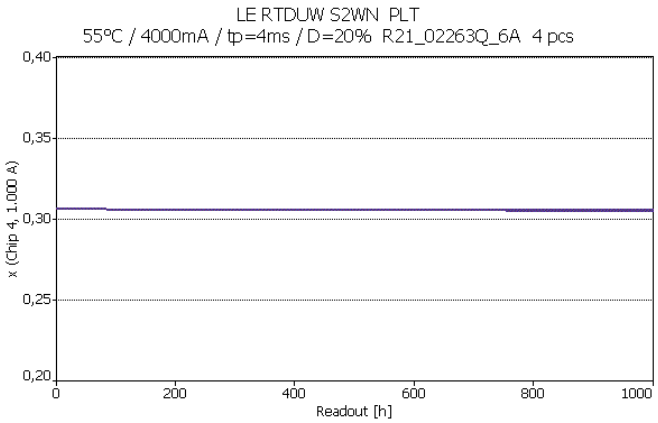


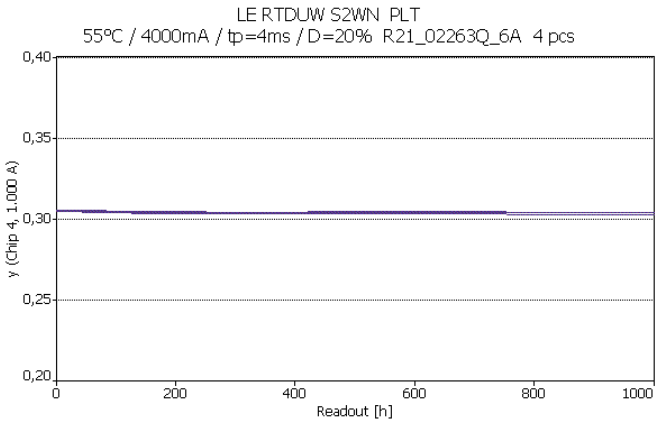


Ultra white chip





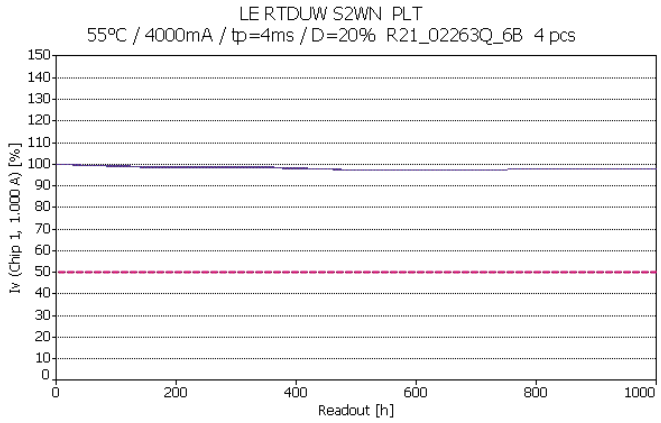


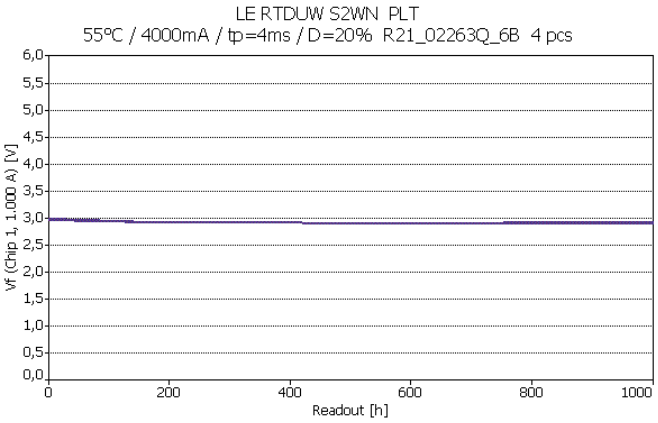


PLT 55°C/4000mA;tp=4ms;D=20%

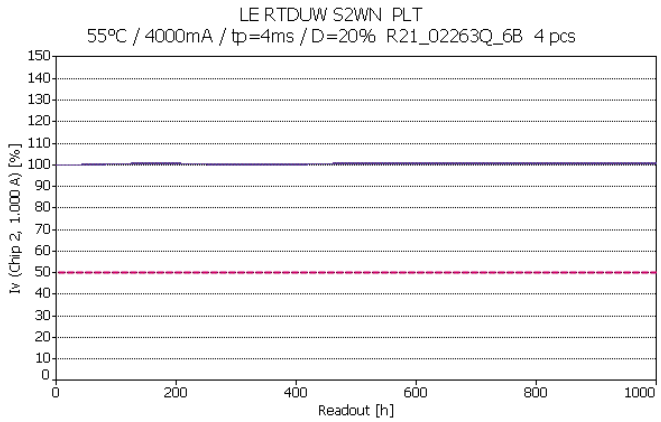
Lot B

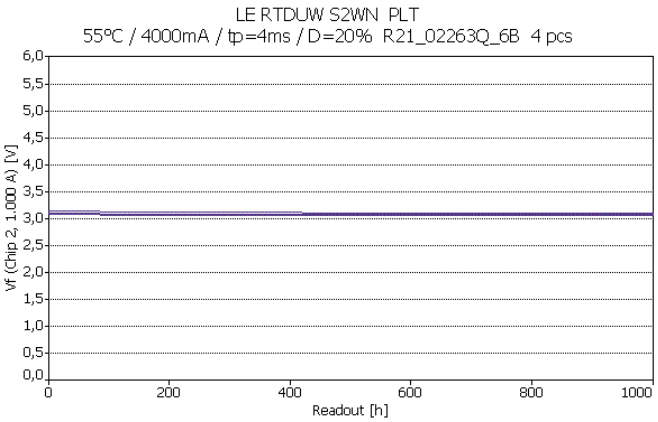
Deep blue chip





True green chip

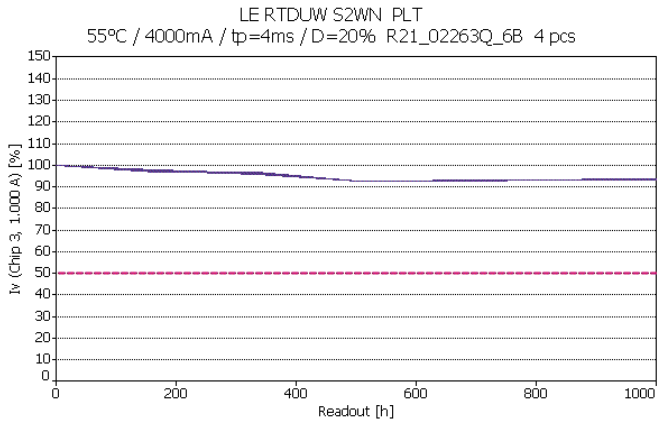


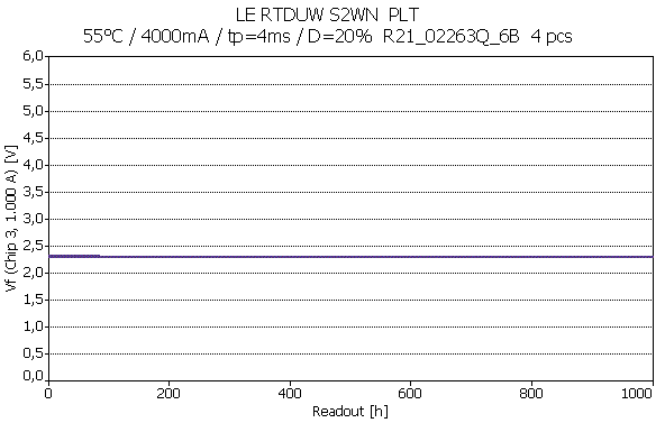


PLT 55°C/4000mA;tp=4ms;D=20%

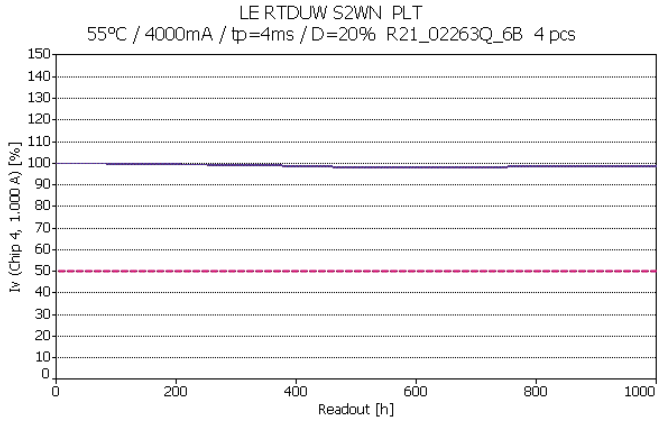
Lot B

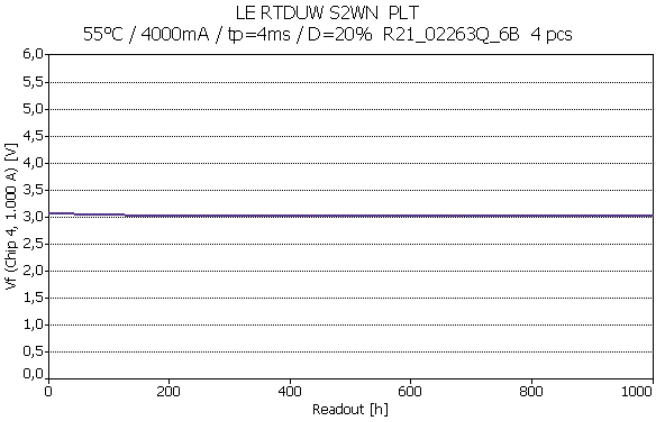
Red chip

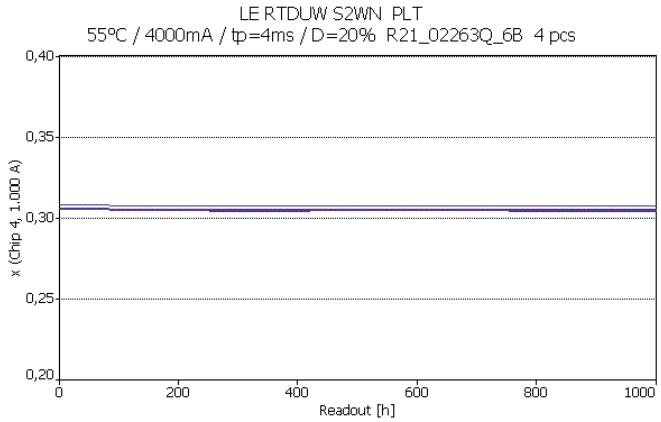


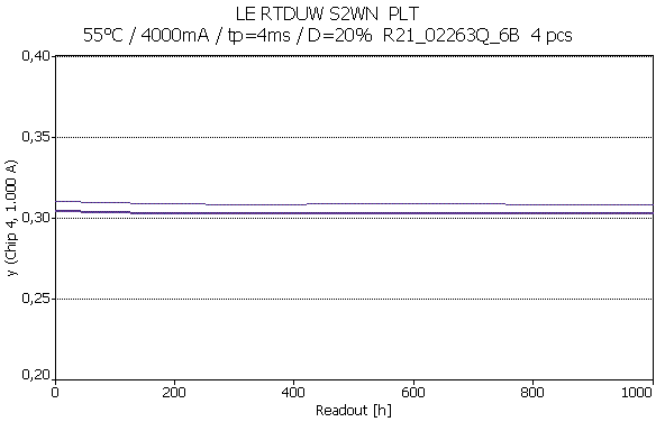


Ultra white chip





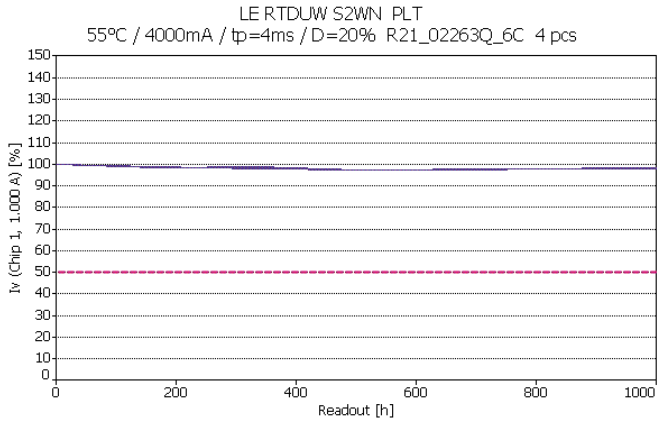


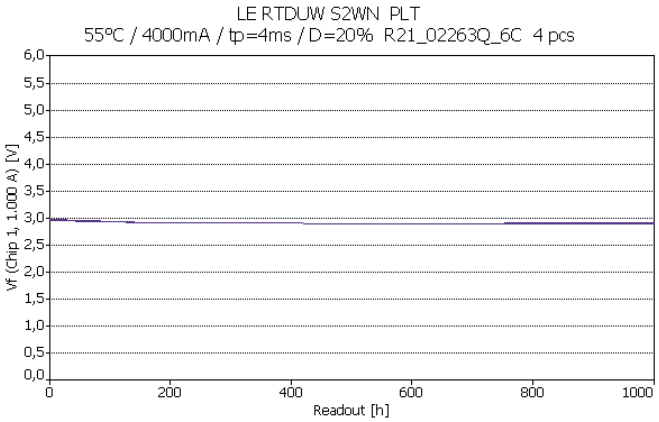


PLT 55°C/4000mA;tp=4ms;D=20%

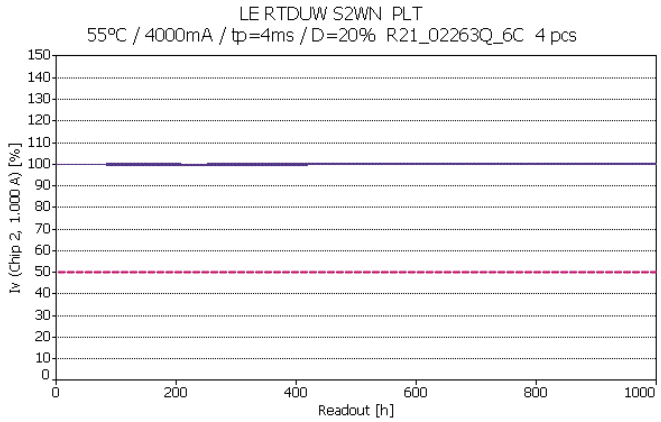
Lot C

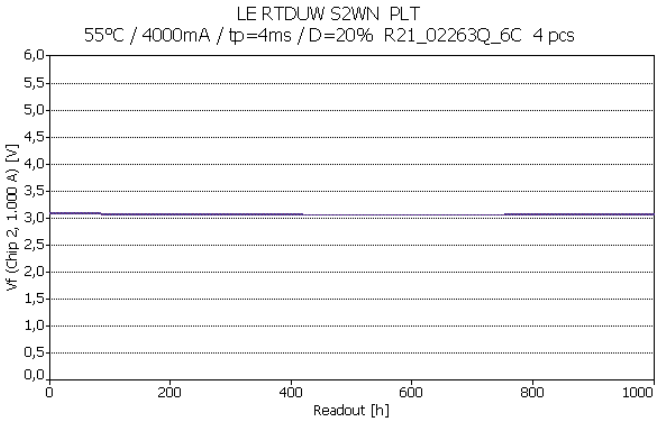
Blue deep chip





True green chip

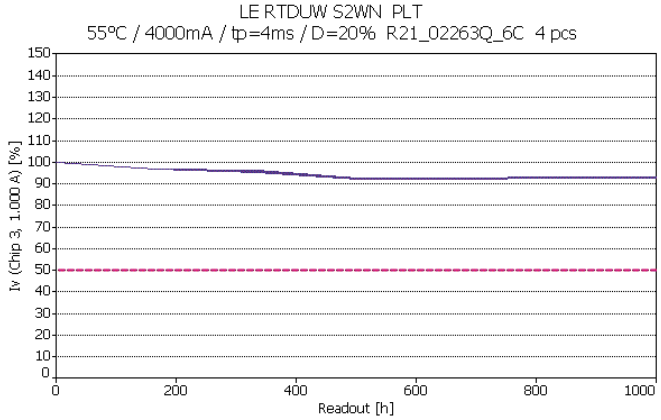


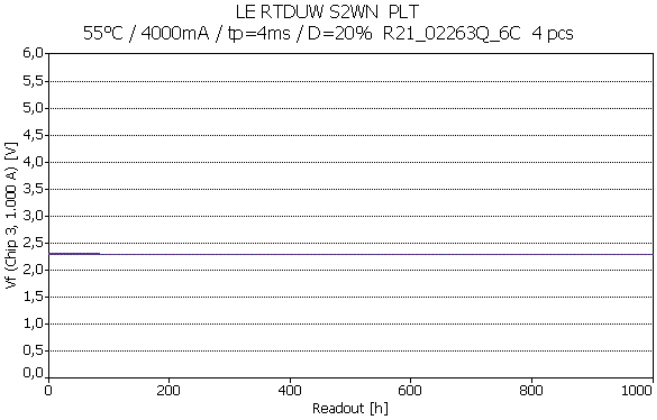


PLT 55°C/4000mA;tp=4ms;D=20%

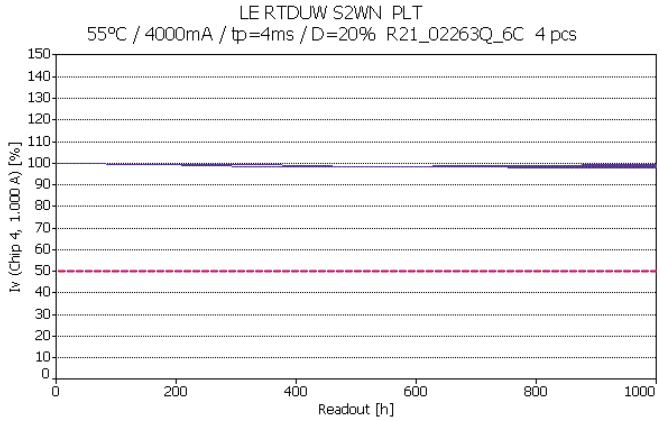
Lot C

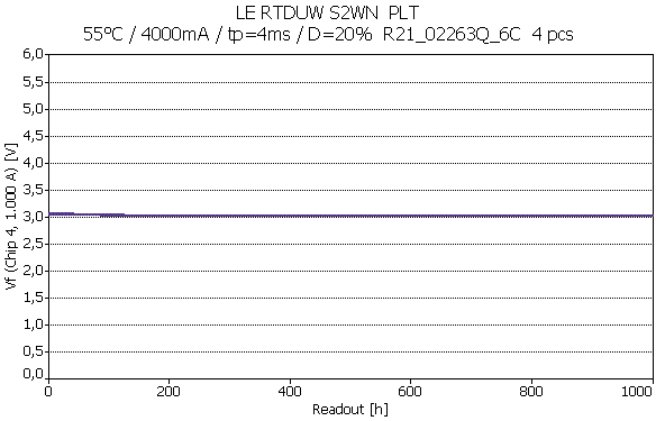
Red chip

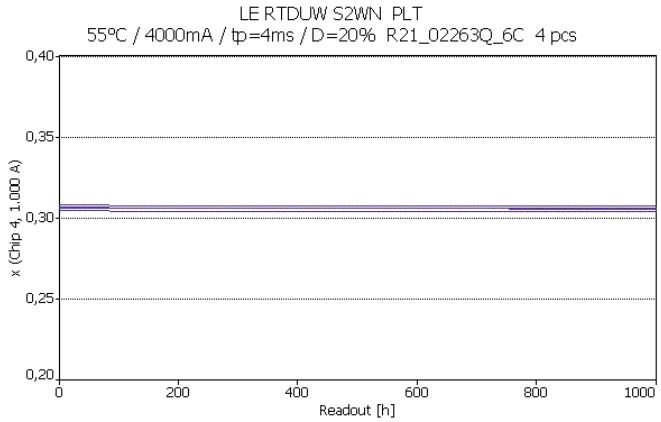


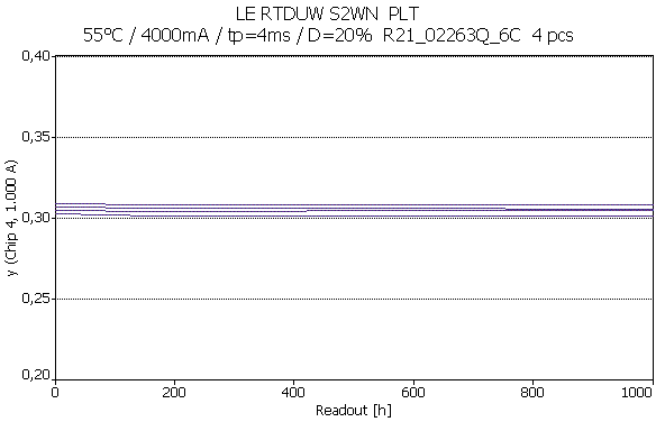


Ultra white chip





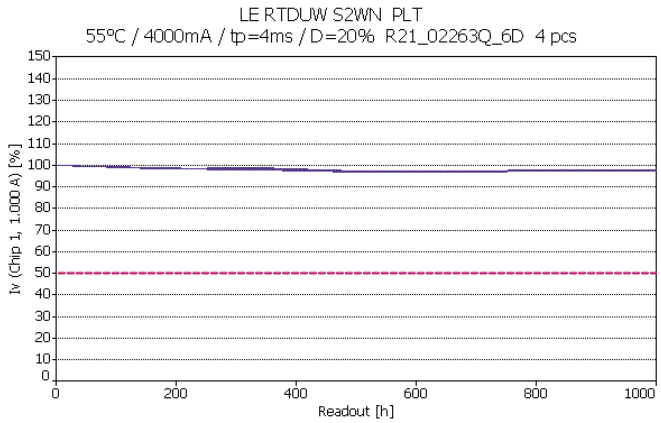


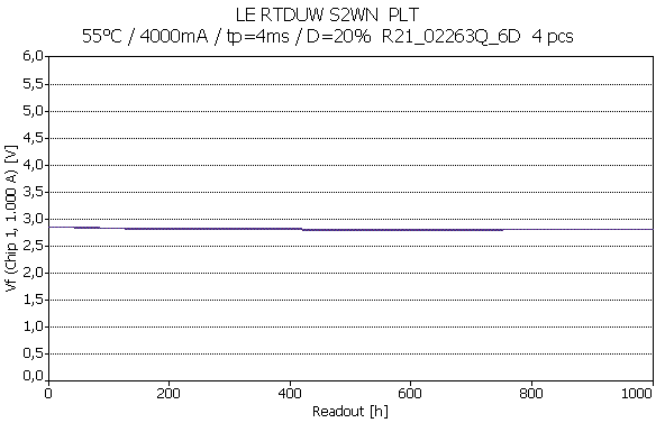


PLT 55°C/4000mA;tp=4ms;D=20%

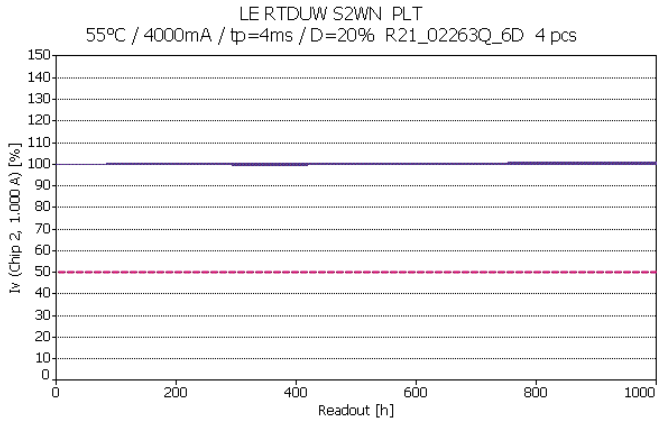
Lot D

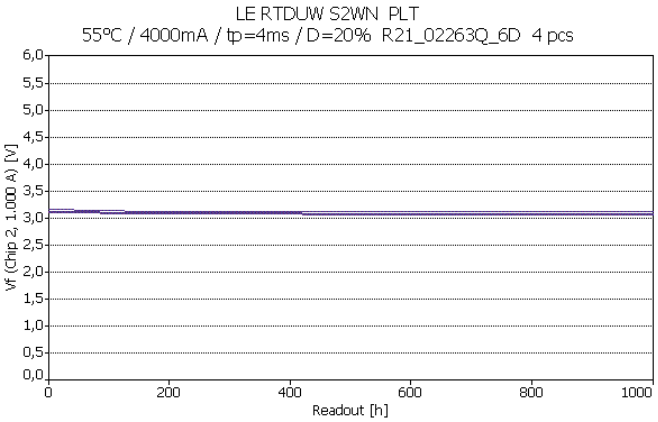
Deep blue chip





True green chip

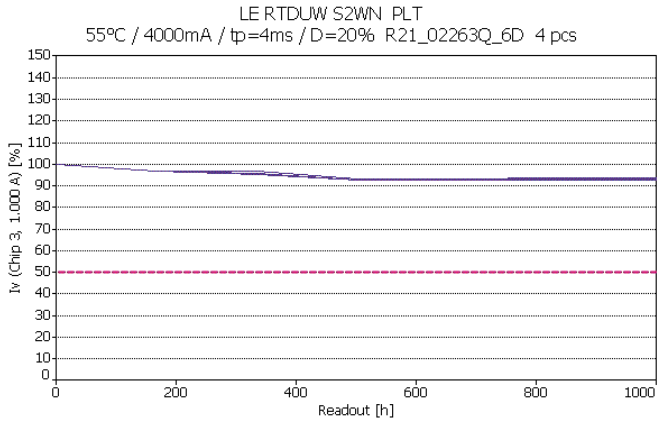


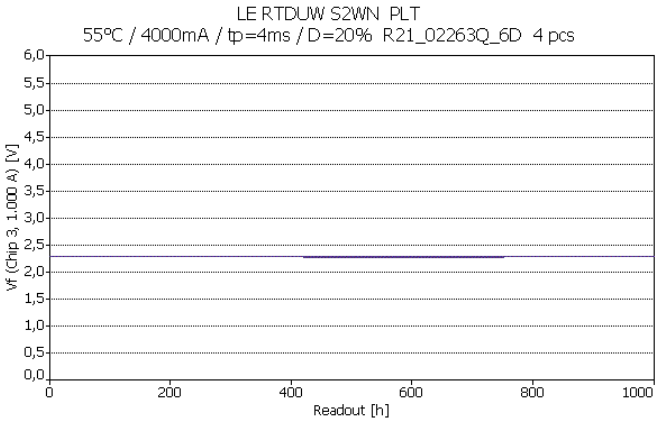


PLT 55°C/4000mA;tp=4ms;D=20%

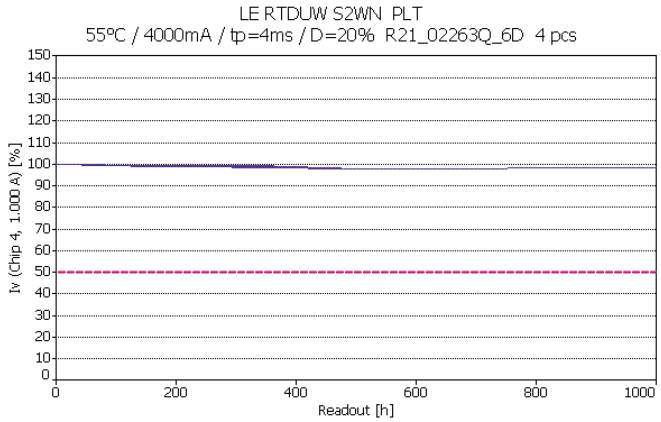
Lot D

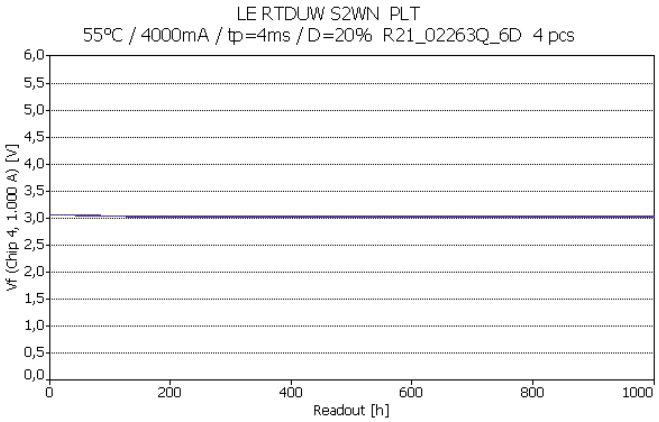
Red chip

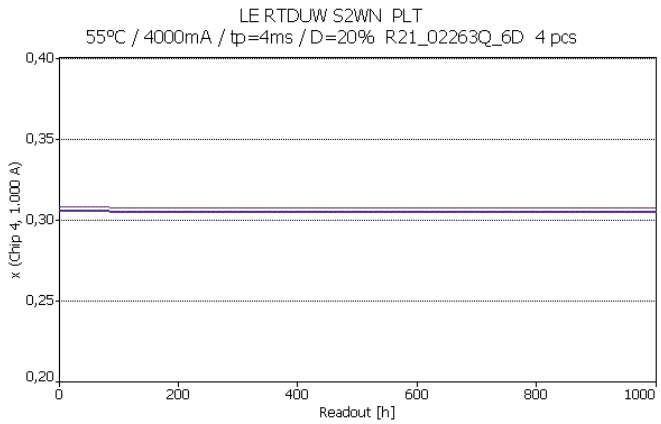


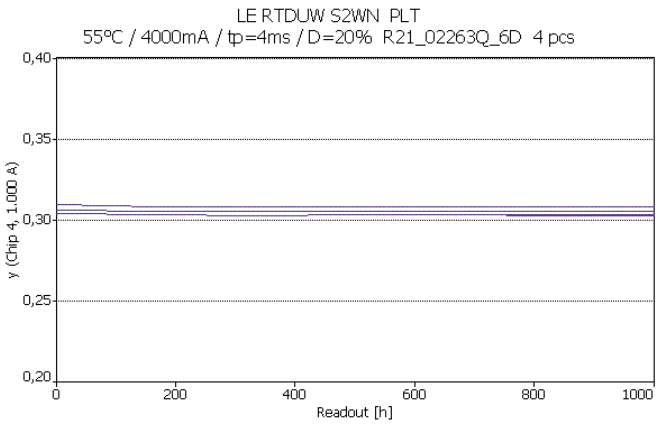


Ultra white chip



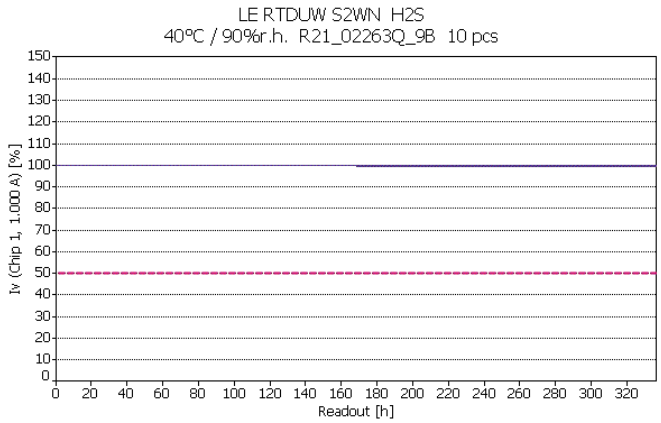


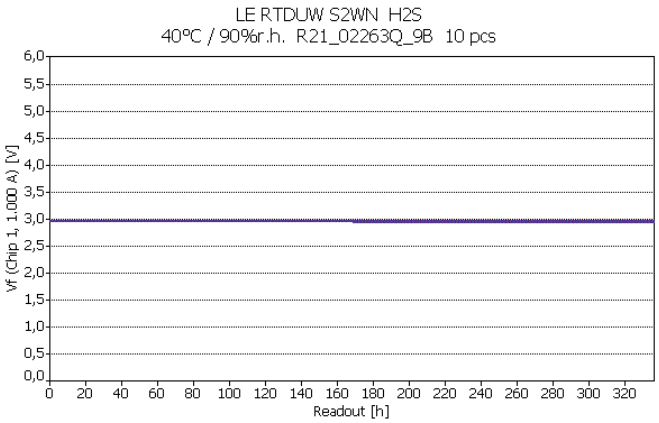




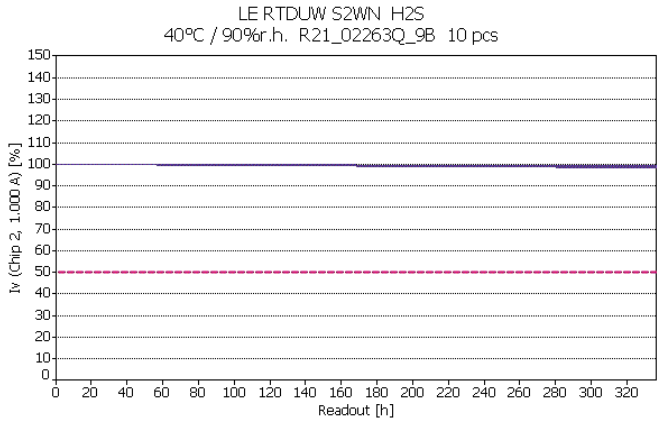
H2S

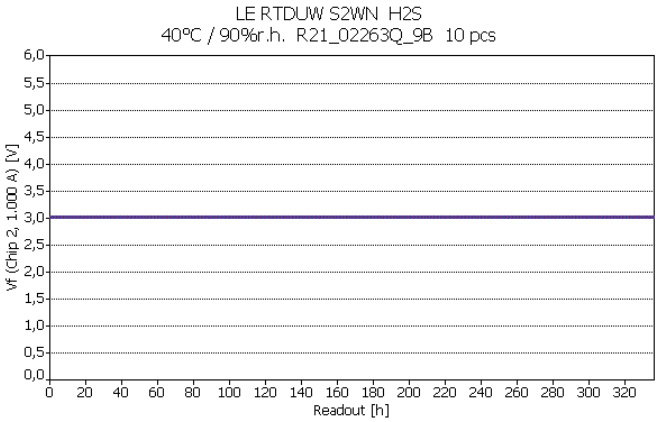
Deep blue chip





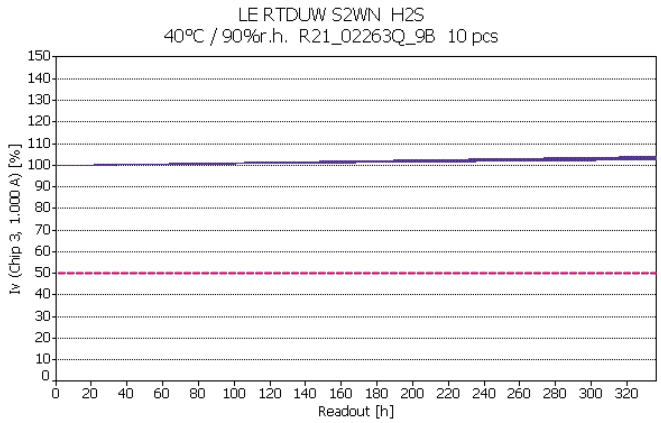
True green chip

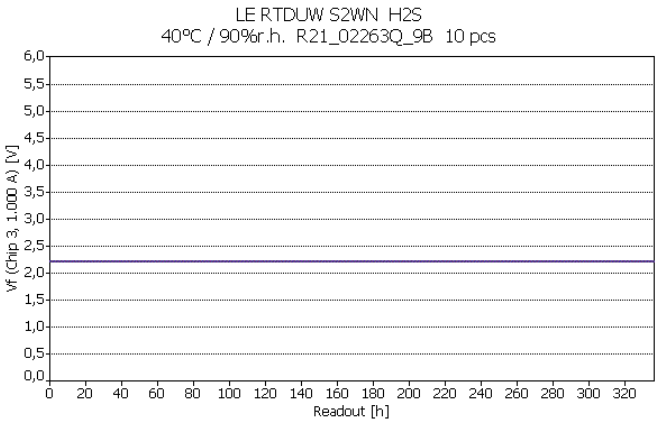




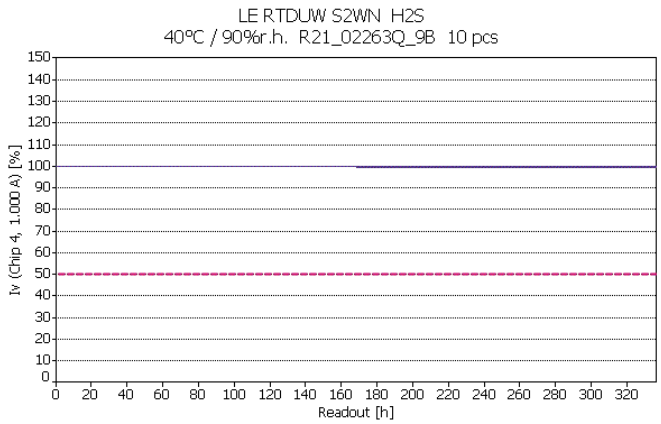
H2S

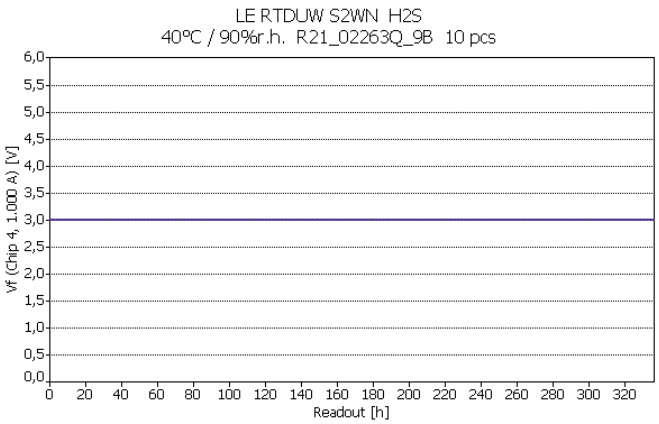
Red chip

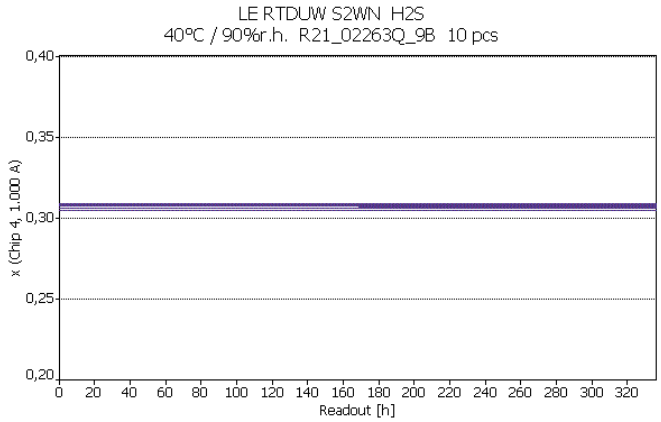


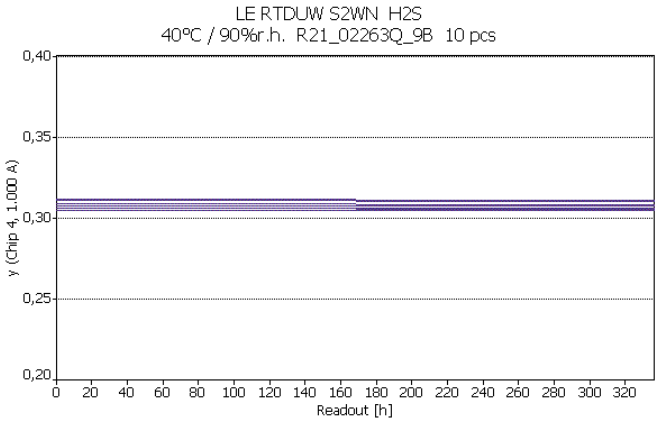


Ultra white chip



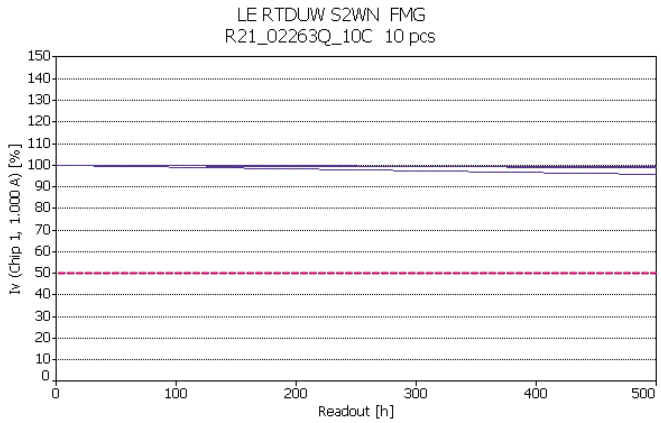


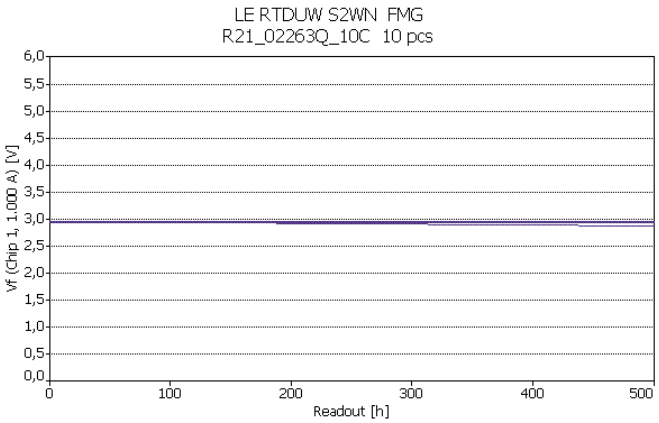




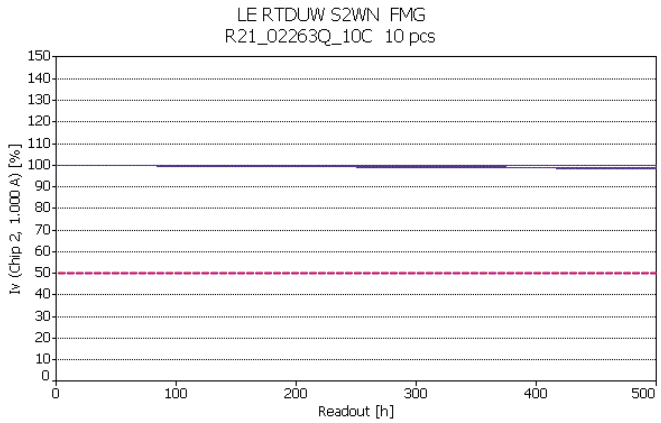
FMG

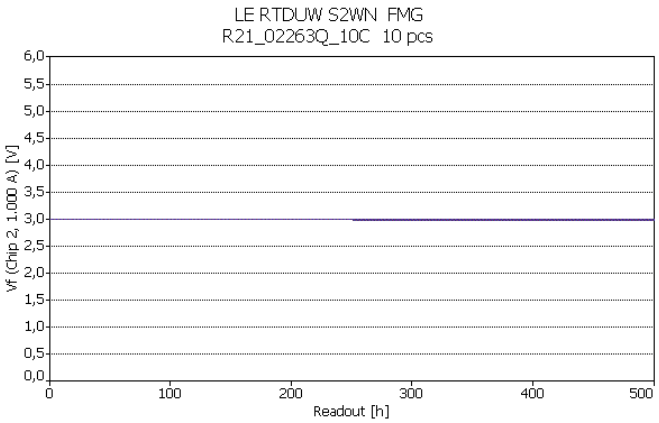
Deep blue chip





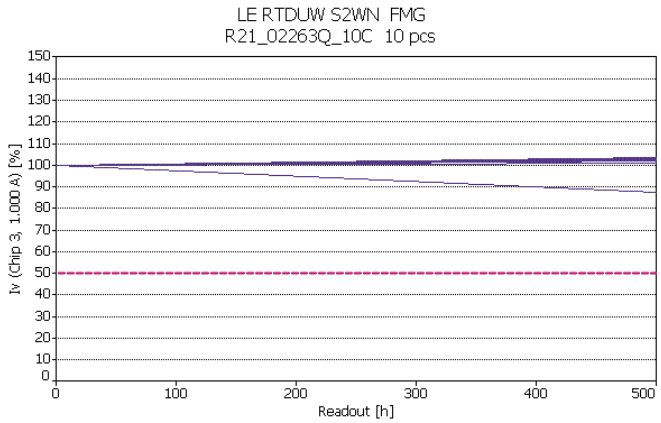
True green chip

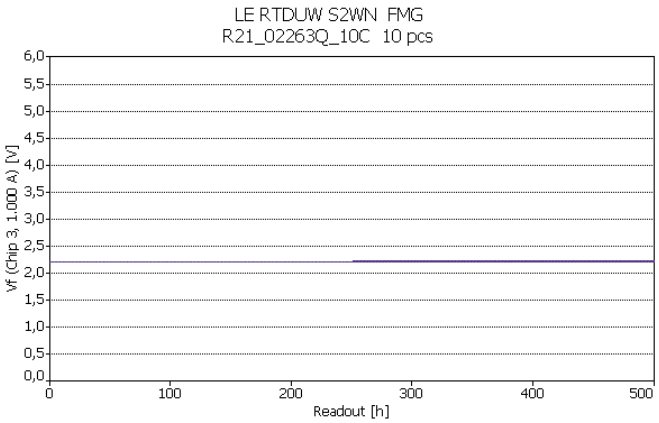




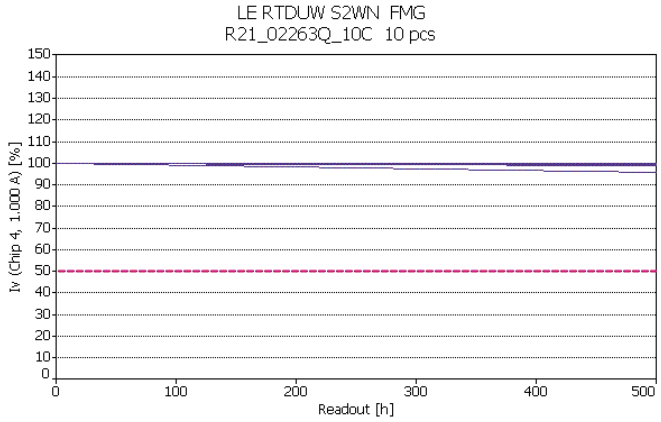
FMG

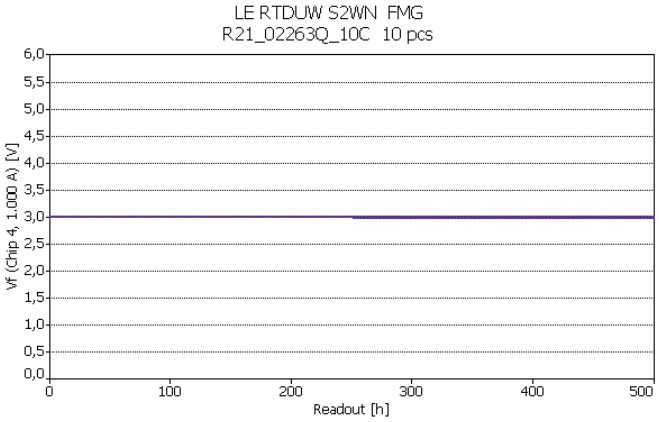
Red chip

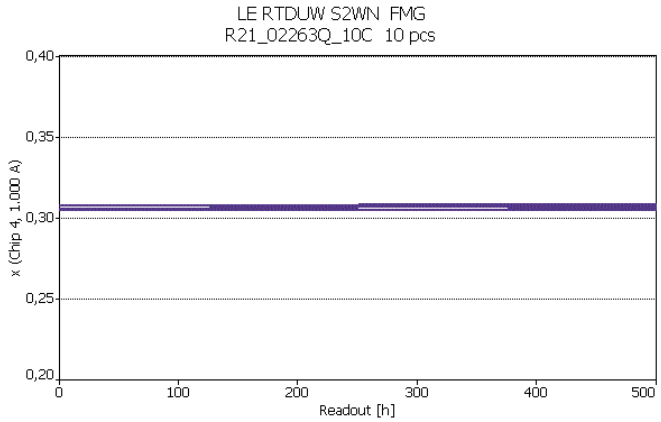


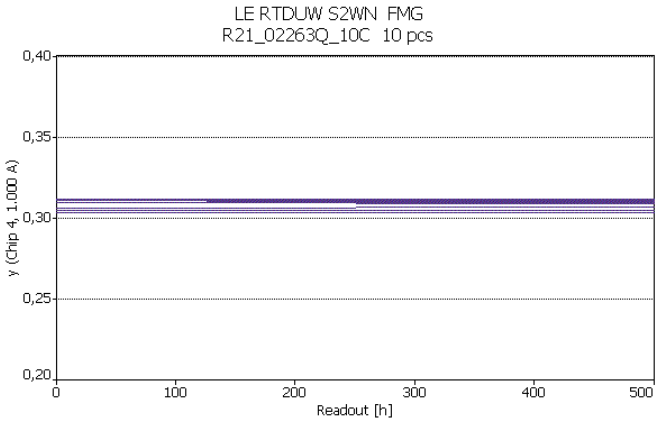


Ultra white chip





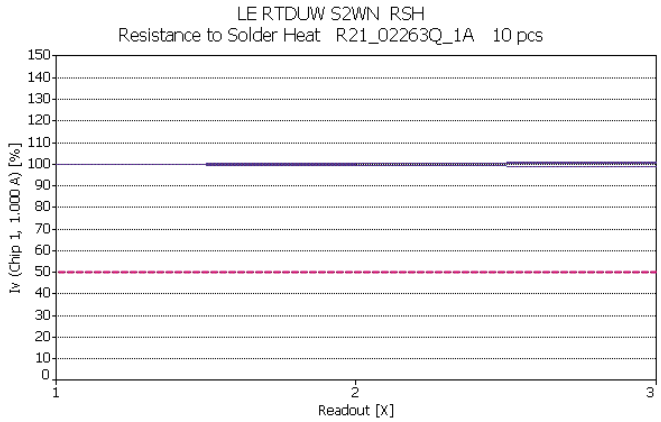


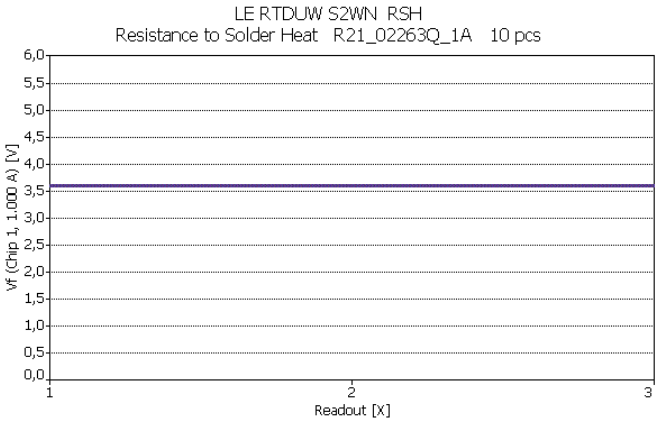


RSH Resistance to Solder Heat

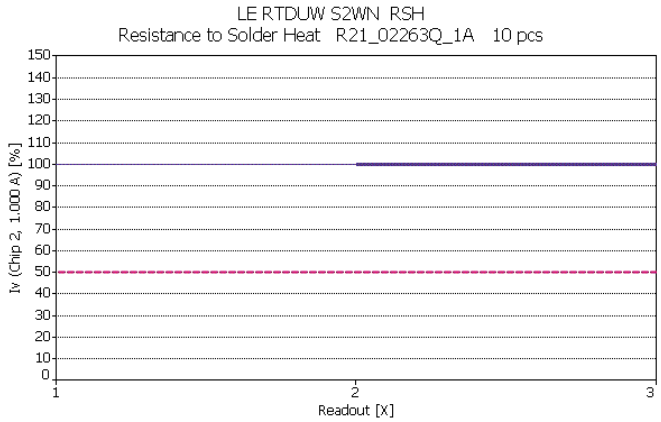
Lot A

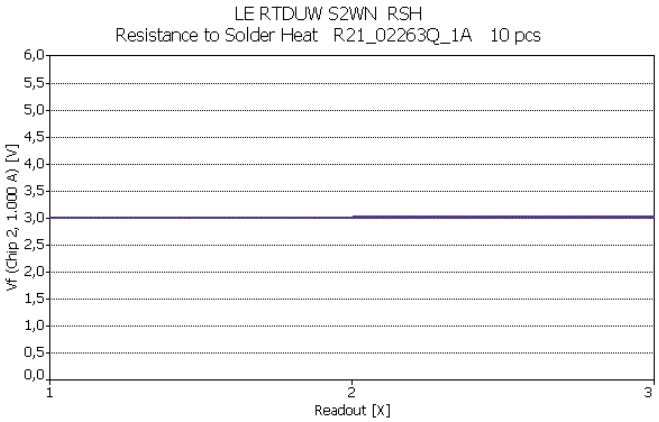
Deep blue chip





True green chip

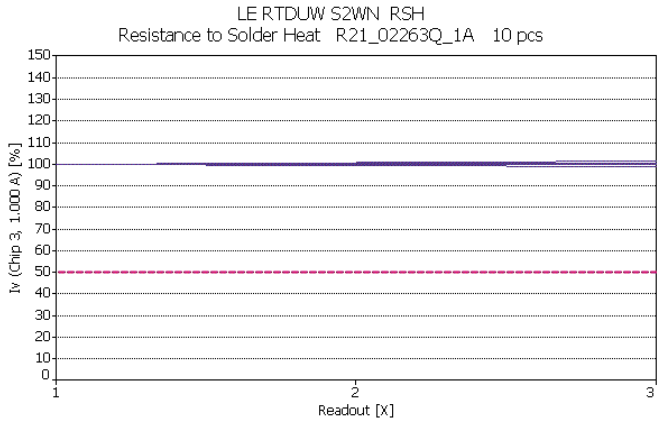


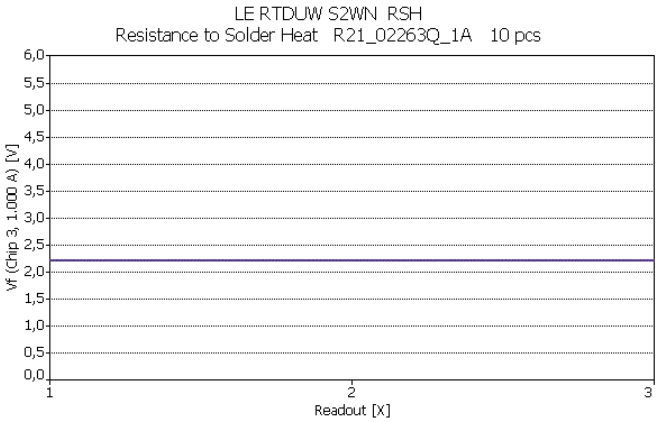


RSH Resistance to Solder Heat

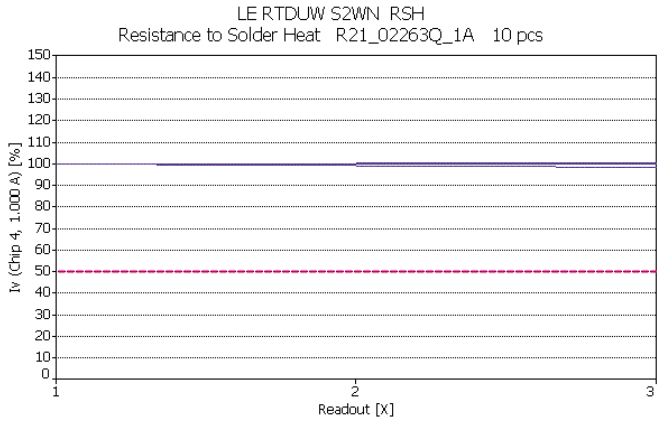
Lot A

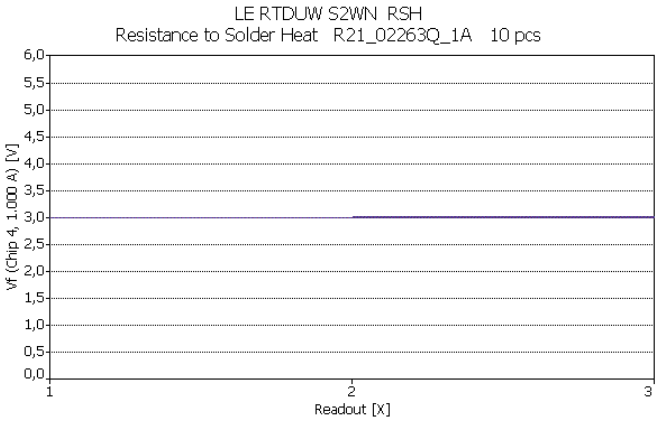
Red chip

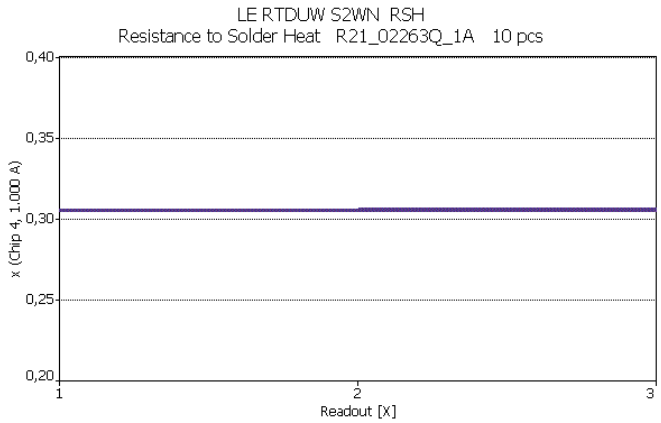


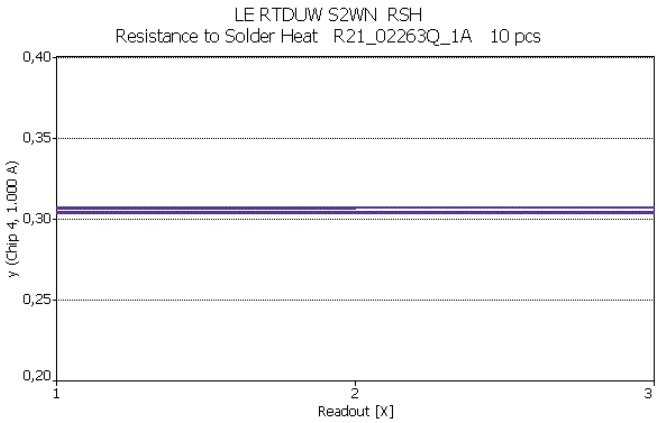


Ultra white chip





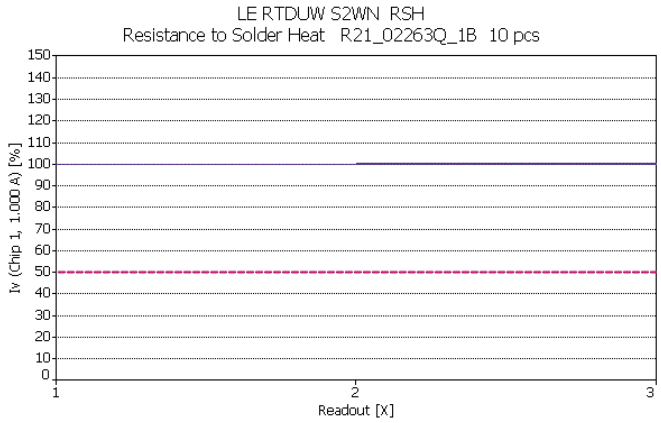




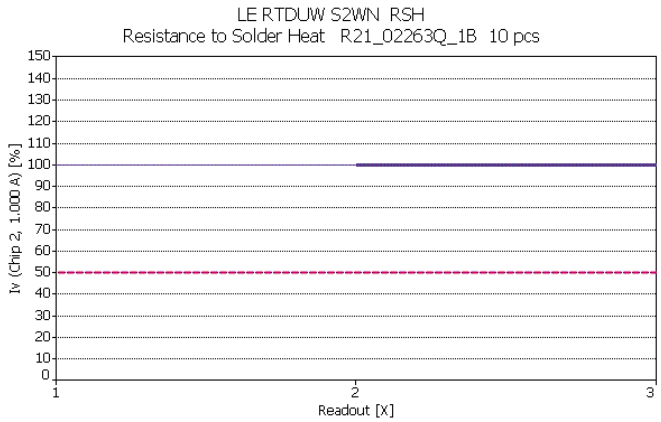
RSH Resistance to Solder Heat

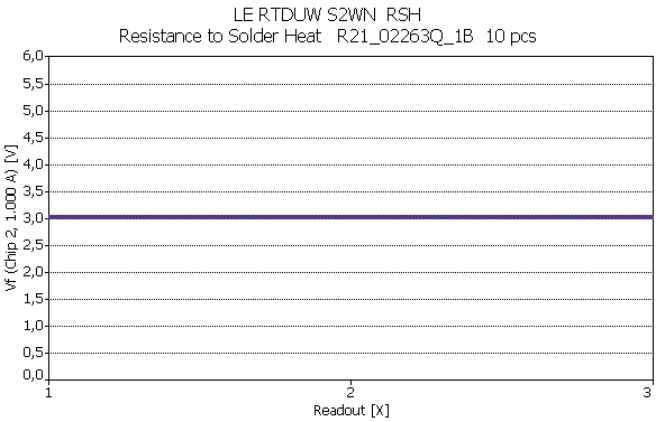
Lot B

Deep blue chip



True green chip

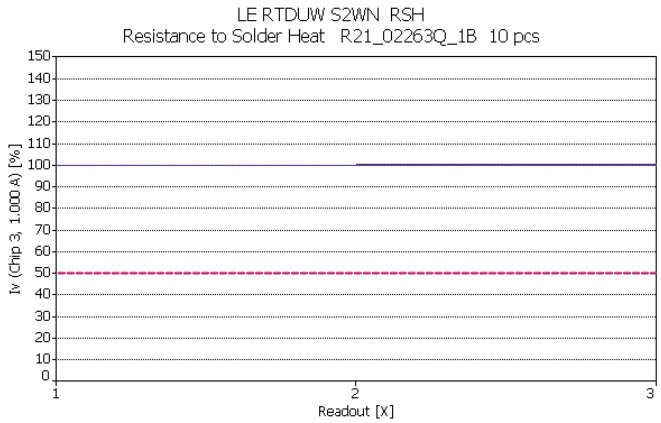


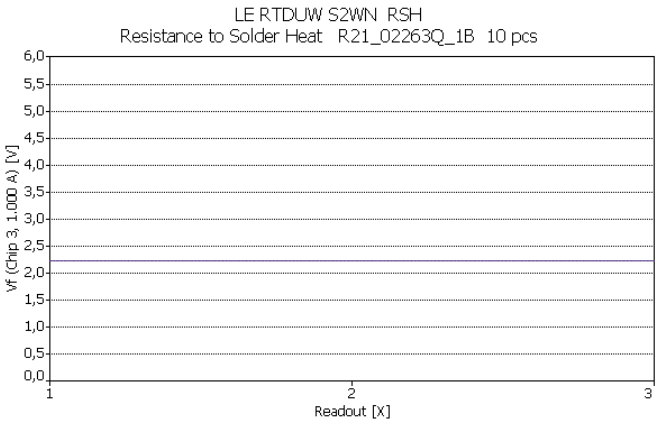


RSH Resistance to Solder Heat

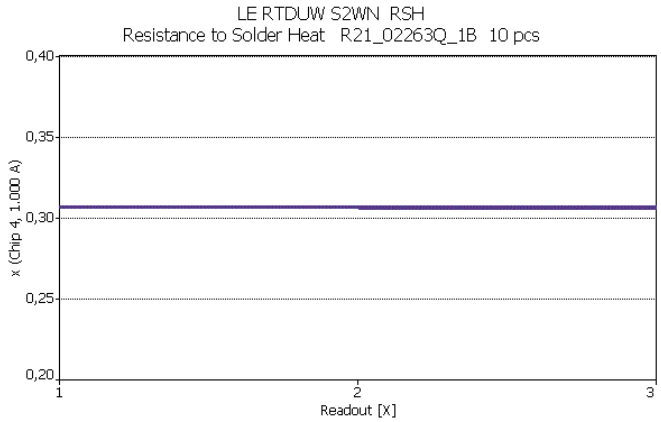
Lot B

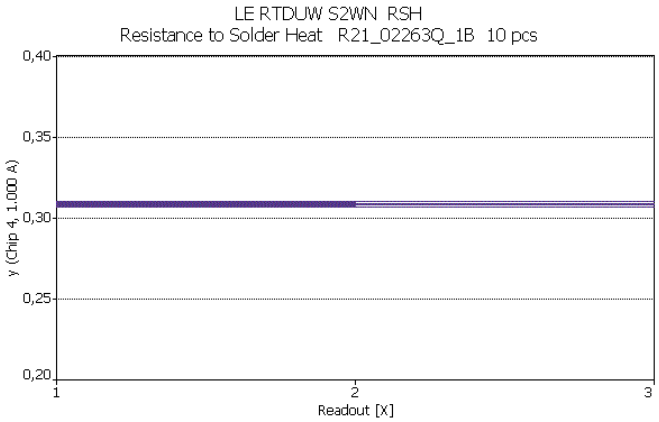
Red chip





Ultra white chip

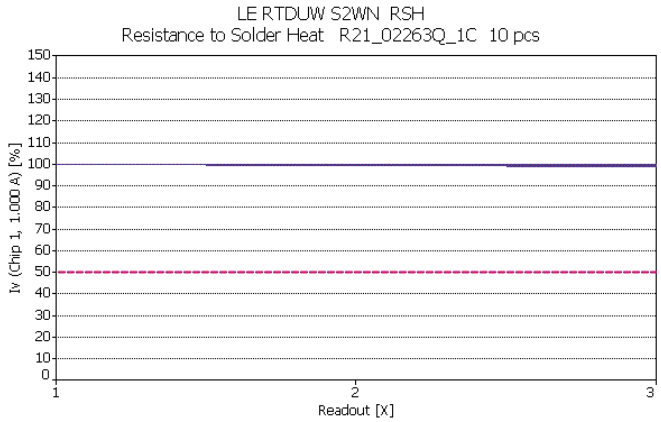


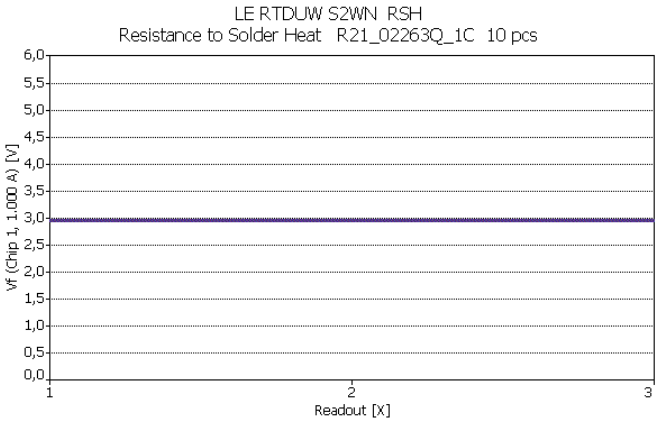


RSH Resistance to Solder Heat

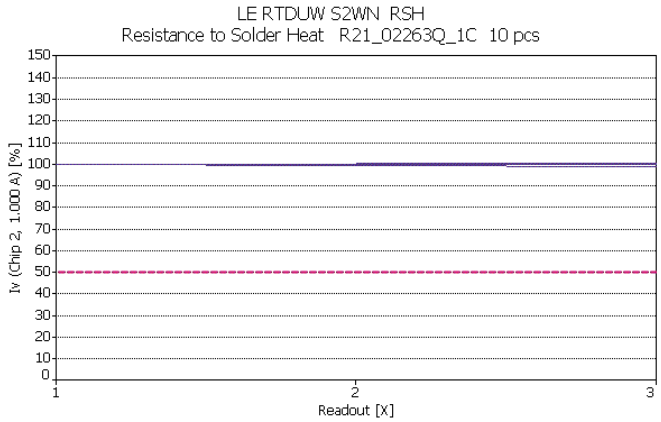
Lot C

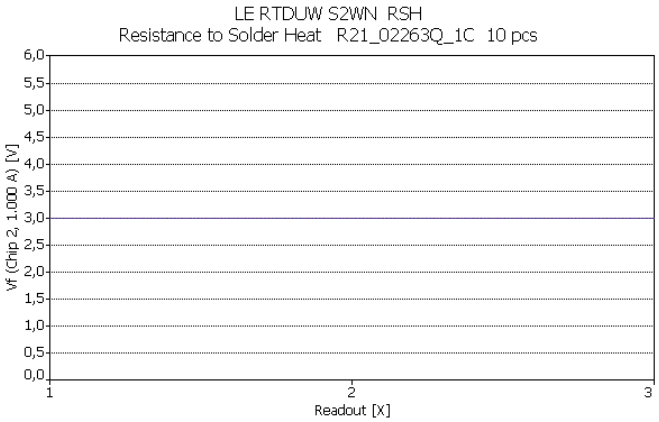
Blue deep chip





True green chip

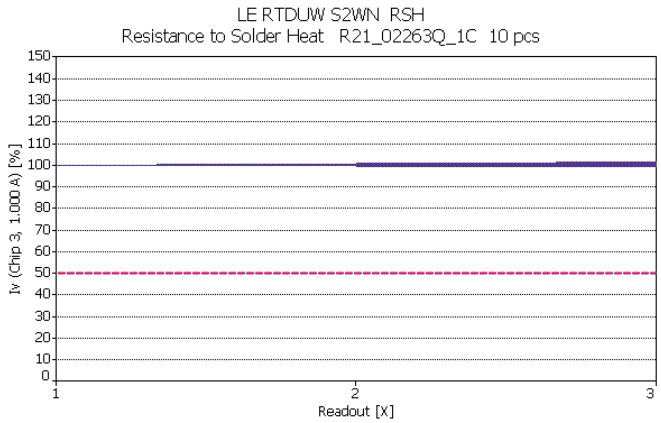


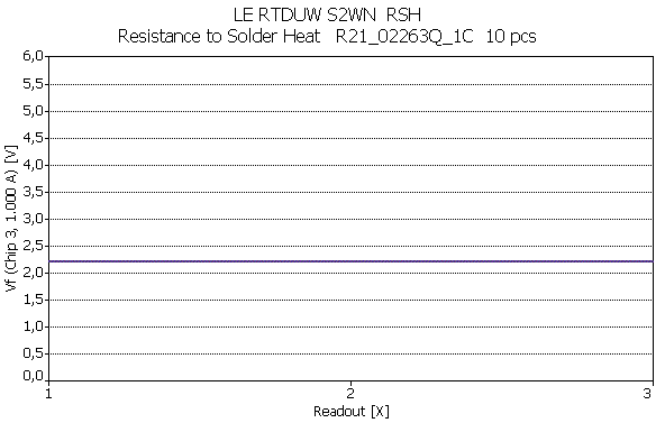


RSH Resistance to Solder Heat

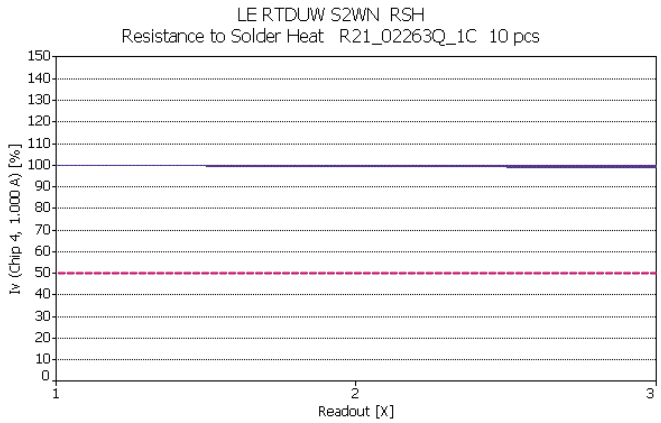
Lot C

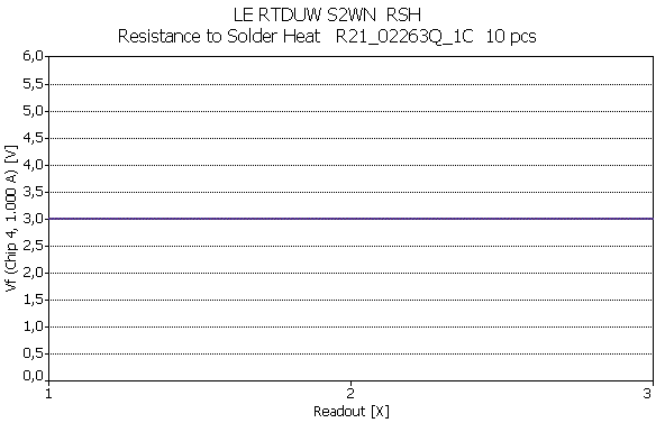
Red chip

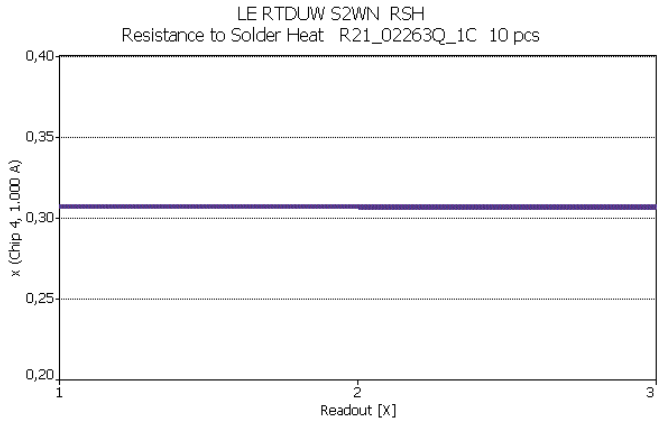


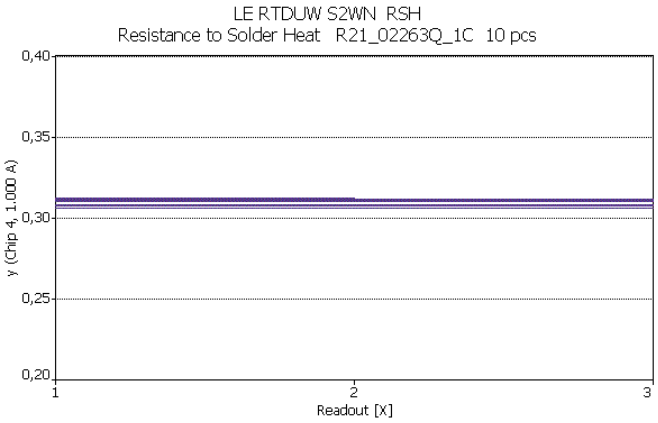


Ultra white chip





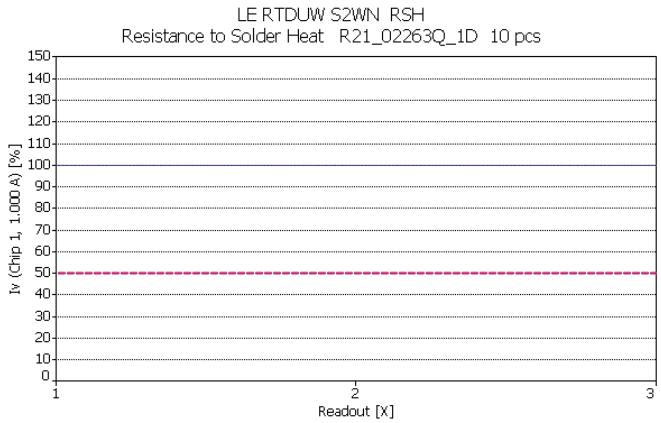


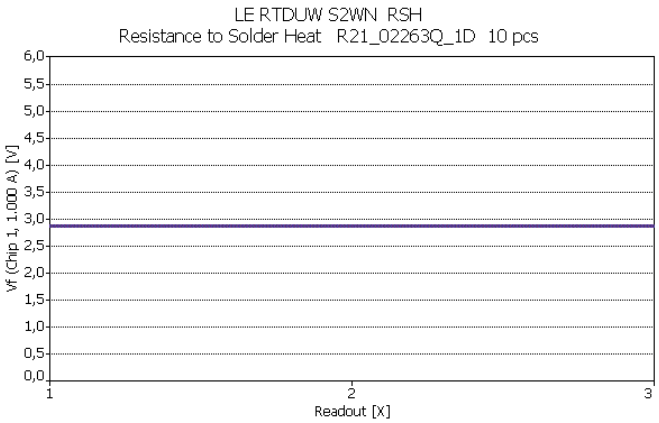


RSH Resistance to Solder Heat

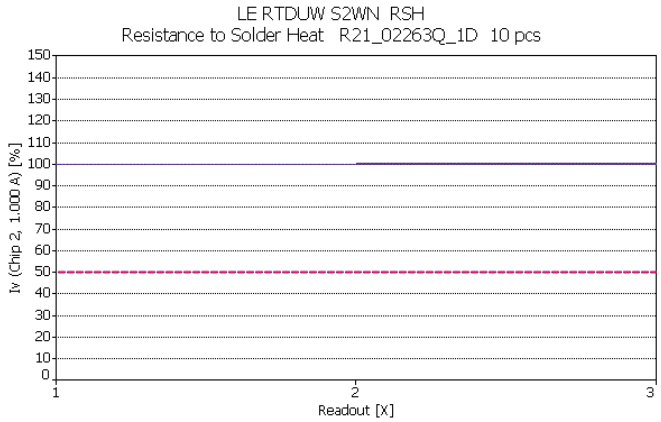
Lot D

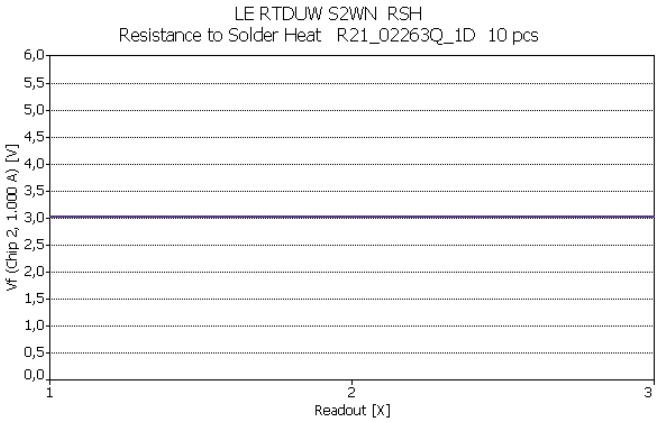
Deep blue chip





True green chip

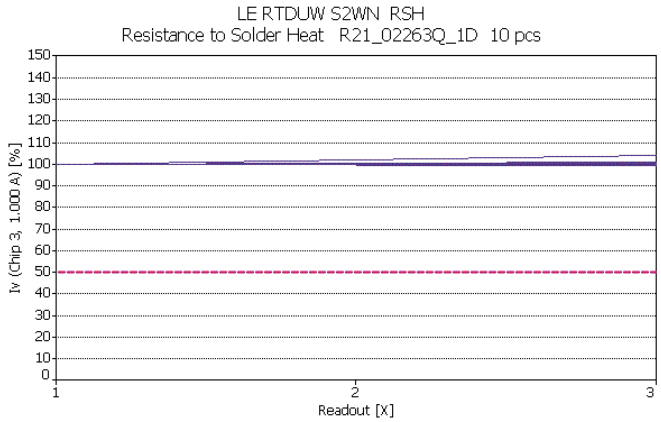




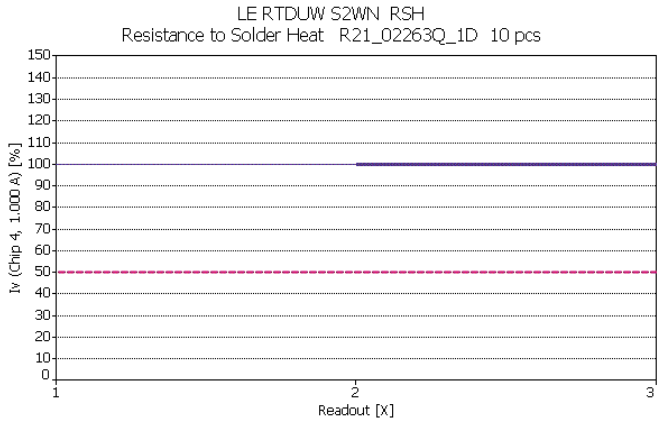
RSH Resistance to Solder Heat

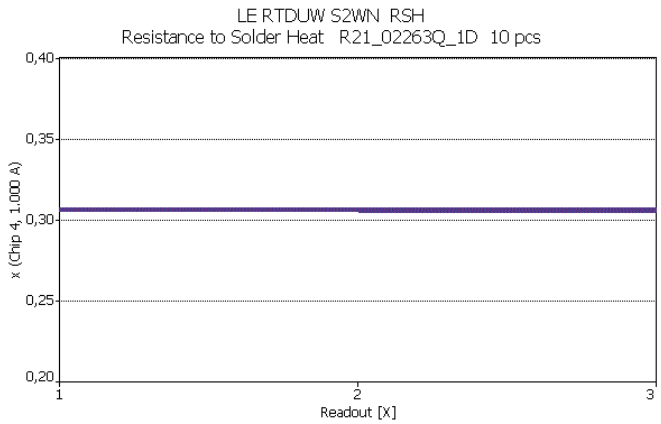
Lot D

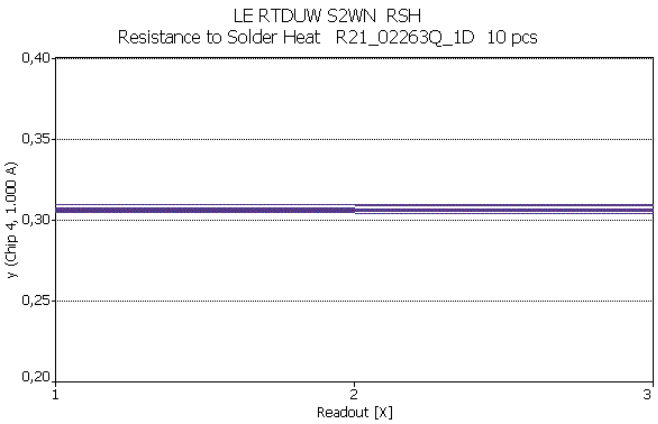
Red chip



Ultra white chip



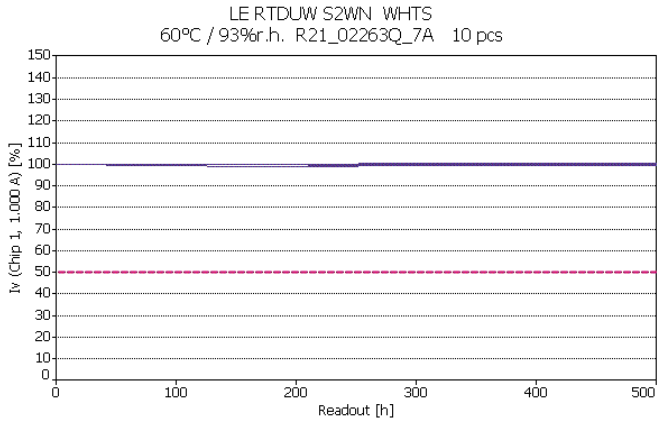


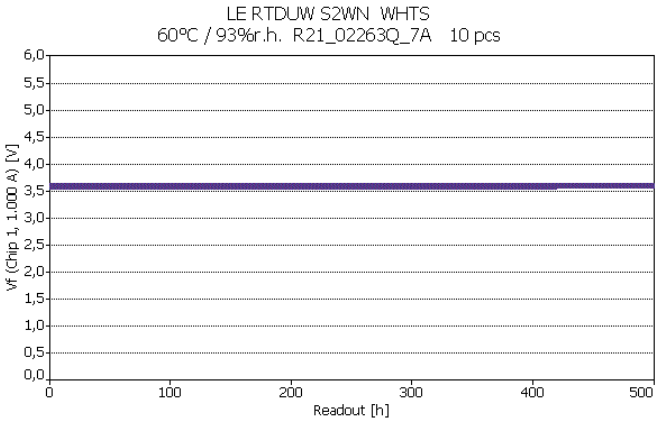


WHTS 60°C/93%,r.H.

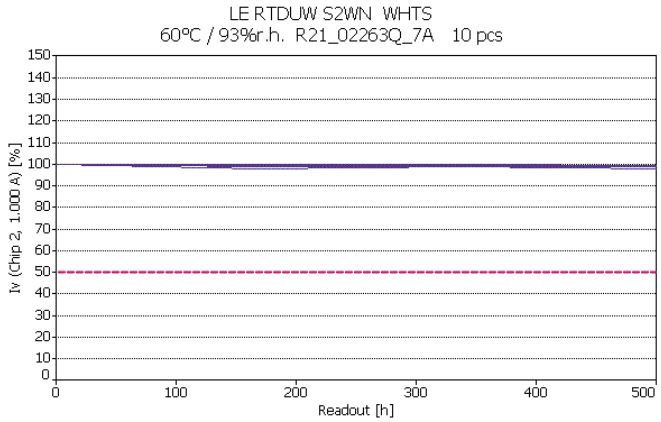
Lot A

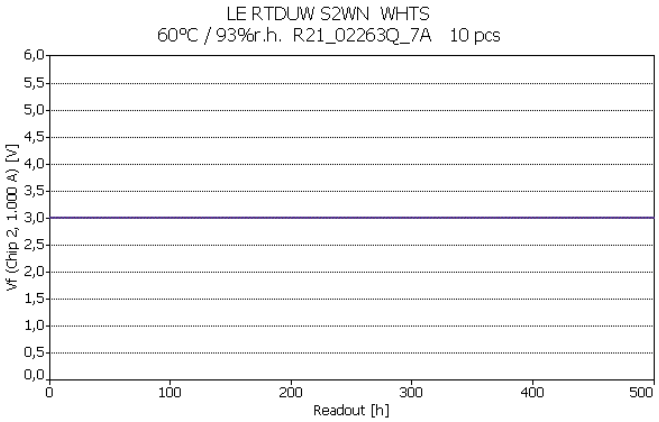
Deep blue chip





True green chip

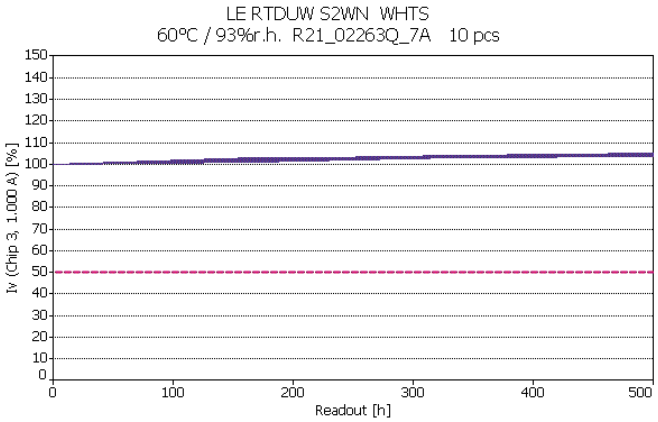


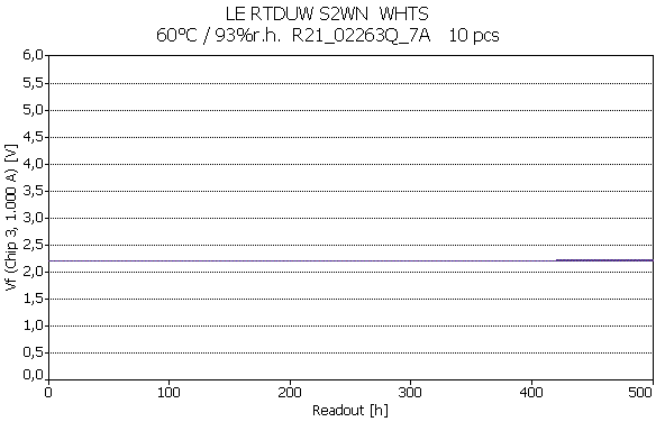


WHTS 60°C/93%,r.H.

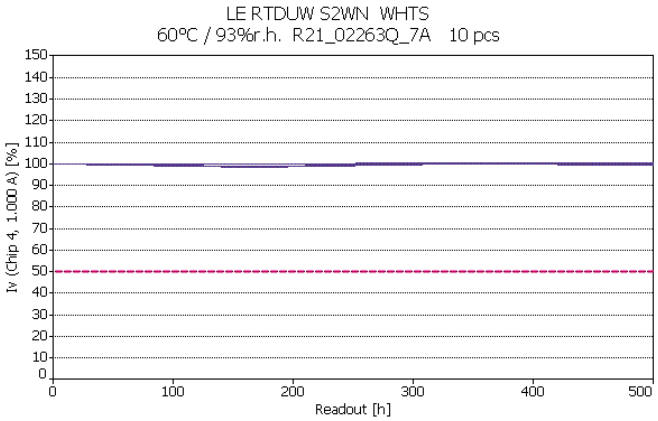
Lot A

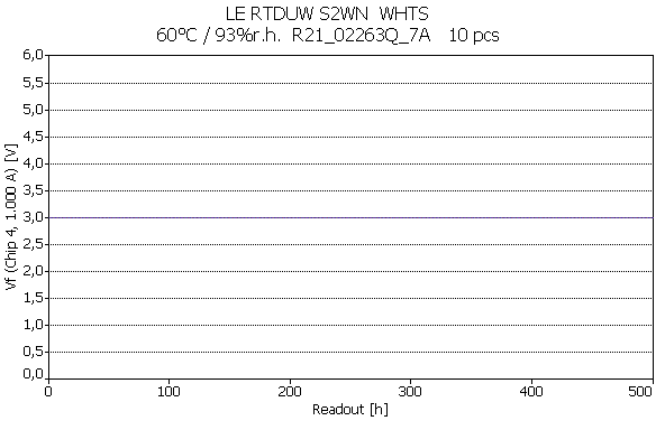
Red chip

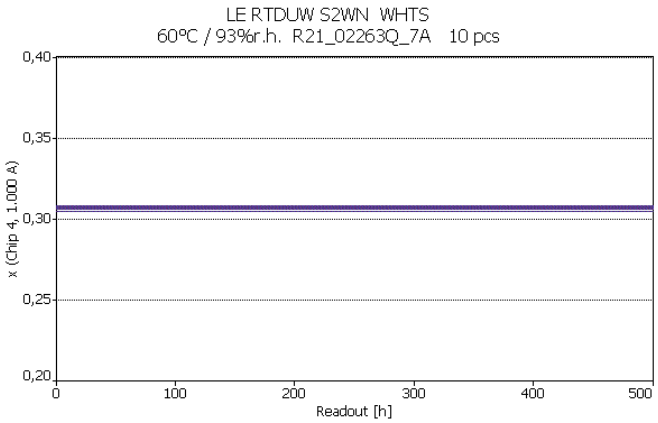


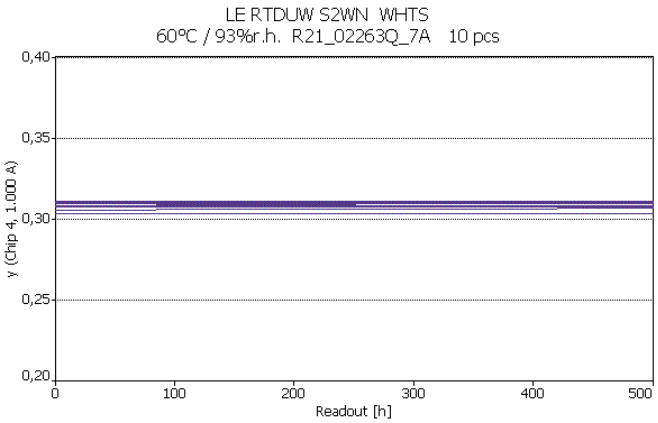


Ultra white chip





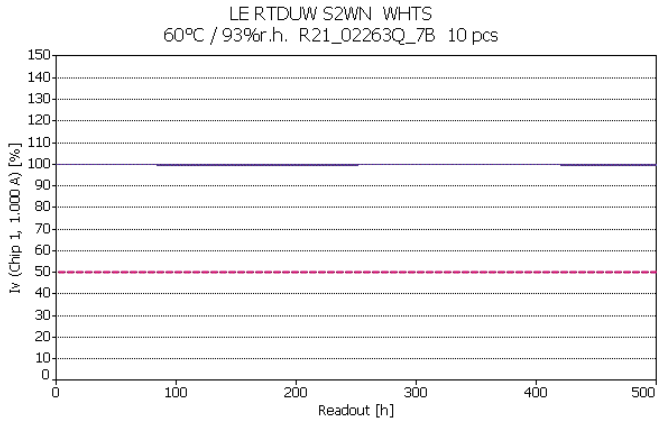


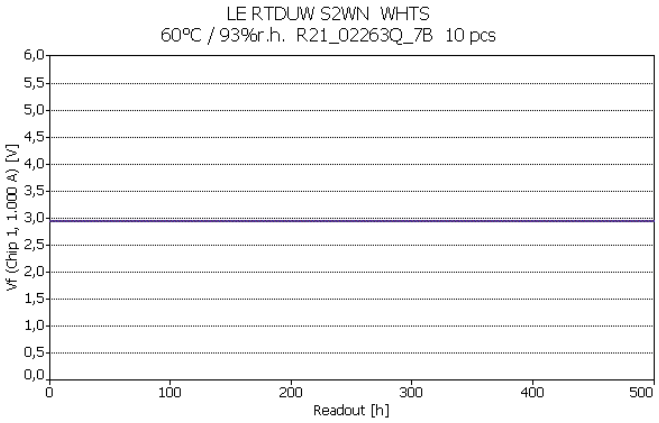


WHTS 60°C/93%,r.H.

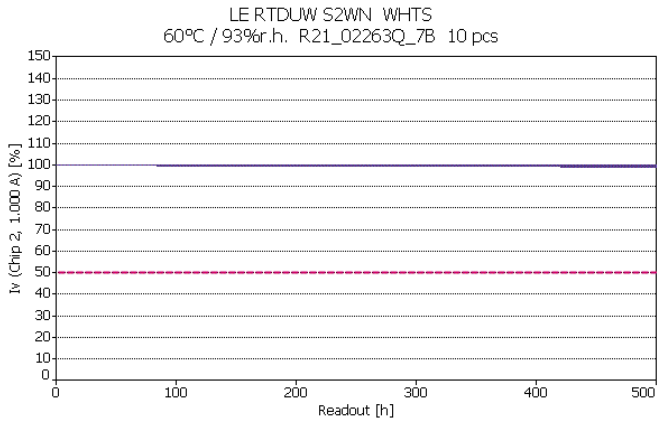
Lot B

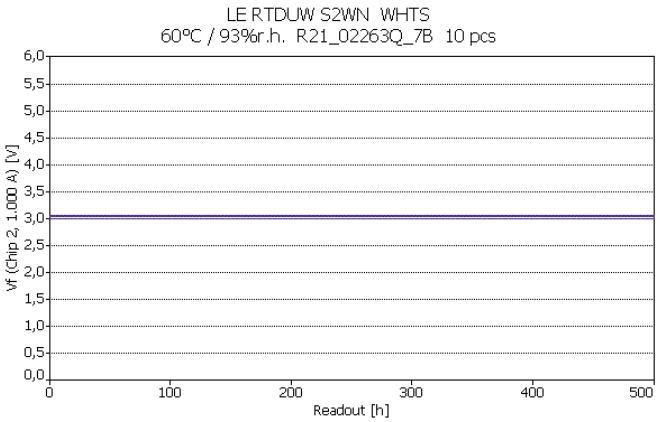
Deep blue chip





True green chip

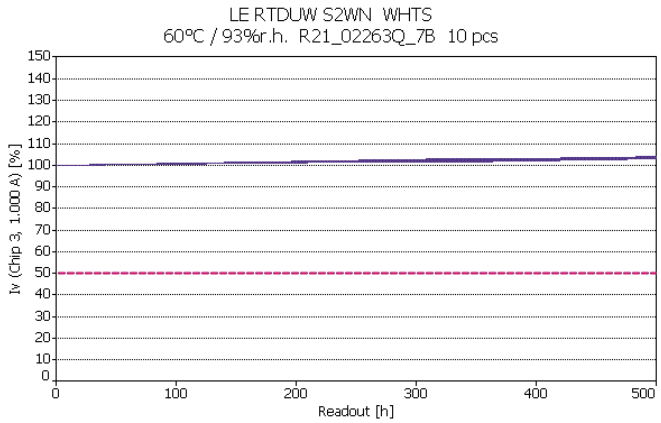


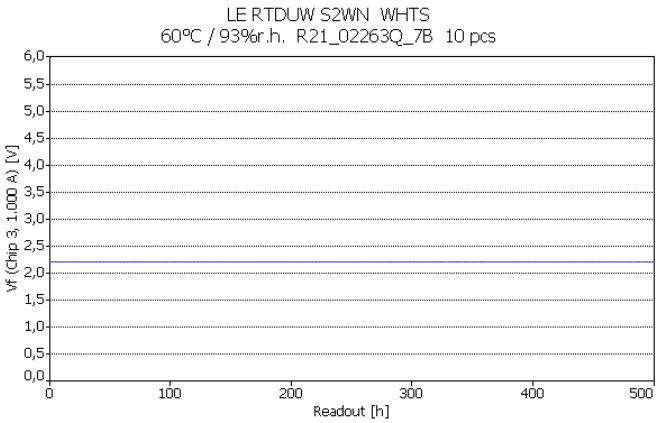


WHTS 60°C/93%,r.H.

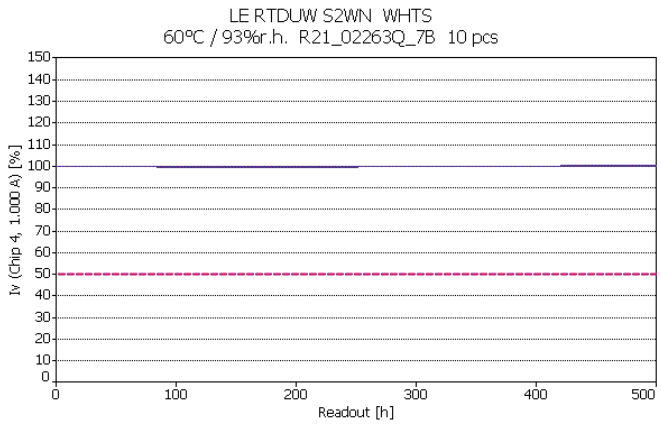
Lot B

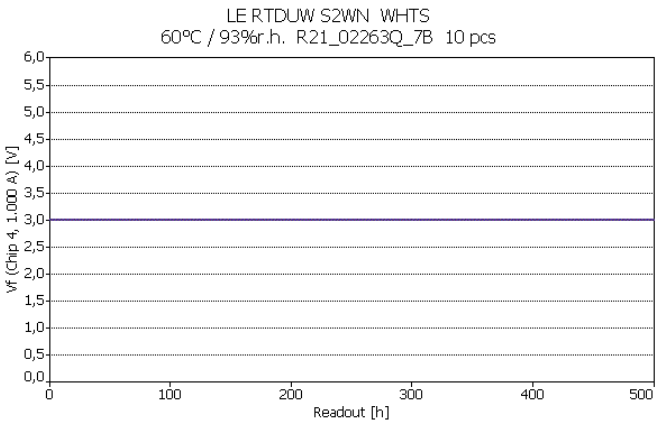
Red chip

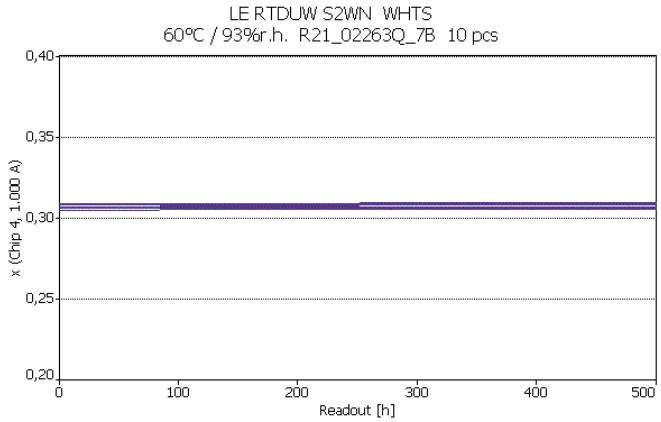


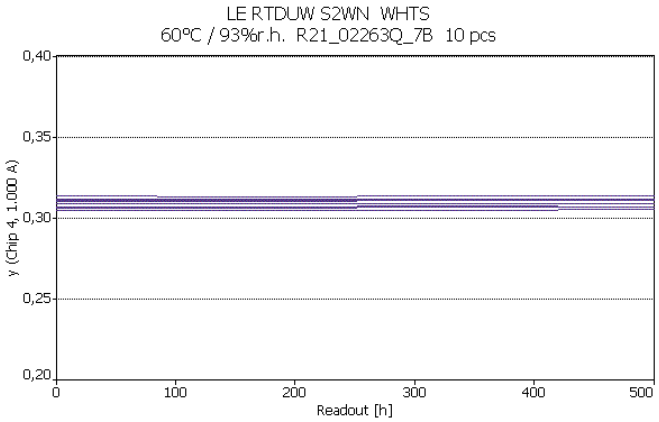


Ultra white chip





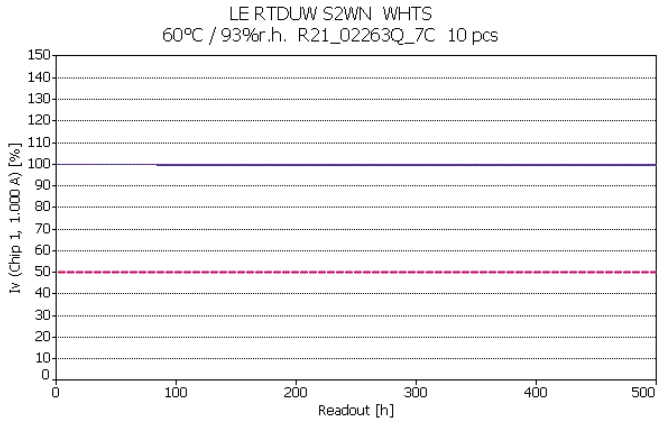


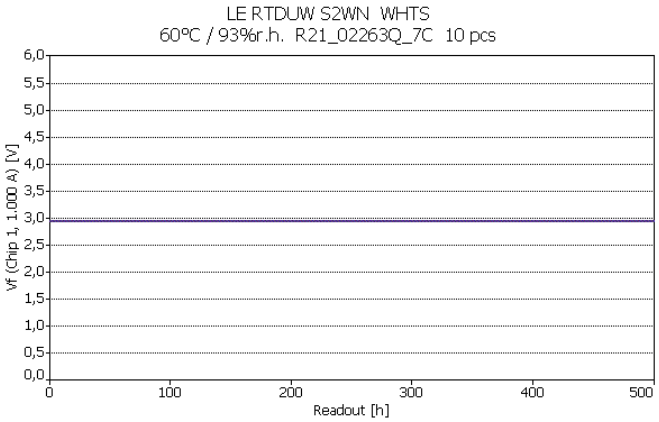


WHTS 60°C/93%,r.H.

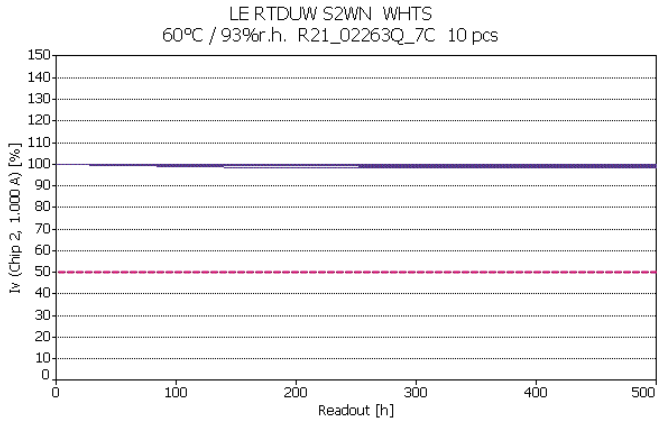
Lot C

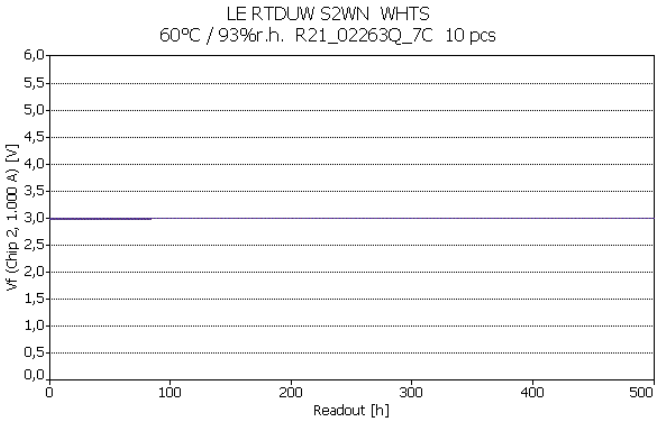
Blue deep chip





True green chip

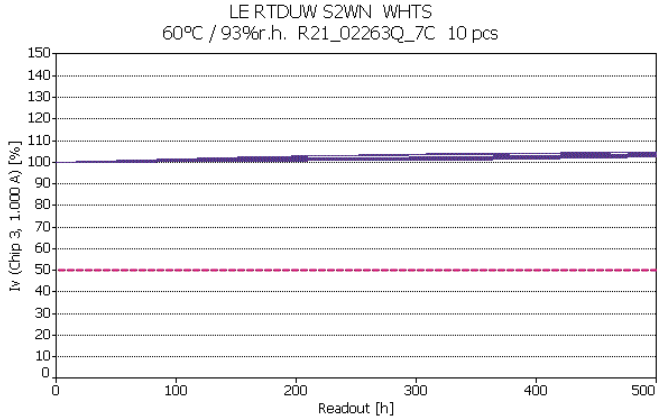


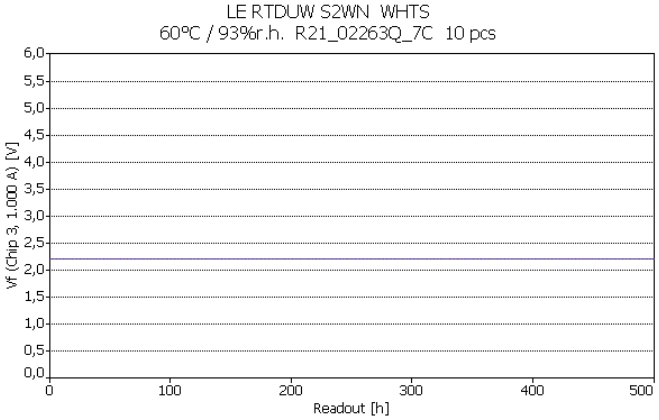


WHTS 60°C/93%,r.H.

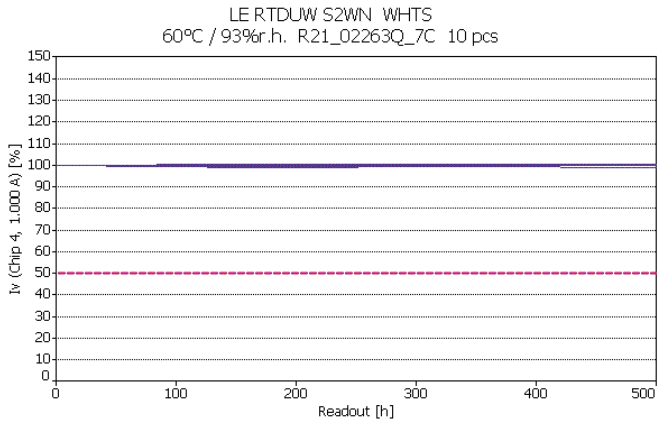
Lot C

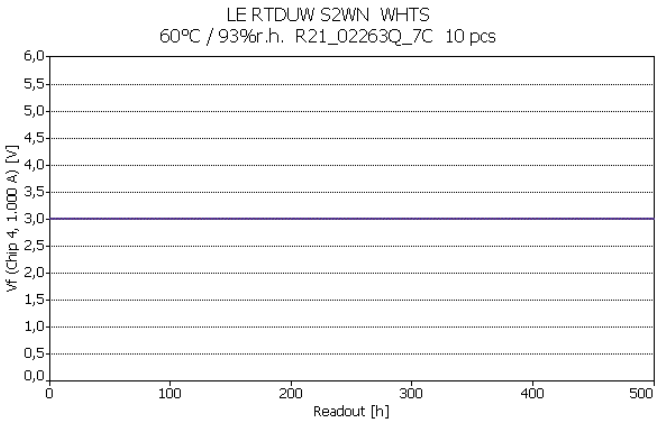
Red chip

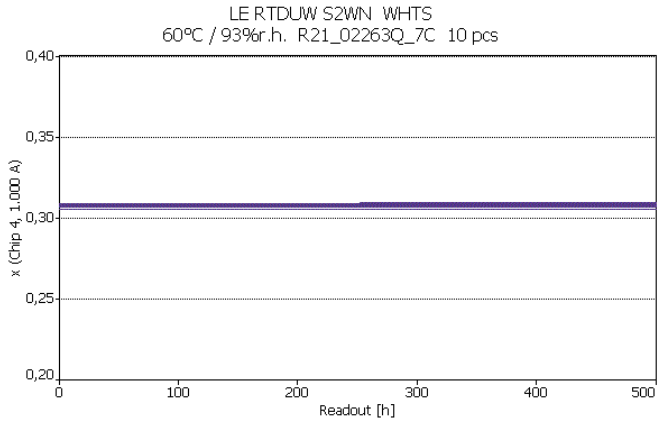


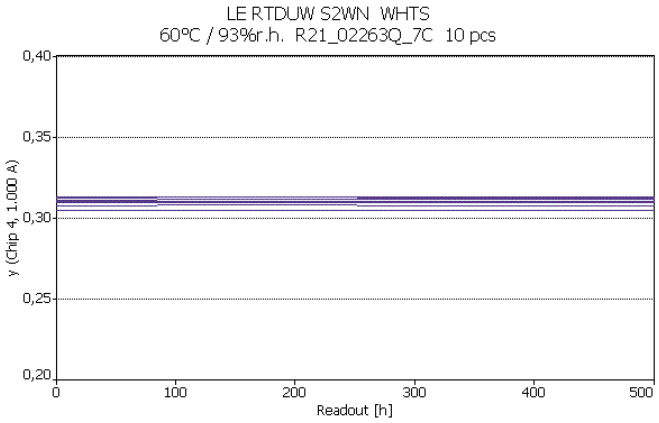


Ultra white chip





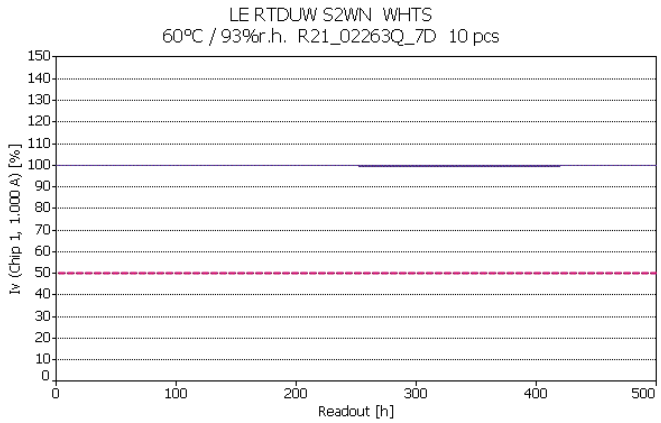


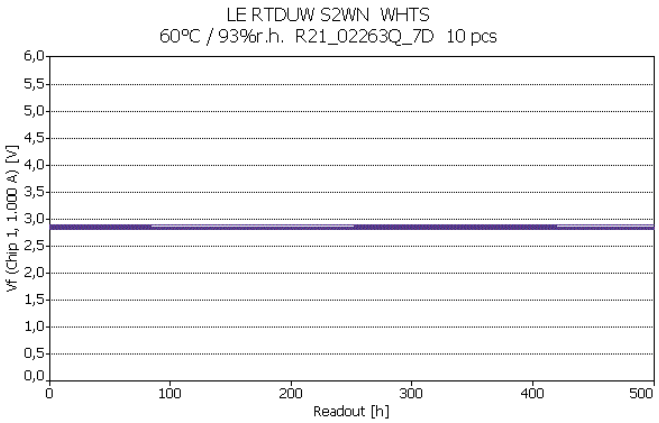


WHTS 60°C/93%,r.H.

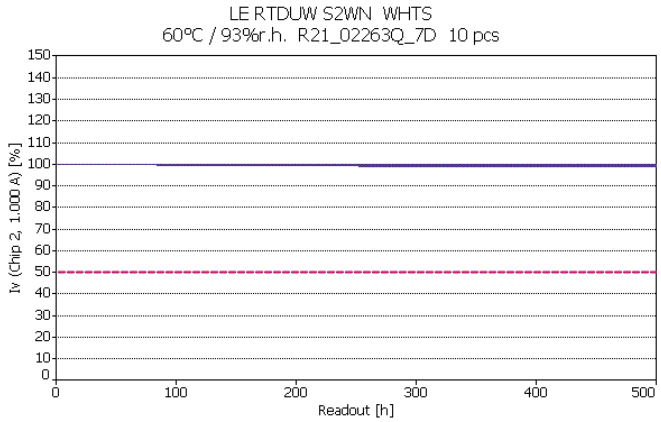
Lot D

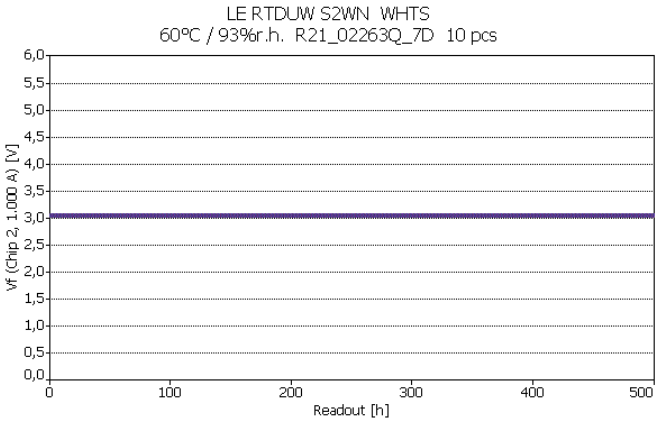
Deep blue chip





True green chip

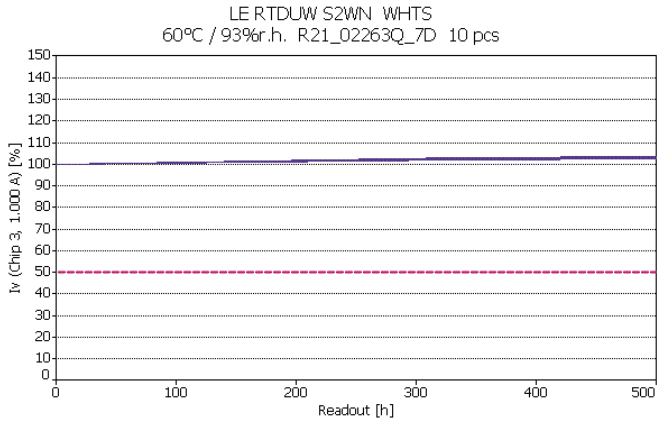


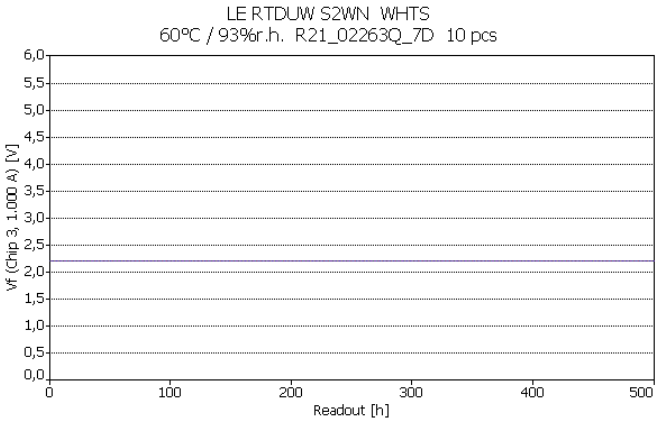


WHTS 60°C/93%,r.H.

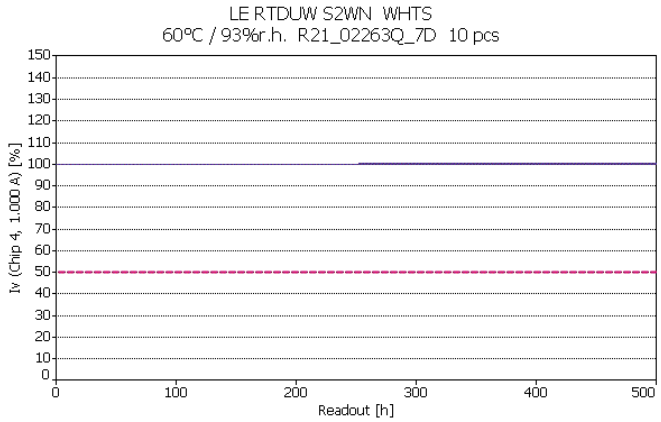
Lot D

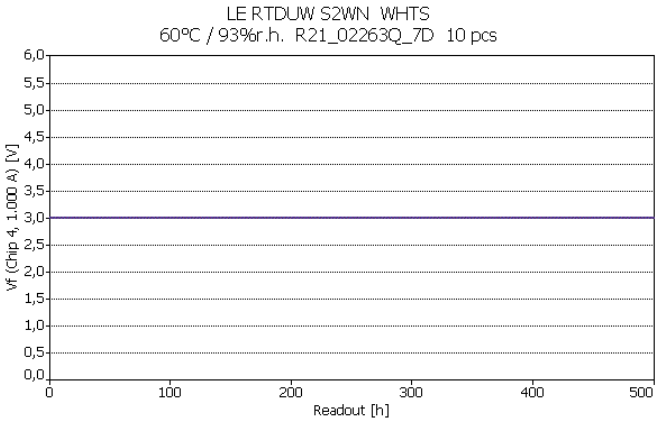
Red chip

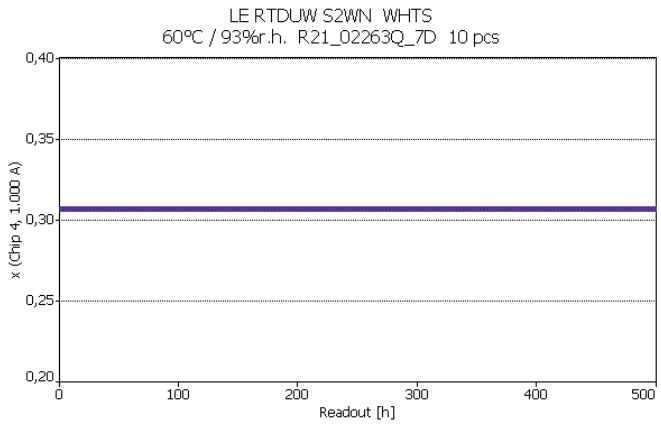


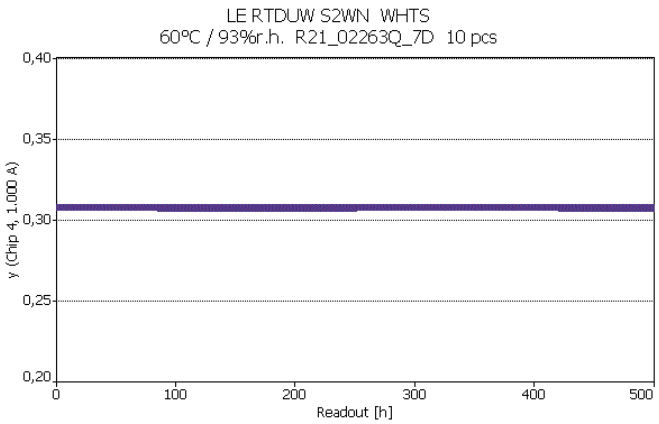


Ultra white chip







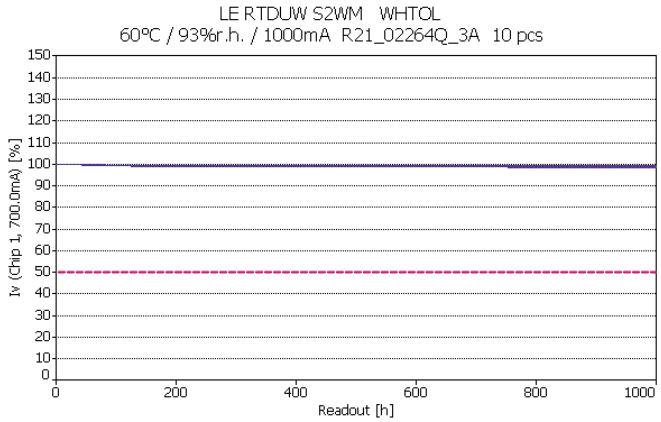


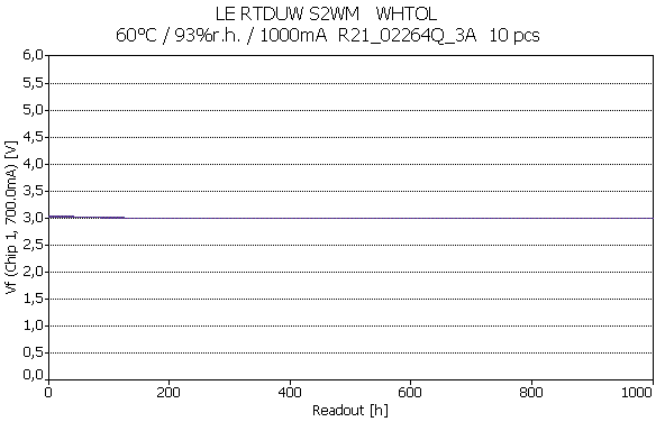
LE RTDUW S2WM

WHTOL 60°C/93%r.H; 1000mA

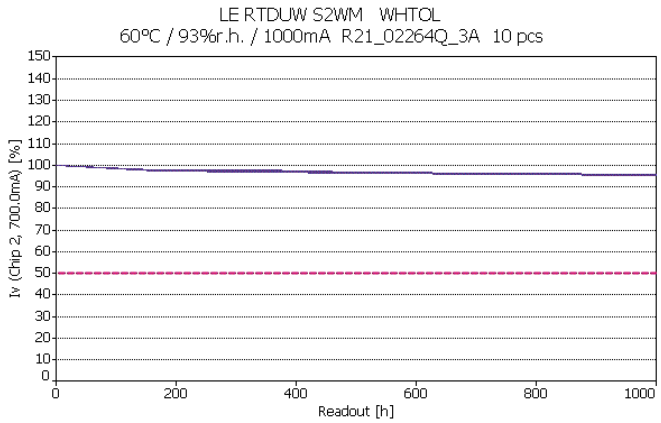
Lot A

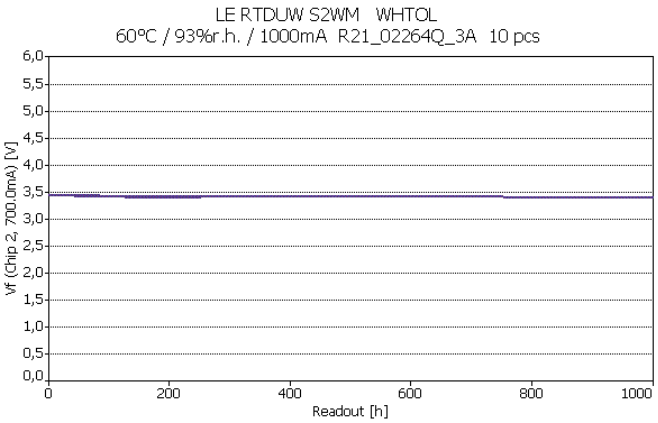
Deep blue chip





True green chip

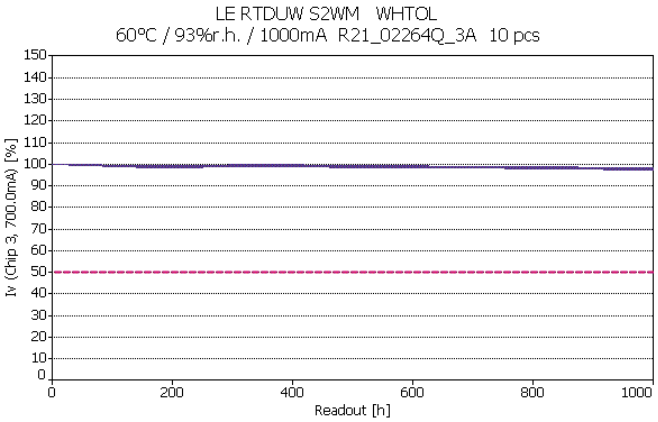


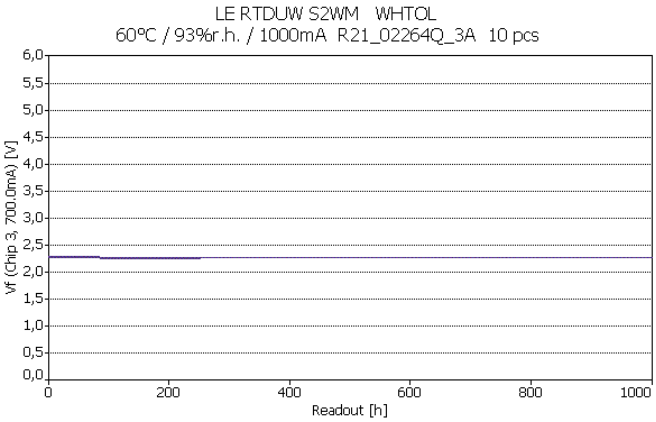


WHTOL 60°C/93%r.H; 1000mA

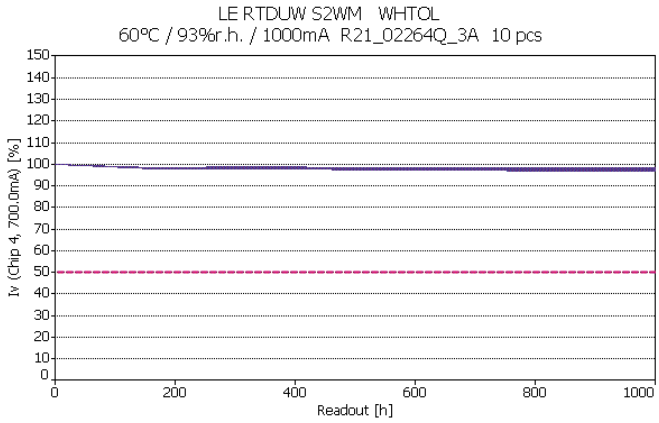
Lot A

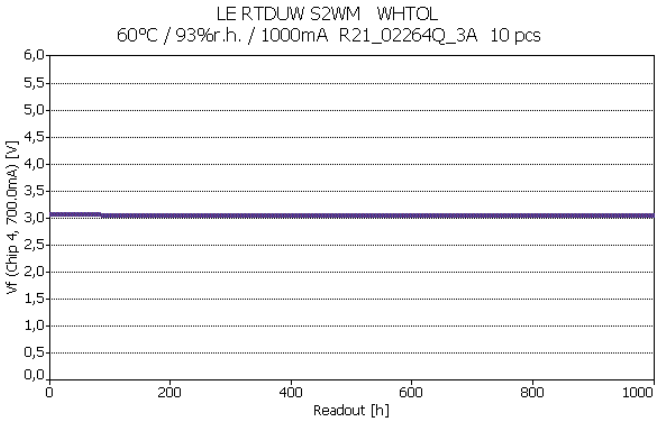
Red chip

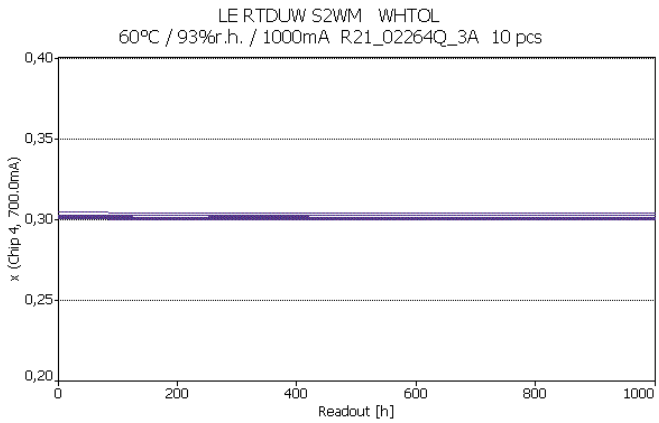


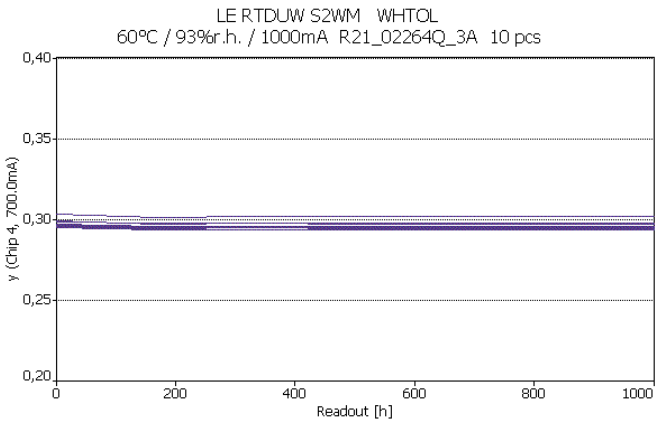


Ultra white chip





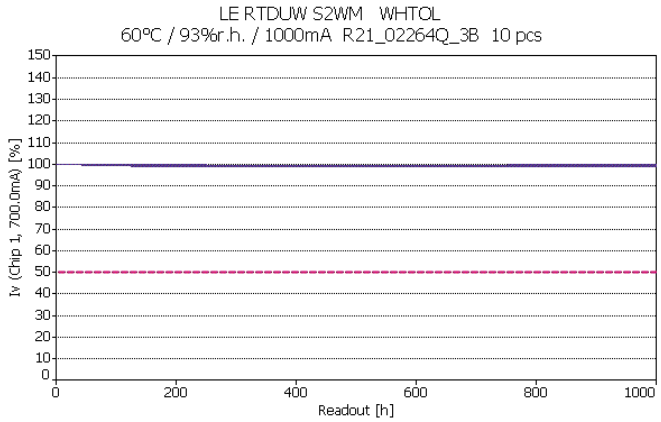


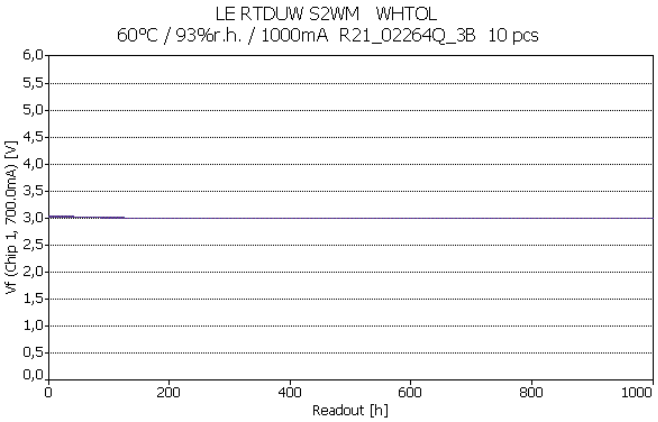


WHTOL 60°C/93%r.H; 1000mA

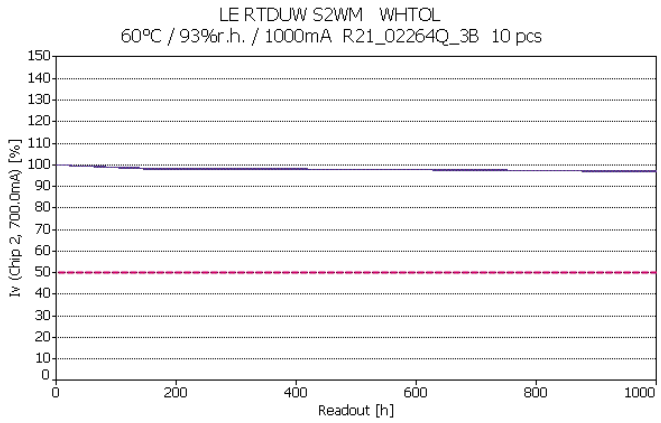
Lot B

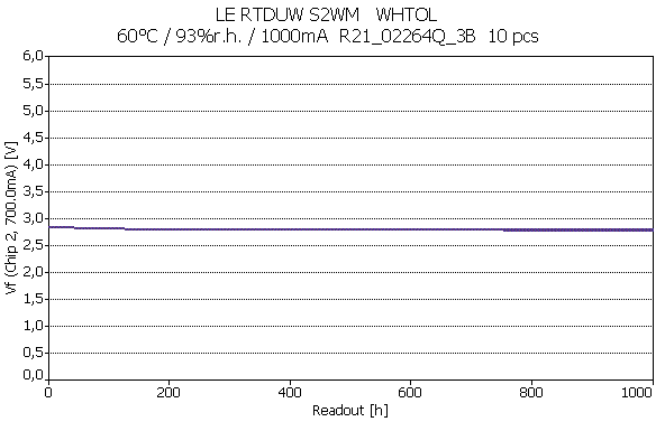
Deep blue chip





True green chip

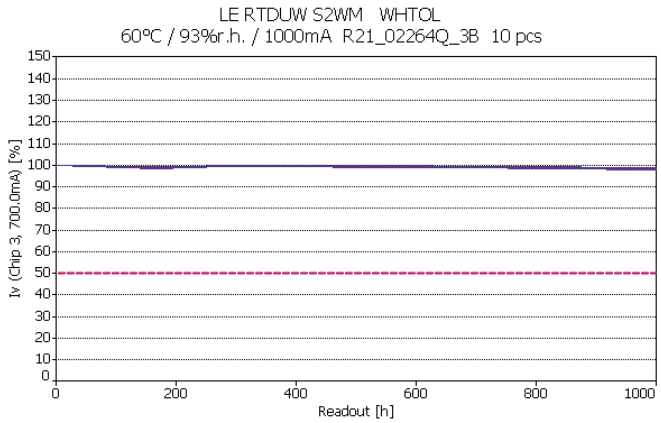


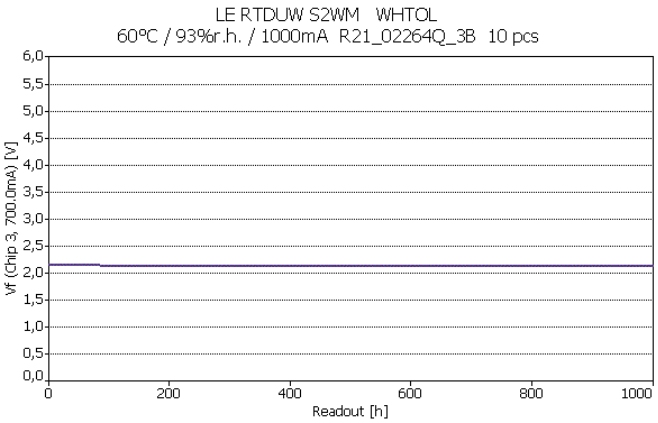


WHTOL 60°C/93%r.H; 1000mA

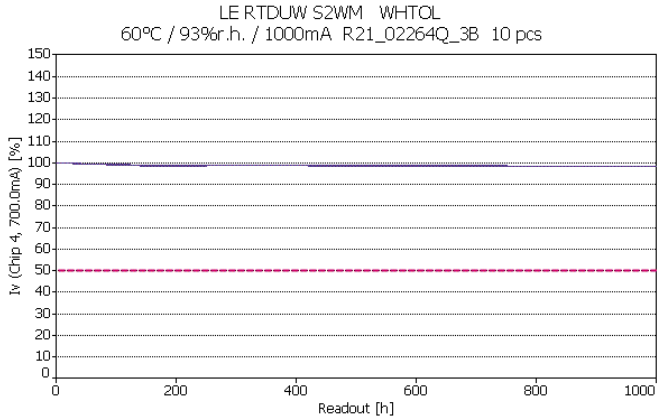
Lot B

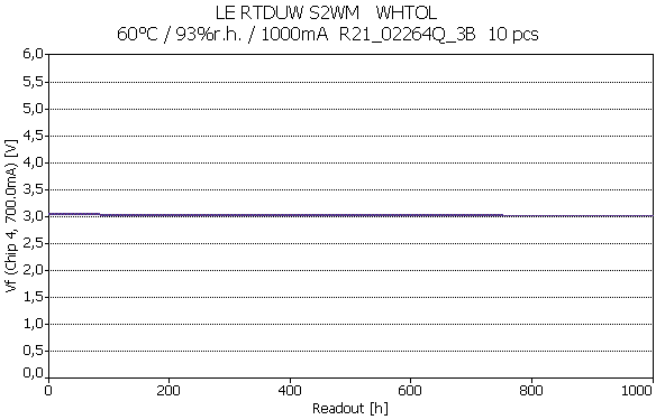
Red chip

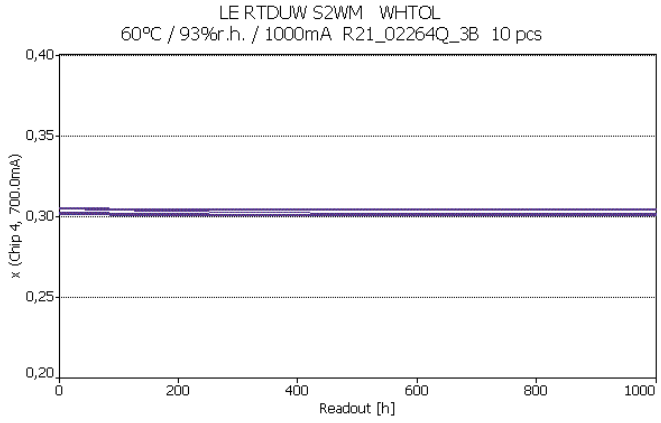


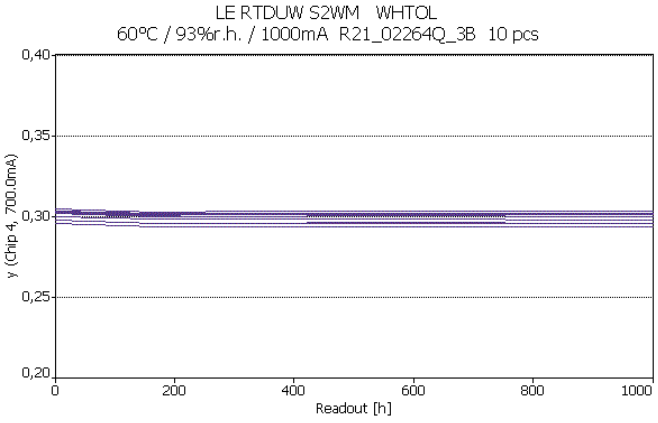


Ultra white chip





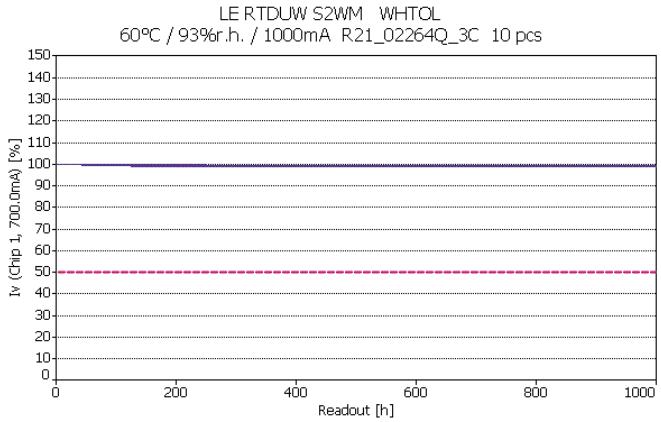


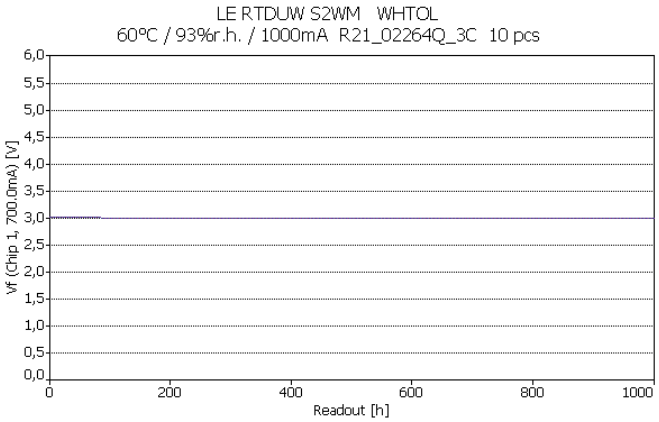


WHTOL 60°C/93%r.H; 1000mA

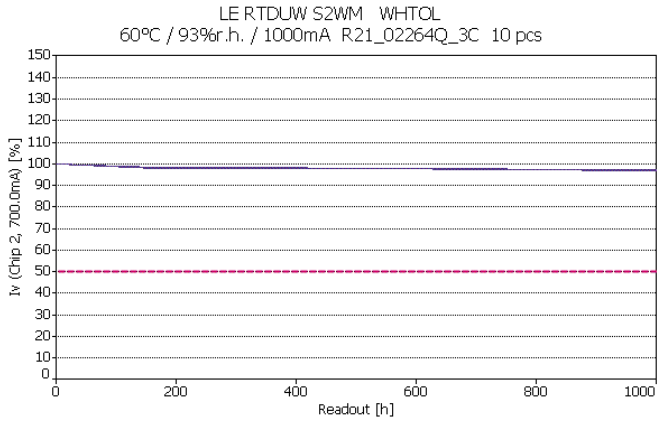
Lot C

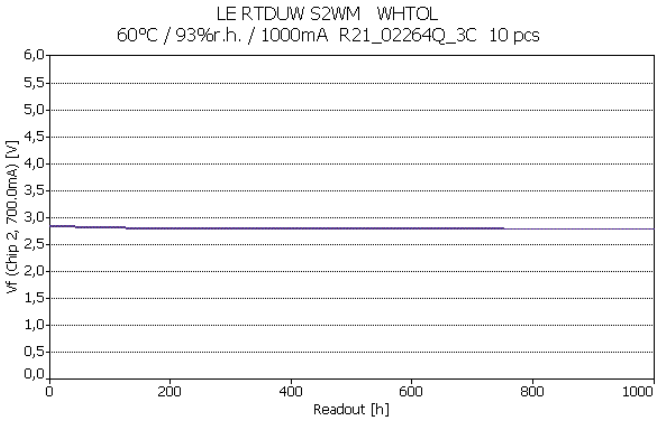
Blue deep chip





True green chip

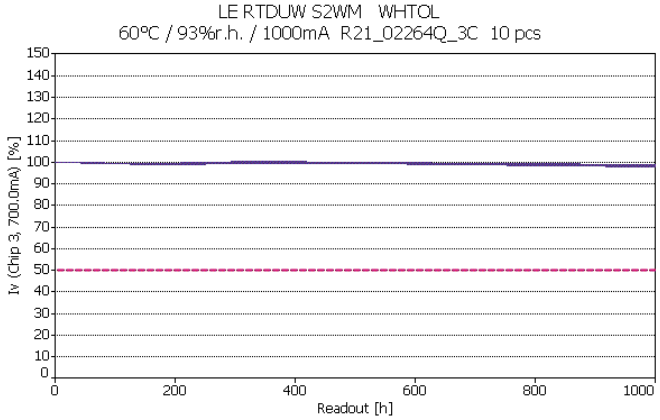


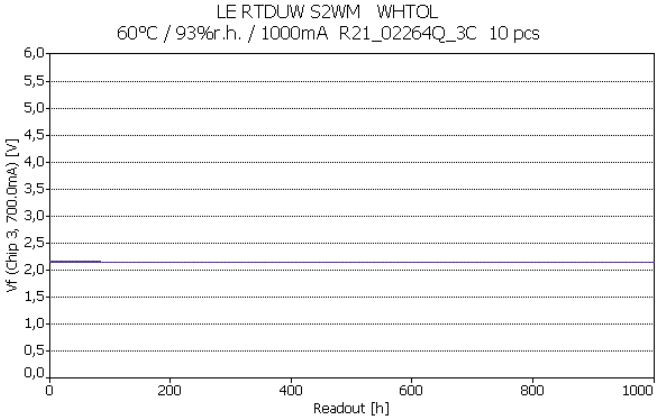


WHTOL 60°C/93%r.H; 1000mA

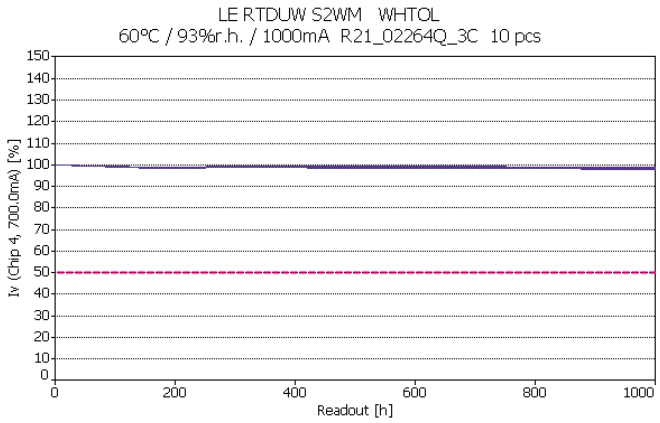
Lot C

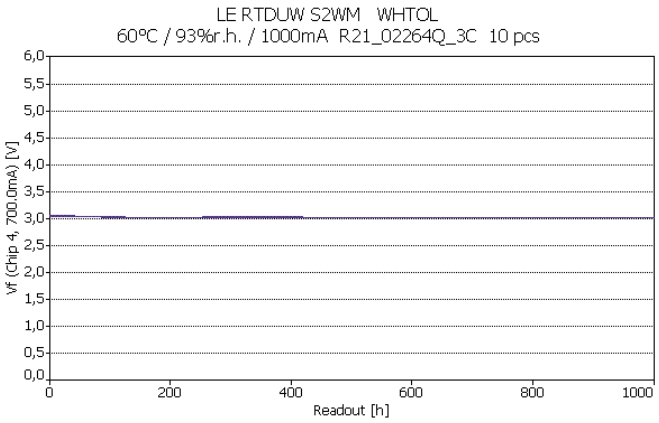
Red chip

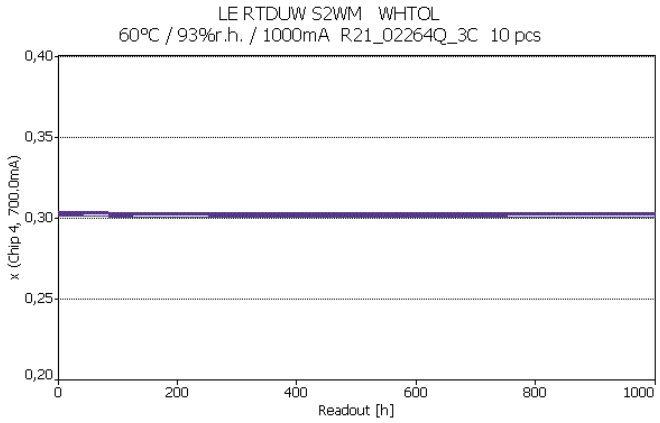


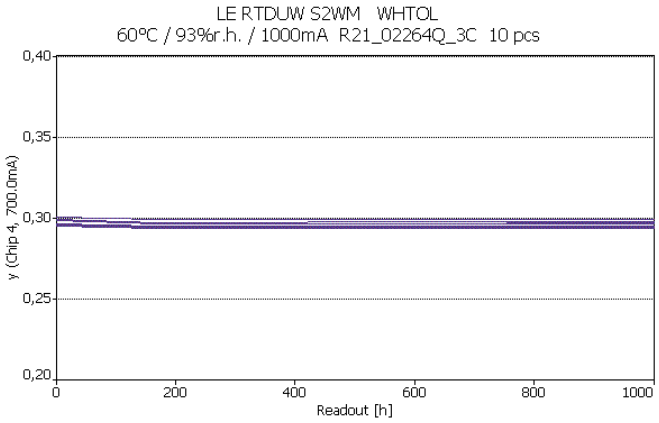


Ultra white chip





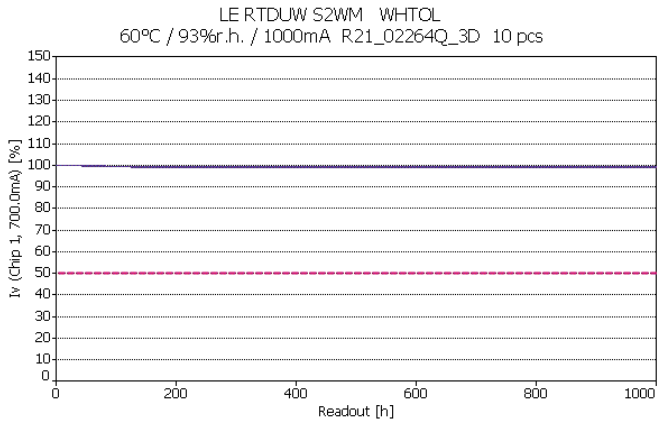


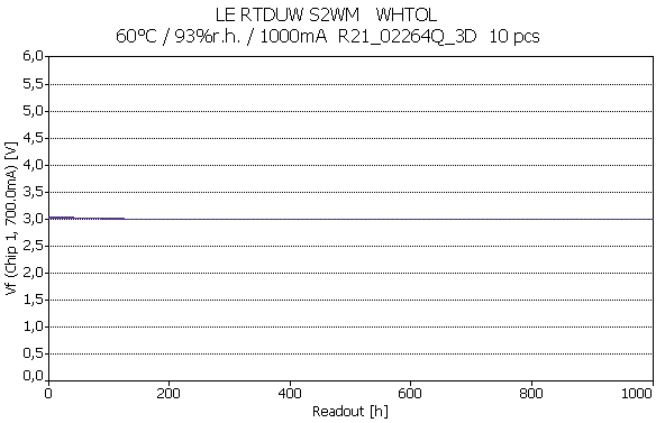


WHTOL 60°C/93%r.H; 1000mA

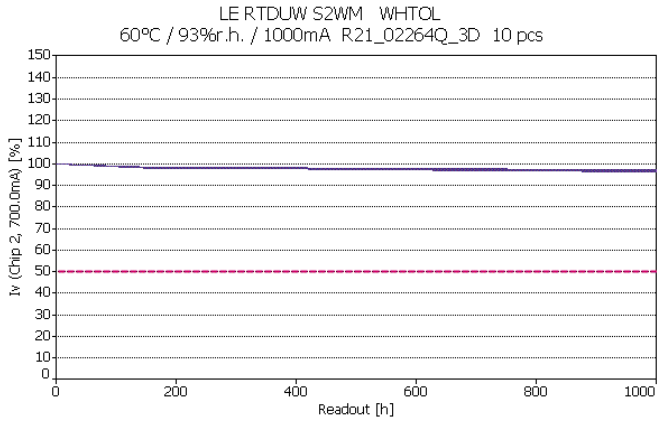
Lot D

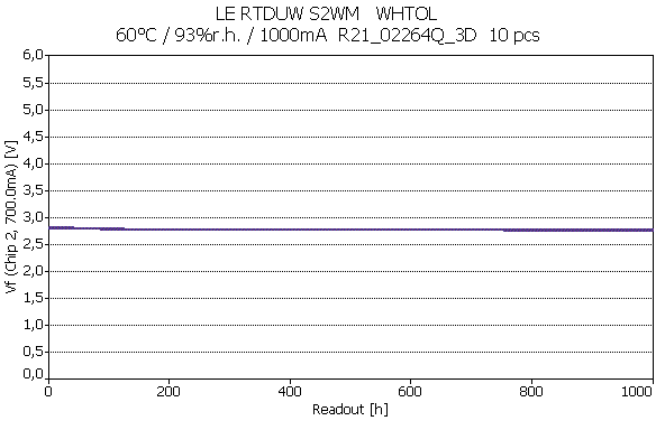
Deep blue chip





True green chip

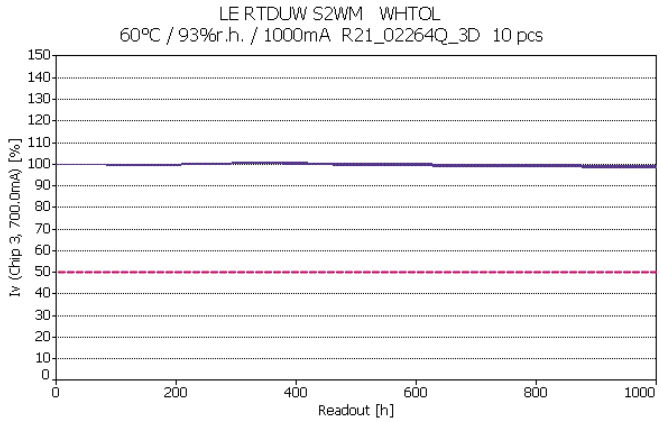


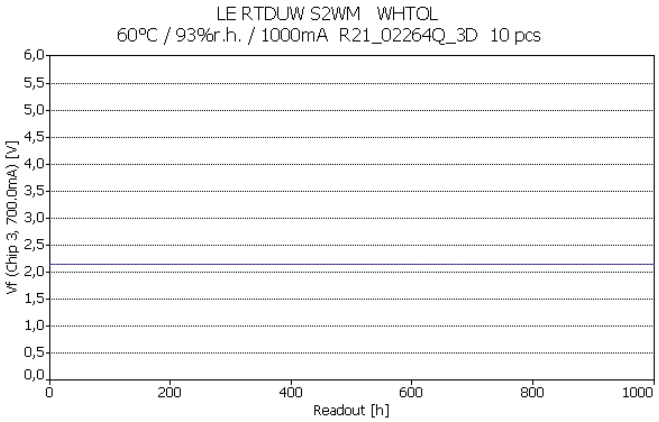


WHTOL 60°C/93%r.H; 1000mA

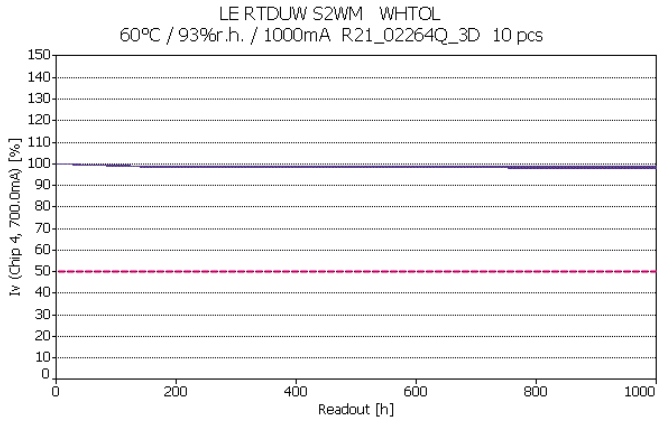
Lot D

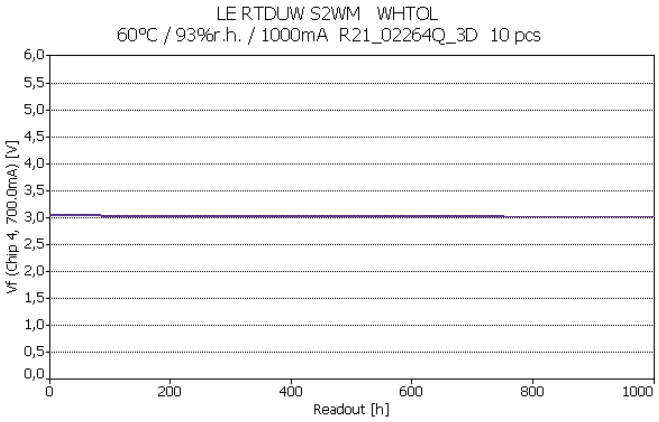
Red chip

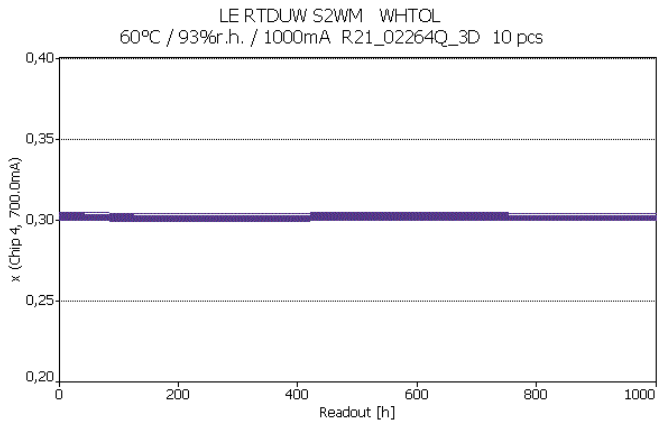


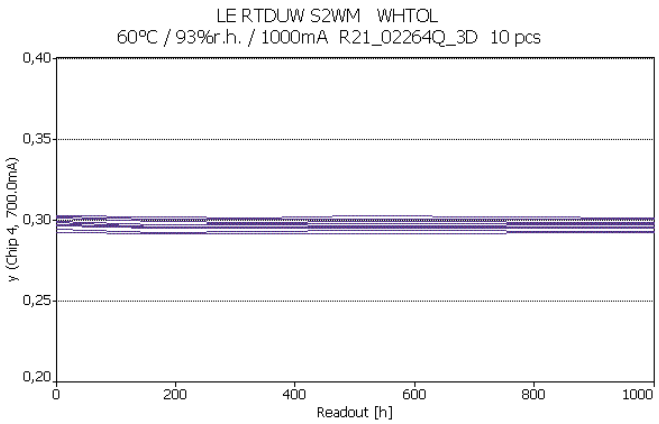


Ultra white chip





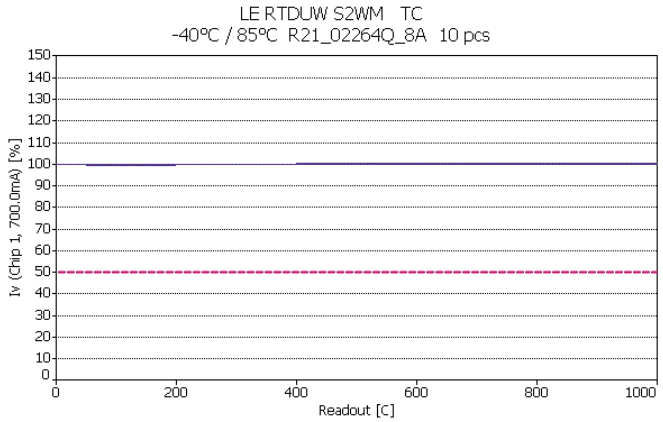


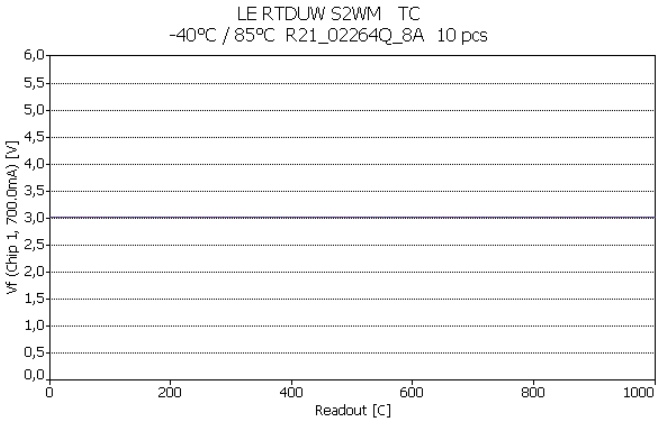


TC -40°C/85°C

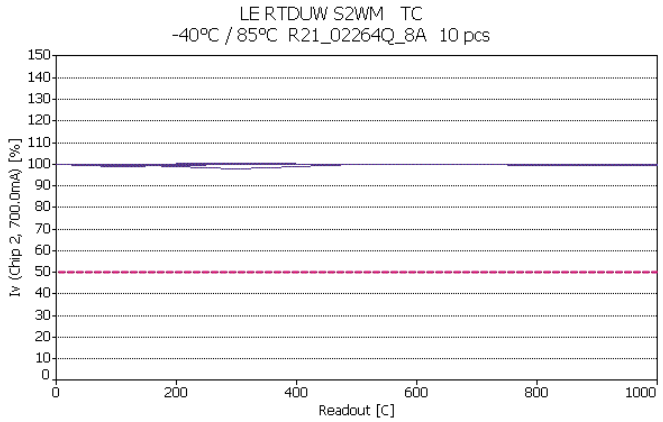
Lot A

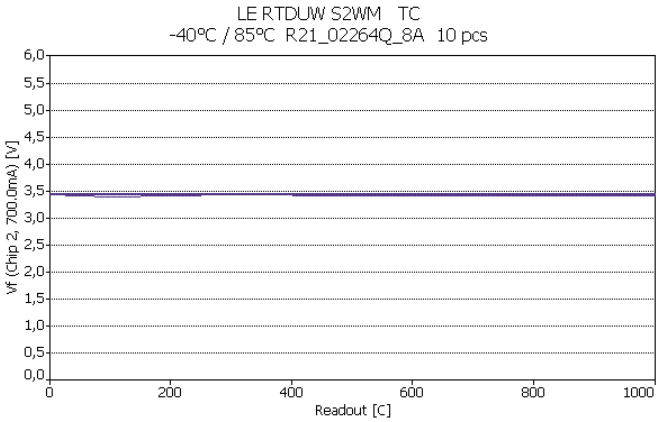
Deep blue chip





True green chip

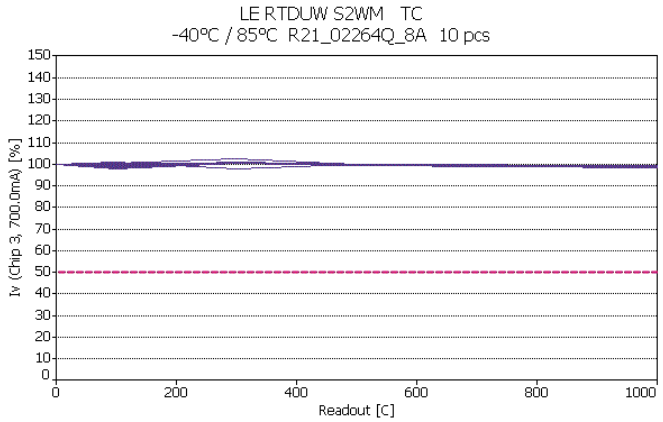


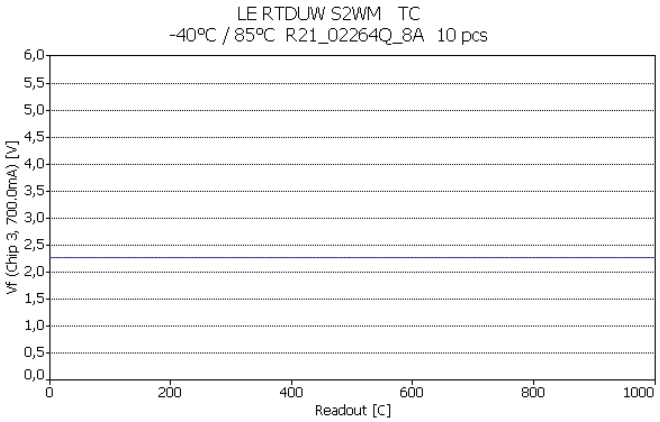


TC -40°C/85°C

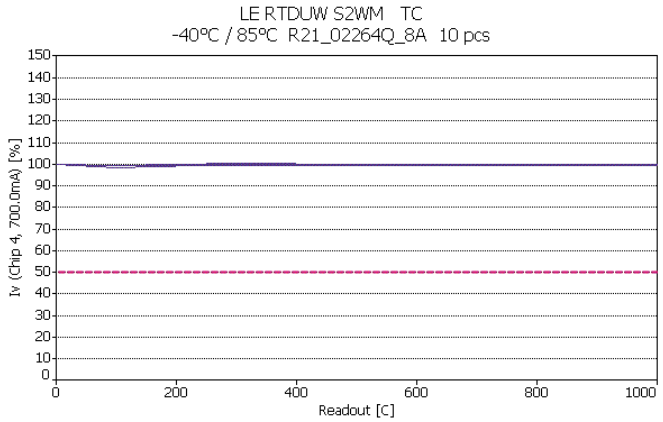
Lot A

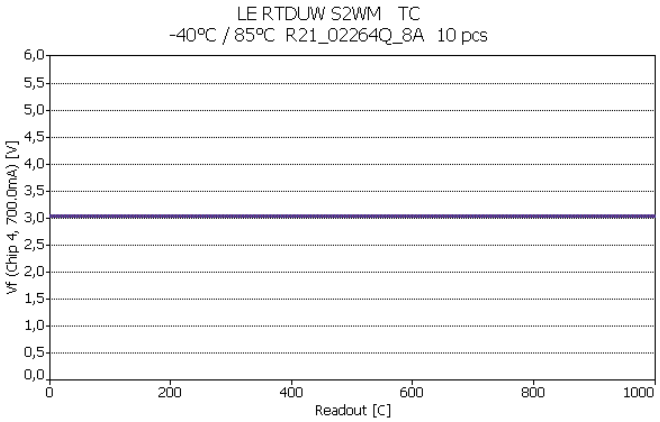
Red chip

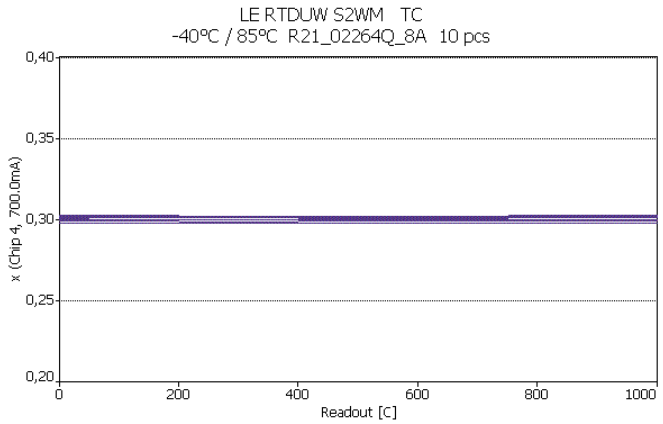


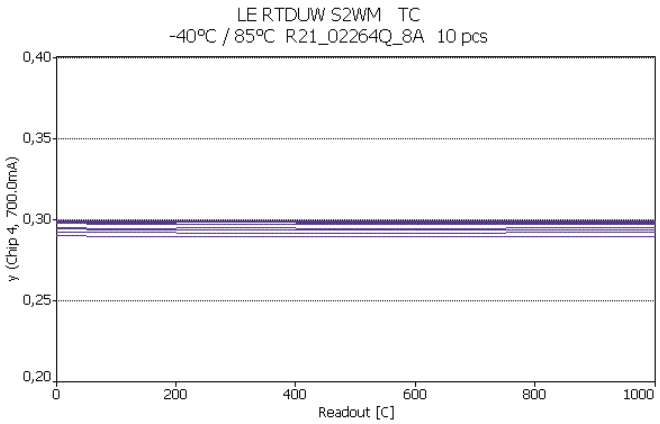


Ultra white chip





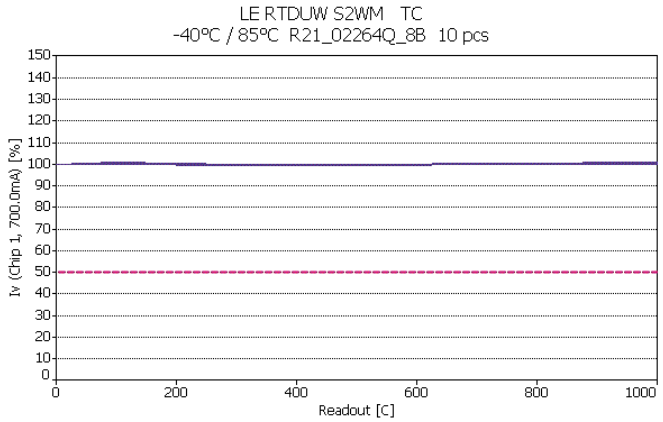


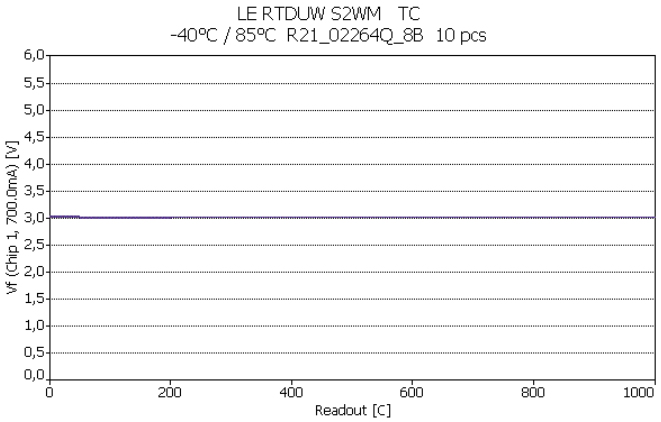


TC -40°C/85°C

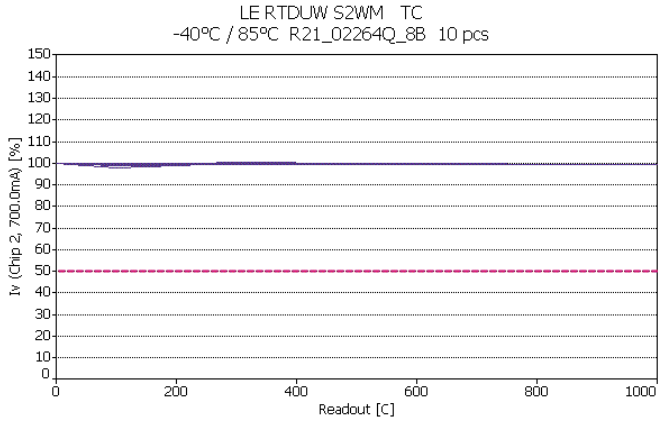
Lot B

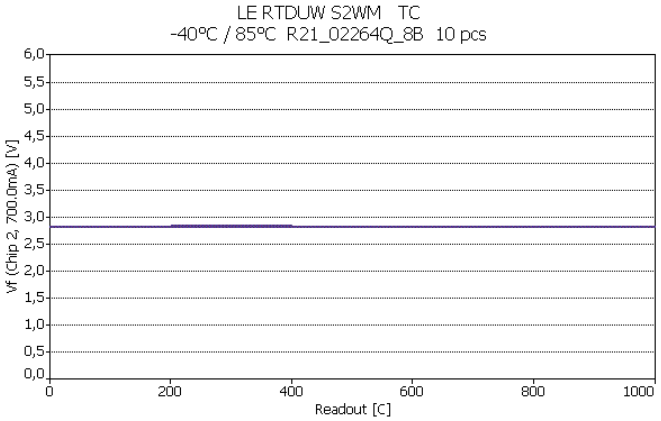
Deep blue chip





True green chip

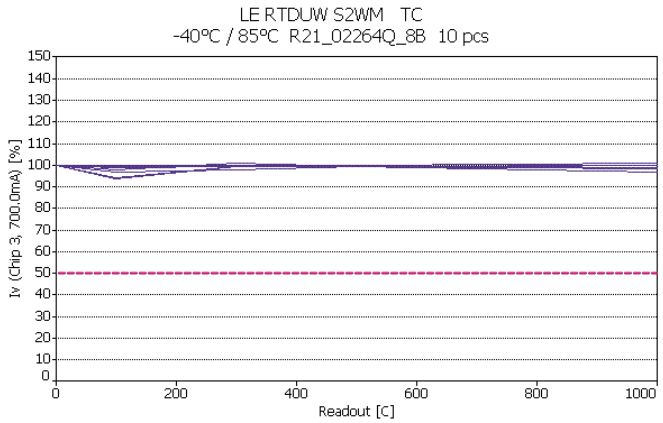


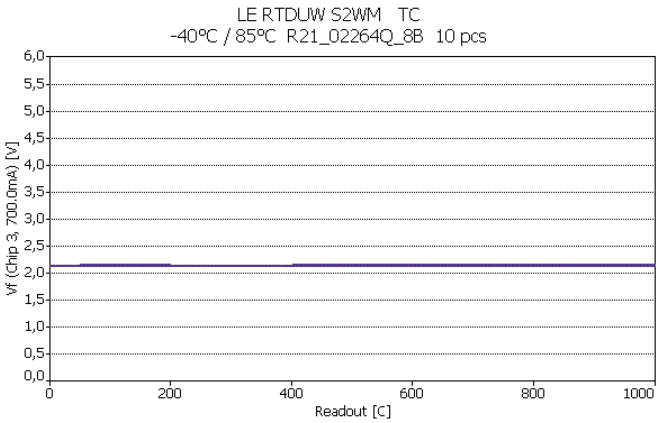


TC -40°C/85°C

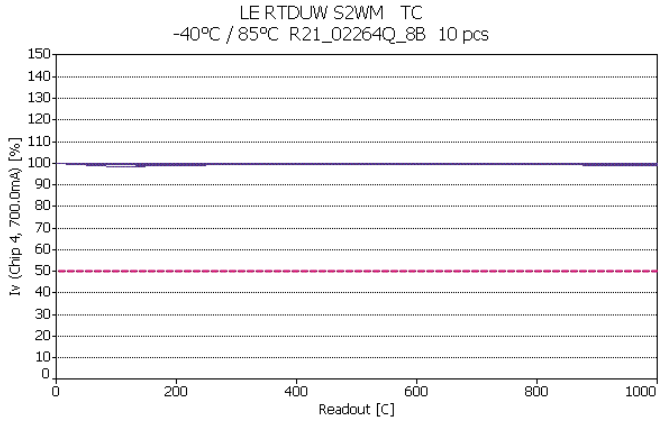
Lot B

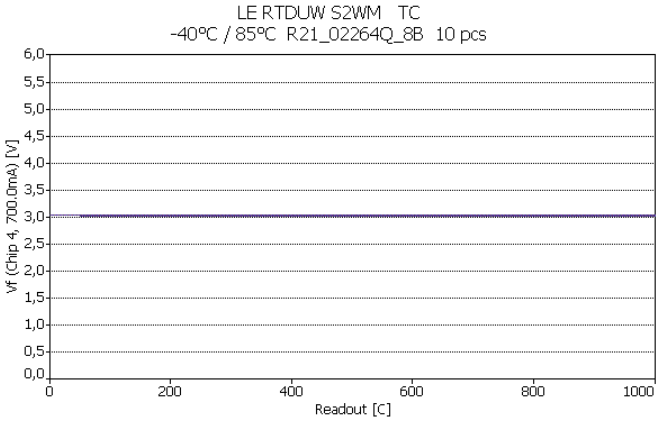
Red chip

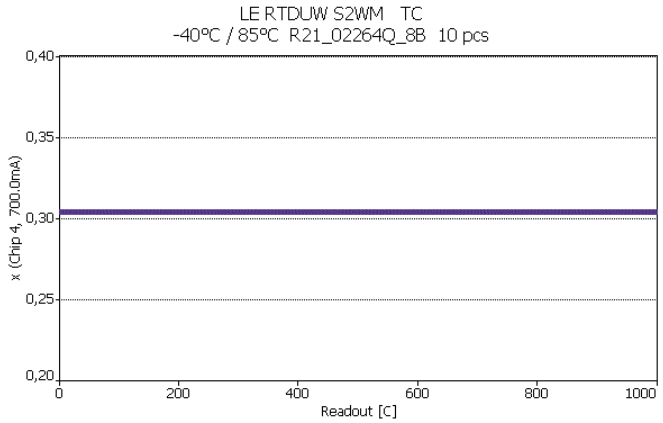


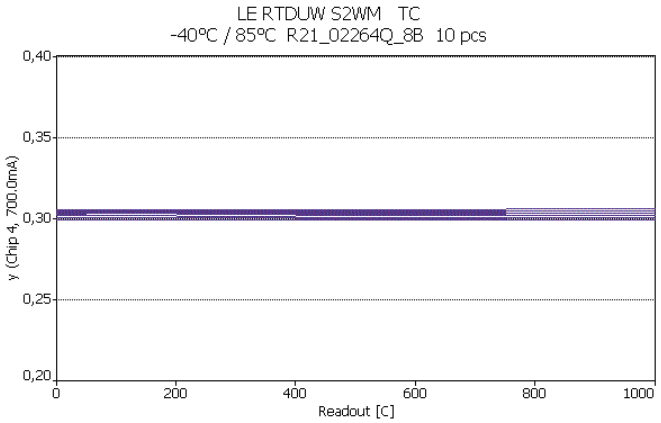


Ultra white chip





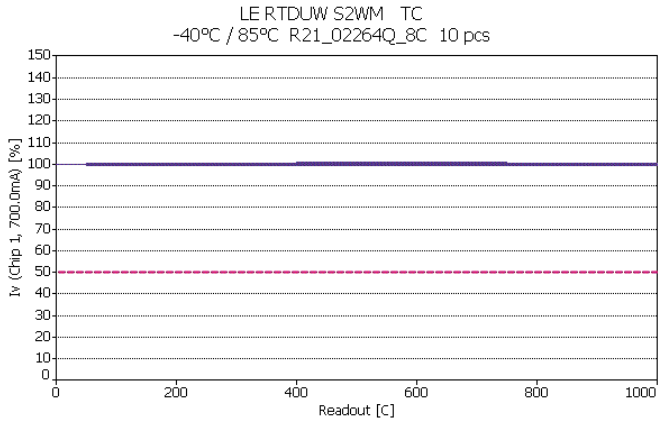


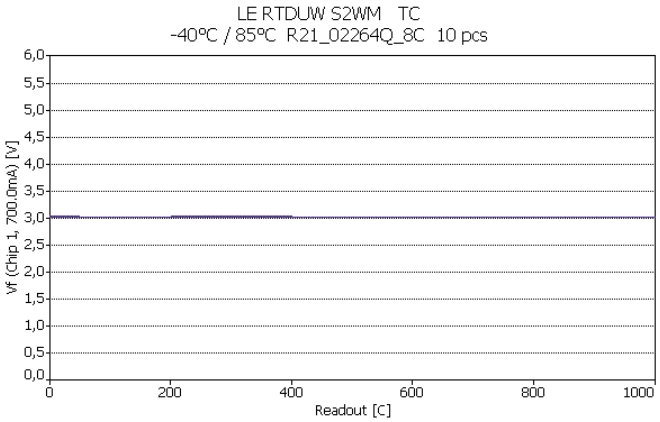


TC -40°C/85°C

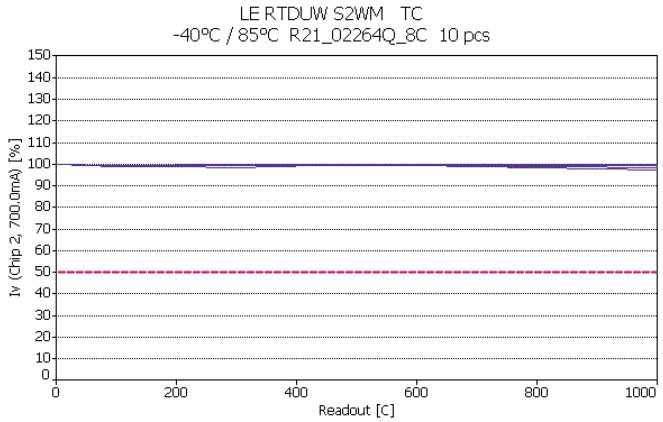
Lot C

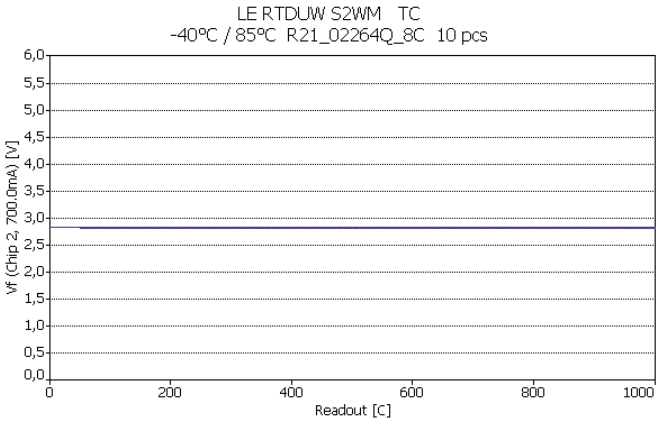
Blue deep chip





True green chip

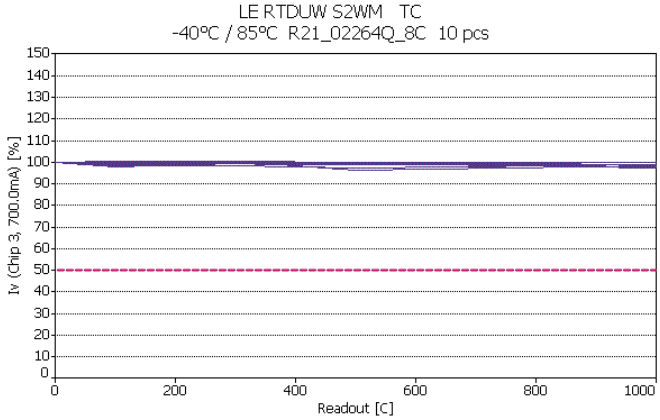


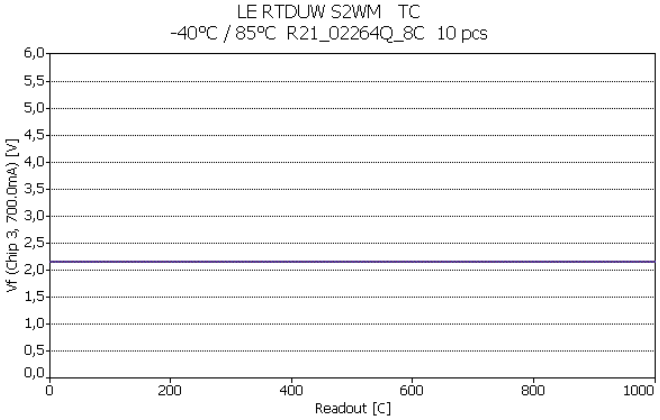


TC -40°C/85°C

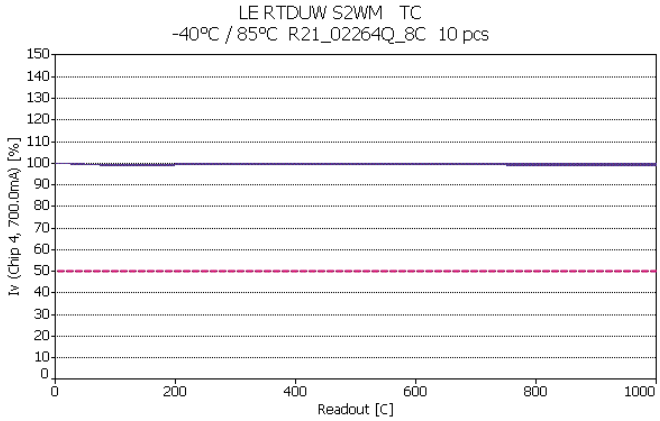
Lot C

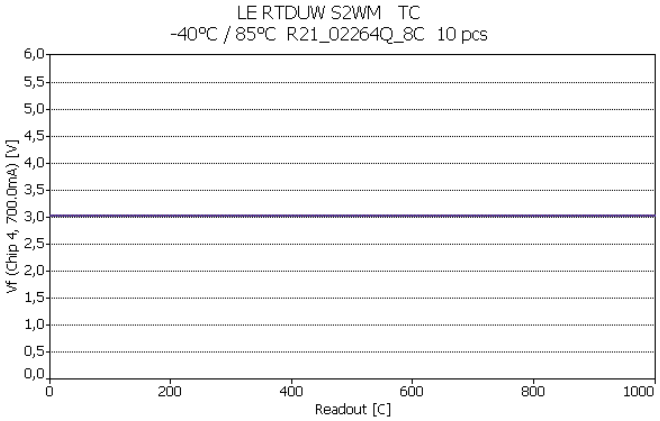
Red chip

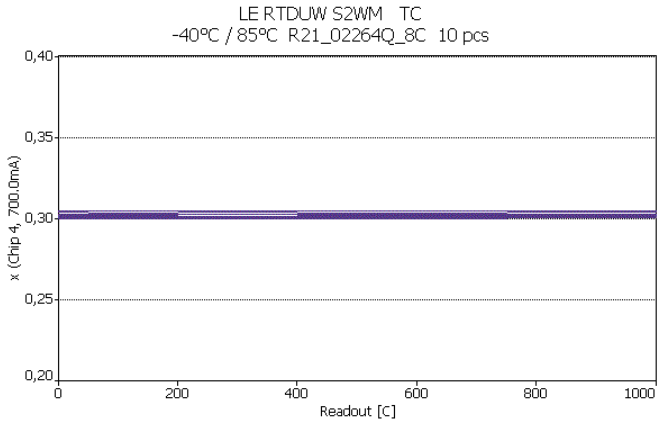


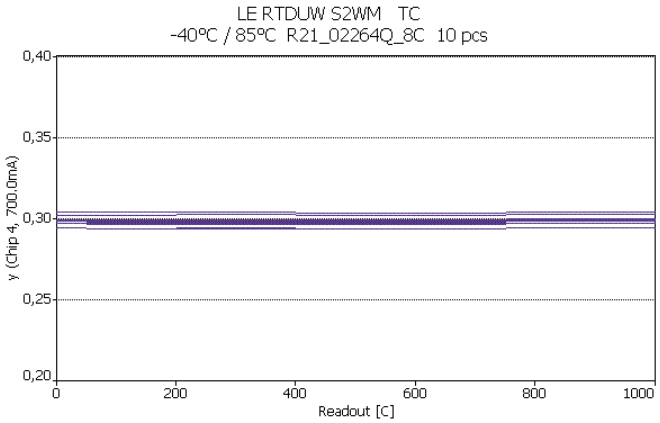


Ultra white chip





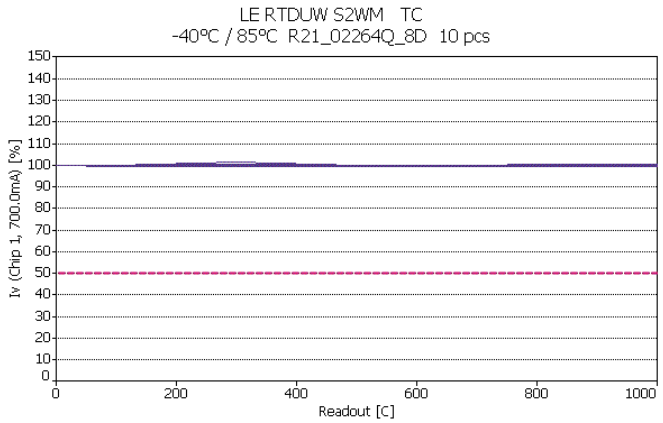


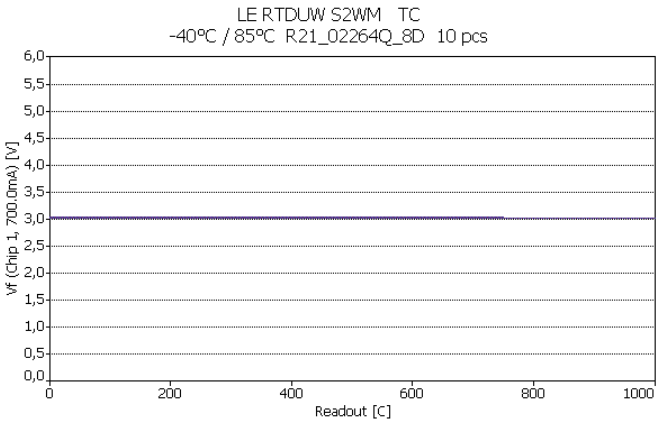


TC -40°C/85°C

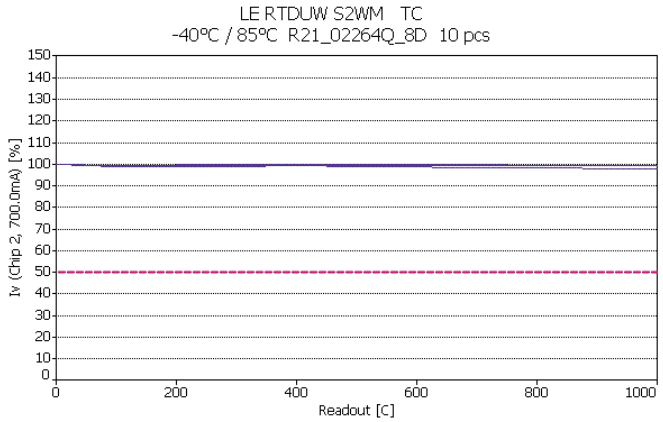
Lot D

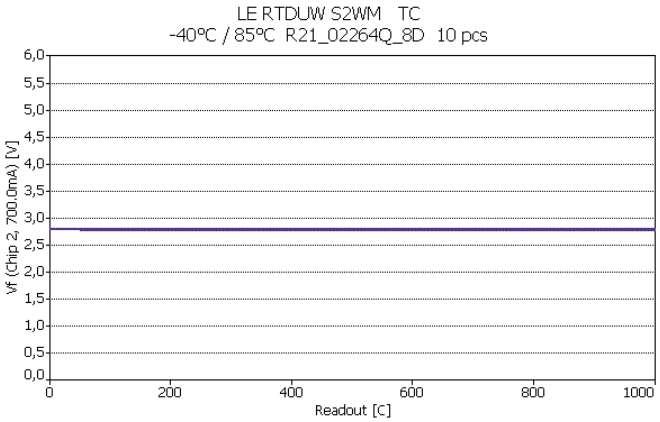
Deep blue chip





True green chip

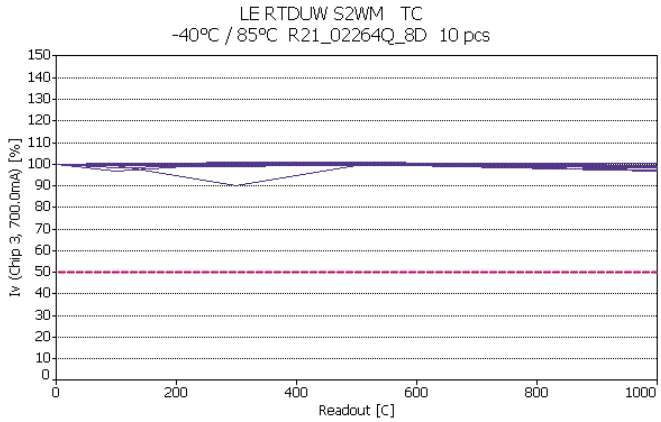


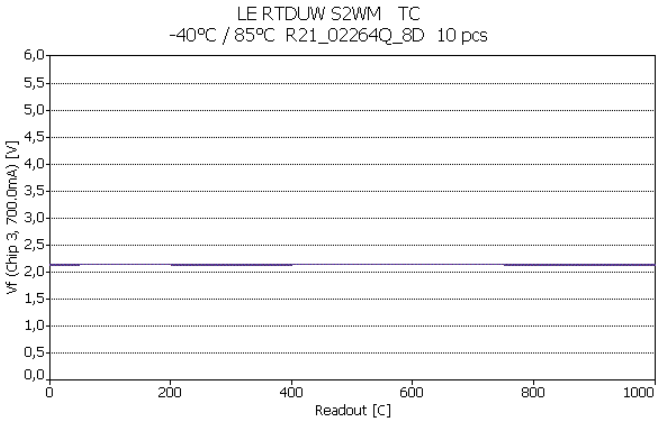


TC -40°C/85°C

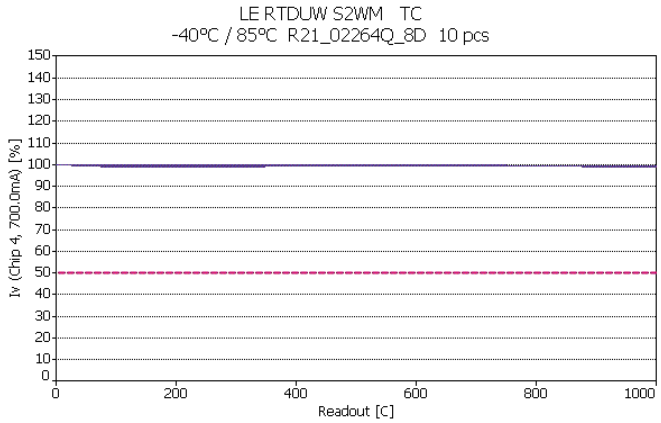
Lot D

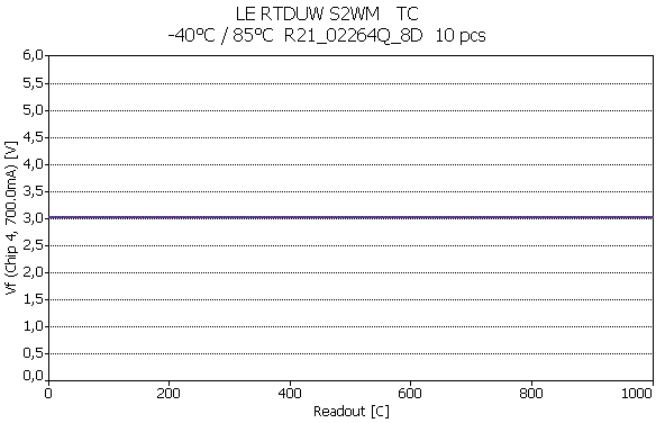
Red chip

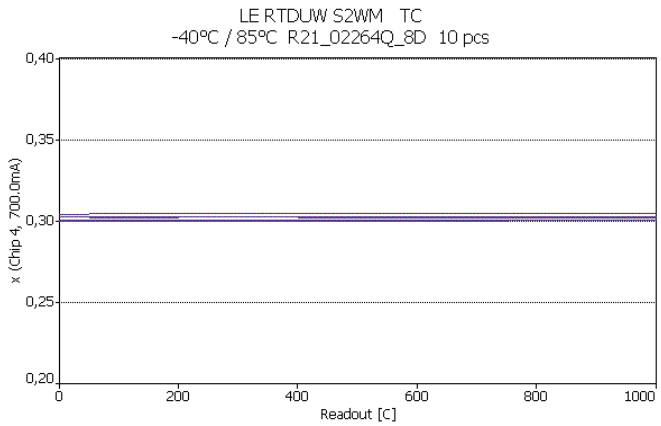


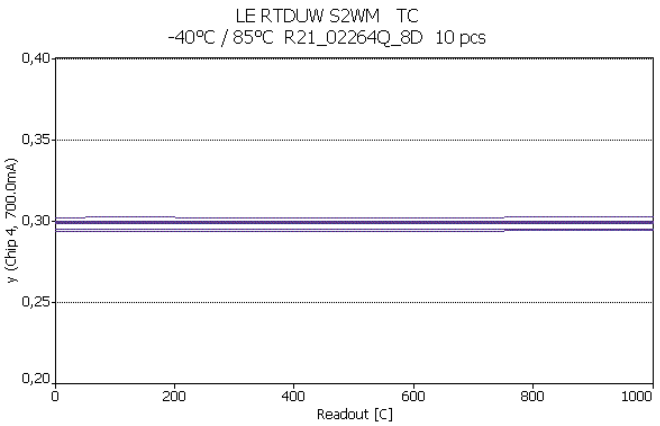


Ultra white chip





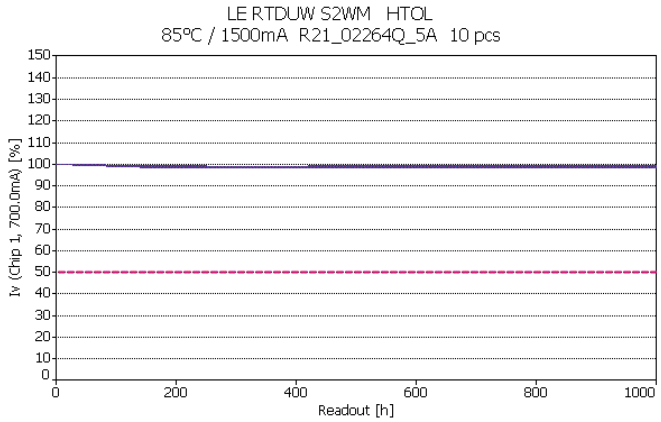


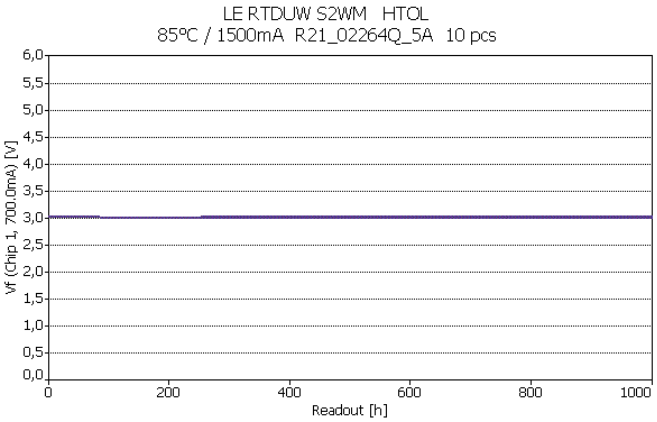


HTOL 85°C/1500mA

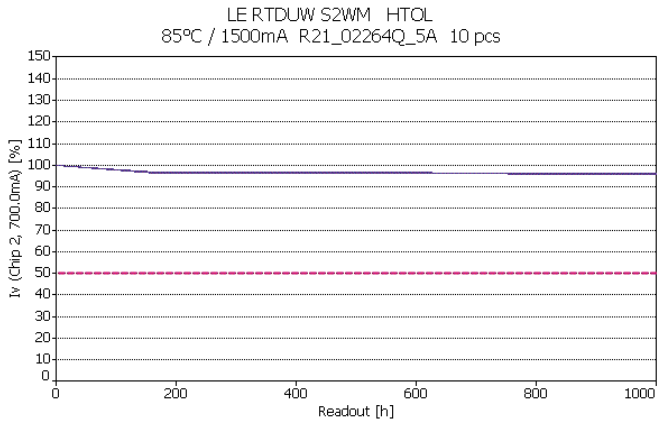
Lot A

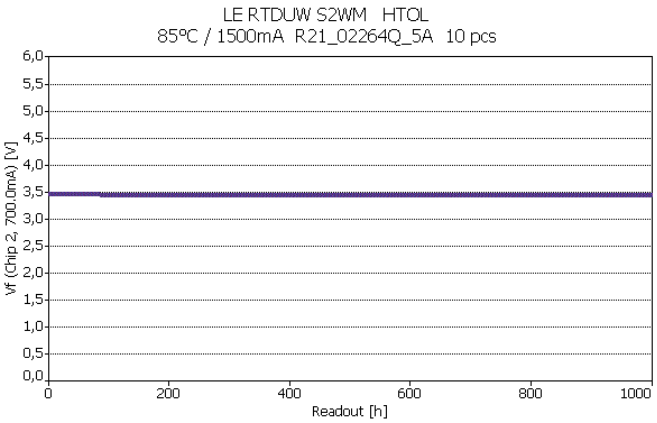
Deep blue chip





True green chip

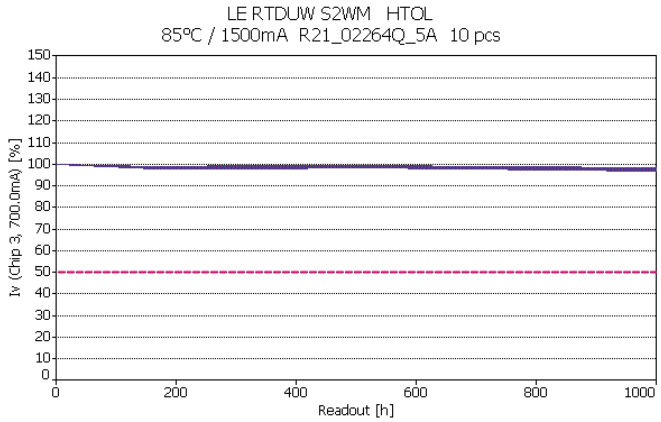


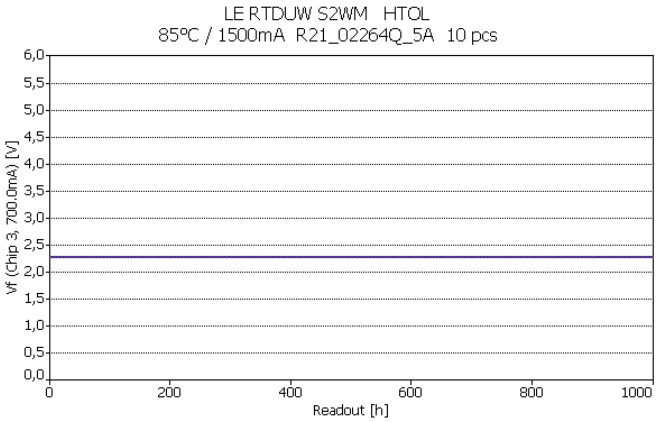


HTOL 85°C/1500mA

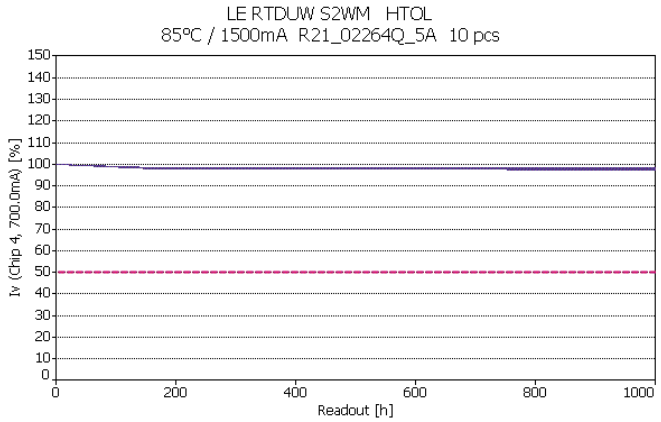
Lot A

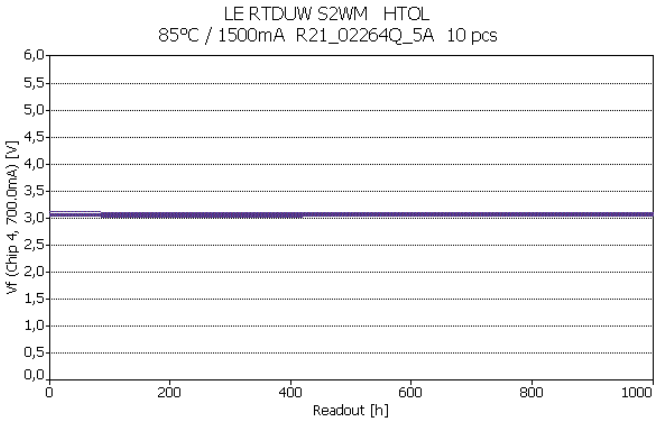
Red chip

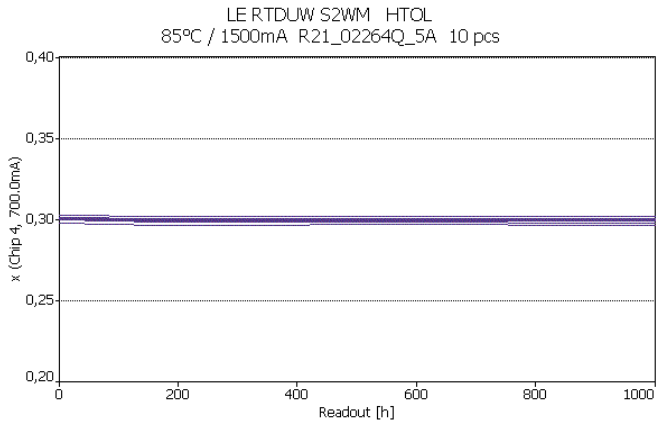


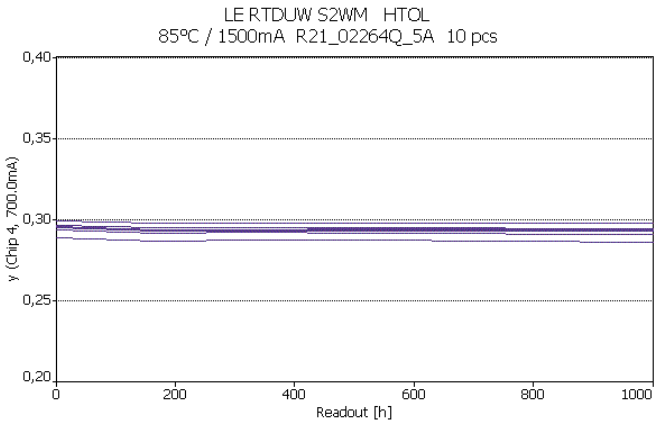


Ultra white chip





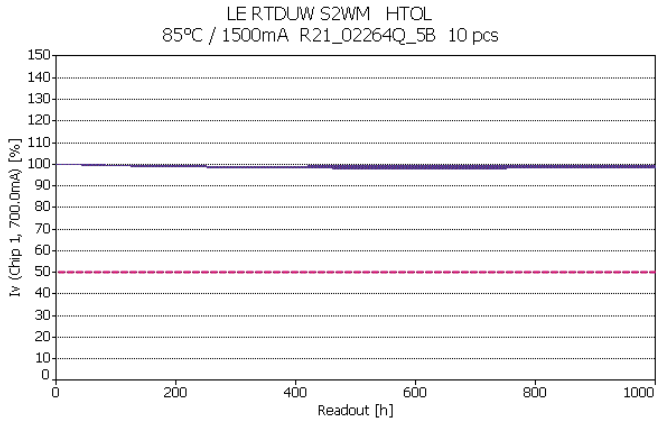


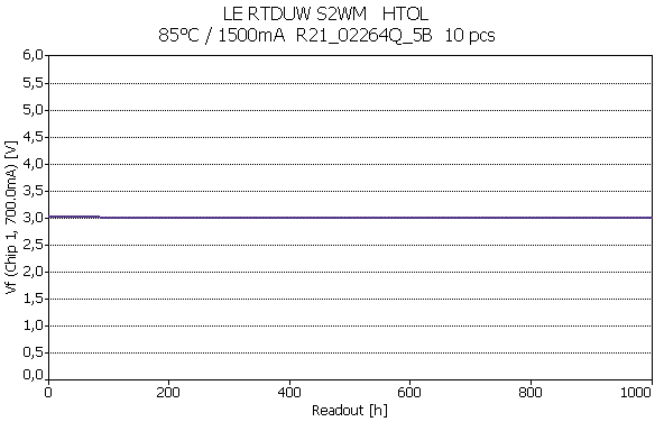


HTOL 85°C/1500mA

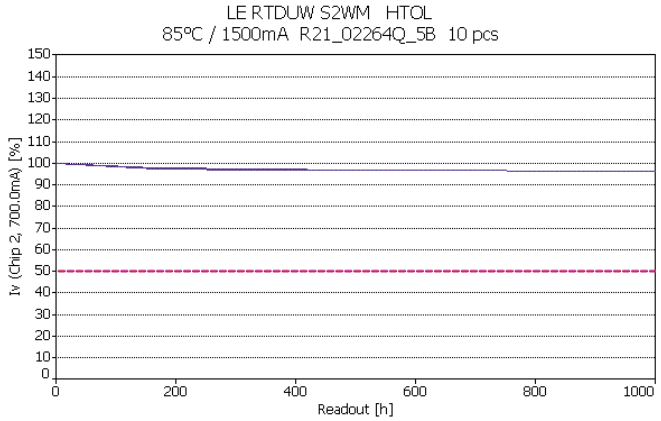
Lot B

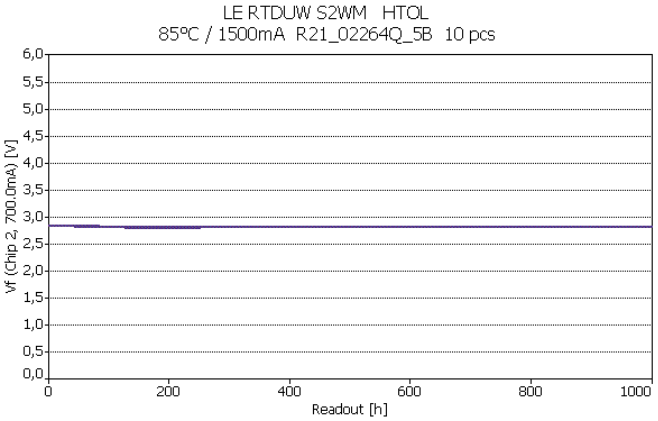
Deep blue chip





True green chip

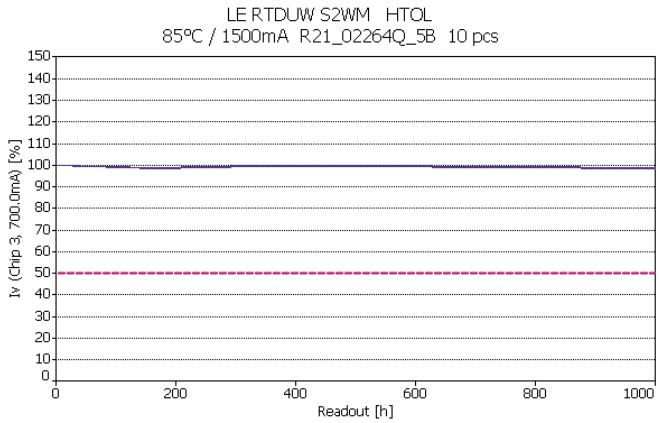


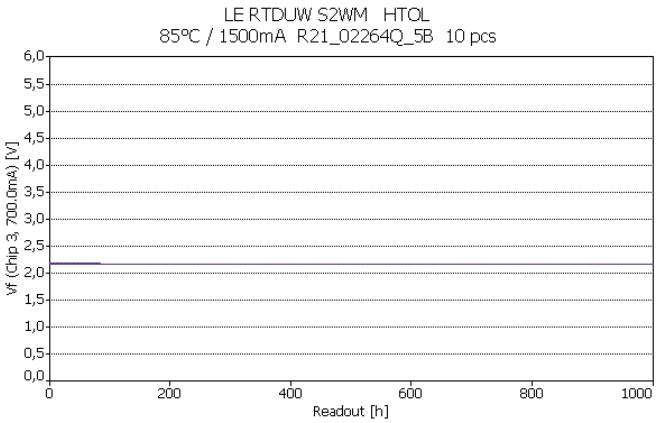


HTOL 85°C/1500mA

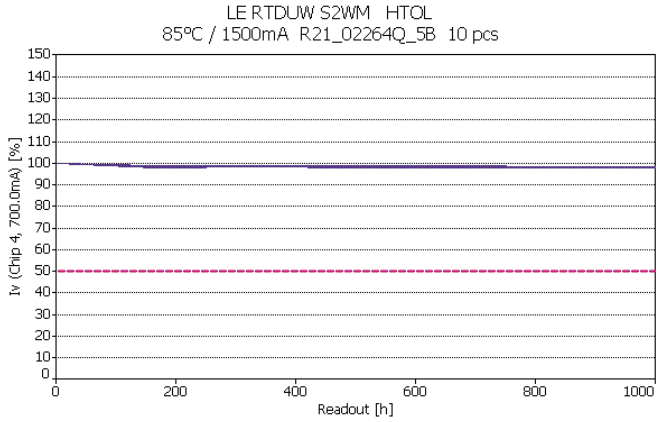
Lot B

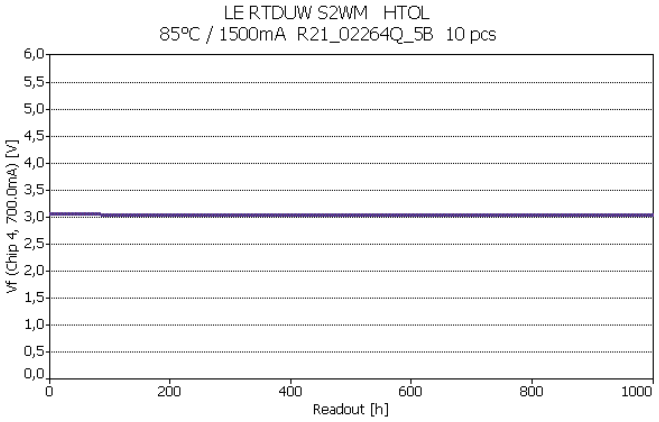
Red chip

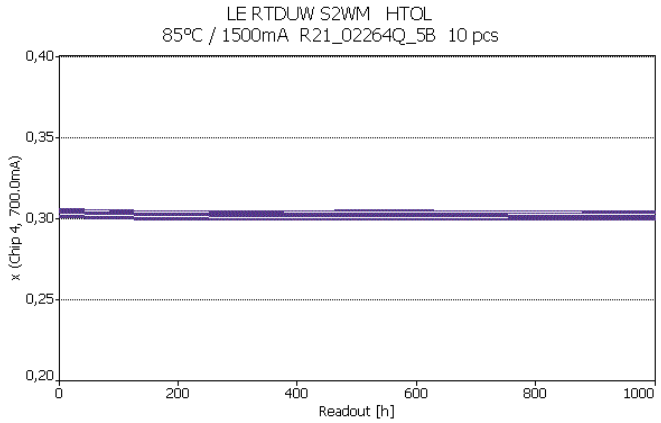


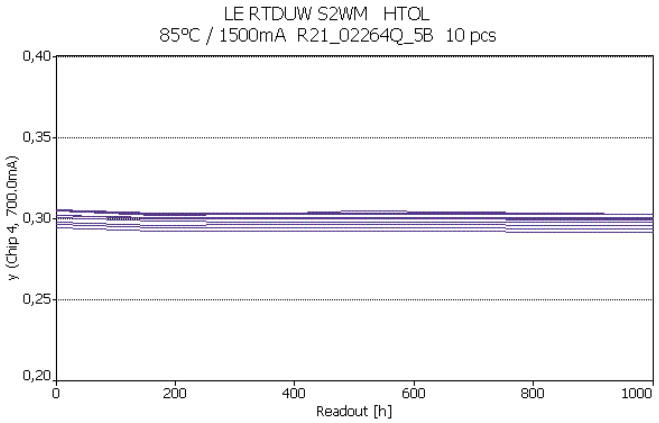


Ultra white chip





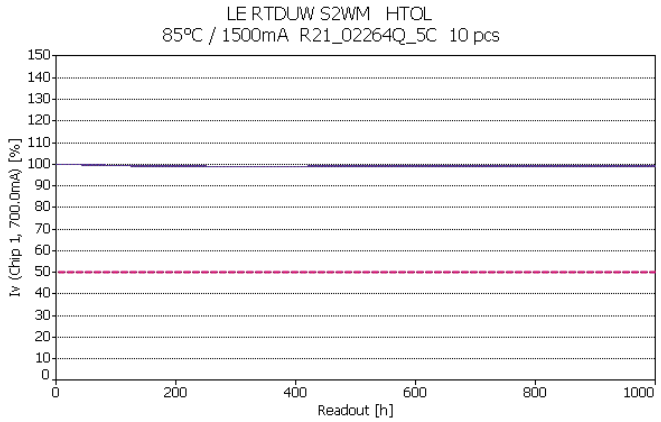


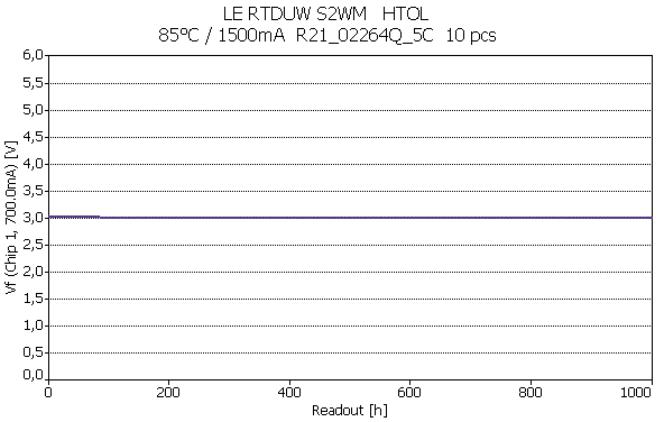


HTOL 85°C/1500mA

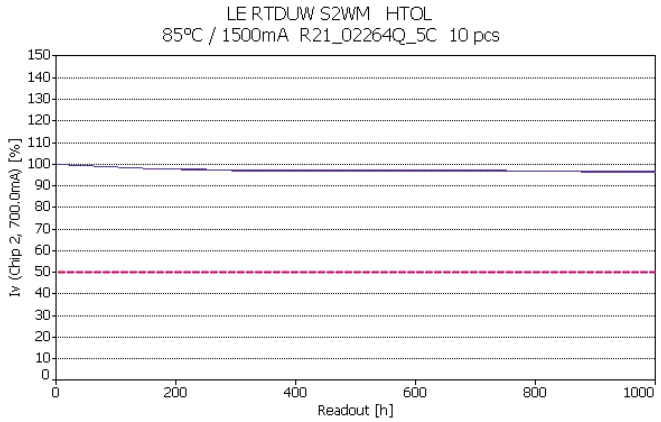
Lot C

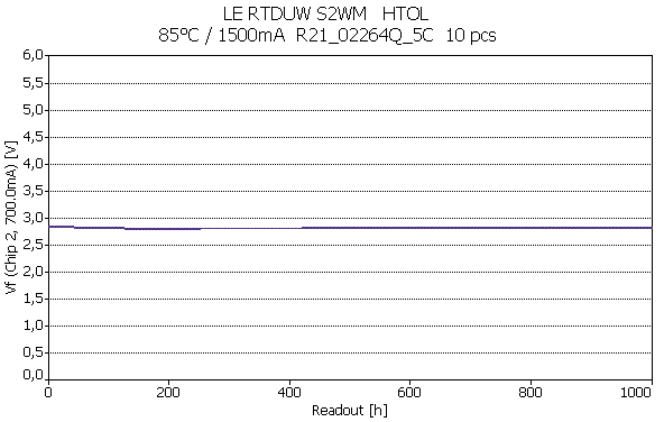
Blue deep chip





True green chip

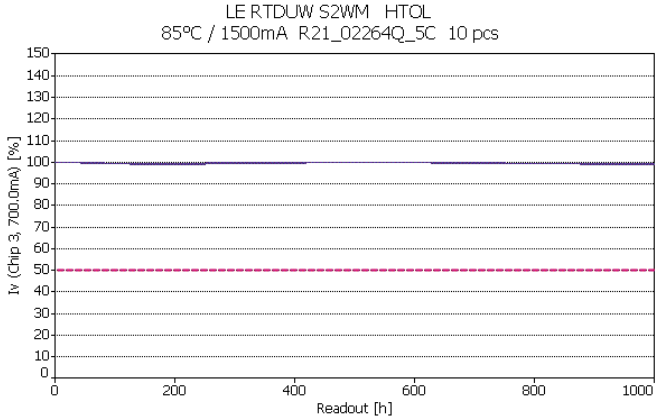


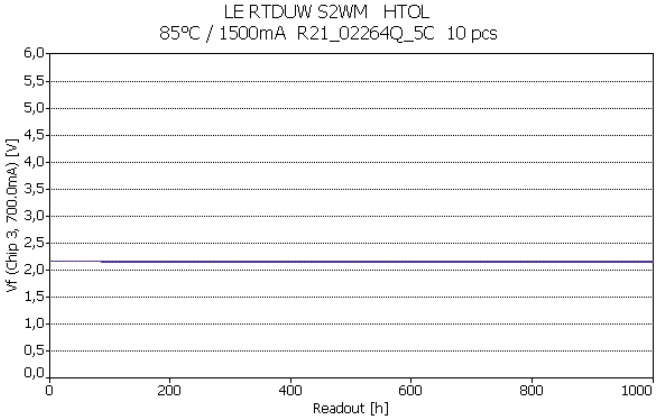


HTOL 85°C/1500mA

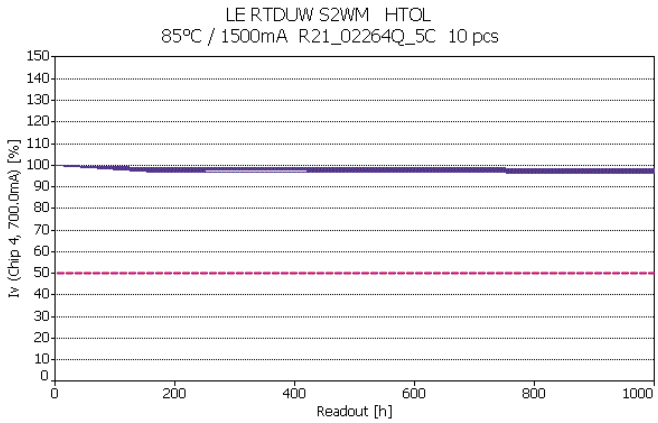
Lot C

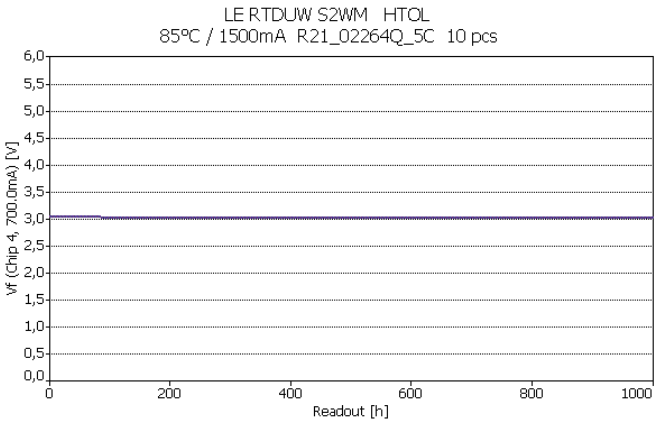
Red chip

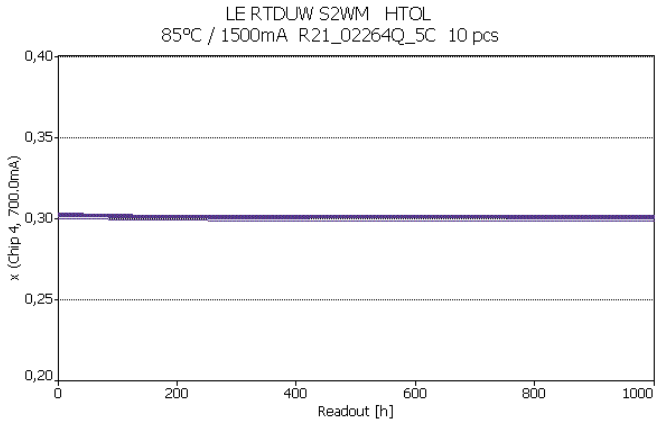


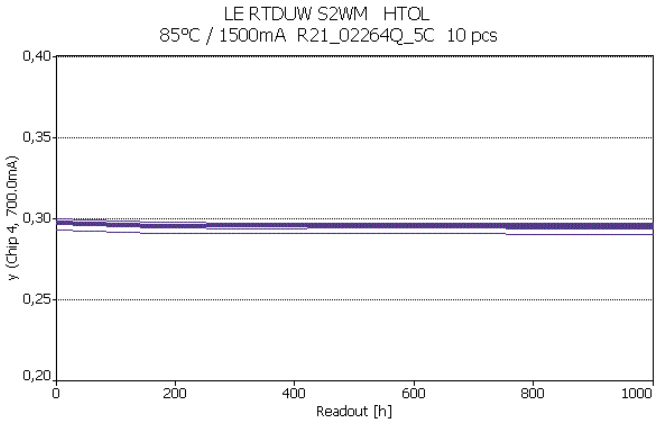


Ultra white chip





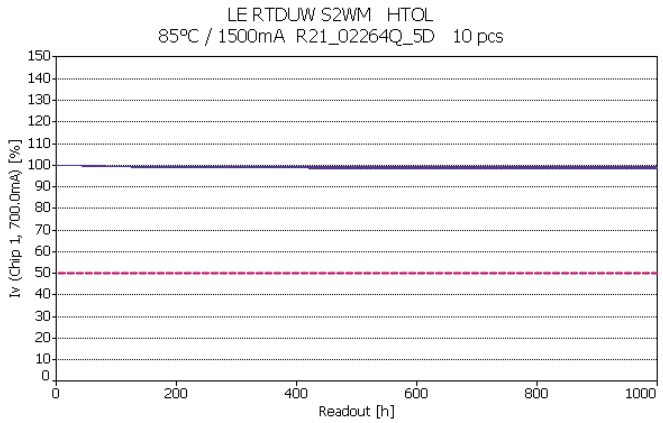


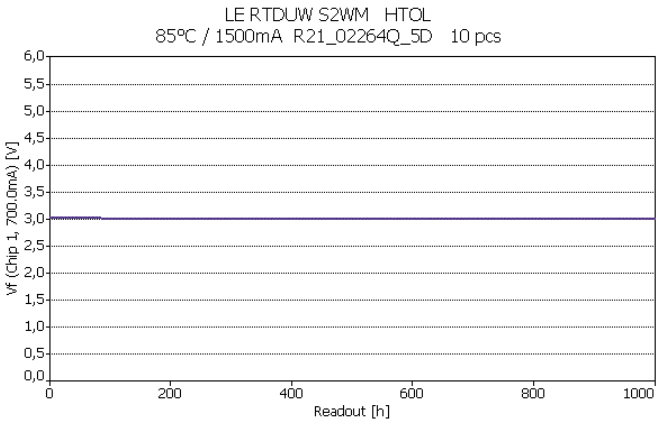


HTOL 85°C/1500mA

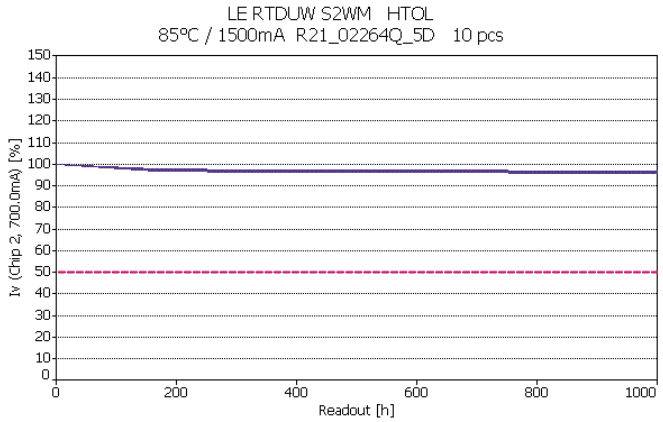
Lot D

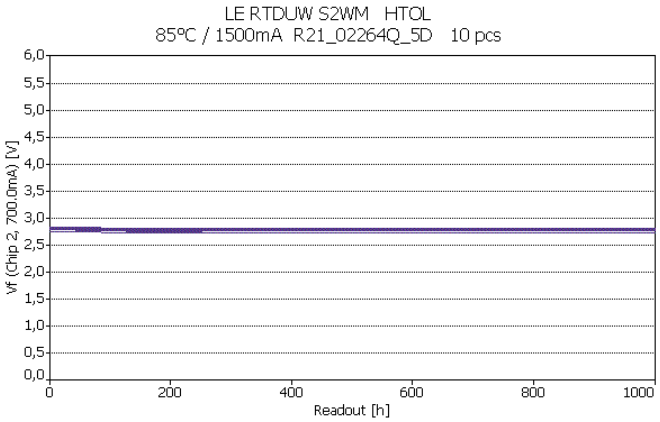
Deep blue chip





True green chip

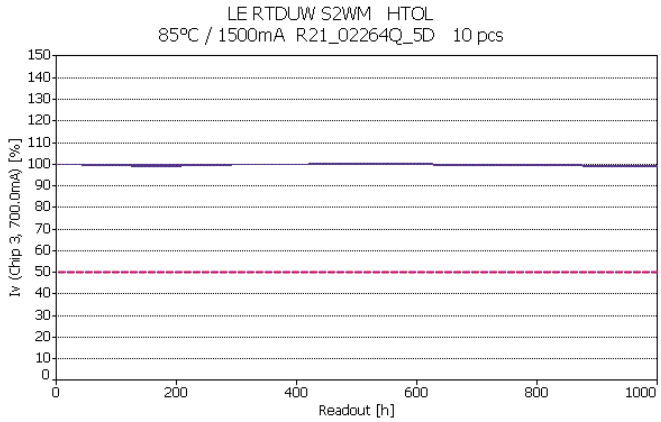


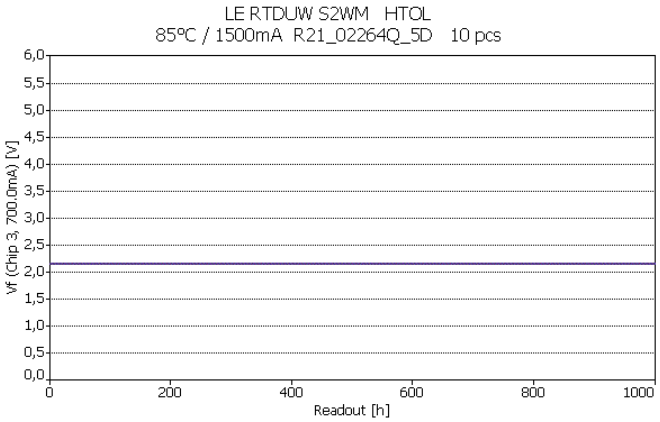


HTOL 85°C/1500mA

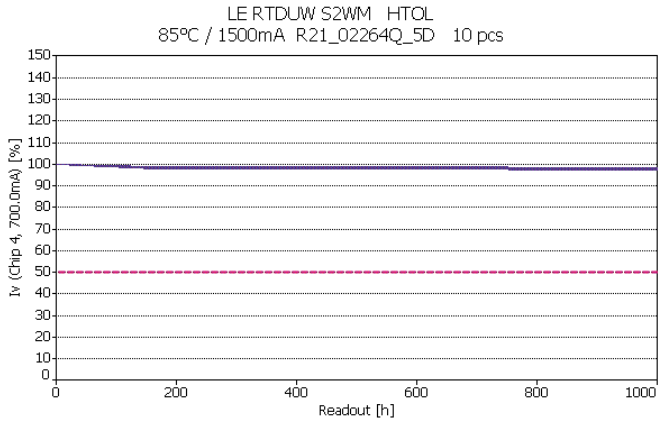
Lot D

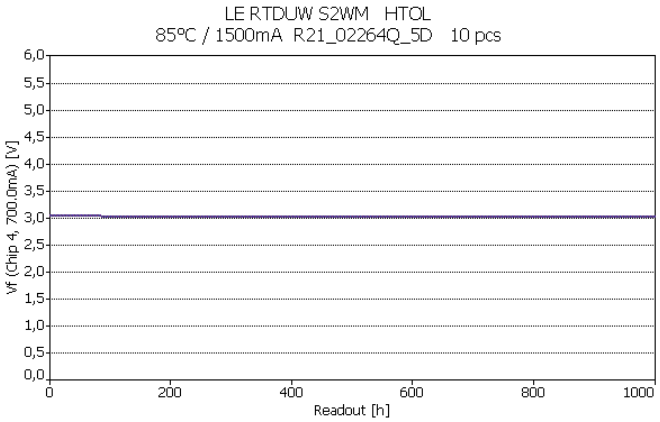
Red chip

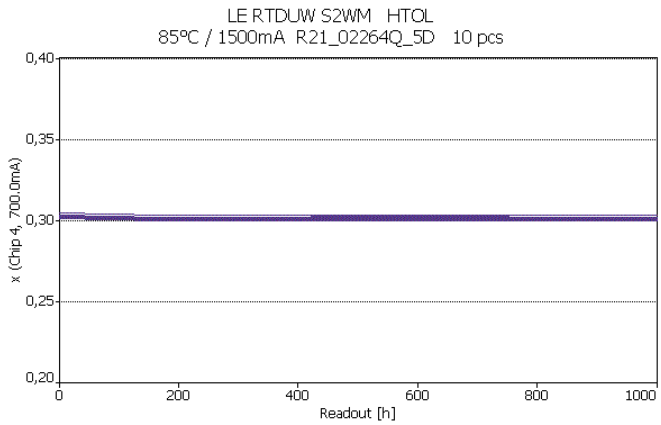


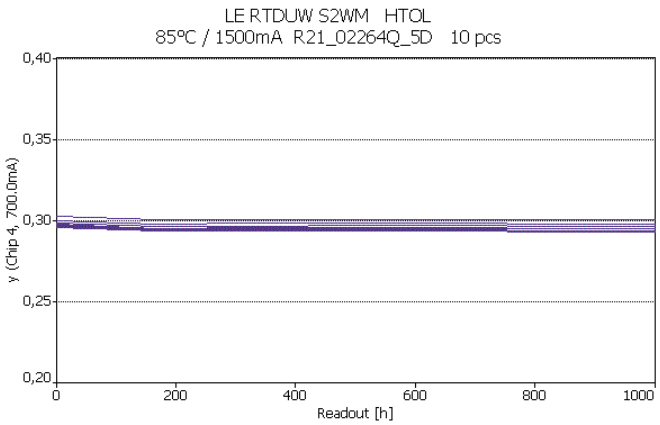


Ultra white chip





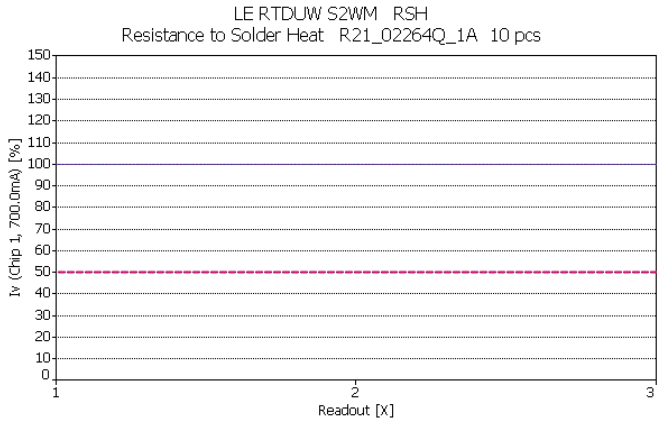




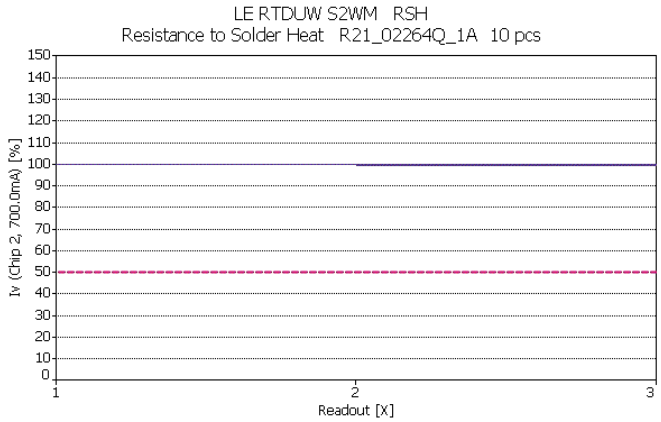
RSH Resistance to Solder Heat

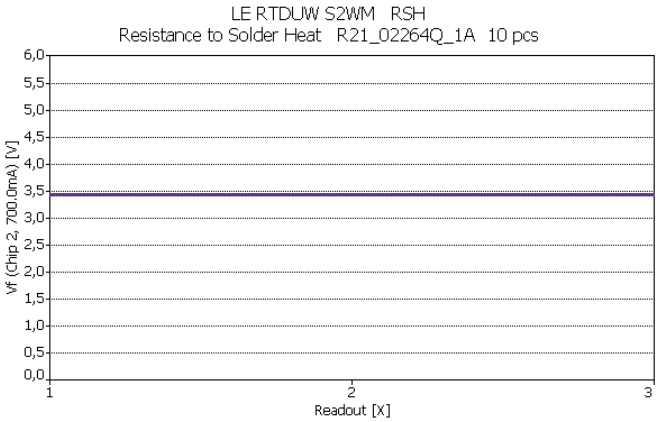
Lot A

Deep blue chip



True green chip

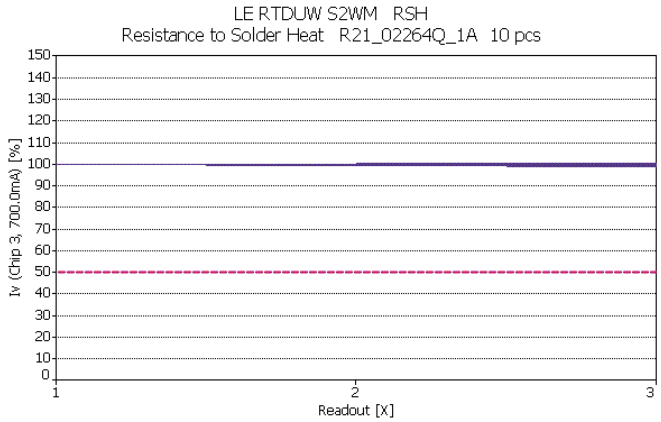


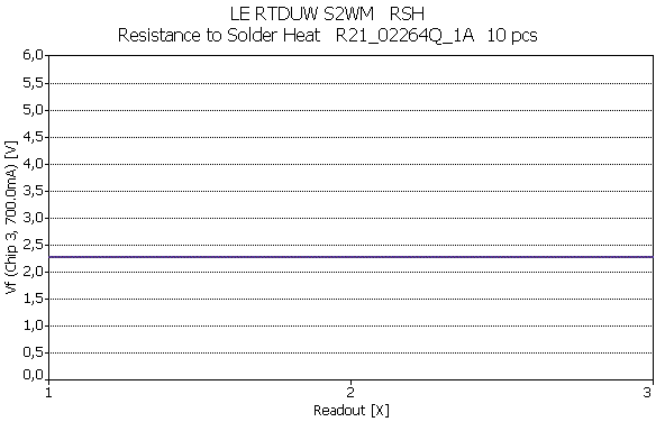


RSH Resistance to Solder Heat

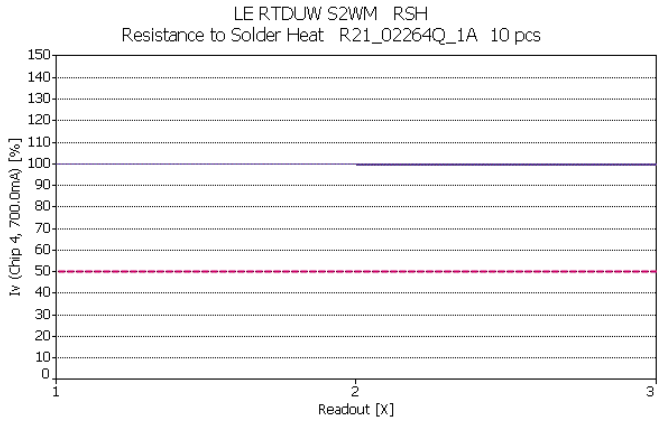
Lot A

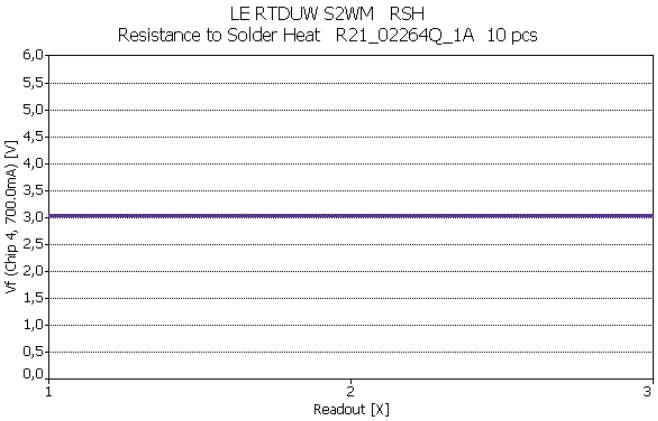
Red chip

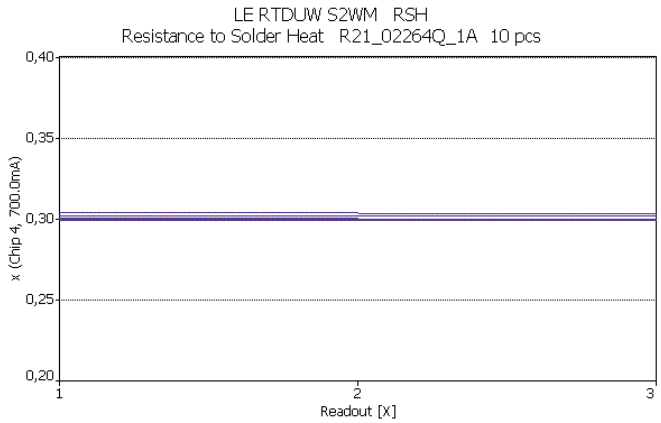


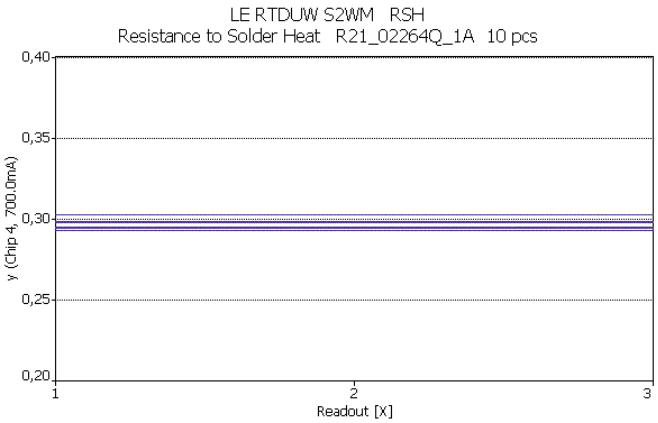


Ultra white chip







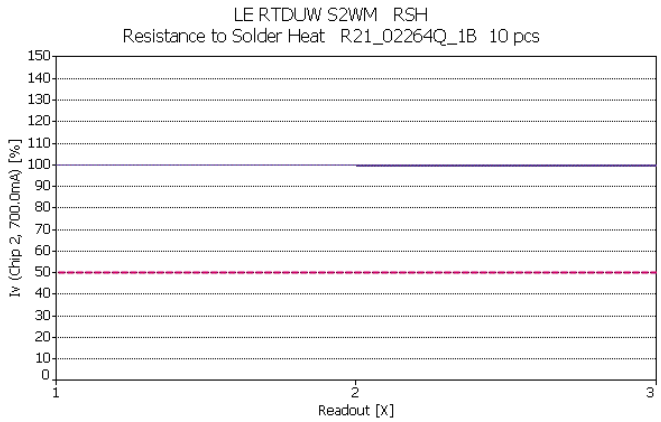


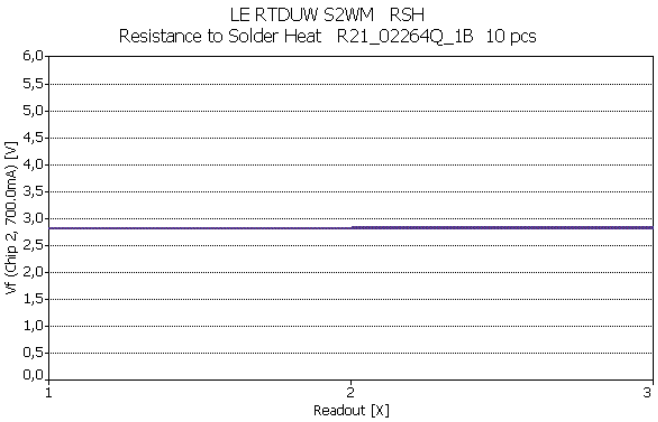
RSH Resistance to Solder Heat

Lot B

Deep blue chip

True green chip

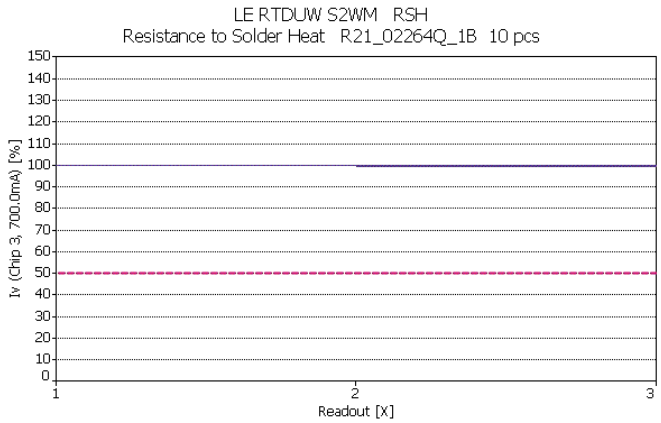




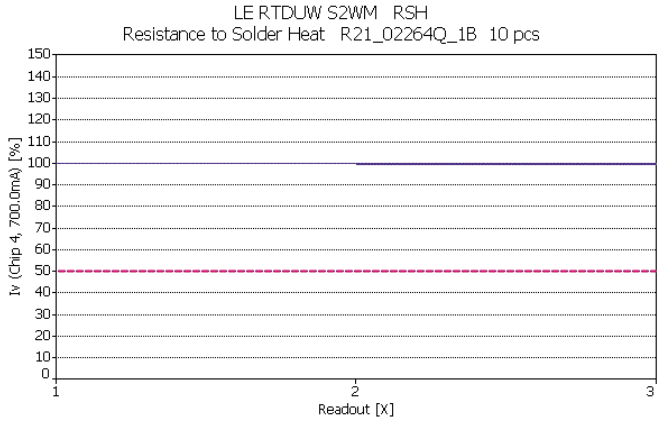
RSH Resistance to Solder Heat

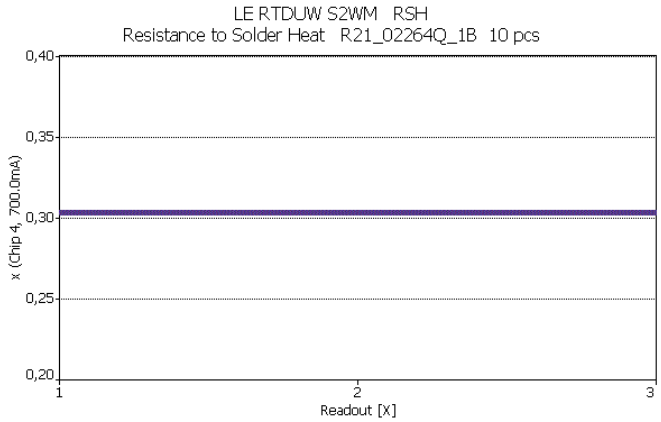
Lot B

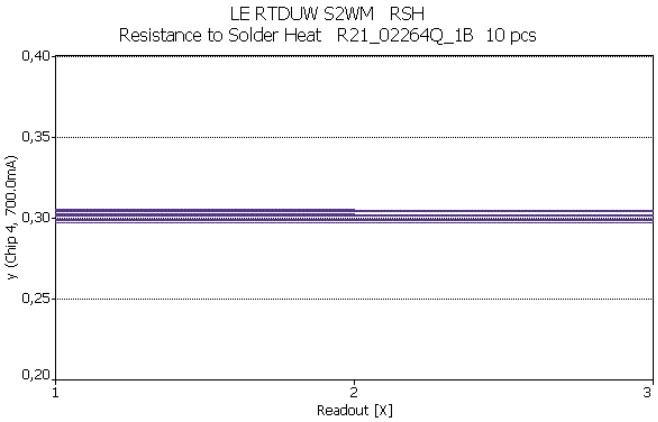
Red chip



Ultra white chip



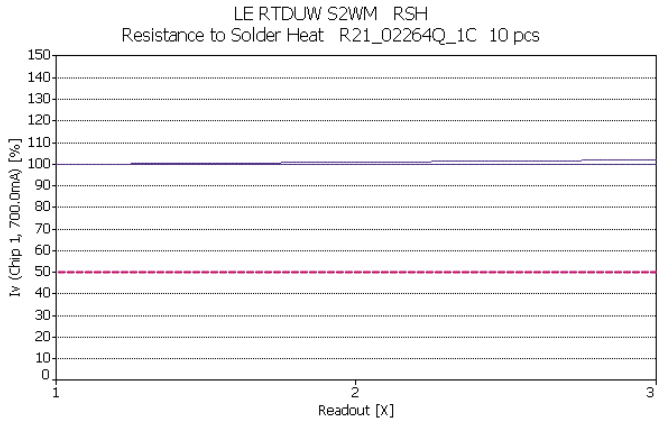


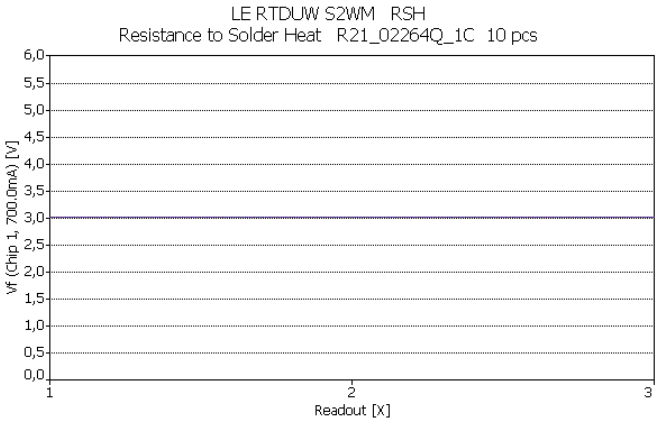


RSH Resistance to Solder Heat

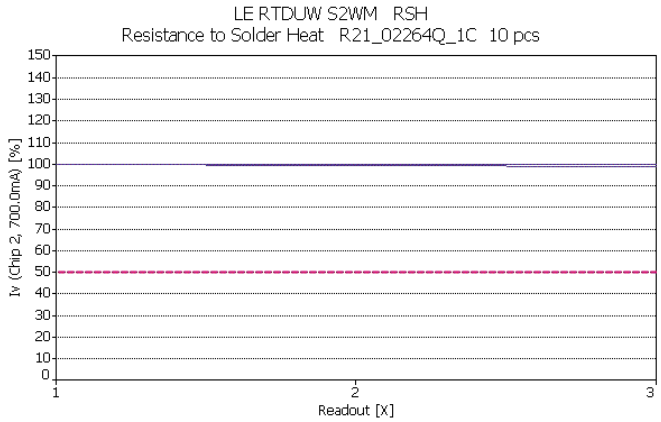
Lot C

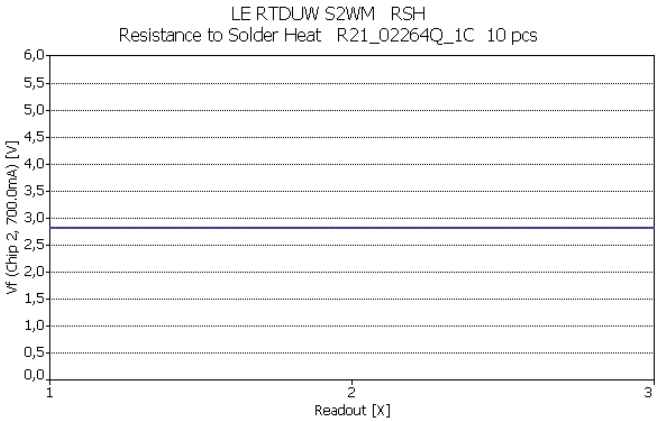
Blue deep chip





True green chip

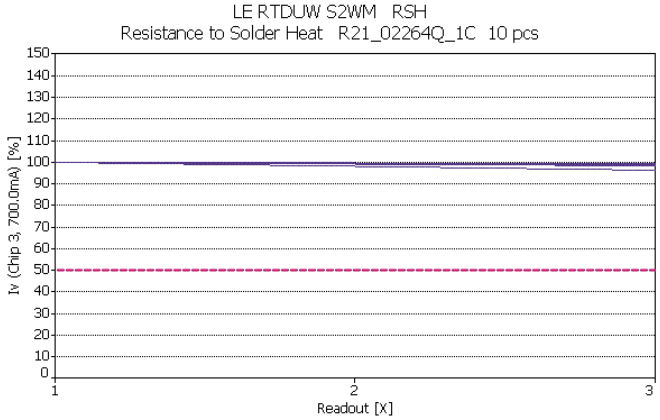


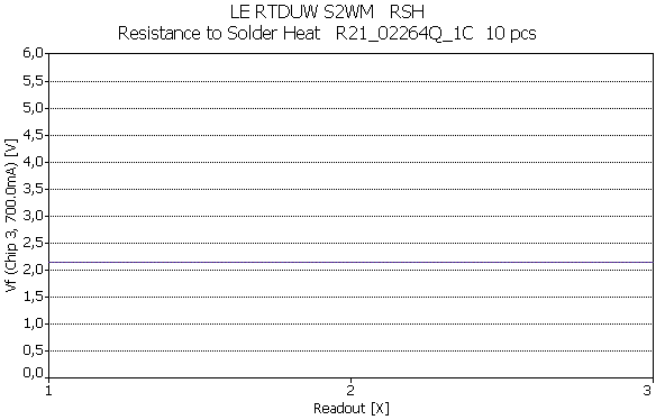


RSH Resistance to Solder Heat

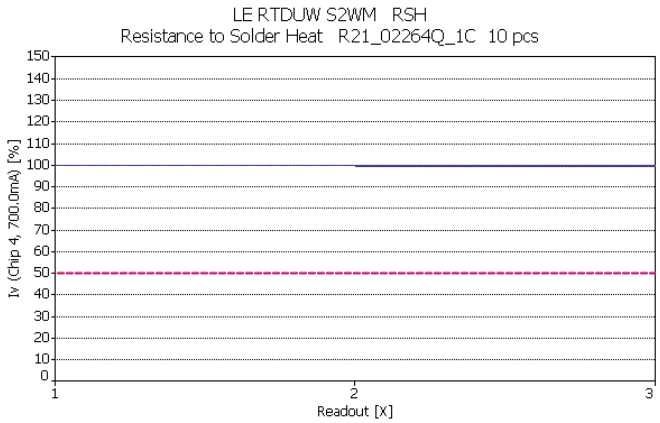
Lot C

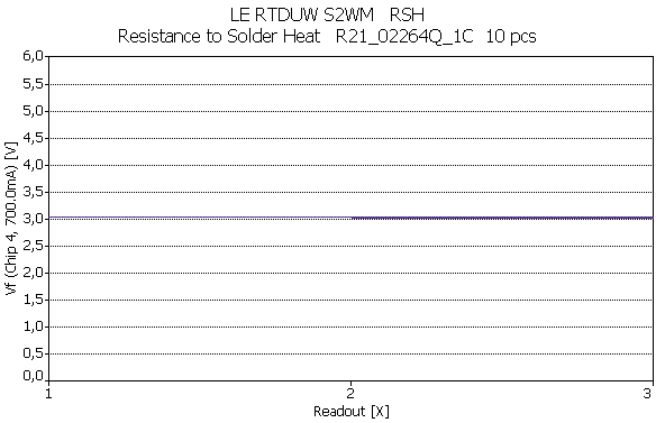
Red chip

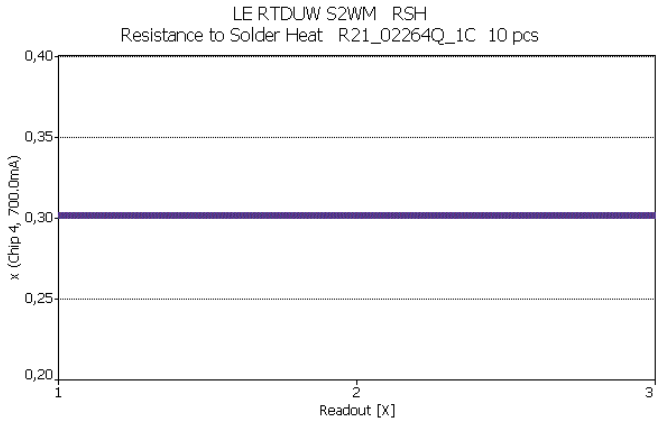


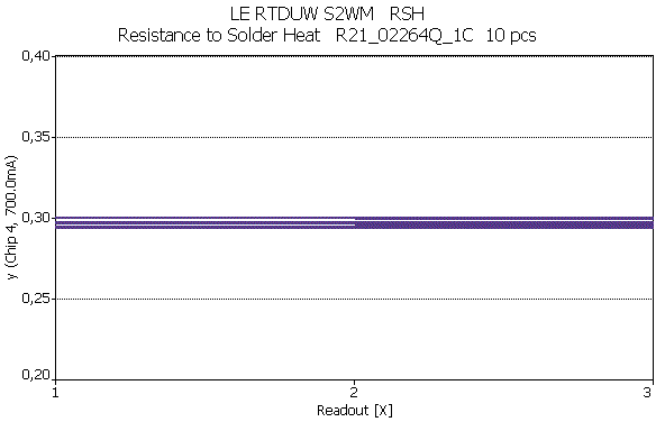


Ultra white chip





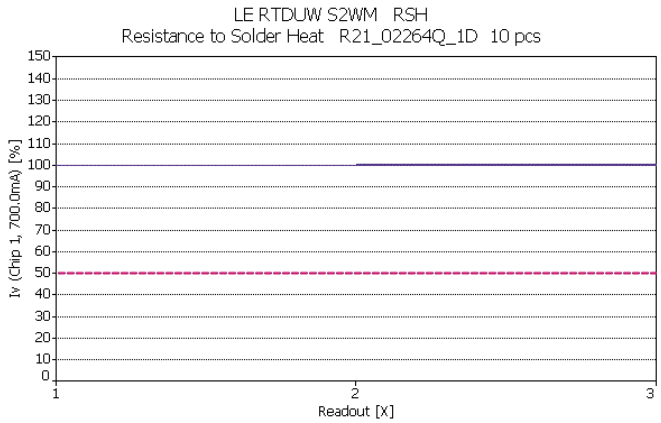




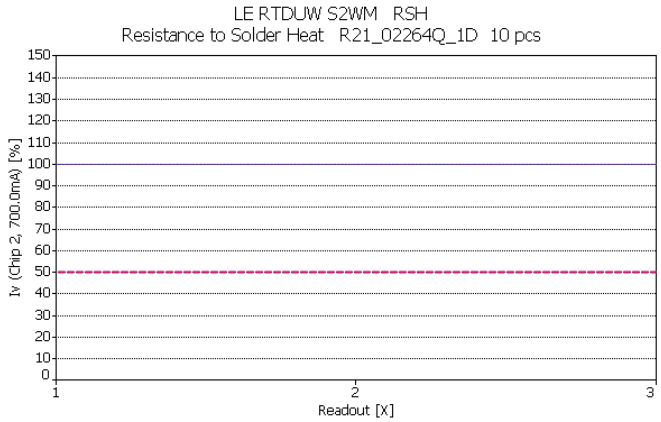
RSH Resistance to Solder Heat

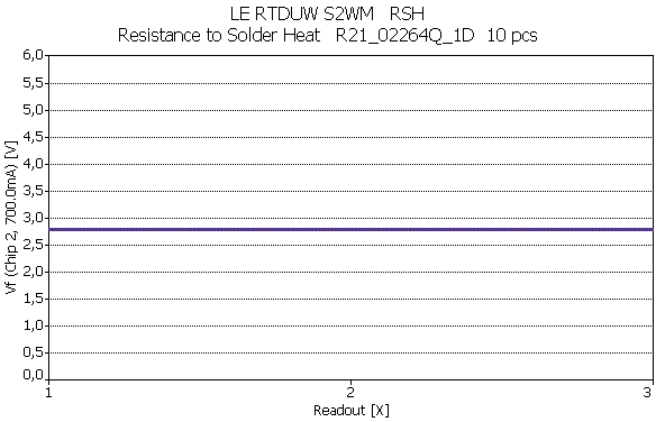
Lot D

Deep blue chip



True green chip

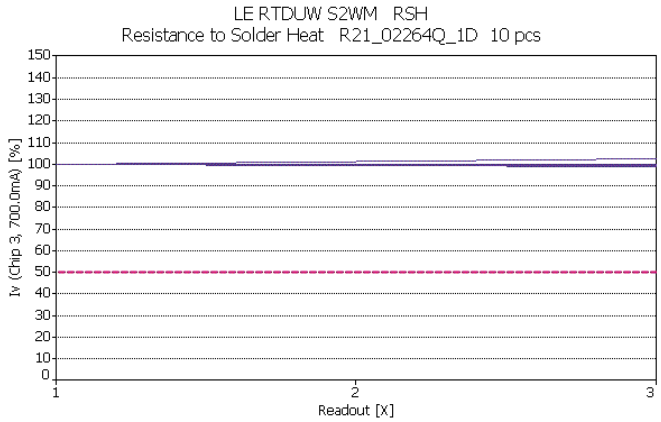




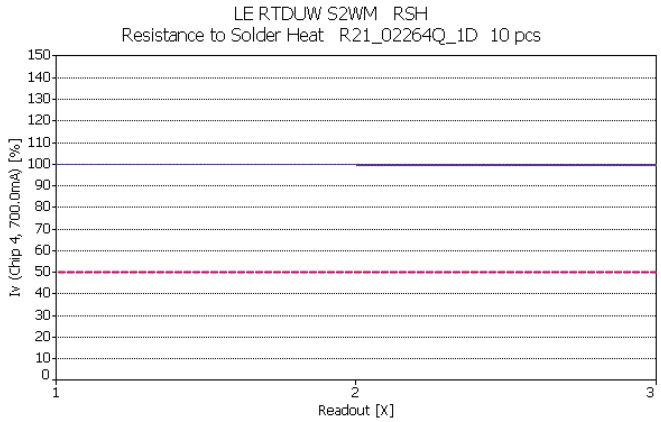
RSH Resistance to Solder Heat

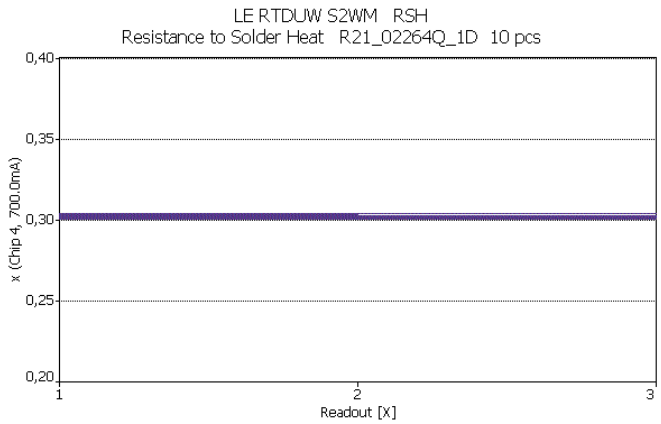
Lot D

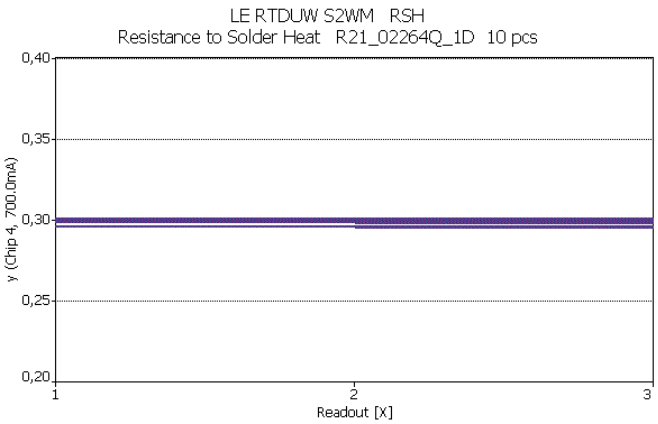
Red chip



Ultra white chip



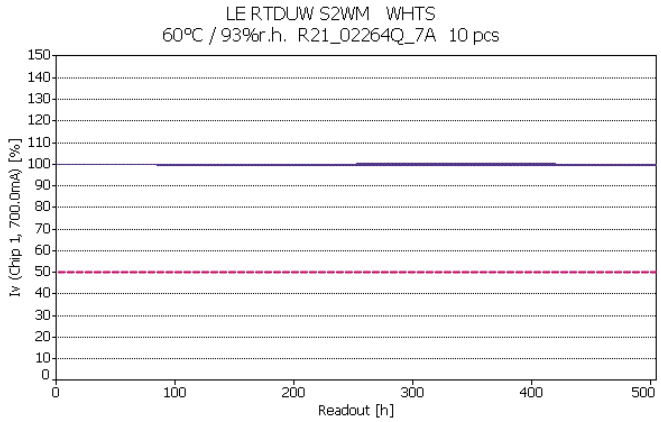


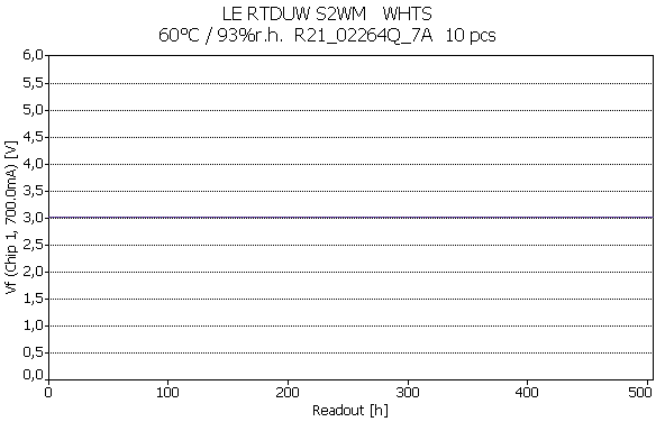


WHTS 60°C/93%,r.H.

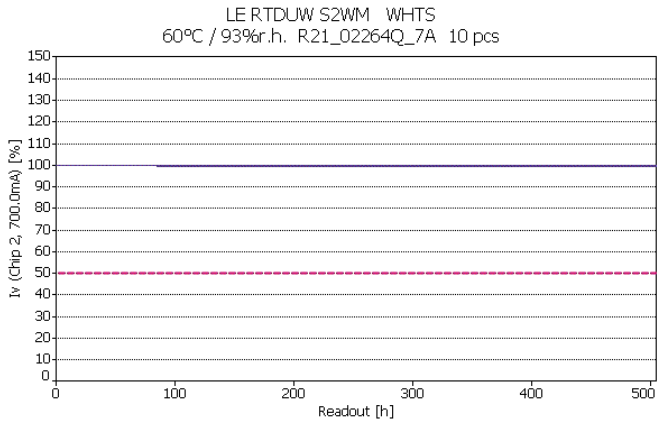
Lot A

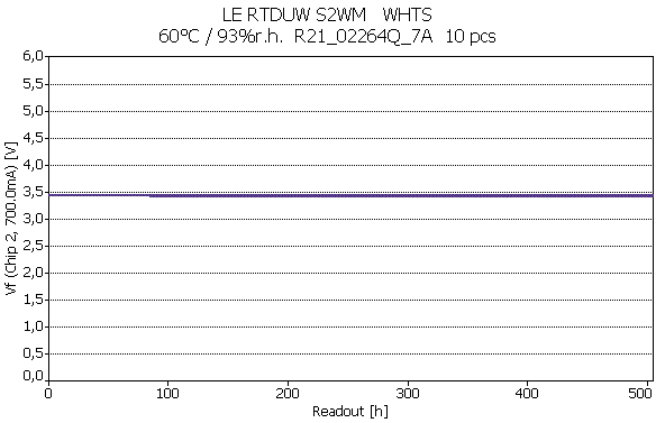
Deep blue chip





True green chip

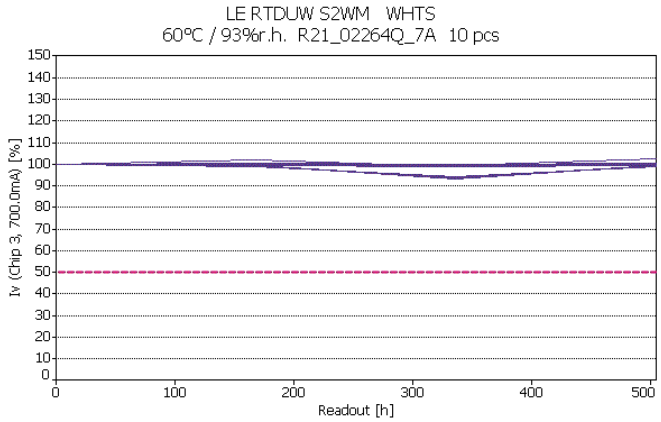


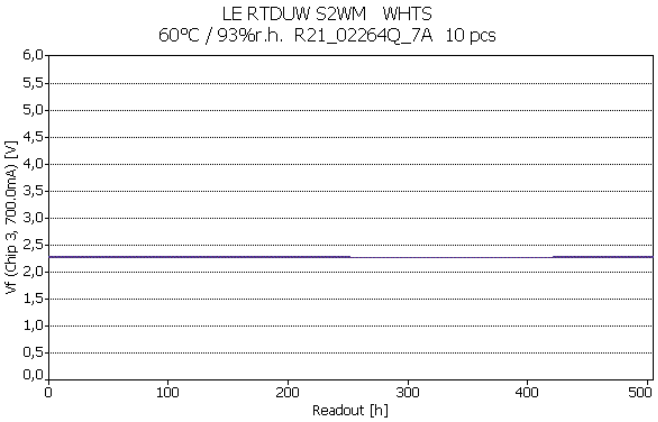


WHTS 60°C/93%,r.H.

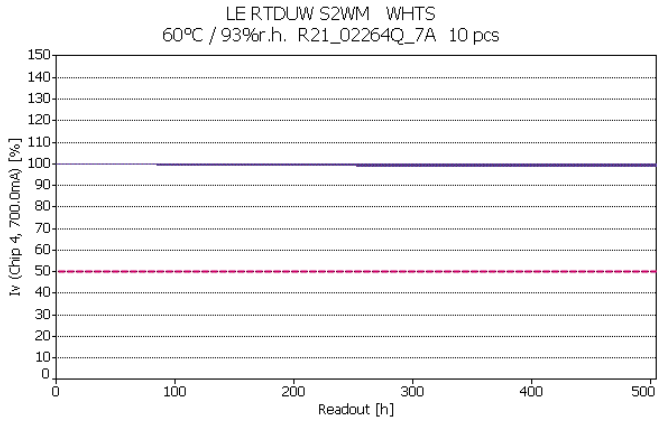
Lot A

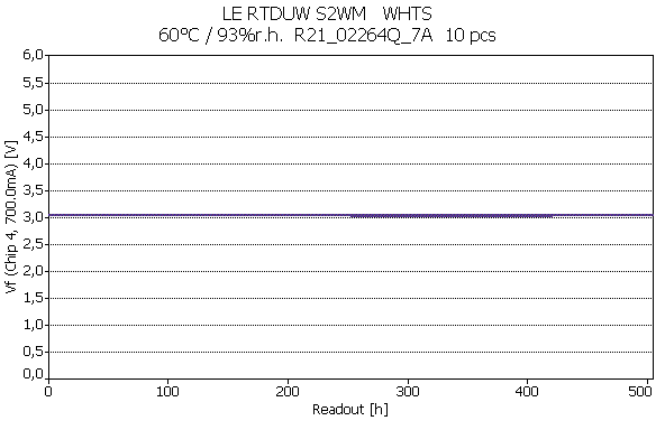
Red chip

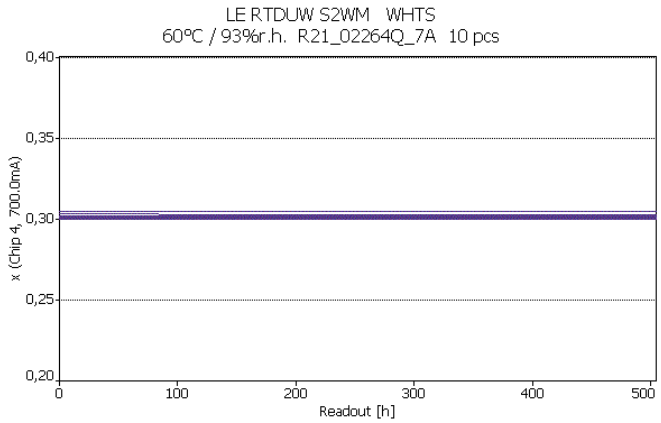


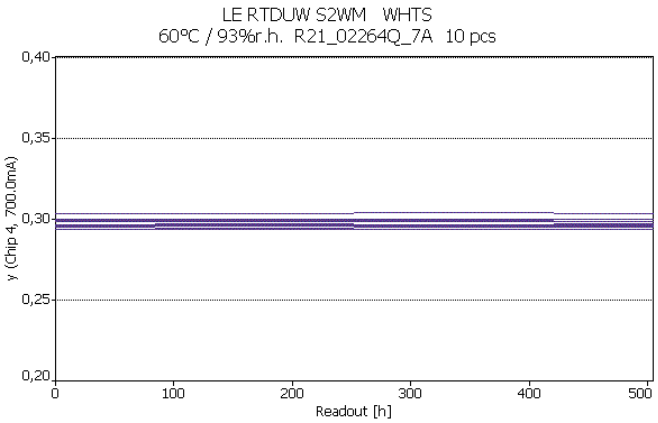


Ultra white chip





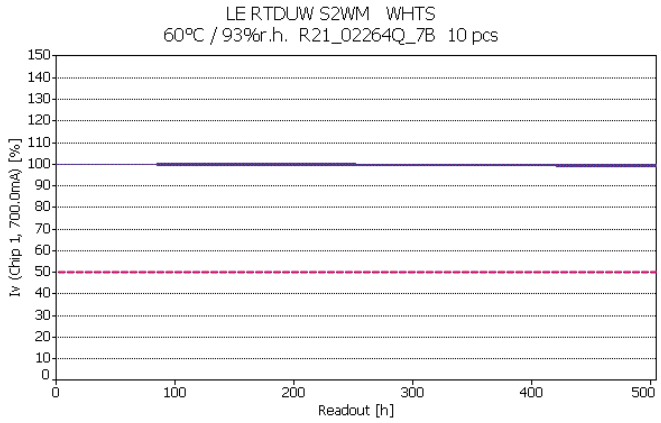


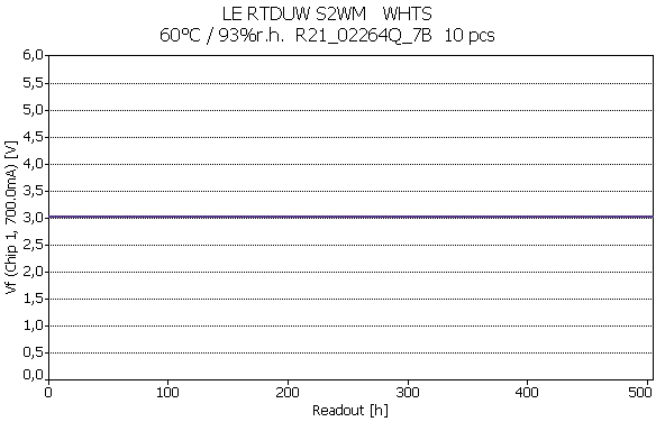


WHTS 60°C/93%,r.H.

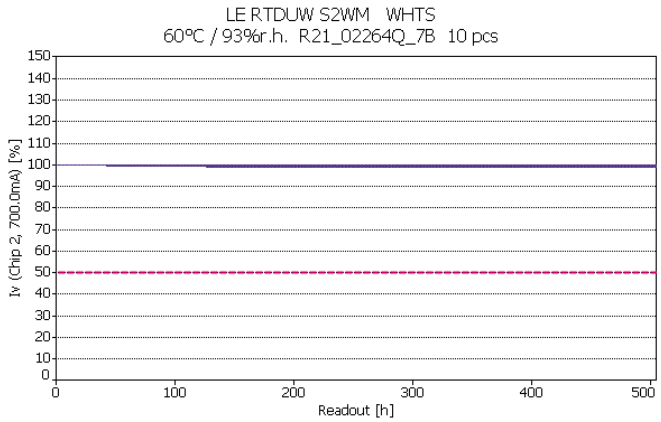
Lot B

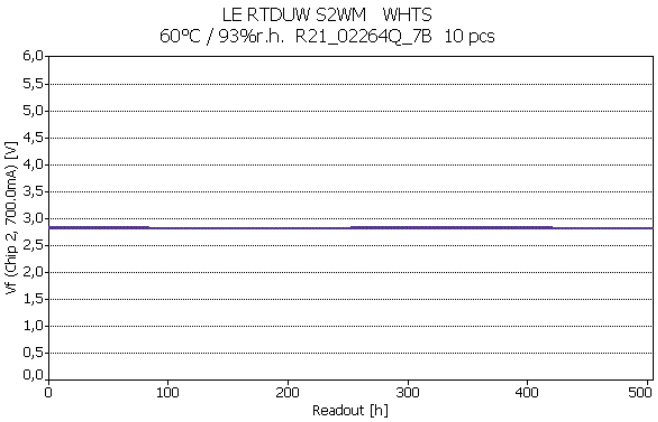
Deep blue chip





True green chip

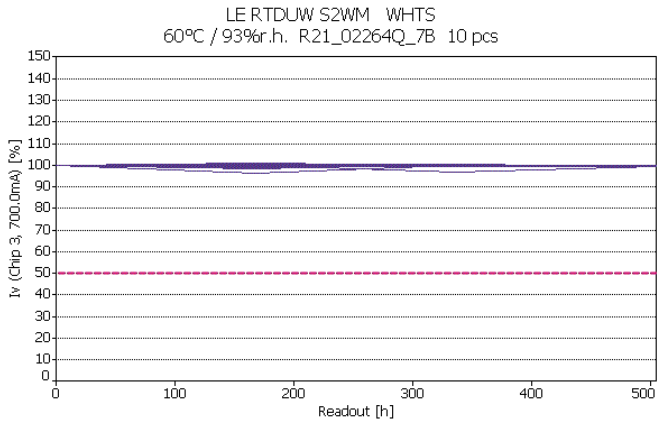


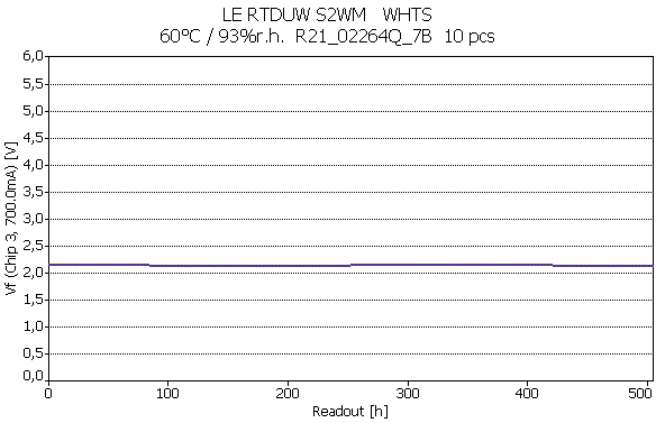


WHTS 60°C/93%,r.H.

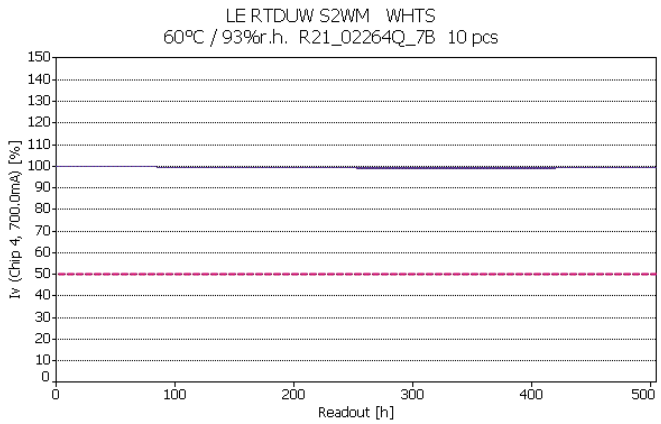
Lot B

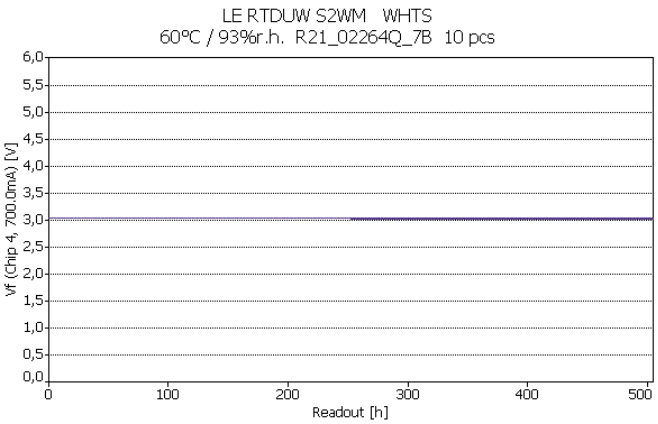
Red chip

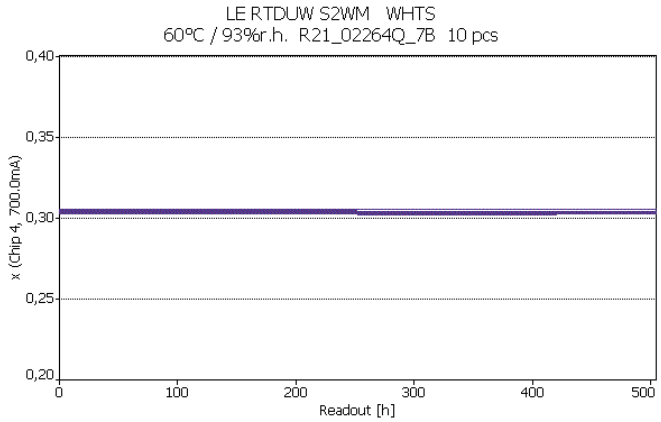


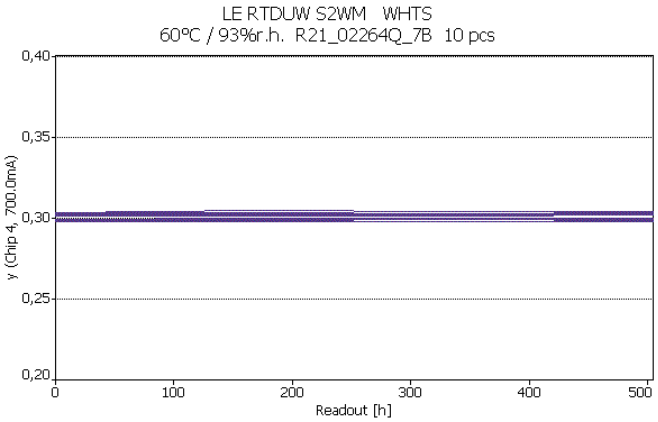


Ultra white chip





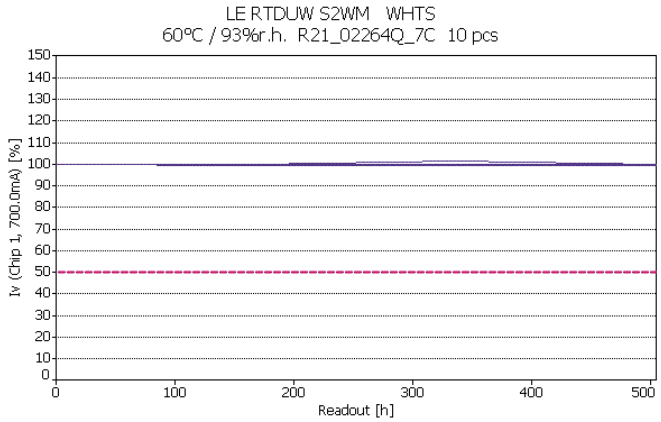


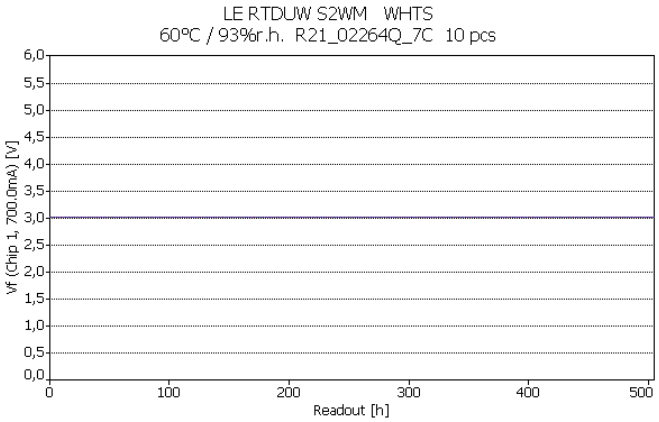


WHTS 60°C/93%,r.H.

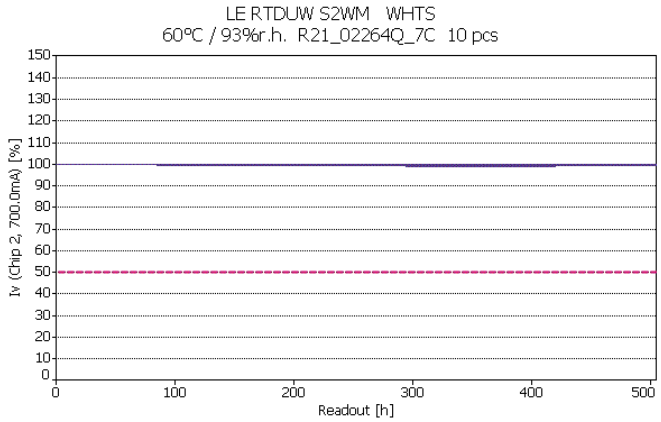
Lot C

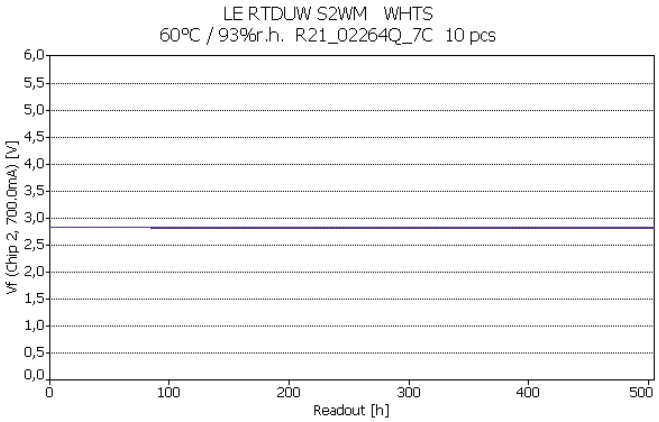
Blue deep chip





True green chip

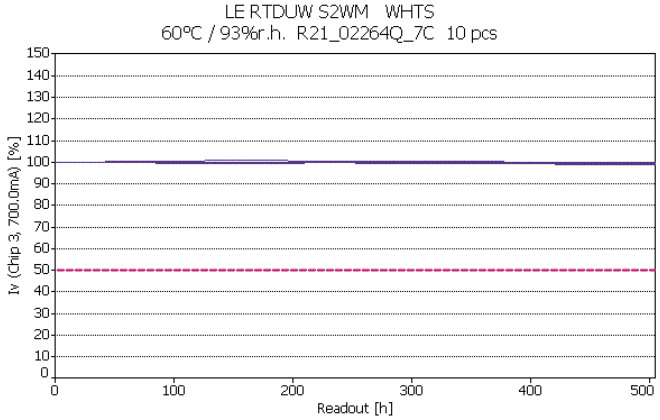


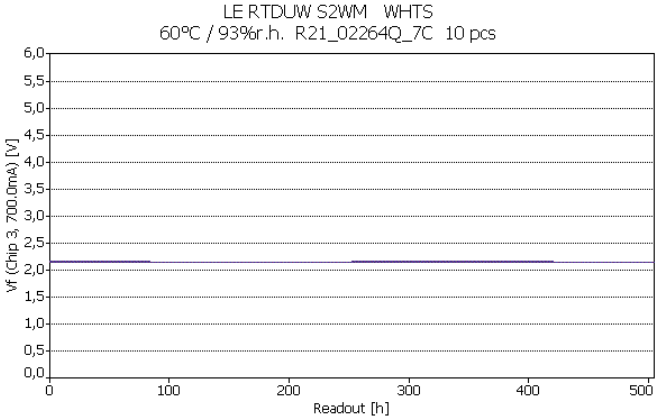


WHTS 60°C/93%,r.H.

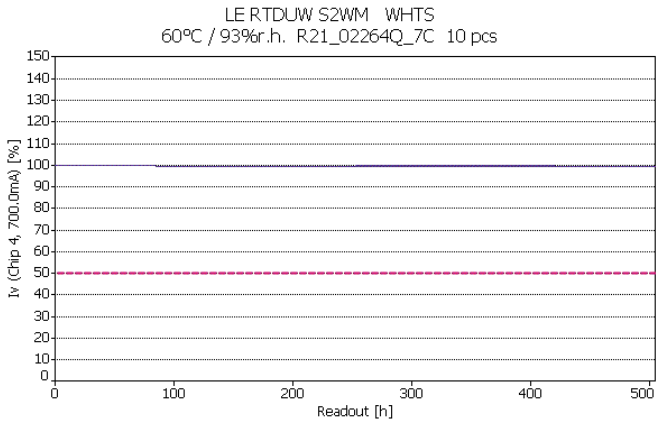
Lot C

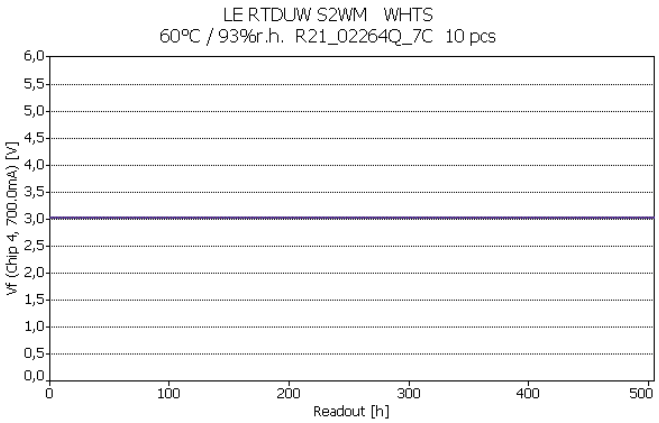
Red chip

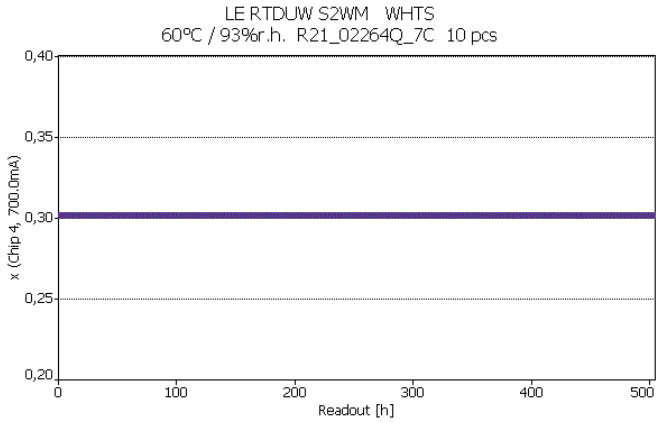


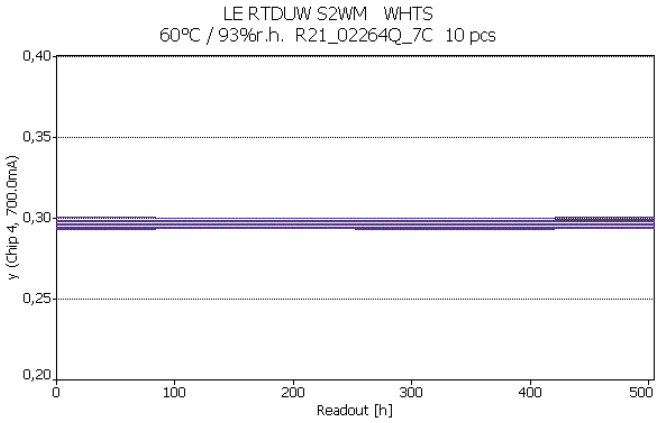


Ultra white chip





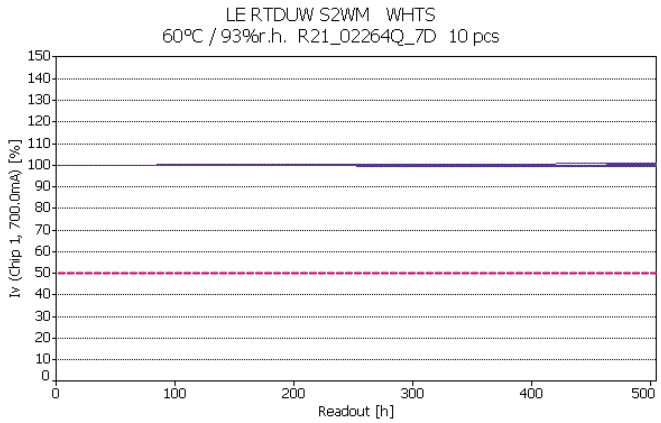


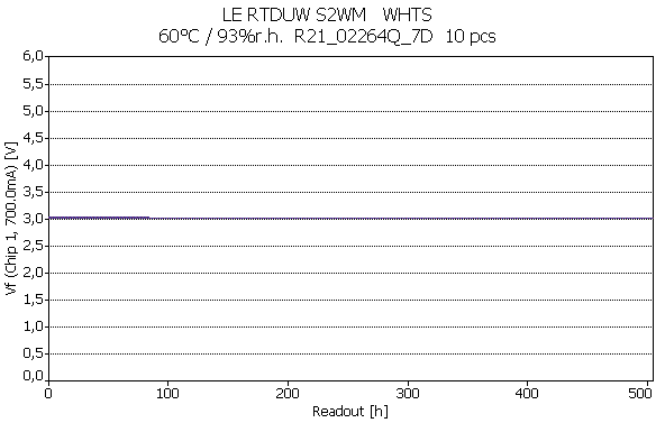


WHTS 60°C/93%,r.H.

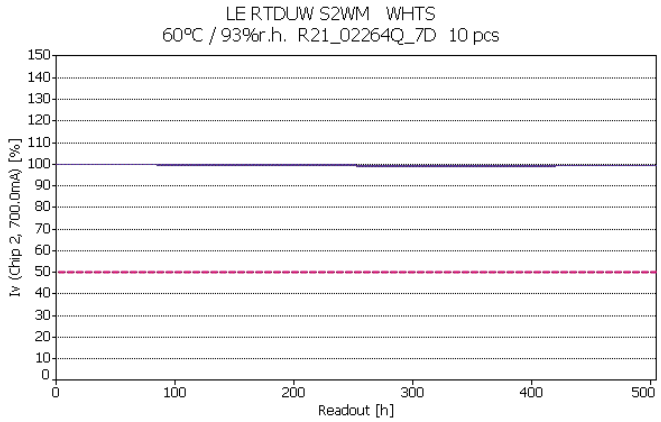
Lot D

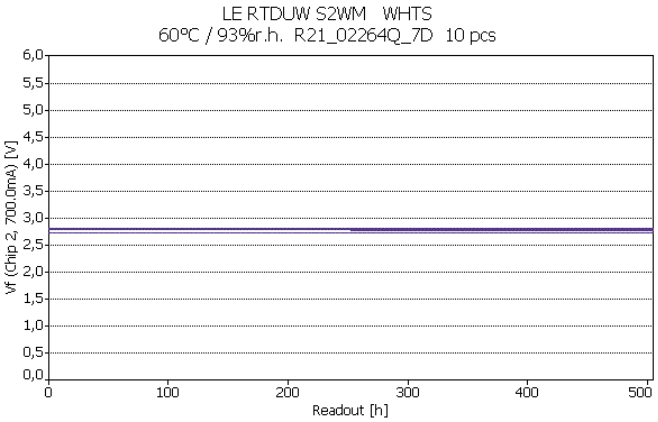
Deep blue chip





True green chip

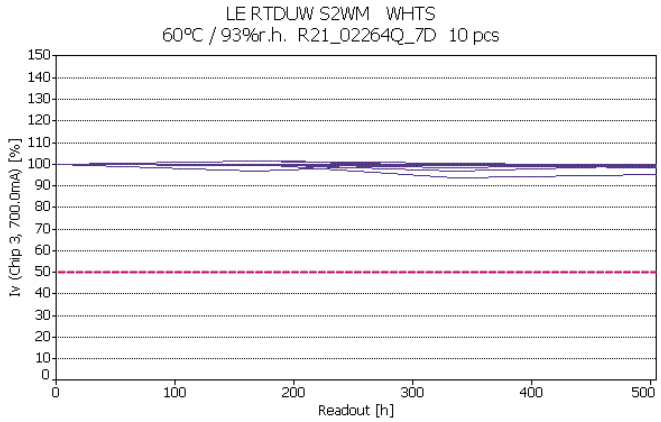


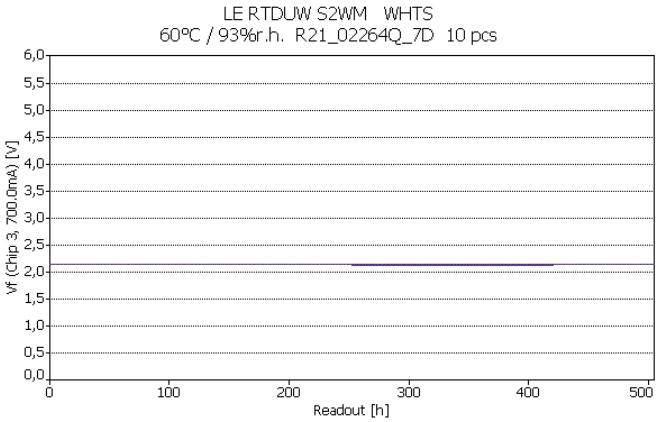


WHTS 60°C/93%,r.H.

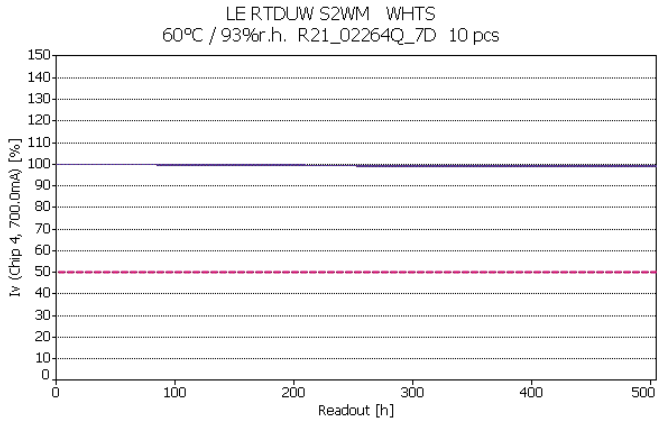
Lot D

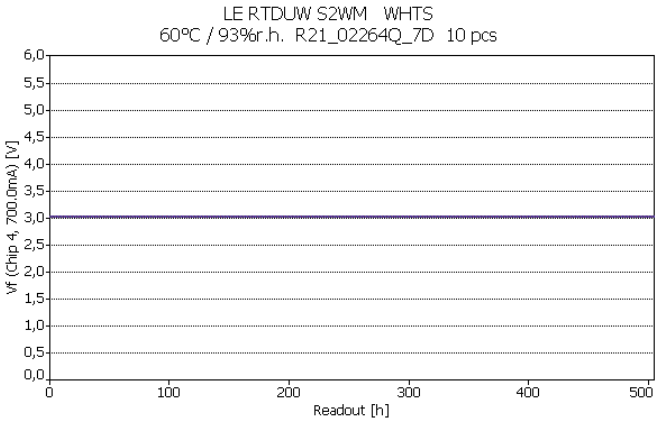
Red chip

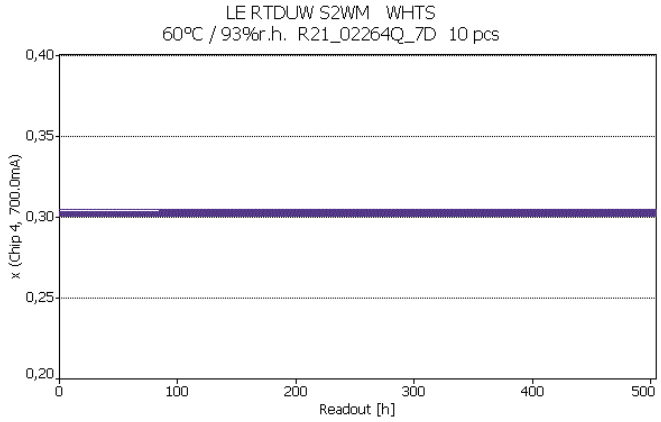


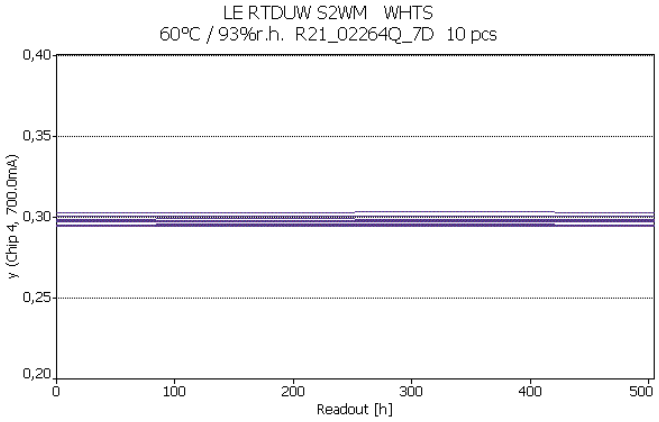


Ultra white chip







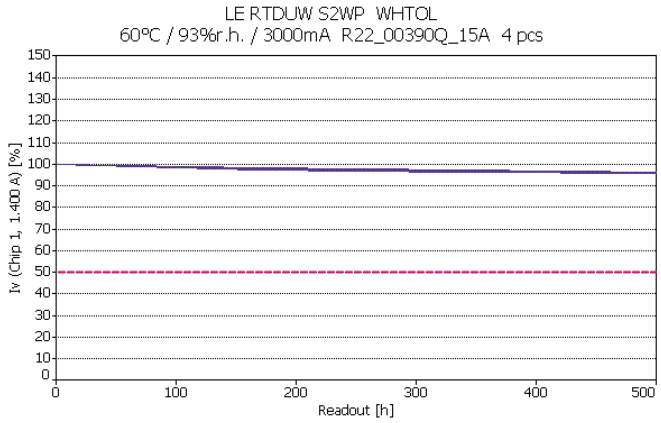


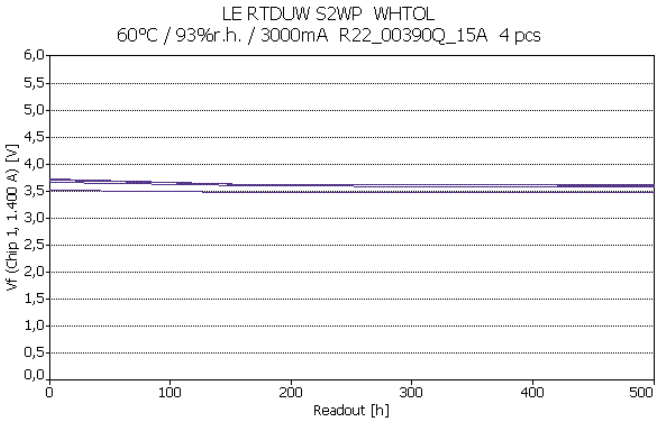
LE RTDUW S2WP

WHTOL 60°C/93%r.H; 3000mA

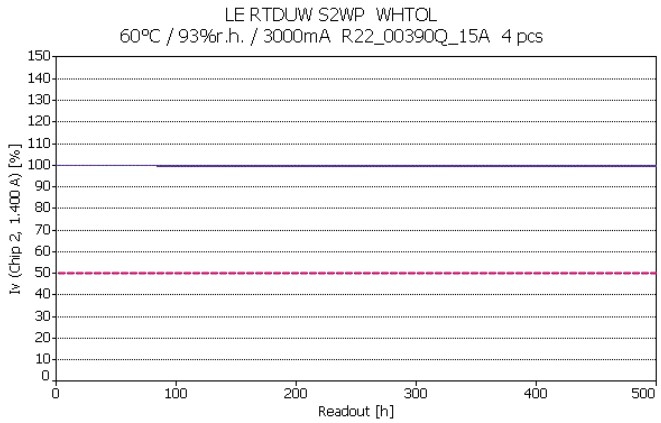
Lot A

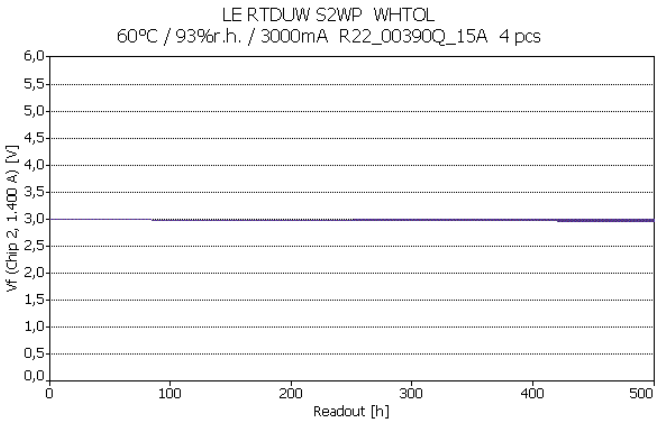
Deep blue chip





True green chip

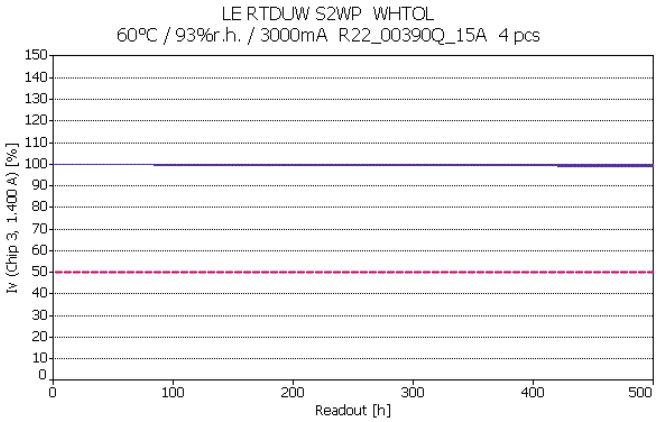


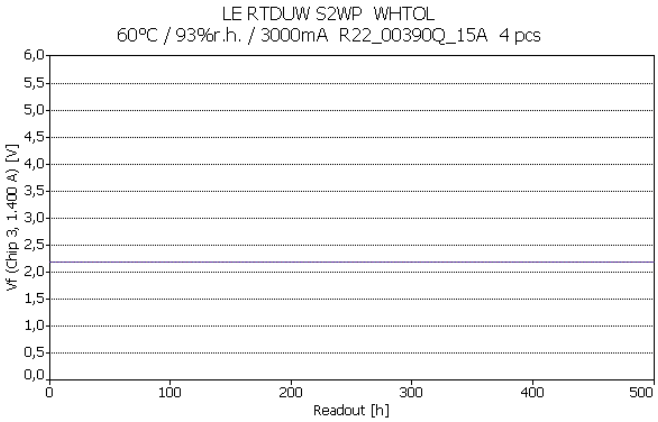


WHTOL 60°C/93%r.H; 3000mA

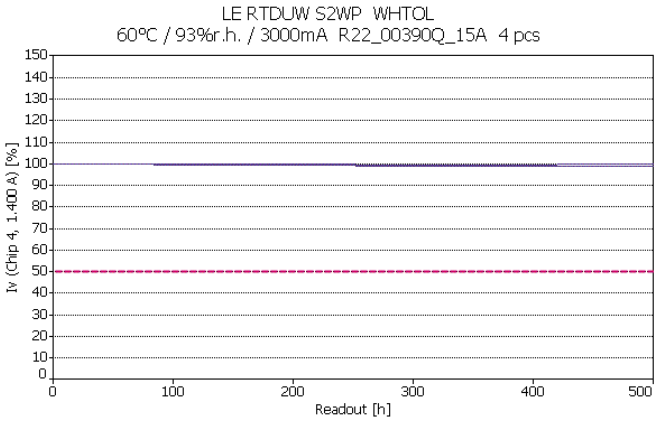
Lot A

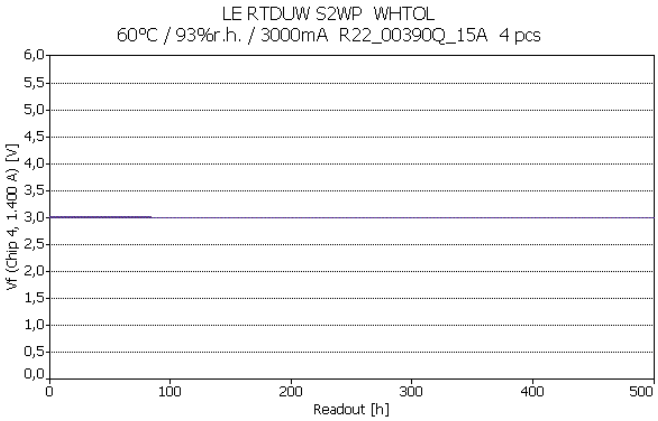
Red chip

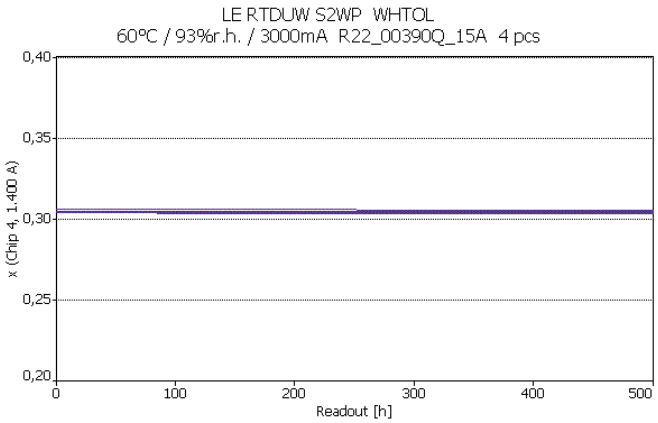


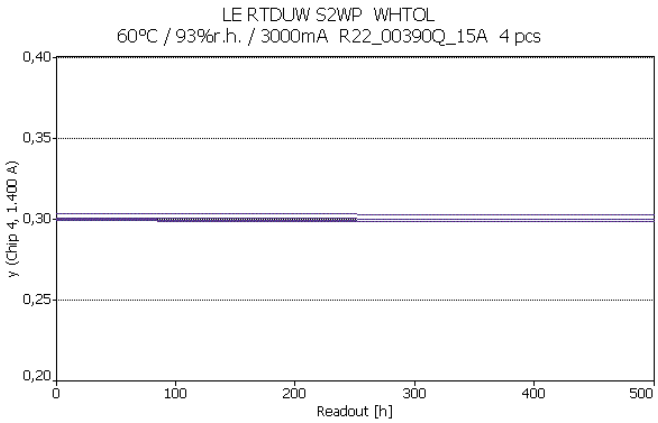


Ultra white chip





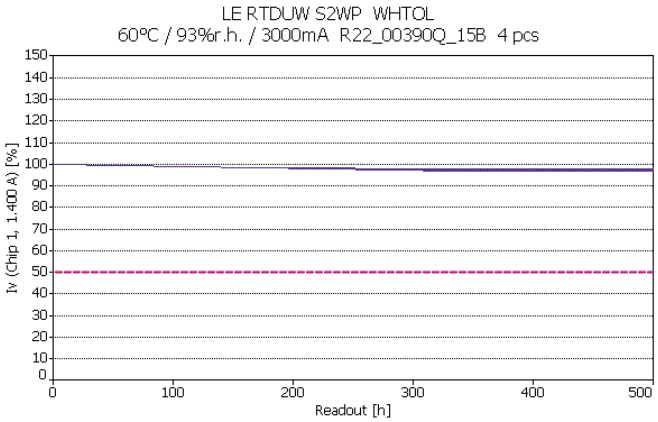


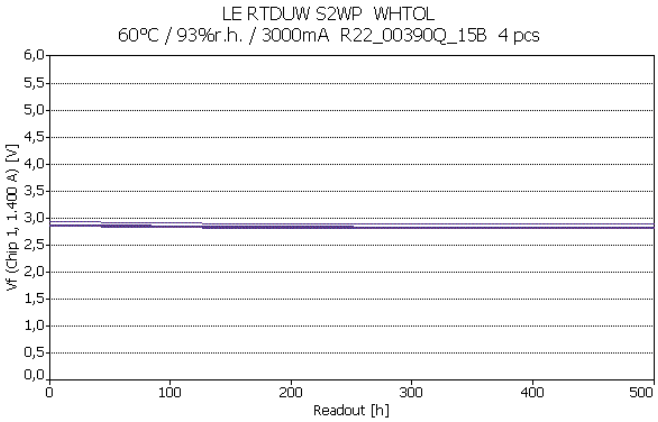


WHTOL 60°C/93%r.H; 3000mA

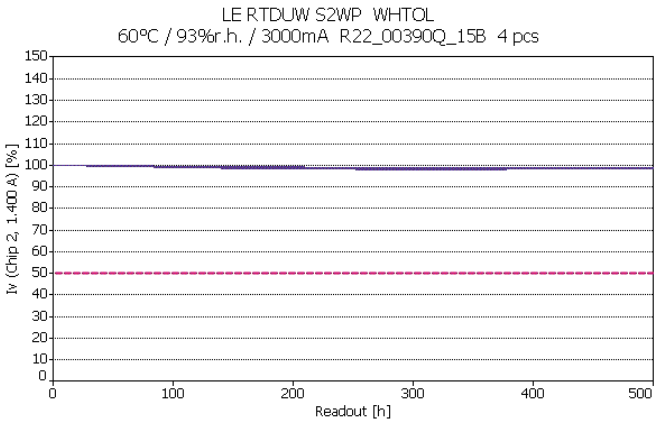
Lot B

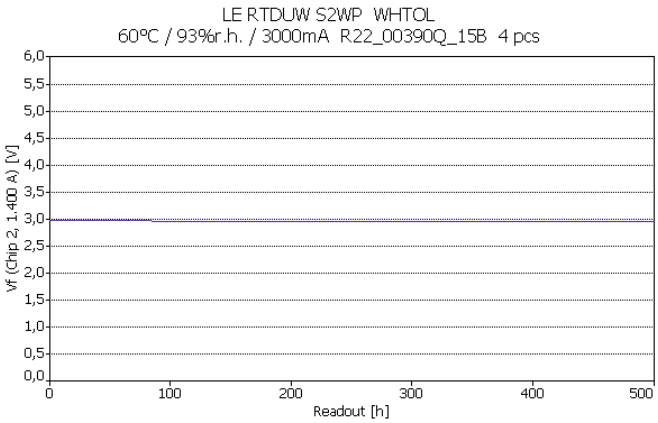
Deep blue chip





True green chip

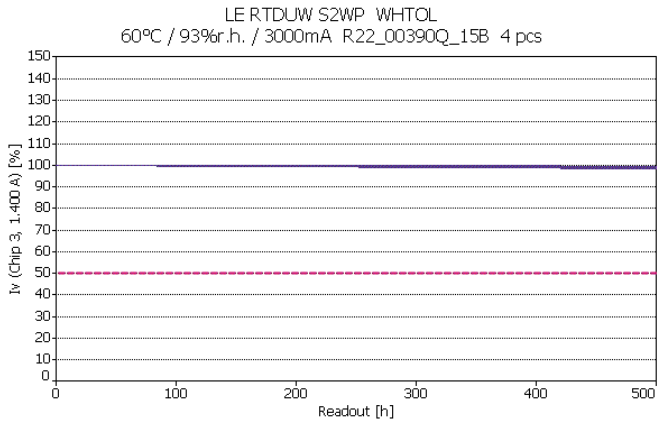


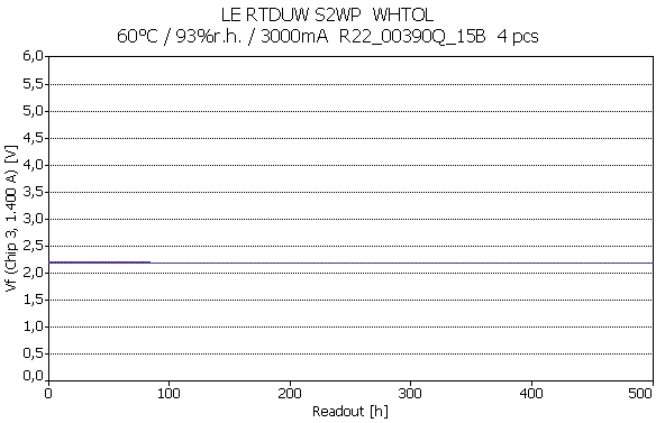


WHTOL 60°C/93%r.H; 3000mA

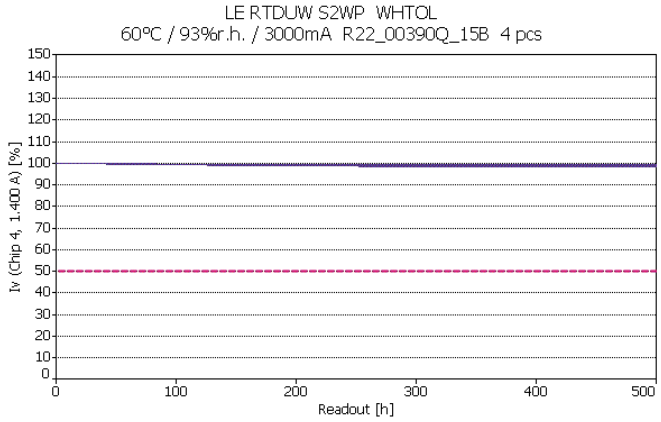
Lot B

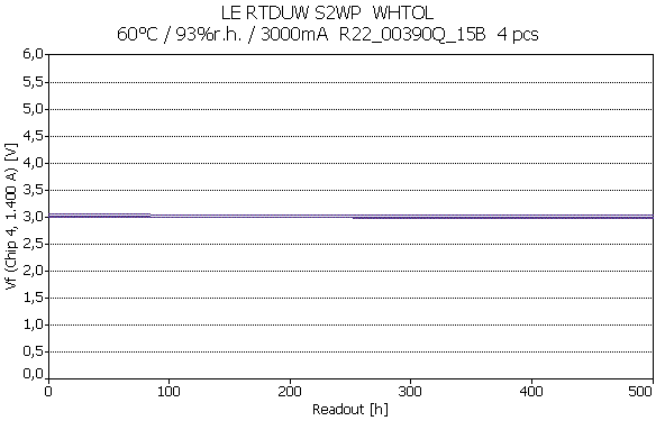
Red chip

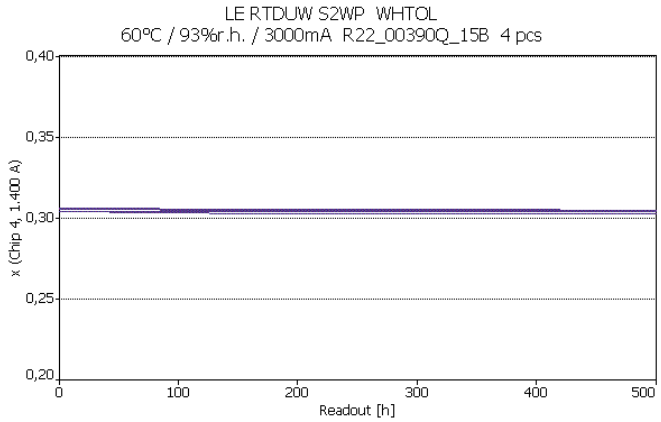


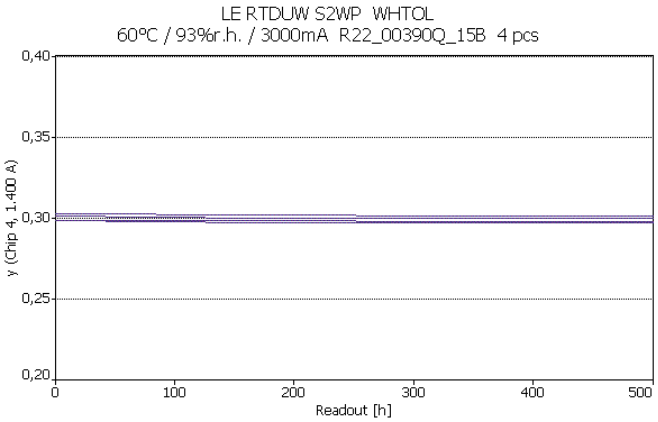


Ultra white chip





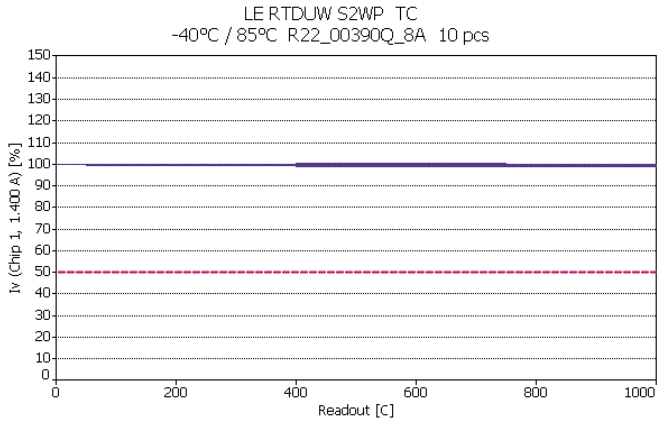


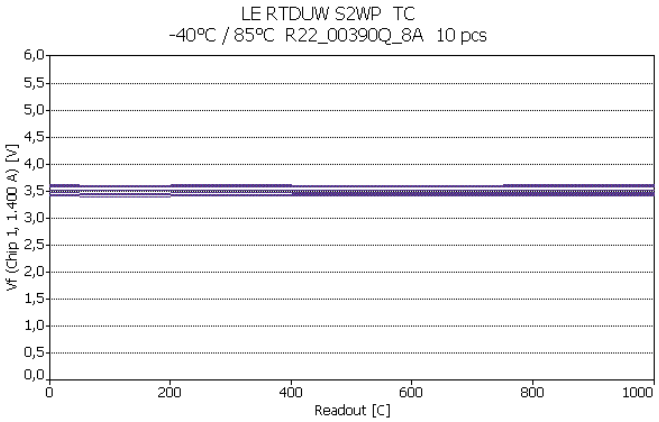


TC -40°C/85°C

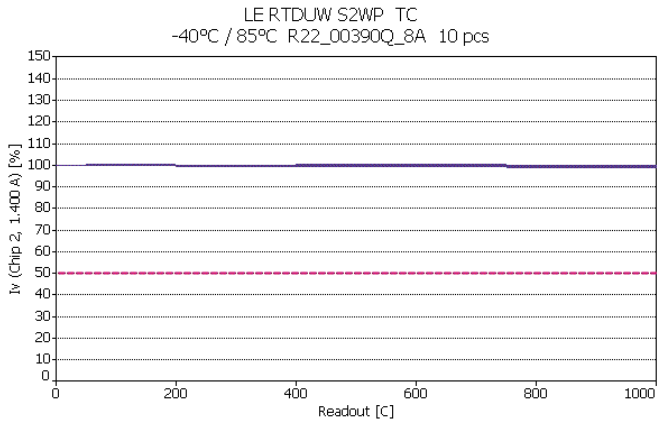
Lot A

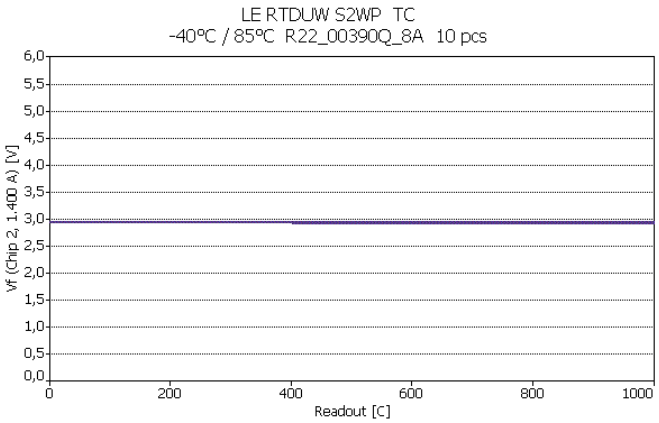
Deep blue chip





True green chip

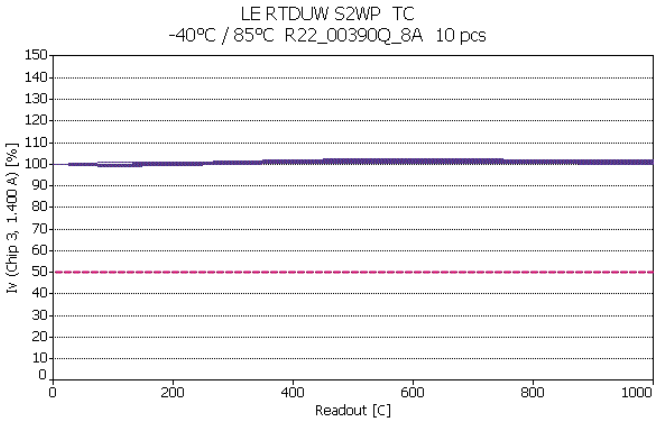


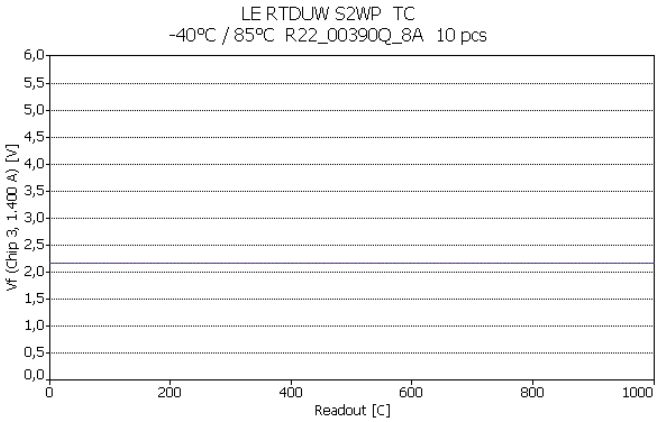


TC -40°C/85°C

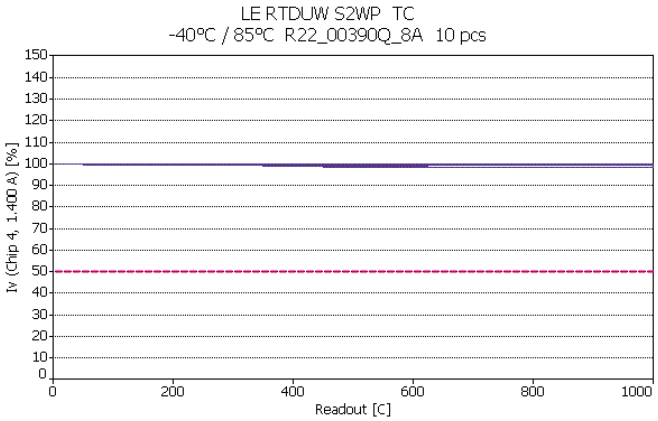
Lot A

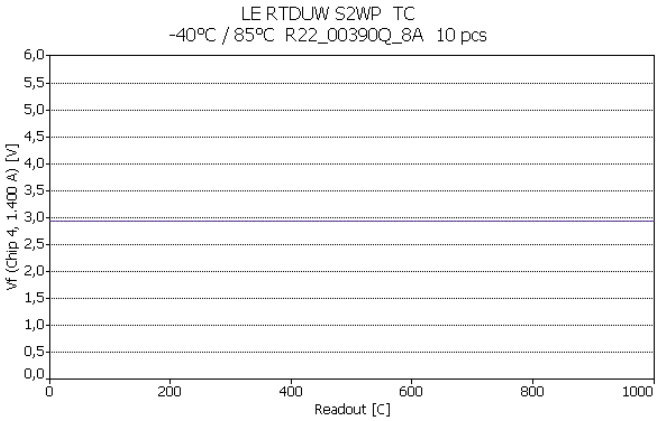
Red chip

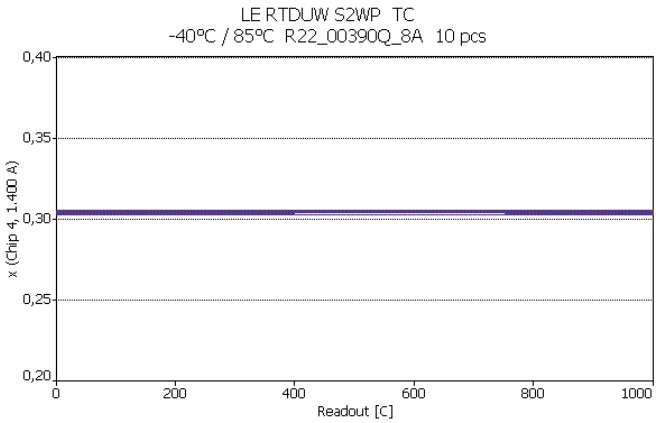


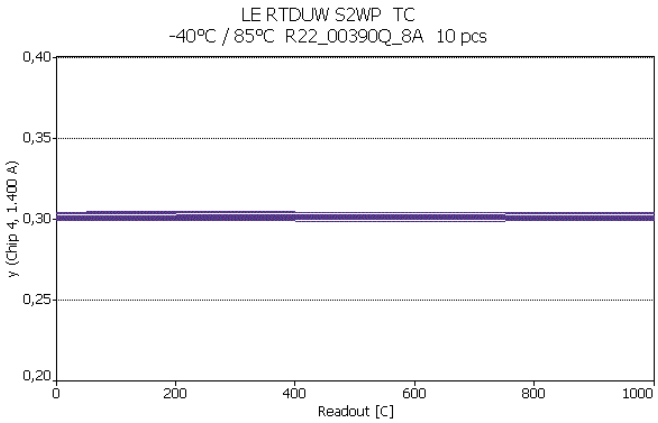


Ultra white chip





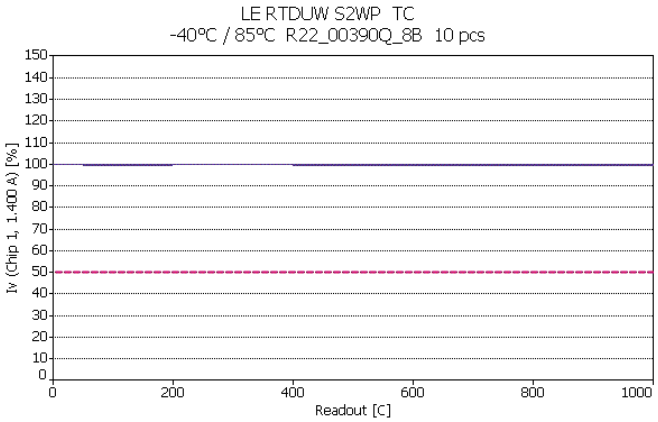


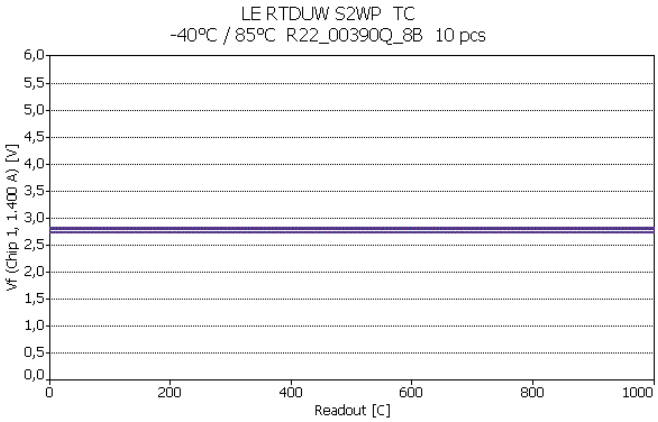


TC -40°C/85°C

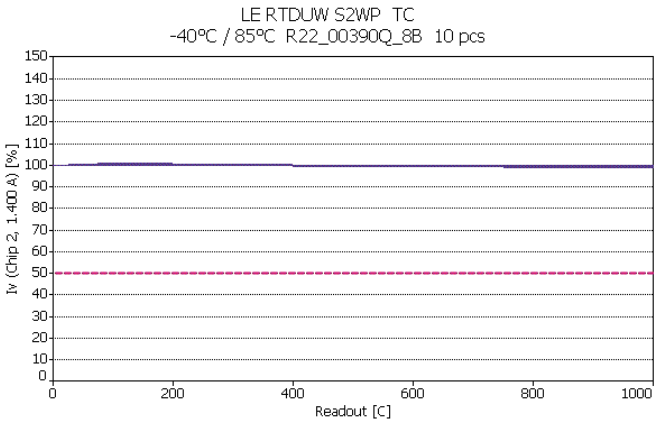
Lot B

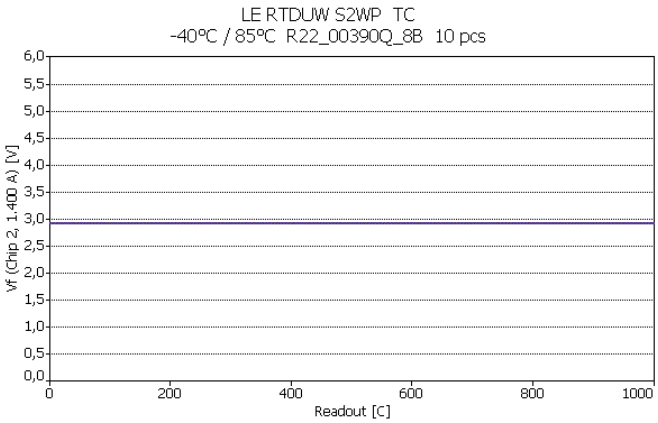
Deep blue chip





True green chip

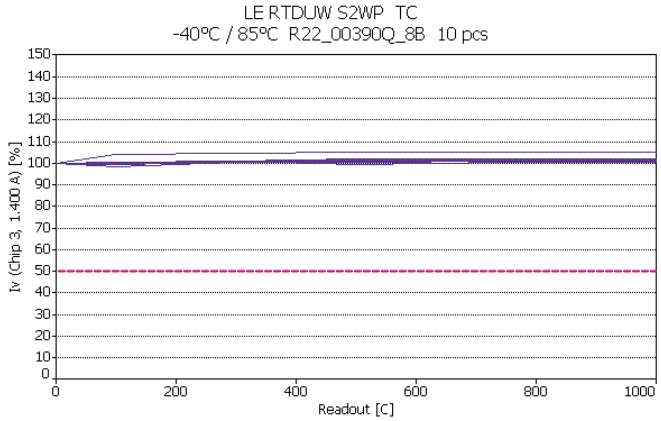


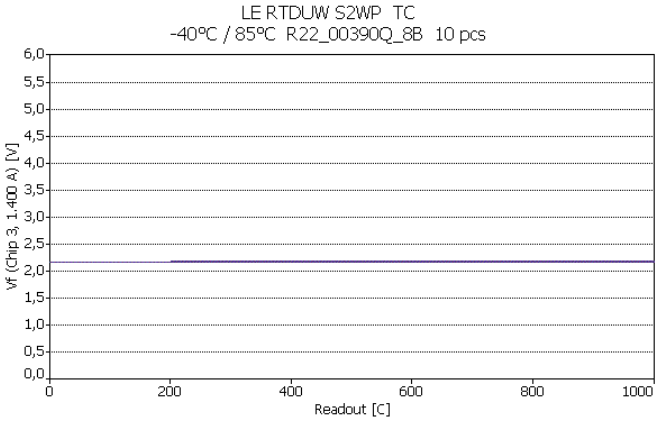


TC -40°C/85°C

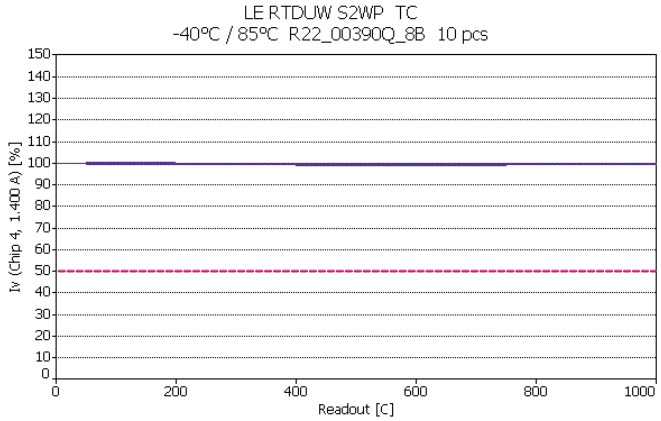
Lot B

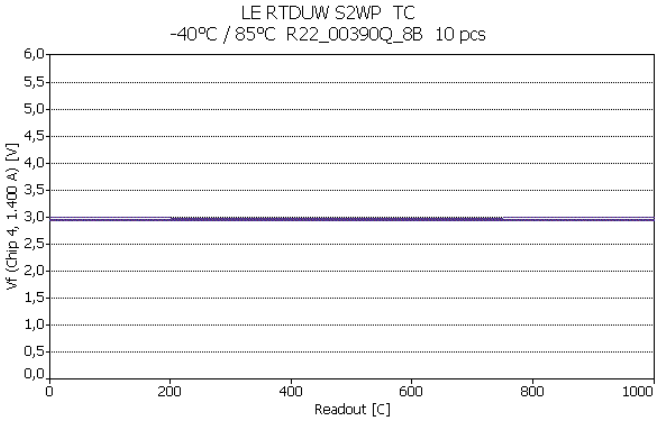
Red chip

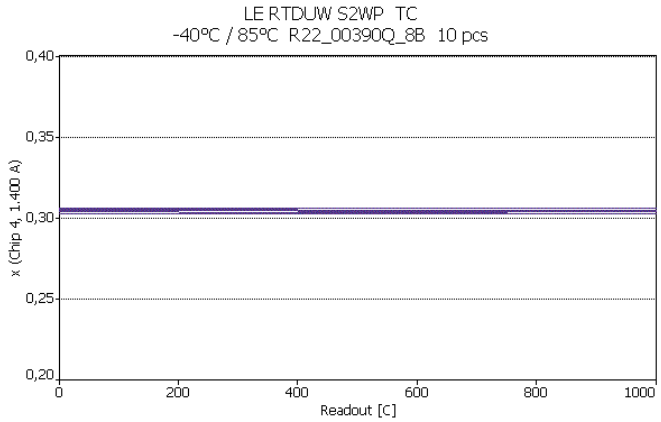


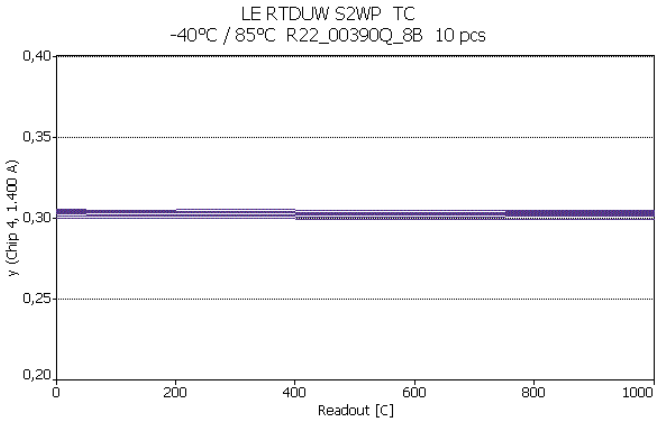


Ultra white chip





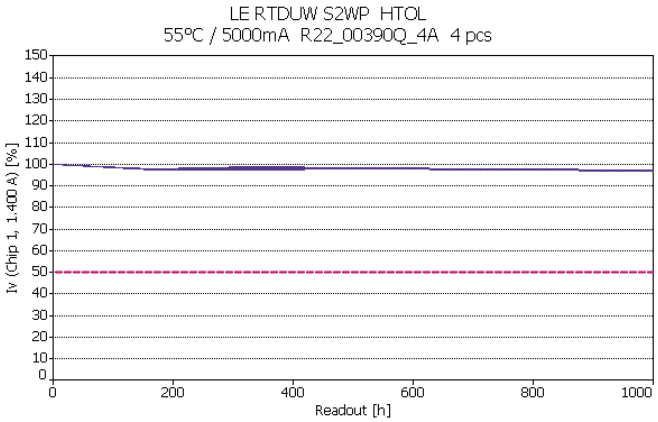


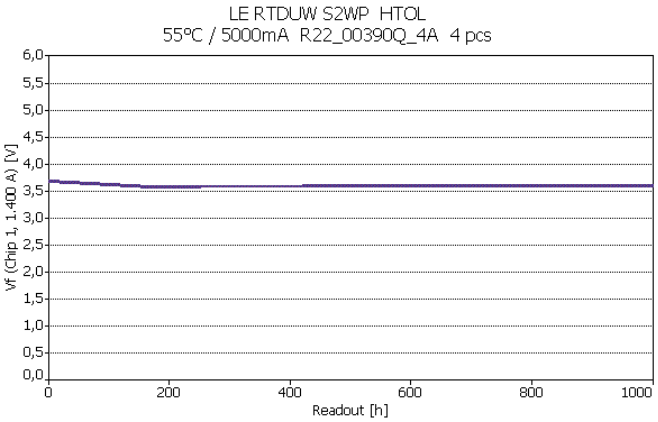


HTOL 55°C/5000mA

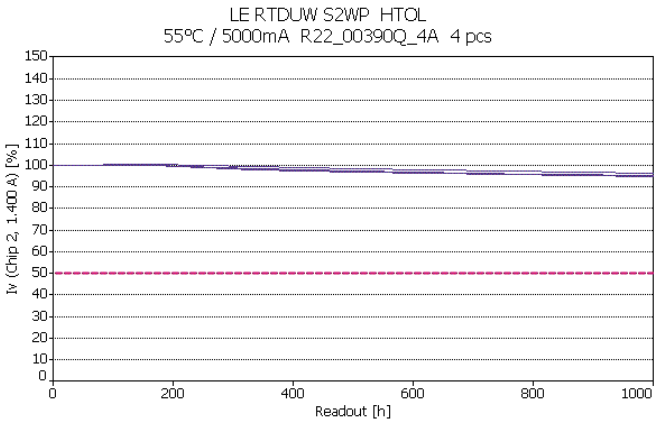
Lot A

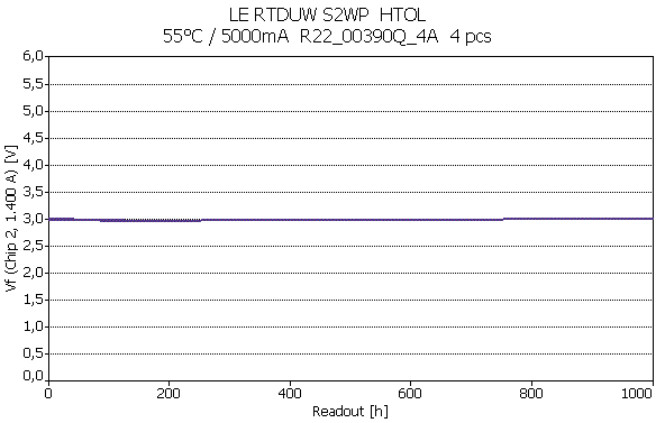
Deep blue chip





True green chip

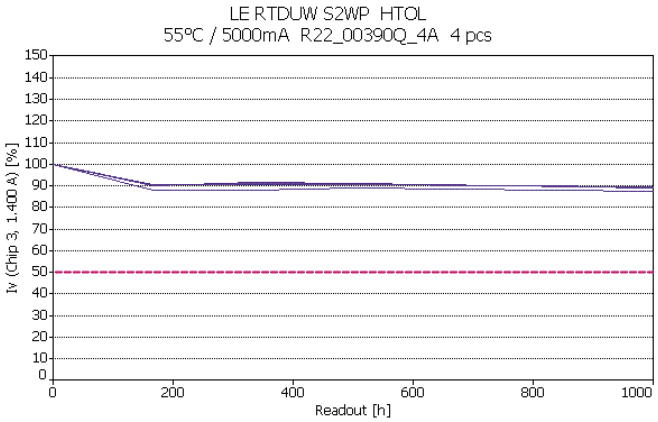


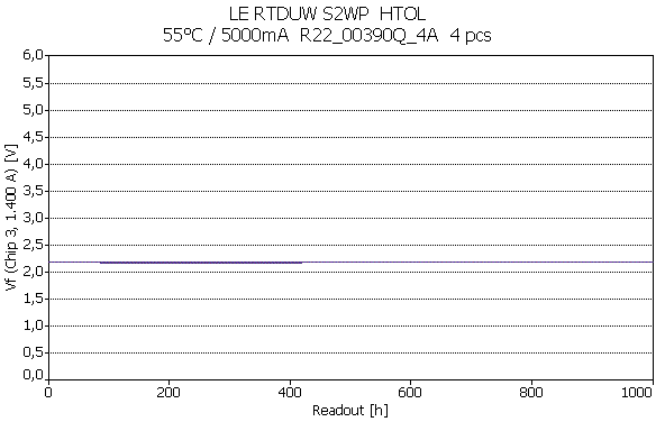


HTOL 55°C/5000mA

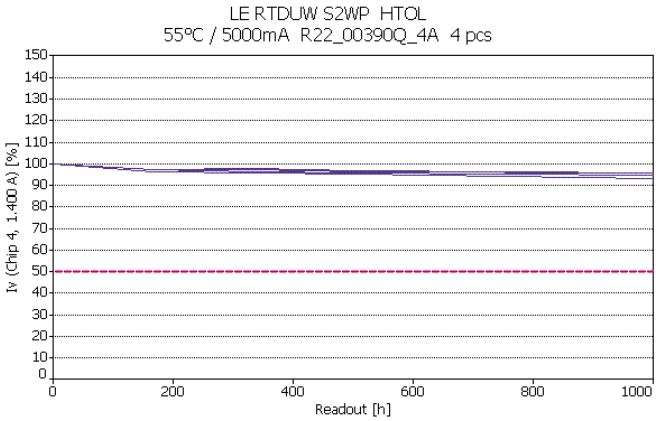
Lot A

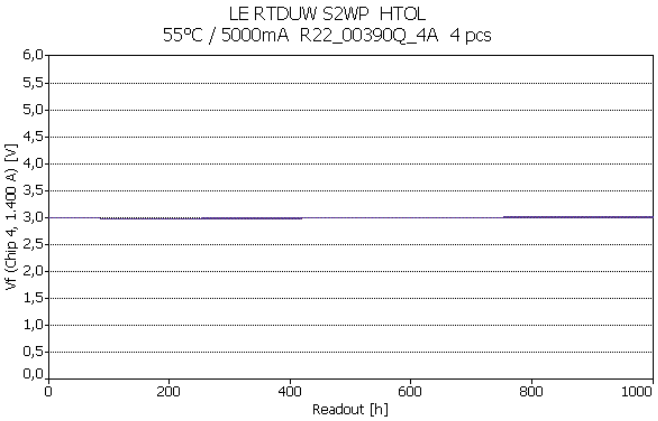
Red chip

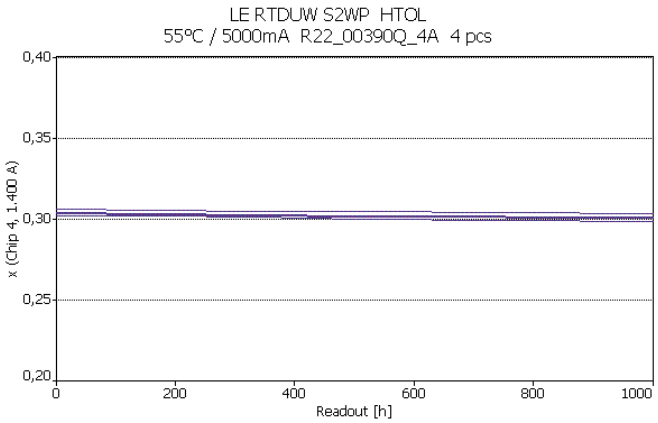


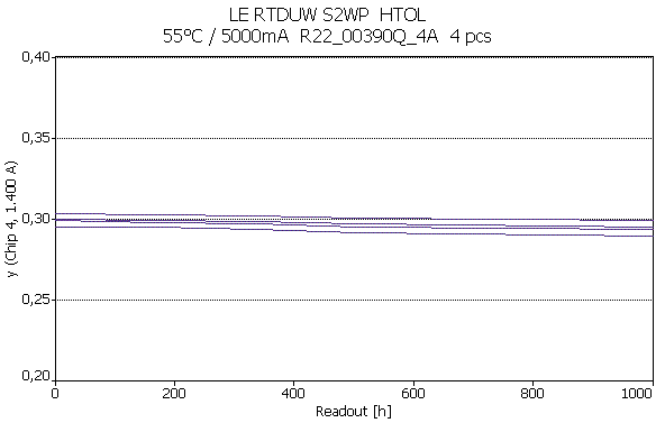


Ultra white chip





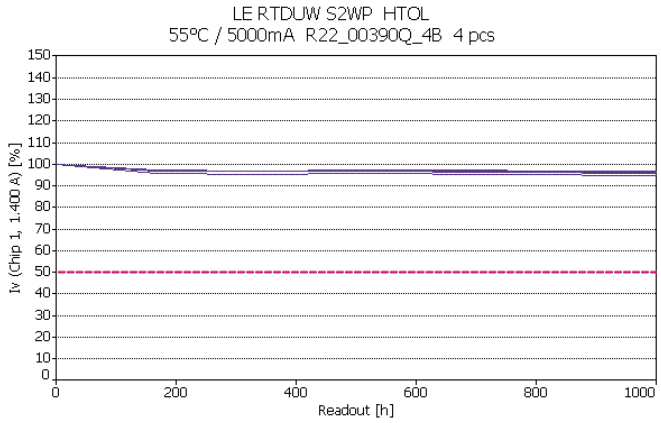


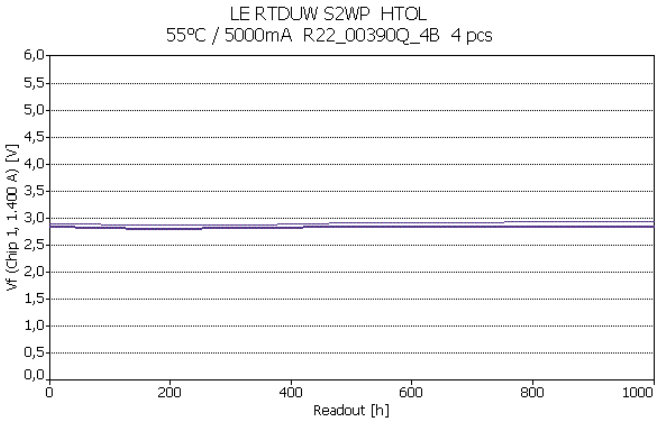


HTOL 55°C/5000mA

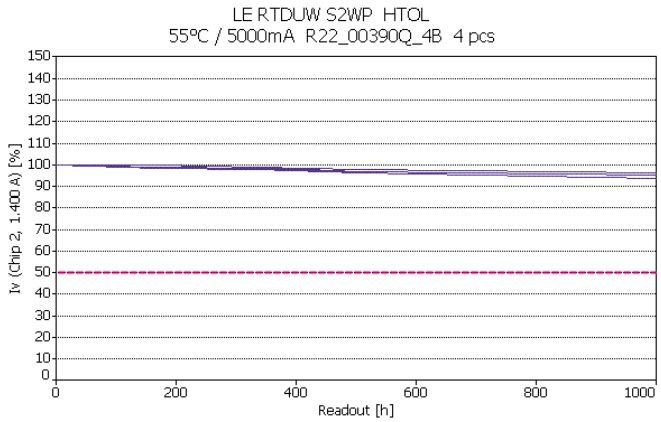
Lot B

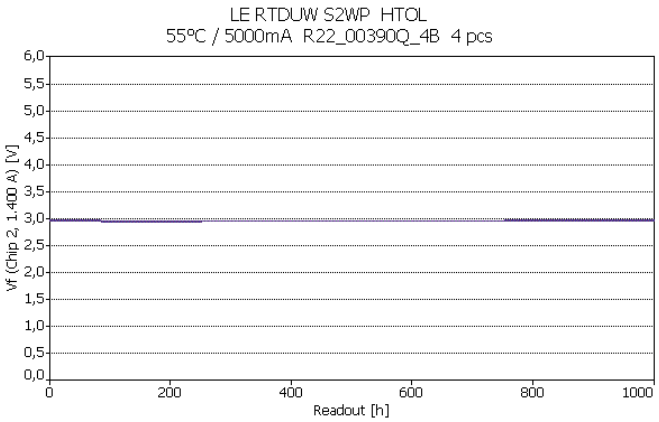
Deep blue chip





True green chip

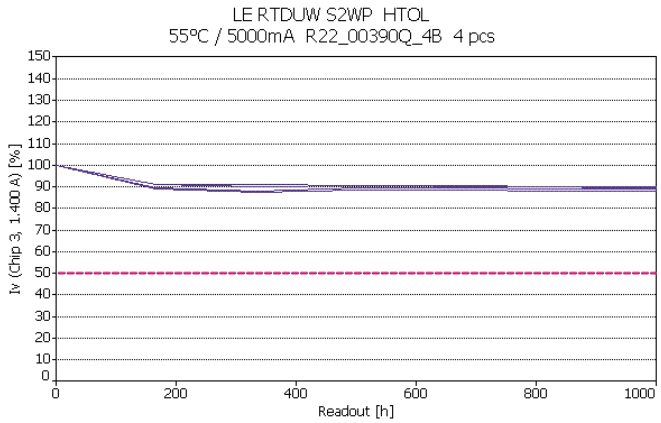


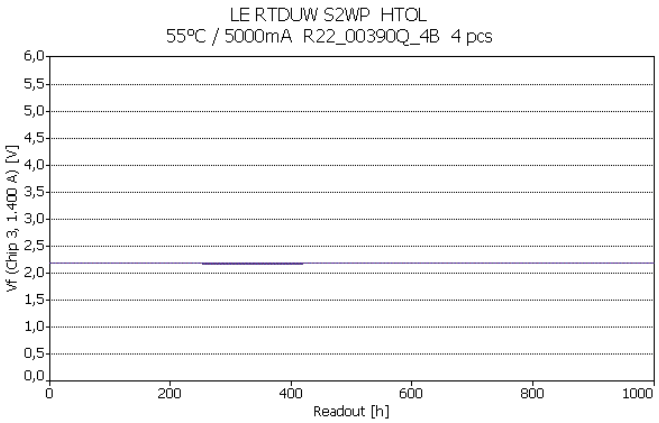


HTOL 55°C/5000mA

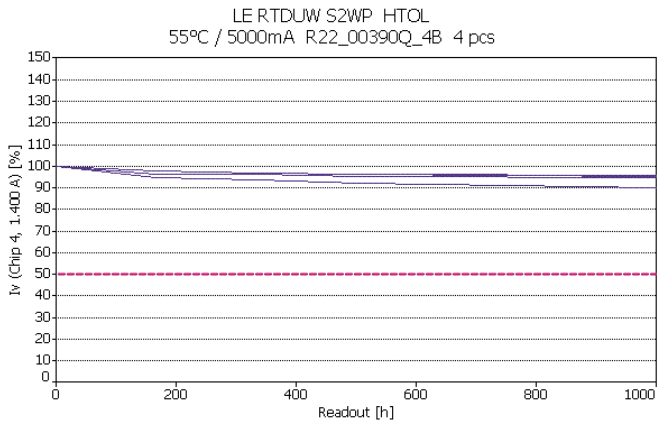
Lot B

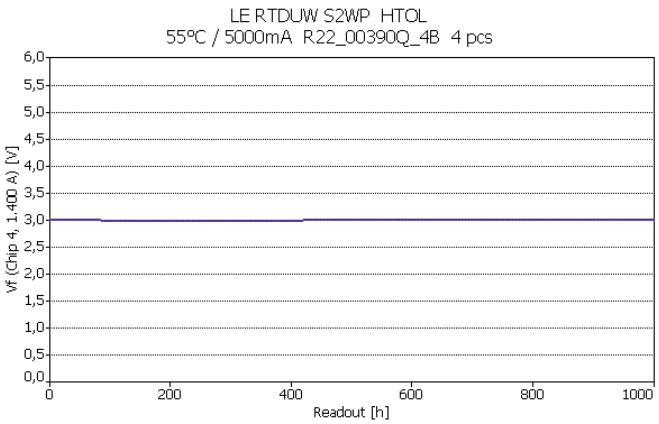
Red chip

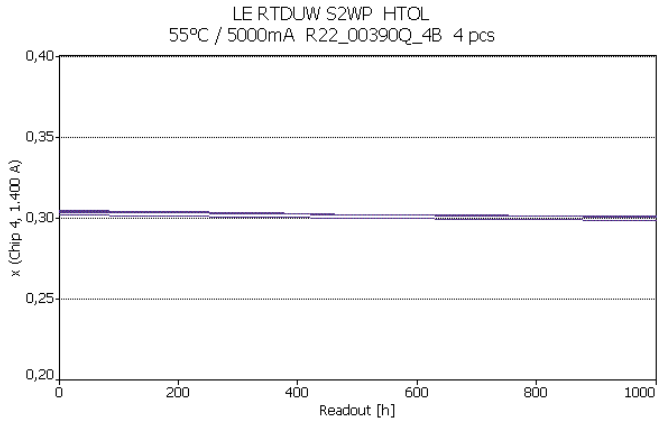


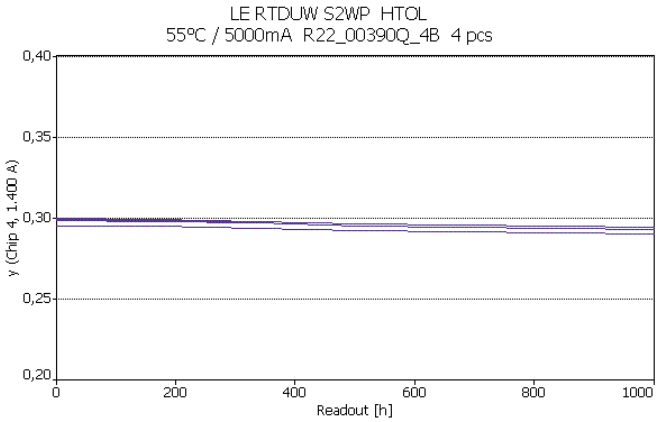


Ultra white chip





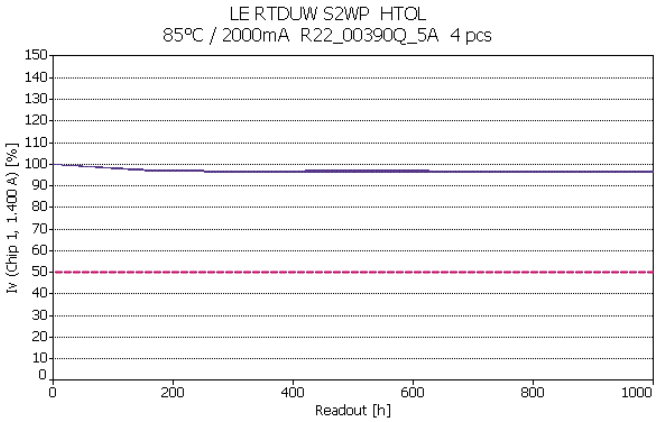


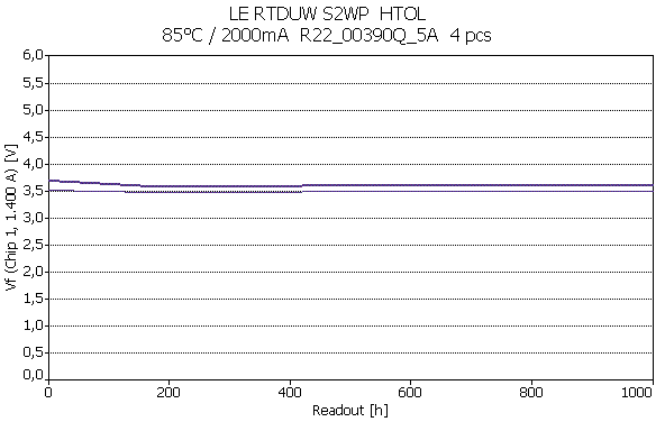


HTOL 85°C/2000mA

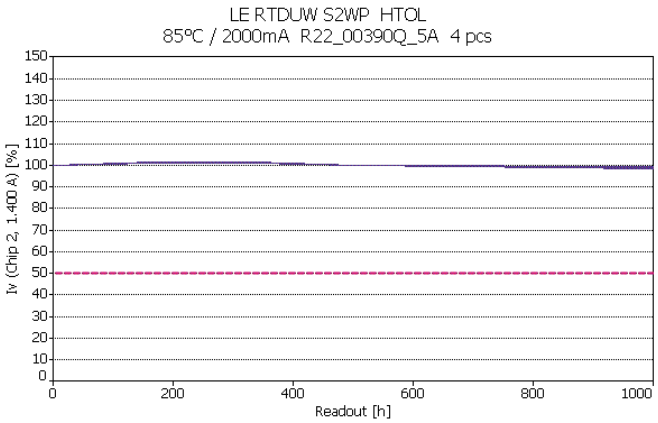
Lot A

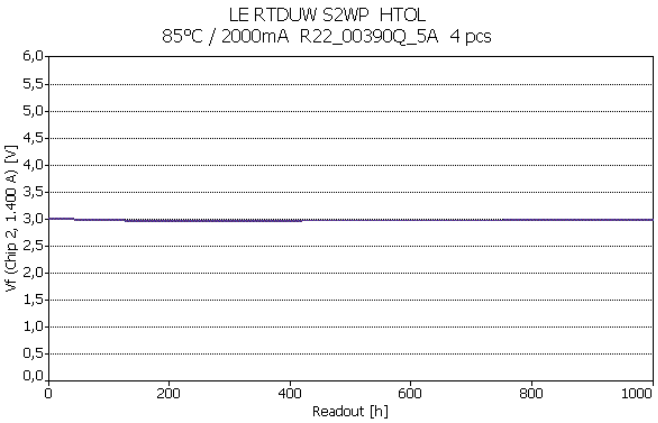
Deep blue chip





True green chip

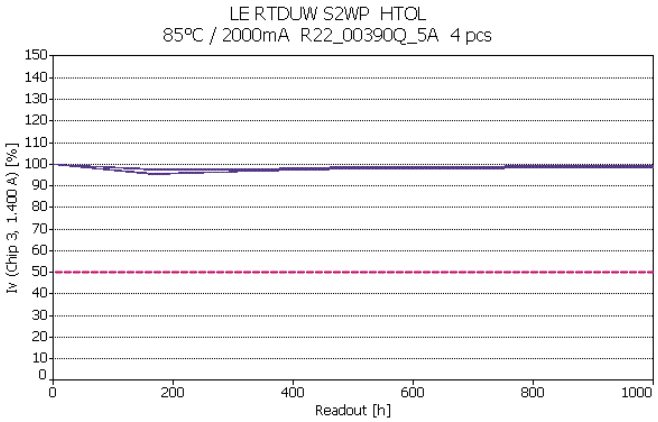


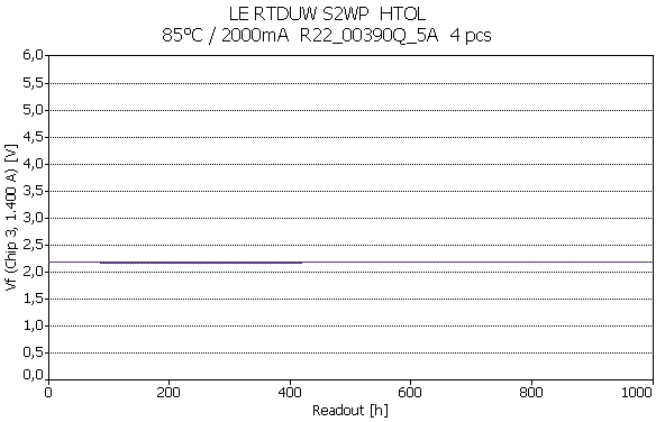


HTOL 85°C/2000mA

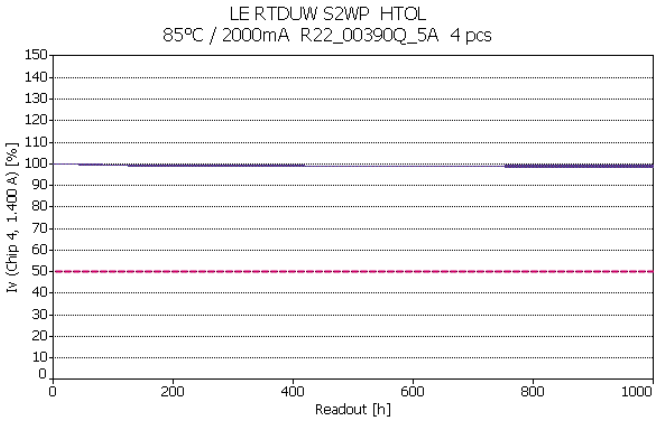
Lot A

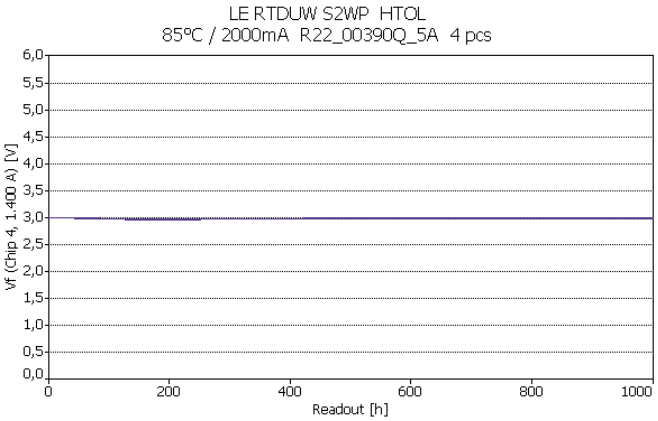
Red chip

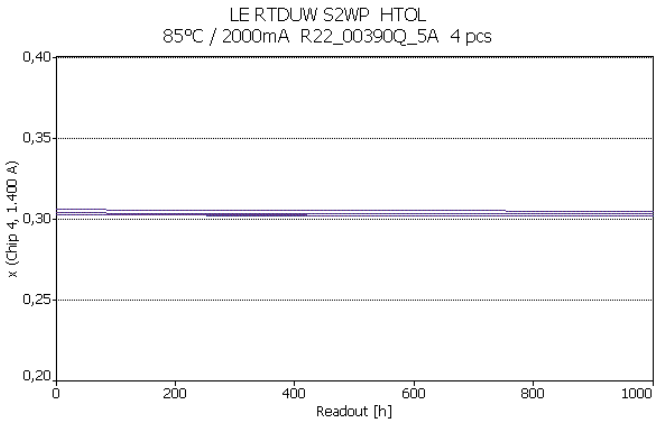


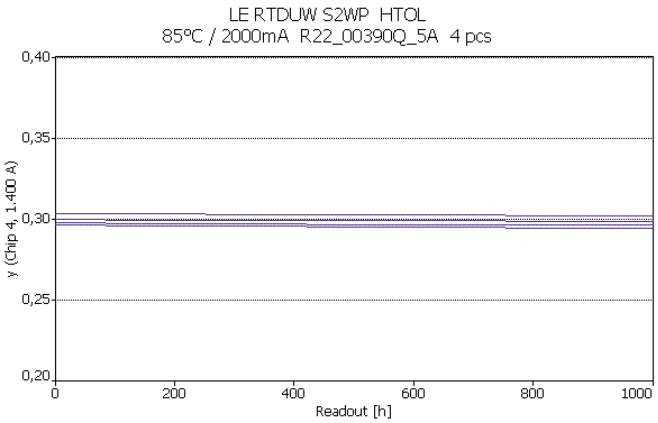


Ultra white chip





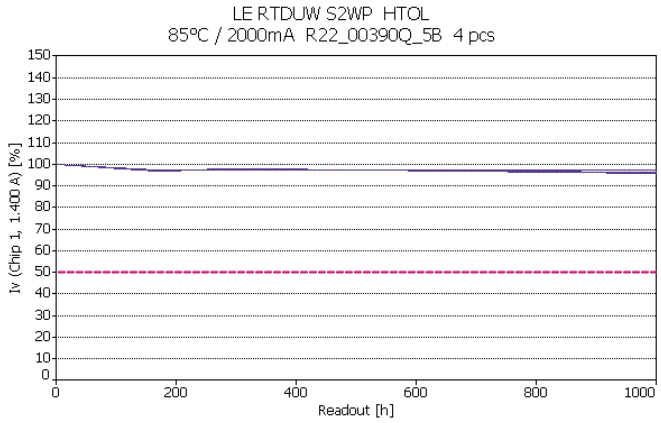


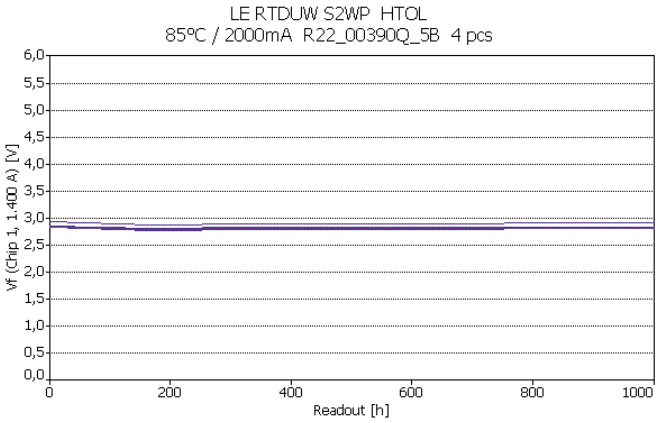


HTOL 85°C/2000mA

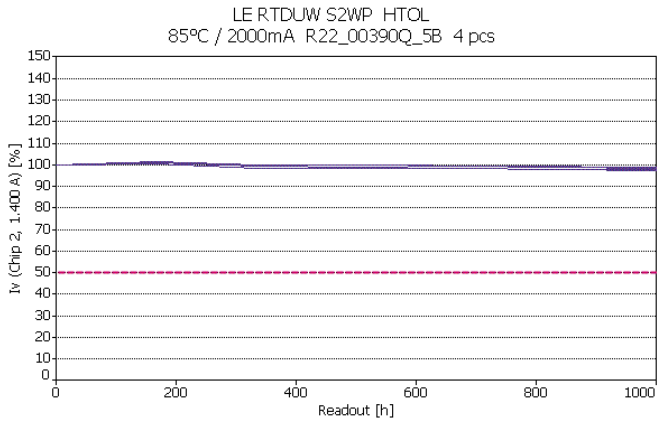
Lot B

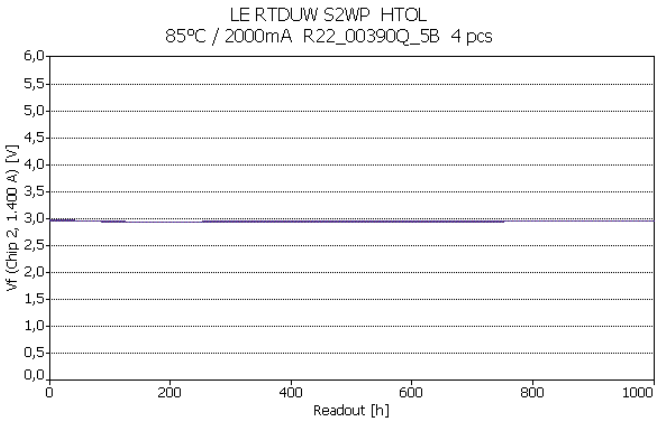
Deep blue chip





True green chip

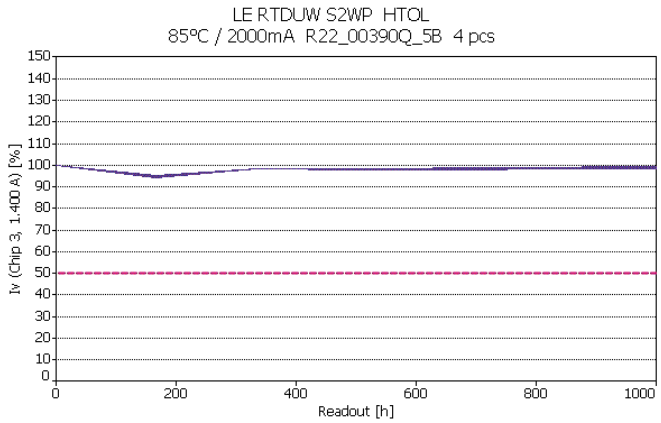


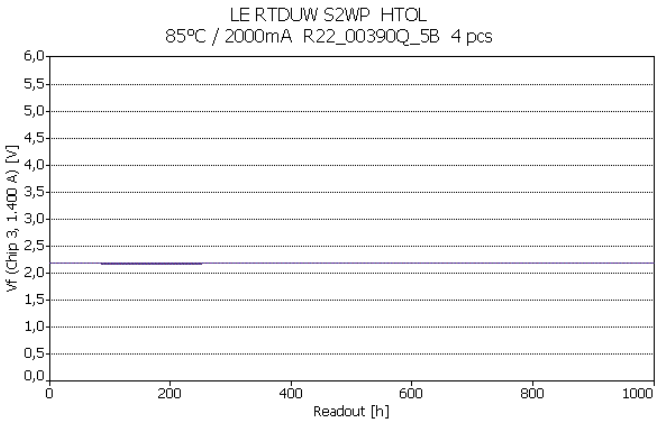


HTOL 85°C/2000mA

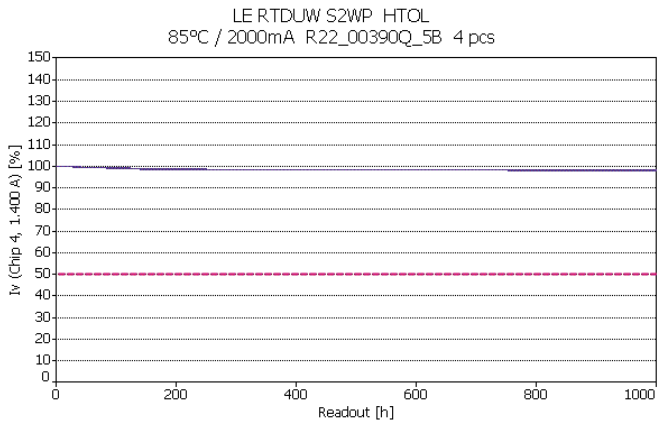
Lot B

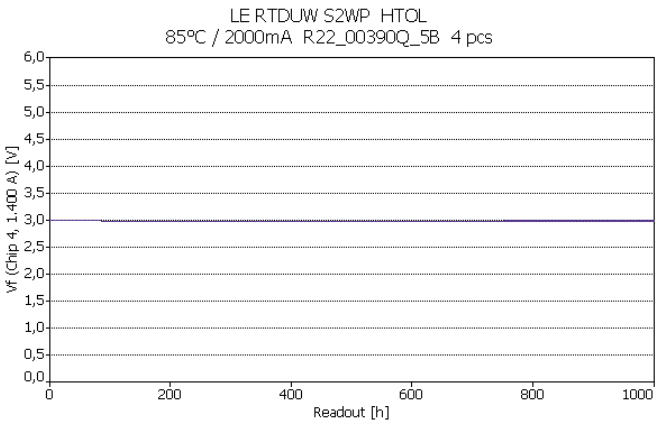
Red chip

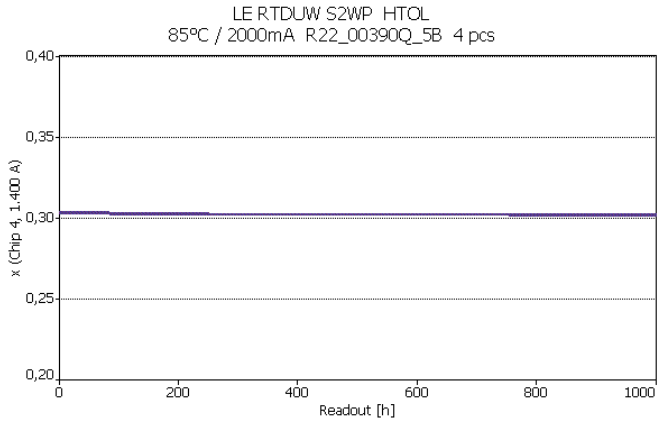


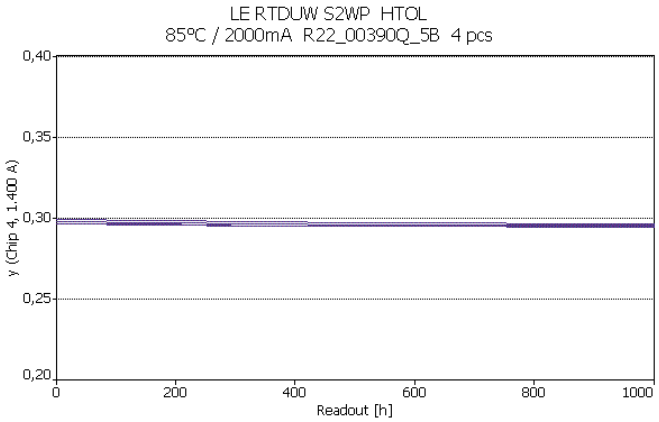


Ultra white chip





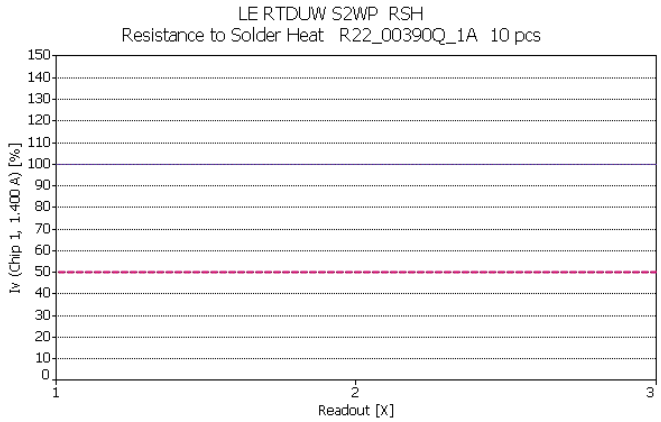


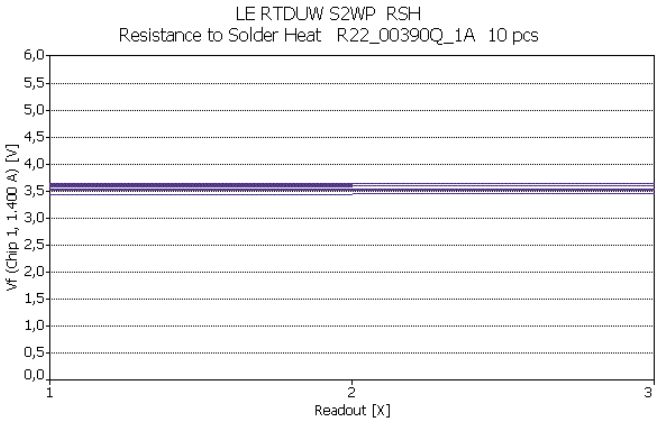


RSH Resistance to Solder Heat

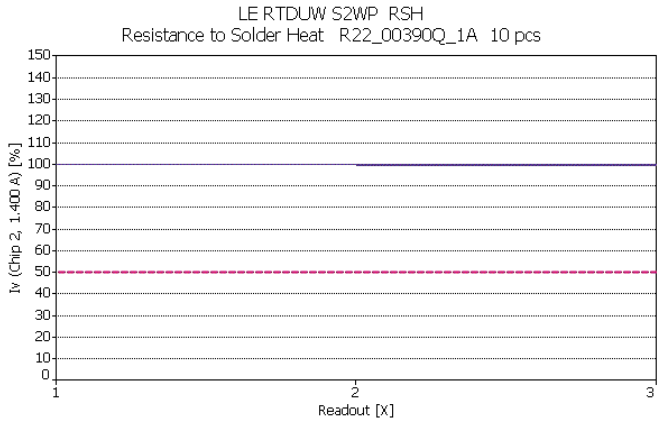
Lot A

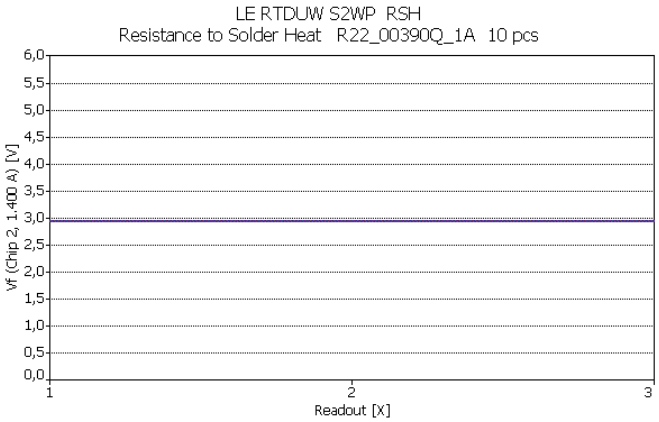
Deep blue chip





True green chip

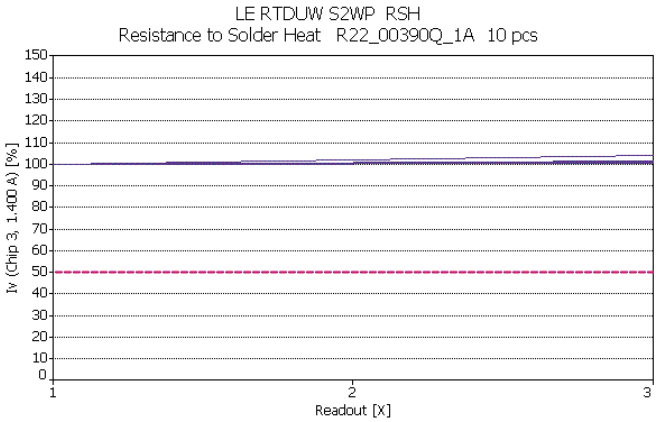




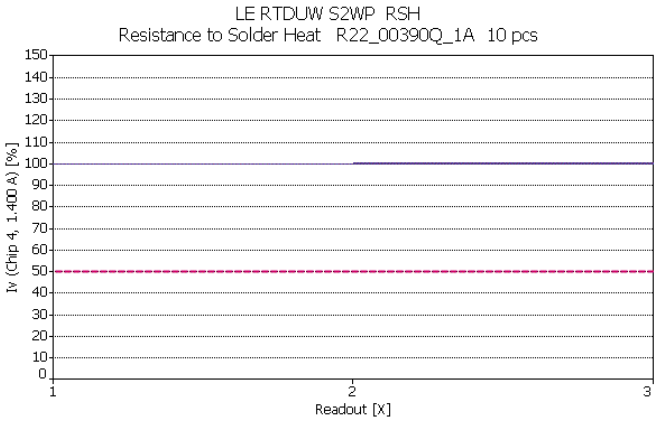
RSH Resistance to Solder Heat

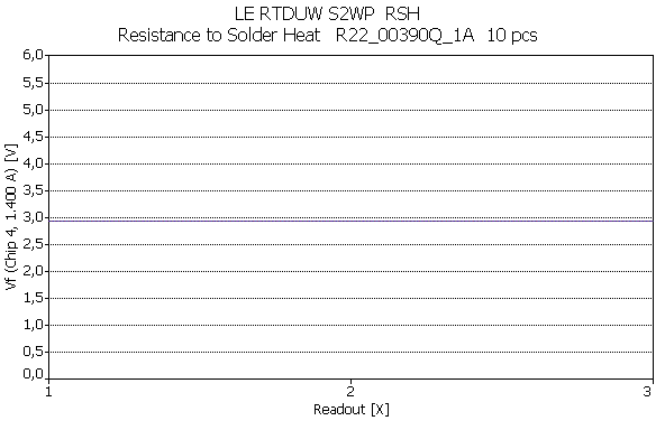
Lot A

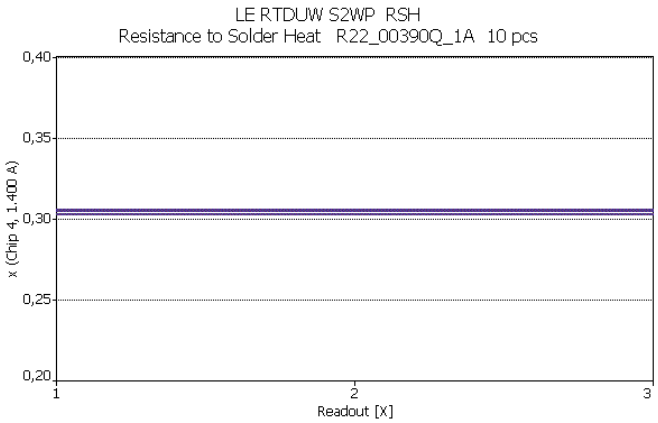
Red chip

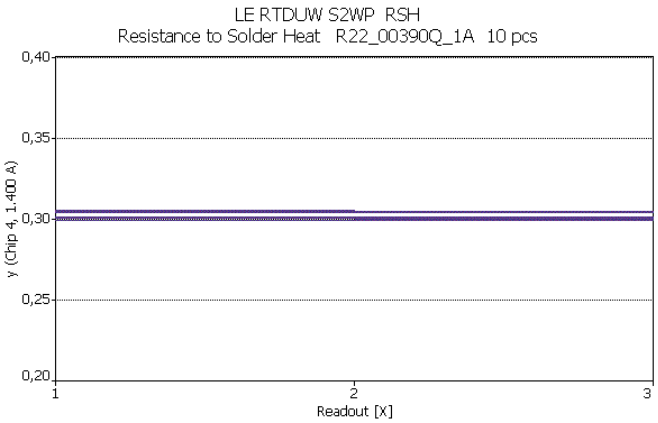


Ultra white chip





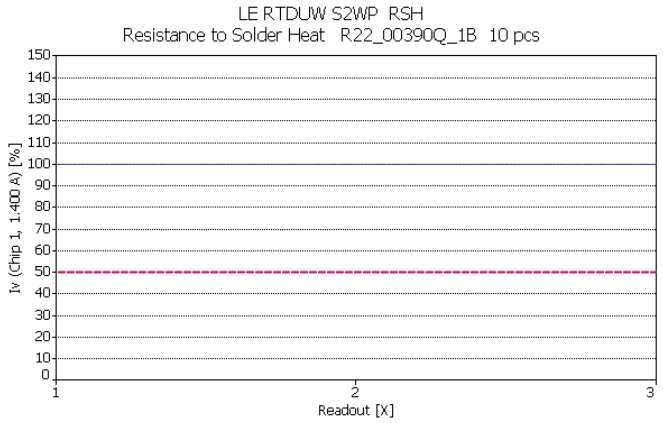


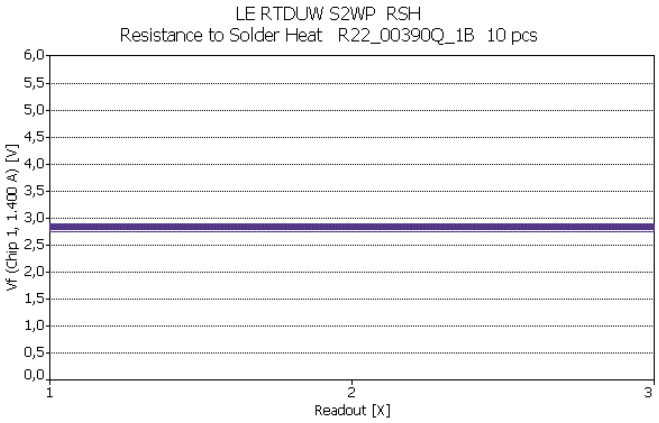


RSH Resistance to Solder Heat

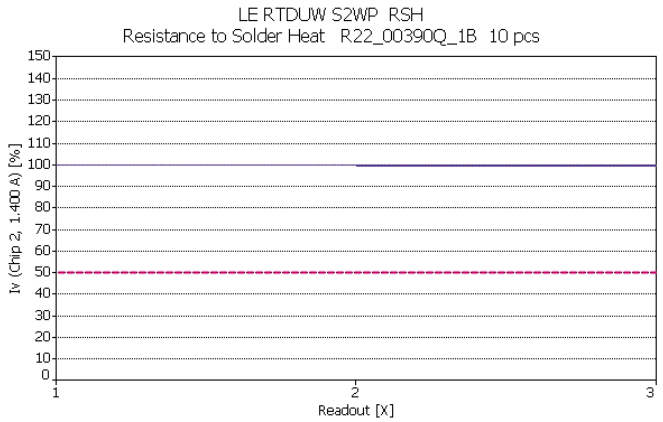
Lot B

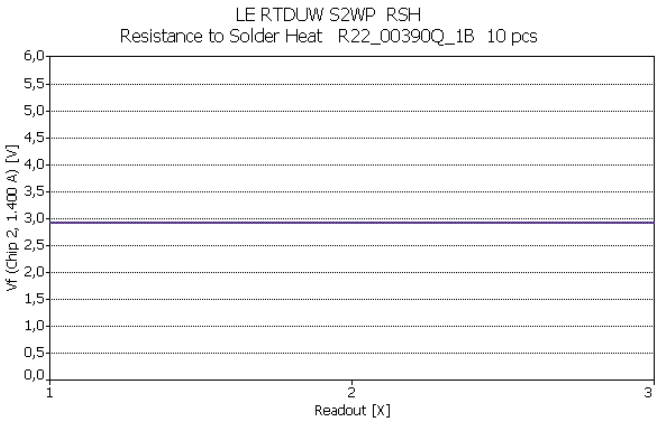
Deep blue chip





True green chip

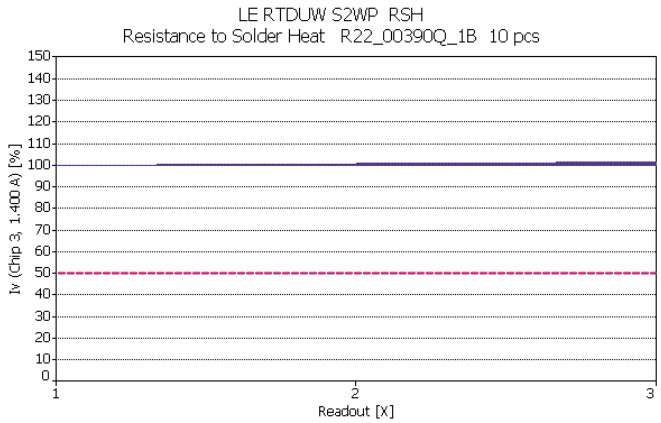


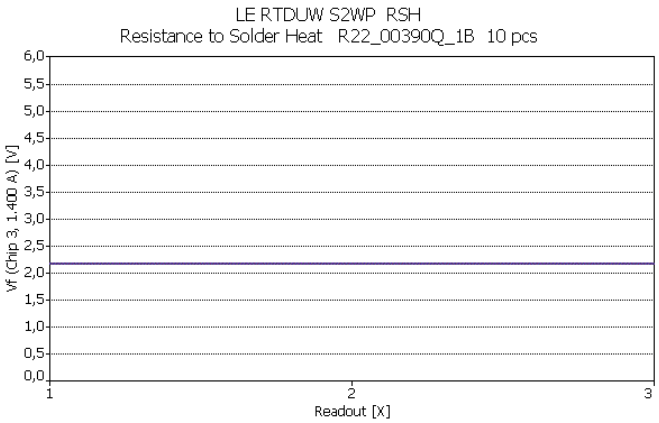


RSH Resistance to Solder Heat

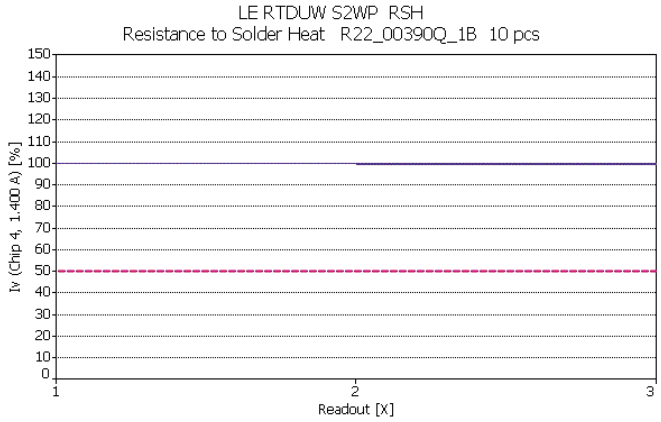
Lot B

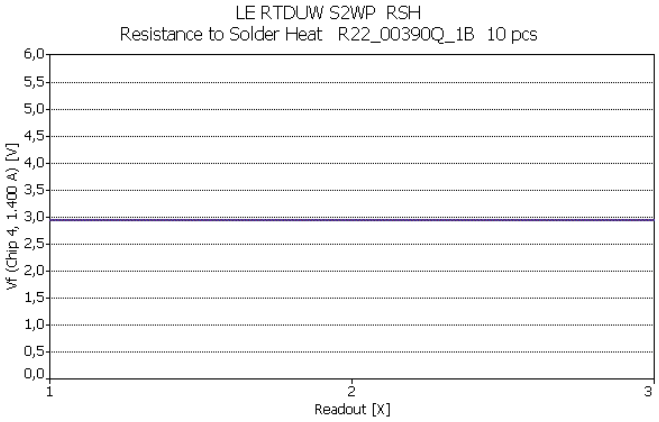
Red chip

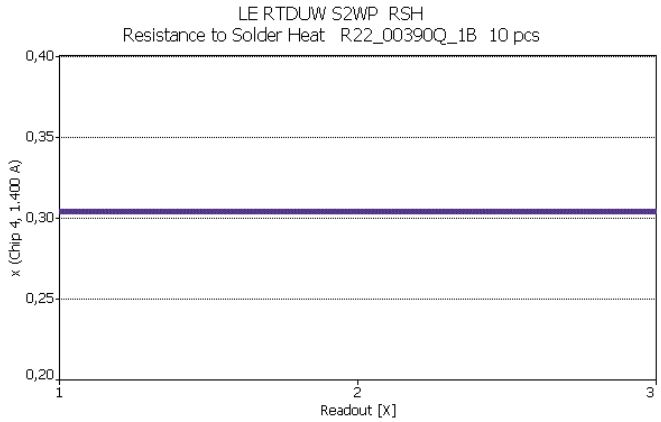


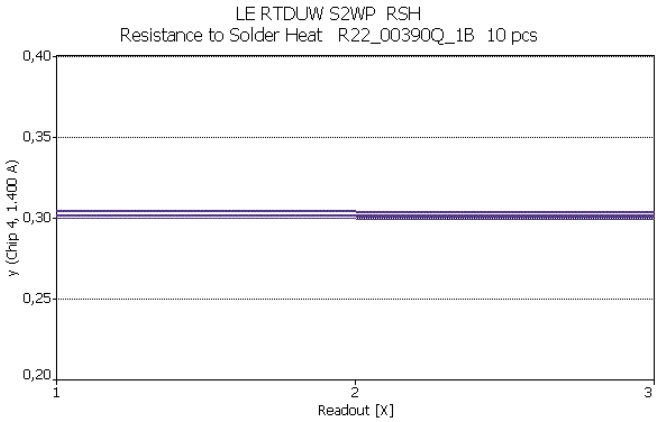


Ultra white chip





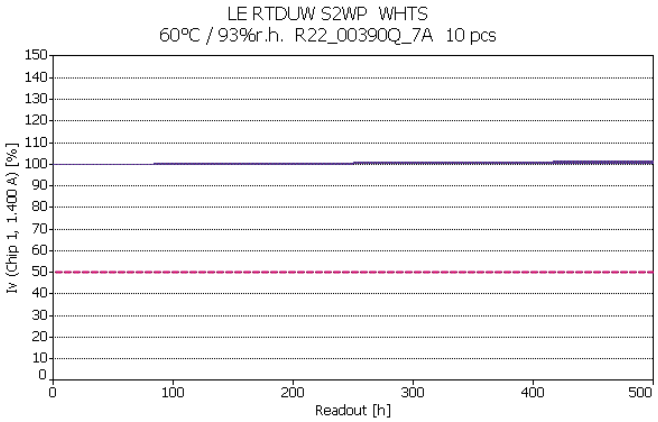


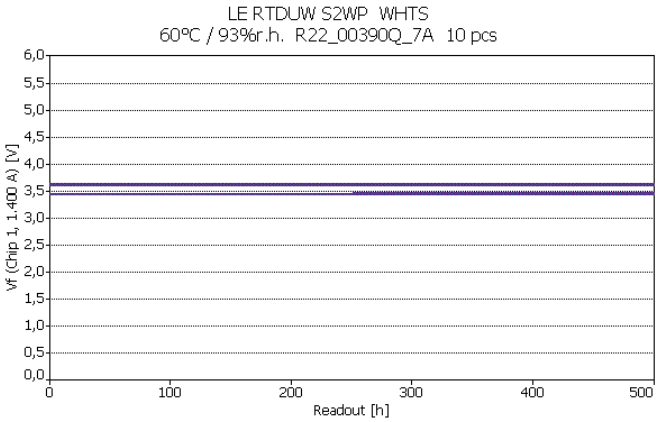


WHTS 60°C/93%,r.H.

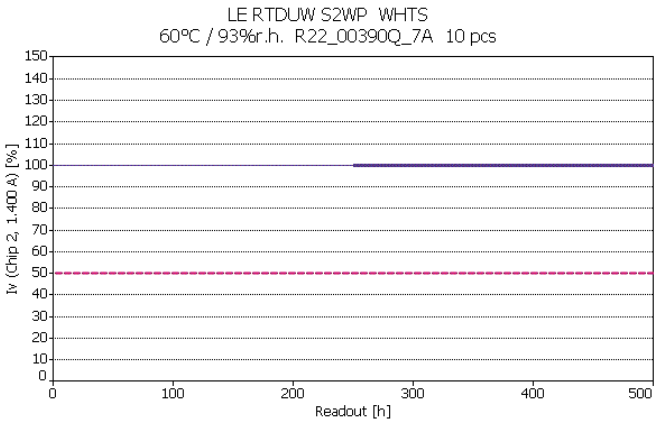
Lot A

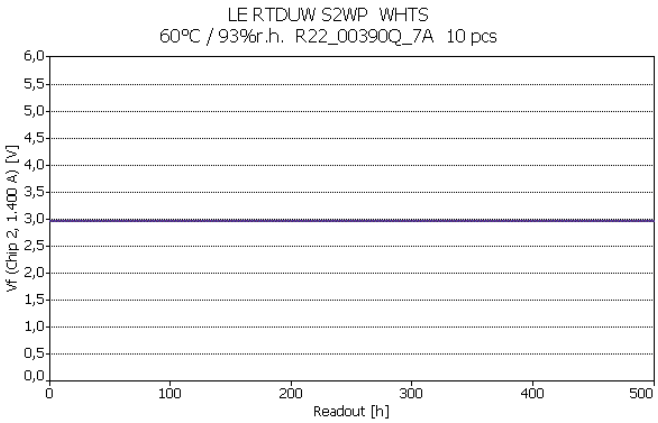
Deep blue chip





True green chip

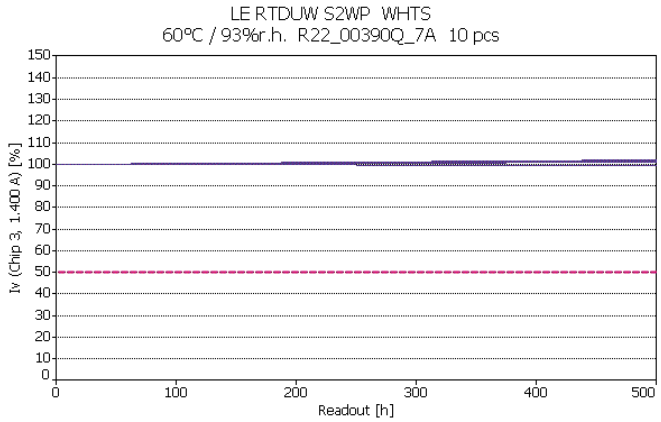


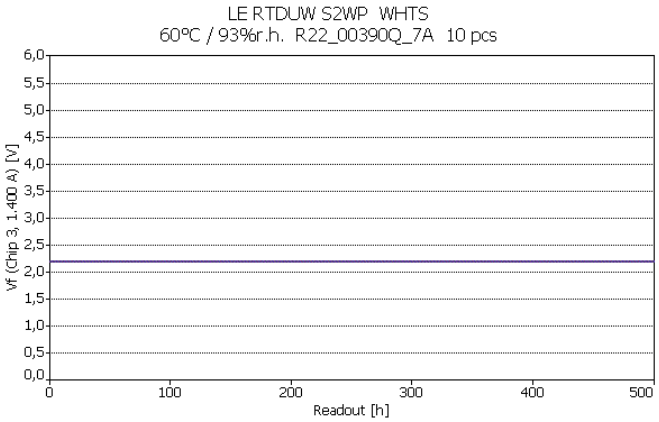


WHTS 60°C/93%,r.H.

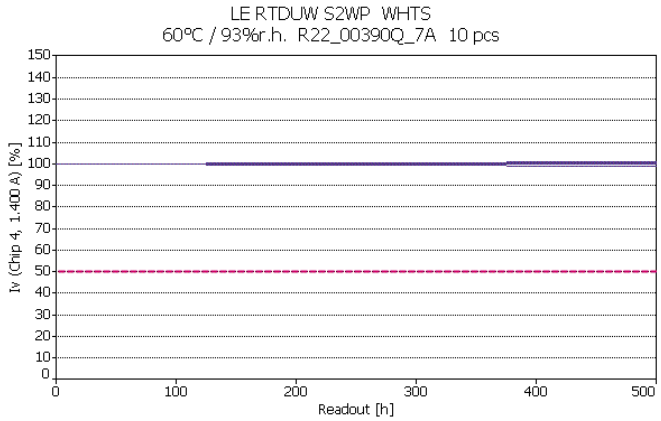
Lot A

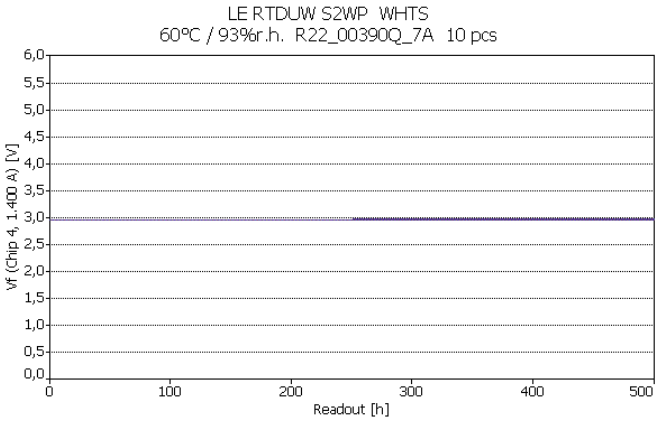
Red chip

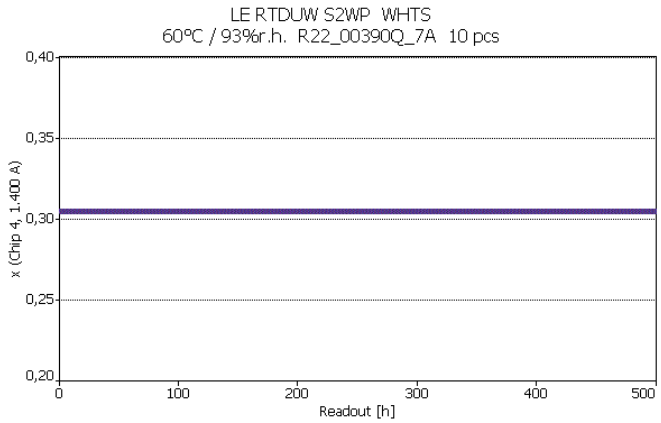


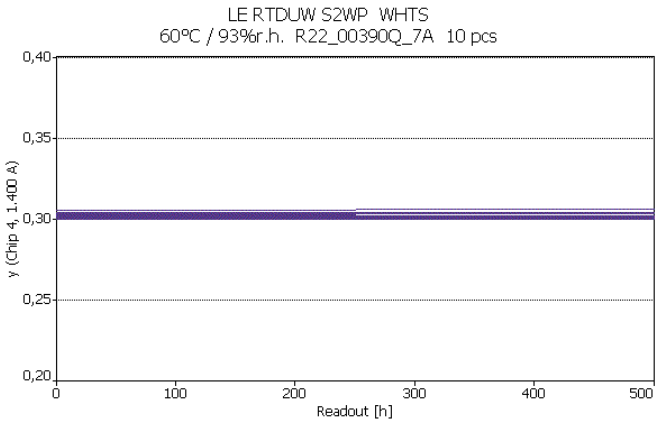


Ultra white chip





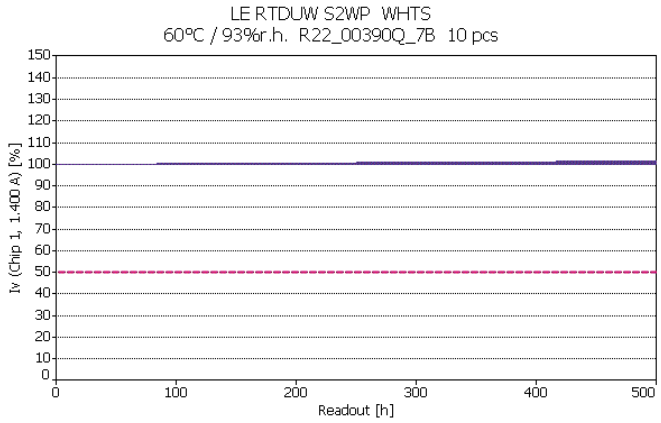


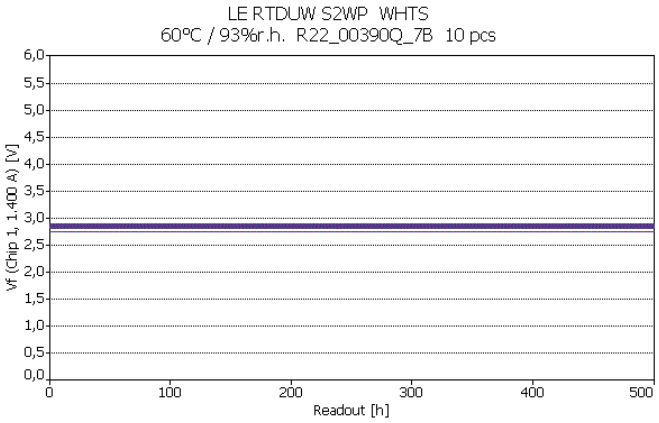


WHTS 60°C/93%,r.H.

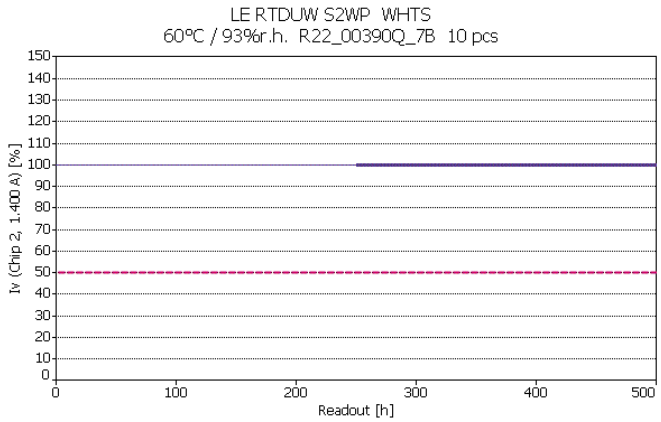
Lot B

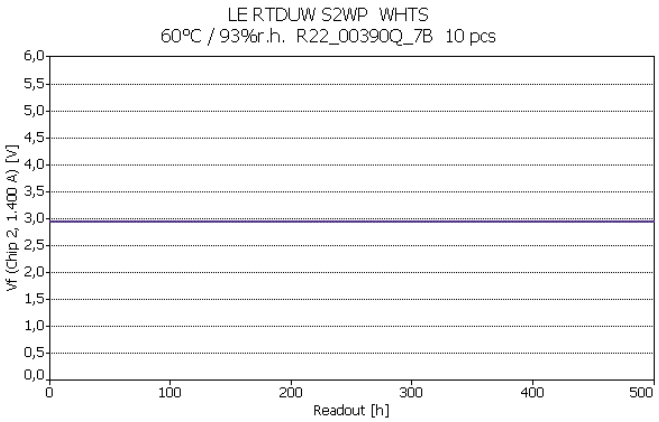
Deep blue chip





True green chip

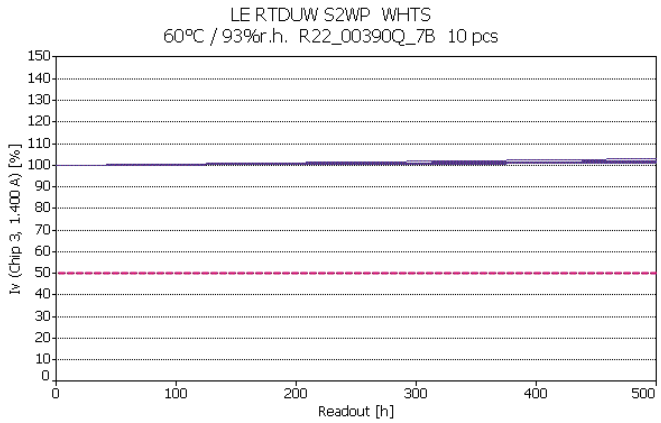


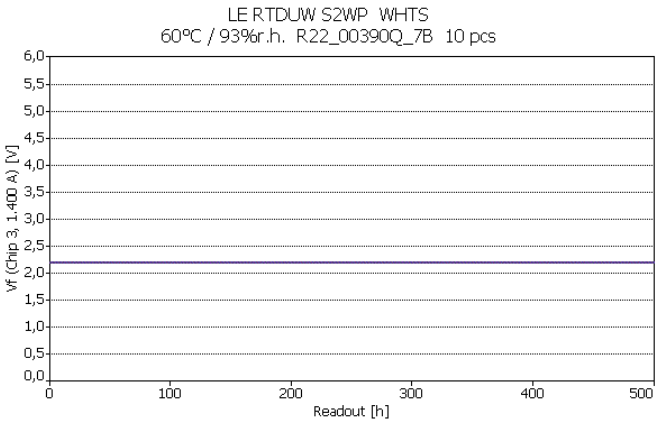


WHTS 60°C/93%,r.H.

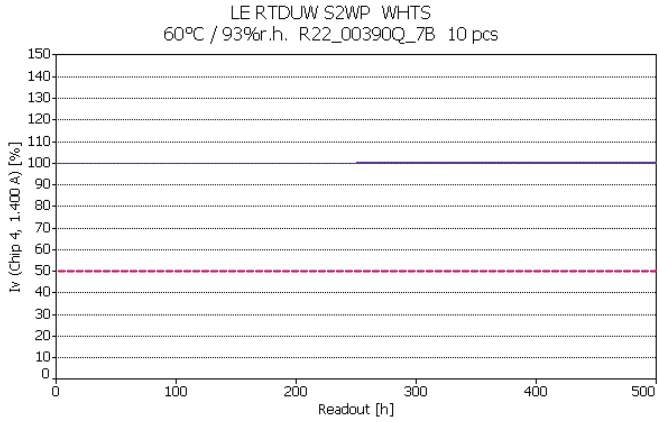
Lot B

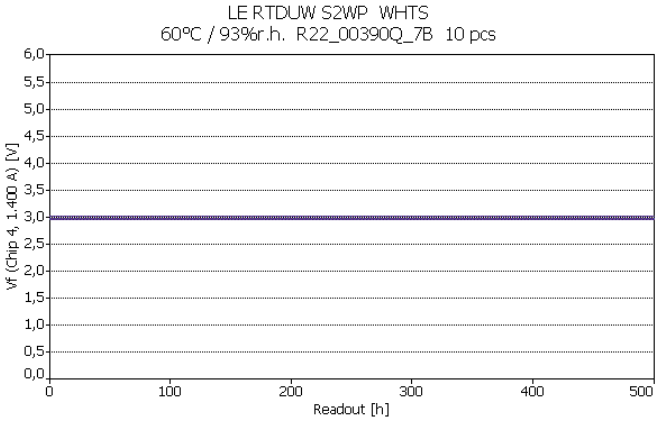
Red chip

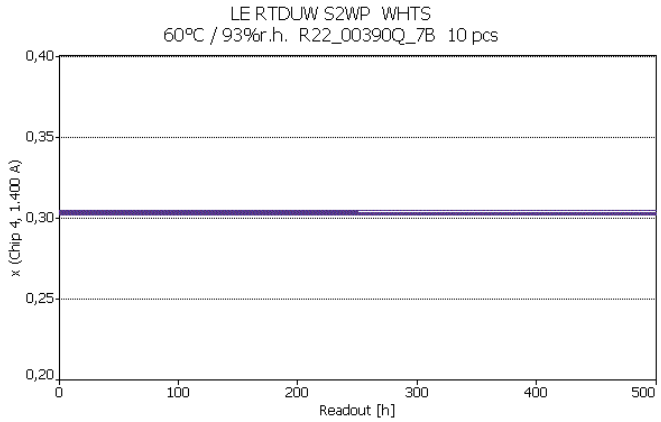


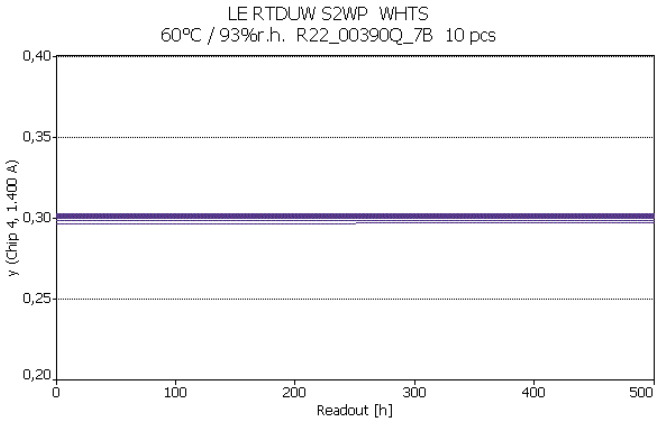


Ultra white chip





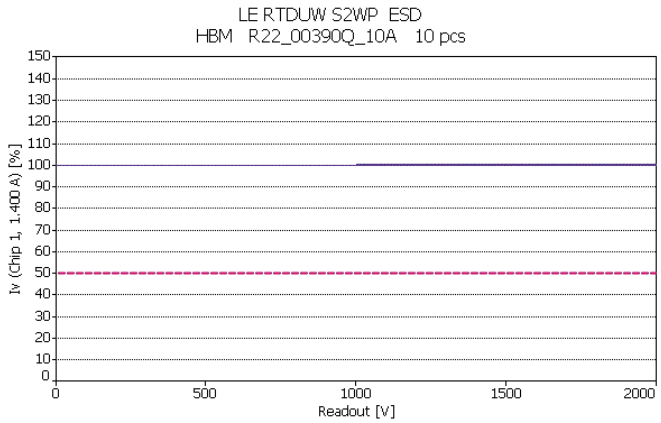


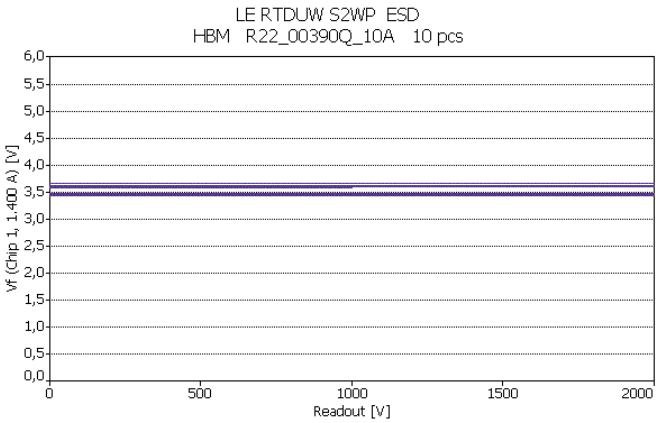


ESD HBM

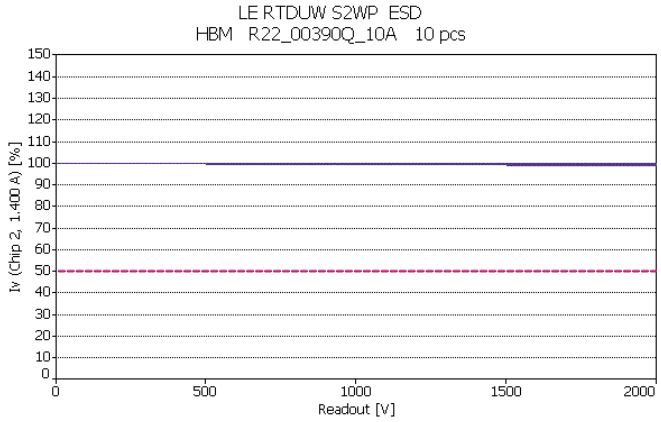
Lot A

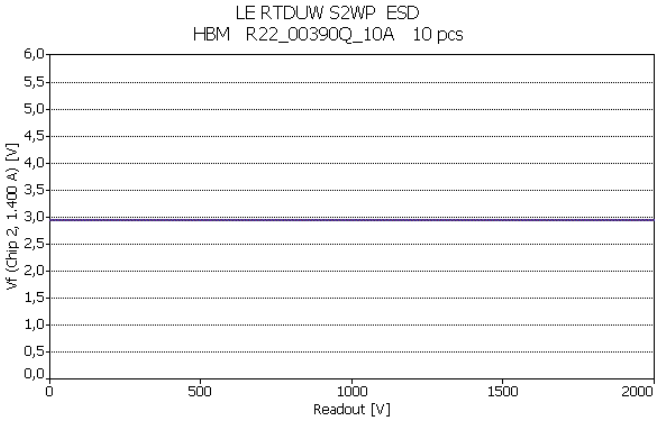
Deep blue chip





True green chip

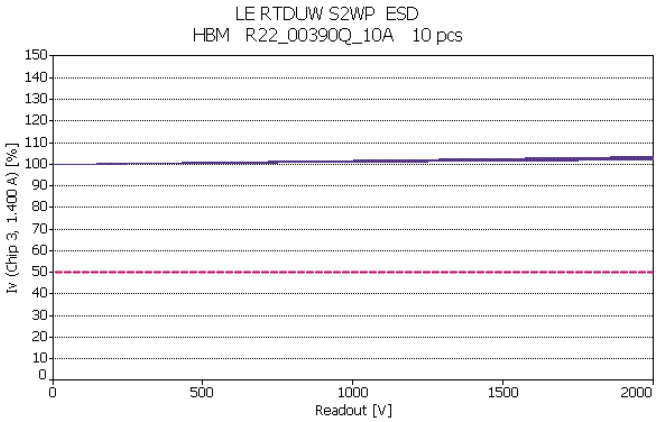


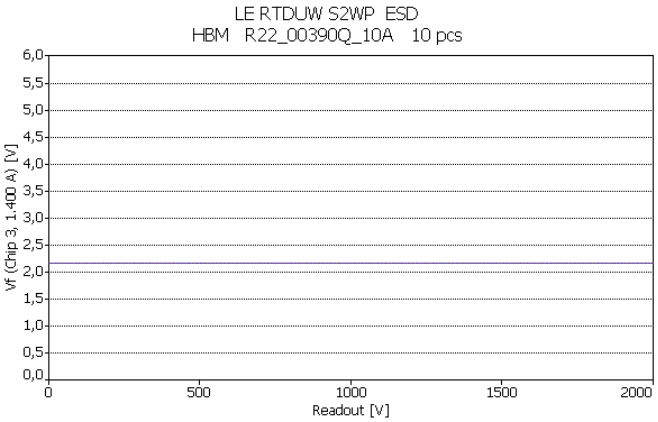


ESD HBM

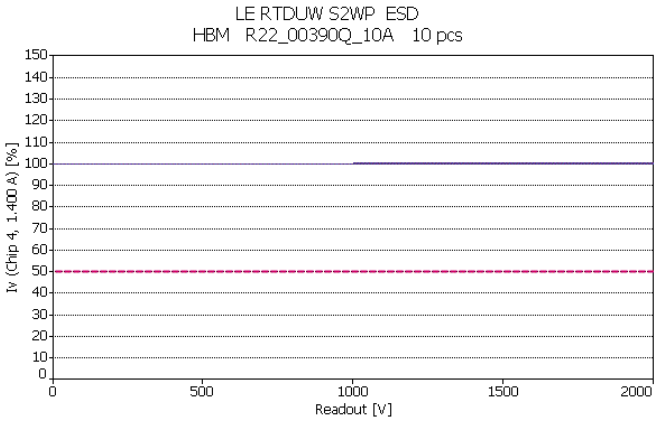
Lot A

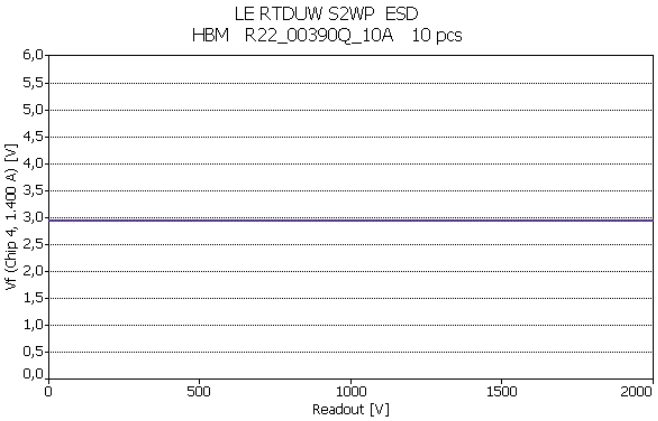
Red chip

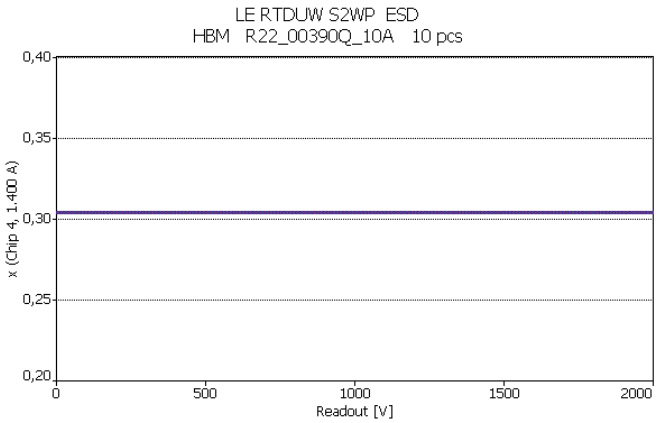


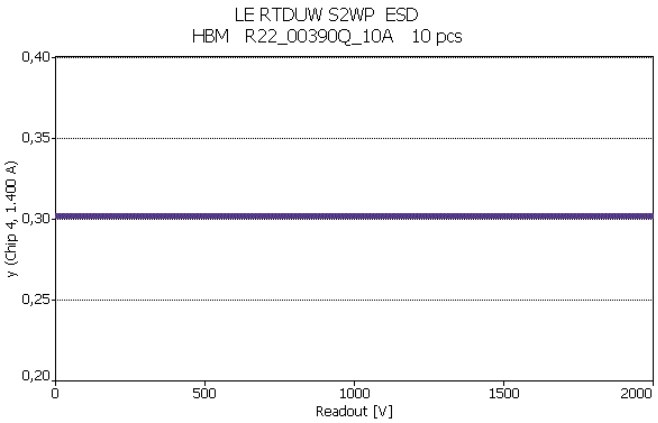


Ultra white chip





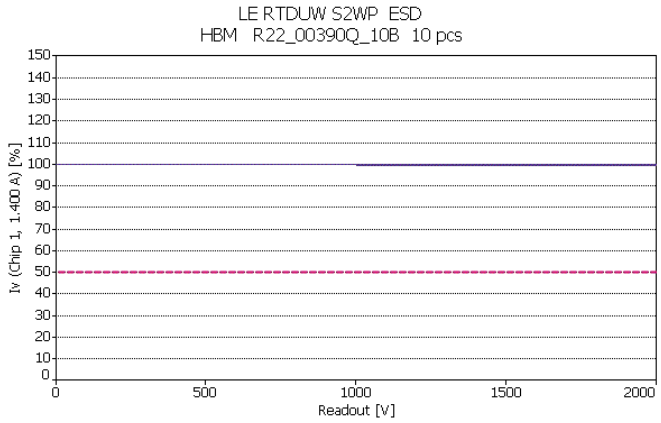


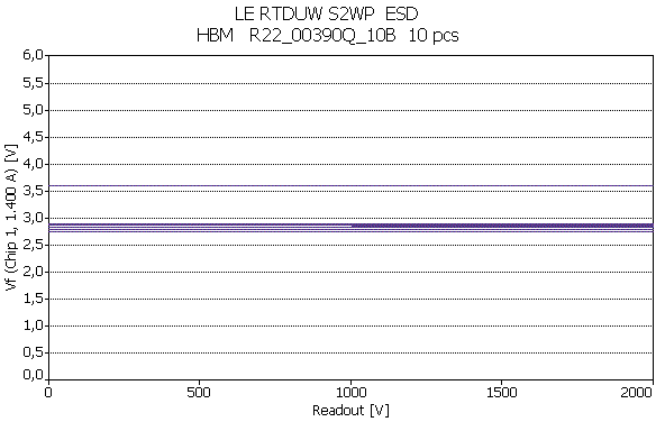


ESD HBM

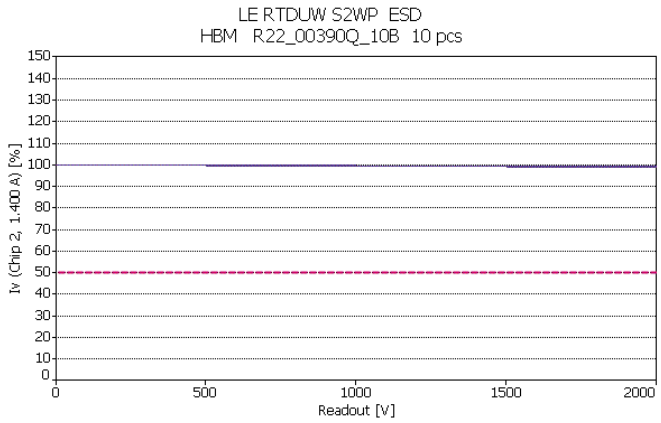
Lot B

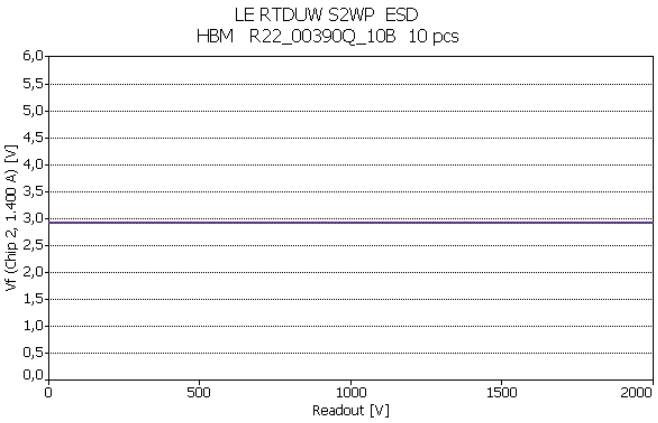
Deep blue chip





True green chip

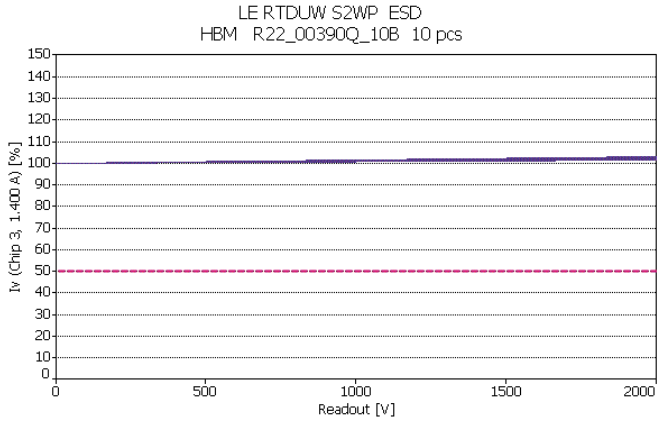


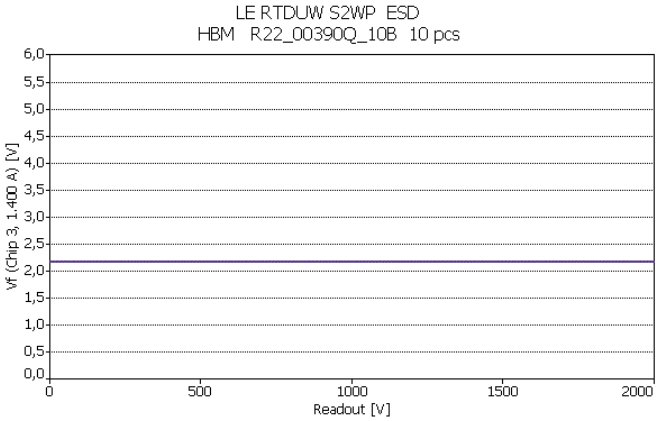


ESD HBM

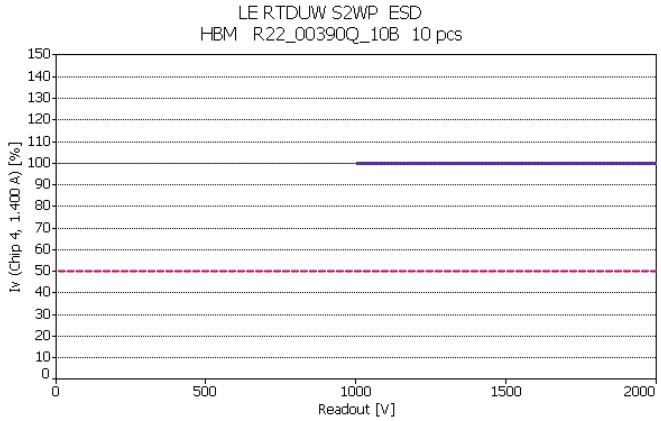
Lot B

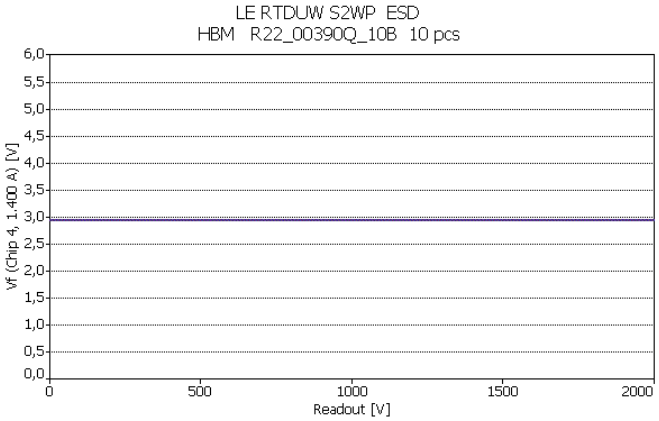
Red chip

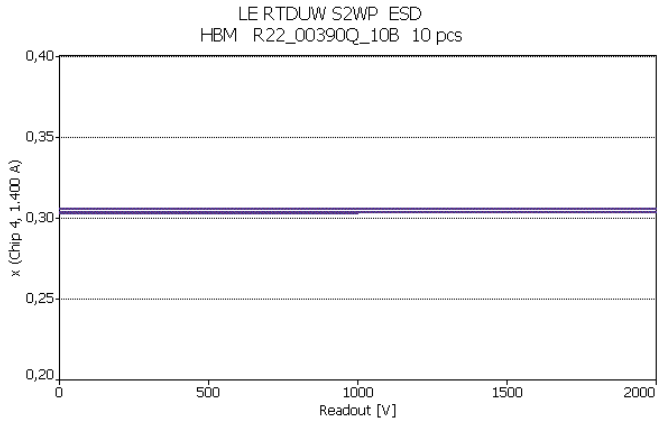


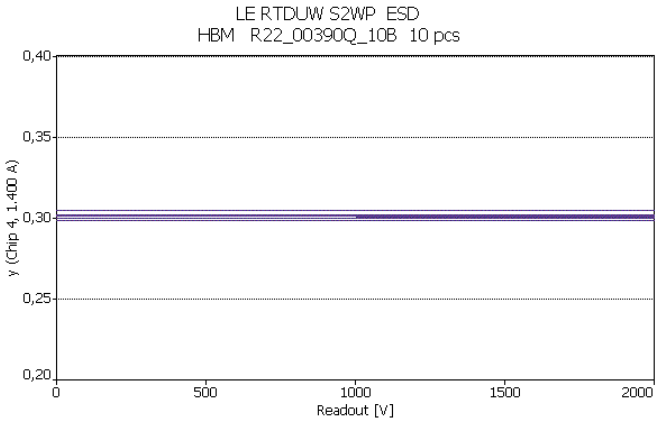


Ultra white chip





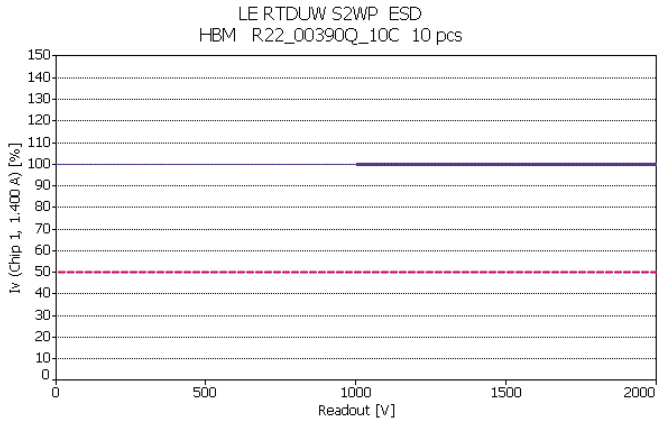


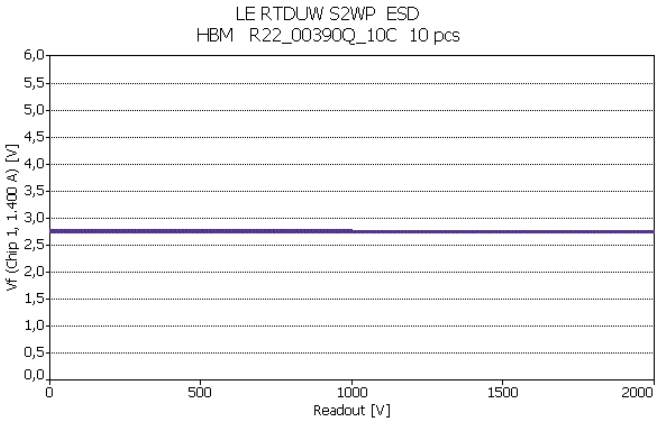


ESD HBM

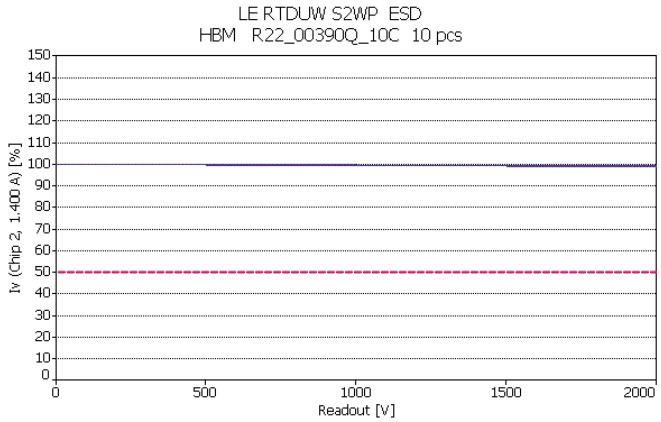
Lot C

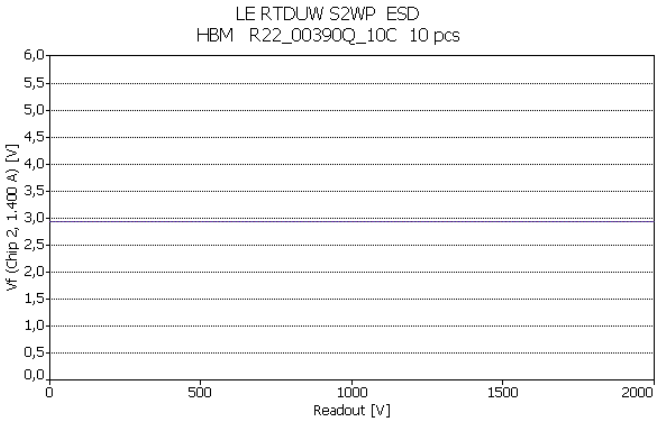
Blue deep chip





True green chip

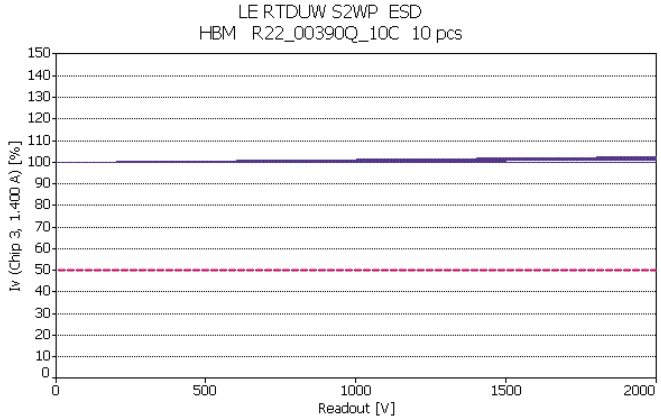


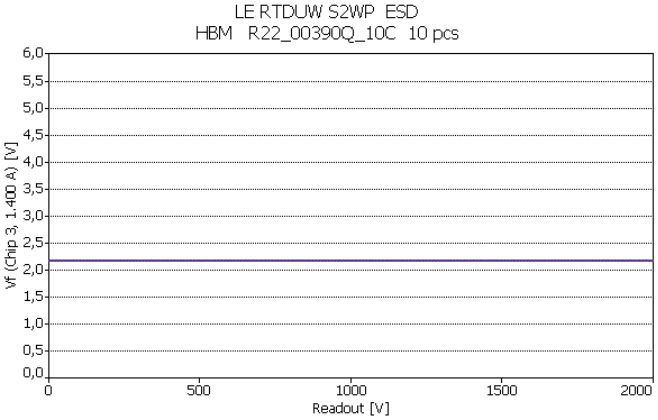


ESD HBM

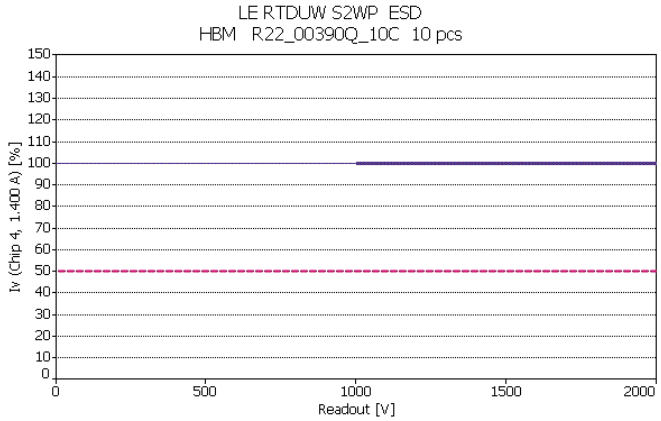
Lot C

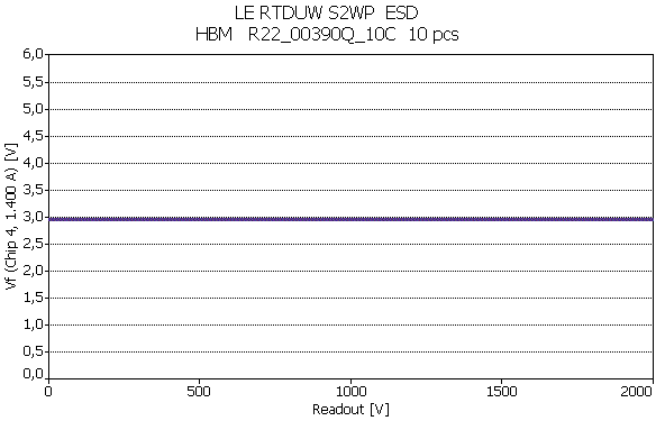
Red chip

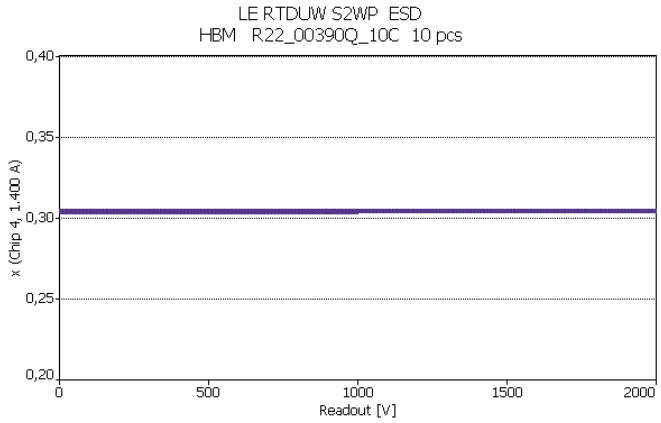


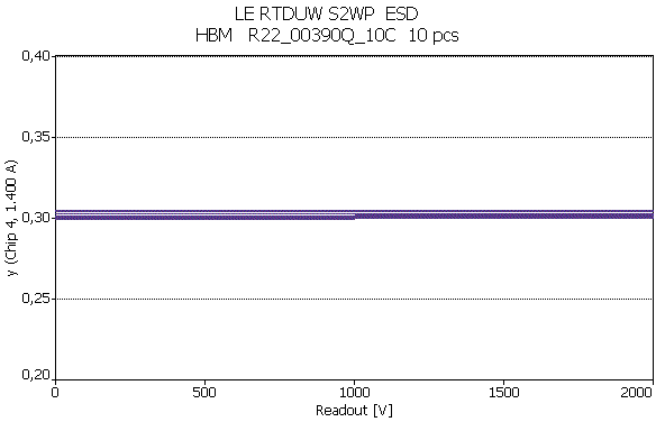


Ultra white chip





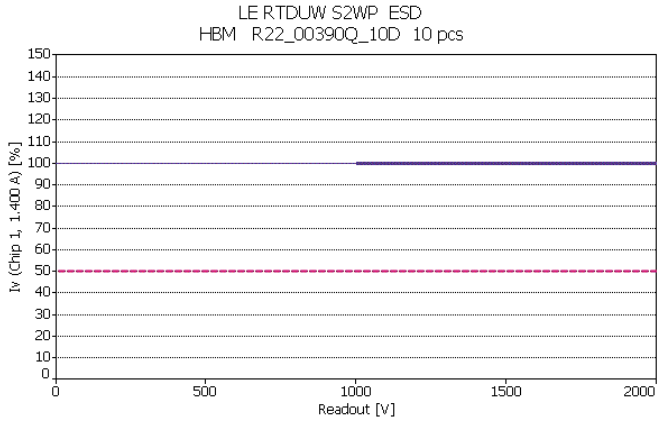


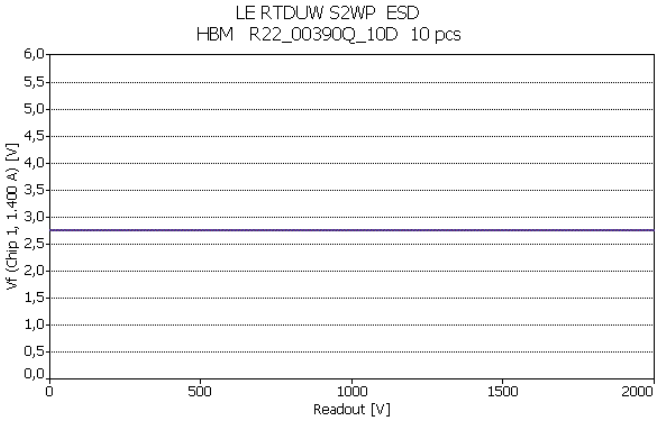


ESD HBM

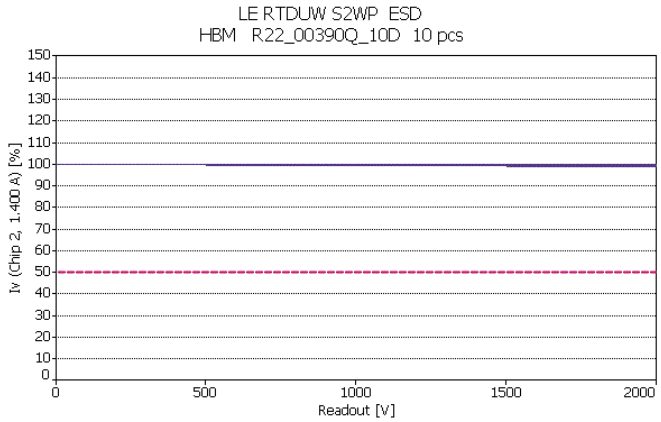
Lot D

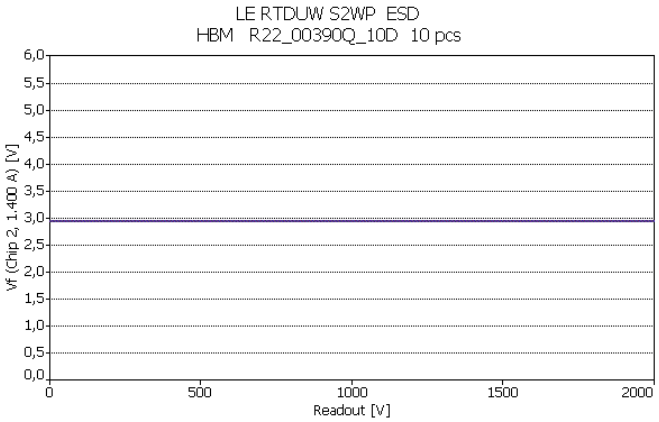
Deep blue chip





True green chip

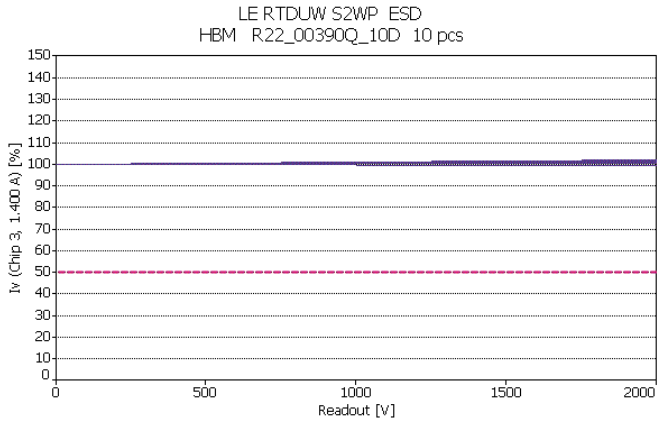


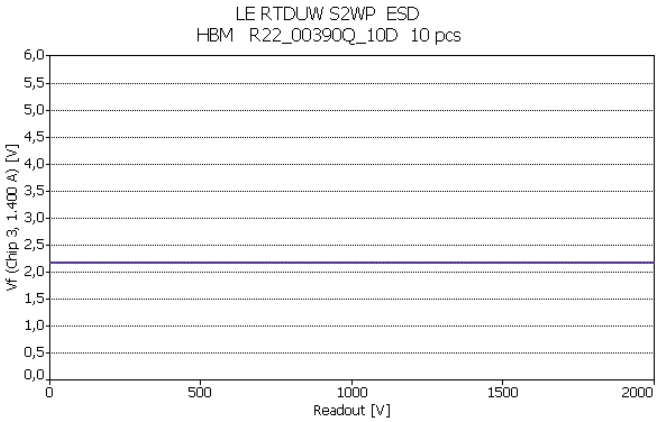


ESD HBM

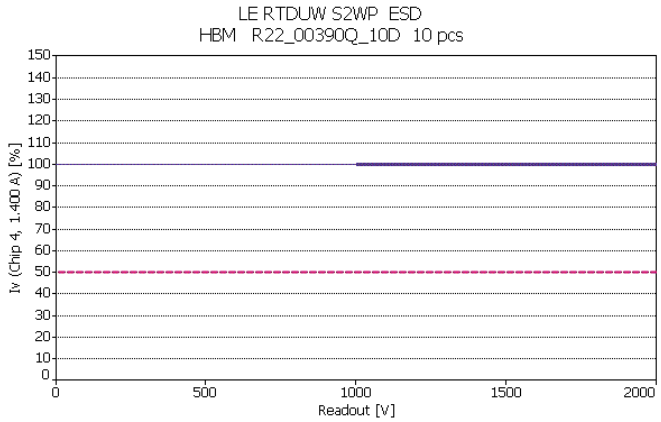
Lot D

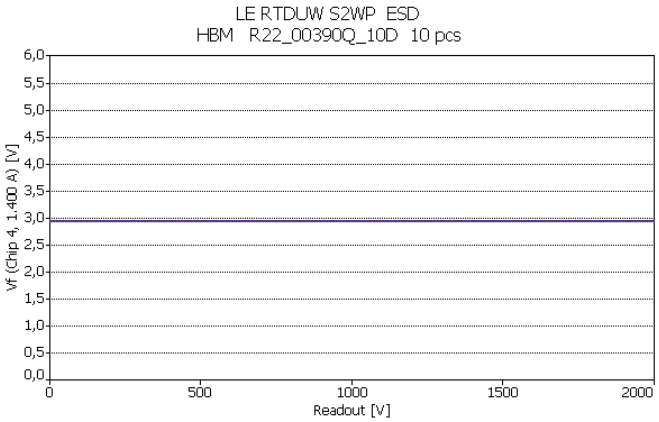
Red chip

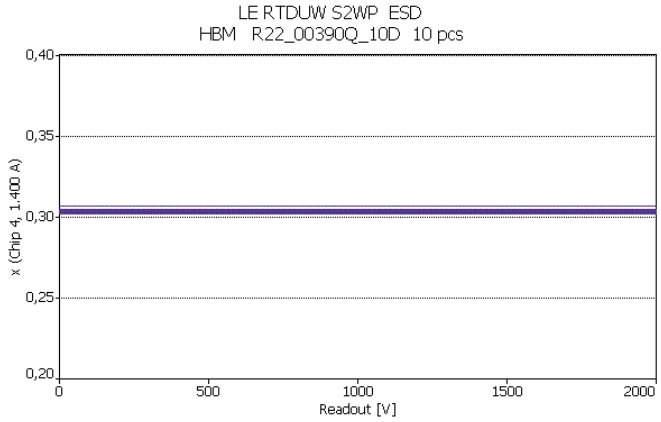


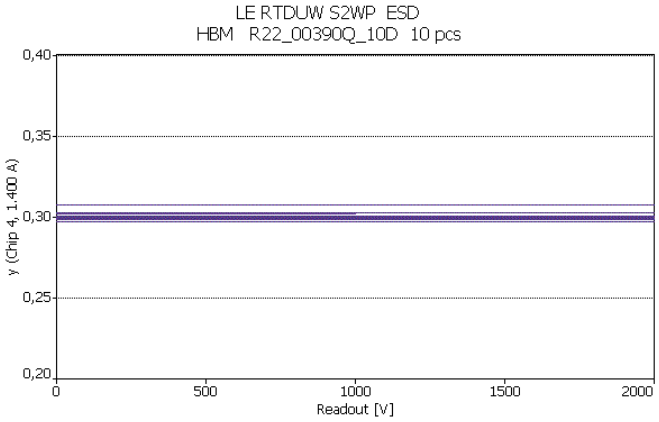


Ultra white chip









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ams-OSRAM AG
Tobelbader Strasse 30
8141 Premstaetten, Austria
Phone +43 3136 500-0
ams-osram.com