

# CEL Embedded RF Wireless Products



California Eastern Laboratories



## 802.15.41 ZIGBEE SOLUTIONS



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California Eastern Laboratories

CEL's comprehensive line of ZigBee solutions includes ICs, modules, and software application packages designed for use in mesh, point-to-point, and point-to multipoint systems. They provide a fully integrated, easy-to-use transceiver solution for IEEE 802.15.4 networks. CEL ZigBee modules and ICs are ideal for remote sensing, AMR/AMI, home and building automation, and security applications.

### Integrated RF Transceiver/MCU for ZigBee /IEEE 802.15.4/SNAP Networks

#### Key Features:

- Industry leading RF Link Budget @ 106 dB
- Embedded 8051 Compatible MCU
- with 96KB/8KB Flash/RAM
- Scalable Data Rate: 250kbps for ZigBee, 500kbps
- Voice Codec Support
- 4 Level Power Management Scheme
- Single Voltage Operation of 1.9 to 3.3V
- Hardware MAC



For quantities greater than listed, call for quote.

MOUSER STOCK NO.	CEL Part No.	Operating Frequency (MHz)	Supply Voltage (V)	Output Power	Sensitivity	MCU	Flash Memory	Data Memory	Price Each			
									1	10	100	500
551-ZIC2410QN48	ZIC2410QN48	2400 to 2483	1.5 -3.3V	+8 dBm	-98 dBm	8-bit	96 KB	8 KB	11.24	10.34	8.10	7.20

### Mesh Connect™ Modules – ZICM2410P0 Series

#### Key Features:

- Scalable Data Rate : 250kbps for Zigbee, 500kbps and 1Mbps
- Voice Codec Support:  $\mu$ -law/a-law/ADPCM
- 4 Level Power Management Scheme w/ Deep Sleep Mode (0.3 $\mu$ A)
- 16 RF Channels
- Over 3000 feet of range
- AES 128-bit encryption
- Network: Mesh, Point to Point, Point to Multipoint



For quantities greater than listed, call for quote.

MOUSER STOCK NO.	CEL Part No.	Description	Transceiver Chipset	Fmax	I/O	Tx Power Output	Rx Sensitivity	Range	Vcc	Rx Current	Tx Current	Price Each		
												1	10	25
551-ZICM2410P0-1	ZICM2410P0-1	PCB Trace Antenna	MeshConnect™	16 MHz	22	+6 dBm	-97dBm	3000+ft	2.1V-3.0V	35mA	44mA	19.00	18.10	17.10
551-ZICM2410P0-1C	ZICM2410P0-1C	U. FL Conn. for Ext. Ant.	ZIC2410	16 MHz	22	+6 dBm	-97dBm	3000+ft	2.1V-3.0V	35mA	44mA	20.50	19.50	18.40
551-ZICM2410P2-2	ZICM2410P2-2	PCB Trace Antenna	8-BIT, 8051	16 MHz	20	+20Dbm	-103 dBm	16000+ ft	2.1-3.3	38mA	200mA	29.60	27.93	26.28
551-ZICM2410P2-1C	ZICM2410P2-1C	U. FL Conn. for Ext. Ant.		16 MHz	20	+20 dBm	-103.5dBm	12,000+ft	2.1V-3.3V	38mA	175mA	23.71	22.38	21.04

#### With SNAP Software

551-ZICM2410P0-1-SN	ZICM2410P0-1-SN	PCB Trace Antenna	MeshConnect™	16 MHz	22	+6 dBm	-97dBm	3000+ft	2.1V-3.0V	35mA	44mA	19.50	18.60	18.35
551-ZICM2410P0-1C-SN	ZICM2410P0-1C-SN	U.FL Conn. for Ext. Ant.	ZIC2410	16 MHz	22	+6 dBm	-97dBm	3000+ft	2.1V-3.0V	35mA	44mA	20.50	19.60	19.55
551-ZICM2410P2-1C-SN	ZICM2410P2-1C-SN	U.FL Conn. for Ext. Ant.	8-BIT, 8051	16 MHz	20	+20 dBm	-103.5dBm	12,000+ft	2.1V-3.3V	38mA	175mA	23.50	22.40	22.33

#### Mesh Connect Development Kit

MOUSER STOCK NO.	CEL Part No.	Description	Price Each
551-ZICM2410P0KIT2-1	ZICM2410P0-KIT2-1	Engineering Dev. Kit	458.00
551-ZICM2410P2KIT1-1	ZICM2410P2-KIT1-1	Engineering Dev. Kit	208.00

### Mesh Connect™ Modules - ZICM357 Series

#### Key Features:

- Based on Ember EM357 system on a chip (SoC)
- Range: Up to 2.5 miles
- Network Speed: 250Kbps
- RF Channels: 15
- Networks: Mesh, Point to Point, and point to multipoint



For quantities greater than listed, call for quote.

MOUSER STOCK NO.	CEL Part No.	Description	Transceiver Chipset	Fmax	I/O	Tx Power Output	Rx Sensitivity	Range	Vcc	Rx Current	Tx Current	Price Each		
												1	10	25
551-ZICM357P2-1	ZICM357P2-1	PCB Trace Antenna	Ember, EM357	24 MHz	23	+20dBm	-100 dBm	13000+ ft	2.7-3.6	28mA	170mA	27.00	26.52	26.28

#### Mesh Connect Evaluation Kit

551-ZICM357P2-KIT-1	ZICM357P2-KIT-1	Engineering Dev. Kit	Eval Board w/ Modules (2), USB Cable, Software & Technical Information, Jumpers & Batteries									375.00	-	-
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### FreeStar Pro Transceiver Modules – ZFSM-201-1 Series

#### Key Features:

- 32-bit ARM7TDMI based microprocessor
- Extensive on-board memory resources
- Up to 100 mW output power
- Over 4000 feet of range
- AES 128-bit encryption



For quantities greater than listed, call for quote.

MOUSER STOCK NO.	CEL Part No.	Description	Transceiver Chipset	Fmax	I/O	Network	Tx Power Output	Rx Sensitivity	Vcc	Rx Current	Tx Current	Price Each		
												1	10	25
551-ZFSM-201-1	ZFSM-201-1	PCB Trace Antenna	MC13224V	32MHz	46	Point to Point, Point to Multipoint, Mesh	+20dBm	-96dBm	2.0-3.6V	30mA	193mA	27.12	25.98	24.83
551-ZFSM-201-1C	ZFSM-201-1C	MMCX Conn. for Ext. Ant.	MC13224V	32MHz	46	Point to Point, Point to Multipoint, Mesh	+20dBm	-96dBm	2.0-3.6V	30mA	193mA	32.23	30.87	29.51

#### FreeStar Pro Evaluation Kit

551-ZFSM-201-KIT-1	ZFSM-201-KIT-1	Engineering Eval. Kit	Eval Board w/ Module, USB Cables, Software & Technical Information, Jumpers & Batteries									399.00	-	-
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### FreeStar Transceiver Modules – ZFSM-101-2 Series

#### Key Features:

- Up to 100 mW output power
- Low power consumption: 125mA @ 10mW output, 150mA @ 100mW
- Over 4000 feet of range
- Simple UART interface



For quantities greater than listed, call for quote.

MOUSER STOCK NO.	CEL Part No.	Description	Transceiver Chipset	Fmax	I/O	Network	Tx Power Output	Rx Sensitivity	Vcc	Rx Current	Tx Current	Price Each		
												1	10	25
551-ZFSM-101-2	ZFSM-101-2	PCB Trace Antenna	Freescall MC1320Z	40MHz	8	Point to Point, Point to Multipoint, Mesh	+20dBm	-92dBm	2.4-3.6V	42mA	150mA	29.65	26.78	25.74

### Apex & Apex LT Modules

#### ZAXM-201-1 Apex Module Features:

- Ember™ EM260 platform
- 128KB Flash memory
- 5kB SRAM
- 16-bit XAP2b microprocessor
- 16 general purpose I/O ports
- DMA - SPI, I<sup>2</sup>C and UART interface
- Integrated ADC with 12-bit resolution

#### ZALM-301-1 Apex LT Module Features:

- Ember™ EM260 platform
- Integrated IEEE 802.15.4 PHY and MAC
- Dedicated network processor
- SPI or UART interface to application microcontroller
- Handles all ZigBee processing and timing sensitive tasks

Description	APEX	APEX LT	Description	APEX	APEX LT
Power Supply Voltage	3.6Vdc	3.6Vdc	Transmit Mode	170mA	170mA
RF Input Power	+10dBm	+10dBm	Receive Mode	37mA	37mA
RF Data Rate	250kbps	250kbps	Nominal Output Power	20dBm	20dBm
Flash Memory	128kB	--	Rec. Sens. (normal)	-96dBm	-96dBm
RAM	5kB	--			

MOUSER STOCK NO.	CEL Part No.	Description	Frequency Min./Max.	Price Each			
				1	10	25	50
551-ZAXM-201-1	ZAXM-201-1	100 mW Output power, PCB Trace Antenna	2400/2483.5	26.75	25.78	25.44	25.10
551-ZAXM-201-1C	ZAXM-201-1C	100 mW Output power, MMCX Connector	2400/2483.5	31.75	30.74	30.23	29.73
551-ZALM-301-1	ZALM-301-1	100 mW Output power	2400/2483.5	23.80	22.78	22.52	22.33
551-ZALM-301-1C	ZALM-301-1C	100 mW Output power, MMCX Connector	2400/2483.5	28.65	27.75	27.34	26.93
551-ZAXM-201-KIT-1	ZAXM-201-KIT-1	100mW Apex Evaluation Kit	2400/2483.5	400.00	-	-	-