



Company:
Model Tested:
Certification Exhibit:

California Eastern Laboratories
ZICM357SP0-1
RF Exposure

166 South Carter, Genoa City, WI 53128

FCC Code of Federal Regulations 47 Part 1.1307(b) (1)

RF Exposure Statement of Compliance

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name: MeshConnect ZICM357SP0-1C Zigbee Module

Kind of Equipment: 802.15.4 Wireless Module

Frequency Range: 2405-2480 MHz

Test Configuration: DC powered transceiver module

Model Number(s): ZICM357SP0-1 Rev X1b
Prototype Nickname: Gemini P0X1A for revision X1a

Model(s) Tested: ZICM357SP0-1 Rev X1b

Serial Number(s): 00232C1

Date of Tests: Original testing: March 26 through March 29, 2012

Class II Permissive Change for Adding External Antennas:
Aveslink E-2820-CA Flying Lead External Dipole Antenna (2 dBi gain),
LSR Model 001-0010 External Dipole Antenna (2 dBi gain)

July 5 through July 7, 2016

Test Conducted For: California Eastern Laboratories
4590 Patrick Henry Drive
Santa Clara, CA 95054-1817, USA



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Transmitter Information:

Maximum Conducted Output Power:	8.21 dBm (6.62 mW)
Maximum Effective Isotropic Radiated Power	10.21 dBm
Frequency:	2440 MHz
Antenna Type:	PCB Trace Antenna
Antenna Gain:	2.0 dBi

Exposure Limit:

Maximum Permissible Exposure (MPE) limit for General Population / Uncontrolled Exposure in the frequency range 1500 – 100,000 MHz (ref: 47 CFR Part 1.1310 Table 1(b))

Limit: $(S) \text{ (mW/cm}^2\text{)} = 1.0 \text{ mW/cm}^2$

MPE Calculation:

Power Density (mW/cm^2) :

$$S = \frac{PG}{4\pi R^2}$$

S = Power Density (mW/cm^2)

P = Power Input to the antenna (mW)

G = Numeric Power Gain of the antenna

R = Distance to the center of the radiation of the antenna (cm)



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Results:

RF Exposure Calculation								
	Input							
Frequency =	2440	MHz						
P =	8.21	dBm						
G =	2	dBi						
R =	20	cm						
π	3.14159							
Transmit Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (numeric)	Distance (cm)	Power Density (mW/cm ²)	Power Density Limit (mW/cm ²)	Margin
2440	8.21	6.62217	2	1.58489	20	0.0021	1.0	0.998

Summary of Results:

With a minimum separation distance of 20 centimeters as defined by FCC 2.1091(b), for a mobile device, the California Eastern Laboratories MeshConnect ZICM357SP0-1C Zigbee Module **meets** the RF exposure evaluation requirements for maximum permissible exposure to any radiating structure and the general population / uncontrolled exposure with the Aveslink E-2820-CA Flying Lead External Dipole Antenna or with the LSR Model 001-0010 External Dipole Antenna.

Conclusion:

The California Eastern Laboratories MeshConnect ZICM357SP0-1C Zigbee Module operating under FCC part 15.247 complies with the requirements of FCC Part 1.1307(b)(1) for RF Exposure Evaluation with either of the 2 dBi antennas attached.

Supporting data to follow...



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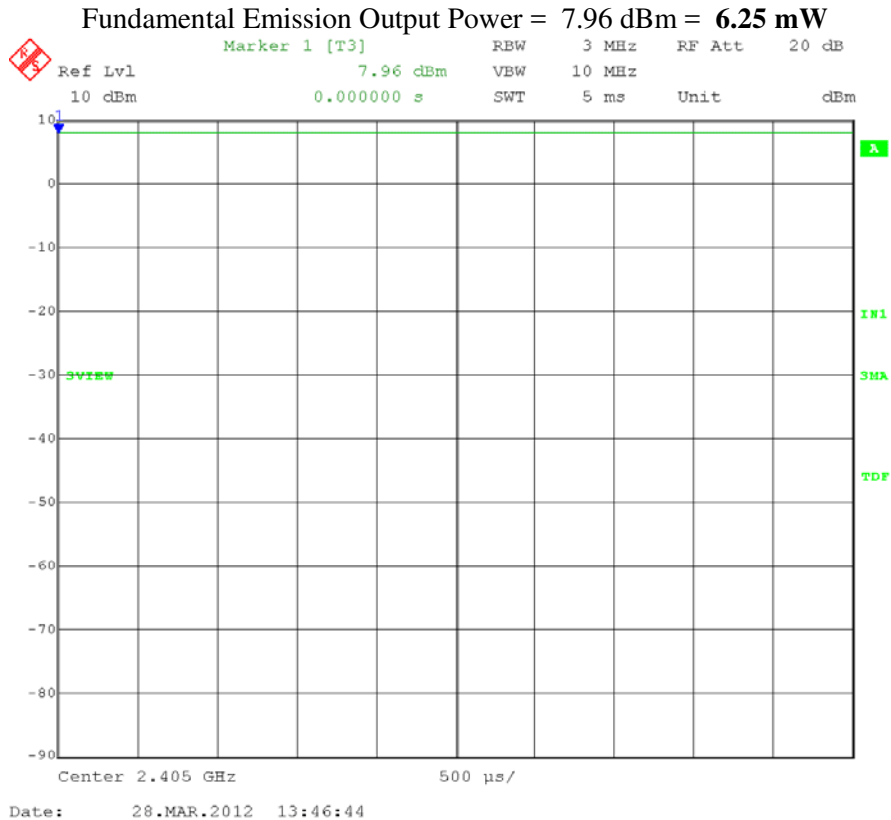
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Test Date: 03-28-2012
 Company: California Eastern Laboratories
 EUT: Gemini P0X1A
 Test: Fundamental Emission Output Power - Conducted
 Operator: Craig B

Comment: RBW ≥ EBW
 VBW ≥ 3 x RBW
 Span = zero
 Sweep = auto couple
 Detector = Peak
 Trace = max hold

Comment: **Low Channel: Frequency – 2.405 GHz**
 Output power setting 8





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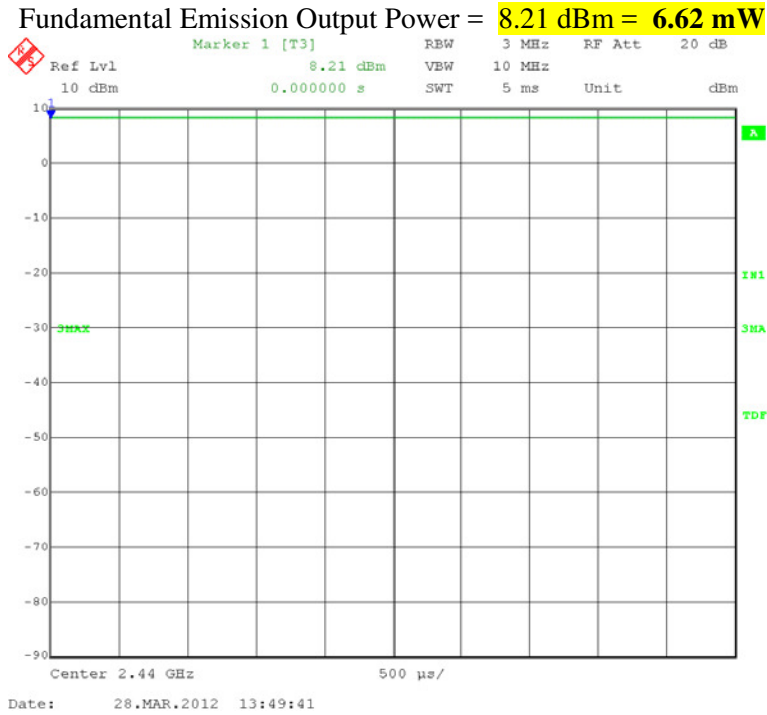
California Eastern Laboratories
 ZICM357SP0-1
 RF Exposure

166 South Carter, Genoa City, WI 53128

Test Date: 03-28-2012
 Company: California Eastern Laboratories
 EUT: Gemini P0X1A
 Test: Fundamental Emission Output Power - Conducted
 Operator: Craig B

Comment: RBW ≥ EBW
 VBW ≥ 3 x RBW
 Span = zero
 Sweep = auto couple
 Detector = Peak
 Trace = max hold

Comment: Middle Channel: Frequency – 2.440 GHz
 Output power setting 8





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Test Date: 03-28-2012
 Company: California Eastern Laboratories
 EUT: Gemini P0X1A
 Test: Fundamental Emission Output Power - Conducted
 Operator: Craig B

Comment: RBW ≥ EBW
 VBW ≥ 3 x RBW
 Span = zero
 Sweep = auto couple
 Detector = Peak
 Trace = max hold

Comment: **High Channel: Frequency – 2.480 GHz**
 Output power setting 2

