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 ZICM357SP2-1 Zigbee Module
Kind of Equipment:	802.15.4 Wireless Module
Frequency Range:	2405-2480 MHz
Test Configuration:	DC powered transceiver module
Model Number(s):	ZICM357SP2-1
Model(s) Tested:	ZICM357SP2 Rev X2 (prototype) - nicknamed Gemini P2_X2 on data sheets
Serial Number(s):	Radiated: 5, RF Conducted: 4
Date of Tests:	May 8 through May 10, 2012
Test Conducted For:	California Eastern Laboratories 1253 N. Old Rand Road Wauconda, Illinois 60084, USA

Transmitter Information:

Maximum Conducted Output Power:	20.77 dBm (119.4 mW)
Maximum Effective Isotropic Radiated Power	21.54 dBm
Frequency:	2470 MHz
Antenna Type:	PCB Trace Antenna
Antenna Gain:	0.77 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) (mW/cm^2) = 1.0 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)

Results:

P =	20.77	dBm
G =	0.77	dBi
R =	20	cm
π	3.14159	

Transmit Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain	Distance (cm)	Power Density (mW/cm²)	Power Density Limit (mW/cm²)	Margin
2470	20.77	119.39881	0.77	1.19399	20	0.0284	1.0	0.972

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 ZICM357SP2-1 Zigbee Module **meets** the RF exposure evaluation requirements for maximum permissible exposure to any radiating structure and the general population / uncontrolled exposure.

Conclusion:

The California Eastern Laboratories MeshConnect ZICM357SP2-1 Zigbee Module operating under FCC part 15.247 complies with the requirements of FCC Part 1.1307(b)(1) for RF Exposure Evaluation.

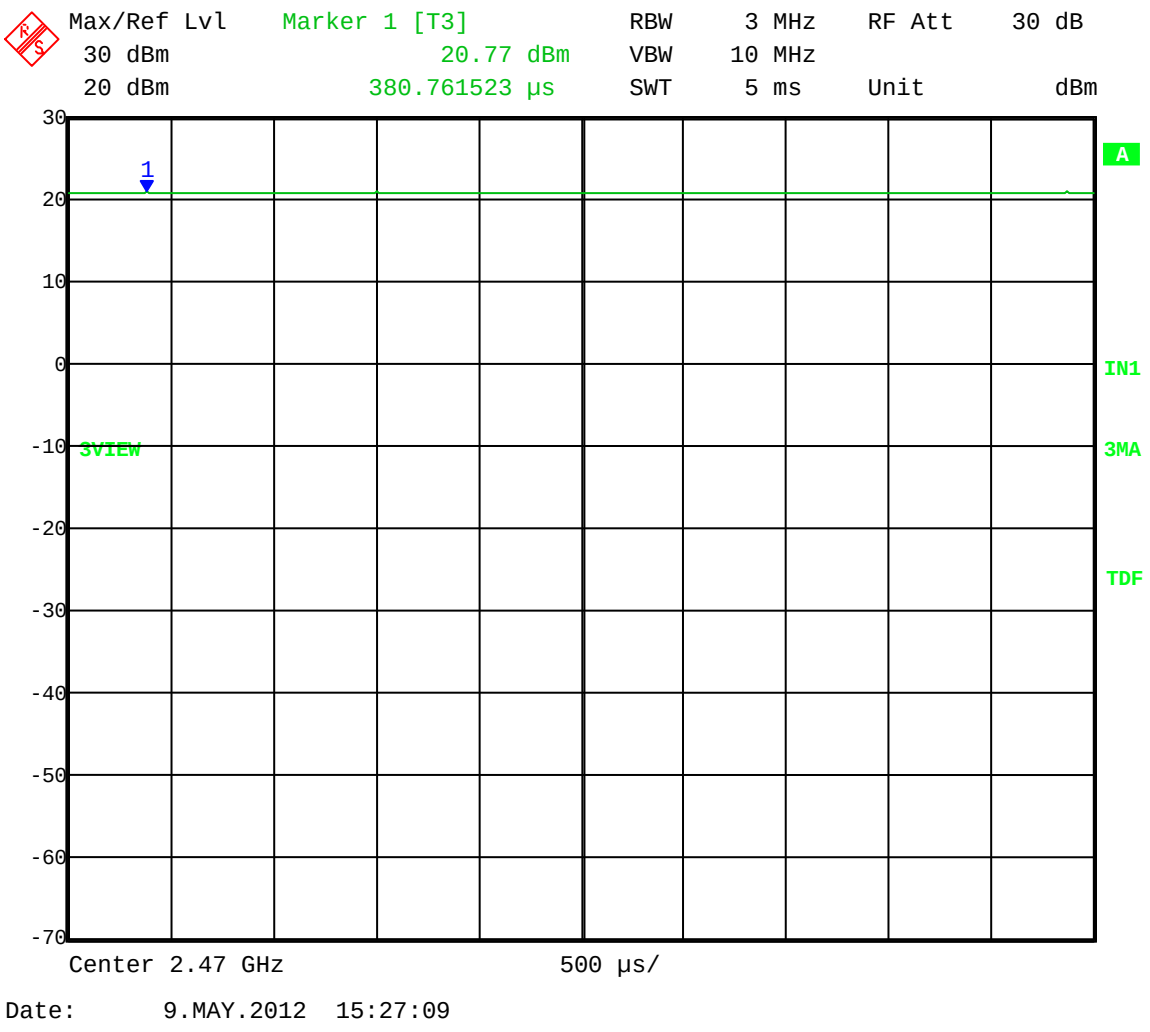
Supporting data to follow…

Test Date: 05-09-2012
Company: California Eastern Laboratories
EUT: Gemini P2_X2
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: Channel 24: Frequency – 2.470 GHz
Output power setting -2

Fundamental Emission Output Power = 20.77 dBm = **119.40 mW**



Date: 9.MAY.2012 15:27:09

DLS Electronic Systems, Inc.

Company: California Eastern Laboratores
Operator: Craig B
Date of test: 05-10-2012
Temperature: 70 deg. F
Humidity: 46% R.H.

RBW: 3 MHz
VBW: 10 MHz
Span = zero
Detector: Peak
Trace mode: max hold

EIRP - Substitution Method

Model: **Gemini P2_X2**

Channel: Channel 24; 2470 MHz; Output power setting -2

Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
2470 Vertical	117.90	14.19	1.78	9.13	21.54			
2470 Horizontal	117.77	13.53	1.78	9.13	20.88			

EIRP = Signal generator output - cable loss + antenna gain

RF Conducted output power = 20.77 dBm
Antenna Gain = 0.77 dBi