Gibson Guitar Corporation

ADDENDUM TO TEST REPORT 91254-13A

Bluetooth Module, MM516

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.207, 15.247 & RSS-210 Issue 8

Report No.: 91254-13B

Date of issue: May 18, 2011

TESTING
CERT #803.01, 803.02, 803.05, 803.06

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Gibson Guitar Corporation
309 Plus Park Blvd.
Nashville TN, 37217

REPRESENTATIVE: Milo Street
Customer Reference Number: 110a+PO000076650

REPORT PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 91250

DATE OF EQUIPMENT RECEIPT: November 4, 2010
DATE(S) OF TESTING: November 4-17, 2010
April 6, 2011

Revision History

Original: To perform the testing of the Bluetooth Module, MM516 with the requirements for FCC Part 15 Subpart C Section 15.247 & RSS-210 devices.
Addendum A: To add FCC Subpart C 15.207 AC Conducted Emissions test data of the Bluetooth Module**,** MM516 performed April 6, 2011.
Addendum B: In the Bandedge testing sections a horn antenna has been added to the equipment list that had been left off in error. Also the setup picture in this section has been corrected as well.

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

Site Registration & Accreditation Information

Location	CB #	JAPAN	CANADA	FCC
Brea A	US0060	R-2945, C-3248 & T-1572	3082D-1	90473

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C & RSS-210 Issue 8

Description	Test Procedure/Method	Results
AC Conducted Emissions	FCC Part 15 Subpart C Section 15.207	Pass
Frequency Separation	FCC Part 15 Subpart C Section 15.247(a)(1) / DA 00-705	Pass
Number of Hopping Channels	FCC Part 15 Subpart C Section 15.247(a)(1) / DA 00-705	Pass
Average Time of Occupancy	FCC Part 15 Subpart C Section 15.247(a)(1)(iii) / DA 00-705	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.247(b)(1) / DA 00-705	Pass
Spurious Emissions	FCC Part 15 Subpart C Section 15.247(c) / DA 00-705	Pass
Bandedge Compliance	ITU-R 55/1 / DA 00-705	Pass
-20 Occupied Bandwidth	DA 00-705	Pass
99% Occupied Bandwidth	RSS-210	Pass

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
Support PCB with enhanced grounding, emission from 30MHz - 1000 MHz: final measurement was performed with 3.3 Vdc supplied to the power pin of the module, by-passing a support passive voltage regulator soldered on the support PCB.

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

Bluetooth Module
Manuf: Bluepacket Communications Co., Ltd.
Model: MM516
Serial: NA

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Laptop
Manuf: Acer
Model: 5741-15763
Serial: LXPW002025016349DF1601

DC Power Supply
Manuf: Topward
Model: 6306
Serial: 988614

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

15.207 AC Conducted Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Gibson Guitar Corporation**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**91250**	Date:	4/6/2011
Test Type:	**Conducted Emissions**	Time:	9:49:37 AM
Equipment:	**Bluetooth Module**	Sequence#:	4
Manufacturer:	Bluepacket Communications Co., Ltd.	Tested By:	E. Wong
Model:	MM-516		110V 60Hz
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	2/12/2011	2/12/2013
T2	AN02343	High Pass Filter	HE9615-150K-50-720B	1/4/2011	1/4/2013
T3	ANP01910	Cable	RG-142	3/19/2010	3/19/2012
T4	ANP06085	Attenuator	SA18N10W-09	12/8/2010	12/8/2012
T5	AN00848.1	50uH LISN-Line 1 (dB)	3816/2nm	3/22/2011	3/22/2013
	AN00848.1	50uH LISN-Line 2 (dB)	3816/2nm	3/22/2011	3/22/2013

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Bluetooth Module*	Bluepacket Communications Co., Ltd.	MM-516	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Acer	5741-15763	LXPW002025016349DF1601
DC Power Supply	Topward	6306	988614

Test Conditions / Notes:

The EUT (limited modular approval) is soldered on an unpopulated PCB, placed on the wooden table.
Freq 2402-2480
TX Freq = 2441 MHz
Firmware Setting (ext, int) = 255, 62
Measure power = 5.76dBm (0.004w)

Receiver circuit is not active.

The module can be installed in two different version of host PCB. The host PCB with longer RF path but highest measured conducted power is used as the test platform.

Two different type of antenna can be used with the device: Pulse, whip antenna W1038 (4.9dBi) and Pulse, Helical SMD antenna W3108 (1.5dBi)

The test is performed with Pulse, whip antenna W1038 (4.9dBi)

SPI port is connected to remote support laptop. The remote support lap top is running test software to exercise all the intended functionality of the EUT.

16°C, 69% Relative Humidity

Frequency range of measurement = 150kHz- 30MHz.
150kHz- 30MHz ;RBW=9 kHz, VBW=9 kHz,
AC Conducted emission measured at the AC port of the support power supply

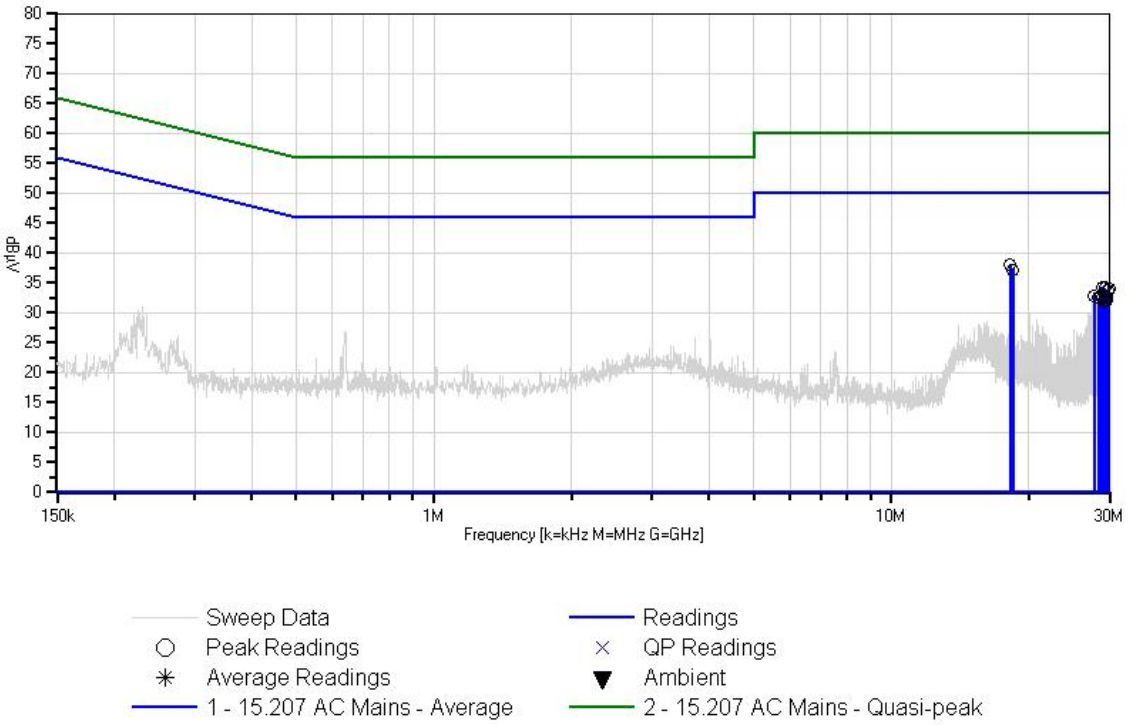
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	18.166M	30.9	+0.0 +0.8	+0.3	+0.4	+5.8	+0.0	38.2	50.0	-11.8	Black
2	18.454M	29.8	+0.0 +0.9	+0.3	+0.4	+5.8	+0.0	37.2	50.0	-12.8	Black
3	28.924M	26.3	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	34.3	50.0	-15.7	Black
4	29.260M	26.2	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	34.2	50.0	-15.8	Black
5	29.897M	26.1	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	34.1	50.0	-15.9	Black
6	29.822M	25.7	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	33.7	50.0	-16.3	Black
7	28.739M	25.0	+0.0 +1.5	+0.3	+0.4	+5.7	+0.0	32.9	50.0	-17.1	Black
8	27.766M	25.0	+0.0 +1.5	+0.3	+0.4	+5.7	+0.0	32.9	50.0	-17.1	Black
9	29.041M	24.7	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	32.7	50.0	-17.3	Black
10	29.678M	24.7	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	32.7	50.0	-17.3	Black
11	28.403M	24.7	+0.0 +1.5	+0.3	+0.4	+5.7	+0.0	32.6	50.0	-17.4	Black

12	29.561M	24.6	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	32.6	50.0	-17.4	Black
13	29.376M	24.2	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	32.2	50.0	-17.8	Black
14	29.527M	24.2	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	32.2	50.0	-17.8	Black
15	29.191M	23.9	+0.0 +1.6	+0.3	+0.4	+5.7	+0.0	31.9	50.0	-18.1	Black

CKC Laboratories, Inc Date: 4/6/2011 Time: 9:49:37 AM Gibson Guitar Corporation WO#: 91250
15.207 AC Mains - Average Test Lead: Black 110V 60Hz Sequence#: 4 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Gibson Guitar Corporation**
Specification: **15.207 AC Mains - Average**
Work Order #: **91250** Date: 4/6/2011
Test Type: **Conducted Emissions** Time: 9:56:36 AM
Equipment: **Bluetooth Module** Sequence#: 5
Manufacturer: Bluepacket Communications Co., Ltd. Tested By: E. Wong
Model: MM-516 110V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02869	Spectrum Analyzer	E4440A	2/12/2011	2/12/2013
T1	AN02343	High Pass Filter	HE9615-150K-50-720B	1/4/2011	1/4/2013
T2	ANP01910	Cable	RG-142	3/19/2010	3/19/2012
T3	ANP06085	Attenuator	SA18N10W-09	12/8/2010	12/8/2012
	AN00848.1	50uH LISN-Line 1 (dB)	3816/2nm	3/22/2011	3/22/2013
T4	AN00848.1	50uH LISN-Line 2 (dB)	3816/2nm	3/22/2011	3/22/2013

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Bluetooth Module*	Bluepacket Communications Co., Ltd.	MM-516	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Acer	5741-15763	LXPW002025016349DF1601
DC Power Supply	Topward	6306	988614

Test Conditions / Notes:

The EUT (limited modular approval) is soldered on an unpopulated PCB, placed on the wooden table.
Freq 2402-2480
TX Freq = 2441MHz
Firmware Setting (ext, int) = 255, 62
Measure power = 5.76dBm (0.004W)
RX freq: idle
The module can be installed in two different version of host PCB. The host PCB with longer RF path but highest measured conducted power is used as the test platform.
Two different type of antenna can be used with the device: Pulse, whip antenna W1038 (4.9dBi) and Pulse, Helical SMD antenna W3108 (1.5dBi)

The test is performed with Pulse, whip antenna W1038 (4.9dBi)

SPI port is connected to remote support laptop. The remote support lap top is running test software to exercise all the intended functionality of the EUT.

16°C, 69% Relative Humidity

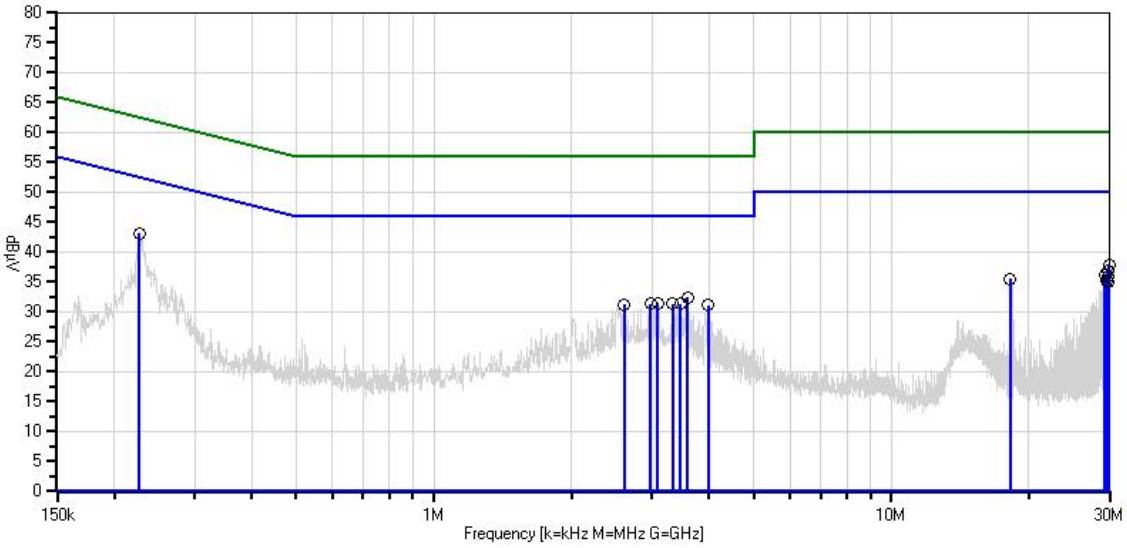
Frequency range of measurement = 150kHz- 30MHz.
150kHz- 30MHz ;RBW=9 kHz, VBW=9 kHz,
AC Conducted emission measured at the AC port of the support power supply

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	227.084k	37.0	+0.1	+0.1	+5.7	+0.2	+0.0	43.1	52.6	-9.5	White
2	29.986M	29.5	+0.3	+0.4	+5.7	+2.0	+0.0	37.9	50.0	-12.1	White
3	29.692M	28.5	+0.3	+0.4	+5.7	+1.9	+0.0	36.8	50.0	-13.2	White
4	3.582M	26.2	+0.2	+0.2	+5.7	+0.2	+0.0	32.5	46.0	-13.5	White
5	29.349M	27.8	+0.3	+0.4	+5.7	+1.9	+0.0	36.1	50.0	-13.9	White
6	29.877M	27.5	+0.3	+0.4	+5.7	+2.0	+0.0	35.9	50.0	-14.1	White
7	18.166M	28.0	+0.3	+0.4	+5.8	+1.0	+0.0	35.5	50.0	-14.5	White
8	3.089M	25.2	+0.2	+0.2	+5.7	+0.2	+0.0	31.5	46.0	-14.5	White
9	2.974M	25.1	+0.2	+0.2	+5.7	+0.2	+0.0	31.4	46.0	-14.6	White
10	3.331M	25.1	+0.2	+0.2	+5.7	+0.2	+0.0	31.4	46.0	-14.6	White
11	3.463M	25.1	+0.2	+0.2	+5.7	+0.2	+0.0	31.4	46.0	-14.6	White
12	2.604M	24.9	+0.2	+0.2	+5.7	+0.2	+0.0	31.2	46.0	-14.8	White
13	29.575M	26.9	+0.3	+0.4	+5.7	+1.9	+0.0	35.2	50.0	-14.8	White
14	3.982M	24.8	+0.2	+0.2	+5.7	+0.2	+0.0	31.1	46.0	-14.9	White
15	29.726M	26.7	+0.3	+0.4	+5.7	+1.9	+0.0	35.0	50.0	-15.0	White

CKC Laboratories, Inc Date: 4/6/2011 Time: 9:56:36 AM Gibson Guitar Corporation WO#: 91250
15.207 AC Mains - Average Test Lead: White 110V 60Hz Sequence#: 5 Ext ATTN: 0 dB



Sweep Data
Peak Readings
Average Readings
1 - 15.207 AC Mains - Average
Readings
QP Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Setup Photos

15.247(a)(1) Frequency Separation

Test Data Sheets

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Gibson Guitar Corporation**
Specification: **15.247 (a)(1) Frequency separation**
Work Order #: **91254** Date: 10/15/2010
Test Type: **Conducted** Time: 10:29:29
Equipment: **Bluetooth Module** Sequence#: 4
Manufacturer: Bluepacket Communications Co., Ltd. Tested By: E. Wong
Model: MM516
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02869	Spectrum Analyzer	E4440A	2/21/2009	2/21/2011
	AN03174	36" 40GHz cable	NA	10/28/2009	10/28/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Bluetooth Module*	Bluepacket Communications Co., Ltd.	MM516	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Acer	5741-15763	LXPW002025016349DF1601
DC Power Supply	Topward	6306	988614

Test Conditions / Notes:

The EUT (limited modular approval) is soldered on an unpopulated PCB placed on the wooden table lined with Styrofoam of 10 cm in thickness.

Freq 2402-2480
Tx = 2402 MHz, 2441 MHz, 2480 MHz
Firmware Setting (ext, int) = 255, 62. The module can be installed in two different version of host PCB. The host PCB with longer RF path but highest measured conducted power and measured pre-scan spurious emission is used as the test platform.
Measure power = 5.61dBm (0.004W), 5.76dBm (0.004), 5.22dBm (0.003W)

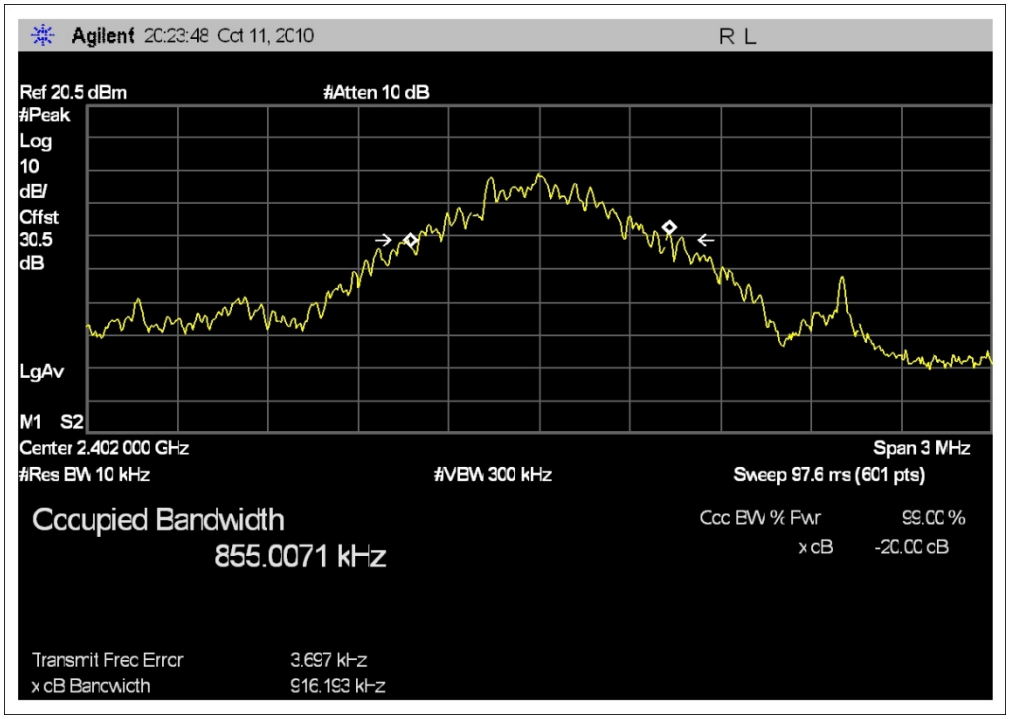
Evaluation performed at the antenna port.

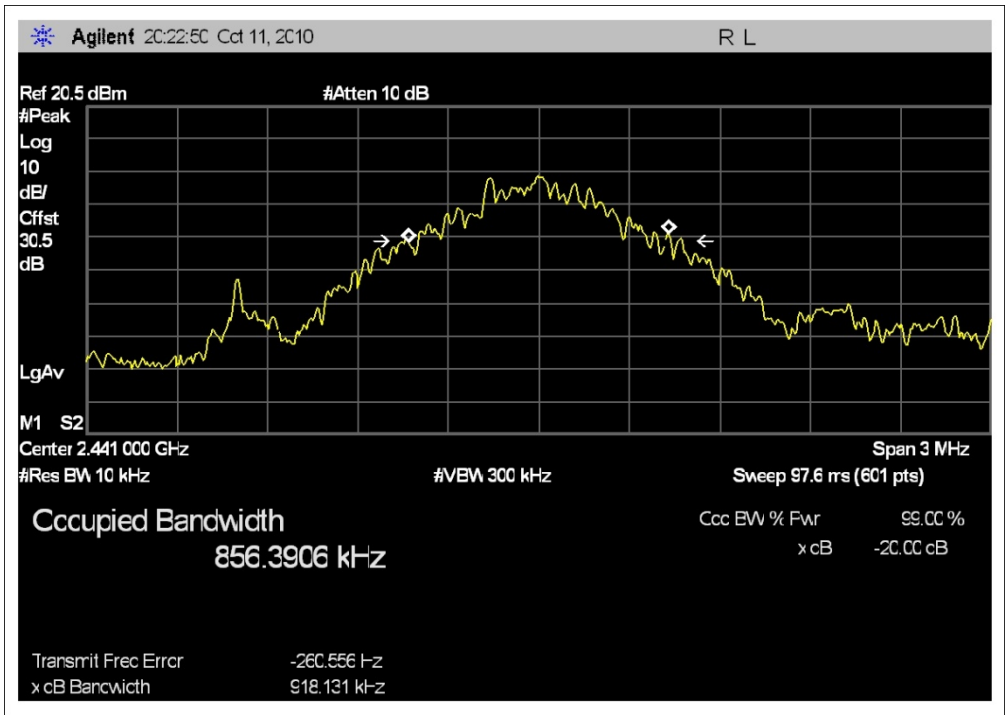
SPI port is connected to remote support laptop. The remote support lap top is running test software to exercise all the intended functionality of the EUT.

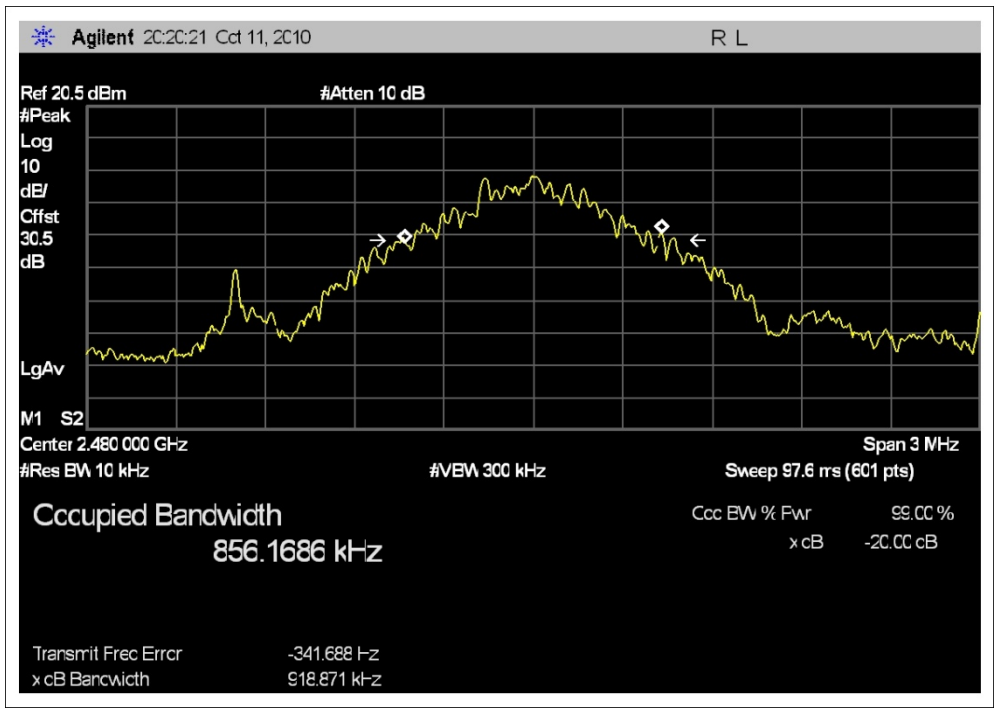
15.31(e) The battery powered device obtains 7.4V DC from a support power supply to simulate the usage of a new battery.

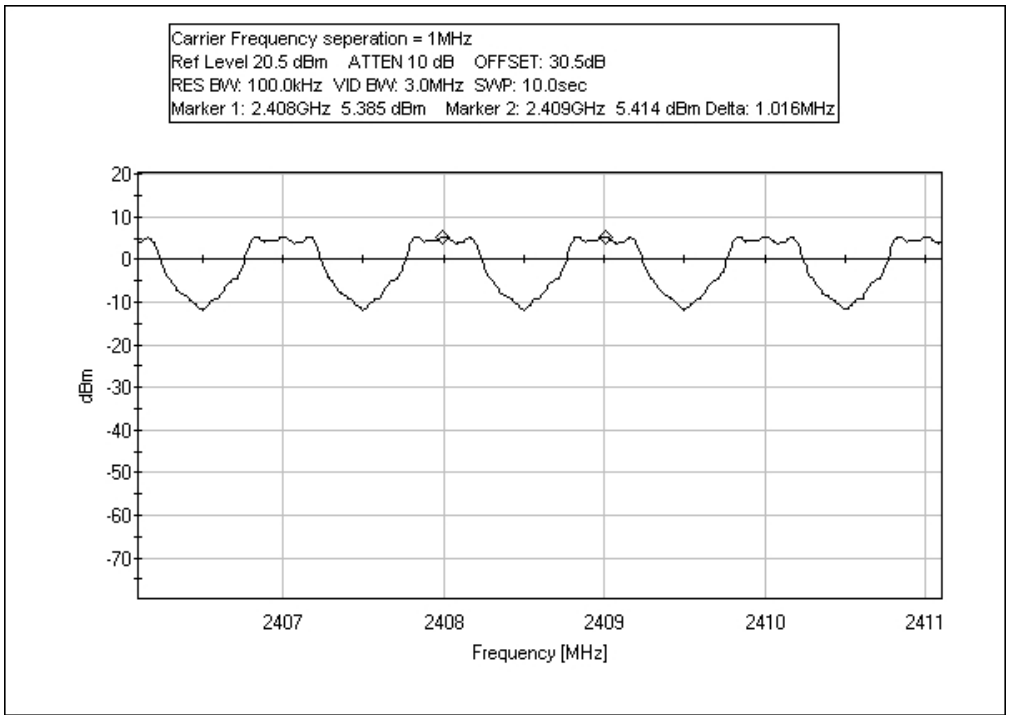
1) *Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater*

18ºC and 79% relative humidity




Agilent 20:22:50 Oct 11, 2010
R L
Ref 20.5 dBm
#Atten 10 dB
#Peak
Log
10
dB/
Offst
30.5
dB
LgAv
M1 S2
Center 2.441 000 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 300 kHz
Sweep 97.6 ms (601 pts)
Occupied Bandwidth
856.3906 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -260.556 Hz
x dB Bandwidth 918.131 kHz


Agilent 20:20:21 Oct 11, 2010
R L
Ref 20.5 dBm
#Atten 10 dB
#Peak
Log
10
dB/
Offst
30.5
dB
LgAv
M1 S2
Center 2.480 000 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 300 kHz
Sweep 97.6 ms (601 pts)
Occupied Bandwidth
856.1686 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -341.688 Hz
x dB Bandwidth 918.871 kHz



Result: Measure Maximum -20dB BW = 919 kHz and Measured Channel Separation = 1 MHz

Test Setup Photos

15.247(a)(1) Number of Hopping Channels & Average Time of Occupancy

Test Data Sheets

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Gibson Guitar Corporation**		
Specification:	**15.247 (a)(1)(iii)Average occupancy time.**		
Work Order #:	**91254**	Date:	10/15/2010
Test Type:	**Conducted**	Time:	10:29:29
Equipment:	**Bluetooth Module**	Sequence#:	4
Manufacturer:	Bluepacket Communications Co., Ltd.	Tested By:	E. Wong
Model:	MM516		
S/N:	NA		

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02869	Spectrum Analyzer	E4440A	2/21/2009	2/21/2011
	AN03174	36” 40GHz cable	NA	10/28/2009	10/28/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Bluetooth Module*	Bluepacket Communications Co., Ltd.	MM516	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Acer	5741-15763	LXPW002025016349DF1601
DC Power Supply	Topward	6306	988614

Test Conditions / Notes:

The EUT (limited modular approval) is soldered on an unpopulated PCB placed on the wooden table lined with Styrofoam of 10 cm in thickness.

Freq 2402-2480
Tx = 2402 MHz, 2441 MHz, 2480 MHz
Firmware Setting (ext, int) = 255, 62. The module can be installed in two different version of host PCB. The host PCB with longer RF path but highest measured conducted power and measured pre-scan spurious emission is used as the test platform.
Measure power = 5.61dBm (0.004W), 5.76dBm (0.004), 5.22dBm (0.003W)

Receiver circuit is not active.
Two different type of antenna can be used with the device; Pulse, whip antenna W1038 (4.9dBi) and Pulse, Helical SMD antenna W3108 (1.5dBi).

The test is performed with both antennas; typical length (30cm) of RF cable is used with the Helical SMD antenna.

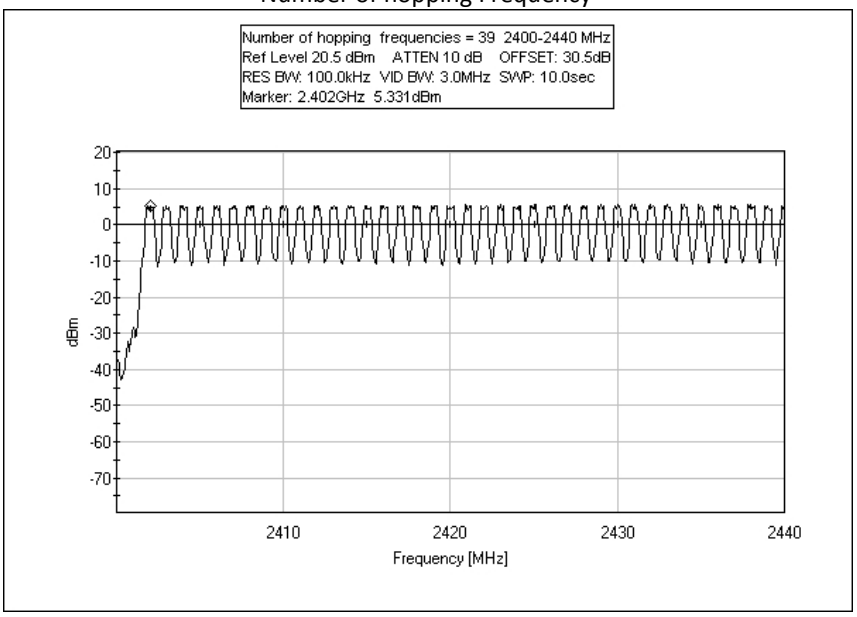
SPI port is connected to remote support laptop. The remote support lap top is running test software to exercise all the intended functionality of the EUT.

15.31(e) The battery powered device obtains 7.4V DC from a support power supply to simulate the usage of a new battery.

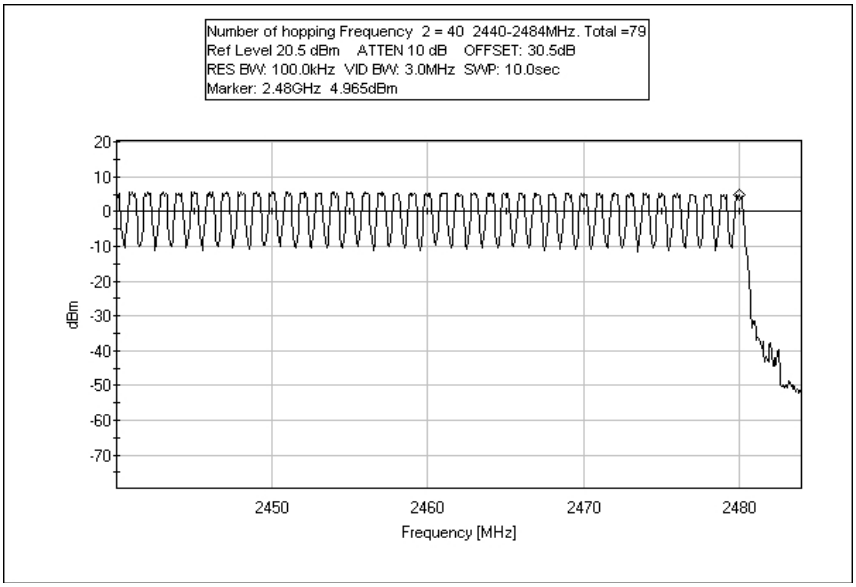
18ºC, 79% relative humidity

(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Number of hopping Frequency

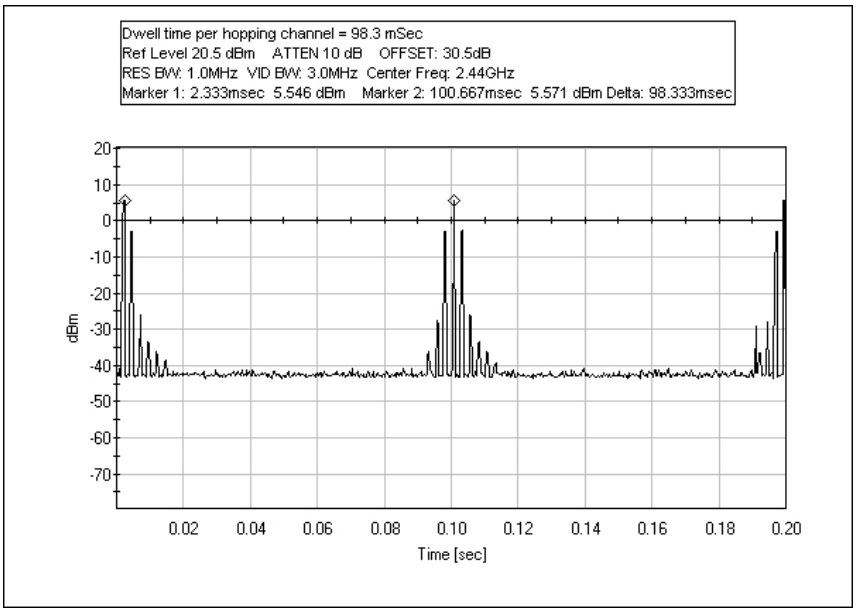


Number of Hopping Frequency1 = 39

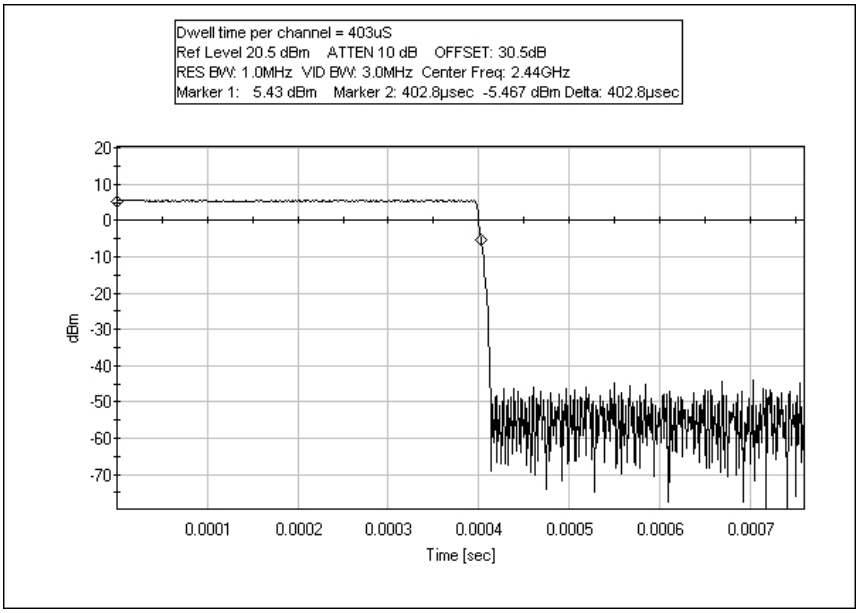


Number of Hopping Frequency 2 = 40

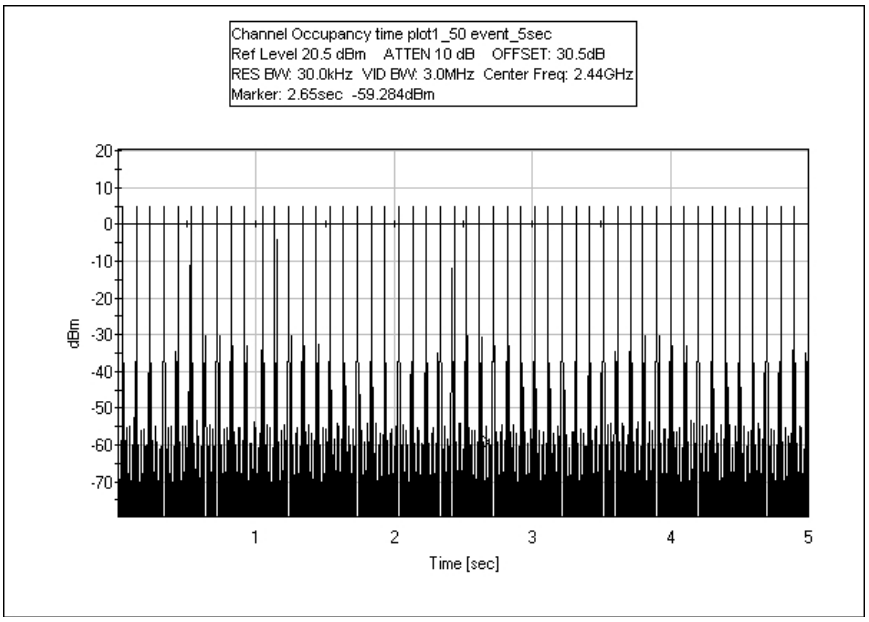
Total Number of Hopping Frequency/Channel = 79

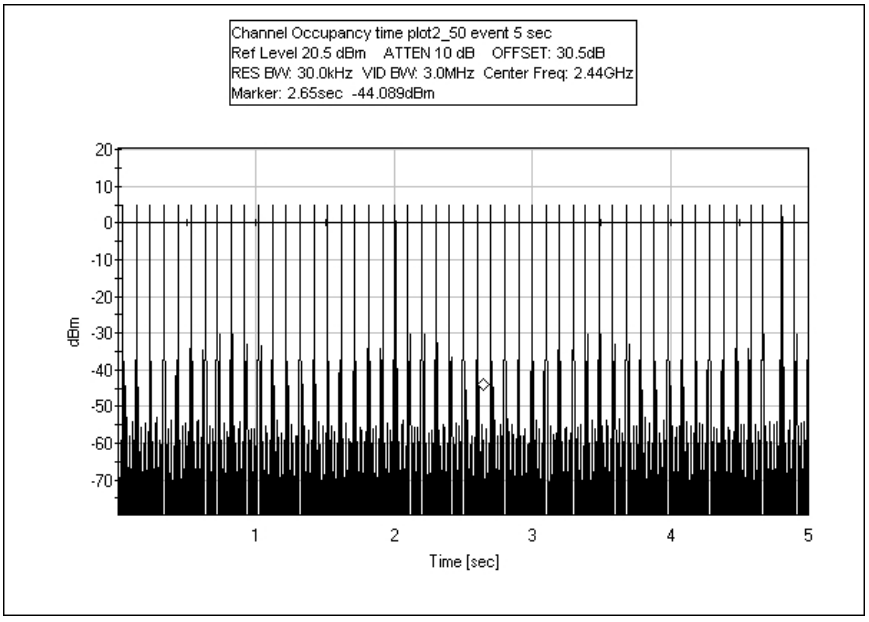


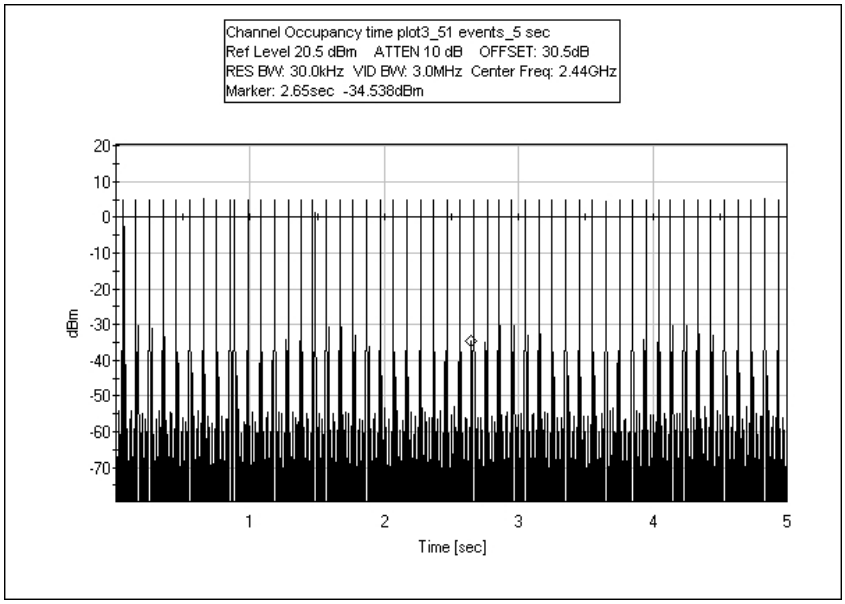
Dwell Time per Hopping Channel



Dwell Time per Channel = 403uS


Channel Occupancy time plot1_50 event_5sec
Ref Level 20.5 dBm ATTEN 10 dB OFFSET: 30.5dB
RES BW: 30.0kHz VID BW: 3.0MHz Center Freq: 2.44GHz
Marker: 2.65sec -59.284dBm
dBm
Time [sec]


Channel Occupancy time plot2_50 event 5 sec
Ref Level 20.5 dBm ATTEN 10 dB OFFSET: 30.5dB
RES BW: 30.0kHz VID BW: 3.0MHz Center Freq: 2.44GHz
Marker: 2.65sec -44.089dBm
dBm
Time [sec]



Average 50.3 events per 5 sec.

50.3 events/ 5sec = 10.1 events per sec.
0.4 sec x 79 channel = 31.6 sec.

In 31.6 sec, there are 31.6 sec x 10.1 event/sec x 403uS = 0.13 Sec

Test Setup Photos

15.247(b)(1) RF Power Output

Test Data Sheets

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Gibson Guitar Corporation**
Specification: **15.247 (B)(1) RF Output power**
Work Order #: **91254** Date: 10/15/2010
Test Type: **Conducted** Time: 10:29:29
Equipment: **Bluetooth Module** Sequence#: 4
Manufacturer: Bluepacket Communications Co., Ltd. Tested By: E. Wong
Model: MM516
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02869	Spectrum Analyzer	E4440A	2/21/2009	2/21/2011
	AN03174	36" 40GHz cable	NA	10/28/2009	10/28/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Bluetooth Module*	Bluepacket Communications Co., Ltd.	MM516	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Acer	5741-15763	LXPW002025016349DF1601
DC Power Supply	Topward	6306	988614

Test Conditions / Notes:

The EUT (limited modular approval) is soldered on an unpopulated PCB placed on the wooden table lined with Styrofoam of 10 cm in thickness.

Freq 2402-2480
Tx = 2402 MHz, 2441 MHz, 2480 MHz
Firmware Setting (ext, int) = 255, 62. The module can be installed in two different version of host PCB. The host PCB with longer RF path but highest measured conducted power and measured pre-scan spurious emission is used as the test platform.
Measure power = 5.61dBm (0.004W), 5.76dBm (0.004), 5.22dBm (0.003W)

Evaluation performed at the antenna port.

SPI port is connected to remote support laptop. The remote support lap top is running test software to exercise all the intended functionality of the EUT.

18ºC, 79% relative humidity

(b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:
(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

Test method, FCC document DA 00-705

Results:

Frequency	***dBm***	***Watts***
2402 MHz	*5.61dBm*	*0.004W*
2441 MHz	*5.76dBm*	*0.004W*
2480 MHz	*5.22dBm*	*0.003W*

Test Setup Photos

15.247(c) Spurious Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Gibson Guitar Corporation**
Specification: **FCC 15.247 (d) (FCC 15.209)**
Work Order #: **91250** Date: 11/4/2010
Test Type: **Radiated Scan** Time: 15:16:40
Equipment: **Bluetooth Module** Sequence#: 2
Manufacturer: Bluepacket Communications Co., Ltd. Tested By: E. Wong
Model: MM516
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	2/21/2009	2/21/2011
T2	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T3	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T4	ANP05050	Cable	RG223/U	4/16/2009	4/16/2011
T5	ANP05198	Cable	8268	1/5/2009	1/5/2011
T6	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012
T7	AN00786	Preamp	83017A	8/5/2010	8/5/2012
T8	AN02948	Cable	32022-2-2909K-24TC	9/21/2009	9/21/2011
T9	ANP05565	Cable	ANDL-1-PNMN-54	9/3/2010	9/3/2012
	AN01413	Horn Antenna	84125-80008	11/13/2008	11/13/2010
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012
T10	AN02744	High Pass Filter	11SH10-3000/T10000-O/O	3/5/2010	3/5/2012
T11	AN02746	Low Pass Filter	11SL10-2000/U6000-O/O	11/20/2009	11/20/2011
T12	AN	Duty Cycle Correction Factor		11/28/2010	11/28/2012

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Bluetooth Module*	Bluepacket Communications Co., Ltd.	MM516	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Acer	5741-15763	LXPW002025016349DF1601
DC Power Supply	Topward	6306	988614

Test Conditions / Notes:

The EUT (limited modular approval) is soldered on an unpopulated PCB placed on the wooden table lined with Styrofoam of 10 cm in thickness.

Freq 2402-2480
Tx = 2402 MHz, 2441 MHz, 2480 MHz
Firmware Setting (ext, int) = 255, 62. The module can be installed in two different version of host PCB. The host PCB with longer RF path but highest measured conducted power and measured pre-scan spurious emission is used as the test platform.
Measure power = 5.61dBm (0.004W), 5.76dBm (0.004), 5.22dBm (0.003W)

Receiver circuit is not active.
Two different type of antenna can be used with the device: Pulse, whip antenna W1038 (4.9dBi) and Pulse, Helical SMD antenna W3108 (1.5dBi)

The test is performed with both antennas; typical length (30cm) of RF cable is used with the Helical SMD antenna.

SPI port is connected to remote support laptop. The remote support lap top is running test software to exercise all the intended functionality of the EUT.

Emission profile with the product and the antenna rotated along its three orthogonal axes was evaluated. Reported data is the worst case emission.

15.31(e) The battery powered device obtains 7.4V DC from a support power supply to simulate the usage of a new battery.

18ºC, 79% relative humidity

Frequency range of measurement = 9 kHz- 25 GHz.
9 kH -150 kHz;RBW=200 Hz,VBW=200 Hz;150 kHz-30 MHz;RBW=9 kHz,VBW=9 kHz;30 MHz-1000 MHz;RBW=120 kHz,VBW=120 kHz,1000 MHz-2500 MHz;RBW=1 MHz,VBW=1 MHz.

Duty Cycle correction applied when appropriate.
Measured dwell time per channel = 465 uS
Duty Cycle correction = 20 Log (465 uS/ 100mS) = -46.7dB.
Support PCB with enhanced grounding, emission from 30MHz - 1000 MHz: final measurement was performed with 3.3 Vdc supplied to the power pin of the module, by-passing a support passive voltage regulator soldered on the support PCB.

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	287.000M	55.4	+0.0	-27.7	+13.2	+0.3	+0.0	44.1	46.0	-1.9	Horiz
	QP		+2.9	+0.0	+0.0	+0.0			X-Whip		
			+0.0	+0.0	+0.0	+0.0					
^	287.000M	59.5	+0.0	-27.7	+13.2	+0.3	+0.0	48.2	46.0	+2.2	Horiz
			+2.9	+0.0	+0.0	+0.0			X-Whip		
			+0.0	+0.0	+0.0	+0.0					
3	290.000M	54.6	+0.0	-27.8	+13.2	+0.3	+0.0	43.3	46.0	-2.7	Horiz
	QP		+3.0	+0.0	+0.0	+0.0			Y-Whip		
			+0.0	+0.0	+0.0	+0.0					
^	290.000M	57.6	+0.0	-27.8	+13.2	+0.3	+0.0	46.3	46.0	+0.3	Horiz
			+3.0	+0.0	+0.0	+0.0			Y-Whip		
			+0.0	+0.0	+0.0	+0.0					
5	392.800M	49.8	+0.0	-27.9	+16.0	+0.4	+0.0	41.9	46.0	-4.1	Vert
			+3.6	+0.0	+0.0	+0.0			X-helical		
			+0.0	+0.0	+0.0	+0.0					
6	288.770M	53.0	+0.0	-27.8	+13.2	+0.3	+0.0	41.7	46.0	-4.3	Vert
	QP		+3.0	+0.0	+0.0	+0.0			Z-Whip		
			+0.0	+0.0	+0.0	+0.0					
^	288.770M	57.3	+0.0	-27.8	+13.2	+0.3	+0.0	46.0	46.0	+0.0	Vert
			+3.0	+0.0	+0.0	+0.0			Z-Whip		
			+0.0	+0.0	+0.0	+0.0					
8	289.000M	52.7	+0.0	-27.8	+13.2	+0.3	+0.0	41.4	46.0	-4.6	Vert
			+3.0	+0.0	+0.0	+0.0			Y-Whip		
			+0.0	+0.0	+0.0	+0.0					
9	289.633M	52.4	+0.0	-27.8	+13.2	+0.3	+0.0	41.1	46.0	-4.9	Horiz
			+3.0	+0.0	+0.0	+0.0			X-Helical		
			+0.0	+0.0	+0.0	+0.0					
10	7206.200M	42.9	+0.0	+0.0	+0.0	+0.0	+0.0	48.5	54.0	-5.5	Horiz
			+0.0	+36.2	-36.8	+0.8			X-whip		
			+5.2	+0.2	+0.0	+0.0					
11	1652.568M	57.1	+0.0	+0.0	+0.0	+0.0	+0.0	48.3	54.0	-5.7	Vert
			+0.0	+26.2	-38.2	+0.4			Y-Whip		
			+2.4	+0.0	+0.4	+0.0					
12	1626.618M	57.2	+0.0	+0.0	+0.0	+0.0	+0.0	48.3	54.0	-5.7	Vert
			+0.0	+26.1	-38.2	+0.4			Y-Whip		
			+2.4	+0.0	+0.4	+0.0					
13	1652.725M	57.1	+0.0	+0.0	+0.0	+0.0	+0.0	48.3	54.0	-5.7	Vert
	Ave		+0.0	+26.2	-38.2	+0.4			Z-Helical		
			+2.4	+0.0	+0.4	+0.0					
^	1652.725M	59.1	+0.0	+0.0	+0.0	+0.0	+0.0	50.3	54.0	-3.7	Vert
			+0.0	+26.2	-38.2	+0.4			Z-Helical		
			+2.4	+0.0	+0.4	+0.0					
^	1652.640M	56.3	+0.0	+0.0	+0.0	+0.0	+0.0	47.5	54.0	-6.5	Vert
			+0.0	+26.2	-38.2	+0.4			Z-Whip		
			+2.4	+0.0	+0.4	+0.0					

^	1652.680M	53.8	+0.0	+0.0	+0.0	+0.0	+0.0	45.0	54.0	-9.0	Vert
			+0.0	+26.2	-38.2	+0.4			X-Helical		
			+2.4	+0.0	+0.4	+0.0					
17	7323.000M	42.8	+0.0	+0.0	+0.0	+0.0	+0.0	48.2	54.0	-5.8	Horiz
			+0.0	+35.9	-36.7	+0.8			X-whip		
			+5.2	+0.2	+0.0	+0.0					
18	7439.980M	43.0	+0.0	+0.0	+0.0	+0.0	+0.0	48.0	54.0	-6.0	Horiz
			+0.0	+35.6	-36.6	+0.8			Z-whip		
			+5.1	+0.1	+0.0	+0.0					
19	287.000M	51.0	+0.0	-27.7	+13.2	+0.3	+0.0	39.7	46.0	-6.3	Vert
	QP		+2.9	+0.0	+0.0	+0.0			X-Whip		
			+0.0	+0.0	+0.0	+0.0					
^	287.000M	54.8	+0.0	-27.7	+13.2	+0.3	+0.0	43.5	46.0	-2.5	Vert
			+2.9	+0.0	+0.0	+0.0			X-Whip		
			+0.0	+0.0	+0.0	+0.0					
21	7206.150M	42.1	+0.0	+0.0	+0.0	+0.0	+0.0	47.7	54.0	-6.3	Horiz
			+0.0	+36.2	-36.8	+0.8			Z-Helical		
			+5.2	+0.2	+0.0	+0.0					
22	1652.617M	56.5	+0.0	+0.0	+0.0	+0.0	+0.0	47.7	54.0	-6.3	Vert
			+0.0	+26.2	-38.2	+0.4			X-Whip		
			+2.4	+0.0	+0.4	+0.0					
23	7206.000M	42.1	+0.0	+0.0	+0.0	+0.0	+0.0	47.7	54.0	-6.3	Horiz
			+0.0	+36.2	-36.8	+0.8			X-Helical		
			+5.2	+0.2	+0.0	+0.0					
24	289.167M	50.9	+0.0	-27.8	+13.2	+0.3	+0.0	39.6	46.0	-6.4	Horiz
	QP		+3.0	+0.0	+0.0	+0.0			Z-Whip		
			+0.0	+0.0	+0.0	+0.0					
^	289.167M	56.2	+0.0	-27.8	+13.2	+0.3	+0.0	44.9	46.0	-1.1	Horiz
			+3.0	+0.0	+0.0	+0.0			Z Whip		
			+0.0	+0.0	+0.0	+0.0					
26	1626.600M	56.5	+0.0	+0.0	+0.0	+0.0	+0.0	47.6	54.0	-6.4	Horiz
			+0.0	+26.1	-38.2	+0.4			X-Whip		
			+2.4	+0.0	+0.4	+0.0					
27	1652.735M	56.3	+0.0	+0.0	+0.0	+0.0	+0.0	47.5	54.0	-6.5	Horiz
	Ave		+0.0	+26.2	-38.2	+0.4			Y-Whip		
			+2.4	+0.0	+0.4	+0.0					
28	1601.970M	56.7	+0.0	+0.0	+0.0	+0.0	+0.0	47.5	54.0	-6.5	Horiz
			+0.0	+25.9	-38.2	+0.4			Y-Helical		
			+2.4	+0.0	+0.3	+0.0					
29	1626.558M	56.1	+0.0	+0.0	+0.0	+0.0	+0.0	47.2	54.0	-6.8	Vert
			+0.0	+26.1	-38.2	+0.4			X-Whip		
			+2.4	+0.0	+0.4	+0.0					
30	1626.610M	56.0	+0.0	+0.0	+0.0	+0.0	+0.0	47.1	54.0	-6.9	Vert
			+0.0	+26.1	-38.2	+0.4			Z-Whip		
			+2.4	+0.0	+0.4	+0.0					
31	1652.625M	55.7	+0.0	+0.0	+0.0	+0.0	+0.0	46.9	54.0	-7.1	Horiz
	Ave		+0.0	+26.2	-38.2	+0.4			Y-Helical		
			+2.4	+0.0	+0.4	+0.0					
^	1652.625M	58.0	+0.0	+0.0	+0.0	+0.0	+0.0	49.2	54.0	-4.8	Horiz
			+0.0	+26.2	-38.2	+0.4			Y-Helical		
			+2.4	+0.0	+0.4	+0.0					

^	1652.617M	57.1	+0.0 +0.0 +2.4	+0.0 +26.2 +0.0	+0.0 -38.2 +0.4	+0.0 +0.4 +0.0	+0.0	48.3	54.0 X-Whip	-5.7	Horiz
^	1652.640M	56.5	+0.0 +0.0 +2.4	+0.0 +26.2 +0.0	+0.0 -38.2 +0.4	+0.0 +0.4 +0.0	+0.0	47.7	54.0 Z-Whip	-6.3	Horiz
35	7439.970M	41.7	+0.0 +0.0 +5.1	+0.0 +35.6 +0.1	+0.0 -36.6 +0.0	+0.0 +0.8 +0.0	+0.0	46.7	54.0 X-whip	-7.3	Horiz
36	1602.060M	55.7	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	46.5	54.0 Z-Whip	-7.5	Horiz
37	1626.767M Ave	55.4	+0.0 +0.0 +2.4	+0.0 +26.1 +0.0	+0.0 -38.2 +0.4	+0.0 +0.4 +0.0	+0.0	46.5	54.0 Z-Helical	-7.5	Vert
^	1626.708M	58.8	+0.0 +0.0 +2.4	+0.0 +26.1 +0.0	+0.0 -38.2 +0.4	+0.0 +0.4 +0.0	+0.0	49.9	54.0 Z-Helical	-4.1	Vert
^	1626.830M	53.7	+0.0 +0.0 +2.4	+0.0 +26.1 +0.0	+0.0 -38.2 +0.4	+0.0 +0.4 +0.0	+0.0	44.8	54.0 X-Helical	-9.2	Vert
40	1652.620M	55.2	+0.0 +0.0 +2.4	+0.0 +26.2 +0.0	+0.0 -38.2 +0.4	+0.0 +0.4 +0.0	+0.0	46.4	54.0 Y-Helical	-7.6	Vert
41	7205.980M	40.7	+0.0 +0.0 +5.2	+0.0 +36.2 +0.2	+0.0 -36.8 +0.0	+0.0 +0.8 +0.0	+0.0	46.3	54.0 Y-Helical	-7.7	Horiz
42	1626.620M	55.1	+0.0 +0.0 +2.4	+0.0 +26.1 +0.0	+0.0 -38.2 +0.4	+0.0 +0.4 +0.0	+0.0	46.2	54.0 Y-Helical	-7.8	Vert
43	276.633M	49.5	+0.0 +2.9 +0.0	-27.7 +0.0 +0.0	+13.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	38.0	46.0 Y-Helical	-8.0	Horiz
44	1601.970M	55.2	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	46.0	54.0 X-Whip	-8.0	Horiz
45	38.420M	44.4	+0.0 +1.0 +0.0	-27.8 +0.0 +0.0	+14.2 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	31.9	40.0 Y-Helical	-8.1	Vert
46	293.800M	49.1	+0.0 +3.0 +0.0	-27.8 +0.0 +0.0	+13.2 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	37.8	46.0 Y-Helical	-8.2	Horiz
47	1602.060M	54.9	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	45.7	54.0 Z-Helical	-8.3	Horiz
48	292.300M	49.0	+0.0 +3.0 +0.0	-27.8 +0.0 +0.0	+13.2 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	37.7	46.0 Z_Helical	-8.3	Vert
49	1601.875M	54.9	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	45.7	54.0 Z-Helical	-8.3	Vert

50	7439.520M	40.6	+0.0	+0.0	+0.0	+0.0	+0.0	45.6	54.0	-8.4	Horiz
			+0.0	+35.6	-36.6	+0.8			X-Helical		
			+5.1	+0.1	+0.0	+0.0					
51	7322.700M	40.1	+0.0	+0.0	+0.0	+0.0	+0.0	45.5	54.0	-8.5	Horiz
			+0.0	+35.9	-36.7	+0.8			Y-Helical		
			+5.2	+0.2	+0.0	+0.0					
52	7440.360M	40.5	+0.0	+0.0	+0.0	+0.0	+0.0	45.5	54.0	-8.5	Vert
			+0.0	+35.6	-36.6	+0.8			X-Helical		
			+5.1	+0.1	+0.0	+0.0					
53	7439.700M	40.4	+0.0	+0.0	+0.0	+0.0	+0.0	45.4	54.0	-8.6	Vert
			+0.0	+35.6	-36.6	+0.8			Y-Whip		
			+5.1	+0.1	+0.0	+0.0					
54	1652.817M	54.1	+0.0	+0.0	+0.0	+0.0	+0.0	45.3	54.0	-8.7	Horiz
	Ave		+0.0	+26.2	-38.2	+0.4			X-Helical		
			+2.4	+0.0	+0.4	+0.0					
^	1652.735M	58.8	+0.0	+0.0	+0.0	+0.0	+0.0	50.0	54.0	-4.0	Horiz
			+0.0	+26.2	-38.2	+0.4			Y-Whip		
			+2.4	+0.0	+0.4	+0.0					
^	1652.820M	57.0	+0.0	+0.0	+0.0	+0.0	+0.0	48.2	54.0	-5.8	Horiz
			+0.0	+26.2	-38.2	+0.4			X-Helical		
			+2.4	+0.0	+0.4	+0.0					
^	1652.725M	54.3	+0.0	+0.0	+0.0	+0.0	+0.0	45.5	54.0	-8.5	Horiz
			+0.0	+26.2	-38.2	+0.4			Z-Helical		
			+2.4	+0.0	+0.4	+0.0					
58	1602.030M	54.5	+0.0	+0.0	+0.0	+0.0	+0.0	45.3	54.0	-8.7	Vert
			+0.0	+25.9	-38.2	+0.4			X-Helical		
			+2.4	+0.0	+0.3	+0.0					
59	1626.725M	54.1	+0.0	+0.0	+0.0	+0.0	+0.0	45.2	54.0	-8.8	Horiz
	Ave		+0.0	+26.1	-38.2	+0.4			Z-Helical		
			+2.4	+0.0	+0.4	+0.0					
^	1626.760M	57.1	+0.0	+0.0	+0.0	+0.0	+0.0	48.2	54.0	-5.8	Horiz
			+0.0	+26.1	-38.2	+0.4			Y-Helical		
			+2.4	+0.0	+0.4	+0.0					
^	1626.658M	56.6	+0.0	+0.0	+0.0	+0.0	+0.0	47.7	54.0	-6.3	Horiz
			+0.0	+26.1	-38.2	+0.4			Y-Whip		
			+2.4	+0.0	+0.4	+0.0					
^	1626.725M	56.5	+0.0	+0.0	+0.0	+0.0	+0.0	47.6	54.0	-6.4	Horiz
			+0.0	+26.1	-38.2	+0.4			Z-Helical		
			+2.4	+0.0	+0.4	+0.0					
^	1626.708M	54.4	+0.0	+0.0	+0.0	+0.0	+0.0	45.5	54.0	-8.5	Horiz
			+0.0	+26.1	-38.2	+0.4			X-Helical		
			+2.4	+0.0	+0.4	+0.0					
64	7324.120M	39.7	+0.0	+0.0	+0.0	+0.0	+0.0	45.1	54.0	-8.9	Vert
			+0.0	+35.9	-36.7	+0.8			X-Helical		
			+5.2	+0.2	+0.0	+0.0					
65	1602.010M	54.2	+0.0	+0.0	+0.0	+0.0	+0.0	45.0	54.0	-9.0	Vert
			+0.0	+25.9	-38.2	+0.4			Z-Whip		
			+2.4	+0.0	+0.3	+0.0					
66	7439.840M	40.0	+0.0	+0.0	+0.0	+0.0	+0.0	45.0	54.0	-9.0	Vert
			+0.0	+35.6	-36.6	+0.8			Y-Helical		
			+5.1	+0.1	+0.0	+0.0					

67	1601.970M	54.1	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	44.9	54.0 Y-Whip	-9.1	Horiz
68	7439.930M	39.8	+0.0 +0.0 +5.1	+0.0 +35.6 +0.1	+0.0 -36.6 +0.0	+0.0 +0.8 +0.0	+0.0	44.8	54.0 Z-Helical	-9.2	Horiz
69	285.700M	48.2	+0.0 +2.9 +0.0	-27.7 +0.0 +0.0	+13.1 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	36.8	46.0 Y-Helical	-9.2	Vert
70	1602.060M	53.8	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	44.6	54.0 X-Whip	-9.4	Vert
71	1626.560M	53.4	+0.0 +0.0 +2.4	+0.0 +26.1 +0.0	+0.0 -38.2 +0.4	+0.0 +0.4 +0.0	+0.0	44.5	54.0 Z-Whip	-9.5	Horiz
72	293.000M	47.8	+0.0 +3.0 +0.0	-27.8 +0.0 +0.0	+13.2 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	36.5	46.0 Z_Helical	-9.5	Horiz
73	1602.010M	53.4	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	44.2	54.0 Y-Whip	-9.8	Vert
74	1601.875M	53.2	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	44.0	54.0 Y-Helical	-10.0	Vert
75	169.920M	48.8	+0.0 +2.2 +0.0	-27.8 +0.0 +0.0	+9.7 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	33.2	43.5 Y-Helical	-10.3	Vert
76	1601.970M	52.9	+0.0 +0.0 +2.4	+0.0 +25.9 +0.0	+0.0 -38.2 +0.3	+0.0 +0.4 +0.0	+0.0	43.7	54.0 X-Helical	-10.3	Horiz
77	2483.500M Ave	47.2	+0.0 +0.0 +2.8	+0.0 +28.5 +0.0	+0.0 -37.9 +0.0	+0.0 +0.5 +0.0	+0.0	41.1	54.0 X-Whip_bandedge	-12.9	Vert
^	2483.500M	67.5	+0.0 +0.0 +2.8	+0.0 +28.5 +0.0	+0.0 -37.9 +0.0	+0.0 +0.5 +0.0	+0.0	61.4	54.0 X-Whip_bandedge	+7.4	Vert
79	757.500M	32.9	+0.0 +5.1 +0.0	-27.2 +0.0 +0.0	+21.8 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	33.0	46.0 Z-Whip	-13.0	Horiz
80	750.000M	32.1	+0.0 +5.1 +0.0	-27.2 +0.0 +0.0	+21.7 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	32.1	46.0 Z_Helical	-13.9	Vert
81	749.200M	30.1	+0.0 +5.1 +0.0	-27.2 +0.0 +0.0	+21.7 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	30.1	46.0 Y-Helical	-15.9	Vert
82	2483.500M Ave	40.7	+0.0 +0.0 +2.8	+0.0 +28.5 +0.0	+0.0 -37.9 +0.0	+0.0 +0.5 +0.0	+0.0	34.6	54.0 X- Helical_bandedge	-19.4	Horiz
^	2483.500M	58.7	+0.0 +0.0 +2.8	+0.0 +28.5 +0.0	+0.0 -37.9 +0.0	+0.0 +0.5 +0.0	+0.0	52.6	54.0 X- Helical_bandedge	-1.4	Horiz

84	4959.900M	56.8	+0.0	+0.0	+0.0	+0.0	+0.0	11.5	54.0	-42.5	Horiz
	Ave		+0.0	+33.2	-37.0	+0.7			Y-Whip		
			+4.1	+0.4	+0.0	-46.7					
85	4959.990M	56.2	+0.0	+0.0	+0.0	+0.0	+0.0	10.9	54.0	-43.1	Horiz
	Ave		+0.0	+33.2	-37.0	+0.7			Z-whip		
			+4.1	+0.4	+0.0	-46.7					
86	4804.030M	56.3	+0.0	+0.0	+0.0	+0.0	+0.0	10.9	54.0	-43.1	Vert
	Ave		+0.0	+33.0	-37.1	+0.7			X-whip		
			+4.2	+0.5	+0.0	-46.7					
87	4959.892M	55.8	+0.0	+0.0	+0.0	+0.0	+0.0	10.5	54.0	-43.5	Vert
	Ave		+0.0	+33.2	-37.0	+0.7			X-whip		
			+4.1	+0.4	+0.0	-46.7					
88	4882.200M	55.0	+0.0	+0.0	+0.0	+0.0	+0.0	9.5	54.0	-44.5	Horiz
	Ave		+0.0	+33.1	-37.1	+0.7			Y-Whip		
			+4.1	+0.4	+0.0	-46.7					
^	4882.200M	68.8	+0.0	+0.0	+0.0	+0.0	+0.0	70.0	54.0	+16.0	Horiz
			+0.0	+33.1	-37.1	+0.7			Y-Whip		
			+4.1	+0.4	+0.0	+0.0					
90	4882.050M	54.7	+0.0	+0.0	+0.0	+0.0	+0.0	9.2	54.0	-44.8	Vert
	Ave		+0.0	+33.1	-37.1	+0.7			X-whip		
			+4.1	+0.4	+0.0	-46.7					
91	4959.800M	54.4	+0.0	+0.0	+0.0	+0.0	+0.0	9.1	54.0	-44.9	Vert
	Ave		+0.0	+33.2	-37.0	+0.7			Y-Whip		
			+4.1	+0.4	+0.0	-46.7					
^	4959.800M	67.0	+0.0	+0.0	+0.0	+0.0	+0.0	68.4	54.0	+14.4	Vert
			+0.0	+33.2	-37.0	+0.7			Y-Whip		
			+4.1	+0.4	+0.0	+0.0					
93	4959.990M	53.5	+0.0	+0.0	+0.0	+0.0	+0.0	8.2	54.0	-45.8	Vert
	Ave		+0.0	+33.2	-37.0	+0.7			Z-whip		
			+4.1	+0.4	+0.0	-46.7					
94	4803.800M	51.7	+0.0	+0.0	+0.0	+0.0	+0.0	6.3	54.0	-47.7	Horiz
	Ave		+0.0	+33.0	-37.1	+0.7			Y-Whip		
			+4.2	+0.5	+0.0	-46.7					
95	4803.780M	51.6	+0.0	+0.0	+0.0	+0.0	+0.0	6.2	54.0	-47.8	Vert
	Ave		+0.0	+33.0	-37.1	+0.7			Y-Helical		
			+4.2	+0.5	+0.0	-46.7					
^	4803.780M	65.6	+0.0	+0.0	+0.0	+0.0	+0.0	66.9	54.0	+12.9	Vert
			+0.0	+33.0	-37.1	+0.7			Y-Helical		
			+4.2	+0.5	+0.0	+0.0					
97	4804.000M	51.2	+0.0	+0.0	+0.0	+0.0	+0.0	5.8	54.0	-48.2	Horiz
	Ave		+0.0	+33.0	-37.1	+0.7			X-Helical		
			+4.2	+0.5	+0.0	-46.7					
98	4804.000M	51.2	+0.0	+0.0	+0.0	+0.0	+0.0	5.8	54.0	-48.2	Horiz
	Ave		+0.0	+33.0	-37.1	+0.7			Y-Helical		
			+4.2	+0.5	+0.0	-46.7					
99	4804.067M	51.1	+0.0	+0.0	+0.0	+0.0	+0.0	5.7	54.0	-48.3	Horiz
	Ave		+0.0	+33.0	-37.1	+0.7			X-whip		
			+4.2	+0.5	+0.0	-46.7					
^	4804.067M	65.2	+0.0	+0.0	+0.0	+0.0	+0.0	66.5	54.0	+12.5	Horiz
			+0.0	+33.0	-37.1	+0.7			X-whip		
			+4.2	+0.5	+0.0	+0.0					

^	4804.000M	65.0	+0.0	+0.0	+0.0	+0.0	+0.0	66.3	54.0	+12.3	Horiz
			+0.0	+33.0	-37.1	+0.7			Y-Helical		
			+4.2	+0.5	+0.0	+0.0					
^	4804.000M	62.5	+0.0	+0.0	+0.0	+0.0	+0.0	63.8	54.0	+9.8	Horiz
			+0.0	+33.0	-37.1	+0.7			X-Helical		
			+4.2	+0.5	+0.0	+0.0					
103	4881.960M	51.0	+0.0	+0.0	+0.0	+0.0	+0.0	5.5	54.0	-48.5	Horiz
	Ave		+0.0	+33.1	-37.1	+0.7			Z-whip		
			+4.1	+0.4	+0.0	-46.7					
104	4882.060M	50.5	+0.0	+0.0	+0.0	+0.0	+0.0	5.0	54.0	-49.0	Vert
	Ave		+0.0	+33.1	-37.1	+0.7			Y-Whip		
			+4.1	+0.4	+0.0	-46.7					
105	4804.310M	49.7	+0.0	+0.0	+0.0	+0.0	+0.0	4.3	54.0	-49.7	Vert
	Ave		+0.0	+33.0	-37.1	+0.7			Z-Helical		
			+4.2	+0.5	+0.0	-46.7					
^	4804.310M	62.8	+0.0	+0.0	+0.0	+0.0	+0.0	64.1	54.0	+10.1	Vert
			+0.0	+33.0	-37.1	+0.7			Z-Helical		
			+4.2	+0.5	+0.0	+0.0					
107	4803.980M	49.4	+0.0	+0.0	+0.0	+0.0	+0.0	4.0	54.0	-50.0	Vert
	Ave		+0.0	+33.0	-37.1	+0.7			X-Helical		
			+4.2	+0.5	+0.0	-46.7					
108	4804.090M	49.3	+0.0	+0.0	+0.0	+0.0	+0.0	3.9	54.0	-50.1	Vert
	Ave		+0.0	+33.0	-37.1	+0.7			Z-whip		
			+4.2	+0.5	+0.0	-46.7					
109	4881.920M	49.2	+0.0	+0.0	+0.0	+0.0	+0.0	3.7	54.0	-50.3	Horiz
	Ave		+0.0	+33.1	-37.1	+0.7			X-Helical		
			+4.1	+0.4	+0.0	-46.7					
110	4803.840M	48.3	+0.0	+0.0	+0.0	+0.0	+0.0	2.9	54.0	-51.1	Horiz
	Ave		+0.0	+33.0	-37.1	+0.7			Z-whip		
			+4.2	+0.5	+0.0	-46.7					
^	4803.800M	67.2	+0.0	+0.0	+0.0	+0.0	+0.0	68.5	54.0	+14.5	Horiz
			+0.0	+33.0	-37.1	+0.7			Y-Whip		
			+4.2	+0.5	+0.0	+0.0					
^	4803.840M	64.0	+0.0	+0.0	+0.0	+0.0	+0.0	65.3	54.0	+11.3	Horiz
			+0.0	+33.0	-37.1	+0.7			Z-whip		
			+4.2	+0.5	+0.0	+0.0					
113	4881.911M	48.1	+0.0	+0.0	+0.0	+0.0	+0.0	2.6	54.0	-51.4	Vert
	Ave		+0.0	+33.1	-37.1	+0.7			Y-Helical		
			+4.1	+0.4	+0.0	-46.7					
114	4804.380M	47.9	+0.0	+0.0	+0.0	+0.0	+0.0	2.5	54.0	-51.5	Horiz
	Ave		+0.0	+33.0	-37.1	+0.7			Z-Helical		
			+4.2	+0.5	+0.0	-46.7					
^	4804.380M	62.4	+0.0	+0.0	+0.0	+0.0	+0.0	63.7	54.0	+9.7	Horiz
			+0.0	+33.0	-37.1	+0.7			Z-Helical		
			+4.2	+0.5	+0.0	+0.0					
116	4959.892M	47.7	+0.0	+0.0	+0.0	+0.0	+0.0	2.4	54.0	-51.6	Horiz
	Ave		+0.0	+33.2	-37.0	+0.7			X-whip		
			+4.1	+0.4	+0.0	-46.7					
^	4959.900M	69.0	+0.0	+0.0	+0.0	+0.0	+0.0	70.4	54.0	+16.4	Horiz
			+0.0	+33.2	-37.0	+0.7			Y-Whip		
			+4.1	+0.4	+0.0	+0.0					

^	4959.892M	60.3	+0.0	+0.0	+0.0	+0.0	+0.0	61.7	54.0	+7.7	Horiz
			+0.0	+33.2	-37.0	+0.7			X-whip		
			+4.1	+0.4	+0.0	+0.0					
119	4882.000M	47.6	+0.0	+0.0	+0.0	+0.0	+0.0	2.1	54.0	-51.9	Horiz
	Ave		+0.0	+33.1	-37.1	+0.7			X-whip		
			+4.1	+0.4	+0.0	-46.7					
120	4882.060M	47.5	+0.0	+0.0	+0.0	+0.0	+0.0	2.0	54.0	-52.0	Vert
	Ave		+0.0	+33.1	-37.1	+0.7			Z-whip		
			+4.1	+0.4	+0.0	-46.7					
121	4881.931M	46.5	+0.0	+0.0	+0.0	+0.0	+0.0	1.0	54.0	-53.0	Horiz
	Ave		+0.0	+33.1	-37.1	+0.7			Y-Helical		
			+4.1	+0.4	+0.0	-46.7					
^	4881.920M	64.7	+0.0	+0.0	+0.0	+0.0	+0.0	65.9	54.0	+11.9	Horiz
			+0.0	+33.1	-37.1	+0.7			X-Helical		
			+4.1	+0.4	+0.0	+0.0					
^	4881.931M	61.8	+0.0	+0.0	+0.0	+0.0	+0.0	63.0	54.0	+9.0	Horiz
			+0.0	+33.1	-37.1	+0.7			Y-Helical		
			+4.1	+0.4	+0.0	+0.0					
124	4882.040M	45.7	+0.0	+0.0	+0.0	+0.0	+0.0	0.2	54.0	-53.8	Horiz
	Ave		+0.0	+33.1	-37.1	+0.7			Z-Helical		
			+4.1	+0.4	+0.0	-46.7					
^	4881.960M	65.7	+0.0	+0.0	+0.0	+0.0	+0.0	66.9	54.0	+12.9	Horiz
			+0.0	+33.1	-37.1	+0.7			Z-whip		
			+4.1	+0.4	+0.0	+0.0					
^	4882.000M	62.0	+0.0	+0.0	+0.0	+0.0	+0.0	63.2	54.0	+9.2	Horiz
			+0.0	+33.1	-37.1	+0.7			X-whip		
			+4.1	+0.4	+0.0	+0.0					
^	4882.040M	60.1	+0.0	+0.0	+0.0	+0.0	+0.0	61.3	54.0	+7.3	Horiz
			+0.0	+33.1	-37.1	+0.7			Z-Helical		
			+4.1	+0.4	+0.0	+0.0					
128	4804.000M	44.8	+0.0	+0.0	+0.0	+0.0	+0.0	-0.6	54.0	-54.6	Vert
	Ave		+0.0	+33.0	-37.1	+0.7			Y-Whip		
			+4.2	+0.5	+0.0	-46.7					
^	4804.030M	70.7	+0.0	+0.0	+0.0	+0.0	+0.0	72.0	54.0	+18.0	Vert
			+0.0	+33.0	-37.1	+0.7			X-whip		
			+4.2	+0.5	+0.0	+0.0					
^	4804.090M	64.1	+0.0	+0.0	+0.0	+0.0	+0.0	65.4	54.0	+11.4	Vert
			+0.0	+33.0	-37.1	+0.7			Z-whip		
			+4.2	+0.5	+0.0	+0.0					
^	4803.980M	61.5	+0.0	+0.0	+0.0	+0.0	+0.0	62.8	54.0	+8.8	Vert
			+0.0	+33.0	-37.1	+0.7			X-Helical		
			+4.2	+0.5	+0.0	+0.0					
^	4804.000M	59.3	+0.0	+0.0	+0.0	+0.0	+0.0	60.6	54.0	+6.6	Vert
			+0.0	+33.0	-37.1	+0.7			Y-Whip		
			+4.2	+0.5	+0.0	+0.0					
133	4882.040M	44.7	+0.0	+0.0	+0.0	+0.0	+0.0	-0.8	54.0	-54.8	Vert
	Ave		+0.0	+33.1	-37.1	+0.7			Z-Helical		
			+4.1	+0.4	+0.0	-46.7					
134	4960.120M	43.5	+0.0	+0.0	+0.0	+0.0	+0.0	-1.8	54.0	-55.8	Horiz
	Ave		+0.0	+33.2	-37.0	+0.7			X-Helical		
			+4.1	+0.4	+0.0	-46.7					

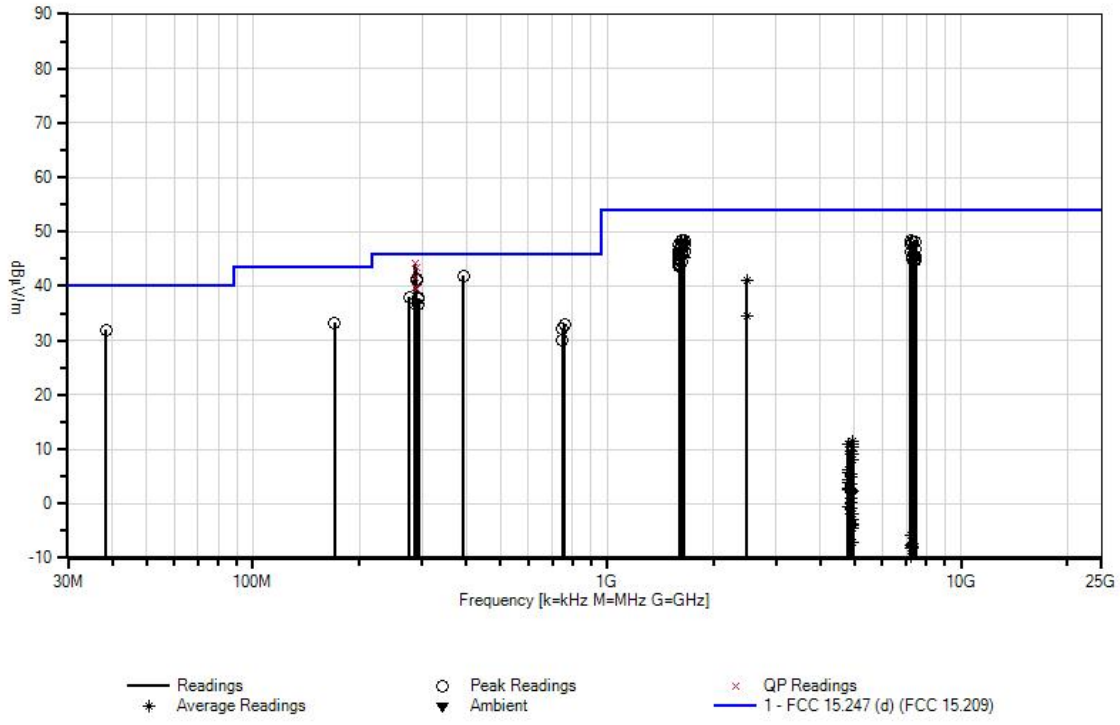
135	4882.000M	43.6	+0.0	+0.0	+0.0	+0.0	+0.0	-1.9	54.0	-55.9	Vert
	Ave		+0.0	+33.1	-37.1	+0.7			X-Helical		
			+4.1	+0.4	+0.0	-46.7					
	^ 4882.050M	70.1	+0.0	+0.0	+0.0	+0.0	+0.0	71.3	54.0	+17.3	Vert
			+0.0	+33.1	-37.1	+0.7			X-whip		
			+4.1	+0.4	+0.0	+0.0					
	^ 4882.060M	64.3	+0.0	+0.0	+0.0	+0.0	+0.0	65.5	54.0	+11.5	Vert
			+0.0	+33.1	-37.1	+0.7			Y-Whip		
			+4.1	+0.4	+0.0	+0.0					
	^ 4881.911M	63.4	+0.0	+0.0	+0.0	+0.0	+0.0	64.6	54.0	+10.6	Vert
			+0.0	+33.1	-37.1	+0.7			Y-Helical		
			+4.1	+0.4	+0.0	+0.0					
	^ 4882.060M	62.2	+0.0	+0.0	+0.0	+0.0	+0.0	63.4	54.0	+9.4	Vert
			+0.0	+33.1	-37.1	+0.7			Z-whip		
			+4.1	+0.4	+0.0	+0.0					
	^ 4882.040M	59.7	+0.0	+0.0	+0.0	+0.0	+0.0	60.9	54.0	+6.9	Vert
			+0.0	+33.1	-37.1	+0.7			Z-Helical		
			+4.1	+0.4	+0.0	+0.0					
	^ 4882.000M	59.1	+0.0	+0.0	+0.0	+0.0	+0.0	60.3	54.0	+6.3	Vert
			+0.0	+33.1	-37.1	+0.7			X-Helical		
			+4.1	+0.4	+0.0	+0.0					
142	4960.060M	42.3	+0.0	+0.0	+0.0	+0.0	+0.0	-3.0	54.0	-57.0	Horiz
	Ave		+0.0	+33.2	-37.0	+0.7			Y-Helical		
			+4.1	+0.4	+0.0	-46.7					
	^ 4960.120M	61.7	+0.0	+0.0	+0.0	+0.0	+0.0	63.1	54.0	+9.1	Horiz
			+0.0	+33.2	-37.0	+0.7			X-Helical		
			+4.1	+0.4	+0.0	+0.0					
144	4960.220M	41.7	+0.0	+0.0	+0.0	+0.0	+0.0	-3.6	54.0	-57.6	Vert
	Ave		+0.0	+33.2	-37.0	+0.7			Y-Helical		
			+4.1	+0.4	+0.0	-46.7					
	^ 4960.220M	59.9	+0.0	+0.0	+0.0	+0.0	+0.0	61.3	54.0	+7.3	Vert
			+0.0	+33.2	-37.0	+0.7			Y-Helical		
			+4.1	+0.4	+0.0	+0.0					
146	4959.970M	41.3	+0.0	+0.0	+0.0	+0.0	+0.0	-4.0	54.0	-58.0	Vert
	Ave		+0.0	+33.2	-37.0	+0.7			Z-Helical		
			+4.1	+0.4	+0.0	-46.7					
	^ 4959.892M	68.1	+0.0	+0.0	+0.0	+0.0	+0.0	69.5	54.0	+15.5	Vert
			+0.0	+33.2	-37.0	+0.7			X-whip		
			+4.1	+0.4	+0.0	+0.0					
	^ 4959.990M	65.7	+0.0	+0.0	+0.0	+0.0	+0.0	67.1	54.0	+13.1	Vert
			+0.0	+33.2	-37.0	+0.7			Z-whip		
			+4.1	+0.4	+0.0	+0.0					
	^ 4959.970M	59.4	+0.0	+0.0	+0.0	+0.0	+0.0	60.8	54.0	+6.8	Vert
			+0.0	+33.2	-37.0	+0.7			Z-Helical		
			+4.1	+0.4	+0.0	+0.0					
150	4960.120M	40.7	+0.0	+0.0	+0.0	+0.0	+0.0	-4.6	54.0	-58.6	Vert
	Ave		+0.0	+33.2	-37.0	+0.7			X-Helical		
			+4.1	+0.4	+0.0	-46.7					
	^ 4960.120M	59.6	+0.0	+0.0	+0.0	+0.0	+0.0	61.0	54.0	+7.0	Vert
			+0.0	+33.2	-37.0	+0.7			X-Helical		
			+4.1	+0.4	+0.0	+0.0					

152	7206.030M	35.2	+0.0	+0.0	+0.0	+0.0	+0.0	-5.9	54.0	-59.9	Vert
	Ave		+0.0	+36.2	-36.8	+0.8			X-whip		
			+5.2	+0.2	+0.0	-46.7					
153	4960.020M	38.3	+0.0	+0.0	+0.0	+0.0	+0.0	-7.0	54.0	-61.0	Horiz
	Ave		+0.0	+33.2	-37.0	+0.7			Z-Helical		
			+4.1	+0.4	+0.0	-46.7					
	^ 4959.990M	68.3	+0.0	+0.0	+0.0	+0.0	+0.0	69.7	54.0	+15.7	Horiz
			+0.0	+33.2	-37.0	+0.7			Z-whip		
			+4.1	+0.4	+0.0	+0.0					
	^ 4960.060M	61.2	+0.0	+0.0	+0.0	+0.0	+0.0	62.6	54.0	+8.6	Horiz
			+0.0	+33.2	-37.0	+0.7			Y-Helical		
			+4.1	+0.4	+0.0	+0.0					
	^ 4960.020M	55.5	+0.0	+0.0	+0.0	+0.0	+0.0	56.9	54.0	+2.9	Horiz
			+0.0	+33.2	-37.0	+0.7			Z-Helical		
			+4.1	+0.4	+0.0	+0.0					
157	7322.880M	33.8	+0.0	+0.0	+0.0	+0.0	+0.0	-7.5	54.0	-61.5	Horiz
	Ave		+0.0	+35.9	-36.7	+0.8			Z-whip		
			+5.2	+0.2	+0.0	-46.7					
	^ 7322.880M	46.8	+0.0	+0.0	+0.0	+0.0	+0.0	52.2	54.0	-1.8	Horiz
			+0.0	+35.9	-36.7	+0.8			Z-whip		
			+5.2	+0.2	+0.0	+0.0					
	^ 7322.900M	41.3	+0.0	+0.0	+0.0	+0.0	+0.0	46.7	54.0	-7.3	Horiz
			+0.0	+35.9	-36.7	+0.8			Z-Helical		
			+5.2	+0.2	+0.0	+0.0					
	^ 7322.920M	40.8	+0.0	+0.0	+0.0	+0.0	+0.0	46.2	54.0	-7.8	Horiz
			+0.0	+35.9	-36.7	+0.8			X-Helical		
			+5.2	+0.2	+0.0	+0.0					
161	7206.440M	33.5	+0.0	+0.0	+0.0	+0.0	+0.0	-7.6	54.0	-61.6	Horiz
	Ave		+0.0	+36.2	-36.8	+0.8			Y-Whip		
			+5.2	+0.2	+0.0	-46.7					
	^ 7206.440M	47.3	+0.0	+0.0	+0.0	+0.0	+0.0	52.9	54.0	-1.1	Horiz
			+0.0	+36.2	-36.8	+0.8			Y-Whip		
			+5.2	+0.2	+0.0	+0.0					
163	7323.000M	33.4	+0.0	+0.0	+0.0	+0.0	+0.0	-7.9	54.0	-61.9	Vert
	Ave		+0.0	+35.9	-36.7	+0.8			X-whip		
			+5.2	+0.2	+0.0	-46.7					
164	7205.720M	33.0	+0.0	+0.0	+0.0	+0.0	+0.0	-8.1	54.0	-62.1	Horiz
	Ave		+0.0	+36.2	-36.8	+0.8			Z-whip		
			+5.2	+0.2	+0.0	-46.7					
	^ 7205.720M	45.9	+0.0	+0.0	+0.0	+0.0	+0.0	51.5	54.0	-2.5	Horiz
			+0.0	+36.2	-36.8	+0.8			Z-whip		
			+5.2	+0.2	+0.0	+0.0					
166	7323.260M	33.2	+0.0	+0.0	+0.0	+0.0	+0.0	-8.1	54.0	-62.1	Horiz
	Ave		+0.0	+35.9	-36.7	+0.8			Y-Whip		
			+5.2	+0.2	+0.0	-46.7					
	^ 7323.260M	46.2	+0.0	+0.0	+0.0	+0.0	+0.0	51.6	54.0	-2.4	Horiz
			+0.0	+35.9	-36.7	+0.8			Y-Whip		
			+5.2	+0.2	+0.0	+0.0					
168	7206.000M	31.3	+0.0	+0.0	+0.0	+0.0	+0.0	-9.8	54.0	-63.8	Vert
	Ave		+0.0	+36.2	-36.8	+0.8			Y-Whip		
			+5.2	+0.2	+0.0	-46.7					

169	7439.810M	31.4	+0.0	+0.0	+0.0	+0.0	+0.0	-10.3	54.0	-64.3	Horiz
	Ave		+0.0	+35.6	-36.6	+0.8			Y-Whip		
			+5.1	+0.1	+0.0	-46.7					
	^ 7439.810M	44.4	+0.0	+0.0	+0.0	+0.0	+0.0	49.4	54.0	-4.6	Horiz
			+0.0	+35.6	-36.6	+0.8			Y-Whip		
			+5.1	+0.1	+0.0	+0.0					
	^ 7439.840M	41.1	+0.0	+0.0	+0.0	+0.0	+0.0	46.1	54.0	-7.9	Horiz
			+0.0	+35.6	-36.6	+0.8			Y-Helical		
			+5.1	+0.1	+0.0	+0.0					
172	7206.320M	30.8	+0.0	+0.0	+0.0	+0.0	+0.0	-10.3	54.0	-64.3	Vert
	Ave		+0.0	+36.2	-36.8	+0.8			Z-whip		
			+5.2	+0.2	+0.0	-46.7					
	^ 7206.320M	44.9	+0.0	+0.0	+0.0	+0.0	+0.0	50.5	54.0	-3.5	Vert
			+0.0	+36.2	-36.8	+0.8			Z-whip		
			+5.2	+0.2	+0.0	+0.0					
174	7322.900M	29.9	+0.0	+0.0	+0.0	+0.0	+0.0	-11.4	54.0	-65.4	Vert
	Ave		+0.0	+35.9	-36.7	+0.8			Z-whip		
			+5.2	+0.2	+0.0	-46.7					
	^ 7322.900M	43.7	+0.0	+0.0	+0.0	+0.0	+0.0	49.1	54.0	-4.9	Vert
			+0.0	+35.9	-36.7	+0.8			Z-whip		
			+5.2	+0.2	+0.0	+0.0					
176	7323.080M	29.9	+0.0	+0.0	+0.0	+0.0	+0.0	-11.4	54.0	-65.4	Vert
	Ave		+0.0	+35.9	-36.7	+0.8			Z-Helical		
			+5.2	+0.2	+0.0	-46.7					
	^ 7323.000M	47.0	+0.0	+0.0	+0.0	+0.0	+0.0	52.4	54.0	-1.6	Vert
			+0.0	+35.9	-36.7	+0.8			X-whip		
			+5.2	+0.2	+0.0	+0.0					
	^ 7323.080M	42.6	+0.0	+0.0	+0.0	+0.0	+0.0	48.0	54.0	-6.0	Vert
			+0.0	+35.9	-36.7	+0.8			Z-Helical		
			+5.2	+0.2	+0.0	+0.0					
	^ 7322.990M	40.2	+0.0	+0.0	+0.0	+0.0	+0.0	45.6	54.0	-8.4	Vert
			+0.0	+35.9	-36.7	+0.8			Y-Helical		
			+5.2	+0.2	+0.0	+0.0					
180	7439.975M	30.2	+0.0	+0.0	+0.0	+0.0	+0.0	-11.5	54.0	-65.5	Vert
	Ave		+0.0	+35.6	-36.6	+0.8			X-whip		
			+5.1	+0.1	+0.0	-46.7					
	^ 7439.970M	43.5	+0.0	+0.0	+0.0	+0.0	+0.0	48.5	54.0	-5.5	Vert
			+0.0	+35.6	-36.6	+0.8			X-whip		
			+5.1	+0.1	+0.0	+0.0					
	^ 7439.970M	42.5	+0.0	+0.0	+0.0	+0.0	+0.0	47.5	54.0	-6.5	Vert
			+0.0	+35.6	-36.6	+0.8			Z-whip		
			+5.1	+0.1	+0.0	+0.0					
	^ 7439.880M	35.5	+0.0	+0.0	+0.0	+0.0	+0.0	40.5	54.0	-13.5	Vert
			+0.0	+35.6	-36.6	+0.8			Z-Helical		
			+5.1	+0.1	+0.0	+0.0					
184	7206.080M	29.2	+0.0	+0.0	+0.0	+0.0	+0.0	-11.9	54.0	-65.9	Vert
	Ave		+0.0	+36.2	-36.8	+0.8			Z-Helical		
			+5.2	+0.2	+0.0	-46.7					
185	7323.260M	29.4	+0.0	+0.0	+0.0	+0.0	+0.0	-11.9	54.0	-65.9	Vert
	Ave		+0.0	+35.9	-36.7	+0.8			Y-Whip		
			+5.2	+0.2	+0.0	-46.7					

^	7323.260M	43.0	+0.0 +0.0 +5.2	+0.0 +35.9 +0.2	+0.0 -36.7 +0.0	+0.0 +0.8 +0.0	+0.0	48.4	54.0 Y-Whip	-5.6	Vert
187	7206.000M Ave	28.8	+0.0 +0.0 +5.2	+0.0 +36.2 +0.2	+0.0 -36.8 +0.0	+0.0 +0.8 -46.7	+0.0	-12.3	54.0 Y-Helical	-66.3	Vert
^	7206.030M	50.0	+0.0 +0.0 +5.2	+0.0 +36.2 +0.2	+0.0 -36.8 +0.0	+0.0 +0.8 +0.0	+0.0	55.6	54.0 X-whip	+1.6	Vert
^	7206.000M	45.0	+0.0 +0.0 +5.2	+0.0 +36.2 +0.2	+0.0 -36.8 +0.0	+0.0 +0.8 +0.0	+0.0	50.6	54.0 Y-Whip	-3.4	Vert
^	7206.080M	42.6	+0.0 +0.0 +5.2	+0.0 +36.2 +0.2	+0.0 -36.8 +0.0	+0.0 +0.8 +0.0	+0.0	48.2	54.0 Z-Helical	-5.8	Vert
^	7206.000M	41.5	+0.0 +0.0 +5.2	+0.0 +36.2 +0.2	+0.0 -36.8 +0.0	+0.0 +0.8 +0.0	+0.0	47.1	54.0 Y-Helical	-6.9	Vert
^	7206.000M	39.5	+0.0 +0.0 +5.2	+0.0 +36.2 +0.2	+0.0 -36.8 +0.0	+0.0 +0.8 +0.0	+0.0	45.1	54.0 X-Helical	-8.9	Vert

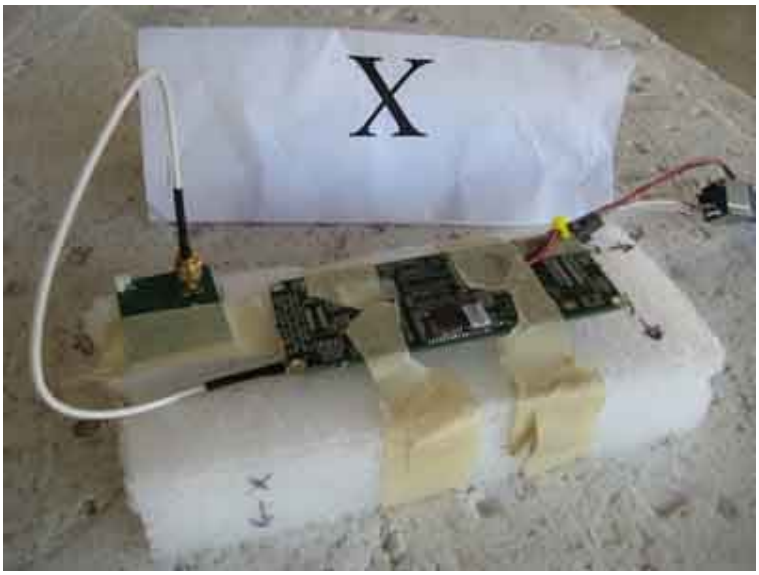
CKC Laboratories, Inc Date: 11/4/2010 Time: 15:16:40 Gibson Guitar Corporation WO#: 91250
FCC 15.247 (d) (FCC 15.209) Test Distance: 3 Meters Sequence#: 2 Ext ATTN: 0 dB



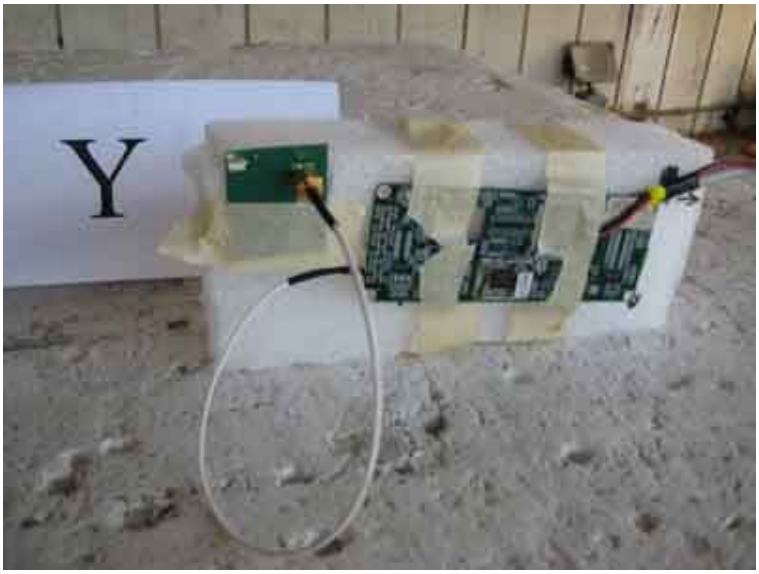
Test Setup Photos

Helical Antenna

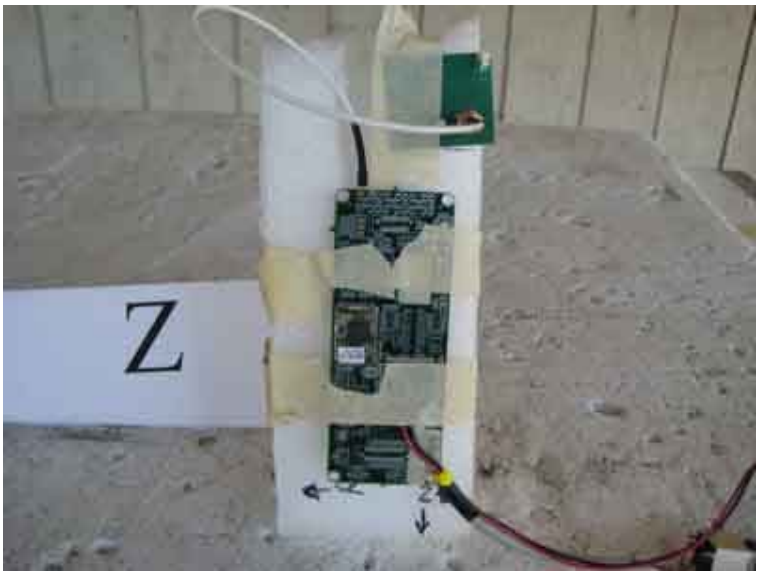
Helical Antenna



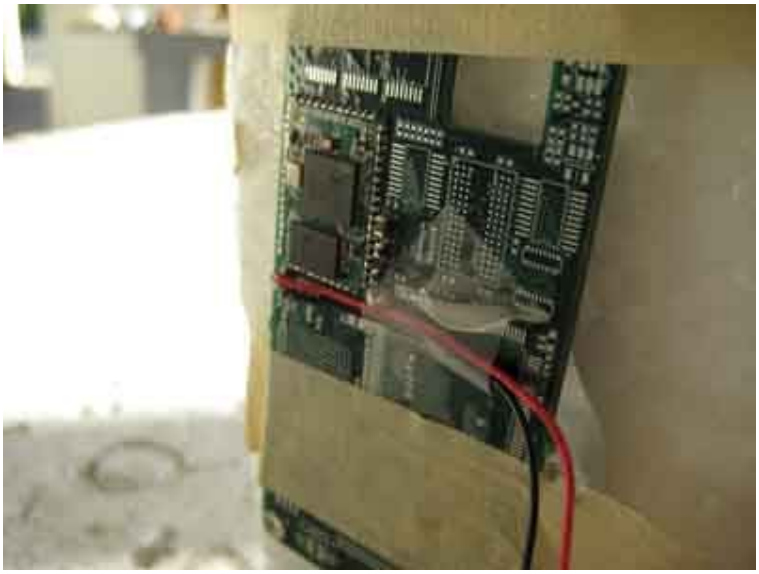
Helical Antenna in X Axis Orientation



Helical Antenna in Y Axis Orientation



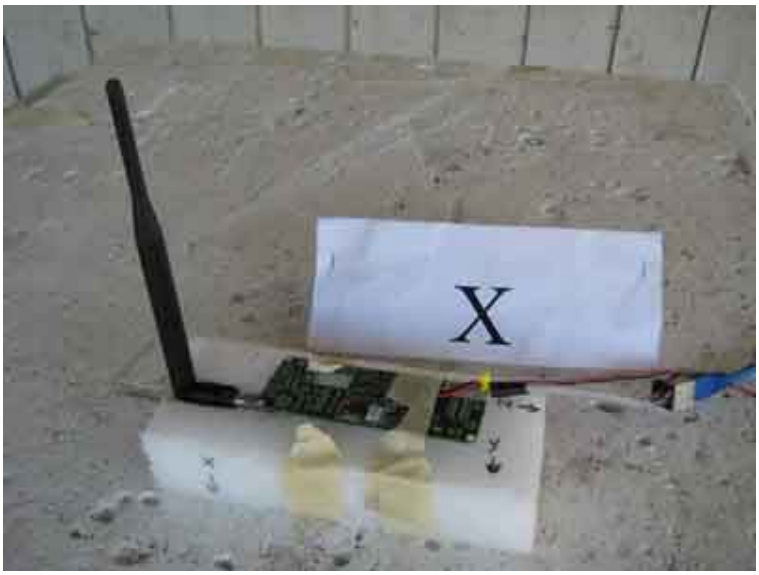
Helical Antenna in Z Axis Orientation



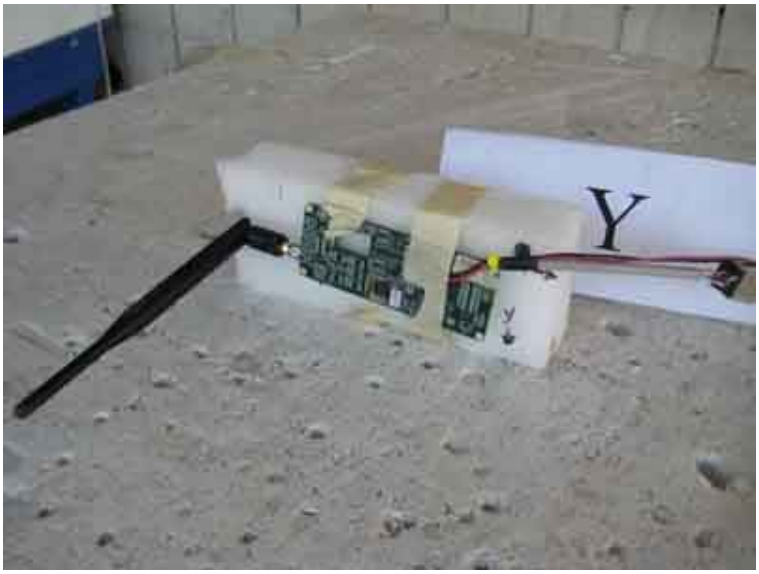
Close up of Helical Configuration (3.3V)

Whip Antenna

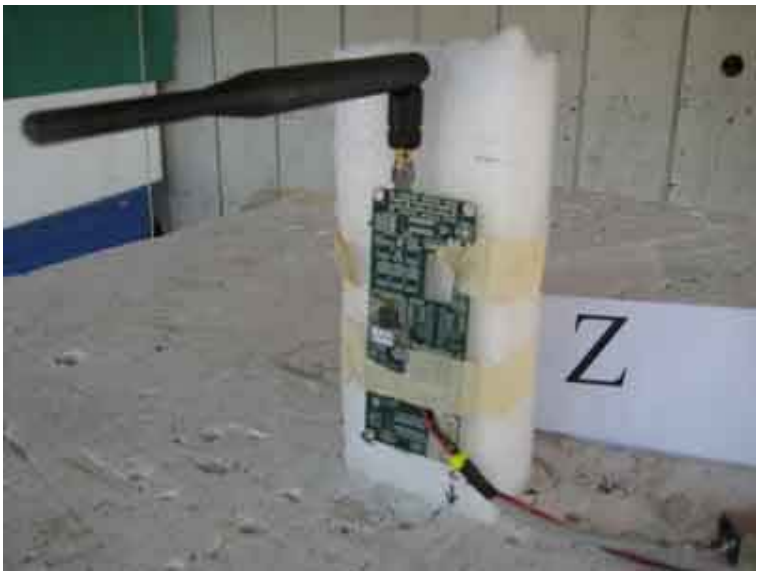
Whip Antenna



Whip Antenna in X Axis Orientation



Whip Antenna in Y Axis Orientation



Whip Antenna in Z Axis Orientation

Close up of Whip Configuration (3.3V)

Bandedge

Test Data Sheets

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Gibson Guitar Corporation**
Specification: **Bandedge plot**
Work Order #: **91250** Date: 11/4/2010
Test Type: **Radiated Scan** Time: 15:16:40
Equipment: **Bluetooth Module** Sequence#: 2
Manufacturer: Bluepacket Communications Co., Ltd. Tested By: E. Wong
Model: MM516
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02869	Spectrum Analyzer	E4440A	2/21/2009	2/21/2011
T7	AN00786	Preamp	83017A	8/5/2010	8/5/2012
T8	AN02948	Cable	32022-2-2909K-24TC	9/21/2009	9/21/2011
T9	ANP05565	Cable	ANDL-1-PNMN-54	9/3/2010	9/3/2012
T6	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Bluetooth Module*	Bluepacket Communications Co., Ltd.	MM516	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Acer	5741-15763	LXPW002025016349DF1601
DC Power Supply	Topward	6306	988614

Test Conditions / Notes:

The EUT (limited modular approval) is soldered on an unpopulated PCB placed on the wooden table lined with Styrofoam of 10 cm in thickness.

Freq 2402-2480
Tx = 2402 MHz, 2441 MHz, 2480 MHz
Firmware Setting (ext, int) = 255, 62. The module can be installed in two different version of host PCB. The host PCB with longer RF path but highest measured conducted power and measured pre-scan spurious emission is used as the test platform.
Measure power = 5.61dBm (0.004W), 5.76dBm (0.004), 5.22dBm (0.003W)

Receiver circuit is not active.
Two different type of antenna can be used with the device; Pulse, whip antenna W1038 (4.9dBi) and Pulse, Helical SMD antenna W3108 (1.5dBi).

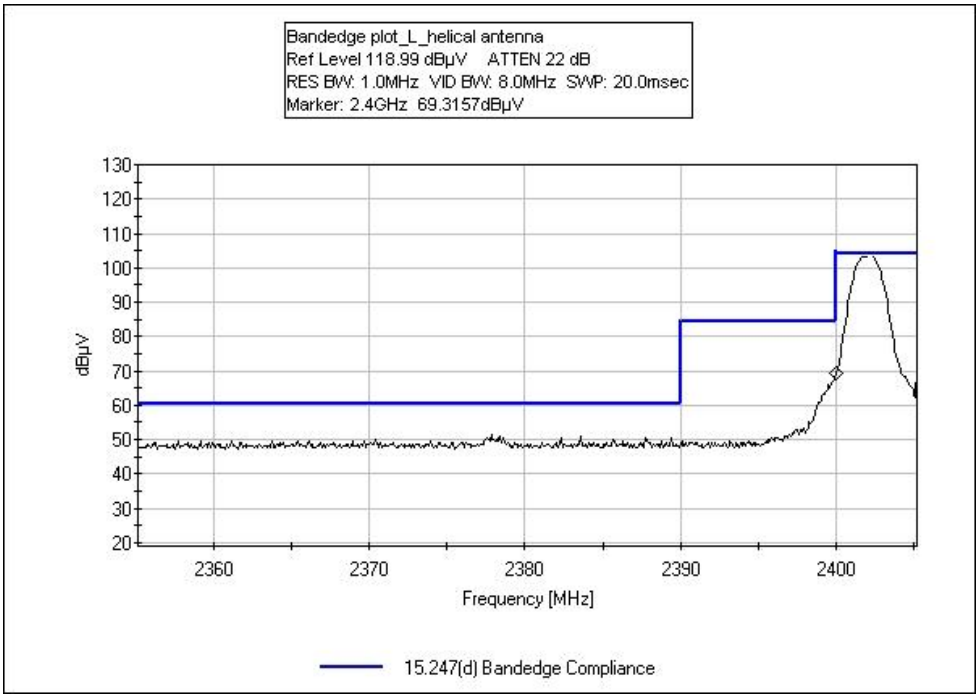
The test is performed with both antennas; typical length (30cm) of RF cable is used with the Helical SMD antenna.

SPI port is connected to remote support laptop. The remote support lap top is running test software to exercise all the intended functionality of the EUT.

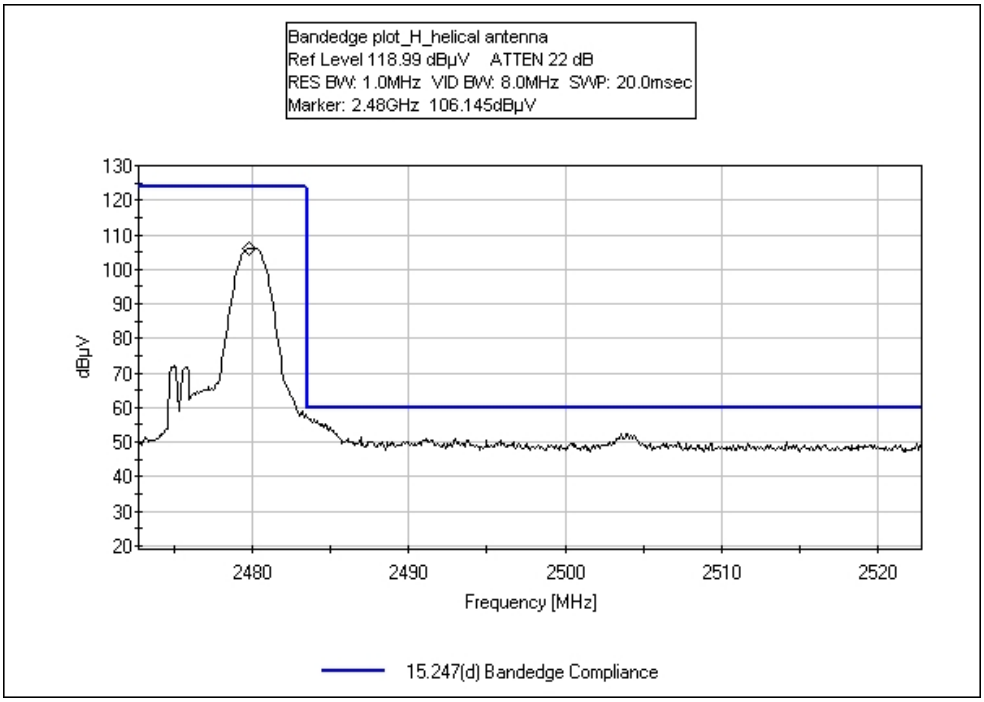
Emission profile with the product and the antenna rotated along its three orthogonal axes was evaluated. Reported data is the worst case emission.

15.31(e) The battery powered device obtains 7.4V DC from a support power supply to simulate the usage of a new battery.

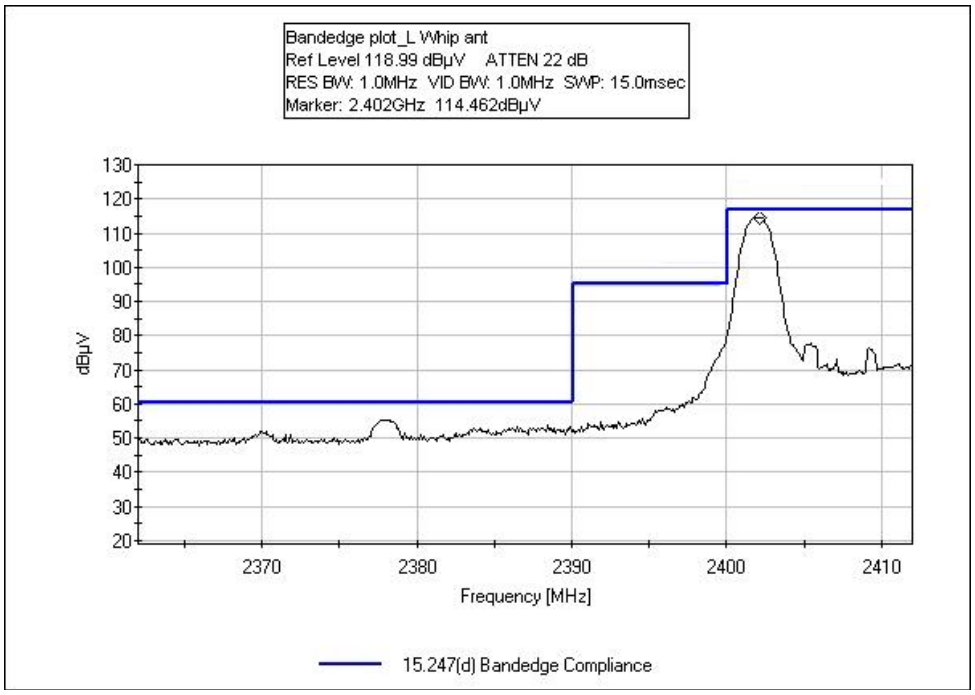
18ºC, 79% relative humidity



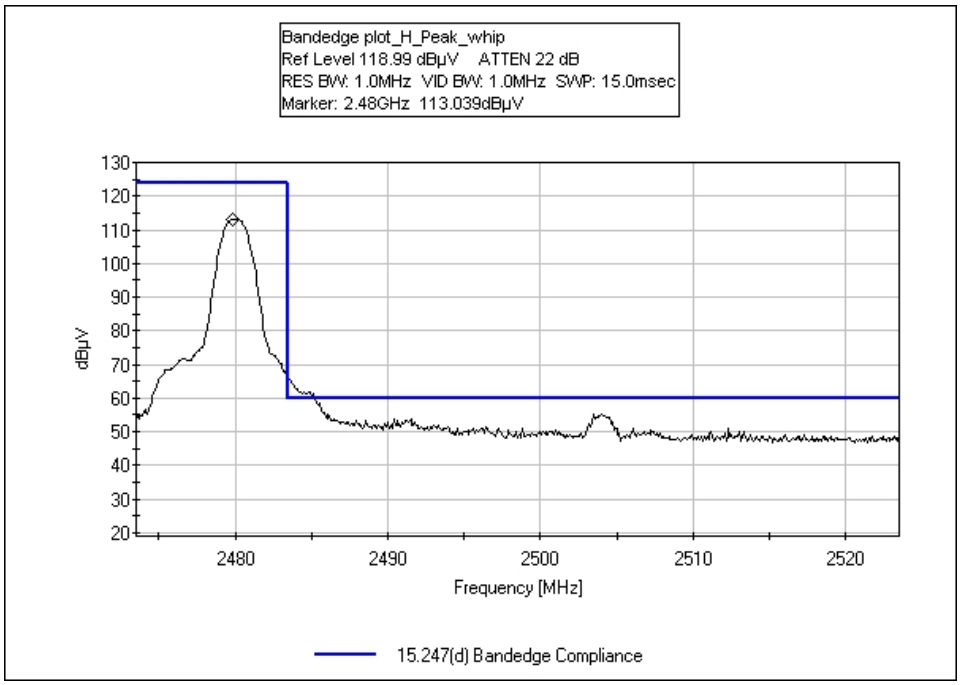
Helical Antenna - Low



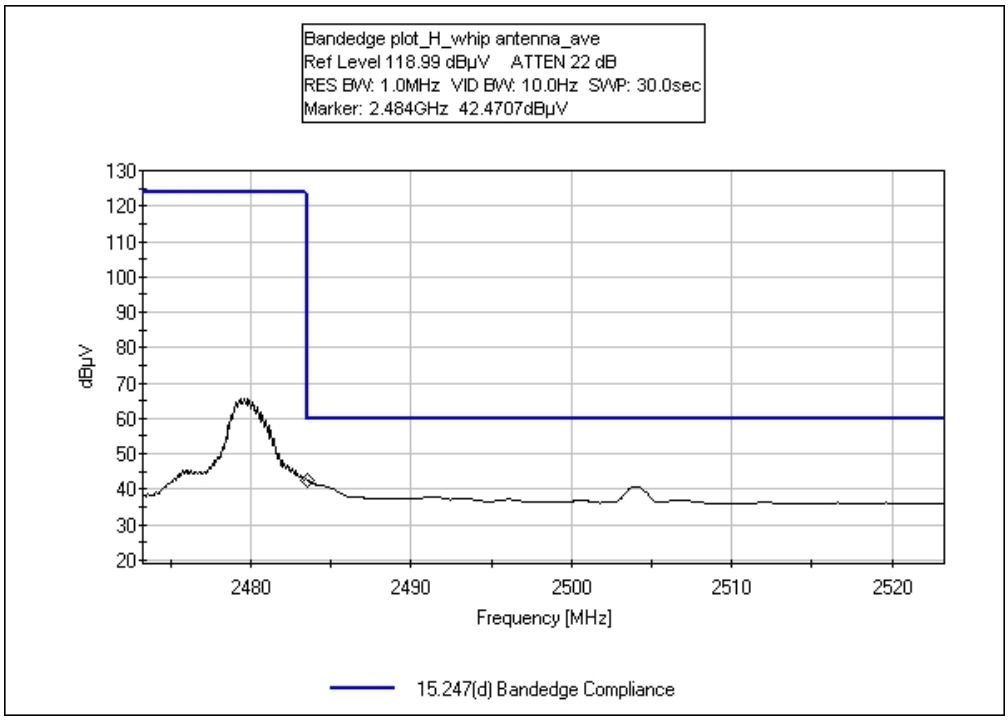
Helical Antenna – High



Whip Antenna - Low



Whip Antenna – High



Whip Antenna – High Averaged

Test Setup Photos

-20dB & 99% Occupied Bandwidth

Test Data

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Gibson Guitar Corporation**
Specification: **-20 dB / 99% BW plot**
Work Order #: **91250** Date: 11/4/2010
Test Type: **Radiated Scan** Time: 15:16:40
Equipment: **Bluetooth Module** Sequence#: 2
Manufacturer: Bluepacket Communications Co., Ltd. Tested By: E. Wong
Model: MM516
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02869	Spectrum Analyzer	E4440A	2/21/2009	2/21/2011
	AN03174	36” 40GHz cable	NA	10/28/2009	10/28/2011

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Bluetooth Module*	Bluepacket Communications Co., Ltd.	MM516	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop	Acer	5741-15763	LXPW002025016349DF1601
DC Power Supply	Topward	6306	988614

Test Conditions / Notes:

The EUT (limited modular approval) is soldered on an unpopulated PCB placed on the wooden table lined with Styrofoam of 10 cm in thickness.

Freq 2402-2480
Tx = 2402 MHz, 2441 MHz, 2480 MHz
Firmware Setting (ext, int) = 255, 62. The module can be installed in two different version of host PCB. The host PCB with longer RF path but highest measured conducted power and measured pre-scan spurious emission is used as the test platform.
Measure power = 5.61dBm (0.004W), 5.76dBm (0.004), 5.22dBm (0.003W)

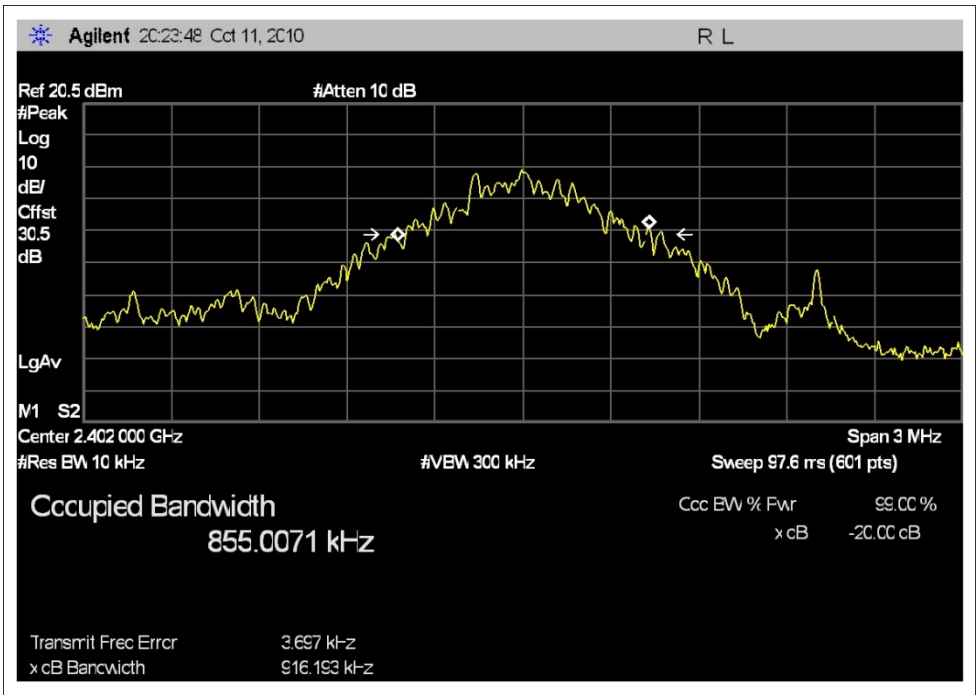
Receiver circuit is not active.
Two different type of antenna can be used with the device; Pulse, whip antenna W1038 (4.9dBi) and Pulse, Helical SMD antenna W3108 (1.5dBi).

SPI port is connected to remote support laptop. The remote support lap top is running test software to exercise all the intended functionality of the EUT.

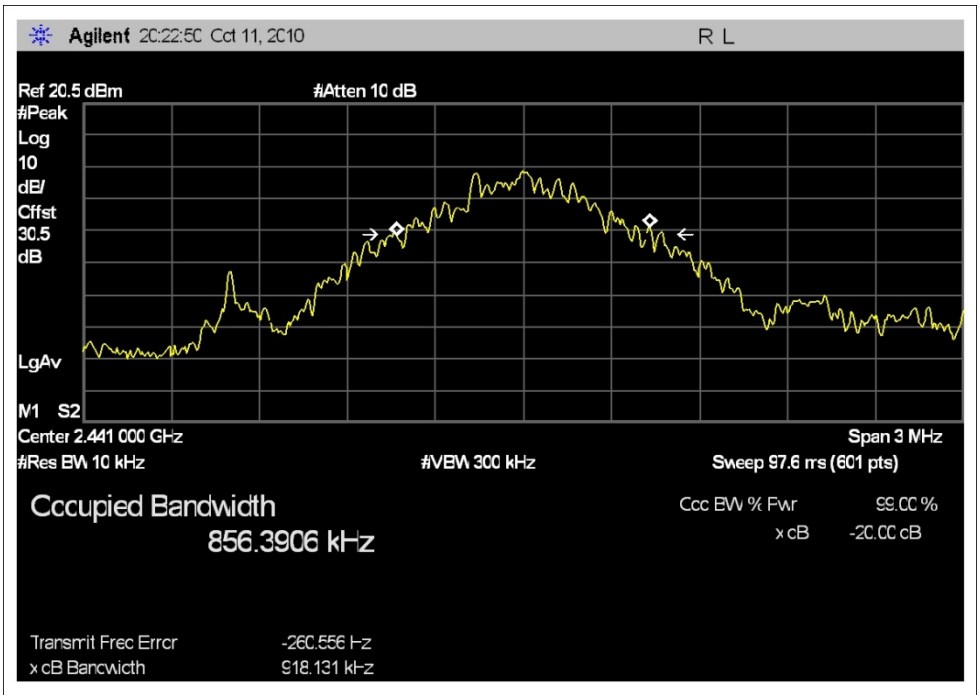
99% & -20dB bandwidth are measured at the antenna port.

15.31(e) The battery powered device obtains 7.4V DC from a support power supply to simulate the usage of a new battery.

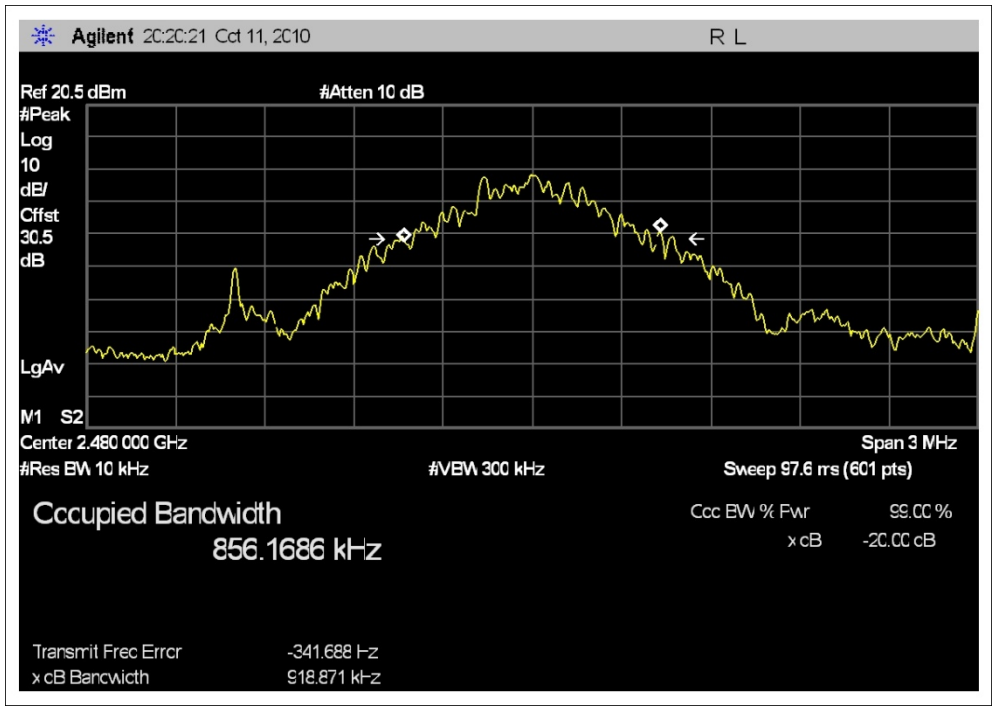
18ºC, 79% relative humidity


Agilent 2C:23:48 Cct 11, 2C10
R L
Ref 20.5 dBm
#Atten 10 dB
#Peak
Log
10
dB/
Cffst
30.5
dB
LgAv
M1 S2
Center 2.402 000 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 300 kHz
Sweep 97.6 ms (601 pts)
Cccupied Bandwidth
855.0071 kHz
Ccc BW % Pwr
99.CC %
x cB
-2C.CC cB
Transmit Frec Error
3.697 kHz
x cB Bandwidth
916.193 kHz

Low


Agilent 2C:22:5C Cct 11, 2C10
R L
Ref 20.5 dBm
#Atten 10 dB
#Peak
Log
10
dB/
Cffst
30.5
dB
LgAv
M1 S2
Center 2.441 000 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 300 kHz
Sweep 97.6 ms (601 pts)
Cccupied Bandwidth
856.3906 kHz
Ccc BW % Pwr
99.CC %
x cB
-2C.CC cB
Transmit Frec Error
-26C.556 Hz
x cB Bandwidth
918.131 kHz

Middle


Agilent 20:20:21 Oct 11, 2010
R L
Ref 20.5 dBm
#Atten 10 dB
#Peak
Log
10
dB/
Offst
30.5
dB
LgAv
M1 S2
Center 2.480 000 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 300 kHz
Sweep 97.6 ms (601 pts)
Occupied Bandwidth
856.1686 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -341.688 Hz
x dB Bandwidth 918.871 kHz

High

Test Setup Photos

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.