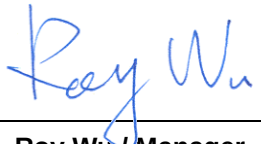
FCC RF Test Report

APPLICANT	:	Quanta Computer Inc.
EQUIPMENT	:	Laptop Computer
BRAND NAME	:	OLPC
MODEL NAME	:	XO-1.5
FCC ID	:	HFS-CL1B
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Transmission System (DTS)

The product was received on Jan. 06, 2010 and completely tested on Jan. 24, 2010. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



Roy Wu / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR010517	Rev. 01	Initial issue of report	Jan. 25, 2010

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.4	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
3.5	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 6.97 dB at 0.18 MHz
3.6	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.21 dB at 800.50 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Quanta Computer Inc.
No. 188, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan

1.2 Manufacturer

Quanta Computer Inc.
No. 188, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Laptop Computer
Brand Name	OLPC
Model Name	XO-1.5
FCC ID	HFS-CL1B
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 16.11 dBm (40.83 mW) 802.11g : 18.28 dBm (67.30 mW)
Antenna Type	PIFA Antenna with gain 0.7 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO01-KS	03CH01-KS	TW1022/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ANSI C63.4-2003
- IC RSS-210 Issue 7

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
2.	iPod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A
3.	Earphone	INTOPIC	Jazz-278	FCC DoC	Shielded, 2.2 m	N/A

2 Test Configuration of Equipment Under Test

2.1 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and recorded the RF power output in the following table:

Channel	Frequency	2.4GHz 802.11b Pre-Scanned RF Power (dBm)			
		At DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	15.90	16.01	15.70	16.20
CH 06	2437 MHz	16.58	16.78	15.77	16.23
CH 11	2462 MHz	17.39	**17.54**	16.67	17.01

Channel	Frequency	2.4GHz 802.11g Pre-Scanned RF Power (dBm)							
		At OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	21.82	22.63	21.93	22.03	22.75	22.55	22.78	22.59
CH 06	2437 MHz	22.00	21.79	21.66	21.25	22.44	21.89	22.08	21.66
CH 11	2462 MHz	22.99	22.87	22.85	22.57	22.98	23.03	22.98	**23.04**

Remark:

1. For WLAN RF power, the pre-scanned RF power was measured by power meter.
2. The data rates of WLAN 802.11b/g were set in 2Mbps for 802.11b and 54Mbps for 802.11g, for all the test cases due to the highest RF output power.
3. The EUT is programmed to transmit signals continuously for all testing.

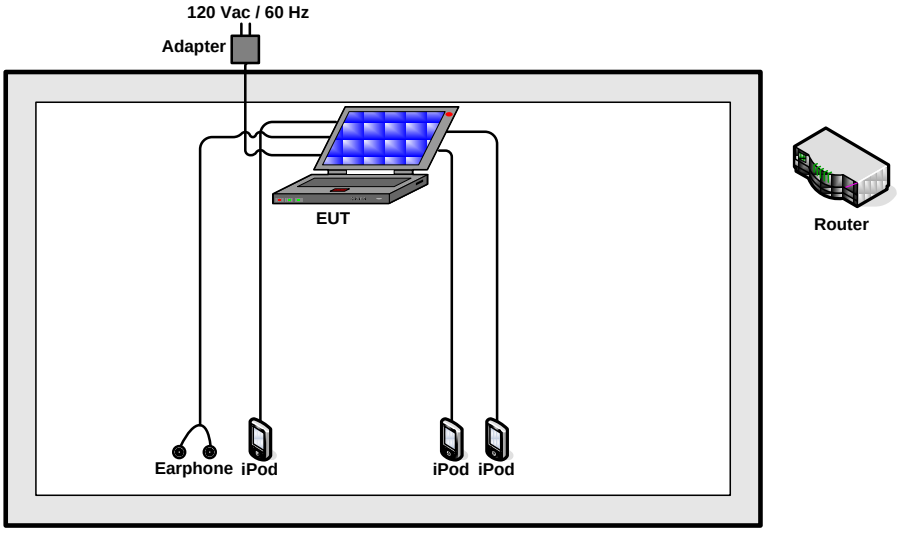
2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests were conducted to determine the final configuration from all possible combinations. The following tables are showing the test modes as the worst cases and recorded in this report.

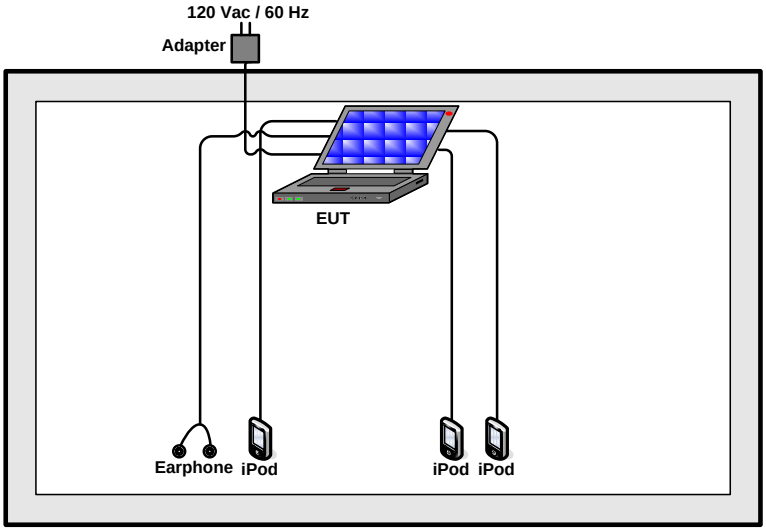
Test Cases		
Test Item	**802.11b**	**802.11g**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4 : 802.11g CH01_2412 MHz Mode 5 : 802.11g CH06_2437 MHz Mode 6 : 802.11g CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz (Laptop) Mode 2 : 802.11b CH06_2437 MHz (Laptop) Mode 3 : 802.11b CH11_2462 MHz (Laptop) Mode 4: 802.11b CH11_2462 MHz(Tablet)	Mode 5 : 802.11g CH01_2412 MHz (Laptop) Mode 6 : 802.11g CH06_2437 MHz (Laptop) Mode 7 : 802.11g CH11_2462 MHz (Laptop) Mode 8 : 802.11g CH01_2412 MHz (Tablet)
AC Conducted Emission	Mode 1 ： WLAN Link + TC + Adapter	
Remark: TC stands for Test Configuration, and consists of iPod and earphone.		

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.4 RF Utility

The programmed RF utility, “DutApiSD83XXP” is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

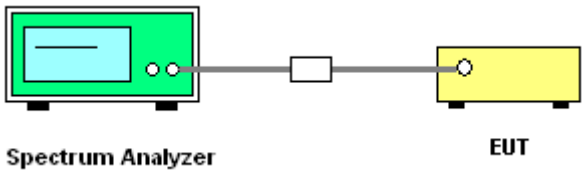
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup

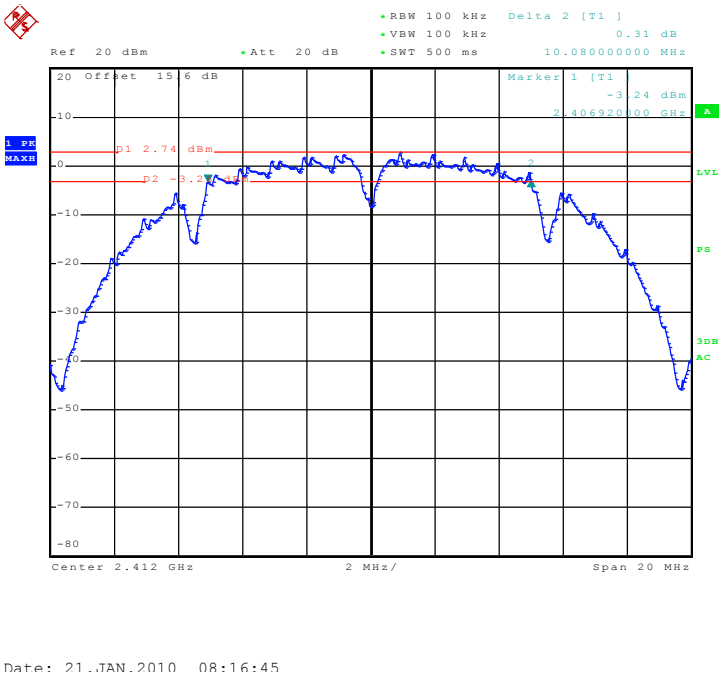


3.1.5 Test Result of 6dB Bandwidth

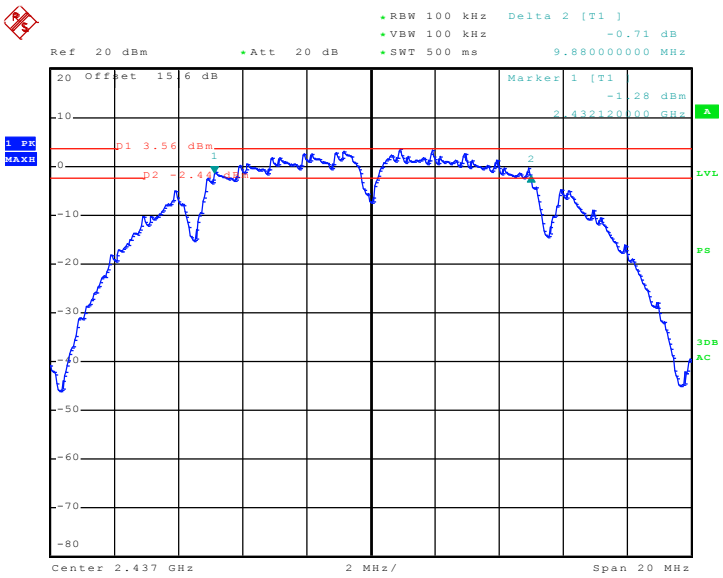
Test Mode :	Mode 1, 2, 3	Temperature :	22~23℃
Test Engineer :	Rain Zhou	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.08	0.5	Pass
06	2437	9.88	0.5	Pass
11	2462	10.12	0.5	Pass

Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



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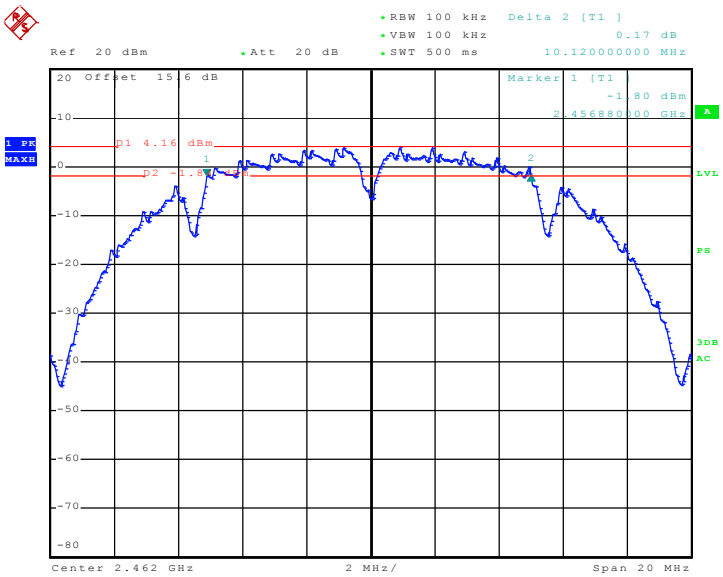
Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



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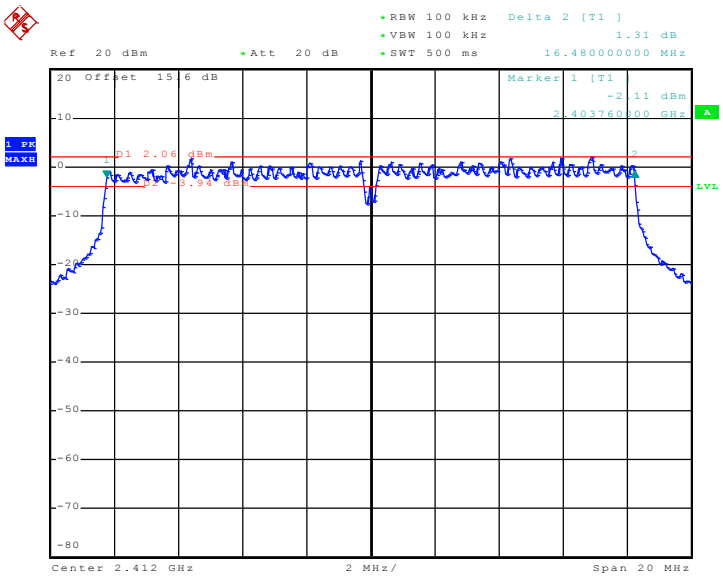
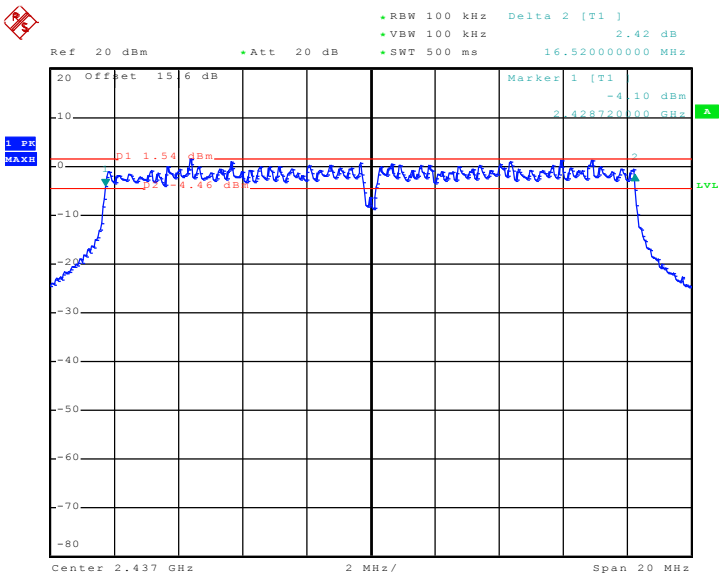
Test Mode :	Mode 4, 5, 6	Temperature :	22~23℃
Test Engineer :	Rain Zhou	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.48	0.5	Pass
06	2437	16.52	0.5	Pass
11	2462	16.48	0.5	Pass

Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



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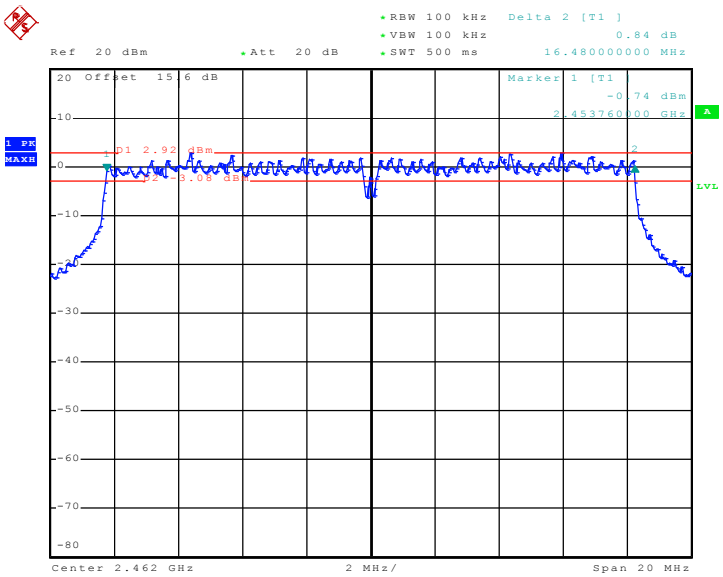
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



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3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

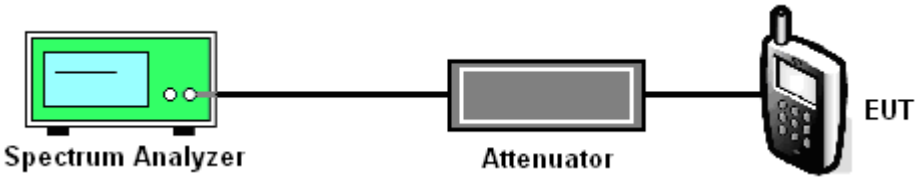
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Measure the power by spectrum analyzer.

3.2.4 Test Setup

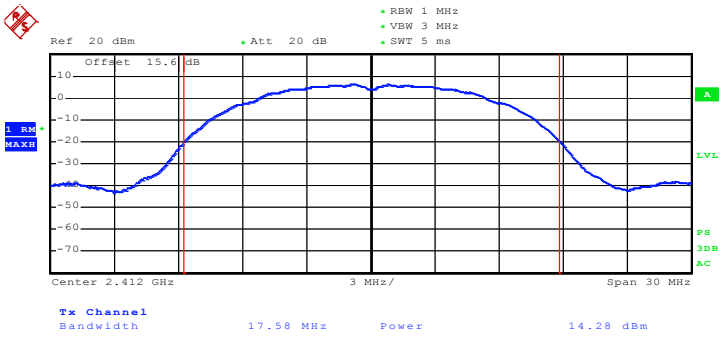


3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	22~23℃
Test Engineer :	Rain Zhou	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	14.28	30	Pass
06	2437	14.98	30	Pass
11	2462	16.11	30	Pass

Mode 1 : Output Power Plot on 802.11b Channel 01



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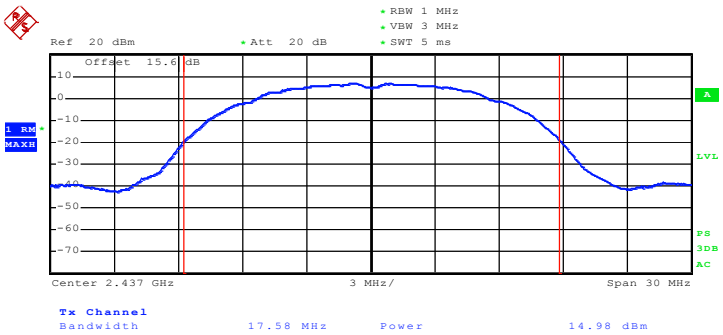
Mode 2 : Output Power Plot on 802.11b Channel 06



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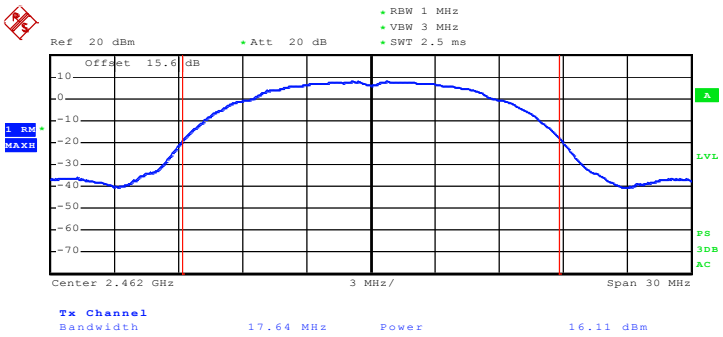
Mode 3 : Output Power Plot on 802.11b Channel 11



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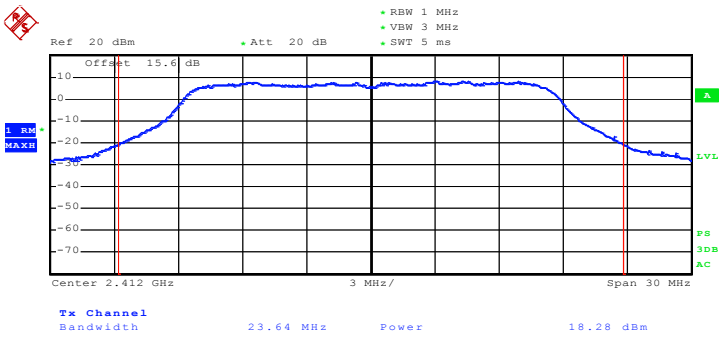
Test Mode :	Mode 4, 5, 6	Temperature :	22~23℃
Test Engineer :	Rain Zhou	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.28	30	Pass
06	2437	17.91	30	Pass
11	2462	17.49	30	Pass

Mode 4 : Output Power Plot on 802.11g Channel 01



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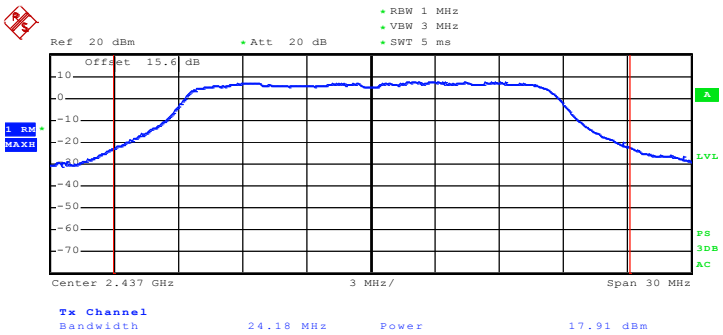
Mode 5 : Output Power Plot on 802.11g Channel 06



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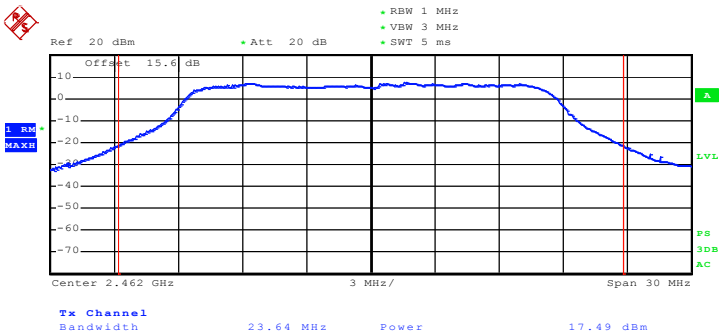
Mode 6 : Output Power Plot on 802.11g Channel 11



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3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation as in FCC Section 15.35(b) and (c).

3.3.4 Test Setup

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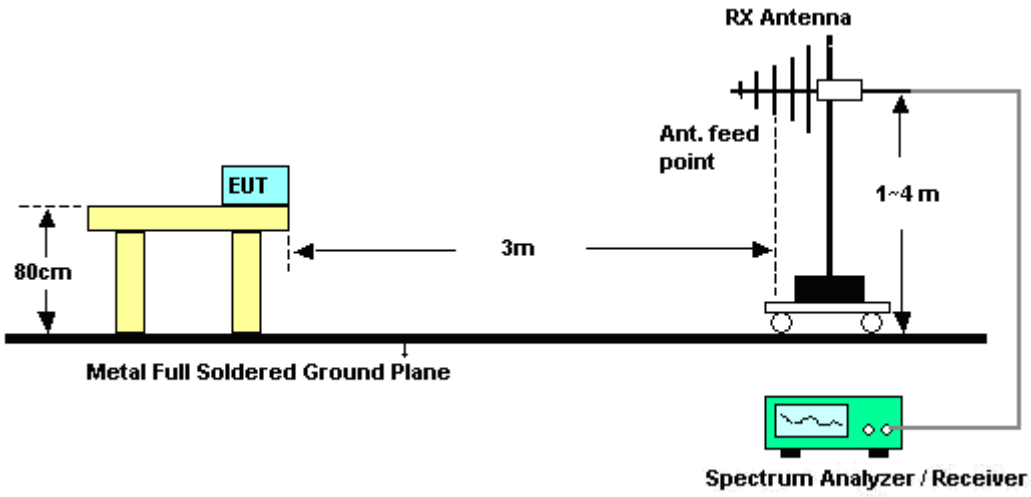
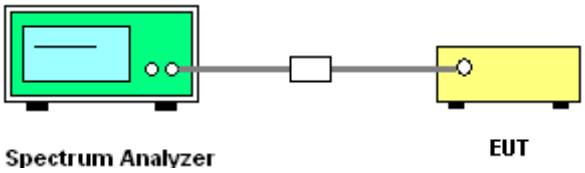


<Conducted Band Edges>



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Harvey Tang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2364.00	53.82	-20.18	74.00	52.72	32.81	3.12	34.83	100	63	Peak
2364.00	44.11	-9.89	54.00	43.01	32.81	3.12	34.83	100	63	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386.00	49.88	-24.12	74.00	48.73	32.86	3.13	34.84	100	346	Peak
2386.00	40.52	-13.48	54.00	39.37	32.86	3.13	34.84	100	346	Average

Test Mode :	Mode 3	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Harvey Tang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2490.00	58.00	-16	74.00	56.60	33.05	3.20	34.85	100	53	Peak
2490.00	46.39	-7.61	54.00	44.99	33.05	3.20	34.85	100	53	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.00	53.17	-20.83	74.00	51.77	33.05	3.20	34.85	100	288	Peak
2488.00	43.35	-10.65	54.00	41.95	33.05	3.20	34.85	100	288	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Harvey Tang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2494.00	57.39	-16.61	74.00	55.98	33.05	3.21	34.85	100	308	Peak
2494.00	47.00	-7.00	54.00	45.59	33.05	3.21	34.85	100	308	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2498.00	58.35	-15.65	74.00	56.94	33.05	3.21	34.85	102	86	Peak
2498.00	48.60	-5.40	54.00	47.19	33.05	3.21	34.85	102	86	Average

Test Mode :	Mode 5	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Harvey Tang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	68.81	-5.19	74.00	67.64	32.86	3.15	34.84	124	58	Peak
2390.00	53.33	-0.67	54.00	52.16	32.86	3.15	34.84	124	58	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	62.57	-11.43	74.00	61.40	32.86	3.15	34.84	104	289	Peak
2390.00	47.80	-6.20	54.00	46.63	32.86	3.15	34.84	104	289	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Harvey Tang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.00	66.40	-7.60	74.00	65.04	33.01	3.20	34.85	132	296	Peak
2486.00	52.57	-1.43	54.00	51.21	33.01	3.20	34.85	132	296	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.00	60.37	-13.63	74.00	59.01	33.01	3.20	34.85	127	287	Peak
2484.00	47.42	-6.58	54.00	46.06	33.01	3.20	34.85	127	287	Average

Test Mode :	Mode 8	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Harvey Tang

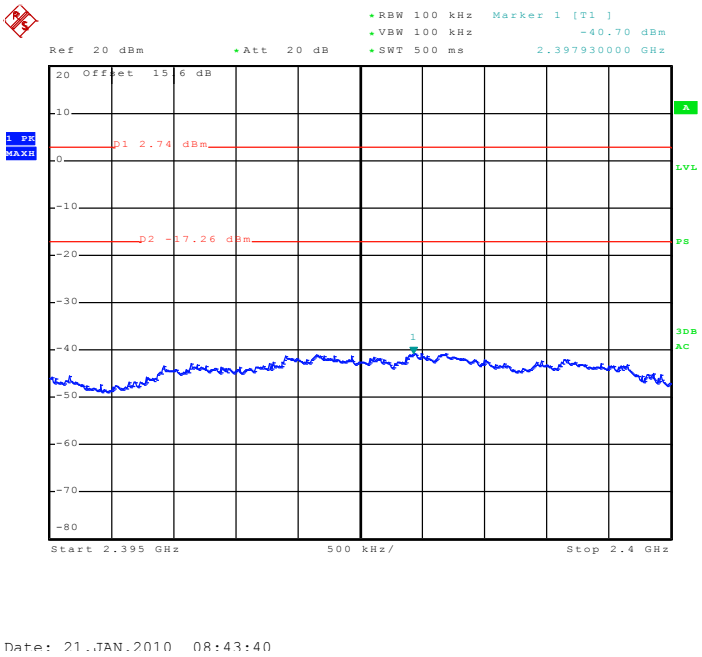
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	71.50	-2.50	74.00	70.33	32.86	3.15	34.84	100	311	Peak
2390.00	53.39	-0.61	54.00	52.22	32.86	3.15	34.84	100	311	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	70.77	-3.23	74.00	69.60	32.86	3.15	34.84	105	85	Peak
2390.00	53.48	-0.52	54.00	52.31	32.86	3.15	34.84	105	85	Average

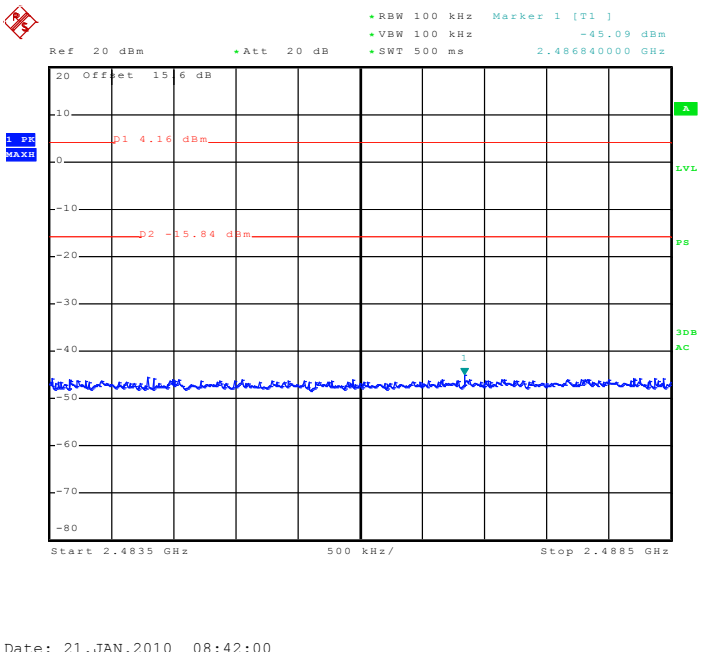
3.3.6 Test Plots of Conducted Band Edges

Test Mode :	Mode 1 and 3	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	42~43%
Test Channel :	01 and 11	Test Engineer :	Rain Zhou

Low Band Edge Plot on 802.11b Channel 01

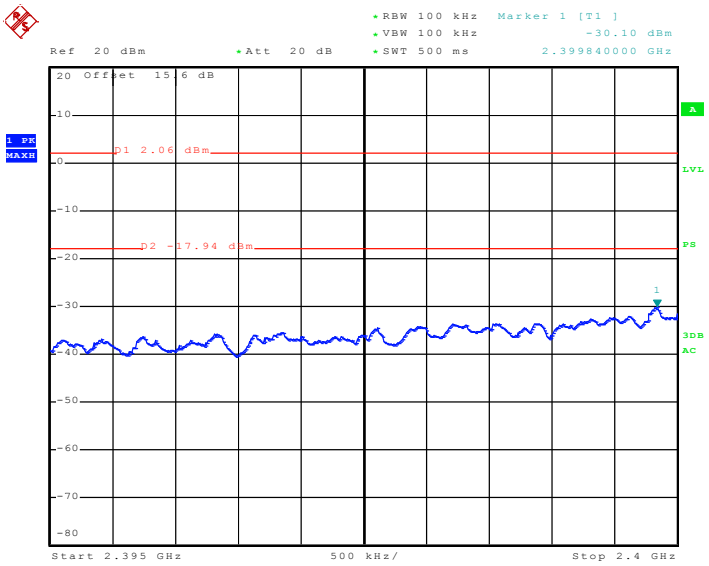


High Band Edge Plot on 802.11b Channel 11



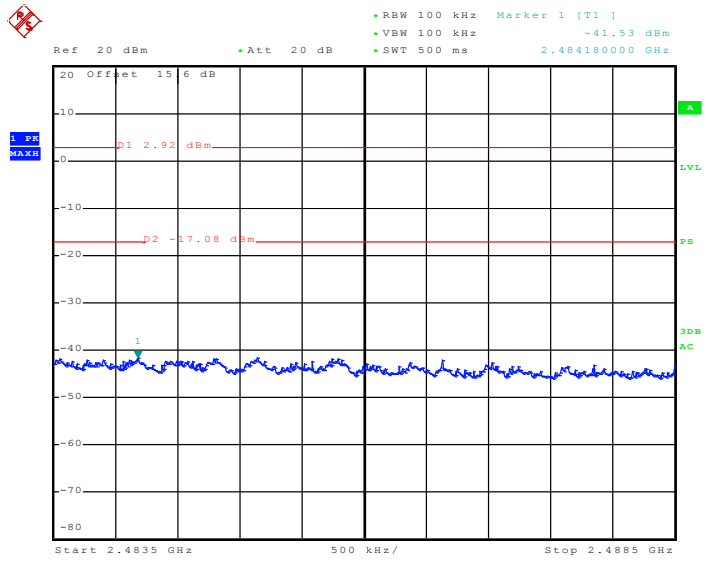
Test Mode :	Mode 5 and 7	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	42~43%
Test Channel :	01 and 11	Test Engineer :	Rain Zhou

Low Band Edge Plot on 802.11g Channel 01



Date: 21.JAN.2010 11:55:50

High Band Edge Plot on 802.11g Channel 11



Date: 21.JAN.2010 11:57:12

3.4 Power Spectral Density Measurement

3.4.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

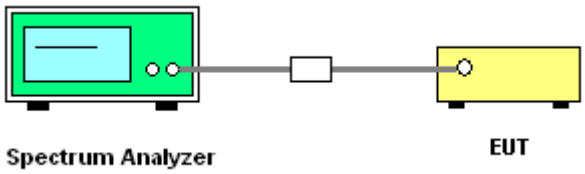
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The test follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Take the measured data from spectrum analyzer.

3.4.4 Test Setup

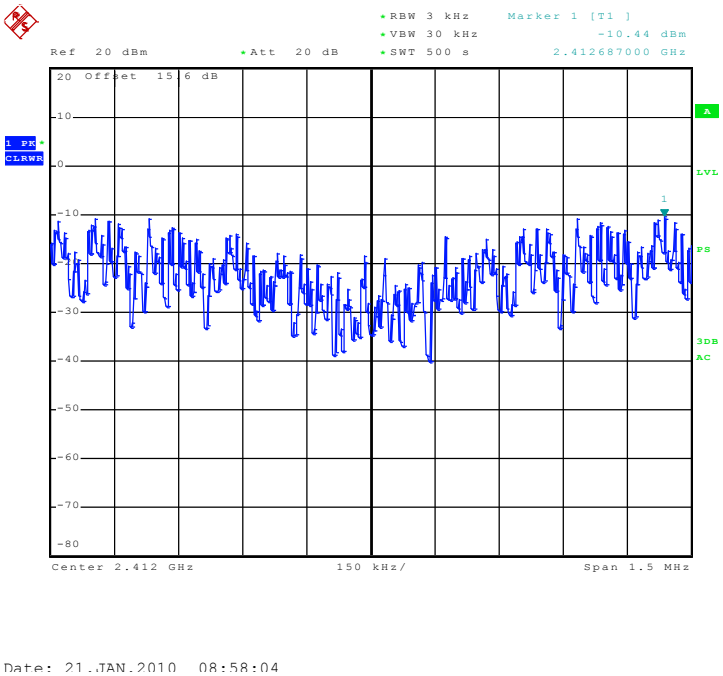


3.4.5 Test Result of Power Spectral Density

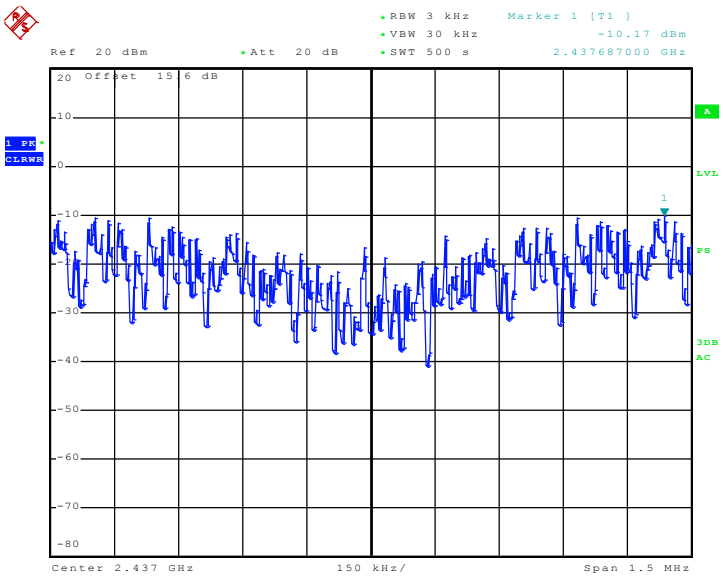
Test Mode :	Mode 1, 2, 3	Temperature :	22~23℃
Test Engineer :	Rain Zhou	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.44	8	Pass
06	2437	-10.17	8	Pass
11	2462	-9.33	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01

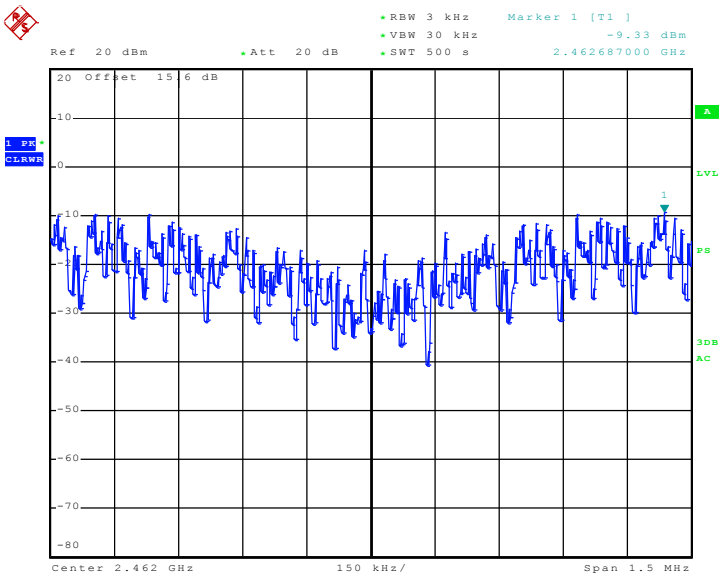


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 21.JAN.2010 09:13:19

Mode 3 : PSD Plot on 802.11b Channel 11

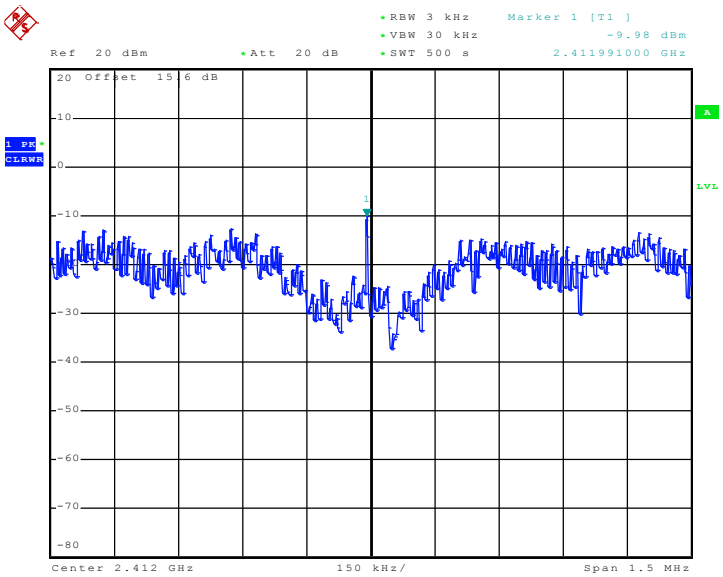


Date: 21.JAN.2010 09:24:52

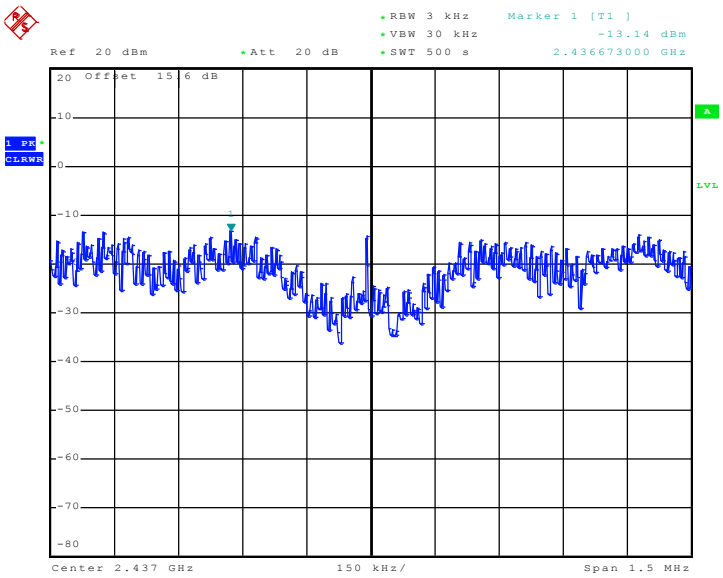
Test Mode :	Mode 4, 5, 6	Temperature :	22~23℃
Test Engineer :	Rain Zhou	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.98	8	Pass
06	2437	-13.14	8	Pass
11	2462	-12.61	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01

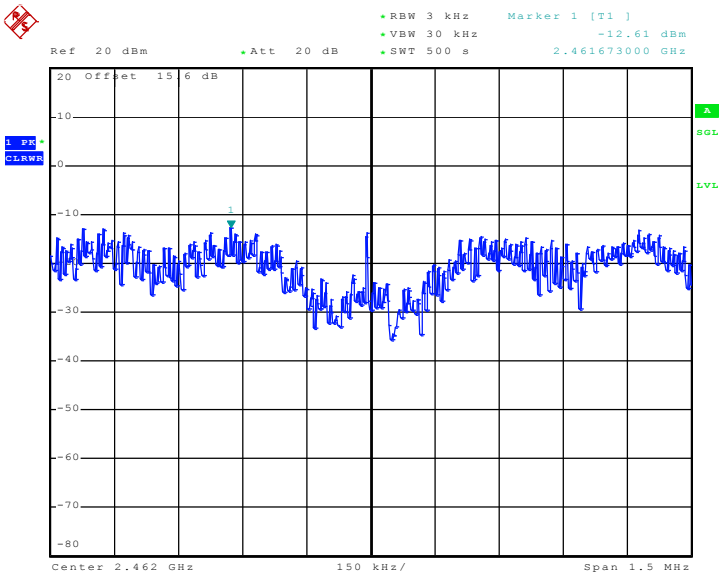


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 6.JAN.2010 14:39:13

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 6.JAN.2010 14:51:46

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

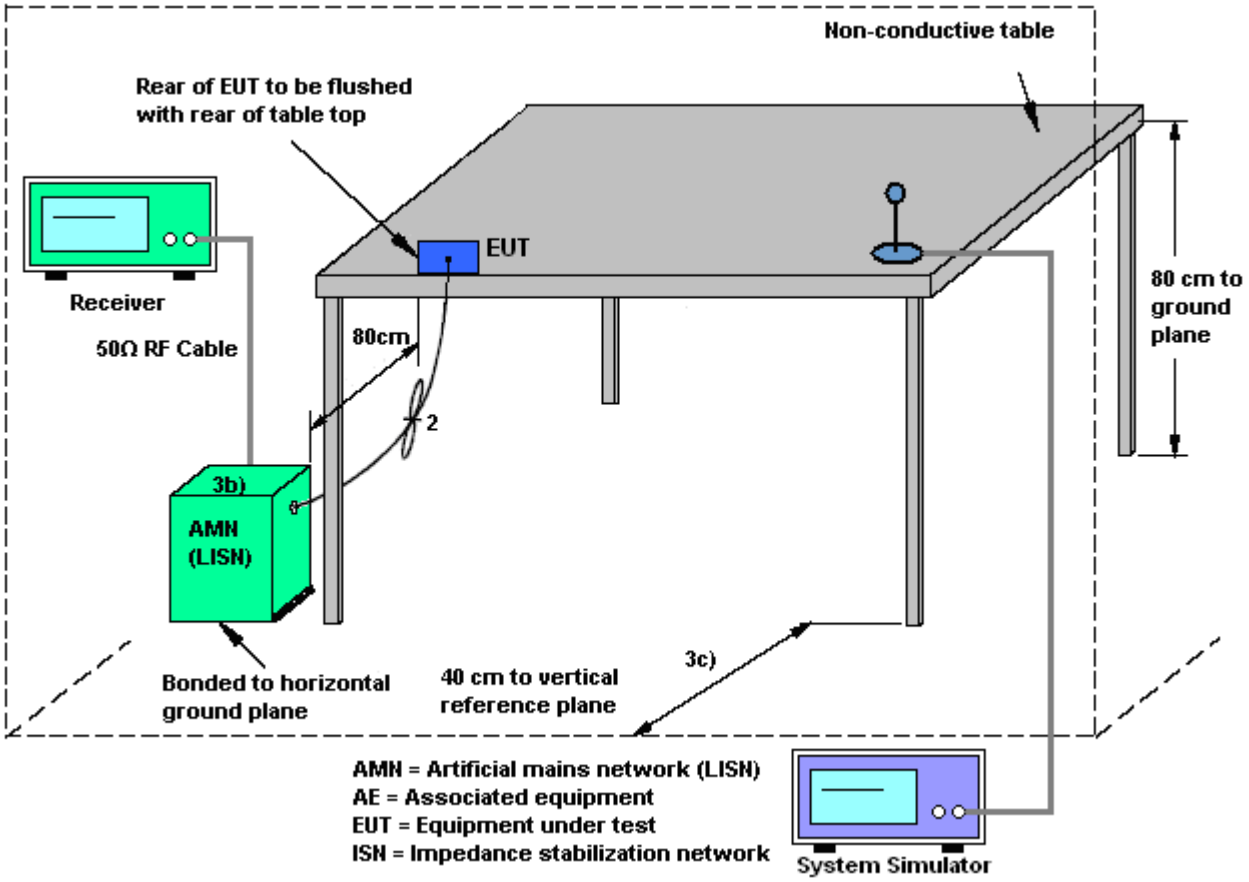
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

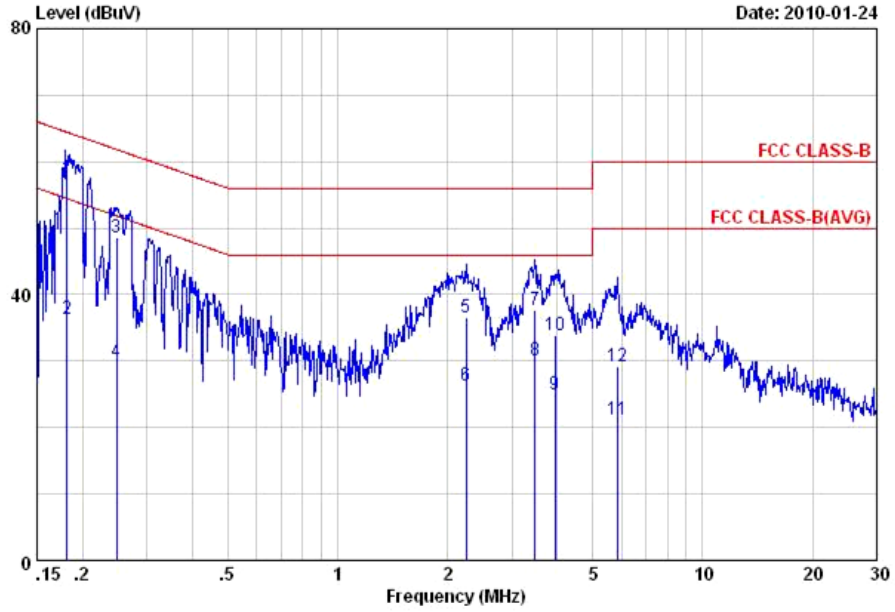
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~23℃
Test Engineer :	Rain Zhou	Relative Humidity :	42~43%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + TC + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

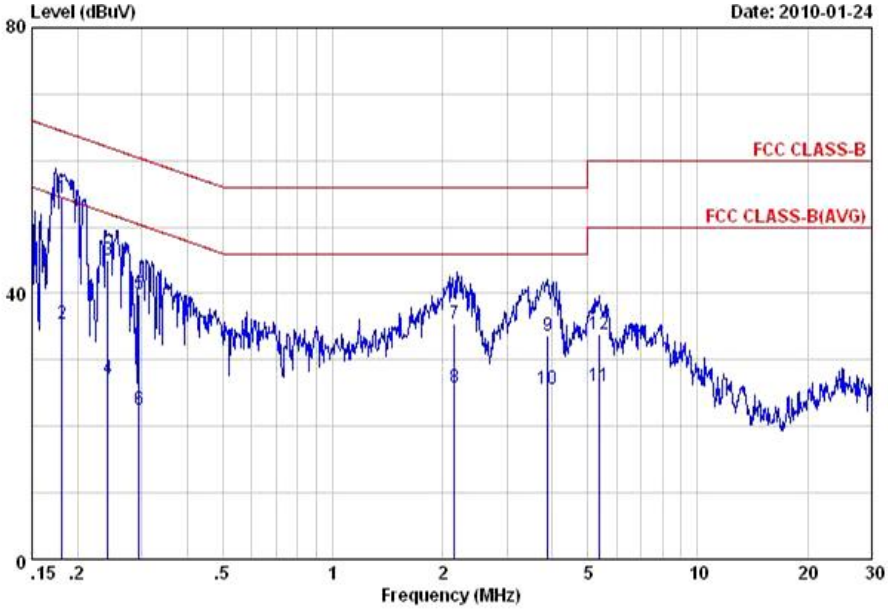


Site : C001-KS
Condition: FCC CLASS-B LISN-071001 LINE

Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.18	57.48	-6.97	64.45	47.40	-0.07	10.15	QP
2	0.18	36.28	-18.17	54.45	26.20	-0.07	10.15	Average
3	0.25	48.59	-13.22	61.81	38.50	-0.07	10.16	QP
4	0.25	29.89	-21.92	51.81	19.80	-0.07	10.16	Average
5	2.25	36.63	-19.37	56.00	26.40	-0.11	10.34	QP
6	2.25	26.33	-19.67	46.00	16.10	-0.11	10.34	Average
7	3.47	37.66	-18.34	56.00	27.40	-0.12	10.38	QP
8	3.47	30.06	-15.94	46.00	19.80	-0.12	10.38	Average
9	3.94	24.96	-21.04	46.00	14.70	-0.13	10.39	Average
10	3.94	33.76	-22.24	56.00	23.50	-0.13	10.39	QP
11	5.83	21.28	-28.72	50.00	11.00	-0.13	10.41	Average
12	5.83	29.28	-30.72	60.00	19.00	-0.13	10.41	QP

Test Mode :	Mode 1	Temperature :	22~23℃
Test Engineer :	Rain Zhou	Relative Humidity :	42~43%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + TC + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
Condition: FCC CLASS-B LISN-071001 NEUTRAL

Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.18	54.47	-9.97	64.44	44.40	-0.08	10.15	QP
2	0.18	35.47	-18.97	54.44	25.40	-0.08	10.15	Average
3	0.24	45.09	-16.94	62.03	35.00	-0.07	10.16	QP
4	0.24	27.29	-24.74	52.03	17.20	-0.07	10.16	Average
5	0.29	40.00	-20.40	60.40	29.90	-0.07	10.17	QP
6	0.29	22.50	-27.90	50.40	12.40	-0.07	10.17	Average
7	2.16	35.43	-20.57	56.00	25.20	-0.11	10.34	QP
8	2.16	25.83	-20.17	46.00	15.60	-0.11	10.34	Average
9	3.88	33.56	-22.44	56.00	23.30	-0.13	10.39	QP
10	3.88	25.66	-20.34	46.00	15.40	-0.13	10.39	Average
11	5.36	25.97	-24.03	50.00	15.70	-0.13	10.40	Average
12	5.36	33.87	-26.13	60.00	23.60	-0.13	10.40	QP

3.6 Radiated Emission Measurement

3.6.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.6.2 Measuring Instruments

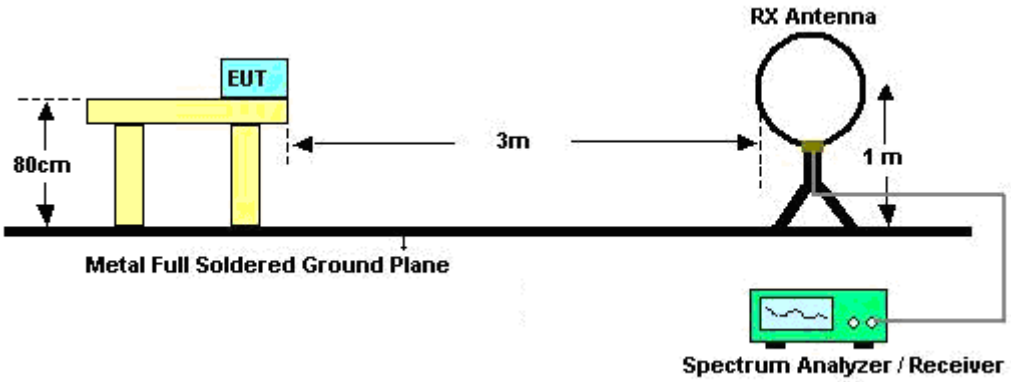
See list of measuring instruments of this test report.

3.6.3 Test Procedures

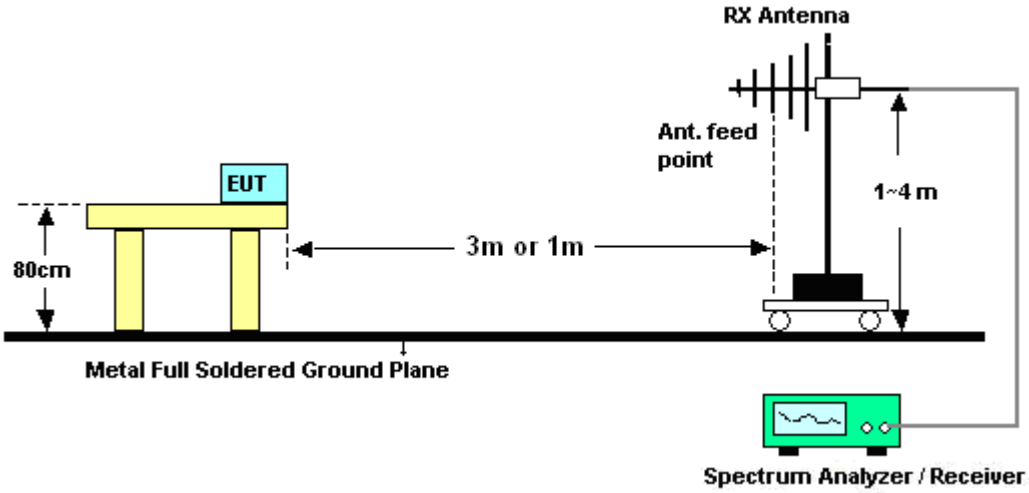
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
   (2) Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
   Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB)
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.6.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.6.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

Test Engineer :	Harvey Tang	Temperature :	23~24℃
		Relative Humidity :	45~46%

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

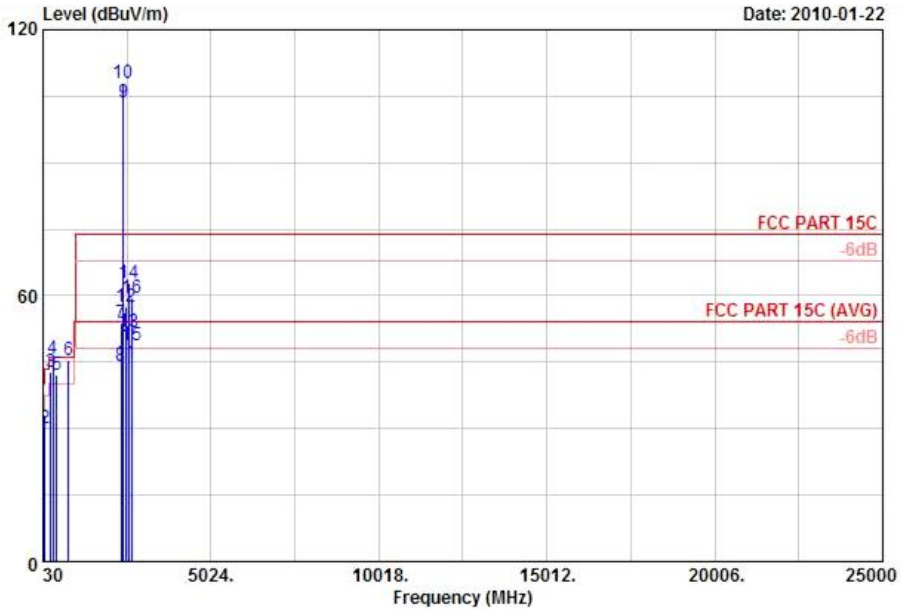
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

3.6.6 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Horizontal
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

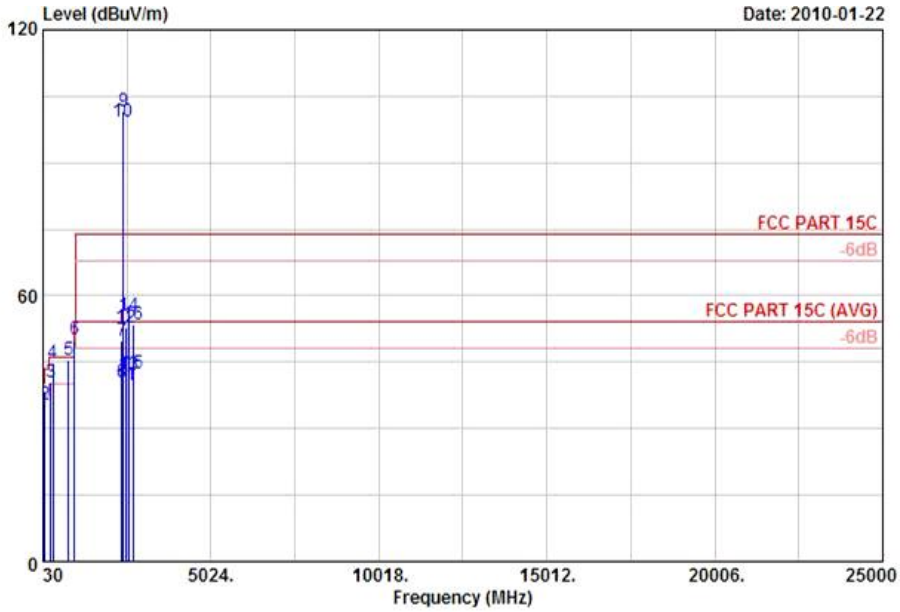


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 HORIZONTAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		58.35	28.68	-11.32	40.00	51.36	5.59	0.34	28.61	---	---	Peak
2		84.54	30.17	-9.83	40.00	50.89	7.53	0.40	28.65	---	---	Peak
3	!	269.49	42.91	-3.09	46.00	58.61	12.36	0.75	28.81	---	---	Peak
4	!	335.70	45.77	-0.23	46.00	59.71	14.14	0.81	28.89	100	296	QP
5	!	431.60	42.01	-3.99	46.00	53.84	16.20	0.90	28.93	---	---	Peak
6	!	800.50	45.62	-0.38	46.00	52.24	19.85	1.23	27.70	100	156	QP
7		2364.00	53.82	-20.18	74.00	52.72	32.81	3.12	34.83	100	63	Peak
8		2364.00	44.11	-9.89	54.00	43.01	32.81	3.12	34.83	100	63	Average
9	X	2412.00	103.57			102.37	32.89	3.15	34.84	100	63	Average
10	X	2412.00	108.11			106.91	32.89	3.15	34.84	100	63	Peak
11		2500.00	44.88	-9.12	54.00	43.47	33.05	3.21	34.85	100	21	Average
12		2500.00	57.52	-16.48	74.00	56.11	33.05	3.21	34.85	100	21	Peak
13	!	2600.00	51.89			50.23	33.24	3.29	34.87	100	346	Average
14		2600.00	62.73			61.07	33.24	3.29	34.87	100	346	Peak
15	!	2690.00	48.81	-5.19	54.00	46.97	33.36	3.35	34.87	100	346	Average
16		2690.00	59.44	-14.56	74.00	57.60	33.36	3.35	34.87	100	346	Peak

Test Mode :	Mode 1	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Vertical
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

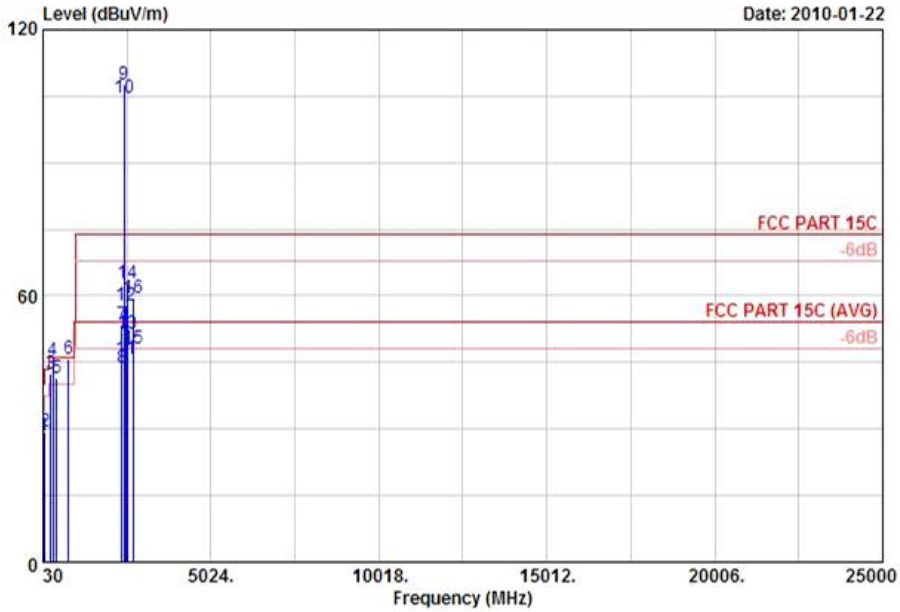


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 VERTICAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	!	47.55	34.22	-5.78	40.00	54.04	8.50	0.31	28.63	---	---	Peak
2	!	81.03	35.27	-4.73	40.00	56.66	6.87	0.39	28.65	---	---	Peak
3	!	253.83	40.28	-5.72	46.00	56.25	12.06	0.74	28.77	---	---	Peak
4	!	335.70	44.79	-1.21	46.00	58.73	14.14	0.81	28.89	100	58	QP
5	!	800.50	45.59	-0.41	46.00	52.21	19.85	1.23	27.70	100	301	QP
6	!	960.80	50.31	-3.69	54.00	54.84	20.80	1.33	26.66	---	---	Peak
7		2386.00	49.88	-24.12	74.00	48.73	32.86	3.13	34.84	100	346	Peak
8		2386.00	40.52	-13.48	54.00	39.37	32.86	3.13	34.84	100	346	Average
9	X	2412.00	101.48			100.28	32.89	3.15	34.84	130	289	Peak
10	X	2412.00	99.41			98.21	32.89	3.15	34.84	130	289	Average
11		2498.00	39.76	-14.24	54.00	38.35	33.05	3.21	34.85	100	11	Average
12		2498.00	52.73	-21.27	74.00	51.32	33.05	3.21	34.85	100	11	Peak
13		2596.00	42.12			40.46	33.24	3.29	34.87	100	69	Average
14		2596.00	55.44			53.78	33.24	3.29	34.87	100	69	Peak
15		2704.00	42.47	-11.53	54.00	40.59	33.38	3.38	34.88	100	69	Average
16		2704.00	53.46	-20.54	74.00	51.58	33.38	3.38	34.88	100	69	Peak

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Horizontal
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

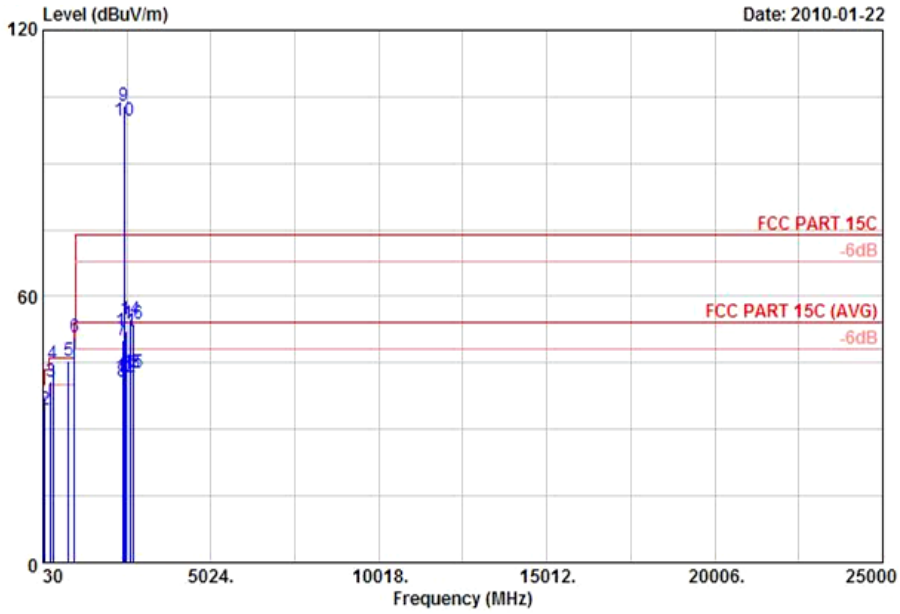


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 HORIZONTAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		58.35	28.52	-11.48	40.00	51.20	5.59	0.34	28.61	---	---	Peak
2		82.92	29.55	-10.45	40.00	50.46	7.34	0.40	28.65	---	---	Peak
3	!	268.41	42.55	-3.45	46.00	58.27	12.34	0.75	28.81	---	---	Peak
4	!	335.70	45.48	-0.52	46.00	59.42	14.14	0.81	28.89	100	294	QP
5	!	431.60	41.45	-4.55	46.00	53.28	16.20	0.90	28.93	---	---	Peak
6	!	800.50	45.70	-0.30	46.00	52.32	19.85	1.23	27.70	100	156	QP
7		2368.00	53.53	-20.47	74.00	52.43	32.81	3.13	34.84	100	56	Peak
8		2368.00	43.90	-10.10	54.00	42.80	32.81	3.13	34.84	100	56	Average
9	X	2437.00	107.75			106.47	32.95	3.17	34.84	103	290	Peak
10	X	2437.00	104.74			103.46	32.95	3.17	34.84	103	290	Average
11		2500.00	45.64	-8.36	54.00	44.23	33.05	3.21	34.85	100	301	Average
12		2500.00	57.76	-16.24	74.00	56.35	33.05	3.21	34.85	100	301	Peak
13	!	2560.00	51.57			50.00	33.18	3.25	34.86	134	301	Average
14		2560.00	62.76			61.19	33.18	3.25	34.86	134	301	Peak
15	!	2698.00	48.26	-5.74	54.00	46.38	33.38	3.38	34.88	134	301	Average
16		2698.00	59.51	-14.49	74.00	57.63	33.38	3.38	34.88	134	301	Peak

Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Vertical
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

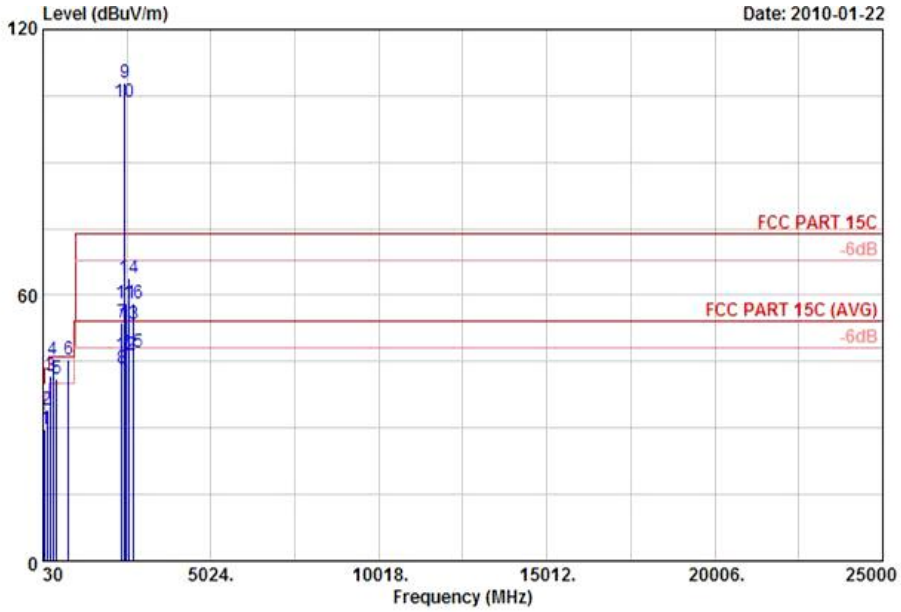


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 VERTICAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		57.81	32.69	-7.31	40.00	55.37	5.59	0.34	28.61	---	---	Peak
2	!	81.57	34.30	-5.70	40.00	55.69	6.87	0.39	28.65	---	---	Peak
3	!	255.45	40.80	-5.20	46.00	56.76	12.07	0.74	28.77	---	---	Peak
4	!	335.70	44.83	-1.17	46.00	58.77	14.14	0.81	28.89	100	54	QP
5	!	800.50	45.40	-0.60	46.00	52.02	19.85	1.23	27.70	100	311	QP
6	!	961.50	50.83	-3.17	54.00	55.36	20.80	1.33	26.66	---	---	Peak
7		2390.00	50.04	-23.96	74.00	48.87	32.86	3.15	34.84	100	23	Peak
8		2390.00	40.66	-13.34	54.00	39.49	32.86	3.15	34.84	100	23	Average
9	X	2437.00	102.81			101.53	32.95	3.17	34.84	129	288	Peak
10	X	2437.00	99.67			98.39	32.95	3.17	34.84	129	288	Average
11		2498.00	52.17	-21.83	74.00	50.76	33.05	3.21	34.85	110	36	Peak
12		2498.00	41.75	-12.25	54.00	40.34	33.05	3.21	34.85	110	36	Average
13		2634.00	42.84			41.11	33.29	3.31	34.87	100	294	Average
14		2634.00	54.86			53.13	33.29	3.31	34.87	100	294	Peak
15		2726.00	42.82	-11.18	54.00	40.87	33.43	3.40	34.88	100	294	Average
16		2726.00	53.87	-20.13	74.00	51.92	33.43	3.40	34.88	100	294	Peak

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Horizontal
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

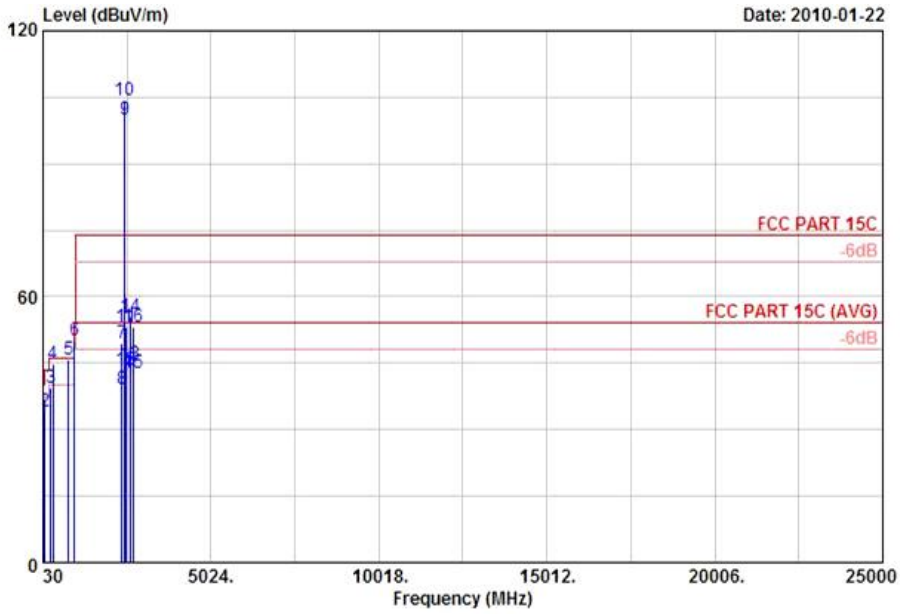


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 HORIZONTAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		82.11	29.73	-10.27	40.00	50.84	7.15	0.39	28.65	---	---	Peak
2		160.68	33.96	-9.54	43.50	52.46	9.56	0.60	28.66	---	---	Peak
3	!	268.41	41.80	-4.20	46.00	57.52	12.34	0.75	28.81	---	---	Peak
4	!	335.70	45.53	-0.47	46.00	59.47	14.14	0.81	28.89	100	294	QP
5	!	431.60	40.95	-5.05	46.00	52.78	16.20	0.90	28.93	---	---	Peak
6	!	800.50	45.36	-0.64	46.00	51.98	19.85	1.23	27.70	100	161	QP
7		2386.00	53.84	-20.16	74.00	52.69	32.86	3.13	34.84	161	102	Peak
8		2386.00	43.60	-10.40	54.00	42.45	32.86	3.13	34.84	161	102	Average
9	X	2462.00	108.10			106.79	32.98	3.18	34.85	100	53	Peak
10	X	2462.00	103.73			102.42	32.98	3.18	34.85	100	53	Average
11		2490.00	58.00	-16.00	74.00	56.60	33.05	3.20	34.85	100	53	Peak
12		2490.00	46.39	-7.61	54.00	44.99	33.05	3.20	34.85	100	53	Average
13	!	2592.00	53.44			51.79	33.24	3.27	34.86	100	39	Average
14		2592.00	63.75			62.10	33.24	3.27	34.86	100	39	Peak
15		2704.00	47.10	-6.90	54.00	45.22	33.38	3.38	34.88	100	39	Average
16		2704.00	58.02	-15.98	74.00	56.14	33.38	3.38	34.88	100	39	Peak

Test Mode :	Mode 3	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Vertical
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

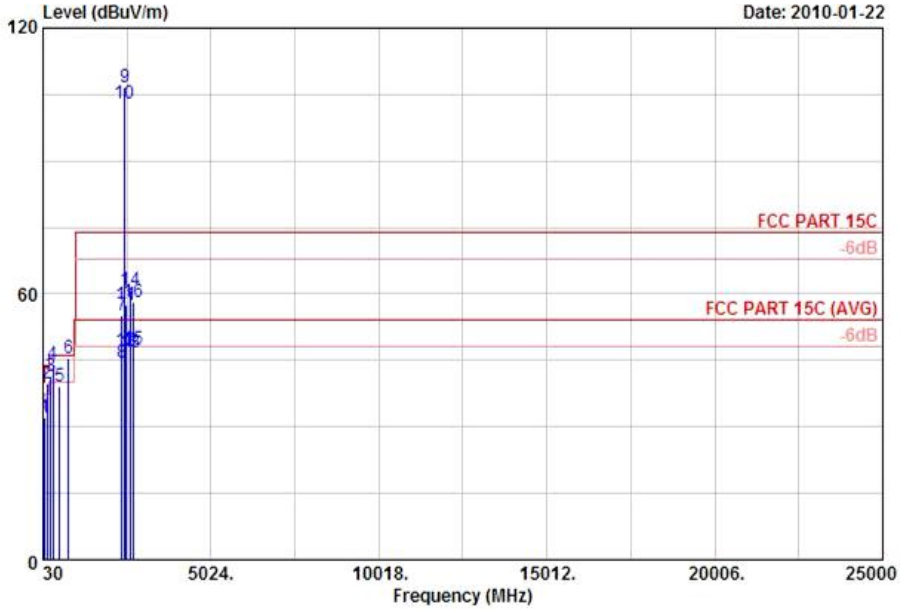


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 VERTICAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		58.08	32.52	-7.48	40.00	55.20	5.59	0.34	28.61	---	---	Peak
2	!	79.14	34.18	-5.82	40.00	55.98	6.47	0.39	28.66	---	---	Peak
3		261.39	39.38	-6.62	46.00	55.22	12.19	0.75	28.78	---	---	Peak
4	!	335.70	44.86	-1.14	46.00	58.80	14.14	0.81	28.89	100	55	QP
5	!	800.50	45.79	-0.21	46.00	52.41	19.85	1.23	27.70	100	300	QP
6	!	960.80	50.02	-3.98	54.00	54.55	20.80	1.33	26.66	---	---	Peak
7		2386.00	49.56	-24.44	74.00	48.41	32.86	3.13	34.84	100	12	Peak
8		2386.00	39.15	-14.85	54.00	38.00	32.86	3.13	34.84	100	12	Average
9	X	2462.00	99.99			98.68	32.98	3.18	34.85	100	288	Average
10	X	2462.00	104.36			103.05	32.98	3.18	34.85	100	288	Peak
11		2488.00	53.17	-20.83	74.00	51.77	33.05	3.20	34.85	100	288	Peak
12		2488.00	43.35	-10.65	54.00	41.95	33.05	3.20	34.85	100	288	Average
13		2608.00	44.66			42.98	33.26	3.29	34.87	100	33	Average
14		2608.00	55.55			53.87	33.26	3.29	34.87	100	33	Peak
15		2704.00	42.88	-11.12	54.00	41.00	33.38	3.38	34.88	100	33	Average
16		2704.00	53.21	-20.79	74.00	51.33	33.38	3.38	34.88	100	33	Peak

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Horizontal
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

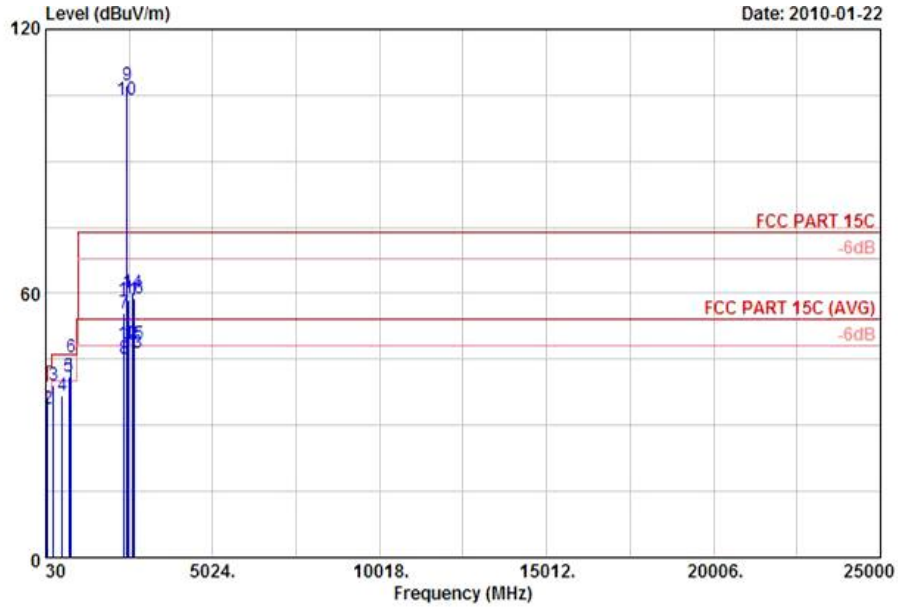


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 HORIZONTAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		86.70	32.02	-7.98	40.00	52.36	7.89	0.40	28.63	---	---	Peak
2	!	159.33	39.82	-3.68	43.50	58.23	9.64	0.60	28.65	---	---	Peak
3	!	257.34	41.34	-4.66	46.00	57.26	12.10	0.75	28.77	---	---	Peak
4	!	335.70	44.11	-1.89	46.00	58.05	14.14	0.81	28.89	100	266	QP
5		528.20	39.24	-6.76	46.00	48.91	17.99	1.00	28.66	---	---	Peak
6	!	800.50	45.54	-0.46	46.00	52.16	19.85	1.23	27.70	100	179	QP
7		2378.00	55.31	-18.69	74.00	54.19	32.83	3.13	34.84	100	301	Peak
8		2378.00	44.56	-9.44	54.00	43.44	32.83	3.13	34.84	100	301	Average
9	X	2462.00	106.61			105.30	32.98	3.18	34.85	100	308	Peak
10	X	2462.00	102.83			101.52	32.98	3.18	34.85	100	308	Average
11		2494.00	57.39	-16.61	74.00	55.98	33.05	3.21	34.85	100	308	Peak
12		2494.00	47.00	-7.00	54.00	45.59	33.05	3.21	34.85	100	308	Average
13		2614.00	46.71			45.03	33.26	3.29	34.87	100	310	Average
14		2614.00	60.97			59.29	33.26	3.29	34.87	100	310	Peak
15		2698.00	47.56	-6.44	54.00	45.68	33.38	3.38	34.88	100	310	Average
16		2698.00	58.29	-15.71	74.00	56.41	33.38	3.38	34.88	100	310	Peak

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Vertical
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

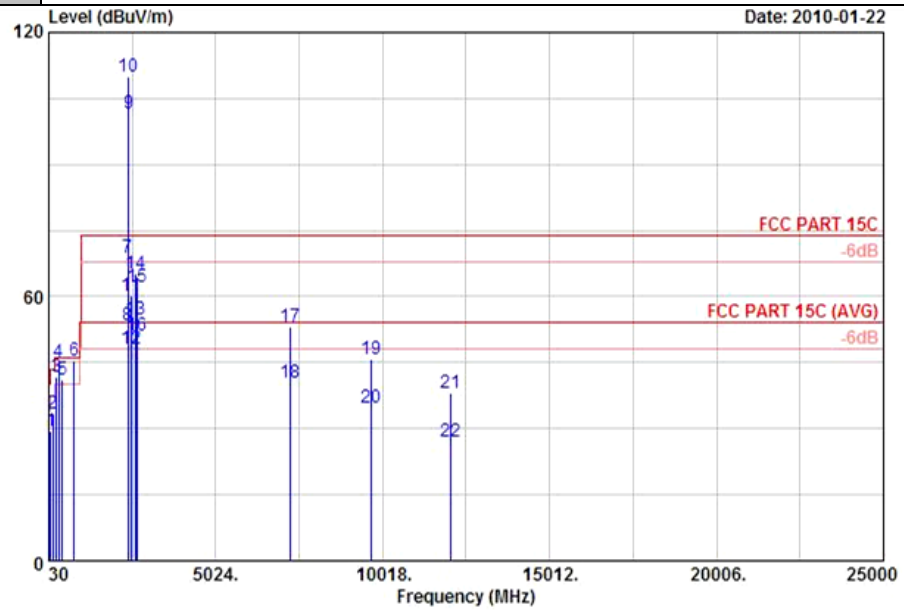


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 VERTICAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		56.73	31.75	-8.25	40.00	54.28	5.75	0.34	28.62	---	---	Peak
2		80.22	33.87	-6.13	40.00	55.54	6.60	0.39	28.66	---	---	Peak
3		259.23	38.96	-7.04	46.00	54.85	12.14	0.75	28.78	---	---	Peak
4		528.20	36.78	-9.22	46.00	46.45	17.99	1.00	28.66	---	---	Peak
5	!	720.00	41.21	-4.79	46.00	48.45	19.52	1.15	27.91	---	---	Peak
6	!	800.50	45.51	-0.49	46.00	52.13	19.85	1.23	27.70	100	344	QP
7		2368.00	55.46	-18.54	74.00	54.36	32.81	3.13	34.84	100	140	Peak
8		2368.00	45.00	-9.00	54.00	43.90	32.81	3.13	34.84	100	140	Average
9	X	2462.00	107.30			105.99	32.98	3.18	34.85	102	86	Peak
10	X	2462.00	103.93			102.62	32.98	3.18	34.85	102	86	Average
11		2498.00	58.35	-15.65	74.00	56.94	33.05	3.21	34.85	102	86	Peak
12	!	2498.00	48.60	-5.40	54.00	47.19	33.05	3.21	34.85	102	86	Average
13		2614.00	46.59			44.91	33.26	3.29	34.87	100	71	Average
14		2614.00	60.22			58.54	33.26	3.29	34.87	100	71	Peak
15	!	2694.00	48.45	-5.55	54.00	46.59	33.38	3.35	34.87	100	71	Average
16		2694.00	58.92	-15.08	74.00	57.06	33.38	3.35	34.87	100	71	Peak

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Horizontal
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

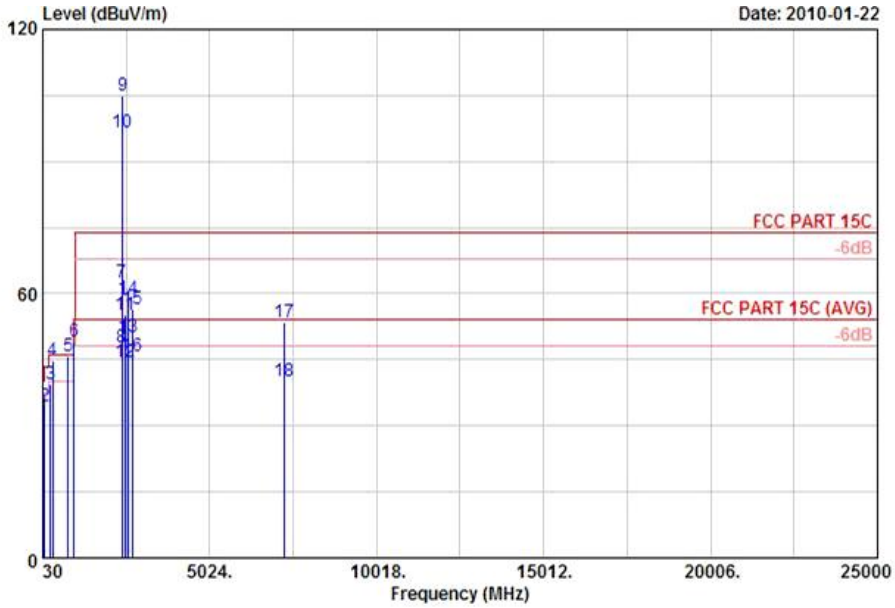


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 HORIZONTAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		80.76	29.46	-10.54	40.00	51.12	6.60	0.39	28.65	---	---	Peak
2		161.22	33.28	-10.22	43.50	51.78	9.56	0.60	28.66	---	---	Peak
3	!	265.17	41.88	-4.12	46.00	57.68	12.25	0.75	28.80	---	---	Peak
4	!	335.70	45.08	-0.92	46.00	59.02	14.14	0.81	28.89	100	296	QP
5	!	431.60	41.08	-4.92	46.00	52.91	16.20	0.90	28.93	---	---	Peak
6	!	800.50	45.32	-0.68	46.00	51.94	19.85	1.23	27.70	100	160	QP
7	!	2390.00	68.81	-5.19	74.00	67.64	32.86	3.15	34.84	124	58	Peak
8	!	2390.00	53.33	-0.67	54.00	52.16	32.86	3.15	34.84	124	58	Average
9	X	2412.00	101.68			100.48	32.89	3.15	34.84	124	58	Average
10	X	2412.00	110.01			108.81	32.89	3.15	34.84	124	58	Peak
11		2488.00	60.19	-13.81	74.00	58.79	33.05	3.20	34.85	100	132	Peak
12	!	2488.00	48.06	-5.94	54.00	46.66	33.05	3.20	34.85	100	132	Average
13	X	2624.00	54.76			53.03	33.29	3.31	34.87	149	296	Average
14		2624.00	65.04			63.31	33.29	3.31	34.87	149	296	Peak
15		2692.00	62.14	-11.86	74.00	60.28	33.38	3.35	34.87	149	296	Peak
16	!	2692.00	51.19	-2.81	54.00	49.33	33.38	3.35	34.87	149	296	Average
17		7236.00	52.99	-21.01	74.00	44.62	36.18	5.91	33.72	100	42	Peak
18		7236.00	40.28	-13.72	54.00	31.91	36.18	5.91	33.72	100	42	Average
19		9664.00	45.89	-28.11	74.00	73.09	0.00	6.92	34.12	100	356	Peak
20		9664.00	34.92	-19.08	54.00	62.12	0.00	6.92	34.12	100	356	Average
21		12062.00	38.24	-35.76	74.00	63.25	0.00	7.39	32.40	100	210	Peak
22		12062.00	27.16	-26.84	54.00	52.17	0.00	7.39	32.40	100	210	Average

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Vertical
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

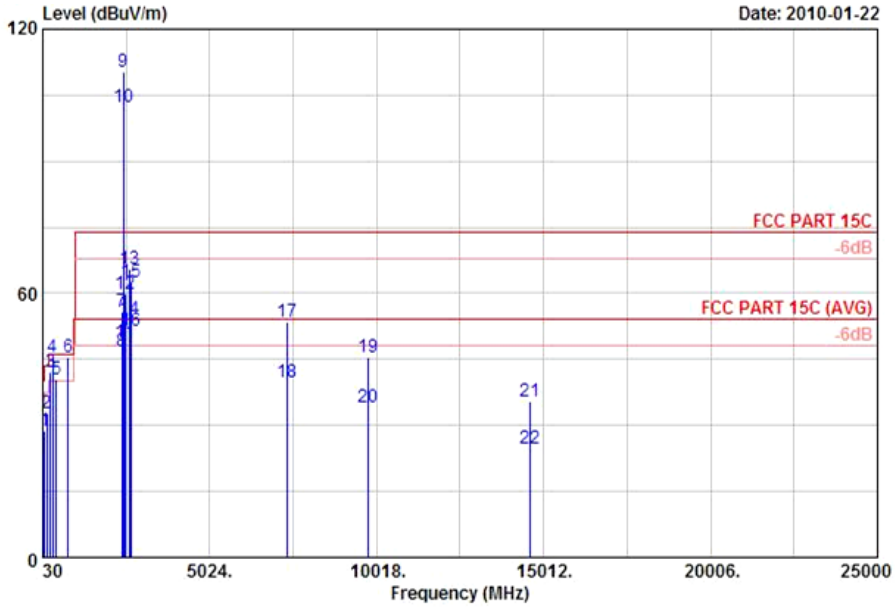


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 VERTICAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		58.08	32.25	-7.75	40.00	54.93	5.59	0.34	28.61	---	---	Peak
2	!	78.60	34.50	-5.50	40.00	56.43	6.34	0.38	28.65	---	---	Peak
3		255.72	39.59	-6.41	46.00	55.53	12.09	0.74	28.77	---	---	Peak
4	!	335.70	44.87	-1.13	46.00	58.81	14.14	0.81	28.89	100	58	QP
5	!	800.50	45.69	-0.31	46.00	52.31	19.85	1.23	27.70	100	302	QP
6	!	961.50	49.14	-4.86	54.00	53.67	20.80	1.33	26.66	---	---	Peak
7		2390.00	62.57	-11.43	74.00	61.40	32.86	3.15	34.84	104	289	Peak
8		2390.00	47.80	-6.20	54.00	46.63	32.86	3.15	34.84	104	289	Average
9	X	2412.00	104.98			103.78	32.89	3.15	34.84	104	289	Peak
10	X	2412.00	96.73			95.53	32.89	3.15	34.84	104	289	Average
11		2492.00	55.02	-18.98	74.00	53.61	33.05	3.21	34.85	100	213	Peak
12		2492.00	44.60	-9.40	54.00	43.19	33.05	3.21	34.85	100	213	Average
13	!	2602.00	49.98			48.32	33.24	3.29	34.87	100	41	Average
14		2602.00	58.69			57.03	33.24	3.29	34.87	100	41	Peak
15		2704.00	56.59	-17.41	74.00	54.71	33.38	3.38	34.88	100	41	Peak
16		2704.00	45.64	-8.36	54.00	43.76	33.38	3.38	34.88	100	41	Average
17		7232.00	53.46	-20.54	74.00	45.08	36.18	5.92	33.72	115	0	Peak
18		7232.00	39.94	-14.06	54.00	31.56	36.18	5.92	33.72	115	0	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Horizontal
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

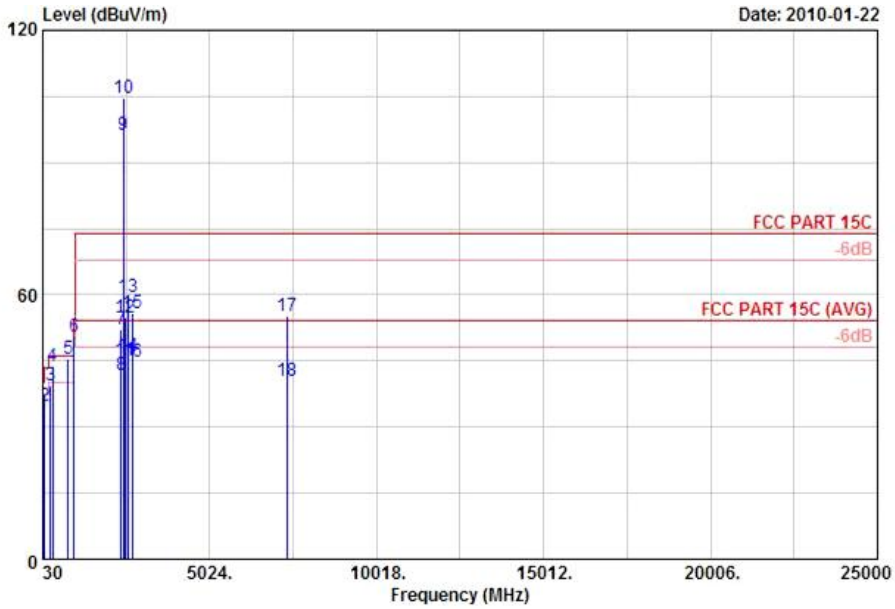


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 HORIZONTAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		85.89	28.61	-11.39	40.00	48.96	7.89	0.40	28.64	---	---	Peak
2		160.68	32.83	-10.67	43.50	51.33	9.56	0.60	28.66	---	---	Peak
3	!	269.76	41.98	-4.02	46.00	57.68	12.36	0.75	28.81	---	---	Peak
4	!	335.70	45.52	-0.48	46.00	59.46	14.14	0.81	28.89	100	297	QP
5	!	431.60	40.51	-5.49	46.00	52.34	16.20	0.90	28.93	---	---	Peak
6	!	800.50	45.42	-0.58	46.00	52.04	19.85	1.23	27.70	100	156	QP
7		2390.00	55.97	-18.03	74.00	54.80	32.86	3.15	34.84	100	210	Peak
8		2390.00	46.67	-7.33	54.00	45.50	32.86	3.15	34.84	100	210	Average
9	X	2437.00	110.40			109.12	32.95	3.17	34.84	104	290	Peak
10	X	2437.00	102.40			101.12	32.95	3.17	34.84	104	290	Average
11	!	2494.00	48.75	-5.25	54.00	47.34	33.05	3.21	34.85	100	103	Average
12		2494.00	59.86	-14.14	74.00	58.45	33.05	3.21	34.85	100	103	Peak
13		2612.00	65.35			63.67	33.26	3.29	34.87	100	294	Peak
14	X	2612.00	54.24			52.56	33.26	3.29	34.87	100	294	Average
15		2690.00	62.36	-11.64	74.00	60.52	33.36	3.35	34.87	100	294	Peak
16	!	2690.00	51.49	-2.51	54.00	49.65	33.36	3.35	34.87	100	294	Average
17		7320.00	53.61	-20.39	74.00	45.22	36.21	5.91	33.73	100	34	Peak
18		7320.00	39.76	-14.24	54.00	31.37	36.21	5.91	33.73	100	34	Average
19		9748.00	45.34	-28.66	74.00	72.48	0.00	6.95	34.09	100	146	Peak
20		9748.00	34.09	-19.91	54.00	61.23	0.00	6.95	34.09	100	146	Average
21		14616.00	35.35	-38.65	74.00	59.47	0.00	7.53	31.65	100	131	Peak
22		14616.00	24.75	-29.25	54.00	48.87	0.00	7.53	31.65	100	131	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Vertical
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

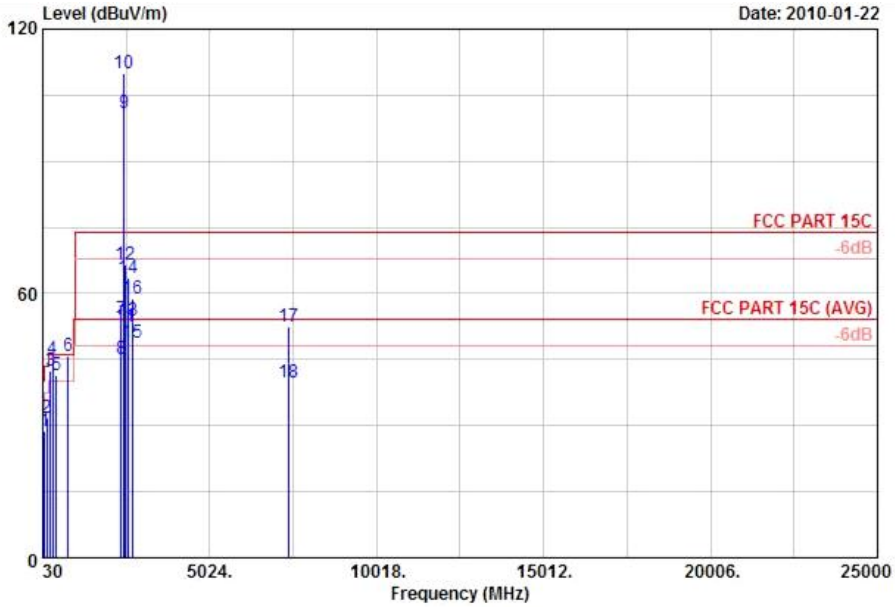


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 VERTICAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		58.35	33.05	-6.95	40.00	55.73	5.59	0.34	28.61	---	---	Peak
2	!	78.60	34.68	-5.32	40.00	56.61	6.34	0.38	28.65	---	---	Peak
3		270.03	39.53	-6.47	46.00	55.23	12.36	0.75	28.81	---	---	Peak
4	!	335.70	43.91	-2.09	46.00	57.85	14.14	0.81	28.89	100	48	QP
5	!	800.50	45.49	-0.51	46.00	52.11	19.85	1.23	27.70	100	302	QP
6	!	961.50	50.39	-3.61	54.00	54.92	20.80	1.33	26.66	---	---	Peak
7		2376.00	52.04	-21.96	74.00	50.92	32.83	3.13	34.84	100	120	Peak
8		2376.00	41.80	-12.20	54.00	40.68	32.83	3.13	34.84	100	120	Average
9	X	2437.00	96.17			94.89	32.95	3.17	34.84	103	208	Average
10	X	2437.00	104.53			103.25	32.95	3.17	34.84	103	208	Peak
11		2496.00	45.24	-8.76	54.00	43.83	33.05	3.21	34.85	150	269	Average
12		2496.00	54.90	-19.10	74.00	53.49	33.05	3.21	34.85	150	269	Peak
13		2606.00	59.34			57.68	33.24	3.29	34.87	100	326	Peak
14		2606.00	46.28			44.62	33.24	3.29	34.87	100	326	Average
15		2698.00	55.75	-18.25	74.00	53.87	33.38	3.38	34.88	100	326	Peak
16		2698.00	44.76	-9.24	54.00	42.88	33.38	3.38	34.88	100	326	Average
17		7320.00	55.29	-18.71	74.00	46.90	36.21	5.91	33.73	101	333	Peak
18		7320.00	40.40	-13.60	54.00	32.01	36.21	5.91	33.73	101	333	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Horizontal
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

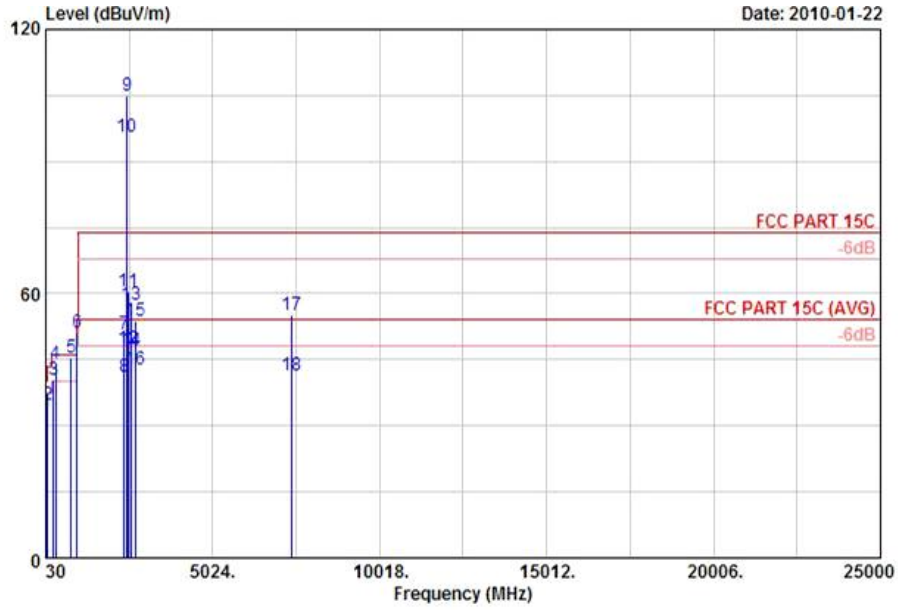


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 HORIZONTAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		82.38	28.86	-11.14	40.00	49.97	7.15	0.39	28.65	---	---	Peak
2		160.68	31.72	-11.78	43.50	50.22	9.56	0.60	28.66	---	---	Peak
3	!	267.33	42.32	-3.68	46.00	58.06	12.31	0.75	28.80	---	---	Peak
4	!	335.70	45.14	-0.86	46.00	59.08	14.14	0.81	28.89	100	299	QP
5	!	431.60	41.37	-4.63	46.00	53.20	16.20	0.90	28.93	---	---	Peak
6	!	800.50	45.68	-0.32	46.00	52.30	19.85	1.23	27.70	100	159	QP
7		2382.00	54.05	-19.95	74.00	52.93	32.83	3.13	34.84	100	316	Peak
8		2382.00	45.14	-8.86	54.00	44.02	32.83	3.13	34.84	100	316	Average
9	X	2462.00	100.97			99.66	32.98	3.18	34.85	132	296	Average
10	X	2462.00	110.05			108.74	32.98	3.18	34.85	132	296	Peak
11	!	2486.00	52.57	-1.43	54.00	51.21	33.01	3.20	34.85	132	296	Average
12		2486.00	66.40	-7.60	74.00	65.04	33.01	3.20	34.85	132	296	Peak
13	!	2584.00	53.74			52.12	33.21	3.27	34.86	100	302	Average
14		2584.00	63.47			61.85	33.21	3.27	34.86	100	302	Peak
15	!	2696.00	48.77	-5.23	54.00	46.89	33.38	3.38	34.88	100	302	Average
16		2696.00	58.92	-15.08	74.00	57.04	33.38	3.38	34.88	100	302	Peak
17		7390.00	52.50	-21.50	74.00	44.10	36.24	5.90	33.74	100	32	Peak
18		7390.00	39.73	-14.27	54.00	31.33	36.24	5.90	33.74	100	32	Average

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Vertical
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

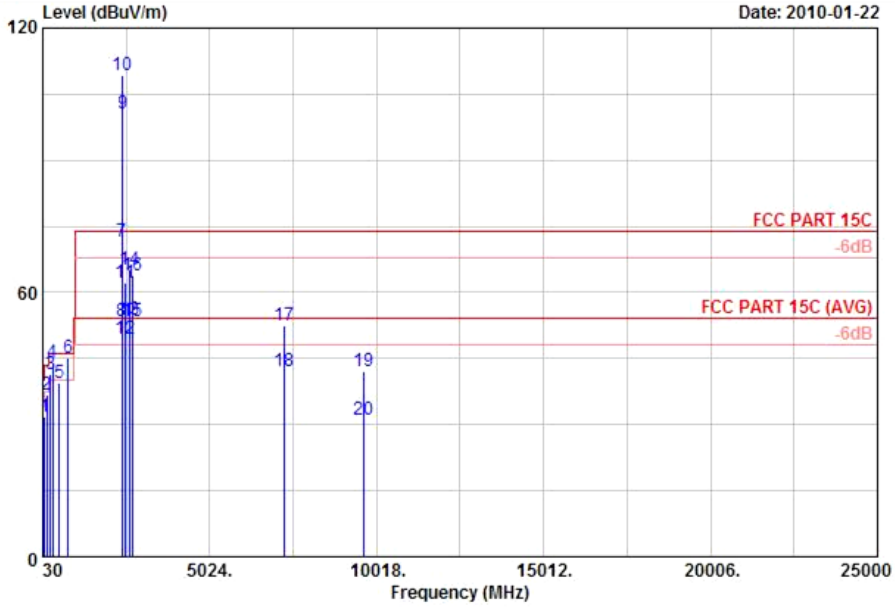


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 VERTICAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		58.08	32.66	-7.34	40.00	55.34	5.59	0.34	28.61	---	---	Peak
2	!	78.87	34.63	-5.37	40.00	56.57	6.34	0.38	28.66	---	---	Peak
3	!	255.72	40.40	-5.60	46.00	56.34	12.09	0.74	28.77	---	---	Peak
4	!	335.70	44.08	-1.92	46.00	58.02	14.14	0.81	28.89	100	58	QP
5	!	800.50	45.60	-0.40	46.00	52.22	19.85	1.23	27.70	100	303	QP
6	!	961.50	50.99	-3.01	54.00	55.52	20.80	1.33	26.66	---	---	Peak
7		2386.00	50.68	-23.32	74.00	49.53	32.86	3.13	34.84	100	36	Peak
8		2386.00	41.19	-12.81	54.00	40.04	32.86	3.13	34.84	100	36	Average
9	X	2462.00	104.92			103.61	32.98	3.18	34.85	127	287	Peak
10	X	2462.00	95.44			94.13	32.98	3.18	34.85	127	287	Average
11		2484.00	60.37	-13.63	74.00	59.01	33.01	3.20	34.85	127	287	Peak
12		2484.00	47.42	-6.58	54.00	46.06	33.01	3.20	34.85	127	287	Average
13		2606.00	57.47			55.81	33.24	3.29	34.87	156	23	Peak
14		2606.00	47.29			45.63	33.24	3.29	34.87	156	23	Average
15		2720.00	53.69	-20.31	74.00	51.78	33.41	3.38	34.88	156	23	Peak
16		2720.00	42.84	-11.16	54.00	40.93	33.41	3.38	34.88	156	23	Average
17		7384.00	55.25	-18.75	74.00	46.84	36.24	5.90	33.73	100	334	Peak
18		7384.00	41.33	-12.67	54.00	32.92	36.24	5.90	33.73	100	334	Average

Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Horizontal
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		

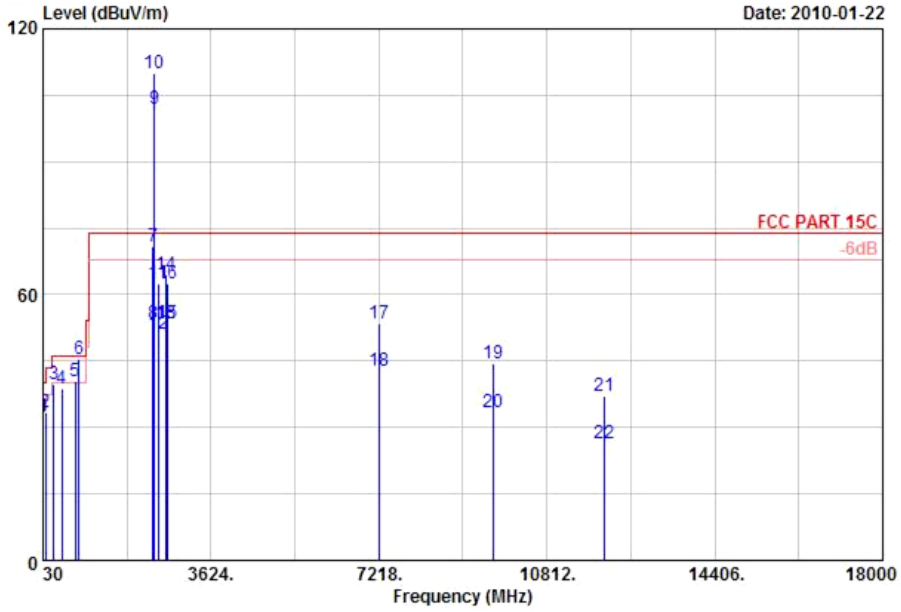


Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 HORIZONTAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		86.97	31.59	-8.41	40.00	51.73	8.09	0.40	28.63	---	---	Peak
2		160.14	36.85	-6.65	43.50	55.30	9.60	0.60	28.65	---	---	Peak
3	!	256.80	41.46	-4.54	46.00	57.38	12.10	0.75	28.77	---	---	Peak
4	!	335.70	43.98	-2.02	46.00	57.92	14.14	0.81	28.89	100	256	QP
5		528.20	39.57	-6.43	46.00	49.24	17.99	1.00	28.66	---	---	Peak
6	!	800.50	45.25	-0.75	46.00	51.87	19.85	1.23	27.70	100	180	QP
7	!	2390.00	71.50	-2.50	74.00	70.33	32.86	3.15	34.84	100	311	Peak
8	!	2390.00	53.39	-0.61	54.00	52.22	32.86	3.15	34.84	100	311	Average
9	X	2412.00	100.52			99.32	32.89	3.15	34.84	100	311	Average
10	X	2412.00	109.39			108.19	32.89	3.15	34.84	100	311	Peak
11		2488.00	62.13	-11.87	74.00	60.73	33.05	3.20	34.85	100	298	Peak
12	!	2488.00	49.63	-4.37	54.00	48.23	33.05	3.20	34.85	100	298	Average
13	!	2634.00	53.74			52.01	33.29	3.31	34.87	100	312	Average
14		2634.00	65.34			63.61	33.29	3.31	34.87	100	312	Peak
15	!	2698.00	53.34	-0.66	54.00	51.46	33.38	3.38	34.88	100	312	Average
16		2698.00	63.90	-10.10	74.00	62.02	33.38	3.38	34.88	100	312	Peak
17		7232.00	52.31	-21.69	74.00	43.93	36.18	5.92	33.72	100	328	Peak
18		7232.00	42.15	-11.85	54.00	33.77	36.18	5.92	33.72	100	328	Average
19		9647.00	41.99	-32.01	74.00	69.20	0.00	6.92	34.13	100	201	Peak
20		9647.00	31.09	-22.91	54.00	58.30	0.00	6.92	34.13	100	201	Average

Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Harvey Tang	Polarization :	Vertical
Remark :	1. #9 and #10 are Fundamental Signals which can be ignored. 2. #13 and #14 are not in the restricted band which limits are 20dB lower than fundamental signal.		



Site : 03CH01-KS
Condition: FCC PART 15C 3m LF_ANT_090807 VERTICAL

Power : 120Vac/60Hz

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		34.32	32.33	-7.67	40.00	45.12	15.56	0.28	28.63	---	---	Peak
2		79.41	33.46	-6.54	40.00	55.26	6.47	0.39	28.66	---	---	Peak
3		259.23	39.81	-6.19	46.00	55.70	12.14	0.75	28.78	---	---	Peak
4		431.60	38.71	-7.29	46.00	50.54	16.20	0.90	28.93	---	---	Peak
5	!	720.00	40.42	-5.58	46.00	47.66	19.52	1.15	27.91	---	---	Peak
6	!	800.50	45.62	-0.38	46.00	52.24	19.85	1.23	27.70	100	351	QP
7	!	2390.00	70.77	-3.23	74.00	69.60	32.86	3.15	34.84	105	85	Peak
8	!	2390.00	53.48	-0.52	54.00	52.31	32.86	3.15	34.84	105	85	Average
9	X	2412.00	102.00			100.80	32.89	3.15	34.84	105	85	Average
10	X	2412.00	110.03			108.83	32.89	3.15	34.84	105	85	Peak
11		2494.00	62.38	-11.62	74.00	60.97	33.05	3.21	34.85	100	56	Peak
12	!	2494.00	51.00	-3.00	54.00	49.59	33.05	3.21	34.85	100	56	Average
13	!	2648.00	53.59			51.82	33.31	3.33	34.87	100	55	Average
14		2648.00	64.44			62.67	33.31	3.33	34.87	100	55	Peak
15	!	2694.00	53.44	-0.56	54.00	51.58	33.38	3.35	34.87	100	55	Average
16		2694.00	62.63	-11.37	74.00	60.77	33.38	3.35	34.87	100	55	Peak
17		7236.00	53.54	-20.46	74.00	45.17	36.18	5.91	33.72	100	344	Peak
18		7236.00	42.86	-11.14	54.00	34.49	36.18	5.91	33.72	100	344	Average
19		9656.00	44.37	-29.63	74.00	71.58	0.00	6.92	34.13	100	326	Peak
20		9656.00	33.39	-20.61	54.00	60.60	0.00	6.92	34.13	100	326	Average
21		12056.00	37.16	-36.84	74.00	62.17	0.00	7.39	32.40	100	149	Peak
22		12056.00	26.46	-27.54	54.00	51.47	0.00	7.39	32.40	100	149	Average

3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.7.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 08, 2009	Dec. 07, 2010	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Jun. 18, 2009	Jun. 17, 2011	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Jun. 12, 2009	Jun. 11, 2011	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI	100534	9kHz~2.75GHz	Nov. 17, 2009	Nov. 16, 2010	Conduction (CO01-KS)
LISN	MessTec	AN3016	060103	9kHz~30MHz	Dec. 18, 2009	Dec. 17, 2010	Conduction (CO01-KS)
LISN	MessTec	AN3016	060105	9kHz~30MHz	Dec. 18, 2009	Dec. 17, 2010	Conduction (CO01-KS)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100724	9kHz – 2.75GHz	Mar. 04, 2009	Mar. 03, 2010	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 08, 2009	Dec. 07, 2010	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 17, 2009	Dec. 16, 2010	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	75959	1GHz~18GHz	Dec. 17, 2009	Dec. 16, 2010	Radiation (03CH01-KS)
Amplifier	Wireless	FPA6592G	600006	30MHz~2GHz	Dec. 17, 2009	Dec. 16, 2010	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 17, 2009	Dec. 16, 2010	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Dec. 08, 2009	Dec. 07, 2010	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**		

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

6 Certification of TAF Accreditation

Certificate No. : L1190-100107

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	:	ISO/IEC 17025:2005
Accreditation Number	:	1190
Originally Accredited	:	December 15, 2003
Effective Period	:	January 10, 2010 to January 09, 2013
Accredited Scope	:	Testing Field, see described in the Appendix
Specific Accreditation Program	:	Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : January 07, 2010

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix

Appendix A. Photographs of EUT

Please refer to Sporton report number EP010517 as below.