FCC Test Report

EQUIPMENT	:	**PDA**
BRAND NAME	:	**Trimble**
MODEL NAME	:	**Juno SC**
FCC ID	:	**JUP66400**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**Digital Transmission System (DTS)**
APPLICANT	:	**Trimble Navigation Ltd.**
		935 Stewart Drive, Sunnyvale CA 94088-3642, U.S.A.

The product sample received on Oct. 04, 2008 and completely tested on Oct. 22, 2008. 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Roy Wu / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

TABLE OF CONTENTS

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 17.4 dB at 2.422 MHz
3.6	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.08 dB at 2390.0 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR8O0405A	Rev. 02	Initial issue of report	Nov. 11, 2008

1 General Description

1.1 Applicant

Trimble Navigation Ltd.
935 Stewart Drive, Sunnyvale CA 94088-3642, U.S.A.

1.2 Manufacturer

GOLDTEK Technology Co., Ltd.
3F., No.3, Ln. 768, Sec. 4, Pateh Rd., Taipei 115, Taiwan, R.O.C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	PDA
Brand Name	Trimble
Model Name	Juno SC
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 : 18.53 dBm 802.11g : 19.11 dBm
Antenna Type	PIFA Antenna with gain 1.56 dBi
HW Version	1.0
SW Version	1.0
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Accessories List:

Accessories Specification		
AC Adapter	**Brand Name**	Trimble
	Model Name	3A-161WP05
	Power Rating	I/P: 100-240Vac, 50-60Hz, 0.6A; O/P: 5Vdc, 2.6A
	AC Power Cord Type	1.24 meter non-shielded cable with ferrite core
Battery	**Model Name**	BA-1405206
	Power Rating	3.7Vdc, 2600mAh
	Type	Li-ion
USB Cable	**Signal Line Type**	1.2 meter shielded cable with ferrite core
LCD Panel	**Brand Name**	Toppy
	Model Name	td035sted7

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. For accessories equipped with this EUT, please refer to the appendix of the external photo.
4. For other wireless features of this EUT, test report will be issued separately.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	**Sporton Site No.**		**FCC/IC Registration No.**
	CO05-HY	03CH06-HY	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) which recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	GSM Base Station	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	SMC	SMC-100	HEDWG4005ACC	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	VOSTRO1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Earphone + Mic	Sampo	EK-Y652CS	FCC DoC	Shielded, 1.8m	N/A
6.	Bluetooth Earphone	Cellink	BTHS-6025-F	PQY-4710874200357	N/A	N/A
7.	i-pod	Apple	A1199	FCC DoC	Shielded, 1.0 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:

802.11b

Channel	Frequency (MHz)	RF Power (dBm)			
		2.4GHz 802.11b Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	16.19	16.59	17.26	18.11
CH 06	2437 MHz	16.34	15.87	17.01	17.95
CH 11	2462 MHz	16.54	17.16	18.33	**18.53**

802.11g

Channel	Frequency (MHz)	RF Power (dBm)							
		2.4GHz 802.11g Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	16.92	17.59	17.53	17.93	18.02	17.89	18.36	18.27
CH 06	2437 MHz	16.63	17.08	17.52	17.55	17.85	18.17	17.68	18.26
CH 11	2462 MHz	17.41	18.33	18.30	18.37	18.18	18.45	**19.11**	18.68

Remark:

1. The 802.11b data rates were set in 11 Mbps and 802.11g data rates were set in 48 Mbps for all the test cases, due to the highest RF output power.
2. The EUT is programmed to transmit signal continuously for all testing.

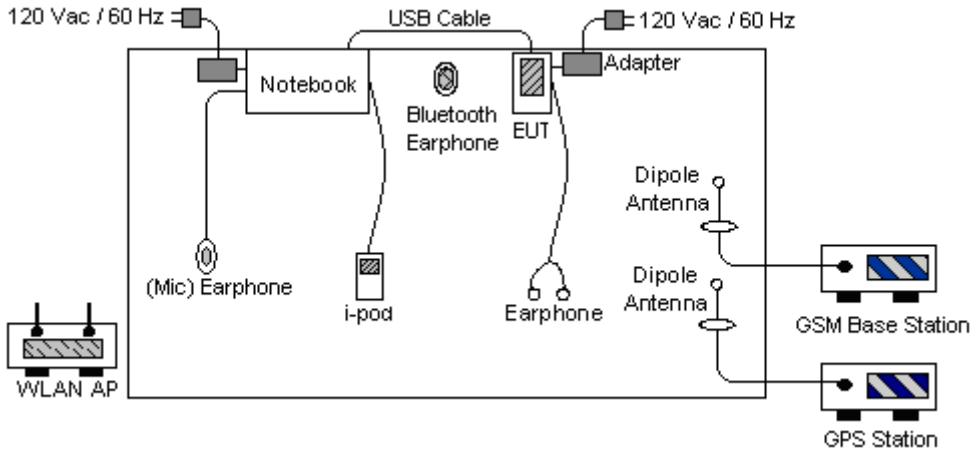
2.2 Test Mode

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.

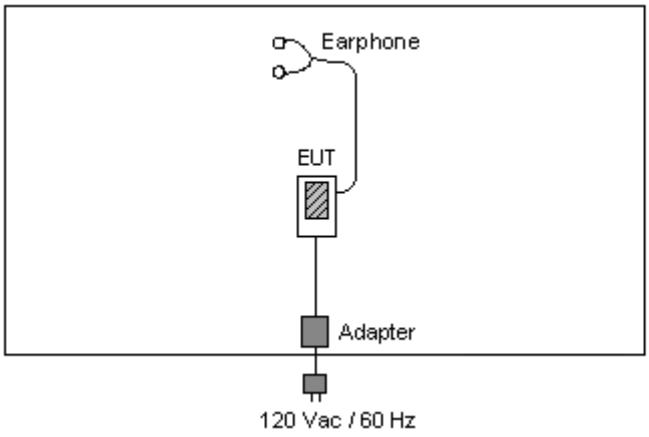
Test Cases		
Test Item	**Modulation**	
	802.11b DSSS	**802.11g OFDM**
Conducted TCs	■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 MHz ■ Mode 3: CH11_2462 MHz	■ Mode 4: CH01_2412 MHz ■ Mode 5: CH06_2437 MHz ■ Mode 6: CH11_2462 MHz
Radiated TCs	■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 MHz ■ Mode 3: CH11_2462 MHz	■ Mode 4: CH01_2412 MHz ■ Mode 5: CH06_2437 MHz ■ Mode 6: CH11_2462 MHz
AC Conducted Emission	Mode 1 : GSM850 Idle + GPS Rx + BT Link + WLAN Link + Earphone + USB Link + Adapter	

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.4 RF Utility

The programmed RF Utility, “FCCTest ppc” 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.

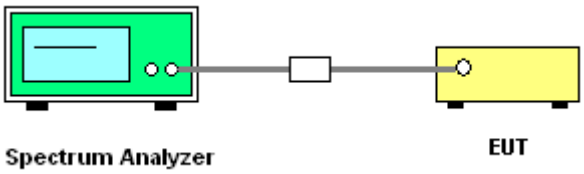
3.1.2 Measuring Instruments

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 :	27~28℃
Test Engineer :	Ken Hsu	Relative Humidity :	56~57%

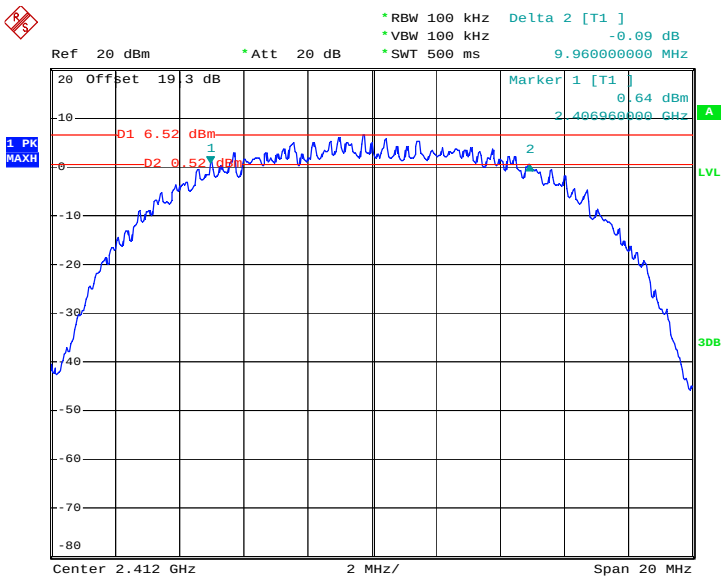
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.96	0.5	Pass
06	2437	9.56	0.5	Pass
11	2462	9.96	0.5	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	27~28℃
Test Engineer :	Ken Hsu	Relative Humidity :	56~57%

Channel	Frequency (MHz)	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	16.52	0.5	Pass

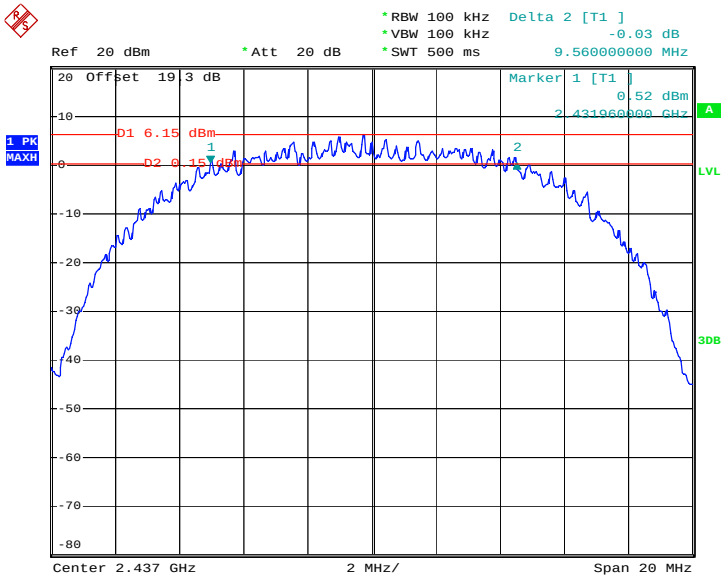
3.1.6 Test Result of 6dB Bandwidth Plots

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



Date: 15.OCT.2008 15:56:01

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



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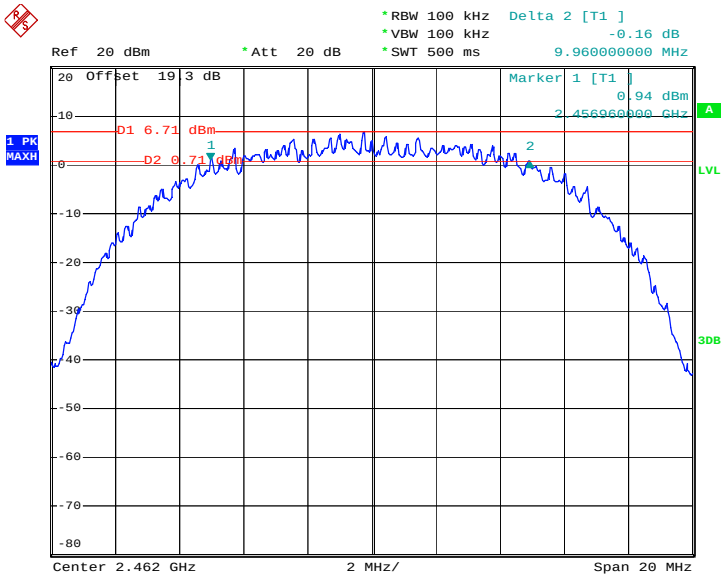
Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



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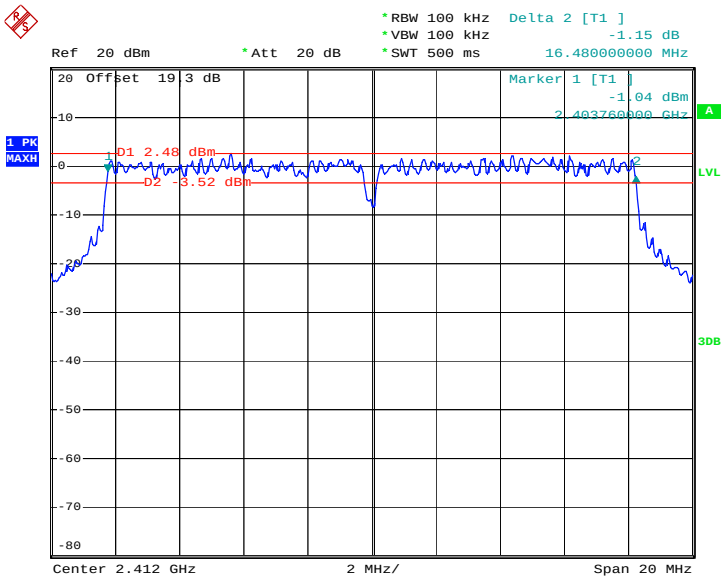
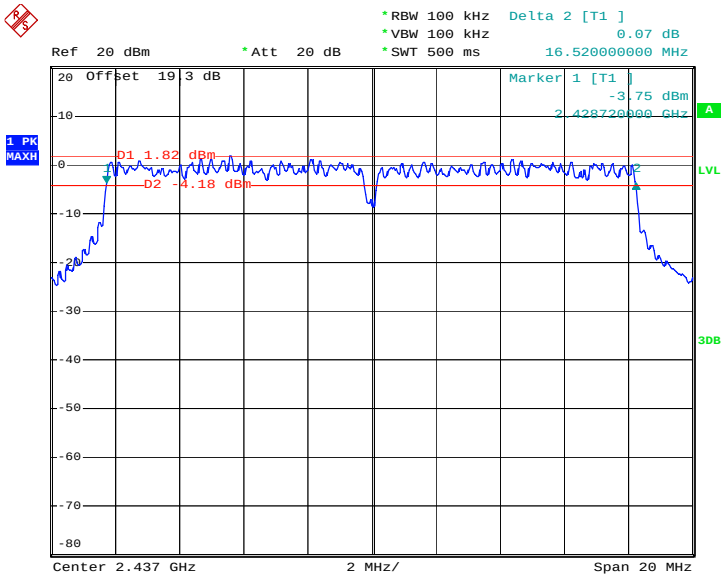
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 15.OCT.2008 15:57:17

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



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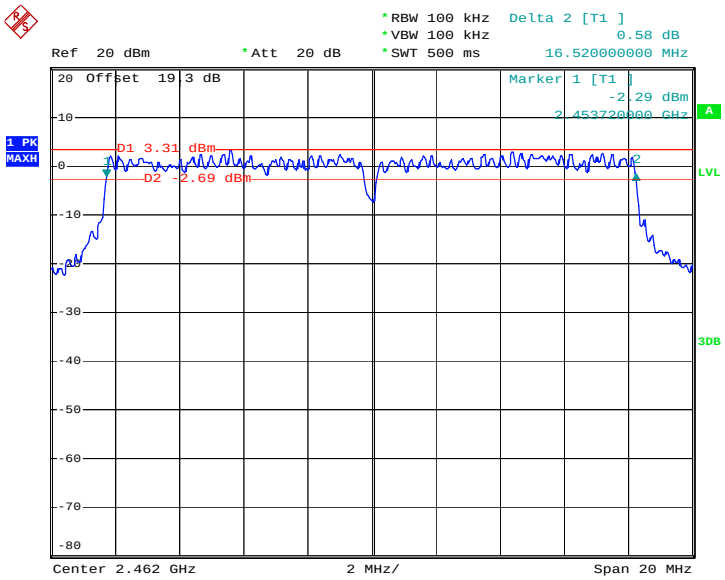
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



Date: 15.OCT.2008 16:01:49

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.

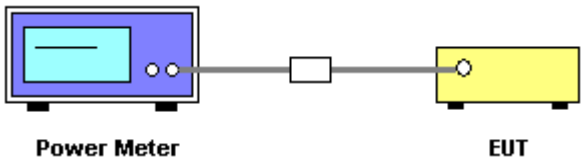
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

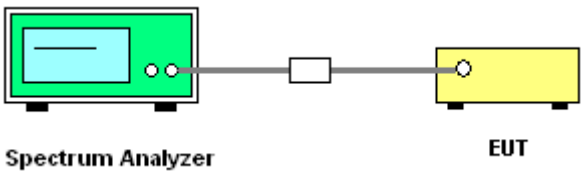
3.2.3 Test Procedures

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 either by power meter or spectrum analyzer.

3.2.4 Test Setup



Output Power Option 1



Output Power Option 2

3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	27~28℃
Test Engineer :	Ken Hsu	Relative Humidity :	56~57%

Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.11	30	Pass
06	2437	17.95	30	Pass
11	2462	18.53	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	27~28℃
Test Engineer :	Ken Hsu	Relative Humidity :	56~57%

Channel	Frequency (MHz)	Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.36	30	Pass
06	2437	17.68	30	Pass
11	2462	19.11	30	Pass

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, scan up through 10th harmonic. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the output power of this device was measured by power meter, 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

3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao		

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
2369.66	54.04	-19.96	74.00	53.87	31.96	3.89	35.68	100	0	Peak
2369.66	42.82	-11.18	54.00	42.65	31.96	3.89	35.68	105	333	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
2365.10	53.03	-20.97	74.00	52.88	31.93	3.89	35.68	100	0	Peak
2365.10	41.88	-12.12	54.00	41.73	31.93	3.89	35.68	126	67	Average

Test Mode :	Mode 3	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao		

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
2489.93	56.26	-17.74	74.00	55.91	32.10	4.05	35.70	100	0	Peak
2489.93	43.12	-10.88	54.00	42.67	32.70	4.05	35.70	104	332	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
2483.50	53.20	-20.80	74.00	52.77	32.08	4.05	35.70	100	0	Peak
2483.50	40.66	-13.34	54.00	40.23	32.08	4.05	35.70	136	54	Average

Test Mode :	Mode 4	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao		

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	70.63	-3.37	74.00	70.41	31.98	3.92	35.68	100	0	Peak
2390.00	50.92	-3.08	54.00	50.70	31.98	3.92	35.68	106	336	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	68.66	-5.34	74.00	68.44	31.98	3.92	35.68	100	0	Peak
2390.00	48.67	-5.33	54.00	48.45	31.98	3.92	35.68	122	68	Average

Test Mode :	Mode 6	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao		

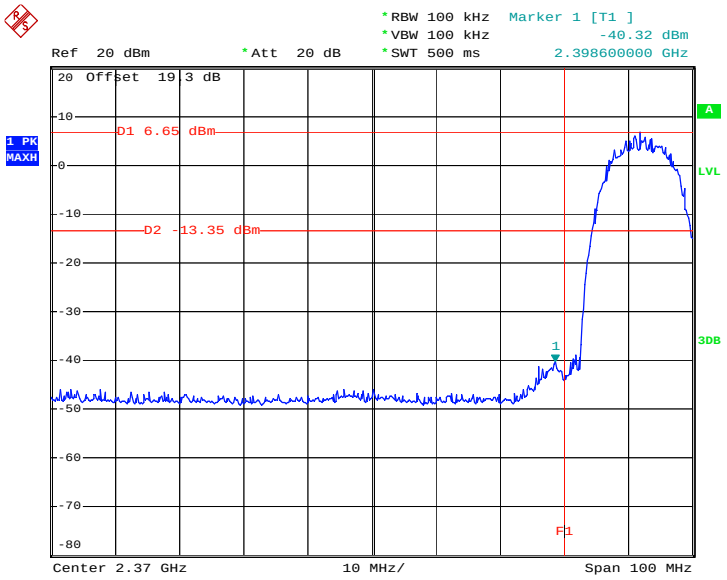
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	67.97	-6.03	74.00	67.54	32.08	4.05	35.70	100	0	Peak
2483.50	49.62	-4.38	54.00	49.19	32.08	4.05	35.70	100	341	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
2483.50	65.33	-8.67	74.00	64.90	32.08	4.05	35.70	100	0	Peak
2483.50	47.21	-6.79	54.00	46.78	32.08	4.05	35.70	140	48	Average

3.3.6 Test Result of Conducted Band Edges

Test Mode :	Mode 1	**Temperature :**	27~28℃
Test Channel :	01	**Relative Humidity :**	56~57%
Test Engineer :	Ken Hsu		

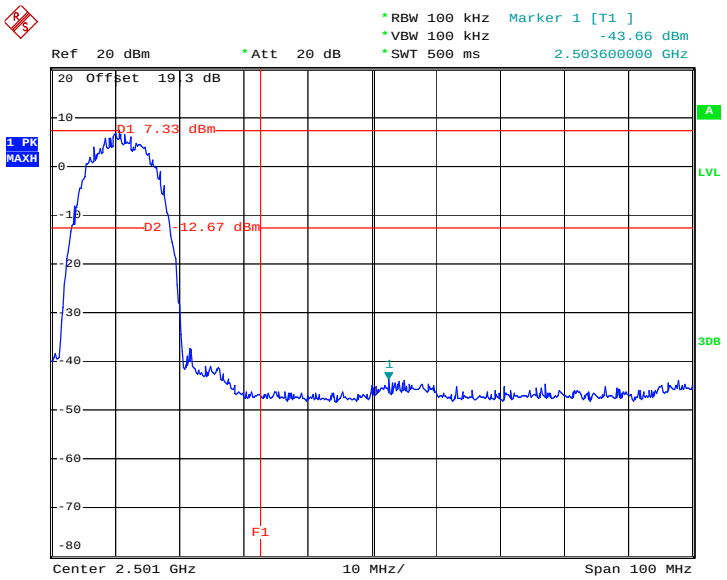
Low Band Edge Plot on 802.11b Channel 01



Date: 15.OCT.2008 16:03:27

Test Mode :	Mode 3	Temperature :	27~28℃
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Ken Hsu		

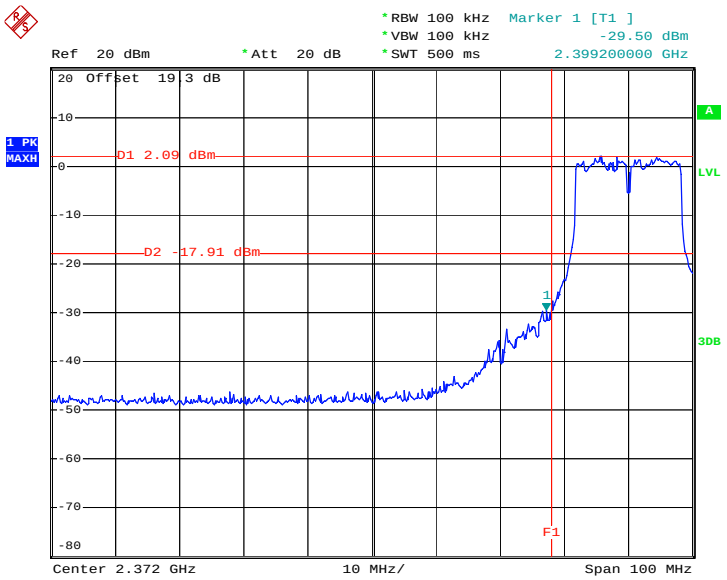
High Band Edge Plot on 802.11b Channel 11



Date: 15.OCT.2008 16:06:42

Test Mode :	Mode 4	Temperature :	27~28℃
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Ken Hsu		

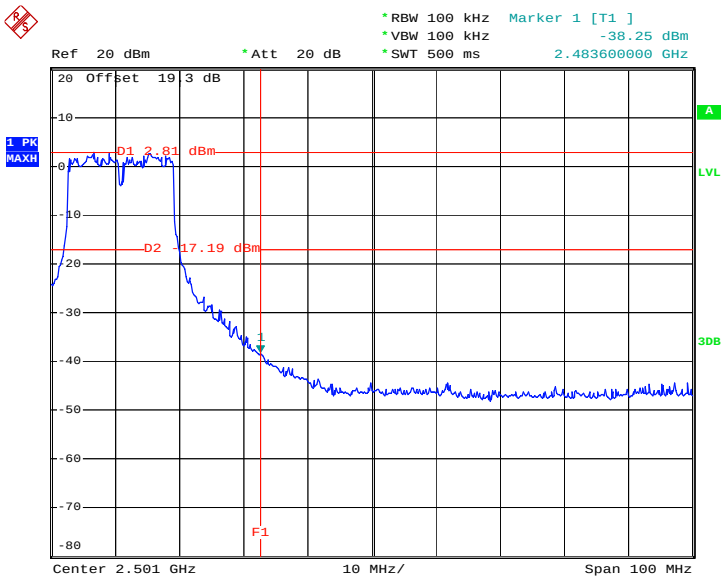
Low Band Edge Plot on 802.11g Channel 01



Date: 15.OCT.2008 16:04:39

Test Mode :	Mode 6	Temperature :	27~28℃
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Ken Hsu		

High Band Edge Plot on 802.11g Channel 11



Date: 15.OCT.2008 16:05:40

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.

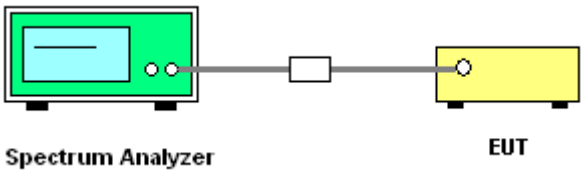
3.4.2 Measuring Instruments

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 :	27~28℃
Test Engineer :	Ken Hsu	Relative Humidity :	56~57%

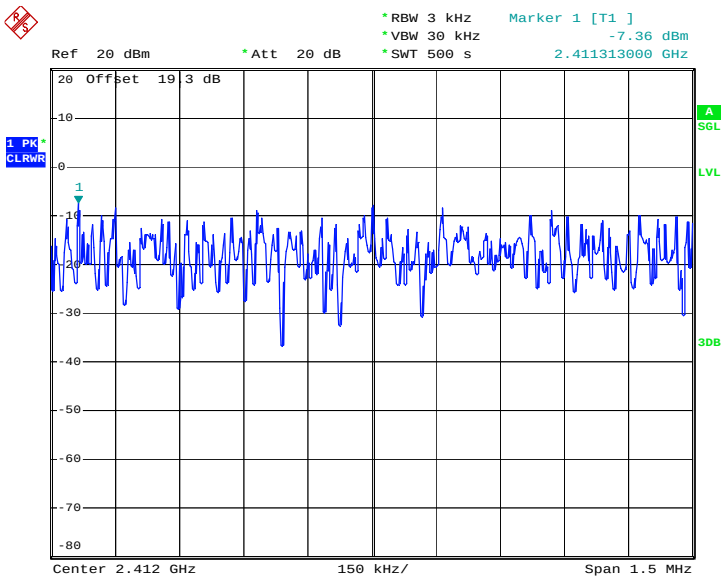
Channel	Frequency (MHz)	Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.36	8	Pass
06	2437	-7.48	8	Pass
11	2462	-7.69	8	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	27~28℃
Test Engineer :	Ken Hsu	Relative Humidity :	56~57%

Channel	Frequency (MHz)	Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-12.49	8	Pass
06	2437	-11.67	8	Pass
11	2462	-11.69	8	Pass

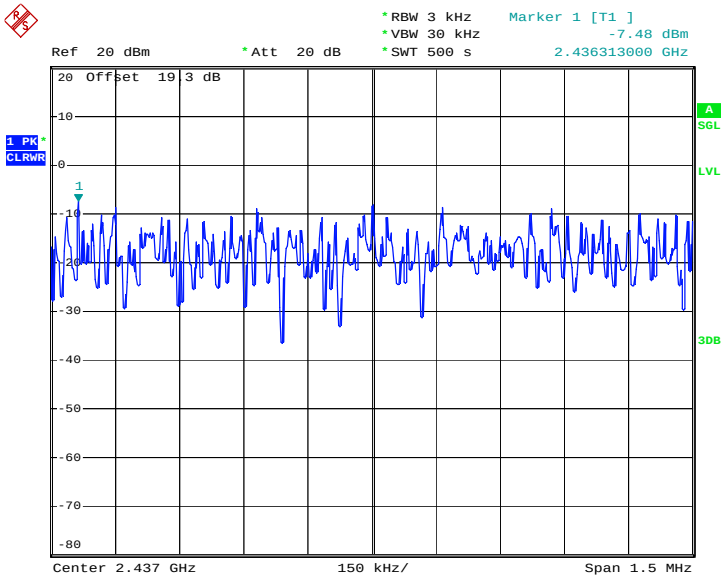
3.4.6 Test Result of Power Spectral Density Plots

Mode 1 : PSD Plot on 802.11b Channel 01



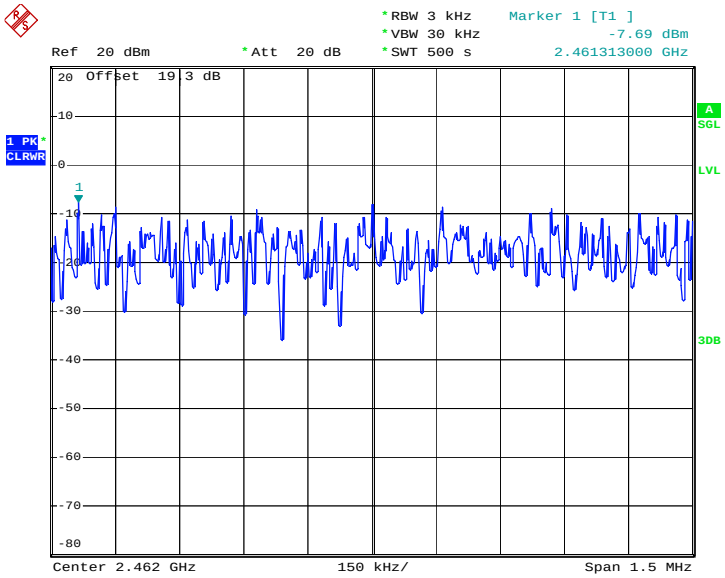
Date: 15.OCT.2008 15:52:18

Mode 2 : PSD Plot on 802.11b Channel 06



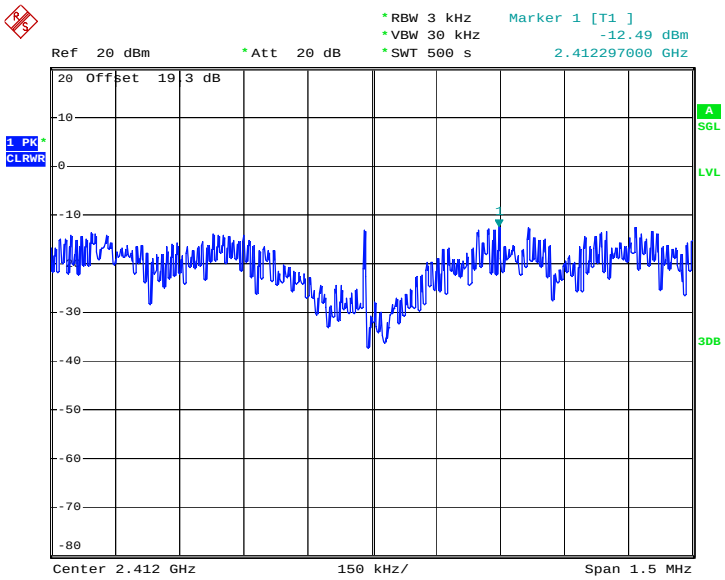
Date: 15.OCT.2008 16:39:02

Mode 3 : PSD Plot on 802.11b Channel 11



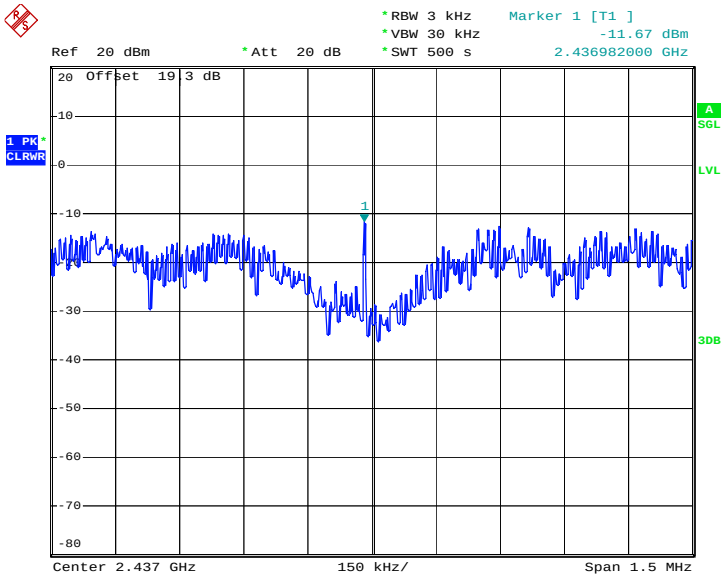
Date: 15.OCT.2008 16:48:06

Mode 4 : PSD Plot on 802.11g Channel 01



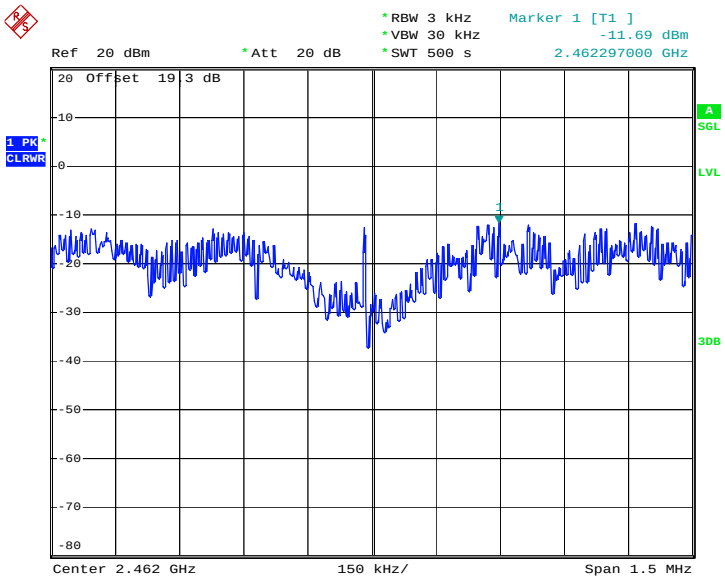
Date: 15.OCT.2008 16:16:28

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 15.OCT.2008 16:29:59

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 15.OCT.2008 16:56:52

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.

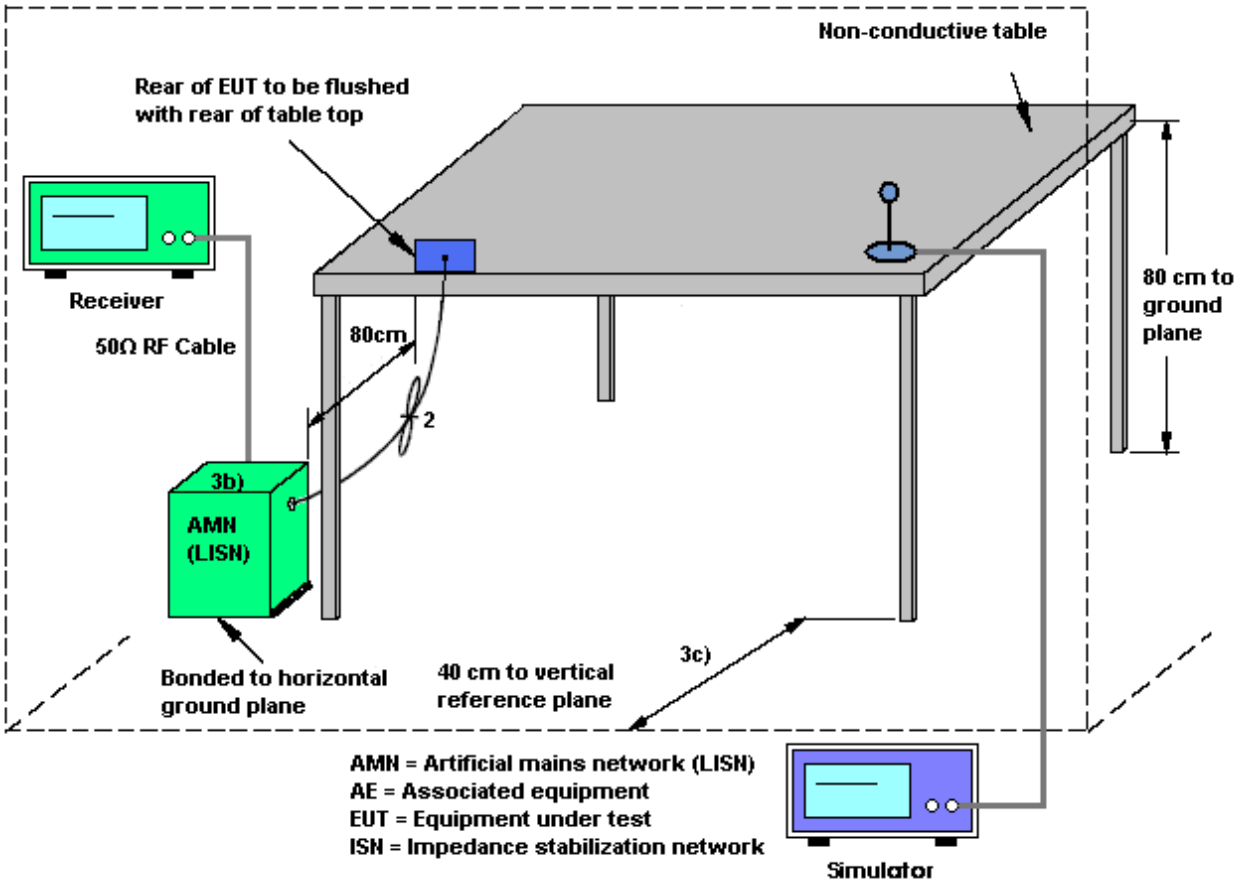
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

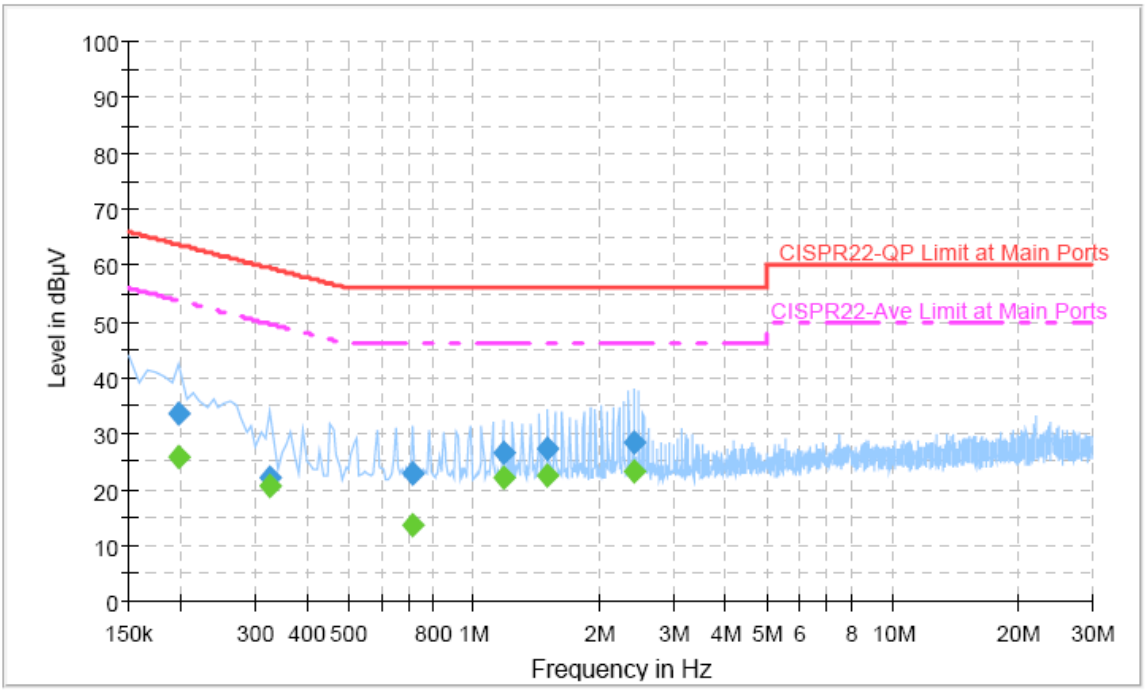
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 :**	24~25℃
Test Engineer :	Cona Huang	**Relative Humidity :**	52~53%
		Phase :	Line
Function Type :	GSM850 Idle + GPS Rx + BT Link + WLAN Link + Earphone + USB Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



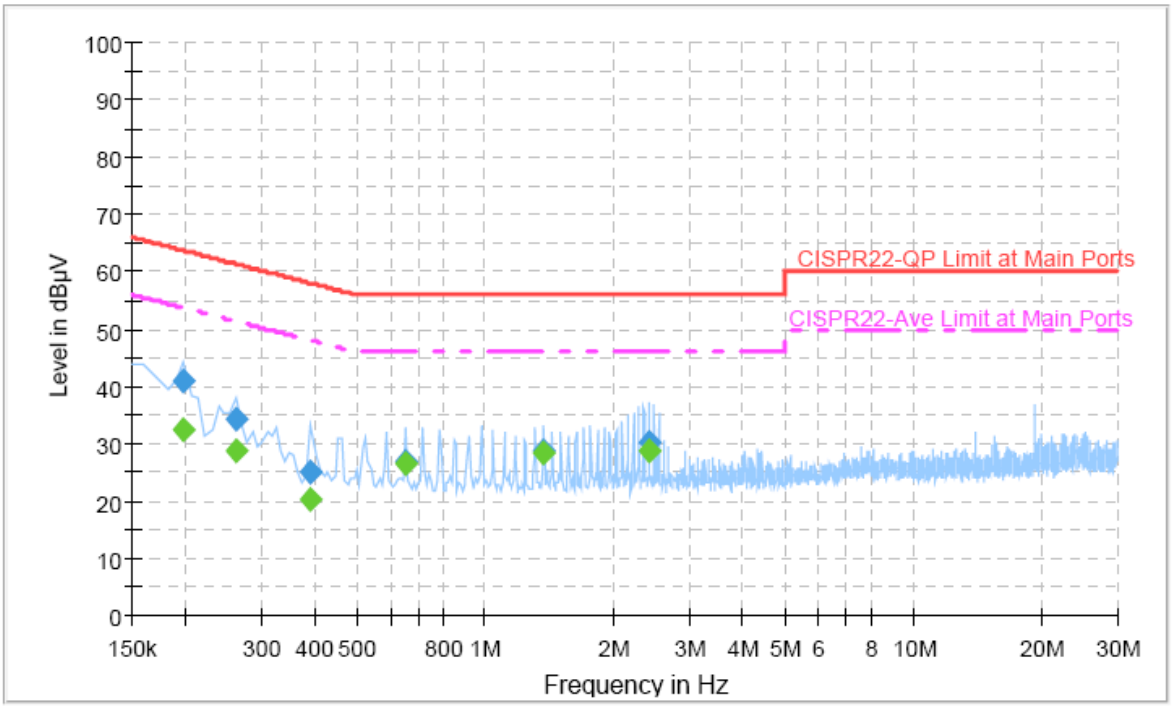
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	33.6	Off	L1	19.3	30.1	63.7
0.326000	22.0	Off	L1	19.3	37.6	59.6
0.718000	22.7	Off	L1	19.4	33.3	56.0
1.174000	26.7	Off	L1	19.4	29.3	56.0
1.502000	27.4	Off	L1	19.4	28.6	56.0
2.414000	28.4	Off	L1	19.5	27.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	25.9	Off	L1	19.3	27.8	53.7
0.326000	20.7	Off	L1	19.3	28.9	49.6
0.718000	13.5	Off	L1	19.4	32.5	46.0
1.174000	22.1	Off	L1	19.4	23.9	46.0
1.502000	22.5	Off	L1	19.4	23.5	46.0
2.414000	23.1	Off	L1	19.5	22.9	46.0

Test Mode :	Mode 1	**Temperature :**	24~25℃
Test Engineer :	Cona Huang	**Relative Humidity :**	52~53%
		Phase :	Neutral
Function Type :	GSM850 Idle + GPS Rx + BT Link + WLAN Link + Earphone + USB Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	40.8	Off	N	19.3	22.9	63.7
0.262000	34.2	Off	N	19.4	27.2	61.4
0.390000	25.0	Off	N	19.4	33.1	58.1
0.654000	27.0	Off	N	19.4	29.0	56.0
1.374000	28.7	Off	N	19.5	27.3	56.0
2.422000	30.2	Off	N	19.5	25.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	32.7	Off	N	19.3	21.0	53.7
0.262000	28.7	Off	N	19.4	22.7	51.4
0.390000	20.4	Off	N	19.4	27.7	48.1
0.654000	26.7	Off	N	19.4	19.3	46.0
1.374000	28.6	Off	N	19.5	17.4	46.0
2.422000	28.6	Off	N	19.5	17.4	46.0

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

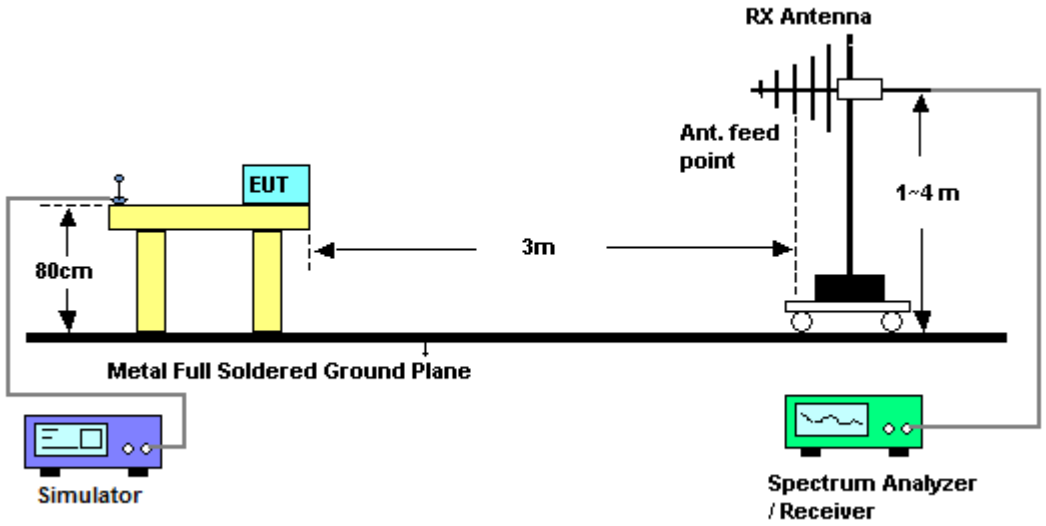
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

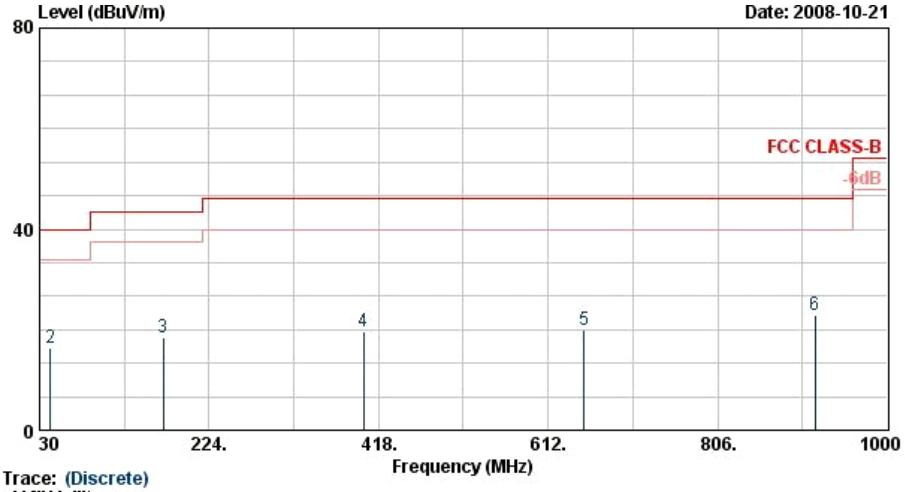
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
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



3.6.5 Test Result of Radiated Emission < 1GHz

Test Mode :	Mode 1	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :			

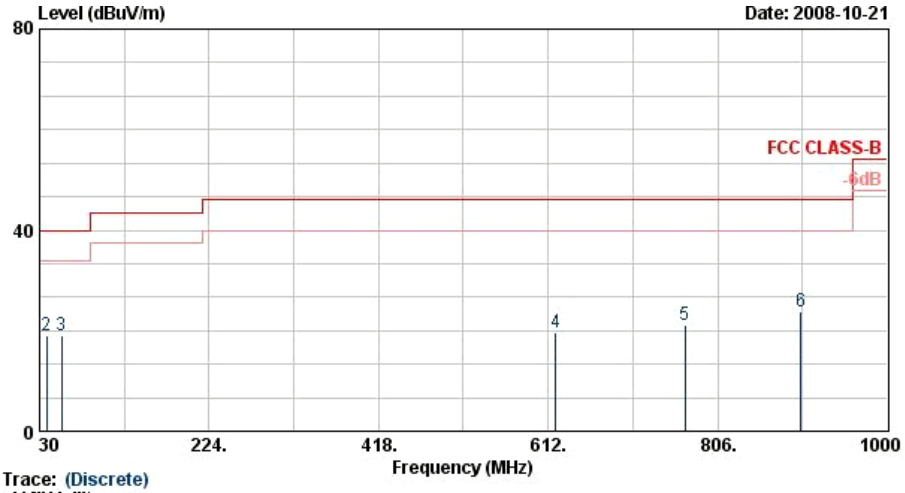


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(9511121) HORIZONTAL
Model : FR 800405

	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 @	30.54	19.34	-20.66	40.00	31.70	18.95	0.30	31.61	100	339	Peak
2	42.69	16.27	-23.73	40.00	35.66	12.02	0.30	31.71	---	---	Peak
3	171.48	18.40	-25.10	43.50	39.84	9.88	0.60	31.93	---	---	Peak
4	400.80	19.76	-26.24	46.00	34.98	15.78	0.90	31.89	---	---	Peak
5	652.80	20.00	-26.00	46.00	32.12	18.69	1.10	31.91	---	---	Peak
6	917.40	22.92	-23.08	46.00	32.62	20.65	1.23	31.59	---	---	Peak

Test Mode :	Mode 1	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :			

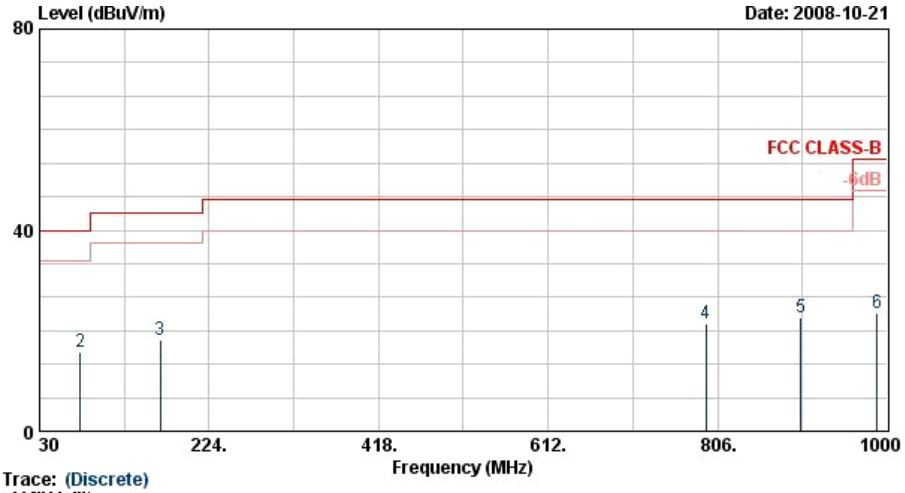


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(9511121) VERTICAL
Model : FR 800405

	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 @	30.54	19.89	-20.11	40.00	32.25	18.95	0.30	31.61	100	331	Peak
2	37.83	19.03	-20.97	40.00	35.92	14.56	0.30	31.75	---	---	Peak
3	54.84	19.00	-21.00	40.00	43.15	7.35	0.40	31.90	---	---	Peak
4	620.60	19.51	-26.49	46.00	31.92	18.56	1.09	32.06	---	---	Peak
5	768.30	21.04	-24.96	46.00	32.53	19.52	1.10	32.10	---	---	Peak
6	901.30	23.78	-22.22	46.00	33.61	20.54	1.30	31.67	---	---	Peak

Test Mode :	Mode 2	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :			

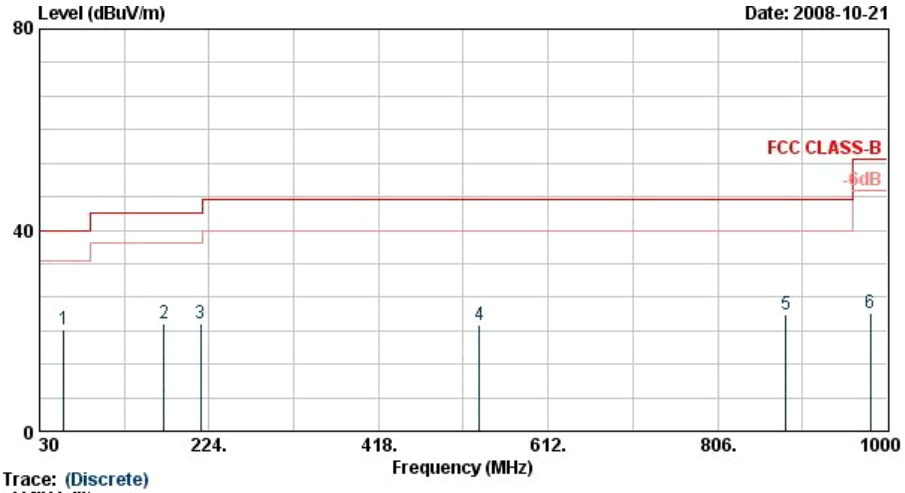


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(9511121) HORIZONTAL
Model : FR 800405

	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 @	30.27	19.58	-20.42	40.00	31.18	19.66	0.30	31.56	100	325	Peak
2	76.98	15.72	-24.28	40.00	39.87	7.29	0.43	31.88	---	---	Peak
3	168.24	18.05	-25.45	43.50	39.40	9.94	0.60	31.89	---	---	Peak
4	792.80	21.43	-24.57	46.00	32.65	19.75	1.20	32.16	---	---	Peak
5	901.30	22.48	-23.52	46.00	32.31	20.54	1.30	31.67	---	---	Peak
6	988.80	23.50	-30.50	54.00	31.94	21.16	1.30	30.90	---	---	Peak

Test Mode :	Mode 2	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :			

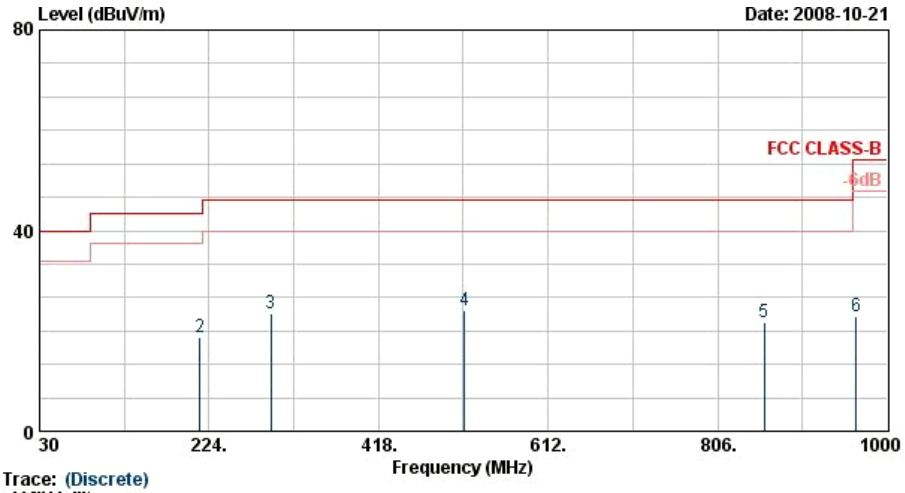


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(95111-2) VERTICAL
Model : FR 800405

	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 @	57.54	20.11	-19.89	40.00	44.62	7.06	0.40	31.96	100	255	Peak
2	172.29	21.48	-22.02	43.50	42.96	9.86	0.60	31.94	---	---	Peak
3	214.14	21.27	-22.23	43.50	42.56	10.16	0.64	32.09	---	---	Peak
4	533.80	21.13	-24.87	46.00	34.52	17.77	0.94	32.10	---	---	Peak
5	883.80	23.31	-22.69	46.00	33.51	20.41	1.30	31.91	---	---	Peak
6	980.40	23.62	-30.38	54.00	32.22	21.10	1.30	31.01	---	---	Peak

Test Mode :	Mode 3	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :			

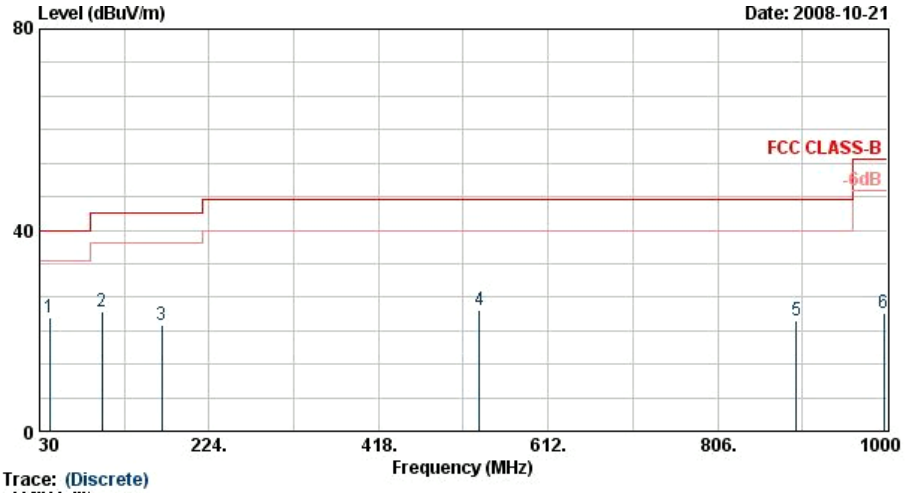


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(95112I) HORIZONTAL
Model : FR 800405

	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 @	30.00	19.58	-20.42	40.00	31.18	19.66	0.30	31.56	100	356	Peak
2	213.33	18.82	-24.68	43.50	40.21	10.10	0.63	32.12	---	---	Peak
3	295.14	23.59	-22.41	46.00	41.89	13.12	0.70	32.11	---	---	Peak
4	516.30	24.23	-21.77	46.00	37.73	17.59	1.00	32.09	---	---	Peak
5	859.30	21.83	-24.17	46.00	32.65	20.24	1.20	32.26	---	---	Peak
6	964.30	22.99	-31.01	54.00	31.94	20.98	1.30	31.23	---	---	Peak

Test Mode :	Mode 3	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :			

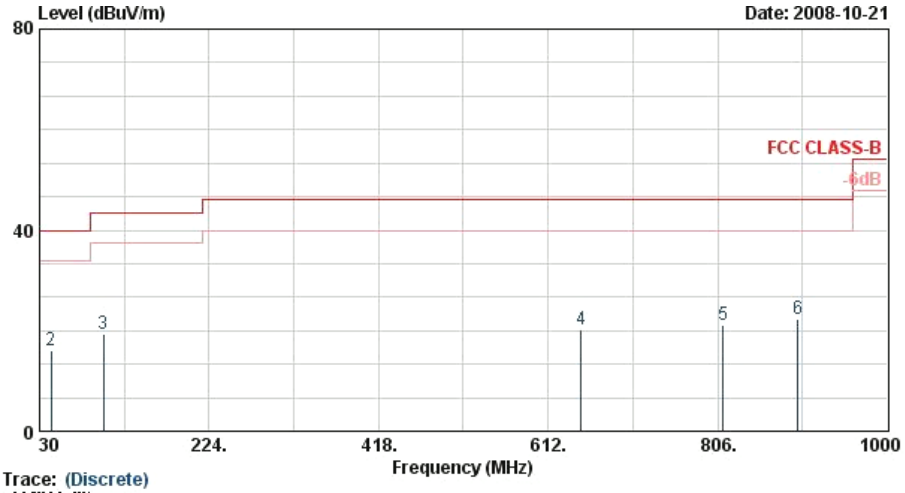


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(9511121) VERTICAL
Model : FR 800405

	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 @	41.34	22.74	-17.26	40.00	41.63	12.51	0.30	31.70	---	---	Peak
2 @	101.28	23.77	-19.73	43.50	44.22	11.07	0.50	32.02	---	---	Peak
3	170.13	21.19	-22.31	43.50	42.55	9.92	0.60	31.89	100	256	Peak
4	533.80	24.13	-21.87	46.00	37.53	17.77	0.94	32.10	---	---	Peak
5	896.40	22.02	-23.98	46.00	31.94	20.50	1.30	31.73	---	---	Peak
6	995.80	23.56	-30.44	54.00	31.84	21.21	1.30	30.79	---	---	Peak

Test Mode :	Mode 4	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :			

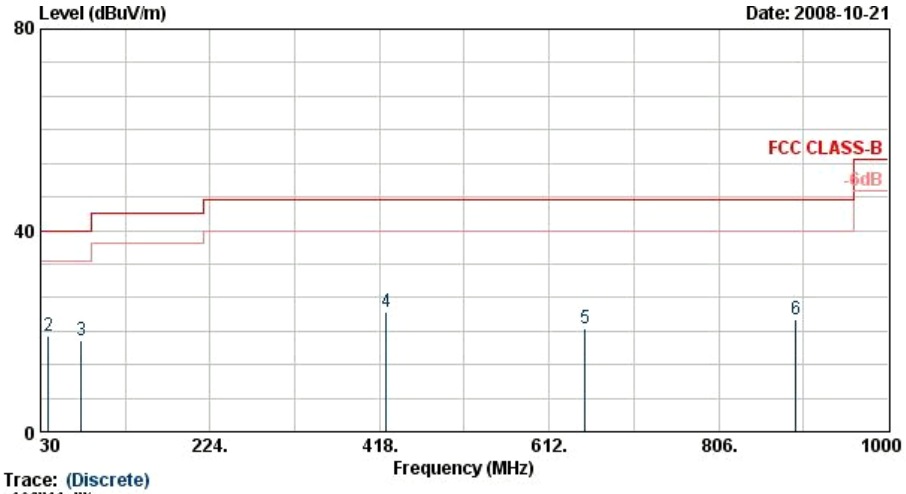


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(95111-2) HORIZONTAL
Model : FR 800405

	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 @	30.00	19.05	-20.95	40.00	30.65	19.66	0.30	31.56	100	302	Peak
2	43.23	16.08	-23.92	40.00	35.97	11.52	0.30	31.71	---	---	Peak
3	103.44	19.39	-24.11	43.50	39.57	11.29	0.50	31.97	---	---	Peak
4	649.30	20.16	-25.84	46.00	32.28	18.67	1.10	31.89	---	---	Peak
5	812.40	21.19	-24.81	46.00	32.31	19.91	1.20	32.24	---	---	Peak
6	897.80	22.22	-23.78	46.00	32.10	20.52	1.30	31.70	---	---	Peak

Test Mode :	Mode 4	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :			

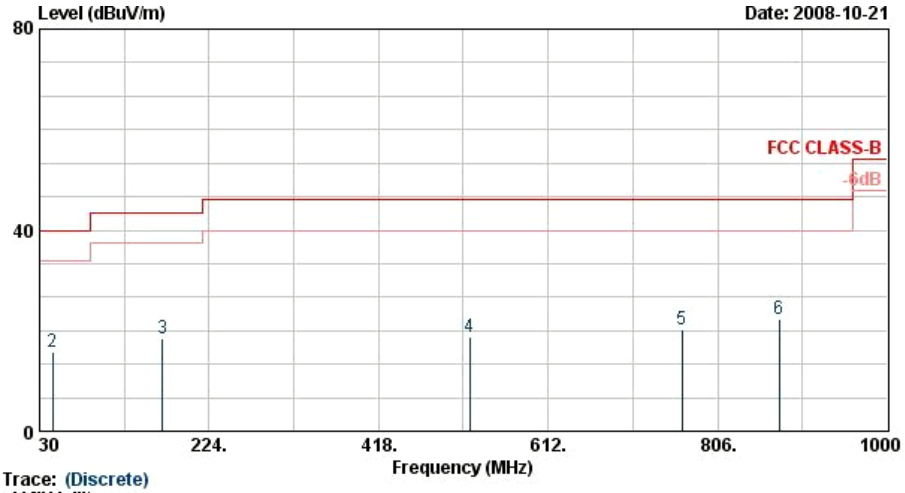


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(95I121) VERTICAL
Model : FR R0D405

	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 @	30.00	20.05	-19.95	40.00	31.65	19.66	0.30	31.56	100	332	Peak
2 @	38.64	19.05	-20.95	40.00	36.44	14.03	0.30	31.72	---	---	Peak
3	76.98	18.19	-21.81	40.00	42.34	7.29	0.43	31.88	---	---	Peak
4	425.30	23.72	-22.28	46.00	38.70	16.19	0.80	31.97	---	---	Peak
5	652.80	20.39	-25.61	46.00	32.51	18.69	1.10	31.91	---	---	Peak
6	894.30	22.21	-23.79	46.00	32.17	20.49	1.30	31.75	---	---	Peak

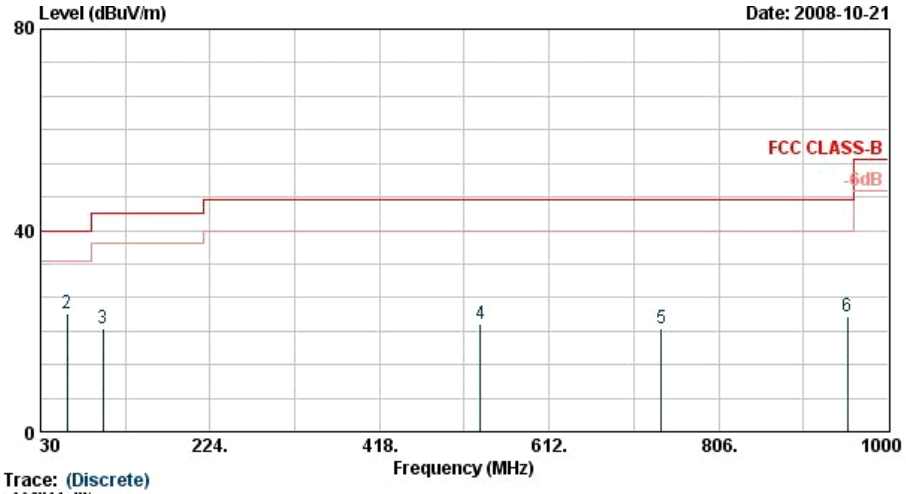
Test Mode :	Mode 5	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :			



Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(9511121) HORIZONTAL
Model : FR 800405

	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 @	30.00	18.90	-21.10	40.00	30.50	19.66	0.30	31.56	100	332	Peak
2	45.39	15.86	-24.14	40.00	36.80	10.53	0.30	31.77	---	---	Peak
3	170.94	18.44	-25.06	43.50	39.84	9.90	0.60	31.91	---	---	Peak
4	521.90	18.76	-27.24	46.00	32.22	17.65	0.98	32.09	---	---	Peak
5	764.80	20.26	-25.74	46.00	31.76	19.49	1.10	32.10	---	---	Peak
6	876.80	22.22	-23.78	46.00	32.56	20.36	1.30	32.01	---	---	Peak

Test Mode :	Mode 5	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :			

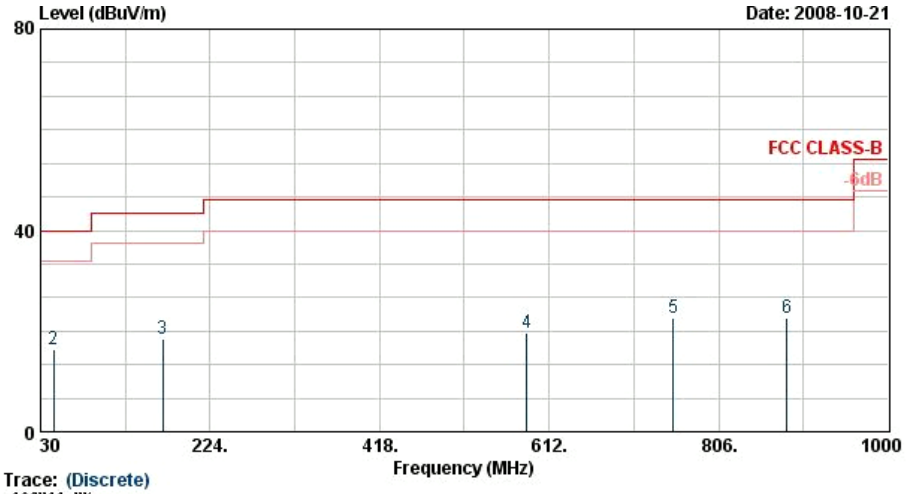


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(95112I) VERTICAL
Model : FR 800405

	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 @	30.00	19.37	-20.63	40.00	30.97	19.66	0.30	31.56	---	---	Peak
2 @	60.24	23.39	-16.61	40.00	48.42	6.62	0.40	32.05	100	320	Peak
3	101.28	20.44	-23.06	43.50	40.90	11.07	0.50	32.02	---	---	Peak
4	533.80	21.31	-24.69	46.00	34.71	17.77	0.94	32.10	---	---	Peak
5	740.30	20.43	-25.57	46.00	32.21	19.26	1.10	32.14	---	---	Peak
6	953.80	22.85	-23.15	46.00	32.08	20.91	1.24	31.38	---	---	Peak

Test Mode :	Mode 6	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :			

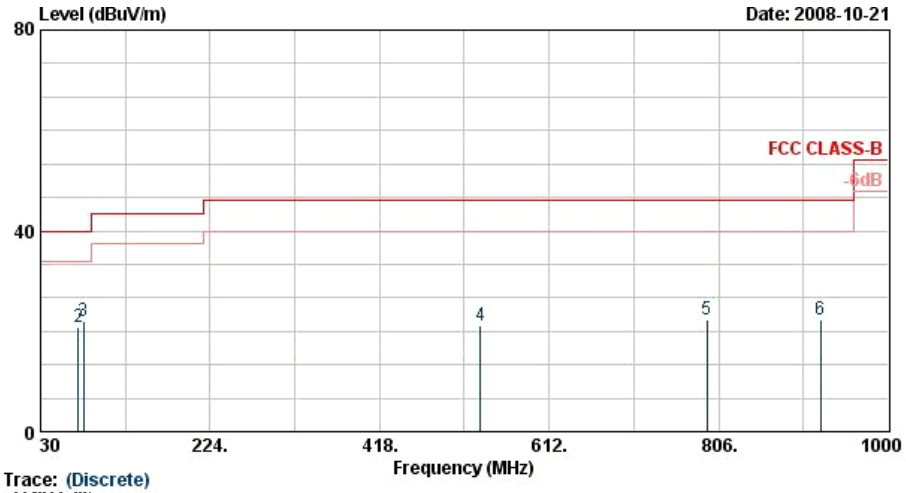


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(95112I) HORIZONTAL
Model : FR 8O0405

	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 @	30.00	19.29	-20.71	40.00	30.89	19.66	0.30	31.56	100	299	Peak
2	45.39	16.28	-23.72	40.00	37.22	10.53	0.30	31.77	---	---	Peak
3	170.13	18.55	-24.95	43.50	39.92	9.92	0.60	31.89	---	---	Peak
4	586.30	19.64	-26.36	46.00	32.48	18.33	1.00	32.16	---	---	Peak
5	754.30	22.70	-23.30	46.00	34.28	19.40	1.10	32.07	---	---	Peak
6	883.80	22.57	-23.43	46.00	32.77	20.41	1.30	31.91	---	---	Peak

Test Mode :	Mode 6	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :			



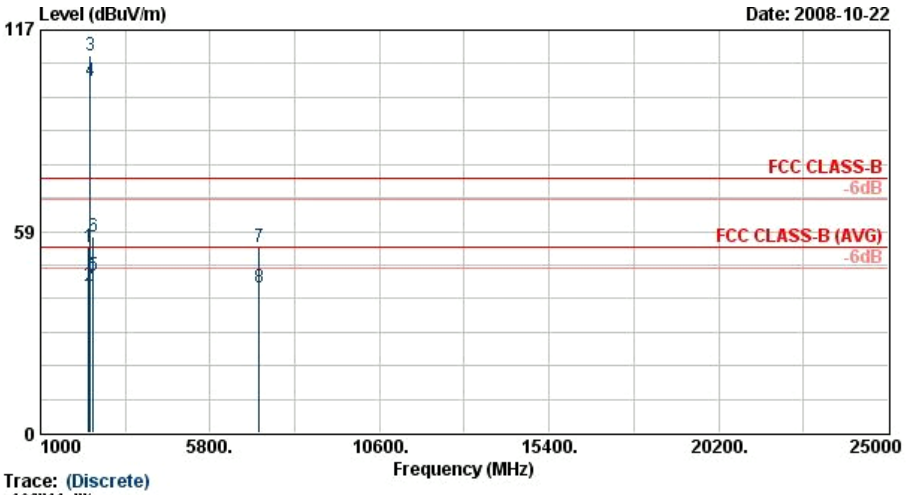
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m LF-ANT(95112I) VERTICAL
Model : FR 800405

	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 @	30.00	19.81	-20.19	40.00	31.41	19.66	0.30	31.56	---	---	Peak
2 @	72.93	20.82	-19.18	40.00	45.15	7.06	0.40	31.79	---	---	Peak
3 @	79.14	21.93	-18.07	40.00	45.97	7.46	0.48	31.99	100	336	Peak
4	533.80	21.14	-24.86	46.00	34.53	17.77	0.94	32.10	---	---	Peak
5	792.80	22.18	-23.82	46.00	33.40	19.75	1.20	32.16	---	---	Peak
6	922.30	22.45	-23.55	46.00	32.12	20.69	1.20	31.56	---	---	Peak

3.6.6 Test Result of Radiated Emission ≥ 1GHz

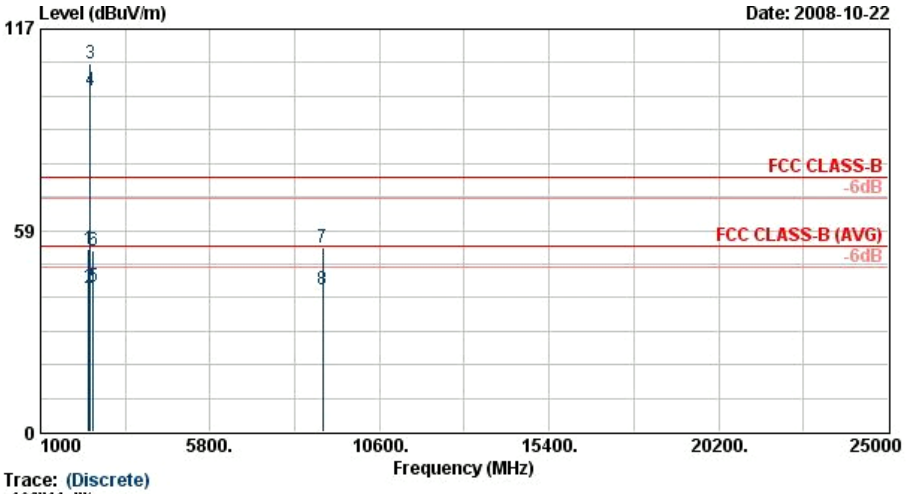
Test Mode :	Mode 1	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals.		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Model : FR ROD405

	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 @	2369.66	54.04	-19.96	74.00	53.87	31.96	3.89	35.68	100	0	Peak
2 @	2369.66	42.82	-11.18	54.00	42.65	31.96	3.89	35.68	105	333	Average
3 @	2412.00	109.64			109.38	32.00	3.95	35.68	100	0	Peak
4 @	2412.00	102.06			101.79	32.00	3.95	35.68	105	333	Average
5 @	2500.00	45.81	-8.19	54.00	45.36	32.10	4.05	35.70	105	333	Average
6 @	2500.00	56.92	-17.08	74.00	56.47	32.10	4.05	35.70	100	0	Peak
7 @	7191.00	53.74	-20.26	74.00	47.04	35.62	7.16	36.08	100	0	Peak
8 @	7191.00	42.10	-11.90	54.00	35.40	35.62	7.16	36.08	100	335	Average

Test Mode :	Mode 1	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals.		

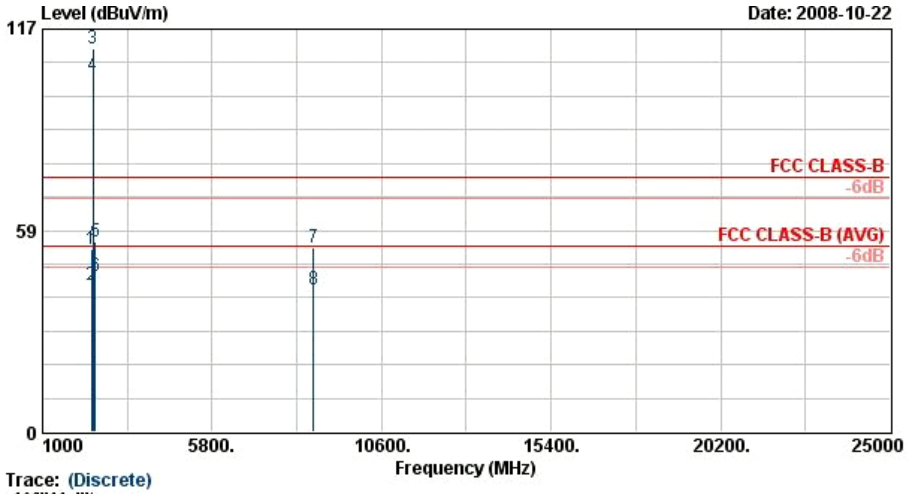


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 8O0405

	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	2365.10	53.03	-20.97	74.00	52.88	31.93	3.89	35.68	100	0	Peak
2 @	2365.10	41.88	-12.12	54.00	41.73	31.93	3.89	35.68	126	67	Average
3 @	2412.00	107.01			106.74	32.00	3.95	35.68	100	0	Peak
4 @	2412.00	99.33			99.06	32.00	3.95	35.68	126	67	Average
5 @	2500.00	42.16	-11.84	54.00	41.71	32.10	4.05	35.70	126	67	Average
6	2500.00	52.49	-21.51	74.00	52.04	32.10	4.05	35.70	100	0	Peak
7 @	9000.00	53.36	-20.64	74.00	45.96	36.20	7.80	36.60	100	0	Peak
8 @	9000.00	41.35	-12.65	54.00	33.95	36.20	7.80	36.60	100	352	Average

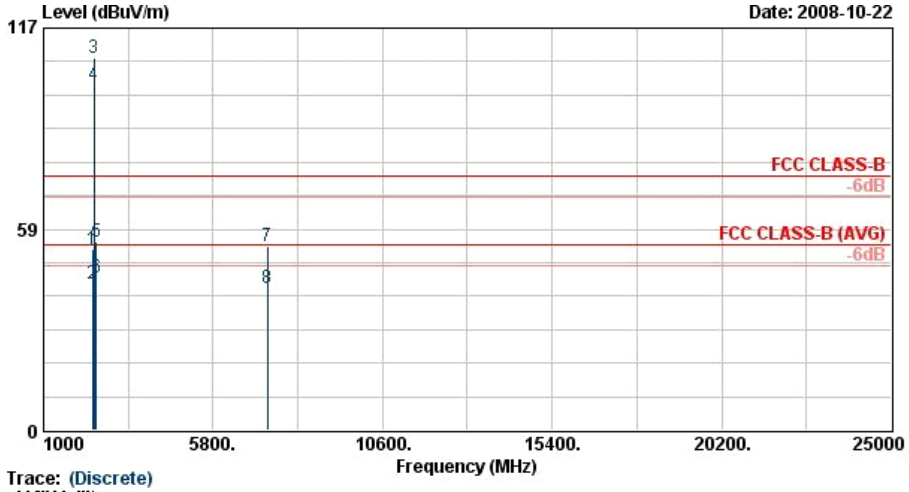
Test Mode :	Mode 2	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals.		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Model : FR ROD405

	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	2390.00	52.88	-21.12	74.00	52.66	31.98	3.92	35.68	100	0	Peak
2 @	2390.00	42.60	-11.40	54.00	42.38	31.98	3.92	35.68	104	333	Average
3 @	2437.00	111.34			111.03	32.02	3.99	35.69	100	0	Peak
4 @	2437.00	103.49			103.15	32.04	3.99	35.69	104	333	Average
5 @	2484.00	55.14	-18.86	74.00	54.71	32.08	4.05	35.70	100	0	Peak
6 @	2484.00	45.09	-8.91	54.00	44.66	32.08	4.05	35.70	104	333	Average
7	8676.00	53.42	-20.58	74.00	46.52	35.88	7.42	36.41	100	0	Peak
8 @	8676.00	41.50	-12.50	54.00	34.61	35.88	7.42	36.41	100	288	Average

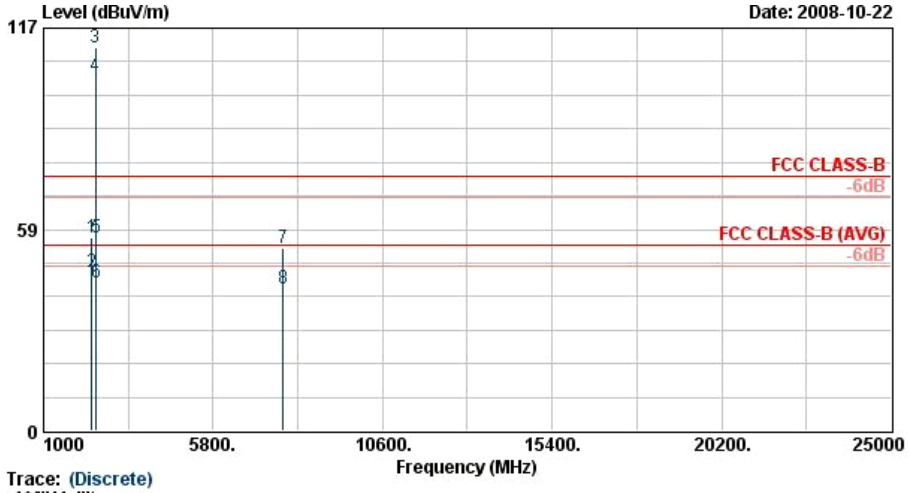
Test Mode :	Mode 2	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals.		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 800405

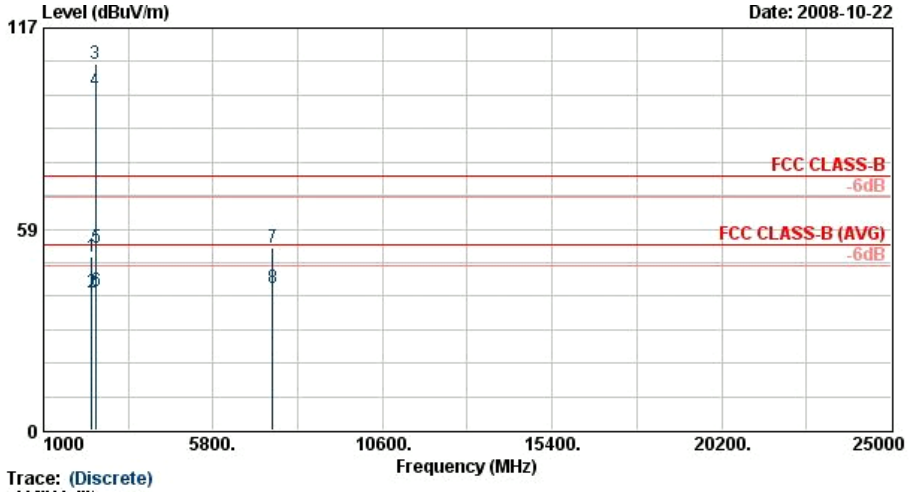
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	2390.00	52.76	-21.24	74.00	52.54	31.98	3.92	35.68	100	0	Peak
2 @	2390.00	42.42	-11.58	54.00	42.20	31.98	3.92	35.68	138	53	Average
3 @	2437.00	108.45			108.11	32.04	3.99	35.69	100	0	Peak
4 @	2437.00	100.53			100.19	32.04	3.99	35.69	138	53	Average
5 @	2484.00	54.74	-19.26	74.00	54.31	32.08	4.05	35.70	100	0	Peak
6 @	2484.00	44.18	-9.82	54.00	43.75	32.08	4.05	35.70	138	53	Average
7 @	7341.00	53.62	-20.38	74.00	46.99	35.56	7.21	36.14	100	0	Peak
8 @	7341.00	41.35	-12.65	54.00	34.72	35.56	7.21	36.14	100	356	Average

Test Mode :	Mode 3	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals.		



	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 @	2372.00	56.31	-17.69	74.00	56.14	31.96	3.89	35.68	100	0	Peak
2 @	2372.00	46.23	-7.77	54.00	46.06	31.96	3.89	35.68	104	332	Average
3 @	2462.00	111.31			110.93	32.06	4.02	35.69	100	0	Peak
4 @	2462.00	103.14			102.75	32.06	4.02	35.69	104	332	Average
5 @	2489.93	56.26	-17.74	74.00	55.81	32.10	4.05	35.70	100	0	Peak
6 @	2489.93	43.12	-10.88	54.00	42.67	32.10	4.05	35.70	104	332	Average
7	7776.00	53.09	-20.91	74.00	46.33	35.61	7.40	36.26	100	0	Peak
8 @	7776.00	41.50	-12.50	54.00	34.74	35.61	7.40	36.26	100	256	Average

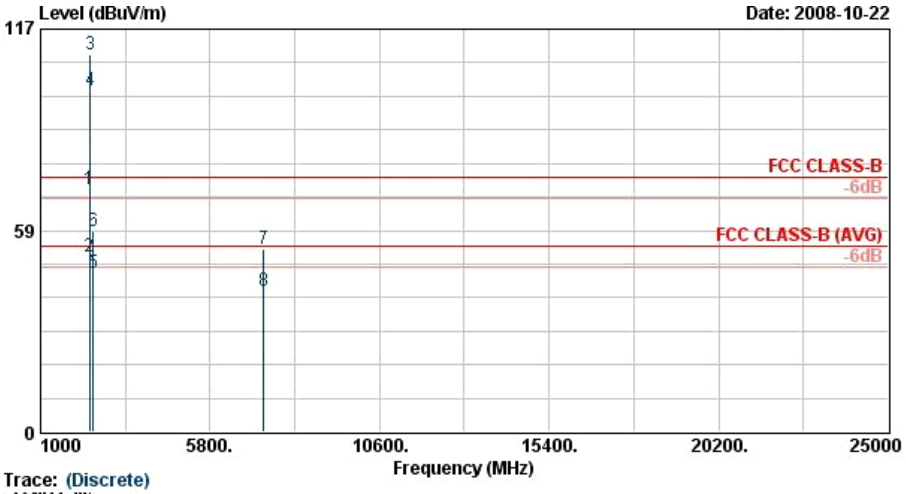
Test Mode :	Mode 3	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 800405

	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	2374.00	50.36	-23.64	74.00	50.19	31.96	3.89	35.68	100	0	Peak
2 @	2374.00	40.09	-13.91	54.00	39.92	31.96	3.89	35.68	136	54	Average
3 @	2462.00	106.70			106.31	32.06	4.02	35.69	100	0	Peak
4 @	2462.00	98.61			98.22	32.06	4.02	35.69	136	54	Average
5	2483.50	53.20	-20.80	74.00	52.77	32.08	4.05	35.70	100	0	Peak
6 @	2483.50	40.66	-13.34	54.00	40.23	32.08	4.05	35.70	136	54	Average
7	7482.00	53.25	-20.75	74.00	46.68	35.51	7.26	36.19	100	0	Peak
8 @	7482.00	41.32	-12.68	54.00	34.74	35.51	7.26	36.19	100	220	Average

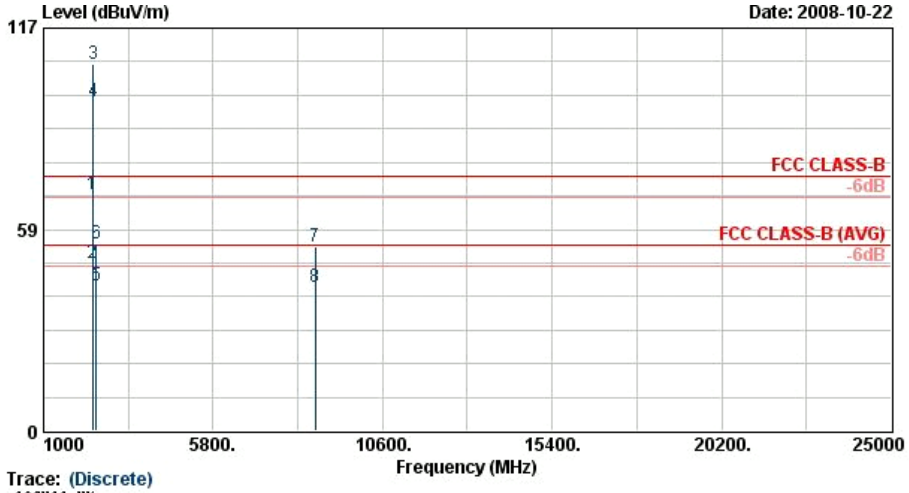
Test Mode :	Mode 4	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals.		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Model : FR ROD405

	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 @	2390.00	70.63	-3.37	74.00	70.41	31.98	3.92	35.68	100	0	Peak
2 @	2390.00	50.92	-3.08	54.00	50.70	31.98	3.92	35.68	106	336	Average
3 @	2412.00	109.64			109.37	32.00	3.95	35.68	100	0	Peak
4 @	2412.00	98.96			98.69	32.00	3.95	35.68	106	336	Average
5 @	2494.00	45.97	-8.03	54.00	45.52	32.10	4.05	35.70	106	336	Average
6 @	2494.00	58.19	-15.81	74.00	57.74	32.10	4.05	35.70	100	0	Peak
7	7317.00	52.90	-21.10	74.00	46.26	35.57	7.20	36.13	100	0	Peak
8 @	7317.00	41.02	-12.98	54.00	34.38	35.57	7.20	36.13	100	288	Average

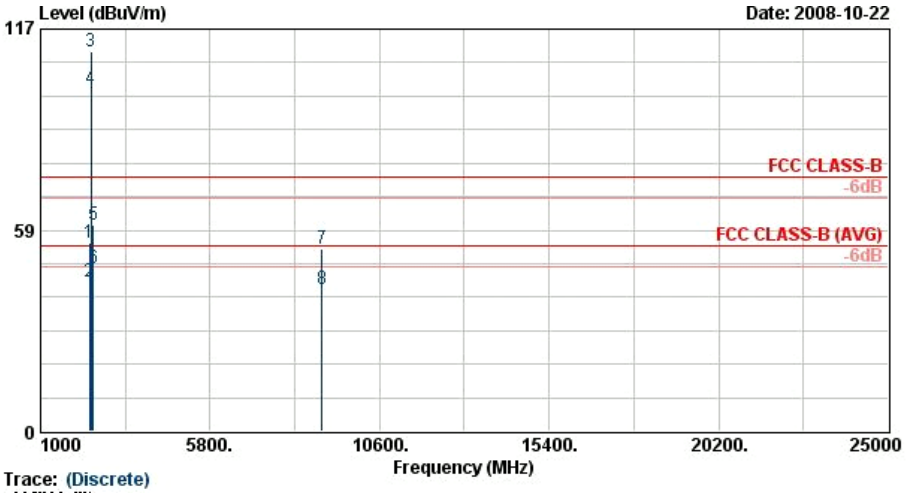
Test Mode :	Mode 4	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals.		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 800405

	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 @	2390.00	68.66	-5.34	74.00	68.44	31.98	3.92	35.68	100	0	Peak
2 @	2390.00	48.67	-5.33	54.00	48.45	31.98	3.92	35.68	122	68	Average
3 @	2412.00	106.64			106.37	32.00	3.95	35.68	100	0	Peak
4 @	2412.00	95.64			95.37	32.00	3.95	35.68	122	68	Average
5 @	2500.00	42.06	-11.94	54.00	41.61	32.10	4.05	35.70	122	68	Average
6 @	2500.00	54.35	-19.65	74.00	53.90	32.10	4.05	35.70	100	0	Peak
7 @	8691.00	53.43	-20.57	74.00	46.55	35.88	7.42	36.42	100	0	Peak
8 @	8691.00	41.85	-12.15	54.00	34.97	35.88	7.42	36.42	100	285	Average

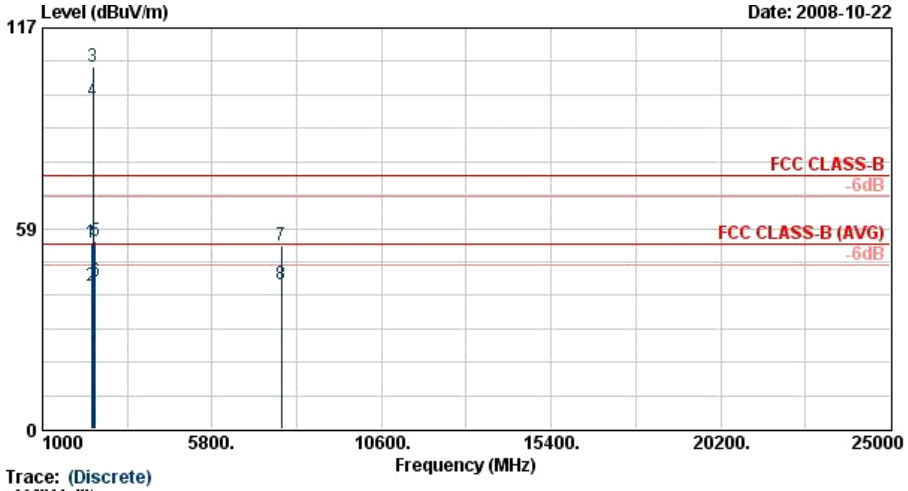
Test Mode :	Mode 5	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals.		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Model : FR 800405

	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 @	2388.00	54.65	-19.35	74.00	54.43	31.98	3.92	35.68	100	0	Peak
2 @	2388.00	43.56	-10.44	54.00	43.34	31.98	3.92	35.68	102	333	Average
3 @	2437.00	110.52			110.20	32.02	3.99	35.69	100	0	Peak
4 @	2437.00	99.82			99.48	32.04	3.99	35.69	102	333	Average
5 @	2486.00	59.88	-14.12	74.00	59.44	32.08	4.05	35.70	100	0	Peak
6 @	2486.00	47.38	-6.62	54.00	46.95	32.08	4.05	35.70	102	333	Average
7 @	8967.00	52.99	-21.01	74.00	45.63	36.17	7.77	36.57	100	0	Peak
8 @	8967.00	41.20	-12.80	54.00	33.83	36.17	7.77	36.57	100	294	Average

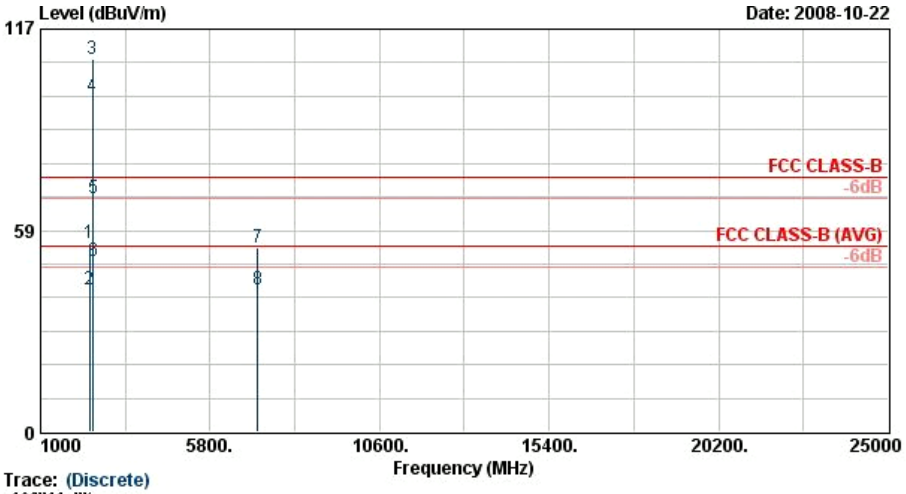
Test Mode :	Mode 5	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals.		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 800405

	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 @	2388.00	54.40	-19.60	74.00	54.18	31.98	3.92	35.68	100	0	Peak
2 @	2388.00	41.92	-12.08	54.00	41.70	31.98	3.92	35.68	145	61	Average
3 @	2437.00	105.75			105.42	32.04	3.99	35.69	100	0	Peak
4 @	2437.00	95.80			95.46	32.04	3.99	35.69	145	61	Average
5 @	2486.00	54.85	-19.15	74.00	54.41	32.08	4.05	35.70	100	0	Peak
6 @	2486.00	43.05	-10.95	54.00	42.62	32.08	4.05	35.70	145	61	Average
7 @	7767.00	53.43	-20.57	74.00	46.67	35.61	7.40	36.25	100	0	Peak
8 @	7767.00	41.98	-12.02	54.00	35.22	35.61	7.40	36.25	100	332	Average

Test Mode :	Mode 6	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Horizontal
Remark :	#3 and #4 are Fundamental Signals.		

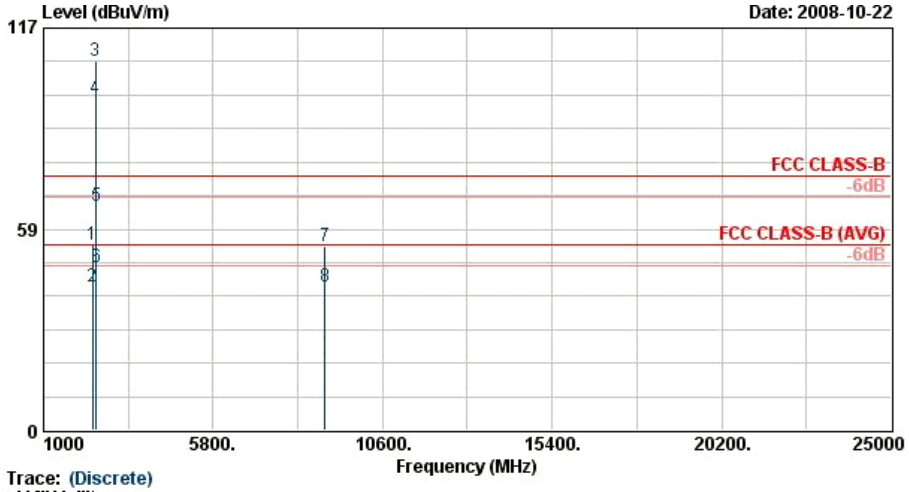


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Model : FR 800405

	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 @	2390.00	54.61	-19.39	74.00	54.39	31.98	3.92	35.68	100	0	Peak
2 @	2390.00	41.54	-12.46	54.00	41.32	31.98	3.92	35.68	100	341	Average
3 @	2462.00	108.40			108.02	32.06	4.02	35.69	100	0	Peak
4 @	2462.00	97.56			97.17	32.06	4.02	35.69	100	341	Average
5 @	2483.50	67.97	-6.03	74.00	67.54	32.08	4.05	35.70	100	0	Peak
6 @	2483.50	49.62	-4.38	54.00	49.19	32.08	4.05	35.70	100	341	Average
7 @	7152.00	53.52	-20.48	74.00	46.80	35.64	7.14	36.06	100	0	Peak
8 @	7152.00	41.52	-12.48	54.00	34.80	35.64	7.14	36.06	100	298	Average

Test Mode :	Mode 6	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	56~57%
Test Engineer :	Andrew Hsiao	Polarization :	Vertical
Remark :	#3 and #4 are Fundamental Signals.		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Model : FR 800405

	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 @	2380.00	53.81	-20.19	74.00	53.61	31.96	3.92	35.68	100	0	Peak
2 @	2380.00	41.96	-12.04	54.00	41.76	31.96	3.92	35.68	140	48	Average
3 @	2462.00	107.42			107.03	32.06	4.02	35.69	100	0	Peak
4 @	2462.00	96.72			96.33	32.06	4.02	35.69	140	48	Average
5 @	2483.50	65.33	-8.67	74.00	64.90	32.08	4.05	35.70	100	0	Peak
6 @	2483.50	47.21	-6.79	54.00	46.78	32.08	4.05	35.70	140	48	Average
7 @	8976.00	53.31	-20.69	74.00	45.96	36.17	7.77	36.59	100	0	Peak
8 @	8976.00	41.85	-12.15	54.00	34.50	36.17	7.77	36.59	100	299	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 Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9KHz~40GHz	Jun. 26, 2008	Jun. 25, 2009	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 21, 2008	Feb. 20, 2009	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 21, 2008	Feb. 20, 2009	Conducted (TH02-HY)
EMI Receiver	R&S	ESCS 30	100356	9kHz – 2.75GHz	Aug. 01, 2008	Jul. 31, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz – 30MHz	Dec. 06, 2007	Dec. 05, 2008	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz – 30MHz	Dec. 06, 2007	Dec. 05, 2008	Conduction (CO05-HY)
DC- LISN	R&S	ESH3-26	1000485	0.1MHz-200MHz	Feb. 04, 2008	Feb. 03, 2009	Conduction (CO05-HY)
DC- LISN	R&S	ESH3-26	1000484	0.1MHz-200MHz	Feb. 04, 2008	Feb. 03, 2009	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Base Station Simulator	R&S	CMU200	103937	Third-Band	Oct. 19, 2007	Oct. 18, 2008	Conduction (CO05-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Oct. 24, 2008	Oct. 23, 2009	Radiation (03CH06-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct.16, 2008	Oct.15, 2009	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz-1000MHz	Apr. 24, 2008	Apr. 23, 2009	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Dec. 01, 2007	Nov. 30, 2008	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1G~18GHz	Aug. 18, 2008	Aug. 17, 2009	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AF-0801	95119	8G~18GHz	Jun. 26, 2008	Jun. 25, 2009	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-251	14G - 40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G - 26.5GHz	Nov. 22, 2007	Nov. 21, 2008	Radiation (03CH06-HY)
Pre Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 21, 2008	Apr. 20, 2009	Radiation (03CH06-HY)

5 Uncertainty of Evaluation

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

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 Spec	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 (30MHz ~ 1000MHz)

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-shaped	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 (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	Ci	$Ci*u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	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-shaped	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. : L1190-070110

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, 2007 to January 09, 2010
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

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : January 10, 2007

P1, total 9 pages

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

Appendix A. Photographs of EUT

Please refer to Sporton report number EP8O0405 as below.