

FCC RF Test Report

APPLICANT : Chi Mei Communication Systems, Inc.
EQUIPMENT : Smart phone
BRAND NAME : CMCS
MODEL NAME : F902_125
FCC ID : QDJ-F902
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Aug. 19, 2009 and completely tested on Oct. 08, 2009. 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



SPORTON INTERNATIONAL INC.

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR981906A	Rev. 01	Initial issue of report	Jan. 15, 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	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.5	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 8.6 dB at 0.262 MHz
3.6	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 7.32 dB at 84.54 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Chi Mei Communication Systems, Inc.

No. 4, Mingsheng Street, Tucheng City, Taipei County 23678, Taiwan

1.2 Manufacturer

Chi Mei Communication Systems, Inc.

No. 4, Mingsheng Street, Tucheng City, Taipei County 23678, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart phone
Brand Name	CMCS
Model Name	F902_125
FCC ID	QDJ-F902
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	$2412+(n-1)*5$ MHz; $n=1\sim11$
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 18.78 dBm (75.51 mW) 802.11g : 22.65 dBm (184.08 mW)
Antenna Type	PIFA Antenna with gain -2.42 dBi
HW Version	PR2
SW Version	0.125
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).

List of Accessory:

Specification of Accessory		
AC Adapter	Brand Name	PHIHONG
	Model Name	PSAI05R-050Q
	Power Rating	I/P:100-240Vac, 50-60Hz, 0.3A; O/P: 5Vdc, 1A
Battery	Brand Name	LICO
	Model Name	HH06
	Power Rating	3.7Vdc, 1270mAh, 4.69Wh
	Type	Li-ion
Earphone	Brand Name	Full-Sound
	Model Name	TDM-600-002
	Signal Line Type	1.7 meter non-shielded cable without ferrite core
USB Cable	Brand Name	Hon Hai
	Model Name	CUNC004B-T19-EF
	Signal Line Type	1.0 meter non-shielded cable without ferrite core
LCD Panel	Brand Name	INNOLUX
	Model Name	CT032TN02
Camera	Brand Name	Foxconn
	Model Name	C265

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. For accessories equipped with this EUT, please refer to the appendix of the external photo.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st 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	03CH07-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), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	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	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
5.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
7.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

802.11b RF Power (dBm)					
Channel	Frequency (MHz)	Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	18.30	18.25	17.89	18.45
CH 06	2437 MHz	18.78	18.38	18.51	18.68
CH 11	2462 MHz	18.41	18.48	18.46	18.46

802.11g RF Power (dBm)									
Channel	Frequency (MHz)	Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	22.39	21.56	22.38	21.55	22.27	22.29	21.76	22.61
CH 06	2437 MHz	22.41	21.80	22.66	22.06	22.51	21.91	22.11	22.65
CH 11	2462 MHz	22.59	22.22	22.14	22.02	22.35	22.11	22.35	22.75

Remark:

1. The 802.11b data rates were set in 1 Mbps and 802.11g data rates were set in 54 Mbps for all the test cases, due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.

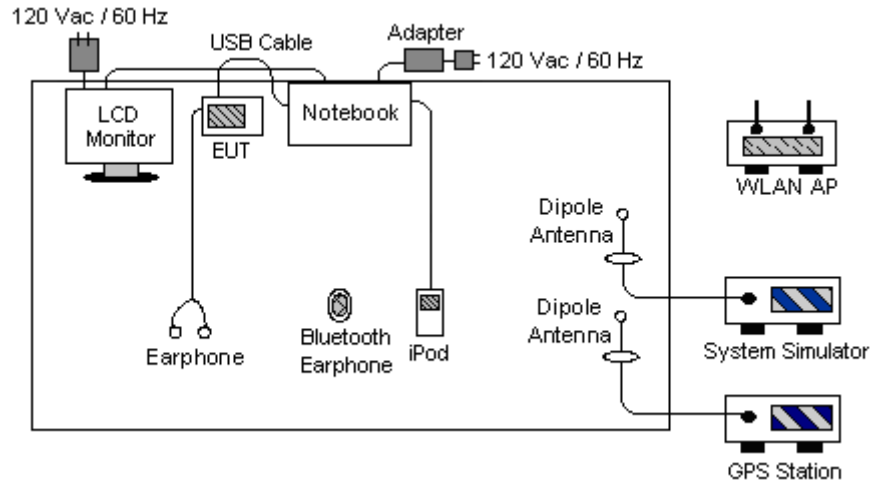
2.2 Test Mode

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.

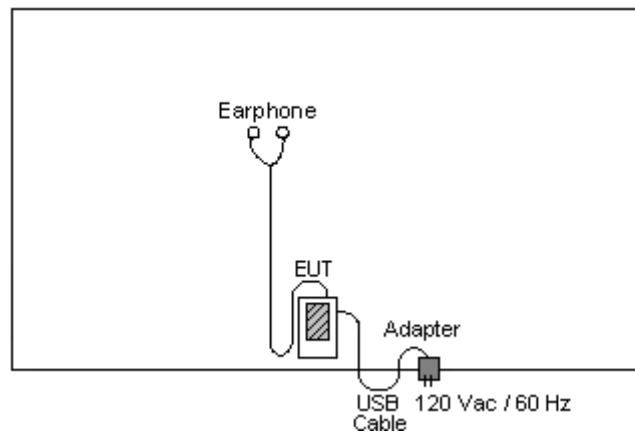
Test Cases		
Test Item	802.11b	802.11g
Conducted TCs	Mode 1 : CH01_2412 MHz	Mode 4 : CH01_2412 MHz
	Mode 2 : CH06_2437 MHz	Mode 5 : CH06_2437 MHz
	Mode 3 : CH11_2462 MHz	Mode 6 : CH11_2462 MHz
Radiated TCs	Mode 1 : CH01_2412 MHz	Mode 4 : CH01_2412 MHz
	Mode 2 : CH06_2437 MHz	Mode 5 : CH06_2437 MHz
	Mode 3 : CH11_2462 MHz	Mode 6 : CH11_2462 MHz
AC Conducted Emission	Mode 1 : WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone + Camera + USB Cable (Link with Notebook)	

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.4 RF Utility

Key in “* # * # 373 # * # *” on the EUT directly. Then, the EUT will have the functions like channel selection and power level for continuous transmitting and receiving signals. 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.

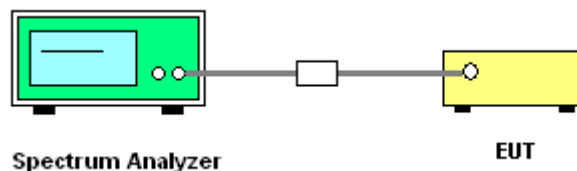
3.1.2 Measuring Instruments

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.

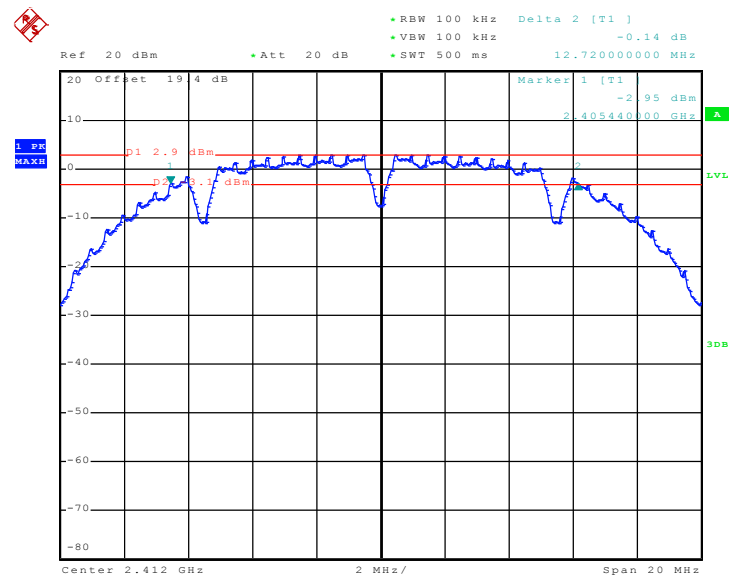
3.1.4 Test Setup



**3.1.5 Test Result of 6dB Bandwidth**

Test Mode :	Mode 1, 2, 3	Temperature :	26.2°C
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	12.72	0.5	Pass
06	2437	12.72	0.5	Pass
11	2462	12.60	0.5	Pass

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

Date: 15.SEP.2009 20:59:19



Ref 20 dBm Att 20 dB RBW 100 kHz VBW 100 kHz SWT 500 ms Delta 2 [T1] 0.00 dB

Offset 19.4 dB

Marker 1 [T1] -2.56 dBm 2.43741000 GHz

p1 3.21 dBm p2 2.74 dBm

Center 2.437 GHz Span 20 MHz

Date: 15.SEP.2009 21:01:34

• RBW 100 kHz Delta 2 [T1] 0.09 dB
 • VBW 100 kHz
 • SWT 500 ms 12.600000000 MHz

Ref 20 dBm • Att 20 dB

20 Offset 19.4 dB

Marker 1 [T1] -2.39 dBm
 2.455440000 GHz

1 PK
 MARK

p1 3.34 dBm
 1
 p2 2.65 dBm

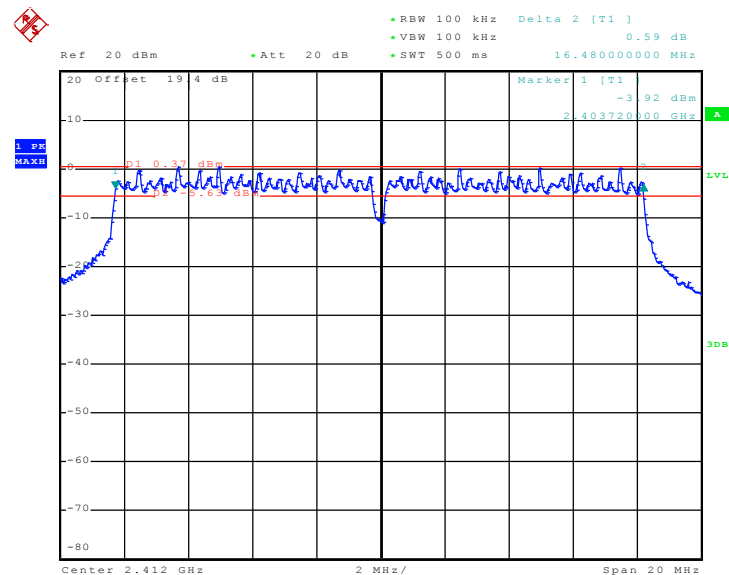
Center 2.462 GHz 2 MHz/ Span 20 MHz

Date: 15.SEP.2009 21:02:45



Test Mode :	Mode 4, 5, 6	Temperature :	26.2°C
Test Engineer :	Ken Hsu	Relative Humidity :	50%

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

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

Date: 15.SEP.2009 21:07:34



• RBW 100 kHz Delta 2 [T1]
 • VBW 100 kHz 1.26 dB
 • Att 20 dB
 • SWT 500 ms 16.48000000 MHz

Ref 20 dBm
 20 Offset 19.4 dB
 Marker 1 [T1] -4.54 dBm
 2.42872000 GHz

1.96
 MAXdB
 0.1 0.55 dBm
 -10.54 dBm
 -4.54 dBm
 -20
 -30
 -40
 -50
 -60
 -70
 -80

Center 2.437 GHz
 2 MHz/
 Span 20 MHz

Date: 15-SEP-2009 21:08:30

Ref 20 dBm Att 20 dB Delta 2 [T1] -0.07 dB
RBW 100 kHz VBW 100 kHz SWT 500 ms 16.480000000 MHz

Marker 1 [T1] -3.33 dBm
2.453720000 GHz

D1 0.9 dBm

Center 2.462 GHz 2 MHz/ Span 20 MHz

Date: 15.SEP.2009 21:09:56

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.

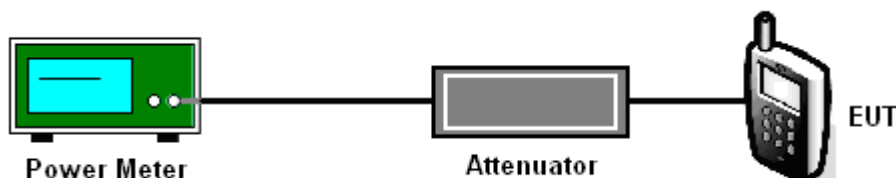
3.2.2 Measuring Instruments

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 power meter by a low loss cable.
3. Measure the power by power meter.

3.2.4 Test Setup



3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	26.2°C
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.30	30	Pass
06	2437	18.78	30	Pass
11	2462	18.41	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	26.2°C
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.61	30	Pass
06	2437	22.65	30	Pass
11	2462	22.75	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.

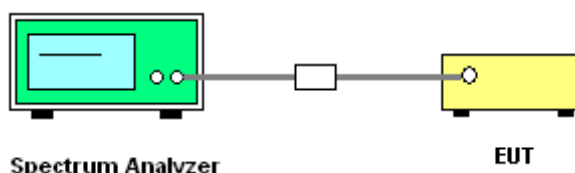
3.3.2 Measuring Instruments

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 = 1MHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 1MHz 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



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Kai Wang

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
2386.57	49.88	-24.12	74.00	46.67	32.13	5.46	34.38	100	354	Peak
2386.57	40.61	-13.39	54.00	37.40	32.13	5.46	34.38	100	354	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
2385.81	47.90	-26.10	74.00	44.69	32.13	5.46	34.38	164	212	Peak
2385.81	36.55	-17.45	54.00	33.34	32.13	5.46	34.38	164	212	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Kai Wang

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
2483.5	48.80	-25.20	74.00	45.54	32.27	5.38	34.40	178	9	Peak
2483.5	37.50	-16.50	54.00	34.24	32.27	5.38	34.40	178	9	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
2485.18	48.06	-25.94	74.00	44.80	32.27	5.38	34.40	131	220	Peak
2485.18	35.87	-18.13	54.00	32.61	32.27	5.38	34.40	131	220	Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Kai Wang

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
2389.99	62.13	-11.87	74.00	58.92	32.13	5.46	34.38	100	355	Peak
2389.99	41.83	-12.17	54.00	38.62	32.13	5.46	34.38	100	355	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
2389.99	59.02	-14.98	74.00	55.81	32.13	5.46	34.38	100	62	Peak
2389.99	39.57	-14.43	54.00	36.36	32.13	5.46	34.38	100	62	Average

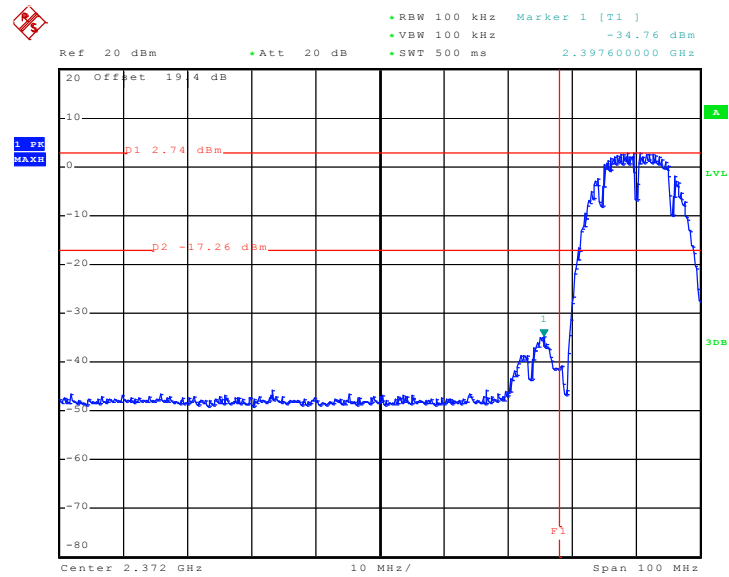
Test Mode :	Mode 6	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Kai Wang

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
2483.5	53.70	-20.3	74.00	50.45	32.27	5.38	34.40	102	5	Peak
2483.5	38.58	-15.42	54.00	35.33	32.27	5.38	34.40	102	5	Average

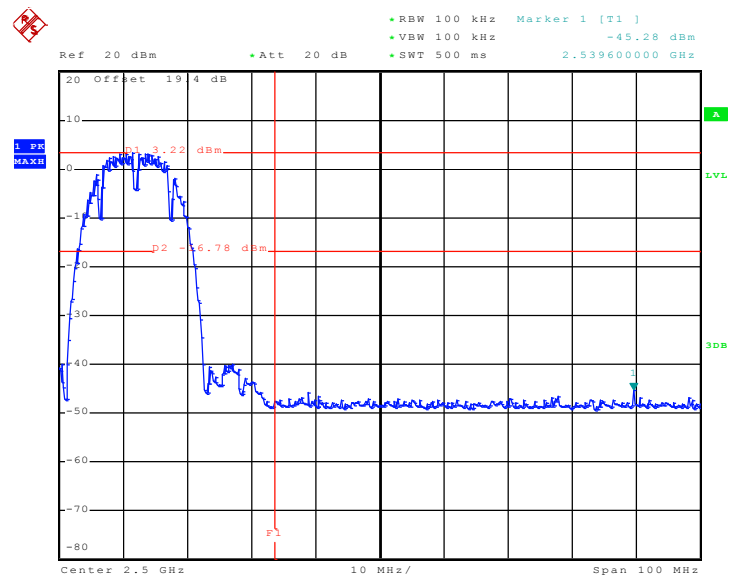
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	50.74	-23.26	74.00	47.49	32.27	5.38	34.40	130	342	Peak
2483.5	36.13	-17.87	54.00	32.88	32.27	5.38	34.40	130	342	Average

**3.3.6 Test Plots of Conducted Band Edges**

Test Mode :	Mode 1 and 3	Temperature :	26.2°C
Test Band :	802.11b	Relative Humidity :	50%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11b Channel 01

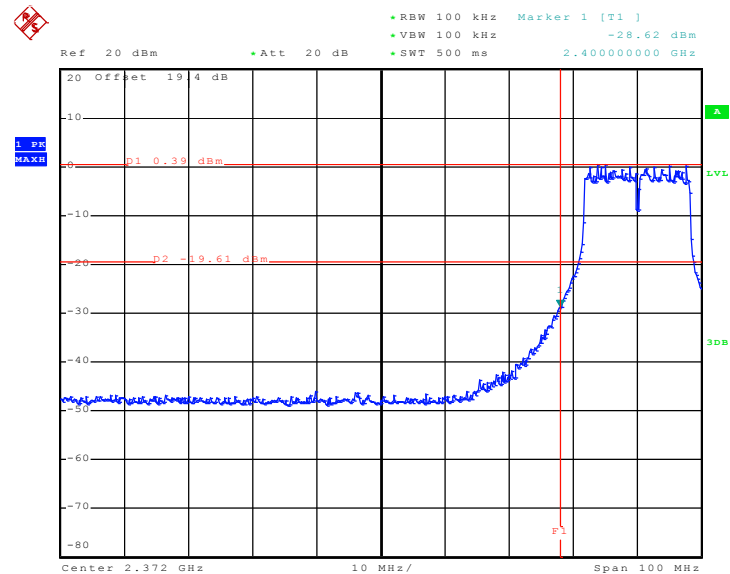
Date: 15.SEP.2009 21:12:29

High Band Edge Plot on 802.11b Channel 11

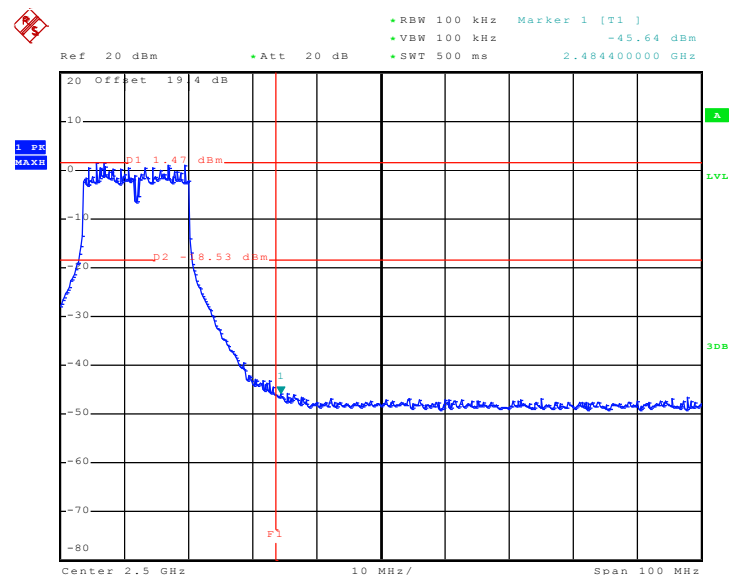
Date: 15.SEP.2009 21:16:03



Test Mode :	Mode 4 and 6	Temperature :	26.2°C
Test Band :	802.11g	Relative Humidity :	50%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11g Channel 01

Date: 15.SEP.2009 21:14:00

High Band Edge Plot on 802.11g Channel 11

Date: 15.SEP.2009 21:15:10

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.

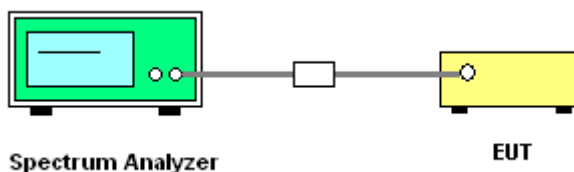
3.4.2 Measuring Instruments

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

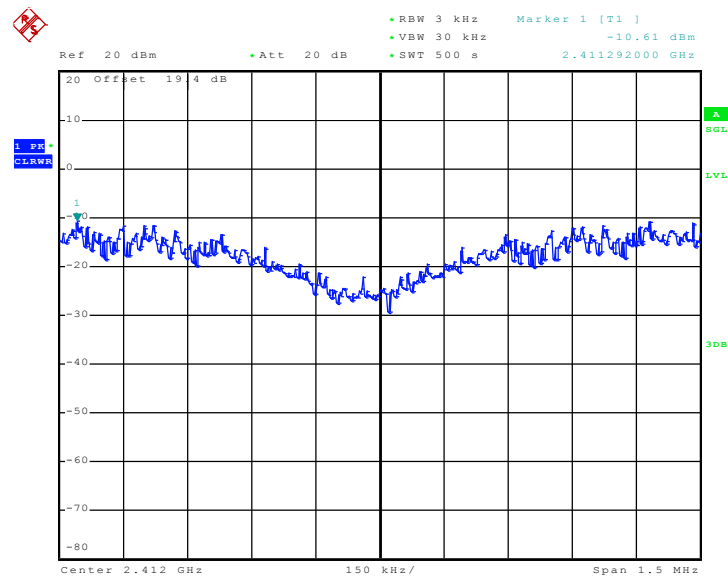


3.4.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	26.2°C
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.61	8	Pass
06	2437	-10.20	8	Pass
11	2462	-10.39	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



Date: 15.SEP.2009 21:30:05



Ref 20 dBm Att 20 dB RBW 3 kHz VBW 30 kHz SWT 500 s Marker 1 [T1] -10.20 dBm 2.436292000 GHz

20 Offset 19.4 dB

1 Vpp
1.65 dB

1

-10

-20

-30

-40

-50

-60

-70

-80

Center 2.437 GHz 150 kHz/ Span 1.5 MHz

Date: 15.SEP.2009 21:40:27

The screenshot shows a Spectrum Analyzer interface with the following details:

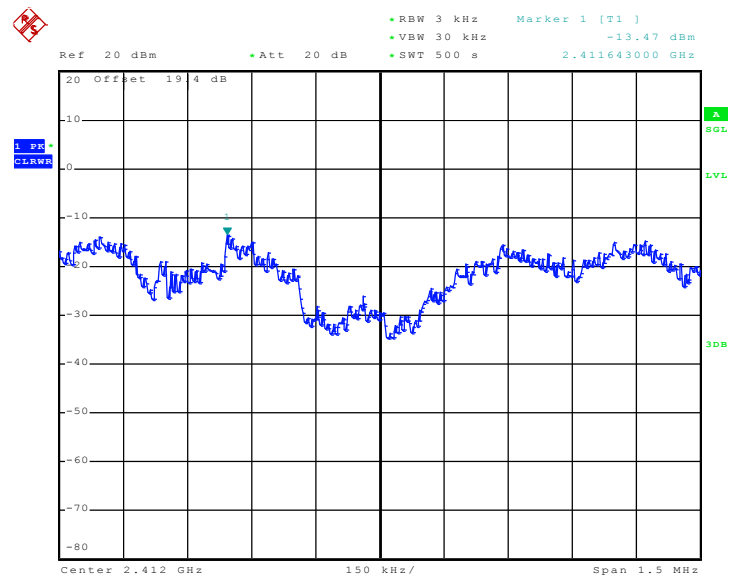
- Top Bar:**
 - Left: A red square icon with a white cross.
 - Center: "Ref 20 dBm" and "Att 20 dB".
 - Right: Measurement parameters: "RBW 3 kHz", "VBW 30 kHz", "SWT 500 s", "Marker 1 [T1]", "-10.39 dBm", and "2.461292000 GHz".
- Left Panel:**
 - Buttons: "1 Freq" and "CLBW".
- Main Display:**
 - Grid: A 10x10 grid with major lines every 10 dB and minor lines every 2 dB.
 - Trace: A blue, noisy signal trace. A green cursor labeled "1" is positioned at approximately -15 dB.
 - Axis Labels: The vertical axis is labeled from -80 to 20 in increments of 10. The horizontal axis is labeled "Center 2.462 GHz", "150 kHz/", and "Span 1.5 MHz".
- Right Panel:**
 - Labels: "A", "SGL", "LVL", and "3dB".

Date: 15.SEP.2009 21:52:27



Test Mode :	Mode 4, 5, 6	Temperature :	26.2°C
Test Engineer :	Ken Hsu	Relative Humidity :	50%

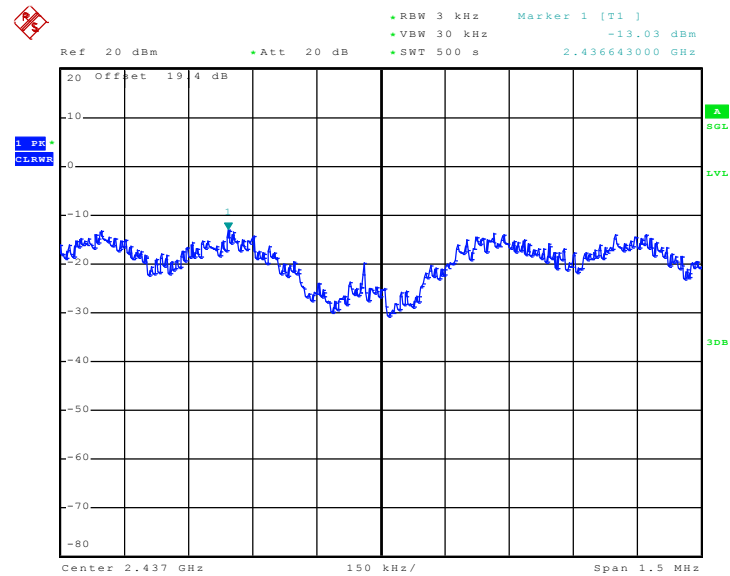
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-13.47	8	Pass
06	2437	-13.03	8	Pass
11	2462	-12.74	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01

Date: 15.SEP.2009 22:05:36

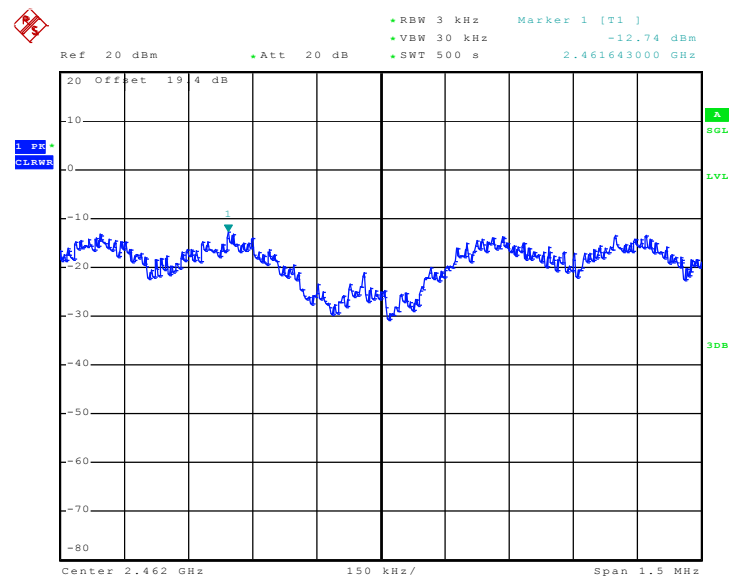


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 15.SEP.2009 22:16:08

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 15.SEP.2009 22:25:26

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.

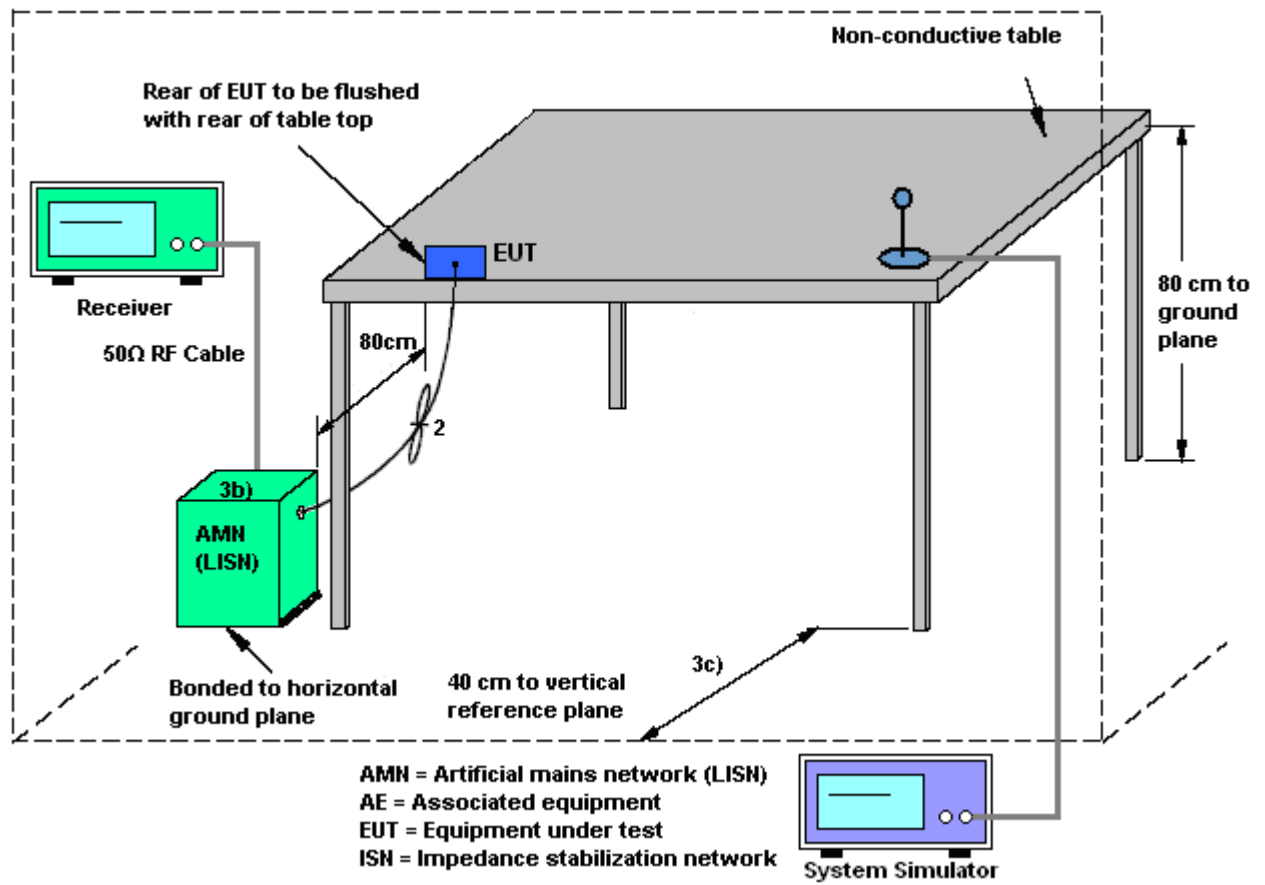
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

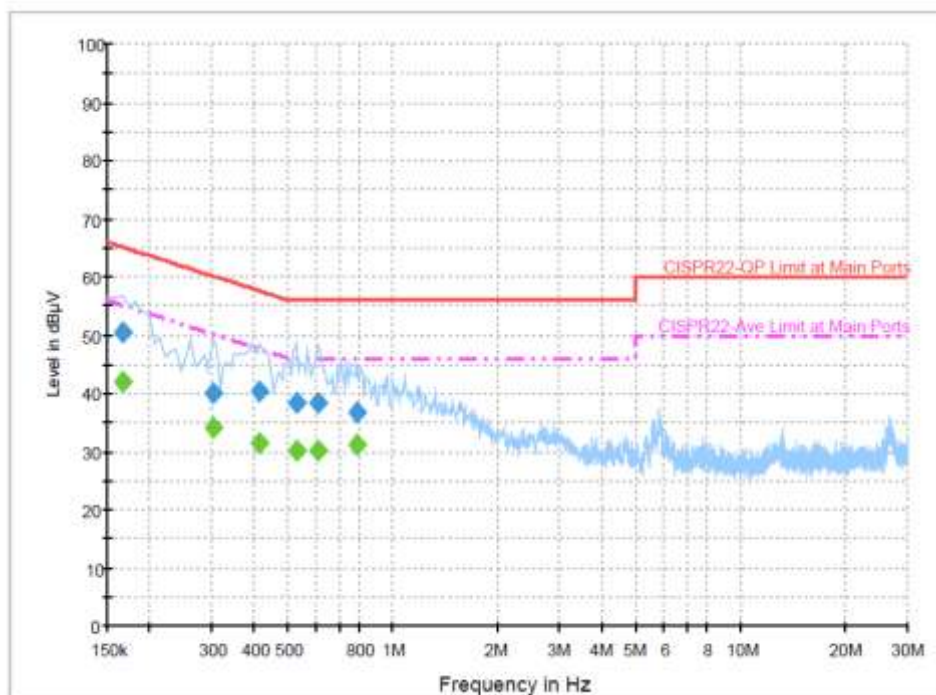
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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°C
Test Engineer :	Cona Huang	Relative Humidity :	45~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone + Camera + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



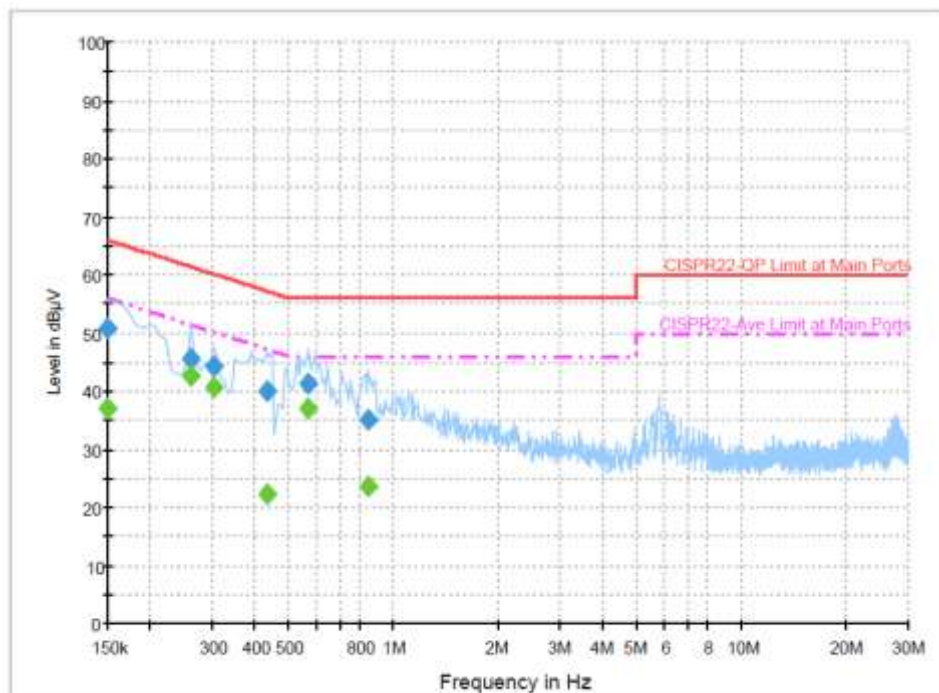
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	50.4	Off	L1	19.5	14.8	65.2
0.302000	40.0	Off	L1	19.4	20.2	60.2
0.414000	40.3	Off	L1	19.4	17.3	57.6
0.526000	38.5	Off	L1	19.5	17.5	56.0
0.606000	38.2	Off	L1	19.5	17.8	56.0
0.782000	36.7	Off	L1	19.5	19.3	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	42.1	Off	L1	19.5	13.1	55.2
0.302000	34.0	Off	L1	19.4	16.2	50.2
0.414000	31.4	Off	L1	19.4	16.2	47.6
0.526000	30.1	Off	L1	19.5	15.9	46.0
0.606000	30.1	Off	L1	19.5	16.0	46.0
0.782000	31.1	Off	L1	19.5	14.9	46.0

Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Cona Huang	Relative Humidity :	45~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band II Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone + Camera + USB Cable (Link with Notebook)		
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)
0.150000	51.0	Off	N	19.5	15.0	66.0
0.262000	45.4	Off	N	19.4	16.0	61.4
0.302000	44.1	Off	N	19.5	16.1	60.2
0.430000	40.0	Off	N	19.4	17.3	57.3
0.566000	41.3	Off	N	19.5	14.8	56.0
0.846000	35.0	Off	N	19.5	21.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	37.1	Off	N	19.5	18.9	56.0
0.262000	42.8	Off	N	19.4	8.6	51.4
0.302000	40.8	Off	N	19.5	9.4	50.2
0.430000	22.2	Off	N	19.4	25.1	47.3
0.566000	37.1	Off	N	19.5	8.9	46.0
0.846000	23.7	Off	N	19.5	22.3	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

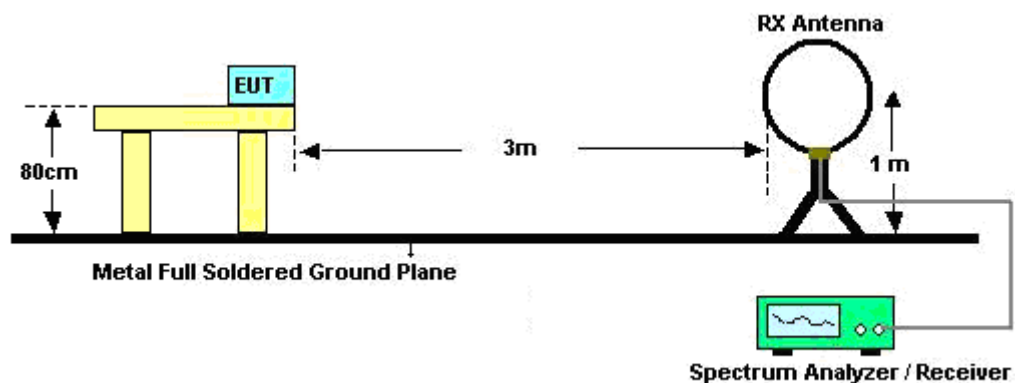
See list of measuring instruments of this test report.

3.6.3 Test Procedures

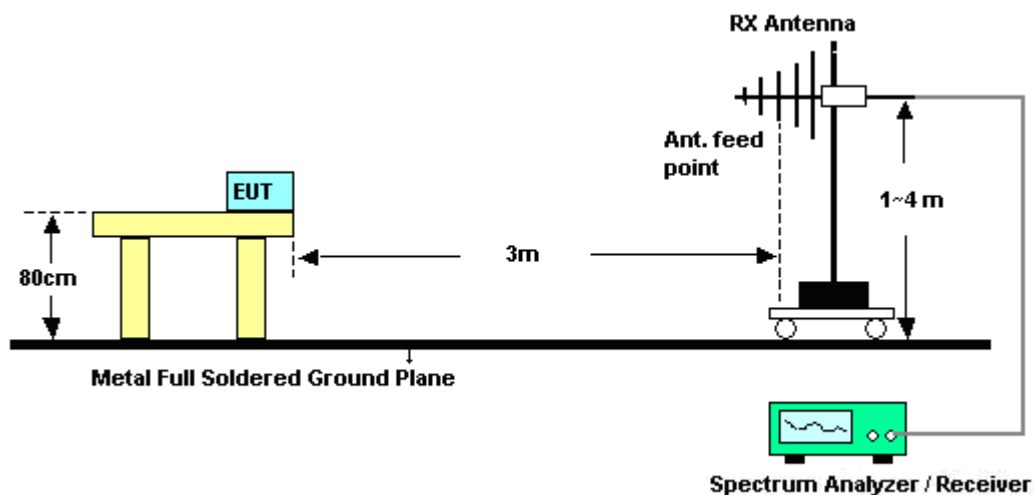
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto;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

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	Kai Wang	Temperature :	24~25°C	
		Relative Humidity :	46~47%	
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.

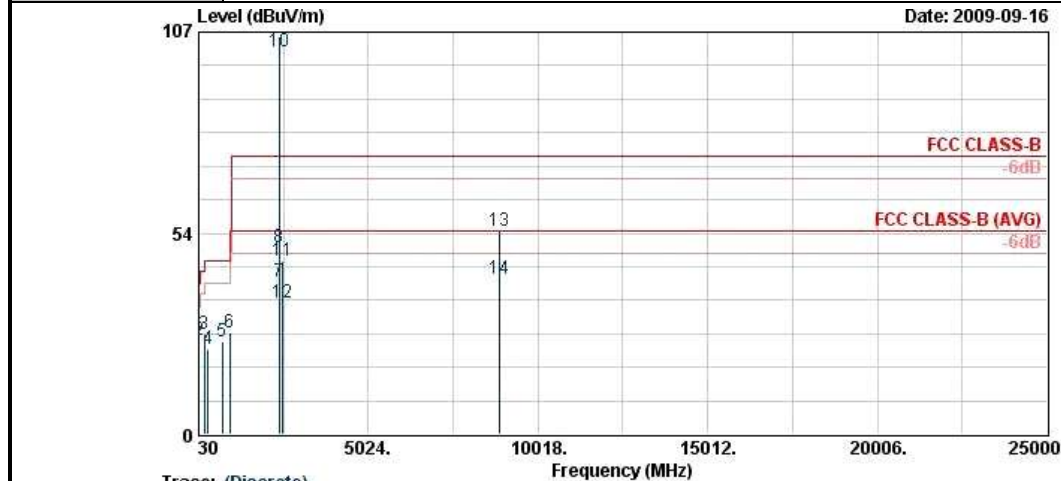
Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

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 :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 Project : FR 981906

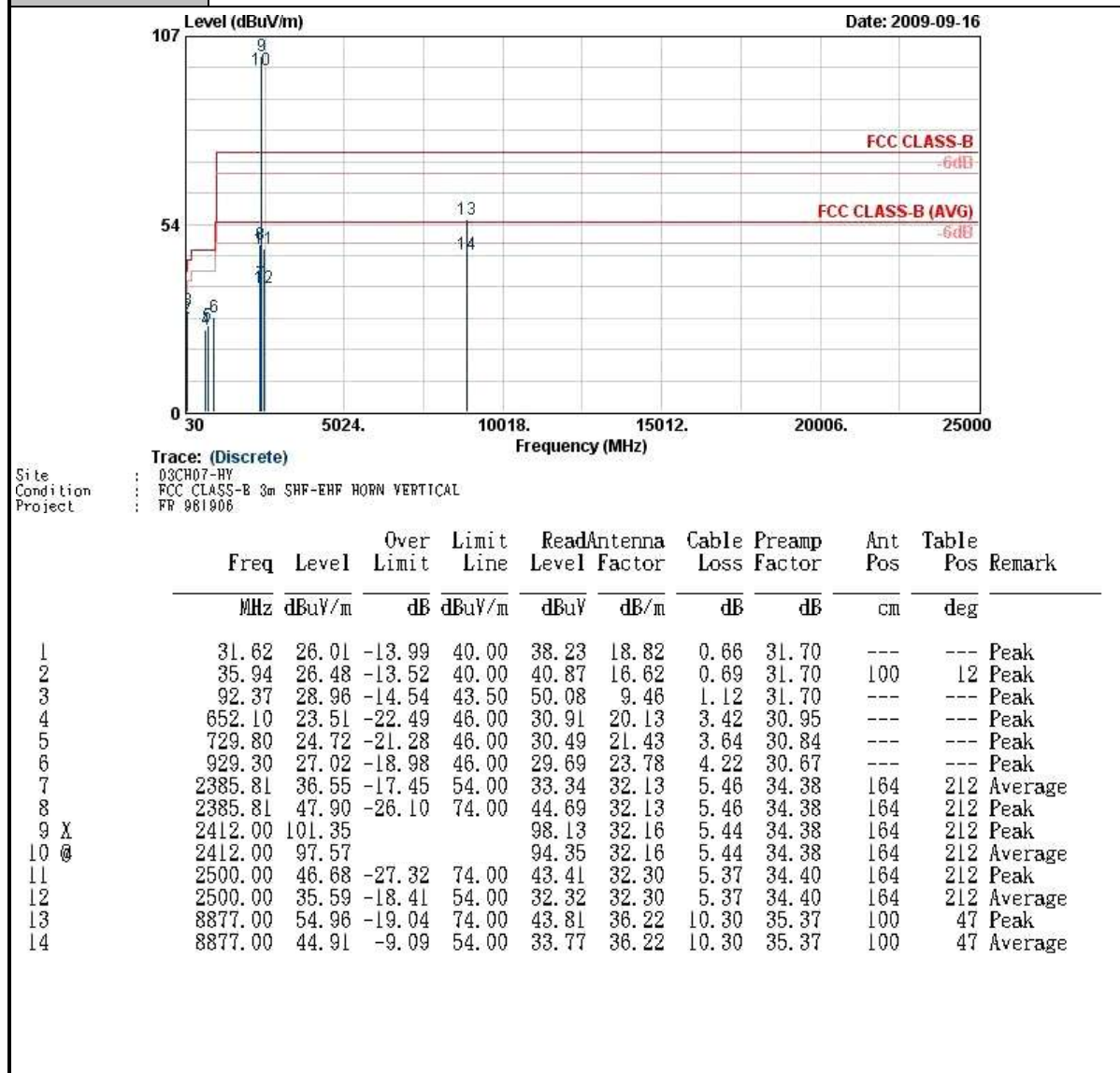
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	27.04	-12.96	40.00	38.20	19.90	0.64	31.70	100	38	Peak
2	35.13	25.23	-14.77	40.00	39.05	17.20	0.68	31.70	---	---	Peak
3	192.54	26.64	-16.86	43.50	46.93	9.64	1.67	31.61	---	---	Peak
4	300.00	22.56	-23.44	46.00	38.03	13.80	2.13	31.40	---	---	Peak
5	724.20	24.48	-21.52	46.00	30.36	21.34	3.62	30.85	---	---	Peak
6	948.90	27.01	-18.99	46.00	29.03	24.37	4.26	30.65	---	---	Peak
7	2386.57	40.61	-13.39	54.00	37.40	32.13	5.46	34.38	100	354	Average
8	2386.57	49.88	-24.12	74.00	46.67	32.13	5.46	34.38	100	354	Peak
9 X	2412.00	105.86			102.63	32.16	5.44	34.38	100	354	Peak
10 @	2412.00	101.89			98.67	32.16	5.44	34.38	100	354	Average
11	2484.00	46.14	-27.86	74.00	42.88	32.27	5.38	34.40	100	354	Peak
12	2484.00	34.82	-19.18	54.00	31.56	32.27	5.38	34.40	100	354	Average
13	8898.00	54.20	-19.80	74.00	43.03	36.24	10.31	35.38	100	222	Peak
14	8898.00	41.19	-12.81	54.00	30.02	36.24	10.31	35.38	100	222	Average



FCC RF Test Report

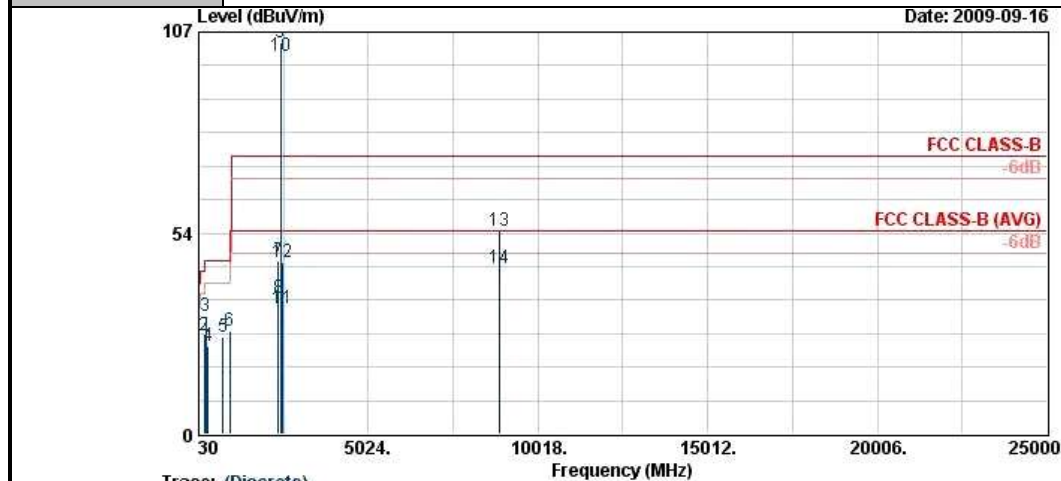
Report No. : FR981906A

Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

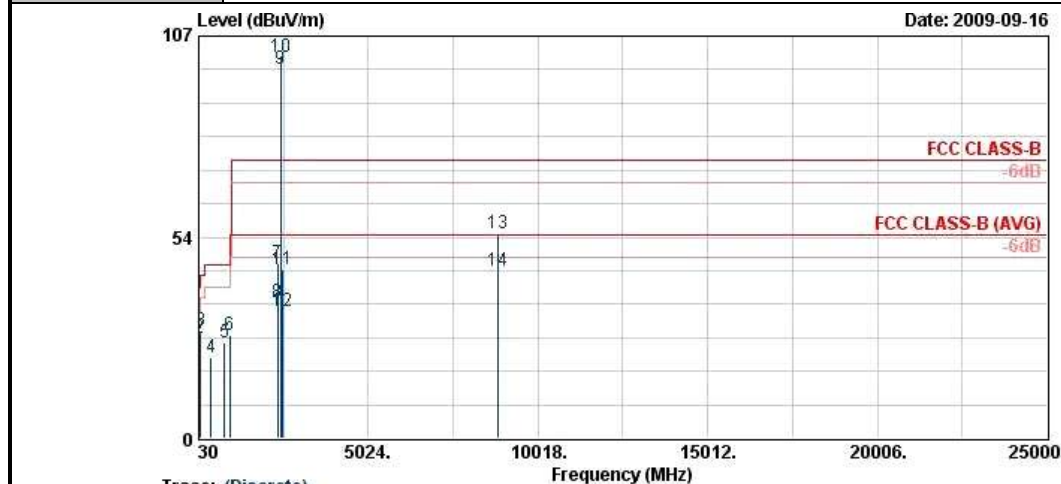


Site : 03CH07-RV
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 981906

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.00	27.66	-12.34	40.00	38.82	19.90	0.64	31.70	100	255 Peak
2	192.54	26.35	-17.15	43.50	46.65	9.64	1.67	31.61	---	---
3	243.57	31.57	-14.43	46.00	48.96	12.23	1.89	31.51	---	---
4	302.10	23.64	-22.36	46.00	39.01	13.88	2.14	31.39	---	---
5	747.30	25.69	-20.31	46.00	31.06	21.75	3.69	30.81	---	---
6	951.00	27.53	-18.47	46.00	29.52	24.40	4.26	30.65	---	---
7	2382.00	46.14	-27.86	74.00	42.94	32.11	5.47	34.38	100	353 Peak
8	2382.00	36.03	-17.97	54.00	32.83	32.11	5.47	34.38	100	353 Average
9 X	2437.00	104.34			101.10	32.22	5.41	34.39	100	353 Peak
10 @	2437.00	100.72			97.48	32.22	5.41	34.39	100	353 Average
11	2484.00	33.49	-20.51	54.00	30.23	32.27	5.38	34.40	100	353 Average
12	2484.00	45.72	-28.28	74.00	42.46	32.27	5.38	34.40	100	353 Peak
13	8862.00	53.90	-20.10	74.00	42.77	36.21	10.29	35.37	100	41 Peak
14	8862.00	44.01	-9.99	54.00	32.88	36.21	10.29	35.37	100	41 Average



Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

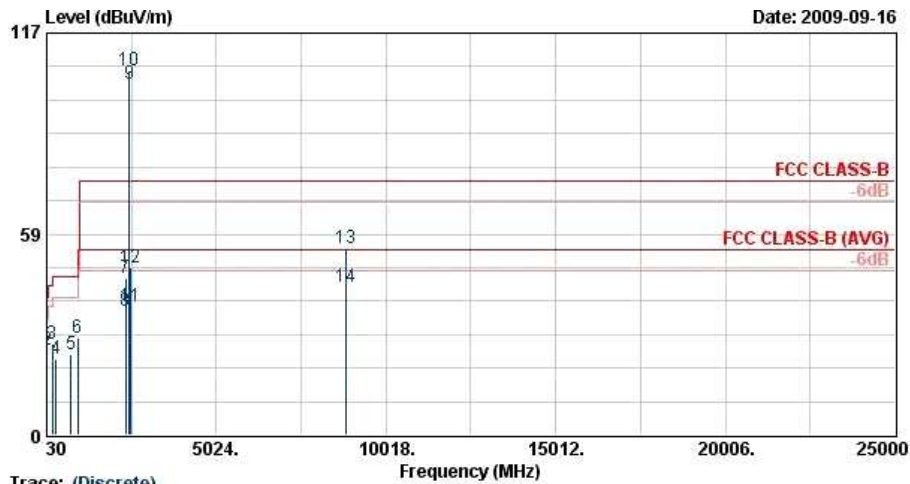


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 981906

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	31.89	26.54	-13.46	40.00	38.77	18.82	0.66	31.70	100	123 Peak
2	34.86	26.54	-13.46	40.00	40.36	17.20	0.68	31.70	---	Peak
3	92.37	28.74	-14.76	43.50	49.86	9.46	1.12	31.70	---	Peak
4	399.40	21.46	-24.54	46.00	33.72	16.40	2.54	31.20	---	Peak
5	797.70	25.63	-20.37	46.00	30.60	21.89	3.84	30.71	---	Peak
6	934.90	27.62	-18.38	46.00	30.10	23.96	4.23	30.67	---	Peak
7	2356.00	46.57	-27.43	74.00	43.38	32.08	5.49	34.37	169	213 Peak
8	2356.00	36.34	-17.66	54.00	33.15	32.08	5.49	34.37	169	213 Average
9 @	2437.00	98.06			94.82	32.22	5.41	34.39	169	213 Average
10 X	2437.00	101.60			98.37	32.19	5.43	34.39	169	213 Peak
11	2494.00	44.96	-29.04	74.00	41.69	32.30	5.37	34.40	169	213 Peak
12	2494.00	33.82	-20.18	54.00	30.55	32.30	5.37	34.40	169	213 Average
13	8853.00	54.40	-19.60	74.00	43.27	36.21	10.29	35.37	100	45 Peak
14	8853.00	44.57	-9.43	54.00	33.44	36.21	10.29	35.37	100	45 Average



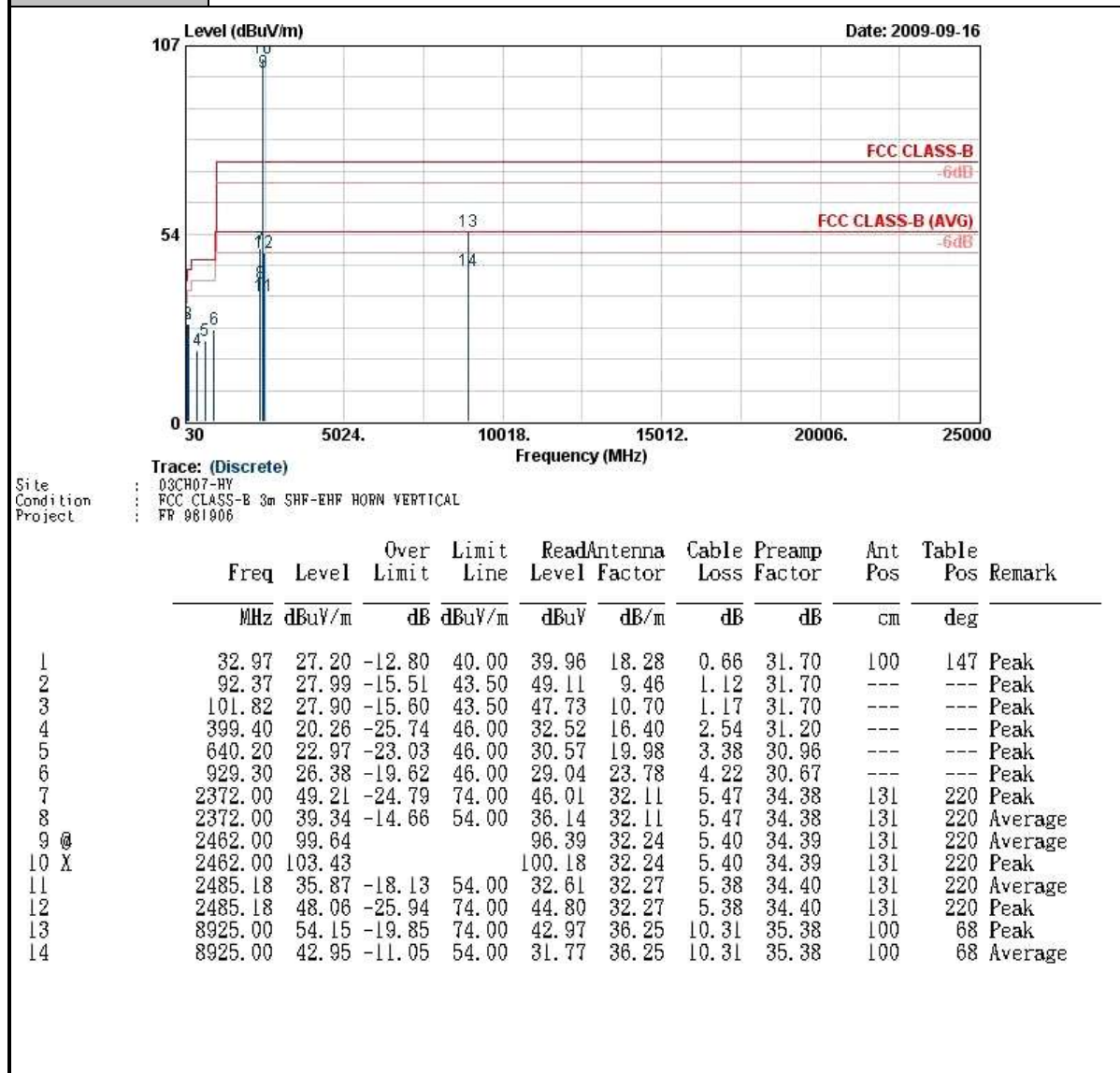
Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	30.00	27.83	-12.17	40.00	38.99	19.90	0.64	31.70	100	254 Peak
2	39.18	24.87	-15.13	40.00	40.97	14.88	0.72	31.70	---	Peak
3	202.53	26.63	-16.87	43.50	46.25	10.25	1.71	31.59	---	Peak
4	309.80	22.27	-23.73	46.00	37.41	14.07	2.17	31.38	---	Peak
5	748.70	23.56	-22.44	46.00	28.88	21.78	3.70	30.80	---	Peak
6	940.50	28.42	-17.58	46.00	30.70	24.14	4.24	30.66	---	Peak
7	2364.00	45.84	-28.16	74.00	42.65	32.08	5.49	34.37	178	9 Peak
8	2364.00	35.98	-18.02	54.00	32.79	32.08	5.49	34.37	178	9 Average
9 @	2462.00	102.26			99.01	32.24	5.40	34.39	178	9 Average
10 X	2462.00	105.96			102.71	32.24	5.40	34.39	178	9 Peak
11	2483.50	37.50	-16.50	54.00	34.24	32.27	5.38	34.40	178	9 Average
12	2483.50	48.80	-25.20	74.00	45.54	32.27	5.38	34.40	178	9 Peak
13	8853.00	54.51	-19.49	74.00	43.37	36.21	10.29	35.37	100	75 Peak
14	8853.00	43.01	-10.99	54.00	31.88	36.21	10.29	35.37	100	75 Average

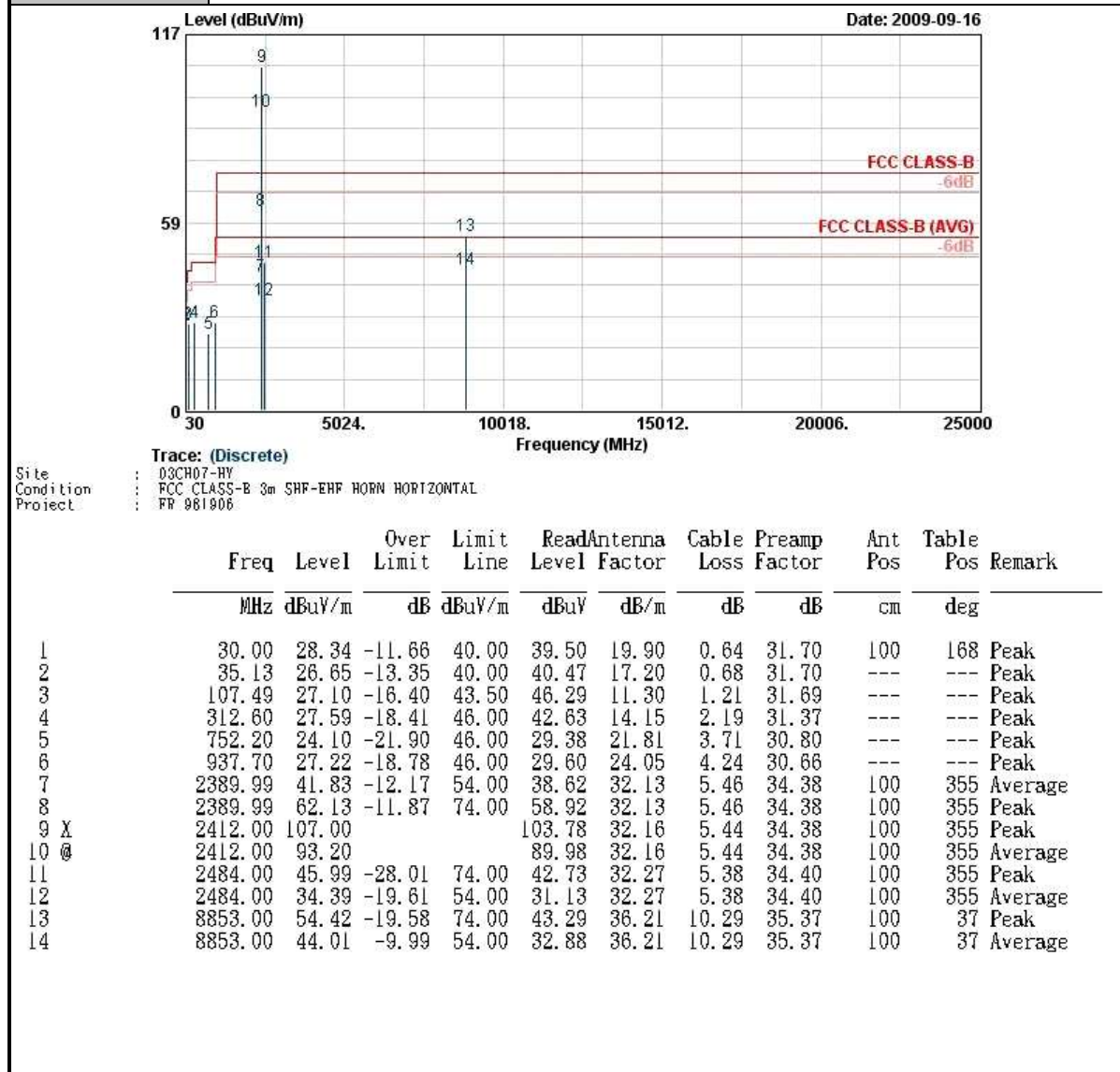


Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



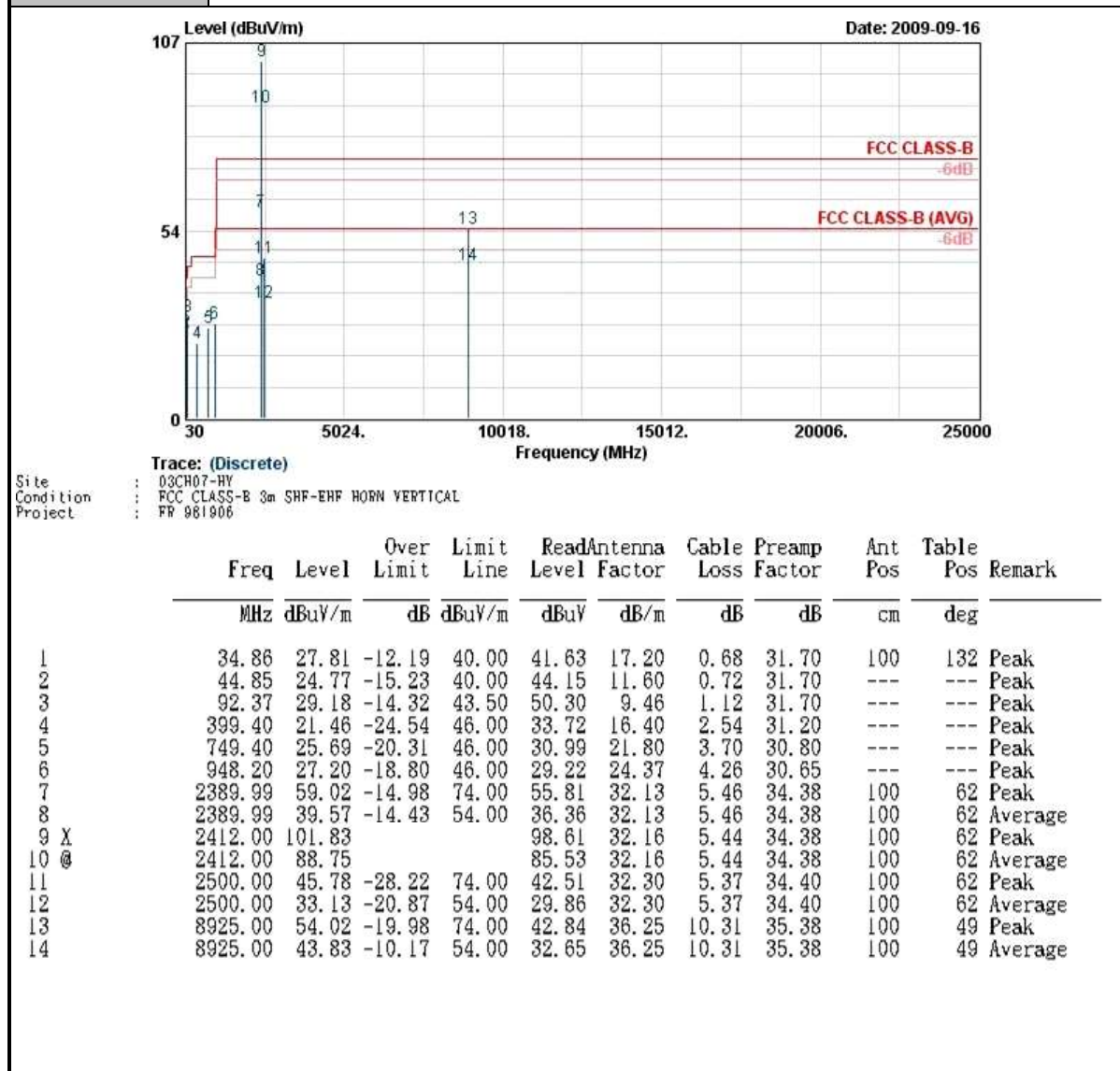


Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



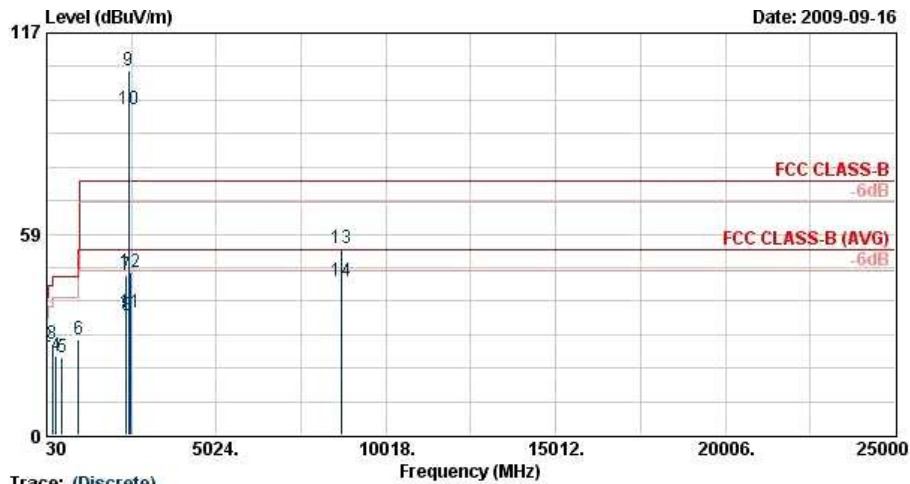


Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

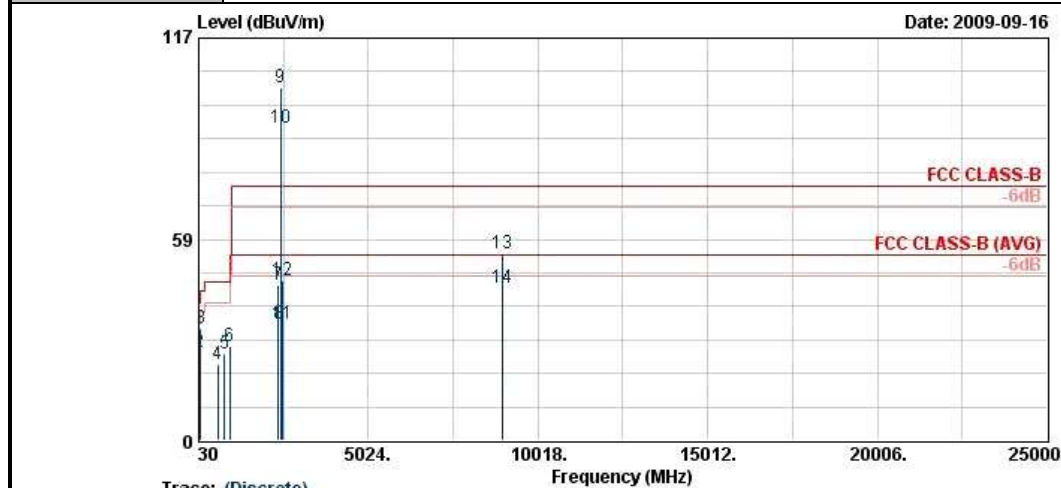


Site : 03CH07-RY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 981906

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	30.00	27.68	-12.32	40.00	38.84	19.90	0.64	31.70	100	25 Peak
2	35.13	25.69	-14.31	40.00	39.51	17.20	0.68	31.70	---	Peak
3	192.54	26.43	-17.07	43.50	46.72	9.64	1.67	31.61	---	Peak
4	307.70	22.91	-23.09	46.00	38.12	14.02	2.16	31.38	---	Peak
5	491.80	22.41	-23.59	46.00	32.57	18.04	2.91	31.11	---	Peak
6	960.10	27.94	-26.06	54.00	29.94	24.36	4.29	30.64	---	Peak
7	2380.00	46.64	-27.36	74.00	43.44	32.11	5.47	34.38	180	12 Peak
8	2380.00	34.73	-19.27	54.00	31.53	32.11	5.47	34.38	180	12 Average
9 X	2437.00	106.33			103.08	32.22	5.41	34.39	180	12 Peak
10 @	2437.00	94.74			91.50	32.22	5.41	34.39	180	12 Average
11	2484.00	35.88	-18.12	54.00	32.62	32.27	5.38	34.40	180	12 Average
12	2484.00	47.36	-26.64	74.00	44.10	32.27	5.38	34.40	180	12 Peak
13	8718.00	54.48	-19.52	74.00	43.44	36.13	10.25	35.34	100	221 Peak
14	8718.00	44.81	-9.19	54.00	33.77	36.13	10.25	35.34	100	221 Average



Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

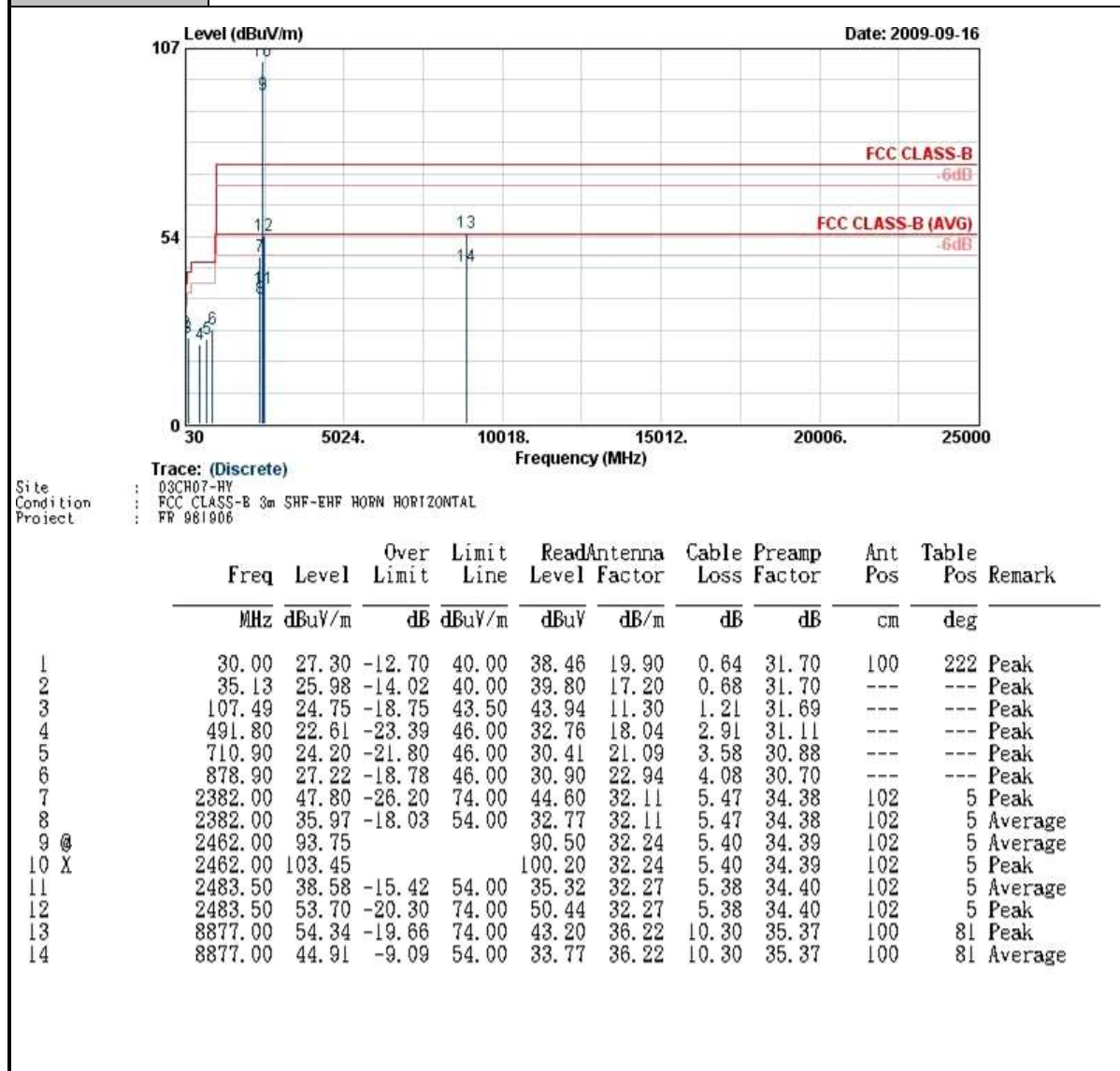


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 981906

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB		deg	
1	34.86	28.39	-11.61	40.00	42.21	17.20	0.68	31.70	---	Peak
2	44.85	25.45	-14.55	40.00	44.83	11.60	0.72	31.70	---	Peak
3	84.54	32.68	-7.32	40.00	55.10	8.24	1.04	31.70	100	56 Peak
4	598.20	22.19	-23.81	46.00	30.47	19.48	3.24	31.00	---	Peak
5	799.80	25.20	-20.80	46.00	30.15	21.90	3.85	30.70	---	Peak
6	939.80	27.44	-18.56	46.00	29.76	24.11	4.24	30.66	---	Peak
7	2374.00	45.41	-28.59	74.00	42.21	32.11	5.47	34.38	129	149 Peak
8	2374.00	34.11	-19.89	54.00	30.91	32.11	5.47	34.38	129	149 Average
9 X	2437.00	102.64			99.40	32.22	5.41	34.39	129	149 Peak
10 @	2437.00	90.93			87.69	32.22	5.41	34.39	129	149 Average
11	2484.00	33.95	-20.05	54.00	30.69	32.27	5.38	34.40	129	149 Average
12	2484.00	46.72	-27.28	74.00	43.46	32.27	5.38	34.40	129	149 Peak
13	8949.00	54.27	-19.73	74.00	43.07	36.27	10.32	35.39	100	74 Peak
14	8949.00	44.22	-9.78	54.00	33.02	36.27	10.32	35.39	100	74 Average

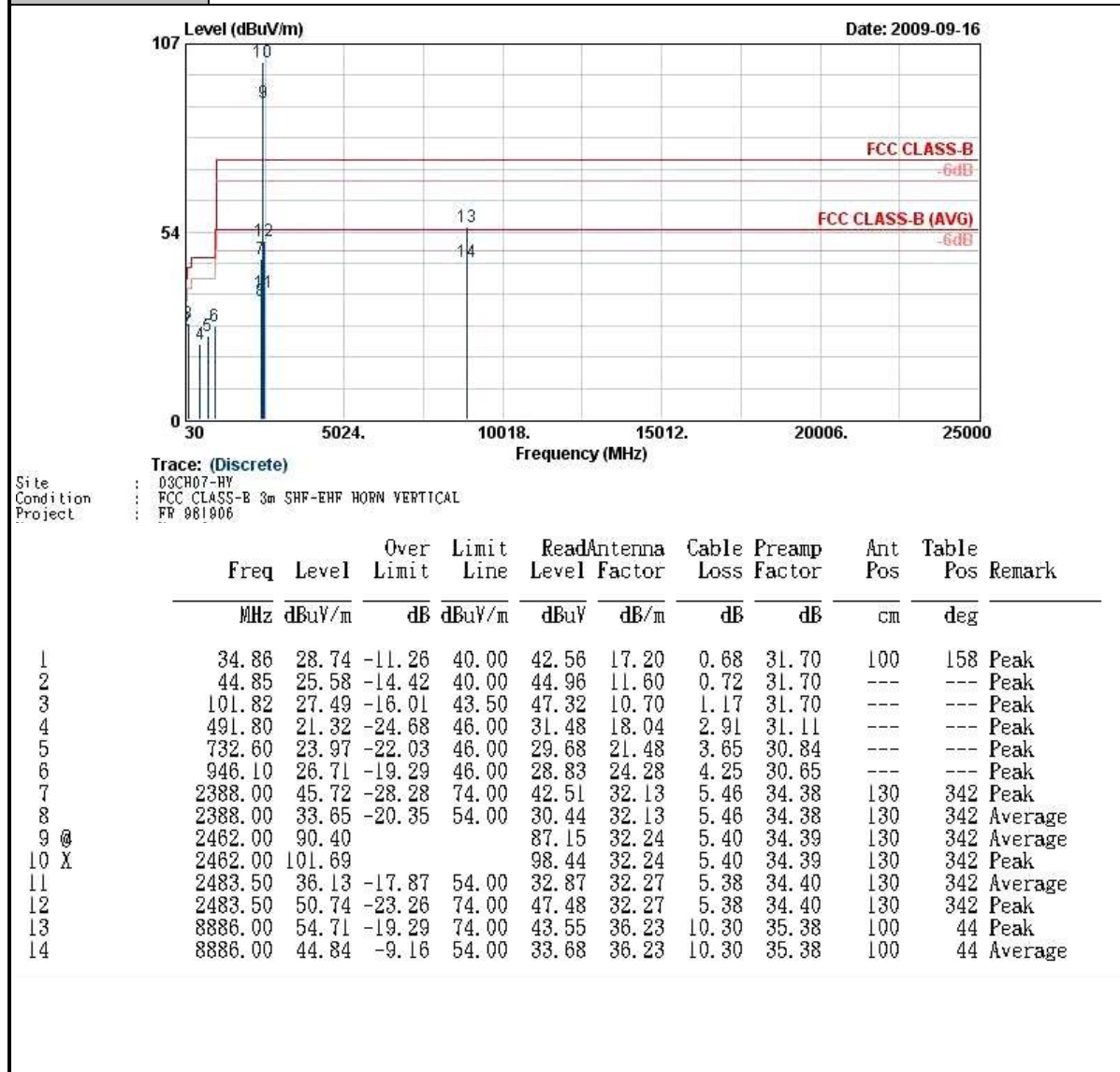


Test Mode :	Mode 6	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 6	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





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	100055	9kHz~40GHz	Jun. 23, 2009	Jun. 22, 2010	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 17, 2009	Sep. 16, 2010	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 10, 2009	Sep. 09, 2010	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 05, 2009	Aug. 04, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 26, 2008	Nov. 25, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 26, 2008	Nov. 25, 2009	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	105934	N/A	Nov. 11, 2008	Nov. 10, 2010	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Nov. 20, 2008	Nov. 19, 2009	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 02, 2008	Dec. 01, 2009	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)

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 $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	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 $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	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 $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				

6 Certification of TAF Accreditation


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

Certificate No. : L1190-100107

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 Arrangement with Foreign Authorities


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

P1, total 21 pages

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 EP981906 as below.