

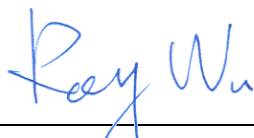
FCC RF Test Report

APPLICANT : Acer Incorporated
EQUIPMENT : Smart HandHeld _ Android
BRAND NAME : Acer
MODEL NAME : S100
FCC ID : HLZSHS100
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Sep. 22, 2009 and completely tested on Oct. 12, 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
FR982009-02B	Rev. 01	Initial issue of report	Oct. 12, 2009

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(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 15.5 dB at 0.51 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.00 dB at 2389.99 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Acer Incorporated

8F., No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien 221, Taiwan

1.2 Manufacturer

Compal Communication (Nanjing)

Nanjing Jingning Export Processing Zone (South Area) No. 68-2 Suyuan Street

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart HandHeld _ Android
Brand Name	Acer
Model Name	S100
FCC ID	HLZSHS100
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 : 17.68 dBm (58.61 mW) 802.11g : 22.69 dBm (185.78 mW)
Antenna Type	PIFA Antenna with gain 0.15 dBi
HW Version	1.0
SW Version	Modem : A1-00.18.07 OS : Donut.eng.poseng.20090907.201329
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 1	Brand Name	PHIHONG
	Model Name	PSAC05R-050
	Part Number	AP.0050P.015
	Power Rating	I/P:100-240Vac, 50-60Hz, 300mA, 12-18VA; O/P: 5Vdc, 1A
	DC Power Cord Type	1.5 meter shielded cable without ferrite core
AC Adapter 2	Brand Name	PHIHONG
	Model Name	PSAC05R-050
	Part Number	AP.0050P.008
	Power Rating	I/P:100-240Vac, 50-60Hz, 300mA, 12-18VA; O/P: 5Vdc, 1A
	DC Power Cord Type	1.5 meter non-shielded cable without ferrite core
Battery	Brand Name	Acer
	Model Name	A7BTA020F
	Power Rating	3.7Vdc, 1350mAh, 4.995Wh
	Type	Li-ion
Earphone 1	Brand Name	Merry
	Model Name	EMC292-003-01
	Signal Line Type	1.6 meter non-shielded cable without ferrite core
Earphone 2	Brand Name	KINGSTATE
	Model Name	KJAH4028AENCB
	Signal Line Type	1.6 meter non-shielded cable without ferrite core
USB Cable 1	Brand Name	Golden Bridge
	Model Name	AS51-09030018
	Signal Line Type	1.0 meter non-shielded cable without ferrite core
USB Cable 2	Brand Name	PHIHONG
	Model Name	DCM1000(AI-H)
	Signal Line Type	1.0 meter non-shielded cable without ferrite core
LCD Panel	Brand Name	AUO
	Model Name	H353VL01 V2

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.
3. Only AC Adapter 1 was performed on all the tests.

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

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 Pre-Scanned RF Power (dBm)					
Channel	Frequency (MHz)	Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	14.45	14.33	13.98	14.20
CH 06	2437 MHz	14.27	14.22	14.01	14.21
CH 11	2462 MHz	13.33	13.25	13.13	13.37

802.11g Pre-Scanned 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	15.88	15.58	15.30	15.30	15.71	15.49	15.78	15.50
CH 06	2437 MHz	15.77	15.51	15.45	15.40	15.64	15.68	15.51	15.61
CH 11	2462 MHz	14.87	14.78	15.12	15.11	14.67	14.64	14.89	14.86

Remark:

1. For WLAN RF power, the pre-scanned RF power was measured by power meter.
2. The 802.11b data rates were set in 1 Mbps and 802.11g data rates were set in 6 Mbps for all the test cases, due to the highest RF output power.
3. The EUT is programmed to transmit signals continuously for all testing.

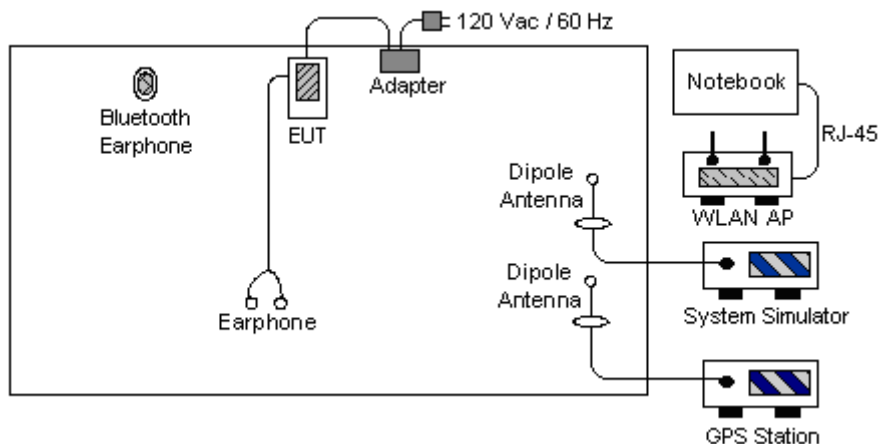
2.2 Test Mode

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

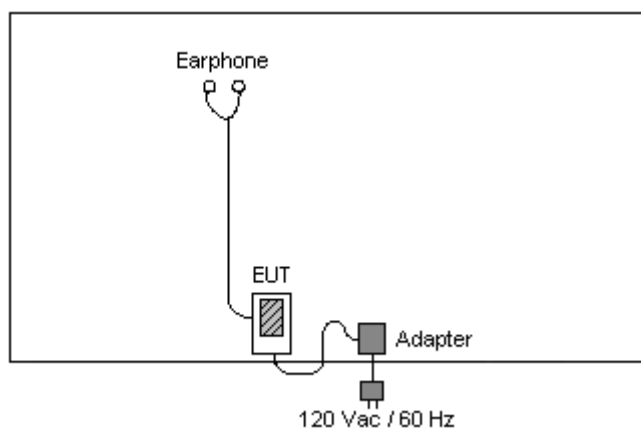
Test Cases		
Test Item	802.11b	802.11g
Conducted TCs	Mode 1 : CH01_2412 MHz	Mode 4 : CH01_2412 MHz
	Mode 2 : CH06_2437 MHz	Mode 5 : CH06_2437 MHz
	Mode 3 : CH11_2462 MHz	Mode 6 : CH11_2462 MHz
Radiated TCs	Mode 1 : CH01_2412 MHz + Adapter 1 + Earphone 1	Mode 4 : CH01_2412 MHz + Adapter 1 + Earphone 1
	Mode 2 : CH06_2437 MHz + Adapter 1 + Earphone 1	Mode 5 : CH06_2437 MHz + Adapter 1 + Earphone 1
	Mode 3 : CH11_2462 MHz + Adapter 1 + Earphone 1	Mode 6 : CH11_2462 MHz + Adapter 1 + Earphone 1
		Mode 7 : CH01_2412 MHz + Adapter 1 + Earphone 2
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 1 + MPEG4 + Adapter 2	
	Mode 2 : WCDMA Band V Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Camera + Adapter 1	
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.		

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.4 RF Utility

The programmed RF utility, "WIFI RF Test" 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.

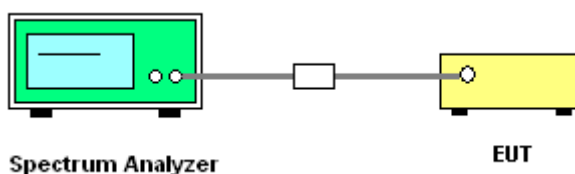
3.1.2 Measuring Instruments

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

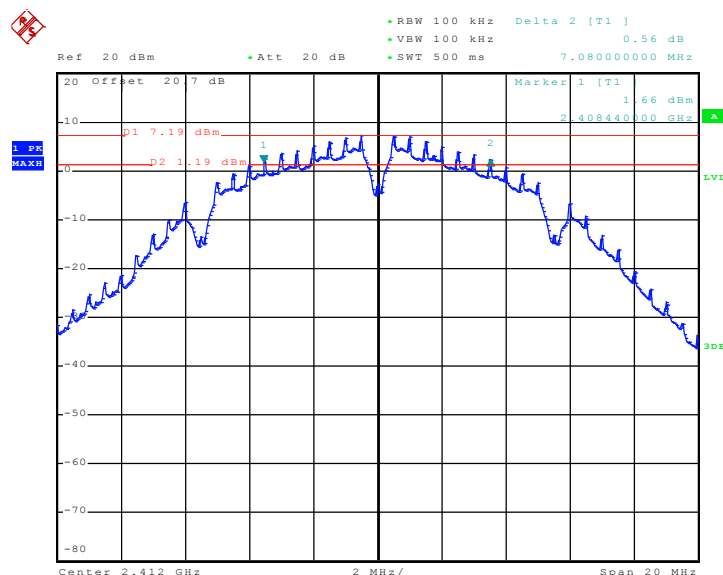


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	27.4℃
Test Engineer :	Ken Hsu	Relative Humidity :	49%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.08	0.5	Pass
06	2437	7.04	0.5	Pass
11	2462	7.08	0.5	Pass

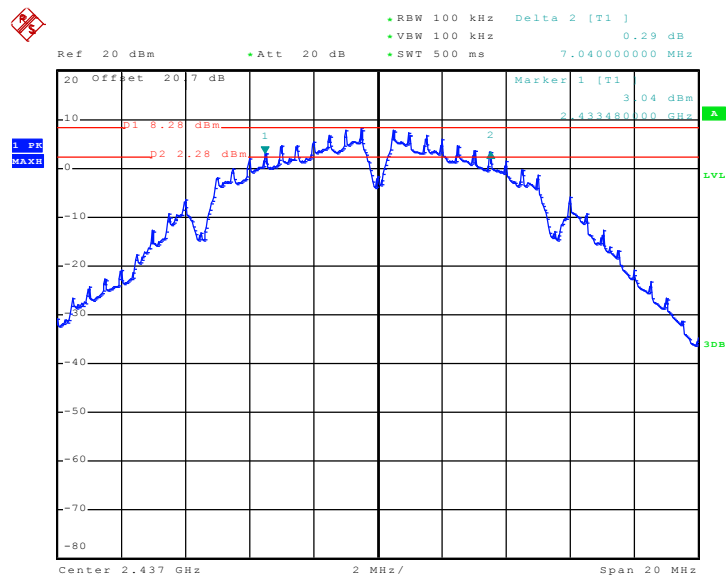
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 30.AUG.2009 23:02:44

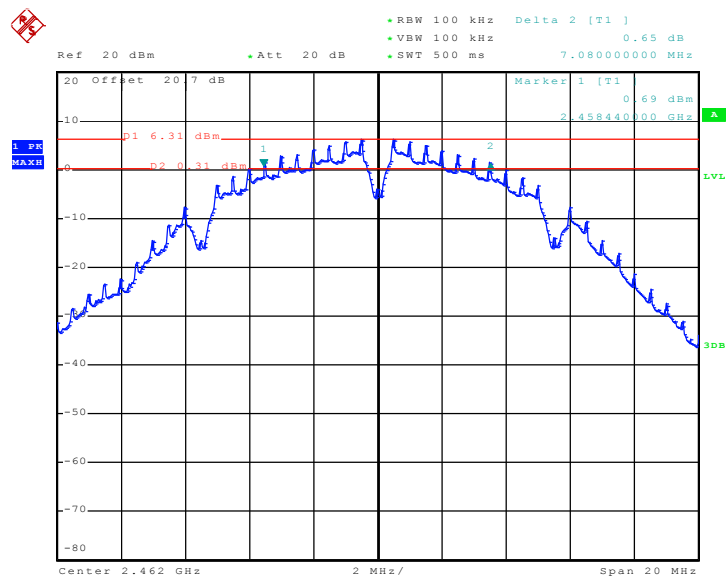


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 31.AUG.2009 14:35:15

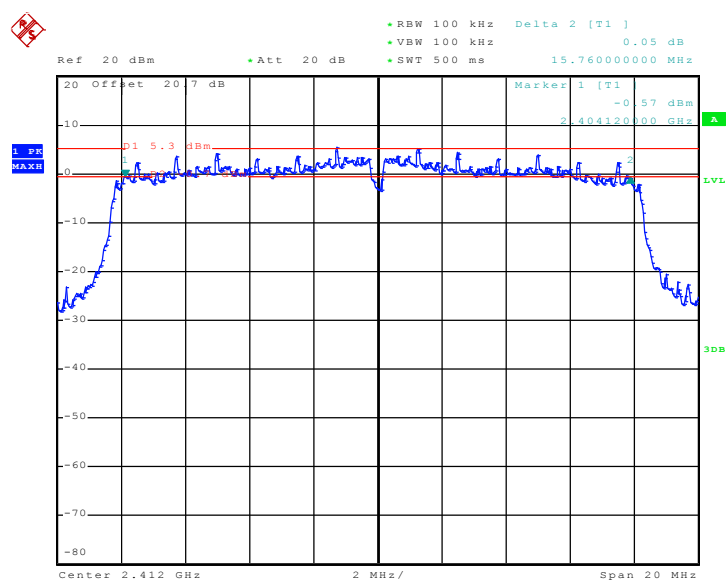
Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



Date: 31.AUG.2009 14:38:56

Test Mode :	Mode 4, 5, 6	Temperature :	27.4°C
Test Engineer :	Ken Hsu	Relative Humidity :	49%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.76	0.5	Pass
06	2437	15.68	0.5	Pass
11	2462	15.68	0.5	Pass

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


Date: 30.AUG.2009 22:52:16



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



3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

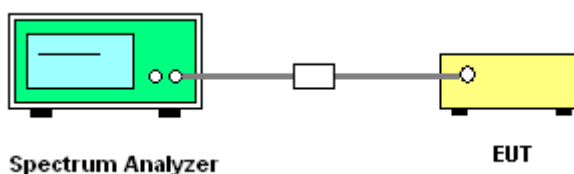
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

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

3.2.4 Test Setup

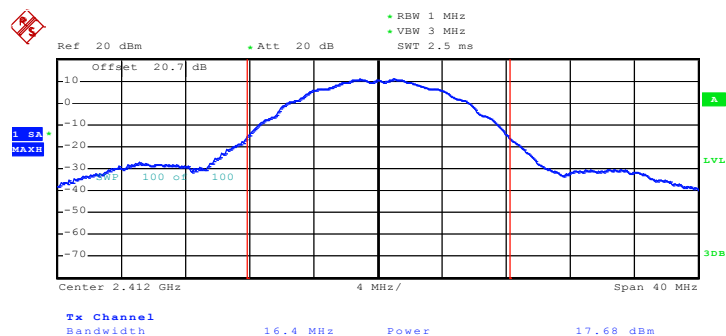


3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	27.4°C
Test Engineer :	Ken Hsu	Relative Humidity :	49%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.68	30	Pass
06	2437	16.94	30	Pass
11	2462	16.18	30	Pass

Mode 1 : Output Power Plot on 802.11b Channel 01



Date: 31.AUG.2009 10:19:02



Ref 20 dBm Att 20 dB SWT 2.5 ms

Offset 20.7 dB

1. SA MAXH

100 0 100

Center 2.437 GHz 4 MHz/ Span 40 MHz

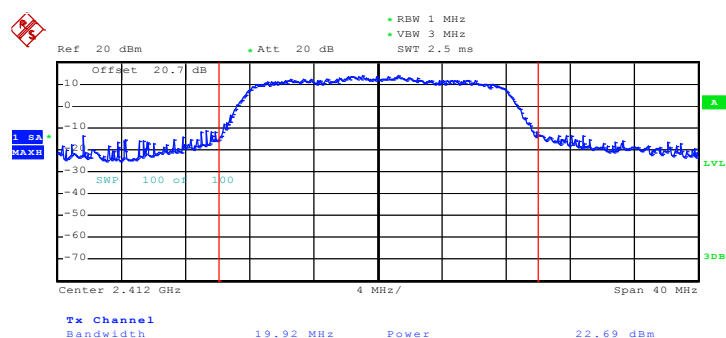
Tx Channel Bandwidth 16.32 MHz Power 16.94 dBm

Date: 31.AUG.2009 10:20:38

Date: 31.AUG.2009 10:21:40

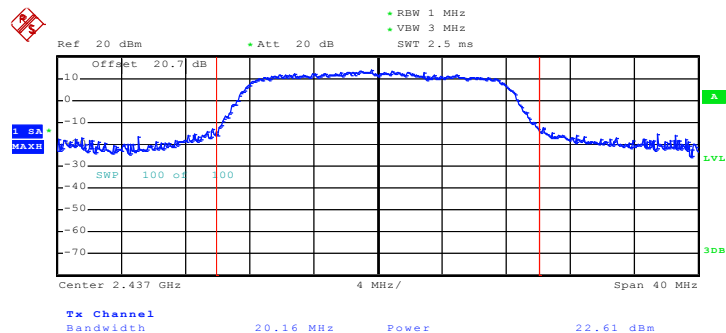
Test Mode :	Mode 4, 5, 6	Temperature :	27.4°C
Test Engineer :	Ken Hsu	Relative Humidity :	49%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.69	30	Pass
06	2437	22.61	30	Pass
11	2462	21.65	30	Pass

Mode 4 : Output Power Plot on 802.11g Channel 01


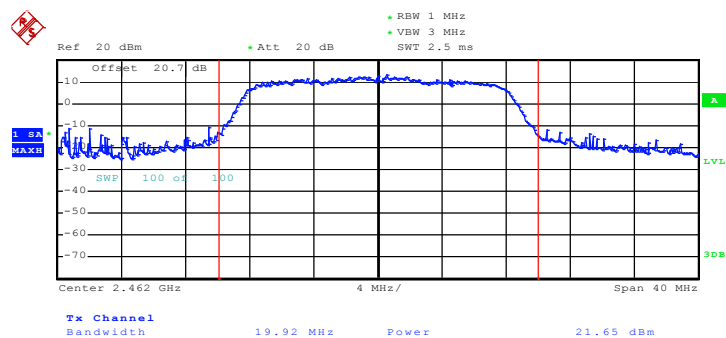
Date: 31.AUG.2009 10:23:01

Mode 5 : Output Power Plot on 802.11g Channel 06



Date: 31.AUG.2009 10:24:31

Mode 6 : Output Power Plot on 802.11g Channel 11



Date: 31.AUG.2009 10:25:40

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.

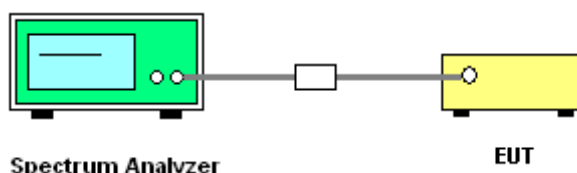
3.3.2 Measuring Instruments

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 :	25~26°C
Test Band :	802.11b	Relative Humidity :	39~40%
Test Channel :	01	Test Engineer :	Kay Wu

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
2334.13	49.88	-24.12	74.00	46.71	32.02	5.51	34.37	100	197	Peak
2334.13	38.90	-15.10	54.00	35.73	32.02	5.51	34.37	100	197	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
2352.37	52.33	-21.67	74.00	49.14	32.08	5.49	34.37	107	147	Peak
2352.37	38.64	-15.36	54.00	35.45	32.08	5.49	34.37	107	147	Average

Test Mode :	Mode 3	Temperature :	25~26°C
Test Band :	802.11b	Relative Humidity :	39~40%
Test Channel :	11	Test Engineer :	Kay Wu

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
2485.37	49.84	-24.16	74.00	46.58	32.27	5.38	34.40	102	331	Peak
2485.37	34.51	-19.49	54.00	31.25	32.27	5.38	34.40	102	331	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
2487.65	48.73	-25.27	74.00	45.46	32.30	5.37	34.40	100	144	Peak
2487.65	35.80	-18.20	54.00	32.53	32.30	5.37	34.40	100	144	Average



Test Mode :	Mode 4	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	39~40%
Test Channel :	01	Test Engineer :	Kay Wu

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
2388.85	70.01	-3.99	74.00	66.80	32.13	5.46	34.38	100	327	Peak
2388.85	47.81	-6.19	54.00	44.60	32.13	5.46	34.38	100	327	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
2389.61	69.72	-4.28	74.00	66.51	32.13	5.46	34.38	100	69	Peak
2389.61	48.24	-5.76	54.00	45.03	32.13	5.46	34.38	100	69	Average

Test Mode :	Mode 6	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	39~40%
Test Channel :	11	Test Engineer :	Kay Wu

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	65.48	-8.52	74.00	62.22	32.27	5.38	34.40	103	331	Peak
2483.50	45.11	-8.89	54.00	41.85	32.27	5.38	34.40	103	331	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	66.05	-7.95	74.00	62.79	32.27	5.38	34.40	100	170	Peak
2483.50	46.19	-7.81	54.00	42.93	32.27	5.38	34.40	100	170	Average



Test Mode :	Mode 7	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	39~40%
Test Channel :	01	Test Engineer :	Kay Wu

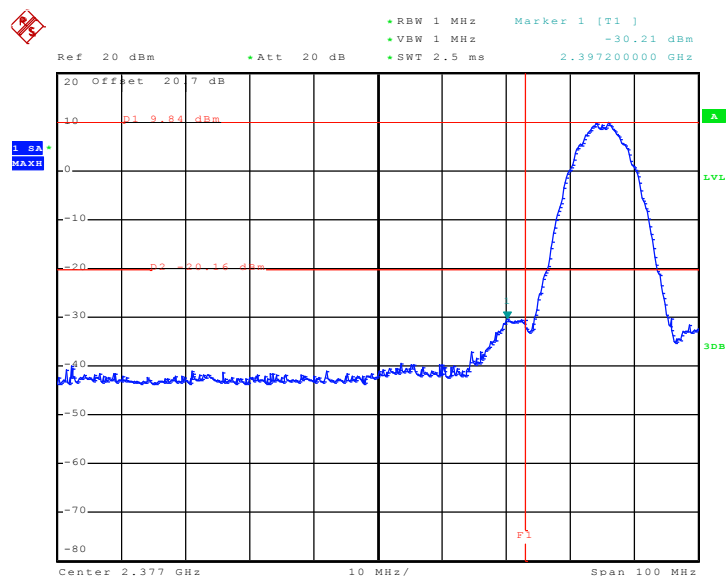
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	71.00	-3.00	74.00	67.79	32.13	5.46	34.38	135	186	Peak
2389.99	48.90	-5.10	54.00	45.69	32.13	5.46	34.38	135	186	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	70.86	-3.14	74.00	67.65	32.13	5.46	34.38	100	168	Peak
2389.99	50.05	-3.95	54.00	46.84	32.13	5.46	34.38	100	168	Average

3.3.6 Test Plots of Conducted Band Edges

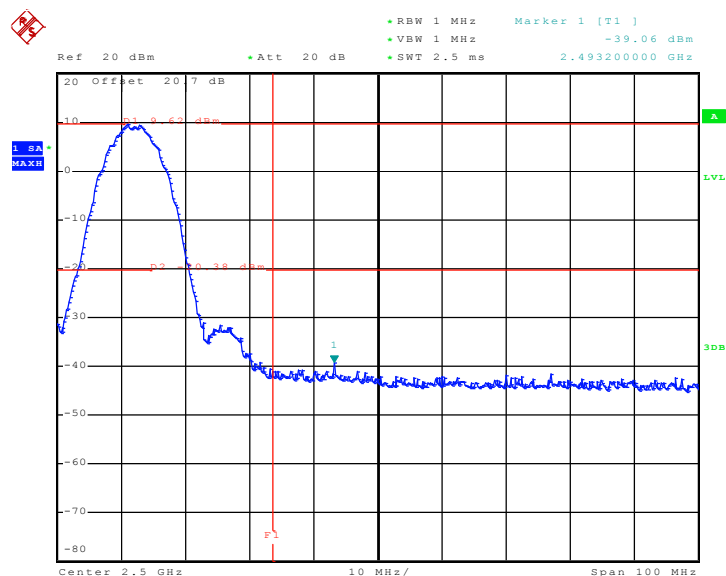
Test Mode :	Mode 1 and 3	Temperature :	27.4°C
Test Band :	802.11b	Relative Humidity :	49%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11b Channel 01



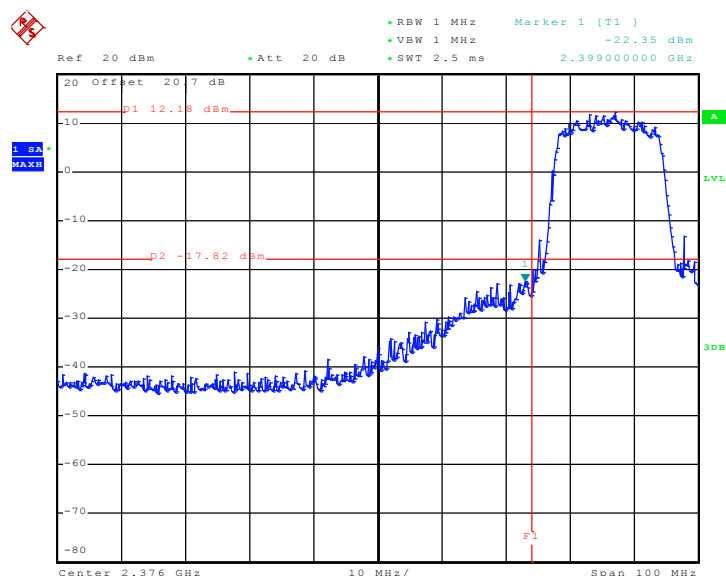
Date: 12.OCT.2009 15:27:23

High Band Edge Plot on 802.11b Channel 11

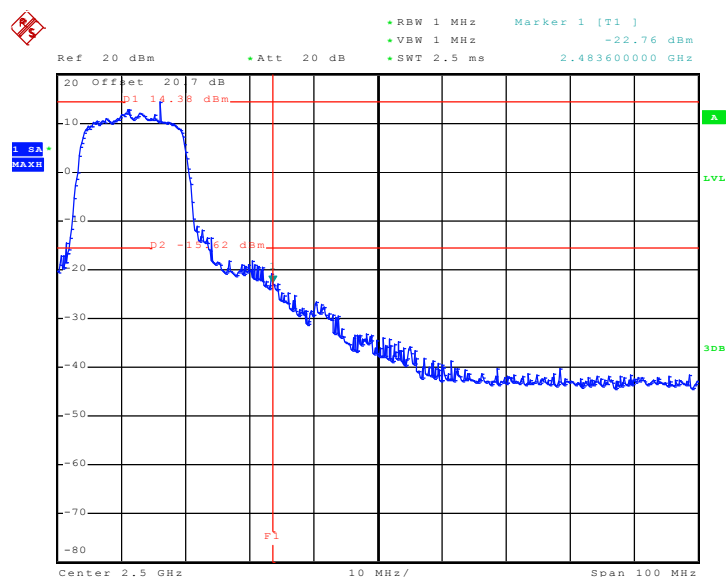


Date: 12.OCT.2009 15:32:39

Test Mode :	Mode 4 and 6	Temperature :	27.4°C
Test Band :	802.11g	Relative Humidity :	49%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11g Channel 01


Date: 12.OCT.2009 15:40:41

High Band Edge Plot on 802.11g Channel 11


Date: 12.OCT.2009 15:30:51

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band.

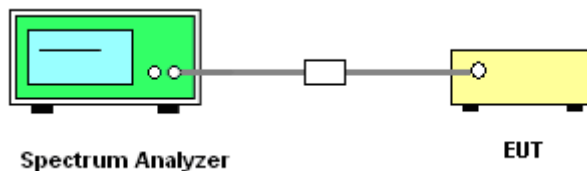
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

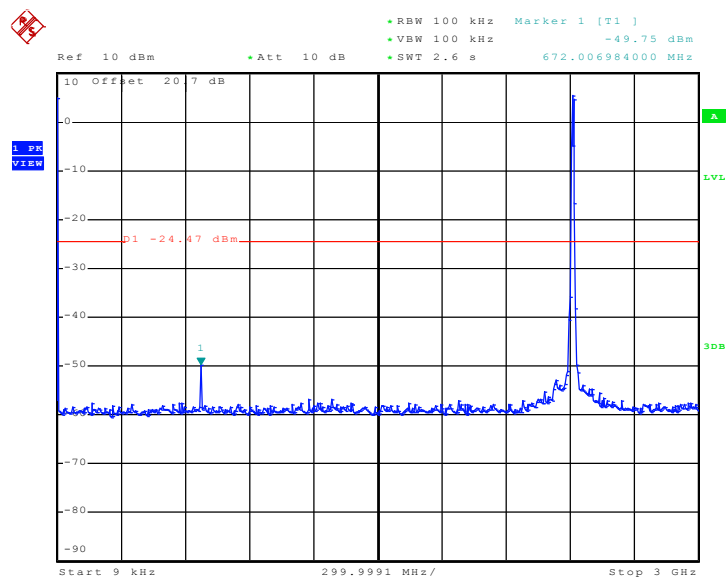
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

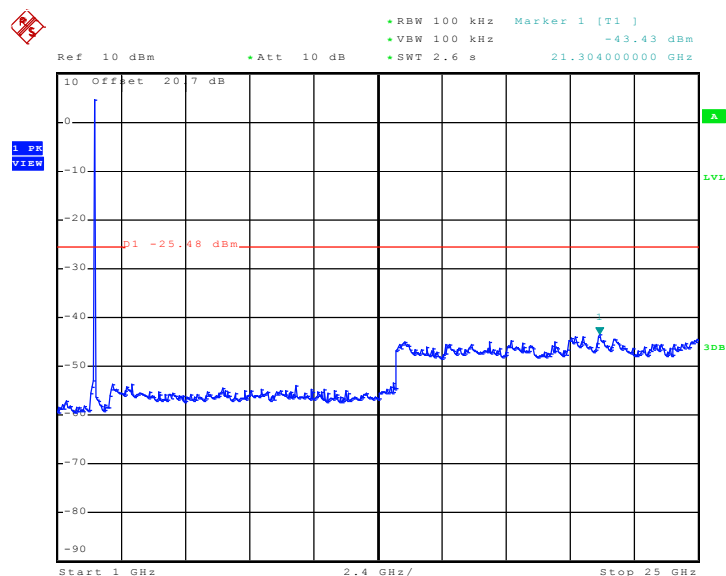
Test Mode :	Mode 1	Temperature :	27.4°C
Test Channel :	01	Relative Humidity :	49%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 29.SEP.2009 10:52:20

Conducted Spurious Emission Plot between 1GHz ~ 25 GHz

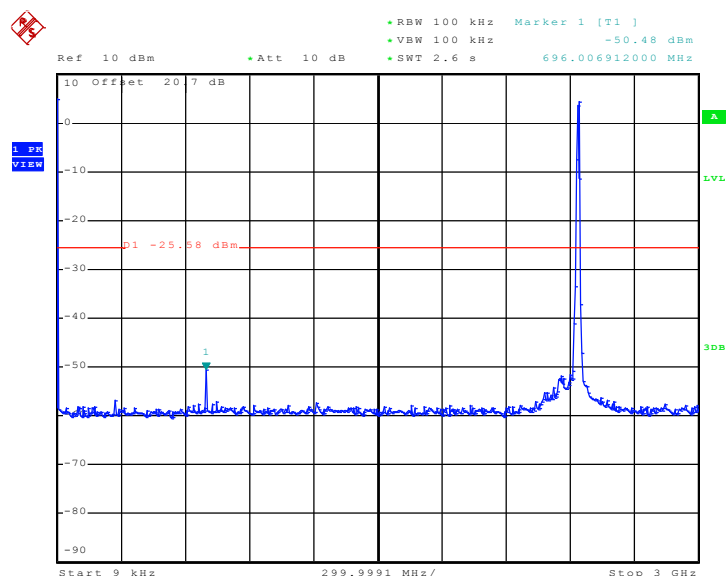


Date: 29.SEP.2009 10:54:15



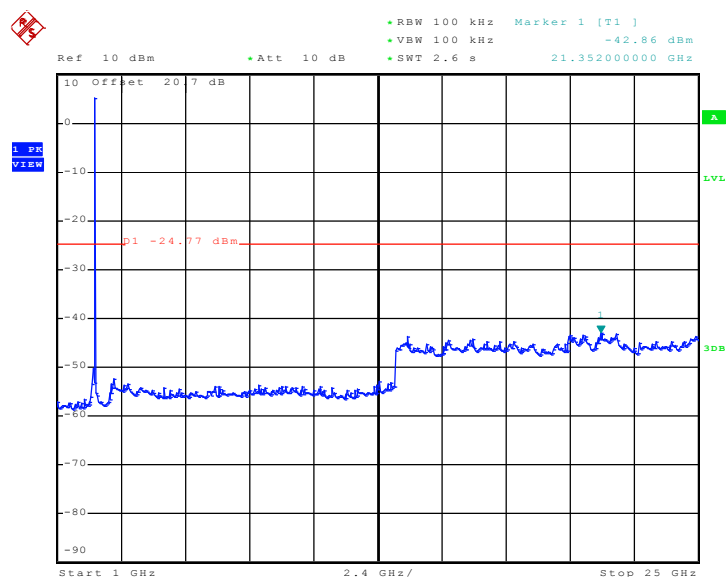
Test Mode :	Mode 2	Temperature :	27.4°C
Test Channel :	06	Relative Humidity :	49%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 29.SEP.2009 10:51:16

Conducted Spurious Emission Plot between 1GHz ~ 25 GHz



Date: 29.SEP.2009 10:56:54



Test Mode :	Mode 3	Temperature :	27.4°C
Test Channel :	11	Relative Humidity :	49%
		Test Engineer :	Ken Hsu

Ref 10 dBm • Att 10 dB • RBW 100 kHz Marker 1 [T1] -54.58 dBm
 • VBW 100 kHz 720.006840000 MHz
 • SWT 2.6 s

10 Off set 20 7 dB

10 dBm

1 720.006840000 MHz

1 -26.87 dBm

1

Start 9 kHz 299.9991 MHz/ Stop 3 GHz

Date: 29.SEP.2009 10:21:44

Ref 10 dBm Att 10 dB RBW 100 kHz VBW 100 kHz SWT 2.6 s Marker 1 [T1] -43.57 dBm 24.71200000 GHz

10 Offset 20 7 dB

10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90

1.75 V12W

D1 -25.15 dBm

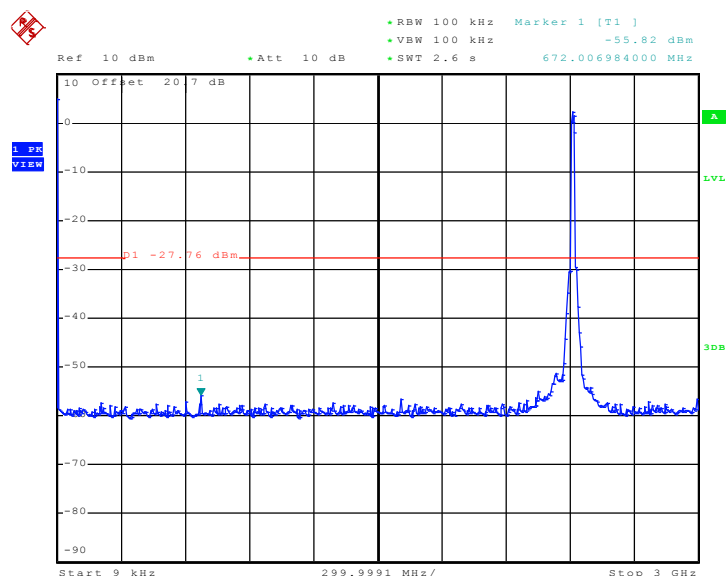
Start 1 GHz 2.4 GHz/ Stop 25 GHz

Date: 29.SEP.2009 10:58:15



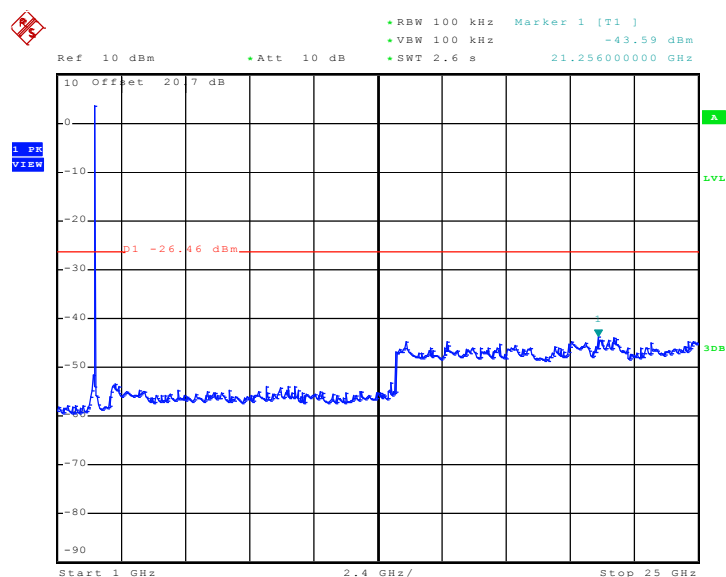
Test Mode :	Mode 4	Temperature :	27.4°C
Test Channel :	01	Relative Humidity :	49%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 29.SEP.2009 10:19:17

Conducted Spurious Emission Plot between 1GHz ~ 25 GHz

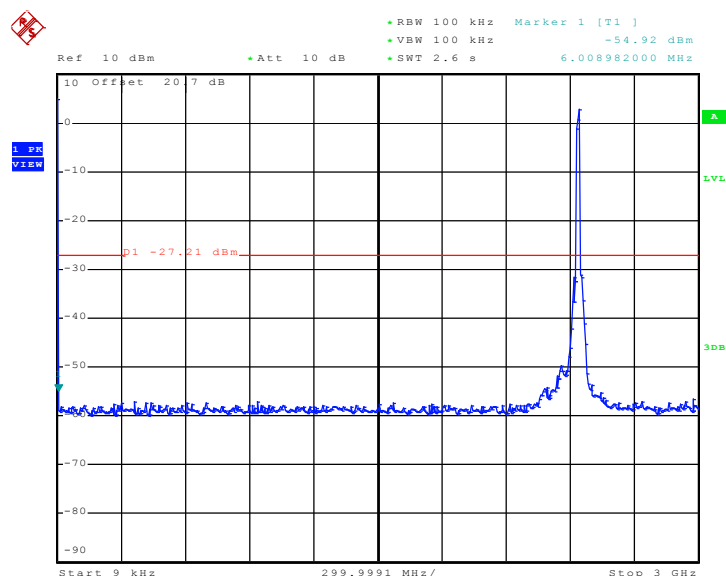


Date: 29.SEP.2009 11:01:33



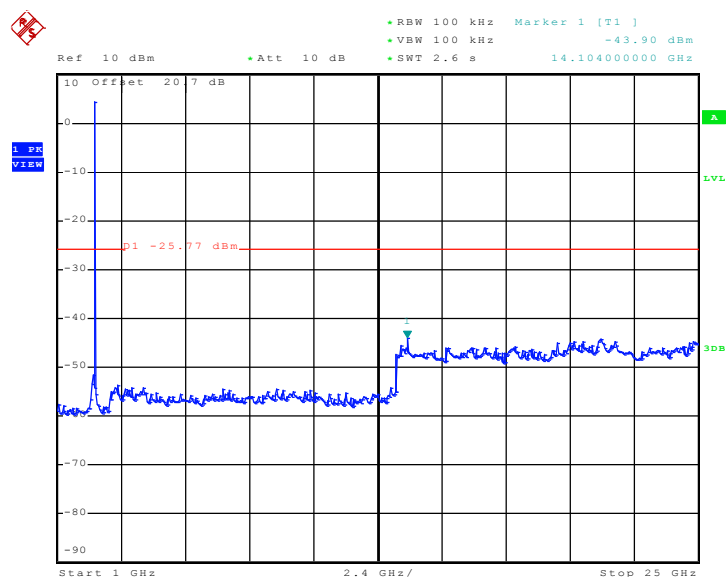
Test Mode :	Mode 5	Temperature :	27.4°C
Test Channel :	06	Relative Humidity :	49%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz



Date: 29.SEP.2009 10:13:28

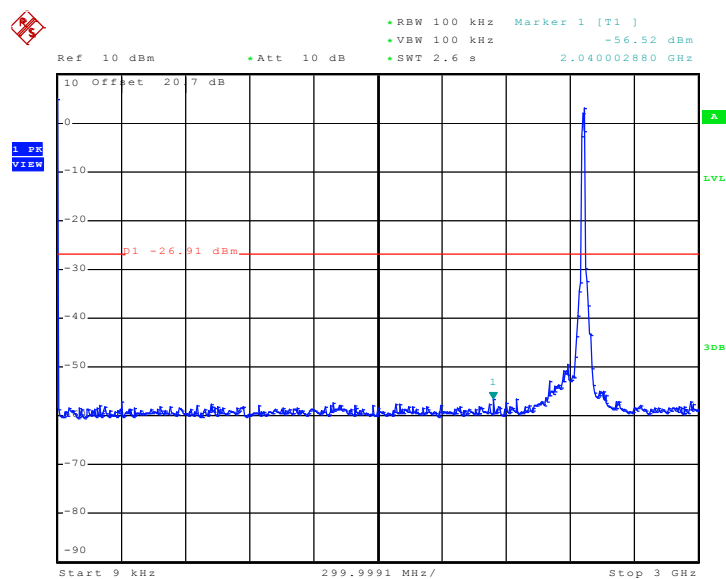
Conducted Spurious Emission Plot between 1GHz ~ 25 GHz



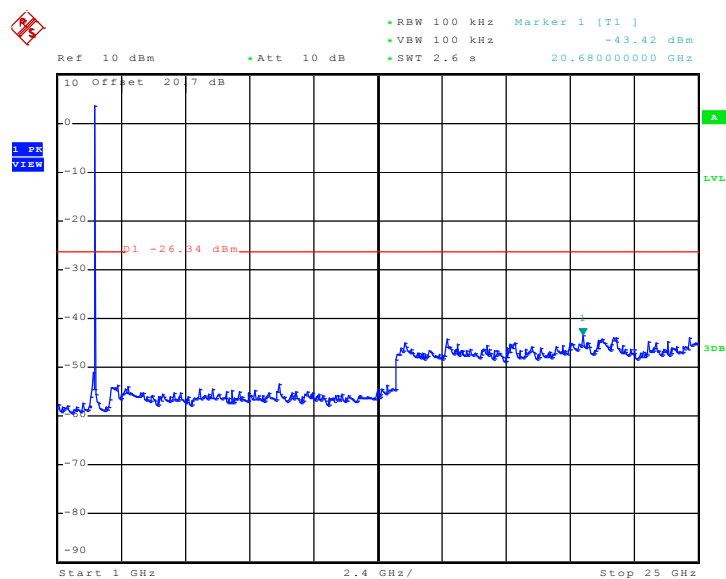
Date: 29.SEP.2009 11:00:32



Test Mode :	Mode 6	Temperature :	27.4°C
Test Channel :	11	Relative Humidity :	49%
		Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot between 9 kHz ~ 3 GHz

Date: 29.SEP.2009 10:20:26

Conducted Spurious Emission Plot between 1GHz ~ 25 GHz

Date: 29.SEP.2009 10:59:24

3.5 Power Spectral Density Measurement

3.5.1 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.

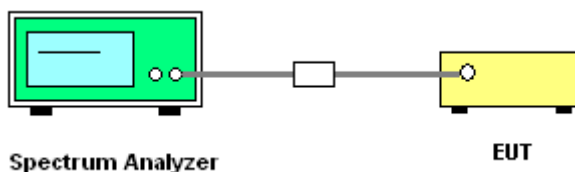
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 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.

3.5.4 Test Setup

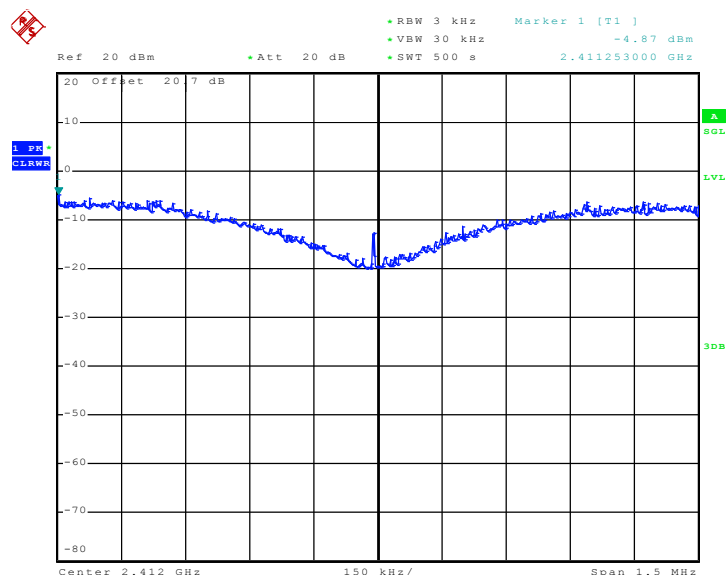


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	27.4°C
Test Engineer :	Ken Hsu	Relative Humidity :	49%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-4.87	8	Pass
06	2437	-6.28	8	Pass
11	2462	-7.41	8	Pass

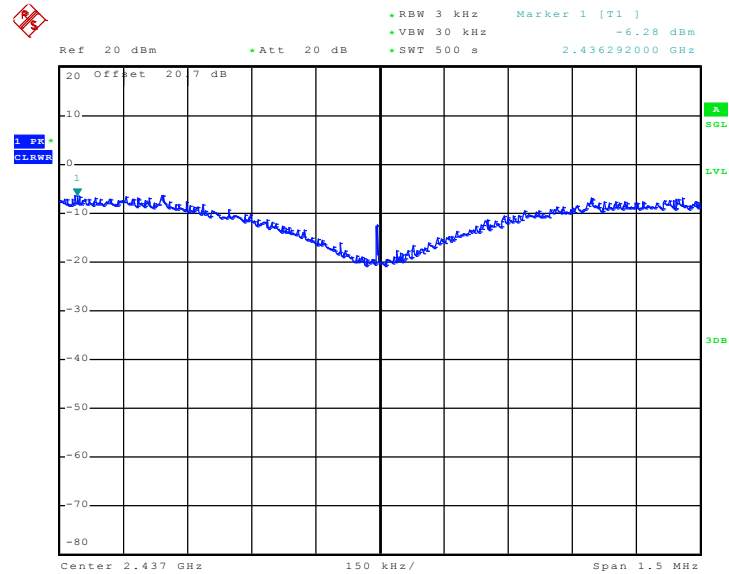
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 30.AUG.2009 22:07:23

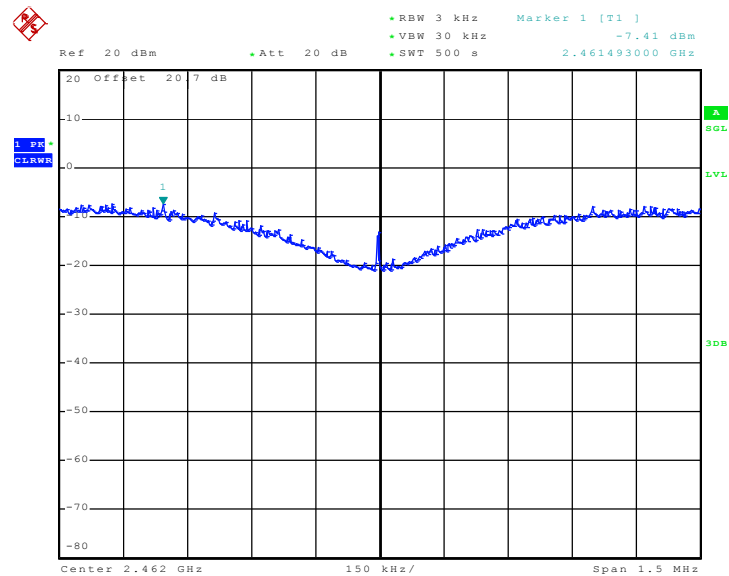


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 31.AUG.2009 11:26:27

Mode 3 : PSD Plot on 802.11b Channel 11



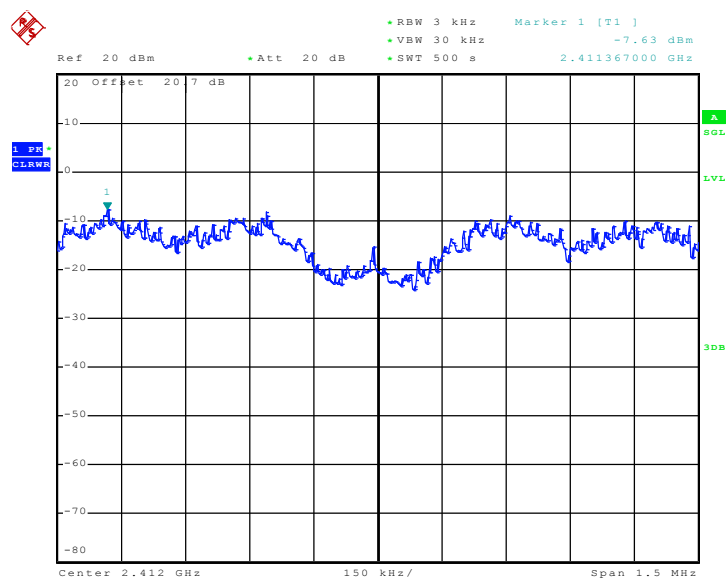
Date: 31.AUG.2009 11:39:27



Test Mode :	Mode 4, 5, 6	Temperature :	27.4°C
Test Engineer :	Ken Hsu	Relative Humidity :	49%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.63	8	Pass
06	2437	-9.08	8	Pass
11	2462	-9.62	8	Pass

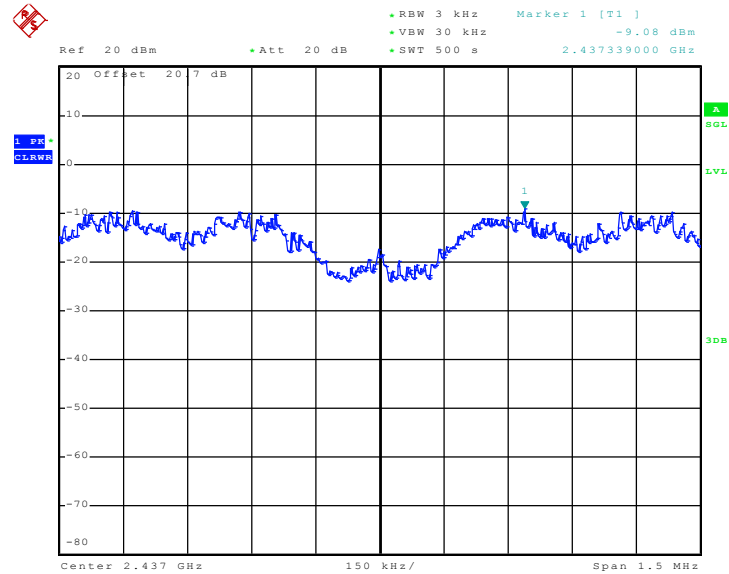
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 30.AUG.2009 22:35:46

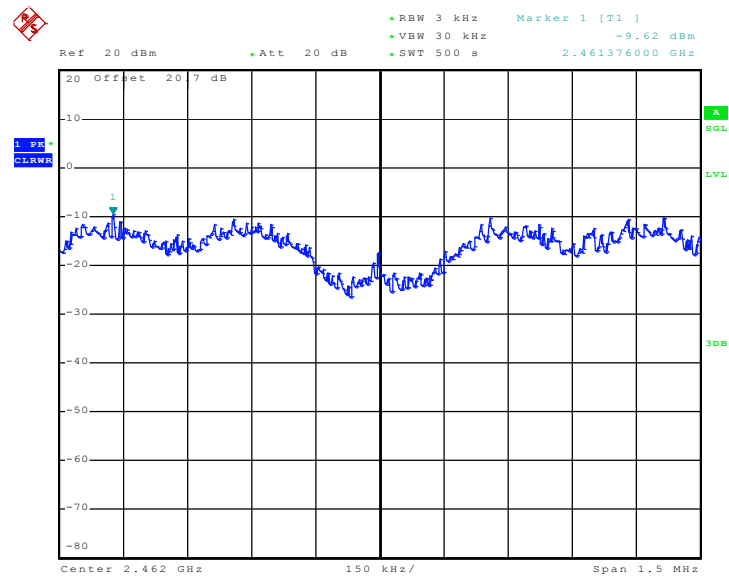


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 31.AUG.2009 12:04:10

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 31.AUG.2009 11:49:07

3.6 AC Conducted Emission Measurement

3.6.1 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.

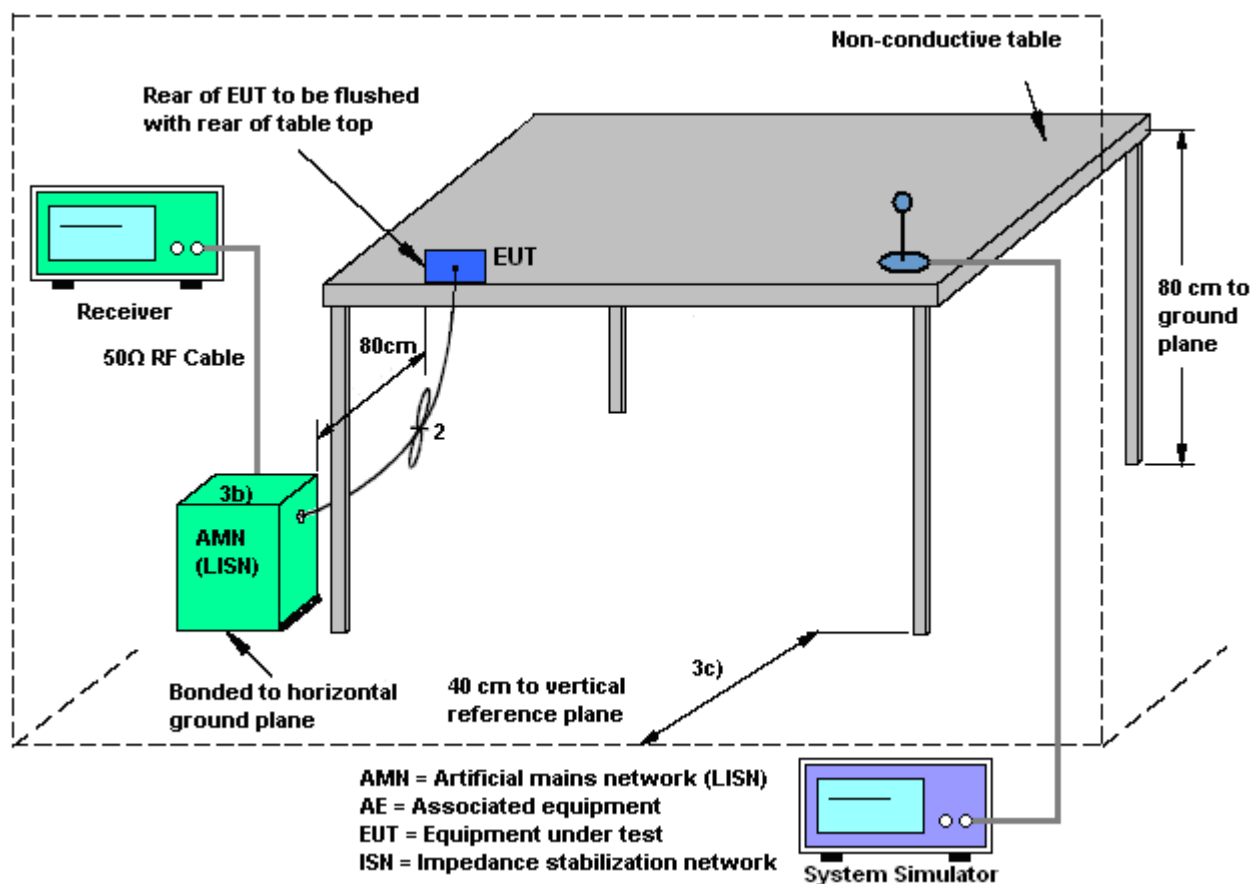
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

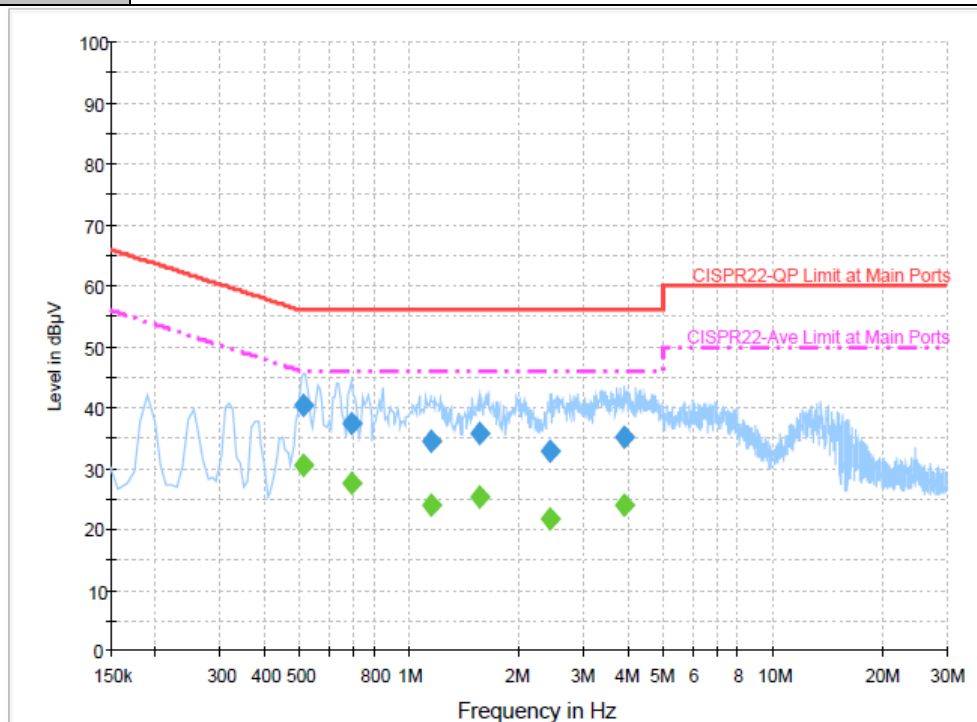
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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.

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	23~24°C
Test Engineer :	Cona Huang	Relative Humidity :	48~51%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Camera + Adapter 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



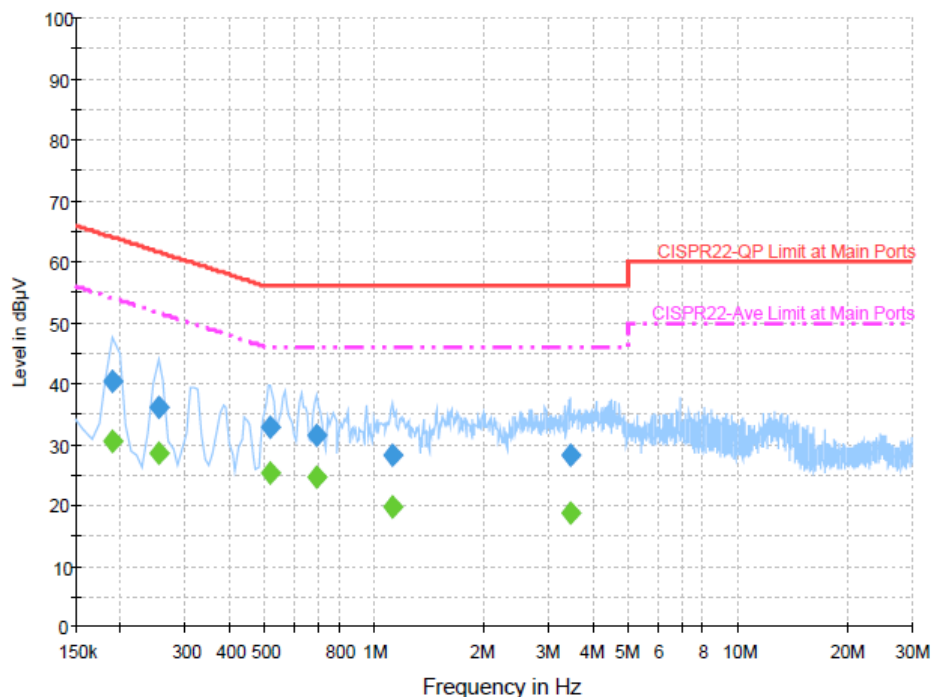
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.510000	40.5	Off	L1	19.4	15.5	56.0
0.694000	37.5	Off	L1	19.5	18.5	56.0
1.142000	34.6	Off	L1	19.5	21.4	56.0
1.550000	35.7	Off	L1	19.5	20.3	56.0
2.422000	32.9	Off	L1	19.5	23.1	56.0
3.870000	35.1	Off	L1	19.5	20.9	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.510000	30.4	Off	L1	19.4	15.6	46.0
0.694000	27.7	Off	L1	19.5	18.3	46.0
1.142000	24.0	Off	L1	19.5	22.0	46.0
1.550000	25.3	Off	L1	19.5	20.7	46.0
2.422000	21.5	Off	L1	19.5	24.5	46.0
3.870000	24.1	Off	L1	19.5	22.0	46.0

Test Mode :	Mode 2	Temperature :	23~24°C
Test Engineer :	Cona Huang	Relative Humidity :	48~51%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Camera + Adapter 1		
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)
0.190000	40.3	Off	N	19.5	23.7	64.0
0.254000	36.2	Off	N	19.4	25.4	61.6
0.518000	32.8	Off	N	19.5	23.2	56.0
0.694000	31.5	Off	N	19.5	24.5	56.0
1.118000	28.3	Off	N	19.5	27.7	56.0
3.462000	28.3	Off	N	19.5	27.7	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	30.6	Off	N	19.5	23.4	54.0
0.254000	28.4	Off	N	19.4	23.2	51.6
0.518000	25.2	Off	N	19.5	20.8	46.0
0.694000	24.5	Off	N	19.5	21.5	46.0
1.118000	19.6	Off	N	19.5	26.4	46.0
3.462000	18.8	Off	N	19.5	27.2	46.0

3.7 Radiated Emission Measurement

3.7.1 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

3.7.2 Measuring Instruments

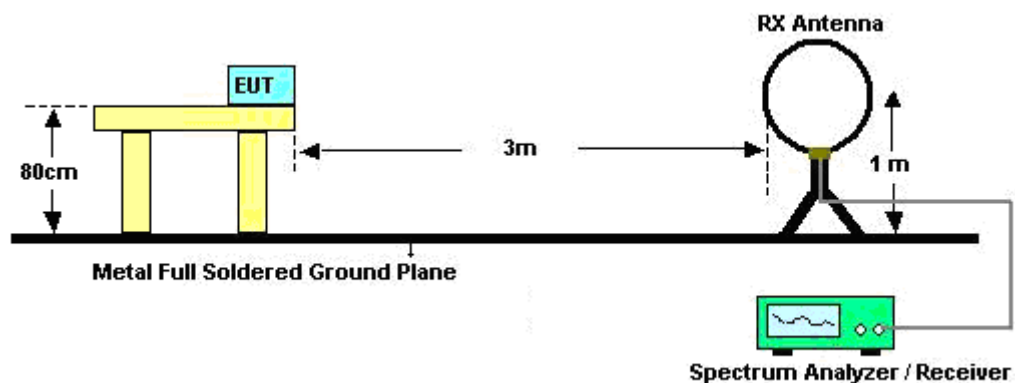
See list of measuring instruments of this test report.

3.7.3 Test Procedures

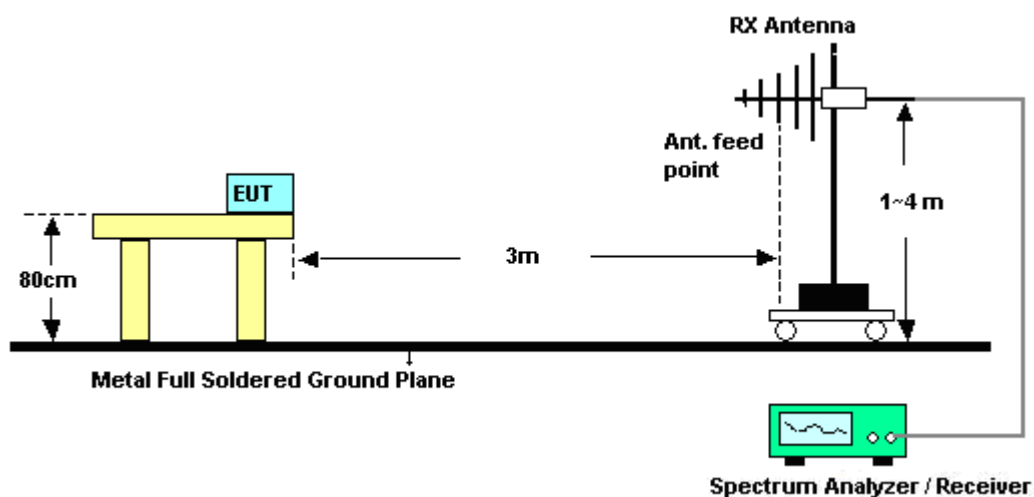
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto;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

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	Kay Wu	Temperature :	25~26°C	
		Relative Humidity :	39~40%	

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

Note:

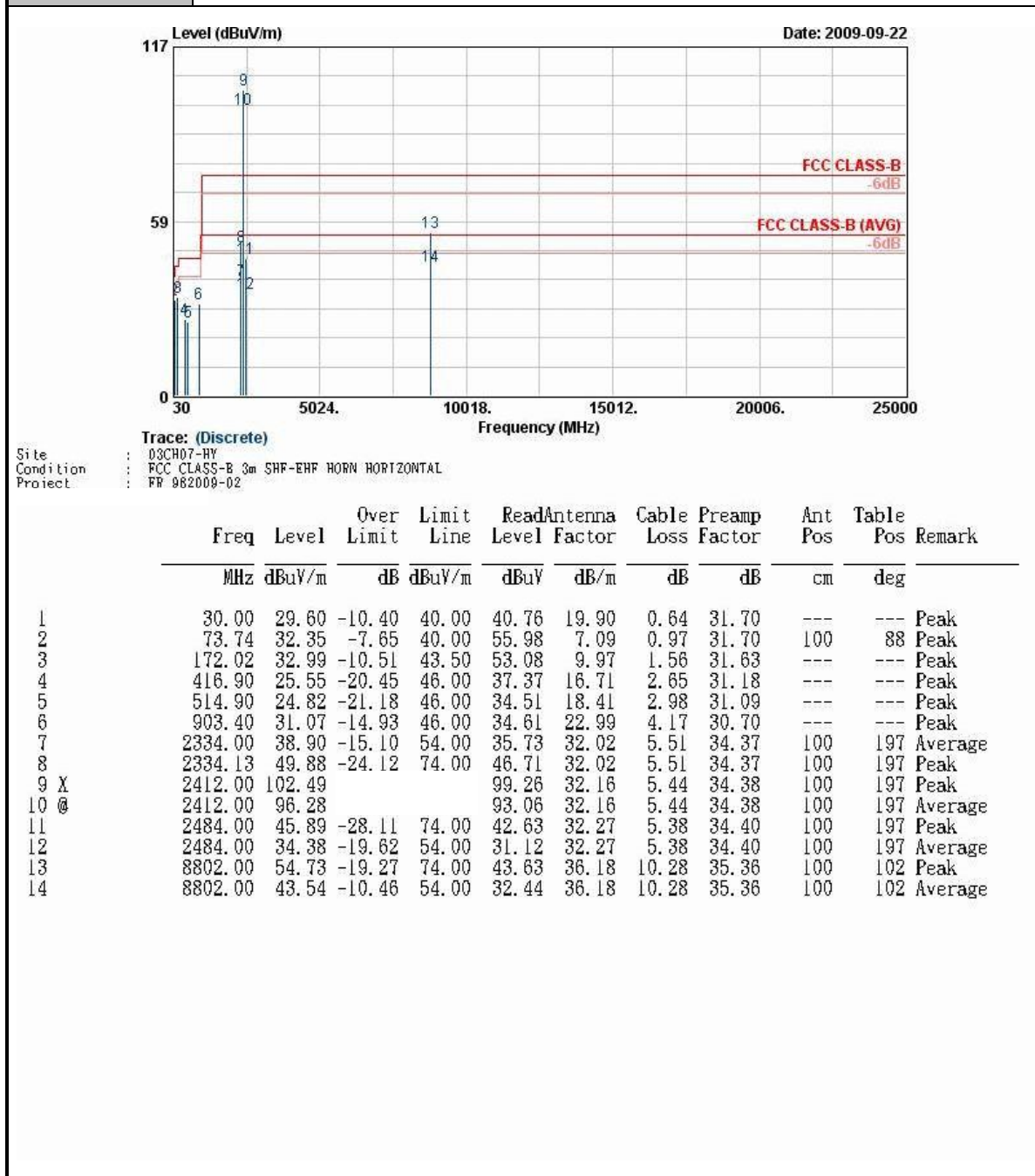
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

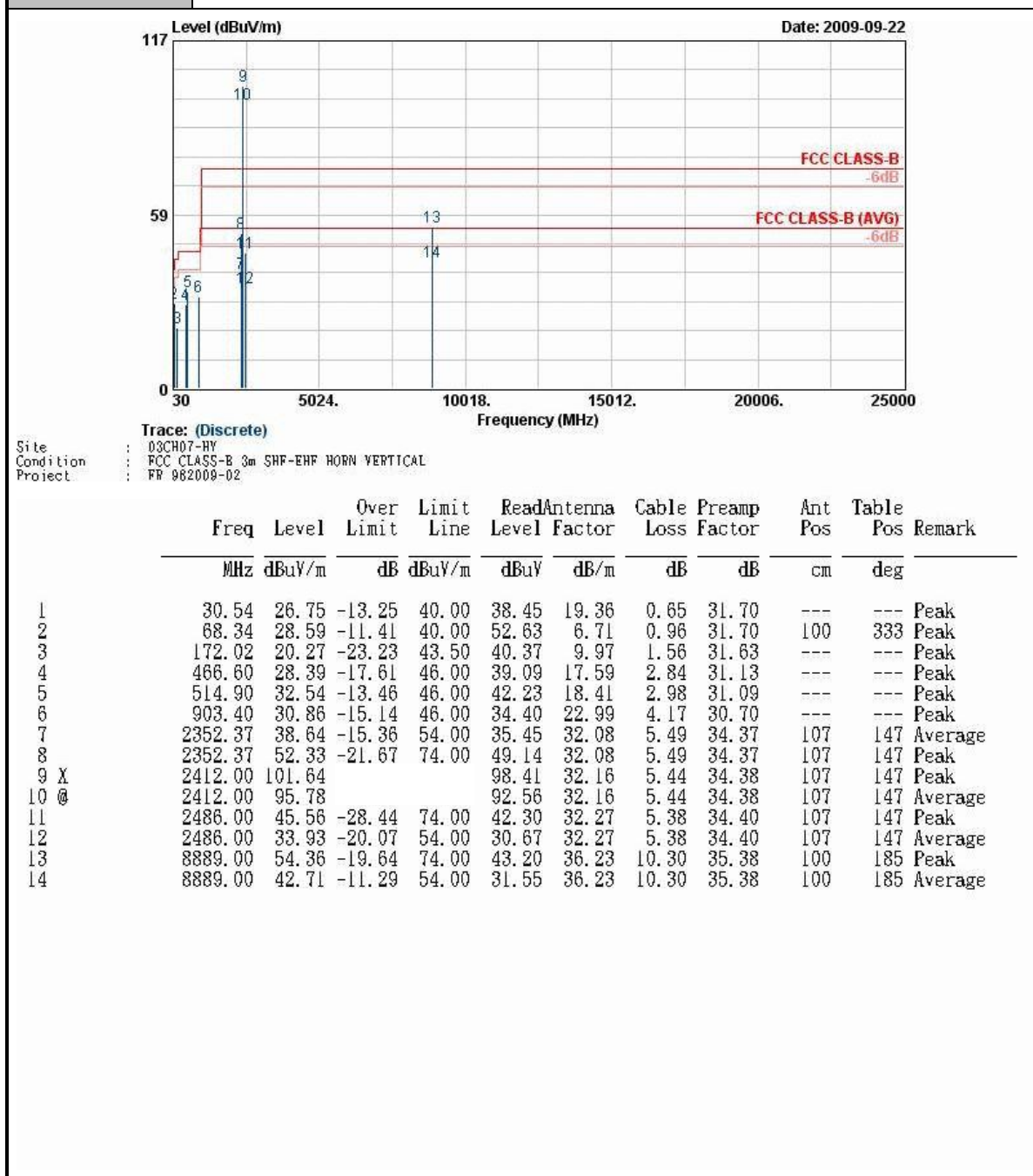
3.7.6 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



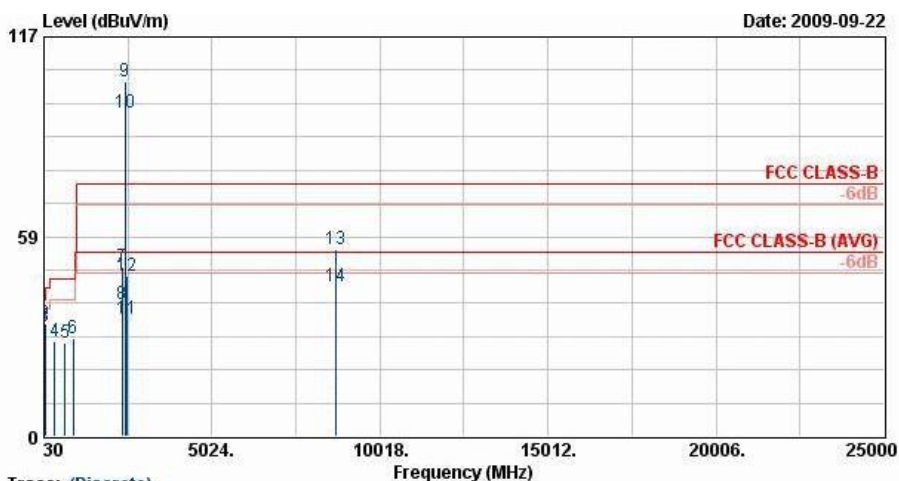


Test Mode :	Mode 1	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





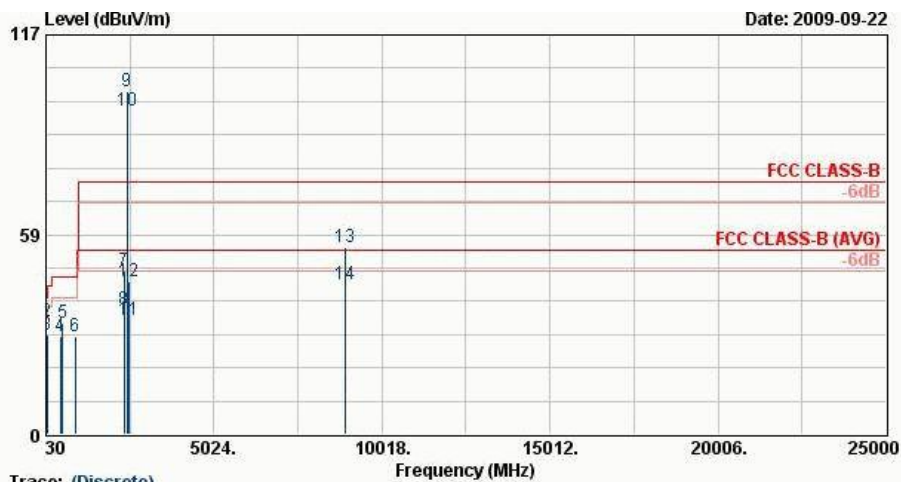
Test Mode :	Mode 2	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



	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	29.07	-10.93	40.00	40.23	19.90	0.64	31.70	---	---	Peak
2	54.30	33.22	-6.78	40.00	56.18	7.88	0.86	31.70	100	47	Peak
3	73.74	32.00	-8.00	40.00	55.63	7.09	0.97	31.70	---	---	Peak
4	352.50	27.70	-18.30	46.00	41.40	15.25	2.35	31.30	---	---	Peak
5	649.30	27.48	-18.52	46.00	34.94	20.09	3.41	30.95	---	---	Peak
6	903.40	28.50	-17.50	46.00	32.04	22.99	4.17	30.70	---	---	Peak
7	2358.00	49.65	-24.35	74.00	46.46	32.08	5.49	34.37	100	183	Peak
8	2358.00	38.76	-15.24	54.00	35.57	32.08	5.49	34.37	100	183	Average
9 X	2437.00	103.90			100.65	32.22	5.41	34.39	100	183	Peak
10 X	2437.00	94.63			91.39	32.22	5.41	34.39	100	183	Average
11	2484.00	34.15	-19.85	54.00	30.89	32.27	5.38	34.40	100	183	Average
12	2484.00	46.79	-27.21	74.00	43.53	32.27	5.38	34.40	100	183	Peak
13	8709.00	54.88	-19.12	74.00	43.85	36.12	10.24	35.34	100	108	Peak
14	8709.00	43.79	-10.21	54.00	32.77	36.12	10.24	35.34	100	108	Average



Test Mode :	Mode 2	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

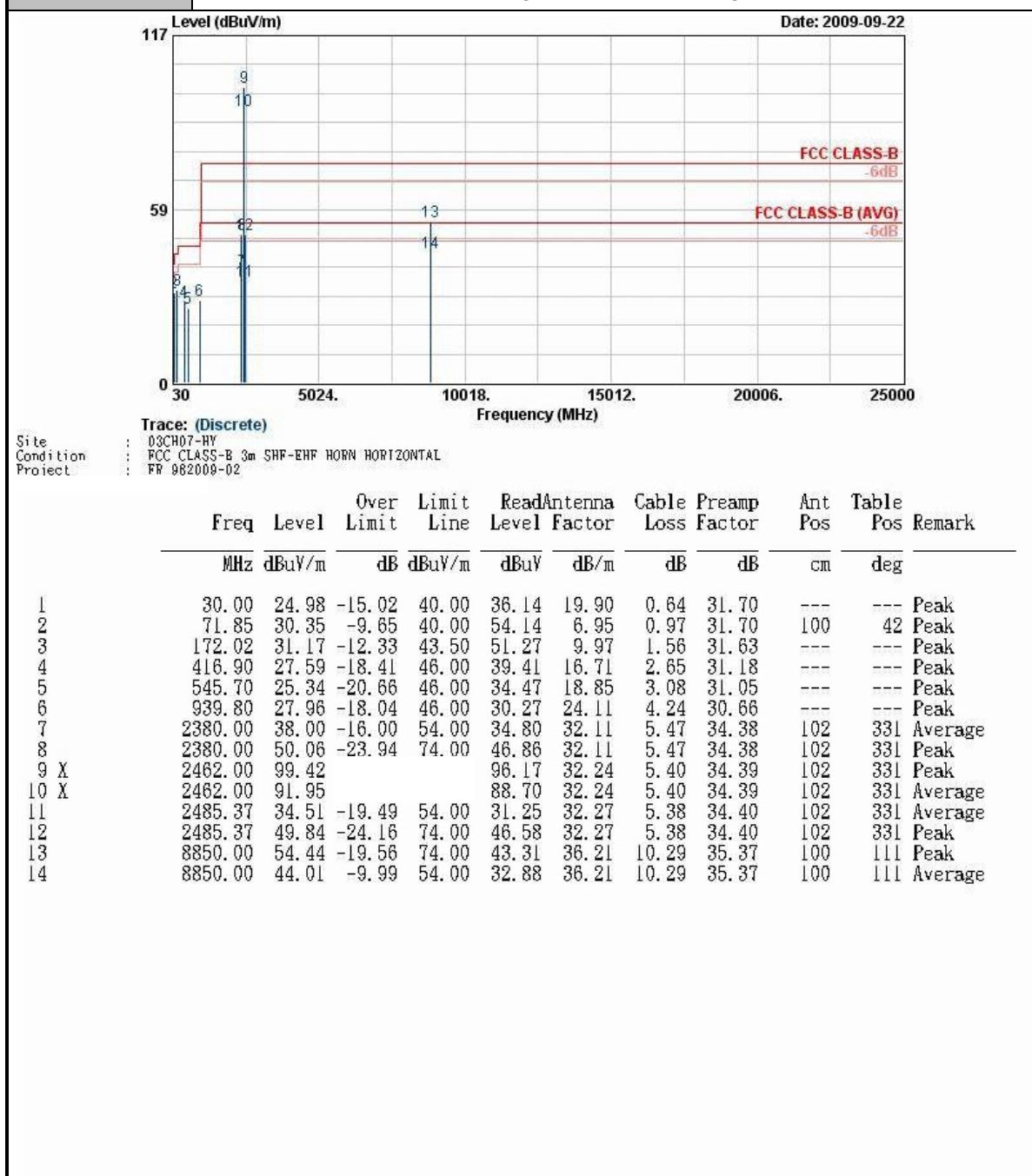


Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 982009-02

	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	34.86	32.43	-7.57	40.00	46.25	17.20	0.68	31.70	---	---	Peak
2	48.90	32.92	-7.08	40.00	53.83	10.00	0.79	31.70	100	78	Peak
3	68.34	29.36	-10.64	40.00	53.39	6.71	0.96	31.70	---	---	Peak
4	466.60	28.57	-17.43	46.00	39.27	17.59	2.84	31.13	---	---	Peak
5	514.90	32.65	-13.35	46.00	42.35	18.41	2.98	31.09	---	---	Peak
6	903.40	28.59	-17.41	46.00	32.14	22.99	4.17	30.70	---	---	Peak
7	2356.00	47.89	-26.11	74.00	44.69	32.08	5.49	34.37	100	182	Peak
8	2356.00	36.35	-17.65	54.00	33.16	32.08	5.49	34.37	100	182	Average
9 X	2437.00	100.56			97.32	32.19	5.43	34.39	100	182	Peak
10 @	2437.00	94.64			91.40	32.22	5.41	34.39	100	182	Average
11	2484.00	33.46	-20.54	54.00	30.20	32.27	5.38	34.40	100	182	Average
12	2484.00	44.93	-29.07	74.00	41.67	32.27	5.38	34.40	100	182	Peak
13	8934.00	55.00	-19.00	74.00	43.81	36.26	10.32	35.39	100	27	Peak
14	8934.00	43.94	-10.06	54.00	32.75	36.26	10.32	35.39	100	27	Average

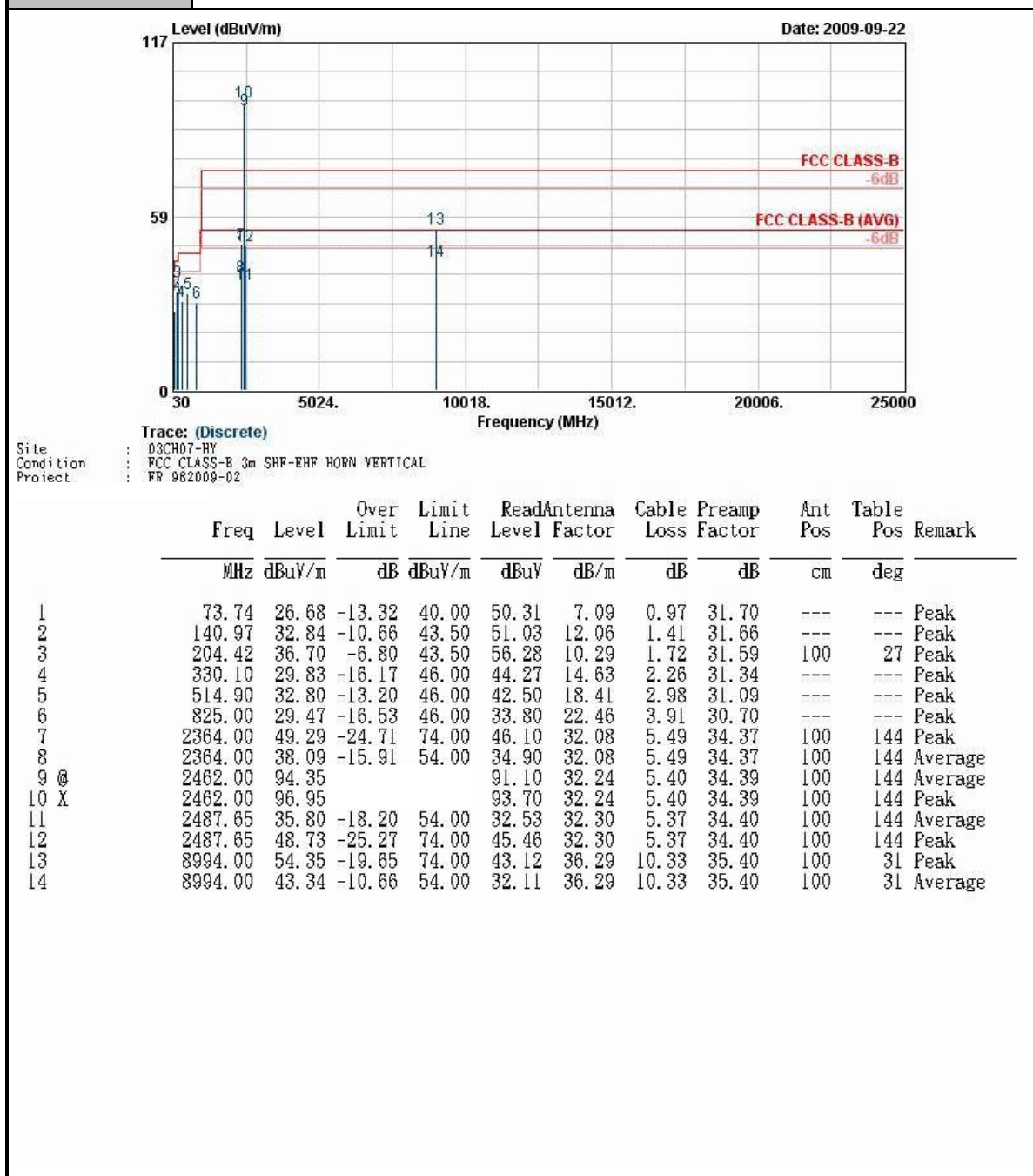


Test Mode :	Mode 3	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

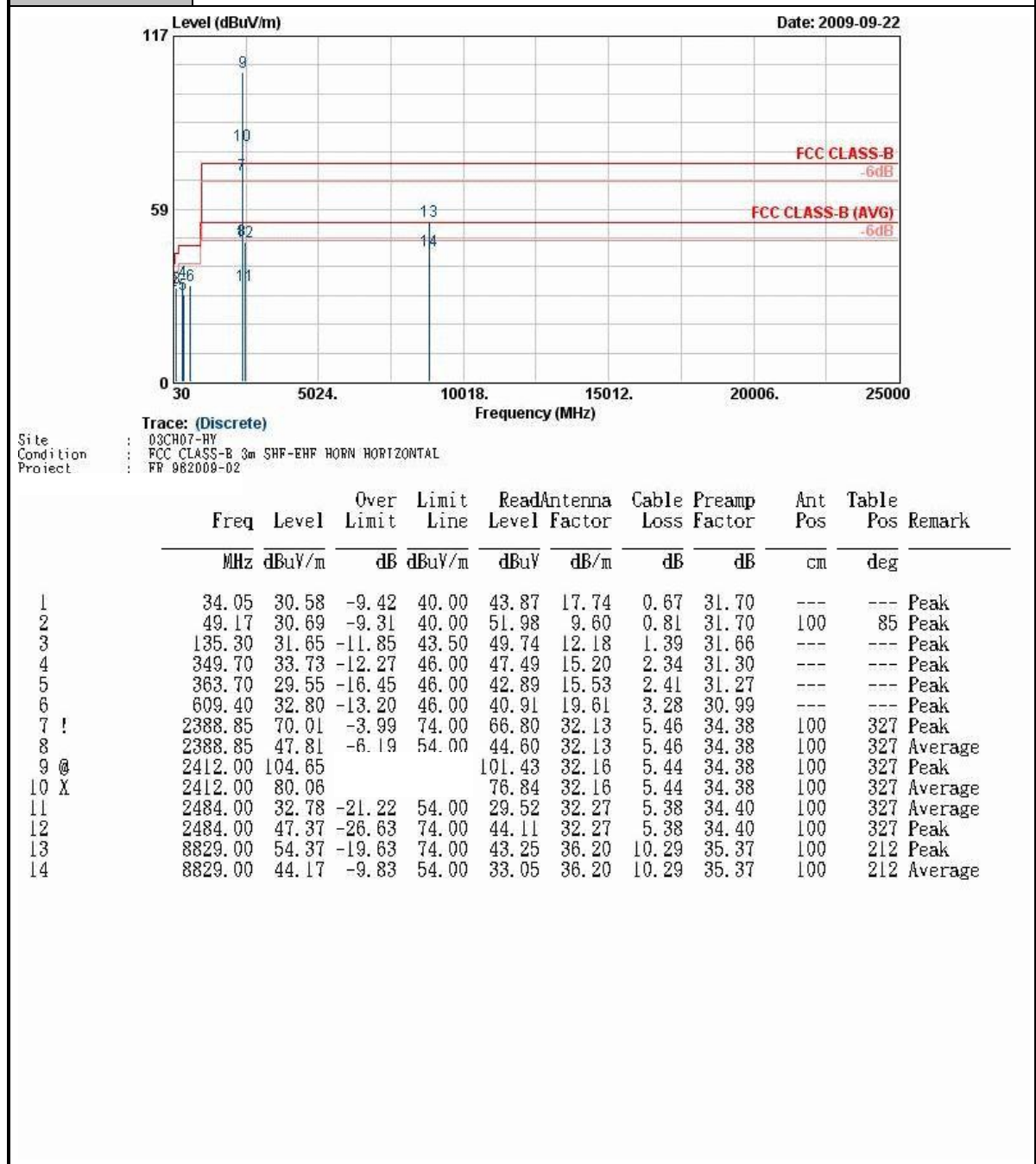




Test Mode :	Mode 3	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

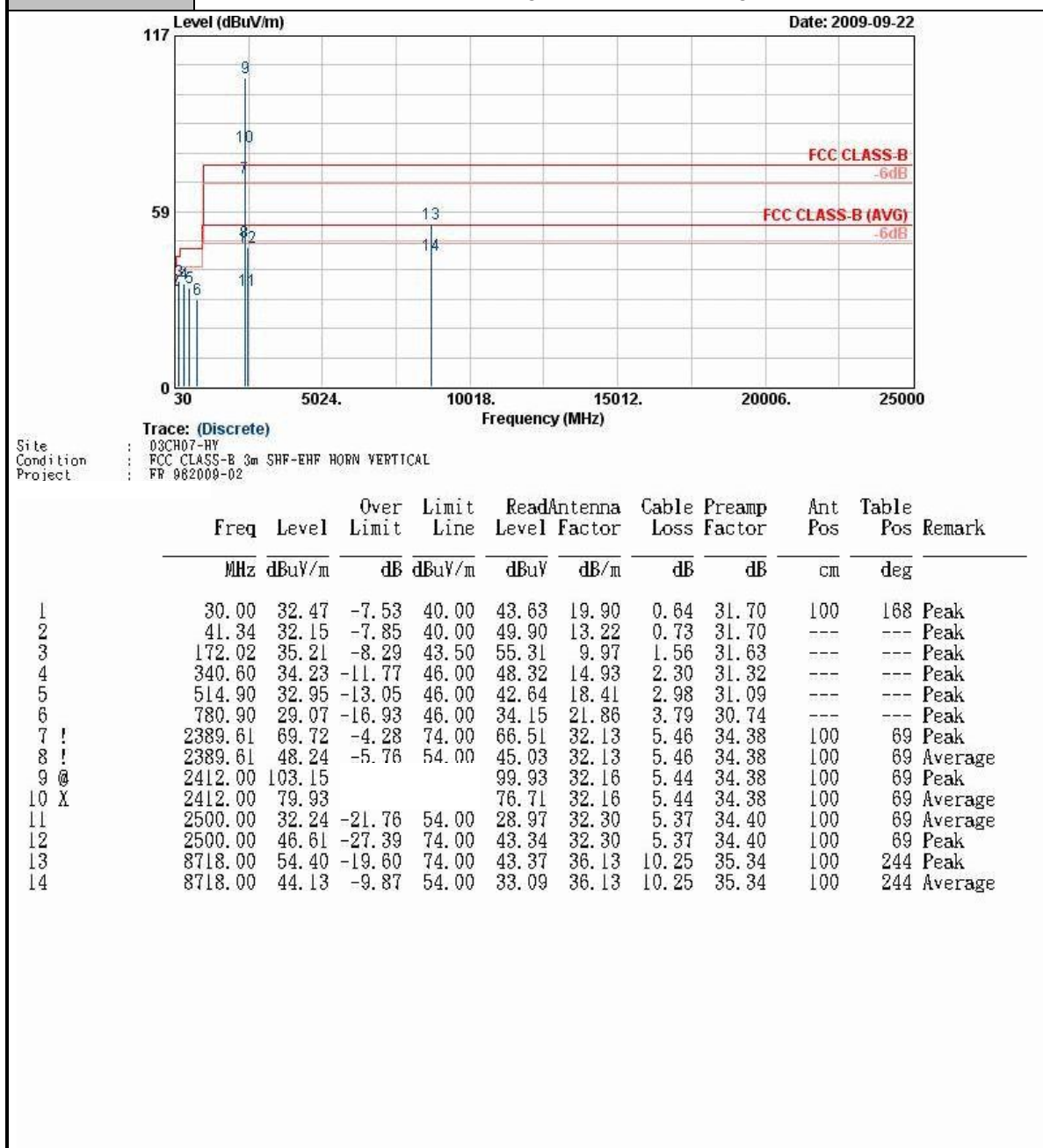


Test Mode :	Mode 4	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



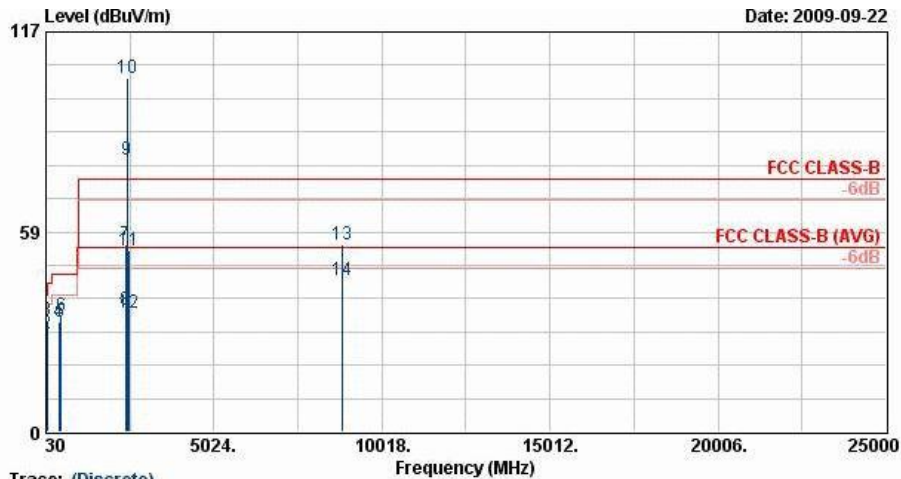


Test Mode :	Mode 4	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 5	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



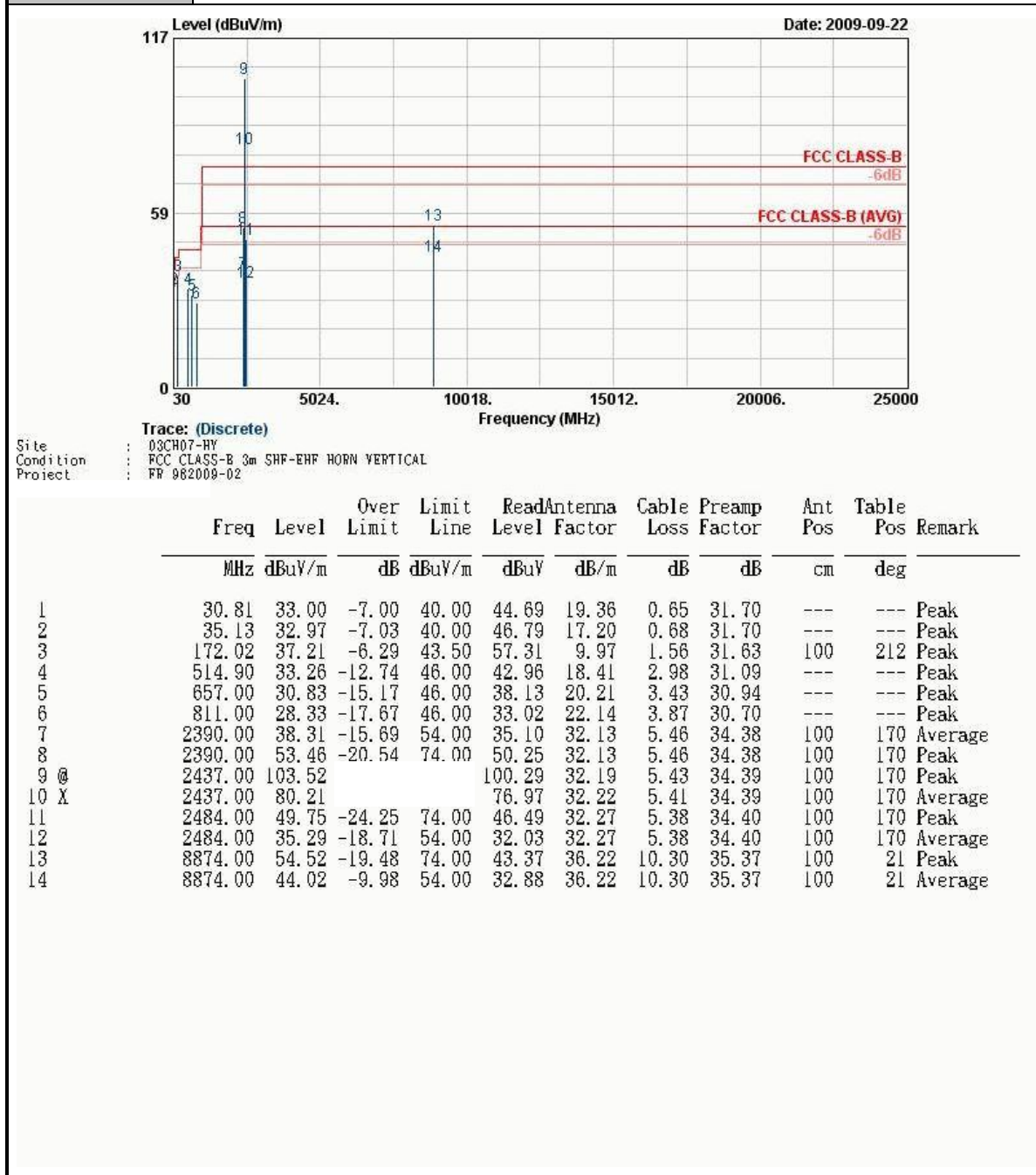
Trace: (Discrete)

Site : D3CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 982009-02

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level 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	29.19	-10.81	40.00	40.35	19.90	0.64	31.70	---	---	Peak
2	56.46	28.54	-11.46	40.00	52.14	7.22	0.88	31.70	---	---	Peak
3	73.74	32.77	-7.23	40.00	56.41	7.09	0.97	31.70	100	78	Peak
4	407.80	32.16	-13.84	46.00	44.22	16.54	2.59	31.19	---	---	Peak
5	430.90	32.03	-13.97	46.00	43.52	16.95	2.73	31.17	---	---	Peak
6	489.70	33.86	-12.14	46.00	44.06	18.01	2.90	31.11	---	---	Peak
7	2390.00	54.81	-19.19	74.00	51.60	32.13	5.46	34.38	100	331	Peak
8	2390.00	35.46	-18.54	54.00	32.25	32.13	5.46	34.38	100	331	Average
9 X	2437.00	79.48			76.24	32.22	5.41	34.39	100	331	Average
10 @	2437.00	103.73			100.48	32.22	5.41	34.39	100	331	Peak
11	2484.00	53.00	-21.00	74.00	49.74	32.27	5.38	34.40	100	331	Peak
12	2484.00	34.77	-19.23	54.00	31.51	32.27	5.38	34.40	100	331	Average
13	8829.00	54.79	-19.21	74.00	43.67	36.20	10.29	35.37	100	245	Peak
14	8829.00	44.22	-9.78	54.00	33.10	36.20	10.29	35.37	100	245	Average

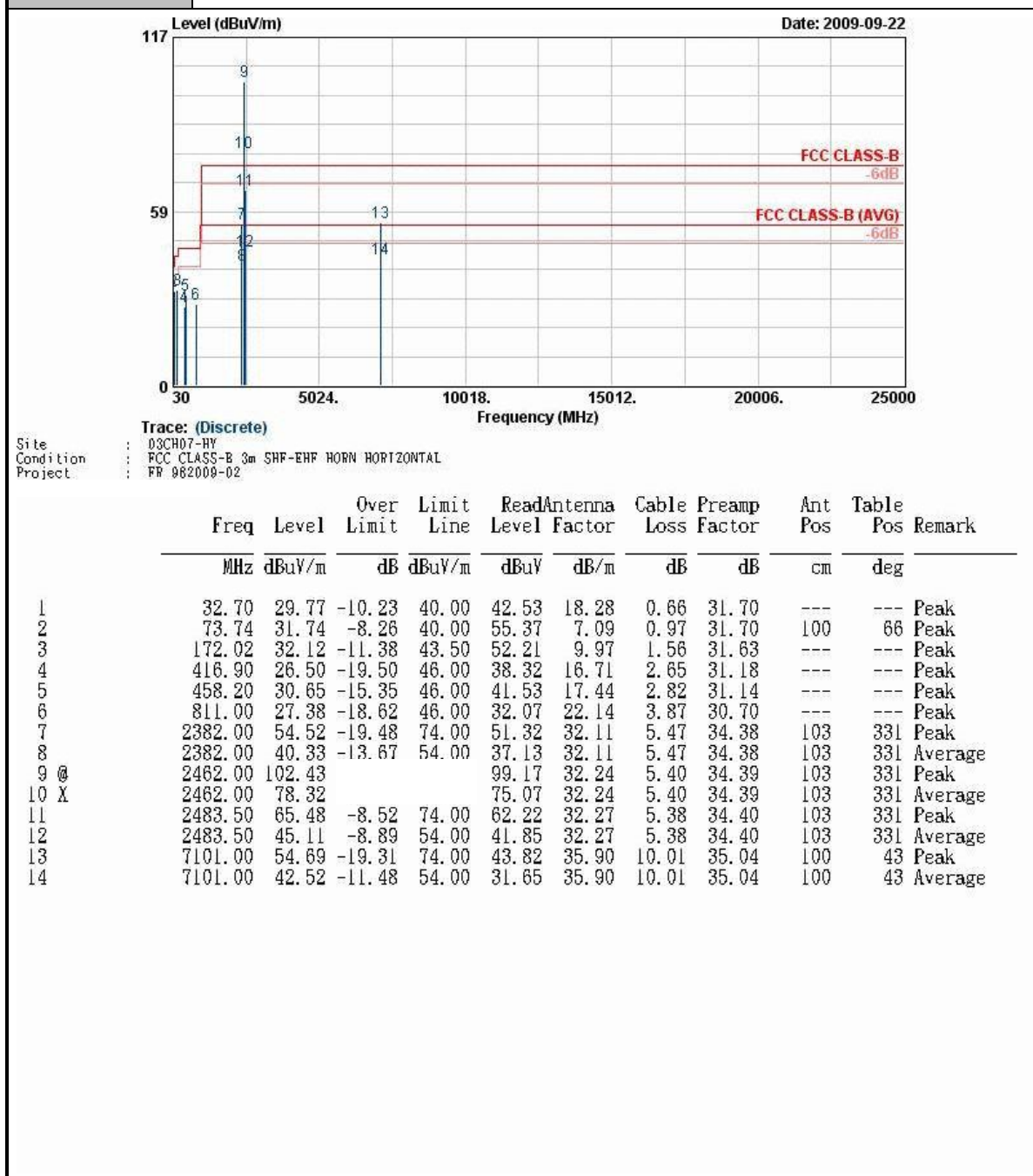


Test Mode :	Mode 5	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

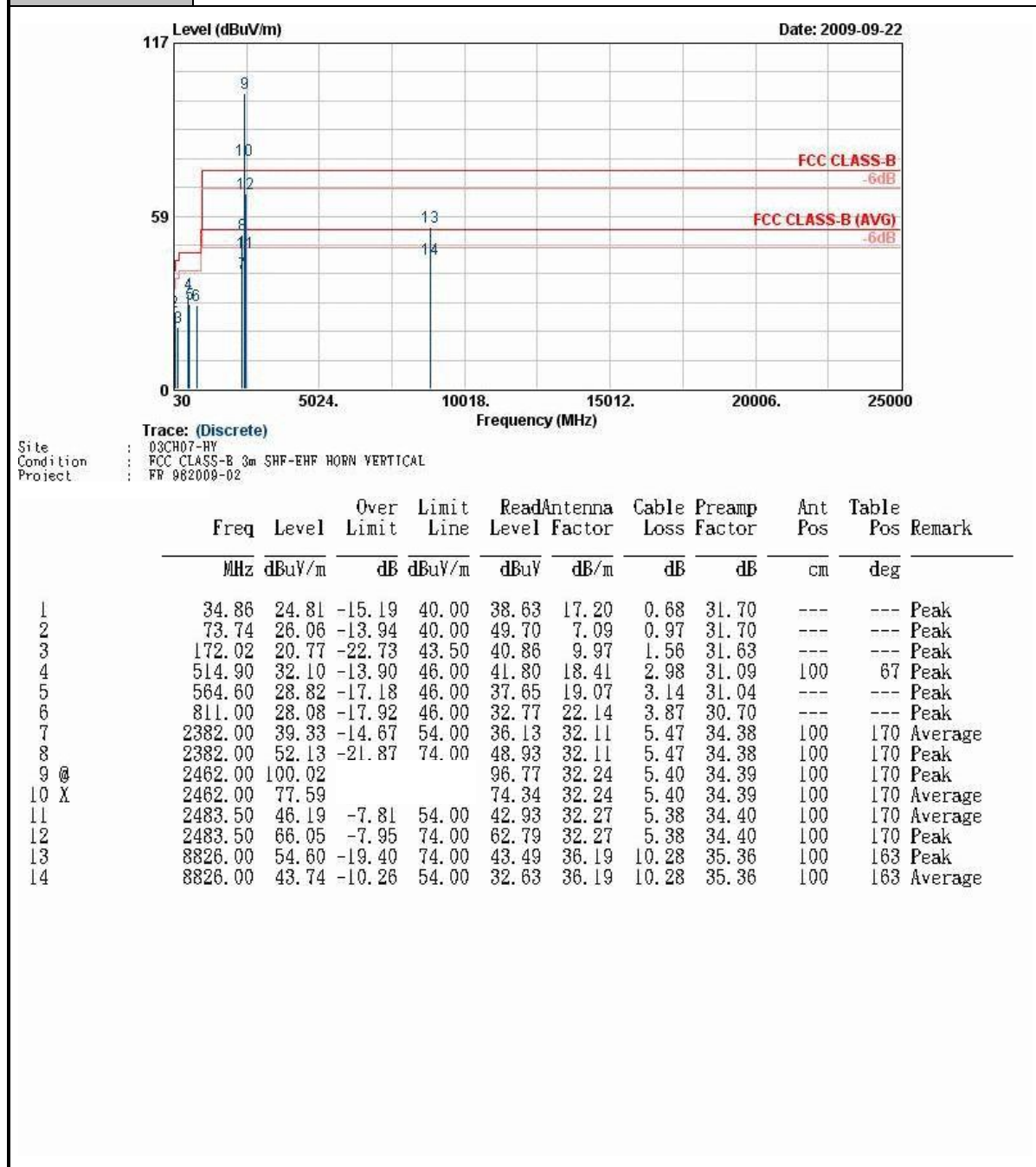




Test Mode :	Mode 6	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

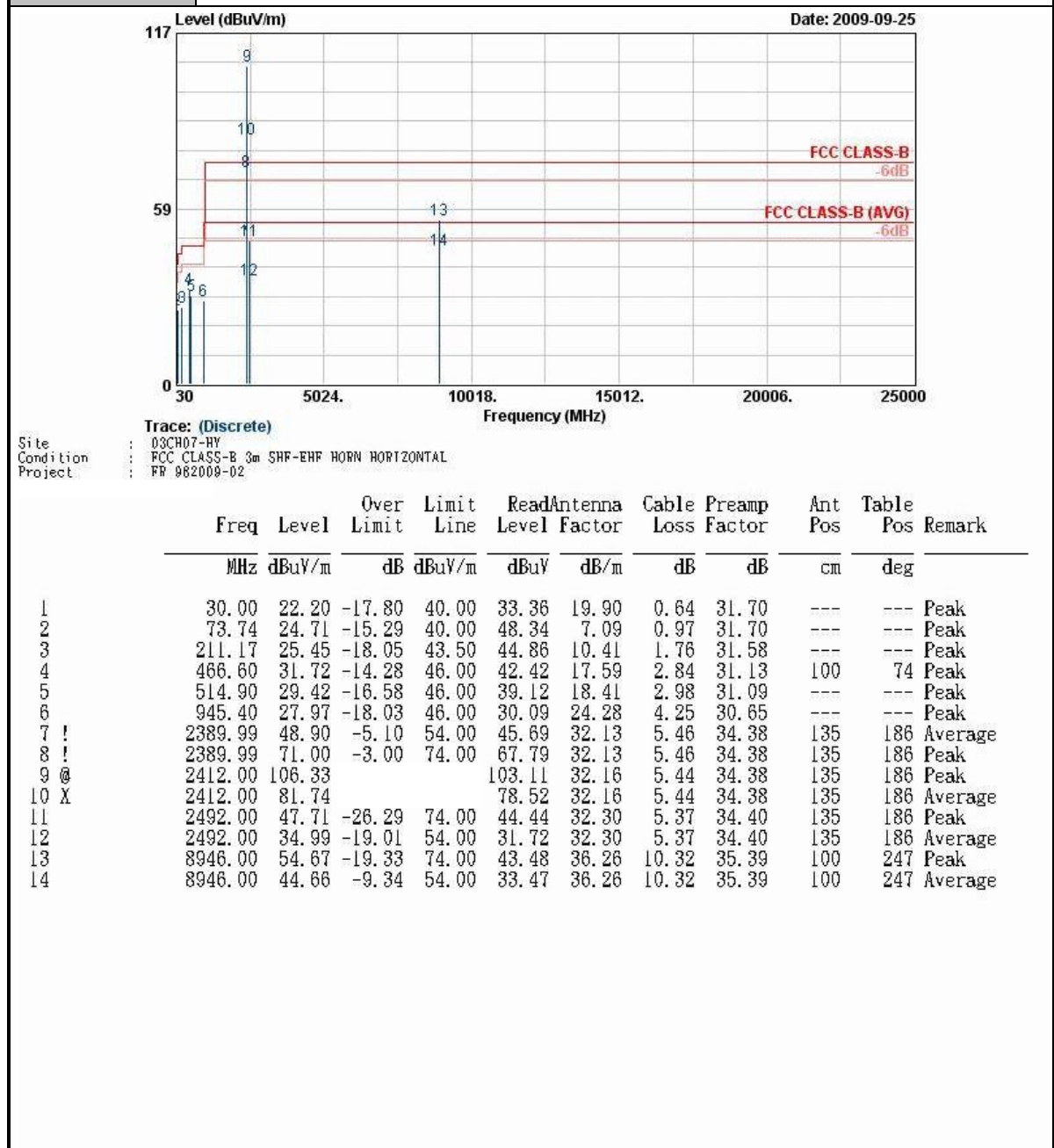


Test Mode :	Mode 6	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



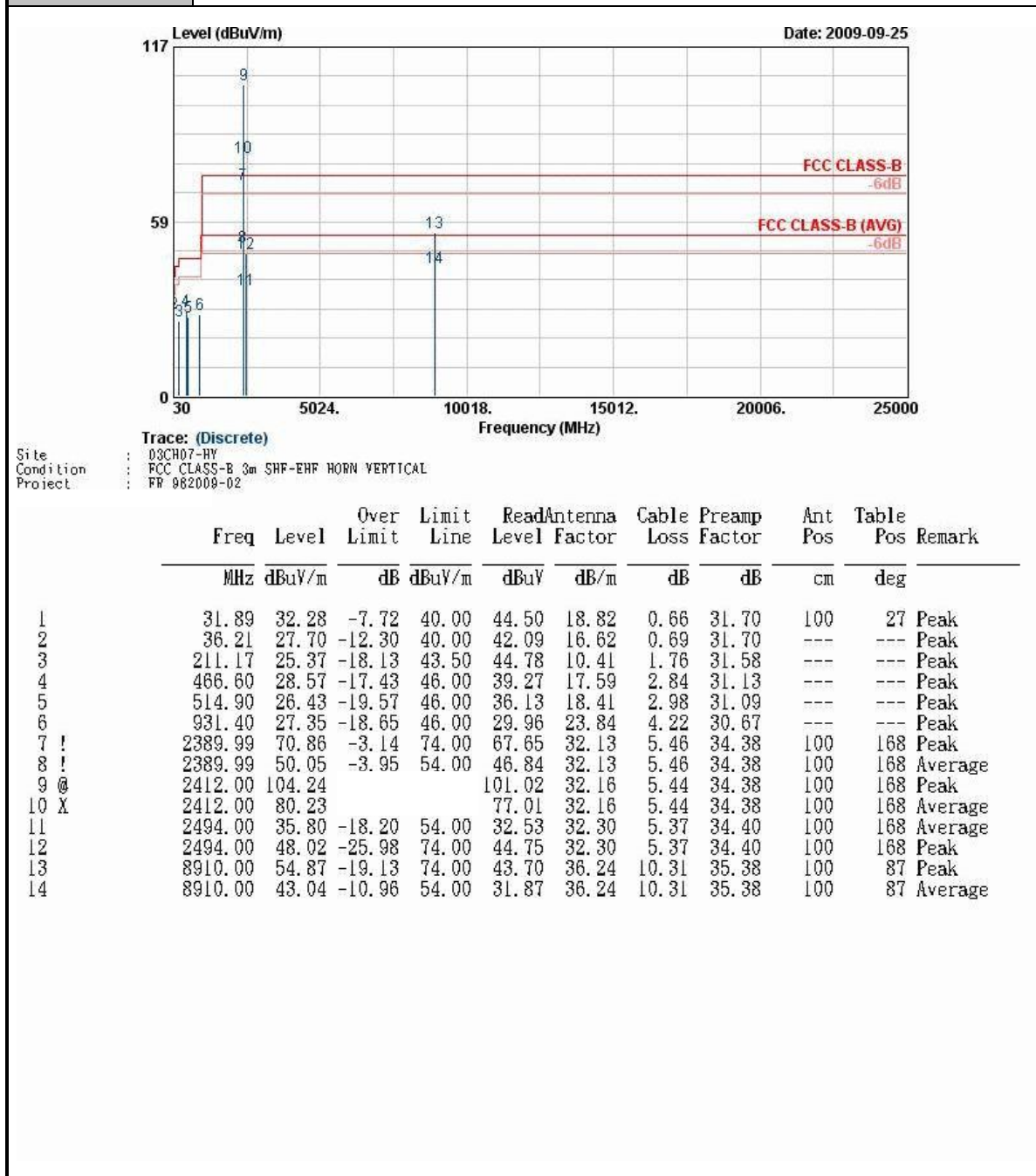


Test Mode :	Mode 7	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 7	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	39~40%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Connected Construction

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

3.8.3 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-1000W	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)
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	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. 16, 2008	Oct. 15, 2009	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 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 (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-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 (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=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 $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 \Gamma_2)$	+0.34/-0.35	U-shaped	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



Certificate No. : L1190-090417

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 Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities



Jay-San Chen
President, Taiwan Accreditation Foundation
Date : April 17, 2009

Pl, total 20 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 EP982009-02 as below.