

Partial FCC RF Test Report

APPLICANT : Acer Inc.
EQUIPMENT : WLAN Module
BRAND NAME : Acer, Gateway, PackardBell
MODEL NAME : AR5B95
FCC ID : HLZ-AR5B95
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

This is a partial report which is only valid combined with the WLAN module (Brand Name: Atheros / Model Name: AR5B95 / FCC ID: PPD-AR5B95) report. The product was installed into Notebook Computer (Brand Name: Acer, Gateway, PackardBell, Model Name: ZG8, Aspire one, AO530) during test.

The product was received on Jul. 27, 2009 and completely tested on Aug. 09, 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
FR921118-07	Rev. 01	Initial issue of report	Aug. 12, 2009

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.2	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 10.5 dB at 0.206 MHz
3.3	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.62 dB at 2483.50 MHz
3.4	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Acer Inc.

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

1.2 Manufacturer

Quanta Computer Inc.

1. No. 2, Lane 58, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R. China
2. No. 4, Wen Ming 1st Street, Kuei Shan Hsiang, Taoyuan Shien 333, Taiwan, R.O.C.
3. No. 8, Dongjing Rd., Songjiang Industrial Zone, Shanghai, P.R. China
4. No. 4, Lane 58, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R. China
5. North to Songsheng Road, Songjiang Industrial Zone, Shanghai, P.R. China
6. B#, No. 1, South Rongteng Road, Songjiang Export Processing Zone, Shanghai, P.R. China
7. Standard Factory, South to Valqua, Rongxin Road, Songjiang Export Processing Zone, Shanghai, P.R. China
8. C#, No. 1, South Rongteng Road, Songhjang Export Processing Zone, Shanghai, P.R. China
9. No. 6, Lane 66, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R. China
10. No. 6, Lane 58, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R. China
11. Huade Building, No. 18, ChuangYe Rd., ShandDi Zone, HaiDian District, Beijing, P.R.C.
12. No. 68, Sanzhuang Road, Songjiang Export Processing Zone, Shanghai, P.R. China
13. 2F., C Building, XinYe Rd., Export Processing District In Torch, Zhongshan, Guangdong, P.R.C.

1.3 Feature of Equipment under Test

Product Feature & Specification	
Equipment	WLAN Module
Brand Name	Acer, Gateway, PackardBell
Model Name	AR5B95
FCC ID	HLZ-AR5B95
Host (Notebook Computer)	Brand Name : Acer, Gateway, PackardBell Model Name : ZG8, Aspire one, AO530 HW Version : E (MB) SW Version : 2106 (BIOS) Antenna Type : Fixed Internal Antenna
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Channel Spacing	5 MHz
Type of Modulation	802.11b: DSSS (BPSK / QPSK / CCK) 802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark: This test report recorded only product characteristics and test results of Digital Transmission System (DTS).

List of Accessory for Host (Notebook Computer):

Specification of Accessory		
AC Adapter	Brand Name	DELTA
	Model Name	ADP-30JH B
	Power Rating	I/P:100-240Vac, 50-60Hz, 1.2A; O/P: 19Vdc, 1.58A
	DC Power Cord Type	1.5 meter shielded cable with ferrite core
Battery	Brand Name	SONY
	Model Name	UM09A41
	Power Rating	11.1Vdc, 2200mAh, 25Wh
	Type	Li-ion

Remark: Please refer to the user's manual for more detailed information of host (notebook computer) (Brand Name: Acer, Gateway, PackardBell / Model Name: ZG8, Aspire one, AO530).

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	03CH07HY	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.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
3.	Earphone	Kolin	Kit-7460E	FCC DoC	Unshielded, 1.6 m	N/A
4.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
5.	USB Cable	Apple	N/A	N/A	Shielded, 1.0 m	N/A
6.	i-Pod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment under Test

2.1 RF Output Power

Channel	Frequency (MHz)	802.11b RF Power (dBm)	802.11b RF Power (dBm)	802.11n (BW 20MHz) RF Power (dBm)
		Data Rate: 1Mbps	Data Rate: 6Mbps	Data Rate: 6.5Mbps
CH 01	2412 MHz	17.40	13.69	12.74
CH 06	2437 MHz	17.49	17.29	17.00
CH 11	2462 MHz	17.84	14.67	14.00

Channel	Frequency (MHz)	802.11n (BW 40MHz) RF Power (dBm)
		Data Rate: 13.5Mbps
CH 03	2422 MHz	9.89
CH 06	2437 MHz	13.41
CH 09	2452 MHz	9.60

Remark: 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).

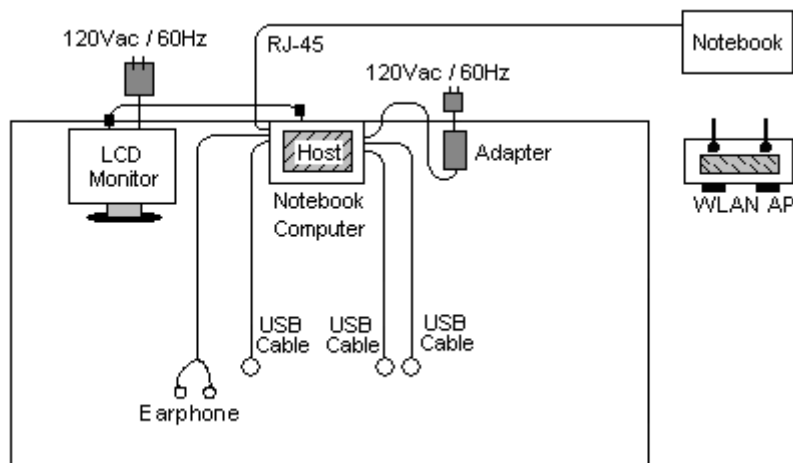
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

The following table is showing the total pre-scanned test modes, and the worst modes are recorded in this report only.

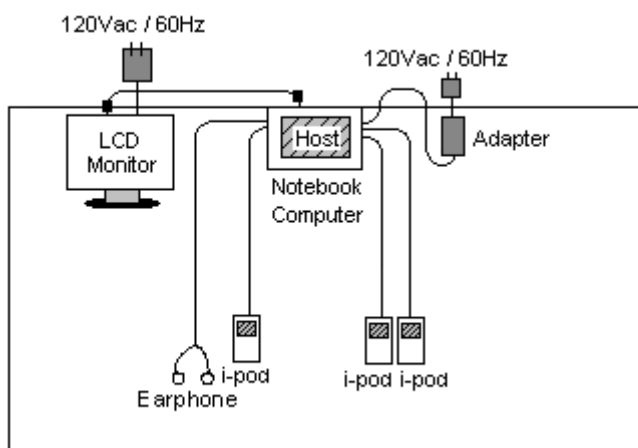
Test Cases	
Test Item	802.11b (Modulation : DSSS) 802.11g/n (Modulation : OFDM)
Radiated TCs	Mode 1: 802.11b_CH01_2412 MHz Mode 2: 802.11b_CH06_2437 MHz Mode 3: 802.11b_CH11_2462 MHz Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n_CH01_2412 MHz (BW 20MHz) Mode 8: 802.11n_CH06_2437 MHz (BW 20MHz) Mode 9: 802.11n_CH11_2462 MHz (BW 20MHz) Mode 10: 802.11n_CH03_2442 MHz (BW 40MHz) Mode 11: 802.11n_CH06_2437 MHz (BW 40MHz) Mode 12: 802.11n_CH09_2452 MHz (BW 40MHz)
AC Conducted Emission	Mode 1 : WLAN Link + TC
Remark: 1. TC stands for Test Configuration, and consists of adapter, LCD monitor, earphone, USB cable, and RJ-45. 2. Only the radiated emission and conducted emission tests of the WLAN Module on this Notebook Computer was performed in this report and the conducted test cases can be referred to the WLAN module (Brand Name: Atheros / Model Name: AR5B95 / FCC ID: PPD-AR5B95) report.	

2.3 Connection Diagram of Test System

<Conducted Emission Test>



<Radiated Emission Test>



Note: The EUT is a WLAN module which was installed into the host Notebook Computer (Brand Name: Acer, Gateway, PackardBell / Model Name: ZG8, Aspire one, AO530) during the test.

2.4 RF Utility

The programmed RF utility "ART" is installed in host notebook computer 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 Band Edges Measurement

3.1.1 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.

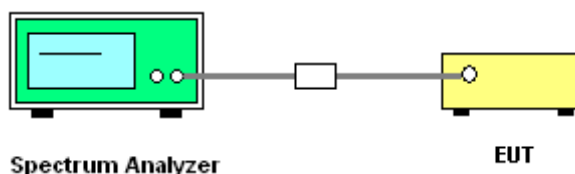
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	41~42%
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
2390.00	49.85	-24.15	74.00	46.76	32.02	5.46	34.38	102	319	Peak
2390.00	38.43	-15.57	54.00	35.34	32.02	5.46	34.38	102	319	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	48.18	-25.82	74.00	45.09	32.02	5.46	34.38	107	342	Peak
2390.00	36.32	-17.68	54.00	33.23	32.02	5.46	34.38	107	342	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	41~42%
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	54.86	-19.14	74.00	51.79	32.09	5.38	34.40	100	306	Peak
2483.50	43.05	-10.95	54.00	39.98	32.09	5.38	34.40	100	306	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	51.45	-22.55	74.00	48.38	32.09	5.38	34.40	104	338	Peak
2483.50	39.68	-14.32	54.00	36.61	32.09	5.38	34.40	104	338	Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	41~42%
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
2390.00	56.16	-17.84	74.00	53.07	32.02	5.46	34.38	103	320	Peak
2390.00	38.31	-15.69	54.00	35.22	32.02	5.46	34.38	103	320	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	53.90	-20.10	74.00	50.81	32.02	5.46	34.38	106	344	Peak
2390.00	36.21	-17.79	54.00	33.12	32.02	5.46	34.38	106	344	Average

Test Mode :	Mode 6	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	41~42%
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	64.26	-9.74	74.00	61.19	32.09	5.38	34.40	100	306	Peak
2483.50	45.86	-8.14	54.00	42.79	32.09	5.38	34.40	100	306	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	59.97	-14.03	74.00	56.90	32.09	5.38	34.40	104	348	Peak
2483.50	42.11	-11.89	54.00	39.04	32.09	5.38	34.40	104	338	Average



Test Mode :	Mode 7	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
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
2390.00	62.01	-11.99	74.00	58.92	32.02	5.46	34.38	100	319	Peak
2390.00	40.87	-13.13	54.00	37.78	32.02	5.46	34.38	100	319	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	59.51	-14.49	74.00	56.42	32.02	5.46	34.38	100	320	Peak
2390.00	40.23	-13.77	54.00	37.14	32.02	5.46	34.38	100	320	Average

Test Mode :	Mode 9	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
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	68.92	-5.08	74.00	65.85	32.09	5.38	34.40	100	104	Peak
2483.50	50.52	-3.48	54.00	47.45	32.09	5.38	34.40	100	104	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	61.02	-12.98	74.00	57.95	32.09	5.38	34.40	100	322	Peak
2483.50	40.14	-13.86	54.00	37.07	32.09	5.38	34.40	100	322	Average



Test Mode :	Mode 10	Temperature :	24~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	41~42%
Test Channel :	03	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	63.02	-10.98	74.00	59.93	32.02	5.46	34.38	100	320	Peak
2389.99	43.84	-10.16	54.00	40.75	32.02	5.46	34.38	100	320	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	63.55	-10.45	74.00	60.45	32.02	5.46	34.38	105	340	Peak
2389.61	45.50	-8.50	54.00	42.41	32.02	5.46	34.38	105	340	Average

Test Mode :	Mode 12	Temperature :	24~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	41~42%
Test Channel :	09	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	70.57	-3.43	74.00	67.50	32.09	5.38	34.40	100	318	Peak
2483.50	53.38	-0.62	54.00	50.31	32.09	5.38	34.40	100	318	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	62.35	-11.65	74.00	59.28	32.09	5.38	34.40	131	338	Peak
2485.18	46.57	-7.43	54.00	43.50	32.09	5.38	34.40	131	338	Average

3.2 AC Conducted Emission Measurement

3.2.1 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.

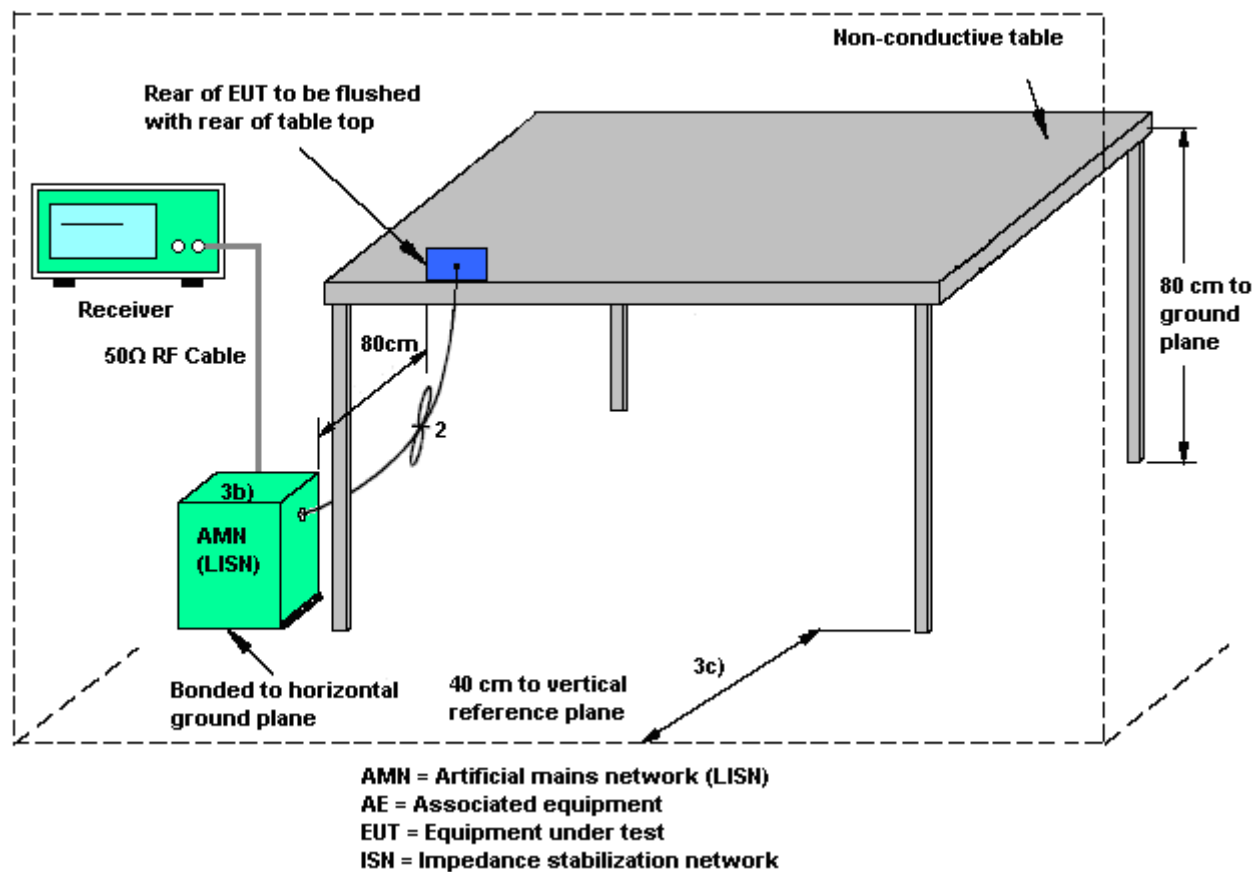
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

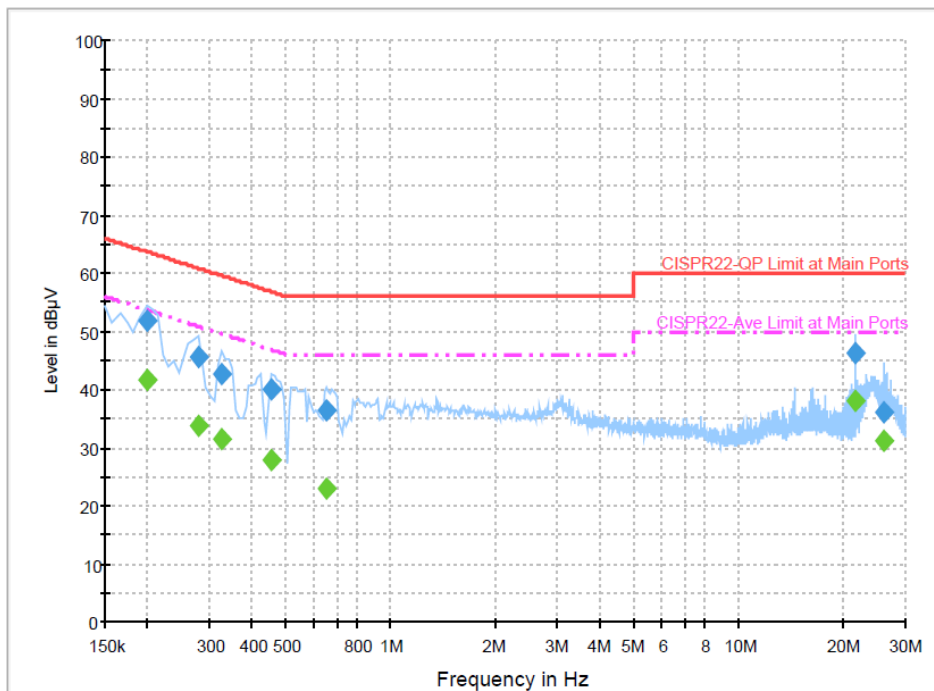
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.2.4 Test Setup



3.2.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Cona Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



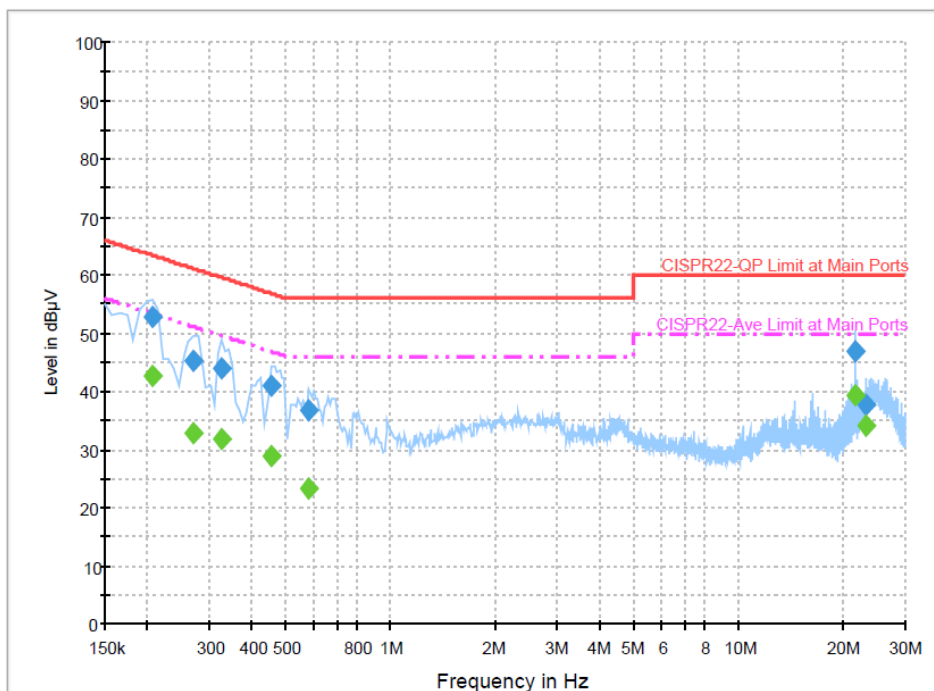
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.198000	51.7	Off	L1	19.5	12.1	63.7
0.278000	45.4	Off	L1	19.4	15.5	60.9
0.326000	42.6	Off	L1	19.4	17.0	59.6
0.454000	40.0	Off	L1	19.4	16.8	56.8
0.654000	36.5	Off	L1	19.5	19.5	56.0
21.598000	46.2	Off	L1	19.8	13.8	60.0
25.998000	35.9	Off	L1	19.8	24.1	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.198000	41.8	Off	L1	19.5	11.9	53.7
0.278000	33.6	Off	L1	19.4	17.3	50.9
0.326000	31.5	Off	L1	19.4	18.1	49.6
0.454000	27.8	Off	L1	19.4	19.0	46.8
0.654000	23.0	Off	L1	19.5	23.0	46.0
21.598000	38.1	Off	L1	19.8	11.9	50.0
25.998000	31.3	Off	L1	19.8	18.7	50.0

Test Mode :	Mode 1	Temperature :	23~24°C
Test Engineer :	Cona Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + TC		
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)
0.206000	52.9	Off	N	19.5	10.5	63.4
0.270000	45.3	Off	N	19.4	15.8	61.1
0.326000	43.9	Off	N	19.5	15.7	59.6
0.454000	41.1	Off	N	19.4	15.7	56.8
0.582000	36.8	Off	N	19.5	19.2	56.0
21.598000	47.0	Off	N	19.8	13.0	60.0
23.126000	37.6	Off	N	19.9	22.4	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.206000	42.5	Off	N	19.5	10.9	53.4
0.270000	32.8	Off	N	19.4	18.3	51.1
0.326000	31.8	Off	N	19.5	17.8	49.6
0.454000	28.9	Off	N	19.4	17.9	46.8
0.582000	23.2	Off	N	19.5	22.8	46.0
21.598000	39.4	Off	N	19.8	10.6	50.0
23.126000	34.2	Off	N	19.9	15.8	50.0

3.3 Radiated Emission Measurement

3.3.1 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

3.3.2 Measuring Instruments

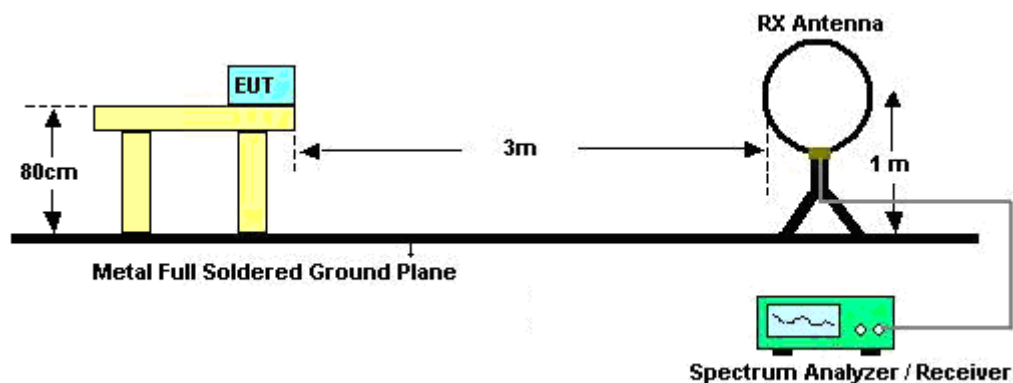
See list of measuring instruments of this test report.

3.3.3 Test Procedures

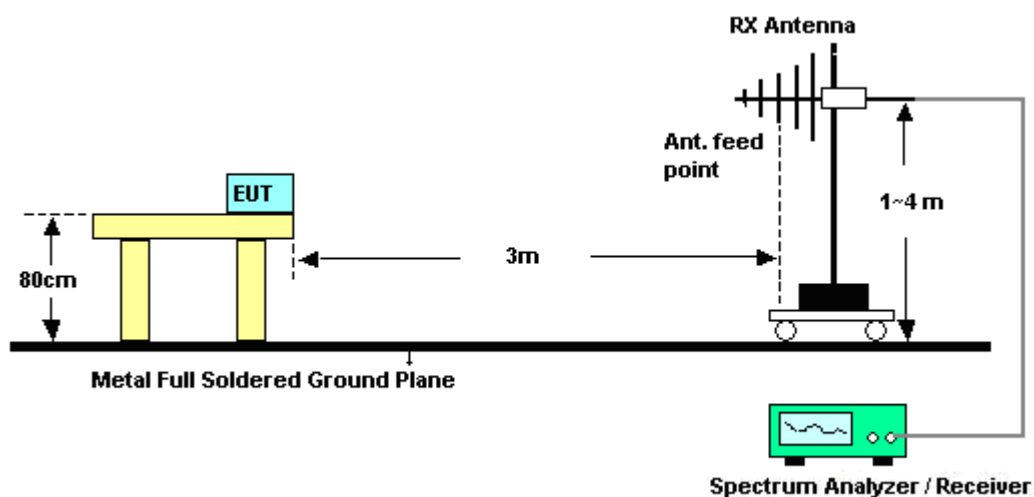
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto;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

3.3.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	Kay Wu	Temperature :	24~25°C	
		Relative Humidity :	41~42%	

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

Note:

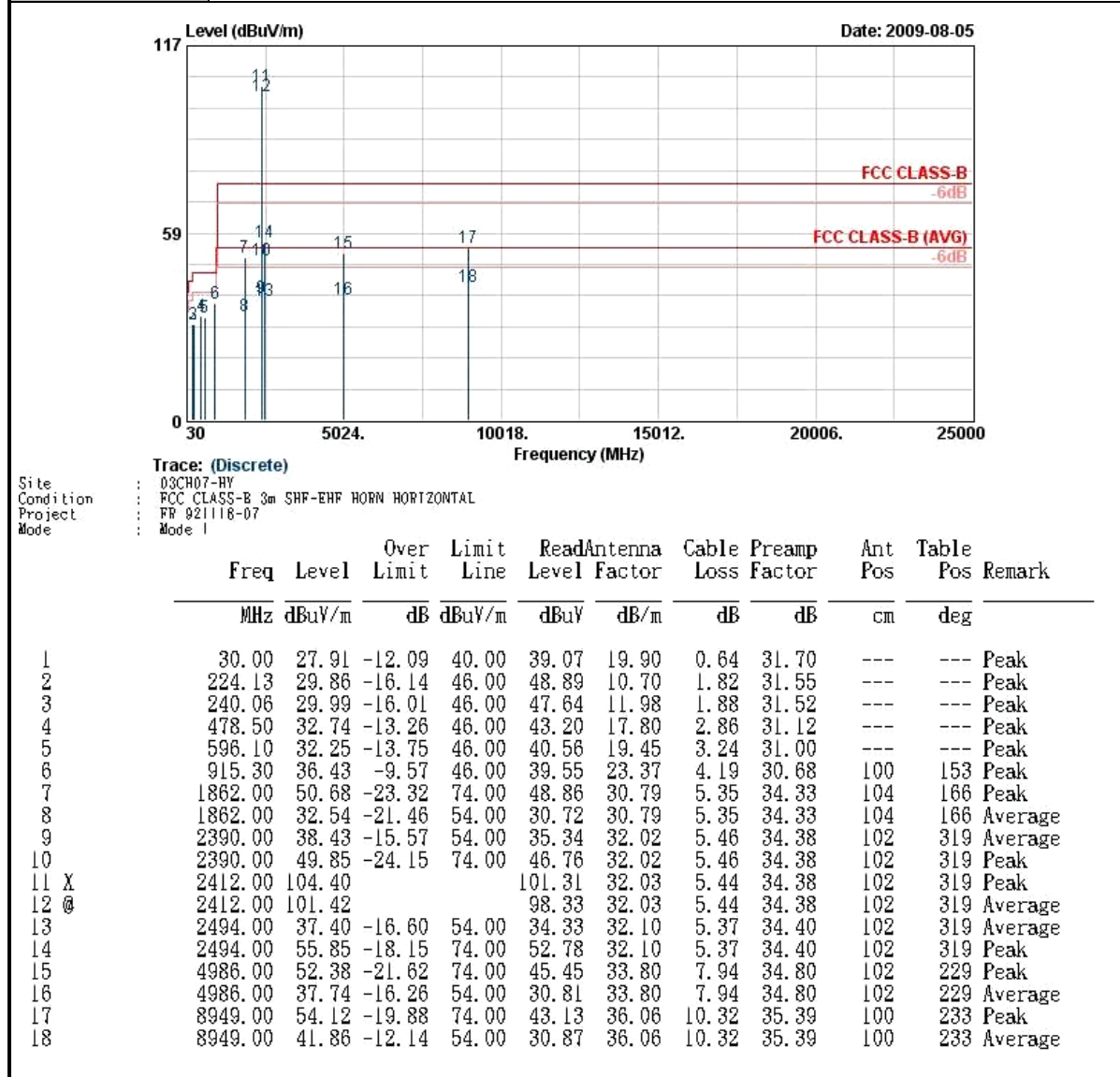
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

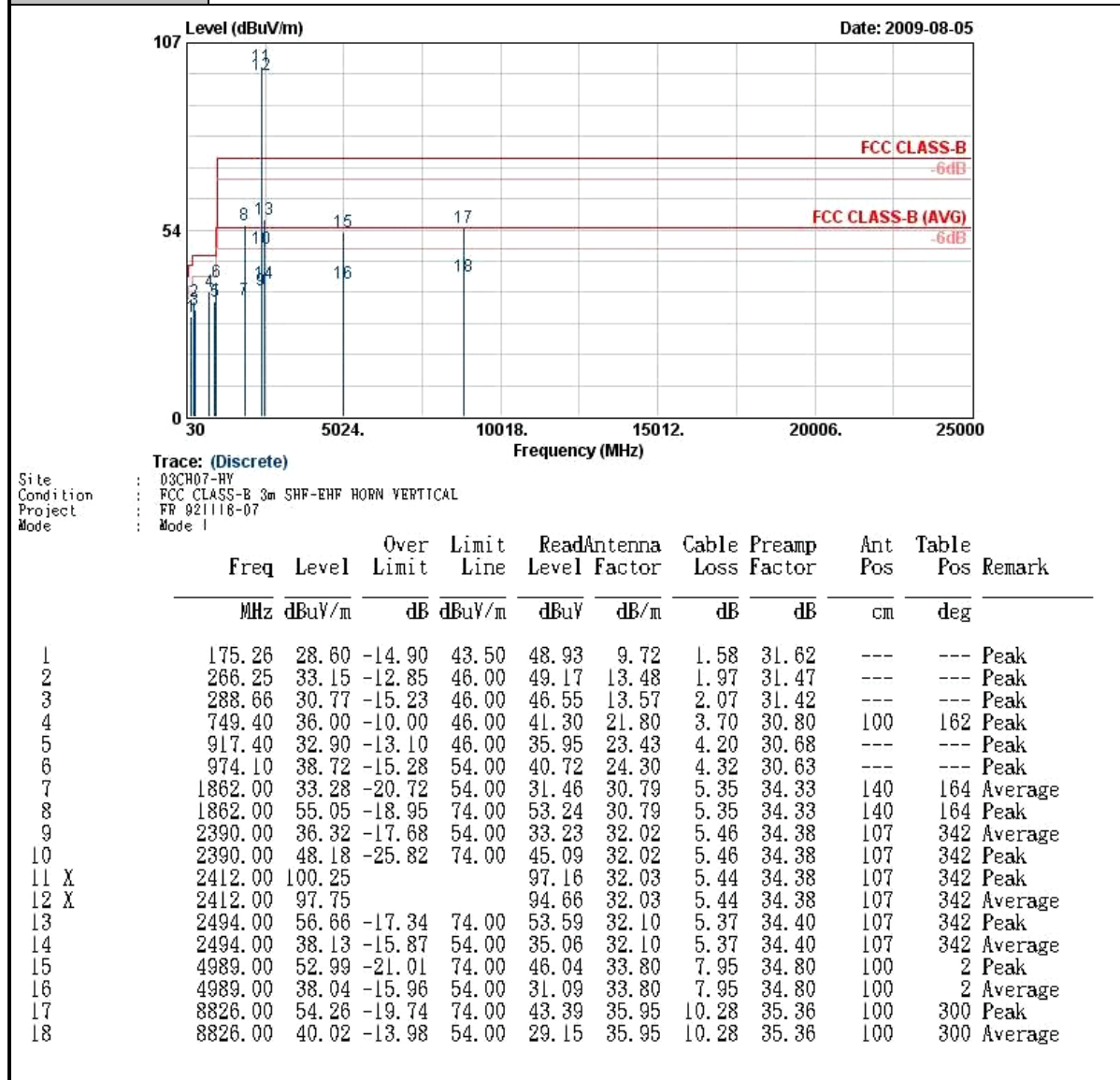
3.3.6 Test Result of Radiated Emission (30MHz ~10th Harmonic)

Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



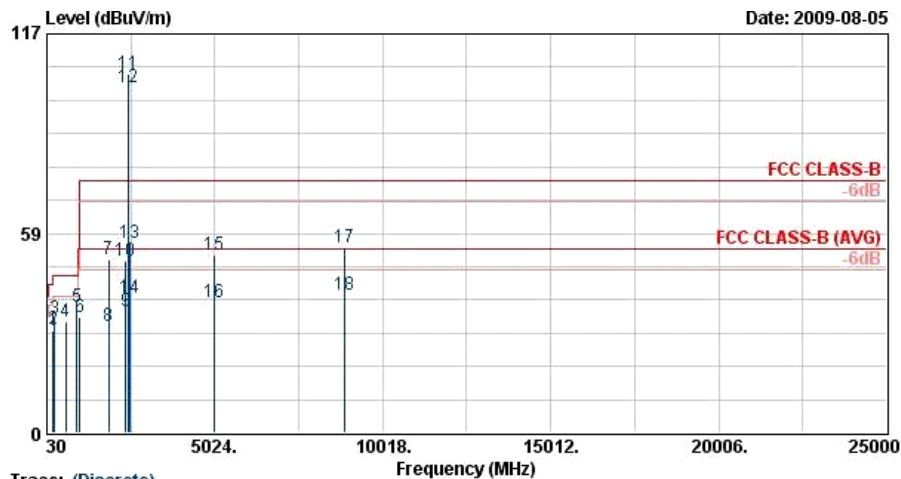


Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		





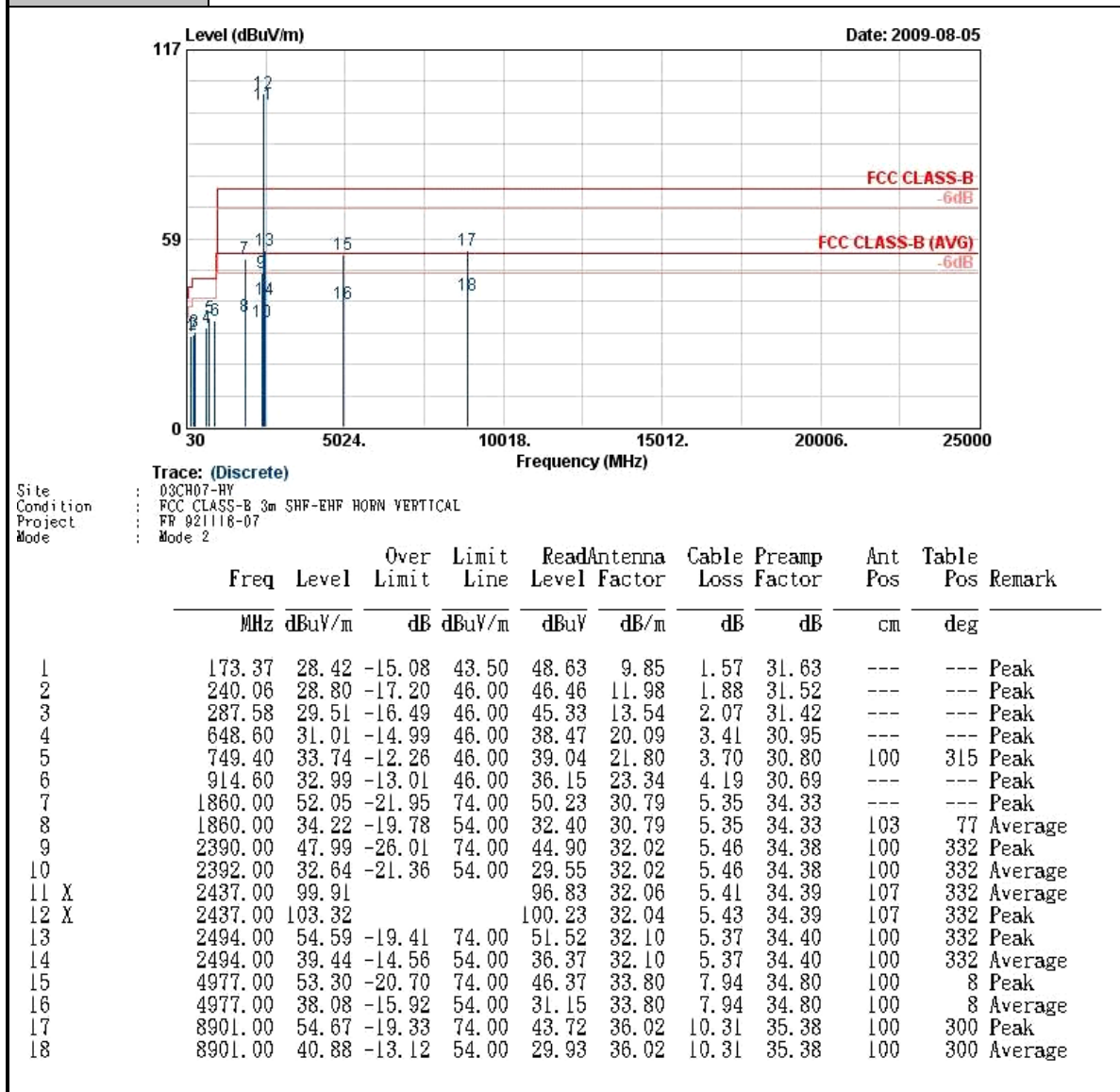
Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	224.13	30.09	-15.91	46.00	49.13	10.70	1.82	31.55	---	---	Peak
2	240.06	30.58	-15.42	46.00	48.23	11.98	1.88	31.52	---	---	Peak
3	266.25	33.70	-12.30	46.00	49.71	13.48	1.97	31.47	---	---	Peak
4	587.00	32.46	-13.54	46.00	40.93	19.34	3.21	31.01	---	---	Peak
5	915.30	36.89	-9.11	46.00	40.02	23.37	4.19	30.68	100	251	Peak
6	999.30	34.05	-19.95	54.00	36.07	24.20	4.38	30.60	---	---	Peak
7	1862.00	50.98	-23.02	74.00	49.17	30.79	5.35	34.33	100	312	Peak
8	1862.00	31.47	-22.53	54.00	29.65	30.79	5.35	34.33	100	312	Average
9	2366.00	35.46	-18.54	54.00	32.36	31.99	5.49	34.37	100	321	Average
10	2366.00	50.33	-23.67	74.00	47.23	31.99	5.49	34.37	100	321	Peak
11 X	2437.00	105.09			102.01	32.06	5.41	34.39	100	321	Peak
12 @	2437.00	101.35			98.27	32.06	5.41	34.39	100	321	Average
13	2494.00	55.65	-18.35	74.00	52.58	32.10	5.37	34.40	100	321	Peak
14	2494.00	39.78	-14.22	54.00	36.71	32.10	5.37	34.40	100	321	Average
15	4998.00	52.21	-21.79	74.00	45.26	33.80	7.95	34.80	102	256	Peak
16	4998.00	38.14	-15.86	54.00	31.19	33.80	7.95	34.80	102	256	Average
17	8877.00	54.22	-19.78	74.00	43.31	35.99	10.30	35.37	100	280	Peak
18	8877.00	40.58	-13.42	54.00	29.66	35.99	10.30	35.37	100	280	Average

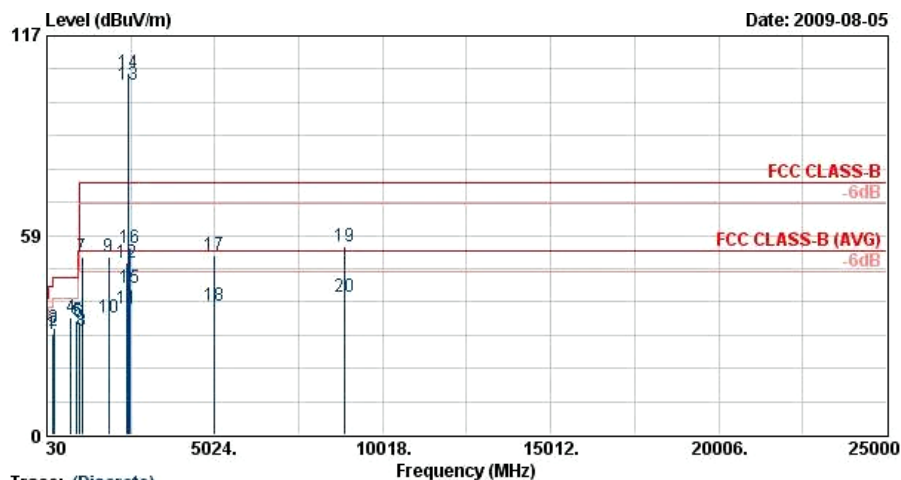


Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		





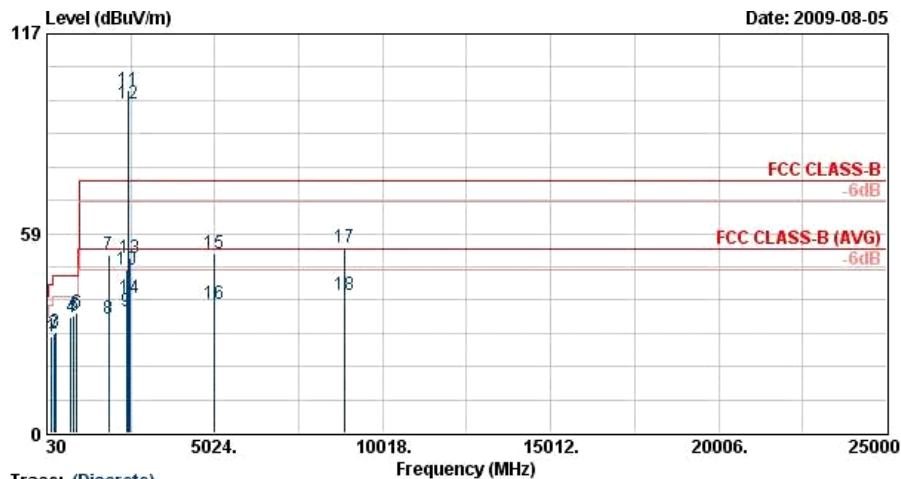
Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#13 and #14 are Fundamental Signals which can be ignored.		



	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	200.10	29.44	-14.06	43.50	49.14	10.20	1.70	31.60	---	---	Peak
2	229.26	30.47	-15.53	46.00	49.23	10.95	1.84	31.54	---	---	Peak
3	240.06	31.30	-14.70	46.00	48.95	11.98	1.88	31.52	---	---	Peak
4	749.40	34.44	-11.56	46.00	39.74	21.80	3.70	30.80	102	87	Peak
5	911.80	33.52	-12.48	46.00	36.77	23.25	4.18	30.69	---	---	Peak
6	996.50	33.22	-20.78	54.00	35.24	24.22	4.37	30.60	---	---	Peak
7	1076.00	51.99	-22.01	74.00	55.83	27.61	3.47	34.92	100	70	Peak
8	1076.00	30.47	-23.53	54.00	34.31	27.61	3.47	34.92	100	70	Average
9	1860.00	52.02	-21.98	74.00	50.20	30.79	5.35	34.33	100	164	Peak
10	1860.00	34.17	-19.83	54.00	32.35	30.79	5.35	34.33	100	164	Average
11	2388.00	36.88	-17.12	54.00	33.79	32.02	5.46	34.38	100	306	Average
12	2388.00	50.64	-23.36	74.00	47.55	32.02	5.46	34.38	100	306	Peak
13 @	2462.00	102.63			99.55	32.07	5.40	34.39	100	306	Average
14 X	2462.00	106.05			102.97	32.07	5.40	34.39	100	306	Peak
15	2483.50	43.05	-10.95	54.00	39.98	32.09	5.38	34.40	100	306	Average
16	2483.50	54.86	-19.14	74.00	51.79	32.09	5.38	34.40	100	306	Peak
17	4989.00	52.72	-21.28	74.00	45.77	33.80	7.95	34.80	102	256	Peak
18	4989.00	37.95	-16.05	54.00	31.00	33.80	7.95	34.80	102	256	Average
19	8889.00	55.08	-18.92	74.00	44.15	36.01	10.30	35.38	100	247	Peak
20	8889.00	40.49	-13.51	54.00	29.56	36.01	10.30	35.38	100	247	Average



Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



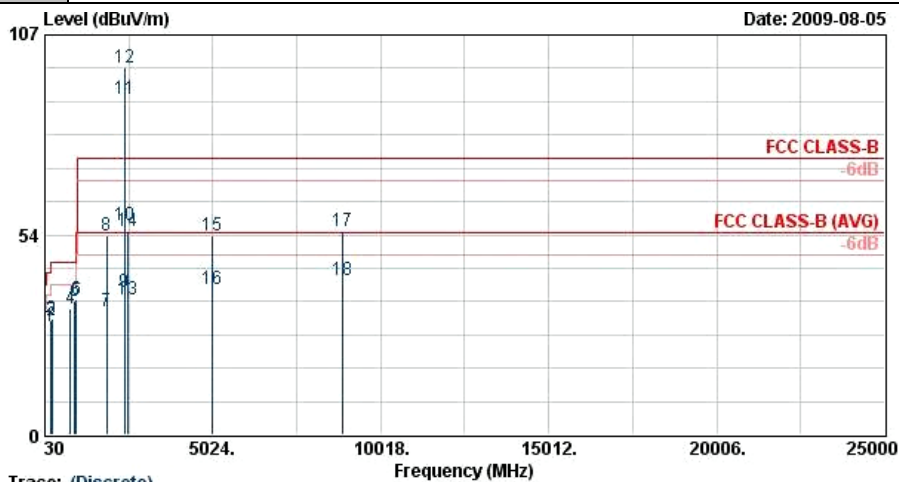
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	177.69	28.47	-15.03	43.50	48.91	9.59	1.60	31.62	---	---	Peak
2	230.34	29.18	-16.82	46.00	47.78	11.09	1.84	31.54	---	---	Peak
3	288.66	29.43	-16.57	46.00	45.21	13.57	2.07	31.42	---	---	Peak
4	749.40	33.81	-12.19	46.00	39.11	21.80	3.70	30.80	---	---	Peak
5	844.60	34.32	-11.68	46.00	38.18	22.89	3.95	30.70	---	---	Peak
6	914.60	35.41	-10.59	46.00	38.56	23.34	4.19	30.69	100	225	Peak
7	1860.00	52.25	-21.75	74.00	50.44	30.79	5.35	34.33	102	312	Peak
8	1860.00	33.39	-20.61	54.00	31.57	30.79	5.35	34.33	102	312	Average
9	2398.00	35.54	-18.46	54.00	32.45	32.02	5.46	34.38	104	338	Average
10	2398.00	47.66	-26.34	74.00	44.57	32.02	5.46	34.38	104	338	Peak
11 X	2462.00	100.40			97.32	32.07	5.40	34.39	104	338	Peak
12 @	2462.00	96.70			93.62	32.07	5.40	34.39	104	338	Average
13	2483.50	51.45	-22.55	74.00	48.38	32.09	5.38	34.40	104	338	Peak
14	2483.50	39.68	-14.32	54.00	36.61	32.09	5.38	34.40	104	338	Average
15	4998.00	52.50	-21.50	74.00	45.55	33.80	7.95	34.80	100	7	Peak
16	4998.00	37.70	-16.30	54.00	30.75	33.80	7.95	34.80	100	7	Average
17	8865.00	54.52	-19.48	74.00	43.60	35.99	10.30	35.37	100	270	Peak
18	8865.00	40.50	-13.50	54.00	29.58	35.99	10.30	35.37	100	270	Average



FCC RF Test Report

Report No. : FR921118-07

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		

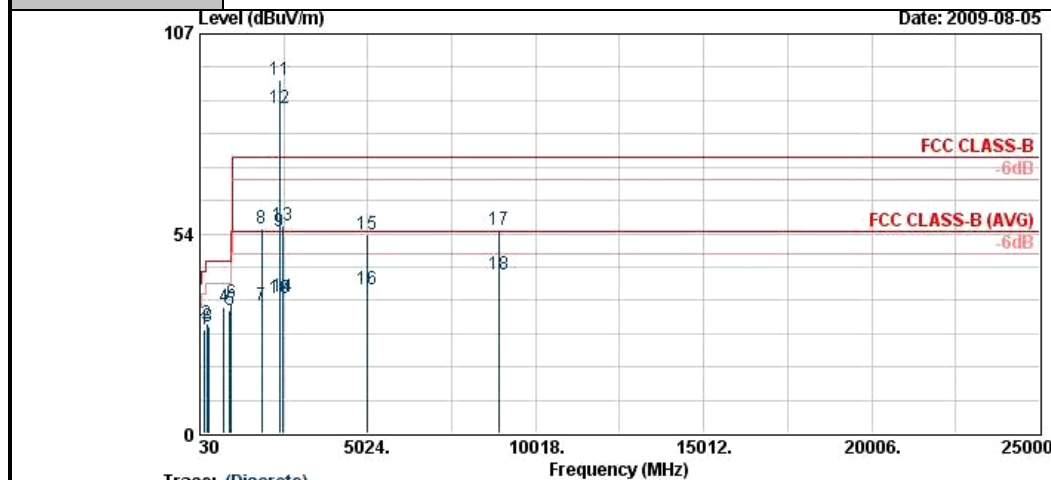


Trace: (Discrete)
Site : 03CH07-RV
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 921118-07
Mode : Mode 4

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	200.10	29.09	-14.41	43.50	48.79	10.20	1.70	31.60	---	Peak
2	224.94	30.52	-15.48	46.00	49.50	10.75	1.82	31.55	---	Peak
3	240.06	30.91	-15.09	46.00	48.56	11.98	1.88	31.52	---	Peak
4	797.70	33.96	-12.04	46.00	38.93	21.89	3.84	30.71	---	Peak
5	914.60	35.94	-10.06	46.00	39.10	23.34	4.19	30.69	100	322 Peak
6	976.20	36.32	-17.68	54.00	38.33	24.30	4.32	30.62	---	Peak
7	1860.00	33.01	-20.99	54.00	31.19	30.79	5.35	34.33	100	263 Average
8	1860.00	53.12	-20.88	74.00	51.30	30.79	5.35	34.33	100	263 Peak
9	2390.00	38.31	-15.69	54.00	35.22	32.02	5.46	34.38	103	320 Average
10	2390.00	56.16	-17.84	74.00	53.07	32.02	5.46	34.38	103	320 Peak
11 @	2412.00	89.73			86.64	32.03	5.44	34.38	103	320 Average
12 X	2412.00	98.20			95.11	32.03	5.44	34.38	103	320 Peak
13	2494.00	36.08	-17.92	54.00	33.01	32.10	5.37	34.40	103	320 Average
14	2494.00	54.37	-19.63	74.00	51.30	32.10	5.37	34.40	103	320 Peak
15	4998.00	53.27	-20.73	74.00	46.32	33.80	7.95	34.80	100	326 Peak
16	4998.00	38.83	-15.17	54.00	31.88	33.80	7.95	34.80	100	326 Average
17	8901.00	54.59	-19.41	74.00	43.64	36.02	10.31	35.38	100	96 Peak
18	8901.00	41.40	-12.60	54.00	30.45	36.02	10.31	35.38	100	96 Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



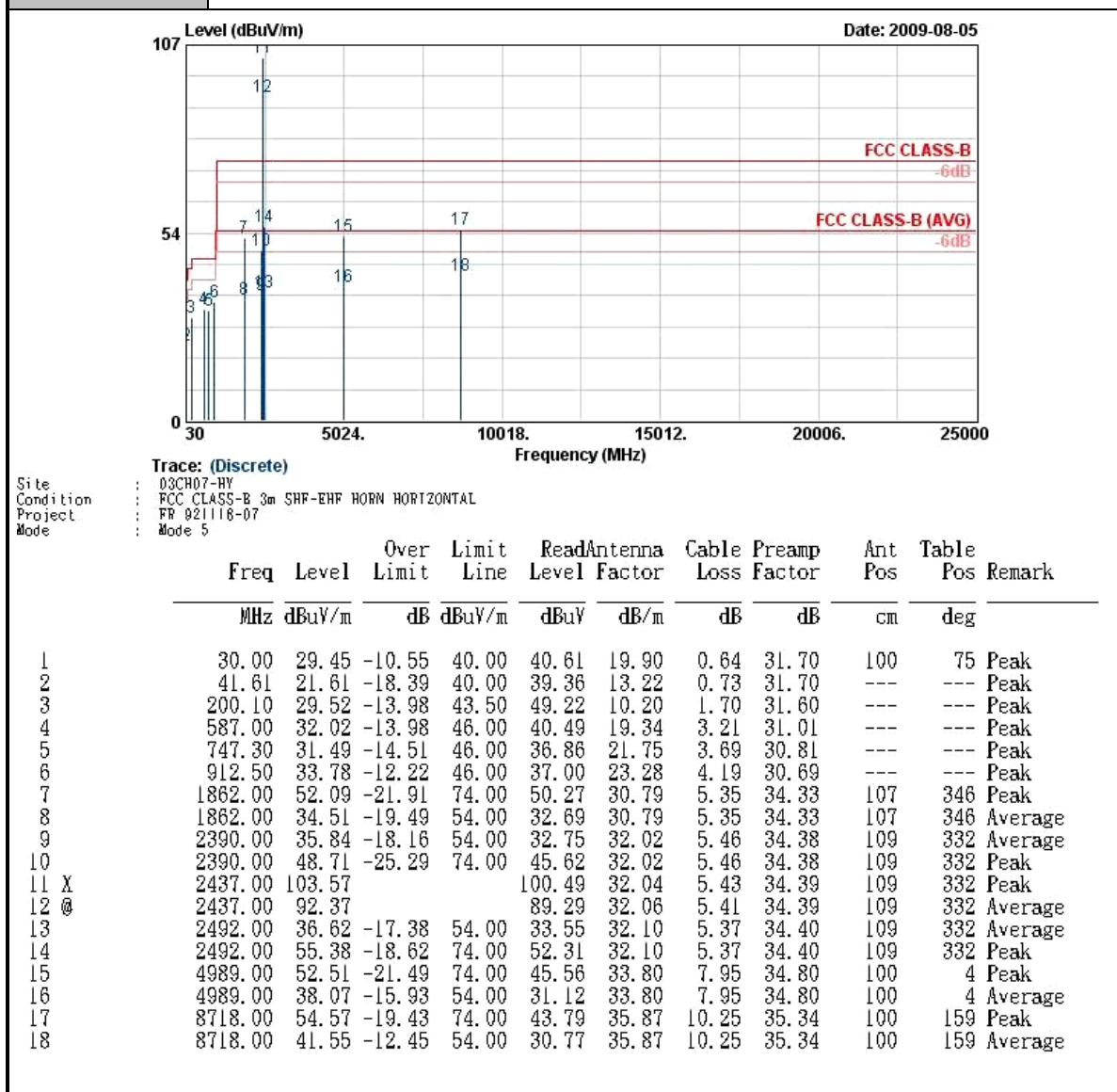
Trace: (Discrete)

Site : D3CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 921118-07
Mode : Mode 4

	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	174.45	27.85	-15.65	43.50	48.12	9.78	1.57	31.63	---	---	Peak
2	240.06	29.34	-16.66	46.00	47.00	11.98	1.88	31.52	---	---	Peak
3	288.66	28.52	-17.48	46.00	44.30	13.57	2.07	31.42	---	---	Peak
4	747.30	33.71	-12.29	46.00	39.08	21.75	3.69	30.81	100	139	Peak
5	914.60	33.11	-12.89	46.00	36.27	23.34	4.19	30.69	---	---	Peak
6	976.20	35.05	-18.95	54.00	37.06	24.30	4.32	30.62	---	---	Peak
7	1862.00	34.32	-19.68	54.00	32.50	30.79	5.35	34.33	100	345	Average
8	1862.00	54.72	-19.28	74.00	52.90	30.79	5.35	34.33	100	345	Peak
9	2390.00	53.90	-20.10	74.00	50.81	32.02	5.46	34.38	106	344	Peak
10	2390.00	36.21	-17.79	54.00	33.12	32.02	5.46	34.38	106	344	Average
11 X	2412.00	94.81			91.72	32.03	5.44	34.38	106	344	Peak
12 @	2412.00	87.14			84.05	32.03	5.44	34.38	106	344	Average
13	2494.00	55.62	-18.38	74.00	52.55	32.10	5.37	34.40	106	344	Peak
14	2494.00	36.76	-17.24	54.00	33.69	32.10	5.37	34.40	106	344	Average
15	4986.00	53.14	-20.86	74.00	46.21	33.80	7.94	34.80	100	8	Peak
16	4986.00	38.66	-15.34	54.00	31.73	33.80	7.94	34.80	100	8	Average
17	8934.00	54.63	-19.37	74.00	43.65	36.05	10.32	35.39	100	312	Peak
18	8934.00	42.50	-11.50	54.00	31.52	36.05	10.32	35.39	100	312	Average

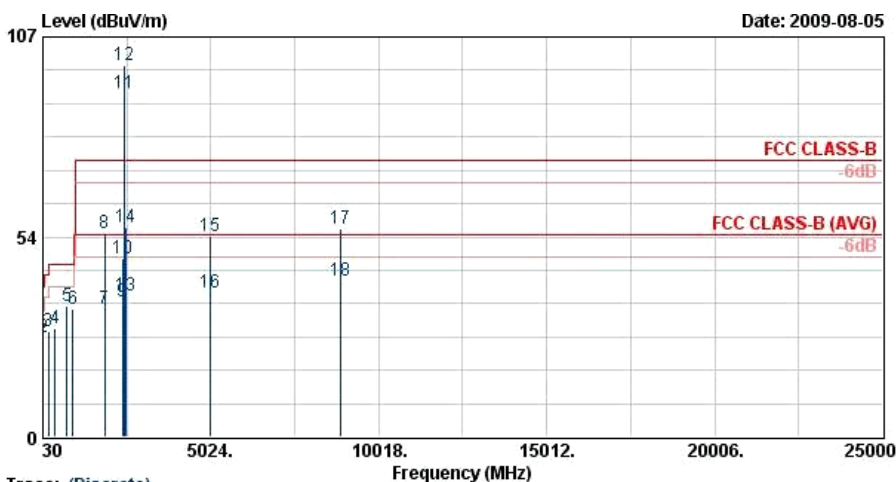


Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		





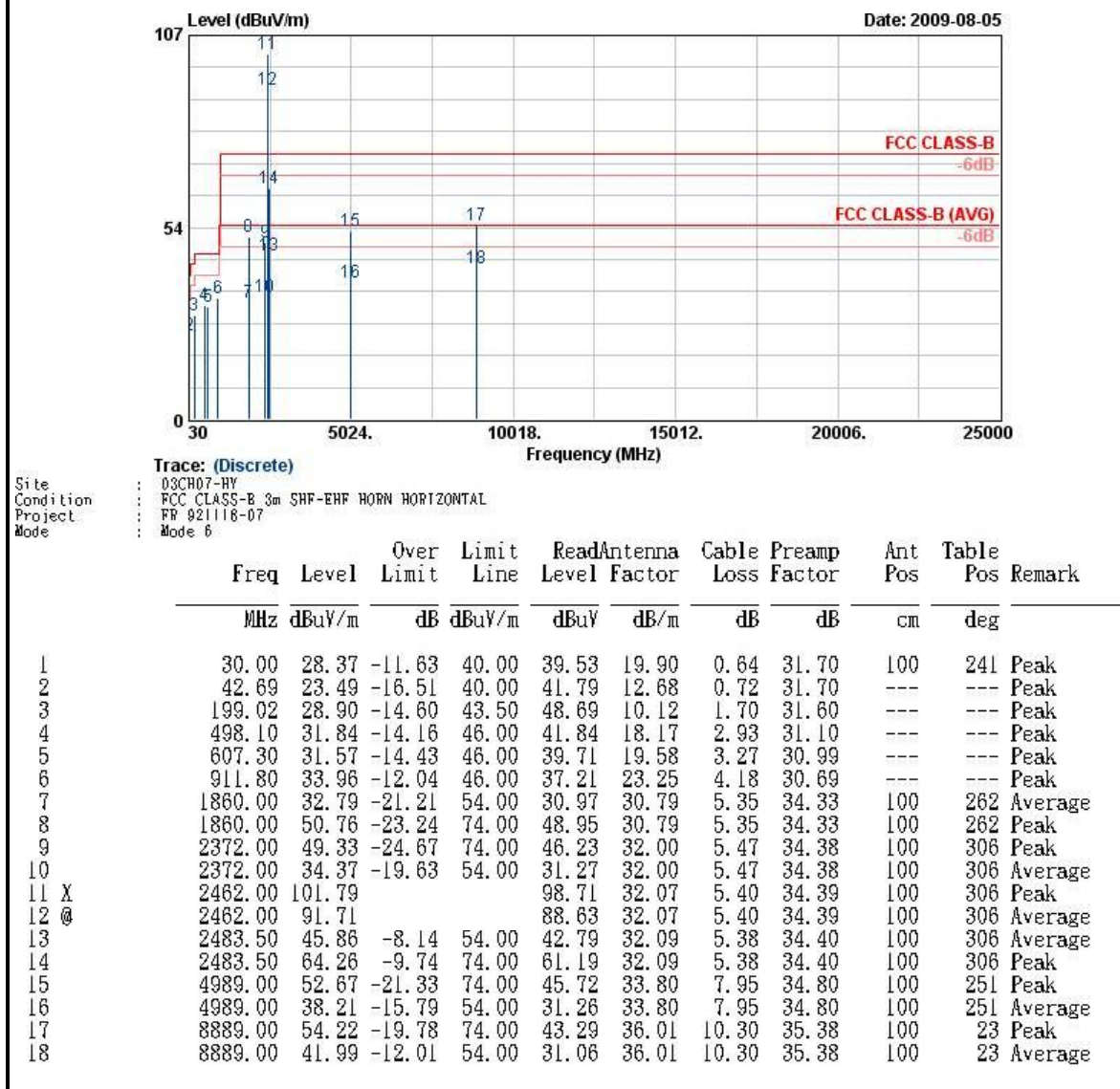
Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



Code	Mode 5										
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	32.97	27.26	-12.74	40.00	40.02	18.28	0.66	31.70	---	---	Peak
2	41.61	26.60	-13.40	40.00	44.35	13.22	0.73	31.70	---	---	Peak
3	187.41	28.21	-15.29	43.50	48.77	9.40	1.65	31.61	---	---	Peak
4	383.30	28.94	-17.06	46.00	41.68	16.00	2.49	31.23	---	---	Peak
5	747.30	35.09	-10.91	46.00	40.46	21.75	3.69	30.81	100	157	Peak
6	915.30	34.08	-11.92	46.00	37.20	23.37	4.19	30.68	---	---	Peak
7	1860.00	34.03	-19.97	54.00	32.21	30.79	5.35	34.33	143	175	Average
8	1860.00	54.52	-19.48	74.00	52.70	30.79	5.35	34.33	143	175	Peak
9	2390.00	36.36	-17.64	54.00	33.27	32.02	5.46	34.38	107	341	Average
10	2390.00	47.55	-26.45	74.00	44.45	32.02	5.46	34.38	107	341	Peak
11 @	2437.00	91.79			88.71	32.06	5.41	34.39	107	341	Average
12 X	2437.00	99.52			96.43	32.06	5.41	34.39	107	341	Peak
13	2494.00	37.90	-16.10	54.00	34.83	32.10	5.37	34.40	107	341	Average
14	2494.00	56.18	-17.82	74.00	53.11	32.10	5.37	34.40	107	341	Peak
15	4998.00	53.82	-20.18	74.00	46.87	33.80	7.95	34.80	100	5	Peak
16	4998.00	38.60	-15.40	54.00	31.65	33.80	7.95	34.80	100	5	Average
17	8865.00	55.81	-18.19	74.00	44.89	35.99	10.30	35.37	100	42	Peak
18	8865.00	41.95	-12.05	54.00	31.03	35.99	10.30	35.37	100	42	Average

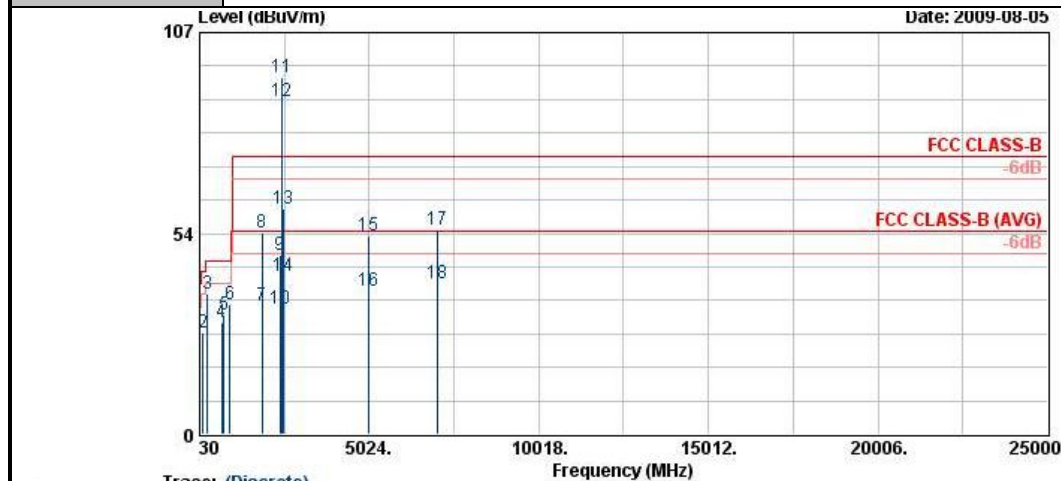


Test Mode :	Mode 6	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 6	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		

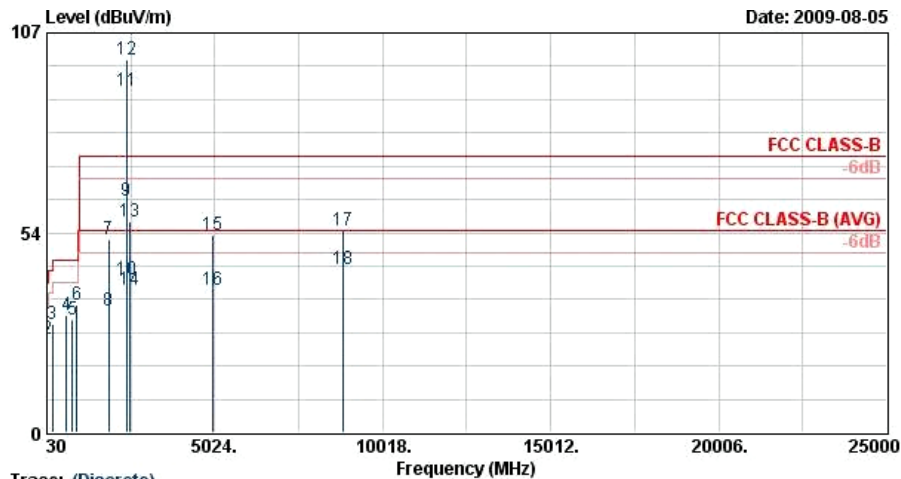


Trace: (Discrete)
 Site : 03CH07-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 921118-07
 Mode : Mode 6

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.89	26.93	-13.07	40.00	39.15	18.82	0.66	31.70	---	---	Peak
2	120.18	26.93	-16.57	43.50	45.23	12.10	1.28	31.68	---	---	Peak
3	269.49	37.20	-8.80	46.00	53.38	13.30	1.98	31.46	100	72	Peak
4	671.70	29.70	-16.30	46.00	36.70	20.45	3.47	30.93	---	---	Peak
5	749.40	31.94	-14.06	46.00	37.24	21.80	3.70	30.80	---	---	Peak
6	915.30	34.59	-11.41	46.00	37.72	23.37	4.19	30.68	---	---	Peak
7	1862.00	34.39	-19.61	54.00	32.57	30.79	5.35	34.33	105	348	Average
8	1862.00	53.57	-20.43	74.00	51.75	30.79	5.35	34.33	105	348	Peak
9	2390.00	47.85	-26.15	74.00	44.75	32.02	5.46	34.38	104	348	Peak
10	2390.00	33.60	-20.40	54.00	30.51	32.02	5.46	34.38	104	338	Average
11 X	2462.00	94.97			91.89	32.07	5.40	34.39	104	348	Peak
12 X	2462.00	88.86			85.78	32.07	5.40	34.39	104	338	Average
13	2483.50	59.97	-14.03	74.00	56.90	32.09	5.38	34.40	104	348	Peak
14	2483.50	42.11	-11.89	54.00	39.04	32.09	5.38	34.40	104	338	Average
15	4986.00	52.91	-21.09	74.00	45.98	33.80	7.94	34.80	100	171	Peak
16	4986.00	38.10	-15.90	54.00	31.17	33.80	7.94	34.80	100	171	Average
17	7041.00	54.53	-19.47	74.00	43.96	35.50	10.08	35.01	100	322	Peak
18	7041.00	40.07	-13.93	54.00	29.51	35.50	10.08	35.01	100	322	Average



Test Mode :	Mode 7	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



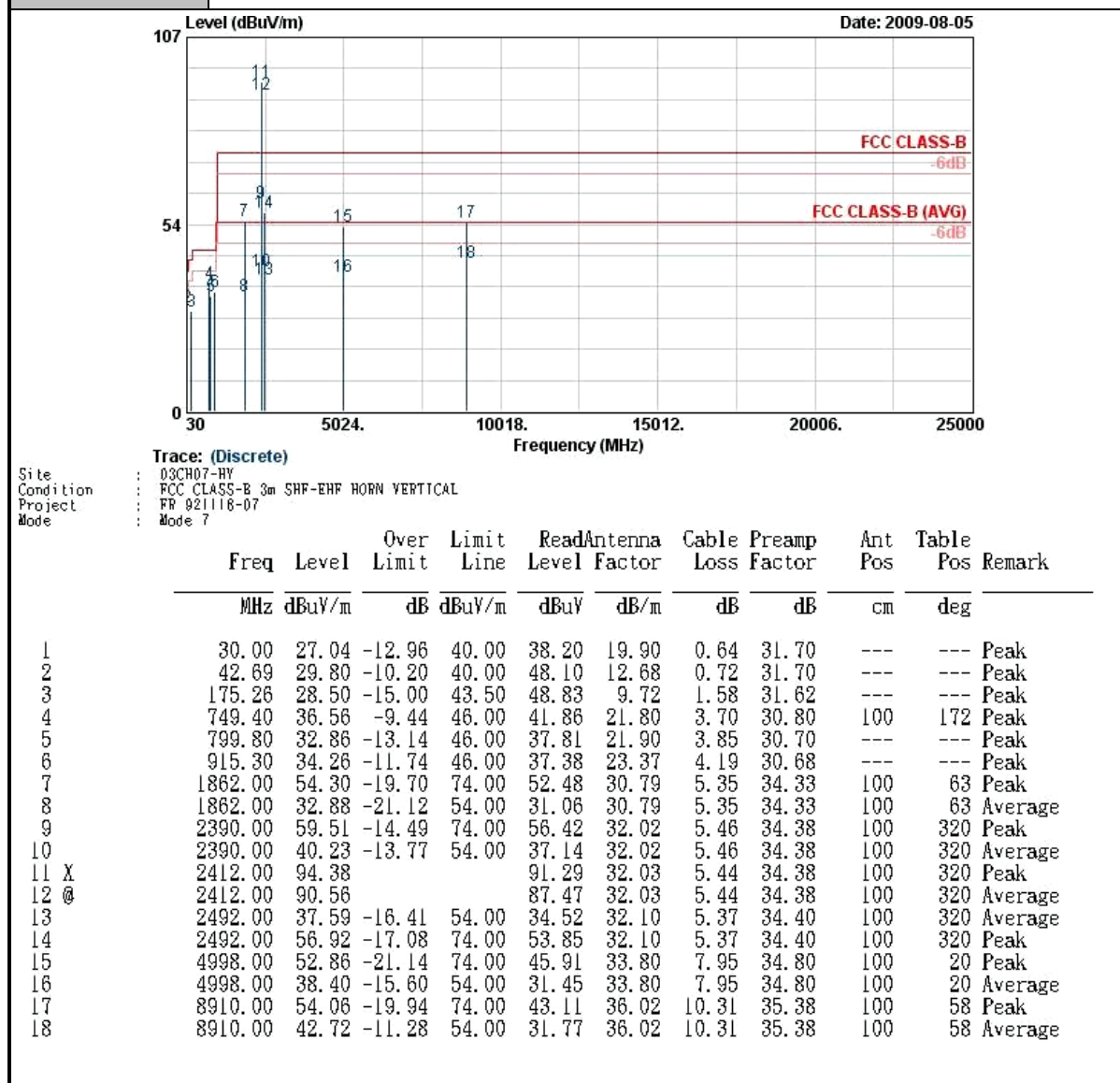
Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 921118-07
Mode : Mode 7

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	25.82	-14.18	40.00	36.98	19.90	0.64	31.70	---	---	Peak
2	44.58	25.08	-14.92	40.00	44.46	11.60	0.72	31.70	---	---	Peak
3	200.10	29.01	-14.49	43.50	48.71	10.20	1.70	31.60	---	---	Peak
4	612.90	31.32	-14.68	46.00	39.36	19.65	3.29	30.99	---	---	Peak
5	797.00	30.33	-15.67	46.00	35.30	21.89	3.84	30.71	---	---	Peak
6	915.30	34.37	-11.63	46.00	37.49	23.37	4.19	30.68	100	275	Peak
7	1860.00	51.55	-22.45	74.00	49.73	30.79	5.35	34.33	100	106	Peak
8	1860.00	32.75	-21.25	54.00	30.93	30.79	5.35	34.33	100	106	Average
9	2390.00	62.01	-11.99	74.00	58.92	32.02	5.46	34.38	100	319	Peak
10	2390.00	40.87	-13.13	54.00	37.78	32.02	5.46	34.38	100	319	Average
11 @	2412.00	91.33			88.24	32.03	5.44	34.38	100	319	Average
12 X	2412.00	99.91			96.82	32.03	5.44	34.38	100	319	Peak
13	2494.00	56.53	-17.47	74.00	53.46	32.10	5.37	34.40	100	319	Peak
14	2494.00	38.14	-15.86	54.00	35.07	32.10	5.37	34.40	100	319	Average
15	4977.00	53.01	-20.99	74.00	46.07	33.80	7.94	34.80	111	319	Peak
16	4977.00	38.22	-15.78	54.00	31.29	33.80	7.94	34.80	111	319	Average
17	8853.00	54.06	-19.94	74.00	43.16	35.98	10.29	35.37	100	71	Peak
18	8853.00	43.75	-10.25	54.00	32.85	35.98	10.29	35.37	100	71	Average

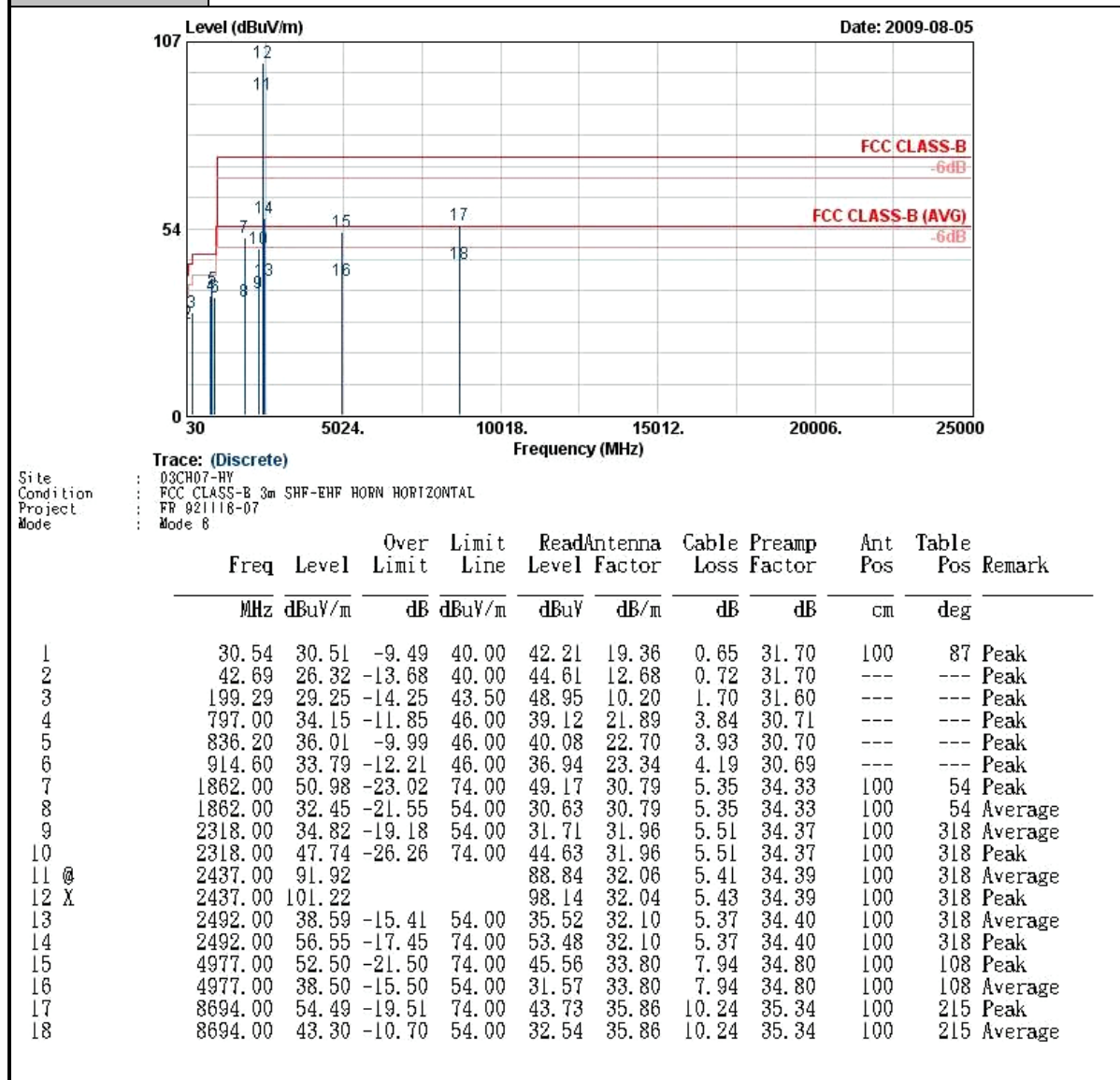


Test Mode :	Mode 7	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



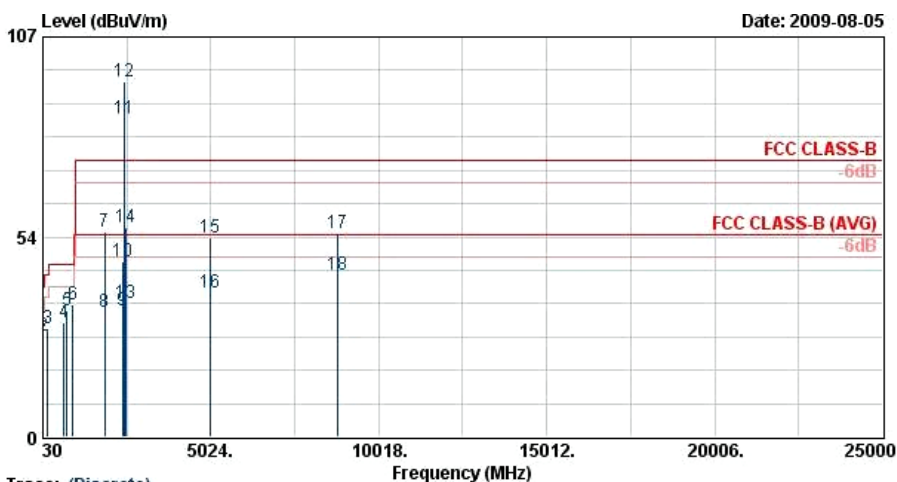


Test Mode :	Mode 8	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 8	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		

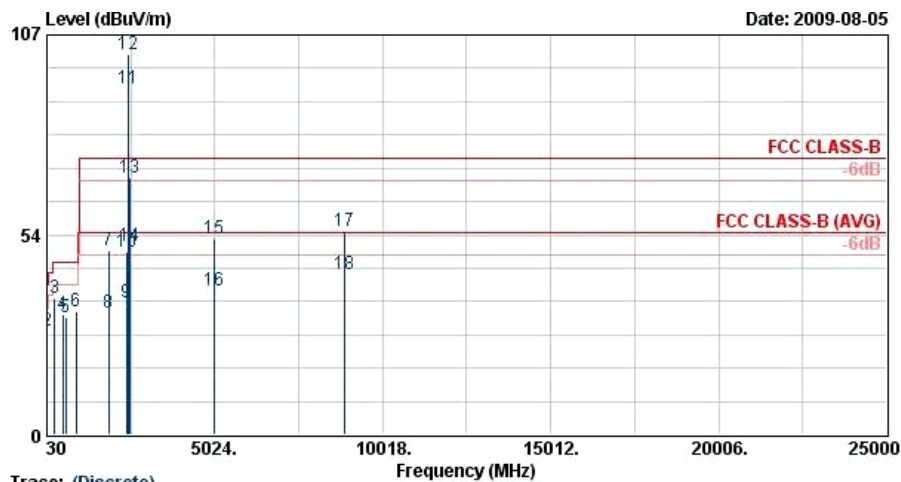
**Trace: (Discrete)**

Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 921118-07
Mode : Mode 8

	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	28.31	-11.69	40.00	39.47	19.90	0.64	31.70	---	---	Peak
2	42.42	27.03	-12.97	40.00	45.32	12.68	0.72	31.70	---	---	Peak
3	174.18	29.11	-14.39	43.50	49.38	9.78	1.57	31.63	---	---	Peak
4	665.40	30.68	-15.32	46.00	37.81	20.35	3.45	30.93	---	---	Peak
5	746.60	33.64	-12.36	46.00	39.01	21.75	3.69	30.81	---	---	Peak
6	915.30	35.43	-10.57	46.00	38.55	23.37	4.19	30.68	100	97	Peak
7	1860.00	54.78	-19.22	74.00	52.96	30.79	5.35	34.33	100	174	Peak
8	1860.00	33.30	-20.70	54.00	31.48	30.79	5.35	34.33	100	174	Average
9	2390.00	33.83	-20.17	54.00	30.74	32.02	5.46	34.38	100	284	Average
10	2390.00	46.82	-27.18	74.00	43.72	32.02	5.46	34.38	100	284	Peak
11 @	2437.00	85.07			81.99	32.06	5.41	34.39	100	284	Average
12 X	2437.00	94.95			91.87	32.04	5.43	34.39	100	284	Peak
13	2494.00	35.82	-18.18	54.00	32.75	32.10	5.37	34.40	100	284	Average
14	2494.00	56.28	-17.72	74.00	53.21	32.10	5.37	34.40	100	284	Peak
15	4989.00	53.46	-20.54	74.00	46.51	33.80	7.95	34.80	100	24	Peak
16	4989.00	38.52	-15.48	54.00	31.57	33.80	7.95	34.80	100	24	Average
17	8805.00	54.49	-19.51	74.00	43.63	35.94	10.28	35.36	100	245	Peak
18	8805.00	43.37	-10.63	54.00	32.51	35.94	10.28	35.36	100	245	Average



Test Mode :	Mode 9	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



Trace: (Discrete)

Site : 03CH07-HY

Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL

Project : FR 921118-07

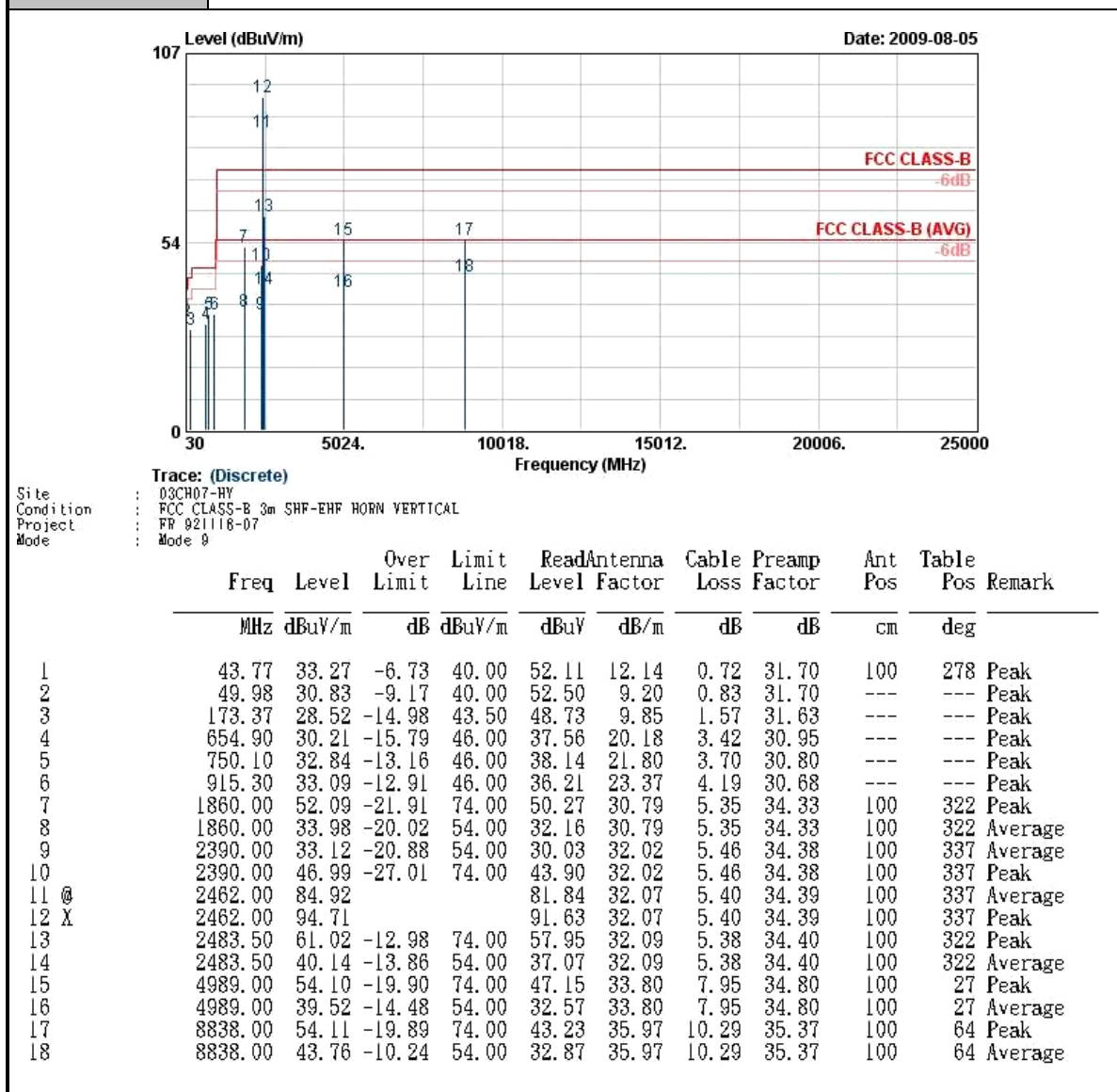
Mode : Mode 0

Frequency (MHz)

	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	31.62	27.67	-12.33	40.00	39.90	18.82	0.66	31.70	---	---	Peak
2	42.69	27.70	-12.30	40.00	45.99	12.68	0.72	31.70	---	---	Peak
3	265.98	36.41	-9.59	46.00	52.37	13.54	1.97	31.47	100	198	Peak
4	498.10	32.28	-13.72	46.00	42.28	18.17	2.93	31.10	---	---	Peak
5	584.90	31.55	-14.45	46.00	40.05	19.32	3.20	31.02	---	---	Peak
6	909.70	32.88	-13.12	46.00	36.19	23.19	4.18	30.69	---	---	Peak
7	1862.00	49.45	-24.55	74.00	47.63	30.79	5.35	34.33	100	104	Peak
8	1862.00	32.64	-21.36	54.00	30.82	30.79	5.35	34.33	100	104	Average
9	2390.00	35.49	-18.51	54.00	32.40	32.02	5.46	34.38	100	317	Average
10	2390.00	48.75	-25.25	74.00	45.65	32.02	5.46	34.38	100	104	Peak
11 @	2462.00	92.71			89.63	32.07	5.40	34.39	100	317	Average
12 X	2462.00	101.90			98.82	32.07	5.40	34.39	100	317	Peak
13 !	2483.50	68.92	-5.08	74.00	65.85	32.09	5.38	34.40	100	104	Peak
14 !	2483.50	50.52	-3.48	54.00	47.45	32.09	5.38	34.40	100	104	Average
15	4986.00	52.50	-21.50	74.00	45.56	33.80	7.94	34.80	100	115	Peak
16	4986.00	38.45	-15.55	54.00	31.52	33.80	7.94	34.80	100	115	Average
17	8877.00	54.37	-19.63	74.00	43.45	35.99	10.30	35.37	100	58	Peak
18	8877.00	42.79	-11.21	54.00	31.87	35.99	10.30	35.37	100	58	Average

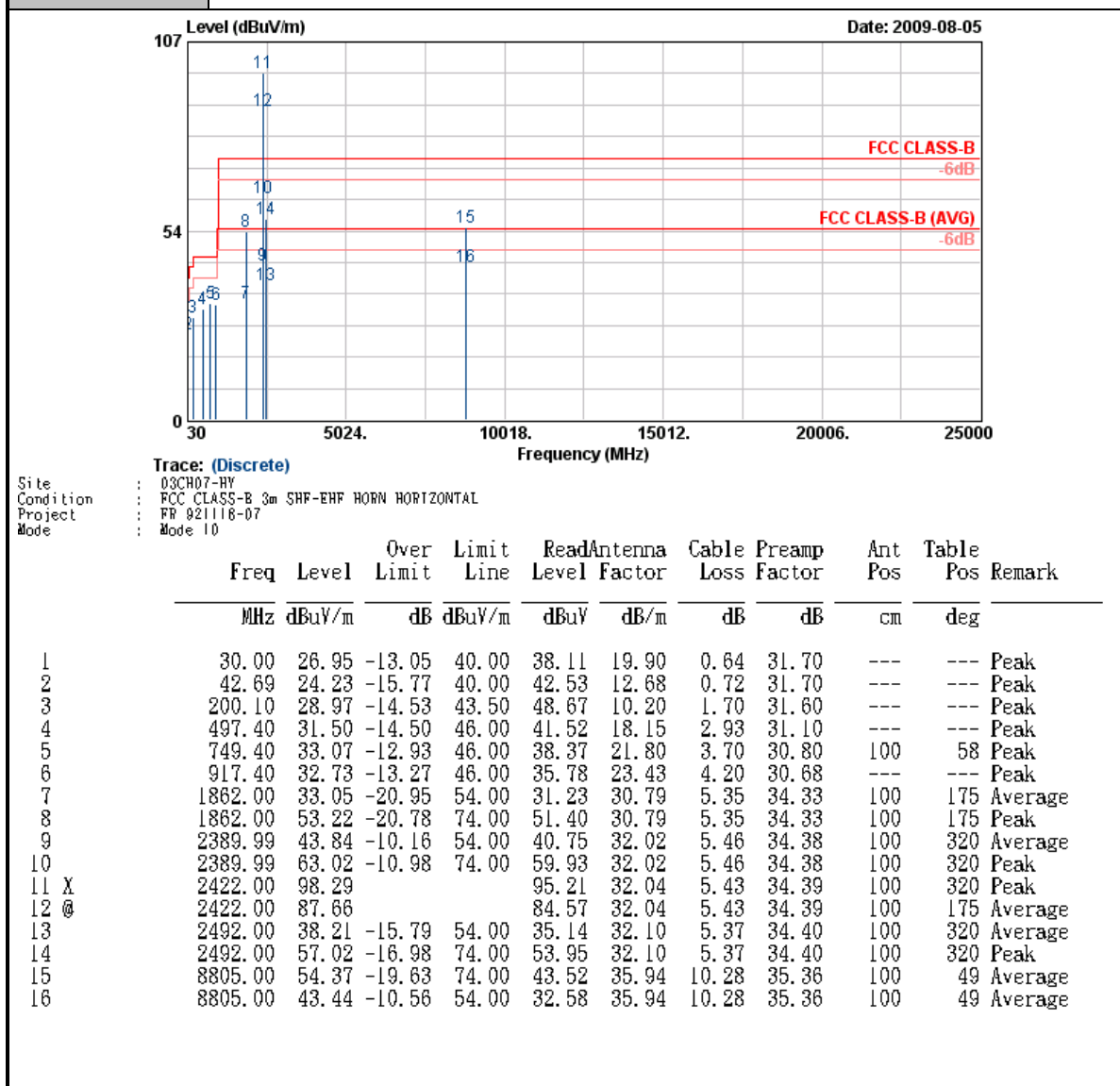


Test Mode :	Mode 9	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



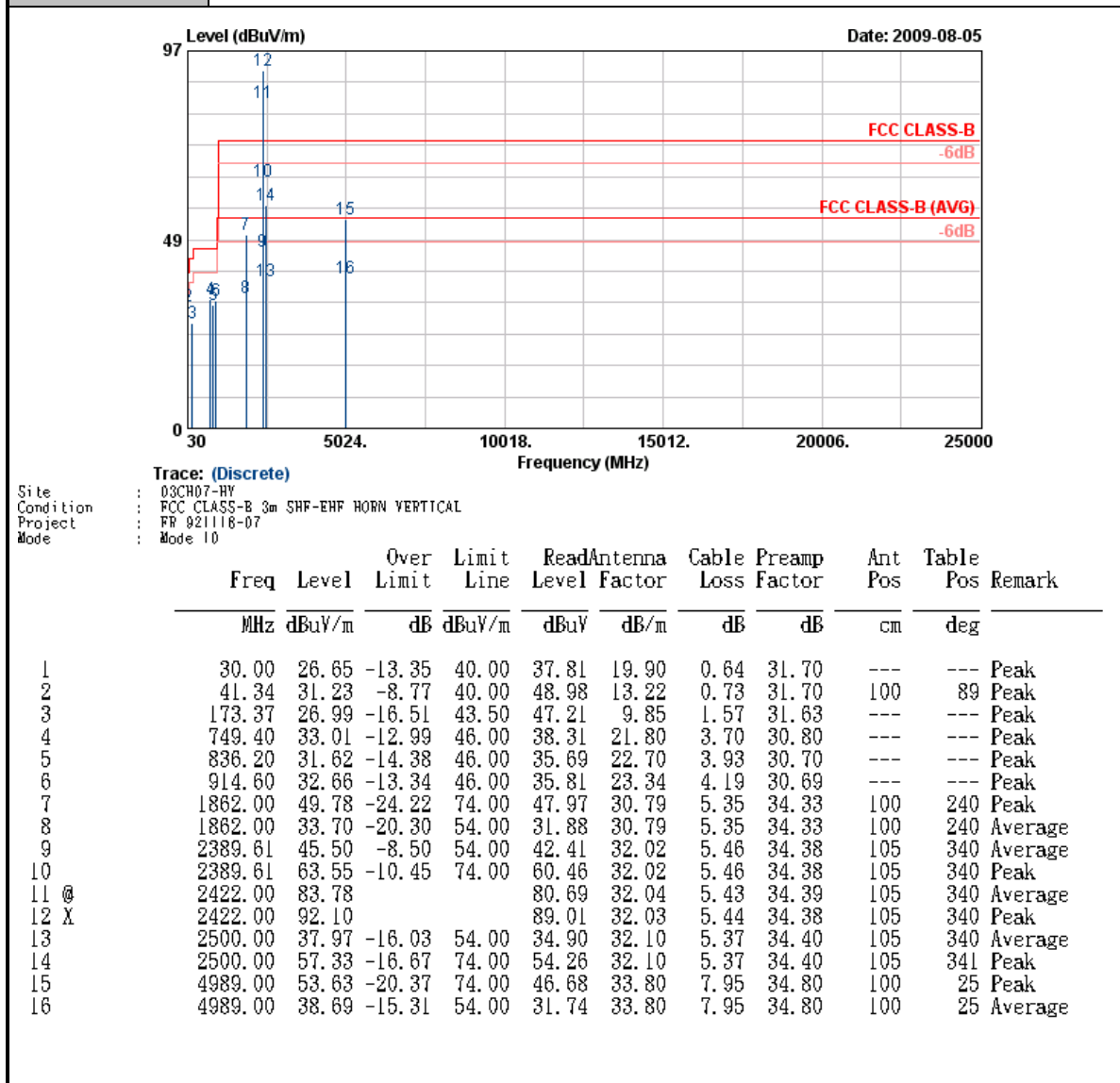


Test Mode :	Mode 10	Temperature :	24~25°C
Test Channel :	03	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



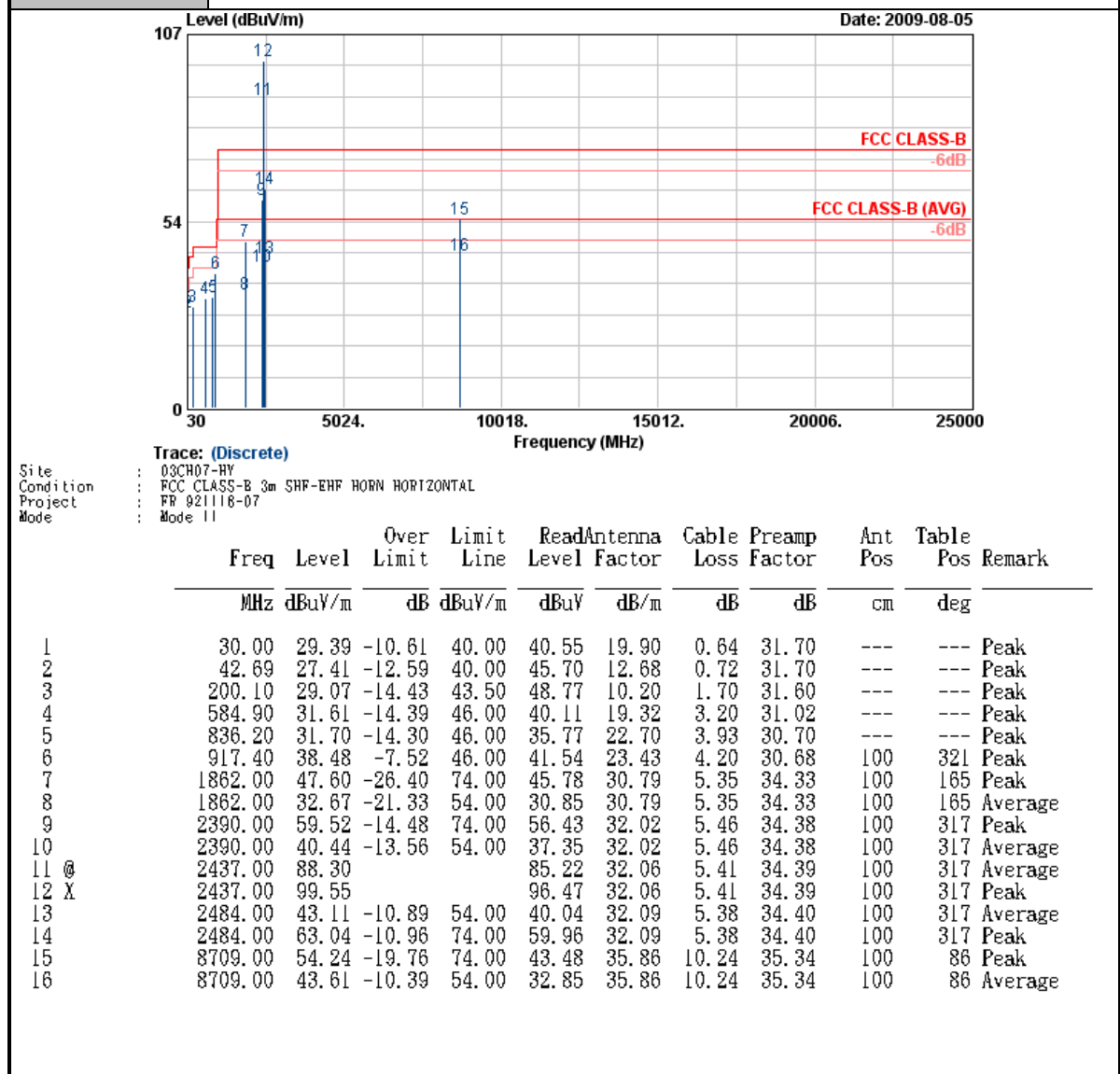


Test Mode :	Mode 10	Temperature :	24~25°C
Test Channel :	03	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



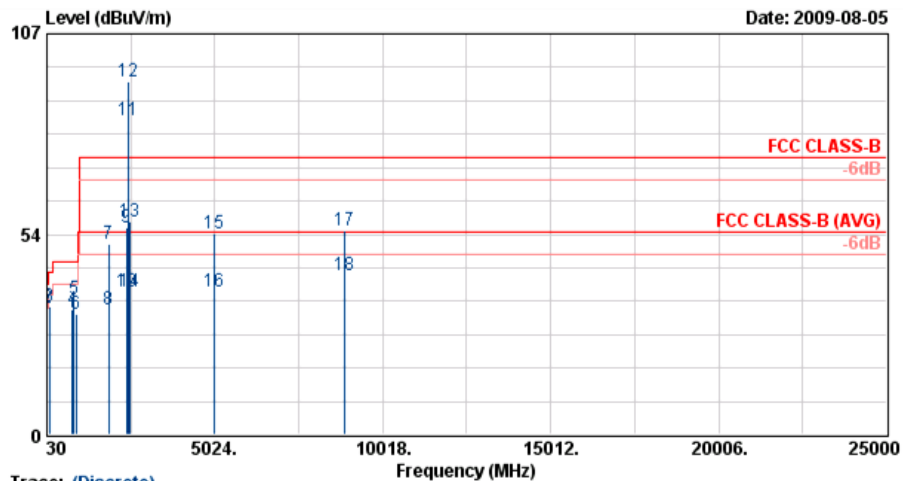


Test Mode :	Mode 11	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 11	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



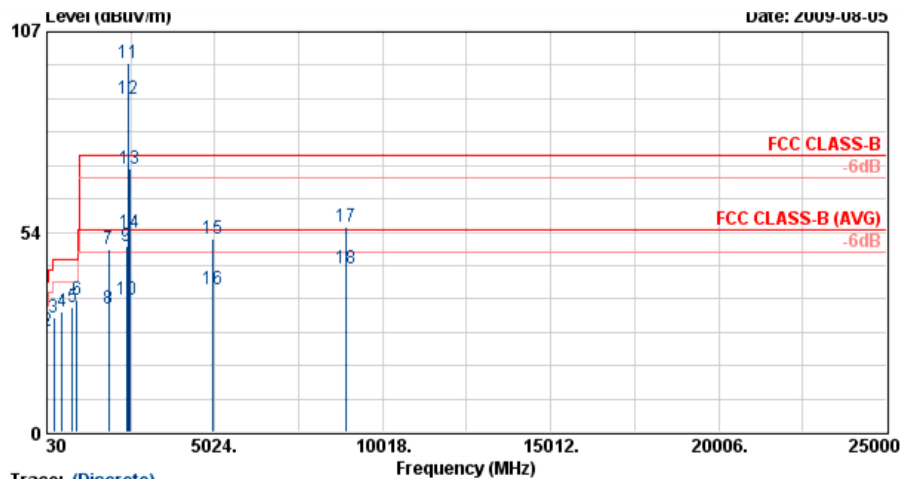
Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 921118-07
Mode : Mode 11

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	32.97	31.92	-8.08	40.00	44.67	18.28	0.66	31.70	---	Peak
2	42.69	33.76	-6.24	40.00	52.06	12.68	0.72	31.70	100	214 Peak
3	101.82	34.15	-9.35	43.50	53.98	10.70	1.17	31.70	---	Peak
4	799.80	33.48	-12.52	46.00	38.43	21.90	3.85	30.70	---	Peak
5	836.20	36.10	-9.90	46.00	40.17	22.70	3.93	30.70	---	Peak
6	901.30	32.09	-13.91	46.00	35.70	22.93	4.16	30.70	---	Peak
7	1862.00	50.88	-23.12	74.00	49.06	30.79	5.35	34.33	100	235 Peak
8	1862.00	33.56	-20.44	54.00	31.74	30.79	5.35	34.33	100	235 Average
9	2390.00	55.47	-18.53	74.00	52.38	32.02	5.46	34.38	105	338 Peak
10	2390.00	37.99	-16.01	54.00	34.90	32.02	5.46	34.38	105	338 Average
11 @	2437.00	83.96			80.88	32.06	5.41	34.39	105	338 Average
12 X	2437.00	94.38			91.30	32.06	5.41	34.39	105	338 Peak
13	2500.00	56.72	-17.28	74.00	53.65	32.10	5.37	34.40	105	338 Peak
14	2500.00	38.13	-15.87	54.00	35.06	32.10	5.37	34.40	105	338 Average
15	4998.00	53.69	-20.31	74.00	46.74	33.80	7.95	34.80	100	20 Peak
16	4998.00	38.38	-15.62	54.00	31.43	33.80	7.95	34.80	100	20 Average
17	8877.00	54.50	-19.50	74.00	43.58	35.99	10.30	35.37	100	79 Peak
18	8877.00	42.67	-11.33	54.00	31.75	35.99	10.30	35.37	100	79 Average



Test Mode :	Mode 12	Temperature :	24~25°C
Test Channel :	09	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		

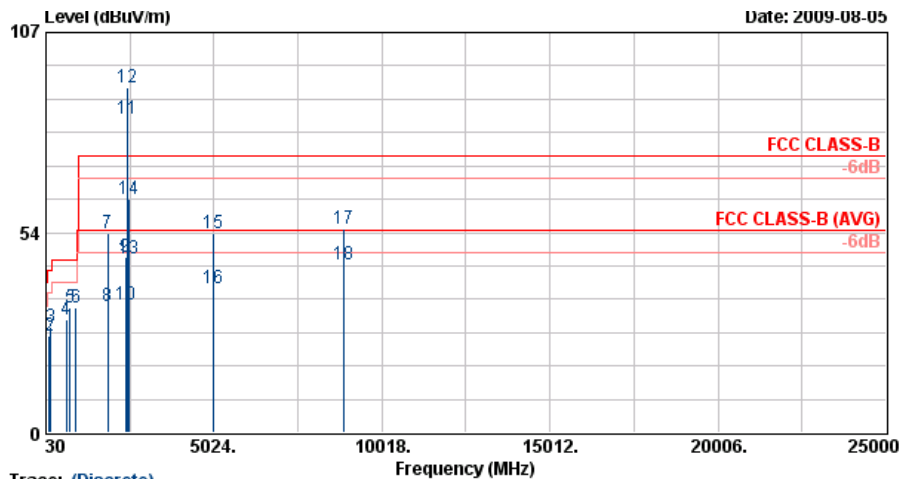


Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 921118-07
Mode : Mode 12

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.00	26.06	-13.94	40.00	37.22	19.90	0.64	31.70	---	Peak
2	42.69	27.11	-12.89	40.00	45.40	12.68	0.72	31.70	---	Peak
3	240.06	30.53	-15.47	46.00	48.18	11.98	1.88	31.52	---	Peak
4	478.50	32.33	-13.67	46.00	42.79	17.80	2.86	31.12	100	24 Peak
5	800.50	33.47	-12.53	46.00	38.42	21.90	3.85	30.70	---	Peak
6	917.40	35.49	-10.51	46.00	38.54	23.43	4.20	30.68	---	Peak
7	1862.00	48.82	-25.18	74.00	47.00	30.79	5.35	34.33	100	178 Peak
8	1862.00	33.05	-20.95	54.00	31.23	30.79	5.35	34.33	100	178 Average
9	2390.00	49.59	-24.41	74.00	46.50	32.02	5.46	34.38	100	318 Peak
10	2390.00	35.57	-18.43	54.00	32.48	32.02	5.46	34.38	100	318 Average
11 X	2452.00	98.61			95.53	32.06	5.41	34.39	100	318 Peak
12 @	2452.00	88.92			85.84	32.06	5.41	34.39	100	318 Average
13 !	2483.50	70.57	-3.43	74.00	67.50	32.09	5.38	34.40	100	318 Peak
14 !	2483.50	53.38	-0.62	54.00	50.31	32.09	5.38	34.40	100	318 Average
15	4977.00	51.81	-22.19	74.00	44.88	33.80	7.94	34.80	124	319 Peak
16	4977.00	38.17	-15.83	54.00	31.24	33.80	7.94	34.80	124	319 Average
17	8910.00	54.82	-19.18	74.00	43.88	36.02	10.31	35.38	100	38 Peak
18	8910.00	43.71	-10.29	54.00	32.76	36.02	10.31	35.38	100	38 Average



Test Mode :	Mode 12	Temperature :	24~25°C
Test Channel :	09	Relative Humidity :	41~42%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		



Trace: (Discrete)

Site : 03CR07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 921118-07
Mode : Mode 12

	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	42.69	27.41	-12.59	40.00	45.71	12.68	0.72	31.70	---	---	Peak
2	120.18	26.01	-17.49	43.50	44.31	12.10	1.28	31.68	---	---	Peak
3	174.45	28.40	-15.10	43.50	48.68	9.78	1.57	31.63	---	---	Peak
4	645.80	30.11	-15.89	46.00	37.61	20.05	3.40	30.95	---	---	Peak
5	747.30	33.59	-12.41	46.00	38.95	21.75	3.69	30.81	100	172	Peak
6	915.30	33.26	-12.74	46.00	36.38	23.37	4.19	30.68	---	---	Peak
7	1860.00	53.20	-20.80	74.00	51.38	30.79	5.35	34.33	100	242	Peak
8	1860.00	33.65	-20.35	54.00	31.83	30.79	5.35	34.33	100	242	Average
9	2390.00	47.01	-26.99	74.00	43.91	32.02	5.46	34.38	131	338	Peak
10	2390.00	34.13	-19.87	54.00	31.04	32.02	5.46	34.38	131	338	Average
11 @	2452.00	84.10			81.02	32.06	5.41	34.39	131	338	Average
12 X	2452.00	92.46			89.38	32.07	5.40	34.39	131	338	Peak
13	2485.18	46.57	-7.43	54.00	43.50	32.09	5.38	34.40	131	338	Average
14	2485.18	62.35	-11.65	74.00	59.28	32.09	5.38	34.40	131	338	Peak
15	4986.00	53.33	-20.67	74.00	46.40	33.80	7.94	34.80	103	27	Peak
16	4986.00	38.40	-15.60	54.00	31.47	33.80	7.94	34.80	103	27	Average
17	8889.00	54.36	-19.64	74.00	43.43	36.01	10.30	35.38	100	96	Peak
18	8889.00	44.80	-9.20	54.00	33.87	36.01	10.30	35.38	100	96	Average

3.4 Antenna Requirements

3.4.1 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.

3.4.2 Antenna Connected Construction

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

3.4.3 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
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)
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	1G~18GHz	Aug. 18, 2008	Aug. 17, 2009	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1G~26.5GHz	Dec. 17, 2008	Dec. 16, 2009	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10~1000MHz. 32dB.GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00066584	1G~18GHz	Aug. 05, 2009	Aug. 04, 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)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	BBHA9170251	15G~40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
Combined standard uncertainty Uc(y)	1.13		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.26		

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

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
Combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.54		

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

Contribution	Uncertainty of x_i		$u(x_i)$	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 Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	4.72				

6 Certification of TAF Accreditation



Certificate No. : L1190-090417

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 EP921118-07 as below.