

Partial FCC RF Test Report

APPLICANT : Acer Inc.
EQUIPMENT : WLAN Module
BRAND NAME : Acer, Gateway, PackardBell
MODEL NAME : BCM94312HMG
FCC ID : HLZ-BRCM1030
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

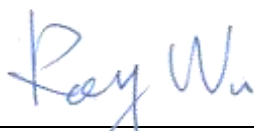
This is a partial report which is only valid combined with the WLAN module (Brand Name: Broadcom / Model Name: BCM94312HMG / FCC ID: QDS-BRCM1030) report.

The product was installed into Notebook Computer (Brand Name: Acer, Gateway, PackardBell / Model Name: KAV60, KAV80, KAVA0 / Marketing Name: AOP150, AOP531, Aspire one, AOD210, AOD250, LT20, dot s, dot sr) during test.

The product was received on Jul. 29, 2009 and completely tested on Aug. 10, 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
FR931617-22	Rev. 01	Initial issue of report	Aug. 14, 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 9.2 dB at 0.534 MHz
3.3	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 8.41 dB at 304.90 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

1. Compal Electronics (China) Co., Ltd.

No. 988, Tong Feng East Rd., Kunshan Economics & Technical Development Zone, Kunshan, Jiangsu, P.R. China

2. Compal Information (Kunshan) Co., Ltd.

The Third Street, Kunshan Export Processing Zone, Jiangsu, P.R. China

3. Compal Information Technology (Kunshan) Co., Ltd.

No. 58, the 1st Street, Kunshan Export Processing Zone, Jiangsu, P.R. China

4. Compal Electronics Technology (Kunshan) Co., Ltd.

No. 25, The Third Street, Kunshan Export Processing Zone, Jiangsu, P.R. China

5. Kunshang Botai Electronics Co., Ltd.

No. 988, Tong Feng East Rd., Kunshan Economic & Technical Development Zone, Kunshan, Jiangsu, P.R. China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	WLAN Module
Brand Name	Acer, Gateway, PackardBell
Model Name	BCM94312HMG
FCC ID	HLZ-BRCM1030
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b: 19.99 dBm 802.11g : 22.29 dBm
Host (Notebook Computer)	Brand Name : Acer, Gateway, PackardBell Model Name : KAV60, KAV80, KAVA0 Marketing Name : AOP150, AOP531, Aspire one, AOD210, AOD250, LT20, dot s, dot sr HW Version : LA-5141P (MB) SW Version : V1.01 (BIOS) Antenna : Main Antenna : Monopole Antenna with gain 0.86 dBi Aux. Antenna : Monopole Antenna with gain 0.91 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : 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 of Host Notebook Computer:

Specification of Accessory		
AC Adapter	Brand Name	HIPRO
	Model Name	HP-A0301R3
	Power Rating	I/P:100-240Vac, 50-60Hz, 1000mA; O/P: 19Vdc, 1.58A, 30W
	DC Power Cord Type	1.5 meter shielded cable without ferrite core
Battery	Brand Name	Panasonic
	Model Name	UM08A51
	Power Rating	10.8Vdc, 2200mAh, 24Wh
	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: KAV60, KAV80, KAVA0 / Marketing Name: AOP150, AOP531, Aspire one, AOD210, AOD250, LT20, dot s, dot sr).

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	03CH06-HY	TW1022/4086B-1

1.5 Applied Standards

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

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

Remark:

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

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Earphone	Kolin	Kit-7460E	FCC DoC	Unshielded, 1.6 m	N/A
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	USB Cable	Apple	N/A	N/A	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Output Power

Band	802.11b			802.11g		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Power	19.99	19.75	19.56	22.29	22.06	22.14

Remark: The EUT is programmed to transmit signals continuously for all testing.

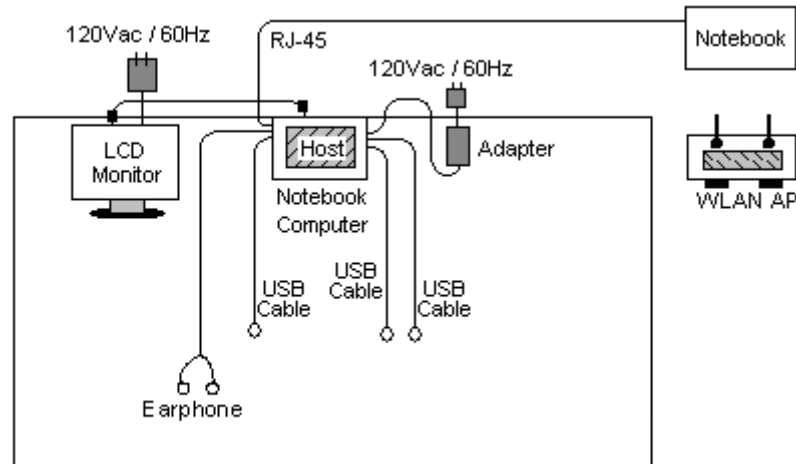
2.2 Test Mode

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 tables are showing the test modes as the worst cases and recorded in this report.

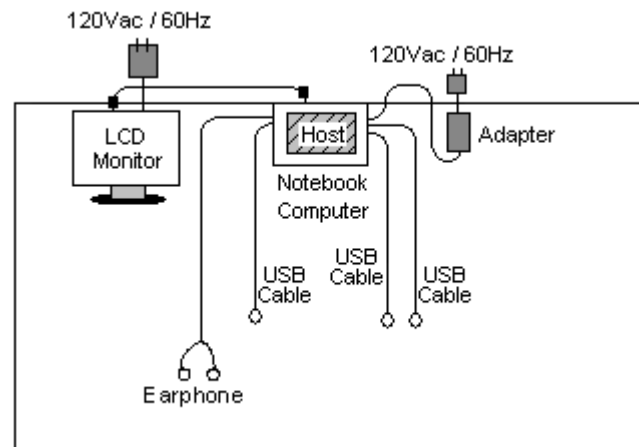
Test Cases	
Test Item	802.11b (Modulation : DSSS) 802.11g (Modulation : OFDM)
Radiated TCs	Mode 1 : 802.11b_CH01_2412 MHz Mode 2 : 802.11b_CH06_2437 MHz Mode 3 : 802.11b_CH11_2462 MHz Mode 4 : 802.11g_CH01_2412 MHz Mode 5 : 802.11g_CH06_2437 MHz Mode 6 : 802.11g_CH11_2462 MHz
AC Conducted Emission	Mode 1 : WLAN Link + TC
Remark: 1. TC stands for Test Configuration, and consists of USB cable, earphone, LCD monitor, RJ-45 and adapter. 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: Broadcom / Model Name: BCM94312HMG / FCC ID: QDS-BRCM1030) report.	

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



Note: The EUT is a WLAN module which was installed into the host Notebook Computer (Brand Name: Acer, Gateway, PackardBell, Model Name: KAV60, KAV80, KAVA0, Marketing Name: AOP150, AOP531, Aspire one, AOD210, AOD250, LT20, dot s, dot sr) during the test.

2.4 RF Utility

The programmed RF utility is installed in EUT to provide channel selection, power level, data rate and the application type. The 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.

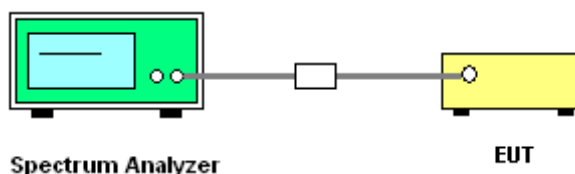
3.1.2 Measuring Instruments

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 :	25~27°C
Test Band :	802.11b	Relative Humidity :	42~45%
Test Channel :	01	Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	57.54	-16.46	74.00	57.92	31.98	3.92	36.28	100	20	Peak
2388.85	34.01	-19.99	54.00	34.39	31.98	3.92	36.28	100	20	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	58.56	-15.44	74.00	58.94	31.98	3.92	36.28	182	360	Peak
2390.00	34.92	-19.08	54.00	35.30	31.98	3.92	36.28	182	360	Average

Test Mode :	Mode 3	Temperature :	25~27°C
Test Band :	802.11b	Relative Humidity :	42~45%
Test Channel :	11	Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	59.67	-14.33	74.00	59.84	32.08	4.05	36.30	100	29	Peak
2483.50	32.94	-21.06	54.00	33.11	32.08	4.05	36.30	100	29	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
2489.93	50.05	-23.95	74.00	50.20	32.10	4.05	36.30	100	314	Peak
2489.93	32.13	-21.87	54.00	32.28	32.10	4.05	36.30	100	314	Average



Test Mode :	Mode 4	Temperature :	25~27°C
Test Band :	802.11g	Relative Humidity :	42~45%
Test Channel :	01	Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390.00	59.41	-14.59	74.00	59.98	31.87	3.82	36.26	100	20	Peak
2390.00	37.02	-16.98	54.00	37.59	31.87	3.82	36.26	100	20	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	57.05	-16.95	74.00	57.43	31.98	3.92	36.28	100	301	Peak
2390.00	35.38	-18.62	54.00	35.76	31.98	3.92	36.28	100	301	Average

Test Mode :	Mode 6	Temperature :	25~27°C
Test Band :	802.11g	Relative Humidity :	42~45%
Test Channel :	11	Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	63.90	-10.10	74.00	64.07	32.08	4.05	36.30	100	11	Peak
2483.50	41.51	-12.49	54.00	41.68	32.08	4.05	36.30	100	11	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	62.39	-11.61	74.00	62.56	32.08	4.05	36.30	100	354	Peak
2483.50	40.85	-13.15	54.00	41.02	32.08	4.05	36.30	100	354	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.

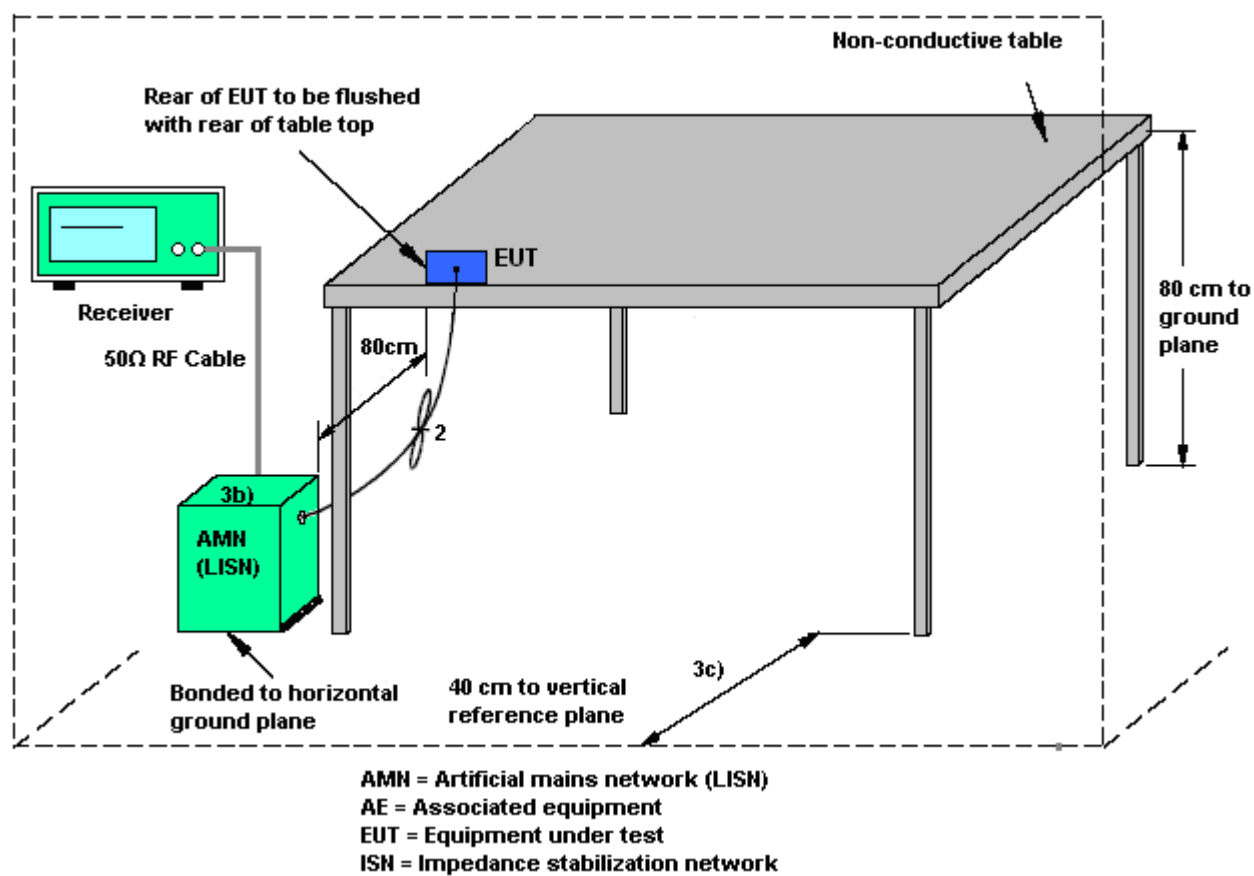
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

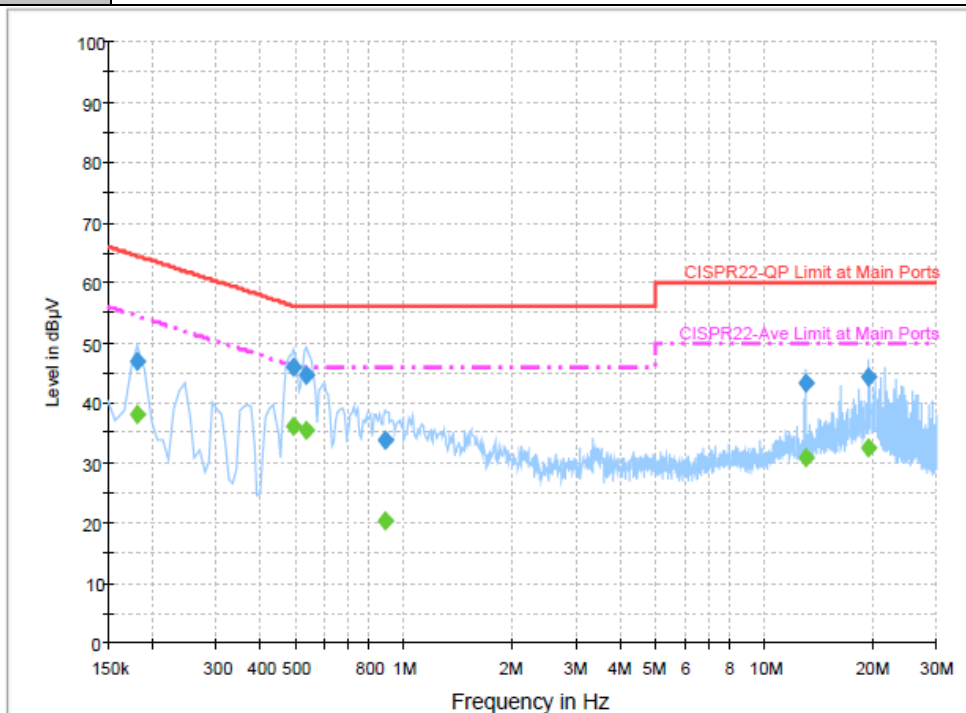
4. The testing follows the guidelines in ANSI C63.4-2003.
5. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
6. Connect EUT to the power mains through a line impedance stabilization network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



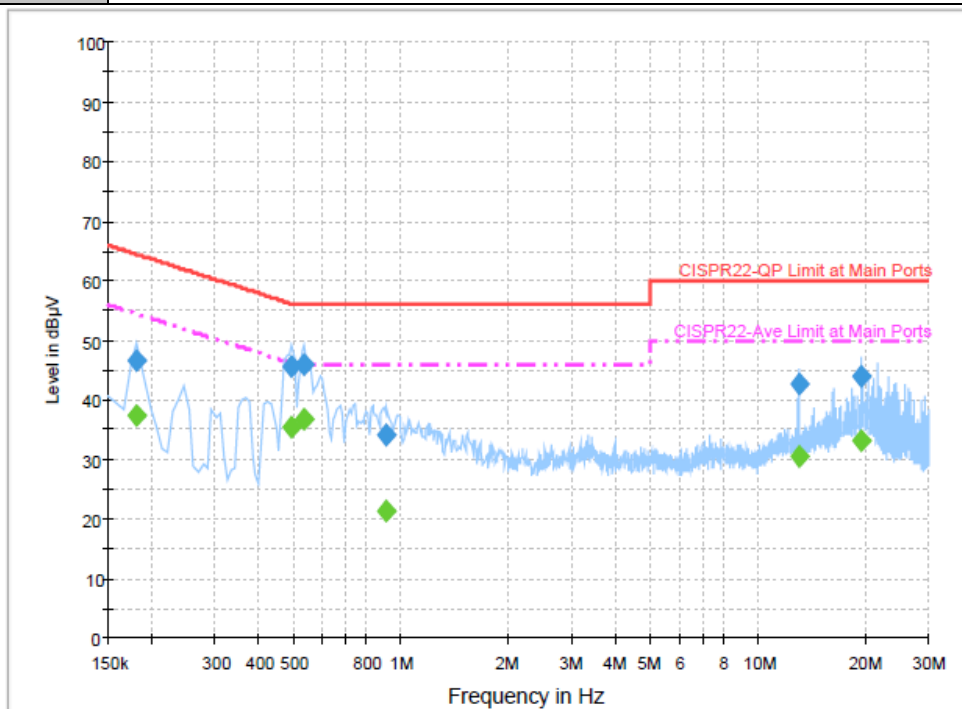
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	46.8	Off	L1	19.5	17.6	64.4
0.494000	45.8	Off	L1	19.4	10.3	56.1
0.534000	44.5	Off	L1	19.5	11.5	56.0
0.886000	33.8	Off	L1	19.5	22.2	56.0
12.966000	43.2	Off	L1	19.6	16.8	60.0
19.430000	44.1	Off	L1	19.7	15.9	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	37.9	Off	L1	19.5	16.5	54.4
0.494000	36.1	Off	L1	19.4	10.0	46.1
0.534000	35.3	Off	L1	19.5	10.7	46.0
0.886000	20.2	Off	L1	19.5	25.8	46.0
12.966000	31.0	Off	L1	19.6	19.0	50.0
19.430000	32.6	Off	L1	19.7	17.4	50.0

Test Mode :	Mode 1	Temperature :	23~24℃
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)
0.182000	46.6	Off	N	19.5	17.8	64.4
0.494000	45.5	Off	N	19.4	10.6	56.1
0.534000	45.8	Off	N	19.5	10.2	56.0
0.910000	34.0	Off	N	19.5	22.0	56.0
12.966000	42.7	Off	N	19.7	17.3	60.0
19.430000	44.0	Off	N	19.8	16.0	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	37.2	Off	N	19.5	17.2	54.4
0.494000	35.5	Off	N	19.4	10.6	46.1
0.534000	36.8	Off	N	19.5	9.2	46.0
0.910000	21.2	Off	N	19.5	24.8	46.0
12.966000	30.6	Off	N	19.7	19.4	50.0
19.430000	33.0	Off	N	19.8	17.0	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

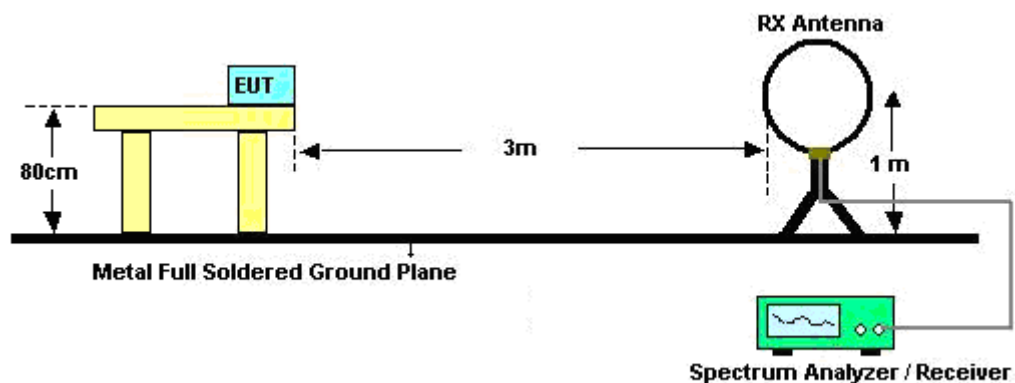
See list of measuring instruments of this test report.

3.3.3 Test Procedures

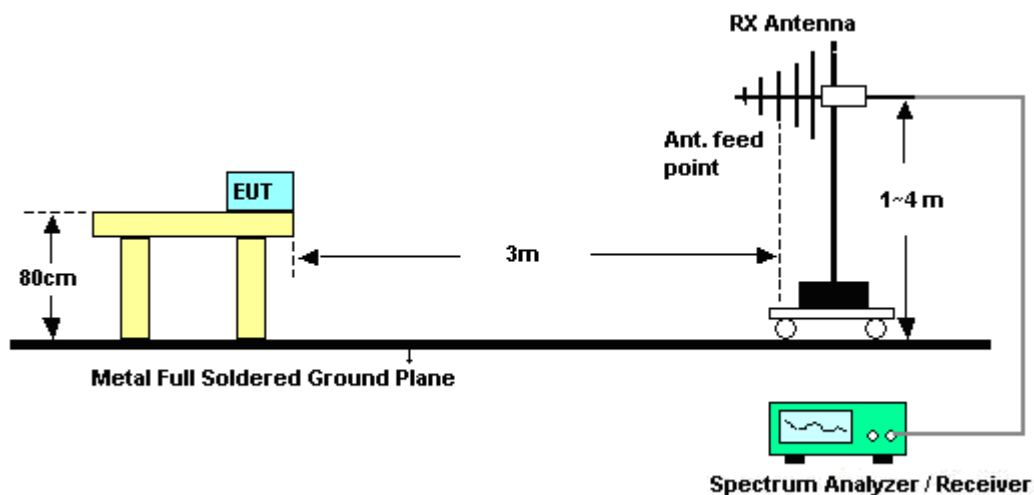
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; 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 (9 kHz ~ 30 MHz)**

Test Engineer :	Kai Wang	Temperature :	25~27°C
		Relative Humidity :	42~45%

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.

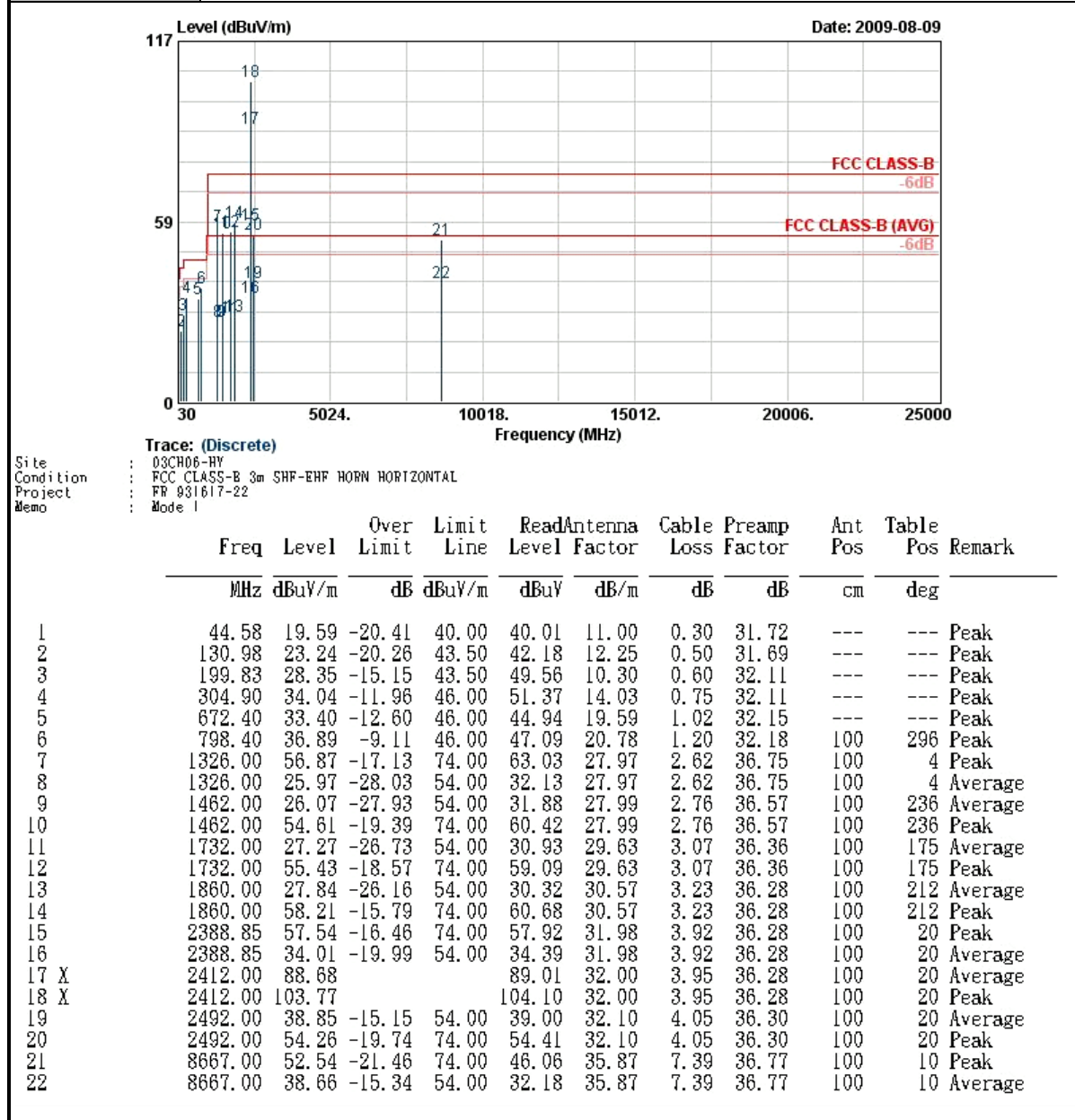
Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

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



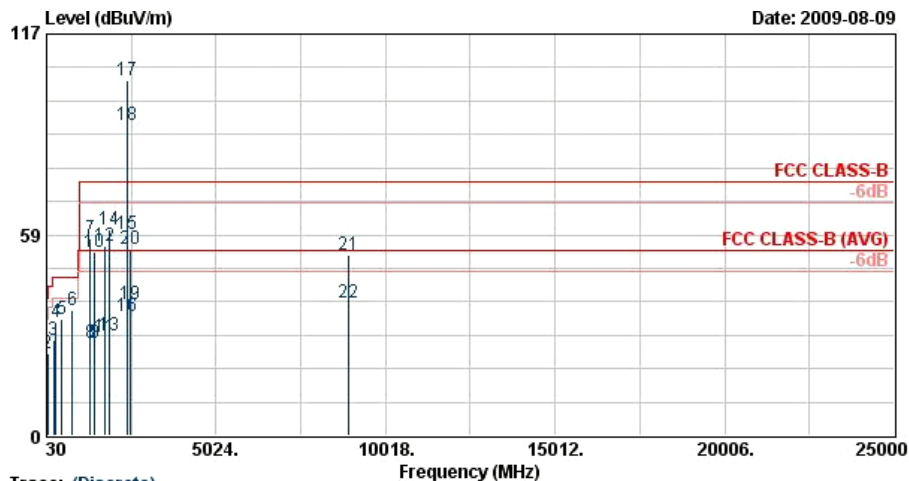
3.3.6 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#17 and #18 are Fundamental Signals which can be ignored.		





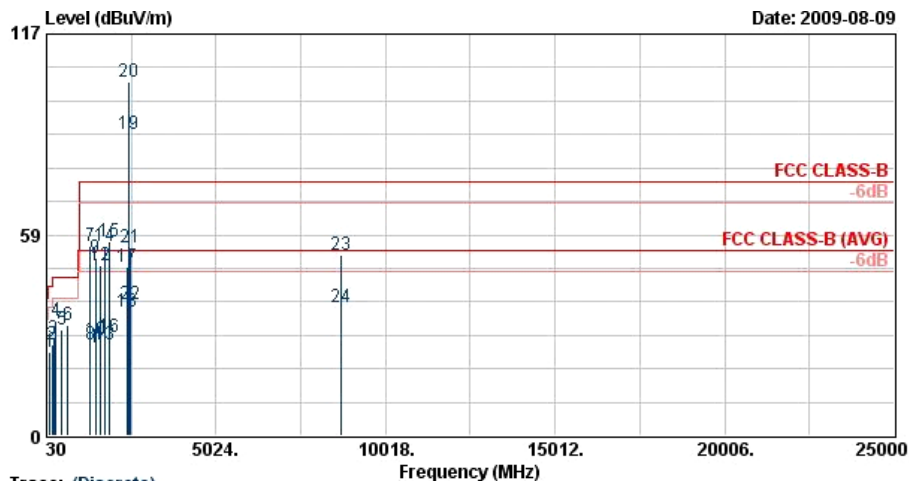
Test Mode :	Mode 1	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#17 and #18 are Fundamental Signals which can be ignored.		



	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	30.54	24.24	-15.76	40.00	36.25	19.30	0.30	31.61	---	---	Peak
2	60.78	23.85	-16.15	40.00	48.78	6.69	0.40	32.03	---	---	Peak
3	241.68	27.90	-18.10	46.00	46.82	12.23	0.70	31.85	---	---	Peak
4	301.40	32.94	-13.06	46.00	50.40	13.95	0.72	32.13	---	---	Peak
5	488.30	33.88	-12.12	46.00	47.29	17.73	0.92	32.06	---	---	Peak
6	798.40	36.71	-9.29	46.00	46.91	20.78	1.20	32.18	100	95	Peak
7	1326.00	57.25	-16.75	74.00	63.40	27.97	2.62	36.75	100	252	Peak
8	1326.00	26.97	-27.03	54.00	33.13	27.97	2.62	36.75	100	252	Average
9	1460.00	27.07	-26.93	54.00	32.88	27.99	2.76	36.57	100	124	Average
10	1460.00	53.28	-20.72	74.00	59.10	27.99	2.76	36.57	100	124	Peak
11	1732.00	28.77	-25.23	54.00	32.43	29.63	3.07	36.36	100	46	Average
12	1732.00	55.08	-18.92	74.00	58.73	29.63	3.07	36.36	100	46	Peak
13	1862.00	29.18	-24.82	54.00	31.66	30.57	3.23	36.28	100	351	Average
14	1862.00	60.06	-13.94	74.00	62.54	30.57	3.23	36.28	100	351	Peak
15	2390.00	58.56	-15.44	74.00	58.94	31.98	3.92	36.28	182	360	Peak
16	2390.00	34.92	-19.08	54.00	35.30	31.98	3.92	36.28	182	360	Average
17 X	2412.00	103.57			103.90	32.00	3.95	36.28	182	360	Peak
18 @	2412.00	90.52			90.85	32.00	3.95	36.28	182	360	Average
19	2492.00	38.40	-15.60	54.00	38.55	32.10	4.05	36.30	182	360	Average
20	2492.00	54.23	-19.77	74.00	54.38	32.10	4.05	36.30	182	360	Peak
21	8916.00	52.70	-21.30	74.00	45.73	36.12	7.71	36.86	100	253	Peak
22	8916.00	38.51	-15.49	54.00	31.54	36.12	7.71	36.86	100	253	Average



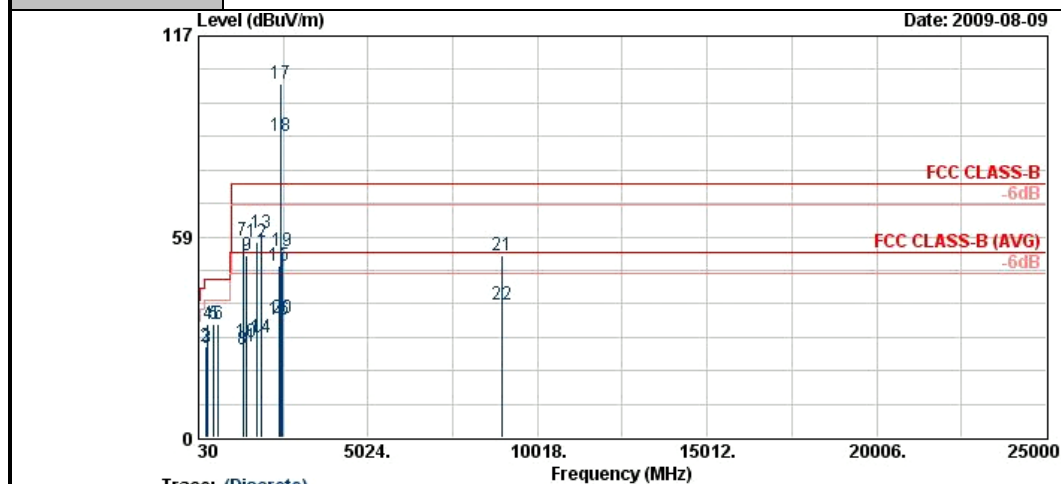
Test Mode :	Mode 2	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#19 and #20 are Fundamental Signals which can be ignored.		



	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	120.99	24.43	-19.07	43.50	43.00	12.66	0.50	31.73	---	---	Peak
2	196.59	26.33	-17.17	43.50	47.72	10.09	0.60	32.08	---	---	Peak
3	244.38	28.43	-17.57	46.00	47.14	12.42	0.70	31.83	---	---	Peak
4	302.10	33.64	-12.36	46.00	51.06	13.98	0.73	32.12	100	233	Peak
5	488.30	30.85	-15.15	46.00	44.27	17.73	0.92	32.06	---	---	Peak
6	663.30	32.23	-13.77	46.00	43.65	19.55	1.06	32.04	---	---	Peak
7	1326.00	55.12	-18.88	74.00	61.27	27.97	2.62	36.75	100	63	Peak
8	1326.00	26.57	-27.43	54.00	32.73	27.97	2.62	36.75	100	63	Average
9	1462.00	51.79	-22.21	74.00	57.60	27.99	2.76	36.57	100	156	Peak
10	1462.00	27.72	-26.28	54.00	33.53	27.99	2.76	36.57	100	156	Average
11	1596.00	25.81	-28.19	54.00	30.63	28.70	2.93	36.45	100	193	Average
12	1596.00	49.67	-24.33	74.00	54.49	28.70	2.93	36.45	100	193	Peak
13	1732.00	26.35	-27.65	54.00	30.01	29.63	3.07	36.36	100	9	Average
14	1732.00	55.12	-18.88	74.00	58.78	29.63	3.07	36.36	100	9	Peak
15	1860.00	56.59	-17.41	74.00	59.07	30.57	3.23	36.28	100	22	Peak
16	1860.00	28.64	-25.36	54.00	31.12	30.57	3.23	36.28	100	22	Average
17	2390.00	49.28	-24.72	74.00	49.67	31.98	3.92	36.28	100	33	Peak
18	2390.00	35.94	-18.06	54.00	36.32	31.98	3.92	36.28	100	33	Average
19 X	2437.00	87.65			87.91	32.04	3.99	36.29	100	33	Average
20 X	2437.00	102.88			103.14	32.04	3.99	36.29	100	33	Peak
21	2484.00	54.68	-19.32	74.00	54.85	32.08	4.05	36.30	100	33	Peak
22	2484.00	38.10	-15.90	54.00	38.27	32.08	4.05	36.30	100	33	Average
23	8712.00	52.48	-21.52	74.00	45.89	35.92	7.45	36.78	100	23	Peak
24	8712.00	37.47	-16.53	54.00	30.89	35.92	7.45	36.78	100	23	Average



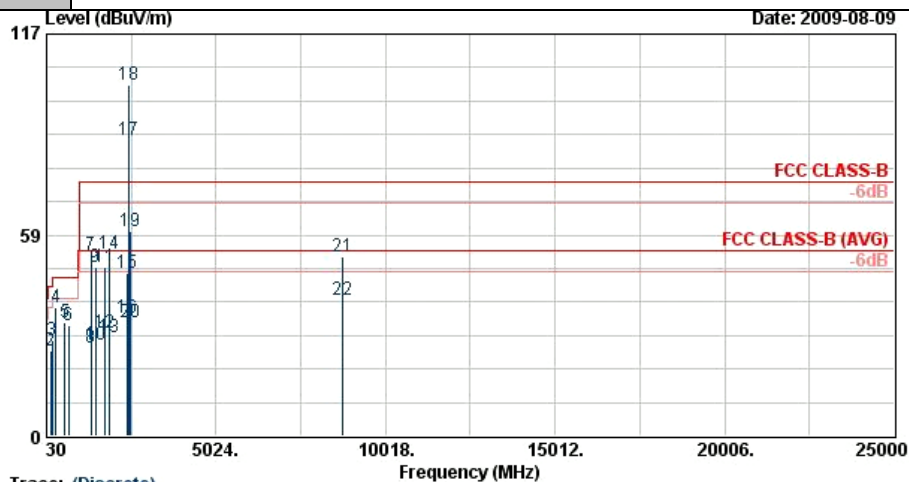
Test Mode :	Mode 2	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#17 and #18 are Fundamental Signals which can be ignored.		



	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	31.08	17.93	-22.07	40.00	29.94	19.30	0.30	31.61	---	---	Peak
2	241.68	26.64	-19.36	46.00	45.56	12.23	0.70	31.85	---	---	Peak
3	274.89	25.90	-20.10	46.00	43.67	13.50	0.70	31.97	---	---	Peak
4	304.90	33.15	-12.85	46.00	50.48	14.03	0.75	32.11	100	188	Peak
5	483.40	33.13	-12.87	46.00	46.57	17.66	0.97	32.06	---	---	Peak
6	610.80	33.05	-12.95	46.00	44.97	19.19	1.01	32.12	---	---	Peak
7	1332.00	57.33	-16.67	74.00	63.49	27.97	2.62	36.75	100	52	Peak
8	1332.00	25.88	-28.12	54.00	32.03	27.97	2.62	36.75	100	52	Average
9	1460.00	53.20	-20.80	74.00	59.02	27.99	2.76	36.57	100	89	Peak
10	1460.00	27.63	-26.37	54.00	33.44	27.99	2.76	36.57	100	89	Average
11	1726.00	26.35	-27.65	54.00	30.02	29.63	3.07	36.37	100	100	Average
12	1726.00	57.12	-16.88	74.00	60.79	29.63	3.07	36.37	100	100	Peak
13	1862.00	59.78	-14.22	74.00	62.25	30.57	3.23	36.28	100	241	Peak
14	1862.00	29.08	-24.92	54.00	31.56	30.57	3.23	36.28	100	241	Average
15	2390.00	50.18	-23.82	74.00	50.56	31.98	3.92	36.28	111	200	Peak
16	2390.00	34.41	-19.59	54.00	34.79	31.98	3.92	36.28	111	200	Average
17 X	2437.00	103.18			103.44	32.04	3.99	36.29	111	200	Peak
18 @	2437.00	87.81			88.07	32.04	3.99	36.29	111	200	Average
19	2492.00	54.58	-19.42	74.00	54.73	32.10	4.05	36.30	111	200	Peak
20	2492.00	34.91	-19.09	54.00	35.06	32.10	4.05	36.30	111	200	Average
21	8961.00	52.97	-21.03	74.00	45.93	36.15	7.77	36.88	100	120	Peak
22	8961.00	38.67	-15.33	54.00	31.63	36.15	7.77	36.88	100	120	Average



Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#17 and #18 are Fundamental Signals which can be ignored.		



Trace: (Discrete)

Site : 03CH06-RY

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

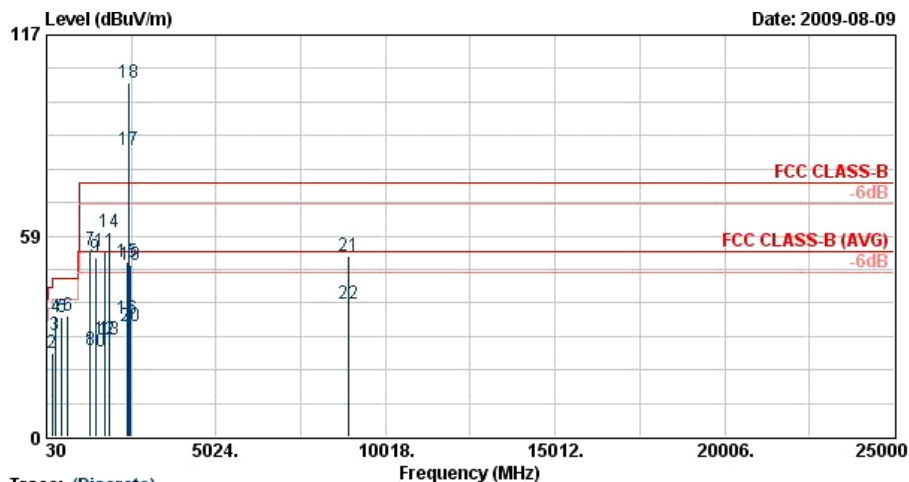
Project : FR 931617-22

Memo : Mode 3

	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	19.29	-20.71	40.00	30.65	19.90	0.30	31.56	---	---	Peak
2	151.23	24.69	-18.81	43.50	44.64	11.15	0.60	31.71	---	---	Peak
3	199.83	27.70	-15.80	43.50	48.91	10.30	0.60	32.11	---	---	Peak
4	304.90	37.59	-8.41	46.00	54.92	14.03	0.75	32.11	100	46	Peak
5	565.30	33.00	-13.00	46.00	45.17	18.96	1.00	32.14	---	---	Peak
6	672.40	32.25	-13.75	46.00	43.78	19.59	1.02	32.15	---	---	Peak
7	1332.00	52.71	-21.29	74.00	58.86	27.97	2.62	36.75	100	10	Peak
8	1332.00	25.59	-28.41	54.00	31.74	27.97	2.62	36.75	100	10	Average
9	1462.00	49.34	-24.66	74.00	55.15	27.99	2.76	36.57	100	162	Peak
10	1462.00	26.75	-27.25	54.00	32.56	27.99	2.76	36.57	100	162	Average
11	1732.00	49.14	-24.86	74.00	52.80	29.63	3.07	36.36	100	93	Peak
12	1732.00	30.08	-23.92	54.00	33.74	29.63	3.07	36.36	100	93	Average
13	1860.00	28.59	-25.41	54.00	31.07	30.57	3.23	36.28	100	341	Average
14	1860.00	53.09	-20.91	74.00	55.57	30.57	3.23	36.28	100	341	Peak
15	2390.00	47.61	-26.39	74.00	47.99	31.98	3.92	36.28	100	29	Peak
16	2390.00	34.23	-19.77	54.00	34.61	31.98	3.92	36.28	100	29	Average
17 @	2462.00	86.19			86.40	32.06	4.02	36.29	100	29	Average
18 X	2462.00	102.09			102.30	32.06	4.02	36.29	100	29	Peak
19	2483.50	59.67	-14.33	74.00	59.84	32.08	4.05	36.30	100	29	Peak
20	2483.50	32.94	-21.06	54.00	33.11	32.08	4.05	36.30	100	29	Average
21	8757.00	52.14	-21.86	74.00	45.49	35.95	7.50	36.80	100	15	Peak
22	8757.00	39.60	-14.40	54.00	32.95	35.95	7.50	36.80	100	15	Average



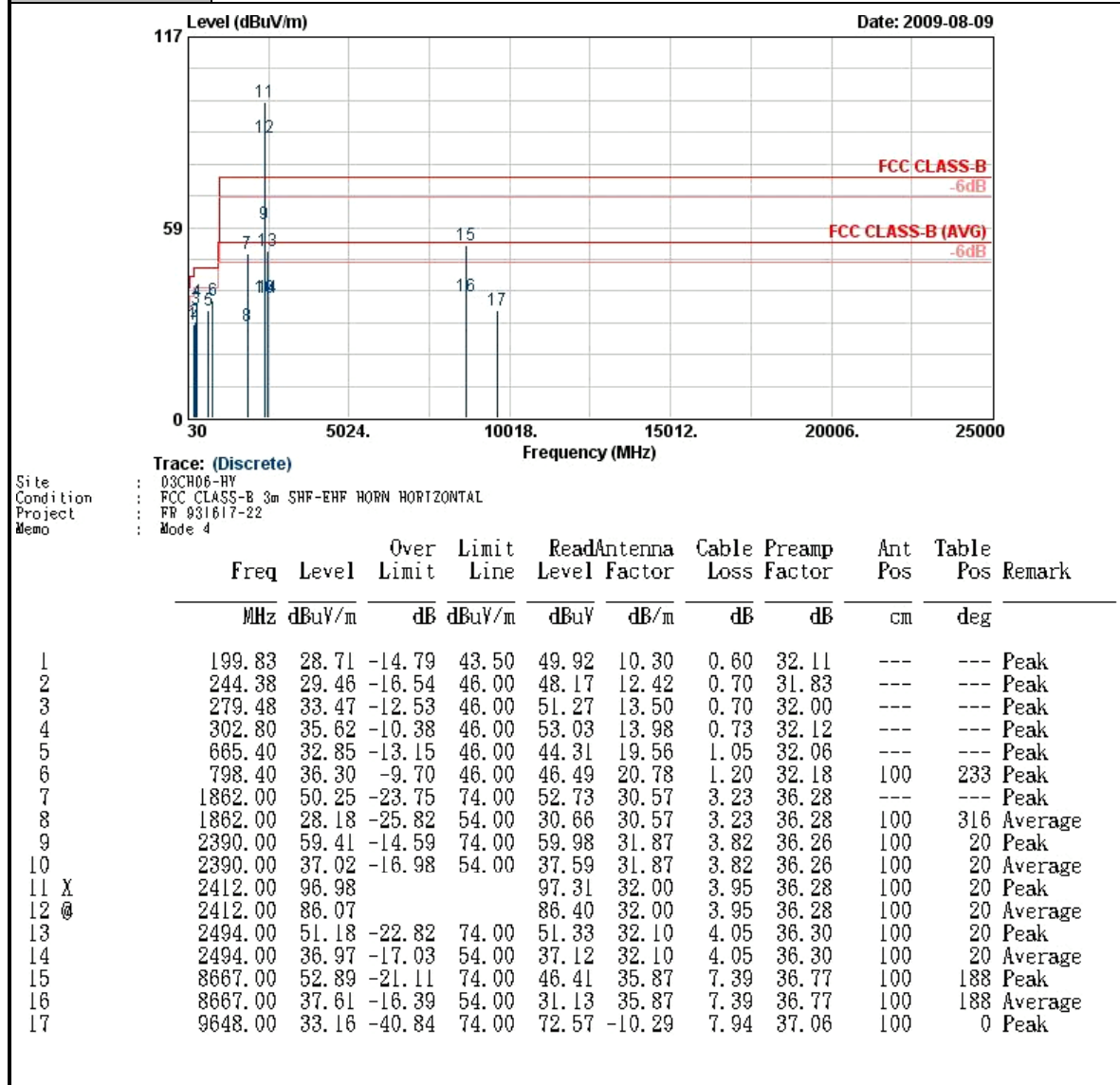
Test Mode :	Mode 3	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#17 and #18 are Fundamental Signals which can be ignored.		



	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	19.19	-20.81	40.00	30.55	19.90	0.30	31.56	---	---	Peak
2	199.83	24.39	-19.11	43.50	45.60	10.30	0.60	32.11	---	---	Peak
3	279.48	29.42	-16.58	46.00	47.22	13.50	0.70	32.00	---	---	Peak
4	301.40	34.87	-11.13	46.00	52.33	13.95	0.72	32.13	---	---	Peak
5	488.30	34.67	-11.33	46.00	48.09	17.73	0.92	32.06	---	---	Peak
6	665.40	35.42	-10.58	46.00	46.88	19.56	1.05	32.06	100	31	Peak
7	1326.00	54.57	-19.43	74.00	60.72	27.97	2.62	36.75	100	192	Peak
8	1326.00	25.33	-28.67	54.00	31.49	27.97	2.62	36.75	100	192	Average
9	1462.00	52.29	-21.71	74.00	58.10	27.99	2.76	36.57	100	48	Peak
10	1462.00	24.93	-29.07	54.00	30.74	27.99	2.76	36.57	100	48	Average
11	1732.00	54.05	-19.95	74.00	57.71	29.63	3.07	36.36	100	229	Peak
12	1732.00	28.17	-25.83	54.00	31.83	29.63	3.07	36.36	100	229	Average
13	1862.00	28.45	-25.55	54.00	30.93	30.57	3.23	36.28	100	316	Average
14	1862.00	59.65	-14.35	74.00	62.13	30.57	3.23	36.28	100	316	Peak
15	2390.00	50.96	-23.04	74.00	51.35	31.98	3.92	36.28	100	314	Peak
16	2390.00	34.34	-19.66	54.00	34.72	31.98	3.92	36.28	100	314	Average
17 @	2462.00	83.72			83.93	32.06	4.02	36.29	100	314	Average
18 X	2462.00	103.16			103.38	32.06	4.02	36.29	100	314	Peak
19	2489.93	50.05	-23.95	74.00	50.20	32.10	4.05	36.30	100	314	Peak
20	2489.93	32.13	-21.87	54.00	32.28	32.10	4.05	36.30	100	314	Average
21	8922.00	52.49	-21.51	74.00	45.54	36.12	7.71	36.87	100	255	Peak
22	8922.00	38.59	-15.41	54.00	31.63	36.12	7.71	36.87	100	255	Average



Test Mode :	Mode 4	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#11 and #12 are Fundamental Signals which can be ignored.		

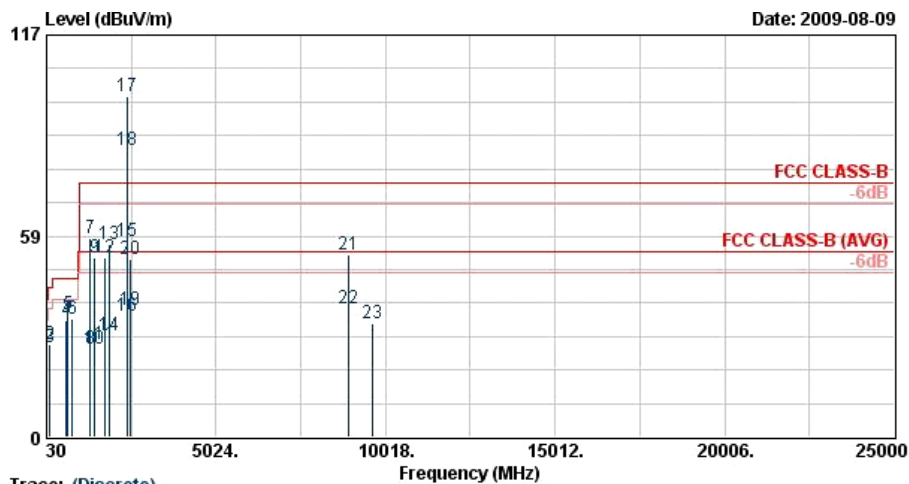




FCC RF Test Report

Report No. : FR931617-22

Test Mode :	Mode 4	Temperature :	25~27°C
Test Channel :	01	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#17 and #18 are Fundamental Signals which can be ignored.		

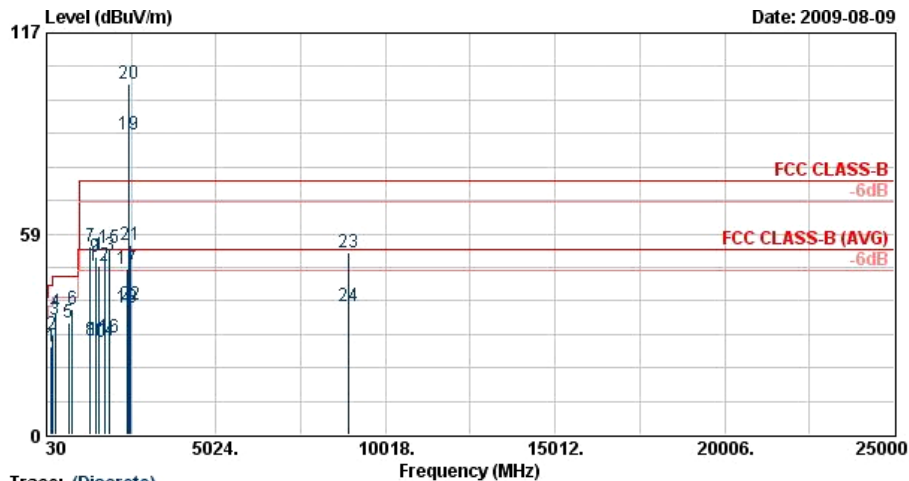


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 931617-22
Memo : Mode 4

	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	23.64	-16.36	40.00	35.00	19.90	0.30	31.56	---	---	Peak
2	120.99	26.87	-16.63	43.50	45.43	12.66	0.50	31.73	---	---	Peak
3	130.98	26.26	-17.24	43.50	45.20	12.25	0.50	31.69	---	---	Peak
4	610.80	33.97	-12.03	46.00	45.89	19.19	1.01	32.12	---	---	Peak
5	663.30	35.82	-10.18	46.00	47.25	19.55	1.06	32.04	100	36	Peak
6	798.40	34.49	-11.51	46.00	44.68	20.78	1.20	32.18	---	---	Peak
7	1326.00	57.68	-16.32	74.00	63.84	27.97	2.62	36.75	100	13	Peak
8	1326.00	25.87	-28.13	54.00	32.03	27.97	2.62	36.75	100	13	Average
9	1460.00	52.05	-21.95	74.00	57.86	27.99	2.76	36.57	100	146	Peak
10	1460.00	25.64	-28.36	54.00	31.45	27.99	2.76	36.57	100	146	Average
11	1726.00	26.76	-27.24	54.00	30.43	29.63	3.07	36.37	100	211	Average
12	1726.00	52.12	-21.88	74.00	55.79	29.63	3.07	36.37	100	211	Peak
13	1860.00	56.28	-17.72	74.00	58.75	30.57	3.23	36.28	100	154	Peak
14	1860.00	29.41	-24.59	54.00	31.89	30.57	3.23	36.28	100	154	Average
15	2390.00	57.05	-16.95	74.00	57.43	31.98	3.92	36.28	100	301	Peak
16	2390.00	35.38	-18.62	54.00	35.76	31.98	3.92	36.28	100	301	Average
17 X	2412.00	99.27	---	---	99.60	32.00	3.95	36.28	100	301	Peak
18 @	2412.00	83.67	---	---	84.00	32.00	3.95	36.28	100	301	Average
19	2492.00	37.02	-16.98	54.00	37.17	32.10	4.05	36.30	100	301	Average
20	2492.00	51.64	-22.36	74.00	51.79	32.10	4.05	36.30	100	301	Peak
21	8907.00	52.99	-21.01	74.00	46.06	36.10	7.68	36.86	100	263	Peak
22	8907.00	37.45	-16.55	54.00	30.53	36.10	7.68	36.86	100	263	Average
23	9648.00	32.89	-41.11	74.00	72.27	-10.27	7.94	37.06	100	0	Peak



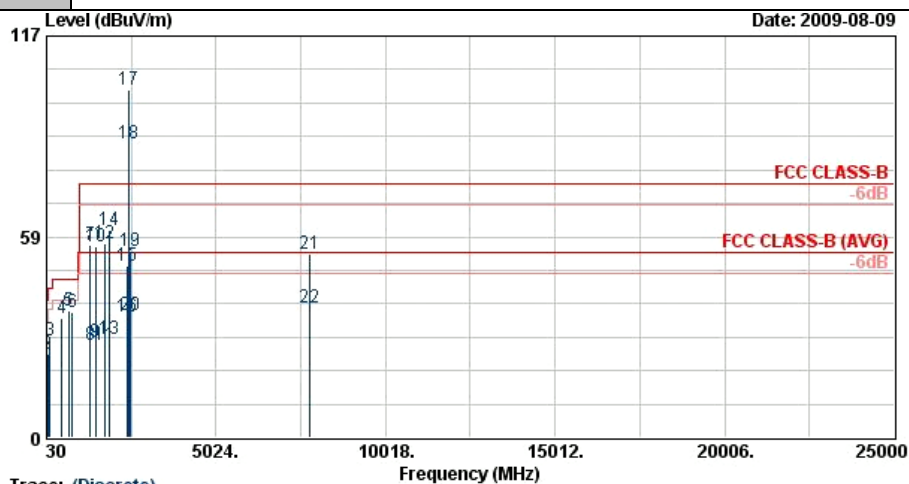
Test Mode :	Mode 5	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#19 and #20 are Fundamental Signals which can be ignored.		



	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	183.09	25.77	-17.73	43.50	47.50	9.74	0.60	32.07	---	---	Peak
2	199.83	29.13	-14.37	43.50	50.34	10.30	0.60	32.11	---	---	Peak
3	279.48	33.47	-12.53	46.00	51.27	13.50	0.70	32.00	---	---	Peak
4	304.90	35.78	-10.22	46.00	53.11	14.03	0.75	32.11	---	---	Peak
5	672.40	32.48	-13.52	46.00	44.01	19.59	1.02	32.15	---	---	Peak
6	799.80	36.46	-9.54	46.00	46.64	20.80	1.20	32.18	100	25	Peak
7	1326.00	54.79	-19.21	74.00	60.95	27.97	2.62	36.75	100	52	Peak
8	1326.00	27.27	-26.73	54.00	33.43	27.97	2.62	36.75	100	52	Average
9	1462.00	51.54	-22.46	74.00	57.36	27.99	2.76	36.57	100	144	Peak
10	1462.00	26.85	-27.15	54.00	32.66	27.99	2.76	36.57	100	144	Average
11	1590.00	27.28	-26.72	54.00	32.10	28.70	2.93	36.45	100	224	Average
12	1590.00	49.17	-24.83	74.00	53.99	28.70	2.93	36.45	100	224	Peak
13	1726.00	52.28	-21.72	74.00	55.95	29.63	3.07	36.37	100	312	Peak
14	1726.00	27.36	-26.64	54.00	31.03	29.63	3.07	36.37	100	312	Average
15	1860.00	54.26	-19.74	74.00	56.73	30.57	3.23	36.28	100	12	Peak
16	1860.00	28.40	-25.60	54.00	30.88	30.57	3.23	36.28	100	12	Average
17	2390.00	48.29	-25.71	74.00	48.67	31.98	3.92	36.28	100	15	Peak
18	2390.00	37.08	-16.92	54.00	37.46	31.98	3.92	36.28	100	15	Average
19 @	2437.00	87.38			87.64	32.04	3.99	36.29	100	15	Average
20 X	2437.00	102.04			102.30	32.04	3.99	36.29	100	15	Peak
21	2494.00	55.29	-18.71	74.00	55.44	32.10	4.05	36.30	100	15	Peak
22	2494.00	37.99	-16.01	54.00	38.14	32.10	4.05	36.30	100	15	Average
23	8922.00	52.87	-21.13	74.00	45.91	36.12	7.71	36.87	100	128	Peak
24	8922.00	37.45	-16.55	54.00	30.49	36.12	7.71	36.87	100	128	Average



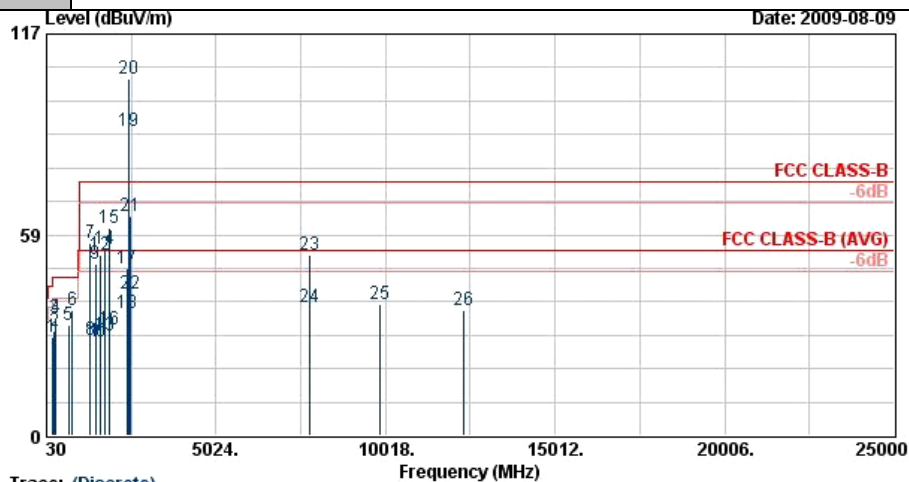
Test Mode :	Mode 5	Temperature :	25~27°C
Test Channel :	06	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#17 and #18 are Fundamental Signals which can be ignored.		



	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	30.54	23.37	-16.63	40.00	35.39	19.30	0.30	31.61	---	---	Peak
2	60.78	24.27	-15.73	40.00	49.20	6.69	0.40	32.03	---	---	Peak
3	120.99	28.19	-15.31	43.50	46.75	12.66	0.50	31.73	---	---	Peak
4	488.30	35.01	-10.99	46.00	48.43	17.73	0.92	32.06	---	---	Peak
5	672.40	36.81	-9.19	46.00	48.35	19.59	1.02	32.15	100	153	Peak
6	796.30	36.69	-9.31	46.00	46.90	20.76	1.20	32.17	---	---	Peak
7	1326.00	56.18	-17.82	74.00	62.34	27.97	2.62	36.75	100	55	Peak
8	1326.00	26.97	-27.03	54.00	33.13	27.97	2.62	36.75	100	55	Average
9	1462.00	27.84	-26.16	54.00	33.65	27.99	2.76	36.57	100	86	Average
10	1462.00	55.63	-18.37	74.00	61.44	27.99	2.76	36.57	100	86	Peak
11	1732.00	26.79	-27.21	54.00	30.46	29.63	3.07	36.37	100	156	Average
12	1732.00	56.43	-17.57	74.00	60.09	29.63	3.07	36.36	100	156	Peak
13	1862.00	28.72	-25.28	54.00	31.20	30.57	3.23	36.28	100	23	Average
14	1862.00	60.28	-13.72	74.00	62.75	30.57	3.23	36.28	100	23	Peak
15	2390.00	50.01	-23.99	74.00	50.40	31.98	3.92	36.28	100	148	Peak
16	2390.00	35.39	-18.61	54.00	35.77	31.98	3.92	36.28	100	148	Average
17 X	2437.00	101.51			101.79	32.02	3.99	36.29	100	148	Peak
18 @	2437.00	85.50			85.76	32.04	3.99	36.29	100	148	Average
19	2500.00	54.22	-19.78	74.00	54.37	32.10	4.05	36.30	100	148	Peak
20	2500.00	35.45	-18.55	54.00	35.60	32.10	4.05	36.30	100	148	Average
21	7791.00	53.42	-20.58	74.00	47.05	35.61	7.41	36.66	100	172	Peak
22	7791.00	37.96	-16.04	54.00	31.59	35.61	7.41	36.66	100	172	Average



Test Mode :	Mode 6	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#19 and #20 are Fundamental Signals which can be ignored.		



Trace: (Discrete)

Frequency (MHz)

Site : 03CH06-RY

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

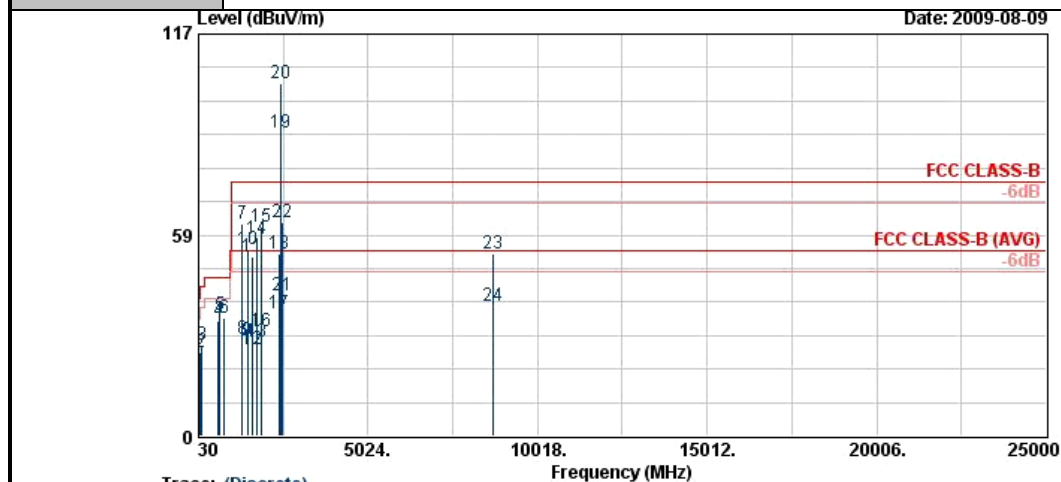
Project : FR 931617-22

Memo : Mode 6

	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	199.83	28.61	-14.89	43.50	49.82	10.30	0.60	32.11	---	---	Peak
2	265.44	30.34	-15.66	46.00	47.92	13.62	0.70	31.90	---	---	Peak
3	279.48	34.50	-11.50	46.00	52.30	13.50	0.70	32.00	---	---	Peak
4	304.90	34.54	-11.46	46.00	51.87	14.03	0.75	32.11	---	---	Peak
5	672.40	32.13	-13.87	46.00	43.67	19.59	1.02	32.15	---	---	Peak
6	798.40	36.44	-9.56	46.00	46.64	20.78	1.20	32.18	100	15	Peak
7	1326.00	56.03	-17.97	74.00	62.19	27.97	2.62	36.75	100	161	Peak
8	1326.00	27.96	-26.04	54.00	34.12	27.97	2.62	36.75	100	161	Average
9	1462.00	49.82	-24.18	74.00	55.64	27.99	2.76	36.57	100	182	Peak
10	1462.00	27.21	-26.79	54.00	33.02	27.99	2.76	36.57	100	182	Average
11	1596.00	27.26	-26.74	54.00	32.08	28.70	2.93	36.45	100	143	Average
12	1596.00	52.56	-21.44	74.00	57.39	28.70	2.93	36.45	100	143	Peak
13	1726.00	29.36	-24.64	54.00	33.03	29.63	3.07	36.37	100	310	Average
14	1726.00	54.55	-19.45	74.00	58.22	29.63	3.07	36.37	100	310	Peak
15	1862.00	60.57	-13.43	74.00	63.05	30.57	3.23	36.28	100	316	Peak
16	1862.00	30.93	-23.07	54.00	33.41	30.57	3.23	36.28	100	316	Average
17	2390.00	48.83	-25.17	74.00	49.21	31.98	3.92	36.28	100	11	Peak
18	2390.00	35.75	-18.25	54.00	36.13	31.98	3.92	36.28	100	11	Average
19 @	2462.00	88.67			88.88	32.06	4.02	36.29	100	11	Average
20 X	2462.00	103.83			104.05	32.06	4.02	36.30	100	11	Peak
21	2483.50	63.90	-10.10	74.00	64.07	32.08	4.05	36.30	100	11	Peak
22	2483.50	41.51	-12.49	54.00	41.68	32.08	4.05	36.30	100	11	Average
23	7776.00	52.57	-21.43	74.00	46.22	35.61	7.40	36.66	100	129	Peak
24	7776.00	37.21	-16.79	54.00	30.85	35.61	7.40	36.66	100	129	Average
25	9848.00	38.11	-35.89	74.00	77.01	-9.79	8.03	37.14	100	0	Peak
26	12310.00	36.56	-37.44	74.00	74.20	-10.70	9.47	36.42	100	0	Peak



Test Mode :	Mode 6	Temperature :	25~27°C
Test Channel :	11	Relative Humidity :	42~45%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#19 and #20 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	30.00	24.76	-15.24	40.00	36.12	19.90	0.30	31.56	---	---	Peak
2	95.88	24.57	-18.93	43.50	45.53	10.60	0.50	32.06	---	---	Peak
3	120.99	26.43	-17.07	43.50	45.00	12.66	0.50	31.73	---	---	Peak
4	610.80	33.42	-12.58	46.00	45.34	19.19	1.01	32.12	---	---	Peak
5	665.40	35.08	-10.92	46.00	46.54	19.56	1.05	32.06	100	55	Peak
6	796.30	34.20	-11.80	46.00	44.41	20.76	1.20	32.17	---	---	Peak
7	1326.00	61.96	-12.04	74.00	68.11	27.97	2.62	36.75	100	76	Peak
8	1326.00	28.27	-25.73	54.00	34.43	27.97	2.62	36.75	100	76	Average
9	1462.00	27.82	-26.18	54.00	33.63	27.99	2.76	36.57	100	149	Average
10	1462.00	54.24	-19.76	74.00	60.05	27.99	2.76	36.57	100	149	Peak
11	1596.00	52.26	-21.74	74.00	57.08	28.70	2.93	36.45	100	265	Peak
12	1596.00	25.34	-28.66	54.00	30.16	28.70	2.93	36.45	100	265	Average
13	1726.00	27.41	-26.59	54.00	31.08	29.63	3.07	36.37	100	311	Average
14	1726.00	57.26	-16.74	74.00	60.93	29.63	3.07	36.37	100	311	Peak
15	1860.00	60.79	-13.21	74.00	63.27	30.57	3.23	36.28	100	356	Peak
16	1860.00	30.28	-23.72	54.00	32.76	30.57	3.23	36.28	100	356	Average
17	2388.00	35.78	-18.22	54.00	36.16	31.98	3.92	36.28	100	354	Average
18	2388.00	53.15	-20.85	74.00	53.52	31.98	3.92	36.28	100	354	Peak
19 @	2462.00	88.19			88.40	32.06	4.02	36.29	100	354	Average
20 X	2462.00	102.58			102.79	32.06	4.02	36.29	100	354	Peak
21	2483.50	40.85	-13.15	54.00	41.02	32.08	4.05	36.30	100	354	Average
22	2483.50	62.39	-11.61	74.00	62.56	32.08	4.05	36.30	100	354	Peak
23	8727.00	52.85	-21.15	74.00	46.23	35.93	7.48	36.79	100	192	Peak
24	8727.00	37.63	-16.37	54.00	31.01	35.93	7.48	36.79	100	192	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 Monopole 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)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9kHz~26.5GHz	Oct. 24, 2008	Oct. 23, 2009	Radiation (03CH06-HY)
Spectrum Analyzer	R&S	FSP40	100057	9kHz~40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz~1000MHz	Apr. 28, 2009	Apr. 27, 2010	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz~2GHz	Nov. 12, 2008	Nov. 11, 2009	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1G~18GHz	Aug. 18, 2008	Aug. 17, 2009	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AF-0801	95119	8G~18G	Oct. 28, 2008	Oct. 27, 2009	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	BBHA9170251	15G~40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G~26.5GHz	Nov. 11, 2008	Nov. 10, 2009	Radiation (03CH06-HY)
Pre Amplifier	Agilent	310N	186713	9kHz~1GHz	Apr. 20, 2009	Apr. 19, 2010	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH06-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 EP931617-22 as below.