

# Partial FCC Test Report

**APPLICANT** : Acer Inc.  
**EQUIPMENT** : WLAN Module  
**BRAND NAME** : Acer, Gateway, PackardBell  
**MODEL NAME** : AR5BHB63  
**FCC ID** : HLZAR5BHB63  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : Digital Transmission System (DTS)

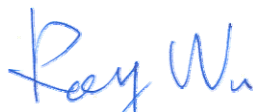
This is a partial report which is only valid combined with the Integrated WLAN Module (brand name: Atheros / model name: AR5BHB63, FCC ID: HLZAR5BHB63).

The product sample received on Apr. 17, 2009 and completely tested on May 15, 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 EUT was installed into Acer laptop PC, brand name: Acer, Gateway, PackardBell / model name: ZA3, Aspire one, AO751, during test.

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 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.**

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : HLZAR5BHB63

Page Number : 1 of 36

Report Issued Date : May 25, 2009

Report Version : Rev. 01



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### 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 16.70 dB at 0.182 MHz
3.3	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.02 dB at 796.30 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, Taiwan, R.O.C.333
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	AR5BHB63
FCC ID	HLZAR5BHB63
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
Antenna Type	Main antenna : PIFA Antenna with gain -1.23 dBi Aux. antenna : PIFA Antenna with gain -1.70 dBi
Type of Antenna Connector	N/A
Host Laptop PC	Brade Name : Acer, Gateway, PackardBell Model Name : ZA3, Aspire one, AO751
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

**Remark:**

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. Please refer to the user's manual for more detailed information of host laptop PC (brand name: Acer, Gateway, PackardBell / model name: Z A3, Aspire one, AO751).
4. The conducted test result can be referred to Sporton report number FR921118.

### 1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 <sup>st</sup> 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.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	(mic) Earphone	Kolin	Kit-7460E	FCC DoC	Unshielded, 1.6 m	N/A
3.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-100	PYA1YH	N/A	N/A
5.	WLAN AP	D-Link	DIR-628	KADIR628A2	N/A	Unshielded, 1.8 m
6.	i-Pod	Apple	A1236	FCC DoC	Shielded, 1.0 m	N/A
7.	i-pod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A

## 2 Test Configuration of Equipment Under Test

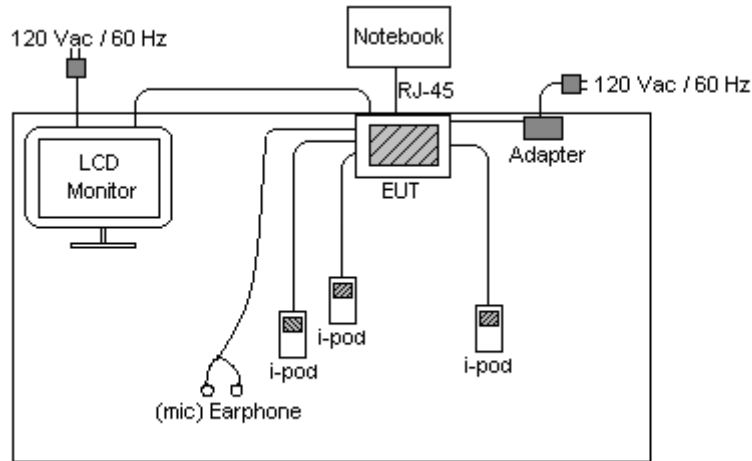
### 2.1 Test Mode

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	<ul style="list-style-type: none"> <li>■ Mode 1: CH01_2412 MHz</li> <li>■ Mode 2: CH06_2437 MHz</li> <li>■ Mode 3: CH11_2462 MHz</li> </ul>	<ul style="list-style-type: none"> <li>■ Mode 4: CH01_2412 MHz</li> <li>■ Mode 5: CH06_2437 MHz</li> <li>■ Mode 6: CH11_2462 MHz</li> </ul>
AC Conducted Emission	<ul style="list-style-type: none"> <li>■ Mode 1: WLAN Link + TC + Adapter</li> </ul>	
<p><b>Remark:</b></p> <ol style="list-style-type: none"> <li>1. TC stands for Test Configuration, and consists of monitor, (mic) earphone, iPod, and RJ-45.</li> <li>2. Only the radiated emission and conducted emission of the WLAN module on the host laptop PC was performed in this report, and the conducted test cases can be referred to Sporton report number FR921118.</li> </ol>		



## 2.2 Connection Diagram of Test System



**Note:** The EUT is WLAN Module which was installed in the host laptop PC (brand name: Acer, Gateway, PackardBell / model name: ZA3, Aspire one, AO751).

## 2.3 RF Utility

The programmed RF utility, "ART" is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

### 3 Test Result

#### 3.1 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.

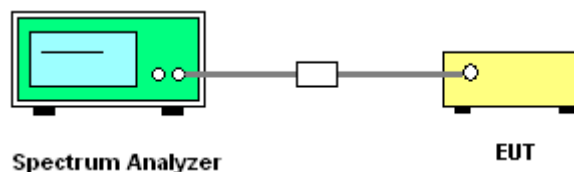
##### 3.1.2 Measuring Instruments

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 :	27~28°C
Test Band :	802.11b	Relative Humidity :	44~45%
Test Channel :	01	Test Engineer :	Mac Lin

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	45.96	-28.04	74.00	46.34	31.98	3.92	36.28	100	314	Peak
2389.99	33.55	-20.45	54.00	33.93	31.98	3.92	36.28	100	314	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
2389.42	45.09	-28.91	74.00	45.47	31.98	3.92	36.28	101	9	Peak
2389.42	30.86	-23.14	54.00	31.24	31.98	3.92	36.28	101	9	Average

Test Mode :	Mode 3	Temperature :	27~28°C
Test Band :	802.11b	Relative Humidity :	44~45%
Test Channel :	11	Test Engineer :	Mac Lin

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	45.68	-28.32	74.00	45.85	32.08	4.05	36.30	100	306	Peak
2483.50	34.16	-19.84	54.00	34.33	32.08	4.05	36.30	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	43.59	-30.41	74.00	43.76	32.08	4.05	36.30	102	330	Peak
2483.50	32.00	-22.00	54.00	32.17	32.08	4.05	36.30	102	330	Average



Test Mode :	Mode 4	Temperature :	27~28°C
Test Band :	802.11g	Relative Humidity :	44~45%
Test Channel :	01	Test Engineer :	Mac Lin

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	70.03	-3.97	74.00	70.41	31.98	3.92	36.28	100	312	Peak
2389.99	48.08	-5.92	54.00	48.46	31.98	3.92	36.28	100	312	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.99	63.83	-10.17	74.00	64.21	31.98	3.92	36.28	156	331	Peak
2389.99	41.52	-12.48	54.00	41.90	31.98	3.92	36.28	156	331	Average

Test Mode :	Mode 6	Temperature :	27~28°C
Test Band :	802.11g	Relative Humidity :	44~45%
Test Channel :	11	Test Engineer :	Mac Lin

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	68.86	-5.14	74.00	69.03	32.08	4.05	36.30	100	304	Peak
2483.50	47.54	-6.46	54.00	47.71	32.08	4.05	36.30	100	304	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
2483.85	61.81	-12.19	74.00	61.98	32.08	4.05	36.30	104	331	Peak
2483.85	41.51	-12.49	54.00	41.68	32.08	4.05	36.30	104	331	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.

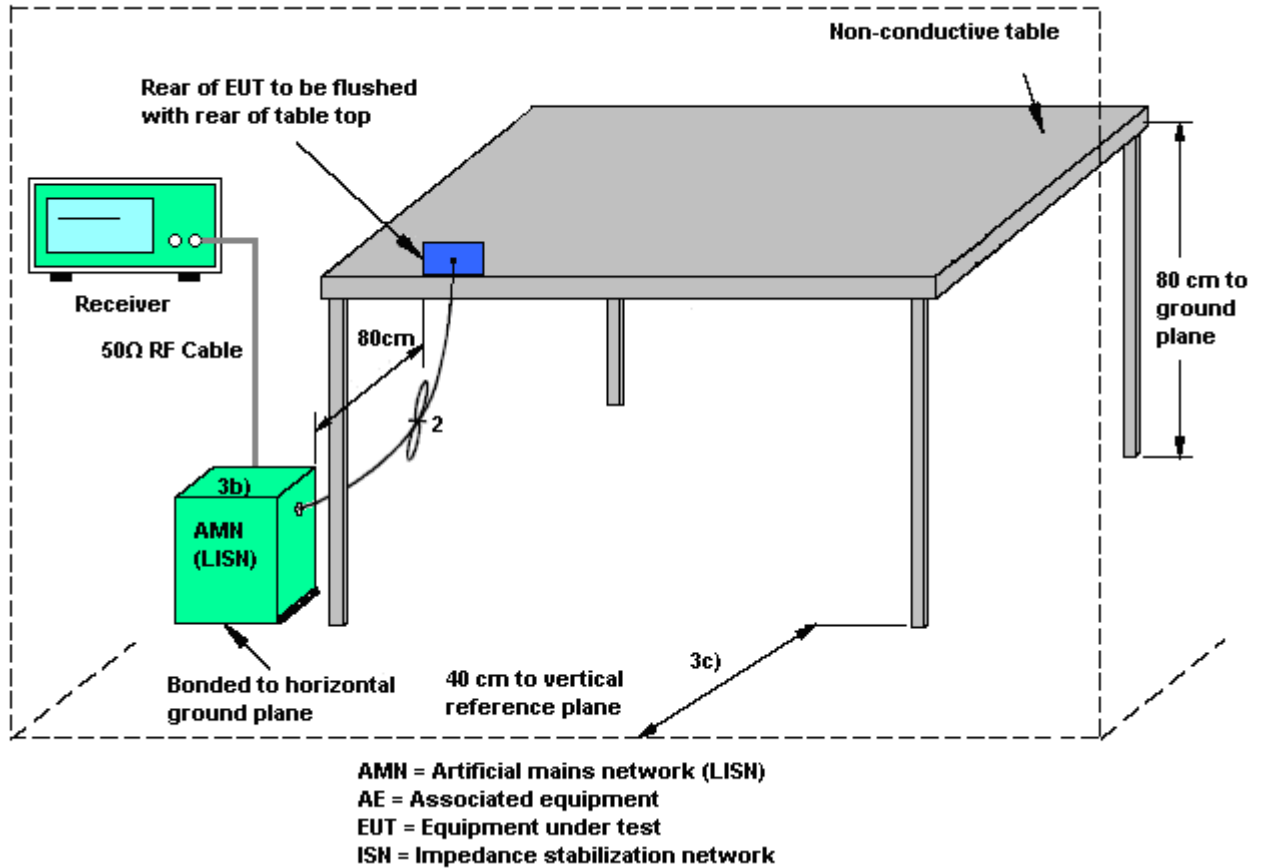
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

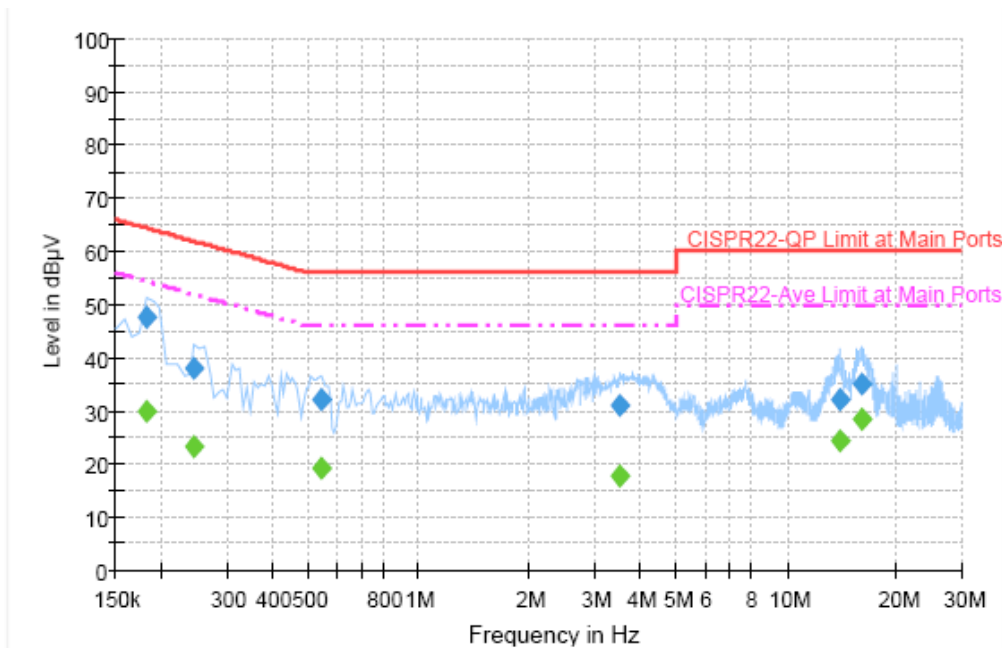
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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°C
Test Engineer :	Cona Huang	Relative Humidity :	42~43%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + TC + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



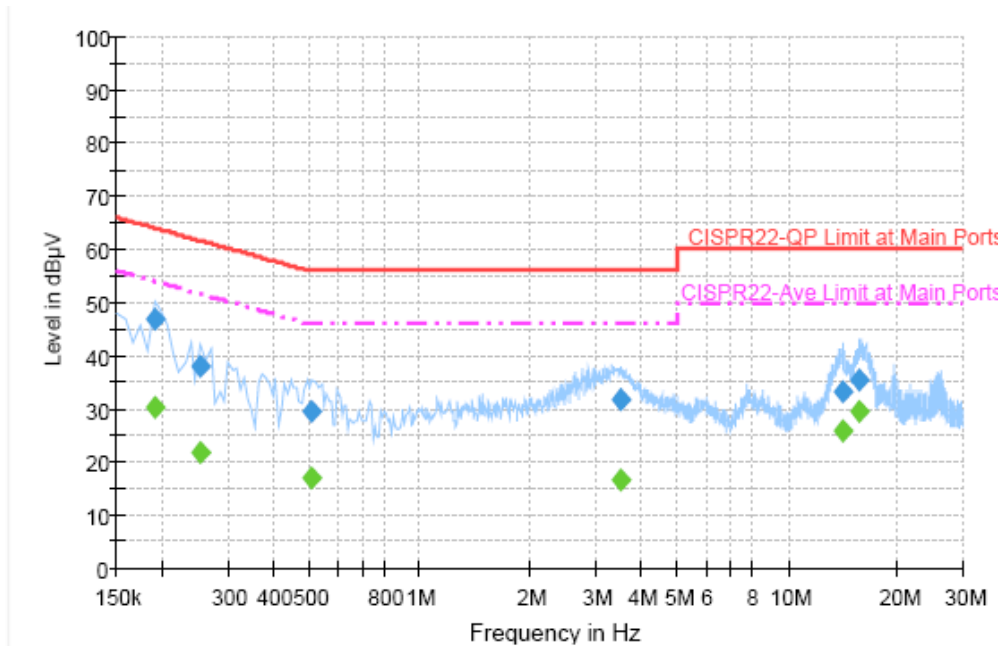
#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	47.7	Off	L1	19.4	16.7	64.4
0.246000	38.0	Off	L1	19.4	23.9	61.9
0.542000	32.2	Off	L1	19.3	23.8	56.0
3.526000	31.0	Off	L1	19.5	25.0	56.0
14.046000	32.2	Off	L1	19.7	27.8	60.0
16.070000	35.1	Off	L1	19.7	24.9	60.0

#### Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	29.9	Off	L1	19.4	24.5	54.4
0.246000	23.3	Off	L1	19.4	28.6	51.9
0.542000	19.3	Off	L1	19.3	26.7	46.0
3.526000	17.8	Off	L1	19.5	28.2	46.0
14.046000	24.5	Off	L1	19.7	25.5	50.0
16.070000	28.3	Off	L1	19.7	21.7	50.0

Test Mode :	Mode 1	Temperature :	23~24°C
Test Engineer :	Cona Huang	Relative Humidity :	42~43%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + TC + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	46.9	Off	N	19.4	17.1	64.0
0.254000	38.0	Off	N	19.4	23.6	61.6
0.510000	29.5	Off	N	19.3	26.5	56.0
3.518000	31.9	Off	N	19.5	24.1	56.0
14.086000	33.3	Off	N	19.7	26.7	60.0
15.662000	35.6	Off	N	19.8	24.4	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	30.2	Off	N	19.4	23.8	54.0
0.254000	21.9	Off	N	19.4	29.7	51.6
0.510000	16.9	Off	N	19.3	29.1	46.0
3.518000	16.5	Off	N	19.5	29.5	46.0
14.086000	25.8	Off	N	19.7	24.2	50.0
15.662000	29.5	Off	N	19.8	20.5	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

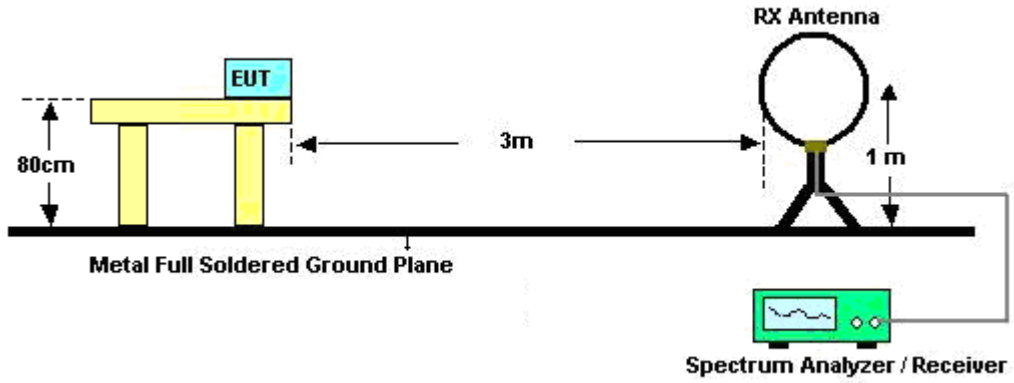
See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

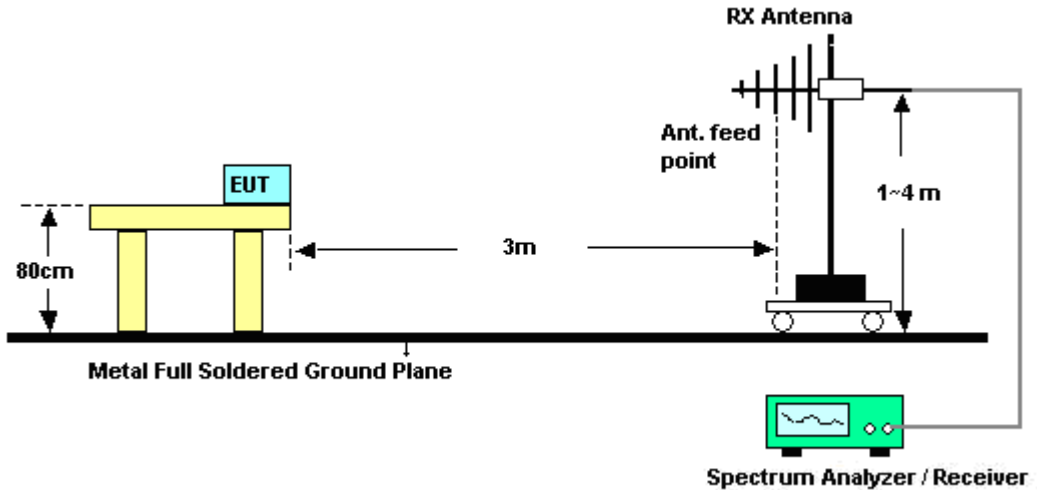
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:  
Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = 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 :	Mac Lin	Temperature :	27~28°C	
		Relative Humidity :	44~45%	
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.

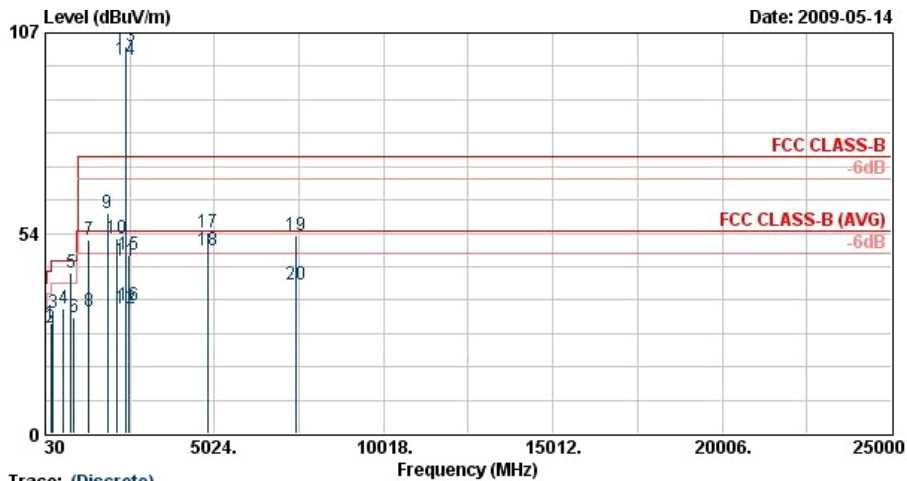
Distance extrapolation factor =  $40 \log(\text{specific distance} / \text{test distance})$  (dB);

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



3.3.6 Test Result of Radiated Emission (30MHz ~ 10<sup>th</sup> Harmonic)

Test Mode :	Mode 1	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#9 and #10 are not in a restricted band. #13 and #14 are Fundamental Signals which can be ignored.		



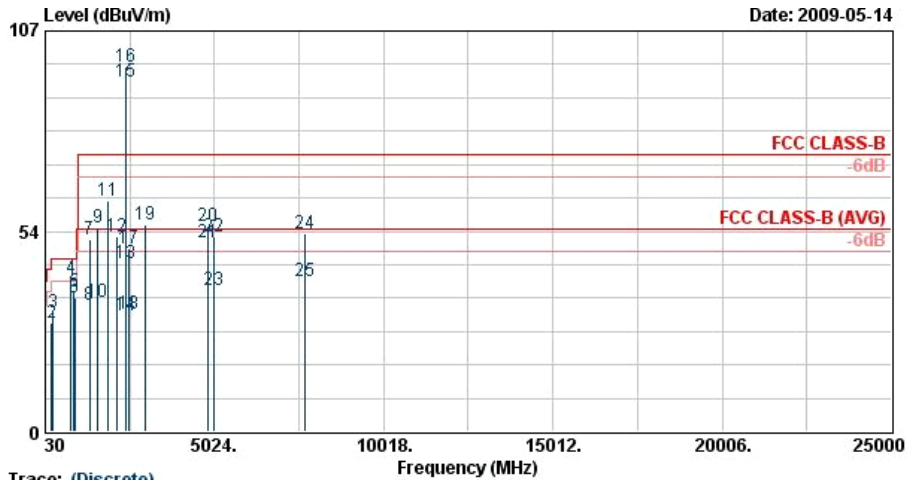
Trace: (Discrete)

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

	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	201.18	29.31	-14.19	43.50	50.50	10.34	0.60	32.12	---	---	Peak
2	205.23	28.25	-15.25	43.50	49.31	10.52	0.60	32.17	---	---	Peak
3	265.98	32.31	-13.69	46.00	49.90	13.62	0.70	31.90	---	---	Peak
4	563.90	33.57	-12.43	46.00	45.75	18.95	1.00	32.14	---	---	Peak
5 @	796.30	42.98	-3.02	46.00	53.19	20.76	1.20	32.17	100	189	Peak
6	883.80	31.16	-14.84	46.00	40.16	21.60	1.30	31.91	---	---	Peak
7	1326.00	51.61	-22.39	74.00	57.76	27.97	2.62	36.75	100	133	Peak
8	1326.00	32.81	-21.19	54.00	38.97	27.97	2.62	36.75	100	133	Average
9	1862.00	58.98			61.46	30.57	3.23	36.28	100	0	Peak
10	2126.00	52.19			53.21	31.64	3.56	36.23	100	0	Peak
11	2389.99	45.96	-28.04	74.00	46.34	31.98	3.92	36.28	100	314	Peak
12	2389.99	33.55	-20.45	54.00	33.93	31.98	3.92	36.28	100	314	Average
13 @	2412.00	103.51			103.84	32.00	3.95	36.28	100	314	Peak
14 @	2412.00	99.91			100.24	32.00	3.95	36.28	100	314	Average
15	2500.00	47.86	-26.14	74.00	48.01	32.10	4.05	36.30	100	314	Peak
16	2500.00	34.38	-19.62	54.00	34.53	32.10	4.05	36.30	100	314	Average
17	4824.00	53.73	-20.27	74.00	49.67	34.43	5.77	36.14	100	47	Peak
18 @	4824.00	48.78	-5.22	54.00	44.72	34.43	5.77	36.14	100	47	Average
19	7422.00	52.85	-21.15	74.00	46.65	35.53	7.24	36.57	100	93	Peak
20	7422.00	39.59	-14.41	54.00	33.39	35.53	7.24	36.57	100	93	Average



Test Mode :	Mode 1	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#11, #12, and #19 are not in a restricted band. #15 and #16 are Fundamental Signals which can be ignored.		



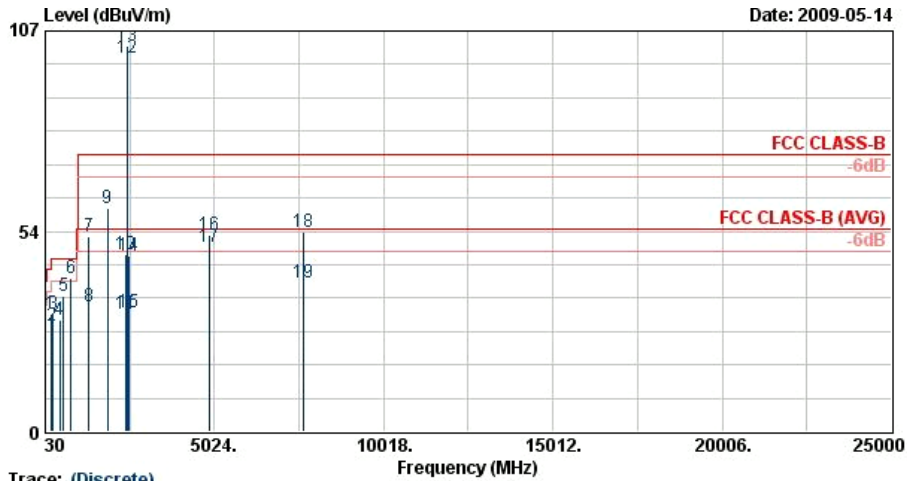
Trace: (Discrete)

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

	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	33.78	24.83	-15.17	40.00	38.81	17.50	0.30	31.78	---	---	Peak
2	210.09	29.06	-14.44	43.50	49.98	10.70	0.60	32.22	---	---	Peak
3	265.98	31.97	-14.03	46.00	49.55	13.62	0.70	31.90	---	---	Peak
4 @	799.80	41.02	-4.98	46.00	51.20	20.80	1.20	32.18	100	203	QP
5 @	885.90	37.34	-8.66	46.00	46.31	21.61	1.30	31.88	---	---	Peak
6 @	896.40	35.74	-10.26	46.00	44.49	21.68	1.30	31.73	---	---	Peak
7	1334.00	51.31	-22.69	74.00	57.46	27.97	2.62	36.75	100	1	Peak
8	1334.00	33.62	-20.38	54.00	39.77	27.97	2.62	36.75	100	1	Average
9	1590.00	54.31	-19.69	74.00	59.13	28.70	2.93	36.45	100	180	Peak
10	1590.00	34.59	-19.41	54.00	39.41	28.70	2.93	36.45	100	180	Average
11	1860.00	61.79			64.27	30.57	3.23	36.28	100	0	Peak
12	2132.00	52.00			53.00	31.67	3.56	36.23	100	0	Peak
13	2389.42	45.09	-28.91	74.00	45.47	31.98	3.92	36.28	101	9	Peak
14	2389.42	30.86	-23.14	54.00	31.24	31.98	3.92	36.28	101	9	Average
15 @	2412.00	93.60			93.93	32.00	3.95	36.28	101	9	Average
16 @	2412.00	97.29			97.62	32.00	3.95	36.28	101	9	Peak
17	2492.00	48.90	-25.10	74.00	49.05	32.10	4.05	36.30	101	9	Peak
18	2492.00	31.39	-22.61	54.00	31.54	32.10	4.05	36.30	101	9	Average
19	2998.00	55.31			54.61	32.70	4.40	36.40	100	0	Peak
20	4824.00	54.89	-19.11	74.00	50.83	34.43	5.77	36.14	100	159	Peak
21 @	4824.00	50.68	-3.32	54.00	46.62	34.43	5.77	36.14	100	159	Average
22	4992.00	52.12	-21.88	74.00	47.84	34.50	5.88	36.10	100	348	Peak
23	4992.00	37.63	-16.37	54.00	33.35	34.50	5.88	36.10	100	348	Average
24	7671.00	52.77	-21.23	74.00	46.48	35.57	7.35	36.64	100	72	Peak
25	7671.00	40.30	-13.71	54.00	34.01	35.57	7.35	36.64	100	72	Average



Test Mode :	Mode 2	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#9 is not in a restricted band. #12 and #13 are Fundamental Signals which can be ignored.		

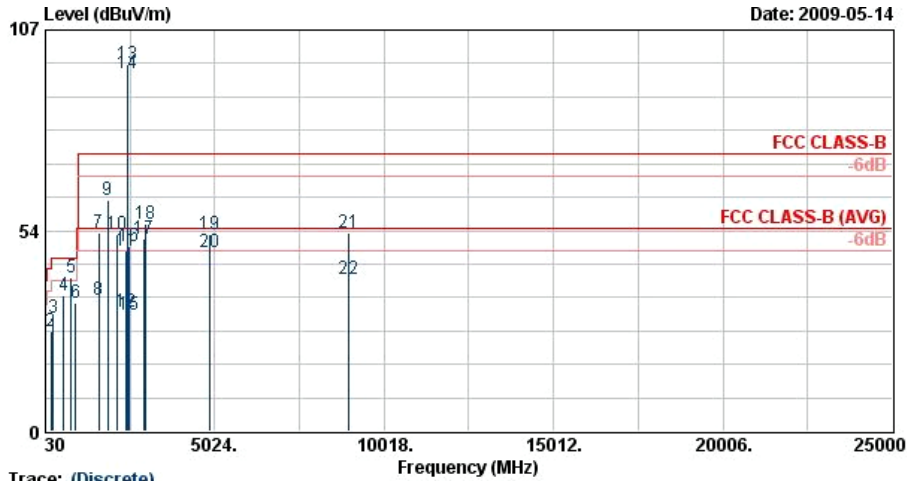


Site : 03CH06-HY  
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL

	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	202.53	31.51	-11.99	43.50	52.64	10.41	0.60	32.14	---	---	Peak
2	207.93	28.14	-15.36	43.50	49.14	10.59	0.60	32.19	---	---	Peak
3	265.98	31.40	-14.60	46.00	48.98	13.62	0.70	31.90	---	---	Peak
4	449.80	29.67	-16.33	46.00	43.61	17.20	0.90	32.04	---	---	Peak
5	565.30	36.26	-9.74	46.00	48.43	18.96	1.00	32.14	---	---	Peak
6 !	796.30	40.88	-5.12	46.00	51.09	20.76	1.20	32.17	100	193	QP
7	1326.00	52.25	-21.75	74.00	58.41	27.97	2.62	36.75	100	139	Peak
8	1326.00	33.51	-20.49	54.00	39.67	27.97	2.62	36.75	100	139	Average
9	1862.00	59.50			61.98	30.57	3.23	36.28	100	0	Peak
10	2390.00	47.47	-26.53	74.00	47.85	31.98	3.92	36.28	100	310	Peak
11	2390.00	31.29	-22.71	54.00	31.67	31.98	3.92	36.28	100	310	Average
12 @	2437.00	99.83			100.09	32.04	3.99	36.29	100	310	Average
13 X	2437.00	103.10			103.36	32.04	3.99	36.29	100	310	Peak
14	2492.00	46.96	-27.04	74.00	47.11	32.10	4.05	36.30	100	310	Peak
15	2492.00	32.01	-21.99	54.00	32.16	32.10	4.05	36.30	100	310	Average
16	4874.00	52.61	-21.39	74.00	48.48	34.45	5.80	36.13	100	48	Peak
17 !	4874.00	49.45	-4.55	54.00	45.32	34.45	5.80	36.13	100	48	Average
18	7632.00	53.18	-20.82	74.00	46.93	35.55	7.33	36.63	100	232	Peak
19	7632.00	39.88	-14.12	54.00	33.62	35.55	7.33	36.63	100	232	Average



Test Mode :	Mode 2	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#9, #10, #17, and #18 are not in a restricted band. #13 and #14 are Fundamental Signals which can be ignored.		

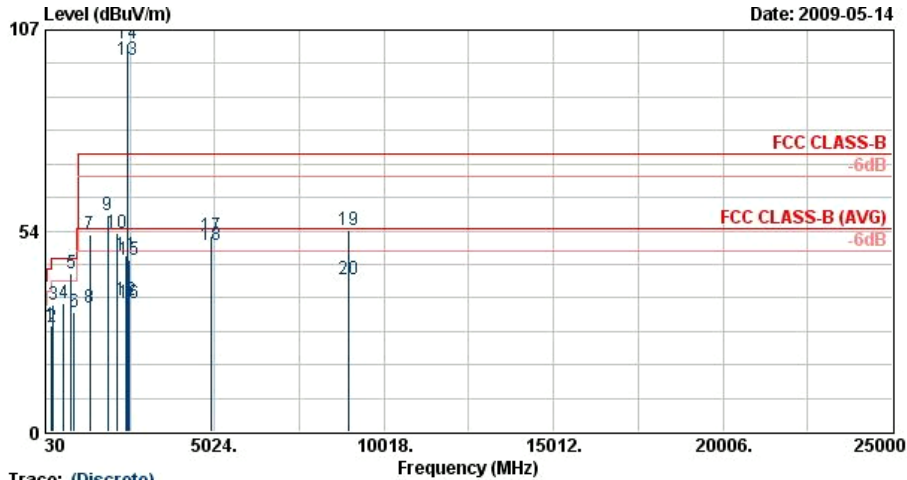


Site : 03CH06-RY  
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL

	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	35.94	24.89	-15.11	40.00	40.10	16.30	0.30	31.80	---	---	Peak
2	201.99	26.81	-16.69	43.50	47.97	10.37	0.60	32.13	---	---	Peak
3	265.44	30.40	-15.60	46.00	47.98	13.62	0.70	31.90	---	---	Peak
4	565.30	36.10	-9.90	46.00	48.28	18.96	1.00	32.14	---	---	Peak
5 !	798.40	40.94	-5.06	46.00	51.13	20.78	1.20	32.18	100	209	QP
6	927.90	34.23	-11.77	46.00	42.64	21.93	1.20	31.53	---	---	Peak
7	1596.00	52.93	-21.07	74.00	57.75	28.70	2.93	36.45	100	184	Peak
8	1596.00	34.95	-19.05	54.00	39.77	28.70	2.93	36.45	100	184	Average
9	1862.00	61.49			63.97	30.57	3.23	36.28	100	0	Peak
10	2124.00	52.36			53.38	31.64	3.56	36.23	100	0	Peak
11	2390.00	48.02	-25.98	74.00	48.40	31.98	3.92	36.28	130	327	Peak
12	2390.00	31.85	-22.15	54.00	32.23	31.98	3.92	36.28	130	327	Average
13 X	2437.00	97.92			98.20	32.02	3.99	36.29	130	327	Peak
14 @	2437.00	95.45			95.71	32.04	3.99	36.29	130	327	Average
15	2492.00	31.19	-22.81	54.00	31.34	32.10	4.05	36.30	130	327	Average
16	2492.00	49.14	-24.86	74.00	49.29	32.10	4.05	36.30	130	327	Peak
17	2924.00	51.32			50.76	32.60	4.35	36.38	100	0	Peak
18	2998.00	55.30			54.60	32.70	4.40	36.40	100	0	Peak
19	4874.00	52.60	-21.40	74.00	48.47	34.45	5.80	36.13	100	90	Peak
20	4874.00	47.87	-6.13	54.00	43.74	34.45	5.80	36.13	100	90	Average
21	8952.00	52.88	-21.12	74.00	45.87	36.15	7.74	36.88	100	308	Peak
22	8952.00	40.43	-13.57	54.00	33.42	36.15	7.74	36.88	100	308	Average



Test Mode :	Mode 3	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#9 and #10 are not in a restricted band. #13 and #14 are Fundamental Signals which can be ignored.		



Trace: (Discrete)

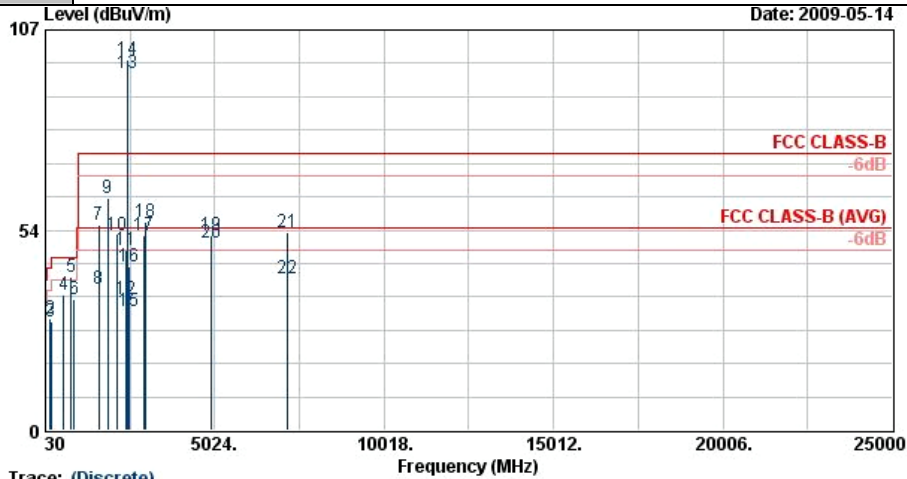
Site : 03CH06-HY  
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL

	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	203.88	28.14	-15.36	43.50	49.25	10.45	0.60	32.15	---	---	Peak
2	206.58	28.00	-15.50	43.50	49.03	10.55	0.60	32.18	---	---	Peak
3	265.98	33.69	-12.31	46.00	51.28	13.62	0.70	31.90	---	---	Peak
4	565.30	34.24	-11.76	46.00	46.42	18.96	1.00	32.14	---	---	Peak
5 !	796.30	42.28	-3.72	46.00	52.49	20.76	1.20	32.17	100	178	Peak
6	887.30	31.91	-14.09	46.00	40.83	21.63	1.30	31.85	---	---	Peak
7	1332.00	52.67	-21.33	74.00	58.83	27.97	2.62	36.75	100	137	Peak
8	1332.00	33.02	-20.98	54.00	39.17	27.97	2.62	36.75	100	137	Average
9	1862.00	57.86			60.34	30.57	3.23	36.28	100	0	Peak
10	2124.00	53.06			54.07	31.64	3.56	36.23	100	0	Peak
11	2390.00	46.90	-27.10	74.00	47.29	31.98	3.92	36.28	100	306	Peak
12	2390.00	35.04	-18.96	54.00	35.42	31.98	3.92	36.28	100	306	Average
13 @	2462.00	99.09			99.30	32.06	4.02	36.29	100	306	Average
14 X	2462.00	103.51			103.72	32.06	4.02	36.29	100	306	Peak
15	2483.50	45.68	-28.32	74.00	45.85	32.08	4.05	36.30	100	306	Peak
16	2483.50	34.16	-19.84	54.00	34.33	32.08	4.05	36.30	100	306	Average
17	4924.00	52.12	-21.88	74.00	47.92	34.47	5.85	36.12	100	47	Peak
18 !	4924.00	49.57	-4.43	54.00	45.36	34.47	5.85	36.12	100	47	Average
19	8961.00	53.83	-20.17	74.00	46.79	36.15	7.77	36.88	100	173	Peak
20	8961.00	40.55	-13.45	54.00	33.51	36.15	7.77	36.88	100	173	Average





Test Mode :	Mode 3	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#9, #10, #17, and #18 are not in a restricted band. #13 and #14 are Fundamental Signals which can be ignored.		

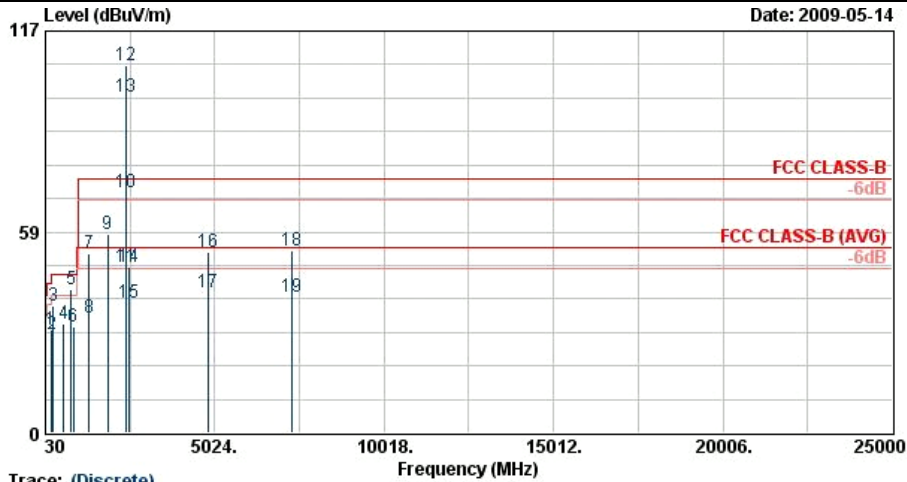


Trace: (Discrete)  
 Site : 03CH06-HY  
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL  
 Project : CR 940409-03

	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	35.94	25.07	-14.93	40.00	40.27	16.30	0.30	31.80	---	---	Peak
2	171.48	29.89	-13.61	43.50	51.01	10.21	0.60	31.93	---	---	Peak
3	205.23	28.96	-14.54	43.50	50.01	10.52	0.60	32.17	---	---	Peak
4	565.30	36.06	-9.94	46.00	48.24	18.96	1.00	32.14	---	---	Peak
5 !	796.30	41.00	-5.00	46.00	51.21	20.76	1.20	32.17	100	211	QP
6	887.30	35.04	-10.96	46.00	43.96	21.63	1.30	31.85	---	---	Peak
7	1596.00	54.80	-19.20	74.00	59.62	28.70	2.93	36.45	100	169	Peak
8	1596.00	37.97	-16.03	54.00	42.79	28.70	2.93	36.45	100	169	Average
9	1862.00	62.16			64.64	30.57	3.23	36.28	100	0	Peak
10	2126.00	52.03			53.04	31.64	3.56	36.23	100	0	Peak
11	2390.00	48.14	-25.86	74.00	48.53	31.98	3.92	36.28	102	330	Peak
12	2390.00	34.83	-19.17	54.00	35.21	31.98	3.92	36.28	102	330	Average
13 @	2462.00	95.40			95.61	32.06	4.02	36.29	102	330	Average
14 X	2462.00	99.14			99.35	32.06	4.02	36.29	102	330	Peak
15	2483.50	32.00	-22.00	54.00	32.17	32.08	4.05	36.30	102	330	Average
16	2483.50	43.59	-30.41	74.00	43.76	32.08	4.05	36.30	102	330	Peak
17	2924.00	52.00			51.43	32.60	4.35	36.38	100	0	Peak
18	2998.00	55.78			55.08	32.70	4.40	36.40	100	0	Peak
19	4924.00	52.29	-21.71	74.00	48.08	34.47	5.85	36.12	100	19	Peak
20 !	4924.00	50.11	-3.89	54.00	45.90	34.47	5.85	36.12	100	19	Average
21	7161.00	52.88	-21.12	74.00	46.56	35.64	7.15	36.47	100	202	Peak
22	7161.00	40.43	-13.57	54.00	34.11	35.64	7.15	36.47	100	202	Average



Test Mode :	Mode 4	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#9 is not in a restricted band. #12 and #13 are Fundamental Signals which can be ignored.		



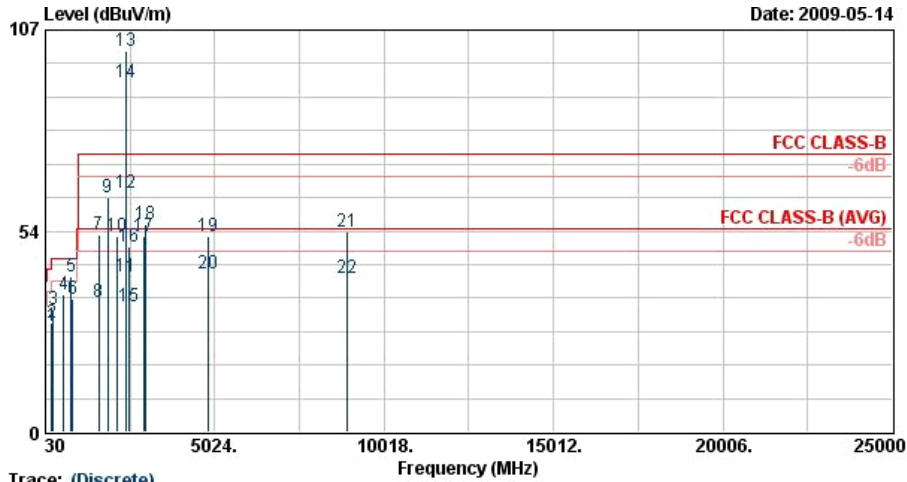
Trace: (Discrete)

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

	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	200.64	29.97	-13.53	43.50	51.15	10.34	0.60	32.12	---	---	Peak
2	206.58	28.68	-14.82	43.50	49.71	10.55	0.60	32.18	---	---	Peak
3	265.44	36.78	-9.22	46.00	54.36	13.62	0.70	31.90	---	---	Peak
4	565.30	31.93	-14.07	46.00	44.10	18.96	1.00	32.14	---	---	Peak
5 !	796.30	41.71	-4.29	46.00	51.92	20.76	1.20	32.17	100	200	Peak
6	862.80	30.69	-15.31	46.00	40.18	21.48	1.23	32.20	---	---	Peak
7	1326.00	52.39	-21.61	74.00	58.55	27.97	2.62	36.75	100	134	Peak
8	1326.00	33.32	-20.68	54.00	39.48	27.97	2.62	36.75	100	134	Average
9	1860.00	57.87			60.35	30.57	3.23	36.28	100	0	Peak
10 !	2389.99	70.03	-3.97	74.00	70.41	31.98	3.92	36.28	100	312	Peak
11 !	2389.99	48.08	-5.92	54.00	48.46	31.98	3.92	36.28	100	312	Average
12 X	2412.00	106.95			107.28	32.00	3.95	36.28	100	312	Peak
13 @	2412.00	97.98			98.19	32.06	4.02	36.29	100	312	Average
14	2500.00	48.25	-25.75	74.00	48.40	32.10	4.05	36.30	100	312	Peak
15	2500.00	38.01	-15.99	54.00	38.16	32.10	4.05	36.30	100	312	Average
16	4824.00	52.77	-21.23	74.00	48.70	34.43	5.77	36.14	100	120	Peak
17	4824.00	40.79	-13.21	54.00	36.73	34.43	5.77	36.14	100	120	Average
18	7317.00	53.02	-20.98	74.00	46.78	35.57	7.20	36.53	100	212	Peak
19	7317.00	39.74	-14.26	54.00	33.50	35.57	7.20	36.53	100	212	Average



Test Mode :	Mode 4	Temperature :	27~28°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#9, #10, #17, and #18 are not in a restricted band. #13 and #14 are Fundamental Signals which can be ignored.		



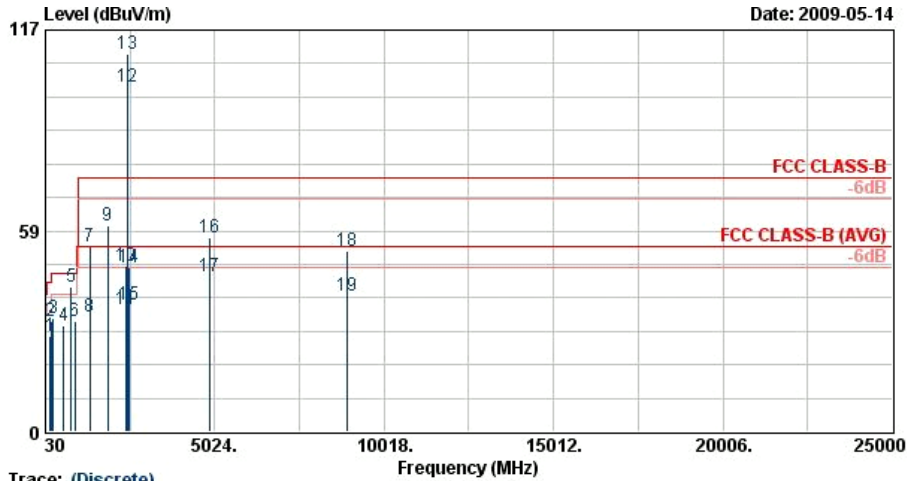
Trace: (Discrete)

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

	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	207.39	28.12	-15.38	43.50	49.12	10.59	0.60	32.19	---	---	Peak
2	211.44	28.94	-14.56	43.50	49.83	10.68	0.61	32.19	---	---	Peak
3	265.44	32.45	-13.55	46.00	50.04	13.62	0.70	31.90	---	---	Peak
4	565.30	36.77	-9.23	46.00	48.94	18.96	1.00	32.14	---	---	Peak
5 !	796.30	41.19	-4.81	46.00	51.40	20.76	1.20	32.17	100	199	QP
6	822.90	35.43	-10.57	46.00	45.44	21.07	1.20	32.28	---	---	Peak
7	1596.00	52.60	-21.40	74.00	57.42	28.70	2.93	36.45	100	184	Peak
8	1596.00	34.79	-19.21	54.00	39.61	28.70	2.93	36.45	100	184	Average
9	1860.00	62.57			65.04	30.57	3.23	36.28	100	0	Peak
10	2124.00	52.20			53.21	31.64	3.56	36.23	100	0	Peak
11	2389.99	41.52	-12.48	54.00	41.90	31.98	3.92	36.28	156	331	Average
12	2389.99	63.83	-10.17	74.00	64.21	31.98	3.92	36.28	156	331	Peak
13 X	2412.00	101.62			101.95	32.00	3.95	36.28	156	331	Peak
14 @	2412.00	93.13			93.46	32.00	3.95	36.28	156	331	Average
15	2494.00	33.27	-20.73	54.00	33.42	32.10	4.05	36.30	156	331	Average
16	2494.00	49.37	-24.63	74.00	49.52	32.10	4.05	36.30	156	331	Peak
17	2926.00	52.20			51.64	32.60	4.35	36.39	100	0	Peak
18	2998.00	55.47			54.77	32.70	4.40	36.40	100	0	Peak
19	4824.00	51.91	-22.09	74.00	47.85	34.43	5.77	36.14	100	160	Peak
20	4824.00	42.11	-11.89	54.00	38.05	34.43	5.77	36.14	100	160	Average
21	8916.00	53.18	-20.82	74.00	46.21	36.12	7.71	36.86	100	243	Peak
22	8916.00	40.84	-13.16	54.00	33.87	36.12	7.71	36.86	100	243	Average



Test Mode :	Mode 5	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#9 is not in a restricted band. #12 and #13 are Fundamental Signals which can be ignored.		

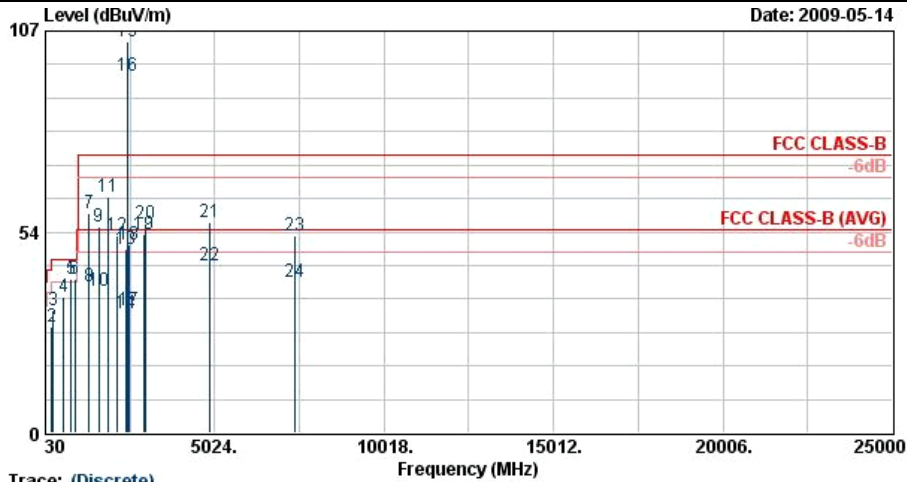


Trace: (Discrete)  
 Site : 03CH06-HV  
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL

	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	170.94	27.99	-15.51	43.50	49.04	10.25	0.60	31.91	---	---	Peak
2	202.53	32.04	-11.46	43.50	53.18	10.41	0.60	32.14	---	---	Peak
3	265.98	33.10	-12.90	46.00	50.69	13.62	0.70	31.90	---	---	Peak
4	563.90	31.00	-15.00	46.00	43.19	18.95	1.00	32.14	---	---	Peak
5 !	798.40	42.16	-3.84	46.00	52.36	20.78	1.20	32.18	100	196	Peak
6	889.40	32.37	-13.63	46.00	41.26	21.64	1.30	31.82	---	---	Peak
7	1332.00	53.84	-20.16	74.00	60.00	27.97	2.62	36.75	100	129	Peak
8	1332.00	33.33	-20.67	54.00	39.48	27.97	2.62	36.75	100	129	Average
9	1862.00	60.17			62.65	30.57	3.23	36.28	100	0	Peak
10	2390.00	48.28	-25.72	74.00	48.67	31.98	3.92	36.28	100	309	Peak
11	2390.00	35.82	-18.18	54.00	36.20	31.98	3.92	36.28	100	309	Average
12 @	2437.00	100.35			100.61	32.04	3.99	36.29	100	309	Average
13 X	2437.00	109.94			110.20	32.04	3.99	36.29	100	309	Peak
14	2494.00	47.93	-26.07	74.00	48.08	32.10	4.05	36.30	100	309	Peak
15	2494.00	37.00	-17.00	54.00	37.15	32.10	4.05	36.30	100	309	Average
16	4874.00	56.49	-17.51	74.00	52.36	34.45	5.80	36.13	100	46	Peak
17	4874.00	45.08	-8.92	54.00	40.95	34.45	5.80	36.13	100	46	Average
18	8931.00	52.81	-21.19	74.00	45.84	36.13	7.71	36.87	100	148	Peak
19	8931.00	39.71	-14.29	54.00	32.74	36.13	7.71	36.87	100	148	Average



Test Mode :	Mode 5	Temperature :	27~28°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#11, #12, #19, and #20 are not in a restricted band. #15 and #16 are Fundamental Signals which can be ignored.		



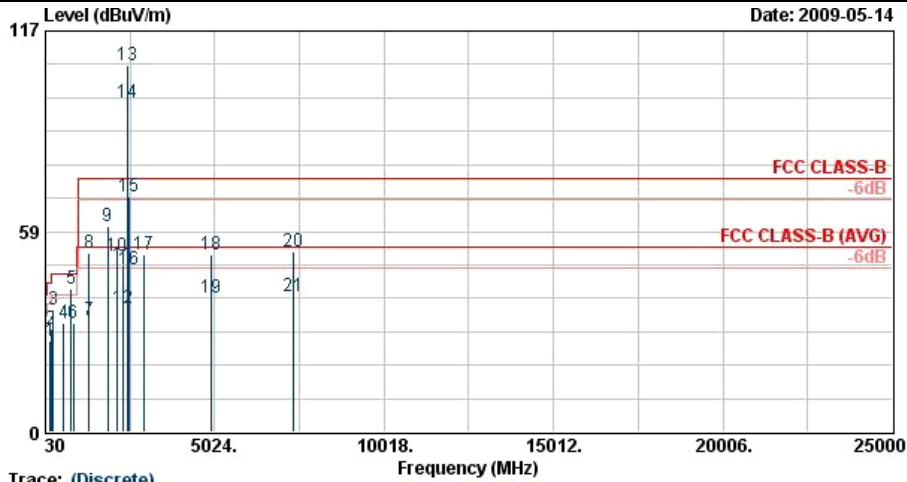
Trace: (Discrete)

Site : 03CH06-HY  
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL  
 Project : CR 940409-03

	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	33.78	24.77	-15.23	40.00	38.75	17.50	0.30	31.78	---	---	Peak
2	207.93	28.10	-15.40	43.50	49.10	10.59	0.60	32.19	---	---	Peak
3	265.98	32.78	-13.22	46.00	50.36	13.62	0.70	31.90	---	---	Peak
4	565.30	36.33	-9.67	46.00	48.51	18.96	1.00	32.14	---	---	Peak
5 !	798.40	41.10	-4.90	46.00	51.29	20.78	1.20	32.18	100	205	QP
6 !	890.80	41.11	-4.89	46.00	49.98	21.64	1.30	31.81	---	---	Peak
7	1326.00	58.49	-15.51	74.00	64.65	27.97	2.62	36.75	100	8	Peak
8	1326.00	39.16	-14.84	54.00	45.32	27.97	2.62	36.75	100	8	Average
9	1596.00	54.91	-19.09	74.00	59.73	28.70	2.93	36.45	100	171	Peak
10	1596.00	37.82	-16.18	54.00	42.64	28.70	2.93	36.45	100	171	Average
11	1860.00	62.87			65.35	30.57	3.23	36.28	100	0	Peak
12	2124.00	52.37			53.39	31.64	3.56	36.23	100	0	Peak
13	2390.00	48.93	-25.07	74.00	49.32	31.98	3.92	36.28	126	329	Peak
14	2390.00	31.82	-22.18	54.00	32.20	31.98	3.92	36.28	126	329	Average
15 X	2437.00	104.24			104.52	32.02	3.99	36.29	126	329	Peak
16 @	2437.00	94.90			95.16	32.04	3.99	36.29	126	329	Average
17	2492.00	32.49	-21.51	54.00	32.64	32.10	4.05	36.30	126	329	Average
18	2492.00	50.28	-23.72	74.00	50.43	32.10	4.05	36.30	126	329	Peak
19	2924.00	52.91			52.34	32.60	4.35	36.38	100	0	Peak
20	2998.00	55.74			55.04	32.70	4.40	36.40	100	0	Peak
21	4874.00	56.10	-17.90	74.00	51.98	34.45	5.80	36.13	100	332	Peak
22	4874.00	44.53	-9.47	54.00	40.40	34.45	5.80	36.13	100	332	Average
23	7392.00	52.63	-21.37	74.00	46.42	35.54	7.23	36.56	100	78	Peak
24	7392.00	40.22	-13.78	54.00	34.01	35.54	7.23	36.56	100	78	Average



Test Mode :	Mode 6	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#9 and #10 are not in a restricted band. #13 and #14 are Fundamental Signals which can be ignored.		



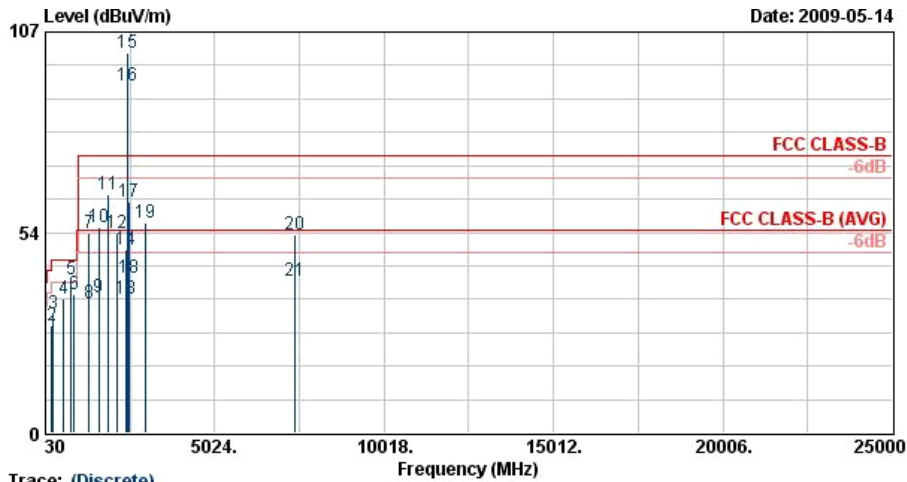
Trace: (Discrete)

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

	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	171.48	26.75	-16.75	43.50	47.86	10.21	0.60	31.93	---	---	Peak
2	199.83	29.99	-13.51	43.50	51.20	10.30	0.60	32.11	---	---	Peak
3	265.44	35.72	-10.28	46.00	53.30	13.62	0.70	31.90	---	---	Peak
4	565.30	31.92	-14.08	46.00	44.10	18.96	1.00	32.14	---	---	Peak
5 !	796.30	41.88	-4.12	46.00	52.09	20.76	1.20	32.17	100	191	Peak
6	866.30	31.82	-14.18	46.00	41.23	21.50	1.26	32.16	---	---	Peak
7	1326.00	32.76	-21.24	54.00	38.92	27.97	2.62	36.75	100	140	Average
8	1326.00	52.40	-21.60	74.00	58.56	27.97	2.62	36.75	100	140	Peak
9	1862.00	60.01			62.48	30.57	3.23	36.28	100	0	Peak
10	2124.00	51.30			52.32	31.64	3.56	36.23	100	0	Peak
11	2316.00	48.93	-25.07	74.00	49.50	31.87	3.82	36.27	100	304	Peak
12	2316.00	36.16	-17.84	54.00	36.73	31.87	3.82	36.27	100	304	Average
13 X	2462.00	107.04			107.26	32.06	4.02	36.29	100	304	Peak
14 @	2462.00	96.01			96.22	32.06	4.02	36.29	100	304	Average
15 !	2483.50	68.86	-5.14	74.00	69.03	32.08	4.05	36.30	100	304	Peak
16	2483.50	47.54	-6.46	54.00	47.71	32.08	4.05	36.30	100	304	Average
17	2924.00	51.80	-22.20	74.00	51.23	32.60	4.35	36.38	100	0	Peak
18	4924.00	51.63	-22.37	74.00	47.42	34.47	5.85	36.12	173	121	Peak
19	4924.00	39.29	-14.71	54.00	35.08	34.47	5.85	36.12	173	121	Average
20	7347.00	52.71	-21.29	74.00	46.48	35.56	7.21	36.54	100	41	Peak
21	7347.00	39.44	-14.56	54.00	33.21	35.56	7.21	36.54	100	41	Average



Test Mode :	Mode 6	Temperature :	27~28°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#11, #12, and #19 are not in a restricted band. #15 and #16 are Fundamental Signals which can be ignored.		



Site : D3CH06-HY  
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL

	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	33.78	25.03	-14.97	40.00	39.01	17.50	0.30	31.78	---	---	Peak
2	207.93	28.60	-14.90	43.50	49.60	10.59	0.60	32.19	---	---	Peak
3	265.98	31.78	-14.22	46.00	49.36	13.62	0.70	31.90	---	---	Peak
4	565.30	35.87	-10.13	46.00	48.05	18.96	1.00	32.14	---	---	Peak
5 !	796.30	41.13	-4.87	46.00	51.34	20.76	1.20	32.17	100	210	QP
6	880.30	36.99	-9.01	46.00	46.06	21.58	1.30	31.95	---	---	Peak
7	1326.00	53.15	-20.85	74.00	59.31	27.97	2.62	36.75	100	3	Peak
8	1326.00	34.68	-19.32	54.00	40.84	27.97	2.62	36.75	100	3	Average
9	1596.00	36.37	-17.63	54.00	41.19	28.70	2.93	36.45	100	179	Average
10	1596.00	54.80	-19.20	74.00	59.62	28.70	2.93	36.45	100	179	Peak
11	1860.00	63.44			65.92	30.57	3.23	36.28	100	0	Peak
12	2132.00	53.12			54.11	31.67	3.56	36.23	100	0	Peak
13	2390.00	35.80	-18.20	54.00	36.18	31.98	3.92	36.28	104	331	Average
14	2390.00	48.73	-25.27	74.00	49.12	31.98	3.92	36.28	104	331	Peak
15 X	2462.00	101.39			101.60	32.06	4.02	36.30	104	331	Peak
16 @	2462.00	92.67			92.88	32.06	4.02	36.29	104	331	Average
17	2483.85	61.81	-12.19	74.00	61.98	32.08	4.05	36.30	104	331	Peak
18	2483.85	41.51	-12.49	54.00	41.68	32.08	4.05	36.30	104	331	Average
19	2998.00	56.05			55.35	32.70	4.40	36.40	100	0	Peak
20	7401.00	53.00	-21.00	74.00	46.79	35.53	7.24	36.56	100	253	Peak
21	7401.00	40.48	-13.52	54.00	34.27	35.53	7.24	36.56	100	253	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 are PIFA Antenna for main antenna and aux. 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 Receiver	R&S	ESCS 30	100356	9kHz~2.75GHz	Aug. 01, 2008	Jul. 31, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	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
<b>Combined standard uncertainty Uc(y)</b>	<b>1.13</b>		
<b>Measuring uncertainty for a level of confidence of 95% U=2Uc(y)</b>	<b>2.26</b>		

### 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
<b>Combined standard uncertainty Uc(y)</b>	<b>1.27</b>		
<b>Measuring uncertainty for a level of confidence of 95% U=2Uc(y)</b>	<b>2.54</b>		

**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
<b>Combined standard uncertainty <math>U_c(y)</math></b>	<b>2.36</b>				
<b>Measuring uncertainty for a level of confidence of 95% <math>U = 2U_c(y)</math></b>	<b>4.72</b>				

## 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**

<b>Accreditation Criteria</b>	: ISO/IEC 17025:2005
<b>Accreditation Number</b>	: 1190
<b>Originally Accredited</b>	: December 15, 2003
<b>Effective Period</b>	: January 10, 2007 to January 09, 2010
<b>Accredited Scope</b>	: Testing Field, see described in the Appendix
<b>Specific Accreditation Program</b>	: 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

P1, 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 EP940409-03 as below.