

Variant FCC Test Report

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

The DUT was installed into notebook computer, trade name: Acer / model name: KAV60, AOD210, AOD250, KAV80, KAVA0, during test.

This is a variant report which is only valid combined with the original report. The product sample received on Mar. 18, 2009 and completely tested on Apr. 08, 2009. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Roy Wu / Manager



SPORTON INTERNATIONAL INC.

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR931617-03	Rev. 01	Initial issue of report	May 05, 2009

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(b)	A8.4	Power Output	$\leq 30\text{dBm}$	Pass	-
3.2	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.3	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 12.3 dB at 19.19 MHz
3.4	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.05 dB at 4924.00 MHz
3.5	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	Atheros
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
Maximum Output Power to Antenna	802.11b: 16.22 dBm / 41.88 mW 802.11g : 20.17 dBm / 103.99 mW
Antenna Type	Monopole Antenna
Type of Antenna Connector	N/A
Host NB Model	Trade Name : Acer Model Name : KAV60, AOD210, AOD250, KAV80, KAVA0
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark: Please find the user's manual for more detailed information of host (Brand Name: Acer / Model Name: KAV60, AOD210, AOD250, KAV80, KAVA0).

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	KADIR628A2	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	(mic) Earphone	Sampo	EK-Y652CS	FCC DoC	Unshielded, 1.8 m	N/A
5.	i-Pod	Apple	A1236	FCC DoC	Shielded, 1.0 m	N/A
6.	i-Pod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 Test Mode

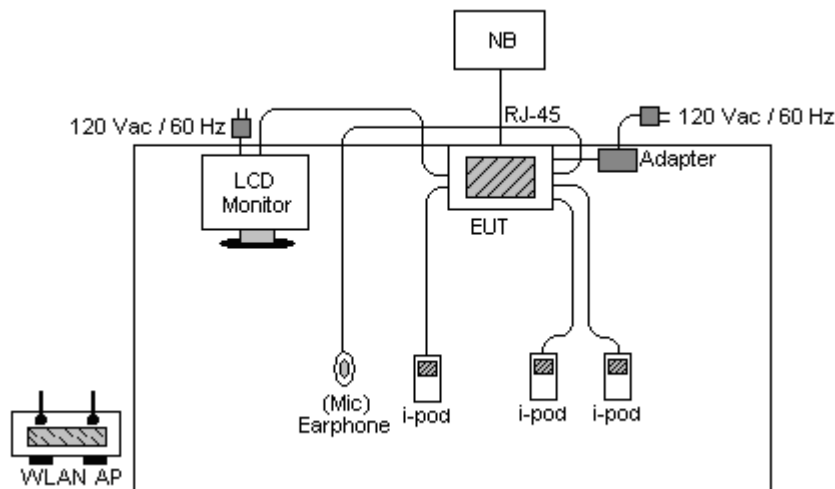
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency, whichever is lower).

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

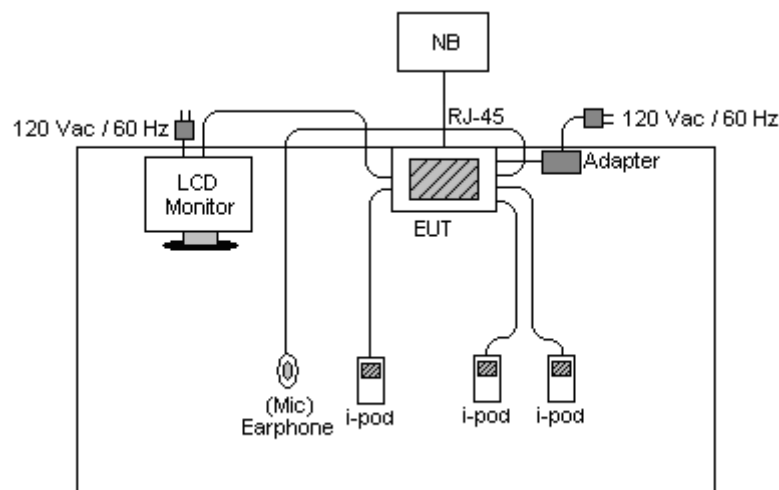
Test Cases		
Test Item	802.11b Modulation : DSSS	802.11g Modulation : OFDM
Conducted TCs	■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 MHz ■ Mode 3: CH11_2462 MHz	■ Mode 4: CH01_2412 MHz ■ Mode 5: CH06_2437 MHz ■ Mode 6: CH11_2462 MHz
Radiated TCs	■ Mode 1: CH01_2412 MHz ■ Mode 2: CH06_2437 MHz ■ Mode 3: CH11_2462 MHz	■ Mode 4: CH01_2412 MHz ■ Mode 5: CH06_2437 MHz ■ Mode 6: CH11_2462 MHz
AC Conducted Emission	Mode 1 : WLAN Link + Adapter + TC	
Remark: 1. TC stands for test configuration which consists of i-Pod, LCD monitor, (mic) earphone and RJ-45. 2. Please refer to Sporton report number FR921118 for conducted test results; only conducted power was verified in this report.		

2.2 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



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 Output Power Measurement

3.1.1 Limit of Output Power

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

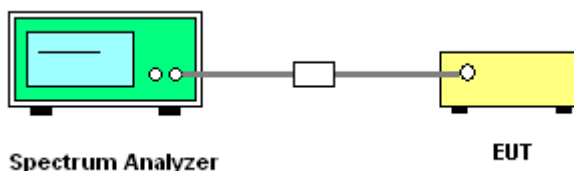
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	23~24
Test Engineer :	Ken Hsu	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.22	30	Pass
06	2437	16.14	30	Pass
11	2462	15.75	30	Pass

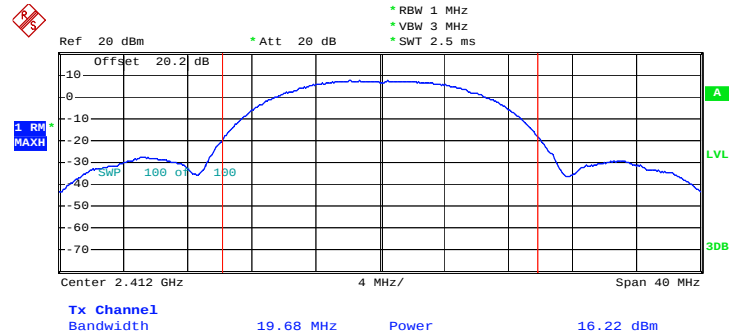
Test Mode :	Mode 4, 5, 6	Temperature :	23~24
Test Engineer :	Ken Hsu	Relative Humidity :	42~43%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	17.57	30	Pass
06	2437	20.17	30	Pass
11	2462	18.10	30	Pass



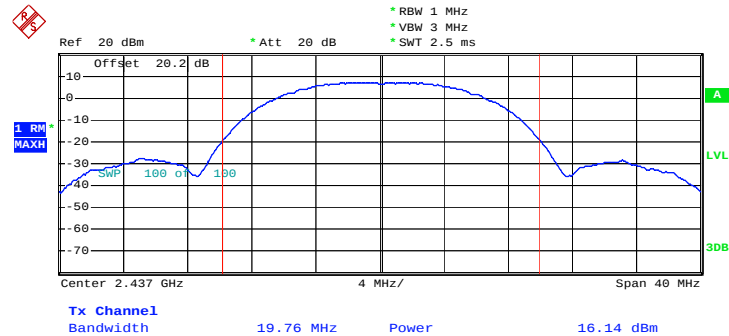
3.1.6 Test Plots of Output Power

Mode 1 : Output Power Plot on 802.11b Channel 01



Date: 29.APR.2009 22:18:13

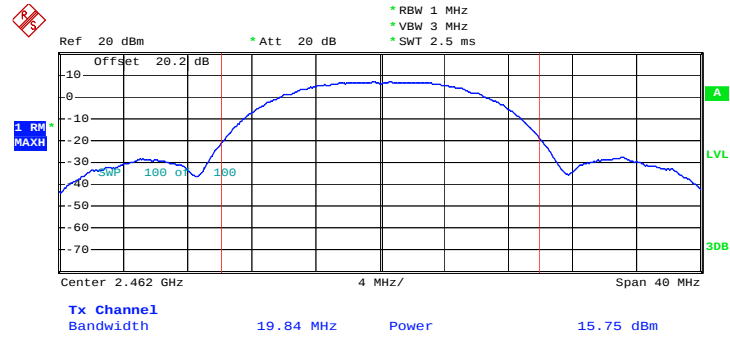
Mode 2 : Output Power Plot on 802.11b Channel 06



Date: 28.APR.2009 22:42:41

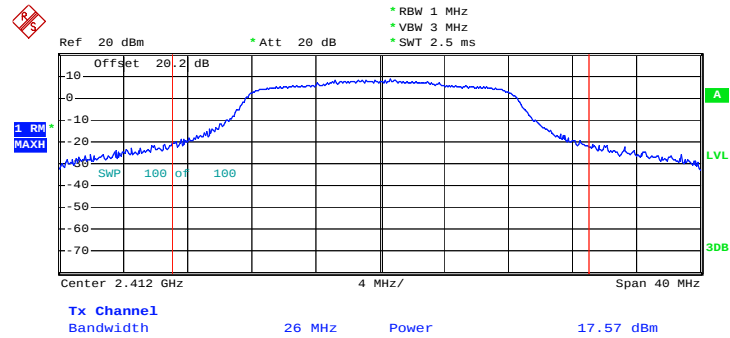


Mode 3 : Output Power Plot on 802.11b Channel 11



Date: 28.APR.2009 22:43:25

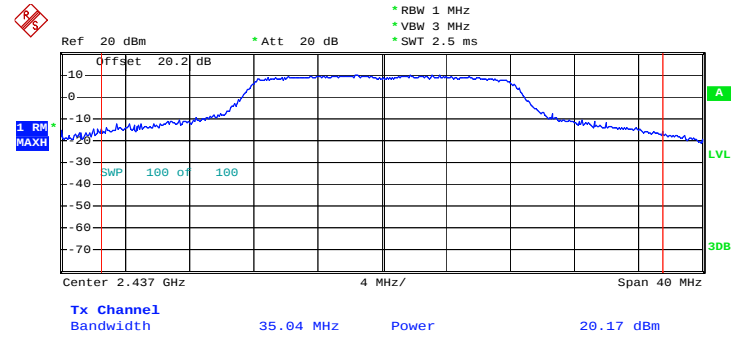
Mode 4 : Output Power Plot on 802.11g Channel 01



Date: 28.APR.2009 22:44:28

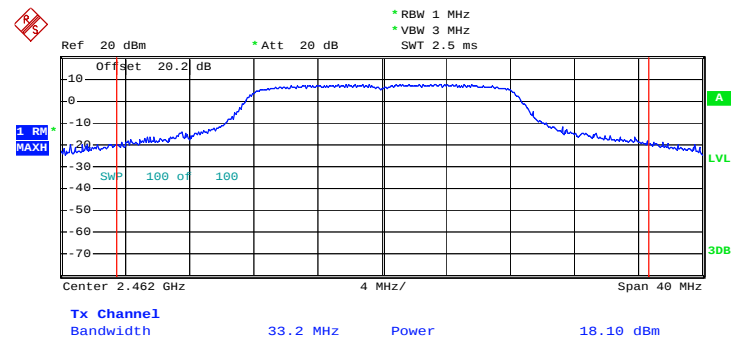


Mode 5 : Output Power Plot on 802.11g Channel 06



Date: 28.APR.2009 22:45:17

Mode 6 : Output Power Plot on 802.11g Channel 11



Date: 30.APR.2009 14:13:46

3.2 Band Edges Measurement

3.2.1 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.

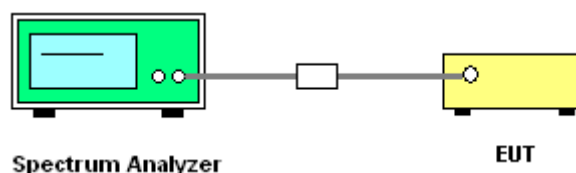
3.2.2 Measuring Instruments

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 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).

3.2.4 Test Setup



3.2.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	45~46%
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
2388.85	46.90	-27.10	74	47.28	31.98	3.92	36.28	106	20	Peak
2388.85	36.45	-17.55	54	36.83	31.98	3.92	36.28	106	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
2389.99	45.89	-28.11	74	46.27	31.98	3.92	36.28	100	187	Peak
2389.99	33.96	-20.04	54	34.34	31.98	3.92	36.28	100	187	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	45~46%
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
2483.5	45.81	-28.19	74	45.97	32.08	4.05	36.29	100	14	Peak
2483.5	34.15	-19.85	54	34.31	32.08	4.05	36.29	100	14	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
2492.21	49.14	-24.86	74	49.29	32.1	4.05	36.3	176	264	Peak
2492.21	33.05	-20.95	54	33.2	32.1	4.05	36.3	176	264	Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	45~46%
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	59.11	-14.89	74	59.49	31.98	3.92	36.28	131	21	Peak
2389.99	38.98	-15.02	54	39.36	31.98	3.92	36.28	131	21	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	57.23	-16.77	74	57.61	31.98	3.92	36.28	100	356	Peak
2389.99	38.18	-15.82	54	38.56	31.98	3.92	36.28	100	356	Average

Test Mode :	Mode 6	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	45~46%
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
2483.5	71.09	-2.91	74	71.25	32.08	4.05	36.29	100	15	Peak
2483.5	49.27	-4.73	54	49.43	32.08	4.05	36.29	100	15	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	68.83	-5.17	74	68.99	32.08	4.05	36.29	100	359	Peak
2483.85	47.41	-6.59	54	47.57	32.08	4.05	36.29	100	359	Average

3.3 AC Conducted Emission Measurement

3.3.1 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.

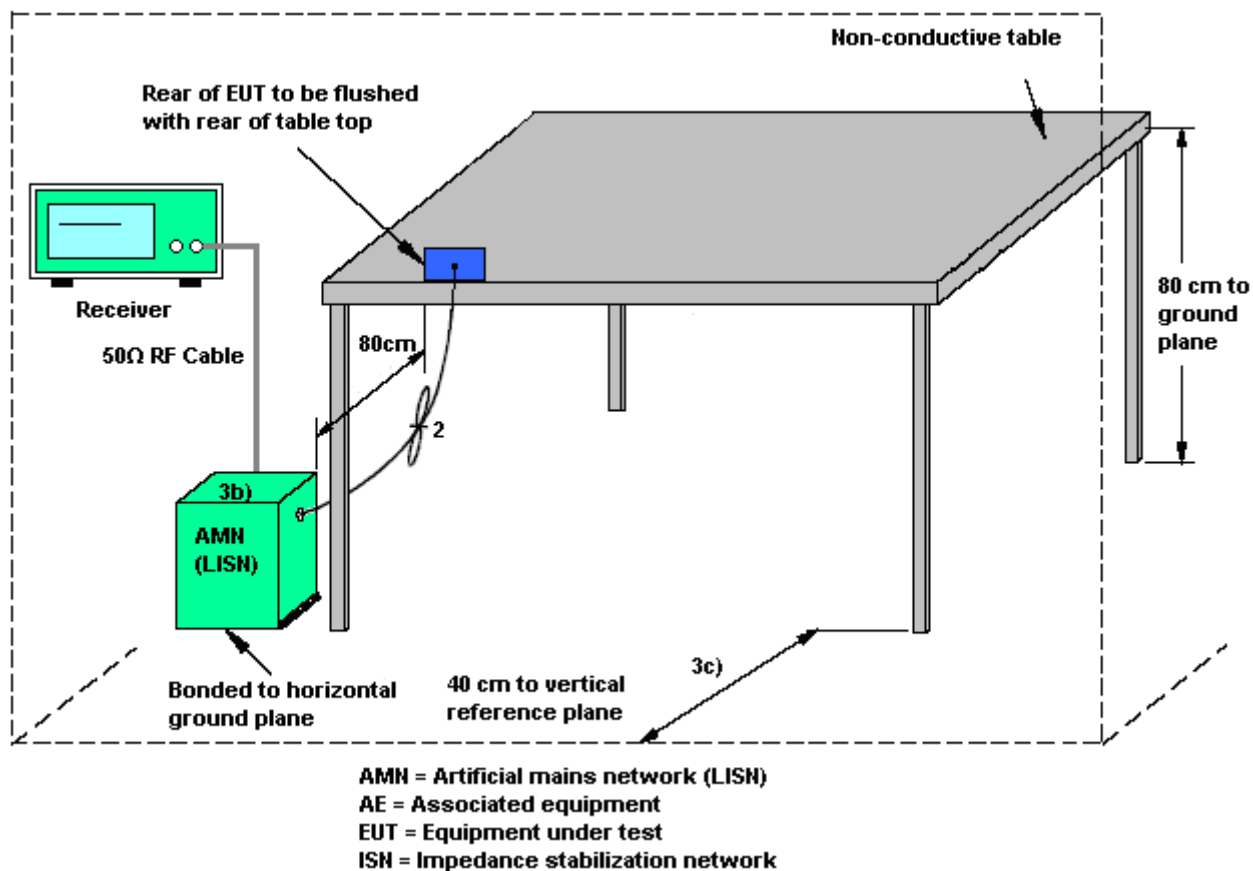
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

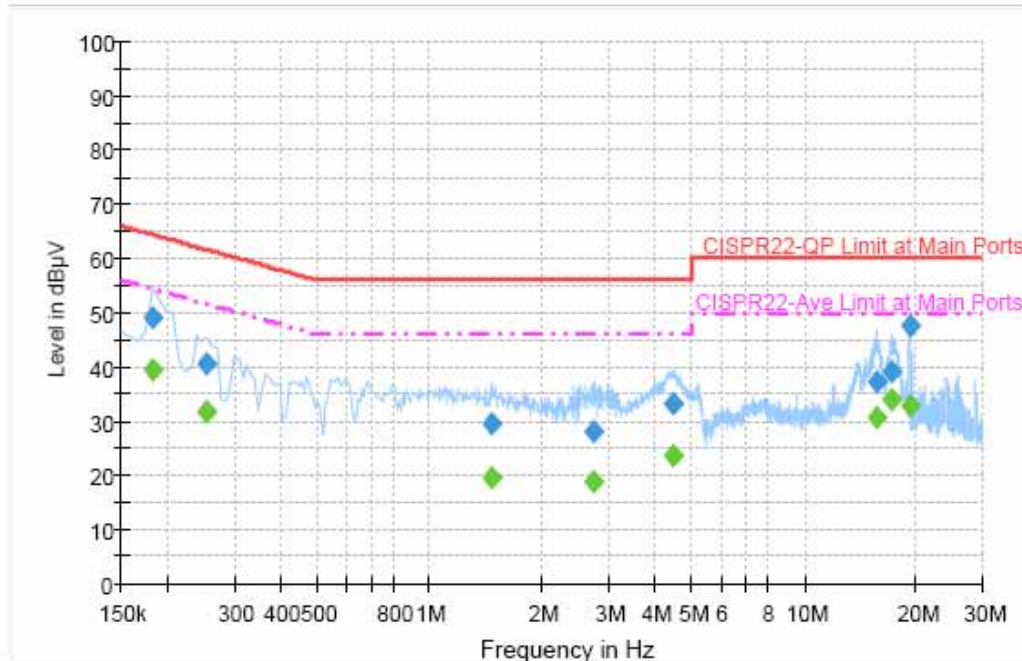
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.3.4 Test Setup



3.3.5 Test Result of AC Conducted Emission

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



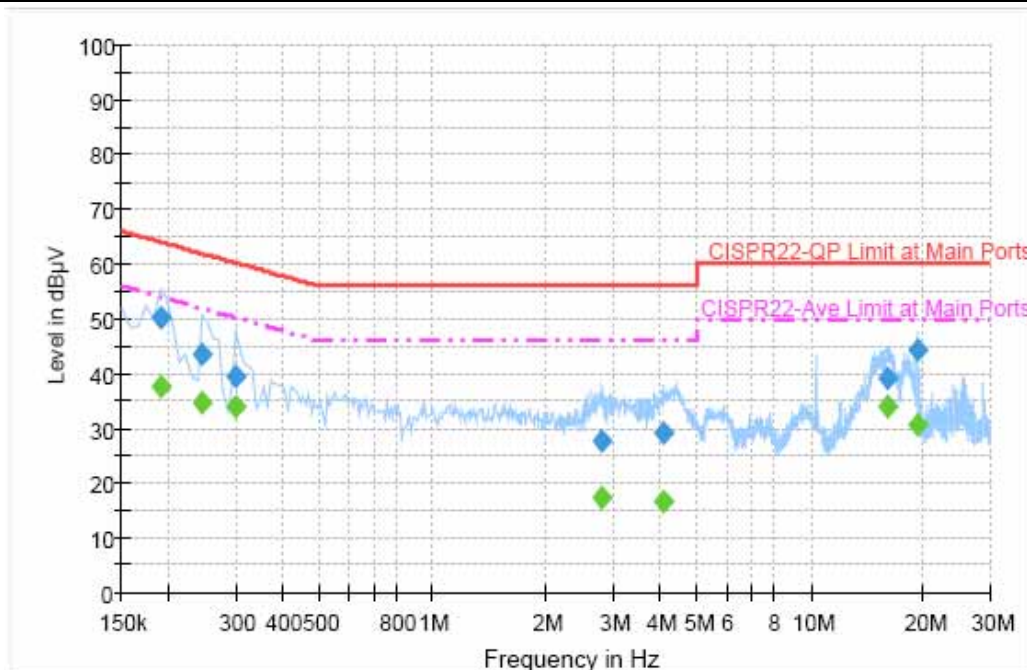
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	49.0	Off	L1	19.4	15.4	64.4
0.254000	40.5	Off	L1	19.3	21.1	61.6
1.462000	29.4	Off	L1	19.4	26.6	56.0
2.750000	27.9	Off	L1	19.5	28.1	56.0
4.470000	33.4	Off	L1	19.5	22.6	56.0
15.582000	37.3	Off	L1	19.8	22.7	60.0
17.238000	39.0	Off	L1	19.7	21.0	60.0
19.190000	47.7	Off	L1	19.8	12.3	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	39.5	Off	L1	19.4	14.9	54.4
0.254000	31.7	Off	L1	19.3	19.9	51.6
1.462000	19.7	Off	L1	19.4	26.3	46.0
2.750000	18.7	Off	L1	19.5	27.3	46.0
4.470000	23.6	Off	L1	19.5	22.4	46.0
15.582000	30.5	Off	L1	19.8	19.5	50.0
17.238000	33.9	Off	L1	19.7	16.1	50.0
19.190000	33.0	Off	L1	19.8	17.0	50.0

Test Mode :	Mode 1	Temperature :	23~24
Test Engineer :	Cona Huang	Relative Humidity :	42~43%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Adapter + 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)
0.190000	50.2	Off	N	19.4	13.8	64.0
0.246000	43.7	Off	N	19.4	18.2	61.9
0.302000	39.5	Off	N	19.3	20.7	60.2
2.814000	27.6	Off	N	19.5	28.4	56.0
4.086000	29.1	Off	N	19.5	26.9	56.0
16.006000	39.3	Off	N	19.8	20.7	60.0
19.190000	44.3	Off	N	19.8	15.7	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	37.5	Off	N	19.4	16.5	54.0
0.246000	34.9	Off	N	19.4	17.0	51.9
0.302000	34.0	Off	N	19.3	16.2	50.2
2.814000	17.3	Off	N	19.5	28.7	46.0
4.086000	16.8	Off	N	19.5	29.2	46.0
16.006000	33.9	Off	N	19.8	16.1	50.0
19.190000	30.7	Off	N	19.8	19.3	50.0

3.4 Radiated Emission Measurement

3.4.1 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

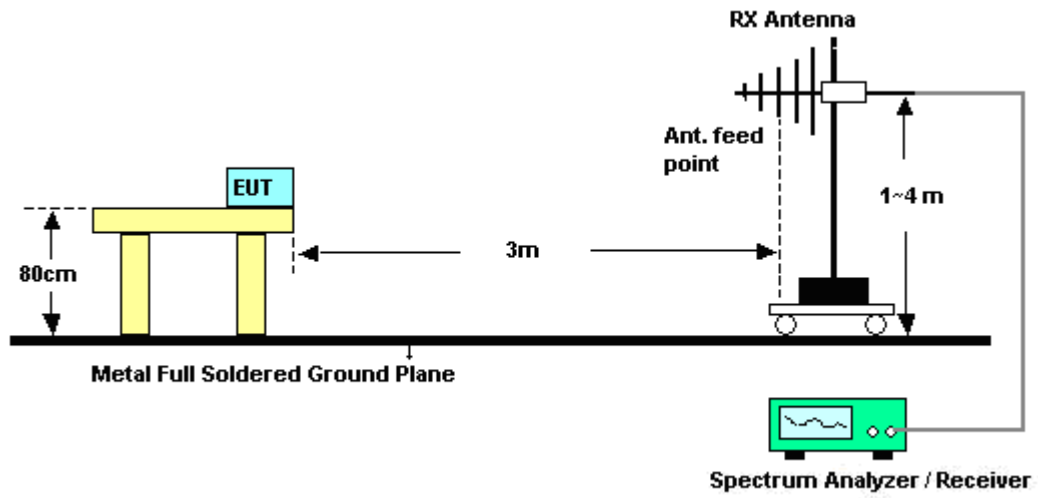
3.4.2 Measuring Instruments

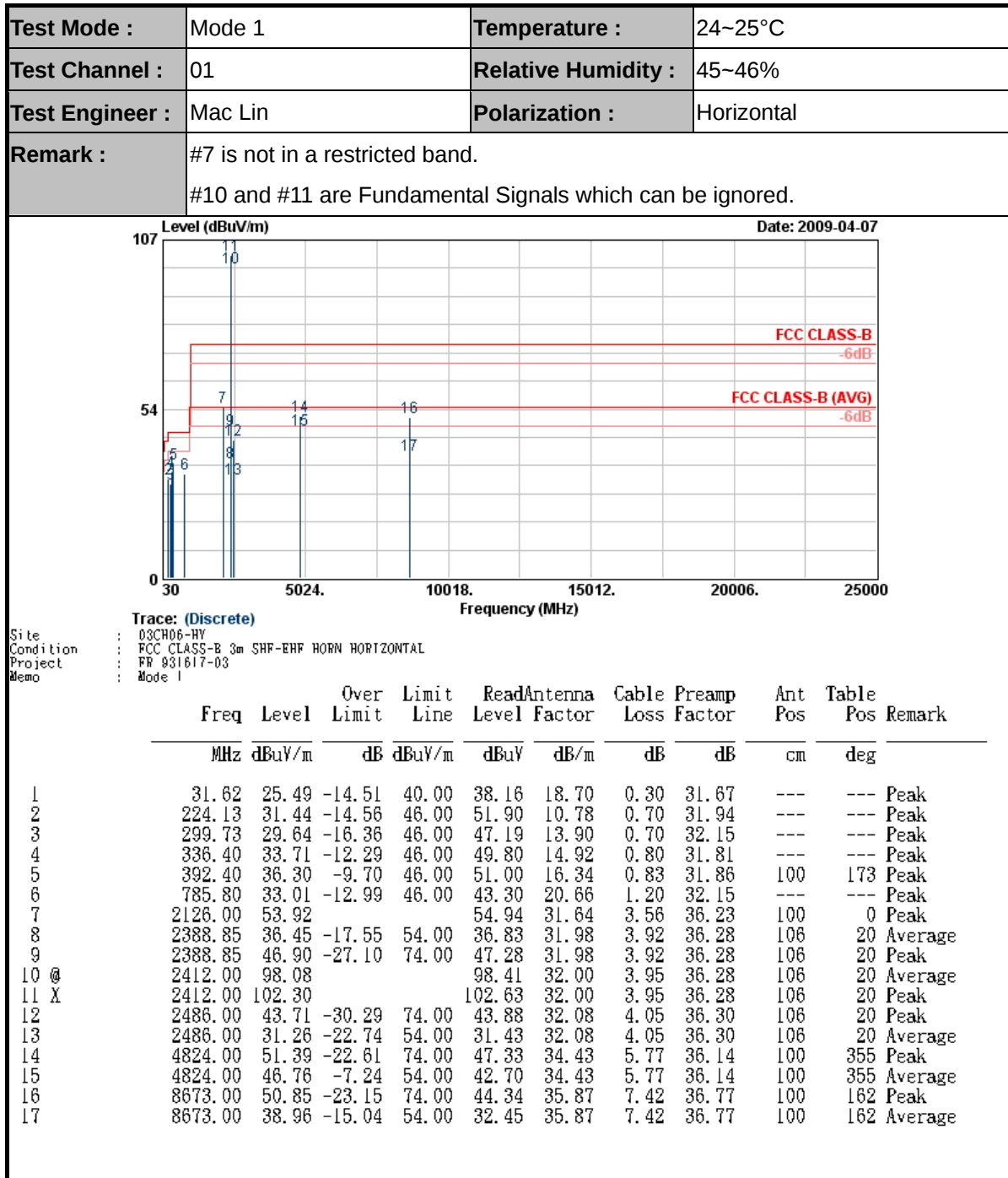
See list of measuring instruments of this test report.

3.4.3 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.

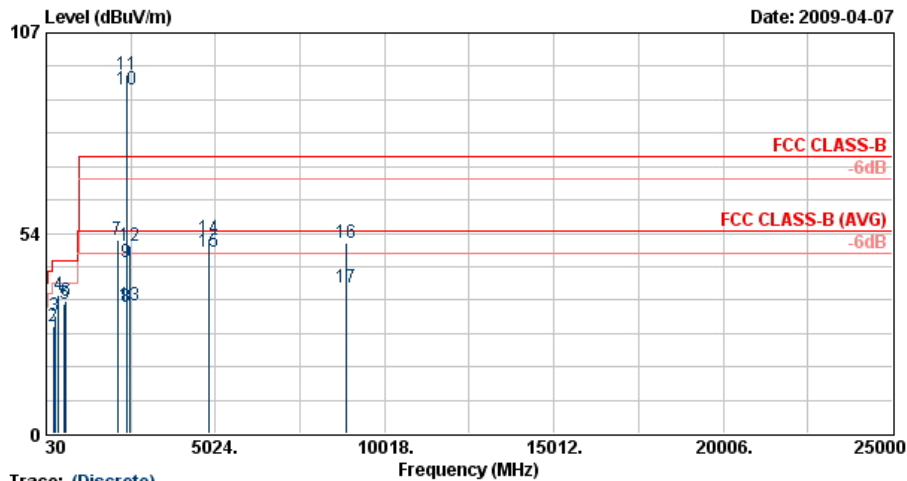
3.4.4 Test Setup



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




Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		

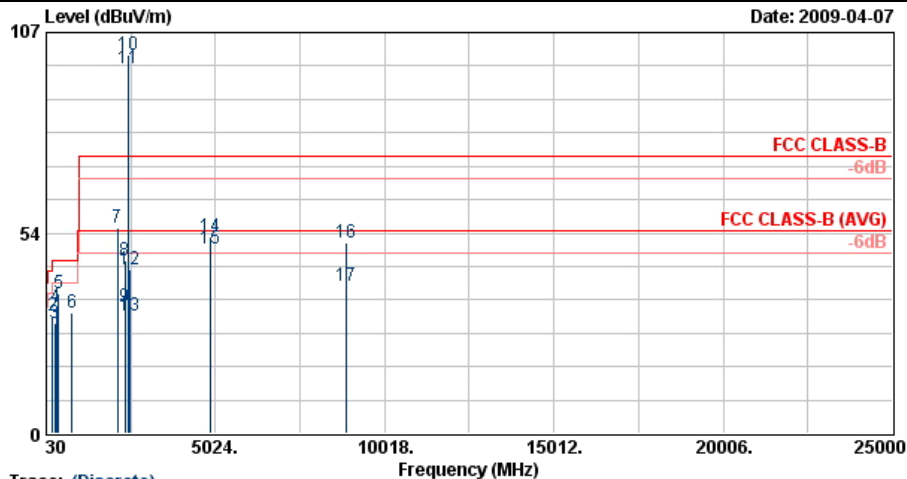


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 931617-03
Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.89	26.51	-13.49	40.00	39.18	18.70	0.30	31.67	---	---	Peak
2	249.78	28.55	-17.45	46.00	46.84	12.80	0.70	31.79	---	---	Peak
3	279.48	31.28	-14.72	46.00	49.08	13.50	0.70	32.00	---	---	Peak
4	392.40	36.99	-9.01	46.00	51.69	16.34	0.83	31.86	100	175	Peak
5	560.40	34.59	-11.41	46.00	46.78	18.94	1.00	32.13	---	---	Peak
6	616.40	35.52	-10.48	46.00	47.30	19.23	1.07	32.08	---	---	Peak
7	2124.00	51.74			52.76	31.64	3.56	36.23	100	0	Peak
8	2389.99	33.96	-20.04	54.00	34.34	31.98	3.92	36.28	100	187	Average
9	2389.99	45.89	-28.11	74.00	46.27	31.98	3.92	36.28	100	187	Peak
10 @	2412.00	91.98			92.31	32.00	3.95	36.28	100	187	Average
11 X	2412.00	95.79			96.12	32.00	3.95	36.28	100	187	Peak
12	2494.00	50.31	-23.69	74.00	50.46	32.10	4.05	36.30	100	187	Peak
13	2494.00	34.05	-19.95	54.00	34.20	32.10	4.05	36.30	100	187	Average
14	4824.00	52.25	-21.75	74.00	48.18	34.43	5.77	36.14	184	301	Peak
15 !	4824.00	48.50	-5.50	54.00	44.44	34.43	5.77	36.14	184	301	Average
16	8901.00	50.97	-23.03	74.00	44.05	36.10	7.68	36.86	100	128	Peak
17	8901.00	39.06	-14.94	54.00	32.14	36.10	7.68	36.86	100	128	Average



Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		

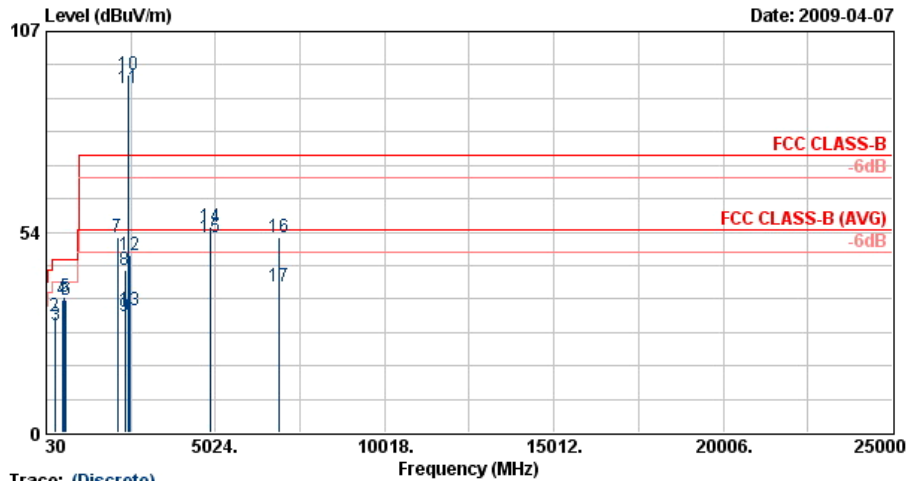


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 931617-03
Memo : Mode 2

	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	26.00	-14.00	40.00	38.02	19.30	0.30	31.61	---	---	Peak
2	224.13	31.29	-14.71	46.00	51.74	10.78	0.70	31.94	---	---	Peak
3	280.29	29.50	-16.50	46.00	47.31	13.50	0.70	32.01	---	---	Peak
4	336.40	33.66	-12.34	46.00	49.75	14.92	0.80	31.81	---	---	Peak
5	390.30	37.43	-8.57	46.00	52.21	16.26	0.80	31.85	100	171	Peak
6	782.30	32.26	-13.74	46.00	42.57	20.63	1.20	32.14	---	---	Peak
7	2126.00	54.82			55.84	31.64	3.56	36.23	100	0	Peak
8	2348.00	46.24	-27.76	74.00	46.74	31.91	3.86	36.27	107	21	Peak
9	2348.00	33.96	-20.04	54.00	34.46	31.91	3.86	36.27	107	21	Average
10 X	2437.00	101.17			101.45	32.02	3.99	36.29	107	21	Peak
11 @	2437.00	97.41			97.67	32.04	3.99	36.29	107	21	Average
12	2484.00	43.91	-30.09	74.00	44.07	32.08	4.05	36.30	107	21	Peak
13	2484.00	31.27	-22.73	54.00	31.44	32.08	4.05	36.30	107	21	Average
14	4874.00	52.55	-21.45	74.00	48.40	34.45	5.82	36.13	100	65	Peak
15 !	4874.00	49.29	-4.71	54.00	45.16	34.45	5.80	36.13	100	65	Average
16	8865.00	51.10	-22.90	74.00	44.22	36.07	7.65	36.84	100	64	Peak
17	8865.00	39.39	-14.61	54.00	32.51	36.07	7.65	36.84	100	64	Average



Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		

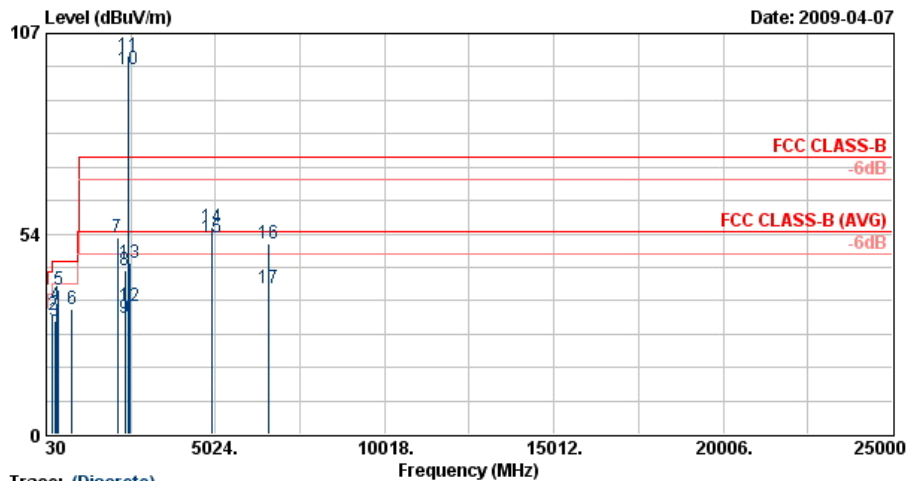
**Trace: (Discrete)**

Site : 03CH06-HV
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 931617-03
Memo : Mode 2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	
					dBuV	dB/m	dB	cm	deg	
1	31.89	26.57	-13.43	40.00	39.24	18.70	0.30	31.67	---	Peak
2	280.29	30.92	-15.08	46.00	48.73	13.50	0.70	32.01	---	Peak
3	299.73	28.66	-17.34	46.00	46.21	13.90	0.70	32.15	---	Peak
4	504.40	35.36	-10.64	46.00	48.46	17.98	1.00	32.07	---	Peak
5	561.80	36.10	-9.90	46.00	48.28	18.95	1.00	32.13	100	215 Peak
6	616.40	35.22	-10.78	46.00	46.99	19.23	1.07	32.08	---	Peak
7	2126.00	52.24			53.26	31.64	3.56	36.23	100	0 Peak
8	2348.00	43.35	-30.65	74.00	43.85	31.91	3.86	36.27	134	358 Peak
9	2348.00	31.06	-22.94	54.00	31.56	31.91	3.86	36.27	134	358 Average
10 X	2437.00	95.48			95.74	32.04	3.99	36.29	134	358 Peak
11 @	2437.00	91.71			91.97	32.04	3.99	36.29	134	358 Average
12	2492.00	47.25	-26.75	74.00	47.40	32.10	4.05	36.30	134	358 Peak
13	2492.00	32.57	-21.43	54.00	32.72	32.10	4.05	36.30	134	358 Average
14	4874.00	54.96	-19.04	74.00	50.82	34.45	5.82	36.13	123	360 Peak
15 !	4874.00	52.23	-1.77	54.00	48.10	34.45	5.80	36.13	123	360 Average
16	6882.00	52.08	-21.92	74.00	45.78	35.65	7.03	36.38	100	312 Peak
17	6882.00	38.81	-15.19	54.00	32.51	35.65	7.03	36.38	100	312 Average



Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		



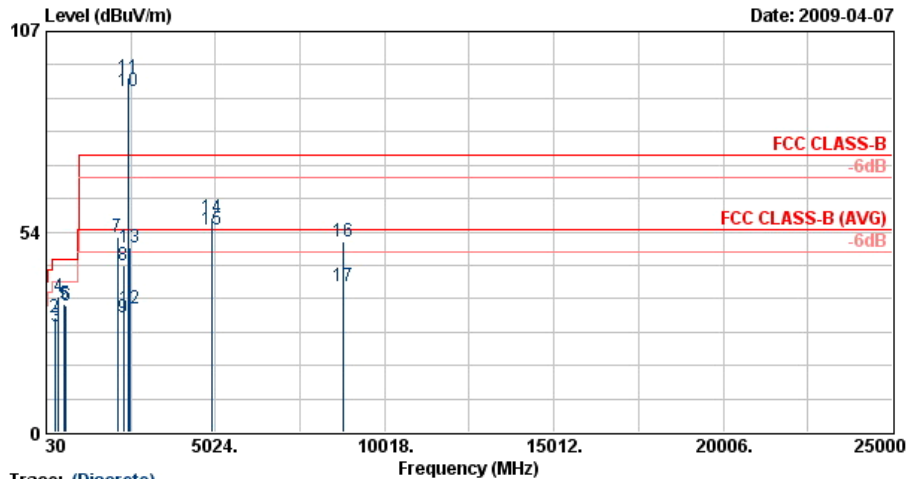
Trace: (Discrete)

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

	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	32.43	25.06	-14.94	40.00	38.39	18.10	0.30	31.72	---	---	Peak
2	223.59	31.87	-14.13	46.00	52.33	10.78	0.70	31.94	---	---	Peak
3	279.48	30.25	-15.75	46.00	48.05	13.50	0.70	32.00	---	---	Peak
4	336.40	34.42	-11.58	46.00	50.51	14.92	0.80	31.81	---	---	Peak
5	392.40	38.43	-7.57	46.00	53.12	16.34	0.83	31.86	100	175	Peak
6	785.80	33.58	-12.42	46.00	43.87	20.66	1.20	32.15	---	---	Peak
7	2126.00	52.48			53.50	31.64	3.56	36.23	100	0	Peak
8	2358.00	43.87	-30.13	74.00	44.31	31.93	3.89	36.27	100	14	Peak
9	2358.00	30.85	-23.15	54.00	31.30	31.93	3.89	36.27	100	14	Average
10 @	2462.00	97.34			97.55	32.06	4.02	36.29	100	14	Average
11 X	2462.00	101.14			101.36	32.06	4.02	36.29	100	14	Peak
12	2483.50	34.15	-19.85	54.00	34.32	32.08	4.05	36.30	100	14	Average
13	2483.50	45.81	-28.19	74.00	45.98	32.08	4.05	36.30	100	14	Peak
14	4924.00	55.37	-18.63	74.00	51.16	34.47	5.85	36.12	100	68	Peak
15 !	4924.00	52.50	-1.50	54.00	48.29	34.47	5.85	36.12	100	68	Average
16	6573.00	51.04	-22.96	74.00	44.95	35.53	6.88	36.32	100	333	Peak
17	6573.00	39.09	-14.91	54.00	33.00	35.53	6.88	36.32	100	333	Average



Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		

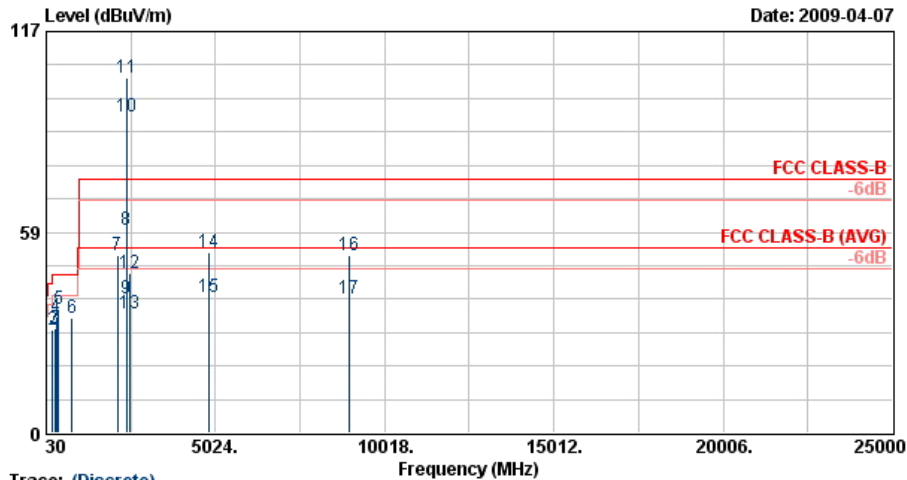


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 931617-03
Memo : Mode 3

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	Level	Factor	Loss	Factor	Pos	Pos	
					dBuV	dB/m	dB	dB	cm	deg	
1	31.89	26.86	-13.14	40.00	39.53	18.70	0.30	31.67	---	---	Peak
2	280.29	30.61	-15.39	46.00	48.42	13.50	0.70	32.01	---	---	Peak
3	298.38	28.30	-17.70	46.00	45.86	13.88	0.70	32.14	---	---	Peak
4	392.40	36.03	-9.97	46.00	50.72	16.34	0.83	31.86	100	174	Peak
5	561.80	34.29	-11.71	46.00	46.48	18.95	1.00	32.13	---	---	Peak
6	617.80	33.91	-12.09	46.00	45.66	19.24	1.08	32.07	---	---	Peak
7	2124.00	52.10			53.12	31.64	3.56	36.23	100	0	Peak
8	2310.00	44.63	-29.37	74.00	45.20	31.87	3.82	36.26	176	264	Peak
9	2310.00	30.79	-23.21	54.00	31.36	31.87	3.82	36.26	176	264	Average
10 @	2462.00	91.10			91.31	32.06	4.02	36.29	176	264	Average
11 X	2462.00	94.87			95.08	32.06	4.02	36.29	176	264	Peak
12	2492.21	33.05	-20.95	54.00	33.20	32.10	4.05	36.30	176	264	Average
13	2492.21	49.14	-24.86	74.00	49.29	32.10	4.05	36.30	176	264	Peak
14	4924.00	57.15	-16.85	74.00	52.94	34.47	5.85	36.12	181	302	Peak
15 !	4924.00	53.95	-0.05	54.00	49.74	34.47	5.85	36.12	181	302	Average
16	8814.00	50.99	-23.01	74.00	44.20	36.02	7.59	36.82	100	99	Peak
17	8814.00	38.98	-15.02	54.00	32.19	36.02	7.59	36.82	100	99	Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		

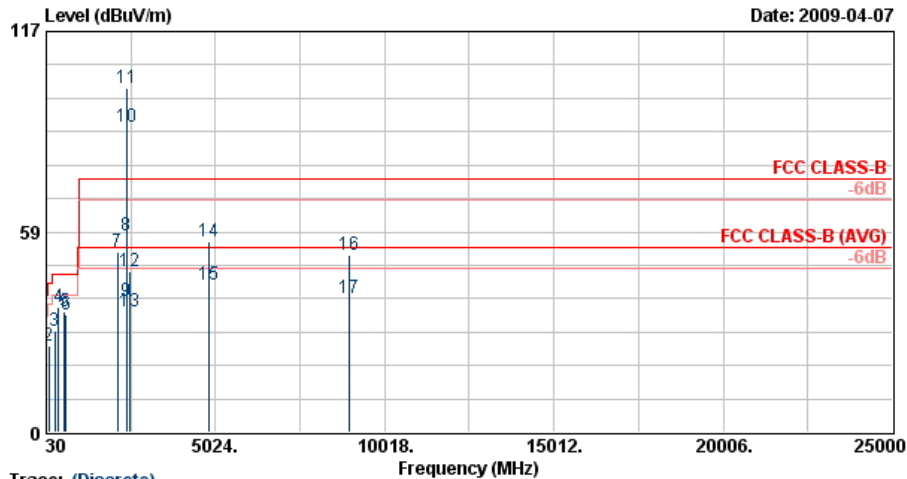
**Trace: (Discrete)**

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

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	31.08	25.66	-14.34	40.00	37.68	19.30	0.30	31.61	---	Peak
2	223.59	29.94	-16.06	46.00	50.39	10.78	0.70	31.94	---	Peak
3	279.48	30.24	-15.76	46.00	48.04	13.50	0.70	32.00	---	Peak
4	336.40	33.89	-12.11	46.00	49.98	14.92	0.80	31.81	---	Peak
5	390.30	36.16	-9.84	46.00	50.94	16.26	0.80	31.85	100	178 Peak
6	785.80	33.33	-12.67	46.00	43.62	20.66	1.20	32.15	---	Peak
7	2132.00	51.93			52.92	31.67	3.56	36.23	100	0 Peak
8	2389.99	59.11	-14.89	74.00	59.49	31.98	3.92	36.28	131	21 Peak
9	2389.99	38.98	-15.02	54.00	39.36	31.98	3.92	36.28	131	21 Average
10 @	2412.00	92.03			92.36	32.00	3.95	36.28	131	21 Average
11 X	2412.00	103.72			104.05	32.00	3.95	36.28	131	21 Peak
12	2484.00	46.62	-27.38	74.00	46.79	32.08	4.05	36.30	131	21 Peak
13	2484.00	34.96	-19.04	54.00	35.13	32.08	4.05	36.30	131	21 Average
14	4824.00	52.66	-21.34	74.00	48.58	34.43	5.78	36.14	102	353 Peak
15	4824.00	39.79	-14.21	54.00	35.73	34.43	5.77	36.14	102	353 Average
16	8982.00	51.58	-22.42	74.00	44.49	36.18	7.80	36.89	100	96 Peak
17	8982.00	39.04	-14.96	54.00	31.95	36.18	7.80	36.89	100	96 Average



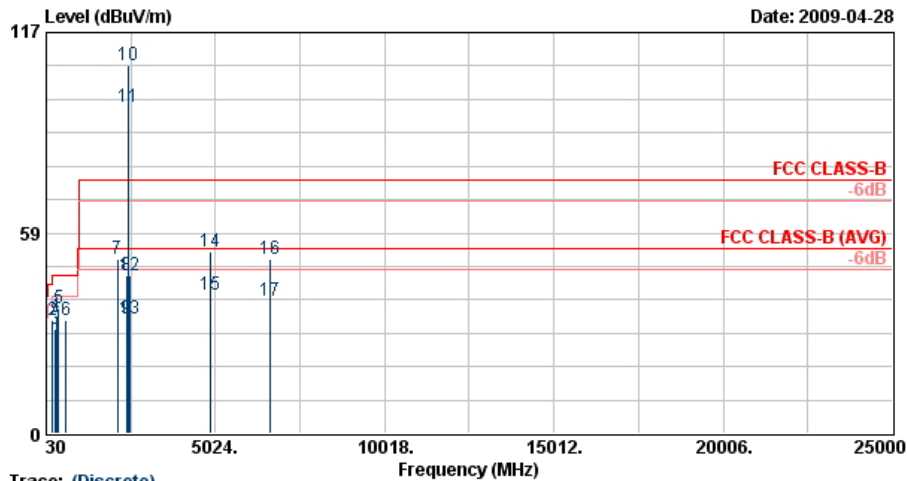
Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		



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

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	Pos	Pos	
					dBuV	dB/m	dB	cm	deg	
1	31.89	26.12	-13.88	40.00	38.79	18.70	0.30	31.67	---	Peak
2	98.58	25.42	-18.08	43.50	45.77	11.20	0.50	32.04	---	Peak
3	280.83	29.76	-16.24	46.00	47.56	13.52	0.70	32.02	---	Peak
4	392.40	36.70	-9.30	46.00	51.40	16.34	0.83	31.86	100	Peak
5	561.80	35.11	-10.89	46.00	47.30	18.95	1.00	32.13	---	Peak
6	616.40	34.23	-11.77	46.00	46.00	19.23	1.07	32.08	---	Peak
7	2124.00	52.54			53.56	31.64	3.56	36.23	100	Peak
8	2389.99	57.23	-16.77	74.00	57.61	31.98	3.92	36.28	100	Peak
9	2389.99	38.18	-15.82	54.00	38.56	31.98	3.92	36.28	100	Average
10 @	2412.00	89.25			89.58	32.00	3.95	36.28	100	Average
11 X	2412.00	100.65			100.96	32.02	3.95	36.29	100	Peak
12	2500.00	47.03	-26.97	74.00	47.18	32.10	4.05	36.30	100	Peak
13	2500.00	35.20	-18.80	54.00	35.35	32.10	4.05	36.30	100	Average
14	4824.00	55.68	-18.32	74.00	51.60	34.43	5.78	36.14	126	Peak
15	4824.00	42.94	-11.06	54.00	38.88	34.43	5.77	36.14	126	Average
16	8970.00	51.62	-22.38	74.00	44.57	36.17	7.77	36.89	100	Peak
17	8970.00	39.16	-14.84	54.00	32.11	36.17	7.77	36.89	100	Average

Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		



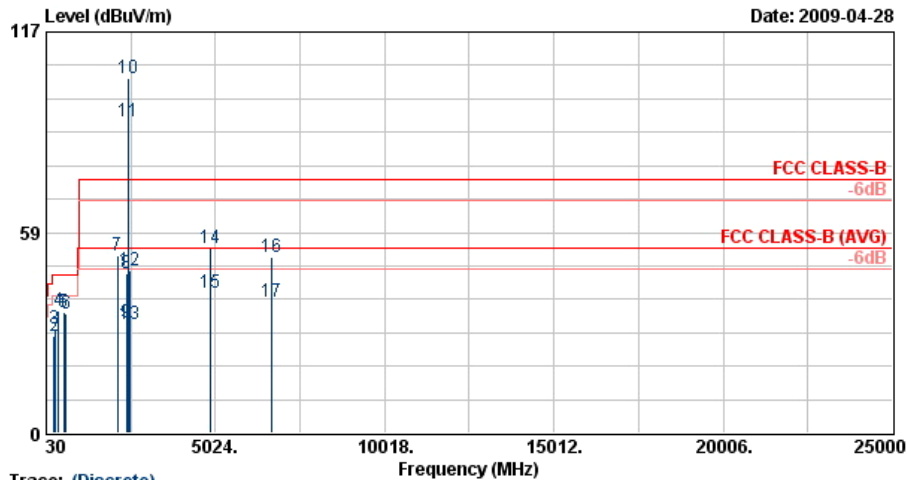
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 931617-03
Memo : Mode 5

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	31.89	25.33	-14.67	40.00	38.00	18.70	0.30	31.67	---	---	Peak
2	223.59	32.87	-13.13	46.00	53.33	10.78	0.70	31.94	---	---	Peak
3	299.19	30.47	-15.53	46.00	48.02	13.90	0.70	32.15	---	---	Peak
4	336.40	34.16	-11.84	46.00	50.26	14.92	0.80	31.81	---	---	Peak
5	392.40	36.63	-9.37	46.00	51.33	16.34	0.83	31.86	100	180	Peak
6	614.30	33.13	-12.87	46.00	44.97	19.21	1.04	32.10	---	---	Peak
7	2126.00	51.03			52.05	31.64	3.56	36.23	102	19	Peak
8	2390.00	46.24	-27.76	74.00	46.62	31.98	3.92	36.28	102	19	Peak
9	2390.00	33.45	-20.55	54.00	33.83	31.98	3.92	36.28	102	19	Average
10 X	2437.00	107.41			107.68	32.04	3.99	36.29	102	19	Peak
11 @	2437.00	95.23			95.49	32.04	3.99	36.29	102	19	Average
12	2484.00	46.25	-27.75	74.00	46.41	32.08	4.05	36.30	102	19	Peak
13	2484.00	33.38	-20.62	54.00	33.55	32.08	4.05	36.30	102	19	Average
14	4874.00	52.91	-21.09	74.00	48.77	34.45	5.82	36.13	100	359	Peak
15	4874.00	40.30	-13.70	54.00	36.17	34.45	5.80	36.13	100	359	Average
16	6633.00	51.08	-22.92	74.00	44.94	35.55	6.91	36.33	100	201	Peak
17	6633.00	38.52	-15.48	54.00	32.39	35.55	6.91	36.33	100	201	Average



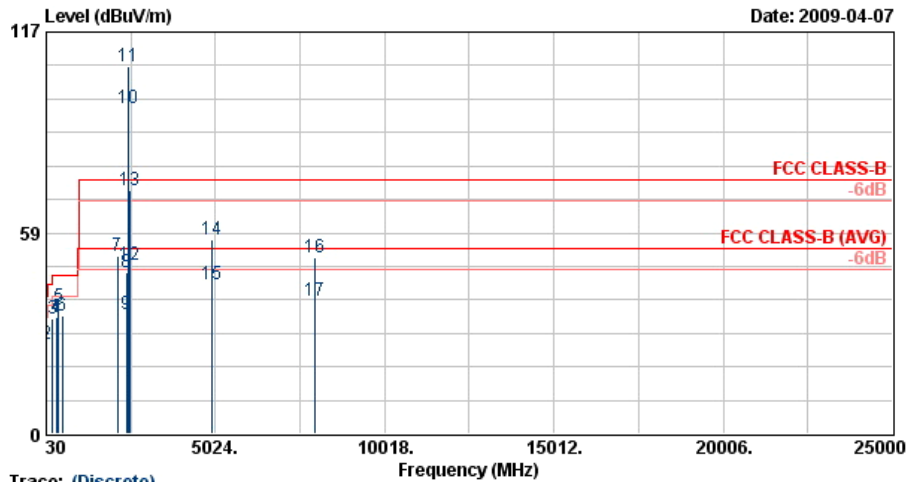
Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		

**Trace: (Discrete)**

Site : 03CH06-HV
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Project : FR 931617-03
Memo : Mode 5

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	32.43	26.55	-13.45	40.00	39.87	18.10	0.30	31.72	---	Peak
2	252.48	28.11	-17.89	46.00	46.22	13.00	0.70	31.80	---	Peak
3	279.48	30.24	-15.76	46.00	48.05	13.50	0.70	32.00	---	Peak
4	390.30	35.87	-10.13	46.00	50.66	16.26	0.80	31.85	100	Peak
5	558.30	35.34	-10.66	46.00	47.54	18.93	1.00	32.13	---	Peak
6	617.80	34.68	-11.32	46.00	46.43	19.24	1.08	32.07	---	Peak
7	2124.00	51.81			52.83	31.64	3.56	36.23	131	Peak
8	2390.00	46.47	-27.53	74.00	46.85	31.98	3.92	36.28	131	Peak
9	2390.00	32.24	-21.76	54.00	32.62	31.98	3.92	36.28	131	Average
10 X	2437.00	103.31			103.57	32.04	3.99	36.29	131	Peak
11 X	2437.00	90.81			91.07	32.04	3.99	36.29	131	Average
12	2484.00	47.21	-26.79	74.00	47.38	32.08	4.05	36.30	131	Peak
13	2484.00	31.71	-22.29	54.00	31.88	32.08	4.05	36.30	131	Average
14	4874.00	53.95	-20.05	74.00	49.82	34.45	5.80	36.13	130	Peak
15	4874.00	41.07	-12.93	54.00	36.94	34.45	5.80	36.13	130	Average
16	6693.00	51.34	-22.66	74.00	45.16	35.58	6.94	36.34	100	Peak
17	6693.00	38.38	-15.62	54.00	32.21	35.58	6.94	36.34	100	Average

Test Mode :	Mode 6	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Horizontal
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		

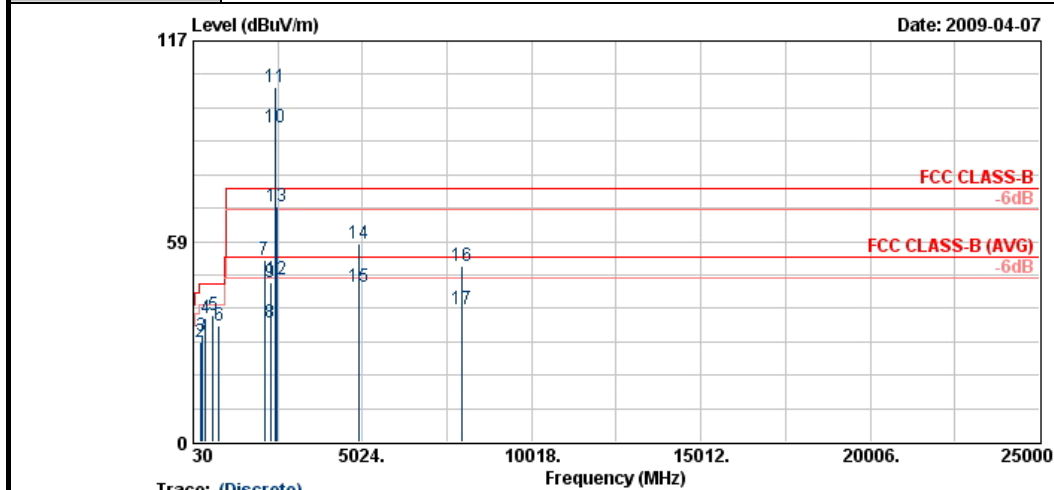


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Project : FR 931617-03
Memo : Mode 6

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	Remark
1	31.89	24.71	-15.29	40.00	37.37	18.70	0.30	31.67	---	---	Peak
2	42.69	26.25	-13.75	40.00	45.50	12.16	0.30	31.71	---	---	Peak
3	224.13	33.69	-12.31	46.00	54.15	10.78	0.70	31.94	---	---	Peak
4	336.40	34.10	-11.90	46.00	50.19	14.92	0.80	31.81	---	---	Peak
5	392.40	36.82	-9.18	46.00	51.52	16.34	0.83	31.86	100	172	Peak
6	502.30	34.15	-11.85	46.00	47.28	17.94	1.00	32.07	---	---	Peak
7	2124.00	51.81			52.83	31.64	3.56	36.23	100	0	Peak
8	2388.00	47.18	-26.82	74.00	47.56	31.98	3.92	36.28	100	15	Peak
9	2388.00	35.00	-19.00	54.00	35.38	31.98	3.92	36.28	100	15	Average
10 @	2462.00	94.63			94.84	32.06	4.02	36.29	100	15	Average
11 X	2462.00	106.82			107.03	32.06	4.02	36.29	100	15	Peak
12 !	2483.50	49.27	-4.73	54.00	49.44	32.08	4.05	36.30	100	15	Average
13 !	2483.50	71.09	-2.91	74.00	71.26	32.08	4.05	36.30	100	15	Peak
14	4924.00	56.48	-17.52	74.00	52.27	34.47	5.85	36.12	100	350	Peak
15	4924.00	43.59	-10.41	54.00	39.38	34.47	5.85	36.12	100	350	Average
16	7941.00	51.40	-22.60	74.00	44.93	35.67	7.48	36.69	100	211	Peak
17	7941.00	38.64	-15.36	54.00	32.17	35.67	7.48	36.69	100	211	Average

Test Mode :	Mode 6	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Mac Lin	Polarization :	Vertical
Remark :	#7 is not in a restricted band. #10 and #11 are Fundamental Signals which can be ignored.		



Trace: (Discrete)
 Site : 03CH06-HV
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 Project : FR 931617-03
 Memo : Mode 6

	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	31.89	27.10	-12.90	40.00	39.77	18.70	0.30	31.67	---	---	Peak
2	249.78	29.08	-16.92	46.00	47.37	12.80	0.70	31.79	---	---	Peak
3	280.29	30.99	-15.01	46.00	48.80	13.50	0.70	32.01	---	---	Peak
4	392.40	36.28	-9.72	46.00	50.97	16.34	0.83	31.86	---	---	Peak
5	617.80	36.80	-9.20	46.00	48.55	19.24	1.08	32.07	100	312	Peak
6	782.30	33.92	-12.08	46.00	44.23	20.63	1.20	32.14	---	---	Peak
7	2124.00	52.88			53.90	31.64	3.56	36.23	100	0	Peak
8	2318.00	34.75	-19.25	54.00	35.30	31.89	3.82	36.27	100	359	Average
9	2318.00	46.62	-27.38	74.00	47.17	31.89	3.82	36.27	100	359	Peak
10 @	2462.00	91.69			91.90	32.06	4.02	36.29	100	359	Average
11 X	2462.00	103.32			103.54	32.06	4.02	36.29	100	359	Peak
12	2483.85	47.41	-6.59	54.00	47.58	32.08	4.05	36.30	100	359	Average
13 !	2483.85	68.83	-5.17	74.00	69.00	32.08	4.05	36.30	100	359	Peak
14	4924.00	58.03	-15.97	74.00	53.84	34.47	5.83	36.12	100	322	Peak
15	4924.00	45.03	-8.97	54.00	40.82	34.47	5.85	36.12	100	322	Average
16	7953.00	51.38	-22.62	74.00	44.89	35.68	7.50	36.69	100	222	Peak
17	7953.00	38.57	-15.43	54.00	32.08	35.68	7.50	36.69	100	222	Average

3.5 Antenna Requirements

3.5.1 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.

3.5.2 Antenna Connected Construction

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

3.5.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 26, 2008	Jun. 25, 2009	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 19, 2009	Feb. 18, 2010	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 19, 2009	Feb. 18, 2010	Conducted (TH02-HY)
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
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. : L1190-090318

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 : March 18, 2009

P1, total 19 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 EP931617-03 as below.



Appendix C. Original Report

Please refer to Sporton report number FR921118 as below.