FCC Test Report

EQUIPMENT	:	**Bar Code Handy Terminal**
BRAND NAME	:	**DENSO**
MODEL NAME	:	**BHT-710BWB-CE**
FCC ID	:	**PZWBHT710BWB**
STANDARD	:	**FCC Part 15 Subpart E**
CLASSIFICATION	:	**Unlicensed National Information Infrastructure (UNII)**
APPLICANT	:	**DENSO WAVE INCORPORATED**
		1-1 Showa-cho, Kariya-shi, Aichi, Japan 448-8661

The product sample received on Jan. 21, 2009 and completely tested on Mar. 26, 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 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

Testing Laboratory 1190

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
FR912101C	Rev. 01	Initial issue of report	Feb. 20, 2009
FR912101C	Rev. 02	Update applicant address	Feb. 23, 2009
FR912101C	Rev. 03	Update test data of frequency stability	Mar. 27, 2009

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	A9.2	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	A9.2	Maximum Conducted Output Power	≤ 17, 24, 30 dBm (depend on band)	Pass	-
3.3	15.407(a)	A9.2	Power Spectral Density	≤ 4, 11, 17 dBm (depend on band)	Pass	-
3.4	15.407(b)	A9.3	Frequency Band Edges	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	-
3.5	15.407(b)	A9.3	Spurious Emission	< 20 dBc	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 18.0 dB at 0.286 MHz
3.7	15.407(b)	A9.3	Transmitter Radiated Emission	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 9.78 dB at 5150.00 MHz
3.8	15.407(b)	A9.3	Peak Excursion Ratio	≤ 13dB	Pass	-
3.9	15.407(c)	A9.5	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.10	15.407(g)	A9.5	Frequency Stability	Within Operation Band	Pass	-
3.11	15.203 & 15.407(a)	A9.2	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

DENSO WAVE INCORPORATED
1-1 Showa-cho, Kariya-shi, Aichi, Japan 448-8661

1.2 Manufacturer

Universal Scientific Industrial CO., LTD.
No. 141, Lane 351, Taiping Road, Sec. 1, Tsao Tuen, Nan-Tou, Taiwan

1.3 Feature of Equipment Under

Product Feature & Specification	
Equipment	Bar Code Handy Terminal
Brand Name	DENSO
Model Name	BHT-710BWB-CE
Tx/Rx Frequency Range	5150 MHz ~ 5250 MHz
Maximum Output Power to Antenna	802.11a : 16.41 dBm
Antenna Type	PIFA Antenna with gain 5.26 dBi
Type of Antenna Connector	I-PEX
HW Version	V3.4
SW Version	1.16a
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark: This device only supports ch36 to ch44 for 802.11a mode.

Accessories List:

Accessories Specification		
Battery 1	**Brand Name**	DENSO
	Model Name	BT-700LL
	Power Rating	3.6Vdc, 3800mAh
	Type	Li-ion
Battery 2	**Brand Name**	DENSO
	Model Name	BT-700L
	Power Rating	3.7Vdc, 2200mAh
	Type	Li-ion

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This test report recorded only product characteristics and test results of U-NII.
3. For accessories equipped with this EUT, please refer to the appendix of the external photo.
4. For other wireless features of this EUT, test report will be issued separately.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st 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 E
- FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
- ANSI C63.4-2003
- IC RSS-210 Issued 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	DWL-7100AP	N/A	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Channel Spacing 20MHz					
Channel	**Freq. (MHz)**	**Channel**	**Freq. (MHz)**	**Channel**	**Freq. (MHz)**
36	5180	**40**	5200	**44**	5220

Note: This device only supports ch36 to ch44 for 802.11a mode.

2.2 Pre-Scanned RF Power

Preliminary RF power output tests were performed in different data rate and recorded the in the following table:

5GHz 802.11a RF Power (dBm)									
Channel	**Frequency (MHz)**	**Data Rate**							
		6 Mbps	**9 Mbps**	**12 Mbps**	**18 Mbps**	**24 Mbps**	**36 Mbps**	**48 Mbps**	**54 Mbps**
CH 36	5180 MHz	**15.22**	15.04	15.10	15.00	15.05	13.91	11.39	10.44
CH 40	5200 MHz	15.18	14.98	15.06	14.95	14.98	13.87	11.36	10.40
CH 44	5220 MHz	14.97	14.80	14.79	14.82	14.61	13.46	10.82	10.08

Remark:

1. The pre-scanned RF power table was measured by power meter.
2. The 802.11a data rate was set in 6Mbps on 5150MHz to 5250MHz due to the highest RF output power.
3. The EUT is programmed to transmit signal continuously for all testing.

2.3 Test Mode

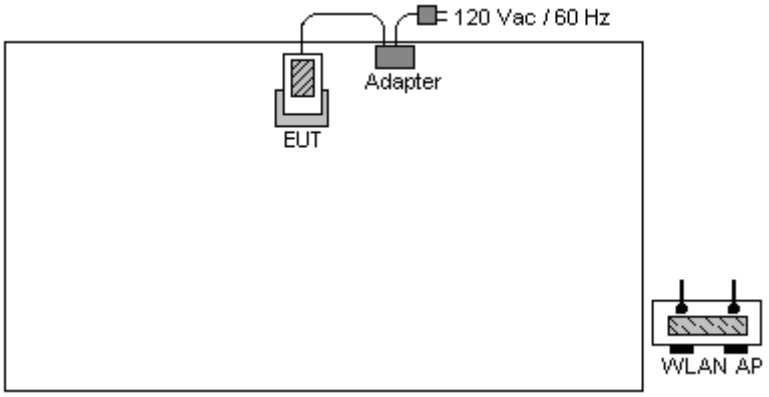
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest 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	**802.11a (Modulation : OFDM)**
Conducted TCs	■ Mode 1: CH36_5180 MHz ■ Mode 2: CH40_5200 MHz ■ Mode 3: CH44_5220 MHz
Radiated TCs	■ Mode 1: CH36_5180 MHz ■ Mode 2: CH40_5200 MHz ■ Mode 3: CH44_5220 MHz
AC Conducted Emission	■ Mode 1 : WLAN (5G) Link + Cradle + Adapter

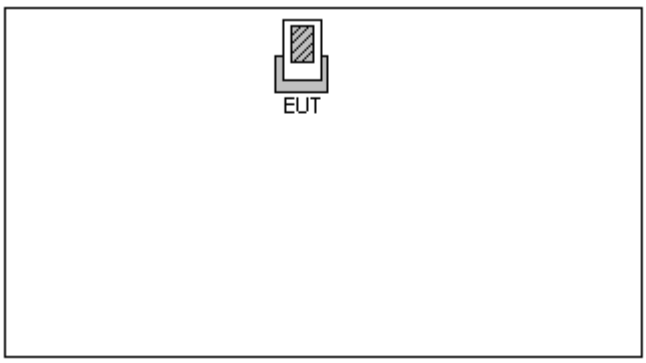
Note: This device only supports ch36 to ch44 for 802.11a mode.

2.4 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.5 RF Utility

Programmed RF Utility “FCCTest18dBm.exe” 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 26dB & 99% Bandwidth Measurement

3.1.1 Limit of 26dB & 99% Bandwidth

There is no restriction limits for bandwidth. The maximum conducted output power can be limited by measured emission bandwidth (B). For the band 5.15~5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B.

3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC Public Notice DA 02-2138 (Measurement Guidelines of UNII).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Read RBW and repeat measurement as needed until the RBW/BW ratio is approximately 1%.
4. Use a RBW = approximately 1% of the emission bandwidth; Set the VBW > RBW; Use a peak detector.
5. Measure the maximum width of the emission that is 26 dB relative to the peak of the emission and 99% occupied bandwidth.

3.1.4 Test Setup

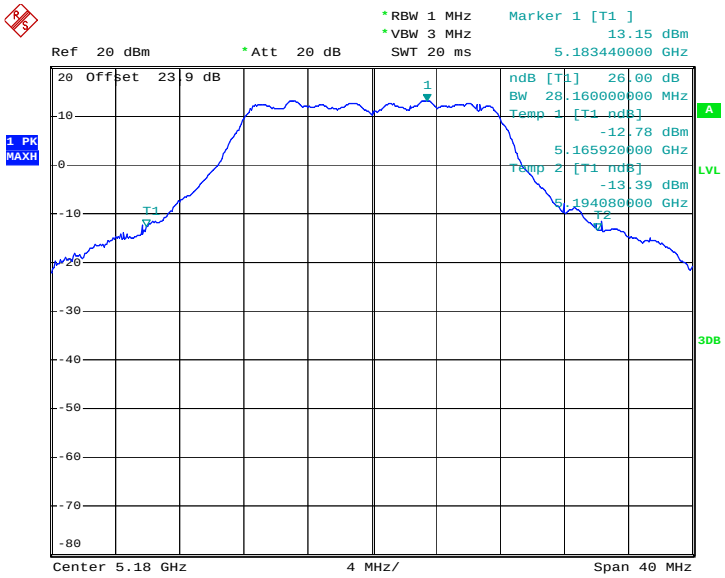
3.1.5 Test Result of 26dB Bandwidth

Test Mode :	Mode 1~3	Temperature :	21~23℃
Test Engineer :	Ken Hsu	Relative Humidity :	49~52%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
36	5180	28.16	Pass
40	5200	28.32	Pass
44	5220	30.88	Pass

3.1.6 Test Result of 26dB Bandwidth Plots

Mode 1 : 26 dB Bandwidth Plot on 802.11a Channel 36



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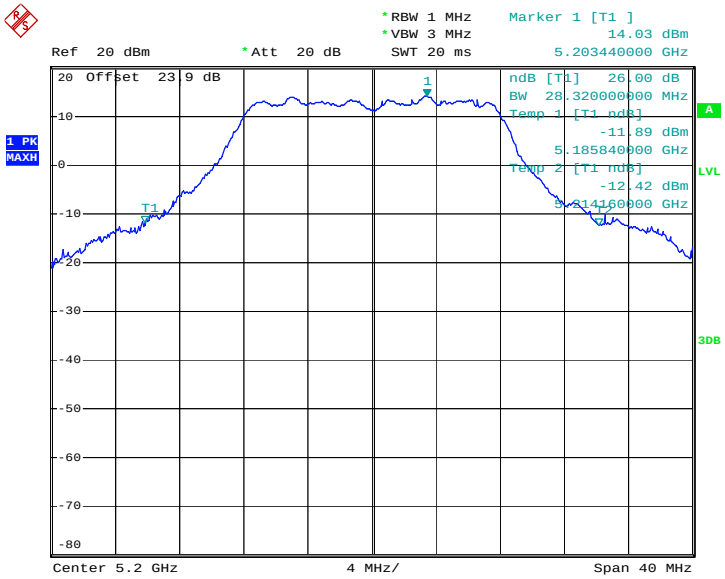
Mode 2 : 26 dB Bandwidth Plot on 802.11a Channel 40



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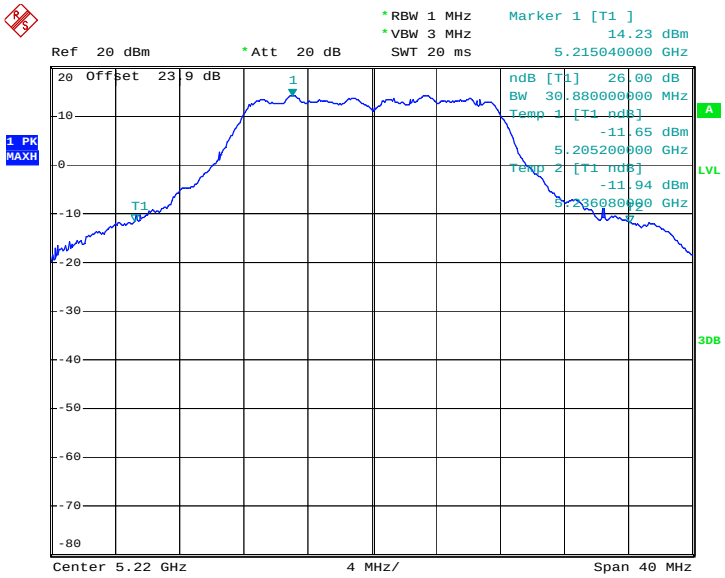
Mode 3 : 26 dB Bandwidth Plot on 802.11a Channel 44



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3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.15~5.25 GHz, the maximum conducted output power shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B, where B is the 26 dB emissions bandwidth in MHz. If transmitting antenna directional gain is greater than 6 dBi, the peak output power and power density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC Public Notice DA 02-2138 (Measurement Guidelines of UNII).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Measure the power and record it.

3.2.4 Test Setup

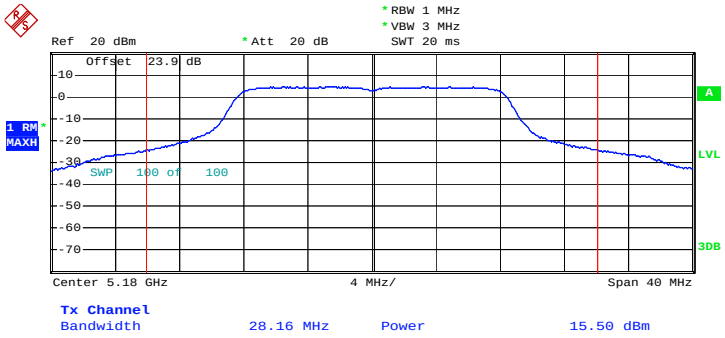
3.2.5 Test Result of Maximum Conducted Output Power

Test Mode :	Mode 1~3	Temperature :	21~23℃
Test Engineer :	Ken Hsu	Relative Humidity :	49~52%

Channel	Frequency (MHz)	Measured Power Output (dBm)	Max. Limits (dBm)	Pass/Fail
36	5180	15.50	17	Pass
40	5200	16.41	17	Pass
44	5220	16.33	17	Pass

3.2.6 Test Result of Power Output Plots

Mode 1 : Output Power Plot on 802.11a Channel 36



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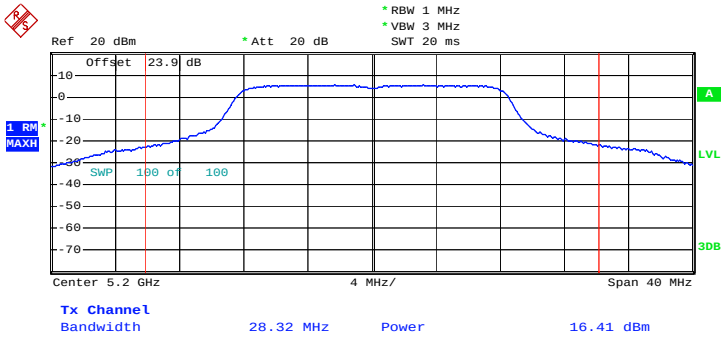
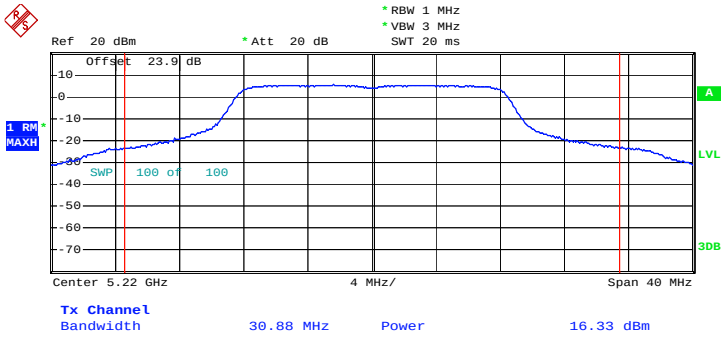
Mode 2 : Output Power Plot on 802.11a Channel 40



Date: 12.FEB.2009 19:42:51

Mode 3 : Output Power Plot on 802.11a Channel 44



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3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.15–5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1MHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

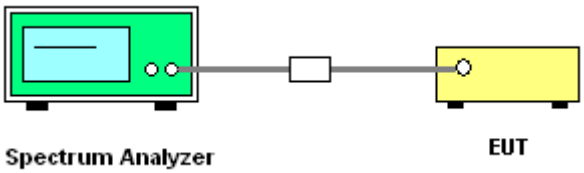
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

The transmitter output is connected to the spectrum analyzer. According to the method 3 of DA-02-2138, the resolution bandwidth is set to 1 MHz, video bandwidth is 3MHz, trace average 100 traces in power averaging mode, and sample detection is used, and the analyzer is set for video averaging.

3.3.4 Test Setup



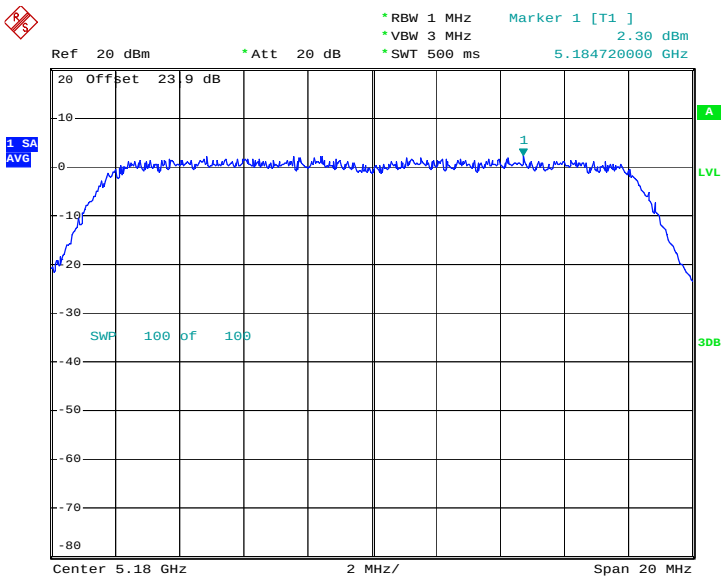
3.3.5 Test Result of Power Spectral Density

Test Mode :	Mode 1~3	**Temperature :**	21~23℃
Test Engineer :	Ken Hsu	**Relative Humidity :**	49~52%

Channel	Frequency (MHz)	Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
36	5180	2.30	4	Pass
40	5200	3.32	4	Pass
44	5220	3.50	4	Pass

3.3.6 Test Result of Power Spectral Density Plots

Mode 1 : PSD Plot on 802.11a Channel 36



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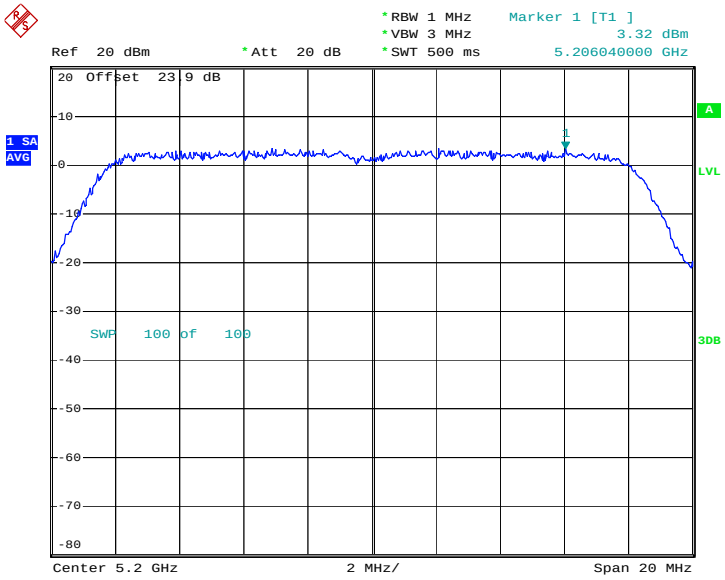
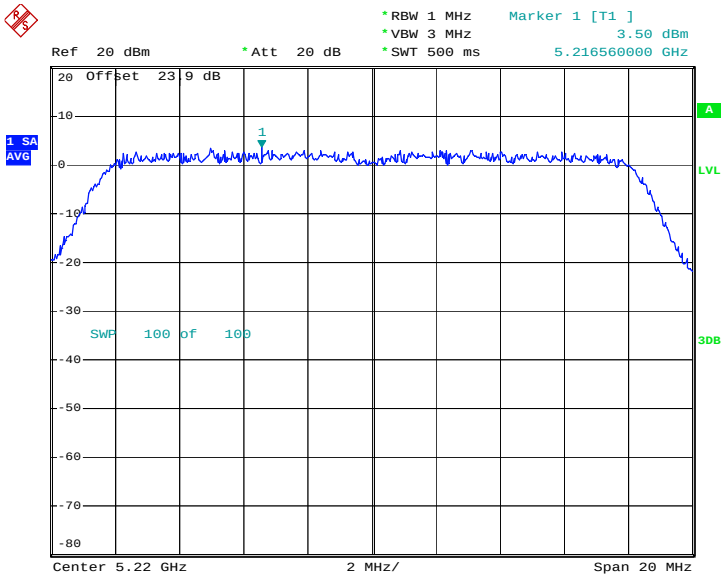
Mode 2 : PSD Plot on 802.11a Channel 40



Date: 19.FEB.2009 14:16:29

Mode 3 : PSD Plot on 802.11a Channel 44



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3.4 Band Edges Measurement

3.4.1 Limit of Band Edges

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.

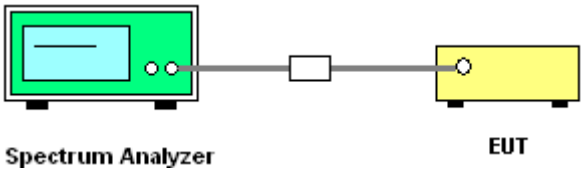
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. Set both RBW and VBW of spectrum analyzer to 1MHz with convenient frequency span including 1MHz bandwidth from band edge.
2. The band edges was measured and recorded.

3.4.4 Test Setup



3.4.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	49~52%
Test Engineer :	Kay Wu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	56.21	-11.99	68.2	51.8	34.53	5.98	36.1	100	331	Peak

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
5150	58.81	-9.39	68.2	54.4	34.53	5.98	36.1	100	293	Peak

Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	49~52%
Test Engineer :	Kay Wu		

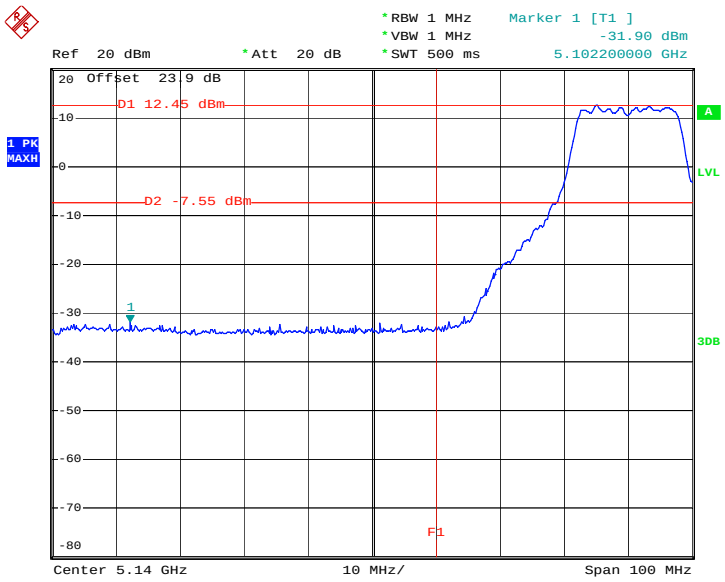
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5250	61.12	-7.08	68.2	56.63	34.55	6.04	36.1	101	321	Peak

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
5250	62.26	-5.94	68.2	57.77	34.55	6.04	36.1	100	292	Peak

3.4.6 Test Result of Conducted Band Edges

Test Mode :	Mode 1 and Mode 3	Temperature :	21~23℃
Test Engineer :	Ken Hsu	Relative Humidity :	49~52%

Mode 1 : Low Band Edge Plot on Channel 36



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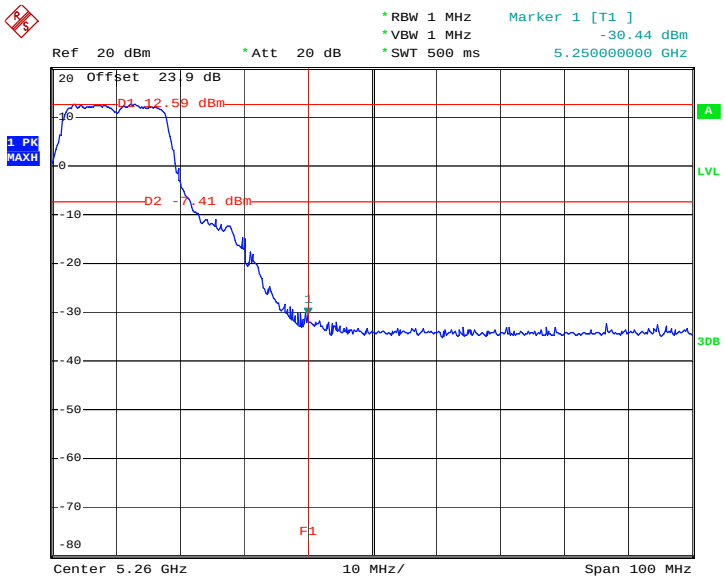
Mode 3 : High Band Edge Plot on Channel 44



Date: 13.FEB.2009 08:17:57

3.5 AC Conducted Emission Measurement

3.5.1 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.

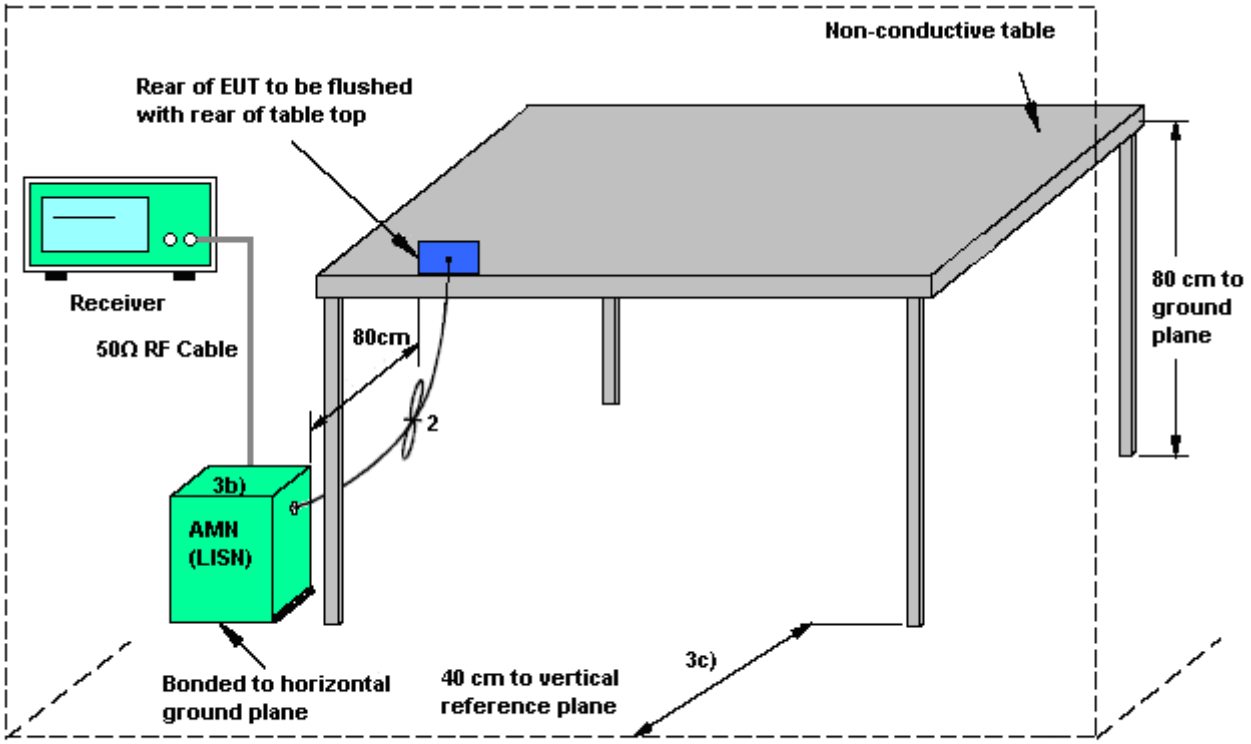
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room 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.

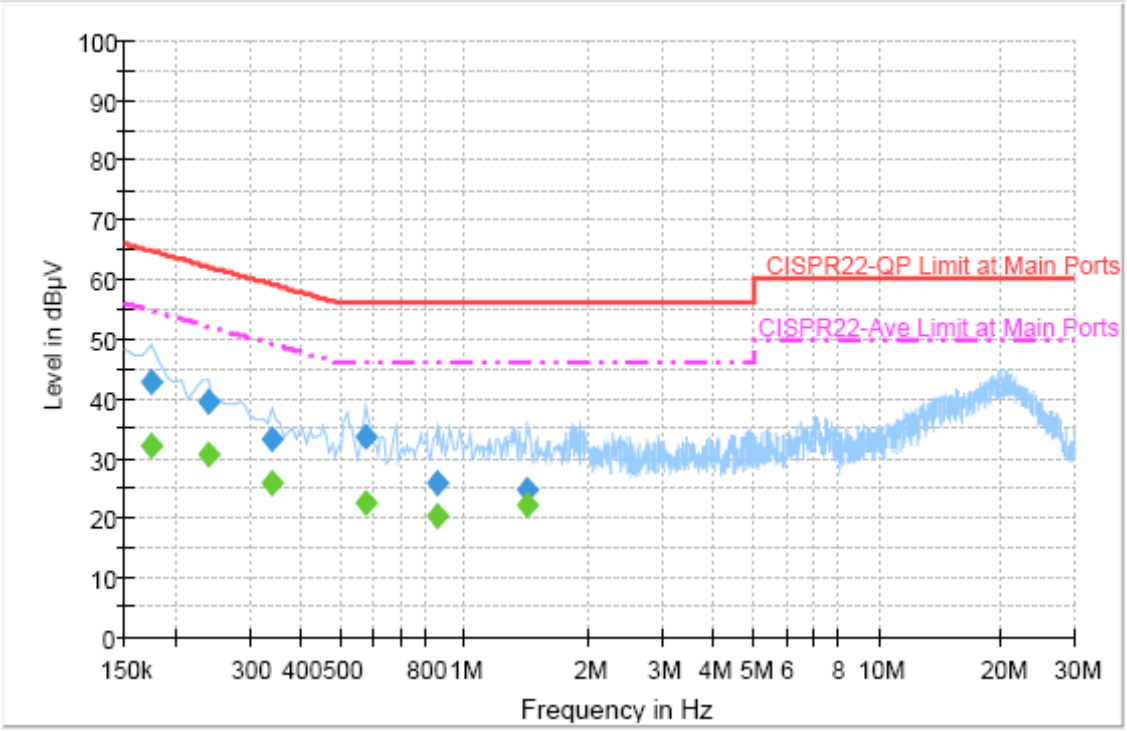
3.5.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Cona Huang	Relative Humidity :	42~43%
		Phase :	Line
Function Type :	WLAN (5G) Link + Cradle + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



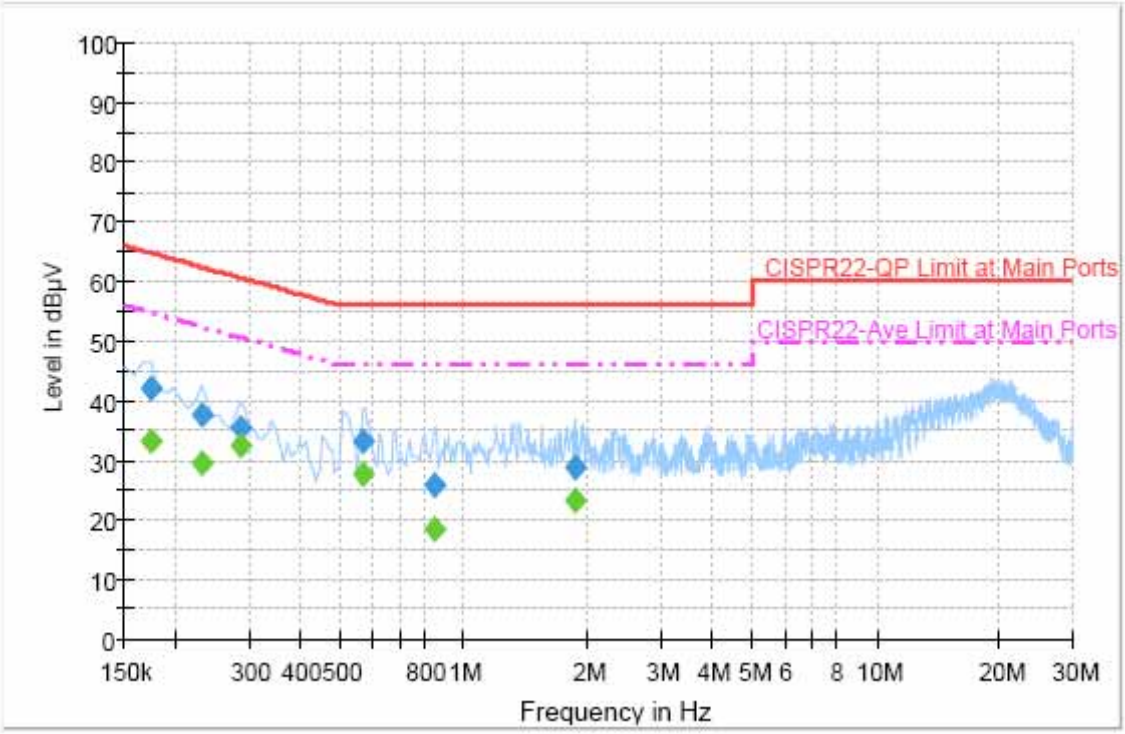
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	42.7	Off	L1	19.3	22.1	64.8
0.238000	39.4	Off	L1	19.4	22.8	62.2
0.342000	33.2	Off	L1	19.3	26.0	59.2
0.574000	33.7	Off	L1	19.3	22.3	56.0
0.854000	25.9	Off	L1	19.5	30.1	56.0
1.414000	24.7	Off	L1	19.4	31.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	32.1	Off	L1	19.3	22.7	54.8
0.238000	30.6	Off	L1	19.4	21.6	52.2
0.342000	25.9	Off	L1	19.3	23.3	49.2
0.574000	22.6	Off	L1	19.3	23.4	46.0
0.854000	20.2	Off	L1	19.5	25.8	46.0
1.414000	22.0	Off	L1	19.4	24.0	46.0

Test Mode :	Mode 1	Temperature :	23~24℃
Test Engineer :	Cona Huang	Relative Humidity :	42~43%
		Phase :	Neutral
Function Type :	WLAN (5G) Link + Cradle + 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)
0.174000	41.9	Off	N	19.3	22.9	64.8
0.230000	37.6	Off	N	19.4	24.8	62.4
0.286000	35.4	Off	N	19.3	25.2	60.6
0.566000	33.2	Off	N	19.3	22.8	56.0
0.846000	26.0	Off	N	19.5	30.0	56.0
1.870000	28.9	Off	N	19.4	27.1	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	33.4	Off	N	19.3	21.4	54.8
0.230000	29.7	Off	N	19.4	22.7	52.4
0.286000	32.6	Off	N	19.3	18.0	50.6
0.566000	27.6	Off	N	19.3	18.4	46.0
0.846000	18.4	Off	N	19.5	27.6	46.0
1.870000	23.4	Off	N	19.4	22.6	46.0

3.6 Radiated Emission Measurement

3.6.1 Limit of Radiated Emission

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.

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

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.

3.6.2 Measuring Instruments

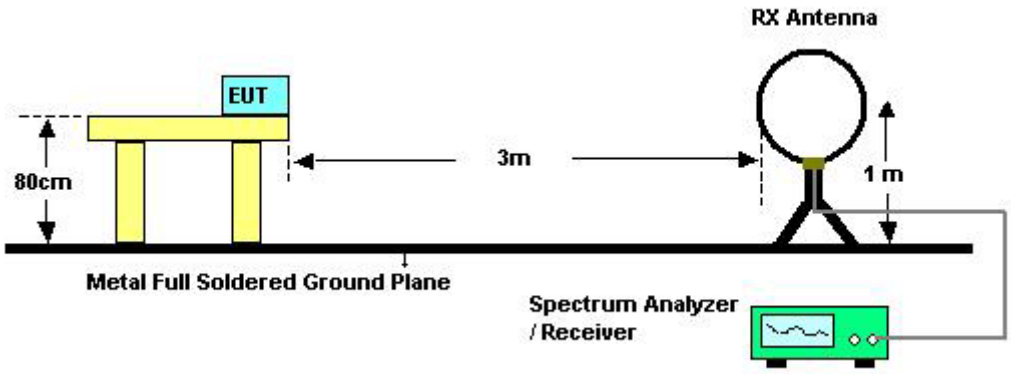
See list of measuring instruments of this test report.

3.6.3 Test Procedures

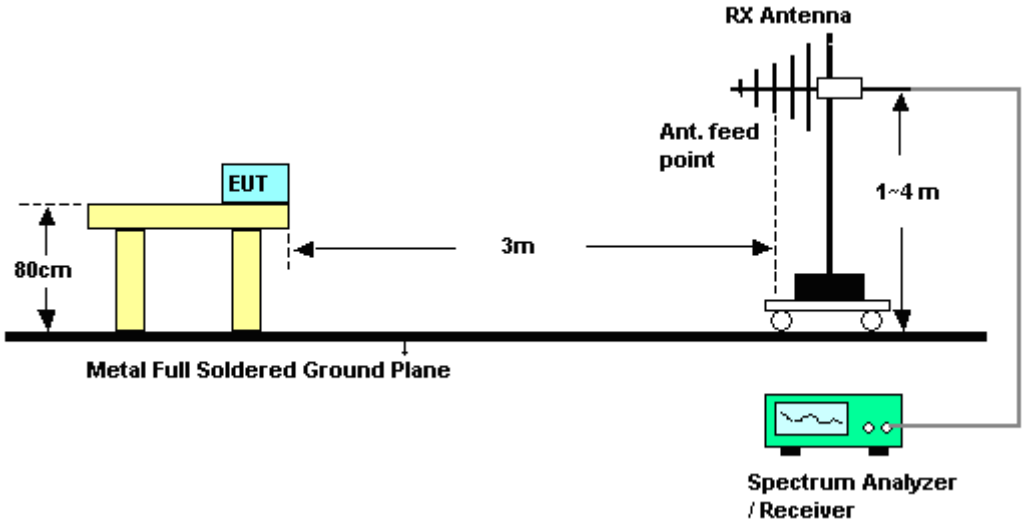
1. The testing follows the guidelines in FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
6. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
7. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
8. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
9. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.6.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Temperature	24~26°C	Humidity	47~49%
Test Engineer	Elvis Chen		

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

Note:

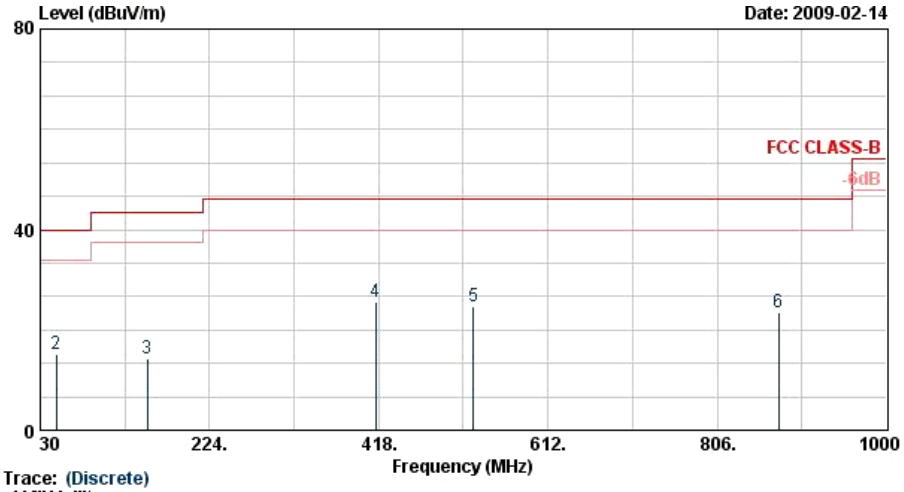
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

3.6.6 Test Result of Radiated Emission (30MHz ~ 1GHz)

Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :			

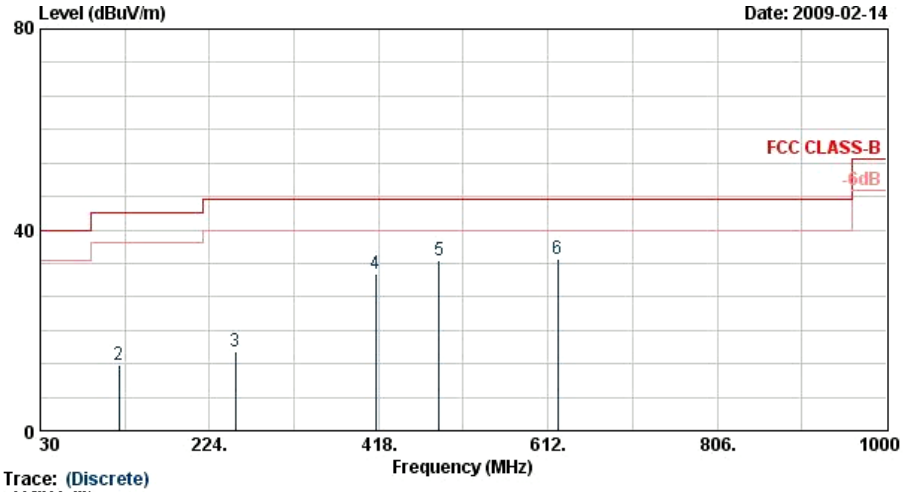


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BILOG_081124 HORIZONTAL
Power : Real Battery 4.18V
Model : FR 912101
Memo : Mode 1

	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	30.00	19.03	-20.97	40.00	30.39	19.90	0.30	31.56	---	---	Peak
2	48.63	15.14	-24.86	40.00	37.08	9.67	0.30	31.91	---	---	Peak
3	152.58	14.14	-29.36	43.50	34.17	11.10	0.60	31.73	---	---	Peak
4	414.80	25.70	-20.30	46.00	40.07	16.72	0.85	31.94	100	314	Peak
5	526.80	24.77	-21.23	46.00	37.51	18.43	0.93	32.10	---	---	Peak
6	876.80	23.39	-22.61	46.00	32.53	21.56	1.30	32.01	---	---	Peak

Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :			

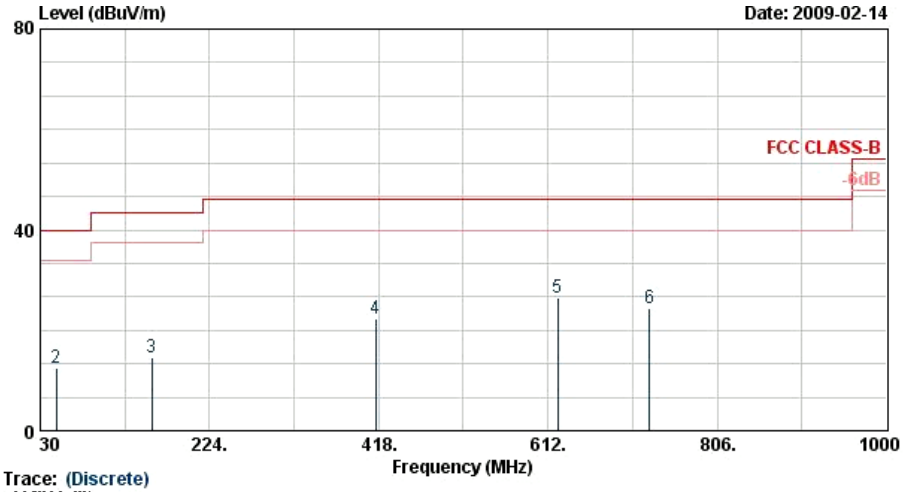


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BILOG_081124 VERTICAL
Power : Real Battery 4.18V
Model : FR 912101
Memo : Mode 1

	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	30.00	18.92	-21.08	40.00	30.28	19.90	0.30	31.56	---	---	Peak
2	120.18	12.94	-30.56	43.50	31.47	12.70	0.50	31.73	---	---	Peak
3	253.29	15.81	-30.19	46.00	33.82	13.10	0.70	31.81	---	---	Peak
4	414.80	31.35	-14.65	46.00	45.73	16.72	0.85	31.94	---	---	Peak
5 @	486.90	34.00	-12.00	46.00	47.42	17.71	0.93	32.06	---	---	Peak
6 @	623.40	34.23	-11.77	46.00	45.91	19.29	1.06	32.04	100	182	Peak

Test Mode :	Mode 2	Temperature :	21~23°C
Test Channel :	40	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :			

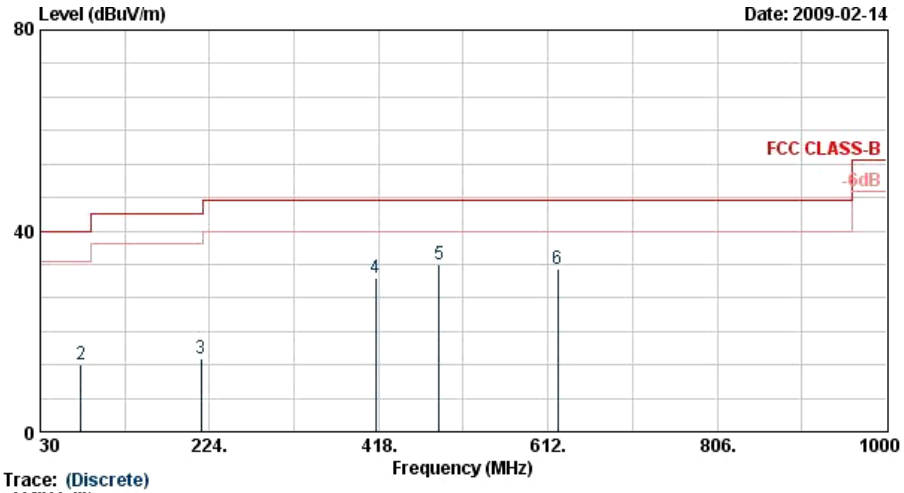


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BILOG_081124 HORIZONTAL
Power : Real Battery 4.18Vdc
Model : FR 912101
Memo : Mode 2

	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	30.00	18.50	-21.50	40.00	29.86	19.90	0.30	31.56	---	---	Peak
2	48.63	12.54	-27.46	40.00	34.49	9.67	0.30	31.91	---	---	Peak
3	157.98	14.66	-28.84	43.50	35.14	10.80	0.60	31.88	---	---	Peak
4	414.80	22.39	-23.61	46.00	36.76	16.72	0.85	31.94	---	---	Peak
5	623.40	26.50	-19.50	46.00	38.18	19.29	1.06	32.04	100	175	Peak
6	728.40	24.24	-21.76	46.00	35.32	20.04	1.12	32.24	---	---	Peak

Test Mode :	Mode 2	Temperature :	21~23°C
Test Channel :	40	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :			

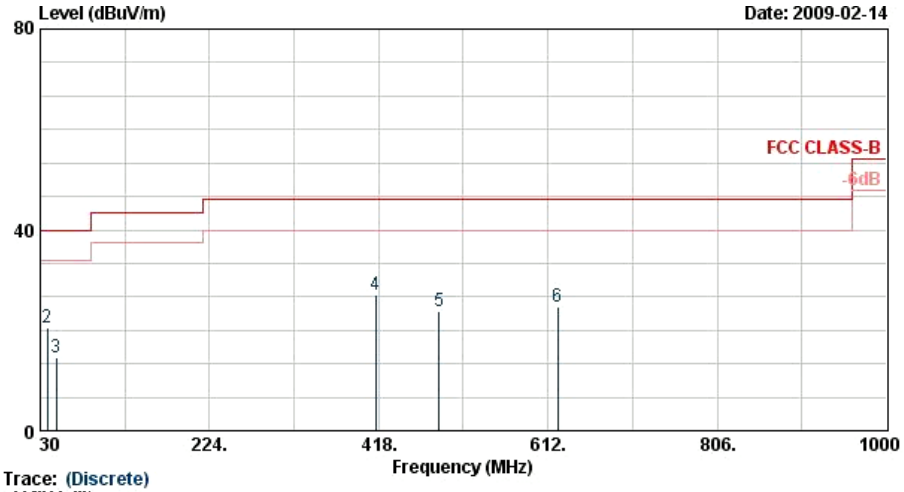


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BILOG_081124 VERTICAL
Power : Real Battery 4.18Vdc
Model : FR 912101
Memo : Mode 2

	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	30.00	18.90	-21.10	40.00	30.26	19.90	0.30	31.56	---	---	Peak
2	76.98	13.44	-26.56	40.00	37.71	7.17	0.43	31.88	---	---	Peak
3	214.14	14.53	-28.97	43.50	35.36	10.62	0.64	32.09	---	---	Peak
4	414.80	30.62	-15.38	46.00	44.99	16.72	0.85	31.94	---	---	Peak
5	486.90	33.33	-12.67	46.00	46.75	17.71	0.93	32.06	100	292	Peak
6	623.40	32.56	-13.44	46.00	44.24	19.29	1.06	32.04	---	---	Peak

Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :			

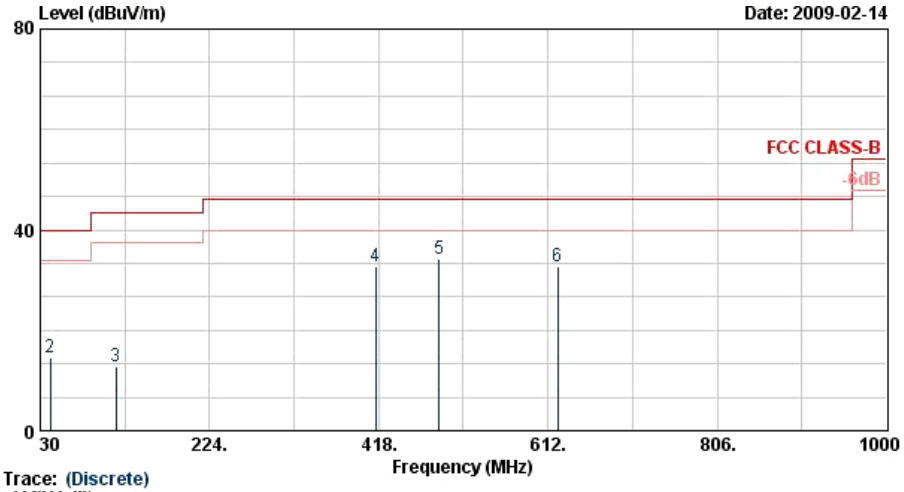


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BILOG_081124 HORIZONTAL
Power : Real Battery 4.18V
Model : FR 912101
Memo : Mode 3

	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	30.00	18.78	-21.22	40.00	30.14	19.90	0.30	31.56	---	---	Peak
2	37.83	20.63	-19.37	40.00	36.98	15.10	0.30	31.75	---	---	Peak
3	48.63	14.60	-25.40	40.00	36.55	9.67	0.30	31.91	---	---	Peak
4	414.80	27.00	-19.00	46.00	41.37	16.72	0.85	31.94	100	32	Peak
5	486.90	23.89	-22.11	46.00	37.31	17.71	0.93	32.06	---	---	Peak
6	623.40	24.82	-21.18	46.00	36.51	19.29	1.06	32.04	---	---	Peak

Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :			



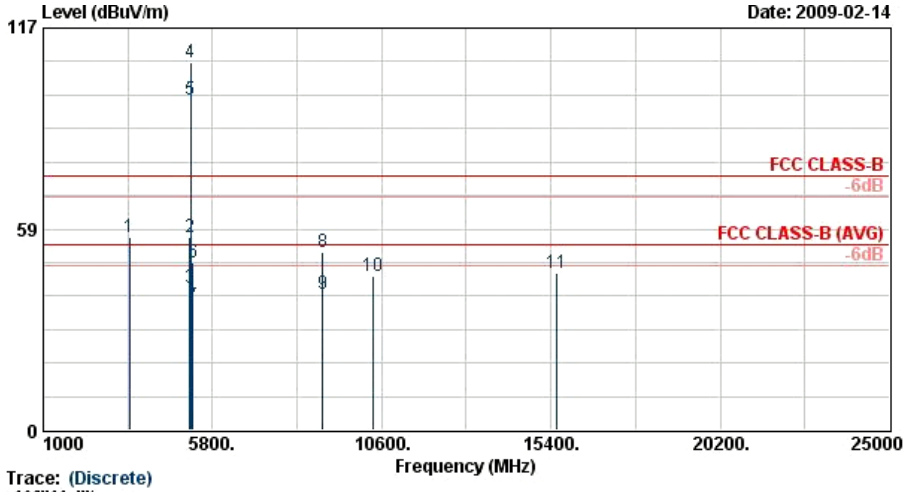
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BILOG_081124 VERTICAL
Power : Real Battery 4.18V
Model : FR 912101
Memo : Mode 3

	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	30.00	18.74	-21.26	40.00	30.10	19.90	0.30	31.56	---	---	Peak
2	41.88	14.61	-25.39	40.00	33.27	12.74	0.30	31.70	---	---	Peak
3	116.94	12.70	-30.80	43.50	31.26	12.70	0.50	31.77	---	---	Peak
4	414.80	32.72	-13.28	46.00	47.09	16.72	0.85	31.94	---	---	Peak
5	486.90	34.27	-11.73	46.00	47.69	17.71	0.93	32.06	100	291	Peak
6	623.40	32.76	-13.24	46.00	44.44	19.29	1.06	32.04	---	---	Peak

3.6.7 Test Result of Radiated Emission ≥ 1GHz

Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#1 is not in the restricted band #4 and #5 are Fundamental Signals		

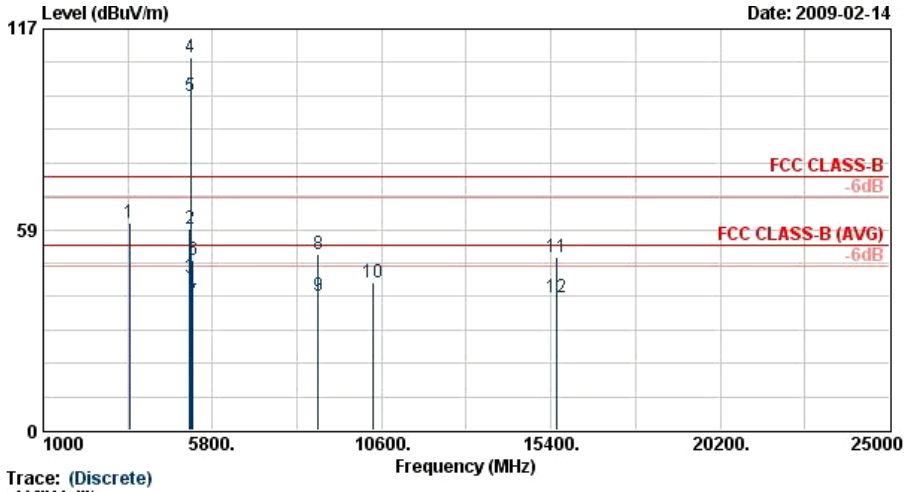


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Power : Real Battery 4.18V
Model : FR 912101
Memo : Mode 1

	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	3454.00	56.29	-17.71	74.00	54.86	32.70	5.04	36.31	100	0	Peak
2	5150.00	56.21	-17.79	74.00	51.80	34.53	5.98	36.10	100	331	Peak
3	5150.00	41.45	-12.55	54.00	37.04	34.53	5.98	36.10	100	331	Average
4 @	5180.00	107.14			102.71	34.54	6.00	36.10	100	331	Peak
5 @	5180.00	96.13			91.70	34.54	6.00	36.10	100	331	Average
6	5250.00	48.54	-25.46	74.00	44.05	34.55	6.04	36.10	100	331	Peak
7	5250.00	36.09	-17.91	54.00	31.60	34.55	6.04	36.10	100	331	Average
8	8932.00	51.94	-22.06	74.00	44.97	36.13	7.71	36.87	100	182	Peak
9	8932.00	39.51	-14.49	54.00	32.54	36.13	7.71	36.87	100	182	Average
10	10360.00	44.63	-29.37	74.00	82.39	-9.16	8.25	36.85	100	0	Peak
11	15540.00	45.72	-28.28	74.00	79.81	-7.19	9.52	36.42	100	0	Peak

Note: Spurious emissions above 25GHz were more than 20dB below the permissible value has no need to be reported.

Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#1 is not in the restricted band #4 and #5 are Fundamental Signals		

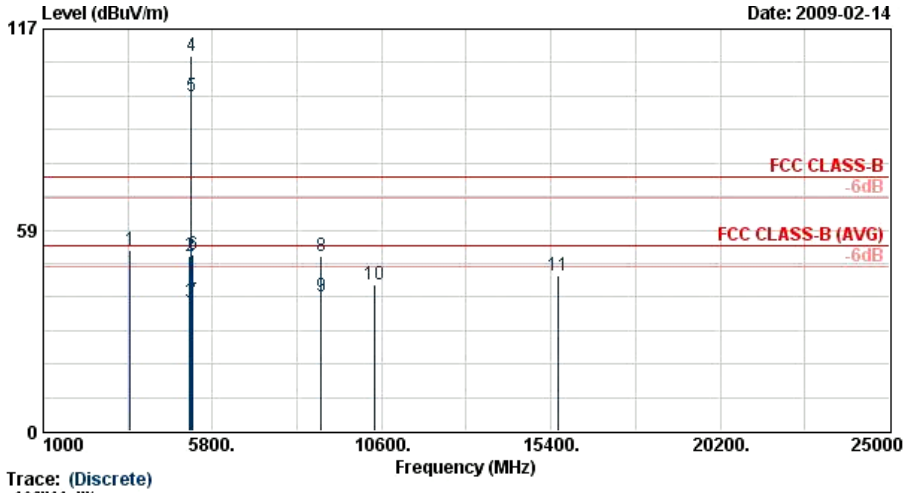


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Power : Real Battery 4.18V
Model : FR 912101
Memo : Mode 1

	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	3454.00	60.38	-13.62	74.00	58.95	32.70	5.04	36.31	100	0	Peak
2	5150.00	58.81	-15.19	74.00	54.40	34.53	5.98	36.10	100	293	Peak
3 @	5150.00	44.22	-9.78	54.00	39.81	34.53	5.98	36.10	100	293	Average
4 @	5180.00	108.88			104.45	34.53	6.00	36.10	100	293	Peak
5 @	5180.00	97.44			93.01	34.54	6.00	36.10	100	293	Average
6	5250.00	49.53	-24.47	74.00	45.04	34.55	6.04	36.10	100	293	Peak
7	5250.00	37.42	-16.58	54.00	32.93	34.55	6.04	36.10	100	293	Average
8	8796.00	51.33	-22.67	74.00	44.58	36.00	7.56	36.82	100	291	Peak
9	8796.00	39.01	-14.99	54.00	32.27	36.00	7.56	36.82	100	291	Average
10	10360.00	43.25	-30.75	74.00	81.01	-9.16	8.25	36.85	100	0	Peak
11	15540.00	50.38	-23.62	74.00	84.47	-7.19	9.52	36.42	100	0	Peak
12	15540.00	38.53	-15.47	54.00	72.62	-7.19	9.52	36.42	100	0	Average

Note: Spurious emissions above 25GHz were more than 20dB below the permissible value has no need to be reported.

Test Mode :	Mode 2	Temperature :	21~23°C
Test Channel :	40	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#1 is not in the restricted band #4 and #5 are Fundamental Signals		

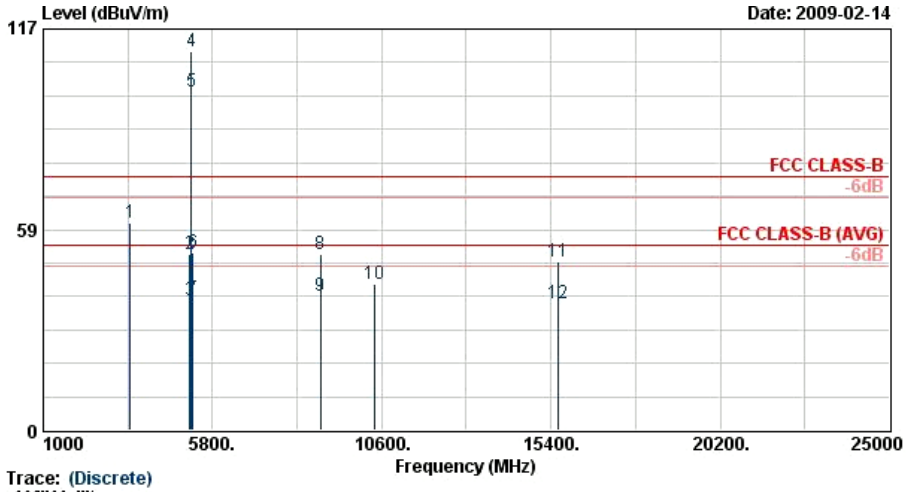


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Power : Real Battery 4.18Vdc
Model : FR 912101
Memo : Mode 2

	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	3464.00	52.79	-21.21	74.00	51.32	32.70	5.08	36.31	100	0	Peak
2	5150.00	50.78	-23.22	74.00	46.37	34.53	5.98	36.10	102	335	Peak
3	5150.00	37.52	-16.48	54.00	33.11	34.53	5.98	36.10	102	335	Average
4 X	5200.00	109.12			104.67	34.54	6.01	36.10	102	335	Peak
5 X	5200.00	97.39			92.94	34.54	6.01	36.10	102	335	Average
6	5250.00	51.44	-22.56	74.00	46.95	34.55	6.04	36.10	102	335	Peak
7	5250.00	37.67	-16.33	54.00	33.18	34.55	6.04	36.10	102	335	Average
8	8894.00	51.02	-22.98	74.00	44.11	36.08	7.68	36.86	100	106	Peak
9	8894.00	38.99	-15.01	54.00	32.08	36.08	7.68	36.86	100	106	Average
10	10400.00	42.74	-31.26	74.00	80.40	-9.13	8.27	36.80	100	0	Peak
11	15600.00	45.30	-28.70	74.00	79.43	-7.21	9.54	36.46	100	0	Peak

Note: Spurious emissions above 25GHz were more than 20dB below the permissible value has no need to be reported.

Test Mode :	Mode 2	Temperature :	21~23°C
Test Channel :	40	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#1 is not in the restricted band #4 and #5 are Fundamental Signals		

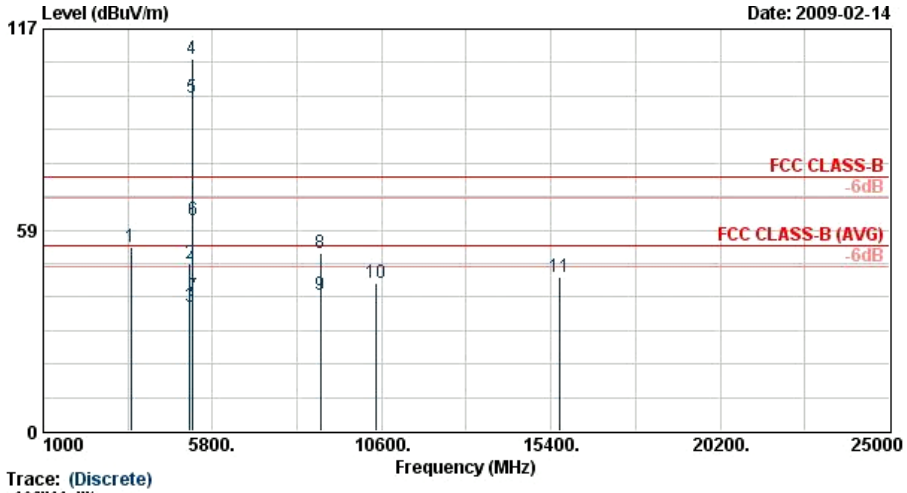


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Power : Real Battery 4.18Vdc
Model : FR 912101
Memo : Mode 2

	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	3464.00	60.63	-13.37	74.00	59.15	32.70	5.08	36.31	100	0	Peak
2	5150.00	51.29	-22.71	74.00	46.88	34.53	5.98	36.10	100	296	Peak
3	5150.00	37.94	-16.06	54.00	33.53	34.53	5.98	36.10	100	296	Average
4 X	5200.00	110.47			106.02	34.54	6.01	36.10	100	296	Peak
5 @	5200.00	98.91			94.46	34.54	6.01	36.10	100	296	Average
6	5250.00	51.70	-22.30	74.00	47.21	34.55	6.04	36.10	100	296	Peak
7	5250.00	38.44	-15.56	54.00	33.95	34.55	6.04	36.10	100	296	Average
8	8870.00	51.23	-22.77	74.00	44.36	36.07	7.65	36.85	100	301	Peak
9	8870.00	39.08	-14.92	54.00	32.21	36.07	7.65	36.85	100	301	Average
10	10400.00	42.80	-31.20	74.00	80.50	-9.14	8.26	36.83	100	0	Peak
11	15600.00	49.23	-24.77	74.00	83.36	-7.21	9.54	36.46	100	0	Peak
12	15600.00	37.18	-16.82	54.00	71.33	-7.21	9.54	36.48	100	0	Average

Note: Spurious emissions above 25GHz were more than 20dB below the permissible value has no need to be reported.

Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#1 is not in the restricted band #4 and #5 are Fundamental Signals		

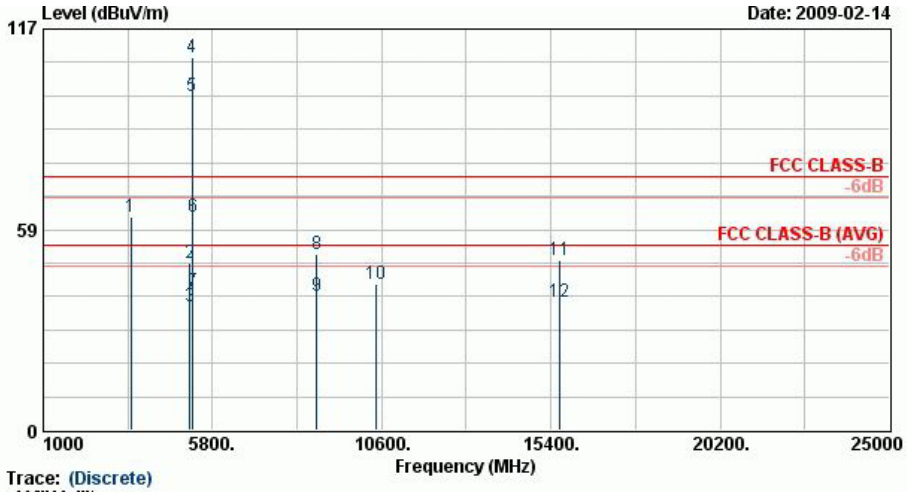


Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
Power : Real Battery 4.18V
Model : FR 912101
Memo : Mode 3

	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	3478.00	53.71	-20.29	74.00	52.23	32.70	5.08	36.31	100	0	Peak
2	5150.00	48.51	-25.49	74.00	44.10	34.53	5.98	36.10	101	321	Peak
3	5150.00	36.16	-17.84	54.00	31.75	34.53	5.98	36.10	101	321	Average
4 X	5220.00	108.42			103.95	34.54	6.02	36.10	101	321	Peak
5 X	5220.00	97.00			92.53	34.54	6.02	36.10	101	321	Average
6	5250.00	61.12	-12.88	74.00	56.63	34.55	6.04	36.10	101	321	Peak
7	5250.00	39.11	-14.89	54.00	34.62	34.55	6.04	36.10	101	321	Average
8	8860.00	51.64	-22.36	74.00	44.78	36.05	7.65	36.84	100	95	Peak
9	8860.00	39.45	-14.55	54.00	32.59	36.05	7.65	36.84	100	95	Average
10	10440.00	43.14	-30.86	74.00	80.74	-9.11	8.28	36.78	100	0	Peak
11	15660.00	44.61	-29.39	74.00	78.80	-7.22	9.56	36.53	100	0	Peak

Note: Spurious emissions above 25GHz were more than 20dB below the permissible value has no need to be reported.

Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	49~52%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#1 is not in the restricted band #4 and #5 are Fundamental Signals		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
Power : Real Battery 4.18V
Model : FR 912101
Memo : Mode 3

	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	3478.00	62.25	-11.75	74.00	60.78	32.70	5.08	36.31	100	0	Peak
2	5150.00	48.87	-25.13	74.00	44.46	34.53	5.98	36.10	100	292	Peak
3	5150.00	36.19	-17.81	54.00	31.78	34.53	5.98	36.10	100	292	Average
4 X	5220.00	108.88			104.41	34.54	6.02	36.10	100	292	Peak
5 @	5220.00	97.26			92.79	34.54	6.02	36.10	100	292	Average
6	5250.00	62.26	-11.74	74.00	57.77	34.55	6.04	36.10	100	292	Peak
7	5250.00	40.39	-13.61	54.00	35.90	34.55	6.04	36.10	100	292	Average
8	8756.00	51.49	-22.51	74.00	44.84	35.95	7.50	36.80	100	192	Peak
9	8756.00	39.32	-14.68	54.00	32.67	35.95	7.50	36.80	100	192	Average
10	10440.00	42.53	-31.47	74.00	80.13	-9.11	8.28	36.78	100	0	Peak
11	15660.00	49.46	-24.54	74.00	83.65	-7.22	9.56	36.53	100	0	Peak
12	15660.00	37.20	-16.80	54.00	71.39	-7.22	9.56	36.53	100	0	Average

Note: Spurious emissions above 25GHz were more than 20dB below the permissible value has no need to be reported.

3.7 Peak Excursion Ratio Measurement

3.7.1 Limit of Peak Excursion Ratio

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedures

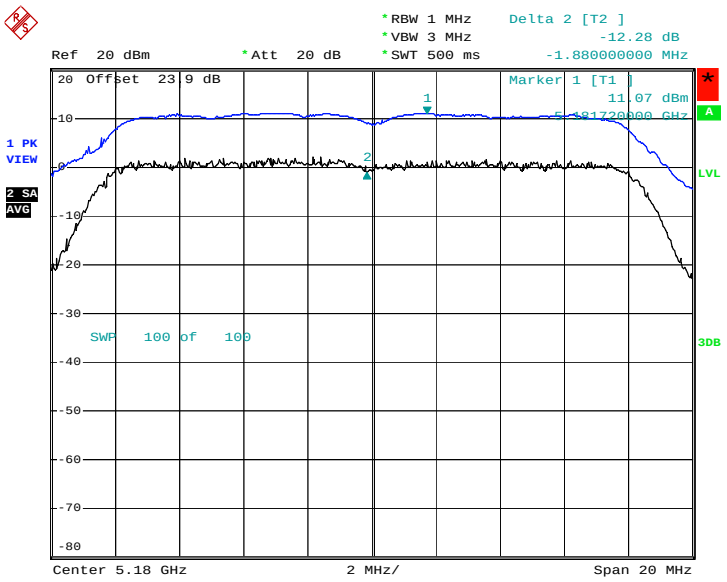
1. The transmitter output is connected to the spectrum analyzer.
2. The resolution bandwidth is set to and maintained at 1 MHz. The video bandwidth is set to 3 MHz.
3. Trace A is set peak detector and to Max Hold, then to View. Then the detector is readjusted to sample detector, max hold to run for 60 seconds, and the signal under this measurement condition is captured in Trace B in Accordance with the method 3 of DA-02-2138.
4. The difference between the traces is investigated. The marker is placed at the frequency, which shows the largest difference. The amplitude delta between the traces at this frequency is the peak excursion.

3.7.4 Test Setup

3.7.5 Test Result of Peak Excursion Ratio

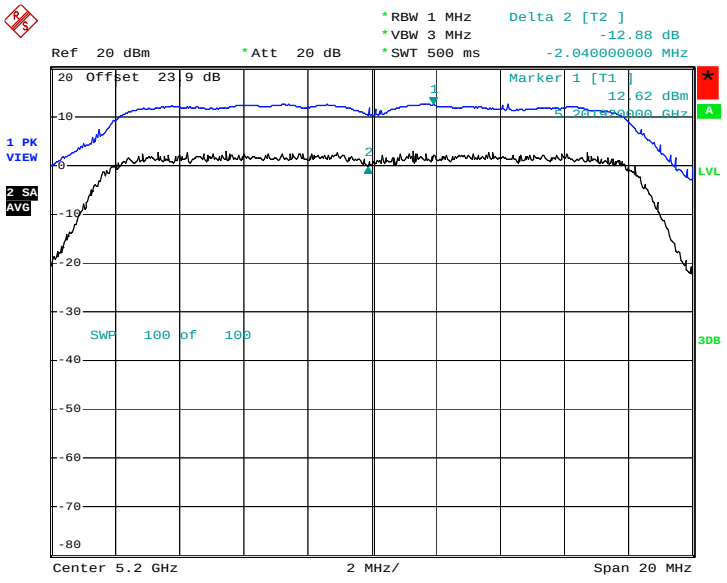
Test Mode :	Mode 1~3	Temperature :	21~23℃
Test Engineer :	Ken Hsu	Relative Humidity :	49~52%

Mode 1 : Peak Excursion Ratio Plot on 802.11a Channel 36



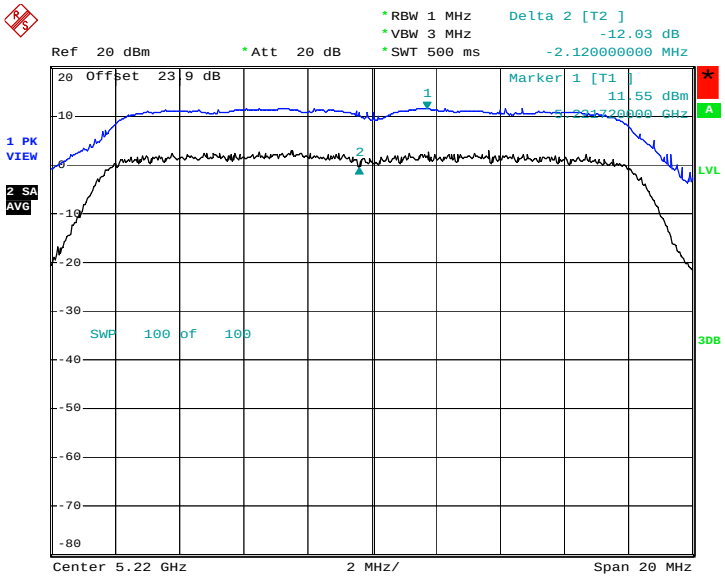
Date: 13.FEB.2009 08:43:48

Mode 2 : Peak Excursion Ratio Plot on 802.11a Channel 40



Date: 19.FEB.2009 14:13:21

Mode 3 : Peak Excursion Ratio Plot on 802.11a Channel 44



Date: 13.FEB.2009 08:41:17

3.8 Automatically Discontinue Transmission

3.8.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Result of Automatically Discontinue Transmission

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.9 Frequency Stability Measurement

3.9.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

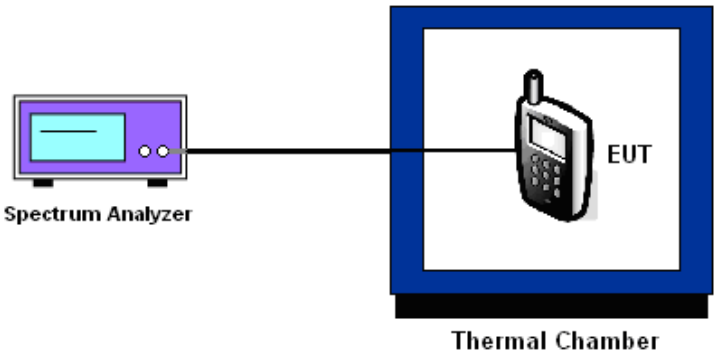
3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The temperature was decreased to -30°C and raise in 10°C step up to 50°C.
4. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
5. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.9.4 Test Setup



3.9.5 Test Result of Frequency Stability

Test Mode :	Mode 1~3	Temperature :	-10~50°C
Test Engineer :	Ken Hsu	Relative Humidity :	49~52%

Channel	Frequency (MHz)	Test Temperature (°C)	Test Voltage (Volt)	Low Frequency (MHz)	High Frequency (MHz)	Frequency Stability (ppm)
36	5180	-30	n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
		-20	n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
		-10	4.2	5171.68	5188.32	0.00
			3.7	5171.68	5188.32	0.00
			3.4	5171.68	5188.32	0.00
		0	4.2	5171.67	5188.32	-1.93
			3.7	5171.67	5188.32	-1.93
			3.4	5171.67	5188.32	-1.93
		10	4.2	5171.67	5188.32	-1.93
			3.7	5171.67	5188.32	-1.93
			3.4	5171.67	5188.32	-1.93
		20	4.2	5171.68	5188.32	0.00
			3.7	5171.68	5188.32	0.00
			3.4	5171.68	5188.32	0.00
		30	4.2	5171.68	5188.33	0.97
			3.7	5171.68	5188.33	0.97
			3.4	5171.68	5188.33	0.97
		40	4.2	5171.68	5188.33	0.97
			3.7	5171.68	5188.33	0.97
			3.4	5171.68	5188.33	0.97
		50	4.2	5171.68	5188.32	0.00
			3.7	5171.68	5188.32	0.00
			3.4	5171.68	5188.32	0.00

Note: The operational condition of EUT is -10 to 50°C which was declared by manufacture.

Channel	Frequency (MHz)	Test Temperature (°C)	Test Voltage (Volt)	Low Frequency (MHz)	High Frequency (MHz)	Frequency Stability (ppm)
40	5200	-30	n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
		-20	n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
		-10	4.2	5191.68	5208.32	0.00
			3.7	5191.68	5208.32	0.00
			3.4	5191.68	5208.32	0.00
		0	4.2	5191.67	5208.32	-0.96
			3.7	5191.67	5208.32	-0.96
			3.4	5191.67	5208.32	-0.96
		10	4.2	5191.68	5208.31	-0.96
			3.7	5191.68	5208.31	-0.96
			3.4	5191.68	5208.31	-0.96
		20	4.2	5191.68	5208.32	0.00
			3.7	5191.68	5208.32	0.00
			3.4	5191.68	5208.32	0.00
		30	4.2	5191.67	5208.31	-1.92
			3.7	5191.67	5208.31	-1.92
			3.4	5191.67	5208.31	-1.92
		40	4.2	5191.67	5208.31	-1.92
			3.7	5191.67	5208.31	-1.92
			3.4	5191.67	5208.31	-1.92
		50	4.2	5191.68	5208.32	0.00
			4.2	5191.68	5208.32	0.00
			3.4	5191.68	5208.32	0.00

Note: The operational condition of EUT is -10 to 50°C which was declared by manufacture.

Channel	Frequency (MHz)	Test Temperature (°C)	Test Voltage (Volt)	Low Frequency (MHz)	High Frequency (MHz)	Frequency Stability (ppm)
44	5220	-30	n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
		-20	n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a
		-10	4.2	5211.68	5228.32	0.00
			3.7	5211.68	5228.32	0.00
			3.4	5211.68	5228.32	0.00
		0	4.2	5211.67	5228.33	0.00
			3.7	5211.67	5228.33	0.00
			3.4	5211.67	5228.33	0.00
		10	4.2	5211.68	5228.33	0.96
			3.7	5211.68	5228.33	0.96
			3.4	5211.68	5228.33	0.96
		20	4.2	5211.68	5228.32	0.00
			3.7	5211.68	5228.32	0.00
			3.4	5211.68	5228.32	0.00
		30	4.2	5211.67	5228.32	-0.96
			3.7	5211.67	5228.32	-0.96
			3.4	5211.67	5228.32	-0.96
		40	4.2	5211.68	5228.32	0.00
			3.7	5211.68	5228.32	0.00
			3.4	5211.68	5228.32	0.00
		50	4.2	5211.68	5228.32	0.00
			3.7	5211.68	5228.32	0.00
			3.4	5211.68	5228.32	0.00

Note: The operational condition of EUT is -10 to 50°C which was declared by manufacture.

3.10 Antenna Requirements

3.10.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.10.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna with I-PEX connector and it is considered to meet antenna requirement of FCC.

3.10.3 Antenna Gain

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

4 List of Measuring Equipments

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. 21, 2008	Feb. 20, 2009	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 21, 2008	Feb. 20, 2009	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. 24, 2008	Apr. 23, 2009	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. 21, 2008	Apr. 20, 2009	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 (150kHz ~ 30MHz)

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

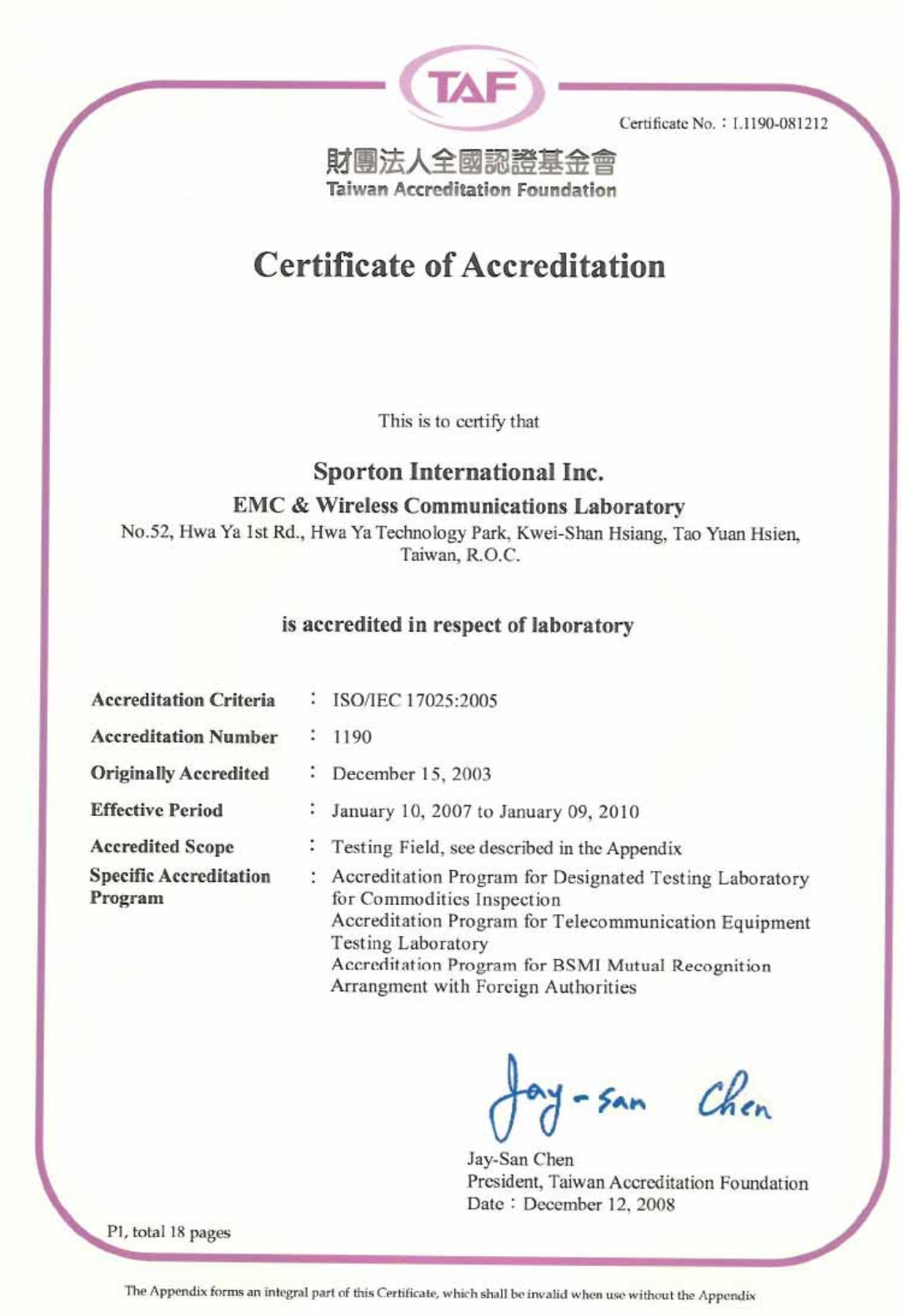
Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

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

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

Contribution	Uncertainty of x_i		$u(x_i)$	Ci	$Ci * u(x_i)$
	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 Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2)	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	**2.36**				
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**4.72**				

6 Certification of TAF Accreditation



TAF

Certificate No. : L1190-081212

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 Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : December 12, 2008

P1, total 18 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 EP912101 as below.