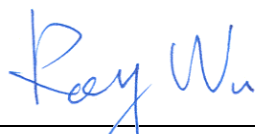


Variant FCC RF Test Report

APPLICANT : DENSO WAVE INCORPORATED
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)

This is a variant report which is only valid combined with the original report. The product was received on Jan. 27, 2010 and completely tested on Mar. 08, 2010. 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



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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APPENDIX A. PHOTOGRAPHS OF EUT

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APPENDIX C. CHANGE NOTE

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR912101-03B	Rev. 01	This is a variant report which can be referred to appendix C for change note. And this report is added test results of 802.11a (5150~5350MHz and 5470~5725MHz). The test results of 802.11a (5150~5250MHz) were performed on original report which can be referred to Sporton Report Number FR912101C as appendix D.	Mar. 11, 2010



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 10.1 dB at 0.51 MHz
3.7	15.407(b)	A9.3	Transmitter Radiated Emission	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 4.95 dB at 3492 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 aza-Yoshiike, ooaza-Kusaki, agui-cho, Chita-gun, Aichi, japan, 470-2297

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 Test

Product Feature & Specification	
Equipment	Bar Code Handy Terminal
Brand Name	DENSO
Model Name	BHT-710BWB-CE
FCC ID	PZWBHT710BWB
Tx/Rx Frequency Range	5150 MHz ~ 5350 MHz 5470 MHz ~ 5725 MHz
Maximum Output Power to Antenna	<5150 MHz ~ 5350 MHz> 802.11a : 14.65 dBm <5470 MHz ~ 5725 MHz> 802.11a : 13.59 dBm
Antenna Type	PIFA Antenna with gain 5.26 dBi
HW Version	V3.4
SW Version	1.16a
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Unlicensed National Information Infrastructure (UNII).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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	03CH07-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	DIR-628	KA2DIR628A2	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

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Channel Spacing 20MHz							
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
36	5180	40	5200	44	5220	48	5240
52	5260	56	5280	60	5300	64	5320
100	5500	104	5520	108	5540	112	5560
116	5580	120	5600	124	5620	128	5640
132	5660	136	5680	140	5700		

2.2 RF Power

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

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		At OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 48	5240 MHz	14.63	14.30	14.44	14.52	14.57	14.60	10.52	9.92
CH 52	5260 MHz	14.63	14.61	14.56	14.64	14.65	14.02	10.82	10.13
CH 60	5300 MHz	14.33	14.34	14.39	14.31	14.30	13.51	10.58	9.70
CH 64	5320 MHz	14.30	14.29	14.28	14.22	14.21	13.32	10.40	9.68
CH 100	5500 MHz	13.31	13.43	13.56	13.69	13.59	12.73	10.04	8.81
CH 120	5600 MHz	13.12	13.13	13.12	13.15	12.92	12.05	9.27	8.36
CH 140	5700 MHz	12.59	12.76	12.94	12.93	12.34	11.63	8.85	7.96

Remark:

1. The CH36 ~ 44 were performed on original report.
2. The 802.11a data rate was set in 24 Mbps 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).

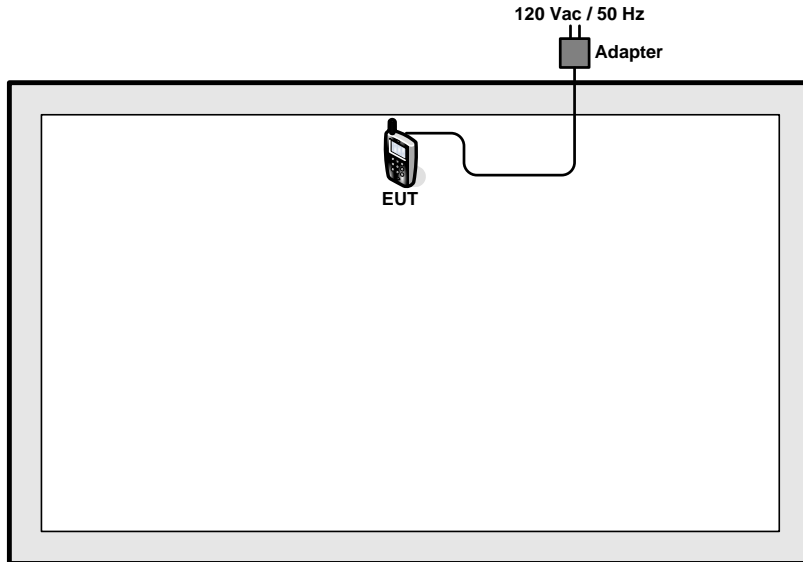
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

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

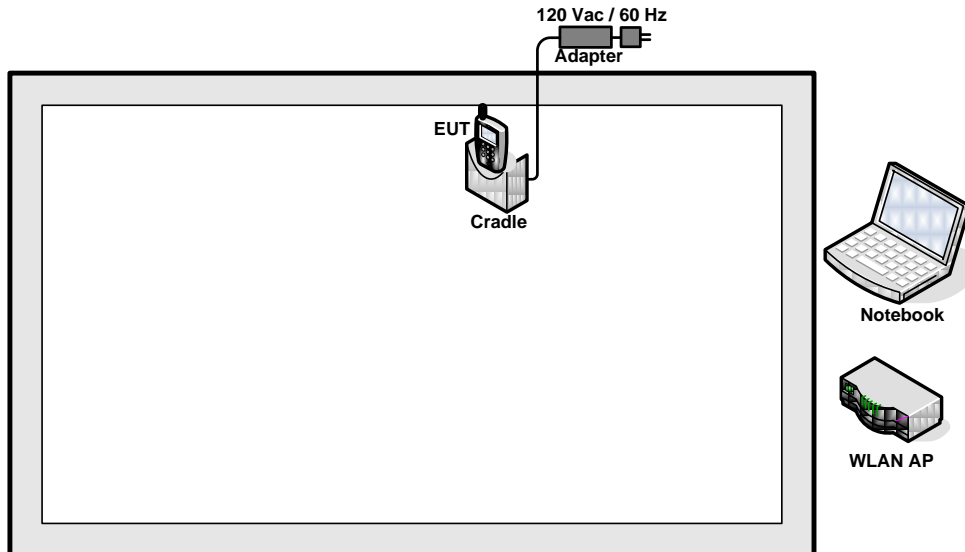
Test Cases	
Test Item	802.11a (Modulation : OFDM)
Conducted TCs	<ul style="list-style-type: none"> ■ Mode 1: CH48_5240 MHz ■ Mode 2: CH52_5260 MHz ■ Mode 3: CH60_5300 MHz ■ Mode 4: CH64_5320 MHz ■ Mode 5: CH100_5500 MHz ■ Mode 6: CH120_5600 MHz ■ Mode 7: CH140_5700 MHz
Radiated TCs	<ul style="list-style-type: none"> ■ Mode 1: CH48_5240 MHz ■ Mode 2: CH52_5260 MHz ■ Mode 3: CH60_5300 MHz ■ Mode 4: CH64_5320 MHz ■ Mode 5: CH100_5500 MHz ■ Mode 6: CH120_5600 MHz ■ Mode 7: CH140_5700 MHz
AC Conducted Emission	Mode 1 : WLAN Link (5G) + Cradle + Adapter 1
<p>Remark: The test results of CH36 ~ 44 were performed on original report which can be referred to Sporton Report Number FR912101C as appendix D.</p>	

2.4 Connection Diagram of Test System

<Radiation Test>



<Conduction Test>



2.5 RF Utility

The programmed RF utility "FCC TEST" 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 Bandwidth Measurement

3.1.1 Limit of 26dB 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. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B.

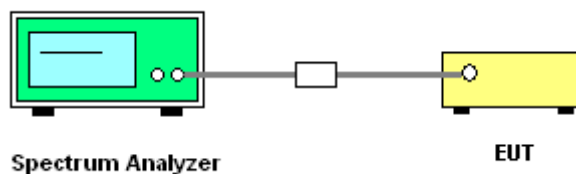
3.1.2 Measuring Instruments

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

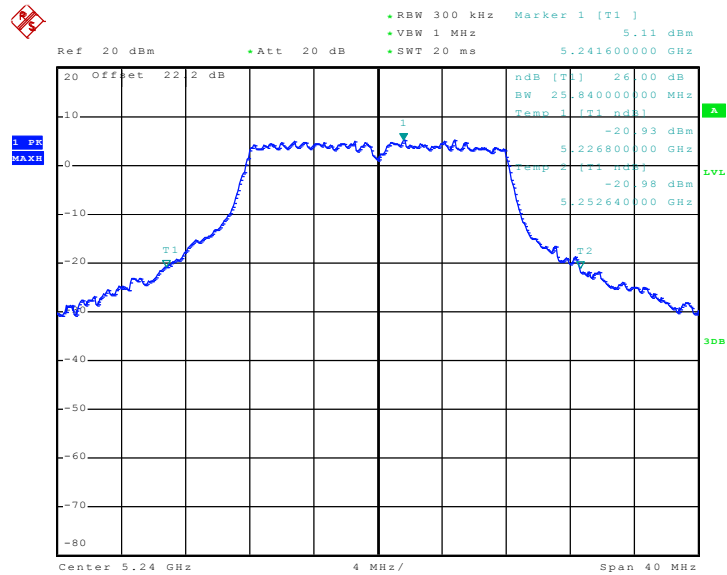
Test Mode :	Mode 1~7	Temperature :	26~28°C
Test Engineer :	Ken Hsu	Relative Humidity :	51~54%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Pass/Fail
48	5240	25.84	Pass
52	5260	23.84	Pass
60	5300	23.92	Pass
64	5320	24.00	Pass
100	5500	23.84	Pass
120	5600	23.92	Pass
140	5700	23.76	Pass



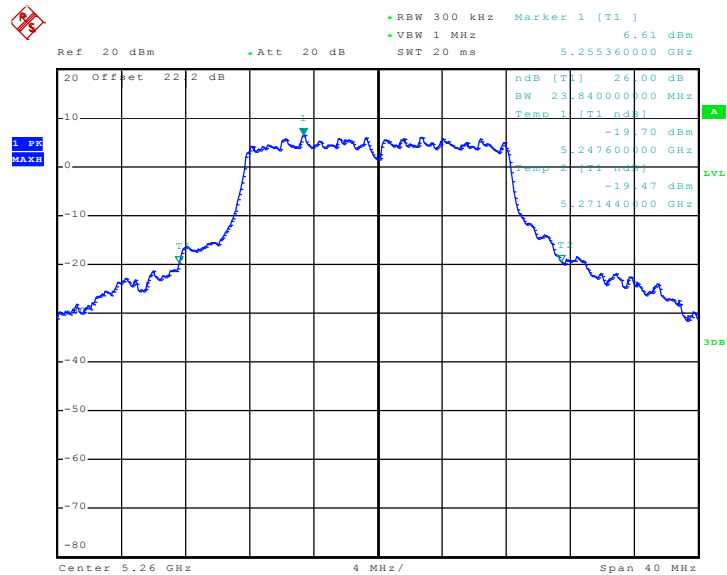
3.1.6 Test Result of 26dB Bandwidth Plots

Mode 1 : 26 dB Bandwidth Plot on 802.11a Channel 48



Date: 7.MAR.2010 21:20:02

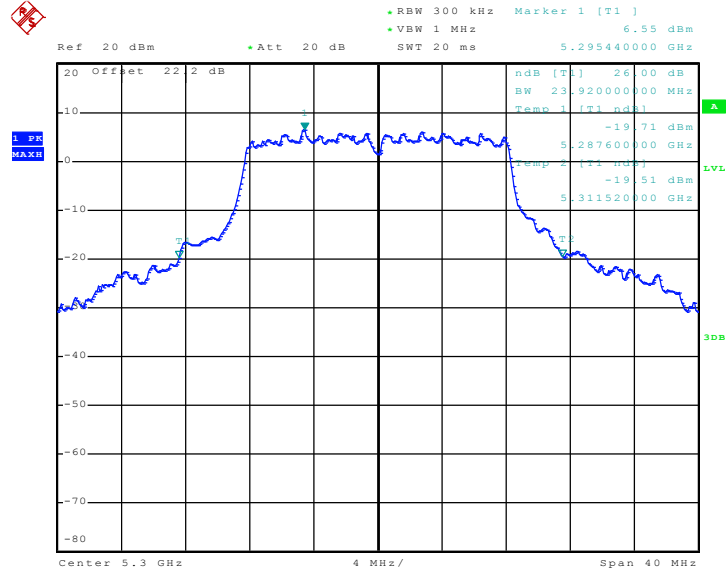
Mode 2 : 26 dB Bandwidth Plot on 802.11a Channel 52



Date: 28.FEB.2010 16:56:22

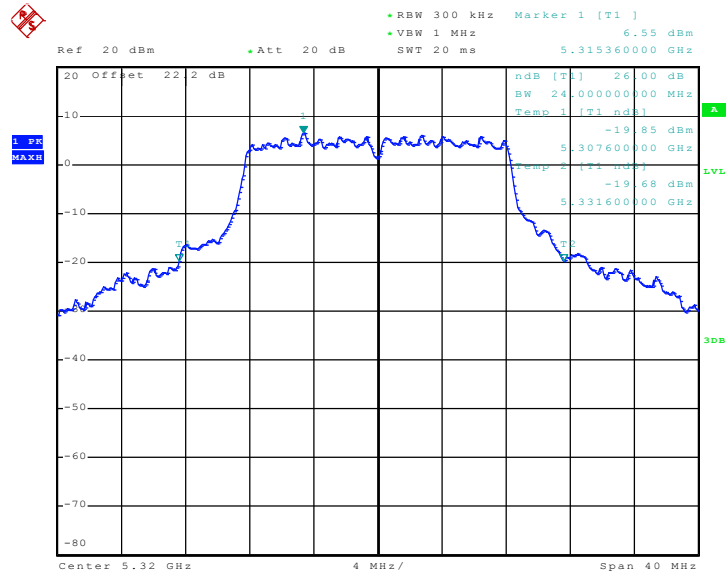


Mode 3 : 26 dB Bandwidth Plot on 802.11a Channel 60



Date: 28.FEB.2010 16:56:45

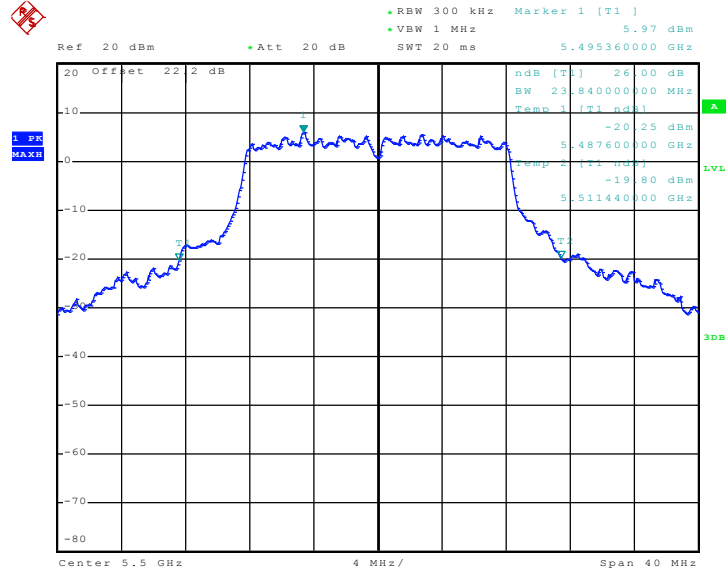
Mode 4 : 26 dB Bandwidth Plot on 802.11a Channel 64



Date: 28.FEB.2010 16:57:20

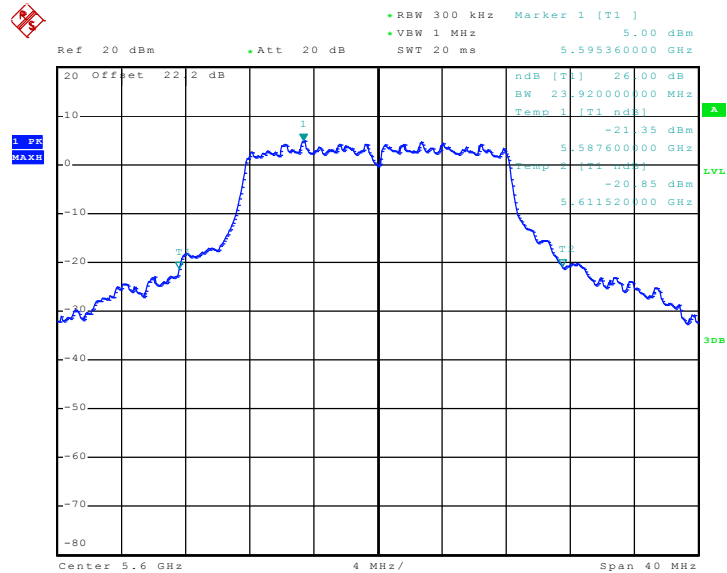


Mode 5 : 26 dB Bandwidth Plot on 802.11a Channel 100



Date: 28.FEB.2010 18:09:11

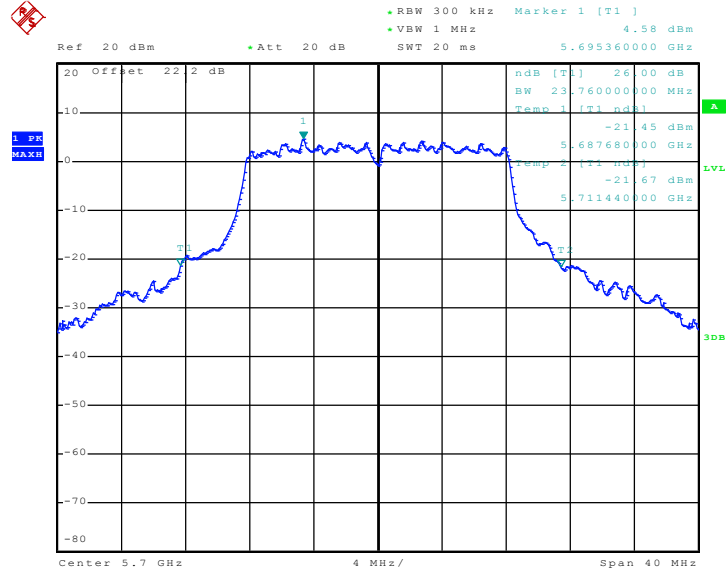
Mode 6 : 26 dB Bandwidth Plot on 802.11a Channel 120



Date: 28.FEB.2010 18:09:39



Mode 7 : 26 dB Bandwidth Plot on 802.11a Channel 140



Date: 28.FEB.2010 18:10:06

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 $4 \text{ dBm} + 10\log B$, 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.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or $11 \text{ dBm} + 10\log B$. 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.

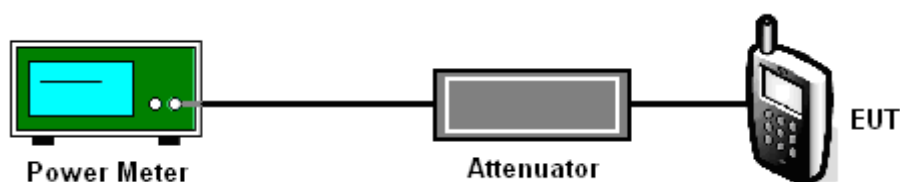
3.2.2 Measuring Instruments

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 power meter by a low loss cable.
3. Measure the power by power meter.

3.2.4 Test Setup





3.2.5 Test Result of Maximum Conducted Output Power

Test Mode :	Mode 1~7	Temperature :	26~28°C
Test Engineer :	Ken Hsu	Relative Humidity :	51~54%

Channel	Frequency (MHz)	Measured Power Output (dBm)	Max. Limits (dBm)	Pass/Fail
48	5240	14.63	17	Pass
52	5260	14.65	24	Pass
60	5300	14.30	24	Pass
64	5320	14.21	24	Pass
100	5500	13.59	24	Pass
120	5600	12.92	24	Pass
140	5700	12.34	24	Pass

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. For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 MHz 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.

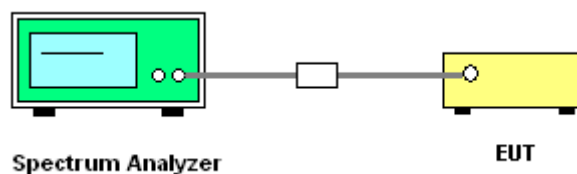
3.3.2 Measuring Instruments

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

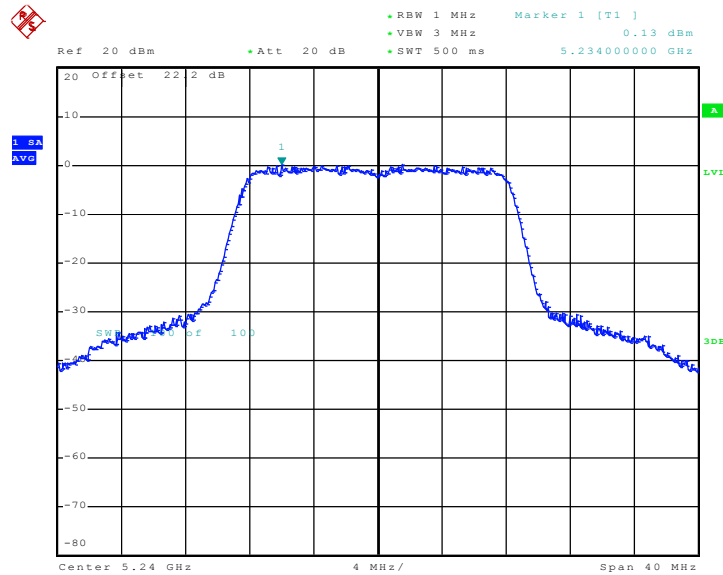
Test Mode :	Mode 1~7	Temperature :	26~28°C
Test Engineer :	Ken Hsu	Relative Humidity :	51~54%

Channel	Frequency (MHz)	Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
48	5240	0.13	4	Pass
52	5260	0.77	11	Pass
60	5300	0.74	11	Pass
64	5320	0.67	11	Pass
100	5500	-0.01	11	Pass
120	5600	-0.79	11	Pass
140	5700	-1.10	11	Pass



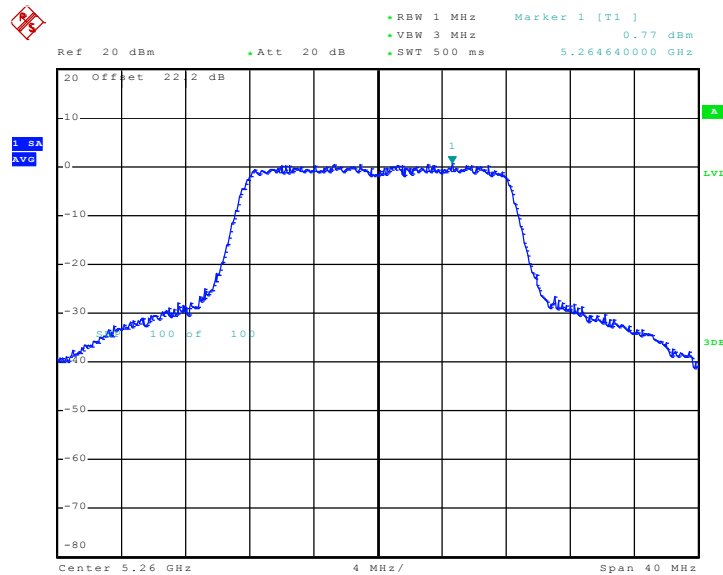
3.3.6 Test Result of Power Spectral Density Plots

Mode 1 : PSD Plot on 802.11a Channel 48



Date: 7.MAR.2010 21:26:17

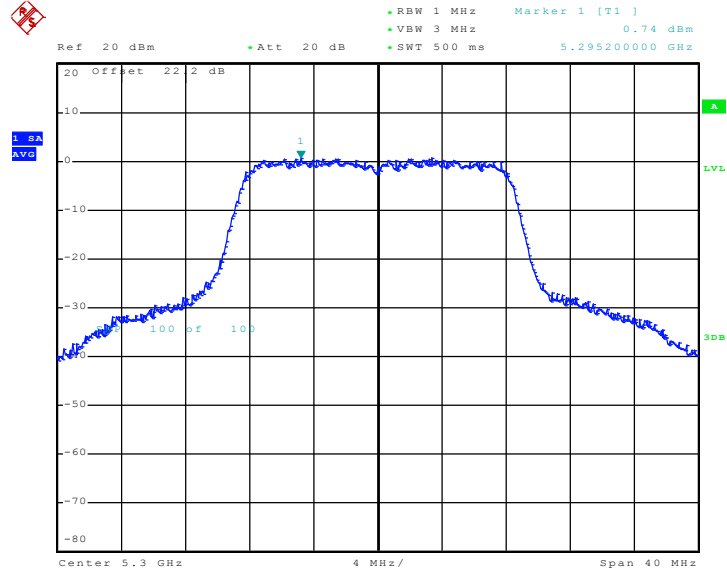
Mode 2 : PSD Plot on 802.11a Channel 52



Date: 28.FEB.2010 17:17:02

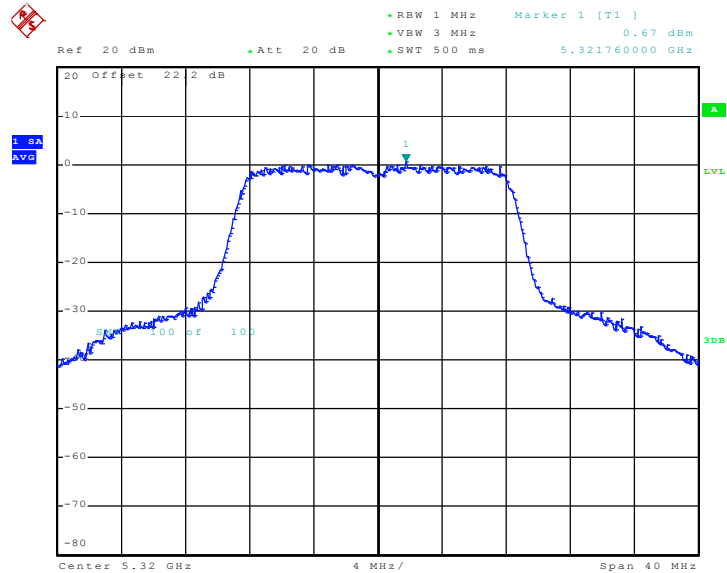


Mode 3 : PSD Plot on 802.11a Channel 60



Date: 28.FEB.2010 17:15:44

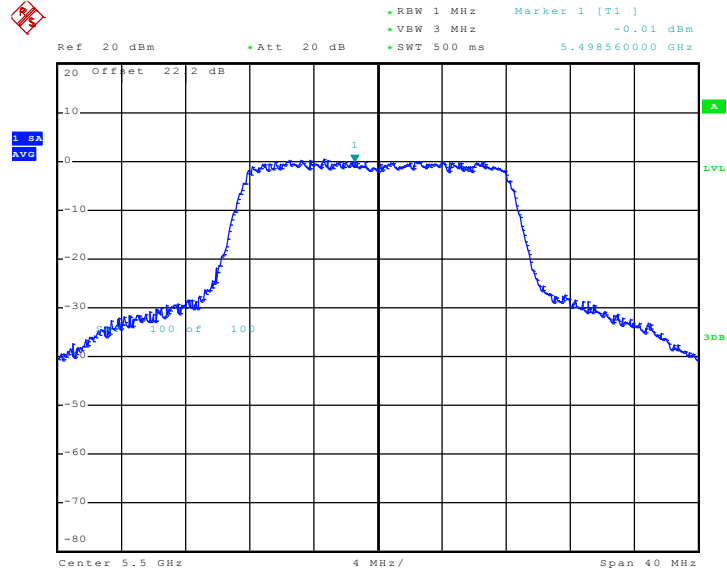
Mode 4 : PSD Plot on 802.11a Channel 64



Date: 28.FEB.2010 17:14:30

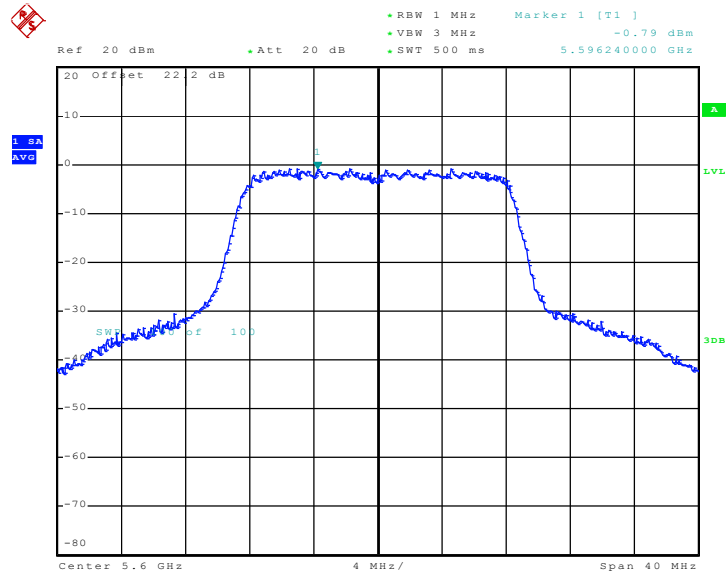


Mode 5 : PSD Plot on 802.11a Channel 100



Date: 28.FEB.2010 18:19:37

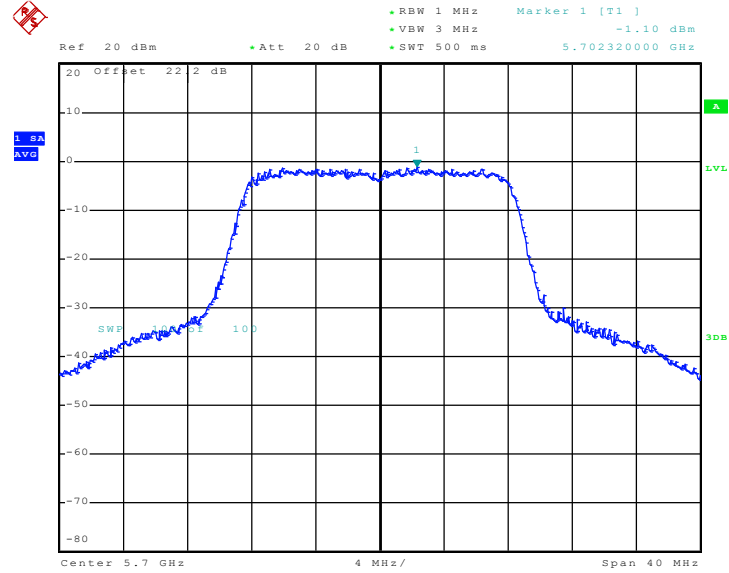
Mode 6 : PSD Plot on 802.11a Channel 120



Date: 28.FEB.2010 18:18:13



Mode 7 : PSD Plot on 802.11a Channel 140



Date: 28.FEB.2010 18:17:04



3.4 Band Edges Measurement

3.4.1 Limit of Band Edges

- (1) 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. For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band. For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (2) The provisions of Section 15.205 Restricted bands of operation of this part apply to intentional radiators operating under this section.

3.4.2 Measuring Instruments

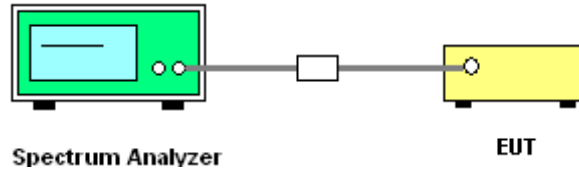
See list of measuring instruments of this test report.

3.4.3 Test Procedures

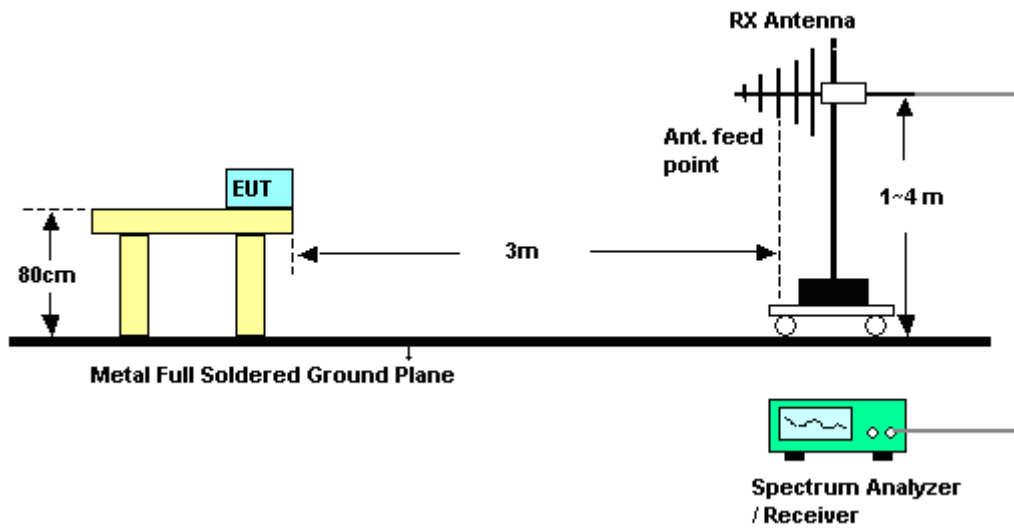
1. Set both RBW and VBW of spectrum analyzer to 1MHz with convenient frequency span including 1MHz bandwidth from band edge.
2. The band edges was measured and recorded.

3.4.4 Test Setup

<Conducted>



<Radiated>

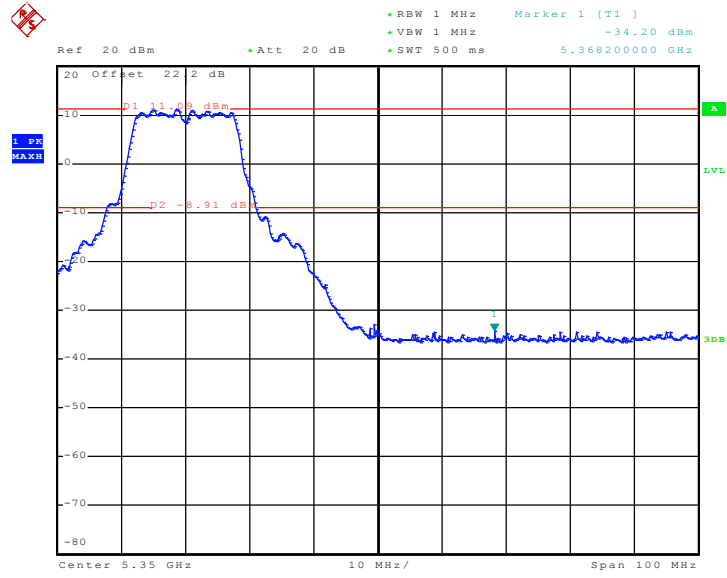




3.4.5 Test Result of Conducted Band Edges

Test Mode :	Mode 4	Temperature :	26~28°C
Test Engineer :	Ken Hsu	Relative Humidity :	51~54%

Mode 4 : High Band Edge Plot on Channel 64

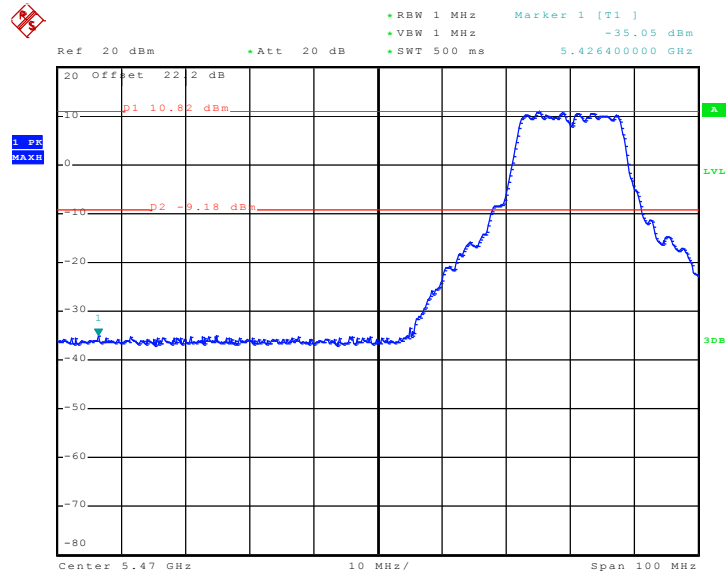


Date: 28.FEB.2010 19:03:38



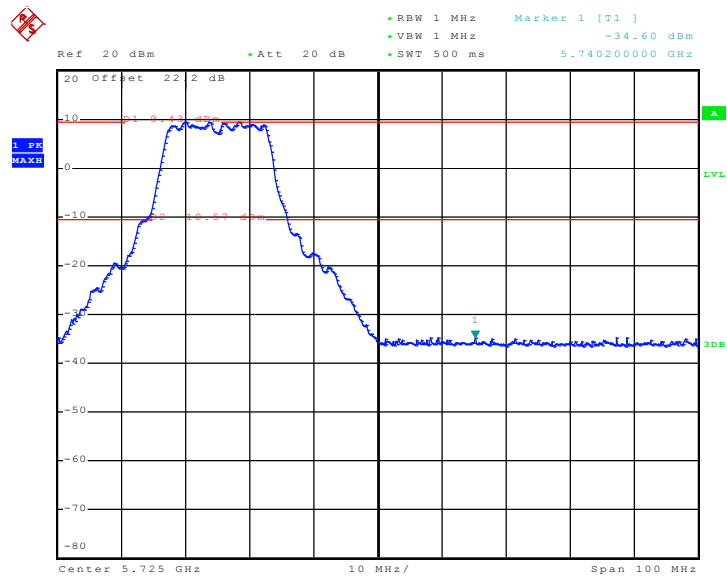
Test Mode :	Mode 5 and Mode 7	Temperature :	26~28°C
Test Engineer :	Ken Hsu	Relative Humidity :	51~54%

Mode 5 : Low Band Edge Plot on Channel 100



Date: 28.FEB.2010 19:00:06

Mode 7 : High Band Edge Plot on Channel 140



Date: 28.FEB.2010 19:02:00



3.4.6 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~22°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	48	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	47.66	-26.34	74	39.57	34.49	8.07	34.47	100	339	Peak
5150	37.24	-16.76	54	29.15	34.49	8.07	34.47	100	339	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
5150	49.68	-24.32	74	41.59	34.49	8.07	34.47	100	293	Peak
5150	38.23	-15.77	54	30.14	34.49	8.07	34.47	100	293	Average

Test Mode :	Mode 2	Temperature :	21~22°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	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	48.41	-25.59	74	40.32	34.49	8.07	34.47	100	326	Peak
5150	37.37	-16.63	54	29.28	34.49	8.07	34.47	100	326	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
5150	49.54	-24.46	74	41.45	34.49	8.07	34.47	100	285	Peak
5150	38	-16	54	29.91	34.49	8.07	34.47	100	285	Average



Test Mode :	Mode 4	Temperature :	21~22°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	64	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
5350	59.99	-14.01	74	51.58	34.61	8.23	34.43	110	325	Peak
5350	39.69	-14.31	54	31.28	34.61	8.23	34.43	110	325	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
5350	61.66	-12.34	74	53.25	34.61	8.23	34.43	102	256	Peak
5350	40.82	-13.18	54	32.41	34.61	8.23	34.43	102	256	Average

Test Mode :	Mode 5	Temperature :	21~22°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	100	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
5470	53.6	-14.7	68.3	45.01	34.68	8.32	34.41	100	232	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
5470	56.42	-11.88	68.3	47.83	34.68	8.32	34.41	100	329	Peak



Test Mode :	Mode 7	Temperature :	21~22°C
Test Band :	802.11a	Relative Humidity :	42~43%
Test Channel :	140	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
5725	57.56	-10.74	68.3	48.64	35.01	8.4	34.49	102	253	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
5725	58.69	-9.61	68.3	49.77	35.01	8.4	34.49	100	272	Peak

3.5 Spurious Emission

3.5.1 Limit of Spurious Emission Measurement

All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band.

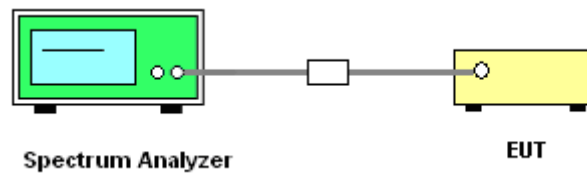
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) > RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

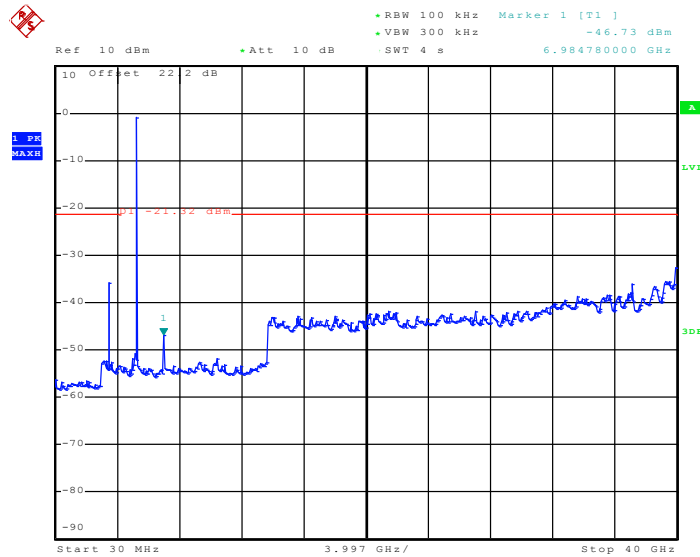
3.5.4 Test Setup



3.5.5 Test Result

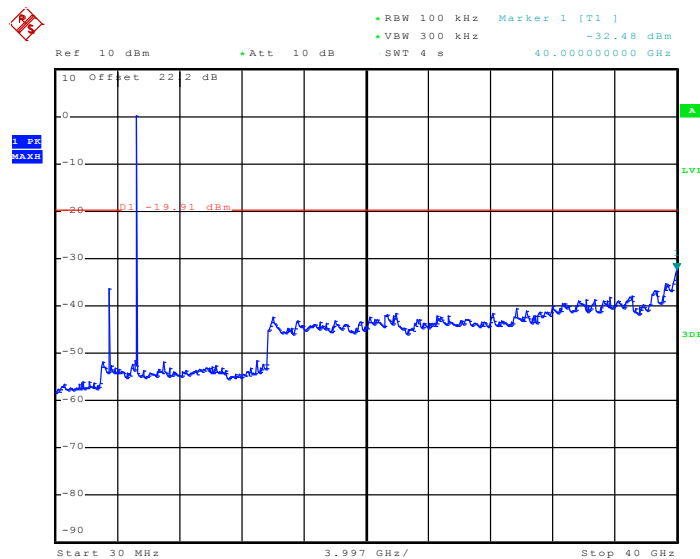
Test Mode :	Mode 1~7	Temperature :	26~28°C
Test Engineer :	Ken Hsu	Relative Humidity :	51~54%

Mode 1 : Spurious Emission Plot on channel 48 between 30 MHz~40 GHz



Date: 7.MAR.2010 21:18:32

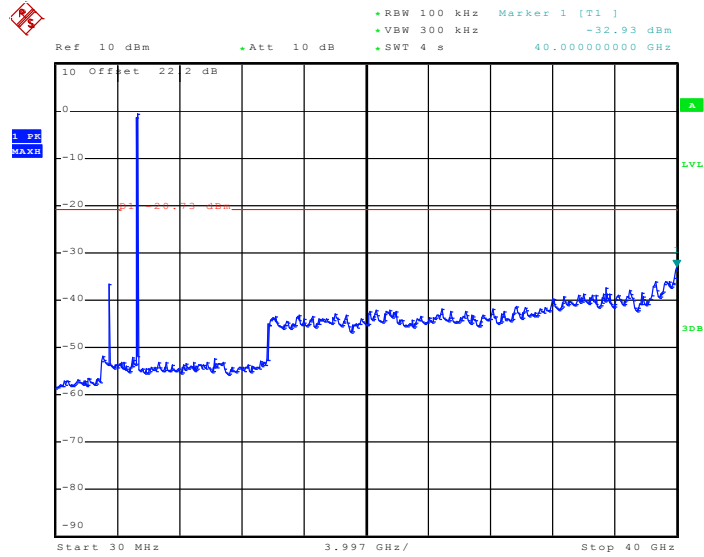
Mode 2 : Spurious Emission Plot on channel 52 between 30 MHz~40 GHz



Date: 28.FEB.2010 18:30:54

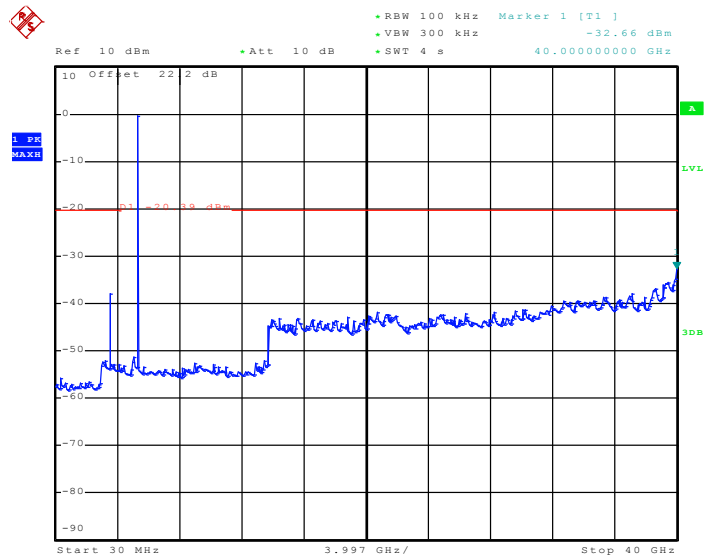


Mode 3 : Spurious Emission Plot on channel 60
between 30 MHz~40 GHz



Date: 28.FEB.2010 17:57:14

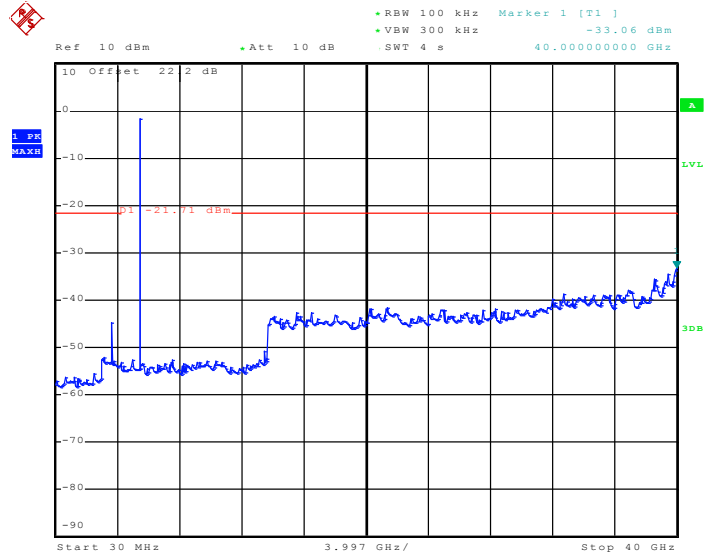
Mode 4 : Spurious Emission Plot on channel 64
between 30 MHz~40 GHz



Date: 28.FEB.2010 17:58:18

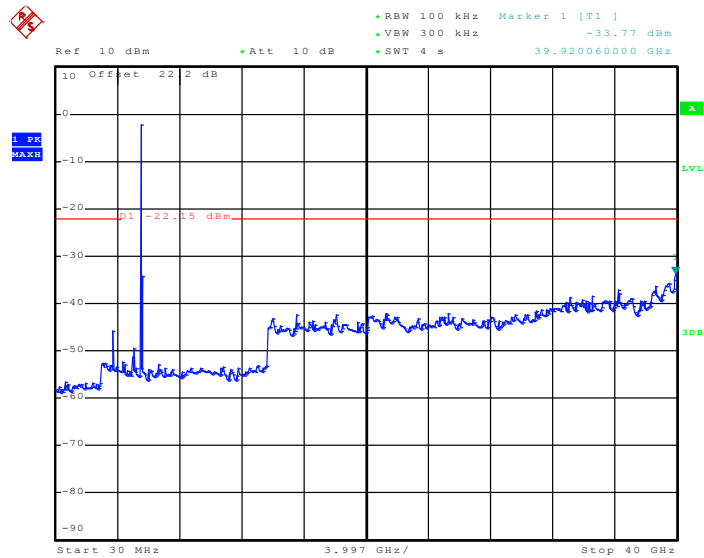


Mode 5 : Spurious Emission Plot on channel 100
between 30 MHz~40 GHz



Date: 28.FEB.2010 18:32:48

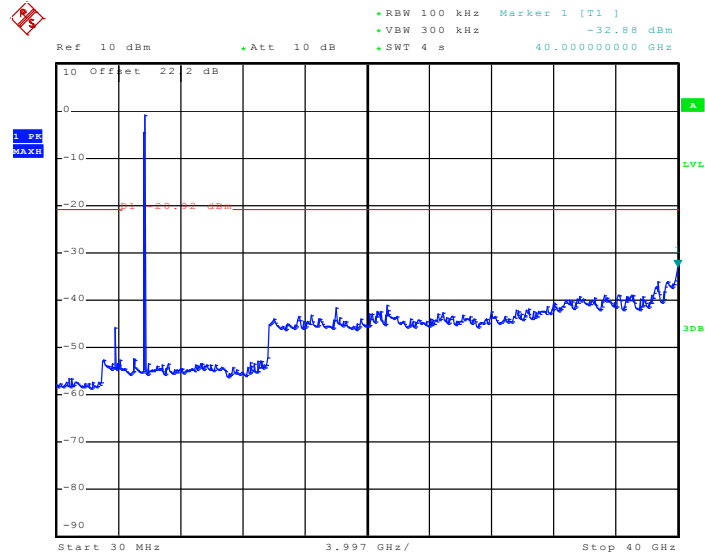
Mode 6 : Spurious Emission Plot on channel 120
between 30 MHz~40 GHz



Date: 28.FEB.2010 18:06:10



Mode 7 : Spurious Emission Plot on channel 140
between 30 MHz~40 GHz



Date: 28.FEB.2010 18:06:42

3.6 AC Conducted Emission Measurement

3.6.1 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.

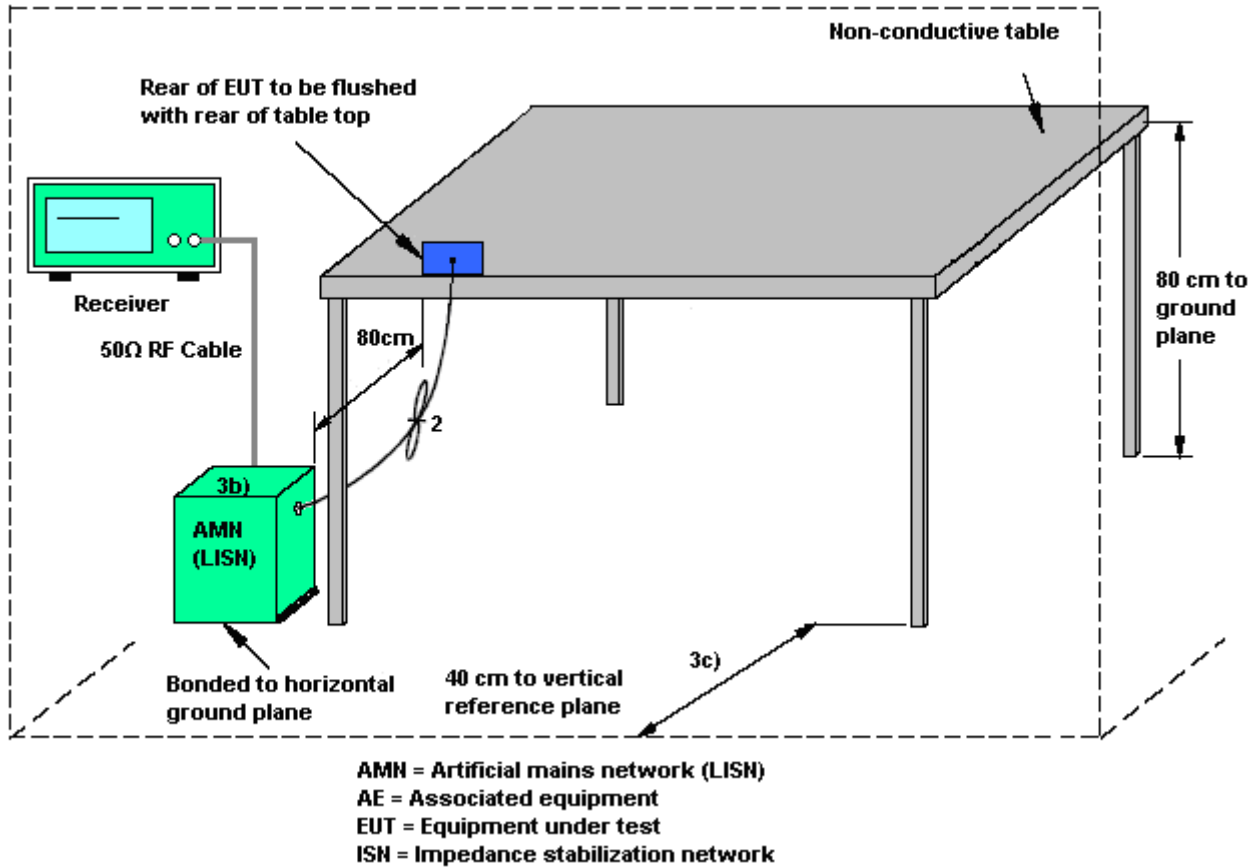
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

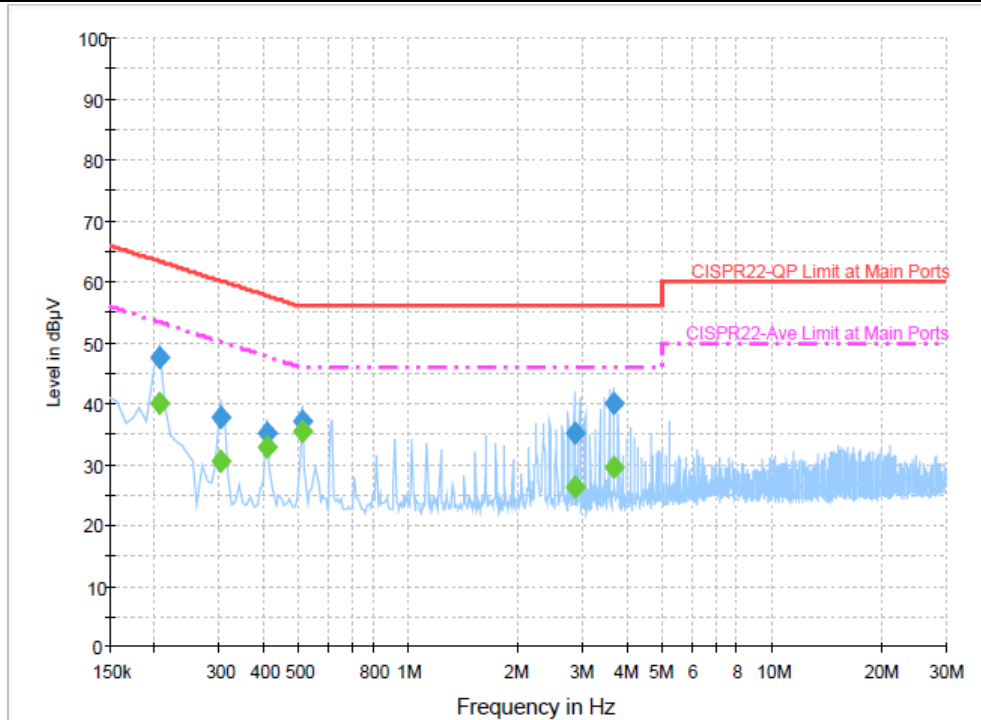
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Hayden Wu	Relative Humidity :	54~56%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link (5G) + Cradle + Adapter 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

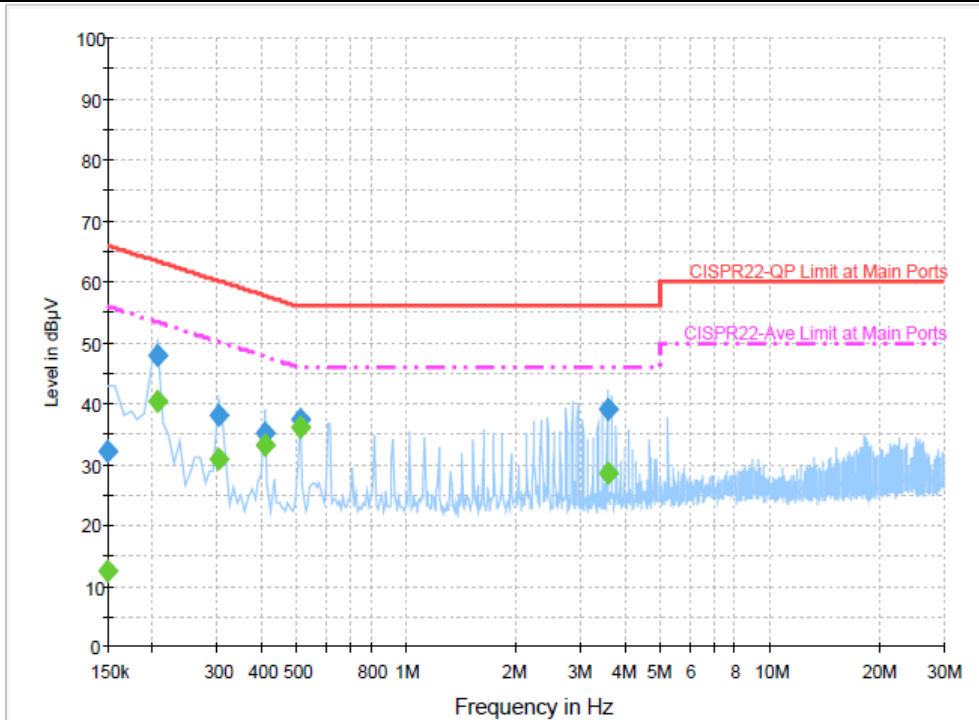
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.206000	47.7	Off	L1	19.6	15.7	63.4
0.302000	37.7	Off	L1	19.5	22.5	60.2
0.406000	35.2	Off	L1	19.4	22.5	57.7
0.510000	37.0	Off	L1	19.4	19.0	56.0
2.846000	35.0	Off	L1	19.5	21.0	56.0
3.662000	39.9	Off	L1	19.5	16.1	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.206000	40.2	Off	L1	19.6	13.2	53.4
0.302000	30.4	Off	L1	19.5	19.8	50.2
0.406000	32.7	Off	L1	19.4	15.0	47.7
0.510000	35.3	Off	L1	19.4	10.7	46.0
2.846000	26.2	Off	L1	19.5	19.8	46.0
3.662000	29.6	Off	L1	19.5	16.4	46.0



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Hayden Wu	Relative Humidity :	54~56%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link (5G) + Cradle + Adapter 1		
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)
0.150000	32.0	Off	N	19.5	34.0	66.0
0.206000	47.8	Off	N	19.5	15.6	63.4
0.302000	37.9	Off	N	19.4	22.3	60.2
0.406000	35.1	Off	N	19.4	22.6	57.7
0.510000	37.5	Off	N	19.4	18.5	56.0
3.558000	39.0	Off	N	19.5	17.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	12.5	Off	N	19.5	43.5	56.0
0.206000	40.5	Off	N	19.5	12.9	53.4
0.302000	30.7	Off	N	19.4	19.5	50.2
0.406000	33.2	Off	N	19.4	14.5	47.7
0.510000	35.9	Off	N	19.4	10.1	46.0
3.558000	28.4	Off	N	19.5	17.6	46.0

3.7 Radiated Emission Measurement

3.7.1 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

- (1) 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.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band.
- (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (4) The provisions of Section 15.205 Restricted bands of operation of this part apply to intentional radiators operating under this section.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

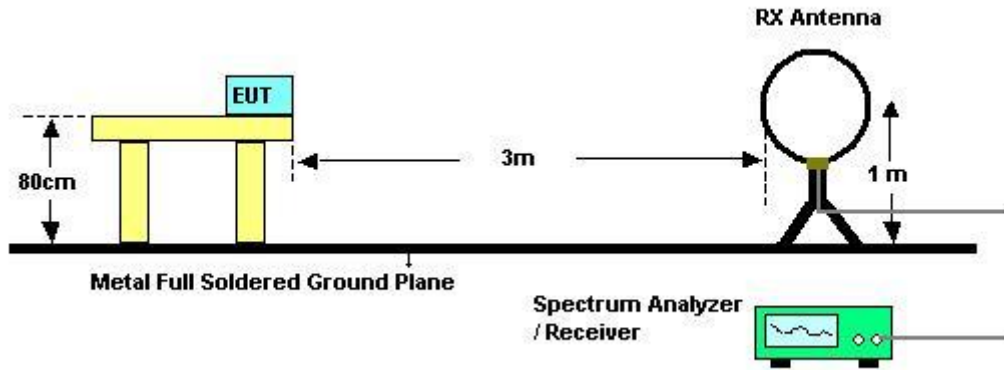


3.7.3 Test Procedures

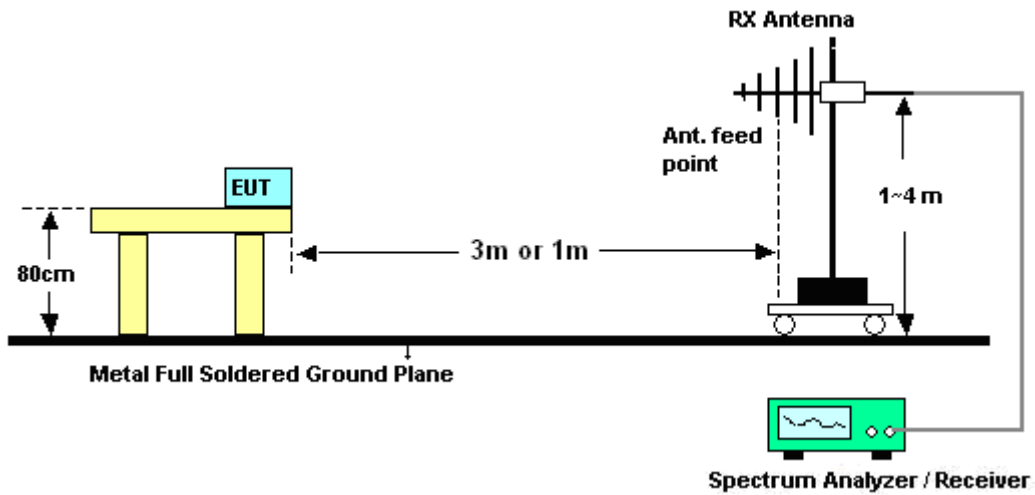
1. The testing follows the guidelines in FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna 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.

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz





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

Temperature	21~22°C	Humidity	42~43%
Test Engineer	Kay Wu		

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

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



3.7.6 Test Result of Radiated Emission (30MHz ~ 25GHz)

Test Mode :	Mode 1	Temperature :	21~22°C
Test Channel :	48	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5240 MHz is Fundamental Signal which can be ignored. 2. 3492 MHz and 10480 MHz are not within a restricted band.		

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
35.94	17.5	-22.5	40	32.31	16.2	0.69	31.7	-	-	Peak
138.27	23.88	-19.62	43.5	42.43	11.71	1.4	31.66	124	224	Peak
163.11	23.02	-20.48	43.5	42.97	10.17	1.52	31.64	-	-	Peak
369.3	23.44	-22.56	46	36.95	15.31	2.44	31.26	-	-	Peak
447.7	23.98	-22.02	46	35.22	17.11	2.8	31.15	-	-	Peak
519.8	23.26	-22.74	46	32.79	18.55	3	31.08	-	-	Peak
3492	55.52	-12.78	68.3	50.7	33	6.42	34.6	100	0	Peak
5150	47.66	-26.34	74	39.57	34.49	8.07	34.47	100	339	Peak
5150	37.24	-16.76	54	29.15	34.49	8.07	34.47	100	339	Average
5240	95.27	-	-	87.04	34.54	8.14	34.45	100	339	Average
5240	106.16	-	-	97.91	34.55	8.15	34.45	100	339	Peak
5350	37.37	-16.63	54	28.96	34.61	8.23	34.43	100	339	Average
5350	49.29	-24.71	74	40.88	34.61	8.23	34.43	100	339	Peak
10480	44.88	-23.42	68.3	77.2	-8.55	11.08	34.85	100	0	Peak
15720	42.78	-31.22	74	69.62	-5.93	14.2	35.11	100	0	Peak



Test Mode :	Mode 1	Temperature :	21~22°C
Test Channel :	48	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5240 MHz is Fundamental Signal which can be ignored. 2. 3492 MHz and 10480 MHz are not within a restricted band.		

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
39.18	19.82	-20.18	40	36.21	14.59	0.72	31.7	-	-	Peak
81.3	21.33	-18.67	40	44.32	7.7	1.01	31.7	100	44	Peak
175.53	24.77	-18.73	43.5	45.54	9.27	1.58	31.62	-	-	Peak
310.5	26.74	-19.26	46	42.2	13.74	2.18	31.38	-	-	Peak
526.1	23.91	-22.09	46	33.3	18.66	3.02	31.07	-	-	Peak
839	26.51	-19.49	46	30.68	22.59	3.94	30.7	-	-	Peak
3492	63.35	-4.95	68.3	58.53	33	6.42	34.6	100	0	Peak
5150	49.68	-24.32	74	41.59	34.49	8.07	34.47	100	293	Peak
5150	38.23	-15.77	54	30.14	34.49	8.07	34.47	100	293	Average
5240	98.64	-	-	90.41	34.54	8.14	34.45	100	293	Average
5240	108.89	-	-	100.66	34.54	8.14	34.45	100	293	Peak
5350	37.56	-16.44	54	29.15	34.61	8.23	34.43	100	293	Average
5350	48.89	-25.11	74	40.48	34.61	8.23	34.43	100	293	Peak
10480	38.86	-29.44	68.3	71.13	-8.53	11.09	34.83	100	0	Peak
15720	45.28	-28.72	74	72.12	-5.93	14.2	35.11	100	0	Peak



Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	52	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5260 MHz is Fundamental Signal which can be ignored. 2. 10520 MHz is not within a restricted band.		

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
140.7	24.75	-18.75	43.5	43.35	11.65	1.41	31.66	-	-	Peak
160.41	25.33	-18.17	43.5	45.08	10.38	1.51	31.64	-	-	Peak
292.98	31.68	-14.32	46	47.63	13.37	2.09	31.41	100	227	Peak
330.1	30.63	-15.37	46	45.45	14.26	2.26	31.34	-	-	Peak
416.2	28.63	-17.37	46	40.72	16.45	2.64	31.18	-	-	Peak
917.4	25.85	-20.15	46	28.89	23.44	4.2	30.68	-	-	Peak
5150	48.41	-25.59	74	40.32	34.49	8.07	34.47	100	326	Peak
5150	37.37	-16.63	54	29.28	34.49	8.07	34.47	100	326	Average
5260	105.47	-	-	97.2	34.56	8.16	34.45	100	326	Peak
5260	94.64	-	-	86.37	34.56	8.16	34.45	100	326	Average
5350	48.02	-25.98	74	39.61	34.61	8.23	34.43	100	326	Peak
5350	37.31	-16.69	54	28.9	34.61	8.23	34.43	100	326	Average
8342	52.76	-21.24	74	41.79	36	10.07	35.1	100	335	Peak
8342	40.41	-13.59	54	29.44	36	10.07	35.1	100	335	Average
10520	42.33	-25.97	68.3	74.5	-8.49	11.12	34.8	100	0	Peak
15780	45.45	-28.55	74	72.03	-5.58	14.16	35.16	100	0	Peak



Test Mode :	Mode 2	Temperature :	21~22°C
Test Channel :	52	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5260 MHz is Fundamental Signal which can be ignored. 2. 3478 MHz and 10520 MHz are not within a restricted band.		

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
90.21	27.86	-15.64	43.5	49.57	8.88	1.11	31.7	-	-	Peak
122.34	28.62	-14.88	43.5	46.93	12.06	1.31	31.68	-	-	Peak
292.98	32.69	-13.31	46	48.64	13.37	2.09	31.41	-	-	Peak
330.1	31.89	-14.11	46	46.71	14.26	2.26	31.34	-	-	Peak
623.4	32.75	-13.25	46	40.15	20.25	3.33	30.98	100	53	Peak
719.3	27.15	-18.85	46	33.29	21.11	3.61	30.86	-	-	Peak
3478	54.59	-13.71	68.3	49.77	33	6.41	34.59	100	0	Peak
5150	38	-16	54	29.91	34.49	8.07	34.47	100	285	Average
5150	49.54	-24.46	74	41.45	34.49	8.07	34.47	100	285	Peak
5260	97.31	-	-	89.04	34.56	8.16	34.45	100	285	Average
5260	108.07	-	-	99.8	34.56	8.16	34.45	100	285	Peak
5350	37.58	-16.42	54	29.17	34.61	8.23	34.43	100	285	Average
5350	49.3	-24.7	74	40.89	34.61	8.23	34.43	100	285	Peak
8318	53.95	-20.05	74	43	36	10.05	35.1	100	99	Peak
8318	40.61	-13.39	54	29.66	36	10.05	35.1	100	99	Average
10520	41.11	-27.19	68.3	73.24	-8.49	11.15	34.79	100	0	Peak
15780	45.7	-28.3	74	72.14	-5.44	14.16	35.16	100	0	Peak



Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	60	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	5300 MHz is Fundamental Signal which can be ignored.		

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
145.02	24.33	-19.17	43.5	43.11	11.43	1.44	31.65	-	-	Peak
161.22	24.79	-18.71	43.5	44.61	10.31	1.51	31.64	-	-	Peak
292.98	32.38	-13.62	46	48.33	13.37	2.09	31.41	100	55	Peak
330.1	30.36	-15.64	46	45.18	14.26	2.26	31.34	-	-	Peak
416.2	31.36	-14.64	46	43.45	16.45	2.64	31.18	-	-	Peak
623.4	27.04	-18.96	46	34.44	20.25	3.33	30.98	-	-	Peak
5150	38.2	-15.8	54	30.11	34.49	8.07	34.47	100	325	Average
5150	49.84	-24.16	74	41.75	34.49	8.07	34.47	100	325	Peak
5300	93.94	-	-	85.61	34.58	8.19	34.44	100	325	Average
5300	104.87	-	-	96.56	34.57	8.18	34.44	100	325	Peak
5350	37.69	-16.31	54	29.28	34.61	8.23	34.43	100	325	Average
5350	48.12	-25.88	74	39.71	34.61	8.23	34.43	100	325	Peak
8420	52.9	-21.1	74	41.88	36	10.12	35.1	100	199	Peak
8420	40.57	-13.43	54	29.55	36	10.12	35.1	100	199	Average
10600	44.12	-29.88	74	76.06	-8.46	11.28	34.76	100	0	Peak
15900	47.14	-26.86	74	72.96	-4.6	14.07	35.29	100	0	Peak



Test Mode :	Mode 3	Temperature :	21~22°C
Test Channel :	60	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 3478 MHz is not within a restricted band. 2. 5300 MHz is Fundamental Signal which can be ignored.		

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
69.69	22.27	-17.73	40	46.42	6.59	0.96	31.7	-	-	Peak
214.41	28.58	-14.92	43.5	49.33	9.05	1.77	31.57	-	-	Peak
292.98	33.35	-12.65	46	49.3	13.37	2.09	31.41	100	121	Peak
330.1	31.93	-14.07	46	46.75	14.26	2.26	31.34	-	-	Peak
603.8	31.76	-14.24	46	39.4	20.1	3.26	31	-	-	Peak
623.4	31.38	-14.62	46	38.78	20.25	3.33	30.98	-	-	Peak
3478	53.52	-14.78	68.3	48.7	33	6.41	34.59	100	0	Peak
5052	54.73	-19.27	74	46.8	34.43	7.99	34.49	100	225	Peak
5052	42.49	-11.51	54	34.56	34.43	7.99	34.49	100	225	Average
5150	50.49	-23.51	74	42.4	34.49	8.07	34.47	100	285	Peak
5150	39.74	-14.26	54	31.65	34.49	8.07	34.47	100	285	Average
5300	107.88	-	-	99.57	34.57	8.18	34.44	100	285	Peak
5300	97.3	-	-	88.97	34.58	8.19	34.44	100	285	Average
5350	49.59	-24.41	74	41.18	34.61	8.23	34.43	100	285	Peak
5350	38.29	-15.71	54	29.88	34.61	8.23	34.43	100	285	Average
8300	52.77	-21.23	74	41.83	36	10.04	35.1	100	195	Peak
8300	40.38	-13.62	54	29.44	36	10.04	35.1	100	195	Average
10600	41.47	-32.53	74	73.41	-8.46	11.28	34.76	100	0	Peak
15900	47.9	-26.1	74	73.79	-4.67	14.07	35.29	100	0	Peak



Test Mode :	Mode 4	Temperature :	21~22°C
Test Channel :	64	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	5320 MHz is Fundamental Signal which can be ignored.		

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
140.97	24.84	-18.66	43.5	43.44	11.65	1.41	31.66	-	-	Peak
160.68	24.83	-18.67	43.5	44.65	10.31	1.51	31.64	-	-	Peak
292.98	32.56	-13.44	46	48.51	13.37	2.09	31.41	-	-	Peak
330.1	29.96	-16.04	46	44.78	14.26	2.26	31.34	-	-	Peak
416.2	32.86	-13.14	46	44.95	16.45	2.64	31.18	100	317	Peak
946.1	26.11	-19.89	46	28.64	23.87	4.25	30.65	-	-	Peak
5150	37	-17	54	28.91	34.49	8.07	34.47	110	325	Average
5150	47.93	-26.07	74	39.84	34.49	8.07	34.47	110	325	Peak
5320	94.06	-	-	85.71	34.59	8.2	34.44	110	325	Average
5320	104.88	-	-	96.53	34.59	8.2	34.44	110	325	Peak
5350	39.69	-14.31	54	31.28	34.61	8.23	34.43	110	325	Average
5350	59.99	-14.01	74	51.58	34.61	8.23	34.43	110	325	Peak
8364	52.71	-21.29	74	41.72	36	10.09	35.1	100	162	Peak
8364	40.46	-13.54	54	29.47	36	10.09	35.1	100	162	Average
10640	43.15	-30.85	74	75	-8.44	11.34	34.75	100	0	Peak
15960	47.43	-26.57	74	72.89	-4.11	14.02	35.37	100	0	Peak



Test Mode :	Mode 4	Temperature :	21~22°C
Test Channel :	64	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 3478 MHz is not within a restricted band. 2. 5320 MHz is Fundamental Signal which can be ignored.		

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
86.7	22.43	-17.57	40	44.7	8.36	1.07	31.7	-	-	Peak
136.38	27.14	-16.36	43.5	45.69	11.72	1.39	31.66	-	-	Peak
292.98	33.24	-12.76	46	49.19	13.37	2.09	31.41	100	211	Peak
330.1	32.61	-13.39	46	47.43	14.26	2.26	31.34	-	-	Peak
603.8	31.81	-14.19	46	39.45	20.1	3.26	31	-	-	Peak
623.4	31.59	-14.41	46	38.99	20.25	3.33	30.98	-	-	Peak
3478	53.86	-14.44	68.3	49.04	33	6.41	34.59	100	0	Peak
5150	37.91	-16.09	54	29.82	34.49	8.07	34.47	102	256	Average
5150	49.18	-24.82	74	41.09	34.49	8.07	34.47	102	256	Peak
5320	97.66	-	-	89.31	34.59	8.2	34.44	102	256	Average
5320	108.71	-	-	100.36	34.59	8.2	34.44	102	256	Peak
5350	40.82	-13.18	54	32.41	34.61	8.23	34.43	102	256	Average
5350	61.66	-12.34	74	53.25	34.61	8.23	34.43	102	256	Peak
8444	52.74	-21.26	74	41.7	36	10.14	35.1	100	166	Peak
8444	40.7	-13.3	54	29.66	36	10.14	35.1	100	166	Average
10640	40.69	-33.31	74	72.54	-8.44	11.34	34.75	100	0	Peak
15960	48.13	-25.87	74	73.71	-4.25	14.02	35.35	100	0	Peak



Test Mode :	Mode 5	Temperature :	21~22°C
Test Channel :	100	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5500 MHz is Fundamental Signal which can be ignored. 2. 5470 MHz, 5725 MHz and 16500 MHz are not within a restricted band.		

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
144.21	24.4	-19.1	43.5	43.16	11.47	1.43	31.66	-	-	Peak
161.22	24.76	-18.74	43.5	44.58	10.31	1.51	31.64	-	-	Peak
292.98	32.19	-13.81	46	48.14	13.37	2.09	31.41	-	-	Peak
330.1	30.34	-15.66	46	45.16	14.26	2.26	31.34	-	-	Peak
416.2	33.36	-12.64	46	45.45	16.45	2.64	31.18	100	211	Peak
623.4	26.3	-19.7	46	33.7	20.25	3.33	30.98	-	-	Peak
5470	53.6	-14.7	68.3	45.01	34.68	8.32	34.41	100	232	Peak
5500	94.01	-	-	85.36	34.7	8.35	34.4	100	232	Average
5500	105.25	-	-	96.62	34.69	8.34	34.4	100	232	Peak
5725	48.37	-19.93	68.3	39.45	35.01	8.4	34.49	100	232	Peak
8396	52.94	-21.06	74	41.93	36	10.11	35.1	100	57	Peak
8396	40.12	-13.88	54	29.11	36	10.11	35.1	100	57	Average
11000	50.39	-23.61	74	81.3	-8.3	11.99	34.6	100	0	Peak
16500	40.11	-28.19	68.3	71.53	-10.1	13.68	35	100	0	Peak



Test Mode :	Mode 5	Temperature :	21~22°C
Test Channel :	100	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5500 MHz is Fundamental Signal which can be ignored. 2. 3478 MHz, 5470 MHz, 5725 MHz and 16500 MHz are not within a restricted band.		

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
86.97	23.59	-16.41	40	45.72	8.49	1.08	31.7	-	-	Peak
136.38	27.26	-16.24	43.5	45.81	11.72	1.39	31.66	-	-	Peak
292.98	33.25	-12.75	46	49.2	13.37	2.09	31.41	100	191	Peak
330.1	31.73	-14.27	46	46.55	14.26	2.26	31.34	-	-	Peak
603.8	31.99	-14.01	46	39.63	20.1	3.26	31	-	-	Peak
623.4	31.83	-14.17	46	39.23	20.25	3.33	30.98	-	-	Peak
3478	54.88	-13.42	68.3	50.06	33	6.41	34.59	100	0	Peak
5038	55.66	-18.34	74	47.73	34.43	7.99	34.49	100	228	Peak
5038	46.58	-7.42	54	38.65	34.43	7.99	34.49	100	228	Average
5470	56.42	-11.88	68.3	47.83	34.68	8.32	34.41	100	329	Peak
5500	108.98	-	-	100.35	34.69	8.34	34.4	100	329	Peak
5500	97.92	-	-	89.27	34.7	8.35	34.4	100	329	Average
5725	47.98	-20.32	68.3	39.06	35.01	8.4	34.49	100	329	Peak
8398	53.29	-20.71	74	42.28	36	10.11	35.1	100	66	Peak
8398	40.42	-13.58	54	29.41	36	10.11	35.1	100	66	Average
11000	46.9	-27.1	74	77.81	-8.3	11.99	34.6	100	0	Peak
16500	43.14	-25.16	68.3	74.56	-10.1	13.68	35	100	0	Peak



Test Mode :	Mode 6	Temperature :	21~22°C
Test Channel :	120	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5600 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz, 5725 MHz and 16800 MHz are not within a restricted band.		

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
143.13	24.59	-18.91	43.5	43.3	11.52	1.43	31.66	-	-	Peak
161.22	24.5	-19	43.5	44.32	10.31	1.51	31.64	-	-	Peak
292.98	32.35	-13.65	46	48.3	13.37	2.09	31.41	100	228	Peak
330.1	30.29	-15.71	46	45.11	14.26	2.26	31.34	-	-	Peak
416.2	31.22	-14.78	46	43.31	16.45	2.64	31.18	-	-	Peak
875.4	25.87	-20.13	46	29.56	22.95	4.06	30.7	-	-	Peak
5470	48.1	-20.2	68.3	39.51	34.68	8.32	34.41	100	288	Peak
5600	102.82	-	-	94.07	34.82	8.37	34.44	100	288	Peak
5600	91.45	-	-	82.68	34.84	8.37	34.44	100	288	Average
5725	47.78	-20.52	68.3	38.86	35.01	8.4	34.49	100	288	Peak
8406	53.12	-20.88	74	42.1	36	10.12	35.1	100	117	Peak
8406	40.13	-13.87	54	29.11	36	10.12	35.1	100	117	Average
11200	48.34	-25.66	74	80.79	-9.7	11.85	34.6	100	0	Peak
16800	40.23	-28.07	68.3	70.71	-10.1	14.18	34.56	100	0	Peak



Test Mode :	Mode 6	Temperature :	21~22°C
Test Channel :	120	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5600 MHz is Fundamental Signals which can be ignored. 2. 3478 MHz, 5470 MHz, 5725 MHz and 16800 MHz are not within a restricted band.		

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
136.38	27.03	-16.47	43.5	45.58	11.72	1.39	31.66	-	-	Peak
214.41	28.36	-15.14	43.5	49.11	9.05	1.77	31.57	-	-	Peak
292.98	33.52	-12.48	46	49.47	13.37	2.09	31.41	100	117	Peak
330.1	31.56	-14.44	46	46.38	14.26	2.26	31.34	-	-	Peak
416.2	29.16	-16.84	46	41.25	16.45	2.64	31.18	-	-	Peak
603.8	31.88	-14.12	46	39.52	20.1	3.26	31	-	-	Peak
3478	54.41	-13.89	68.3	49.59	33	6.41	34.59	100	0	Peak
5038	54.09	-19.91	74	46.16	34.43	7.99	34.49	100	257	Peak
5038	43.62	-10.38	54	35.69	34.43	7.99	34.49	100	257	Average
5470	48.94	-19.36	68.3	40.35	34.68	8.32	34.41	100	273	Peak
5600	107.36	-	-	98.61	34.82	8.37	34.44	100	273	Peak
5600	95.78	-	-	87.01	34.84	8.37	34.44	100	273	Average
5725	48.96	-19.34	68.3	40.04	35.01	8.4	34.49	100	273	Peak
8340	52.92	-21.08	74	41.95	36	10.07	35.1	100	61	Peak
8340	40.52	-13.48	54	29.55	36	10.07	35.1	100	61	Average
11200	45.9	-28.1	74	78.28	-9.63	11.85	34.6	100	0	Peak
16800	42.89	-25.41	68.3	73.37	-10.1	14.18	34.56	100	0	Peak



Test Mode :	Mode 7	Temperature :	21~22°C
Test Channel :	140	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5700 MHz is Fundamental Signals which can be ignored. 2. 5470 MHz, 5725 MHz and 17100 MHz are not within a restricted band.		

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
139.62	24.5	-19	43.5	43.06	11.7	1.4	31.66	-	-	Peak
161.49	23.93	-19.57	43.5	43.81	10.24	1.52	31.64	-	-	Peak
292.98	31.59	-14.41	46	47.54	13.37	2.09	31.41	100	192	Peak
330.1	29.67	-16.33	46	44.49	14.26	2.26	31.34	-	-	Peak
416.2	30.28	-15.72	46	42.37	16.45	2.64	31.18	-	-	Peak
623.4	27.02	-18.98	46	34.42	20.25	3.33	30.98	-	-	Peak
5470	47.88	-20.42	68.3	39.29	34.68	8.32	34.41	102	253	Peak
5700	103.59	-	-	94.68	34.99	8.4	34.48	102	253	Peak
5700	92.78	-	-	83.89	34.97	8.4	34.48	102	253	Average
5725	57.56	-10.74	68.3	48.64	35.01	8.4	34.49	102	253	Peak
8292	52.88	-21.12	74	41.94	36	10.04	35.1	100	221	Peak
8292	40.09	-13.91	54	29.15	36	10.04	35.1	100	221	Average
11400	43.17	-30.83	74	77.23	-11.17	11.71	34.6	100	0	Peak
17100	39.04	-29.26	68.3	69.16	-10.48	14.64	34.28	100	0	Peak



Test Mode :	Mode 7	Temperature :	21~22°C
Test Channel :	140	Relative Humidity :	42~43%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5700 MHz is Fundamental Signals which can be ignored. 2. 3478 MHz, 5470 MHz, 5725 MHz and 17100 MHz are not within a restricted band.		

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
86.7	22.87	-17.13	40	45.14	8.36	1.07	31.7	-	-	Peak
142.86	26.79	-16.71	43.5	45.47	11.56	1.42	31.66	-	-	Peak
292.98	33.2	-12.8	46	49.15	13.37	2.09	31.41	100	122	Peak
330.1	31.86	-14.14	46	46.68	14.26	2.26	31.34	-	-	Peak
603.8	31.45	-14.55	46	39.09	20.1	3.26	31	-	-	Peak
719.3	26.17	-19.83	46	32.31	21.11	3.61	30.86	-	-	Peak
3478	55.81	-12.49	68.3	50.99	33	6.41	34.59	100	0	Peak
5060	54.56	-19.44	74	46.61	34.44	8	34.49	100	335	Peak
5060	42.56	-11.44	54	34.61	34.44	8	34.49	100	335	Average
5470	49.27	-19.03	68.3	40.68	34.68	8.32	34.41	100	272	Peak
5700	105.01	-	-	96.12	34.97	8.4	34.48	100	272	Peak
5700	93.78	-	-	84.89	34.97	8.4	34.48	100	272	Average
5725	58.69	-9.61	68.3	49.77	35.01	8.4	34.49	100	272	Peak
8348	52.47	-21.53	74	41.5	36	10.07	35.1	100	133	Peak
8348	40.16	-13.84	54	29.19	36	10.07	35.1	100	133	Average
11400	39.55	-34.45	74	73.54	-11.1	11.71	34.6	100	0	Peak
17100	42.8	-25.5	68.3	73	-10.56	14.64	34.28	100	0	Peak

3.8 Peak Excursion Ratio Measurement

3.8.1 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.

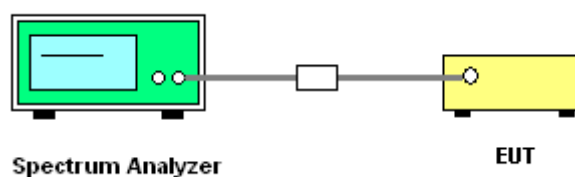
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 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.

3.8.4 Test Setup

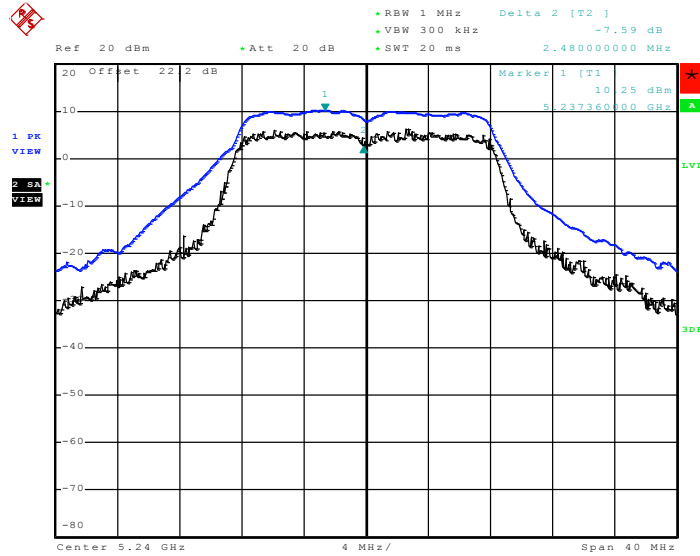




3.8.5 Test Result of Peak Excursion Ratio

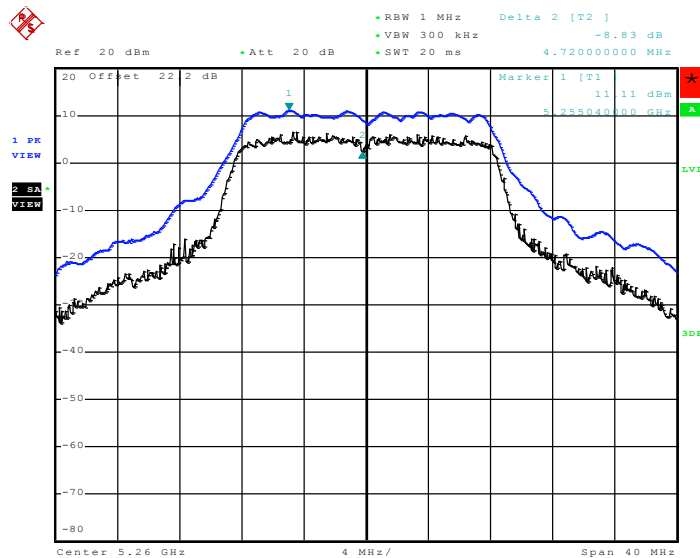
Test Mode :	Mode 1~7	Temperature :	26~28°C
Test Engineer :	Ken Hsu	Relative Humidity :	51~54%

Mode 1 : Peak Excursion Ratio Plot on 802.11a Channel 48



Date: 7.MAR.2010 21:24:17

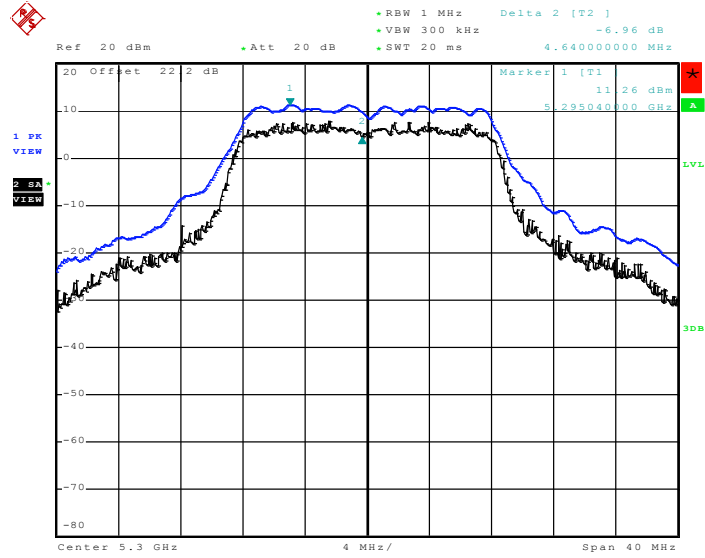
Mode 2 : Peak Excursion Ratio Plot on 802.11a Channel 52



Date: 28.FEB.2010 17:44:25

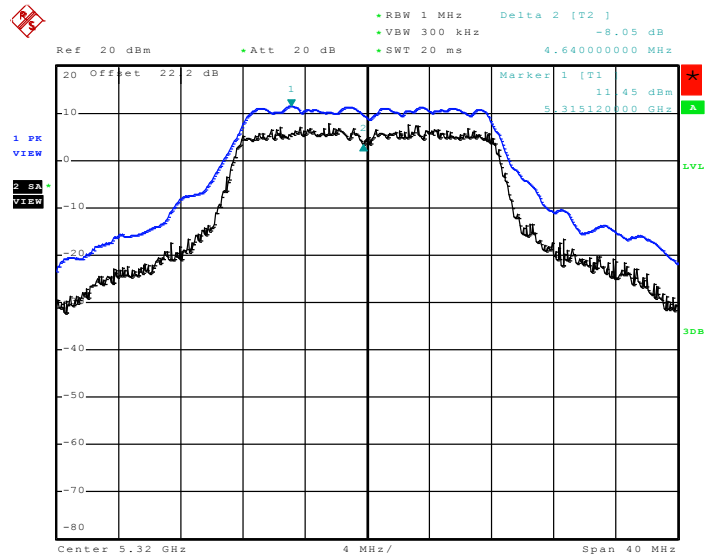


Mode 3 : Peak Excursion Ratio Plot on 802.11a Channel 60



Date: 28.FEB.2010 17:46:13

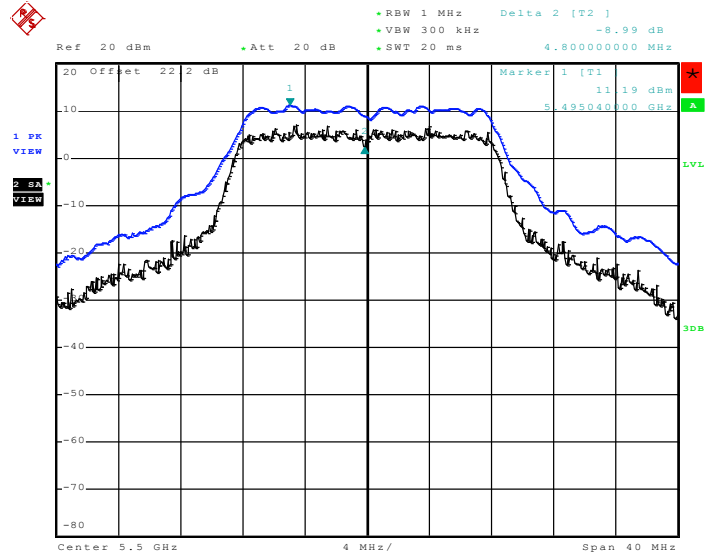
Mode 4 : Peak Excursion Ratio Plot on 802.11a Channel 64



Date: 28.FEB.2010 17:47:57

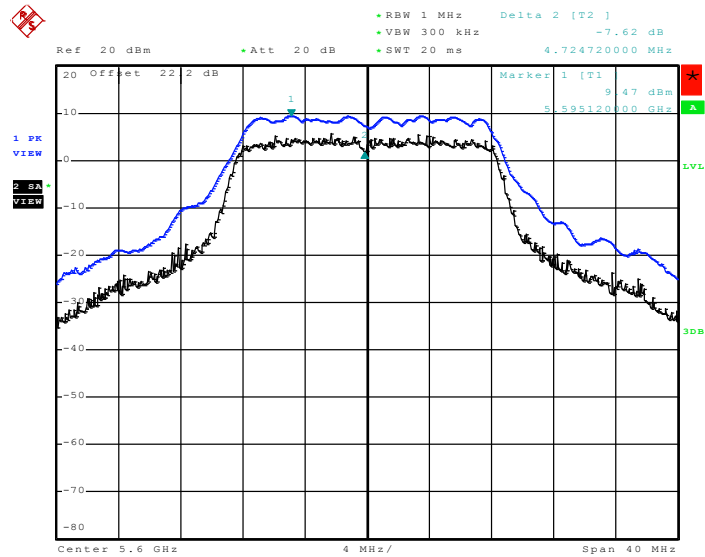


Mode 5 : Peak Excursion Ratio Plot on 802.11a Channel 100



Date: 28.FEB.2010 18:21:15

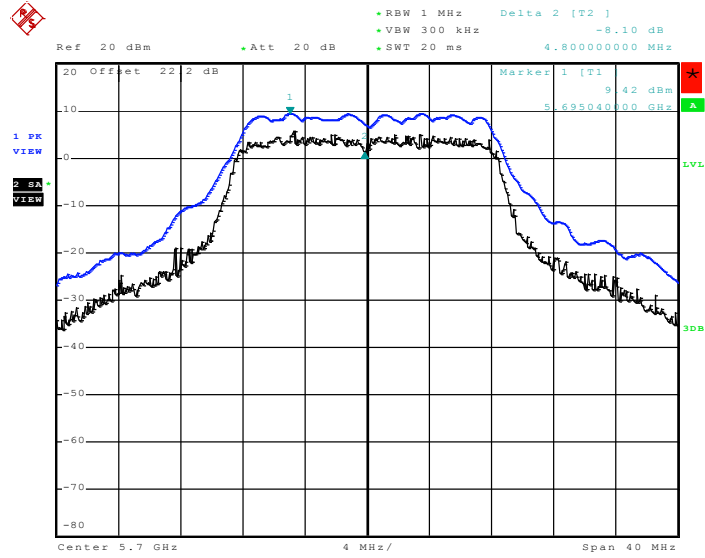
Mode 6 : Peak Excursion Ratio Plot on 802.11a Channel 120



Date: 28.FEB.2010 18:24:03



Mode 7 : Peak Excursion Ratio Plot on 802.11a Channel 140



Date: 28.FEB.2010 18:25:13



3.9 Automatically Discontinue Transmission

3.9.1 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.

3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 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.

3.10 Frequency Stability Measurement

3.10.1 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.

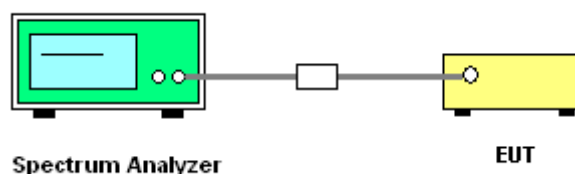
3.10.2 Measuring Instruments

See list of measuring instruments of this test report.

3.10.3 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 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.

3.10.4 Test Setup





3.10.5 Test Result of Frequency Stability

Test Mode :	Mode 1~7	Temperature :	26~28°C
Test Engineer :	Ken Hsu	Relative Humidity :	51~54%

Channel	Frequency (MHz)	Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
48	5240	5231.64	5248.32	-3.82
52	5260	5251.68	5268.32	0.00
60	5300	5291.68	5308.32	0.00
64	5320	5311.68	5328.32	0.00
100	5500	5491.68	5508.32	0.00
120	5600	5591.68	5608.32	0.00
140	5700	5691.68	5708.28	-3.51



3.11 Antenna Requirements

3.11.1 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.

3.11.2 Antenna Connected Construction

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

3.11.3 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. 23, 2009	Jun. 22, 2010	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 17, 2009	Sep. 16, 2010	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 10, 2009	Sep. 09, 2010	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Aug. 05, 2009	Aug. 04, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)

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 Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	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-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		



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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	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 = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	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				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP912101-03 as below.



Appendix C. Change Note

Denso Wave Incorporated

1, Yoshiike, Kusaki, Agui-cho, Chita-gun, Aichi, 470-2297 Japan
Tel: 81 569 49 5246 ; Fax: 81 569 49 5488

Federal Communications Commission
Authorization and Evaluation Division
1435 Oakland Mills Road
Columbia, MD 21046

SUBJECT: Class II Permissive Change for FCC ID: PZWBHT710BWB

The product, Bar Code Handy Terminal, has been granted by FCC dated 03/31/2009,
FCC ID: PZWBHT710BWB.

Now we, Denso Wave Incorporated, would like to modify the authorized equipment
for enabling frequency bands by software control, which could be refer to below
information:

1. 5150 MHz ~ 5250 MHz
2. 5250 MHz ~ 5350 MHz
3. 5470 MHz ~ 5725 MHz
4. 5725 MHz ~ 5850 MHz

We would like to certify the additional of certified FCC ID: PZWBHT710BWB as a
Class II Permissive Change in this device.



Contact Person: Toshiaki Hotta



Appendix D. Original Report

Please refer to Sporton report number FR912101C as below.