Variant FCC RF Test Report

APPLICANT	:	**DELL Inc.**
EQUIPMENT	:	**Tablet PC**
BRAND NAME	:	**Dell**
MODEL NAME	:	**T01C; T01C003**
TYPE NAME	:	**T01C003**
FCC ID	:	**E2K-T01C003**
STANDARD	:	**FCC Part 15 Subpart E §15.407**
CLASSIFICATION	:	**(NII) Unlicensed National Information Infrastructure**

This is a variant report which is only valid together with the original test report. The product was received on May 30, 2014 and testing was completed on Sep. 26, 2014. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and the testing has shown the tested sample to be in 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR422417-1D	Rev. 01	This is a variant report for T01C; T01C003. The product equality declaration could be referred to Appendix B. Since 5GHz band 2/3 has power reduced, then all the conducted test items were verified for these bands. And the worst cases of radiated spurious emission for all bands from original test report (Sporton Report Number FR422417D) were verified for the differences.	Oct. 31, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	RSS-210 A9.2	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	RSS-210 A9.2	Maximum Conducted Output Power	24 dBm	Pass	-
3.3	15.407(a)	RSS-210 A9.2	Power Spectral Density	11 dBm	Pass	-
3.4	15.407(a)(6)	RSS-210 A9.3	Peak Excursion Ratio	≤ 13dB	Pass	-
3.5	15.407(b)	RSS-210 A9.3	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 6.47 dB at 5725.320 MHz
3.6	15.407(g)	-	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	RSS-210 A9.4	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	RSS-210 A9.2	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

DELL Inc.
One Dell Way, Round Rock, Texas 78682, United States

1.2 Manufacturer

DELL Inc.
One Dell Way, Round Rock, Texas 78682, United States

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Tablet PC
Brand Name	Dell
Model Name	T01C; T01C003
Type Name	T01C003
FCC ID	E2K-T01C003
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40/ WLAN 5GHz 802.11a/n HT20/HT40/ WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
HW Version	B2
SW Version	Venue7 3740_V1.84_140916-NoModem
EUT Stage	Identical Prototype

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. There are five types of EUT for this project. The differences between them are summary below:

Sample List	RAM	ROM	CPU	Front Camera	Rear Camera	LCD	PCBA	Color
Sample 1	1G	16G	1.6 PRQ	OV	Liteon	CPT without EMI coating	Chinabuild	Black
Sample 2	2G	16G	1.6 QS	OV	Liteon	AUO with EMI coating	Tripod	Red
Sample 3	2G	16G	1.6 QS	OV	Liteon	CPT with EMI coating	Chinabuild	Black
Sample 4	2G	16G	1.6 QS	OV	Liteon	AUO without EMI coating	Chinabuild	Red
Sample 5	2G	16G	1.6 QS	OV	Liteon	AUO without EMI coating	Tripod	Red

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz
Maximum Output Power to Antenna	**<5260 MHz ~ 5320 MHz>** 802.11a : 9.66 dBm / 0.0092 W 802.11n HT20 : 10.00 dBm / 0.0100 W 802.11n HT40 : 10.41 dBm / 0.0110 W 802.11ac VHT20 : 10.39 dBm / 0.0109 W 802.11ac VHT40 : 10.39 dBm / 0.0109 W 802.11ac VHT80 : 9.27 dBm / 0.0085 W **<5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz >** 802.11a : 8.34 dBm / 0.0068 W 802.11n HT20 : 7.16 dBm / 0.0052 W 802.11n HT40 : 7.08 dBm / 0.0051 W 802.11ac VHT20 : 7.48 dBm / 0.0056 W 802.11ac VHT40 : 7.41 dBm / 0.0055 W 802.11ac VHT80 : 6.02 dBm / 0.0040 W
99% Occupied Bandwidth	**<5260 MHz ~ 5320 MHz>** 802.11a : 18.25 MHz 802.11n HT20 : 19.05 MHz 802.11n HT40 : 36.80 MHz 802.11ac VHT20: 18.95 MHz 802.11ac VHT40 : 36.70 MHz 802.11ac VHT80 : 75.96 MHz **<5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz >** 802.11a : 18.15 MHz 802.11n HT20 : 18.95 MHz 802.11n HT40 : 36.80 MHz 802.11ac VHT20: 19.05 MHz 802.11ac VHT40 : 36.70 MHz 802.11ac VHT80 : 75.84 MHz
Antenna Type	IFA Antenna
Antenna Gain	5250 MHz ~ 5350 MHz : 2.00 dBi 5470 MHz ~ 5725 MHz : 2.00 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note: 5600 MHz ~ 5650 MHz is notched.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	**Sporton Site No.**		**FCC/IC Registration No.**
	TH01-KS	03CH01-KS	149928/4086E-1

Note: The test site complies with ANSI C63.4 2003 requirement.

1.7 Applicable 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 KDB 789033 D01 General UNII Test Procedures Old Rules v01r04
- FCC KDB 644545 D01 Guidance for IEEE 802 11ac Old Rules v01r02
- ANSI C63.4-2003

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, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test in the following tables.

5GHz 802.11a RF Output Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate 6Mbps	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 52	5260	9.01	CH 64	9.60	9.64	9.57	9.61	9.52	9.59	9.58
CH 60	5300	9.54								
CH 64	5320	**9.66**								
CH 100	5500	**8.34**	CH 100	8.13	8.31	8.28	8.16	8.20	8.27	8.09
CH 116	5580	7.61								
CH 140	5700	7.18								

5GHz 802.11n HT20 RF Output Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 52	5260	9.80	CH 64	9.85	9.86	9.85	9.90	9.81	9.87	9.94
CH 60	5300	9.93								
CH 64	5320	**10.00**								
CH 100	5500	**7.16**	CH 100	7.13	7.10	7.08	7.14	6.97	7.07	7.03
CH 116	5580	6.73								
CH 140	5700	6.58								

5GHz 802.11n HT40 RF Output Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 54	5270	10.36	CH 62	10.40	10.38	10.30	10.25	10.29	10.27	10.32
CH 62	5310	**10.41**								
CH 102	5510	7.06	CH 110	6.96	6.92	6.88	6.94	6.95	6.91	6.93
CH 110	5550	**7.08**								
CH 134	5670	6.60								

5GHz 802.11ac VHT20 RF Output Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
CH 52	5260	9.95	CH 60	10.36	10.22	10.37	10.21	10.24	10.38	10.27	10.29
CH 60	5300	**10.39**									
CH 64	5320	10.32									
CH 100	5500	**7.48**	CH 100	7.44	7.42	7.46	7.40	7.41	7.37	7.39	7.36
CH 116	5580	6.70									
CH 140	5700	6.65									

5GHz 802.11ac VHT40 RF Output Power (dBm)											
Power vs. Channel			Power vs. MCS Index								
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 54	5270MHz	10.30	CH 62	10.27	10.30	10.36	10.22	10.26	10.36	10.34	10.21	10.32
CH 62	5310MHz	**10.39**										
CH 102	5510MHz	6.83	CH 110	7.37	7.31	7.20	7.18	7.15	7.19	7.15	7.23	7.16
CH 110	5550MHz	**7.41**										
CH 134	5670MHz	6.84										

5GHz 802.11ac VHT80 RF Output Power (dBm)											
Power vs. Channel			Power vs. MCS Index								
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 58	5290	**9.27**	CH 58	9.17	9.19	9.16	9.21	9.23	9.15	9.17	9.23	9.20
CH 106	5530	**6.02**	CH 106	5.98	5.96	6.00	5.93	6.01	5.95	5.91	5.97	5.97

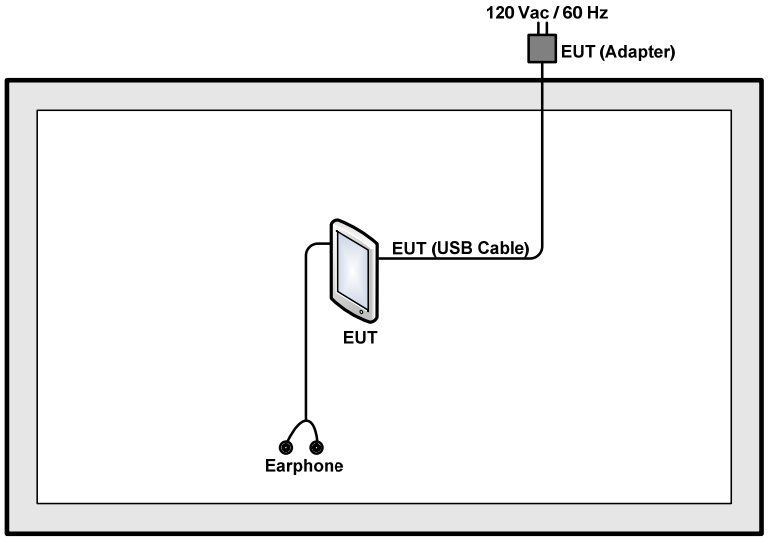
2.2 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

Test Cases				
	Test Items	Mode	Data rate	Test Channel
Conducted TCs	26dB and 99% BW Power Spectral Density	802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/H
		802.11n HT40	MCS0	L/M/H
		802.11ac VHT20	MCS0	L/M/H
		802.11ac VHT40	MCS0	L/M/H
		802.11ac VHT80	MCS0	M
	20dB Occupied Bandwidth	802.11a	6 Mbps	H
		802.11n HT20	MCS0	H
		802.11n HT40	MCS0	H
		802.11ac VHT20	MCS0	H
		802.11ac VHT40	MCS0	H
		802.11ac VHT80	MCS0	M
	Output Power	802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/H
		802.11n HT40	MCS0	L/M/H
		802.11ac VHT20	MCS0	L/M/H
		802.11ac VHT40	MCS0	L/M/H
		802.11ac VHT80	MCS0	M
	Peak Excursion	802.11a	6 Mbps	L
		802.11n HT20	MCS0	L
		802.11n HT40	MCS0	L
		802.11ac VHT20	MCS0	L
		802.11ac VHT40	MCS0	L
		802.11ac VHT80	MCS0	M
	Frequency Stability	802.11a	6 Mbps	H

Test Cases				
Radiated TCs	Radiated Band Edge	802.11a	6 Mbps	L/H
		802.11n HT20	MCS0	L/H
		802.11n HT40	MCS0	L/H
		802.11ac VHT20	MCS0	L/H
		802.11ac VHT40	MCS0	L/H
		802.11ac VHT80	MCS0	M
	Radiated Spurious Emission	802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/H
		802.11n HT40	MCS0	L/M/H
		802.11ac VHT20	MCS0	L/M/H
		802.11ac VHT40	MCS0	L/M/H
		802.11ac VHT80	MCS0	M

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Earphone	Lenovo	SH100	FCC DOC	Unshielded, 1.0 m	N/A
2.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded,1.8m

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.
Following shows an offset computation example with cable loss 7.3 dB and 10dB attenuator.

Offset (dB) = RF cable loss (dB) + attenuator factor (dB).
= 7.3 + 10 = 17.3 (dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

There is no restriction limits for bandwidth. The maximum conducted output power can be limited by measured emission bandwidth (B).

For the bands 5250-5350 MHz and 5470-5600 MHz and 5650-5725MHz, 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.

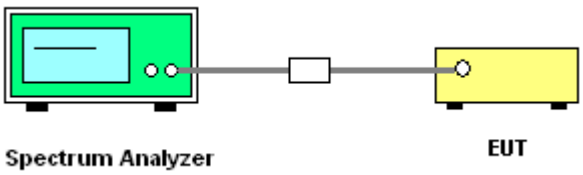
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r04. Section D) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) ≥ 3 * RBW.
8. Measure and record the results in the test report.

3.1.4 Test Setup



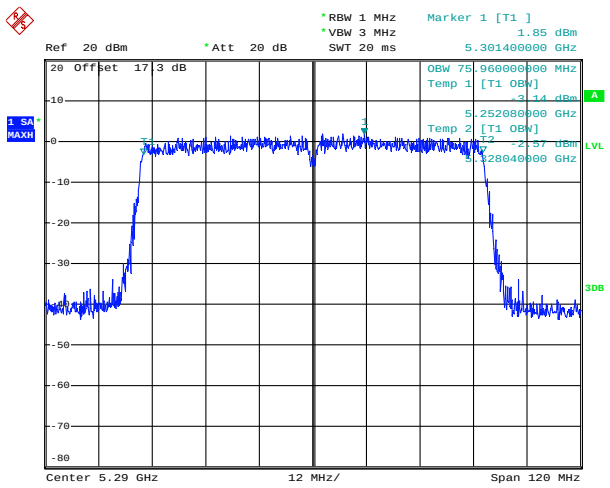
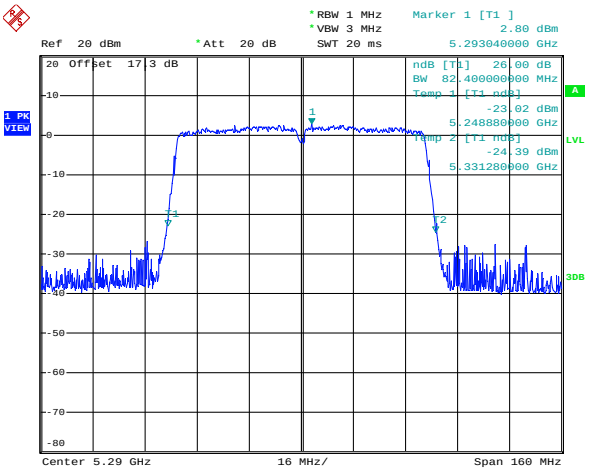
3.1.5 Test Result of 26dB & 99% Occupied Bandwidth Plots

Test Band :	5GHz band 2	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	52	5260	18.05	23.10	29.56	23.98
11a	6Mbps	1	60	5300	18.25	23.10	29.61	23.98
11a	6Mbps	1	64	5320	18.00	23.00	29.55	23.98
HT20	MCS0	1	52	5260	18.80	23.30	29.74	23.98
HT20	MCS0	1	60	5300	19.05	23.35	29.80	23.98
HT20	MCS0	1	64	5320	18.90	23.25	29.76	23.98
HT40	MCS0	1	54	5270	36.80	41.67	30.00	23.98
HT40	MCS0	1	62	5310	36.60	41.49	30.00	23.98
VHT20	MCS0	1	52	5260	18.95	23.40	29.78	23.98
VHT20	MCS0	1	60	5300	18.95	23.30	29.78	23.98
VHT20	MCS0	1	64	5320	18.75	23.40	29.73	23.98
VHT40	MCS0	1	54	5270	36.70	41.58	30.00	23.98
VHT40	MCS0	1	62	5310	36.60	41.58	30.00	23.98
VHT80	MCS0	1	58	5290	75.96	82.40	30.00	23.98

Test Band :	5GHz band 3	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	100	5500	18.10	23.05	29.58	23.98
11a	6Mbps	1	116	5580	18.00	23.05	29.55	23.98
11a	6Mbps	1	140	5700	18.15	22.90	29.59	23.98
HT20	MCS0	1	100	5500	18.95	23.30	29.78	23.98
HT20	MCS0	1	116	5580	18.90	23.20	29.76	23.98
HT20	MCS0	1	140	5700	18.95	23.35	29.78	23.98
HT40	MCS0	1	102	5510	36.80	41.67	30.00	23.98
HT40	MCS0	1	110	5550	36.70	41.58	30.00	23.98
HT40	MCS0	1	134	5670	36.70	41.58	30.00	23.98
VHT20	MCS0	1	100	5500	18.95	23.25	29.78	23.98
VHT20	MCS0	1	116	5580	19.05	23.25	29.80	23.98
VHT20	MCS0	1	140	5700	19.00	23.15	29.79	23.98
VHT40	MCS0	1	102	5510	36.70	41.13	30.00	23.98
VHT40	MCS0	1	110	5550	36.60	41.58	30.00	23.98
VHT40	MCS0	1	134	5670	36.70	41.40	30.00	23.98
VHT80	MCS0	1	106	5530	75.84	82.40	30.00	23.98

Maximum 99% Occupied Bandwidth	Maximum 26dB Bandwidth
	

Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the bands 5250-5350 MHz and 5470-5600 MHz and 5650-5725 MHz, bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B, where B is the 26 dB emissions bandwidth in 1-MHz. If transmitting antenna directional gain is greater than 6 dBi, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

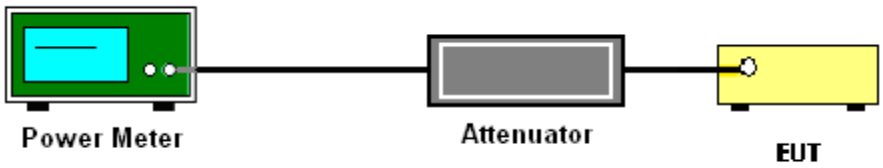
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D01 General UNII Test Procedures v01r04.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Test Band :	5GHz band 2	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	52	5260	0.27	9.01	23.98	2.00		Pass
11a	6Mbps	1	60	5300	0.27	9.54	23.98	2.00		Pass
11a	6Mbps	1	64	5320	0.27	9.66	23.98	2.00		Pass
HT20	MCS0	1	52	5260	0.31	9.80	23.98	2.00		Pass
HT20	MCS0	1	60	5300	0.31	9.93	23.98	2.00		Pass
HT20	MCS0	1	64	5320	0.31	10.00	23.98	2.00		Pass
HT40	MCS0	1	54	5270	0.63	10.36	23.98	2.00		Pass
HT40	MCS0	1	62	5310	0.63	10.41	23.98	2.00	-	Pass
VHT20	MCS0	1	52	5260	0.31	9.95	23.98	2.00		Pass
VHT20	MCS0	1	60	5300	0.31	10.39	23.98	2.00		Pass
VHT20	MCS0	1	64	5320	0.31	10.32	23.98	2.00		Pass
VHT40	MCS0	1	54	5270	0.62	10.30	23.98	2.00		Pass
VHT40	MCS0	1	62	5310	0.62	10.39	23.98	2.00		Pass
VHT80	MCS0	1	58	5290	1.14	9.27	23.98	2.00		Pass

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	IC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6Mbps	1	52	5260	0.27	9.01	23.56	2.00	29.56	Pass
11a	6Mbps	1	60	5300	0.27	9.54	23.61	2.00	29.61	Pass
11a	6Mbps	1	64	5320	0.27	9.66	23.55	2.00	29.55	Pass
HT20	MCS0	1	52	5260	0.31	9.80	23.74	2.00	29.74	Pass
HT20	MCS0	1	60	5300	0.31	9.93	23.80	2.00	29.80	Pass
HT20	MCS0	1	64	5320	0.31	10.00	23.76	2.00	29.76	Pass
HT40	MCS0	1	54	5270	0.63	10.36	23.98	2.00	30.00	Pass
HT40	MCS0	1	62	5310	0.63	10.41	23.98	2.00	30.00	Pass
VHT20	MCS0	1	52	5260	0.31	9.95	23.78	2.00	29.78	Pass
VHT20	MCS0	1	60	5300	0.31	10.39	23.78	2.00	29.78	Pass
VHT20	MCS0	1	64	5320	0.31	10.32	23.73	2.00	29.73	Pass
VHT40	MCS0	1	54	5270	0.62	10.30	23.98	2.00	30.00	Pass
VHT40	MCS0	1	62	5310	0.62	10.39	23.98	2.00	30.00	Pass
VHT80	MCS0	1	58	5290	1.14	9.27	23.98	2.00	30.00	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the 5250-5350 MHz and 5470-5600 MHz and 5650-5725 MHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log (B), where B is 26dB BW for FCC and 99% OBW for IC.

Test Band :	5GHz band 3	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6Mbps	1	100	5500	0.27	8.34	23.98	2.00		Pass
11a	6Mbps	1	116	5580	0.27	7.61	23.98	2.00		Pass
11a	6Mbps	1	140	5700	0.27	7.18	23.98	2.00		Pass
HT20	MCS0	1	100	5500	0.31	7.16	23.98	2.00		Pass
HT20	MCS0	1	116	5580	0.31	6.73	23.98	2.00		Pass
HT20	MCS0	1	140	5700	0.31	6.58	23.98	2.00		Pass
HT40	MCS0	1	102	5510	0.63	7.06	23.98	2.00		Pass
HT40	MCS0	1	110	5550	0.63	7.08	23.98	2.00		Pass
HT40	MCS0	1	134	5670	0.63	6.60	23.98	2.00	-	Pass
VHT20	MCS0	1	100	5500	0.31	7.48	23.98	2.00		Pass
VHT20	MCS0	1	116	5580	0.31	6.70	23.98	2.00		Pass
VHT20	MCS0	1	140	5700	0.31	6.65	23.98	2.00		Pass
VHT40	MCS0	1	102	5510	0.62	6.83	23.98	2.00		Pass
VHT40	MCS0	1	110	5550	0.62	7.41	23.98	2.00		Pass
VHT40	MCS0	1	134	5670	0.62	6.84	23.98	2.00		Pass
VHT80	MCS0	1	106	5530	1.14	6.02	23.98	2.00		Pass

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	IC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6Mbps	1	100	5500	0.27	8.34	23.58	2.00	29.58	Pass
11a	6Mbps	1	116	5580	0.27	7.61	23.55	2.00	29.55	Pass
11a	6Mbps	1	140	5700	0.27	7.18	23.59	2.00	29.59	Pass
HT20	MCS0	1	100	5500	0.31	7.16	23.78	2.00	29.78	Pass
HT20	MCS0	1	116	5580	0.31	6.73	23.76	2.00	29.76	Pass
HT20	MCS0	1	140	5700	0.31	6.58	23.78	2.00	29.78	Pass
HT40	MCS0	1	102	5510	0.63	7.06	23.98	2.00	30.00	Pass
HT40	MCS0	1	110	5550	0.63	7.08	23.98	2.00	30.00	Pass
HT40	MCS0	1	134	5670	0.63	6.60	23.98	2.00	30.00	Pass
VHT20	MCS0	1	100	5500	0.31	7.48	23.78	2.00	29.78	Pass
VHT20	MCS0	1	116	5580	0.31	6.70	23.80	2.00	29.80	Pass
VHT20	MCS0	1	140	5700	0.31	6.65	23.79	2.00	29.79	Pass
VHT40	MCS0	1	102	5510	0.62	6.83	23.98	2.00	30.00	Pass
VHT40	MCS0	1	110	5550	0.62	7.41	23.98	2.00	30.00	Pass
VHT40	MCS0	1	134	5670	0.62	6.84	23.98	2.00	30.00	Pass
VHT80	MCS0	1	106	5530	1.14	6.02	23.98	2.00	30.00	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the 5250-5350 MHz and 5470-5600 MHz and 5650-5725 MHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log (B), where B is 26dB BW for FCC and 99% OBW for IC.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the bands 5250-5350 MHz and 5470-5600 and 5650-5725 MHz, 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

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r04.

Section F) Peak power spectral density (PPSD).

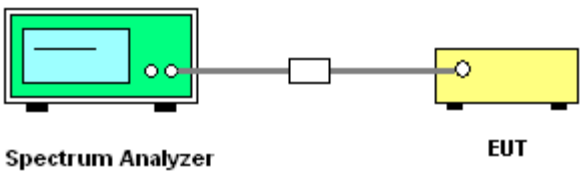
Note: Though the rule refers to “peak power spectral density”, the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission.

 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D01 General UNII Test Procedures v01r04.
   - Measure the duty cycle.
   - Set span to encompass the entire emission bandwidth (EBW) of the signal.
   - Set RBW = 1 MHz.
   - Set VBW ≥ 3 MHz.
   - Number of points in sweep ≥ 2 Span / RBW.
   - Sweep time = auto.
   - Detector = RMS
   - Trace average at least 100 traces in power averaging mode.
   - Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

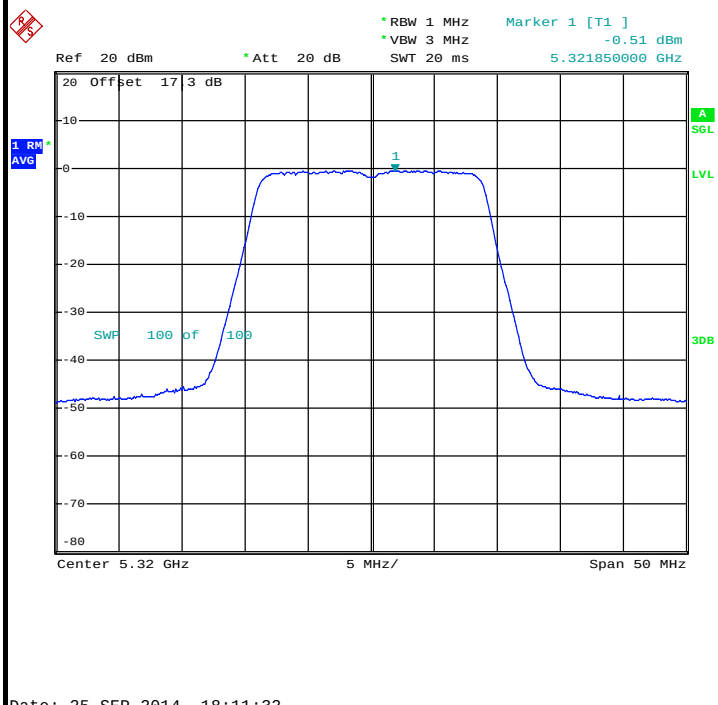
Test Band :	5GHz band 2	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	52	5260	0.27	-0.65	11.00	2.00	Pass
11a	6Mbps	1	60	5300	0.27	-0.31	11.00	2.00	Pass
11a	6Mbps	1	64	5320	0.27	-0.28	11.00	2.00	Pass
HT20	MCS0	1	52	5260	0.31	-0.99	11.00	2.00	Pass
HT20	MCS0	1	60	5300	0.31	-1.08	11.00	2.00	Pass
HT20	MCS0	1	64	5320	0.31	-0.64	11.00	2.00	Pass
HT40	MCS0	1	54	5270	0.63	-3.42	11.00	2.00	Pass
HT40	MCS0	1	62	5310	0.63	-2.97	11.00	2.00	Pass
VHT20	MCS0	1	52	5260	0.31	-0.63	11.00	2.00	Pass
VHT20	MCS0	1	60	5300	0.31	-0.57	11.00	2.00	Pass
VHT20	MCS0	1	64	5320	0.31	-0.20	11.00	2.00	Pass
VHT40	MCS0	1	54	5270	0.62	-3.01	11.00	2.00	Pass
VHT40	MCS0	1	62	5310	0.62	-2.59	11.00	2.00	Pass
VHT80	MCS0	1	58	5290	1.14	-6.00	11.00	2.00	Pass

Test Band :	5GHz band 3	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	100	5500	0.27	-1.58	11.00	2.00	Pass
11a	6Mbps	1	116	5580	0.27	-2.32	11.00	2.00	Pass
11a	6Mbps	1	140	5700	0.27	-2.62	11.00	2.00	Pass
HT20	MCS0	1	100	5500	0.31	-3.46	11.00	2.00	Pass
HT20	MCS0	1	116	5580	0.31	-4.30	11.00	2.00	Pass
HT20	MCS0	1	140	5700	0.31	-5.56	11.00	2.00	Pass
HT40	MCS0	1	102	5510	0.63	-7.30	11.00	2.00	Pass
HT40	MCS0	1	110	5550	0.63	-6.33	11.00	2.00	Pass
HT40	MCS0	1	134	5670	0.63	-6.88	11.00	2.00	Pass
VHT20	MCS0	1	100	5500	0.31	-3.06	11.00	2.00	Pass
VHT20	MCS0	1	116	5580	0.31	-3.95	11.00	2.00	Pass
VHT20	MCS0	1	140	5700	0.31	-5.35	11.00	2.00	Pass
VHT40	MCS0	1	102	5510	0.62	-6.89	11.00	2.00	Pass
VHT40	MCS0	1	110	5550	0.62	-6.02	11.00	2.00	Pass
VHT40	MCS0	1	134	5670	0.62	-6.61	11.00	2.00	Pass
VHT80	MCS0	1	106	5530	1.14	-8.92	11.00	2.00	Pass

Worst Case Power Spectral Density(dBm/MHz)



Note: Average Power Density (dB) = Measured value+ Duty Factor

3.4 Peak Excursion Ratio Measurement

3.4.1 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.

3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

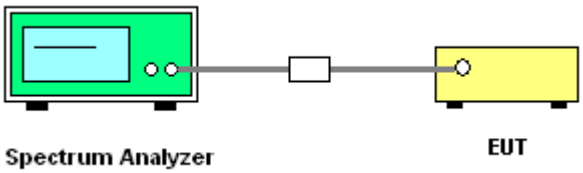
3.4.3 Test Procedures

The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r04.

Section G) Peak excursion measurement

1. The transmitter output is connected to the spectrum analyzer.
2. Set the spectrum analyzer span to view the entire emission bandwidth.
3. Find the maximum of the peak-max-hold spectrum.
   *Set RBW = 1MHz.
   *Set VBW ≥ 3MHz.
   *Detector = peak.
   *Trace mode = max-hold.
   *Allow the sweeps to continue until the trace stabilizes.
   *Use the peak search function to find the peak of the spectrum.
4. Use the procedure found under section 3.3 to measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

3.4.4 Test Setup



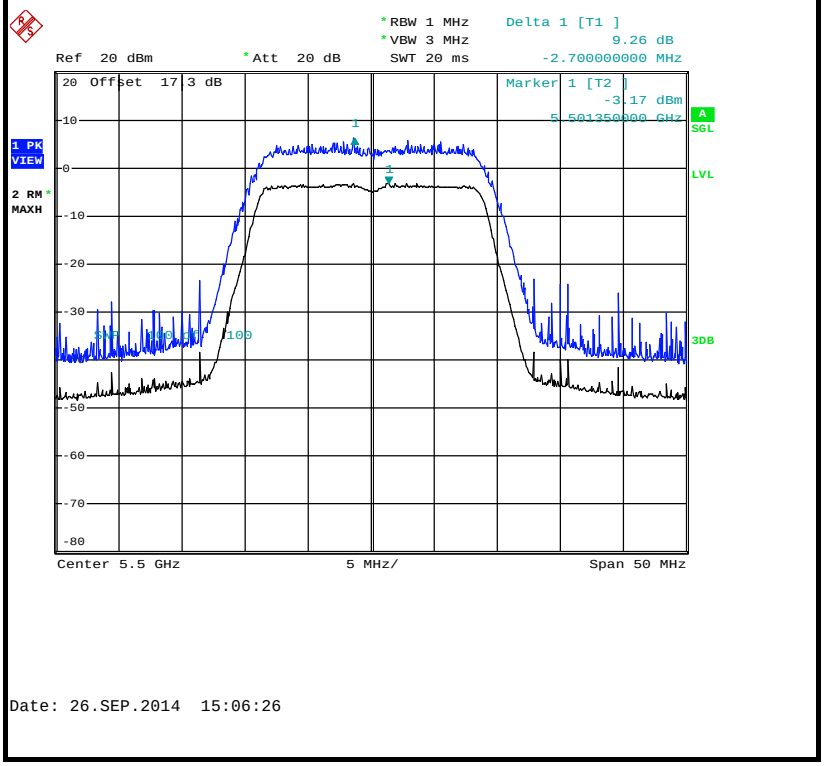
3.4.5 Test Result of Peak Excursion Ratio

Test Band :	5GHz band 3	Temperature :	24~25℃
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N_{TX}	Ch.	Freq. (MHz)	Peak Excursion Ratio (dB)					Max. Limits (dB)	Pass/Fail
					BPSK	QPSK	16QAM	64QAM	256QAM		
11a	6Mbps	1	100	5500	7.26	7.08	6.19	5.51	-	13	Pass
HT20	MCS0	1	100	5500	7.71	8.21	7.84	6.13	-	13	Pass
HT40	MCS0	1	102	5510	7.97	7.59	6.59	5.53	-	13	Pass
VHT20	MCS0	1	100	5500	7.75	8.66	7.33	6.92	5.30	13	Pass
VHT40	MCS0	1	102	5510	8.08	7.42	6.85	5.91	4.54	13	Pass
VHT80	MCS0	1	106	5530	7.27	6.48	5.20	4.35	4.05	13	Pass

Note: All modulation measured based on the minimum data rate setting.

Worst Case Peak Excursion Ratio (dB)



Note: Peak Excursion Ratio (dB) = Peak – (Average + Duty Cycle Offset)

Duty Cycle Offset: 0.60 dB

3.5 Unwanted Radiated Emission Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.5.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

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

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
- 27	68.3

(3) KDB789033 v01r04 H)2)c)(i) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r04. Section H) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- The setting follows the H) 5) of FCC KDB 789033.
- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

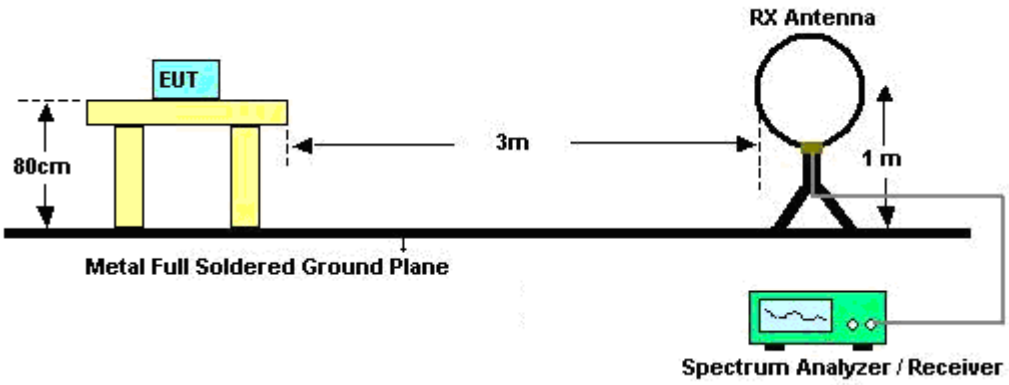
- The setting follows H) 6) of FCC KDB 789033.
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	93.96	1.43	0.70	1kHz
802.11n HT20	93.06	1.34	0.75	1kHz
802.11n HT40	86.53	0.67	1.50	3kHz
802.11ac VHT20	93.10	1.35	0.74	1kHz
802.11ac VHT40	86.60	0.67	1.49	3kHz
802.11ac VHT80	76.96	0.33	2.99	3kHz

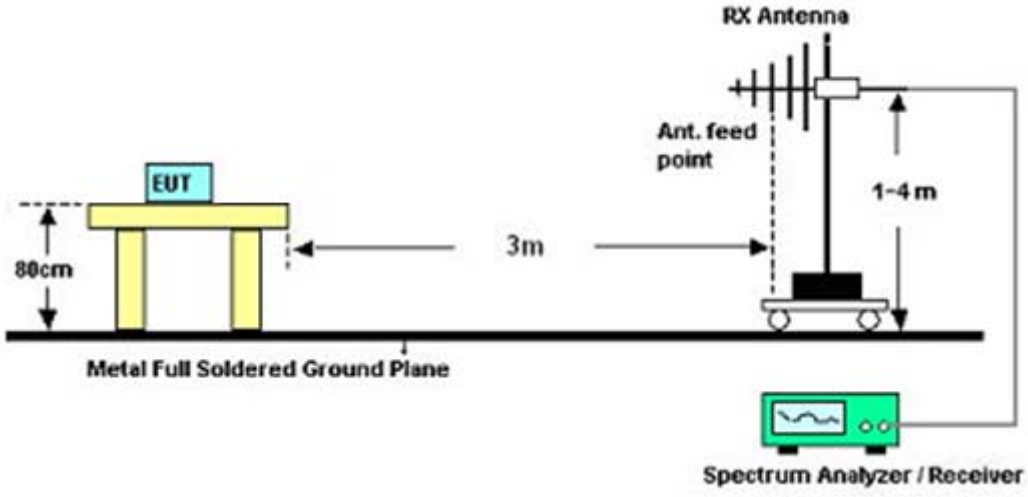
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. 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.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. 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 peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.5.4 Test Setup

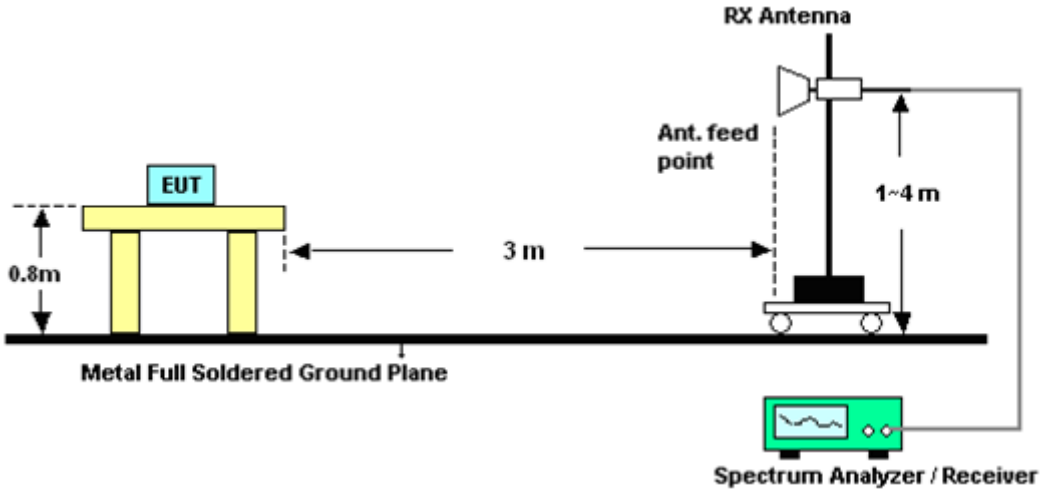
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result

3.5.6.1 Test Result of Radiated Band Edges

<Sample #1>

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	36	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.65	61.1	-12.9	74	54.24	35.25	5.38	33.77	100	21	Peak
5142.45	39.09	-14.91	54	32.23	35.25	5.38	33.77	100	21	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	59.13	-14.87	74	52.27	35.25	5.38	33.77	100	123	Peak
5145.2	38.63	-15.37	54	31.77	35.25	5.38	33.77	100	123	Average

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	140	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725.32	67.53	-6.47	74	60.06	35.52	5.65	33.7	100	16	Peak
5725	44.45	-9.55	54	36.98	35.52	5.65	33.7	100	16	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725.56	63.07	-10.93	74	55.6	35.52	5.65	33.7	100	86	Peak
5725.24	42.11	-11.89	54	34.64	35.52	5.65	33.7	100	86	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.75	63.63	-10.37	74	56.77	35.25	5.38	33.77	100	131	Peak
5147.5	38.46	-15.54	54	31.6	35.25	5.38	33.77	100	136	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5147.7	58.29	-15.71	74	51.43	35.25	5.38	33.77	100	221	Peak
5138.1	38.28	-15.72	54	31.44	35.24	5.38	33.78	100	221	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5469.92	60.84	-13.16	74	53.69	35.39	5.47	33.71	100	14	Peak
5469.12	39.75	-14.25	54	32.6	35.39	5.47	33.71	100	14	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5469.84	59.59	-14.41	74	52.44	35.39	5.47	33.71	100	33	Peak
5469.12	39.53	-14.47	54	32.38	35.39	5.47	33.71	100	33	Average

Test Mode :	802.11n HT40	Temperature :	22~23°C
Test Channel :	38	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5149.7	55.62	-18.38	74	48.76	35.25	5.38	33.77	100	20	Peak
5145.55	39.16	-14.84	54	32.3	35.25	5.38	33.77	100	20	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5149.3	53.06	-20.94	74	46.2	35.25	5.38	33.77	100	12	Peak
5107.15	38.68	-15.32	54	31.85	35.23	5.38	33.78	100	12	Average

Test Mode :	802.11n HT40	Temperature :	22~23°C
Test Channel :	102	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5468.24	58.53	-15.47	74	51.38	35.39	5.47	33.71	100	23	Peak
5469.52	40.6	-13.4	54	33.45	35.39	5.47	33.71	100	23	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5463.12	56.28	-17.72	74	49.13	35.39	5.47	33.71	100	29	Peak
5468.24	39.57	-14.43	54	32.42	35.39	5.47	33.71	100	29	Average

Test Mode :	802.11ac VHT20	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350.9	58.61	-15.39	74	51.57	35.32	5.45	33.73	120	10	Peak
5399.35	39.12	-14.88	54	32.03	35.35	5.46	33.72	120	10	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350	55.79	-18.21	74	48.75	35.32	5.45	33.73	100	123	Peak
5350.35	38.65	-15.35	54	31.61	35.32	5.45	33.73	100	123	Average

Test Mode :	802.11ac VHT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5469.92	59.55	-14.45	74	52.4	35.39	5.47	33.71	112	136	Peak
5469.76	39.96	-14.04	54	32.81	35.39	5.47	33.71	112	136	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5469.44	58.78	-15.22	74	51.63	35.39	5.47	33.71	100	25	Peak
5469.04	39.93	-14.07	54	32.78	35.39	5.47	33.71	100	25	Average

Test Mode :	802.11ac VHT40	Temperature :	22~23°C
Test Channel :	38	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5149.85	60.36	-13.64	74	53.5	35.25	5.38	33.77	100	160	Peak
5149.15	39.35	-14.65	54	32.49	35.25	5.38	33.77	100	160	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.3	55.35	-18.65	74	48.49	35.25	5.38	33.77	100	88	Peak
5125.2	38.78	-15.22	54	31.94	35.24	5.38	33.78	100	50	Average

Test Mode :	802.11ac VHT40	Temperature :	22~23°C
Test Channel :	102	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5466	55.74	-18.26	74	48.59	35.39	5.47	33.71	100	122	Peak
5469.76	40.83	-13.17	54	33.68	35.39	5.47	33.71	100	122	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5469.84	54.82	-19.18	74	47.67	35.39	5.47	33.71	100	186	Peak
5469.36	39.96	-14.04	54	32.81	35.39	5.47	33.71	100	186	Average

Test Mode :	802.11ac VHT80	Temperature :	22~23°C
Test Channel :	106	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5469.52	66.62	-7.38	74	59.47	35.39	5.47	33.71	100	134	Peak
5469.76	46.52	-7.48	54	39.37	35.39	5.47	33.71	100	134	Average
5732.6	52.41	-21.59	74	44.94	35.52	5.65	33.7	100	12	Peak
5764.68	40.16	-13.84	54	32.65	35.53	5.68	33.7	100	12	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5469.52	64.14	-9.86	74	56.99	35.39	5.47	33.71	100	122	Peak
5467.12	45.79	-8.21	54	38.64	35.39	5.47	33.71	100	122	Average
5728.04	52.62	-21.38	74	45.15	35.52	5.65	33.7	100	112	Peak
5735.24	39.07	-14.93	54	31.58	35.52	5.67	33.7	100	112	Average

<Sample #2>

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	140	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725.16	65.47	-8.53	74	58	35.52	5.65	33.7	100	201	Peak
5725.08	43.34	-10.66	54	35.87	35.52	5.65	33.7	100	201	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725.32	61.64	-12.36	74	54.17	35.52	5.65	33.7	100	230	Peak
5725	41.47	-12.53	54	34	35.52	5.65	33.7	100	228	Average

<Sample #3>

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	140	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5726.2	65.29	-8.71	74	57.82	35.52	5.65	33.7	100	209	Peak
5725.08	42.84	-11.16	54	35.37	35.52	5.65	33.7	100	206	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725.48	65.26	-8.74	74	57.79	35.52	5.65	33.7	100	265	Peak
5725	43.87	-10.13	54	36.4	35.52	5.65	33.7	100	265	Average

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

Note: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

<Sample #1>

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	36	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu	**Polarization :**	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	98.83	-	-	91.95	35.26	5.39	33.77	100	157	Peak
5180	88.08	-	-	81.2	35.26	5.39	33.77	100	157	Average
10359	33.95	-40.05	74	59.26	1.46	7.72	34.49	100	162	Peak

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	36	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu	**Polarization :**	Vertical
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	97.64	-	-	90.76	35.26	5.39	33.77	100	49	Peak
5180	86.28	-	-	79.4	35.26	5.39	33.77	100	49	Average
10359	33.83	-40.17	74	59.14	1.46	7.72	34.49	100	214	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
191.02	31.11	-12.39	43.5	54.86	8.55	1.26	33.56	100	145	Peak
286.08	22.5	-23.5	46	41.55	12.78	1.56	33.39	-	-	Peak
378.23	19.78	-26.22	46	35.96	15.38	1.77	33.33	-	-	Peak
551.86	20.34	-25.66	46	32.75	18.5	2.1	33.01	-	-	Peak
667.29	18.96	-27.04	46	30.52	19.02	2.35	32.93	-	-	Peak
913.67	23.49	-22.51	46	32.65	20.51	2.76	32.43	-	-	Peak
5700	105.31	-	-	97.89	35.5	5.62	33.7	100	24	Peak
5700	93.79	-	-	86.37	35.5	5.62	33.7	100	24	Average
11400	34.66	-39.34	74	55.79	4.13	8.74	34	100	154	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
191.02	27.35	-16.15	43.5	51.1	8.55	1.26	33.56	132	22	Peak
286.08	20.39	-25.61	46	39.44	12.78	1.56	33.39	-	-	Peak
461.65	21.31	-24.69	46	36.08	16.46	1.96	33.19	-	-	Peak
558.65	20.23	-25.77	46	32.58	18.51	2.15	33.01	-	-	Peak
659.53	18.62	-27.38	46	30.28	18.96	2.32	32.94	-	-	Peak
800.18	20.45	-25.55	46	30.66	19.85	2.56	32.62	-	-	Peak
5700	101.52	-	-	94.1	35.5	5.62	33.7	100	47	Peak
5700	90.45	-	-	83.03	35.5	5.62	33.7	100	47	Average
11400	34.3	-39.7	74	55.43	4.13	8.74	34	100	182	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	98.08	-	-	91.2	35.26	5.39	33.77	100	0	Peak
5180	86.09	-	-	79.21	35.26	5.39	33.77	100	0	Average
10359	33.95	-40.05	74	59.26	1.46	7.72	34.49	100	108	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	97.47	-	-	90.59	35.26	5.39	33.77	100	56	Peak
5180	85.21	-	-	78.33	35.26	5.39	33.77	100	56	Average
10359	33.64	-40.36	74	58.95	1.46	7.72	34.49	100	116	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5500 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5500	101.11	-	-	93.92	35.41	5.48	33.7	100	132	Peak
5500	89.42	-	-	82.23	35.41	5.48	33.7	100	132	Average
11001	32.28	-41.72	74	55.95	2.21	8.12	34	100	101	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5500 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5500	100.78	-	-	93.59	35.41	5.48	33.7	100	24	Peak
5500	87.62	-	-	80.43	35.41	5.48	33.7	100	24	Average
11001	32.53	-41.47	74	56.2	2.21	8.12	34	100	118	Peak

Test Mode :	802.11n HT40	Temperature :	22~23°C
Test Channel :	38	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5190 MHz is fundamental signal which can be ignored. 2. 10380 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5190	95.67	-	-	88.79	35.26	5.39	33.77	100	159	Peak
5190	84.03	-	-	77.15	35.26	5.39	33.77	100	159	Average
10380	35.61	-38.39	74	60.88	1.48	7.73	34.48	100	155	Peak

Test Mode :	802.11n HT40	Temperature :	22~23°C
Test Channel :	38	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5190 MHz is fundamental signal which can be ignored. 2. 10380 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5190	92.91	-	-	86.03	35.26	5.39	33.77	100	55	Peak
5190	82.46	-	-	75.58	35.26	5.39	33.77	100	55	Average
10380	34.16	-39.84	74	59.43	1.48	7.73	34.48	100	271	Peak

Test Mode :	802.11n HT40	Temperature :	22~23°C
Test Channel :	102	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5510 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5510	95.16	-	-	87.97	35.41	5.48	33.7	100	134	Peak
5510	83.83	-	-	76.64	35.41	5.48	33.7	100	134	Average
11019	35.7	-38.3	74	59.29	2.27	8.14	34	100	107	Peak

Test Mode :	802.11n HT40	Temperature :	22~23°C
Test Channel :	102	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5510 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5510	94.09	-	-	86.9	35.41	5.48	33.7	100	26	Peak
5510	83.48	-	-	76.29	35.41	5.48	33.7	100	26	Average
11019	34.19	-39.81	74	57.78	2.27	8.14	34	100	109	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	97.35	-	-	90.33	35.31	5.44	33.73	100	5	Peak
5320	85.98	-	-	78.96	35.31	5.44	33.73	100	5	Average
10641	33.59	-40.41	74	58.33	1.7	7.87	34.31	100	151	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	96.8	-	-	89.78	35.31	5.44	33.73	100	55	Peak
5320	84.72	-	-	77.7	35.31	5.44	33.73	100	55	Average
10641	32.68	-41.32	74	57.42	1.7	7.87	34.31	100	89	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5500 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5500	101.39	-	-	94.2	35.41	5.48	33.7	100	129	Peak
5500	88.99	-	-	81.8	35.41	5.48	33.7	100	129	Average
11001	32.28	-41.72	74	55.95	2.21	8.12	34	100	106	Peak

Test Mode :	802.11ac VHT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5500 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5500	100.04	-	-	92.85	35.41	5.48	33.7	100	30	Peak
5500	87.29	-	-	80.1	35.41	5.48	33.7	100	30	Average
11001	33.96	-40.04	74	57.63	2.21	8.12	34	100	210	Peak

Test Mode :	802.11ac VHT40	Temperature :	22~23°C
Test Channel :	38	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5190 MHz is fundamental signal which can be ignored. 2. 10380 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5190	95.98	-	-	89.1	35.26	5.39	33.77	100	133	Peak
5190	85.22	-	-	78.34	35.26	5.39	33.77	100	133	Average
10380	34.03	-39.97	74	59.3	1.48	7.73	34.48	100	126	Peak

Test Mode :	802.11ac VHT40	Temperature :	22~23°C
Test Channel :	38	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5190 MHz is fundamental signal which can be ignored. 2. 10380 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5190	92.77	-	-	85.89	35.26	5.39	33.77	100	94	Peak
5190	81.98	-	-	75.1	35.26	5.39	33.77	100	94	Average
10380	33.92	-40.08	74	59.19	1.48	7.73	34.48	100	161	Peak

Test Mode :	802.11ac VHT40	Temperature :	22~23°C
Test Channel :	102	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5510 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5510	95.51	-	-	88.32	35.41	5.48	33.7	100	131	Peak
5510	83.93	-	-	76.74	35.41	5.48	33.7	100	131	Average
11019	32.75	-41.25	74	56.34	2.27	8.14	34	100	108	Peak

Test Mode :	802.11ac VHT40	Temperature :	22~23°C
Test Channel :	102	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5510 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5510	94.37	-	-	87.18	35.41	5.48	33.7	110	29	Peak
5510	83.32	-	-	76.13	35.41	5.48	33.7	110	29	Average
11019	32.67	-41.33	74	56.26	2.27	8.14	34	100	147	Peak

Test Mode :	802.11ac VHT80	Temperature :	22~23°C
Test Channel :	106	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Horizontal
Remark :	1. 5530 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5530	95.92	-	-	88.71	35.42	5.49	33.7	100	100	Peak
5530	84.87	-	-	77.66	35.42	5.49	33.7	100	100	Average
11061	33.62	-40.38	74	56.96	2.46	8.2	34	100	151	Peak

Test Mode :	802.11ac VHT80	Temperature :	22~23°C
Test Channel :	106	Relative Humidity :	40~41%
Test Engineer :	Jun Liu	Polarization :	Vertical
Remark :	1. 5530 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5530	95.08	-	-	87.87	35.42	5.49	33.7	100	38	Peak
5530	83.73	-	-	76.52	35.42	5.49	33.7	100	38	Average
11061	35.88	-38.12	74	59.22	2.46	8.2	34	100	126	Peak

<Sample #2>

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	140	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu	**Polarization :**	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5700	101.78	-	-	94.36	35.5	5.62	33.7	100	195	Peak
5700	90.01	-	-	82.59	35.5	5.62	33.7	100	195	Average
11400	33.24	-40.76	74	54.37	4.13	8.74	34	100	154	Peak

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	140	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu	**Polarization :**	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5700	97.67	-	-	90.25	35.5	5.62	33.7	100	214	Peak
5700	87.54	-	-	80.12	35.5	5.62	33.7	100	214	Average
11400	35.83	-38.17	74	56.96	4.13	8.74	34	100	152	Peak

<Sample #3>

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	140	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu	**Polarization :**	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5700	102.52	-	-	95.1	35.5	5.62	33.7	100	211	Peak
5700	90.62	-	-	83.2	35.5	5.62	33.7	100	211	Average
11400	34.24	-39.76	74	55.37	4.13	8.74	34	100	51	Peak

Test Mode :	802.11a	**Temperature :**	22~23°C
Test Channel :	140	**Relative Humidity :**	40~41%
Test Engineer :	Jun Liu	**Polarization :**	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5700	102.33	-	-	94.91	35.5	5.62	33.7	100	272	Peak
5700	90.92	-	-	83.5	35.5	5.62	33.7	100	272	Average
11400	32.83	-41.17	74	53.96	4.13	8.74	34	100	251	Peak

3.6 Frequency Stability Measurement

3.6.1 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.

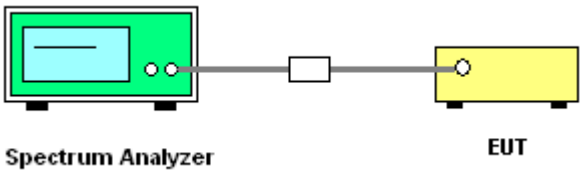
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 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.

3.6.4 Test Setup



3.6.5 Test Result of Frequency Stability

Test Band :	5GHz band 2,3	Test Engineer :	Issac Song

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (˚C)	Voltage (V)
11a	6Mbps	1	64	5320	5320.00	0.00	0.00	20	3.6
11a	6Mbps	1	64	5320	5320.00	0.00	0.00	20	4.2
11a	6Mbps	1	64	5320	5320.00	0.00	0.00	20	3.8
11a	6Mbps	1	64	5320	5320.00	0.00	0.00	-30	3.8
11a	6Mbps	1	64	5320	5320.00	0.00	0.00	50	3.8

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (˚C)	Voltage (V)
11a	6Mbps	1	100	5500	5500.00	0.00	0.00	20	3.6
11a	6Mbps	1	100	5500	5500.00	0.00	0.00	20	4.2
11a	6Mbps	1	100	5500	5500.00	0.00	0.00	20	3.8
11a	6Mbps	1	100	5500	5500.00	0.00	0.00	-30	3.8
11a	6Mbps	1	100	5500	5500.00	0.00	0.00	50	3.8

Note: Center Frequency = (Low Frequency + High Frequency) / 2.

3.7 Automatically Discontinue Transmission

3.7.1 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.

3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, 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.

3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Anti-Replacement Construction

Non-standard antenna connector is used.

3.8.3 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 Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 28, 2013	Sep. 25, 2014~ Sep. 26, 2014	Dec. 27, 2014	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	30MHz~40GHz	Feb. 27, 2014	Sep. 25, 2014~ Sep. 26, 2014	Feb. 26, 2015	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Feb. 27, 2014	Sep. 25, 2014~ Sep. 26, 2014	Feb. 26, 2015	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	(-40~+150)	Dec. 10, 2013	Sep. 25, 2014~ Sep. 26, 2014	Dec. 09, 2014	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Sep. 16, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101399	9kHz~30GHz	May 04, 2014	Sep. 16, 2014	May 03, 2015	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 09, 2013	Sep. 16, 2014	Oct. 08, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 08, 2014	Sep. 16, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 08, 2014	Sep. 16, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 18, 2013	Sep. 16, 2014	Nov. 17, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 10, 2014	Sep. 16, 2014	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Sep. 16, 2014	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02371	1GHz~26.5GHz	Dec. 10, 2013	Sep. 16, 2014	Dec. 09, 2014	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Sep. 16, 2014	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Sep. 16, 2014	NCR	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.5**

Appendix B. Product Equality Declaration

BYD Precision Manufacture CO.,LTD
No.3001,Baohe Road, Baolong Industrial, Longgang, Shenzhen, P.R., China
Tel: +86-10-58018888; Fax: +86-10-58018888 .73000

Product Equality Declaration

(Declaration of equality of a product variant with a previously assessed original product. To be signed in the name of the company that is responsible for the product variant)

We, **BYD Precision Manufacture CO., LTD**, declare on our sole responsibility for the product -- *Model Name: T01C003 (FCC ID: E2K-T01C003)* as below:

The main differences conducted to 2nd source are:

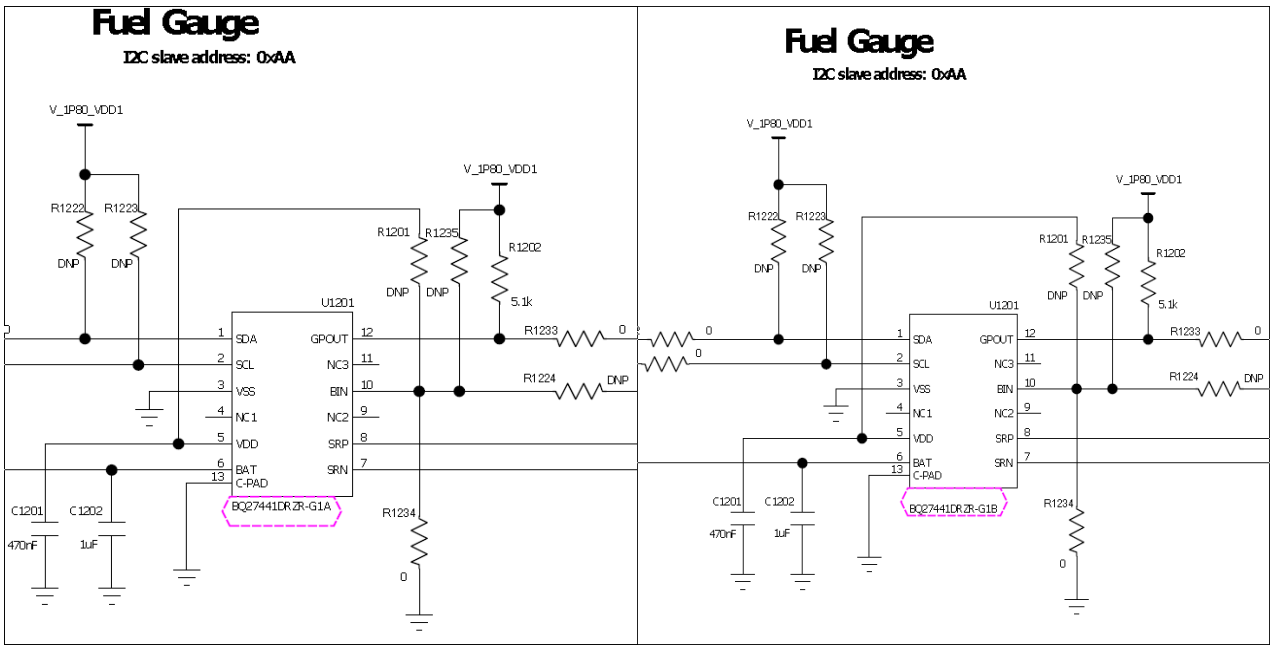
1. Add 2nd source of Adapter , P/N: LA10EUNM130 & LA10USNM130
2. Add 2nd source of DDR3, P/N: 11143382-00 & 11212957-00
3. Add 2nd source of EMMC, P/N: 11147188-00 & 11169784-00
4. Add 2nd source of LCD, P/N: 11218030-00 & 11170378-00 & 11218117-00
5. SW differences as below:

   Change from YTP802A110830 to Venue7 3740_V1.84_140916-NoModem
6. HW differences as below:

1. Fuel Gauge IC upgrade from BQ27441DRZR-G 1A to BQ27441DRZR-G1B.

SCH location:

P708-B1-BOT **B2**

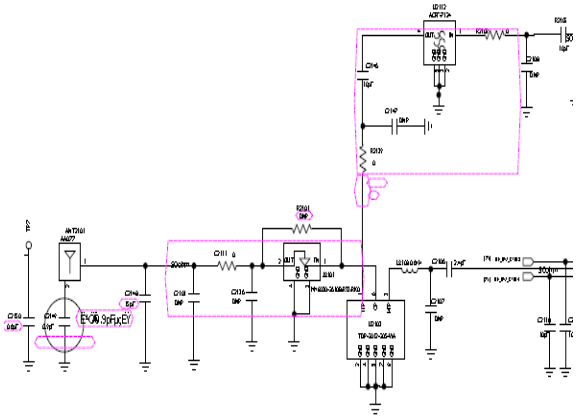


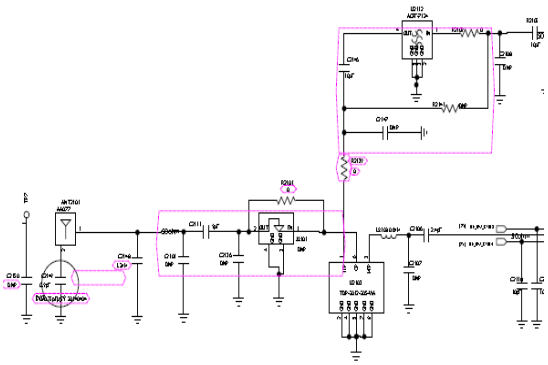
2. BT/WIFI antenna matching optimization.

C2149 change from 0402 0.75 PF to 0402 0.9 PF;
C2150 change from 0402 0.5 PF to 0402 DNP;
C2148 change from 0402 9 PF to 0402 1.2NH;
J2101 change from MM8030-2610B/RJ3/RK0 to DNP;
R2101 change from DNP to 0201 0R.

SCH location:

P708-B1-BOT **B2**





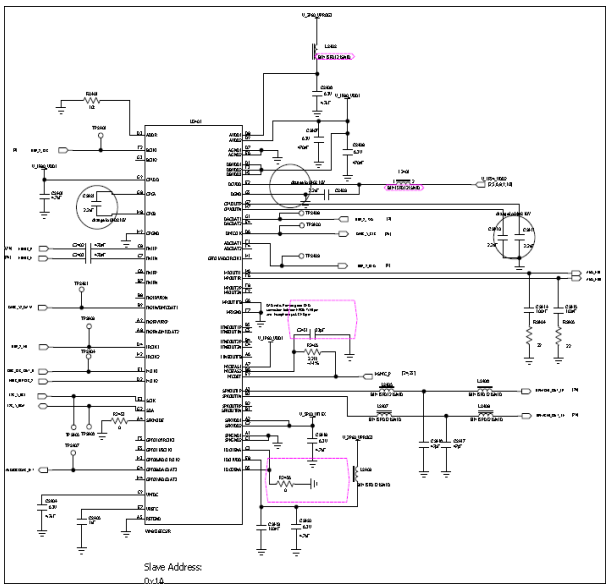
3. Optimization of audio circuit.

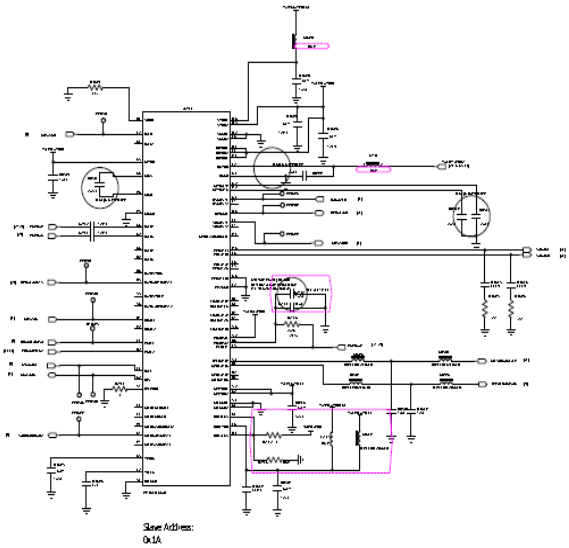
Add R2457 0R 0201 L2410;

Delete R2456, L2401, L2402 , L2409.

SCH location:

P708-B1-BOT **B2**



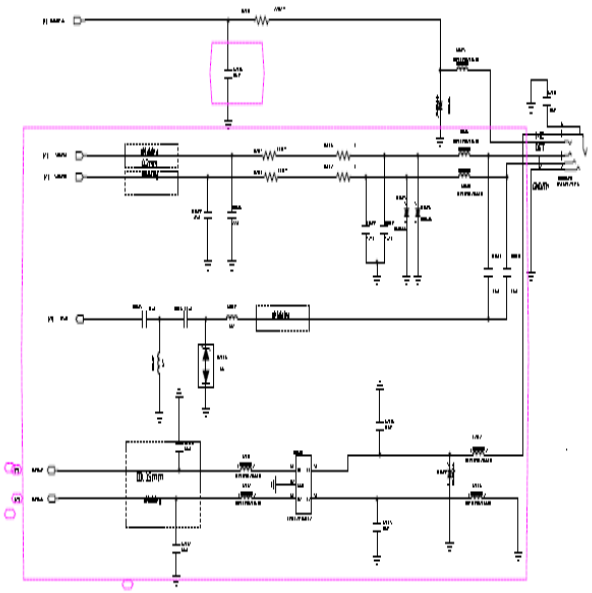


4. Optimization Headset interface circuit.

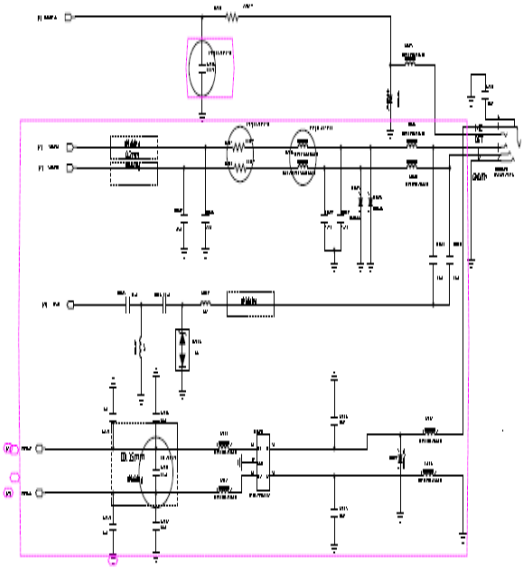
Add C2452 4.7uF 0402;
R2506 change from 0R 0402 to BLM15AG601SN1D;
R2507 change from 0R 0402 to BLM15AG601SN1D;
C2506 change from 0201 DNP to 0201 100nF;
R2504 change from 10R 0201 to 33R 0201;
R2505 change from 10R 0201 to 33R 0201;
Add C2515 33pF 0201.

SCH location:

P708-B1-BOT



B2

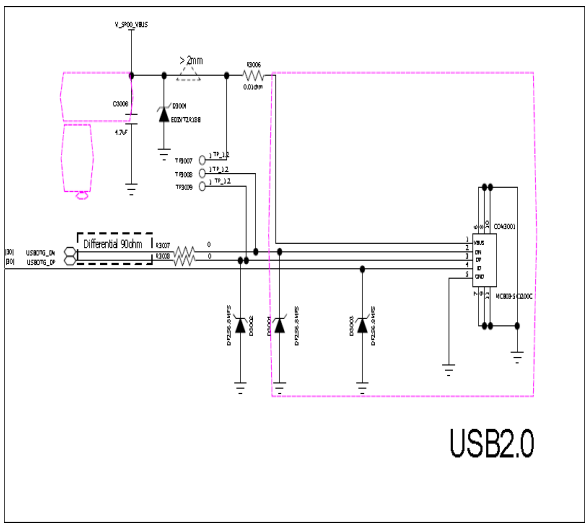


5. Replacing the USB connector.

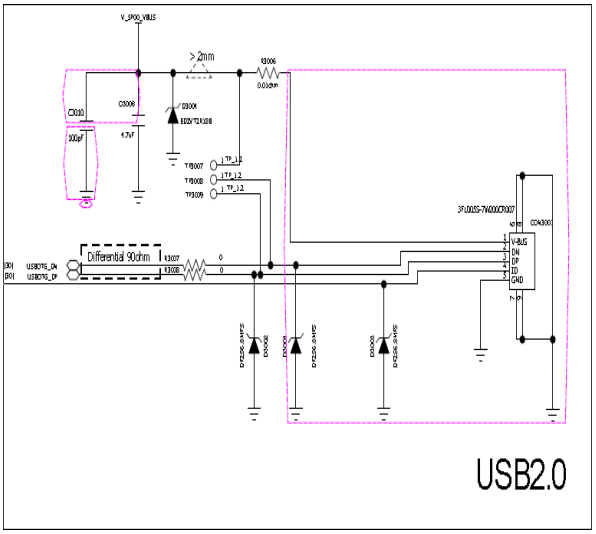
Connector changed from CON3001 MCB03-5K1200C to 3FU005S-7W200CR007.

SCH location:

P708-B1-BOT



B2

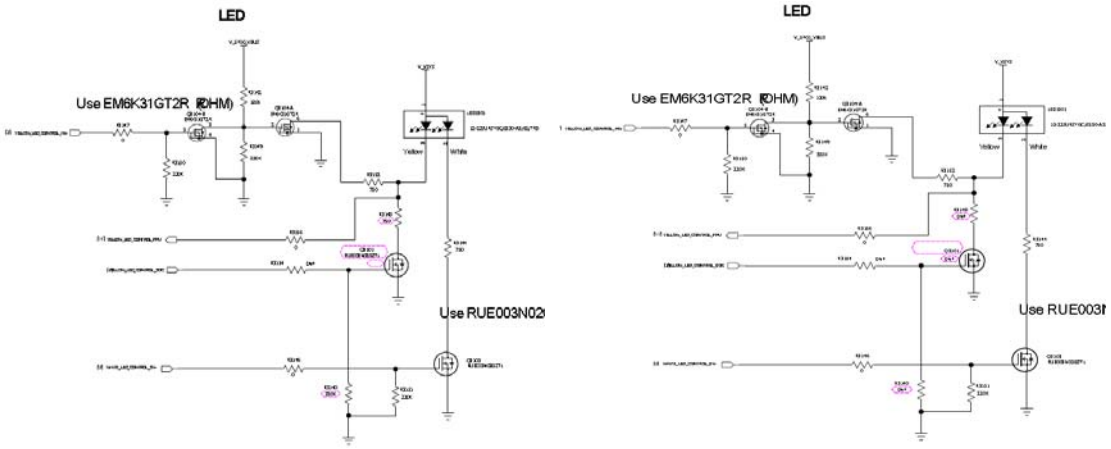


6. Optimization of LED lamp control circuit.

Q3101 change from RUE003N02GZTL to DNP;
R3148 change from 750 R to DNP;
R3140 change from 220K to DNP.

SCH location:

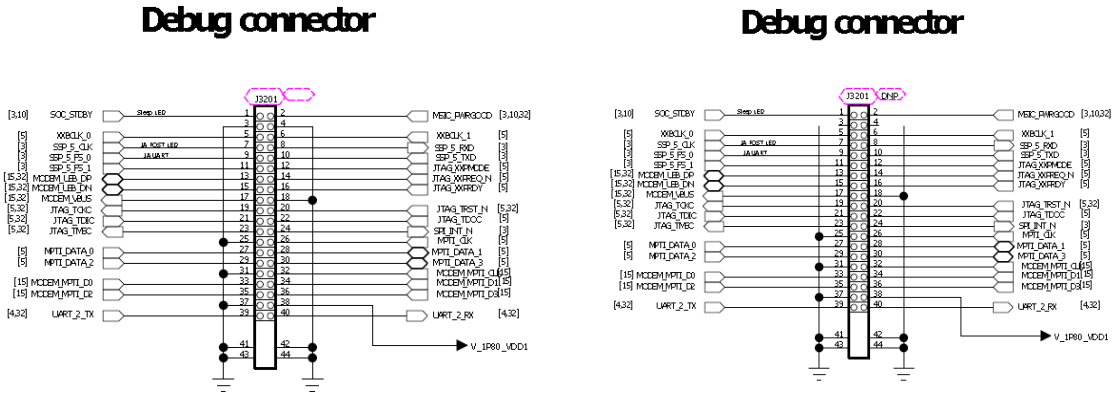
P708-B1-BOT **B2**



7. Delete Debug connector **DNP J3201.**

SCH location:

P708-B1-BOT **B2**



All of these changes listed above have been applied to the samples used for lab tests.

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E-Mail: tao.zeli@byd.com.