Variant FCC RF Test Report

APPLICANT	**:**	**Symbol Technologies, Inc.**
EQUIPMENT	**:**	**Touch Computer**
BRAND NAME	**:**	**Symbol**
MODEL NAME	**:**	**TC55AH**
FCC ID	**:**	**UZ7TC55AH**
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 Jun. 11, 2013 and testing was completed on Jun. 24, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been 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 INC., the test report shall not be reproduced except in full.

Louis Wu

Reviewed by: Louis Wu / Manager

Jones Tsai

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR322304-20B	Rev. 01	This is a variant report for updating the standard FCC new rule. All the test cases were performed on original report which can be referred to Sporton Report Number FR322304-07C.	Jan. 16, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	6dB Bandwidth	> 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	≤ -17, -27 dBm/MHz &15.209(a)	Pass	Under limit 1.07 dB at 5724.040 MHz
3.5	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.6	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.7	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Symbol Technologies, Inc.
One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.2 Manufacturer

Symbol Technologies, Inc.
One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Touch Computer
Brand Name	Symbol
Model Name	TC55AH
FCC ID	UZ7TC55AH
Sample 1	EUT with Scanner
Sample 2	EUT without Scanner
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC WLAN 11b/g/n (HT20) WLAN 11a/n (HT20/HT40) Bluetooth v4.0 EDR/LE
HW Version	DV1
SW Version	Android 4.1.2
FW Version	BSP 1.27
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. All tests were performed with sample 1.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	5725 MHz ~ 5850 MHz
Maximum Output Power	802.11a : 16.63 dBm / 0.0460 W 802.11n HT20 : 15.44 dBm / 0.0350 W 802.11n HT40 : 14.24 dBm / 0.0265 W
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Antenna Type	PIFA Antenna
Antenna Gain	0.81 dBi (Battery 1) 1.30 dBi (Battery 2)

Remark: The WLAN antenna is not changed while using battery cover 1 or 2. The antenna gain difference is due to antenna gain measurement result by using different battery covers.

1.5 Modification of EUT

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

1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH02-HY	03CH07-HY

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 D02 General UNII Test Procedures New Rules v01
- ANSI C63.4-2003

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151	**5755**	**159**	**5795**
	153	5765	161	5805
	155	5775	165	5825

Note: The above Frequency and Channel in boldface were 802.11n HT40.

2.2 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.

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		OFDM Data Rate							
		6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
CH 149	5745 MHz	13.47	13.11	13.10	13.13	13.15	13.11	13.14	13.06
CH 157	5785 MHz	**16.63**	16.61	16.60	16.57	16.56	16.62	16.60	16.57
CH 165	5825 MHz	16.53	16.51	16.47	16.52	16.48	16.51	15.51	15.43

Channel	Frequency	5GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 149	5745 MHz	13.49	13.26	13.27	13.28	13.33	13.15	13.03	13.01
CH 157	5785 MHz	15.41	15.36	15.33	15.35	15.35	15.39	15.35	15.21
CH 165	5825 MHz	**15.44**	15.40	15.34	15.36	15.30	15.35	15.33	15.20

Channel	Frequency	5GHz 802.11n HT40 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 151	5755 MHz	10.18	10.16	10.15	10.07	10.15	10.16	10.06	10.11
CH 159	5795 MHz	**14.24**	14.15	14.23	14.20	14.14	14.19	14.17	14.09

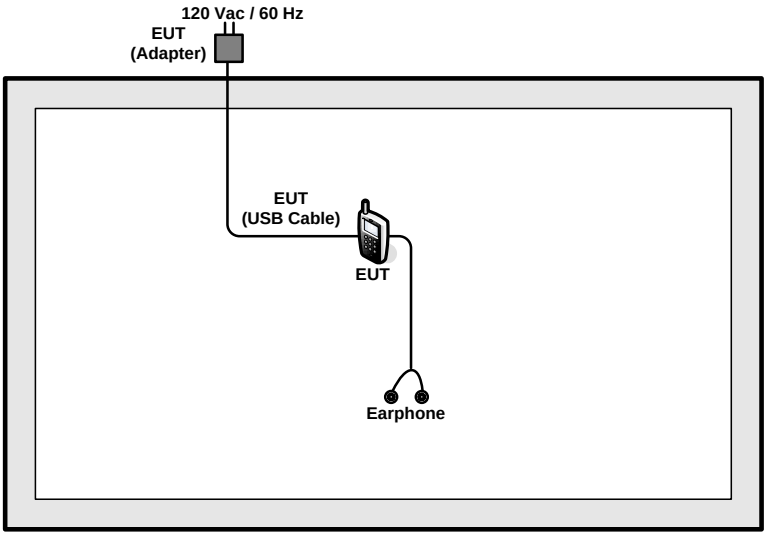
2.3 Test Mode

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	**6dB Bandwidth Power Spectral Density**	**802.11a**	**6 Mbps**	**L/M/H**
		802.11n HT20	**MCS0**	**L/M/H**
		802.11n HT40	**MCS0**	**L/H**
	Output Power	**802.11a**	**6 Mbps**	**L/M/H**
		802.11n HT20	**MCS0**	**L/M/H**
		802.11n HT40	**MCS0**	**L/H**
	Frequency Stability	**802.11a**	**6 Mbps**	**L**
Radiated TCs	**Radiated Band Edge**	**802.11a**	**6 Mbps**	**L/H**
		802.11n HT20	**MCS0**	**L/H**
		802.11n HT40	**MCS0**	**L/H**
	Radiated Spurious Emission	**802.11a**	**6 Mbps**	**L/M/H**
		802.11n HT20	**MCS0**	**L/M/H**
		802.11n HT40	**MCS0**	**L/H**
Remark: For Radiated TCs, all tests performed with Battery 2.				

Ch. #		**Band IV：5725-5850 MHz**		
		802.11a	**802.11n HT20**	**802.11n HT40**
L	**Low**	149	149	151
M	**Middle**	157	157	-
H	**High**	165	165	159

2.4 Connection Diagram of Test System



2.5 EUT Operation Test Setup

The programmed RF utility “QRCT”, 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.

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 4.2 dB and 10dB attenuator.

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Description of 6dB Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

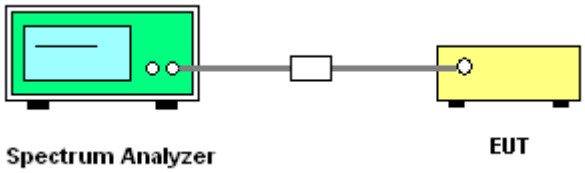
3.1.2 Measuring Instruments

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 D02 General UNII Test Procedures New Rules v01. Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

3.1.4 Test Setup

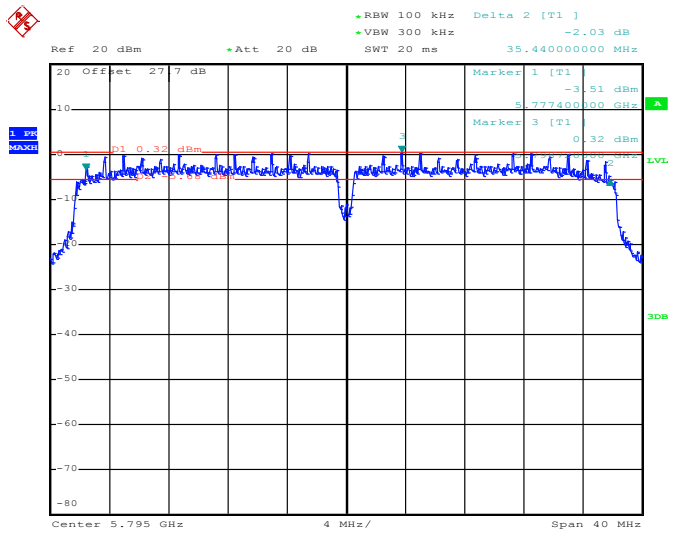


3.1.5 Test Result of 6dB Bandwidth

Test Band :	5GHz band 4	Temperature :	21~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	45~54%

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	6 dB Bandwidth (MHz)	FCC 6 dB Bandwidth Min. Limit (MHz)	Pass/Fail
11a	6Mbps	1	149	5745	16.32	0.5	Pass
11a	6Mbps	1	157	5785	16.32	0.5	Pass
11a	6Mbps	1	165	5825	16.32	0.5	Pass
HT20	MCS0	1	149	5745	17.56	0.5	Pass
HT20	MCS0	1	157	5785	17.56	0.5	Pass
HT20	MCS0	1	165	5825	17.54	0.5	Pass
HT40	MCS0	1	151	5755	35.12	0.5	Pass
HT40	MCS0	1	159	5795	35.44	0.5	Pass

Maximum 6dB Bandwidth



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3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

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.

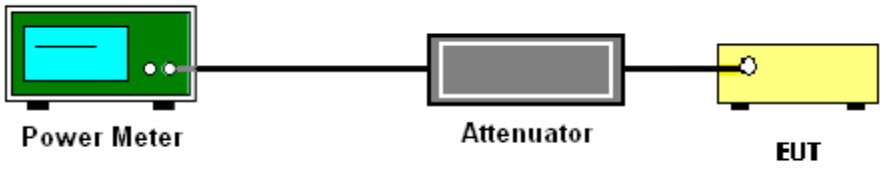
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.

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 4	Temperature :	21~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	45~54%

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	Pass /Fail
11a	6Mbps	1	149	5745	0.59	13.47	30.00	1.30	Pass
11a	6Mbps	1	157	5785	0.59	16.63	30.00	1.30	Pass
11a	6Mbps	1	165	5825	0.59	16.53	30.00	1.30	Pass
HT20	MCS0	1	149	5745	0.63	13.49	30.00	1.30	Pass
HT20	MCS0	1	157	5785	0.63	15.41	30.00	1.30	Pass
HT20	MCS0	1	165	5825	0.63	15.44	30.00	1.30	Pass
HT40	MCS0	1	151	5755	0.63	10.18	30.00	1.30	Pass
HT40	MCS0	1	159	5795	0.63	14.24	30.00	1.30	Pass

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

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.

3.3.2 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 D02 General UNII Test Procedures New Rules v01.
Section F) Maximum power spectral density.

 # Method SA-2 #

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

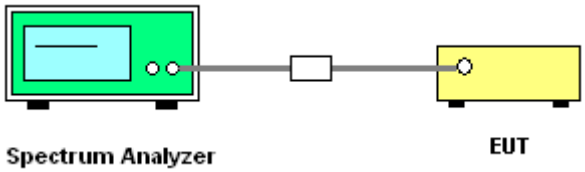
1. The testing follows Method SA-2 of FCC KDB 789033 D01 General UNII Test Procedures v01r03.
   - Measure the duty cycle.
   - Set span to encompass the entire emission bandwidth (EBW) of the signal.
   - Set RBW = 300 kHz.
   - Set VBW ≥ 1 MHz.
   - Number of points in sweep ≥ 2 Span / RBW.
   - Sweep time = auto.
   - Detector = RMS
   - Trace average at least 100 traces in power averaging mode.
   - Add 10 log(500kHz/RBW) to the test result.
   - 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.
4. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

   Method (1): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

3.3.4 Test Setup

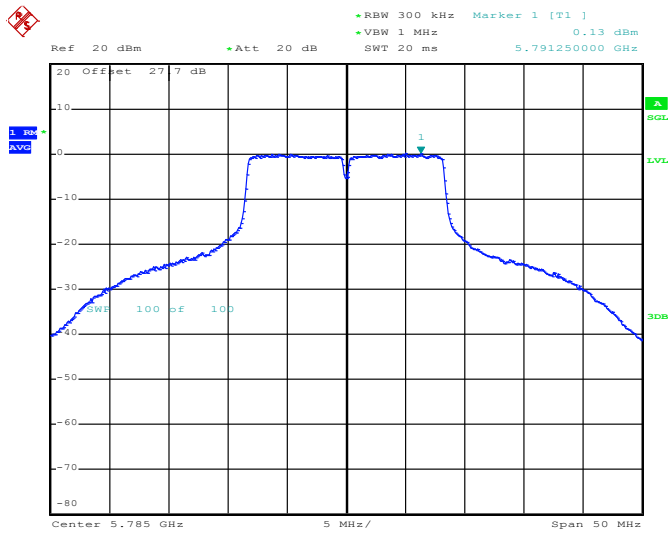


3.3.5 Test Result of Power Spectral Density

Test Band :	5GHz band 4	Temperature :	21~26℃
Test Engineer :	Bill Kuo	Relative Humidity :	45~54%

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Duty Factor (dB)	10log (500kHz /RBW) Factor (dB)	Average Power Density (dBm/500kHz)	Average PSD Limit (dBm/500kHz)	DG (dBi)	Pass /Fail
11a	6Mbps	1	149	5745	0.59	2.22	-2.91	30.00	1.30	Pass
11a	6Mbps	1	157	5785	0.59	2.22	0.72	30.00	1.30	Pass
11a	6Mbps	1	165	5825	0.59	2.22	-0.02	30.00	1.30	Pass
HT20	MCS0	1	149	5745	0.63	2.22	-3.02	30.00	1.30	Pass
HT20	MCS0	1	157	5785	0.63	2.22	-0.55	30.00	1.30	Pass
HT20	MCS0	1	165	5825	0.63	2.22	-0.60	30.00	1.30	Pass
HT40	MCS0	1	151	5755	0.63	2.22	-8.99	30.00	1.30	Pass
HT40	MCS0	1	159	5795	0.63	2.22	-4.60	30.00	1.30	Pass

Worst Case Power Density (dBm/500kHz)



3.4 Unwanted Emissions 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.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5725-5850 MHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBμV/m); for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz (68.3dBμV/m).

(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 v01r03 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.

3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01. Section G) 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

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

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

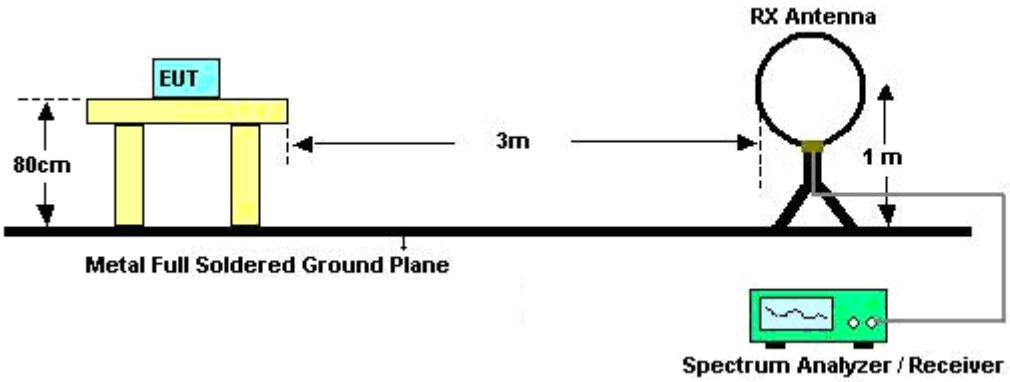
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11a	87.26	1370.00	0.73	1kHz
1	802.11n HT20	86.49	1280.00	0.78	1kHz
1	802.11n HT40	86.49	640.00	1.56	3kHz

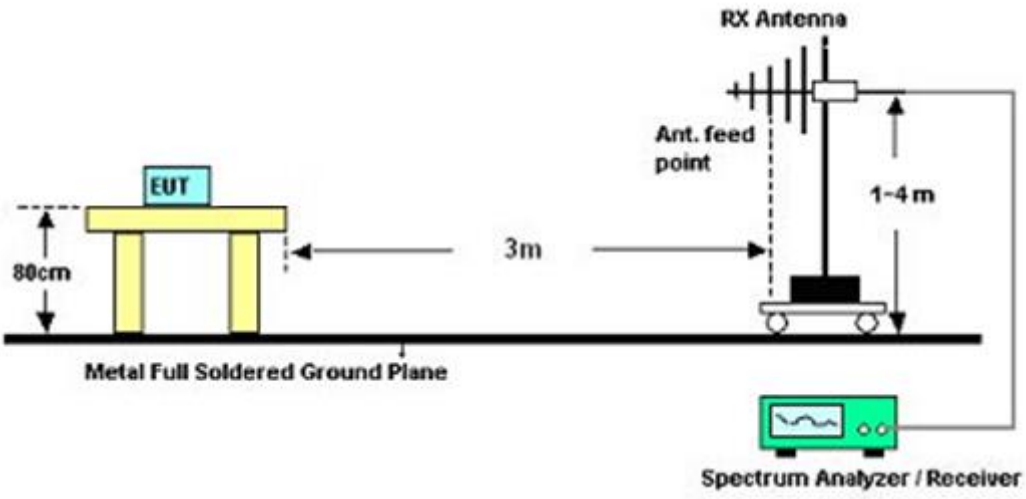
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters 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.

3.4.4 Test Setup

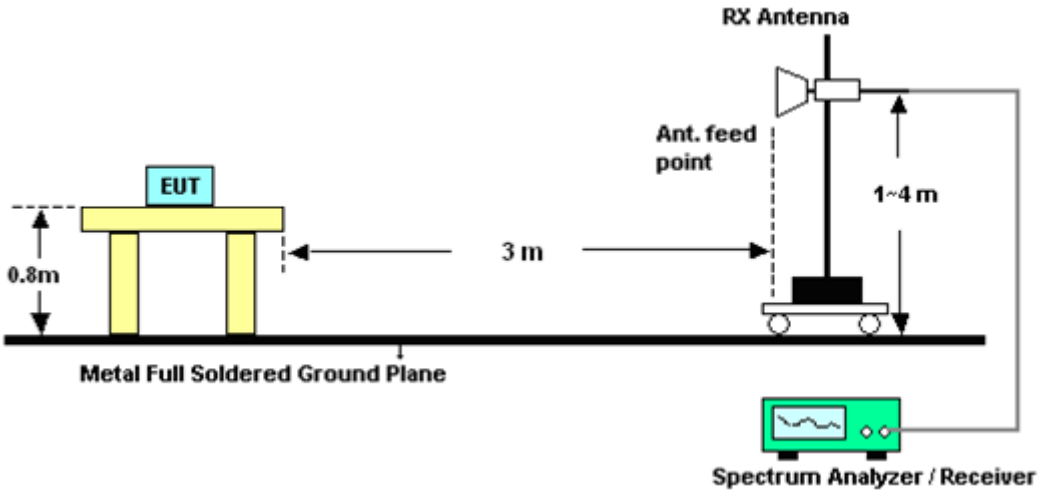
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 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.

3.4.6 Test Result of Radiated Band Edges

Test Mode :	802.11a	**Temperature :**	23~25°C
Test Channel :	149	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh		

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**
5711.88	59.17	-9.13	68.3	48.08	35.22	10.02	34.15	148	247	Peak
5724.12	76.32	-1.98	78.3	65.2	35.23	10.04	34.15	148	247	Peak

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**
5713.88	57.92	-10.38	68.3	46.83	35.22	10.02	34.15	142	255	Peak
5724.92	74.33	-3.97	78.3	63.21	35.23	10.04	34.15	142	255	Peak

Test Mode :	802.11a	**Temperature :**	23~25°C
Test Channel :	165	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh		

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**
5851.84	73.08	-5.22	78.3	61.95	35.31	10.13	34.31	100	148	Peak
5860.24	66.87	-1.43	68.3	55.75	35.32	10.15	34.35	100	148	Peak

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**
5850.96	74.96	-3.34	78.3	63.83	35.31	10.13	34.31	179	113	Peak
5861.84	66.83	-1.47	68.3	55.71	35.32	10.15	34.35	179	113	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	149	Relative Humidity :	44~48%
Test Engineer :	Stan Hsieh		

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
5713.48	60.24	-8.06	68.3	49.15	35.22	10.02	34.15	147	256	Peak
5724.92	75.91	-2.39	78.3	64.79	35.23	10.04	34.15	147	256	Peak

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
5714.76	61.03	-7.27	68.3	49.94	35.22	10.02	34.15	141	255	Peak
5724.04	77.23	-1.07	78.3	66.11	35.23	10.04	34.15	141	255	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	165	Relative Humidity :	44~48%
Test Engineer :	Stan Hsieh		

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
5850.8	73.65	-4.65	78.3	62.52	35.31	10.13	34.31	144	262	Peak
5861.2	66.77	-1.53	68.3	55.65	35.32	10.15	34.35	144	262	Peak

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
5850.08	73.71	-4.59	78.3	62.58	35.31	10.13	34.31	158	278	Peak
5860.56	67.17	-1.13	68.3	56.05	35.32	10.15	34.35	158	278	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	151	Relative Humidity :	44~48%
Test Engineer :	Stan Hsieh		

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
5714.92	64.58	-3.72	68.3	53.49	35.22	10.02	34.15	124	223	Peak
5724.6	69.54	-8.76	78.3	58.42	35.23	10.04	34.15	124	223	Peak
5857.36	54.61	-23.69	78.3	43.47	35.32	10.13	34.31	124	223	Peak
5875.12	54.38	-13.92	68.3	43.25	35.33	10.15	34.35	124	223	Peak

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
5714.84	65.87	-2.43	68.3	54.78	35.22	10.02	34.15	156	268	Peak
5725	70.94	-7.36	78.3	59.82	35.23	10.04	34.15	156	268	Peak
5859.12	53.85	-24.45	78.3	42.75	35.32	10.13	34.35	156	268	Peak
5868.8	55.07	-13.23	68.3	43.95	35.32	10.15	34.35	156	268	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	159	Relative Humidity :	44~48%
Test Engineer :	Stan Hsieh		

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
5706.68	56.6	-11.7	68.3	45.51	35.22	10.02	34.15	135	263	Peak
5723.24	57.94	-20.36	78.3	46.82	35.23	10.04	34.15	135	263	Peak
5850.72	62.35	-15.95	78.3	51.22	35.31	10.13	34.31	135	263	Peak
5864.08	62.03	-6.27	68.3	50.91	35.32	10.15	34.35	135	263	Peak

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
5710.28	56.97	-11.33	68.3	45.88	35.22	10.02	34.15	161	249	Peak
5719.48	59.48	-18.82	78.3	48.36	35.23	10.04	34.15	161	249	Peak
5850.48	62.43	-15.87	78.3	51.3	35.31	10.13	34.31	161	249	Peak
5861.76	60.31	-7.99	68.3	49.19	35.32	10.15	34.35	161	249	Peak

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

Test Mode :	802.11a	**Temperature :**	23~25°C
Test Channel :	149	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5747 MHz is fundamental signal which can be ignored.. 2. 17235 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
81.3	20.06	-19.94	40	42.55	7.79	0.89	31.17	-	-	Peak
133.68	23.64	-19.86	43.5	42.05	11.52	1.17	31.1	-	-	Peak
222.24	24.85	-21.15	46	43.77	10.65	1.43	31	-	-	Peak
333.6	23	-23	46	37.92	14.22	1.86	31	-	-	Peak
604.5	26.23	-19.77	46	34.29	19.83	2.7	30.59	-	-	Peak
902.7	30.01	-15.99	46	33.83	23.14	3.35	30.31	163	75	Peak
5747	95.86	-	-	84.73	35.24	10.06	34.17	148	247	Average
5747	105.3	-	-	94.17	35.24	10.06	34.17	148	247	Peak
11490	46.3	-27.7	74	50.75	38.19	14.33	56.97	100	0	Peak
17235	49.74	-18.56	68.3	47.12	42.21	16.6	56.19	100	0	Peak

Test Mode :	802.11a	**Temperature :**	23~25°C
Test Channel :	149	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5747 MHz is fundamental signal which can be ignored.. 2. 17235 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
58.08	22.03	-17.97	40	46.04	6.5	0.75	31.26	100	95	Peak
159.6	24.33	-19.17	43.5	43.81	10.5	1.22	31.2	-	-	Peak
280.56	23.99	-22.01	46	40.22	13.03	1.64	30.9	-	-	Peak
303.5	22.05	-23.95	46	37.87	13.4	1.78	31	-	-	Peak
530.3	25.12	-20.88	46	34.72	18.61	2.51	30.72	-	-	Peak
899.9	25.4	-20.6	46	29.26	23.1	3.34	30.3	-	-	Peak
5747	93.9	-	-	82.77	35.24	10.06	34.17	142	255	Average
5747	103.97	-	-	92.84	35.24	10.06	34.17	142	255	Peak
11490	47.9	-26.1	74	52.35	38.19	14.33	56.97	100	0	Peak
17235	49.84	-18.46	68.3	47.22	42.21	16.6	56.19	100	0	Peak

Test Mode :	802.11a	**Temperature :**	23~25°C
Test Channel :	157	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5783 MHz is fundamental signal which can be ignored.. 2. 17346 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
32.16	25.54	-14.46	40	37.85	18.56	0.55	31.42	100	129	Peak
98.31	14.53	-28.97	43.5	35.08	9.56	0.99	31.1	-	-	Peak
156.9	21.98	-21.52	43.5	41.22	10.71	1.22	31.17	-	-	Peak
351.1	19.41	-26.59	46	33.79	14.69	1.98	31.05	-	-	Peak
666.8	25.74	-20.26	46	33.01	20.33	2.87	30.47	-	-	Peak
871.9	27.52	-18.48	46	31.75	22.82	3.3	30.35	-	-	Peak
5783	99.49	-	-	88.38	35.27	10.07	34.23	135	251	Average
5783	109.62	-	-	98.51	35.27	10.07	34.23	135	251	Peak
11565	47.26	-26.74	74	51.4	38.27	14.41	56.82	100	0	Peak
17346	51.37	-16.93	68.3	48.72	42.12	16.75	56.22	100	0	Peak

Test Mode :	802.11a	**Temperature :**	23~25°C
Test Channel :	157	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5783 MHz is fundamental signal which can be ignored.. 2. 17346 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
30.27	22.73	-17.27	40	33.7	20	0.53	31.5	-	-	Peak
79.95	24.81	-15.19	40	47.56	7.57	0.88	31.2	100	72	Peak
195.78	20.57	-22.93	43.5	41.31	9.06	1.3	31.1	-	-	Peak
423.9	22.24	-23.76	46	34.3	16.5	2.22	30.78	-	-	Peak
646.5	25.32	-20.68	46	32.83	20.17	2.83	30.51	-	-	Peak
880.3	29.31	-16.69	46	33.43	22.91	3.31	30.34	-	-	Peak
5783	96.57	-	-	85.46	35.27	10.07	34.23	144	268	Average
5783	107.12	-	-	96.01	35.27	10.07	34.23	144	268	Peak
11565	49.04	-24.96	74	53.18	38.27	14.41	56.82	100	0	Peak
17346	50.26	-18.04	68.3	47.61	42.12	16.75	56.22	100	0	Peak

Test Mode :	802.11a	**Temperature :**	23~25°C
Test Channel :	165	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5825 MHz is fundamental signal which can be ignored.. 2. 17475 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
37.29	23.43	-16.57	40	39.41	14.66	0.6	31.24	106	169	Peak
100.47	19.28	-24.22	43.5	39.49	9.89	1	31.1	-	-	Peak
288.66	21.49	-24.51	46	37.71	13.15	1.69	31.06	-	-	Peak
369.3	23.29	-22.71	46	37.08	15.19	2.08	31.06	-	-	Peak
631.1	26.5	-19.5	46	34.21	20.05	2.78	30.54	-	-	Peak
875.4	23.89	-22.11	46	28.07	22.86	3.31	30.35	-	-	Peak
5825	99.03	-	-	87.89	35.3	10.11	34.27	132	238	Average
5825	108.84	-	-	97.7	35.3	10.11	34.27	132	238	Peak
11649	46.59	-27.41	74	50.29	38.39	14.52	56.61	100	0	Peak
17475	50.84	-17.46	68.3	48.17	42.03	16.89	56.25	100	0	Peak

Test Mode :	802.11a	**Temperature :**	23~25°C
Test Channel :	165	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5825 MHz is fundamental signal which can be ignored.. 2. 17475 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
30.54	25.01	-14.99	40	36.65	19.28	0.54	31.46	100	345	Peak
78.87	24.18	-15.82	40	47.06	7.45	0.87	31.2	-	-	Peak
134.22	24.23	-19.27	43.5	42.64	11.52	1.17	31.1	-	-	Peak
412	20.82	-25.18	46	33.22	16.26	2.18	30.84	-	-	Peak
638.8	24.35	-21.65	46	31.95	20.11	2.81	30.52	-	-	Peak
920.2	27.87	-18.13	46	31.41	23.41	3.39	30.34	-	-	Peak
5825	99.75	-	-	88.61	35.3	10.11	34.27	141	261	Average
5825	109.08	-	-	97.94	35.3	10.11	34.27	141	261	Peak
11649	47.86	-26.14	74	51.56	38.39	14.52	56.61	100	0	Peak
17475	51.36	-16.94	68.3	48.69	42.03	16.89	56.25	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	23~25°C
Test Channel :	149	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5745 MHz is fundamental signal which can be ignored.. 2. 17235 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
30.54	22.69	-17.31	40	34.33	19.28	0.54	31.46	116	85	Peak
146.37	22.67	-20.83	43.5	41.29	11.27	1.21	31.1	-	-	Peak
214.95	22.38	-21.12	43.5	41.86	10.18	1.39	31.05	-	-	Peak
322.4	19.23	-26.77	46	34.51	13.9	1.82	31	-	-	Peak
426.7	24.21	-21.79	46	36.18	16.57	2.23	30.77	-	-	Peak
727.7	24.46	-21.54	46	30.84	21.01	3.01	30.4	-	-	Peak
5745	95.55	-	-	84.42	35.24	10.06	34.17	147	256	Average
5745	104.84	-	-	93.71	35.24	10.06	34.17	147	256	Peak
11490	46.87	-27.13	74	51.32	38.19	14.33	56.97	100	0	Peak
17235	49.57	-18.73	68.3	46.95	42.21	16.6	56.19	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	23~25°C
Test Channel :	149	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5744 MHz is fundamental signal which can be ignored.. 2. 17235 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
30	21.64	-18.36	40	32.61	20	0.53	31.5	-	-	Peak
76.17	22.2	-17.8	40	45.35	7.19	0.86	31.2	155	123	Peak
128.82	23.12	-20.38	43.5	41.46	11.62	1.14	31.1	-	-	Peak
426.7	20.73	-25.27	46	32.7	16.57	2.23	30.77	-	-	Peak
748	24.3	-21.7	46	30.33	21.31	3.06	30.4	-	-	Peak
961.5	26.84	-27.16	54	29.7	24.02	3.47	30.35	-	-	Peak
5744	96.3	-	-	85.17	35.24	10.06	34.17	141	255	Average
5744	105.94	-	-	94.81	35.24	10.06	34.17	141	255	Peak
11490	47.52	-26.48	74	51.97	38.19	14.33	56.97	100	0	Peak
17235	49.72	-18.58	68.3	47.1	42.21	16.6	56.19	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	23~25°C
Test Channel :	157	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5785 MHz is fundamental signal which can be ignored.. 2. 17355 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
31.89	24.47	-15.53	40	36.78	18.56	0.55	31.42	149	325	Peak
154.2	23.72	-19.78	43.5	42.74	10.92	1.21	31.15	-	-	Peak
245.19	19.11	-26.89	46	36.32	12.26	1.53	31	-	-	Peak
442.1	24.71	-21.29	46	36.25	16.89	2.28	30.71	-	-	Peak
644.4	25.91	-20.09	46	33.45	20.15	2.82	30.51	-	-	Peak
862.1	28.24	-17.76	46	32.6	22.72	3.29	30.37	-	-	Peak
5785	98.12	-	-	87.01	35.27	10.07	34.23	156	268	Average
5785	107.92	-	-	96.81	35.27	10.07	34.23	156	268	Peak
11571	48.54	-25.46	74	52.61	38.3	14.41	56.78	100	0	Peak
17355	50.46	-17.84	68.3	47.81	42.12	16.75	56.22	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	23~25°C
Test Channel :	157	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5785 MHz is fundamental signal which can be ignored.. 2. 17355 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
34.05	23.05	-16.95	40	36.7	17.12	0.57	31.34	-	-	Peak
79.14	24.5	-15.5	40	47.25	7.57	0.88	31.2	100	112	Peak
160.68	25.34	-18.16	43.5	44.9	10.41	1.22	31.19	-	-	Peak
493.2	18.31	-27.69	46	28.59	17.96	2.43	30.67	-	-	Peak
696.9	21.6	-24.4	46	28.5	20.58	2.93	30.41	-	-	Peak
941.9	26.4	-19.6	46	29.61	23.73	3.44	30.38	-	-	Peak
5785	99.41	-	-	88.3	35.27	10.07	34.23	112	298	Average
5785	108.8	-	-	97.69	35.27	10.07	34.23	112	298	Peak
11568	50	-24	74	54.07	38.3	14.41	56.78	100	0	Peak
17355	50.62	-17.68	68.3	47.97	42.12	16.75	56.22	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	23~25°C
Test Channel :	165	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5825 MHz is fundamental signal which can be ignored.. 2. 17475 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
31.62	25.35	-14.65	40	37.66	18.56	0.55	31.42	100	27	Peak
127.2	21.52	-21.98	43.5	39.83	11.66	1.13	31.1	-	-	Peak
214.68	23.02	-20.48	43.5	42.58	10.11	1.38	31.05	-	-	Peak
331.5	18.68	-27.32	46	33.65	14.17	1.86	31	-	-	Peak
576.5	25.3	-20.7	46	33.98	19.39	2.62	30.69	-	-	Peak
842.5	27.27	-18.73	46	31.87	22.53	3.25	30.38	-	-	Peak
5825	98.29	-	-	87.15	35.3	10.11	34.27	144	262	Average
5825	108.05	-	-	96.91	35.3	10.11	34.27	144	262	Peak
11649	46.07	-27.93	74	49.77	38.39	14.52	56.61	100	0	Peak
17475	50.63	-17.67	68.3	47.96	42.03	16.89	56.25	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	23~25°C
Test Channel :	165	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5825 MHz is fundamental signal which can be ignored.. 2. 17475 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
31.35	23.77	-16.23	40	35.37	19.28	0.54	31.42	-	-	Peak
81.57	24.46	-15.54	40	46.95	7.79	0.89	31.17	100	47	Peak
125.04	25.76	-17.74	43.5	44.04	11.7	1.12	31.1	-	-	Peak
416.2	22.66	-23.34	46	34.94	16.34	2.2	30.82	-	-	Peak
594.7	24.27	-21.73	46	32.52	19.7	2.67	30.62	-	-	Peak
802.6	27.22	-18.78	46	32.26	22.12	3.15	30.31	-	-	Peak
5825	99.11	-	-	87.97	35.3	10.11	34.27	158	278	Average
5825	108.49	-	-	97.35	35.3	10.11	34.27	158	278	Peak
11649	47.95	-26.05	74	51.65	38.39	14.52	56.61	100	0	Peak
17475	50.48	-17.82	68.3	47.81	42.03	16.89	56.25	100	0	Peak

Test Mode :	802.11n HT40	**Temperature :**	23~25°C
Test Channel :	151	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5755 MHz is fundamental signal which can be ignored.. 2. 17265 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
33.78	26.3	-13.7	40	39.95	17.12	0.57	31.34	100	92	Peak
99.12	28.79	-14.71	43.5	49.22	9.68	0.99	31.1	-	-	Peak
217.38	26.33	-19.67	46	45.65	10.31	1.4	31.03	-	-	Peak
430.2	24.96	-21.04	46	36.81	16.65	2.25	30.75	-	-	Peak
658.4	26.04	-19.96	46	33.39	20.27	2.86	30.48	-	-	Peak
910.4	29.3	-16.7	46	32.99	23.26	3.37	30.32	-	-	Peak
5755	90.77	-	-	79.62	35.26	10.06	34.17	124	223	Average
5755	99.81	-	-	88.66	35.26	10.06	34.17	124	223	Peak
11511	45.56	-28.44	74	49.96	38.2	14.35	56.95	100	0	Peak
17265	50.63	-17.67	68.3	47.98	42.19	16.66	56.2	100	0	Peak

Test Mode :	802.11n HT40	**Temperature :**	23~25°C
Test Channel :	151	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5755 MHz is fundamental signal which can be ignored.. 2. 17265 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
30.27	23.73	-16.27	40	34.7	20	0.53	31.5	134	246	Peak
113.7	24.58	-18.92	43.5	43.6	11.07	1.07	31.16	-	-	Peak
193.89	25.5	-18	43.5	46.26	9.04	1.3	31.1	-	-	Peak
428.8	24	-22	46	35.91	16.61	2.24	30.76	-	-	Peak
615.7	26.5	-19.5	46	34.41	19.92	2.74	30.57	-	-	Peak
841.1	27.57	-18.43	46	32.19	22.51	3.25	30.38	-	-	Peak
5755	91.6	-	-	80.45	35.26	10.06	34.17	156	268	Average
5755	101.21	-	-	90.06	35.26	10.06	34.17	156	268	Peak
11511	46.56	-27.44	74	50.96	38.2	14.35	56.95	100	0	Peak
17265	49.85	-18.45	68.3	47.2	42.19	16.66	56.2	100	0	Peak

Test Mode :	802.11n HT40	**Temperature :**	23~25°C
Test Channel :	159	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5795 MHz is fundamental signal which can be ignored.. 2. 17385 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
37.02	24.72	-15.28	40	40.14	15.24	0.6	31.26	100	136	Peak
138.54	24.12	-19.38	43.5	42.6	11.42	1.2	31.1	-	-	Peak
260.04	23.83	-22.17	46	40.5	12.74	1.59	31	-	-	Peak
419.7	22.81	-23.19	46	34.98	16.42	2.21	30.8	-	-	Peak
590.5	26.63	-19.37	46	34.98	19.63	2.66	30.64	-	-	Peak
853.7	27.76	-18.24	46	32.24	22.63	3.28	30.39	-	-	Peak
5795	94.84	-	-	83.7	35.28	10.09	34.23	135	263	Average
5795	103.85	-	-	92.71	35.28	10.09	34.23	135	263	Peak
11589	46.25	-27.75	74	50.23	38.32	14.44	56.74	100	0	Peak
17385	51.09	-17.21	68.3	48.43	42.09	16.8	56.23	100	0	Peak

Test Mode :	802.11n HT40	**Temperature :**	23~25°C
Test Channel :	159	**Relative Humidity :**	44~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5795 MHz is fundamental signal which can be ignored.. 2. 17385 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit. 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
32.16	25.15	-14.85	40	37.46	18.56	0.55	31.42	100	265	Peak
82.11	21.62	-18.38	40	44	7.88	0.89	31.15	-	-	Peak
202.8	20.11	-23.39	43.5	40.58	9.3	1.33	31.1	-	-	Peak
361.6	23.84	-22.16	46	37.9	14.98	2.06	31.1	-	-	Peak
603.1	24.12	-21.88	46	32.19	19.82	2.7	30.59	-	-	Peak
913.9	28.68	-17.32	46	32.34	23.3	3.37	30.33	-	-	Peak
5795	95.59	-	-	84.45	35.28	10.09	34.23	161	249	Average
5795	104.55	-	-	93.41	35.28	10.09	34.23	161	249	Peak
11589	46.69	-27.31	74	50.67	38.32	14.44	56.74	100	0	Peak
17385	50.06	-18.24	68.3	47.4	42.09	16.8	56.23	100	0	Peak

3.5 Frequency Stability Measurement

3.5.1 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.

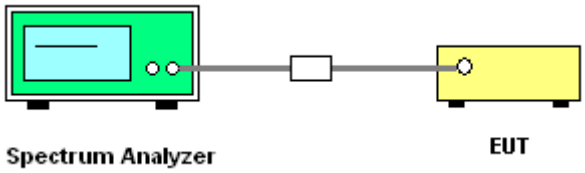
3.5.2 Measuring Instruments

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

3.5.3 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.

3.5.4 Test Setup



3.5.5 Test Result of Frequency Stability

Test Band :	5GHz band 4	Test Engineer :	Bill Kuo

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	20	3.55
11a	6Mbps	1	149	5745	5744.975	-0.025	-4.35	20	4.20
11a	6Mbps	1	149	5745	5745.000	0.000	0.00	20	3.70
11a	6Mbps	1	149	5745	5745.050	0.050	8.70	-30	3.70
11a	6Mbps	1	149	5745	5744.950	-0.050	-8.70	50	3.70

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

3.6 Automatically Discontinue Transmission

3.6.1 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.

3.6.2 Measuring Instruments

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

3.6.3 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.

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 09, 2014	Jun. 20, 2014~ Jun. 24, 2014	Jun. 08, 2015	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 17, 2013	Jun. 20, 2014~ Jun. 24, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 17, 2013	Jun. 20, 2014~ Jun. 24, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 10, 2014	Jun. 16, 2014~ Jun. 18, 2014	Feb. 09, 2015	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 06, 2013	Jun. 16, 2014~ Jun. 18, 2014	Sep. 05, 2014	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	860004/0001	9 kHz~30 MhZ	Jul. 03, 2012	Jun. 16, 2014~ Jun. 18, 2014	Jul. 03, 2014	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 10, 2013	Jun. 16, 2014~ Jun. 18, 2014	Oct. 09, 2014	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 22, 2013	Jun. 16, 2014~ Jun. 18, 2014	Aug. 21, 2014	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 03, 2013	Jun. 16, 2014~ Jun. 18, 2014	Oct. 02, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz 32dB GAIN	Mar. 17, 2014	Jun. 16, 2014~ Jun. 18, 2014	Mar. 16, 2015	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1 GHz~26.5 GHz	Nov. 29, 2013	Jun. 16, 2014~ Jun. 18, 2014	Nov. 28, 2014	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	DC~18 G High Gain	Jul. 09, 2013	Jun. 16, 2014~ Jun. 18, 2014	Jul. 08, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Jun. 16, 2014~ Jun. 18, 2014	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	ChainTek 3000	N/A	N/A	N/A	Jun. 16, 2014~ Jun. 18, 2014	N/A	Radiation (03CH07-HY)

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))	**4.50**