



FCC RF Test Report

APPLICANT : Honeywell International Inc.
EQUIPMENT : CN75LAN mobile computer
BRAND NAME : Honeywell
MODEL NAME : CN75LAN
MARKETING NAME : CN75
FCC ID : HD5-CN75LAN
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (UNII) Unlicensed National Information Infrastructure

The product was received on Dec. 28, 2016 and testing was completed on Feb. 14, 2017. 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.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



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FCC ID : HD5-CN75LAN

Page Number : 1 of 32

Report Issued Date : Mar. 08, 2017

Report Version : Rev. 01

Report Template No.: BU5-FR15EWLB4 Version 1.5



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR6D2819-01E	Rev. 01	Initial issue of report	Mar. 08, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(a)	Maximum Conducted Output Power	≤ 30 dBm	Pass	-
3.2	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) &15.209(a)	Pass	Under limit 12.09 dB at 36.480 MHz
3.3	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 7.90 dB at 3.486 MHz
3.4	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Honeywell International Inc.

9680 Old Bailes Road, Fort Mill, SC 29707 USA

1.2 Manufacturer

Honeywell International Inc.

9680 Old Bailes Road, Fort Mill, SC 29707 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	CN75LAN mobile computer
Brand Name	Honeywell
Model Name	CN75LAN
Marketing Name	CN75
FCC ID	HD5-CN75LAN
Sample 1	CN75 non-WWAN-Q5 non-WWAN_Q5 keypad
Sample 2	CN75 non-WWAN-N5 non-WWAN_N5 keypad
Sample 3	CN75E non-WWAN-N7 non-WWAN_N7 keypad
Sample 4	CN75E non-WWAN-Q6 non-WWAN_Q6 keypad
EUT supports Radios application	WLAN 11a/b/g/n HT20 Bluetooth BR/EDR/LE
HW Version	v1.1
SW Version	3.00.05.0075
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



1.4 Re-use of Measured Data

1.4.1 Introduction Section

The original model (FCC ID: HD5-CN75WAN) and the variant model (FCC ID: HD5-CN75LAN) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/GPS. Based on their similarity, the FCC Part 15C & 15E (equipment class: DTS, DSS, NII) test data issued for original model also apply for the variant model.

The applicant takes full responsibility that the test data as referenced in section 4 below represent compliance for this FCC ID (FCC ID: HD5-CN75LAN).

1.4.2 Difference Section

The original model (FCC ID: HD5-CN75WAN) and the variant model (FCC ID: HD5-CN75LAN) has identical PCB layout, antenna, SW implementation for Bluetooth/Wi-Fi/GPS. The details of similarity and difference can be found in the Operating Description.

The product specification is outlined in the following table:

FCC ID			HD5-CN75WAN	HD5-CN75LAN
Wireless Tech	Mode		Frequency (MHz)	
GSM	GSM Voice	Multi-Slot Class 12 DTM: No	850/1900	NA
	GPRS (GMSK)			
	EDGE (8PSK)			
UMTS	AMR/RCM12.2Kbps HSDPA/HSUPA/DC-HSDPA		B5/B4/B2	NA
CDMA2000	1xRTT/1xEV-DO		BC0/BC1/BC10	NA
Wi-Fi	11b/11g/11n(HT20)		2412-2462 MHz/	
	11a/11n(HT20)		5180-5240 MHz 5260-5320 MHz 5500-5700 MHz 5745-5825 MHz *5600-5650MHz notched	
Bluetooth	BR/EDR/LE		2402-2480 MHz	



1.4.3 Spot Check Verification Data Section

Summary of the spot check:

Test Item	Mode	HD5-CN75WAN Worst Result	HD5-CN75LAN Worst Result	Difference (dB)
Average Conducted Power (dBm)	802.11b	17.27	17.18	0.09
	802.11g	13.50	13.33	0.17
	11n HT20	13.50	13.33	0.17
	5150-5250MHz	13.43	13.10	0.33
	5250-5350MHz	13.40	13.06	0.34
	5470-5725MHz	13.19	13.12	0.07
	5725-5850MHz	13.48	13.12	0.36
	BT (1Mbps)	7.11	6.50	0.61
	BT (2Mbps)	5.86	5.35	0.51
	BT (3Mbps)	5.84	5.30	0.54
	BT-LE	6.74	6.73	0.01
	S/N of test sample			
	Test date	2016/12/28 – 2017/02/02	2016/12/28 – 2017/02/14	
Peak Radiated Spurious Emission (Band Edge) (dBuV/m)	802.11b	55.65	55.77	-0.74
	11n HT20	57.82	60.17	-2.35
	5150-5250MHz	62.25	59.61	2.64
	5250-5350MHz	62.65	60.05	2.6
	5470-5725MHz	63.72	62.24	1.48
	5725-5850MHz	74.27	71.82	2.45
	S/N of test sample			
	Test date	2016/12/28 – 2017/02/02	2016/12/28 – 2017/02/14	
Average Radiated Spurious Emission (Band Edge) (dBuV/m)	802.11b	46.82	45.94	-0.35
	11n HT20	46.38	47.98	-1.6
	5150-5250MHz	50.99	48.90	2.09
	5250-5350MHz	50.65	47.91	2.74
	5470-5725MHz	NA	NA	NA
	5725-5850MHz	NA	NA	NA
	S/N of test sample			
	Test date	2016/12/28 – 2017/02/02	2016/12/28 – 2017/02/14	
Peak Radiated Spurious Emission (Harmonic) (dBuV/m)	802.11b	36.66	37.70	-0.54
	11n HT20	37.80	36.58	1.22
	5150-5250MHz	40.81	41.66	-0.85
	5250-5350MHz	39.27	41.17	-1.9
	5470-5725MHz	44.50	46.36	-1.86
	5725-5850MHz	45.34	46.65	-1.31
	S/N of test sample			
	Test date	2016/12/28 – 2017/02/02	2016/12/28 – 2017/02/14	

Conclusion:

WLAN Radiated spurious emission test against the variant model for non-cellular part based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result (power levels measured are within 1dB, and the worst case of RSE spot check verification based on the worst condition from the original model is within 3dB, and are compliance with the limits), the test data from the original model is representative for the variant model.



The unwanted, harmonics, radiated spurious emission is reported peak measurement only due to spurious lower than 20dB than the limit.

The detail test results can be found in this document, Appendix A, hereafter.

1.4.4 Reference detail Section:

Equipment Class	Reference FCC ID	Type Grant/Permissive Change	Reference Application	Folder Test/RF Exposure	Report Title
DTS	HD5-CN75WAN	Original Grant	FR6D2819B	Part 15C	Conducted sections applicable
			FR6D2819C	Part 15C	All sections applicable
			FA6D2819	RF Exposure	All sections applicable
DSS	HD5-CN75WAN	Original Grant	FR6O1802A	Part 15C	Conducted sections applicable
			FA6D2819	RF Exposure	All sections applicable
NII	HD5-CN75WAN	Original Grant	FR6D2819D FR6D2819E	Part 15E	All sections applicable
			FA6D2819	RF Exposure	All sections applicable

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 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH05-HY	CO05-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH11-HY	

Note: The test site complies with ANSI C63.4 2014 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 D02 General UNII Test Procedures New Rules v01r03
- ♦ ANSI C63.10-2013

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

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: conducted emission (150 kHz to 30 MHz) and 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 (Y plane) were recorded in this report.

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
	-	-	-	-
	153	5765	161	5805
	-	-	165	5825

2.2 Test Mode

Final test mode of radiated spurious emissions are considering the modulation and worse data rates as below table.

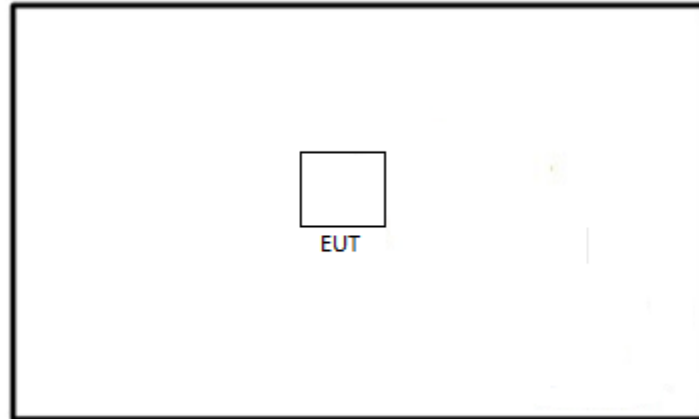
Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2
Remark: 1. Snap-on 1: Ethernet Snap-On 1000AA01 2. Adapter :Level V (for Snap-on) 3. All the radiation tests were performed with sample 2.	

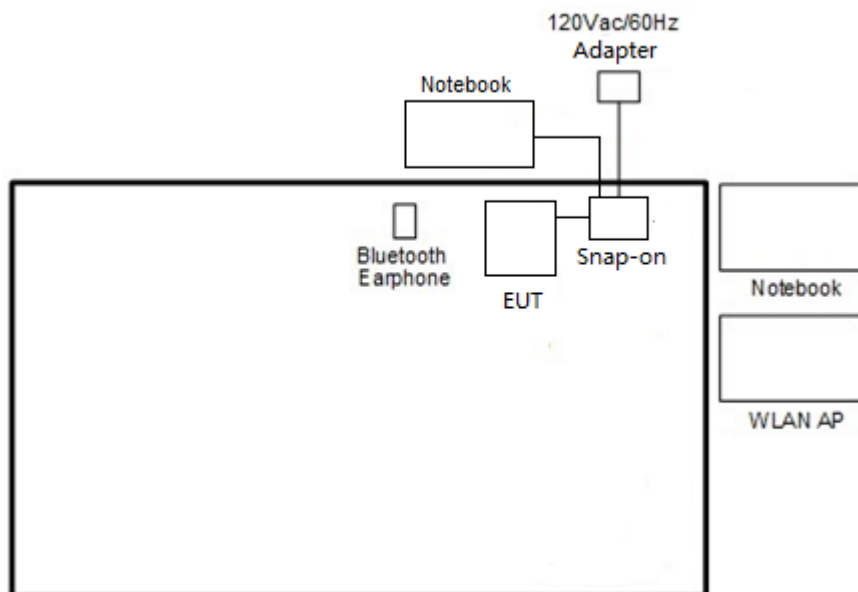
Ch. #		Band IV : 5725-5850 MHz	
		802.11a	802.11n HT20
L	Low	149	149
M	Middle	157	157
H	High	165	165

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
2.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
5.	CN75A/CN75E Vehicle dock	intermec technologies corp	1000AV01	FCC DoC	NA	NA
6.	CK75 Vehicle dock	intermec technologies corp	1001AV01	FCC DoC	NA	NA
7.	car charger	intermec technologies corp	852-057-005	Verification	NA	Unshielded, 1.2m
8.	Snap-on(LAN)	intermec technologies corp	1000AA01	FCC DoC	NA	NA
9.	Snap-on(RS232)	intermec technologies corp	1000AA03	FCC DoC	NA	NA
10.	Snap-On (VoCollect)	intermec technologies corp	1000AA05	FCC DoC	NA	NA
11.	Snap-on (USB)	intermec technologies corp	1000AA07	FCC DoC	NA	NA
12.	Snap-on adapter	intermec technologies corp	9001AE01	FCC DoC	NA	AC IP: Unshielded, 1.8m DC OP: Shielded, 1.8m
13.	Earphone	Honeywell	Vocollect SR-20	FCC DoC	1.1 meter, shielded cable	NA
14.	USB Cable	intermec technologies corp	VE011-2018	FCC DoC	NA	1.4 meter, shielded cable, w/t ferrite core
15.	Battery	intermec technologies corp	1000AB02	NA	NA	NA

2.5 EUT Operation Test Setup

For WLAN function, programmed RF utility, “rtt-adv-usr v21” installed in the EUT make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

3 Test Result

3.1 Maximum Conducted Output Power Measurement

3.1.1 Limit of Maximum Conducted Output Power

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.

3.1.2 Measuring Instruments

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

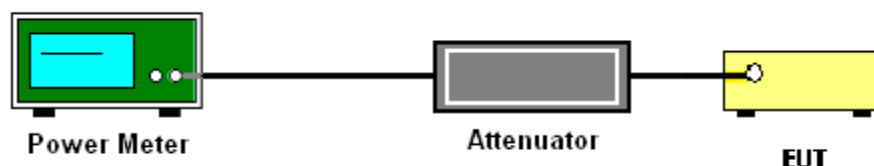
3.1.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

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.

3.1.4 Test Setup



3.1.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.2 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 Part 15.205.

3.2.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:
15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part 15.205 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.

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

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



- (3) KDB 789033 D02 General UNII Test Procedures New Rules v01r03 G)2)c) 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.

3.2.2 Measuring Instruments

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

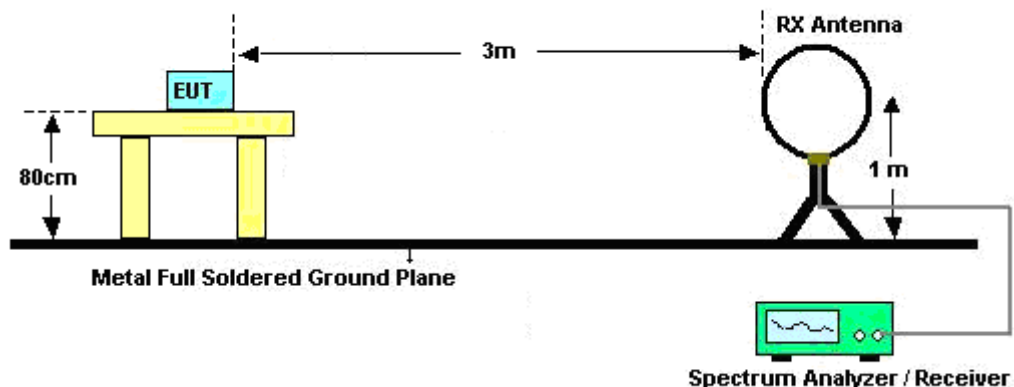
3.2.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. 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 $\geq$ 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 $\geq$ 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.

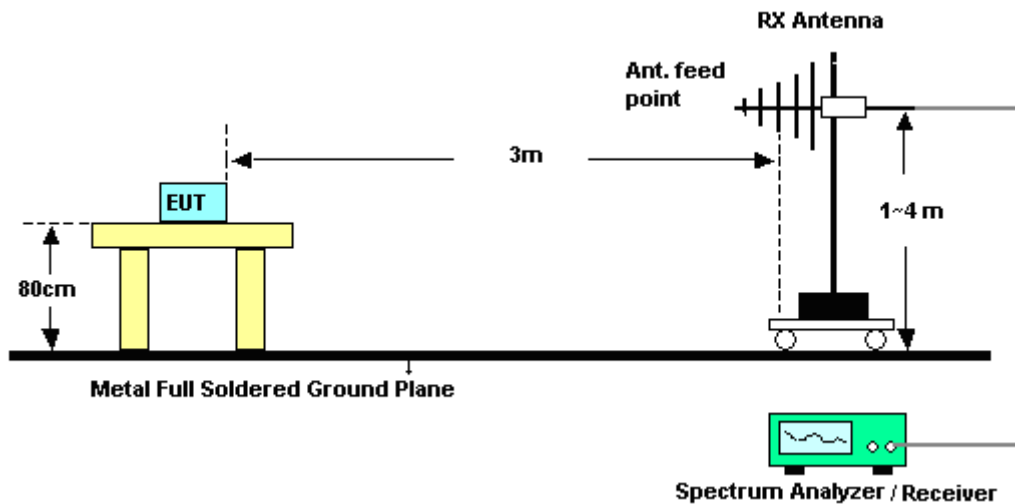
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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.

3.2.4 Test Setup

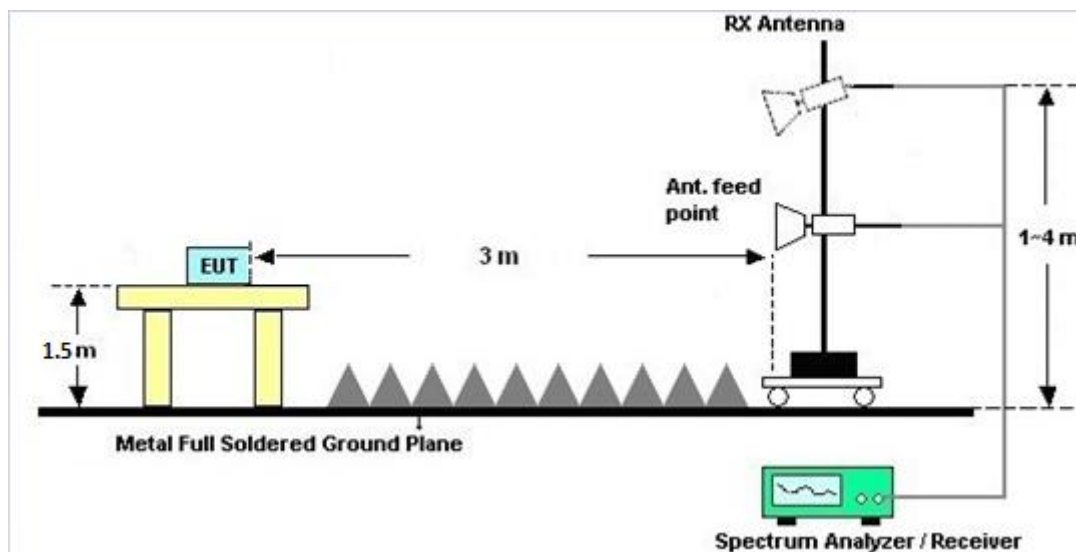
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 Test Results of Radiated Spurious 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.



3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

3.2.7 Duty Cycle

Please refer to Appendix D.

3.2.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

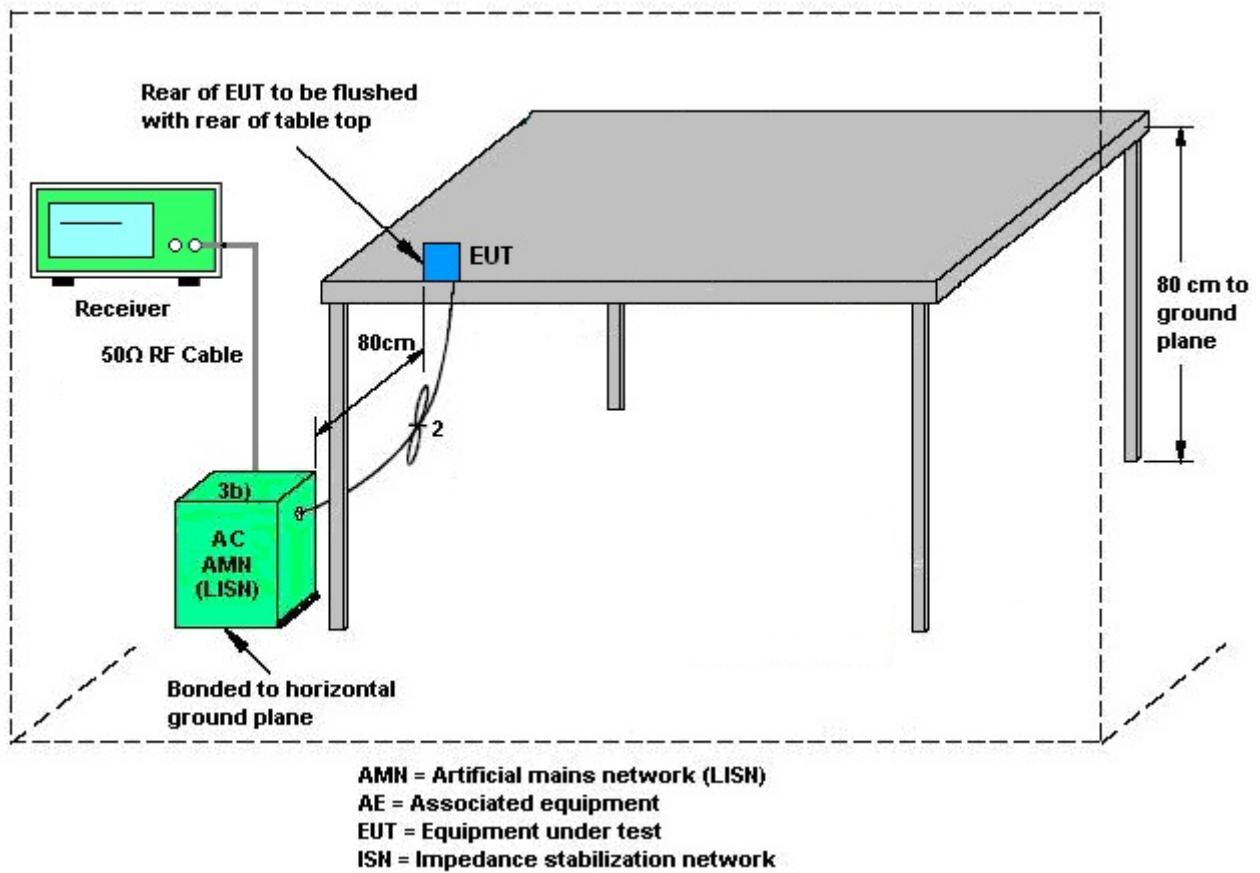
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

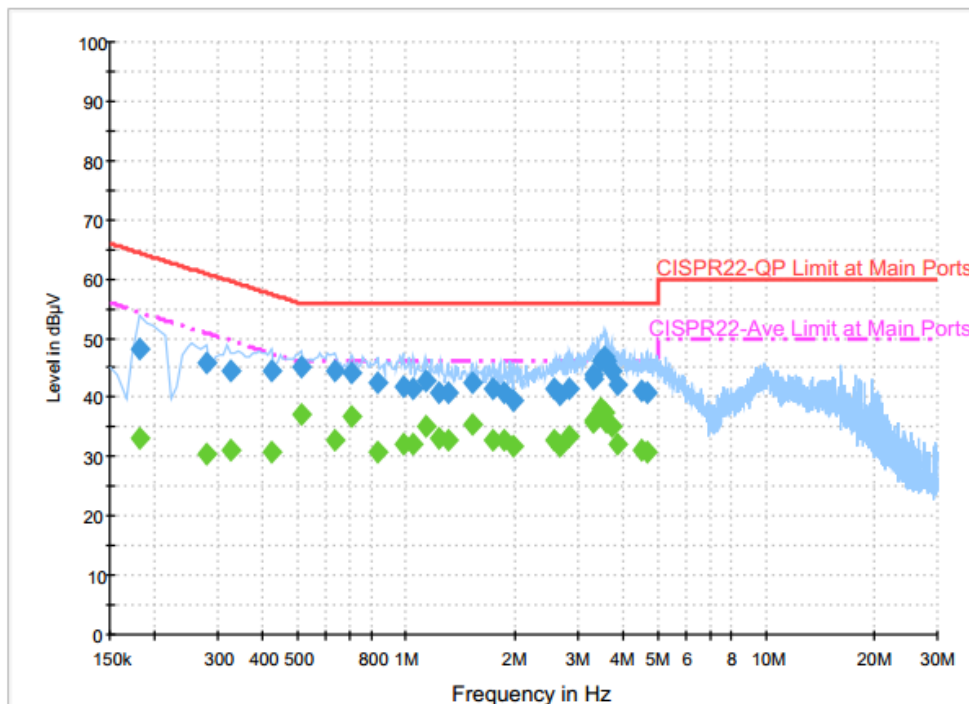
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.3.4 Test Setup



3.3.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2		

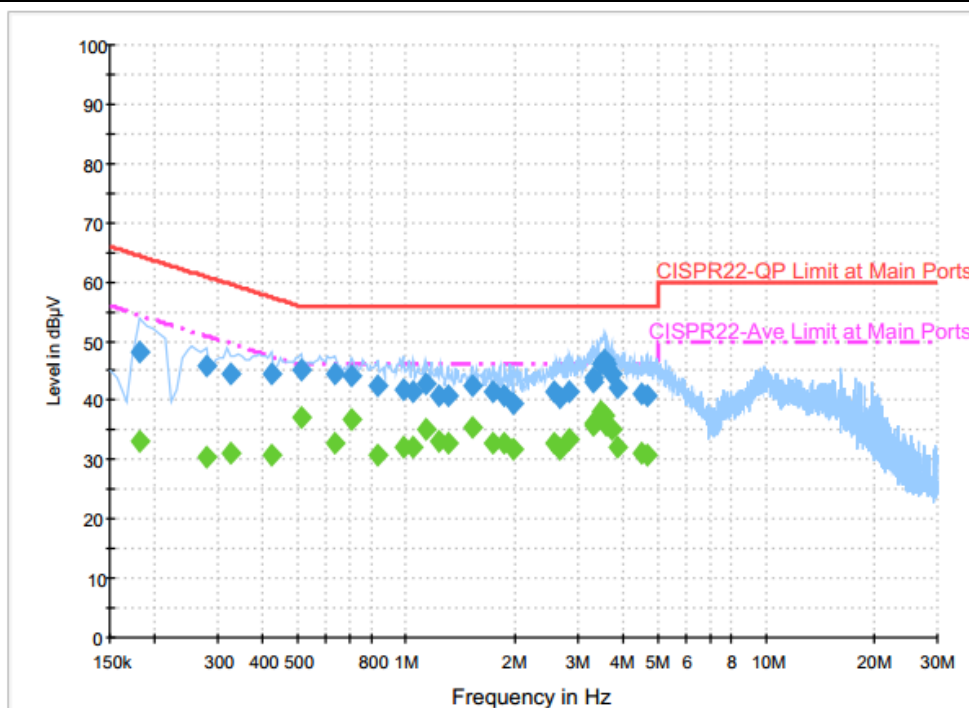


Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.182000	48.1	Off	L1	19.6	16.3	64.4
0.278000	45.8	Off	L1	19.6	15.1	60.9
0.326000	44.5	Off	L1	19.6	15.1	59.6
0.422000	44.3	Off	L1	19.6	13.1	57.4
0.510000	45.1	Off	L1	19.6	10.9	56.0
0.630000	44.5	Off	L1	19.5	11.5	56.0
0.702000	44.3	Off	L1	19.6	11.7	56.0
0.838000	42.6	Off	L1	19.6	13.4	56.0
0.982000	42.0	Off	L1	19.6	14.0	56.0
1.046000	41.6	Off	L1	19.6	14.4	56.0
1.142000	42.8	Off	L1	19.6	13.2	56.0
1.238000	40.7	Off	L1	19.6	15.3	56.0
1.302000	40.7	Off	L1	19.6	15.3	56.0
1.526000	42.3	Off	L1	19.6	13.7	56.0
1.750000	41.6	Off	L1	19.6	14.4	56.0
1.878000	40.9	Off	L1	19.6	15.1	56.0
1.998000	39.6	Off	L1	19.6	16.4	56.0



Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2		

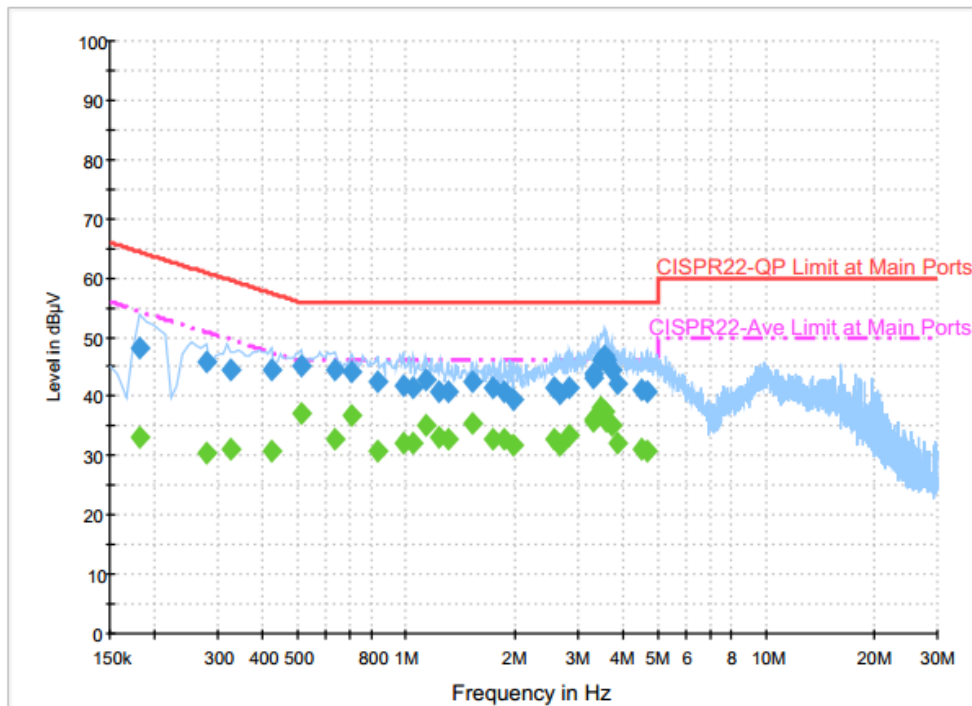


Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
2.574000	41.4	Off	L1	19.2	14.6	56.0
2.662000	40.6	Off	L1	19.3	15.4	56.0
2.854000	41.3	Off	L1	19.4	14.7	56.0
3.302000	43.2	Off	L1	19.5	12.8	56.0
3.318000	43.7	Off	L1	19.5	12.3	56.0
3.486000	46.3	Off	L1	19.5	9.7	56.0
3.574000	46.9	Off	L1	19.5	9.1	56.0
3.622000	46.0	Off	L1	19.6	10.0	56.0
3.718000	44.3	Off	L1	19.6	11.7	56.0
3.878000	42.0	Off	L1	19.6	14.0	56.0
4.502000	41.1	Off	L1	19.6	14.9	56.0
4.662000	40.9	Off	L1	19.6	15.1	56.0



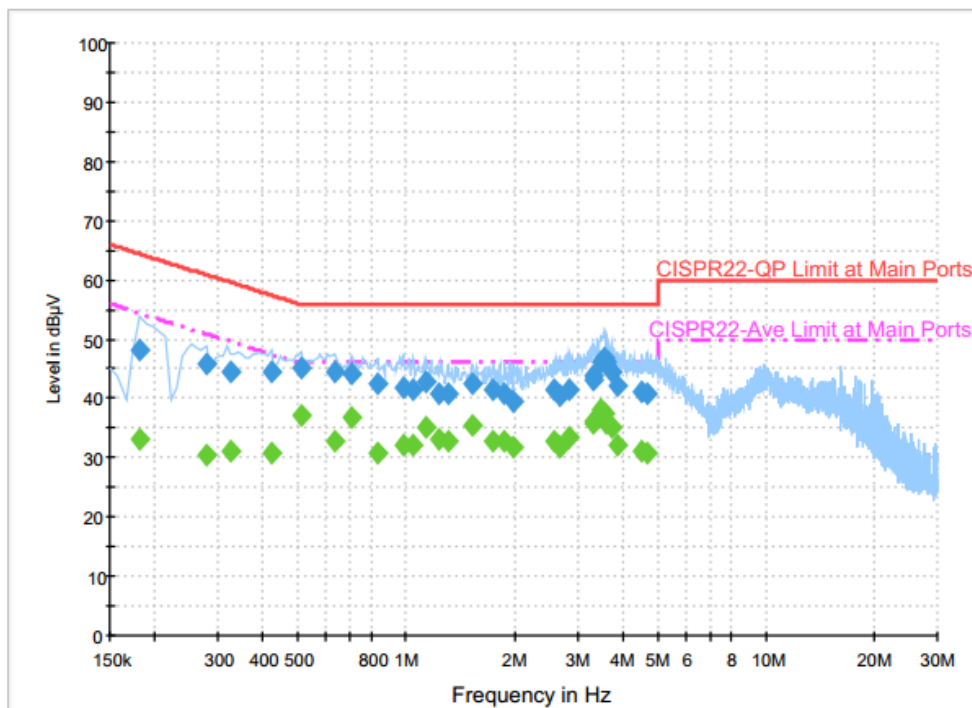
Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2		

**Final Result : Average**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	33.1	Off	L1	19.6	21.3	54.4
0.278000	30.4	Off	L1	19.6	20.5	50.9
0.326000	31.2	Off	L1	19.6	18.4	49.6
0.422000	30.8	Off	L1	19.6	16.6	47.4
0.510000	37.2	Off	L1	19.6	8.8	46.0
0.630000	32.9	Off	L1	19.5	13.1	46.0
0.702000	36.8	Off	L1	19.6	9.2	46.0
0.838000	30.9	Off	L1	19.6	15.1	46.0
0.982000	32.0	Off	L1	19.6	14.0	46.0
1.046000	32.2	Off	L1	19.6	13.8	46.0
1.142000	35.0	Off	L1	19.6	11.0	46.0
1.238000	33.1	Off	L1	19.6	12.9	46.0
1.302000	32.9	Off	L1	19.6	13.1	46.0
1.526000	35.5	Off	L1	19.6	10.5	46.0
1.750000	32.8	Off	L1	19.6	13.2	46.0
1.878000	32.7	Off	L1	19.6	13.3	46.0
1.998000	31.7	Off	L1	19.6	14.3	46.0

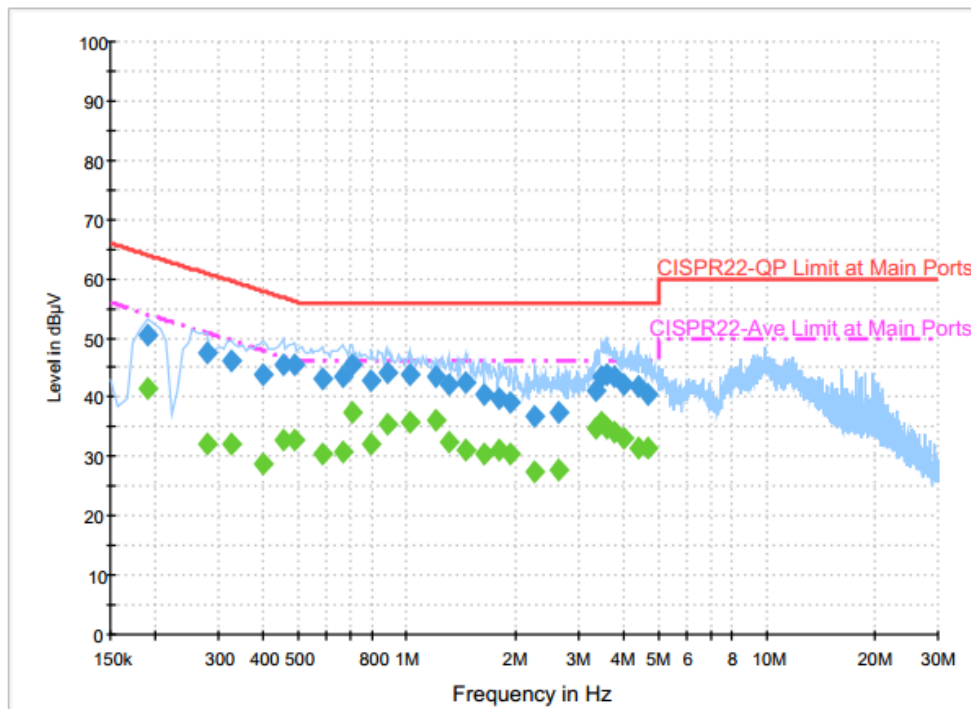


Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2		

**Final Result : Average**

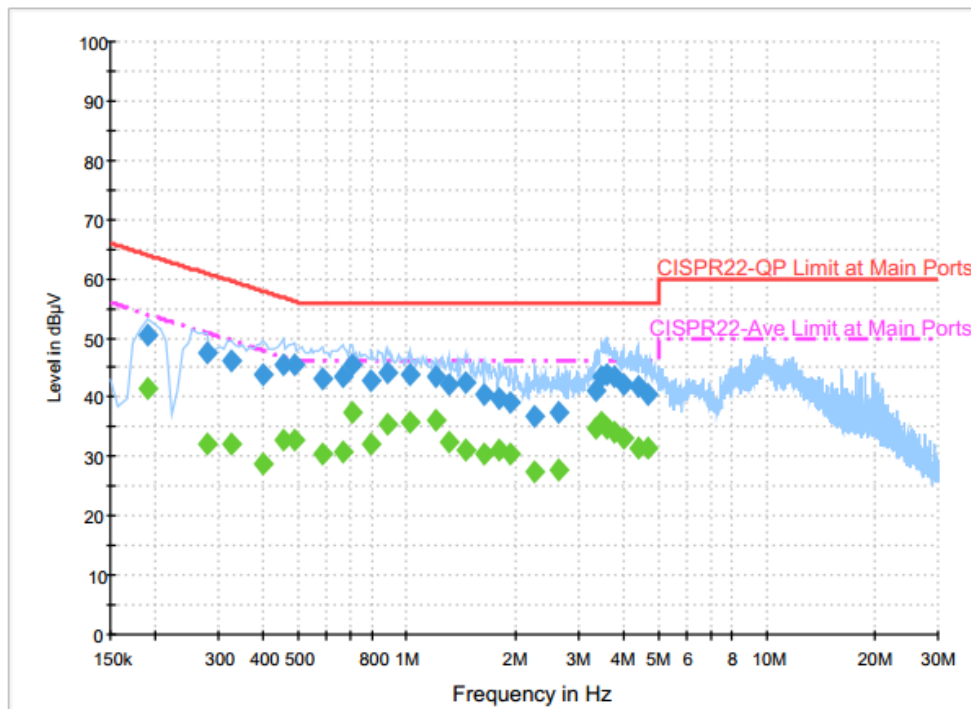
Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.574000	32.7	Off	L1	19.2	13.3	46.0
2.662000	31.8	Off	L1	19.3	14.2	46.0
2.854000	33.5	Off	L1	19.4	12.5	46.0
3.302000	35.9	Off	L1	19.5	10.1	46.0
3.318000	36.1	Off	L1	19.5	9.9	46.0
3.486000	38.1	Off	L1	19.5	7.9	46.0
3.574000	37.4	Off	L1	19.5	8.6	46.0
3.622000	35.9	Off	L1	19.6	10.1	46.0
3.718000	35.0	Off	L1	19.6	11.0	46.0
3.878000	32.1	Off	L1	19.6	13.9	46.0
4.502000	31.2	Off	L1	19.6	14.8	46.0
4.662000	30.7	Off	L1	19.6	15.3	46.0

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2		


Final Result : QuasiPeak

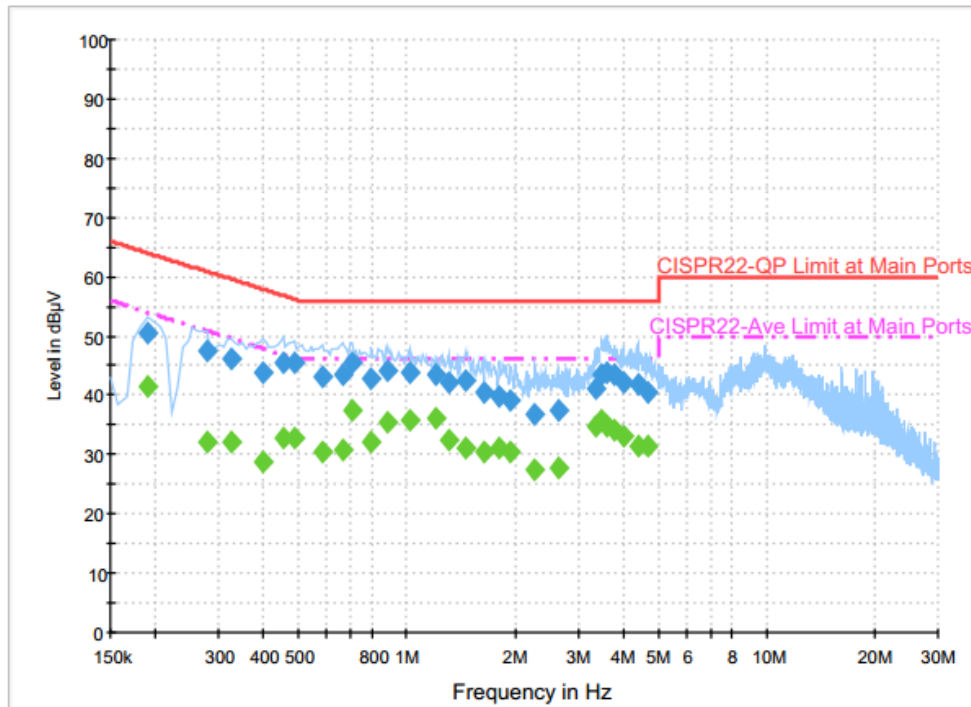
Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	50.5	Off	N	19.5	13.5	64.0
0.278000	47.6	Off	N	19.5	13.3	60.9
0.326000	46.0	Off	N	19.5	13.6	59.6
0.398000	43.9	Off	N	19.5	14.0	57.9
0.454000	45.3	Off	N	19.5	11.5	56.8
0.486000	45.6	Off	N	19.6	10.6	56.2
0.582000	43.1	Off	N	19.5	12.9	56.0
0.662000	43.3	Off	N	19.5	12.7	56.0
0.702000	45.5	Off	N	19.5	10.5	56.0
0.798000	42.8	Off	N	19.6	13.2	56.0
0.886000	44.2	Off	N	19.5	11.8	56.0

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2		


Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.014000	44.0	Off	N	19.5	12.0	56.0
1.206000	43.6	Off	N	19.6	12.4	56.0
1.302000	42.2	Off	N	19.6	13.8	56.0
1.454000	42.4	Off	N	19.6	13.6	56.0
1.646000	40.3	Off	N	19.6	15.7	56.0
1.806000	39.9	Off	N	19.6	16.1	56.0
1.950000	39.0	Off	N	19.6	17.0	56.0
2.278000	36.8	Off	N	18.7	19.2	56.0
2.630000	37.4	Off	N	19.3	18.6	56.0
3.342000	41.2	Off	N	19.5	14.8	56.0
3.486000	43.4	Off	N	19.5	12.6	56.0
3.622000	43.9	Off	N	19.5	12.1	56.0
3.782000	43.4	Off	N	19.6	12.6	56.0
4.022000	42.1	Off	N	19.6	13.9	56.0
4.390000	41.9	Off	N	19.6	14.1	56.0
4.670000	40.4	Off	N	19.6	15.6	56.0

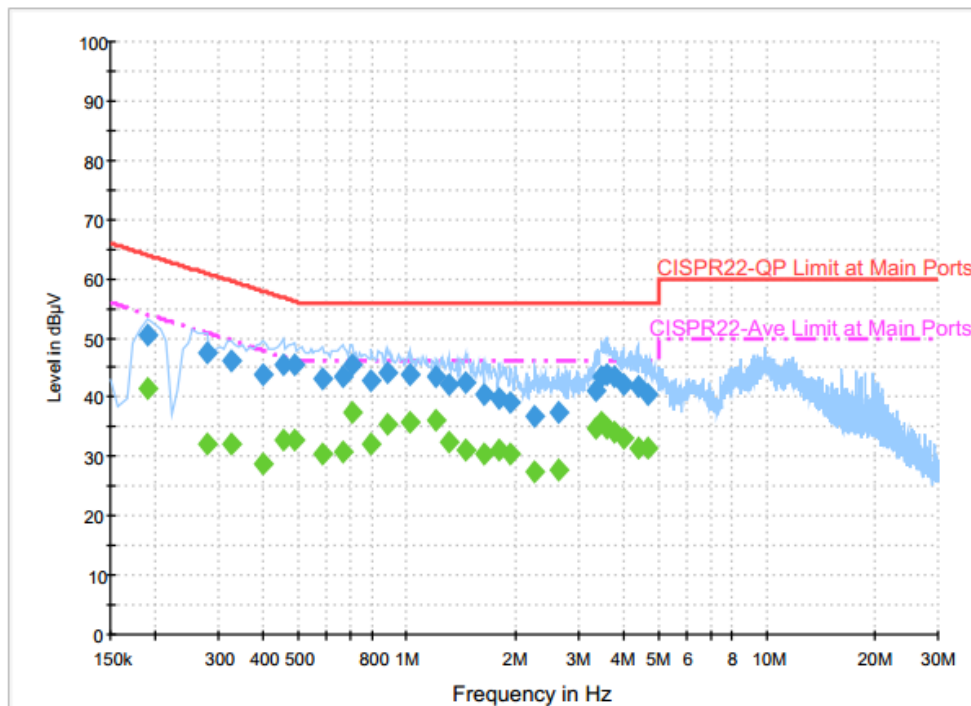
Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2		


Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	41.5	Off	N	19.5	12.5	54.0
0.278000	32.3	Off	N	19.5	18.6	50.9
0.326000	32.1	Off	N	19.5	17.5	49.6
0.398000	28.7	Off	N	19.5	19.2	47.9
0.454000	32.7	Off	N	19.5	14.1	46.8
0.486000	32.6	Off	N	19.6	13.6	46.2
0.582000	30.4	Off	N	19.5	15.6	46.0
0.662000	30.8	Off	N	19.5	15.2	46.0
0.702000	37.6	Off	N	19.5	8.4	46.0
0.798000	32.1	Off	N	19.6	13.9	46.0
0.886000	35.6	Off	N	19.5	10.4	46.0



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	50~52%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 2		

**Final Result : Average**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.014000	35.9	Off	N	19.5	10.1	46.0
1.206000	36.3	Off	N	19.6	9.7	46.0
1.302000	32.5	Off	N	19.6	13.5	46.0
1.454000	31.2	Off	N	19.6	14.8	46.0
1.646000	30.4	Off	N	19.6	15.6	46.0
1.806000	31.0	Off	N	19.6	15.0	46.0
1.950000	30.3	Off	N	19.6	15.7	46.0
2.278000	27.3	Off	N	18.7	18.7	46.0
2.630000	27.6	Off	N	19.3	18.4	46.0
3.342000	34.8	Off	N	19.5	11.2	46.0
3.486000	35.9	Off	N	19.5	10.1	46.0
3.622000	34.9	Off	N	19.5	11.1	46.0
3.782000	34.0	Off	N	19.6	12.0	46.0
4.022000	33.3	Off	N	19.6	12.7	46.0
4.390000	31.4	Off	N	19.6	14.6	46.0
4.670000	31.5	Off	N	19.6	14.5	46.0



3.4 Antenna Requirements

3.4.1 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.

3.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.4.3 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
Power Meter	Anritsu	ML2495A	0932001	300MHz~40GHz	Sep. 29, 2016	Jan. 05, 2017 ~ Jan. 13, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 29, 2016	Jan. 05, 2017 ~ Jan. 13, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	Jan. 05, 2017 ~ Jan. 13, 2017	Jul. 16, 2017	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 17, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Jan. 17, 2017	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Jan. 17, 2017	Nov. 28, 2017	Conduction (CO05-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Jan. 21, 2017 ~ Feb. 14, 2017	Nov. 09, 2017	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Jan. 21, 2017 ~ Feb. 14, 2017	Sep. 01, 2017	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Oct. 15, 2016	Jan. 21, 2017 ~ Feb. 14, 2017	Oct. 14, 2017	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1GHz ~ 18GHz	Mar. 30, 2016	Jan. 21, 2017 ~ Feb. 14, 2017	Mar. 31, 2017	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 10, 2016	Jan. 21, 2017 ~ Feb. 14, 2017	Nov. 09, 2017	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY52350276	10Hz ~ 44GHZ	Mar. 21, 2016	Jan. 21, 2017 ~ Feb. 14, 2017	Mar. 20, 2017	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jan. 21, 2017 ~ Feb. 14, 2017	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jan. 21, 2017 ~ Feb. 14, 2017	N/A	Radiation (03CH11-HY)
Preamplifier	MITEQ	TTA0204	1872107	2GHz~40GHz	Feb. 15, 2016	Jan. 21, 2017 ~ Feb. 14, 2017	Feb. 14, 2017	Radiation (03CH11-HY)
Preamplifier	MITEQ	JS44-1800400 0-33-8P	1840917	18GHz ~ 40GHz	Jun. 14, 2016	Jan. 21, 2017 ~ Feb. 14, 2017	Jun. 13, 2017	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 08, 2016	Jan. 21, 2017 ~ Feb. 14, 2017	Nov. 07, 2017	Radiation (03CH11-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.7
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
---	-----

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.5
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
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Appendix A. Conducted Test Results

Report Number : FR6D2819-01E

Test Engineer:	Aking Chang	Temperature:	21~25	°C
Test Date:	2017/01/05~2017/01/13	Relative Humidity:	51~54	%

TEST RESULTS DATA
Average Power Table

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6M bps	1	149	5745	0.00	13.12	30.00	2.78		Pass
11a	6Mbps	1	157	5785	0.00	13.05	30.00	2.78		Pass
11a	6Mbps	1	165	5825	0.00	13.10	30.00	2.78		Pass
HT20	MCS 0	1	149	5745	0.00	13.10	30.00	2.78		Pass
HT20	MCS 0	1	157	5785	0.00	13.05	30.00	2.78		Pass
HT20	MCS 0	1	165	5825	0.00	13.08	30.00	2.78		Pass



Appendix B. Radiated Spurious Emission

Test Engineer :	Jacky Hung and Ken Wu	Temperature :	20~23°C
		Relative Humidity :	50~54%

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		5620.8	50.72	-17.48	68.2	39.46	32.87	11.47	33.08	178	294	P	H
		5696	52.29	-49.96	102.25	40.97	32.97	11.47	33.12	178	294	P	H
		5716.2	57.52	-52.22	109.74	46.2	32.99	11.46	33.13	178	294	P	H
		5724.8	60.76	-60.98	121.74	49.42	33.01	11.46	33.13	178	294	P	H
	*	5745	107.58	-	-	96.23	33.04	11.46	33.15	178	294	P	H
	*	5745	98.45	-	-	87.1	33.04	11.46	33.15	178	294	A	H
													H
													H
		5633.4	52.83	-15.37	68.2	41.57	32.89	11.47	33.1	168	341	P	V
		5681.2	54.13	-37.2	91.33	42.84	32.94	11.47	33.12	168	341	P	V
		5719.8	58.3	-52.44	110.74	46.96	33.01	11.46	33.13	168	341	P	V
		5724.6	71.82	-49.47	121.29	60.48	33.01	11.46	33.13	168	341	P	V
	*	5745	111.29	-	-	99.94	33.04	11.46	33.15	168	341	P	V
	*	5745	102.55	-	-	91.2	33.04	11.46	33.15	168	341	A	V
													V
													V
Remark	1. No other spurious found.												
	2. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		11490	39.79	-34.21	74	36.06	39.12	15.85	51.24	100	0	P	H
		17235	46.65	-21.55	68.2	35.23	42.84	20.57	51.99	100	0	P	H
													H
													H
		11490	39.26	-34.74	74	35.53	39.12	15.85	51.24	100	0	P	V
		17235	46.11	-22.09	68.2	34.69	42.84	20.57	51.99	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

5GHz WIFI 802.11n HT20 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11n HT20 LF		32.43	22.47	-17.53	40	29.53	24.14	1.29	32.49	-	-	P	H
		42.15	16.68	-23.32	40	29.26	18.62	1.29	32.49	-	-	P	H
		143.94	17.35	-26.15	43.5	30.29	17.72	2	32.66	-	-	P	H
		657.7	28.73	-17.27	46	31.12	26.28	3.8	32.47	-	-	P	H
		905.5	31.88	-14.12	46	29.5	29.36	4.63	31.61	-	-	P	H
		948.9	33.63	-12.37	46	29.58	30.57	4.69	31.21	169	225	P	H
													H
													H
													H
													H
													H
													H
		36.48	27.91	-12.09	40	37.13	21.98	1.29	32.49	310	129	P	V
		46.2	26.46	-13.54	40	41.03	16.63	1.29	32.49	-	-	P	V
		123.69	18.03	-25.47	43.5	31.01	17.82	1.78	32.58	-	-	P	V
		708.1	28.84	-17.16	46	30.41	26.86	4.02	32.45	-	-	P	V
		815.9	31.41	-14.59	46	30.76	28.49	4.26	32.1	-	-	P	V
		944.7	33.53	-12.47	46	29.63	30.46	4.69	31.25	-	-	P	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Jacky Hung and Ken Wu	Temperature :	20~23°C
		Relative Humidity :	50~54%

Note symbol

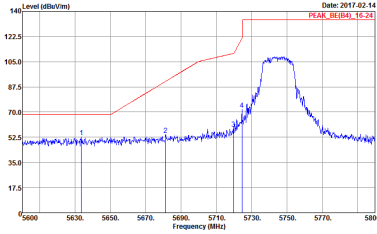
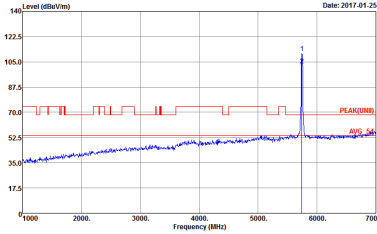
-L	Low channel location
-R	High channel location

Band 4 - 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

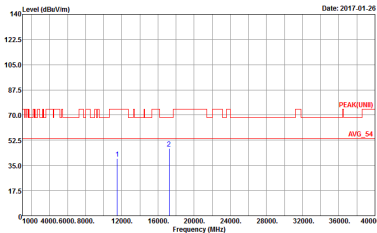
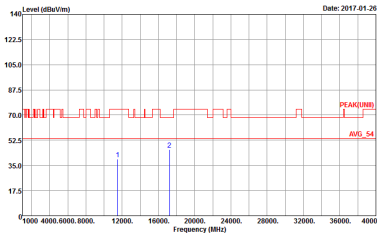
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Fundamental
Peak	Site : 03CHI1-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6D2819-01 : 14	Site : 03CHI1-HY Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6D2819-01 : 14



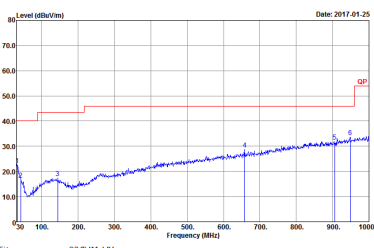
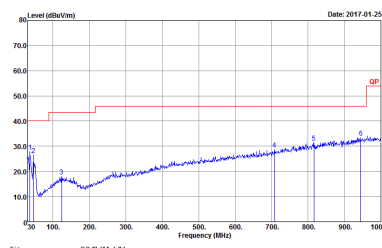
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6D2819-01 : 14	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 6D2819-01 : 14



Band 4 - 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

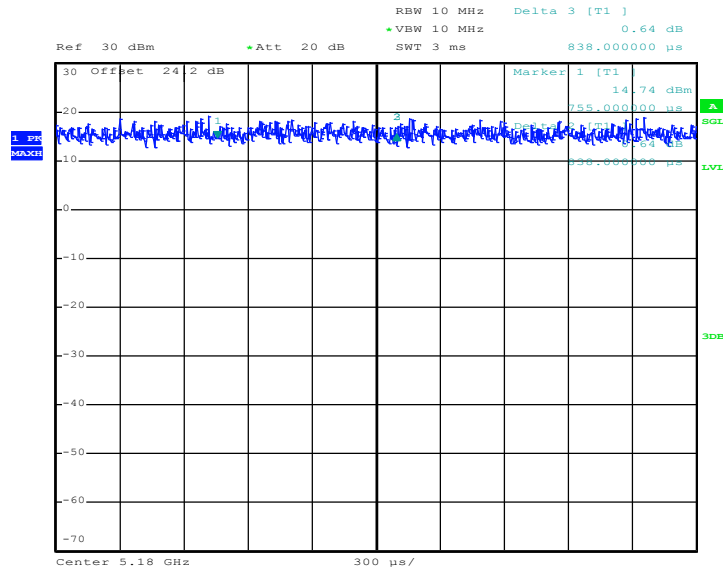
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-4FY Condition : PEAK(UWB) 3m 9170 SHF HORM_150809 HORIZONTAL Detector : Peak Project : 602819-01 14	 Site : 03CH11-4FY Condition : PEAK(UWB) 3m 9170 SHF HORM_150809 VERTICAL Detector : Peak Project : 602819-01 14

Emission below 1GHz
5GHz WIFI 802.11n HT20 (LF)

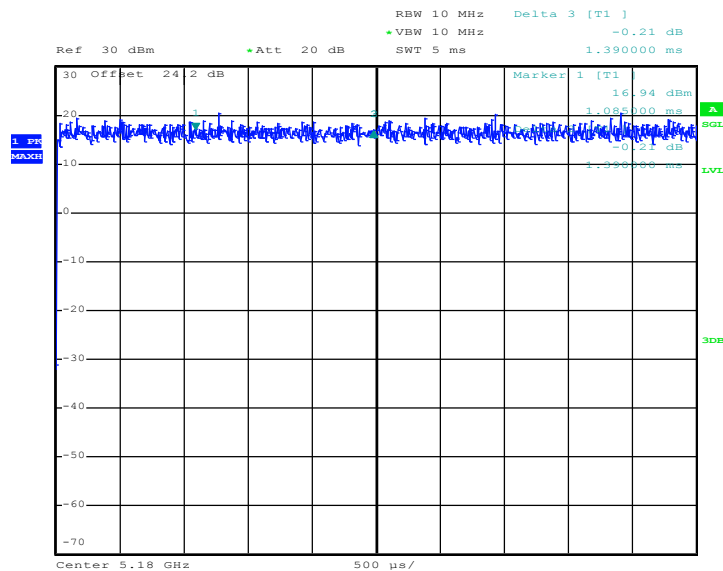
WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL Detector : Peak Project : 602819-01	 Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL Detector : Peak Project : 602819-01

Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
802.11a	100	-	-	10Hz
5GHz 802.11n HT20	100	-	-	10Hz

802.11a


Date: 5.JAN.2017 13:47:04

802.11n HT20


Date: 5.JAN.2017 14:22:47



Appendix F. Original Report

Please refer to Sporton report number FR6D2819E as below.



FCC RF Test Report

APPLICANT : Honeywell International Inc.
EQUIPMENT : CN75WAN mobile computer
BRAND NAME : Honeywell
MODEL NAME : CN75WAN
MARKETING NAME : CN75
FCC ID : HD5-CN75WAN
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Dec. 28, 2016 and testing was completed on Jan. 21, 2017. 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.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : HD5-CN75WAN

Page Number : 1 of 38

Report Issued Date : Mar. 08, 2017

Report Version : Rev. 01

Report Template No.: BU5-FR15EWLB4 AC MA Version 1.5



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR6D2819E	Rev. 01	Initial issue of report	Mar. 08, 2017



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	6dB, 26dB and 99% Occupied 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	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 4.61 dB at 31.350 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 7.80 dB at 0.694 MHz
3.6	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Honeywell International Inc.
9680 Old Bailes Road, Fort Mill, SC 29707 USA

1.2 Manufacturer

Honeywell International Inc.
9680 Old Bailes Road, Fort Mill, SC 29707 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	CN75WAN mobile computer
Brand Name	Honeywell
Model Name	CN75WAN
Marketing Name	CN75
FCC ID	HD5-CN75WAN
Sample 1	CN75 WWAN-Q5 WWAN_Q5 keypad
Sample 2	CN75 WWAN-N5 WWAN_N5 keypad
Sample 3	CN75E WWAN-N7 WWAN_N7 keypad
Sample 4	CN75E WWAN-Q6 WWAN_Q6 keypad
EUT supports Radios application	CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA/LTE WLAN 11a/b/g/n HT20 Bluetooth BR/EDR/LE
HW Version	v1.1
SW Version	W03.320
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz
Maximum Output Power	802.11a : 13.42 dBm / 0.0220 W 802.11n HT20 : 13.48 dBm / 0.0223 W
99% Occupied Bandwidth	802.11a : 17.95 MHz 802.11n HT20 : 19.05 MHz
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Antenna Type / Gain	PIFA Antenna with gain 2.78 dBi



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 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH05-HY	CO05-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	03CH11-HY	

Note: The test site complies with ANSI C63.4 2014 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 D02 General UNII Test Procedures New Rules v01r03
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2013

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

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: conducted emission (150 kHz to 30 MHz) and 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 (Y plane) were recorded in this report.

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
	-	-	-	-
	153	5765	161	5805
	-	-	165	5825

2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

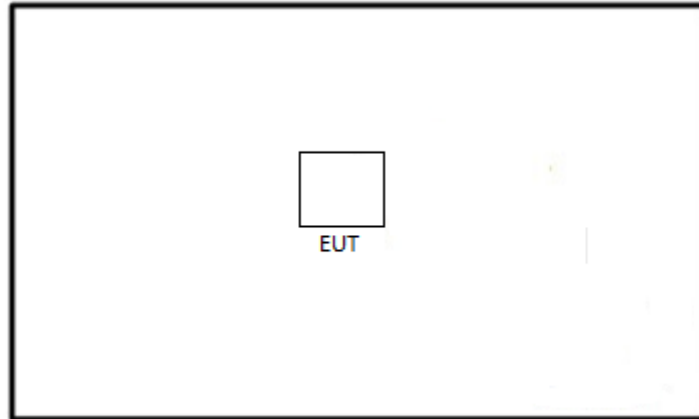
Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0

Test Cases	
AC Conducted Emission	Mode 1 : WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3
Remark: - Snap-on 1: Ethernet Snap-On 1000AA01 - Adapter: Level V (for Snap-on) - All the radiated test cases were performed with sample 4.	

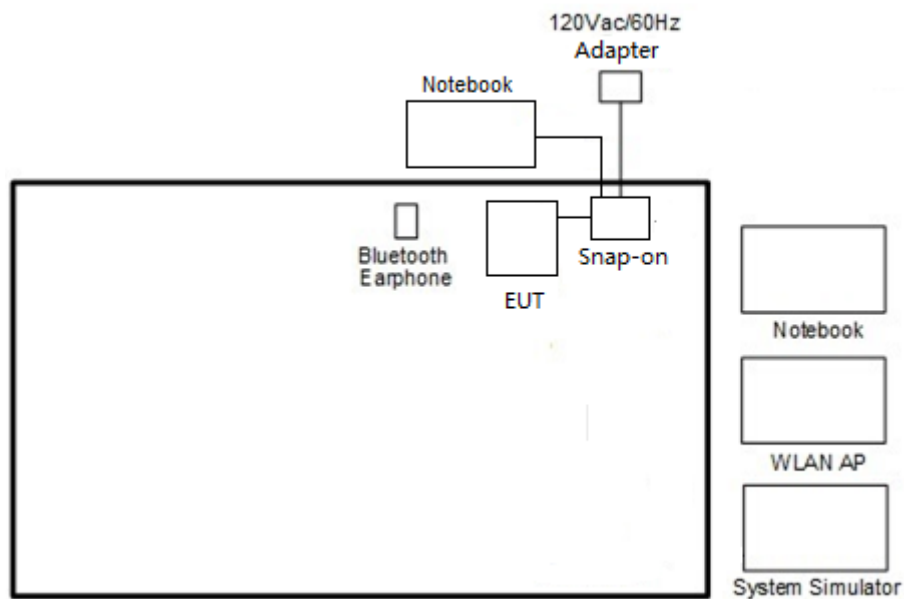
Ch. #		Band IV : 5725-5850 MHz	
		802.11a	802.11n HT20
L	Low	149	149
M	Middle	157	157
H	High	165	165

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>





2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
3.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
6.	CN75A/CN75E Vehicle dock	intermec technologies corp	1000AV01	FCC DoC	NA	NA
7.	CK75 Vehicle dock	intermec technologies corp	1001AV01	FCC DoC	NA	NA
8.	car charger	intermec technologies corp	852-057-005	Verification	NA	Unshielded, 1.2m
9.	Snap-on(LAN)	intermec technologies corp	1000AA01	FCC DoC	NA	NA
10.	Snap-on(RS232)	intermec technologies corp	1000AA03	FCC DoC	NA	NA
11.	Snap-On (VoCollect)	intermec technologies corp	1000AA05	FCC DoC	NA	NA
12.	Snap-on (USB)	intermec technologies corp	1000AA07	FCC DoC	NA	NA
13.	Snap-on adapter	intermec technologies corp	9001AE01	FCC DoC	NA	AC IP: Unshielded, 1.8m DC OP: Shielded, 1.8m
14.	Earphone	Honeywell	Vocollect SR-20	FCC DoC	1.1 meter, shielded cable	NA
15.	USB Cable	intermec technologies corp	VE011-2018	FCC DoC	NA	1.4 meter, shielded cable, w/t ferrite core
16.	Battery	intermec technologies corp	1000AB02	NA	NA	NA



2.5 EUT Operation Test Setup

For WLAN function, programmed RF utility, "rtt-adv-usr v21" installed in the EUT make the EUT provide functions like channel selection and power level for continuous transmitting and receiving signals.

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.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

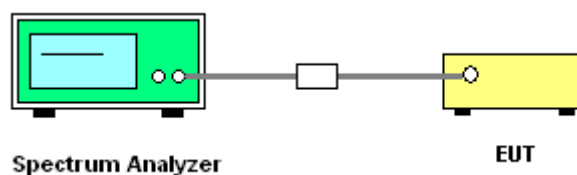
3.1.2 Measuring Instruments

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 v01r03.
Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ 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.

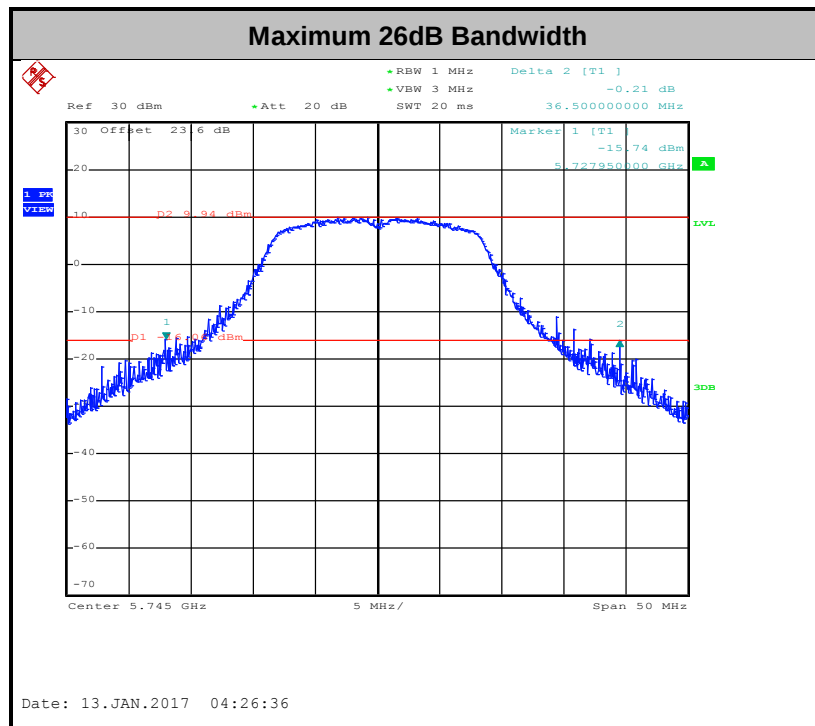
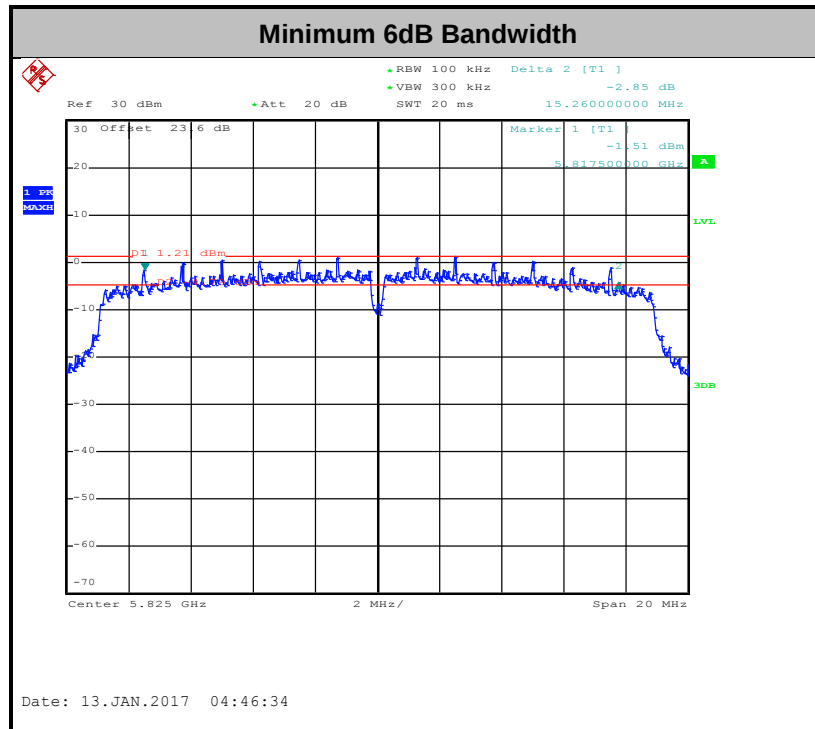
3.1.4 Test Setup

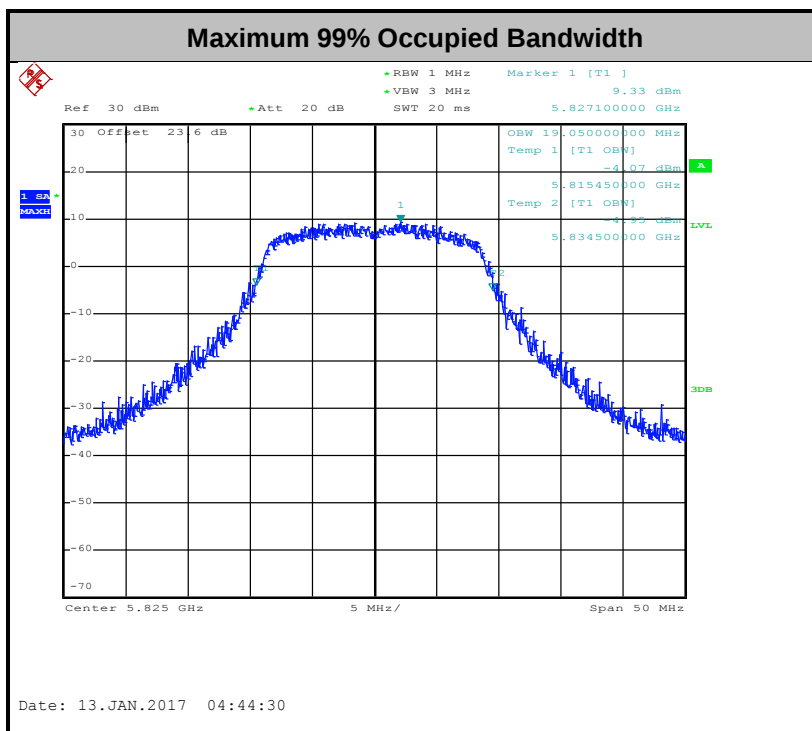




3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.





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 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.

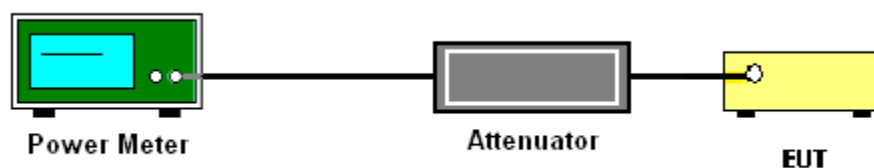
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

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

Please refer to Appendix A.



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

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

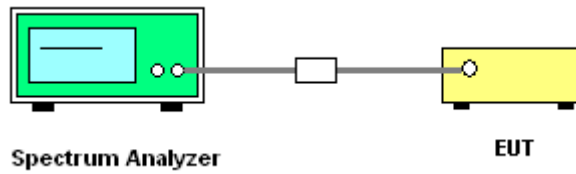
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.
Section F) Maximum power spectral density.

Method SA-2

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

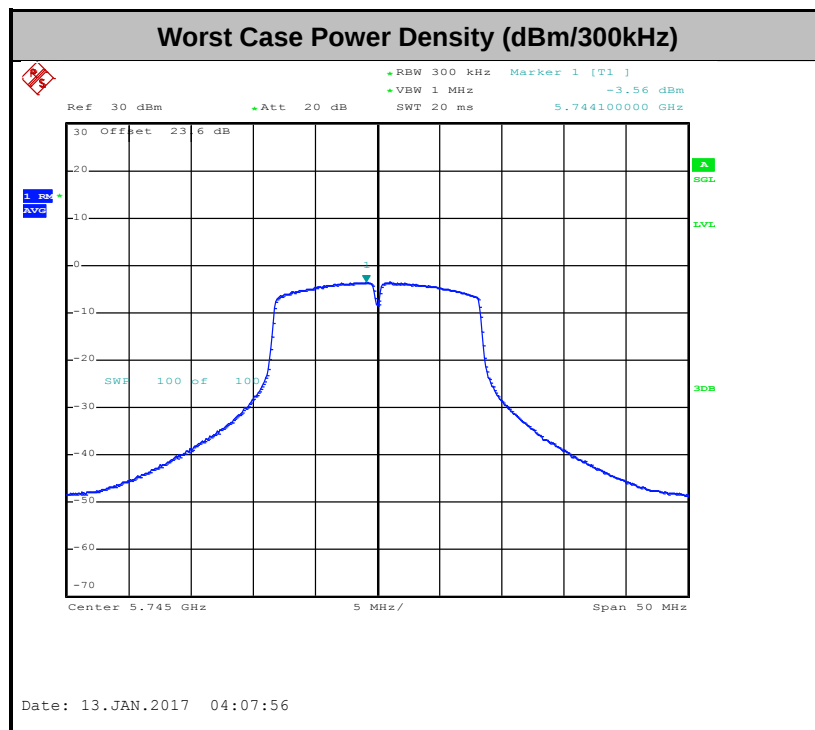
- Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 300 kHz.
 - Set VBW $\geq$ 1 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(500\text{kHz}/\text{RBW})$ 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.
1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
 2. 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

Please refer to Appendix A.



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 5.725-5.85 GHz band:
15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (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.

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

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

- (3) KDB 789033 D02 General UNII Test Procedures New Rules v01r03 G)2)c) 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.

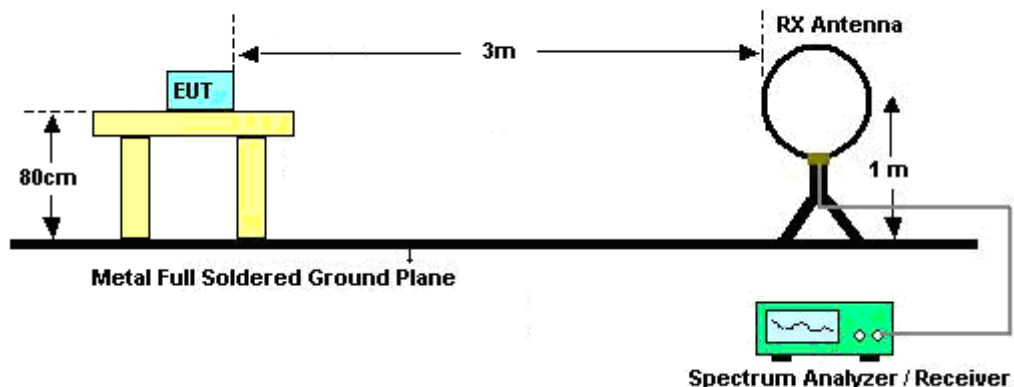
3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. 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 $\geq$ 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 $\geq$ 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.

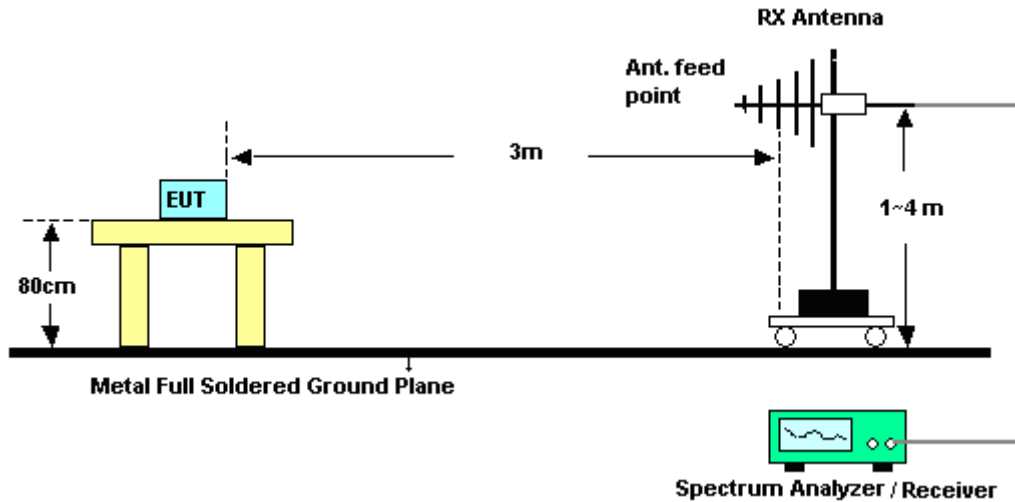
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband 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

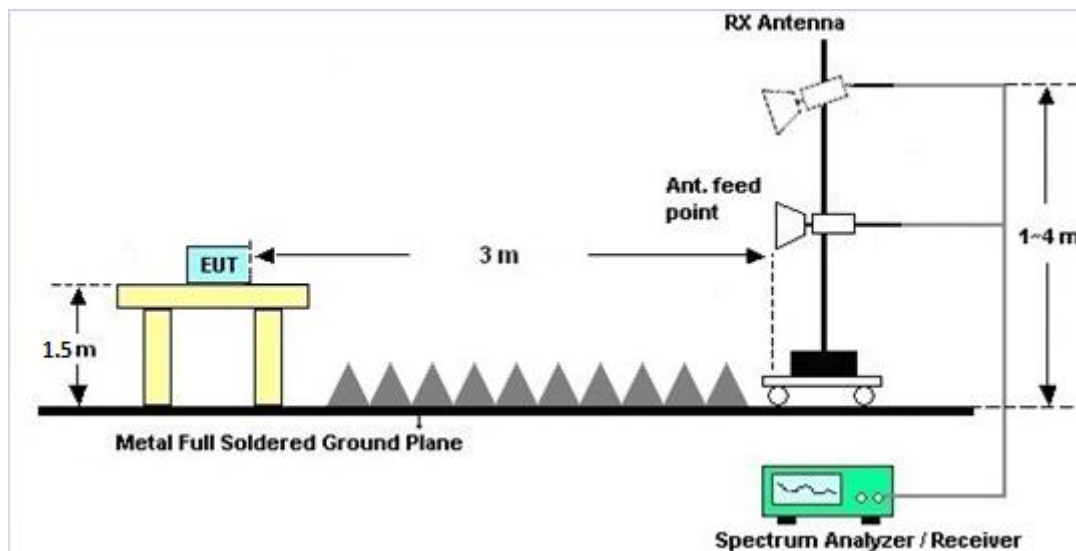
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated Spurious 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 Spurious at Band Edges

Please refer to Appendix B and C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

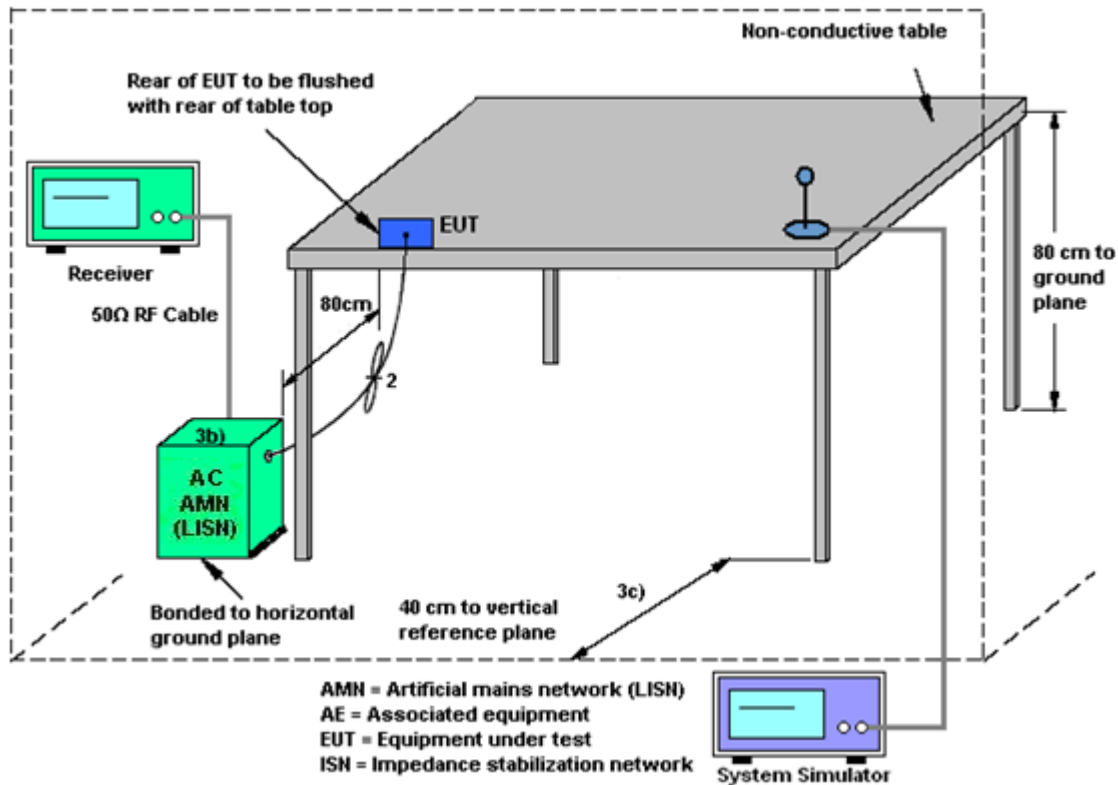
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

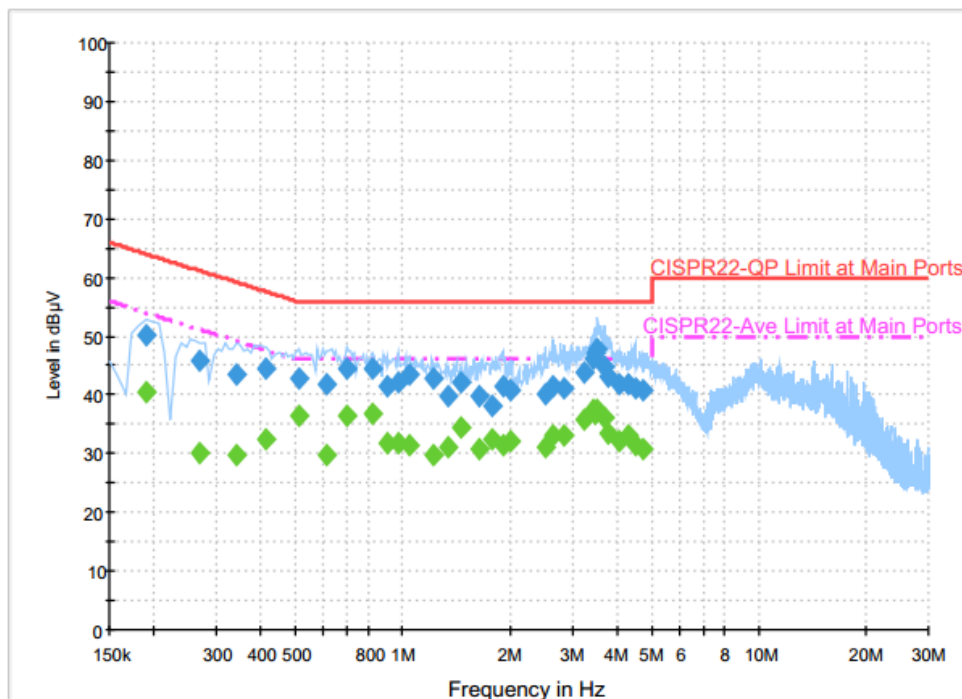
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3		

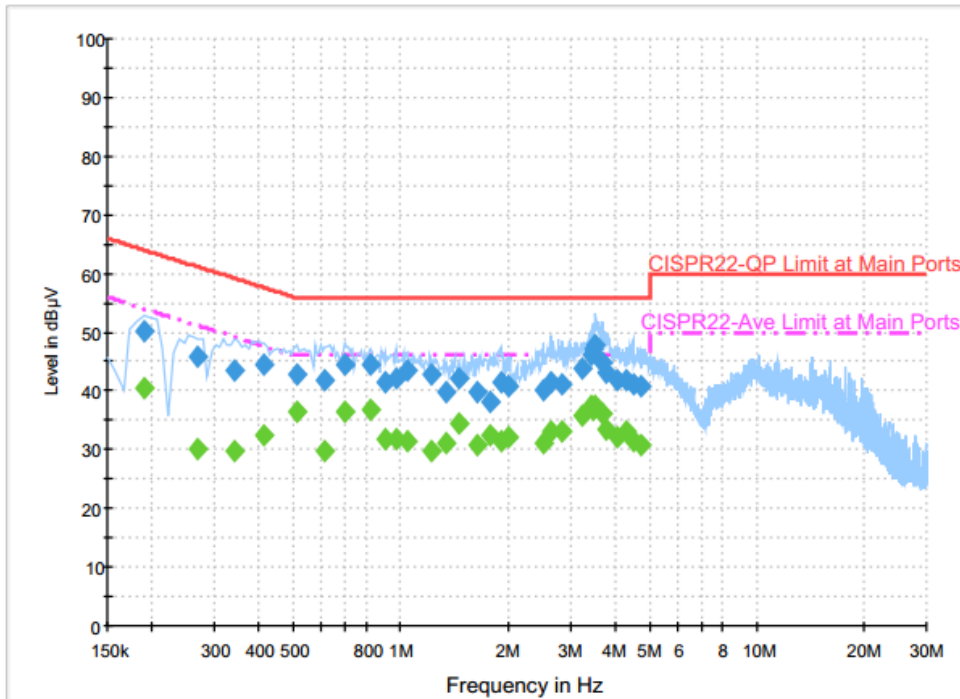


Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	50.1	Off	L1	19.6	13.9	64.0
0.270000	45.7	Off	L1	19.6	15.4	61.1
0.342000	43.6	Off	L1	19.6	15.6	59.2
0.414000	44.6	Off	L1	19.6	13.0	57.6
0.510000	42.8	Off	L1	19.6	13.2	56.0
0.614000	41.8	Off	L1	19.6	14.2	56.0
0.694000	44.4	Off	L1	19.6	11.6	56.0
0.822000	44.4	Off	L1	19.6	11.6	56.0
0.902000	41.5	Off	L1	19.6	14.5	56.0
0.974000	42.2	Off	L1	19.6	13.8	56.0
1.046000	43.4	Off	L1	19.6	12.6	56.0
1.214000	42.7	Off	L1	19.6	13.3	56.0
1.342000	39.7	Off	L1	19.6	16.3	56.0
1.454000	42.1	Off	L1	19.6	13.9	56.0
1.638000	39.7	Off	L1	19.6	16.3	56.0



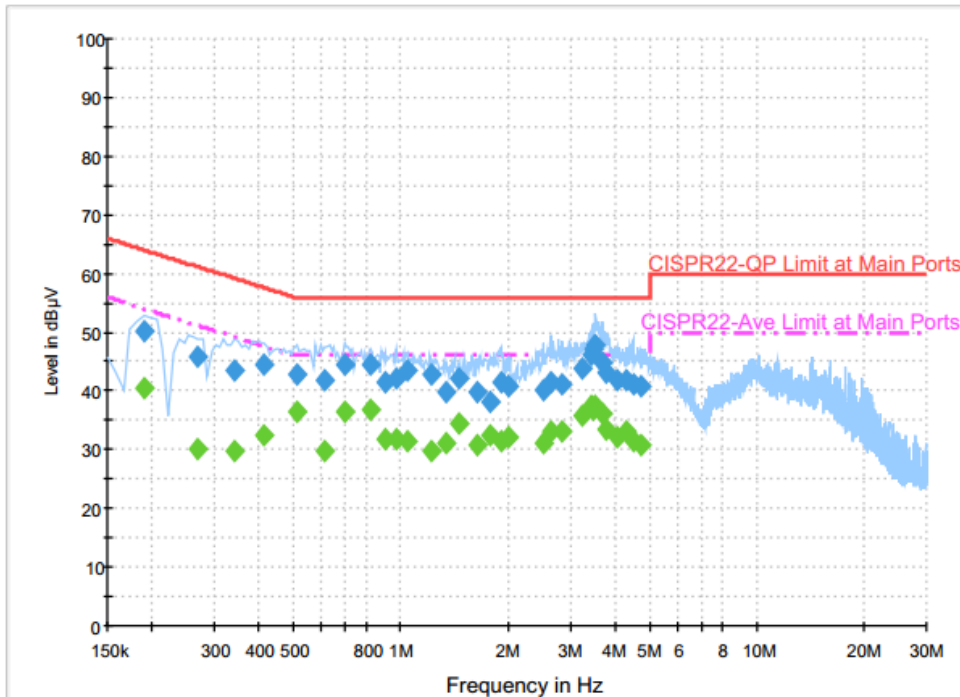
Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3		

**Final Result : QuasiPeak**

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.782000	38.0	Off	L1	19.6	18.0	56.0
1.910000	41.4	Off	L1	19.6	14.6	56.0
2.006000	40.9	Off	L1	19.6	15.1	56.0
2.518000	40.1	Off	L1	19.1	15.9	56.0
2.638000	41.4	Off	L1	19.3	14.6	56.0
2.854000	41.2	Off	L1	19.4	14.8	56.0
3.246000	43.8	Off	L1	19.5	12.2	56.0
3.422000	46.1	Off	L1	19.5	9.9	56.0
3.478000	47.1	Off	L1	19.5	8.9	56.0
3.534000	48.0	Off	L1	19.5	8.0	56.0
3.670000	45.0	Off	L1	19.6	11.0	56.0
3.790000	43.0	Off	L1	19.6	13.0	56.0
4.038000	41.9	Off	L1	19.6	14.1	56.0
4.310000	41.8	Off	L1	19.6	14.2	56.0
4.494000	41.2	Off	L1	19.6	14.8	56.0
4.750000	40.9	Off	L1	19.6	15.1	56.0

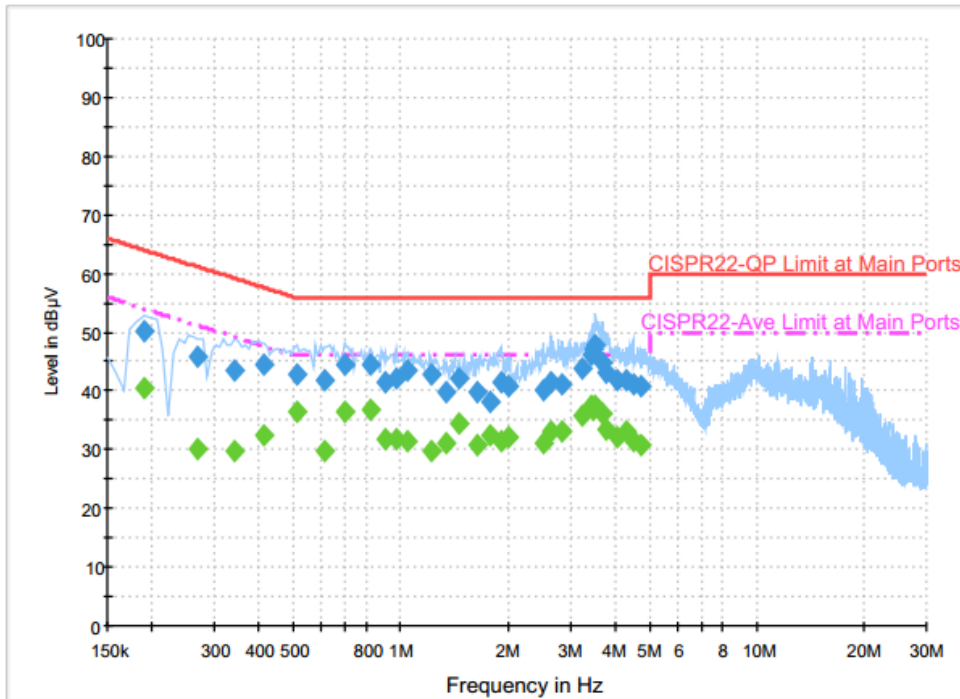


Test Mode :	Mode 1	Temperature :	21~23℃
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3		

**Final Result : Average**

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	40.6	Off	L1	19.6	13.4	54.0
0.270000	30.3	Off	L1	19.6	20.8	51.1
0.342000	29.8	Off	L1	19.6	19.4	49.2
0.414000	32.6	Off	L1	19.6	15.0	47.6
0.510000	36.6	Off	L1	19.6	9.4	46.0
0.614000	29.8	Off	L1	19.6	16.2	46.0
0.694000	36.5	Off	L1	19.6	9.5	46.0
0.822000	36.9	Off	L1	19.6	9.1	46.0
0.902000	31.9	Off	L1	19.6	14.1	46.0
0.974000	31.9	Off	L1	19.6	14.1	46.0
1.046000	31.4	Off	L1	19.6	14.6	46.0
1.214000	29.7	Off	L1	19.6	16.3	46.0
1.342000	31.0	Off	L1	19.6	15.0	46.0
1.454000	34.4	Off	L1	19.6	11.6	46.0
1.638000	30.7	Off	L1	19.6	15.3	46.0

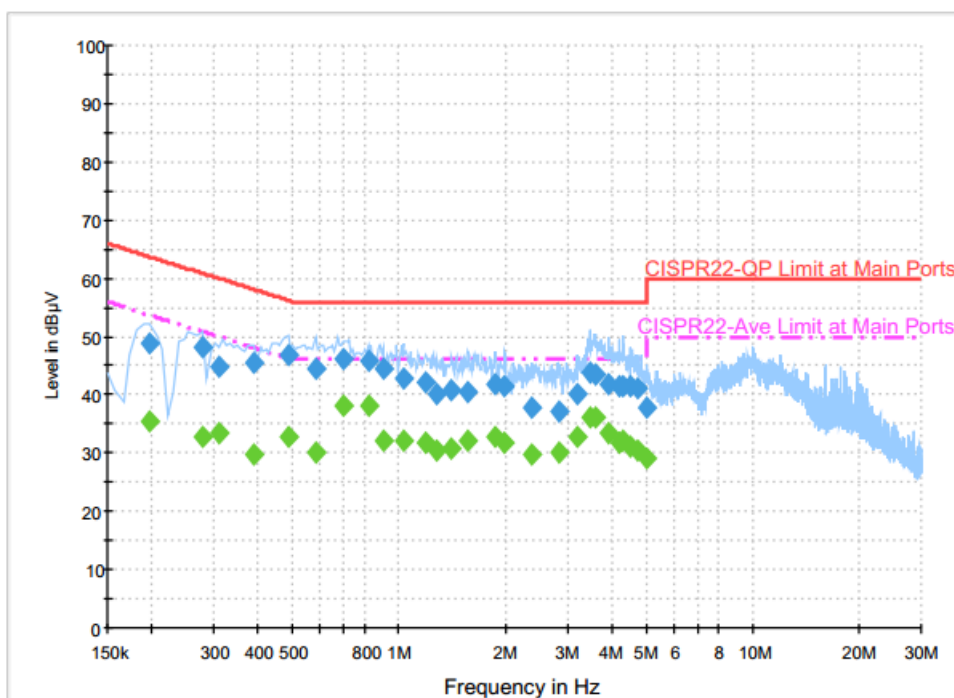
Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3		


Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.782000	32.4	Off	L1	19.6	13.6	46.0
1.910000	31.3	Off	L1	19.6	14.7	46.0
2.006000	32.1	Off	L1	19.6	13.9	46.0
2.518000	31.3	Off	L1	19.1	14.7	46.0
2.638000	33.1	Off	L1	19.3	12.9	46.0
2.854000	33.2	Off	L1	19.4	12.8	46.0
3.246000	35.7	Off	L1	19.5	10.3	46.0
3.422000	37.5	Off	L1	19.5	8.5	46.0
3.478000	36.9	Off	L1	19.5	9.1	46.0
3.534000	37.6	Off	L1	19.5	8.4	46.0
3.670000	36.1	Off	L1	19.6	9.9	46.0
3.790000	33.5	Off	L1	19.6	12.5	46.0
4.038000	32.0	Off	L1	19.6	14.0	46.0
4.310000	33.1	Off	L1	19.6	12.9	46.0
4.494000	31.4	Off	L1	19.6	14.6	46.0
4.750000	30.7	Off	L1	19.6	15.3	46.0



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3		

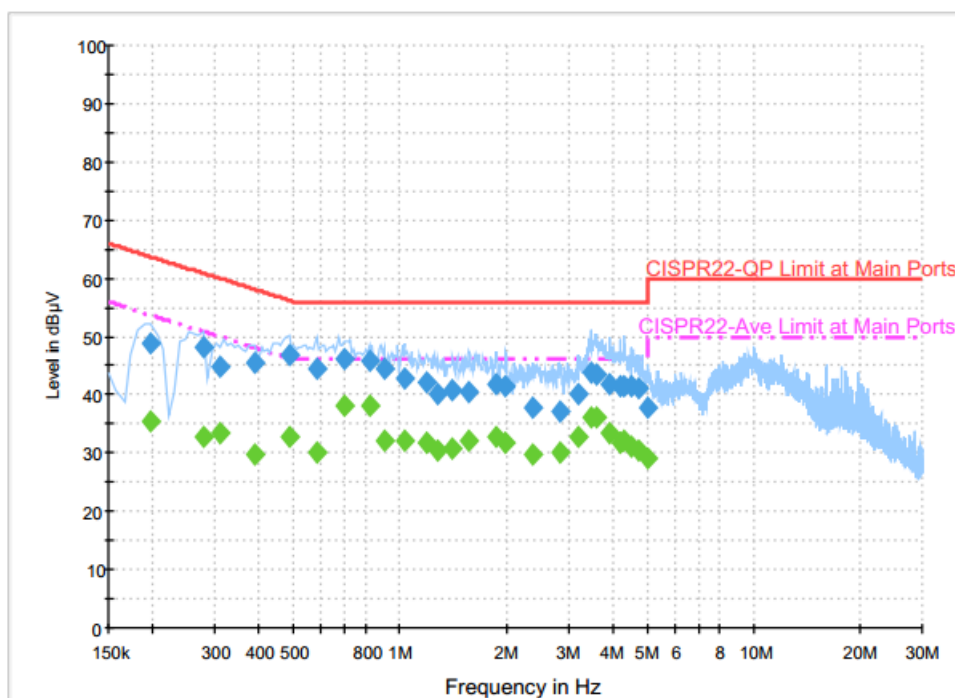


Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.198000	48.9	Off	N	19.5	14.8	63.7
0.278000	48.2	Off	N	19.5	12.7	60.9
0.310000	44.8	Off	N	19.5	15.2	60.0
0.390000	45.6	Off	N	19.5	12.5	58.1
0.486000	46.8	Off	N	19.6	9.4	56.2
0.582000	44.5	Off	N	19.5	11.5	56.0
0.694000	46.3	Off	N	19.5	9.7	56.0
0.822000	45.7	Off	N	19.5	10.3	56.0
0.902000	44.6	Off	N	19.5	11.4	56.0
1.030000	42.8	Off	N	19.5	13.2	56.0
1.190000	42.0	Off	N	19.6	14.0	56.0
1.286000	40.3	Off	N	19.6	15.7	56.0
1.414000	40.9	Off	N	19.6	15.1	56.0
1.574000	40.5	Off	N	19.6	15.5	56.0



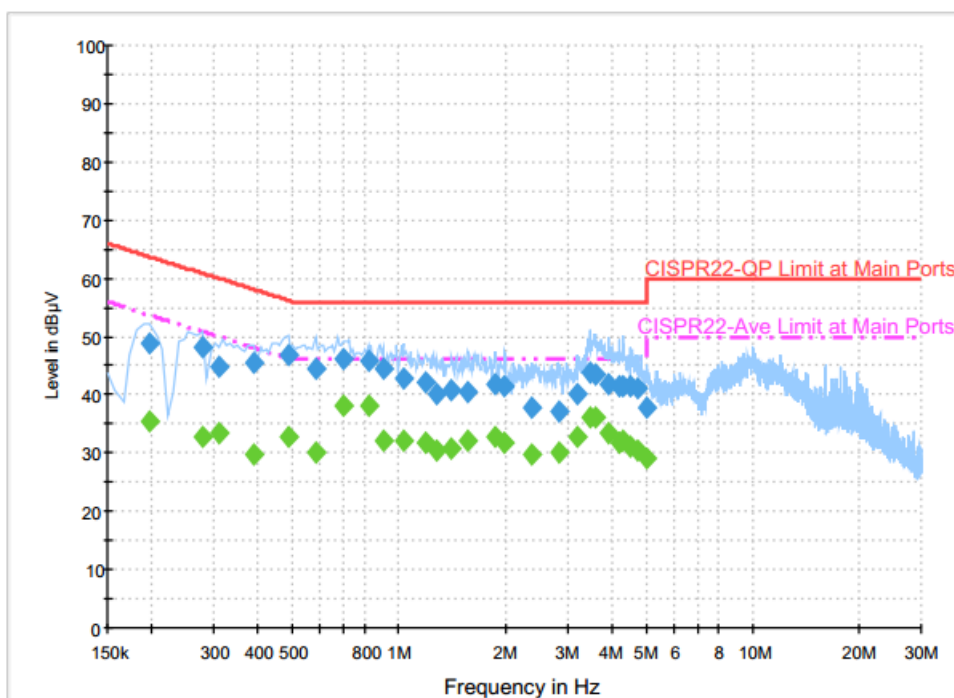
Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3		

**Final Result : QuasiPeak**

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.870000	42.0	Off	N	19.6	14.0	56.0
1.998000	41.5	Off	N	19.6	14.5	56.0
2.382000	37.7	Off	N	18.9	18.3	56.0
2.854000	37.3	Off	N	19.4	18.7	56.0
3.198000	40.2	Off	N	19.5	15.8	56.0
3.486000	43.9	Off	N	19.5	12.1	56.0
3.606000	43.6	Off	N	19.5	12.4	56.0
3.902000	42.0	Off	N	19.6	14.0	56.0
4.222000	41.6	Off	N	19.6	14.4	56.0
4.318000	41.4	Off	N	19.6	14.6	56.0
4.502000	41.6	Off	N	19.6	14.4	56.0
4.758000	41.2	Off	N	19.6	14.8	56.0
5.038000	37.7	Off	N	19.6	22.3	60.0



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3		

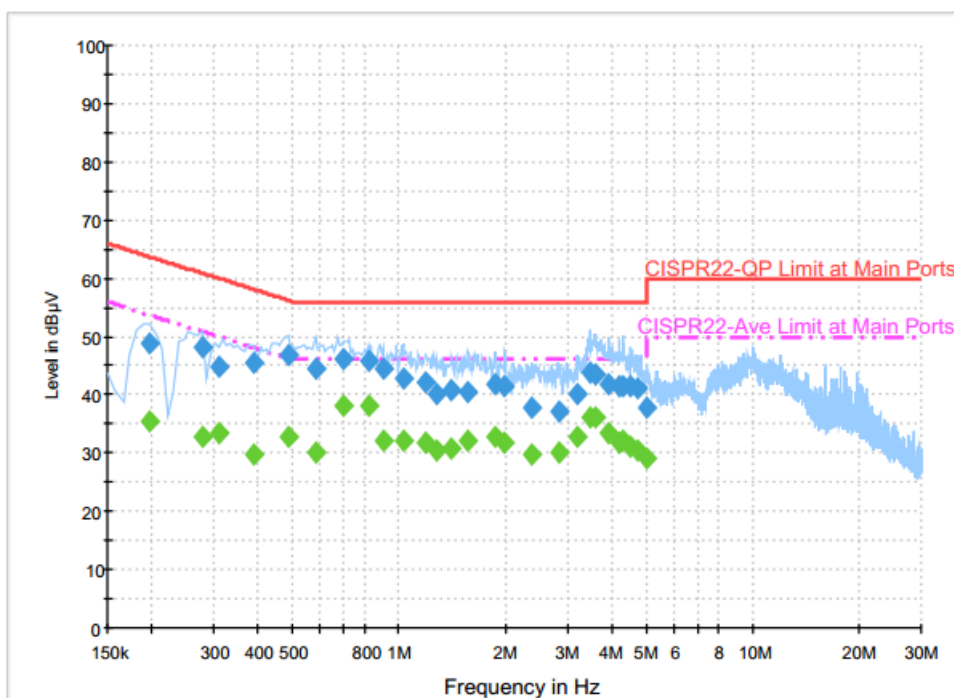


Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.198000	35.4	Off	N	19.5	18.3	53.7
0.278000	32.9	Off	N	19.5	18.0	50.9
0.310000	33.4	Off	N	19.5	16.6	50.0
0.390000	29.7	Off	N	19.5	18.4	48.1
0.486000	32.9	Off	N	19.6	13.3	46.2
0.582000	30.2	Off	N	19.5	15.8	46.0
0.694000	38.2	Off	N	19.5	7.8	46.0
0.822000	38.0	Off	N	19.5	8.0	46.0
0.902000	32.0	Off	N	19.5	14.0	46.0
1.030000	32.0	Off	N	19.5	14.0	46.0
1.190000	31.9	Off	N	19.6	14.1	46.0
1.286000	30.5	Off	N	19.6	15.5	46.0
1.414000	30.7	Off	N	19.6	15.3	46.0
1.574000	32.2	Off	N	19.6	13.8	46.0



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Arthur Hsieh	Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN (5GHz) Link + MPEG4 + Scanner + Snap-on 1 + RJ-45 Cable Link with Notebook + Adapter + SD Card for Sample 3		

**Final Result : Average**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.870000	32.8	Off	N	19.6	13.2	46.0
1.998000	31.6	Off	N	19.6	14.4	46.0
2.382000	29.7	Off	N	18.9	16.3	46.0
2.854000	30.1	Off	N	19.4	15.9	46.0
3.198000	32.9	Off	N	19.5	13.1	46.0
3.486000	36.1	Off	N	19.5	9.9	46.0
3.606000	36.2	Off	N	19.5	9.8	46.0
3.902000	33.4	Off	N	19.6	12.6	46.0
4.222000	31.8	Off	N	19.6	14.2	46.0
4.318000	32.1	Off	N	19.6	13.9	46.0
4.502000	31.2	Off	N	19.6	14.8	46.0
4.758000	30.4	Off	N	19.6	15.6	46.0
5.038000	29.2	Off	N	19.6	20.8	50.0

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.

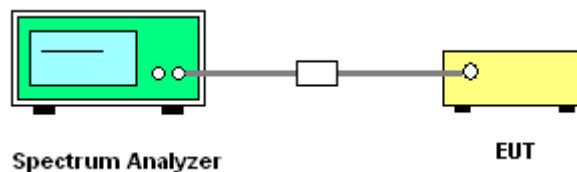
3.6.2 Measuring Instruments

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

Please refer to Appendix A.



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

An embedded-in antenna design 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
Power Meter	Anritsu	ML2495A	0932001	300MHz~40GHz	Sep. 29, 2016	Jan. 10, 2017 ~ Jan. 13, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	0846202	300MHz~40GHz	Sep. 29, 2016	Jan. 10, 2017 ~ Jan. 13, 2017	Sep. 28, 2017	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz-40GHz	Jul. 17, 2016	Jan. 10, 2017 ~ Jan. 13, 2017	Jul. 16, 2017	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 01, 2016	Jan. 10, 2017 ~ Jan. 13, 2017	Aug. 31, 2017	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890094	1V~20V 0.5A~5A	Oct. 11, 2016	Jan. 10, 2017 ~ Jan. 13, 2017	Oct. 10, 2017	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jan. 17, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	Jan. 17, 2017	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	Jan. 17, 2017	Nov. 28, 2017	Conduction (CO05-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 10, 2016	Jan. 20, 2017 ~ Jan. 21, 2017	Nov. 09, 2017	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Jan. 20, 2017 ~ Jan. 21, 2017	Sep. 01, 2017	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Oct. 15, 2016	Jan. 20, 2017 ~ Jan. 21, 2017	Oct. 14, 2017	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1GHz ~ 18GHz	Mar. 30, 2016	Jan. 20, 2017 ~ Jan. 21, 2017	Mar. 31, 2017	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 10, 2016	Jan. 20, 2017 ~ Jan. 21, 2017	Nov. 09, 2017	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY52350276	10Hz ~ 44GHz	Mar. 21, 2016	Jan. 20, 2017 ~ Jan. 21, 2017	Mar. 20, 2017	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jan. 20, 2017 ~ Jan. 21, 2017	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jan. 20, 2017 ~ Jan. 21, 2017	N/A	Radiation (03CH11-HY)
Preamplifier	MITEQ	TTA0204	1872107	2GHz~40GHz	Feb. 15, 2016	Jan. 20, 2017 ~ Jan. 21, 2017	Feb. 14, 2017	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 08, 2016	Jan. 20, 2017 ~ Jan. 21, 2017	Nov. 07, 2017	Radiation (03CH11-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.7
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.5
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.2
---	-----



Appendix A. Conducted Test Results

Test Engineer:	Aking chang	Temperature:	21~25	°C
Test Date:	2017/01/10~2017/01/13	Relative Humidity:	51~54	%

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

Band IV									
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)	6 dB Bandwidth (MHz)	6dB Bandwidth min. Limit (MHz)	Pass/Fail
11a	6M bps	1	149	5745	17.6	30	15.54	0.5	Pass
11a	6Mbps	1	157	5785	17.85	26.3	15.64	0.5	Pass
11a	6Mbps	1	165	5825	17.95	26.7	15.3	0.5	Pass
HT20	MCS 0	1	149	5745	18.95	36.5	15.46	0.5	Pass
HT20	MCS 0	1	157	5785	18.95	28	15.34	0.5	Pass
HT20	MCS 0	1	165	5825	19.05	29.2	15.26	0.5	Pass

TEST RESULTS DATA
Average Power Table

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)		Pass/Fail
11a	6M bps	1	149	5745	0.05	13.42	30.00	2.78		Pass
11a	6Mbps	1	157	5785	0.05	13.40	30.00	2.78		Pass
11a	6Mbps	1	165	5825	0.05	13.41	30.00	2.78		Pass
HT20	MCS 0	1	149	5745	0.05	13.48	30.00	2.78		Pass
HT20	MCS 0	1	157	5785	0.05	13.37	30.00	2.78		Pass
HT20	MCS 0	1	165	5825	0.05	13.47	30.00	2.78		Pass

TEST RESULTS DATA
Power Spectral Density

Band IV										
Mod.	Data Rate	N _{TX}	CH.	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	6M bps	1	149	5745	0.05	2.22	-1.29	30.00	2.78	Pass
11a	6Mbps	1	157	5785	0.05	2.22	-1.53	30.00	2.78	Pass
11a	6Mbps	1	165	5825	0.05	2.22	-1.42	30.00	2.78	Pass
HT20	MCS 0	1	149	5745	0.05	2.22	-1.45	30.00	2.78	Pass
HT20	MCS 0	1	157	5785	0.05	2.22	-1.59	30.00	2.78	Pass
HT20	MCS 0	1	165	5825	0.05	2.22	-1.53	30.00	2.78	Pass

TEST RESULTS DATA
Frequency Stability

Band IV										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)	Note
11a	6M bps	1	149	5745	5745.000	0.000	0.00	50	3.8	
11a	6M bps	1	149	5745	5744.990	-0.010	-1.74	-30	3.8	
11a	6M bps	1	149	5745	5745.000	0.000	0.00	20	4.3	
11a	6M bps	1	149	5745	5745.050	0.050	8.70	20	3.6	
11a	6M bps	1	149	5745	5745.000	0.000	0.00	20	3.8	



Appendix B. Radiated Spurious Emission

Test Engineer :	Ken Wu	Temperature :	20~23°C
		Relative Humidity :	50~54%



Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5607.2	51.23	-16.97	68.2	39.99	32.84	11.48	33.08	105	320	P	H
		5686.4	51.19	-43.98	95.17	39.87	32.97	11.47	33.12	105	320	P	H
		5718	58.68	-51.56	110.24	47.34	33.01	11.46	33.13	105	320	P	H
		5725	65.21	-56.99	122.2	53.87	33.01	11.46	33.13	105	320	P	H
	*	5745	107.4	-	-	96.05	33.04	11.46	33.15	105	320	P	H
	*	5745	98.77	-	-	87.42	33.04	11.46	33.15	105	320	A	H
													H
													H
		5621	52.36	-15.84	68.2	41.1	32.87	11.47	33.08	179	327	P	V
		5699.2	53.67	-50.94	104.61	42.35	32.97	11.47	33.12	179	327	P	V
		5719.6	61.88	-48.81	110.69	50.54	33.01	11.46	33.13	179	327	P	V
		5724.8	74.27	-47.47	121.74	62.93	33.01	11.46	33.13	179	327	P	V
	*	5745	113.55	-	-	102.2	33.04	11.46	33.15	179	327	P	V
	*	5745	105.07	-	-	93.72	33.04	11.46	33.15	179	327	A	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5618.4	51.69	-16.51	68.2	40.42	32.87	11.48	33.08	172	294	P	H
		5653.4	50.71	-20.02	70.73	39.42	32.92	11.47	33.1	172	294	P	H
		5712.2	50.53	-58.09	108.62	39.21	32.99	11.46	33.13	172	294	P	H
		5721	49.7	-63.38	113.08	38.36	33.01	11.46	33.13	172	294	P	H
	*	5785	108.14	-	-	96.77	33.09	11.45	33.17	172	294	P	H
	*	5785	99.6	-	-	88.23	33.09	11.45	33.17	172	294	A	H
		5850.4	50.78	-70.51	121.29	39.26	33.18	11.53	33.19	172	294	P	H
		5866.2	51.97	-55.69	107.66	40.37	33.21	11.6	33.21	172	294	P	H
		5899.8	51.17	-35.64	86.81	39.53	33.26	11.6	33.22	172	294	P	H
		5947.6	51.78	-16.42	68.2	39.95	33.33	11.74	33.24	172	294	P	H
													H
													H
		5612.8	53.46	-14.74	68.2	42.22	32.84	11.48	33.08	166	339	P	V
		5687.2	52.71	-43.05	95.76	41.39	32.97	11.47	33.12	166	339	P	V
		5713	51.15	-57.69	108.84	39.83	32.99	11.46	33.13	166	339	P	V
		5720.2	52.16	-59.1	111.26	40.82	33.01	11.46	33.13	166	339	P	V
	*	5785	114.28	-	-	102.91	33.09	11.45	33.17	166	339	P	V
	*	5785	105.45	-	-	94.08	33.09	11.45	33.17	166	339	A	V
		5852.4	50.96	-65.77	116.73	39.44	33.18	11.53	33.19	166	339	P	V
		5864.6	52.15	-55.96	108.11	40.55	33.21	11.6	33.21	166	339	P	V
		5895.6	51.91	-38.01	89.92	40.27	33.26	11.6	33.22	166	339	P	V
		5942.6	51.74	-16.46	68.2	39.91	33.33	11.74	33.24	166	339	P	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz	*	5825	108.22	-	-	96.71	33.16	11.53	33.18	168	282	P	H
	*	5825	99.5	-	-	87.99	33.16	11.53	33.18	168	282	A	H
		5852.2	59.51	-57.67	117.18	47.99	33.18	11.53	33.19	168	282	P	H
		5859.2	54.73	-54.89	109.62	43.2	33.21	11.53	33.21	168	282	P	H
		5907.8	53.11	-27.78	80.89	41.38	33.28	11.67	33.22	168	282	P	H
		5948.4	52.09	-16.11	68.2	40.26	33.33	11.74	33.24	168	282	P	H
													H
													H
	*	5825	113.37	-	-	101.86	33.16	11.53	33.18	162	335	P	V
	*	5825	105	-	-	93.49	33.16	11.53	33.18	162	335	A	V
		5852.2	61.42	-55.76	117.18	49.9	33.18	11.53	33.19	162	335	P	V
		5858.6	57.38	-52.41	109.79	45.85	33.21	11.53	33.21	162	335	P	V
		5890.2	53.59	-40.33	93.92	41.95	33.26	11.6	33.22	162	335	P	V
		5945.4	51.79	-16.41	68.2	39.96	33.33	11.74	33.24	162	335	P	V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 149 5745MHz		11490	39.29	-34.71	74	35.56	39.12	15.85	51.24	100	0	P	H
		17235	45.34	-22.86	68.2	33.92	42.84	20.57	51.99	100	0	P	H
													H
													H
		11490	39.71	-34.29	74	35.98	39.12	15.85	51.24	100	0	P	V
		17235	44.94	-23.26	68.2	33.52	42.84	20.57	51.99	100	0	P	V
													V
													V
802.11a CH 157 5785MHz		11570	38.96	-35.04	74	35.24	39.07	15.91	51.26	100	0	P	H
		17355	44.88	-23.32	68.2	32.85	43.26	20.78	52.01	100	0	P	H
													H
													H
		11570	39.77	-34.23	74	36.05	39.07	15.91	51.26	100	0	P	V
		17355	45.41	-22.79	68.2	33.38	43.26	20.78	52.01	100	0	P	V
													V
													V
802.11a CH 165 5825MHz		11650	38.85	-35.15	74	35.13	39.04	15.97	51.29	100	0	P	H
		17475	46.3	-21.9	68.2	33.65	43.68	20.99	52.02	100	0	P	H
													H
													H
		11650	39.49	-34.51	74	35.77	39.04	15.97	51.29	100	0	P	V
		17475	46.44	-21.76	68.2	33.79	43.68	20.99	52.02	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		5607.4	51.77	-16.43	68.2	40.53	32.84	11.48	33.08	161	273	P	H
		5680.6	52.1	-38.78	90.88	40.81	32.94	11.47	33.12	161	273	P	H
		5716.2	55.77	-53.97	109.74	44.45	32.99	11.46	33.13	161	273	P	H
		5724.4	66.33	-54.5	120.83	54.99	33.01	11.46	33.13	161	273	P	H
	*	5745	106.73	-	-	95.38	33.04	11.46	33.15	161	273	P	H
	*	5745	98.15	-	-	86.8	33.04	11.46	33.15	161	273	A	H
													H
													H
		5627.2	53.94	-14.26	68.2	42.68	32.87	11.47	33.08	143	331	P	V
		5677.8	54.37	-34.44	88.81	43.07	32.94	11.47	33.11	143	331	P	V
		5718.8	63.26	-47.2	110.46	51.92	33.01	11.46	33.13	143	331	P	V
		5723.6	69.75	-49.26	119.01	58.41	33.01	11.46	33.13	143	331	P	V
	*	5745	113.28	-	-	101.93	33.04	11.46	33.15	143	331	P	V
	*	5745	104.72	-	-	93.37	33.04	11.46	33.15	143	331	A	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 157 5785MHz		5628	50.94	-17.26	68.2	39.68	32.87	11.47	33.08	168	289	P	H
		5691.8	50.45	-48.7	99.15	39.13	32.97	11.47	33.12	168	289	P	H
		5706.4	50.66	-56.33	106.99	39.34	32.99	11.46	33.13	168	289	P	H
		5724.4	50.67	-70.16	120.83	39.33	33.01	11.46	33.13	168	289	P	H
	*	5785	108.53	-	-	97.16	33.09	11.45	33.17	168	289	P	H
	*	5785	99.77	-	-	88.4	33.09	11.45	33.17	168	289	A	H
		5855	50.38	-60.42	110.8	38.83	33.21	11.53	33.19	168	289	P	H
		5858	51.36	-58.6	109.96	39.83	33.21	11.53	33.21	168	289	P	H
		5877.4	51.18	-52.24	103.42	39.56	33.23	11.6	33.21	168	289	P	H
		5932.2	50.56	-17.64	68.2	38.82	33.3	11.67	33.23	168	289	P	H
													H
													H
		5642.6	52.93	-15.27	68.2	41.67	32.89	11.47	33.1	165	329	P	V
		5682.8	53.57	-38.94	92.51	42.28	32.94	11.47	33.12	165	329	P	V
		5711.2	54.31	-54.03	108.34	42.99	32.99	11.46	33.13	165	329	P	V
		5724.6	52.63	-68.66	121.29	41.29	33.01	11.46	33.13	165	329	P	V
	*	5785	113.58	-	-	102.21	33.09	11.45	33.17	165	329	P	V
	*	5785	105.07	-	-	93.7	33.09	11.45	33.17	165	329	A	V
		5850	51.33	-70.87	122.2	39.81	33.18	11.53	33.19	165	329	P	V
		5870.2	52.55	-53.99	106.54	40.95	33.21	11.6	33.21	165	329	P	V
		5893.8	52.61	-38.64	91.25	40.97	33.26	11.6	33.22	165	329	P	V
		5934.8	51.1	-17.1	68.2	39.37	33.3	11.67	33.24	165	329	P	V
													V
													V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 165 5825MHz	*	5825	108.85	-	-	97.34	33.16	11.53	33.18	162	295	P	H
	*	5825	99.73	-	-	88.22	33.16	11.53	33.18	162	295	A	H
		5852.4	58.35	-58.38	116.73	46.83	33.18	11.53	33.19	162	295	P	H
		5855.4	54.9	-55.79	110.69	43.35	33.21	11.53	33.19	162	295	P	H
		5900.8	54.09	-31.98	86.07	42.38	33.26	11.67	33.22	162	295	P	H
		5937.4	51.25	-16.95	68.2	39.52	33.3	11.67	33.24	162	295	P	H
													H
													H
	*	5825	113.02	-	-	101.51	33.16	11.53	33.18	153	339	P	V
	*	5825	104.32	-	-	92.81	33.16	11.53	33.18	153	339	A	V
		5850.2	64.95	-56.79	121.74	53.43	33.18	11.53	33.19	153	339	P	V
		5855.6	57.71	-52.92	110.63	46.16	33.21	11.53	33.19	153	339	P	V
		5898.2	52.12	-35.87	87.99	40.48	33.26	11.6	33.22	153	339	P	V
		5945.4	51.71	-16.49	68.2	39.88	33.33	11.74	33.24	153	339	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		11490	39.28	-34.72	74	35.55	39.12	15.85	51.24	100	0	P	H
		17235	44.76	-23.44	68.2	33.34	42.84	20.57	51.99	100	0	P	H
													H
													H
		11490	39.36	-34.64	74	35.63	39.12	15.85	51.24	100	0	P	V
		17235	44.14	-24.06	68.2	32.72	42.84	20.57	51.99	100	0	P	V
													V
													V
802.11n HT20 CH 157 5785MHz		11570	40.95	-33.05	74	37.23	39.07	15.91	51.26	100	0	P	H
		17355	45.98	-22.22	68.2	33.95	43.26	20.78	52.01	100	0	P	H
													H
													H
		11570	39.82	-34.18	74	36.1	39.07	15.91	51.26	100	0	P	V
		17355	44.95	-23.25	68.2	32.92	43.26	20.78	52.01	100	0	P	V
													V
													V
802.11n HT20 CH 165 5825MHz		11650	41.05	-32.95	74	37.33	39.04	15.97	51.29	100	0	P	H
		17475	48.4	-19.8	68.2	35.75	43.68	20.99	52.02	100	0	P	H
													H
													H
		11650	42.77	-31.23	74	39.05	39.04	15.97	51.29	100	0	P	V
		17475	46.86	-21.34	68.2	34.21	43.68	20.99	52.02	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

Emission below 1GHz

5GHz WIFI 802.11n HT20 (LF @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11n HT20 LF		31.35	24.03	-15.97	40	30.05	25.18	1.29	32.49	-	-	P	H
		49.44	15.6	-24.4	40	31.47	15.33	1.29	32.49	-	-	P	H
		259.77	18.85	-27.15	46	29.39	19.7	2.34	32.58	-	-	P	H
		708.8	28.51	-17.49	46	30.05	26.88	4.02	32.44	-	-	P	H
		878.9	32.11	-13.89	46	30.24	29.07	4.57	31.77	-	-	P	H
		943.3	32.84	-13.16	46	28.97	30.44	4.69	31.26	146	231	P	H
													H
													H
													H
													H
													H
		31.35	35.39	-4.61	40	41.41	25.18	1.29	32.49	166	315	P	V
		46.2	26.29	-13.71	40	40.86	16.63	1.29	32.49	-	-	P	V
		49.44	25.8	-14.2	40	41.67	15.33	1.29	32.49	-	-	P	V
		549.9	27.26	-18.74	46	31.41	24.8	3.47	32.42	-	-	P	V
		729.1	29.69	-16.31	46	30.77	27.29	4.02	32.39	-	-	P	V
		919.5	33.42	-12.58	46	30.53	29.75	4.63	31.49	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.



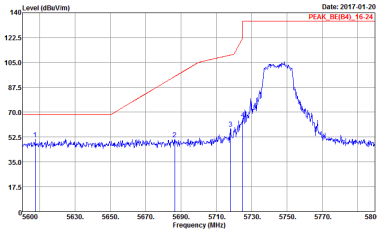
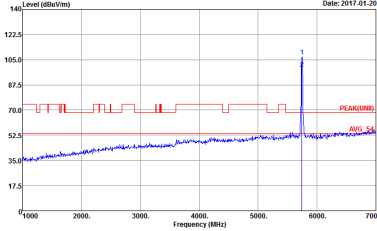
Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Ken Wu	Temperature :	20~23°C
		Relative Humidity :	50~54%

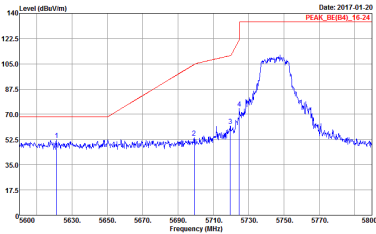
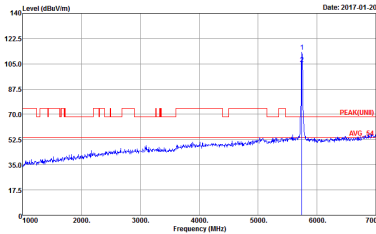
Note symbol

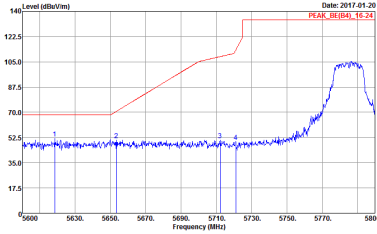
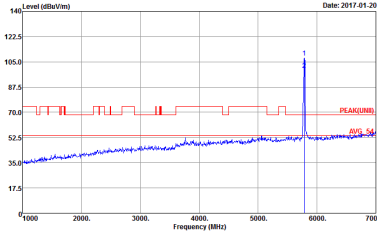
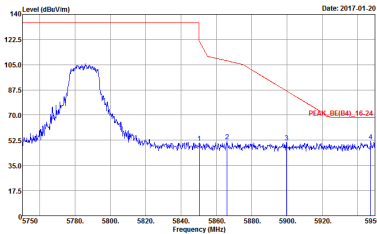
-L	Low channel location
-R	High channel location

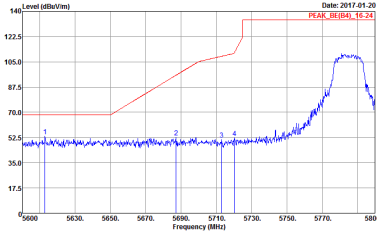
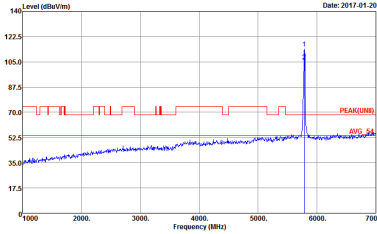
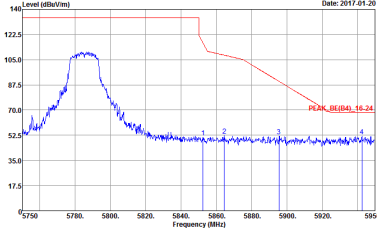
Band 4 - 5725~5850MHz
WIFI 802.11a (Band Edge @ 3m)

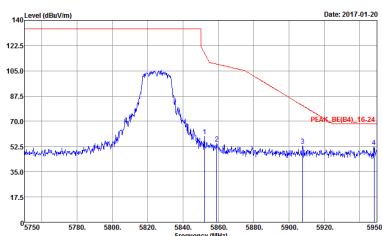
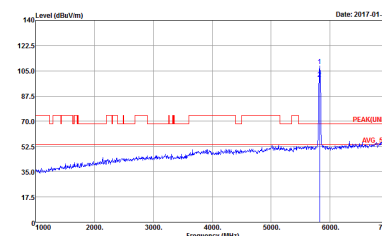
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 602819 EUT : 68.2 : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 602819 EUT : 68.2 : Sample 6

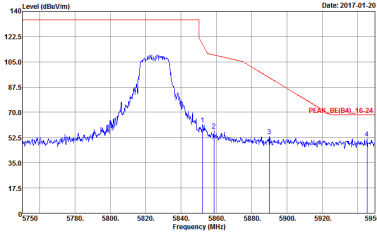
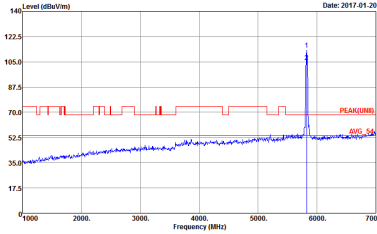


WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH149 5745MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 602819 EUT : 68.2 Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 602819 EUT : 68.2 Sample 6

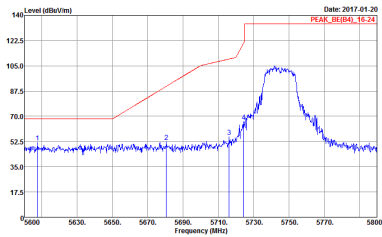
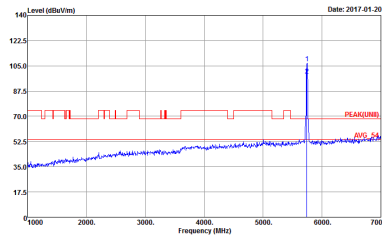
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	Left blank

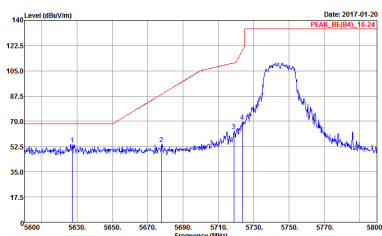
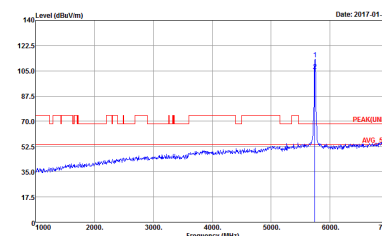
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH157 5785MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6
	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6	Left blank

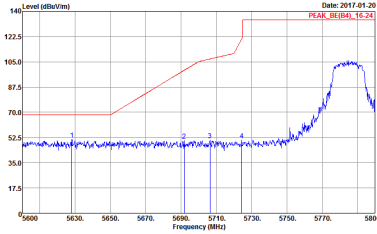
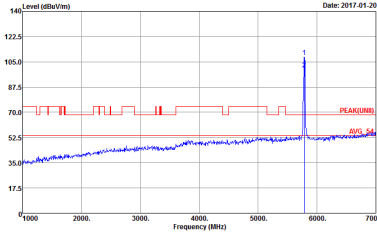
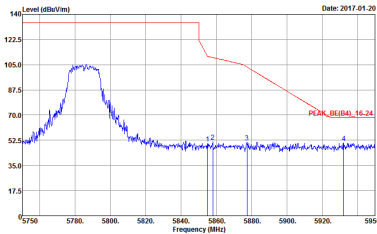
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6

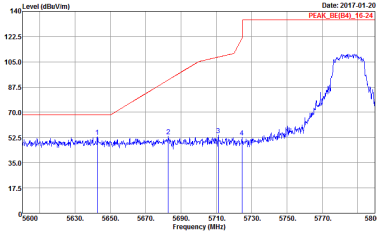
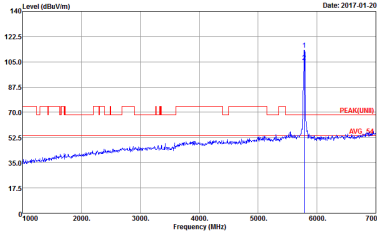
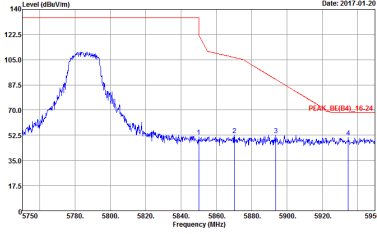
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11a CH165 5825MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6

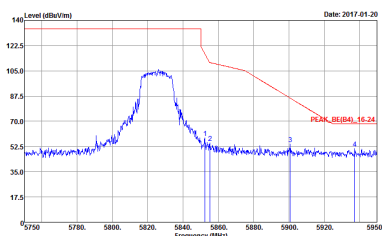
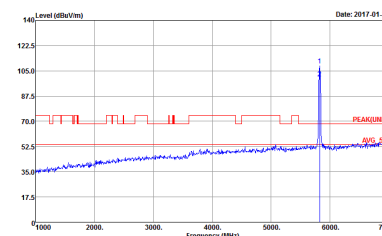
Band 4 5725~5850MHz
WIFI 802.11n HT20 (Band Edge @ 3m)

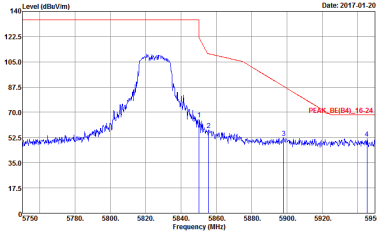
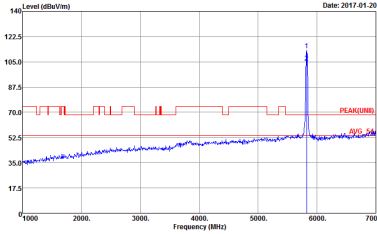
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(B4)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNIT) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6

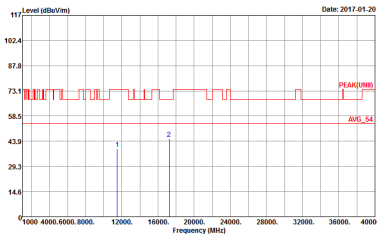
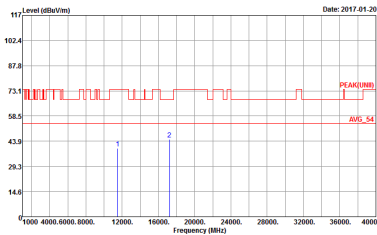
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6
	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	Left blank

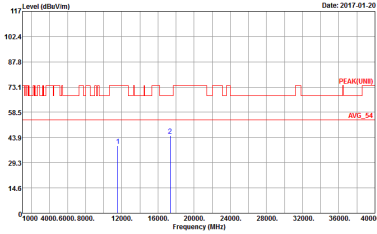
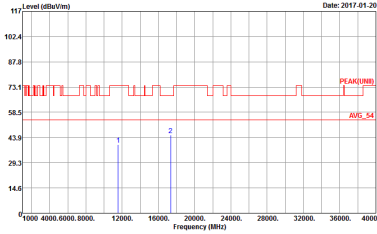
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6D2819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6D2819 EUT : Sample 6
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF VERTICAL RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 6D2819 EUT : Sample 6	Left blank

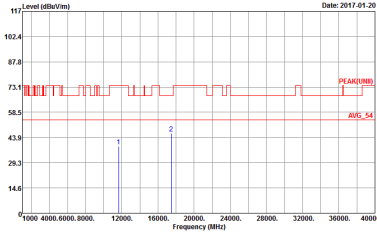
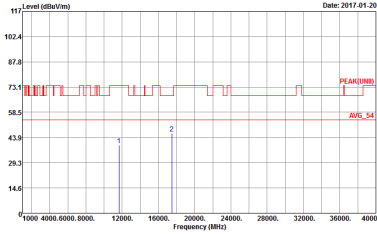
WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 6D2819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 6D2819 EUT : Sample 6

WIFI	Band 4 5725~5850MHz Band Edge @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE(84)_16-24 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : Sample 6

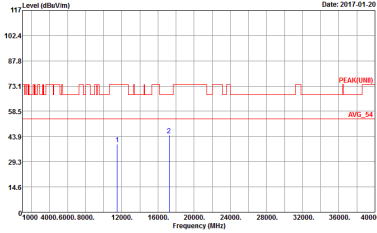
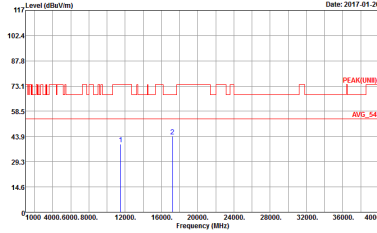
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

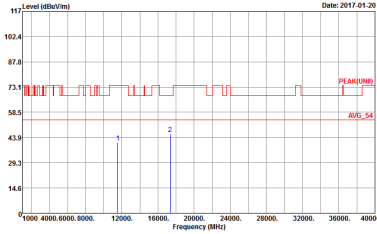
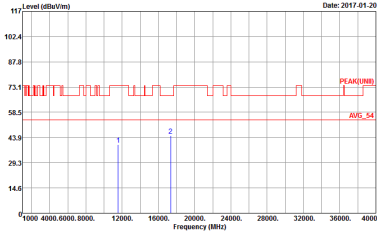
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 602819 EUT : 68.2 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 602819 EUT : 68.2 EUT : Sample 6

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 602819 EUT : Sample 6

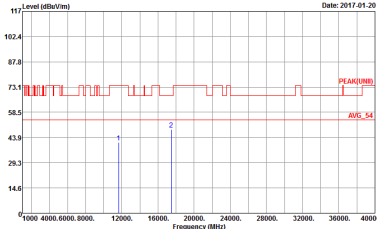
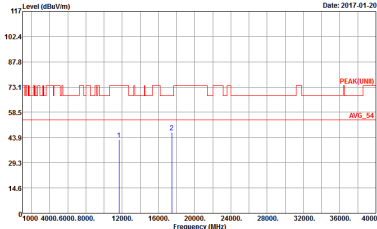
WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11a CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 602819 EUT : Sample 6

Band 4 5725~5850MHz
WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH149 5745MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 6D2819 EUT : 68.2 : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 6D2819 EUT : 68.2 : Sample 6

WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH157 5785MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 602819 EUT : Sample 6

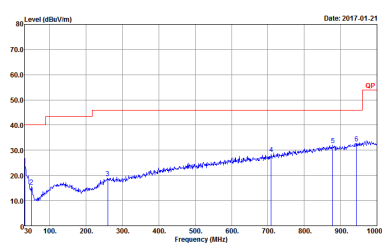
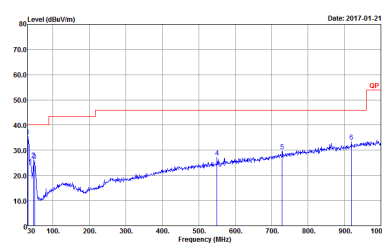


WIFI	Band 4 5725~5850MHz Harmonic @ 3m	
ANT	802.11n HT20 CH165 5825MHz	
1	Horizontal	Vertical
Peak Avg.	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF HORIZONTAL Detector : Peak Project : 602819 EUT : Sample 6	 Site : 03CH11-HY Condition : PEAK(UNII) 3m HORN 91200-HF VERTICAL Detector : Peak Project : 602819 EUT : Sample 6

Band 4 5725~5850MHz

Emission below 1GHz

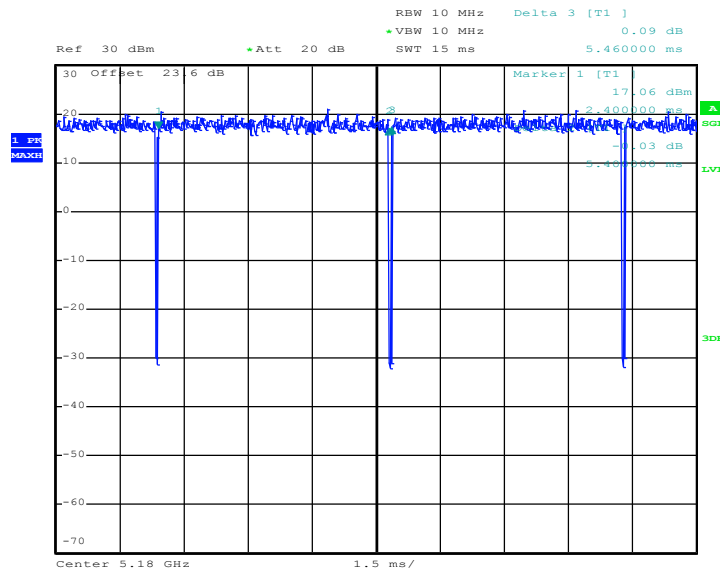
5GHz WIFI 802.11n HT20 (LF)

WIFI	5GHz 5725~5850MHz	
ANT	802.11n HT20 LF	
1	Horizontal	Vertical
QP / Peak	 Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC HORIZONTAL Project : 6D2819 Sample : Sample 6	 Site : 03CH11-HY Condition : QP 3m BT-LOG 6111D-LF_ETC VERTICAL Project : 6D2819 Sample : Sample 6

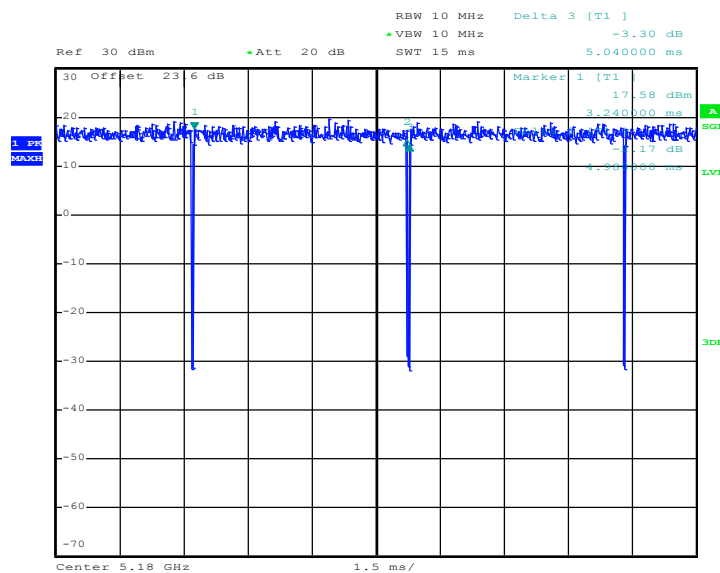


Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
802.11a	98.90	-	-	10Hz
5GHz 802.11n HT20	98.81	-	-	10Hz

802.11a


Date: 10.JAN.2017 11:52:39

802.11n HT20


Date: 10.JAN.2017 14:08:07