

FCC Test Report

Report No.: RF130904E05B

FCC ID: MCLJ20H081

Test Model: J20H081

Received Date: Mar. 14, 2016

Test Date: Mar. 22 to 25, 2016

Issued Date: Apr. 14, 2016

Applicant: HON HAI PRECISION IND. CO., LTD.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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A D T

Release Control Record

Issue No.	Description	Date Issued
RF130904E05B	Original release.	Apr. 14, 2016



A D T

1 Certificate of Conformity

Product: 802.11ac/abgn/BT wireless module

Brand: FOXCONN

Test Model: J20H081

Sample Status: ENGINEERING SAMPLE

Applicant: HON HAI PRECISION IND. CO., LTD.

Test Date: Mar. 22 to 25, 2016

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Wendy Wu, **Date:** Apr. 14, 2016
Wendy Wu / Specialist

Approved by : May Chen, **Date:** Apr. 14, 2016
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5715.00MHz, 5725.00MHz and 5850.00MHz.
15.407(a)(1/2 /3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(1/2 /3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

NOTE: 1. This report is prepared for FCC Class II change. (Upgraded the standard to section 15.407 under new rule.)

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.31 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.40 dB
	6GHz ~ 18GHz	3.73 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	802.11ac/abgn/BT wireless module
Brand	FOXCONN
Test Model	J20H081
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 5V from from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only.
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 150Mbps 802.11ac: up to 433.3Mbps
Operating Frequency	For 15.407: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.58GHz & 5.66 ~ 5.70GHz, 5.745GHz ~ 5.825GHz For 15.247: 2.412 ~ 2.462GHz
Number of Channel	For 15.407: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 21 802.11n (HT40), 802.11ac (VHT40): 9 802.11ac (VHT80): 4 For 15.247: 802.11b, 802.11g, 802.11n (HT20): 11
Output Power	For 15.407: 5.18 ~ 5.24GHz: 138.357mW 5.26 ~ 5.32GHz: 153.462mW 5.50 ~ 5.58GHz & 5.66GHz ~ 5.70GHz: 128.233mW 5.745GHz ~ 5.825GHz: 90.573mW For 15.247: 245.471mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

- This is a supplementary report of Report No.: RF130904E05 and RF130904E05-1. The differences between them are as below information:
 - ◆ Upgraded the standard to section 15.407 under new rule.
- For U-NII-2A and U-NII-2C Band: There is no increase in authorized power level, so RF test data refer to the original test report (RF130904E05-1).
- According to above conditions, all test items of U-NII-1 and U-NII-3 band need to be performed, except for AC power conducted emission test item. And all data was verified to meet the requirements.

4. There are Bluetooth technology (BT3.0 without support HS) and WLAN (2.4GHz & 5GHz) technology used for the EUT.
5. 5GHz & BT technology can transmit at same time.
6. The antennas provided to the EUT, please refer to the following table:

Transmitter Circuit	Gain (dBi) (Include cable loss)	Antenna Type	Connector Type	Frequency range (MHz to MHz)
Chain (0)	-0.4	PCB	NA	2400~2483.5
	1.12			5150~5850
Chain (1)	0.28	PCB	NA	2400~2483.5
	0.9			5150~5850

7. The EUT incorporates a SISO function.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX/1RX (Diversity)
802.11g	1TX/1RX (Diversity)
802.11n (HT20) <2.4GHz>	1TX/1RX (Diversity)
802.11a	1TX/1RX (Diversity)
802.11n (HT20) <5GHz>	1TX/1RX (Diversity)
802.11n (HT40) <5GHz>	1TX/1RX (Diversity)
802.11ac (VHT20)	1TX/1RX (Diversity)
802.11ac (VHT40)	1TX/1RX (Diversity)
802.11ac (VHT80)	1TX/1RX (Diversity)

Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

8. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.
9. When the EUT operating in 802.11ac, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 9.
10. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	-	√	-

Where **RE≥1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

NOTE:

1. The EUT's antenna (PCB) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane** (below 1GHz) and **Z-plane** (above 1GHz).
2. "-" means no effect.

Radiated Emission Test (Above 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5320	36 to 64	40	OFDM	BPSK	6.0

Antenna Port Conducted Measurement:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY	TEST LOCATION
RE $\geq$ 1G	20deg. C, 60%RH	120Vac, 60Hz	Tim Ho	1
RE<1G	20deg. C, 60%RH	120Vac, 60Hz	Andy Ho	1
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng	1

3.3 Duty Cycle of Test Signal

If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

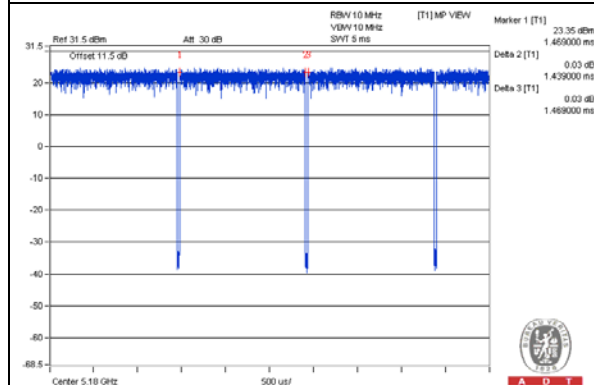
802.11a: Duty cycle = $1.439 \text{ ms} / 1.469 \text{ ms} = 0.98$

802.11ac (VHT20): Duty cycle = $1.347 \text{ ms} / 1.373 \text{ ms} = 0.981$

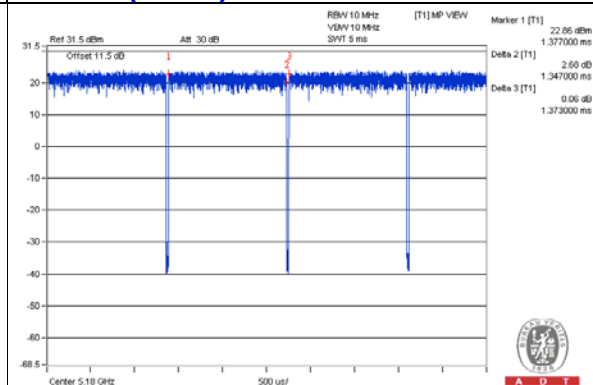
802.11ac (VHT40): Duty cycle = $0.667 \text{ ms} / 0.695 \text{ ms} = 0.96$, Duty factor = $10 * \log(1/0.96) = 0.18$

802.11ac (VHT80): Duty cycle = $0.335 \text{ ms} / 0.362 \text{ ms} = 0.925$, Duty factor = $10 * \log(1/0.925) = 0.34$

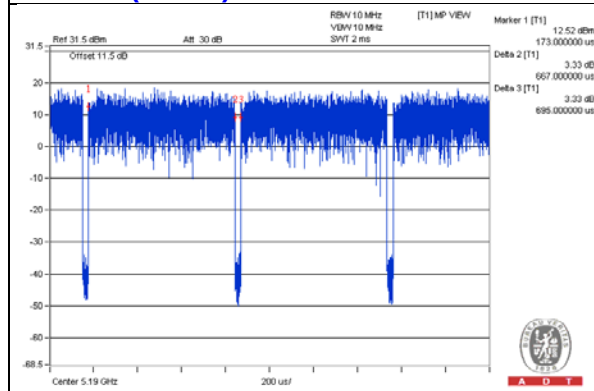
802.11a



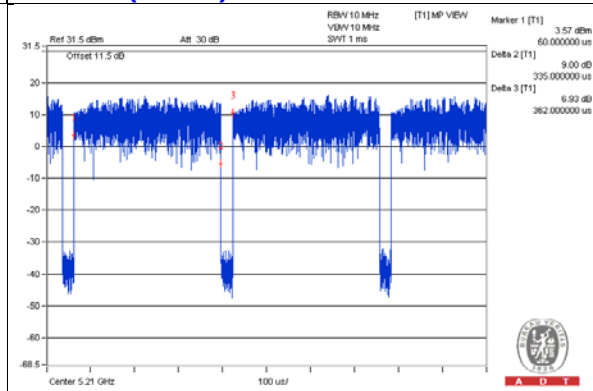
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

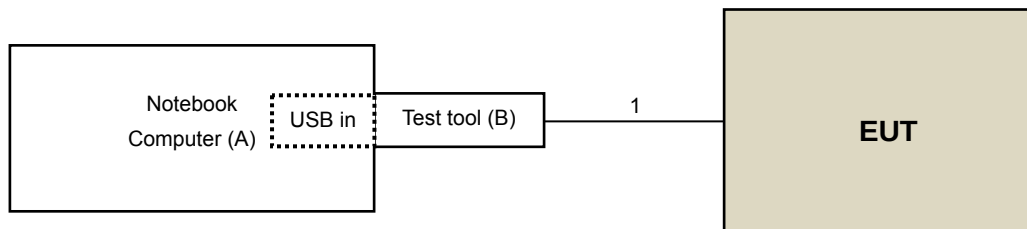
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook computer	DELL	E5430	HL3SKV1	FCC DoC	Provided by Lab
B.	Test tool	FOXCONN	NA	NA	NA	Supplied by Client

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Console cable	1	0.05	No	0	Supplied by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)

KDB 789033 D02 General UNII Test Procedure New Rules v01r01

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (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:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedure New Rules v01r01	FIELD STRENGTH AT 3m	
	PK:74 (dBuV/m)	AV:54 (dBuV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBuV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) ^{*1} PK:-17 (dBm/MHz) ^{*2}	PK: 68.2(dBuV/m) ^{*1} PK:78.2 (dBuV/m) ^{*2}

NOTE: ^{*1} beyond 10MHz of the band edge ^{*2} within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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



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4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	Aug. 12, 2015	Aug. 11, 2016
Pre-Amplifier ^(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna ^(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-07	May 08, 2015	May 07, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	138	Jan. 18, 2016	Jan. 17, 2017
RF Cable	8D	966-3-1 966-3-2 966-3-3	Apr. 03, 2015	Apr. 02, 2016
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Jan. 20, 2016	Jan. 19, 2017
Pre-Amplifier Agilent	8449B	3008A02465	Apr. 06, 2015	Apr. 05, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150317 150321 150322	Mar. 31, 2015	Mar. 30, 2016
Spectrum Analyzer Keysight	N9030A	MY54490520	July 26, 2015	July 25, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 15, 2016	Jan. 14, 2017
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Jan. 08, 2016	Jan. 07, 2017
RF Cable	SUCOFLEX 102	36432/2 36441/2	Jan. 16, 2016	Jan. 15, 2017
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Boresight Antenna Fixture	NA	NA	NA	NA
Spectrum analyzer R&S	FSP 40	100060	May 08, 2015	May 07, 2016
Power meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-SP-AR	MAA0812-008	Jan. 15, 2016	Jan. 14, 2017

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Loop antenna was used for all emissions below 30 MHz.
4. The test was performed in 966 Chamber No. 3.
6. The FCC Site Registration No. is 147459
7. The CANADA Site Registration No. is 20331-1
8. Tested Date: Mar. 25, 2016

4.1.3 Test Procedure

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

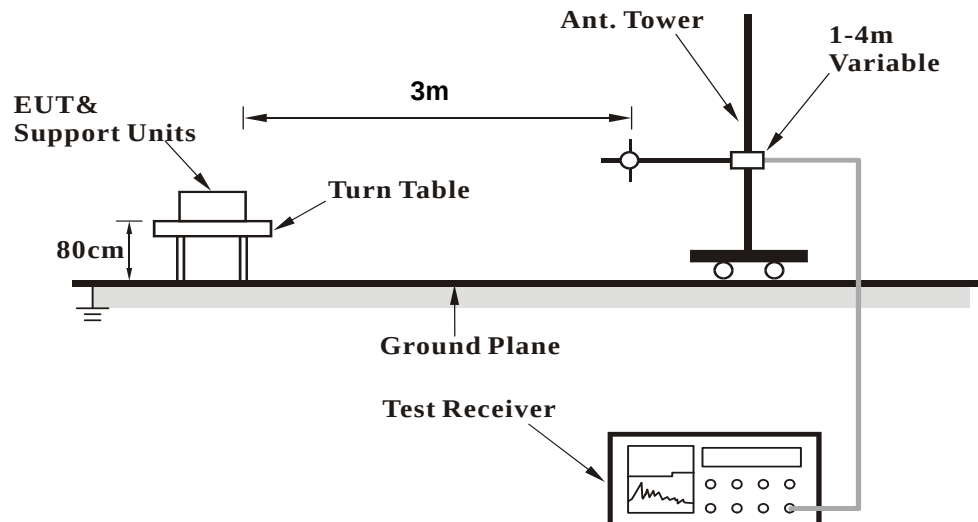
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

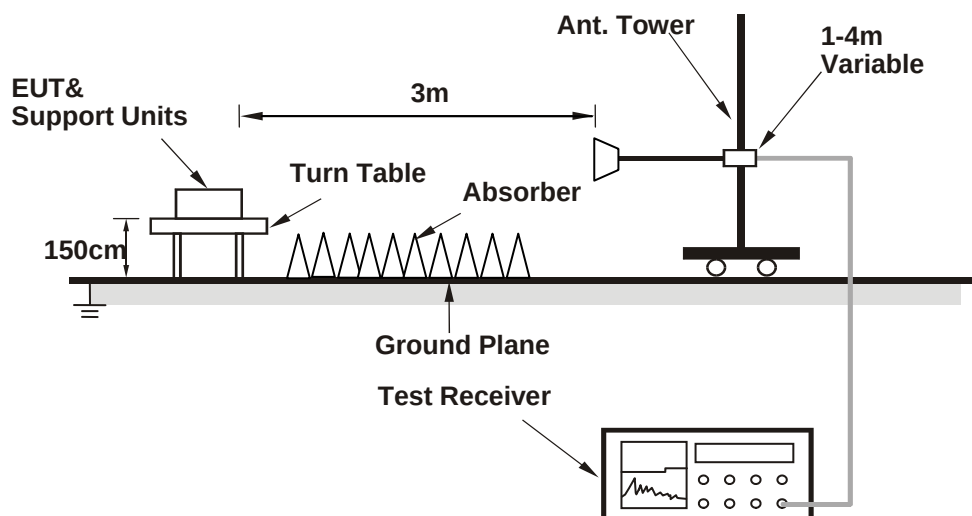
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Condition

- Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
- The communication partner run test program "MT76xxU QA V2.0.10.0[0709]" to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.5 PK	74.0	-3.5	1.03 H	140	67.94	2.56
2	5150.00	53.8 AV	54.0	-0.2	1.03 H	140	51.24	2.56
3	*5180.00	109.0 PK			1.03 H	140	106.35	2.65
4	*5180.00	98.2 AV			1.03 H	140	95.55	2.65
5	#10360.00	51.0 PK	74.0	-23.0	1.15 H	288	37.78	13.22
6	#10360.00	38.7 AV	54.0	-15.3	1.15 H	288	25.48	13.22
7	15540.00	53.3 PK	74.0	-20.7	1.51 H	315	37.82	15.48
8	15540.00	39.5 AV	54.0	-14.5	1.51 H	315	24.02	15.48
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.2 PK	74.0	-3.8	3.05 V	152	67.64	2.56
2	5150.00	53.6 AV	54.0	-0.4	3.05 V	152	51.04	2.56
3	*5180.00	109.5 PK			3.05 V	152	106.85	2.65
4	*5180.00	98.3 AV			3.05 V	152	95.65	2.65
5	#10360.00	51.3 PK	74.0	-22.7	1.46 V	229	38.08	13.22
6	#10360.00	37.3 AV	54.0	-16.7	1.46 V	229	24.08	13.22
7	15540.00	52.2 PK	74.0	-21.8	1.51 V	216	36.72	15.48
8	15540.00	38.4 AV	54.0	-15.6	1.51 V	216	22.92	15.48

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.7 PK	74.0	-7.3	1.10 H	140	64.14	2.56
2	5150.00	48.7 AV	54.0	-5.3	1.10 H	140	46.14	2.56
3	*5200.00	111.2 PK			1.10 H	140	108.49	2.71
4	*5200.00	100.0 AV			1.10 H	140	97.29	2.71
5	#10400.00	50.9 PK	74.0	-23.1	1.10 H	286	37.43	13.47
6	#10400.00	38.5 AV	54.0	-15.5	1.10 H	286	25.03	13.47
7	15600.00	53.0 PK	74.0	-21.0	1.50 H	301	37.57	15.43
8	15600.00	39.1 AV	54.0	-14.9	1.50 H	301	23.67	15.43
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.5 PK	74.0	-7.5	3.11 V	153	63.94	2.56
2	5150.00	48.7 AV	54.0	-5.3	3.11 V	153	46.14	2.56
3	*5200.00	111.0 PK			3.11 V	153	108.29	2.71
4	*5200.00	99.9 AV			3.11 V	153	97.19	2.71
5	#10400.00	51.2 PK	74.0	-22.8	1.43 V	221	37.73	13.47
6	#10400.00	37.2 AV	54.0	-16.8	1.43 V	221	23.73	13.47
7	15600.00	52.5 PK	74.0	-21.5	1.56 V	231	37.07	15.43
8	15600.00	38.7 AV	54.0	-15.3	1.56 V	231	23.27	15.43

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	110.5 PK			1.25 H	131	107.69	2.81
2	*5240.00	99.8 AV			1.25 H	131	96.99	2.81
3	5350.00	53.6 PK	74.0	-20.4	1.25 H	131	50.51	3.09
4	5350.00	40.1 AV	54.0	-13.9	1.25 H	131	37.01	3.09
5	#10480.00	51.1 PK	74.0	-22.9	1.09 H	300	37.70	13.40
6	#10480.00	38.9 AV	54.0	-15.1	1.09 H	300	25.50	13.40
7	15720.00	53.0 PK	74.0	-21.0	1.52 H	304	37.99	15.01
8	15720.00	39.3 AV	54.0	-14.7	1.52 H	304	24.29	15.01
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	109.4 PK			1.63 V	148	106.59	2.81
2	*5240.00	98.7 AV			1.63 V	148	95.89	2.81
3	5350.00	53.4 PK	74.0	-20.6	1.63 V	148	50.31	3.09
4	5350.00	39.7 AV	54.0	-14.3	1.63 V	148	36.61	3.09
5	#10480.00	51.3 PK	74.0	-22.7	1.46 V	215	37.90	13.40
6	#10480.00	37.3 AV	54.0	-16.7	1.46 V	215	23.90	13.40
7	15720.00	51.9 PK	74.0	-22.1	1.53 V	219	36.89	15.01
8	15720.00	38.3 AV	54.0	-15.7	1.53 V	219	23.29	15.01

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	67.2 PK	74.0	-6.8	1.00 H	127	63.41	3.79
2	#5715.00	50.1 AV	54.0	-3.9	1.00 H	127	46.31	3.79
3	#5725.00	78.1 PK	78.2	-0.1	1.00 H	127	74.30	3.80
4	*5745.00	106.4 PK			1.00 H	127	102.60	3.80
5	*5745.00	95.5 AV			1.00 H	127	91.70	3.80
6	11490.00	50.8 PK	74.0	-23.2	1.14 H	303	35.77	15.03
7	11490.00	38.7 AV	54.0	-15.3	1.14 H	303	23.67	15.03
8	#17235.00	53.1 PK	74.0	-20.9	1.50 H	310	33.50	19.60
9	#17235.00	39.5 AV	54.0	-14.5	1.50 H	310	19.90	19.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	64.9 PK	74.0	-9.1	3.26 V	66	61.11	3.79
2	#5715.00	48.9 AV	54.0	-5.1	3.26 V	66	45.11	3.79
3	#5725.00	78.0 PK	78.2	-0.2	3.26 V	66	74.20	3.80
4	*5745.00	106.4 PK			3.26 V	66	102.60	3.80
5	*5745.00	95.3 AV			3.26 V	66	91.50	3.80
6	11490.00	51.7 PK	74.0	-22.3	1.45 V	214	36.67	15.03
7	11490.00	37.5 AV	54.0	-16.5	1.45 V	214	22.47	15.03
8	#17235.00	52.0 PK	74.0	-22.0	1.53 V	239	32.40	19.60
9	#17235.00	38.4 AV	54.0	-15.6	1.53 V	239	18.80	19.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	59.2 PK	78.2	-19.0	1.09 H	140	55.40	3.80
2	*5785.00	107.8 PK			1.09 H	140	103.97	3.83
3	*5785.00	96.5 AV			1.09 H	140	92.67	3.83
4	#5850.00	58.0 PK	78.2	-20.2	1.09 H	140	54.17	3.83
5	11570.00	52.3 PK	74.0	-21.7	1.36 H	189	37.46	14.84
6	11570.00	38.2 AV	54.0	-15.8	1.36 H	189	23.36	14.84
7	#17355.00	56.5 PK	74.0	-17.5	1.45 H	205	36.26	20.24
8	#17355.00	43.1 AV	54.0	-10.9	1.45 H	205	22.86	20.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	58.8 PK	78.2	-19.4	3.27 V	76	55.00	3.80
2	*5785.00	107.5 PK			3.27 V	76	103.67	3.83
3	*5785.00	96.4 AV			3.27 V	76	92.57	3.83
4	#5850.00	58.3 PK	78.2	-19.9	3.27 V	76	54.47	3.83
5	11570.00	51.0 PK	74.0	-23.0	1.38 V	226	36.16	14.84
6	11570.00	37.0 AV	54.0	-17.0	1.38 V	226	22.16	14.84
7	#17355.00	52.2 PK	74.0	-21.8	1.56 V	246	31.96	20.24
8	#17355.00	38.3 AV	54.0	-15.7	1.56 V	246	18.06	20.24

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	107.7 PK			1.00 H	138	103.87	3.83
2	*5825.00	96.7 AV			1.00 H	138	92.87	3.83
3	#5850.00	78.1 PK	78.2	-0.1	1.00 H	138	74.27	3.83
4	#5860.00	68.4 PK	74.0	-5.6	1.00 H	138	64.56	3.84
5	#5860.00	52.7 AV	54.0	-1.3	1.00 H	138	48.86	3.84
6	11650.00	51.4 PK	74.0	-22.6	1.11 H	296	36.73	14.67
7	11650.00	39.0 AV	54.0	-15.0	1.11 H	296	24.33	14.67
8	#17475.00	52.7 PK	74.0	-21.3	1.53 H	303	31.87	20.83
9	#17475.00	38.9 AV	54.0	-15.1	1.53 H	303	18.07	20.83
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	106.6 PK			1.50 V	143	102.77	3.83
2	*5825.00	95.7 AV			1.50 V	143	91.87	3.83
3	#5850.00	74.6 PK	78.2	-3.6	1.50 V	143	70.77	3.83
4	#5860.00	67.8 PK	74.0	-6.2	1.50 V	143	63.96	3.84
5	#5860.00	51.2 AV	54.0	-2.8	1.50 V	143	47.36	3.84
6	11650.00	50.7 PK	74.0	-23.3	1.42 V	241	36.03	14.67
7	11650.00	37.0 AV	54.0	-17.0	1.42 V	241	22.33	14.67
8	#17475.00	51.8 PK	74.0	-22.2	1.62 V	246	30.97	20.83
9	#17475.00	38.1 AV	54.0	-15.9	1.62 V	246	17.27	20.83

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT20)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.7 PK	74.0	-6.3	1.27 H	133	65.14	2.56
2	5150.00	52.3 AV	54.0	-1.7	1.27 H	133	49.74	2.56
3	*5180.00	107.1 PK			1.27 H	133	104.45	2.65
4	*5180.00	96.6 AV			1.27 H	133	93.95	2.65
5	#10360.00	51.6 PK	74.0	-22.4	1.12 H	299	38.38	13.22
6	#10360.00	38.9 AV	54.0	-15.1	1.12 H	299	25.68	13.22
7	15540.00	53.1 PK	74.0	-20.9	1.46 H	315	37.62	15.48
8	15540.00	39.0 AV	54.0	-15.0	1.46 H	315	23.52	15.48
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.9 PK	74.0	-5.1	3.15 V	71	66.34	2.56
2	5150.00	53.2 AV	54.0	-0.8	3.15 V	71	50.64	2.56
3	*5180.00	107.8 PK			3.15 V	71	105.15	2.65
4	*5180.00	97.0 AV			3.15 V	71	94.35	2.65
5	#10360.00	51.2 PK	74.0	-22.8	1.39 V	236	37.98	13.22
6	#10360.00	36.9 AV	54.0	-17.1	1.39 V	236	23.68	13.22
7	15540.00	52.2 PK	74.0	-21.8	1.60 V	222	36.72	15.48
8	15540.00	38.6 AV	54.0	-15.4	1.60 V	222	23.12	15.48

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.8 PK	74.0	-10.2	1.08 H	131	61.24	2.56
2	5150.00	48.6 AV	54.0	-5.4	1.08 H	131	46.04	2.56
3	*5200.00	110.2 PK			1.08 H	131	107.49	2.71
4	*5200.00	98.9 AV			1.08 H	131	96.19	2.71
5	#10400.00	50.7 PK	74.0	-23.3	1.09 H	299	37.23	13.47
6	#10400.00	38.4 AV	54.0	-15.6	1.09 H	299	24.93	13.47
7	15600.00	53.0 PK	74.0	-21.0	1.46 H	291	37.57	15.43
8	15600.00	38.8 AV	54.0	-15.2	1.46 H	291	23.37	15.43
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.3 PK	74.0	-10.7	3.19 V	66	60.74	2.56
2	5150.00	47.8 AV	54.0	-6.2	3.19 V	66	45.24	2.56
3	*5200.00	108.3 PK			3.19 V	66	105.59	2.71
4	*5200.00	97.4 AV			3.19 V	66	94.69	2.71
5	#10400.00	51.0 PK	74.0	-23.0	1.40 V	211	37.53	13.47
6	#10400.00	36.9 AV	54.0	-17.1	1.40 V	211	23.43	13.47
7	15600.00	52.7 PK	74.0	-21.3	1.56 V	239	37.27	15.43
8	15600.00	39.0 AV	54.0	-15.0	1.56 V	239	23.57	15.43

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.8 PK			1.21 H	143	103.99	2.81
2	*5240.00	96.0 AV			1.21 H	143	93.19	2.81
3	5350.00	53.6 PK	74.0	-20.4	1.21 H	143	50.51	3.09
4	5350.00	40.8 AV	54.0	-13.2	1.21 H	143	37.71	3.09
5	#10480.00	51.0 PK	74.0	-23.0	1.11 H	298	37.60	13.40
6	#10480.00	38.7 AV	54.0	-15.3	1.11 H	298	25.30	13.40
7	15720.00	52.5 PK	74.0	-21.5	1.51 H	298	37.49	15.01
8	15720.00	38.9 AV	54.0	-15.1	1.51 H	298	23.89	15.01
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	107.8 PK			3.19 V	63	104.99	2.81
2	*5240.00	97.1 AV			3.19 V	63	94.29	2.81
3	5350.00	52.8 PK	74.0	-21.2	3.19 V	63	49.71	3.09
4	5350.00	40.1 AV	54.0	-13.9	3.19 V	63	37.01	3.09
5	#10480.00	51.7 PK	74.0	-22.3	1.47 V	229	38.30	13.40
6	#10480.00	37.6 AV	54.0	-16.4	1.47 V	229	24.20	13.40
7	15720.00	53.1 PK	74.0	-20.9	1.57 V	246	38.09	15.01
8	15720.00	39.0 AV	54.0	-15.0	1.57 V	246	23.99	15.01

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	64.2 PK	74.0	-9.8	1.01 H	137	60.41	3.79
2	#5715.00	45.2 AV	54.0	-8.8	1.01 H	137	41.41	3.79
3	#5725.00	77.4 PK	78.2	-0.8	1.01 H	137	73.60	3.80
4	*5745.00	104.3 PK			1.01 H	137	100.50	3.80
5	*5745.00	93.4 AV			1.01 H	137	89.60	3.80
6	11490.00	51.2 PK	74.0	-22.8	1.14 H	286	36.17	15.03
7	11490.00	39.2 AV	54.0	-14.8	1.14 H	286	24.17	15.03
8	#17235.00	53.2 PK	74.0	-20.8	1.48 H	288	33.60	19.60
9	#17235.00	39.5 AV	54.0	-14.5	1.48 H	288	19.90	19.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	61.4 PK	74.0	-12.6	3.17 V	73	57.61	3.79
2	#5715.00	44.4 AV	54.0	-9.6	3.17 V	73	40.61	3.79
3	#5725.00	75.7 PK	78.2	-2.5	3.17 V	73	71.90	3.80
4	*5745.00	103.0 PK			3.17 V	73	99.20	3.80
5	*5745.00	91.9 AV			3.17 V	73	88.10	3.80
6	11490.00	50.8 PK	74.0	-23.2	1.38 V	226	35.77	15.03
7	11490.00	36.6 AV	54.0	-17.4	1.38 V	226	21.57	15.03
8	#17235.00	52.2 PK	74.0	-21.8	1.61 V	250	32.60	19.60
9	#17235.00	38.0 AV	54.0	-16.0	1.61 V	250	18.40	19.60

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	61.7 PK	78.2	-16.5	1.02 H	139	57.90	3.80
2	*5785.00	108.0 PK			1.02 H	139	104.17	3.83
3	*5785.00	96.3 AV			1.02 H	139	92.47	3.83
4	#5850.00	60.9 PK	78.2	-17.3	1.02 H	139	57.07	3.83
5	11570.00	51.2 PK	74.0	-22.8	1.04 H	285	36.36	14.84
6	11570.00	39.3 AV	54.0	-14.7	1.04 H	285	24.46	14.84
7	#17355.00	53.4 PK	74.0	-20.6	1.48 H	308	33.16	20.24
8	#17355.00	39.5 AV	54.0	-14.5	1.48 H	308	19.26	20.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	60.4 PK	78.2	-17.8	3.13 V	71	56.60	3.80
2	*5785.00	107.8 PK			3.13 V	71	103.97	3.83
3	*5785.00	96.9 AV			3.13 V	71	93.07	3.83
4	#5850.00	60.3 PK	78.2	-17.9	3.13 V	71	56.47	3.83
5	11570.00	51.7 PK	74.0	-22.3	1.36 V	224	36.86	14.84
6	11570.00	37.5 AV	54.0	-16.5	1.36 V	224	22.66	14.84
7	#17355.00	52.4 PK	74.0	-21.6	1.60 V	235	32.16	20.24
8	#17355.00	38.4 AV	54.0	-15.6	1.60 V	235	18.16	20.24

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	106.4 PK			1.08 H	139	102.57	3.83
2	*5825.00	95.8 AV			1.08 H	139	91.97	3.83
3	#5850.00	77.9 PK	78.2	-0.3	1.08 H	139	74.07	3.83
4	#5860.00	68.4 PK	74.0	-5.6	1.08 H	139	64.56	3.84
5	#5860.00	51.6 AV	54.0	-2.4	1.08 H	139	47.76	3.84
6	11650.00	51.0 PK	74.0	-23.0	1.07 H	285	36.33	14.67
7	11650.00	38.6 AV	54.0	-15.4	1.07 H	285	23.93	14.67
8	#17475.00	53.2 PK	74.0	-20.8	1.51 H	306	32.37	20.83
9	#17475.00	39.7 AV	54.0	-14.3	1.51 H	306	18.87	20.83

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	107.1 PK			3.12 V	83	103.27	3.83
2	*5825.00	96.5 AV			3.12 V	83	92.67	3.83
3	#5850.00	76.9 PK	78.2	-1.3	3.12 V	83	73.07	3.83
4	#5860.00	67.0 PK	74.0	-7.0	3.12 V	83	63.16	3.84
5	#5860.00	50.5 AV	54.0	-3.5	3.12 V	83	46.66	3.84
6	11650.00	51.0 PK	74.0	-23.0	1.36 V	239	36.33	14.67
7	11650.00	37.1 AV	54.0	-16.9	1.36 V	239	22.43	14.67
8	#17475.00	52.3 PK	74.0	-21.7	1.52 V	248	31.47	20.83
9	#17475.00	38.7 AV	54.0	-15.3	1.52 V	248	17.87	20.83

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT40)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.7 PK	74.0	-5.3	1.00 H	134	66.14	2.56
2	5150.00	53.1 AV	54.0	-0.9	1.00 H	134	50.54	2.56
3	*5190.00	102.2 PK			1.00 H	134	99.52	2.68
4	*5190.00	90.0 AV			1.00 H	134	87.32	2.68
5	#10380.00	51.2 PK	74.0	-22.8	1.31 H	238	37.86	13.34
6	#10380.00	37.3 AV	54.0	-16.7	1.31 H	238	23.96	13.34
7	15570.00	51.7 PK	74.0	-22.3	1.47 H	237	36.25	15.45
8	15570.00	38.4 AV	54.0	-15.6	1.47 H	237	22.95	15.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.8 PK	74.0	-3.2	3.20 V	60	68.24	2.56
2	5150.00	53.6 AV	54.0	-0.4	3.20 V	60	51.04	2.56
3	*5190.00	102.0 PK			3.20 V	60	99.32	2.68
4	*5190.00	90.3 AV			3.20 V	60	87.62	2.68
5	#10380.00	51.2 PK	74.0	-22.8	1.40 V	213	37.86	13.34
6	#10380.00	37.3 AV	54.0	-16.7	1.40 V	213	23.96	13.34
7	15570.00	51.8 PK	74.0	-22.2	1.53 V	248	36.35	15.45
8	15570.00	37.9 AV	54.0	-16.1	1.53 V	248	22.45	15.45

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.4 PK	74.0	-13.6	1.05 H	135	57.84	2.56
2	5150.00	46.3 AV	54.0	-7.7	1.05 H	135	43.74	2.56
3	*5230.00	105.1 PK			1.05 H	135	102.33	2.77
4	*5230.00	93.8 AV			1.05 H	135	91.03	2.77
5	5350.00	55.9 PK	74.0	-18.1	1.05 H	135	52.81	3.09
6	5350.00	41.6 AV	54.0	-12.4	1.05 H	135	38.51	3.09
7	#10460.00	50.8 PK	74.0	-23.2	1.32 H	252	37.38	13.42
8	#10460.00	37.0 AV	54.0	-17.0	1.32 H	252	23.58	13.42
9	15690.00	52.8 PK	74.0	-21.2	1.55 H	240	37.66	15.14
10	15690.00	39.0 AV	54.0	-15.0	1.55 H	240	23.86	15.14

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.6 PK	74.0	-14.4	3.14 V	150	57.04	2.56
2	5150.00	46.1 AV	54.0	-7.9	3.14 V	150	43.54	2.56
3	*5230.00	105.2 PK			3.14 V	150	102.43	2.77
4	*5230.00	93.7 AV			3.14 V	150	90.93	2.77
5	5350.00	55.4 PK	74.0	-18.6	3.14 V	150	52.31	3.09
6	5350.00	41.4 AV	54.0	-12.6	3.14 V	150	38.31	3.09
7	#10460.00	51.0 PK	74.0	-23.0	1.33 V	235	37.58	13.42
8	#10460.00	37.1 AV	54.0	-16.9	1.33 V	235	23.68	13.42
9	15690.00	52.5 PK	74.0	-21.5	1.60 V	259	37.36	15.14
10	15690.00	38.7 AV	54.0	-15.3	1.60 V	259	23.56	15.14

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	72.2 PK	74.0	-1.8	1.03 H	137	68.41	3.79
2	#5715.00	53.9 AV	54.0	-0.1	1.03 H	137	50.11	3.79
3	#5725.00	76.6 PK	78.2	-1.6	1.03 H	137	72.80	3.80
4	*5755.00	101.1 PK			1.03 H	137	97.29	3.81
5	*5755.00	89.5 AV			1.03 H	137	85.69	3.81
6	11510.00	51.1 PK	74.0	-22.9	1.33 H	224	36.11	14.99
7	11510.00	37.2 AV	54.0	-16.8	1.33 H	224	22.21	14.99
8	#17265.00	52.9 PK	74.0	-21.1	1.53 H	235	33.13	19.77
9	#17265.00	39.1 AV	54.0	-14.9	1.53 H	235	19.33	19.77
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	70.2 PK	74.0	-3.8	3.18 V	71	66.41	3.79
2	#5715.00	53.0 AV	54.0	-1.0	3.18 V	71	49.21	3.79
3	#5725.00	75.0 PK	78.2	-3.2	3.18 V	71	71.20	3.80
4	*5755.00	99.4 PK			3.18 V	71	95.59	3.81
5	*5755.00	88.0 AV			3.18 V	71	84.19	3.81
6	11510.00	51.6 PK	74.0	-22.4	1.34 V	214	36.61	14.99
7	11510.00	37.5 AV	54.0	-16.5	1.34 V	214	22.51	14.99
8	#17265.00	51.9 PK	74.0	-22.1	1.59 V	255	32.13	19.77
9	#17265.00	37.8 AV	54.0	-16.2	1.59 V	255	18.03	19.77

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	105.0 PK			1.02 H	138	101.16	3.84
2	*5795.00	93.2 AV			1.02 H	138	89.36	3.84
3	#5850.00	74.2 PK	78.2	-4.0	1.02 H	138	70.37	3.83
4	#5860.00	68.4 PK	74.0	-5.6	1.02 H	138	64.56	3.84
5	#5860.00	53.6 AV	54.0	-0.4	1.02 H	138	49.76	3.84
6	11590.00	51.1 PK	74.0	-22.9	1.35 H	236	36.31	14.79
7	11590.00	37.2 AV	54.0	-16.8	1.35 H	236	22.41	14.79
8	#17385.00	52.0 PK	74.0	-22.0	1.47 H	244	31.60	20.40
9	#17385.00	38.4 AV	54.0	-15.6	1.47 H	244	18.00	20.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	104.0 PK			3.21 V	83	100.16	3.84
2	*5795.00	92.1 AV			3.21 V	83	88.26	3.84
3	#5850.00	73.5 PK	78.2	-4.7	3.21 V	83	69.67	3.83
4	#5860.00	67.4 PK	74.0	-6.6	3.21 V	83	63.56	3.84
5	#5860.00	52.7 AV	54.0	-1.3	3.21 V	83	48.86	3.84
6	11590.00	51.1 PK	74.0	-22.9	1.34 V	213	36.31	14.79
7	11590.00	37.2 AV	54.0	-16.8	1.34 V	213	22.41	14.79
8	#17385.00	52.0 PK	74.0	-22.0	1.57 V	245	31.60	20.40
9	#17385.00	38.0 AV	54.0	-16.0	1.57 V	245	17.60	20.40

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac VHT80

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.1 PK	74.0	-3.9	1.13 H	142	67.54	2.56
2	5150.00	53.7 AV	54.0	-0.3	1.13 H	142	51.14	2.56
3	*5210.00	100.9 PK			1.13 H	142	98.17	2.73
4	*5210.00	87.5 AV			1.13 H	142	84.77	2.73
5	5350.00	54.8 PK	74.0	-19.2	1.13 H	142	51.71	3.09
6	5350.00	41.2 AV	54.0	-12.8	1.13 H	142	38.11	3.09
7	#10420.00	50.9 PK	74.0	-23.1	1.33 H	253	37.44	13.46
8	#10420.00	37.3 AV	54.0	-16.7	1.33 H	253	23.84	13.46
9	15630.00	52.2 PK	74.0	-21.8	1.52 H	237	36.87	15.33
10	15630.00	38.9 AV	54.0	-15.1	1.52 H	237	23.57	15.33
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.7 PK	74.0	-4.3	3.29 V	72	67.14	2.56
2	5150.00	53.5 AV	54.0	-0.5	3.29 V	72	50.94	2.56
3	*5210.00	100.2 PK			3.29 V	72	97.47	2.73
4	*5210.00	86.7 AV			3.29 V	72	83.97	2.73
5	5350.00	54.3 PK	74.0	-19.7	3.29 V	72	51.21	3.09
6	5350.00	41.2 AV	54.0	-12.8	3.29 V	72	38.11	3.09
7	#10420.00	51.0 PK	74.0	-23.0	1.39 V	240	37.54	13.46
8	#10420.00	37.0 AV	54.0	-17.0	1.39 V	240	23.54	13.46
9	15630.00	52.9 PK	74.0	-21.1	1.52 V	256	37.57	15.33
10	15630.00	38.8 AV	54.0	-15.2	1.52 V	256	23.47	15.33

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	70.5 PK	74.0	-3.5	1.10 H	140	66.71	3.79
2	#5715.00	53.5 AV	54.0	-0.5	1.10 H	140	49.71	3.79
3	#5725.00	73.0 PK	78.2	-5.2	1.10 H	140	69.20	3.80
4	*5775.00	97.7 PK			1.10 H	140	93.89	3.81
5	*5775.00	84.7 AV			1.10 H	140	80.89	3.81
6	#5850.00	68.9 PK	78.2	-9.3	1.10 H	140	65.07	3.83
7	#5860.00	66.3 PK	74.0	-7.7	1.10 H	140	62.46	3.84
8	#5860.00	48.3 AV	54.0	-5.7	1.10 H	140	44.46	3.84
9	11550.00	51.1 PK	74.0	-22.9	1.35 H	233	36.21	14.89
10	11550.00	37.1 AV	54.0	-16.9	1.35 H	233	22.21	14.89
11	#17325.00	52.3 PK	74.0	-21.7	1.52 H	253	32.22	20.08
12	#17325.00	39.0 AV	54.0	-15.0	1.52 H	253	18.92	20.08

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	68.6 PK	74.0	-5.4	3.29 V	79	64.81	3.79
2	#5715.00	51.6 AV	54.0	-2.4	3.29 V	79	47.81	3.79
3	#5725.00	71.2 PK	78.2	-7.0	3.29 V	79	67.40	3.80
4	*5775.00	97.3 PK			3.29 V	79	93.49	3.81
5	*5775.00	84.2 AV			3.29 V	79	80.39	3.81
6	#5850.00	66.4 PK	78.2	-11.8	3.29 V	79	62.57	3.83
7	#5860.00	64.4 PK	74.0	-9.6	3.29 V	79	60.56	3.84
8	#5860.00	46.4 AV	54.0	-7.6	3.29 V	79	42.56	3.84
9	11550.00	50.9 PK	74.0	-23.1	1.36 V	227	36.01	14.89
10	11550.00	36.8 AV	54.0	-17.2	1.36 V	227	21.91	14.89
11	#17325.00	52.0 PK	74.0	-22.0	1.52 V	241	31.92	20.08
12	#17325.00	38.3 AV	54.0	-15.7	1.52 V	241	18.22	20.08

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz Data:

802.11a

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	91.86	40.1 QP	43.5	-3.4	2.00 H	56	44.77	-4.67
2	120.02	39.4 QP	43.5	-4.1	1.50 H	360	40.22	-0.81
3	166.28	40.5 QP	43.5	-3.0	2.00 H	60	39.64	0.82
4	240.03	40.5 QP	46.0	-5.5	1.00 H	275	40.90	-0.42
5	432.02	39.0 QP	46.0	-7.0	2.00 H	326	33.71	5.26
6	959.99	42.0 QP	46.0	-4.0	1.50 H	161	27.71	14.25
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	49.04	32.6 QP	40.0	-7.4	1.00 V	314	31.47	1.09
2	89.97	35.9 QP	43.5	-7.7	1.00 V	109	40.65	-4.80
3	120.02	37.3 QP	43.5	-6.2	1.00 V	220	38.13	-0.81
4	165.99	38.0 QP	43.5	-5.5	1.00 V	266	37.19	0.82
5	797.61	36.8 QP	46.0	-9.2	1.50 V	360	25.11	11.70
6	840.00	39.8 QP	46.0	-6.3	1.00 V	254	27.45	12.30

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 Transmit Power Measurement

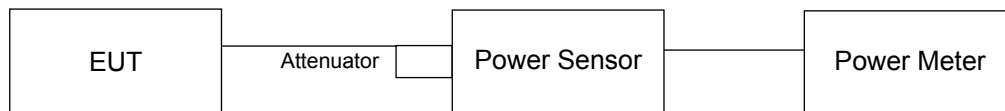
4.2.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

4.2.2 Test Setup

FOR POWER OUTPUT MEASUREMENT



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedure

FOR POWER OUTPUT MEASUREMENT

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.2.7 Test Result

POWER OUTPUT:

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	123.31	20.91	24	Pass
40	5200	138.357	21.41	24	Pass
48	5240	123.88	20.93	24	Pass
149	5745	54.828	17.39	30	Pass
157	5785	90.573	19.57	30	Pass
165	5825	87.297	19.41	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	138.357	21.41	24	Pass
40	5200	133.352	21.25	24	Pass
48	5240	137.088	21.37	24	Pass
149	5745	37.068	15.69	30	Pass
157	5785	86.298	19.36	30	Pass
165	5825	82.794	19.18	30	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
38	5190	57.677	17.61	24	Pass
46	5230	125.314	20.98	24	Pass
151	5755	44.566	16.49	30	Pass
159	5795	90.573	19.57	30	Pass

802.11ac (VHT80)

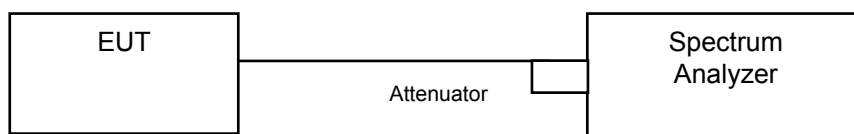
Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
42	5210	57.943	17.63	24	Pass
155	5775	37.068	15.69	30	Pass

4.3 Peak Power Spectral Density Measurement

4.3.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Mobile and Portable client device	11dBm/ MHz
U-NII-2A			11dBm/ MHz
U-NII-2C			11dBm/ MHz
U-NII-3		√	30dBm/ 500kHz

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

802.11a, 802.11ac (VHT20)

For U-NII-1:

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to "free run".
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$
5. Sweep time = auto, trigger set to "free run".
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value

802.11ac (VHT40), 802.11ac (VHT80)

For U-NII-1:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to "free run".
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and add $10 \log (1/\text{duty cycle})$

For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$
5. Sweep time = auto, trigger set to "free run".
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value and add $10 \log (1/\text{duty cycle})$

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

Same as Item 4.2.6.

4.3.7 Test Results

For U-NII-1:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	8.46	11	Pass
40	5200	8.38	11	Pass
48	5240	8.01	11	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	7.22	11	Pass
40	5200	7.39	11	Pass
48	5240	7.45	11	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
38	5190	0.30	0.18	0.48	11	Pass
46	5230	0.08	0.18	0.26	11	Pass

Note: 1. Refer to section 3.3 for duty cycle spectrum plot.

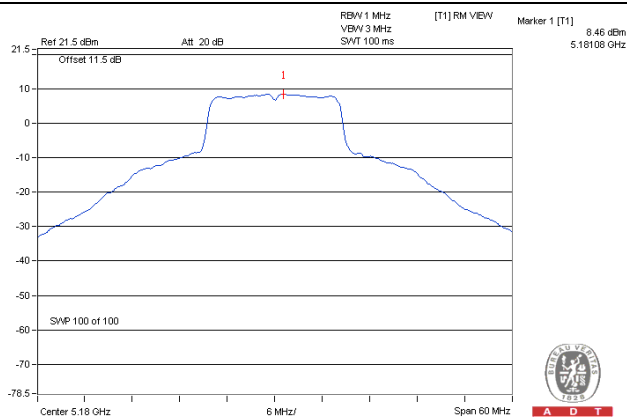
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
42	5210	-2.62	0.34	-2.28	11	Pass

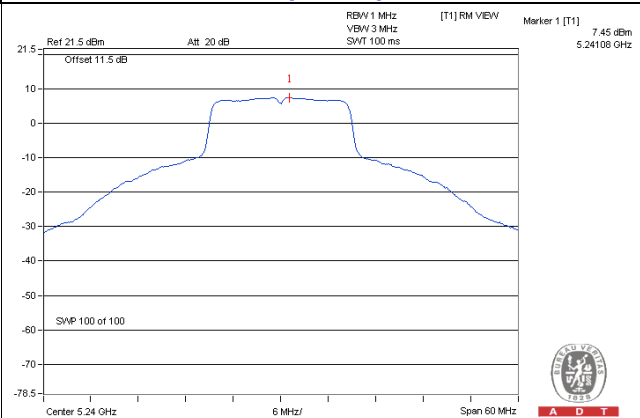
Note: 1. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

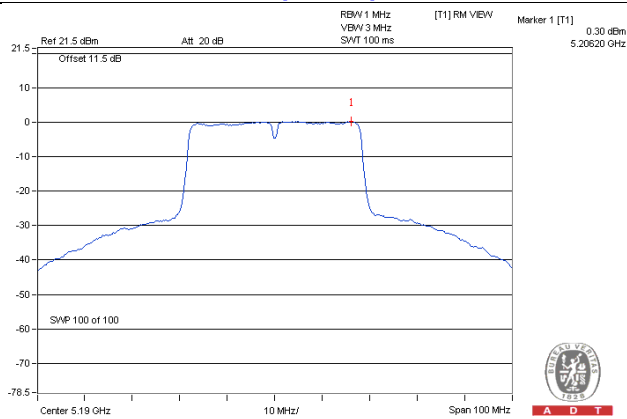
802.11a / CH36



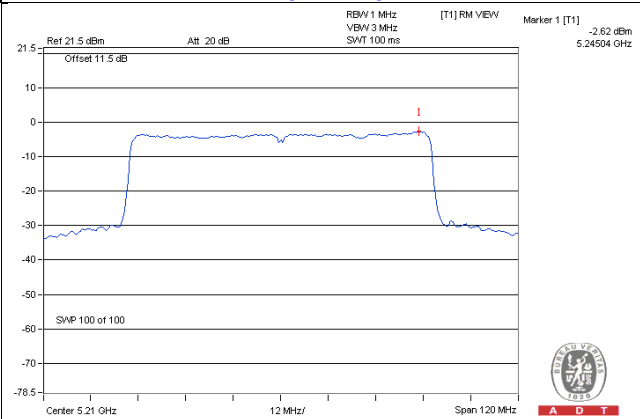
802.11ac (VHT20) / CH48



802.11ac (VHT40) / CH38



802.11ac (VHT80) / CH42



For U-NII-3:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-4.14	-1.92	30	Pass
157	5785	-1.03	1.19	30	Pass
165	5825	-1.73	0.49	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-5.95	-3.73	30	Pass
157	5785	-2.25	-0.03	30	Pass
165	5825	-2.55	-0.33	30	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
151	5755	-8.57	-6.35	0.18	-6.17	30	Pass
159	5795	-6.04	-3.82	0.18	-3.64	30	Pass

Note: 1. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

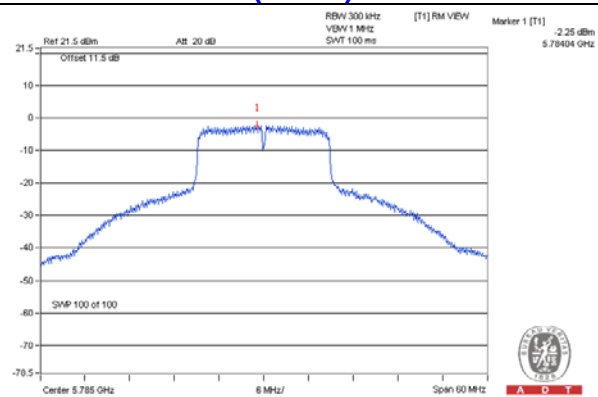
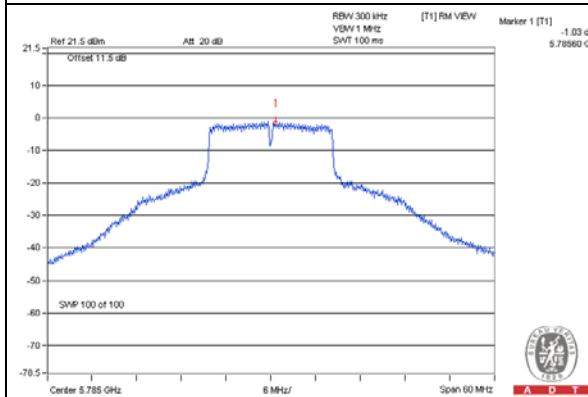
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
155	5775	-12.63	-10.41	0.34	-10.07	30	Pass

Note: 1. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

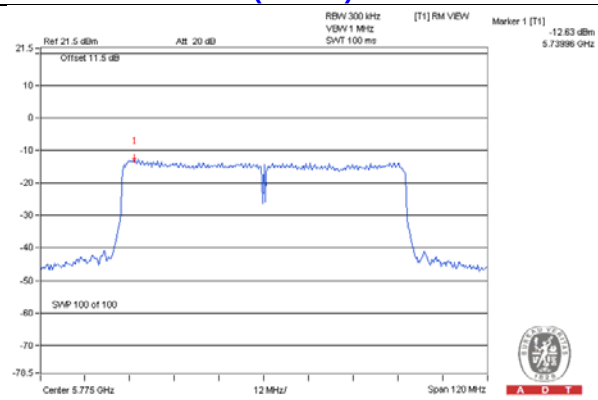
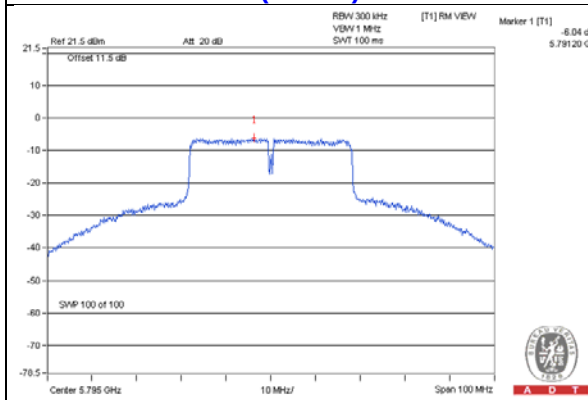
802.11a : CH 157

802.11ac (VHT20) : CH 157



802.11ac (VHT40) : CH 159

802.11ac (VHT80) : CH 155

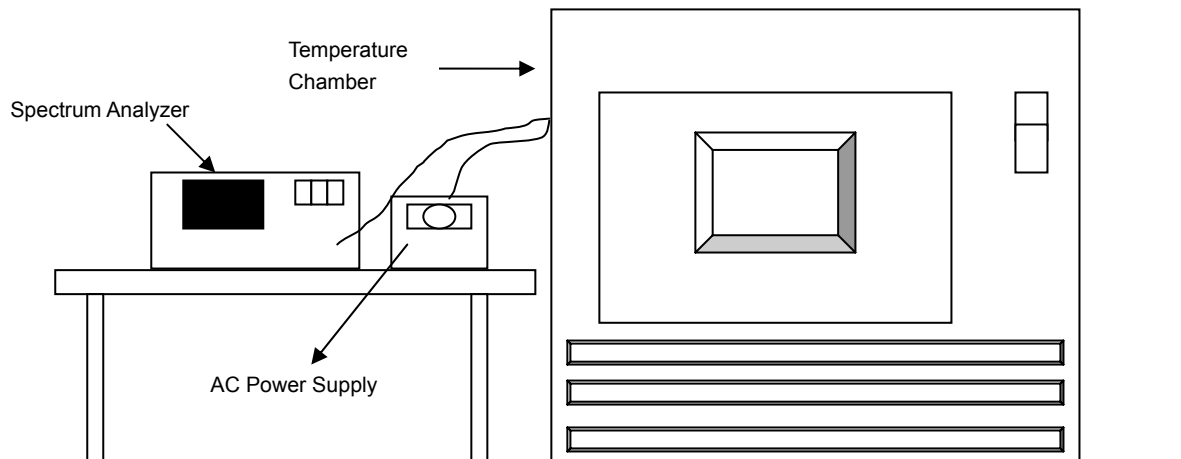


4.4 Frequency Stability Measurement

4.4.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.4.7 Test Results

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5179.9729	-0.00052	5179.9757	-0.00047	5179.9748	-0.00049	5179.9738	-0.00051
40	120	5180.0247	0.00048	5180.0222	0.00043	5180.0268	0.00052	5180.0269	0.00052
30	120	5180.0269	0.00052	5180.0229	0.00044	5180.0239	0.00046	5180.0234	0.00045
20	120	5179.9938	-0.00012	5179.9957	-0.00008	5179.993	-0.00014	5179.9946	-0.00010
10	120	5179.9845	-0.00030	5179.9807	-0.00037	5179.9819	-0.00035	5179.9817	-0.00035
0	120	5179.9982	-0.00003	5179.9957	-0.00008	5179.9971	-0.00006	5179.9952	-0.00009
-10	120	5179.9788	-0.00041	5179.9758	-0.00047	5179.9761	-0.00046	5179.9765	-0.00045
-20	120	5180.0244	0.00047	5180.0206	0.00040	5180.0229	0.00044	5180.0197	0.00038
-30	120	5179.9971	-0.00006	5180	0.00000	5179.9967	-0.00006	5179.9998	0.00000

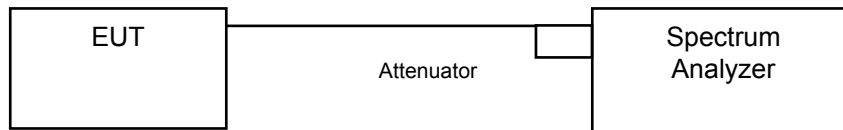
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5179.9947	-0.00010	5179.9964	-0.00007	5179.9928	-0.00014	5179.9955	-0.00009
	120	5179.9938	-0.00012	5179.9957	-0.00008	5179.993	-0.00014	5179.9946	-0.00010
	102	5179.9941	-0.00011	5179.9967	-0.00006	5179.9937	-0.00012	5179.9936	-0.00012

4.5 6dB Bandwidth Measurement

4.5.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

MEASUREMENT PROCEDURE REF

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.35	0.5	PASS
157	5785	16.36	0.5	PASS
165	5825	16.36	0.5	PASS

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.93	0.5	PASS
157	5785	16.82	0.5	PASS
165	5825	16.96	0.5	PASS

802.11ac (VHT40)

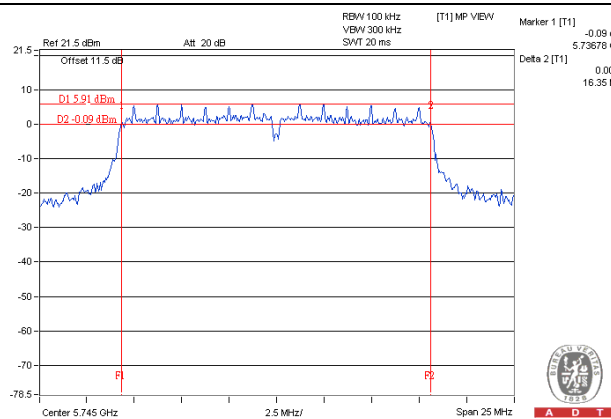
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	35.35	0.5	PASS
159	5795	35.64	0.5	PASS

802.11ac (VHT80)

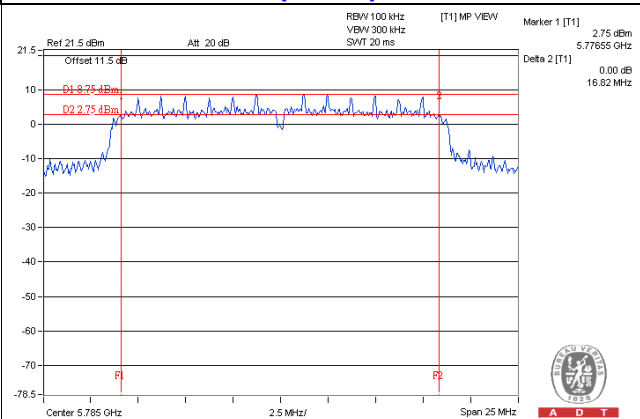
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
155	5775	75.50	0.5	PASS

Spectrum Plot of Worst Value

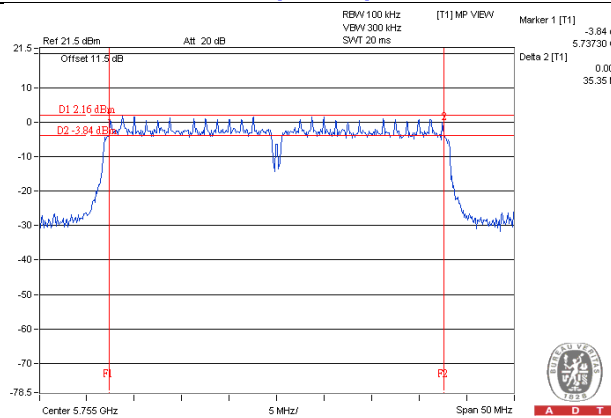
802.11a / CH149



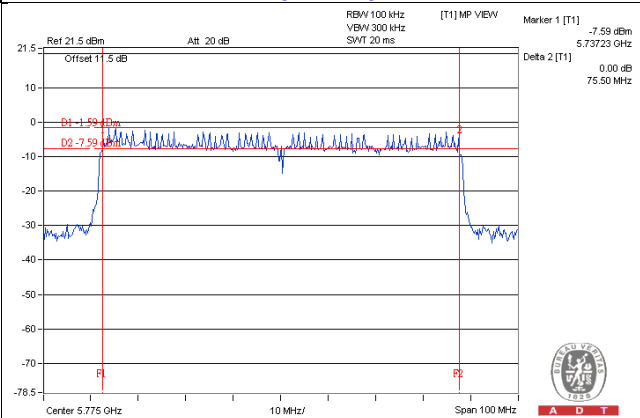
802.11ac (VHT20) / CH157



802.11ac (VHT40) / CH151



802.11ac (VHT80) / CH155



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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