

FCC Test Report

Report No.: RF151109C01-1

FCC ID: SLY-WX1O33

Test Model: WX-1-O

Received Date: Nov. 09, 2015

Test Date: Nov. 18 ~ Dec. 07, 2015

Issued Date: Dec. 09, 2015

Applicant: Pakedge Device and Software Inc.

Address: 3847 Breakwater Ave., Hayward, California, United States, 94545

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

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, TAIWAN (R.O.C.)



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A D T

Release Control Record

Issue No.	Description	Date Issued
RF151109C01-1	Original release.	Dec. 09, 2015

1 Certificate of Conformity

Product: 802.11ac Dual Band Access Point

Brand: PAKEDGE

Test Model: WX-1-O

Sample Status: Engineering sample

Applicant: Pakedge Device and Software Inc.

Test Date: Nov. 18 ~ Dec. 07, 2015

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 : Polly Chien , **Date:** Dec. 09, 2015
Polly Chien / Specialist

Approved by : Ken Liu , **Date:** Dec. 09, 2015
Ken Liu / Senior 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)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -18.79dB at 0.45078MHz.
15.407(b)(1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.4dB at 11570.00MHz.
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	Antenna connector is N-TYPE. (The device is professionally installed)

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	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	802.11ac Dual Band Access Point
Brand	PAKEDGE
Test Model	WX-1-O
Status of EUT	Engineering sample
Power Supply Rating	48Vdc from PoE
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 450.0Mbps 802.11ac: up to 1300Mbps
Operating Frequency	5180 ~ 5240MHz & 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	5180 ~ 5240MHz: 31.611mW 5745 ~ 5825MHz: 158.907mW
Antenna Type	Refer to Note
Antenna Connector	N-TYPE (The device is professionally installed)
Accessory Device	NA
Data Cable Supplied	1.8m non-shielded RJ45 cable without core

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 3 completed transmitters and 3 receivers.

Modulation Mode	TX Function
802.11a	3TX
802.11n (HT20)	3TX
802.11n (HT40)	3TX
802.11ac (VHT20)	3TX
802.11ac (VHT40)	3TX
802.11ac (VHT80)	3TX

* The modulation and bandwidth are similar between 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40, and therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT consumes power from the following POE. (POE and POE's adapter for support unit only)

POE	
Brand	NA
Model	NPE-5818
Power Rating	48Vdc, 1.25A

POE's Adapter	
Brand	Powertron Electronics Corp.
Model	PA1040-480IB080
Input Power	100-240Vac, 50-60Hz, 1.5A
Output Power	48Vdc, 0.8A, 38.4W Max
Power Line	1.55m cable with one core attached on adapter

3. The following antennas were provided to the EUT.

Type	Gain(dBi)			Connector
	2.4GHz Band	5GHz Band		
		5150~5250MHz	5725~5825MHz	
Dipole	3.762	5.648	6.200	N-TYPE

4. 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 (40MHz):

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 $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

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.

EUT CONFIGURE MODE	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	6.0
-	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
-	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11ac (VHT80)		42	42	OFDM	BPSK	97.5
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
-	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	15.0
-	802.11ac (VHT80)		155	155	OFDM	BPSK	97.5

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.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5320 5745-5825	36 to 64 149 to 165	157	OFDM	BPSK	6.0

Power Line Conducted Emission Test:

- ☒ 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.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	5180-5320 5745-5825	36 to 64 149 to 165	157	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.

EUT CONFIGURE MODE	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	6.0
-	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
-	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	15.0
-	802.11ac (VHT80)		42	42	OFDM	BPSK	97.5
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
-	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	15.0
-	802.11ac (VHT80)		155	155	OFDM	BPSK	97.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	18deg. C, 70%RH	120Vac, 60Hz	Nick Hsu
RE<1G	18deg. C, 70%RH	120Vac, 60Hz	Nick Hsu
PLC	25deg. C, 70%RH	120Vac, 60Hz	Jones Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Frank Liu

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is < 98%, duty factor shall be considered.

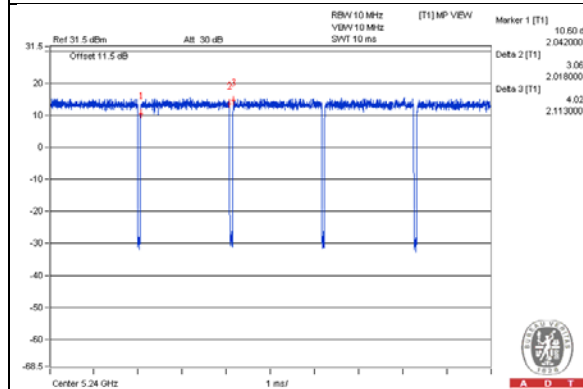
802.11a: Duty cycle = $2.018/2.113 = 0.955$, Duty factor = $10 * \log(1/0.955) = 0.20$

802.11n (HT20): Duty cycle = $1.878/2.055 = 0.914$, Duty factor = $10 * \log(1/0.914) = 0.39$

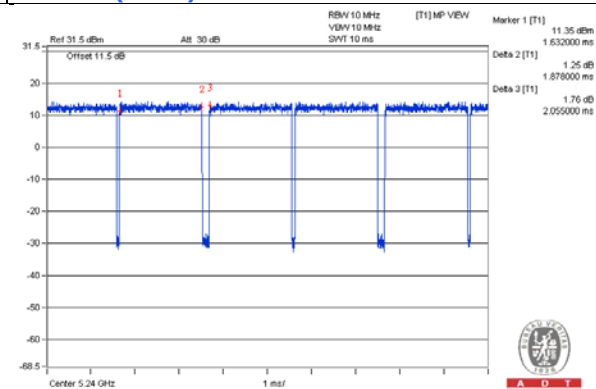
802.11n (HT40): Duty cycle = $0.905/1.005 = 0.900$, Duty factor = $10 * \log(1/0.900) = 0.46$

802.11ac (VHT80): Duty cycle = $0.442/0.527 = 0.839$, Duty factor = $10 * \log(1/0.839) = 0.76$

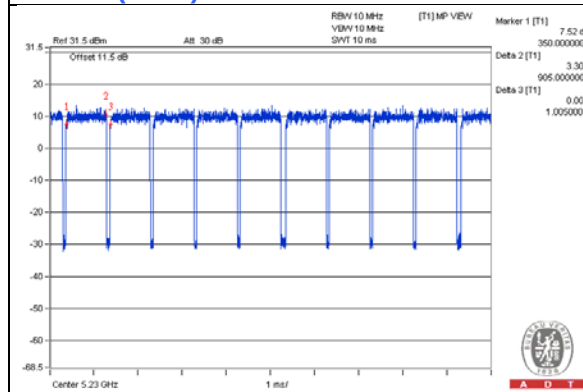
802.11a



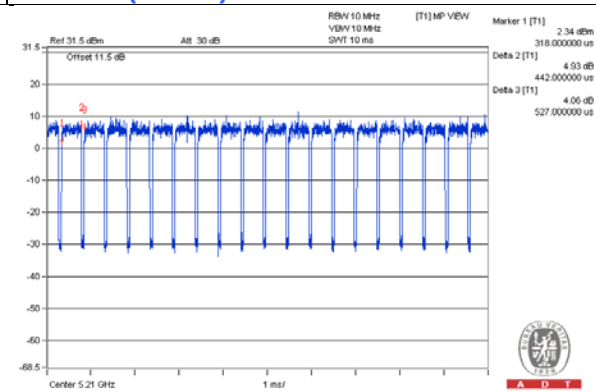
802.11n (HT20)



802.11n (HT40)



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	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	POE	NA	NPE-5818	NA	NA	Provided by manufacturer
C.	POE's Adapter	Powertron Electronics Corp.	PA1040-480IB080	NA	NA	Provided by manufacturer

Note:

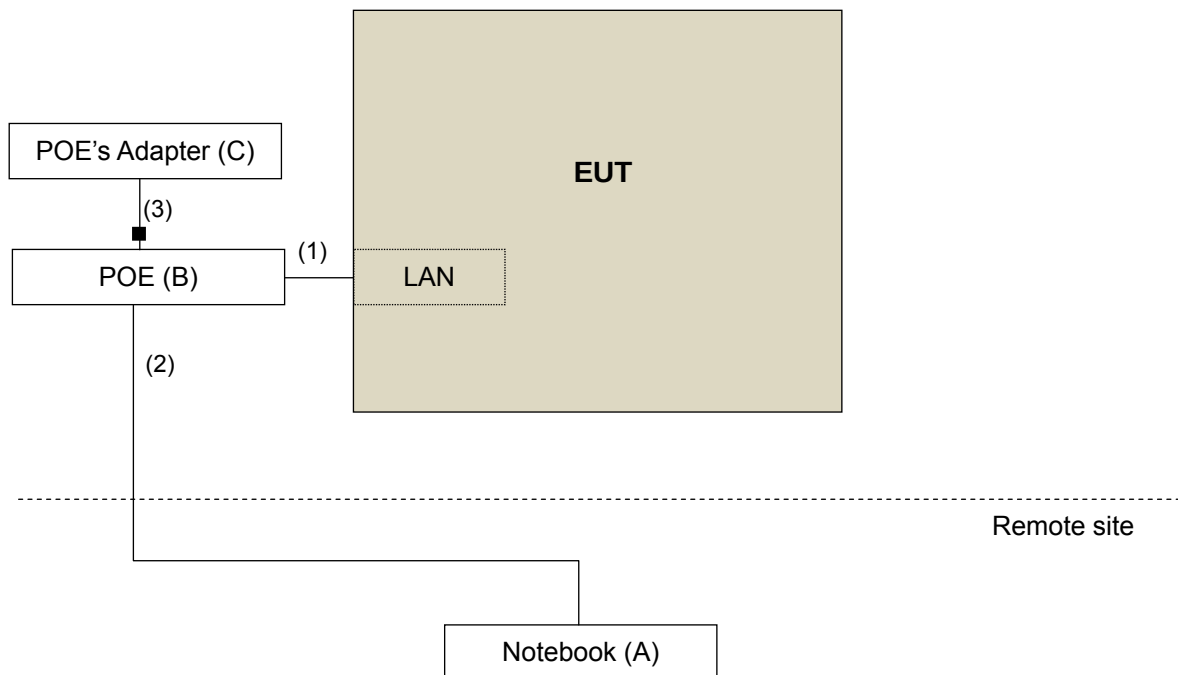
1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN cable	1	1.8	N	0	Cat5e Accessory of EUT
2.	LAN cable	1	10	N	0	Cat5e
3.	Power cable	1	1.55	N	1	Attached on adapter Provided by manufacturer

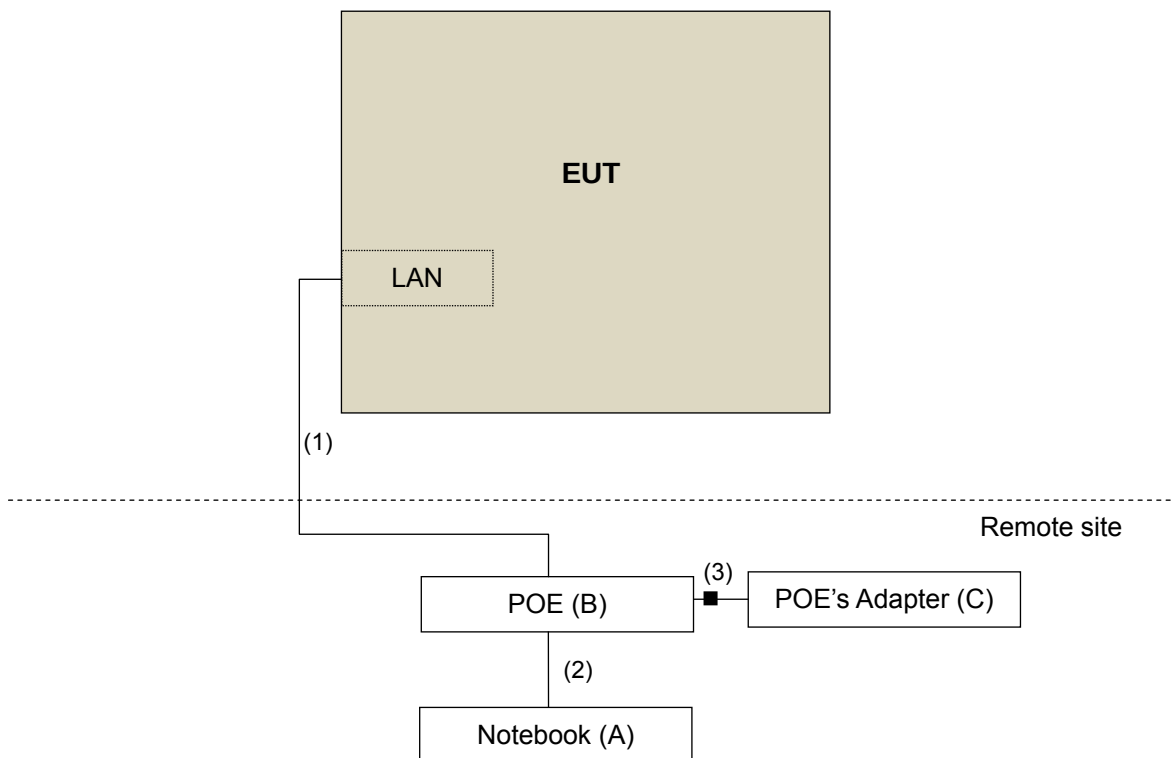
Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test

Conducted emission test:



Radiated emission tests



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)
789033 D02 General UNII Test Procedure New Rules v01
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

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:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 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 v01	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:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Apr. 10, 2015	Apr. 09, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Sep. 02, 2015	Sep. 01, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Feb. 05, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	9120D	209	Feb. 09, 2015	Feb. 08, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8447D	2944A10738	Oct. 18, 2015	Oct. 17, 2016
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2015	Aug. 21, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (214378)	Aug. 22, 2015	Aug. 21, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 106	Cable-CH3-03 (309224+12738)	Aug. 22, 2015	Aug. 21, 2016
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
High Speed Peak Power Meter	ML2495A	0824011	Jul. 09, 2015	Jul. 08, 2016
Power Sensor	MA2411B	0738171	Jul. 09, 2015	Jul. 08, 2016
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2015	Oct. 17, 2016
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 08, 2015	Jun. 07, 2016

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 test was performed in HwaYa Chamber 3.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 988962.

5. The IC Site Registration No. is IC 7450F-3.

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:

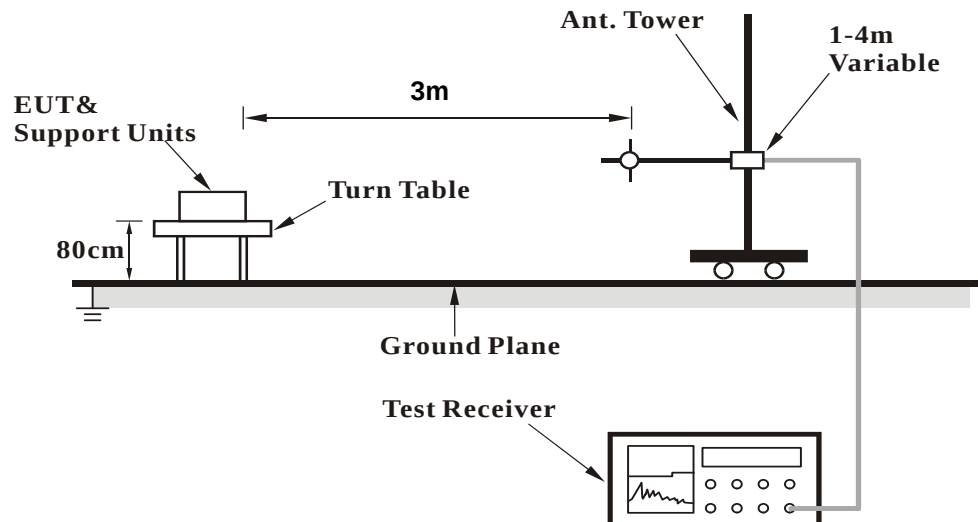
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

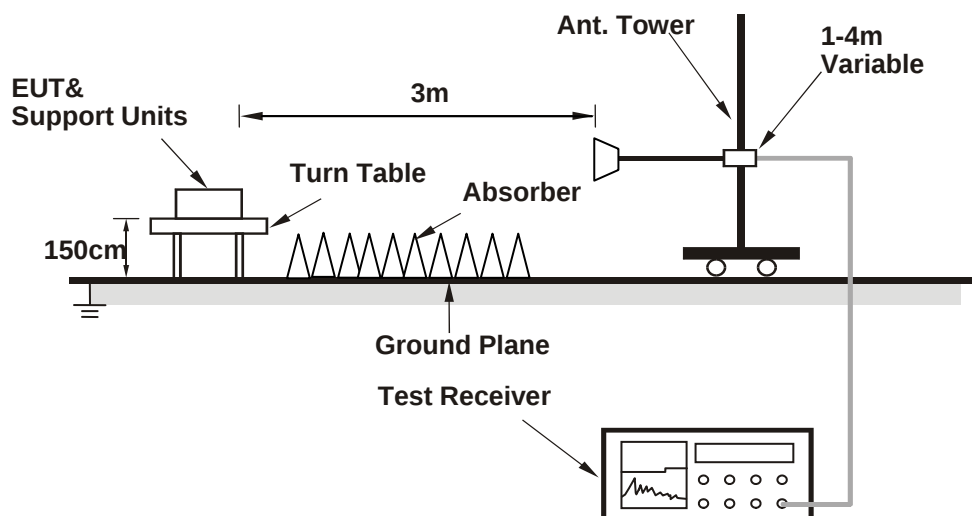
No deviation.

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 Conditions

- Placed the EUT on the testing table.
- Prepared notebook to act as communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

ABOVE 1GHz WORST-CASE BDATA :

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	57.3 PK	74.0	-16.7	2.15 H	334	51.10	6.20
2	5150.00	45.9 AV	54.0	-8.1	2.15 H	334	39.70	6.20
3	*5180.00	108.8 PK			2.51 H	353	69.30	39.50
4	*5180.00	98.5 AV			2.51 H	353	59.00	39.50
5	#10360.00	58.2 PK	74.0	-15.8	1.82 H	302	41.20	17.00
6	#10360.00	46.0 AV	54.0	-8.0	1.82 H	302	29.00	17.00
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	59.7 PK	74.0	-14.3	1.08 V	45	53.50	6.20
2	5150.00	45.0 AV	54.0	-9.0	1.08 V	45	38.80	6.20
3	*5180.00	110.7 PK			1.00 V	42	71.20	39.50
4	*5180.00	100.3 AV			1.00 V	42	60.80	39.50
5	#10360.00	58.4 PK	74.0	-15.6	1.16 V	65	41.40	17.00
6	#10360.00	45.7 AV	54.0	-8.3	1.16 V	65	28.70	17.00

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)
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	*5200.00	108.2 PK			2.77 H	338	68.60	39.60
2	*5200.00	98.2 AV			2.77 H	338	58.60	39.60
3	#10400.00	57.8 PK	74.0	-16.2	2.52 H	344	40.80	17.00
4	#10400.00	45.5 AV	54.0	-8.5	2.52 H	344	28.50	17.00
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	*5200.00	111.4 PK			1.61 V	46	71.80	39.60
2	*5200.00	100.4 AV			1.61 V	46	60.80	39.60
3	#10400.00	58.2 PK	74.0	-15.8	1.42 V	72	41.20	17.00
4	#10400.00	45.5 AV	54.0	-8.5	1.42 V	72	28.50	17.00

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)
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	108.3 PK			2.57 H	350	68.70	39.60
2	*5240.00	98.3 AV			2.57 H	350	58.70	39.60
3	5350.00	57.9 PK	74.0	-16.1	2.39 H	338	51.50	6.40
4	5350.00	45.4 AV	54.0	-8.6	2.39 H	338	39.00	6.40
5	#10480.00	58.6 PK	74.0	-15.4	2.19 H	320	40.60	18.00
6	#10480.00	46.0 AV	54.0	-8.0	2.19 H	320	28.00	18.00
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	109.9 PK			1.00 V	43	70.30	39.60
2	*5240.00	100.5 AV			1.00 V	43	60.90	39.60
3	5350.00	59.9 PK	74.0	-14.1	1.08 V	44	53.50	6.40
4	5350.00	45.8 AV	54.0	-8.2	1.08 V	44	39.40	6.40
5	#10480.00	59.1 PK	74.0	-14.9	1.16 V	23	41.10	18.00
6	#10480.00	46.3 AV	54.0	-7.7	1.16 V	23	28.30	18.00

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)
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	#5714.90	62.2 PK	74.0	-11.8	2.51 H	344	55.00	7.20
2	#5714.90	48.4 AV	54.0	-5.6	2.51 H	344	41.20	7.20
3	#5722.90	67.3 PK	78.2	-10.9	2.48 H	345	60.10	7.20
4	#5725.00	53.3 PK	78.2	-24.9	2.50 H	343	46.10	7.20
5	*5745.00	114.1 PK			2.48 H	348	73.70	40.40
6	*5745.00	104.1 AV			2.48 H	348	63.70	40.40
7	11490.00	62.7 PK	74.0	-11.3	2.66 H	349	44.40	18.30
8	11490.00	50.1 AV	54.0	-3.9	2.66 H	349	31.80	18.30
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	#5714.90	65.7 PK	74.0	-8.3	1.66 V	98	58.50	7.20
2	#5714.90	52.3 AV	54.0	-1.7	1.66 V	98	45.10	7.20
3	#5722.90	69.0 PK	78.2	-9.2	1.64 V	98	61.80	7.20
4	#5725.00	56.5 PK	78.2	-21.7	1.60 V	99	49.30	7.20
5	*5745.00	115.7 PK			1.66 V	145	75.30	40.40
6	*5745.00	105.4 AV			1.66 V	145	65.00	40.40
7	11490.00	59.7 PK	74.0	-14.3	1.11 V	328	41.40	18.30
8	11490.00	47.5 AV	54.0	-6.5	1.11 V	328	29.20	18.30

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)
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	*5785.00	114.2 PK			2.71 H	355	73.70	40.50
2	*5785.00	104.5 AV			2.71 H	355	64.00	40.50
3	11570.00	65.4 PK	74.0	-8.6	2.72 H	349	47.20	18.20
4	11570.00	52.6 AV	54.0	-1.4	2.72 H	349	34.40	18.20
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	*5785.00	116.2 PK			1.53 V	143	75.70	40.50
2	*5785.00	105.7 AV			1.53 V	143	65.20	40.50
3	11570.00	61.3 PK	74.0	-12.7	1.00 V	159	43.10	18.20
4	11570.00	47.9 AV	54.0	-6.1	1.00 V	159	29.70	18.20

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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	113.1 PK			2.63 H	196	72.60	40.50
2	*5825.00	103.8 AV			2.63 H	196	63.30	40.50
3	#5850.00	52.6 PK	78.2	-25.6	2.77 H	197	45.10	7.50
4	#5852.10	70.6 PK	78.2	-7.6	2.60 H	198	63.00	7.60
5	#5860.10	67.9 PK	74.0	-6.1	2.71 H	196	60.30	7.60
6	#5860.10	48.6 AV	54.0	-5.4	2.71 H	196	41.00	7.60
7	11650.00	64.8 PK	74.0	-9.2	2.64 H	350	46.10	18.70
8	11650.00	52.4 AV	54.0	-1.6	2.64 H	350	33.70	18.70
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	115.3 PK			1.49 V	143	74.80	40.50
2	*5825.00	104.7 AV			1.49 V	143	64.20	40.50
3	#5850.00	56.0 PK	78.2	-22.2	1.51 V	145	48.50	7.50
4	#5852.10	66.5 PK	78.2	-11.7	1.47 V	139	58.90	7.60
5	#5860.10	62.9 PK	74.0	-11.1	1.36 V	143	55.30	7.60
6	#5860.10	47.7 AV	54.0	-6.3	1.36 V	143	40.10	7.60
7	11650.00	60.9 PK	74.0	-13.1	1.40 V	342	42.20	18.70
8	11650.00	48.6 AV	54.0	-5.4	1.40 V	342	29.90	18.70

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)
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.

802.11n (HT20)

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	57.9 PK	74.0	-16.1	1.14 H	348	51.70	6.20
2	5150.00	45.0 AV	54.0	-9.0	1.14 H	348	38.80	6.20
3	*5180.00	107.9 PK			1.00 H	353	68.40	39.50
4	*5180.00	97.7 AV			1.00 H	353	58.20	39.50
5	#10360.00	58.4 PK	74.0	-15.6	1.25 H	308	41.40	17.00
6	#10360.00	46.2 AV	54.0	-7.8	1.25 H	308	29.20	17.00
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	58.8 PK	74.0	-15.2	1.16 V	43	52.60	6.20
2	5150.00	45.4 AV	54.0	-8.6	1.16 V	43	39.20	6.20
3	*5180.00	109.6 PK			1.00 V	45	70.10	39.50
4	*5180.00	99.7 AV			1.00 V	45	60.20	39.50
5	#10360.00	58.0 PK	74.0	-16.0	1.05 V	62	41.00	17.00
6	#10360.00	45.7 AV	54.0	-8.3	1.05 V	62	28.70	17.00

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)
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	*5200.00	107.9 PK			2.49 H	354	68.30	39.60
2	*5200.00	98.0 AV			2.49 H	354	58.40	39.60
3	#10400.00	58.2 PK	74.0	-15.8	2.32 H	336	41.20	17.00
4	#10400.00	45.6 AV	54.0	-8.4	2.32 H	336	28.60	17.00
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	*5200.00	110.4 PK			1.21 V	45	70.80	39.60
2	*5200.00	99.9 AV			1.21 V	45	60.30	39.60
3	#10400.00	58.4 PK	74.0	-15.6	1.09 V	34	41.40	17.00
4	#10400.00	45.5 AV	54.0	-8.5	1.09 V	34	28.50	17.00

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)
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	110.4 PK			2.83 H	343	70.80	39.60
2	*5240.00	99.7 AV			2.83 H	343	60.10	39.60
3	5350.00	58.2 PK	74.0	-15.8	2.61 H	338	51.80	6.40
4	5350.00	45.5 AV	54.0	-8.5	2.61 H	338	39.10	6.40
5	#10480.00	58.7 PK	74.0	-15.3	2.26 H	314	40.70	18.00
6	#10480.00	45.9 AV	54.0	-8.1	2.26 H	314	27.90	18.00
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	110.2 PK			1.29 V	43	70.60	39.60
2	*5240.00	99.8 AV			1.29 V	43	60.20	39.60
3	5350.00	58.0 PK	74.0	-16.0	1.36 V	47	51.60	6.40
4	5350.00	45.8 AV	54.0	-8.2	1.36 V	47	39.40	6.40
5	#10480.00	58.6 PK	74.0	-15.4	1.06 V	29	40.60	18.00
6	#10480.00	46.3 AV	54.0	-7.7	1.06 V	29	28.30	18.00

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)
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	#5714.90	59.8 PK	74.0	-14.2	1.10 H	148	52.60	7.20
2	#5714.90	47.4 AV	54.0	-6.6	1.10 H	148	40.20	7.20
3	#5722.90	69.0 PK	78.2	-9.2	1.08 H	140	61.80	7.20
4	#5725.00	55.7 PK	78.2	-22.5	1.09 H	142	48.50	7.20
5	*5745.00	112.3 PK			1.09 H	137	71.90	40.40
6	*5745.00	102.2 AV			1.09 H	137	61.80	40.40
7	11490.00	61.9 PK	74.0	-12.1	2.14 H	346	43.60	18.30
8	11490.00	50.1 AV	54.0	-3.9	2.14 H	346	31.80	18.30
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	#5714.90	65.7 PK	74.0	-8.3	1.65 V	97	58.50	7.20
2	#5714.90	52.4 AV	54.0	-1.6	1.65 V	97	45.20	7.20
3	#5722.90	70.2 PK	78.2	-8.0	1.68 V	97	63.00	7.20
4	#5725.00	57.8 PK	78.2	-20.4	1.70 V	97	50.60	7.20
5	*5745.00	115.2 PK			1.39 V	48	74.80	40.40
6	*5745.00	105.0 AV			1.39 V	48	64.60	40.40
7	11490.00	59.5 PK	74.0	-14.5	1.31 V	162	41.20	18.30
8	11490.00	46.7 AV	54.0	-7.3	1.31 V	162	28.40	18.30

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)
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	*5785.00	114.0 PK			2.49 H	349	73.50	40.50
2	*5785.00	103.4 AV			2.49 H	349	62.90	40.50
3	11570.00	64.6 PK	74.0	-9.4	1.99 H	345	46.40	18.20
4	11570.00	52.2 AV	54.0	-1.8	1.99 H	345	34.00	18.20
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	*5785.00	114.6 PK			1.00 V	47	74.10	40.50
2	*5785.00	104.6 AV			1.00 V	47	64.10	40.50
3	11570.00	62.3 PK	74.0	-11.7	1.52 V	356	44.10	18.20
4	11570.00	49.6 AV	54.0	-4.4	1.52 V	356	31.40	18.20

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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	114.0 PK			2.81 H	347	73.50	40.50
2	*5825.00	103.3 AV			2.81 H	347	62.80	40.50
3	#5850.00	54.1 PK	78.2	-24.1	2.81 H	344	46.60	7.50
4	#5852.10	70.7 PK	78.2	-7.5	2.91 H	349	63.10	7.60
5	#5860.10	62.9 PK	74.0	-11.1	2.92 H	7	55.30	7.60
6	#5860.10	48.3 AV	54.0	-5.7	2.92 H	7	40.70	7.60
7	11650.00	64.4 PK	74.0	-9.6	2.92 H	346	45.70	18.70
8	11650.00	52.2 AV	54.0	-1.8	2.92 H	346	33.50	18.70
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	114.3 PK			1.30 V	29	73.80	40.50
2	*5825.00	103.2 AV			1.30 V	29	62.70	40.50
3	#5850.00	52.1 PK	78.2	-26.1	1.05 V	32	44.60	7.50
4	#5852.10	66.4 PK	78.2	-11.8	1.00 V	33	58.80	7.60
5	#5860.10	63.1 PK	74.0	-10.9	1.13 V	51	55.50	7.60
6	#5860.10	47.6 AV	54.0	-6.4	1.13 V	51	40.00	7.60
7	11650.00	61.5 PK	74.0	-12.5	1.54 V	357	42.80	18.70
8	11650.00	49.8 AV	54.0	-4.2	1.54 V	357	31.10	18.70

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)
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.

802.11n (HT40)

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	60.5 PK	74.0	-13.5	2.93 H	341	54.30	6.20
2	5150.00	48.3 AV	54.0	-5.7	2.93 H	341	42.10	6.20
3	*5190.00	105.8 PK			3.11 H	344	66.30	39.50
4	*5190.00	96.4 AV			3.11 H	344	56.90	39.50
5	#10380.00	58.2 PK	74.0	-15.8	2.64 H	313	41.20	17.00
6	#10380.00	46.6 AV	54.0	-7.4	2.64 H	313	29.60	17.00
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	61.9 PK	74.0	-12.1	1.62 V	45	55.70	6.20
2	5150.00	50.3 AV	54.0	-3.7	1.62 V	45	44.10	6.20
3	*5190.00	107.5 PK			1.65 V	44	68.00	39.50
4	*5190.00	97.8 AV			1.65 V	44	58.30	39.50
5	#10380.00	58.9 PK	74.0	-15.1	1.42 V	66	41.90	17.00
6	#10380.00	46.9 AV	54.0	-7.1	1.42 V	66	29.90	17.00

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)
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 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	*5230.00	105.7 PK			3.21 H	343	66.10	39.60
2	*5230.00	96.2 AV			3.21 H	343	56.60	39.60
3	5350.00	57.8 PK	74.0	-16.2	3.01 H	357	51.40	6.40
4	5350.00	46.0 AV	54.0	-8.0	3.01 H	357	39.60	6.40
5	#10460.00	59.1 PK	74.0	-14.9	2.72 H	328	41.30	17.80
6	#10460.00	47.3 AV	54.0	-6.7	2.72 H	328	29.50	17.80
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	*5230.00	108.7 PK			1.37 V	146	69.10	39.60
2	*5230.00	97.8 AV			1.37 V	146	58.20	39.60
3	5350.00	57.8 PK	74.0	-16.2	1.42 V	136	51.40	6.40
4	5350.00	46.5 AV	54.0	-7.5	1.42 V	136	40.10	6.40
5	#10460.00	58.9 PK	74.0	-15.1	1.22 V	96	41.10	17.80
6	#10460.00	47.0 AV	54.0	-7.0	1.22 V	96	29.20	17.80

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)
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	#5714.90	65.7 PK	74.0	-8.3	2.56 H	350	58.50	7.20
2	#5714.90	51.9 AV	54.0	-2.1	2.56 H	350	44.70	7.20
3	#5722.90	67.5 PK	78.2	-10.7	2.52 H	325	60.30	7.20
4	#5725.00	44.7 PK	78.2	-33.5	2.54 H	355	37.50	7.20
5	*5755.00	107.9 PK			2.56 H	346	67.40	40.50
6	*5755.00	98.5 AV			2.56 H	346	58.00	40.50
7	11510.00	59.9 PK	74.0	-14.1	2.29 H	325	41.70	18.20
8	11510.00	47.6 AV	54.0	-6.4	2.29 H	325	29.40	18.20
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	#5714.90	67.3 PK	74.0	-6.7	1.39 V	47	60.10	7.20
2	#5714.90	52.4 AV	54.0	-1.6	1.39 V	47	45.20	7.20
3	#5722.90	68.5 PK	78.2	-9.7	1.21 V	49	61.30	7.20
4	#5725.00	56.7 PK	78.2	-21.5	1.31 V	48	49.50	7.20
5	*5755.00	110.0 PK			1.46 V	48	69.50	40.50
6	*5755.00	99.6 AV			1.46 V	48	59.10	40.50
7	11510.00	59.4 PK	74.0	-14.6	1.52 V	331	41.20	18.20
8	11510.00	47.5 AV	54.0	-6.5	1.52 V	331	29.30	18.20

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)
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	111.8 PK			2.51 H	346	71.30	40.50
2	*5795.00	102.5 AV			2.51 H	346	62.00	40.50
3	#5850.00	50.6 PK	78.2	-27.6	2.50 H	346	43.10	7.50
4	#5852.10	64.0 PK	78.2	-14.2	2.53 H	4	56.40	7.60
5	#5860.10	61.7 PK	74.0	-12.3	2.52 H	351	54.10	7.60
6	#5860.10	49.0 AV	54.0	-5.0	2.52 H	351	41.40	7.60
7	11590.00	63.4 PK	74.0	-10.6	2.69 H	347	45.10	18.30
8	11590.00	52.3 AV	54.0	-1.7	2.69 H	347	34.00	18.30
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	112.7 PK			1.43 V	49	72.20	40.50
2	*5795.00	103.0 AV			1.43 V	49	62.50	40.50
3	#5850.00	46.8 PK	78.2	-31.4	1.44 V	46	39.30	7.50
4	#5852.10	47.8 PK	78.2	-30.4	1.41 V	46	40.20	7.60
5	#5860.10	59.8 PK	74.0	-14.2	1.49 V	51	52.20	7.60
6	#5860.10	47.1 AV	54.0	-6.9	1.49 V	51	39.50	7.60
7	11590.00	59.9 PK	74.0	-14.1	1.50 V	22	41.60	18.30
8	11590.00	49.0 AV	54.0	-5.0	1.50 V	22	30.70	18.30

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)
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	63.9 PK	74.0	-10.1	2.46 H	346	57.70	6.20
2	5150.00	49.4 AV	54.0	-4.6	2.46 H	346	43.20	6.20
3	*5210.00	101.0 PK			2.42 H	349	61.40	39.60
4	*5210.00	91.1 AV			2.42 H	349	51.50	39.60
5	#10420.00	58.5 PK	74.0	-15.5	2.32 H	303	41.30	17.20
6	#10420.00	46.8 AV	54.0	-7.2	2.32 H	303	29.60	17.20
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	65.7 PK	74.0	-8.3	1.51 V	45	59.50	6.20
2	5150.00	52.3 AV	54.0	-1.7	1.51 V	45	46.10	6.20
3	*5210.00	103.8 PK			1.53 V	46	64.20	39.60
4	*5210.00	93.0 AV			1.53 V	46	53.40	39.60
5	#10420.00	57.8 PK	74.0	-16.2	1.33 V	35	40.60	17.20
6	#10420.00	46.8 AV	54.0	-7.2	1.33 V	35	29.60	17.20

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)
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	#5714.90	67.6 PK	74.0	-6.4	2.99 H	351	60.40	7.20
2	#5714.90	52.1 AV	54.0	-1.9	2.99 H	351	44.90	7.20
3	#5722.90	69.1 PK	78.2	-9.1	2.87 H	353	61.90	7.20
4	#5725.00	55.3 PK	78.2	-22.9	3.01 H	345	48.10	7.20
5	*5775.00	101.4 PK			2.82 H	343	60.90	40.50
6	*5775.00	92.2 AV			2.82 H	343	51.70	40.50
7	#5850.00	48.5 PK	78.2	-29.7	2.75 H	352	41.00	7.50
8	#5852.10	61.2 PK	78.2	-17.0	2.76 H	351	53.60	7.60
9	#5860.10	60.2 PK	74.0	-13.8	2.75 H	351	52.60	7.60
10	#5860.10	47.6 AV	54.0	-6.4	2.75 H	351	40.00	7.60
11	11550.00	59.4 PK	74.0	-14.6	2.44 H	308	41.20	18.20
12	11550.00	47.3 AV	54.0	-6.7	2.44 H	308	29.10	18.20
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	#5714.90	67.3 PK	74.0	-6.7	1.57 V	99	60.10	7.20
2	#5714.90	52.3 AV	54.0	-1.7	1.57 V	99	45.10	7.20
3	#5722.90	72.3 PK	78.2	-5.9	1.70 V	97	65.10	7.20
4	#5725.00	57.2 PK	78.2	-21.0	1.67 V	97	50.00	7.20
5	*5775.00	104.3 PK			1.48 V	48	63.80	40.50
6	*5775.00	93.6 AV			1.48 V	48	53.10	40.50
7	#5850.00	47.0 PK	78.2	-31.2	1.38 V	48	39.50	7.50
8	#5852.10	60.8 PK	78.2	-17.4	1.32 V	38	53.20	7.60
9	#5860.10	58.9 PK	74.0	-15.1	1.36 V	29	51.30	7.60
10	#5860.10	46.8 AV	54.0	-7.2	1.36 V	29	39.20	7.60
11	11550.00	59.2 PK	74.0	-14.8	1.21 V	84	41.00	18.20
12	11550.00	47.1 AV	54.0	-6.9	1.21 V	84	28.90	18.20

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)
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 WORST-CASE DATA:

802.11a

CHANNEL	TX Channel 157	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	57.12	30.9 QP	40.0	-9.1	2.00 H	285	45.70	-14.80
2	88.23	34.4 QP	43.5	-9.1	2.00 H	52	54.20	-19.80
3	148.50	36.7 QP	43.5	-6.8	2.00 H	100	50.70	-14.00
4	187.39	28.9 QP	43.5	-14.6	1.50 H	231	44.80	-15.90
5	249.60	22.9 QP	46.0	-23.1	1.00 H	200	37.30	-14.40
6	280.71	22.0 QP	46.0	-24.0	1.50 H	143	34.90	-12.90
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	37.68	36.3 QP	40.0	-3.7	1.01 V	295	51.70	-15.40
2	90.17	31.5 QP	43.5	-12.0	1.01 V	130	51.40	-19.90
3	150.45	38.4 QP	43.5	-5.1	1.01 V	162	52.40	-14.00
4	195.16	30.1 QP	43.5	-13.4	1.01 V	182	46.50	-16.40
5	232.11	26.8 QP	46.0	-19.2	2.00 V	145	42.60	-15.80
6	280.71	24.9 QP	46.0	-21.1	1.50 V	241	37.80	-12.90

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS 30	100288	Apr. 27, 2015	Apr. 26, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2014	Dec. 29, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 21, 2015	Jul. 20, 2016
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Notes: 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 test was performed in HwaYa Shielded Room 2.

3. The VCCI Site Registration No. is C-2047.

4.2.3 Test Procedure

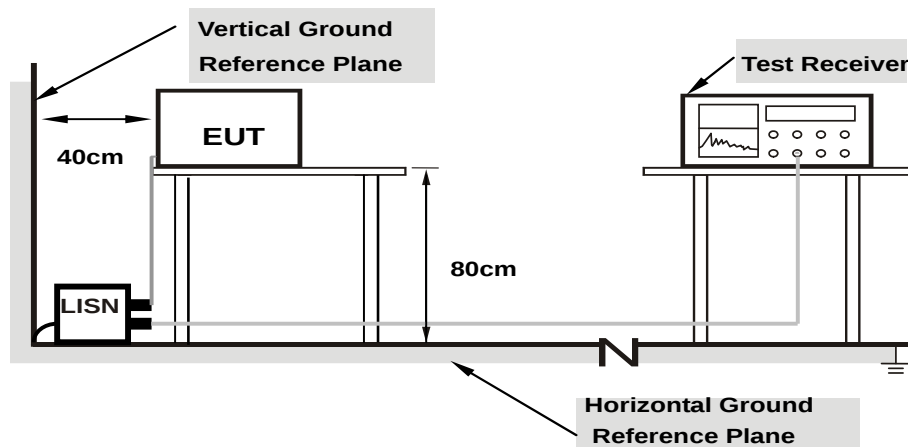
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

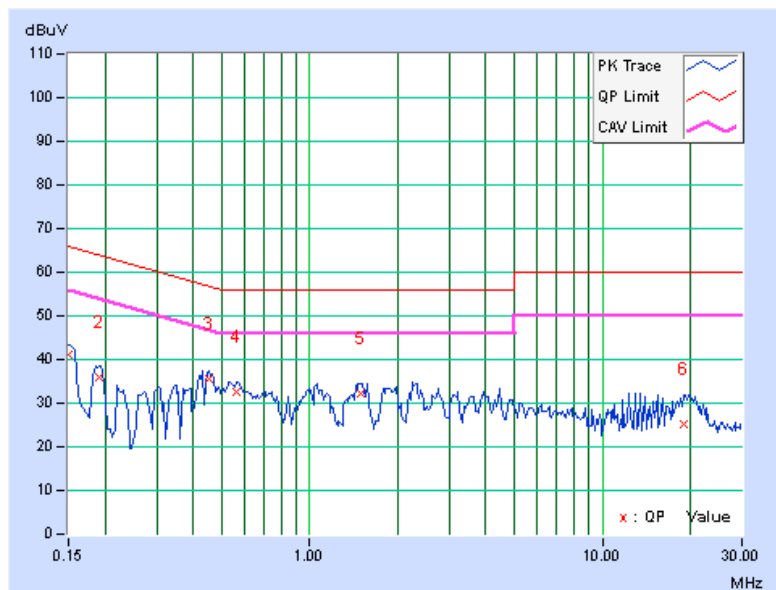
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.94	31.19	21.94	41.13	31.88	66.00	56.00	-24.87	-24.12
2	0.19026	9.94	26.03	19.34	35.97	29.28	64.03	54.03	-28.05	-24.74
3	0.45078	9.96	25.56	18.11	35.52	28.07	56.86	46.86	-21.34	-18.79
4	0.56016	9.98	22.54	13.64	32.52	23.62	56.00	46.00	-23.48	-22.38
5	1.50391	10.11	22.00	12.88	32.11	22.99	56.00	46.00	-23.89	-23.01
6	18.96875	10.65	14.48	5.79	25.13	16.44	60.00	50.00	-34.87	-33.56

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

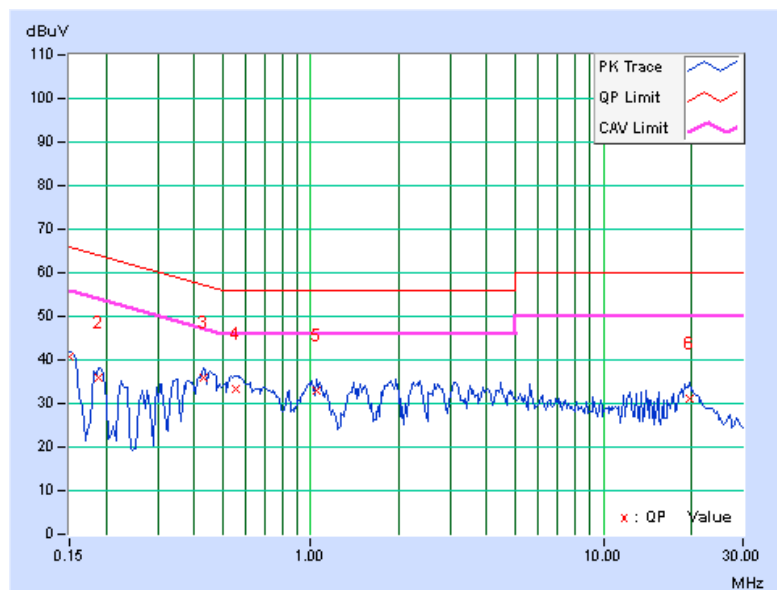


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.95	30.77	23.29	40.72	33.24	66.00	56.00	-25.28	-22.76
2	0.18906	9.96	26.11	20.99	36.07	30.95	64.08	54.08	-28.01	-23.13
3	0.43125	10.00	25.88	14.63	35.88	24.63	57.23	47.23	-21.34	-22.59
4	0.55625	10.02	23.45	12.57	33.47	22.59	56.00	46.00	-22.53	-23.41
5	1.05078	10.08	22.98	14.89	33.06	24.97	56.00	46.00	-22.94	-21.03
6	19.64844	10.83	20.31	16.66	31.14	27.49	60.00	50.00	-28.86	-22.51

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



4.3 Transmit Power Measurement

4.3.1 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

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

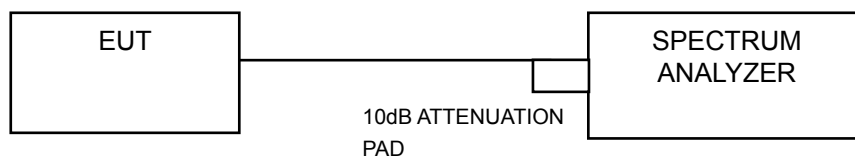
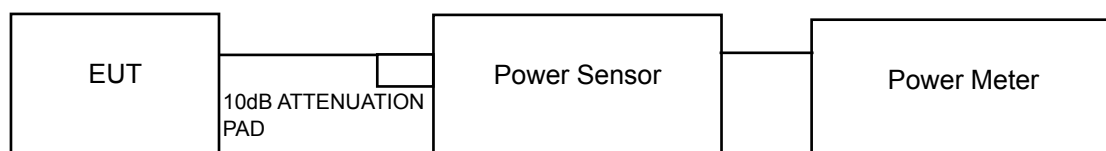
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

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

FOR AVERAGE POWER MEASUREMENT

For 802.11a, 802.11n (HT20), 802.11n (HT40)

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.

For 802.11ac (VHT80)

- 1) Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- 2) Set sweep trigger to "free run".
- 3) Set RBW = 1 MHz.
- 4) Set VBW $\geq$ 3 MHz
- 5) Number of points in sweep $\geq$ 2 Span / RBW.
- 6) Sweep time $\leq$ (number of points in sweep) * T
- 7) Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
- 8) Detector = RMS.
- 9) Trace mode = max hold.
- 10) Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

FOR OCCUPIED BANDWIDTH

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300 kHz RBW and 1MHz VBW. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

POWER OUTPUT:

For U-NII-1 Band (Outdoor Access Point)

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	9.60	11.12	9.55	31.078	14.92	30.00	Pass
40	5200	9.77	10.82	9.71	30.916	14.90	30.00	Pass
48	5240	9.79	10.95	9.84	31.611	15.00	30.00	Pass

Note: Gain = 5.648 < 6dBi, so the conducted power limit is not reduced.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	9.54	10.58	9.37	29.074	14.64	30.00	Pass
40	5200	9.44	10.75	9.76	30.137	14.79	30.00	Pass
48	5240	9.57	10.47	9.74	29.619	14.72	30.00	Pass

Note: Gain = 5.648 < 6dBi, so the conducted power limit is not reduced.

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	9.51	10.94	9.60	30.47	14.84	30.00	Pass
46	5230	9.54	10.46	9.64	29.316	14.67	30.00	Pass

Note: Gain = 5.648 < 6dBi, so the conducted power limit is not reduced.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	9.03	10.29	9.26	27.122	14.33	30.00	Pass

Note: Gain = 5.648 < 6dBi, so the conducted power limit is not reduced.

For U-NII-3 Band 802.11a

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
149	5745	16.78	17.20	15.66	136.937	21.37	25.030	Pass
157	5785	16.59	17.27	16.82	147.021	21.67	25.030	Pass
165	5825	15.64	15.70	15.94	113.062	20.53	25.030	Pass

Note: Directional gain = $6.200\text{dBi} + 10\log(3) = 10.970\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30-(10.970-6) = 25.030\text{dBm}$.

802.11n (HT20)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
149	5745	16.69	17.33	15.97	140.278	21.47	25.030	Pass
157	5785	16.15	17.39	16.58	141.537	21.51	25.030	Pass
165	5825	15.92	16.21	15.83	119.149	20.76	25.030	Pass

Note: Directional gain = $6.200\text{dBi} + 10\log(3) = 10.970\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30-(10.970-6) = 25.030\text{dBm}$.

802.11n (HT40)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
151	5755	13.30	14.13	13.06	67.492	18.29	25.030	Pass
159	5795	16.85	17.96	16.81	158.907	22.01	25.030	Pass

Note: Directional gain = $6.200\text{dBi} + 10\log(3) = 10.970\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30-(10.970-6) = 25.030\text{dBm}$.

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
155	5775	10.15	10.87	9.68	31.859	15.03	25.030	Pass

Note: Directional gain = $6.200\text{dBi} + 10\log(3) = 10.970\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30-(10.970-6) = 25.030\text{dBm}$.

26dB BANDWIDTH:

802.11a

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	21.79	22.10	22.25	PASS
40	5200	22.62	21.77	21.64	PASS
48	5240	21.68	22.59	22.39	PASS

802.11n (HT20)

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	22.89	23.72	24.01	PASS
40	5200	23.85	22.65	22.94	PASS
48	5240	23.82	23.26	22.75	PASS

802.11n (HT40)

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
38	5190	45.70	44.37	45.09	PASS
46	5230	45.15	44.49	44.45	PASS

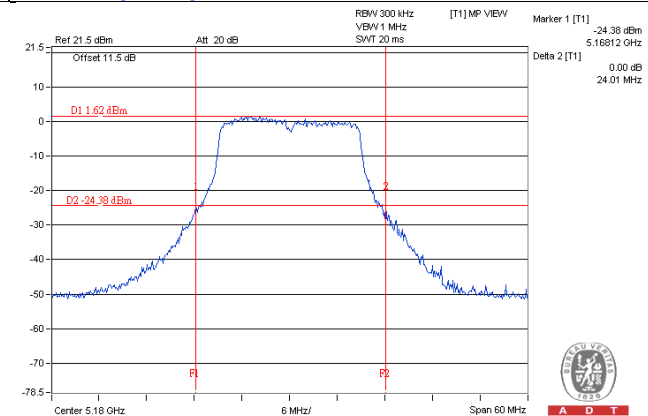
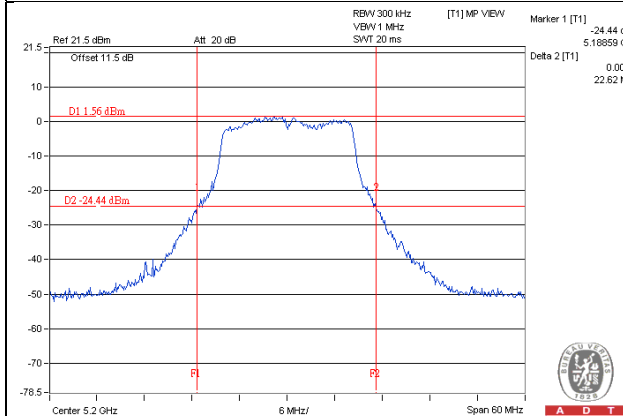
802.11ac (VHT80)

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
42	5210	86.12	86.51	86.59	PASS

SPECTRUM PLOT OF WORST VALUE

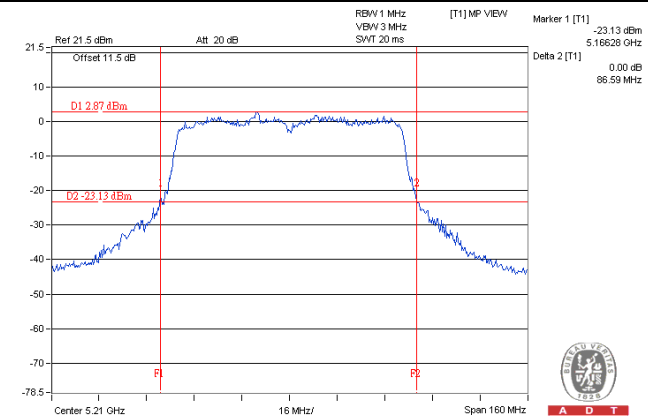
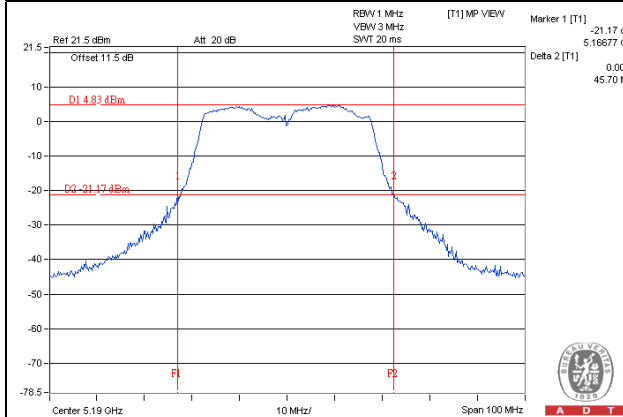
802.11a

802.11n (HT20)



802.11n (HT40)

802.11ac (VHT80)



OCCUPIED BANDWIDTH:

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	16.68	16.80	16.68	PASS
40	5200	16.68	16.68	16.68	PASS
48	5240	16.80	16.80	16.80	PASS
149	5745	16.78	16.70	16.70	PASS
157	5785	16.68	16.80	16.68	PASS
165	5825	16.68	16.80	16.56	PASS

802.11n (HT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
36	5180	17.88	18.00	17.76	PASS
40	5200	18.00	17.76	17.88	PASS
48	5240	18.00	17.76	17.88	PASS
149	5745	17.88	17.76	17.88	PASS
157	5785	18.00	17.76	16.68	PASS
165	5825	18.00	17.88	17.88	PASS

802.11n (HT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
38	5190	36.60	36.60	36.84	PASS
46	5230	36.72	36.60	36.72	PASS
151	5755	36.72	36.96	36.96	PASS
159	5795	36.96	36.84	36.72	PASS

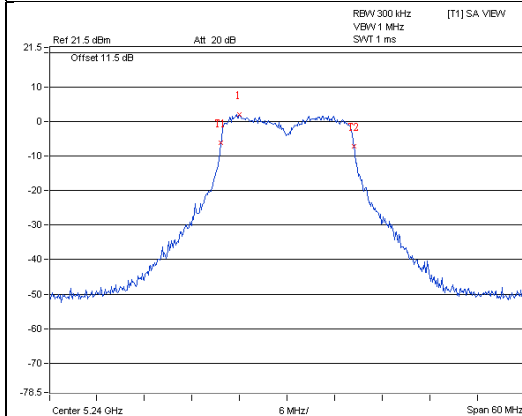
802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			Pass / Fail
		Chain 0	Chain 1	Chain 2	
42	5210	75.88	75.60	75.88	PASS
155	5775	75.88	75.60	75.60	PASS

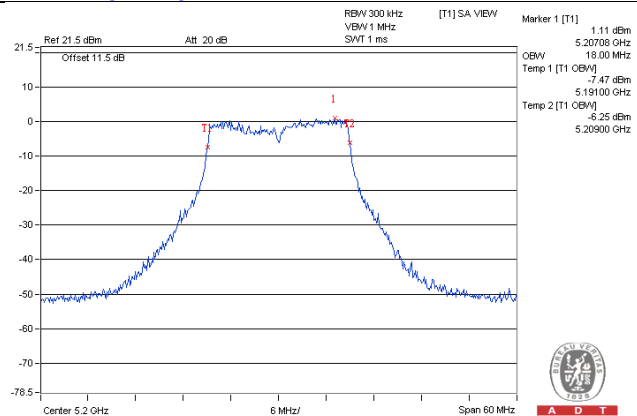
SPECTRUM PLOT OF WORST VALUE

802.11a

802.11n (HT20)



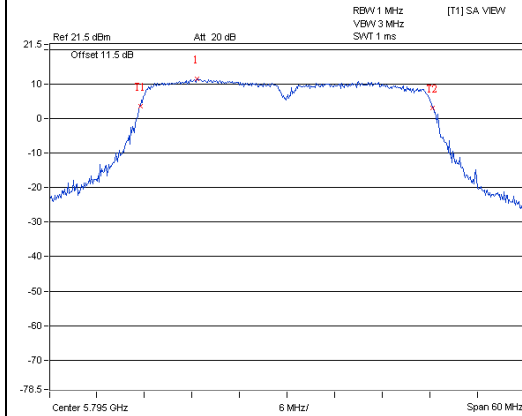
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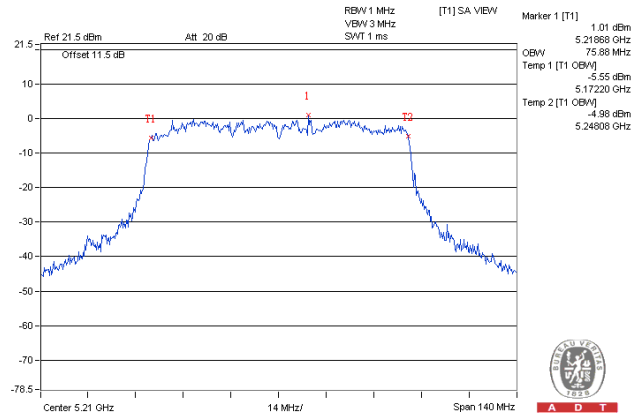
A D T

802.11n (HT40)

802.11ac (VHT80)



A D T



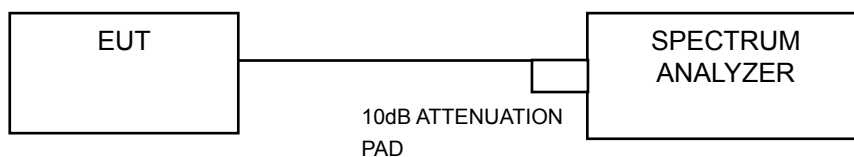
A D T

4.4 Peak Power Spectral Density Measurement

4.4.1 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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedure

For U-NII-1 band:

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1MHz, Set VBW ≥ 3MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to “free run”.
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 300 kHz, Set VBW ≥ 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 = 10log(500 kHz/300kHz)
- 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/duty cycle)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Same as Item 4.3.6.

4.4.7 Test Results

For U-NII-1 Band

802.11a

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
36	5180	-4.53	-2.71	-3.96	1.11	0.20	1.31	12.582	Pass
40	5200	-4.18	-1.50	-4.06	1.71	0.20	1.91	12.582	Pass
48	5240	-2.11	-2.26	-2.62	2.45	0.20	2.65	12.582	Pass

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = $5.648\text{dBi} + 10\log(3) = 10.418\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (10.418 - 6) = 12.582\text{dBm}$.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
36	5180	-2.53	-1.54	-4.67	2.05	0.39	2.44	12.582	Pass
40	5200	-4.82	-2.45	-2.93	1.49	0.39	1.88	12.582	Pass
48	5240	-2.71	-2.07	-3.29	2.11	0.39	2.50	12.582	Pass

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = $5.648\text{dBi} + 10\log(3) = 10.418\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (10.418 - 6) = 12.582\text{dBm}$.

802.11n (HT40)

Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
38	5190	-5.70	-5.27	-7.56	-1.30	0.46	4.15	12.582	Pass
46	5230	-5.82	-5.17	-6.41	-1.00	0.46	11.06	12.582	Pass

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = $5.648\text{dBi} + 10\log(3) = 10.418\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (10.418 - 6) = 12.582\text{dBm}$.

802.11n (VHT80)

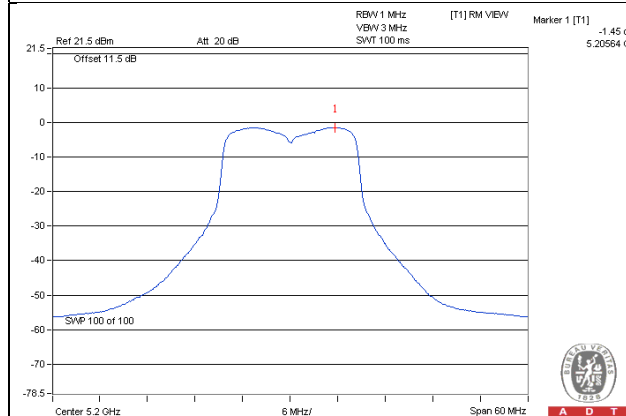
Chan.	Freq. (MHz)	PSD (dBm)			Total PSD w/o Duty Factor (dBm)	Duty Factor	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2					
42	5210	-10.79	-9.39	-10.23	-5.32	0.76	-4.56	12.582	Pass

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

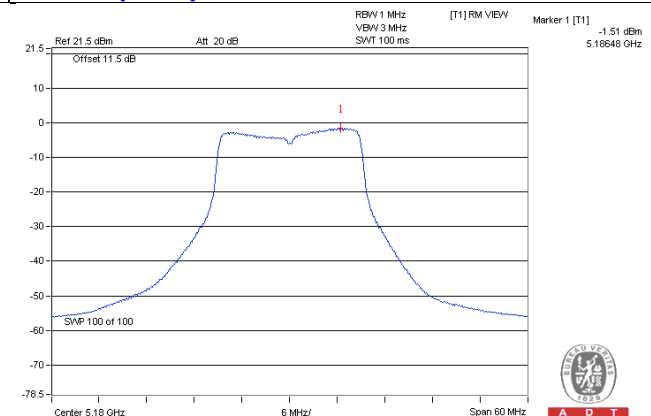
2. Directional gain = $5.648\text{dBi} + 10\log(3) = 10.418\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (10.418 - 6) = 12.582\text{dBm}$.

SPECTRUM PLOT OF WORST VALUE

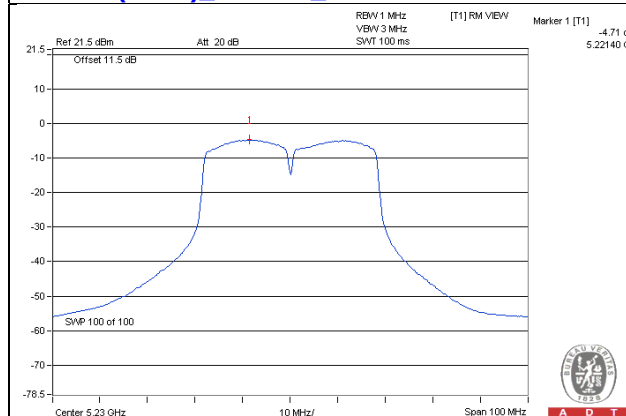
802.11a_Chain 1_Ch 40



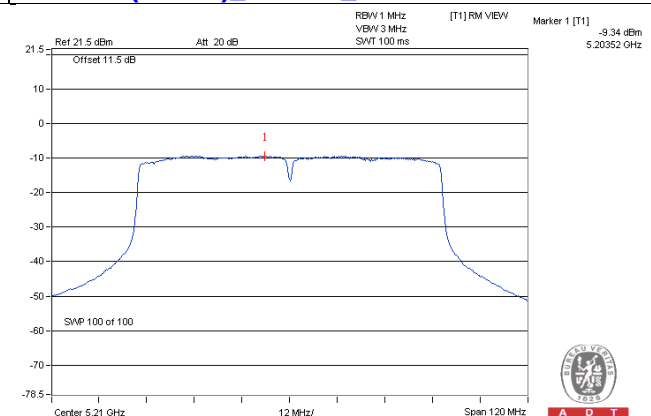
802.11n (HT20)_Chain 1_Ch 36



802.11n (HT40)_Chain 1_Ch 46



802.11ac (VHT80)_Chain 1_Ch 42



For U-NII-3 Band

802.11a

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=3) dB	Duty Factor	Total PSD (dBm /500kHz)	Limit (dBm /500kHz)	Pass /Fail
0	149	5745	-4.68	-2.46	4.77	0.20	2.51	25.030	Pass
	157	5785	-4.12	-1.90	4.77	0.20	3.07	25.030	Pass
	165	5825	-4.48	-2.26	4.77	0.20	2.71	25.030	Pass
1	149	5745	-3.63	-1.41	4.77	0.20	3.56	25.030	Pass
	157	5785	-3.27	-1.05	4.77	0.20	3.92	25.030	Pass
	165	5825	-4.55	-2.33	4.77	0.20	2.64	25.030	Pass
2	149	5745	-4.64	-2.42	4.77	0.20	2.55	25.030	Pass
	157	5785	-3.78	-1.56	4.77	0.20	3.41	25.030	Pass
	165	5825	-4.42	-2.20	4.77	0.20	2.77	25.030	Pass

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 6.200dBi + 10log(3) = 10.970dBi > 6dBi, so the power density limit shall be reduced to 30-(10.970-6) = 25.030dBm.

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=3) dB	Duty Factor	Total PSD (dBm /500kHz)	Limit (dBm /500kHz)	Pass /Fail
0	149	5745	-4.76	-2.54	4.77	0.39	2.62	25.030	Pass
	157	5785	-5.21	-2.99	4.77	0.39	2.17	25.030	Pass
	165	5825	-5.17	-2.95	4.77	0.39	2.21	25.030	Pass
1	149	5745	-3.84	-1.62	4.77	0.39	3.54	25.030	Pass
	157	5785	-3.83	-1.61	4.77	0.39	3.55	25.030	Pass
	165	5825	-4.82	-2.60	4.77	0.39	2.56	25.030	Pass
2	149	5745	-4.78	-2.56	4.77	0.39	2.60	25.030	Pass
	157	5785	-4.12	-1.90	4.77	0.39	3.26	25.030	Pass
	165	5825	-5.02	-2.80	4.77	0.39	2.36	25.030	Pass

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 6.200dBi + 10log(3) = 10.970dBi > 6dBi, so the power density limit shall be reduced to 30-(10.970-6) = 25.030dBm.

802.11n (HT40)

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=3) dB	Duty Factor	Total PSD (dBm /500kHz)	Limit (dBm /500kHz)	Pass /Fail
0	151	5755	-11.30	-9.08	4.77	0.46	-3.85	25.030	Pass
	159	5795	-7.36	-5.14	4.77	0.46	0.09	25.030	Pass
1	151	5755	-10.47	-8.25	4.77	0.46	-3.02	25.030	Pass
	159	5795	-6.33	-4.11	4.77	0.46	1.12	25.030	Pass
2	151	5755	-11.64	-9.42	4.77	0.46	-4.19	25.030	Pass
	159	5795	-7.53	-5.31	4.77	0.46	-0.08	25.030	Pass

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. Directional gain = 6.200dBi + 10log(3) = 10.970dBi > 6dBi, so the power density limit shall be reduced to 30-(10.970-6) = 25.030dBm.

802.11ac (VHT80)

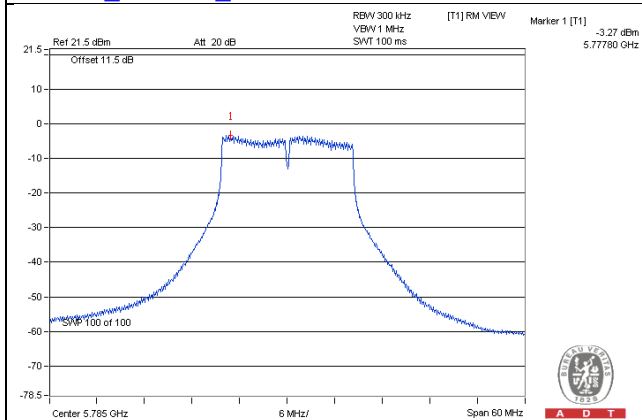
TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=3) dB	Duty Factor	Total PSD (dBm /500kHz)	Limit (dBm /500kHz)	Pass /Fail
0	155	5775	-17.25	-15.03	4.77	0.76	-9.50	25.030	Pass
1	155	5775	-16.25	-14.03	4.77	0.76	-8.50	25.030	Pass
2	155	5775	-18.11	-15.89	4.77	0.76	-10.36	25.030	Pass

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

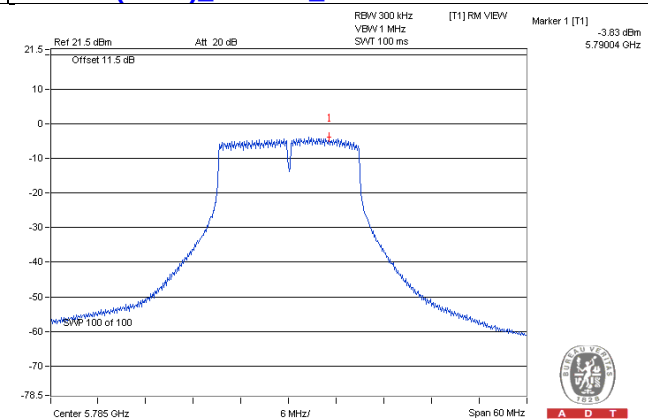
2. Directional gain = 6.200dBi + 10log(3) = 10.970dBi > 6dBi, so the power density limit shall be reduced to 30-(10.970-6) = 25.030dBm.

SPECTRUM PLOT OF WORST VALUE

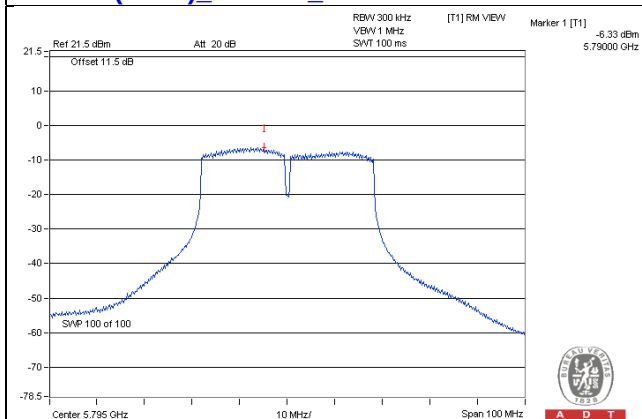
802.11a Chain 1_Ch 157



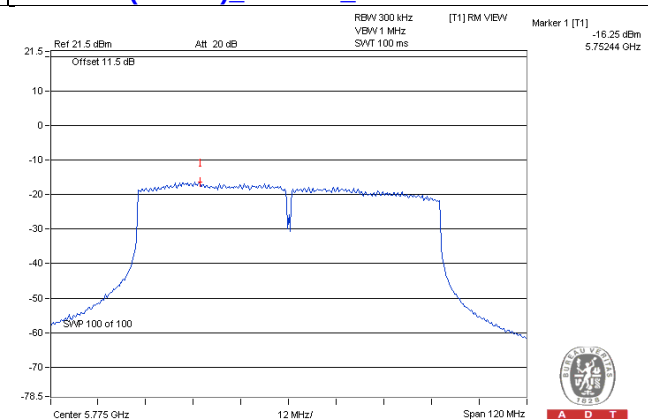
802.11n (HT20) Chain 1_Ch 157



802.11n (HT40) Chain 1_Ch 159



802.11ac (VHT80) Chain 1_Ch 155

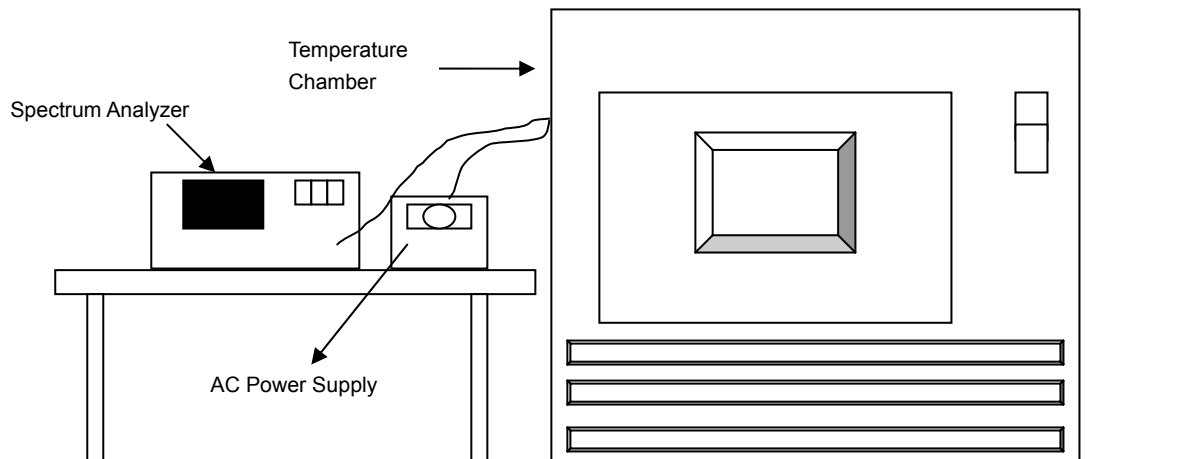


4.5 Frequency Stability

4.5.1 Limits of Frequency Stability Measurement

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

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

- 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 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	5180.0240	0.00046	5180.0249	0.00048	5180.0256	0.00049	5180.0273	0.00053
40	120	5180.0062	0.00012	5180.0028	0.00005	5180.0019	0.00004	5180.0065	0.00013
30	120	5179.9924	-0.00015	5179.9943	-0.00011	5179.9916	-0.00016	5179.9917	-0.00016
20	120	5179.9854	-0.00028	5179.9875	-0.00024	5179.9888	-0.00022	5179.9845	-0.00030
10	120	5179.9979	-0.00004	5180.0000	0.00000	5180.0001	0.00000	5180.0000	0.00000
0	120	5179.9914	-0.00017	5179.9916	-0.00016	5179.9925	-0.00014	5179.9908	-0.00018
-10	120	5179.9799	-0.00039	5179.9785	-0.00042	5179.9775	-0.00043	5179.9814	-0.00036
-20	120	5180.0038	0.00007	5180.0030	0.00006	5180.0012	0.00002	5180.0008	0.00002
-30	120	5179.9879	-0.00023	5179.9864	-0.00026	5179.9867	-0.00026	5179.9866	-0.00026

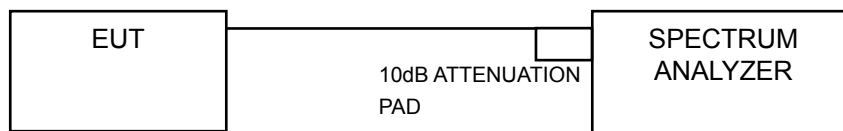
FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5179.9860	-0.00027	5179.9871	-0.00025	5179.9889	-0.00021	5179.9847	-0.00030
	120	5179.9854	-0.00028	5179.9875	-0.00024	5179.9888	-0.00022	5179.9845	-0.00030
	102	5179.9860	-0.00027	5179.9884	-0.00022	5179.9885	-0.00022	5179.9847	-0.00030

4.6 6dB Bandwidth Measurement

4.6.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	16.40	16.39	16.42	0.5	PASS
157	5785	16.37	16.40	16.43	0.5	PASS
165	5825	16.40	16.42	16.44	0.5	PASS

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
149	5745	17.63	17.63	17.67	0.5	PASS
157	5785	17.63	17.62	16.44	0.5	PASS
165	5825	17.65	17.64	17.68	0.5	PASS

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
151	5755	35.89	36.22	36.10	0.5	PASS
159	5795	35.88	35.76	36.44	0.5	PASS

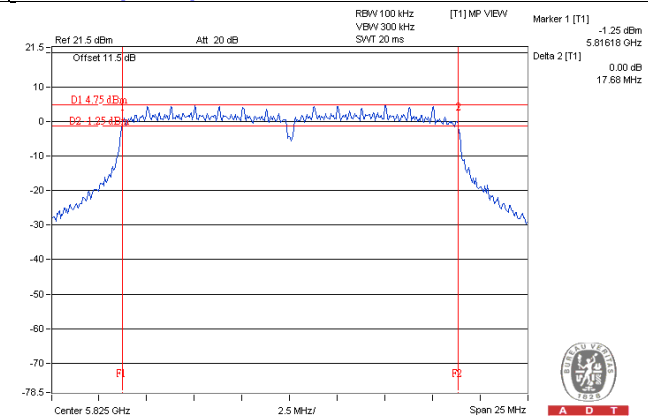
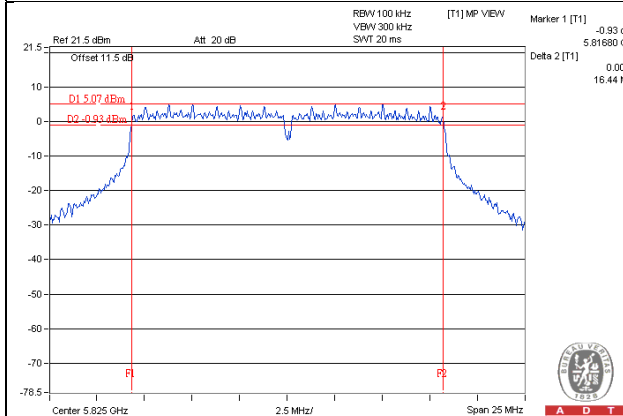
802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
155	5775	67.16	73.47	73.61	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

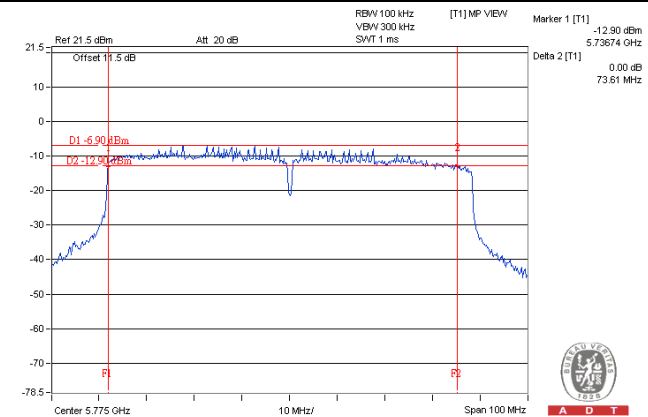
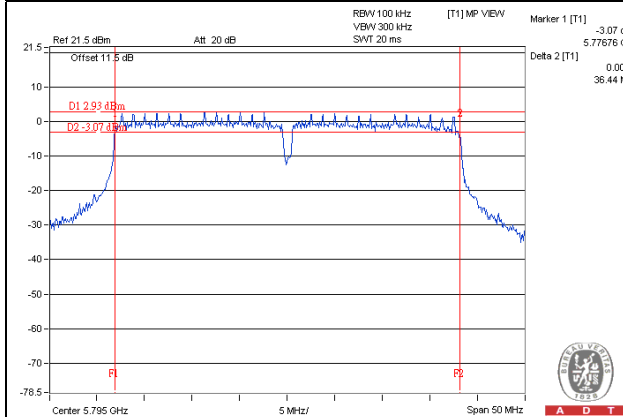
802.11a

802.11n (HT20)



802.11n (HT40)

802.11ac (VHT80)



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:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

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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