

FCC Test Report

Report No.: RF150204C08-1

FCC ID: GZ5NVG34NX4

Test Model: NVG348BQ

Series Model: NVG348Q, NVG343BQ

Received Date: Feb. 04, 2015

Test Date: Feb. 07 ~ Mar. 04, 2015

Issued Date: Mar. 09, 2015

Applicant: ARRIS Group, Inc.

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A D T

Release Control Record

Issue No.	Description	Date Issued
RF150204C08-1	Original release.	Mar. 09, 2015

1 Certificate of Conformity

Product: NVG34X Series VDSL2 Gateway

Brand: ARRIS

Test Model: NVG348BQ

Series Model: NVG348Q, NVG343BQ

Sample Status: Engineering sample

Applicant: ARRIS Group, Inc.

Test Date: Feb. 07 ~ Mar. 04, 2015

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2009

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 :


Pettie Chen / Senior Specialist

Date:

Mar. 09, 2015

Approved by :



Ken Liu / Senior Manager

Date:

Mar. 09, 2015

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 -24.05dB at 0.92418MHz.
15.407(b)(1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5714.90, 5722.90, 10360.00MHz.
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 i-pex not a standard connector.

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	3.63 dB
	200MHz ~ 1000MHz	3.64 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	NVG34X Series VDSL2 Gateway
Brand	ARRIS
Test Model	NVG348BQ
Series Model	NVG348Q, NVG343BQ
Model Difference	Refer to Note
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from adapter
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 800.0Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	5180 ~ 5240MHz & 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
Output Power	Beamform off: 307.639mW for 5180 ~ 5240MHz 357.548mW for 5745 ~ 5825MHz Beamform on: 221.788mW for 5180 ~ 5240MHz 220.530mW for 5745 ~ 5825MHz
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Data Cable Supplied	NA

Note:

1. All models are listed as below.

Brand	Model	Difference	
		VoIP	Bonding
ARRIS	NVG348BQ	With	With
	NVG348Q	With	Without
	NVG343BQ	Without	With

*Model: NVG348BQ is the main test model.

2. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Modulation Mode	TX FUNCTION	Beamforming mode
802.11a	4TX	Not support
802.11n (20MHz)	4TX	Support
802.11n (40MHz)	4TX	Support
802.11ac (20MHz)	4TX	Support
802.11ac (40MHz)	4TX	Support
802.11ac (80MHz)	4TX	Support

* 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)

3. The EUT uses following adapter.

Adapter	
Brand	DVE
Model	DSA-24PFD-15
Input Power	100-120Vac~50/60Hz, 0.8A
Output Power	+12Vdc, 2A
Power Line	2.0m non-shielded cable without core attached on adapter

4. The following antennas were provided to the EUT.

Antenna Type	Dipole				
Antenna Connector	i-pex (MHF)				
Gain (dBi)	Frequency (MHz)				
	4900	5150	5350	5725	5850
Ant. 3	4.6	4.9	5.0	4.7	5.7
Ant. 4	3.8	3.5	2.9	3.2	3.2
Ant. 5	4.6	4.1	4.1	5.7	5.4
Ant. 6	3.9	3.5	5.2	4.2	4.5

5. 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 (20MHz), 802.11ac (20MHz):

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

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (80MHz):

Channel	Frequency
42	5210MHz

FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

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

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (80MHz):

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	
A	√	√	√	√	Beamforming off
B	√	√	√	√	Beamforming on

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 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)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A, B	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
A, B	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
A, B	802.11ac (80MHz)		42	42	OFDM	BPSK	130.0
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A, B	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
A, B	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	15.0
A, B	802.11ac (80MHz)		155	155	OFDM	BPSK	130.0

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)
A	802.11a	5180-5320, 5745-5825	36 to 64, 149 to 165	157	OFDM	BPSK	6.0
B	802.11n (20MHz)	5180-5320, 5745-5825	36 to 64, 149 to 165	40	OFDM	BPSK	7.2

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)
A	802.11a	5180-5320, 5745-5825	36 to 64, 149 to 165	157	OFDM	BPSK	6.0
B	802.11n (20MHz)	5180-5320, 5745-5825	36 to 64, 149 to 165	40	OFDM	BPSK	7.2

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)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
A, B	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
A, B	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
A, B	802.11ac (80MHz)		42	42	OFDM	BPSK	130.0
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A, B	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	7.2
A, B	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	15.0
A, B	802.11ac (80MHz)		155	155	OFDM	BPSK	130.0

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	20deg. C, 70%RH	120Vac, 60Hz	Tank Wu
RE<1G	22deg. C, 61%RH	120Vac, 60Hz	Tank Wu
PLC	25deg. C, 60%RH	120Vac, 60Hz	Tank Wu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nick Chen

3.3 Duty Cycle of Test Signal

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

802.11a: Duty cycle = $5.355/5.42 = 0.988$

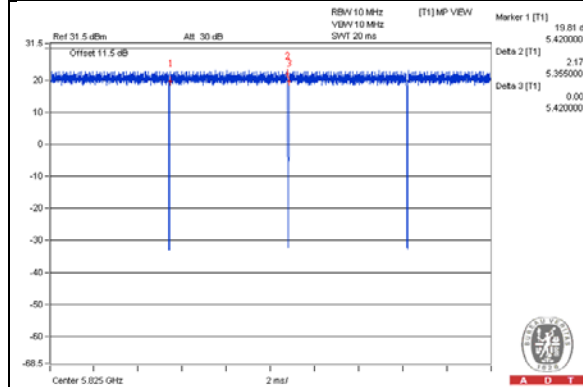
802.11n (20MHz): Duty cycle = $4.955/5.045 = 0.982$

Duty cycle of test signal is $< 98\%$, duty factor is required

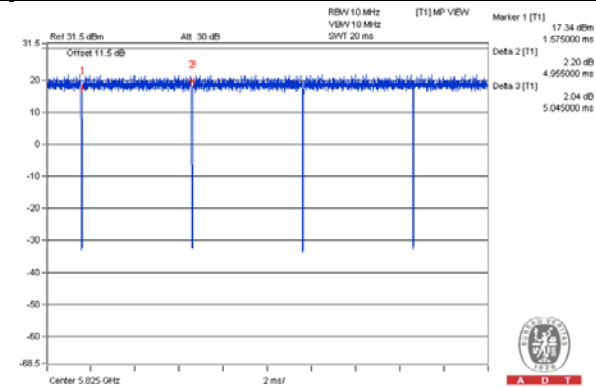
802.11n (40MHz): Duty cycle = $2.4/2.475 = 0.97$, Duty factor = $10 * \log(1/0.97) = 0.13$

802.11ac (80MHz): Duty cycle = $1.139/1.197 = 0.952$, Duty factor = $10 * \log(1/0.952) = 0.22$

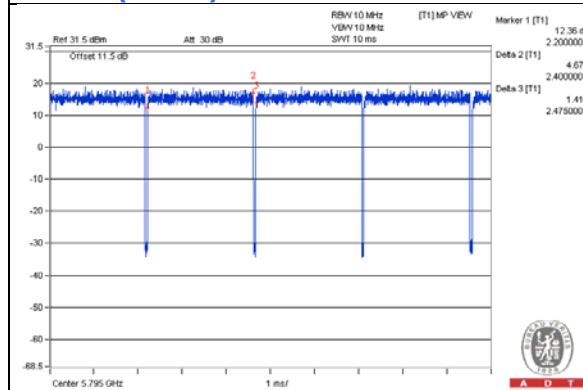
802.11a



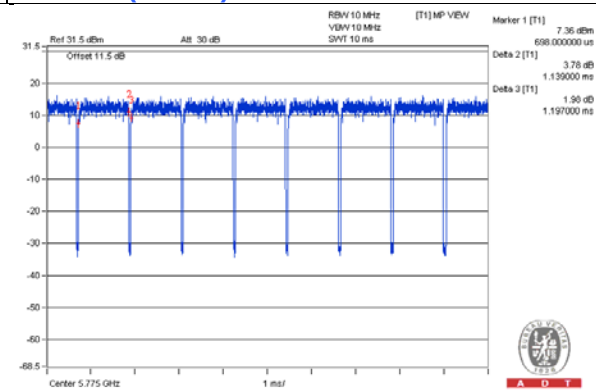
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)



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.	USB Flash	Transcend	V85	569992-8209	FCC DoC Approved	
B.	Notebook	DELL	Inspiron N4030	JCDJZM1	FCC DoC Approved	

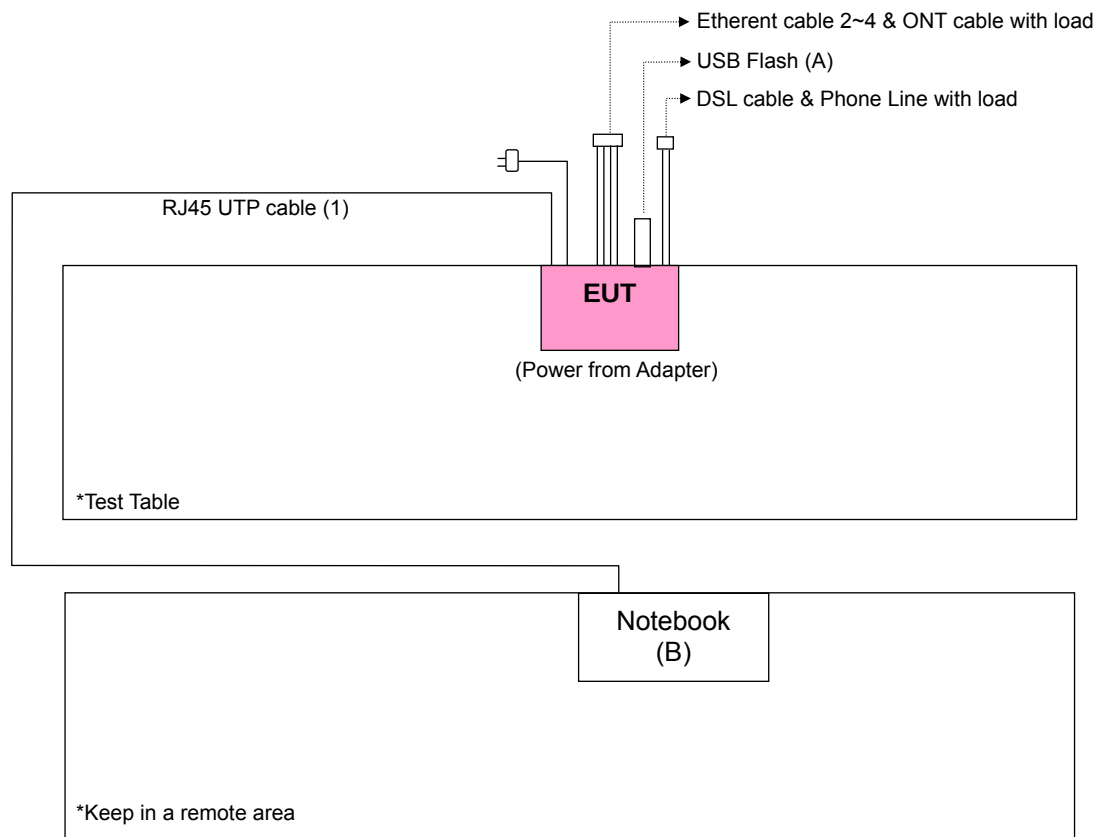
Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45 cable	1	10	N	0	-

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

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)

789033 D02 General UNII Test Procedure New Rules v01

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It 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. Other emissions shall be at least 20dB below the highest level of the desired power:

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.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 01, 2014	Nov. 30, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 25, 2014	Jul. 24, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 06, 2015	Feb. 05, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-404	Aug. 26, 2014	Aug. 25, 2015
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Feb. 04, 2015	Feb. 04, 2016
Preamplifier Agilent	8449B	3008A01911	Aug. 09, 2014	Aug. 08, 2015
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2014	Aug. 08, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	248780/4 309222/4 274092/4	Aug. 09, 2014	Aug. 08, 2015
RF signal cable Worken	8D-FB	Cable-CH9-01	Aug. 11, 2014	Aug. 10, 2015
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2014	Oct. 17, 2015
High Speed Peak Power Meter	ML2495A	0824011	Jul. 26, 2014	Jul. 25, 2015
Power Sensor	MA2411B	0738171	Jul. 26, 2014	Jul. 25, 2015
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 09, 2014	Jun. 08, 2015

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 9.

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 215374.

5. The IC Site Registration No. is IC 7450F-9.

4.1.3 Test Procedure

- a. The EUT was placed on the top of a rotating table 0.8 meters 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:

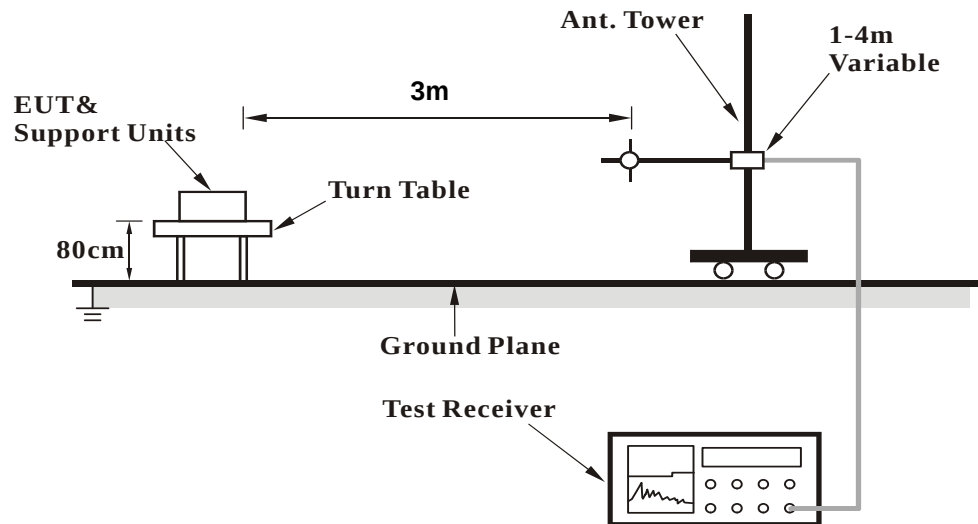
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. 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 ($10 \log(1/\text{duty cycle})$).
5. 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.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

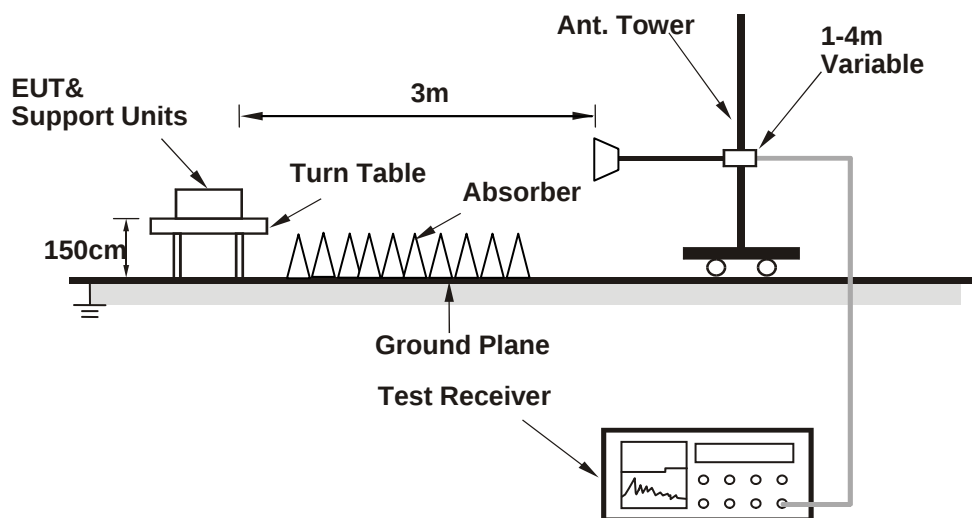
No deviation.

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

- a. Placed the EUT on the testing table.
- b. Prepared notebook to act as communication partner and placed it outside of testing area.
- c. 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.
- d. The necessary accessories enable the system in full functions.

4.1.7 Test Results

Test Mode A

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	60.0 PK	74.0	-14.0	1.70 H	2	58.00	2.00
2	5150.00	46.9 AV	54.0	-7.1	1.70 H	2	44.90	2.00
3	*5180.00	112.6 PK			1.79 H	4	72.60	40.00
4	*5180.00	102.7 AV			1.79 H	4	62.70	40.00
5	#6906.00	55.6 PK	68.2	-12.6	1.00 H	202	48.20	7.40
6	#10360.00	64.1 PK	68.2	-4.1	1.03 H	52	49.10	15.00
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	58.9 PK	74.0	-15.1	1.42 V	348	56.90	2.00
2	5150.00	46.4 AV	54.0	-7.6	1.42 V	348	44.40	2.00
3	*5180.00	108.1 PK			1.05 V	340	68.10	40.00
4	*5180.00	98.9 AV			1.05 V	340	58.90	40.00
5	#6906.00	60.2 PK	68.2	-8.0	1.17 V	2	52.80	7.40
6	#10360.00	67.2 PK	68.2	-1.0	1.00 V	29	52.20	15.00

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	113.1 PK			1.69 H	14	73.00	40.10
2	*5200.00	103.3 AV			1.69 H	14	63.20	40.10
3	#6933.00	56.7 PK	68.2	-11.5	1.46 H	357	49.10	7.60
4	#10400.00	65.6 PK	68.2	-2.6	1.09 H	54	50.60	15.00
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	109.1 PK			1.04 V	349	69.00	40.10
2	*5200.00	99.8 AV			1.04 V	349	59.70	40.10
3	#6933.00	59.7 PK	68.2	-8.5	1.01 V	1	52.10	7.60
4	#10400.00	66.8 PK	68.2	-1.4	1.01 V	93	51.80	15.00

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	114.1 PK			1.68 H	6	74.00	40.10
2	*5240.00	104.7 AV			1.68 H	6	64.60	40.10
3	5350.00	58.8 PK	74.0	-15.2	1.69 H	3	56.80	2.00
4	5350.00	45.3 AV	54.0	-8.7	1.69 H	3	43.30	2.00
5	#6987.00	56.9 PK	68.2	-11.3	1.47 H	356	49.00	7.90
6	#10480.00	65.6 PK	68.2	-2.6	1.04 H	59	50.50	15.10
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	109.5 PK			1.04 V	348	69.40	40.10
2	*5240.00	100.0 AV			1.04 V	348	59.90	40.10
3	5350.00	58.0 PK	74.0	-16.0	1.06 V	343	56.00	2.00
4	5350.00	44.9 AV	54.0	-9.1	1.06 V	343	42.90	2.00
5	#6987.00	58.8 PK	68.2	-9.4	1.01 V	1	50.90	7.90
6	#10480.00	66.6 PK	68.2	-1.6	1.34 V	101	51.50	15.10

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 (20MHz)

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	60.4 PK	74.0	-13.6	1.52 H	16	58.40	2.00
2	5150.00	46.8 AV	54.0	-7.2	1.52 H	16	44.80	2.00
3	*5180.00	113.0 PK			1.90 H	8	73.00	40.00
4	*5180.00	100.7 AV			1.90 H	8	60.70	40.00
5	#6906.00	55.9 PK	68.2	-12.3	1.41 H	350	48.50	7.40
6	#10360.00	66.3 PK	68.2	-1.9	1.28 H	193	51.30	15.00
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	61.0 PK	74.0	-13.0	1.21 V	339	59.00	2.00
2	5150.00	47.3 AV	54.0	-6.7	1.21 V	339	45.30	2.00
3	*5180.00	107.0 PK			1.00 V	3	67.00	40.00
4	*5180.00	97.6 AV			1.00 V	3	57.60	40.00
5	#6906.00	59.4 PK	68.2	-8.8	1.59 V	268	52.00	7.40
6	#10360.00	66.8 PK	68.2	-1.4	1.30 V	223	51.80	15.00

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	113.5 PK			1.56 H	2	73.40	40.10
2	*5200.00	103.0 AV			1.56 H	2	62.90	40.10
3	#6933.00	56.4 PK	68.2	-11.8	1.48 H	359	48.80	7.60
4	#10400.00	65.1 PK	68.2	-3.1	1.01 H	57	50.10	15.00
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	109.4 PK			1.04 V	72	69.30	40.10
2	*5200.00	99.3 AV			1.04 V	72	59.20	40.10
3	#6933.00	58.9 PK	68.2	-9.3	1.01 V	2	51.30	7.60
4	#10400.00	66.0 PK	68.2	-2.2	1.01 V	30	51.00	15.00

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	113.5 PK			1.69 H	3	73.40	40.10
2	*5240.00	103.0 AV			1.69 H	3	62.90	40.10
3	5350.00	58.8 PK	74.0	-15.2	1.65 H	5	56.80	2.00
4	5350.00	47.0 AV	54.0	-7.0	1.65 H	5	45.00	2.00
5	#6987.00	56.6 PK	68.2	-11.6	1.40 H	350	48.70	7.90
6	#10480.00	64.4 PK	68.2	-3.8	1.00 H	50	49.30	15.10
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	109.7 PK			1.73 V	73	69.60	40.10
2	*5240.00	99.8 AV			1.73 V	73	59.70	40.10
3	5350.00	58.4 PK	74.0	-15.6	1.78 V	77	56.40	2.00
4	5350.00	46.6 AV	54.0	-7.4	1.78 V	77	44.60	2.00
5	#6987.00	57.9 PK	68.2	-10.3	1.06 V	357	50.00	7.90
6	#10480.00	64.6 PK	68.2	-3.6	1.00 V	314	49.50	15.10

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 (40MHz)

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	68.0 PK	74.0	-6.0	1.80 H	12	66.00	2.00
2	5150.00	52.8 AV	54.0	-1.2	1.80 H	12	50.80	2.00
3	*5190.00	109.3 PK			1.80 H	5	69.30	40.00
4	*5190.00	99.8 AV			1.80 H	5	59.80	40.00
5	#6920.00	55.0 PK	68.2	-13.2	1.00 H	189	47.40	7.60
6	#10380.00	63.9 PK	68.2	-4.3	1.00 H	43	48.90	15.00
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	64.9 PK	74.0	-9.1	1.48 V	66	62.90	2.00
2	5150.00	51.1 AV	54.0	-2.9	1.48 V	66	49.10	2.00
3	*5190.00	106.1 PK			1.47 V	65	66.10	40.00
4	*5190.00	96.8 AV			1.47 V	65	56.80	40.00
5	#6920.00	59.1 PK	68.2	-9.1	1.44 V	1	51.50	7.60
6	#10380.00	64.3 PK	68.2	-3.9	1.00 V	74	49.30	15.00

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	109.9 PK			1.76 H	7	69.80	40.10
2	*5230.00	100.3 AV			1.76 H	7	60.20	40.10
3	5350.00	59.0 PK	74.0	-15.0	1.76 H	3	57.00	2.00
4	5350.00	45.4 AV	54.0	-8.6	1.76 H	3	43.40	2.00
5	#6973.00	55.4 PK	68.2	-12.8	1.00 H	183	47.60	7.80
6	#10460.00	62.6 PK	68.2	-5.6	1.00 H	49	47.60	15.00
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	*5230.00	106.5 PK			1.04 V	69	66.40	40.10
2	*5230.00	97.0 AV			1.04 V	69	56.90	40.10
3	5350.00	58.2 PK	74.0	-15.8	1.07 V	65	56.20	2.00
4	5350.00	44.7 AV	54.0	-9.3	1.07 V	65	42.70	2.00
5	#6973.00	58.2 PK	68.2	-10.0	1.01 V	350	50.40	7.80
6	#10460.00	63.3 PK	68.2	-4.9	1.00 V	221	48.30	15.00

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.

802.11ac (80MHz)

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	5140.00	67.4 PK	74.0	-6.6	1.80 H	5	65.50	1.90
2	5140.00	52.7 AV	54.0	-1.3	1.80 H	5	50.80	1.90
3	*5210.00	106.4 PK			1.79 H	4	66.30	40.10
4	*5210.00	96.5 AV			1.79 H	4	56.40	40.10
5	#6947.00	54.3 PK	68.2	-13.9	1.04 H	180	46.60	7.70
6	#10420.00	62.2 PK	68.2	-6.0	1.04 H	38	47.20	15.00
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	5140.00	63.4 PK	74.0	-10.6	1.04 V	63	61.50	1.90
2	5140.00	49.9 AV	54.0	-4.1	1.04 V	63	48.00	1.90
3	*5210.00	102.8 PK			1.04 V	61	62.70	40.10
4	*5210.00	93.4 AV			1.04 V	61	53.30	40.10
5	#6947.00	58.1 PK	68.2	-10.1	1.17 V	17	50.40	7.70
6	#10420.00	63.2 PK	68.2	-5.0	1.07 V	64	48.20	15.00

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.

802.11a

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	63.3 PK	74.0	-10.7	1.76 H	1	60.70	2.60
2	#5714.90	49.9 AV	54.0	-4.1	1.76 H	1	47.30	2.60
3	#5722.90	76.6 PK	78.2	-1.6	1.77 H	8	74.00	2.60
4	*5745.00	115.9 PK			1.70 H	18	74.90	41.00
5	*5745.00	106.1 AV			1.70 H	18	65.10	41.00
6	11490.00	60.5 PK	74.0	-13.5	1.00 H	55	44.60	15.90
7	11490.00	47.2 AV	54.0	-6.8	1.00 H	55	31.30	15.90
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	#5714.90	61.4 PK	74.0	-12.6	1.00 V	78	58.80	2.60
2	#5714.90	46.8 AV	54.0	-7.2	1.00 V	78	44.20	2.60
3	#5722.90	72.2 PK	78.2	-6.0	1.00 V	78	69.60	2.60
4	*5745.00	110.8 PK			1.00 V	74	69.80	41.00
5	*5745.00	101.4 AV			1.00 V	74	60.40	41.00
6	11490.00	60.7 PK	74.0	-13.3	1.00 V	21	44.80	15.90
7	11490.00	47.8 AV	54.0	-6.2	1.00 V	21	31.90	15.90

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
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	116.4 PK			1.70 H	19	75.30	41.10
2	*5785.00	106.8 AV			1.70 H	19	65.70	41.10
3	11570.00	61.0 PK	74.0	-13.0	1.00 H	51	45.40	15.60
4	11570.00	47.9 AV	54.0	-6.1	1.00 H	51	32.30	15.60
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	*5785.00	112.2 PK			1.60 V	73	71.10	41.10
2	*5785.00	103.0 AV			1.60 V	73	61.90	41.10
3	11570.00	61.5 PK	74.0	-12.5	1.00 V	32	45.90	15.60
4	11570.00	48.5 AV	54.0	-5.5	1.00 V	32	32.90	15.60

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)
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	115.3 PK			1.89 H	18	74.20	41.10
2	*5825.00	105.7 AV			1.89 H	18	64.60	41.10
3	#5852.10	67.3 PK	78.2	-10.9	1.59 H	15	64.30	3.00
4	#5860.10	65.1 PK	74.0	-8.9	1.59 H	15	62.10	3.00
5	#5860.10	50.9 AV	54.0	-3.1	1.59 H	15	47.90	3.00
6	11650.00	60.0 PK	74.0	-14.0	1.00 H	54	44.40	15.60
7	11650.00	47.6 AV	54.0	-6.4	1.00 H	54	32.00	15.60
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	*5825.00	110.9 PK			1.53 V	71	69.80	41.10
2	*5825.00	101.6 AV			1.53 V	71	60.50	41.10
3	#5852.10	64.4 PK	78.2	-13.8	1.56 V	74	61.40	3.00
4	#5860.10	61.3 PK	74.0	-12.7	1.56 V	74	58.30	3.00
5	#5860.10	47.7 AV	54.0	-6.3	1.56 V	74	44.70	3.00
6	11650.00	61.2 PK	74.0	-12.8	1.00 V	30	45.60	15.60
7	11650.00	48.3 AV	54.0	-5.7	1.00 V	30	32.70	15.60

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)
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 (20MHz)

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	67.3 PK	74.0	-6.7	1.66 H	18	64.70	2.60
2	#5714.90	50.4 AV	54.0	-3.6	1.66 H	18	47.80	2.60
3	#5722.90	69.0 PK	78.2	-9.2	1.66 H	18	66.40	2.60
4	*5745.00	114.0 PK			1.70 H	13	73.00	41.00
5	*5745.00	103.7 AV			1.70 H	13	62.70	41.00
6	11490.00	60.2 PK	74.0	-13.8	1.00 H	51	44.30	15.90
7	11490.00	46.9 AV	54.0	-7.1	1.00 H	51	31.00	15.90
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	#5714.90	61.1 PK	74.0	-12.9	1.72 V	66	58.50	2.60
2	#5714.90	46.5 AV	54.0	-7.5	1.72 V	66	43.90	2.60
3	#5722.90	68.0 PK	78.2	-10.2	1.72 V	66	65.40	2.60
4	*5745.00	109.3 PK			1.77 V	67	68.30	41.00
5	*5745.00	99.5 AV			1.77 V	67	58.50	41.00
6	11490.00	60.6 PK	74.0	-13.4	1.00 V	28	44.70	15.90
7	11490.00	47.4 AV	54.0	-6.6	1.00 V	28	31.50	15.90

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
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	113.8 PK			1.50 H	16	72.70	41.10
2	*5785.00	103.6 AV			1.50 H	16	62.50	41.10
3	11570.00	60.7 PK	74.0	-13.3	1.00 H	53	45.10	15.60
4	11570.00	47.3 AV	54.0	-6.7	1.00 H	53	31.70	15.60
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	*5785.00	109.1 PK			1.62 V	70	68.00	41.10
2	*5785.00	99.2 AV			1.62 V	70	58.10	41.10
3	11570.00	61.1 PK	74.0	-12.9	1.00 V	25	45.50	15.60
4	11570.00	47.9 AV	54.0	-6.1	1.00 V	25	32.30	15.60

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)
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	113.4 PK			1.55 H	15	72.30	41.10
2	*5825.00	103.3 AV			1.55 H	15	62.20	41.10
3	#5852.10	63.8 PK	78.2	-14.4	1.53 H	13	60.80	3.00
4	#5860.10	62.9 PK	74.0	-11.1	1.53 H	13	59.90	3.00
5	#5860.10	49.3 AV	54.0	-4.7	1.53 H	13	46.30	3.00
6	11650.00	60.4 PK	74.0	-13.6	1.00 H	56	44.80	15.60
7	11650.00	47.2 AV	54.0	-6.8	1.00 H	56	31.60	15.60
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	*5825.00	109.4 PK			1.83 V	354	68.30	41.10
2	*5825.00	99.9 AV			1.83 V	354	58.80	41.10
3	#5852.10	62.1 PK	78.2	-16.1	1.88 V	351	59.10	3.00
4	#5860.10	61.1 PK	74.0	-12.9	1.88 V	351	58.10	3.00
5	#5860.10	47.2 AV	54.0	-6.8	1.88 V	351	44.20	3.00
6	11650.00	60.7 PK	74.0	-13.3	1.00 V	27	45.10	15.60
7	11650.00	47.8 AV	54.0	-6.2	1.00 V	27	32.20	15.60

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)
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 (40MHz)

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	66.7 PK	74.0	-7.3	1.50 H	15	64.10	2.60
2	#5714.90	51.4 AV	54.0	-2.6	1.50 H	15	48.80	2.60
3	#5722.90	76.6 PK	78.2	-1.6	1.50 H	15	74.00	2.60
4	*5755.00	111.4 PK			1.46 H	11	70.40	41.00
5	*5755.00	101.8 AV			1.46 H	11	60.80	41.00
6	11510.00	59.9 PK	74.0	-14.1	1.00 H	50	44.20	15.70
7	11510.00	46.1 AV	54.0	-7.9	1.00 H	50	30.40	15.70
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	#5714.90	64.2 PK	74.0	-9.8	1.53 V	69	61.60	2.60
2	#5714.90	46.5 AV	54.0	-7.5	1.53 V	69	43.90	2.60
3	#5722.90	66.5 PK	78.2	-11.7	1.53 V	69	63.90	2.60
4	*5755.00	105.4 PK			1.55 V	65	64.40	41.00
5	*5755.00	96.2 AV			1.55 V	65	55.20	41.00
6	11510.00	60.3 PK	74.0	-13.7	1.00 V	26	44.60	15.70
7	11510.00	46.4 AV	54.0	-7.6	1.00 V	26	30.70	15.70

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.

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	110.3 PK			1.64 H	6	69.20	41.10
2	*5795.00	100.8 AV			1.64 H	6	59.70	41.10
3	#5852.10	63.4 PK	78.2	-14.8	1.64 H	3	60.40	3.00
4	#5860.10	59.9 PK	74.0	-14.1	1.64 H	3	56.90	3.00
5	#5860.10	47.2 AV	54.0	-6.8	1.64 H	3	44.20	3.00
6	11590.00	59.4 PK	74.0	-14.6	1.00 H	56	43.80	15.60
7	11590.00	46.6 AV	54.0	-7.4	1.00 H	56	31.00	15.60
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	*5795.00	105.5 PK			1.00 V	58	64.40	41.10
2	*5795.00	96.2 AV			1.00 V	58	55.10	41.10
3	#5852.10	59.5 PK	78.2	-18.7	1.00 V	50	56.50	3.00
4	#5860.10	57.7 PK	74.0	-16.3	1.00 V	50	54.70	3.00
5	#5860.10	45.0 AV	54.0	-9.0	1.00 V	50	42.00	3.00
6	11590.00	59.9 PK	74.0	-14.1	1.00 V	29	44.30	15.60
7	11590.00	46.9 AV	54.0	-7.1	1.00 V	29	31.30	15.60

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)
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 (80MHz)

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	73.0 PK	74.0	-1.0	1.59 H	4	70.40	2.60
2	#5714.90	50.3 AV	54.0	-3.7	1.59 H	4	47.70	2.60
3	#5722.90	71.7 PK	78.2	-6.5	1.59 H	4	69.10	2.60
4	*5775.00	107.0 PK			1.54 H	3	66.00	41.00
5	*5775.00	97.1 AV			1.54 H	3	56.10	41.00
6	11550.00	59.6 PK	74.0	-14.4	1.00 H	40	44.00	15.60
7	11550.00	45.7 AV	54.0	-8.3	1.00 H	40	30.10	15.60
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	#5714.90	66.9 PK	74.0	-7.1	1.82 V	56	64.30	2.60
2	#5714.90	46.1 AV	54.0	-7.9	1.82 V	56	43.50	2.60
3	#5722.90	64.1 PK	78.2	-14.1	1.82 V	56	61.50	2.60
4	*5775.00	102.6 PK			1.83 V	56	61.60	41.00
5	*5775.00	93.1 AV			1.83 V	56	52.10	41.00
6	11550.00	60.0 PK	74.0	-14.0	1.00 V	24	44.40	15.60
7	11550.00	46.0 AV	54.0	-8.0	1.00 V	24	30.40	15.60

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)
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	55.22	21.5 QP	40.0	-18.5	1.00 H	269	36.00	-14.50
2	92.08	29.4 QP	43.5	-14.1	1.99 H	278	49.30	-19.90
3	169.68	29.9 QP	43.5	-13.6	1.00 H	297	44.30	-14.40
4	383.08	37.2 QP	46.0	-8.8	1.99 H	154	48.10	-10.90
5	625.58	37.3 QP	46.0	-8.7	1.24 H	261	43.10	-5.80
6	875.84	36.6 QP	46.0	-9.4	1.24 H	244	38.50	-1.90
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	51.34	34.5 QP	40.0	-5.5	1.01 V	15	48.90	-14.40
2	90.14	34.7 QP	43.5	-8.8	1.50 V	225	54.50	-19.80
3	198.78	28.0 QP	43.5	-15.5	1.01 V	148	44.70	-16.70
4	383.08	38.2 QP	46.0	-7.8	1.50 V	161	49.10	-10.90
5	641.10	36.1 QP	46.0	-9.9	1.01 V	100	41.80	-5.70
6	1000.00	36.8 QP	54.0	-17.2	1.25 V	73	36.80	0.00

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

Test Mode B

ABOVE 1GHz DATA

802.11n (20MHz)

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	62.9 PK	74.0	-11.1	1.72 H	6	60.90	2.00
2	5150.00	50.3 AV	54.0	-3.7	1.72 H	6	48.30	2.00
3	*5180.00	114.4 PK			1.67 H	2	74.40	40.00
4	*5180.00	103.0 AV			1.67 H	2	63.00	40.00
5	#6906.00	55.8 PK	68.2	-12.4	1.00 H	206	48.40	7.40
6	#10360.00	63.4 PK	68.2	-4.8	1.06 H	58	48.40	15.00
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	64.5 PK	74.0	-9.5	1.33 V	67	62.50	2.00
2	5150.00	46.6 AV	54.0	-7.4	1.33 V	67	44.60	2.00
3	*5180.00	111.4 PK			1.33 V	66	71.40	40.00
4	*5180.00	100.0 AV			1.33 V	66	60.00	40.00
5	#6906.00	59.9 PK	68.2	-8.3	1.30 V	264	52.50	7.40
6	#10360.00	65.9 PK	68.2	-2.3	1.00 V	20	50.90	15.00

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	114.3 PK			1.78 H	5	74.20	40.10
2	*5200.00	103.5 AV			1.78 H	5	63.40	40.10
3	#6933.00	56.9 PK	68.2	-11.3	1.00 H	204	49.30	7.60
4	#10400.00	65.2 PK	68.2	-3.0	1.03 H	55	50.20	15.00
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	111.5 PK			1.32 V	66	71.40	40.10
2	*5200.00	100.6 AV			1.32 V	66	60.50	40.10
3	#6933.00	60.3 PK	68.2	-7.9	1.41 V	261	52.70	7.60
4	#10400.00	67.0 PK	68.2	-1.2	1.12 V	80	52.00	15.00

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	114.7 PK			1.70 H	5	74.60	40.10
2	*5240.00	103.2 AV			1.70 H	5	63.10	40.10
3	5350.00	60.3 PK	74.0	-13.7	1.66 H	2	58.30	2.00
4	5350.00	48.3 AV	54.0	-5.7	1.66 H	2	46.30	2.00
5	#6987.00	57.5 PK	68.2	-10.7	1.44 H	358	49.60	7.90
6	#10480.00	64.7 PK	68.2	-3.5	1.00 H	56	49.60	15.10
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	111.9 PK			1.26 V	58	71.80	40.10
2	*5240.00	101.0 AV			1.26 V	58	60.90	40.10
3	5350.00	59.9 PK	74.0	-14.1	1.20 V	57	57.90	2.00
4	5350.00	47.9 AV	54.0	-6.1	1.20 V	57	45.90	2.00
5	#6987.00	58.2 PK	68.2	-10.0	1.19 V	255	50.30	7.90
6	#10480.00	66.4 PK	68.2	-1.8	1.08 V	77	51.30	15.10

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 (40MHz)

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	71.6 PK	74.0	-2.4	1.73 H	11	69.60	2.00
2	5150.00	52.3 AV	54.0	-1.7	1.73 H	11	50.30	2.00
3	*5190.00	110.4 PK			1.72 H	5	70.40	40.00
4	*5190.00	99.8 AV			1.72 H	5	59.80	40.00
5	#6920.00	55.2 PK	68.2	-13.0	1.00 H	180	47.60	7.60
6	#10380.00	63.3 PK	68.2	-4.9	1.00 H	50	48.30	15.00
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	67.6 PK	74.0	-6.4	1.44 V	66	65.60	2.00
2	5150.00	48.7 AV	54.0	-5.3	1.44 V	66	46.70	2.00
3	*5190.00	107.0 PK			1.46 V	65	67.00	40.00
4	*5190.00	96.5 AV			1.46 V	65	56.50	40.00
5	#6920.00	60.0 PK	68.2	-8.2	1.35 V	260	52.40	7.60
6	#10380.00	63.7 PK	68.2	-4.5	1.02 V	17	48.70	15.00

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	112.5 PK			1.70 H	4	72.40	40.10
2	*5230.00	101.7 AV			1.70 H	4	61.60	40.10
3	5350.00	59.9 PK	74.0	-14.1	1.70 H	7	57.90	2.00
4	5350.00	46.3 AV	54.0	-7.7	1.70 H	7	44.30	2.00
5	#6973.00	55.0 PK	68.2	-13.2	1.00 H	187	47.20	7.80
6	#10460.00	62.2 PK	68.2	-6.0	1.00 H	47	47.20	15.00
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	*5230.00	109.9 PK			1.46 V	62	69.80	40.10
2	*5230.00	98.8 AV			1.46 V	62	58.70	40.10
3	5350.00	58.8 PK	74.0	-15.2	1.49 V	61	56.80	2.00
4	5350.00	45.5 AV	54.0	-8.5	1.49 V	61	43.50	2.00
5	#6973.00	59.1 PK	68.2	-9.1	1.24 V	259	51.30	7.80
6	#10460.00	63.6 PK	68.2	-4.6	1.00 V	80	48.60	15.00

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.

802.11ac (80MHz)

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	68.5 PK	74.0	-5.5	1.74 H	2	66.50	2.00
2	5150.00	52.7 AV	54.0	-1.3	1.74 H	2	50.70	2.00
3	*5210.00	106.6 PK			1.71 H	5	66.50	40.10
4	*5210.00	95.3 AV			1.71 H	5	55.20	40.10
5	#6947.00	54.0 PK	68.2	-14.2	1.03 H	189	46.30	7.70
6	#10420.00	61.7 PK	68.2	-6.5	1.00 H	56	46.70	15.00
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	63.5 PK	74.0	-10.5	1.35 V	55	61.50	2.00
2	5150.00	49.1 AV	54.0	-4.9	1.35 V	55	47.10	2.00
3	*5210.00	104.4 PK			1.33 V	59	64.30	40.10
4	*5210.00	93.4 AV			1.33 V	59	53.30	40.10
5	#6947.00	59.3 PK	68.2	-8.9	1.46 V	253	51.60	7.70
6	#10420.00	62.0 PK	68.2	-6.2	1.00 V	75	47.00	15.00

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.

802.11n (20MHz)

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	60.6 PK	74.0	-13.4	1.58 H	360	58.00	2.60
2	#5714.90	49.3 AV	54.0	-4.7	1.58 H	360	46.70	2.60
3	#5722.90	77.2 PK	78.2	-1.0	1.26 H	2	74.60	2.60
4	*5745.00	113.5 PK			1.17 H	351	72.50	41.00
5	*5745.00	101.0 AV			1.17 H	351	60.00	41.00
6	11490.00	61.5 PK	74.0	-12.5	1.00 H	26	45.60	15.90
7	11490.00	48.8 AV	54.0	-5.2	1.00 H	26	32.90	15.90
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	#5714.90	61.9 PK	74.0	-12.1	1.20 V	59	59.30	2.60
2	#5714.90	47.0 AV	54.0	-7.0	1.20 V	59	44.40	2.60
3	#5722.90	71.3 PK	78.2	-6.9	1.18 V	57	68.70	2.60
4	*5745.00	109.2 PK			1.00 V	59	68.20	41.00
5	*5745.00	97.3 AV			1.00 V	59	56.30	41.00
6	11490.00	61.2 PK	74.0	-12.8	1.00 V	106	45.30	15.90
7	11490.00	49.3 AV	54.0	-4.7	1.00 V	106	33.40	15.90

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
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	115.4 PK			1.78 H	341	74.30	41.10
2	*5785.00	103.4 AV			1.78 H	341	62.30	41.10
3	11570.00	59.8 PK	74.0	-14.2	1.00 H	133	44.20	15.60
4	11570.00	47.5 AV	54.0	-6.5	1.00 H	133	31.90	15.60
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	*5785.00	108.6 PK			1.73 V	59	67.50	41.10
2	*5785.00	97.7 AV			1.73 V	59	56.60	41.10
3	11570.00	60.8 PK	74.0	-13.2	1.00 V	143	45.20	15.60
4	11570.00	48.5 AV	54.0	-5.5	1.00 V	143	32.90	15.60

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)
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	115.6 PK			1.54 H	340	74.50	41.10
2	*5825.00	103.7 AV			1.54 H	340	62.60	41.10
3	#5852.10	70.2 PK	78.2	-8.0	1.30 H	354	67.20	3.00
4	#5860.10	64.0 PK	74.0	-10.0	1.29 H	351	61.00	3.00
5	#5860.10	50.5 AV	54.0	-3.5	1.29 H	351	47.50	3.00
6	11650.00	59.7 PK	74.0	-14.3	1.00 H	0	44.10	15.60
7	11650.00	47.4 AV	54.0	-6.6	1.00 H	0	31.80	15.60
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	*5825.00	110.6 PK			1.85 V	55	69.50	41.10
2	*5825.00	98.7 AV			1.85 V	55	57.60	41.10
3	#5852.10	67.8 PK	78.2	-10.4	1.62 V	50	64.80	3.00
4	#5860.10	60.5 PK	74.0	-13.5	1.50 V	50	57.50	3.00
5	#5860.10	47.9 AV	54.0	-6.1	1.50 V	50	44.90	3.00
6	11650.00	60.8 PK	74.0	-13.2	1.00 V	131	45.20	15.60
7	11650.00	48.2 AV	54.0	-5.8	1.00 V	131	32.60	15.60

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)
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 (40MHz)

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	72.6 PK	74.0	-1.4	1.48 H	357	70.00	2.60
2	#5714.90	52.4 AV	54.0	-1.6	1.48 H	357	49.80	2.60
3	#5722.90	76.5 PK	78.2	-1.7	1.48 H	357	73.90	2.60
4	*5755.00	112.7 PK			1.60 H	4	71.70	41.00
5	*5755.00	101.4 AV			1.60 H	4	60.40	41.00
6	11510.00	59.3 PK	74.0	-14.7	1.00 H	59	43.60	15.70
7	11510.00	45.7 AV	54.0	-8.3	1.00 H	59	30.00	15.70
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	#5714.90	63.9 PK	74.0	-10.1	1.00 V	64	61.30	2.60
2	#5714.90	46.4 AV	54.0	-7.6	1.00 V	64	43.80	2.60
3	#5722.90	69.9 PK	78.2	-8.3	1.00 V	64	67.30	2.60
4	*5755.00	105.0 PK			1.00 V	62	64.00	41.00
5	*5755.00	94.1 AV			1.00 V	62	53.10	41.00
6	11550.00	60.2 PK	74.0	-13.8	1.00 V	21	44.60	15.60
7	11550.00	46.2 AV	54.0	-7.8	1.00 V	21	30.60	15.60

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)
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	112.7 PK			1.44 H	2	71.60	41.10
2	*5795.00	101.6 AV			1.44 H	2	60.50	41.10
3	#5852.10	66.3 PK	78.2	-11.9	1.47 H	2	63.30	3.00
4	#5860.10	63.0 PK	74.0	-11.0	1.48 H	5	60.00	3.00
5	#5860.10	48.9 AV	54.0	-5.1	1.48 H	5	45.90	3.00
6	11590.00	59.8 PK	74.0	-14.2	1.00 H	341	44.20	15.60
7	11590.00	46.6 AV	54.0	-7.4	1.00 H	341	31.00	15.60
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	*5795.00	107.0 PK			1.05 V	55	65.90	41.10
2	*5795.00	95.9 AV			1.05 V	55	54.80	41.10
3	#5852.10	59.3 PK	78.2	-18.9	1.14 V	52	56.30	3.00
4	#5860.10	58.7 PK	74.0	-15.3	1.14 V	57	55.70	3.00
5	#5860.10	45.6 AV	54.0	-8.4	1.14 V	57	42.60	3.00
6	11590.00	59.7 PK	74.0	-14.3	1.00 V	12	44.10	15.60
7	11590.00	47.1 AV	54.0	-6.9	1.00 V	12	31.50	15.60

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)
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 (80MHz)

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	72.5 PK	74.0	-1.5	1.65 H	10	69.90	2.60
2	#5714.90	52.9 AV	54.0	-1.1	1.65 H	10	50.30	2.60
3	#5722.90	73.0 PK	78.2	-5.2	1.65 H	10	70.40	2.60
4	*5775.00	108.0 PK			1.64 H	1	67.00	41.00
5	*5775.00	97.0 AV			1.64 H	1	56.00	41.00
6	11550.00	60.4 PK	74.0	-13.6	1.00 H	47	44.80	15.60
7	11550.00	45.8 AV	54.0	-8.2	1.00 H	47	30.20	15.60
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	#5714.90	64.1 PK	74.0	-9.9	1.00 V	51	61.50	2.60
2	#5714.90	45.4 AV	54.0	-8.6	1.00 V	51	42.80	2.60
3	#5722.90	67.1 PK	78.2	-11.1	1.00 V	51	64.50	2.60
4	*5775.00	103.0 PK			1.00 V	53	62.00	41.00
5	*5775.00	92.4 AV			1.00 V	53	51.40	41.00
6	11550.00	59.4 PK	74.0	-14.6	1.00 V	28	43.80	15.60
7	11550.00	45.4 AV	54.0	-8.6	1.00 V	28	29.80	15.60

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)
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

802.11n (20MHz)

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	33.88	32.1 QP	40.0	-7.9	2.00 H	98	47.90	-15.80
2	92.08	33.0 QP	43.5	-10.5	2.00 H	254	52.90	-19.90
3	167.74	30.3 QP	43.5	-13.2	2.00 H	85	44.50	-14.20
4	383.08	37.2 QP	46.0	-8.8	1.26 H	116	48.10	-10.90
5	625.58	37.3 QP	46.0	-8.7	1.26 H	225	43.10	-5.80
6	875.84	37.6 QP	46.0	-8.4	1.26 H	264	39.50	-1.90
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	33.88	34.0 QP	40.0	-6.0	1.99 V	293	49.80	-15.80
2	62.98	33.4 QP	40.0	-6.6	1.25 V	343	48.60	-15.20
3	92.08	37.1 QP	43.5	-6.4	1.00 V	295	57.00	-19.90
4	159.98	33.2 QP	43.5	-10.3	1.00 V	294	47.20	-14.00
5	383.08	39.4 QP	46.0	-6.6	1.49 V	189	50.30	-10.90
6	1000.00	37.2 QP	54.0	-16.8	1.25 V	59	37.20	0.00

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

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.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100612	Sep. 30, 2014	Sep. 29, 2015
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	847265/023	Oct. 21, 2014	Oct. 20, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 21, 2014	Jul. 20, 2015
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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 Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedure

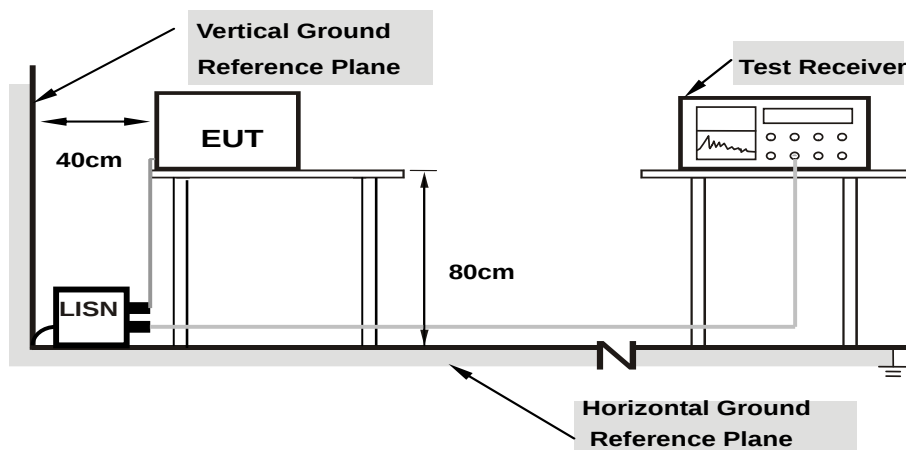
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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: All modes of operation were investigated and the worst-case emissions are reported.

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 Condition

Same as 4.1.6.

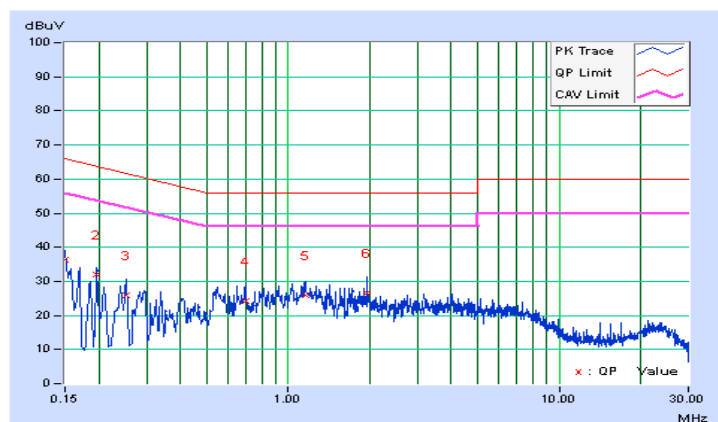
4.2.7 Test Results

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

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	0.08	36.28	19.05	36.36	19.13	66.00	56.00	-29.64	-36.87
2	0.19692	0.07	32.08	18.45	32.15	18.52	63.74	53.74	-31.59	-35.22
3	0.25166	0.07	25.93	13.99	26.00	14.06	61.70	51.70	-35.70	-37.64
4	0.69349	0.09	24.16	18.06	24.25	18.15	56.00	46.00	-31.75	-27.85
5	1.15878	0.12	25.83	18.57	25.95	18.69	56.00	46.00	-30.05	-27.31
6	1.96033	0.15	26.44	21.70	26.59	21.85	56.00	46.00	-29.41	-24.15

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.

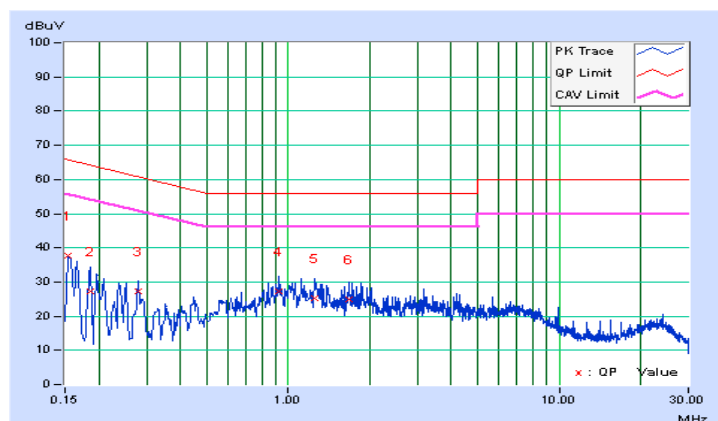


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.05	37.66	23.86	37.71	23.91	65.79	55.79	-28.08	-31.88
2	0.18519	0.05	27.36	7.60	27.41	7.65	64.25	54.25	-36.84	-46.60
3	0.27903	0.06	27.22	18.10	27.28	18.16	60.84	50.84	-33.57	-32.69
4	0.92418	0.09	27.14	21.86	27.23	21.95	56.00	46.00	-28.77	-24.05
5	1.24871	0.10	25.02	17.36	25.12	17.46	56.00	46.00	-30.88	-28.54
6	1.67099	0.12	24.80	20.01	24.92	20.13	56.00	46.00	-31.08	-25.87

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.

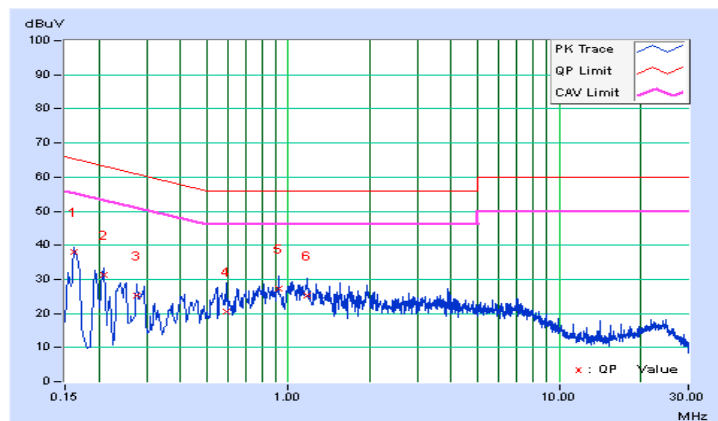


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16181	0.08	37.83	27.33	37.91	27.41	65.37	55.37	-27.46	-27.96
2	0.20865	0.07	31.11	17.17	31.18	17.24	63.26	53.26	-32.08	-36.02
3	0.27512	0.07	25.19	14.16	25.26	14.23	60.96	50.96	-35.70	-36.73
4	0.59183	0.09	20.39	13.82	20.48	13.91	56.00	46.00	-35.52	-32.09
5	0.92418	0.11	27.33	21.59	27.44	21.70	56.00	46.00	-28.56	-24.30
6	1.17442	0.12	25.05	17.61	25.17	17.73	56.00	46.00	-30.83	-28.27

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.

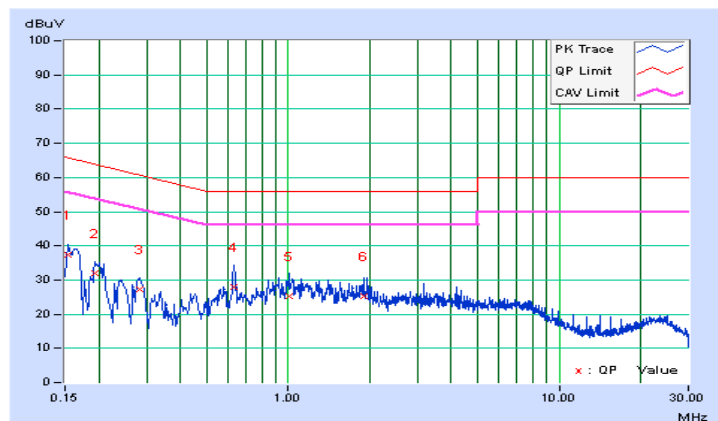


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.05	37.42	23.45	37.47	23.50	65.79	55.79	-28.32	-32.29
2	0.19305	0.05	32.04	16.80	32.09	16.85	63.90	53.90	-31.81	-37.05
3	0.28140	0.06	27.14	18.87	27.20	18.93	60.77	50.77	-33.58	-31.85
4	0.63093	0.08	27.79	18.86	27.87	18.94	56.00	46.00	-28.13	-27.06
5	1.00629	0.09	25.13	17.94	25.22	18.03	56.00	46.00	-30.78	-27.97
6	1.89386	0.13	25.11	16.73	25.24	16.86	56.00	46.00	-30.76	-29.14

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,

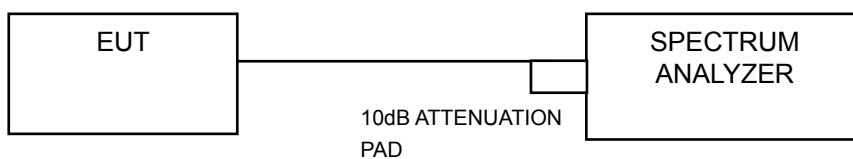
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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 (20MHz), 802.11n (40MHz)

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 (80MHz)

- 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) Detector = RMS.
- 8) Trace mode = max hold.
- 9) Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Result

POWER OUTPUT:

Test Mode A

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	CHAIN 3				
36	5180	16.64	16.18	16.58	16.22	175.005	22.43	30	PASS
40	5200	17.03	16.99	17.31	16.91	203.387	23.08	30	PASS
48	5240	18.73	18.03	19.22	19.34	307.639	24.88	30	PASS
149	5745	18.26	18.21	19.43	18.19	286.827	24.58	30	PASS
157	5785	19.15	20.25	19.71	18.80	357.548	25.53	30	PASS
165	5825	18.65	19.20	19.53	18.13	311.214	24.93	30	PASS

802.11n (20MHz)

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	CHAIN 3				
36	5180	16.96	17.74	16.82	16.68	203.731	23.09	30	PASS
40	5200	16.79	17.31	17.55	17.02	208.815	23.20	30	PASS
48	5240	17.02	17.39	17.42	16.59	205.990	23.14	30	PASS
149	5745	16.55	17.67	17.50	16.33	202.853	23.07	30	PASS
157	5785	16.57	17.30	17.89	16.79	208.368	23.19	30	PASS
165	5825	16.48	17.76	17.71	16.36	206.438	23.15	30	PASS

802.11n (40MHz)

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	CHAIN 3				
38	5190	16.84	17.10	17.58	17.11	208.276	23.19	30	PASS
46	5230	17.33	17.81	17.60	16.97	221.788	23.46	30	PASS
151	5755	16.88	17.83	18.22	16.90	224.779	23.52	30	PASS
159	5795	16.89	17.97	17.94	16.70	220.530	23.43	30	PASS

802.11ac (80MHz)

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	CHAIN 3				
42	5210	16.18	15.99	16.71	16.09	168.739	22.27	30	PASS
155	5775	16.02	16.64	16.82	16.10	174.948	22.43	30	PASS

Test Mode B

802.11n (20MHz)

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	CHAIN 3				
36	5180	16.96	17.74	16.82	16.68	203.731	23.09	25.96	PASS
40	5200	16.79	17.31	17.55	17.02	208.815	23.20	25.96	PASS
48	5240	17.02	17.39	17.42	16.59	205.990	23.14	25.96	PASS
149	5745	15.89	15.90	16.36	15.81	159.078	22.02	25.14	PASS
157	5785	16.57	17.30	17.89	16.79	208.368	23.19	25.14	PASS
165	5825	16.48	17.76	17.71	16.36	206.438	23.15	25.14	PASS

NOTE:

For U-NII-1 Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6 \text{ dBi}$, so the power limit shall be reduced to $30 - (10.04 - 6) = 25.96 \text{ dBm}$.

For U-NII-3 Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6 \text{ dBi}$, so the power limit shall be reduced to $30 - (10.86 - 6) = 25.14 \text{ dBm}$.

802.11n (40MHz)

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	CHAIN 3				
38	5190	14.82	15.12	15.20	14.88	126.722	21.03	25.96	PASS
46	5230	17.33	17.81	17.60	16.97	221.788	23.46	25.96	PASS
151	5755	15.39	16.21	16.36	15.46	154.784	21.90	25.14	PASS
159	5795	16.89	17.97	17.94	16.70	220.530	23.43	25.14	PASS

NOTE:

For U-NII-1 Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6 \text{ dBi}$, so the power limit shall be reduced to $30 - (10.04 - 6) = 25.96 \text{ dBm}$.

For U-NII-3 Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6 \text{ dBi}$, so the power limit shall be reduced to $30 - (10.86 - 6) = 25.14 \text{ dBm}$.

802.11ac (80MHz)

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	CHAIN 3				
42	5210	14.83	15.27	15.46	14.89	130.048	21.14	25.96	PASS
155	5775	16.02	16.64	16.82	16.10	174.948	22.43	25.14	PASS

NOTE:

For U-NII-1 Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6 \text{ dBi}$, so the power limit shall be reduced to $30 - (10.04 - 6) = 25.96 \text{ dBm}$.

For U-NII-3 Band: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6 \text{ dBi}$, so the power limit shall be reduced to $30 - (10.86 - 6) = 25.14 \text{ dBm}$.

26dB BANDWIDTH:

Test Mode A

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
36	5180	22.97	23.65	23.19	23.36	PASS
40	5200	23.00	23.74	22.81	23.45	PASS
48	5240	23.71	23.95	22.57	23.94	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
36	5180	24.59	25.27	23.73	24.11	PASS
40	5200	25.01	25.52	24.11	24.08	PASS
48	5240	24.78	24.92	24.01	23.77	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
38	5190	44.43	44.10	44.10	43.91	PASS
46	5230	44.39	43.96	44.35	43.94	PASS

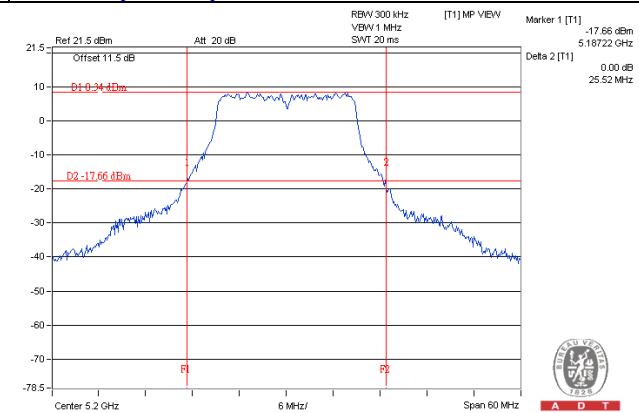
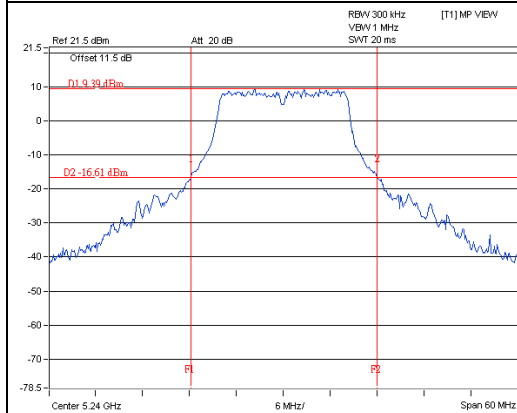
802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
42	5210	83.85	85.29	83.58	82.36	PASS

SPECTRUM PLOT OF WORST VALUE

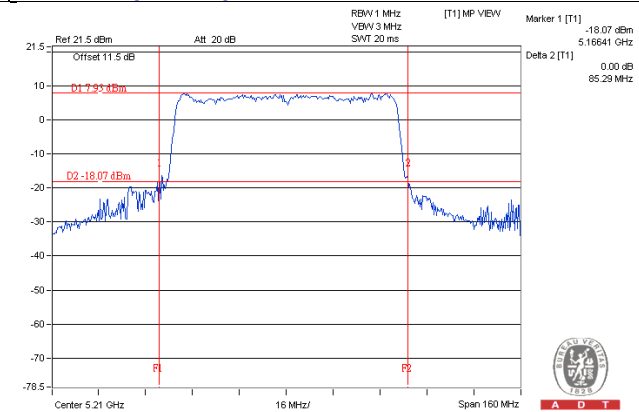
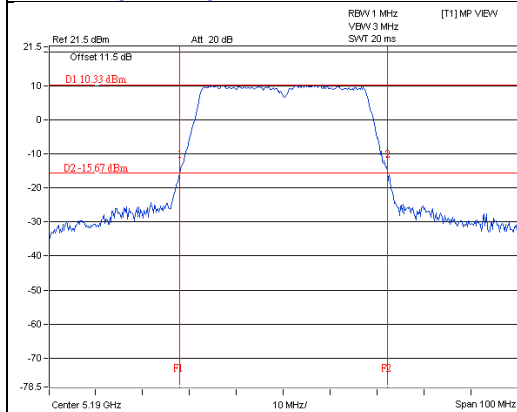
802.11a

802.11n (20MHz)



802.11n (40MHz)

802.11ac (80MHz)



Test Mode B

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
36	5180	24.59	25.27	23.73	24.11	PASS
40	5200	25.01	25.52	24.11	24.08	PASS
48	5240	24.78	24.92	24.01	23.77	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
38	5190	44.39	43.76	44.07	43.83	PASS
46	5230	44.39	43.96	44.35	43.94	PASS

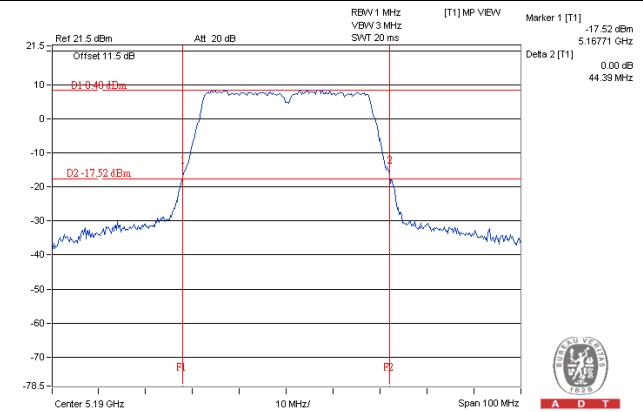
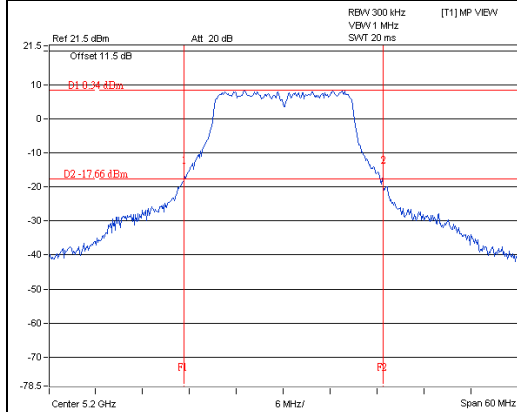
802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
42	5210	83.88	82.01	83.63	83.48	PASS

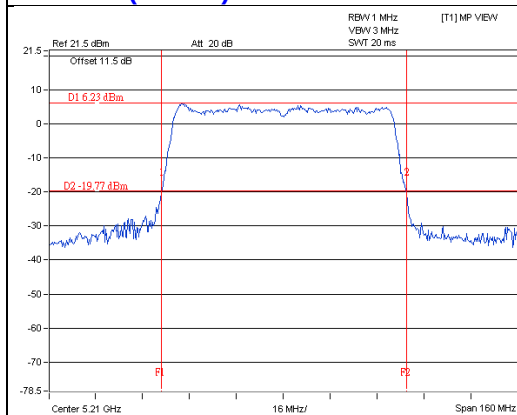
SPECTRUM PLOT OF WORST VALUE

802.11n (20MHz)

802.11n (40MHz)



802.11ac (80MHz)

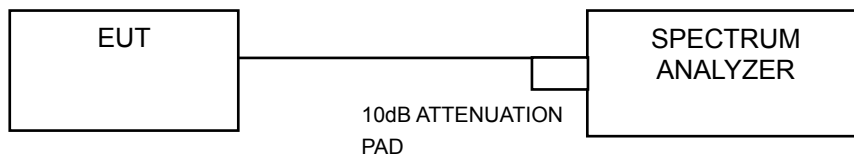


4.4 Peak Power Spectral Density Measurement

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:

For 802.11a, 802.11n (20MHz)

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW ≥ 1 MHz, 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

For 802.11n (40MHz), 802.11ac (80MHz)

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW ≥ 1 MHz, 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 = 500 kHz, Set VBW $\geq$ 3 RBW, 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 $10 \log (1/\text{duty cycle})$
- 6) 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 $\text{BWCF} = 10 \log (500 \text{ kHz}/300 \text{ kHz})$

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

Test Mode A

802.11a

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)				TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3			
36	5180	-0.30	0.03	0.61	-0.13	6.09	12.96	PASS
40	5200	1.37	1.29	1.95	1.33	7.51	12.96	PASS
48	5240	2.72	2.46	2.77	3.53	8.91	12.96	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. For U-NII-1 Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $17 - (10.04 - 6) = 12.96 \text{ dBm}$.

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)				TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3			
36	5180	0.71	1.31	1.54	0.97	7.16	12.96	PASS
40	5200	0.78	1.53	1.73	0.78	7.25	12.96	PASS
48	5240	0.68	1.27	2.16	0.82	7.29	12.96	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. For U-NII-1 Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $17 - (10.04 - 6) = 12.96 \text{ dBm}$.

802.11n (40MHz)

CHAN.	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	CHAIN 3					
38	5190	-2.52	-2.21	-1.29	-2.97	3.82	0.13	3.95	12.96	PASS
46	5230	-2.06	-1.75	-0.83	-1.75	4.45	0.13	4.58	12.96	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. **For U-NII-1 Band:**
 $\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17-(10.04-6) = 12.96\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

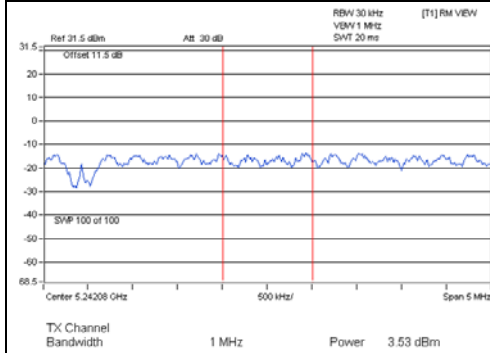
CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)				TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3					
42	5210	-5.41	-4.95	-4.54	-5.79	0.87	0.22	1.09	12.96	PASS

- 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. **For U-NII-1 Band:**
 $\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17-(10.04-6) = 12.96\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

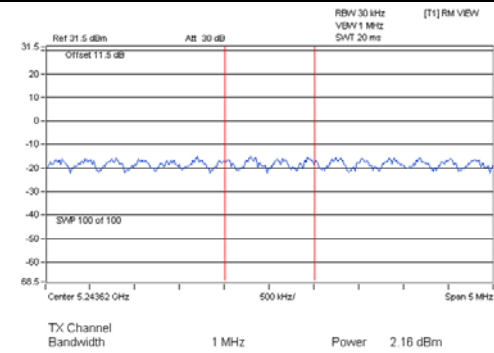
SPECTRUM PLOT OF WORST VALUE

802.11a

802.11n (20MHz)



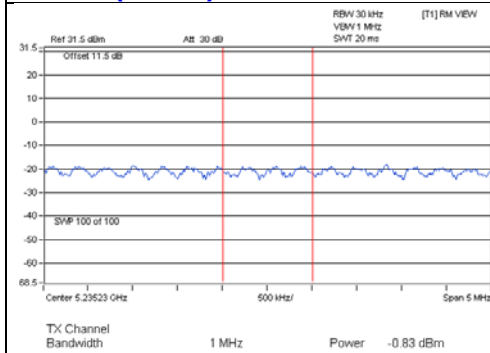
A D T



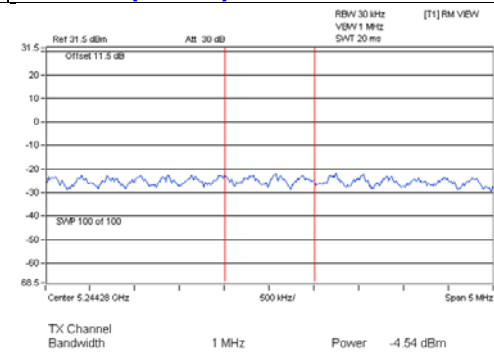
A D T

802.11n (40MHz)

802.11ac (80MHz)



A D T



A D T

Test Mode B

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)				TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3			
36	5180	0.71	1.31	1.54	0.97	7.16	12.96	PASS
40	5200	0.78	1.53	1.73	0.78	7.25	12.96	PASS
48	5240	0.68	1.27	2.16	0.82	7.29	12.96	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. For U-NII-1 Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $17 - (10.04 - 6) = 12.96 \text{ dBm}$.

802.11n (40MHz)

CHAN.	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	CHAIN 3					
38	5190	-4.83	-4.01	-3.01	-4.29	2.04	0.13	2.17	12.96	PASS
46	5230	-2.06	-1.75	-0.83	-1.75	4.45	0.13	4.58	12.96	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. For U-NII-1 Band:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $17 - (10.04 - 6) = 12.96 \text{ dBm}$.

3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (80MHz)

CHAN.	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	CHAIN 3					
42	5210	-7.29	-6.69	-6.01	-7.25	-0.76	0.22	-0.54	12.96	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. For U-NII-1 Band:

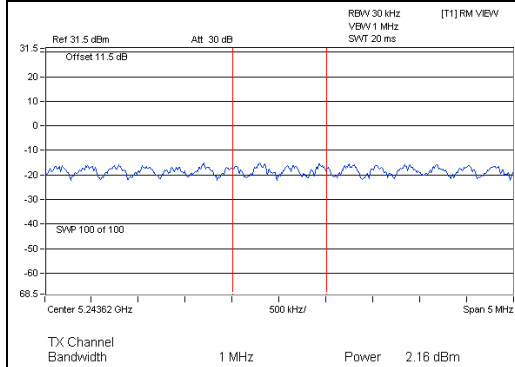
Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.04 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $17 - (10.04 - 6) = 12.96 \text{ dBm}$.

3. Refer to section 3.3 for duty cycle spectrum plot.

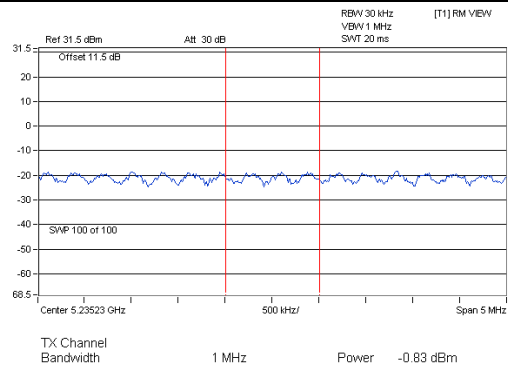
SPECTRUM PLOT OF WORST VALUE

802.11n (20MHz)

802.11n (40MHz)

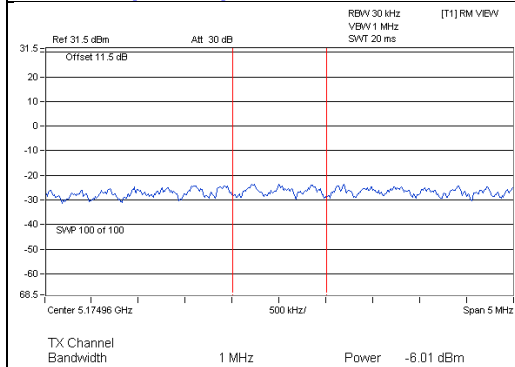


A D T



A D T

802.11ac (80MHz)



A D T

For U-NII-3 Band

Test Mode A

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/300k Hz)	PSD (dBm/500k Hz)	10 log (N=4) dB	Total PSD (dBm/500k Hz)	Limit (dBm/500k Hz)	PASS /FAIL
0	149	5745	-3.79	-1.57	6.02	4.45	25.14	PASS
	157	5785	-3.36	-1.14	6.02	4.88	25.14	PASS
	165	5825	-3.41	-1.19	6.02	4.83	25.14	PASS
1	149	5745	-2.59	-0.37	6.02	5.65	25.14	PASS
	157	5785	-1.74	0.48	6.02	6.50	25.14	PASS
	165	5825	-2.73	-0.51	6.02	5.51	25.14	PASS
2	149	5745	-2.41	-0.19	6.02	5.83	25.14	PASS
	157	5785	-1.74	0.48	6.02	6.50	25.14	PASS
	165	5825	-3.14	-0.92	6.02	5.10	25.14	PASS
3	149	5745	-4.29	-2.07	6.02	3.95	25.14	PASS
	157	5785	-3.23	-1.01	6.02	5.01	25.14	PASS
	165	5825	-4.42	-2.20	6.02	3.82	25.14	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (10.86 - 6) = 25.14\text{dBm}$.

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300k Hz)	PSD (dBm/500k Hz)	10 log (N=4) dB	Total PSD (dBm/500k Hz)	Limit (dBm/500k Hz)	PASS /FAIL
0	149	5745	-5.60	-3.38	6.02	2.64	25.14	PASS
	157	5785	-5.79	-3.57	6.02	2.45	25.14	PASS
	165	5825	-6.04	-3.82	6.02	2.20	25.14	PASS
1	149	5745	-4.31	-2.09	6.02	3.93	25.14	PASS
	157	5785	-4.67	-2.45	6.02	3.57	25.14	PASS
	165	5825	-5.02	-2.80	6.02	3.22	25.14	PASS
2	149	5745	-4.20	-1.98	6.02	4.04	25.14	PASS
	157	5785	-4.53	-2.31	6.02	3.71	25.14	PASS
	165	5825	-4.99	-2.77	6.02	3.25	25.14	PASS
3	149	5745	-5.80	-3.58	6.02	2.44	25.14	PASS
	157	5785	-6.04	-3.82	6.02	2.20	25.14	PASS
	165	5825	-6.33	-4.11	6.02	1.91	25.14	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (10.86 - 6) = 25.14\text{dBm}$.

802.11n (40MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=4) dB	Total PSD without Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm /500kHz)	PASS /FAIL
0	151	5755	-8.94	-6.72	6.02	-0.70	0.13	-0.57	25.14	PASS
	159	5795	-8.98	-6.76	6.02	-0.74	0.13	-0.61	25.14	PASS
1	151	5755	-7.43	-5.21	6.02	0.81	0.13	0.94	25.14	PASS
	159	5795	-7.73	-5.51	6.02	0.51	0.13	0.64	25.14	PASS
2	151	5755	-7.58	-5.36	6.02	0.66	0.13	0.79	25.14	PASS
	159	5795	-7.88	-5.66	6.02	0.36	0.13	0.49	25.14	PASS
3	151	5755	-9.33	-7.11	6.02	-1.09	0.13	-0.96	25.14	PASS
	159	5795	-8.99	-6.77	6.02	-0.75	0.13	-0.62	25.14	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (10.86 - 6) = 25.14 \text{ dBm}$.

802.11ac (80MHz)

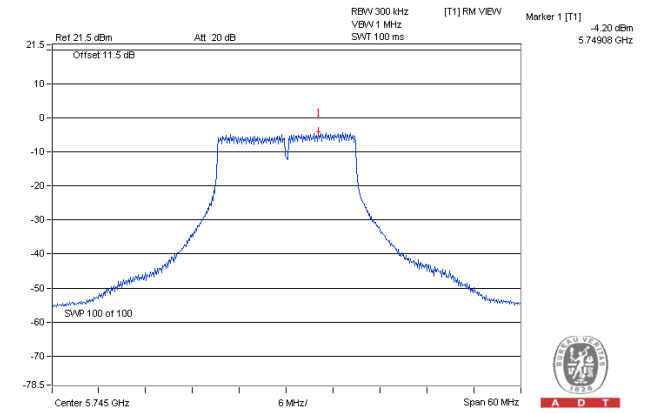
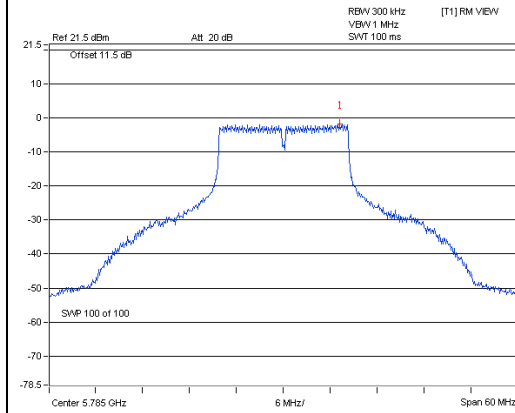
TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=4) dB	Total PSD without Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm /500kHz)	PASS /FAIL
0	155	5775	-12.24	-10.02	6.02	-4.00	0.22	-3.78	25.14	PASS
1	155	5775	-11.28	-9.06	6.02	-3.04	0.22	-2.82	25.14	PASS
2	155	5775	-11.41	-9.19	6.02	-3.17	0.22	-2.95	25.14	PASS
3	155	5775	-12.50	-10.28	6.02	-4.26	0.22	-4.04	25.14	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (10.86 - 6) = 25.14 \text{ dBm}$.

SPECTRUM PLOT OF WORST VALUE

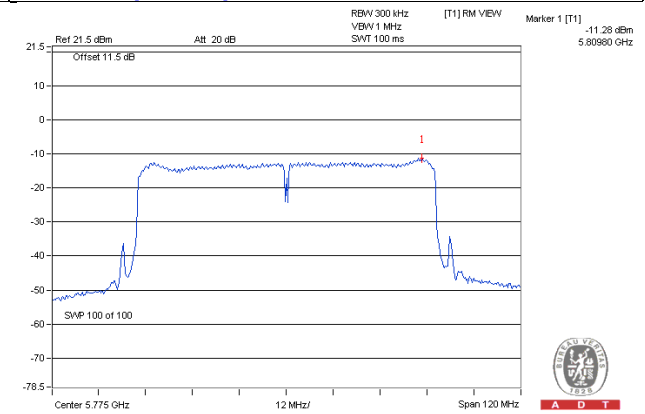
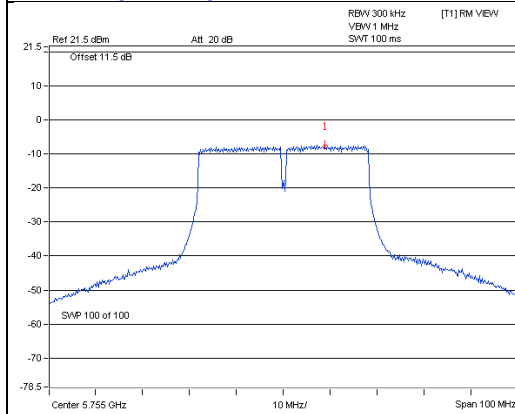
802.11a

802.11n (20MHz)



802.11n (40MHz)

802.11ac (80MHz)



Test Mode B

802.11n (20MHz)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300k Hz)	PSD (dBm/500k Hz)	10 log (N=4) dB	Total PSD (dBm/500k Hz)	Limit (dBm/500k Hz)	PASS /FAIL
0	149	5745	-6.77	-4.55	6.02	1.47	25.14	PASS
	157	5785	-5.79	-3.57	6.02	2.45	25.14	PASS
	165	5825	-6.04	-3.82	6.02	2.20	25.14	PASS
1	149	5745	-5.27	-3.05	6.02	2.97	25.14	PASS
	157	5785	-4.67	-2.45	6.02	3.57	25.14	PASS
	165	5825	-5.02	-2.80	6.02	3.22	25.14	PASS
2	149	5745	-5.73	-3.51	6.02	2.51	25.14	PASS
	157	5785	-4.53	-2.31	6.02	3.71	25.14	PASS
	165	5825	-4.99	-2.77	6.02	3.25	25.14	PASS
3	149	5745	-5.75	-3.53	6.02	2.49	25.14	PASS
	157	5785	-6.04	-3.82	6.02	2.20	25.14	PASS
	165	5825	-6.33	-4.11	6.02	1.91	25.14	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (10.86 - 6) = 25.14 \text{ dBm}$.

802.11n (40MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=4) dB	Total PSD without Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm /500kHz)	PASS /FAIL
0	151	5755	-10.24	-8.02	6.02	-2.00	0.13	-1.87	25.14	PASS
	159	5795	-8.98	-6.76	6.02	-0.74	0.13	-0.61	25.14	PASS
1	151	5755	-8.32	-6.10	6.02	-0.08	0.13	0.05	25.14	PASS
	159	5795	-7.73	-5.51	6.02	0.51	0.13	0.64	25.14	PASS
2	151	5755	-8.94	-6.72	6.02	-0.70	0.13	-0.57	25.14	PASS
	159	5795	-7.88	-5.66	6.02	0.36	0.13	0.49	25.14	PASS
3	151	5755	-8.97	-6.75	6.02	-0.73	0.13	-0.60	25.14	PASS
	159	5795	-8.99	-6.77	6.02	-0.75	0.13	-0.62	25.14	PASS

NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (10.86 - 6) = 25.14 \text{ dBm}$.

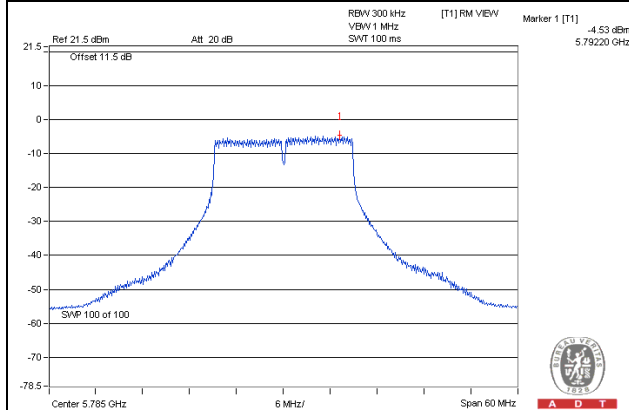
802.11ac (80MHz)

TX chain	Chan.	Freq. (MHz)	PSD (dBm /300kHz)	PSD (dBm /500kHz)	10 log (N=4) dB	Total PSD without Duty Factor (dBm/500kHz)	Duty Factor	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm /500kHz)	PASS /FAIL
0	155	5775	-12.24	-10.02	6.02	-4.00	0.22	-3.78	25.14	PASS
1	155	5775	-11.28	-9.06	6.02	-3.04	0.22	-2.82	25.14	PASS
2	155	5775	-11.41	-9.19	6.02	-3.17	0.22	-2.95	25.14	PASS
3	155	5775	-12.50	-10.28	6.02	-4.26	0.22	-4.04	25.14	PASS

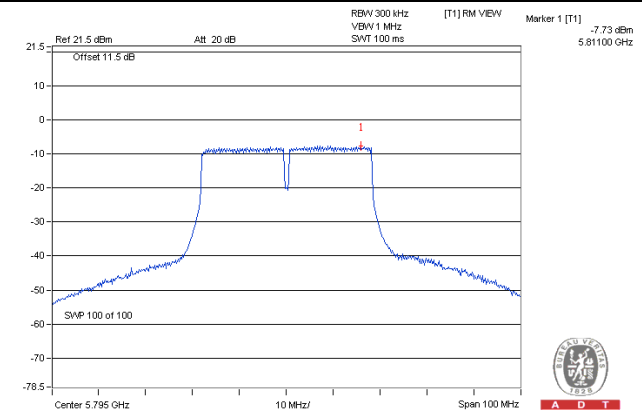
NOTE: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/4] = 10.86 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (10.86 - 6) = 25.14 \text{ dBm}$.

SPECTRUM PLOT OF WORST VALUE

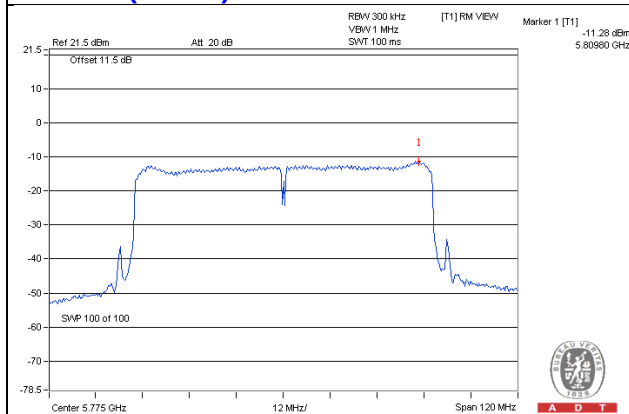
802.11n (20MHz)



802.11n (40MHz)



802.11ac (80MHz)

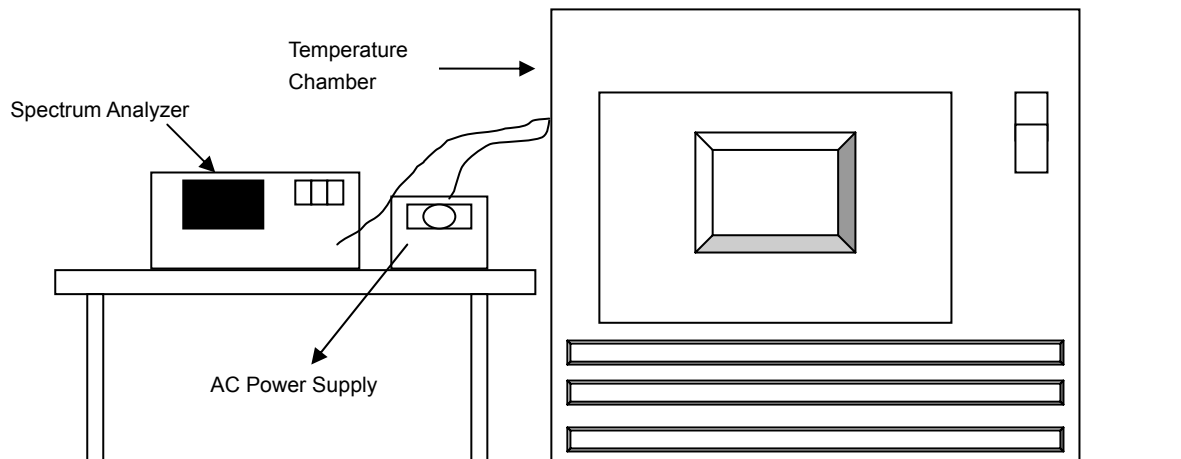


4.5 Frequency Stability Measurement

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: 5240MHz									
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	5239.9923	-0.00015	5239.9911	-0.00017	5239.9914	-0.00016	5239.9937	-0.00012
40	120	5239.9956	-0.00008	5239.9951	-0.00009	5239.9956	-0.00008	5239.9969	-0.00006
30	120	5240.0022	0.00004	5240.0009	0.00002	5239.9982	-0.00003	5240.0002	0.00000
20	120	5239.9866	-0.00026	5239.9871	-0.00025	5239.9852	-0.00028	5239.9888	-0.00021
10	120	5240.0065	0.00012	5240.0096	0.00018	5240.0101	0.00019	5240.0086	0.00016
0	120	5240.0000	0.00000	5240.0000	0.00000	5240.0011	0.00002	5239.9997	-0.00001
-10	120	5239.9837	-0.00031	5239.9824	-0.00034	5239.9822	-0.00034	5239.9806	-0.00037
-20	120	5240.0014	0.00003	5240.0058	0.00011	5240.0064	0.00012	5240.0025	0.00005
-30	120	5239.9978	-0.00004	5239.9937	-0.00012	5239.9948	-0.00010	5239.9971	-0.00006

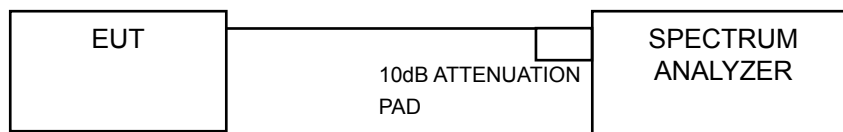
FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5239.9860	-0.00027	5239.9875	-0.00024	5239.9861	-0.00027	5239.9881	-0.00023
	120	5239.9866	-0.00026	5239.9871	-0.00025	5239.9852	-0.00028	5239.9888	-0.00021
	102	5239.9857	-0.00027	5239.9880	-0.00023	5239.9862	-0.00026	5239.9885	-0.00022

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

Test Mode A

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)				MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
149	5745	16.44	16.46	16.44	16.48	0.5	PASS
157	5785	16.43	16.42	16.40	16.45	0.5	PASS
165	5825	16.43	16.42	16.43	16.43	0.5	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)				MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
149	5745	17.67	17.69	17.68	17.69	0.5	PASS
157	5785	17.70	17.72	17.67	17.69	0.5	PASS
165	5825	17.66	17.67	17.69	17.69	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)				MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
151	5755	36.46	36.49	36.42	36.39	0.5	PASS
159	5795	36.48	36.46	36.47	36.50	0.5	PASS

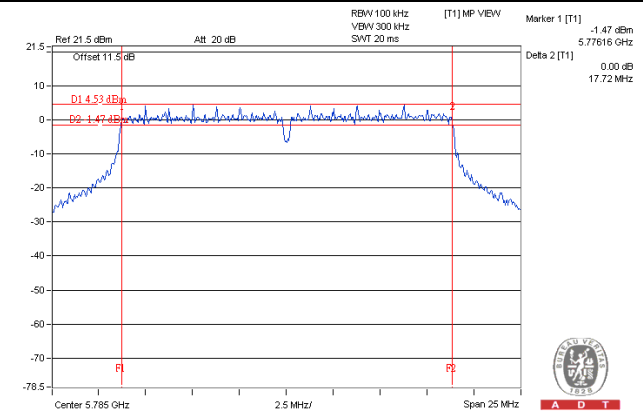
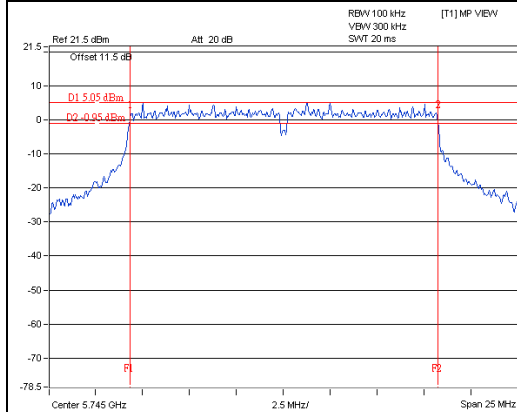
802.11ac (80MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)				MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
155	5775	75.62	75.51	75.47	74.92	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

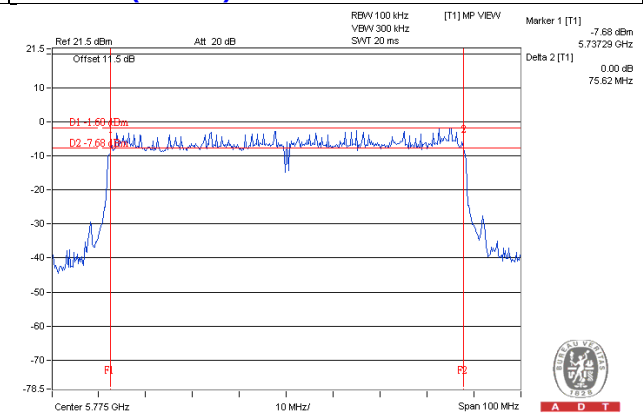
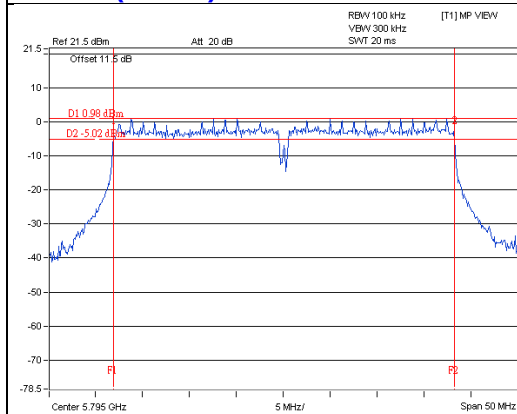
802.11a

802.11n (20MHz)



802.11n (40MHz)

802.11ac (80MHz)



Test Mode B

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)				MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
149	5745	17.69	17.67	17.67	17.67	0.5	PASS
157	5785	17.70	17.72	17.67	17.69	0.5	PASS
165	5825	17.66	17.67	17.69	17.69	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)				MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
151	5755	36.44	36.48	36.42	36.42	0.5	PASS
159	5795	36.48	36.46	36.47	36.50	0.5	PASS

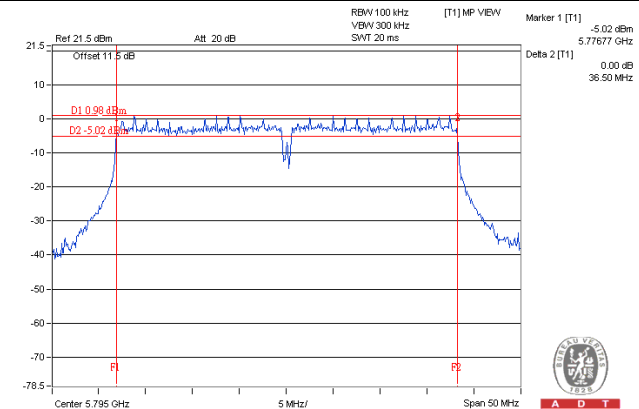
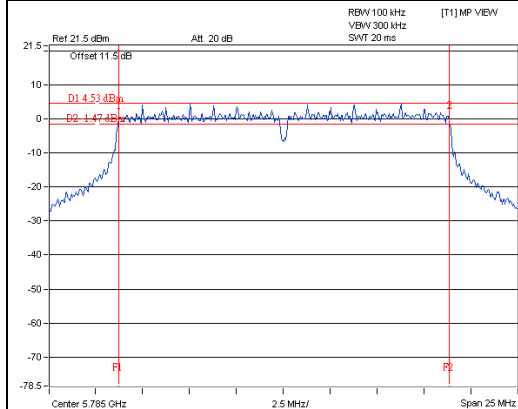
802.11ac (80MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)				MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
155	5775	75.62	75.51	75.47	74.92	0.5	PASS

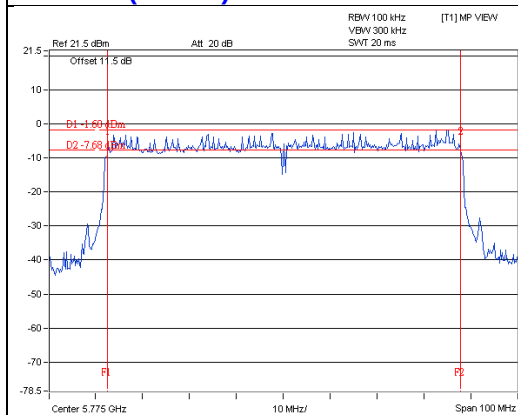
SPECTRUM PLOT OF WORST VALUE

802.11n (20MHz)

802.11n (40MHz)



802.11ac (80MHz)



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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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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