

FCC Test Report

Report No.: RF120530E05E-1

FCC ID: KA2AP2690B1

Test Model: DAP-2690

Received Date: Oct. 26, 2015

Test Date: Nov. 02 to 12, 2015

Issued Date: Nov. 17, 2015

Applicant: D-Link Corporation

Address: No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.

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

Lab Address: No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.

Test Location (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.

Test Location (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.

Test Location (3): E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes	10
3.2.1 Test Mode Applicability and Tested Channel Detail	11
3.3 Duty Cycle of Test Signal	13
3.4 Description of Support Units	14
3.4.1 Configuration of System under Test	15
3.5 General Description of Applied Standard	17
4 Test Types and Results	18
4.1 Radiated Emission and Bandedge Measurement	18
4.1.1 Limits of Radiated Emission and Bandedge Measurement	18
4.1.2 Test Instruments	19
4.1.3 Test Procedure	21
4.1.4 Deviation from Test Standard	21
4.1.5 Test Setup	22
4.1.6 EUT Operating Condition	22
4.1.7 Test Results	23
4.2 Conducted Emission Measurement	40
4.2.1 Limits of Conducted Emission Measurement	40
4.2.2 Test Instruments	40
4.2.3 Test Procedure	41
4.2.4 Deviation from Test Standard	41
4.2.5 Test Setup	41
4.2.6 EUT Operating Condition	41
4.2.7 Test Results (Mode 1)	42
4.2.8 Test Results (Mode 2)	44
4.2.9 Test Results (Mode 3)	46
4.3 Transmit Power Measurement	48
4.3.1 Limits of Transmit Power Measurement	48
4.3.2 Test Setup	48
4.3.3 Test Instruments	48
4.3.4 Test Procedure	49
4.3.5 Deviation from Test Standard	49
4.3.6 EUT Operating Condition	49
4.3.7 Test Result	50
4.4 Peak Power Spectral Density Measurement	51
4.4.1 Limits of Peak Power Spectral Density Measurement	51
4.4.2 Test Setup	51
4.4.3 Test Instruments	51
4.4.4 Test Procedure	52
4.4.5 Deviation from Test Standard	52
4.4.6 EUT Operating Condition	52
4.4.7 Test Results	53
4.5 Frequency Stability Measurement	57
4.5.1 Limits of Frequency Stability Measurement	57
4.5.2 Test Setup	57
4.5.3 Test Instruments	57
4.5.4 Test Procedure	57

4.5.5	Deviation from Test Standard	58
4.5.6	EUT Operating Condition	58
4.5.7	Test Results	59
4.6	6dB Bandwidth Measurment.....	60
4.6.1	Limits of 6dB Bandwidth Measurement.....	60
4.6.2	Test Setup.....	60
4.6.3	Test Instruments	60
4.6.4	Test Procedure	60
4.6.5	Deviation from Test Standard	60
4.6.6	EUT Operating Condition	60
4.6.7	Test Results	61
5	Pictures of Test Arrangements.....	63
	Appendix – Information on the Testing Laboratories	64



A D T

Release Control Record

Issue No.	Description	Date Issued
RF120530E05E-1	Original release.	Nov. 17, 2015



A D T

1 Certificate of Conformity

Product: DAP-2690 AirPremier N Dual Band Concurrent PoE Access Point

Brand: D-Link

Test Model: DAP-2690

Sample Status: MASS-PRODUCTION

Applicant: D-Link Corporation

Test Date: Nov. 02 to 12, 2015

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

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

Prepared by :

Midoli Peng / Specialist

Date:

Nov. 17, 2015

Approved by :

May Chen / Manager

Date:

Nov. 17, 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 -3.50dB at 0.41384MHz.
15.407(b)(1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5150.00MHz
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 SMA Plug Reverse not a standard connector.

NOTE: 1 The EUT was operating in 2400 ~ 2483.5MHz, 5150~5250MHz and 5725~5850MHz frequencies band. This report was recorded the RF parameters including 5150~5250MHz and 5725~5850MHz. For the 2400 ~ 2483.5MHz RF parameters was recorded in another test report.

2 report is prepared for FCC Class II permissive change. (Upgrade the standard to section 15.407 under new rule and added one new adapter).

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.19 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.40 dB
	6GHz ~ 18GHz	3.73 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	DAP-2690 AirPremier N Dual Band Concurrent PoE Access Point
Brand	D-Link
Test Model	DAP-2690
Status of EUT	MASS-PRODUCTION
Power Supply Rating	DC 48V from Power adapter or POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps
Operating Frequency	For 15.407 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
Number of Channel	For 15.407 9 for 802.11a, 802.11n (HT20) 4 for 802.11n (HT40)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	For 15.407(5.18 ~ 5.24GHz) 802.11a: 476.199mW 802.11n (HT20): 480.816mW 802.11n (HT40): 523.384mW For 15.407(5.745 ~ 5.825GHz) 802.11a: 477.909mW 802.11n (HT20): 468.143mW 802.11n (HT40): 258.64mW
	For 15.247 802.11b: 283.170mW 802.11g: 424.097mW 802.11n (HT20): 266.886mW 802.11n (HT40): 62.886mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1 POE x 1
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC Class II change. The difference compared with the Report No.: RF120530E05-1 R1 design is as the following:

- ◆ Upgraded the standard to section 15.407 under new rule.
- ◆ Change one new adapter as below table:

Original adapter		
Brand	Model No.	Spec.
LEI	MU24-B480050-A1	Input: 100-240V, 1.0A, 50/60Hz Output: 48V, 0.5A DC output cable (Unshielded, 1.5m)
Newly adapter		
Brand	Model No.	Spec.
LEI	MU24A5480050-A1	Input: 100-240V, 0.7A, 50/60Hz Output: 48V, 0.5A DC output cable (Unshielded, 1.2m)

2. According to above conditions, all test items of U-NII-1 & U-NII-3 band need to be performed. And all data was verified to meet the requirements.
3. There are 2.4GHz and 5GHz technology used for the EUT.
4. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
5. The EUT must be supplied with POE or a power adapter as following table:

POE 1		
Brand	Model No.	Spec.
Lanready	PE03G	Output: 12-48V , 1A
POE 2		
Manufacture	Model No.	Spec.
Bothhand	EBU-101G-T2 LF	Output: 48V, 0.4A
Adapter		
Brand	Model No.	Spec.
LEI	MU24A5480050-A1	Input: 100-240V, 0.7A, 50/60Hz Output: 48V, 0.5A DC output cable (Unshielded, 1.2m)

6. The EUT was pre-tested in chamber under the following modes:

Pre-test Mode	Description
Mode A	EUT + new adapter
Mode B	EUT + POE 1 + new adapter
Mode C	EUT + POE 2 + new adapter

The worse radiated emission was found in **Mode A**. Therefore only the test data of the modes were recorded in this report.

7. The antennas provided to the EUT, please refer to the following table:

For 2.4GHz					
Transmitter Circuit	Manufacture	Model name	Antenna Gain Gain (dBi)	Antenna Type	Connector
Chain (0)	WHA YU GROUP	NP-9022	4.29	Dipole	SMA Plug Reverse
Chain (1)	WHA YU GROUP	NP-9022	4.29	Dipole	SMA Plug Reverse
For 5GHz					
Transmitter Circuit	Manufacture	Model name	Antenna Gain Gain (dBi)	Antenna Type	Connector
Chain (0)	WHA YU GROUP	SSR-12968	5G Band1: 5.646 5G Band2: 6.270 5G Band3: 5.428 5G Band4: 5.264	Dipole	SMA Plug Reverse
Chain (1)	WHA YU GROUP	SSR-12968	5G Band1: 5.646 5G Band2: 6.270 5G Band3: 5.428 5G Band4: 5.264	Dipole	SMA Plug Reverse

8. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
5GHz Band			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX

9. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

FOR 5745 ~ 5825MHz:

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

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

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE $<$ 1G	PLC	APCM	
1	-	√	√	√	EUT : Laying-flat type + new adapter
2	-	-	√	-	EUT : Laying-flat type + POE 1 + new adapter
3	-	-	√	-	EUT : Laying-flat type + POE 2 + new adapter
4	√	-	-	-	EUT : Stand-up type + new adapter

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

RE $<$ 1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: 1. The test mode was reference to the worst case in the original test report.

2. "-" means no effect.

Radiated Emission Test (Above 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	13.5

Radiated Emission Test (Below 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT40)	5180-5240	38 to 46	46	OFDM	BPSK	13.5
	5745-5825	151 to 159				

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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT40)	5180-5240	38 to 46	46	OFDM	BPSK	13.5
	5745-5825	151 to 159				

Antenna Port Conducted Measurement:

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	13.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 74%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	26deg. C, 70%RH	120Vac, 60Hz	Jyunchun Lin
PLC	24deg. C, 56%RH	120Vac, 60Hz	Jason Huang
	25deg. C, 57%RH		
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.



3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab

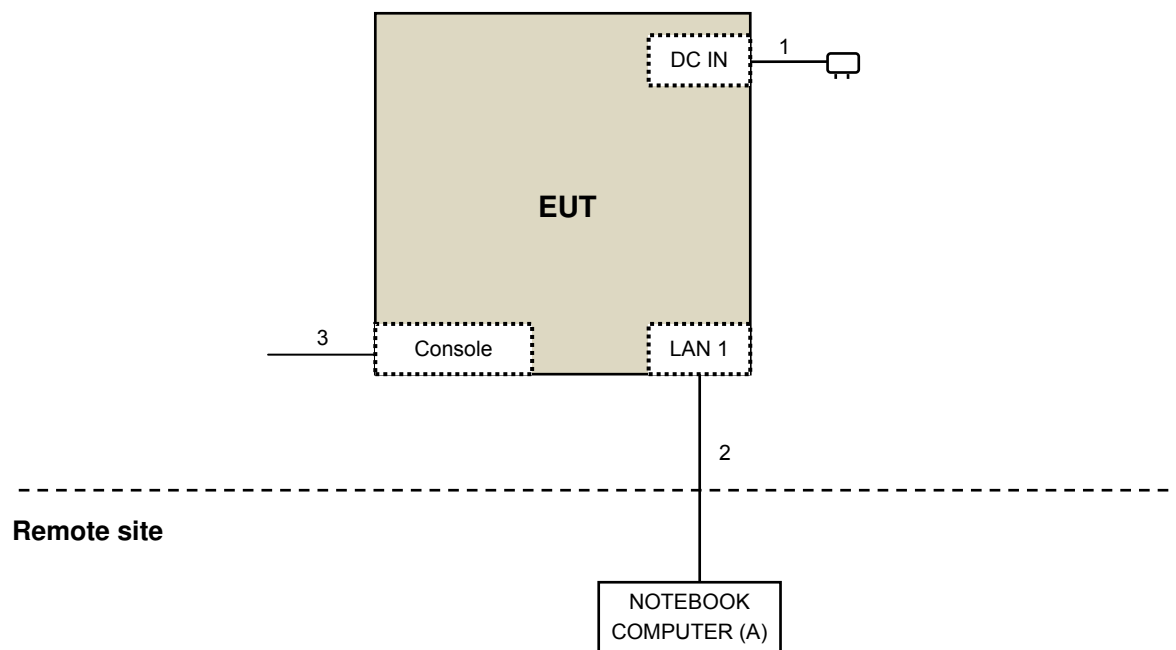
Note:

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

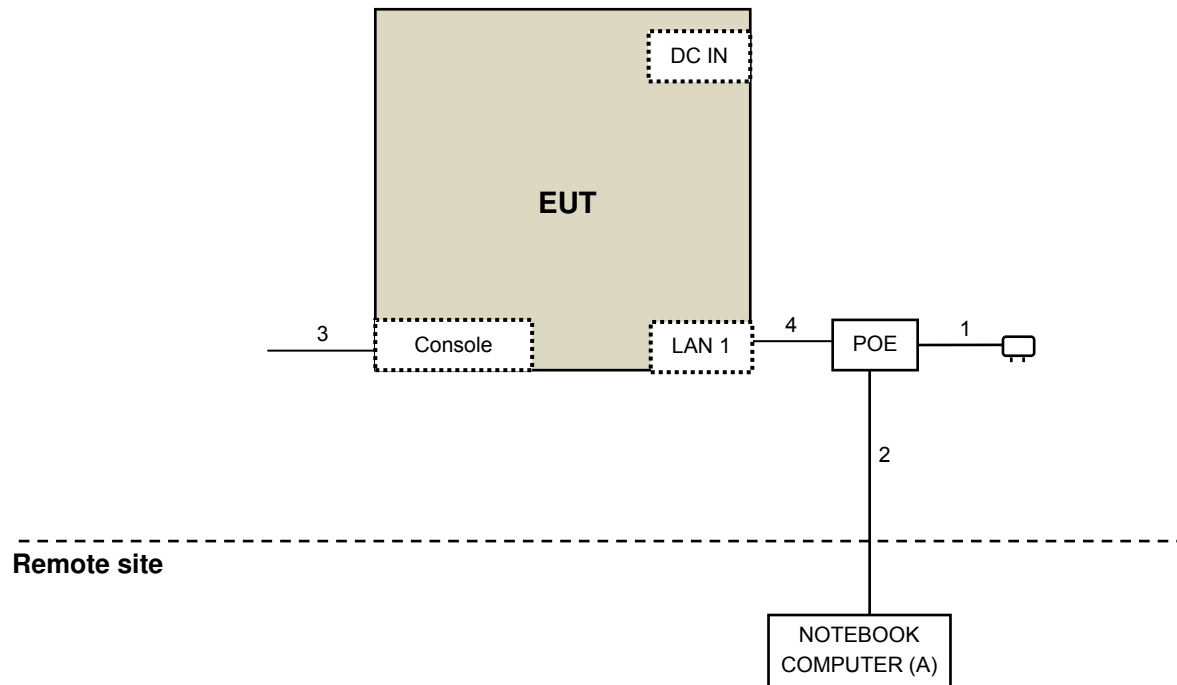
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC	1	1.2	No	0	Supplied by Client
2.	RJ45	1	10	No	0	Provided by Lab
3.	Console	1	1.8	No	0	Provided by Lab
4.	RJ45	1	3	No	0	Provided by Lab

3.4.1 Configuration of System under Test

With adapter:



With POE:



3.5 General Description of Applied Standard

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

FCC Part 15, Subpart E (15.407)

789033 D02 General UNII Test Procedure New Rules v01

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

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

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedure New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBuV/m)	AV:54 (dBuV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBuV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) ^{*1} PK:-17 (dBm/MHz) ^{*2}	PK: 68.2(dBuV/m) ^{*1} PK:78.2 (dBuV/m) ^{*2}

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

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

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

4.1.2 Test Instruments

For below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 2016
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-06	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Feb. 03, 2015	Feb. 02, 2016
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 03, 2015	Apr. 02, 2016
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 966 Chamber No. 4.
3. The FCC Site Registration No. is 292998
4. The CANADA Site Registration No. is 20331-2
5. Tested Date: Nov. 09, 2015

For above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	Aug. 12, 2015	Aug. 11, 2016
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Feb. 05, 2015	Feb. 04, 2016
Pre-Amplifier Agilent	8449B	3008A02465	Apr. 06, 2015	Apr. 05, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150317 150321 150322	Mar. 31, 2015	Mar. 30, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Feb. 05, 2015	Feb. 04, 2016
RF Cable	SUCOFLEX104	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. 3.
4. The FCC Site Registration No. is 147459
6. The CANADA Site Registration No. is 20331-1
8. Tested Date: Nov. 09, 2015

4.1.3 Test Procedure

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

Note:

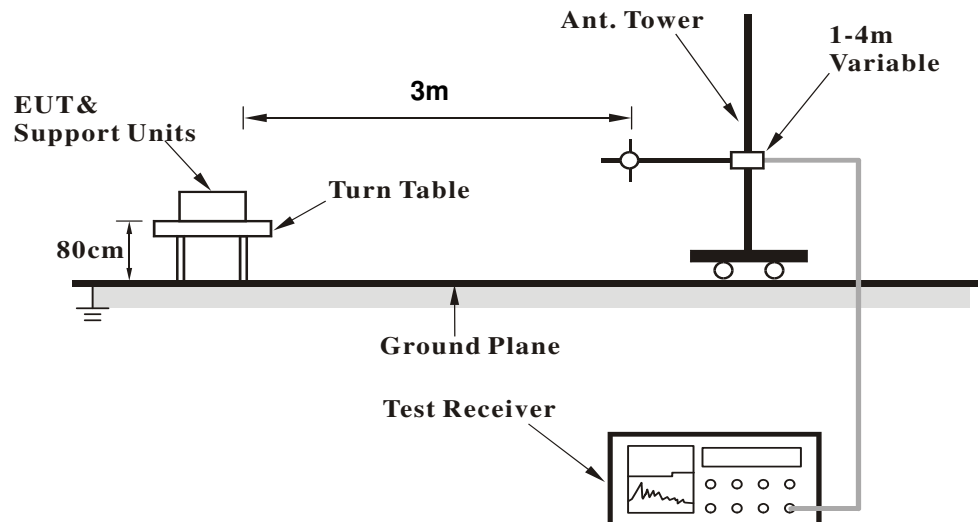
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

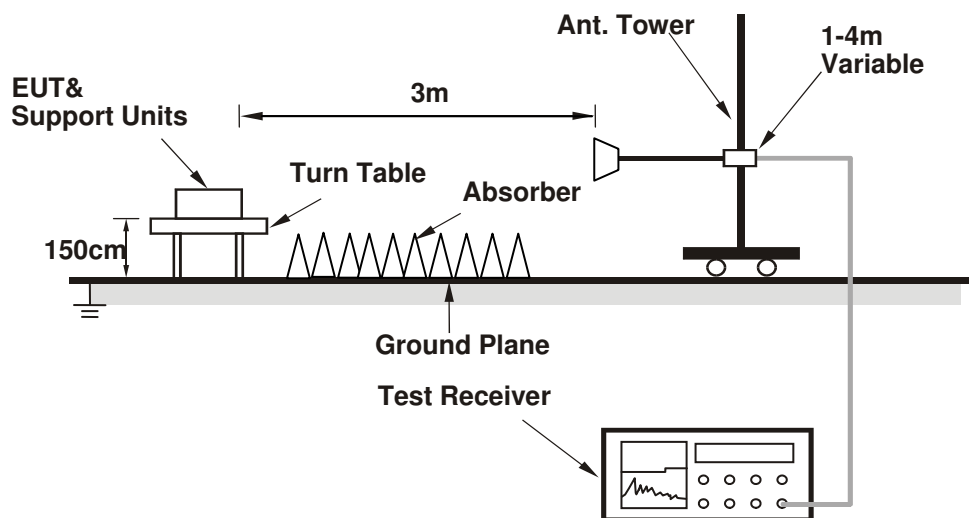
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Condition

1. Connect the EUT with the support unit A (Notebook Computer) which is placed on remote site.
2. Controlling software (artgui.exe Ver: 2.3) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.5 PK	74.0	-16.5	1.86 H	357	52.53	4.97
2	5150.00	41.6 AV	54.0	-12.4	1.86 H	357	36.63	4.97
3	*5180.00	106.6 PK			1.86 H	357	101.60	5.00
4	*5180.00	95.0 AV			1.86 H	357	90.00	5.00
5	#10360.00	51.4 PK	74.0	-22.6	1.38 H	228	35.73	15.67
6	#10360.00	37.4 AV	54.0	-16.6	1.38 H	228	21.73	15.67
7	15540.00	51.3 PK	74.0	-22.7	1.69 H	203	34.06	17.24
8	15540.00	38.6 AV	54.0	-15.4	1.69 H	203	21.36	17.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.5 PK	74.0	-2.5	1.51 V	0	66.53	4.97
2	5150.00	53.9 AV	54.0	-0.1	1.51 V	0	48.93	4.97
3	*5180.00	118.0 PK			1.51 V	0	113.00	5.00
4	*5180.00	106.1 AV			1.51 V	0	101.10	5.00
5	#10360.00	52.4 PK	74.0	-21.6	1.55 V	150	36.73	15.67
6	#10360.00	38.4 AV	54.0	-15.6	1.55 V	150	22.73	15.67
7	15540.00	53.4 PK	74.0	-20.6	1.56 V	180	36.16	17.24
8	15540.00	38.2 AV	54.0	-15.8	1.56 V	180	20.96	17.24

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.2 PK	74.0	-15.8	1.85 H	360	53.23	4.97
2	5150.00	42.8 AV	54.0	-11.2	1.85 H	360	37.83	4.97
3	*5200.00	112.6 PK			1.85 H	360	107.57	5.03
4	*5200.00	101.3 AV			1.85 H	360	96.27	5.03
5	#10400.00	52.4 PK	74.0	-21.6	1.42 H	224	36.29	16.11
6	#10400.00	38.3 AV	54.0	-15.7	1.42 H	224	22.19	16.11
7	15600.00	52.7 PK	74.0	-21.3	1.69 H	193	35.17	17.53
8	15600.00	39.3 AV	54.0	-14.7	1.69 H	193	21.77	17.53
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.6 PK	74.0	-3.4	1.65 V	356	65.63	4.97
2	5150.00	53.6 AV	54.0	-0.4	1.65 V	356	48.63	4.97
3	*5200.00	124.1 PK			1.65 V	356	119.07	5.03
4	*5200.00	112.8 AV			1.65 V	356	107.77	5.03
5	#10400.00	53.7 PK	74.0	-20.3	1.60 V	166	37.59	16.11
6	#10400.00	40.2 AV	54.0	-13.8	1.60 V	166	24.09	16.11
7	15600.00	53.7 PK	74.0	-20.3	1.60 V	176	36.17	17.53
8	15600.00	39.7 AV	54.0	-14.3	1.60 V	176	22.17	17.53

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5120.00	50.8 PK	74.0	-23.2	1.84 H	360	45.86	4.94
2	5120.00	39.0 AV	54.0	-15.0	1.84 H	360	34.06	4.94
3	*5240.00	112.9 PK			1.84 H	360	107.80	5.10
4	*5240.00	100.7 AV			1.84 H	360	95.60	5.10
5	5359.00	52.2 PK	74.0	-21.8	1.84 H	360	46.81	5.39
6	5359.00	42.4 AV	54.0	-11.6	1.84 H	360	37.01	5.39
7	#10480.00	52.5 PK	74.0	-21.5	1.46 H	221	36.25	16.25
8	#10480.00	38.5 AV	54.0	-15.5	1.46 H	221	22.25	16.25
9	15720.00	52.7 PK	74.0	-21.3	1.72 H	189	35.13	17.57
10	15720.00	39.4 AV	54.0	-14.6	1.72 H	189	21.83	17.57

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	5120.00	62.2 PK	74.0	-11.8	1.53 V	358	57.26	4.94
2	5120.00	50.4 AV	54.0	-3.6	1.53 V	358	45.46	4.94
3	*5240.00	123.9 PK			2.27 V	358	118.80	5.10
4	*5240.00	112.1 AV			2.27 V	358	107.00	5.10
5	5359.00	64.6 PK	74.0	-9.4	1.53 V	358	59.21	5.39
6	5359.00	53.8 AV	54.0	-0.2	1.53 V	358	48.41	5.39
7	#10480.00	53.6 PK	74.0	-20.4	1.58 V	165	37.35	16.25
8	#10480.00	40.2 AV	54.0	-13.8	1.58 V	165	23.95	16.25
9	15720.00	53.4 PK	74.0	-20.6	1.64 V	179	35.83	17.57
10	15720.00	39.5 AV	54.0	-14.5	1.64 V	179	21.93	17.57

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	53.4 PK	74.0	-20.6	1.89 H	360	47.29	6.11
2	#5715.00	39.9 AV	54.0	-14.1	1.89 H	360	33.79	6.11
3	#5725.00	65.8 PK	78.2	-12.4	1.89 H	360	59.66	6.14
4	*5745.00	102.6 PK			1.89 H	360	96.41	6.19
5	*5745.00	90.9 AV			1.89 H	360	84.71	6.19
6	11490.00	51.6 PK	74.0	-22.4	1.35 H	223	34.72	16.88
7	11490.00	37.6 AV	54.0	-16.4	1.35 H	223	20.72	16.88
8	#17235.00	51.6 PK	74.0	-22.4	1.64 H	201	29.48	22.12
9	#17235.00	38.8 AV	54.0	-15.2	1.64 H	201	16.68	22.12

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	67.2 PK	74.0	-6.8	1.00 V	15	61.09	6.11
2	#5715.00	50.5 AV	54.0	-3.5	1.00 V	15	44.39	6.11
3	#5725.00	77.7 PK	78.2	-0.5	1.00 V	15	71.56	6.14
4	*5745.00	115.0 PK			1.00 V	15	108.81	6.19
5	*5745.00	103.4 AV			1.00 V	15	97.21	6.19
6	11490.00	52.3 PK	74.0	-21.7	1.52 V	139	35.42	16.88
7	11490.00	38.0 AV	54.0	-16.0	1.52 V	139	21.12	16.88
8	#17235.00	53.2 PK	74.0	-20.8	1.61 V	182	31.08	22.12
9	#17235.00	37.8 AV	54.0	-16.2	1.61 V	182	15.68	22.12

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5700.00	50.5 PK	74.0	-23.5	1.85 H	360	44.43	6.07
2	#5700.00	40.3 AV	54.0	-13.7	1.85 H	360	34.23	6.07
3	*5785.00	106.4 PK			1.85 H	360	100.08	6.32
4	*5785.00	95.1 AV			1.85 H	360	88.78	6.32
5	11570.00	52.7 PK	74.0	-21.3	1.41 H	213	36.03	16.67
6	11570.00	38.6 AV	54.0	-15.4	1.41 H	213	21.93	16.67
7	#17355.00	53.0 PK	74.0	-21.0	1.67 H	175	30.35	22.65
8	#17355.00	39.7 AV	54.0	-14.3	1.67 H	175	17.05	22.65
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	#5700.00	62.8 PK	74.0	-11.2	1.00 V	32	56.73	6.07
2	#5700.00	51.3 AV	54.0	-2.7	1.00 V	32	45.23	6.07
3	*5785.00	118.8 PK			1.00 V	32	112.48	6.32
4	*5785.00	106.3 AV			1.00 V	32	99.98	6.32
5	11570.00	53.3 PK	74.0	-20.7	1.55 V	154	36.63	16.67
6	11570.00	39.8 AV	54.0	-14.2	1.55 V	154	23.13	16.67
7	#17355.00	53.1 PK	74.0	-20.9	1.65 V	193	30.45	22.65
8	#17355.00	39.1 AV	54.0	-14.9	1.65 V	193	16.45	22.65

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	102.4 PK			1.93 H	360	96.02	6.38
2	*5825.00	92.0 AV			1.93 H	360	85.62	6.38
3	#5850.00	65.2 PK	78.2	-13.0	1.93 H	360	58.81	6.39
4	#5860.00	57.7 PK	74.0	-16.3	1.93 H	360	51.29	6.41
5	#5860.00	40.6 AV	54.0	-13.4	1.93 H	360	34.19	6.41
6	11650.00	51.4 PK	74.0	-22.6	1.35 H	215	34.95	16.45
7	11650.00	37.2 AV	54.0	-16.8	1.35 H	215	20.75	16.45
8	#17475.00	51.1 PK	74.0	-22.9	1.71 H	216	27.95	23.15
9	#17475.00	38.2 AV	54.0	-15.8	1.71 H	216	15.05	23.15

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	114.2 PK			1.00 V	331	107.82	6.38
2	*5825.00	102.9 AV			1.00 V	331	96.52	6.38
3	#5850.00	77.6 PK	78.2	-0.6	1.00 V	331	71.21	6.39
4	#5860.00	63.7 PK	74.0	-10.3	1.00 V	331	57.29	6.41
5	#5860.00	46.4 AV	54.0	-7.6	1.00 V	331	39.99	6.41
6	11650.00	52.2 PK	74.0	-21.8	1.52 V	147	35.75	16.45
7	11650.00	38.3 AV	54.0	-15.7	1.52 V	147	21.85	16.45
8	#17475.00	53.1 PK	74.0	-20.9	1.60 V	186	29.95	23.15
9	#17475.00	37.8 AV	54.0	-16.2	1.60 V	186	14.65	23.15

REMARKS:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	52.6 PK	74.0	-21.4	1.75 H	166	47.76	4.84
2	5000.00	43.4 AV	54.0	-10.6	1.75 H	166	38.56	4.84
3	5150.00	57.1 PK	74.0	-16.9	1.92 H	360	52.13	4.97
4	5150.00	41.5 AV	54.0	-12.5	1.92 H	360	36.53	4.97
5	*5180.00	106.7 PK			1.92 H	360	101.70	5.00
6	*5180.00	95.4 AV			1.92 H	360	90.40	5.00
7	#10360.00	51.2 PK	74.0	-22.8	1.42 H	222	35.53	15.67
8	#10360.00	37.4 AV	54.0	-16.6	1.42 H	222	21.73	15.67
9	15540.00	51.2 PK	74.0	-22.8	1.92 H	360	33.96	17.24
10	15540.00	38.7 AV	54.0	-15.3	1.92 H	360	21.46	17.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5000.00	55.6 PK	74.0	-18.4	2.51 V	182	50.76	4.84
2	5000.00	46.1 AV	54.0	-7.9	2.51 V	182	41.26	4.84
3	5150.00	72.1 PK	74.0	-1.9	1.30 V	352	67.13	4.97
4	5150.00	53.5 AV	54.0	-0.5	1.30 V	352	48.53	4.97
5	*5180.00	117.8 PK			1.30 V	353	112.80	5.00
6	*5180.00	105.8 AV			1.30 V	353	100.80	5.00
7	#10360.00	52.8 PK	74.0	-21.2	1.58 V	143	37.13	15.67
8	#10360.00	38.7 AV	54.0	-15.3	1.58 V	143	23.03	15.67
9	15540.00	53.0 PK	74.0	-21.0	1.58 V	165	35.76	17.24
10	15540.00	38.0 AV	54.0	-16.0	1.58 V	165	20.76	17.24

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.2 PK	74.0	-13.8	1.92 H	360	55.23	4.97
2	5150.00	42.2 AV	54.0	-11.8	1.92 H	360	37.23	4.97
3	*5200.00	109.8 PK			1.92 H	360	104.77	5.03
4	*5200.00	98.6 AV			1.92 H	360	93.57	5.03
5	#10400.00	52.7 PK	74.0	-21.3	1.47 H	235	36.59	16.11
6	#10400.00	38.7 AV	54.0	-15.3	1.47 H	235	22.59	16.11
7	15600.00	52.1 PK	74.0	-21.9	1.69 H	177	34.57	17.53
8	15600.00	39.0 AV	54.0	-15.0	1.69 H	177	21.47	17.53
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	72.8 PK	74.0	-1.2	1.28 V	5	67.83	4.97
2	5150.00	53.9 AV	54.0	-0.1	1.28 V	5	48.93	4.97
3	*5200.00	122.3 PK			1.28 V	5	117.27	5.03
4	*5200.00	110.2 AV			1.28 V	5	105.17	5.03
5	#10400.00	53.8 PK	74.0	-20.2	1.53 V	170	37.69	16.11
6	#10400.00	40.1 AV	54.0	-13.9	1.53 V	170	23.99	16.11
7	15600.00	53.9 PK	74.0	-20.1	1.58 V	194	36.37	17.53
8	15600.00	40.0 AV	54.0	-14.0	1.58 V	194	22.47	17.53

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	109.8 PK			1.96 H	349	104.70	5.10
2	*5240.00	98.4 AV			1.96 H	349	93.30	5.10
3	5350.00	52.8 PK	74.0	-21.2	1.96 H	349	47.44	5.36
4	5350.00	39.8 AV	54.0	-14.2	1.96 H	349	34.44	5.36
5	#10480.00	52.3 PK	74.0	-21.7	1.42 H	222	36.05	16.25
6	#10480.00	38.1 AV	54.0	-15.9	1.42 H	222	21.85	16.25
7	15720.00	53.1 PK	74.0	-20.9	1.67 H	199	35.53	17.57
8	15720.00	39.7 AV	54.0	-14.3	1.67 H	199	22.13	17.57
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	123.5 PK			2.20 V	360	118.40	5.10
2	*5240.00	111.1 AV			2.20 V	360	106.00	5.10
3	5350.00	64.3 PK	74.0	-9.7	2.14 V	2	58.94	5.36
4	5350.00	51.3 AV	54.0	-2.7	2.14 V	2	45.94	5.36
5	#10480.00	54.3 PK	74.0	-19.7	1.58 V	174	38.05	16.25
6	#10480.00	40.7 AV	54.0	-13.3	1.58 V	174	24.45	16.25
7	15720.00	53.6 PK	74.0	-20.4	1.59 V	181	36.03	17.57
8	15720.00	39.6 AV	54.0	-14.4	1.59 V	181	22.03	17.57

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	58.4 PK	74.0	-15.6	1.96 H	360	52.29	6.11
2	#5715.00	37.6 AV	54.0	-16.4	1.96 H	360	31.49	6.11
3	#5725.00	65.0 PK	78.2	-13.2	1.96 H	360	58.86	6.14
4	*5745.00	102.7 PK			1.96 H	360	96.51	6.19
5	*5745.00	92.0 AV			1.96 H	360	85.81	6.19
6	11490.00	51.5 PK	74.0	-22.5	1.34 H	242	34.62	16.88
7	11490.00	37.7 AV	54.0	-16.3	1.34 H	242	20.82	16.88
8	#17235.00	51.7 PK	74.0	-22.3	1.66 H	202	29.58	22.12
9	#17235.00	38.7 AV	54.0	-15.3	1.66 H	202	16.58	22.12

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	69.8 PK	74.0	-4.2	1.05 V	5	63.69	6.11
2	#5715.00	48.8 AV	54.0	-5.2	1.05 V	5	42.69	6.11
3	#5725.00	77.6 PK	78.2	-0.6	1.05 V	5	71.46	6.14
4	*5745.00	114.7 PK			1.05 V	5	108.51	6.19
5	*5745.00	103.2 AV			1.05 V	5	97.01	6.19
6	11490.00	52.5 PK	74.0	-21.5	1.57 V	134	35.62	16.88
7	11490.00	38.6 AV	54.0	-15.4	1.57 V	134	21.72	16.88
8	#17235.00	53.4 PK	74.0	-20.6	1.59 V	180	31.28	22.12
9	#17235.00	38.0 AV	54.0	-16.0	1.59 V	180	15.88	22.12

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5711.00	54.5 PK	74.0	-19.5	1.86 H	360	48.41	6.09
2	#5711.00	40.1 AV	54.0	-13.9	1.86 H	360	34.01	6.09
3	*5785.00	106.0 PK			1.86 H	360	99.68	6.32
4	*5785.00	95.1 AV			1.86 H	360	88.78	6.32
5	11570.00	52.2 PK	74.0	-21.8	1.46 H	218	35.53	16.67
6	11570.00	38.0 AV	54.0	-16.0	1.46 H	218	21.33	16.67
7	#17355.00	52.9 PK	74.0	-21.1	1.76 H	189	30.25	22.65
8	#17355.00	39.7 AV	54.0	-14.3	1.76 H	189	17.05	22.65

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	#5711.00	66.9 PK	74.0	-7.1	2.57 V	187	60.81	6.09
2	#5711.00	51.3 AV	54.0	-2.7	2.57 V	187	45.21	6.09
3	*5785.00	118.5 PK			2.48 V	177	112.18	6.32
4	*5785.00	106.2 AV			2.48 V	177	99.88	6.32
5	11570.00	53.2 PK	74.0	-20.8	1.53 V	167	36.53	16.67
6	11570.00	39.7 AV	54.0	-14.3	1.53 V	167	23.03	16.67
7	#17355.00	53.5 PK	74.0	-20.5	1.63 V	186	30.85	22.65
8	#17355.00	39.9 AV	54.0	-14.1	1.63 V	186	17.25	22.65

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	101.4 PK			1.84 H	360	95.02	6.38
2	*5825.00	90.5 AV			1.84 H	360	84.12	6.38
3	#5850.00	65.2 PK	78.2	-13.0	1.84 H	360	58.81	6.39
4	#5860.00	52.4 PK	74.0	-21.6	1.84 H	360	45.99	6.41
5	#5860.00	34.2 AV	54.0	-19.8	1.84 H	360	27.79	6.41
6	11650.00	51.1 PK	74.0	-22.9	1.33 H	241	34.65	16.45
7	11650.00	37.4 AV	54.0	-16.6	1.33 H	241	20.95	16.45
8	#17475.00	51.4 PK	74.0	-22.6	1.67 H	206	28.25	23.15
9	#17475.00	38.9 AV	54.0	-15.1	1.67 H	206	15.75	23.15

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	113.8 PK			1.00 V	360	107.42	6.38
2	*5825.00	101.9 AV			1.00 V	360	95.52	6.38
3	#5850.00	77.7 PK	78.2	-0.5	1.00 V	360	71.31	6.39
4	#5860.00	64.5 PK	74.0	-9.5	1.00 V	360	58.09	6.41
5	#5860.00	45.4 AV	54.0	-8.6	1.00 V	360	38.99	6.41
6	11650.00	51.9 PK	74.0	-22.1	1.55 V	158	35.45	16.45
7	11650.00	38.0 AV	54.0	-16.0	1.55 V	158	21.55	16.45
8	#17475.00	53.0 PK	74.0	-21.0	1.57 V	182	29.85	23.15
9	#17475.00	37.7 AV	54.0	-16.3	1.57 V	182	14.55	23.15

REMARKS:

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

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.6 PK	74.0	-17.4	1.90 H	360	51.63	4.97
2	5150.00	42.3 AV	54.0	-11.7	1.90 H	360	37.33	4.97
3	*5190.00	100.9 PK			1.90 H	360	95.88	5.02
4	*5190.00	88.8 AV			1.90 H	360	83.78	5.02
5	5350.00	50.5 PK	74.0	-23.5	1.90 H	360	45.14	5.36
6	5350.00	39.0 AV	54.0	-15.0	1.90 H	360	33.64	5.36
7	#10380.00	50.9 PK	74.0	-23.1	1.39 H	242	35.02	15.88
8	#10380.00	36.8 AV	54.0	-17.2	1.39 H	242	20.92	15.88
9	15570.00	51.4 PK	74.0	-22.6	1.71 H	205	34.03	17.37
10	15570.00	39.0 AV	54.0	-15.0	1.71 H	205	21.63	17.37
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.1 PK	74.0	-5.9	1.00 V	352	63.13	4.97
2	5150.00	53.7 AV	54.0	-0.3	1.00 V	352	48.73	4.97
3	*5190.00	112.8 PK			1.00 V	352	107.78	5.02
4	*5190.00	100.3 AV			1.00 V	352	95.28	5.02
5	5350.00	62.4 PK	74.0	-11.6	1.00 V	352	57.04	5.36
6	5350.00	50.4 AV	54.0	-3.6	1.00 V	352	45.04	5.36
7	#10380.00	50.3 PK	74.0	-23.7	1.48 V	163	34.42	15.88
8	#10380.00	36.4 AV	54.0	-17.6	1.48 V	163	20.52	15.88
9	15570.00	51.5 PK	74.0	-22.5	1.64 V	172	34.13	17.37
10	15570.00	35.5 AV	54.0	-18.5	1.64 V	172	18.13	17.37

REMARKS:

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

CHANNEL	TX Channel 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	106.7 PK			1.93 H	360	101.61	5.09
2	*5230.00	95.1 AV			1.93 H	360	90.01	5.09
3	5350.00	52.9 PK	74.0	-21.1	1.90 H	360	47.54	5.36
4	5350.00	39.1 AV	54.0	-14.9	1.90 H	360	33.74	5.36
5	#10460.00	51.0 PK	74.0	-23.0	1.36 H	256	34.78	16.22
6	#10460.00	37.0 AV	54.0	-17.0	1.36 H	256	20.78	16.22
7	15690.00	51.8 PK	74.0	-22.2	1.71 H	217	34.09	17.71
8	15690.00	39.2 AV	54.0	-14.8	1.71 H	217	21.49	17.71
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	119.1 PK			2.59 V	157	114.01	5.09
2	*5230.00	106.6 AV			2.59 V	157	101.51	5.09
3	5350.00	65.5 PK	74.0	-8.5	2.59 V	157	60.14	5.36
4	5350.00	50.7 AV	54.0	-3.3	2.59 V	157	45.34	5.36
5	#10460.00	52.2 PK	74.0	-21.8	1.49 V	149	35.98	16.22
6	#10460.00	38.1 AV	54.0	-15.9	1.49 V	149	21.88	16.22
7	15690.00	53.1 PK	74.0	-20.9	1.61 V	182	35.39	17.71
8	15690.00	37.7 AV	54.0	-16.3	1.61 V	182	19.99	17.71

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	61.8 PK	74.0	-12.2	1.89 H	353	55.69	6.11
2	#5715.00	41.5 AV	54.0	-12.5	1.89 H	353	35.39	6.11
3	#5725.00	65.5 PK	78.2	-12.7	1.89 H	353	59.36	6.14
4	*5755.00	98.3 PK			1.89 H	353	92.06	6.24
5	*5755.00	86.7 AV			1.89 H	353	80.46	6.24
6	11510.00	50.6 PK	74.0	-23.4	1.37 H	243	33.79	16.81
7	11510.00	36.8 AV	54.0	-17.2	1.37 H	243	19.99	16.81
8	#17265.00	51.5 PK	74.0	-22.5	1.72 H	204	29.35	22.15
9	#17265.00	38.9 AV	54.0	-15.1	1.72 H	204	16.75	22.15

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	73.7 PK	74.0	-0.3	1.00 V	5	67.59	6.11
2	#5715.00	52.7 AV	54.0	-1.3	1.00 V	5	46.59	6.11
3	#5725.00	77.9 PK	78.2	-0.3	1.00 V	5	71.76	6.14
4	*5755.00	110.7 PK			1.00 V	5	104.46	6.24
5	*5755.00	98.3 AV			1.00 V	5	92.06	6.24
6	11510.00	50.6 PK	74.0	-23.4	1.47 V	148	33.79	16.81
7	11510.00	36.9 AV	54.0	-17.1	1.47 V	148	20.09	16.81
8	#17265.00	51.5 PK	74.0	-22.5	1.61 V	183	29.35	22.15
9	#17265.00	35.4 AV	54.0	-18.6	1.61 V	183	13.25	22.15

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	101.5 PK			1.96 H	360	95.16	6.34
2	*5795.00	89.9 AV			1.96 H	360	83.56	6.34
3	#5850.00	59.3 PK	78.2	-18.9	1.96 H	360	52.91	6.39
4	#5860.00	56.4 PK	74.0	-17.6	1.96 H	360	49.99	6.41
5	#5860.00	41.8 AV	54.0	-12.2	1.96 H	360	35.39	6.41
6	11590.00	50.5 PK	74.0	-23.5	1.33 H	248	33.89	16.61
7	11590.00	36.7 AV	54.0	-17.3	1.33 H	248	20.09	16.61
8	#17385.00	52.5 PK	74.0	-21.5	1.73 H	208	29.59	22.91
9	#17385.00	39.6 AV	54.0	-14.4	1.73 H	208	16.69	22.91

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	114.0 PK			1.00 V	332	107.66	6.34
2	*5795.00	101.9 AV			1.00 V	332	95.56	6.34
3	#5850.00	71.7 PK	78.2	-6.5	1.00 V	332	65.31	6.39
4	#5860.00	68.4 PK	74.0	-5.6	1.00 V	332	61.99	6.41
5	#5860.00	53.4 AV	54.0	-0.6	1.00 V	332	46.99	6.41
6	11590.00	50.4 PK	74.0	-23.6	1.45 V	159	33.79	16.61
7	11590.00	36.3 AV	54.0	-17.7	1.45 V	159	19.69	16.61
8	#17385.00	51.8 PK	74.0	-22.2	1.62 V	166	28.89	22.91
9	#17385.00	36.0 AV	54.0	-18.0	1.62 V	166	13.09	22.91

REMARKS:

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

Below 1GHz Data

802.11n (HT40)

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 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	82.21	30.5 QP	40.0	-9.6	2.50 H	311	50.90	-20.45
2	85.20	33.0 QP	40.0	-7.0	2.00 H	193	53.81	-20.81
3	108.65	37.5 QP	43.5	-6.1	1.50 H	115	55.59	-18.14
4	375.00	28.4 QP	46.0	-17.6	1.00 H	92	40.69	-12.31
5	450.00	29.0 QP	46.0	-17.0	1.50 H	116	38.93	-9.93
6	500.00	30.5 QP	46.0	-15.6	1.50 H	84	39.63	-9.18
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.60	36.9 QP	40.0	-3.1	1.00 V	192	52.92	-16.04
2	108.99	40.4 QP	43.5	-3.1	1.50 V	46	58.48	-18.09
3	186.15	34.9 QP	43.5	-8.7	1.00 V	44	52.38	-17.53
4	375.00	38.4 QP	46.0	-7.7	1.50 V	90	50.66	-12.31
5	675.00	38.5 QP	46.0	-7.5	1.00 V	151	44.25	-5.77
6	900.00	41.8 QP	46.0	-4.3	1.00 V	48	43.84	-2.09

REMARKS:

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

4.2 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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 01, 2015	Aug. 31, 2016
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 23, 2015	Sep. 22, 2016
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2015	Sep. 30, 2016
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
- 3 The VCCI Con C Registration No. is C-3611.
- 4 Tested Date: Nov. 02 to 12, 2015

4.2.3 Test Procedure

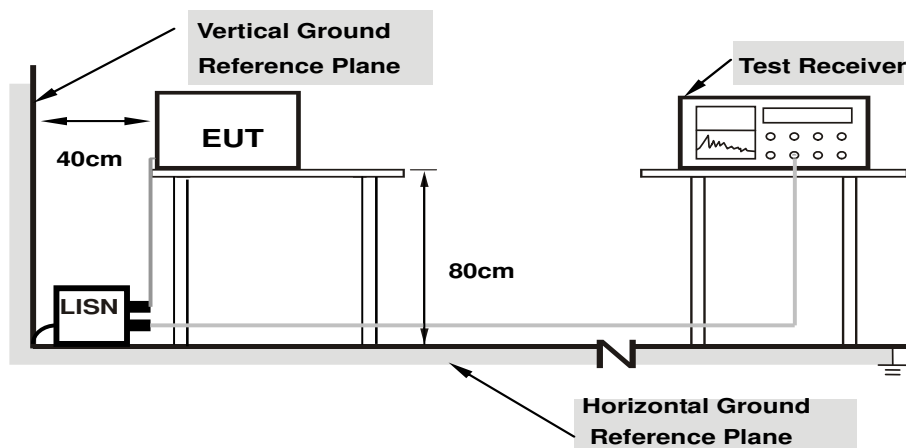
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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.

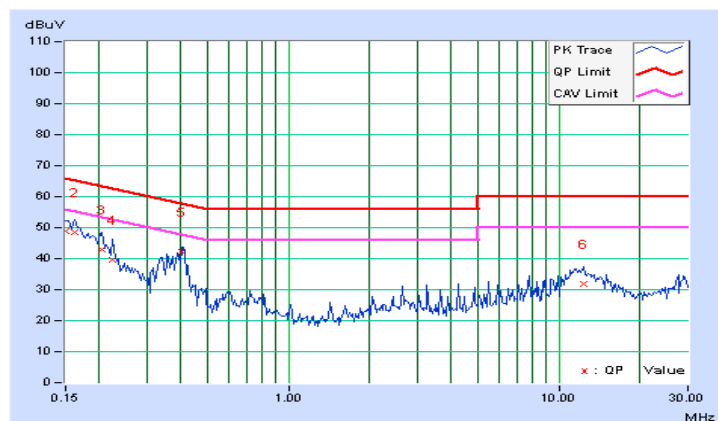
4.2.7 Test Results (Mode 1)

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.38	38.41	27.27	48.79	37.65	66.00	56.00	-17.21	-18.35
2	0.16172	10.37	37.99	25.55	48.36	35.92	65.38	55.38	-17.01	-19.45
3	0.20469	10.34	32.51	24.95	42.85	35.29	63.42	53.42	-20.57	-18.13
4	0.22422	10.34	29.18	18.50	39.52	28.84	62.66	52.66	-23.14	-23.82
5	0.40391	10.37	31.74	31.05	42.11	41.42	57.77	47.77	-15.66	-6.35
6	12.34375	11.05	20.75	14.85	31.80	25.90	60.00	50.00	-28.20	-24.10

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

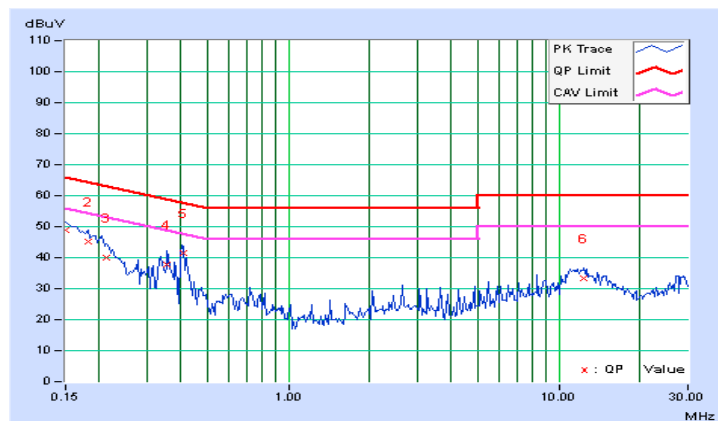


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.38	38.47	27.25	48.85	37.63	66.00	56.00	-17.15	-18.37
2	0.18125	10.39	34.74	23.82	45.13	34.21	64.43	54.43	-19.30	-20.22
3	0.21250	10.39	29.78	18.76	40.17	29.15	63.11	53.11	-22.94	-23.96
4	0.35703	10.41	27.54	25.32	37.95	35.73	58.80	48.80	-20.84	-13.06
5	0.40781	10.42	31.09	28.39	41.51	38.81	57.69	47.69	-16.18	-8.88
6	12.41406	11.07	22.42	18.51	33.49	29.58	60.00	50.00	-26.51	-20.42

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



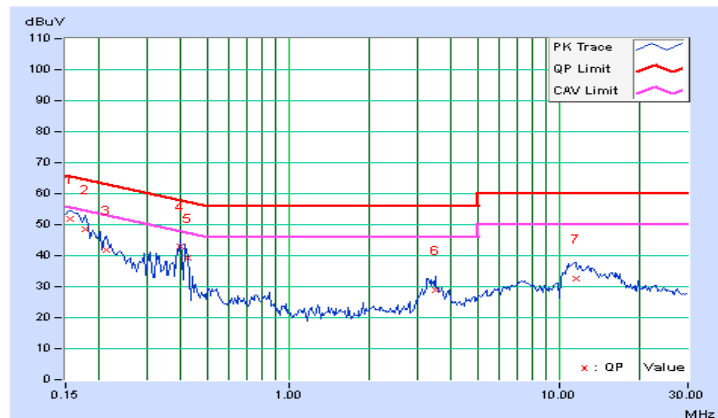
4.2.8 Test Results (Mode 2)

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15591	10.38	41.31	30.05	51.69	40.43	65.68	55.68	-13.99	-15.25
2	0.17734	10.36	38.00	26.69	48.36	37.05	64.61	54.61	-16.25	-17.56
3	0.21250	10.34	31.64	21.54	41.98	31.88	63.11	53.11	-21.13	-21.23
4	0.39722	10.37	32.65	30.44	43.02	40.81	57.91	47.91	-14.89	-7.10
5	0.42397	10.37	29.04	23.88	39.41	34.25	57.37	47.37	-17.96	-13.12
6	3.48047	10.53	18.38	11.86	28.91	22.39	56.00	46.00	-27.09	-23.61
7	11.54688	11.00	21.65	16.95	32.65	27.95	60.00	50.00	-27.35	-22.05

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

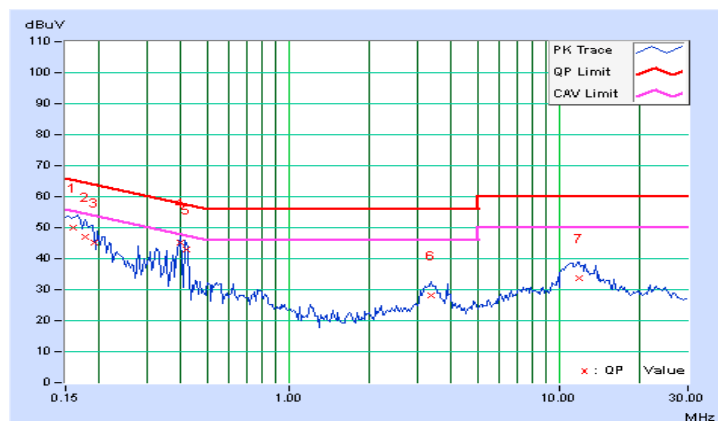


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16037	10.38	39.49	29.82	49.87	40.20	65.44	55.44	-15.57	-15.24
2	0.17709	10.39	36.51	24.58	46.90	34.97	64.62	54.62	-17.73	-19.66
3	0.19159	10.39	34.69	25.73	45.08	36.12	63.97	53.97	-18.89	-17.85
4	0.40000	10.42	34.81	31.74	45.23	42.16	57.85	47.85	-12.62	-5.69
5	0.42075	10.42	32.47	30.78	42.89	41.20	57.43	47.43	-14.55	-6.24
6	3.36719	10.61	17.55	10.49	28.16	21.10	56.00	46.00	-27.84	-24.90
7	11.88672	11.04	22.76	18.54	33.80	29.58	60.00	50.00	-26.20	-20.42

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



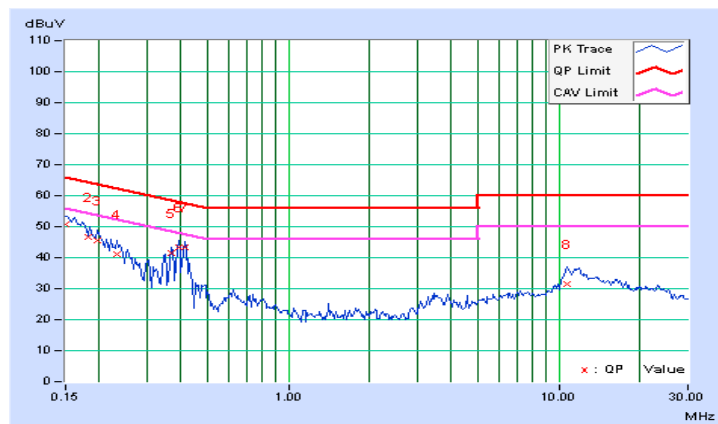
4.2.9 Test Results (Mode 3)

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.38	40.36	27.82	50.74	38.20	66.00	56.00	-15.26	-17.80
2	0.18294	10.35	36.35	25.65	46.70	36.00	64.35	54.35	-17.65	-18.35
3	0.19687	10.34	35.36	25.61	45.70	35.95	63.74	53.74	-18.04	-17.79
4	0.23203	10.34	30.90	21.50	41.24	31.84	62.38	52.38	-21.13	-20.53
5	0.36819	10.37	31.04	29.11	41.41	39.48	58.54	48.54	-17.14	-9.07
6	0.39219	10.37	32.83	30.83	43.20	41.20	58.02	48.02	-14.82	-6.82
7	0.41369	10.37	33.02	31.69	43.39	42.06	57.57	47.57	-14.19	-5.52
8	10.77344	10.95	20.59	15.95	31.54	26.90	60.00	50.00	-28.46	-23.10

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

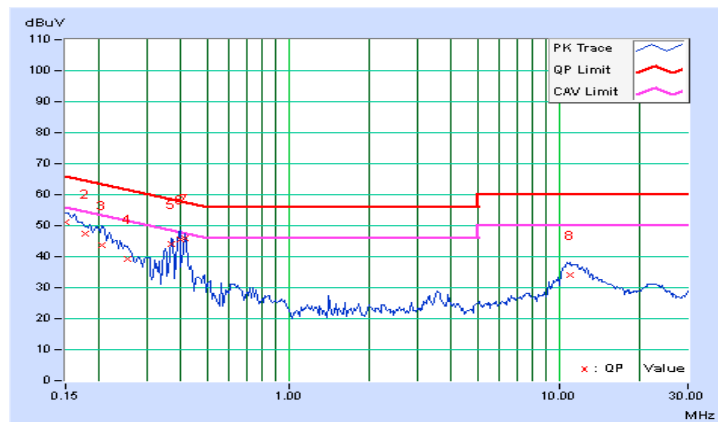


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.38	40.66	27.80	51.04	38.18	66.00	56.00	-14.96	-17.82
2	0.17697	10.39	36.84	27.51	47.23	37.90	64.63	54.63	-17.40	-16.73
3	0.20469	10.39	33.30	25.65	43.69	36.04	63.42	53.42	-19.73	-17.38
4	0.25547	10.40	28.86	19.61	39.26	30.01	61.58	51.58	-22.32	-21.57
5	0.36884	10.42	33.56	32.23	43.98	42.65	58.53	48.53	-14.55	-5.88
6	0.39609	10.42	34.99	31.58	45.41	42.00	57.93	47.93	-12.53	-5.94
7	0.41384	10.42	35.37	33.65	45.79	44.07	57.57	47.57	-11.78	-3.50
8	10.98828	10.98	23.24	18.04	34.22	29.02	60.00	50.00	-25.78	-20.98

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,

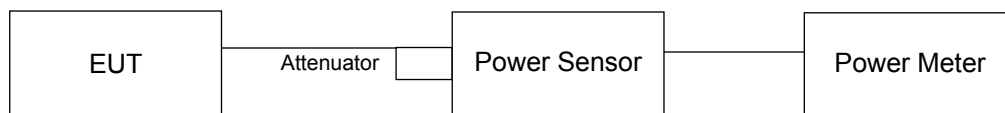
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	0824006	May 25, 2015	May 24, 2016
Power sensor Anritsu	MA2411B	0738172	May 25, 2015	May 24, 2016

Note:

- NOTE:**
1. The test was performed in Oven room 1.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Nov. 09, 2015

4.3.4 Test Procedure

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

4.3.5 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

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	18.42	19.42	157	21.96	30	Pass
40	5200	23.25	24.23	476.199	26.78	30	Pass
48	5240	23.01	23.68	433.332	26.37	30	Pass
149	5745	20.28	18.76	181.822	22.60	30	Pass
157	5785	24.25	23.26	477.909	26.79	30	Pass
165	5825	20.13	18.53	174.324	22.41	30	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	18.40	19.31	154.493	21.89	30	Pass
40	5200	23.44	24.15	480.816	26.82	30	Pass
48	5240	23.19	23.92	455.053	26.58	30	Pass
149	5745	20.48	18.77	187.022	22.72	30	Pass
157	5785	24.20	23.12	468.143	26.70	30	Pass
165	5825	19.77	18.61	167.453	22.24	30	Pass

802.11n (HT40)

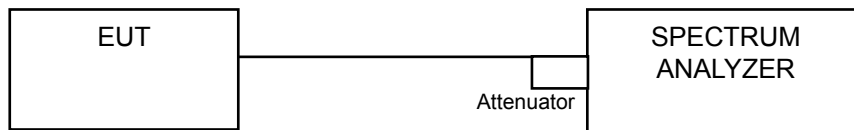
Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	16.85	17.34	102.617	20.11	30	Pass
46	5230	23.83	24.50	523.384	27.19	30	Pass
151	5755	19.15	17.69	140.973	21.49	30	Pass
159	5795	21.61	20.56	258.64	24.13	30	Pass

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP40	100036	Jan. 22, 2015	Jan. 21, 2016

Note:

- NOTE:**
1. The test was performed in Oven room 1.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Nov. 09, 2015

4.4.4 Test Procedure

For U-NII-1 band:

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW $\geq$ 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 U-NII-3 band:

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Same as Item 4.3.6.

4.4.7 Test Results

For U-NII-1 Band 802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
36	5180	4.10	6.46	8.45	14.34	Pass
40	5200	8.80	9.61	12.23	14.34	Pass
48	5240	9.15	9.40	12.29	14.34	Pass

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

2. Directional gain = 5.646dBi + 10log(2) = 8.66dBi > 6dBi , so the power density limit shall be reduced to 17-(8.66-6) = 14.34dBm.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
36	5180	3.30	5.44	7.51	14.34	Pass
40	5200	7.53	8.93	11.30	14.34	Pass
48	5240	8.64	9.28	11.98	14.34	Pass

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

2. Directional gain = 5.646dBi + 10log(2) = 8.66dBi > 6dBi , so the power density limit shall be reduced to 17-(8.66-6) = 14.34dBm.

802.11n (HT40)

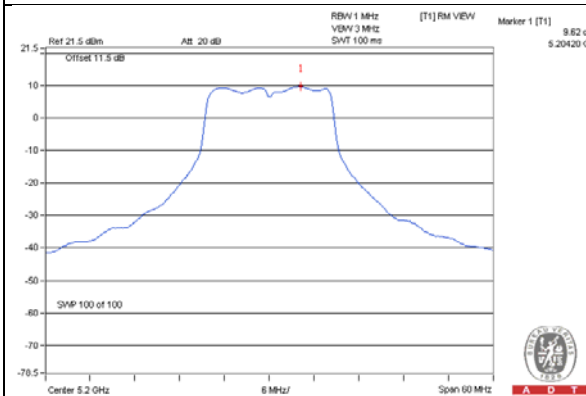
Chan.	Chan. Freq. (MHz)	PSD (dBm)		Total Power Density (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1			
38	5190	1.84	0.67	4.30	14.34	Pass
46	5230	6.32	7.27	9.83	14.34	Pass

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

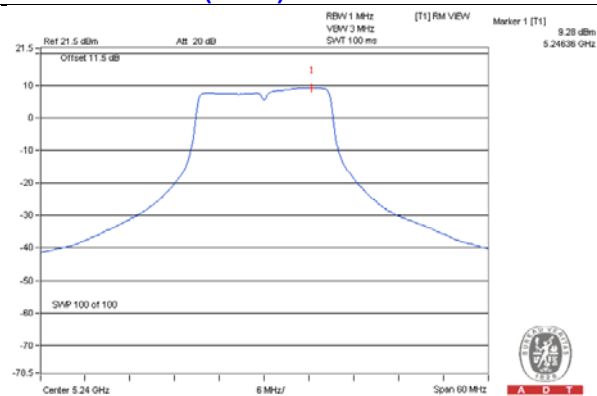
2. Directional gain = $5.646\text{dBi} + 10\log(2) = 8.66\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (8.66 - 6) = 14.34\text{dBm}$.

SPECTRUM PLOT OF WORST VALUE

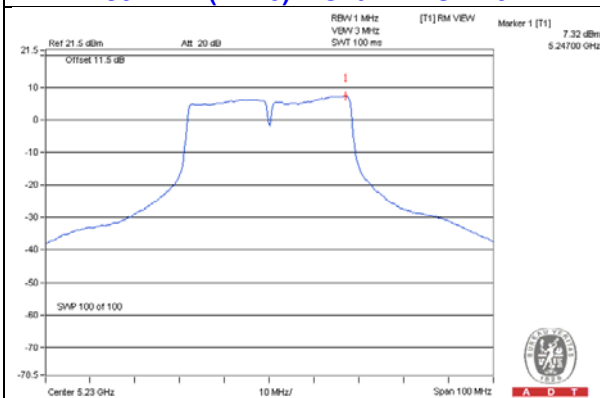
802.11a – Chain 1: CH 40



802.11n (HT20) – Chain 1: CH 48



802.11n (HT40) – Chain 1: CH 46



For U-NII-3 Band

802.11a

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	-1.20	1.02	3.01	4.03	27.73	Pass
	157	5785	1.14	3.36	3.01	6.37	27.73	Pass
	165	5825	-1.63	0.59	3.01	3.60	27.73	Pass
1	149	5745	-2.03	0.19	3.01	3.20	27.73	Pass
	157	5785	1.33	3.55	3.01	6.56	27.73	Pass
	165	5825	-2.60	-0.38	3.01	2.63	27.73	Pass

Note: 1. Directional gain = 5.264dBi + 10log(2) = 8.27dBi > 6dBi , so the power density limit shall be reduced to 30-(8.27-6) = 27.73dBm.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	-1.40	0.82	3.01	3.83	27.73	Pass
	157	5785	0.31	2.53	3.01	5.54	27.73	Pass
	165	5825	-2.71	-0.49	3.01	2.52	27.73	Pass
1	149	5745	-3.74	-1.52	3.01	1.49	27.73	Pass
	157	5785	0.70	2.92	3.01	5.93	27.73	Pass
	165	5825	-3.52	-1.30	3.01	1.71	27.73	Pass

Note: 1. Directional gain = 5.264dBi + 10log(2) = 8.27dBi > 6dBi , so the power density limit shall be reduced to 30-(8.27-6) = 27.73dBm.

802.11n (HT40)

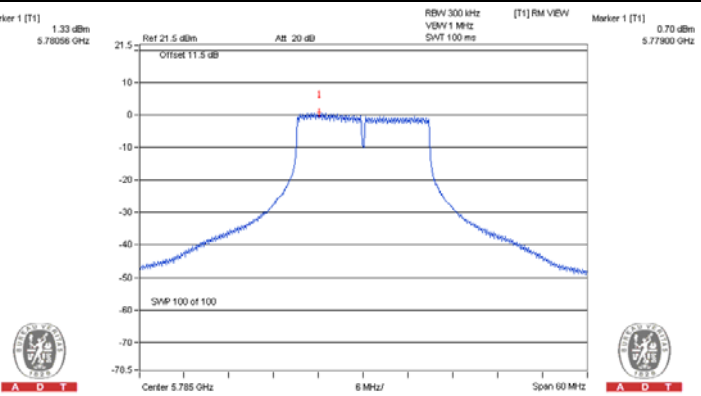
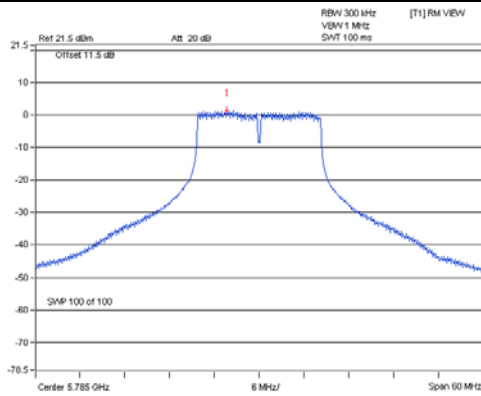
TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	151	5755	-5.22	-3.00	3.01	0.01	27.73	Pass
	159	5795	-5.30	-3.08	3.01	-0.07	27.73	Pass
1	151	5755	-6.49	-4.27	3.01	-1.26	27.73	Pass
	159	5795	-3.89	-1.67	3.01	1.34	27.73	Pass

Note: 1. Directional gain = 5.264dBi + 10log(2) = 8.27dBi > 6dBi , so the power density limit shall be reduced to 30-(8.27-6) = 27.73dBm.

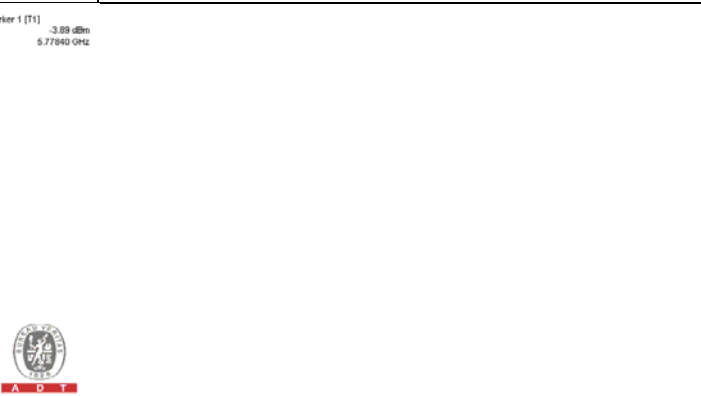
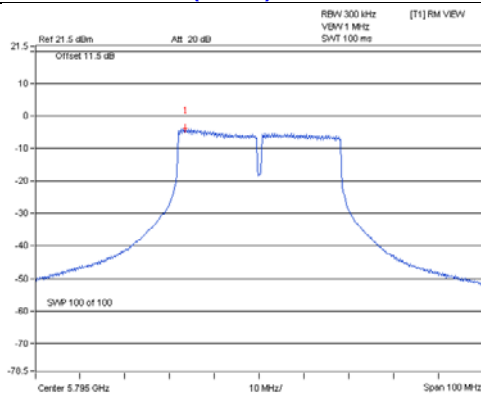
SPECTRUM PLOT OF WORST VALUE

802.11a – Chain 1: CH 157

802.11n (HT20) – Chain 1: CH 157



802.11n (HT40) – Chain 1: CH 159

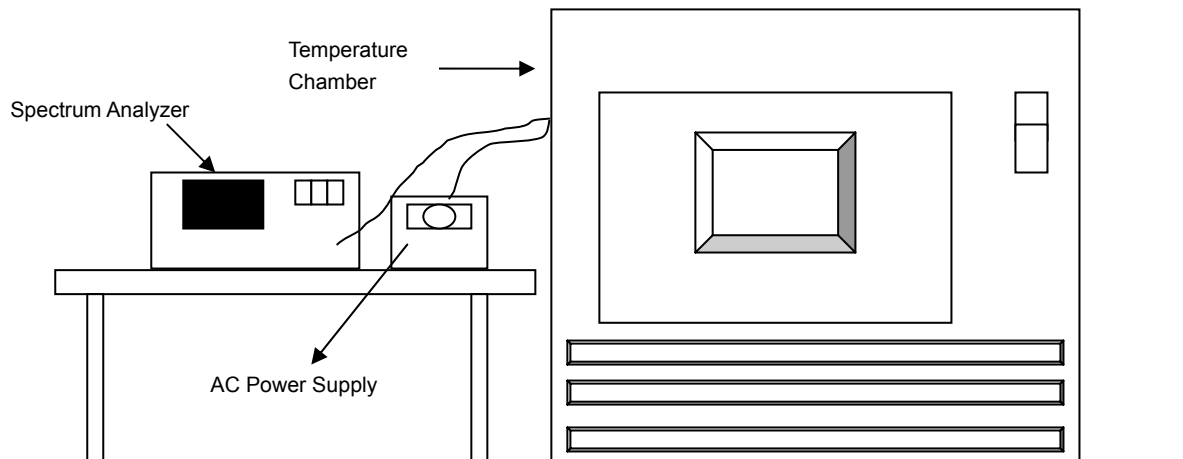


4.5 Frequency Stability Measurement

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Temperature & Humidity Chamber TERCHY	MHU-225AU	911033	Dec. 08, 2014	Dec. 07, 2015

Note:

- NOTE:**
1. The test was performed in Oven room 1.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Nov. 09, 2015

4.5.4 Test Procedure

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. 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.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 Test Results

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5179.9756	-0.00047	5179.9752	-0.00048	5179.9783	-0.00042	5179.9775	-0.00043
40	120	5179.9898	-0.00020	5179.9894	-0.00020	5179.9895	-0.00020	5179.987	-0.00025
30	120	5179.9921	-0.00015	5179.993	-0.00014	5179.9944	-0.00011	5179.9946	-0.00010
20	120	5180.0018	0.00003	5180.0038	0.00007	5180.0027	0.00005	5180.0038	0.00007
10	120	5179.985	-0.00029	5179.9863	-0.00026	5179.9818	-0.00035	5179.985	-0.00029
0	120	5180.0128	0.00025	5180.0104	0.00020	5180.0135	0.00026	5180.0111	0.00021
-10	120	5180.0211	0.00041	5180.0193	0.00037	5180.0206	0.00040	5180.0199	0.00038
-20	120	5179.9835	-0.00032	5179.9867	-0.00026	5179.9855	-0.00028	5179.987	-0.00025
-30	120	5180.0186	0.00036	5180.0153	0.00030	5180.0192	0.00037	5180.0184	0.00036

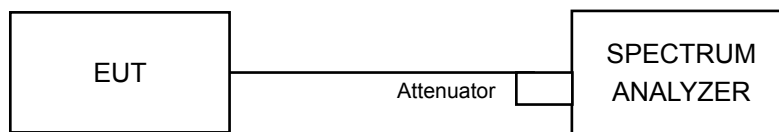
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5180.0025	0.00005	5180.0048	0.00009	5180.0025	0.00005	5180.0034	0.00007
	120	5180.0018	0.00003	5180.0038	0.00007	5180.0027	0.00005	5180.0038	0.00007
	102	5180.0015	0.00003	5180.003	0.00006	5180.0029	0.00006	5180.0046	0.00009

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP40	100036	Jan. 22, 2015	Jan. 21, 2016

Note:

- NOTE:**
1. The test was performed in Oven room 1.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Nov. 09, 2015

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.61	16.62	0.5	Pass
157	5785	16.56	16.61	0.5	Pass
165	5825	16.56	16.59	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.86	17.89	0.5	Pass
157	5785	17.87	17.85	0.5	Pass
165	5825	17.83	17.83	0.5	Pass

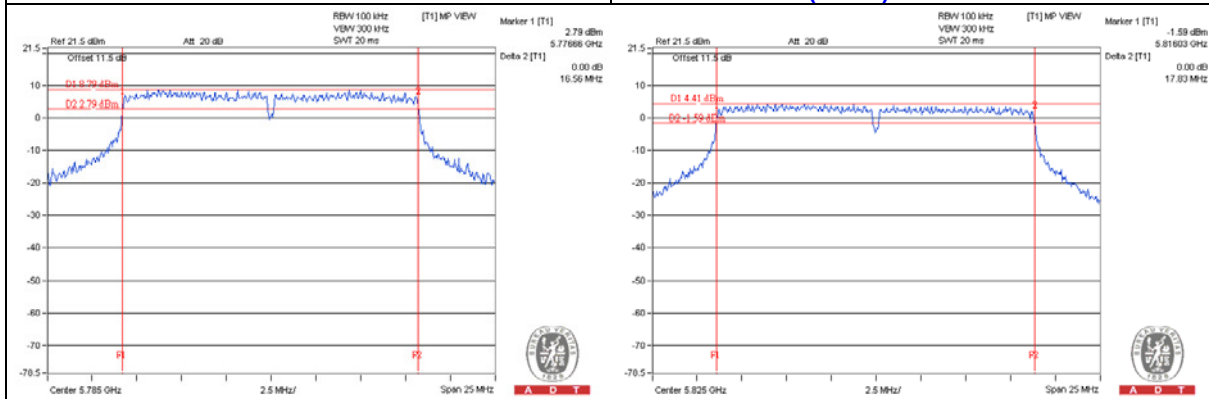
802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	36.67	36.62	0.5	Pass
159	5795	36.72	36.65	0.5	Pass

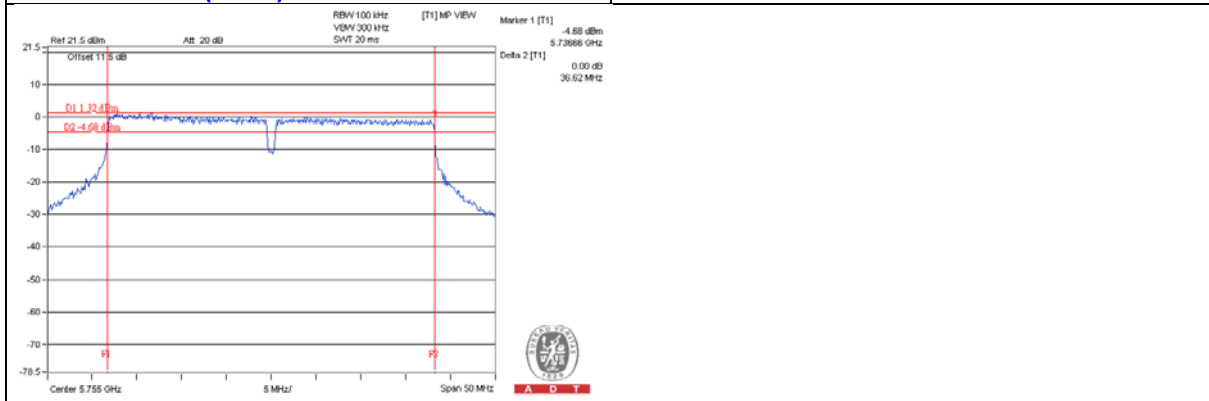
SPECTRUM PLOT OF WORST VALUE

802.11a – Chain 0: CH 157

802.11n (HT20) – Chain 0: CH 165



802.11n (HT40) – Chain 1: CH 151



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---