FCC Test Report (15.407)

Report No.:	RF150422E07-1
FCC ID:	KA2IR868LC1
Test Model:	DIR-868L, DAP-1750
Received Date:	Apr. 22, 2015
Test Date:	Apr. 27 to May 08, 2015
Issued Date:	May 21, 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.

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Release Control Record

Issue No.	Description	Date Issued
RF150422E07-1	Original release.	May 21, 2015

1 Certificate of Conformity

Product:	Wireless AC1750 Dual Band Gigabit Cloud Router USB 3.0
Brand:	D-Link
Test Model:	DIR-868L, DAP-1750
Sample Status:	ENGINEERING SAMPLE
Applicant:	D-Link Corporation
Test Date:	Apr. 27 to May 08, 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 : _____ , **Date:** May 21, 2015
Lori Chung / Specialist

Approved by : _____ , **Date:** May 21, 2015
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407 Under New Rule)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -7.43dB at 0.37266MHz.
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(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF) not a standard connector.

NOTE: 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. For the 2400 ~ 2483.5MHz and 5725~5850MHz RF parameters was recorded in another test report.

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	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.72 dB
	6GHz ~ 18GHz	4.00 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	Wireless AC1750 Dual Band Gigabit Cloud Router USB 3.0
Brand	D-Link
Test Model	DIR-868L, DAP-1750
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	**For 15.407** 5.18 ~ 5.24GHz
	For 15.247 2.412 ~ 2.462GHz, 5.745 ~ 5.825GHz
Number of Channel	**For 15.407** 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
	For 15.247 (2.4GHz) 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) **For 15.247 (5GHz)** 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
Output Power	**For 15.407** 802.11a: 295.88mW 802.11ac (VHT20): 414.695mW 802.11ac (VHT40): 279.009mW 802.11ac (VHT80): 76.884mW
	For 15.247 (2.4GHz) 802.11b: 260.338mW 802.11g: 223.301mW 802.11n (HT20): 252.52mW 802.11n (HT40): 129.897mW **For 15.247 (5GHz)** 802.11a: 522.641mW 802.11ac (VHT20): 514.507mW 802.11ac (VHT40): 520.364mW 802.11ac (VHT80): 195.207mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The EUT has below Model names, which are identical to each other in all aspects except for the following information:

Model Name	Difference
DIR-868L	RJ45 port x 5, with WAN port and transformer
DAP-1750	RJ45 port x 4, without WAN port and transformer

2. 2.4GHz and 5GHz technology can transmit at same time.

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

Antenna No.	Transmitter Circuit	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connecter Type	Cable Length (mm)
1	Chain (0)	Alpha	WRGAC35-ANT 1	2.5	2.4~2.4835	PCB	Ipex(MHF)	60
				2.5	5.15~5.85			
2	Chain (1)		WRGAC35-ANT 2	2.5	2.4~2.4835			120
				2.5	5.15~5.85			
3	Chain (2)		WRGAC35-ANT 3	2.5	2.4~2.4835			110
				2.5	5.15~5.85			

4. The EUT must be supplied with a power adapter and following two different models could be chosen as following table:

No	Brand Name	Model No.	Spec.
1	D-LINK	AMS115-1202000FU	Input: 100-240V, 0.8A, 50/60Hz Output: 12V, 2A DC output cable: 1.2m, unshielded
2	D-LINK	WA-24Q12R	Input: 100-240V, 0.7A, 50/60Hz Output: 12V, 2A DC output cable: 1.2m, unshielded
For Radiated Emission test, the EUT was pre-tested with adapter 1 & 2, the worst case was found in adapter 2. Therefore only the test data of the adapter 2 was recorded in this report.			

5. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	3TX	3RX
802.11g	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11ac (VHT20)	MCS 0~8, Nss=1	3TX	3RX
	MCS 0~8, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
802.11ac (VHT40)	MCS 0~9, Nss=1	3TX	3RX
	MCS 0~9, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX
802.11ac (VHT80)	MCS 0~9, Nss=1	3TX	3RX
	MCS 0~9, Nss=2	3TX	3RX
	MCS 0~9, Nss=3	3TX	3RX

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

6. 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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	Model: DIR-868L, with adapter 2
2	-	√	√	-	Model: DAP-1750, with adapter 2
3	-	-	√	-	Model: DIR-868L, with adapter 1
4	-	-	√	-	Model: DAP-1750, with adapter 1

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement
NOTE: "-" means no effect.

Radiated Emission Test (Above 1GHz):

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

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

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)
802.11ac (VHT20)	5180-5240	36 to 48	40	OFDM	BPSK	6.5

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)
802.11ac (VHT20)	5180-5240	36 to 48	40	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

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

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

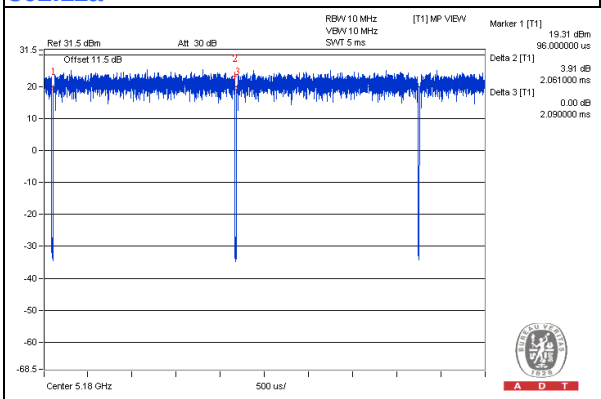
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 69%RH	120Vac, 60Hz	Gary Cheng
RE<1G	23deg. C, 65%RH	120Vac, 60Hz	Gary Cheng
PLC	20deg. C, 70%RH 25deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

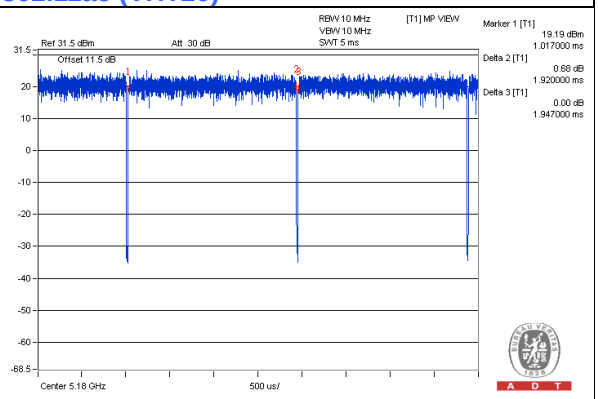
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 2.061 ms/2.09 ms = 0.986
802.11ac (VHT20): Duty cycle = 1.92 ms/1.947 ms = 0.986
802.11ac (VHT40): Duty cycle = 0.941 ms/0.962 ms = 0.978, Duty factor = 10 * log(1/0.978) = 0.10
802.11ac (VHT80): Duty cycle = 0.458 ms/0.483 ms = 0.948, Duty factor = 10 * log(1/0.948) = 0.23

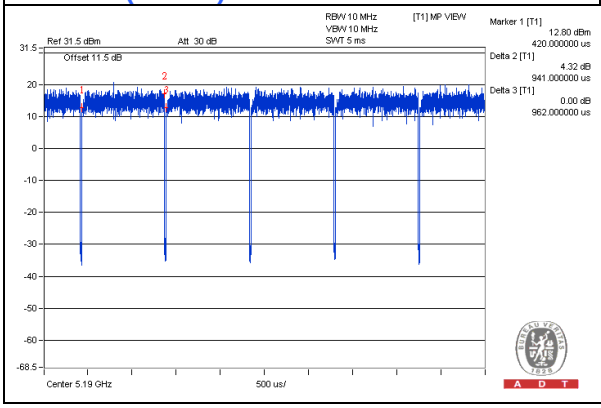
802.11a



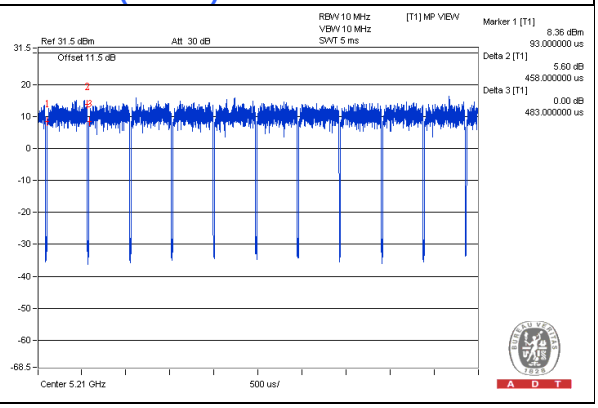
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

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

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	USB 3.0 HDD	Transcend	JetFlash 700	NA	NA	Provided by Lab
B	NOTEBOOK COMOPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
C	NOTEBOOK COMOPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
D	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab

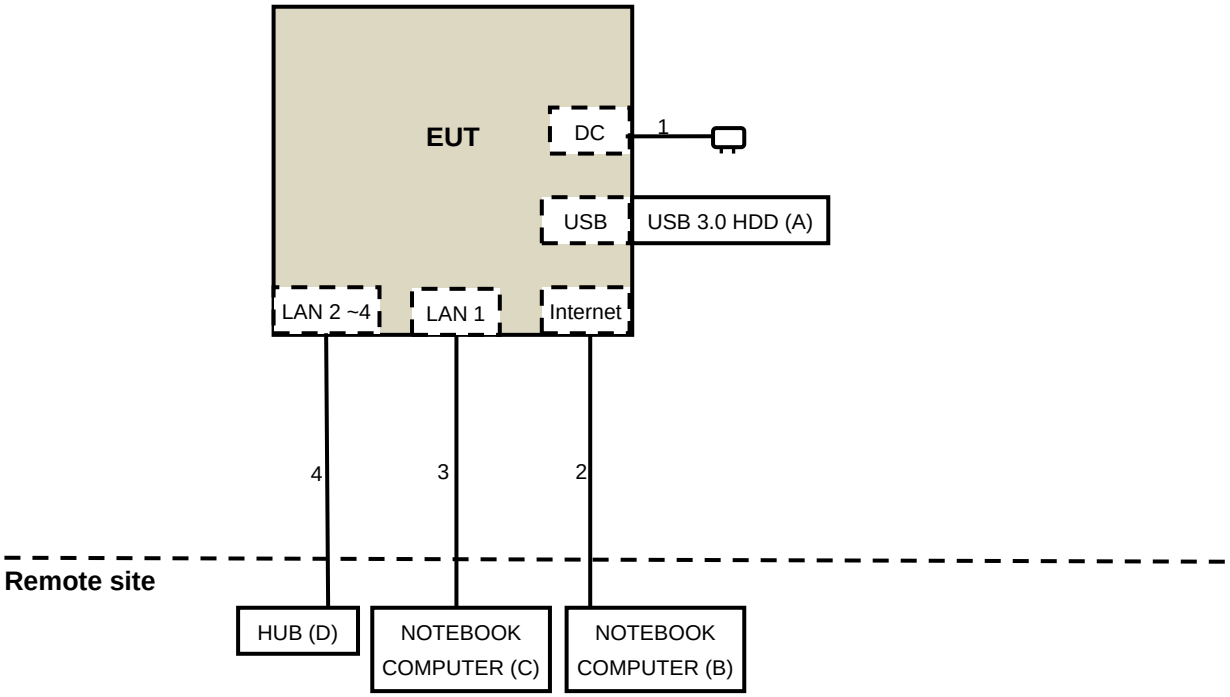
NOTE:

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

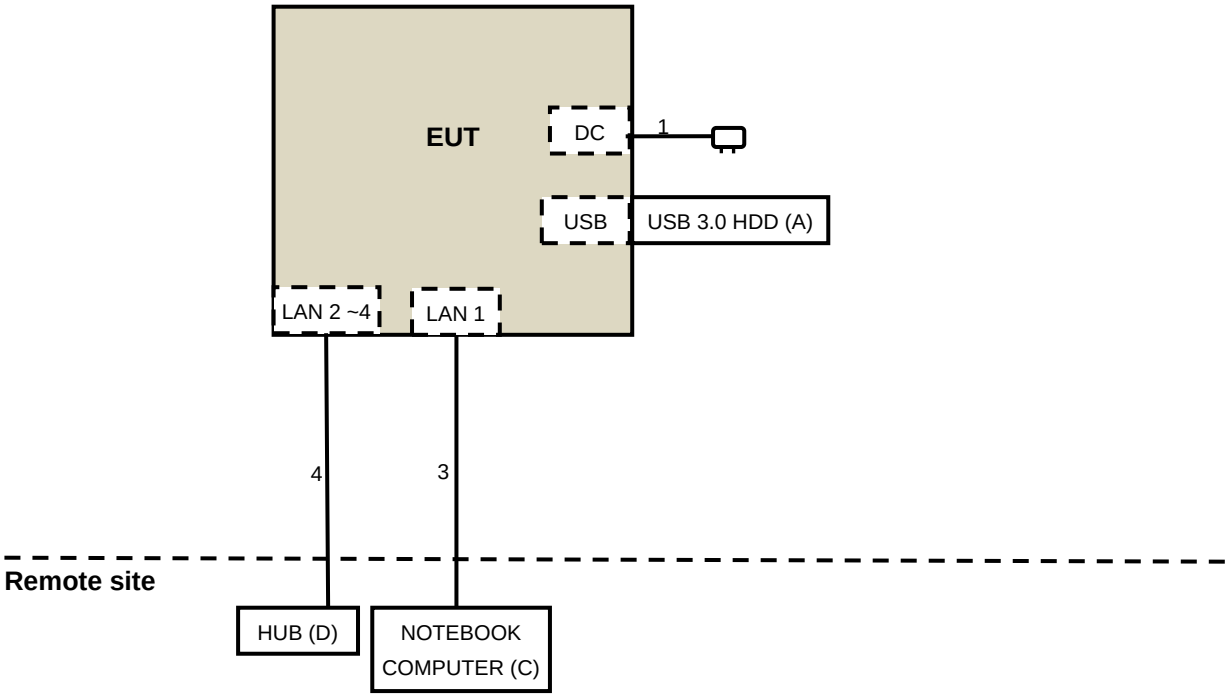
No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	DC	1	1.2	No	0	Supplied by Client
2	RJ45	1	10	No	0	Provided by Lab
3	RJ45	1	10	No	0	Provided by Lab
4	RJ45	3	10	No	0	Provided by Lab

3.4.1 Configuration of System under Test

For Model: DIR-868L mode:



For Model: DAP-1750 mode:



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 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:

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

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 06, 2015	Feb. 05, 2016
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Feb. 06, 2015	Feb. 05, 2016
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131213 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	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
Power Meter Anritsu	ML2495A	0824006	May 22, 2014	May 21, 2015
Power Sensor Anritsu	MA2411B	0738172	May 22, 2014	May 21, 2015
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-SP-AR	MAA0812-008	Jan. 12, 2015	Jan. 11, 2016

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The 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. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: May 01 to 08, 2015

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:

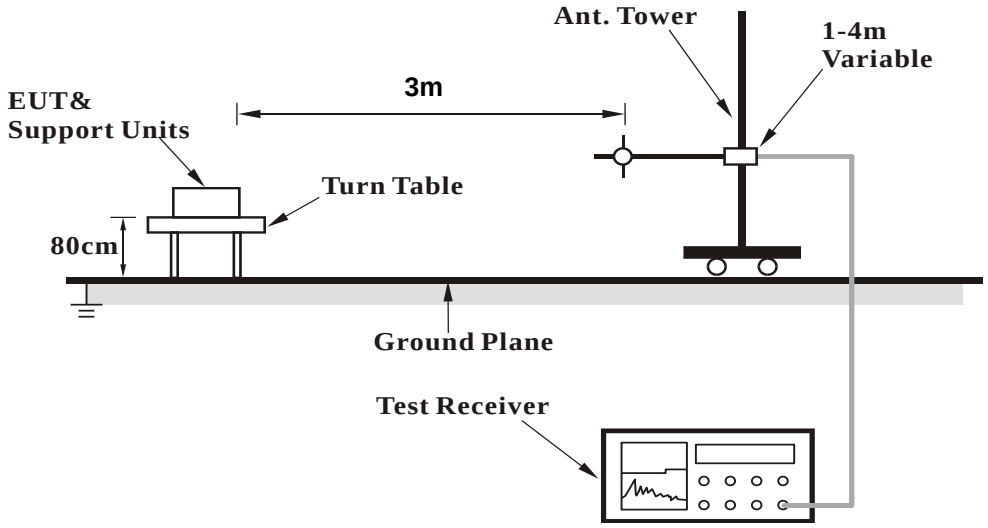
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution 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/duty cycle)).
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 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

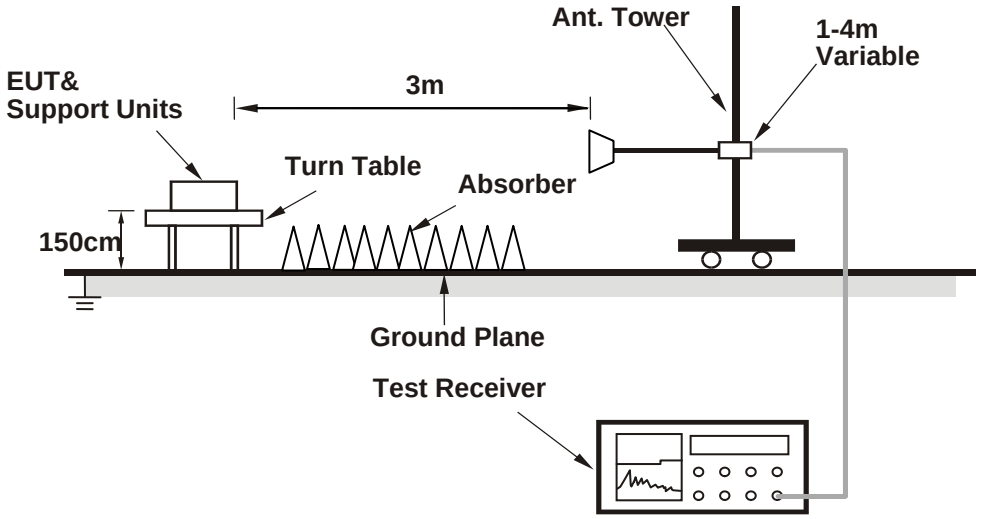
No deviation.

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

For Model: DIR-868L mode:

1. Connect the EUT with the supports units B & C (NOTEBOOK COMPUTER) which is placed on remote site.
2. Controlling software (MTool 2.0.1.0.msi) has been activated to set the EUT on specific status.

For Model: DAP-1750 mode:

1. Connect the EUT with the support unit C (NOTEBOOK COMPUTER) which is placed on remote site.
2. Controlling software (MTool 2.0.1.0.msi) has been activated to set the EUT on specific status.

4.1.7 Test Results (Mode 1)

Above 1GHz Data:

802.11a

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

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	5103.00	63.1 PK	74.0	-10.9	1.39 H	319	59.38	3.72
2	5103.00	53.3 AV	54.0	-0.7	1.39 H	319	49.58	3.72
3	5150.00	70.0 PK	74.0	-4.0	1.21 H	307	66.16	3.84
4	5150.00	50.5 AV	54.0	-3.5	1.21 H	307	46.66	3.84
5	*5180.00	117.7 PK			1.39 H	319	113.78	3.92
6	*5180.00	108.1 AV			1.39 H	319	104.18	3.92
7	5400.00	63.6 PK	74.0	-10.4	1.21 H	307	59.41	4.19
8	5400.00	51.8 AV	54.0	-2.2	1.21 H	307	47.61	4.19
9	#10360.00	58.0 PK	74.0	-16.0	1.00 H	199	48.57	9.43
10	#10360.00	46.4 AV	54.0	-7.6	1.00 H	199	36.97	9.43
11	15540.00	63.3 PK	74.0	-10.7	1.12 H	174	49.27	14.03
12	15540.00	50.9 AV	54.0	-3.1	1.12 H	174	36.87	14.03
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	5103.00	71.3 PK	74.0	-2.7	1.32 V	57	67.58	3.72
2	5103.00	53.5 AV	54.0	-0.5	1.32 V	57	49.78	3.72
3	5150.00	73.5 PK	74.0	-0.5	1.32 V	57	69.66	3.84
4	5150.00	53.7 AV	54.0	-0.3	1.32 V	57	49.86	3.84
5	*5180.00	119.3 PK			1.32 V	57	115.38	3.92
6	*5180.00	109.7 AV			1.32 V	57	105.78	3.92
7	5400.00	61.3 PK	74.0	-12.7	1.42 V	196	57.11	4.19
8	5400.00	51.0 AV	54.0	-3.0	1.42 V	196	46.81	4.19
9	#10360.00	55.4 PK	74.0	-18.6	1.04 V	243	45.97	9.43
10	#10360.00	45.0 AV	54.0	-9.0	1.04 V	243	35.57	9.43
11	15540.00	61.2 PK	74.0	-12.8	1.00 V	256	47.17	14.03
12	15540.00	49.4 AV	54.0	-4.6	1.00 V	256	35.37	14.03

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	69.6 PK	74.0	-4.4	1.36 H	323	65.84	3.76
2	5120.00	53.2 AV	54.0	-0.8	1.36 H	323	49.44	3.76
3	*5200.00	117.0 PK			1.36 H	323	113.04	3.96
4	*5200.00	107.4 AV			1.36 H	323	103.44	3.96
5	#10400.00	58.2 PK	74.0	-15.8	1.02 H	209	48.75	9.45
6	#10400.00	46.5 AV	54.0	-7.5	1.02 H	209	37.05	9.45
7	15600.00	62.9 PK	74.0	-11.1	1.13 H	172	48.72	14.18
8	15600.00	50.5 AV	54.0	-3.5	1.13 H	172	36.32	14.18
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	5120.00	63.8 PK	74.0	-10.2	1.30 V	55	60.04	3.76
2	5120.00	53.8 AV	54.0	-0.2	1.30 V	55	50.04	3.76
3	*5200.00	118.7 PK			1.30 V	56	114.74	3.96
4	*5200.00	109.1 AV			1.30 V	56	105.14	3.96
5	#10400.00	55.7 PK	74.0	-18.3	1.06 V	230	46.25	9.45
6	#10400.00	45.0 AV	54.0	-9.0	1.06 V	230	35.55	9.45
7	15600.00	61.3 PK	74.0	-12.7	1.00 V	246	47.12	14.18
8	15600.00	49.3 AV	54.0	-4.7	1.00 V	246	35.12	14.18

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	118.3 PK			1.36 H	331	114.35	3.95
2	*5240.00	109.4 AV			1.36 H	331	105.45	3.95
3	5350.00	60.9 PK	74.0	-13.1	1.36 H	331	56.83	4.07
4	5350.00	50.3 AV	54.0	-3.7	1.36 H	331	46.23	4.07
5	#10480.00	57.7 PK	74.0	-16.3	1.06 H	201	48.03	9.67
6	#10480.00	46.0 AV	54.0	-8.0	1.06 H	201	36.33	9.67
7	15720.00	62.7 PK	74.0	-11.3	1.08 H	163	48.81	13.89
8	15720.00	50.2 AV	54.0	-3.8	1.08 H	163	36.31	13.89
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	120.5 PK			1.30 V	52	116.55	3.95
2	*5240.00	111.0 AV			1.30 V	52	107.05	3.95
3	5350.00	63.5 PK	74.0	-10.5	1.28 V	58	59.43	4.07
4	5350.00	53.3 AV	54.0	-0.7	1.28 V	58	49.23	4.07
5	#10480.00	55.4 PK	74.0	-18.6	1.05 V	224	45.73	9.67
6	#10480.00	44.7 AV	54.0	-9.3	1.05 V	224	35.03	9.67
7	15720.00	61.3 PK	74.0	-12.7	1.00 V	256	47.41	13.89
8	15720.00	49.5 AV	54.0	-4.5	1.00 V	256	35.61	13.89

REMARKS:

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

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.6 PK	74.0	-3.4	1.36 H	310	66.76	3.84
2	5150.00	50.6 AV	54.0	-3.4	1.36 H	310	46.76	3.84
3	*5180.00	116.7 PK			1.36 H	310	112.78	3.92
4	*5180.00	107.3 AV			1.36 H	310	103.38	3.92
5	#10360.00	58.3 PK	74.0	-15.7	1.02 H	194	48.87	9.43
6	#10360.00	46.9 AV	54.0	-7.1	1.02 H	194	37.47	9.43
7	15540.00	63.0 PK	74.0	-11.0	1.17 H	184	48.97	14.03
8	15540.00	50.3 AV	54.0	-3.7	1.17 H	184	36.27	14.03
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	73.6 PK	74.0	-0.4	1.33 V	56	69.76	3.84
2	5150.00	53.6 AV	54.0	-0.4	1.33 V	56	49.76	3.84
3	*5180.00	118.7 PK			1.33 V	56	114.82	3.92
4	*5180.00	109.1 AV			1.33 V	56	105.18	3.92
5	#10360.00	55.5 PK	74.0	-18.5	1.10 V	225	46.07	9.43
6	#10360.00	44.6 AV	54.0	-9.4	1.10 V	225	35.17	9.43
7	15540.00	61.6 PK	74.0	-12.4	1.00 V	251	47.57	14.03
8	15540.00	49.7 AV	54.0	-4.3	1.00 V	251	35.67	14.03

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	69.0 PK	74.0	-5.0	1.39 H	322	65.24	3.76
2	5120.00	52.9 AV	54.0	-1.1	1.39 H	322	49.14	3.76
3	*5200.00	117.2 PK			1.39 H	322	113.24	3.96
4	*5200.00	107.3 AV			1.39 H	322	103.34	3.96
5	#10400.00	58.9 PK	74.0	-15.1	1.00 H	211	49.45	9.45
6	#10400.00	46.9 AV	54.0	-7.1	1.00 H	211	37.45	9.45
7	15600.00	63.0 PK	74.0	-11.0	1.17 H	182	48.82	14.18
8	15600.00	50.9 AV	54.0	-3.1	1.17 H	182	36.72	14.18
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	5120.00	63.6 PK	74.0	-10.4	1.30 V	55	59.84	3.76
2	5120.00	53.6 AV	54.0	-0.4	1.30 V	55	49.84	3.76
3	*5200.00	118.7 PK			1.27 V	72	114.74	3.96
4	*5200.00	108.8 AV			1.27 V	72	104.84	3.96
5	#10400.00	55.6 PK	74.0	-18.4	1.07 V	235	46.15	9.45
6	#10400.00	44.9 AV	54.0	-9.1	1.07 V	235	35.45	9.45
7	15600.00	62.1 PK	74.0	-11.9	1.00 V	240	47.92	14.18
8	15600.00	49.8 AV	54.0	-4.2	1.00 V	240	35.62	14.18

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	118.8 PK			1.35 H	332	114.85	3.95
2	*5240.00	109.7 AV			1.35 H	332	105.75	3.95
3	5350.00	61.2 PK	74.0	-12.8	1.35 H	332	57.13	4.07
4	5350.00	51.0 AV	54.0	-3.0	1.35 H	332	46.93	4.07
5	#10480.00	58.1 PK	74.0	-15.9	1.00 H	191	48.43	9.67
6	#10480.00	46.4 AV	54.0	-7.6	1.00 H	191	36.73	9.67
7	15720.00	62.4 PK	74.0	-11.6	1.06 H	167	48.51	13.89
8	15720.00	50.1 AV	54.0	-3.9	1.06 H	167	36.21	13.89
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	121.9 PK			1.30 V	57	117.95	3.95
2	*5240.00	112.5 AV			1.30 V	57	108.55	3.95
3	5350.00	65.7 PK	74.0	-8.3	1.29 V	59	61.63	4.07
4	5350.00	53.7 AV	54.0	-0.3	1.29 V	59	49.63	4.07
5	#10480.00	56.2 PK	74.0	-17.8	1.00 V	233	46.53	9.67
6	#10480.00	45.5 AV	54.0	-8.5	1.00 V	233	35.83	9.67
7	15720.00	61.9 PK	74.0	-12.1	1.04 V	260	48.01	13.89
8	15720.00	49.6 AV	54.0	-4.4	1.04 V	260	35.71	13.89

REMARKS:

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

802.11ac (VHT40)

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

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	65.4 PK	74.0	-8.6	1.36 H	331	61.56	3.84
2	5150.00	51.4 AV	54.0	-2.6	1.36 H	331	47.56	3.84
3	*5190.00	110.1 PK			1.36 H	331	106.16	3.94
4	*5190.00	100.2 AV			1.36 H	331	96.26	3.94
5	#10380.00	55.9 PK	74.0	-18.1	1.05 H	234	46.46	9.44
6	#10380.00	44.0 AV	54.0	-10.0	1.05 H	234	34.56	9.44
7	15570.00	58.9 PK	74.0	-15.1	1.04 H	179	44.79	14.11
8	15570.00	47.4 AV	54.0	-6.6	1.04 H	179	33.29	14.11
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	67.9 PK	74.0	-6.1	1.32 V	55	64.06	3.84
2	5150.00	53.2 AV	54.0	-0.8	1.32 V	55	49.36	3.84
3	*5190.00	113.8 PK			1.32 V	55	109.86	3.94
4	*5190.00	103.2 AV			1.32 V	55	99.26	3.94
5	#10380.00	54.1 PK	74.0	-19.9	1.01 V	236	44.66	9.44
6	#10380.00	43.2 AV	54.0	-10.8	1.01 V	236	33.76	9.44
7	15570.00	60.4 PK	74.0	-13.6	1.06 V	272	46.29	14.11
8	15570.00	48.6 AV	54.0	-5.4	1.06 V	272	34.49	14.11

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.9 PK	74.0	-7.1	1.36 H	316	63.06	3.84
2	5150.00	51.3 AV	54.0	-2.7	1.36 H	316	47.46	3.84
3	*5230.00	114.6 PK			1.36 H	316	110.64	3.96
4	*5230.00	104.3 AV			1.36 H	316	100.34	3.96
5	#10460.00	55.7 PK	74.0	-18.3	1.02 H	228	46.09	9.61
6	#10460.00	43.8 AV	54.0	-10.2	1.02 H	228	34.19	9.61
7	15690.00	59.5 PK	74.0	-14.5	1.09 H	156	45.60	13.90
8	15690.00	47.8 AV	54.0	-6.2	1.09 H	156	33.90	13.90
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	5150.00	68.7 PK	74.0	-5.3	1.29 V	56	64.86	3.84
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.29 V**	**56**	**50.06**	**3.84**
3	*5230.00	117.6 PK			1.29 V	56	113.64	3.96
4	*5230.00	107.7 AV			1.29 V	56	103.74	3.96
5	#10460.00	53.6 PK	74.0	-20.4	1.02 V	252	43.99	9.61
6	#10460.00	42.7 AV	54.0	-11.3	1.02 V	252	33.09	9.61
7	15690.00	59.9 PK	74.0	-14.1	1.12 V	261	46.00	13.90
8	15690.00	48.2 AV	54.0	-5.8	1.12 V	261	34.30	13.90

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT80)

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

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	65.4 PK	74.0	-8.6	1.30 H	322	61.56	3.84
2	5150.00	51.4 AV	54.0	-2.6	1.30 H	322	47.56	3.84
3	*5210.00	105.9 PK			1.30 H	322	101.94	3.96
4	*5210.00	96.4 AV			1.30 H	322	92.44	3.96
5	5350.00	62.4 PK	74.0	-11.6	1.30 H	322	58.33	4.07
6	5350.00	50.9 AV	54.0	-3.1	1.30 H	322	46.83	4.07
7	#10420.00	54.1 PK	74.0	-19.9	1.06 H	254	44.60	9.50
8	#10420.00	42.4 AV	54.0	-11.6	1.06 H	254	32.90	9.50
9	15630.00	57.5 PK	74.0	-16.5	1.12 H	175	43.41	14.09
10	15630.00	46.7 AV	54.0	-7.3	1.12 H	175	32.61	14.09
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	67.5 PK	74.0	-6.5	1.29 V	56	63.66	3.84
2	5150.00	53.3 AV	54.0	-0.7	1.29 V	56	49.46	3.84
3	*5210.00	108.7 PK			1.29 V	56	104.74	3.96
4	*5210.00	98.7 AV			1.29 V	56	94.74	3.96
5	5350.00	64.9 PK	74.0	-9.1	1.29 V	56	60.83	4.07
6	5350.00	52.6 AV	54.0	-1.4	1.29 V	56	48.53	4.07
7	#10420.00	53.4 PK	74.0	-20.6	1.07 V	192	43.90	9.50
8	#10420.00	42.8 AV	54.0	-11.2	1.07 V	192	33.30	9.50
9	15630.00	57.4 PK	74.0	-16.6	1.02 V	210	43.31	14.09
10	15630.00	47.6 AV	54.0	-6.4	1.02 V	210	33.51	14.09

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
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz Data:

802.11ac (VHT20)

CHANNEL	TX Channel 40	**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	76.11	29.8 QP	40.0	-10.2	1.50 H	209	46.46	-16.66
2	111.51	32.4 QP	43.5	-11.1	1.10 H	292	48.20	-15.78
3	145.87	30.9 QP	43.5	-12.6	1.10 H	300	43.84	-12.94
4	172.52	35.2 QP	43.5	-8.3	1.40 H	100	48.86	-13.66
5	212.65	31.7 QP	43.5	-11.8	1.40 H	320	47.80	-16.09
6	275.17	34.8 QP	46.0	-11.2	1.10 H	108	47.66	-12.84
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	30.30	34.4 QP	40.0	-5.6	1.10 V	104	49.24	-14.88
2	37.50	36.9 QP	40.0	-3.1	1.20 V	300	50.86	-14.00
3	76.44	31.8 QP	40.0	-8.2	1.20 V	11	48.64	-16.80
4	119.66	36.9 QP	43.5	-6.6	1.10 V	101	52.10	-15.19
5	214.16	35.2 QP	43.5	-8.3	1.40 V	350	51.25	-16.05
6	817.35	35.3 QP	46.0	-10.7	1.10 V	109	36.49	-1.18

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

4.1.8 Test Results (Mode 2)

Below 1GHz Data:

802.11ac (VHT20)

CHANNEL	TX Channel 40	**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	76.52	32.3 QP	40.0	-7.7	2.00 H	319	49.10	-16.83
2	109.59	32.8 QP	43.5	-10.7	1.50 H	306	48.85	-16.03
3	148.09	27.0 QP	43.5	-16.5	1.50 H	288	39.78	-12.77
4	273.10	28.9 QP	46.0	-17.1	1.00 H	77	41.84	-12.96
5	351.79	26.9 QP	46.0	-19.1	1.00 H	269	37.54	-10.66
6	940.11	35.1 QP	46.0	-10.9	1.50 H	308	34.07	1.04
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	30.09	32.0 QP	40.0	-8.0	1.50 V	90	46.90	-14.88
2	76.80	35.3 QP	40.0	-4.7	1.00 V	302	52.29	-16.95
3	116.62	35.0 QP	43.5	-8.5	1.50 V	25	50.56	-15.52
4	148.30	28.2 QP	43.5	-15.4	1.00 V	79	40.93	-12.78
5	804.13	36.2 QP	46.0	-9.8	1.50 V	24	37.58	-1.42
6	957.04	33.4 QP	46.0	-12.6	2.00 V	111	32.24	1.16

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 ROHDE & SCHWARZ	ESCS 30	847124/029	Oct. 22, 2014	Oct. 21, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 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 Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: Apr. 27 to May 08, 2015

4.2.3 Test Procedure

a. 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

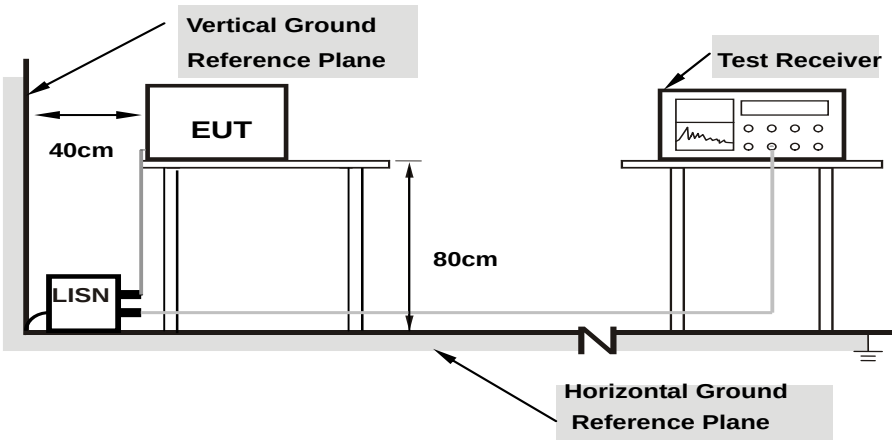
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

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.

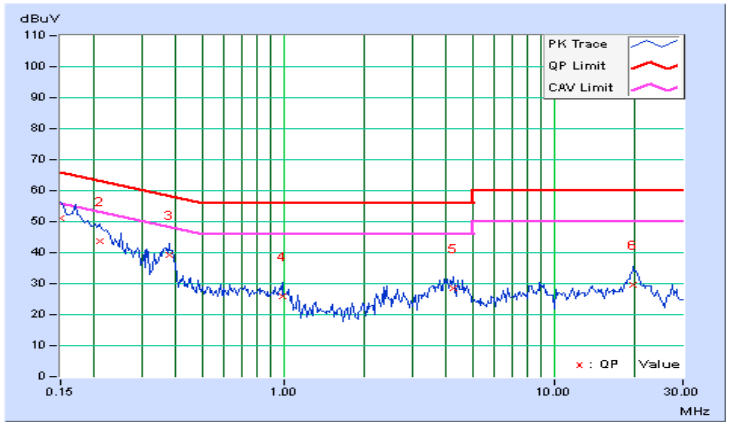
4.2.7 Test Results (Mode 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.08	50.93	41.16	51.01	41.24	66.00	56.00	-14.99	-14.76
2	0.20859	0.09	43.77	34.59	43.86	34.68	63.26	53.26	-19.40	-18.58
3	0.37656	0.10	39.06	33.98	39.16	34.08	58.35	48.35	-19.20	-14.28
4	0.98984	0.13	25.79	20.77	25.92	20.90	56.00	46.00	-30.08	-25.10
5	4.23047	0.23	28.38	19.29	28.61	19.52	56.00	46.00	-27.39	-26.48
6	19.63672	0.69	29.09	22.93	29.78	23.62	60.00	50.00	-30.22	-26.38

REMARKS:

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

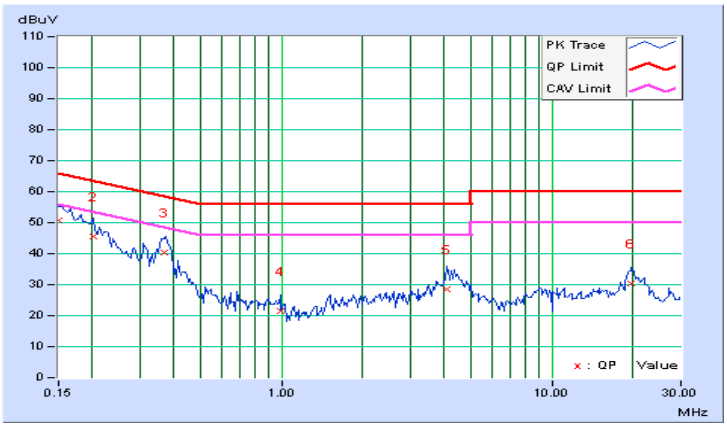


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.08	50.71	40.88	50.79	40.96	66.00	56.00	-15.21	-15.04
2	0.20078	0.08	45.59	36.26	45.67	36.34	63.58	53.58	-17.91	-17.24
3	0.36875	0.10	40.39	31.60	40.49	31.70	58.53	48.53	-18.04	-16.83
4	0.98984	0.13	21.45	17.21	21.58	17.34	56.00	46.00	-34.42	-28.66
5	4.08203	0.23	28.28	19.87	28.51	20.10	56.00	46.00	-27.49	-25.90
6	19.64063	0.73	29.73	23.59	30.46	24.32	60.00	50.00	-29.54	-25.68

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.



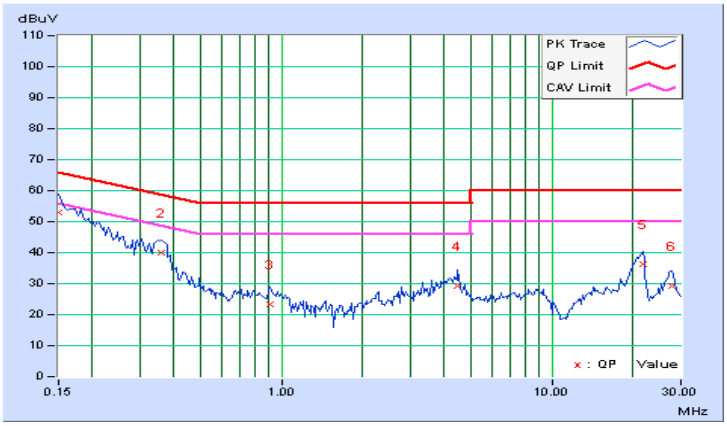
4.2.8 Test Results (Mode 2)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.08	52.74	42.86	52.82	42.94	66.00	56.00	-13.18	-13.06
2	0.36094	0.10	39.80	24.45	39.90	24.55	58.71	48.71	-18.81	-24.16
3	0.90781	0.13	23.05	17.37	23.18	17.50	56.00	46.00	-32.82	-28.50
4	4.46094	0.24	28.90	19.85	29.14	20.09	56.00	46.00	-26.86	-25.91
5	21.61328	0.74	35.56	28.53	36.30	29.27	60.00	50.00	-23.70	-20.73
6	27.80469	0.87	28.44	21.43	29.31	22.30	60.00	50.00	-30.69	-27.70

REMARKS:

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

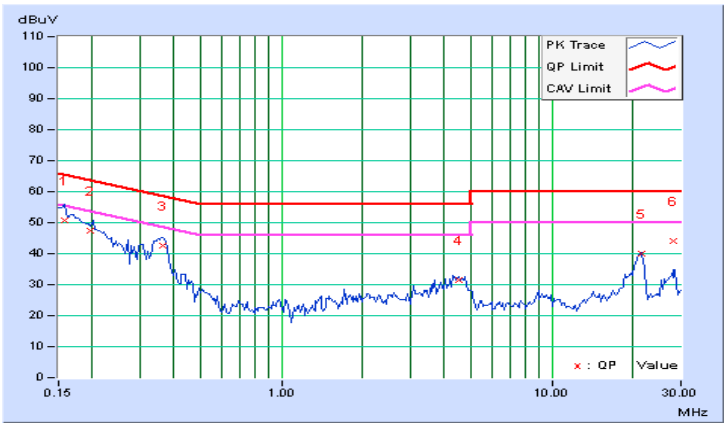


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.08	50.79	41.61	50.87	41.69	65.58	55.58	-14.71	-13.89
2	0.19687	0.08	47.28	38.81	47.36	38.89	63.74	53.74	-16.38	-14.85
3	0.36484	0.10	42.47	33.83	42.57	33.93	58.62	48.62	-16.05	-14.69
4	4.55859	0.25	31.32	23.48	31.57	23.73	56.00	46.00	-24.43	-22.27
5	21.48828	0.78	39.39	32.20	40.17	32.98	60.00	50.00	-19.83	-17.02
6	28.05859	0.93	43.22	38.51	44.15	39.44	60.00	50.00	-15.85	-10.56

REMARKS:

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



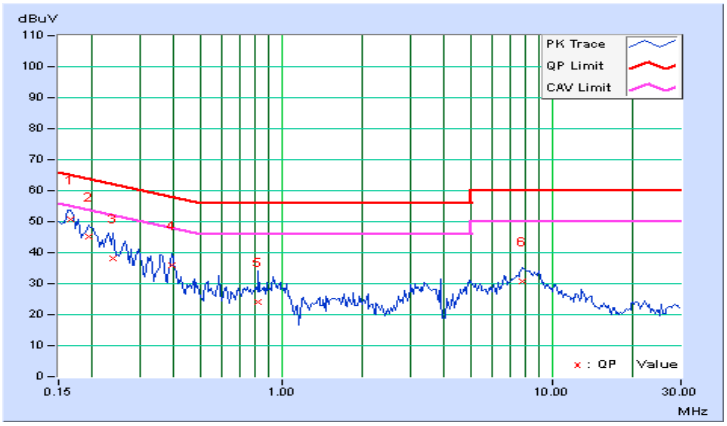
4.2.9 Test Results (Mode 3)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.08	50.65	44.28	50.73	44.36	65.18	55.18	-14.44	-10.81
2	0.19297	0.09	44.92	37.52	45.01	37.61	63.91	53.91	-18.90	-16.30
3	0.23984	0.09	37.90	23.92	37.99	24.01	62.10	52.10	-24.11	-28.09
4	0.39219	0.10	35.85	30.07	35.95	30.17	58.02	48.02	-22.07	-17.85
5	0.81797	0.12	23.87	19.80	23.99	19.92	56.00	46.00	-32.01	-26.08
6	7.72656	0.36	30.32	26.00	30.68	26.36	60.00	50.00	-29.32	-23.64

REMARKS:

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

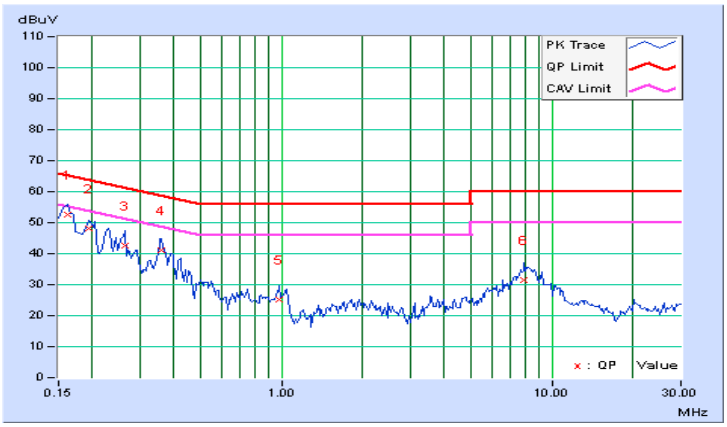


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.08	52.54	45.99	52.62	46.07	65.38	55.38	-12.76	-9.31
2	0.19297	0.08	47.95	40.97	48.03	41.05	63.91	53.91	-15.88	-12.86
3	0.26328	0.09	42.44	34.74	42.53	34.83	61.33	51.33	-18.80	-16.50
4	0.36094	0.10	41.14	35.46	41.24	35.56	58.71	48.71	-17.47	-13.15
5	0.98594	0.13	24.98	19.91	25.11	20.04	56.00	46.00	-30.89	-25.96
6	7.88672	0.38	31.04	26.87	31.42	27.25	60.00	50.00	-28.58	-22.75

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.



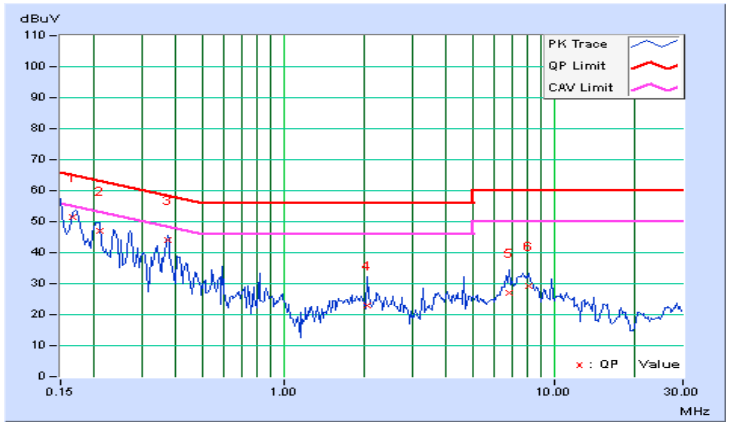
4.2.10 Test Results (Mode 4)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16652	0.08	51.23	43.72	51.31	43.80	65.13	55.13	-13.82	-11.33
2	0.20859	0.09	47.06	38.53	47.15	38.62	63.26	53.26	-16.11	-14.64
3	**0.37266**	**0.10**	**43.83**	**40.91**	**43.93**	**41.01**	**58.44**	**48.44**	**-14.51**	**-7.43**
4	2.04297	0.17	22.97	17.31	23.14	17.48	56.00	46.00	-32.86	-28.52
5	6.81641	0.33	26.76	21.09	27.09	21.42	60.00	50.00	-32.91	-28.58
6	8.05859	0.38	28.86	23.97	29.24	24.35	60.00	50.00	-30.76	-25.65

REMARKS:

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

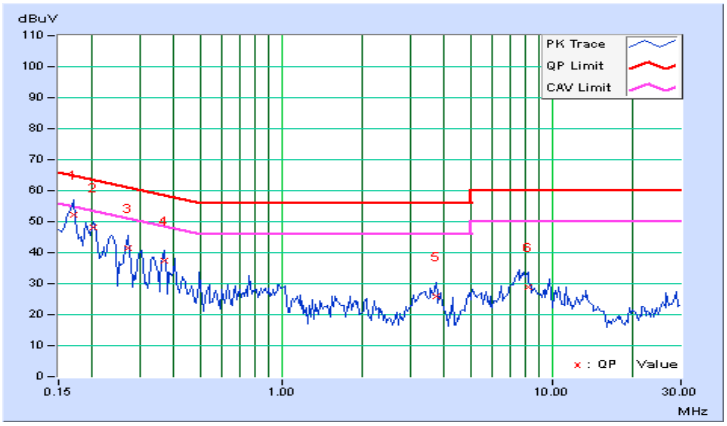


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	0.08	52.20	46.30	52.28	46.38	64.98	54.98	-12.70	-8.60
2	0.20078	0.08	48.05	41.60	48.13	41.68	63.58	53.58	-15.45	-11.90
3	0.27109	0.09	41.35	36.65	41.44	36.74	61.08	51.08	-19.65	-14.35
4	0.36875	0.10	37.28	34.39	37.38	34.49	58.53	48.53	-21.15	-14.04
5	3.71484	0.22	25.81	19.72	26.03	19.94	56.00	46.00	-29.97	-26.06
6	8.15625	0.39	28.55	23.60	28.94	23.99	60.00	50.00	-31.06	-26.01

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 Measurment

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 ≦ 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)

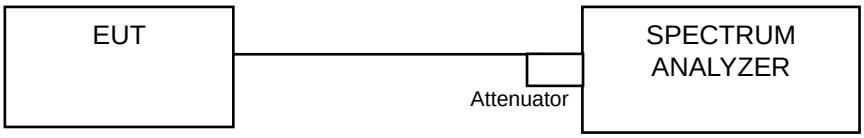
*B is the 26 dB emission bandwidth in megahertz

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

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	Chain 2				
36	5180	18.90	19.11	19.27	243.623	23.87	30	Pass
40	5200	18.56	18.82	19.15	230.211	23.62	30	Pass
48	5240	19.78	19.86	20.17	295.88	24.71	30	Pass

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
36	5180	18.68	18.86	18.98	229.771	23.61	30	Pass
40	5200	18.52	18.80	19.17	229.583	23.61	30	Pass
48	5240	21.24	21.36	21.61	414.695	26.18	30	Pass

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	15.69	16.00	16.32	119.734	20.78	30	Pass
46	5230	19.86	19.01	20.11	279.009	24.46	30	Pass

802.11ac (VHT80)

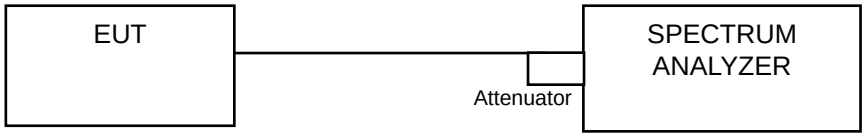
Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)			Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	14.74	13.51	13.92	76.884	18.86	30	Pass

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

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedure

For 802.11a & 802.11ac (VHT20) test:

Using method SA-1

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

For 802.11ac (VHT40) & 802.11ac (VHT80) test:

Using method SA-2

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Same as Item 4.3.6.

4.4.7 Test Results

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
36	5180	6.95	6.21	5.96	11.17	15.73	Pass
40	5200	6.55	5.60	5.65	10.73	15.73	Pass
48	5240	8.08	7.17	7.08	12.24	15.73	Pass

NOTE:
1. Method a) 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 = 2.5dBi + 10log(3) = 7.27dBi > 6dBi , so the power density limit shall be reduced to 17-(7.27-6) = 15.73dBm.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm)			Total Power Density (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2			
36	5180	6.18	5.12	5.69	10.46	15.73	Pass
40	5200	5.62	4.74	5.53	10.09	15.73	Pass
48	5240	9.09	8.39	8.42	13.42	15.73	Pass

NOTE:
1. Method a) 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 = 2.5dBi + 10log(3) = 7.27dBi > 6dBi , so the power density limit shall be reduced to 17-(7.27-6) = 15.73dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)			Duty Factor (dB)	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
38	5190	0.09	-0.70	-0.31	0.10	4.57	15.73	PASS
46	5230	4.58	3.74	4.04	0.10	9.00	15.73	PASS

NOTE:
1. Method a) 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 = 2.5dBi + 10log(3) = 7.27dBi > 6dBi , so the power density limit shall be reduced to 17-(7.27-6) = 15.73dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80):

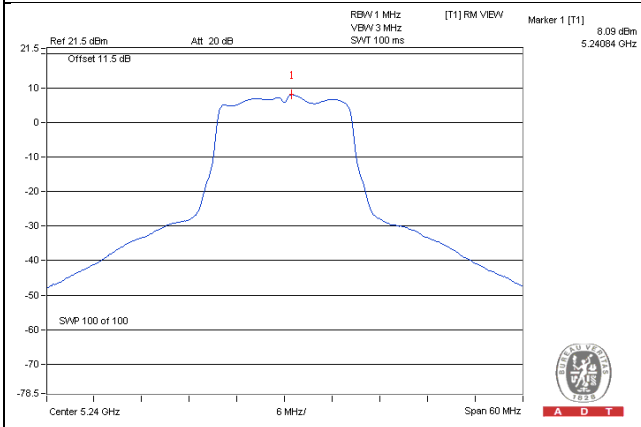
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)			Duty Factor (dB)	Total PSD with Duty Factor (dBm)	Max. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
42	5210	-4.15	-5.05	-4.75	0.23	0.37	15.73	PASS

NOTE:

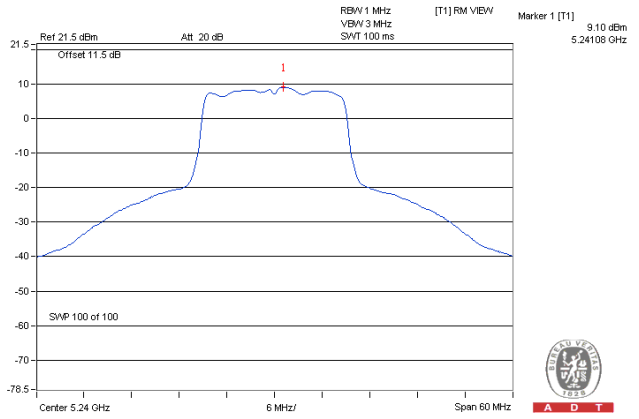
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 2.5dBi + 10log(3) = 7.27dBi > 6dBi , so the power density limit shall be reduced to 17-(7.27-6) = 15.73dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

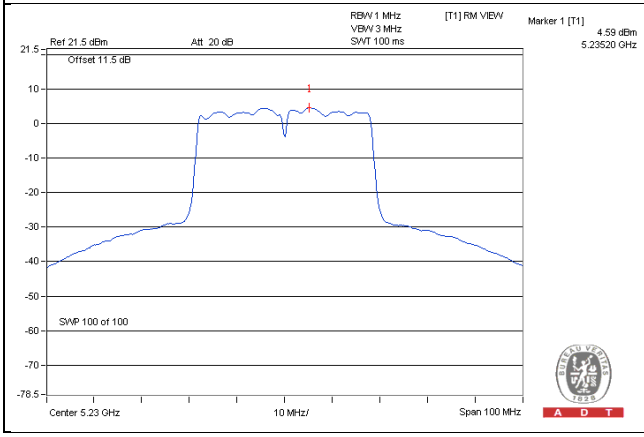
802.11a – Chain 0: CH 48



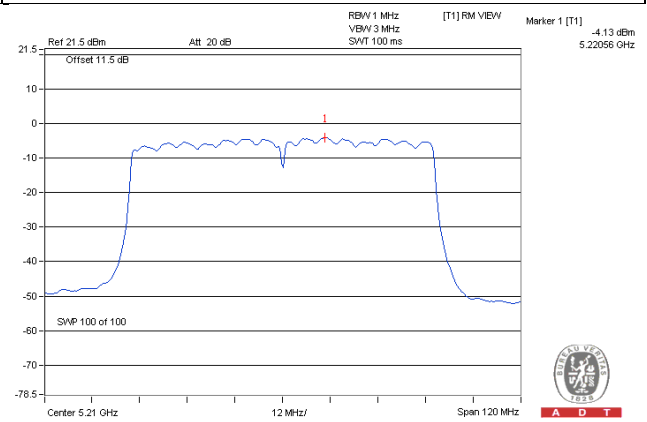
802.11ac (VHT20) – Chain 0: CH 48



802.11ac (VHT40) – Chain 0: CH 46



802.11ac (VHT80) – Chain 0: CH 42

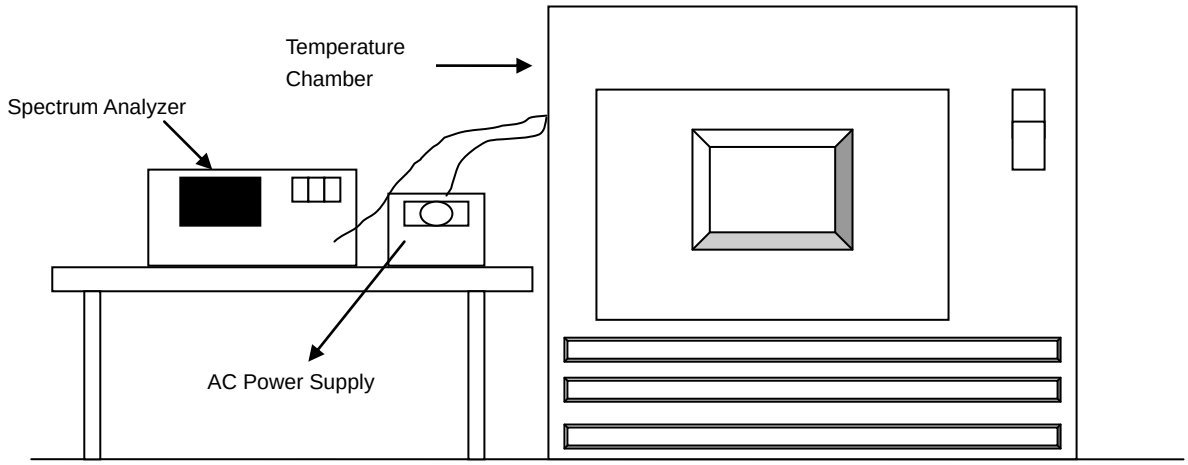


4.5 Frequency Stability Measurement

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

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

FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5180.0217	0.00042	5180.018	0.00035	5180.0185	0.00036	5180.0208	0.00040
40	120	5180.0243	0.00047	5180.0269	0.00052	5180.024	0.00046	5180.0232	0.00045
30	120	5179.9867	-0.00026	5179.9859	-0.00027	5179.9853	-0.00028	5179.987	-0.00025
20	120	5180.0226	0.00044	5180.0204	0.00039	5180.0223	0.00043	5180.023	0.00044
10	120	5179.9959	-0.00008	5179.9947	-0.00010	5179.9959	-0.00008	5179.9981	-0.00004
0	120	5179.9802	-0.00038	5179.9768	-0.00045	5179.9783	-0.00042	5179.9789	-0.00041
-10	120	5179.9907	-0.00018	5179.9912	-0.00017	5179.9888	-0.00022	5179.9894	-0.00020
-20	120	5179.9756	-0.00047	5179.9776	-0.00043	5179.9755	-0.00047	5179.9777	-0.00043
-30	120	5180.0082	0.00016	5180.013	0.00025	5180.0116	0.00022	5180.0117	0.00023

FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5180MHz									
TEMP. (℃)	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	5180.0236	0.00046	5180.0213	0.00041	5180.0229	0.00044	5180.0228	0.00044
	120	5180.0226	0.00044	5180.0204	0.00039	5180.0223	0.00043	5180.023	0.00044
	102	5180.0225	0.00043	5180.0207	0.00040	5180.0223	0.00043	5180.0228	0.00044

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

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