

FCC TEST REPORT (WLAN 15.407)

REPORT NO.: RF140508E03-1

MODEL NO.: D1201

FCC ID: V7TD1201

RECEIVED: May 02, 2014

TESTED: June 14 to 26, 2014

ISSUED: July 04, 2014

APPLICANT: SHENZHEN TENDA TECHNOLOGY CO.,LTD.

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Table of Contents

RELEASE CONTROL RECORD	4
1. CERTIFICATION	5
2. SUMMARY OF TEST RESULTS	6
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT (WLAN)	8
3.2 DESCRIPTION OF TEST MODES	11
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	12
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	14
3.4 DUTY CYCLE OF TEST SIGNAL	15
3.5 DESCRIPTION OF SUPPORT UNITS	16
3.6 CONFIGURATION OF SYSTEM UNDER TEST	17
4. TEST TYPES AND RESULTS	18
4.1 CONDUCTED EMISSION MEASUREMENT	18
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	18
4.1.2 TEST INSTRUMENTS	18
4.1.3 TEST PROCEDURES	19
4.1.4 DEVIATION FROM TEST STANDARD	19
4.1.5 TEST SETUP	19
4.1.6 EUT OPERATING CONDITIONS	20
4.1.7 TEST RESULTS	21
4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT	23
4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT	23
4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	24
4.2.3 TEST INSTRUMENTS	25
4.2.4 TEST PROCEDURES	27
4.2.5 DEVIATION FROM TEST STANDARD	27
4.2.6 TEST SETUP	28
4.2.7 EUT OPERATING CONDITION	28
4.2.8 TEST RESULTS	29
4.3 TRANSMIT POWER MEASUREMENT	48
4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT	48
4.3.2 TEST INSTRUMENTS	49
4.3.3 TEST PROCEDURE	49
4.3.4 DEVIATION FROM TEST STANDARD	50
4.3.5 TEST SETUP	50
4.3.6 EUT OPERATING CONDITIONS	50
4.3.7 TEST RESULTS	51



A D T

4.4	PEAK POWER SPECTRAL DENSITY MEASUREMENT	55
4.4.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	55
4.4.2	TEST INSTRUMENTS.....	55
4.4.3	TEST PROCEDURES	56
4.4.4	DEVIATION FROM TEST STANDARD	57
4.4.5	TEST SETUP	57
4.4.6	EUT OPERATING CONDITIONS	57
4.4.7	TEST RESULTS	58
4.5	FREQUENCY STABILITY.....	62
4.5.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	62
4.5.2	TEST INSTRUMENTS.....	62
4.5.3	TEST PROCEDURE.....	62
4.5.4	DEVIATION FROM TEST STANDARD	63
4.5.5	TEST SETUP	63
4.5.6	EUT OPERATING CONDITION	63
4.5.7	TEST RESULTS	64
4.6	6DB BANDWIDTH MEASUREMENT	65
4.6.1	LIMITS OF 6DB BANDWIDTH MEASUREMENT	65
4.6.2	TEST INSTRUMENTS.....	65
4.6.3	TEST PROCEDURE.....	65
4.6.4	DEVIATION FROM TEST STANDARD	65
4.6.5	TEST SETUP	65
4.6.6	EUT OPERATING CONDITIONS	65
4.6.7	TEST RESULTS	66
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	68
6.	INFORMATION ON THE TESTING LABORATORIES	69
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	70



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140508E03-1	Original release	July 04, 2014



1. CERTIFICATION

PRODUCT: Wireless AC1200 ADSL2+ Dual Band Modem Router
BRAND NAME: Tenda
MODEL NO.: D1201
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: SHENZHEN TENDA TECHNOLOGY CO.,LTD.
TESTED: June 14 to 26, 2014
STANDARDS: FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10-2009

The above equipment (Model: D1201) 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:** July 04, 2014
(Elsie Hsu, Specialist)

APPROVED BY :  , **DATE:** July 04, 2014
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -21.82dB at 0.24766MHz
15.407 (b)(1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 5120.60MHz, 5101.80MHz, 5150.00MHz, 5904.00MHz, 5666.90MHz, 5864.00MHz, 5903.50MHz, 5715.00MHz.
15.407(a/1/2/3)	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 Straight Plug not a standard connector.

NOTE: 1. The EUT was operating in 2400 ~ 2483.5MHz, 5.18~5.24GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.18~5.24GHz and 5.725~5.850GHz. For the 2400 ~ 2483.5MHz 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:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Measurement	Value
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.37 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT (WLAN)

PRODUCT	Wireless AC1200 ADSL2+ Dual Band Modem Router
MODEL NO.	D1201
POWER SUPPLY	DC 12V from power adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
MODULATION TECHNOLOGY	DSSS,OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 900Mbps
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), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	For 15.407 802.11a: 45.394mW 802.11ac (VHT20): 109.997mW 802.11ac (VHT40): 92.485mW 802.11ac (VHT80): 45.723mW For 15.247 802.11b: 67.764mW 802.11g: 168.655mW 802.11n (HT20): 364.591mW 802.11n (HT40): 179.999mW

ANTENNA TYPE	Please see NOTE
DATA CABLE	RJ11 cable (1m) x 1 RJ45 cable (1m) x 1
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Adapter x 1

NOTE:

- The EUT is a 2.4GHz & 5GHz WLAN device.
- The EUT must be supplied with a power adapter as following table:

Brand:	Dongguan Ponon Technology Co., Ltd.
Model No.:	TEA12U-12150
Input power :	100-240V~50/60Hz 0.6A
Output power :	12V, 1.5A DC output cable(unshielded, 1.5m)

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

For 2.4GHz						
Transmitter Circuit	Gain(dBi) Exclude cable loss	Cable Loss(dB) (External only, if any)	Antenna Type	Connector Type	Frequency range (MHz to MHz)	Cable Length
Chain (0)	5	0.4	dipole	SMA Straight Plug	2400-2500	272mm
Chain (1)	5	0.4	dipole	SMA Straight Plug	2400-2500	90mm
For 5GHz						
Transmitter Circuit	Gain(dBi) Exclude cable loss	Cable Loss(dB)	Antenna Type	Connector Type	Frequency range (MHz to MHz)	Cable Length
Chain (0)	2.5	0.4	PCB	NA	5150-5850	60mm
Chain (1)	2.5	0.4	PCB	NA	5150-5850	145mm

4. The EUT incorporates a MIMO function without beam forming.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	1TX	1RX
802.11b	1 ~ 11Mbps	1TX	1RX
802.11g	6 ~ 54Mbps	1TX	1RX
802.11n (HT20)	MCS 0~7	1TX	1RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	1TX	1RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20) (5GHz)	MCS0~8 (256QAM) Nss= 1	1TX	1RX
	MCS0~8 (256QAM) Nss= 2	2TX	2RX
802.11ac (VHT40) (5GHz)	MCS0~9 (256QAM) Nss= 1	1TX	1RX
	MCS0~9 (256QAM) Nss= 2	2TX	2RX
802.11ac (VHT80) (5GHz)	MCS0~9 (256QAM) Nss= 1	1TX	1RX
	MCS0~9 (256QAM) Nss= 2	2TX	2RX

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)

5. Spurious emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
6. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
7. When the EUT operating in 802.11ac, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 9.
8. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 5150 ~ 5250MHz band:

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
42	5210 MHz

Operated in 5725 ~ 5850MHz band:

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

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

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
155	5775 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

NOTE: 1. The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on Y-plane.

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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	36 to 48 149 to 165	149	OFDM	BPSK	13

RADIATED EMISSION TEST (BELOW 1 GHz):

- ☒ 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	36 to 48 149 to 165	149	OFDM	BPSK	13

RADIATED EMISSION TEST (ABOVE 1 GHz):

- ☒ 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)	36 to 48 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	13
802.11ac (VHT40)	38 to 46 151 to 159	38, 46, 151, 159	OFDM	BPSK	27
802.11ac (VHT80)	42, 155	42, 155	OFDM	BPSK	58.5

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)	36 to 48 149 to 165	36, 40, 48, 149, 157, 165	OFDM	BPSK	13
802.11ac (VHT40)	38 to 46 151 to 159	38, 46, 151, 159	OFDM	BPSK	27
802.11ac (VHT80)	42, 155	42, 155	OFDM	BPSK	58.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C, 65%RH	120Vac, 60Hz	Ping Liu
RE<1G	23deg. C, 67%RH	120Vac, 60Hz	Tim Ho
RE ³ 1G	23deg. C, 69%RH	120Vac, 60Hz	Robert Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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 Procedures 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.

3.4 DUTY CYCLE OF TEST SIGNAL

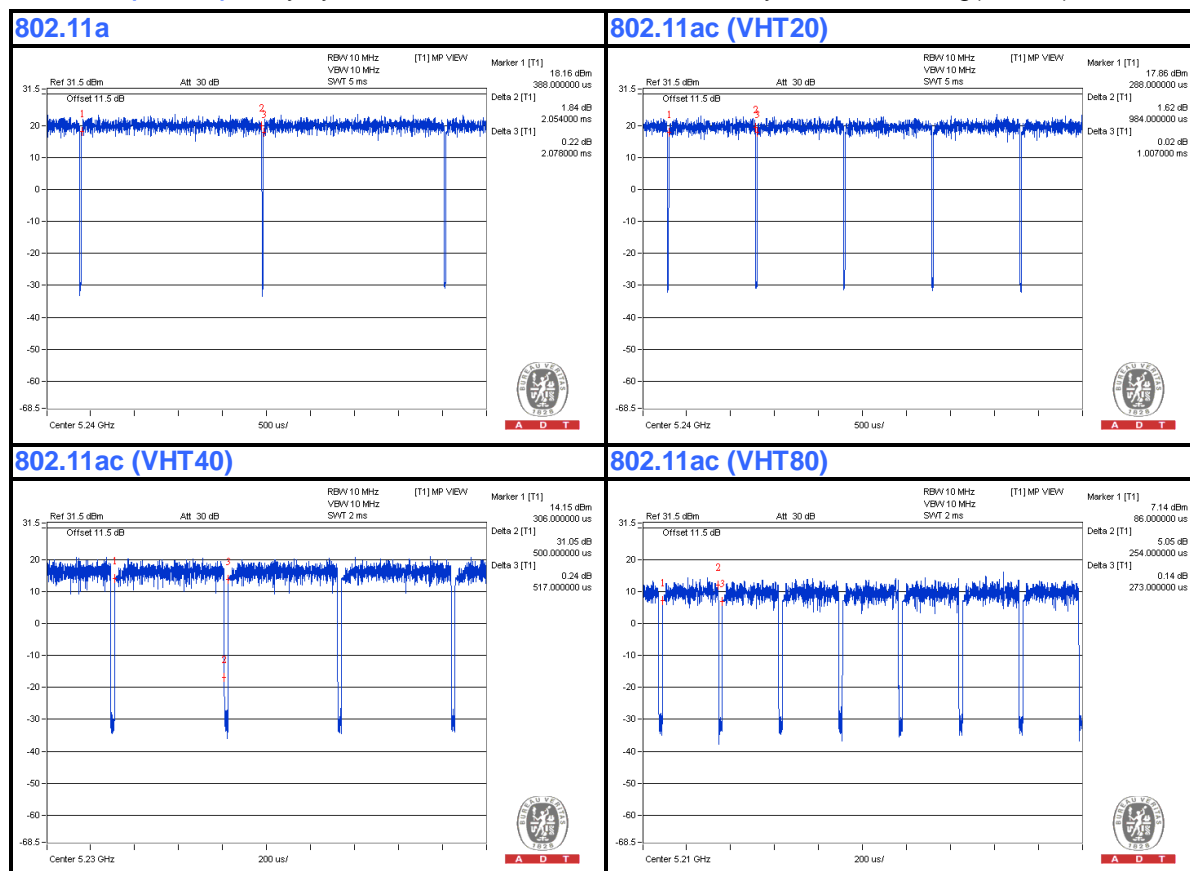
If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11a: Duty cycle = 2.054 ms/2.078 ms = 0.988

802.11ac (VHT20): Duty cycle = 0.984 ms/1.007 ms = 0.977, Duty factor = $10 * \log(1/0.977) = 0.1$

802.11ac (VHT40): Duty cycle = 0.5 ms/0.517 ms = 0.967, Duty factor = $10 * \log(1/0.967) = 0.146$

802.11ac (VHT80): Duty cycle = 0.254 ms/0.273 ms = 0.93, Duty factor = $10 * \log(1/0.93) = 0.315$





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3.5 DESCRIPTION OF SUPPORT UNITS

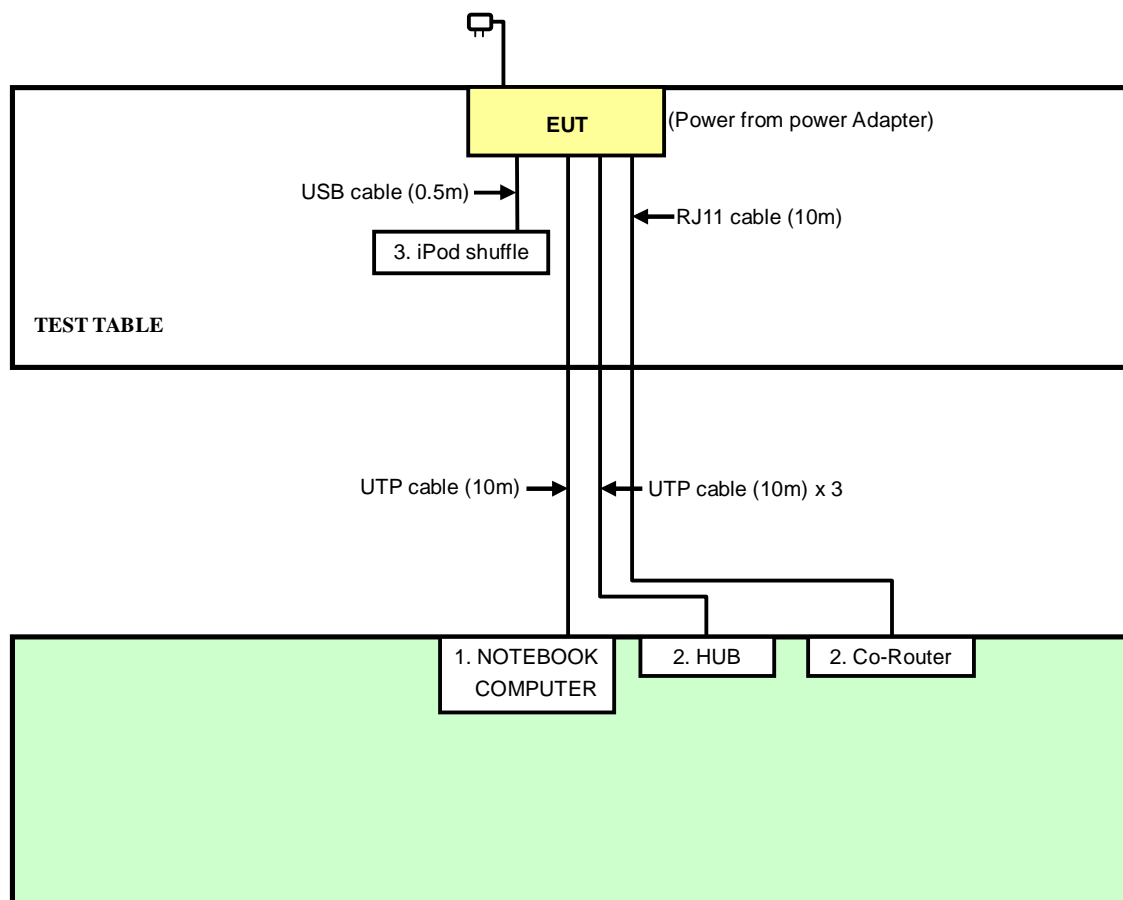
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	Notebook	DELL	PP32LA	FSLB32S	FCC DoC
2	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC
3	iPod shuffle	Apple	MC749TA/A	CC4DMFJUDFDM	NA
4	Co-Router	ZyXEL	IES-1000	S4Z3112558	NA

No.	Signal cable description
1	UTP cable (10m)
2	UTP cable (10m)
3	USB cable (0.5m)
4	RJ11 cable (10m)

Note: The power cords of the above support units were unshielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	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 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 12, 2013	Sep. 11, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10, 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 24, 2013	Sep. 23, 2014
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2013	Sep. 30, 2014
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: June 18, 2014

4.1.3 TEST PROCEDURES

- 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 level under (Limit – 20dB) was not recorded.

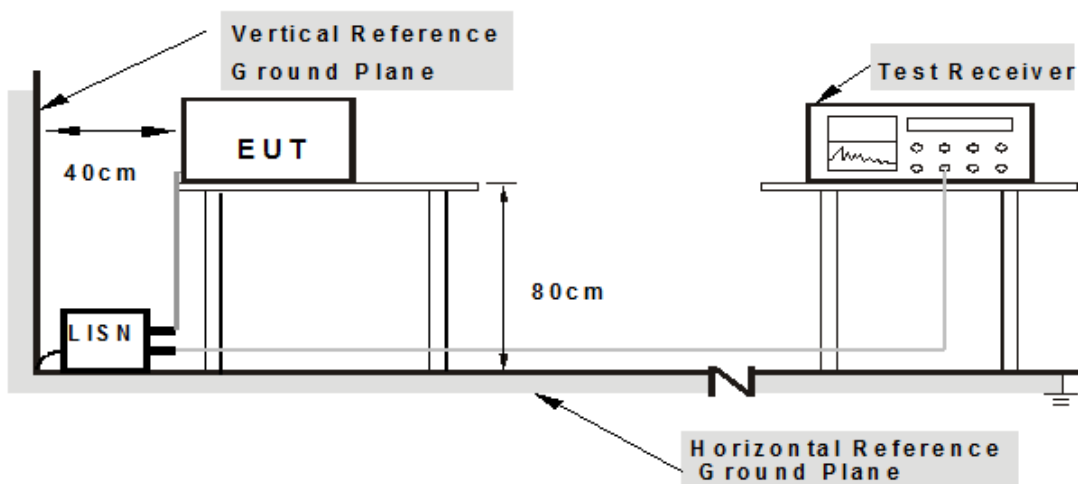
NOTE:

- The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



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4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is Kept in a remote area
2. The communication partner run test program “MP Tool 2.0.1.0.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

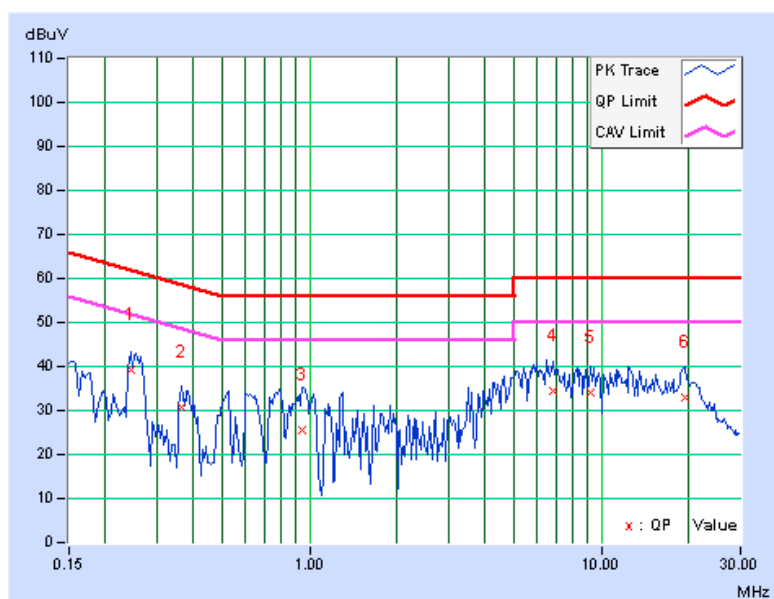
4.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.24375	0.07	39.11	24.27	39.18	24.34	61.97	51.97	-22.78	-27.62
2	0.36484	0.09	30.81	15.35	30.90	15.44	58.62	48.62	-27.72	-33.18
3	0.94688	0.13	25.43	9.18	25.56	9.31	56.00	46.00	-30.44	-36.69
4	6.83594	0.35	34.03	24.15	34.38	24.50	60.00	50.00	-25.62	-25.50
5	9.18750	0.42	33.53	25.39	33.95	25.81	60.00	50.00	-26.05	-24.19
6	19.30469	0.69	32.42	26.79	33.11	27.48	60.00	50.00	-26.89	-22.52

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

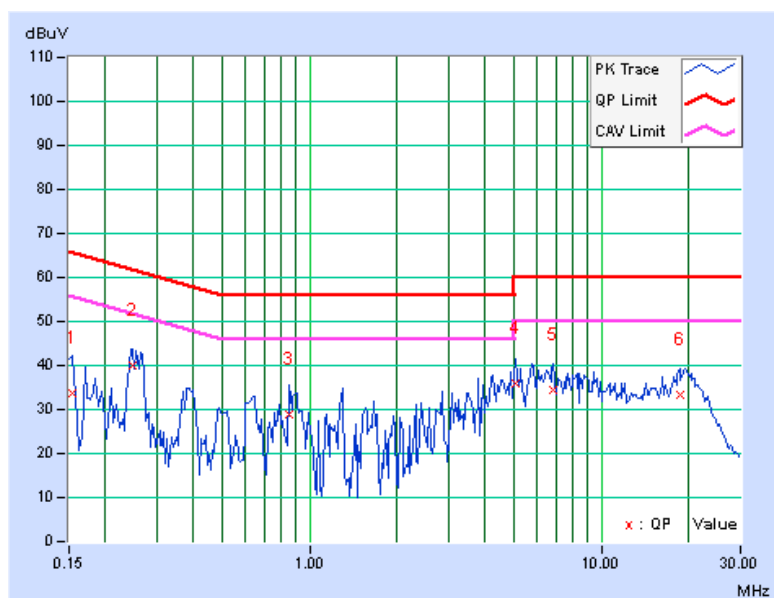


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor [dB]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB (uV)]	AV. [dB (uV)]	Q.P. [dB]	AV. [dB]
1	0.15391	0.07	33.67	10.02	33.74	10.09	65.79	55.79	-32.04	-45.69
2	0.24766	0.07	39.94	24.82	40.01	24.89	61.84	51.84	-21.82	-26.94
3	0.85313	0.12	28.72	10.89	28.84	11.01	56.00	46.00	-27.16	-34.99
4	5.07422	0.29	35.53	25.60	35.82	25.89	60.00	50.00	-24.18	-24.11
5	6.85938	0.35	34.22	24.68	34.57	25.03	60.00	50.00	-25.43	-24.97
6	18.56250	0.67	32.72	27.06	33.39	27.73	60.00	50.00	-26.61	-22.27

REMARKS:

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



4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 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.

4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedures 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:

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

4.2.3 TEST INSTRUMENTS

For Below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21, 2014	Jan. 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
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. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: June 14, 2014

**A D T****For Below 1GHz:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21, 2014	Jan. 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKA-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
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. G.
4. The FCC Site Registration No. is 966073.
- 5 The VCCI Site Registration No. is G-137.
- 6 The CANADA Site Registration No. is IC 7450H-2.
- 7 Tested Date: June 26, 2014

4.2.4 TEST PROCEDURES

- 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:

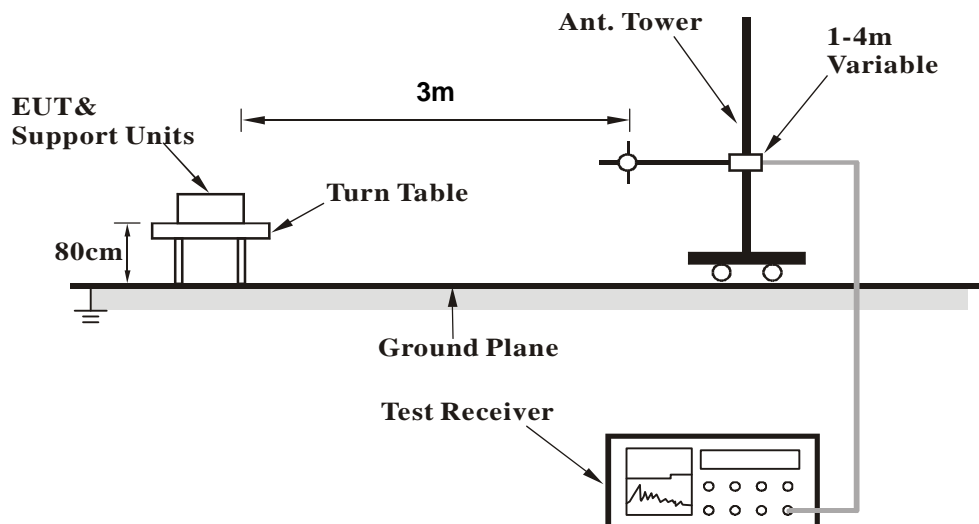
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.2.5 DEVIATION FROM TEST STANDARD

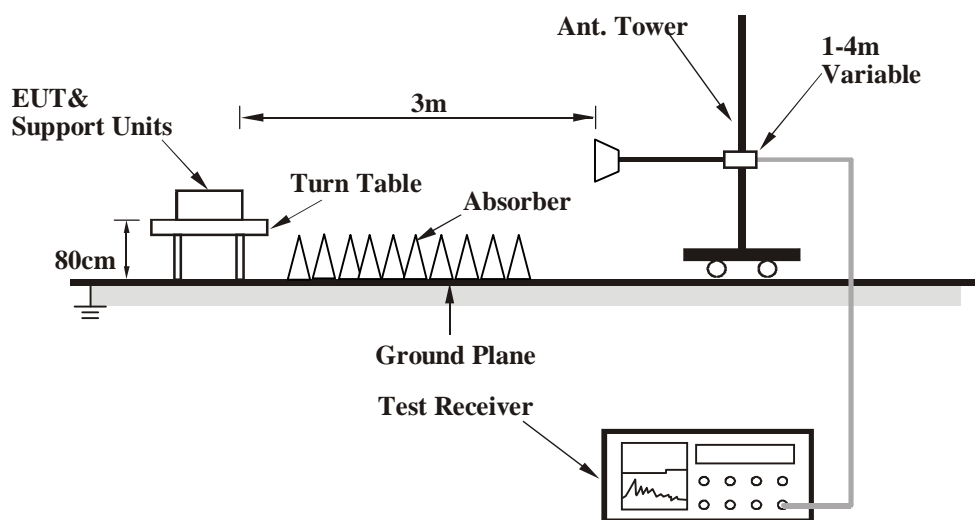
No deviation

4.2.6 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

4.2.8 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11ac (VHT20)

CHANNEL	TX Channel 149	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	167.16	32.3 QP	43.5	-11.2	1.50 H	281	45.91	-13.57
2	240.01	35.9 QP	46.0	-10.1	1.50 H	360	50.70	-14.77
3	375.03	36.5 QP	46.0	-9.5	1.00 H	3	46.72	-10.23
4	442.10	43.8 QP	46.0	-2.2	1.50 H	113	52.20	-8.37
5	625.00	41.3 QP	46.0	-4.7	1.50 H	331	45.75	-4.41
6	749.98	35.9 QP	46.0	-10.2	1.00 H	327	37.79	-1.94
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	57.78	32.7 QP	40.0	-7.3	1.00 V	156	46.49	-13.81
2	219.44	38.9 QP	46.0	-7.1	1.00 V	180	55.07	-16.13
3	233.85	43.4 QP	46.0	-2.6	1.00 V	171	58.75	-15.38
4	433.08	39.5 QP	46.0	-6.5	1.00 V	320	48.10	-8.57
5	459.86	26.9 QP	46.0	-19.1	1.00 V	0	34.96	-8.09
6	484.88	42.4 QP	46.0	-3.6	1.00 V	167	50.06	-7.64

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

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	5102.60	64.5 PK	74.0	-9.5	1.05 H	206	57.94	6.56
2	5102.60	53.8 AV	54.0	-0.2	1.05 H	206	47.24	6.56
3	5150.00	61.4 PK	74.0	-12.6	1.01 H	210	54.60	6.80
4	5150.00	49.2 AV	54.0	-4.8	1.01 H	210	42.40	6.80
5	*5180.00	113.0 PK			1.01 H	210	106.05	6.95
6	*5180.00	102.9 AV			1.01 H	210	95.95	6.95
7	#10360.00	63.5 PK	74.0	-10.5	1.15 H	329	50.39	13.11
8	#10360.00	51.0 AV	54.0	-3.0	1.15 H	329	37.89	13.11
9	15540.00	60.7 PK	74.0	-13.3	1.00 H	306	42.01	18.69
10	15540.00	48.5 AV	54.0	-5.5	1.00 H	306	29.81	18.69
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	5102.60	55.6 PK	74.0	-18.4	1.22 V	263	49.04	6.56
2	5102.60	46.5 AV	54.0	-7.5	1.22 V	263	39.94	6.56
3	5150.00	60.3 PK	74.0	-13.7	1.22 V	263	53.50	6.80
4	5150.00	43.2 AV	54.0	-10.8	1.22 V	263	36.40	6.80
5	*5180.00	104.9 PK			1.22 V	263	97.95	6.95
6	*5180.00	95.2 AV			1.22 V	263	88.25	6.95
7	#10360.00	63.9 PK	74.0	-10.1	1.00 V	337	50.79	13.11
8	#10360.00	50.9 AV	54.0	-3.1	1.00 V	337	37.79	13.11
9	15540.00	60.0 PK	74.0	-14.0	1.11 V	37	41.31	18.69
10	15540.00	47.8 AV	54.0	-6.2	1.11 V	37	29.11	18.69

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	5121.40	63.2 PK	74.0	-10.8	1.03 H	210	56.55	6.65
2	5121.40	53.7 AV	54.0	-0.3	1.03 H	210	47.05	6.65
3	*5200.00	113.0 PK			1.01 H	213	105.95	7.05
4	*5200.00	103.0 AV			1.01 H	213	95.95	7.05
5	#10400.00	64.2 PK	74.0	-9.8	1.12 H	339	50.98	13.22
6	#10400.00	50.5 AV	54.0	-3.5	1.12 H	339	37.28	13.22
7	15600.00	60.4 PK	74.0	-13.6	1.00 H	297	41.70	18.70
8	15600.00	48.5 AV	54.0	-5.5	1.00 H	297	29.80	18.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5121.40	57.3 PK	74.0	-16.7	1.26 V	264	50.65	6.65
2	5121.40	46.3 AV	54.0	-7.7	1.26 V	264	39.65	6.65
3	*5200.00	108.2 PK			1.08 V	272	101.15	7.05
4	*5200.00	98.0 AV			1.08 V	272	90.95	7.05
5	#10400.00	63.8 PK	74.0	-10.2	1.00 V	337	50.58	13.22
6	#10400.00	50.3 AV	54.0	-3.7	1.00 V	337	37.08	13.22
7	15600.00	60.9 PK	74.0	-13.1	1.14 V	47	42.20	18.70
8	15600.00	48.4 AV	54.0	-5.6	1.14 V	47	29.70	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	114.5 PK			1.00 H	212	107.34	7.16
2	*5240.00	103.6 AV			1.00 H	212	96.44	7.16
3	5459.80	59.6 PK	74.0	-14.4	1.32 H	212	51.70	7.90
4	5459.80	48.4 AV	54.0	-5.6	1.32 H	212	40.50	7.90
5	#10480.00	64.7 PK	74.0	-9.3	1.05 H	332	51.54	13.16
6	#10480.00	51.0 AV	54.0	-3.0	1.05 H	332	37.84	13.16
7	15720.00	60.9 PK	74.0	-13.1	1.00 H	302	42.50	18.40
8	15720.00	48.8 AV	54.0	-5.2	1.00 H	302	30.40	18.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	108.4 PK			1.04 V	273	101.24	7.16
2	*5240.00	98.2 AV			1.04 V	273	91.04	7.16
3	5459.80	57.7 PK	74.0	-16.3	1.25 V	274	49.80	7.90
4	5459.80	46.2 AV	54.0	-7.8	1.25 V	274	38.30	7.90
5	#10480.00	64.3 PK	74.0	-9.7	1.01 V	347	51.14	13.16
6	#10480.00	50.8 AV	54.0	-3.2	1.01 V	347	37.64	13.16
7	15720.00	60.6 PK	74.0	-13.4	1.10 V	56	42.20	18.40
8	15720.00	48.2 AV	54.0	-5.8	1.10 V	56	29.80	18.40

REMARKS:

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

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	#5666.20	63.6 PK	74.0	-10.4	1.03 H	211	55.30	8.30
2	#5666.20	53.7 AV	54.0	-0.3	1.03 H	211	45.40	8.30
3	#5725.00	70.8 PK	78.2	-7.4	1.02 H	214	62.41	8.39
4	*5745.00	111.1 PK			1.02 H	214	102.68	8.42
5	*5745.00	101.2 AV			1.02 H	214	92.78	8.42
6	11490.00	58.7 PK	74.0	-15.3	1.00 H	240	44.35	14.35
7	11490.00	46.2 AV	54.0	-7.8	1.00 H	240	31.85	14.35
8	#17235.00	64.2 PK	74.0	-9.8	1.04 H	157	41.76	22.44
9	#17235.00	42.3 AV	54.0	-11.7	1.04 H	157	19.86	22.44

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	#5666.20	60.9 PK	74.0	-13.1	1.18 V	246	52.60	8.30
2	#5666.20	48.6 AV	54.0	-5.4	1.18 V	246	40.30	8.30
3	#5725.00	67.5 PK	78.2	-10.7	1.18 V	246	59.11	8.39
4	*5745.00	103.4 PK			1.18 V	246	94.98	8.42
5	*5745.00	94.8 AV			1.18 V	246	86.38	8.42
6	11490.00	56.3 PK	74.0	-17.7	1.00 V	351	41.95	14.35
7	11490.00	44.3 AV	54.0	-9.7	1.00 V	351	29.95	14.35
8	#17235.00	61.4 PK	74.0	-12.6	1.10 V	33	38.96	22.44
9	#17235.00	40.6 AV	54.0	-13.4	1.10 V	33	18.16	22.44

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	53.5 PK	78.2	-24.7	1.02 H	216	45.11	8.39
2	*5785.00	107.5 PK			1.02 H	216	99.01	8.49
3	*5785.00	97.7 AV			1.02 H	216	89.21	8.49
4	#5853.30	63.4 PK	78.2	-14.8	1.02 H	216	54.71	8.69
5	#5864.20	63.4 PK	74.0	-10.6	1.01 H	219	54.67	8.73
6	#5864.20	53.7 AV	54.0	-0.3	1.01 H	219	44.97	8.73
7	11570.00	54.3 PK	74.0	-19.7	1.00 H	254	39.99	14.31
8	11570.00	44.7 AV	54.0	-9.3	1.00 H	254	30.39	14.31
9	#17355.00	62.5 PK	74.0	-11.5	1.00 H	158	39.50	23.00
10	#17355.00	42.3 AV	54.0	-11.7	1.00 H	158	19.30	23.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	50.6 PK	78.2	-27.6	1.15 V	240	42.21	8.39
2	*5785.00	100.3 PK			1.15 V	240	91.81	8.49
3	*5785.00	90.3 AV			1.15 V	240	81.81	8.49
4	#5853.30	50.2 PK	78.2	-28.0	1.15 V	240	41.51	8.69
5	#5864.20	61.2 PK	74.0	-12.8	1.15 V	240	52.47	8.73
6	#5864.20	48.7 AV	54.0	-5.3	1.15 V	240	39.97	8.73
7	11570.00	56.0 PK	74.0	-18.0	1.00 V	360	41.69	14.31
8	11570.00	43.8 AV	54.0	-10.2	1.00 V	360	29.49	14.31
9	#17355.00	61.7 PK	74.0	-12.3	1.02 V	10	38.70	23.00
10	#17355.00	40.8 AV	54.0	-13.2	1.02 V	10	17.80	23.00

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	106.8 PK			1.01 H	215	98.21	8.59
2	*5825.00	97.1 AV			1.01 H	215	88.51	8.59
3	#5850.00	57.2 PK	78.2	-21.0	1.01 H	215	48.53	8.67
4	#5904.00	63.6 PK	74.0	-10.4	1.00 H	216	54.73	8.87
5	#5904.00	53.8 AV	54.0	-0.2	1.00 H	216	44.93	8.87
6	11650.00	54.9 PK	74.0	-19.1	1.00 H	265	40.52	14.38
7	11650.00	45.0 AV	54.0	-9.0	1.00 H	265	30.62	14.38
8	#17475.00	62.6 PK	74.0	-11.4	1.00 H	148	39.30	23.30
9	#17475.00	42.7 AV	54.0	-11.3	1.00 H	148	19.40	23.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	100.4 PK			1.09 V	218	91.81	8.59
2	*5825.00	90.2 AV			1.09 V	218	81.61	8.59
3	#5850.00	54.6 PK	78.2	-23.6	1.09 V	218	45.93	8.67
4	#5904.00	61.4 PK	74.0	-12.6	1.09 V	218	52.53	8.87
5	#5904.00	48.6 AV	54.0	-5.4	1.09 V	218	39.73	8.87
6	11650.00	56.1 PK	74.0	-17.9	1.00 V	360	41.72	14.38
7	11650.00	44.0 AV	54.0	-10.0	1.00 V	360	29.62	14.38
8	#17475.00	61.4 PK	74.0	-12.6	1.07 V	16	38.10	23.30
9	#17475.00	40.8 AV	54.0	-13.2	1.07 V	16	17.50	23.30

REMARKS:

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

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5101.80	63.6 PK	74.0	-10.4	1.05 H	207	57.05	6.55
2	5101.80	53.8 AV	54.0	-0.2	1.05 H	207	47.25	6.55
3	5150.00	59.3 PK	74.0	-14.7	1.04 H	209	52.50	6.80
4	5150.00	49.0 AV	54.0	-5.0	1.04 H	209	42.16	6.80
5	*5180.00	113.3 PK			1.04 H	209	106.35	6.95
6	*5180.00	102.7 AV			1.04 H	209	95.75	6.95
7	#10360.00	63.3 PK	74.0	-10.7	1.10 H	331	50.19	13.11
8	#10360.00	51.0 AV	54.0	-3.0	1.10 H	331	37.89	13.11
9	15540.00	60.1 PK	74.0	-13.9	1.00 H	304	41.41	18.69
10	15540.00	48.5 AV	54.0	-5.5	1.00 H	304	29.81	18.69
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	5101.80	60.5 PK	74.0	-13.5	1.23 V	288	53.95	6.55
2	5101.80	48.7 AV	54.0	-5.3	1.23 V	288	42.15	6.55
3	5150.00	57.6 PK	74.0	-16.4	1.23 V	288	50.80	6.80
4	5150.00	46.4 AV	54.0	-7.6	1.23 V	288	39.60	6.80
5	*5180.00	107.7 PK			1.23 V	288	100.75	6.95
6	*5180.00	97.7 AV			1.23 V	288	90.75	6.95
7	#10360.00	63.5 PK	74.0	-10.5	1.02 V	343	50.39	13.11
8	#10360.00	50.2 AV	54.0	-3.8	1.02 V	343	37.09	13.11
9	15540.00	59.3 PK	74.0	-14.7	1.08 V	49	40.61	18.69
10	15540.00	47.2 AV	54.0	-6.8	1.08 V	49	28.51	18.69

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	5122.10	62.9 PK	74.0	-11.1	1.04 H	206	56.24	6.66
2	5122.10	53.6 AV	54.0	-0.4	1.04 H	206	46.94	6.66
3	*5200.00	112.6 PK			1.02 H	205	105.55	7.05
4	*5200.00	102.5 AV			1.02 H	205	95.45	7.05
5	#10400.00	64.6 PK	74.0	-9.4	1.09 H	331	51.38	13.22
6	#10400.00	51.0 AV	54.0	-3.0	1.09 H	331	37.78	13.22
7	15600.00	59.6 PK	74.0	-14.4	1.03 H	274	40.90	18.70
8	15600.00	48.0 AV	54.0	-6.0	1.03 H	274	29.30	18.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5122.10	59.6 PK	74.0	-14.4	1.17 V	283	52.94	6.66
2	5122.10	48.2 AV	54.0	-5.8	1.17 V	283	41.54	6.66
3	*5200.00	106.9 PK			1.17 V	283	99.85	7.05
4	*5200.00	97.1 AV			1.17 V	283	90.05	7.05
5	#10400.00	63.5 PK	74.0	-10.5	1.00 V	338	50.28	13.22
6	#10400.00	50.4 AV	54.0	-3.6	1.00 V	338	37.18	13.22
7	15600.00	59.1 PK	74.0	-14.9	1.07 V	45	40.40	18.70
8	15600.00	47.3 AV	54.0	-6.7	1.07 V	45	28.60	18.70

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	111.9 PK			1.01 H	203	104.74	7.16
2	*5240.00	102.1 AV			1.01 H	203	94.94	7.16
3	5350.00	59.7 PK	74.0	-14.3	1.30 H	217	52.21	7.49
4	5350.00	48.4 AV	54.0	-5.6	1.30 H	217	40.91	7.49
5	#10480.00	65.4 PK	74.0	-8.6	1.04 H	334	52.24	13.16
6	#10480.00	50.9 AV	54.0	-3.1	1.04 H	334	37.74	13.16
7	15720.00	60.5 PK	74.0	-13.5	1.00 H	305	42.10	18.40
8	15720.00	48.4 AV	54.0	-5.6	1.00 H	305	30.00	18.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.2 PK			1.17 V	260	99.04	7.16
2	*5240.00	96.5 AV			1.17 V	260	89.34	7.16
3	5350.00	57.2 PK	74.0	-16.8	1.17 V	260	49.71	7.49
4	5350.00	46.1 AV	54.0	-7.9	1.17 V	260	38.61	7.49
5	#10480.00	63.8 PK	74.0	-10.2	1.05 V	331	50.64	13.16
6	#10480.00	50.4 AV	54.0	-3.6	1.05 V	331	37.24	13.16
7	15720.00	60.1 PK	74.0	-13.9	1.03 V	49	41.70	18.40
8	15720.00	47.8 AV	54.0	-6.2	1.03 V	49	29.40	18.40

REMARKS:

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

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	#5666.90	64.6 PK	74.0	-9.4	1.02 H	217	56.30	8.30
2	#5666.90	53.8 AV	54.0	-0.2	1.02 H	217	45.50	8.30
3	#5725.00	76.5 PK	78.2	-1.7	1.01 H	215	68.11	8.39
4	*5745.00	107.5 PK			1.01 H	215	99.08	8.42
5	*5745.00	96.9 AV			1.01 H	215	88.48	8.42
6	11490.00	55.0 PK	74.0	-19.0	1.00 H	270	40.65	14.35
7	11490.00	45.1 AV	54.0	-8.9	1.00 H	270	30.75	14.35
8	#17235.00	62.2 PK	74.0	-11.8	1.00 H	134	39.76	22.44
9	#17235.00	42.6 AV	54.0	-11.4	1.00 H	134	20.16	22.44

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	#5666.90	61.2 PK	74.0	-12.8	1.05 V	198	52.90	8.30
2	#5666.90	48.7 AV	54.0	-5.3	1.05 V	198	40.40	8.30
3	#5725.00	73.2 PK	78.2	-5.0	1.05 V	198	64.81	8.39
4	*5745.00	100.3 PK			1.05 V	198	91.88	8.42
5	*5745.00	90.6 AV			1.05 V	198	82.18	8.42
6	11490.00	56.1 PK	74.0	-17.9	1.00 V	360	41.75	14.35
7	11490.00	44.2 AV	54.0	-9.8	1.00 V	360	29.85	14.35
8	#17235.00	60.2 PK	74.0	-13.8	1.08 V	5	37.76	22.44
9	#17235.00	40.2 AV	54.0	-13.8	1.08 V	5	17.76	22.44

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.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	53.4 PK	78.2	-24.8	1.00 H	218	45.01	8.39
2	*5785.00	109.1 PK			1.00 H	218	100.61	8.49
3	*5785.00	98.6 AV			1.00 H	218	90.11	8.49
4	#5858.30	63.5 PK	78.2	-14.7	1.00 H	218	54.79	8.71
5	#5864.00	63.3 PK	74.0	-10.7	1.19 H	220	54.57	8.73
6	#5864.00	53.8 AV	54.0	-0.2	1.19 H	220	45.07	8.73
7	11570.00	54.5 PK	74.0	-19.5	1.00 H	242	40.19	14.31
8	11570.00	44.7 AV	54.0	-9.3	1.00 H	242	30.39	14.31
9	#17355.00	62.0 PK	74.0	-12.0	1.00 H	162	39.00	23.00
10	#17355.00	42.3 AV	54.0	-11.7	1.00 H	162	19.30	23.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	49.7 PK	78.2	-28.5	1.16 V	253	41.31	8.39
2	*5785.00	101.7 PK			1.14 V	246	93.21	8.49
3	*5785.00	91.2 AV			1.14 V	246	82.71	8.49
4	#5858.30	60.3 PK	78.2	-17.9	1.14 V	360	51.59	8.71
5	#5864.00	60.6 PK	74.0	-13.4	1.17 V	227	51.87	8.73
6	#5864.00	48.4 AV	54.0	-5.6	1.17 V	227	39.67	8.73
7	11570.00	56.2 PK	74.0	-17.8	1.00 V	348	41.89	14.31
8	11570.00	44.0 AV	54.0	-10.0	1.00 V	348	29.69	14.31
9	#17355.00	61.2 PK	74.0	-12.8	1.00 V	0	38.20	23.00
10	#17355.00	40.6 AV	54.0	-13.4	1.00 V	0	17.60	23.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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	108.8 PK			1.00 H	219	100.21	8.59
2	*5825.00	98.8 AV			1.00 H	219	90.21	8.59
3	#5850.00	61.9 PK	78.2	-16.3	1.00 H	219	53.23	8.67
4	#5903.50	63.6 PK	74.0	-10.4	1.18 H	221	54.74	8.86
5	#5903.50	53.8 AV	54.0	-0.2	1.18 H	221	44.94	8.86
6	11650.00	54.1 PK	74.0	-19.9	1.00 H	243	39.72	14.38
7	11650.00	45.0 AV	54.0	-9.0	1.00 H	243	30.62	14.38
8	#17475.00	61.6 PK	74.0	-12.4	1.00 H	148	38.30	23.30
9	#17475.00	41.9 AV	54.0	-12.1	1.00 H	148	18.60	23.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	100.4 PK			1.05 V	217	91.81	8.59
2	*5825.00	90.1 AV			1.05 V	217	81.51	8.59
3	#5850.00	57.6 PK	78.2	-20.6	1.05 V	217	48.93	8.67
4	#5903.50	60.8 PK	74.0	-13.2	1.05 V	217	51.94	8.86
5	#5903.50	49.1 AV	54.0	-4.9	1.05 V	217	40.24	8.86
6	11650.00	55.3 PK	74.0	-18.7	1.00 V	360	40.92	14.38
7	11650.00	43.1 AV	54.0	-10.9	1.00 V	360	28.72	14.38
8	#17475.00	61.4 PK	74.0	-12.6	1.09 V	10	38.10	23.30
9	#17475.00	41.1 AV	54.0	-12.9	1.09 V	10	17.80	23.30

REMARKS:

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

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5114.60	58.8 PK	74.0	-15.2	1.03 H	205	52.17	6.63
2	5114.60	49.1 AV	54.0	-4.9	1.03 H	205	42.47	6.63
3	5150.00	68.0 PK	74.0	-6.0	1.02 H	205	61.20	6.80
4	5150.00	53.8 AV	54.0	-0.2	1.02 H	205	47.00	6.80
5	*5190.00	107.5 PK			1.02 H	205	100.50	7.00
6	*5190.00	97.9 AV			1.02 H	205	90.90	7.00
7	#10380.00	64.9 PK	74.0	-9.1	1.08 H	320	51.73	13.17
8	#10380.00	50.6 AV	54.0	-3.4	1.08 H	320	37.43	13.17
9	15570.00	60.4 PK	74.0	-13.6	1.00 H	298	41.71	18.69
10	15570.00	48.6 AV	54.0	-5.4	1.00 H	298	29.91	18.69
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	5114.60	56.3 PK	74.0	-17.7	1.15 V	261	49.67	6.63
2	5114.60	47.3 AV	54.0	-6.7	1.15 V	261	40.67	6.63
3	5150.00	57.3 PK	74.0	-16.7	1.15 V	261	50.50	6.80
4	5150.00	46.2 AV	54.0	-7.8	1.15 V	261	39.40	6.80
5	*5190.00	101.9 PK			1.15 V	261	94.90	7.00
6	*5190.00	92.3 AV			1.15 V	261	85.30	7.00
7	#10380.00	62.6 PK	74.0	-11.4	1.08 V	325	49.43	13.17
8	#10380.00	49.7 AV	54.0	-4.3	1.08 V	325	36.53	13.17
9	15570.00	59.2 PK	74.0	-14.8	1.09 V	28	40.51	18.69
10	15570.00	46.9 AV	54.0	-7.1	1.09 V	28	28.21	18.69

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	5150.00	69.3 PK	74.0	-4.7	1.01 H	210	62.50	6.80
2	5150.00	53.8 AV	54.0	-0.2	1.01 H	210	47.00	6.80
3	*5230.00	112.3 PK			1.01 H	210	105.18	7.12
4	*5230.00	101.1 AV			1.01 H	210	93.98	7.12
5	5456.80	57.4 PK	74.0	-16.6	1.08 H	218	49.50	7.90
6	5456.80	46.1 AV	54.0	-7.9	1.08 H	218	38.20	7.90
7	#10460.00	65.3 PK	74.0	-8.7	1.00 H	307	52.12	13.18
8	#10460.00	50.9 AV	54.0	-3.1	1.00 H	307	37.72	13.18
9	15690.00	60.4 PK	74.0	-13.6	1.00 H	290	42.02	18.38
10	15690.00	48.5 AV	54.0	-5.5	1.00 H	290	30.12	18.38
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	57.2 PK	74.0	-16.8	1.15 V	258	50.40	6.80
2	5150.00	46.1 AV	54.0	-7.9	1.15 V	258	39.30	6.80
3	*5230.00	106.7 PK			1.14 V	247	99.58	7.12
4	*5230.00	95.7 AV			1.14 V	247	88.58	7.12
5	5456.80	55.9 PK	74.0	-18.1	1.10 V	267	48.00	7.90
6	5456.80	44.3 AV	54.0	-9.7	1.10 V	267	36.40	7.90
7	#10460.00	62.8 PK	74.0	-11.2	1.00 V	309	49.62	13.18
8	#10460.00	49.8 AV	54.0	-4.2	1.00 V	309	36.62	13.18
9	15690.00	58.3 PK	74.0	-15.7	1.10 V	14	39.92	18.38
10	15690.00	45.9 AV	54.0	-8.1	1.10 V	14	27.52	18.38

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	69.6 PK	74.0	-4.4	1.00 H	218	61.23	8.37
2	#5715.00	53.8 AV	54.0	-0.2	1.00 H	218	45.43	8.37
3	#5725.00	74.6 PK	78.2	-3.6	1.00 H	218	66.21	8.39
4	*5755.00	108.2 PK			1.00 H	218	99.76	8.44
5	*5755.00	97.7 AV			1.00 H	218	89.26	8.44
6	#5851.40	62.7 PK	78.2	-15.5	1.00 H	218	54.02	8.68
7	11510.00	55.2 PK	74.0	-18.8	1.00 H	248	40.86	14.34
8	11510.00	45.6 AV	54.0	-8.4	1.00 H	248	31.26	14.34
9	#17265.00	61.9 PK	74.0	-12.1	1.00 H	146	39.22	22.68
10	#17265.00	42.1 AV	54.0	-11.9	1.00 H	146	19.42	22.68
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	67.3 PK	74.0	-6.7	1.01 V	200	58.93	8.37
2	#5715.00	51.2 AV	54.0	-2.8	1.01 V	200	42.83	8.37
3	#5725.00	72.6 PK	78.2	-5.6	1.11 V	195	64.21	8.39
4	*5755.00	100.2 PK			1.11 V	195	91.76	8.44
5	*5755.00	90.8 AV			1.11 V	195	82.36	8.44
6	#5851.40	59.3 PK	78.2	-18.9	1.11 V	195	50.62	8.68
7	11510.00	55.6 PK	74.0	-18.4	1.00 V	360	41.26	14.34
8	11510.00	44.1 AV	54.0	-9.9	1.00 V	360	29.76	14.34
9	#17265.00	59.2 PK	74.0	-14.8	1.10 V	2	36.52	22.68
10	#17265.00	39.1 AV	54.0	-14.9	1.10 V	2	16.42	22.68

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	#5714.00	61.8 PK	74.0	-12.2	1.01 H	216	53.43	8.37
2	#5714.00	51.2 AV	54.0	-2.8	1.01 H	216	42.83	8.37
3	*5795.00	107.9 PK			1.00 H	218	99.40	8.50
4	*5795.00	97.1 AV			1.00 H	218	88.60	8.50
5	#5860.00	64.1 PK	78.2	-14.1	1.00 H	218	55.39	8.71
6	#5871.10	63.9 PK	74.0	-10.1	1.00 H	219	55.15	8.75
7	#5871.10	53.7 AV	54.0	-0.3	1.00 H	219	44.95	8.75
8	11590.00	54.6 PK	74.0	-19.4	1.00 H	270	40.30	14.30
9	11590.00	45.1 AV	54.0	-8.9	1.00 H	270	30.80	14.30
10	#17385.00	62.0 PK	74.0	-12.0	1.00 H	127	38.97	23.03
11	#17385.00	42.3 AV	54.0	-11.7	1.00 H	127	19.27	23.03
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	#5714.00	58.7 PK	74.0	-15.3	1.11 V	190	50.33	8.37
2	#5714.00	48.3 AV	54.0	-5.7	1.11 V	190	39.93	8.37
3	*5795.00	100.2 PK			1.11 V	185	91.70	8.50
4	*5795.00	91.0 AV			1.11 V	185	82.50	8.50
5	#5860.00	60.2 PK	78.2	-18	1.11 V	185	51.49	8.71
6	#5871.10	60.0 PK	74.0	-14.0	1.11 V	185	51.25	8.75
7	#5871.10	50.4 AV	54.0	-3.6	1.11 V	185	41.65	8.75
8	11590.00	55.3 PK	74.0	-18.7	1.00 V	360	41.00	14.30
9	11590.00	43.9 AV	54.0	-10.1	1.00 V	360	29.60	14.30
10	#17385.00	59.2 PK	74.0	-14.8	1.01 V	15	36.17	23.03
11	#17385.00	39.2 AV	54.0	-14.8	1.01 V	15	16.17	23.03

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.

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.6 PK	74.0	-8.4	1.02 H	207	58.80	6.80
2	5150.00	53.7 AV	54.0	-0.3	1.02 H	207	46.90	6.80
3	*5210.00	103.8 PK			1.02 H	207	96.74	7.06
4	*5210.00	93.4 AV			1.02 H	207	86.34	7.06
5	#10420.00	65.5 PK	74.0	-8.5	1.02 H	318	52.30	13.20
6	#10420.00	51.0 AV	54.0	-3.0	1.02 H	318	37.80	13.20
7	15630.00	60.0 PK	74.0	-14.0	1.00 H	278	41.40	18.60
8	15630.00	48.0 AV	54.0	-6.0	1.00 H	278	29.40	18.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.3 PK	74.0	-16.7	1.05 V	247	50.50	6.80
2	5150.00	46.2 AV	54.0	-7.8	1.05 V	247	39.40	6.80
3	*5210.00	98.2 PK			1.19 V	233	91.14	7.06
4	*5210.00	88.1 AV			1.19 V	233	81.04	7.06
5	#10420.00	62.8 PK	74.0	-11.2	1.00 V	310	49.60	13.20
6	#10420.00	49.8 AV	54.0	-4.2	1.00 V	310	36.60	13.20
7	15630.00	57.1 PK	74.0	-16.9	1.04 V	7	38.50	18.60
8	15630.00	46.8 AV	54.0	-7.2	1.04 V	7	28.20	18.60

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	67.1 PK	74.0	-6.9	1.00 H	218	58.73	8.37
2	#5715.00	53.7 AV	54.0	-0.3	1.00 H	218	45.33	8.37
3	#5725.00	63.3 PK	78.2	-14.9	1.00 H	218	54.91	8.39
4	*5775.00	100.4 PK			1.00 H	218	91.93	8.47
5	*5775.00	90.2 AV			1.00 H	218	81.73	8.47
6	#5851.40	70.8 PK	78.2	-7.4	1.00 H	218	62.12	8.68
7	#5851.80	61.8 PK	74	-12.2	1.00 H	218	53.12	8.68
8	#5851.80	49.5 AV	54.0	-4.5	1.00 H	218	40.82	8.68
9	11550.00	52.5 PK	74.0	-21.5	1.00 H	256	38.18	14.32
10	11550.00	42.6 AV	54.0	-11.4	1.00 H	256	28.28	14.32
11	#17325.00	59.3 PK	74.0	-14.7	1.00 H	124	36.32	22.98
12	#17325.00	40.5 AV	54.0	-13.5	1.00 H	124	17.52	22.98
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	66.5 PK	74.0	-7.5	1.14 V	182	58.13	8.37
2	#5715.00	52.3 AV	54.0	-1.7	1.14 V	182	43.93	8.37
3	#5725.00	60.5 PK	78.2	-17.7	1.14 V	182	52.11	8.39
4	*5775.00	93.7 PK			1.14 V	182	85.23	8.47
5	*5775.00	83.4 AV			1.14 V	182	74.93	8.47
6	#5851.40	67.8 PK	78.2	-10.4	1.14 V	182	59.12	8.68
7	#5851.80	59.3 PK	74	-14.7	1.14 V	182	50.62	8.68
8	#5851.80	47.6 AV	54.0	-6.4	1.14 V	182	38.92	8.68
9	11550.00	51.9 PK	74.0	-22.1	1.00 V	360	37.58	14.32
10	11550.00	41.2 AV	54.0	-12.8	1.00 V	360	26.88	14.32
11	#17325.00	58.6 PK	74.0	-15.4	1.00 V	13	35.62	22.98
12	#17325.00	38.7 AV	54.0	-15.3	1.00 V	13	15.72	22.98

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.

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)

Note: Where B is the 26dB emission bandwidth in MHz.

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT \leq 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths \geq 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT \geq 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.3.2 TEST INSTRUMENTS

FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 25, 2014

FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

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. Tested date : June 25, 2014

4.3.3 TEST PROCEDURE

FOR POWER OUTPUT MEASUREMENT

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

FOR 26dB OCCUPIED BANDWIDTH

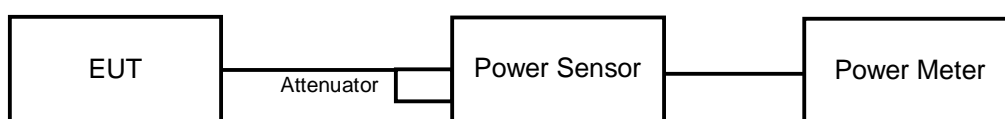
1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.3.4 DEVIATION FROM TEST STANDARD

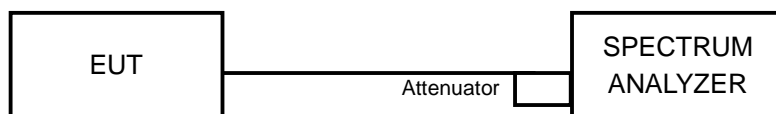
No deviation

4.3.5 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.3.7 TEST RESULTS

802.11a

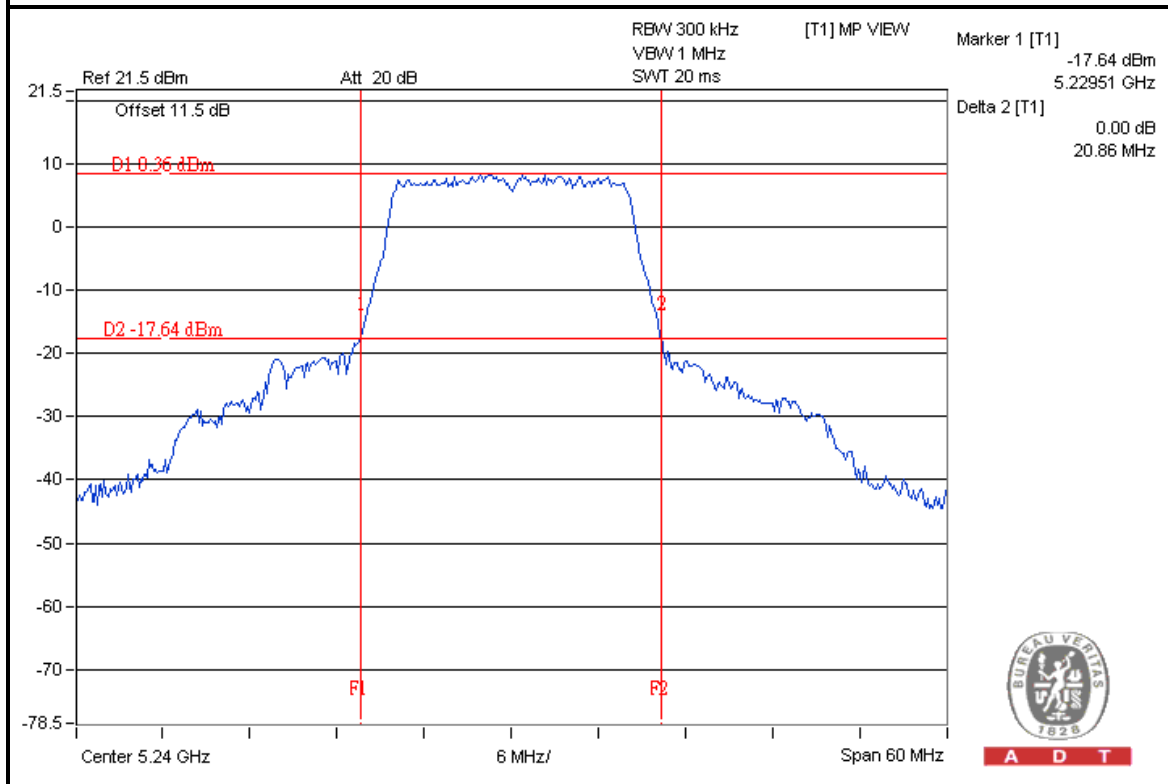
CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	41.976	16.23	30.00	PASS
40	5200	38.815	15.89	30.00	PASS
48	5240	45.394	16.57	30.00	PASS
149	5745	21.429	13.31	30.00	PASS
157	5785	9.141	9.61	30.00	PASS
165	5825	9.036	9.56	30.00	PASS

26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
36	5180	21.36
40	5200	20.90
48	5240	20.86

SPECTRUM PLOT OF WORST VALUE

802.11a : CH48



802.11ac (VHT20)

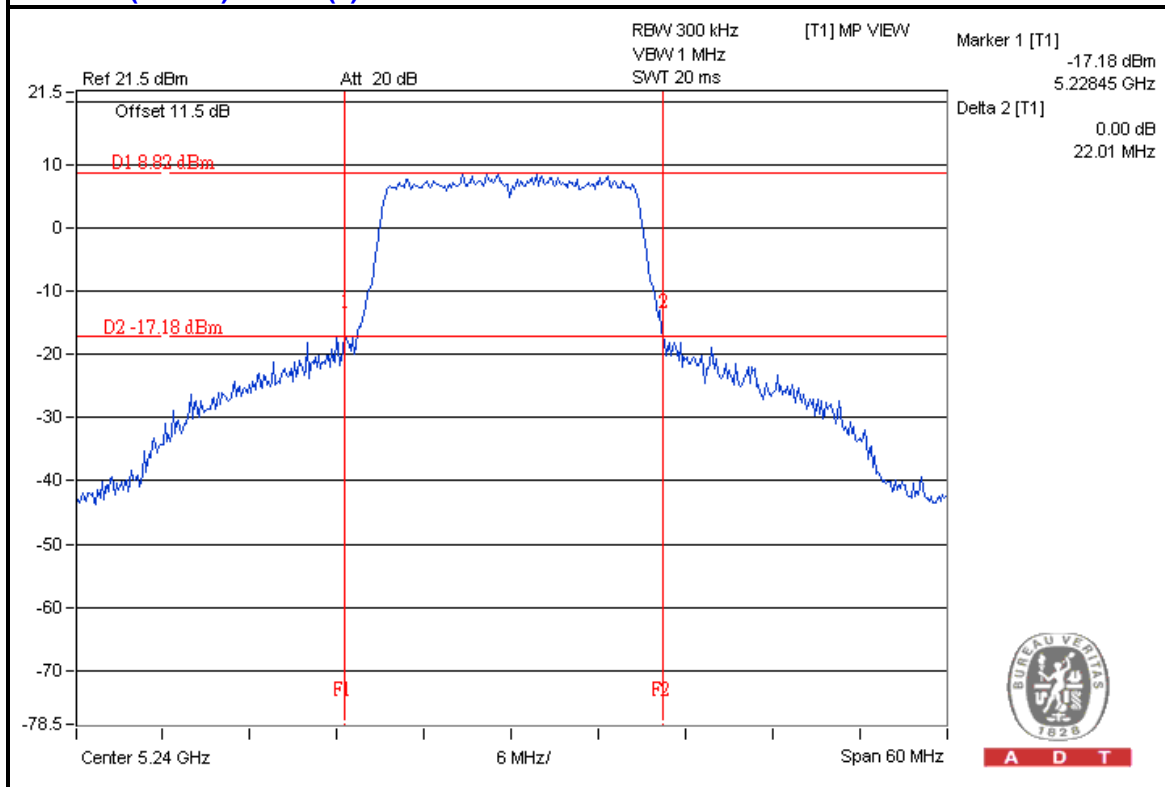
CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	16.83	17.91	109.997	20.41	30.00	PASS
40	5200	16.73	17.26	100.309	20.01	30.00	PASS
48	5240	16.52	16.53	89.853	19.54	30.00	PASS
149	5745	14.07	16.09	66.171	18.21	30.00	PASS
157	5785	10.49	12.42	28.652	14.57	30.00	PASS
165	5825	10.82	12.31	29.1	14.64	30.00	PASS

26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
36	5180	29.91	24.53
40	5200	25.24	23.08
48	5240	22.01	23.33

SPECTRUM PLOT OF WORST VALUE

802.11ac (VHT20) / Chain(0) : CH48

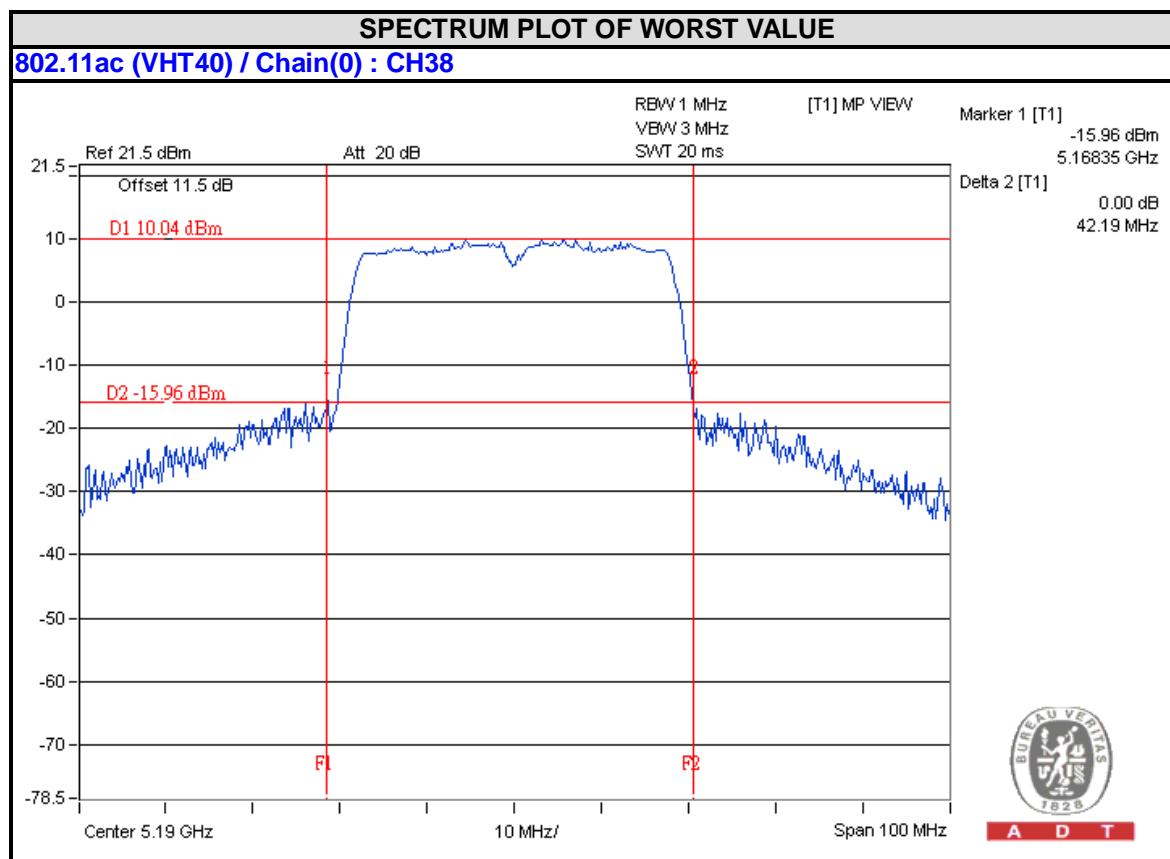


802.11ac (VHT40)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	14.57	15.51	64.205	18.08	30.00	PASS
46	5230	16.59	16.71	92.485	19.66	30.00	PASS
151	5755	12.64	13.74	42.024	16.23	30.00	PASS
159	5795	13.86	15.21	57.511	17.60	30.00	PASS

26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
38	5190	42.19	47.67
46	5230	52.85	68.37

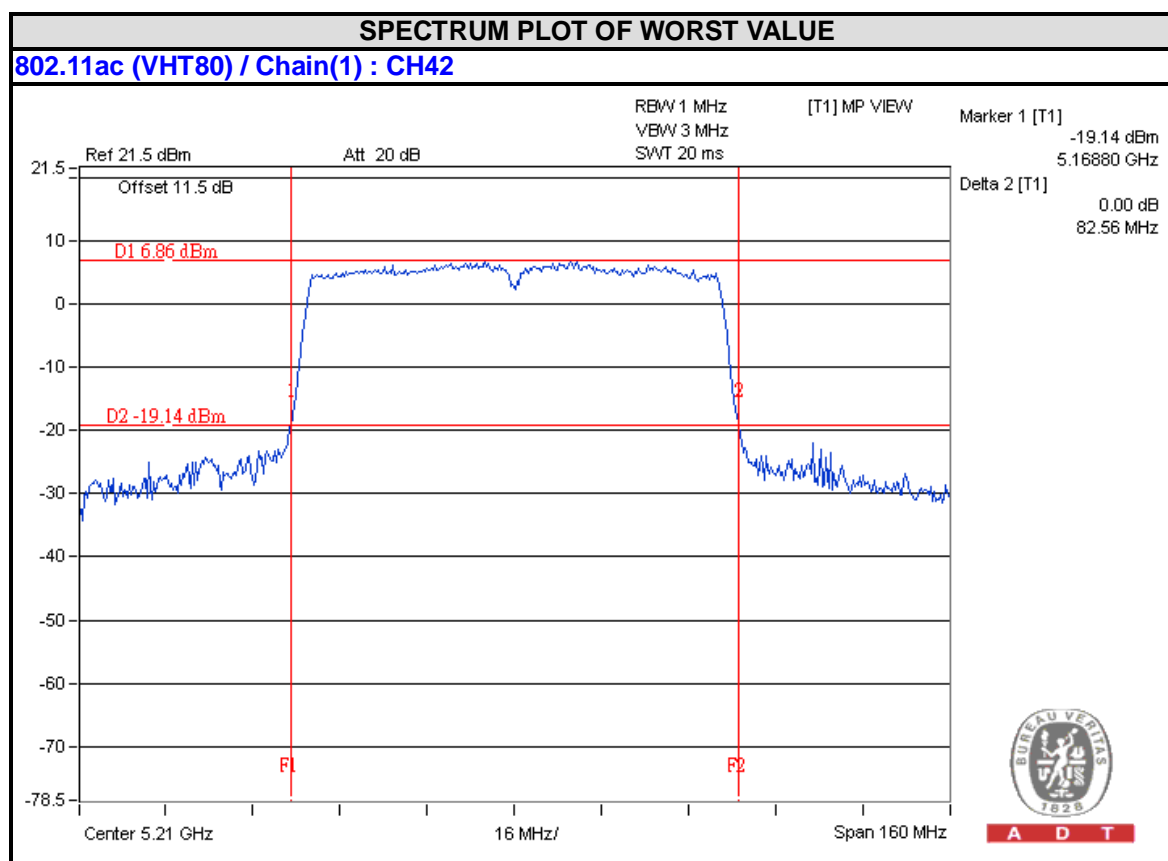


802.11ac (VHT80)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
42	5210	13.27	13.89	45.723	16.60	30.00	PASS
155	5775	10.73	12.64	30.195	14.80	30.00	PASS

26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
42	5210	83.23	82.56





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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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

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. Tested date : June 25, 2014

4.4.3 TEST PROCEDURES

For U-NII-1:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW \geq 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to "free run".
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and for duty cycle of test signal is $< 98\%$ add $10 \log (1/\text{duty cycle})$

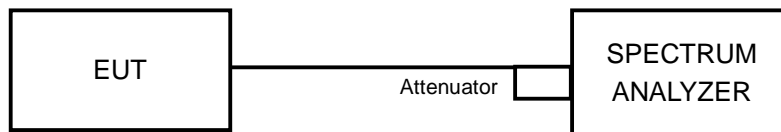
For U-NII-3:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW \geq 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $\text{BWCF} = 10\log(500 \text{ kHz}/300\text{kHz})$
5. Sweep time = auto, trigger set to "free run".
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value and for duty cycle of test signal is $< 98\%$ add $10 \log (1/\text{duty cycle})$

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6

4.4.7 TEST RESULTS

For U-NII-1:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	4.43	17	PASS
40	5200	3.79	17	PASS
48	5240	4.35	17	PASS

802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (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				
36	5180	4.42	4.92	0.10	7.79	17	PASS
40	5200	4.23	4.74	0.10	7.60	17	PASS
48	5240	4.00	4.31	0.10	7.27	17	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.

802.11ac (VHT40)

CHANNEL	CHANNEL FREQUENCY (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				
38	5190	-0.51	0.23	0.15	3.03	17	PASS
46	5230	1.40	1.49	0.15	4.60	17	PASS

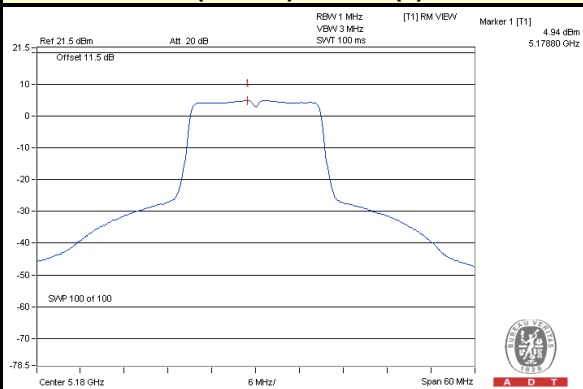
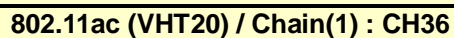
NOTE: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

802.11ac (VHT80)

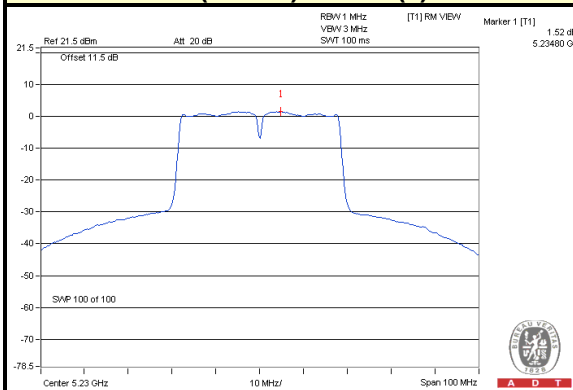
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)		DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
42	5210	-4.96	-4.38	0.31	-1.33	17	PASS

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.

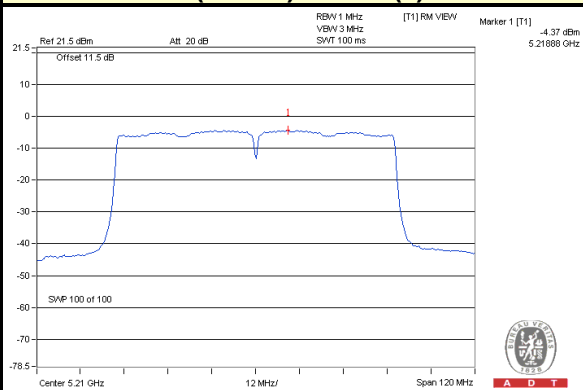
802.11a : CH36



802.11ac (VHT40) / Chain(1) : CH46



802.11ac (VHT80) / Chain(1) : CH42



For U-NII-3:

802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
149	5745	-6.80	-4.58	30	PASS
157	5785	-10.72	-8.50	30	PASS
165	5825	-11.00	-8.78	30	PASS

802.11ac (VHT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	TOTAL PSD (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
0	149	5745	-7.46	-5.24	3.01	-2.23	30	PASS
	157	5785	-10.94	-8.72	3.01	-5.71	30	PASS
	165	5825	-10.45	-8.23	3.01	-5.22	30	PASS
1	149	5745	-4.55	-2.33	3.01	0.68	30	PASS
	157	5785	-8.33	-6.11	3.01	-3.10	30	PASS
	165	5825	-8.44	-6.22	3.01	-3.21	30	PASS

802.11ac (VHT40)

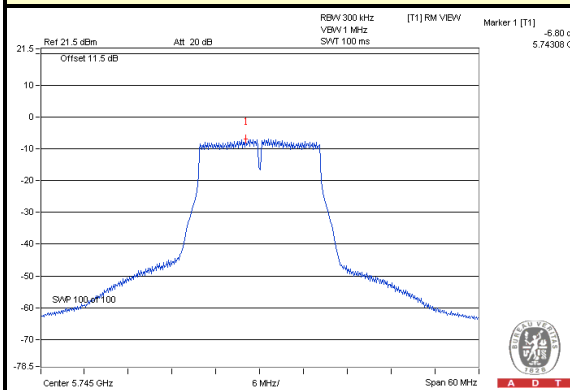
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	TOTAL PSD (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
0	151	5755	-12.26	-10.04	3.01	-7.03	30	PASS
	159	5795	-10.97	-8.75	3.01	-5.74	30	PASS
1	151	5755	-10.27	-8.05	3.01	-5.04	30	PASS
	159	5795	-8.68	-6.46	3.01	-3.45	30	PASS

802.11ac (VHT80)

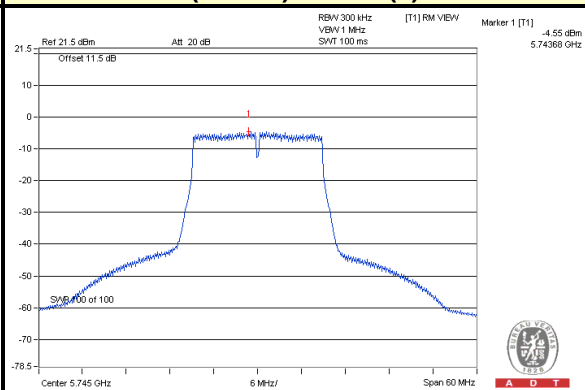
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	TOTAL PSD (dBm/500kHz)	LIMIT (dBm/500kHz)	PASS /FAIL
0	155	5775	-17.29	-15.07	3.01	-12.06	30	PASS
1	155	5775	-14.12	-11.90	3.01	-8.89	30	PASS

SPECTRUM PLOT OF WORST VALUE

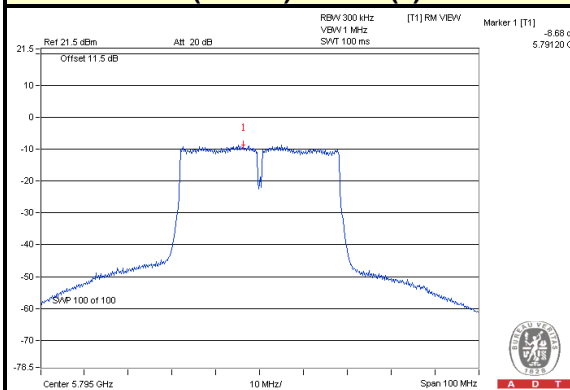
802.11a : CH149



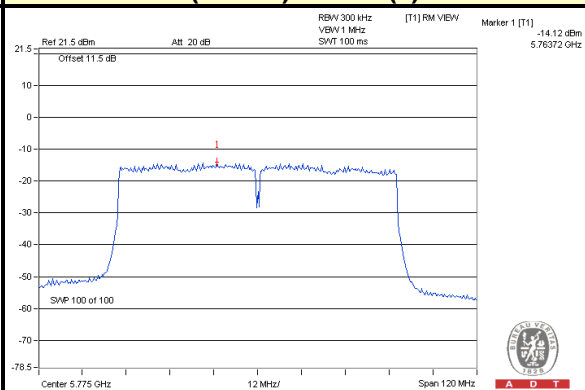
802.11ac (VHT20) / Chain(1) : CH149



802.11ac (VHT40) / Chain(1) : CH159



802.11ac (VHT80) / Chain(1) : CH155





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4.5 FREQUENCY STABILITY

4.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-SP-AR	MAA0812-008	Jan. 13, 2014	Jan. 12, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 25, 2014

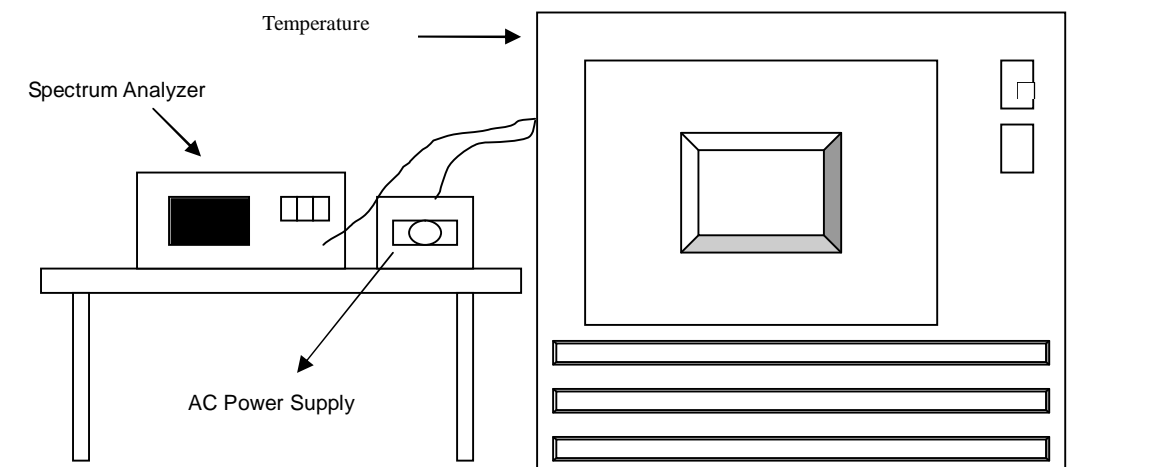
4.5.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. 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.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. 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.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

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

4.5.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
50	120	5239.991	-0.00017	5239.9934	-0.00013	5239.9924	-0.00015	5239.9912	-0.00017
40	120	5240.0057	0.00011	5240.0069	0.00013	5240.0052	0.00010	5240.0044	0.00008
30	120	5240.0003	0.00001	5240.0043	0.00008	5240.0033	0.00006	5240.0005	0.00001
20	120	5239.9974	-0.00005	5239.9962	-0.00007	5239.9998	0.00000	5239.9965	-0.00007
10	120	5240.0034	0.00006	5240.003	0.00006	5240.0027	0.00005	5240.0064	0.00012
0	120	5240.0206	0.00039	5240.0168	0.00032	5240.0166	0.00032	5240.0208	0.00040
-10	120	5240.0069	0.00013	5240.0053	0.00010	5240.0076	0.00015	5240.0094	0.00018
-20	120	5239.9854	-0.00028	5239.9834	-0.00032	5239.9878	-0.00023	5239.9871	-0.00025
-30	120	5240.012	0.00023	5240.01	0.00019	5240.0143	0.00027	5240.01	0.00019

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5240MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
20	138	5239.9976	-0.00005	5239.9953	-0.00009	5239.9989	-0.00002	5239.9958	-0.00008
	120	5239.9974	-0.00005	5239.9962	-0.00007	5239.9998	0.00000	5239.9965	-0.00007
	102	5239.9971	-0.00006	5239.9963	-0.00007	5240	0.00000	5239.9971	-0.00006

4.6 6dB BANDWIDTH MEASUREMENT

4.6.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSV 40	100964	July 15, 2013	July 14, 2014

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. Tested date : June 25, 2014

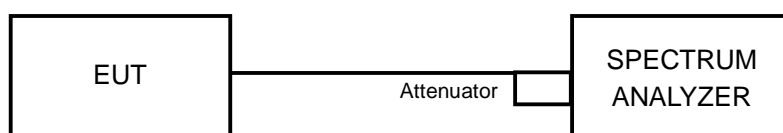
4.6.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITIONS

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

4.6.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.38	0.5	PASS
157	5785	16.43	0.5	PASS
165	5825	16.43	0.5	PASS

802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.70	17.65	0.5	PASS
157	5785	17.75	17.69	0.5	PASS
165	5825	17.76	17.67	0.5	PASS

802.11ac (VHT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.43	36.45	0.5	PASS
159	5795	36.42	36.45	0.5	PASS

802.11ac (VHT80)

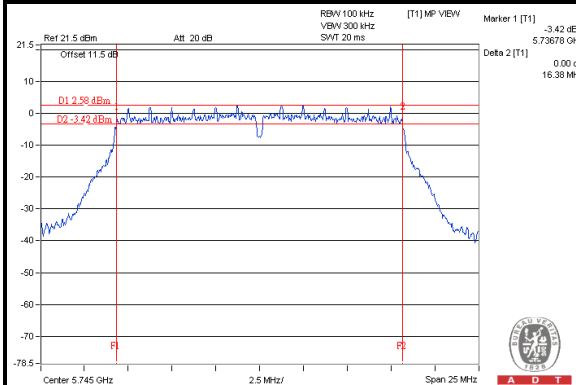
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
155	5775	75.98	76.00	0.5	PASS



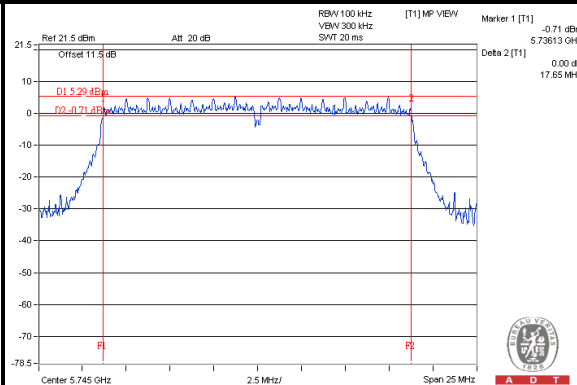
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SPECTRUM PLOT OF WORST VALUE

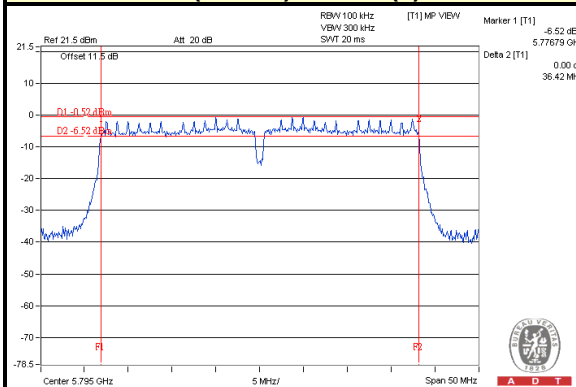
802.11a : CH149



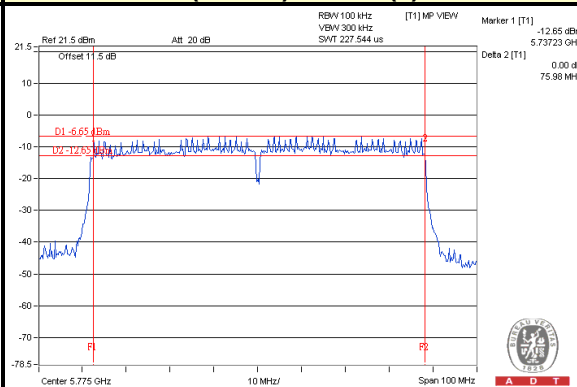
802.11ac (VHT20) / Chain(1) : CH149



802.11ac (VHT40) / Chain(0) : CH159



802.11ac (VHT80) / Chain(0) : CH155



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. 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: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

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Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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



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7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

--- END ---