



# FCC TEST REPORT (15.407)

**REPORT NO.:** RF130927E08E-1

**MODEL NO.:** FiOS-G1100

**FCC ID:** 2ABTEG1100

**RECEIVED:** Sep. 27, 2013

**TESTED:** Oct. 07 to Dec. 03, 2013

**ISSUED:** Mar. 21, 2014

**APPLICANT:** Verizon Online LLC

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130927E08E-1	Original release	Mar. 21, 2014



## 1. CERTIFICATION

**PRODUCT:** FiOS Quantum Gateway  
**BRAND NAME:** Verizon  
**MODEL NO.:** FiOS-G1100  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**APPLICANT:** Verizon Online LLC  
**TESTED:** Oct. 07 to Dec. 03, 2013  
**STANDARDS:** FCC Part 15, Subpart E (Section 15.407)  
ANSI C63.10-2009

The above equipment (Model: FiOS-G1100) 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:** Mar. 21, 2014  
( Elsie Hsu, Specialist )

**APPROVED BY** :  , **DATE:** Mar. 21, 2014  
( May Chen, Manager )



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## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 5GHz, 5150~5350MHz & 5470~5600 & 5650~5725MHz

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 -14.03dB at 0.15391MHz
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5155.80MHz, 5354.00MHz, 5361.00MHz & 5402.00MHz
15.407(a/1/2)	Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2)	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	No antenna connector is used.

**NOTE:** 1. For WLAN: The EUT was operating in 2.400 ~ 2.4835GHz, 5.15~5.25GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.25GHz. For the 2.400 ~ 2.4835GHz and 5.725~5.850GHz RF parameters was recorded in another test report.



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## 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	2.98 dB
Radiated emissions (30MHz-1GHz)	5.37 dB
Radiated emissions (1GHz -6GHz) for Chamber G	3.65 dB
Radiated emissions (1GHz -6GHz) for Chamber H	3.72 dB
Radiated emissions (6GHz -18GHz) for Chamber G	3.88 dB
Radiated emissions (6GHz -18GHz) for Chamber H	4.00 dB
Radiated emissions (18GHz -40GHz)	4.11 dB



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### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	FiOS Quantum Gateway
<b>MODEL NO.</b>	FiOS-G1100
<b>POWER SUPPLY</b>	DC 12V from power adapter
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only.
<b>MODULATION TECHNOLOGY</b>	DSSS,OFDM
<b>TRANSFER RATE</b>	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
<b>OPERATING FREQUENCY</b>	<b>For 15.407</b> <b>5GHz:</b> 5.18 ~ 5.24GHz
	<b>For 15.247</b> <b>2.4GHz:</b> 2.412 ~ 2.462GHz <b>5GHz:</b> 5.745 ~ 5.825GHz
<b>NUMBER OF CHANNEL</b>	<b>For 15.407</b> 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
	<b>For 15.247 (2.4GHz)</b> 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) <b>For 15.247 (5GHz)</b> 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
<b>MAXIMUM OUTPUT POWER</b>	Please see NOTE
<b>ANTENNA TYPE</b>	Please see NOTE
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	Adapter x1 Zigbee module (option) x1





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**NOTE:**

1. There are Z-Wave technology and WLAN (2.4GHz & 5GHz) technology used for the EUT.
2. The EUT inside has one Zigbee technology module (option).

Zigbee module (test only)		
Product Name	Brand	FCC ID
Zigbee Wireless Module	GreenWave Reality	Z3M-ZBMOD1

3. The emission of the simultaneous operation (Z-Wave, Zigbee & WLAN) has been evaluated and no non-compliance was found.
4. The maximum output power table as below table:

MAXIMUM OUTPUT POWER (mW)										
15.247 (2.4GHz)										
Test Mode	802.11b	802.11g			802.11n (HT20)			802.11n (HT40)		
1Tx	76.033	287.078			490.908			84.723		
2Tx	CDD				SDM			SDM		
	120.238				379.835			105.681		
3Tx	CDD				CDD	STBC	CDD	STBC	CDD	STBC
	116.819				535.959	919.616	189.726	196.924		
15.247 (5GHz)										
Test Mode	802.11a	802.11ac (VHT20)			802.11ac (VHT40)			802.11ac (VHT80)		
1Tx	225.944									
2Tx		CDD	STBC	Beam forming	CDD	STBC	Beam forming	CDD	STBC	Beam forming
		446.548	569.758	446.548	597.854	597.854	597.854	224.328	224.328	224.328
3Tx		CDD	STBC	Beam forming	CDD	STBC	Beam forming	CDD	STBC	Beam forming
		585.942	848.370	585.942	625.599	904.050	625.599	347.638	347.638	347.638
15.407										
Test Mode	802.11a	802.11ac (VHT20)			802.11ac (VHT40)			802.11ac (VHT80)		
1Tx	29.174									
2Tx		CDD	STBC	Beam forming	CDD	STBC	Beam forming	CDD	STBC	Beam forming
		33.656	33.656	33.656	49.493	49.493	49.493	49.268	49.268	49.268
3Tx		CDD	STBC	Beam forming	CDD	STBC	Beam forming	CDD	STBC	Beam forming
		26.041	39.110	41.871	49.247	49.247	49.247	49.372	49.372	49.372

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

<b>WLAN Antenna Spec.</b>				
Transmitter Circuit	Gain (dBi) (Include cable loss)	Antenna Type	Connector Type	Frequency range (GHz to GHz)
Chain (0)	-0.4	Metal	NA	2.4~2.4835
	3.56			5.15~5.25
	4.05			5.725~5.85
Chain (1)	4.1	Metal	NA	2.4~2.4835
	5.3			5.15~5.25
	5.71			5.725~5.85
Chain (2)	3.36	Metal	NA	2.4~2.4835
	4.6			5.15~5.25
	4.21			5.725~5.85
<b>Z-Wave Antenna Spec.</b>				
Gain (dBi) (Include cable loss)	Antenna Type	Connector Type	Frequency range (MHz to MHz)	
1.73	Metal	NA	902~928	
Note: 1. For 1Tx mode will fix transmission on Chain (0). 2. For 2Tx mode will fix transmission on Chain (0) and Chain (1)				

6. The EUT must be supplied with a power adapter and following two different model names could be chosen:

No.	Brand	Model No.	Spec.
1	Ktec	KSAS0361200300HU	AC Input : 100-240V, 1.0A, 50/60Hz DC Output : 12V, 3.0A DC output cable(unshielded ,1.8m)
2	LEI	MU36-8120300-A1	AC Input : 100-240V, 1.0A, 50/60Hz DC Output : 12V, 3.0A DC output cable(unshielded ,1.8m)
From the above adapters, the worst radiated emission was found in <b>Adapter 1</b> . Therefore only the test data of the modes were recorded in this report.			



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7. The specifications of EUT listed as below:

<b>MODULATION MODE</b>	<b>TX/RX FUNCTION</b>
<b>802.11b</b>	1TX/3RX
	2TX/3RX(CDD Mode)
	3TX/3RX(CDD Mode)
<b>802.11g</b>	1TX/3RX
<b>802.11n (HT20)</b>	1TX/3RX
	2TX/3RX (SDM Mode)
	3TX/3RX (CDD Mode)
	3TX/3RX (STBC Mode)
	2TX/3RX (Beam forming Mode, only 5GHz band)
	3TX/3RX (Beam forming Mode, only 5GHz band)
<b>802.11n (HT40)</b>	1TX/3RX
	2TX/3RX (SDM Mode)
	3TX/3RX (CDD Mode)
	3TX/3RX (STBC Mode)
	2TX/3RX (Beam forming Mode, only 5GHz band)
	3TX/3RX (Beam forming Mode, only 5GHz band)
<b>802.11a</b>	1TX/3RX
<b>802.11ac (VHT20)</b>	2TX/3RX (Beam forming Mode)
	2TX/3RX (CDD Mode)
	2TX/3RX (STBC Mode)
	3TX/3RX (Beam forming Mode)
	3TX/3RX (CDD Mode)
	3TX/3RX (STBC Mode)
<b>802.11ac (VHT40)</b>	2TX/3RX (Beam forming Mode)
	2TX/3RX (CDD Mode)
	2TX/3RX (STBC Mode)
	3TX/3RX (Beam forming Mode)
	3TX/3RX (CDD Mode)
	3TX/3RX (STBC Mode)
<b>802.11ac (VHT80)</b>	2TX/3RX (Beam forming Mode)
	2TX/3RX (CDD Mode)
	2TX/3RX (STBC Mode)
	3TX/3RX (Beam forming Mode)
	3TX/3RX (CDD Mode)
	3TX/3RX (STBC Mode)

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)



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8. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 23.
9. When the EUT operating in 802.11ac, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 9.
10. 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.



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### 3.2 DESCRIPTION OF TEST MODES

#### Operated in 5150 ~ 5350MHz 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
38	5190 MHz
46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
42	5210 MHz

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	
1	-	-	√	√	3TX configuration (with Adapter 1)
	√	-	-	-	2TX configuration (with Adapter 2)
2	√	√	√	√	2TX configuration (with Adapter 1)
3	-	-	√	√	1TX configuration (with Adapter 1)

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

**Notes:**

1. The Peak Power Excursion test item is test 3TX configuration mode and 1TX configuration mode and Frequency Stability is only test **1Tx configuration mode**.
2. For 5GHz: radiated emissions above 1GHz test, the EUT’s Beam forming and CDD mode had been pre-tested. The worst case was found when **CDD mode**. Therefore only the test data was recorded in this report.

**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.

2TX CONFIGURATION					
STBC_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT40)	38 to 46	38	OFDM	BPSK	13.5

**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.

2TX CONFIGURATION					
STBC_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT40)	38 to 46	38	OFDM	BPSK	13.5

**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.

3TX CONFIGURATION					
CDD & STBC_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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
2TX CONFIGURATION					
CDD & STBC_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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
1TX CONFIGURATION					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6

**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.

3TX CONFIGURATION					
CDD & STBC_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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
Beam forming_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
					13
					19.5
802.11ac (VHT40)	38 to 46	38, 46	OFDM	BPSK	13.5
					27
					40.5
802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
					58.5
					87.8
2TX CONFIGURATION					
CDD & STBC_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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
Beam forming_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (VHT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
					13
802.11ac (VHT40)	38 to 46	38, 46	OFDM	BPSK	13.5
					27
802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
					58.5
1TX CONFIGURATION					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6





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**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C, 62%RH	120Vac, 60Hz	Sean Huang
	27deg. C, 62%RH	120Vac, 60Hz	Sean Huang
RE<1G	20deg. C, 65%RH	120Vac, 60Hz	Andy Ho
RE <sup>3</sup> 1G	24deg. C, 66%RH	120Vac, 60Hz	Robert Cheng
	23deg. C, 67%RH	120Vac, 60Hz	Andy Ho
	23deg. C, 67%RH	120Vac, 60Hz	Tim Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nelson Teng

### 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 D01 General UNII Test Procedures v01 r03**

**662911 D01 Multiple Transmitter Output v01 r02**

**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.

If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

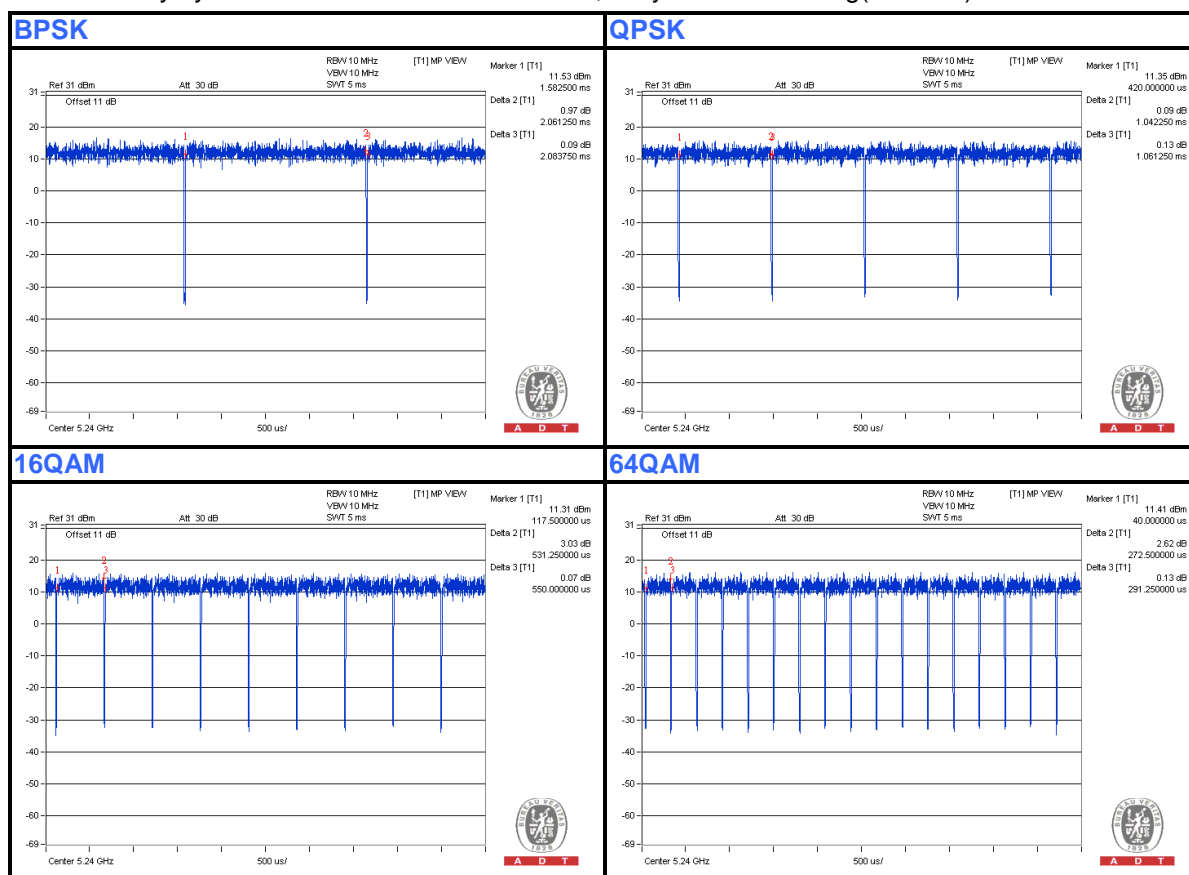
#### 802.11a

**BPSK:** Duty cycle =  $2.061 \text{ ms} / 2.084 \text{ ms} = 0.989$

**QPSK:** Duty cycle =  $1.042 \text{ ms} / 1.061 \text{ ms} = 0.982$

**16QAM:** Duty cycle =  $0.531 \text{ ms} / 0.55 \text{ ms} = 0.965$ , Duty factor =  $10 * \log(1/0.965) = 0.15$

**64QAM:** Duty cycle =  $0.273 \text{ ms} / 0.291 \text{ ms} = 0.938$ , Duty factor =  $10 * \log(1/0.938) = 0.28$





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### 802.11ac (VHT20)

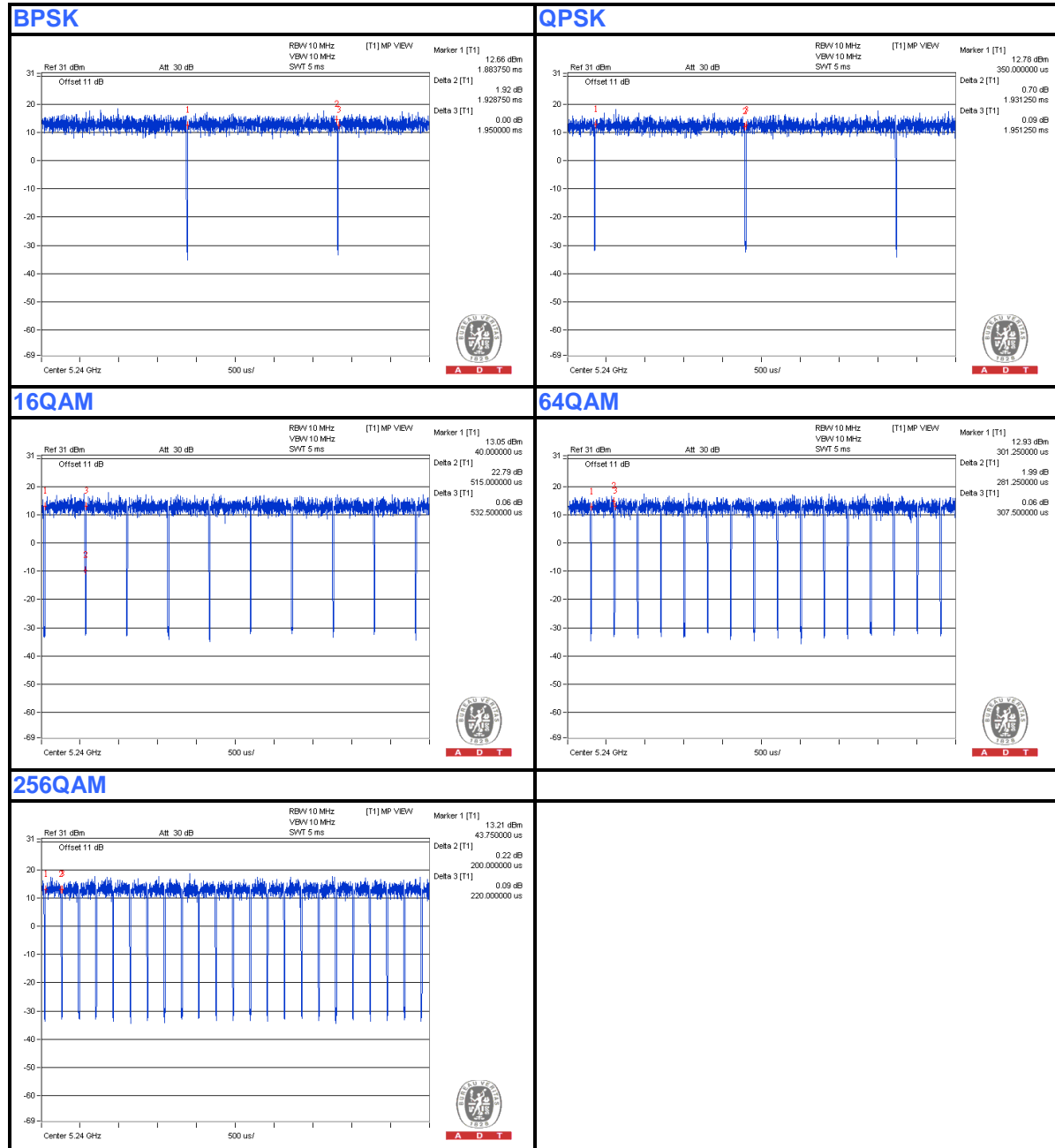
**BPSK:** Duty cycle = 1.929 ms/1.95 ms = 0.989

**QPSK:** Duty cycle = 1.931 ms/1.951 ms = 0.99

**16QAM:** Duty cycle = 0.515 ms/0.532 ms = 0.968, Duty factor =  $10 * \log(1/0.968) = 0.14$

**64QAM:** Duty cycle = 0.281 ms/0.307 ms = 0.915, Duty factor =  $10 * \log(1/0.915) = 0.38$

**256QAM:** Duty cycle = 0.2 ms/0.22 ms = 0.909, Duty factor =  $10 * \log(1/0.909) = 0.41$





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### 802.11ac (VHT40)

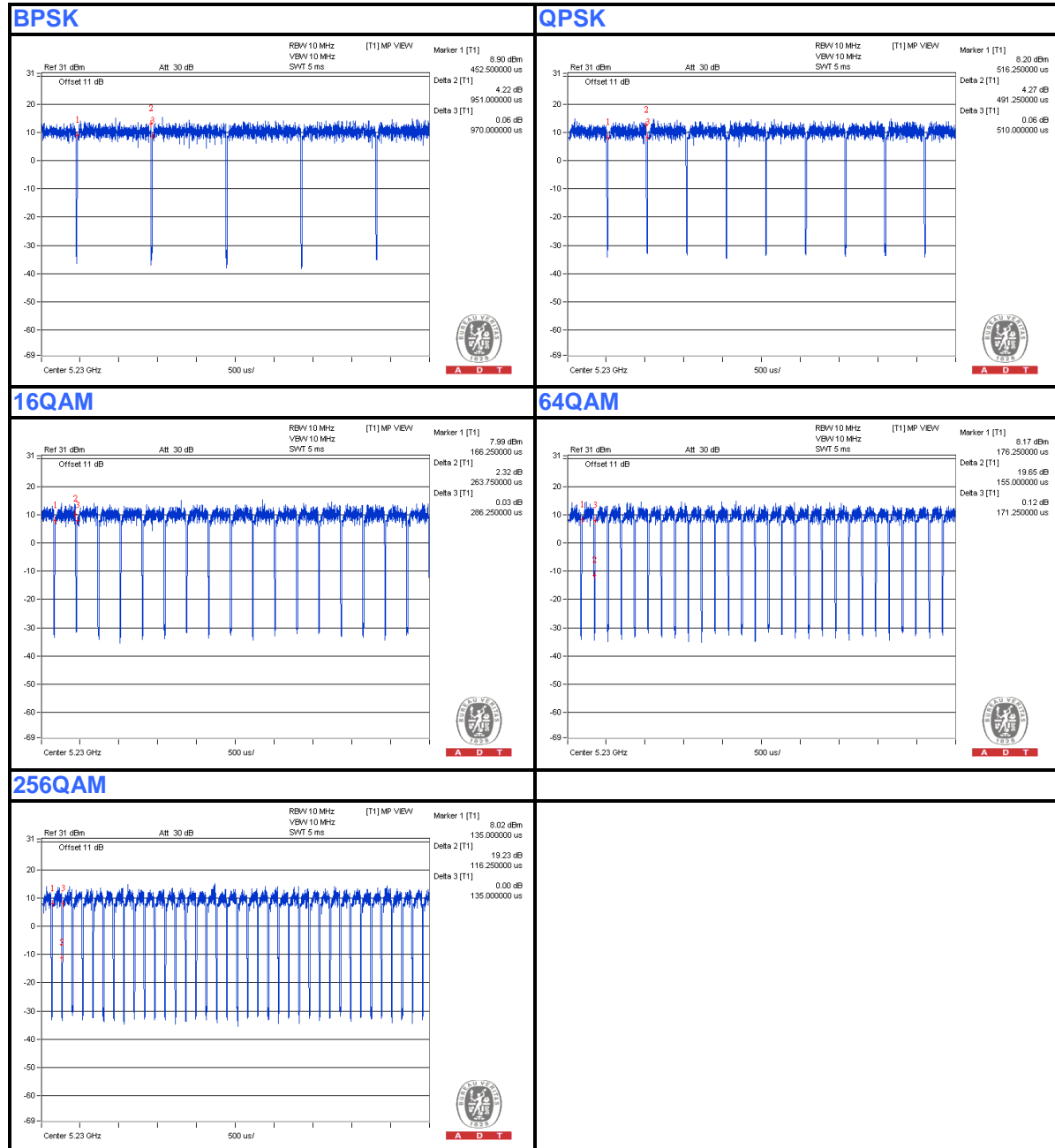
**BPSK:** Duty cycle = 0.951 ms/0.97 ms = 0.98

**QPSK:** Duty cycle = 0.491 ms/0.51 ms = 0.963, Duty factor =  $10 * \log(1/0.963) = 0.16$

**16QAM:** Duty cycle = 0.264 ms/0.286 ms = 0.923, Duty factor =  $10 * \log(1/0.923) = 0.35$

**64QAM:** Duty cycle = 0.155 ms/0.171 ms = 0.906, Duty factor =  $10 * \log(1/0.906) = 0.43$

**256QAM:** Duty cycle = 0.116 ms/0.14 ms = 0.859, Duty factor =  $10 * \log(1/0.859) = 0.66$





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### 802.11ac (VHT80)

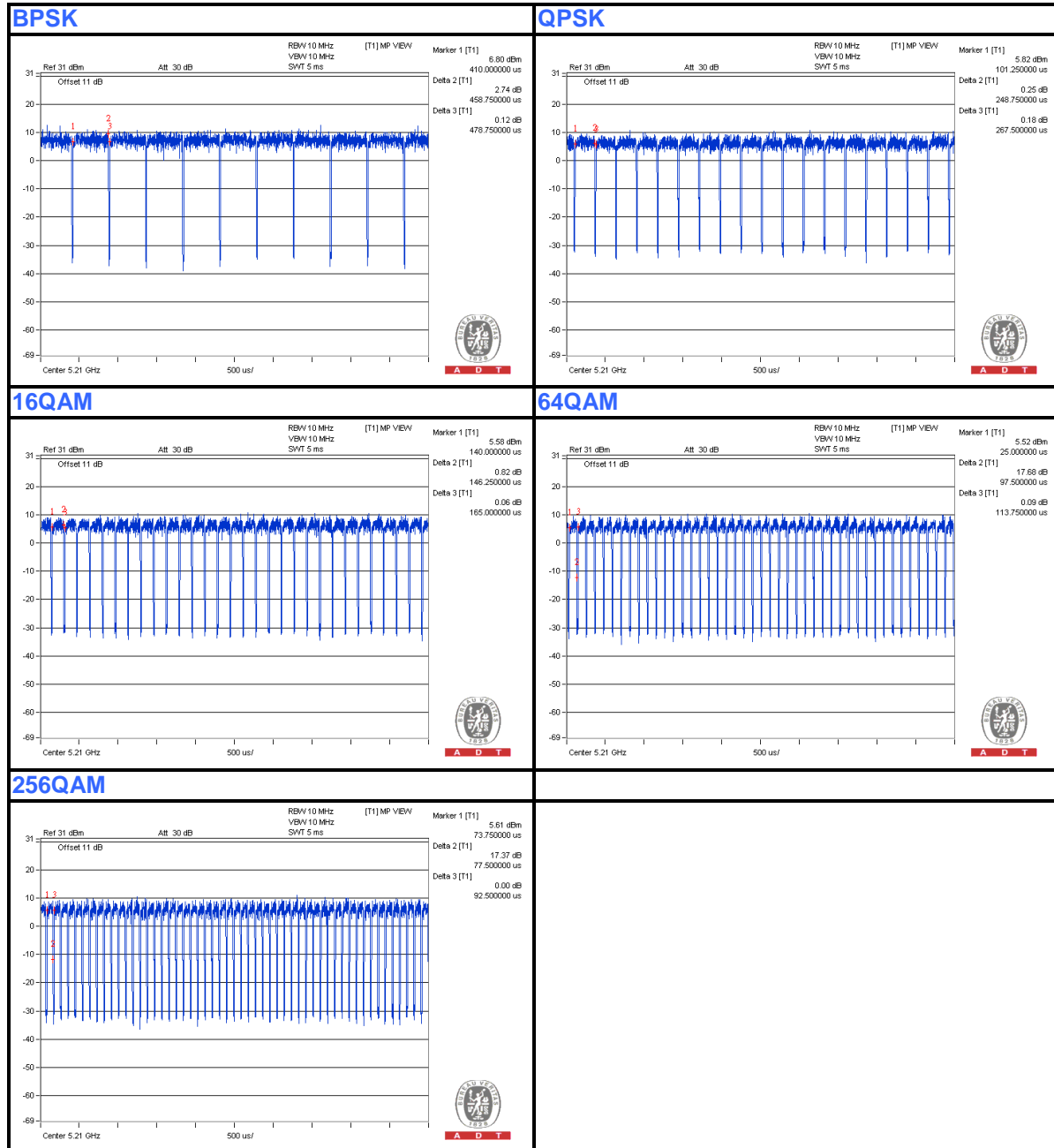
**BPSK:** Duty cycle = 0.459 ms/0.479 ms = 0.958, Duty factor =  $10 * \log(1/0.958) = 0.19$

**QPSK:** Duty cycle = 0.249 ms/0.268 ms = 0.929, Duty factor =  $10 * \log(1/0.929) = 0.32$

**16QAM:** Duty cycle = 0.146 ms/0.165 ms = 0.885, Duty factor =  $10 * \log(1/0.885) = 0.53$

**64QAM:** Duty cycle = 0.098 ms/0.114 ms = 0.86, Duty factor =  $10 * \log(1/0.86) = 0.66$

**256QAM:** Duty cycle = 0.078 ms/0.09 ms = 0.839, Duty factor =  $10 * \log(1/0.839) = 0.76$





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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.

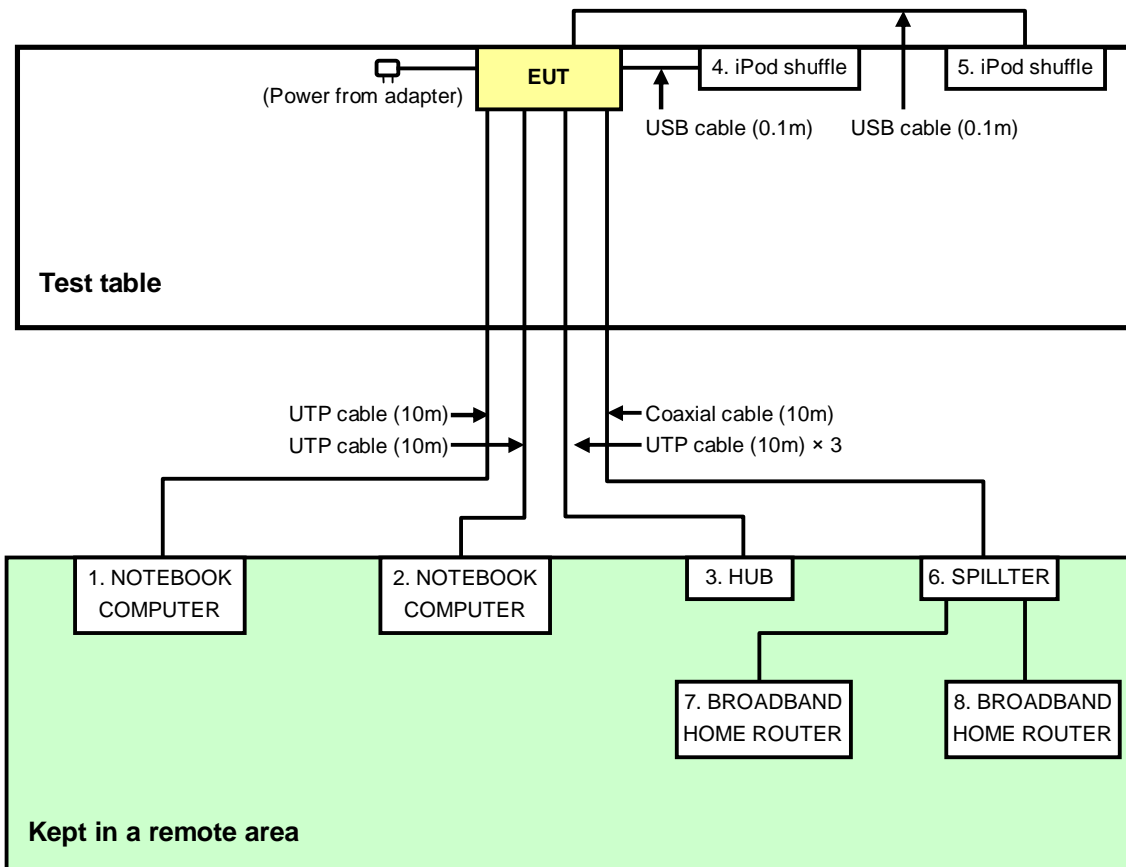
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP32LA	HSLB32S	FCC DoC
3	HUB	Linksys	SD028	NA	NA
4	USB FLASH DISK (for other test items)	SanDisk	SDCZ33	NA	FCC DoC
	iPod shuffle (for conducted test)	Apple	MC749TA/A	CC4DMFJUDFDM	NA
5	USB FLASH DISK (for other test items)	SanDisk	SDCZ33	NA	FCC DoC
	iPod shuffle (for conducted test)	Apple	MC749TA/A	CC4DN25WDFDM	NA
6	SPILLTER	DIRECTV	SWS-2-WNC	NA	NA
7	BROADBAND HOME ROUTER	NA	JG101	NA	NA
8	BROADBAND HOME ROUTER	NA	JG101	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP Cable, 10m
2	UTP Cable, 10m
3	UTP Cable, 10m
4	NA (for other test items)
	USB Cable, 0.1m (for Conducted test)
5	NA (for other test items)
	USB Cable, 0.1m (for Conducted test)
6	Coaxial Cable, 10m
7	Coaxial Cable, 3m
8	Coaxial Cable, 3m

**NOTE:** All power cords of the above support units are non shielded (1.8m).

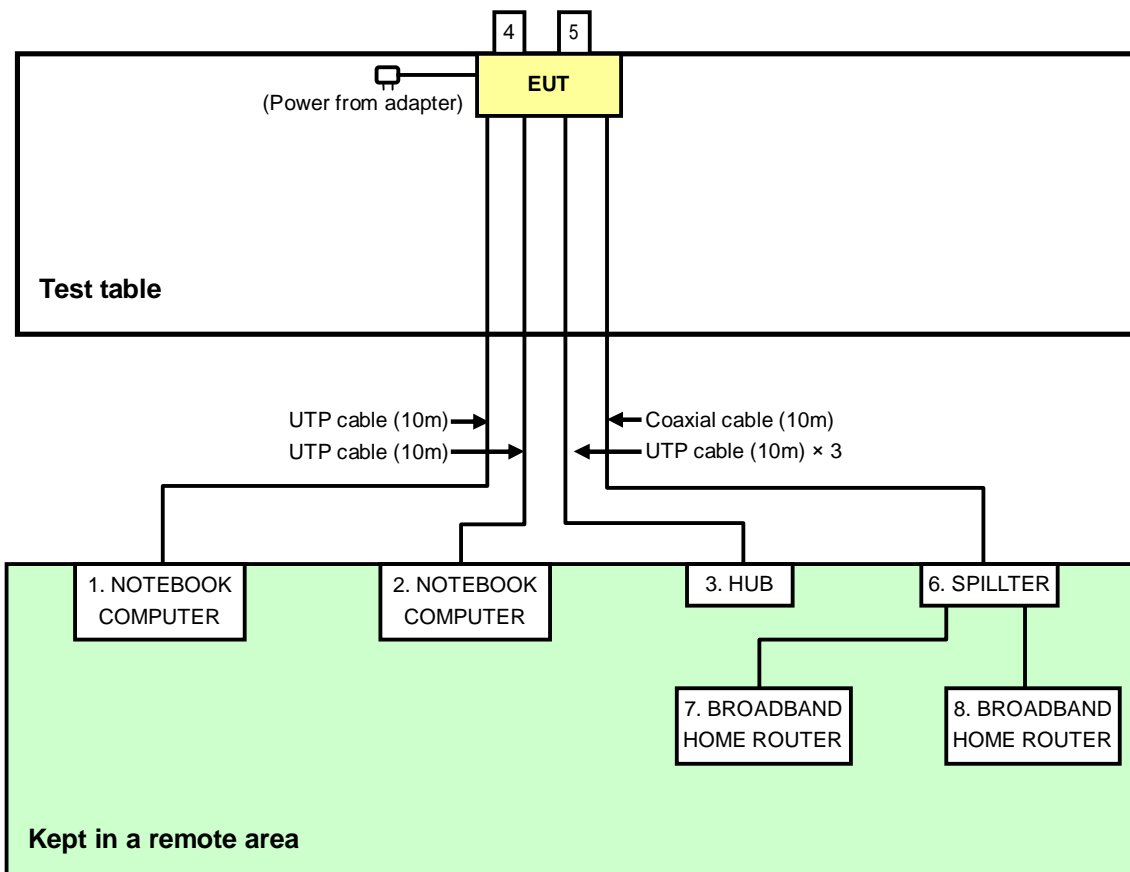
### 3.6 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted Emission Test:





**For Other test items:**



**Note:** Support unit 4 & 5 are USB FLASH DISK.



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## 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 $\mu$ 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	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 05, 2013	Sep. 04, 2014
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 06, 2013	June 05, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-03	Sep. 24, 2013	Sep. 23, 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: Oct. 07 to 22, 2013

#### 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.

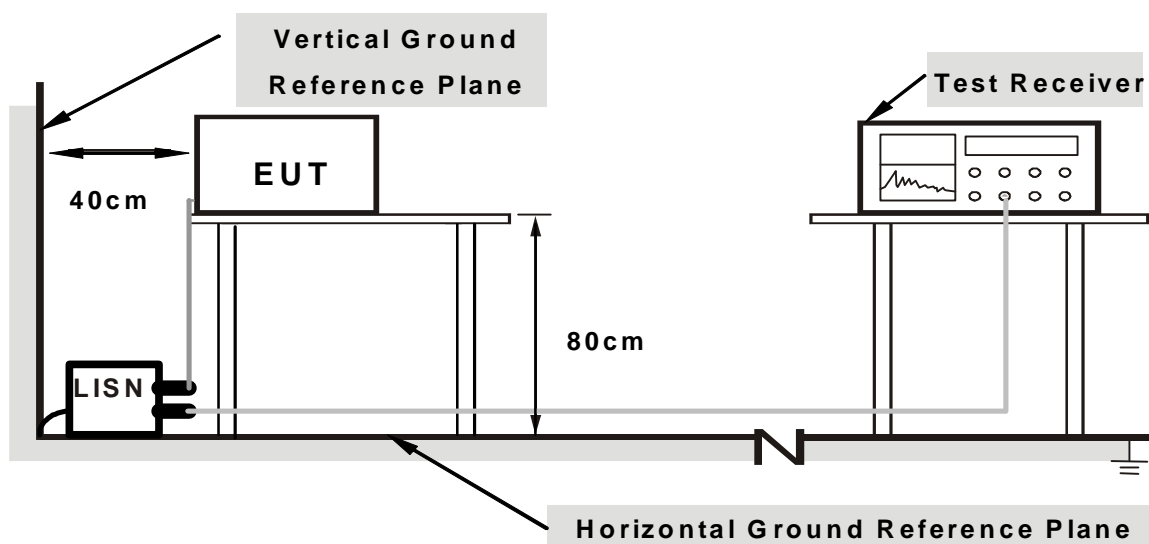
#### NOTE:

- 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. Placed the EUT on testing table.
2. Prepared computer system (support unit 1) to act as communication partner.
3. The communication partner run test program “BCMTool BHR4 Greenwave.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

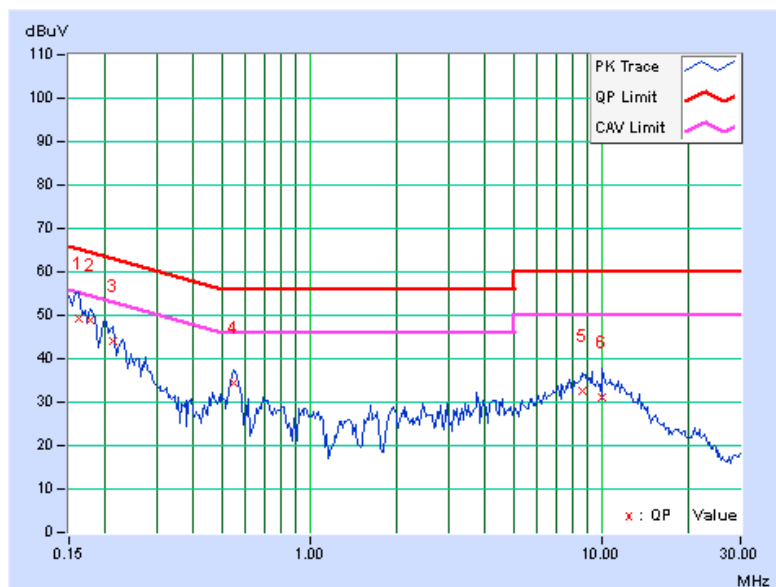
### 4.1.7 TEST RESULTS (MODE 1)

<b>PHASE</b>	Line (L)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	----------	--------------------------	--------------------------------

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	0.16172	0.08	49.34	32.89	49.42	32.97	65.38	55.38	-15.95
2	0.17734	0.09	48.74	35.39	48.83	35.48	64.61	54.61	-15.78	-19.13
3	0.21250	0.10	43.79	29.94	43.89	30.04	63.11	53.11	-19.21	-23.06
4	0.55234	0.15	34.14	28.79	34.29	28.94	56.00	46.00	-21.71	-17.06
5	8.62891	0.43	32.19	27.36	32.62	27.79	60.00	50.00	-27.38	-22.21
6	10.10156	0.47	30.47	25.58	30.94	26.05	60.00	50.00	-29.06	-23.95

**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





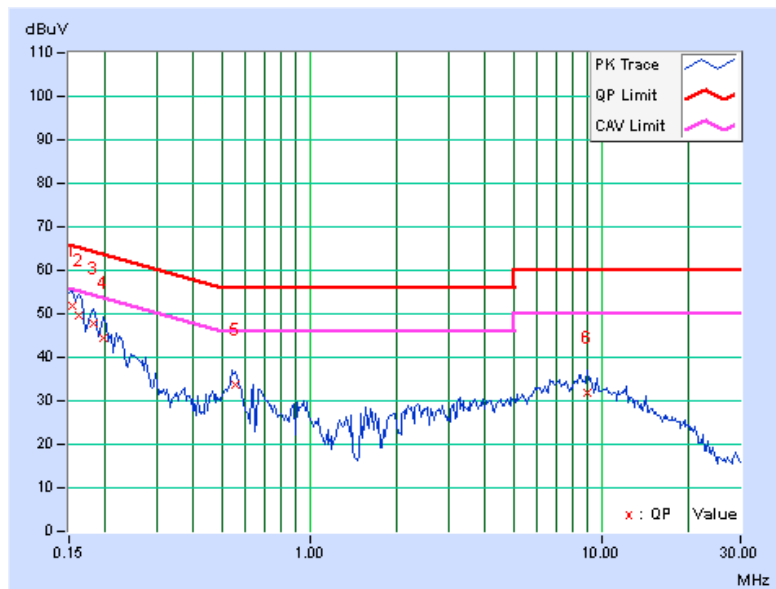
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<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	-------------	--------------------------	--------------------------------

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	0.15391	0.09	51.67	34.63	51.76	34.72	65.79	55.79	-14.03	-21.07
2	0.16172	0.09	49.48	33.19	49.57	33.28	65.38	55.38	-15.80	-22.09
3	0.18125	0.10	47.72	35.05	47.82	35.15	64.43	54.43	-16.61	-19.28
4	0.19687	0.10	44.52	28.42	44.62	28.52	63.74	53.74	-19.12	-25.22
5	0.56016	0.15	33.39	28.06	33.54	28.21	56.00	46.00	-22.46	-17.79
6	8.92188	0.44	31.47	26.48	31.91	26.92	60.00	50.00	-28.09	-23.08

**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



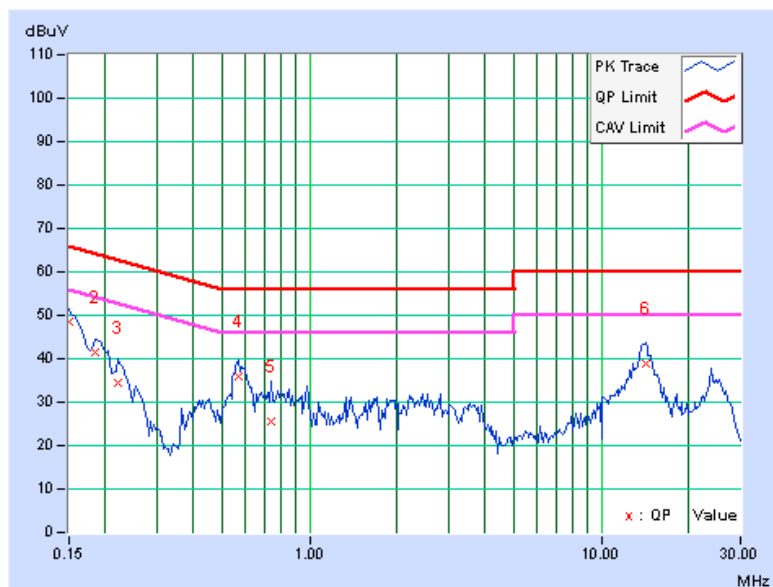
### 4.1.8 TEST RESULTS (MODE 2)

<b>PHASE</b>	Line (L)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	----------	--------------------------	--------------------------------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.08	48.51	34.12	48.59	34.20	66.00	56.00	-17.41	-21.80
2	0.18516	0.09	41.22	26.20	41.31	26.29	64.25	54.25	-22.94	-27.96
3	0.22031	0.10	34.25	18.35	34.35	18.45	62.81	52.81	-28.45	-34.35
4	0.56797	0.15	35.65	28.80	35.80	28.95	56.00	46.00	-20.20	-17.05
5	0.73594	0.16	25.31	16.52	25.47	16.68	56.00	46.00	-30.53	-29.32
6	14.14844	0.59	38.25	29.90	38.84	30.49	60.00	50.00	-21.16	-19.51

**REMARKS:**

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

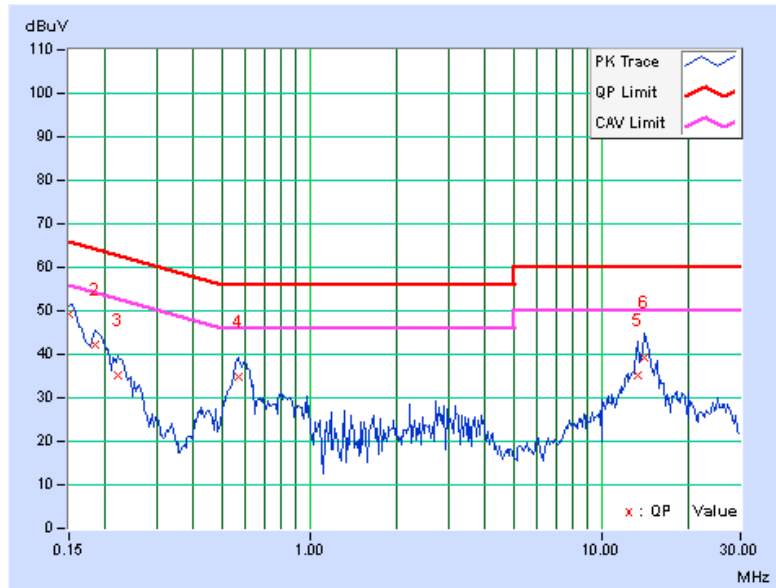


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	-------------	--------------------------	--------------------------------

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	0.15000	0.09	49.32	34.46	49.41	34.55	66.00	56.00	-16.59	-21.45
2	0.18516	0.10	42.22	26.98	42.32	27.08	64.25	54.25	-21.93	-27.17
3	0.22031	0.10	34.95	18.51	35.05	18.61	62.81	52.81	-27.75	-34.19
4	0.56797	0.15	34.54	27.51	34.69	27.66	56.00	46.00	-21.31	-18.34
5	13.33594	0.57	34.74	27.91	35.31	28.48	60.00	50.00	-24.69	-21.52
6	14.10547	0.59	38.49	31.17	39.08	31.76	60.00	50.00	-20.92	-18.24

**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	
√	FIELD STRENGTH AT 3m (dBμV/m)	
	PK	AV
	74	54
	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m)
	PK	PK
	-27	68.3

**NOTE:**

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

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



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### 4.2.3 TEST INSTRUMENTS

#### For Mode 2 (above 1GHz):

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29,2013	Jan. 28,2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 13, 2013	Nov. 12, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
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: Dec. 02, 2013



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**For Mode 2 (below 1GHz):**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29,2013	Jan. 28,2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Mar. 19, 2013	Mar. 18, 2014
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 19, 2012	Nov. 18, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
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: Oct. 31, 2013



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**For Mode 1 & 3:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
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. H.
4. The FCC Site Registration No. is 797305.
- 5 The CANADA Site Registration No. is IC 7450H-3.
- 6 Tested Date: Oct. 10, 2013

#### 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:**

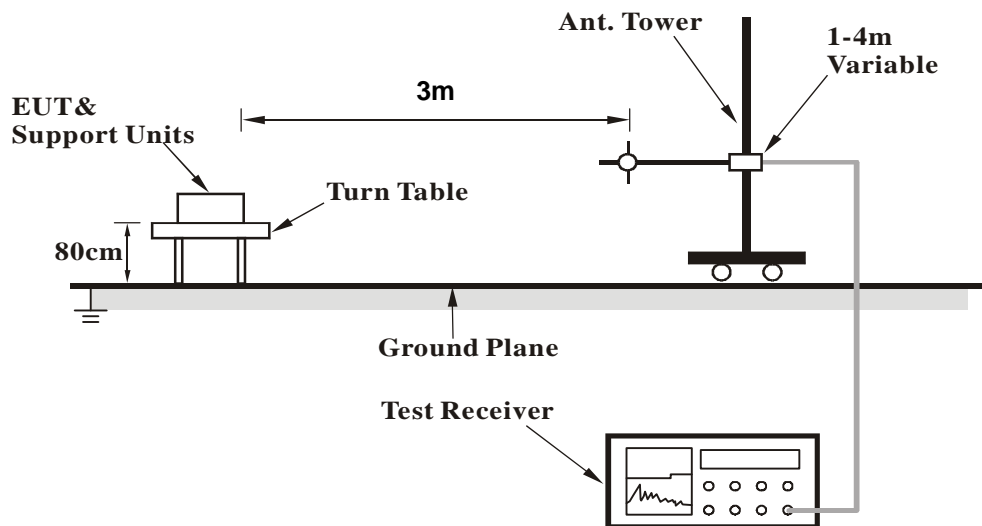
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.2.5 DEVIATION FROM TEST STANDARD

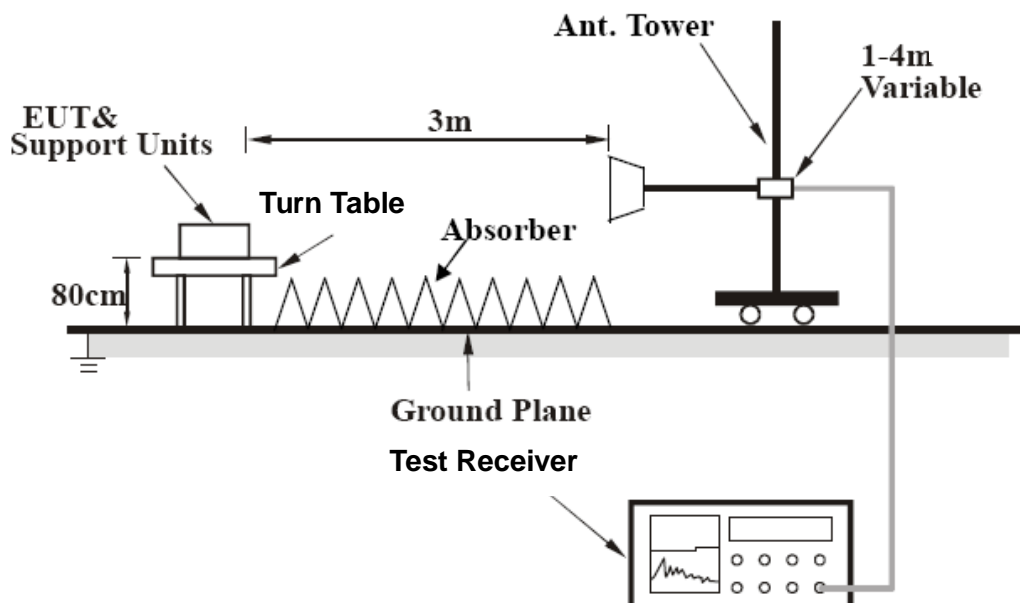
No deviation

#### 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



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### 4.2.8 TEST RESULTS (MODE 1)

#### CDD\_MODE

#### ABOVE 1GHz DATA

#### 802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 36	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5100.00	61.7 PK	74.0	-12.3	1.10 H	360	18.23	43.47
2	5100.00	51.5 AV	54.0	-2.5	1.10 H	360	8.03	43.47
3	*5180.00	110.2 PK			1.10 H	358	66.56	43.64
4	*5180.00	99.2 AV			1.10 H	358	55.56	43.64
5	5396.00	56.0 PK	74.0	-18.0	1.10 H	356	12.03	43.97
6	5396.00	48.5 AV	54.0	-5.5	1.10 H	356	4.53	43.97
7	#10360.00	50.9 PK	74.0	-23.1	1.04 H	205	0.16	50.74
8	#10360.00	39.2 AV	54.0	-14.8	1.04 H	205	-11.54	50.74
9	15540.00	54.0 PK	74.0	-20.0	1.03 H	203	-2.06	56.06
10	15540.00	41.8 AV	54.0	-12.2	1.03 H	203	-14.26	56.06

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	5100.00	63.2 PK	74.0	-10.8	1.09 V	168	19.73	43.47
2	5100.00	53.8 AV	54.0	-0.2	1.09 V	168	10.33	43.47
3	*5180.00	109.1 PK			1.00 V	157	65.46	43.64
4	*5180.00	100.5 AV			1.00 V	157	56.86	43.64
5	5396.00	56.8 PK	74.0	-17.2	1.00 V	131	12.83	43.97
6	5396.00	46.4 AV	54.0	-7.6	1.00 V	131	2.43	43.97
7	#10360.00	49.8 PK	74.0	-24.2	1.31 V	101	-0.94	50.74
8	#10360.00	38.3 AV	54.0	-15.7	1.31 V	101	-12.44	50.74
9	15540.00	53.9 PK	74.0	-20.1	1.01 V	220	-2.16	56.06
10	15540.00	42.2 AV	54.0	-11.8	1.01 V	220	-13.86	56.06

#### 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.



A D T

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5120.00	63.1 PK	74.0	-10.9	1.01 H	359	19.59	43.51
2	5120.00	53.1 AV	54.0	-0.9	1.01 H	359	9.59	43.51
3	*5200.00	111.0 PK			1.01 H	356	67.32	43.68
4	*5200.00	99.3 AV			1.01 H	356	55.62	43.68
5	5359.00	56.3 PK	74.0	-17.7	1.01 H	3	12.39	43.91
6	5359.00	46.4 AV	54.0	-7.6	1.01 H	3	2.49	43.91
7	#10400.00	51.3 PK	74.0	-22.7	1.00 H	195	0.63	50.67
8	#10400.00	39.3 AV	54.0	-14.7	1.00 H	195	-11.37	50.67
9	15600.00	54.6 PK	74.0	-19.4	1.00 H	205	-1.41	56.01
10	15600.00	42.3 AV	54.0	-11.7	1.00 H	205	-13.71	56.01

**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	63.1 PK	74.0	-10.9	1.08 V	165	19.59	43.51
2	5120.00	53.8 AV	54.0	-0.2	1.08 V	165	10.29	43.51
3	*5200.00	109.7 PK			1.00 V	154	66.02	43.68
4	*5200.00	100.8 AV			1.00 V	154	57.12	43.68
5	5359.00	62.1 PK	74.0	-11.9	1.10 V	260	18.19	43.91
6	5359.00	52.4 AV	54.0	-1.6	1.10 V	260	8.49	43.91
7	#10400.00	49.9 PK	74.0	-24.1	1.26 V	107	-0.77	50.67
8	#10400.00	38.4 AV	54.0	-15.6	1.26 V	107	-12.27	50.67
9	15600.00	53.8 PK	74.0	-20.2	1.00 V	205	-2.21	56.01
10	15600.00	42.3 AV	54.0	-11.7	1.00 V	205	-13.71	56.01

**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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<b>CHANNEL</b>	TX Channel 48	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5077.00	54.5 PK	74.0	-19.5	1.11 H	360	11.07	43.43
2	5077.00	44.1 AV	54.0	-9.9	1.11 H	360	0.67	43.43
3	*5240.00	111.2 PK			1.11 H	359	67.47	43.73
4	*5240.00	99.5 AV			1.11 H	359	55.77	43.73
5	5402.00	56.8 PK	74.0	-17.2	1.11 H	355	12.83	43.97
6	5402.00	46.7 AV	54.0	-7.3	1.11 H	355	2.73	43.97
7	#10480.00	51.7 PK	74.0	-22.3	1.01 H	191	0.67	51.03
8	#10480.00	39.5 AV	54.0	-14.5	1.01 H	191	-11.53	51.03
9	15720.00	55.0 PK	74.0	-19.0	1.00 H	215	-0.88	55.88
10	15720.00	42.4 AV	54.0	-11.6	1.00 H	215	-13.48	55.88

**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	5077.00	63.1 PK	74.0	-10.9	1.03 V	148	19.67	43.43
2	5077.00	53.4 AV	54.0	-0.6	1.03 V	148	9.97	43.43
3	*5240.00	108.1 PK			1.38 V	266	64.37	43.73
4	*5240.00	99.1 AV			1.38 V	266	55.37	43.73
5	5402.00	64.1 PK	74.0	-9.9	1.03 V	147	20.13	43.97
6	5402.00	53.7 AV	54.0	-0.3	1.03 V	147	9.73	43.97
7	#10480.00	50.3 PK	74.0	-23.7	1.24 V	92	-0.73	51.03
8	#10480.00	38.8 AV	54.0	-15.2	1.24 V	92	-12.23	51.03
9	15720.00	53.9 PK	74.0	-20.1	1.00 V	205	-1.98	55.88
10	15720.00	42.3 AV	54.0	-11.7	1.00 V	205	-13.58	55.88

**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.



A D T

802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 38	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5105.00	65.9 PK	74.0	-8.1	1.00 H	339	22.41	43.49
2	5105.00	51.3 AV	54.0	-2.7	1.00 H	339	7.81	43.49
3	*5190.00	110.3 PK			1.11 H	357	66.64	43.66
4	*5190.00	98.8 AV			1.11 H	357	55.14	43.66
5	5354.00	56.7 PK	74.0	-17.3	1.11 H	357	12.81	43.89
6	5354.00	47.5 AV	54.0	-6.5	1.11 H	357	3.61	43.89
7	#10380.00	57.1 PK	74.0	-16.9	1.11 H	153	6.39	50.71
8	#10380.00	43.8 AV	54.0	-10.2	1.11 H	153	-6.91	50.71
9	15570.00	55.3 PK	74.0	-18.7	1.00 H	209	-0.73	56.03
10	15570.00	42.7 AV	54.0	-11.3	1.00 H	209	-13.33	56.03

**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	5105.00	65.6 PK	74.0	-8.4	1.00 V	139	22.11	43.49
2	5105.00	53.5 AV	54.0	-0.5	1.00 V	139	10.01	43.49
3	*5190.00	108.1 PK			1.29 V	185	64.44	43.66
4	*5190.00	98.9 AV			1.29 V	185	55.24	43.66
5	5354.00	62.2 PK	74.0	-11.8	1.12 V	95	18.31	43.89
6	5354.00	52.4 AV	54.0	-1.6	1.12 V	95	8.51	43.89
7	#10380.00	53.4 PK	74.0	-20.6	1.00 V	92	2.69	50.71
8	#10380.00	41.9 AV	54.0	-12.1	1.00 V	92	-8.81	50.71
9	15570.00	54.8 PK	74.0	-19.2	1.00 V	190	-1.23	56.03
10	15570.00	42.6 AV	54.0	-11.4	1.00 V	190	-13.43	56.03

**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.



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<b>CHANNEL</b>	TX Channel 46	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	#5155.80	69.7 PK	74.0	-4.3	1.11 H	357	26.11	43.59
2	#5155.80	53.9 AV	54.0	-0.1	1.11 H	357	10.31	43.59
3	*5230.00	110.5 PK			1.11 H	360	66.78	43.72
4	*5230.00	99.6 AV			1.11 H	360	55.88	43.72
5	5392.00	58.2 PK	74.0	-15.8	1.11 H	0	14.24	43.96
6	5392.00	46.7 AV	54.0	-7.3	1.11 H	0	2.74	43.96
7	#10460.00	57.3 PK	74.0	-16.7	1.14 H	148	6.36	50.94
8	#10460.00	43.9 AV	54.0	-10.1	1.14 H	148	-7.04	50.94
9	15690.00	54.7 PK	74.0	-19.3	1.00 H	205	-1.22	55.92
10	15690.00	42.3 AV	54.0	-11.7	1.00 H	205	-13.62	55.92

**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	#5155.80	64.1 PK	74.0	-9.9	1.09 V	162	20.51	43.59
2	#5155.80	53.6 AV	54.0	-0.4	1.09 V	162	10.01	43.59
3	*5230.00	108.3 PK			1.29 V	186	64.58	43.72
4	*5230.00	99.7 AV			1.29 V	186	55.98	43.72
5	5392.00	63.9 PK	74.0	-10.1	1.02 V	148	19.94	43.96
6	5392.00	53.5 AV	54.0	-0.5	1.02 V	148	9.54	43.96
7	#10460.00	53.8 PK	74.0	-20.2	1.00 V	83	2.86	50.94
8	#10460.00	42.1 AV	54.0	-11.9	1.00 V	83	-8.84	50.94
9	15690.00	54.6 PK	74.0	-19.4	1.00 V	180	-1.32	55.92
10	15690.00	42.3 AV	54.0	-11.7	1.00 V	180	-13.62	55.92

**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.



A D T

802.11ac (VHT80)

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5140.00	67.5 PK	74.0	-6.5	1.11 H	352	23.95	43.55
2	5140.00	53.1 AV	54.0	-0.9	1.11 H	352	9.55	43.55
3	*5210.00	107.9 PK			1.11 H	356	64.21	43.69
4	*5210.00	96.6 AV			1.11 H	356	52.91	43.69
5	5360.00	63.9 PK	74.0	-10.1	1.11 H	356	19.99	43.91
6	5360.00	53.0 AV	54.0	-1.0	1.11 H	356	9.09	43.91
7	#10420.00	52.6 PK	74.0	-21.4	1.00 H	169	1.84	50.76
8	#10420.00	39.9 AV	54.0	-14.1	1.00 H	169	-10.86	50.76
9	15630.00	55.1 PK	74.0	-18.9	1.00 H	228	-0.88	55.98
10	15630.00	42.3 AV	54.0	-11.7	1.00 H	228	-13.68	55.98

**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	5140.00	70.2 PK	74.0	-3.8	1.08 V	183	26.65	43.55
2	5140.00	53.6 AV	54.0	-0.4	1.08 V	183	10.05	43.55
3	*5210.00	108.0 PK			1.15 V	179	64.31	43.69
4	*5210.00	97.6 AV			1.15 V	179	53.91	43.69
5	5360.00	61.4 PK	74.0	-12.6	1.13 V	94	17.49	43.91
6	5360.00	50.4 AV	54.0	-3.6	1.13 V	94	6.49	43.91
7	#10420.00	50.7 PK	74.0	-23.3	1.00 V	321	-0.06	50.76
8	#10420.00	37.5 AV	54.0	-16.5	1.00 V	321	-13.26	50.76
9	15630.00	54.0 PK	74.0	-20.0	1.00 V	208	-1.98	55.98
10	15630.00	42.4 AV	54.0	-11.6	1.00 V	208	-13.58	55.98

**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.



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STBC\_MODE

ABOVE 1GHz DATA

802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 36	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5100.00	61.9 PK	74.0	-12.1	1.00 H	355	18.43	43.47
2	5100.00	51.4 AV	54.0	-2.6	1.00 H	355	7.93	43.47
3	*5180.00	107.4 PK			1.00 H	337	63.76	43.64
4	*5180.00	96.1 AV			1.00 H	337	52.46	43.64
5	5396.00	56.9 PK	74.0	-17.1	1.00 H	254	12.93	43.97
6	5396.00	48.2 AV	54.0	-5.8	1.00 H	254	4.23	43.97
7	#10360.00	53.3 PK	74.0	-20.7	1.00 H	165	2.56	50.74
8	#10360.00	40.6 AV	54.0	-13.4	1.00 H	165	-10.14	50.74
9	15540.00	58.2 PK	74.0	-15.8	1.00 H	211	2.14	56.06
10	15540.00	45.2 AV	54.0	-8.8	1.00 H	211	-10.86	56.06

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	5100.00	62.9 PK	74.0	-11.1	1.00 V	138	19.43	43.47
2	5100.00	53.8 AV	54.0	-0.2	1.00 V	138	10.33	43.47
3	*5180.00	108.6 PK			1.19 V	177	64.96	43.64
4	*5180.00	98.6 AV			1.19 V	177	54.96	43.64
5	5396.00	57.5 PK	74.0	-16.5	1.00 V	155	13.53	43.97
6	5396.00	46.7 AV	54.0	-7.3	1.00 V	155	2.73	43.97
7	#10360.00	53.0 PK	74.0	-21.0	1.00 V	182	2.26	50.74
8	#10360.00	40.1 AV	54.0	-13.9	1.00 V	182	-10.64	50.74
9	15540.00	57.6 PK	74.0	-16.4	1.00 V	210	1.54	56.06
10	15540.00	45.2 AV	54.0	-8.8	1.00 V	210	-10.86	56.06

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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<b>CHANNEL</b>	TX Channel 40	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5117.00	60.5 PK	74.0	-13.5	1.06 H	179	16.99	43.51
2	5117.00	48.7 AV	54.0	-5.3	1.06 H	179	5.19	43.51
3	*5200.00	105.5 PK			1.06 H	251	61.82	43.68
4	*5200.00	95.1 AV			1.06 H	251	51.42	43.68
5	5362.00	57.1 PK	74.0	-16.9	1.06 H	359	13.19	43.91
6	5362.00	45.6 AV	54.0	-8.4	1.06 H	359	1.69	43.91
7	#10400.00	53.5 PK	74.0	-20.5	1.05 H	151	2.83	50.67
8	#10400.00	40.5 AV	54.0	-13.5	1.05 H	151	-10.17	50.67
9	15600.00	58.4 PK	74.0	-15.6	1.01 H	212	2.39	56.01
10	15600.00	45.5 AV	54.0	-8.5	1.01 H	212	-10.51	56.01

**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	5117.00	61.3 PK	74.0	-12.7	1.09 V	149	17.79	43.51
2	5117.00	50.4 AV	54.0	-3.6	1.09 V	149	6.89	43.51
3	*5200.00	106.6 PK			1.18 V	167	62.92	43.68
4	*5200.00	97.1 AV			1.18 V	167	53.42	43.68
5	5362.00	63.7 PK	74.0	-10.3	1.04 V	154	19.79	43.91
6	5362.00	53.6 AV	54.0	-0.4	1.04 V	154	9.69	43.91
7	#10400.00	53.1 PK	74.0	-20.9	1.05 V	184	2.43	50.67
8	#10400.00	40.2 AV	54.0	-13.8	1.05 V	184	-10.47	50.67
9	15600.00	57.1 PK	74.0	-16.9	1.00 V	205	1.09	56.01
10	15600.00	44.9 AV	54.0	-9.1	1.00 V	205	-11.11	56.01

**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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<b>CHANNEL</b>	TX Channel 48	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	105.2 PK			1.08 H	356	61.47	43.73
2	*5240.00	94.5 AV			1.08 H	356	50.77	43.73
3	5350.00	56.1 PK	74.0	-17.9	1.08 H	4	12.21	43.89
4	5350.00	43.8 AV	54.0	-10.2	1.08 H	4	-0.09	43.89
5	5402.00	55.1 PK	74.0	-18.9	1.08 H	342	11.13	43.97
6	5402.00	45.2 AV	54.0	-8.8	1.08 H	342	1.23	43.97
7	#10480.00	53.1 PK	74.0	-20.9	1.00 H	157	2.07	51.03
8	#10480.00	40.4 AV	54.0	-13.6	1.00 H	157	-10.63	51.03
9	15720.00	58.4 PK	74.0	-15.6	1.00 H	204	2.52	55.88
10	15720.00	45.8 AV	54.0	-8.2	1.00 H	204	-10.08	55.88

**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	105.6 PK			1.18 V	167	61.87	43.73
2	*5240.00	96.0 AV			1.18 V	167	52.27	43.73
3	5350.00	60.4 PK	74.0	-13.6	1.02 V	165	16.51	43.89
4	5350.00	50.2 AV	54.0	-3.8	1.02 V	165	6.31	43.89
5	5402.00	65.1 PK	74.0	-8.9	1.02 V	148	21.13	43.97
<b>6</b>	<b>5402.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.02 V</b>	<b>148</b>	<b>9.93</b>	<b>43.97</b>
7	#10480.00	53.7 PK	74.0	-20.3	1.10 V	194	2.67	51.03
8	#10480.00	40.5 AV	54.0	-13.5	1.10 V	194	-10.53	51.03
9	15720.00	57.3 PK	74.0	-16.7	1.01 V	204	1.42	55.88
10	15720.00	45.1 AV	54.0	-8.9	1.01 V	204	-10.78	55.88

**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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802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 38	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5105.00	61.4 PK	74.0	-12.6	1.08 H	360	17.91	43.49
2	5105.00	51.8 AV	54.0	-2.2	1.08 H	360	8.31	43.49
3	*5190.00	108.0 PK			1.08 H	351	64.34	43.66
4	*5190.00	96.9 AV			1.08 H	351	53.24	43.66
5	5357.00	57.2 PK	74.0	-16.8	1.08 H	353	13.30	43.90
6	5357.00	45.3 AV	54.0	-8.7	1.08 H	353	1.40	43.90
7	#10380.00	53.0 PK	74.0	-21.0	1.00 H	148	2.29	50.71
8	#10380.00	40.0 AV	54.0	-14.0	1.00 H	148	-10.71	50.71
9	15570.00	57.7 PK	74.0	-16.3	1.00 H	197	1.67	56.03
10	15570.00	45.4 AV	54.0	-8.6	1.00 H	197	-10.63	56.03

**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	5105.00	63.3 PK	74.0	-10.7	1.00 V	137	19.81	43.49
2	5105.00	53.1 AV	54.0	-0.9	1.00 V	137	9.61	43.49
3	*5190.00	107.9 PK			1.00 V	135	64.24	43.66
4	*5190.00	97.5 AV			1.00 V	135	53.84	43.66
5	5357.00	65.4 PK	74.0	-8.6	1.03 V	150	21.50	43.90
6	5357.00	53.8 AV	54.0	-0.2	1.03 V	150	9.90	43.90
7	#10380.00	53.7 PK	74.0	-20.3	1.07 V	184	2.99	50.71
8	#10380.00	40.7 AV	54.0	-13.3	1.07 V	184	-10.01	50.71
9	15570.00	57.7 PK	74.0	-16.3	1.04 V	197	1.67	56.03
10	15570.00	45.4 AV	54.0	-8.6	1.04 V	197	-10.63	56.03

**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.





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<b>CHANNEL</b>	TX Channel 46	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5145.00	61.1 PK	74.0	-12.9	1.03 H	346	17.54	43.56
2	5145.00	51.6 AV	54.0	-2.4	1.03 H	346	8.04	43.56
3	*5230.00	108.2 PK			1.10 H	360	64.48	43.72
4	*5230.00	97.2 AV			1.10 H	360	53.48	43.72
5	5382.00	57.5 PK	74.0	-16.5	1.05 H	348	13.56	43.94
6	5382.00	45.6 AV	54.0	-8.4	1.05 H	348	1.66	43.94
7	#10460.00	52.7 PK	74.0	-21.3	1.03 H	140	1.76	50.94
8	#10460.00	39.9 AV	54.0	-14.1	1.03 H	140	-11.04	50.94
9	15690.00	58.2 PK	74.0	-15.8	1.00 H	203	2.28	55.92
10	15690.00	45.7 AV	54.0	-8.3	1.00 H	203	-10.22	55.92

**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	5145.00	61.6 PK	74.0	-12.4	1.00 V	137	18.04	43.56
2	5145.00	51.1 AV	54.0	-2.9	1.00 V	137	7.54	43.56
3	*5230.00	107.8 PK			1.00 V	147	64.08	43.72
4	*5230.00	97.3 AV			1.00 V	147	53.58	43.72
5	5382.00	65.3 PK	74.0	-8.7	1.03 V	151	21.36	43.94
6	5382.00	53.7 AV	54.0	-0.3	1.03 V	151	9.76	43.94
7	#10460.00	53.2 PK	74.0	-20.8	1.13 V	181	2.26	50.94
8	#10460.00	40.5 AV	54.0	-13.5	1.13 V	181	-10.44	50.94
9	15690.00	57.8 PK	74.0	-16.2	1.04 V	201	1.88	55.92
10	15690.00	45.2 AV	54.0	-8.8	1.04 V	201	-10.72	55.92

**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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802.11ac (VHT80)

<b>CHANNEL</b>	TX Channel 42	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5142.00	69.6 PK	74.0	-4.4	1.10 H	355	26.04	43.56
2	5142.00	53.1 AV	54.0	-0.9	1.10 H	355	9.54	43.56
3	*5210.00	104.9 PK			1.00 H	259	61.21	43.69
4	*5210.00	93.9 AV			1.00 H	259	50.21	43.69
5	5358.00	62.5 PK	74.0	-11.5	1.05 H	348	18.60	43.90
6	5358.00	50.4 AV	54.0	-3.6	1.05 H	348	6.50	43.90
7	#10420.00	52.8 PK	74.0	-21.2	1.04 H	148	2.04	50.76
8	#10420.00	40.0 AV	54.0	-14.0	1.04 H	148	-10.76	50.76
9	15630.00	58.1 PK	74.0	-15.9	1.00 H	215	2.12	55.98
10	15630.00	45.4 AV	54.0	-8.6	1.00 H	215	-10.58	55.98

**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	5142.00	68.7 PK	74.0	-5.3	1.08 V	157	25.14	43.56
2	5142.00	53.5 AV	54.0	-0.5	1.08 V	157	9.94	43.56
3	*5210.00	107.4 PK			1.40 V	279	63.71	43.69
4	*5210.00	96.3 AV			1.40 V	279	52.61	43.69
5	5358.00	63.0 PK	74.0	-11.0	1.12 V	93	19.10	43.90
6	5358.00	51.2 AV	54.0	-2.8	1.12 V	93	7.30	43.90
7	#10420.00	52.9 PK	74.0	-21.1	1.13 V	178	2.14	50.76
8	#10420.00	40.1 AV	54.0	-13.9	1.13 V	178	-10.66	50.76
9	15630.00	58.5 PK	74.0	-15.5	1.07 V	189	2.52	55.98
10	15630.00	45.7 AV	54.0	-8.3	1.07 V	189	-10.28	55.98

**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.



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### 4.2.9 TEST RESULTS (MODE 2)

**STBC\_MODE**

**BELOW 1GHz WORST-CASE DATA**

**802.11ac (VHT40)**

<b>CHANNEL</b>	TX Channel 38	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	161.58	33.7 QP	43.5	-9.9	2.00 H	84	46.87	-13.22
2	375.03	41.4 QP	46.0	-4.6	1.00 H	59	52.04	-10.62
3	625.00	42.9 QP	46.0	-3.2	1.00 H	90	47.43	-4.58
4	750.03	39.0 QP	46.0	-7.0	1.00 H	250	41.20	-2.17
5	875.02	44.8 QP	46.0	-1.2	1.50 H	327	45.51	-0.69
6	1000.00	42.6 QP	54.0	-11.4	2.00 H	304	41.45	1.18

#### 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	47.75	38.2 QP	40.0	-1.9	1.00 V	0	51.79	-13.64
2	80.88	34.2 QP	40.0	-5.8	1.00 V	130	52.52	-18.29
3	375.03	38.5 QP	46.0	-7.5	1.50 V	245	49.11	-10.62
4	500.01	43.6 QP	46.0	-2.4	1.00 V	77	51.14	-7.53
5	625.00	42.2 QP	46.0	-3.8	1.50 V	106	46.74	-4.58
6	875.02	42.1 QP	46.0	-3.9	1.00 V	339	42.82	-0.69
7	1000.00	41.4 QP	54.0	-12.6	1.00 V	117	40.22	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



**CDD\_MODE**

**ABOVE 1GHz DATA**

**802.11ac (VHT20)**

<b>CHANNEL</b>	TX Channel 36	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5098.00	62.4 PK	74.0	-11.6	1.04 H	1	54.53	7.87
2	5098.00	51.9 AV	54.0	-2.1	1.04 H	1	44.03	7.87
3	*5180.00	110.1 PK			1.13 H	1	102.21	7.89
4	*5180.00	98.9 AV			1.13 H	1	91.01	7.89
5	#10360.00	52.5 PK	74.0	-21.5	1.04 H	106	38.08	14.42
6	#10360.00	39.7 AV	54.0	-14.3	1.04 H	106	25.28	14.42
7	15540.00	57.5 PK	74.0	-16.5	1.24 H	156	37.32	20.18
8	15540.00	45.0 AV	54.0	-9.0	1.24 H	156	24.82	20.18

**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	5098.00	63.3 PK	74.0	-10.7	1.02 V	151	55.43	7.87
2	5098.00	53.5 AV	54.0	-0.5	1.02 V	151	45.63	7.87
3	*5180.00	110.9 PK			1.00 V	151	103.01	7.89
4	*5180.00	100.8 AV			1.00 V	151	92.91	7.89
5	#10360.00	53.1 PK	74.0	-20.9	1.00 V	133	38.68	14.42
6	#10360.00	40.6 AV	54.0	-13.4	1.00 V	133	26.18	14.42
7	15540.00	58.4 PK	74.0	-15.6	1.24 V	116	38.22	20.18
8	15540.00	45.4 AV	54.0	-8.6	1.24 V	116	25.22	20.18

**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.



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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5120.00	60.6 PK	74.0	-13.4	1.05 H	7	52.71	7.89
2	5120.00	49.7 AV	54.0	-4.3	1.05 H	7	41.81	7.89
3	*5200.00	107.7 PK			1.12 H	6	99.80	7.90
4	*5200.00	97.2 AV			1.12 H	6	89.30	7.90
5	5361.00	63.0 PK	74.0	-11.0	1.10 H	24	54.51	8.49
6	5361.00	51.9 AV	54.0	-2.1	1.10 H	24	43.41	8.49
7	#10400.00	51.9 PK	74.0	-22.1	1.01 H	115	37.15	14.75
8	#10400.00	39.1 AV	54.0	-14.9	1.01 H	115	24.35	14.75
9	15600.00	57.8 PK	74.0	-16.2	1.26 H	141	37.67	20.13
10	15600.00	45.0 AV	54.0	-9.0	1.26 H	141	24.87	20.13

**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	61.4 PK	74.0	-12.6	1.01 V	152	53.51	7.89
2	5120.00	51.4 AV	54.0	-2.6	1.01 V	152	43.51	7.89
3	*5200.00	108.5 PK			1.00 V	134	100.60	7.90
4	*5200.00	98.9 AV			1.00 V	134	91.00	7.90
5	5361.00	63.8 PK	74.0	-10.2	1.00 V	132	55.31	8.49
6	5361.00	53.6 AV	54.0	-0.4	1.00 V	132	45.11	8.49
7	#10400.00	52.4 PK	74.0	-21.6	1.00 V	106	37.65	14.75
8	#10400.00	39.8 AV	54.0	-14.2	1.00 V	106	25.05	14.75
9	15600.00	57.4 PK	74.0	-16.6	1.21 V	104	37.27	20.13
10	15600.00	45.0 AV	54.0	-9.0	1.21 V	104	24.87	20.13

**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.



A D T

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	109.7 PK			1.03 H	9	101.65	8.05
2	*5240.00	99.1 AV			1.03 H	9	91.05	8.05
3	5401.00	63.0 PK	74.0	-11.0	1.12 H	34	54.36	8.64
4	5401.00	52.0 AV	54.0	-2.0	1.12 H	34	43.36	8.64
5	#10480.00	53.1 PK	74.0	-20.9	1.00 H	120	38.47	14.63
6	#10480.00	40.1 AV	54.0	-13.9	1.00 H	120	25.47	14.63
7	15720.00	57.3 PK	74.0	-16.7	1.21 H	134	37.28	20.02
8	15720.00	44.9 AV	54.0	-9.1	1.21 H	134	24.88	20.02

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	110.5 PK			1.00 V	135	102.45	8.05
2	*5240.00	100.8 AV			1.00 V	135	92.75	8.05
3	5401.00	63.8 PK	74.0	-10.2	1.08 V	131	55.16	8.64
4	5401.00	53.7 AV	54.0	-0.3	1.08 V	131	45.06	8.64
5	#10480.00	52.1 PK	74.0	-21.9	1.00 V	134	37.47	14.63
6	#10480.00	40.0 AV	54.0	-14.0	1.00 V	134	25.37	14.63
7	15720.00	58.2 PK	74.0	-15.8	1.29 V	132	38.18	20.02
8	15720.00	45.5 AV	54.0	-8.5	1.29 V	132	25.48	20.02

**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.



A D T

802.11ac (VHT40)

<b>CHANNEL</b>	TX Channel 38	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5116.00	65.4 PK	74.0	-8.6	1.04 H	3	57.51	7.89
2	5116.00	49.8 AV	54.0	-4.2	1.04 H	3	41.91	7.89
3	*5190.00	108.6 PK			1.13 H	3	100.70	7.90
4	*5190.00	97.3 AV			1.13 H	3	89.40	7.90
5	5354.00	62.4 PK	74.0	-11.6	1.07 H	19	53.94	8.46
6	5354.00	51.9 AV	54.0	-2.1	1.07 H	19	43.44	8.46
7	#10380.00	51.6 PK	74.0	-22.4	1.00 H	123	37.01	14.59
8	#10380.00	39.2 AV	54.0	-14.8	1.00 H	123	24.61	14.59
9	15570.00	56.8 PK	74.0	-17.2	1.32 H	137	36.65	20.15
10	15570.00	44.8 AV	54.0	-9.2	1.32 H	137	24.65	20.15

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5116.00	66.2 PK	74.0	-7.8	1.01 V	148	58.31	7.89
2	5116.00	51.5 AV	54.0	-2.5	1.01 V	148	43.61	7.89
3	*5190.00	109.4 PK			1.00 V	149	101.50	7.90
4	*5190.00	99.0 AV			1.00 V	149	91.10	7.90
5	5354.00	63.2 PK	74.0	-10.8	1.00 V	133	54.74	8.46
6	5354.00	53.6 AV	54.0	-0.4	1.00 V	133	45.14	8.46
7	#10380.00	52.8 PK	74.0	-21.2	1.00 V	130	38.21	14.59
8	#10380.00	40.2 AV	54.0	-13.8	1.00 V	130	25.61	14.59
9	15570.00	58.2 PK	74.0	-15.8	1.17 V	132	38.05	20.15
10	15570.00	45.7 AV	54.0	-8.3	1.17 V	132	25.55	20.15

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 46	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 40GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	106.9 PK			1.16 H	5	98.89	8.01
2	*5230.00	96.2 AV			1.16 H	5	88.19	8.01
3	5384.00	62.3 PK	74.0	-11.7	1.03 H	4	53.73	8.57
4	5384.00	51.7 AV	54.0	-2.3	1.03 H	4	43.13	8.57
5	#10460.00	52.6 PK	74.0	-21.4	1.00 H	108	37.94	14.66
6	#10460.00	39.8 AV	54.0	-14.2	1.00 H	108	25.14	14.66
7	15690.00	57.5 PK	74.0	-16.5	1.18 H	131	37.44	20.06
8	15690.00	45.0 AV	54.0	-9.0	1.18 H	131	24.94	20.06

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	107.7 PK			1.00 V	134	99.69	8.01
2	*5230.00	97.9 AV			1.00 V	134	89.89	8.01
3	5384.00	63.1 PK	74.0	-10.9	1.08 V	143	54.53	8.57
4	5384.00	53.4 AV	54.0	-0.6	1.08 V	143	44.83	8.57
5	#10460.00	53.0 PK	74.0	-21.0	1.00 V	127	38.34	14.66
6	#10460.00	40.7 AV	54.0	-13.3	1.00 V	127	26.04	14.66
7	15690.00	58.4 PK	74.0	-15.6	1.16 V	93	38.34	20.06
8	15690.00	45.7 AV	54.0	-8.3	1.16 V	93	25.64	20.06

**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)

<b>CHANNEL</b>	TX Channel 42	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5146.00	68.1 PK	74.0	-5.9	1.05 H	6	60.21	7.89
2	5146.00	51.5 AV	54.0	-2.5	1.05 H	6	43.61	7.89
3	*5210.00	105.9 PK			1.07 H	2	97.97	7.93
4	*5210.00	94.6 AV			1.07 H	2	86.67	7.93
5	5358.00	62.8 PK	74.0	-11.2	1.01 H	10	54.32	8.48
6	5358.00	49.9 AV	54.0	-4.1	1.01 H	10	41.42	8.48
7	#10420.00	52.2 PK	74.0	-21.8	1.04 H	117	37.49	14.71
8	#10420.00	39.7 AV	54.0	-14.3	1.04 H	117	24.99	14.71
9	15630.00	57.1 PK	74.0	-16.9	1.21 H	121	36.99	20.11
10	15630.00	44.8 AV	54.0	-9.2	1.21 H	121	24.69	20.11

**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	5146.00	68.9 PK	74.0	-5.1	1.00 V	151	61.01	7.89
2	5146.00	53.2 AV	54.0	-0.8	1.00 V	151	45.31	7.89
3	*5210.00	106.7 PK			1.00 V	151	98.77	7.93
4	*5210.00	96.3 AV			1.00 V	151	88.37	7.93
5	5358.00	63.6 PK	74.0	-10.4	1.00 V	132	55.12	8.48
6	5358.00	51.6 AV	54.0	-2.4	1.00 V	132	43.12	8.48
7	#10420.00	53.4 PK	74.0	-20.6	1.01 V	135	38.69	14.71
8	#10420.00	40.7 AV	54.0	-13.3	1.01 V	135	25.99	14.71
9	15630.00	57.2 PK	74.0	-16.8	1.23 V	90	37.09	20.11
10	15630.00	44.2 AV	54.0	-9.8	1.23 V	90	24.09	20.11

**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.



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STBC\_MODE

ABOVE 1GHz DATA

802.11ac (VHT20)

<b>CHANNEL</b>	TX Channel 36	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5102.00	62.9 PK	74.0	-11.1	1.14 H	221	55.03	7.87
2	5102.00	52.1 AV	54.0	-1.9	1.14 H	221	44.23	7.87
3	*5180.00	109.4 PK			1.32 H	184	101.51	7.89
4	*5180.00	98.5 AV			1.32 H	184	90.61	7.89
5	5397.00	57.3 PK	74.0	-16.7	1.32 H	124	48.67	8.63
6	5397.00	44.4 AV	54.0	-9.6	1.32 H	124	35.77	8.63
7	#10360.00	52.3 PK	74.0	-21.7	1.14 H	133	37.88	14.42
8	#10360.00	39.3 AV	54.0	-14.7	1.14 H	133	24.88	14.42
9	15540.00	56.7 PK	74.0	-17.3	1.24 H	245	36.52	20.18
10	15540.00	44.6 AV	54.0	-9.4	1.24 H	245	24.42	20.18

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	5102.00	64.0 PK	74.0	-10.0	1.03 V	136	56.13	7.87
2	5102.00	53.6 AV	54.0	-0.4	1.03 V	136	45.73	7.87
3	*5180.00	110.3 PK			1.22 V	172	102.41	7.89
4	*5180.00	100.2 AV			1.22 V	172	92.31	7.89
5	5397.00	58.2 PK	74.0	-15.8	1.38 V	172	49.57	8.63
6	5397.00	46.1 AV	54.0	-7.9	1.38 V	172	37.47	8.63
7	#10360.00	52.9 PK	74.0	-21.1	1.15 V	65	38.48	14.42
8	#10360.00	40.6 AV	54.0	-13.4	1.15 V	65	26.18	14.42
9	15540.00	59.1 PK	74.0	-14.9	1.31 V	154	38.92	20.18
10	15540.00	45.8 AV	54.0	-8.2	1.31 V	154	25.62	20.18

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.



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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5120.00	63.6 PK	74.0	-10.4	1.09 H	208	55.71	7.89
2	5120.00	51.8 AV	54.0	-2.2	1.09 H	208	43.91	7.89
3	*5200.00	111.0 PK			1.35 H	182	103.10	7.90
4	*5200.00	98.7 AV			1.35 H	182	90.80	7.90
5	5361.00	60.3 PK	74.0	-13.7	1.35 H	123	51.81	8.49
6	5361.00	48.3 AV	54.0	-5.7	1.35 H	123	39.81	8.49
7	#10400.00	52.2 PK	74.0	-21.8	1.01 H	138	37.45	14.75
8	#10400.00	39.6 AV	54.0	-14.4	1.01 H	138	24.85	14.75
9	15600.00	56.7 PK	74.0	-17.3	1.28 H	235	36.57	20.13
10	15600.00	44.8 AV	54.0	-9.2	1.28 H	235	24.67	20.13

**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	64.5 PK	74.0	-9.5	1.21 V	189	56.61	7.89
2	5120.00	53.5 AV	54.0	-0.5	1.21 V	189	45.61	7.89
3	*5200.00	111.9 PK			1.08 V	189	104.00	7.90
4	*5200.00	100.4 AV			1.08 V	189	92.50	7.90
5	5361.00	61.2 PK	74.0	-12.8	1.06 V	200	52.71	8.49
6	5361.00	50.0 AV	54.0	-4.0	1.06 V	200	41.51	8.49
7	#10400.00	52.7 PK	74.0	-21.3	1.18 V	61	37.95	14.75
8	#10400.00	40.7 AV	54.0	-13.3	1.18 V	61	25.95	14.75
9	15600.00	58.0 PK	74.0	-16.0	1.29 V	139	37.87	20.13
10	15600.00	44.9 AV	54.0	-9.1	1.29 V	139	24.77	20.13

**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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<b>CHANNEL</b>	TX Channel 48	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5075.00	57.1 PK	74.0	-16.9	1.18 H	214	49.36	7.74
2	5075.00	45.8 AV	54.0	-8.2	1.18 H	214	38.06	7.74
3	*5240.00	109.9 PK			1.29 H	185	101.85	8.05
4	*5240.00	99.5 AV			1.29 H	185	91.45	8.05
5	5399.00	64.6 PK	74.0	-9.4	1.28 H	121	55.96	8.64
6	5399.00	52.1 AV	54.0	-1.9	1.28 H	121	43.46	8.64
7	#10480.00	51.7 PK	74.0	-22.3	1.03 H	123	37.07	14.63
8	#10480.00	39.2 AV	54.0	-14.8	1.03 H	123	24.57	14.63
9	15720.00	55.7 PK	74.0	-18.3	1.24 H	237	35.68	20.02
10	15720.00	43.8 AV	54.0	-10.2	1.24 H	237	23.78	20.02

**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	5075.00	58.0 PK	74.0	-16.0	1.00 V	177	50.26	7.74
2	5075.00	47.5 AV	54.0	-6.5	1.00 V	177	39.76	7.74
3	*5240.00	110.8 PK			1.00 V	171	102.75	8.05
4	*5240.00	101.2 AV			1.00 V	171	93.15	8.05
5	5399.00	65.5 PK	74.0	-8.5	1.00 V	135	56.86	8.64
6	5399.00	53.8 AV	54.0	-0.2	1.00 V	135	45.16	8.64
7	#10480.00	52.1 PK	74.0	-21.9	1.10 V	52	37.47	14.63
8	#10480.00	39.7 AV	54.0	-14.3	1.10 V	52	25.07	14.63
9	15720.00	58.8 PK	74.0	-15.2	1.21 V	123	38.78	20.02
10	15720.00	45.4 AV	54.0	-8.6	1.21 V	123	25.38	20.02

**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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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	5116.00	70.4 PK	74.0	-3.6	1.10 H	225	62.51	7.89
2	5116.00	50.6 AV	54.0	-3.4	1.10 H	225	42.71	7.89
3	*5190.00	108.5 PK			1.26 H	169	100.60	7.90
4	*5190.00	98.3 AV			1.26 H	169	90.40	7.90
5	5354.00	62.0 PK	74.0	-12.0	1.20 H	132	53.54	8.46
6	5354.00	52.2 AV	54.0	-1.8	1.20 H	132	43.74	8.46
7	#10380.00	52.7 PK	74.0	-21.3	1.09 H	130	38.11	14.59
8	#10380.00	39.5 AV	54.0	-14.5	1.09 H	130	24.91	14.59
9	15570.00	56.5 PK	74.0	-17.5	1.20 H	255	36.35	20.15
10	15570.00	44.6 AV	54.0	-9.4	1.20 H	255	24.45	20.15

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5116.00	71.3 PK	74.0	-2.7	1.00 V	276	63.41	7.89
2	5116.00	52.3 AV	54.0	-1.7	1.00 V	276	44.41	7.89
3	*5190.00	109.4 PK			1.00 V	169	101.50	7.90
4	*5190.00	100.0 AV			1.00 V	169	92.10	7.90
5	5354.00	62.9 PK	74.0	-11.1	1.00 V	139	54.44	8.46
<b>6</b>	<b>5354.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.00 V</b>	<b>139</b>	<b>45.44</b>	<b>8.46</b>
7	#10380.00	52.7 PK	74.0	-21.3	1.15 V	45	38.11	14.59
8	#10380.00	40.4 AV	54.0	-13.6	1.15 V	45	25.81	14.59
9	15570.00	58.3 PK	74.0	-15.7	1.27 V	156	38.15	20.15
10	15570.00	45.1 AV	54.0	-8.9	1.27 V	156	24.95	20.15

**REMARKS:**

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



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<b>CHANNEL</b>	TX Channel 46	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5146.00	66.5 PK	74.0	-7.5	1.19 H	126	58.61	7.89
2	5146.00	51.0 AV	54.0	-3.0	1.19 H	126	43.11	7.89
3	*5230.00	109.8 PK			1.26 H	188	101.79	8.01
4	*5230.00	98.9 AV			1.26 H	188	90.89	8.01
5	5384.00	62.9 PK	74.0	-11.1	1.16 H	206	54.33	8.57
6	5384.00	52.0 AV	54.0	-2.0	1.16 H	206	43.43	8.57
7	#10460.00	51.7 PK	74.0	-22.3	1.09 H	110	37.04	14.66
8	#10460.00	39.2 AV	54.0	-14.8	1.09 H	110	24.54	14.66
9	15690.00	55.8 PK	74.0	-18.2	1.21 H	257	35.74	20.06
10	15690.00	44.0 AV	54.0	-10.0	1.21 H	257	23.94	20.06

**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	5146.00	67.4 PK	74.0	-6.6	1.00 V	181	59.51	7.89
2	5146.00	52.7 AV	54.0	-1.3	1.00 V	181	44.81	7.89
3	*5230.00	110.7 PK			1.00 V	202	102.69	8.01
4	*5230.00	100.6 AV			1.00 V	202	92.59	8.01
5	5384.00	63.8 PK	74.0	-10.2	1.00 V	138	55.23	8.57
6	5384.00	53.7 AV	54.0	-0.3	1.00 V	138	45.13	8.57
7	#10460.00	52.3 PK	74.0	-21.7	1.10 V	44	37.64	14.66
8	#10460.00	40.2 AV	54.0	-13.8	1.10 V	44	25.54	14.66
9	15690.00	57.6 PK	74.0	-16.4	1.34 V	137	37.54	20.06
10	15690.00	44.8 AV	54.0	-9.2	1.34 V	137	24.74	20.06

**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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## 802.11ac (VHT80)

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

## ANTENNA POLARITY &amp; 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	67.3 PK	74.0	-6.7	1.06 H	227	59.41	7.89
2	5150.00	52.0 AV	54.0	-2.0	1.06 H	227	44.11	7.89
3	*5210.00	107.2 PK			1.29 H	171	99.27	7.93
4	*5210.00	96.0 AV			1.29 H	171	88.07	7.93
5	5358.00	61.1 PK	74.0	-12.9	1.31 H	128	52.62	8.48
6	5358.00	50.5 AV	54.0	-3.5	1.31 H	128	42.02	8.48
7	#10420.00	52.5 PK	74.0	-21.5	1.14 H	124	37.79	14.71
8	#10420.00	39.3 AV	54.0	-14.7	1.14 H	124	24.59	14.71
9	15630.00	56.5 PK	74.0	-17.5	1.18 H	245	36.39	20.11
10	15630.00	44.4 AV	54.0	-9.6	1.18 H	245	24.29	20.11

## ANTENNA POLARITY &amp; 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	68.2 PK	74.0	-5.8	1.00 V	175	60.31	7.89
2	5150.00	53.7 AV	54.0	-0.3	1.00 V	175	45.81	7.89
3	*5210.00	108.1 PK			1.00 V	171	100.17	7.93
4	*5210.00	97.7 AV			1.00 V	171	89.77	7.93
5	5358.00	62.0 PK	74.0	-12.0	1.00 V	138	53.52	8.48
6	5358.00	52.2 AV	54.0	-1.8	1.00 V	138	43.72	8.48
7	#10420.00	52.6 PK	74.0	-21.4	1.10 V	47	37.89	14.71
8	#10420.00	40.3 AV	54.0	-13.7	1.10 V	47	25.59	14.71
9	15630.00	59.5 PK	74.0	-14.5	1.27 V	143	39.39	20.11
10	15630.00	46.0 AV	54.0	-8.0	1.27 V	143	25.89	20.11

## 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.



## 4.2.10 TEST RESULTS (MODE 3)

### ABOVE 1GHz DATA

#### 802.11a

<b>CHANNEL</b>	TX Channel 36	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5100.00	52.9 PK	74.0	-21.1	1.00 H	83	9.43	43.47
2	5100.00	42.0 AV	54.0	-12.0	1.00 H	83	-1.47	43.47
3	*5180.00	96.4 PK			1.00 H	75	52.76	43.64
4	*5180.00	86.7 AV			1.00 H	75	43.06	43.64
5	#10360.00	54.1 PK	74.0	-19.9	1.00 H	85	3.36	50.74
6	#10360.00	41.7 AV	54.0	-12.3	1.00 H	85	-9.04	50.74
7	15540.00	56.8 PK	74.0	-17.2	1.00 H	219	0.74	56.06
8	15540.00	45.1 AV	54.0	-8.9	1.00 H	219	-10.96	56.06

#### 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	5100.00	63.8 PK	74.0	-10.2	1.00 V	137	20.33	43.47
2	5100.00	53.8 AV	54.0	-0.2	1.00 V	137	10.33	43.47
3	*5180.00	110.9 PK			1.00 V	152	67.26	43.64
4	*5180.00	100.9 AV			1.00 V	152	57.26	43.64
5	#10360.00	53.7 PK	74.0	-20.3	1.00 V	74	2.96	50.74
6	#10360.00	41.0 AV	54.0	-13.0	1.00 V	74	-9.74	50.74
7	15540.00	56.4 PK	74.0	-17.6	1.00 V	95	0.34	56.06
8	15540.00	44.8 AV	54.0	-9.2	1.00 V	95	-11.26	56.06

#### 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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<b>CHANNEL</b>	TX Channel 40	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5121.00	51.6 PK	74.0	-22.4	1.00 H	80	8.09	43.51
2	5121.00	41.0 AV	54.0	-13.0	1.00 H	80	-2.51	43.51
3	*5200.00	94.5 PK			1.00 H	76	50.82	43.68
4	*5200.00	83.8 AV			1.00 H	76	40.12	43.68
5	5361.00	54.5 PK	74.0	-19.5	1.00 H	77	10.59	43.91
6	5361.00	42.1 AV	54.0	-11.9	1.00 H	77	-1.81	43.91
7	#10400.00	56.4 PK	74.0	-17.6	1.00 H	220	5.73	50.67
8	#10400.00	47.0 AV	54.0	-7.0	1.00 H	220	-3.67	50.67
9	15600.00	57.3 PK	74.0	-16.7	1.00 H	224	1.29	56.01
10	15600.00	45.6 AV	54.0	-8.4	1.00 H	224	-10.41	56.01

**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	5121.00	60.2 PK	74.0	-13.8	1.00 V	135	16.69	43.51
2	5121.00	50.1 AV	54.0	-3.9	1.00 V	135	6.59	43.51
3	*5200.00	106.6 PK			1.00 V	202	62.92	43.68
4	*5200.00	96.8 AV			1.00 V	202	53.12	43.68
5	5361.00	64.1 PK	74.0	-9.9	1.03 V	147	20.19	43.91
<b>6</b>	<b>5361.00</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.03 V</b>	<b>147</b>	<b>9.99</b>	<b>43.91</b>
7	#10400.00	56.1 PK	74.0	-17.9	1.00 V	211	5.43	50.67
8	#10400.00	44.3 AV	54.0	-9.7	1.00 V	211	-6.37	50.67
9	15600.00	56.0 PK	74.0	-18.0	1.00 V	103	-0.01	56.01
10	15600.00	44.4 AV	54.0	-9.6	1.00 V	103	-11.61	56.01

**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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<b>CHANNEL</b>	TX Channel 48	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	5080.00	54.6 PK	74.0	-19.4	1.00 H	85	11.17	43.43
2	5080.00	42.3 AV	54.0	-11.7	1.00 H	85	-1.13	43.43
3	*5240.00	94.6 PK			1.00 H	78	50.87	43.73
4	*5240.00	84.0 AV			1.00 H	78	40.27	43.73
5	5401.00	55.4 PK	74.0	-18.6	1.00 H	206	11.43	43.97
6	5401.00	44.1 AV	54.0	-9.9	1.00 H	206	0.13	43.97
7	#10480.00	56.0 PK	74.0	-18.0	1.00 H	229	4.97	51.03
8	#10480.00	46.5 AV	54.0	-7.5	1.00 H	229	-4.53	51.03
9	15720.00	56.9 PK	74.0	-17.1	1.00 H	238	1.02	55.88
10	15720.00	45.1 AV	54.0	-8.9	1.00 H	238	-10.78	55.88

**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	5080.00	59.1 PK	74.0	-14.9	1.00 V	136	15.67	43.43
2	5080.00	49.4 AV	54.0	-4.6	1.00 V	136	5.97	43.43
3	*5240.00	106.2 PK			1.04 V	189	62.47	43.73
4	*5240.00	96.4 AV			1.04 V	189	52.67	43.73
5	5401.00	63.6 PK	74.0	-10.4	1.03 V	148	19.63	43.97
6	5401.00	53.8 AV	54.0	-0.2	1.03 V	148	9.83	43.97
7	#10480.00	56.6 PK	74.0	-17.4	1.00 V	218	5.57	51.03
8	#10480.00	44.7 AV	54.0	-9.3	1.00 V	218	-6.33	51.03
9	15720.00	56.3 PK	74.0	-17.7	1.00 V	95	0.42	55.88
10	15720.00	44.8 AV	54.0	-9.2	1.00 V	95	-11.08	55.88

**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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### 4.3 TRANSMIT POWER MEASUREMENT

#### 4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.250 ~ 5.350GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.470 ~ 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB

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

Per KDB 662911 D01 Multiple Transmitter Output v01r02 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.



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### 4.3.2 TEST INSTRUMENTS

#### FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	0824006	May 20, 2013	May 19, 2014
Power sensor Anritsu	MA2411B	0738172	May 20, 2013	May 19, 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 : Dec. 03, 2013

#### FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP 40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 03, 2013

### 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

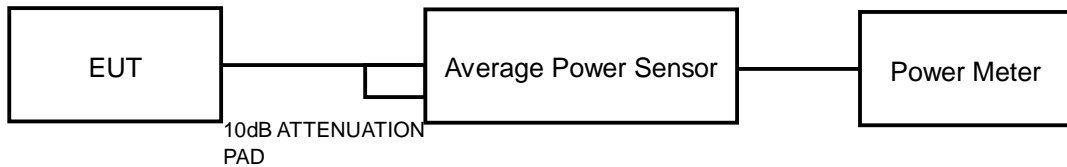
1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement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

#### 4.3.4 DEVIATION FROM TEST STANDARD

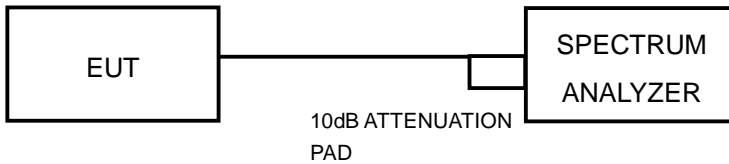
No deviation

#### 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.



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### 4.3.7 TEST RESULTS (MODE 1)

#### POWER OUTPUT:

CDD_MODE								
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
<b>802.11ac (VHT20)</b>								
36	5180	9.73	9.58	8.76	25.991	14.15	17	PASS
40	5200	9.54	9.61	8.91	25.916	14.14	17	PASS
48	5240	9.12	10.01	8.95	26.041	14.16	17	PASS
<b>802.11ac (VHT40)</b>								
38	5190	12.10	12.39	11.84	48.832	16.89	17	PASS
46	5230	11.98	12.54	11.91	49.247	16.92	17	PASS
<b>802.11ac (VHT80)</b>								
42	5210	12.41	12.24	11.82	49.372	16.93	17	PASS

#### 26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT20)</b>				
36	5180	20.61	20.54	20.61
40	5200	20.67	20.47	20.66
48	5240	20.77	20.65	20.68
<b>802.11ac (VHT40)</b>				
38	5190	41.37	41.17	40.90
46	5230	41.54	40.91	40.83
<b>802.11ac (VHT80)</b>				
42	5210	83.11	82.87	82.38

Note: For FCC output power limitation is determined based on 26dBc bandwidth.

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.54	17.12 > 17
40	5200	20.47	17.11 > 17
48	5240	20.65	17.14 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.90	20.11 > 17
46	5230	40.83	20.1 > 17
<b>802.11ac (VHT80)</b>			
42	5210	82.38	23.15 > 17



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**POWER OUTPUT:**

STBC_MODE								
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
<b>802.11ac (VHT20)</b>								
36	5180	11.42	11.46	10.51	39.110	15.92	17	PASS
40	5200	10.97	11.42	10.22	36.891	15.67	17	PASS
48	5240	10.59	11.27	9.96	34.760	15.41	17	PASS
<b>802.11ac (VHT40)</b>								
38	5190	12.10	12.39	11.84	48.832	16.89	17	PASS
46	5230	11.98	12.54	11.91	49.247	16.92	17	PASS
<b>802.11ac (VHT80)</b>								
42	5210	12.41	12.24	11.82	49.372	16.93	17	PASS

**26dB OCCUPIED BANDWIDTH:**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT20)</b>				
36	5180	20.76	20.49	20.56
40	5200	20.67	20.66	20.65
48	5240	20.49	20.46	20.73
<b>802.11ac (VHT40)</b>				
38	5190	41.37	41.17	40.90
46	5230	41.54	40.91	40.83
<b>802.11ac (VHT80)</b>				
42	5210	83.11	82.87	82.38

**Note: For FCC output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.49	17.11 > 17
40	5200	20.65	17.14 > 17
48	5240	20.46	17.1 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.90	20.11 > 17
46	5230	40.83	20.1 > 17
<b>802.11ac (VHT80)</b>			
42	5210	82.38	23.15 > 17



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**POWER OUTPUT:**

Beam forming (MCS0 N=1)_MODE								
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
<b>802.11ac (VHT20)</b>								
36	5180	9.28	9.06	8.34	23.349	13.68	13.71	PASS
40	5200	8.97	9.04	8.34	22.729	13.57	13.71	PASS
48	5240	8.46	9.34	8.29	22.350	13.49	13.71	PASS
<b>802.11ac (VHT40)</b>								
38	5190	9.06	9.11	8.39	23.103	13.64	13.71	PASS
46	5230	8.69	9.08	8.76	23.003	13.62	13.71	PASS
<b>802.11ac (VHT80)</b>								
42	5210	8.83	8.75	8.78	22.688	13.56	13.71	PASS

**NOTE:** Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.29\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to  $17-(9.29-6) = 13.71\text{dBm}$ .

**26dB OCCUPIED BANDWIDTH:**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT20)</b>				
36	5180	20.49	20.43	20.40
40	5200	20.55	20.39	20.55
48	5240	20.62	20.45	20.48
<b>802.11ac (VHT40)</b>				
38	5190	41.40	41.13	40.93
46	5230	41.55	41.12	40.76
<b>802.11ac (VHT80)</b>				
42	5210	82.74	83.15	82.25

**Note:** For FCC output power limitation is determined based on 26dBc bandwidth.

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.40	17.09 > 17
40	5200	20.39	17.09 > 17
48	5240	20.45	17.1 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.93	20.12 > 17
46	5230	40.76	20.1 > 17
<b>802.11ac (VHT80)</b>			
42	5210	82.25	23.15 > 17





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**POWER OUTPUT:**

Beam forming (MCS0 N=2)_MODE								
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
<b>802.11ac (VHT20)</b>								
36	5180	10.25	10.36	9.64	30.661	14.87	15.94	PASS
40	5200	9.84	10.49	9.49	29.724	14.73	15.94	PASS
48	5240	10.59	11.27	9.96	34.760	15.41	15.94	PASS
<b>802.11ac (VHT40)</b>								
38	5190	11.08	11.39	10.80	38.618	15.87	15.94	PASS
46	5230	10.91	11.46	11.02	38.974	15.91	15.94	PASS
<b>802.11ac (VHT80)</b>								
42	5210	10.98	11.38	11.11	39.183	15.93	15.94	PASS

**NOTE:** Directional gain = maximum gain of antennas + 10 log(3/2) = 7.06dBi > 6dBi , so the power limit shall be reduced to 17-(7.06-6) = 15.94dBm.

**26dB OCCUPIED BANDWIDTH:**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT20)</b>				
36	5180	20.53	20.30	20.26
40	5200	20.59	20.36	20.36
48	5240	20.54	20.51	20.54
<b>802.11ac (VHT40)</b>				
38	5190	41.13	40.64	40.51
46	5230	40.98	40.54	40.76
<b>802.11ac (VHT80)</b>				
42	5210	82.84	82.00	81.81

**Note: For FCC output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 4dBm + 10logB < UNII Band 1>			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.26	17.06 > 17
40	5200	20.36	17.08 > 17
48	5240	20.51	17.11 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.51	20.07 > 17
46	5230	40.54	20.07 > 17
<b>802.11ac (VHT80)</b>			
42	5210	81.81	23.12 > 17



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**POWER OUTPUT:**

Beam forming (MCS0 N=3)_MODE								
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
<b>802.11ac (VHT20)</b>								
36	5180	11.42	11.46	10.51	39.110	15.92	17	PASS
40	5200	10.97	11.42	10.22	36.891	15.67	17	PASS
48	5240	10.99	12.21	11.03	41.871	16.22	17	PASS
<b>802.11ac (VHT40)</b>								
38	5190	12.10	12.39	11.84	48.832	16.89	17	PASS
46	5230	11.98	12.54	11.91	49.247	16.92	17	PASS
<b>802.11ac (VHT80)</b>								
42	5210	12.41	12.24	11.82	49.372	16.93	17	PASS

**26dB OCCUPIED BANDWIDTH:**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		
		CHAIN 0	CHAIN 1	CHAIN 2
<b>802.11ac (VHT20)</b>				
36	5180	20.70	20.46	20.50
40	5200	20.68	20.43	20.39
48	5240	20.30	20.73	20.39
<b>802.11ac (VHT40)</b>				
38	5190	41.37	41.17	40.90
46	5230	41.54	40.91	40.83
<b>802.11ac (VHT80)</b>				
42	5210	83.11	82.87	82.38

**Note: For FCC output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.46	17.1 > 17
40	5200	20.39	17.09 > 17
48	5240	20.30	17.07 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.90	20.11 > 17
46	5230	40.83	20.1 > 17
<b>802.11ac (VHT80)</b>			
42	5210	82.38	23.15 > 17



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### 4.3.8 TEST RESULTS (MODE 2)

#### POWER OUTPUT:

CDD_MODE							
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
<b>802.11ac (VHT20)</b>							
36	5180	12.26	12.16	33.271	15.22	17	PASS
40	5200	12.28	12.18	33.424	15.24	17	PASS
48	5240	12.21	12.31	33.656	15.27	17	PASS
<b>802.11ac (VHT40)</b>							
38	5190	13.91	13.96	49.493	16.95	17	PASS
46	5230	13.72	13.89	48.041	16.82	17	PASS
<b>802.11ac (VHT80)</b>							
42	5210	13.86	13.97	49.268	16.93	17	PASS

#### 26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
<b>802.11ac (VHT20)</b>			
36	5180	20.57	20.52
40	5200	20.47	20.33
48	5240	20.68	20.45
<b>802.11ac (VHT40)</b>			
38	5190	40.97	40.85
46	5230	40.93	40.95
<b>802.11ac (VHT80)</b>			
42	5210	82.59	82.44

Note: For FCC output power limitation is determined based on 26dBc bandwidth.

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.52	17.12 > 17
40	5200	20.33	17.08 > 17
48	5240	20.45	17.1 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.85	20.11 > 17
46	5230	40.93	20.12 > 17
<b>802.11ac (VHT80)</b>			
42	5210	82.44	23.16 > 17



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**POWER OUTPUT:**

STBC_MODE							
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
<b>802.11ac (VHT20)</b>							
36	5180	12.26	12.16	33.271	15.22	17	PASS
40	5200	12.28	12.18	33.424	15.24	17	PASS
48	5240	12.21	12.31	33.656	15.27	17	PASS
<b>802.11ac (VHT40)</b>							
38	5190	13.91	13.96	49.493	16.95	17	PASS
46	5230	13.72	13.89	48.041	16.82	17	PASS
<b>802.11ac (VHT80)</b>							
42	5210	13.86	13.97	49.268	16.93	17	PASS

**26dB OCCUPIED BANDWIDTH:**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
<b>802.11ac (VHT20)</b>			
36	5180	20.57	20.43
40	5200	20.62	20.65
48	5240	20.77	20.60
<b>802.11ac (VHT40)</b>			
38	5190	40.98	40.50
46	5230	40.81	40.77
<b>802.11ac (VHT80)</b>			
42	5210	83.10	82.05

**Note: For FCC output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.43	17.1 > 17
40	5200	20.62	17.14 > 17
48	5240	20.60	17.13 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.50	20.07 > 17
46	5230	40.77	20.1 > 17
<b>802.11ac (VHT80)</b>			
42	5210	82.05	23.14 > 17



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**POWER OUTPUT:**

Beam forming (MCS0 N=1)_MODE							
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
<b>802.11ac (VHT20)</b>							
36	5180	12.26	12.16	33.271	15.22	15.52	PASS
40	5200	12.28	12.18	33.424	15.24	15.52	PASS
48	5240	12.21	12.31	33.656	15.27	15.52	PASS
<b>802.11ac (VHT40)</b>							
38	5190	12.34	12.25	33.928	15.31	15.52	PASS
46	5230	12.37	12.33	34.358	15.36	15.52	PASS
<b>802.11ac (VHT80)</b>							
42	5210	12.51	12.37	35.082	15.45	15.52	PASS

**NOTE:** Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.48\text{dBi} > 6\text{dBi}$  , so the power limit shall be reduced to  $17 - (7.48 - 6) = 15.52\text{dBm}$ .

**26dB OCCUPIED BANDWIDTH:**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
<b>802.11ac (VHT20)</b>			
36	5180	20.57	20.52
40	5200	20.47	20.33
48	5240	20.68	20.45
<b>802.11ac (VHT40)</b>			
38	5190	40.85	40.90
46	5230	41.22	40.65
<b>802.11ac (VHT80)</b>			
42	5210	83.16	82.98

**Note: For FCC output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.52	17.12 > 17
40	5200	20.33	17.08 > 17
48	5240	20.45	17.1 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.85	20.11 > 17
46	5230	40.65	20.09 > 17
<b>802.11ac (VHT80)</b>			
42	5210	82.98	23.18 > 17



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**POWER OUTPUT:**

Beam forming (MCS0 N=2)_MODE							
CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
<b>802.11ac (VHT20)</b>							
36	5180	12.26	12.16	33.271	15.22	17	PASS
40	5200	12.28	12.18	33.424	15.24	17	PASS
48	5240	12.21	12.31	33.656	15.27	17	PASS
<b>802.11ac (VHT40)</b>							
38	5190	13.91	13.96	49.493	16.95	17	PASS
46	5230	13.72	13.89	48.041	16.82	17	PASS
<b>802.11ac (VHT80)</b>							
42	5210	13.86	13.97	49.268	16.93	17	PASS

**26dB OCCUPIED BANDWIDTH:**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
<b>802.11ac (VHT20)</b>			
36	5180	20.57	20.52
40	5200	20.47	20.33
48	5240	20.68	20.45
<b>802.11ac (VHT40)</b>			
38	5190	40.97	40.85
46	5230	40.93	40.95
<b>802.11ac (VHT80)</b>			
42	5210	82.59	82.44

**Note: For FCC output power limitation is determined based on 26dBc bandwidth.**

Power Limit = 4dBm + 10logB < UNII Band 1 >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
<b>802.11ac (VHT20)</b>			
36	5180	20.52	17.12 > 17
40	5200	20.33	17.08 > 17
48	5240	20.45	17.1 > 17
<b>802.11ac (VHT40)</b>			
38	5190	40.85	20.11 > 17
46	5230	40.93	20.12 > 17
<b>802.11ac (VHT80)</b>			
42	5210	82.	23.16 > 17



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### 4.3.9 TEST RESULTS (MODE 3)

#### POWER OUTPUT:

802.11a					
CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	29.174	14.65	17	PASS
40	5200	12.218	10.87	17	PASS
48	5240	11.995	10.79	17	PASS

#### 26dB OCCUPIED BANDWIDTH:

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
36	5180	20.51
40	5200	20.52
48	5240	20.52

**Note:** For output power limitation is determined based on 26dBc bandwidth.

Power Limit = $4\text{dBm} + 10\log B < \text{UNII Band 1}>$			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
36	5180	20.51	17.11 > 17
40	5200	20.52	17.12 > 17
48	5240	20.52	17.12 > 17



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#### 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

##### 4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.47 ~ 5.725GHz	11dBm
5.725 ~ 5.825GHz	17dBm

##### 4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 03, 2013

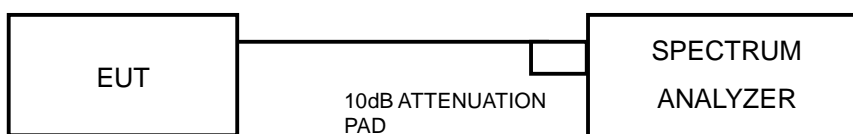
##### 4.4.3 TEST PROCEDURES

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  $10 \log (1/\text{duty cycle})$

##### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation

##### 4.4.5 TEST SETUP







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#### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6



#### 4.4.7 TEST RESULTS (MODE 1)

##### CDD\_MODE

802.11ac (VHT20)							
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-3.71	-5.06	-4.58	0.36	0.71	PASS
40	5200	-3.92	-4.66	-4.26	0.50	0.71	PASS
48	5240	-4.73	-4.49	-4.34	0.25	0.71	PASS
<b>NOTE:</b> 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 = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.29\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(9.29-6) = 0.71\text{dBm}$ .							

802.11ac (VHT40)							
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-3.80	-4.51	-5.43	0.24	0.71	PASS
46	5230	-4.14	-4.53	-5.45	0.10	0.71	PASS
<b>NOTE:</b> 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 = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.29\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(9.29-6) = 0.71\text{dBm}$ .							

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	CHAIN 2				
155	5775	-7.01	-6.91	-8.46	0.19	-2.44	0.71	PASS
<b>NOTE:</b> 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 = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.29\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(9.29-6) = 0.71\text{dBm}$ . 3. Refer to section 3.4 for duty cycle spectrum plot.								



**STBC\_MODE**

802.11ac (VHT20)							
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-0.41	-1.02	-1.11	3.94	4	PASS
40	5200	-0.43	-1.13	-1.09	3.90	4	PASS
48	5240	-2.75	-1.87	-1.94	2.60	4	PASS
<b>NOTE:</b> 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 (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-3.80	-4.51	-5.43	0.24	4	PASS
46	5230	-4.14	-4.53	-5.45	0.10	4	PASS
<b>NOTE:</b> 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	CHAIN 2				
155	5775	-7.01	-6.91	-8.46	0.19	-2.44	4	PASS
<b>NOTE:</b> 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. Refer to section 3.4 for duty cycle spectrum plot.								



**Beam forming (MCS0 N=1)\_MODE**

**802.11ac (VHT20)**

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-5.34	-5.54	-7.62	-1.28	0.71	PASS
40	5200	-5.74	-4.88	-7.32	-1.09	0.71	PASS
48	5240	-5.30	-4.53	-6.65	-0.64	0.71	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 =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.29\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $4-(9.29-6) = 0.71\text{dBm}$ .

**802.11ac (VHT40)**

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-4.42	-5.12	-5.73	-0.29	0.71	PASS
46	5230	-4.43	-4.67	-5.51	-0.07	0.71	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 =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.29\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $4-(9.29-6) = 0.71\text{dBm}$ .

**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	CHAIN 2				
155	5775	-7.83	-8.35	-8.76	0.19	-3.34	0.71	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 =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.29\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $4-(9.29-6) = 0.71\text{dBm}$ .  
 3. Refer to section 3.4 for duty cycle spectrum plot.



**Beam forming (MCS0 N=2)\_MODE**

**802.11ac (VHT20)**

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-2.83	-4.26	-4.11	1.09	2.94	PASS
40	5200	-2.94	-4.43	-4.64	0.84	2.94	PASS
48	5240	-3.39	-3.66	-4.56	0.93	2.94	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 = maximum gain of antennas +  $10 \log(3/2) = 7.06\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $4-(7.06-6) = 2.94\text{dBm}$ .

**802.11ac (VHT40)**

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-6.10	-5.75	-6.38	-1.30	2.94	PASS
46	5230	-5.49	-5.80	-6.19	-1.05	2.94	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 = maximum gain of antennas +  $10 \log(3/2) = 7.06\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $4-(7.06-6) = 2.94\text{dBm}$ .

**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	CHAIN 2				
155	5775	-8.42	-9.05	-9.22	0.19	-3.92	2.94	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 = maximum gain of antennas +  $10 \log(3/2) = 7.06\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $4-(7.06-6) = 2.94\text{dBm}$ .  
3. Refer to section 3.4 for duty cycle spectrum plot.



**Beam forming (MCS0 N=3)\_MODE**

**802.11ac (VHT20)**

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
36	5180	-2.38	-4.02	-3.75	1.45	4	PASS
40	5200	-2.87	-3.79	-4.02	1.24	4	PASS
48	5240	-2.93	-1.86	-2.56	2.34	4	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 (dBm)			TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1	CHAIN 2			
38	5190	-3.80	-4.51	-5.43	0.24	4	PASS
46	5230	-4.14	-4.53	-5.45	0.10	4	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	CHAIN 2				
155	5775	-7.01	-6.91	-8.46	0.19	-2.44	4	PASS

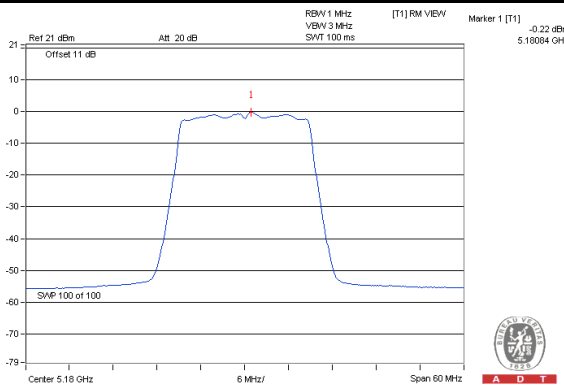
**NOTE:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.  
2. Refer to section 3.4 for duty cycle spectrum plot.



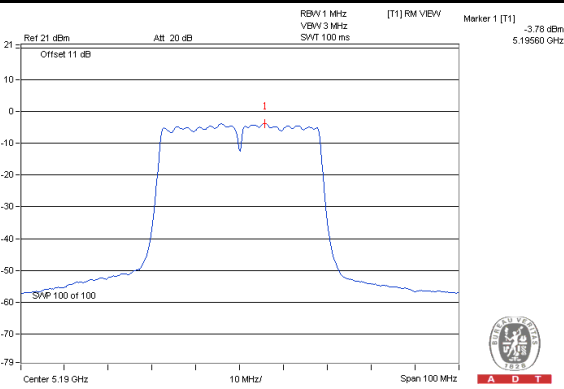
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### SPECTRUM PLOT OF WORST VALUE

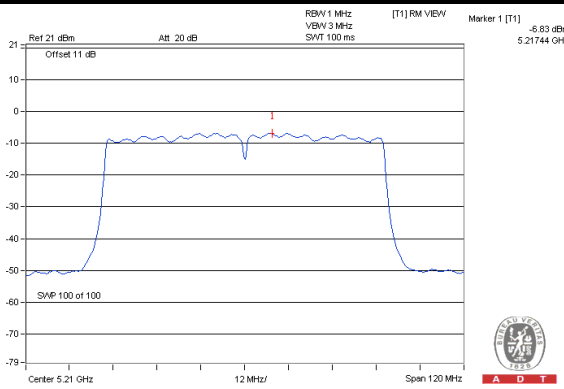
#### STBC\_MODE <802.11ac (VHT20)\_Chain (0) / CH36>



#### CDD\_MODE <802.11ac (VHT40)\_Chain (0) / CH38>



#### CDD\_MODE <802.11ac (VHT80)\_Chain (1) / CH42>





#### 4.4.8 TEST RESULTS (MODE 2)

##### CDD\_MODE

802.11ac (VHT20)						
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	-0.80	-2.59	1.41	2.52	PASS
40	5200	-0.84	-2.11	1.58	2.52	PASS
48	5240	-1.12	-1.54	1.69	2.52	PASS
<b>NOTE:</b> 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 = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.48\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(7.48-6) = 2.52\text{dBm}$ .						

802.11ac (VHT40)						
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
38	5190	-2.06	-3.39	0.34	2.52	PASS
46	5230	-2.85	-3.02	0.08	2.52	PASS
<b>NOTE:</b> 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 = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.48\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(7.48-6) = 2.52\text{dBm}$ .						

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				
155	5775	-5.65	-6.28	0.19	-2.75	2.52	PASS
<b>NOTE:</b> 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 = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.48\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(7.48-6) = 2.52\text{dBm}$ . 3. Refer to section 3.4 for duty cycle spectrum plot.							





**STBC\_MODE**

**802.11ac (VHT20)**

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	-2.63	-2.89	0.25	4	PASS
40	5200	-2.65	-2.64	0.37	4	PASS
48	5240	-2.64	-2.39	0.50	4	PASS
<b>NOTE:</b>	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 (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
38	5190	-3.70	-3.92	-0.80	4	PASS
46	5230	-3.99	-4.00	-0.98	4	PASS
<b>NOTE:</b>	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				
155	5775	-7.33	-6.98	0.19	-3.95	4	PASS
<b>NOTE:</b>	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. Refer to section 3.4 for duty cycle spectrum plot.						



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**Beam forming (MCS0 N=1)\_MODE**

802.11ac (VHT20)						
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	-0.80	-2.59	1.41	2.52	PASS
40	5200	-0.84	-2.11	1.58	2.52	PASS
48	5240	-1.12	-1.54	1.69	2.52	PASS
<b>NOTE:</b>	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 = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.48\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(7.48-6) = 2.52\text{dBm}$ .					

802.11ac (VHT40)						
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
38	5190	-3.66	-5.27	-1.38	2.52	PASS
46	5230	-4.02	-4.46	-1.22	2.52	PASS
<b>NOTE:</b>	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 = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.48\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(7.48-6) = 2.52\text{dBm}$ .					

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				
155	5775	-7.36	-8.04	0.19	-4.49	2.52	PASS
<b>NOTE:</b>	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 = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.48\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to $4-(7.48-6) = 2.52\text{dBm}$ . 3. Refer to section 3.4 for duty cycle spectrum plot.						



### Beam forming (MCS0 N=2)\_MODE

**802.11ac (VHT20)**

CHANNEL	CHANNEL FREQUENCY (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
36	5180	-0.80	-2.59	1.41	4	PASS
40	5200	-0.84	-2.11	1.58	4	PASS
48	5240	-1.12	-1.54	1.69	4	PASS
<b>NOTE:</b>	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 (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
38	5190	-2.06	-3.39	0.34	4	PASS
46	5230	-2.85	-3.02	0.08	4	PASS
<b>NOTE:</b>	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)**

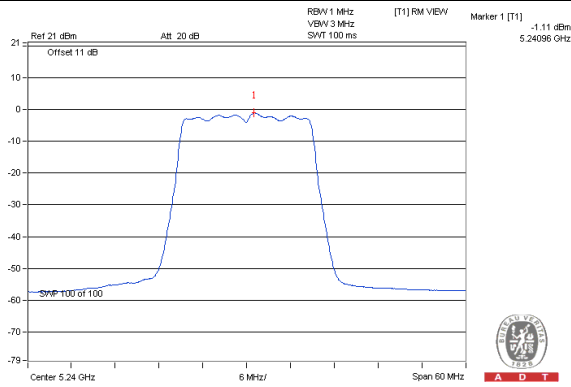
CHANNEL	CHANNEL FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)		DUTY FACTOR (dB)	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS/FAIL
		CHAIN 0	CHAIN 1				
155	5775	-5.65	-6.28	0.19	-2.75	4	PASS
<b>NOTE:</b>	1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.						
	2. Refer to section 3.4 for duty cycle spectrum plot.						



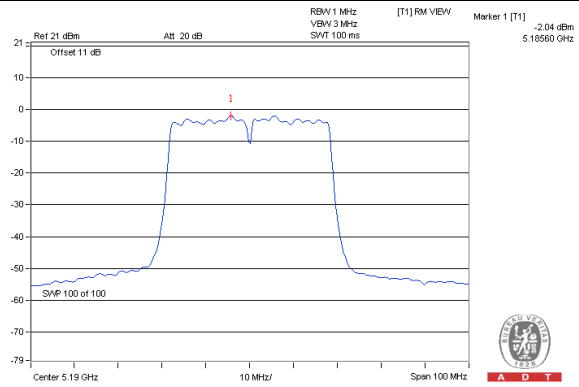
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### SPECTRUM PLOT OF WORST VALUE

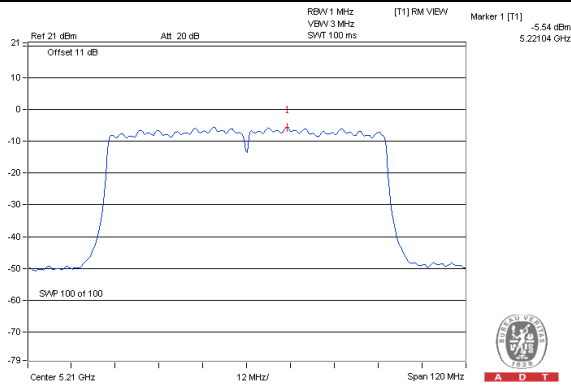
#### CDD\_MODE <802.11ac (VHT20)\_Chain (0) / CH48>



#### CDD\_MODE <802.11ac (VHT40)\_Chain (0) / CH38>



#### CDD\_MODE <802.11ac (VHT80)\_Chain (0) / CH42>

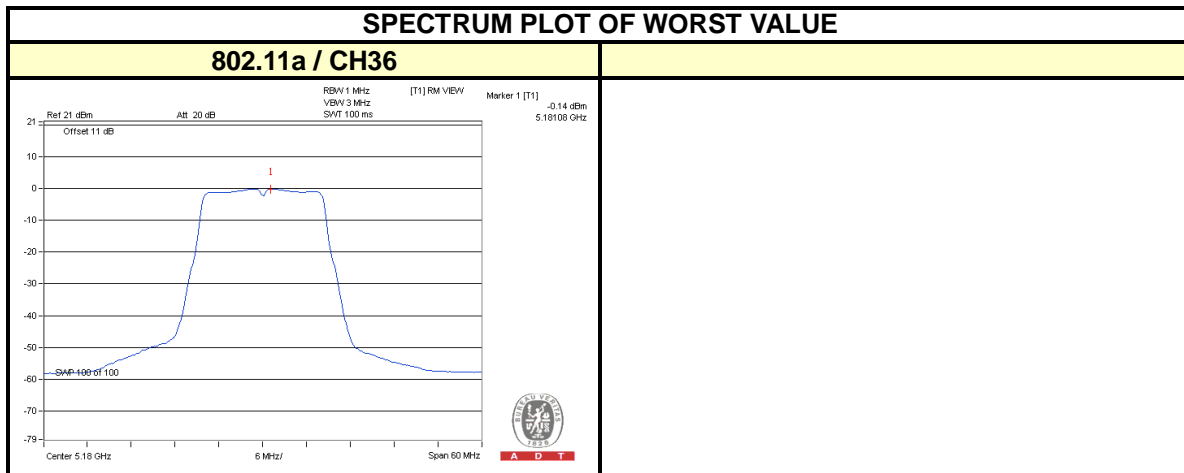




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### 4.4.9 TEST RESULTS (MODE 3)

802.11a				
CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	-0.14	4	PASS
40	5200	-3.36	4	PASS
48	5240	-3.31	4	PASS



## 4.5 PEAK POWER EXCURSION MEASUREMENT

### 4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP 40	100036	Jan. 21, 2013	Jan. 20, 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 : Dec. 03, 2013

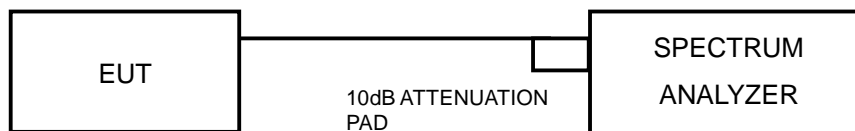
### 4.5.3 TEST PROCEDURE

1. Set RBW = 1 MHz, VBW  $\geq$  3 MHz, Detector = peak.
2. Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak search function to find the peak of the spectrum.
4. Measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.5.5 TEST SETUP



### 4.5.6 EUT OPERATING CONDITIONS

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



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#### 4.5.7 TEST RESULTS (MODE 1)

MODULATION MODE	MODULATION TYPE	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/ FAIL
802.11ac (VHT20)	BPSK	5240	7.41	-1.74	9.15	13	PASS
	QPSK		7.04	-2.04	9.08	13	PASS
802.11ac (VHT40)	BPSK	5240	4.32	-4.06	8.38	13	PASS

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
802.11ac (VHT20)	16QAM	5240	8.07	-1.88	-1.74	9.81	13	PASS
	64QAM		8.32	-2.08	-1.7	10.02	13	PASS
	256QAM		8.38	-1.8	-1.39	9.77	13	PASS
802.11ac (VHT40)	QPSK	5230	5.21	-4.03	-3.87	9.08	13	PASS
	16QAM		5.61	-4.33	-3.98	9.59	13	PASS
	64QAM		5.88	-4.17	-3.74	9.62	13	PASS
	256QAM		4.96	-4.41	-3.75	8.71	13	PASS
802.11ac (VHT80)	BPSK	5210	2.71	-7.01	-6.82	9.53	13	PASS
	QPSK		2.36	-7.55	-7.23	9.59	13	PASS
	16QAM		2.03	-7.76	-7.23	9.26	13	PASS
	64QAM		2.27	-7.78	-7.12	9.39	13	PASS
	256QAM		2.22	-7.73	-6.97	9.19	13	PASS

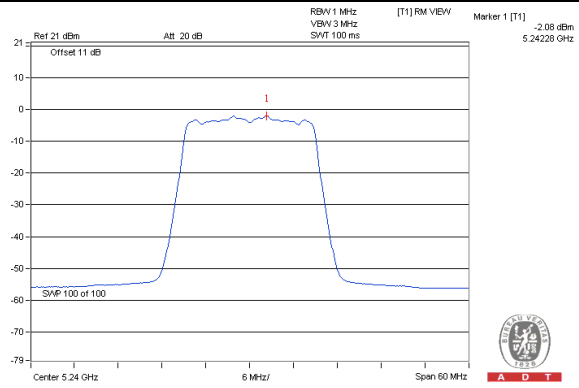
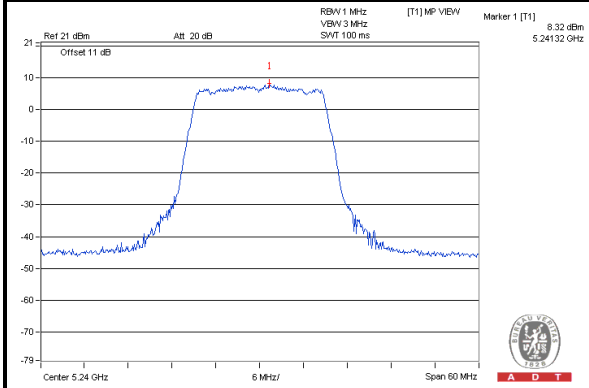
**NOTE:** 1. Refer to section 3.4 for duty cycle spectrum plot.



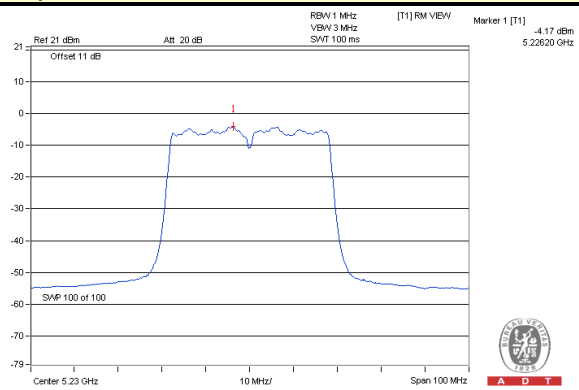
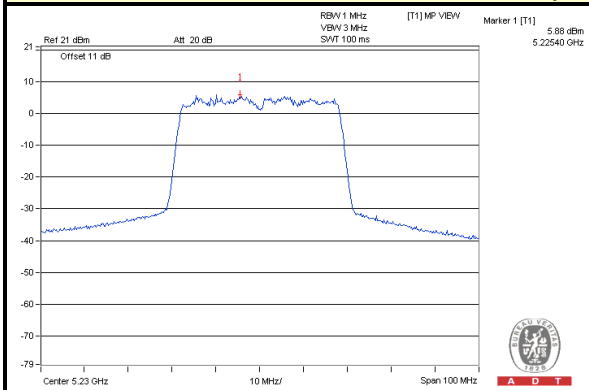
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### SPECTRUM PLOT OF WORST VALUE

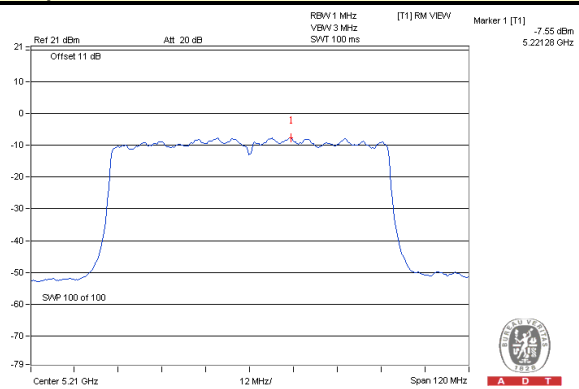
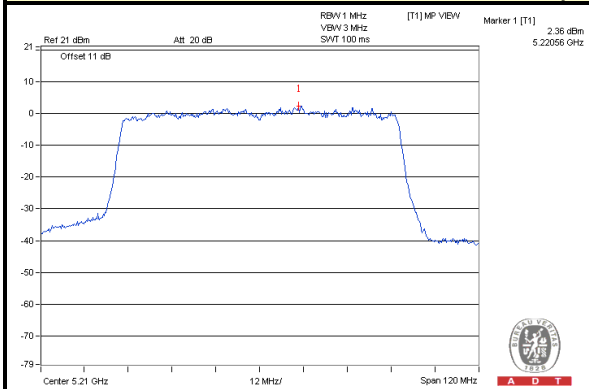
#### 802.11ac (VHT20) / 64QAM



#### 802.11ac (VHT40) / 64QAM



#### 802.11ac (VHT80) / QPSK







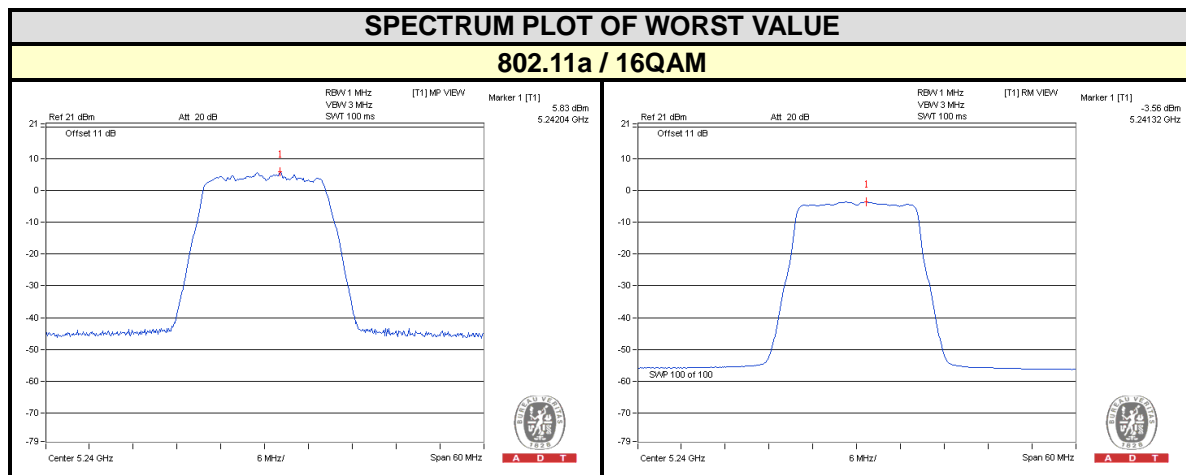
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### 4.5.8 TEST RESULTS (MODE 3)

MODULATION MODE	MODULATION TYPE	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/ FAIL
802.11a	BPSK	5240	5	-3.31	8.31	13	PASS
	QPSK		5.2	-3.66	8.86	13	PASS

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
802.11a	16QAM	5240	5.83	-3.56	-3.41	9.24	13	PASS
	64QAM		5.34	-3.3	-3.02	8.36	13	PASS

**NOTE:** 1. Refer to section 3.4 for duty cycle spectrum plot.



## 4.6 FREQUENCY STABILITY

### 4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP 40	100036	Jan. 21, 2013	Jan. 20, 2014
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40 -SP-AR	MAA0812-008	Jan. 17, 2013	Jan. 16, 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 : Dec. 03, 2013

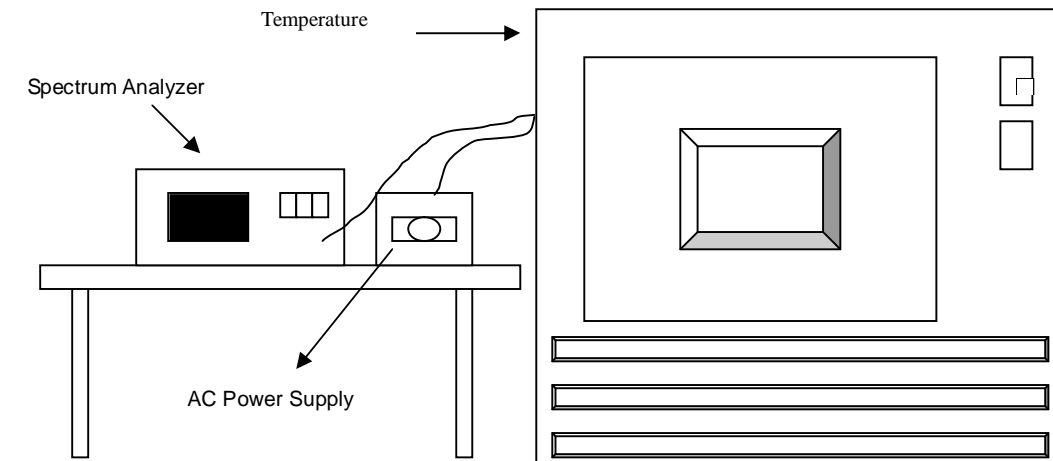
### 4.6.3 TEST PROCEDURE

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.

#### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.6.5 TEST SETUP



#### 4.6.6 EUT OPERATING CONDITION

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



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### 4.6.7 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	5240.0132	0.00025	5240.0133	0.00025	5240.0139	0.00027	5240.013	0.00025
40	120	5239.9878	-0.00023	5239.9813	-0.00036	5239.9803	-0.00038	5239.9846	-0.00029
30	120	5239.9922	-0.00015	5239.9983	-0.00003	5239.9914	-0.00016	5240.0015	0.00003
20	120	5239.973	-0.00052	5239.974	-0.00050	5239.9712	-0.00055	5239.9723	-0.00053
10	120	5240.0026	0.00005	5240.0005	0.00001	5240.0012	0.00002	5239.9942	-0.00011
0	120	5239.9937	-0.00012	5239.996	-0.00008	5239.9967	-0.00006	5239.9918	-0.00016
-10	120	5239.9951	-0.00009	5239.9958	-0.00008	5240.0012	0.00002	5239.9962	-0.00007
-20	120	5240.0131	0.00025	5240.0095	0.00018	5240.015	0.00029	5240.0122	0.00023
-30	120	5239.9818	-0.00035	5239.9823	-0.00034	5239.9824	-0.00034	5239.9803	-0.00038

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	5239.9729	-0.00052	5239.975	-0.00048	5239.9709	-0.00056	5239.9719	-0.00054
	120	5239.973	-0.00052	5239.974	-0.00050	5239.9712	-0.00055	5239.9723	-0.00053
	102	5239.9739	-0.00050	5239.9747	-0.00048	5239.9716	-0.00054	5239.9718	-0.00054



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## 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:

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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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## 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.

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