FCC TEST REPORT (15.247)

REPORT NO.:	RF140324E06
MODEL NO.:	IPC2100
FCC ID:	2ABTEIPC2100
RECEIVED:	Mar. 24, 2014
TESTED:	Apr. 23 to June 05, 2014
ISSUED:	July 18, 2014

APPLICANT:	Verizon Online LLC
ADDRESS:	1300 I Street NW, Room 400W, Washington, District of Columbia, 20005 United State

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS :	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140324E06	Original release	July 18, 2014

1. CERTIFICATION

PRODUCT:	FiOS™ IPC2100 IP Client
BRAND NAME:	Verizon
MODEL NO.:	IPC2100
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Verizon Online LLC
TESTED:	Apr. 23 to June 05, 2014
STANDARDS:	FCC Part 15, Subpart C (Section 15.247) ANSI C63.10-2009

The above equipment (Model: IPC2100) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ **DATE:** *July 18, 2014*
(Midoli Peng, Specialist)

APPROVED BY : _____ , **DATE:** *July 18, 2014*
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 5GHz, 5725~5850MHz Band

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.11dB at 2.22656MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.8dB at 11650.00MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex not a standard connector.

NOTE: The EUT was operating in 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.725~5.850GHz. For the 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz RF parameters was recorded in another test report.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.86 dB
Radiated emissions (30MHz-1GHz)	5.43 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	FiOS™ IPC2100 IP Client
MODEL NO.	IPC2100
POWER SUPPLY	DC 12V from power adapter
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only.
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: up to 54Mbps 802.11n: up to 405Mbps 802.11ac: up to 1170Mbps
OPERATING FREQUENCY	**For 15.407** 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.58GHz & 5.66GHz ~ 5.72GHz
	For 15.247 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	**For 15.407** 17 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 8 for 802.11n (HT40), 802.11ac (VHT40) 4 for 802.11ac (VHT80)
	For 15.247 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80)
MAXIMUM OUTPUT POWER	Please see NOTE
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Adapter x1

NOTE:

1. The maximum output power(mW) table as below table:

15.247 (5GHz)				
Test Mode	**802.11a**	**802.11ac (VHT20)**	**802.11ac (VHT40)**	**802.11ac (VHT80)**
1TX	292.415	NA	NA	NA
2TX / Beamforming Mode MCS0NSS1	NA	362.438	321.141	160.526
2TX mode Beamforming Mode MCS0NSS2	NA	362.438	321.141	160.526
2TX / CDD Mode	NA	362.438	321.141	160.526
2TX / STBC Mode	NA	362.438	321.141	160.526
2TX / SDM	NA	362.438	321.141	160.526
3TX / Beamforming Mode MCS0NSS1	NA	584.258	522.05	243.894
3TX mode Beamforming Mode MCS0NSS2	NA	584.258	522.05	512.631
3TX / Beamforming Mode MCS0NSS3	NA	584.258	522.05	512.631
3TX / CDD Mode	NA	584.258	522.05	243.894
3TX / STBC Mode	NA	584.258	522.05	512.631
3TX / SDM	NA	584.258	522.05	512.631
15.407 (5GHz)				
Test Mode	**802.11a**	**802.11ac (VHT20)**	**802.11ac (VHT40)**	**802.11ac (VHT80)**
1TX	214.289	NA	NA	NA
2TX / Beamforming Mode MCS0NSS1	NA	163.364	153.137	131.45
2TX mode Beamforming Mode MCS0NSS2	NA	163.364	173.303	156.239
2TX / CDD Mode	NA	163.364	173.303	156.239
2TX / STBC Mode	NA	216.399	192.345	156.239
2TX / SDM	NA	163.364	173.303	156.239
3TX / Beamforming Mode MCS0NSS1	NA	146.81	142.322	86.99
3TX mode Beamforming Mode MCS0NSS2	NA	218.359	218.608	86.99
3TX / Beamforming Mode MCS0NSS3	NA	218.359	248.898	152.951
3TX / CDD Mode	NA	146.81	248.898	152.951
3TX / STBC Mode	NA	218.359	237.924	142.967
3TX / SDM	NA	218.359	248.898	152.951

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

Transmitter Circuit	Gain (dBi) (Include cable loss)	Frequency range (MHz)	Antenna Type	Connecter Type
Chain (0) Right antenna	2.63	5150	PCB	i-pex
	2.81	5250		
	2.67	5350		
	1.88	5725		
	1.68	5825		
Chain (1) Front antenna	4.33	5150	PCB	i-pex
	4.22	5250		
	4.20	5350		
	3.40	5725		
	3.18	5825		
Chain (2) Left antenna	3.43	5150	PCB	i-pex
	3.41	5250		
	3.59	5350		
	4.76	5725		
	4.57	5825		
Note: For 1Tx mode will fix transmission on Chain (0).				

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

No.	Brand	Model No.	Spec.
1	LEI	MU18-X120150-A1	AC Input : 100-240V, 0.6A, 50/60Hz DC Output : 12V, 1.5A DC output cable(unshielded ,1.5m)
2	Ktec	KSASB0241200150VU	AC Input : 100-240V, 0.6A, 50-60Hz DC Output : 12V, 1.5A DC output cable(unshielded ,1.5m)
For radiated emissions test, the EUT was pre-tested with adapter 1 & 2, the worst case was found in adapter 1. Therefore only the test data of the adapter 1 was recorded in this report.			

4. The EUT incorporates a MIMO function.

MODULATION MODE	Data Rate (MCS)	TX/RX FUNCTION
802.11a	6 ~ 54Mbps	1TX / 3RX
802.11n (HT20)	MCS 0~7	2TX/3TX (CDD/STBC/Beamforming) / 3RX
	MCS 8~15	2TX/3TX (CDD/STBC/SDM/Beamforming) / 3RX
	MCS 16~23	3Tx (SDM/Beamforming) / 3RX
802.11n (HT40)	MCS 0~7	2TX/3TX (CDD/STBC/Beamforming) / 3RX
	MCS 8~15	2TX/3TX (CDD/STBC/SDM/Beamforming) / 3RX
	MCS 16~23	3Tx (SDM/Beamforming) / 3RX
802.11ac (VHT20)	MCS0~8 (256QAM) Nss=1	2TX/3TX (CDD/STBC/Beamforming) / 3RX
	MCS0~8 (256QAM) Nss=2	2TX/3TX (CDD/STBC/SDM/Beamforming) / 3RX
	MCS0~9 (256QAM) Nss=3	3Tx (SDM/Beamforming) / 3RX
802.11ac (VHT40)	MCS0~9 (256QAM) Nss=1	2TX/3TX (CDD/STBC/Beamforming) / 3RX
	MCS0~9 (256QAM) Nss=2	2TX/3TX (CDD/STBC/SDM/Beamforming) / 3RX
	MCS0~9 (256QAM) Nss=3	3Tx (SDM/Beamforming) / 3RX
802.11ac (VHT80)	MCS0~9 (256QAM) Nss=1	2TX/3TX (CDD/STBC/Beamforming) / 3RX
	MCS0~9 (256QAM) Nss=2	2TX/3TX (CDD/STBC/SDM/Beamforming) / 3RX
	MCS0~8 (256QAM) Nss=3	3Tx (SDM/Beamforming) / 3RX

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

5. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 5725 ~ 5850MHz band:

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

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

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

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

CHANNEL	FREQUENCY
155	5775 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
1	-	-	v	v	v	1TX mode
2	-	-	-	v	v	2TX / Beamforming Mode MCS0NSS1
3	-	-	-	v	v	2TX mode Beamforming Mode MCS0NSS2
4	-	-	v	v	v	2TX / CDD Mode
5	-	-	v	v	v	2TX / STBC Mode
6	-	-	-	v	v	2TX / SDM
7	-	-	-	v	v	3TX / Beamforming Mode MCS0NSS1
8	-	-	-	v	v	3TX mode Beamforming Mode MCS0NSS2
9	-	-	-	v	v	3TX / Beamforming Mode MCS0NSS3
10	v	v	v	v	v	3TX / CDD Mode
11	-	-	v	v	v	3TX / STBC Mode
12	-	-	-	v	v	3TX / SDM

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

Note. : 1 "-"means no effect.

2. For radiated emissions above 1GHz test, the EUT's Beamforming, SDM 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.

STBC_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
For 5 GHz 802.11ac (VHT20)	149 to 165	157	OFDM	BPSK	6.5	10

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.

STBC_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11ac (VHT20)	149 to 165	157	OFDM	BPSK	6.5	10

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.

CDD_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6	1
802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5	4, 5, 10, 11
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	13.5	4, 5, 10, 11
802.11ac (VHT80)	155	155	OFDM	BPSK	29.3	4, 5, 10, 11

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.

CDD_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6	1
802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5	2, 4, 5, 7, 10, 11
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	13.5	2, 4, 5, 7, 10, 11
802.11ac (VHT80)	155	155	OFDM	BPSK	29.3	2, 4, 5, 7, 10, 11
802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	13	3, 6, 8
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	27	3, 6, 8
802.11ac (VHT80)	155	155	OFDM	BPSK	58.5	3, 6, 8
802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	19.5	9, 12
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	40.5	9, 12
802.11ac (VHT80)	155	155	OFDM	BPSK	87.8	9, 12

CONDUCTED OUT-BAND EMISSION 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.

CDD_MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	EUT CONFIGURE MODE
802.11a	149 to 165	149, 165	OFDM	BPSK	6	1
802.11ac (VHT20)	149 to 165	149, 165	OFDM	BPSK	6.5	2, 4, 5, 7, 10, 11
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	13.5	2, 4, 5, 7, 10, 11
802.11ac (VHT80)	155	155	OFDM	BPSK	29.3	2, 4, 5, 7, 10, 11
802.11ac (VHT20)	149 to 165	149, 165	OFDM	BPSK	13	3, 6, 8
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	27	3, 6, 8
802.11ac (VHT80)	155	155	OFDM	BPSK	58.5	3, 6, 8
802.11ac (VHT20)	149 to 165	149, 165	OFDM	BPSK	19.5	9, 12
802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	40.5	9, 12
802.11ac (VHT80)	155	155	OFDM	BPSK	87.8	9, 12

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	26deg. C,70%RH	120Vac, 60Hz	Scott Chen
RE<1G	24deg. C, 70%RH	120Vac, 60Hz	Andy Ho
RE≥1G	25deg. C, 72%RH	120Vac, 60Hz	Nelson Teng
	25deg. C, 72%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee
OB	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 C (15.247)

558074 D01 DTS Meas Guidance v03r02

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

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

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

3.4 DUTY CYCLE OF TEST SIGNAL

If duty cycle of test signal is ≥ 98 %, duty factor is not required.

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

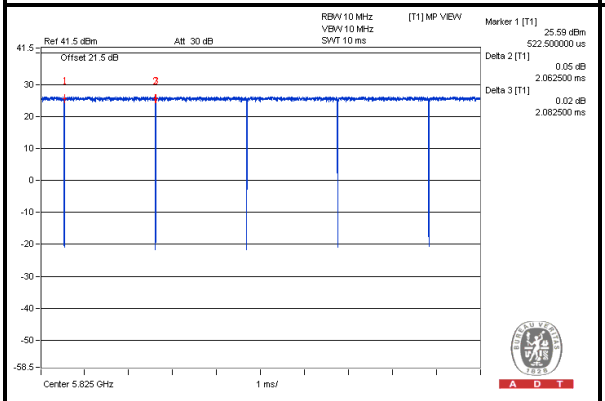
802.11a: Duty cycle = 2.0625 ms/2.0825 ms = 0.99

802.11ac (VHT20): Duty cycle = 1.92625 ms/1.94625 ms = 0.99

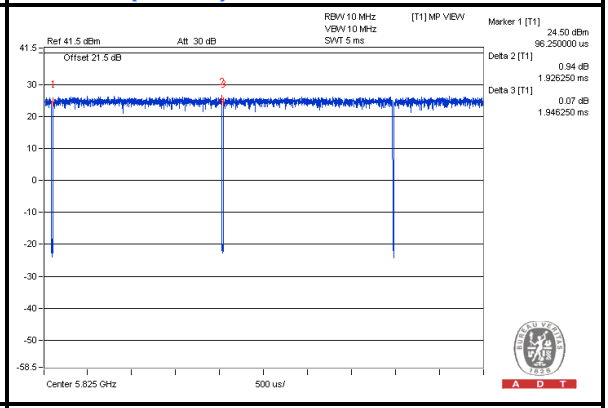
802.11ac (VHT40): Duty cycle = 0.951 ms/0.9705 ms = 0.98

802.11ac (VHT80): Duty cycle = 0.4595 ms/0.485 ms = 0.96, Duty factor = 10 * log(1/0.96) = 0.2

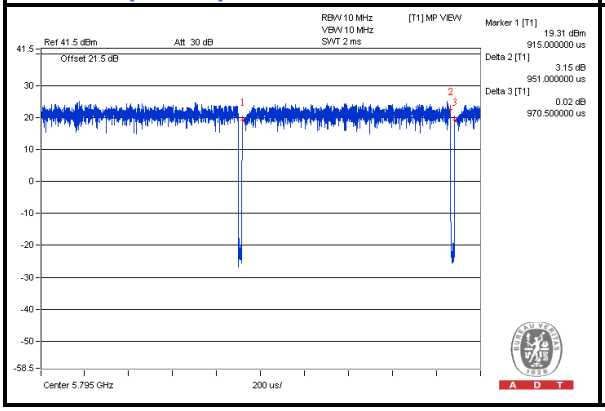
802.11a



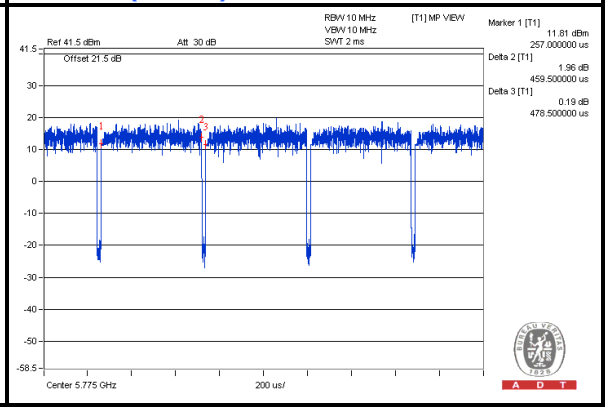
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.5 DESCRIPTION OF SUPPORT UNITS

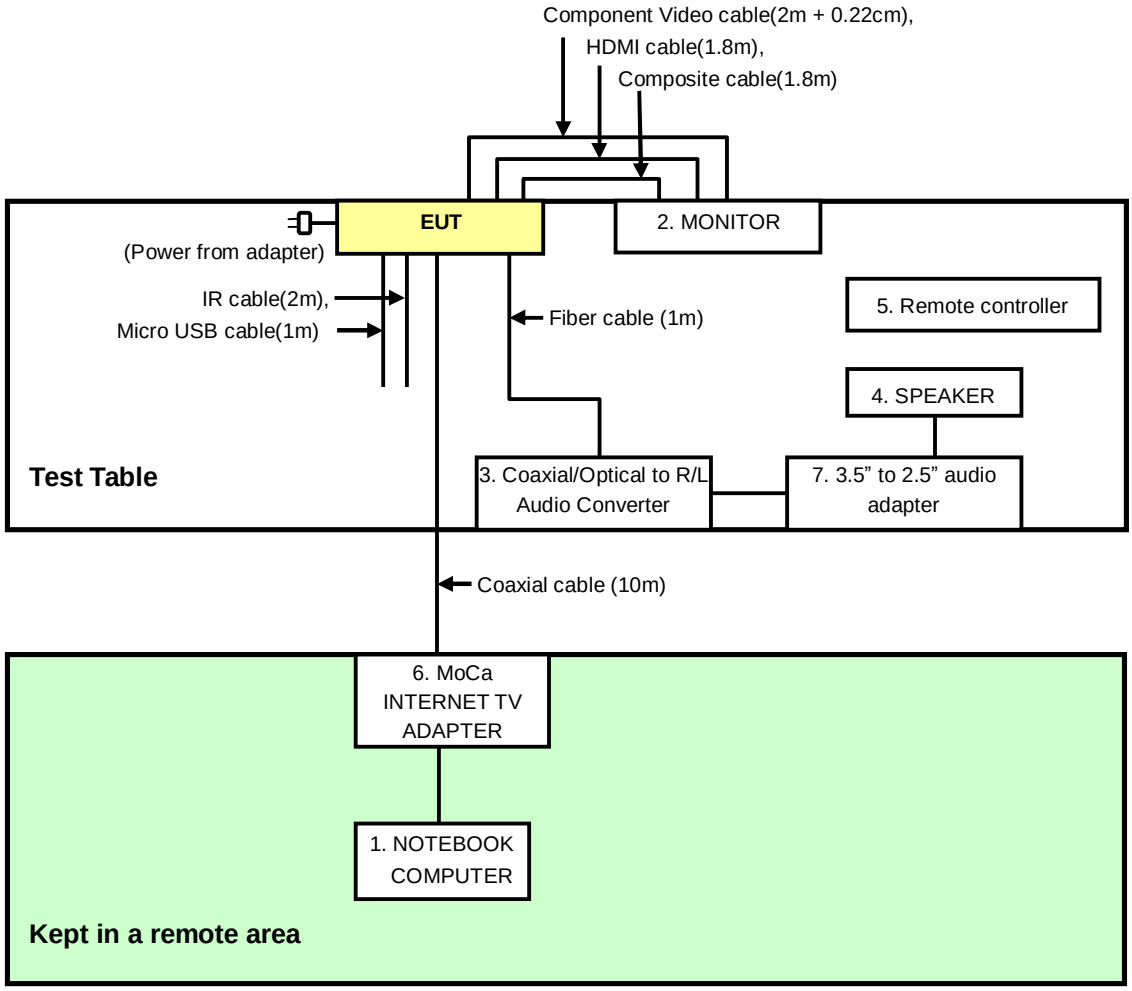
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	MONITOR (For conducted test item)	Panasonic	TH-L26K10W	9540684	NA
	MONITOR (For other test items)	SONY	KDL-32CX520	3676813	FCC DoC
3	Coaxial/Optical to R/L Audio Converter	UPMOST	DCT-3	055200042	FCC DoC
4	SPEAKER	JS	JY2003	081202049	NA
5	Remote controller	Verizon	VZ P265v3RC	NA	NA
6	MoCa INTERNET TV ADAPTER	Channel Master	CM-6004	NA	NA
7	3.5” to 2.5” audio adapter	NA	NA	NA	NA

No.	Signal cable description
1	UTP cable(3m)
2	Composite Video cable (2m+0.22cm), HDMI cable(1.8m), Composite cable(1.8m)
3	Fiber cable(1m)
4	Audio cable(1m)
5	NA
6	Coaxial cable(10m)
7	L/R Audio cable(1.5m)

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

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	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	100287	Apr. 09, 2014	Apr. 08, 2015
Line-Impedance Stabilization Network (for EUT) ROHDE & SCHWARZ	NSLK-8127	8127-523	Oct. 02, 2013	Oct. 01, 2014
*Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ESH3-Z5	848773/004	Oct. 27, 2013	Oct. 26, 2015
RF Cable (JYEBAO)	5D-FB	COACAB-001	May 26, 2014	May 25, 2015
50 ohms Terminator	50	3	Oct. 17, 2013	Oct. 16, 2014
50 ohms Terminator	N/A	EMC-04	Oct. 19, 2013	Oct. 18, 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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in Shielded Room No. A.
4 The VCCI Con A Registration No. is C-817.
5. Tested Date: May 02, 2014

4.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN.
b. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
d. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit – 20dB) were not recorded.

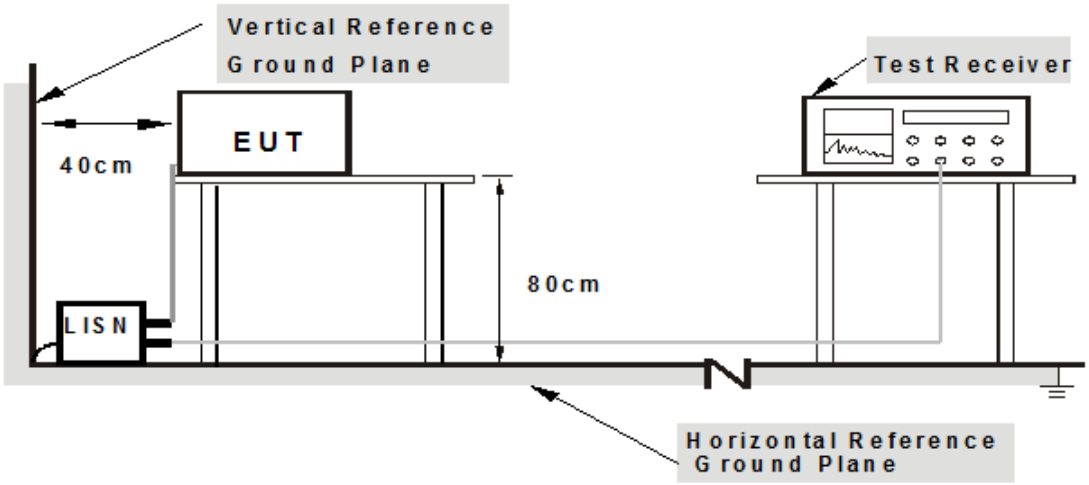
NOTE:

1. 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.

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared computer system (support units 1, 6) to act as communication partner.
3. The communication partner ran test program “MTool_2.0.1.0” to enable EUT under transmission/receiving condition continuously.

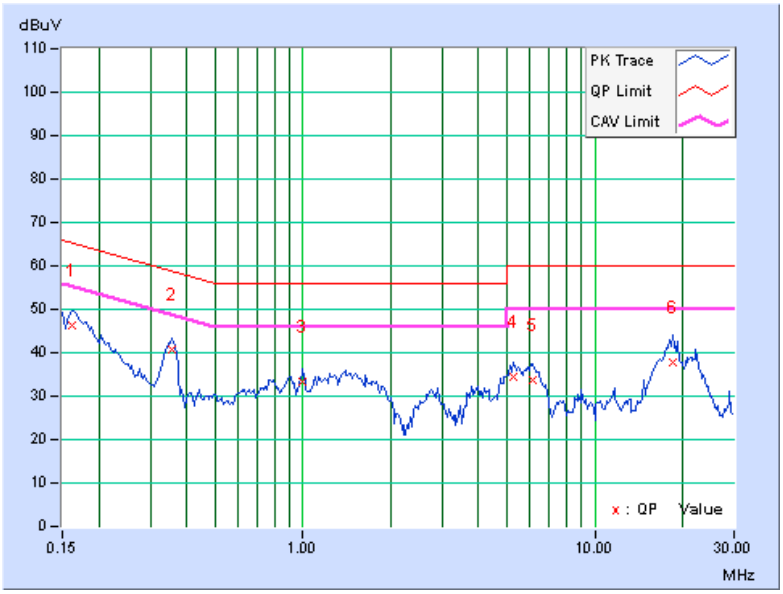
4.1.7 TEST RESULTS (MODE 10, with adapter 1)

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.07	46.31	40.81	46.38	40.88	65.38	55.38	-18.99	-14.49
2	0.35703	0.13	40.49	36.06	40.62	36.19	58.80	48.80	-18.18	-12.61
3	0.99766	0.18	33.08	28.62	33.26	28.80	56.00	46.00	-22.74	-17.20
4	5.23047	0.51	33.91	28.16	34.42	28.67	60.00	50.00	-25.58	-21.33
5	6.16016	0.54	33.24	27.70	33.78	28.24	60.00	50.00	-26.22	-21.76
6	18.55469	1.15	36.59	28.00	37.74	29.15	60.00	50.00	-22.26	-20.85

REMARKS:

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

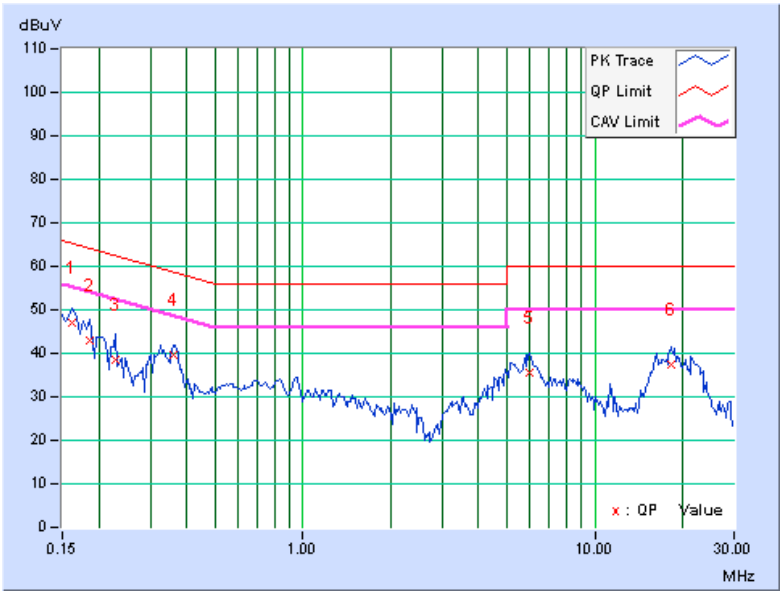


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.07	46.81	40.85	46.88	40.92	65.38	55.38	-18.50	-14.46
2	0.18516	0.07	43.04	32.15	43.11	32.22	64.25	54.25	-21.14	-22.03
3	0.22812	0.08	38.31	28.04	38.39	28.12	62.52	52.52	-24.13	-24.40
4	0.36094	0.13	39.54	35.15	39.67	35.28	58.71	48.71	-19.04	-13.43
5	6.00781	0.45	35.24	30.12	35.69	30.57	60.00	50.00	-24.31	-19.43
6	18.31641	1.06	36.35	27.97	37.41	29.03	60.00	50.00	-22.59	-20.97

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



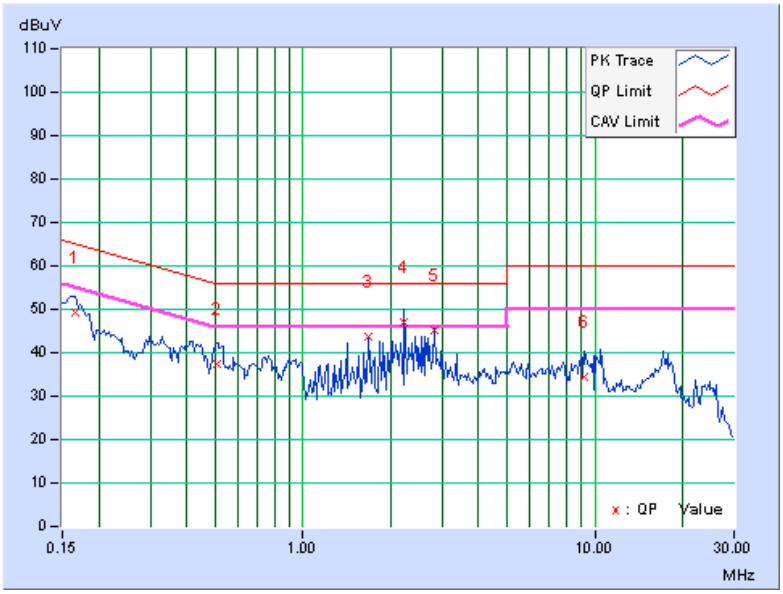
4.1.8 TEST RESULTS (MODE 10, with adapter 2)

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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.07	49.11	41.19	49.18	41.26	65.18	55.18	-15.99	-13.91
2	0.50547	0.15	37.17	27.74	37.32	27.89	56.00	46.00	-18.68	-18.11
3	1.68750	0.22	43.53	34.78	43.75	35.00	56.00	46.00	-12.25	-11.00
4	**2.22656**	**0.26**	**46.75**	**38.63**	**47.01**	**38.89**	**56.00**	**46.00**	**-8.99**	**-7.11**
5	2.83203	0.33	44.80	32.25	45.13	32.58	56.00	46.00	-10.87	-13.42
6	9.23828	0.66	33.91	27.20	34.57	27.86	60.00	50.00	-25.43	-22.14

REMARKS:

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

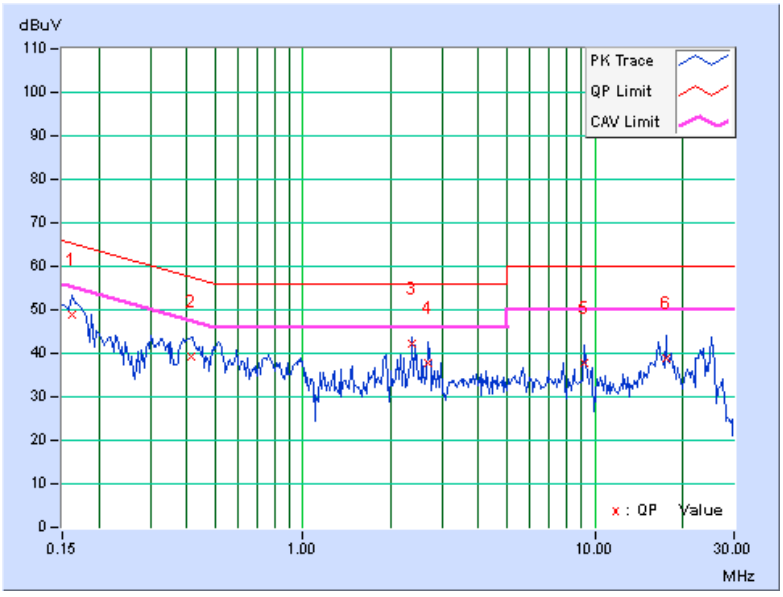


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.07	48.87	40.91	48.94	40.98	65.38	55.38	-16.44	-14.40
2	0.41563	0.14	39.14	30.71	39.28	30.85	57.54	47.54	-18.25	-16.68
3	2.35938	0.25	41.93	35.48	42.18	35.73	56.00	46.00	-13.82	-10.27
4	2.69922	0.27	37.61	32.35	37.88	32.62	56.00	46.00	-18.12	-13.38
5	9.23828	0.62	37.09	28.34	37.71	28.96	60.00	50.00	-22.29	-21.04
6	17.59766	1.03	37.83	28.62	38.86	29.65	60.00	50.00	-21.14	-20.35

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 AND BANDEDGE EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED AND BANDEDGE EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

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

NOTE:

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 TEST INSTRUMENTS

For Below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 15, 2014	Jan. 14, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-04	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 06, 2013	Oct. 05, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Dec. 06, 2013	Dec. 05, 2014
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 29, 2013	Oct. 28, 2014
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Apr. 23, 2014

For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 21,2014	Jan. 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 05, 2013	Oct. 04, 2014
Spectrum Analyzer R&S	FSV40	100964	July 15, 2013	July 14, 2014
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 18, 2013	Nov. 17, 2014
Pre-Amplifier Agilent	8449B	3008A02578	June 25, 2013	June 24, 2014
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: June 05, 2014

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

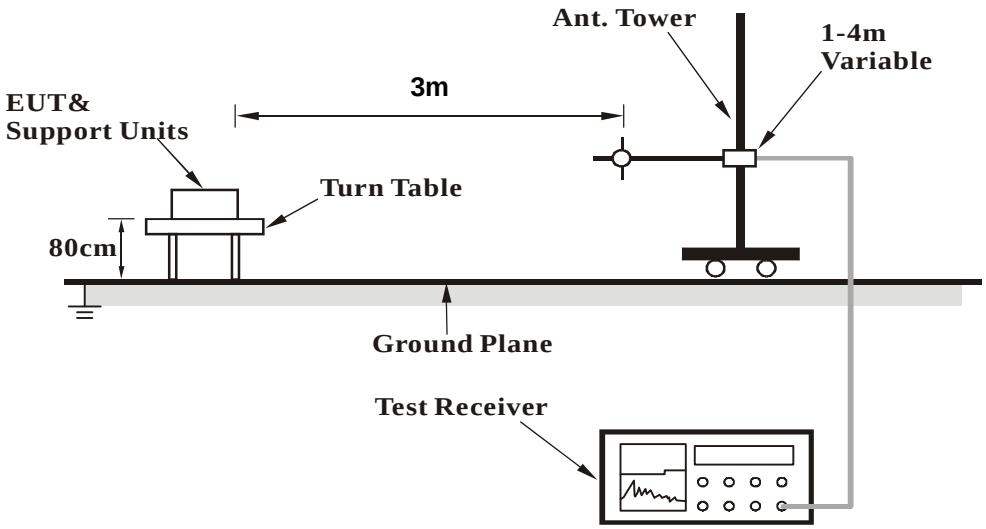
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.2.4 DEVIATION FROM TEST STANDARD

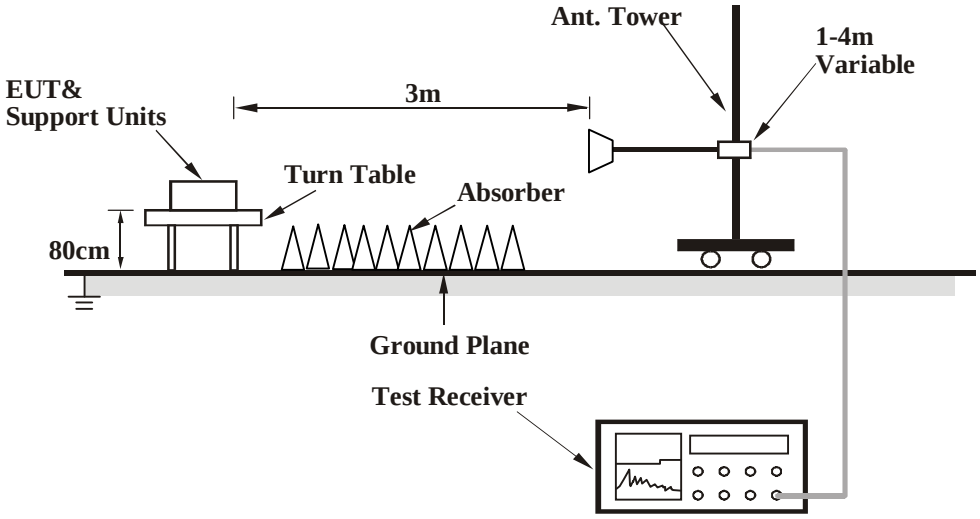
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

4.2.7 TEST RESULTS (MODE 1)

ABOVE 1GHz DATA

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	115.7 PK			1.62 H	283	110.43	5.27
2	*5745.00	105.8 AV			1.62 H	283	100.53	5.27
3	11490.00	58.2 PK	74.0	-15.8	1.23 H	3	46.84	11.36
4	11490.00	45.8 AV	54.0	-8.2	1.23 H	3	34.44	11.36
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	*5745.00	110.5 PK			1.00 V	129	105.23	5.27
2	*5745.00	101.0 AV			1.00 V	129	95.73	5.27
3	11490.00	62.0 PK	74.0	-12.0	1.48 V	160	50.64	11.36
4	11490.00	49.5 AV	54.0	-4.5	1.48 V	160	38.14	11.36

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	115.8 PK			1.62 H	274	110.52	5.28
2	*5785.00	105.8 AV			1.62 H	274	100.52	5.28
3	11570.00	58.1 PK	74.0	-15.9	1.22 H	2	46.78	11.32
4	11570.00	45.7 AV	54.0	-8.3	1.22 H	2	34.38	11.32
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	110.6 PK			1.04 V	133	105.32	5.28
2	*5785.00	101.1 AV			1.04 V	133	95.82	5.28
3	11570.00	64.4 PK	74.0	-9.6	1.09 V	356	53.08	11.32
4	11570.00	50.8 AV	54.0	-3.2	1.09 V	356	39.48	11.32

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	116.2 PK			1.62 H	291	110.87	5.33
2	*5825.00	105.9 AV			1.62 H	291	100.57	5.33
3	11650.00	58.5 PK	74.0	-15.5	1.21 H	3	47.28	11.22
4	11650.00	46.2 AV	54.0	-7.8	1.21 H	3	34.98	11.22
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	110.7 PK			1.01 V	123	105.37	5.33
2	*5825.00	100.9 AV			1.01 V	123	95.57	5.33
3	11650.00	62.9 PK	74.0	-11.1	1.27 V	0	51.68	11.22
4	11650.00	50.0 AV	54.0	-4.0	1.27 V	0	38.78	11.22

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.

4.2.8 TEST RESULTS (MODE 4)

ABOVE 1GHz DATA

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	118.5 PK			1.31 H	245	113.23	5.27
2	*5745.00	110.0 AV			1.31 H	245	104.73	5.27
3	11490.00	58.1 PK	74.0	-15.9	1.11 H	353	46.74	11.36
4	11490.00	47.6 AV	54.0	-6.4	1.11 H	353	36.24	11.36
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	*5745.00	119.6 PK			1.03 V	268	114.33	5.27
2	*5745.00	110.7 AV			1.03 V	268	105.43	5.27
3	11490.00	60.7 PK	74.0	-13.3	1.33 V	219	49.34	11.36
4	11490.00	49.9 AV	54.0	-4.1	1.33 V	219	38.54	11.36

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	119.0 PK			1.36 H	260	113.72	5.28
2	*5785.00	110.4 AV			1.36 H	260	105.12	5.28
3	11570.00	58.0 PK	74.0	-16.0	1.16 H	343	46.68	11.32
4	11570.00	47.3 AV	54.0	-6.7	1.16 H	343	35.98	11.32
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	119.5 PK			1.05 V	275	114.22	5.28
2	*5785.00	110.6 AV			1.05 V	275	105.32	5.28
3	11570.00	60.8 PK	74.0	-13.2	1.30 V	220	49.48	11.32
4	11570.00	50.1 AV	54.0	-3.9	1.30 V	220	38.78	11.32

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	118.8 PK			1.32 H	273	113.47	5.33
2	*5825.00	110.2 AV			1.32 H	273	104.87	5.33
3	11650.00	58.3 PK	74.0	-15.7	1.14 H	336	47.08	11.22
4	11650.00	47.5 AV	54.0	-6.5	1.14 H	336	36.28	11.22
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	118.9 PK			1.02 V	273	113.57	5.33
2	*5825.00	110.1 AV			1.02 V	273	104.77	5.33
3	11650.00	60.8 PK	74.0	-13.2	1.34 V	217	49.58	11.22
4	11650.00	50.3 AV	54.0	-3.7	1.34 V	217	39.08	11.22

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.

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	113.1 PK			1.32 H	243	107.84	5.26
2	*5755.00	105.3 AV			1.32 H	243	100.04	5.26
3	11510.00	58.9 PK	74.0	-15.1	1.14 H	325	47.52	11.38
4	11510.00	47.9 AV	54.0	-6.1	1.14 H	325	36.52	11.38
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	113.2 PK			1.03 V	285	107.94	5.26
2	*5755.00	105.2 AV			1.03 V	285	99.94	5.26
3	11510.00	56.3 PK	74.0	-17.7	1.35 V	221	44.92	11.38
4	11510.00	45.7 AV	54.0	-8.3	1.35 V	221	34.32	11.38

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	113.2 PK			1.26 H	257	107.91	5.29
2	*5795.00	105.2 AV			1.26 H	257	99.91	5.29
3	11590.00	59.1 PK	74.0	-14.9	1.09 H	336	47.80	11.30
4	11590.00	47.9 AV	54.0	-6.1	1.09 H	336	36.60	11.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	113.5 PK			1.09 V	277	108.21	5.29
2	*5795.00	105.5 AV			1.09 V	277	100.21	5.29
3	11590.00	57.2 PK	74.0	-16.8	1.35 V	224	45.90	11.30
4	11590.00	46.1 AV	54.0	-7.9	1.35 V	224	34.80	11.30

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5775.00	109.7 PK			1.58 H	244	104.44	5.26
2	*5775.00	101.2 AV			1.58 H	244	95.94	5.26
3	11550.00	58.7 PK	74.0	-15.3	1.10 H	334	47.35	11.35
4	11550.00	47.6 AV	54.0	-6.4	1.10 H	334	36.25	11.35
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	*5775.00	111.0 PK			1.07 V	276	105.74	5.26
2	*5775.00	101.6 AV			1.07 V	276	96.34	5.26
3	11550.00	56.2 PK	74.0	-17.8	1.34 V	223	44.85	11.35
4	11550.00	44.9 AV	54.0	-9.1	1.34 V	223	33.55	11.35

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.

4.2.9 TEST RESULTS (MODE 5)

ABOVE 1GHz DATA

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	119.8 PK			1.60 H	274	114.53	5.27
2	*5745.00	110.3 AV			1.60 H	274	105.03	5.27
3	7660.00	56.7 PK	74.0	-17.3	1.19 H	86	47.10	9.60
4	7660.00	41.7 AV	54.0	-12.3	1.19 H	86	32.10	9.60
5	11490.00	58.1 PK	74.0	-15.9	1.57 H	340	46.74	11.36
6	11490.00	45.8 AV	54.0	-8.2	1.57 H	340	34.44	11.36
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	*5745.00	116.2 PK			1.80 V	200	110.93	5.27
2	*5745.00	105.3 AV			1.80 V	200	100.03	5.27
3	7660.00	55.9 PK	74.0	-18.1	1.02 V	208	46.30	9.60
4	7660.00	45.2 AV	54.0	-8.8	1.02 V	208	35.60	9.60
5	11490.00	65.1 PK	74.0	-8.9	1.38 V	216	53.74	11.36
6	11490.00	51.8 AV	54.0	-2.2	1.38 V	216	40.44	11.36

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5785.00	119.7 PK			1.58 H	275	114.42	5.28
2	*5785.00	109.5 AV			1.58 H	275	104.22	5.28
3	11570.00	58.0 PK	74.0	-16.0	1.58 H	353	46.68	11.32
4	11570.00	46.0 AV	54.0	-8.0	1.58 H	353	34.68	11.32
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5785.00	116.1 PK			1.82 V	193	110.82	5.28
2	*5785.00	104.5 AV			1.82 V	193	99.22	5.28
3	11570.00	64.7 PK	74.0	-9.3	1.41 V	219	53.38	11.32
4	11570.00	51.4 AV	54.0	-2.6	1.41 V	219	40.08	11.32

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5825.00	119.2 PK			1.57 H	264	113.87	5.33
2	*5825.00	109.2 AV			1.57 H	264	103.87	5.33
3	11650.00	58.6 PK	74.0	-15.4	1.63 H	351	47.38	11.22
4	11650.00	46.4 AV	54.0	-7.6	1.63 H	351	35.18	11.22
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5825.00	115.6 PK			1.79 V	188	110.27	5.33
2	*5825.00	104.2 AV			1.79 V	188	98.87	5.33
3	11650.00	65.7 PK	74.0	-8.3	1.42 V	226	54.48	11.22
4	**11650.00**	**52.2 AV**	**54.0**	**-1.8**	**1.42 V**	**226**	**40.98**	**11.22**

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.

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	115.2 PK			1.58 H	271	109.94	5.26
2	*5755.00	104.3 AV			1.58 H	271	99.04	5.26
3	11510.00	58.1 PK	74.0	-15.9	1.67 H	343	46.72	11.38
4	11510.00	46.0 AV	54.0	-8.0	1.67 H	343	34.62	11.38
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	111.6 PK			1.79 V	204	106.34	5.26
2	*5755.00	99.3 AV			1.79 V	204	94.04	5.26
3	11510.00	65.3 PK	74.0	-8.7	1.44 V	223	53.92	11.38
4	11510.00	52.1 AV	54.0	-1.9	1.44 V	223	40.72	11.38

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	115.6 PK			1.58 H	275	110.31	5.29
2	*5795.00	104.7 AV			1.58 H	275	99.41	5.29
3	11590.00	58.5 PK	74.0	-15.5	1.65 H	342	47.20	11.30
4	11590.00	46.5 AV	54.0	-7.5	1.65 H	342	35.20	11.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	112.0 PK			1.78 V	210	106.71	5.29
2	*5795.00	99.7 AV			1.78 V	210	94.41	5.29
3	11590.00	64.9 PK	74.0	-9.1	1.37 V	212	53.60	11.30
4	11590.00	51.8 AV	54.0	-2.2	1.37 V	212	40.50	11.30

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5775.00	113.2 PK			1.57 H	273	107.94	5.26
2	*5775.00	102.4 AV			1.57 H	273	97.14	5.26
3	11550.00	58.4 PK	74.0	-15.6	1.71 H	332	47.05	11.35
4	11550.00	46.6 AV	54.0	-7.4	1.71 H	332	35.25	11.35
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	*5775.00	109.6 PK			1.75 V	220	104.34	5.26
2	*5775.00	97.4 AV			1.75 V	220	92.14	5.26
3	11550.00	64.7 PK	74.0	-9.3	1.39 V	231	53.35	11.35
4	11550.00	51.6 AV	54.0	-2.4	1.39 V	231	40.25	11.35

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.

4.2.10 TEST RESULTS (MODE 10)

BELOW 1GHz WORST-CASE DATA

802.11ac (VHT20)

CHANNEL	TX Channel 157	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	30.00	34.7 QP	40.0	-5.3	1.84 H	211	49.01	-14.29
2	85.44	35.8 QP	40.0	-4.2	1.50 H	211	54.21	-18.38
3	118.03	37.2 QP	43.5	-6.3	1.00 H	302	51.88	-14.70
4	528.00	40.3 QP	46.0	-5.7	1.22 H	241	46.70	-6.38
5	593.43	40.0 QP	46.0	-6.0	1.00 H	215	44.79	-4.77
6	710.26	41.4 QP	46.0	-4.6	1.00 H	206	44.40	-3.00
7	741.76	42.5 QP	46.0	-3.5	1.66 H	257	44.40	-1.92
8	936.27	41.6 QP	46.0	-4.4	1.00 H	215	40.25	1.35
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	30.40	35.0 QP	40.0	-5.0	1.00 V	227	49.33	-14.30
2	64.49	31.2 QP	40.0	-8.8	1.65 V	221	45.26	-14.08
3	115.82	38.4 QP	43.5	-5.1	1.39 V	228	53.45	-15.09
4	299.56	41.4 QP	46.0	-4.6	1.00 V	205	53.09	-11.73
5	623.98	42.6 QP	46.0	-3.4	1.41 V	221	46.73	-4.09
6	741.77	42.9 QP	46.0	-3.1	1.00 V	203	44.79	-1.92

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

TX_High

ABOVE 1GHz DATA

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	117.9 PK			1.59 H	239	112.63	5.27
2	*5745.00	108.6 AV			1.59 H	239	103.33	5.27
3	7660.00	54.7 PK	74.0	-19.3	1.47 H	22	45.10	9.60
4	7660.00	42.5 AV	54.0	-11.5	1.47 H	22	32.90	9.60
5	11490.00	57.4 PK	74.0	-16.6	1.23 H	360	46.04	11.36
6	11490.00	46.2 AV	54.0	-7.8	1.23 H	360	34.84	11.36
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	*5745.00	116.4 PK			1.02 V	130	111.13	5.27
2	*5745.00	106.5 AV			1.02 V	130	101.23	5.27
3	7660.00	59.0 PK	74.0	-15.0	1.73 V	28	49.40	9.60
4	7660.00	50.4 AV	54.0	-3.6	1.73 V	28	40.80	9.60
5	11490.00	64.2 PK	74.0	-9.8	1.54 V	166	52.84	11.36
6	11490.00	51.7 AV	54.0	-2.3	1.54 V	166	40.34	11.36

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	119.4 PK			1.58 H	263	114.12	5.28
2	*5785.00	109.5 AV			1.58 H	263	104.22	5.28
3	7713.00	51.8 PK	74.0	-22.2	1.44 H	20	42.10	9.70
4	7713.00	40.6 AV	54.0	-13.4	1.44 H	20	30.90	9.70
5	11570.00	57.7 PK	74.0	-16.3	1.18 H	360	46.38	11.32
6	11570.00	46.2 AV	54.0	-7.8	1.18 H	360	34.88	11.32
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	117.9 PK			1.00 V	135	112.62	5.28
2	*5785.00	107.4 AV			1.00 V	135	102.12	5.28
3	7713.00	56.1 PK	74.0	-17.9	1.74 V	27	46.40	9.70
4	7713.00	48.5 AV	54.0	-5.5	1.74 V	27	38.80	9.70
5	11570.00	61.3 PK	74.0	-12.7	1.47 V	164	49.98	11.32
6	11570.00	49.5 AV	54.0	-4.5	1.47 V	164	38.18	11.32

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	118.1 PK			1.56 H	267	112.77	5.33
2	*5825.00	109.3 AV			1.56 H	267	103.97	5.33
3	#7767.00	52.7 PK	98.1	-45.4	1.42 H	20	43.02	9.68
4	#7767.00	39.5 AV	89.3	-49.8	1.42 H	20	29.82	9.68
5	11650.00	57.9 PK	74.0	-16.1	1.13 H	360	46.68	11.22
6	11650.00	46.1 AV	54.0	-7.9	1.13 H	360	34.88	11.22
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	116.4 PK			1.03 V	141	111.07	5.33
2	*5825.00	107.2 AV			1.03 V	141	101.87	5.33
3	#7767.00	55.2 PK	96.4	-41.2	1.82 V	29	45.52	9.68
4	#7767.00	47.4 AV	87.2	-39.8	1.82 V	29	37.72	9.68
5	11650.00	63.9 PK	74.0	-10.1	1.66 V	247	52.68	11.22
6	11650.00	52.1 AV	54.0	-1.9	1.66 V	247	40.88	11.22

REMARKS:

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

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5755.00	114.2 PK			1.63 H	268	108.94	5.26
2	*5755.00	104.7 AV			1.63 H	268	99.44	5.26
3	11510.00	58.1 PK	74.0	-15.9	1.08 H	360	46.72	11.38
4	11510.00	46.4 AV	54.0	-7.6	1.08 H	360	35.02	11.38
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5755.00	112.7 PK			1.00 V	143	107.44	5.26
2	*5755.00	102.6 AV			1.00 V	143	97.34	5.26
3	11510.00	58.8 PK	74.0	-15.2	1.80 V	248	47.42	11.38
4	11510.00	47.5 AV	54.0	-6.5	1.80 V	248	36.12	11.38

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	113.5 PK			1.32 H	270	108.21	5.29
2	*5795.00	104.2 AV			1.32 H	270	98.91	5.29
3	11590.00	57.7 PK	74.0	-16.3	1.04 H	360	46.40	11.30
4	11590.00	45.9 AV	54.0	-8.1	1.04 H	360	34.60	11.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	112.0 PK			1.00 V	133	106.71	5.29
2	*5795.00	102.0 AV			1.00 V	133	96.71	5.29
3	11590.00	59.7 PK	74.0	-14.3	1.34 V	218	48.40	11.30
4	11590.00	47.9 AV	54.0	-6.1	1.34 V	218	36.60	11.30

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5775.00	111.1 PK			1.60 H	270	105.84	5.26
2	*5775.00	101.8 AV			1.60 H	270	96.54	5.26
3	11550.00	57.9 PK	74.0	-16.1	1.04 H	360	46.55	11.35
4	11550.00	45.9 AV	54.0	-8.1	1.04 H	360	34.55	11.35
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	*5775.00	109.6 PK			1.00 V	127	104.34	5.26
2	*5775.00	99.6 AV			1.00 V	127	94.34	5.26
3	11550.00	58.3 PK	74.0	-15.7	1.47 V	218	46.95	11.35
4	11550.00	45.5 AV	54.0	-8.5	1.47 V	218	34.15	11.35

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.

4.2.11 TEST RESULTS (MODE 11)

ABOVE 1GHz DATA

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5745.00	118.6 PK			1.29 H	268	113.33	5.27
2	*5745.00	109.7 AV			1.29 H	268	104.43	5.27
3	11490.00	58.6 PK	74.0	-15.4	1.56 H	334	47.24	11.36
4	11490.00	46.8 AV	54.0	-7.2	1.56 H	334	35.44	11.36
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	*5745.00	114.0 PK			1.02 V	162	108.73	5.27
2	*5745.00	106.4 AV			1.02 V	162	101.13	5.27
3	11490.00	61.7 PK	74.0	-12.3	1.34 V	162	50.34	11.36
4	11490.00	50.5 AV	54.0	-3.5	1.34 V	162	39.14	11.36

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5785.00	119.3 PK			1.31 H	266	114.02	5.28
2	*5785.00	110.1 AV			1.31 H	266	104.82	5.28
3	11570.00	58.8 PK	74.0	-15.2	1.56 H	339	47.48	11.32
4	11570.00	47.1 AV	54.0	-6.9	1.56 H	339	35.78	11.32
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5785.00	114.7 PK			1.01 V	151	109.42	5.28
2	*5785.00	106.8 AV			1.01 V	151	101.52	5.28
3	11570.00	61.4 PK	74.0	-12.6	1.39 V	152	50.08	11.32
4	11570.00	50.2 AV	54.0	-3.8	1.39 V	152	38.88	11.32

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 limit value is defined as per 15.247.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	118.0 PK			1.34 H	258	112.67	5.33
2	*5825.00	109.3 AV			1.34 H	258	103.97	5.33
3	11650.00	59.1 PK	74.0	-14.9	1.55 H	338	47.88	11.22
4	11650.00	47.4 AV	54.0	-6.6	1.55 H	338	36.18	11.22
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	113.4 PK			1.03 V	155	108.07	5.33
2	*5825.00	106.0 AV			1.03 V	155	100.67	5.33
3	11650.00	61.4 PK	74.0	-12.6	1.31 V	158	50.18	11.22
4	11650.00	50.3 AV	54.0	-3.7	1.31 V	158	39.08	11.22

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.

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5755.00	114.0 PK			1.40 H	270	108.74	5.26
2	*5755.00	104.7 AV			1.40 H	270	99.44	5.26
3	11510.00	59.3 PK	74.0	-14.7	1.54 H	343	47.92	11.38
4	11510.00	47.8 AV	54.0	-6.2	1.54 H	343	36.42	11.38
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*5755.00	109.4 PK			1.03 V	141	104.14	5.26
2	*5755.00	101.4 AV			1.03 V	141	96.14	5.26
3	11510.00	58.5 PK	74.0	-15.5	1.36 V	155	47.12	11.38
4	11510.00	47.4 AV	54.0	-6.6	1.36 V	155	36.02	11.38

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	113.8 PK			1.45 H	261	108.51	5.29
2	*5795.00	104.5 AV			1.45 H	261	99.21	5.29
3	11590.00	58.6 PK	74.0	-15.4	1.57 H	339	47.30	11.30
4	11590.00	47.1 AV	54.0	-6.9	1.57 H	339	35.80	11.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	109.2 PK			1.04 V	130	103.91	5.29
2	*5795.00	101.2 AV			1.04 V	130	95.91	5.29
3	11590.00	58.8 PK	74.0	-15.2	1.34 V	157	47.50	11.30
4	11590.00	47.5 AV	54.0	-6.5	1.34 V	157	36.20	11.30

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5775.00	111.4 PK			1.41 H	249	106.14	5.26
2	*5775.00	102.1 AV			1.41 H	249	96.84	5.26
3	11550.00	58.1 PK	74.0	-15.9	1.58 H	335	46.75	11.35
4	11550.00	46.9 AV	54.0	-7.1	1.58 H	335	35.55	11.35
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	*5775.00	106.8 PK			1.09 V	99	101.54	5.26
2	*5775.00	98.8 AV			1.09 V	99	93.54	5.26
3	11550.00	58.1 PK	74.0	-15.9	1.38 V	163	46.75	11.35
4	11550.00	45.4 AV	54.0	-8.6	1.38 V	163	34.05	11.35

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.

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2014

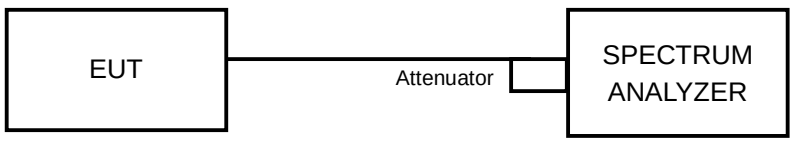
4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

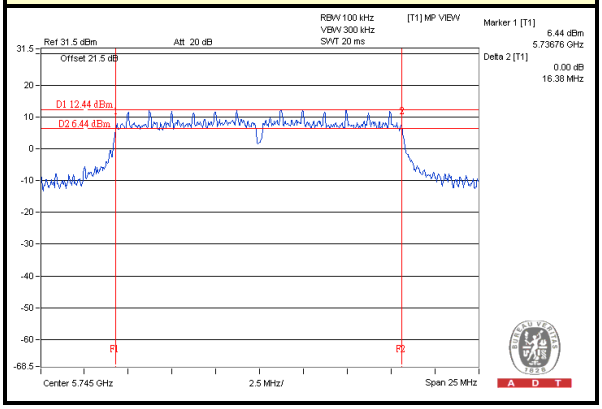
4.3.7 TEST RESULTS (MODE 1)

1Tx

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.38	0.5	PASS
157	5785	16.39	0.5	PASS
165	5825	16.42	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

802.11a : CH149



4.3.8 TEST RESULTS (MODE 2~6)

802.11ac (VHT20)

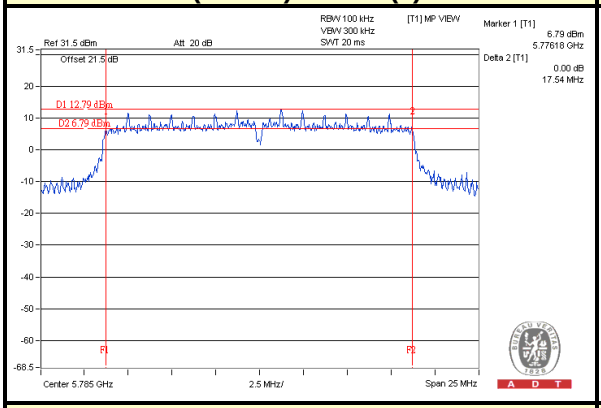
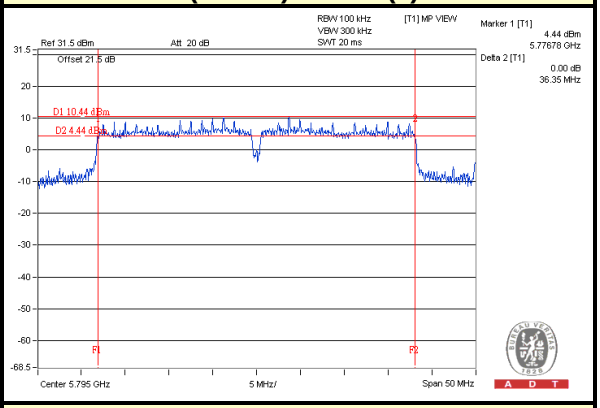
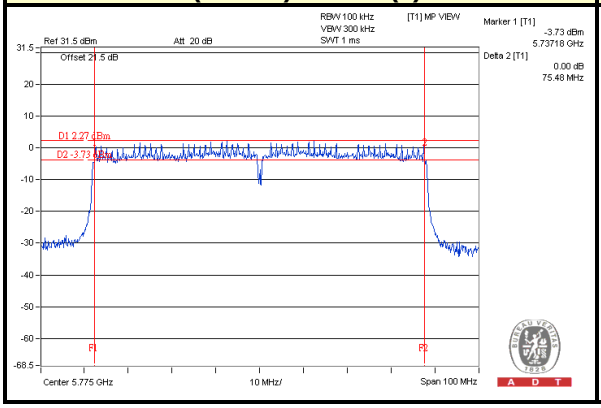
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 1	CHAIN 2		
149	5745	17.60	17.60	0.5	PASS
157	5785	17.64	17.54	0.5	PASS
165	5825	17.62	17.62	0.5	PASS

802.11ac (VHT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 1	CHAIN 2		
151	5755	36.41	36.39	0.5	PASS
159	5795	36.35	36.41	0.5	PASS

802.11ac (VHT80)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 1	CHAIN 2		
155	5775	75.94	75.48	0.5	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11ac (VHT20) / Chain(2) : CH157	**802.11ac (VHT40) / Chain(1) : CH159**
	
802.11ac (VHT80) / Chain(2) : CH155	
	

4.3.9 TEST RESULTS (MODE 7~12)

802.11ac (VHT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
149	5745	17.64	17.60	17.60	0.5	PASS
157	5785	17.64	17.64	17.54	0.5	PASS
165	5825	17.65	17.62	17.62	0.5	PASS

802.11ac (VHT40)

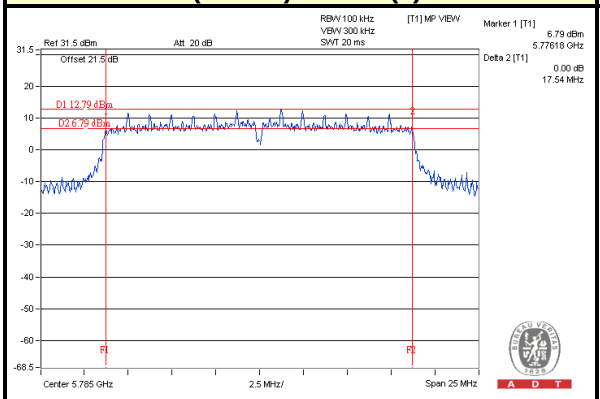
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
151	5755	36.43	36.41	36.39	0.5	PASS
159	5795	36.41	36.35	36.41	0.5	PASS

802.11ac (VHT80)

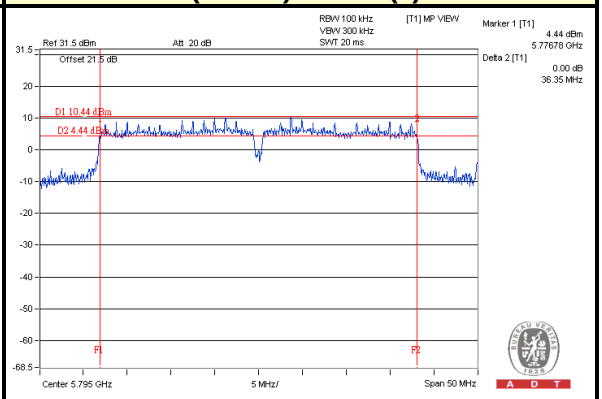
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)			MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2		
155	5775	75.77	75.94	75.48	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

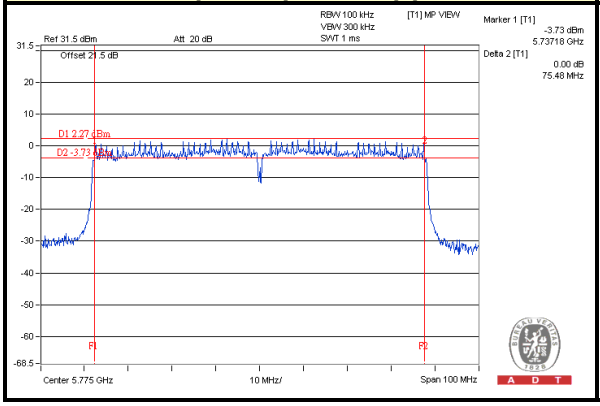
802.11ac (VHT20) / Chain(2) : CH157



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



802.11ac (VHT80) / Chain(2) : CH155



4.4 CONDUCTED OUTPUT POWER MEASUREMENT

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz band: 1 Watt (30dBm)

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

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

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 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 ≥ 5.

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

4.4.2 INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2014

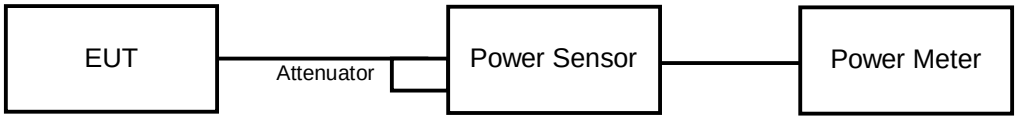
4.4.3 TEST PROCEDURES

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the average power level.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

4.4.7 TEST RESULTS (MODE 1)

802.11a

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	LIMIT (dBm)	PASS/FAIL
149	5745	231.206	23.64	30	PASS
157	5785	292.415	24.66	30	PASS
165	5825	269.153	24.30	30	PASS

4.4.8 TEST RESULTS (MODE 2)

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 1	CHAIN 2				
149	5745	21.43	21.04	266.052	24.25	28.88	PASS
157	5785	22.95	22.18	362.438	25.59	28.88	PASS
165	5825	23.02	22.01	359.302	25.55	28.88	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.12dBi > 6dBi , so the power limit shall be reduced to 30-(7.12-6) = 28.88dBm.

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 1	CHAIN 2				
151	5755	20.53	20.31	220.379	23.43	28.88	PASS
159	5795	22.55	21.50	321.141	25.07	28.88	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.12dBi > 6dBi , so the power limit shall be reduced to 30-(7.12-6) = 28.88dBm.

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 1	CHAIN 2				
155	5775	19.08	19.01	160.526	22.06	28.88	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.12dBi > 6dBi , so the power limit shall be reduced to 30-(7.12-6) = 28.88dBm.

4.4.9 TEST RESULTS (MODE 3~6)

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 1	CHAIN 2				
149	5745	21.43	21.04	266.052	24.25	30	PASS
157	5785	22.95	22.18	362.438	25.59	30	PASS
165	5825	23.02	22.01	359.302	25.55	30	PASS

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 1	CHAIN 2				
151	5755	20.53	20.31	220.379	23.43	30	PASS
159	5795	22.55	21.50	321.141	25.07	30	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 1	CHAIN 2				
155	5775	19.08	19.01	160.526	22.06	30	PASS

4.4.10 TEST RESULTS (MODE 7)

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	22.86	21.43	21.04	459.249	26.62	27.80	PASS
157	5785	23.46	22.95	22.18	584.258	27.67	27.80	PASS
165	5825	23.47	23.02	22.01	581.633	27.65	27.80	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.2dBi > 6dBi , so the power limit shall be reduced to 30-(8.2-6) = 27.8dBm.

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
151	5755	21.51	20.53	20.31	361.958	25.59	27.80	PASS
159	5795	23.03	22.55	21.50	522.05	27.18	27.80	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.2dBi > 6dBi , so the power limit shall be reduced to 30-(8.2-6) = 27.8dBm.

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
155	5775	19.21	19.08	19.01	243.894	23.87	27.80	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.2dBi > 6dBi , so the power limit shall be reduced to 30-(8.2-6) = 27.8dBm.

4.4.11 TEST RESULTS (MODE 8)

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	23.43	22.98	21.04	545.959	27.37	29.48	PASS
157	5785	23.46	22.95	22.18	584.258	27.67	29.48	PASS
165	5825	23.47	23.02	22.01	581.633	27.65	29.48	PASS

NOTE: Directional gain = maximum gain of antennas + 10 log(3/2) = 6.52dBi > 6dBi , so the power limit shall be reduced to 30-(6.52-6) = 29.48dBm.

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
151	5755	23.36	22.45	20.31	499.961	26.99	29.48	PASS
159	5795	23.03	22.55	21.50	522.05	27.18	29.48	PASS

NOTE: Directional gain = maximum gain of antennas + 10 log(3/2) = 6.52dBi > 6dBi , so the power limit shall be reduced to 30-(6.52-6) = 29.48dBm.

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
155	5775	23.87	22.77	19.01	512.631	27.10	29.48	PASS

NOTE: Directional gain = maximum gain of antennas + 10 log(3/2) = 6.52dBi > 6dBi , so the power limit shall be reduced to 30-(6.52-6) = 29.48dBm.

4.4.12 TEST RESULTS (MODE 9, 11~12)

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	23.43	22.98	21.04	545.959	27.37	30	PASS
157	5785	23.46	22.95	22.18	584.258	27.67	30	PASS
165	5825	23.47	23.02	22.01	581.633	27.65	30	PASS

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
151	5755	23.36	22.45	20.31	499.961	26.99	30	PASS
159	5795	23.03	22.55	21.50	522.05	27.18	30	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
155	5775	23.87	22.77	19.01	512.631	27.10	30	PASS

4.4.13 TEST RESULTS (MODE 10)

802.11ac (VHT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
149	5745	22.86	21.43	21.04	459.249	26.62	30	PASS
157	5785	23.46	22.95	22.18	584.258	27.67	30	PASS
165	5825	23.47	23.02	22.01	581.633	27.65	30	PASS

802.11ac (VHT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
151	5755	21.51	20.53	20.31	361.958	25.59	30	PASS
159	5795	23.03	22.55	21.50	522.05	27.18	30	PASS

802.11ac (VHT80)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)			TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2				
155	5775	19.21	19.08	19.01	243.894	23.87	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2014

4.5.3 TEST PROCEDURE

For 802.11a, 802.11ac (VHT20) & 802.11ac (VHT40):

1. Set the RBW = 10 kHz, VBW = 30 kHz, Detector = power averaging (RMS).
2. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW
3. Sweep time = auto couple,
4. Employ trace averaging (RMS) mode over a minimum of 100 traces.
5. Use the peak marker function to determine the maximum amplitude level.

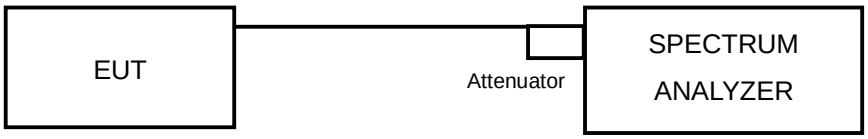
For 802.11ac (VHT80):

1. Set the RBW = 10 kHz, VBW = 30 kHz, Detector = power averaging (RMS).
2. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW
3. Sweep time = auto couple,
4. Manually set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (maximum data rate per stream).
5. Perform the measurement over a single sweep.
6. Use the peak marker function to determine the maximum amplitude level.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

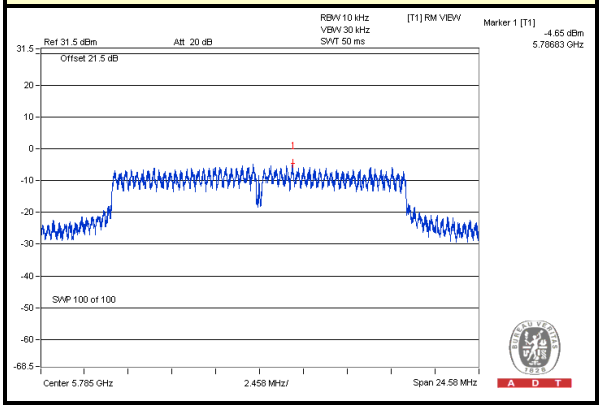
4.5.7 TEST RESULTS (MODE 1)

802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	LIMIT (dBm)	PASS /FAIL
149	5745	-5.95	8	PASS
157	5785	-4.65	8	PASS
165	5825	-5.34	8	PASS

SPECTRUM PLOT OF WORST VALUE

802.11a : CH157



4.5.8 TEST RESULTS (MODE 2, 4)

802.11ac (VHT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
1	149	5745	-8.81	3.01	-5.80	6.88	PASS
	157	5785	-7.34	3.01	-4.33	6.88	PASS
	165	5825	-7.40	3.01	-4.39	6.88	PASS
2	149	5745	-9.05	3.01	-6.04	6.88	PASS
	157	5785	-7.47	3.01	-4.46	6.88	PASS
	165	5825	-8.62	3.01	-5.61	6.88	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.12dBi > 6dBi , so the power density limit shall be reduced to 8-(7.12-6) = 6.88dBm.

802.11ac (VHT40)

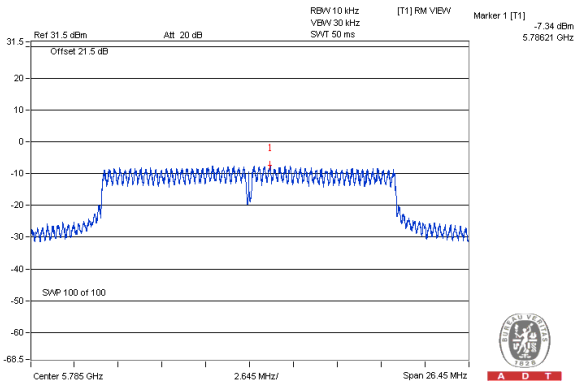
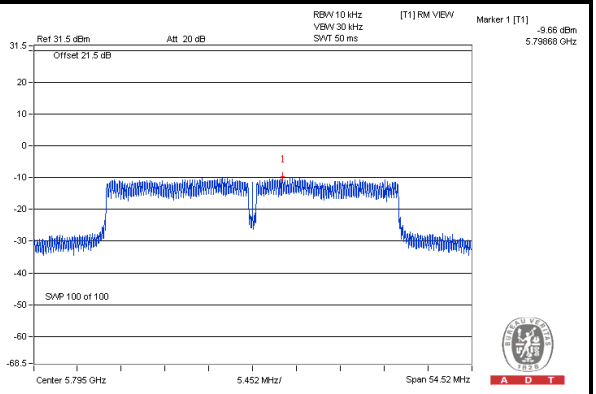
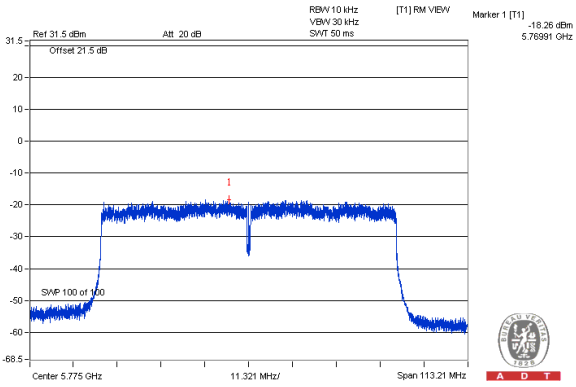
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
1	151	5755	-12.50	3.01	-9.49	6.88	PASS
	159	5795	-9.66	3.01	-6.65	6.88	PASS
2	151	5755	-13.02	3.01	-10.01	6.88	PASS
	159	5795	-11.05	3.01	-8.04	6.88	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.12dBi > 6dBi , so the power density limit shall be reduced to 8-(7.12-6) = 6.88dBm.

802.11ac (VHT80)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
1	155	5775	-18.78	3.01	-15.59	6.88	PASS
2	155	5775	-18.26	3.01	-15.07	6.88	PASS

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 7.12dBi > 6dBi , so the power density limit shall be reduced to 8-(7.12-6) = 6.88dBm.

SPECTRUM PLOT OF WORST VALUE	
802.11ac (VHT20) / Chain(1) : CH157	**802.11ac (VHT40) / Chain(1) : CH159**
	
802.11ac (VHT80) / Chain(2) : CH155	
	

4.5.9 TEST RESULTS (MODE 3, 5, 6)

802.11ac (VHT20)

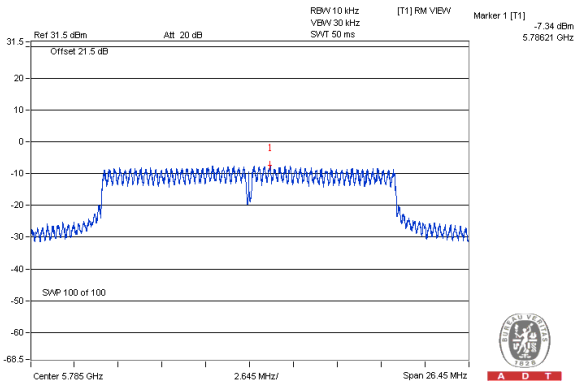
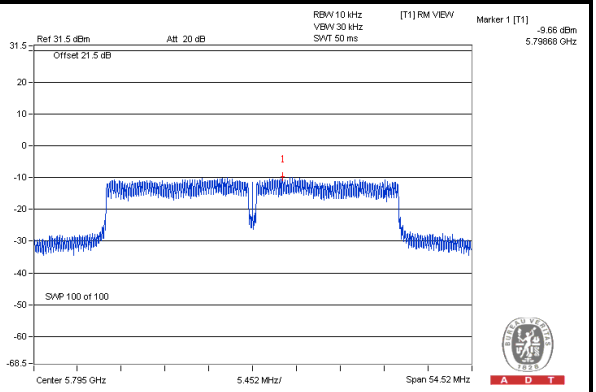
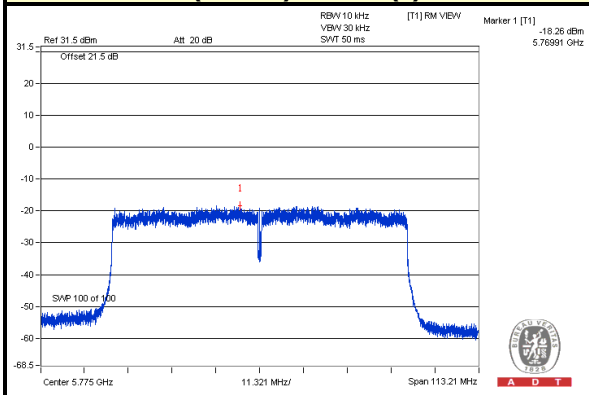
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
1	149	5745	-8.81	3.01	-5.80	8	PASS
	157	5785	-7.34	3.01	-4.33	8	PASS
	165	5825	-7.40	3.01	-4.39	8	PASS
2	149	5745	-9.05	3.01	-6.04	8	PASS
	157	5785	-7.47	3.01	-4.46	8	PASS
	165	5825	-8.62	3.01	-5.61	8	PASS

802.11ac (VHT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
1	151	5755	-12.50	3.01	-9.49	8	PASS
	159	5795	-9.66	3.01	-6.65	8	PASS
2	151	5755	-13.02	3.01	-10.01	8	PASS
	159	5795	-11.05	3.01	-8.04	8	PASS

802.11ac (VHT80)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
1	155	5775	-18.78	3.01	-15.59	8	PASS
2	155	5775	-18.26	3.01	-15.07	8	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11ac (VHT20) / Chain(1) : CH157	**802.11ac (VHT40) / Chain(1) : CH159**
	
802.11ac (VHT80) / Chain(2) : CH155	
	

4.5.10 TEST RESULTS (MODE 7, 10)

802.11ac (VHT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	149	5745	-10.59	4.77	-5.82	5.8	PASS
	157	5785	-7.35	4.77	-2.58	5.8	PASS
	165	5825	-8.55	4.77	-3.78	5.8	PASS
1	149	5745	-8.81	4.77	-4.04	5.8	PASS
	157	5785	-7.34	4.77	-2.57	5.8	PASS
	165	5825	-7.40	4.77	-2.63	5.8	PASS
2	149	5745	-9.05	4.77	-4.28	5.8	PASS
	157	5785	-7.47	4.77	-2.70	5.8	PASS
	165	5825	-8.62	4.77	-3.85	5.8	PASS

NOTE: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^2 / 3] = 8.2dBi > 6dBi , so the power density limit shall be reduced to 8-(8.2-6) =5.8dBm.

802.11ac (VHT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	151	5755	-13.60	4.77	-8.83	5.8	PASS
	159	5795	-10.21	4.77	-5.44	5.8	PASS
1	151	5755	-12.50	4.77	-7.73	5.8	PASS
	159	5795	-9.66	4.77	-4.89	5.8	PASS
2	151	5755	-13.02	4.77	-8.25	5.8	PASS
	159	5795	-11.05	4.77	-6.28	5.8	PASS

NOTE: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^2 / 3] = 8.2dBi > 6dBi , so the power density limit shall be reduced to 8-(8.2-6) =5.8dBm.

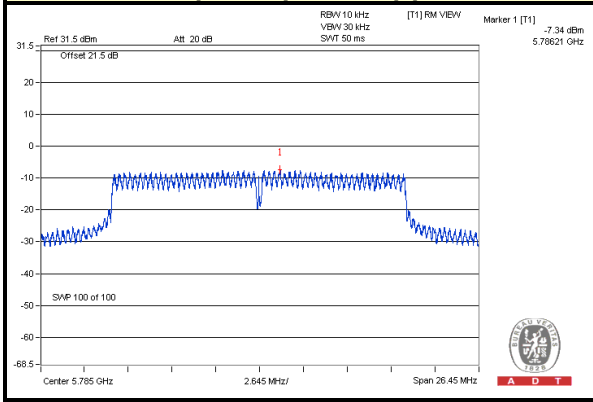
802.11ac (VHT80)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	155	5775	-18.31	4.77	-13.36	5.8	PASS
1	155	5775	-18.78	4.77	-13.83	5.8	PASS
2	155	5775	-18.26	4.77	-13.31	5.8	PASS

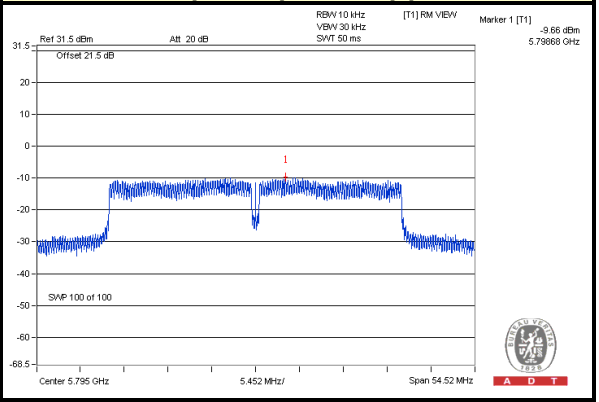
NOTE: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^2 / 3] = 8.2dBi > 6dBi , so the power density limit shall be reduced to 8-(8.2-6) =5.8dBm.

SPECTRUM PLOT OF WORST VALUE

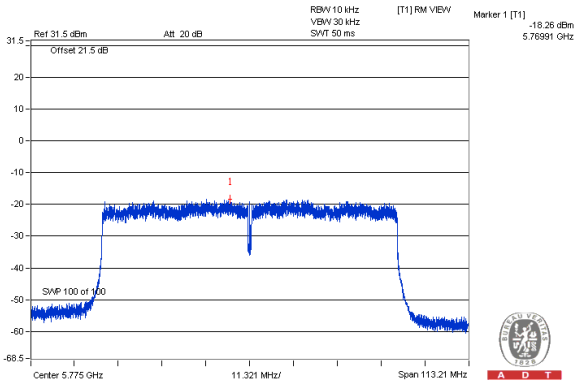
802.11ac (VHT20) / Chain(1) : CH157



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



802.11ac (VHT80) / Chain(2) : CH155



4.5.11 TEST RESULTS (MODE 8)

802.11ac (VHT20)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	149	5745	-10.59	4.77	-5.82	7.48	PASS
	157	5785	-7.35	4.77	-2.58	7.48	PASS
	165	5825	-8.55	4.77	-3.78	7.48	PASS
1	149	5745	-8.81	4.77	-4.04	7.48	PASS
	157	5785	-7.34	4.77	-2.57	7.48	PASS
	165	5825	-7.40	4.77	-2.63	7.48	PASS
2	149	5745	-9.05	4.77	-4.28	7.48	PASS
	157	5785	-7.47	4.77	-2.70	7.48	PASS
	165	5825	-8.62	4.77	-3.85	7.48	PASS

NOTE: Directional gain = maximum gain of antennas + 10 log(3/2) = 6.52dBi > 6dBi , so the power density limit shall be reduced to 8-(6.52-6) = 7.48dBm.

802.11ac (VHT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	151	5755	-13.60	4.77	-8.83	7.48	PASS
	159	5795	-10.21	4.77	-5.44	7.48	PASS
1	151	5755	-12.50	4.77	-7.73	7.48	PASS
	159	5795	-9.66	4.77	-4.89	7.48	PASS
2	151	5755	-13.02	4.77	-8.25	7.48	PASS
	159	5795	-11.05	4.77	-6.28	7.48	PASS

NOTE: Directional gain = maximum gain of antennas + 10 log(3/2) = 6.52dBi > 6dBi , so the power density limit shall be reduced to 8-(6.52-6) = 7.48dBm.

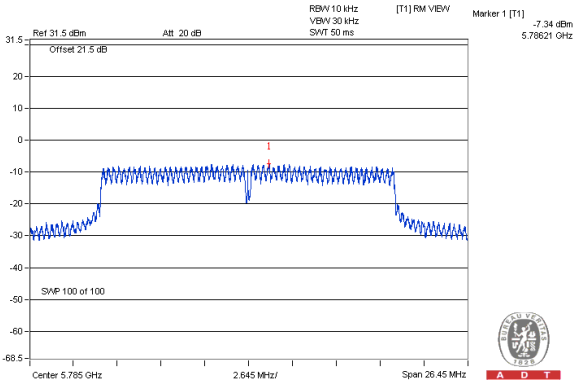
802.11ac (VHT80)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	155	5775	-18.31	4.77	-13.36	7.48	PASS
1	155	5775	-18.78	4.77	-13.83	7.48	PASS
2	155	5775	-18.26	4.77	-13.31	7.48	PASS

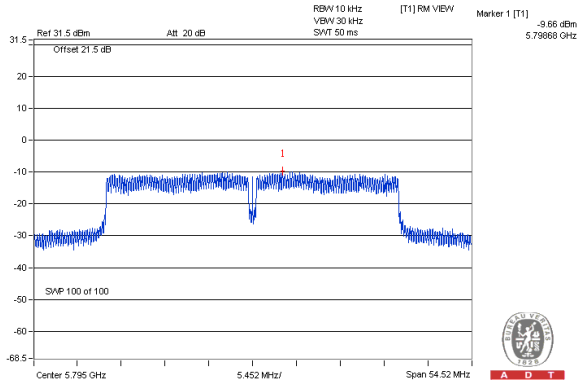
NOTE: Directional gain = maximum gain of antennas + 10 log(3/2) = 6.52dBi > 6dBi , so the power density limit shall be reduced to 8-(6.52-6) = 7.48dBm.

SPECTRUM PLOT OF WORST VALUE

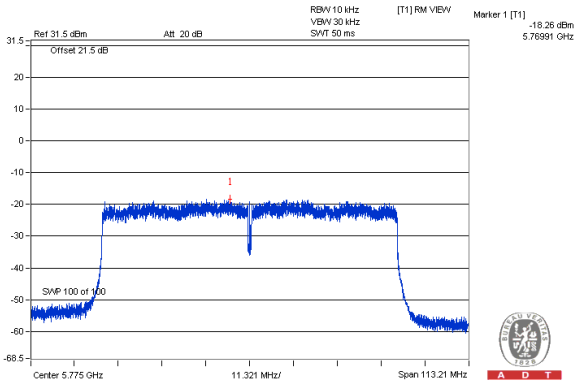
802.11ac (VHT20) / Chain(1) : CH157



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



802.11ac (VHT80) / Chain(2) : CH155



4.5.12 TEST RESULTS (MODE 9, 11, 12)

802.11ac (VHT20)

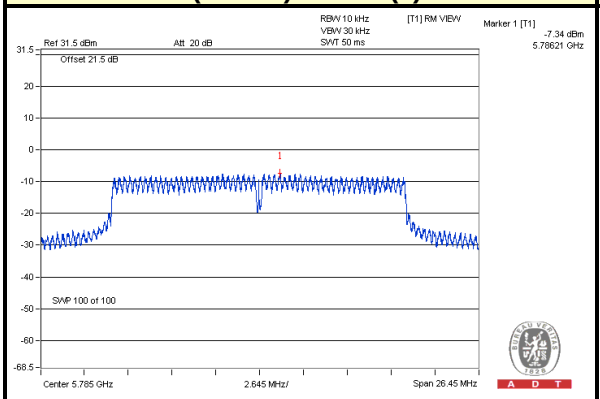
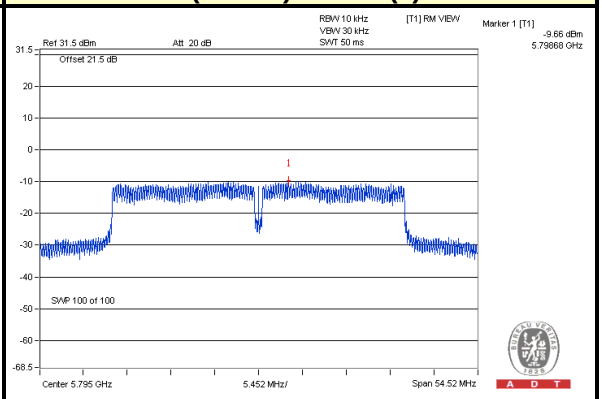
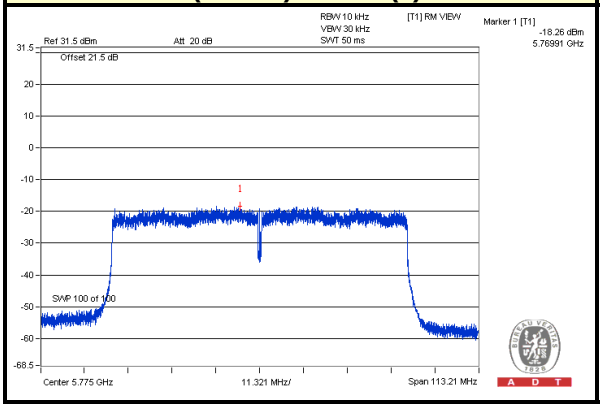
TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	149	5745	-10.59	4.77	-5.82	8	PASS
	157	5785	-7.35	4.77	-2.58	8	PASS
	165	5825	-8.55	4.77	-3.78	8	PASS
1	149	5745	-8.81	4.77	-4.04	8	PASS
	157	5785	-7.34	4.77	-2.57	8	PASS
	165	5825	-7.40	4.77	-2.63	8	PASS
2	149	5745	-9.05	4.77	-4.28	8	PASS
	157	5785	-7.47	4.77	-2.70	8	PASS
	165	5825	-8.62	4.77	-3.85	8	PASS

802.11ac (VHT40)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	151	5755	-13.60	4.77	-8.83	8	PASS
	159	5795	-10.21	4.77	-5.44	8	PASS
1	151	5755	-12.50	4.77	-7.73	8	PASS
	159	5795	-9.66	4.77	-4.89	8	PASS
2	151	5755	-13.02	4.77	-8.25	8	PASS
	159	5795	-11.05	4.77	-6.28	8	PASS

802.11ac (VHT80)

TX CHAIN	CHANNEL	FREQUENCY (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	PASS /FAIL
0	155	5775	-18.31	4.77	-13.36	8	PASS
1	155	5775	-18.78	4.77	-13.83	8	PASS
2	155	5775	-18.26	4.77	-13.31	8	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11ac (VHT20) / Chain(1) : CH157	802.11ac (VHT40) / Chain(1) : CH159
	
802.11ac (VHT80) / Chain(2) : CH155	
	

4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 13, 2014

4.6.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

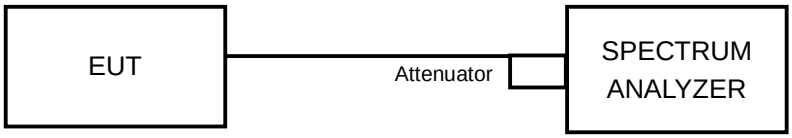
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

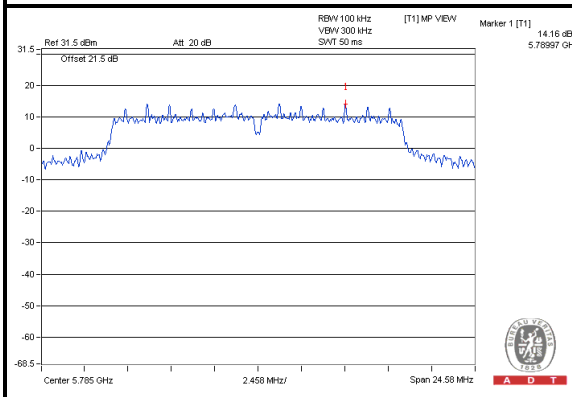
Same as Item 4.3.6

4.6.7 TEST RESULTS (MODE 1)

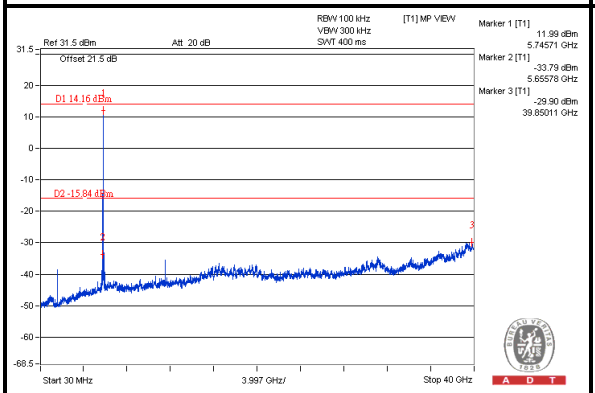
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

802.11a

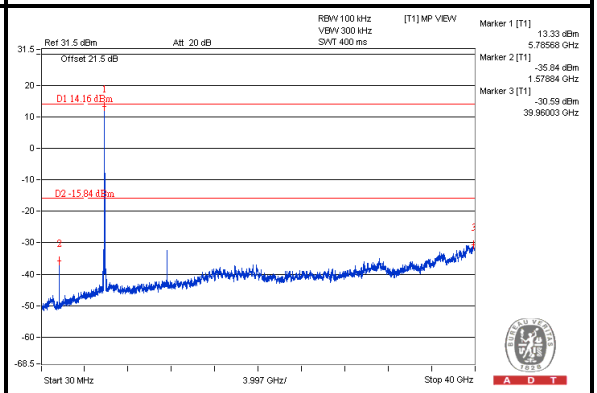
Maximum REF



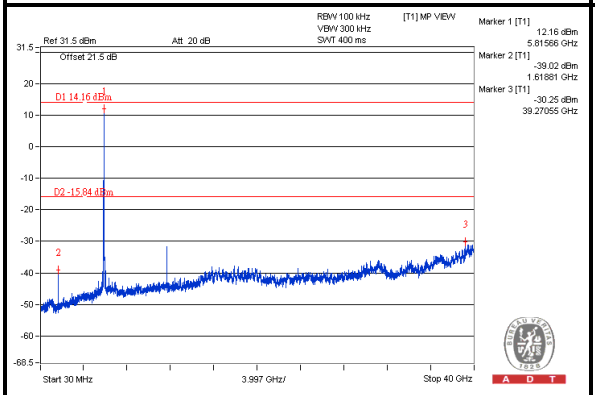
CH 149



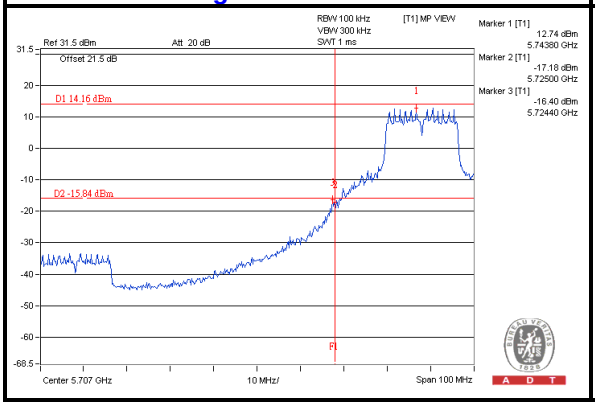
CH 157



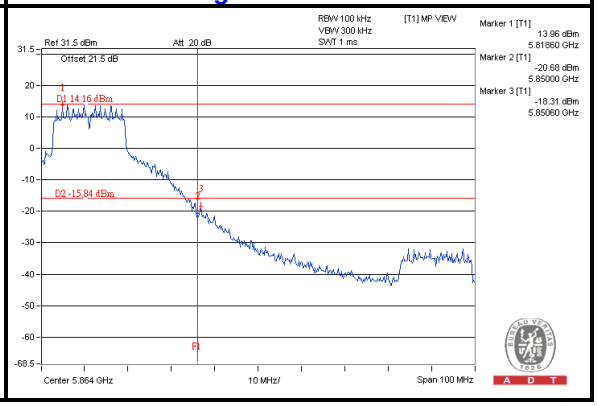
CH 165



CH 149 Band edge



CH 165 Band edge

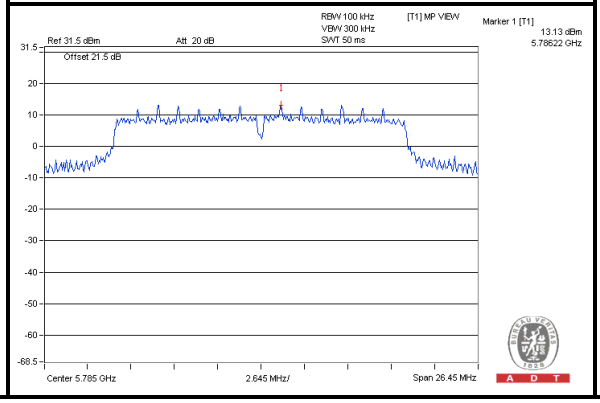


4.6.8 TEST RESULTS (MODE 2~6)

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

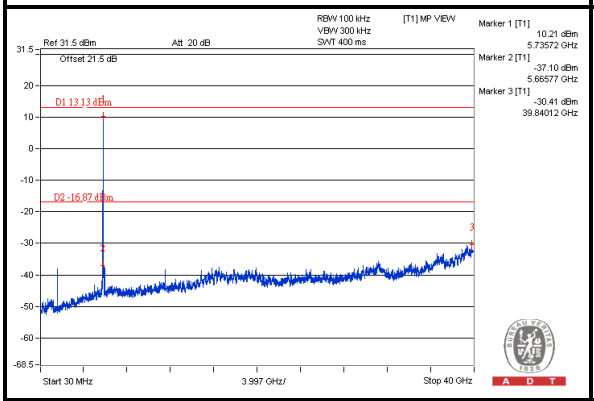
802.11ac (VHT20)

Maximum REF

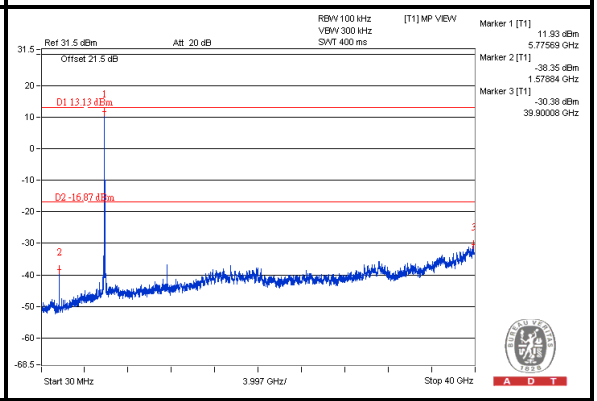


Chain (1)

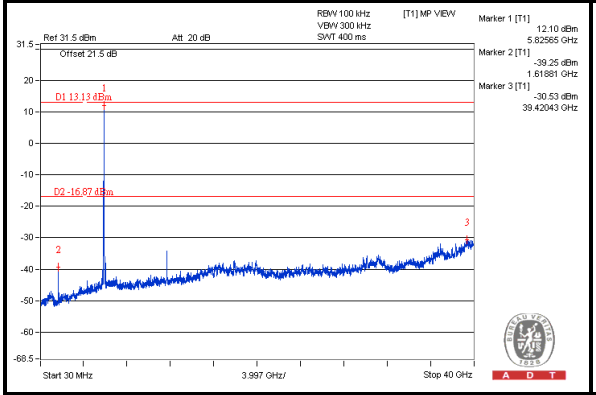
CH 149



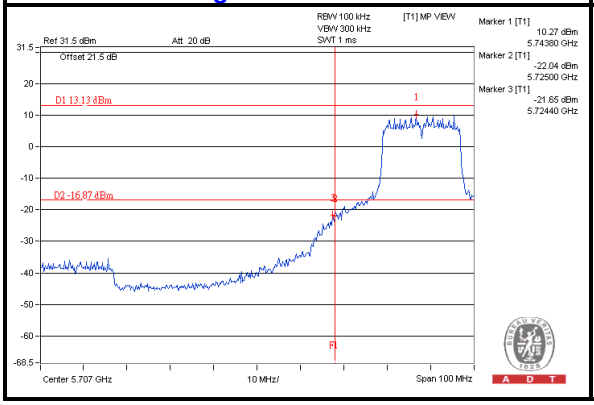
CH 157



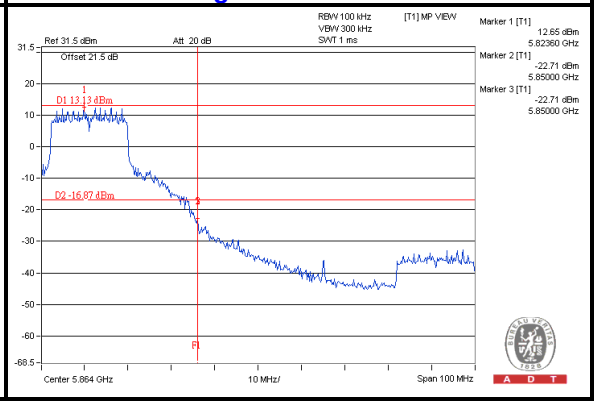
CH 165



CH 149 Band edge

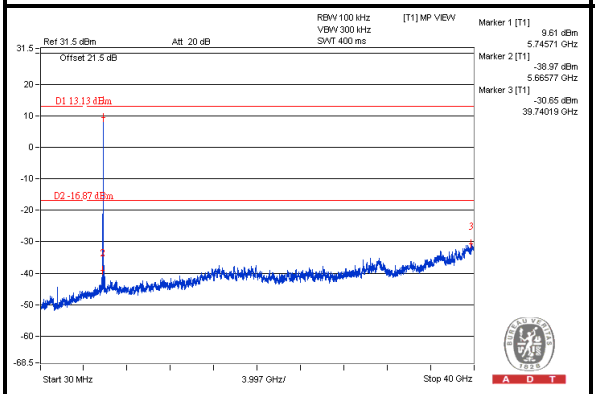


CH 165 Band edge

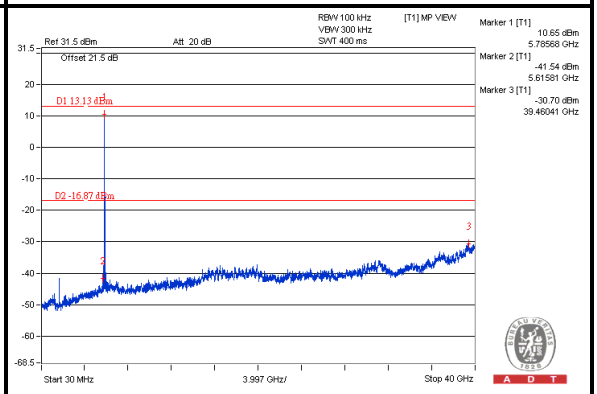


Chain (2)

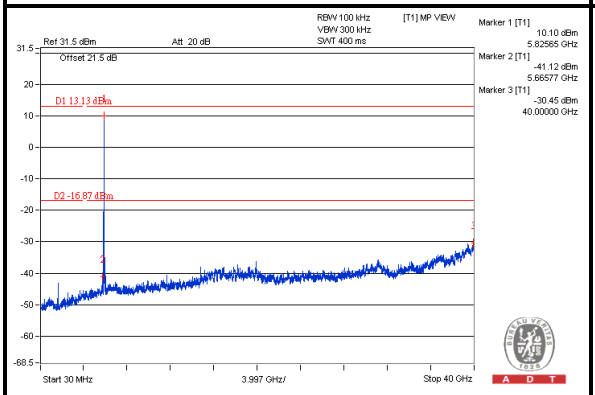
CH 149



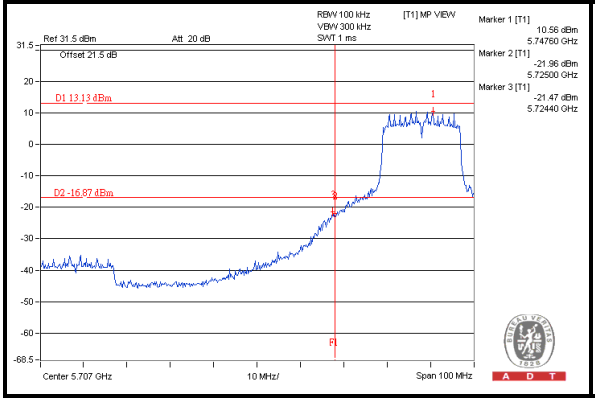
CH 157



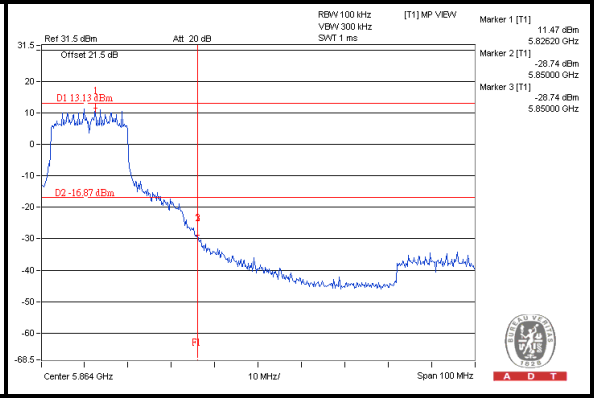
CH 165



CH 149 Band edge

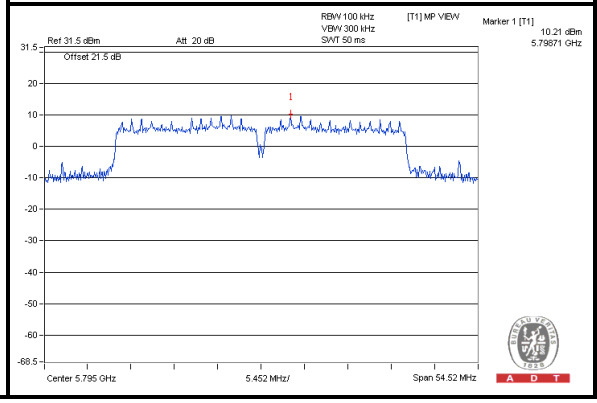


CH 165 Band edge



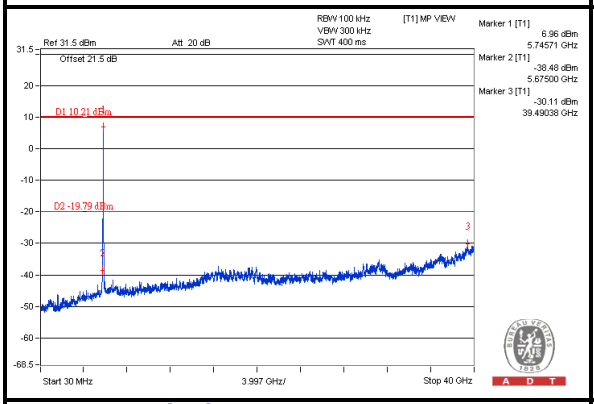
802.11ac (VHT40)

Maximum REF

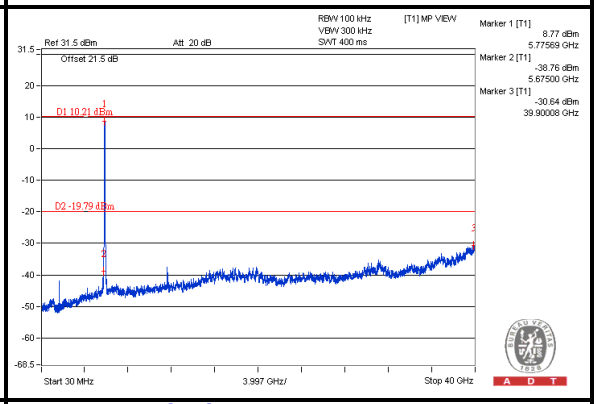


Chain (1)

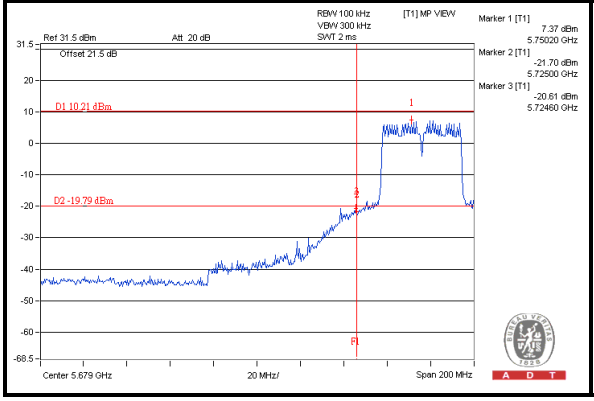
CH 151



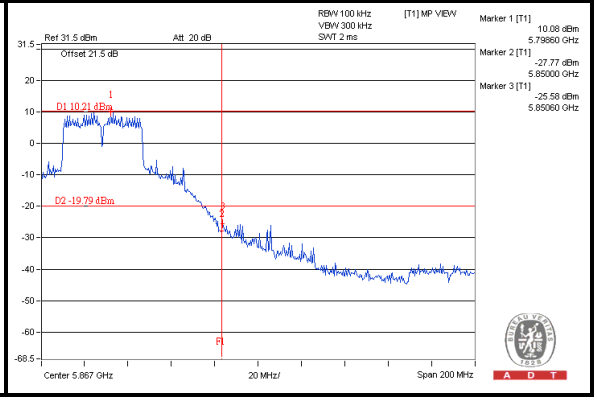
CH 159



CH 151 Band edge

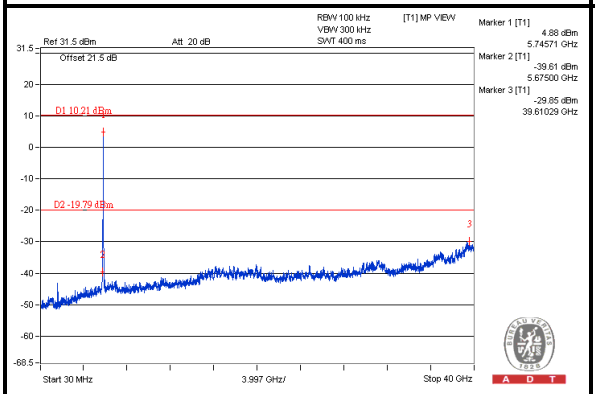


CH 159 Band edge

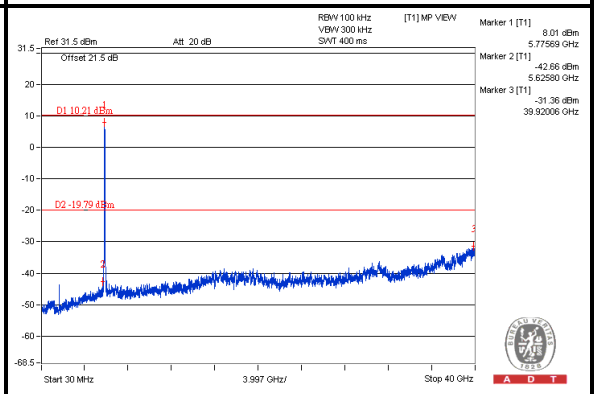


Chain (2)

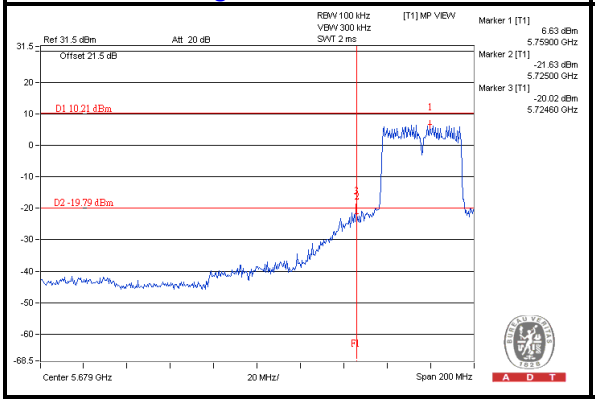
CH 151



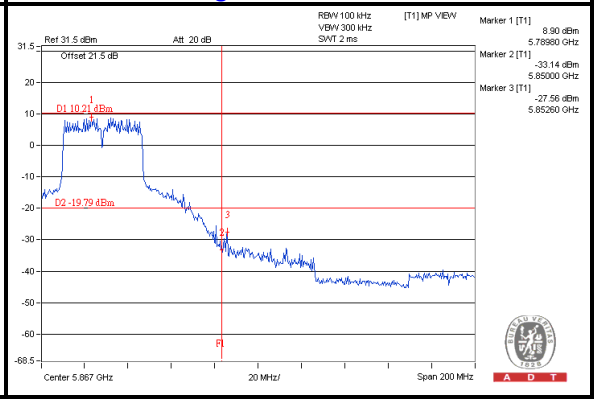
CH 159



CH 151 Band edge

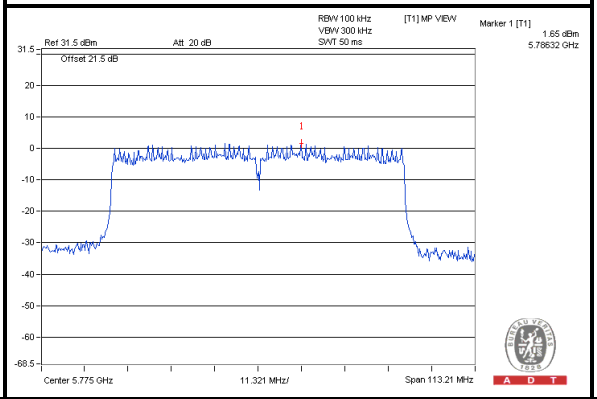


CH 159 Band edge



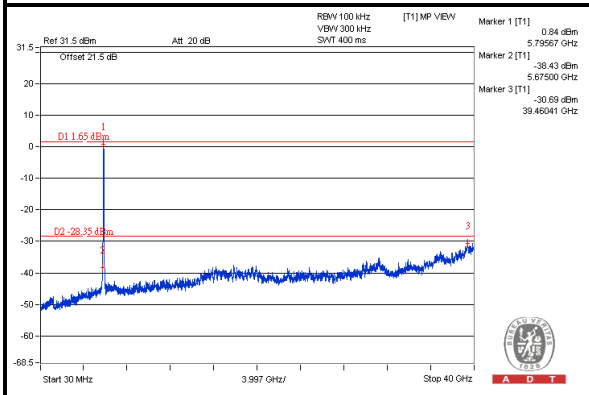
802.11ac (VHT80)

Maximum REF

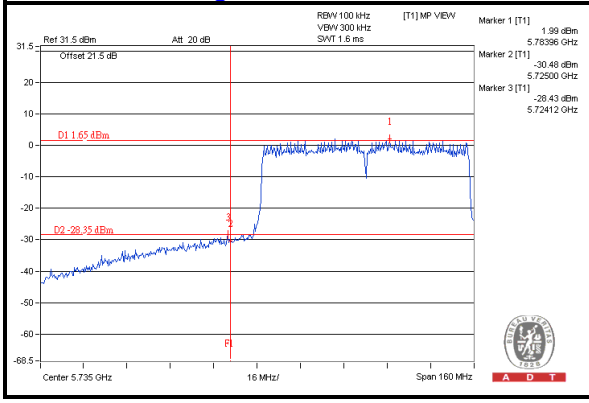


Chain (1)

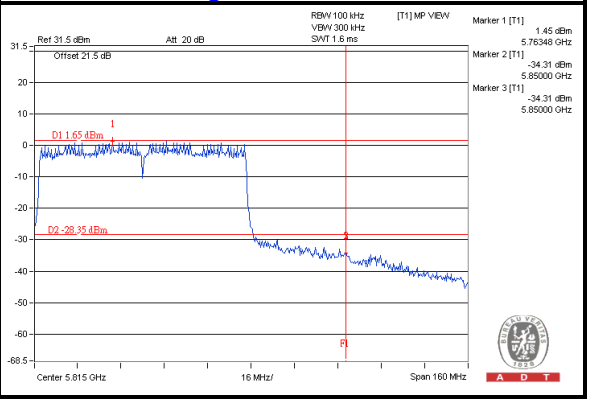
CH 155



CH 155 Band edge

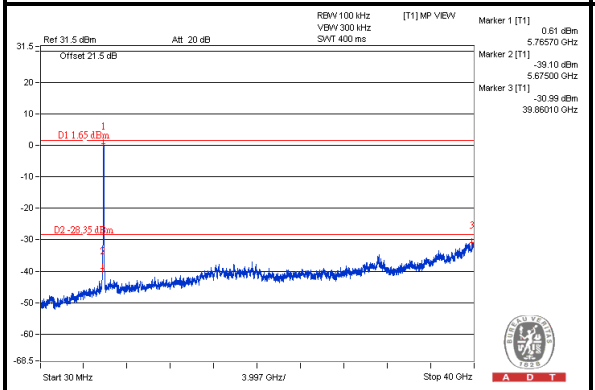


CH 155 Band edge

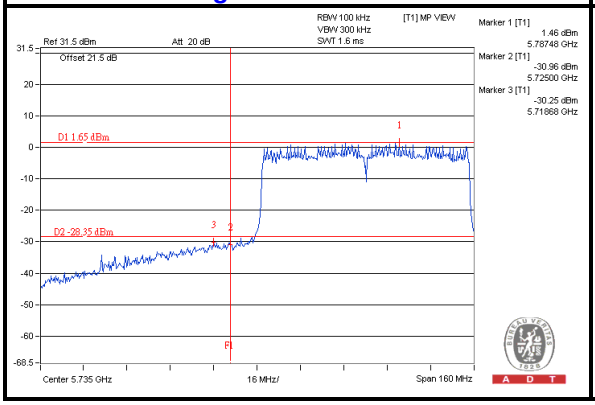


Chain (2)

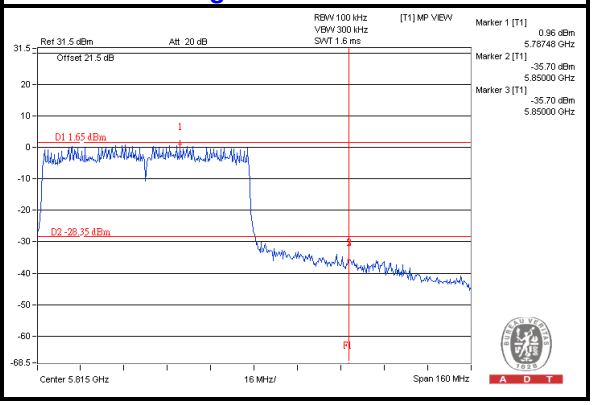
CH 155



CH 155 Band edge



CH 155 Band edge

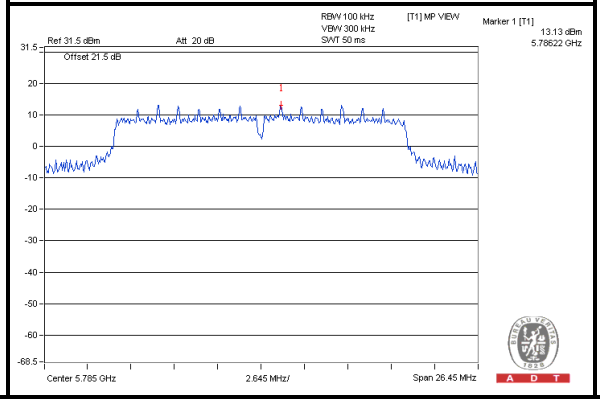


4.6.9 TEST RESULTS (MODE 7~12)

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

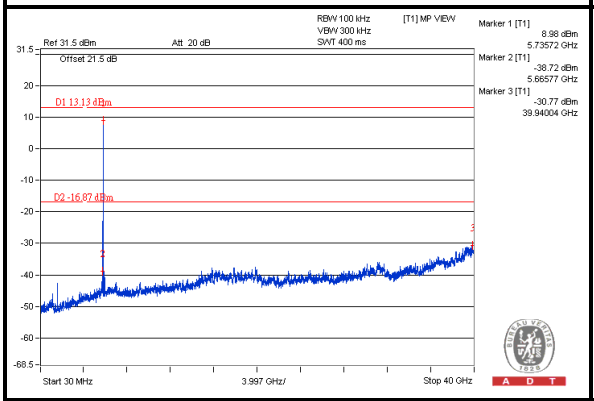
802.11ac (VHT20)

Maximum REF

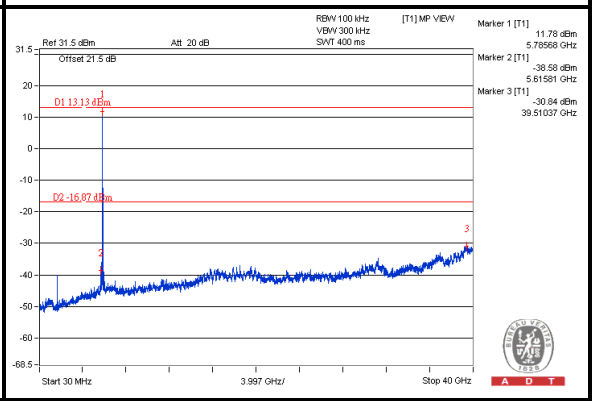


Chain (0)

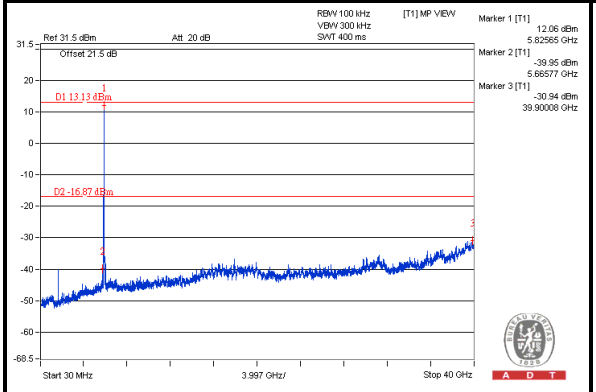
CH 149



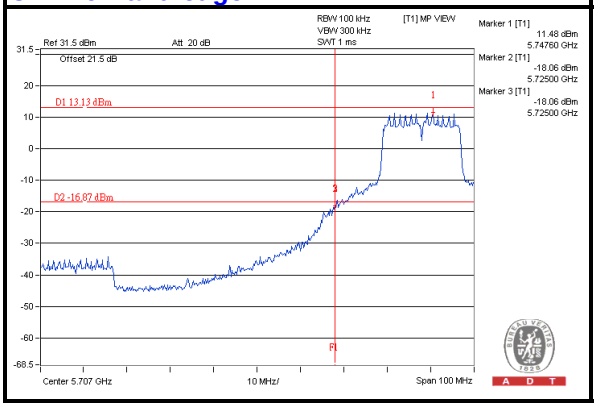
CH 157



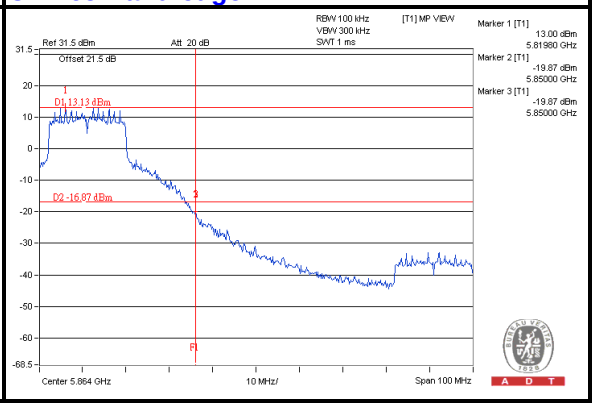
CH 165



CH 149 Band edge

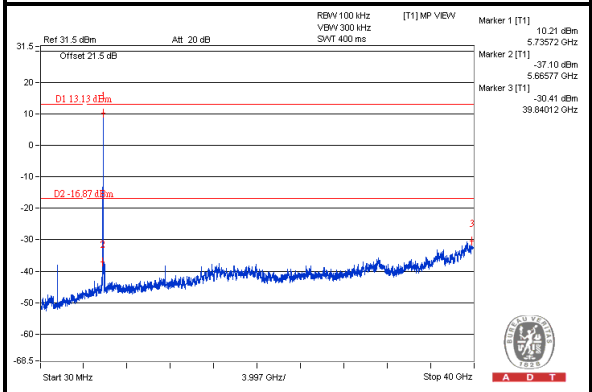


CH 165 Band edge

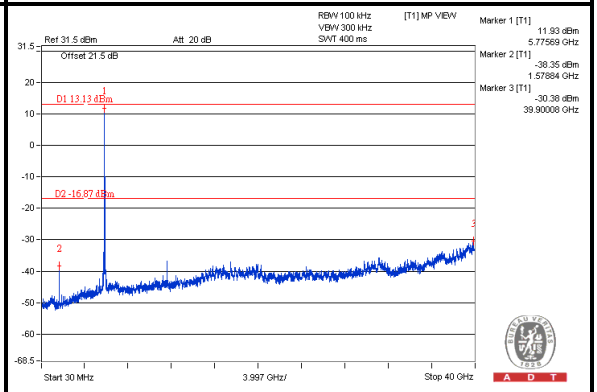


Chain (1)

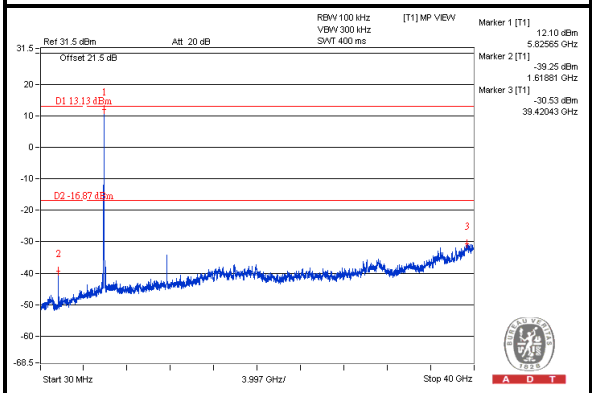
CH 149



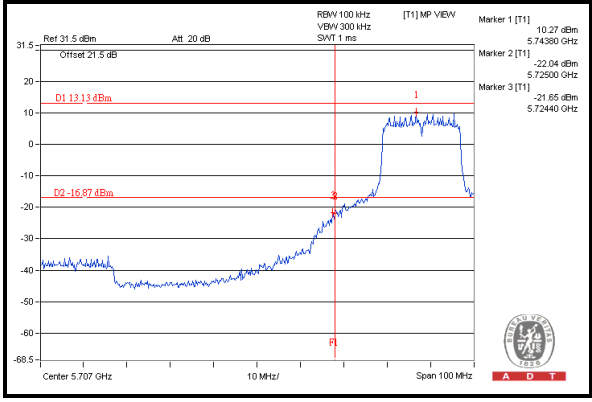
CH 157



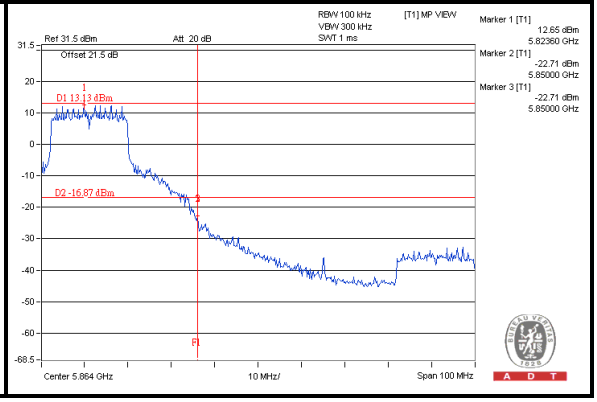
CH 165



CH 149 Band edge

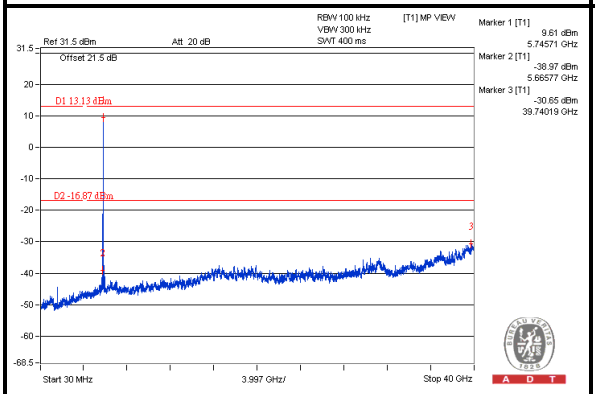


CH 165 Band edge

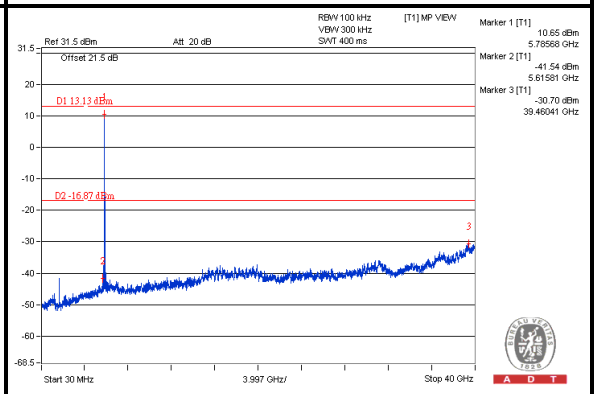


Chain (2)

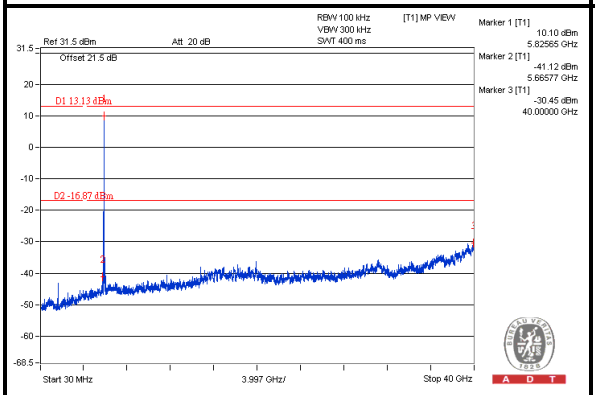
CH 149



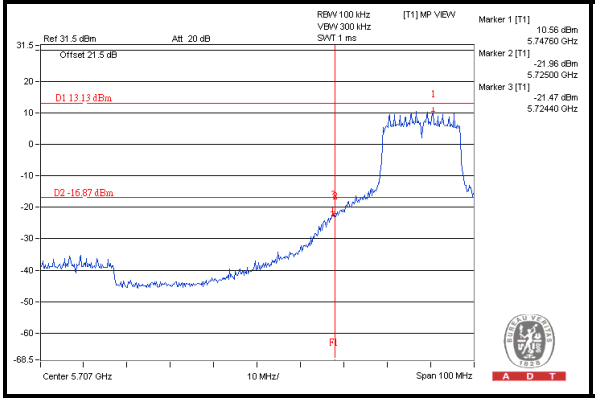
CH 157



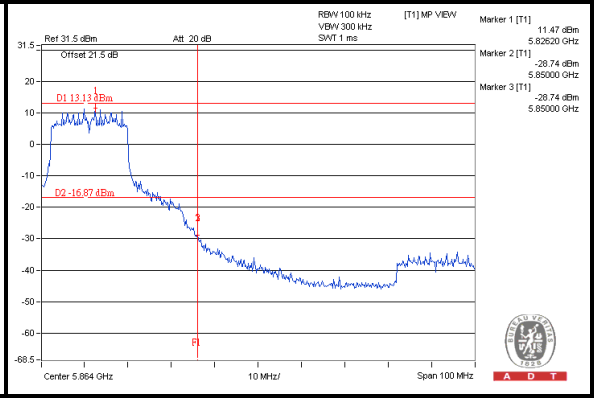
CH 165



CH 149 Band edge

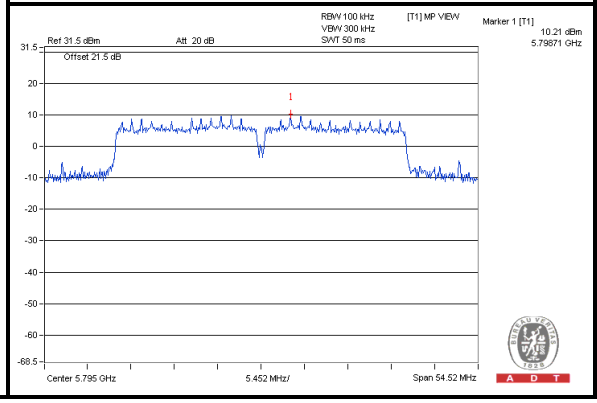


CH 165 Band edge



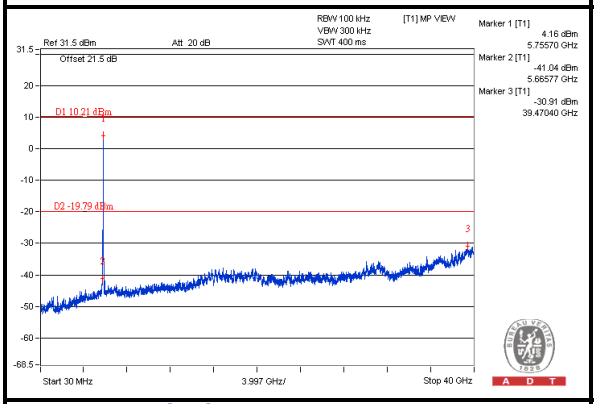
802.11ac (VHT40)

Maximum REF

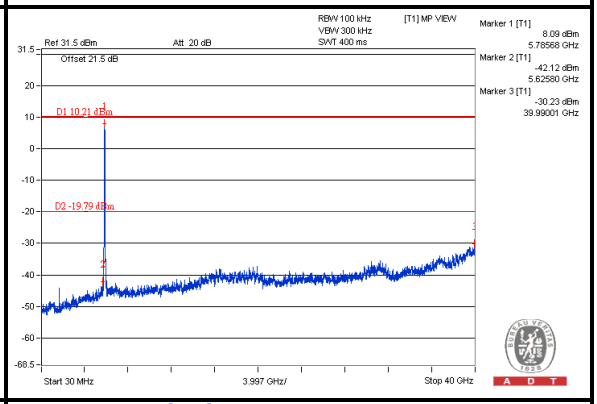


Chain (0)

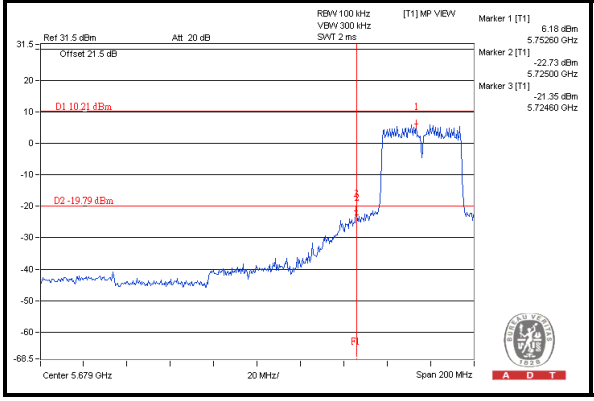
CH 151



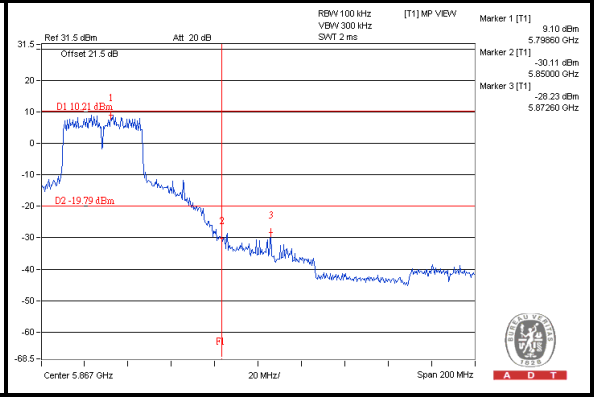
CH 159



CH 151 Band edge

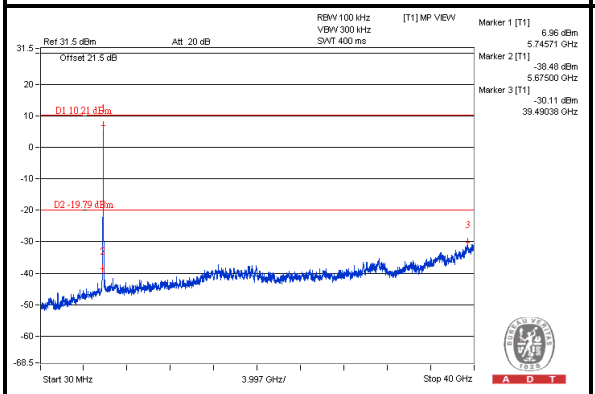


CH 159 Band edge

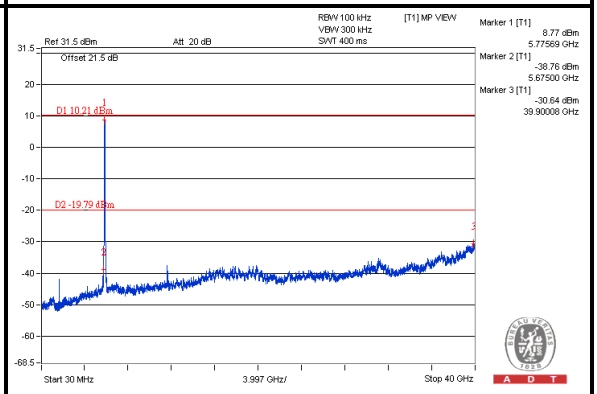


Chain (1)

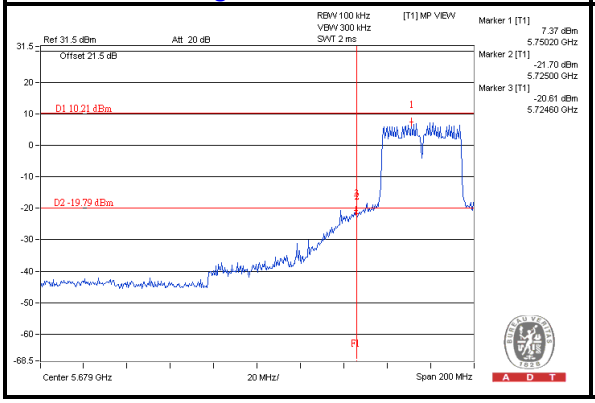
CH 151



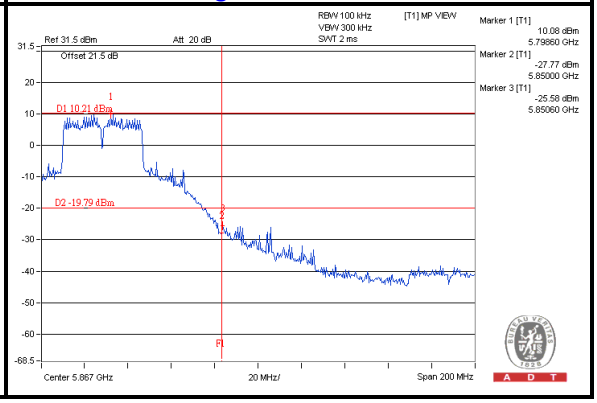
CH 159



CH 151 Band edge

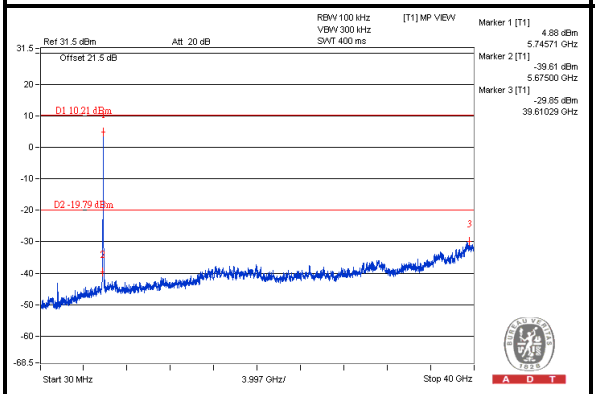


CH 159 Band edge

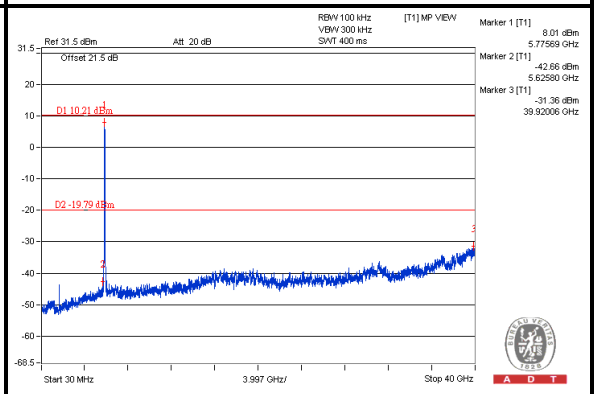


Chain (2)

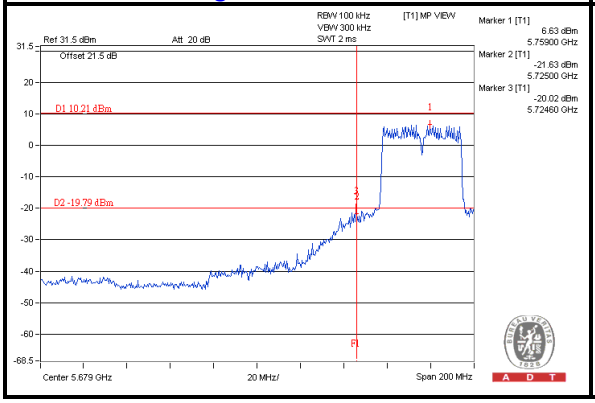
CH 151



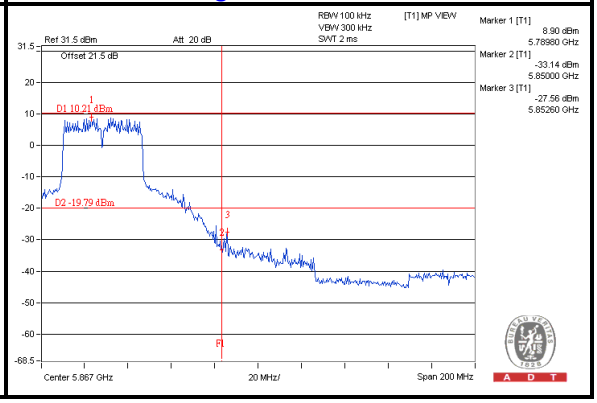
CH 159



CH 151 Band edge

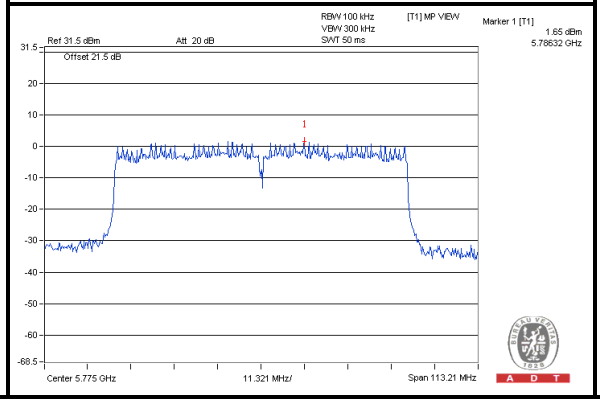


CH 159 Band edge



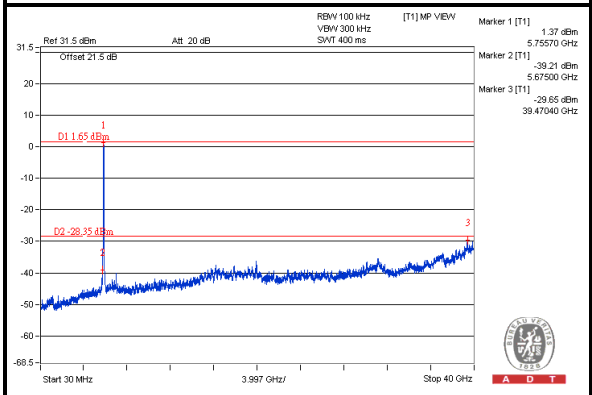
802.11ac (VHT80)

Maximum REF

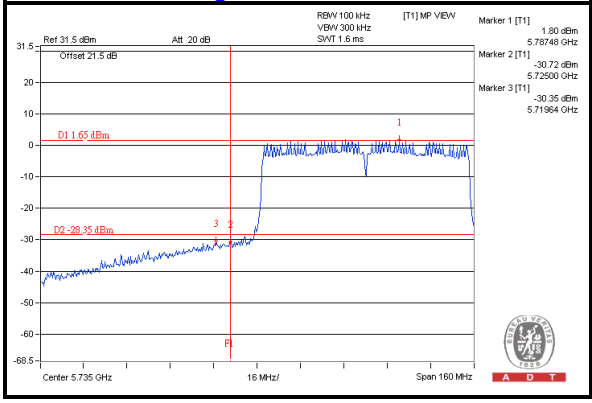


Chain (0)

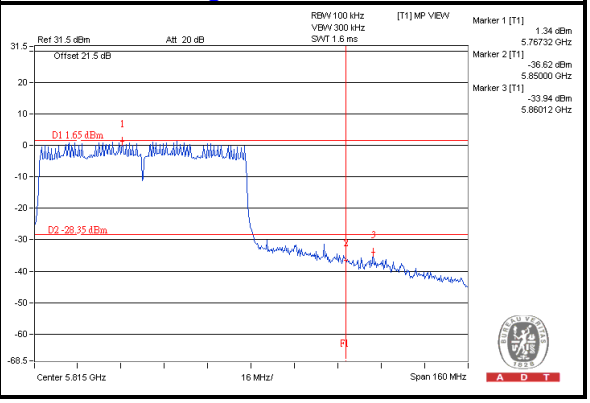
CH 155



CH 155 Band edge

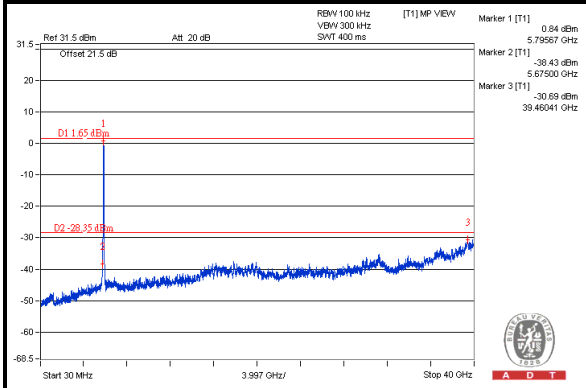


CH 155 Band edge

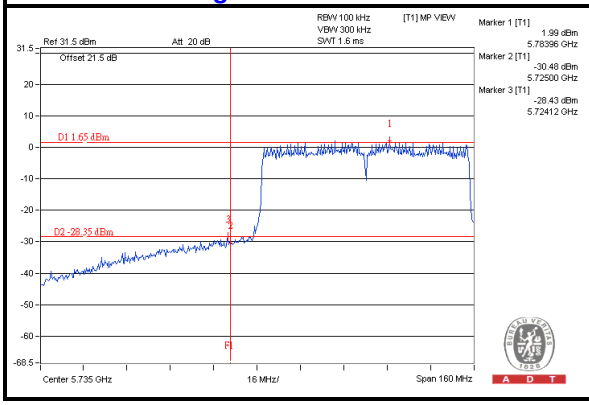


Chain (1)

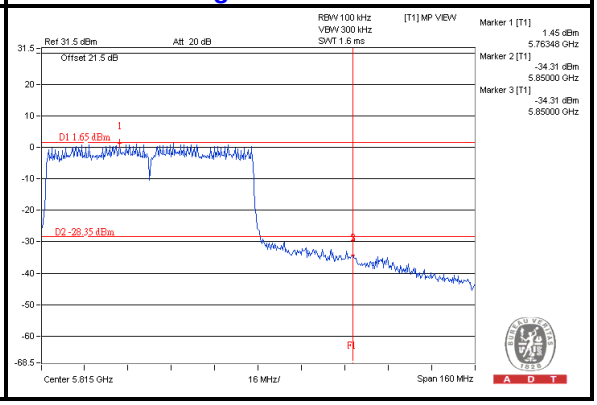
CH 155



CH 155 Band edge

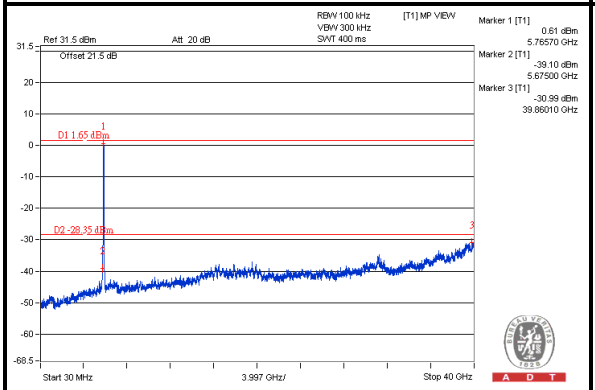


CH 155 Band edge

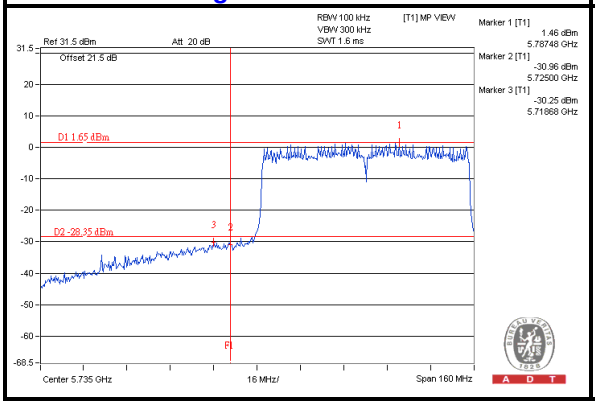


Chain (2)

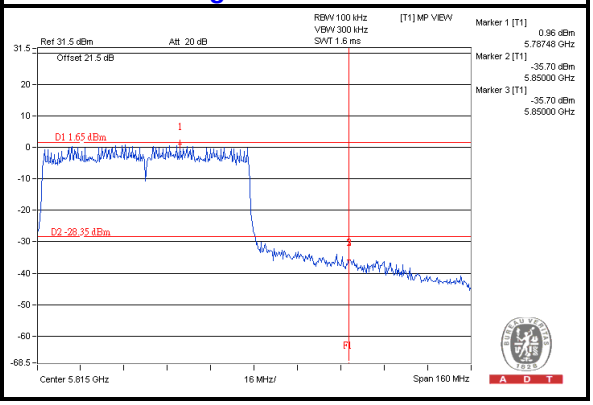
CH 155



CH 155 Band edge



CH 155 Band edge



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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

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

--- END ---