FCC Test Report

Report No.: RF150122E07

FCC ID: UIDSBG6900

Test Model: SBG6900-AC

Received Date: Jan. 22, 2015

Test Date: Feb. 26 to Mar. 11, 2015

Issued Date: Mar. 24, 2015

Applicant: ARRIS Group, Inc.

Address: 3871 Lakefield Drive Suite 300 Suwanee, GA30024

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

Table of Contents

Release Control Record **4**

1 Certificate of Conformity **5**

2 Summary of Test Results **6**

2.1 Measurement Uncertainty 6
2.2 Modification Record 6

3 General Information **7**

3.1 General Description of EUT 7
3.2 Description of Test Modes 10
3.2.1 Test Mode Applicability and Tested Channel Detail 11
3.3 Duty Cycle of Test Signal 13
3.4 Description of Support Units 14
3.4.1 Configuration of System under Test 15
3.5 General Description of Applied Standards 16

4 Test Types and Results **17**

4.1 Radiated Emission and Bandedge Measurement 17
4.1.1 Limits of Radiated Emission and Bandedge Measurement 17
4.1.2 Test Instruments 18
4.1.3 Test Procedures 20
4.1.4 Deviation from Test Standard 20
4.1.5 Test Set Up 21
4.1.6 EUT Operating Conditions 21
4.1.7 Test Results 22
4.2 Conducted Emission Measurement 41
4.2.1 Limits of Conducted Emission Measurement 41
4.2.2 Test Instruments 41
4.2.3 Test Procedures 42
4.2.4 Deviation from Test Standard 42
4.2.5 Test Setup 42
4.2.6 EUT Operating Conditions 42
4.2.7 Test Results 43
4.3 6dB Bandwidth Measurement 45
4.3.1 Limits of 6dB Bandwidth Measurement 45
4.3.2 Test Setup 45
4.3.3 Test Instruments 45
4.3.4 Test Procedure 45
4.3.5 Deviation fromTest Standard 45
4.3.6 EUT Operating Conditions 45
4.3.7 Test Result 46
4.4 Conducted Output Power Measurement 49
4.4.1 Limits of Conducted Output Power Measurement 49
4.4.2 Test Setup 49
4.4.3 Test Instruments 49
4.4.4 Test Procedures 49
4.4.5 Deviation from Test Standard 49
4.4.6 EUT Operating Conditions 49
4.4.7 Test Results 50
4.5 Power Spectral Density Measurement 52
4.5.1 Limits of Power Spectral Density Measurement 52
4.5.2 Test Setup 52
4.5.3 Test Instruments 52
4.5.4 Test Procedure 52
4.5.5 Deviation from Test Standard 53
4.5.6 EUT Operating Condition 53

4.5.7 Test Results 54
4.6 Conducted Out of Band Emission Measurement 59
4.6.1 Limits of Conducted Out of Band Emission Measurement 59
4.6.2 Test Setup 59
4.6.3 Test Instruments 59
4.6.4 Test Procedure 59
4.6.5 Deviation from Test Standard 59
4.6.6 EUT Operating Condition 60
4.6.7 Test Results 60

5 Pictures of Test Arrangements 79

Appendix – Information on the Testing Laboratories 80

Release Control Record

Issue No.	Description	Date Issued
RF150122E07	Original release.	Mar. 24, 2015

1 Certificate of Conformity

Product: Wireless Cable Modem & Router

Brand: ARRIS

Test Model: SBG6900-AC

Sample Status: ENGINEERING SAMPLE

Applicant: ARRIS Group, Inc.

Test Date: Feb. 26 to Mar. 11, 2015

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2009

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

Prepared by : _____ , **Date:** Mar. 24, 2015
Lori Chung / Specialist

Approved by : _____ , **Date:** Mar. 24, 2015
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -20.40dB at 0.16953MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2390.00MHz & 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted 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(MHF) not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz – Chamber G	3.65 dB
	1GHz ~ 6GHz – Chamber H	3.72 dB
	6GHz ~ 18GHz – Chamber G	3.88 dB
	1GHz ~ 6GHz – Chamber H	4.00 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Cable Modem & Router
Brand	ARRIS
Test Model	SBG6900-AC
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	100~240Vac, 50/60Hz
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a / g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
Operating Frequency	**For 15.407** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
Number of Channel	**For 15.407** 9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20), VHT20 7 for 802.11n (HT40), VHT40
Output Power	**For 15.407** **CDD Mode:** 802.11a: 638.049mW 802.11ac (VHT20): 651.264mW 802.11ac (VHT40): 531.625mW 802.11ac (VHT80): 160.238mW **Beamforming Mode:** 802.11ac (VHT20): 306.853mW 802.11ac (VHT40): 352.462mW 802.11ac (VHT80): 105.496mW
	For 15.247 **CDD Mode:** 802.11b: 300.9mW 802.11g: 541.786mW VHT20: 598.855mW VHT40: 223.357mW **Beamforming Mode:** VHT20: 489.08mW VHT40: 186.699mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
2. The antennas provided to the EUT, please refer to the following table:

2.4GHz								
Antenna No.	PCB Chain No.	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Ant. Type	Connecter Type	Cable Length (mm)
361.00624.005	1	FIT	FX02A04-0G-EF	3.72	2.4~2.4835	PCB	i-pex(MHF)	185
361.00625.005	2	FIT	FX02A05-0G-EF	4.59	2.4~2.4835	PCB	i-pex(MHF)	111
361.00626.005	0	FIT	FX02A06-0G-EF	4.2	2.4~2.4835	PCB	i-pex(MHF)	210
5GHz								
Antenna No.	PCB Chain No.	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Ant. Type	Connecter Type	Cable Length (mm)
361.00628.005	1	FIT	FX02A07-0G-EF	5.59	5.15~5.85	PCB	i-pex(MHF)	120
361.00629.005	2	FIT	FX02A08-0G-EF	3.42	5.15~5.85	PCB	i-pex(MHF)	190
361.00630.005	0	FIT	FX02A10-0G-EF	3.88	5.15~5.85	PCB	i-pex(MHF)	255

3. The EUT must be supplied with an internal power supply as below table :

Brand	Model No.	Spec.
DVE	DSO-36PFE-12 2 120300	AC Input: 100~240V, 1.3A, 50/60Hz DC Output: 12V, 3A

4. The EUT incorporates a MIMO function.

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

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

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

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20), VHT20:

Channel	Frequency	Channel	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

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

Channel	Frequency	Channel	Frequency
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

CDD MODE					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
VHT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Beamforming MODE					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
VHT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

CDD MODE					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
VHT20	1 to 11	6	OFDM	BPSK	6.5

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

CDD MODE					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
VHT20	1 to 11	6	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

CDD MODE					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
VHT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5
Beamforming MODE					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
VHT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

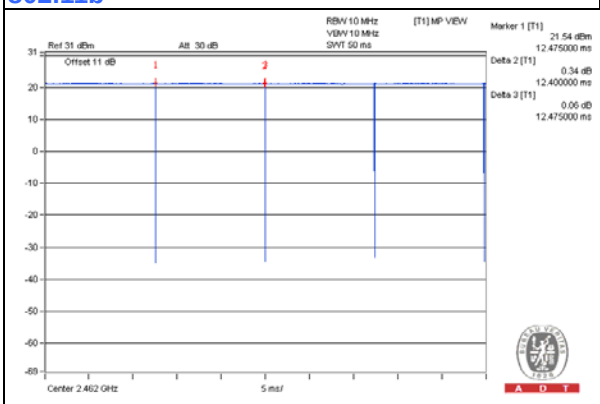
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	24deg. C, 71%RH	120Vac, 60Hz	Robert Cheng
RE<1G	24deg. C, 70%RH 23deg. C, 68%RH	120Vac, 60Hz	Robert Cheng
PLC	20deg. C, 60%RH	120Vac, 60Hz	Barry Lee
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

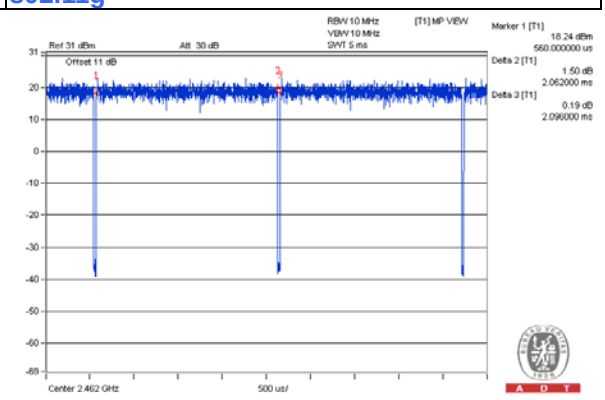
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11b: Duty cycle = 12.4 ms/12.475 ms = 0.994
802.11g: Duty cycle = 2.062 ms/2.096 ms = 0.984
VHT20: Duty cycle = 1.919 ms/1.951 ms= 0.984
VHT40: Duty cycle = 0.937 ms/0.979 ms= 0.957, Duty factor = 10 * log(1/0.957) = 0.19

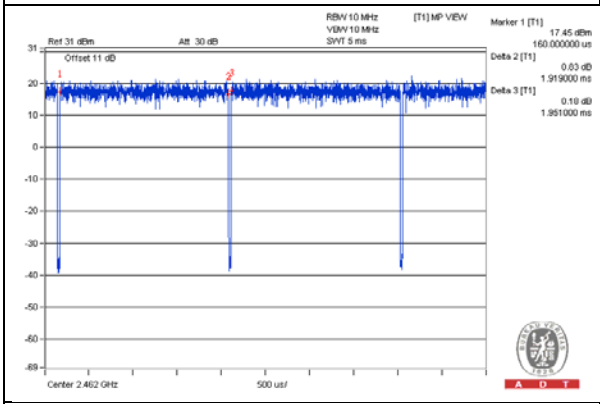
802.11b



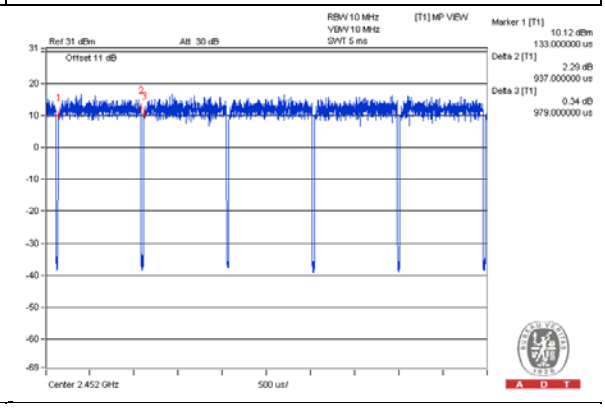
802.11g



VHT20



VHT40



3.4 Description of Support Units

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

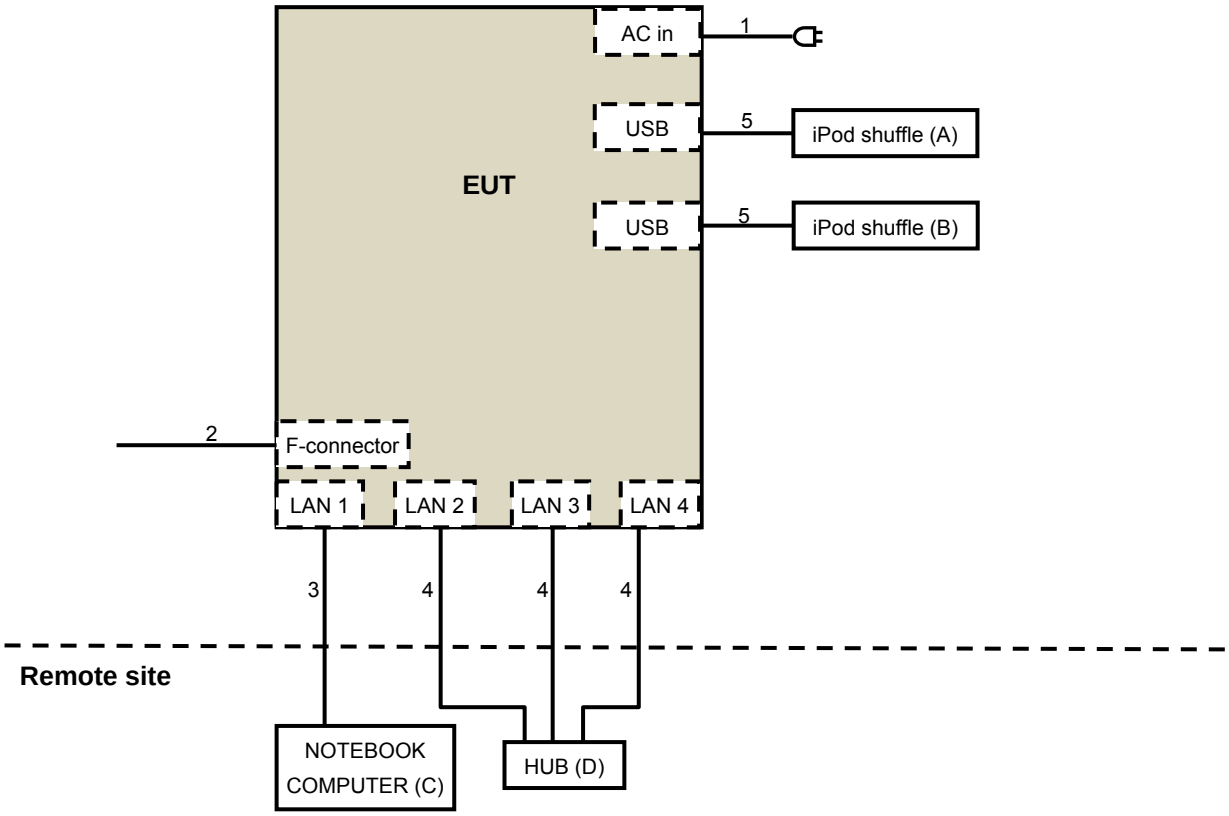
No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	iPod shuffle	Apple	MC749TA/A	CC4DMFJUDFDM	NA	Provided by Lab
B	iPod shuffle	Apple	MC749TA/A	CC4DN25WDFDM	NA	Provided by Lab
C	NOTEBOOK COMPUTER	DELL	E6420	H62T3R1	FCC DoC	Supplied by Client
D	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab

NOTE:

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

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	AC	1	1.5	No	0	Supplied by Client
2	Coaxial	1	10	No	0	Provided by Lab
3	UTP	1	10	No	0	Provided by Lab
4	UTP	1	10	No	0	Provided by Lab
5	USB	1	0.1	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 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.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

4.1.2 Test Instruments

For CDD MODE test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Feb. 26, 2015

For Beamforming MODE test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
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: Mar. 05, 2015

4.1.3 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:

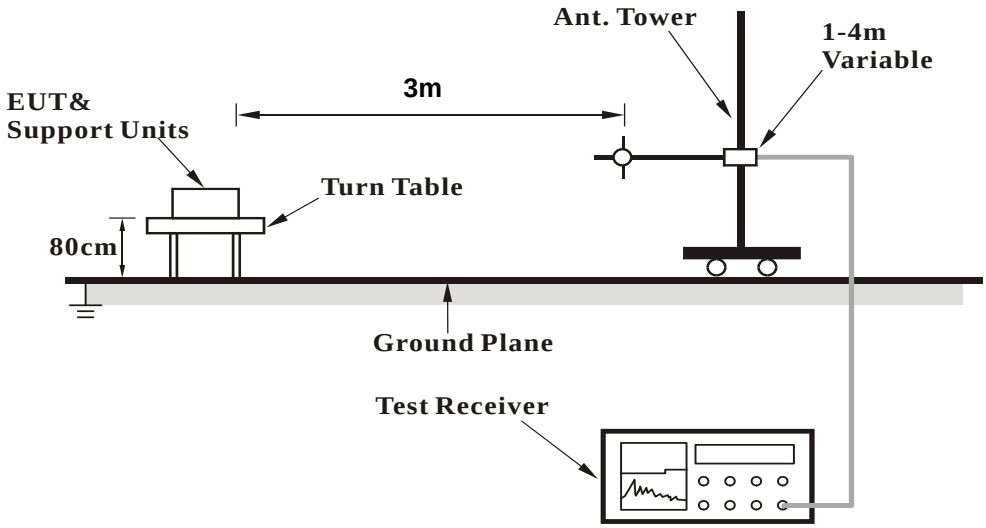
1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
6. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

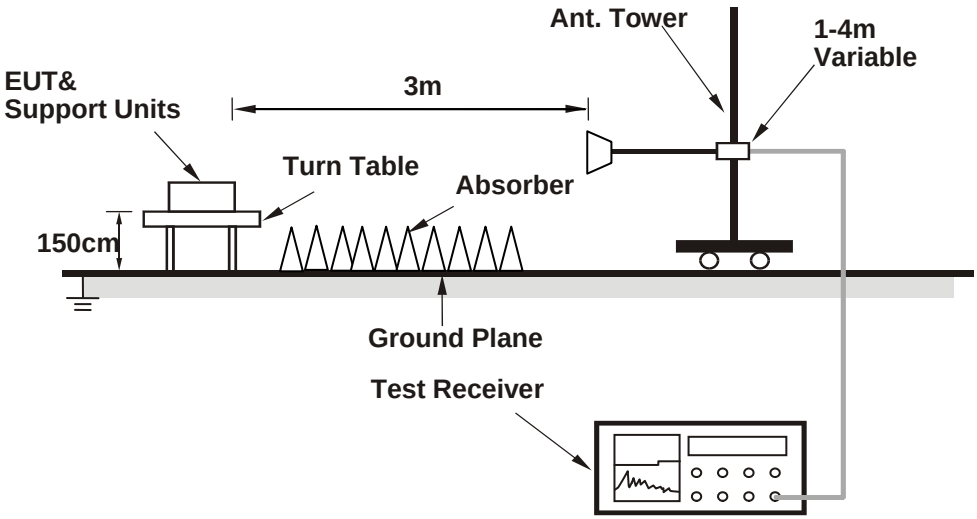
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

CDD MODE

Above 1GHz Data:

802.11b

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	52.9 PK	74.0	-21.1	1.70 H	105	55.39	-2.49
2	2390.00	40.7 AV	54.0	-13.3	1.70 H	105	43.19	-2.49
3	*2412.00	113.7 PK			1.70 H	105	116.12	-2.42
4	*2412.00	110.1 AV			1.70 H	105	112.52	-2.42
5	4824.00	56.2 PK	74.0	-17.8	1.78 H	234	48.99	7.21
6	4824.00	53.4 AV	54.0	-0.6	1.78 H	234	46.19	7.21
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	2390.00	52.3 PK	74.0	-21.7	1.57 V	194	54.79	-2.49
2	2390.00	40.8 AV	54.0	-13.2	1.57 V	194	43.29	-2.49
3	*2412.00	112.7 PK			1.57 V	194	115.12	-2.42
4	*2412.00	110.6 AV			1.57 V	194	113.02	-2.42
5	4824.00	54.2 PK	74.0	-19.8	1.95 V	217	46.99	7.21
6	4824.00	50.8 AV	54.0	-3.2	1.95 V	217	43.59	7.21

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 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2437.00	113.1 PK			1.65 H	105	115.44	-2.34
2	*2437.00	110.8 AV			1.65 H	105	113.14	-2.34
3	4874.00	56.2 PK	74.0	-17.8	1.46 H	327	48.99	7.21
4	4874.00	53.6 AV	54.0	-0.4	1.46 H	327	46.39	7.21
5	7311.00	58.6 PK	74.0	-15.4	1.99 H	157	46.88	11.72
6	7311.00	52.7 AV	54.0	-1.3	1.99 H	157	40.98	11.72
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	*2437.00	113.8 PK			1.45 V	200	116.14	-2.34
2	*2437.00	111.8 AV			1.45 V	200	114.14	-2.34
3	4874.00	54.4 PK	74.0	-19.6	1.91 V	217	47.19	7.21
4	4874.00	50.9 AV	54.0	-3.1	1.91 V	217	43.69	7.21
5	7311.00	59.4 PK	74.0	-14.6	2.16 V	58	47.68	11.72
6	7311.00	53.6 AV	54.0	-0.4	2.16 V	58	41.88	11.72

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 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2462.00	112.4 PK			1.70 H	154	114.66	-2.26
2	*2462.00	110.4 AV			1.70 H	154	112.66	-2.26
3	2483.50	54.6 PK	74.0	-19.4	1.70 H	154	56.78	-2.18
4	2483.50	42.8 AV	54.0	-11.2	1.70 H	154	44.98	-2.18
5	4924.00	56.8 PK	74.0	-17.2	1.97 H	317	49.58	7.22
6	4924.00	53.3 AV	54.0	-0.7	1.97 H	317	46.08	7.22
7	7386.00	58.5 PK	74.0	-15.5	2.03 H	156	46.58	11.92
8	7386.00	51.9 AV	54.0	-2.1	2.03 H	156	39.98	11.92
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.1 PK			1.56 V	201	115.36	-2.26
2	*2462.00	111.0 AV			1.56 V	201	113.26	-2.26
3	2483.50	55.7 PK	74.0	-18.3	1.56 V	201	57.88	-2.18
4	2483.50	44.8 AV	54.0	-9.2	1.56 V	201	46.98	-2.18
5	4924.00	55.1 PK	74.0	-18.9	2.00 V	211	47.88	7.22
6	4924.00	51.3 AV	54.0	-2.7	2.00 V	211	44.08	7.22
7	7386.00	59.2 PK	74.0	-14.8	2.23 V	59	47.28	11.92
8	7386.00	53.2 AV	54.0	-0.8	2.23 V	59	41.28	11.92

REMARKS:

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

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	70.3 PK	74.0	-3.7	1.73 H	117	72.79	-2.49
2	2390.00	53.0 AV	54.0	-1.0	1.73 H	117	55.49	-2.49
3	*2412.00	115.9 PK			1.70 H	115	118.32	-2.42
4	*2412.00	105.7 AV			1.70 H	115	108.12	-2.42
5	4824.00	57.1 PK	74.0	-16.9	1.64 H	325	49.89	7.21
6	4824.00	44.3 AV	54.0	-9.7	1.64 H	325	37.09	7.21
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	2390.00	69.9 PK	74.0	-4.1	1.58 V	197	72.39	-2.49
2	2390.00	53.3 AV	54.0	-0.7	1.58 V	197	55.79	-2.49
3	*2412.00	116.4 PK			1.58 V	197	118.82	-2.42
4	*2412.00	106.3 AV			1.58 V	197	108.72	-2.42
5	4824.00	54.1 PK	74.0	-19.9	1.64 V	339	46.89	7.21
6	4824.00	42.3 AV	54.0	-11.7	1.64 V	339	35.09	7.21

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 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	61.2 PK	74.0	-12.8	1.69 H	113	63.69	-2.49
2	2390.00	45.7 AV	54.0	-8.3	1.69 H	113	48.19	-2.49
3	*2437.00	119.4 PK			1.69 H	113	121.74	-2.34
4	*2437.00	108.6 AV			1.69 H	113	110.94	-2.34
5	2483.50	61.0 PK	74.0	-13.0	1.69 H	113	63.18	-2.18
6	2483.50	47.7 AV	54.0	-6.3	1.69 H	113	49.88	-2.18
7	4874.00	57.0 PK	74.0	-17.0	1.59 H	329	49.79	7.21
8	4874.00	44.3 AV	54.0	-9.7	1.59 H	329	37.09	7.21
9	7311.00	67.2 PK	74.0	-6.8	1.33 H	150	55.48	11.72
10	7311.00	52.1 AV	54.0	-1.9	1.33 H	150	40.38	11.72
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	2390.00	65.3 PK	74.0	-8.7	1.61 V	55	67.79	-2.49
2	2390.00	46.6 AV	54.0	-7.4	1.61 V	55	49.09	-2.49
3	*2437.00	120.5 PK			1.61 V	55	122.84	-2.34
4	*2437.00	109.9 AV			1.61 V	55	112.24	-2.34
5	2483.50	65.5 PK	74.0	-8.5	1.61 V	55	67.68	-2.18
6	2483.50	50.5 AV	54.0	-3.5	1.61 V	55	52.68	-2.18
7	4874.00	53.7 PK	74.0	-20.3	1.60 V	344	46.49	7.21
8	4874.00	42.0 AV	54.0	-12.0	1.60 V	344	34.79	7.21
9	7311.00	67.0 PK	74.0	-7.0	2.18 V	180	55.28	11.72
10	7311.00	53.5 AV	54.0	-0.5	2.18 V	180	41.78	11.72

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 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2462.00	114.7 PK			1.64 H	109	116.96	-2.26
2	*2462.00	104.6 AV			1.64 H	109	106.86	-2.26
3	2483.50	67.8 PK	74.0	-6.2	1.64 H	70	69.98	-2.18
4	2483.50	48.2 AV	54.0	-5.8	1.64 H	70	50.38	-2.18
5	4924.00	55.0 PK	74.0	-19.0	1.46 H	182	47.78	7.22
6	4924.00	44.8 AV	54.0	-9.2	1.46 H	182	37.58	7.22
7	7386.00	50.9 PK	74.0	-23.1	1.07 H	154	38.98	11.92
8	7386.00	45.7 AV	54.0	-8.3	1.07 H	154	33.78	11.92
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.4 PK			1.60 V	54	117.66	-2.26
2	*2462.00	105.1 AV			1.60 V	54	107.36	-2.26
3	2483.50	70.2 PK	74.0	-3.8	1.60 V	56	72.38	-2.18
4	2483.50	53.6 AV	54.0	-0.4	1.60 V	56	55.78	-2.18
5	4924.00	54.5 PK	74.0	-19.5	1.67 V	332	47.28	7.22
6	4924.00	42.6 AV	54.0	-11.4	1.67 V	332	35.38	7.22
7	7386.00	57.4 PK	74.0	-16.6	1.04 V	215	45.48	11.92
8	7386.00	47.2 AV	54.0	-6.8	1.04 V	215	35.28	11.92

REMARKS:

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

VHT20

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	70.9 PK	74.0	-3.1	1.57 H	63	73.39	-2.49
2	2390.00	51.8 AV	54.0	-2.2	1.57 H	63	54.29	-2.49
3	*2412.00	114.1 PK			1.69 H	86	116.52	-2.42
4	*2412.00	103.7 AV			1.69 H	86	106.12	-2.42
5	4824.00	56.4 PK	74.0	-17.6	1.53 H	314	49.19	7.21
6	4824.00	43.9 AV	54.0	-10.1	1.53 H	314	36.69	7.21
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	2390.00	72.7 PK	74.0	-1.3	1.60 V	203	75.19	-2.49
2	2390.00	53.6 AV	54.0	-0.4	1.60 V	203	56.09	-2.49
3	*2412.00	115.0 PK			1.59 V	204	117.42	-2.42
4	*2412.00	104.7 AV			1.59 V	204	107.12	-2.42
5	4824.00	54.5 PK	74.0	-19.5	1.69 V	346	47.29	7.21
6	4824.00	42.7 AV	54.0	-11.3	1.69 V	346	35.49	7.21

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 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	61.9 PK	74.0	-12.1	1.67 H	84	64.39	-2.49
2	2390.00	45.1 AV	54.0	-8.9	1.67 H	84	47.59	-2.49
3	*2437.00	119.6 PK			1.67 H	84	121.94	-2.34
4	*2437.00	108.9 AV			1.67 H	84	111.24	-2.34
5	2483.50	61.9 PK	74.0	-12.1	1.67 H	84	64.08	-2.18
6	2483.50	47.8 AV	54.0	-6.2	1.67 H	84	49.98	-2.18
7	4874.00	55.1 PK	74.0	-18.9	1.22 H	331	47.89	7.21
8	4874.00	42.9 AV	54.0	-11.1	1.22 H	331	35.69	7.21
9	7311.00	66.6 PK	74.0	-7.4	2.21 H	145	54.88	11.72
10	7311.00	52.5 AV	54.0	-1.5	2.21 H	145	40.78	11.72
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	2390.00	62.5 PK	74.0	-11.5	1.59 V	41	64.99	-2.49
2	2390.00	46.3 AV	54.0	-7.7	1.59 V	41	48.79	-2.49
3	*2437.00	120.2 PK			1.59 V	41	122.54	-2.34
4	*2437.00	109.9 AV			1.59 V	41	112.24	-2.34
5	2483.50	65.5 PK	74.0	-8.5	1.59 V	41	67.68	-2.18
6	2483.50	50.5 AV	54.0	-3.5	1.59 V	41	52.68	-2.18
7	4874.00	53.7 PK	74.0	-20.3	1.25 V	216	46.49	7.21
8	4874.00	41.7 AV	54.0	-12.3	1.25 V	216	34.49	7.21
9	7311.00	67.6 PK	74.0	-6.4	2.19 V	182	55.88	11.72
10	7311.00	53.7 AV	54.0	-0.3	2.19 V	182	41.98	11.72

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 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2462.00	114.3 PK			1.49 H	109	116.56	-2.26
2	*2462.00	103.0 AV			1.49 H	109	105.26	-2.26
3	2483.50	70.1 PK	74.0	-3.9	1.49 H	109	72.28	-2.18
4	2483.50	50.0 AV	54.0	-4.0	1.49 H	109	52.18	-2.18
5	4924.00	57.5 PK	74.0	-16.5	1.61 H	334	50.28	7.22
6	4924.00	44.5 AV	54.0	-9.5	1.61 H	334	37.28	7.22
7	7386.00	51.5 PK	74.0	-22.5	1.12 H	163	39.58	11.92
8	7386.00	46.1 AV	54.0	-7.9	1.12 H	163	34.18	11.92
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.7 PK			1.60 V	41	116.96	-2.26
2	*2462.00	104.0 AV			1.60 V	41	106.26	-2.26
3	2483.50	72.0 PK	74.0	-2.0	1.60 V	41	74.18	-2.18
4	2483.50	53.7 AV	54.0	-0.3	1.60 V	41	55.88	-2.18
5	4924.00	54.8 PK	74.0	-19.2	1.59 V	354	47.58	7.22
6	4924.00	42.8 AV	54.0	-11.2	1.59 V	354	35.58	7.22
7	7386.00	57.7 PK	74.0	-16.3	1.00 V	210	45.78	11.92
8	7386.00	47.5 AV	54.0	-6.5	1.00 V	210	35.58	11.92

REMARKS:

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

VHT40

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	69.0 PK	74.0	-5.0	1.52 H	105	71.49	-2.49
2	2390.00	53.8 AV	54.0	-0.2	1.52 H	105	56.29	-2.49
3	*2422.00	110.8 PK			1.52 H	105	113.19	-2.39
4	*2422.00	99.5 AV			1.52 H	105	101.89	-2.39
5	4844.00	50.7 PK	74.0	-23.3	1.01 H	144	43.49	7.21
6	4844.00	40.8 AV	54.0	-13.2	1.01 H	144	33.59	7.21
7	7266.00	57.1 PK	74.0	-16.9	1.43 H	214	45.49	11.61
8	7266.00	39.9 AV	54.0	-14.1	1.43 H	214	28.29	11.61
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	2390.00	68.5 PK	74.0	-5.5	1.63 V	44	70.99	-2.49
2	2390.00	53.6 AV	54.0	-0.4	1.63 V	44	56.09	-2.49
3	*2422.00	111.3 PK			1.63 V	44	113.69	-2.39
4	*2422.00	99.8 AV			1.63 V	44	102.19	-2.39
5	4844.00	52.1 PK	74.0	-21.9	1.00 V	145	44.89	7.21
6	4844.00	42.0 AV	54.0	-12.0	1.00 V	145	34.79	7.21
7	7266.00	52.6 PK	74.0	-21.4	1.30 V	219	40.99	11.61
8	7266.00	41.0 AV	54.0	-13.0	1.30 V	219	29.39	11.61

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 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	66.6 PK	74.0	-7.4	1.88 H	76	69.09	-2.49
2	2390.00	48.5 AV	54.0	-5.5	1.88 H	76	50.99	-2.49
3	*2437.00	111.3 PK			1.88 H	78	113.64	-2.34
4	*2437.00	100.4 AV			1.88 H	78	102.74	-2.34
5	2483.50	69.5 PK	74.0	-4.5	1.88 H	76	71.68	-2.18
6	2483.50	51.1 AV	54.0	-2.9	1.88 H	76	53.28	-2.18
7	4874.00	51.1 PK	74.0	-22.9	1.01 H	133	43.89	7.21
8	4874.00	41.1 AV	54.0	-12.9	1.01 H	133	33.89	7.21
9	7311.00	57.8 PK	74.0	-16.2	1.37 H	210	46.08	11.72
10	7311.00	40.5 AV	54.0	-13.5	1.37 H	210	28.78	11.72
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	2390.00	67.0 PK	74.0	-7.0	1.63 V	44	69.49	-2.49
2	2390.00	51.1 AV	54.0	-2.9	1.63 V	44	53.59	-2.49
3	*2437.00	112.0 PK			1.63 V	44	114.34	-2.34
4	*2437.00	101.1 AV			1.63 V	44	103.44	-2.34
5	2483.50	73.3 PK	74.0	-0.7	1.63 V	44	75.48	-2.18
6	2483.50	53.7 AV	54.0	-0.3	1.63 V	44	55.88	-2.18
7	4874.00	52.4 PK	74.0	-21.6	1.07 V	135	45.19	7.21
8	4874.00	42.8 AV	54.0	-11.2	1.07 V	135	35.59	7.21
9	7311.00	53.1 PK	74.0	-20.9	1.29 V	221	41.38	11.72
10	7311.00	41.4 AV	54.0	-12.6	1.29 V	221	29.68	11.72

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 9	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2452.00	107.6 PK			1.83 H	78	109.90	-2.30
2	*2452.00	96.8 AV			1.83 H	78	99.10	-2.30
3	2483.50	67.1 PK	74.0	-6.9	1.83 H	78	69.28	-2.18
4	2483.50	50.4 AV	54.0	-3.6	1.83 H	78	52.58	-2.18
5	4904.00	51.7 PK	74.0	-22.3	1.09 H	141	44.49	7.21
6	4904.00	41.6 AV	54.0	-12.4	1.09 H	141	34.39	7.21
7	7356.00	57.0 PK	74.0	-17.0	1.40 H	210	45.15	11.85
8	7356.00	40.1 AV	54.0	-13.9	1.40 H	210	28.25	11.85
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	*2452.00	108.3 PK			1.74 V	45	110.60	-2.30
2	*2452.00	97.7 AV			1.74 V	45	100.00	-2.30
3	2483.50	69.2 PK	74.0	-4.8	1.74 V	45	71.38	-2.18
4	2483.50	53.6 AV	54.0	-0.4	1.74 V	45	55.78	-2.18
5	4904.00	51.9 PK	74.0	-22.1	1.03 V	134	44.69	7.21
6	4904.00	41.9 AV	54.0	-12.1	1.03 V	134	34.69	7.21
7	7356.00	53.1 PK	74.0	-20.9	1.36 V	214	41.25	11.85
8	7356.00	41.4 AV	54.0	-12.6	1.36 V	214	29.55	11.85

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.

Below 1GHz Data:

VHT20

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	133.11	37.2 QP	43.5	-6.3	1.45 H	264	51.08	-13.87
2	249.95	41.7 QP	46.0	-4.3	1.24 H	245	55.65	-13.91
3	281.81	41.6 QP	46.0	-4.4	1.34 H	122	54.20	-12.56
4	500.12	42.5 QP	46.0	-3.5	1.34 H	245	49.73	-7.19
5	749.81	40.2 QP	46.0	-5.8	1.45 H	245	42.21	-2.00
6	800.13	38.1 QP	46.0	-7.9	1.24 H	267	39.57	-1.45
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	89.12	36.7 QP	43.5	-6.9	1.24 V	134	55.60	-18.95
2	133.31	37.2 QP	43.5	-6.3	1.24 V	145	51.06	-13.85
3	167.12	37.2 QP	43.5	-6.3	1.34 V	360	50.52	-13.31
4	199.51	36.2 QP	43.5	-7.3	1.64 V	145	52.24	-16.03
5	249.34	41.5 QP	46.0	-4.5	1.24 V	164	55.43	-13.92
6	282.12	42.2 QP	46.0	-3.8	1.34 V	64	54.76	-12.55

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

Beamforming MODE
Above 1GHz Data:

VHT20

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	72.6 PK	74.0	-1.4	1.37 H	81	78.18	-5.58
2	2390.00	53.1 AV	54.0	-0.9	1.37 H	81	58.68	-5.58
3	*2412.00	112.5 PK			1.17 H	89	117.98	-5.48
4	*2412.00	103.2 AV			1.17 H	89	108.68	-5.48
5	4824.00	56.6 PK	74.0	-17.4	1.54 H	318	54.24	2.36
6	4824.00	43.9 AV	54.0	-10.1	1.54 H	318	41.54	2.36
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	2390.00	72.2 PK	74.0	-1.8	1.46 V	78	77.78	-5.58
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.46 V**	**78**	**59.48**	**-5.58**
3	*2412.00	114.3 PK			1.73 V	120	119.78	-5.48
4	*2412.00	104.7 AV			1.73 V	120	110.18	-5.48
5	4824.00	55.2 PK	74.0	-18.8	1.68 V	350	52.84	2.36
6	4824.00	43.2 AV	54.0	-10.8	1.68 V	350	40.84	2.36

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 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	61.7 PK	74.0	-12.3	1.71 H	73	67.28	-5.58
2	2390.00	44.8 AV	54.0	-9.2	1.71 H	73	50.38	-5.58
3	*2437.00	119.6 PK			1.64 H	70	124.93	-5.33
4	*2437.00	109.1 AV			1.64 H	70	114.43	-5.33
5	2483.50	61.8 PK	74.0	-12.2	1.69 H	89	66.85	-5.05
6	2483.50	47.7 AV	54.0	-6.3	1.69 H	89	52.75	-5.05
7	4874.00	54.9 PK	74.0	-19.1	1.20 H	342	52.40	2.50
8	4874.00	43.0 AV	54.0	-11.0	1.20 H	342	40.50	2.50
9	7311.00	67.5 PK	74.0	-6.5	2.04 H	140	57.82	9.68
10	7311.00	53.8 AV	54.0	-0.2	2.04 H	140	44.12	9.68
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.6 PK	74.0	-9.4	1.55 V	54	70.18	-5.58
2	2390.00	45.8 AV	54.0	-8.2	1.55 V	54	51.38	-5.58
3	*2437.00	120.5 PK			1.54 V	29	125.83	-5.33
4	*2437.00	110.2 AV			1.54 V	29	115.53	-5.33
5	2483.50	65.8 PK	74.0	-8.2	1.55 V	65	70.85	-5.05
6	2483.50	50.9 AV	54.0	-3.1	1.55 V	65	55.95	-5.05
7	4874.00	53.7 PK	74.0	-20.3	1.21 V	200	51.20	2.50
8	4874.00	42.0 AV	54.0	-12.0	1.21 V	200	39.50	2.50
9	7311.00	65.3 PK	74.0	-8.7	1.00 V	178	55.62	9.68
10	7311.00	51.2 AV	54.0	-2.8	1.00 V	178	41.52	9.68

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2462.00	115.0 PK			1.45 H	100	120.19	-5.19
2	*2462.00	103.4 AV			1.45 H	100	108.59	-5.19
3	2483.50	69.9 PK	74.0	-4.1	1.45 H	102	74.95	-5.05
4	2483.50	50.0 AV	54.0	-4.0	1.45 H	102	55.05	-5.05
5	4924.00	58.1 PK	74.0	-15.9	1.65 H	326	55.41	2.69
6	4924.00	45.0 AV	54.0	-9.0	1.65 H	326	42.31	2.69
7	7386.00	51.8 PK	74.0	-22.2	1.11 H	153	41.99	9.81
8	7386.00	46.5 AV	54.0	-7.5	1.11 H	153	36.69	9.81
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	*2462.00	114.3 PK			1.68 V	126	119.49	-5.19
2	*2462.00	104.5 AV			1.68 V	126	109.69	-5.19
3	2483.50	71.2 PK	74.0	-2.8	2.05 V	71	76.25	-5.05
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**2.05 V**	**71**	**58.95**	**-5.05**
5	4924.00	54.9 PK	74.0	-19.1	1.62 V	345	52.21	2.69
6	4924.00	42.8 AV	54.0	-11.2	1.62 V	345	40.11	2.69
7	7386.00	57.4 PK	74.0	-16.6	1.00 V	200	47.59	9.81
8	7386.00	47.1 AV	54.0	-6.9	1.00 V	200	37.29	9.81

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.

VHT40

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	69.4 PK	74.0	-4.6	1.48 H	90	74.98	-5.58
2	2390.00	51.2 AV	54.0	-2.8	1.48 H	90	56.78	-5.58
3	*2422.00	110.7 PK			1.53 H	121	116.12	-5.42
4	*2422.00	99.5 AV			1.53 H	121	104.92	-5.42
5	4844.00	50.2 PK	74.0	-23.8	1.00 H	146	47.79	2.41
6	4844.00	40.4 AV	54.0	-13.6	1.00 H	146	37.99	2.41
7	7266.00	57.2 PK	74.0	-16.8	1.47 H	222	47.55	9.65
8	7266.00	39.7 AV	54.0	-14.3	1.47 H	222	30.05	9.65
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.0 PK	74.0	-5.0	1.40 V	234	74.58	-5.58
2	2390.00	53.7 AV	54.0	-0.3	1.40 V	234	59.28	-5.58
3	*2422.00	111.5 PK			1.66 V	188	116.92	-5.42
4	*2422.00	100.6 AV			1.66 V	188	106.02	-5.42
5	4844.00	51.8 PK	74.0	-22.2	1.02 V	145	49.39	2.41
6	4844.00	41.7 AV	54.0	-12.3	1.02 V	145	39.29	2.41
7	7266.00	52.4 PK	74.0	-21.6	1.30 V	218	42.75	9.65
8	7266.00	40.8 AV	54.0	-13.2	1.30 V	218	31.15	9.65

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	2390.00	67.2 PK	74.0	-6.8	1.85 H	77	72.78	-5.58
2	2390.00	48.9 AV	54.0	-5.1	1.85 H	77	54.48	-5.58
3	*2437.00	111.8 PK			1.86 H	67	117.13	-5.33
4	*2437.00	100.8 AV			1.86 H	67	106.13	-5.33
5	2483.50	69.3 PK	74.0	-4.7	1.84 H	71	74.35	-5.05
6	2483.50	50.7 AV	54.0	-3.3	1.84 H	71	55.75	-5.05
7	4874.00	51.4 PK	74.0	-22.6	1.03 H	144	48.90	2.50
8	4874.00	41.3 AV	54.0	-12.7	1.03 H	144	38.80	2.50
9	7311.00	58.4 PK	74.0	-15.6	1.33 H	202	48.72	9.68
10	7311.00	40.9 AV	54.0	-13.1	1.33 H	202	31.22	9.68
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	1.60 V	60	72.78	-5.58
2	2390.00	51.6 AV	54.0	-2.4	1.60 V	60	57.18	-5.58
3	*2437.00	113.6 PK			1.68 V	39	118.93	-5.33
4	*2437.00	102.3 AV			1.68 V	39	107.63	-5.33
5	2483.50	73.2 PK	74.0	-0.8	1.59 V	31	78.25	-5.05
6	2483.50	53.6 AV	54.0	-0.4	1.59 V	31	58.65	-5.05
7	4874.00	52.2 PK	74.0	-21.8	1.09 V	147	49.70	2.50
8	4874.00	42.4 AV	54.0	-11.6	1.09 V	147	39.90	2.50
9	7311.00	53.6 PK	74.0	-20.4	1.29 V	219	43.92	9.68
10	7311.00	41.7 AV	54.0	-12.3	1.29 V	219	32.02	9.68

REMARKS:

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

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2452.00	107.8 PK			1.85 H	62	113.04	-5.24
2	*2452.00	97.3 AV			1.85 H	62	102.54	-5.24
3	2483.50	66.5 PK	74.0	-7.5	1.84 H	76	71.55	-5.05
4	2483.50	50.1 AV	54.0	-3.9	1.84 H	76	55.15	-5.05
5	4904.00	51.9 PK	74.0	-22.1	1.04 H	141	49.30	2.60
6	4904.00	41.7 AV	54.0	-12.3	1.04 H	141	39.10	2.60
7	7356.00	56.9 PK	74.0	-17.1	1.44 H	217	47.14	9.76
8	7356.00	40.0 AV	54.0	-14.0	1.44 H	217	30.24	9.76
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	*2452.00	108.9 PK			1.70 V	45	114.14	-5.24
2	*2452.00	98.3 AV			1.70 V	45	103.54	-5.24
3	2483.50	69.6 PK	74.0	-4.4	1.72 V	51	74.65	-5.05
4	2483.50	53.8 AV	54.0	-0.2	1.72 V	51	58.85	-5.05
5	4904.00	52.0 PK	74.0	-22.0	1.00 V	133	49.40	2.60
6	4904.00	42.0 AV	54.0	-12.0	1.00 V	133	39.40	2.60
7	7356.00	52.5 PK	74.0	-21.5	1.36 V	207	42.74	9.76
8	7356.00	41.0 AV	54.0	-13.0	1.36 V	207	31.24	9.76

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 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 10 , 2014	Mar. 09, 2015
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: Feb. 26, 2015

4.2.3 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. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

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

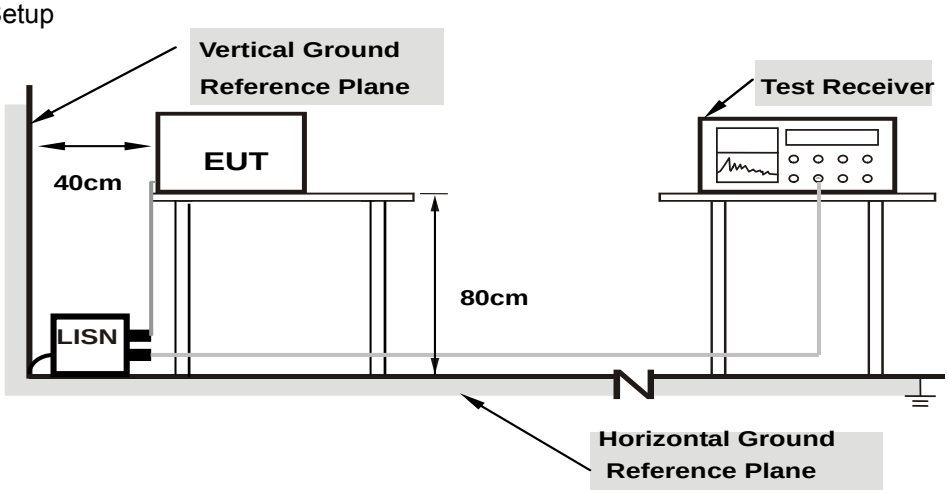
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

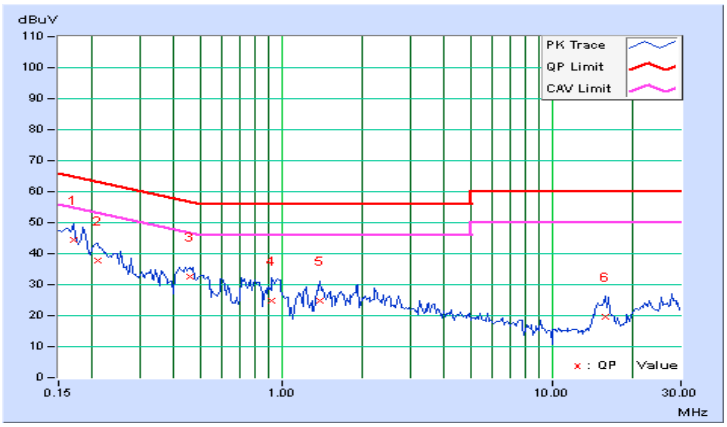
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.16953**	**0.07**	**44.52**	**34.01**	**44.59**	**34.08**	**64.98**	**54.98**	**-20.40**	**-20.91**
2	0.20859	0.07	37.59	24.97	37.66	25.04	63.26	53.26	-25.60	-28.22
3	0.45859	0.09	32.44	23.63	32.53	23.72	56.72	46.72	-24.18	-22.99
4	0.92344	0.12	24.64	15.53	24.76	15.65	56.00	46.00	-31.24	-30.35
5	1.38281	0.15	24.81	18.63	24.96	18.78	56.00	46.00	-31.04	-27.22
6	15.75781	0.60	19.19	12.11	19.79	12.71	60.00	50.00	-40.21	-37.29

Remarks:

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

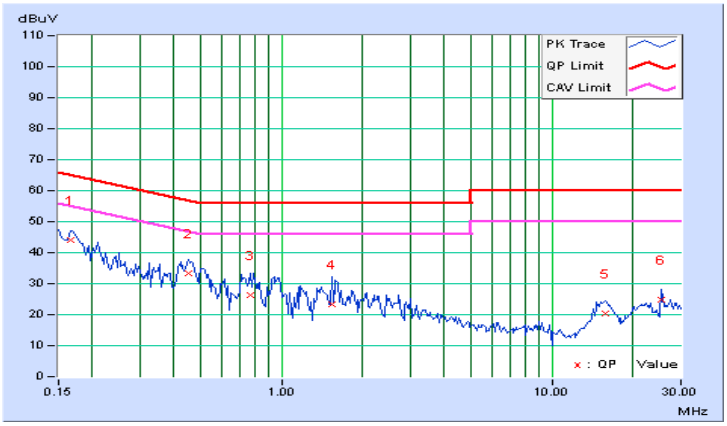


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		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	0.06	44.07	32.43	44.13	32.49	65.18	55.18	-21.04	-22.68
2	0.45078	0.09	33.07	21.51	33.16	21.60	56.86	46.86	-23.70	-25.26
3	0.76719	0.11	26.31	19.19	26.42	19.30	56.00	46.00	-29.58	-26.70
4	1.54297	0.16	23.31	15.49	23.47	15.65	56.00	46.00	-32.53	-30.35
5	15.80469	0.63	19.68	13.98	20.31	14.61	60.00	50.00	-39.69	-35.39
6	25.23047	0.86	24.03	22.98	24.89	23.84	60.00	50.00	-35.11	-26.16

Remarks:

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

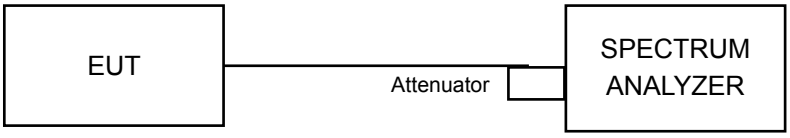


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

NOTE:
1. The test was performed in Oven room B.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Mar. 11, 2015

4.3.4 Test Procedure

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

4.3.5 Deviation fromTest Standard

No deviation.

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 Result

CDD MODE

802.11b

Channel	Frequency (MHz)	6db Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	8.60	9.03	9.04	0.5	PASS
6	2437	9.10	8.14	9.09	0.5	PASS
11	2462	8.58	8.61	8.61	0.5	PASS

802.11g

Channel	Frequency (MHz)	6db Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	16.38	16.40	16.41	0.5	PASS
6	2437	16.41	16.40	16.40	0.5	PASS
11	2462	16.38	16.40	16.41	0.5	PASS

VHT20

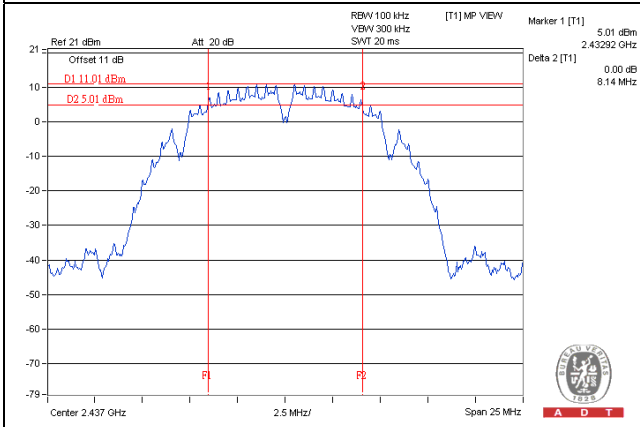
Channel	Frequency (MHz)	6db Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	17.36	17.66	17.65	0.5	PASS
6	2437	17.63	16.42	17.65	0.5	PASS
11	2462	17.63	17.66	17.63	0.5	PASS

VHT40

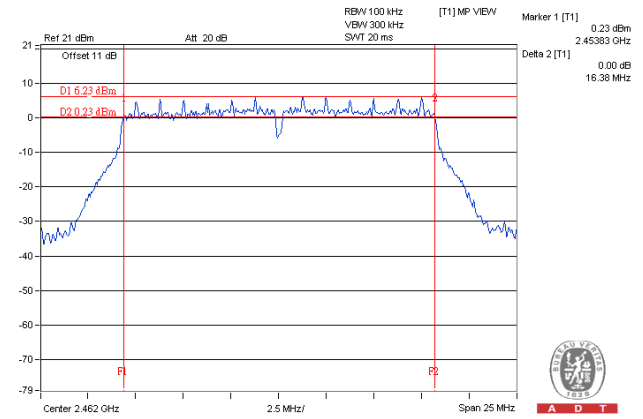
Channel	Frequency (MHz)	6db Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
3	2422	35.97	35.89	35.66	0.5	Pass
6	2437	36.22	36.48	36.16	0.5	Pass
9	2452	36.14	36.43	36.16	0.5	Pass

Spectrum Plot of Worst Value

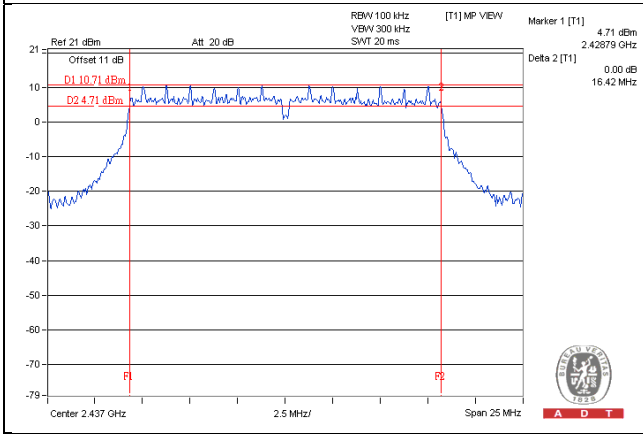
802.11b: Chain 1 / CH 6



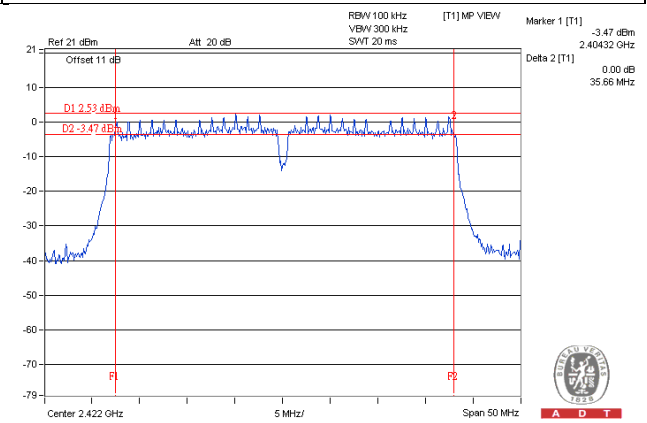
802.11g: Chain 0 / CH 11



VHT20: Chain 1 / CH 6



VHT40: Chain 2 / CH 3



Beamforming MODE

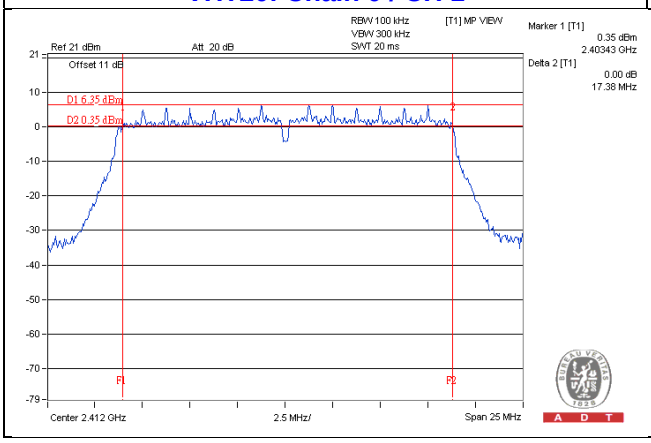
VHT20

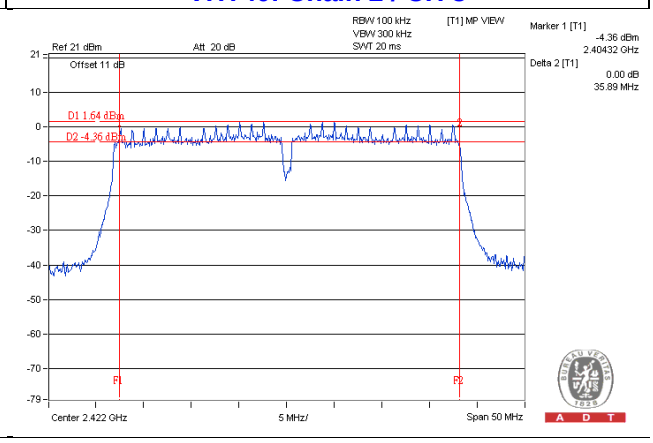
Channel	Frequency (MHz)	6db Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	17.38	17.64	17.64	0.5	PASS
6	2437	17.63	17.65	17.64	0.5	PASS
11	2462	17.59	17.65	17.64	0.5	PASS

VHT40

Channel	Frequency (MHz)	6db Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
3	2422	35.92	35.90	35.89	0.5	Pass
6	2437	36.17	36.46	35.91	0.5	Pass
9	2452	35.93	36.17	35.90	0.5	Pass

Spectrum Plot of Worst Value	
VHT20: Chain 0 / CH 1	**VHT40: Chain 2 / CH 3**





4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

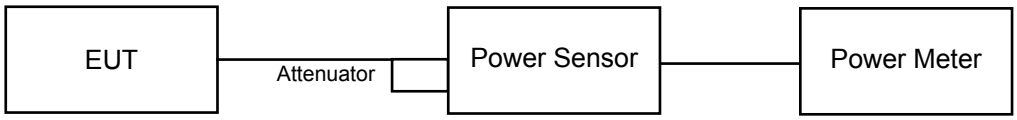
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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 Test Setup



4.4.3 Test 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 test was performed in Oven room B.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Mar. 11, 2015

4.4.4 Test Procedures

A 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 power level.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

CDD MODE

802.11b

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	18.85	19.04	18.98	235.972	23.73	30	Pass
6	2437	19.59	20.20	20.22	300.9	24.78	30	Pass
11	2462	19.45	19.35	19.56	264.569	24.23	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	19.11	18.97	18.73	235.001	23.71	30	Pass
6	2437	22.79	22.55	22.35	541.786	27.34	30	Pass
11	2462	17.64	17.39	17.32	166.855	22.22	30	Pass

VHT20

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	18.39	18.02	17.96	194.928	22.90	30	Pass
6	2437	23.25	23.12	22.61	598.855	27.77	30	Pass
11	2462	17.23	16.88	16.80	149.461	21.75	30	Pass

VHT40

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	17.04	16.72	16.23	139.547	21.45	30	Pass
6	2437	19.01	18.63	18.50	223.357	23.49	30	Pass
9	2452	15.09	14.31	13.98	84.265	19.26	30	Pass

Beamforming MODE

VHT20

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	17.51	17.57	17.72	172.668	22.37	27.05	Pass
6	2437	22.32	22.08	21.96	489.08	26.89	27.05	Pass
11	2462	17.23	16.88	16.80	149.461	21.75	27.05	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.95dBi > 6dBi , so the power limit shall be reduced to 30-(8.95-6) = 27.05dBm.

VHT40

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	15.52	16.17	15.72	114.37	20.58	27.05	Pass
6	2437	18.15	17.94	17.72	186.699	22.71	27.05	Pass
9	2452	14.23	13.54	13.24	70.165	18.46	27.05	Pass

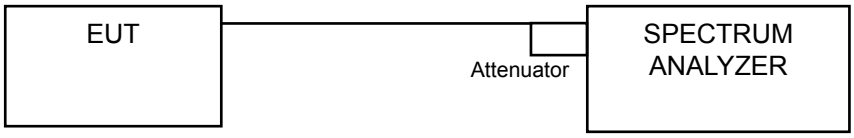
NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.95dBi > 6dBi , so the power limit shall be reduced to 30-(8.95-6) = 27.05dBm.

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 Setup



4.5.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

NOTE:
1. The test was performed in Oven room B.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Mar. 11, 2015

4.5.4 Test Procedure

For 802.11b, 802.11g & VHT20 test:

a) Set instrument center frequency to DTS channel center frequency.
b) Set span to at least 1.5 times the OBW.
c) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz. .
d) Set VBW ≥3 x RBW.
e) Detector = power averaging (RMS) or sample detector (when RMS not available).
f) Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g) Sweep time = auto couple.
h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
i) Use the peak marker function to determine the maximum amplitude level.

For VHT40 test:

a) Measure the duty cycle (x).
b) Set instrument center frequency to DTS channel center frequency.
c) Set span to at least 1.5 times the OBW.
d) Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz..
e) Set VBW ≥3 x RBW.
f) Detector = power averaging (RMS) or sample detector (when RMS not available).
g) Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h) Sweep time = auto couple.
i) Do not use sweep triggering. Allow sweep to “free run”.
j) Employ trace averaging (RMS) mode over a minimum of 100 traces.
k) Use the peak marker function to determine the maximum amplitude level.
l) Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

CDD MODE

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-9.66	4.77	-4.89	5.05	Pass
	6	2437	-9.02	4.77	-4.25	5.05	Pass
	11	2462	-9.36	4.77	-4.59	5.05	Pass
1	1	2412	-9.46	4.77	-4.69	5.05	Pass
	6	2437	-8.25	4.77	-3.48	5.05	Pass
	11	2462	-9.29	4.77	-4.52	5.05	Pass
2	1	2412	-9.56	4.77	-4.79	5.05	Pass
	6	2437	-9.14	4.77	-4.37	5.05	Pass
	11	2462	-9.22	4.77	-4.45	5.05	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.95dBi > 6dBi , so the power density limit shall be reduced to 8-(8.95-6) = 5.05dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-10.67	4.77	-5.90	5.05	Pass
	6	2437	-7.50	4.77	-2.73	5.05	Pass
	11	2462	-12.20	4.77	-7.43	5.05	Pass
1	1	2412	-10.79	4.77	-6.02	5.05	Pass
	6	2437	-6.29	4.77	-1.52	5.05	Pass
	11	2462	-12.05	4.77	-7.28	5.05	Pass
2	1	2412	-10.82	4.77	-6.05	5.05	Pass
	6	2437	-7.69	4.77	-2.92	5.05	Pass
	11	2462	-12.30	4.77	-7.53	5.05	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.95dBi > 6dBi , so the power density limit shall be reduced to 8-(8.95-6) = 5.05dBm.

VHT20

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-12.76	4.77	-7.99	5.05	Pass
	6	2437	-8.52	4.77	-3.75	5.05	Pass
	11	2462	-14.04	4.77	-9.27	5.05	Pass
1	1	2412	-10.99	4.77	-6.22	5.05	Pass
	6	2437	-7.17	4.77	-2.40	5.05	Pass
	11	2462	-13.92	4.77	-9.15	5.05	Pass
2	1	2412	-13.39	4.77	-8.62	5.05	Pass
	6	2437	-8.74	4.77	-3.97	5.05	Pass
	11	2462	-14.72	4.77	-9.95	5.05	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.95dBi > 6dBi , so the power density limit shall be reduced to 8-(8.95-6) = 5.05dBm.

VHT40

TX chain	Channel	Freq. (MHz)	PSD w/o Duty Factor (dBm)	10 log (N=3) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-16.22	4.77	0.19	-11.26	5.05	PASS
	6	2437	-14.41	4.77	0.19	-9.45	5.05	PASS
	9	2452	-18.06	4.77	0.19	-13.10	5.05	PASS
1	3	2422	-16.32	4.77	0.19	-11.36	5.05	PASS
	6	2437	-12.31	4.77	0.19	-7.35	5.05	PASS
	9	2452	-17.08	4.77	0.19	-12.12	5.05	PASS
2	3	2422	-16.74	4.77	0.19	-11.78	5.05	PASS
	6	2437	-14.92	4.77	0.19	-9.96	5.05	PASS
	9	2452	-18.86	4.77	0.19	-13.90	5.05	PASS

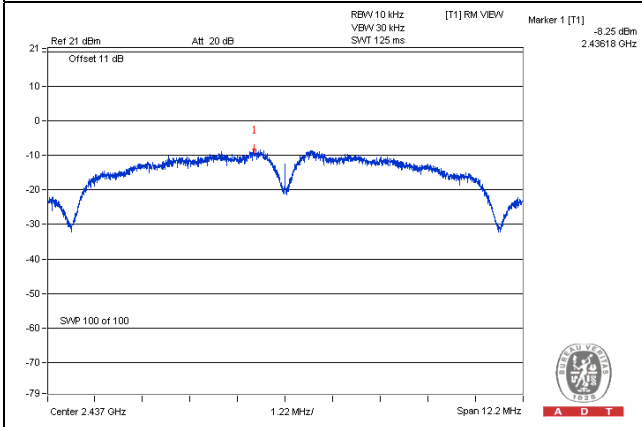
NOTE: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.95dBi > 6dBi , so the power density limit shall be reduced to 8-(8.95-6) = 5.05dBm.

2. Refer to section 3.3 for duty cycle spectrum plot.

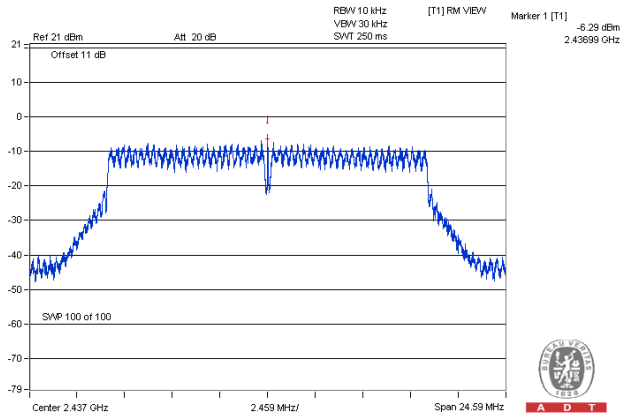
.

Spectrum Plot of Worst Value

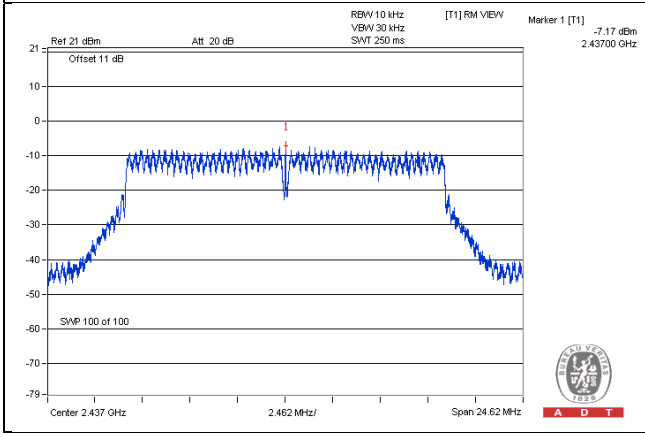
802.11b: Chain 1 / CH 6



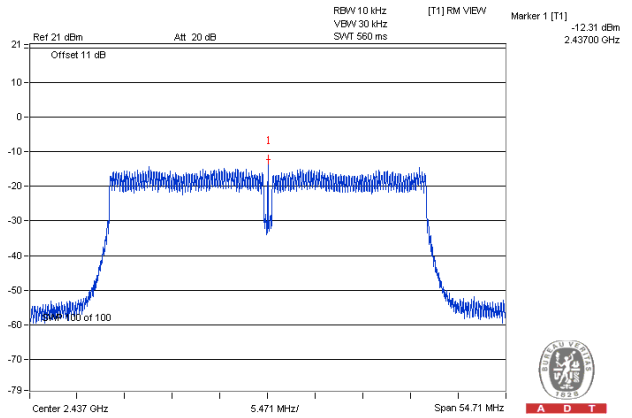
802.11g: Chain 1 / CH 6



VHT20: Chain 1 / CH 6



VHT40: Chain 1 / CH 6



Beamforming MODE

VHT20

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=3) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-12.90	4.77	-8.13	5.05	Pass
	6	2437	-9.51	4.77	-4.74	5.05	Pass
	11	2462	-14.52	4.77	-9.75	5.05	Pass
1	1	2412	-12.05	4.77	-7.28	5.05	Pass
	6	2437	-7.10	4.77	-2.33	5.05	Pass
	11	2462	-14.01	4.77	-9.24	5.05	Pass
2	1	2412	-13.89	4.77	-9.12	5.05	Pass
	6	2437	-9.16	4.77	-4.39	5.05	Pass
	11	2462	-14.61	4.77	-9.84	5.05	Pass

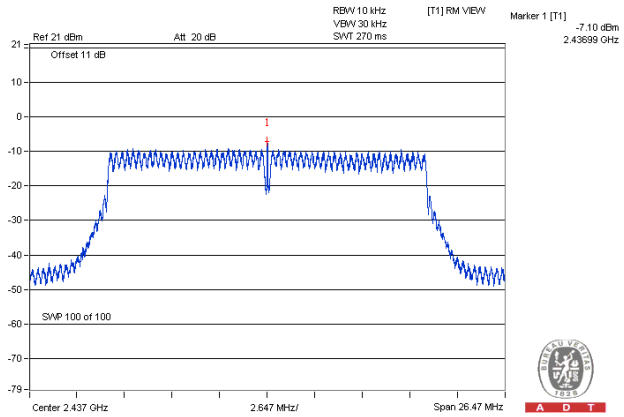
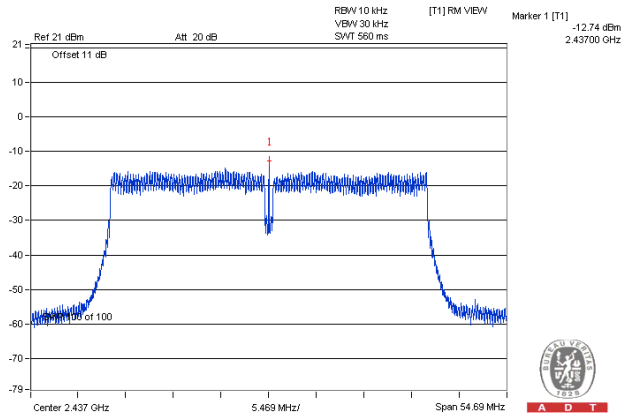
NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.95dBi > 6dBi , so the power density limit shall be reduced to 8-(8.95-6) = 5.05dBm.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD w/o Duty Factor (dBm)	10 log (N=3) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-16.16	4.77	0.19	-11.20	5.05	PASS
	6	2437	-14.63	4.77	0.19	-9.67	5.05	PASS
	9	2452	-19.08	4.77	0.19	-14.12	5.05	PASS
1	3	2422	-15.32	4.77	0.19	-10.36	5.05	PASS
	6	2437	-12.74	4.77	0.19	-7.78	5.05	PASS
	9	2452	-18.44	4.77	0.19	-13.48	5.05	PASS
2	3	2422	-17.77	4.77	0.19	-12.81	5.05	PASS
	6	2437	-15.40	4.77	0.19	-10.44	5.05	PASS
	9	2452	-19.81	4.77	0.19	-14.85	5.05	PASS

NOTE: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 3] = 8.95dBi > 6dBi , so the power density limit shall be reduced to 8-(8.95-6) = 5.05dBm.

2. Refer to section 3.3 for duty cycle spectrum plot.

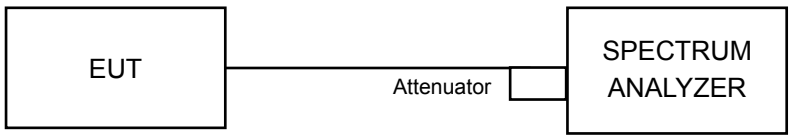
Spectrum Plot of Worst Value	
VHT20: Chain 1 / CH 6	**VHT40: Chain 1 / CH 6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

NOTE:
1. The test was performed in Oven room B.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Mar. 11, 2015

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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 OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Same as Item 4.3.6

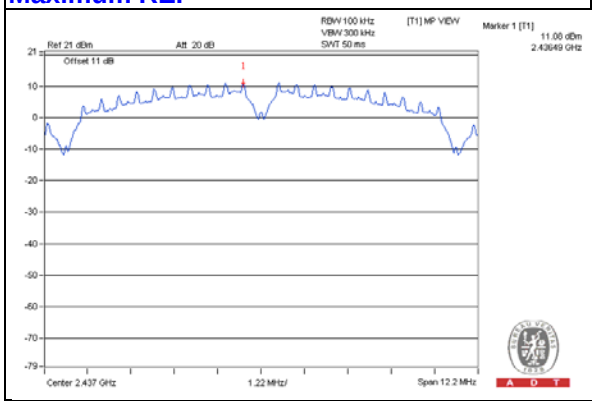
4.6.7 Test Results

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.

CDD MODE

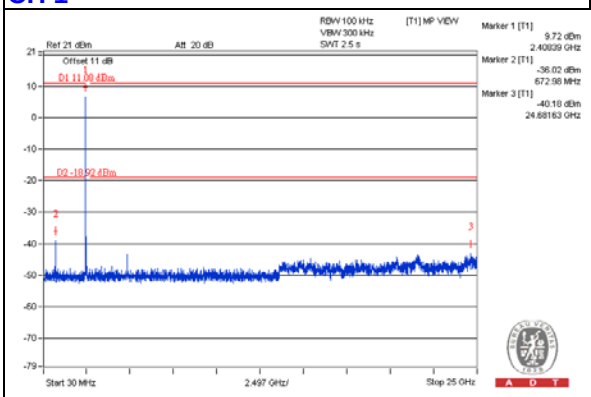
802.11b

Maximum REF

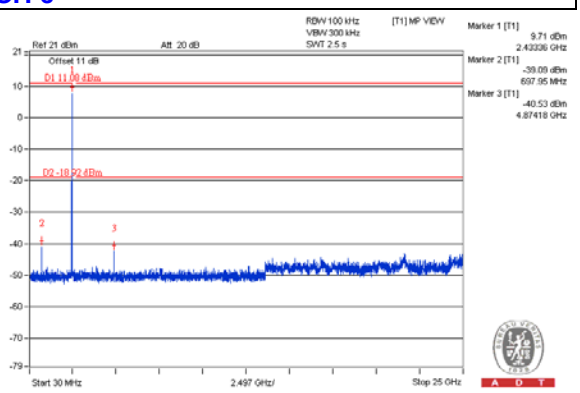


Chain 0

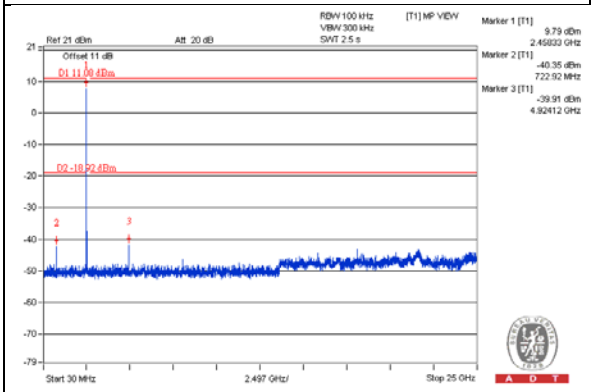
CH 1



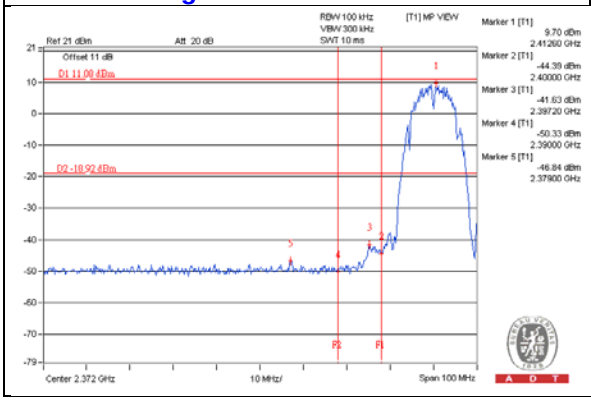
CH 6



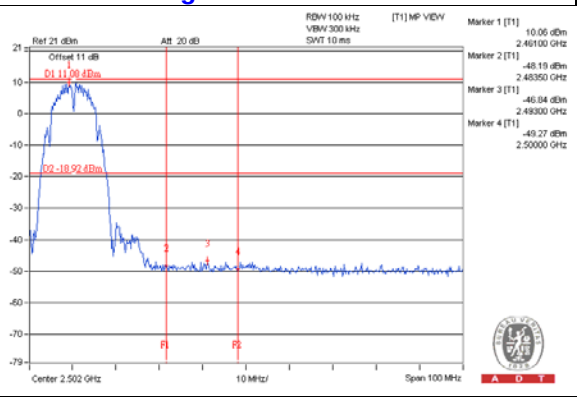
CH 11



CH 1 Band edge

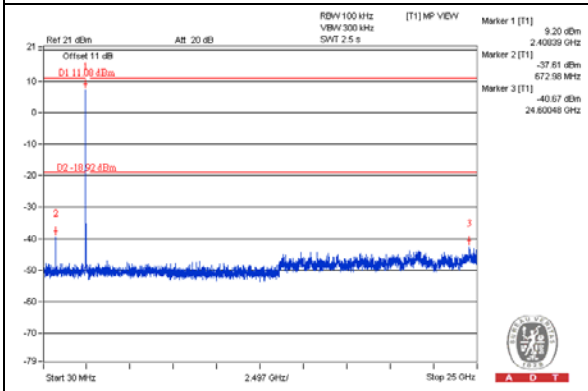


CH 11 Band edge

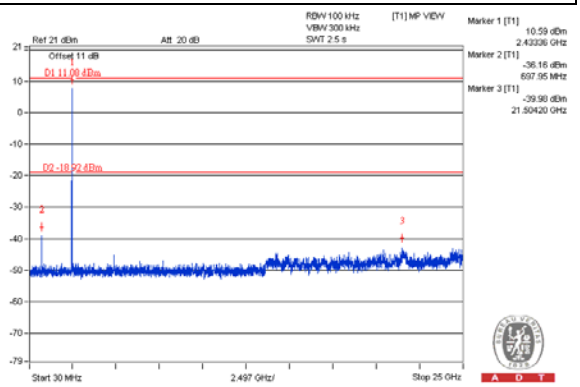


Chain 1

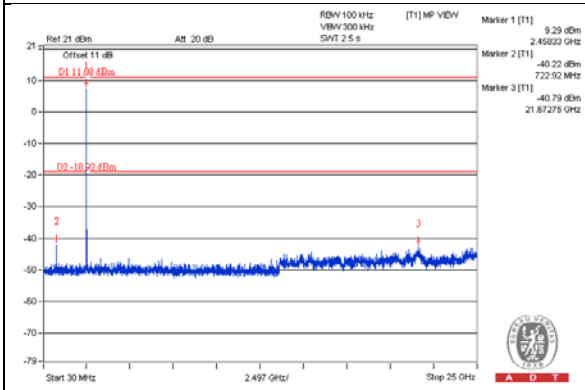
CH 1



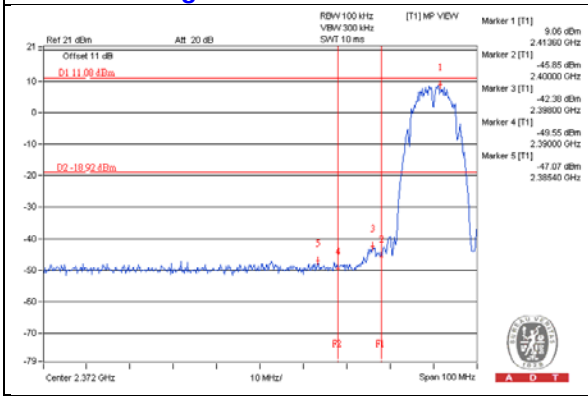
CH 6



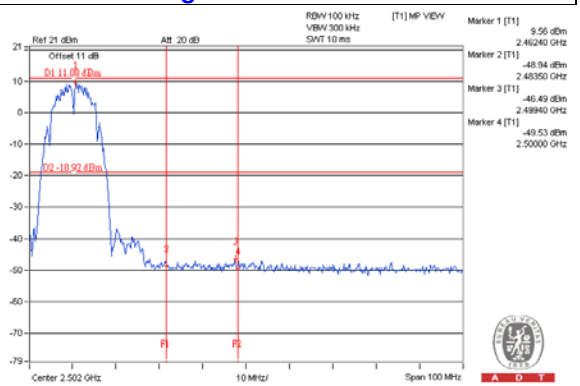
CH 11



CH 1 Band edge

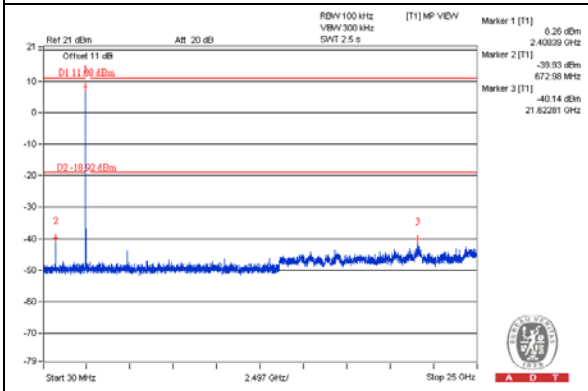


CH 11 Band edge

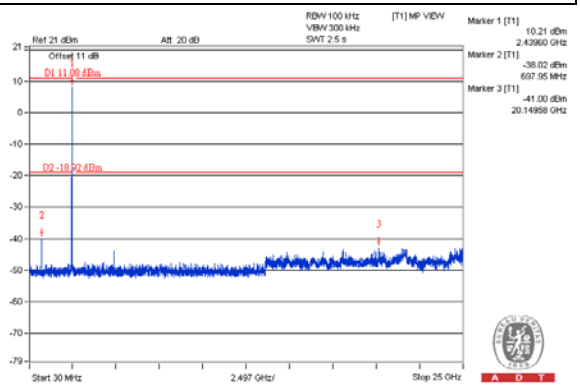


Chain 2

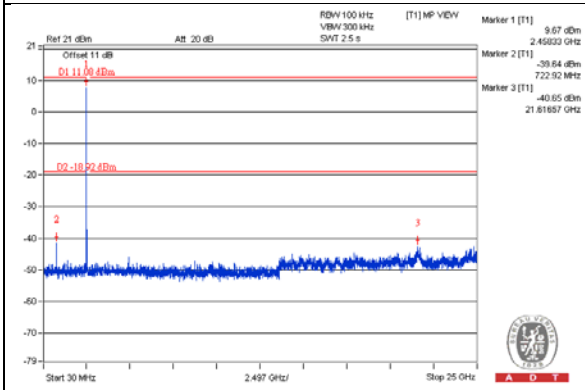
CH 1



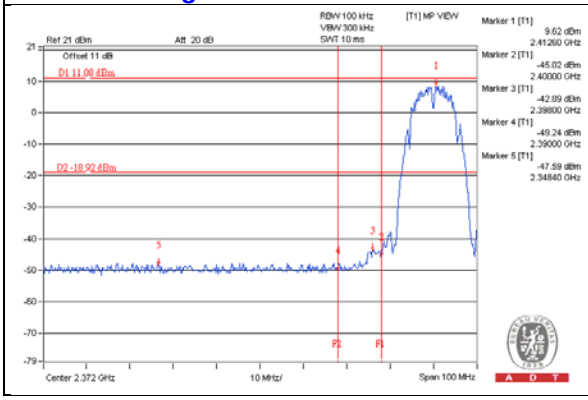
CH 6



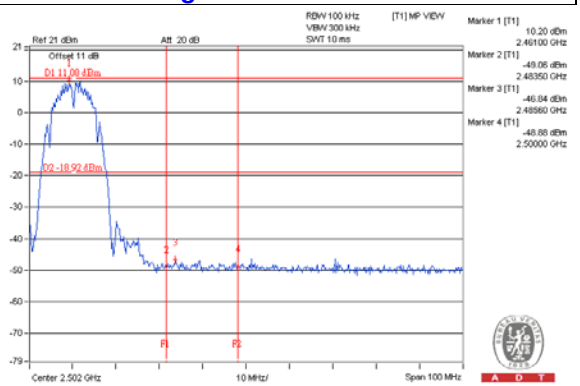
CH 11



CH 1 Band edge

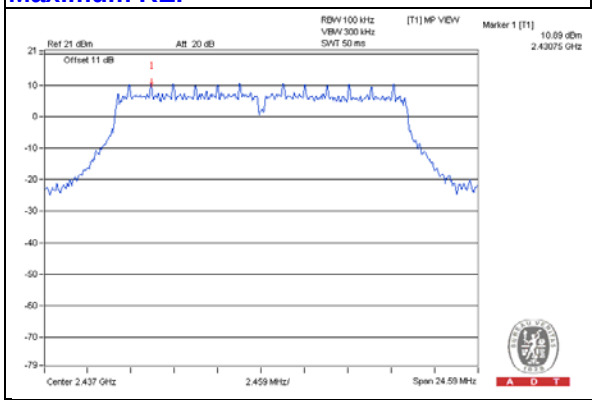


CH 11 Band edge



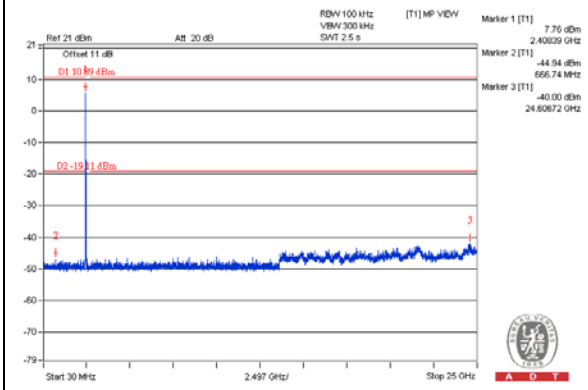
802.11g

Maximum REF

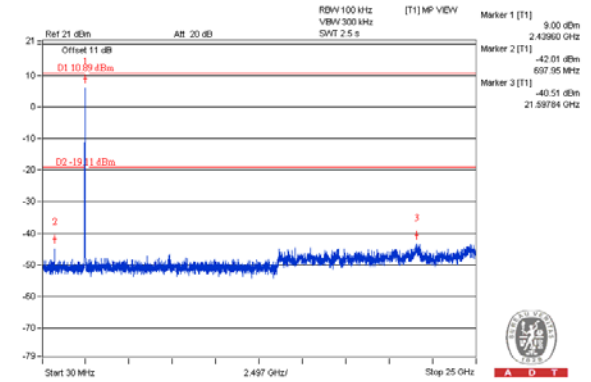


Chain 0

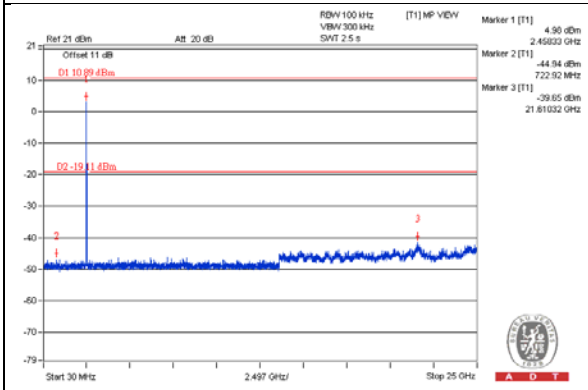
CH 1



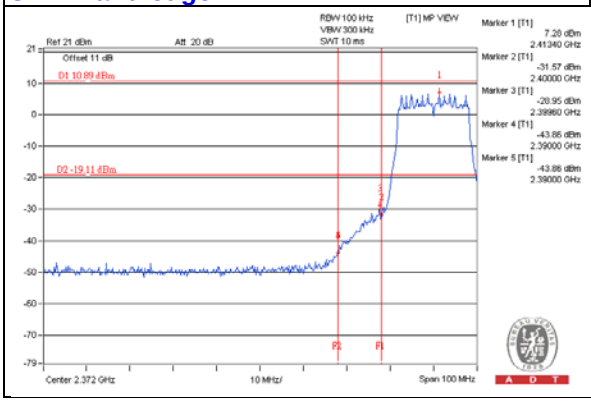
CH 6



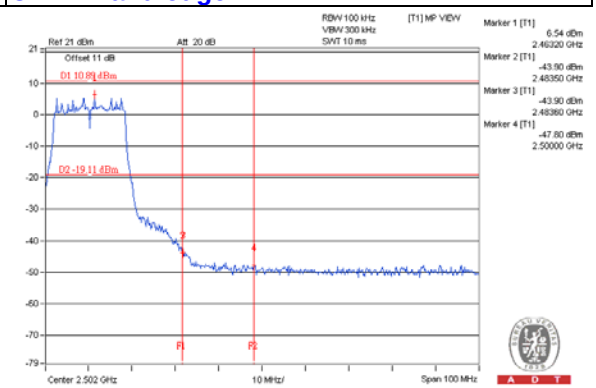
CH 11



CH 1 Band edge

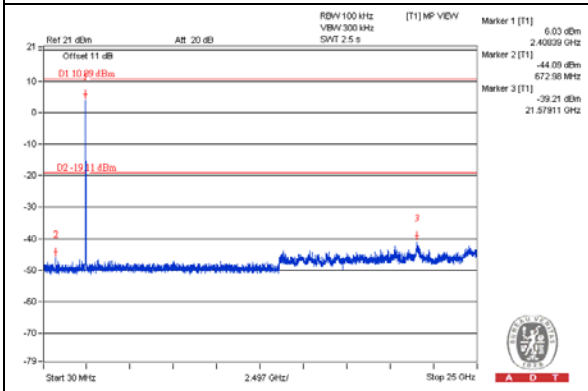


CH 11 Band edge

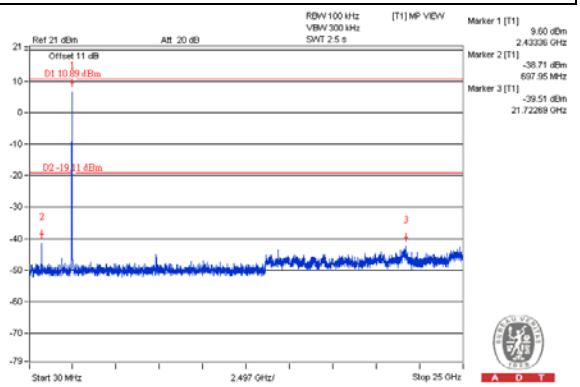


Chain 1

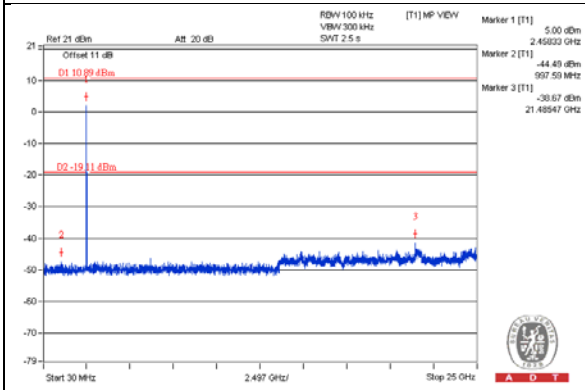
CH 1



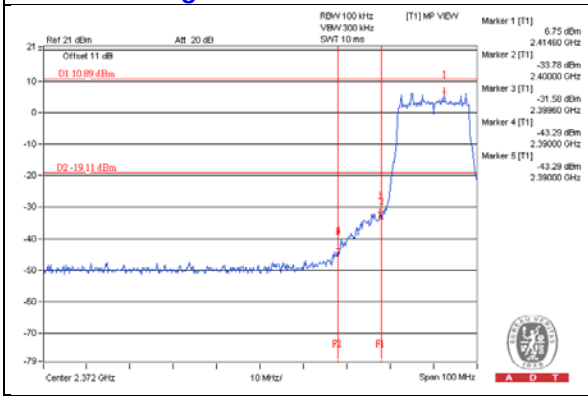
CH 6



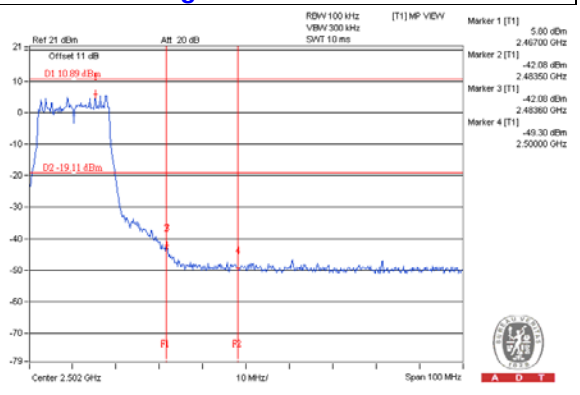
CH 11



CH 1 Band edge

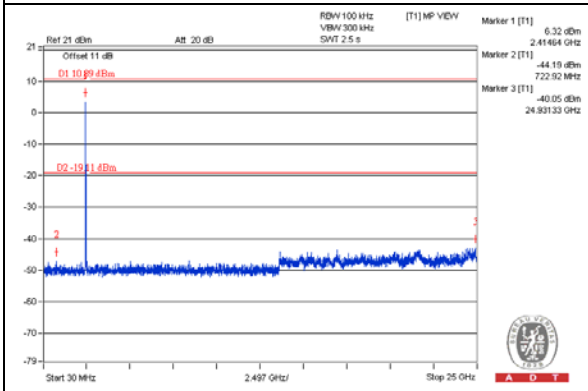


CH 11 Band edge

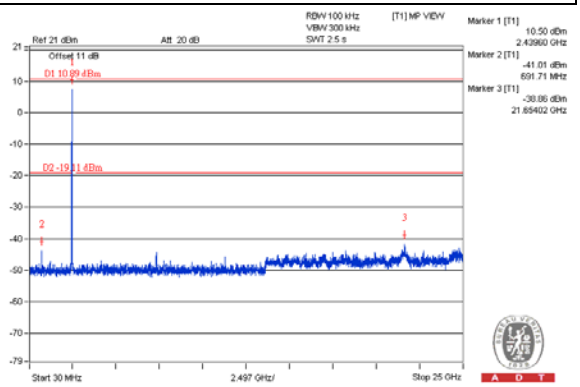


Chain 2

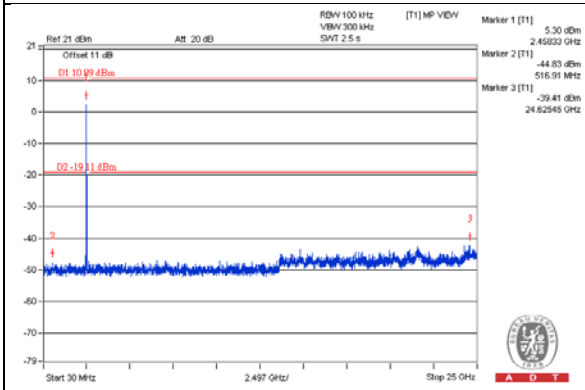
CH 1



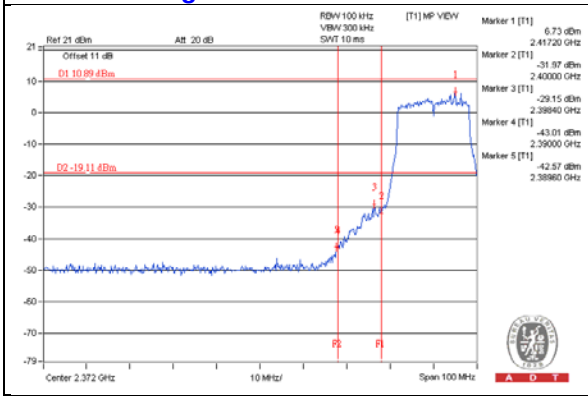
CH 6



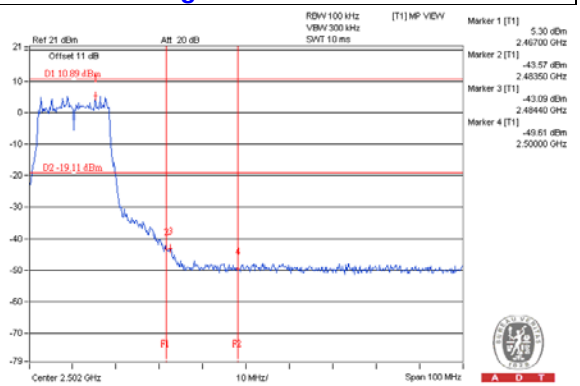
CH 11



CH 1 Band edge

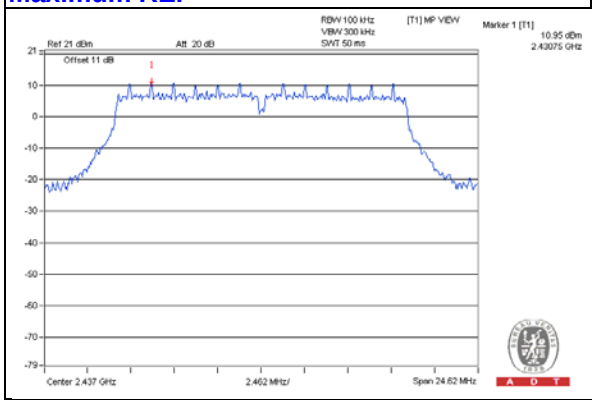


CH 11 Band edge



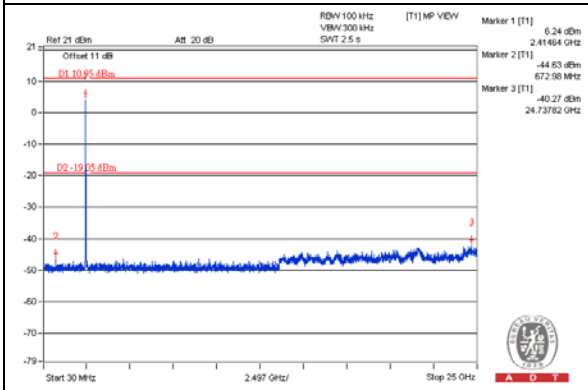
VHT20

Maximum REF

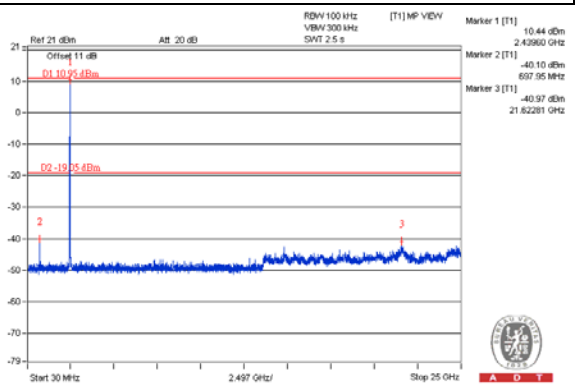


Chain 0

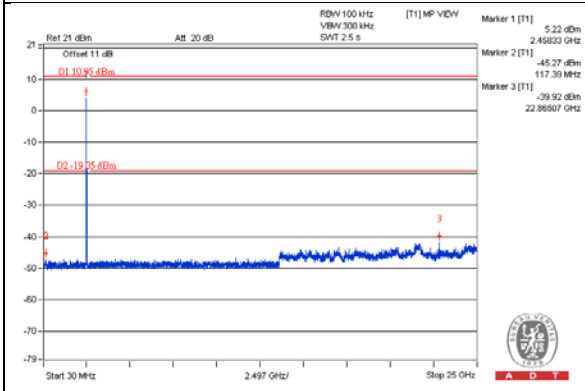
CH 1



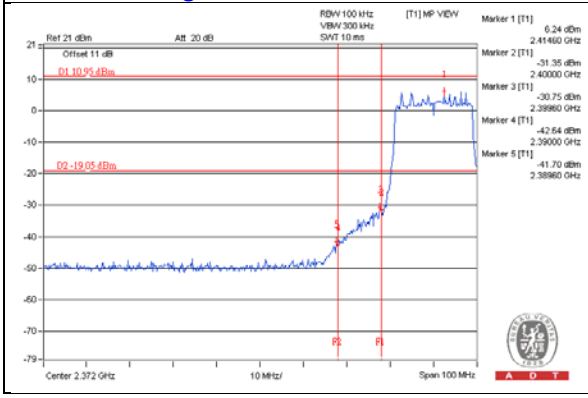
CH 6



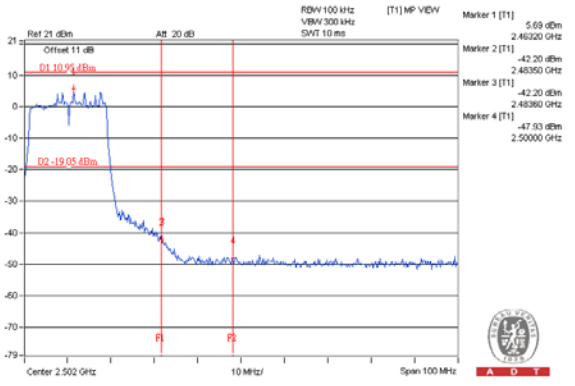
CH 11



CH 1 Band edge

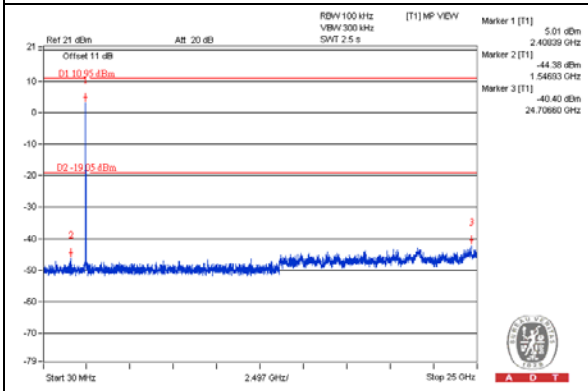


CH 11 Band edge

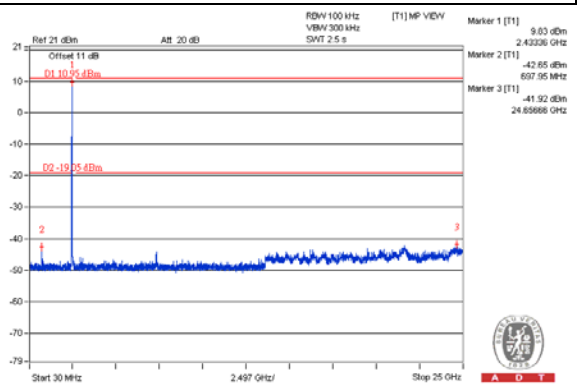


Chain 1

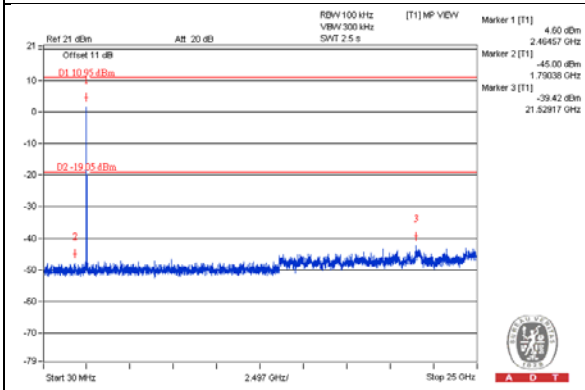
CH 1



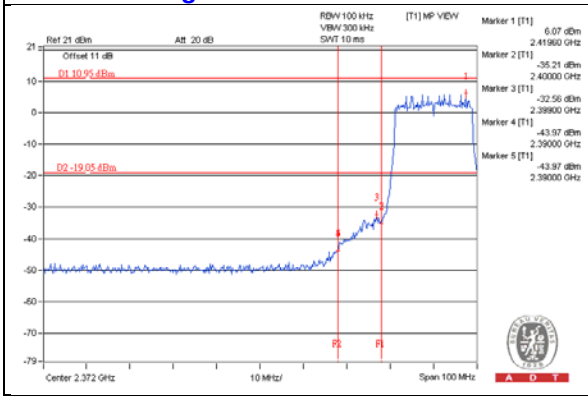
CH 6



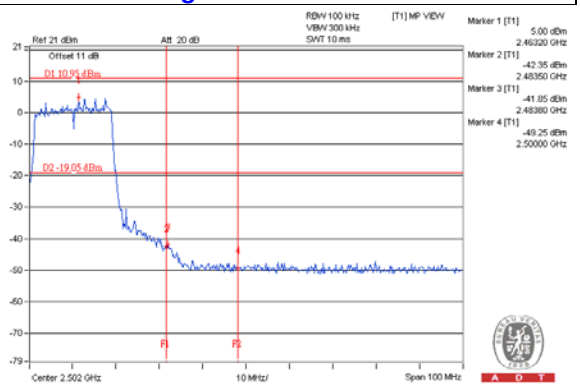
CH 11



CH 1 Band edge

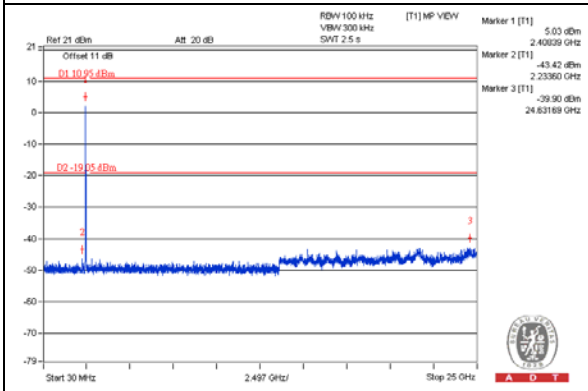


CH 11 Band edge

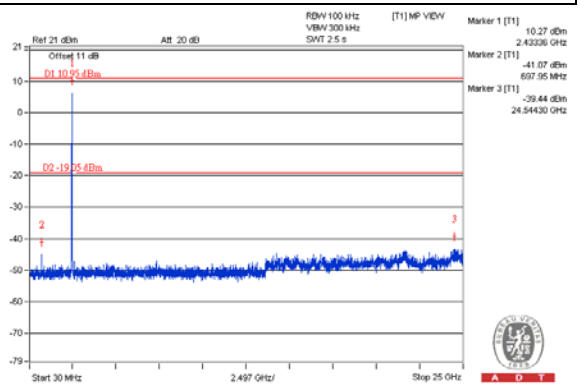


Chain 2

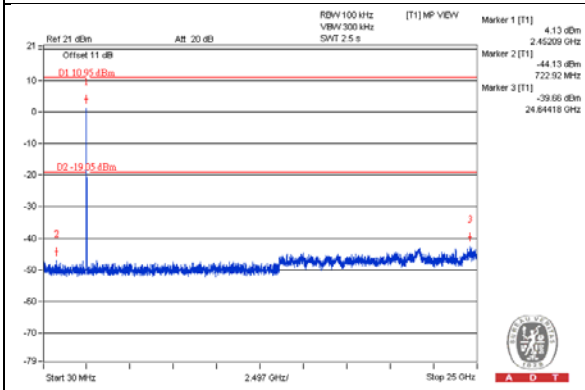
CH 1



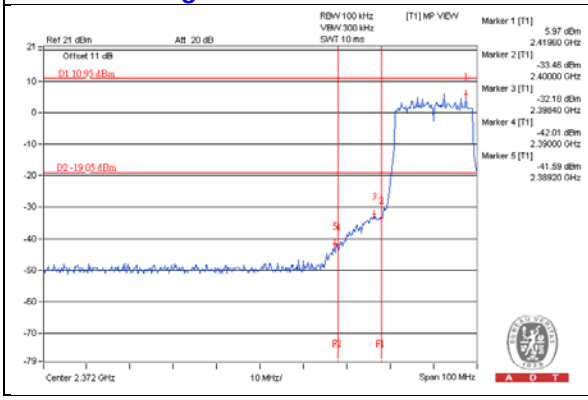
CH 6



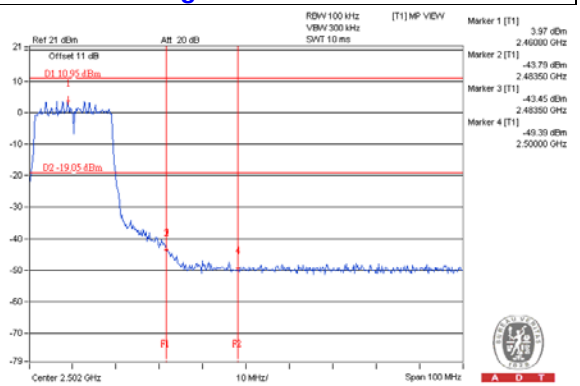
CH 11



CH 1 Band edge

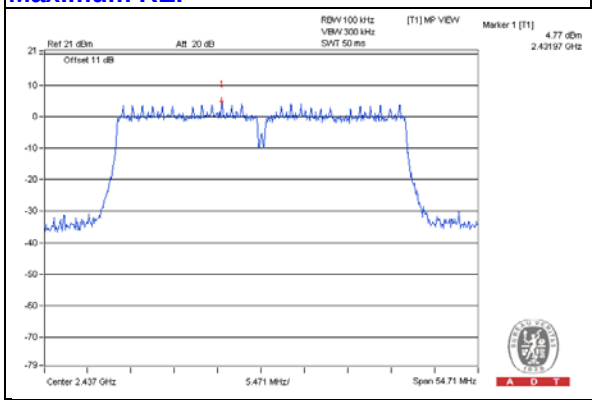


CH 11 Band edge



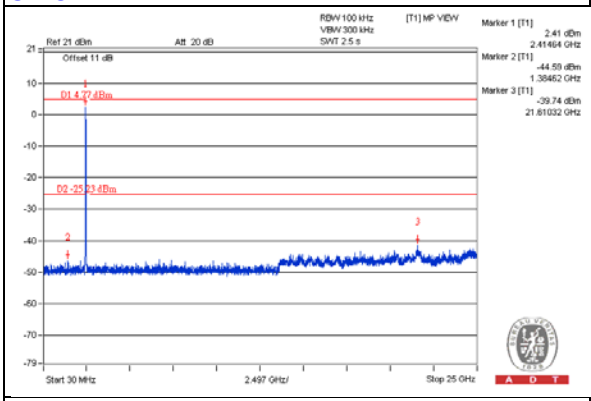
VHT40

Maximum REF

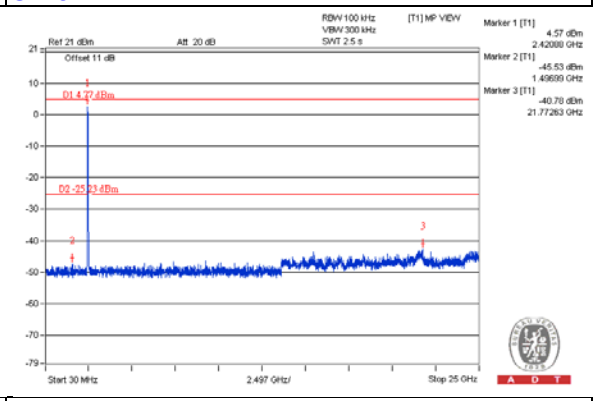


Chain 0

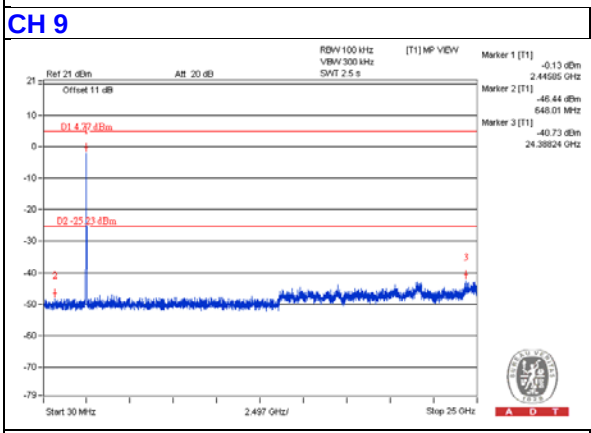
CH 3



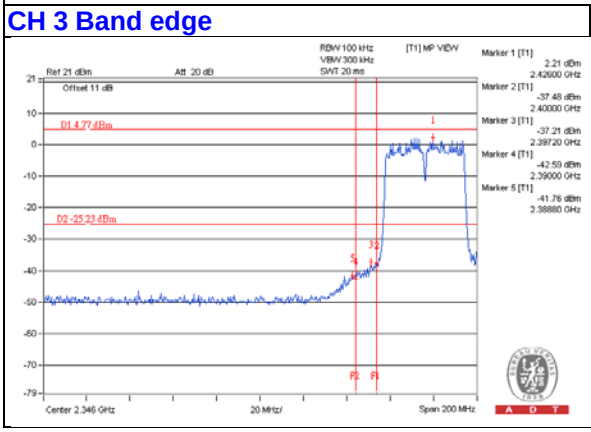
CH 6



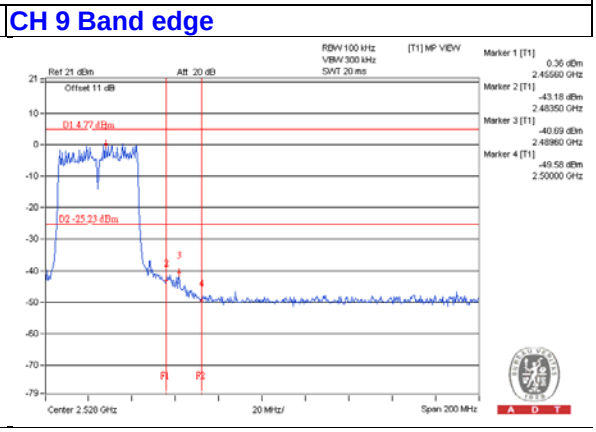
CH 9



CH 3 Band edge

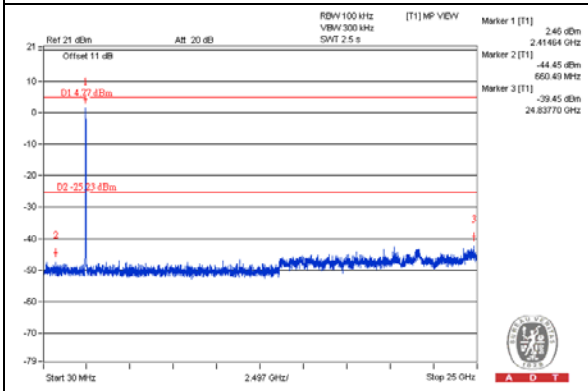


CH 9 Band edge

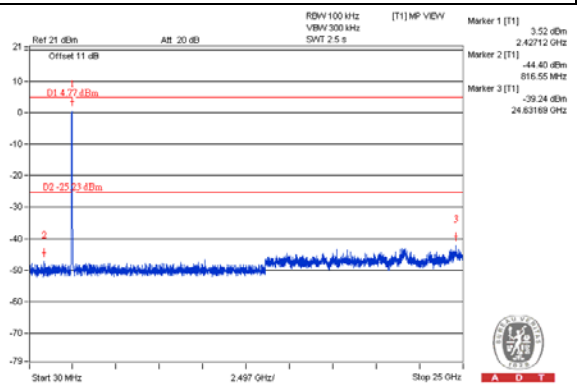


Chain 1

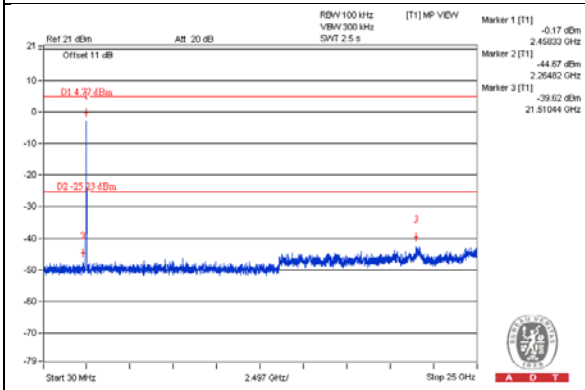
CH 3



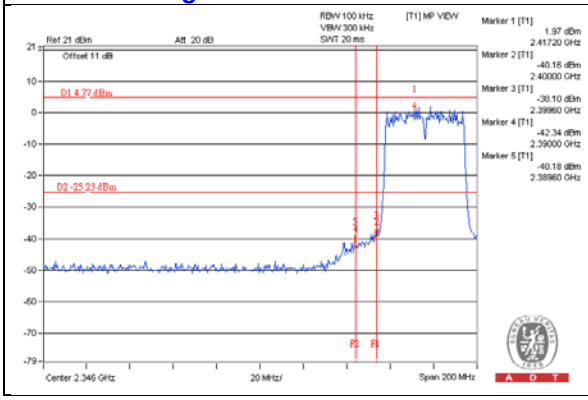
CH 6



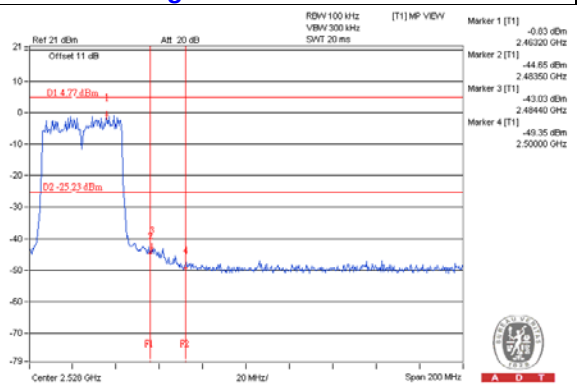
CH 9



CH 3 Band edge

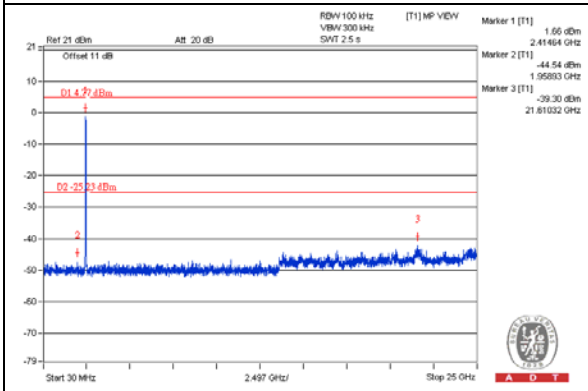


CH 9 Band edge

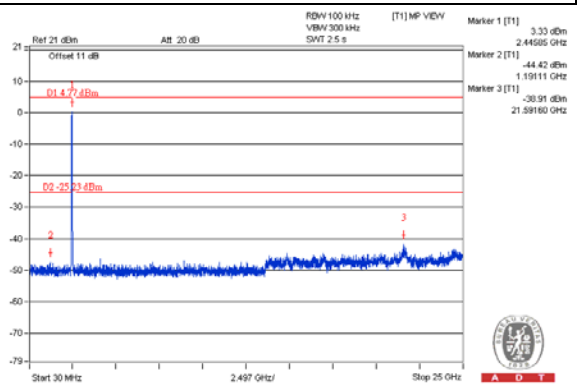


Chain 2

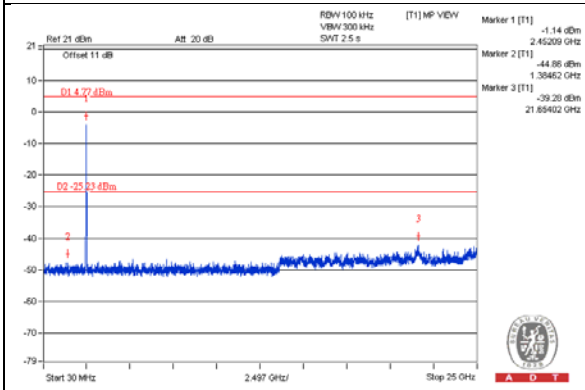
CH 3



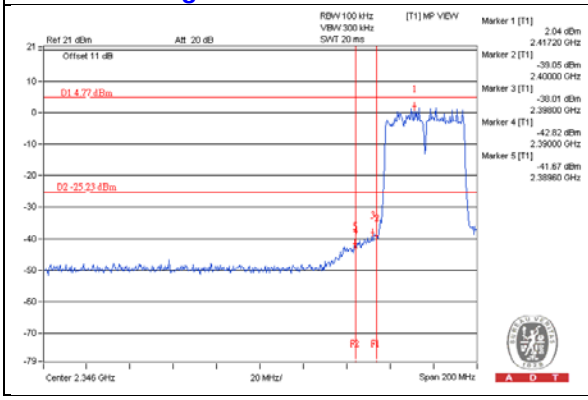
CH 6



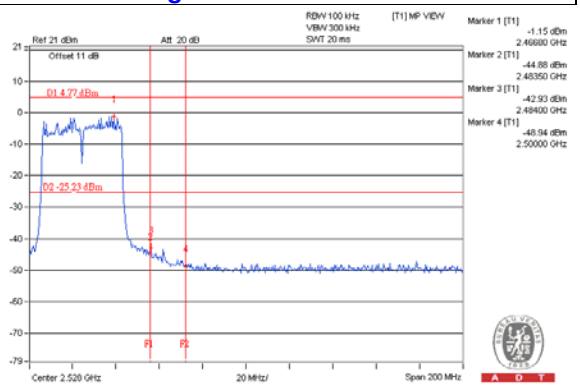
CH 9



CH 3 Band edge



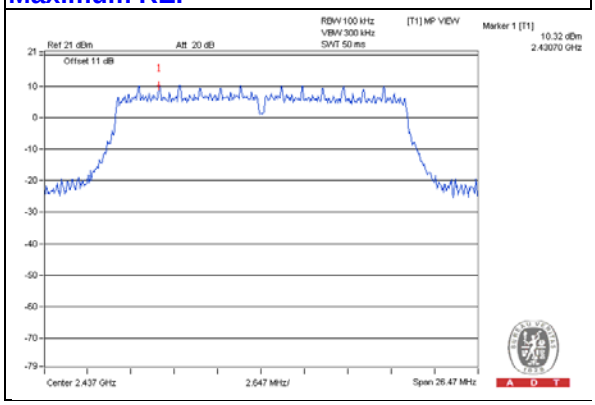
CH 9 Band edge



Beamforming MODE

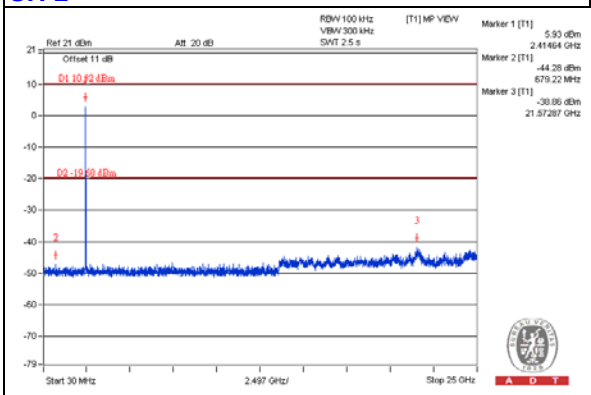
VHT20

Maximum REF

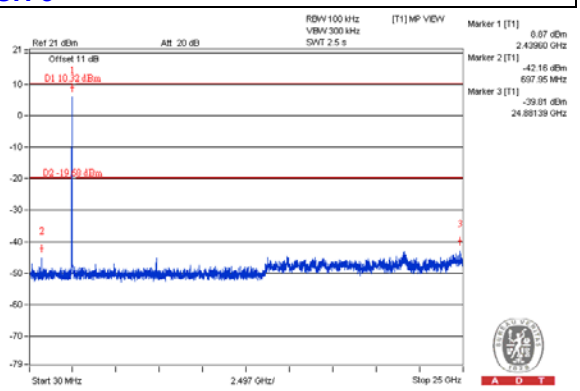


Chain 0

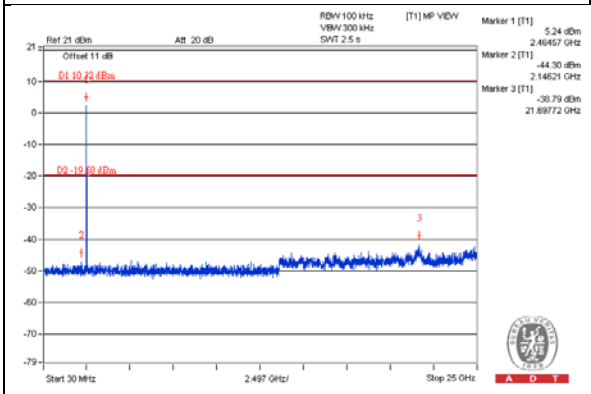
CH 1



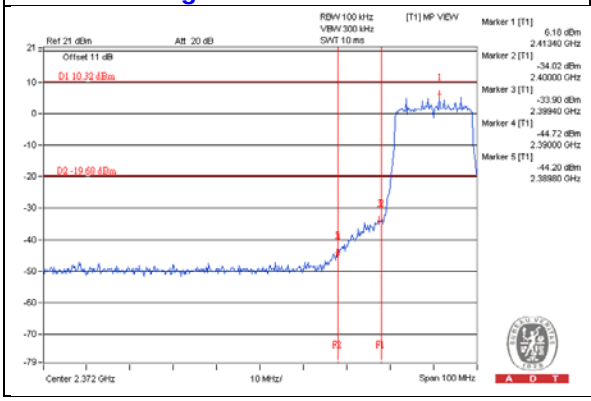
CH 6



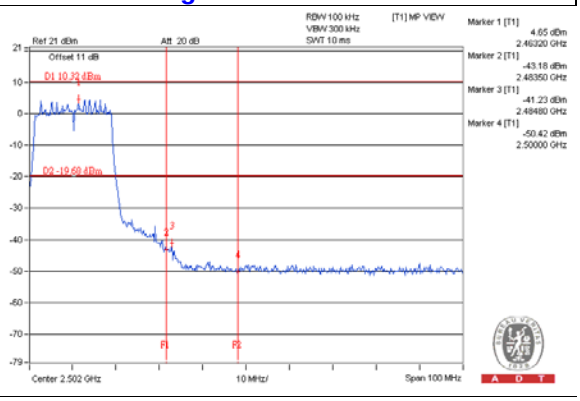
CH 11



CH 1 Band edge

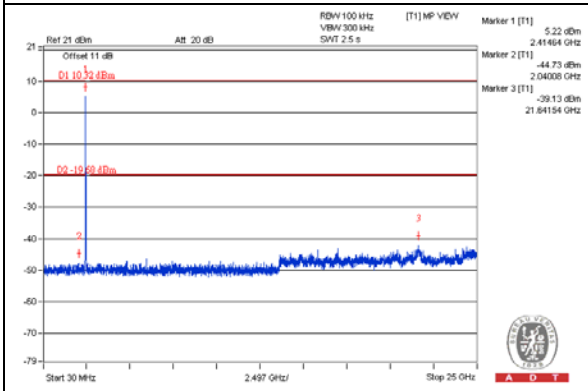


CH 11 Band edge

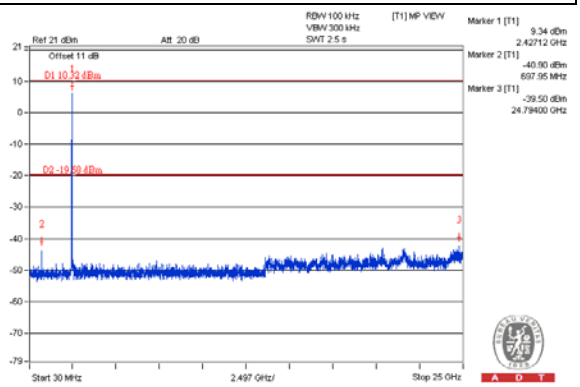


Chain 1

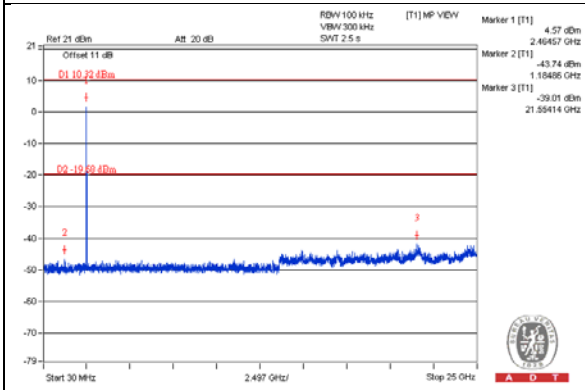
CH 1



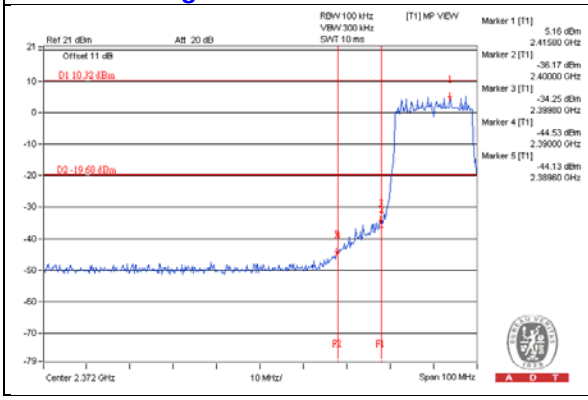
CH 6



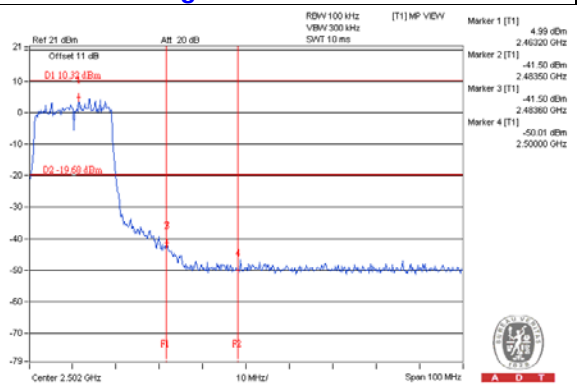
CH 11



CH 1 Band edge

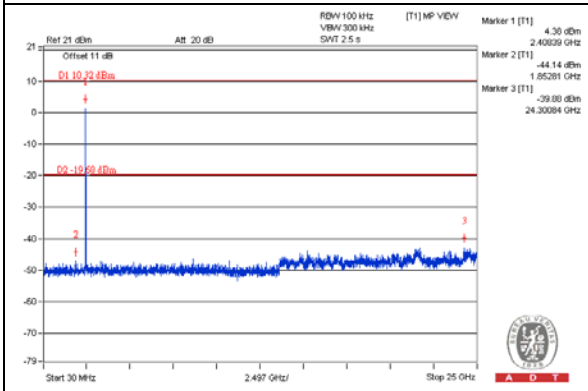


CH 11 Band edge

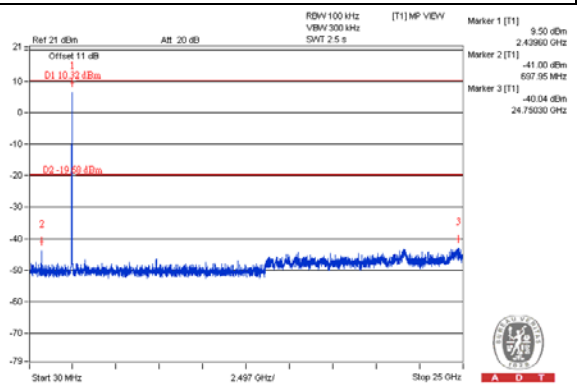


Chain 2

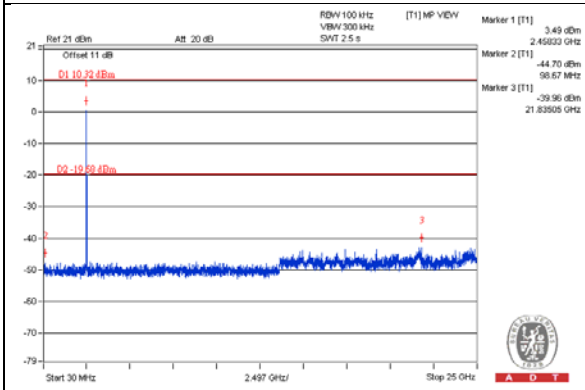
CH 1



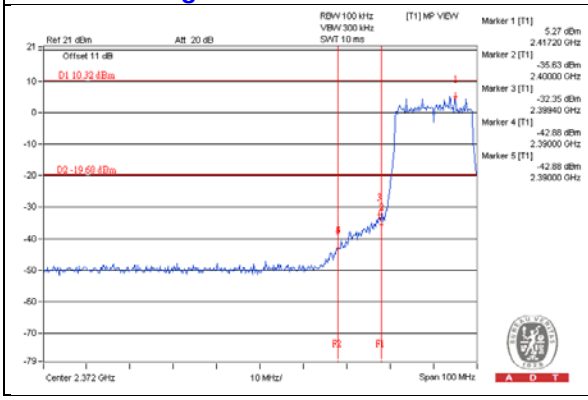
CH 6



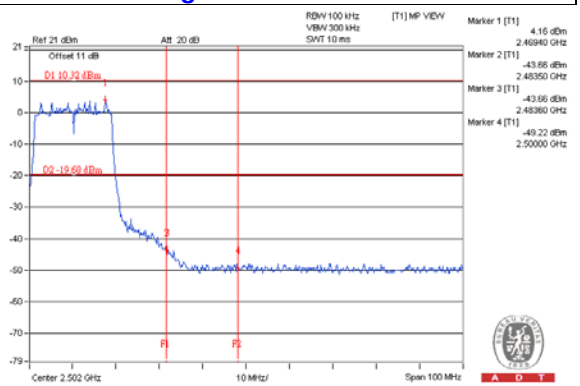
CH 11



CH 1 Band edge

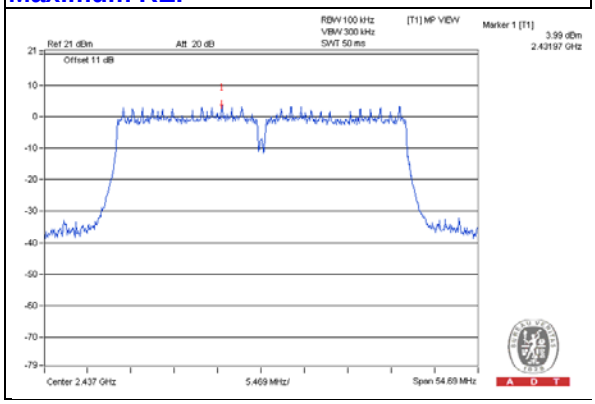


CH 11 Band edge



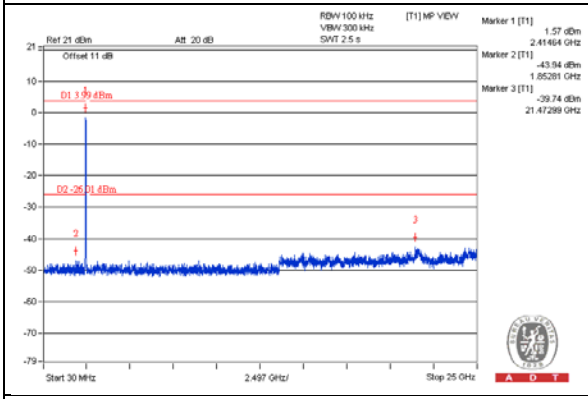
VHT40

Maximum REF

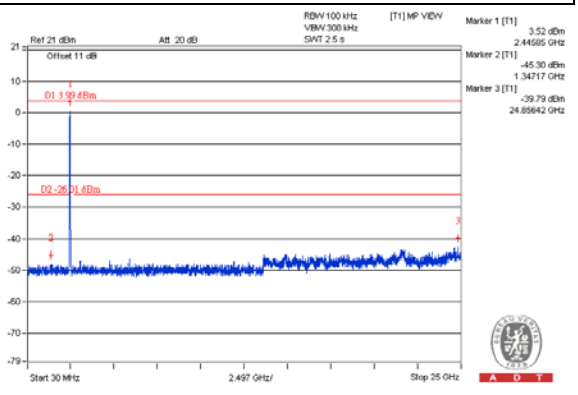


Chain 0

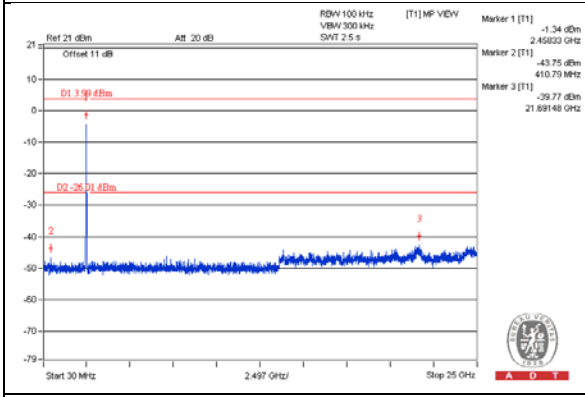
CH 3



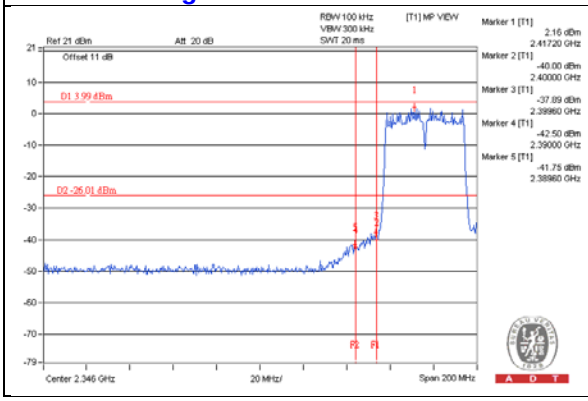
CH 6



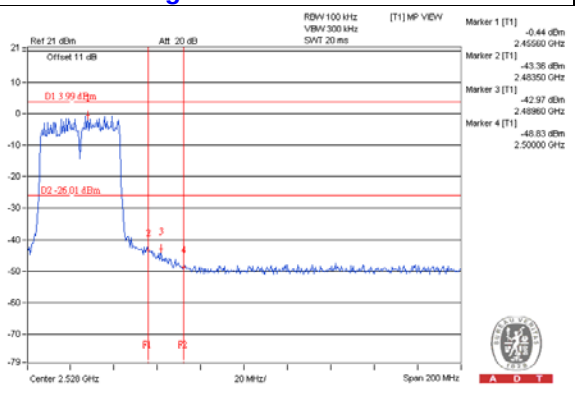
CH 9



CH 3 Band edge

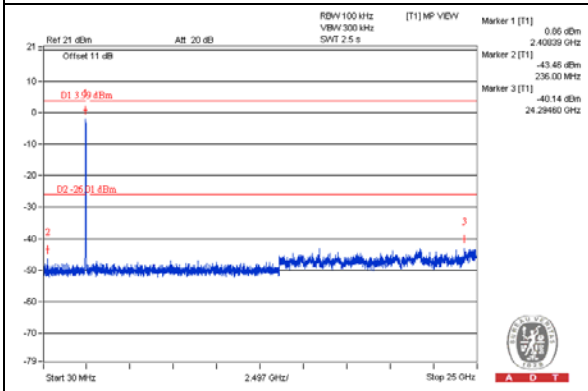


CH 9 Band edge

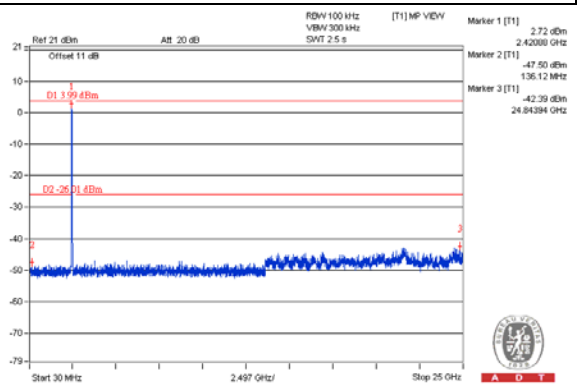


Chain 1

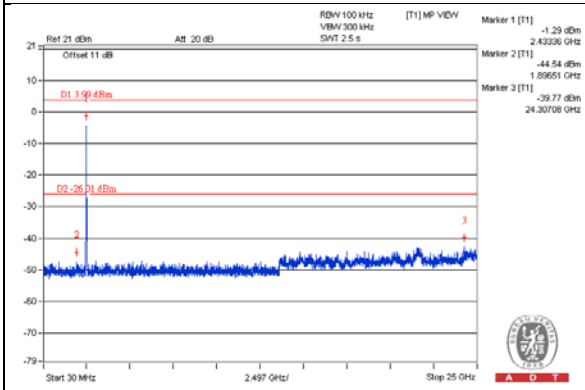
CH 3



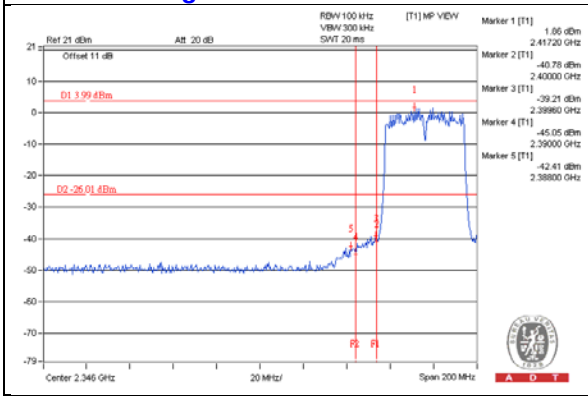
CH 6



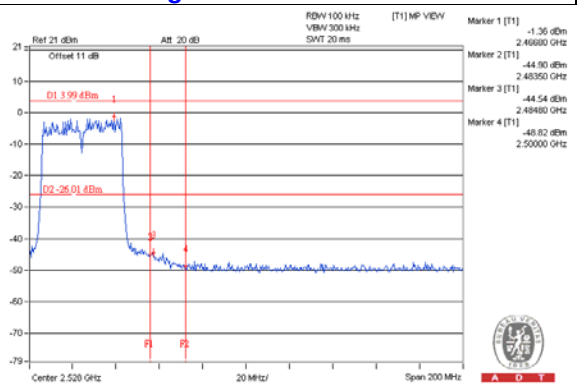
CH 9



CH 3 Band edge

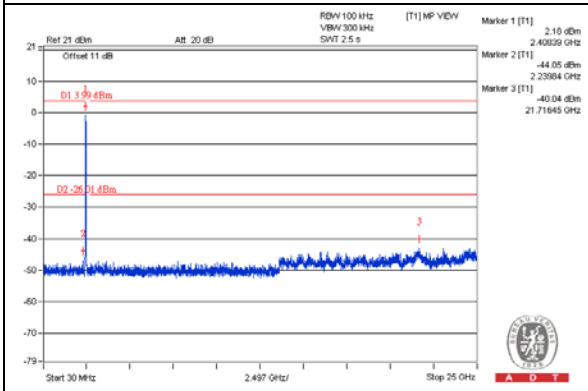


CH 9 Band edge

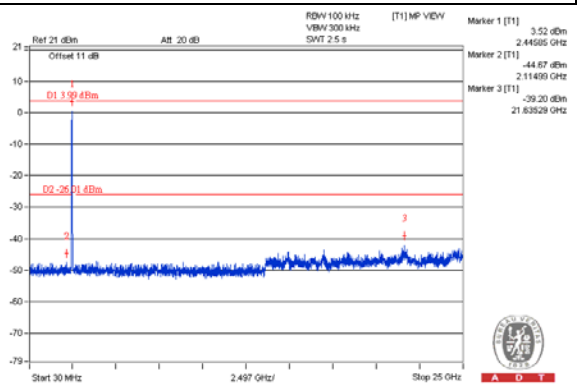


Chain 2

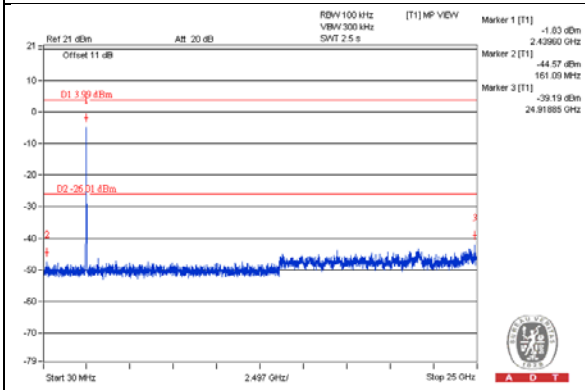
CH 3



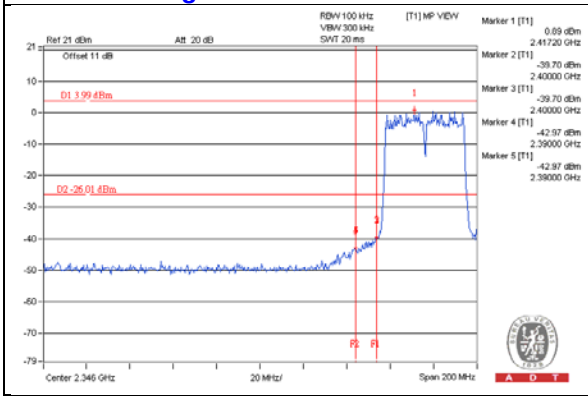
CH 6



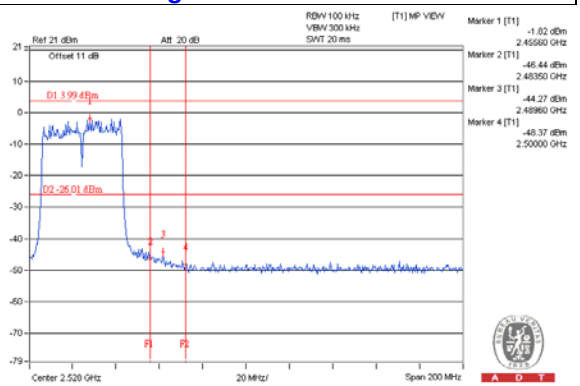
CH 9



CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

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

Hwa Ya EMC/RF/Safety 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.

--- END ---