FCC Test Report

Report No.: RF160119C37

FCC ID: GZ5NVG3XXX

Test Model: NVG348BQR2

Series Model: NVG343QR2, NVG343BQR2, NVG348QR2, NVG363Q, NVG368Q

Received Date: Jan. 19, 2016

Test Date: Feb. 26 to Mar. 08, 2016

Issued Date: Apr. 21, 2016

Applicant: ARRIS GROUP, INC.

Address: 2500 Walsh Ave. Santa Clara, CA 95051,United States

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

Test Location (1): E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

Test Location (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF160119C37	Original release.	Apr. 21, 2016

1 Certificate of Conformity

Product: VDSL Gateway

Brand: ARRIS

Test Model: NVG348BQR2

Series Model: NVG343QR2, NVG343BQR2, NVG348QR2, NVG363Q, NVG368Q

Sample Status: ENGINEERING SAMPLE

Applicant: ARRIS GROUP, INC.

Test Date: Feb. 26 to Mar. 08, 2016

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013

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:** Apr. 21, 2016
Claire Kuan / Specialist

Approved by : _____ , **Date:** Apr. 21, 2016
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 -7.36dB at 1.32813MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2390.00MHz & 4874.00MHz.
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	5.31 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.40 dB
	6GHz ~ 18GHz	3.73 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	VDSL Gateway
Brand	ARRIS
Test Model	NVG348BQR2
Series Model	NVG343QR2, NVG343BQR2, NVG348QR2, NVG363Q, NVG368Q
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n : up to 600Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	**For 15.407** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
Number of Channel	**For 15.407** 9 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 4 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80)
	For 15.247 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	**For 15.407** **5.18 ~ 5.24GHz** **CDD Mode** 802.11a: 264.883mW 802.11ac (VHT20): 237.118mW 802.11ac (VHT40): 235.906mW 802.11ac (VHT80): 176.292mW **Beamforming Mode** 802.11ac (VHT20): 237.118mW 802.11ac (VHT40): 235.906mW 802.11ac (VHT80): 176.292mW **5.745 ~ 5.825GHz** **CDD Mode** 802.11a: 599.069mW 802.11ac (VHT20): 584.116mW 802.11ac (VHT40): 237.02mW 802.11ac (VHT80): 97.223mW **Beamforming Mode** 802.11ac (VHT20): 262.978mW 802.11ac (VHT40): 237.02mW 802.11ac (VHT80): 97.223mW
	For 15.247 802.11b: 78.705mW **CDD Mode** 802.11g: 514.08mW 802.11n (HT20): 455.328mW 802.11n (HT40): 344.789mW

Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1 Stand x1 (Brand : FOXCONN / Model: 447.00105.005)
Data Cable Supplied	Refer to Note

Note:

1. 2.4GHz and 5GHz technology can transmit at same time.
2. All models are listed as below.

Model	NVG343QR2	NVG343BQR2	NVG348QR2	NVG348BQR2	NVG363Q	NVG368Q
xDSL	V	V	V	V	X	X
Bonding	X	V	X	V	X	X
VoIP	X	X	V	V	X	V
2.4G Wi-Fi	V	V	V	V	V	V
5G Wi-Fi	V	V	V	V	V	V

From the above models, model: **NVG348BQR2** was selected as representative model for the test and its data was recorded in this report.

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

2.4GHz								
Transmitter Circuit	Brand	Model No.	Ant. Gain (dBi) Including cable loss	Frequency Range (MHz to MHz)	Antenna Type	Connecter Type	Cable Loss(dB)	Cable Length (mm)
Chain (0)	FIT	CZZ04-EF_X3	2.3	2400 to 2500	Dipole	i-pex(MHF)	NA	45
Chain (1)	FIT	CZZ05-EF_X3	2.71	2400 to 2500	Dipole	i-pex(MHF)	NA	120
5GHz								
Transmitter Circuit	Brand	Model No.	Ant. Gain (dBi) Including cable loss	Frequency Range (MHz to MHz)	Antenna Type	Connecter Type	Cable Loss(dB)	Cable Length (mm)
Chain (0)	FIT	CZZ03-EF_X3	6.36	5150 to 5850	Dipole	i-pex(MHF)	NA	200
Chain (1)	FIT	CZZ02-EF_X3	5.01	5150 to 5850	Dipole	i-pex(MHF)	NA	230
Chain (2)	FIT	CZZ01-EF_X3	4.38	5150 to 5850	Dipole	i-pex(MHF)	NA	275
Chain (3)	FIT	CZZ00-EF_X3	6.97	5150 to 5850	Dipole	i-pex(MHF)	NA	305

4. The data cables of EUT information are as below:

Data cable	Brand	Model No.	Description
Ethernet Cable	NIEN-YI	NYS1097	2m, unshielded
RJ14 Cable	WHA YU	C107-421195-A	4.5m, unshielded
RJ14 Cable	NIEN-YI	NYS1131	4.5m, unshielded
RJ11 Cable	NIEN-YI	NYS0833	2m, unshielded
RJ14 Y Cable	FOXCONN	CT64A01T62-001-EF	0.3m, unshielded

5. The EUT power needs to be supplied from power adapters, the information is as below table:

No.	Brand	Model No.	Spec.
1	Ktec	KSASB0241200200VU	Input: 100-120Vac, 0.6A, 50/60Hz Output: 12V, 2.0A DC cable: 2.0m, unshielded
2	HOIOTO	ADS-25FSG-12 12024EPCU-L	Input: 100-120Vac, 0.6A, 50/60Hz Output: 12V, 2.0A DC cable: 2.0m, unshielded
For radiated test, the EUT was pre-tested with adapter 1 & 2, the worst case was found in adapter 1. Therefore only the test data of the adapter 1 was recorded in this report.			

6. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	1TX (Fixed Chain 0)	1RX (Fixed Chain 0)
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	4TX	4RX
802.11n (HT20)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
802.11n (HT40)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
802.11ac (VHT20)	MCS0~8 Nss=1	4TX	4RX
	MCS0~8 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~8 Nss=4	4TX	4RX
802.11ac (VHT40)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX
802.11ac (VHT80)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX
Note. : All of modulation mode support beamforming function except 2.4GHz and 802.11a modulation mode.			

7. The emission of the simultaneous operation (2.4GHz & 5GHz) has been evaluated and no non-compliance was found.
8. 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):

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):

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	
1	√	√	√	√	With Adapter 1
2	-	-	√	-	With Adapter 2

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

NOTE: "-"means no effect.

Radiated Emission Test (Above 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
CDD Mode					
MODE	**AVAILABLE CHANNEL**	**TESTED CHANNEL**	**MODULATION TECHNOLOGY**	**MODULATIO N TYPE**	**DATA RATE (Mbps)**
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	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)**
802.11g	1 to 11	6	OFDM	BPSK	6

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)**
802.11g	1 to 11	6	OFDM	BPSK	6

Antenna Port Conducted Measurement:

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

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
CDD Mode					
MODE	**AVAILABLE CHANNEL**	**TESTED CHANNEL**	**MODULATION TECHNOLOGY**	**MODULATIO N TYPE**	**DATA RATE (Mbps)**
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

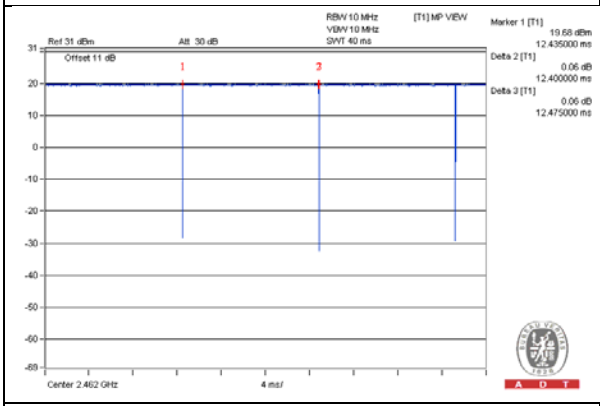
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY	TEST LOCATION
RE≥1G	21deg. C, 70%RH	120Vac, 60Hz	Gary Cheng	2
RE<1G	21deg. C, 68%RH	120Vac, 60Hz	Gary Cheng	2
PLC	20deg. C, 63%RH	120Vac, 60Hz	Timmy Hu	2
APCM	17deg. C, 64%RH	120Vac, 60Hz	Anderson Chen	1

3.3 Duty Cycle of Test Signal

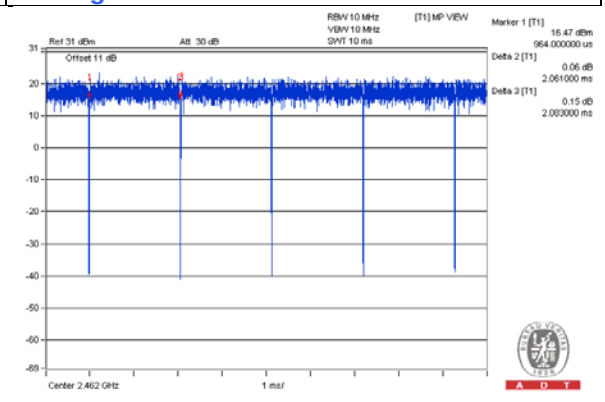
Duty cycle of test signal is ≥ 98 %, duty factor is not required.

802.11b: Duty cycle = 12.4/12.475 = 0.994
802.11g: Duty cycle = 2.061/2.083 = 0.989
802.11n (HT20): Duty cycle = 1.917/1.935 = 0.991
802.11n (HT40): Duty cycle = 0.945/0.963 = 0.981

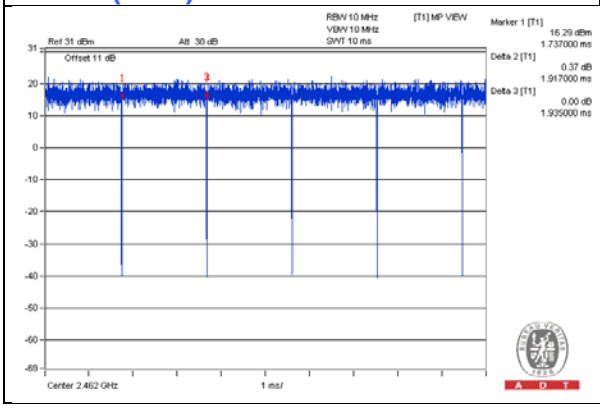
802.11b



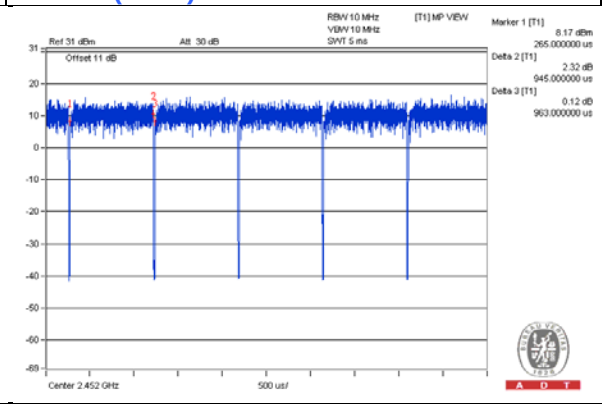
802.11g



802.11n (HT20)



802.11n (HT40)



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.

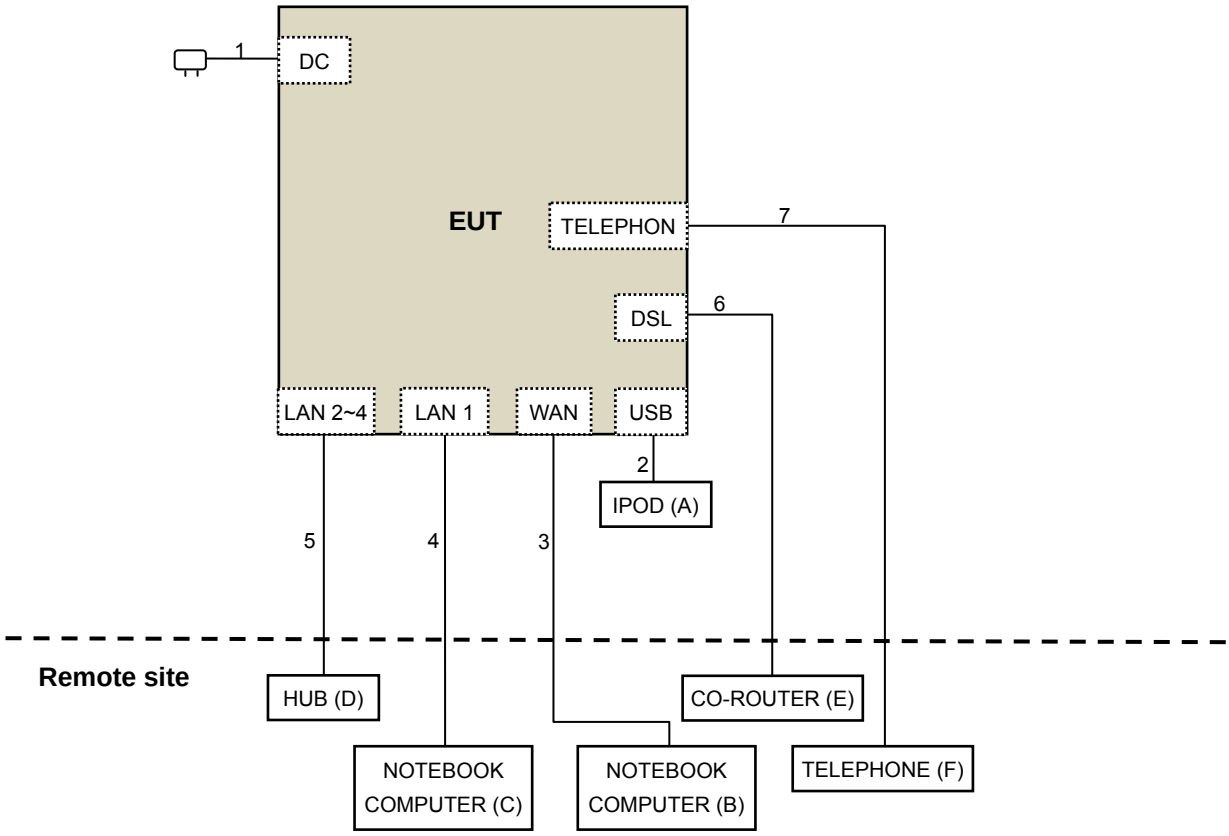
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	IPOD	Apple	MD778TA/A	CC4JG680F4T1	NA	Provided by Lab
B.	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
C.	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
D.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
E.	CO-ROUTER	ZyXEL	IES-1000	S08024701597	FCC DoC	Provided by Lab
F.	TELEPHONE	WONDER	WD-303	7C17KA 06072	N/A	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC	1	2	No	0	Supplied by client
2.	USB	1	0.1	Yes	0	Provided by Lab
3.	RJ-45	1	10	No	0	Provided by Lab
4.	RJ-45	1	10	No	0	Provided by Lab
5.	RJ-45	3	10	No	0	Provided by Lab
6.	RJ-11	1	10	No	0	Provided by Lab
7.	RJ-11	1	10	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)
KDB 558074 D01 DTS Meas Guidance v03r05
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

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 20dB 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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	Aug. 12, 2015	Aug. 11, 2016
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2014	Dec. 15, 2016
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-07	May 08, 2015	May 07, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	138	Jan. 18, 2016	Jan. 17, 2017
RF Cable	8D	966-3-1 966-3-2 966-3-3	Apr. 03, 2015	Apr. 02, 2016
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Jan. 20, 2016	Jan. 19, 2017
Pre-Amplifier Agilent	8449B	3008A02465	Apr. 06, 2015	Apr. 05, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150317 150321 150322	Mar. 31, 2015	Mar. 30, 2016
Spectrum Analyzer Keysight	N9030A	MY54490520	July 26, 2015	July 25, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 15, 2016	Jan. 14, 2017
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Jan. 08, 2016	Jan. 07, 2017
RF Cable	SUCOFLEX 102	36432/2 36441/2	Jan. 16, 2016	Jan. 15, 2017
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Power Meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016
Spectrum Analyzer R&S	FSP40	100060	May 08, 2015	May 07, 2016

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
   *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 3.

3. The FCC Site Registration No. is 147459
4. The CANADA Site Registration No. is 20331-1
5. Tested Date: Feb. 26, 2016

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

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

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

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

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

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

Note:

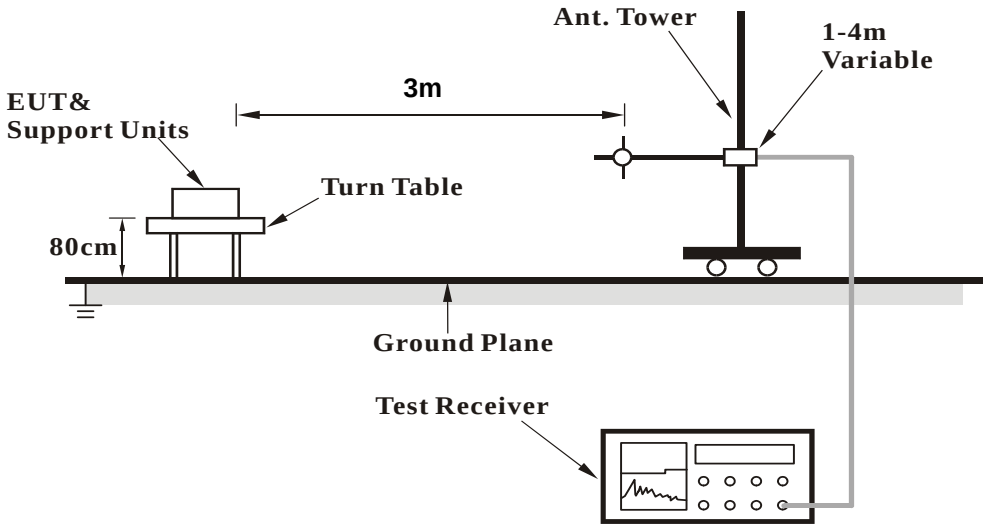
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

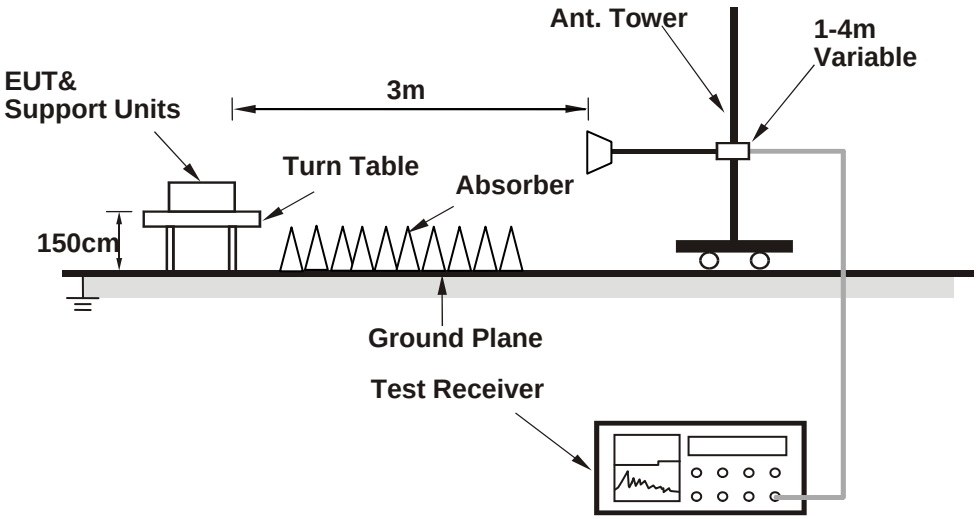
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with the support units B-C (Notebook Computer) which is placed on remote site.
b. Contorlling software (Mtool.exe [V2.0.1.8]) has been activated to set the EUT on specific status.

4.1.7 Test Results

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	50.7 PK	74.0	-23.3	1.25 H	44	52.13	-1.43
2	2390.00	37.1 AV	54.0	-16.9	1.25 H	44	38.53	-1.43
3	*2412.00	99.8 PK			1.25 H	44	101.18	-1.38
4	*2412.00	97.4 AV			1.25 H	44	98.78	-1.38
5	4824.00	53.0 PK	74.0	-21.0	1.74 H	321	45.91	7.09
6	4824.00	51.2 AV	54.0	-2.8	1.74 H	321	44.11	7.09
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	53.4 PK	74.0	-20.6	2.44 V	197	54.83	-1.43
2	2390.00	40.6 AV	54.0	-13.4	2.44 V	197	42.03	-1.43
3	*2412.00	106.8 PK			2.44 V	197	108.18	-1.38
4	*2412.00	104.3 AV			2.44 V	197	105.68	-1.38
5	4824.00	55.3 PK	74.0	-18.7	1.01 V	262	48.21	7.09
6	4824.00	53.5 AV	54.0	-0.5	1.01 V	262	46.41	7.09

REMARKS:

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

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	99.8 PK			1.23 H	58	101.12	-1.32
2	*2437.00	97.6 AV			1.23 H	58	98.92	-1.32
3	4874.00	53.2 PK	74.0	-20.8	1.69 H	334	45.95	7.25
4	4874.00	51.3 AV	54.0	-2.7	1.69 H	334	44.05	7.25
5	7311.00	46.4 PK	74.0	-27.6	1.82 H	165	31.95	14.45
6	7311.00	34.3 AV	54.0	-19.7	1.82 H	165	19.85	14.45
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	*2437.00	107.5 PK			2.44 V	188	108.82	-1.32
2	*2437.00	104.7 AV			2.44 V	188	106.02	-1.32
3	4874.00	55.5 PK	74.0	-18.5	1.09 V	260	48.25	7.25
4	**4874.00**	**53.8 AV**	**54.0**	**-0.2**	**1.09 V**	**260**	**46.55**	**7.25**
5	7311.00	47.8 PK	74.0	-26.2	1.11 V	134	33.35	14.45
6	7311.00	35.7 AV	54.0	-18.3	1.11 V	134	21.25	14.45

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	100.4 PK			1.27 H	49	101.66	-1.26
2	*2462.00	97.9 AV			1.27 H	49	99.16	-1.26
3	2483.50	52.3 PK	74.0	-21.7	1.27 H	49	53.51	-1.21
4	2483.50	39.4 AV	54.0	-14.6	1.27 H	49	40.61	-1.21
5	4924.00	53.2 PK	74.0	-20.8	1.63 H	350	45.75	7.45
6	4924.00	51.3 AV	54.0	-2.7	1.63 H	350	43.85	7.45
7	7386.00	45.9 PK	74.0	-28.1	1.83 H	179	31.38	14.52
8	7386.00	33.9 AV	54.0	-20.1	1.83 H	179	19.38	14.52
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	106.6 PK			2.73 V	185	107.86	-1.26
2	*2462.00	104.1 AV			2.73 V	185	105.36	-1.26
3	2483.50	56.3 PK	74.0	-17.7	2.73 V	185	57.51	-1.21
4	2483.50	42.9 AV	54.0	-11.1	2.73 V	185	44.11	-1.21
5	4924.00	55.3 PK	74.0	-18.7	1.02 V	247	47.85	7.45
6	4924.00	53.6 AV	54.0	-0.4	1.02 V	247	46.15	7.45
7	7386.00	47.7 PK	74.0	-26.3	1.12 V	131	33.18	14.52
8	7386.00	35.7 AV	54.0	-18.3	1.12 V	131	21.18	14.52

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	64.4 PK	74.0	-9.6	1.24 H	44	65.83	-1.43
2	2390.00	46.1 AV	54.0	-7.9	1.24 H	44	47.53	-1.43
3	*2412.00	106.7 PK			1.24 H	44	108.08	-1.38
4	*2412.00	95.7 AV			1.24 H	44	97.08	-1.38
5	4824.00	56.4 PK	74.0	-17.6	2.87 H	319	49.31	7.09
6	4824.00	43.3 AV	54.0	-10.7	2.87 H	319	36.21	7.09
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.3 PK	74.0	-1.7	2.80 V	184	73.73	-1.43
2	2390.00	53.2 AV	54.0	-0.8	2.80 V	184	54.63	-1.43
3	*2412.00	114.1 PK			2.80 V	184	115.48	-1.38
4	*2412.00	104.4 AV			2.80 V	184	105.78	-1.38
5	4824.00	61.1 PK	74.0	-12.9	2.21 V	242	54.01	7.09
6	4824.00	46.7 AV	54.0	-7.3	2.21 V	242	39.61	7.09

REMARKS:

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

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	105.4 PK			1.28 H	55	106.72	-1.32
2	*2437.00	94.3 AV			1.28 H	55	95.62	-1.32
3	2483.50	57.6 PK	74.0	-16.4	1.28 H	55	58.81	-1.21
4	2483.50	42.6 AV	54.0	-11.4	1.28 H	55	43.81	-1.21
5	4874.00	57.4 PK	74.0	-16.6	2.83 H	328	50.15	7.25
6	4874.00	44.5 AV	54.0	-9.5	2.83 H	328	37.25	7.25
7	7311.00	46.2 PK	74.0	-27.8	1.79 H	180	31.75	14.45
8	7311.00	35.4 AV	54.0	-18.6	1.79 H	180	20.95	14.45
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	*2437.00	113.1 PK			2.15 V	205	114.42	-1.32
2	*2437.00	102.9 AV			2.15 V	205	104.22	-1.32
3	2483.50	65.0 PK	74.0	-9.0	2.15 V	205	66.21	-1.21
4	2483.50	49.6 AV	54.0	-4.4	2.15 V	205	50.81	-1.21
5	4874.00	62.4 PK	74.0	-11.6	2.23 V	250	55.15	7.25
6	4874.00	47.9 AV	54.0	-6.1	2.23 V	250	40.65	7.25
7	7311.00	48.4 PK	74.0	-25.6	1.12 V	154	33.95	14.45
8	7311.00	38.6 AV	54.0	-15.4	1.12 V	154	24.15	14.45

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	107.3 PK			1.21 H	30	108.56	-1.26
2	*2462.00	96.0 AV			1.21 H	30	97.26	-1.26
3	2483.50	63.7 PK	74.0	-10.3	1.21 H	30	64.91	-1.21
4	2483.50	46.2 AV	54.0	-7.8	1.21 H	30	47.41	-1.21
5	4924.00	56.9 PK	74.0	-17.1	2.84 H	309	49.45	7.45
6	4924.00	43.6 AV	54.0	-10.4	2.84 H	309	36.15	7.45
7	7386.00	46.8 PK	74.0	-27.2	1.75 H	187	32.28	14.52
8	7386.00	35.9 AV	54.0	-18.1	1.75 H	187	21.38	14.52
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	113.9 PK			2.43 V	197	115.16	-1.26
2	*2462.00	102.7 AV			2.43 V	197	103.96	-1.26
3	2483.50	71.1 PK	74.0	-2.9	2.43 V	197	72.31	-1.21
4	2483.50	53.6 AV	54.0	-0.4	2.43 V	197	54.81	-1.21
5	4924.00	60.8 PK	74.0	-13.2	2.17 V	234	53.35	7.45
6	4924.00	46.4 AV	54.0	-7.6	2.17 V	234	38.95	7.45
7	7386.00	47.9 PK	74.0	-26.1	1.11 V	140	33.38	14.52
8	7386.00	36.4 AV	54.0	-17.6	1.11 V	140	21.88	14.52

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.

802.11n (HT20)

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	62.8 PK	74.0	-11.2	1.21 H	41	64.23	-1.43
2	2390.00	46.2 AV	54.0	-7.8	1.21 H	41	47.63	-1.43
3	*2412.00	105.4 PK			1.21 H	41	106.78	-1.38
4	*2412.00	94.3 AV			1.21 H	41	95.68	-1.38
5	4824.00	56.8 PK	74.0	-17.2	2.85 H	331	49.71	7.09
6	4824.00	43.5 AV	54.0	-10.5	2.85 H	331	36.41	7.09
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.9 PK	74.0	-3.1	1.08 V	205	72.33	-1.43
2	2390.00	53.6 AV	54.0	-0.4	1.08 V	205	55.03	-1.43
3	*2412.00	113.2 PK			1.08 V	205	114.58	-1.38
4	*2412.00	102.7 AV			1.08 V	205	104.08	-1.38
5	4824.00	60.5 PK	74.0	-13.5	2.16 V	221	53.41	7.09
6	4824.00	46.0 AV	54.0	-8.0	2.16 V	221	38.91	7.09

REMARKS:

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

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	52.4 PK	74.0	-21.6	1.20 H	38	53.83	-1.43
2	2390.00	40.6 AV	54.0	-13.4	1.20 H	38	42.03	-1.43
3	*2437.00	106.4 PK			1.20 H	38	107.72	-1.32
4	*2437.00	95.6 AV			1.20 H	38	96.92	-1.32
5	2483.50	53.4 PK	74.0	-20.6	1.20 H	38	54.61	-1.21
6	2483.50	41.6 AV	54.0	-12.4	1.20 H	38	42.81	-1.21
7	4874.00	57.1 PK	74.0	-16.9	2.83 H	327	49.85	7.25
8	4874.00	44.3 AV	54.0	-9.7	2.83 H	327	37.05	7.25
9	7311.00	45.7 PK	74.0	-28.3	1.85 H	170	31.25	14.45
10	7311.00	35.2 AV	54.0	-18.8	1.85 H	170	20.75	14.45
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	2390.00	59.9 PK	74.0	-14.1	1.17 V	203	61.33	-1.43
2	2390.00	47.2 AV	54.0	-6.8	1.17 V	203	48.63	-1.43
3	*2437.00	114.4 PK			1.17 V	203	115.72	-1.32
4	*2437.00	103.8 AV			1.17 V	203	105.12	-1.32
5	2483.50	60.8 PK	74.0	-13.2	1.17 V	203	62.01	-1.21
6	2483.50	47.6 AV	54.0	-6.4	1.17 V	203	48.81	-1.21
7	4874.00	62.6 PK	74.0	-11.4	2.20 V	237	55.35	7.25
8	4874.00	47.8 AV	54.0	-6.2	2.20 V	237	40.55	7.25
9	7311.00	48.1 PK	74.0	-25.9	1.07 V	160	33.65	14.45
10	7311.00	38.5 AV	54.0	-15.5	1.07 V	160	24.05	14.45

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	107.3 PK			1.21 H	23	108.56	-1.26
2	*2462.00	96.2 AV			1.21 H	23	97.46	-1.26
3	2483.50	64.3 PK	74.0	-9.7	1.21 H	23	65.51	-1.21
4	2483.50	46.6 AV	54.0	-7.4	1.21 H	23	47.81	-1.21
5	4924.00	56.7 PK	74.0	-17.3	2.84 H	316	49.25	7.45
6	4924.00	43.2 AV	54.0	-10.8	2.84 H	316	35.75	7.45
7	7386.00	47.1 PK	74.0	-26.9	1.80 H	174	32.58	14.52
8	7386.00	36.3 AV	54.0	-17.7	1.80 H	174	21.78	14.52
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			1.19 V	234	115.96	-1.26
2	*2462.00	102.6 AV			1.19 V	234	103.86	-1.26
3	2483.50	72.8 PK	74.0	-1.2	1.19 V	234	74.01	-1.21
4	2483.50	53.7 AV	54.0	-0.3	1.19 V	234	54.91	-1.21
5	4924.00	60.5 PK	74.0	-13.5	2.28 V	241	53.05	7.45
6	4924.00	46.3 AV	54.0	-7.7	2.28 V	241	38.85	7.45
7	7386.00	48.7 PK	74.0	-25.3	1.07 V	150	34.18	14.52
8	7386.00	38.7 AV	54.0	-15.3	1.07 V	150	24.18	14.52

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.

802.11n (HT40)

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	67.8 PK	74.0	-6.2	2.04 H	47	69.23	-1.43
2	2390.00	49.2 AV	54.0	-4.8	2.04 H	47	50.63	-1.43
3	*2422.00	101.5 PK			2.04 H	47	102.86	-1.36
4	*2422.00	90.2 AV			2.04 H	47	91.56	-1.36
5	4844.00	56.9 PK	74.0	-17.1	2.85 H	332	49.75	7.15
6	4844.00	43.4 AV	54.0	-10.6	2.85 H	332	36.25	7.15
7	7266.00	46.7 PK	74.0	-27.3	1.77 H	186	32.13	14.57
8	7266.00	36.1 AV	54.0	-17.9	1.77 H	186	21.53	14.57
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	72.4 PK	74.0	-1.6	1.20 V	239	73.83	-1.43
2	**2390.00**	**53.8 AV**	**54.0**	**-0.2**	**1.20 V**	**239**	**55.23**	**-1.43**
3	*2422.00	108.1 PK			1.20 V	239	109.46	-1.36
4	*2422.00	96.6 AV			1.20 V	239	97.96	-1.36
5	4844.00	58.4 PK	74.0	-15.6	2.29 V	235	51.25	7.15
6	4844.00	45.4 AV	54.0	-8.6	2.29 V	235	38.25	7.15
7	7266.00	48.6 PK	74.0	-25.4	1.09 V	142	34.03	14.57
8	7266.00	38.3 AV	54.0	-15.7	1.09 V	142	23.73	14.57

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	65.8 PK	74.0	-8.2	2.06 H	52	67.23	-1.43
2	2390.00	47.3 AV	54.0	-6.7	2.06 H	52	48.73	-1.43
3	*2437.00	102.4 PK			2.06 H	52	103.72	-1.32
4	*2437.00	91.6 AV			2.06 H	52	92.92	-1.32
5	2483.50	64.5 PK	74.0	-9.5	2.06 H	52	65.71	-1.21
6	2483.50	47.6 AV	54.0	-6.4	2.06 H	52	48.81	-1.21
7	4874.00	57.1 PK	74.0	-16.9	2.80 H	320	49.85	7.25
8	4874.00	43.7 AV	54.0	-10.3	2.80 H	320	36.45	7.25
9	7311.00	47.1 PK	74.0	-26.9	1.78 H	163	32.65	14.45
10	7311.00	36.6 AV	54.0	-17.4	1.78 H	163	22.15	14.45
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	2390.00	70.4 PK	74.0	-3.6	1.04 V	234	71.83	-1.43
2	2390.00	51.8 AV	54.0	-2.2	1.04 V	234	53.23	-1.43
3	*2437.00	109.4 PK			1.04 V	234	110.72	-1.32
4	*2437.00	97.7 AV			1.04 V	234	99.02	-1.32
5	2483.50	69.1 PK	74.0	-4.9	1.04 V	234	70.31	-1.21
6	2483.50	52.2 AV	54.0	-1.8	1.04 V	234	53.41	-1.21
7	4874.00	58.8 PK	74.0	-15.2	2.31 V	227	51.55	7.25
8	4874.00	45.5 AV	54.0	-8.5	2.31 V	227	38.25	7.25
9	7311.00	49.1 PK	74.0	-24.9	1.05 V	162	34.65	14.45
10	7311.00	39.2 AV	54.0	-14.8	1.05 V	162	24.75	14.45

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	101.6 PK			2.04 H	35	102.88	-1.28
2	*2452.00	90.4 AV			2.04 H	35	91.68	-1.28
3	2483.50	67.5 PK	74.0	-6.5	2.04 H	35	68.71	-1.21
4	2483.50	49.0 AV	54.0	-5.0	2.04 H	35	50.21	-1.21
5	4904.00	56.9 PK	74.0	-17.1	2.87 H	324	49.54	7.36
6	4904.00	43.3 AV	54.0	-10.7	2.87 H	324	35.94	7.36
7	7356.00	47.7 PK	74.0	-26.3	1.86 H	179	33.20	14.50
8	7356.00	36.7 AV	54.0	-17.3	1.86 H	179	22.20	14.50
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	107.8 PK			1.45 V	210	109.08	-1.28
2	*2452.00	96.6 AV			1.45 V	210	97.88	-1.28
3	2483.50	72.2 PK	74.0	-1.8	1.45 V	210	73.41	-1.21
4	2483.50	53.3 AV	54.0	-0.7	1.45 V	210	54.51	-1.21
5	4904.00	58.2 PK	74.0	-15.8	2.33 V	246	50.84	7.36
6	4904.00	45.5 AV	54.0	-8.5	2.33 V	246	38.14	7.36
7	7356.00	49.4 PK	74.0	-24.6	1.02 V	157	34.90	14.50
8	7356.00	39.2 AV	54.0	-14.8	1.02 V	157	24.70	14.50

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 Worst-Case Data:

802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	38.85	36.3 QP	40.0	-3.7	1.50 H	260	45.51	-9.21
2	72.68	34.1 QP	40.0	-5.9	2.00 H	111	45.79	-11.67
3	209.98	34.0 QP	43.5	-9.5	1.00 H	246	45.88	-11.85
4	320.01	37.9 QP	46.0	-8.1	1.00 H	50	45.13	-7.21
5	350.00	38.3 QP	46.0	-7.7	1.00 H	55	45.06	-6.75
6	624.97	37.3 QP	46.0	-8.8	1.50 H	90	37.36	-0.11
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	84.73	35.7 QP	40.0	-4.3	4.00 V	8	50.13	-14.40
2	350.00	36.9 QP	46.0	-9.1	1.50 V	360	43.65	-6.75
3	439.99	36.7 QP	46.0	-9.4	1.00 V	360	40.54	-3.89
4	559.98	37.3 QP	46.0	-8.7	1.00 V	292	39.07	-1.81
5	625.00	37.8 QP	46.0	-8.2	1.00 V	360	37.90	-0.11
6	874.99	38.7 QP	46.0	-7.4	1.00 V	92	35.27	3.38

REMARKS:

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

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 R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 01, 2015	Aug. 31, 2016
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 23, 2015	Sep. 22, 2016
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2015	Sep. 30, 2016
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 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: Mar. 08, 2016

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.

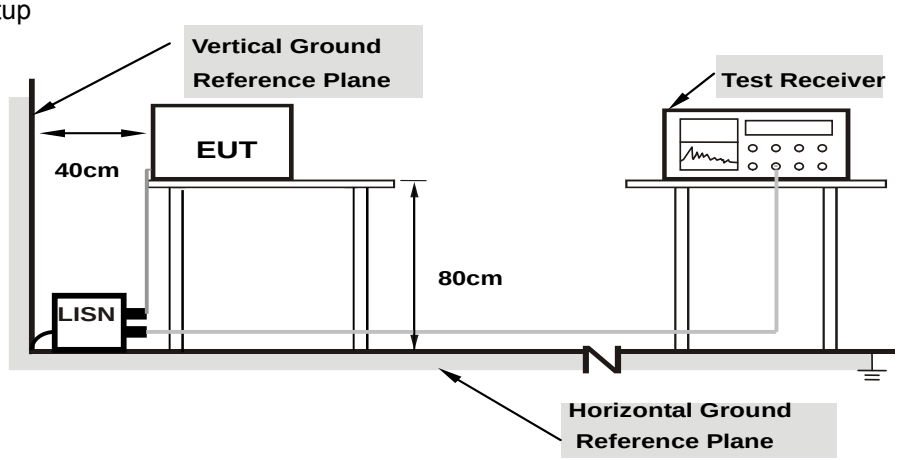
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

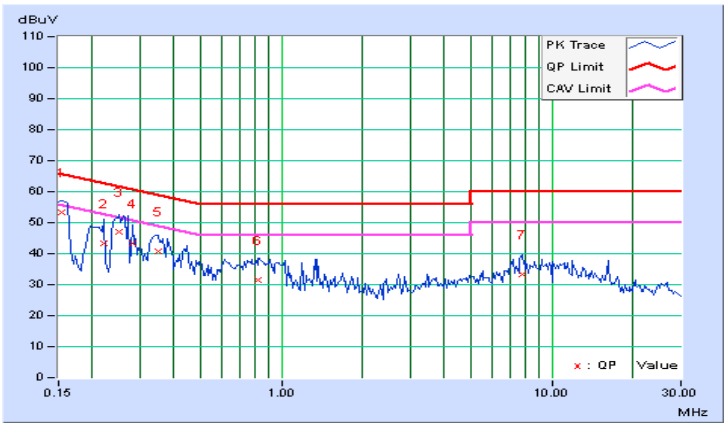
4.2.7 Test Results (Mode 1)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.26	43.06	28.48	53.32	38.74	65.79	55.79	-12.47	-17.05
2	0.22031	10.22	33.24	10.74	43.46	20.96	62.81	52.81	-19.35	-31.85
3	0.25156	10.23	36.88	25.68	47.11	35.91	61.71	51.71	-14.60	-15.80
4	0.28281	10.23	33.13	22.92	43.36	33.15	60.73	50.73	-17.37	-17.58
5	0.34922	10.23	30.69	19.01	40.92	29.24	58.98	48.98	-18.06	-19.74
6	0.82188	10.19	21.28	11.82	31.47	22.01	56.00	46.00	-24.53	-23.99
7	7.73047	10.47	22.72	14.57	33.19	25.04	60.00	50.00	-26.81	-24.96

REMARKS:

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

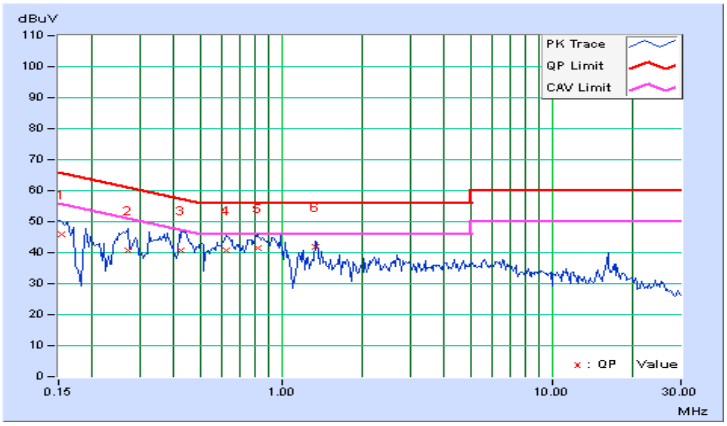


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.24	35.86	23.07	46.10	33.31	65.79	55.79	-19.69	-22.48
2	0.27109	10.21	30.49	14.29	40.70	24.50	61.08	51.08	-20.39	-26.59
3	0.42734	10.22	30.51	26.16	40.73	36.38	57.30	47.30	-16.58	-10.93
4	0.62656	10.20	30.70	19.67	40.90	29.87	56.00	46.00	-15.10	-16.13
5	0.81406	10.18	31.29	23.50	41.47	33.68	56.00	46.00	-14.53	-12.32
6	**1.32813**	**10.18**	**31.64**	**28.46**	**41.82**	**38.64**	**56.00**	**46.00**	**-14.18**	**-7.36**

REMARKS:

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



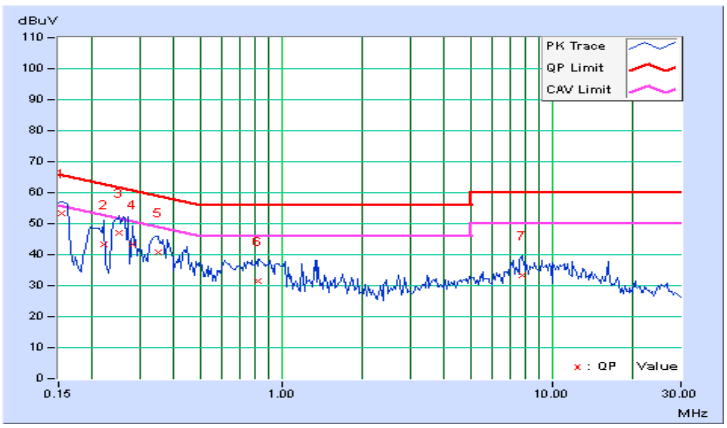
4.2.8 Test Results (Mode 2)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.26	43.06	28.48	53.32	38.74	65.79	55.79	-12.47	-17.05
2	0.22031	10.22	33.24	10.74	43.46	20.96	62.81	52.81	-19.35	-31.85
3	0.25156	10.23	36.88	25.68	47.11	35.91	61.71	51.71	-14.60	-15.80
4	0.28281	10.23	33.13	22.92	43.36	33.15	60.73	50.73	-17.37	-17.58
5	0.34922	10.23	30.69	19.01	40.92	29.24	58.98	48.98	-18.06	-19.74
6	0.82188	10.19	21.28	11.82	31.47	22.01	56.00	46.00	-24.53	-23.99
7	7.73047	10.47	22.72	14.57	33.19	25.04	60.00	50.00	-26.81	-24.96

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.

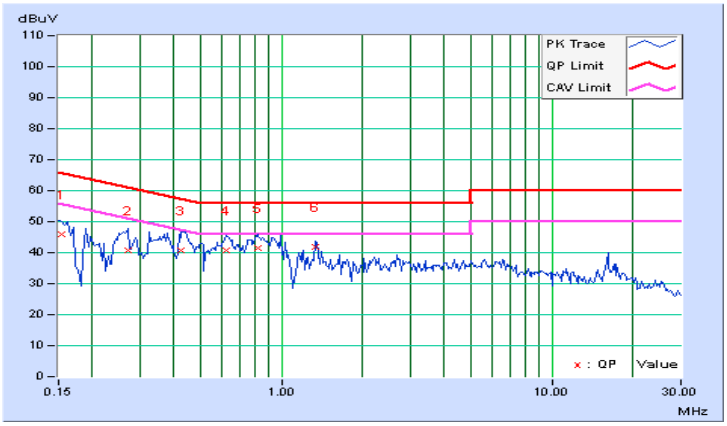


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15391	10.24	35.86	23.07	46.10	33.31	65.79	55.79	-19.69	-22.48
2	0.27109	10.21	30.49	14.29	40.70	24.50	61.08	51.08	-20.39	-26.59
3	0.42734	10.22	30.51	26.16	40.73	36.38	57.30	47.30	-16.58	-10.93
4	0.62656	10.20	30.70	19.67	40.90	29.87	56.00	46.00	-15.10	-16.13
5	0.81406	10.18	31.29	23.50	41.47	33.68	56.00	46.00	-14.53	-12.32
6	**1.32813**	**10.18**	**31.64**	**28.46**	**41.82**	**38.64**	**56.00**	**46.00**	**-14.18**	**-7.36**

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.

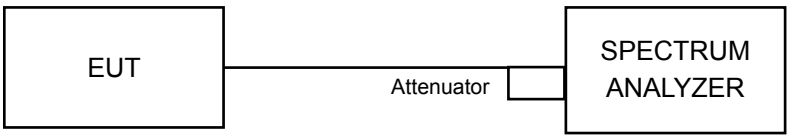


4.3 6dB Bandwidth Measurement

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

Refer to section 4.1.2 to get information of above instrument.

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

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.10	0.5	PASS
6	2437	8.11	0.5	PASS
11	2462	8.10	0.5	PASS

CDD Mode

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1		
1	2412	15.10	15.11	0.5	PASS
6	2437	15.15	15.16	0.5	PASS
11	2462	15.13	15.17	0.5	PASS

802.11n (HT20)

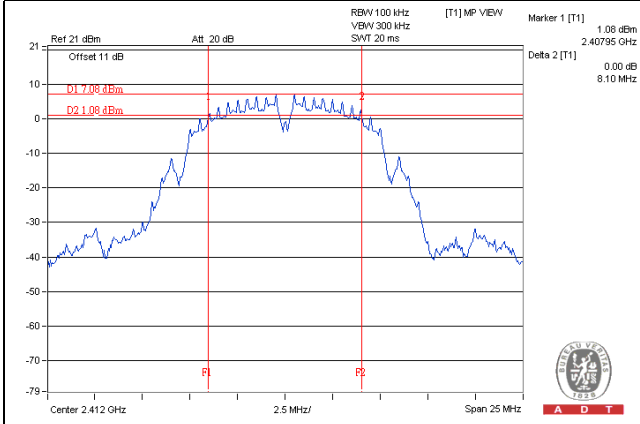
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1		
1	2412	15.16	15.16	0.5	Pass
6	2437	15.15	15.71	0.5	Pass
11	2462	15.15	15.16	0.5	Pass

802.11n (HT40)

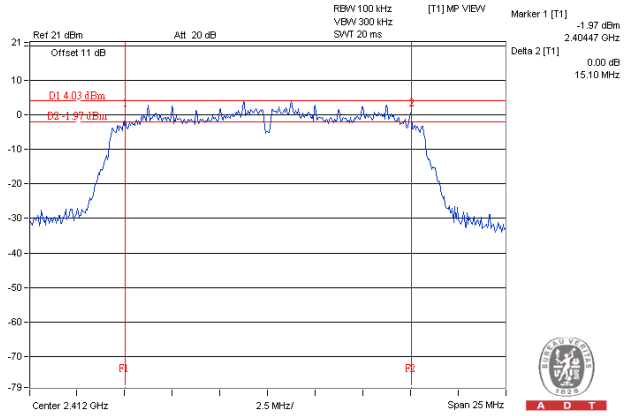
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		CHAIN 0	CHAIN 1		
3	2422	35.98	36.42	0.5	Pass
6	2437	35.46	36.38	0.5	Pass
9	2452	35.87	36.44	0.5	Pass

Spectrum Plot of Worst Value

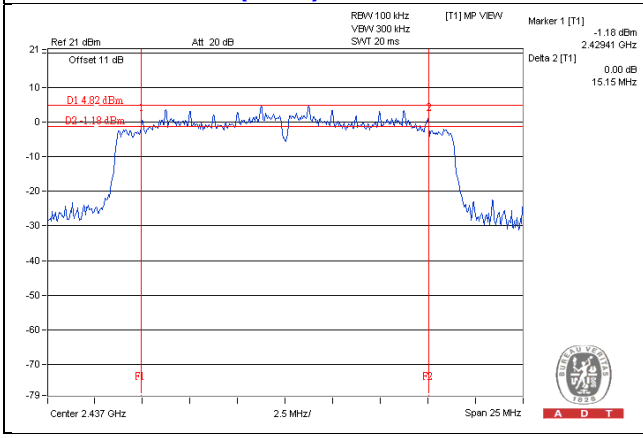
802.11b / CH1



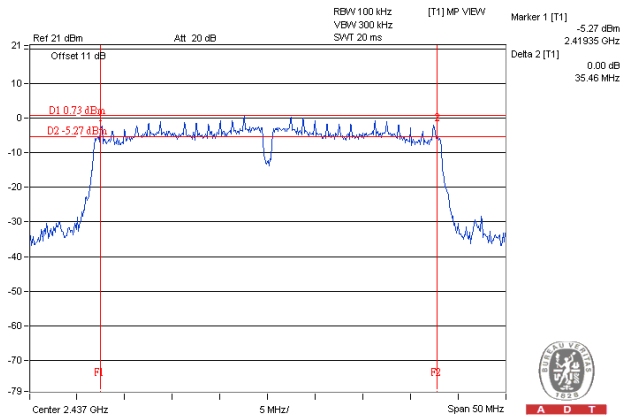
802.11g / Chain 0 : CH1



802.11n (HT20) / Chain 0 : CH6



802.11n (HT40) / Chain 0 : CH6



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

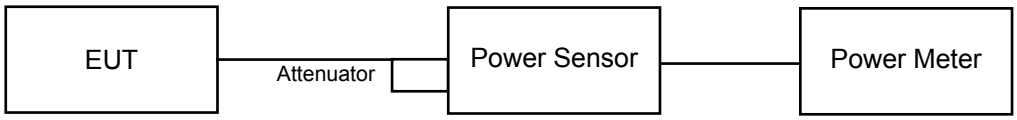
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / 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

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	71.614	18.55	30	Pass
6	2437	78.705	18.96	30	Pass
11	2462	69.502	18.42	30	Pass

CDD Mode

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	23.42	23.61	449.401	26.53	30	Pass
6	2437	24.11	24.09	514.08	27.11	30	Pass
11	2462	23.68	23.37	450.616	26.54	30	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.91	23.04	396.806	25.99	30	Pass
6	2437	23.73	23.41	455.328	26.58	30	Pass
11	2462	23.25	23.23	421.727	26.25	30	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	21.57	21.33	279.38	24.46	30	Pass
6	2437	22.32	22.41	344.789	25.38	30	Pass
9	2452	21.31	21.51	276.786	24.42	30	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	29.309	14.67
6	2437	31.989	15.05
11	2462	34.754	15.41

CDD Mode

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.46	14.77	57.917	17.63
6	2437	15.74	15.65	74.225	18.71
11	2462	14.61	14.89	59.739	17.76

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.74	13.58	41.596	16.19
6	2437	14.62	15.49	64.373	18.09
11	2462	13.61	14.15	48.963	16.90

802.11n (HT40)

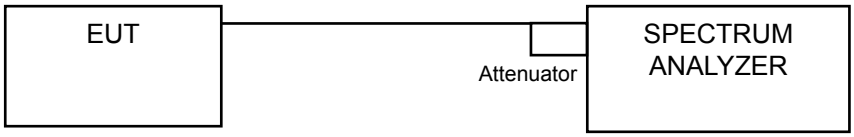
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	11.96	12.72	34.411	15.37
6	2437	13.79	14.17	50.055	16.99
9	2452	12.07	12.36	33.325	15.23

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

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

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

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-7.72	8	Pass
6	2437	-6.98	8	Pass
11	2462	-5.71	8	Pass

CDD Mode

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-10.16	3.01	-7.15	8	Pass
	6	2437	-8.73	3.01	-5.72	8	Pass
	11	2462	-9.72	3.01	-6.71	8	Pass
1	1	2412	-10.45	3.01	-7.44	8	Pass
	6	2437	-8.70	3.01	-5.69	8	Pass
	11	2462	-10.36	3.01	-7.35	8	Pass

Note: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$ = 5.52dBi < 6dBi , so the power density limit shall not be reduced.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-11.85	3.01	-8.84	8	Pass
	6	2437	-10.30	3.01	-7.29	8	Pass
	11	2462	-10.25	3.01	-7.24	8	Pass
1	1	2412	-10.67	3.01	-7.66	8	Pass
	6	2437	-10.46	3.01	-7.45	8	Pass
	11	2462	-10.77	3.01	-7.76	8	Pass

Note: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$ = 5.52dBi < 6dBi , so the power density limit shall not be reduced.

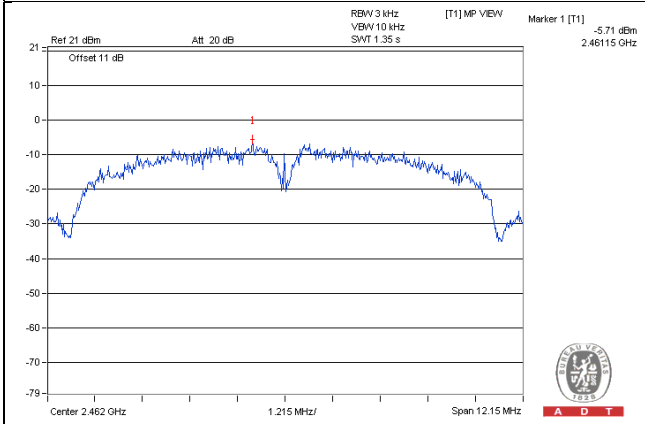
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-16.58	3.01	-13.57	8	Pass
	6	2437	-14.39	3.01	-11.38	8	Pass
	9	2452	-15.05	3.01	-12.04	8	Pass
1	3	2422	-14.74	3.01	-11.73	8	Pass
	6	2437	-12.95	3.01	-9.94	8	Pass
	9	2452	-15.65	3.01	-12.64	8	Pass

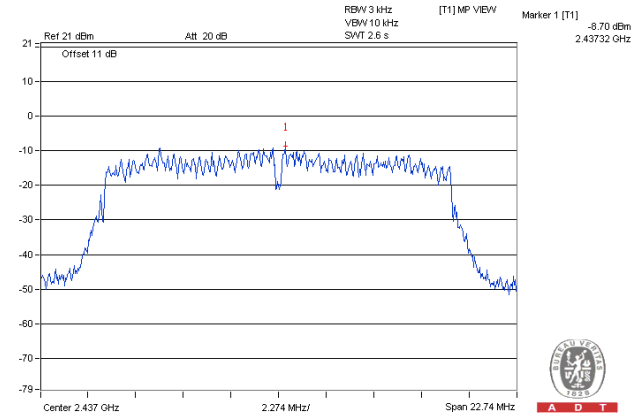
Note: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 5.52dBi < 6dBi , so the power density limit shall not be reduced.

Spectrum Plot of Worst Value

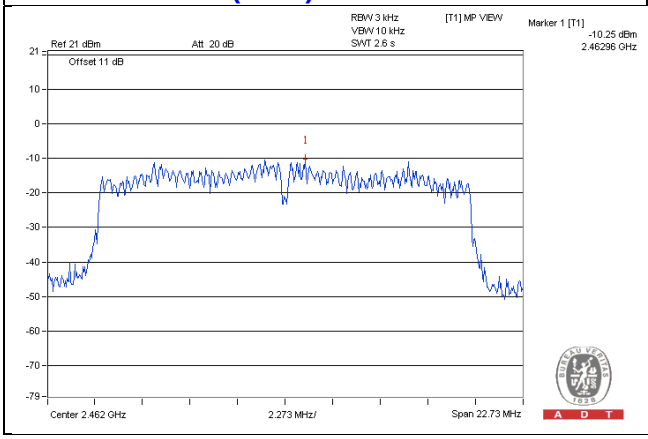
802.11b / CH11



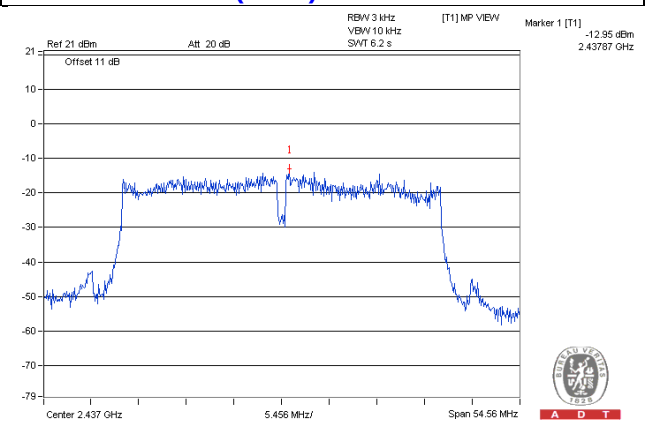
802.11g / Chain 1 : CH6



802.11n (HT20) / Chain 0 : CH11



802.11n (HT40) / Chain 1 : CH6

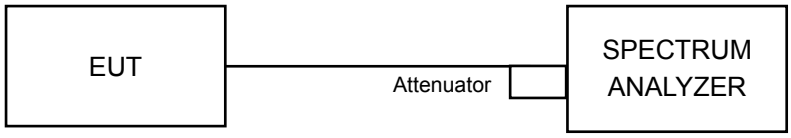


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

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

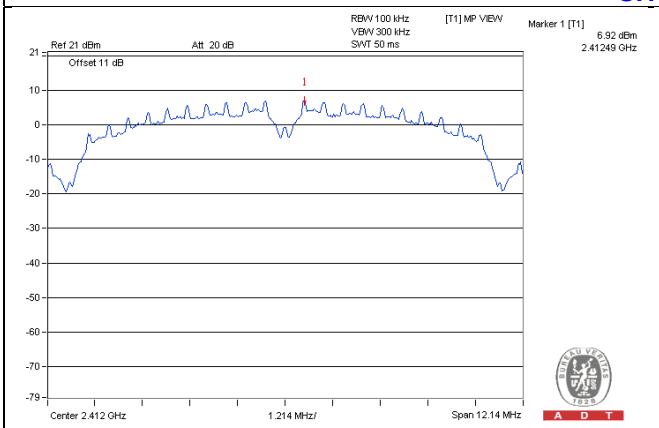
Same as Item 4.3.6

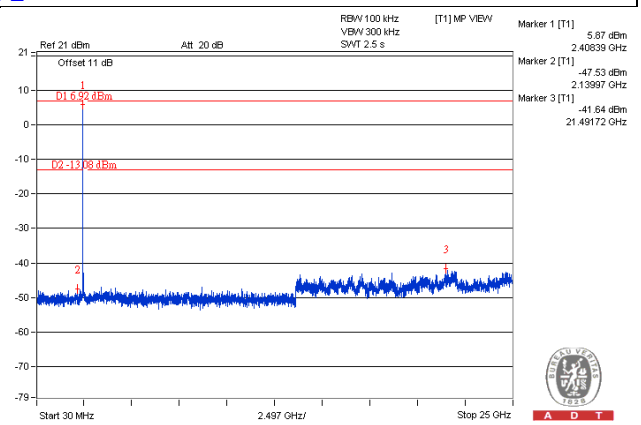
4.6.7 Test Results

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

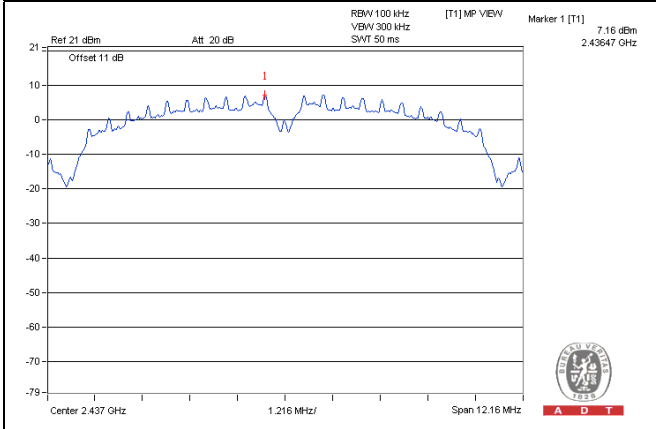
802.11b

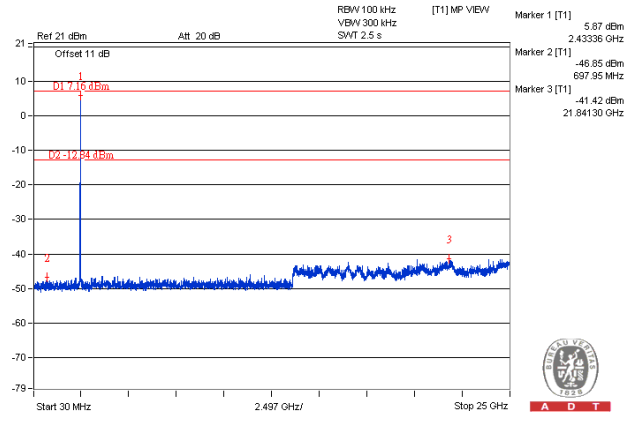
CH 1



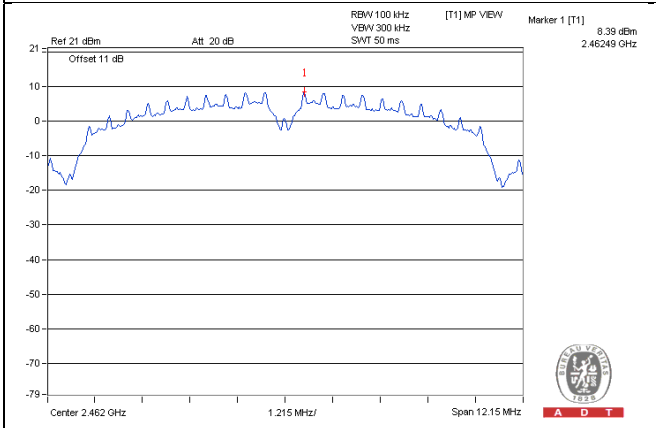


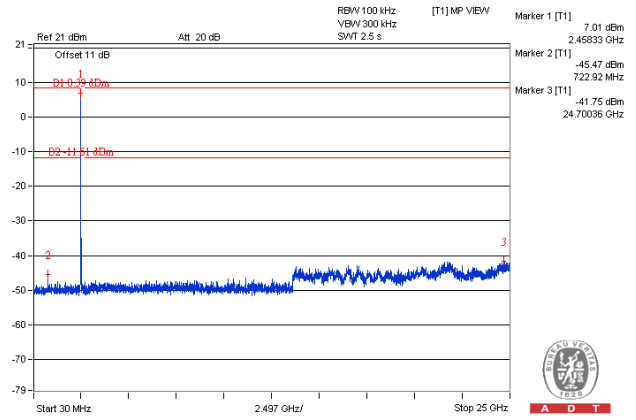
CH 6



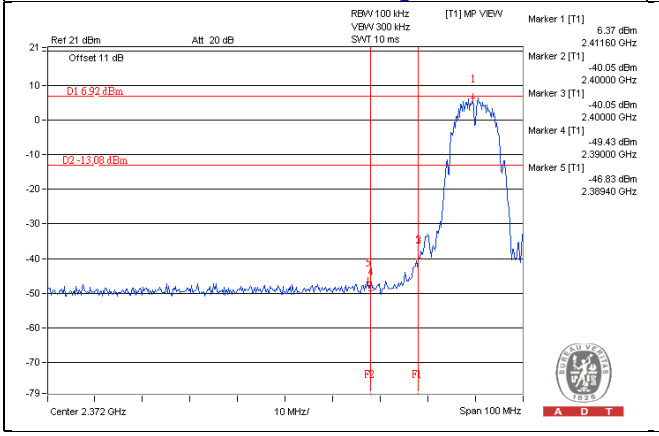


CH 11

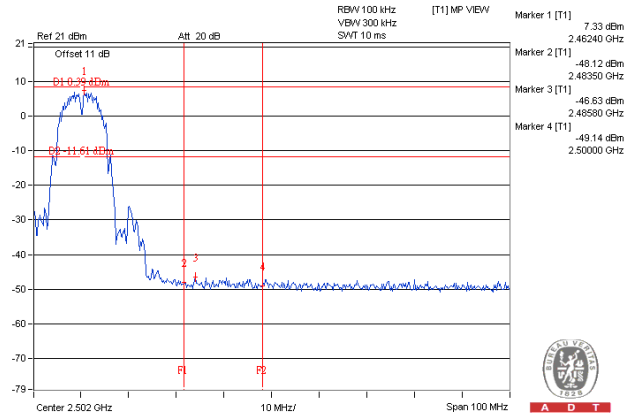




CH 1 Band edge

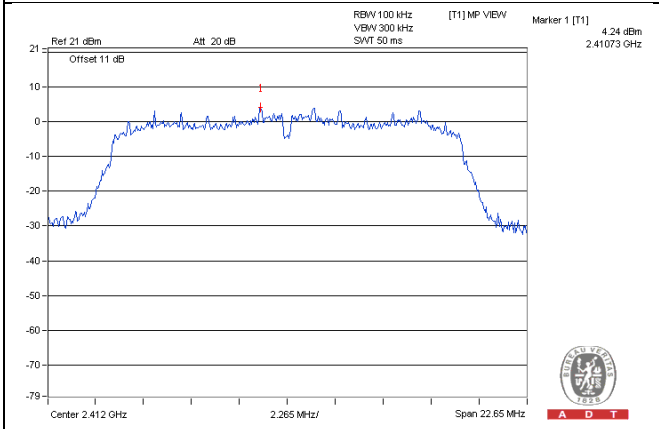


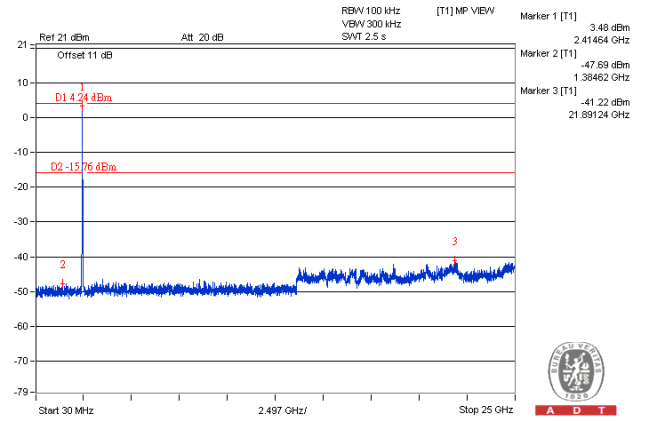
CH 11 Band edge



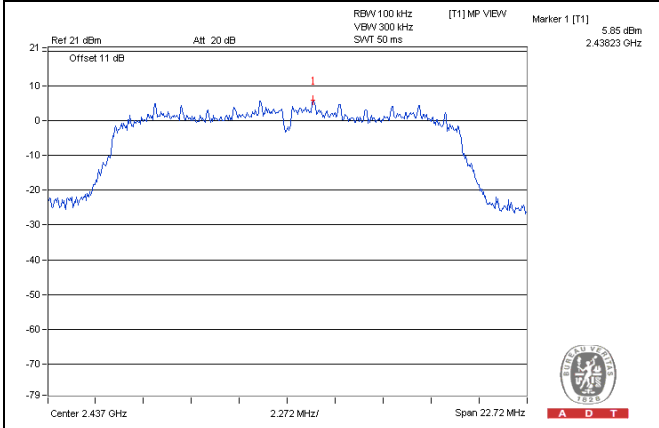
802.11g / Chain 0

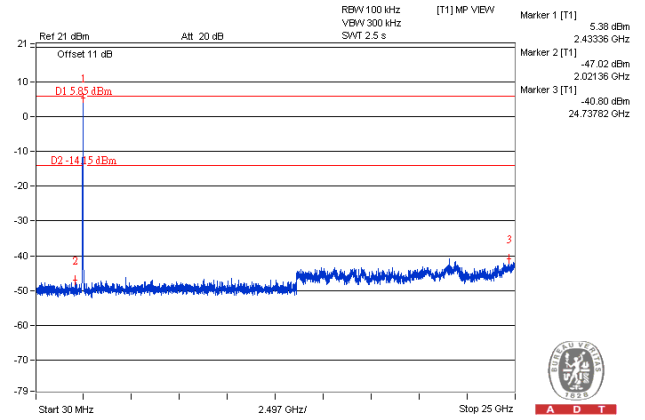
CH 1



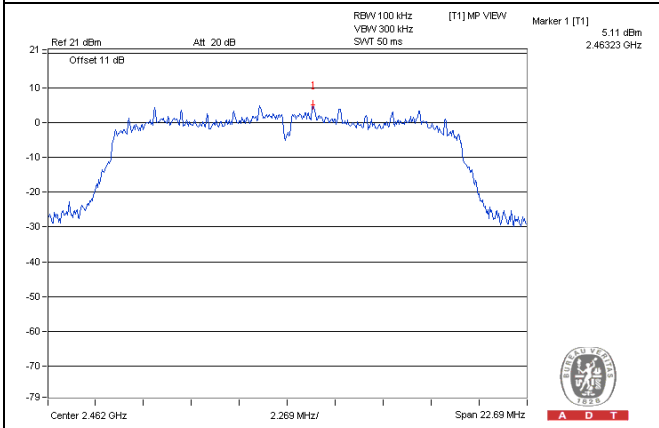


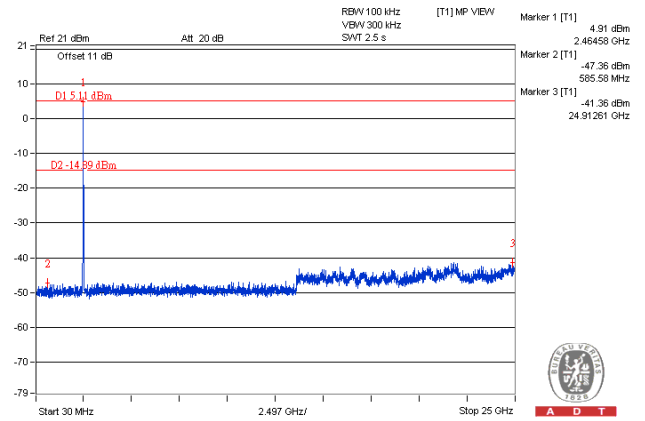
CH 6



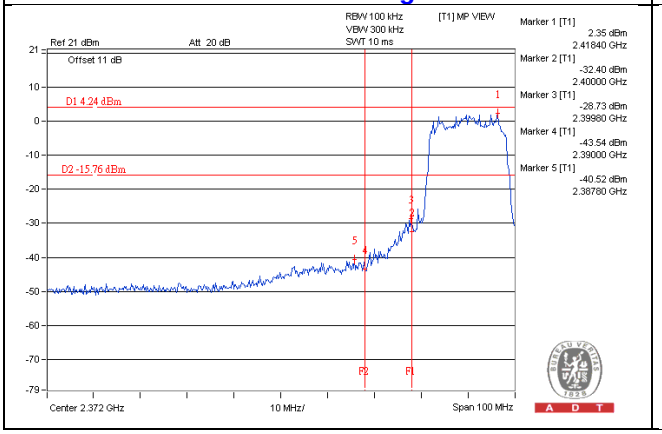


CH 11

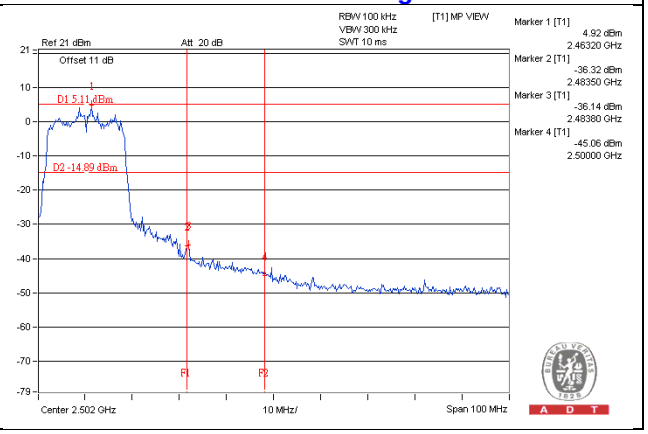




CH 1 Band edge

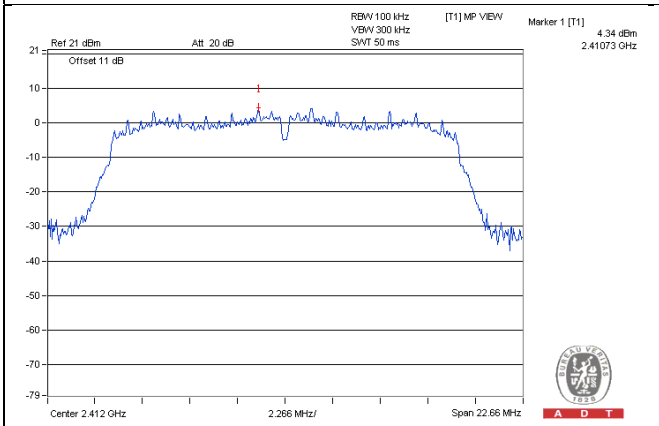


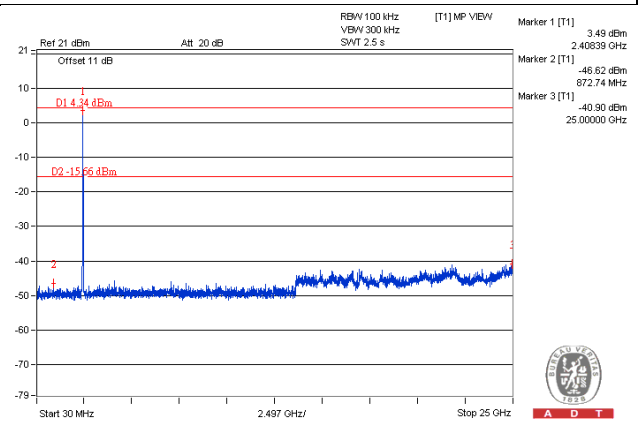
CH 11 Band edge



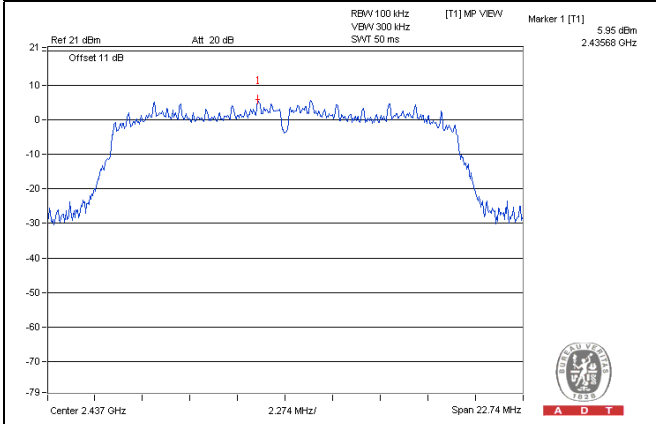
Chain 1

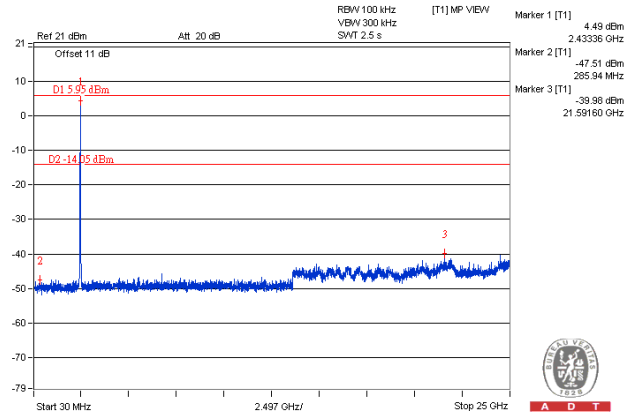
CH 1



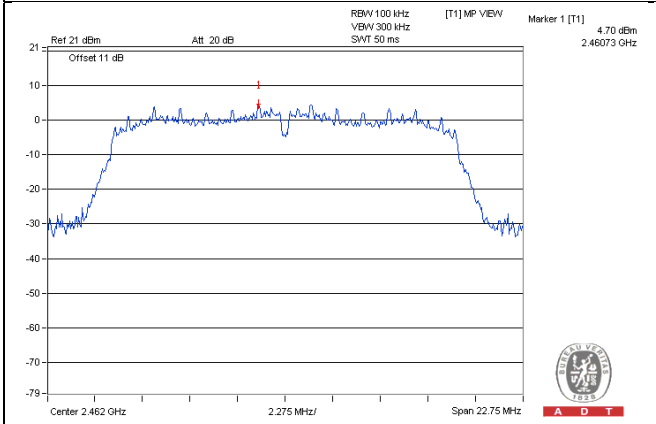


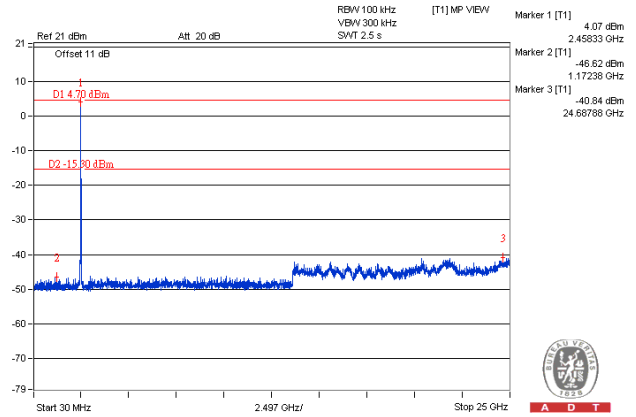
CH 6



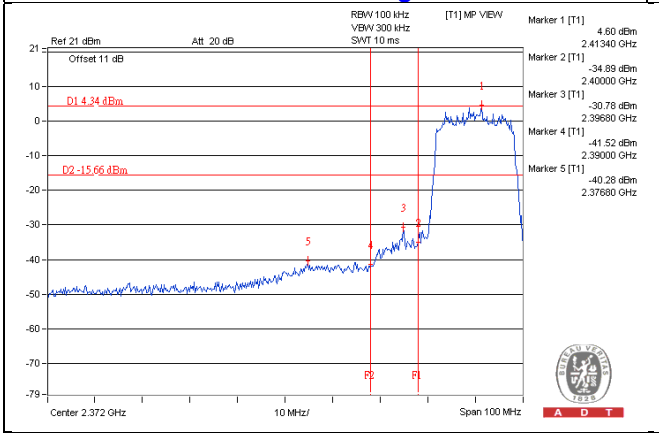


CH 11

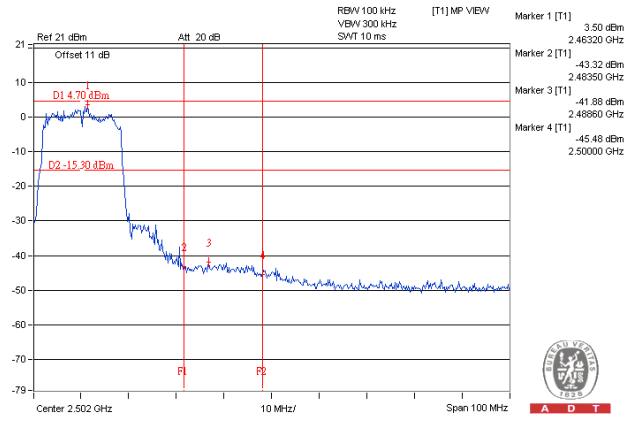




CH 1 Band edge

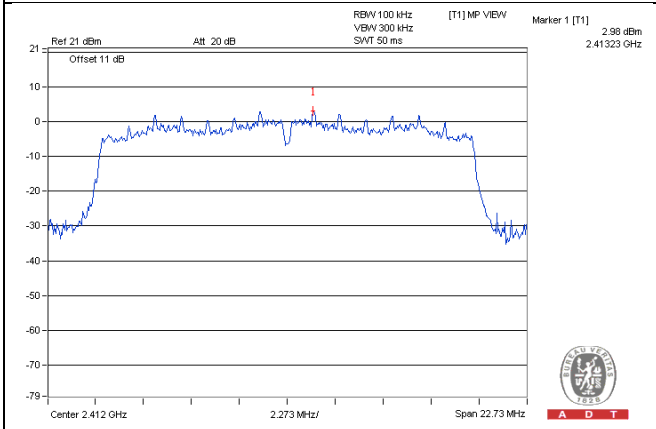


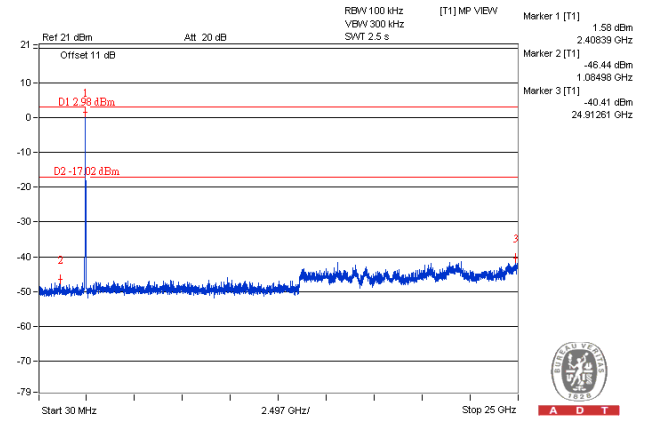
CH 11 Band edge



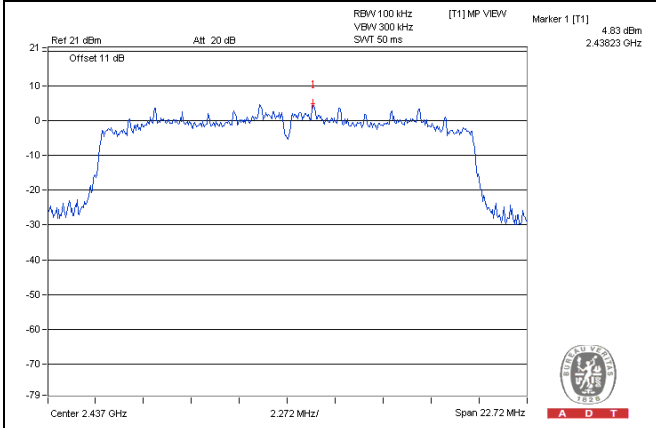
802.11n (HT20) / Chain 0

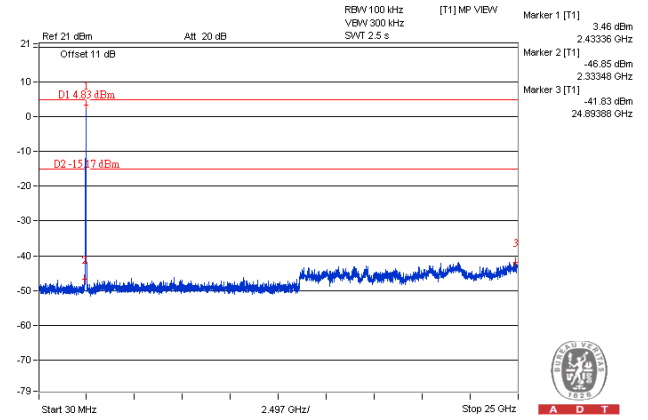
CH 1



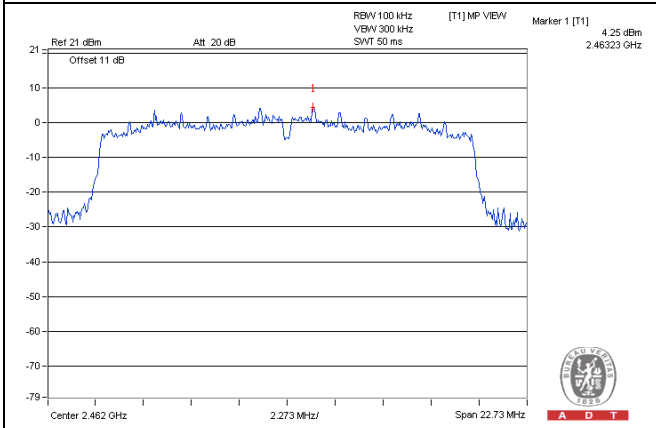


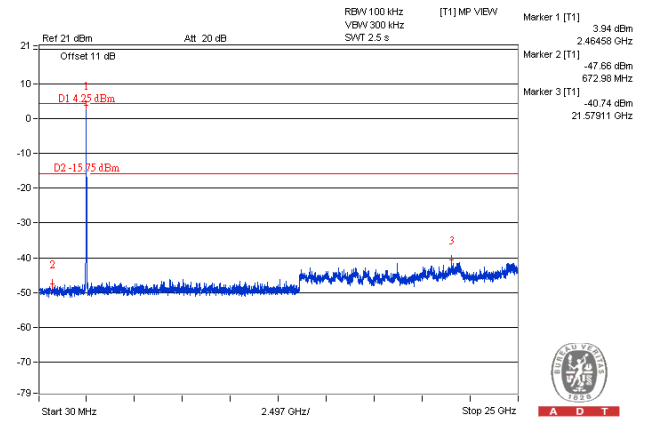
CH 6



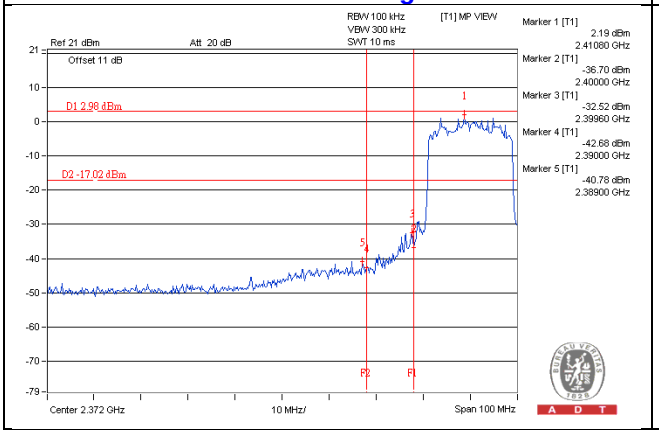


CH 11

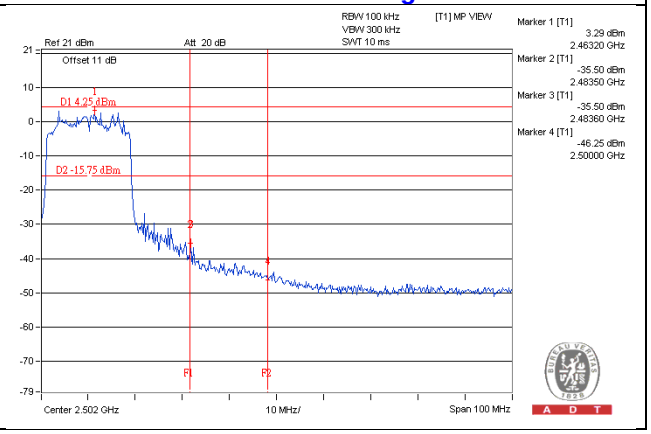




CH 1 Band edge

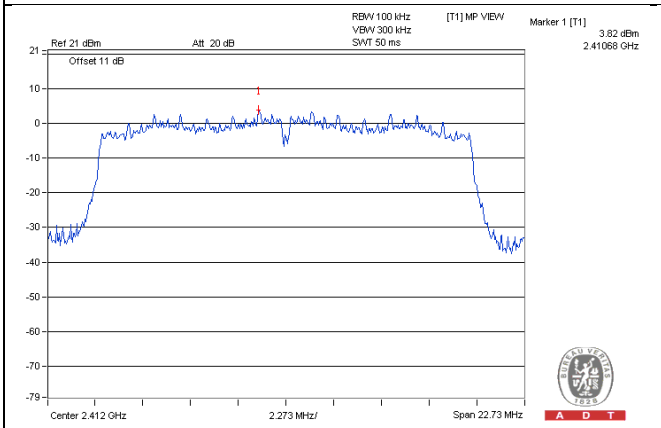


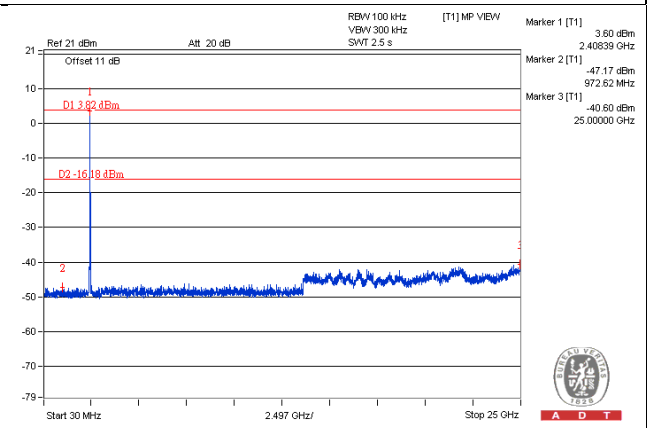
CH 11 Band edge



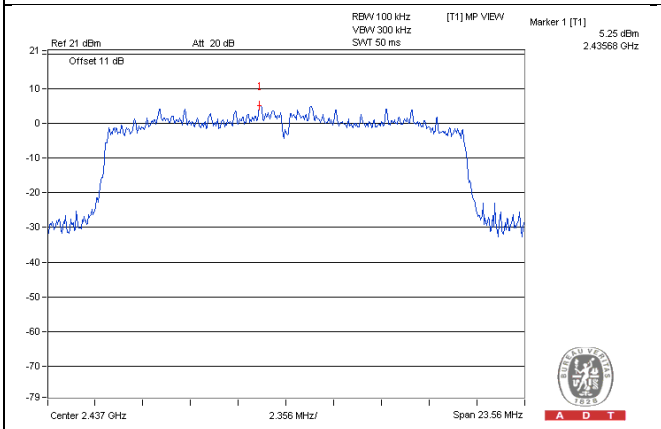
Chain 1

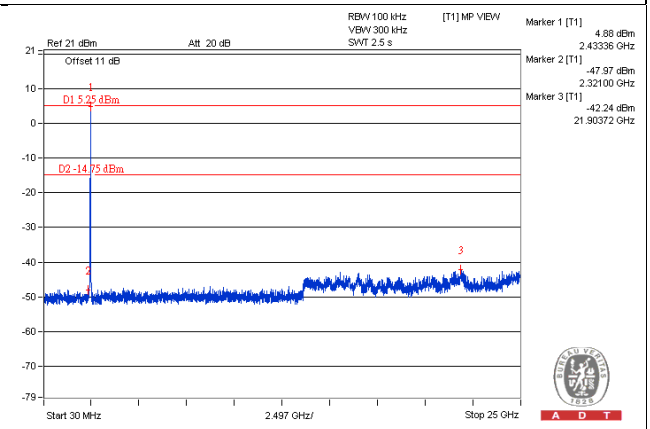
CH 1



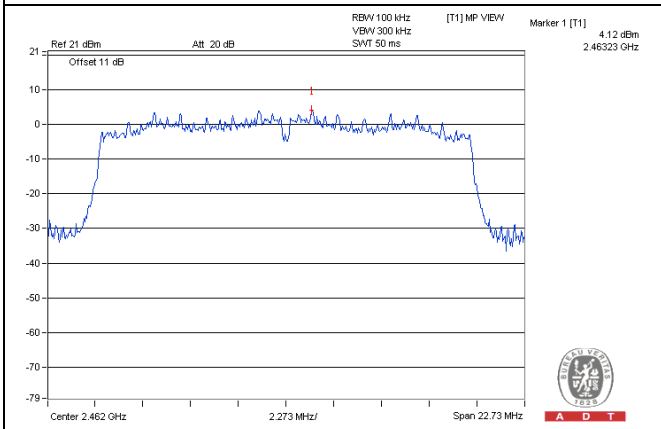


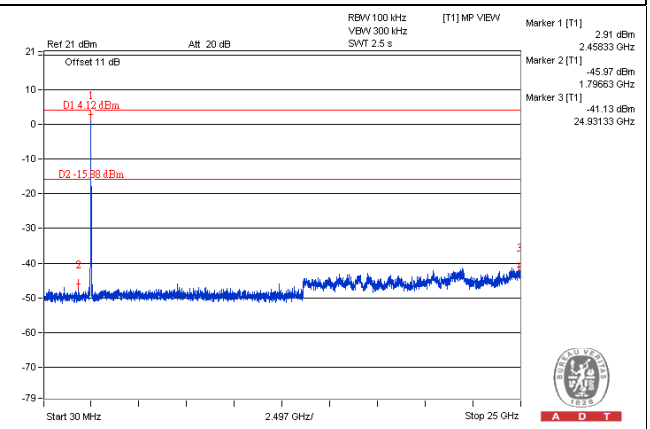
CH 6



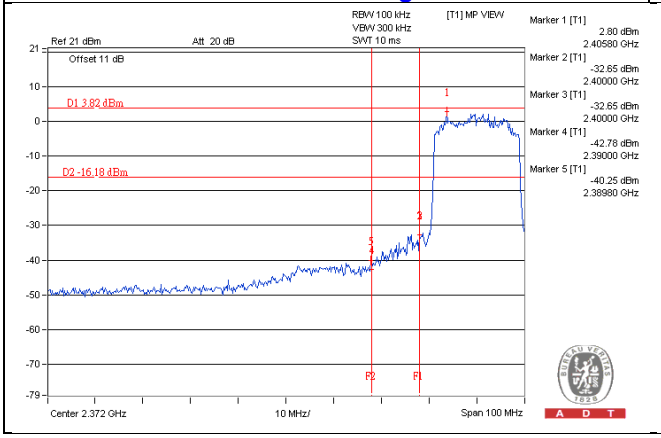


CH 11

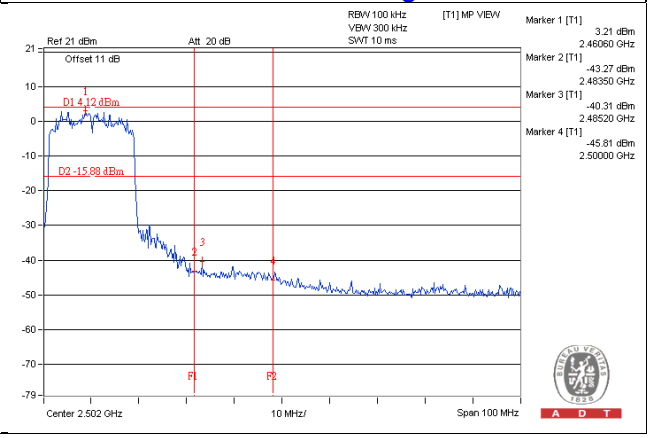




CH 1 Band edge

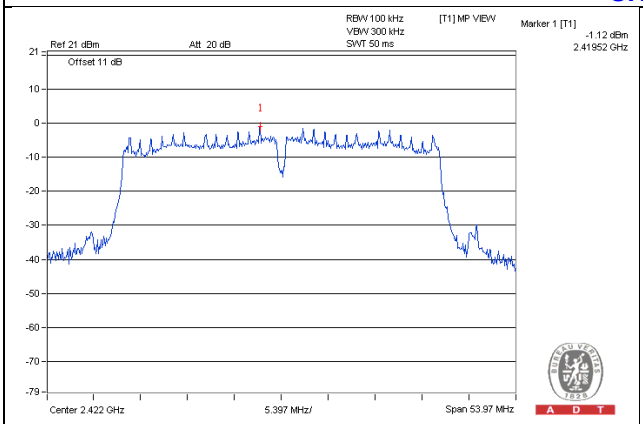


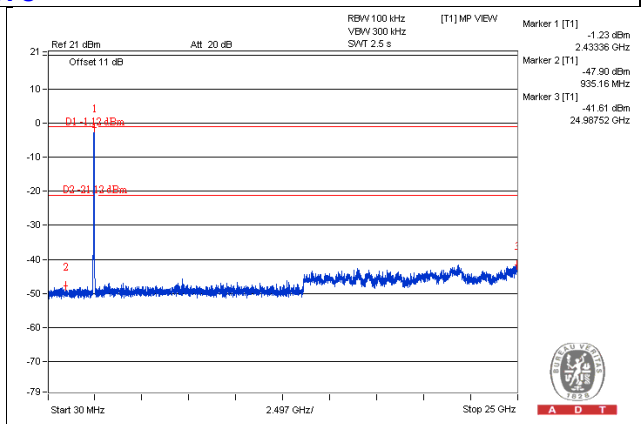
CH 11 Band edge



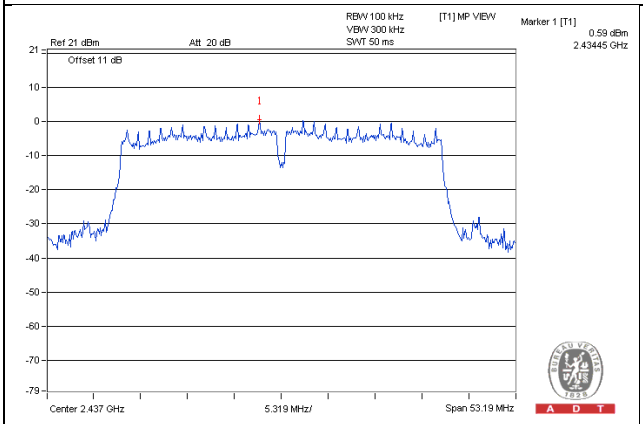
802.11n (HT40) / Chain 0

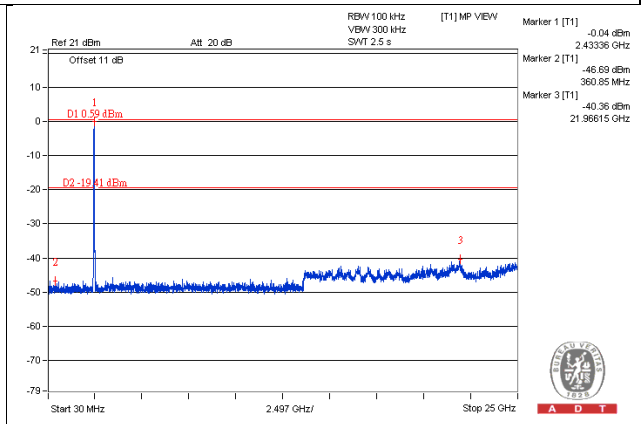
CH 3



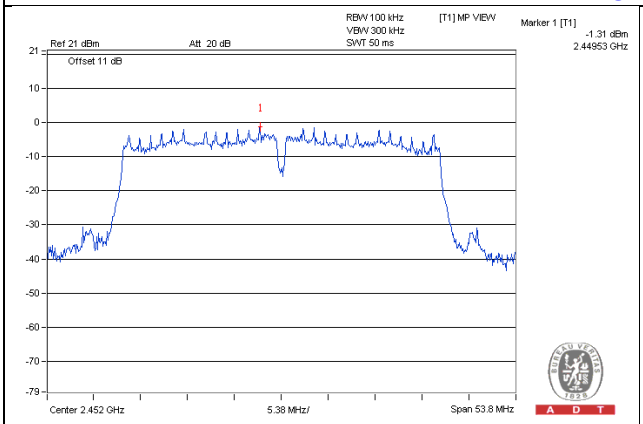


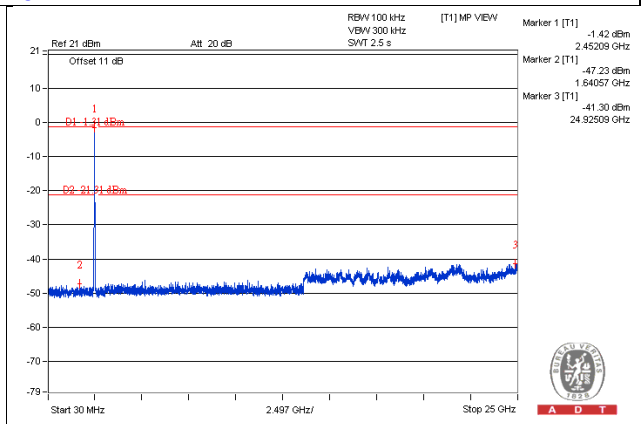
CH 6



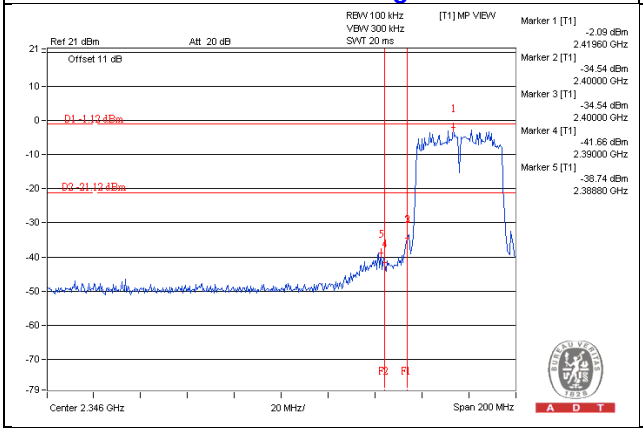


CH 9

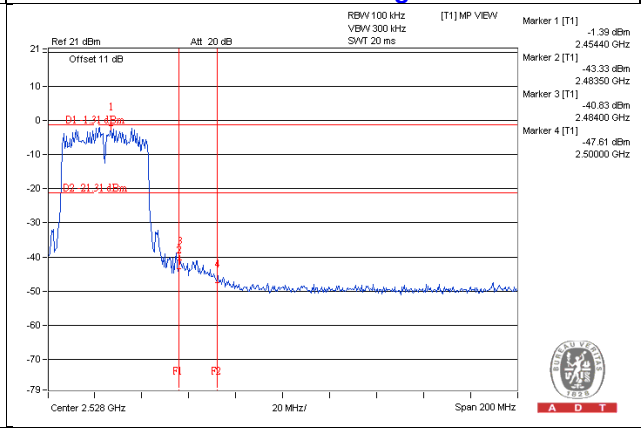




CH 3 Band edge

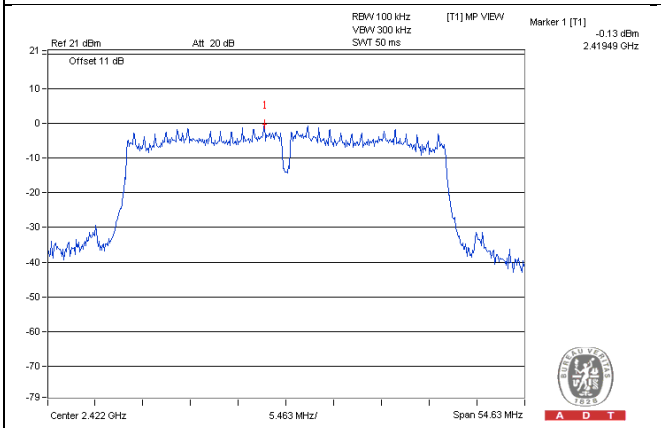


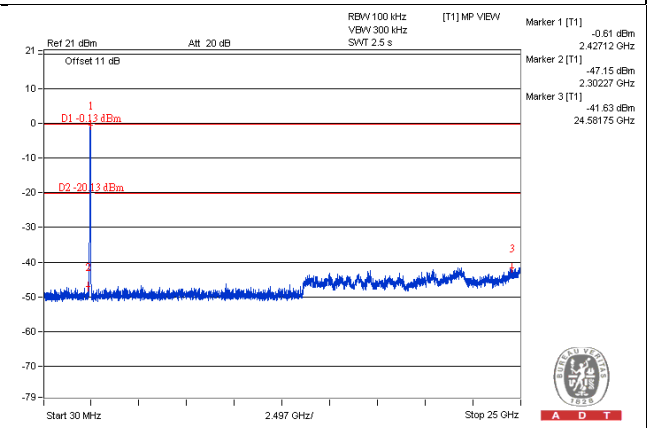
CH 9 Band edge



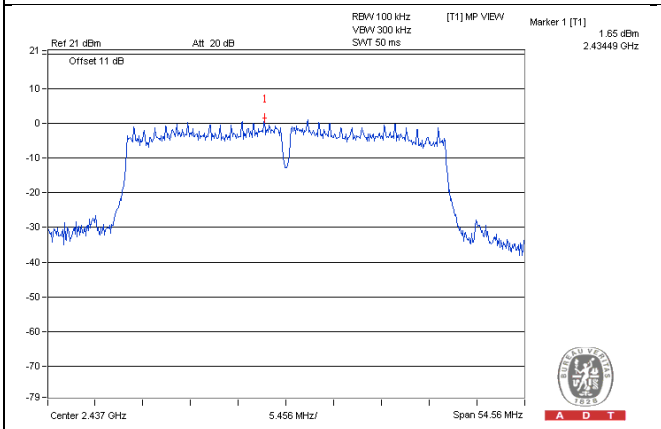
Chain 1

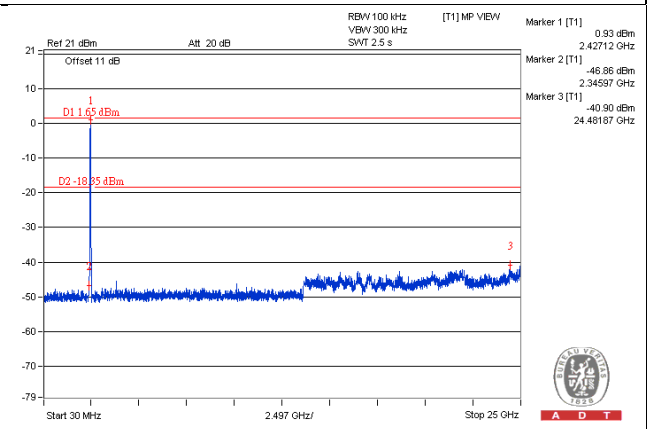
CH 3



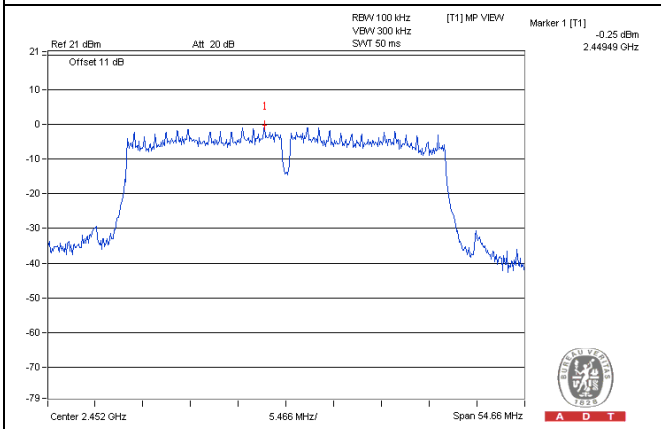


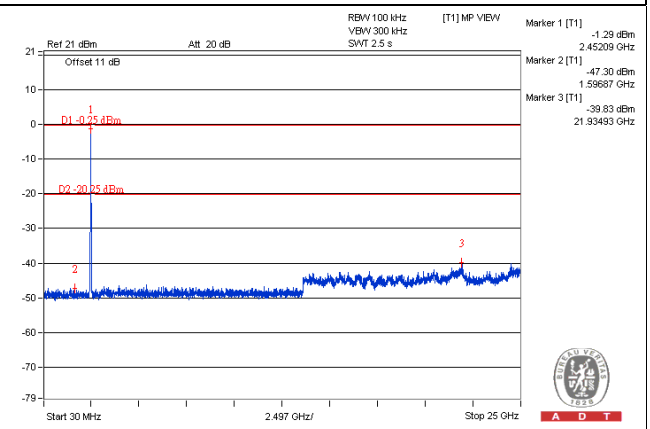
CH 6



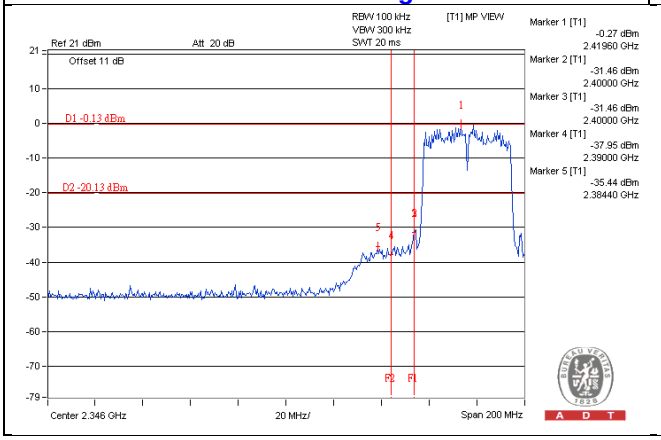


CH 9

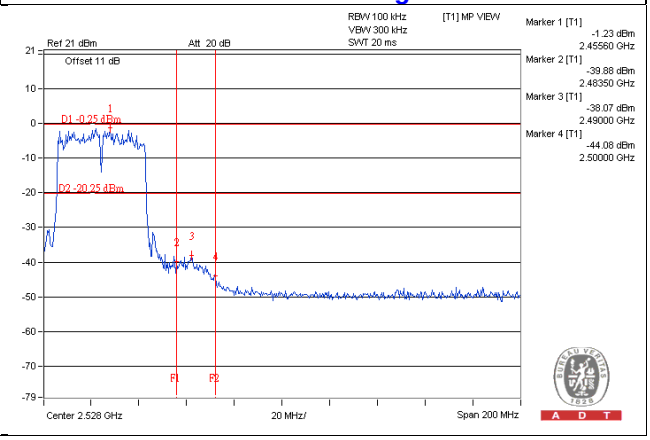




CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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

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

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