FCC Test Report

Report No.:	RF160104E05
FCC ID:	2AG56001
Test Model:	M3-EXT-PM1
Received Date:	Jan. 04, 2016
Test Date:	Jan. 07 to Mar. 03, 2016
Issued Date:	Mar. 18, 2016
Applicant:	DTECH Labs Inc.
Address:	21580 Beaumeade Circle, Suite 230, Ashburn, VA 20147-6007 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
RF160104E05	Original release.	Mar. 18, 2016

1 Certificate of Conformity

Product:	M3-EXT-PM1 Module
Brand:	M3-EXT Peplink Computer Module
Test Model:	M3-EXT-PM1
Sample Status:	ENGINEERING SAMPLE
Applicant:	DTECH Labs Inc.
Test Date:	Jan. 07 to Mar. 03, 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 : Wendy Wu , **Date:** Mar. 18, 2016

Wendy Wu / Specialist

Approved by : , **Date:** Mar. 18, 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 -0.92dB at 12.83144MHz.
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 and 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 RP-SMA 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	3.43 dB
	6GHz ~ 18GHz	3.49 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	M3-EXT-PM1 Module
Brand	M3-EXT Peplink Computer Module
Test Model	M3-EXT-PM1
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 24V from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 300Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	802.11b: 550.391mW 802.11g: 645.052mW 802.11n (HT20): 794.554mW 802.11n (HT40): 453.703mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Platform x 1 Battery x 1 AC Adapter x 1
Data Cable Supplied	DC power cable (Unshielded, 3m) x 1 Console cable (Unshielded, 1.8m) x 1

Note:

1. The EUT must be plugged and sold with below platform and either the battery, the power adapter or the DC power input cable, the information as below tables:

Product Name	Brand	Model No.
Platform	DTECH LABS	M3-EXT-CF1
Product Name	Brand	Model No.
Battery	DTECH LABS	M3-EXT-BAT1 M3-EXT Primary Battery Option
Product Name	Brand	Model No.
DC power cable	DTECH LABS	M3-EXT-DCPWRCA-120
Product Name	Brand	Model No.
AC Adapter	MEAN WELL	GS120A24
Input: 100-240Vac, 1.4A, 50/60Hz AC input cable: Unshielded, 1.8m Output: 24Vdc, 5A DC output cable: Unshielded, 1.2m		

2. For Radiated Emissions, EUT has been pre-tested under following test modes

Mode	Test Condition
A	**Battery + AC adapter**
B	AC adapter
C	DC power cable
D	Battery
E	Battery + DC power cable

According above condition, mode A was the worst case and recorded in this report.

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

Antenna No	Brand	Model	Antenna Type	Antenna Connector	Gain (dBi)	Frequency (GHz to GHz)
1	Laird	RD2458-5-RSMA	Dipole	RP-SMA	3	2.4~2.4835
2	Laird	RD2458-5-RSMA	Dipole	RP-SMA	3	2.4~2.4835

4. The EUT incorporates a MIMO function

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	2TX	2RX
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

5. The EUT could be applied with three Cellular USB Dongles, therefore emission tests are added for simultaneously transmit between WLAN and Cellular USB Dongles. The emission tests have been performed at the worst channel of all WLAN and Cellular USB Dongles, the emission of the simultaneous operation (WLAN & Cellular USB Dongles) has been evaluated and no non-compliance found. < Cellular USB Dongle only for test, not for sale >
6. 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	√	√	√	√	Battery + AC adapter
2	-	-	√	-	AC adapter
3	-	-	√	-	DC power cable
4	-	-	√	-	Battery + DC power cable

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: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

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
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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	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.

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
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

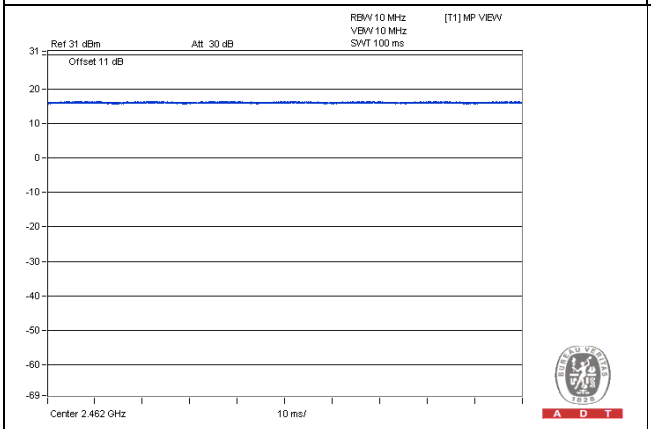
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (system)	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Tim Ho
PLC	23deg. C, 68%RH	120Vac, 60Hz	Eagle Chen
APCM	21deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

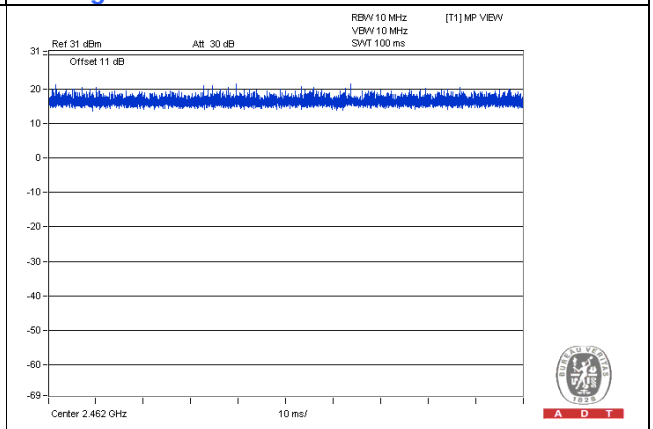
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.

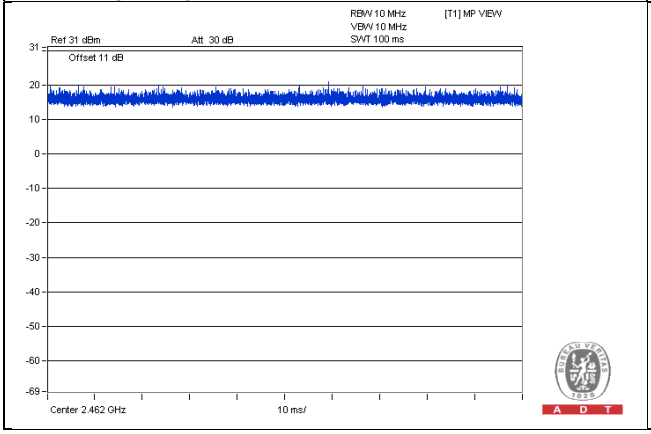
802.11b



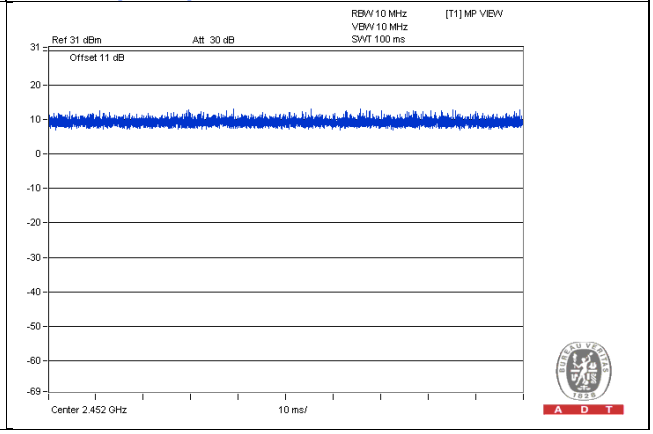
802.11g



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.	PLATFORM	DDTECHLABS	M3-EXT-CF1	NA	NA	Provided by Lab
B.	BATTERY	DDTECHLABS	E3-EXT-BATI	NA	NA	Supplied by Client
C.	ADAPTER	MEAN WELL	GS120A24	NA	NA	Supplied by Client
D.	3G DONGLE	QUALCOMM	Aircard 881u	NA	N7NMC8781U	Provided by Lab
E.	3G DONGLE	QUALCOMM	Aircard 881u	NA	N7NMC8781U	Provided by Lab
F.	3G DONGLE	QUALCOMM	Aircard 881u	NA	N7NMC8781U	Provided by Lab
G.	NOTEBOOK COMPUTER	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
H.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
I.	DC POWER SUPPLY	Topward	6603D	NA	NA	Provided by Lab

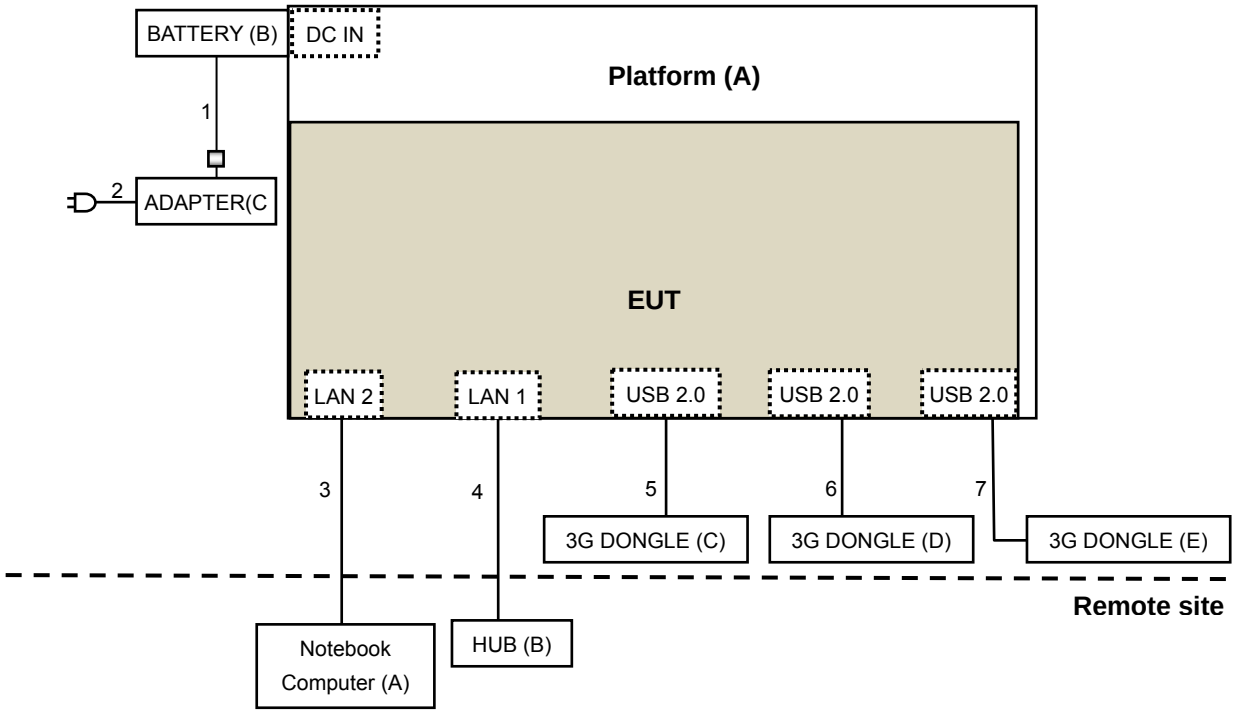
Note:
1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC	1	1.2	No	1	Supplied by Client
2.	AC	1	1.8	No	0	Supplied by Client
3.	RJ45	1	10	No	0	Provided by Lab
4.	RJ45	1	10	No	0	Provided by Lab
5.	USB	1	1	No	0	Provided by Lab
6.	USB	1	1	No	0	Provided by Lab
7.	USB	1	1	No	0	Provided by Lab
8.	DC	1	3	No	0	Supplied by Client
9.	DC	1	1	No	0	Provided by Lab

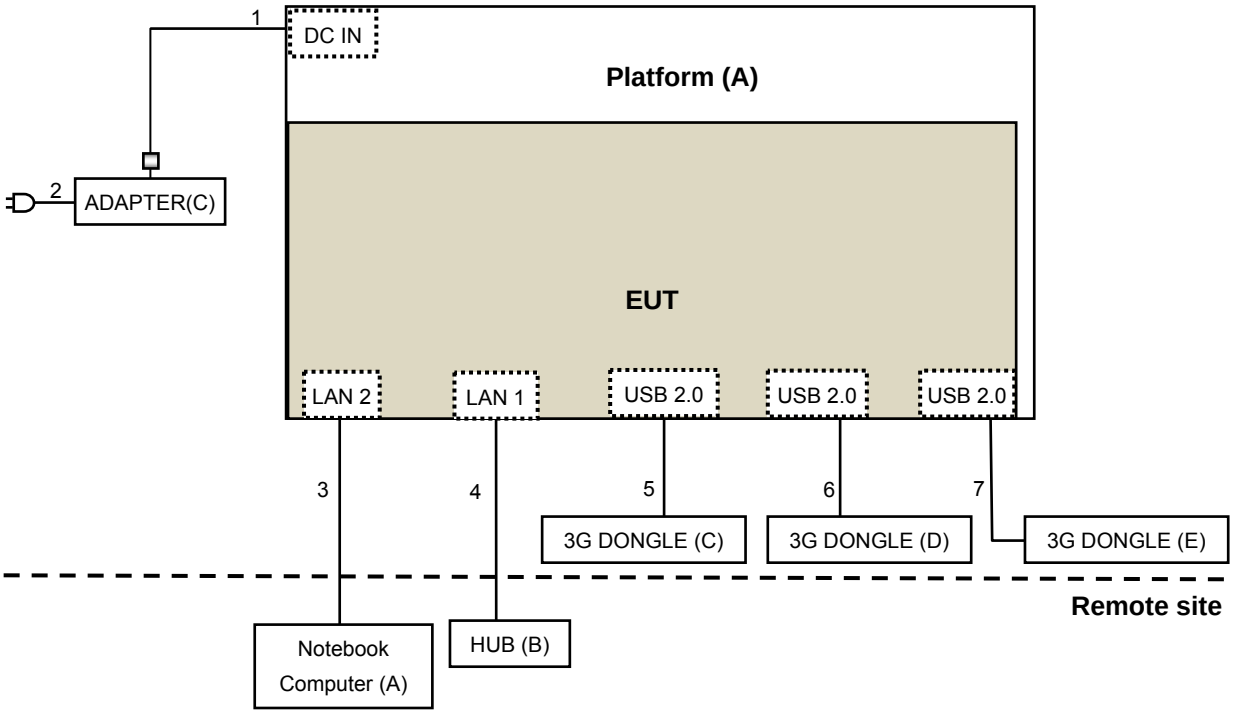
Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test

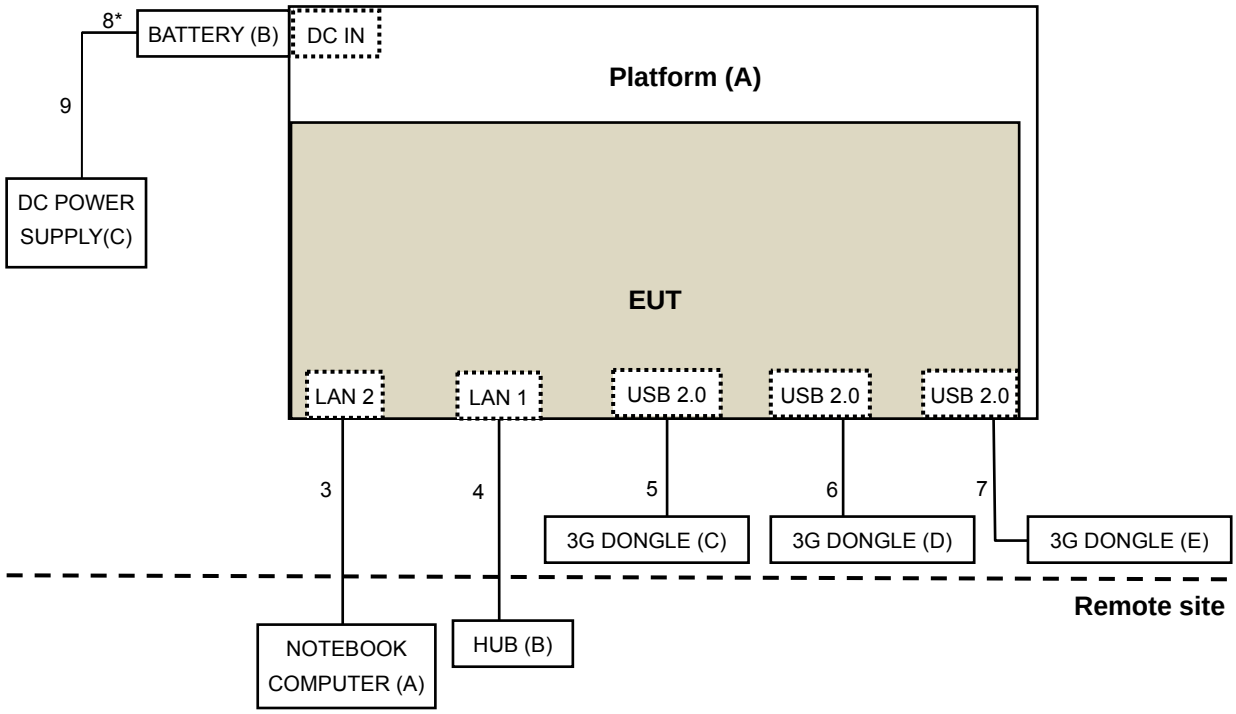
For AC power + Battery mode



For AC power mode

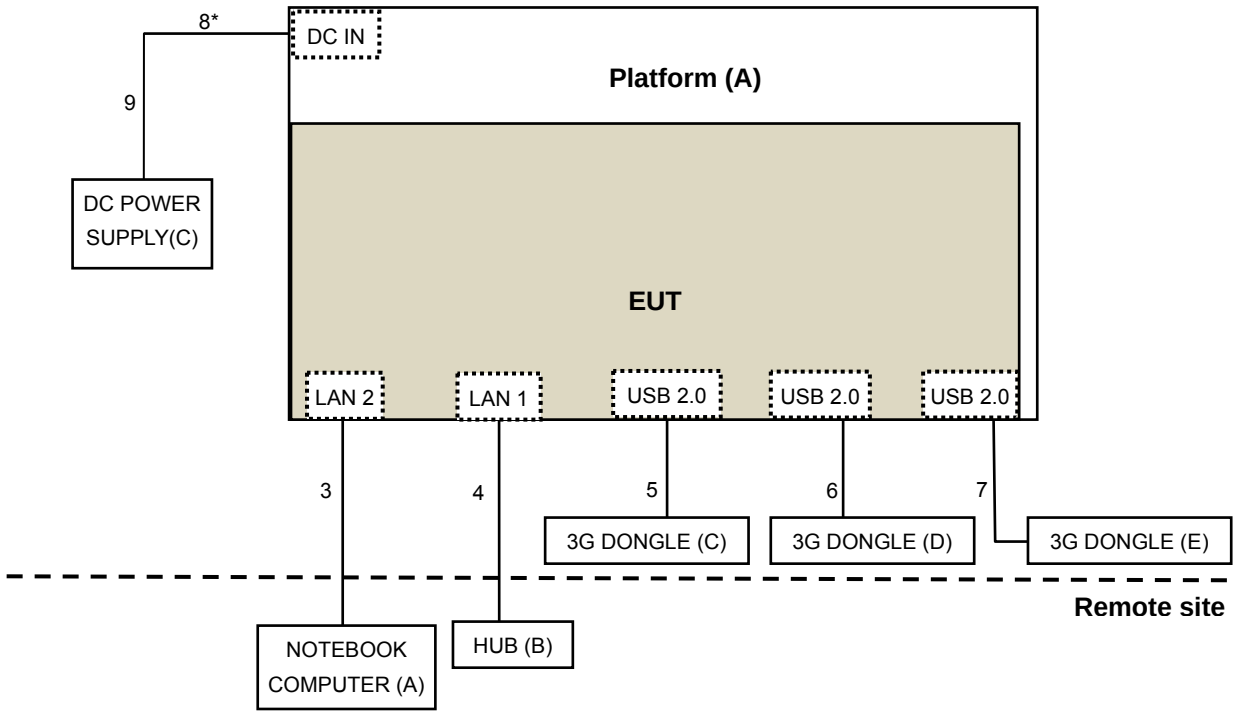


For DC power cable + Battery mode



8* : Model No: M3-EXT-DCPWRCA-120

For DC power cable mode



8* : Model No: M3-EXT-DCPWRCA-120

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 v03r04
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

For Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 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-01	Nov. 11, 2015	Nov. 10, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Jan. 04, 2016	Jan. 03, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 03, 2015	Apr. 02, 2016
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Jan. 19, 2016	Jan. 18, 2017
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 19, 2015	Sep. 18, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150318 150323 150324	Mar. 31, 2015	Mar. 30, 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

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Loop antenna was used for all emissions below 30 MHz.
4. The test was performed in 966 Chamber No. 4.
5. The FCC Site Registration No. is 292998
6. The CANADA Site Registration No. is 20331-2
7. Tested Date: Feb. 23, 2016

For Above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 2016
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Feb. 06, 2015	Feb. 05, 2016
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 19, 2015	Sep. 18, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150318 150323 150324	Mar. 31, 2015	Mar. 30, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Feb. 05, 2015	Feb. 04, 2016
RF Cable	SUCOFLEX 102	36432/2 36441/2	Jan. 17, 2015	Jan. 16, 2016
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.
2. The test was performed in 966 Chamber No. 4.
3. The FCC Site Registration No. is 292998
4. The CANADA Site Registration No. is 20331-2
5. Tested Date: Jan. 07 to 12, 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:

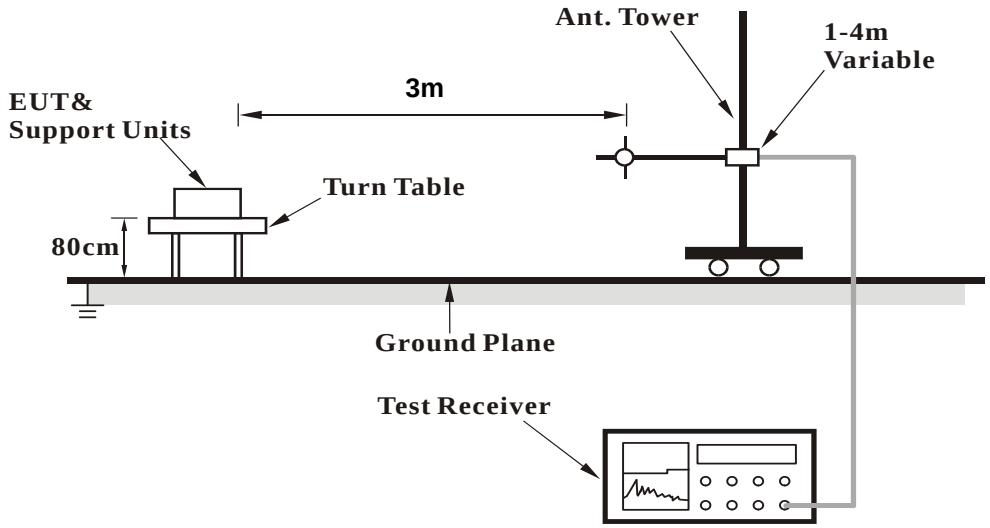
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

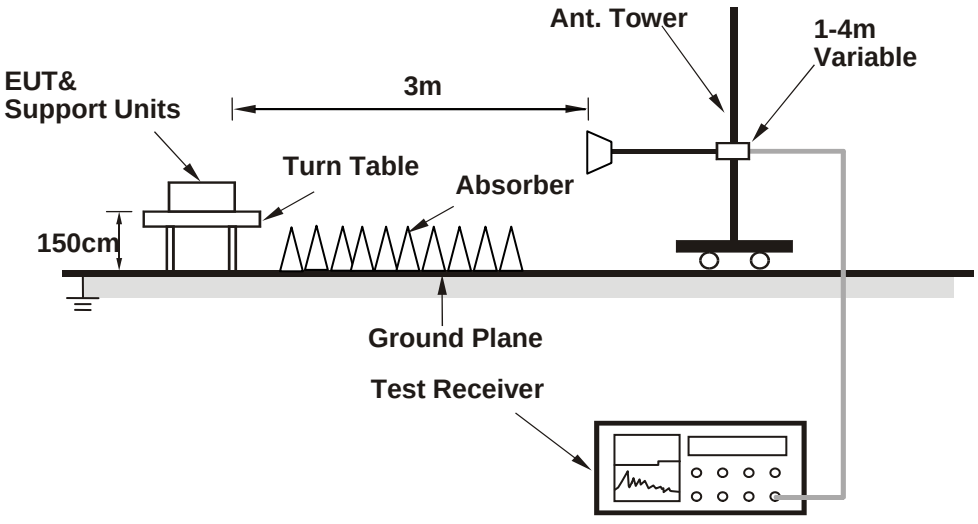
No deviation.

4.1.5 Test 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. Placed the EUT on the testing table.
2. Connect the EUT with the support unit A (Notebook Computer) which is placed in remote site.
3. Support unit A (Notebook Computer) runs test program “artgui.exe V2.3” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

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	51.9 PK	74.0	-22.1	1.24 H	121	53.33	-1.43
2	2390.00	43.4 AV	54.0	-10.6	1.24 H	121	44.83	-1.43
3	*2412.00	100.0 PK			1.24 H	121	101.38	-1.38
4	*2412.00	97.2 AV			1.24 H	121	98.58	-1.38
5	4824.00	43.2 PK	74.0	-30.8	1.36 H	206	36.11	7.09
6	4824.00	36.6 AV	54.0	-17.4	1.36 H	206	29.51	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	60.9 PK	74.0	-13.1	1.25 V	212	62.33	-1.43
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.25 V**	**212**	**55.33**	**-1.43**
3	*2412.00	110.0 PK			1.25 V	212	111.38	-1.38
4	*2412.00	106.8 AV			1.25 V	212	108.18	-1.38
5	4824.00	45.9 PK	74.0	-28.1	2.22 V	118	38.81	7.09
6	4824.00	43.1 AV	54.0	-10.9	2.22 V	118	36.01	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	50.6 PK	74.0	-23.4	1.23 H	129	52.03	-1.43
2	2390.00	38.4 AV	54.0	-15.6	1.23 H	129	39.83	-1.43
3	*2437.00	107.2 PK			1.23 H	129	108.52	-1.32
4	*2437.00	104.4 AV			1.23 H	129	105.72	-1.32
5	2483.50	55.5 PK	74.0	-18.5	1.23 H	129	56.71	-1.21
6	2483.50	43.8 AV	54.0	-10.2	1.23 H	129	45.01	-1.21
7	4874.00	44.4 PK	74.0	-29.6	1.27 H	214	37.15	7.25
8	4874.00	37.7 AV	54.0	-16.3	1.27 H	214	30.45	7.25
9	7311.00	48.6 PK	74.0	-25.4	1.00 H	160	34.15	14.45
10	7311.00	36.9 AV	54.0	-17.1	1.00 H	160	22.45	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	59.5 PK	74.0	-14.5	1.30 V	184	60.93	-1.43
2	2390.00	47.9 AV	54.0	-6.1	1.30 V	184	49.33	-1.43
3	*2437.00	117.1 PK			1.30 V	184	118.42	-1.32
4	*2437.00	113.9 AV			1.30 V	184	115.22	-1.32
5	2483.50	64.6 PK	74.0	-9.4	1.30 V	184	65.81	-1.21
6	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.30 V**	**184**	**55.11**	**-1.21**
7	4874.00	49.2 PK	74.0	-24.8	2.26 V	110	41.95	7.25
8	4874.00	46.3 AV	54.0	-7.7	2.26 V	110	39.05	7.25
9	7311.00	49.5 PK	74.0	-24.5	2.23 V	190	35.05	14.45
10	7311.00	37.8 AV	54.0	-16.2	2.23 V	190	23.35	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	99.6 PK			1.24 H	122	100.86	-1.26
2	*2462.00	96.8 AV			1.24 H	122	98.06	-1.26
3	2483.50	51.8 PK	74.0	-22.2	1.24 H	122	53.01	-1.21
4	2483.50	43.2 AV	54.0	-10.8	1.24 H	122	44.41	-1.21
5	4924.00	43.2 PK	74.0	-30.8	1.30 H	209	35.75	7.45
6	4924.00	36.4 AV	54.0	-17.6	1.30 H	209	28.95	7.45
7	7386.00	47.6 PK	74.0	-26.4	1.01 H	166	33.08	14.52
8	7386.00	36.5 AV	54.0	-17.5	1.01 H	166	21.98	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	109.4 PK			1.00 V	214	110.66	-1.26
2	*2462.00	106.4 AV			1.00 V	214	107.66	-1.26
3	2483.50	60.3 PK	74.0	-13.7	1.00 V	214	61.51	-1.21
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.00 V**	**214**	**55.11**	**-1.21**
5	4924.00	46.2 PK	74.0	-27.8	2.27 V	118	38.75	7.45
6	4924.00	43.2 AV	54.0	-10.8	2.27 V	118	35.75	7.45
7	7386.00	48.4 PK	74.0	-25.6	2.20 V	185	33.88	14.52
8	7386.00	36.4 AV	54.0	-17.6	2.20 V	185	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.

802.11g

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	62.9 PK	74.0	-11.1	1.23 H	131	64.33	-1.43
2	2390.00	44.3 AV	54.0	-9.7	1.23 H	131	45.73	-1.43
3	*2412.00	102.0 PK			1.23 H	131	103.38	-1.38
4	*2412.00	90.3 AV			1.23 H	131	91.68	-1.38
5	4824.00	47.4 PK	74.0	-26.6	1.33 H	216	40.31	7.09
6	4824.00	33.4 AV	54.0	-20.6	1.33 H	216	26.31	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	72.1 PK	74.0	-1.9	1.00 V	210	73.53	-1.43
2	2390.00	53.7 AV	54.0	-0.3	1.00 V	210	55.13	-1.43
3	*2412.00	111.8 PK			1.00 V	210	113.18	-1.38
4	*2412.00	99.9 AV			1.00 V	210	101.28	-1.38
5	4824.00	49.7 PK	74.0	-24.3	1.50 V	234	42.61	7.09
6	4824.00	34.9 AV	54.0	-19.1	1.50 V	234	27.81	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	63.4 PK	74.0	-10.6	1.24 H	132	64.83	-1.43
2	2390.00	40.1 AV	54.0	-13.9	1.24 H	132	41.53	-1.43
3	*2437.00	108.8 PK			1.24 H	132	110.12	-1.32
4	*2437.00	97.1 AV			1.24 H	132	98.42	-1.32
5	2483.50	62.3 PK	74.0	-11.7	1.24 H	132	63.51	-1.21
6	2483.50	45.6 AV	54.0	-8.4	1.24 H	132	46.81	-1.21
7	4874.00	47.6 PK	74.0	-26.4	1.33 H	203	40.35	7.25
8	4874.00	33.2 AV	54.0	-20.8	1.33 H	203	25.95	7.25
9	7311.00	47.3 PK	74.0	-26.7	1.01 H	151	32.85	14.45
10	7311.00	34.6 AV	54.0	-19.4	1.01 H	151	20.15	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	73.2 PK	74.0	-0.8	1.28 V	205	74.63	-1.43
2	2390.00	50.6 AV	54.0	-3.4	1.28 V	205	52.03	-1.43
3	*2437.00	118.6 PK			1.28 V	205	119.92	-1.32
4	*2437.00	106.7 AV			1.28 V	205	108.02	-1.32
5	2483.50	72.1 PK	74.0	-1.9	1.28 V	205	73.31	-1.21
6	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.28 V**	**205**	**55.11**	**-1.21**
7	4874.00	49.8 PK	74.0	-24.2	1.50 V	247	42.55	7.25
8	4874.00	35.0 AV	54.0	-19.0	1.50 V	247	27.75	7.25
9	7311.00	48.6 PK	74.0	-25.4	1.00 V	196	34.15	14.45
10	7311.00	35.8 AV	54.0	-18.2	1.00 V	196	21.35	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	102.1 PK			1.25 H	120	103.36	-1.26
2	*2462.00	90.4 AV			1.25 H	120	91.66	-1.26
3	2483.50	61.5 PK	74.0	-12.5	1.25 H	120	62.71	-1.21
4	2483.50	44.6 AV	54.0	-9.4	1.25 H	120	45.81	-1.21
5	4924.00	47.3 PK	74.0	-26.7	1.31 H	214	39.85	7.45
6	4924.00	33.1 AV	54.0	-20.9	1.31 H	214	25.65	7.45
7	7386.00	47.5 PK	74.0	-26.5	1.00 H	158	32.98	14.52
8	7386.00	35.0 AV	54.0	-19.0	1.00 H	158	20.48	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	111.9 PK			1.00 V	212	113.16	-1.26
2	*2462.00	99.9 AV			1.00 V	212	101.16	-1.26
3	2483.50	70.6 PK	74.0	-3.4	1.00 V	212	71.81	-1.21
4	2483.50	53.3 AV	54.0	-0.7	1.00 V	212	54.51	-1.21
5	4924.00	48.6 PK	74.0	-25.4	1.53 V	248	41.15	7.45
6	4924.00	33.6 AV	54.0	-20.4	1.53 V	248	26.15	7.45
7	7386.00	48.3 PK	74.0	-25.7	1.06 V	210	33.78	14.52
8	7386.00	35.4 AV	54.0	-18.6	1.06 V	210	20.88	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	63.4 PK	74.0	-10.6	1.25 H	107	64.83	-1.43
2	2390.00	44.6 AV	54.0	-9.4	1.25 H	107	46.03	-1.43
3	*2412.00	102.7 PK			1.25 H	107	104.08	-1.38
4	*2412.00	90.7 AV			1.25 H	107	92.08	-1.38
5	4824.00	47.6 PK	74.0	-26.4	1.34 H	225	40.51	7.09
6	4824.00	33.6 AV	54.0	-20.4	1.34 H	225	26.51	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	73.5 PK	74.0	-0.5	1.25 V	206	74.93	-1.43
2	2390.00	53.6 AV	54.0	-0.4	1.25 V	206	55.03	-1.43
3	*2412.00	112.5 PK			1.25 V	206	113.88	-1.38
4	*2412.00	100.2 AV			1.25 V	206	101.58	-1.38
5	4824.00	49.6 PK	74.0	-24.4	1.49 V	231	42.51	7.09
6	4824.00	34.8 AV	54.0	-19.2	1.49 V	231	27.71	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)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.0 PK	74.0	-11.0	1.29 H	114	64.43	-1.43
2	2390.00	39.7 AV	54.0	-14.3	1.29 H	114	41.13	-1.43
3	*2437.00	109.1 PK			1.29 H	114	110.42	-1.32
4	*2437.00	97.2 AV			1.29 H	114	98.52	-1.32
5	2483.50	62.4 PK	74.0	-11.6	1.29 H	114	63.61	-1.21
6	2483.50	45.8 AV	54.0	-8.2	1.29 H	114	47.01	-1.21
7	4874.00	47.7 PK	74.0	-26.3	1.28 H	195	40.45	7.25
8	4874.00	33.2 AV	54.0	-20.8	1.28 H	195	25.95	7.25
9	7311.00	46.9 PK	74.0	-27.1	1.00 H	144	32.45	14.45
10	7311.00	34.4 AV	54.0	-19.6	1.00 H	144	19.95	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	2390.00	70.0 PK	74.0	-4.0	1.25 V	205	71.43	-1.43
2	2390.00	47.4 AV	54.0	-6.6	1.25 V	205	48.83	-1.43
3	*2437.00	118.9 PK			1.25 V	205	120.22	-1.32
4	*2437.00	106.7 AV			1.25 V	205	108.02	-1.32
5	**2483.50**	**73.9 PK**	**74.0**	**-0.1**	**1.25 V**	**205**	**75.11**	**-1.21**
6	2483.50	53.4 AV	54.0	-0.6	1.25 V	205	54.61	-1.21
7	4874.00	50.3 PK	74.0	-23.7	1.49 V	241	43.05	7.25
8	4874.00	35.5 AV	54.0	-18.5	1.49 V	241	28.25	7.25
9	7311.00	48.8 PK	74.0	-25.2	1.03 V	186	34.35	14.45
10	7311.00	36.0 AV	54.0	-18.0	1.03 V	186	21.55	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	102.0 PK			1.22 H	117	103.26	-1.26
2	*2462.00	90.2 AV			1.22 H	117	91.46	-1.26
3	2483.50	60.2 PK	74.0	-13.8	1.22 H	117	61.41	-1.21
4	2483.50	44.3 AV	54.0	-9.7	1.22 H	117	45.51	-1.21
5	4924.00	47.0 PK	74.0	-27.0	1.30 H	216	39.55	7.45
6	4924.00	32.7 AV	54.0	-21.3	1.30 H	216	25.25	7.45
7	7386.00	48.0 PK	74.0	-26.0	1.01 H	153	33.48	14.52
8	7386.00	35.3 AV	54.0	-18.7	1.01 H	153	20.78	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	111.8 PK			1.18 V	213	113.06	-1.26
2	*2462.00	99.6 AV			1.18 V	213	100.86	-1.26
3	2483.50	69.6 PK	74.0	-4.4	1.18 V	213	70.81	-1.21
4	2483.50	53.4 AV	54.0	-0.6	1.18 V	213	54.61	-1.21
5	4924.00	48.3 PK	74.0	-25.7	1.48 V	254	40.85	7.45
6	4924.00	33.5 AV	54.0	-20.5	1.48 V	254	26.05	7.45
7	7386.00	48.1 PK	74.0	-25.9	1.06 V	200	33.58	14.52
8	7386.00	35.0 AV	54.0	-19.0	1.06 V	200	20.48	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.

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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	61.6 PK	74.0	-12.4	1.29 H	127	63.03	-1.43
2	2390.00	43.4 AV	54.0	-10.6	1.29 H	127	44.83	-1.43
3	*2422.00	98.9 PK			1.29 H	127	100.26	-1.36
4	*2422.00	86.4 AV			1.29 H	127	87.76	-1.36
5	4844.00	46.2 PK	74.0	-27.8	1.33 H	227	39.05	7.15
6	4844.00	32.2 AV	54.0	-21.8	1.33 H	227	25.05	7.15
7	7266.00	47.8 PK	74.0	-26.2	1.03 H	155	33.23	14.57
8	7266.00	35.2 AV	54.0	-18.8	1.03 H	155	20.63	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	1.00 V	163	73.83	-1.43
2	2390.00	53.5 AV	54.0	-0.5	1.00 V	163	54.93	-1.43
3	*2422.00	108.6 PK			1.00 V	163	109.96	-1.36
4	*2422.00	95.7 AV			1.00 V	163	97.06	-1.36
5	4844.00	48.1 PK	74.0	-25.9	1.49 V	263	40.95	7.15
6	4844.00	33.4 AV	54.0	-20.6	1.49 V	263	26.25	7.15
7	7266.00	47.9 PK	74.0	-26.1	1.12 V	211	33.33	14.57
8	7266.00	34.7 AV	54.0	-19.3	1.12 V	211	20.13	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	61.5 PK	74.0	-12.5	1.21 H	124	62.93	-1.43
2	2390.00	40.6 AV	54.0	-13.4	1.21 H	124	42.03	-1.43
3	*2437.00	101.2 PK			1.21 H	124	102.52	-1.32
4	*2437.00	88.7 AV			1.21 H	124	90.02	-1.32
5	2483.50	64.4 PK	74.0	-9.6	1.21 H	124	65.61	-1.21
6	2483.50	43.6 AV	54.0	-10.4	1.21 H	124	44.81	-1.21
7	4874.00	46.8 PK	74.0	-27.2	1.29 H	206	39.55	7.25
8	4874.00	32.3 AV	54.0	-21.7	1.29 H	206	25.05	7.25
9	7311.00	48.3 PK	74.0	-25.7	1.00 H	146	33.85	14.45
10	7311.00	35.7 AV	54.0	-18.3	1.00 H	146	21.25	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	65.0 PK	74.0	-9.0	1.00 V	204	66.43	-1.43
2	2390.00	46.4 AV	54.0	-7.6	1.00 V	204	47.83	-1.43
3	*2437.00	110.8 PK			1.00 V	204	112.12	-1.32
4	*2437.00	97.9 AV			1.00 V	204	99.22	-1.32
5	**2483.50**	**73.9 PK**	**74.0**	**-0.1**	**1.00 V**	**204**	**75.11**	**-1.21**
6	2483.50	52.8 AV	54.0	-1.2	1.00 V	204	54.01	-1.21
7	4874.00	49.0 PK	74.0	-25.0	1.52 V	257	41.75	7.25
8	4874.00	34.0 AV	54.0	-20.0	1.52 V	257	26.75	7.25
9	7311.00	47.8 PK	74.0	-26.2	1.02 V	189	33.35	14.45
10	7311.00	34.8 AV	54.0	-19.2	1.02 V	189	20.35	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	97.5 PK			1.19 H	115	98.78	-1.28
2	*2452.00	84.7 AV			1.19 H	115	85.98	-1.28
3	2483.50	62.8 PK	74.0	-11.2	1.19 H	115	64.01	-1.21
4	2483.50	44.5 AV	54.0	-9.5	1.19 H	115	45.71	-1.21
5	4904.00	46.3 PK	74.0	-27.7	1.25 H	230	38.94	7.36
6	4904.00	32.2 AV	54.0	-21.8	1.25 H	230	24.84	7.36
7	7356.00	48.0 PK	74.0	-26.0	1.04 H	141	33.50	14.50
8	7356.00	35.3 AV	54.0	-18.7	1.04 H	141	20.80	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	107.0 PK			1.25 V	205	108.28	-1.28
2	*2452.00	93.8 AV			1.25 V	205	95.08	-1.28
3	2483.50	72.1 PK	74.0	-1.9	1.25 V	205	73.31	-1.21
4	2483.50	53.6 AV	54.0	-0.4	1.25 V	205	54.81	-1.21
5	4904.00	48.2 PK	74.0	-25.8	1.52 V	259	40.84	7.36
6	4904.00	33.2 AV	54.0	-20.8	1.52 V	259	25.84	7.36
7	7356.00	48.1 PK	74.0	-25.9	1.01 V	193	33.60	14.50
8	7356.00	34.8 AV	54.0	-19.2	1.01 V	193	20.30	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 Data:

802.11n (HT20)

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	34.39	34.6 QP	40.0	-5.4	1.00 H	204	44.21	-9.65
2	250.02	45.0 QP	46.0	-1.0	1.00 H	170	54.83	-9.84
3	500.01	40.7 QP	46.0	-5.3	2.00 H	233	43.65	-2.91
4	714.99	40.2 QP	46.0	-5.8	2.00 H	273	39.25	0.91
5	840.00	41.0 QP	46.0	-5.0	1.00 H	226	38.04	2.95
6	1000.00	50.0 QP	54.0	-4.0	1.50 H	224	45.15	4.83
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	37.13	35.0 QP	40.0	-5.0	2.00 V	228	44.49	-9.49
2	250.02	39.3 QP	46.0	-6.7	2.00 V	360	49.15	-9.84
3	480.01	41.9 QP	46.0	-4.1	1.50 V	209	45.22	-3.29
4	625.00	38.6 QP	46.0	-7.4	1.50 V	167	38.73	-0.11
5	687.51	42.8 QP	46.0	-3.2	1.50 V	0	42.36	0.46
6	1000.00	48.9 QP	54.0	-5.1	2.00 V	199	44.05	4.83

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. 03, 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.

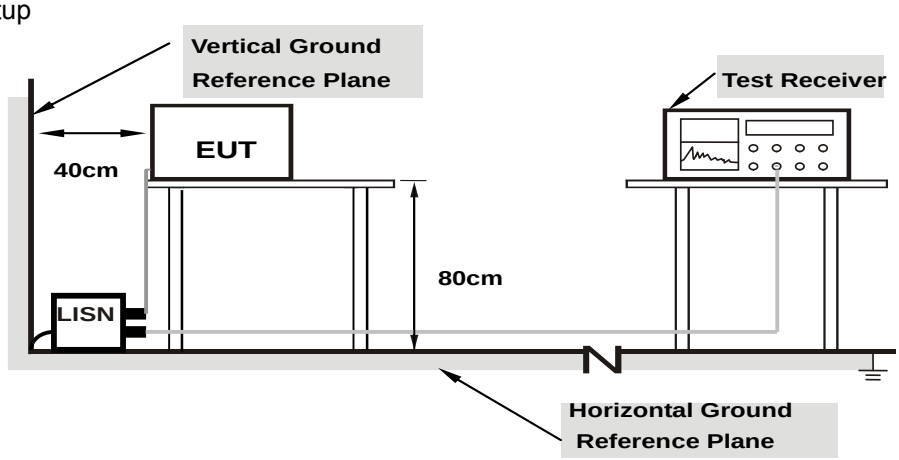
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

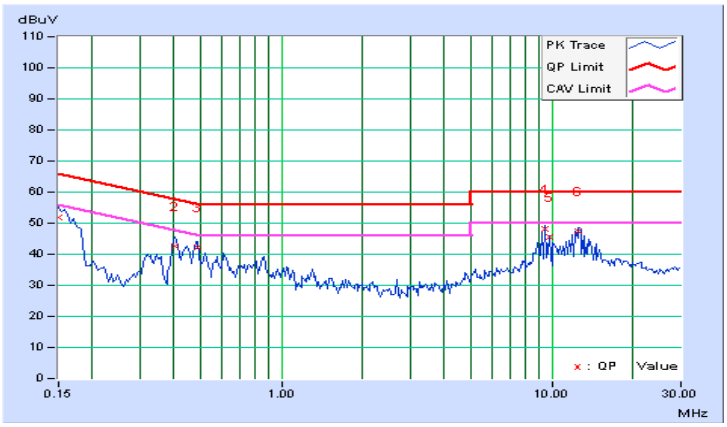
4.2.7 Test Results (Mode 1)

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

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.26	41.60	25.08	51.86	35.34	66.00	56.00	-14.14	-20.66
2	0.40391	10.24	32.34	30.78	42.58	41.02	57.77	47.77	-15.19	-6.75
3	0.48984	10.23	31.82	30.26	42.05	40.49	56.17	46.17	-14.12	-5.68
4	9.46009	10.51	37.62	36.66	48.13	47.17	60.00	50.00	-11.87	-2.83
5	9.76563	10.51	35.04	33.70	45.55	44.21	60.00	50.00	-14.45	-5.79
6	12.50987	10.65	36.68	35.60	47.33	46.25	60.00	50.00	-12.67	-3.75
1	0.15000	10.26	41.60	25.08	51.86	35.34	66.00	56.00	-14.14	-20.66

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

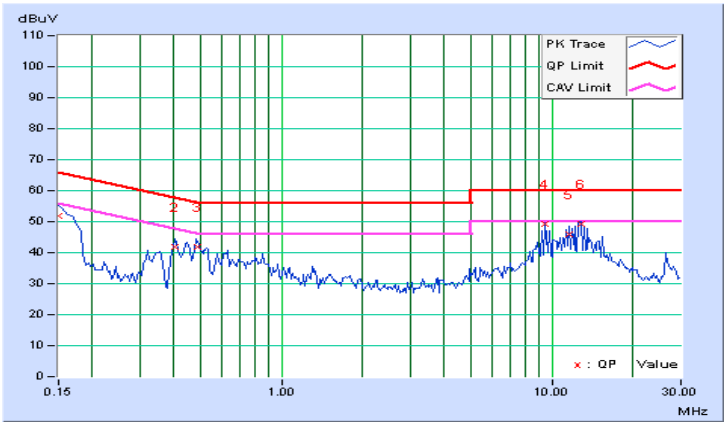


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.24	41.56	24.04	51.80	34.28	66.00	56.00	-14.20	-21.72
2	0.40391	10.22	31.54	30.10	41.76	40.32	57.77	47.77	-16.01	-7.45
3	0.49044	10.21	31.58	30.38	41.79	40.59	56.16	46.16	-14.37	-5.57
4	9.47131	10.52	38.78	37.76	49.30	48.28	60.00	50.00	-10.70	-1.72
5	11.60653	10.61	35.50	33.82	46.11	44.43	60.00	50.00	-13.89	-5.57
6	**12.83144**	**10.68**	**38.56**	**38.40**	**49.24**	**49.08**	**60.00**	**50.00**	**-10.76**	**-0.92**
1	0.15000	10.24	41.56	24.04	51.80	34.28	66.00	56.00	-14.20	-21.72

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



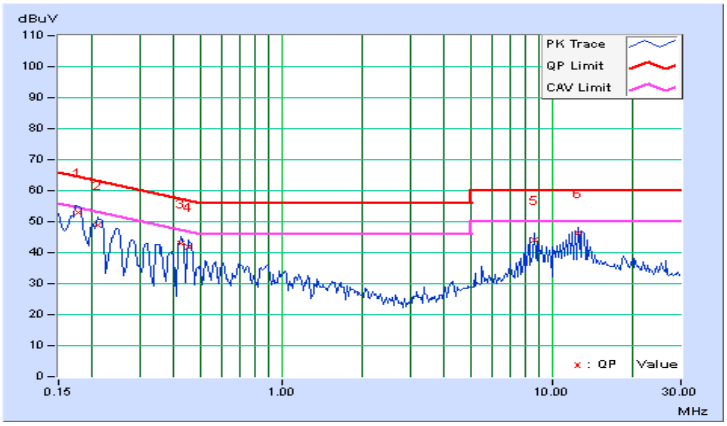
4.2.8 Test Results (Mode 2)

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

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	10.24	42.76	33.02	53.00	43.26	64.61	54.61	-11.61	-11.35
2	0.20859	10.22	38.62	27.08	48.84	37.30	63.26	53.26	-14.42	-15.96
3	0.42734	10.24	32.86	24.30	43.10	34.54	57.30	47.30	-14.21	-12.77
4	0.45469	10.23	31.78	29.68	42.01	39.91	56.79	46.79	-14.78	-6.88
5	8.56713	10.49	33.76	33.16	44.25	43.65	60.00	50.00	-15.75	-6.35
6	12.54659	10.65	35.74	34.94	46.39	45.59	60.00	50.00	-13.61	-4.41
1	0.17734	10.24	42.76	33.02	53.00	43.26	64.61	54.61	-11.61	-11.35

Remarks:

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

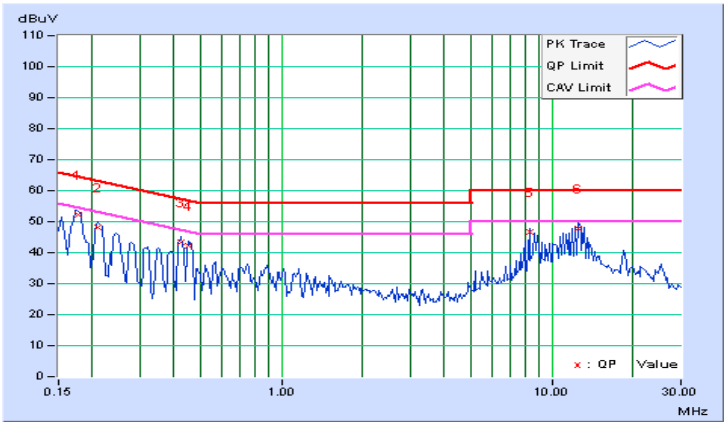


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	10.22	42.08	32.40	52.30	42.62	64.61	54.61	-12.31	-11.99
2	0.20859	10.20	38.00	26.62	48.20	36.82	63.26	53.26	-15.06	-16.44
3	0.42734	10.22	33.04	26.94	43.26	37.16	57.30	47.30	-14.05	-10.15
4	0.45469	10.21	31.94	29.20	42.15	39.41	56.79	46.79	-14.63	-7.37
5	8.25781	10.49	36.30	34.40	46.79	44.89	60.00	50.00	-13.21	-5.11
6	12.53906	10.66	36.96	35.48	47.62	46.14	60.00	50.00	-12.38	-3.86
1	0.17734	10.22	42.08	32.40	52.30	42.62	64.61	54.61	-12.31	-11.99

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



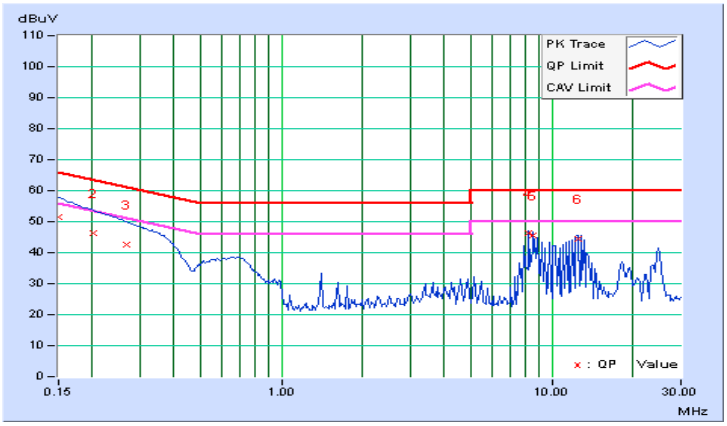
4.2.9 Test Results (Mode 3)

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

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.26	41.18	14.48	51.44	24.74	66.00	56.00	-14.56	-31.26
2	0.20078	10.22	36.18	8.26	46.40	18.48	63.58	53.58	-17.18	-35.10
3	0.26719	10.23	32.38	5.38	42.61	15.61	61.20	51.20	-18.60	-35.60
4	8.23162	10.48	35.84	35.76	46.32	46.24	60.00	50.00	-13.68	-3.76
5	8.53431	10.49	35.02	34.92	45.51	45.41	60.00	50.00	-14.49	-4.59
6	12.50000	10.64	33.62	33.14	44.26	43.78	60.00	50.00	-15.74	-6.22

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

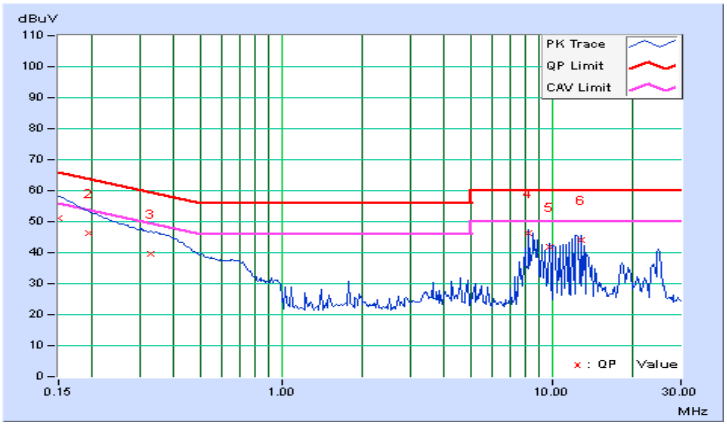


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.24	40.94	13.36	51.18	23.60	66.00	56.00	-14.82	-32.40
2	0.19297	10.21	36.20	9.08	46.41	19.29	63.91	53.91	-17.50	-34.62
3	0.32969	10.21	29.34	2.80	39.55	13.01	59.46	49.46	-19.91	-36.45
4	8.23438	10.49	35.76	35.64	46.25	46.13	60.00	50.00	-13.75	-3.87
5	9.75797	10.52	31.32	30.84	41.84	41.36	60.00	50.00	-18.16	-8.64
6	12.80859	10.68	33.28	32.76	43.96	43.44	60.00	50.00	-16.04	-6.56

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



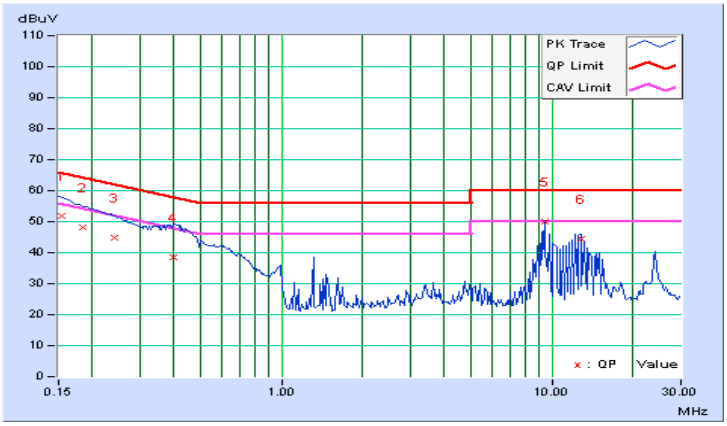
4.2.10 Test Results (Mode 4)

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

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.26	41.52	14.52	51.78	24.78	65.79	55.79	-14.01	-31.01
2	0.18516	10.23	37.84	11.02	48.07	21.25	64.25	54.25	-16.18	-33.00
3	0.24169	10.22	34.46	14.18	44.68	24.40	62.04	52.04	-17.35	-27.63
4	0.39609	10.24	28.44	2.24	38.68	12.48	57.93	47.93	-19.26	-35.46
5	9.46941	10.51	39.32	37.80	49.83	48.31	60.00	50.00	-10.17	-1.69
6	12.82503	10.66	33.86	33.30	44.52	43.96	60.00	50.00	-15.48	-6.04

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

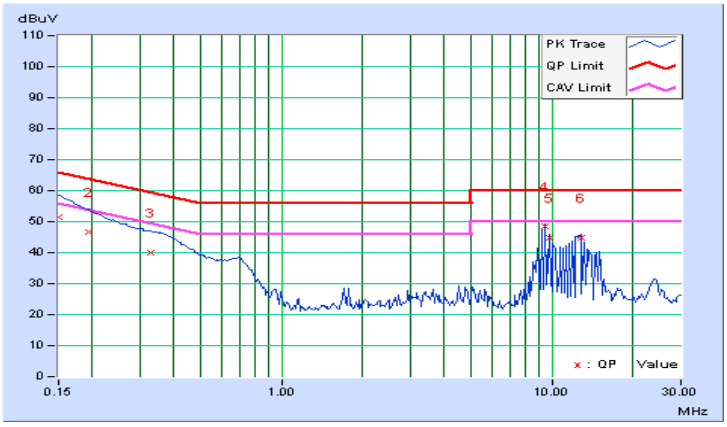


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.24	41.14	13.42	51.38	23.66	66.00	56.00	-14.62	-32.34
2	0.19297	10.21	36.48	9.30	46.69	19.51	63.91	53.91	-17.22	-34.40
3	0.32969	10.21	29.64	3.10	39.85	13.31	59.46	49.46	-19.61	-36.15
4	9.45944	10.52	38.10	37.10	48.62	47.62	60.00	50.00	-11.38	-2.38
5	9.76337	10.52	34.14	33.90	44.66	44.42	60.00	50.00	-15.34	-5.58
6	12.81481	10.68	34.04	33.46	44.72	44.14	60.00	50.00	-15.28	-5.86

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

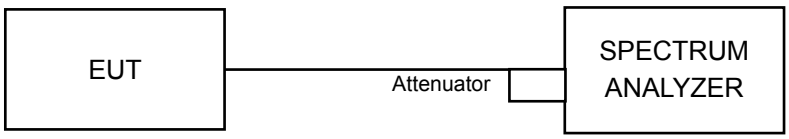


4.3 6dB Bandwidth Measurement

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
		Chain 0	Chain 1		
1	2412	10.13	10.15	0.5	PASS
6	2437	10.12	9.61	0.5	PASS
11	2462	10.13	10.10	0.5	PASS

802.11g

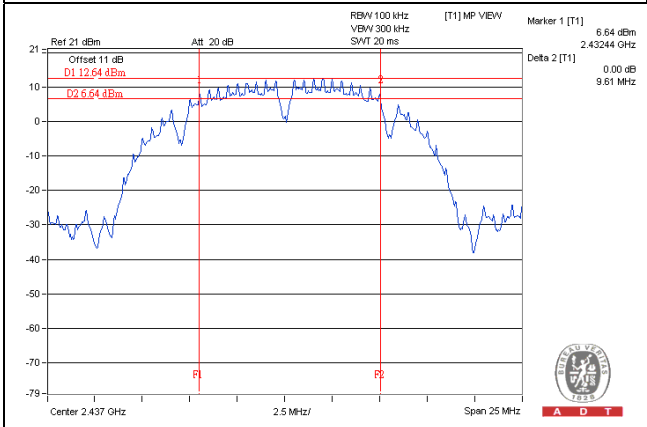
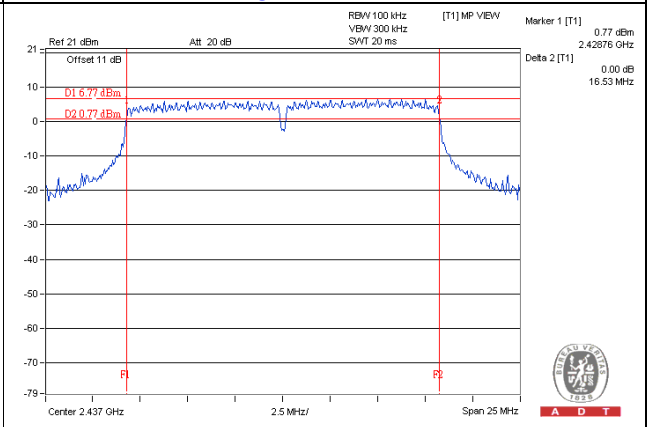
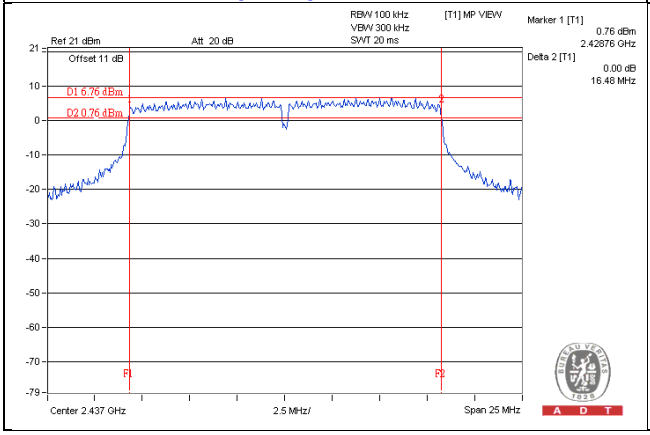
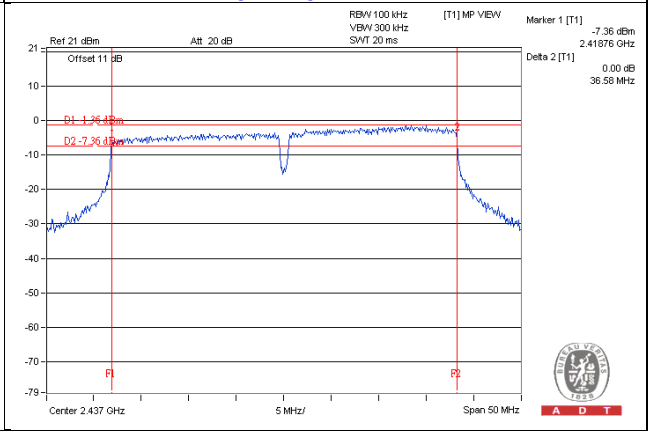
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.54	16.62	0.5	PASS
6	2437	16.53	16.54	0.5	PASS
11	2462	16.54	16.56	0.5	PASS

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.81	17.85	0.5	PASS
6	2437	16.48	17.75	0.5	PASS
11	2462	17.79	17.77	0.5	PASS

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	36.59	36.62	0.5	PASS
6	2437	36.64	36.58	0.5	PASS
11	2462	36.62	36.61	0.5	PASS

Spectrum Plot of Worst Value	
802.11b – Chain 1: CH 6	**802.11g – Chain 0: CH 6**
	
802.11n (HT20) – Chain 0: CH 6	**802.11n (HT40) – Chain 1: CH 6**
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

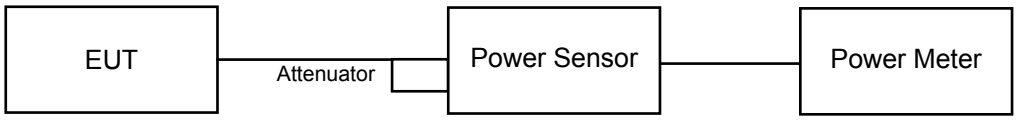
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	16.35	15.94	82.416	19.16	30	Pass
6	2437	24.70	24.07	550.391	27.41	30	Pass
11	2462	16.30	15.62	79.133	18.98	30	Pass

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	23.38	23.21	427.182	26.31	30	Pass
6	2437	25.16	25.01	645.052	28.10	30	Pass
11	2462	22.58	22.80	371.68	25.70	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	23.26	22.89	406.372	26.09	30	Pass
6	2437	26.08	25.90	794.554	29.00	30	Pass
11	2462	22.69	22.26	354.047	25.49	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	22.50	22.77	367.062	25.65	30	Pass
6	2437	23.70	23.41	453.703	26.57	30	Pass
9	2452	20.07	19.21	184.993	22.67	30	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.53	13.11	43.006	16.34
6	2437	22.36	21.44	311.503	24.93
11	2462	13.18	12.84	40.028	16.02

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.96	12.86	39.09	15.92
6	2437	20.08	19.51	191.19	22.81
11	2462	13.25	12.39	38.473	15.85

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.03	12.73	38.841	15.89
6	2437	20.26	19.64	198.215	22.97
11	2462	12.83	12.46	36.807	15.66

802.11n (HT40)

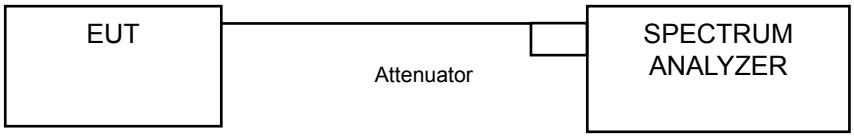
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.56	12.80	37.085	15.69
6	2437	14.86	14.18	56.802	17.54
11	2462	10.38	10.08	21.1	13.24

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

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-10.38	3.01	-7.37	7.99	Pass
	6	2437	-1.87	3.01	1.14	7.99	Pass
	11	2462	-9.75	3.01	-6.74	7.99	Pass
1	1	2412	-10.17	3.01	-7.16	7.99	Pass
	6	2437	-2.77	3.01	0.24	7.99	Pass
	11	2462	-10.68	3.01	-7.67	7.99	Pass

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-12.21	3.01	-9.20	7.99	Pass
	6	2437	-6.24	3.01	-3.23	7.99	Pass
	11	2462	-11.05	3.01	-8.04	7.99	Pass
1	1	2412	-13.24	3.01	-10.23	7.99	Pass
	6	2437	-5.10	3.01	-2.09	7.99	Pass
	11	2462	-12.01	3.01	-9.00	7.99	Pass

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	1	2412	-12.55	3.01	-9.54	7.99	Pass
	6	2437	-5.17	3.01	-2.16	7.99	Pass
	11	2462	-12.94	3.01	-9.93	7.99	Pass
1	1	2412	-12.82	3.01	-9.81	7.99	Pass
	6	2437	-5.76	3.01	-2.75	7.99	Pass
	11	2462	-11.70	3.01	-8.69	7.99	Pass

NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

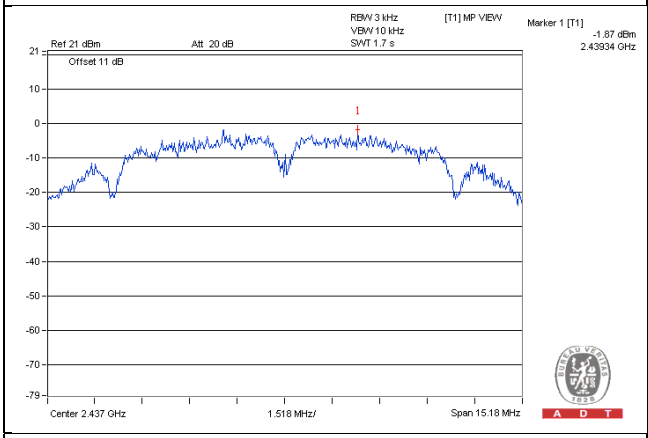
802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm)	10 log (N=2) dB	Total PSD (dBm)	Limit (dBm)	Pass /Fail
0	3	2422	-14.20	3.01	-11.19	7.99	Pass
	6	2437	-14.15	3.01	-11.14	7.99	Pass
	9	2452	-17.86	3.01	-14.85	7.99	Pass
1	3	2422	-13.71	3.01	-10.70	7.99	Pass
	6	2437	-14.63	3.01	-11.62	7.99	Pass
	9	2452	-18.60	3.01	-15.59	7.99	Pass

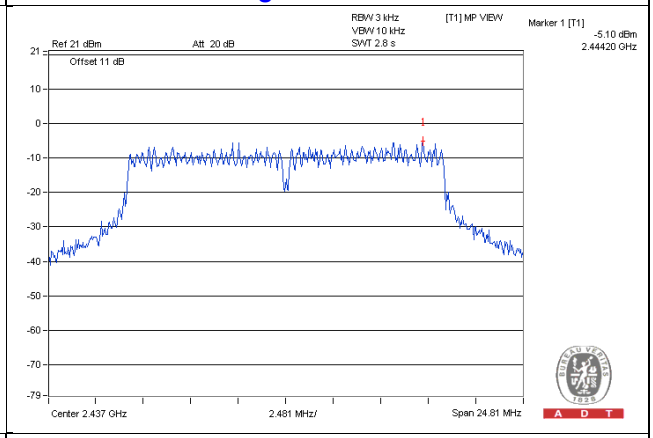
NOTE: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi , so the power density limit shall be reduced to 8-(6.01-6) = 7.99dBm.

Spectrum Plot of Worst Value

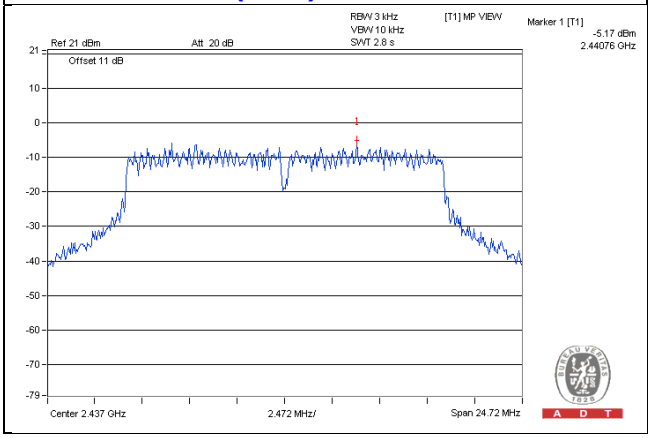
802.11b – Chain 0: CH 6



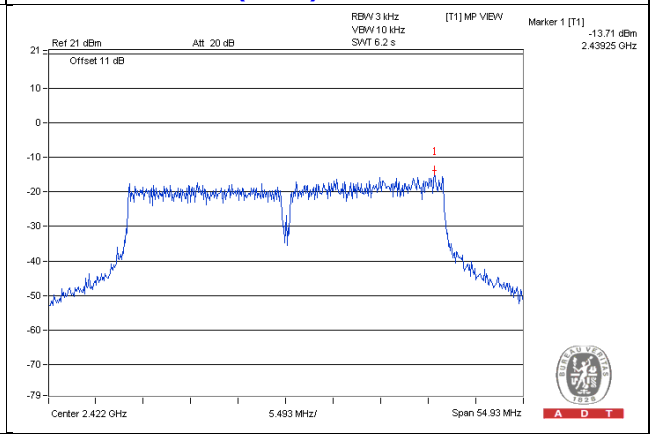
802.11g – Chain 1: CH 6



802.11n (HT20) – Chain 0: CH 6



802.11n (HT40) – Chain 1: CH 3

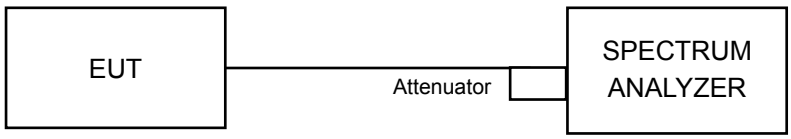


4.6 Conducted Out of Band Emission Measurement

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

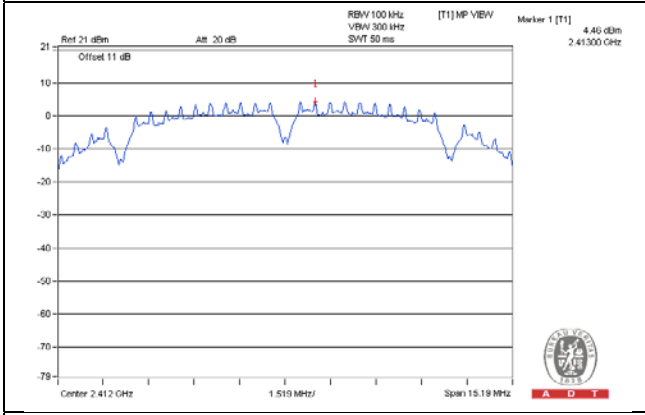
4.6.7 Test Results

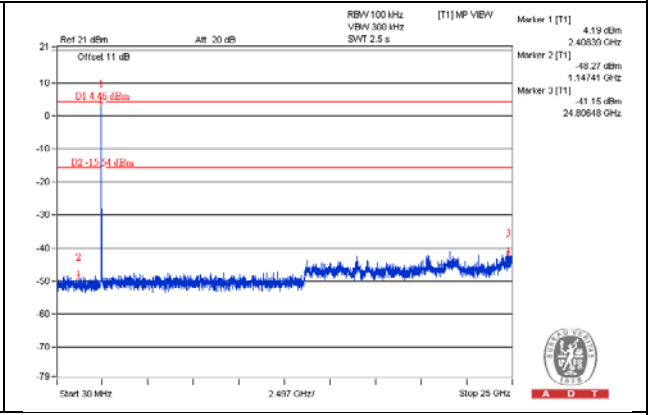
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

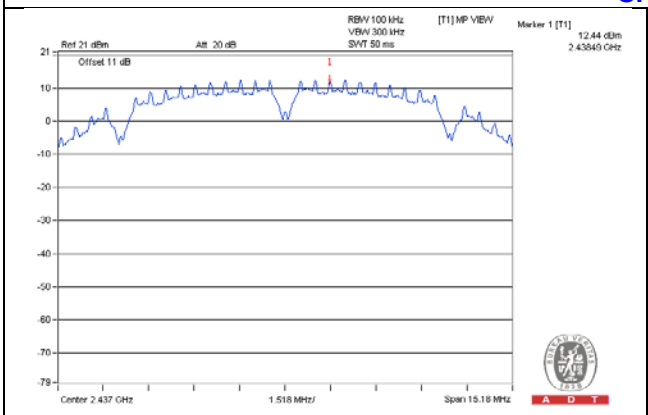
Chain 0

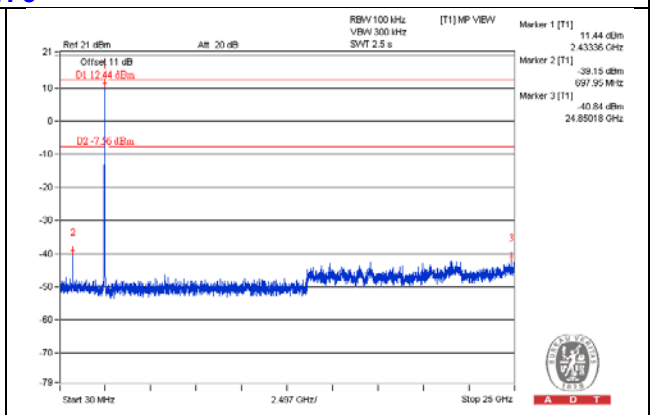
CH 1



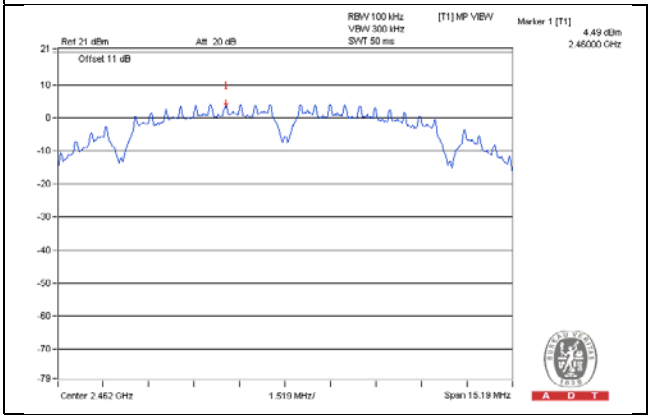


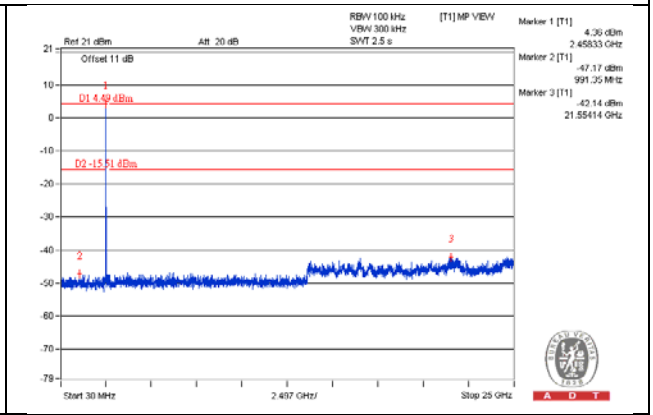
CH 6



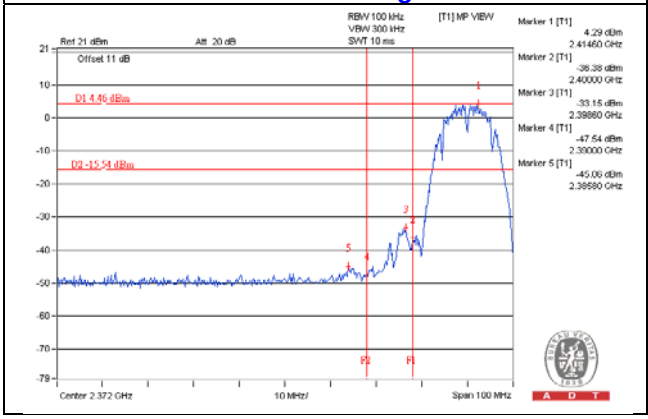


CH 11

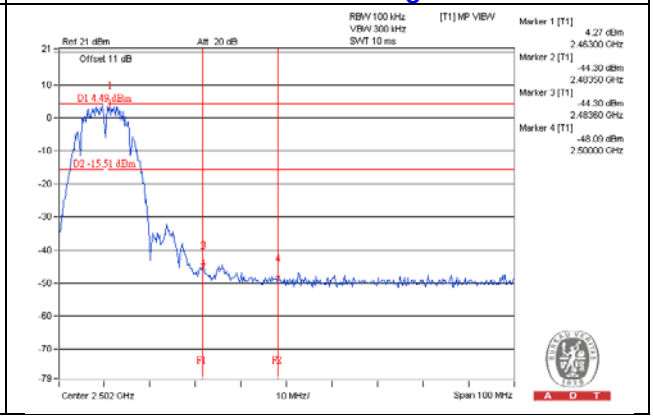




CH 1 Band edge

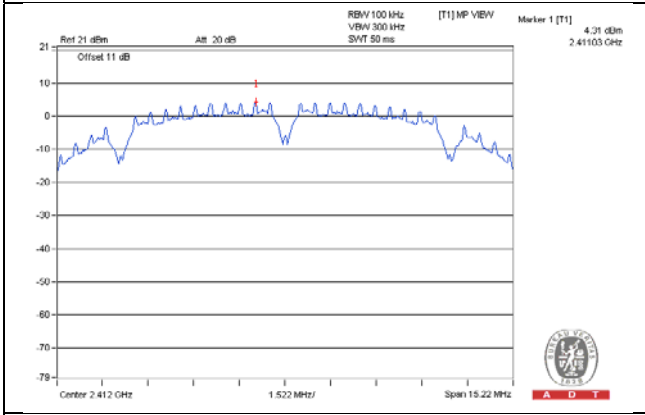


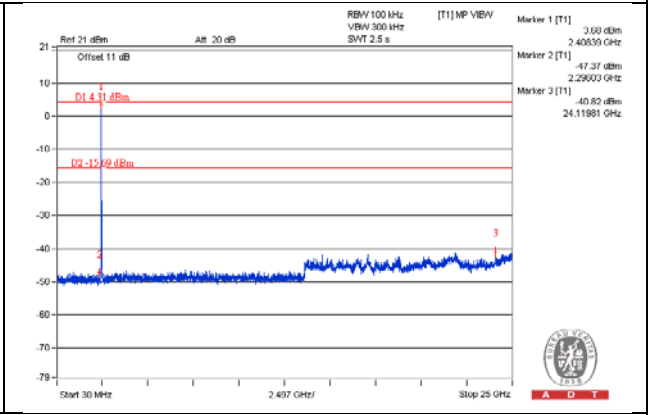
CH 11 Band edge



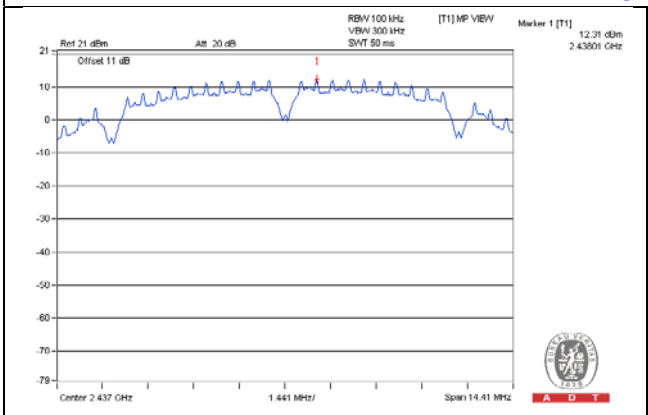
Chain 1

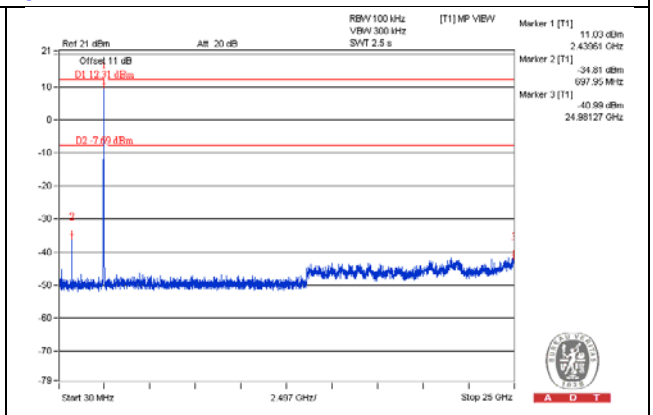
CH 1



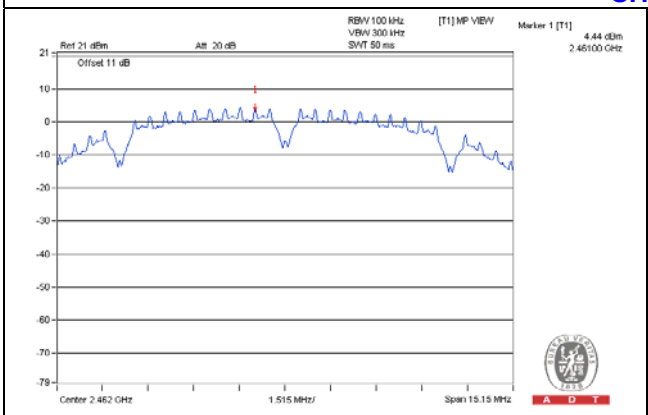


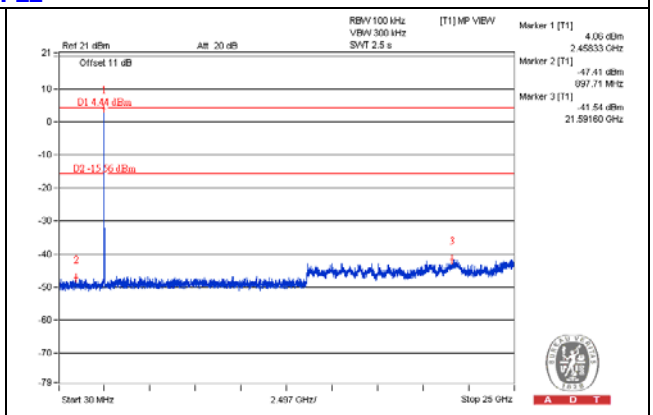
CH 6



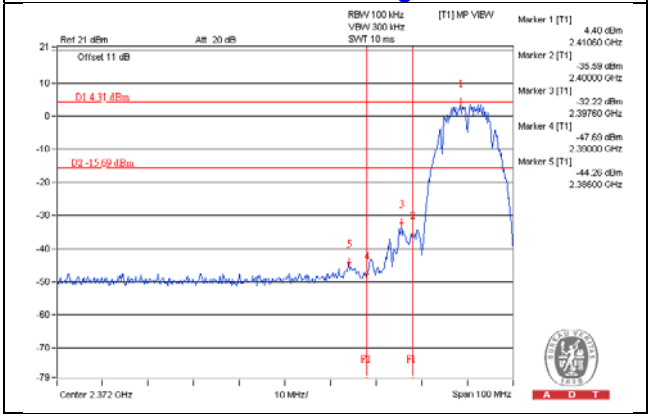


CH 11

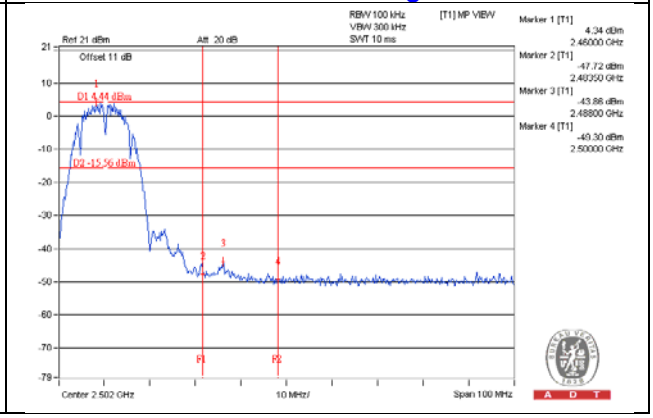




CH 1 Band edge



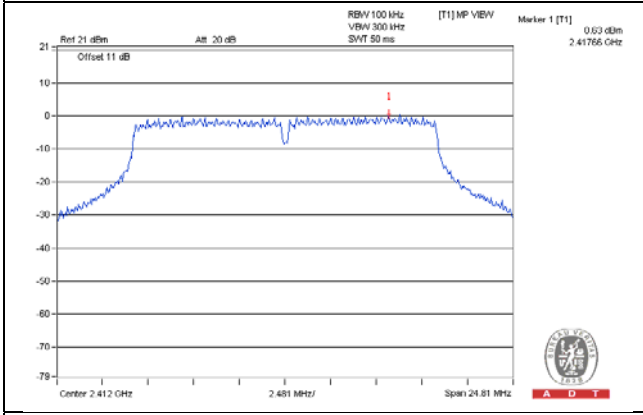
CH 11 Band edge

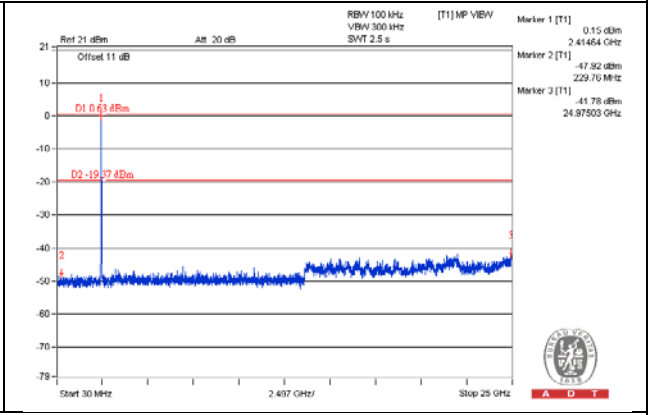


802.11g

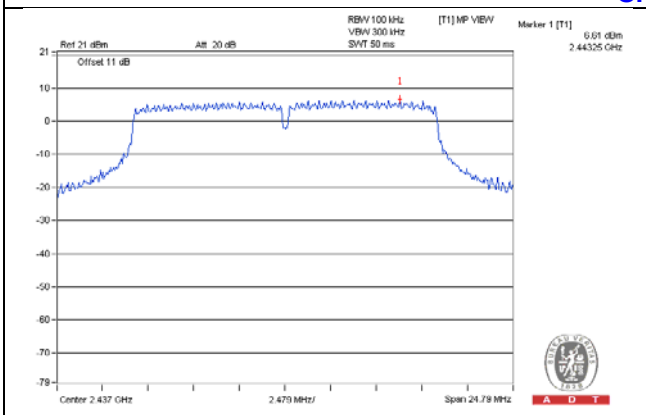
Chain 0

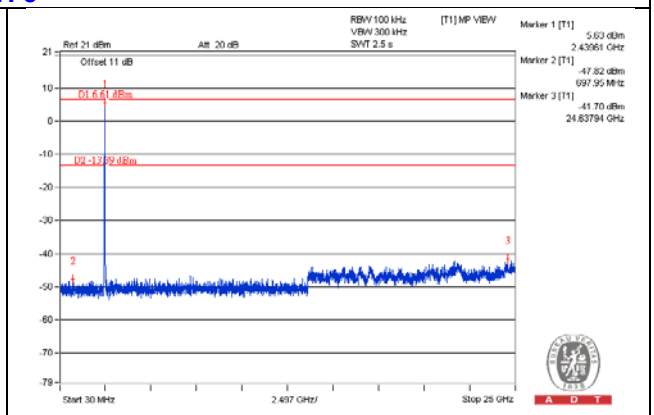
CH 1



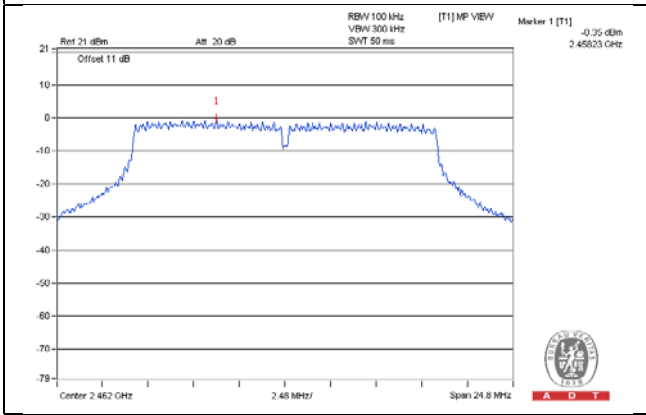


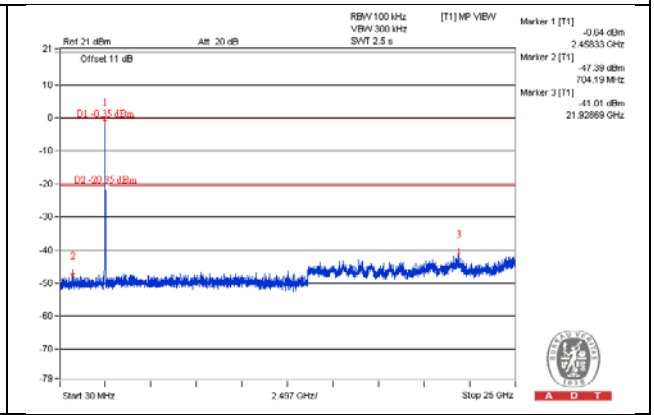
CH 6



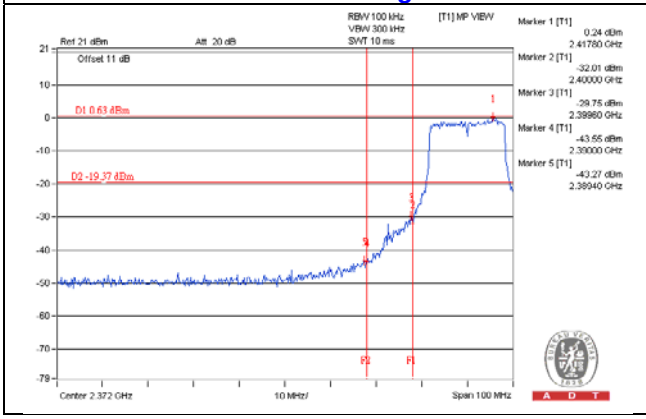


CH 11

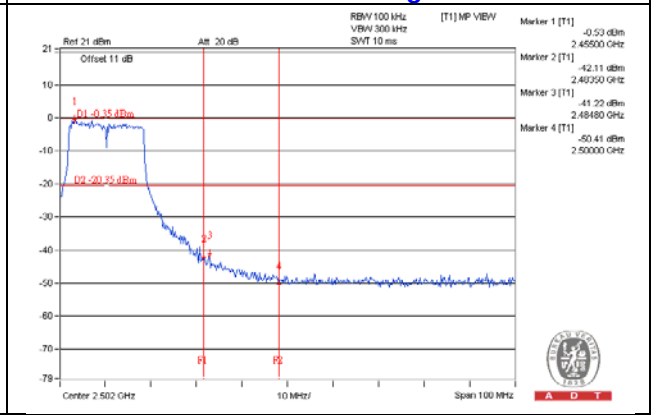




CH 1 Band edge

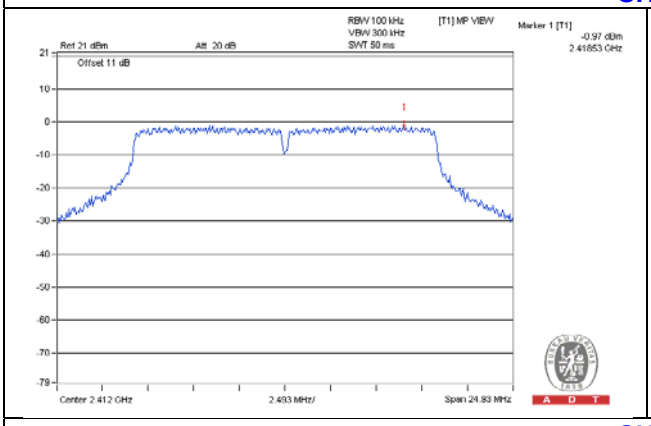


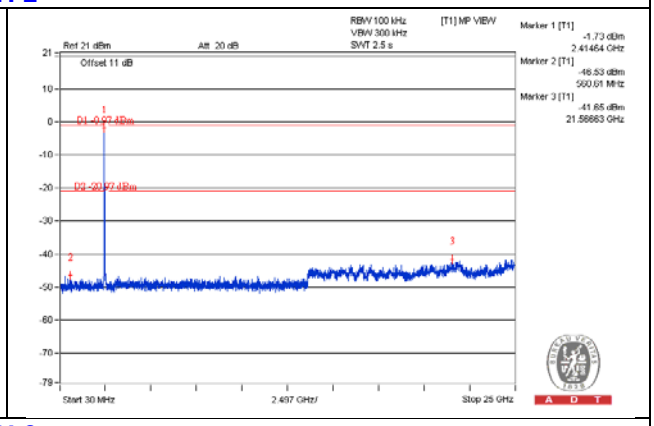
CH 11 Band edge



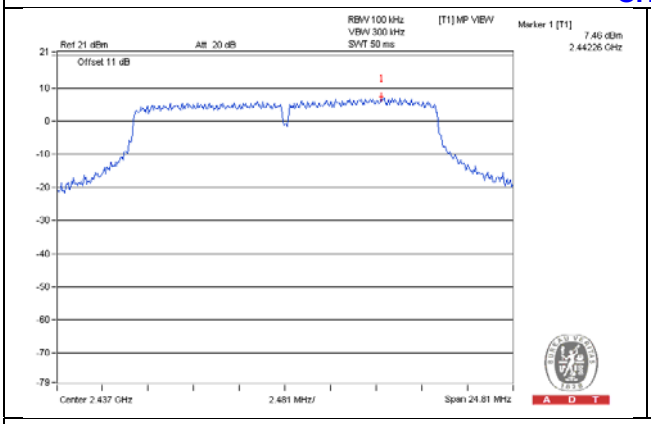
Chain 1

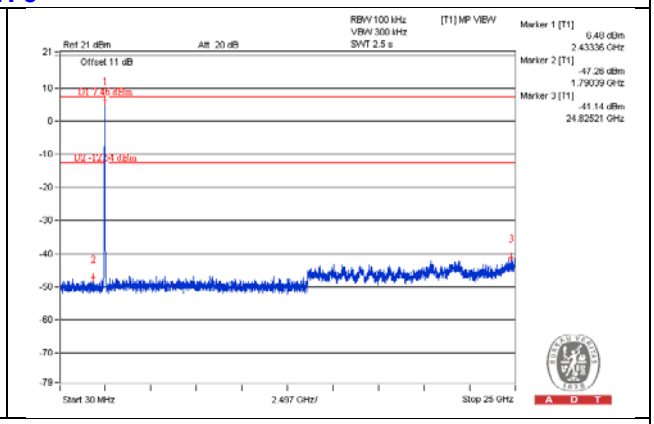
CH 1



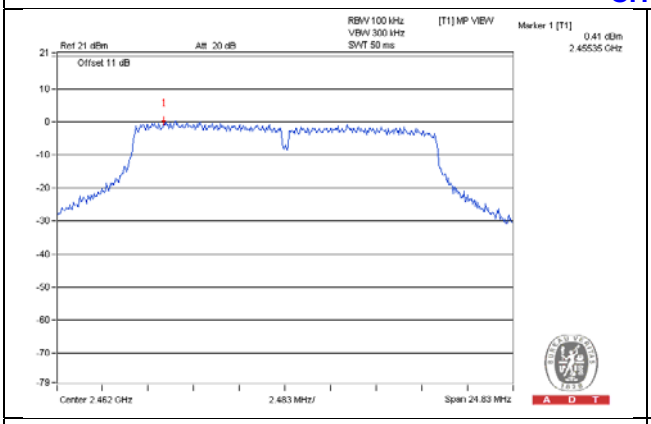


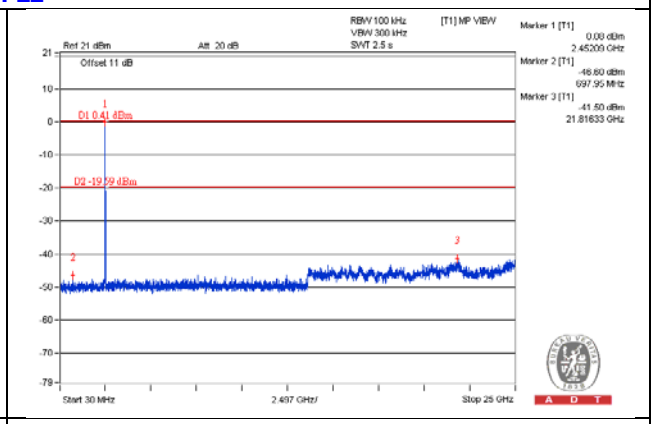
CH 6



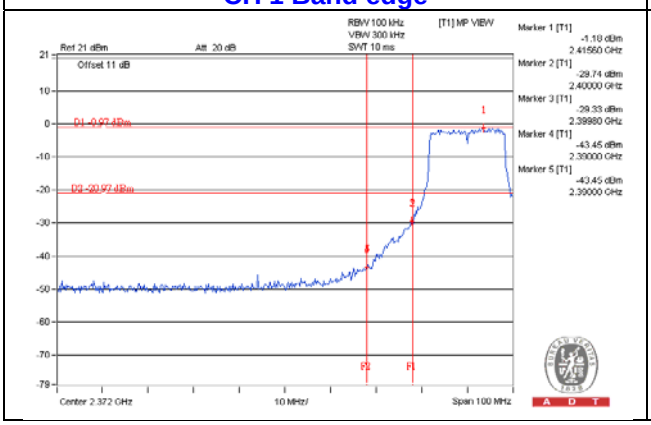


CH 11

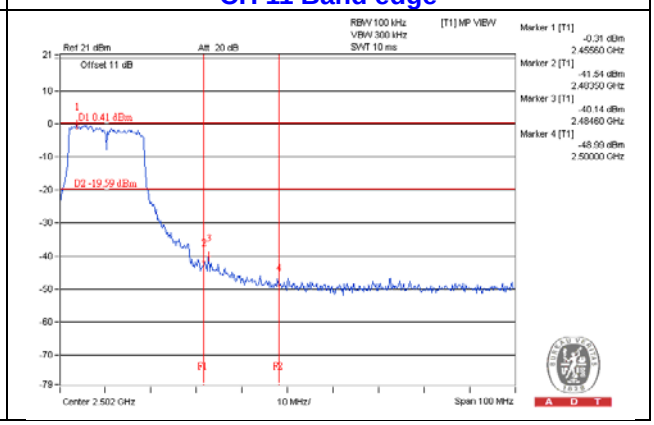




CH 1 Band edge



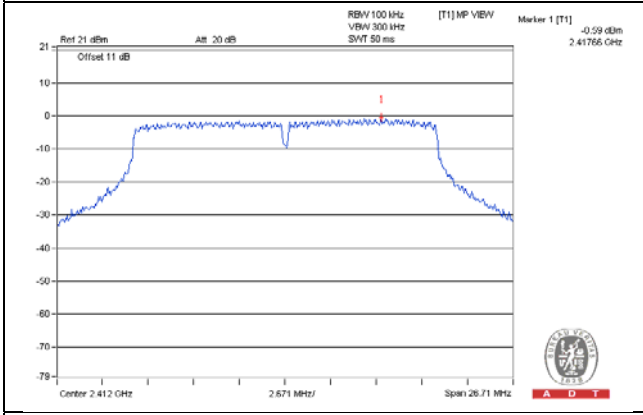
CH 11 Band edge

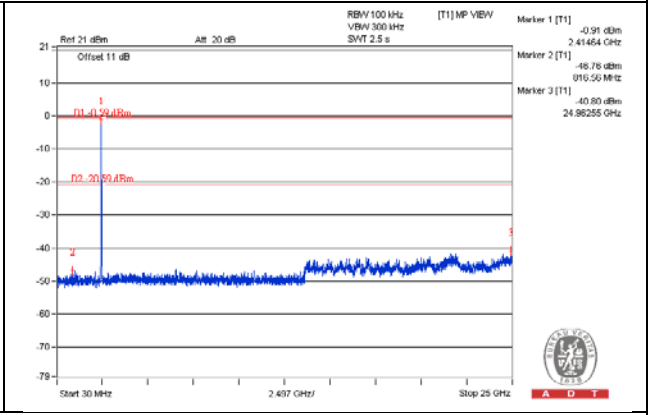


802.11n (HT20)

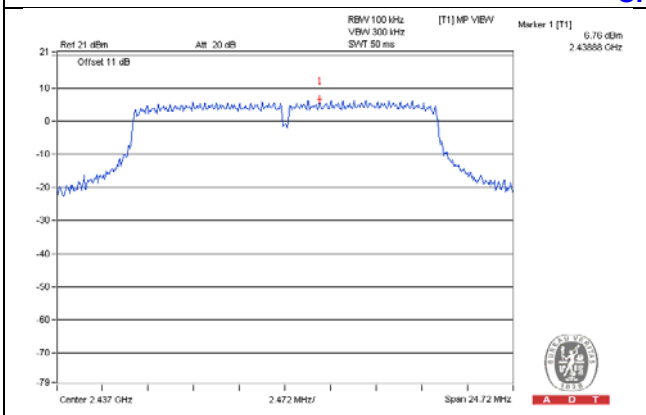
Chain 0

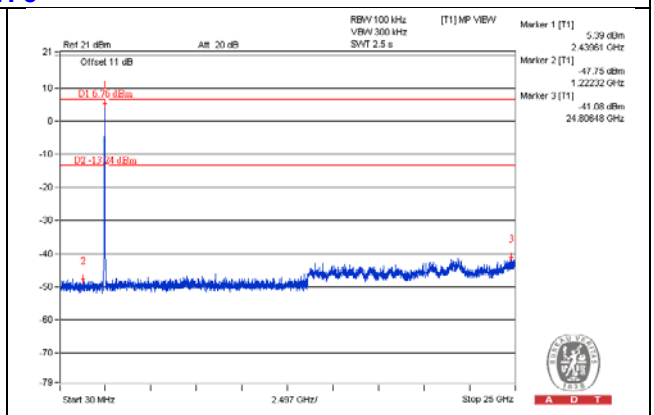
CH 1



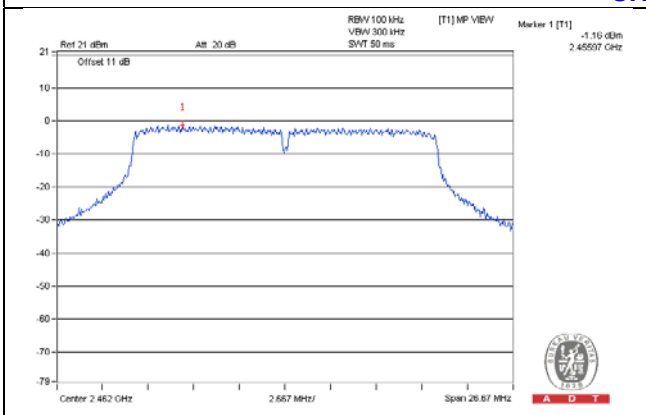


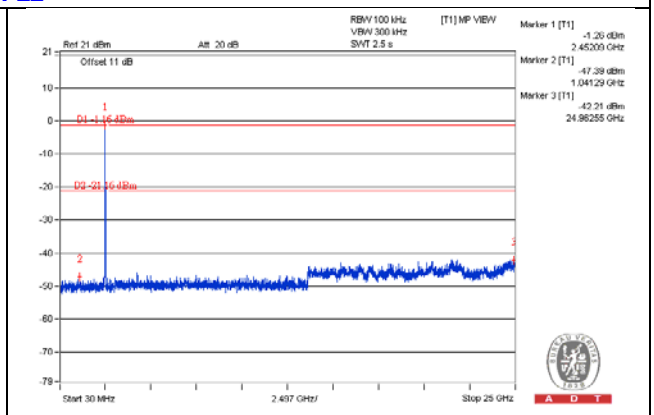
CH 6



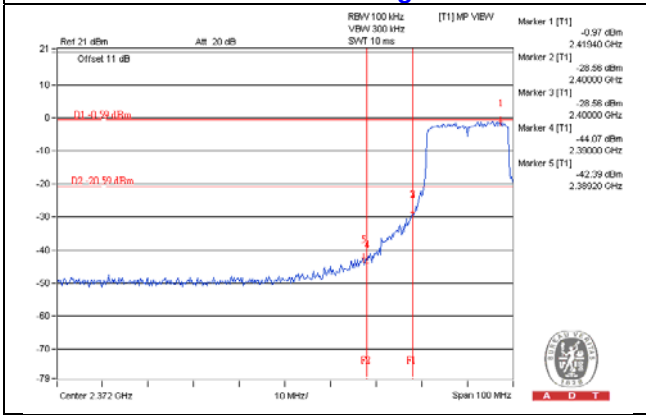


CH 11

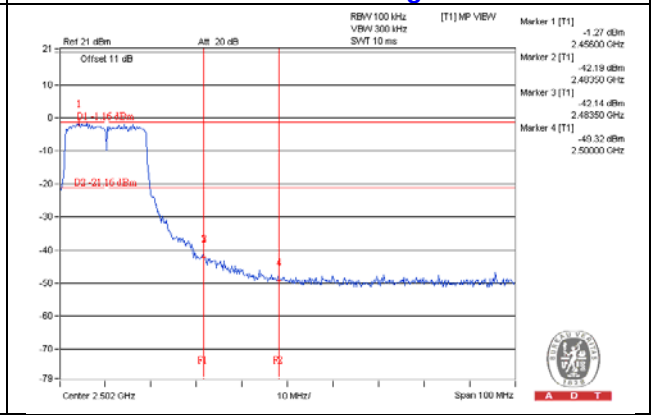




CH 1 Band edge

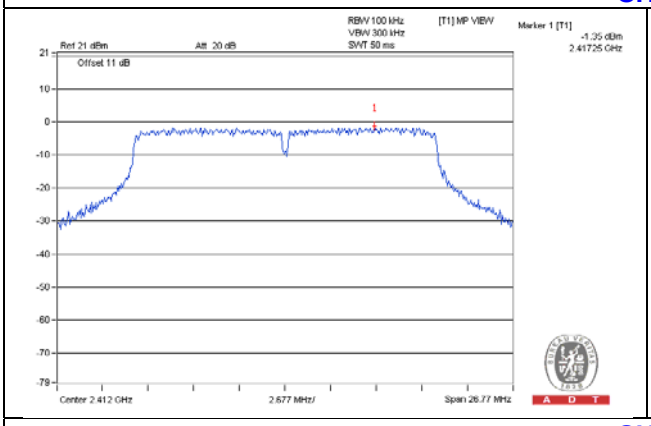


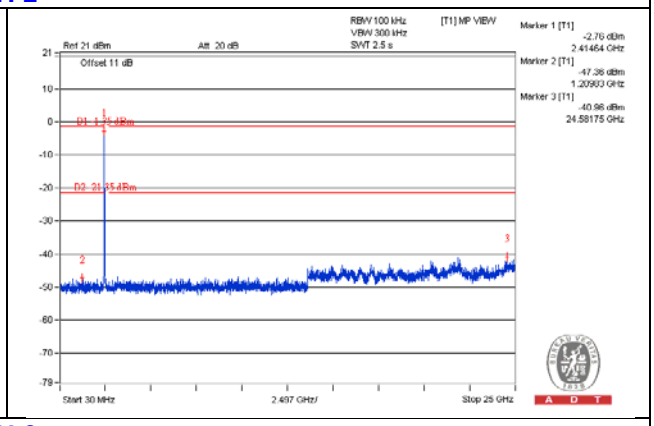
CH 11 Band edge



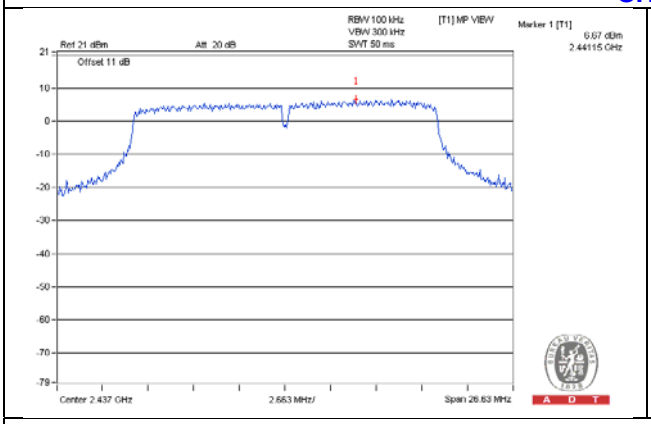
Chain 1

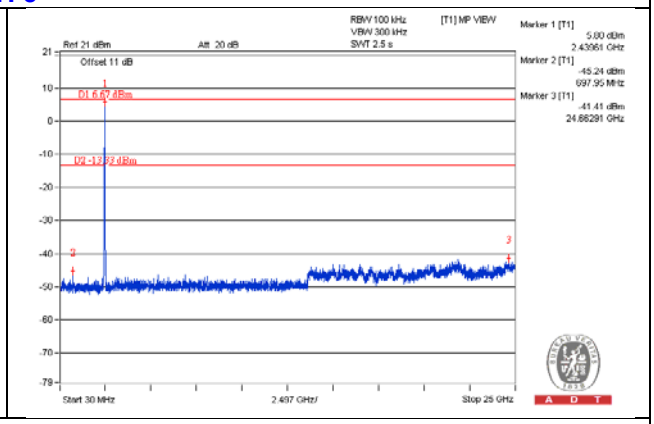
CH 1



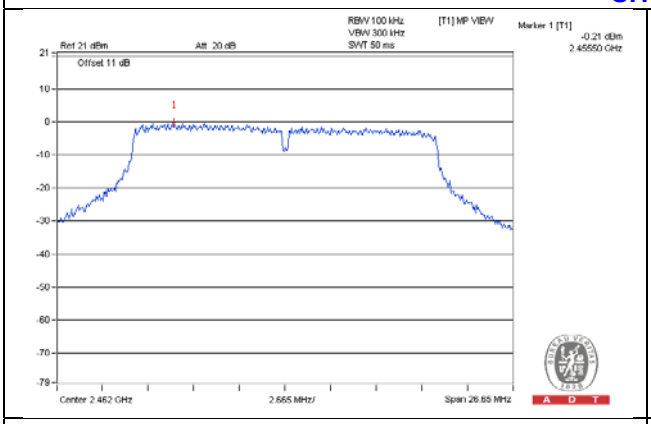


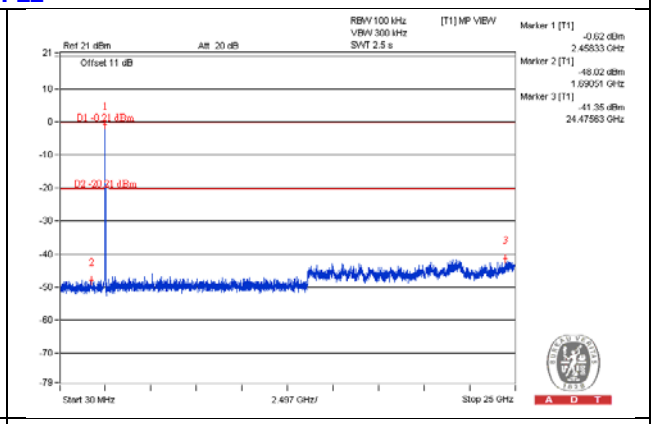
CH 6



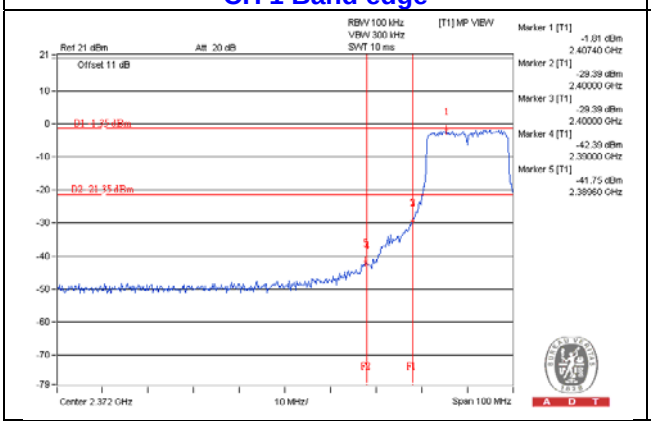


CH 11

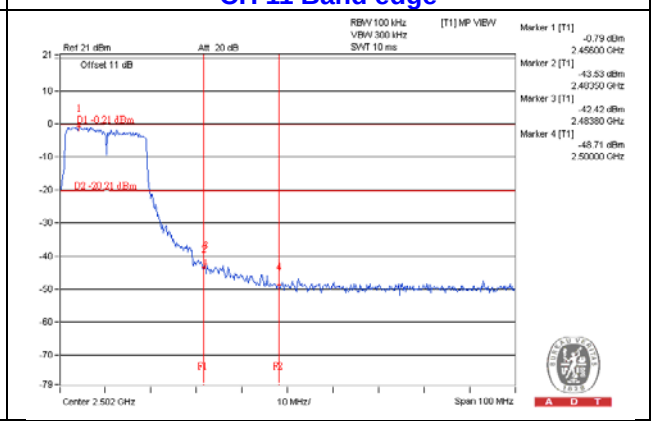




CH 1 Band edge



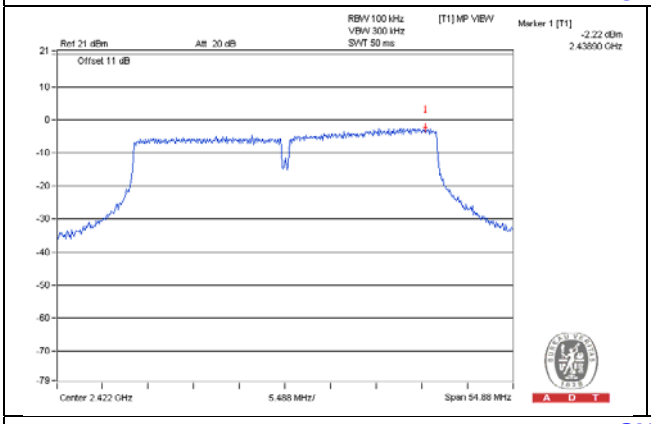
CH 11 Band edge

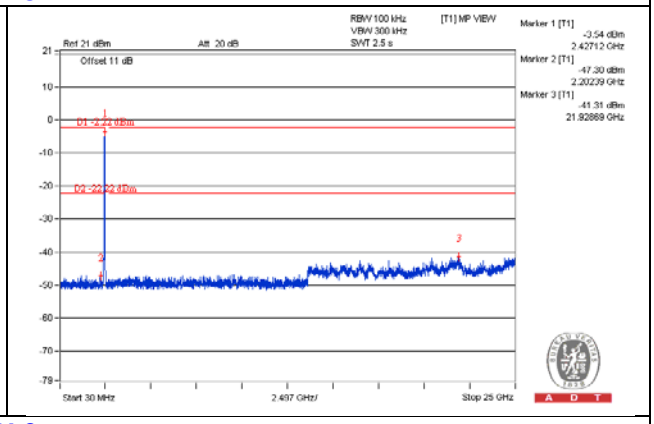


802.11n (HT40)

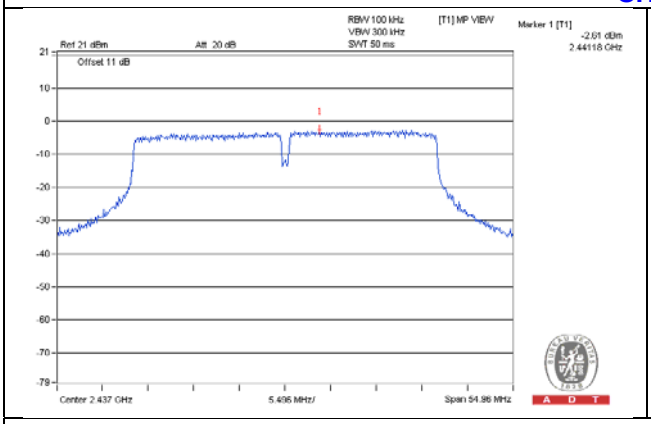
Chain 0

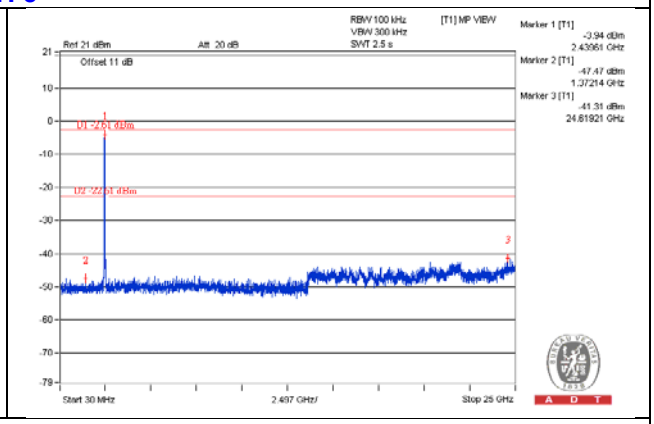
CH 3



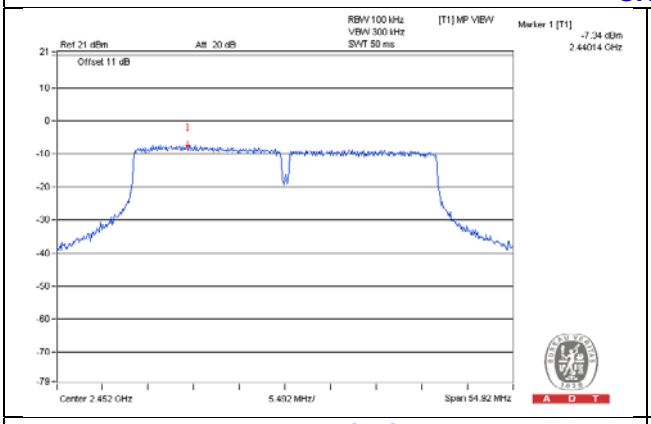


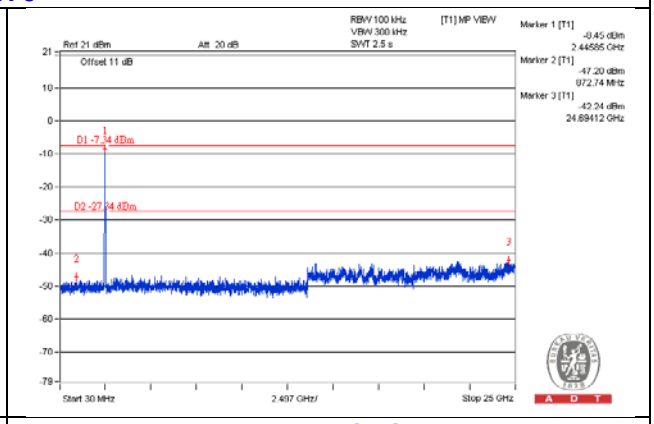
CH 6



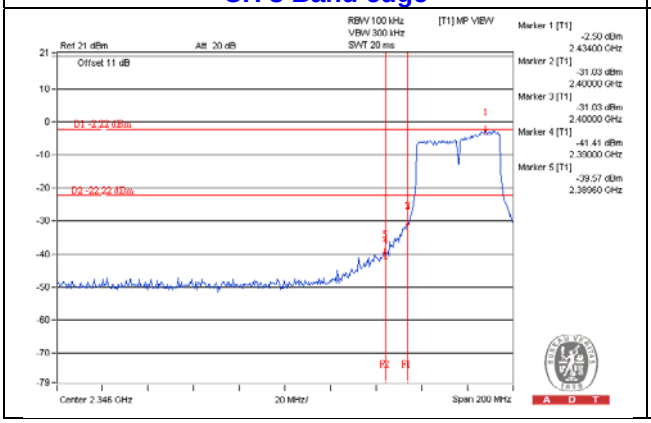


CH 9

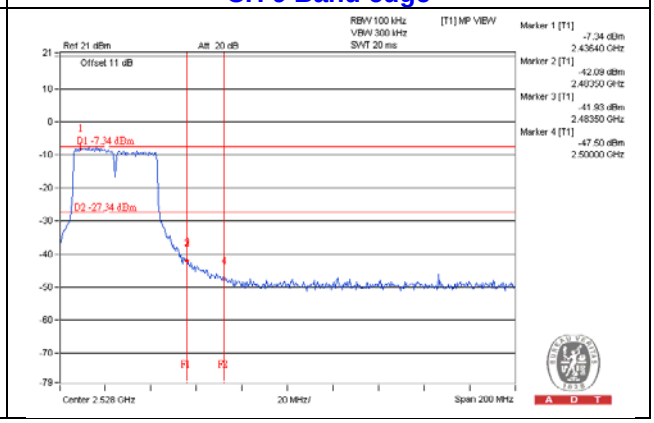




CH 3 Band edge

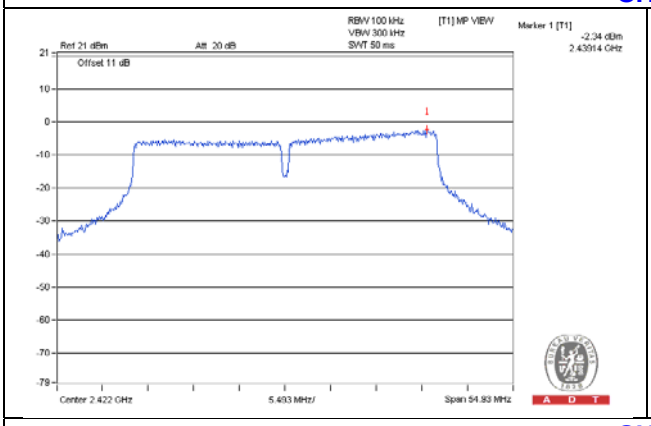


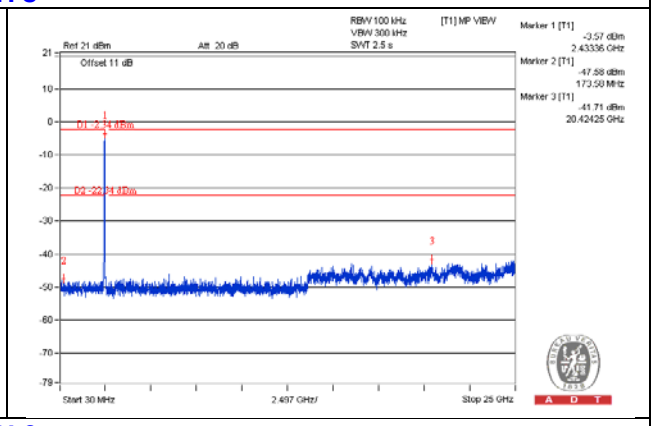
CH 9 Band edge



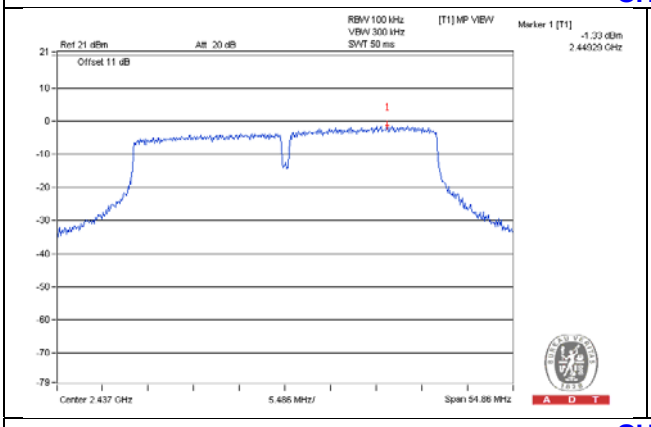
Chain 1

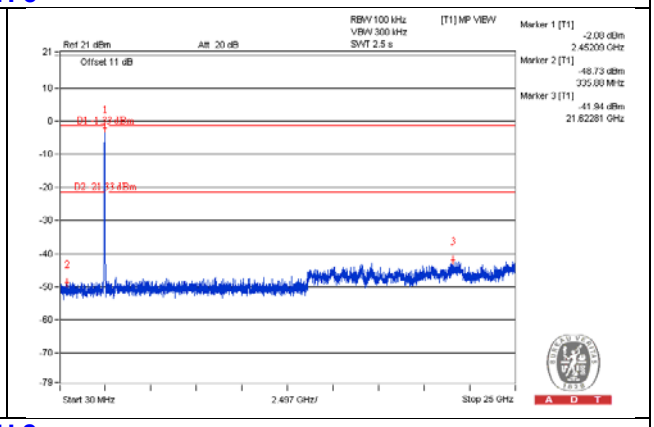
CH 3



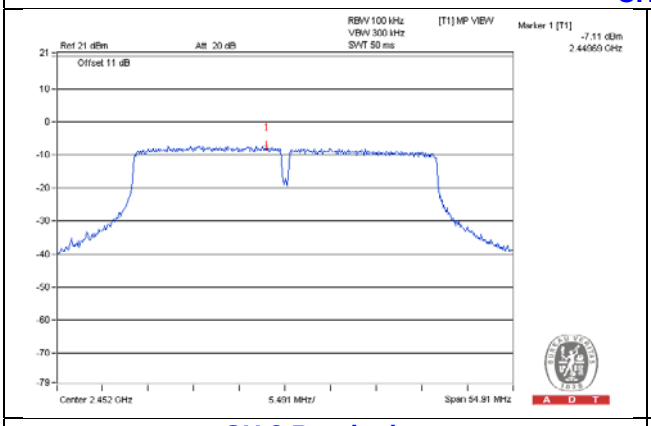


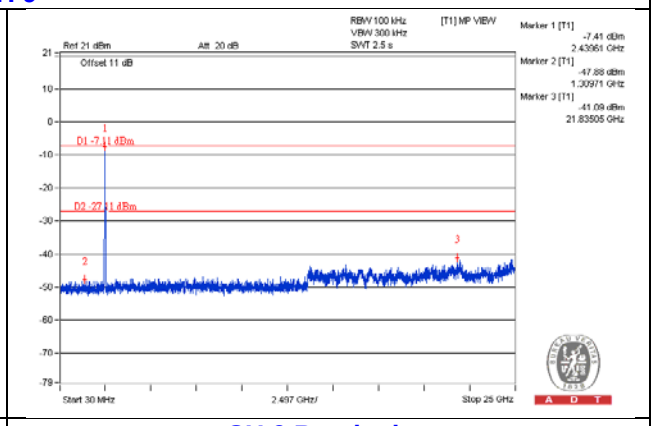
CH 6



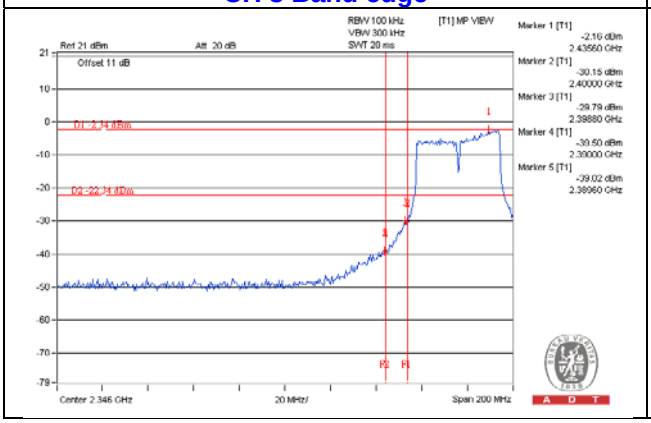


CH 9

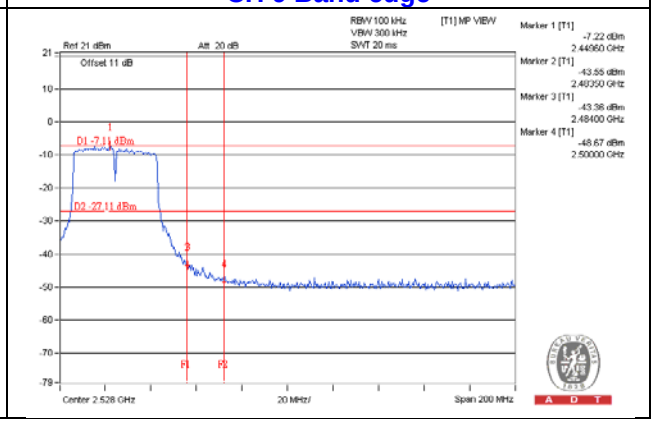




CH 3 Band edge



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

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