FCC Test Report

Report No.:	RF170829E16
FCC ID:	KA2IR853A1
Test Model:	DIR-853
Received Date:	Aug. 29, 2017
Test Date:	Nov. 27 to 29, 2017
Issued Date:	Jan. 02, 2018
Applicant:	D-Link Corporation
Address:	17595 Mt. Herrmann Street Fountain Valley, CA92708 USA
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:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

Testing Laboratory
2022

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Release Control Record

Issue No.	Description	Date Issued
RF170829E16	Original release.	Jan. 02, 2018

1 Certificate of Conformity

Product:	AC1300 MU-MIMO Wi-Fi Gigabit Router
Brand:	D-Link
Test Model:	DIR-853
Sample Status:	ENGINEERING SAMPLE
Applicant:	D-Link Corporation
Test Date:	Nov. 27 to 29, 2017
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 : Cindy Hsin , **Date:** Jan. 02, 2018

Cindy Hsin / Specialist

Approved by : , **Date:** Jan. 02, 2018

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 -15.76dB at 0.36094MHz.
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 4824.00MHz, 2483.50MHz, 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB Bandwidth	PASS	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.16 dB
	6GHz ~ 18GHz	4.91 dB
	18GHz ~ 40GHz	5.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (WLAN)

Product	AC1300 MU-MIMO Wi-Fi Gigabit Router
Brand	D-Link
Test Model	DIR-853
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and 2.4GHz
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18GHz ~ 5.24GHz, 5.745GHz ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20), VHT20: 11 802.11n (HT40), VHT40: 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:** 876.611mW **5GHz:** **CDD Mode** **5.18 ~ 5.24GHz:** 622.476 mW **5.745 ~ 5.825GHz** 232.946 mW **Beamforming Mode** **5.18 ~ 5.24GHz:** 622.476 mW **5.745 ~ 5.825GHz** 232.946 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	WLAN 5GHz
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

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

2.4GHz				
Antenna No.	Antenna Net Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
1	5	2.4 ~ 2.4835	Dipole	i-pex(MHF)
2	5	2.4 ~ 2.4835	Dipole	i-pex(MHF)
5GHz				
Antenna No.	Antenna Net Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
1	5	5.15 ~ 5.85	Dipole	i-pex(MHF)
2	5	5.15 ~ 5.85	Dipole	i-pex(MHF)

3. The EUT could be supplied with a power adaper as below table:

Brand	Model No.	Spec.
Shenzhen Gongjin Electronics Co., Ltd	S18B72-120A150-C4	Input: 100-240Vac, 0.7A, 50/60Hz Output: 12Vdc, 1.5A Power cord (Unshielded, 1.1m)

4. The EUT incorporates a MIMO function.

2.4GHz Band			
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
VHT20	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
VHT 40	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	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
802.11ac (VHT20)	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
802.11ac (VHT40)	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
802.11ac (VHT80)	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX

Note:
1. All of modulation mode support beamforming function except 802.11a and 2.4GHz modulation mode.

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

3.2 Description of Test Modes

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

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

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **Y-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:

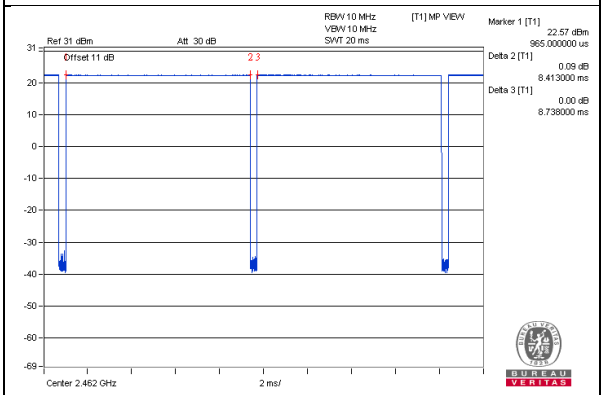
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	23deg. C, 65%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	24deg. C, 64%RH	120Vac, 60Hz	Jyunchun Lin
PLC	25deg. C, 58%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 Duty Cycle of Test Signal

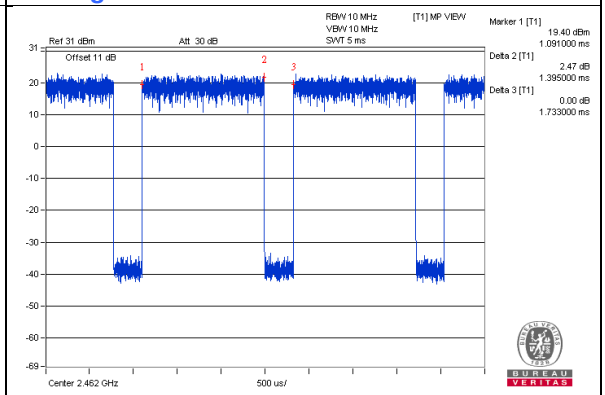
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 8.413/8.738 = 0.963, Duty factor = 10 * log(1/0.963) = 0.16
802.11g: Duty cycle = 1.395/1.733 = 0.805, Duty factor = 10 * log(1/0.805) = 0.94
802.11n (HT20): Duty cycle = 1.306/1.652 = 0.791, Duty factor = 10 * log(1/0.791) = 1.02
802.11n (HT40): Duty cycle = 0.646/0.985 = 0.656, Duty factor = 10 * log(1/0.656) = 1.83

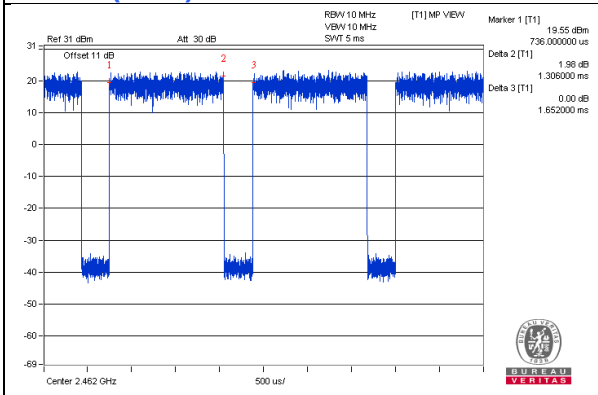
802.11b



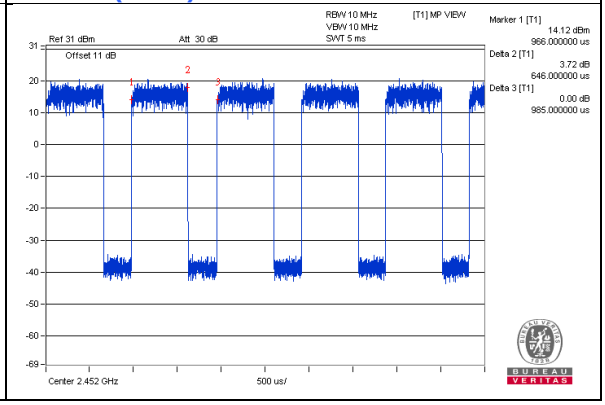
802.11g



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.

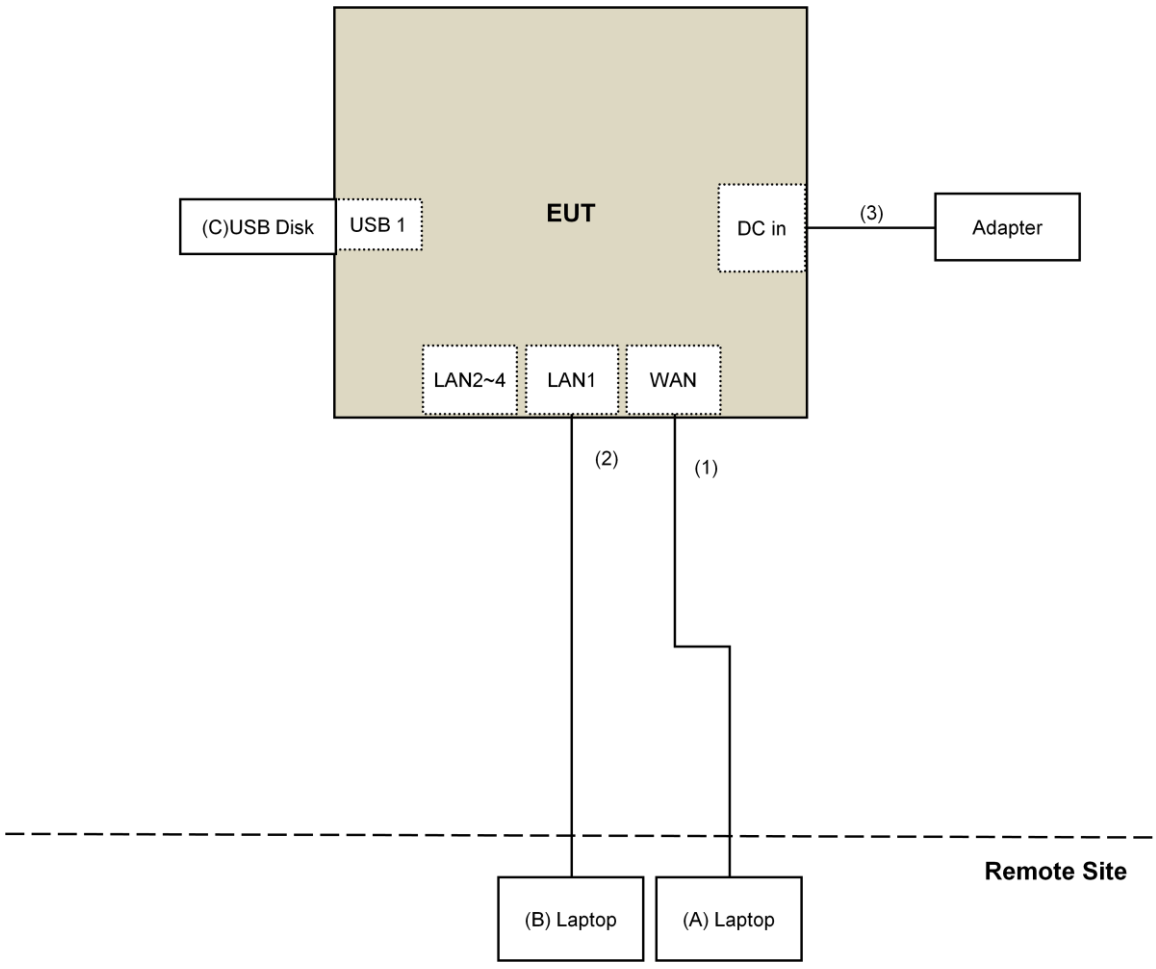
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	USB Disk	Transcend	16GB	NA	NA	Provided by Lab

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.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	DC Cable	1	1.1	No	0	Supplied by client

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 v04
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 Keysight	N9038A	MY54450088	July 08, 2017	July 07, 2018
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150321	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSv40	100964	July 1, 2017	June 30, 2018
Power meter Anritsu	ML2495A	1014008	May 11, 2017	May 10, 2018
Power sensor Anritsu	MA2411B	0917122	May 11, 2017	May 10, 2018

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Nov. 27 to 28, 2017

4.1.3 Test Procedures

For Radiated Emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case 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.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated Emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 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:

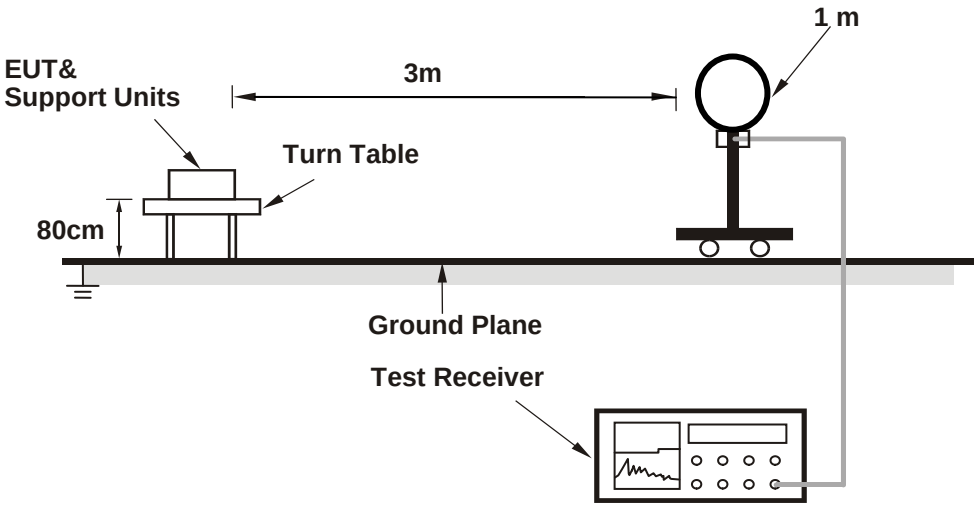
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Average detection (AV) at frequency above 1GHz. If duty cycle of test signal is < 98%, the duty factor need added to measured value.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

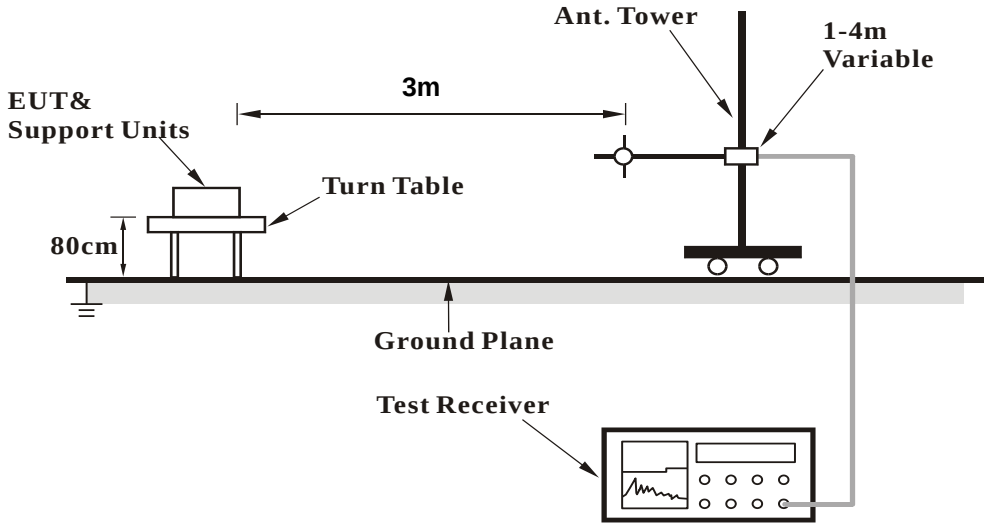
No deviation.

4.1.5 Test Setup

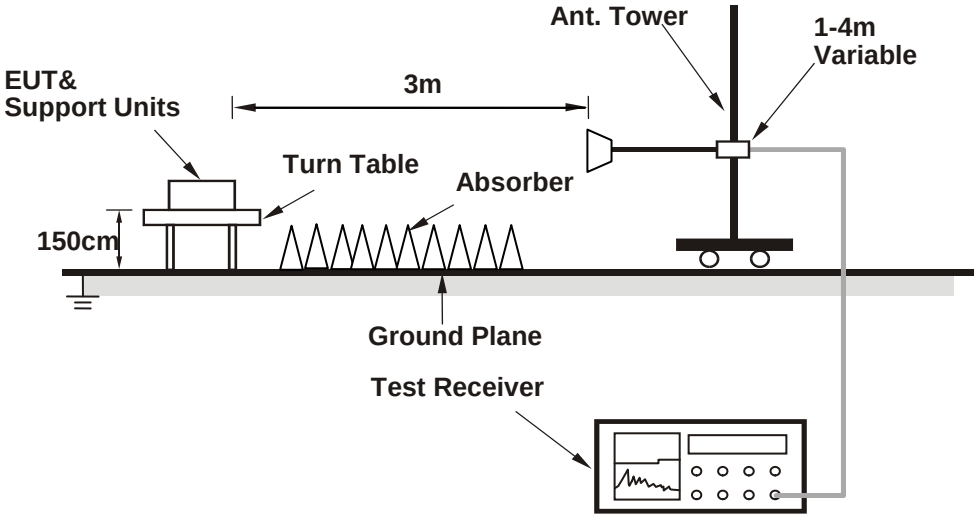
For Radiated Emission below 30MHz



For Radiated Emission 30MHz to 1GHz



For Radiated Emission 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 Laptop which is placed on remote site.
b. Contorlling software (QATool V1.84) 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	2388.00	57.7 PK	74.0	-16.3	1.04 H	244	59.0	-1.3
2	2388.00	44.0 AV	54.0	-10.0	1.04 H	244	45.3	-1.3
3	*2412.00	105.3 PK			1.04 H	244	106.4	-1.1
4	*2412.00	102.7 AV			1.04 H	244	103.8	-1.1
5	4824.00	51.4 PK	74.0	-22.6	1.47 H	254	48.2	3.2
6	4824.00	49.3 AV	54.0	-4.7	1.47 H	254	46.1	3.2
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	2388.00	60.8 PK	74.0	-13.2	1.84 V	159	62.1	-1.3
2	2388.00	48.5 AV	54.0	-5.5	1.84 V	159	49.8	-1.3
3	*2412.00	116.9 PK			1.84 V	159	118.0	-1.1
4	*2412.00	114.5 AV			1.84 V	159	115.6	-1.1
5	4824.00	55.5 PK	74.0	-18.5	1.79 V	178	52.3	3.2
6	**4824.00**	**53.9 AV**	**54.0**	**-0.1**	**1.79 V**	**178**	**50.7**	**3.2**

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	106.5 PK			1.05 H	253	107.7	-1.2
2	*2437.00	104.9 AV			1.05 H	253	106.1	-1.2
3	4874.00	51.0 PK	74.0	-23.0	1.50 H	243	47.7	3.3
4	4874.00	49.0 AV	54.0	-5.0	1.50 H	243	45.7	3.3
5	7311.00	46.0 PK	74.0	-28.0	1.68 H	192	36.2	9.8
6	7311.00	35.4 AV	54.0	-18.6	1.68 H	192	25.6	9.8
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	118.0 PK			1.84 V	162	119.2	-1.2
2	*2437.00	115.7 AV			1.84 V	162	116.9	-1.2
3	4874.00	55.1 PK	74.0	-18.9	1.75 V	182	51.8	3.3
4	4874.00	53.8 AV	54.0	-0.2	1.75 V	182	50.5	3.3
5	7311.00	45.9 PK	74.0	-28.1	1.75 V	195	36.1	9.8
6	7311.00	35.2 AV	54.0	-18.8	1.75 V	195	25.4	9.8

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	106.7 PK			1.00 H	243	107.8	-1.1
2	*2462.00	105.0 AV			1.00 H	243	106.1	-1.1
3	2487.00	59.5 PK	74.0	-14.5	1.00 H	243	60.5	-1.0
4	2487.00	48.1 AV	54.0	-5.9	1.00 H	243	49.1	-1.0
5	4924.00	51.1 PK	74.0	-22.9	1.47 H	240	47.6	3.5
6	4924.00	49.4 AV	54.0	-4.6	1.47 H	240	45.9	3.5
7	7386.00	46.6 PK	74.0	-27.4	1.68 H	195	36.7	9.9
8	7386.00	35.9 AV	54.0	-18.1	1.68 H	195	26.0	9.9
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	118.2 PK			1.80 V	162	119.3	-1.1
2	*2462.00	115.8 AV			1.80 V	162	116.9	-1.1
3	2487.00	62.7 PK	74.0	-11.3	1.80 V	162	63.7	-1.0
4	2487.00	52.5 AV	54.0	-1.5	1.80 V	162	53.5	-1.0
5	4924.00	55.1 PK	74.0	-18.9	1.84 V	184	51.6	3.5
6	4924.00	53.8 AV	54.0	-0.2	1.84 V	184	50.3	3.5
7	7386.00	46.1 PK	74.0	-27.9	1.70 V	201	36.2	9.9
8	7386.00	35.3 AV	54.0	-18.7	1.70 V	201	25.4	9.9

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	66.4 PK	74.0	-7.6	1.03 H	253	67.7	-1.3
2	2390.00	49.4 AV	54.0	-4.6	1.03 H	253	50.7	-1.3
3	*2412.00	107.2 PK			1.03 H	253	108.3	-1.1
4	*2412.00	97.7 AV			1.03 H	253	98.8	-1.1
5	4824.00	44.7 PK	74.0	-29.3	1.59 H	258	41.5	3.2
6	4824.00	32.3 AV	54.0	-21.7	1.59 H	258	29.1	3.2
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	1.80 V	152	71.7	-1.3
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.80 V**	**152**	**55.2**	**-1.3**
3	*2412.00	118.2 PK			1.80 V	152	119.3	-1.1
4	*2412.00	108.5 AV			1.80 V	152	109.6	-1.1
5	4824.00	48.7 PK	74.0	-25.3	1.86 V	164	45.5	3.2
6	4824.00	36.4 AV	54.0	-17.6	1.86 V	164	33.2	3.2

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	62.1 PK	74.0	-11.9	1.06 H	247	63.4	-1.3
2	2390.00	44.5 AV	54.0	-9.5	1.06 H	247	45.8	-1.3
3	*2437.00	113.6 PK			1.06 H	247	114.8	-1.2
4	*2437.00	104.2 AV			1.06 H	247	105.4	-1.2
5	2483.50	68.3 PK	74.0	-5.7	1.06 H	247	69.3	-1.0
6	2483.50	49.5 AV	54.0	-4.5	1.06 H	247	50.5	-1.0
7	4874.00	50.7 PK	74.0	-23.3	1.50 H	236	47.4	3.3
8	4874.00	39.0 AV	54.0	-15.0	1.50 H	236	35.7	3.3
9	7311.00	50.1 PK	74.0	-23.9	1.68 H	187	40.3	9.8
10	7311.00	36.8 AV	54.0	-17.2	1.68 H	187	27.0	9.8
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	66.2 PK	74.0	-7.8	1.86 V	164	67.5	-1.3
2	2390.00	48.7 AV	54.0	-5.3	1.86 V	164	50.0	-1.3
3	*2437.00	124.3 PK			1.86 V	164	125.5	-1.2
4	*2437.00	115.0 AV			1.86 V	164	116.2	-1.2
5	2483.50	72.5 PK	74.0	-1.5	1.86 V	164	73.5	-1.0
6	2483.50	53.8 AV	54.0	-0.2	1.86 V	164	54.8	-1.0
7	4874.00	54.8 PK	74.0	-19.2	1.90 V	183	51.5	3.3
8	4874.00	43.0 AV	54.0	-11.0	1.90 V	183	39.7	3.3
9	7311.00	53.9 PK	74.0	-20.1	1.70 V	185	44.1	9.8
10	7311.00	40.9 AV	54.0	-13.1	1.70 V	185	31.1	9.8

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	107.0 PK			1.08 H	269	108.1	-1.1
2	*2462.00	97.4 AV			1.08 H	269	98.5	-1.1
3	2483.50	64.5 PK	74.0	-9.5	1.08 H	269	65.5	-1.0
4	2483.50	49.5 AV	54.0	-4.5	1.08 H	269	50.5	-1.0
5	4924.00	44.3 PK	74.0	-29.7	1.55 H	250	40.8	3.5
6	4924.00	32.1 AV	54.0	-21.9	1.55 H	250	28.6	3.5
7	7386.00	44.5 PK	74.0	-29.5	1.71 H	189	34.6	9.9
8	7386.00	32.2 AV	54.0	-21.8	1.71 H	189	22.3	9.9
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	117.5 PK			1.80 V	163	118.6	-1.1
2	*2462.00	108.1 AV			1.80 V	163	109.2	-1.1
3	2483.50	68.5 PK	74.0	-5.5	1.80 V	163	69.5	-1.0
4	2483.50	53.7 AV	54.0	-0.3	1.80 V	163	54.7	-1.0
5	4924.00	48.5 PK	74.0	-25.5	1.89 V	168	45.0	3.5
6	4924.00	36.2 AV	54.0	-17.8	1.89 V	168	32.7	3.5
7	7386.00	44.8 PK	74.0	-29.2	1.65 V	172	34.9	9.9
8	7386.00	32.5 AV	54.0	-21.5	1.65 V	172	22.6	9.9

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	65.3 PK	74.0	-8.7	1.12 H	277	66.6	-1.3
2	2390.00	49.8 AV	54.0	-4.2	1.12 H	277	51.1	-1.3
3	*2412.00	108.5 PK			1.12 H	277	109.6	-1.1
4	*2412.00	99.1 AV			1.12 H	277	100.2	-1.1
5	4824.00	42.8 PK	74.0	-31.2	1.55 H	252	39.6	3.2
6	4824.00	29.7 AV	54.0	-24.3	1.55 H	252	26.5	3.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.9 PK	74.0	-4.1	1.82 V	152	71.2	-1.3
2	2390.00	53.5 AV	54.0	-0.5	1.82 V	152	54.8	-1.3
3	*2412.00	112.8 PK			1.82 V	152	113.9	-1.1
4	*2412.00	103.4 AV			1.82 V	152	104.5	-1.1
5	4824.00	47.3 PK	74.0	-26.7	1.90 V	186	44.1	3.2
6	4824.00	33.8 AV	54.0	-20.2	1.90 V	186	30.6	3.2

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	61.5 PK	74.0	-12.5	1.07 H	264	62.8	-1.3
2	2390.00	43.1 AV	54.0	-10.9	1.07 H	264	44.4	-1.3
3	*2437.00	115.0 PK			1.07 H	264	116.2	-1.2
4	*2437.00	105.8 AV			1.07 H	264	107.0	-1.2
5	2483.50	68.7 PK	74.0	-5.3	1.07 H	264	69.7	-1.0
6	2483.50	49.5 AV	54.0	-4.5	1.07 H	264	50.5	-1.0
7	4874.00	49.5 PK	74.0	-24.5	1.51 H	257	46.2	3.3
8	4874.00	35.5 AV	54.0	-18.5	1.51 H	257	32.2	3.3
9	7311.00	43.9 PK	74.0	-30.1	1.70 H	202	34.1	9.8
10	7311.00	31.8 AV	54.0	-22.2	1.70 H	202	22.0	9.8
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	65.5 PK	74.0	-8.5	1.86 V	160	66.8	-1.3
2	2390.00	47.3 AV	54.0	-6.7	1.86 V	160	48.6	-1.3
3	*2437.00	119.4 PK			1.86 V	160	120.6	-1.2
4	*2437.00	110.0 AV			1.86 V	160	111.2	-1.2
5	2483.50	72.9 PK	74.0	-1.1	1.86 V	160	73.9	-1.0
6	2483.50	53.5 AV	54.0	-0.5	1.86 V	160	54.5	-1.0
7	4874.00	53.2 PK	74.0	-20.8	1.86 V	181	49.9	3.3
8	4874.00	39.6 AV	54.0	-14.4	1.86 V	181	36.3	3.3
9	7311.00	47.9 PK	74.0	-26.1	1.70 V	185	38.1	9.8
10	7311.00	35.2 AV	54.0	-18.8	1.70 V	185	25.4	9.8

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	108.8 PK			1.09 H	281	109.9	-1.1
2	*2462.00	99.4 AV			1.09 H	281	100.5	-1.1
3	2483.50	67.6 PK	74.0	-6.4	1.09 H	281	68.6	-1.0
4	2483.50	49.6 AV	54.0	-4.4	1.09 H	281	50.6	-1.0
5	4924.00	43.1 PK	74.0	-30.9	1.55 H	246	39.6	3.5
6	4924.00	29.8 AV	54.0	-24.2	1.55 H	246	26.3	3.5
7	7386.00	44.5 PK	74.0	-29.5	1.69 H	214	34.6	9.9
8	7386.00	32.1 AV	54.0	-21.9	1.69 H	214	22.2	9.9
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	112.9 PK			1.82 V	151	114.0	-1.1
2	*2462.00	103.6 AV			1.82 V	151	104.7	-1.1
3	2483.50	71.8 PK	74.0	-2.2	1.82 V	151	72.8	-1.0
4	2483.50	53.8 AV	54.0	-0.2	1.82 V	151	54.8	-1.0
5	4924.00	46.8 PK	74.0	-27.2	1.87 V	177	43.3	3.5
6	4924.00	33.5 AV	54.0	-20.5	1.87 V	177	30.0	3.5
7	7386.00	44.9 PK	74.0	-29.1	1.62 V	175	35.0	9.9
8	7386.00	32.6 AV	54.0	-21.4	1.62 V	175	22.7	9.9

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	65.9 PK	74.0	-8.1	1.11 H	266	67.2	-1.3
2	2390.00	49.3 AV	54.0	-4.7	1.11 H	266	50.6	-1.3
3	*2422.00	103.2 PK			1.11 H	266	104.5	-1.3
4	*2422.00	93.7 AV			1.11 H	266	95.0	-1.3
5	4844.00	38.5 PK	74.0	-35.5	1.60 H	249	35.2	3.3
6	4844.00	26.7 AV	54.0	-27.3	1.60 H	249	23.4	3.3
7	7266.00	44.9 PK	74.0	-29.1	1.69 H	216	35.1	9.8
8	7266.00	32.5 AV	54.0	-21.5	1.69 H	216	22.7	9.8
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	70.1 PK	74.0	-3.9	1.82 V	151	71.4	-1.3
2	2390.00	53.7 AV	54.0	-0.3	1.82 V	151	55.0	-1.3
3	*2422.00	107.2 PK			1.82 V	151	108.5	-1.3
4	*2422.00	97.9 AV			1.82 V	151	99.2	-1.3
5	4844.00	38.5 PK	74.0	-35.5	1.93 V	190	35.2	3.3
6	4844.00	26.6 AV	54.0	-27.4	1.93 V	190	23.3	3.3
7	7266.00	44.8 PK	74.0	-29.2	1.61 V	184	35.0	9.8
8	7266.00	32.6 AV	54.0	-21.4	1.61 V	184	22.8	9.8

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	65.0 PK	74.0	-9.0	1.11 H	261	66.3	-1.3
2	2390.00	49.6 AV	54.0	-4.4	1.11 H	261	50.9	-1.3
3	*2437.00	108.1 PK			1.11 H	261	109.3	-1.2
4	*2437.00	98.7 AV			1.11 H	261	99.9	-1.2
5	2483.50	63.0 PK	74.0	-11.0	1.11 H	261	64.0	-1.0
6	2483.50	48.7 AV	54.0	-5.3	1.11 H	261	49.7	-1.0
7	4874.00	40.6 PK	74.0	-33.4	1.57 H	250	37.3	3.3
8	4874.00	27.7 AV	54.0	-26.3	1.57 H	250	24.4	3.3
9	7311.00	44.8 PK	74.0	-29.2	1.64 H	226	35.0	9.8
10	7311.00	32.7 AV	54.0	-21.3	1.64 H	226	22.9	9.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.9 PK	74.0	-5.1	1.86 V	160	70.2	-1.3
2	2390.00	53.5 AV	54.0	-0.5	1.86 V	160	54.8	-1.3
3	*2437.00	112.0 PK			1.86 V	160	113.2	-1.2
4	*2437.00	102.9 AV			1.86 V	160	104.1	-1.2
5	2483.50	67.2 PK	74.0	-6.8	1.86 V	160	68.2	-1.0
6	2483.50	52.6 AV	54.0	-1.4	1.86 V	160	53.6	-1.0
7	4874.00	44.7 PK	74.0	-29.3	1.91 V	169	41.4	3.3
8	4874.00	31.6 AV	54.0	-22.4	1.91 V	169	28.3	3.3
9	7311.00	44.2 PK	74.0	-29.8	1.64 V	181	34.4	9.8
10	7311.00	32.1 AV	54.0	-21.9	1.64 V	181	22.3	9.8

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	105.6 PK			1.09 H	254	106.7	-1.1
2	*2452.00	96.2 AV			1.09 H	254	97.3	-1.1
3	2483.50	68.9 PK	74.0	-5.1	1.09 H	254	69.9	-1.0
4	2483.50	49.8 AV	54.0	-4.2	1.09 H	254	50.8	-1.0
5	4904.00	38.6 PK	74.0	-35.4	1.55 H	238	35.1	3.5
6	4904.00	26.8 AV	54.0	-27.2	1.55 H	238	23.3	3.5
7	7356.00	45.5 PK	74.0	-28.5	1.69 H	214	35.6	9.9
8	7356.00	32.9 AV	54.0	-21.1	1.69 H	214	23.0	9.9
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	109.5 PK			1.82 V	151	110.6	-1.1
2	*2452.00	100.5 AV			1.82 V	151	101.6	-1.1
3	2483.50	73.3 PK	74.0	-0.7	1.82 V	151	74.3	-1.0
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.82 V**	**151**	**54.9**	**-1.0**
5	4904.00	40.2 PK	74.0	-33.8	1.91 V	191	36.7	3.5
6	4904.00	27.9 AV	54.0	-26.1	1.91 V	191	24.4	3.5
7	7356.00	44.3 PK	74.0	-29.7	1.65 V	169	34.4	9.9
8	7356.00	32.2 AV	54.0	-21.8	1.65 V	169	22.3	9.9

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	9kHz ~ 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	38.05	35.2 QP	40.0	-4.8	1.00 H	166	43.3	-8.1
2	143.51	30.9 QP	43.5	-12.6	2.00 H	112	38.9	-8.0
3	250.00	39.4 QP	46.0	-6.6	1.00 H	249	48.7	-9.3
4	451.34	32.7 QP	46.0	-13.3	2.00 H	12	36.0	-3.3
5	500.01	36.5 QP	46.0	-9.5	1.50 H	215	39.1	-2.6
6	804.28	32.3 QP	46.0	-13.7	1.00 H	198	29.6	2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	89.00	34.9 QP	43.5	-8.6	1.50 V	216	48.8	-13.9
2	250.00	33.8 QP	46.0	-12.2	1.00 V	360	43.1	-9.3
3	457.99	33.4 QP	46.0	-12.6	1.00 V	123	36.6	-3.2
4	500.01	34.9 QP	46.0	-11.1	1.00 V	199	37.5	-2.6
5	927.40	35.4 QP	46.0	-10.6	1.00 V	45	30.8	4.6
6	989.35	36.4 QP	54.0	-17.6	1.00 V	212	31.2	5.2

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	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 20167	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 18, 2017	June 17, 2018
Software BVADT	BVADT_Cond_ V7.3.7.4	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. 1.
3 Tested Date: Nov. 29, 2017

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

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

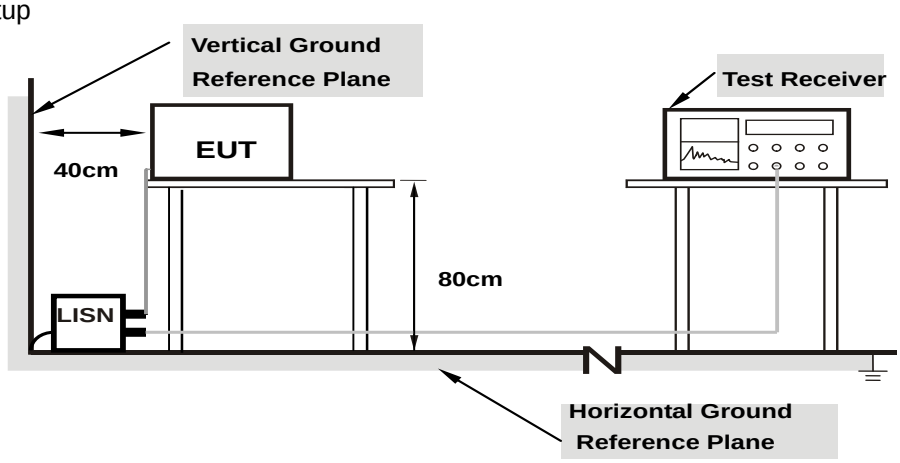
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

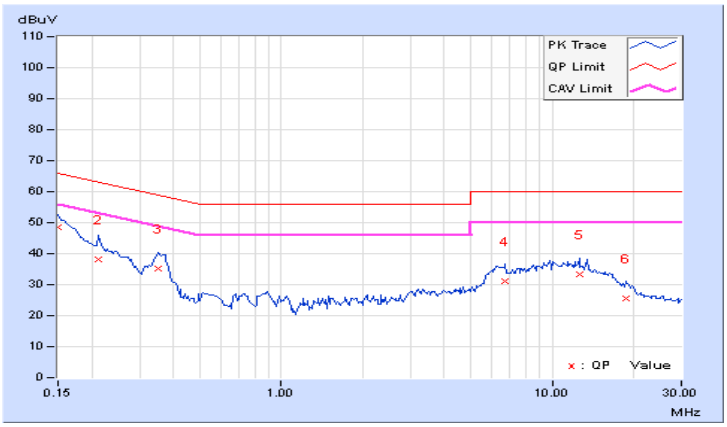
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.09	38.32	25.01	48.41	35.10	66.00	56.00	-17.59	-20.90
2	0.21250	10.07	28.17	16.27	38.24	26.34	63.11	53.11	-24.87	-26.77
3	0.34922	10.11	24.91	19.73	35.02	29.84	58.98	48.98	-23.96	-19.14
4	6.72656	10.56	20.65	15.09	31.21	25.65	60.00	50.00	-28.79	-24.35
5	12.58203	11.00	22.33	16.66	33.33	27.66	60.00	50.00	-26.67	-22.34
6	18.74219	11.49	14.25	8.51	25.74	20.00	60.00	50.00	-34.26	-30.00

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.

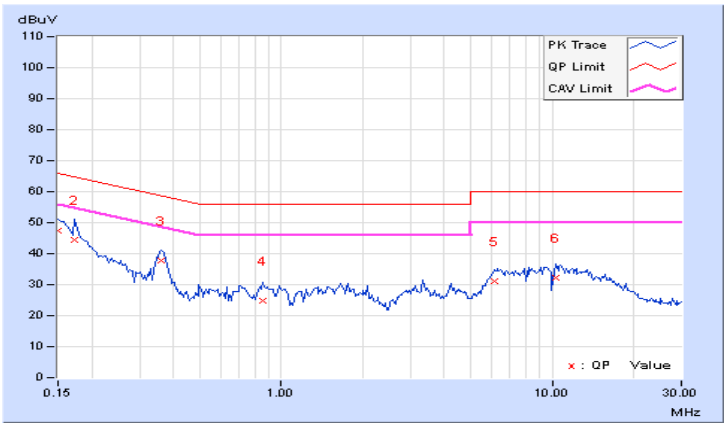


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.08	37.37	21.89	47.45	31.97	66.00	56.00	-18.55	-24.03
2	0.17344	10.06	34.28	19.31	44.34	29.37	64.79	54.79	-20.45	-25.42
3	**0.36094**	**10.10**	**27.54**	**22.85**	**37.64**	**32.95**	**58.71**	**48.71**	**-21.07**	**-15.76**
4	0.85313	10.13	14.76	10.71	24.89	20.84	56.00	46.00	-31.11	-25.16
5	6.09375	10.42	20.53	15.56	30.95	25.98	60.00	50.00	-29.05	-24.02
6	10.38281	10.73	21.38	15.81	32.11	26.54	60.00	50.00	-27.89	-23.46

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.

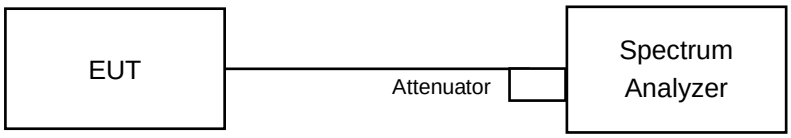


4.3 6dB Bandwidth Measurement

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 from Test 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	9.09	9.09	0.5	PASS
6	2437	9.13	9.13	0.5	PASS
11	2462	9.14	8.13	0.5	PASS

802.11g

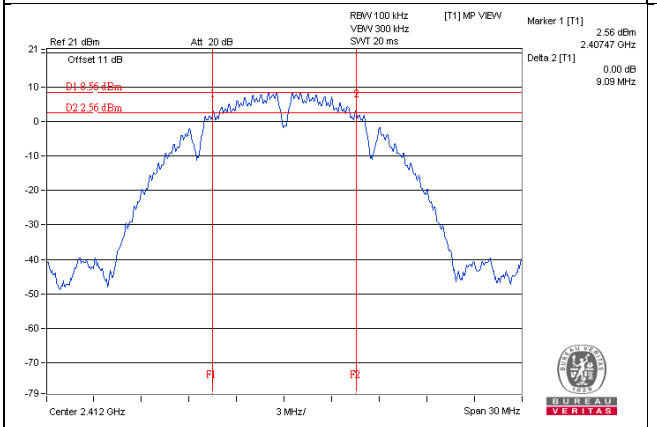
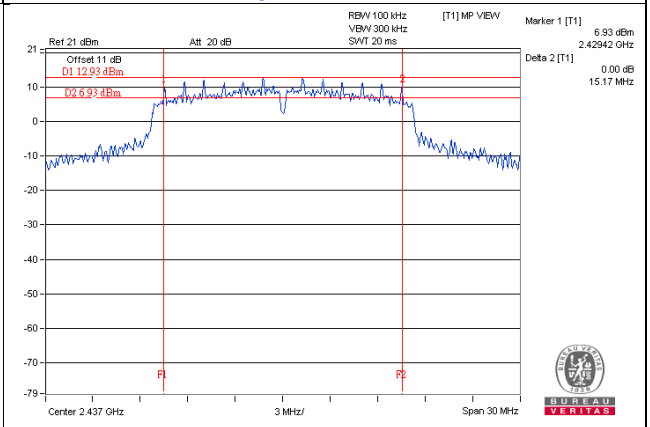
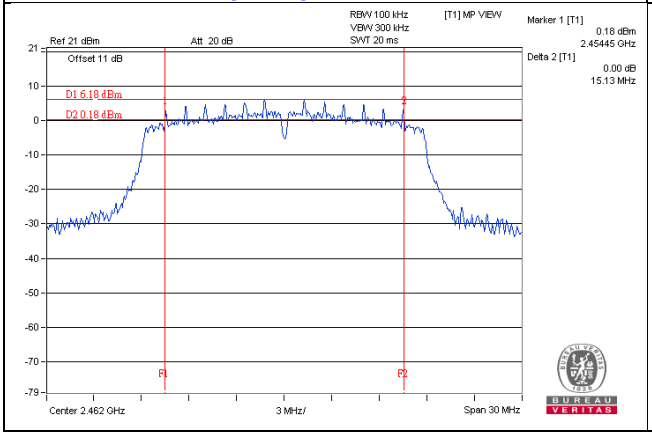
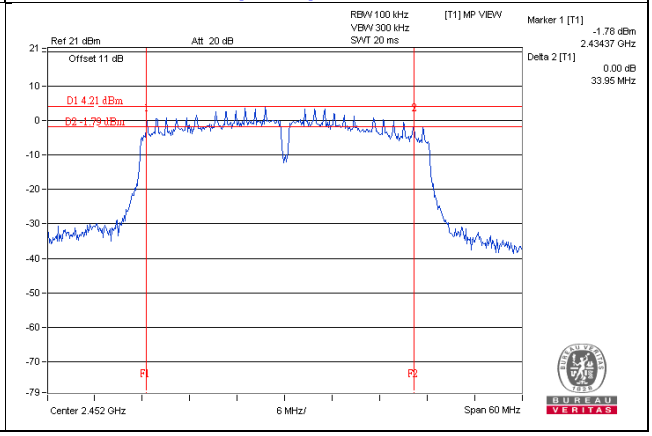
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.18	15.17	0.5	PASS
6	2437	15.17	15.18	0.5	PASS
11	2462	15.19	15.18	0.5	PASS

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.18	15.18	0.5	PASS
6	2437	15.19	15.18	0.5	PASS
11	2462	15.18	15.13	0.5	PASS

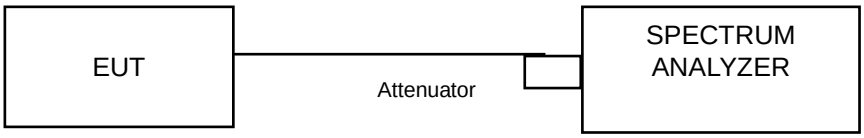
802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.11	35.15	0.5	Pass
6	2437	35.16	35.25	0.5	Pass
9	2452	33.95	35.14	0.5	Pass

Spectrum Plot of Worst Value	
802.11b / Chain 0 : CH 1	**802.11g / Chain 0 : CH 6**
	
802.11n (HT20) / Chain 1 : CH 11	**802.11n (HT40) / Chain 0 : CH 9**
	

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Deviation from Test Standard

No deviation.

4.4.5 EUT Operating Conditions

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

4.4.6 Test Results

802.11b

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	13.32	13.32
6	2437	13.56	13.44
11	2462	13.68	13.44

802.11g

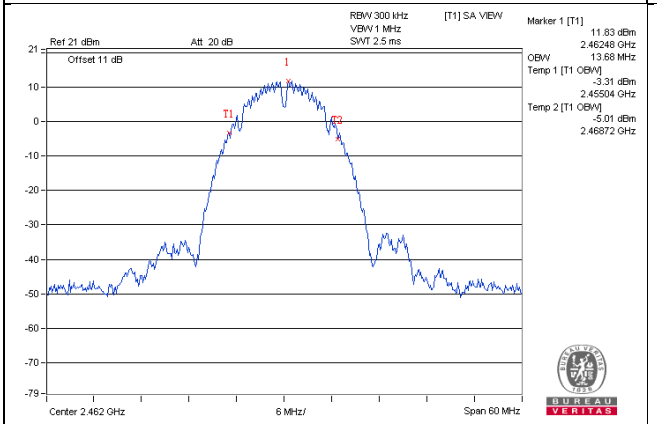
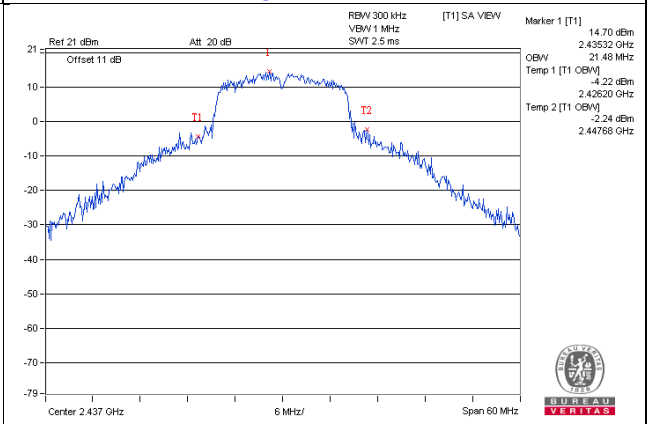
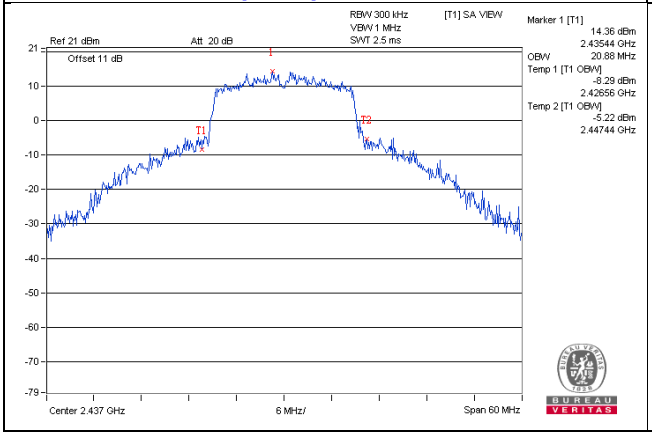
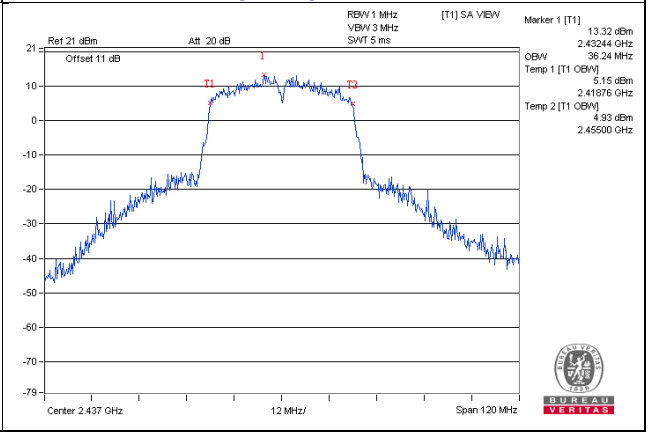
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	16.56	16.44
6	2437	21.48	18.60
11	2462	16.68	16.44

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	17.64	17.64
6	2437	20.88	18.72
11	2462	17.64	17.64

802.11n (HT40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
3	2422	36.24	36.24
6	2437	36.24	36.24
9	2452	36.24	36.24

Spectrum Plot of Worst Value	
802.11b / Chain 0 : CH 11	**802.11g / Chain 0 : CH6**
	
802.11n (HT20) / Chain 0 : CH6	**802.11n (HT40) / Chain 0 : CH6**
	

4.5 Conducted Output Power Measurement

4.5.1 Limits of Conducted Output Power Measurement

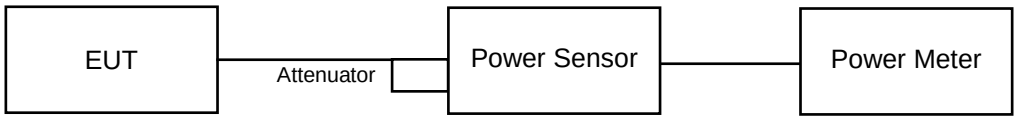
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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 $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

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 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as Item 4.3.6.

4.5.7 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	20.78	19.40	206.77	23.15	30.00	Pass
6	2437	21.63	20.26	251.716	24.01	30.00	Pass
11	2462	22.03	20.71	277.349	24.43	30.00	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	25.12	24.34	596.731	27.76	30.00	Pass
6	2437	26.57	26.26	876.611	29.43	30.00	Pass
11	2462	24.49	23.73	517.238	27.14	30.00	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	24.89	23.04	509.691	27.07	30	Pass
6	2437	26.48	26.08	850.14	29.29	30	Pass
11	2462	24.57	23.49	509.775	27.07	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	21.14	20.44	240.679	23.81	30	Pass
6	2437	24.59	23.48	510.584	27.08	30	Pass
9	2452	23.23	22.33	381.38	25.81	30	Pass

FOR AVERAGE POWER

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	18.40	17.22	121.906	20.86
6	2437	19.45	18.11	152.819	21.84
11	2462	19.80	18.47	165.806	22.20

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	17.28	16.12	94.382	19.75
6	2437	22.94	21.84	349.546	25.44
11	2462	16.51	15.61	81.163	19.09

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	16.28	15.27	76.113	18.81
6	2437	22.38	21.43	311.977	24.94
11	2462	16.53	15.70	82.132	19.15

802.11n (HT40)

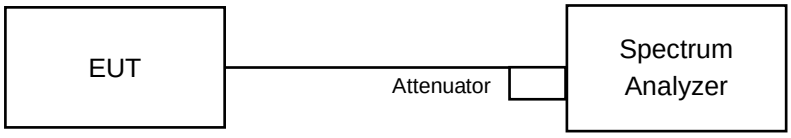
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	13.07	12.01	36.162	15.58
6	2437	17.37	16.25	96.746	19.86
9	2452	15.27	14.31	60.628	17.83

4.6 Power Spectral Density Measurement

4.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz.

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

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.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Same as Item 4.3.6

4.6.7 Test Results

802.11b

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	-7.74	3.01	-4.73	5.99	PASS
	6	2437	-6.44	3.01	-3.43	5.99	PASS
	11	2462	-5.67	3.01	-2.66	5.99	PASS
1	1	2412	-6.97	3.01	-3.96	5.99	PASS
	6	2437	-8.05	3.01	-5.04	5.99	PASS
	11	2462	-6.63	3.01	-3.62	5.99	PASS

NOTE: Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm.

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	-8.25	3.01	-5.24	5.99	PASS
	6	2437	-4.27	3.01	-1.26	5.99	PASS
	11	2462	-10.77	3.01	-7.76	5.99	PASS
1	1	2412	-9.59	3.01	-6.58	5.99	PASS
	6	2437	-5.86	3.01	-2.85	5.99	PASS
	11	2462	-10.83	3.01	-7.82	5.99	PASS

NOTE: Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm.

802.11n (HT20)

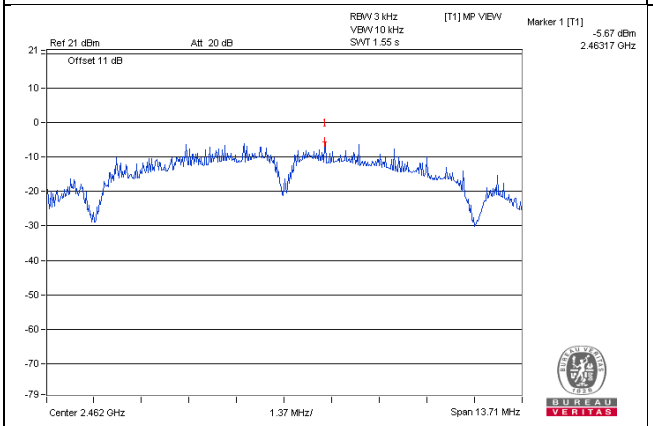
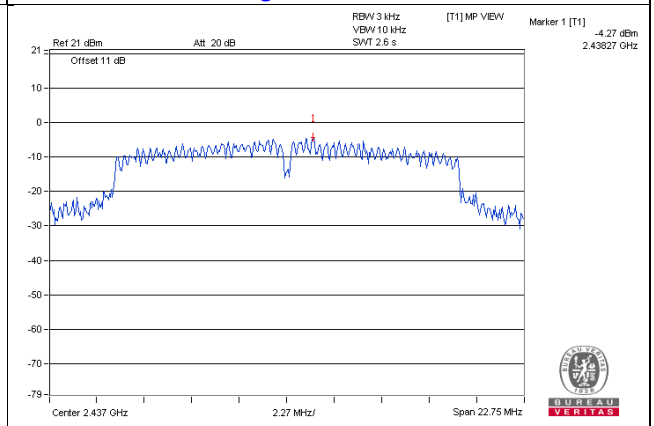
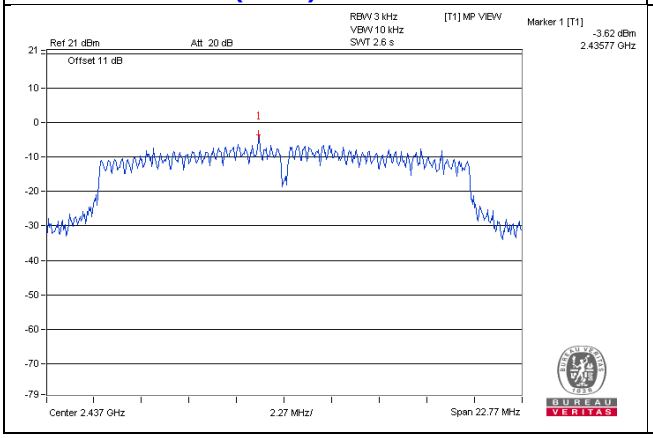
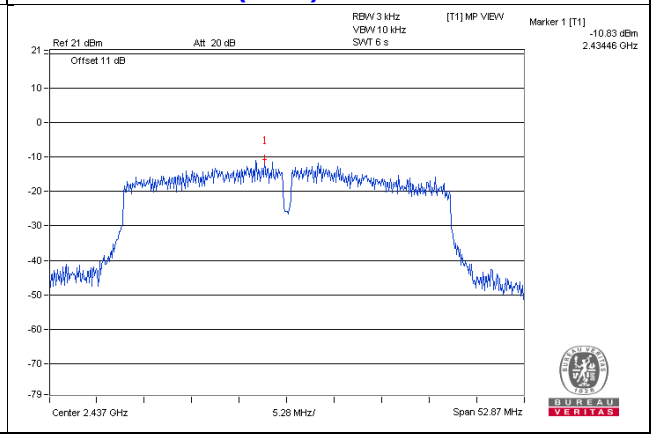
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-10.29	3.01	-7.28	5.99	PASS
	6	2437	-4.73	3.01	-1.72	5.99	PASS
	11	2462	-10.56	3.01	-7.55	5.99	PASS
1	1	2412	-11.38	3.01	-8.37	5.99	PASS
	6	2437	-3.62	3.01	-0.61	5.99	PASS
	11	2462	-9.94	3.01	-6.93	5.99	PASS

NOTE: Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm.

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	-15.10	3.01	-12.09	5.99	PASS
	6	2437	-11.21	3.01	-8.20	5.99	PASS
	9	2452	-12.57	3.01	-9.56	5.99	PASS
1	3	2422	-16.07	3.01	-13.06	5.99	PASS
	6	2437	-10.83	3.01	-7.82	5.99	PASS
	9	2452	-13.46	3.01	-10.45	5.99	PASS

NOTE: Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm.

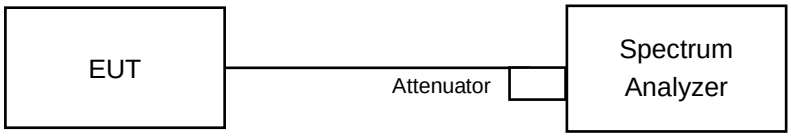
Spectrum Plot of Worst Value	
802.11b / Chain 0 : CH 11	**802.11g / Chain 0 : CH 6**
	
802.11n (HT20) / Chain 1 : CH 6	**802.11n (HT40) / Chain 1 : CH 6**
	

4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out of Band Emission Measurement

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

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 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.

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

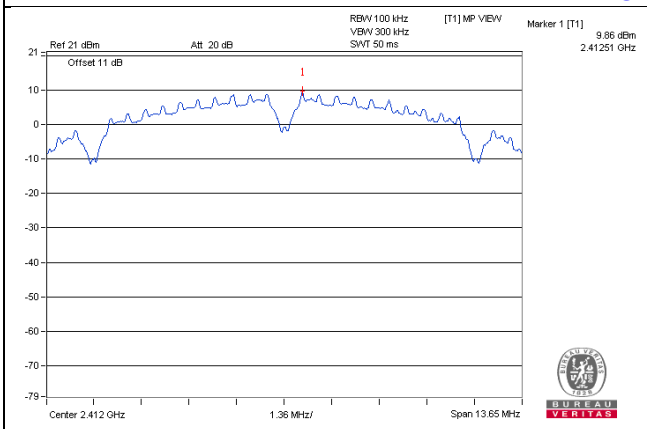
Same as Item 4.3.6

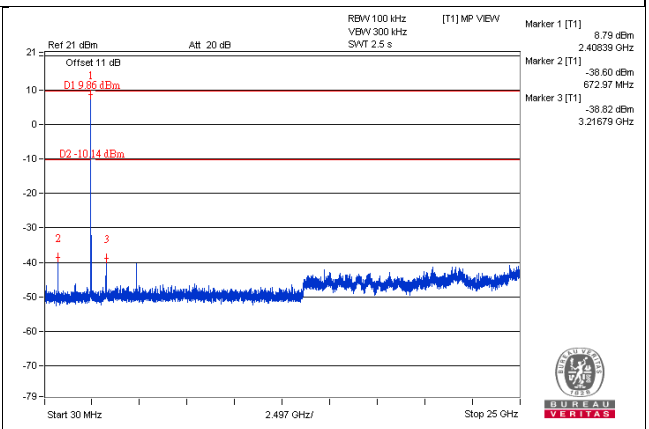
4.7.7 Test Results

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.

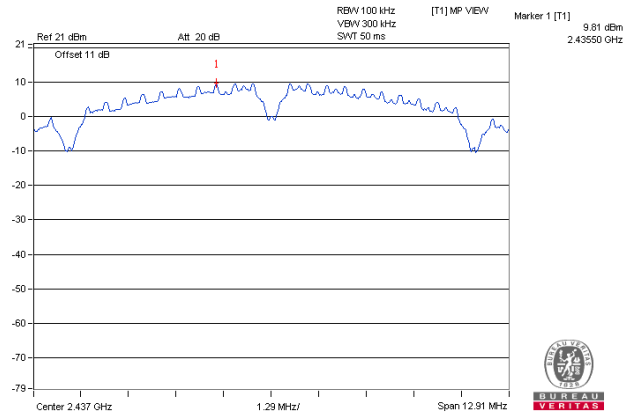
802.11b - Chain 0

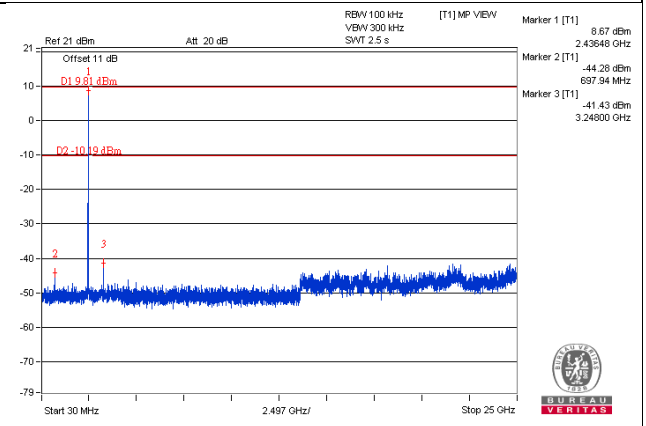
CH 1



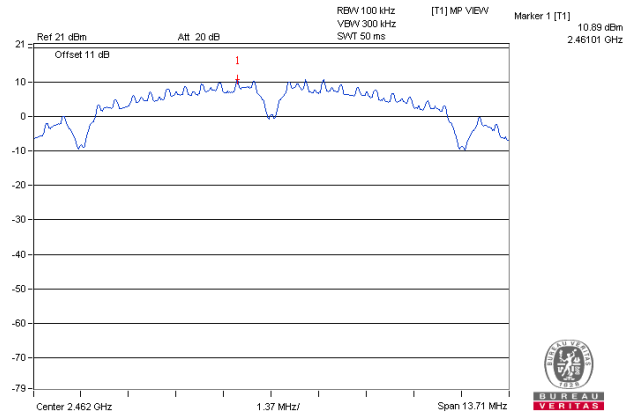


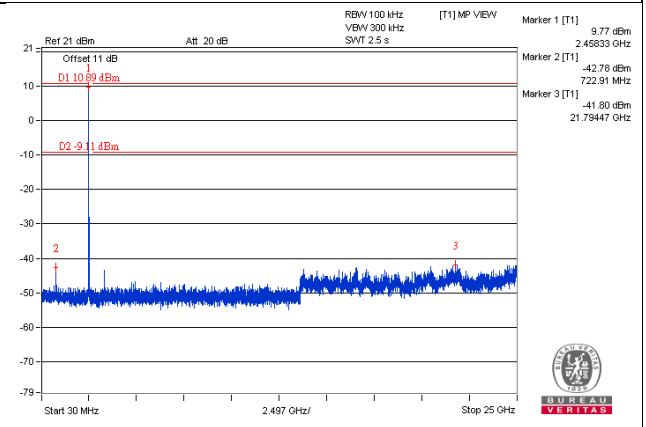
CH 6



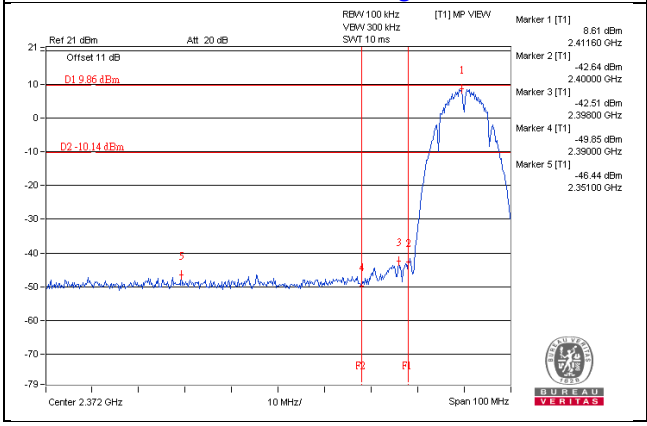


CH 11

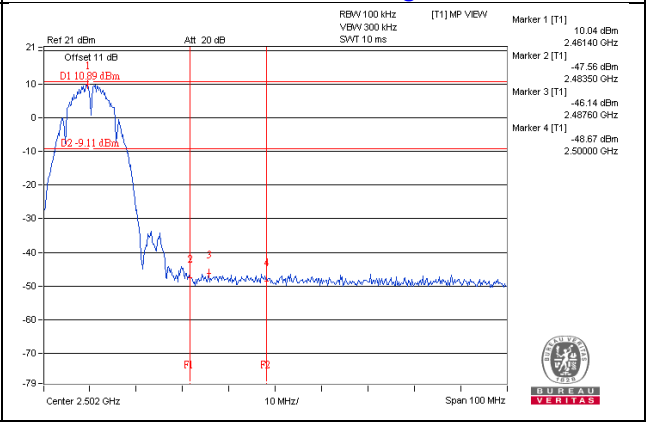




CH 1 Band edge

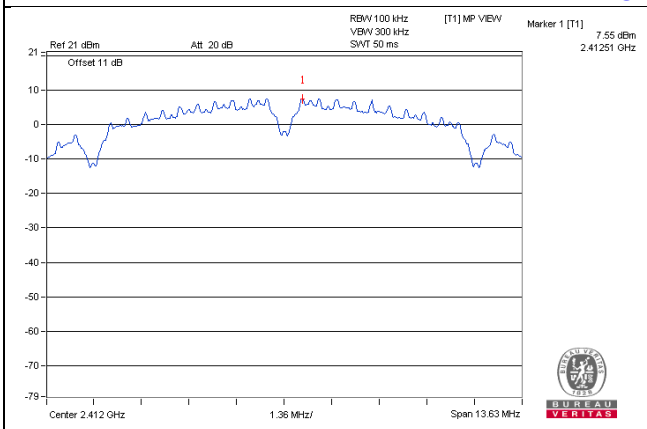


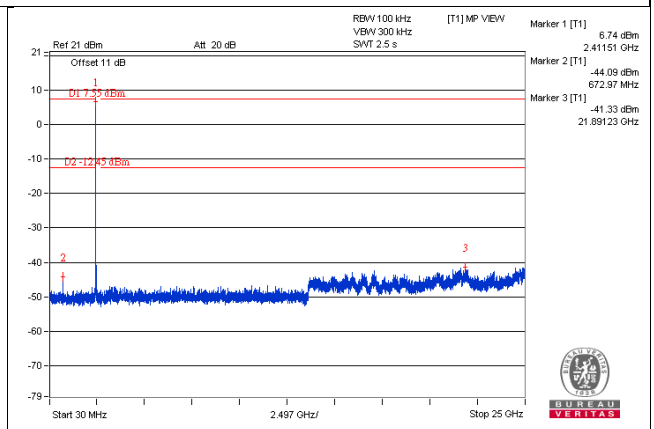
CH 11 Band edge



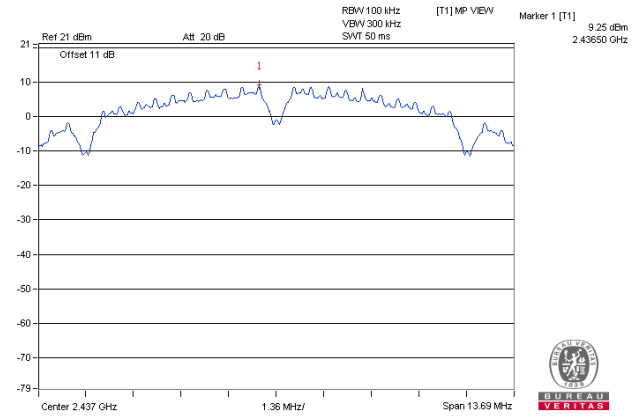
Chain 1

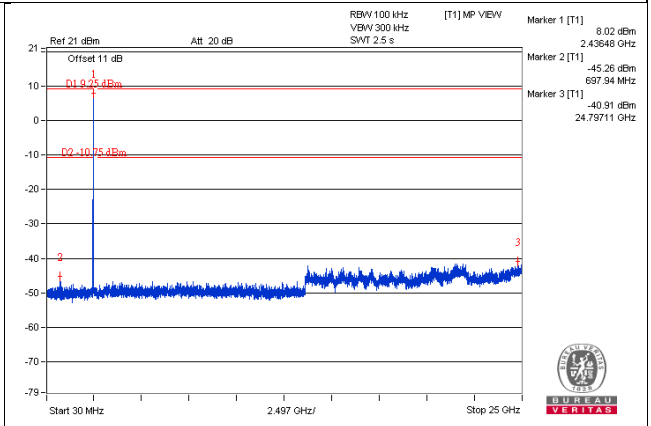
CH 1



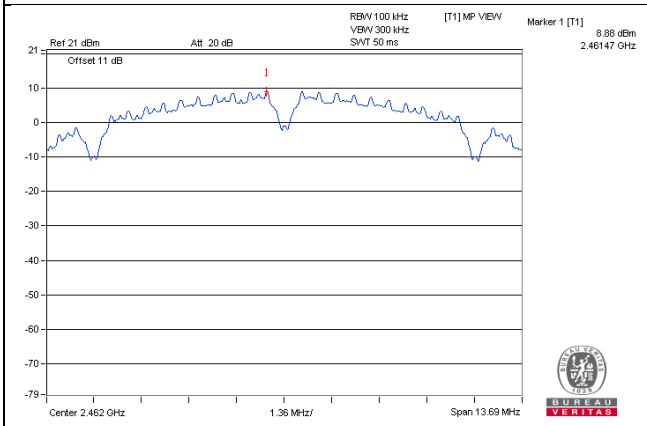


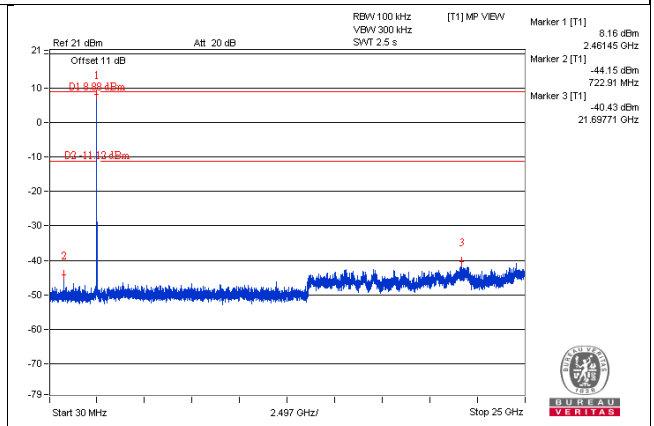
CH 6



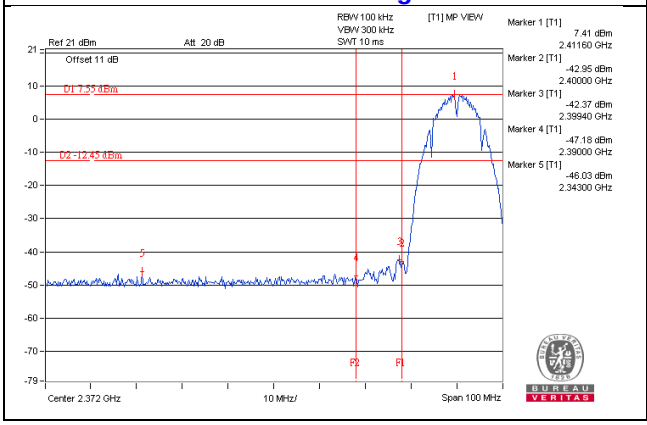


CH 11

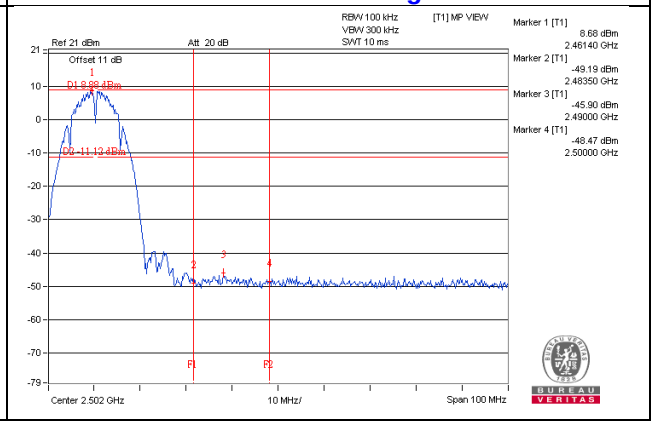




CH 1 Band edge

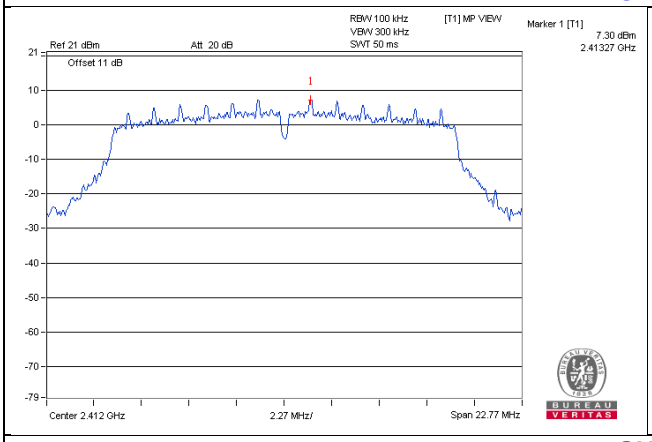


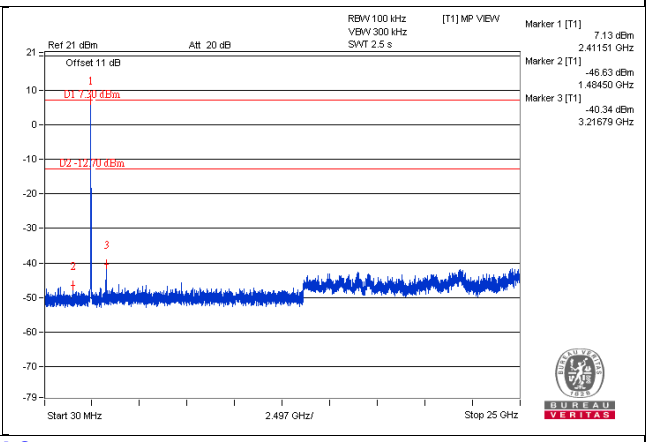
CH 11 Band edge



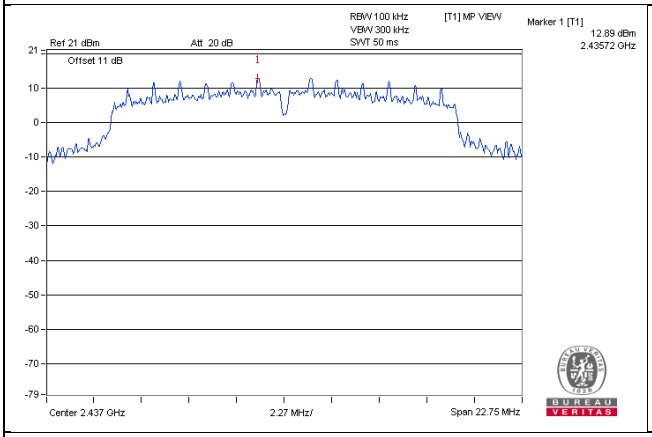
802.11g - Chain 0

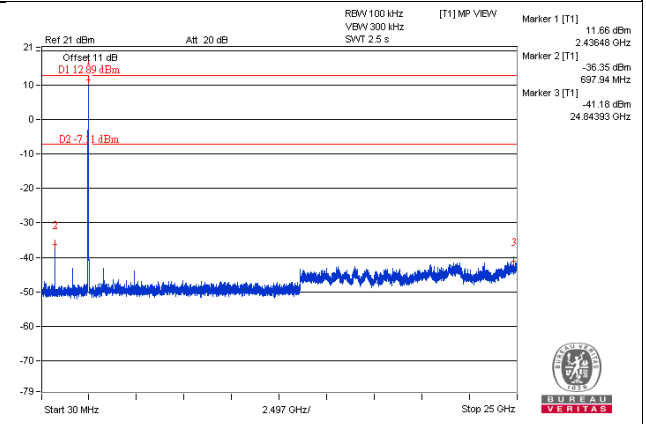
CH 1



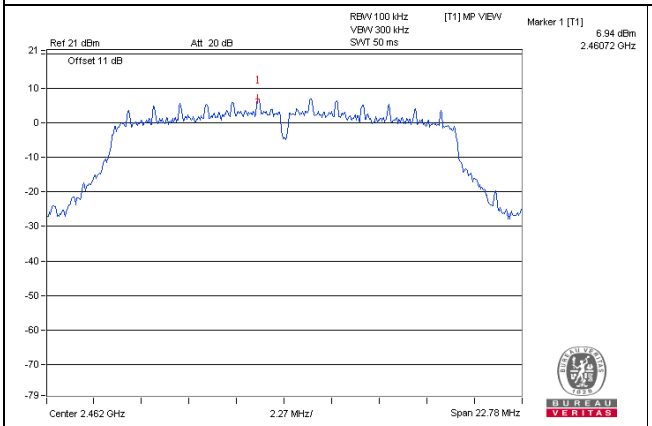


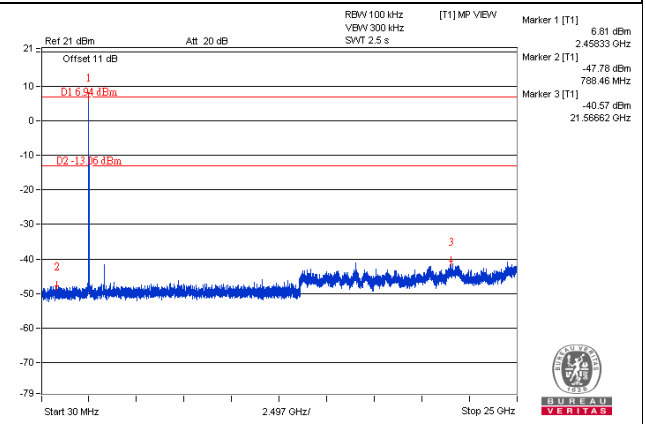
CH 6



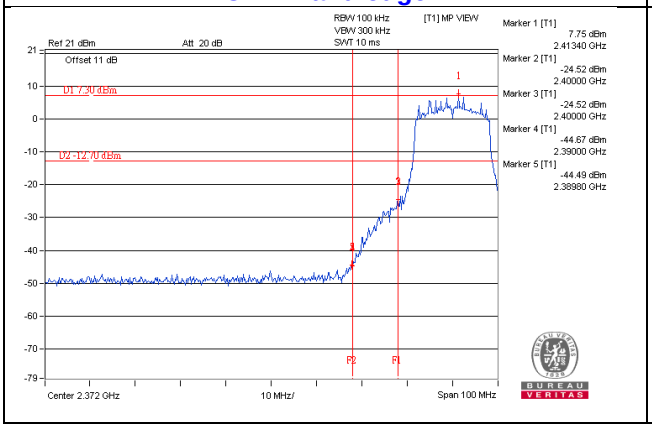


CH 11

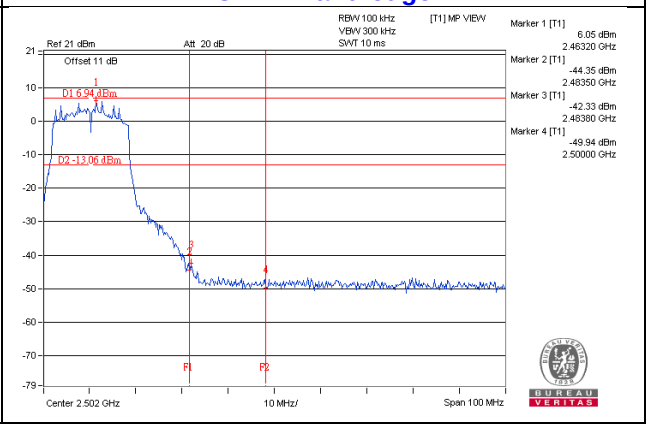




CH 1 Band edge

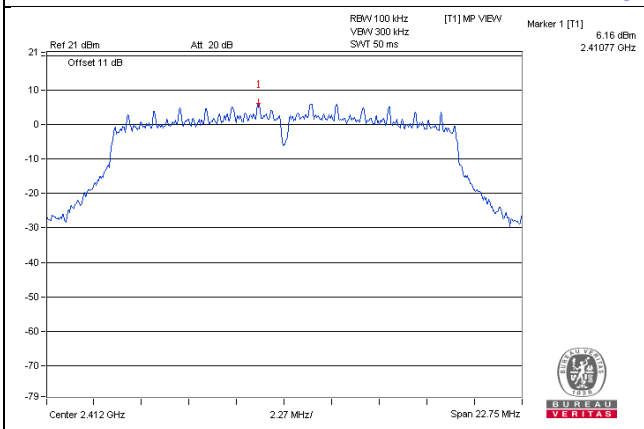


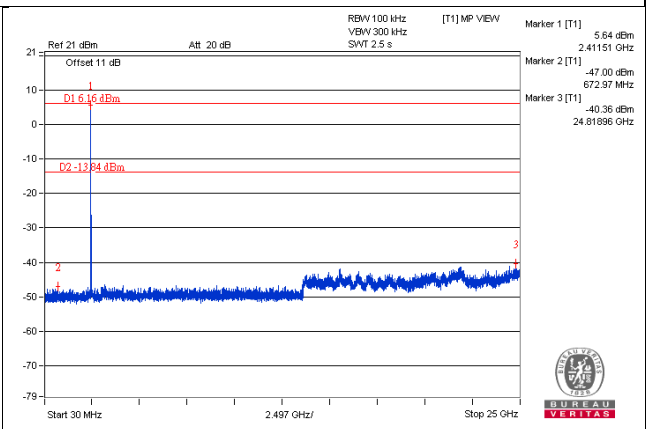
CH 11 Band edge



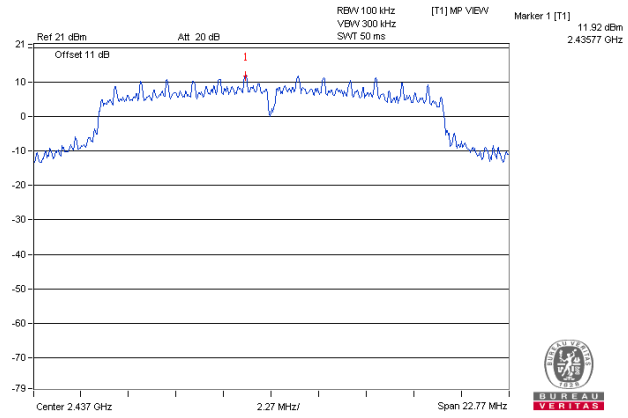
Chain 1

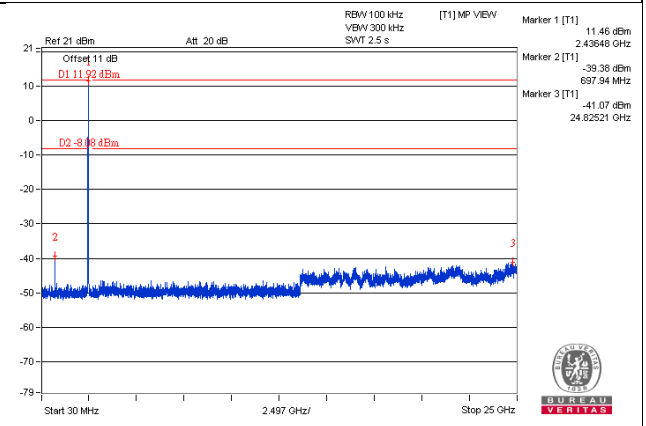
CH 1



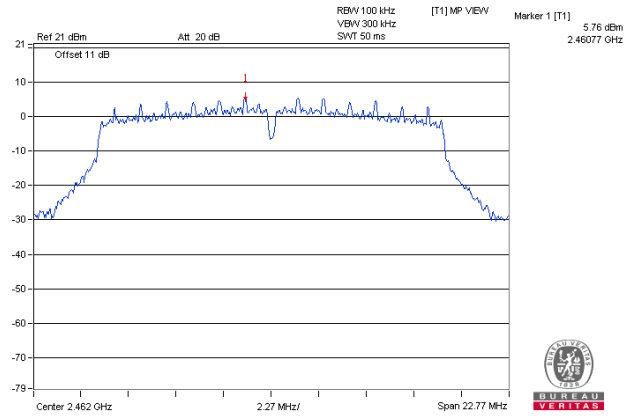


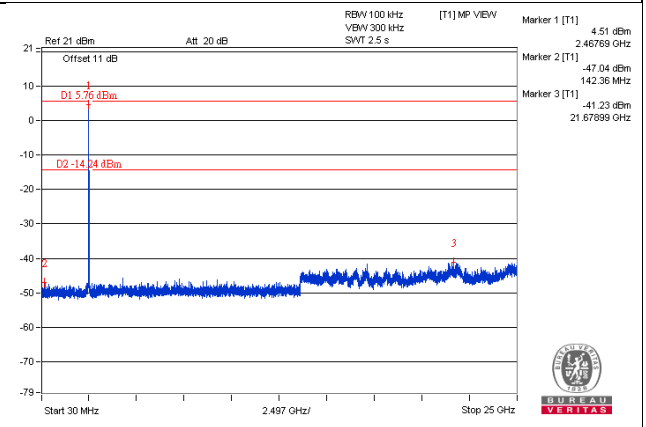
CH 6



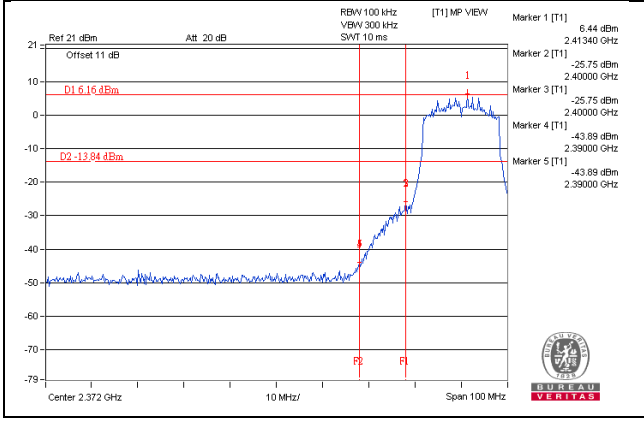


CH 11

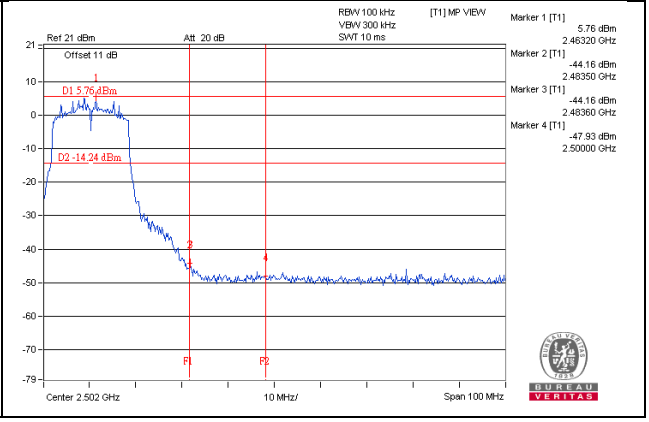




CH 1 Band edge

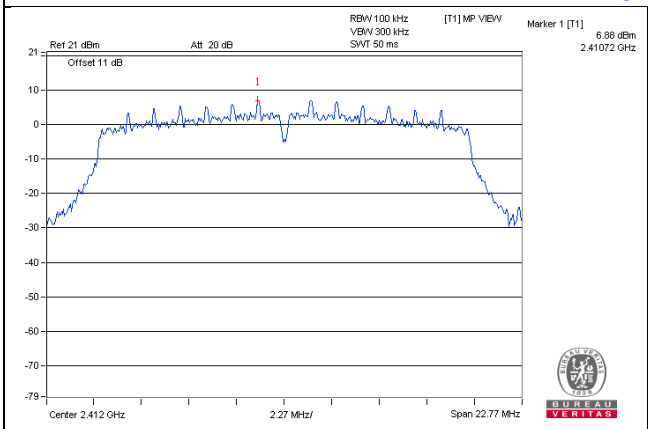


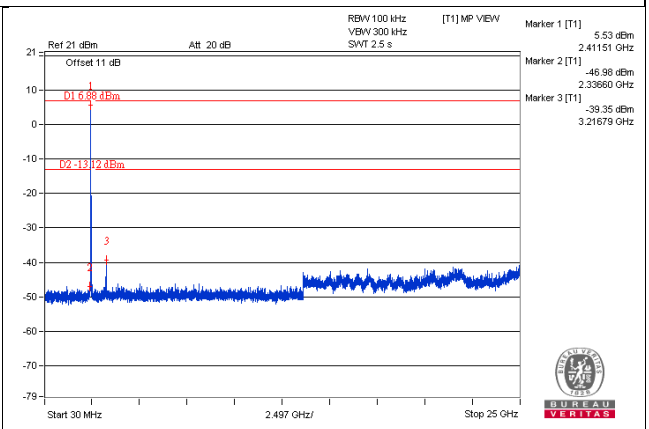
CH 11 Band edge



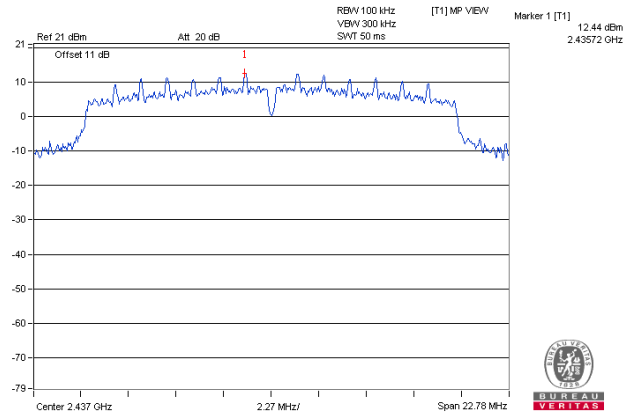
802.11n (HT20) - Chain 0

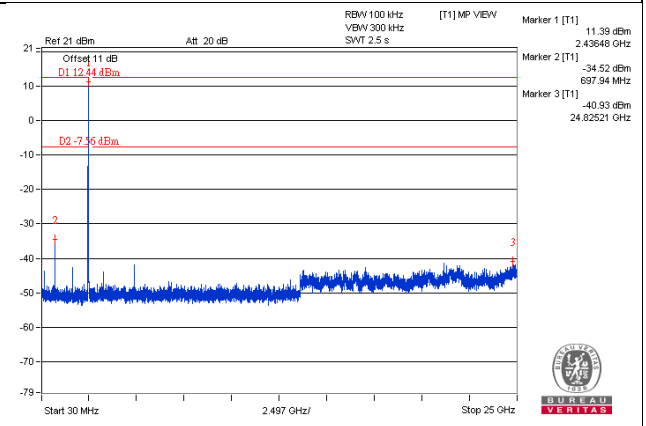
CH 1



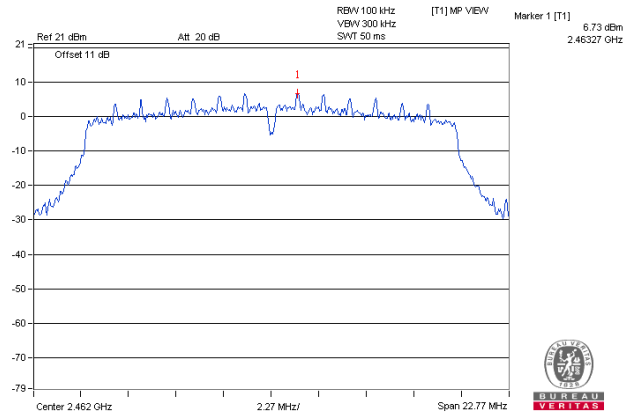


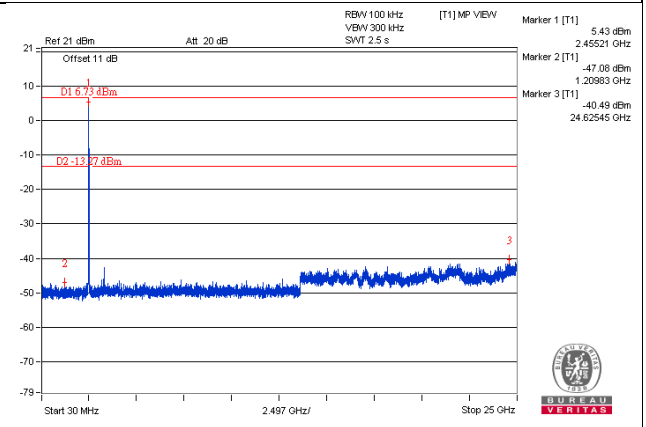
CH 6



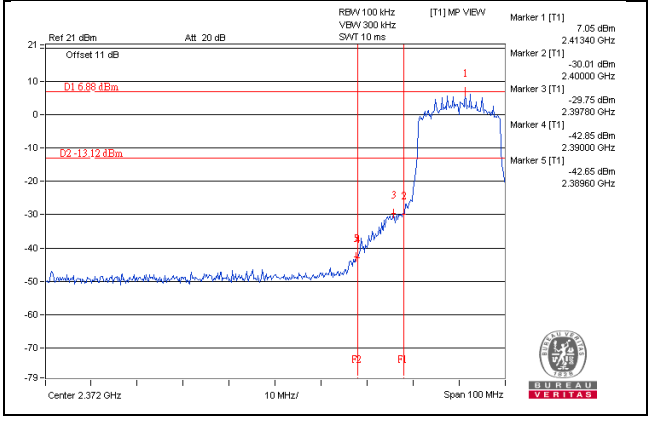


CH 11

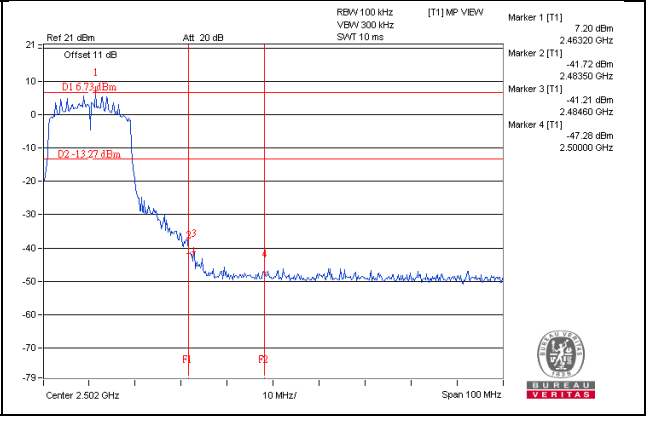




CH 1 Band edge

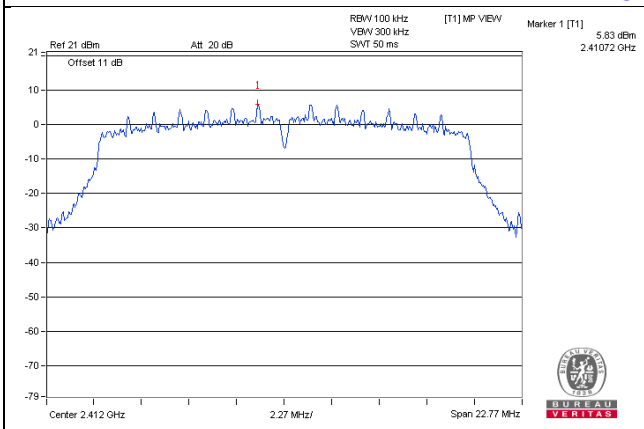


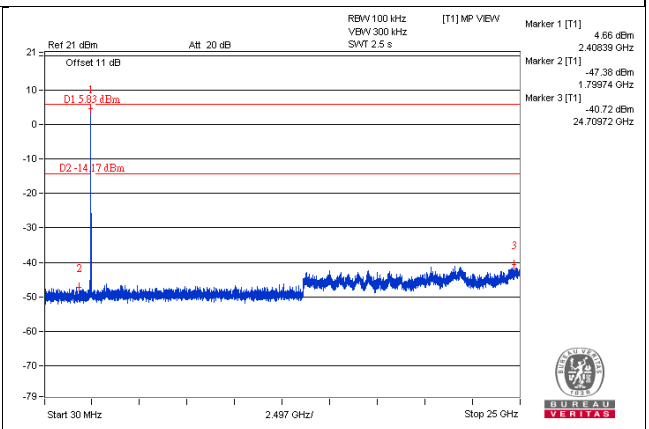
CH 11 Band edge



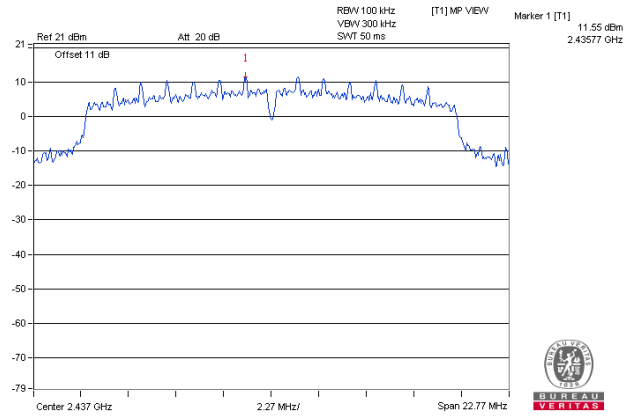
Chain 1

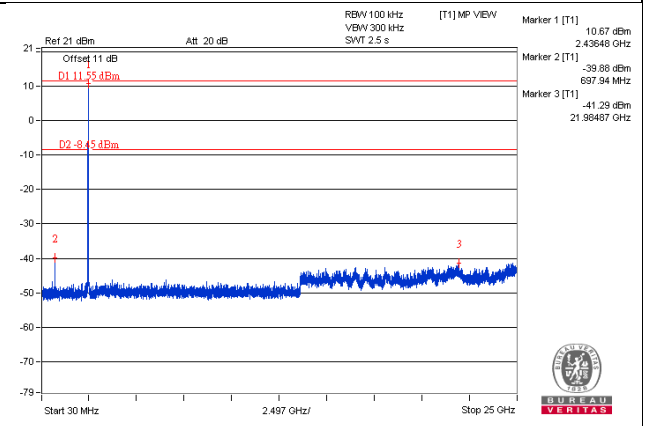
CH 1



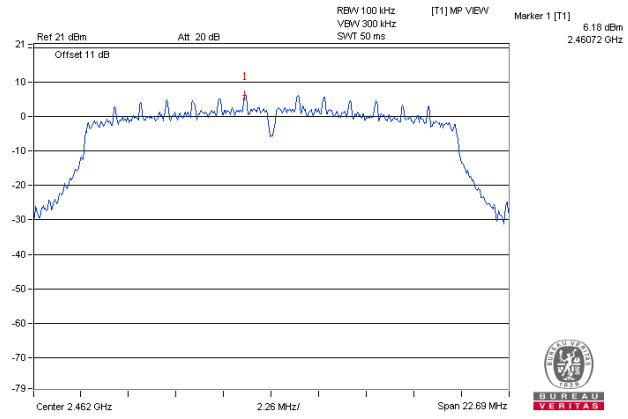


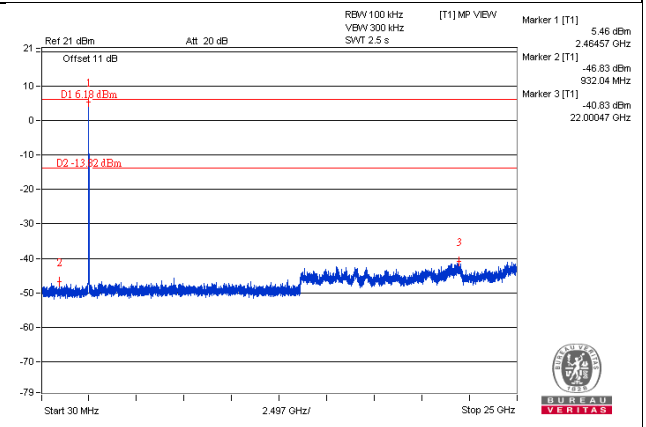
CH 6



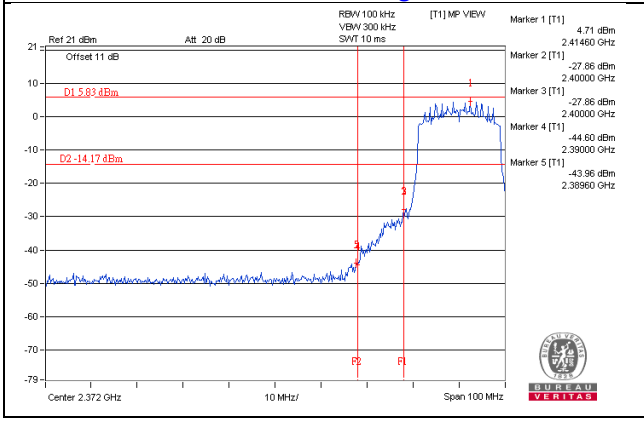


CH 11

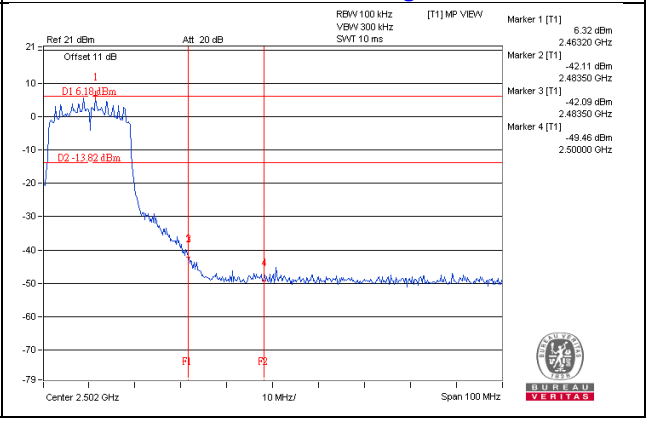




CH 1 Band edge

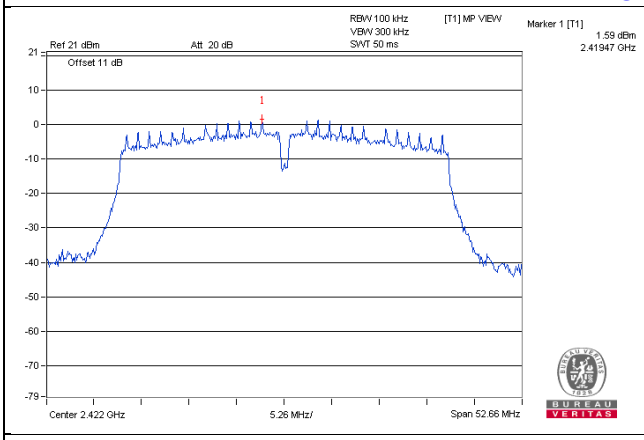


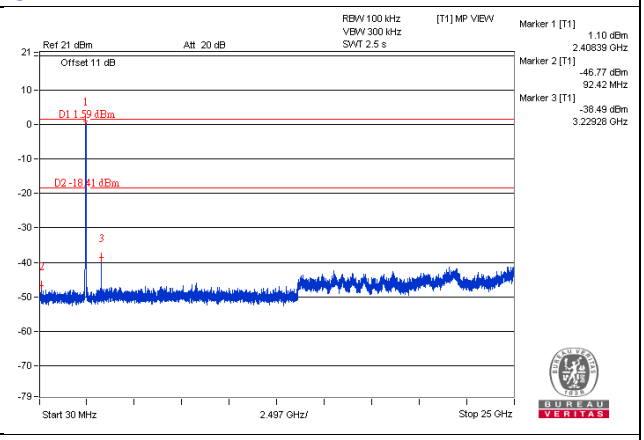
CH 11 Band edge



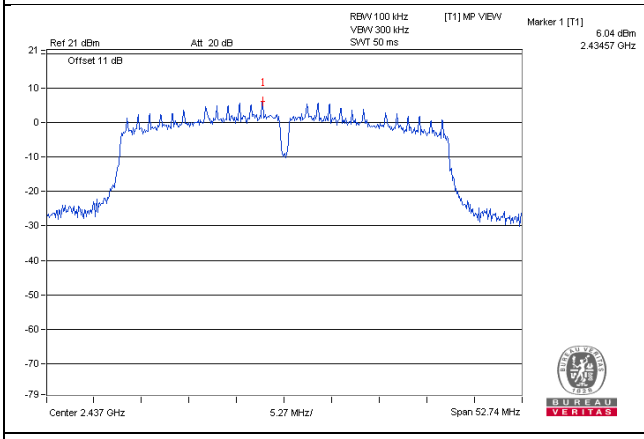
802.11n (HT40) - Chain 0

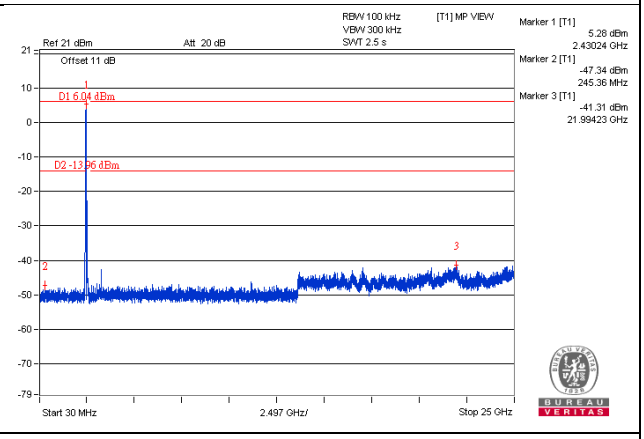
CH 3



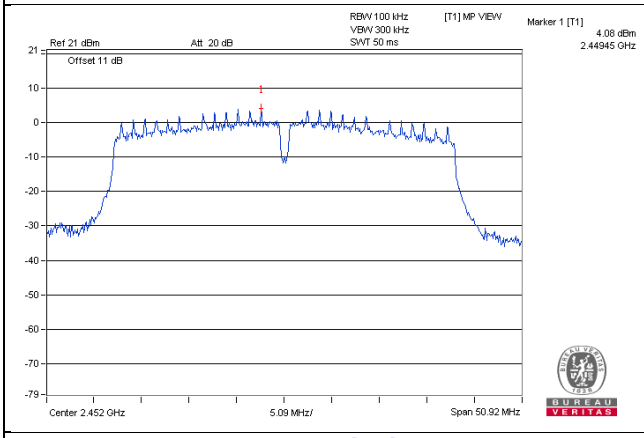


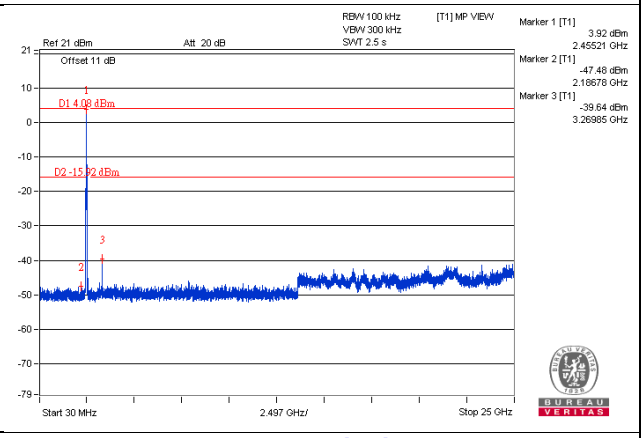
CH 6



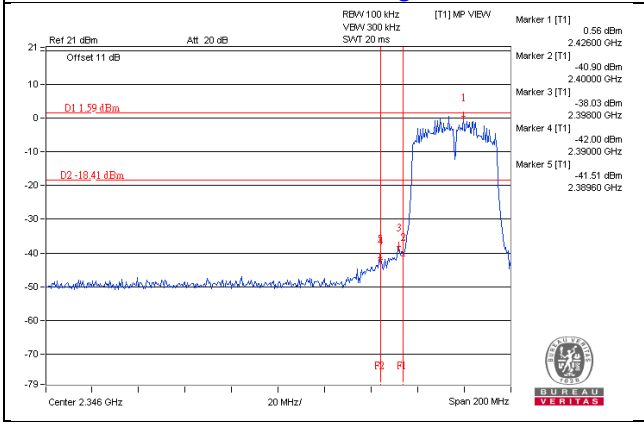


CH 9

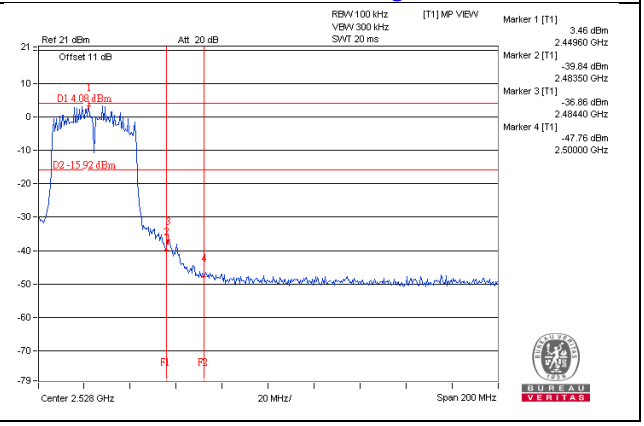




CH 3 Band edge

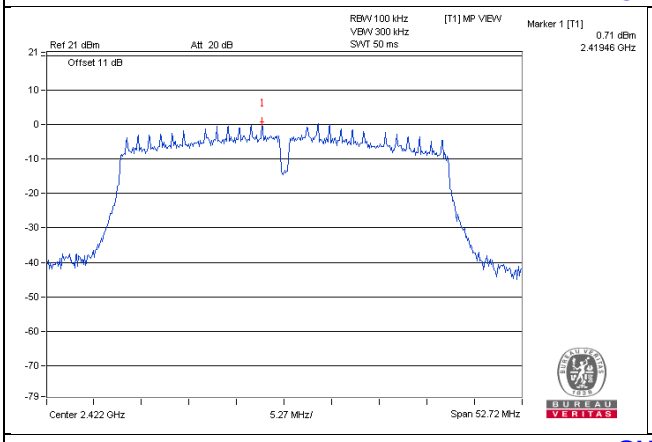


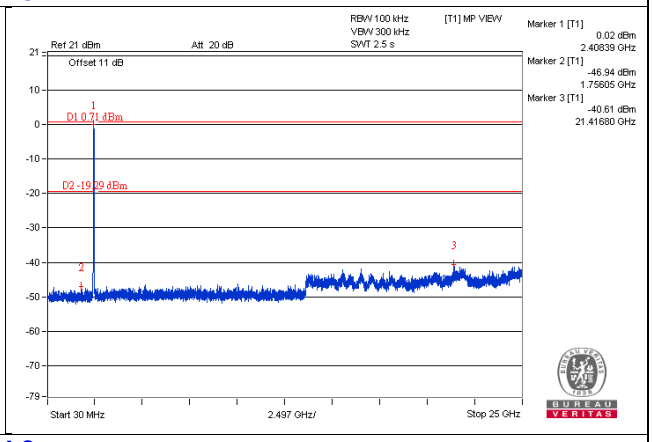
CH 9 Band edge



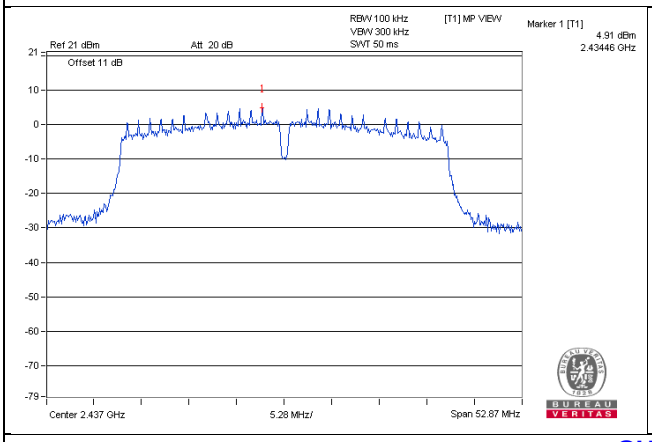
Chain 1

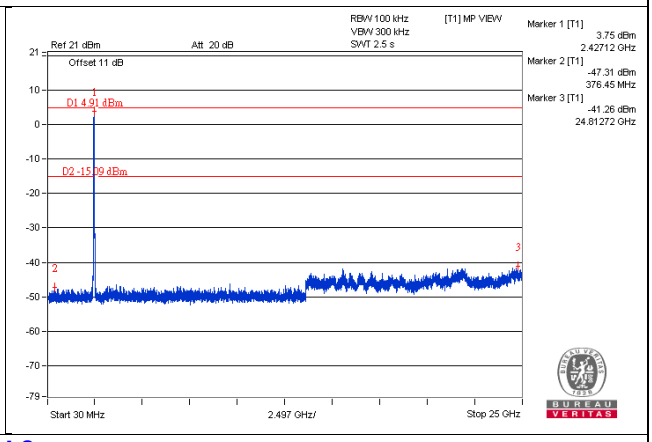
CH 3



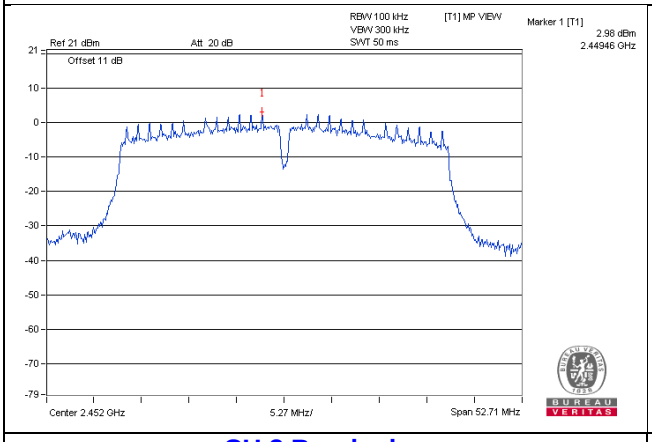


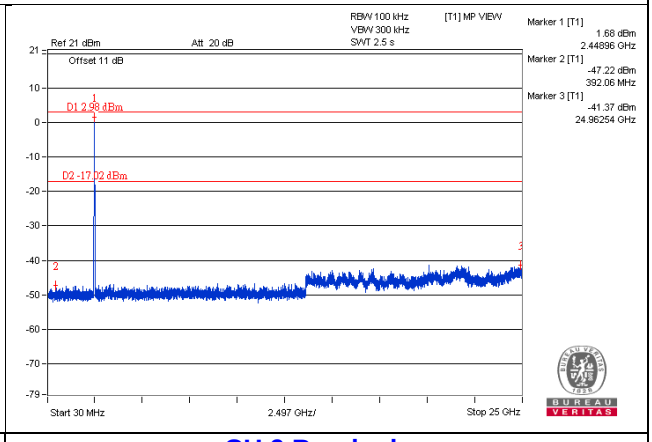
CH 6



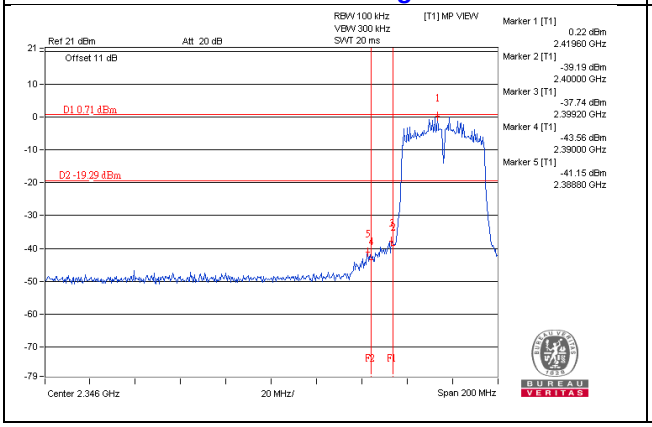


CH 9

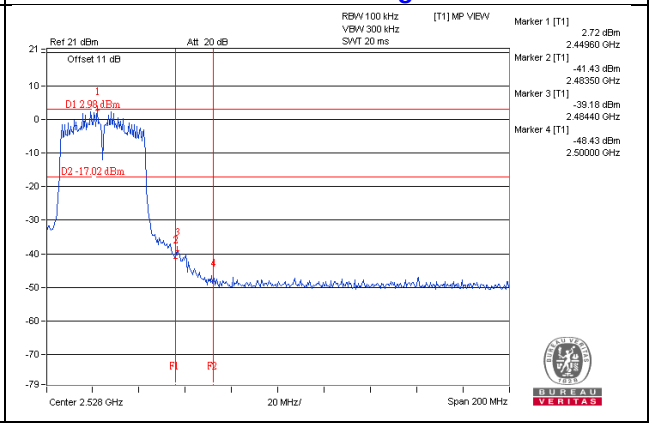




CH 3 Band edge



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 FCC recognized accredited test firms and accredited 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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