FCC Test Report

Report No.:	RF170613E01
FCC ID:	2AHKM-HTEMN3
Test Model:	HT-EMN3
Received Date:	June 13, 2017
Test Date:	July 13 to 31, 2017
Issued Date:	Aug. 11, 2017
Applicant:	Hitron Technologies Inc.
Address:	No.1-8, Li-Hsin 1st Rd. Hsinchu Science Park, Hsinchu 30078, Taiwan
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
RF170613E01	Original release.	Aug. 11, 2017

1 Certificate of Conformity

Product:	4x4 5G Wireless MoCA 2.0 Network Extender
Brand:	hitron
Test Model:	HT-EMN3
Sample Status:	ENGINEERING SAMPLE
Applicant:	Hitron Technologies Inc.
Test Date:	July 13 to 31, 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 : _____ , **Date:** Aug. 11, 2017

Wendy Wu / Specialist

Approved by : _____ , **Date:** Aug. 11, 2017

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 -13.7dB at 0.4625MHz.
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 2390MHz.
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 IPEX 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

Product	4x4 5G Wireless MoCA 2.0 Network Extender
Brand	hitron
Test Model	HT-EMN3
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 mode in 2.4GHz band
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b/g, 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:**684.125mW **5.18 ~ 5.24GHz:** 463.333mW **5.745 ~ 5.825GHz:** 793.302mW
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 EUT must be supplied with a power adapter as following table:

Brand	Model No.	Spec.
AOEM	ADS0248T-W120200	AC Input: 100-240V, 0.6A, 50/60Hz DC Output: 12V, 2.0A DC Output cable: 1.5m, Unshielded

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

Chain No.	Brand	Model	Antenna Gain (dBi)	Frequency range (MHz)	Antenna Type	Connecter Type	Cable Length
2G1	Walsin	393000015827	3.56	2400-2500	PCB	IPEX	185mm
2G2		393000015927	4.15	2400-2500	PCB	IPEX	100mm
5G1		393000016027	5.27	5150~5850	PCB	IPEX	135mm
5G2		393000016127	6.17	5150~5850	PCB	IPEX	185mm
5G3		393000016227	5.05	5150~5850	PCB	IPEX	110mm
5G4		393000016327	5.64	5150~5850	PCB	IPEX	60mm

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
802.11ac (VHT20)	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
802.11ac (VHT40)	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	4TX	4RX
802.11n (HT20)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
802.11n (HT40)	MCS 0~7	4TX	4RX
	MCS 8~15	4TX	4RX
	MCS 16~23	4TX	4RX
	MCS 24~31	4TX	4RX
802.11ac (VHT20)	MCS0~8 Nss=1	4TX	4RX
	MCS0~8 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~8 Nss=4	4TX	4RX
802.11ac (VHT40)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX
802.11ac (VHT80)	MCS0~9 Nss=1	4TX	4RX
	MCS0~9 Nss=2	4TX	4RX
	MCS0~9 Nss=3	4TX	4RX
	MCS0~9 Nss=4	4TX	4RX
Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report.			

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

3.2 Description of Test Modes

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

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

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

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

Radiated Emission Test (Above 1GHz):

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

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

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)
802.11g	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)
802.11g	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:

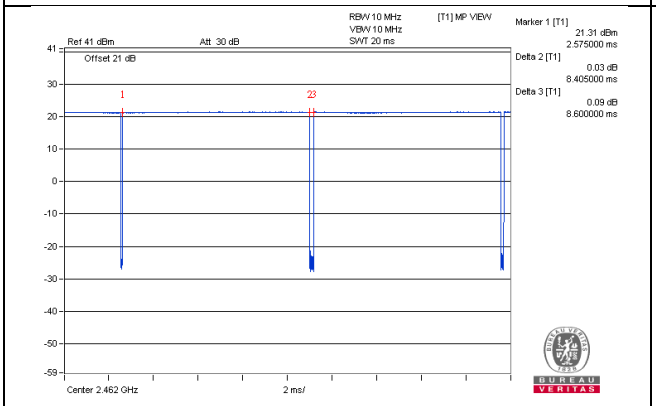
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	21deg. C, 64%RH	120Vac, 60Hz	Rey Chen
RE<1G	24deg. C, 70%RH	120Vac, 60Hz	Andy Ho
PLC	24deg. C, 66%RH	120Vac, 60Hz	Jyunchun Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 Duty Cycle of Test Signal

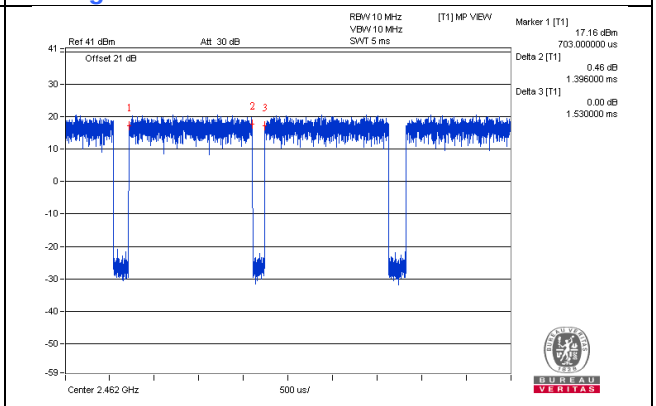
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 8.405/8.6 = 0.977, Duty factor = 10 * log(1/0.977) = 0.1
802.11g: Duty cycle = 1.396/1.53 = 0.912, Duty factor = 10 * log(1/0.912) = 0.4
802.11n (HT20): Duty cycle = 1.306/1.467 = 0.89, Duty factor = 10 * log(1/0.89) = 0.5
802.11n (HT40): Duty cycle = 0.647/0.745 = 0.868, Duty factor = 10 * log(1/0.868) = 0.61

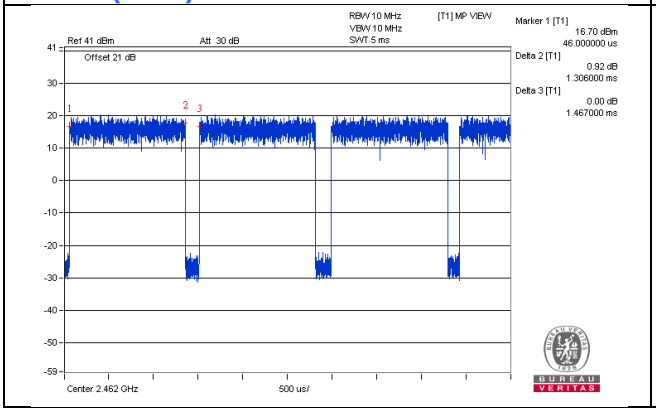
802.11b



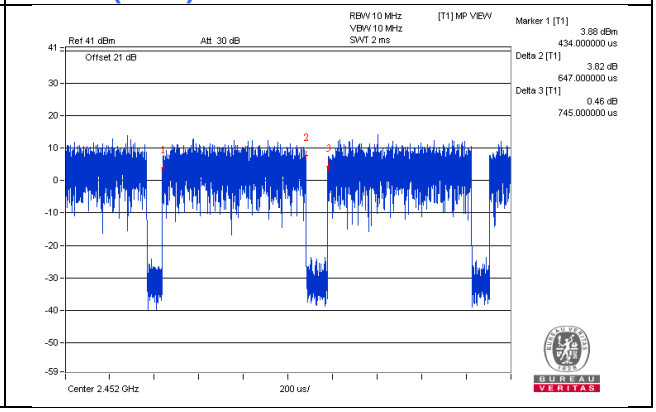
802.11g



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.

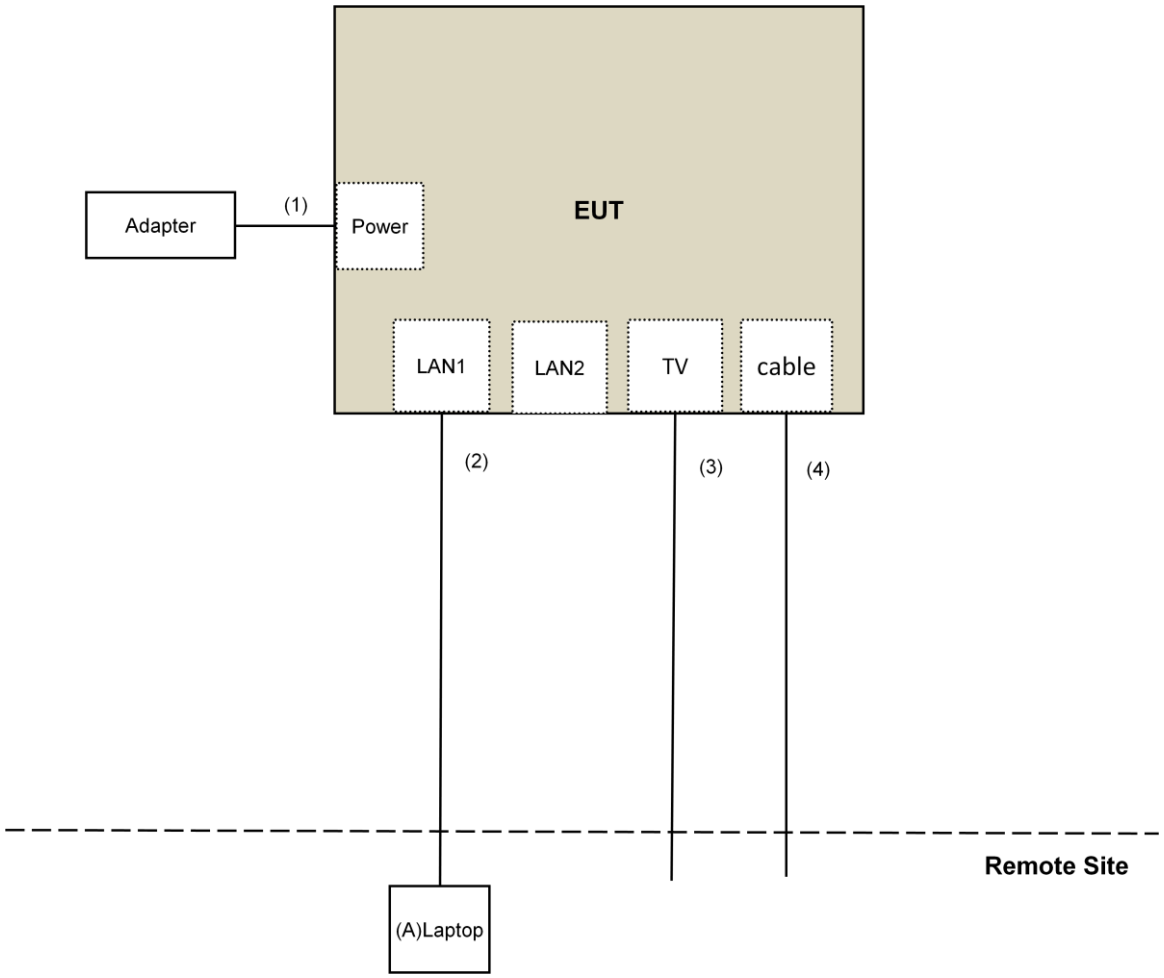
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab

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 Cable	1	1.5	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	Coaxial Cable	1	10	Yes	0	Provided by Lab
4.	Coaxial Cable	1	10	Yes	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 DTS Meas Guidance 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.

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 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 ReceiverKeysight	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. 10, 2016	Nov. 09, 2017
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. 05, 2016	Oct. 04, 2017
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	FSP40	100964	July 1, 2017	June 30, 2018
Power meter Anritsu	ML2495A	MY48250253	Dec. 21, 2016	Dec. 20, 2017
Power sensor Anritsu	MA2411B	1014008	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: July 19 to 27, 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:

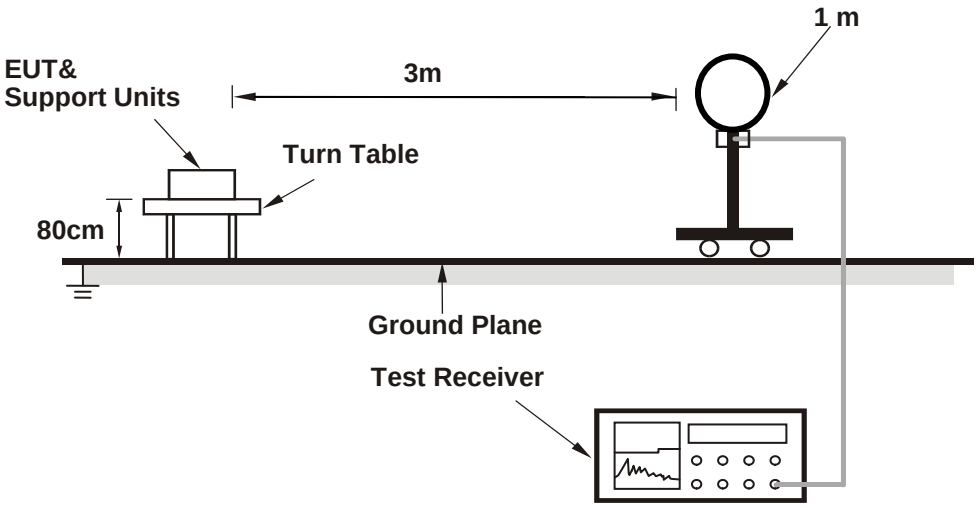
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

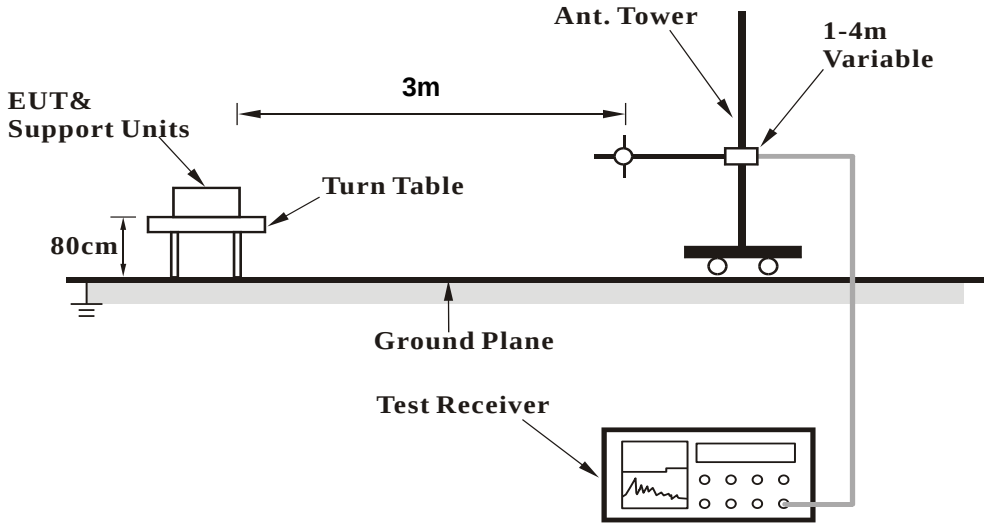
No deviation.

4.1.5 Test Setup

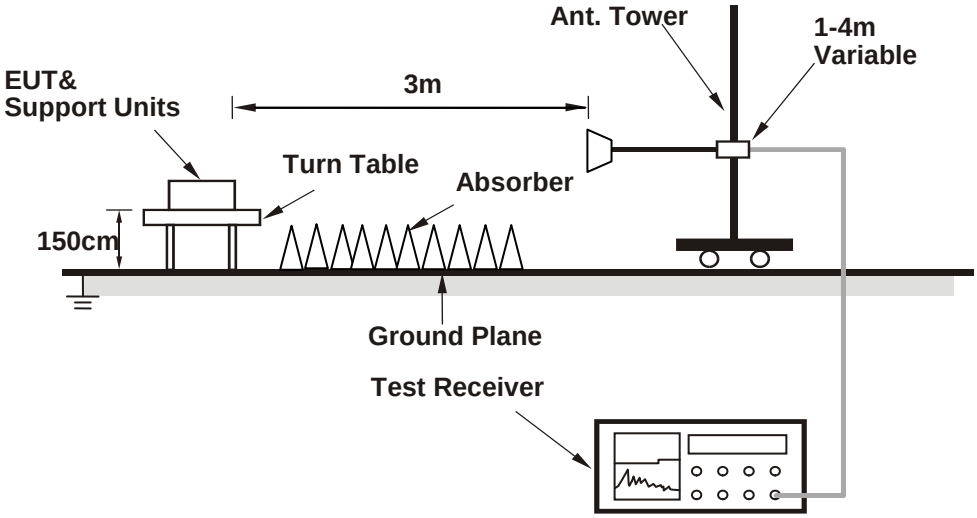
For Radiated emission below 30MHz



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_Dbg.exe[Ver 0.0.0.72]) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data：

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.8 PK	74.0	-12.2	1.73 H	255	63.1	-1.3
2	2390.00	53.5 AV	54.0	-0.5	1.73 H	255	54.8	-1.3
3	*2412.00	112.3 PK			1.73 H	255	113.4	-1.1
4	*2412.00	110.1 AV			1.73 H	255	111.2	-1.1
5	4824.00	48.3 PK	74.0	-25.7	1.29 H	232	45.1	3.2
6	4824.00	46.1 AV	54.0	-7.9	1.29 H	232	42.9	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	58.4 PK	74.0	-15.6	1.50 V	281	59.7	-1.3
2	2390.00	47.3 AV	54.0	-6.7	1.50 V	281	48.6	-1.3
3	*2412.00	109.2 PK			1.50 V	281	110.3	-1.1
4	*2412.00	107.0 AV			1.50 V	281	108.1	-1.1
5	4824.00	49.3 PK	74.0	-24.7	3.89 V	3	46.1	3.2
6	4824.00	47.5 AV	54.0	-6.5	3.89 V	3	44.3	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	2390.00	59.4 PK	74.0	-14.6	1.68 H	255	60.7	-1.3
2	2390.00	50.9 AV	54.0	-3.1	1.68 H	255	52.2	-1.3
3	*2437.00	115.5 PK			1.68 H	255	116.7	-1.2
4	*2437.00	113.3 AV			1.68 H	255	114.5	-1.2
5	2483.50	58.3 PK	74.0	-15.7	1.68 H	255	59.3	-1.0
6	2483.50	47.1 AV	54.0	-6.9	1.68 H	255	48.1	-1.0
7	4874.00	48.3 PK	74.0	-25.7	1.24 H	248	45.0	3.3
8	4874.00	46.1 AV	54.0	-7.9	1.24 H	248	42.8	3.3
9	7311.00	50.9 PK	74.0	-23.1	1.19 H	211	41.1	9.8
10	7311.00	44.7 AV	54.0	-9.3	1.19 H	211	34.9	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	56.1 PK	74.0	-17.9	1.45 V	277	57.4	-1.3
2	2390.00	44.5 AV	54.0	-9.5	1.45 V	277	45.8	-1.3
3	*2437.00	112.3 PK			1.45 V	277	113.5	-1.2
4	*2437.00	110.2 AV			1.45 V	277	111.4	-1.2
5	2483.50	55.0 PK	74.0	-19.0	1.45 V	277	56.0	-1.0
6	2483.50	41.0 AV	54.0	-13.0	1.45 V	277	42.0	-1.0
7	4874.00	49.1 PK	74.0	-24.9	3.93 V	2	45.8	3.3
8	4874.00	47.2 AV	54.0	-6.8	3.93 V	2	43.9	3.3
9	7311.00	51.9 PK	74.0	-22.1	1.04 V	149	42.1	9.8
10	7311.00	46.1 AV	54.0	-7.9	1.04 V	149	36.3	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 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	113.7 PK			1.68 H	255	114.8	-1.1
2	*2462.00	111.4 AV			1.68 H	255	112.5	-1.1
3	2483.50	60.7 PK	74.0	-13.3	1.68 H	255	61.7	-1.0
4	2483.50	53.2 AV	54.0	-0.8	1.68 H	255	54.2	-1.0
5	4924.00	48.3 PK	74.0	-25.7	1.27 H	240	44.8	3.5
6	4924.00	46.0 AV	54.0	-8.0	1.27 H	240	42.5	3.5
7	7386.00	50.8 PK	74.0	-23.2	1.17 H	225	40.9	9.9
8	7386.00	44.4 AV	54.0	-9.6	1.17 H	225	34.5	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	110.4 PK			1.46 V	267	111.5	-1.1
2	*2462.00	108.2 AV			1.46 V	267	109.3	-1.1
3	2483.50	57.6 PK	74.0	-16.4	1.46 V	267	58.6	-1.0
4	2483.50	47.1 AV	54.0	-6.9	1.46 V	267	48.1	-1.0
5	4924.00	49.1 PK	74.0	-24.9	3.97 V	15	45.6	3.5
6	4924.00	47.4 AV	54.0	-6.6	3.97 V	15	43.9	3.5
7	7386.00	51.6 PK	74.0	-22.4	1.03 V	140	41.7	9.9
8	7386.00	45.8 AV	54.0	-8.2	1.03 V	140	35.9	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	72.7 PK	74.0	-1.3	1.68 H	278	74.0	-1.3
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.68 H**	**278**	**55.2**	**-1.3**
3	*2412.00	114.1 PK			1.68 H	278	115.2	-1.1
4	*2412.00	102.8 AV			1.68 H	278	103.9	-1.1
5	4824.00	40.5 PK	74.0	-33.5	1.26 H	26	37.3	3.2
6	4824.00	28.0 AV	54.0	-26.0	1.26 H	26	24.8	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	69.5 PK	74.0	-4.5	1.49 V	260	70.8	-1.3
2	2390.00	48.3 AV	54.0	-5.7	1.49 V	260	49.6	-1.3
3	*2412.00	111.0 PK			1.49 V	260	112.1	-1.1
4	*2412.00	99.5 AV			1.49 V	260	100.6	-1.1
5	4824.00	42.0 PK	74.0	-32.0	3.97 V	10	38.8	3.2
6	4824.00	29.4 AV	54.0	-24.6	3.97 V	10	26.2	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) 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	68.8 PK	74.0	-5.2	1.42 H	278	70.1	-1.3
2	2390.00	52.3 AV	54.0	-1.7	1.42 H	278	53.6	-1.3
3	*2437.00	119.4 PK			1.42 H	278	120.6	-1.2
4	*2437.00	108.7 AV			1.42 H	278	109.9	-1.2
5	2483.50	64.1 PK	74.0	-9.9	1.42 H	278	65.1	-1.0
6	2483.50	50.1 AV	54.0	-3.9	1.42 H	278	51.1	-1.0
7	4874.00	41.2 PK	74.0	-32.8	1.24 H	18	37.9	3.3
8	4874.00	28.5 AV	54.0	-25.5	1.24 H	18	25.2	3.3
9	7311.00	47.1 PK	74.0	-26.9	1.19 H	212	37.3	9.8
10	7311.00	34.1 AV	54.0	-19.9	1.19 H	212	24.3	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	1.53 V	267	66.8	-1.3
2	2390.00	48.1 AV	54.0	-5.9	1.53 V	267	49.4	-1.3
3	*2437.00	116.3 PK			1.53 V	267	117.5	-1.2
4	*2437.00	105.5 AV			1.53 V	267	106.7	-1.2
5	2483.50	60.8 PK	74.0	-13.2	1.53 V	267	61.8	-1.0
6	2483.50	46.0 AV	54.0	-8.0	1.53 V	267	47.0	-1.0
7	4874.00	41.8 PK	74.0	-32.2	3.93 V	4	38.5	3.3
8	4874.00	29.2 AV	54.0	-24.8	3.93 V	4	25.9	3.3
9	7311.00	50.3 PK	74.0	-23.7	1.04 V	113	40.5	9.8
10	7311.00	37.3 AV	54.0	-16.7	1.04 V	113	27.5	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	114.2 PK			1.68 H	278	115.3	-1.1
2	*2462.00	103.3 AV			1.68 H	278	104.4	-1.1
3	2483.50	73.7 PK	74.0	-0.3	1.68 H	278	74.7	-1.0
4	2483.50	53.6 AV	54.0	-0.4	1.68 H	278	54.6	-1.0
5	4924.00	41.2 PK	74.0	-32.8	1.21 H	4	37.7	3.5
6	4924.00	28.3 AV	54.0	-25.7	1.21 H	4	24.8	3.5
7	7386.00	47.5 PK	74.0	-26.5	1.16 H	221	37.6	9.9
8	7386.00	34.2 AV	54.0	-19.8	1.16 H	221	24.3	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	111.1 PK			1.56 V	259	112.2	-1.1
2	*2462.00	100.1 AV			1.56 V	259	101.2	-1.1
3	2483.50	70.5 PK	74.0	-3.5	1.56 V	259	71.5	-1.0
4	2483.50	49.2 AV	54.0	-4.8	1.56 V	259	50.2	-1.0
5	4924.00	42.4 PK	74.0	-31.6	3.95 V	5	38.9	3.5
6	4924.00	29.6 AV	54.0	-24.4	3.95 V	5	26.1	3.5
7	7386.00	50.9 PK	74.0	-23.1	1.06 V	101	41.0	9.9
8	7386.00	37.8 AV	54.0	-16.2	1.06 V	101	27.9	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	71.9 PK	74.0	-2.1	1.42 H	278	73.2	-1.3
2	2390.00	53.6 AV	54.0	-0.4	1.42 H	278	54.9	-1.3
3	*2412.00	113.6 PK			1.42 H	278	114.7	-1.1
4	*2412.00	102.2 AV			1.42 H	278	103.3	-1.1
5	4824.00	41.6 PK	74.0	-32.4	1.14 H	3	38.4	3.2
6	4824.00	28.5 AV	54.0	-25.5	1.14 H	3	25.3	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	68.5 PK	74.0	-5.5	1.60 V	255	69.8	-1.3
2	2390.00	49.1 AV	54.0	-4.9	1.60 V	255	50.4	-1.3
3	*2412.00	110.3 PK			1.60 V	255	111.4	-1.1
4	*2412.00	99.0 AV			1.60 V	255	100.1	-1.1
5	4824.00	42.9 PK	74.0	-31.1	3.96 V	8	39.7	3.2
6	4824.00	30.4 AV	54.0	-23.6	3.96 V	8	27.2	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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.9 PK	74.0	-6.1	1.41 H	277	69.2	-1.3
2	2390.00	52.9 AV	54.0	-1.1	1.41 H	277	54.2	-1.3
3	*2437.00	119.2 PK			1.41 H	277	120.4	-1.2
4	*2437.00	108.7 AV			1.41 H	277	109.9	-1.2
5	2483.50	65.7 PK	74.0	-8.3	1.41 H	277	66.7	-1.0
6	2483.50	50.7 AV	54.0	-3.3	1.41 H	277	51.7	-1.0
7	4874.00	41.2 PK	74.0	-32.8	1.18 H	7	37.9	3.3
8	4874.00	28.1 AV	54.0	-25.9	1.18 H	7	24.8	3.3
9	7311.00	47.6 PK	74.0	-26.4	1.12 H	221	37.8	9.8
10	7311.00	34.3 AV	54.0	-19.7	1.12 H	221	24.5	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	63.7 PK	74.0	-10.3	1.60 V	245	65.0	-1.3
2	2390.00	48.3 AV	54.0	-5.7	1.60 V	245	49.6	-1.3
3	*2437.00	115.9 PK			1.60 V	245	117.1	-1.2
4	*2437.00	105.2 AV			1.60 V	245	106.4	-1.2
5	2483.50	61.3 PK	74.0	-12.7	1.60 V	245	62.3	-1.0
6	2483.50	46.1 AV	54.0	-7.9	1.60 V	245	47.1	-1.0
7	4874.00	42.8 PK	74.0	-31.2	3.91 V	16	39.5	3.3
8	4874.00	30.0 AV	54.0	-24.0	3.91 V	16	26.7	3.3
9	7311.00	50.8 PK	74.0	-23.2	1.09 V	98	41.0	9.8
10	7311.00	38.0 AV	54.0	-16.0	1.09 V	98	28.2	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	113.8 PK			1.38 H	277	114.9	-1.1
2	*2462.00	102.6 AV			1.38 H	277	103.7	-1.1
3	2483.50	72.2 PK	74.0	-1.8	1.38 H	277	73.2	-1.0
4	2483.50	53.5 AV	54.0	-0.5	1.38 H	277	54.5	-1.0
5	4924.00	40.9 PK	74.0	-33.1	1.15 H	21	37.4	3.5
6	4924.00	27.9 AV	54.0	-26.1	1.15 H	21	24.4	3.5
7	7386.00	47.8 PK	74.0	-26.2	1.15 H	234	37.9	9.9
8	7386.00	34.4 AV	54.0	-19.6	1.15 H	234	24.5	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	110.3 PK			1.64 V	254	111.4	-1.1
2	*2462.00	99.0 AV			1.64 V	254	100.1	-1.1
3	2483.50	68.7 PK	74.0	-5.3	1.64 V	254	69.7	-1.0
4	2483.50	49.9 AV	54.0	-4.1	1.64 V	254	50.9	-1.0
5	4924.00	43.4 PK	74.0	-30.6	3.88 V	8	39.9	3.5
6	4924.00	30.4 AV	54.0	-23.6	3.88 V	8	26.9	3.5
7	7386.00	50.7 PK	74.0	-23.3	1.12 V	97	40.8	9.9
8	7386.00	37.7 AV	54.0	-16.3	1.12 V	97	27.8	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	71.9 PK	74.0	-2.1	1.16 H	275	73.2	-1.3
2	2390.00	53.6 AV	54.0	-0.4	1.16 H	275	54.9	-1.3
3	*2422.00	106.9 PK			1.16 H	275	108.2	-1.3
4	*2422.00	96.2 AV			1.16 H	275	97.5	-1.3
5	4844.00	40.7 PK	74.0	-33.3	1.20 H	16	37.4	3.3
6	4844.00	27.9 AV	54.0	-26.1	1.20 H	16	24.6	3.3
7	7266.00	47.5 PK	74.0	-26.5	1.16 H	193	37.7	9.8
8	7266.00	33.7 AV	54.0	-20.3	1.16 H	193	23.9	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	66.8 PK	74.0	-7.2	1.65 V	253	68.1	-1.3
2	2390.00	49.1 AV	54.0	-4.9	1.65 V	253	50.4	-1.3
3	*2422.00	103.4 PK			1.65 V	253	104.7	-1.3
4	*2422.00	92.6 AV			1.65 V	253	93.9	-1.3
5	4844.00	42.9 PK	74.0	-31.1	3.91 V	31	39.6	3.3
6	4844.00	30.4 AV	54.0	-23.6	3.91 V	31	27.1	3.3
7	7266.00	50.3 PK	74.0	-23.7	1.09 V	111	40.5	9.8
8	7266.00	37.9 AV	54.0	-16.1	1.09 V	111	28.1	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 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	70.5 PK	74.0	-3.5	1.16 H	276	71.8	-1.3
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.16 H**	**276**	**55.2**	**-1.3**
3	*2437.00	112.3 PK			1.16 H	276	113.5	-1.2
4	*2437.00	101.0 AV			1.16 H	276	102.2	-1.2
5	2483.50	67.2 PK	74.0	-6.8	1.16 H	276	68.2	-1.0
6	2483.50	50.9 AV	54.0	-3.1	1.16 H	276	51.9	-1.0
7	4874.00	41.2 PK	74.0	-32.8	1.21 H	1	37.9	3.3
8	4874.00	28.2 AV	54.0	-25.8	1.21 H	1	24.9	3.3
9	7311.00	47.6 PK	74.0	-26.4	1.11 H	206	37.8	9.8
10	7311.00	34.1 AV	54.0	-19.9	1.11 H	206	24.3	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	65.6 PK	74.0	-8.4	1.68 V	238	66.9	-1.3
2	2390.00	48.8 AV	54.0	-5.2	1.68 V	238	50.1	-1.3
3	*2437.00	108.9 PK			1.68 V	238	110.1	-1.2
4	*2437.00	97.5 AV			1.68 V	238	98.7	-1.2
5	2483.50	62.9 PK	74.0	-11.1	1.68 V	238	63.9	-1.0
6	2483.50	46.5 AV	54.0	-7.5	1.68 V	238	47.5	-1.0
7	4874.00	43.1 PK	74.0	-30.9	3.95 V	28	39.8	3.3
8	4874.00	30.4 AV	54.0	-23.6	3.95 V	28	27.1	3.3
9	7311.00	51.0 PK	74.0	-23.0	1.13 V	106	41.2	9.8
10	7311.00	38.4 AV	54.0	-15.6	1.13 V	106	28.6	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	109.8 PK			1.16 H	260	110.9	-1.1
2	*2452.00	98.4 AV			1.16 H	260	99.5	-1.1
3	2483.50	73.2 PK	74.0	-0.8	1.16 H	260	74.2	-1.0
4	2483.50	53.8 AV	54.0	-0.2	1.16 H	260	54.8	-1.0
5	4904.00	40.9 PK	74.0	-33.1	1.19 H	16	37.4	3.5
6	4904.00	27.8 AV	54.0	-26.2	1.19 H	16	24.3	3.5
7	7356.00	47.9 PK	74.0	-26.1	1.07 H	193	38.0	9.9
8	7356.00	34.2 AV	54.0	-19.8	1.07 H	193	24.3	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	*2452.00	106.3 PK			1.66 V	238	107.4	-1.1
2	*2452.00	94.8 AV			1.66 V	238	95.9	-1.1
3	2483.50	69.0 PK	74.0	-5.0	1.66 V	238	70.0	-1.0
4	2483.50	49.3 AV	54.0	-4.7	1.66 V	238	50.3	-1.0
5	4904.00	42.7 PK	74.0	-31.3	3.89 V	40	39.2	3.5
6	4904.00	29.9 AV	54.0	-24.1	3.89 V	40	26.4	3.5
7	7356.00	50.9 PK	74.0	-23.1	1.09 V	92	41.0	9.9
8	7356.00	38.1 AV	54.0	-15.9	1.09 V	92	28.2	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:

802.11g

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	39.70	27.8 QP	40.0	-12.2	2.00 H	134	36.4	-8.6
2	61.04	27.3 QP	40.0	-12.7	1.50 H	106	36.1	-8.8
3	99.84	32.5 QP	43.5	-11.0	1.50 H	187	45.3	-12.8
4	125.06	32.3 QP	43.5	-11.2	2.00 H	302	41.9	-9.6
5	400.54	27.7 QP	46.0	-18.3	1.50 H	258	32.9	-5.2
6	625.58	27.9 QP	46.0	-18.1	1.00 H	119	28.0	-0.1
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	38.24	37.2 QP	40.0	-2.8	1.01 V	25	45.5	-8.3
2	98.87	31.4 QP	43.5	-12.1	1.00 V	150	44.3	-12.9
3	137.67	31.4 QP	43.5	-12.1	1.00 V	301	39.7	-8.3
4	399.57	28.1 QP	46.0	-17.9	1.50 V	214	33.3	-5.2
5	749.74	27.9 QP	46.0	-18.1	2.00 V	118	25.7	2.2
6	935.98	29.3 QP	46.0	-16.7	1.50 V	98	24.8	4.5

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 ReceiverR&S	ESCS 30	847124/029	Oct. 24, 2016	Oct. 23, 2017
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 26, 2016	Oct. 25, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 2017
RF Cable	5D-FB	COCCAB-001	Sep. 30, 2016	Sep. 29, 2017
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: July 31, 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.

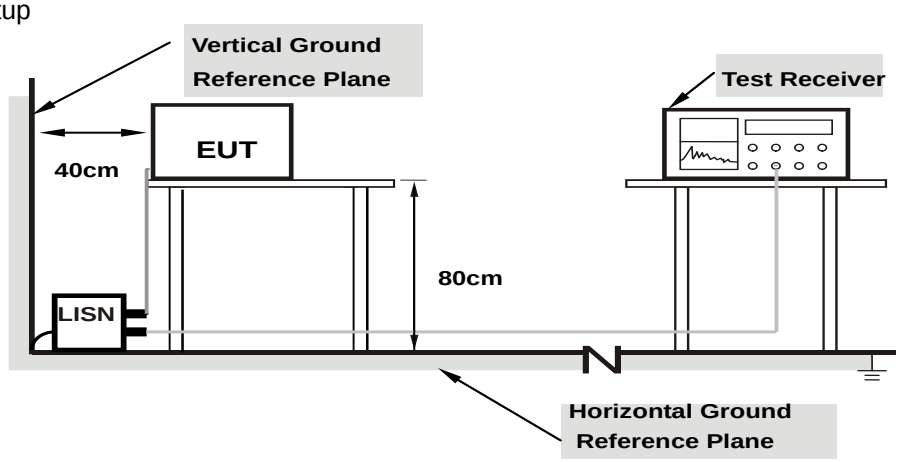
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

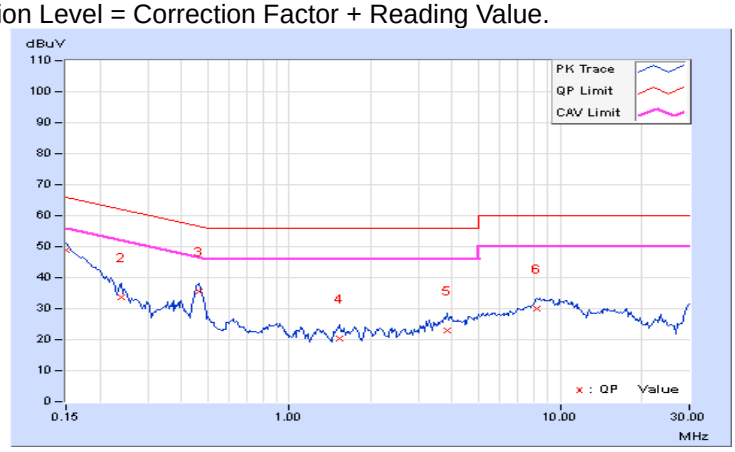
4.2.7 Test Results

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	10.07	38.96	27.69	49.03	37.76	66.00	56.00	-16.97	-18.24
2	0.23984	10.07	23.45	12.08	33.52	22.15	62.10	52.10	-28.58	-29.95
3	0.46641	10.11	25.34	20.55	35.45	30.66	56.58	46.58	-21.13	-15.92
4	1.54297	10.14	10.07	6.26	20.21	16.40	56.00	46.00	-35.79	-29.60
5	3.83203	10.29	12.59	7.88	22.88	18.17	56.00	46.00	-33.12	-27.83
6	8.24609	10.52	19.37	14.63	29.89	25.15	60.00	50.00	-30.11	-24.85

REMARKS:

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

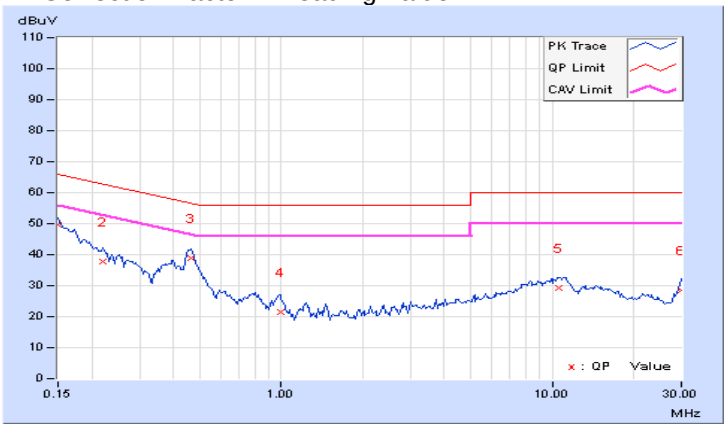


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	10.06	39.56	28.51	49.62	38.57	66.00	56.00	-16.38	-17.43
2	0.22031	10.04	27.74	17.05	37.78	27.09	62.81	52.81	-25.03	-25.72
3	**0.46250**	**10.10**	**28.77**	**22.85**	**38.87**	**32.95**	**56.65**	**46.65**	**-17.78**	**-13.70**
4	0.99375	10.11	11.34	7.92	21.45	18.03	56.00	46.00	-34.55	-27.97
5	10.60547	10.58	18.58	14.32	29.16	24.90	60.00	50.00	-30.84	-25.10
6	29.93359	10.96	17.46	13.54	28.42	24.50	60.00	50.00	-31.58	-25.50

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.

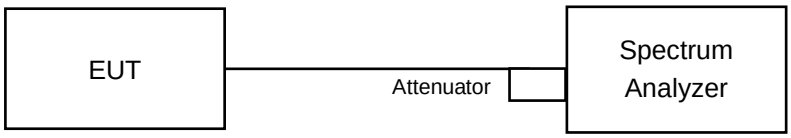


4.3 6dB Bandwidth Measurement

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	10.10	10.12	0.5	PASS
6	2437	10.12	10.12	0.5	PASS
11	2462	9.63	10.12	0.5	PASS

802.11g

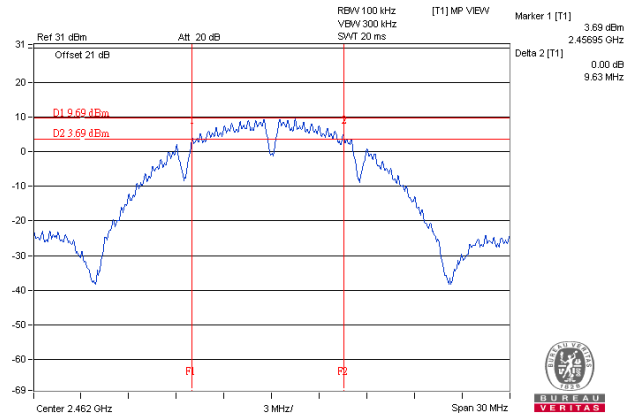
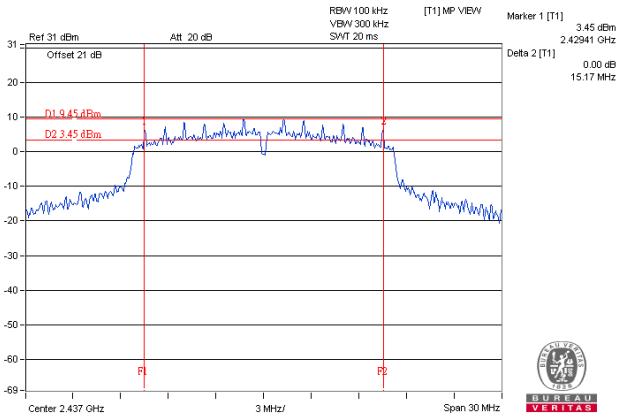
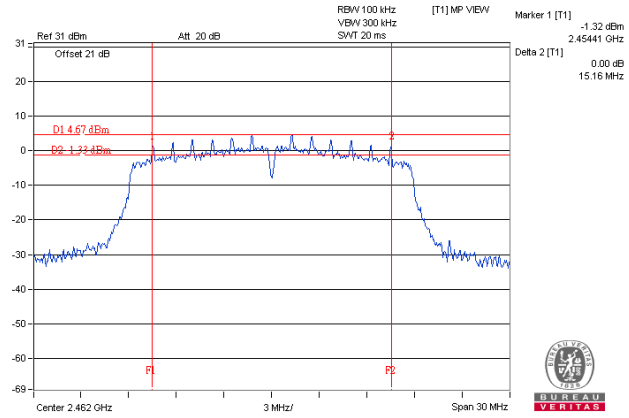
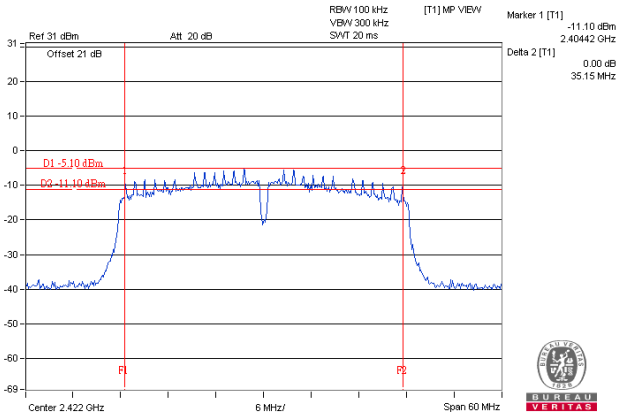
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.18	15.17	0.5	PASS
6	2437	15.17	15.18	0.5	PASS
11	2462	15.18	15.18	0.5	PASS

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.17	15.16	0.5	Pass
6	2437	15.18	15.17	0.5	Pass
11	2462	15.17	15.16	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.15	35.16	0.5	Pass
6	2437	35.17	35.17	0.5	Pass
9	2452	35.24	35.23	0.5	Pass

Spectrum Plot of Worst Value	
802.11b / Chain 0 : CH11	**802.11g / Chain 0 : CH6**
	
802.11n (HT20) / Chain 1 : CH11	**802.11n (HT40) / Chain 0 : CH3**
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

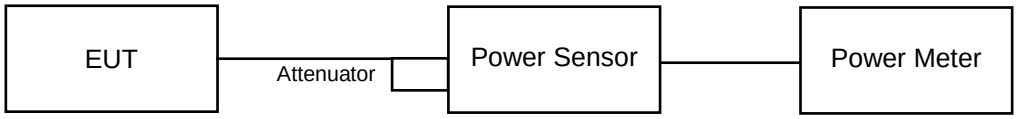
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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 $N_{ANT} \leq 4$;
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.

4.4.2 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	22.17	23.41	384.096	25.84	30	Pass
6	2437	21.89	23.57	382.035	25.82	30	Pass
11	2462	21.17	22.98	329.527	25.18	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	22.39	22.87	367.022	25.65	30	Pass
6	2437	25.02	25.64	684.125	28.35	30	Pass
11	2462	22.58	23.87	424.915	26.28	30	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.26	22.82	359.693	25.56	30	Pass
6	2437	24.90	25.67	678.008	28.31	30	Pass
11	2462	21.97	23.12	362.514	25.59	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	16.59	16.49	90.17	19.55	30	Pass
6	2437	20.62	21.24	248.39	23.95	30	Pass
9	2452	18.57	19.23	155.698	21.92	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	20.47	21.75	261.053	24.17
6	2437	20.23	22.01	264.294	24.22
11	2462	19.49	21.37	226.008	23.54

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.98	15.17	64.362	18.09
6	2437	20.14	20.96	228.014	23.58
11	2462	15.13	15.79	70.515	18.48

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.63	14.31	56.017	17.48
6	2437	19.86	20.79	216.778	23.36
11	2462	14.25	14.73	56.324	17.51

802.11n (HT40)

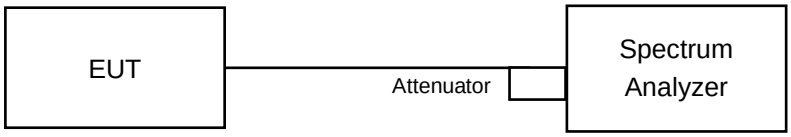
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	7.86	7.53	11.771	10.71
6	2437	12.21	12.62	34.915	15.43
9	2452	9.61	10.01	19.164	12.82

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 W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-6.05	3.01	0.1	-3.04	7.13	Pass
	6	2437	-5.81	3.01	0.1	-2.80	7.13	Pass
	11	2462	-6.66	3.01	0.1	-3.65	7.13	Pass
1	1	2412	-5.41	3.01	0.1	-2.40	7.13	Pass
	6	2437	-3.57	3.01	0.1	-0.56	7.13	Pass
	11	2462	-4.61	3.01	0.1	-1.60	7.13	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.87dBi > 6dBi , so the power density limit shall be reduced to 8-(6.87-6) = 7.13dBm.

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

802.11g

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-13.08	3.01	0.4	-10.07	7.13	Pass
	6	2437	-7.13	3.01	0.4	-4.12	7.13	Pass
	11	2462	-12.71	3.01	0.4	-9.70	7.13	Pass
1	1	2412	-11.79	3.01	0.4	-8.78	7.13	Pass
	6	2437	-6.71	3.01	0.4	-3.70	7.13	Pass
	11	2462	-11.65	3.01	0.4	-8.64	7.13	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.87dBi > 6dBi , so the power density limit shall be reduced to 8-(6.87-6) = 7.13dBm.

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

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-12.04	3.01	0.5	-9.03	7.13	Pass
	6	2437	-7.34	3.01	0.5	-4.33	7.13	Pass
	11	2462	-12.87	3.01	0.5	-9.86	7.13	Pass
1	1	2412	-12.33	3.01	0.5	-9.32	7.13	Pass
	6	2437	-7.12	3.01	0.5	-4.11	7.13	Pass
	11	2462	-11.44	3.01	0.5	-8.43	7.13	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.87dBi > 6dBi , so the power density limit shall be reduced to 8-(6.87-6) = 7.13dBm.

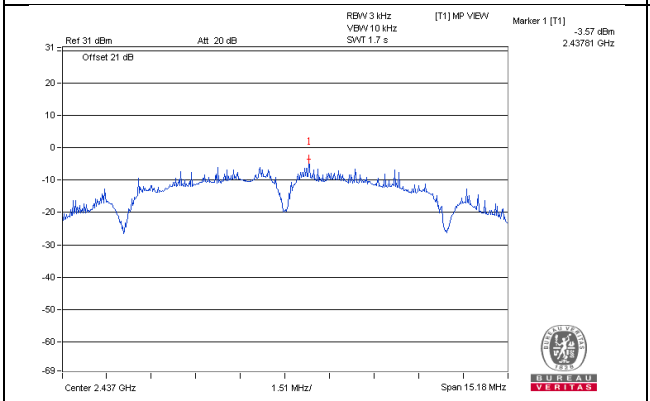
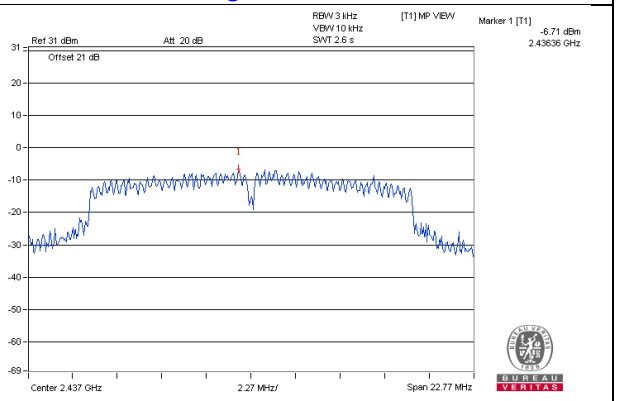
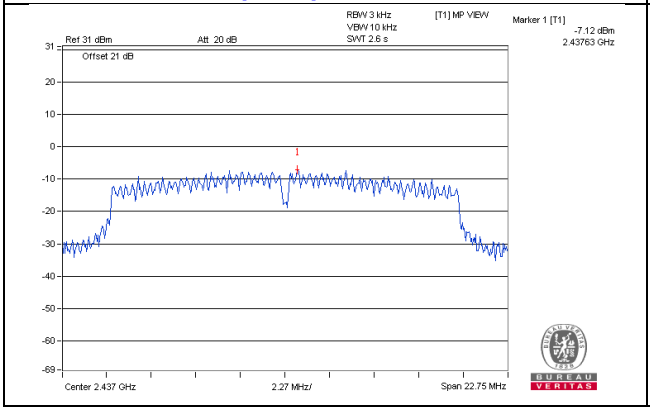
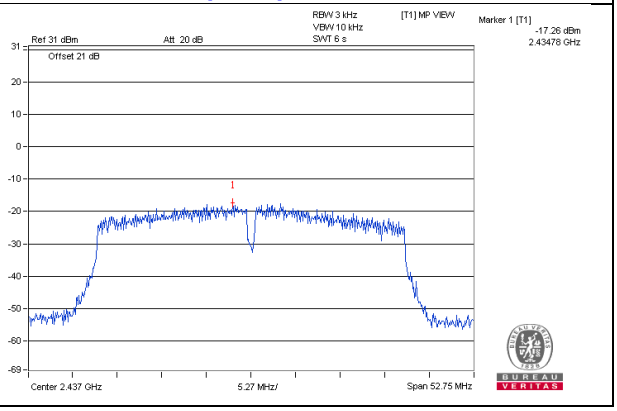
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	TOTAL PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-20.93	3.01	0.61	-17.92	7.13	Pass
	6	2437	-17.26	3.01	0.61	-14.25	7.13	Pass
	9	2452	-19.26	3.01	0.61	-16.25	7.13	Pass
1	3	2422	-22.20	3.01	0.61	-19.19	7.13	Pass
	6	2437	-17.28	3.01	0.61	-14.27	7.13	Pass
	9	2452	-19.33	3.01	0.61	-16.32	7.13	Pass

Note: 1. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.87dBi > 6dBi , so the power density limit shall be reduced to 8-(6.87-6) = 7.13dBm.

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

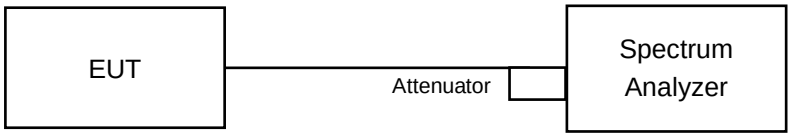
Spectrum Plot of Worst Value	
802.11b / Chain 1 : CH6	**802.11g / Chain 1 : CH6**
	
802.11n (HT20) / Chain 1 : CH6	**802.11n (HT40) / Chain 0 : CH6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

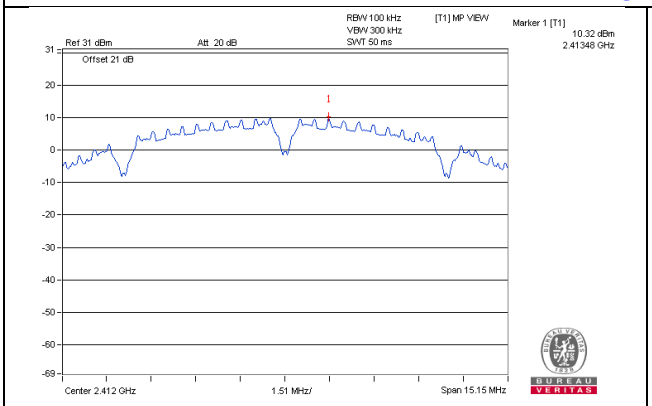
Same as Item 4.3.6

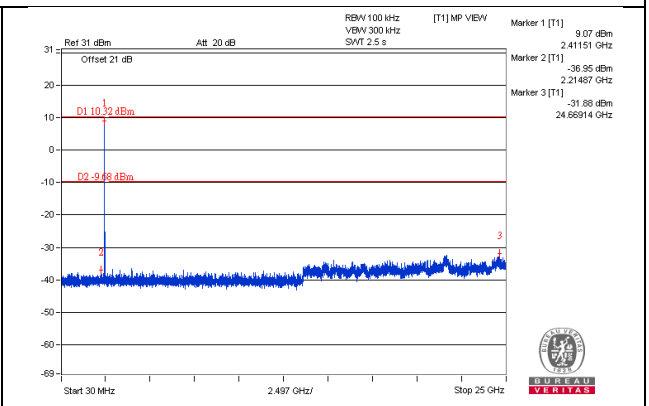
4.6.7 Test Results

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

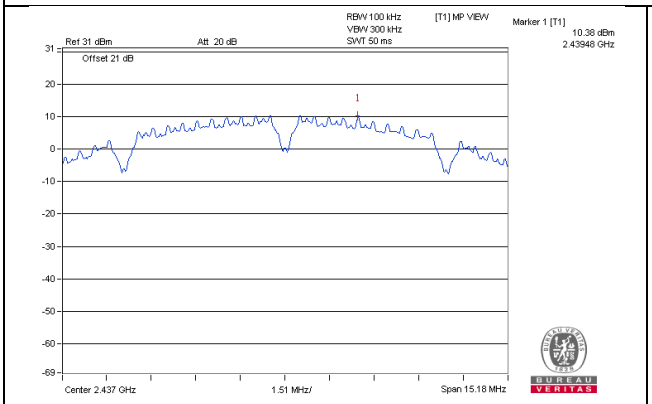
802.11b
CHAIN 0

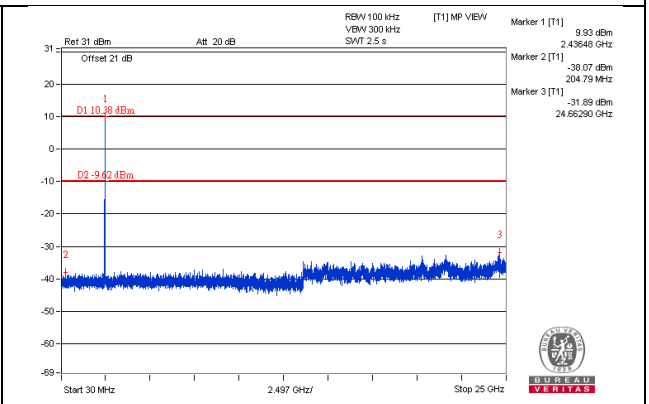
CH 1



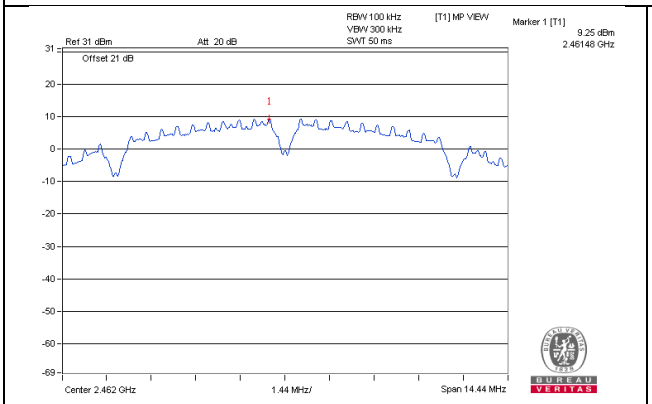


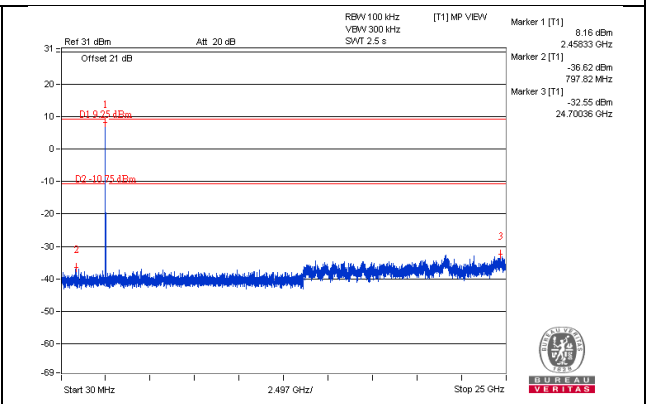
CH 6



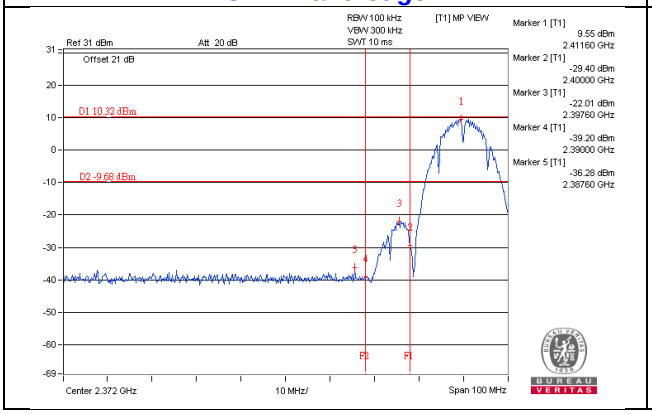


CH 11

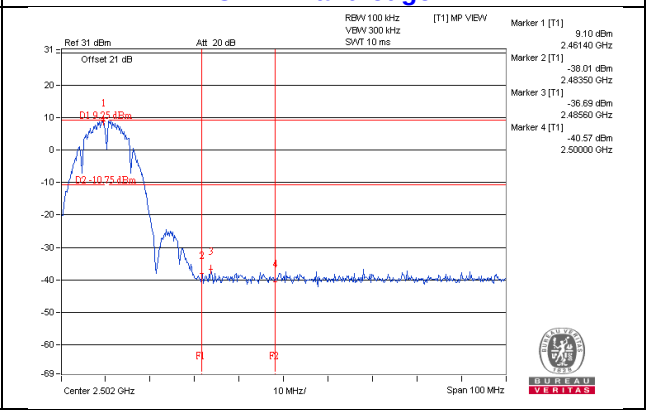




CH 1 Band edge

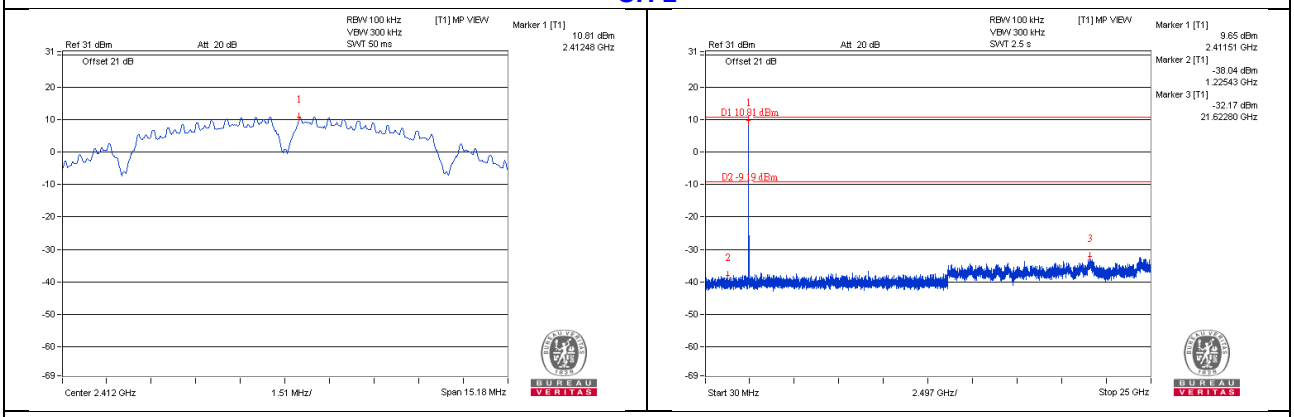


CH 11 Band edge

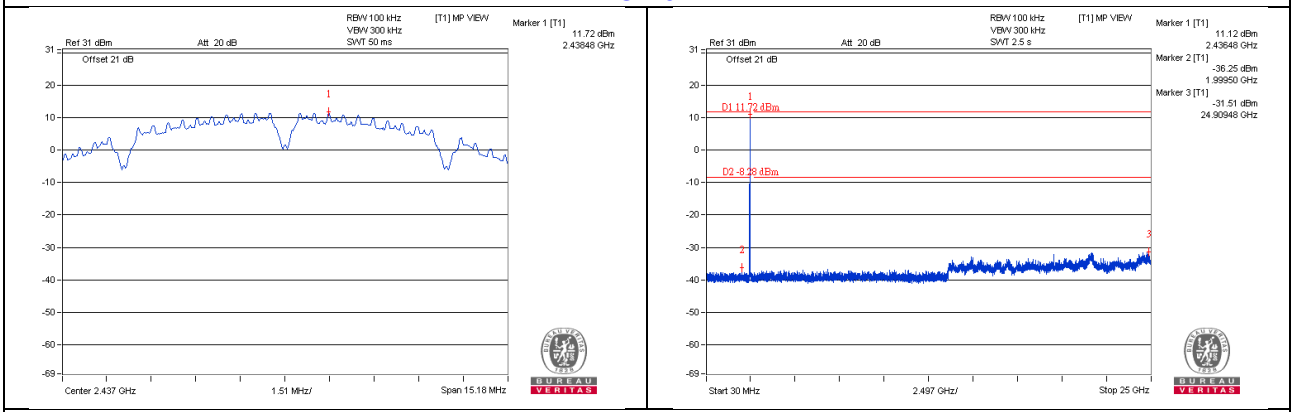


CHAIN 1

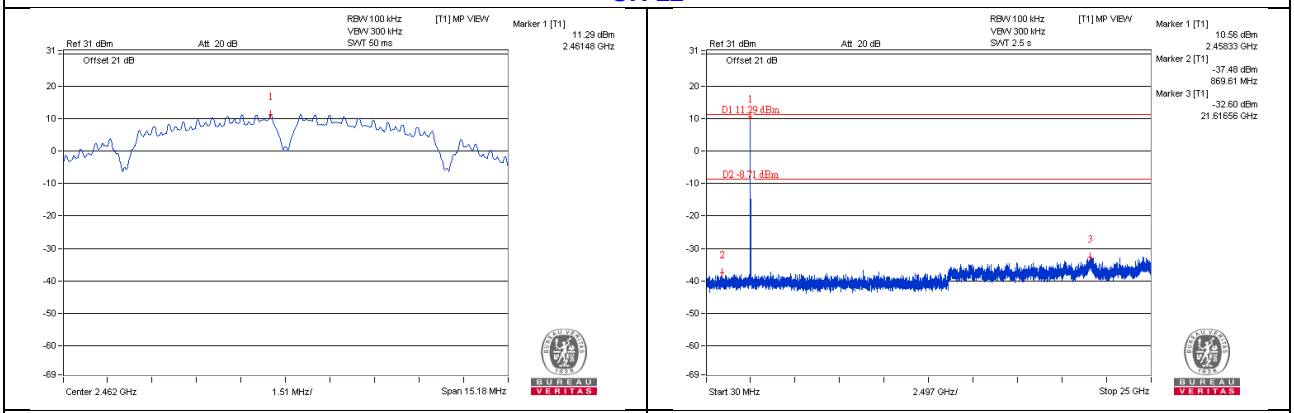
CH 1



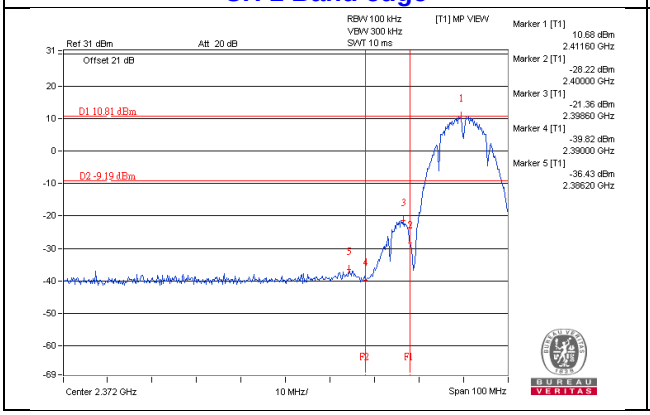
CH 6



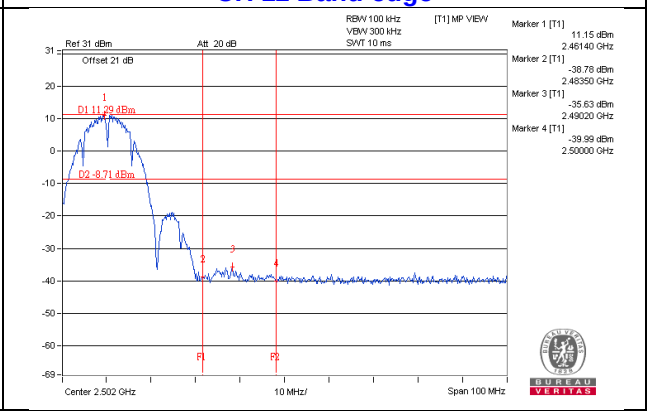
CH 11



CH 1 Band edge

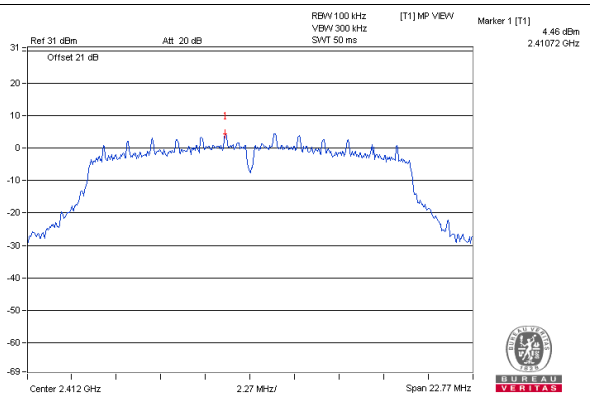


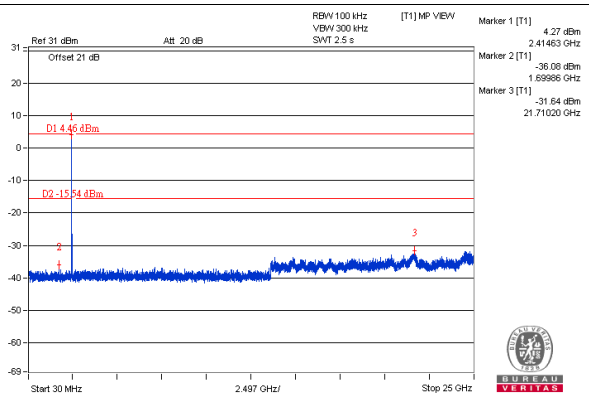
CH 11 Band edge



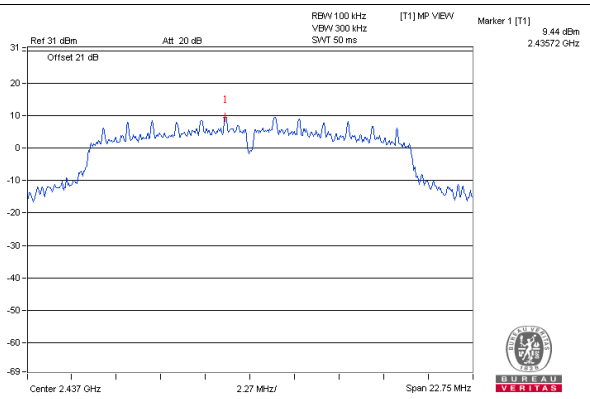
802.11g
CHAIN 0

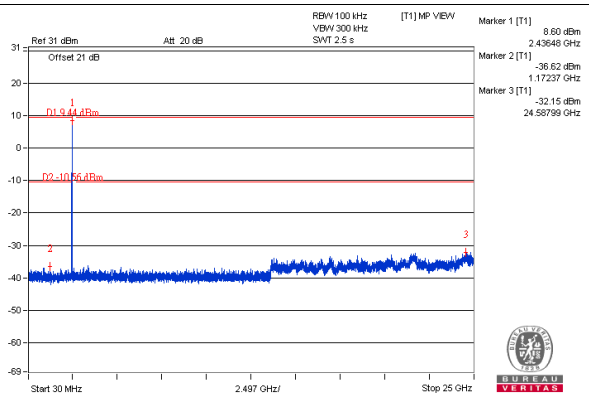
CH 1



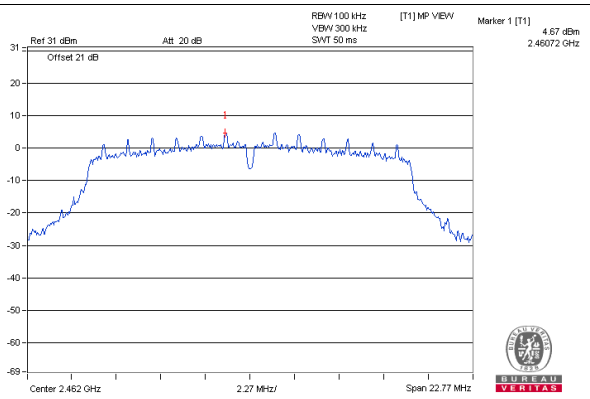


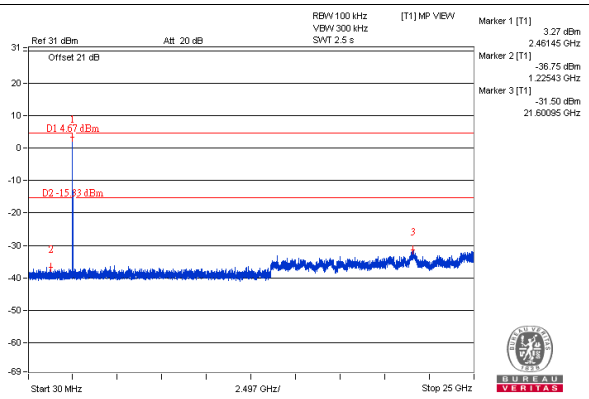
CH 6



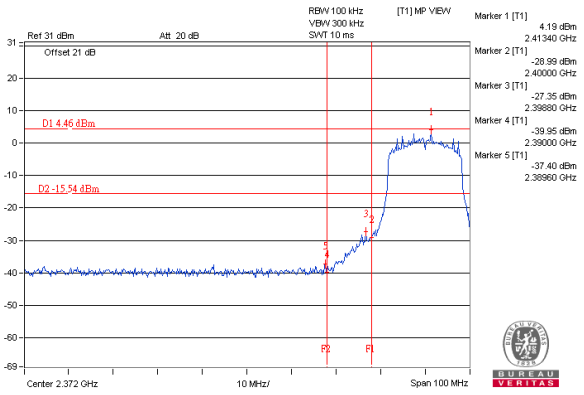


CH 11

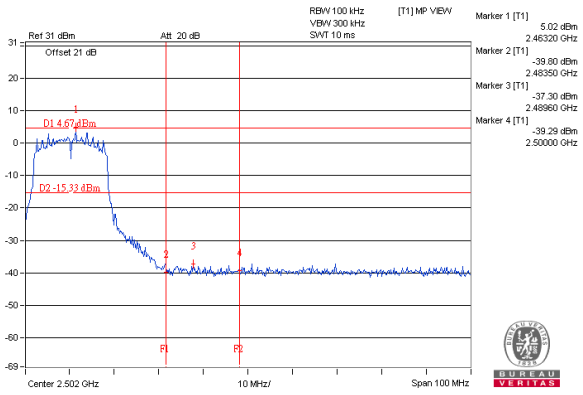




CH 1 Band edge

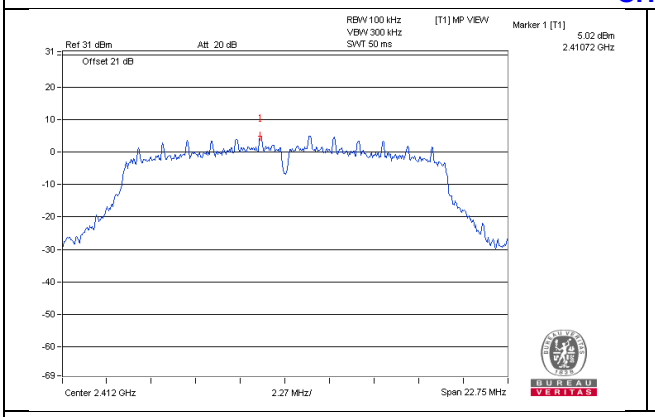


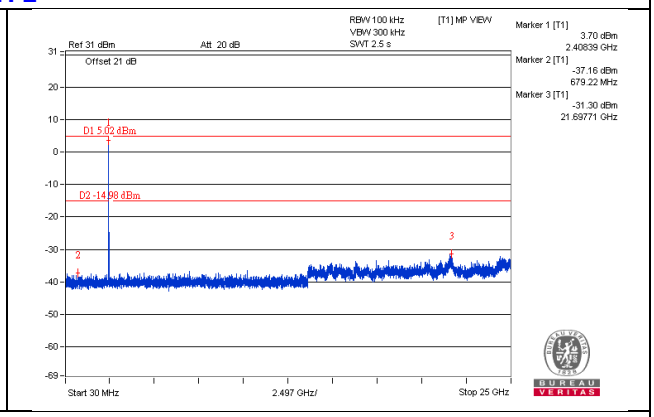
CH 11 Band edge



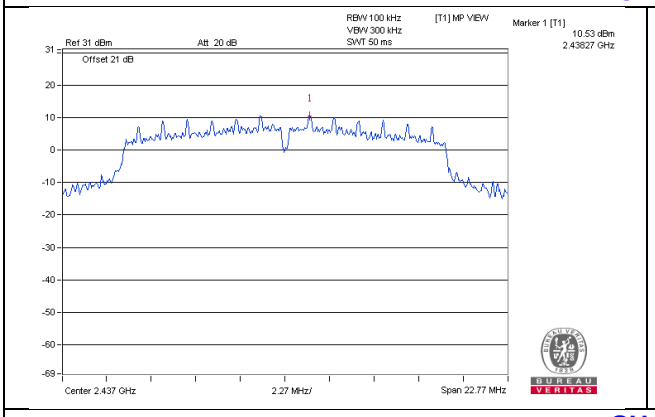
CHAIN 1

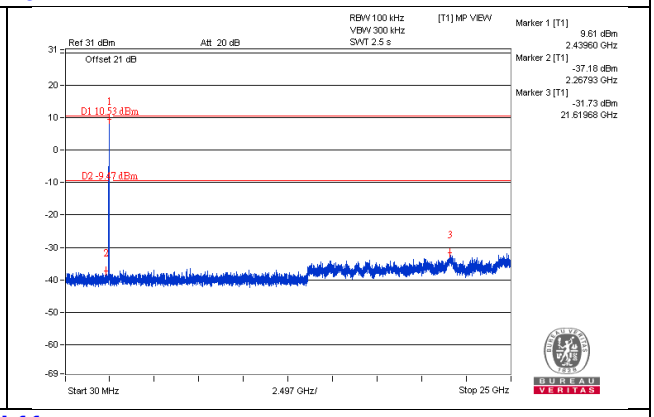
CH 1



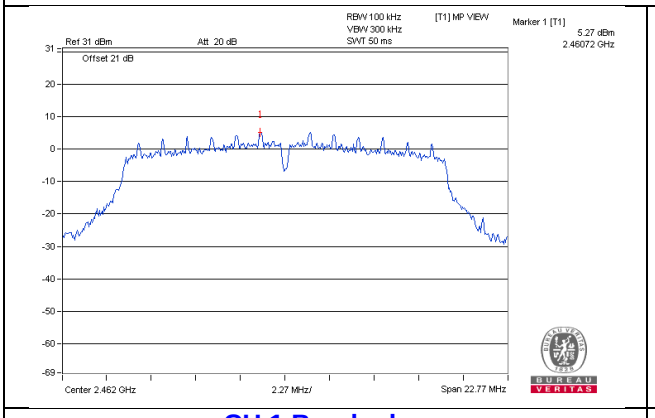


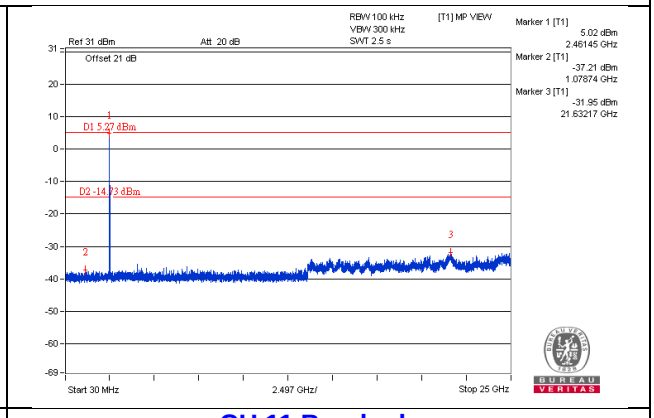
CH 6



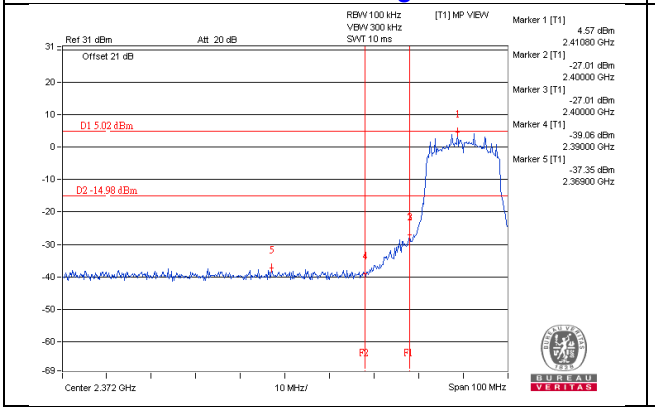


CH 11

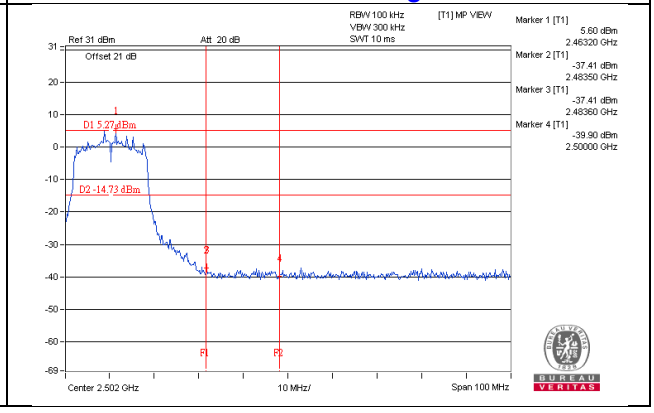




CH 1 Band edge

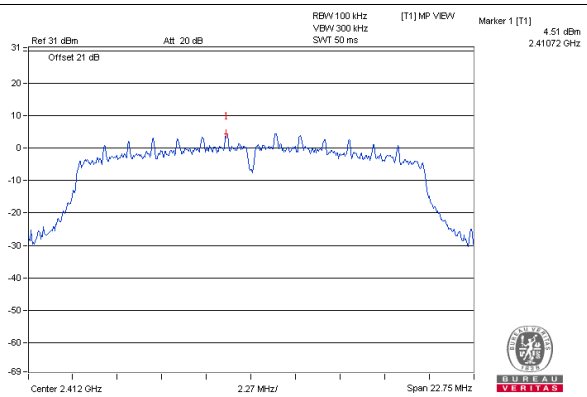


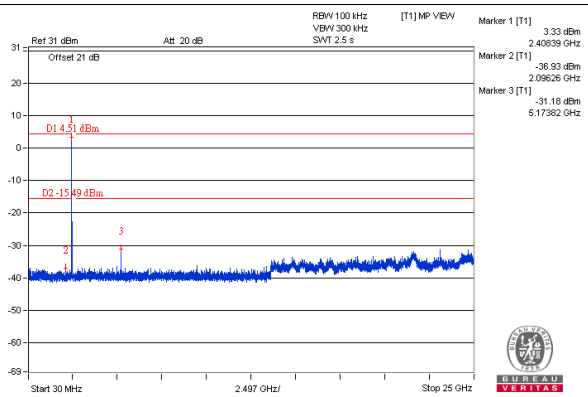
CH 11 Band edge



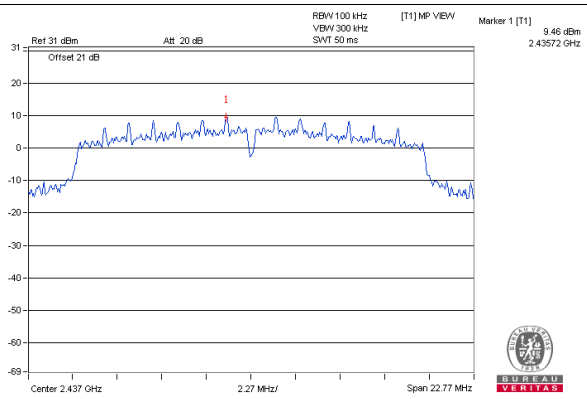
802.11n (HT20)
CHAIN 0

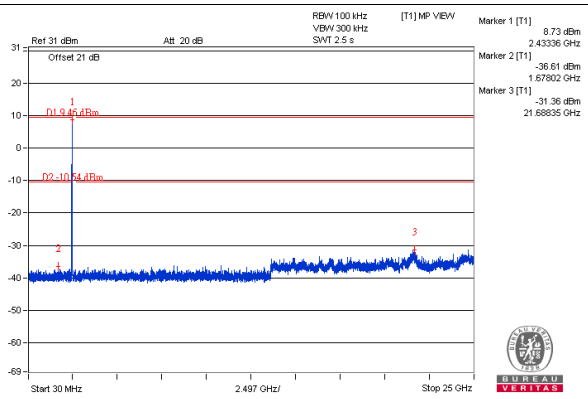
CH 1



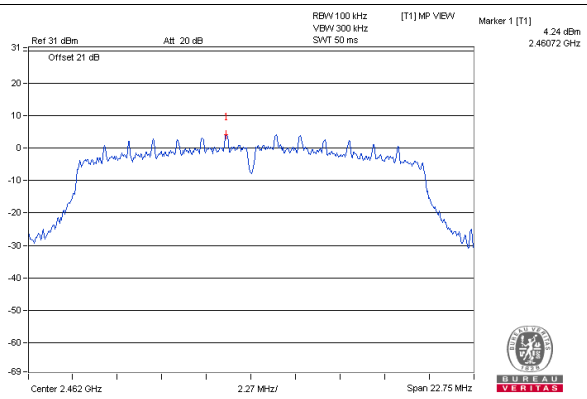


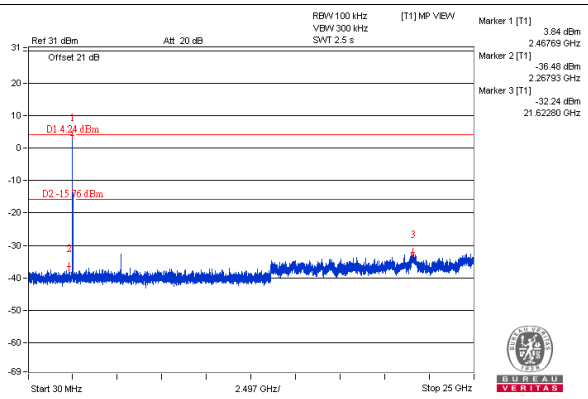
CH 6



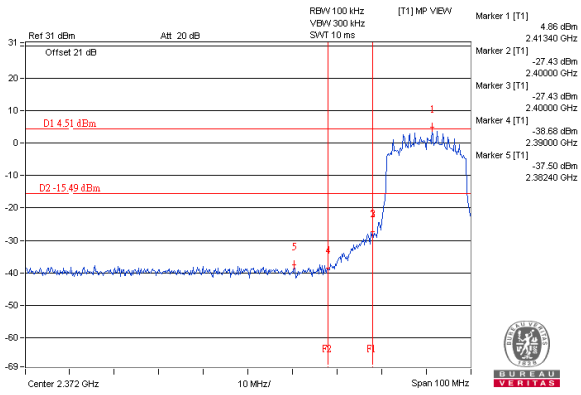


CH 11

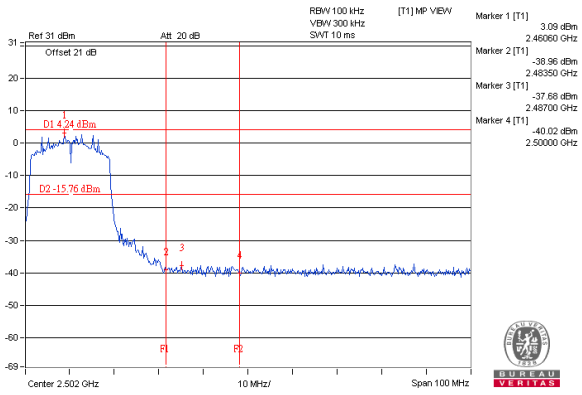




CH 1 Band edge

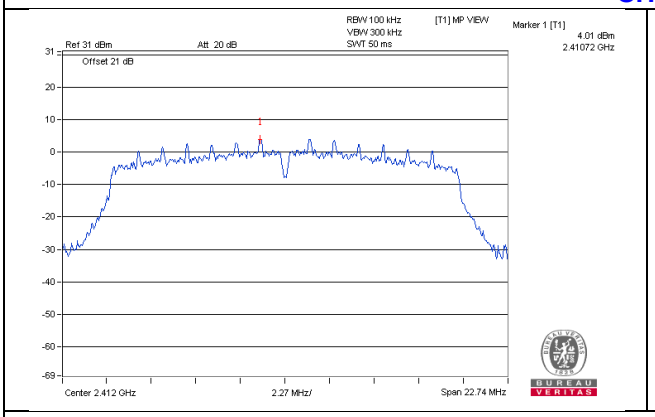


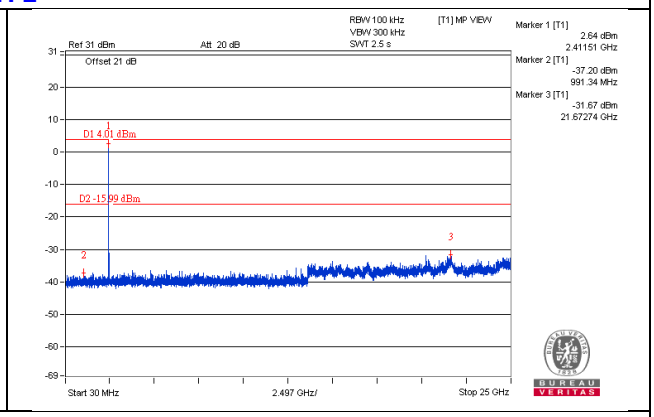
CH 11 Band edge



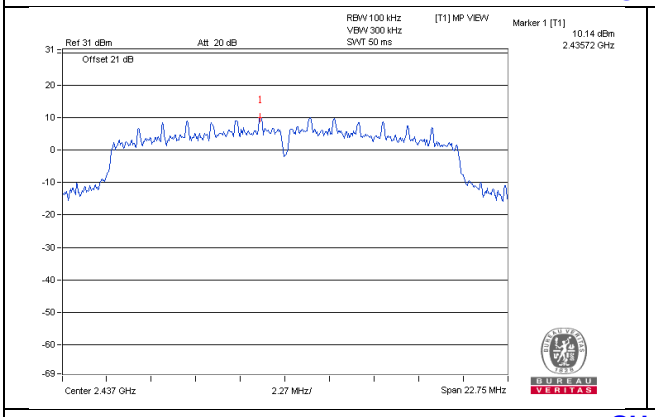
CHAIN 1

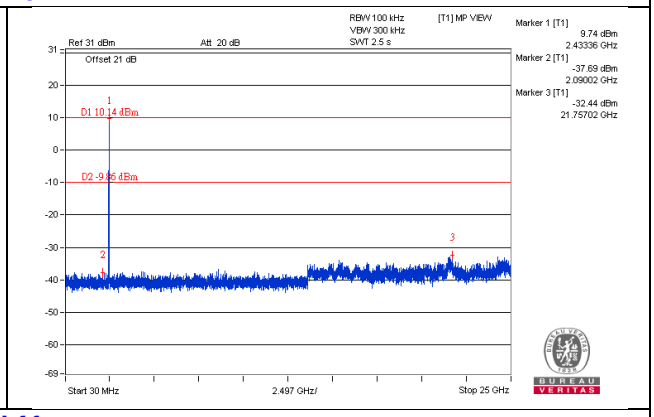
CH 1



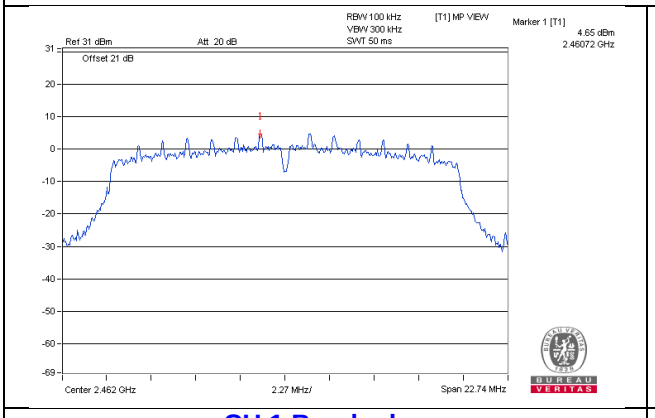


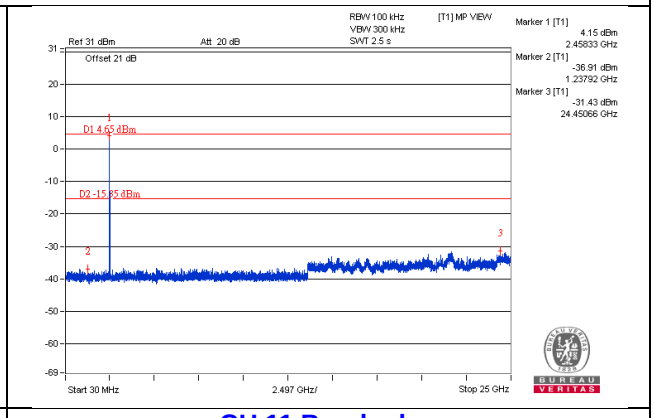
CH 6



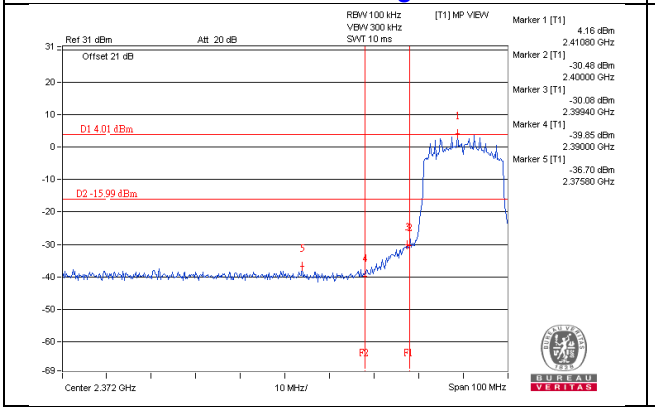


CH 11

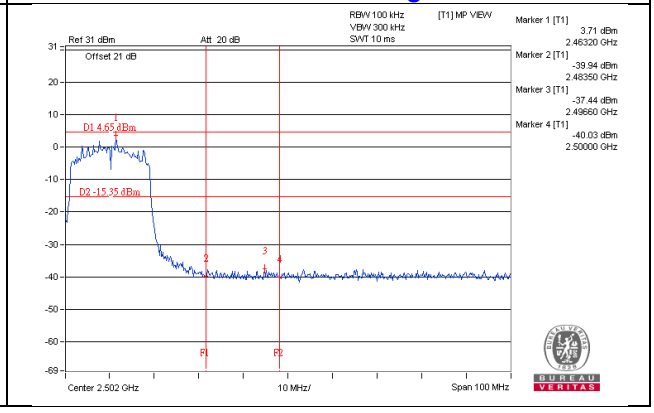




CH 1 Band edge

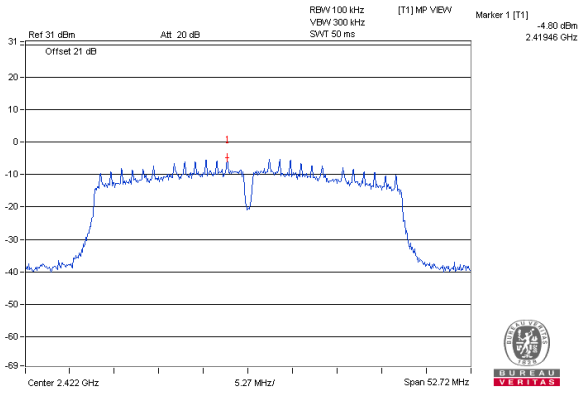


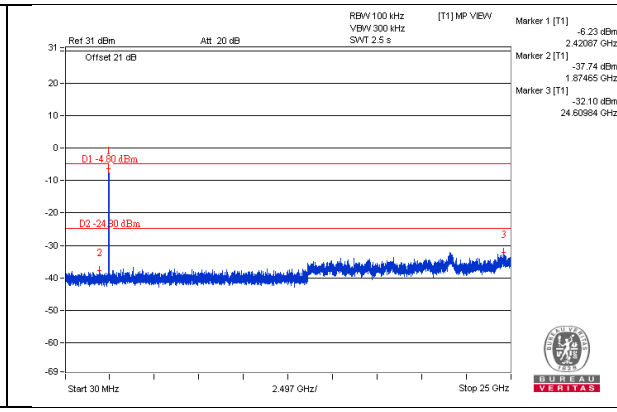
CH 11 Band edge



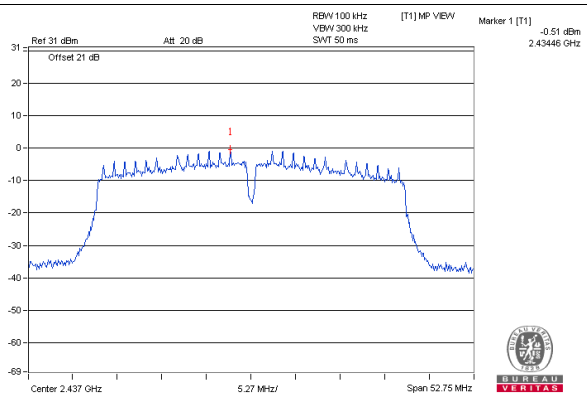
802.11n (HT40)
Chain 0

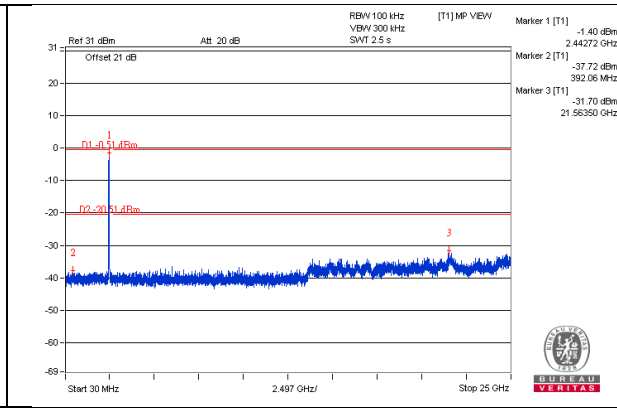
CH 3



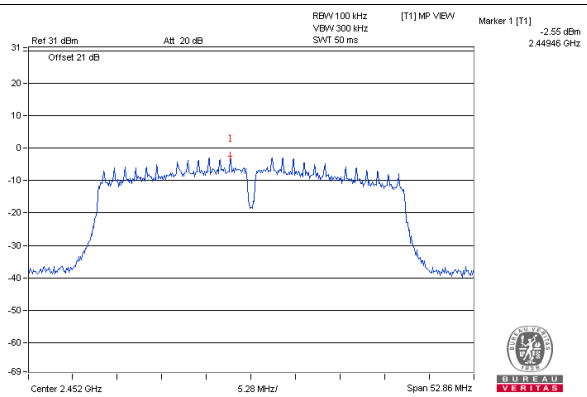


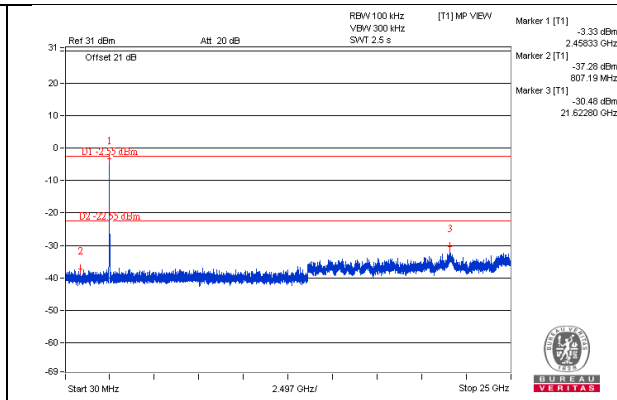
CH 6



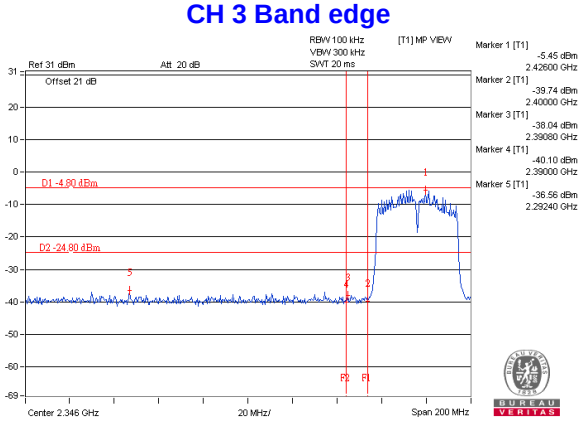


CH 9

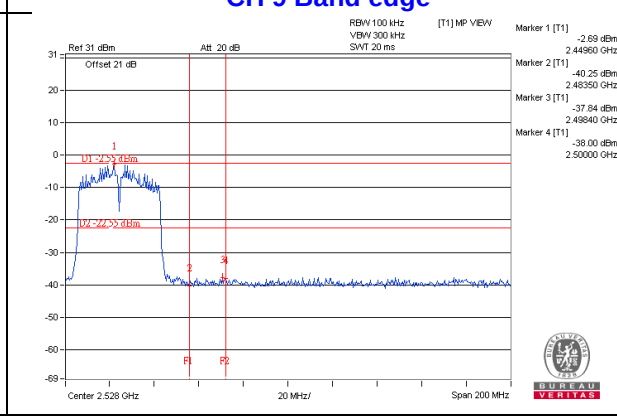




CH 3 Band edge

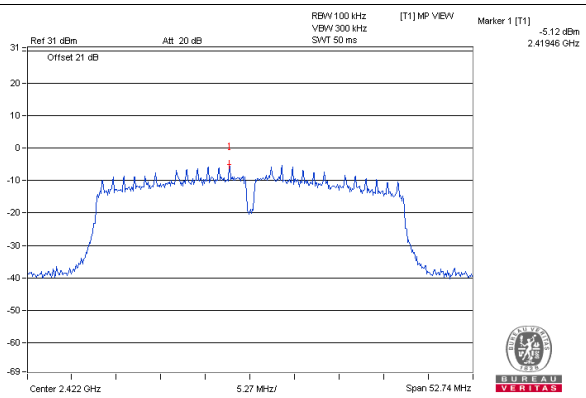


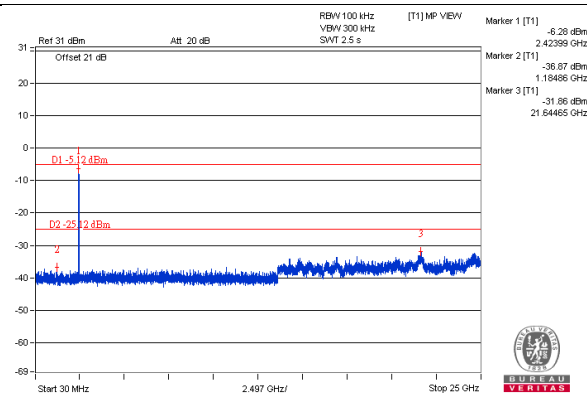
CH 9 Band edge



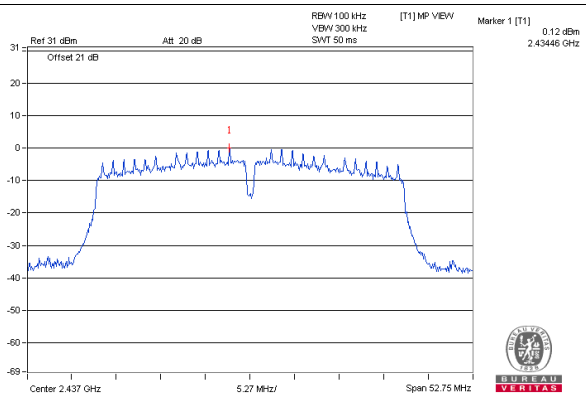
Chain 1

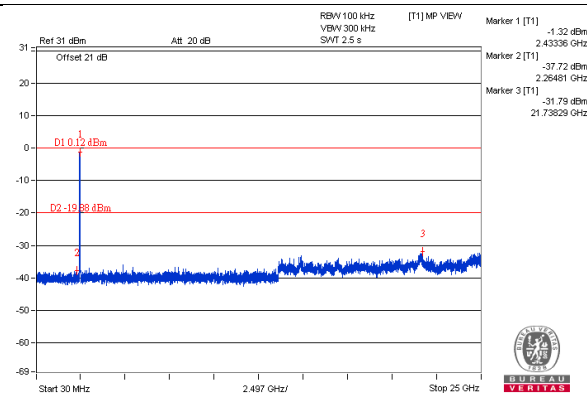
CH 3



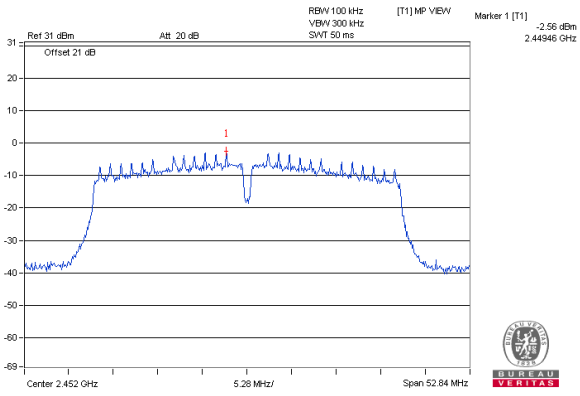


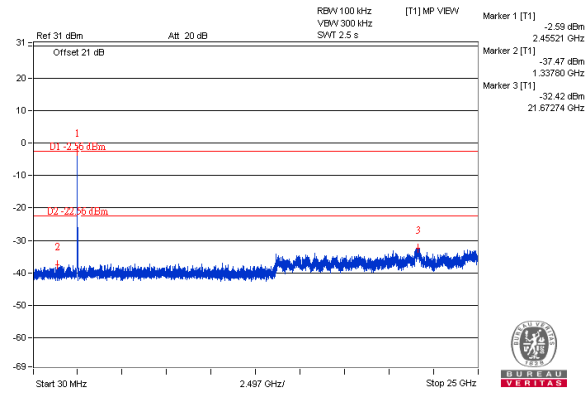
CH 6



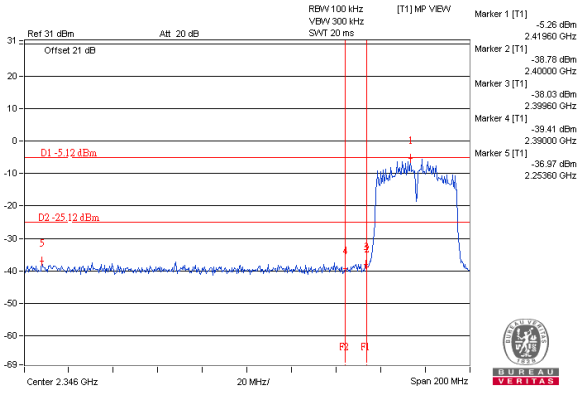


CH 9

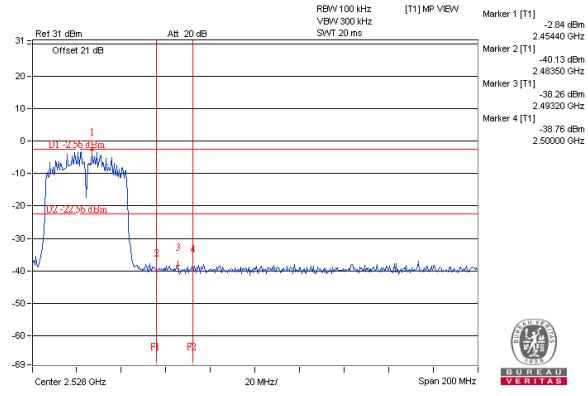




CH 3 Band edge



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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