FCC Test Report

Report No.:	RF181109E05
FCC ID:	2AMRICR48NA
Test Model:	CR48NA
Series Model:	CXD2800
Received Date:	Nov. 13, 2018
Test Date:	Dec. 07 to 12, 2018
Issued Date:	Feb. 20, 2019
Applicant:	Connected IO
Address:	8304 Esters Boulevard, Suite 850, Irving, Texas United States 75063
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

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Release Control Record

Issue No.	Description	Date Issued
RF181109E05	Original release.	Feb. 20, 2019

1 Certificate of Conformity

Product:	Router
Brand:	Connected IO, Netsurion
Test Model:	CR48NA
Series Model:	CXD2800
Sample Status:	ENGINEERING SAMPLE
Applicant:	Connected IO
Test Date:	Dec. 07 to 12, 2018
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:** Feb. 20, 2019

Wendy Wu / Specialist

Approved by : _____ , **Date:** Feb. 20, 2019

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 -6.27dB at 0.36484MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2390.00MHz, 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is R-SMA not a standard connector.
-	Occupied Bandwidth Measurement	-	Reference only.

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	5.33 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.10 dB
	6GHz ~ 18GHz	4.85 dB
	18GHz ~ 40GHz	5.24 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Router
Brand	Connected IO, Netsurion
Test Model	CR48NA
Series Model	CXD2800
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 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 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 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:** **CDD Mode:** 683.343mW **Beamforming Mode:** 595.78mW **5GHz:** **CDD Mode:** **5.18 ~ 5.24GHz:** 59.941mW **5.745 ~ 5.825GHz:** 139.597mW **Beamforming Mode:** **5.18 ~ 5.24GHz:** 30.784mW **5.745 ~ 5.825GHz:** 138.587mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	RJ 45 cable x 1 (Unshielded, 1.5m)

Note:

1. There are WLAN, WWAN and LTE technology used for the EUT.
2. The EUT contains certified 3G/LTE modular which FCC ID: RI7LE910NAV2.
3. The EUT has below model names, which are identical to each other in all aspects except for the following:

Brand	Model No.	Difference
Connected IO	CR48NA	Different Housing colors
Netsurion	CXD2800	

From the above models, model: **CR48NA** was selected as representative model for the test and its data was recorded in this report.

4. Simultaneously transmission condition.

Condition	**Technology**		
1	WLAN 2.4GHz	WLAN 5GHz	WWAN (3G/LTE)
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.			

5. The EUT must be supplied with a power adapter and following two different model names could be chosen:

No.	Brand	Model No.	Spec.
1	UMEC	UP0251M-12PA	Input: 100-240Vac, 0.6A, 50/60Hz Output: 12Vdc, 2A DC output cable (Unshielded, 1.5m)
2	AMIGO	AMS115-1202000FU	Input: 100-240Vac, 0.8A, 50/60Hz Output: 12Vdc, 2.0A DC output cable (Unshielded, 1.5m)
Note: From the above models, the worst radiated emission and AC power conducted emission test was found in **Adapter 1**. Therefore only the test data of the modes were recorded in this report.			

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

WLAN							
Ant Set.	Chain No.	Brand	Model	Antenna Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	Chain 0	JOYMAX	TWX-1513RSXX-711	5	2.4~2.4835	Collinear	R-SMA
				5	5.15~5.85		
	Chain 1	JOYMAX	TWX-1513RSXX-711	5	2.4~2.4835	Collinear	R-SMA
				5	5.15~5.85		
2	Chain 0	JOYMAX	TWX-6141RSXX-711	3	2.4~2.4835	Microstrip	R-SMA
				5	5.15~5.85		
	Chain 1	JOYMAX	TWX-6141RSXX-711	3	2.4~2.4835	Microstrip	R-SMA
				5	5.15~5.85		
WWAN – 3G / LTE							
Ant Set	Transmitter Circuit	Brand	Model	Antenna Gain (dBi)	Frequency Range (MHz)	Antenna Type	Connector Type
1	Main	JOYMAX	YWX-6252SAXX-711	3	698~960	Microstrip	SMA
					1710~2710		
					2300~2700		
	Aux	JOYMAX	YWX-6252SAXX-711	3	698~960	Microstrip	SMA
					1710~2710		
					2300~2700		
Note: 1. For WLAN: Ant set 1 was selected for the final test.							

7. The EUT incorporates a MIMO function:

2.4GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
VHT20	2TX	2RX
VHT40	2TX	2RX
5GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11a	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ac (VHT80)	2TX	2RX

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

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

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20), 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 **X-plane**.

Radiated Emission Test (Above 1GHz):

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

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

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

Radiated Emission Test (Below 1GHz):

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

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

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

Power Line Conducted Emission Test:

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

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

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

Antenna Port Conducted Measurement:

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

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

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

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

Test Condition:

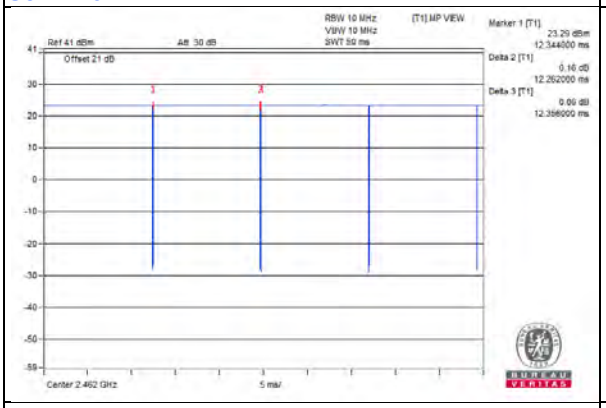
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 64%RH	120Vac, 60Hz	Steven Chiang
RE<1G	21deg. C, 67%RH	120Vac, 60Hz	Steven Chiang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

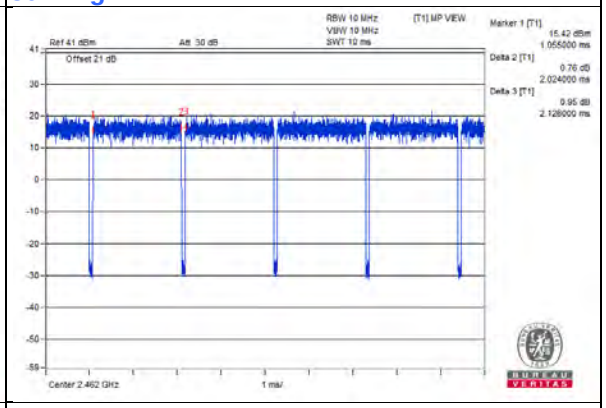
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 12.262/12.356 = 0.992
802.11g: Duty cycle = 2.024/2.126 = 0.952, Duty factor = 10 * log(1/0.952) = 0.21
VHT20: Duty cycle = 4.955/5.047 = 0.982
VHT40: Duty cycle = 2.405/2.494 = 0.964, Duty factor = 10 * log(1/0.964) = 0.16

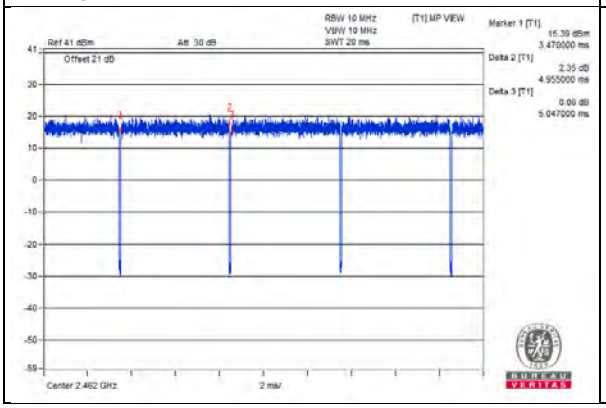
802.11b



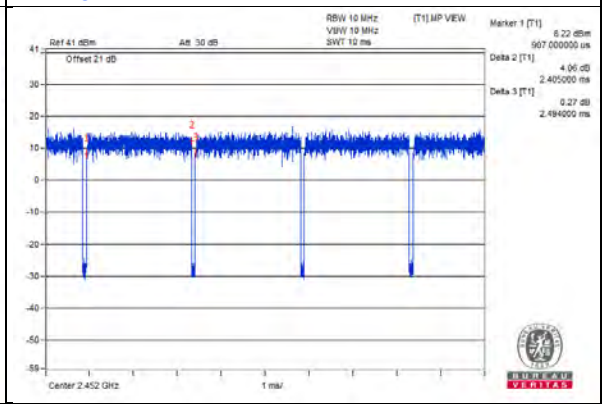
802.11g



VHT20



VHT40



3.4 Description of Support Units

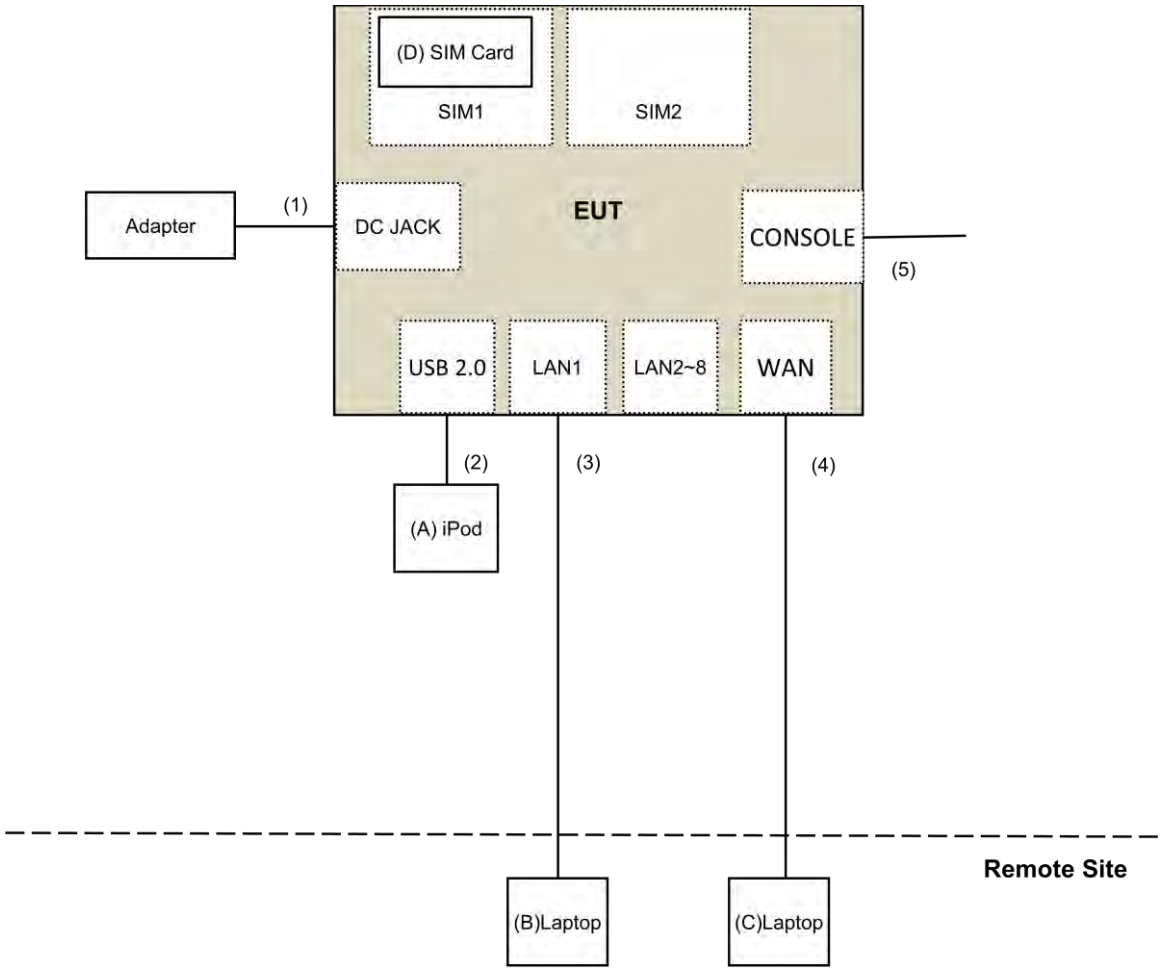
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	iPod	Apple	MD778TA/A	CC4JMFL0F4T1	NA	Provided by Lab
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
D.	SIM Card	R&S	CRT-Z3	NA	NA	Provided by Lab

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.5	No	0	Supplied by client
2.	USB Cable	1	0.1	Yes	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	RJ-45 Cable	1	10	No	0	Provided by Lab
5.	Console Cable	1	1.5	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 15.247 Meas Guidance v05
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 05, 2018	July 04, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Oct. 30, 2018	Oct. 29, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 22, 2018	Nov. 21, 2019
RF Cable	8D	966-4-1	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-2	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-3	Mar. 21, 2018	Mar. 20, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier Mini-Circuits	ZVA-183-S+	AMP-ZVA-03	May 10, 2018	May 09, 2019
RF Cable	EMC104-SM-SM-1200	160923	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150318	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150321	Jan. 29, 2018	Jan. 28, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160925	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019

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: Dec. 07 to 11, 2018

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. Parallel, perpendicular, and ground-parallel orientations 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 detects 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:

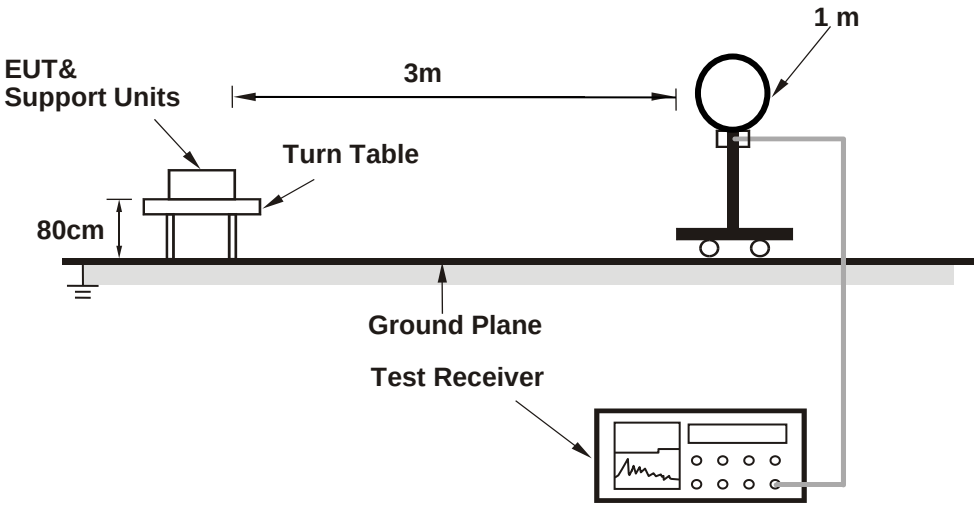
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

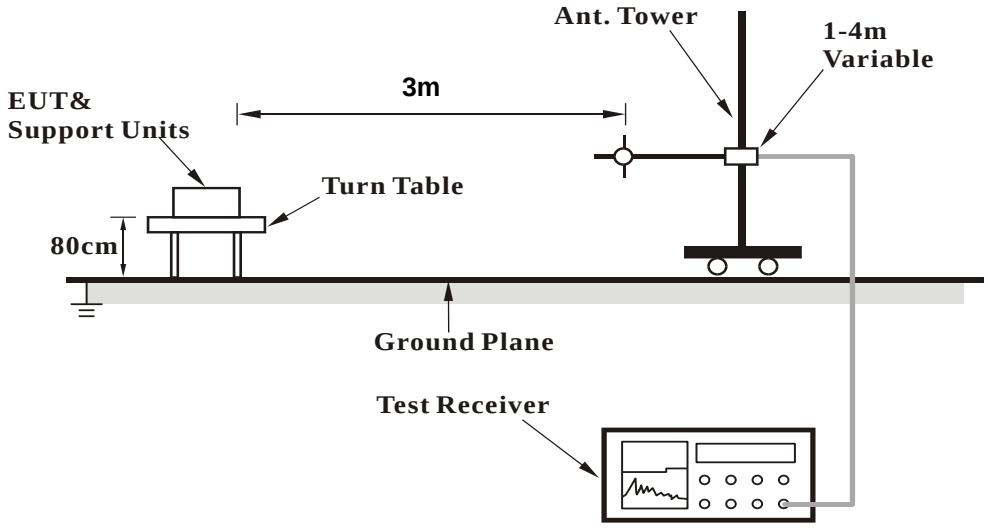
No deviation.

4.1.5 Test Setup

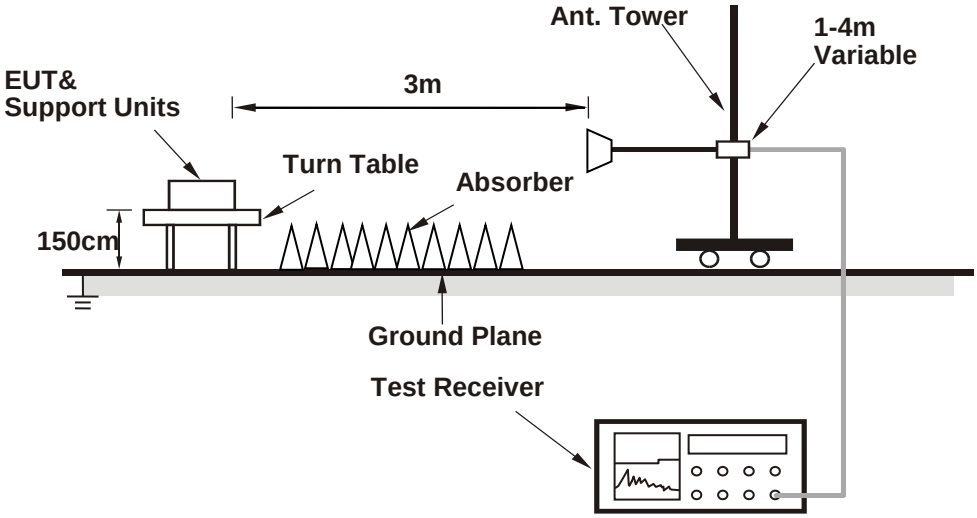
For Radiated emission below 30MHz



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 is placed on remote site.
b. Controlling software (QDART_1.0.44) 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	2385.30	47.5 PK	74.0	-26.5	1.44 H	238	49.5	-2.0
2	2385.30	43.1 AV	54.0	-10.9	1.44 H	238	45.1	-2.0
3	2390.00	49.3 PK	74.0	-24.7	1.44 H	238	51.3	-2.0
4	2390.00	37.1 AV	54.0	-16.9	1.44 H	238	39.1	-2.0
5	*2412.00	104.5 PK			1.44 H	238	106.6	-2.1
6	*2412.00	102.0 AV			1.44 H	238	104.1	-2.1
7	4824.00	45.8 PK	74.0	-28.2	1.04 H	109	43.8	2.0
8	4824.00	43.0 AV	54.0	-11.0	1.04 H	109	41.0	2.0
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	2385.30	57.7 PK	74.0	-16.3	1.53 V	48	59.7	-2.0
2	2385.30	52.6 AV	54.0	-1.4	1.53 V	48	54.6	-2.0
3	2390.00	55.5 PK	74.0	-18.5	1.53 V	48	57.5	-2.0
4	2390.00	47.6 AV	54.0	-6.4	1.53 V	48	49.6	-2.0
5	*2412.00	115.8 PK			1.53 V	48	117.9	-2.1
6	*2412.00	113.3 AV			1.53 V	48	115.4	-2.1
7	4824.00	51.1 PK	74.0	-22.9	1.21 V	304	49.1	2.0
8	4824.00	49.1 AV	54.0	-4.9	1.21 V	304	47.1	2.0

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	47.3 PK	74.0	-26.7	1.46 H	234	49.3	-2.0
2	2390.00	35.8 AV	54.0	-18.2	1.46 H	234	37.8	-2.0
3	*2437.00	104.6 PK			1.46 H	234	106.8	-2.2
4	*2437.00	102.2 AV			1.46 H	234	104.4	-2.2
5	2483.50	48.6 PK	74.0	-25.4	1.46 H	234	50.8	-2.2
6	2483.50	36.3 AV	54.0	-17.7	1.46 H	234	38.5	-2.2
7	4874.00	47.9 PK	74.0	-26.1	1.34 H	168	45.9	2.0
8	4874.00	46.1 AV	54.0	-7.9	1.34 H	168	44.1	2.0
9	7311.00	48.7 PK	74.0	-25.3	1.14 H	62	40.2	8.5
10	7311.00	42.6 AV	54.0	-11.4	1.14 H	62	34.1	8.5
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	49.9 PK	74.0	-24.1	1.16 V	43	51.9	-2.0
2	2390.00	36.0 AV	54.0	-18.0	1.16 V	43	38.0	-2.0
3	*2437.00	116.1 PK			1.16 V	43	118.3	-2.2
4	*2437.00	113.6 AV			1.16 V	43	115.8	-2.2
5	2483.50	48.3 PK	74.0	-25.7	1.16 V	43	50.5	-2.2
6	2483.50	36.7 AV	54.0	-17.3	1.16 V	43	38.9	-2.2
7	4874.00	54.3 PK	74.0	-19.7	1.21 V	304	52.3	2.0
8	4874.00	53.3 AV	54.0	-0.7	1.21 V	304	51.3	2.0
9	7311.00	54.5 PK	74.0	-19.5	1.22 V	228	46.0	8.5
10	7311.00	50.7 AV	54.0	-3.3	1.22 V	228	42.2	8.5

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
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	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	*2462.00	103.8 PK			1.46 H	248	106.0	-2.2
2	*2462.00	101.4 AV			1.46 H	248	103.6	-2.2
3	2483.50	47.2 PK	74.0	-26.8	1.46 H	248	49.4	-2.2
4	2483.50	36.1 AV	54.0	-17.9	1.46 H	248	38.3	-2.2
5	2488.70	48.2 PK	74.0	-25.8	1.46 H	248	50.4	-2.2
6	2488.70	39.2 AV	54.0	-14.8	1.46 H	248	41.4	-2.2
7	4924.00	48.4 PK	74.0	-25.6	1.37 H	172	46.4	2.0
8	4924.00	46.4 AV	54.0	-7.6	1.37 H	172	44.4	2.0
9	7386.00	48.8 PK	74.0	-25.2	1.09 H	78	40.2	8.6
10	7386.00	42.9 AV	54.0	-11.1	1.09 H	78	34.3	8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.2 PK			1.31 V	44	117.4	-2.2
2	*2462.00	112.8 AV			1.31 V	44	115.0	-2.2
3	2483.50	55.4 PK	74.0	-18.6	1.31 V	44	57.6	-2.2
4	2483.50	45.1 AV	54.0	-8.9	1.31 V	44	47.3	-2.2
5	2486.90	56.1 PK	74.0	-17.9	1.31 V	44	58.3	-2.2
6	2486.90	49.5 AV	54.0	-4.5	1.31 V	44	51.7	-2.2
7	4924.00	54.7 PK	74.0	-19.3	1.21 V	304	52.7	2.0
8	4924.00	53.7 AV	54.0	-0.3	1.21 V	304	51.7	2.0
9	7386.00	54.3 PK	74.0	-19.7	1.20 V	213	45.7	8.6
10	7386.00	50.6 AV	54.0	-3.4	1.20 V	213	42.0	8.6

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.4 PK	74.0	-10.6	1.47 H	244	65.4	-2.0
2	2390.00	44.1 AV	54.0	-9.9	1.47 H	244	46.1	-2.0
3	*2412.00	102.7 PK			1.47 H	244	104.8	-2.1
4	*2412.00	90.2 AV			1.47 H	244	92.3	-2.1
5	4824.00	41.5 PK	74.0	-32.5	1.09 H	94	39.5	2.0
6	4824.00	29.3 AV	54.0	-24.7	1.09 H	94	27.3	2.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.7 PK	74.0	-0.3	1.61 V	95	75.7	-2.0
2	2390.00	53.5 AV	54.0	-0.5	1.61 V	95	55.5	-2.0
3	*2412.00	114.0 PK			1.61 V	95	116.1	-2.1
4	*2412.00	101.4 AV			1.61 V	95	103.5	-2.1
5	4824.00	43.5 PK	74.0	-30.5	1.25 V	320	41.5	2.0
6	4824.00	31.4 AV	54.0	-22.6	1.25 V	320	29.4	2.0

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	60.4 PK	74.0	-13.6	1.51 H	243	62.4	-2.0
2	2390.00	42.1 AV	54.0	-11.9	1.51 H	243	44.1	-2.0
3	*2437.00	111.0 PK			1.51 H	243	113.2	-2.2
4	*2437.00	98.2 AV			1.51 H	243	100.4	-2.2
5	2483.50	61.5 PK	74.0	-12.5	1.51 H	243	63.7	-2.2
6	2483.50	43.3 AV	54.0	-10.7	1.51 H	243	45.5	-2.2
7	4874.00	45.2 PK	74.0	-28.8	1.12 H	105	43.2	2.0
8	4874.00	32.7 AV	54.0	-21.3	1.12 H	105	30.7	2.0
9	7311.00	50.6 PK	74.0	-23.4	1.11 H	76	42.1	8.5
10	7311.00	37.9 AV	54.0	-16.1	1.11 H	76	29.4	8.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.3 PK	74.0	-0.7	1.61 V	93	75.3	-2.0
2	2390.00	49.2 AV	54.0	-4.8	1.61 V	93	51.2	-2.0
3	*2437.00	121.7 PK			1.61 V	93	123.9	-2.2
4	*2437.00	109.6 AV			1.61 V	93	111.8	-2.2
5	2483.50	71.1 PK	74.0	-2.9	1.61 V	93	73.3	-2.2
6	2483.50	49.1 AV	54.0	-4.9	1.61 V	93	51.3	-2.2
7	4874.00	49.0 PK	74.0	-25.0	1.21 V	324	47.0	2.0
8	4874.00	36.8 AV	54.0	-17.2	1.21 V	324	34.8	2.0
9	7311.00	57.1 PK	74.0	-16.9	1.08 V	223	48.6	8.5
10	7311.00	43.5 AV	54.0	-10.5	1.08 V	223	35.0	8.5

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
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	103.0 PK			1.44 H	248	105.2	-2.2
2	*2462.00	90.6 AV			1.44 H	248	92.8	-2.2
3	2483.50	63.3 PK	74.0	-10.7	1.44 H	248	65.5	-2.2
4	2483.50	43.5 AV	54.0	-10.5	1.44 H	248	45.7	-2.2
5	4924.00	42.1 PK	74.0	-31.9	1.14 H	102	40.1	2.0
6	4924.00	30.0 AV	54.0	-24.0	1.14 H	102	28.0	2.0
7	7386.00	44.7 PK	74.0	-29.3	1.12 H	81	36.1	8.6
8	7386.00	32.0 AV	54.0	-22.0	1.12 H	81	23.4	8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.3 PK			1.61 V	94	117.5	-2.2
2	*2462.00	101.7 AV			1.61 V	94	103.9	-2.2
3	2483.50	73.7 PK	74.0	-0.3	1.61 V	94	75.9	-2.2
4	2483.50	51.8 AV	54.0	-2.2	1.61 V	94	54.0	-2.2
5	4924.00	44.2 PK	74.0	-29.8	1.20 V	318	42.2	2.0
6	4924.00	31.7 AV	54.0	-22.3	1.20 V	318	29.7	2.0
7	7386.00	52.9 PK	74.0	-21.1	1.10 V	236	44.3	8.6
8	7386.00	39.3 AV	54.0	-14.7	1.10 V	236	30.7	8.6

REMARKS:

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

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CHANNEL	TX Channel 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	58.5 PK	74.0	-15.5	1.45 H	232	60.5	-2.0
2	2390.00	44.2 AV	54.0	-9.8	1.45 H	232	46.2	-2.0
3	*2412.00	102.3 PK			1.45 H	232	104.4	-2.1
4	*2412.00	91.8 AV			1.45 H	232	93.9	-2.1
5	4824.00	42.6 PK	74.0	-31.4	1.11 H	82	40.6	2.0
6	4824.00	30.1 AV	54.0	-23.9	1.11 H	82	28.1	2.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.9 PK	74.0	-6.1	1.49 V	92	69.9	-2.0
2	**2390.00**	**53.8 AV**	**54.0**	**-0.2**	**1.49 V**	**92**	**55.8**	**-2.0**
3	*2412.00	114.1 PK			1.49 V	92	116.2	-2.1
4	*2412.00	103.6 AV			1.49 V	92	105.7	-2.1
5	4824.00	43.6 PK	74.0	-30.4	1.19 V	321	41.6	2.0
6	4824.00	31.4 AV	54.0	-22.6	1.19 V	321	29.4	2.0

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	56.5 PK	74.0	-17.5	1.45 H	257	58.5	-2.0
2	2390.00	42.1 AV	54.0	-11.9	1.45 H	257	44.1	-2.0
3	*2437.00	110.0 PK			1.45 H	257	112.2	-2.2
4	*2437.00	99.6 AV			1.45 H	257	101.8	-2.2
5	2483.50	56.8 PK	74.0	-17.2	1.45 H	257	59.0	-2.2
6	2483.50	42.5 AV	54.0	-11.5	1.45 H	257	44.7	-2.2
7	4874.00	45.0 PK	74.0	-29.0	1.16 H	106	43.0	2.0
8	4874.00	32.7 AV	54.0	-21.3	1.16 H	106	30.7	2.0
9	7311.00	50.1 PK	74.0	-23.9	1.05 H	87	41.6	8.5
10	7311.00	37.5 AV	54.0	-16.5	1.05 H	87	29.0	8.5
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	1.29 V	89	67.6	-2.0
2	2390.00	50.3 AV	54.0	-3.7	1.29 V	89	52.3	-2.0
3	*2437.00	121.4 PK			1.29 V	89	123.6	-2.2
4	*2437.00	111.0 AV			1.29 V	89	113.2	-2.2
5	2483.50	66.2 PK	74.0	-7.8	1.29 V	89	68.4	-2.2
6	2483.50	50.2 AV	54.0	-3.8	1.29 V	89	52.4	-2.2
7	4874.00	48.9 PK	74.0	-25.1	1.21 V	327	46.9	2.0
8	4874.00	36.5 AV	54.0	-17.5	1.21 V	327	34.5	2.0
9	7311.00	57.6 PK	74.0	-16.4	1.12 V	216	49.1	8.5
10	7311.00	43.8 AV	54.0	-10.2	1.12 V	216	35.3	8.5

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
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	103.6 PK			1.49 H	238	105.8	-2.2
2	*2462.00	93.0 AV			1.49 H	238	95.2	-2.2
3	2483.50	58.6 PK	74.0	-15.4	1.49 H	238	60.8	-2.2
4	2483.50	45.3 AV	54.0	-8.7	1.49 H	238	47.5	-2.2
5	4924.00	42.0 PK	74.0	-32.0	1.14 H	96	40.0	2.0
6	4924.00	29.7 AV	54.0	-24.3	1.14 H	96	27.7	2.0
7	7386.00	45.1 PK	74.0	-28.9	1.10 H	94	36.5	8.6
8	7386.00	32.5 AV	54.0	-21.5	1.10 H	94	23.9	8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	115.8 PK			1.39 V	89	118.0	-2.2
2	*2462.00	104.9 AV			1.39 V	89	107.1	-2.2
3	2483.50	68.5 PK	74.0	-5.5	1.39 V	89	70.7	-2.2
4	**2483.50**	**53.8 AV**	**54.0**	**-0.2**	**1.39 V**	**89**	**56.0**	**-2.2**
5	4924.00	43.9 PK	74.0	-30.1	1.23 V	321	41.9	2.0
6	4924.00	31.5 AV	54.0	-22.5	1.23 V	321	29.5	2.0
7	7386.00	52.6 PK	74.0	-21.4	1.15 V	229	44.0	8.6
8	7386.00	38.8 AV	54.0	-15.2	1.15 V	229	30.2	8.6

REMARKS:

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

VHT40

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.8 PK	74.0	-18.2	1.51 H	232	57.8	-2.0
2	2390.00	43.3 AV	54.0	-10.7	1.51 H	232	45.3	-2.0
3	*2422.00	95.8 PK			1.51 H	232	97.9	-2.1
4	*2422.00	85.7 AV			1.51 H	232	87.8	-2.1
5	4844.00	42.2 PK	74.0	-31.8	1.17 H	108	40.3	1.9
6	4844.00	29.8 AV	54.0	-24.2	1.17 H	108	27.9	1.9
7	7266.00	45.3 PK	74.0	-28.7	1.07 H	99	36.8	8.5
8	7266.00	32.6 AV	54.0	-21.4	1.07 H	99	24.1	8.5
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	68.2 PK	74.0	-5.8	1.29 V	88	70.2	-2.0
2	**2390.00**	**53.8 AV**	**54.0**	**-0.2**	**1.29 V**	**88**	**55.8**	**-2.0**
3	*2422.00	110.4 PK			1.29 V	88	112.5	-2.1
4	*2422.00	100.4 AV			1.29 V	88	102.5	-2.1
5	4844.00	43.7 PK	74.0	-30.3	1.20 V	330	41.8	1.9
6	4844.00	31.1 AV	54.0	-22.9	1.20 V	330	29.2	1.9
7	7266.00	52.8 PK	74.0	-21.2	1.16 V	220	44.3	8.5
8	7266.00	39.3 AV	54.0	-14.7	1.16 V	220	30.8	8.5

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
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	56.1 PK	74.0	-17.9	1.51 H	228	58.1	-2.0
2	2390.00	43.5 AV	54.0	-10.5	1.51 H	228	45.5	-2.0
3	*2437.00	98.7 PK			1.51 H	228	100.9	-2.2
4	*2437.00	88.7 AV			1.51 H	228	90.9	-2.2
5	2483.50	55.7 PK	74.0	-18.3	1.51 H	228	57.9	-2.2
6	2483.50	42.9 AV	54.0	-11.1	1.51 H	228	45.1	-2.2
7	4874.00	41.5 PK	74.0	-32.5	1.18 H	101	39.5	2.0
8	4874.00	29.5 AV	54.0	-24.5	1.18 H	101	27.5	2.0
9	7311.00	44.9 PK	74.0	-29.1	1.13 H	104	36.4	8.5
10	7311.00	32.0 AV	54.0	-22.0	1.13 H	104	23.5	8.5
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	70.3 PK	74.0	-3.7	1.36 V	86	72.3	-2.0
2	**2390.00**	**53.8 AV**	**54.0**	**-0.2**	**1.36 V**	**86**	**55.8**	**-2.0**
3	*2437.00	112.4 PK			1.36 V	86	114.6	-2.2
4	*2437.00	102.9 AV			1.36 V	86	105.1	-2.2
5	2483.50	72.0 PK	74.0	-2.0	1.36 V	86	74.2	-2.2
6	2483.50	53.4 AV	54.0	-0.6	1.36 V	86	55.6	-2.2
7	4874.00	44.4 PK	74.0	-29.6	1.21 V	326	42.4	2.0
8	4874.00	31.8 AV	54.0	-22.2	1.21 V	326	29.8	2.0
9	7311.00	52.8 PK	74.0	-21.2	1.20 V	223	44.3	8.5
10	7311.00	39.0 AV	54.0	-15.0	1.20 V	223	30.5	8.5

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
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	95.5 PK			1.58 H	248	97.7	-2.2
2	*2452.00	85.5 AV			1.58 H	248	87.7	-2.2
3	2483.50	55.6 PK	74.0	-18.4	1.58 H	248	57.8	-2.2
4	2483.50	42.3 AV	54.0	-11.7	1.58 H	248	44.5	-2.2
5	4904.00	42.1 PK	74.0	-31.9	1.14 H	103	40.1	2.0
6	4904.00	29.6 AV	54.0	-24.4	1.14 H	103	27.6	2.0
7	7356.00	44.8 PK	74.0	-29.2	1.08 H	105	36.3	8.5
8	7356.00	32.2 AV	54.0	-21.8	1.08 H	105	23.7	8.5
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	110.8 PK			1.35 V	91	113.0	-2.2
2	*2452.00	100.3 AV			1.35 V	91	102.5	-2.2
3	2483.50	67.4 PK	74.0	-6.6	1.35 V	91	69.6	-2.2
4	2483.50	53.5 AV	54.0	-0.5	1.35 V	91	55.7	-2.2
5	4904.00	43.4 PK	74.0	-30.6	1.17 V	326	41.4	2.0
6	4904.00	31.0 AV	54.0	-23.0	1.17 V	326	29.0	2.0
7	7356.00	52.5 PK	74.0	-21.5	1.19 V	223	44.0	8.5
8	7356.00	38.9 AV	54.0	-15.1	1.19 V	223	30.4	8.5

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
5. " * ": Fundamental frequency.

Below 1GHz Data:

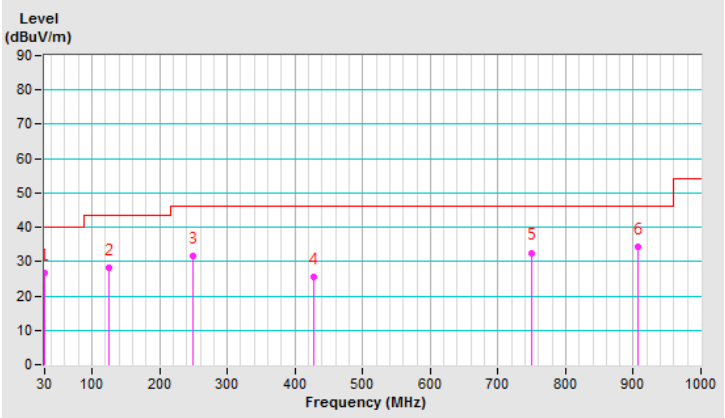
VHT20

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	30.02	26.6 QP	40.0	-13.4	1.50 H	160	36.4	-9.8
2	125.01	28.3 QP	43.5	-15.2	1.00 H	102	37.7	-9.4
3	250.00	31.7 QP	46.0	-14.3	1.50 H	340	40.4	-8.7
4	428.35	25.5 QP	46.0	-20.5	1.00 H	226	28.9	-3.4
5	750.01	32.6 QP	46.0	-13.4	1.50 H	360	29.1	3.5
6	906.27	34.3 QP	46.0	-11.7	1.00 H	308	28.4	5.9

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. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

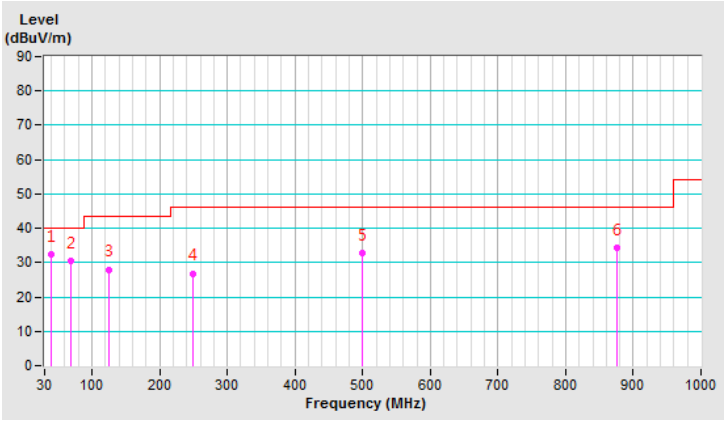


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	38.83	32.5 QP	40.0	-7.5	1.00 V	267	41.1	-8.6
2	69.02	30.6 QP	40.0	-9.4	1.00 V	107	41.0	-10.4
3	125.01	28.0 QP	43.5	-15.5	1.00 V	348	37.4	-9.4
4	250.00	26.9 QP	46.0	-19.1	1.00 V	9	35.6	-8.7
5	499.99	32.9 QP	46.0	-13.1	1.00 V	176	34.8	-1.9
6	874.97	34.1 QP	46.0	-11.9	1.00 V	330	28.8	5.3

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. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



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	Oct. 24, 2018	Oct. 23, 2019
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 22, 2018	Oct. 21, 2019
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	3	Oct. 22, 2018	Oct. 21, 2019
RF Cable	5D-FB	COCCAB-001	Sep. 28, 2018	Sep. 27, 2019
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
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 Conduction 1.
3 Tested Date: Dec. 12, 2018

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.

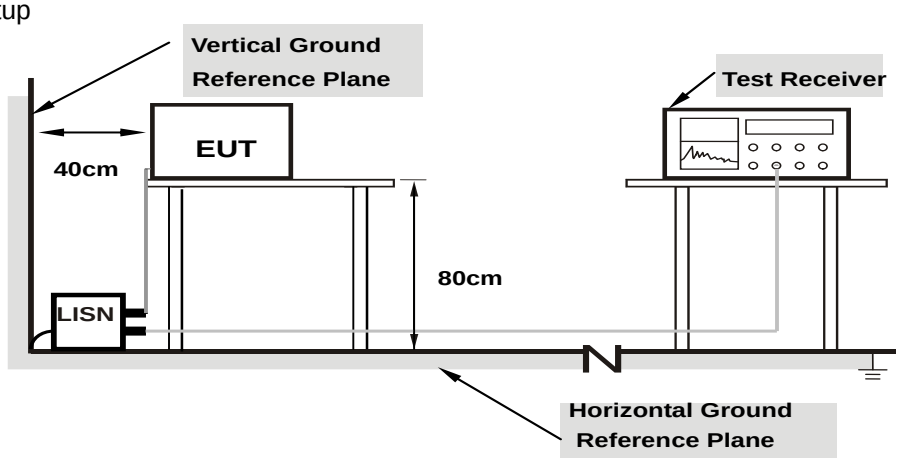
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

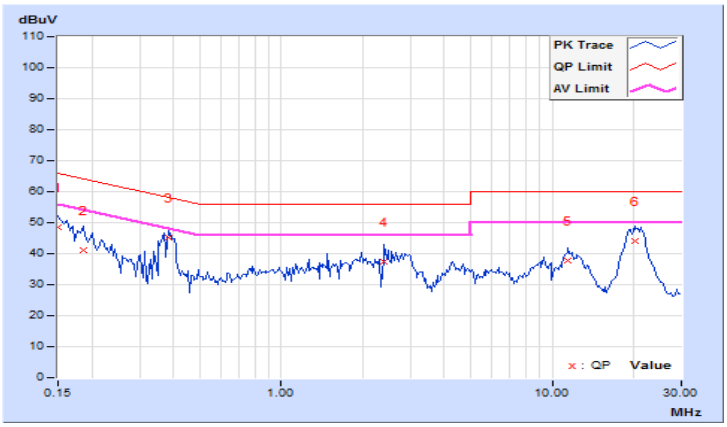
4.2.7 Test Results

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	10.03	38.65	22.78	48.68	32.81	66.00	56.00	-17.32	-23.19
2	0.18516	10.04	31.05	17.11	41.09	27.15	64.25	54.25	-23.16	-27.10
3	0.38438	10.08	35.16	27.29	45.24	37.37	58.18	48.18	-12.94	-10.81
4	2.40625	10.22	27.18	18.30	37.40	28.52	56.00	46.00	-18.60	-17.48
5	11.46875	10.80	26.88	19.84	37.68	30.64	60.00	50.00	-22.32	-19.36
6	20.13281	11.36	32.76	24.29	44.12	35.65	60.00	50.00	-15.88	-14.35

REMARKS:

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

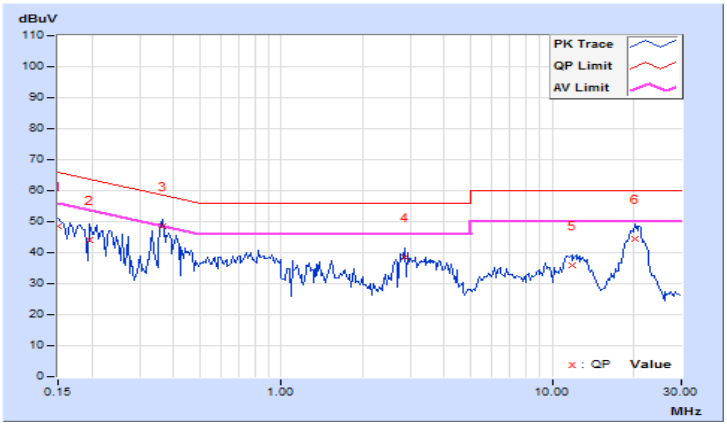


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	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	9.94	38.59	21.84	48.53	31.78	66.00	56.00	-17.47	-24.22
2	0.19687	9.95	34.09	23.15	44.04	33.10	63.74	53.74	-19.70	-20.64
3	**0.36484**	**9.97**	**38.57**	**32.38**	**48.54**	**42.35**	**58.62**	**48.62**	**-10.08**	**-6.27**
4	2.87500	10.11	28.34	16.39	38.45	26.50	56.00	46.00	-17.55	-19.50
5	11.86719	10.64	25.35	17.97	35.99	28.61	60.00	50.00	-24.01	-21.39
6	20.30859	11.14	33.25	25.38	44.39	36.52	60.00	50.00	-15.61	-13.48

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.

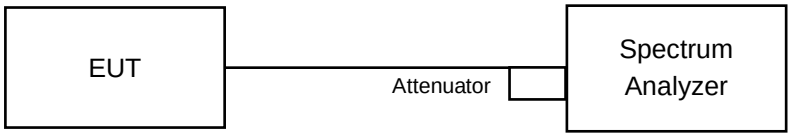


4.3 6dB Bandwidth Measurement

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	8.60	9.08	0.5	PASS
6	2437	8.56	9.07	0.5	PASS
11	2462	8.58	8.13	0.5	PASS

802.11g

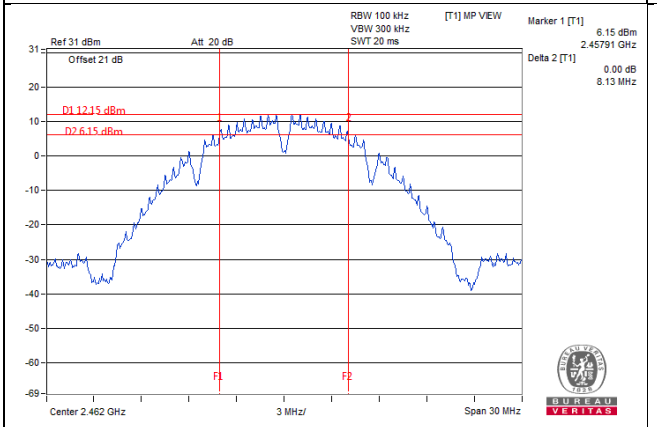
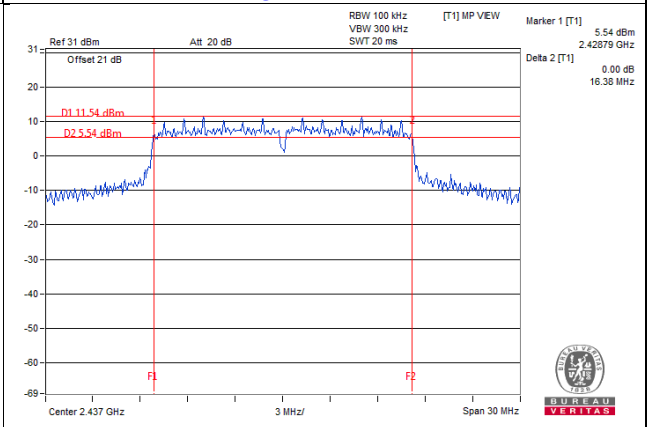
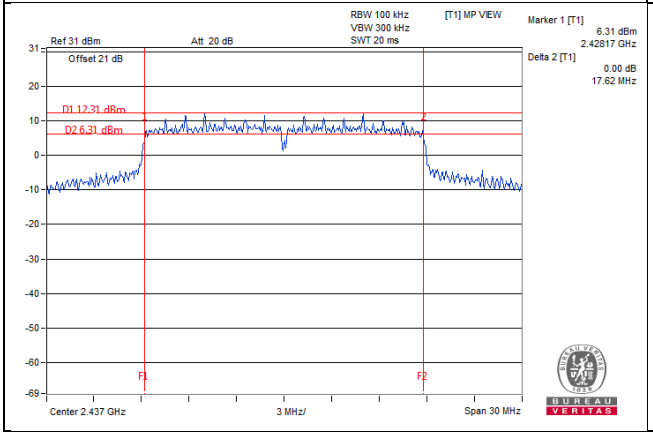
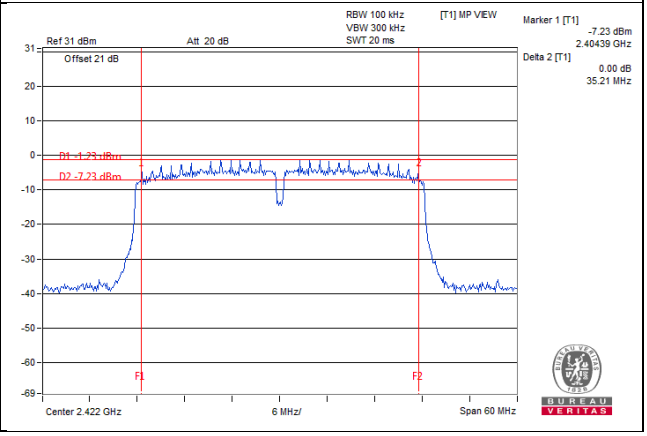
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.44	16.43	0.5	PASS
6	2437	16.38	16.38	0.5	PASS
11	2462	16.41	16.41	0.5	PASS

VHT20

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.66	17.65	0.5	Pass
6	2437	17.66	17.62	0.5	Pass
11	2462	17.67	17.64	0.5	Pass

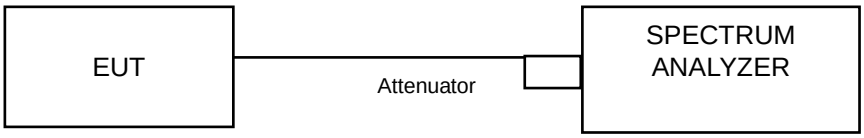
VHT40

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.41	35.21	0.5	Pass
6	2437	35.41	35.25	0.5	Pass
9	2452	35.40	35.39	0.5	Pass

Spectrum Plot of Worst Value	
802.11b / Chain 1: CH11	**802.11g / Chain 0 : CH6**
	
VHT20 / Chain 1: CH6	**VHT40 / Chain 1: CH3**
	

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	13.80
6	2437	13.68	14.04
11	2462	13.20	13.56

802.11g

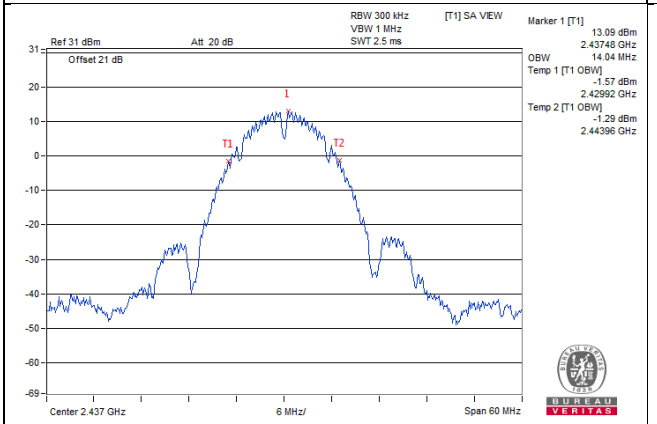
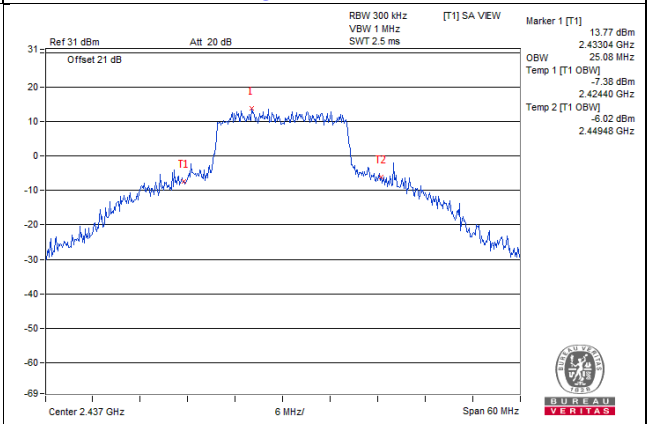
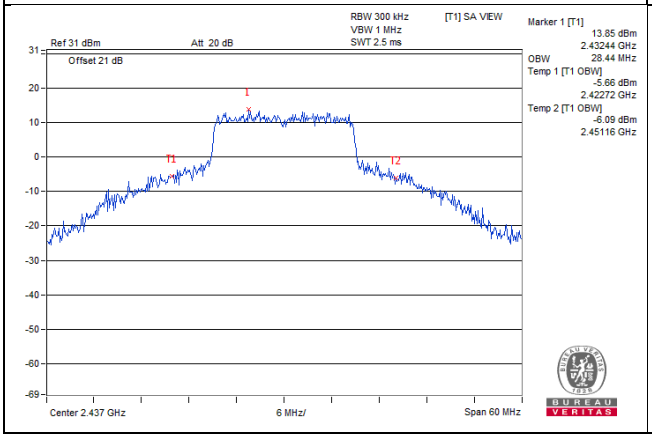
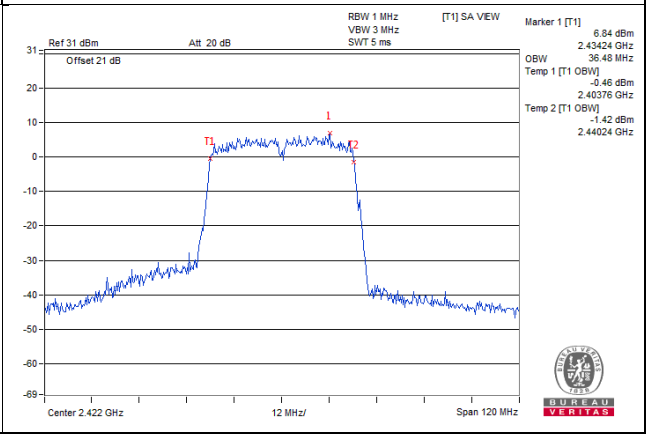
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	16.56	16.44
6	2437	22.20	25.08
11	2462	16.44	16.44

VHT20

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	17.64	17.76
6	2437	23.88	28.44
11	2462	17.64	17.64

VHT40

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
3	2422	36.48	36.24
6	2437	36.24	36.24
9	2452	36.24	36.24

Spectrum Plot of Worst Value	
802.11b / Chain 1 : CH6	**802.11g / Chain 1 : CH6**
	
VHT20 / Chain 1 : CH6	**VHT40 / Chain 0: CH3**
	

4.5 Conducted Output Power Measurement

4.5.1 Limits of Conducted Output Power Measurement

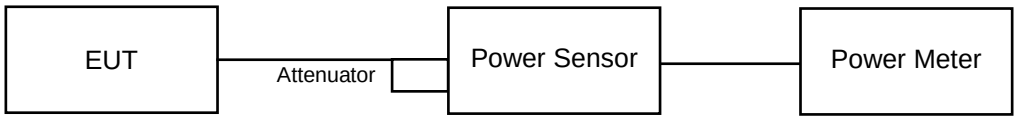
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

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

CDD Mode

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	22.46	22.51	354.436	25.50	30.00	Pass
6	2437	22.66	22.71	371.14	25.70	30.00	Pass
11	2462	22.12	21.91	318.169	25.03	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	21.92	21.81	307.302	24.88	30.00	Pass
6	2437	25.53	25.09	680.122	28.33	30.00	Pass
11	2462	21.85	21.05	280.459	24.48	30.00	Pass

VHT20

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.83	21.52	294.311	24.69	30.00	Pass
6	2437	25.56	25.10	683.343	28.35	30.00	Pass
11	2462	21.50	20.63	256.865	24.10	30.00	Pass

VHT40

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	20.66	20.73	234.717	23.71	30.00	Pass
6	2437	22.92	22.75	384.249	25.85	30.00	Pass
9	2452	20.20	20.47	216.142	23.35	30.00	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	20.20	20.30	211.865	23.26
6	2437	20.44	20.59	225.213	23.53
11	2462	19.92	19.79	193.455	22.87

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.02	14.31	52.212	17.18
6	2437	21.51	21.46	281.538	24.50
11	2462	13.34	13.70	45.019	16.53

VHT20

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.01	14.27	51.907	17.15
6	2437	21.91	21.87	309.054	24.90
11	2462	13.22	13.62	44.003	16.43

VHT40

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	12.20	12.69	35.174	15.46
6	2437	14.90	15.22	64.169	18.07
9	2452	11.92	12.39	32.898	15.17

Beamforming Mode

FOR PEAK POWER

VHT20

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.83	21.52	294.311	24.69	27.99	Pass
6	2437	24.81	24.67	595.78	27.75	27.99	Pass
11	2462	21.50	20.63	256.865	24.10	27.99	Pass

Note: 1. Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power limit shall be reduced to 30-(8.01-6) = 27.99dBm

VHT40

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	20.66	20.73	234.717	23.71	27.99	Pass
6	2437	22.92	22.75	384.249	25.85	27.99	Pass
9	2452	20.20	20.47	216.142	23.35	27.99	Pass

Note: 1. Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi , so the power limit shall be reduced to 30-(8.01-6) = 27.99dBm

FOR AVERAGE POWER

VHT20

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.01	14.27	51.907	17.15
6	2437	21.76	21.67	296.861	24.73
11	2462	13.22	13.62	44.003	16.43

VHT40

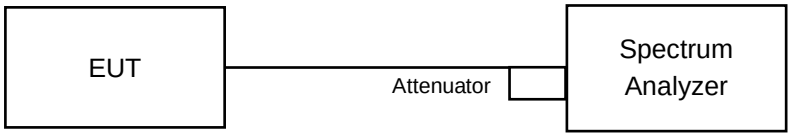
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	12.20	12.69	35.174	15.46
6	2437	14.90	15.22	64.169	18.07
9	2452	11.92	12.39	32.898	15.17

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	-1.30	3.01	1.71	5.99	Pass
	6	2437	-0.12	3.01	2.89	5.99	Pass
	11	2462	-2.17	3.01	0.84	5.99	Pass
1	1	2412	-0.66	3.01	2.35	5.99	Pass
	6	2437	-1.95	3.01	1.06	5.99	Pass
	11	2462	-1.93	3.01	1.08	5.99	Pass

Note: 1. 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	-10.28	3.01	-7.27	5.99	Pass
	6	2437	-3.50	3.01	-0.49	5.99	Pass
	11	2462	-10.56	3.01	-7.55	5.99	Pass
1	1	2412	-9.95	3.01	-6.94	5.99	Pass
	6	2437	-3.59	3.01	-0.58	5.99	Pass
	11	2462	-10.36	3.01	-7.35	5.99	Pass

Note: 1. Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi, so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm

VHT20

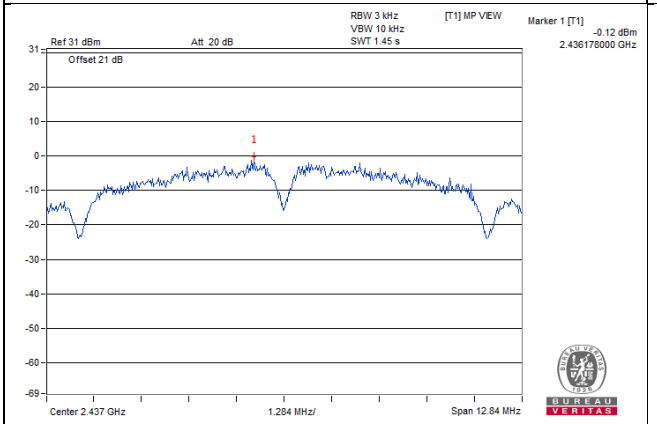
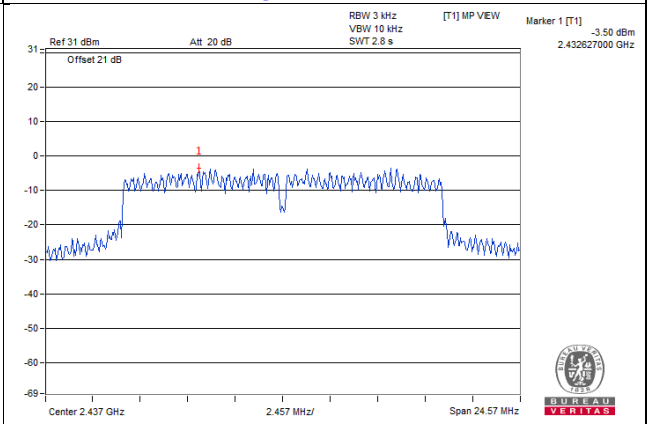
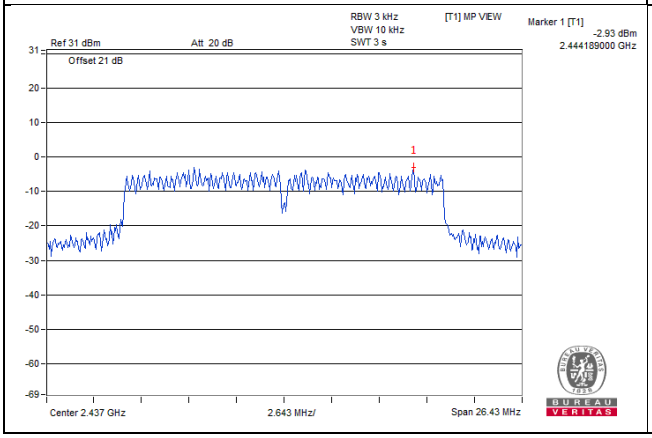
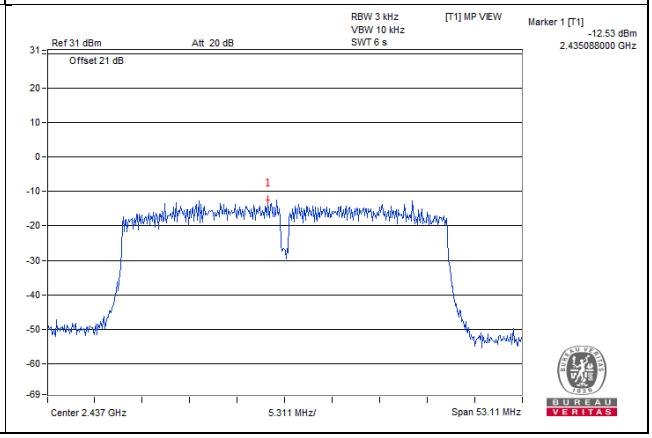
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-10.36	3.01	-7.35	5.99	Pass
	6	2437	-3.35	3.01	-0.34	5.99	Pass
	11	2462	-12.15	3.01	-9.14	5.99	Pass
1	1	2412	-10.08	3.01	-7.07	5.99	Pass
	6	2437	-2.93	3.01	0.08	5.99	Pass
	11	2462	-10.94	3.01	-7.93	5.99	Pass

Note: 1. Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi, so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm

VHT40

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	-14.86	3.01	-11.85	5.99	Pass
	6	2437	-12.53	3.01	-9.52	5.99	Pass
	9	2452	-15.77	3.01	-12.76	5.99	Pass
1	3	2422	-15.12	3.01	-12.11	5.99	Pass
	6	2437	-12.90	3.01	-9.89	5.99	Pass
	9	2452	-14.62	3.01	-11.61	5.99	Pass

Note: 1. Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi, so the power density limit shall be reduced to 8-(8.01-6) = 5.99dBm

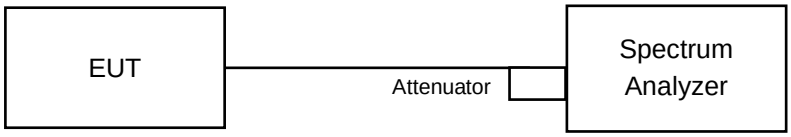
Spectrum Plot of Worst Value	
802.11b / Chain 0 : CH6	**802.11g / Chain 0 : CH6**
	
VHT20 / Chain 1: CH6	**VHT40 / Chain 0 : CH6**
	

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

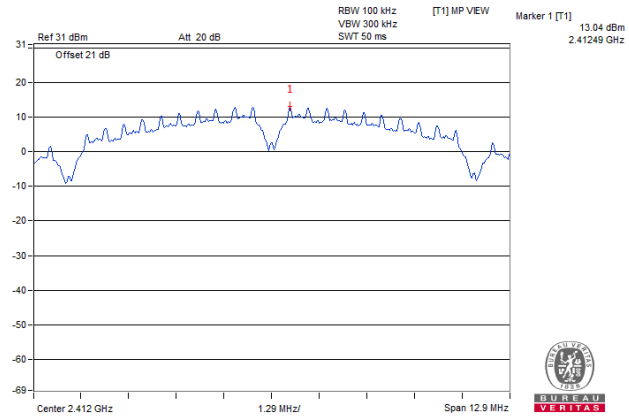
Same as Item 4.3.6

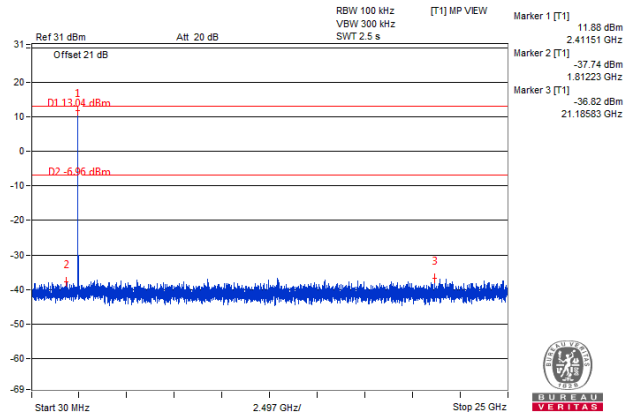
4.7.7 Test Results

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

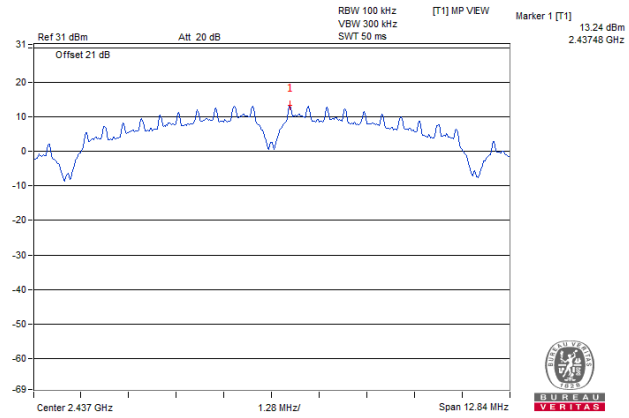
802.11b - Chain 0

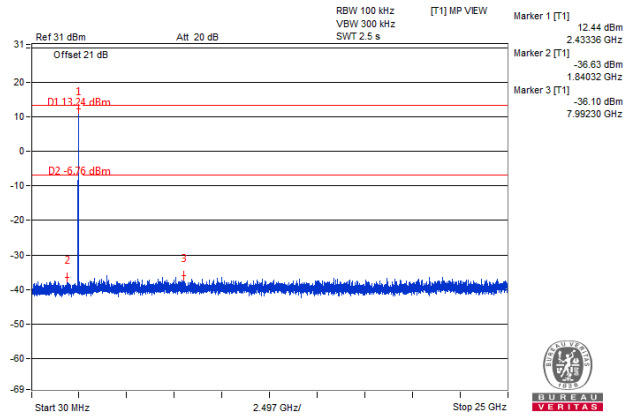
CH 1



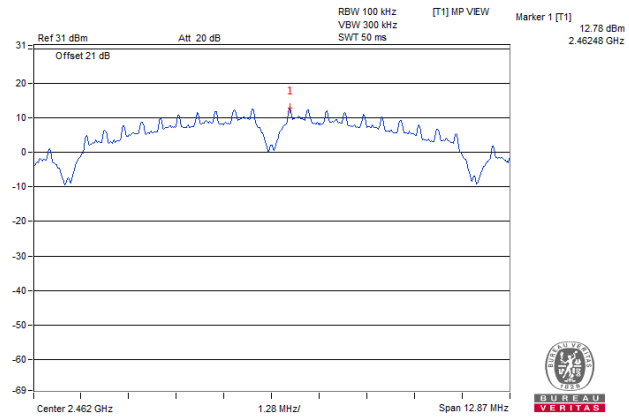


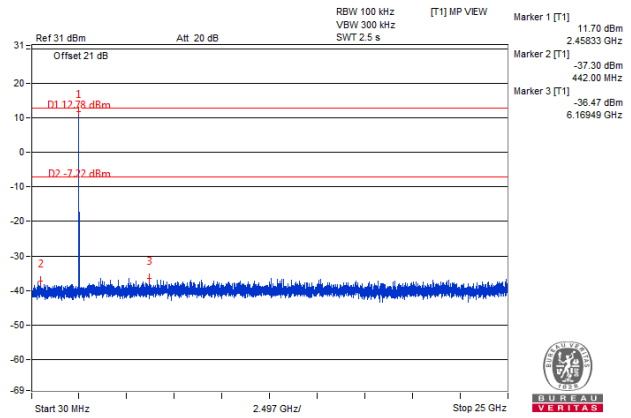
CH 6



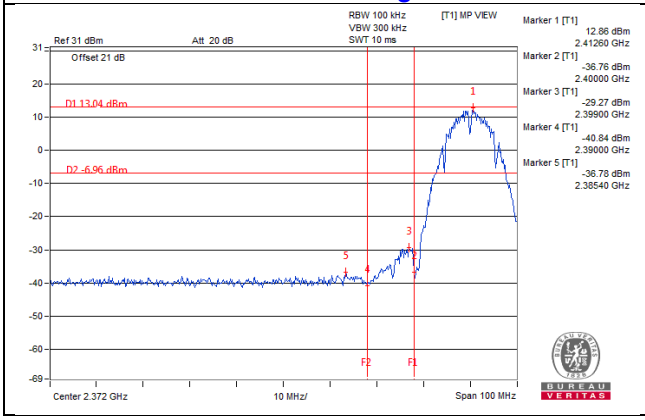


CH 11

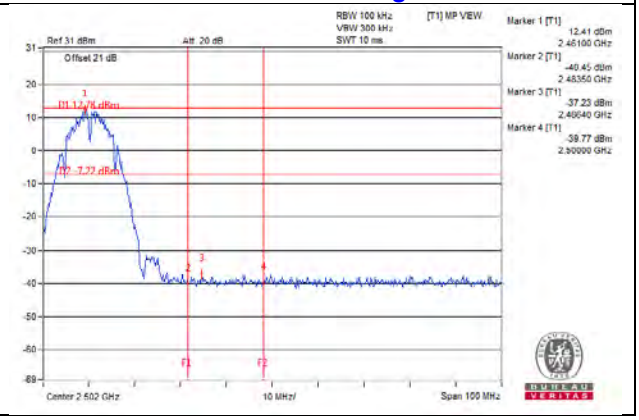




CH 1 Band edge

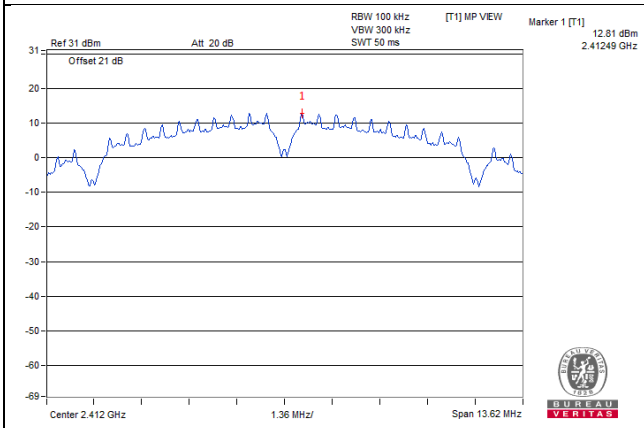


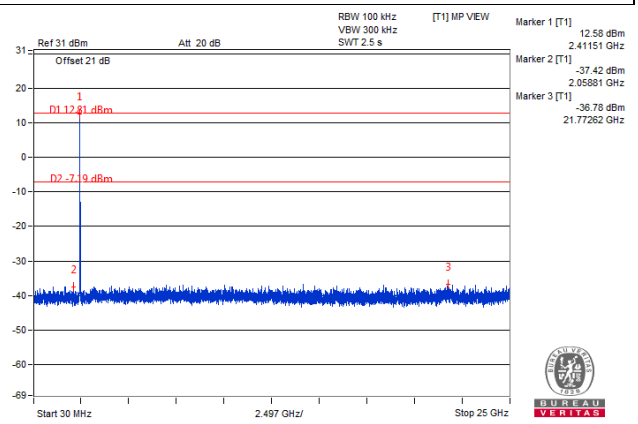
CH 11 Band edge



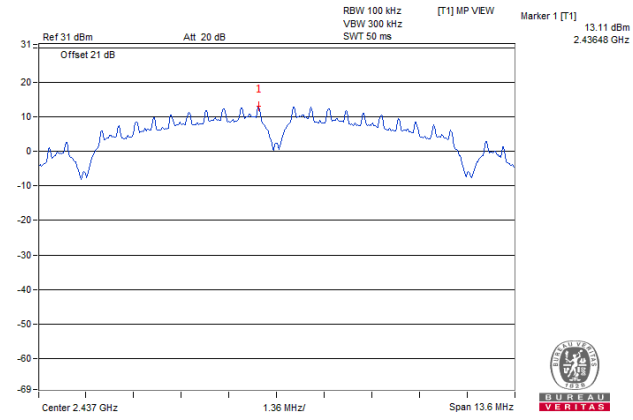
Chain 1

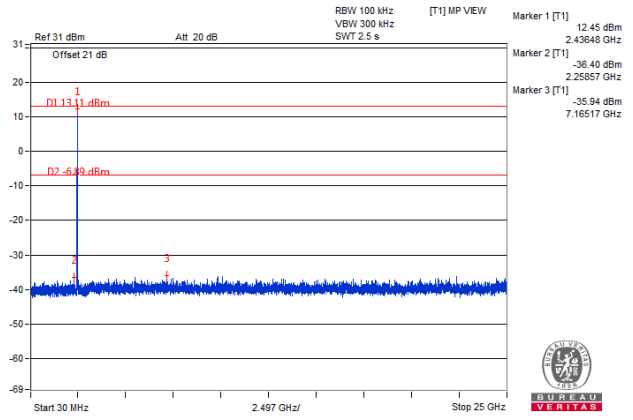
CH 1



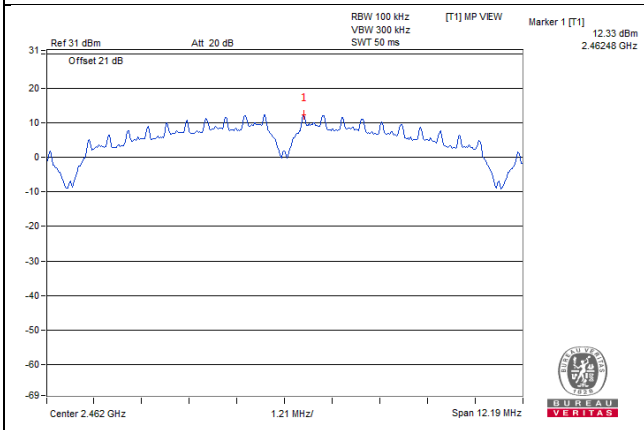


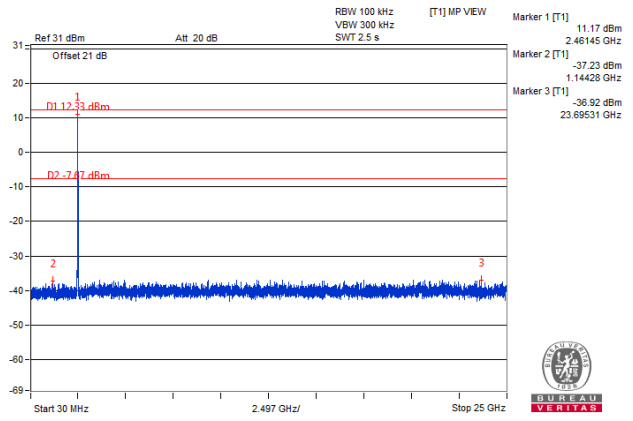
CH 6



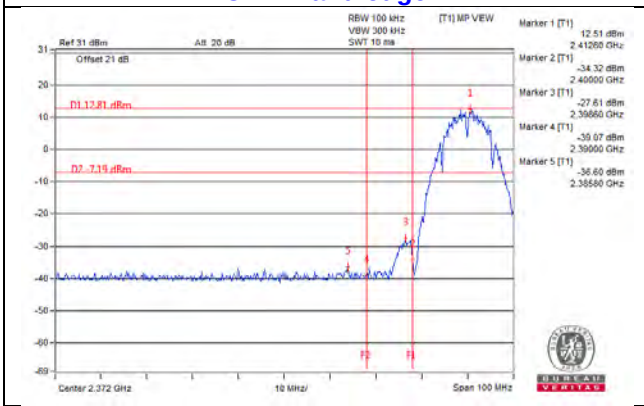


CH 11

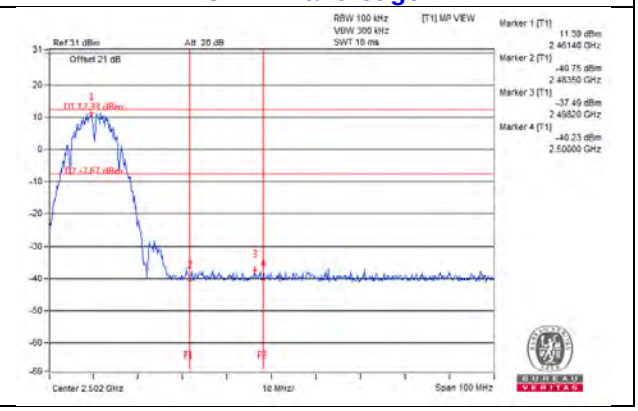




CH 1 Band edge

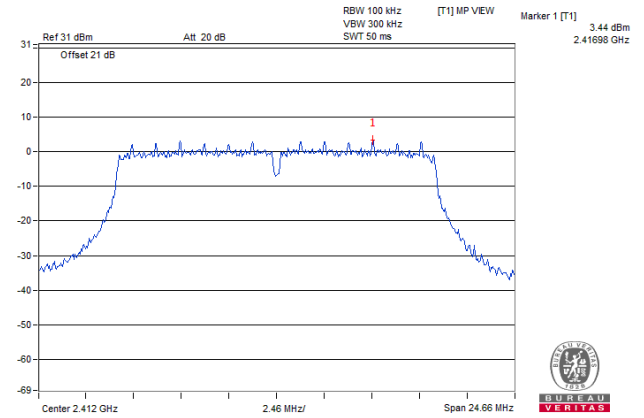


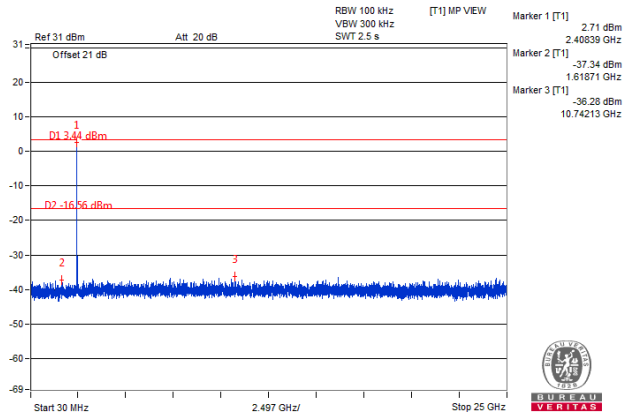
CH 11 Band edge



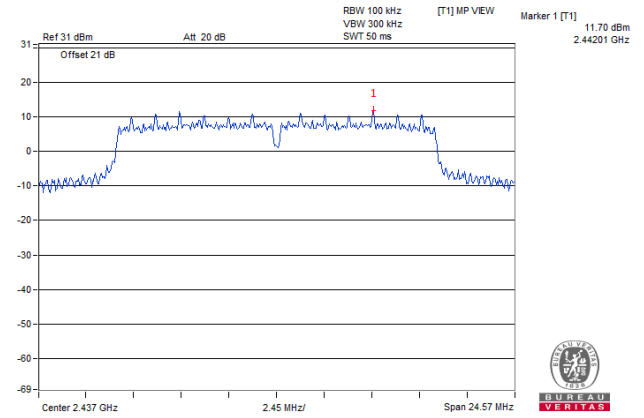
802.11g - Chain 0

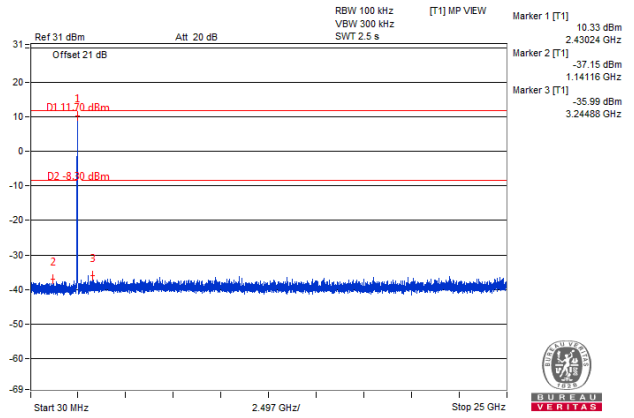
CH 1



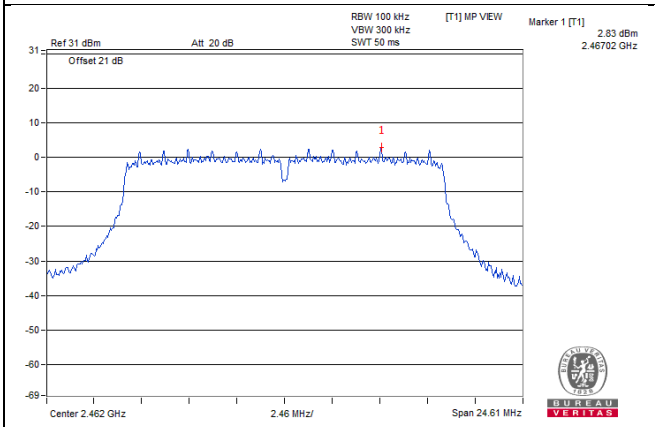


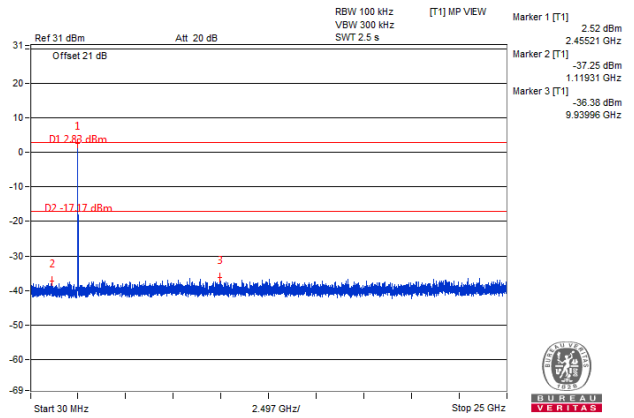
CH 6



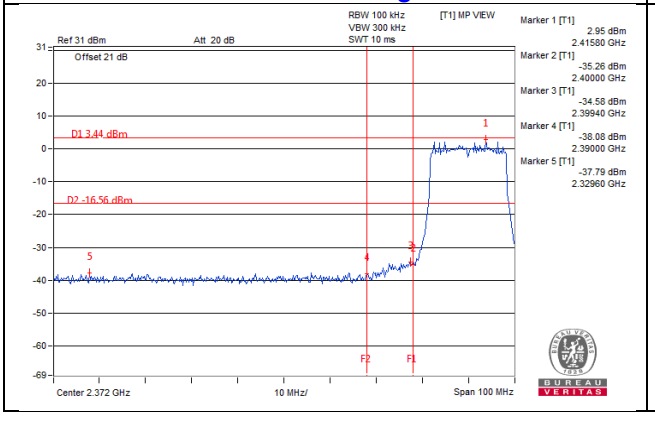


CH 11

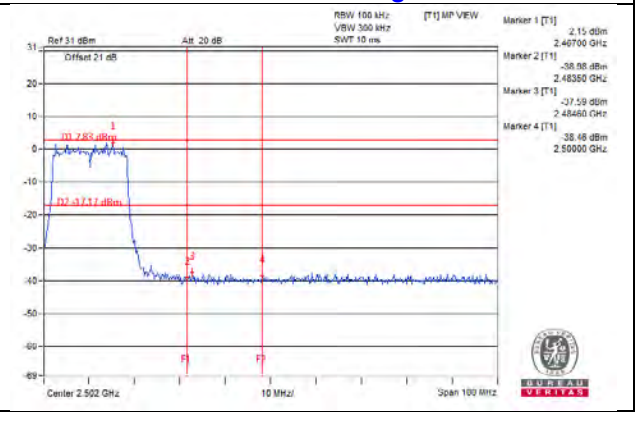




CH 1 Band edge

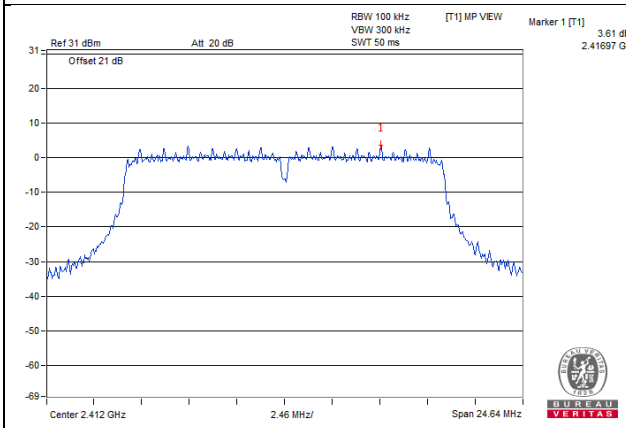


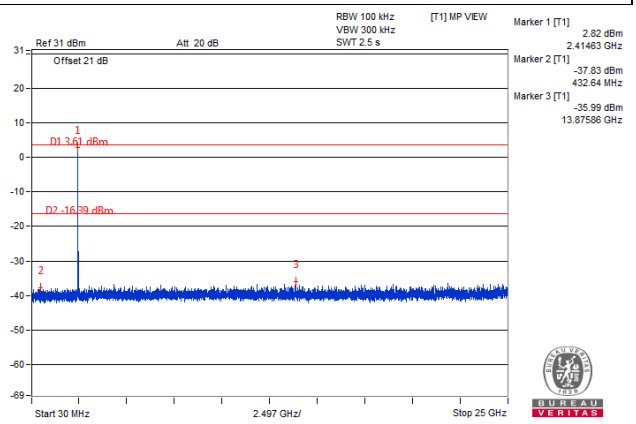
CH 11 Band edge



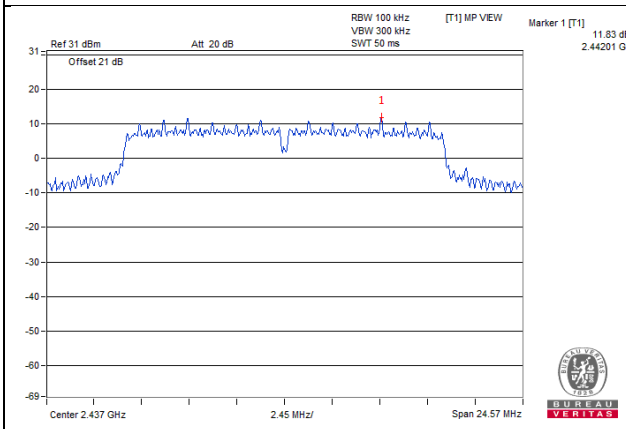
Chain 1

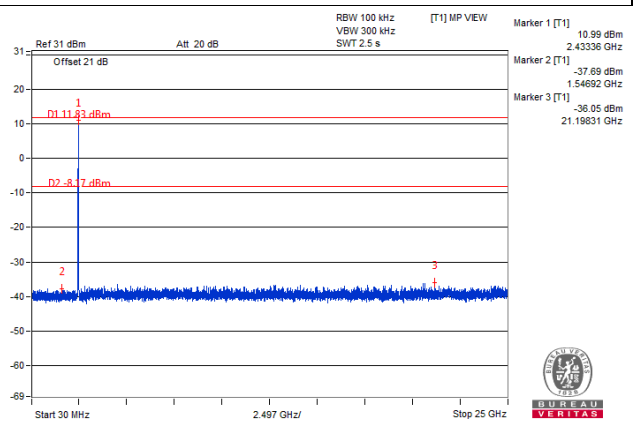
CH 1



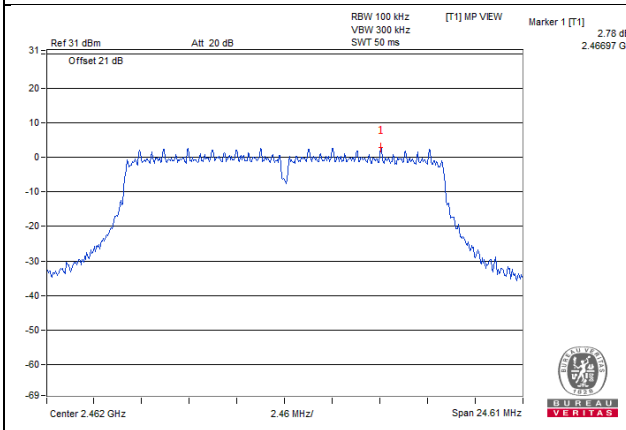


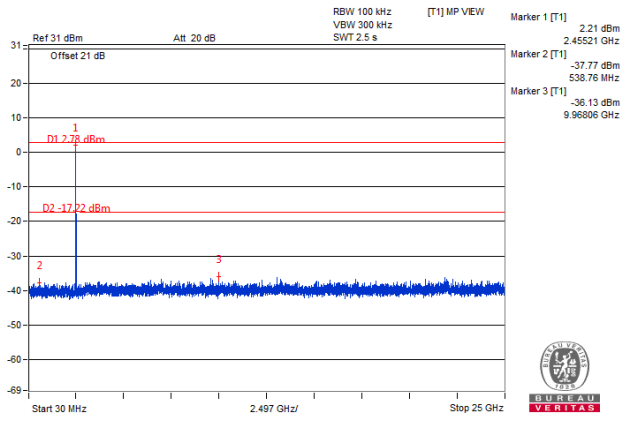
CH 6



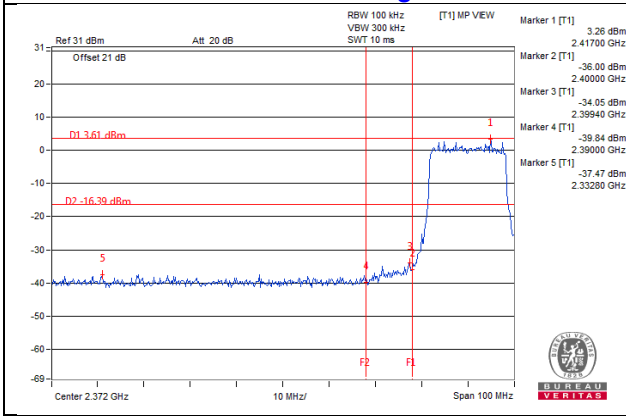


CH 11

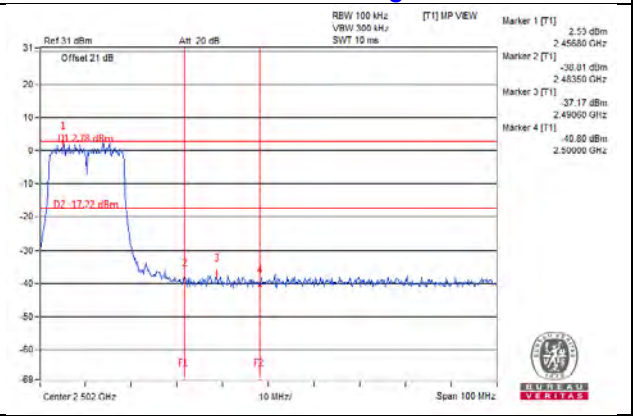




CH 1 Band edge

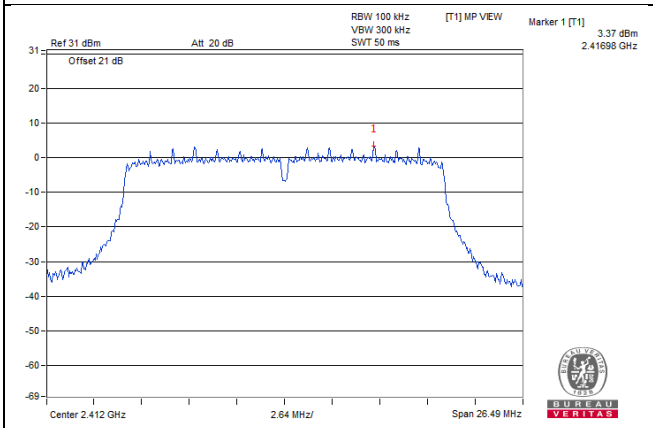


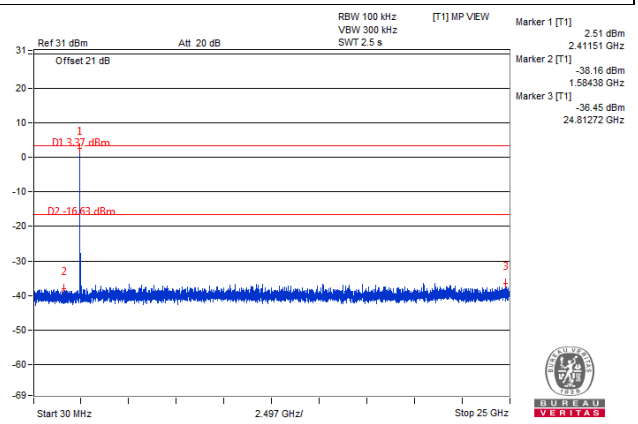
CH 11 Band edge



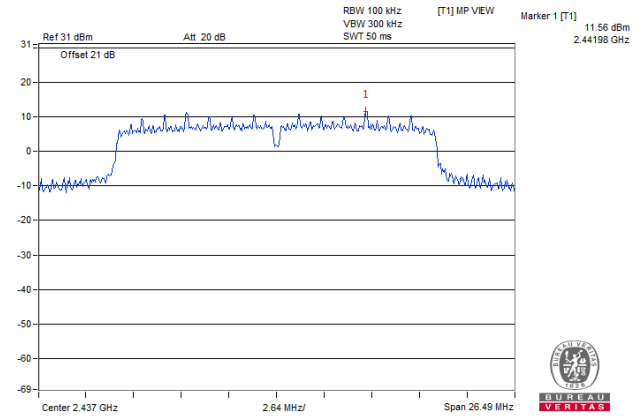
VHT20 - Chain 0

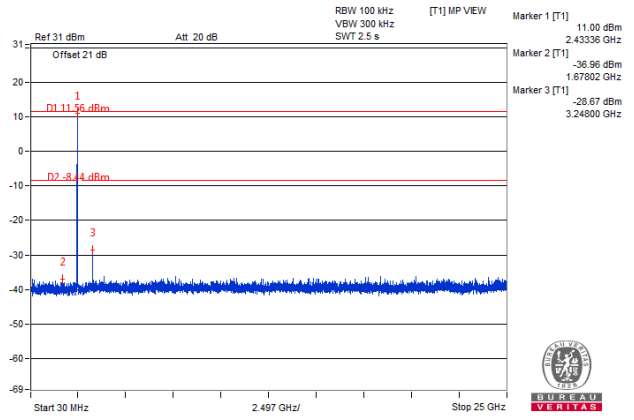
CH 1



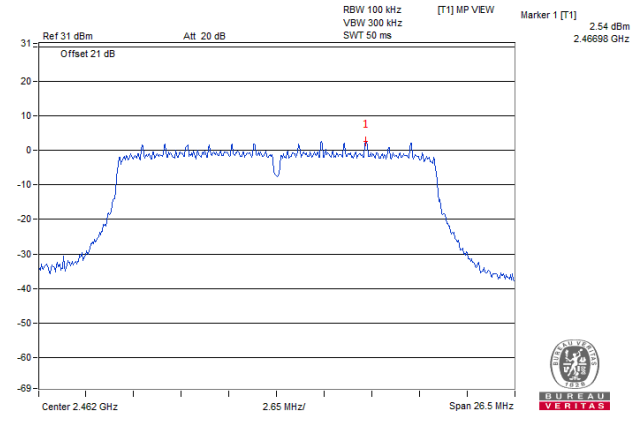


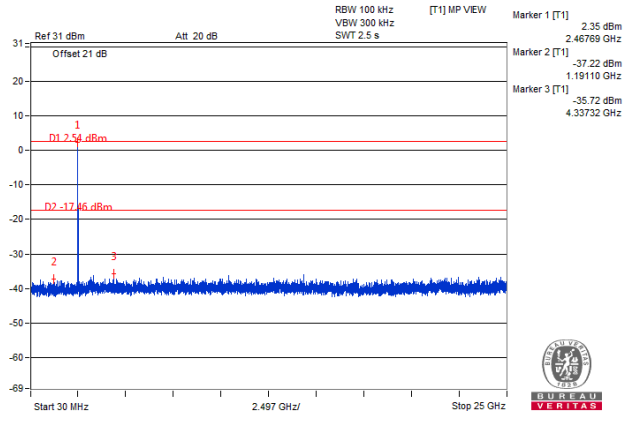
CH 6



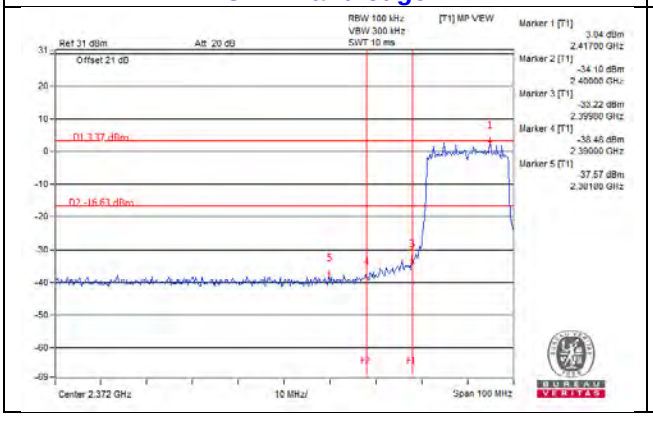


CH 11

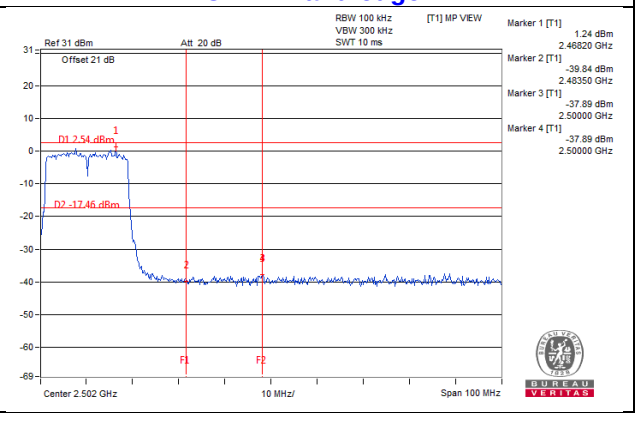




CH 1 Band edge

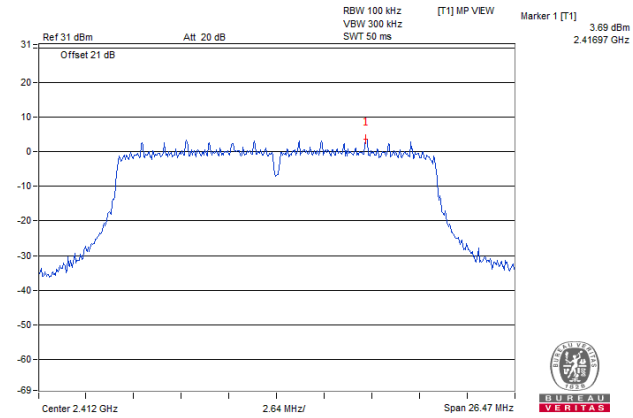


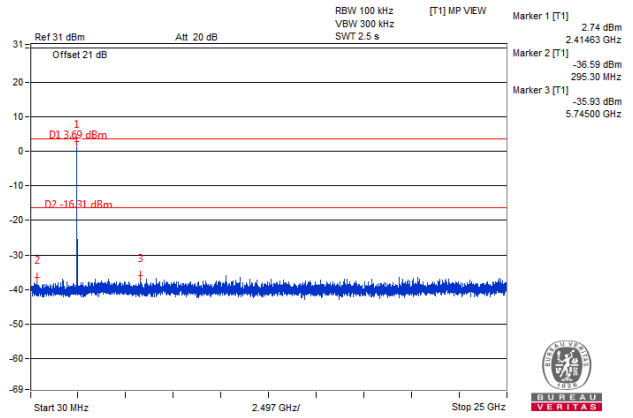
CH 11 Band edge



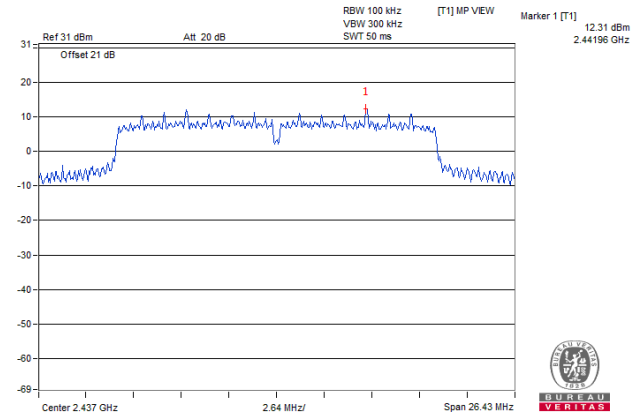
Chain 1

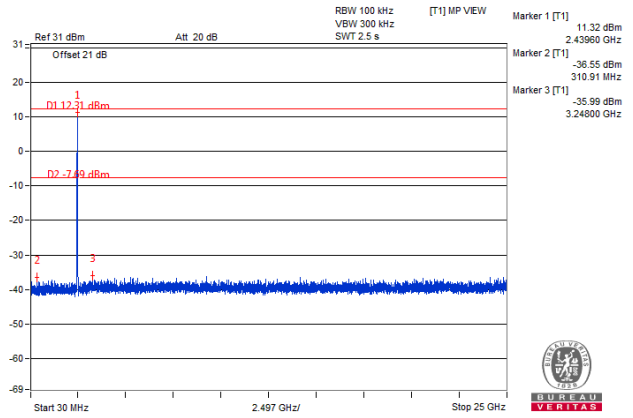
CH 1



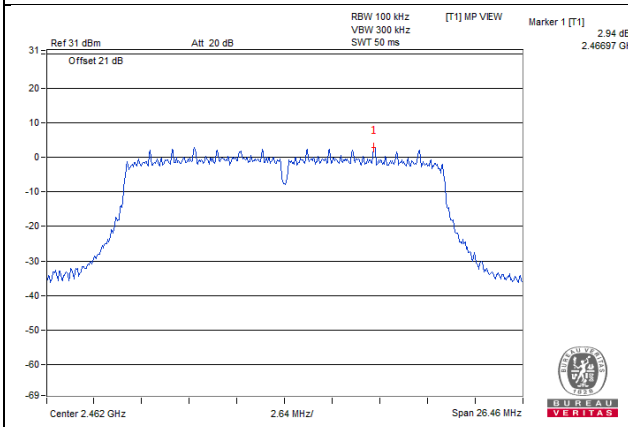


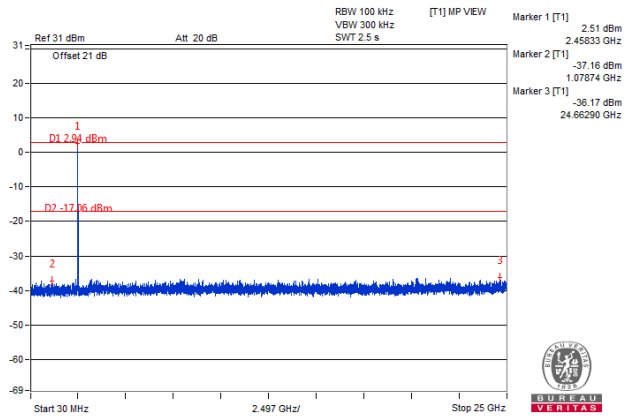
CH 6



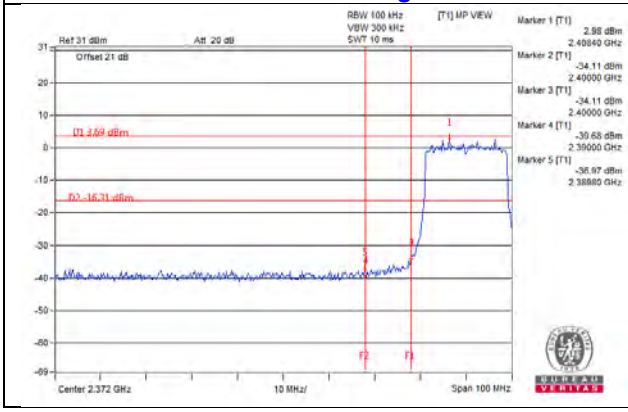


CH 11

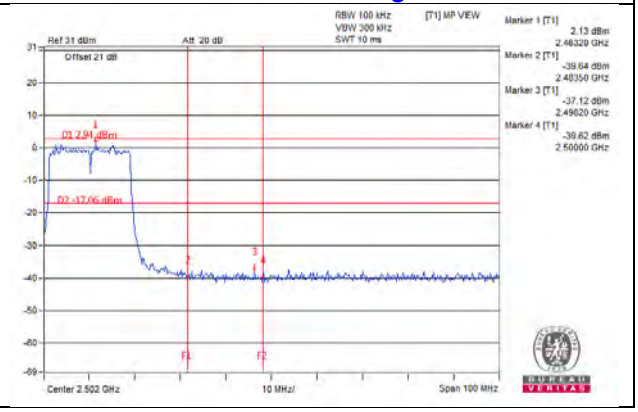




CH 1 Band edge

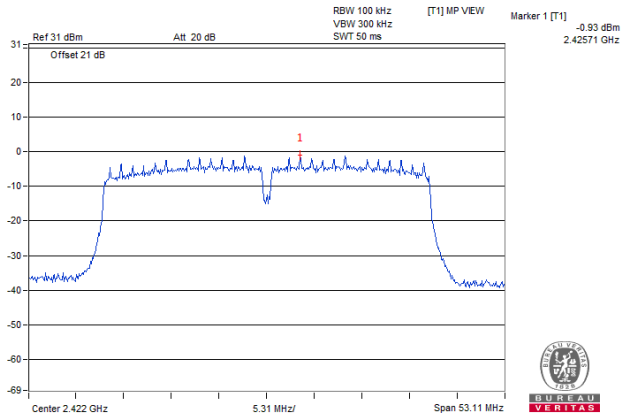


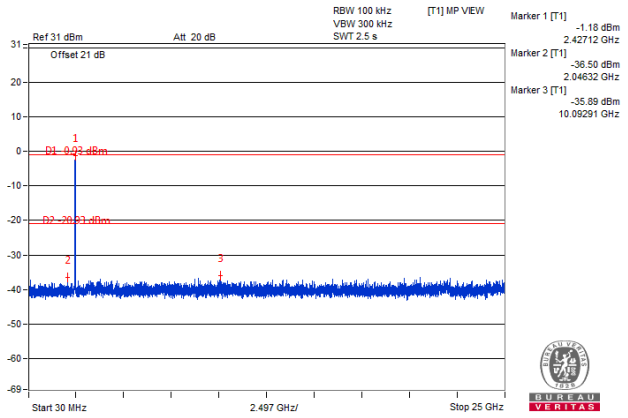
CH 11 Band edge



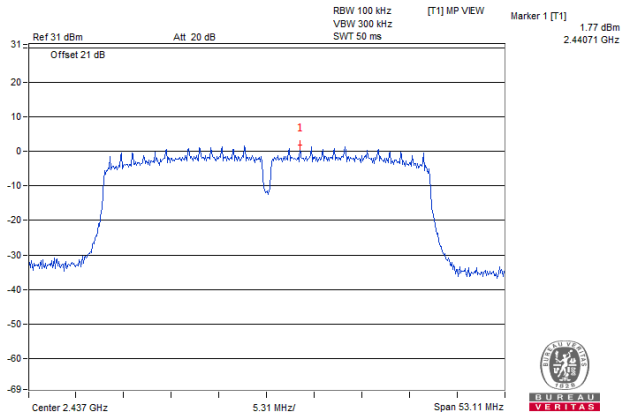
VHT40 - Chain 0

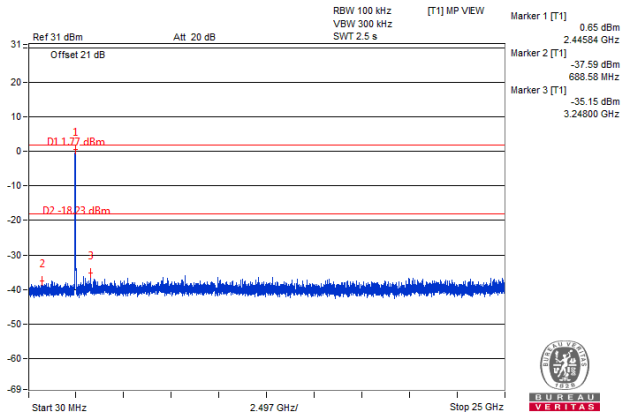
CH 3



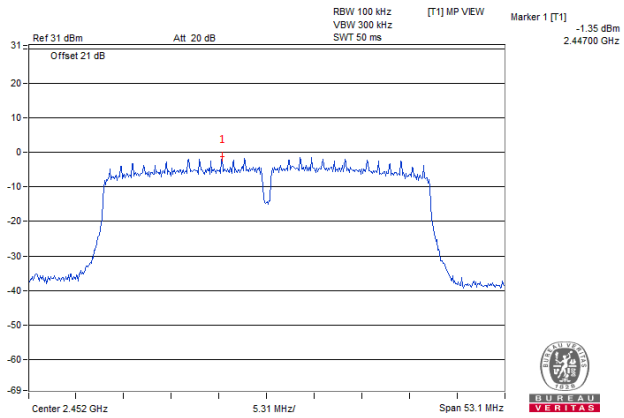


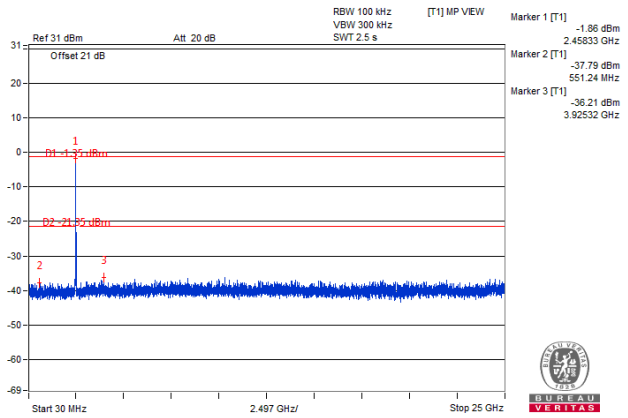
CH 6



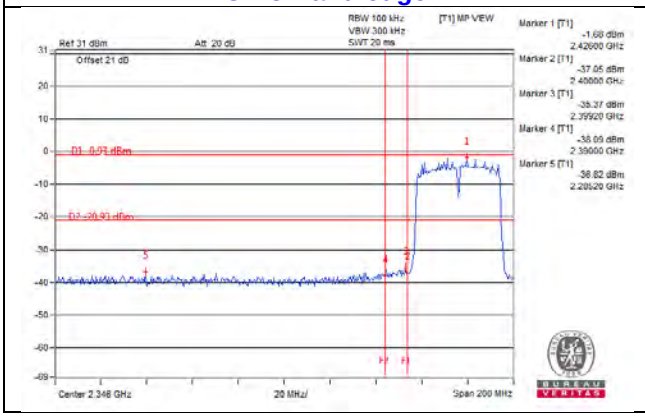


CH 9

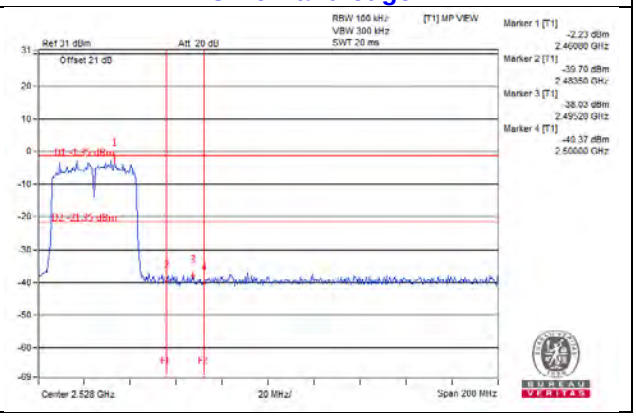




CH 3 Band edge

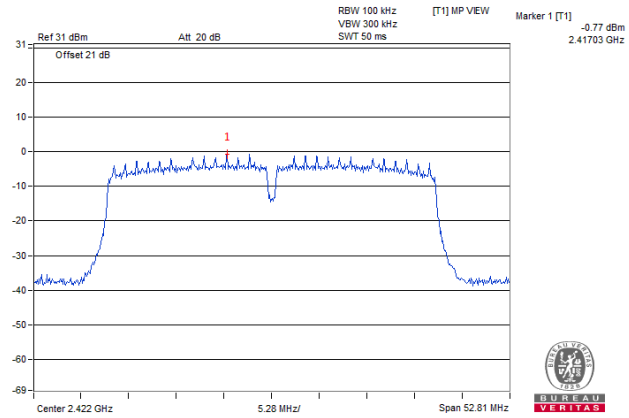


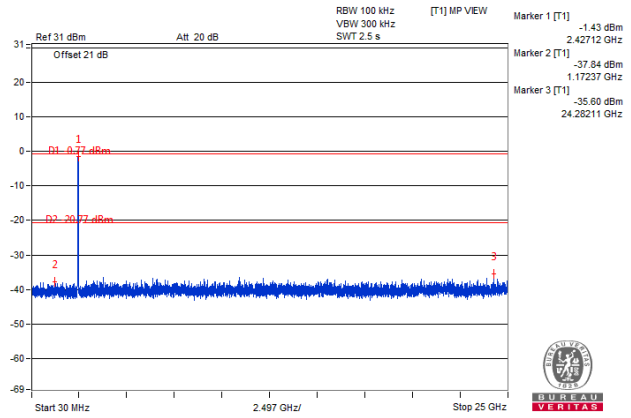
CH 9 Band edge



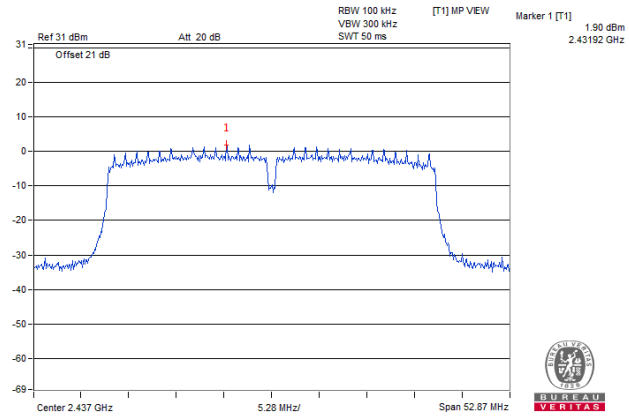
Chain 1

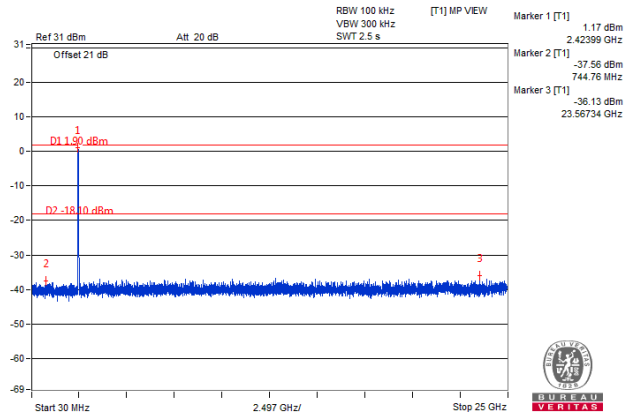
CH 3



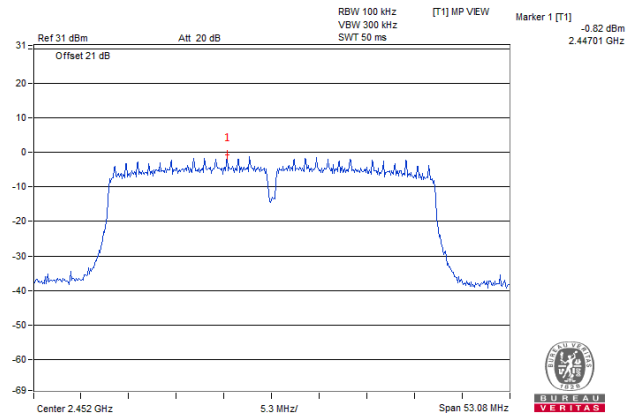


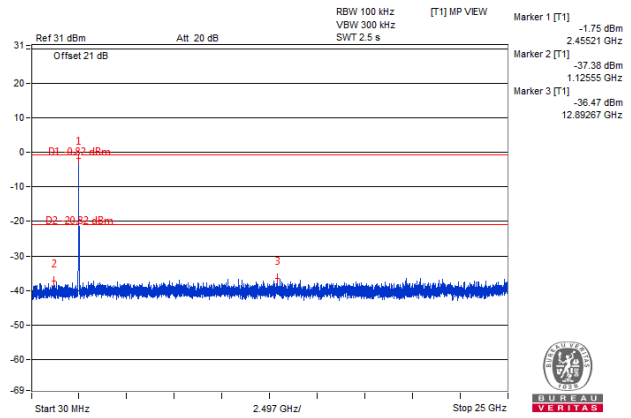
CH 6



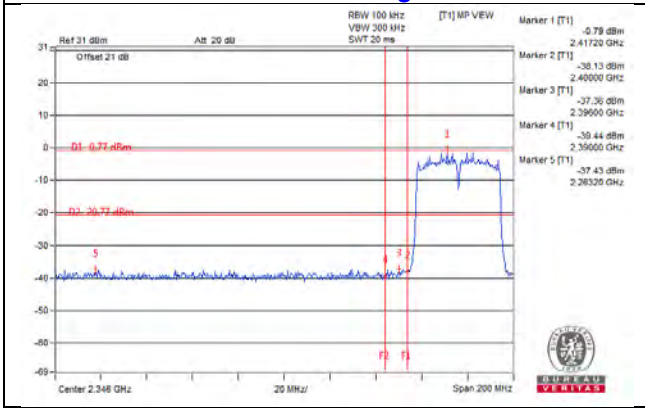


CH 9

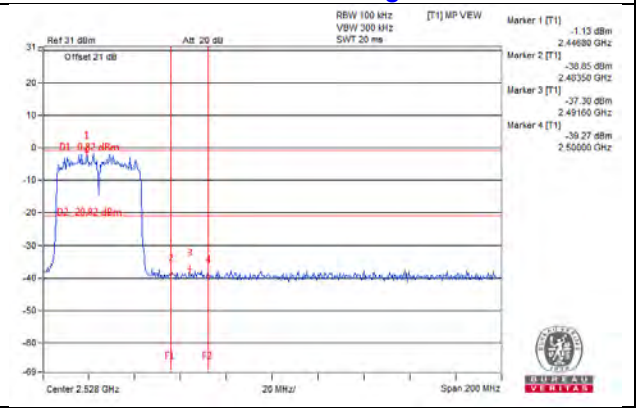




CH 3 Band edge



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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