FCC Test Report

Report No.:	RF181015E02
FCC ID:	PY318300420
Test Model:	R7000
Received Date:	Oct. 15, 2018
Test Date:	Nov. 16 to 20, 2018
Issued Date:	Dec. 12, 2018
Applicant:	NETGEAR, Inc.
Address:	350 East Plumeria Drive San Jose, CA 95134
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
RF181015E02	Original release.	Dec. 12, 2018

1 Certificate of Conformity

Product:	AC1900 Smart WiFi Router
Brand:	NETGEAR
Test Model:	R7000
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETGEAR, Inc.
Test Date:	Nov. 16 to 20, 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 : Phoenix Huang , **Date:** Dec. 12, 2018

Phoenix Huang / Specialist

Approved by : , **Date:** Dec. 12, 2018

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -10.12dB at 0.34141MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2390.00MHz, 2483.50MHz, 4874.00MHz and 4924.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex 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	5.53 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.08 dB
	6GHz ~ 18GHz	4.98 dB
	18GHz ~ 40GHz	5.19 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	AC1900 Smart WiFi Router
Brand	NETGEAR
Test Model	R7000
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 450Mbps 802.11ac: up to 1300Mbps
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	**2.412 ~ 2.462GHz** **CDD Mode:** 950.585mW **Beamforming Mode:** 550.262mW **5.18 ~ 5.24GHz** **CDD Mode:** 861.408mW **Beamforming Mode:** 539.752mW **5.745 ~ 5.825GHz** **CDD Mode:** 876.145mW **Beamforming Mode:** 532.959mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	RJ45 Cable x1 (unshielded, 1.4m)

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 power adapter and following different models could be chosen as following table:

No.	Brand	Model No.	P/N	Spec.
1	NETGEAR	AD2080F20	332-10876-01	Input: 100-240Vac, 1.0A, 50/60Hz Output: 12V, 3.5A DC Output cable: Unshielded, 1.8m
2	NETGEAR	2ABN042F NA	332-10761-01	Input: 100-240Vac, 1.5A, 50/60Hz Output: 12V, 3.5A DC Output cable: Unshielded, 1.8m

Note:
1. The EUT was pre-tested with above adapters, for radiated emission test the worse case was found in **Adapter 1**. Therefore only the test data of the adapter was recorded in this report.
2. The EUT was pre-tested with above adapters, for AC power conducted emission test the worse case was found in **Adapter 2**. Therefore only the test data of the adapter was recorded in this report.

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

Antenna No.	Ant. Gain (dBi) (include cable loss)	Frequency range (GHz)	Antenna Type	Connector Type
1	3.52	2.4~2.4835	Dipole	i-pex
	3.89	5.15~5.85		
2	3.39	2.4~2.4835	Dipole	i-pex
	3.86	5.15~5.85		
3	3.16	2.4~2.4835	Dipole	i-pex
	3.86	5.15~5.85		

4. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	3TX	3RX
802.11g	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
VHT20	MCS0~8 Nss=1	3TX	3RX
	MCS0~8 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
VHT40	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX

5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	3TX	3RX
802.11n (HT20)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11n (HT40)	MCS 0~7	3TX	3RX
	MCS 8~15	3TX	3RX
	MCS 16~23	3TX	3RX
802.11ac (VHT20)	MCS0~8 Nss=1	3TX	3RX
	MCS0~8 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
802.11ac (VHT40)	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX
802.11ac (VHT80)	MCS0~9 Nss=1	3TX	3RX
	MCS0~9 Nss=2	3TX	3RX
	MCS0~9 Nss=3	3TX	3RX

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)

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

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

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

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)
802.11g	1 to 11	6	OFDM	BPSK	6

Power Line Conducted Emission Test:

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

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

Antenna Port Conducted Measurement:

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

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

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

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:

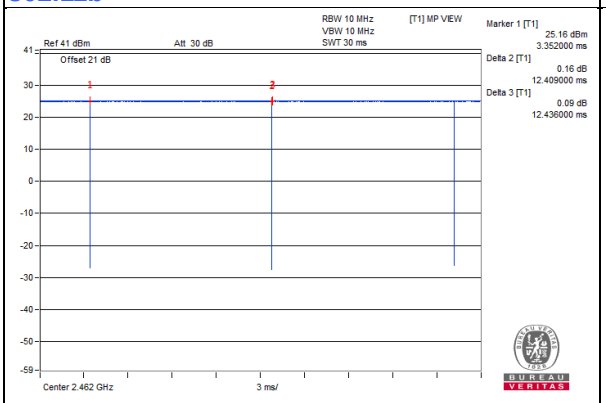
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	23deg. C, 68%RH	120Vac, 60Hz	Steven Chiang
RE<1G	23deg. C, 69%RH	120Vac, 60Hz	Andy Ho
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

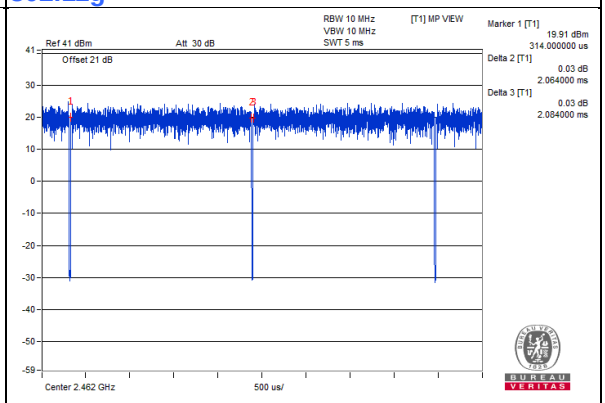
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 12.409 ms/12.436 ms = 0.998
802.11g: Duty cycle = 2.064 ms/2.084 ms = 0.99
VHT20: Duty cycle = 1.919 ms/1.939 ms = 0.99
VHT40: Duty cycle = 0.94 ms/0.96 ms = 0.979, Duty factor = 10 * log (1/Duty cycle) = 0.09

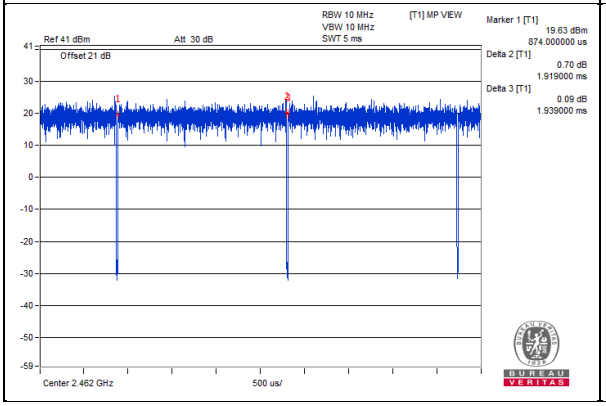
802.11b



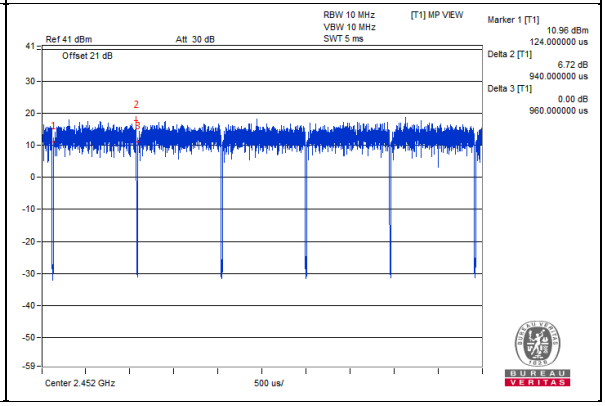
802.11g



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.

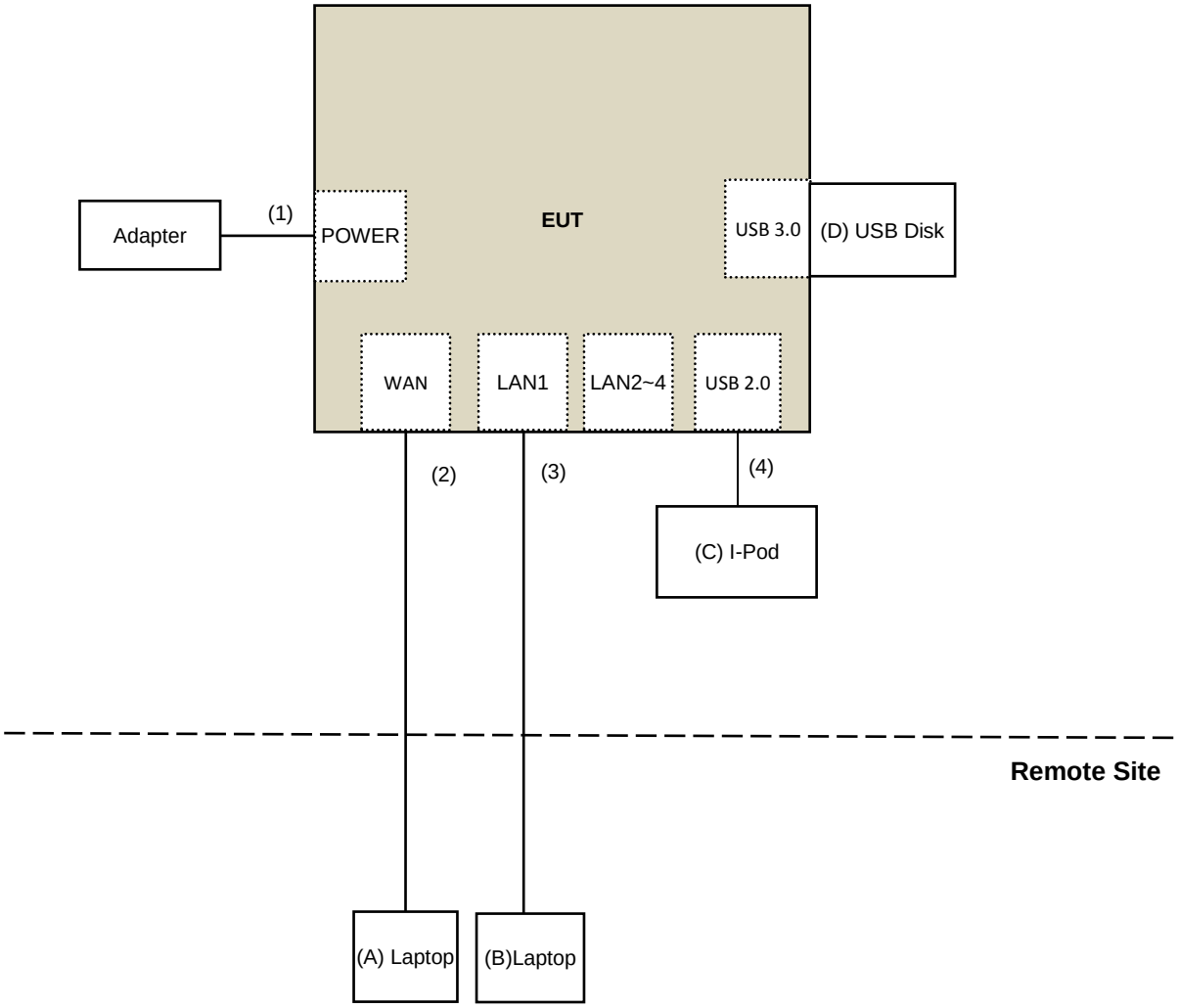
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E6420	482T3R1	FCC DoC	Provided by Lab
C.	iPod	Apple	MC749TA/A	CC4DMFJUDFDM	NA	Provided by Lab
D.	USB Disk	Transcend	16GB	NA	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	USB Cable	1	0.1	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 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 30dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2018	July 11, 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-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-3-1	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-2	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200	160922	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150317	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150322	Jan. 29, 2018	Jan. 28, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 23, 2018	July 22, 2019
Pre-Amplifier EMCI	EMC184045SE	980386	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160924	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	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. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Nov. 16 to 20, 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:

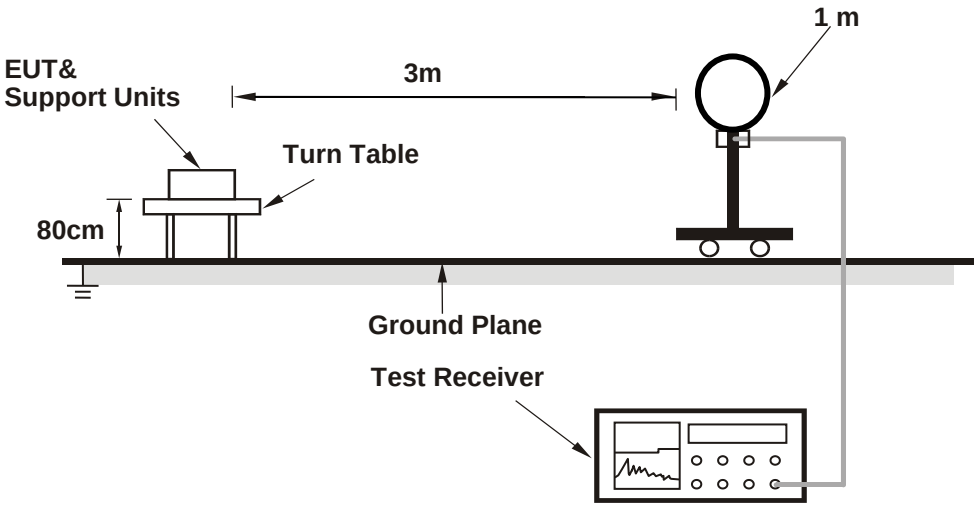
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

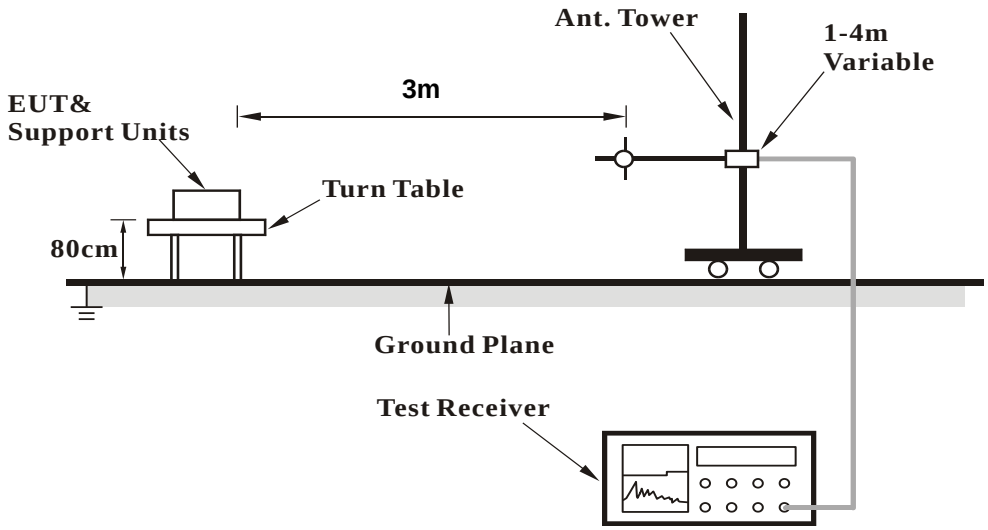
No deviation.

4.1.5 Test Setup

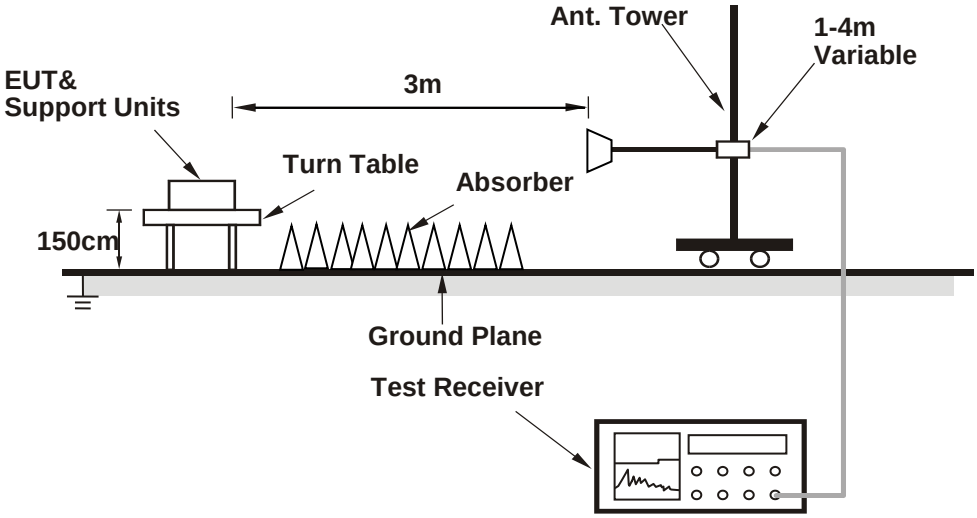
For Radiated emission below 30MHz



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 which is placed on remote site.
b. Controlling software (Mtool 3.0.0.6) 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	51.3 PK	74.0	-22.7	1.60 H	95	53.7	-2.4
2	2390.00	39.6 AV	54.0	-14.4	1.60 H	95	42.0	-2.4
3	*2412.00	108.4 PK			1.60 H	95	110.7	-2.3
4	*2412.00	105.2 AV			1.60 H	95	107.5	-2.3
5	2491.20	50.2 PK	74.0	-23.8	1.60 H	95	52.8	-2.6
6	2491.20	41.3 AV	54.0	-12.7	1.60 H	95	43.9	-2.6
7	4824.00	51.2 PK	74.0	-22.8	1.28 H	295	49.3	1.9
8	4824.00	49.3 AV	54.0	-4.7	1.28 H	295	47.4	1.9
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	2390.00	56.7 PK	74.0	-17.3	1.55 V	76	59.1	-2.4
2	2390.00	44.1 AV	54.0	-9.9	1.55 V	76	46.5	-2.4
3	*2412.00	118.5 PK			1.55 V	76	120.8	-2.3
4	*2412.00	115.6 AV			1.55 V	76	117.9	-2.3
5	2491.20	60.9 PK	74.0	-13.1	1.55 V	76	63.5	-2.6
6	2491.20	53.7 AV	54.0	-0.3	1.55 V	76	56.3	-2.6
7	4824.00	55.4 PK	74.0	-18.6	1.25 V	25	53.5	1.9
8	4824.00	53.1 AV	54.0	-0.9	1.25 V	25	51.2	1.9

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.

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	51.3 PK	74.0	-22.7	1.50 H	102	54.0	-2.7
2	2390.00	39.5 AV	54.0	-14.5	1.50 H	102	42.2	-2.7
3	*2437.00	109.4 PK			1.50 H	102	112.4	-3.0
4	*2437.00	106.5 AV			1.50 H	102	109.5	-3.0
5	2483.50	50.5 PK	74.0	-23.5	1.50 H	102	53.5	-3.0
6	2483.50	39.1 AV	54.0	-14.9	1.50 H	102	42.1	-3.0
7	4874.00	51.7 PK	74.0	-22.3	1.30 H	298	50.1	1.6
8	4874.00	49.7 AV	54.0	-4.3	1.30 H	298	48.1	1.6
9	7311.00	52.0 PK	74.0	-22.0	1.08 H	38	44.3	7.7
10	7311.00	46.8 AV	54.0	-7.2	1.08 H	38	39.1	7.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.3 PK	74.0	-17.7	1.52 V	87	59.0	-2.7
2	2390.00	44.1 AV	54.0	-9.9	1.52 V	87	46.8	-2.7
3	*2437.00	119.7 PK			1.52 V	87	122.7	-3.0
4	*2437.00	116.7 AV			1.52 V	87	119.7	-3.0
5	2483.50	58.1 PK	74.0	-15.9	1.52 V	87	61.1	-3.0
6	2483.50	45.1 AV	54.0	-8.9	1.52 V	87	48.1	-3.0
7	4874.00	55.9 PK	74.0	-18.1	1.27 V	32	54.3	1.6
8	**4874.00**	**53.9 AV**	**54.0**	**-0.1**	**1.27 V**	**32**	**52.3**	**1.6**
9	7311.00	56.0 PK	74.0	-18.0	1.03 V	49	48.3	7.7
10	7311.00	52.2 AV	54.0	-1.8	1.03 V	49	44.5	7.7

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	2382.80	55.3 PK	74.0	-18.7	1.54 H	3	58.0	-2.7
2	2382.80	46.0 AV	54.0	-8.0	1.54 H	3	48.7	-2.7
3	*2462.00	108.6 PK			1.54 H	88	111.6	-3.0
4	*2462.00	105.8 AV			1.54 H	88	108.8	-3.0
5	2483.50	54.9 PK	74.0	-19.1	1.54 H	3	57.9	-3.0
6	2483.50	43.7 AV	54.0	-10.3	1.54 H	3	46.7	-3.0
7	4924.00	52.0 PK	74.0	-22.0	1.27 H	295	50.3	1.7
8	4924.00	50.1 AV	54.0	-3.9	1.27 H	295	48.4	1.7
9	7386.00	51.9 PK	74.0	-22.1	1.09 H	49	44.0	7.9
10	7386.00	46.7 AV	54.0	-7.3	1.09 H	49	38.8	7.9
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	2382.80	60.2 PK	74.0	-13.8	1.17 V	72	62.9	-2.7
2	2382.80	53.1 AV	54.0	-0.9	1.17 V	72	55.8	-2.7
3	*2462.00	118.8 PK			1.17 V	72	121.8	-3.0
4	*2462.00	115.8 AV			1.17 V	72	118.8	-3.0
5	2483.50	59.8 PK	74.0	-14.2	1.17 V	72	62.8	-3.0
6	2483.50	51.8 AV	54.0	-2.2	1.17 V	72	54.8	-3.0
7	4924.00	56.0 PK	74.0	-18.0	1.22 V	26	54.3	1.7
8	**4924.00**	**53.9 AV**	**54.0**	**-0.1**	**1.22 V**	**26**	**52.2**	**1.7**
9	7386.00	55.7 PK	74.0	-18.3	1.26 V	169	47.8	7.9
10	7386.00	51.4 AV	54.0	-2.6	1.26 V	169	43.5	7.9

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.

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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	62.1 PK	74.0	-11.9	1.50 H	99	64.8	-2.7
2	2390.00	45.2 AV	54.0	-8.8	1.50 H	99	47.9	-2.7
3	*2412.00	107.5 PK			1.50 H	99	110.2	-2.7
4	*2412.00	97.2 AV			1.50 H	99	99.9	-2.7
5	4824.00	47.5 PK	74.0	-26.5	1.25 H	308	45.9	1.6
6	4824.00	36.1 AV	54.0	-17.9	1.25 H	308	34.5	1.6
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	2390.00	72.5 PK	74.0	-1.5	1.40 V	178	75.2	-2.7
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.40 V**	**178**	**56.6**	**-2.7**
3	*2412.00	117.4 PK			1.40 V	178	120.1	-2.7
4	*2412.00	107.3 AV			1.40 V	178	110.0	-2.7
5	4824.00	48.4 PK	74.0	-25.6	1.18 V	27	46.8	1.6
6	4824.00	36.2 AV	54.0	-17.8	1.18 V	27	34.6	1.6

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.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.0 PK	74.0	-12.0	1.55 H	76	64.7	-2.7
2	2390.00	45.2 AV	54.0	-8.8	1.55 H	76	47.9	-2.7
3	*2437.00	113.9 PK			1.55 H	76	116.9	-3.0
4	*2437.00	103.8 AV			1.55 H	76	106.8	-3.0
5	2483.50	61.6 PK	74.0	-12.4	1.55 H	76	64.6	-3.0
6	2483.50	44.9 AV	54.0	-9.1	1.55 H	76	47.9	-3.0
7	4874.00	51.1 PK	74.0	-22.9	1.30 H	313	49.5	1.6
8	4874.00	39.6 AV	54.0	-14.4	1.30 H	313	38.0	1.6
9	7311.00	55.7 PK	74.0	-18.3	1.05 H	32	48.0	7.7
10	7311.00	44.2 AV	54.0	-9.8	1.05 H	32	36.5	7.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.8 PK	74.0	-0.2	1.45 V	185	76.5	-2.7
2	2390.00	51.5 AV	54.0	-2.5	1.45 V	185	54.2	-2.7
3	*2437.00	123.8 PK			1.45 V	185	126.8	-3.0
4	*2437.00	113.9 AV			1.45 V	185	116.9	-3.0
5	2483.50	73.7 PK	74.0	-0.3	1.45 V	185	76.7	-3.0
6	2483.50	51.3 AV	54.0	-2.7	1.45 V	185	54.3	-3.0
7	4874.00	54.5 PK	74.0	-19.5	1.25 V	35	52.9	1.6
8	4874.00	42.6 AV	54.0	-11.4	1.25 V	35	41.0	1.6
9	7311.00	63.0 PK	74.0	-11.0	1.14 V	188	55.3	7.7
10	7311.00	51.4 AV	54.0	-2.6	1.14 V	188	43.7	7.7

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.1 PK			1.56 H	93	110.1	-3.0
2	*2462.00	96.4 AV			1.56 H	93	99.4	-3.0
3	2483.50	62.0 PK	74.0	-12.0	1.56 H	93	65.0	-3.0
4	2483.50	44.9 AV	54.0	-9.1	1.56 H	93	47.9	-3.0
5	4924.00	47.7 PK	74.0	-26.3	1.29 H	313	46.0	1.7
6	4924.00	35.9 AV	54.0	-18.1	1.29 H	313	34.2	1.7
7	7386.00	54.4 PK	74.0	-19.6	1.09 H	45	46.5	7.9
8	7386.00	39.2 AV	54.0	-14.8	1.09 H	45	31.3	7.9
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	116.3 PK			1.31 V	180	119.3	-3.0
2	*2462.00	106.3 AV			1.31 V	180	109.3	-3.0
3	2483.50	72.8 PK	74.0	-1.2	1.31 V	180	75.8	-3.0
4	**2483.50**	**53.9 AV**	**54.0**	**-0.1**	**1.31 V**	**180**	**56.9**	**-3.0**
5	4924.00	48.6 PK	74.0	-25.4	1.24 V	20	46.9	1.7
6	4924.00	36.7 AV	54.0	-17.3	1.24 V	20	35.0	1.7
7	7386.00	55.3 PK	74.0	-18.7	1.28 V	180	47.4	7.9
8	7386.00	41.0 AV	54.0	-13.0	1.28 V	180	33.1	7.9

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.

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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	61.6 PK	74.0	-12.4	1.60 H	93	64.3	-2.7
2	2390.00	44.9 AV	54.0	-9.1	1.60 H	93	47.6	-2.7
3	*2412.00	106.6 PK			1.60 H	93	109.3	-2.7
4	*2412.00	96.2 AV			1.60 H	93	98.9	-2.7
5	4824.00	47.9 PK	74.0	-26.1	1.32 H	286	46.3	1.6
6	4824.00	36.1 AV	54.0	-17.9	1.32 H	286	34.5	1.6
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	2390.00	72.6 PK	74.0	-1.4	1.33 V	168	75.3	-2.7
2	2390.00	53.8 AV	54.0	-0.2	1.33 V	168	56.5	-2.7
3	*2412.00	117.4 PK			1.33 V	168	120.1	-2.7
4	*2412.00	106.4 AV			1.33 V	168	109.1	-2.7
5	4824.00	48.3 PK	74.0	-25.7	1.22 V	20	46.7	1.6
6	4824.00	36.4 AV	54.0	-17.6	1.22 V	20	34.8	1.6

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.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.9 PK	74.0	-12.1	1.58 H	73	64.6	-2.7
2	2390.00	44.9 AV	54.0	-9.1	1.58 H	73	47.6	-2.7
3	*2437.00	114.1 PK			1.58 H	73	117.1	-3.0
4	*2437.00	103.7 AV			1.58 H	73	106.7	-3.0
5	2483.50	61.7 PK	74.0	-12.3	1.58 H	73	64.7	-3.0
6	2483.50	45.1 AV	54.0	-8.9	1.58 H	73	48.1	-3.0
7	4874.00	48.5 PK	74.0	-25.5	1.29 H	303	46.9	1.6
8	4874.00	36.8 AV	54.0	-17.2	1.29 H	303	35.2	1.6
9	7311.00	54.9 PK	74.0	-19.1	1.04 H	53	47.2	7.7
10	7311.00	39.7 AV	54.0	-14.3	1.04 H	53	32.0	7.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.8 PK	74.0	-0.2	1.52 V	171	76.5	-2.7
2	2390.00	52.8 AV	54.0	-1.2	1.52 V	171	55.5	-2.7
3	*2437.00	123.9 PK			1.52 V	171	126.9	-3.0
4	*2437.00	113.5 AV			1.52 V	171	116.5	-3.0
5	2483.50	73.2 PK	74.0	-0.8	1.52 V	171	76.2	-3.0
6	2483.50	52.4 AV	54.0	-1.6	1.52 V	171	55.4	-3.0
7	4874.00	54.3 PK	74.0	-19.7	1.20 V	36	52.7	1.6
8	4874.00	42.3 AV	54.0	-11.7	1.20 V	36	40.7	1.6
9	7311.00	63.0 PK	74.0	-11.0	1.23 V	184	55.3	7.7
10	7311.00	51.6 AV	54.0	-2.4	1.23 V	184	43.9	7.7

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.4 PK			1.59 H	103	110.4	-3.0
2	*2462.00	96.4 AV			1.59 H	103	99.4	-3.0
3	2483.50	62.4 PK	74.0	-11.6	1.59 H	103	65.4	-3.0
4	2483.50	45.2 AV	54.0	-8.8	1.59 H	103	48.2	-3.0
5	4924.00	48.5 PK	74.0	-25.5	1.24 H	291	46.8	1.7
6	4924.00	36.9 AV	54.0	-17.1	1.24 H	291	35.2	1.7
7	7386.00	54.8 PK	74.0	-19.2	1.09 H	45	46.9	7.9
8	7386.00	40.0 AV	54.0	-14.0	1.09 H	45	32.1	7.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	117.6 PK			1.41 V	168	120.6	-3.0
2	*2462.00	106.7 AV			1.41 V	168	109.7	-3.0
3	2483.50	72.3 PK	74.0	-1.7	1.41 V	168	75.3	-3.0
4	2483.50	53.5 AV	54.0	-0.5	1.41 V	168	56.5	-3.0
5	4924.00	48.8 PK	74.0	-25.2	1.21 V	24	47.1	1.7
6	4924.00	36.7 AV	54.0	-17.3	1.21 V	24	35.0	1.7
7	7386.00	55.1 PK	74.0	-18.9	1.28 V	162	47.2	7.9
8	7386.00	40.7 AV	54.0	-13.3	1.28 V	162	32.8	7.9

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.

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	61.7 PK	74.0	-12.3	1.54 H	95	64.4	-2.7
2	2390.00	44.8 AV	54.0	-9.2	1.54 H	95	47.5	-2.7
3	*2422.00	101.8 PK			1.54 H	95	104.7	-2.9
4	*2422.00	91.5 AV			1.54 H	95	94.4	-2.9
5	4844.00	48.1 PK	74.0	-25.9	1.31 H	302	46.5	1.6
6	4844.00	36.3 AV	54.0	-17.7	1.31 H	302	34.7	1.6
7	7266.00	54.7 PK	74.0	-19.3	1.07 H	28	46.9	7.8
8	7266.00	39.7 AV	54.0	-14.3	1.07 H	28	31.9	7.8
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	71.2 PK	74.0	-2.8	1.36 V	168	73.9	-2.7
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.36 V**	**168**	**56.6**	**-2.7**
3	*2422.00	111.4 PK			1.36 V	168	114.3	-2.9
4	*2422.00	101.4 AV			1.36 V	168	104.3	-2.9
5	4844.00	49.3 PK	74.0	-24.7	1.21 V	21	47.7	1.6
6	4844.00	37.0 AV	54.0	-17.0	1.21 V	21	35.4	1.6
7	7266.00	54.8 PK	74.0	-19.2	1.23 V	184	47.0	7.8
8	7266.00	39.8 AV	54.0	-14.2	1.23 V	184	32.0	7.8

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.3 PK	74.0	-11.7	1.56 H	93	65.0	-2.7
2	2390.00	45.2 AV	54.0	-8.8	1.56 H	93	47.9	-2.7
3	*2437.00	104.9 PK			1.56 H	93	107.9	-3.0
4	*2437.00	94.2 AV			1.56 H	93	97.2	-3.0
5	2483.50	61.7 PK	74.0	-12.3	1.56 H	93	64.7	-3.0
6	2483.50	44.7 AV	54.0	-9.3	1.56 H	93	47.7	-3.0
7	4874.00	48.4 PK	74.0	-25.6	1.35 H	294	46.8	1.6
8	4874.00	36.8 AV	54.0	-17.2	1.35 H	294	35.2	1.6
9	7311.00	54.4 PK	74.0	-19.6	1.04 H	32	46.7	7.7
10	7311.00	39.4 AV	54.0	-14.6	1.04 H	32	31.7	7.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.7 PK	74.0	-4.3	1.51 V	171	72.4	-2.7
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.51 V**	**171**	**56.6**	**-2.7**
3	*2437.00	115.1 PK			1.51 V	171	118.1	-3.0
4	*2437.00	104.3 AV			1.51 V	171	107.3	-3.0
5	2483.50	72.4 PK	74.0	-1.6	1.51 V	171	75.4	-3.0
6	2483.50	53.5 AV	54.0	-0.5	1.51 V	171	56.5	-3.0
7	4874.00	49.7 PK	74.0	-24.3	1.17 V	30	48.1	1.6
8	4874.00	37.3 AV	54.0	-16.7	1.17 V	30	35.7	1.6
9	7311.00	55.1 PK	74.0	-18.9	1.24 V	165	47.4	7.7
10	7311.00	40.1 AV	54.0	-13.9	1.24 V	165	32.4	7.7

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	100.8 PK			1.58 H	98	103.8	-3.0
2	*2452.00	91.0 AV			1.58 H	98	94.0	-3.0
3	2483.50	62.1 PK	74.0	-11.9	1.58 H	98	65.1	-3.0
4	2483.50	45.1 AV	54.0	-8.9	1.58 H	98	48.1	-3.0
5	4904.00	48.2 PK	74.0	-25.8	1.28 H	294	46.5	1.7
6	4904.00	36.3 AV	54.0	-17.7	1.28 H	294	34.6	1.7
7	7356.00	54.9 PK	74.0	-19.1	1.06 H	38	47.0	7.9
8	7356.00	39.7 AV	54.0	-14.3	1.06 H	38	31.8	7.9
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	110.8 PK			1.40 V	165	113.8	-3.0
2	*2452.00	100.8 AV			1.40 V	165	103.8	-3.0
3	2483.50	70.1 PK	74.0	-3.9	1.40 V	165	73.1	-3.0
4	2483.50	53.6 AV	54.0	-0.4	1.40 V	165	56.6	-3.0
5	4904.00	48.8 PK	74.0	-25.2	1.18 V	33	47.1	1.7
6	4904.00	36.7 AV	54.0	-17.3	1.18 V	33	35.0	1.7
7	7356.00	54.7 PK	74.0	-19.3	1.27 V	185	46.8	7.9
8	7356.00	39.5 AV	54.0	-14.5	1.27 V	185	31.6	7.9

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:

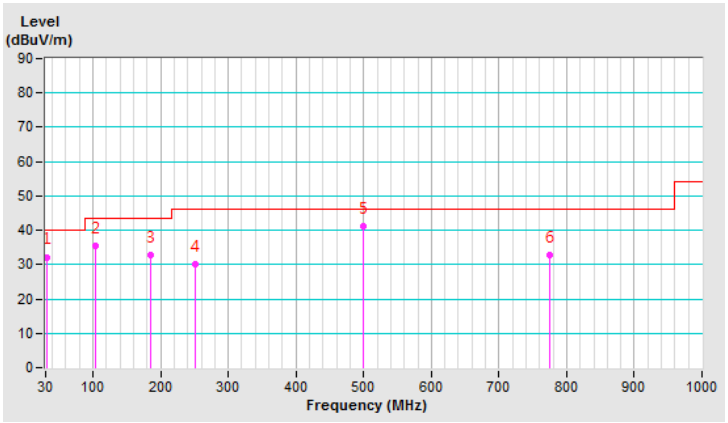
802.11g

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	30.97	32.2 QP	40.0	-7.8	3.00 H	112	41.2	-9.0
2	102.75	35.4 QP	43.5	-8.1	2.50 H	130	47.2	-11.8
3	185.20	32.7 QP	43.5	-10.8	2.50 H	143	42.6	-9.9
4	250.19	30.2 QP	46.0	-15.8	2.00 H	144	39.1	-8.9
5	500.45	41.1 QP	46.0	-4.9	2.00 H	302	43.1	-2.0
6	773.99	32.9 QP	46.0	-13.1	1.50 H	107	29.3	3.6

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. 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.

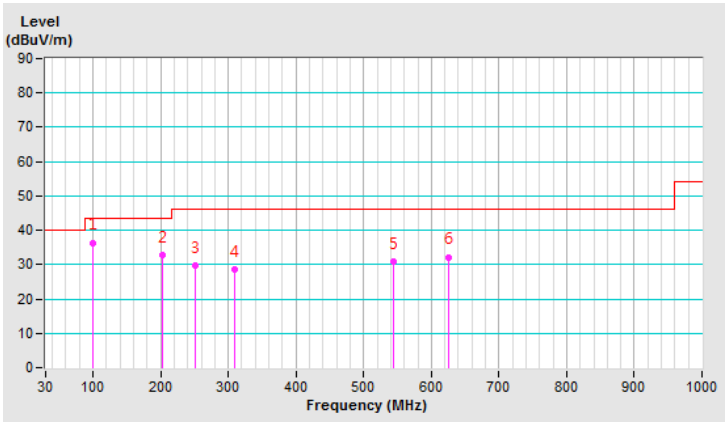


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	98.87	36.4 QP	43.5	-7.1	1.00 V	115	49.0	-12.6
2	201.69	32.9 QP	43.5	-10.6	1.50 V	318	43.8	-10.9
3	250.19	29.8 QP	46.0	-16.2	2.00 V	243	38.7	-8.9
4	308.39	28.7 QP	46.0	-17.3	1.50 V	302	35.3	-6.6
5	544.10	31.0 QP	46.0	-15.0	1.00 V	117	32.4	-1.4
6	624.61	32.2 QP	46.0	-13.8	3.00 V	243	31.3	0.9

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.



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: Nov. 16, 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.

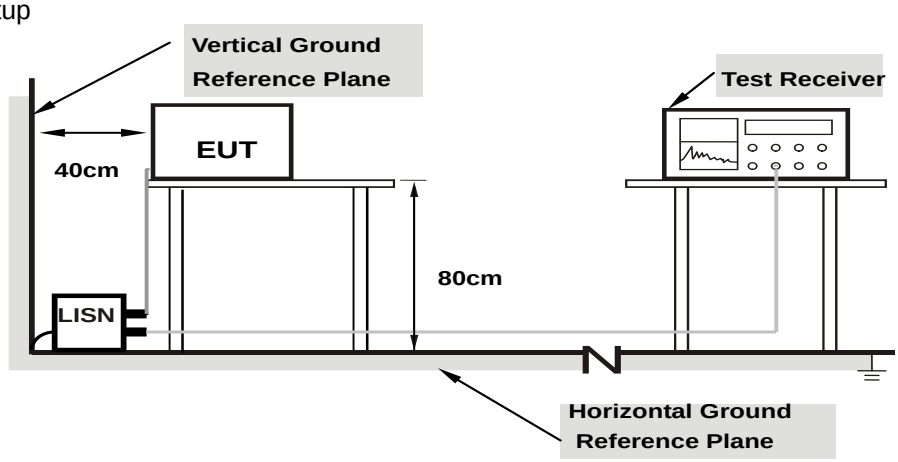
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

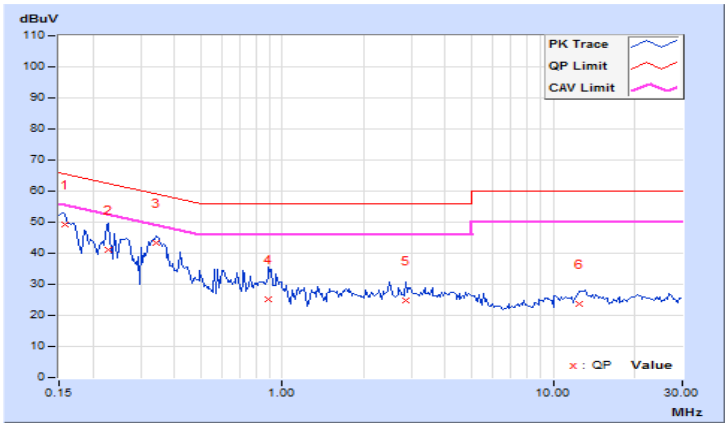
4.2.7 Test Results

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	0.15781	10.03	39.38	24.68	49.41	34.71	65.58	55.58	-16.17	-20.87
2	0.22812	10.05	31.06	18.85	41.11	28.90	62.52	52.52	-21.41	-23.62
3	**0.34141**	**10.07**	**33.28**	**28.98**	**43.35**	**39.05**	**59.17**	**49.17**	**-15.82**	**-10.12**
4	0.88828	10.12	15.07	2.71	25.19	12.83	56.00	46.00	-30.81	-33.17
5	2.86719	10.25	14.42	8.69	24.67	18.94	56.00	46.00	-31.33	-27.06
6	12.51172	10.87	12.79	6.92	23.66	17.79	60.00	50.00	-36.34	-32.21

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

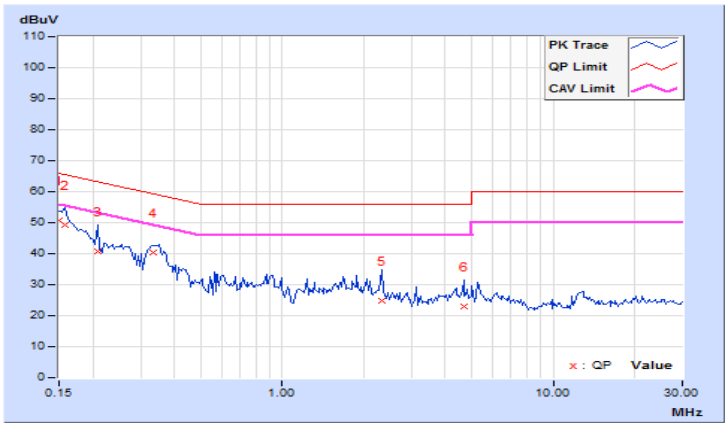


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	40.66	25.94	50.60	35.88	66.00	56.00	-15.40	-20.12
2	0.15781	9.94	39.40	24.88	49.34	34.82	65.58	55.58	-16.24	-20.76
3	0.20859	9.95	30.63	10.96	40.58	20.91	63.26	53.26	-22.68	-32.35
4	0.33359	9.97	30.29	22.73	40.26	32.70	59.36	49.36	-19.10	-16.66
5	2.32422	10.09	14.57	7.98	24.66	18.07	56.00	46.00	-31.34	-27.93
6	4.68750	10.21	12.84	6.08	23.05	16.29	56.00	46.00	-32.95	-29.71

Remarks:

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

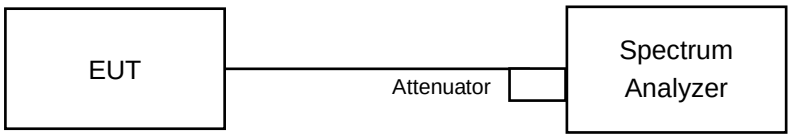


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

CDD Mode

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	8.60	8.62	9.08	0.5	Pass
6	2437	8.62	9.06	8.63	0.5	Pass
11	2462	8.63	8.62	9.01	0.5	Pass

802.11g

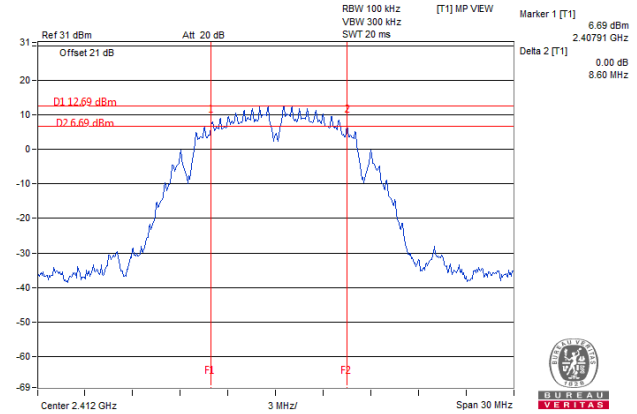
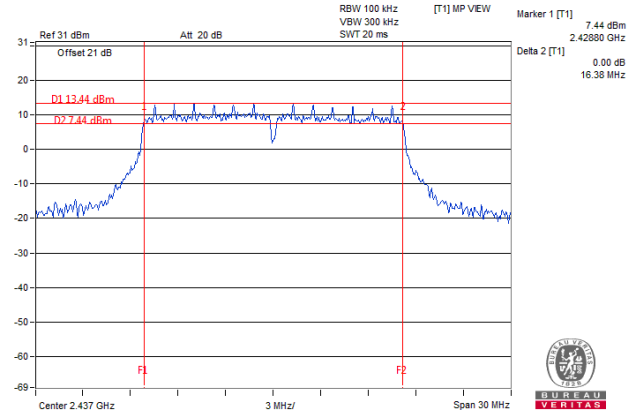
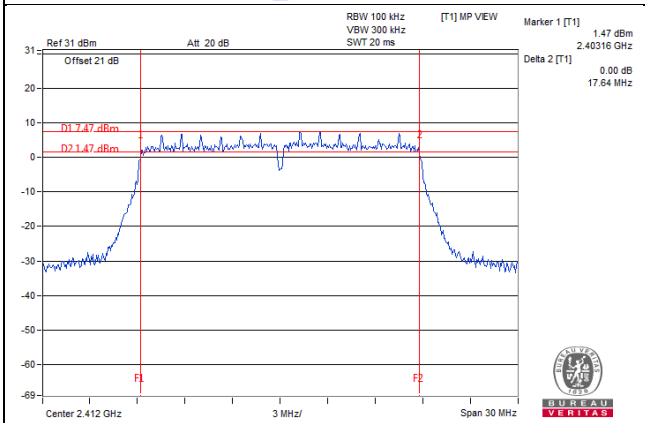
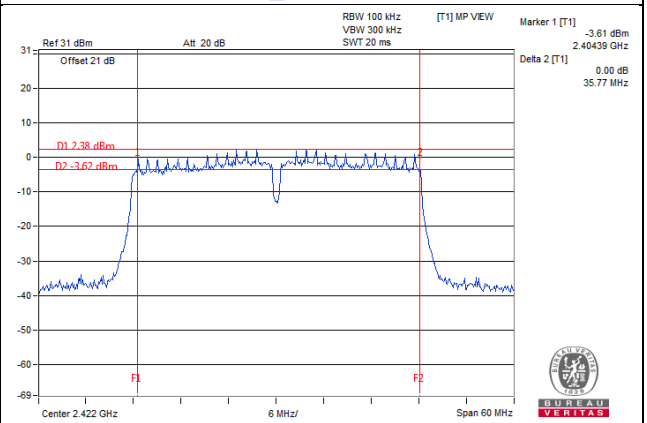
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	16.43	16.45	16.45	0.5	Pass
6	2437	16.38	16.40	16.43	0.5	Pass
11	2462	16.42	16.39	16.42	0.5	Pass

VHT20

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	17.64	17.70	17.67	0.5	Pass
6	2437	17.66	17.67	17.68	0.5	Pass
11	2462	17.68	17.68	17.68	0.5	Pass

VHT40

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
3	2422	35.77	36.53	36.25	0.5	Pass
6	2437	36.11	36.21	36.53	0.5	Pass
9	2452	36.50	35.93	36.50	0.5	Pass

Spectrum Plot of Worst Value	
802.11b_Chain 0 / CH1	**802.11g_Chain 0 / CH6**
	
VHT20_Chain 0 / CH1	**VHT40_Chain 0 / CH3**
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

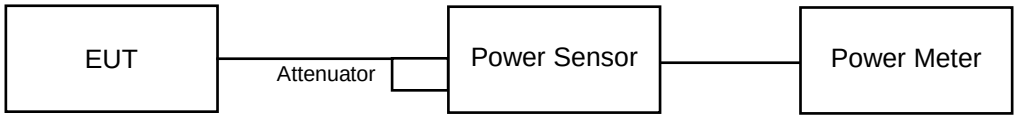
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

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.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

CDD Mode

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	23.35	22.60	22.54	578.096	27.62	30	Pass
6	2437	24.87	23.96	23.89	800.694	29.03	30	Pass
11	2462	23.65	22.94	22.65	612.605	27.87	30	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	19.85	19.50	19.70	279.055	24.46	30	Pass
6	2437	25.36	24.49	25.13	950.585	29.78	30	Pass
11	2462	19.26	19.02	18.91	241.936	23.84	30	Pass

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	19.14	18.89	18.78	234.99	23.71	30	Pass
6	2437	25.35	24.52	24.58	912.985	29.60	30	Pass
11	2462	19.01	18.54	18.70	225.197	23.53	30	Pass

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	16.68	16.04	16.27	129.102	21.11	30	Pass
6	2437	20.35	19.56	19.62	290.38	24.63	30	Pass
9	2452	15.81	15.35	15.42	107.218	20.30	30	Pass

Beamforming Mode

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	19.14	18.89	18.78	234.99	23.71	27.87	Pass
6	2437	23.21	22.26	22.37	550.262	27.41	27.87	Pass
11	2462	19.01	18.54	18.70	225.197	23.53	27.87	Pass

Note: The directional gain is 10 log[$(10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 3] = 8.13dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(8.13-6) = 27.87dBm.

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	16.68	16.04	16.27	129.102	21.11	27.87	Pass
6	2437	20.35	19.56	19.62	290.38	24.63	27.87	Pass
9	2452	15.81	15.35	15.42	107.218	20.30	27.87	Pass

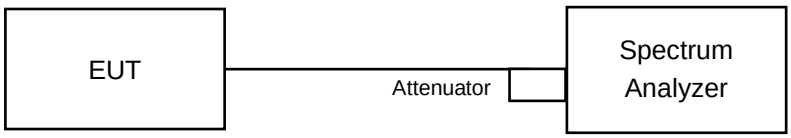
Note: The directional gain is 10 log[$(10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 3] = 8.13dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(8.13-6) = 27.87dBm.

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

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

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

For 802.11b, 802.11g, VHT20

a. Set instrument center frequency to DTS channel center frequency.
b. Set span to at least 1.5 times the OBW.
c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz. .
d. Set VBW ≥3 x RBW.
e. Detector = power averaging (RMS) or sample detector (when RMS not available).
f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g. Sweep time = auto couple.
h. Employ trace averaging (RMS) mode over a minimum of 100 traces.
i. Use the peak marker function to determine the maximum amplitude level.

For VHT40

a. Measure the duty cycle (x).
b. Set instrument center frequency to DTS channel center frequency.
c. Set span to at least 1.5 times the OBW.
d. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz..
e. Set VBW ≥3 x RBW.
f. Detector = power averaging (RMS) or sample detector (when RMS not available).
g. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h. Sweep time = auto couple.
i. Do not use sweep triggering. Allow sweep to “free run”.

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

CDD Mode

802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-9.27	4.77	-4.50	5.87	Pass
	6	2437	-6.80	4.77	-2.03	5.87	Pass
	11	2462	-8.35	4.77	-3.58	5.87	Pass
1	1	2412	-5.70	4.77	-0.93	5.87	Pass
	6	2437	-6.17	4.77	-1.40	5.87	Pass
	11	2462	-5.15	4.77	-0.38	5.87	Pass
2	1	2412	-9.89	4.77	-5.12	5.87	Pass
	6	2437	-6.45	4.77	-1.68	5.87	Pass
	11	2462	-8.70	4.77	-3.93	5.87	Pass

Note: The directional gain is 10 log[$(10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 3] = 8.13dBi > 6dBi, therefore the limit needs to reduce, so the power density limit shall be reduced to 8-(8.13-6) = 5.87dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-11.58	4.77	-6.81	5.87	Pass
	6	2437	-6.91	4.77	-2.14	5.87	Pass
	11	2462	-12.20	4.77	-7.43	5.87	Pass
1	1	2412	-9.85	4.77	-5.08	5.87	Pass
	6	2437	-7.33	4.77	-2.56	5.87	Pass
	11	2462	-12.58	4.77	-7.81	5.87	Pass
2	1	2412	-12.20	4.77	-7.43	5.87	Pass
	6	2437	-6.63	4.77	-1.86	5.87	Pass
	11	2462	-12.61	4.77	-7.84	5.87	Pass

Note: The directional gain is 10 log[$(10^{Chain1/20} + 10^{Chain2/20} + 10^{Chain3/20})^2$ / 3] = 8.13dBi > 6dBi, therefore the limit needs to reduce, so the power density limit shall be reduced to 8-(8.13-6) = 5.87dBm.

VHT20

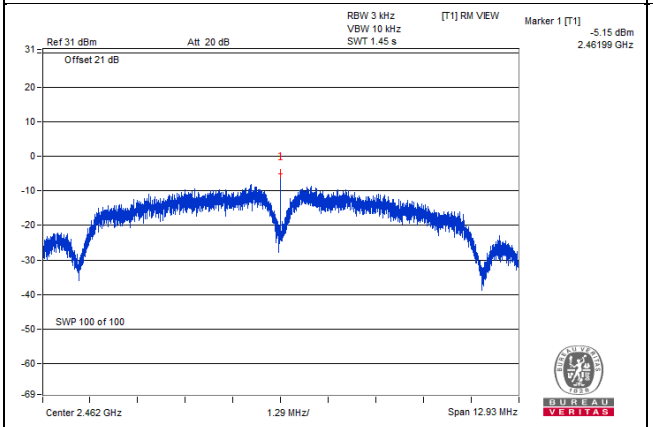
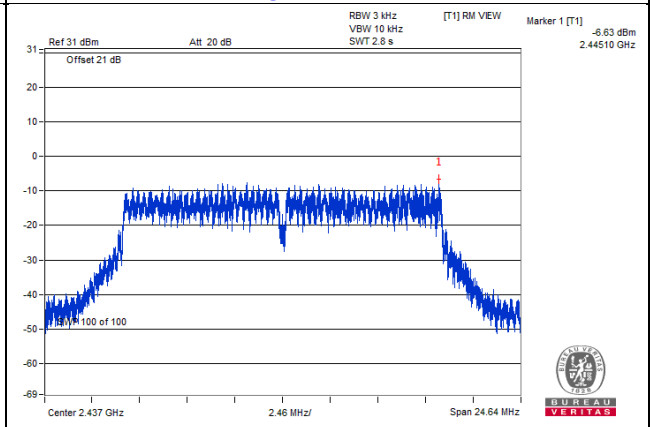
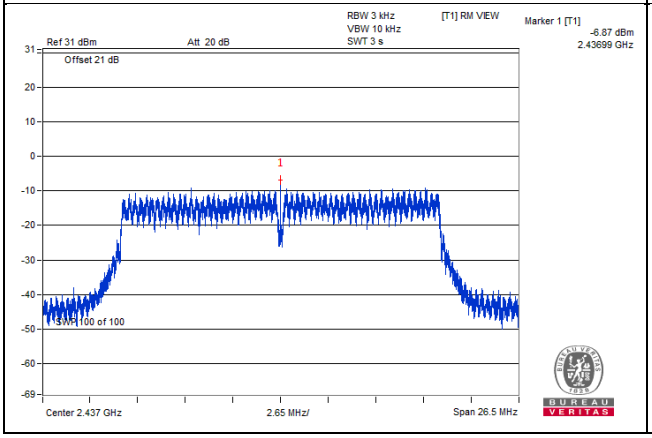
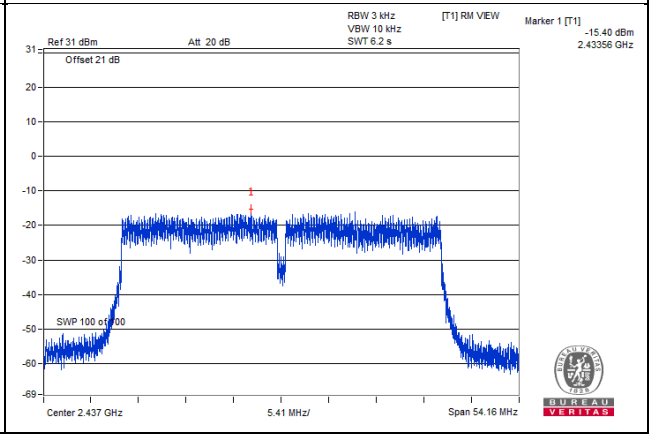
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-13.42	4.77	-8.65	5.87	Pass
	6	2437	-8.51	4.77	-3.74	5.87	Pass
	11	2462	-14.35	4.77	-9.58	5.87	Pass
1	1	2412	-9.61	4.77	-4.84	5.87	Pass
	6	2437	-6.87	4.77	-2.10	5.87	Pass
	11	2462	-11.62	4.77	-6.85	5.87	Pass
2	1	2412	-14.41	4.77	-9.64	5.87	Pass
	6	2437	-8.87	4.77	-4.10	5.87	Pass
	11	2462	-14.45	4.77	-9.68	5.87	Pass

Note: The directional gain is 10 log[(10$^{Chain1/20}$ + 10$^{Chain2/20}$ + 10$^{Chain3/20}$)^2 / 3] = 8.13dBi > 6dBi, therefore the limit needs to reduce, so the power density limit shall be reduced to 8-(8.13-6) = 5.87dBm.

VHT40

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	-18.85	4.77	0.09	-13.99	5.87	Pass
	6	2437	-15.40	4.77	0.09	-10.54	5.87	Pass
	9	2452	-20.87	4.77	0.09	-16.01	5.87	Pass
1	3	2422	-18.58	4.77	0.09	-13.72	5.87	Pass
	6	2437	-15.80	4.77	0.09	-10.94	5.87	Pass
	9	2452	-20.20	4.77	0.09	-15.34	5.87	Pass
2	3	2422	-19.42	4.77	0.09	-14.56	5.87	Pass
	6	2437	-16.66	4.77	0.09	-11.80	5.87	Pass
	9	2452	-19.89	4.77	0.09	-15.03	5.87	Pass

Note: 1. The directional gain is 10 log[(10$^{Chain1/20}$ + 10$^{Chain2/20}$ + 10$^{Chain3/20}$)^2 / 3] = 8.13dBi > 6dBi, therefore the limit needs to reduce, so the power density limit shall be reduced to 8-(8.13-6) = 5.87dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

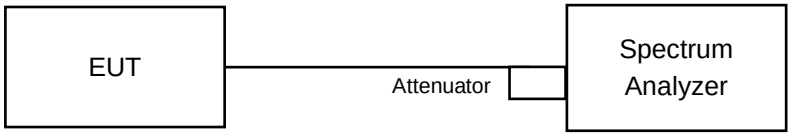
Spectrum Plot of Worst Value	
802.11b_Chain 1 / CH11	**802.11g_Chain 2 / CH6**
	
VHT20_Chain 1 / CH6	**VHT40_Chain 0 / CH6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB 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

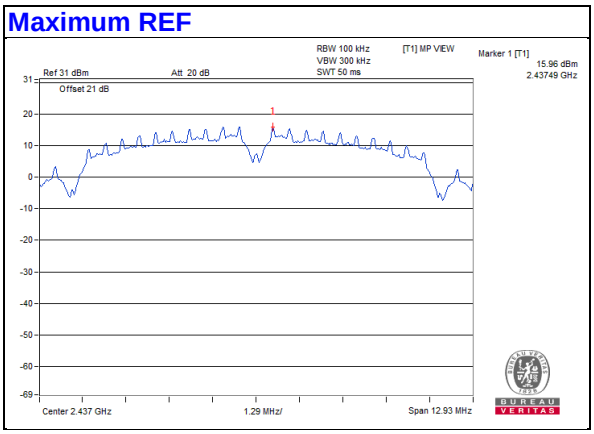
Same as Item 4.3.6

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 30dB offset below D1. It shows compliance with the requirement.

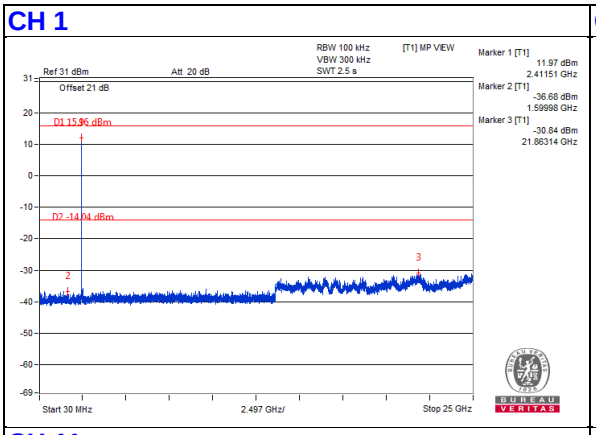
802.11b

Maximum REF

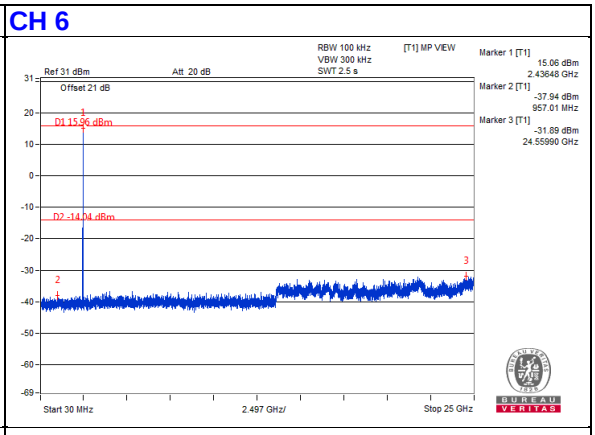


Chain 0

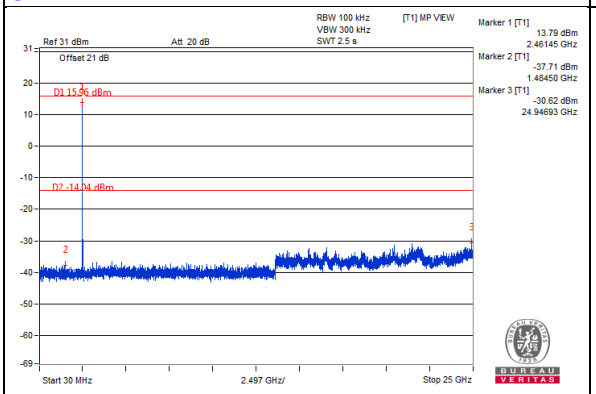
CH 1



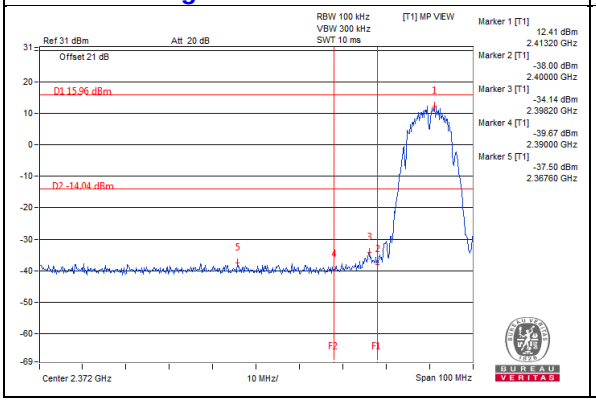
CH 6



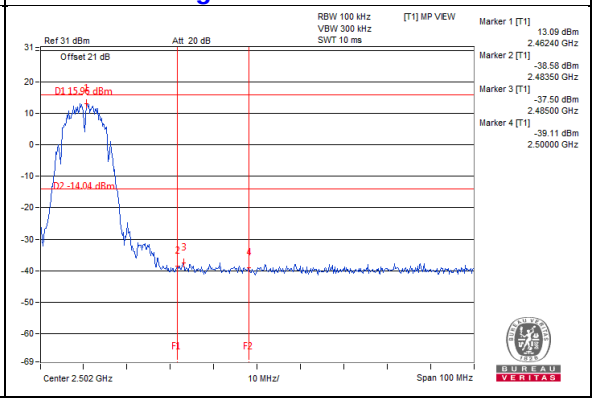
CH 11



CH 1 Band edge

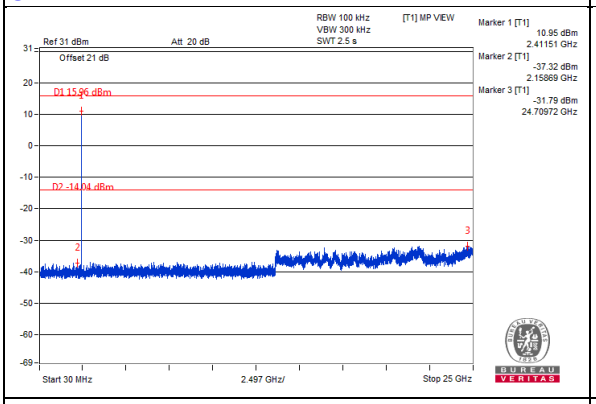


CH 11 Band edge

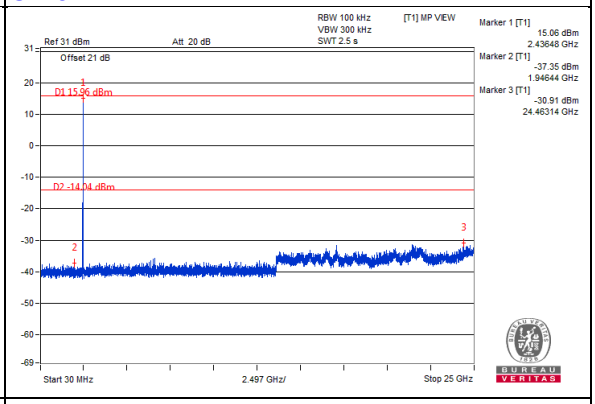


Chain 1

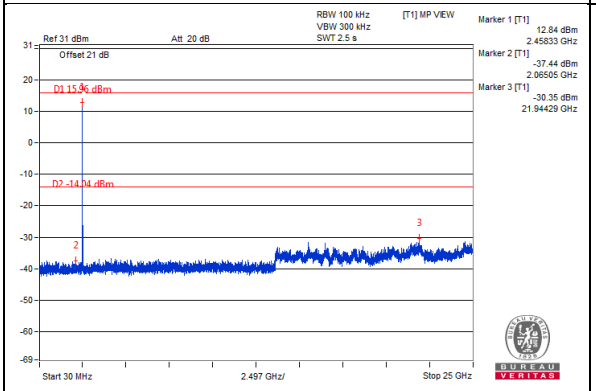
CH 1



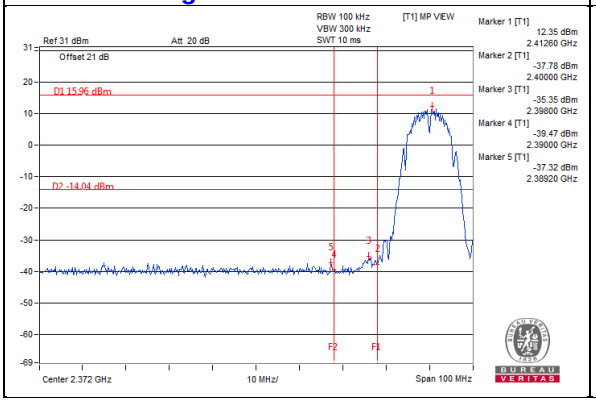
CH 6



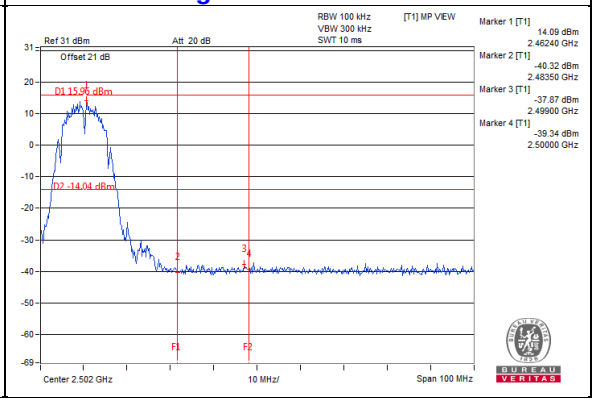
CH 11



CH 1 Band edge

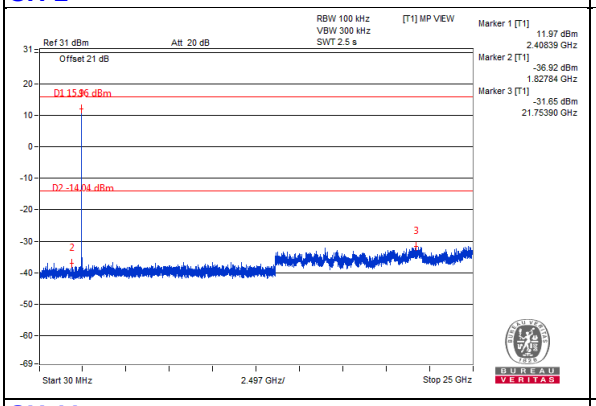


CH 11 Band edge

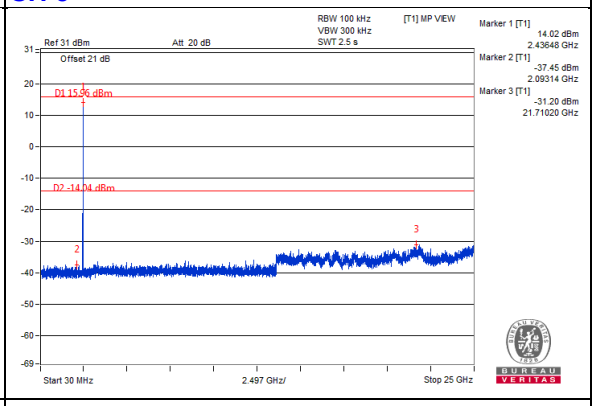


Chain 2

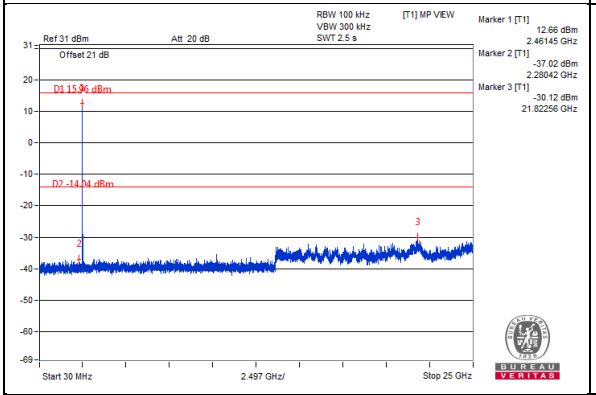
CH 1



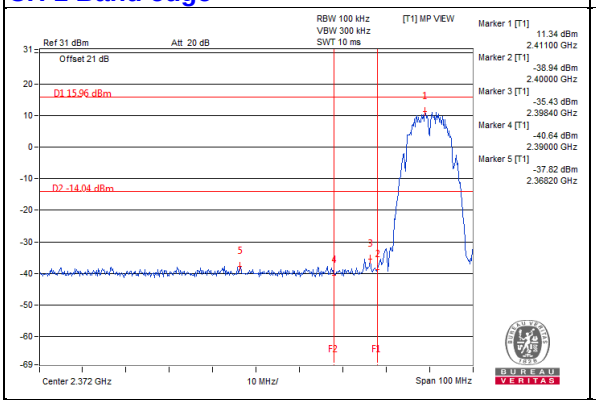
CH 6



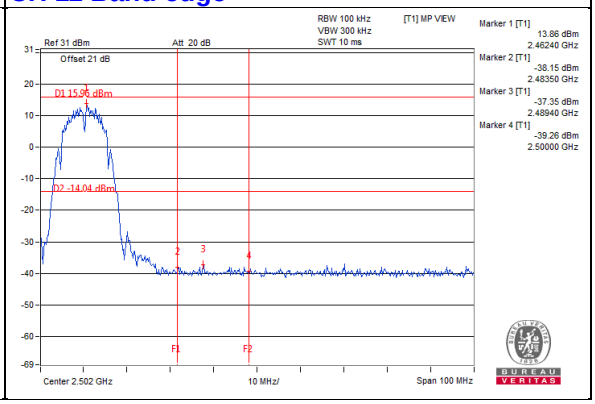
CH 11



CH 1 Band edge

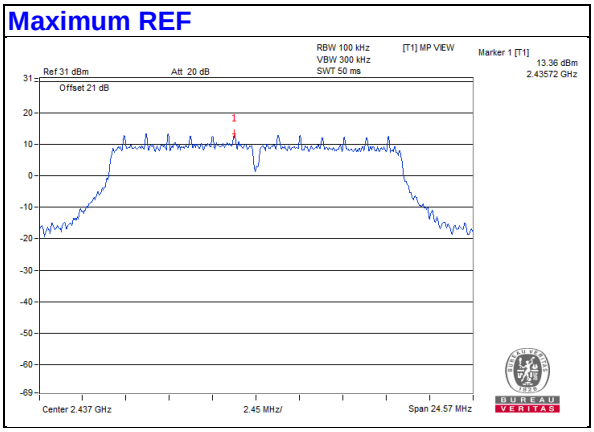


CH 11 Band edge



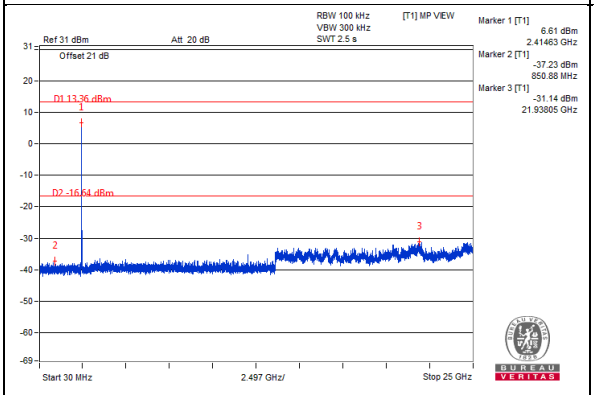
802.11g

Maximum REF

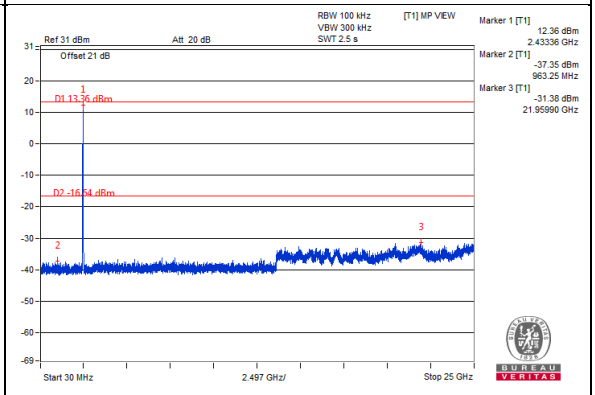


Chain 0

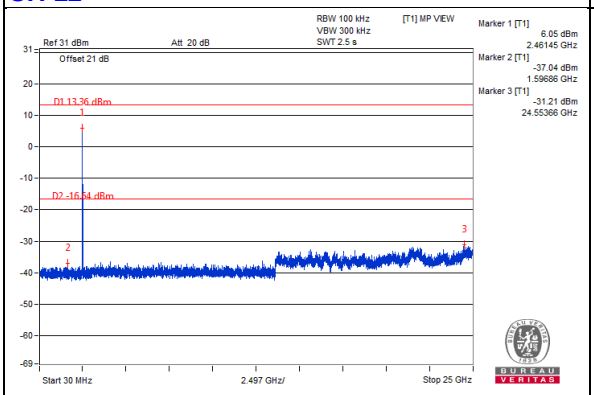
CH 1



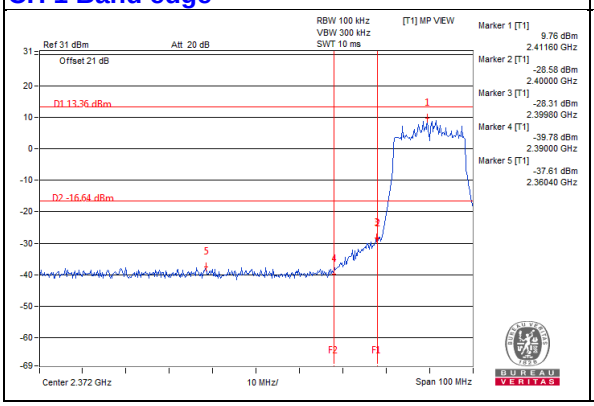
CH 6



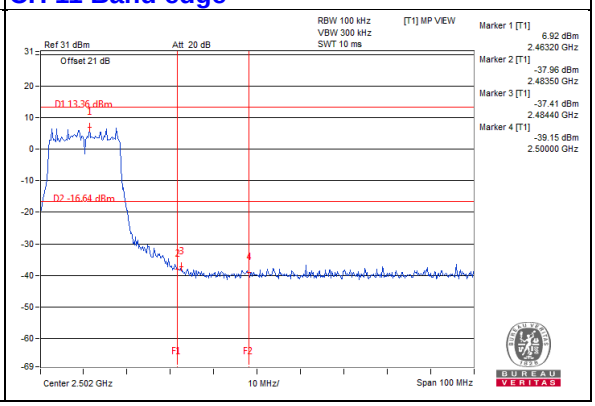
CH 11



CH 1 Band edge

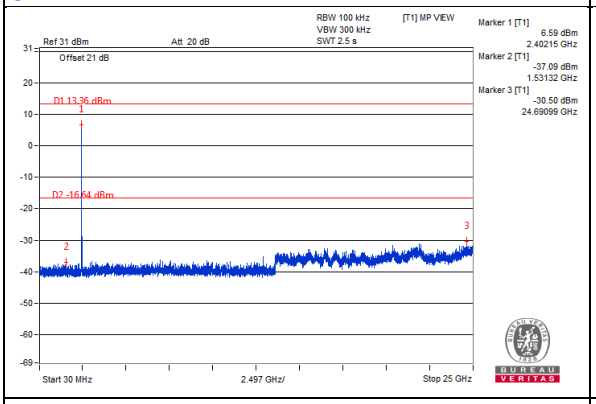


CH 11 Band edge

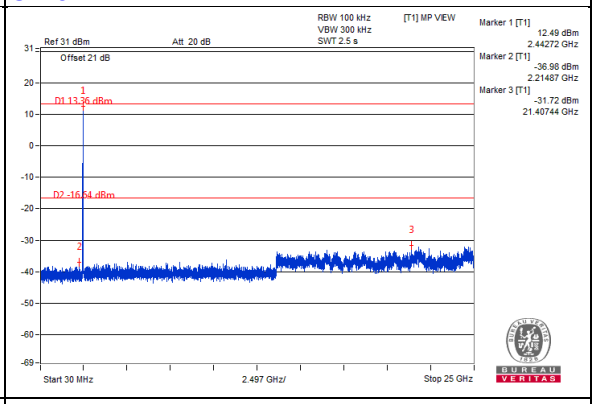


Chain 1

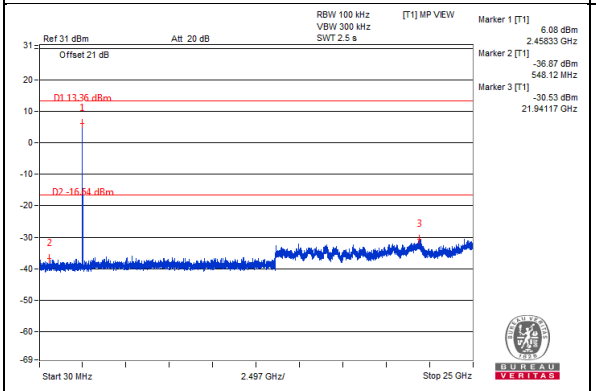
CH 1



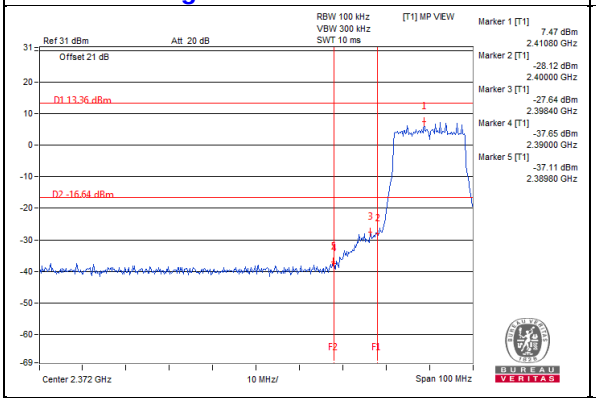
CH 6



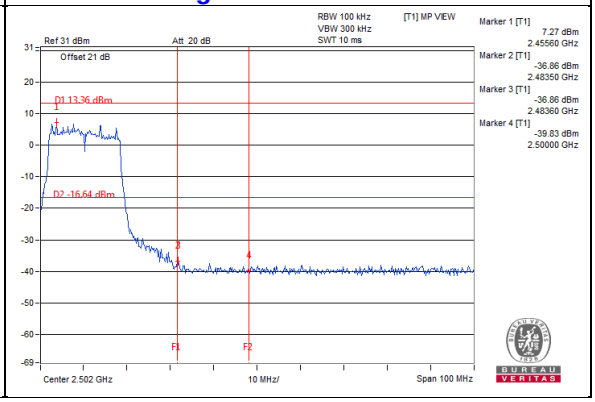
CH 11



CH 1 Band edge

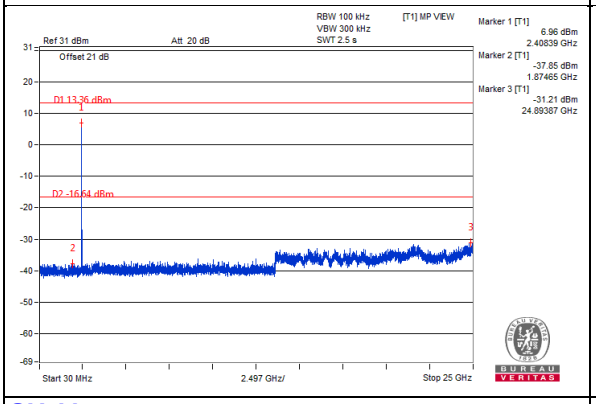


CH 11 Band edge

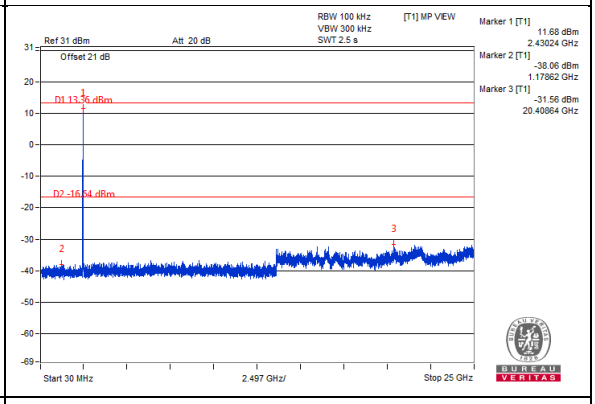


Chain 2

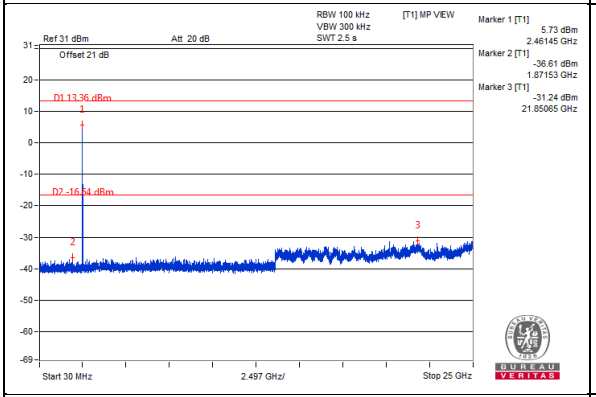
CH 1



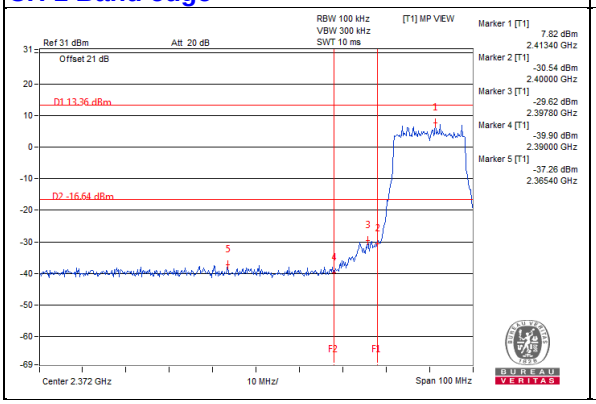
CH 6



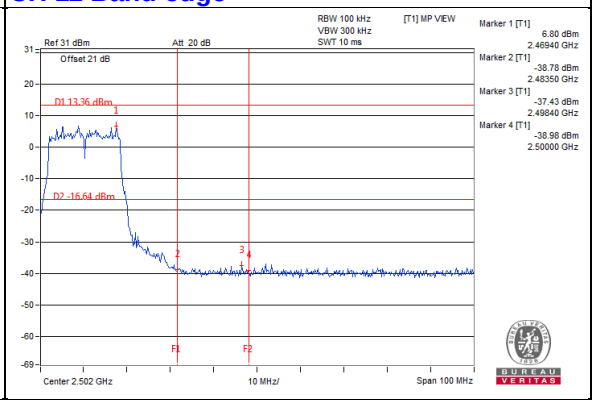
CH 11



CH 1 Band edge

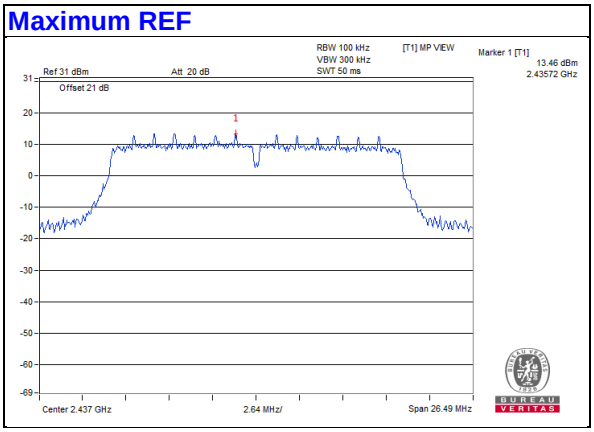


CH 11 Band edge



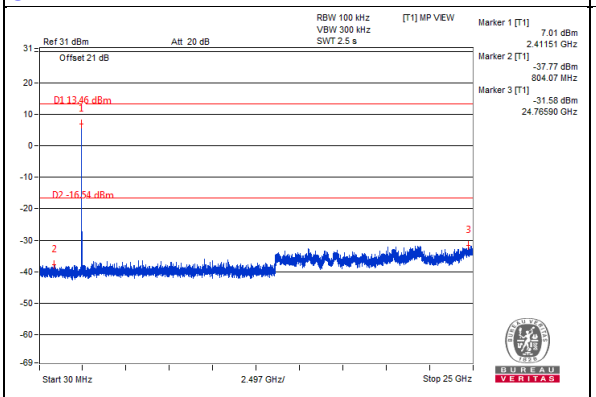
VHT20

Maximum REF

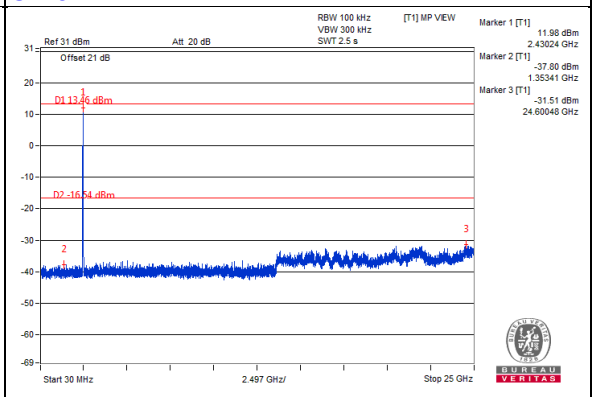


Chain 0

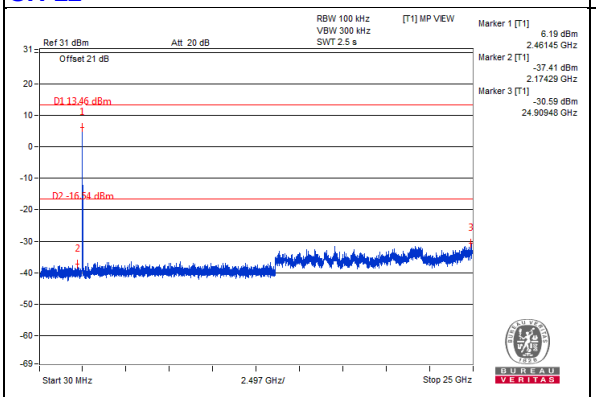
CH 1



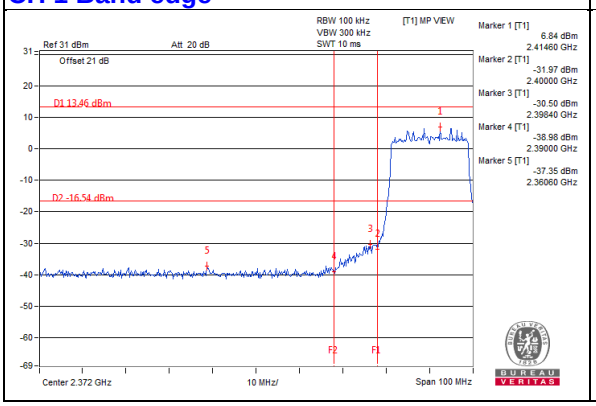
CH 6



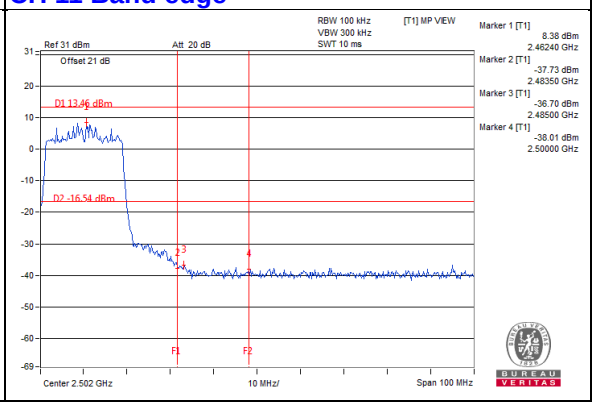
CH 11



CH 1 Band edge

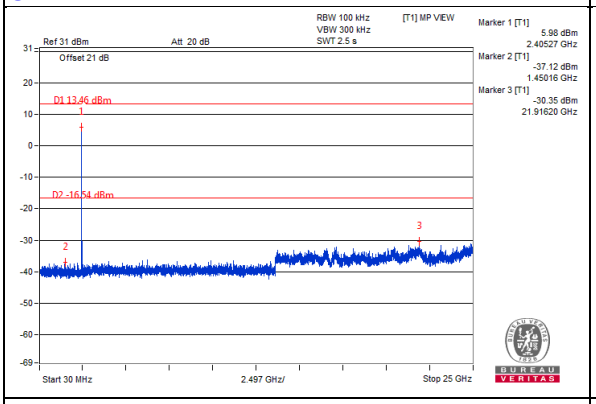


CH 11 Band edge

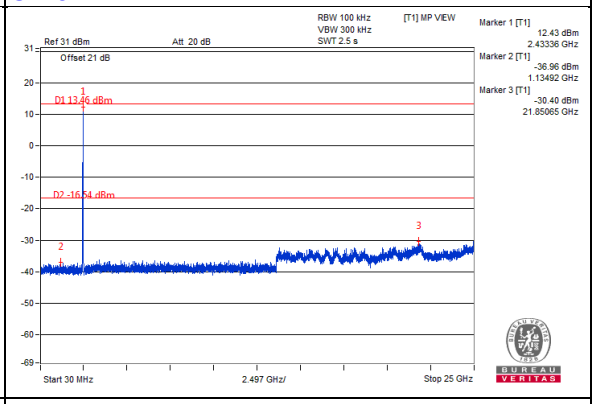


Chain 1

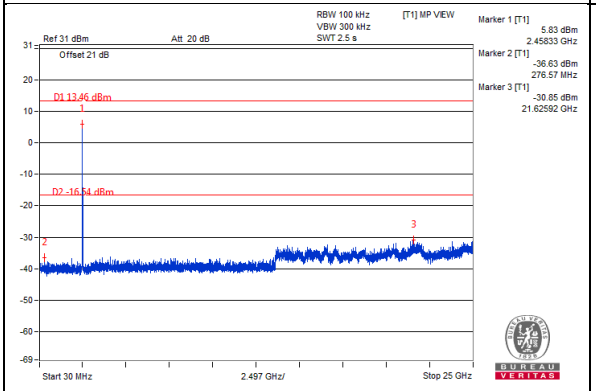
CH 1



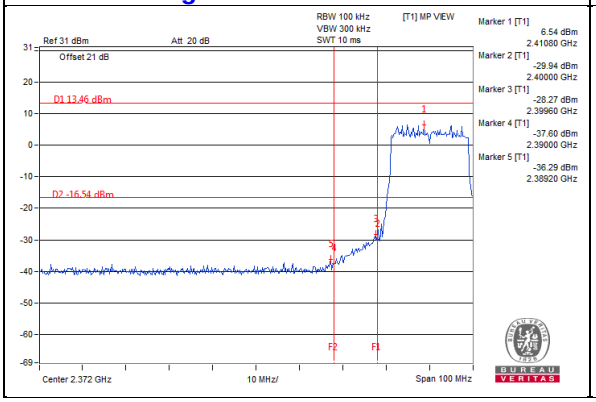
CH 6



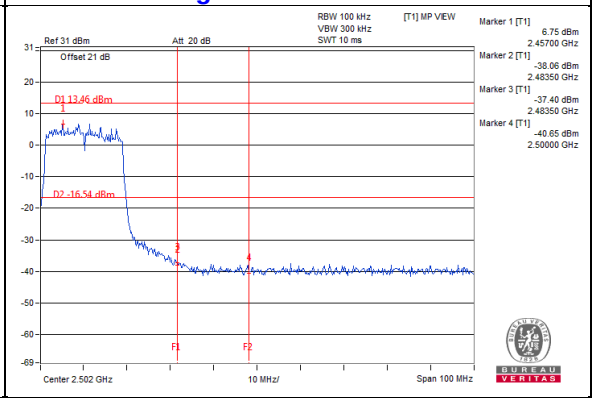
CH 11



CH 1 Band edge

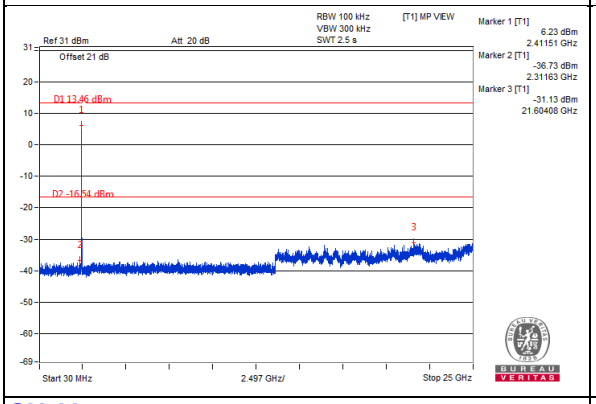


CH 11 Band edge

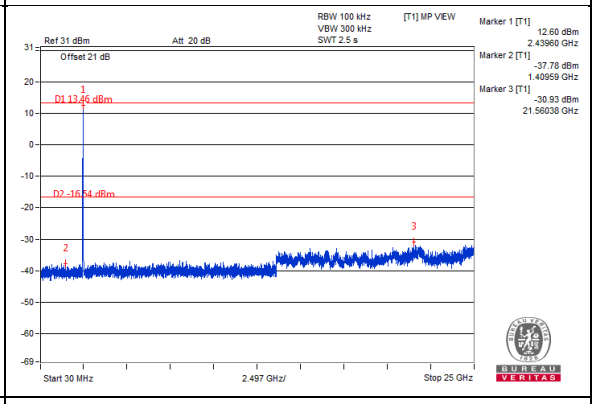


Chain 2

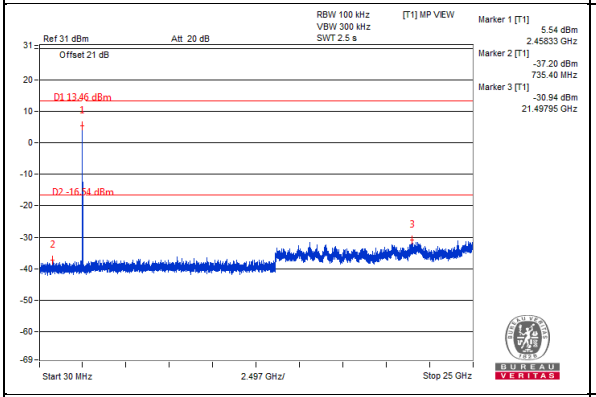
CH 1



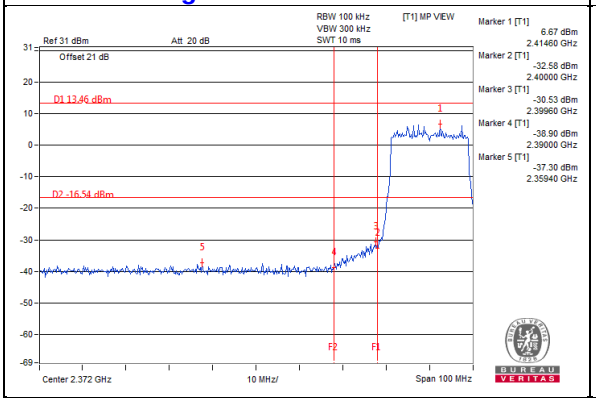
CH 6



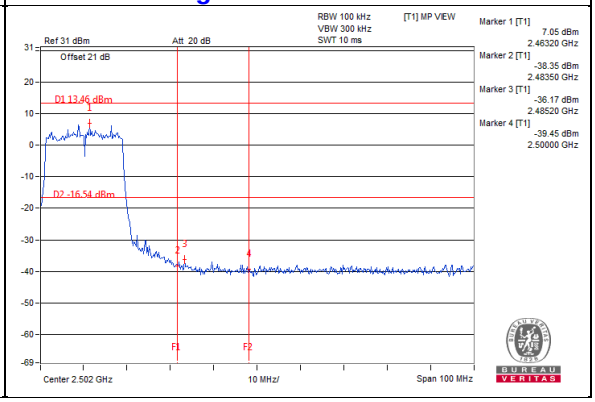
CH 11



CH 1 Band edge

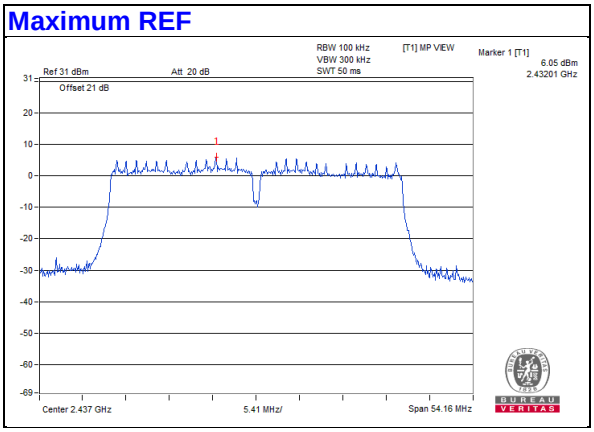


CH 11 Band edge



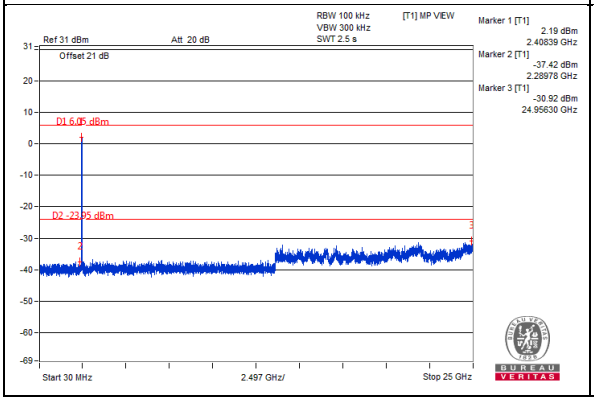
VHT40

Maximum REF

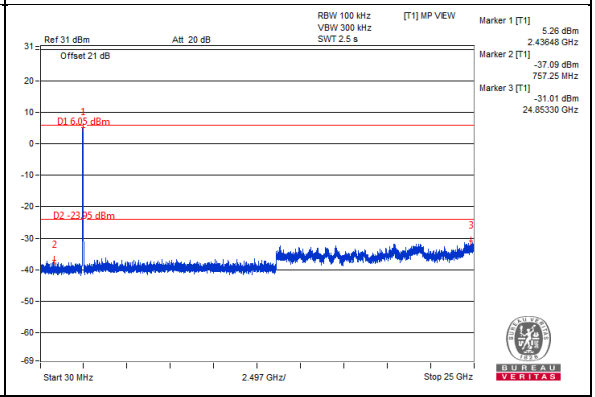


Chain 0

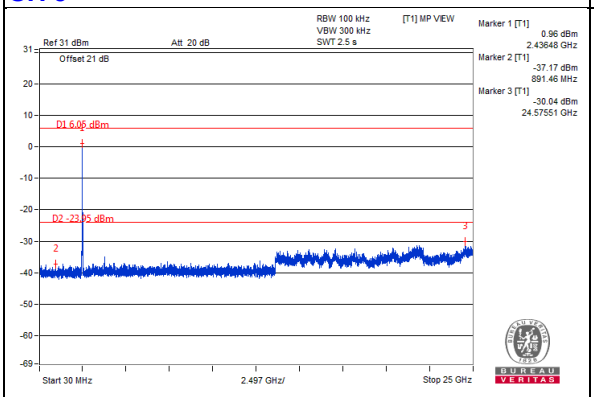
CH 3



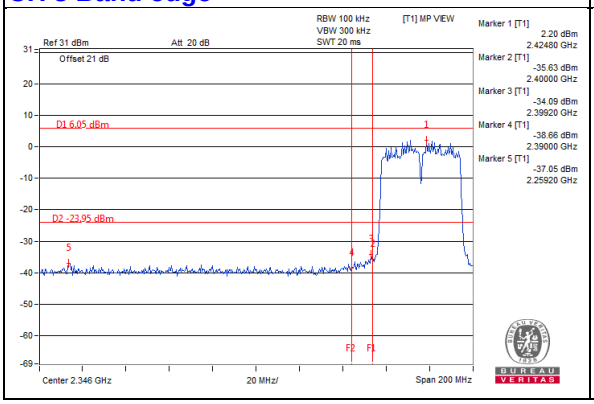
CH 6



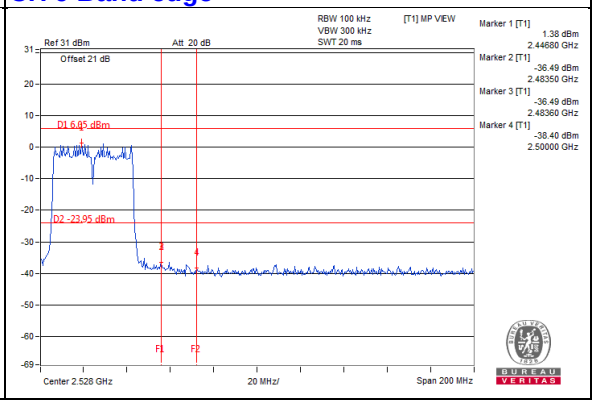
CH 9



CH 3 Band edge

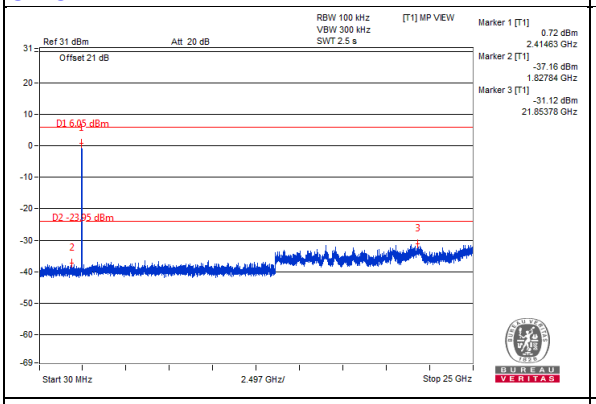


CH 9 Band edge

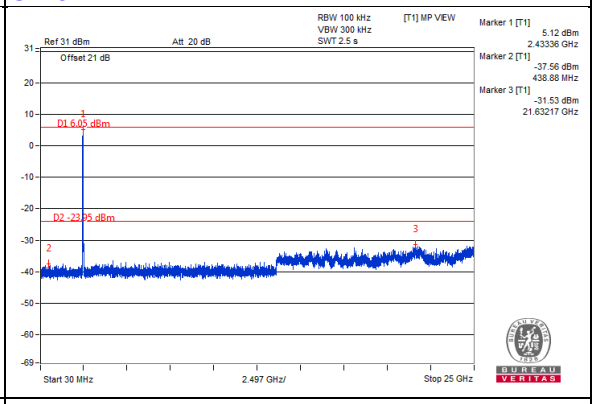


Chain 1

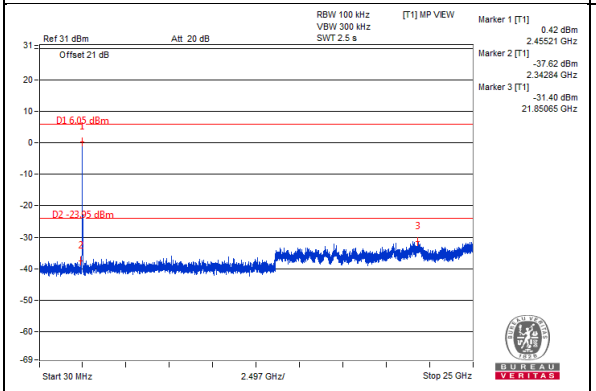
CH 3



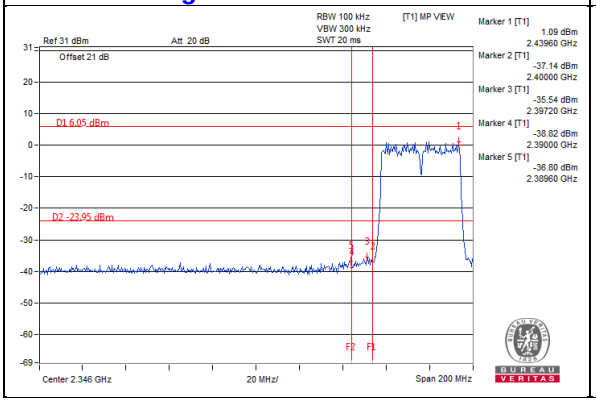
CH 6



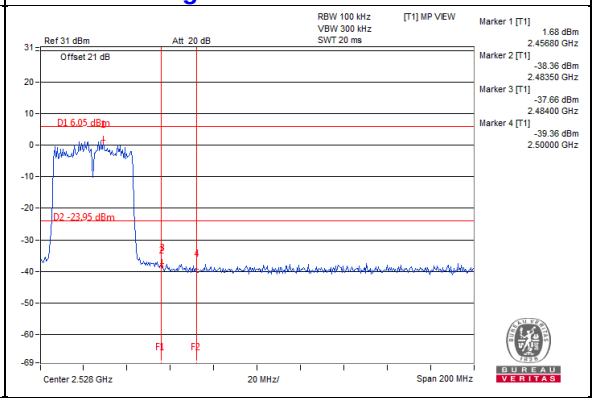
CH 9



CH 3 Band edge

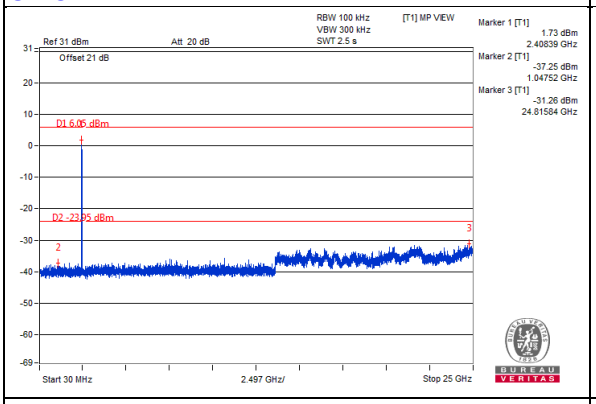


CH 9 Band edge

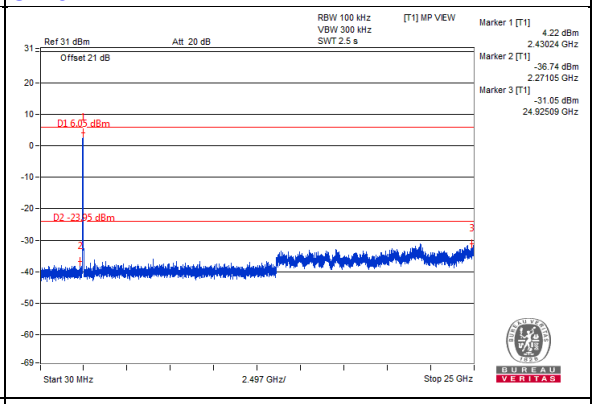


Chain 2

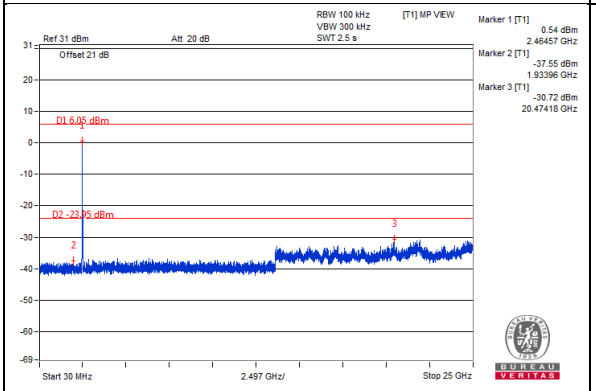
CH 3



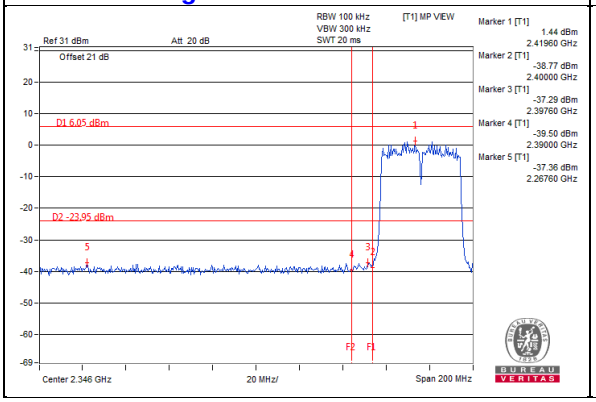
CH 6



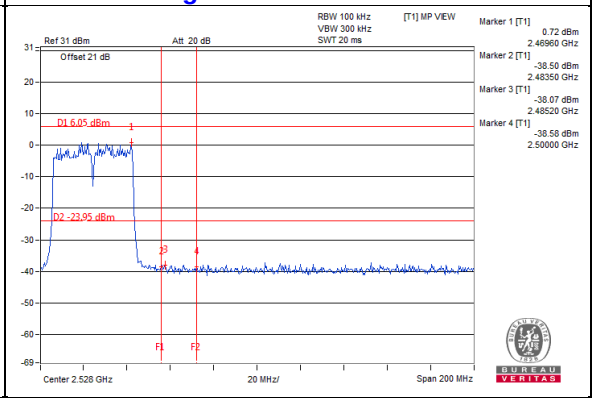
CH 9



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:

Linkou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

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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