FCC Test Report

Report No.:	RF191224E03
FCC ID:	Q87-08205
Test Model:	E5600
Received Date:	Dec. 24, 2019
Test Date:	Feb. 18 to Mar. 06, 2020
Issued Date:	Apr. 16, 2020
Applicant:	Linksys LLC
Address:	121 Theory Drive Irvine California 92617 United States
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location :	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RF191224E03	Original release.	Apr. 16, 2020

1 Certificate of Conformity

Product:	AC1200 DUAL-BAND GIGABIT WiFi 5 ROUTER
Brand:	Linksys
Test Model:	E5600
Sample Status:	ENGINEERING SAMPLE
Applicant:	Linksys LLC
Test Date:	Feb. 18 to Mar. 06, 2020
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 : Vivian Huang , **Date:** Apr. 16, 2020

Vivian Huang / Specialist

Approved by : , **Date:** Apr. 16, 2020

Clark Lin / Technical 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 -10.41 dB at 0.15391 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1 dB at 2390.00 MHz
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(MHF) not a standard connector.

Note:
Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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	1.8 dB
Conducted Emissions	-	3.1 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	4.9 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	4.9 dB
	18GHz ~ 40GHz	5.2 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	AC1200 DUAL-BAND GIGABIT WiFi 5 ROUTER
Brand	Linksys
Test Model	E5600
Status of EUT	ENGINEERING SAMPLE
Driver Version	1.0.0.1xxxxx
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
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:** 2.412GHz ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 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:** 891.464 mW **CDD Mode:** **5.18 ~ 5.24GHz:** 226.417 mW **5.745 ~ 5.825GHz:** 221.012 mW **Beamforming Mode:** **5.18 ~ 5.24GHz:** 184.639 mW **5.745 ~ 5.825GHz:** 213.827 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	RJ45 cable (Unshielded, 1m)

Note:

1. The EUT has two radios as following table:

Radio 1	Radio 2
WLAN (2.4GHz)	WLAN (5GHz)

2. 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.		

3. The EUT must be supplied power adapter and following different models could be chosen as following table:

No.	Brand	Model No.	Spec.	Plug
1	APD	WB-12G12FU	AC Input: 100-240Vac, 0.3A, 50/60Hz DC Output: 12V, 1.0A DC Output Cable: 1.5m, Unshielded	FCC/IC fix plug
2	APD	WB-12G12R	AC Input: 100-240Vac, 0.3A, 50/60Hz DC Output: 12V, 1.0A DC Output Cable: 1.5m, Unshielded	Interchangeable plug
3	Ktec	KSA-12W-120100VU	AC Input: 100-240Vac, 0.4A, 50-60Hz DC Output: 12V, 1.0A DC Output Cable: 1.5m, Unshielded	FCC/IC fix plug
4	Ktec	KSAS0121200100D5	AC Input: 100-240Vac, 0.4A, 50-60Hz DC Output: 12V, 1.0A DC Output Cable: 1.5m, Unshielded	Interchangeable plug

Note:
1. The adapter 2 is as same as adapter 1; except for plug shape is different.
2. The adapters 4 is as same as adapter 3; except for plug shape is different.
3. For conducted emissionand and radiated emission test, the EUT was pre-tested with above adapters 1 and 3, the worst case was found in **adapter 1**. Therefore only the test data of the adapter was recorded in this report.

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

Antenna NO.	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Cable Length(mm)	Cable Loss(dB)	excluding cable loss Antenna Gain(dBi)
G_ANT1	2.56	2.4~2.4835GHz	PIFA	none	NA	NA	2.56
G_ANT2	3.25	2.4~2.4835GHz	Dipole	i-pex(MHF)	75	0.3	3.55
A_ANT1	3.02	5.15~5.25GHz	Monopole	none	NA	NA	3.02
	3.29	5.25~5.35GHz				NA	3.29
	3.15	5.47~5.725GHz				NA	3.15
	3.27	5.725~5.85GHz				NA	3.27
A_ANT2	3.97	5.15~5.25GHz	Dipole	i-pex(MHF)	175	0.6	4.57
	4.29	5.25~5.35GHz				0.6	4.89
	4.35	5.47~5.725GHz				0.6	4.95
	4.35	5.725~5.85GHz				0.6	4.95

5. 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
5GHz Band		
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
1. All of modulation mode support beamforming function except 2.4GHz and 802.11a modulation mode.		

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

3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

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

Radiated Emission Test (Above 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Rate (Mbps)
802.11b	1 to 11	6	DSSS	DBPSK	1

Power Line Conducted Emission Test:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Rate (Mbps)
802.11b	1 to 11	6	DSSS	DBPSK	1

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

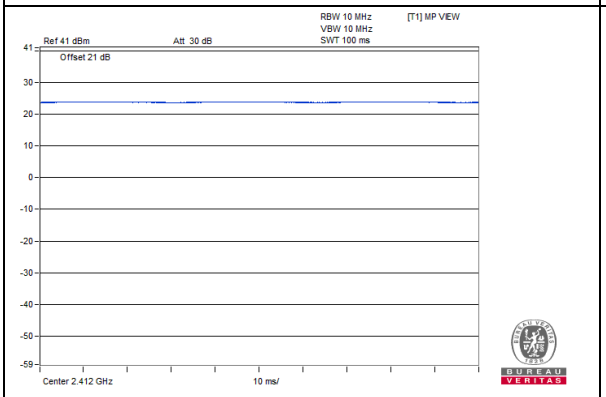
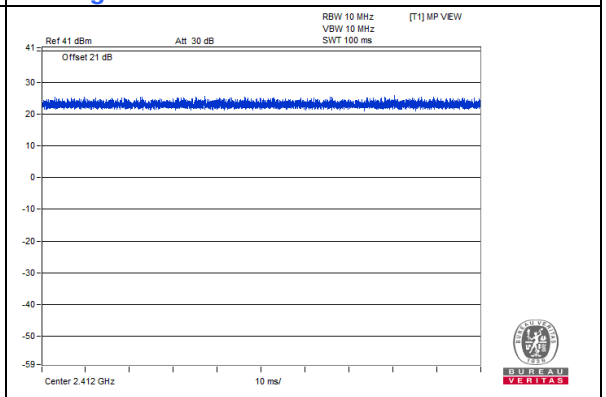
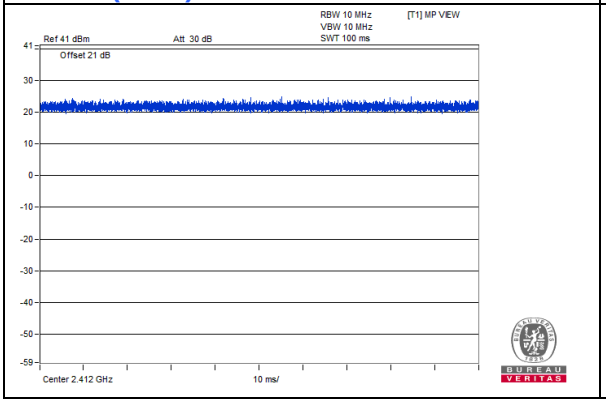
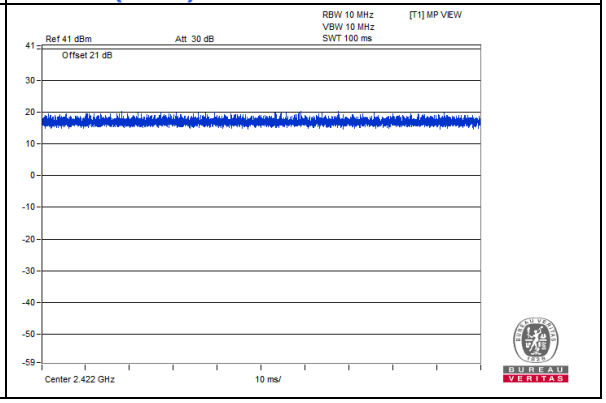
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	25deg. C, 75%RH	120Vac, 60Hz	Jeff Lee
RE<1G	23deg. C, 65%RH	120Vac, 60Hz	Tom Yang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Kevin Ko
APCM	25deg. C, 60%RH	120Vac, 60Hz	Andy Ho

3.3 Duty Cycle of Test Signal

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

802.11b	802.11g
	
802.11n (HT20)	**802.11n (HT40)**
	

3.4 Description of Support Units

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

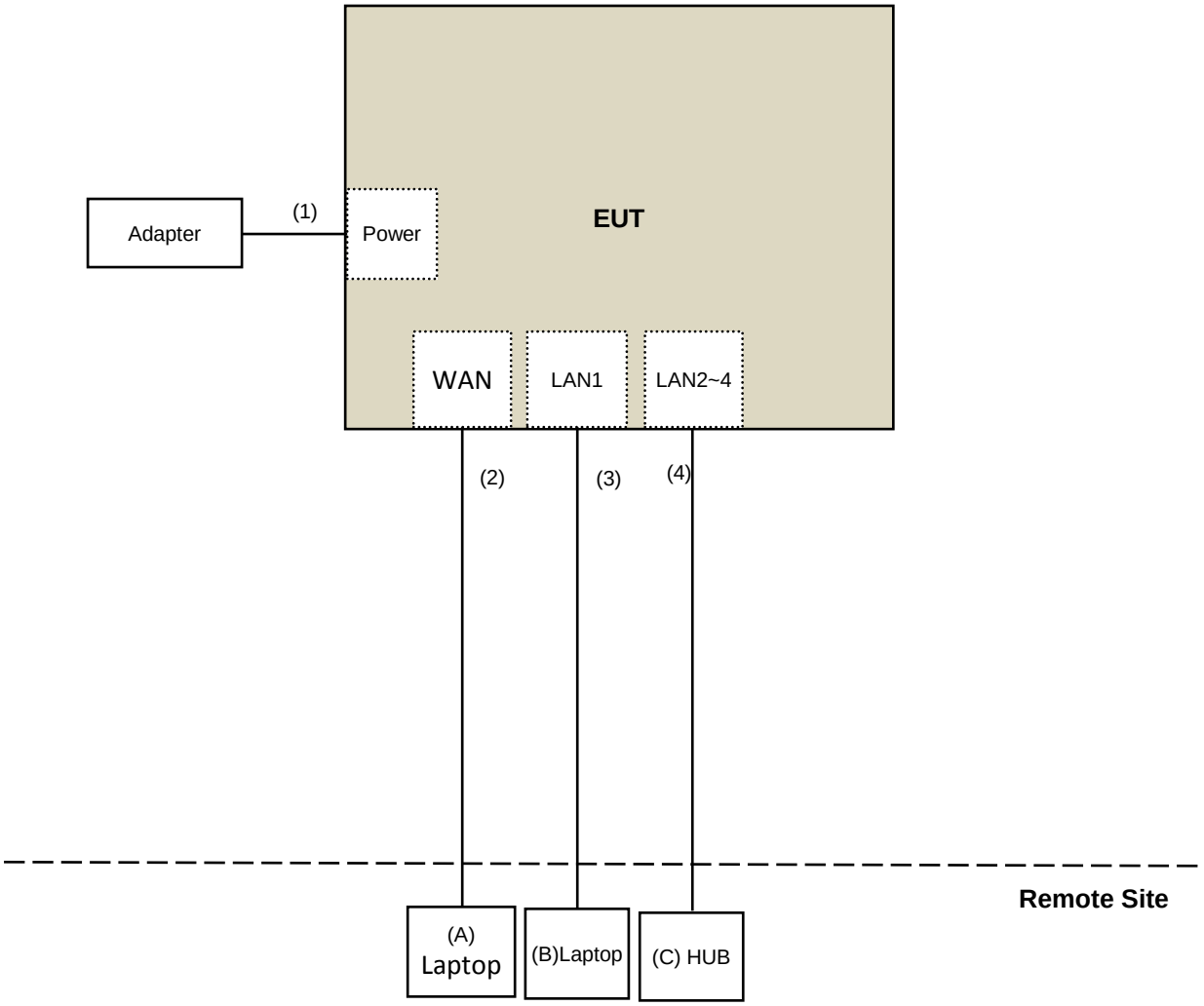
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	HUB	ZyXEL	GS1100-16	S150H44000046	FCC DoC	Provided by Lab

Note:

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

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and references

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

Test standard:

FCC Part 15, Subpart C (15.247)
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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

NOTE:

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

4.1.2 Test Instruments

For Radiated Emission test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 30, 2019	May 29, 2020
Loop Antenna Electro-Metrics	EM-6879	264	Feb. 18, 2020	Feb. 17, 2021
RF Cable	NA	LOOPCAB-001	Jan. 08, 2020	Jan. 07, 2021
RF Cable	NA	LOOPCAB-002	Jan. 08, 2020	Jan. 07, 2021
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Oct. 23, 2019	Oct. 22, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 11, 2019	Nov. 10, 2020
RF Cable	8D	966-4-1	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-2	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-3	Mar. 19, 2019	Mar. 18, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Sep. 26, 2019	Sep. 25, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980385	Aug. 15, 2019	Aug. 14, 2020
RF Cable	EMC104-SM-SM-1200	160923	Jan. 15, 2020	Jan. 14, 2021
RF Cable	104 RF cable	131215	Jan. 09, 2020	Jan. 08, 2021
RF Cable	EMC104-SM-SM-6000	180418	May 03, 2019	May 02, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC-KM-KM-4000	181205	Aug. 26, 2019	Aug. 25, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 4.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Feb. 18 to Mar. 06, 2020

For other test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 04, 2019	June 03, 2020
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

NOTE: 1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Mar. 06, 2020

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:

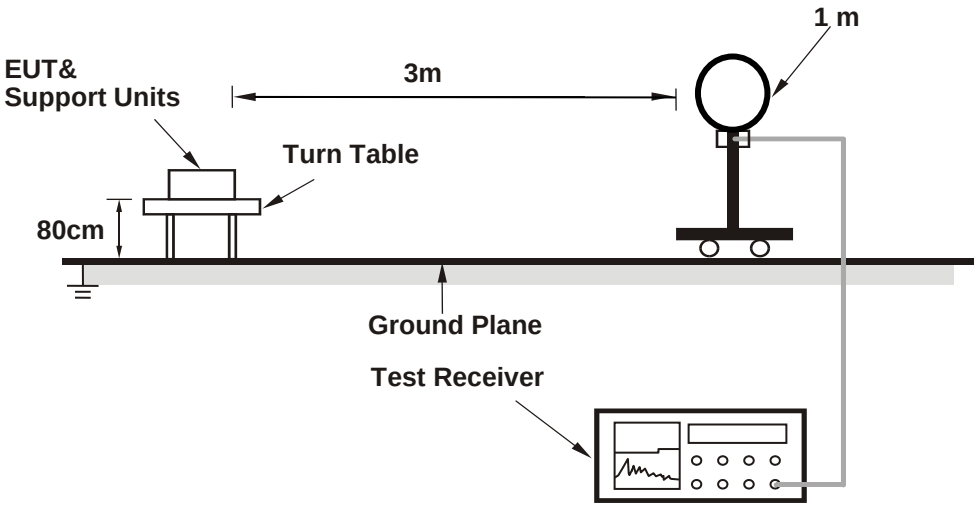
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

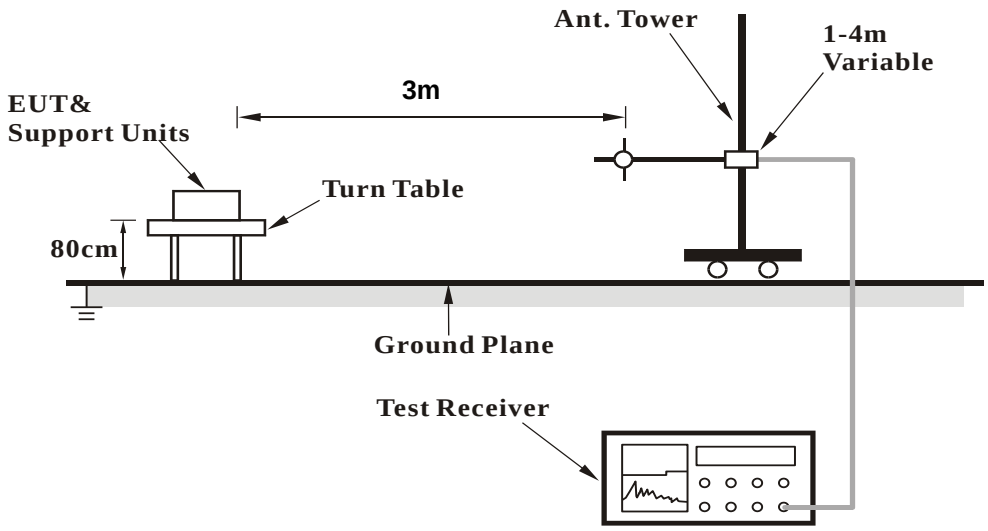
No deviation.

4.1.5 Test Setup

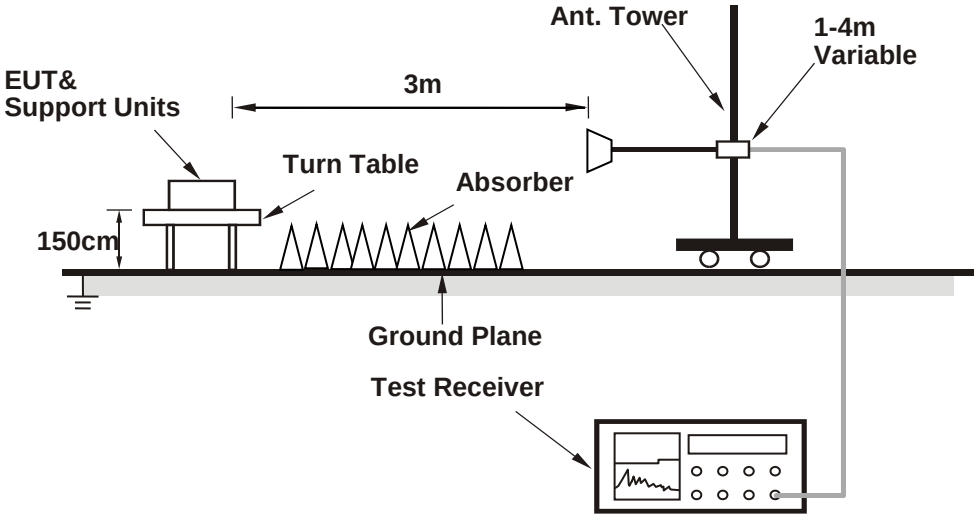
For Radiated emission below 30MHz



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 (MT7603 QA0.0.1.85) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data：

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.5 PK	74.0	-13.5	3.09 H	268	62.2	-1.7
2	2390.00	53.7 AV	54.0	-0.3	3.09 H	268	55.4	-1.7
3	*2412.00	111.6 PK			3.09 H	268	113.4	-1.8
4	*2412.00	109.4 AV			3.09 H	268	111.2	-1.8
5	4824.00	43.2 PK	74.0	-30.8	3.03 H	39	40.9	2.3
6	4824.00	40.3 AV	54.0	-13.7	3.03 H	39	38.0	2.3
7	14472.00	55.4 PK	74.0	-18.6	1.50 H	216	38.3	17.1
8	14472.00	52.4 AV	54.0	-1.6	1.50 H	216	35.3	17.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.4 PK	74.0	-13.6	2.98 V	9	62.1	-1.7
2	2390.00	52.0 AV	54.0	-2.0	2.98 V	9	53.7	-1.7
3	*2412.00	110.4 PK			2.98 V	9	112.2	-1.8
4	*2412.00	109.2 AV			2.98 V	9	111.0	-1.8
5	4824.00	44.7 PK	74.0	-29.3	1.61 V	346	42.4	2.3
6	4824.00	41.5 AV	54.0	-12.5	1.61 V	346	39.2	2.3
7	14472.00	52.2 PK	74.0	-21.8	2.16 V	241	35.1	17.1
8	14472.00	47.8 AV	54.0	-6.2	2.16 V	241	30.7	17.1

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 other emission levels were very low against the limit.
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	58.1 PK	74.0	-15.9	3.34 H	268	59.8	-1.7
2	2390.00	46.3 AV	54.0	-7.7	3.34 H	268	48.0	-1.7
3	*2437.00	112.2 PK			3.34 H	268	113.9	-1.7
4	*2437.00	110.0 AV			3.34 H	268	111.7	-1.7
5	2483.50	57.5 PK	74.0	-16.5	3.34 H	268	59.2	-1.7
6	2483.50	45.9 AV	54.0	-8.1	3.34 H	268	47.6	-1.7
7	4874.00	44.2 PK	74.0	-29.8	1.63 H	267	42.0	2.2
8	4874.00	40.1 AV	54.0	-13.9	1.63 H	267	37.9	2.2
9	7311.00	47.4 PK	74.0	-26.6	1.90 H	212	38.3	9.1
10	7311.00	40.3 AV	54.0	-13.7	1.90 H	212	31.2	9.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.4 PK	74.0	-15.6	2.92 V	10	60.1	-1.7
2	2390.00	44.6 AV	54.0	-9.4	2.92 V	10	46.3	-1.7
3	*2437.00	111.9 PK			2.92 V	10	113.6	-1.7
4	*2437.00	109.7 AV			2.92 V	10	111.4	-1.7
5	2483.50	57.9 PK	74.0	-16.1	2.92 V	10	59.6	-1.7
6	2483.50	45.3 AV	54.0	-8.7	2.92 V	10	47.0	-1.7
7	4874.00	45.6 PK	74.0	-28.4	1.43 V	1	43.4	2.2
8	4874.00	41.6 AV	54.0	-12.4	1.43 V	1	39.4	2.2
9	7311.00	44.5 PK	74.0	-29.5	1.42 V	89	35.4	9.1
10	7311.00	32.1 AV	54.0	-21.9	1.42 V	89	23.0	9.1

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 other emission levels were very low against the limit.
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	111.0 PK			1.04 H	243	112.7	-1.7
2	*2462.00	108.8 AV			1.04 H	243	110.5	-1.7
3	2483.50	60.4 PK	74.0	-13.6	1.04 H	243	62.1	-1.7
4	2483.50	53.6 AV	54.0	-0.4	1.04 H	243	55.3	-1.7
5	4924.00	43.2 PK	74.0	-30.8	3.06 H	51	40.8	2.4
6	4924.00	40.1 AV	54.0	-13.9	3.06 H	51	37.7	2.4
7	7386.00	47.3 PK	74.0	-26.7	1.90 H	219	37.8	9.5
8	7386.00	41.2 AV	54.0	-12.8	1.90 H	219	31.7	9.5
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	*2462.00	111.6 PK			2.59 V	39	113.3	-1.7
2	*2462.00	108.9 AV			2.59 V	39	110.6	-1.7
3	2483.50	59.1 PK	74.0	-14.9	2.59 V	39	60.8	-1.7
4	2483.50	47.7 AV	54.0	-6.3	2.59 V	39	49.4	-1.7
5	4924.00	44.3 PK	74.0	-29.7	1.62 V	351	41.9	2.4
6	4924.00	41.2 AV	54.0	-12.8	1.62 V	351	38.8	2.4
7	7386.00	45.1 PK	74.0	-28.9	1.43 V	73	35.6	9.5
8	7386.00	33.7 AV	54.0	-20.3	1.43 V	73	24.2	9.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.8 PK	74.0	-4.2	1.52 H	244	71.5	-1.7
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.52 H**	**244**	**55.6**	**-1.7**
3	*2412.00	113.2 PK			1.52 H	244	115.0	-1.8
4	*2412.00	102.7 AV			1.52 H	244	104.5	-1.8
5	4824.00	39.6 PK	74.0	-34.4	3.03 H	30	37.3	2.3
6	4824.00	37.5 AV	54.0	-16.5	3.03 H	30	35.2	2.3
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	68.4 PK	74.0	-5.6	2.45 V	3	70.1	-1.7
2	2390.00	51.8 AV	54.0	-2.2	2.45 V	3	53.5	-1.7
3	*2412.00	113.4 PK			2.45 V	3	115.2	-1.8
4	*2412.00	103.7 AV			2.45 V	3	105.5	-1.8
5	4824.00	40.1 PK	74.0	-33.9	1.58 V	348	37.8	2.3
6	4824.00	37.9 AV	54.0	-16.1	1.58 V	348	35.6	2.3

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 other emission levels were very low against the limit.
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	59.6 PK	74.0	-14.4	1.34 H	240	61.3	-1.7
2	2390.00	46.6 AV	54.0	-7.4	1.34 H	240	48.3	-1.7
3	*2437.00	115.2 PK			1.34 H	240	116.9	-1.7
4	*2437.00	105.4 AV			1.34 H	240	107.1	-1.7
5	2483.50	58.4 PK	74.0	-15.6	1.34 H	240	60.1	-1.7
6	2483.50	45.8 AV	54.0	-8.2	1.34 H	240	47.5	-1.7
7	4874.00	40.0 PK	74.0	-34.0	1.66 H	274	37.8	2.2
8	4874.00	37.3 AV	54.0	-16.7	1.66 H	274	35.1	2.2
9	7311.00	44.3 PK	74.0	-29.7	1.88 H	198	35.2	9.1
10	7311.00	31.6 AV	54.0	-22.4	1.88 H	198	22.5	9.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.5 PK	74.0	-15.5	2.91 V	8	60.2	-1.7
2	2390.00	46.1 AV	54.0	-7.9	2.91 V	8	47.8	-1.7
3	*2437.00	116.3 PK			2.91 V	8	118.0	-1.7
4	*2437.00	107.1 AV			2.91 V	8	108.8	-1.7
5	2483.50	59.6 PK	74.0	-14.4	2.91 V	8	61.3	-1.7
6	2483.50	46.3 AV	54.0	-7.7	2.91 V	8	48.0	-1.7
7	4874.00	40.2 PK	74.0	-33.8	1.37 V	4	38.0	2.2
8	4874.00	37.4 AV	54.0	-16.6	1.37 V	4	35.2	2.2
9	7311.00	44.6 PK	74.0	-29.4	1.48 V	102	35.5	9.1
10	7311.00	32.1 AV	54.0	-21.9	1.48 V	102	23.0	9.1

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 other emission levels were very low against the limit.
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	112.5 PK			1.04 H	244	114.2	-1.7
2	*2462.00	102.3 AV			1.04 H	244	104.0	-1.7
3	2483.50	71.7 PK	74.0	-2.3	1.04 H	244	73.4	-1.7
4	2483.50	51.6 AV	54.0	-2.4	1.04 H	244	53.3	-1.7
5	4924.00	41.0 PK	74.0	-33.0	3.06 H	41	38.6	2.4
6	4924.00	38.0 AV	54.0	-16.0	3.06 H	41	35.6	2.4
7	7386.00	44.7 PK	74.0	-29.3	1.94 H	216	35.2	9.5
8	7386.00	33.7 AV	54.0	-20.3	1.94 H	216	24.2	9.5
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	*2462.00	112.2 PK			2.57 V	0	113.9	-1.7
2	*2462.00	102.8 AV			2.57 V	0	104.5	-1.7
3	2483.50	72.2 PK	74.0	-1.8	2.57 V	0	73.9	-1.7
4	2483.50	53.7 AV	54.0	-0.3	2.57 V	0	55.4	-1.7
5	4924.00	41.2 PK	74.0	-32.8	1.58 V	360	38.8	2.4
6	4924.00	38.0 AV	54.0	-16.0	1.58 V	360	35.6	2.4
7	7386.00	44.6 PK	74.0	-29.4	1.48 V	74	35.1	9.5
8	7386.00	33.3 AV	54.0	-20.7	1.48 V	74	23.8	9.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.6 PK	74.0	-3.4	1.53 H	242	72.3	-1.7
2	2390.00	52.5 AV	54.0	-1.5	1.53 H	242	54.2	-1.7
3	*2412.00	110.7 PK			1.53 H	242	112.5	-1.8
4	*2412.00	100.7 AV			1.53 H	242	102.5	-1.8
5	4824.00	39.3 PK	74.0	-34.7	2.99 H	27	37.0	2.3
6	4824.00	37.4 AV	54.0	-16.6	2.99 H	27	35.1	2.3
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	70.2 PK	74.0	-3.8	2.98 V	5	71.9	-1.7
2	2390.00	53.6 AV	54.0	-0.4	2.98 V	5	55.3	-1.7
3	*2412.00	112.4 PK			2.98 V	5	114.2	-1.8
4	*2412.00	102.7 AV			2.98 V	5	104.5	-1.8
5	4824.00	40.0 PK	74.0	-34.0	1.56 V	347	37.7	2.3
6	4824.00	37.6 AV	54.0	-16.4	1.56 V	347	35.3	2.3

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 other emission levels were very low against the limit.
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	60.1 PK	74.0	-13.9	1.74 H	242	61.8	-1.7
2	2390.00	46.9 AV	54.0	-7.1	1.74 H	242	48.6	-1.7
3	*2437.00	113.9 PK			1.74 H	242	115.6	-1.7
4	*2437.00	104.2 AV			1.74 H	242	105.9	-1.7
5	2483.50	59.2 PK	74.0	-14.8	1.74 H	242	60.9	-1.7
6	2483.50	45.7 AV	54.0	-8.3	1.74 H	242	47.4	-1.7
7	4874.00	40.2 PK	74.0	-33.8	1.71 H	268	38.0	2.2
8	4874.00	37.6 AV	54.0	-16.4	1.71 H	268	35.4	2.2
9	7311.00	44.4 PK	74.0	-29.6	1.92 H	201	35.3	9.1
10	7311.00	31.9 AV	54.0	-22.1	1.92 H	201	22.8	9.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.0 PK	74.0	-15.0	2.92 V	3	60.7	-1.7
2	2390.00	46.1 AV	54.0	-7.9	2.92 V	3	47.8	-1.7
3	*2437.00	115.6 PK			2.92 V	3	117.3	-1.7
4	*2437.00	106.3 AV			2.92 V	3	108.0	-1.7
5	2483.50	59.3 PK	74.0	-14.7	2.92 V	3	61.0	-1.7
6	2483.50	45.9 AV	54.0	-8.1	2.92 V	3	47.6	-1.7
7	4874.00	40.7 PK	74.0	-33.3	1.34 V	0	38.5	2.2
8	4874.00	37.8 AV	54.0	-16.2	1.34 V	0	35.6	2.2
9	7311.00	44.0 PK	74.0	-30.0	1.53 V	92	34.9	9.1
10	7311.00	31.7 AV	54.0	-22.3	1.53 V	92	22.6	9.1

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 other emission levels were very low against the limit.
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	110.6 PK			1.50 H	241	112.3	-1.7
2	*2462.00	100.7 AV			1.50 H	241	102.4	-1.7
3	2483.50	72.1 PK	74.0	-1.9	1.50 H	241	73.8	-1.7
4	2483.50	52.9 AV	54.0	-1.1	1.50 H	241	54.6	-1.7
5	4924.00	41.0 PK	74.0	-33.0	3.08 H	56	38.6	2.4
6	4924.00	37.9 AV	54.0	-16.1	3.08 H	56	35.5	2.4
7	7386.00	44.9 PK	74.0	-29.1	2.00 H	213	35.4	9.5
8	7386.00	34.0 AV	54.0	-20.0	2.00 H	213	24.5	9.5
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	*2462.00	110.4 PK			2.57 V	0	112.1	-1.7
2	*2462.00	101.7 AV			2.57 V	0	103.4	-1.7
3	2483.50	70.5 PK	74.0	-3.5	2.57 V	0	72.2	-1.7
4	2483.50	53.7 AV	54.0	-0.3	2.57 V	0	55.4	-1.7
5	4924.00	41.3 PK	74.0	-32.7	1.54 V	356	38.9	2.4
6	4924.00	38.3 AV	54.0	-15.7	1.54 V	356	35.9	2.4
7	7386.00	44.6 PK	74.0	-29.4	1.44 V	72	35.1	9.5
8	7386.00	33.6 AV	54.0	-20.4	1.44 V	72	24.1	9.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.2 PK	74.0	-5.8	1.73 H	244	69.9	-1.7
2	2390.00	53.2 AV	54.0	-0.8	1.73 H	244	54.9	-1.7
3	*2422.00	104.9 PK			1.73 H	244	106.7	-1.8
4	*2422.00	94.4 AV			1.73 H	244	96.2	-1.8
5	4844.00	36.8 PK	74.0	-37.2	3.11 H	67	34.5	2.3
6	4844.00	33.9 AV	54.0	-20.1	3.11 H	67	31.6	2.3
7	7266.00	44.6 PK	74.0	-29.4	1.96 H	200	35.7	8.9
8	7266.00	33.9 AV	54.0	-20.1	1.96 H	200	25.0	8.9
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	68.7 PK	74.0	-5.3	3.03 V	3	70.4	-1.7
2	2390.00	53.8 AV	54.0	-0.2	3.03 V	3	55.5	-1.7
3	*2422.00	105.3 PK			3.03 V	3	107.1	-1.8
4	*2422.00	95.7 AV			3.03 V	3	97.5	-1.8
5	4844.00	36.8 PK	74.0	-37.2	1.57 V	360	34.5	2.3
6	4844.00	33.8 AV	54.0	-20.2	1.57 V	360	31.5	2.3
7	7266.00	44.7 PK	74.0	-29.3	1.44 V	77	35.8	8.9
8	7266.00	33.7 AV	54.0	-20.3	1.44 V	77	24.8	8.9

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 other emission levels were very low against the limit.
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	70.7 PK	74.0	-3.3	1.60 H	239	72.4	-1.7
2	2390.00	53.6 AV	54.0	-0.4	1.60 H	239	55.3	-1.7
3	*2437.00	109.0 PK			1.60 H	239	110.7	-1.7
4	*2437.00	98.7 AV			1.60 H	239	100.4	-1.7
5	2483.50	68.5 PK	74.0	-5.5	1.60 H	239	70.2	-1.7
6	2483.50	50.0 AV	54.0	-4.0	1.60 H	239	51.7	-1.7
7	4874.00	36.5 PK	74.0	-37.5	1.74 H	257	34.3	2.2
8	4874.00	33.3 AV	54.0	-20.7	1.74 H	257	31.1	2.2
9	7311.00	44.1 PK	74.0	-29.9	1.88 H	195	35.0	9.1
10	7311.00	31.7 AV	54.0	-22.3	1.88 H	195	22.6	9.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.1 PK	74.0	-2.9	3.03 V	342	72.8	-1.7
2	2390.00	53.4 AV	54.0	-0.6	3.03 V	342	55.1	-1.7
3	*2437.00	109.7 PK			3.03 V	342	111.4	-1.7
4	*2437.00	99.7 AV			3.03 V	342	101.4	-1.7
5	2483.50	66.3 PK	74.0	-7.7	3.03 V	342	68.0	-1.7
6	2483.50	49.7 AV	54.0	-4.3	3.03 V	342	51.4	-1.7
7	4874.00	36.9 PK	74.0	-37.1	1.39 V	360	34.7	2.2
8	4874.00	33.8 AV	54.0	-20.2	1.39 V	360	31.6	2.2
9	7311.00	43.4 PK	74.0	-30.6	1.54 V	91	34.3	9.1
10	7311.00	31.3 AV	54.0	-22.7	1.54 V	91	22.2	9.1

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 other emission levels were very low against the limit.
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	106.2 PK			1.08 H	240	107.9	-1.7
2	*2452.00	95.8 AV			1.08 H	240	97.5	-1.7
3	2483.50	72.2 PK	74.0	-1.8	1.08 H	240	73.9	-1.7
4	2483.50	53.8 AV	54.0	-0.2	1.08 H	240	55.5	-1.7
5	4904.00	37.8 PK	74.0	-36.2	3.09 H	63	35.6	2.2
6	4904.00	34.8 AV	54.0	-19.2	3.09 H	63	32.6	2.2
7	7356.00	45.5 PK	74.0	-28.5	2.00 H	207	36.2	9.3
8	7356.00	34.4 AV	54.0	-19.6	2.00 H	207	25.1	9.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	107.4 PK			2.30 V	360	109.1	-1.7
2	*2452.00	97.9 AV			2.30 V	360	99.6	-1.7
3	2483.50	70.1 PK	74.0	-3.9	2.30 V	360	71.8	-1.7
4	2483.50	52.9 AV	54.0	-1.1	2.30 V	360	54.6	-1.7
5	4904.00	37.2 PK	74.0	-36.8	1.52 V	360	35.0	2.2
6	4904.00	34.4 AV	54.0	-19.6	1.52 V	360	32.2	2.2
7	7356.00	44.4 PK	74.0	-29.6	1.39 V	71	35.1	9.3
8	7356.00	33.3 AV	54.0	-20.7	1.39 V	71	24.0	9.3

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 other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Below 1GHz Data:

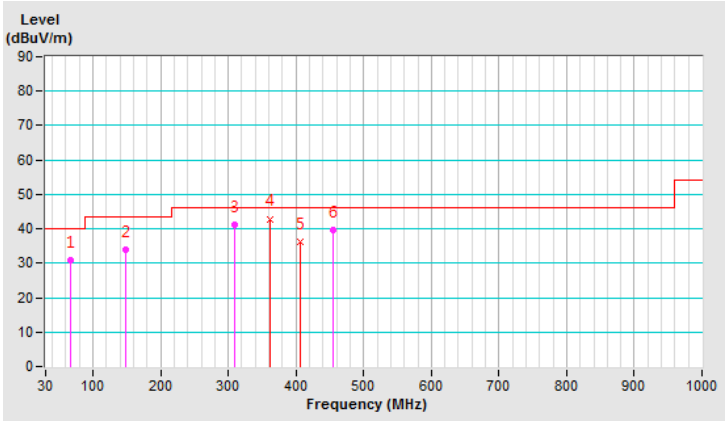
802.11b

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	66.62	30.8 QP	40.0	-9.2	1.00 H	360	40.0	-9.2
2	148.70	33.9 QP	43.5	-9.6	2.00 H	256	41.6	-7.7
3	309.55	41.1 QP	46.0	-4.9	1.00 H	281	47.6	-6.5
4	362.27	42.9 QP	46.0	-3.1	1.00 H	294	48.2	-5.3
5	406.37	36.3 QP	46.0	-9.7	1.00 H	299	40.4	-4.1
6	454.23	39.6 QP	46.0	-6.4	2.00 H	226	42.1	-2.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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.

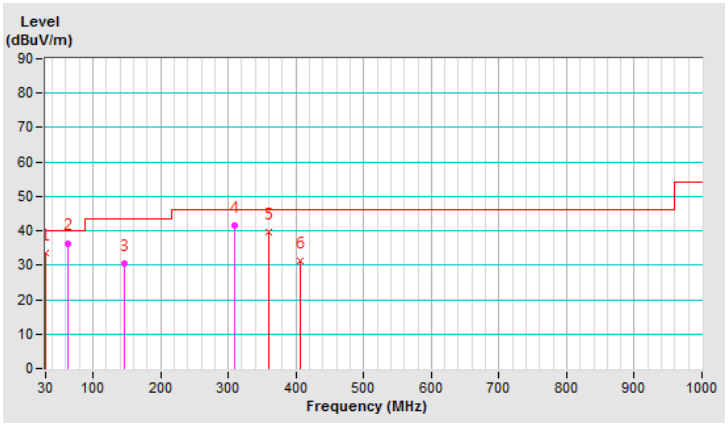


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	30.65	33.7 QP	40.0	-6.3	1.00 V	96	42.9	-9.2
2	62.81	36.4 QP	40.0	-3.6	1.50 V	0	45.2	-8.8
3	145.45	30.6 QP	43.5	-12.9	3.00 V	0	38.3	-7.7
4	309.00	41.4 QP	46.0	-4.6	1.50 V	360	47.9	-6.5
5	360.54	39.8 QP	46.0	-6.2	1.50 V	226	45.2	-5.4
6	407.23	31.4 QP	46.0	-14.6	1.50 V	247	35.5	-4.1

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 other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. 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. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 27, 2019	Sep. 26, 2020
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 14, 2019	Mar. 13, 2020
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: Feb. 25, 2020

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.

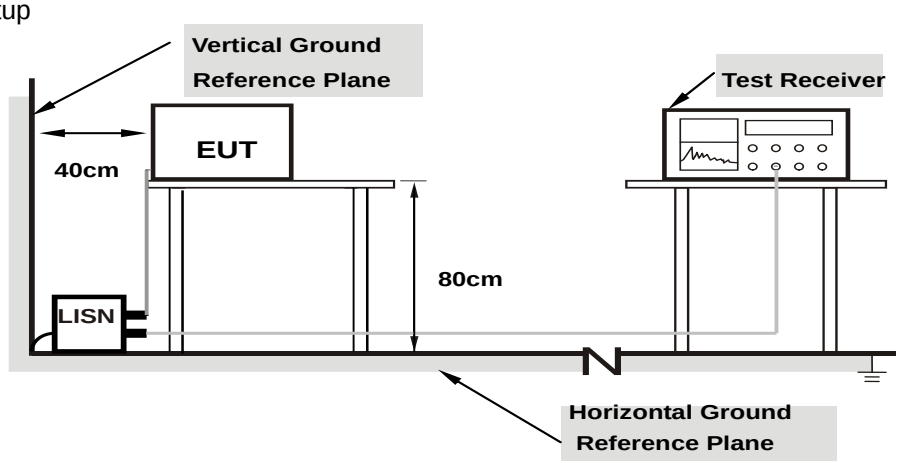
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

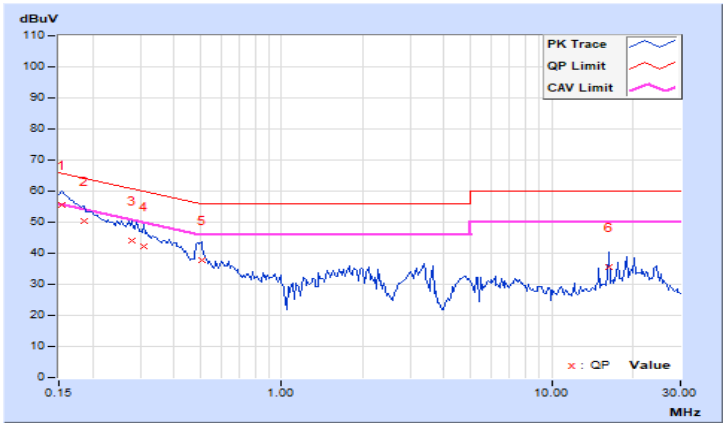
4.2.7 Test Results

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15391**	**9.99**	**45.39**	**32.33**	**55.38**	**42.32**	**65.79**	**55.79**	**-10.41**	**-13.47**
2	0.18516	9.99	40.51	27.50	50.50	37.49	64.25	54.25	-13.75	-16.76
3	0.27891	9.99	33.99	20.03	43.98	30.02	60.85	50.85	-16.87	-20.83
4	0.31016	10.00	32.25	17.94	42.25	27.94	59.97	49.97	-17.72	-22.03
5	0.50547	10.01	27.71	15.99	37.72	26.00	56.00	46.00	-18.28	-20.00
6	16.23828	11.10	24.53	13.72	35.63	24.82	60.00	50.00	-24.37	-25.18

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

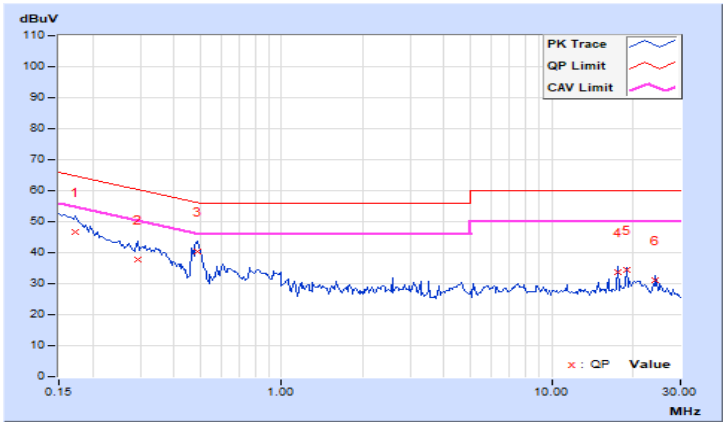


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	9.99	36.82	22.78	46.81	32.77	64.79	54.79	-17.98	-22.02
2	0.29453	10.00	27.73	15.24	37.73	25.24	60.40	50.40	-22.67	-25.16
3	0.48594	10.02	30.29	25.37	40.31	35.39	56.24	46.24	-15.93	-10.85
4	17.56250	10.98	22.69	15.44	33.67	26.42	60.00	50.00	-26.33	-23.58
5	18.91406	11.05	23.35	15.62	34.40	26.67	60.00	50.00	-25.60	-23.33
6	24.32031	11.21	19.94	12.61	31.15	23.82	60.00	50.00	-28.85	-26.18

Remarks:

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

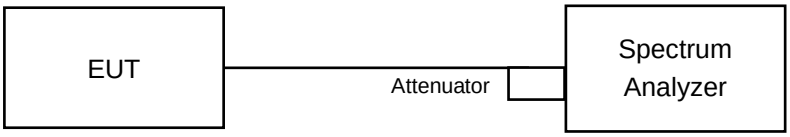


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	9.61	10.11	0.5	Pass
6	2437	10.09	9.99	0.5	Pass
11	2462	9.14	9.13	0.5	Pass

802.11g

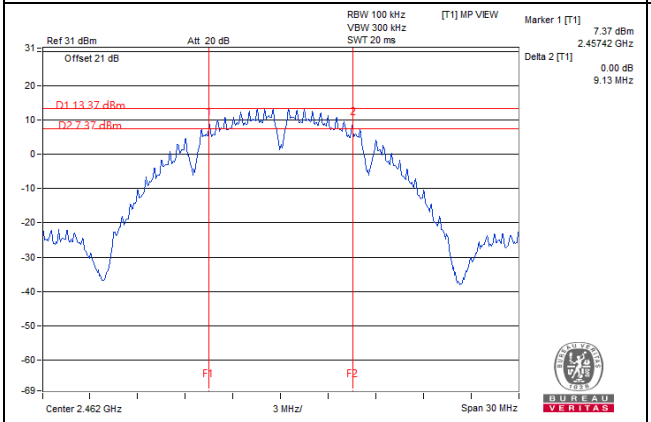
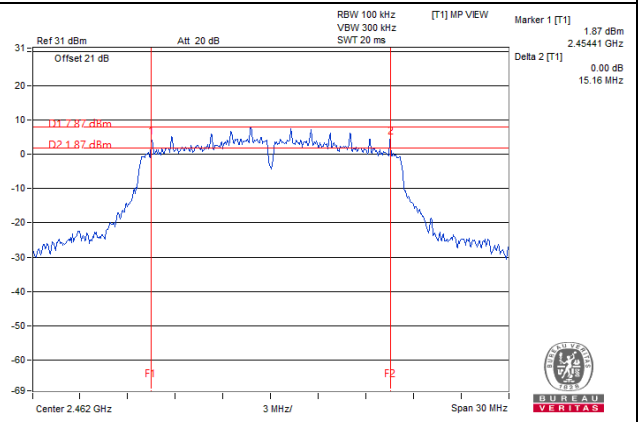
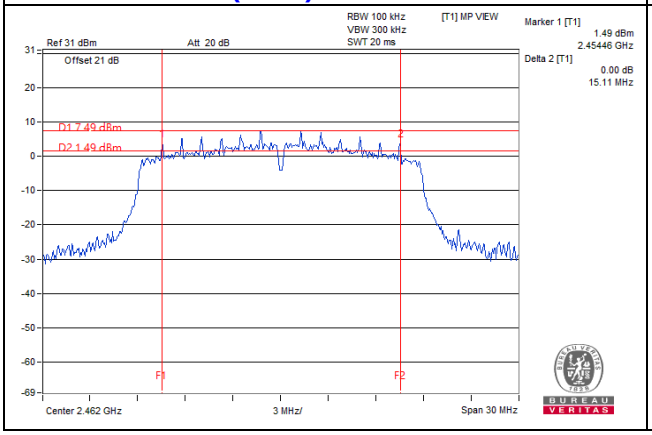
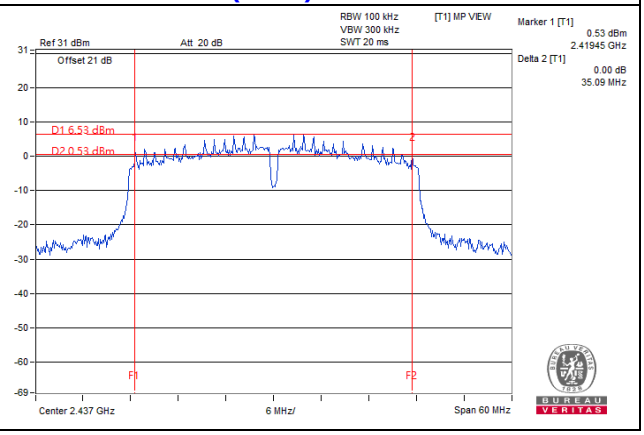
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.37	16.37	0.5	Pass
6	2437	15.18	16.37	0.5	Pass
11	2462	15.16	16.33	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.16	17.17	0.5	Pass
6	2437	15.17	17.58	0.5	Pass
11	2462	15.11	17.55	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.18	35.49	0.5	Pass
6	2437	35.09	35.17	0.5	Pass
9	2452	35.15	35.21	0.5	Pass

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

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

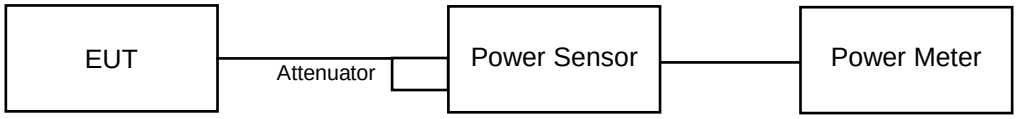
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

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

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak 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.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

802.11b

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	23.92	23.54	472.548	26.74	30	Pass
6	2437	24.39	23.99	525.4	27.20	30	Pass
11	2462	24.25	23.25	477.421	26.79	30	Pass

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	25.98	25.31	735.903	28.67	30	Pass
6	2437	26.57	26.41	891.464	29.50	30	Pass
11	2462	25.70	24.93	682.707	28.34	30	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	25.61	25.43	713.055	28.53	30	Pass
6	2437	26.62	26.33	888.734	29.49	30	Pass
11	2462	25.45	24.85	656.244	28.17	30	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	24.34	22.65	455.721	26.59	30	Pass
6	2437	25.77	25.37	721.922	28.58	30	Pass
9	2452	23.71	22.87	428.605	26.32	30	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	22.26	21.87	322.083	25.08
6	2437	22.73	22.35	359.29	25.55
11	2462	22.65	21.55	326.967	25.15

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	19.83	18.59	168.438	22.26
6	2437	22.39	21.43	312.376	24.95
11	2462	19.25	17.62	141.949	21.52

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	18.55	17.39	126.442	21.02
6	2437	22.34	21.32	306.915	24.87
11	2462	18.67	16.86	122.15	20.87

802.11n (HT40)

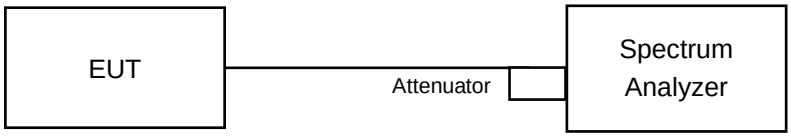
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	16.17	14.31	68.377	18.35
6	2437	19.55	18.57	162.102	22.10
9	2452	15.55	13.97	60.838	17.84

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

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (mW/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1				
1	2412	-0.83	-0.42	1.7338	2.39	8.00	PASS
6	2437	-0.06	-0.27	1.9275	2.85	8.00	PASS
11	2462	-1.29	-1.07	1.5241	1.83	8.00	PASS

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.

2. Directional gain = 10 log[$(10^{G0/20}+10^{G1/20})^2$ / 2] = 5.92dBi < 6dBi , so the power power density limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (mW/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1				
1	2412	-4.69	-6.16	0.5821	-2.35	8.00	PASS
6	2437	-4.03	-2.52	0.955	-0.20	8.00	PASS
11	2462	-8.50	-7.31	0.3273	-4.85	8.00	PASS

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.

2. Directional gain = 10 log[$(10^{G0/20}+10^{G1/20})^2$ / 2] = 5.92dBi < 6dBi , so the power power density limit shall not be reduced.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (mW/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1				
1	2412	-8.79	-7.48	0.3105	-5.08	8.00	PASS
6	2437	-4.51	-1.55	1.0544	0.23	8.00	PASS
11	2462	-8.43	-6.86	0.3499	-4.56	8.00	PASS

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.

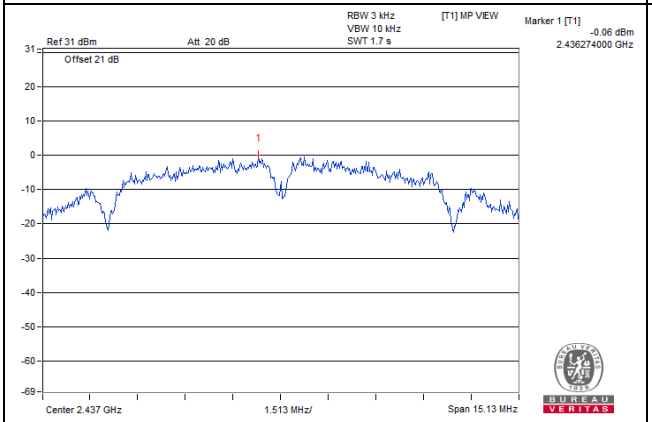
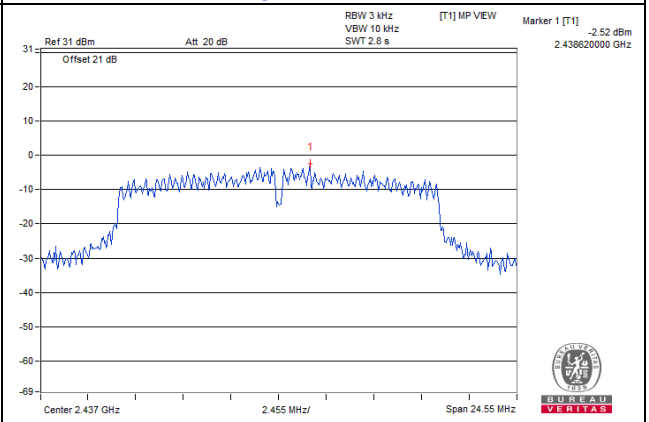
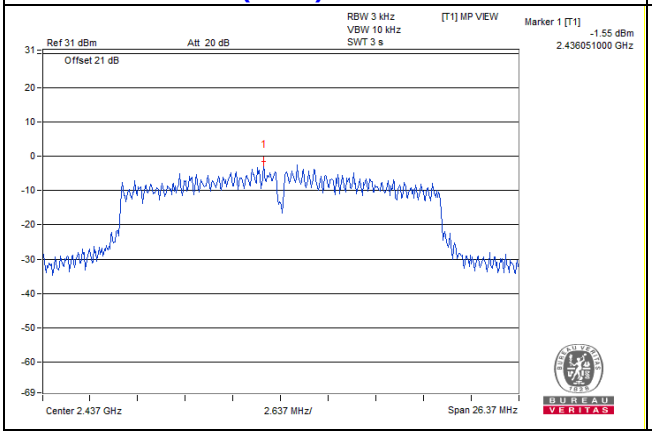
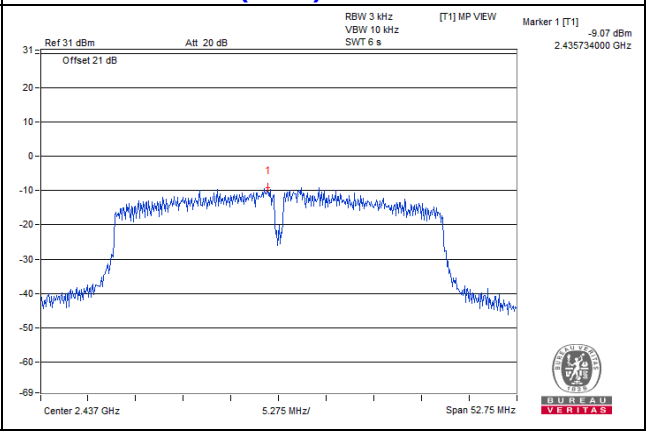
2. Directional gain = 10 log[$(10^{G0/20}+10^{G1/20})^2$ / 2] = 5.92dBi < 6dBi , so the power power density limit shall not be reduced.

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (mW/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1				
3	2422	-14.46	-13.04	0.08551	-10.68	8.00	PASS
6	2437	-9.17	-9.07	0.2449	-6.11	8.00	PASS
9	2452	-14.53	-13.83	0.07656	-11.16	8.00	PASS

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.

2. Directional gain = 10 log[$(10^{G0/20}+10^{G1/20})^2$ / 2] = 5.92dBi < 6dBi , so the power power density limit shall not be reduced.

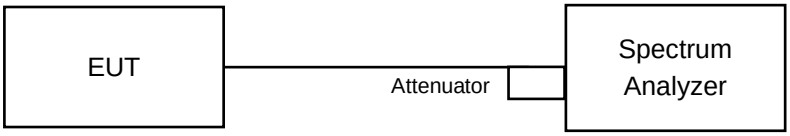
Spectrum Plot of Worst Value	
802.11b / Chain 0: CH6	**802.11g / Chain 1 : CH6**
	
802.11n (HT20) / Chain 1: CH6	**802.11n (HT40) / Chain 1: CH6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Same as Item 4.3.6

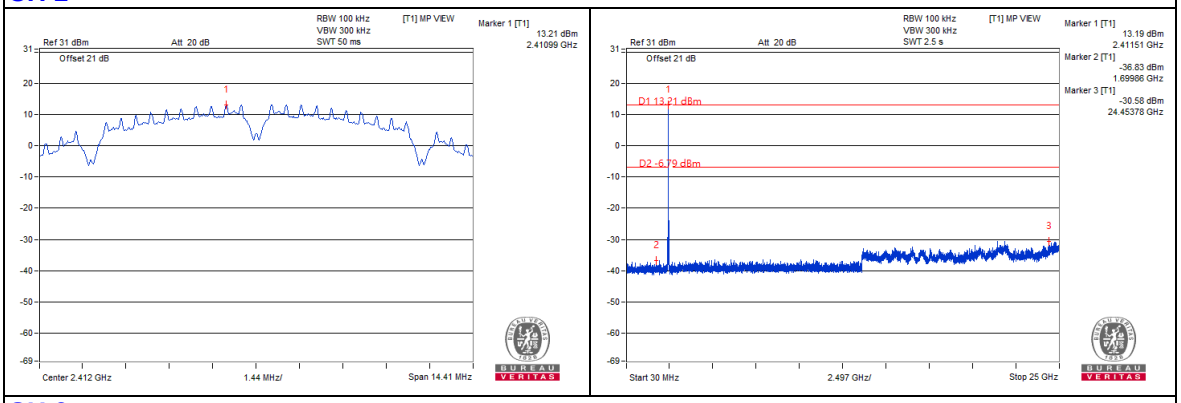
4.6.7 Test Results

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

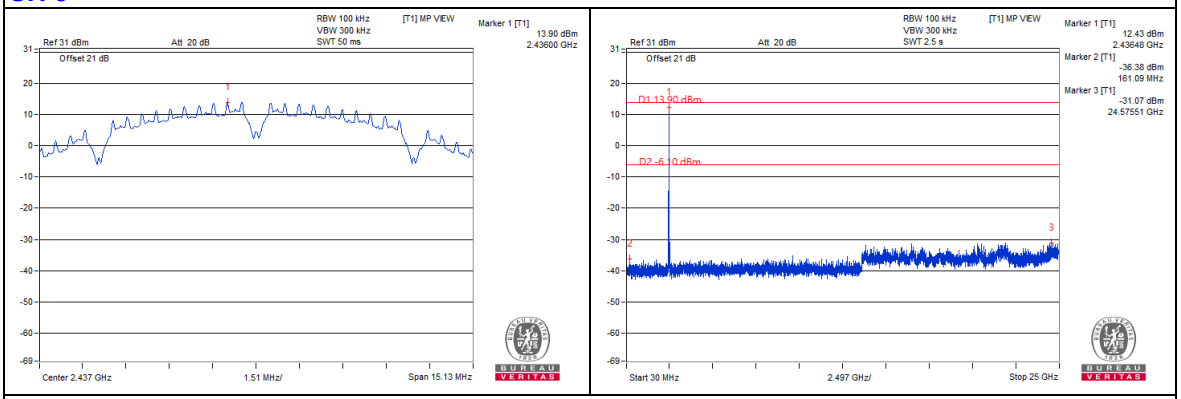
802.11b

Chain 0

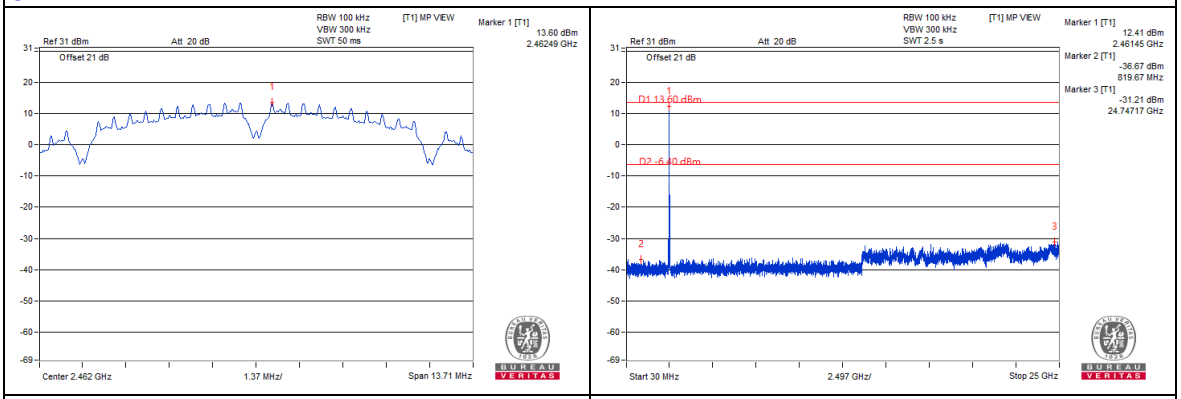
CH 1



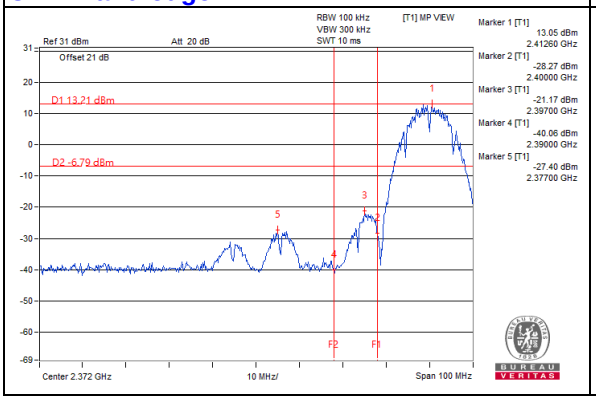
CH 6



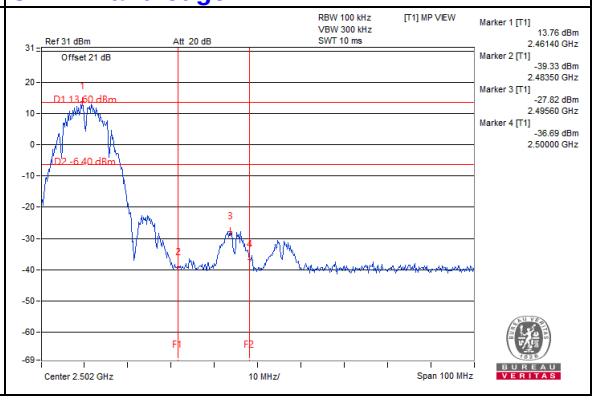
CH 11



CH 1 Band edge

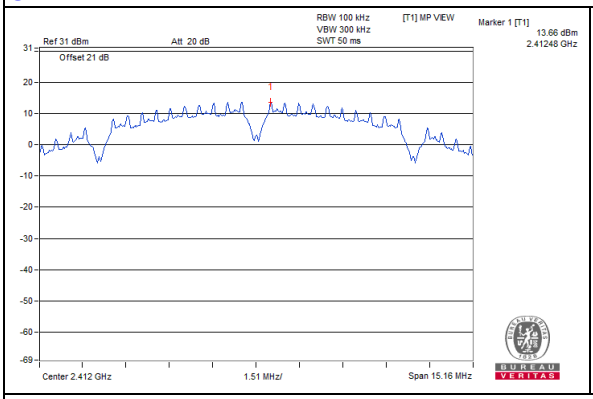


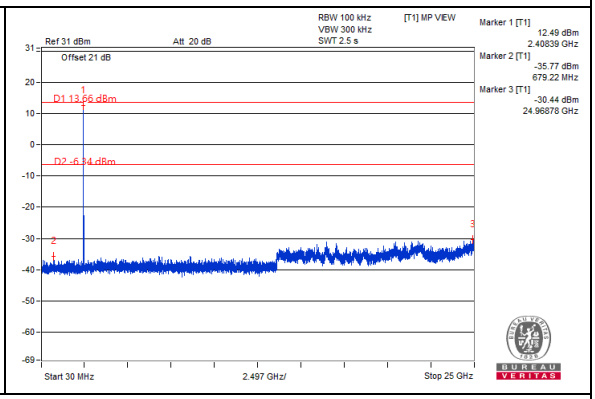
CH 11 Band edge



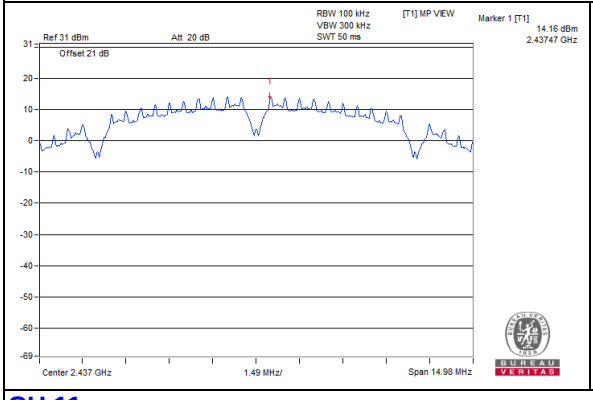
Chain 1

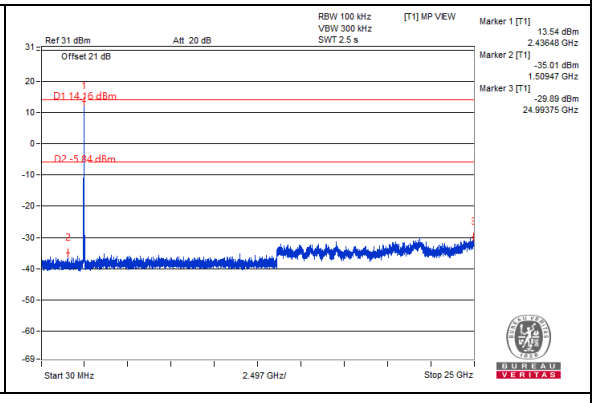
CH 1



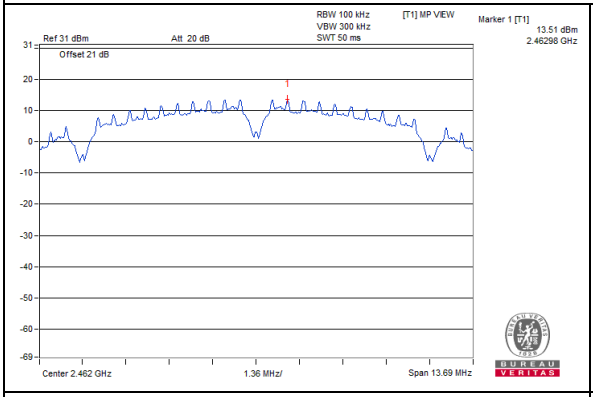


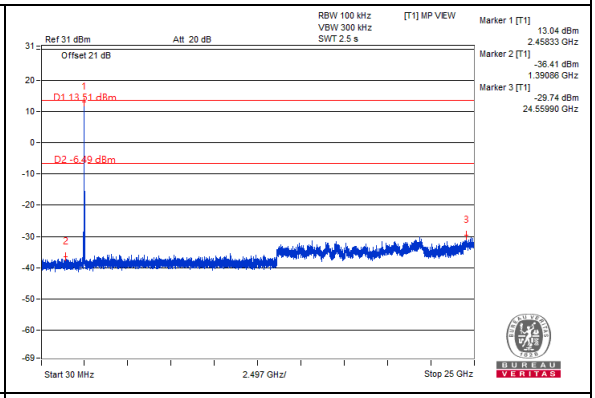
CH 6



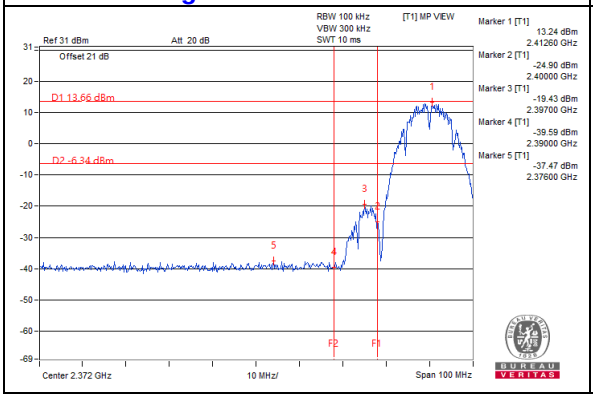


CH 11

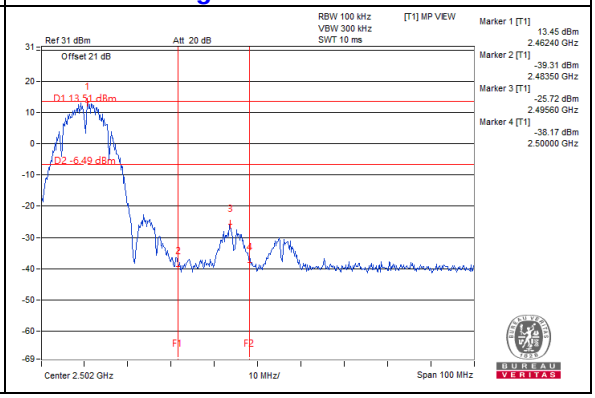




CH 1 Band edge



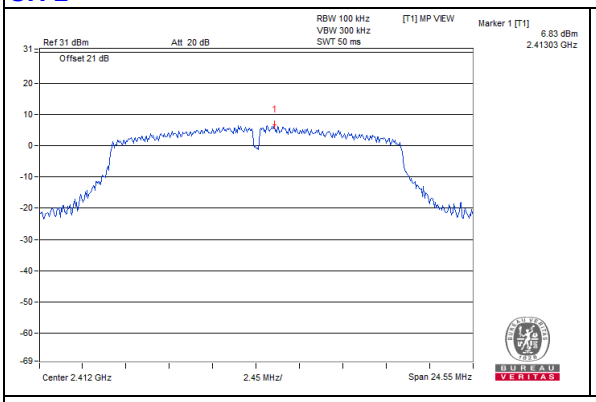
CH 11 Band edge

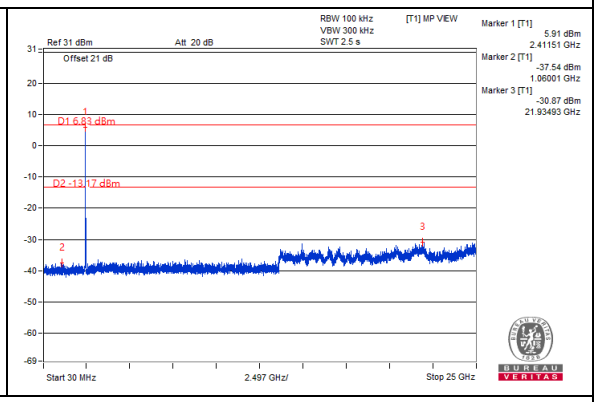


802.11g

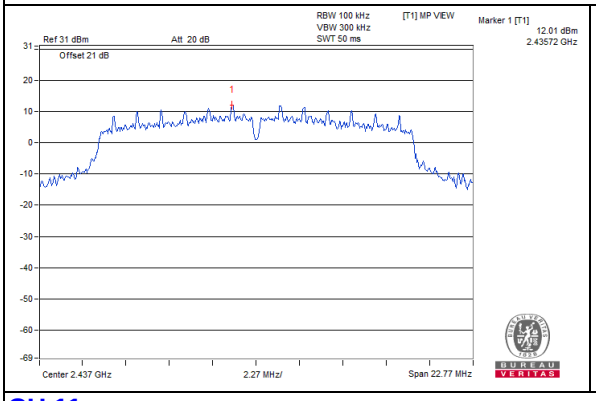
Chain 0

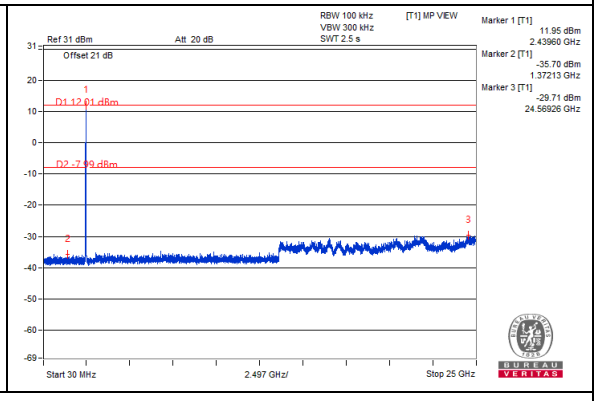
CH 1



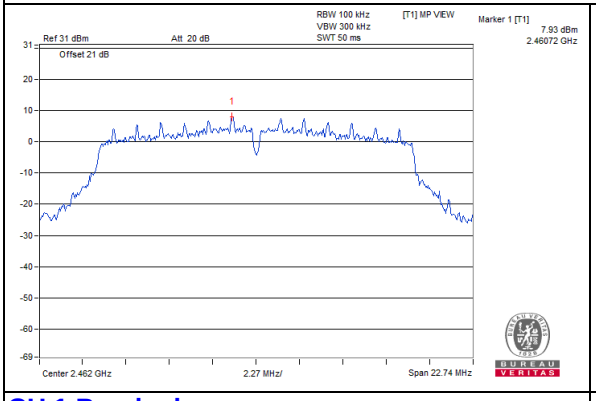


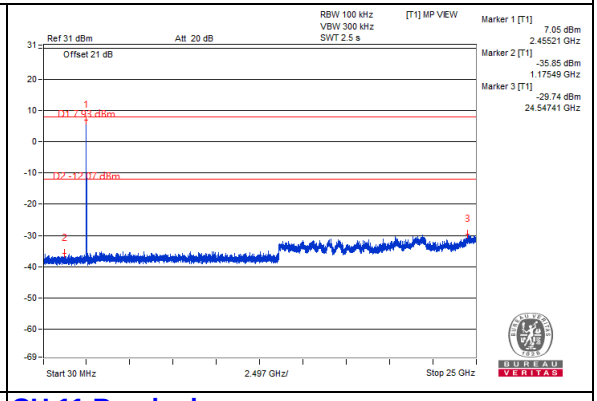
CH 6



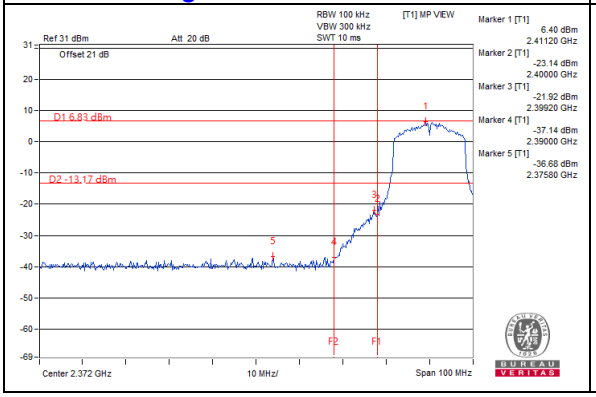


CH 11

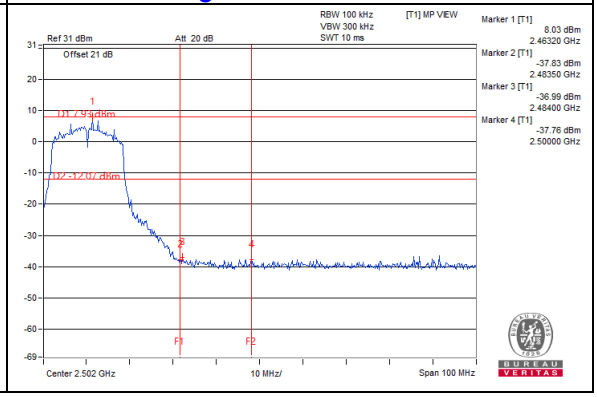




CH 1 Band edge

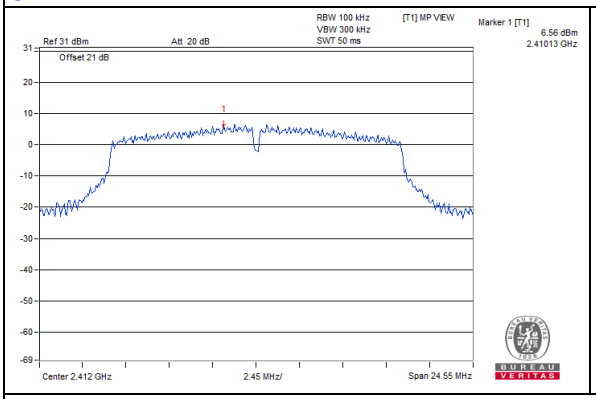


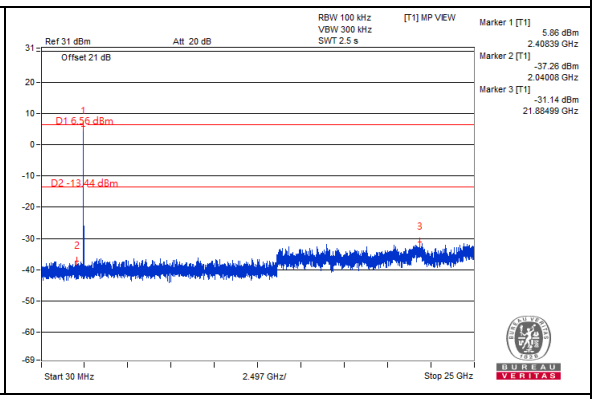
CH 11 Band edge



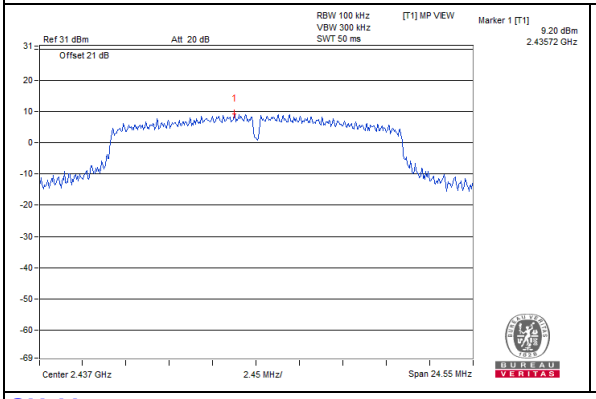
Chain 1

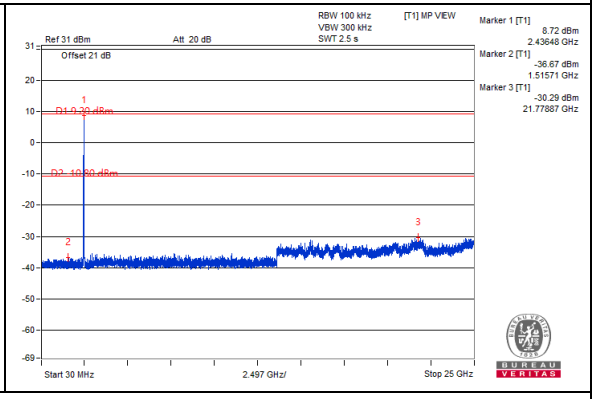
CH 1



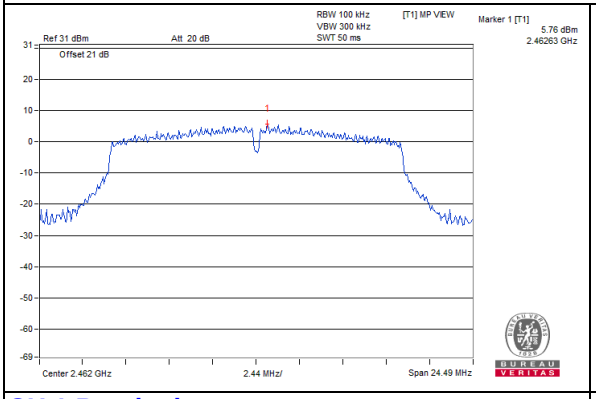


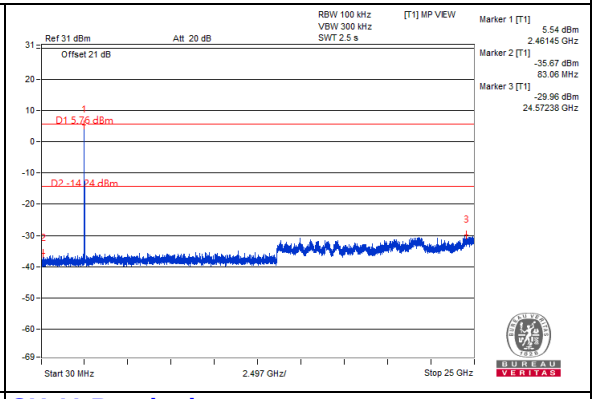
CH 6



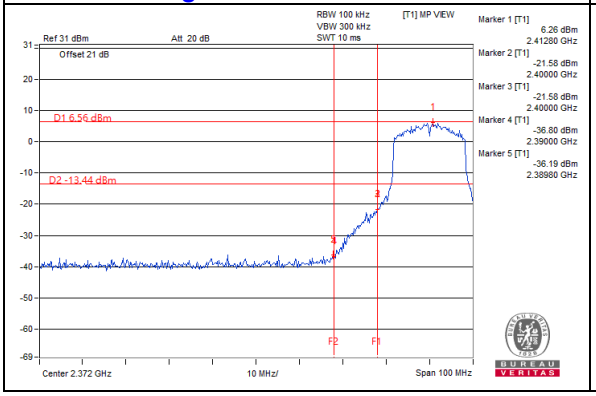


CH 11

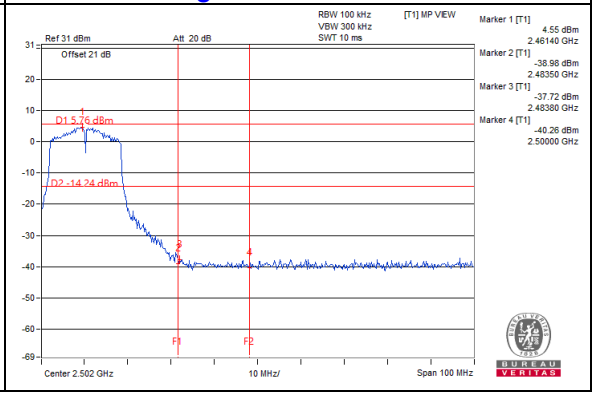




CH 1 Band edge



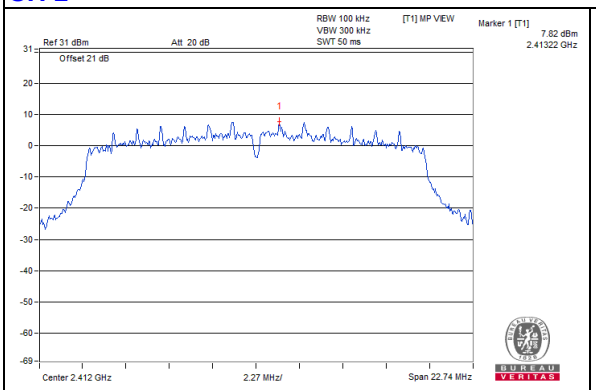
CH 11 Band edge

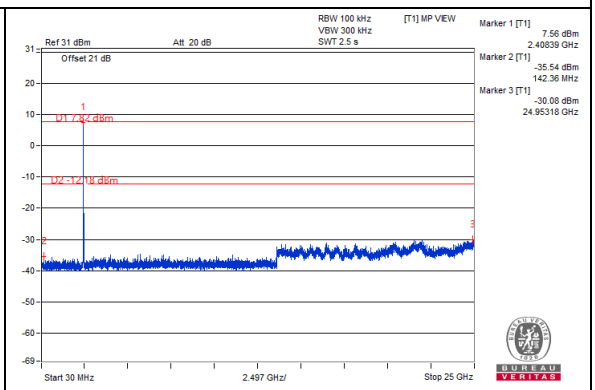


802.11n (HT20)

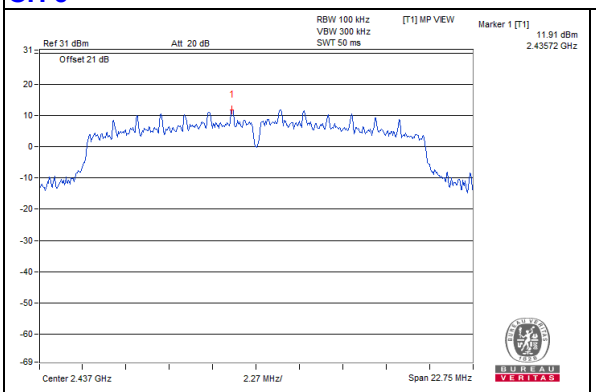
Chain 0

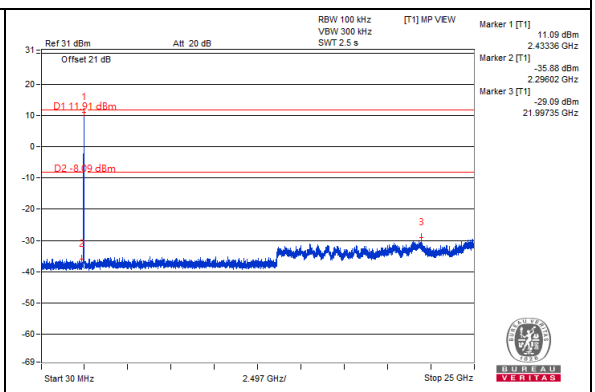
CH 1



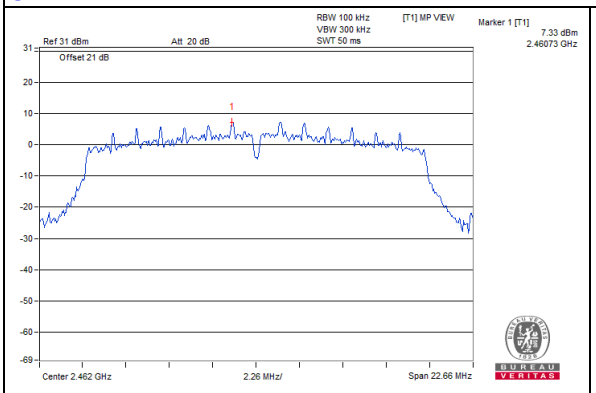


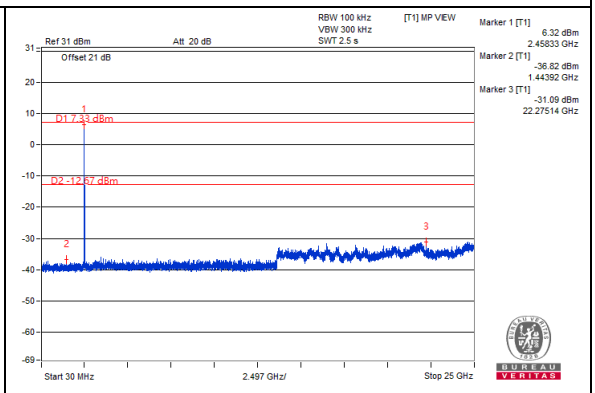
CH 6



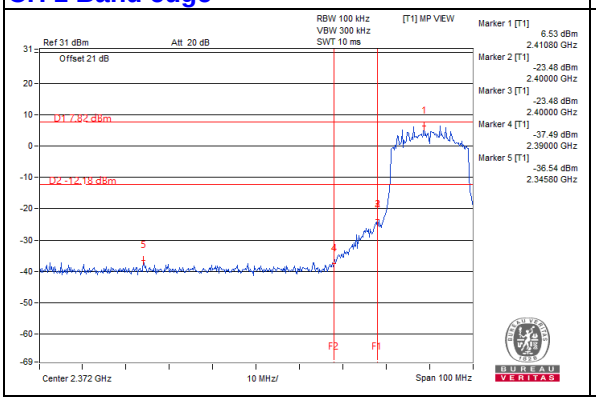


CH 11

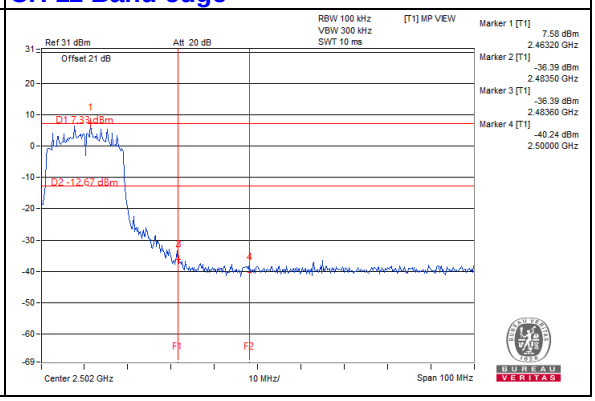




CH 1 Band edge

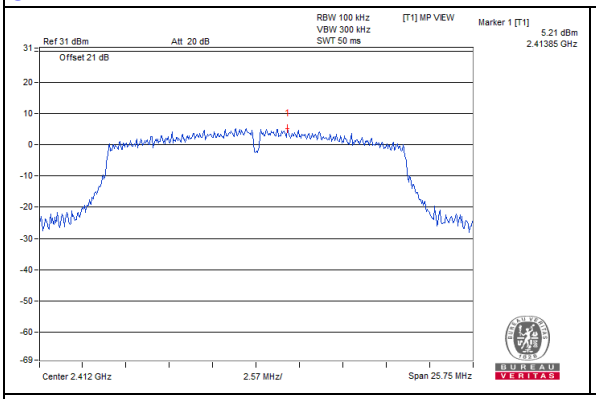


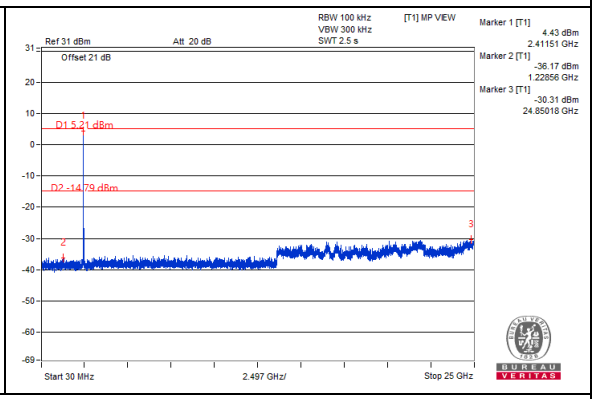
CH 11 Band edge



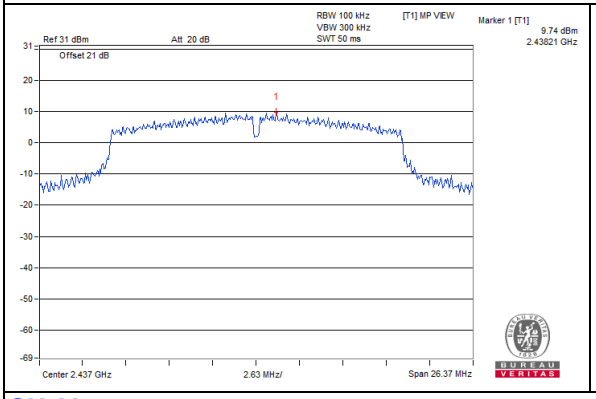
Chain 1

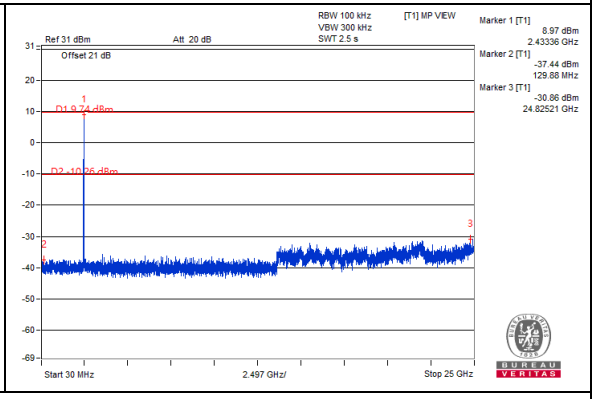
CH 1



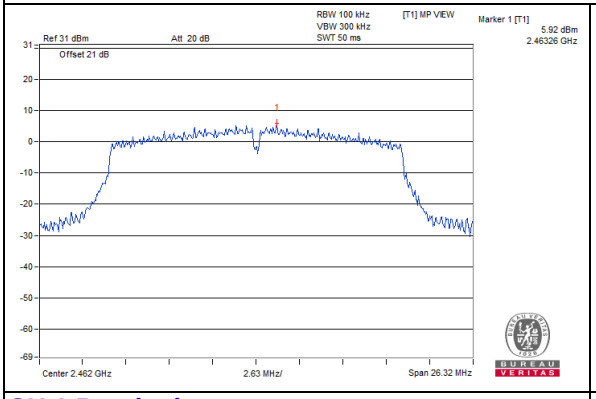


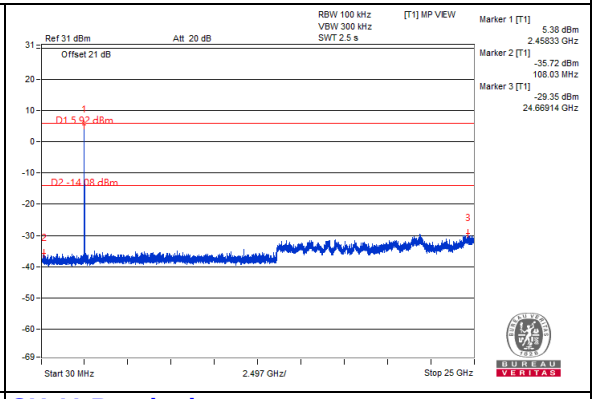
CH 6



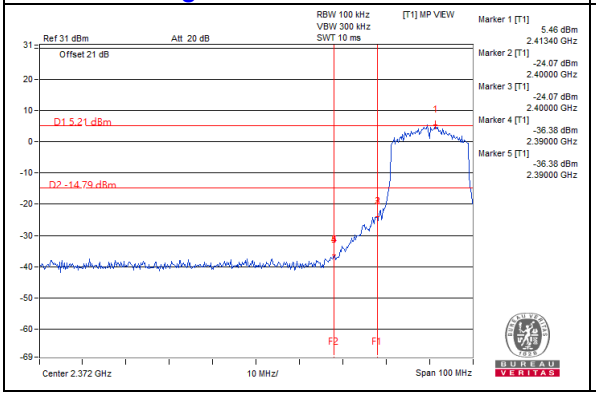


CH 11

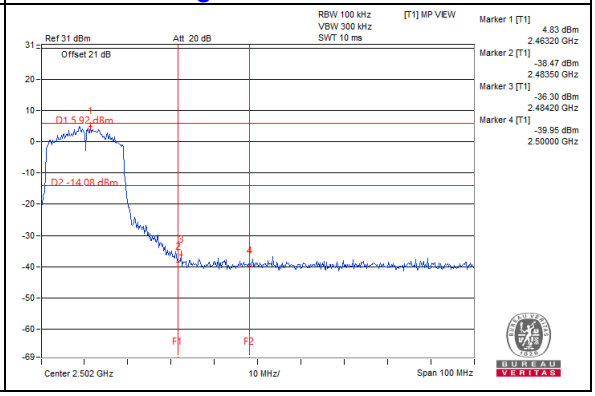




CH 1 Band edge



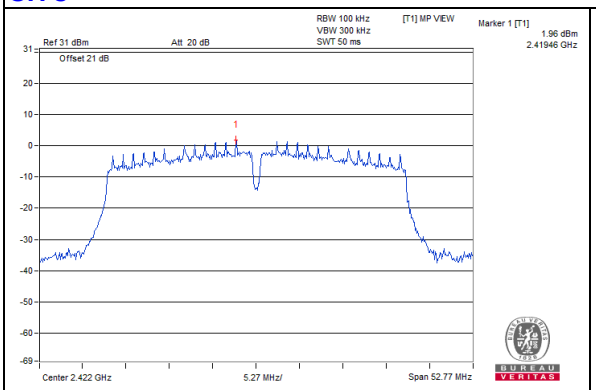
CH 11 Band edge

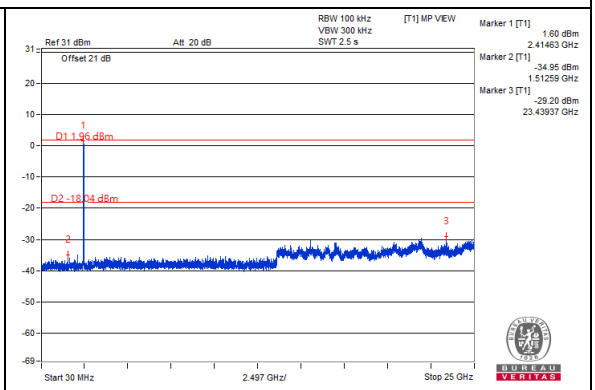


802.11n (HT40)

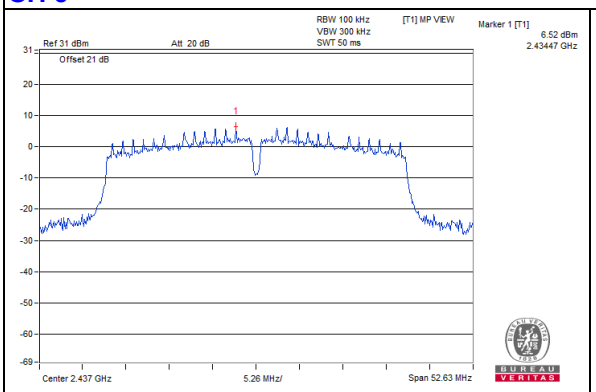
Chain 0

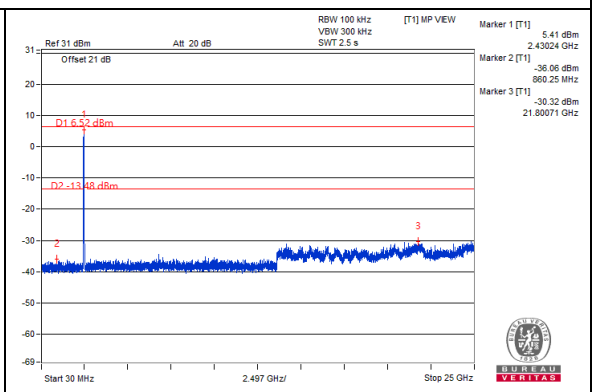
CH 3



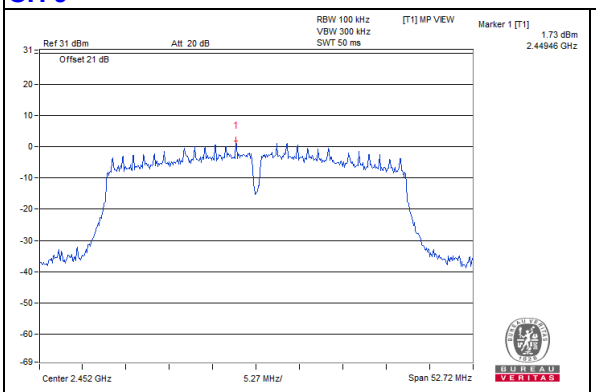


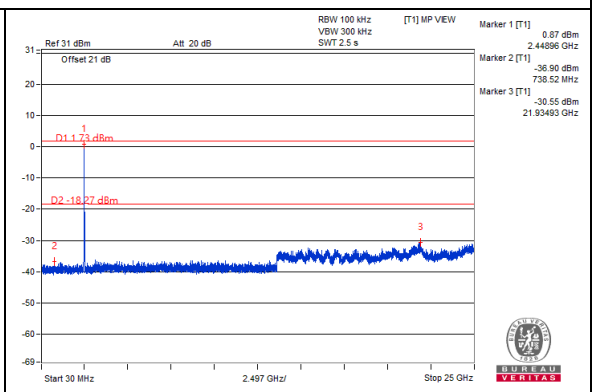
CH 6



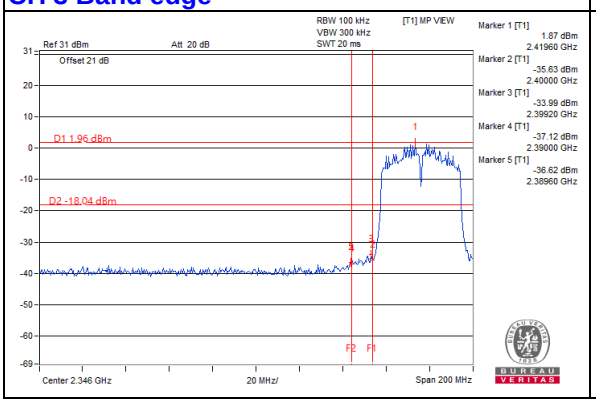


CH 9

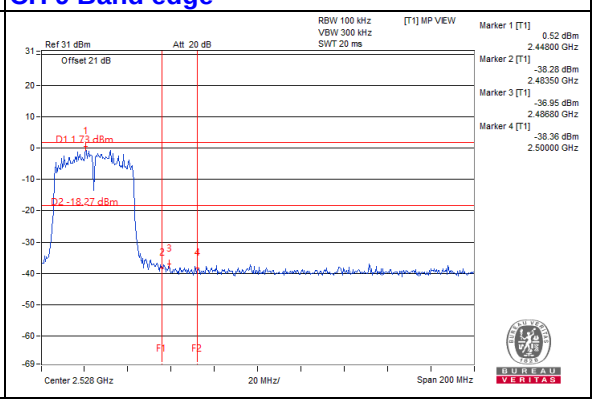




CH 3 Band edge

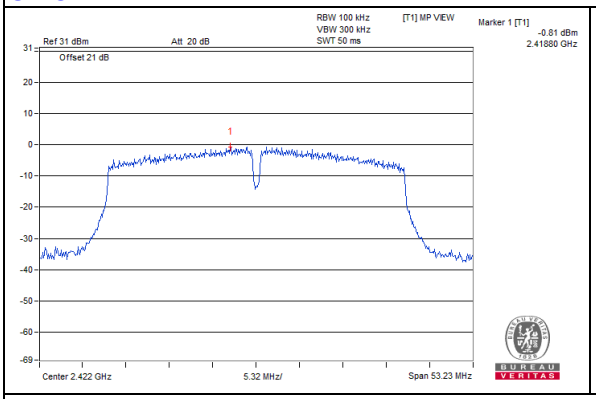


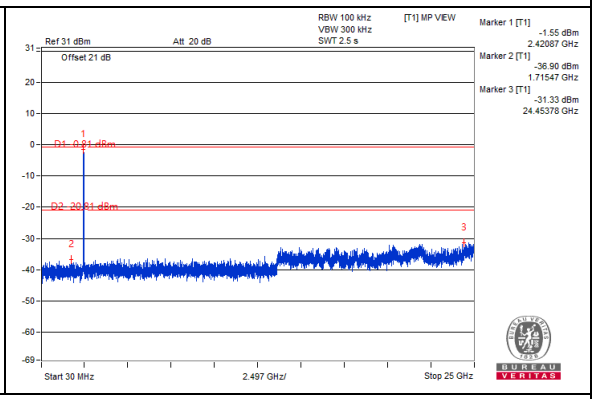
CH 9 Band edge



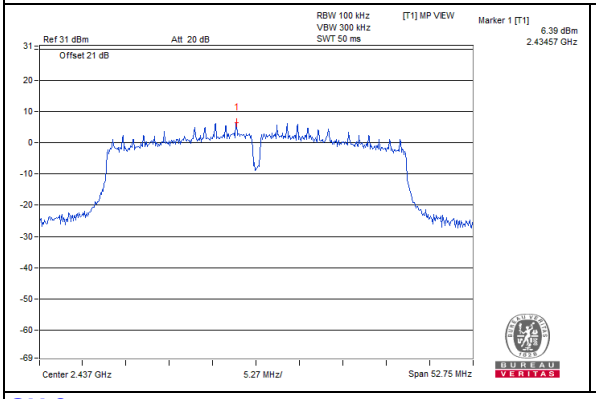
Chain 1

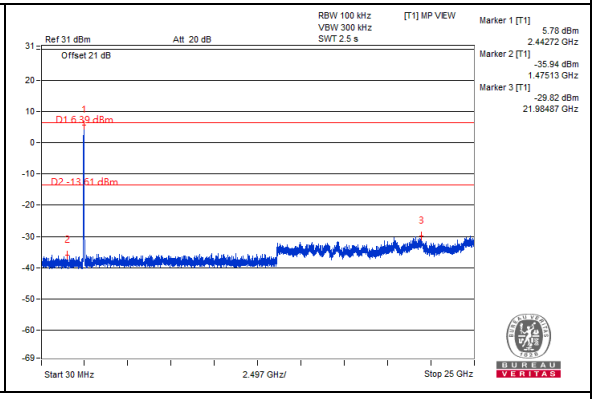
CH 3



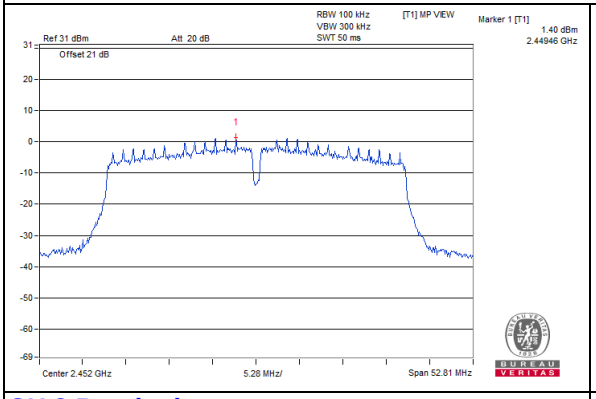


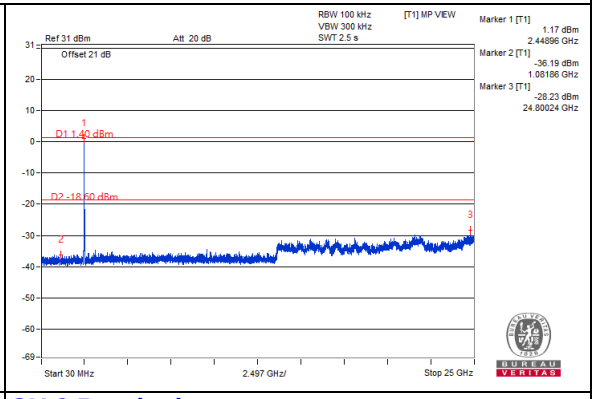
CH 6



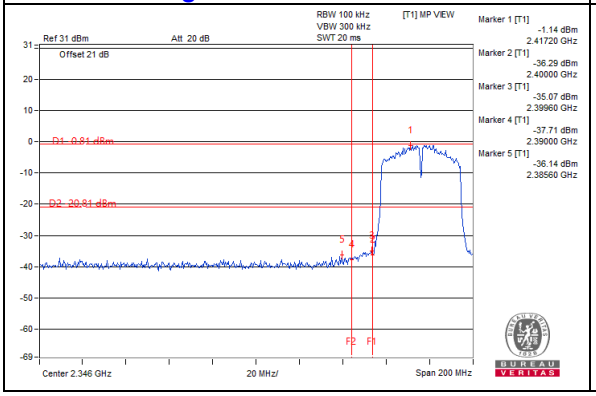


CH 9

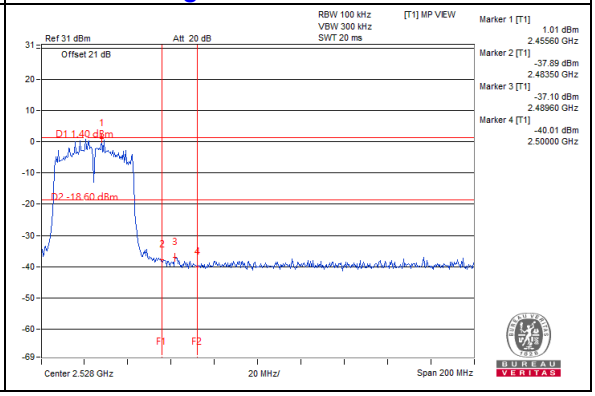




CH 3 Band edge



CH 9 Band edge

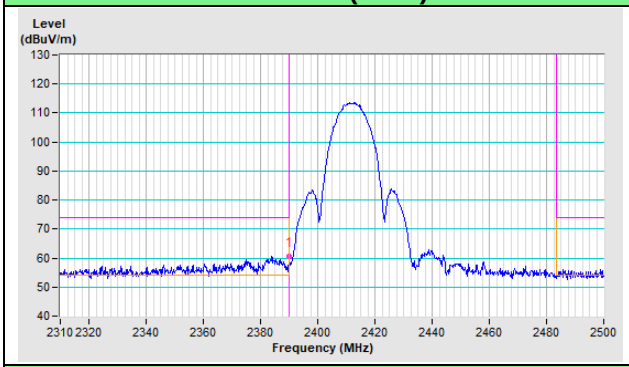
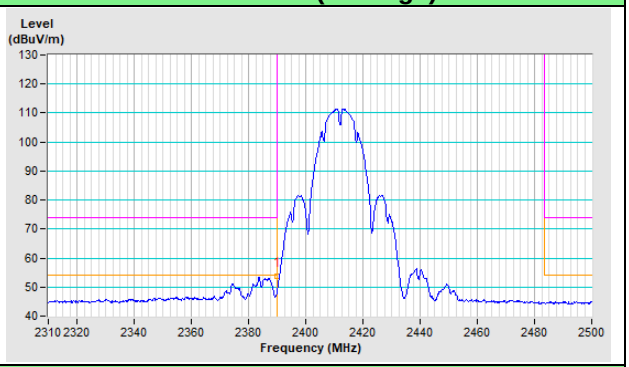
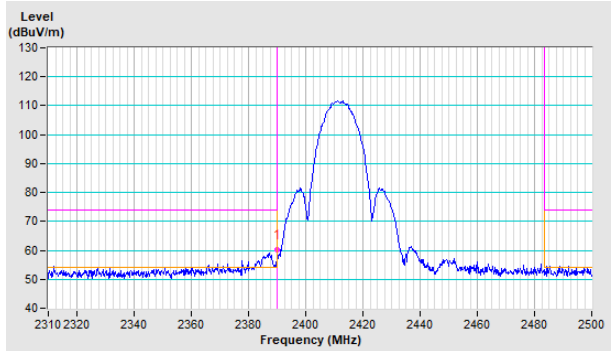
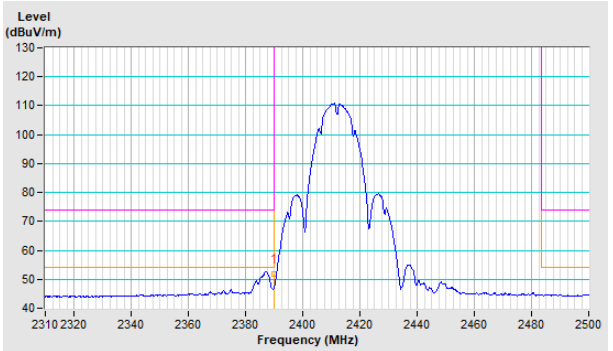
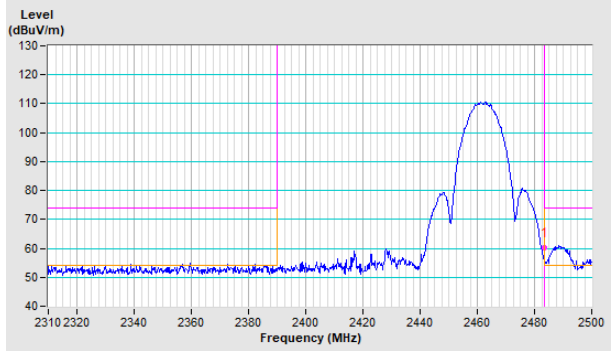
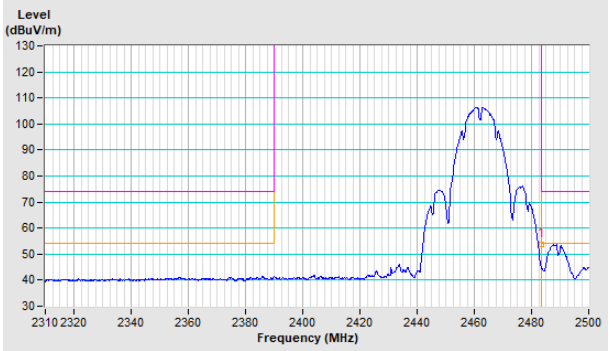
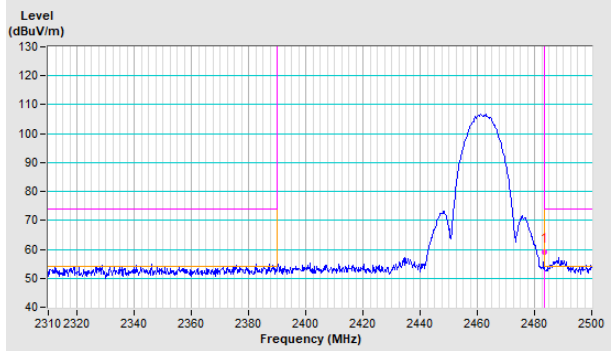
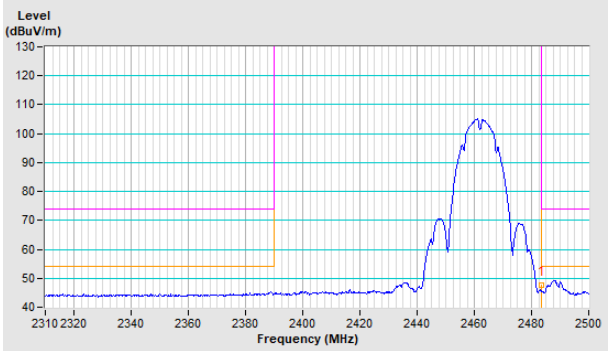


5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Annex A - Band-Edge Measurement

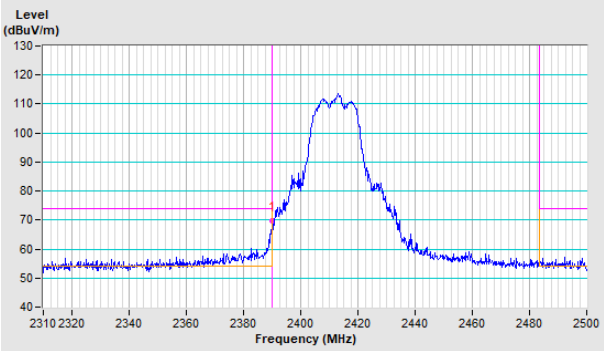
802.11b

Channel 1	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 11	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

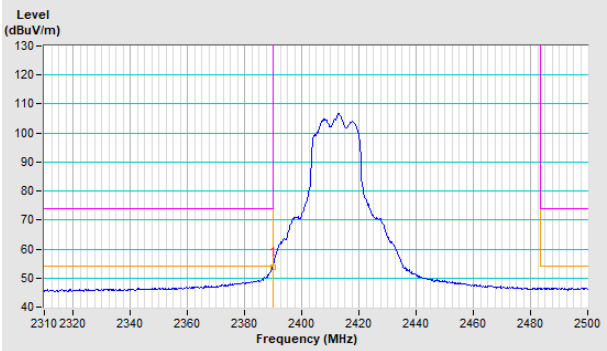
802.11g

Channel 1

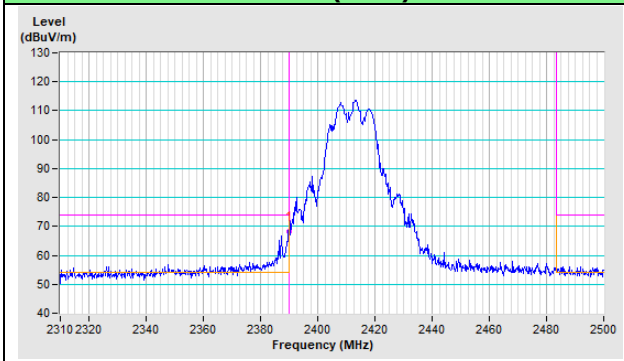
Horizontal (Peak)



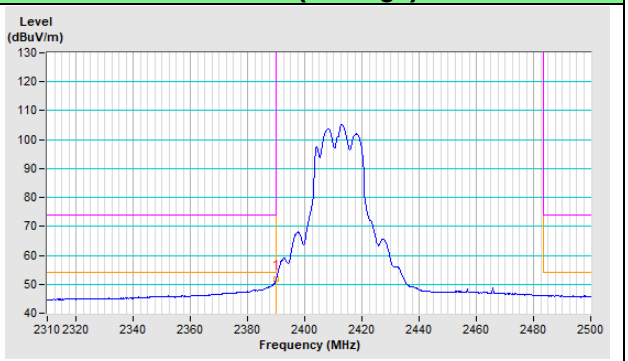
Horizontal (Average)



Vertical (Peak)

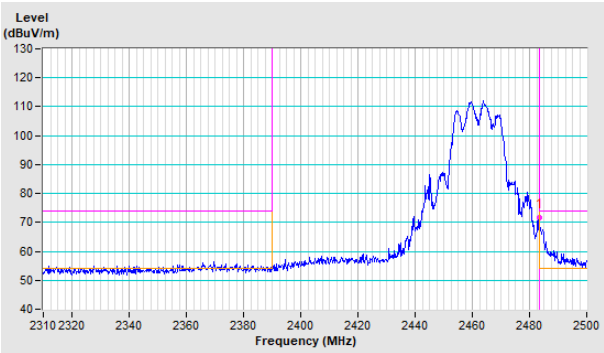


Vertical (Average)

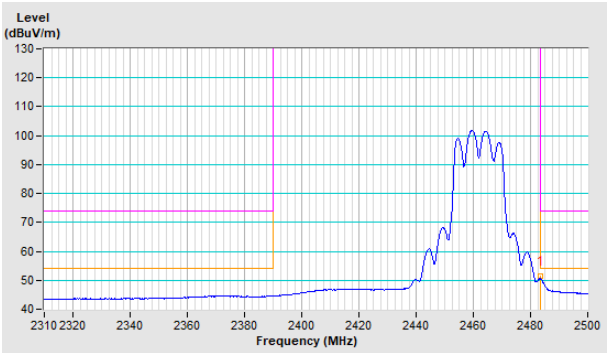


Channel 11

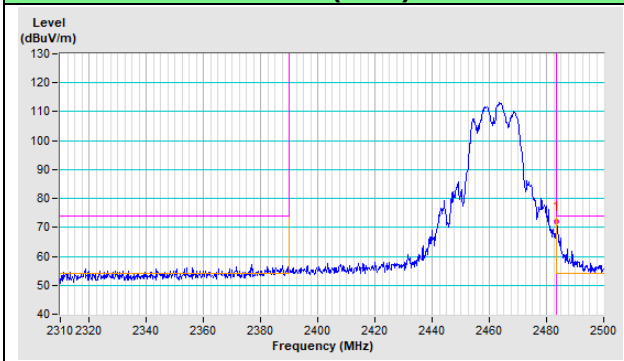
Horizontal (Peak)



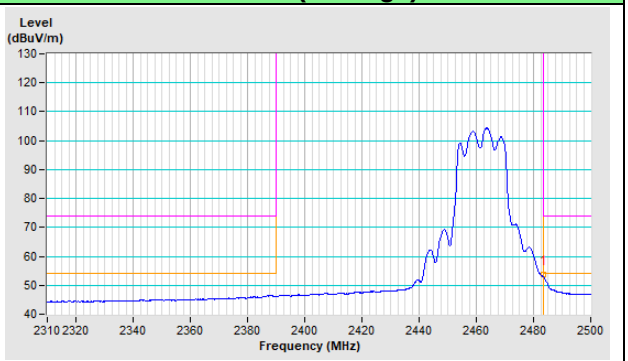
Horizontal (Average)



Vertical (Peak)



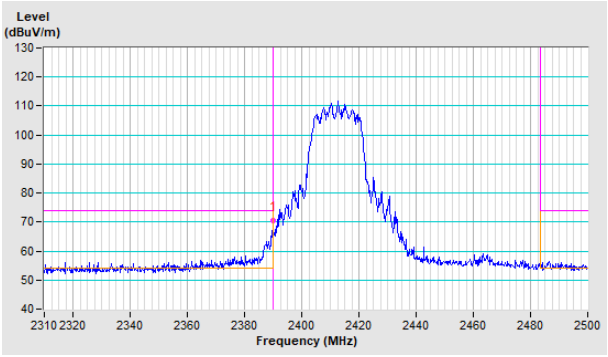
Vertical (Average)



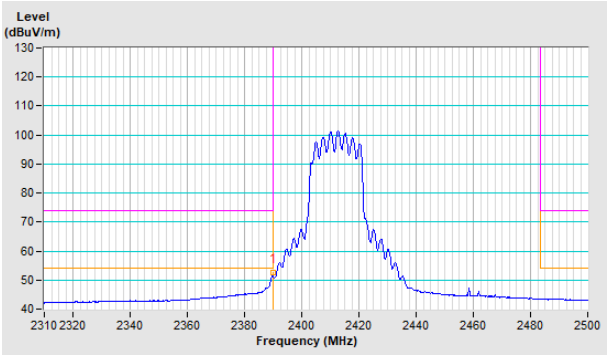
802.11n (HT20)

Channel 1

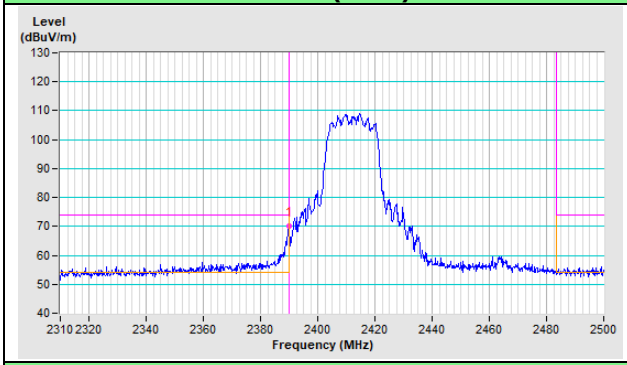
Horizontal (Peak)



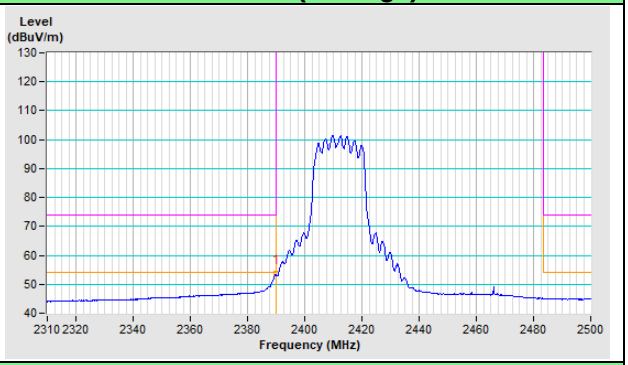
Horizontal (Average)



Vertical (Peak)

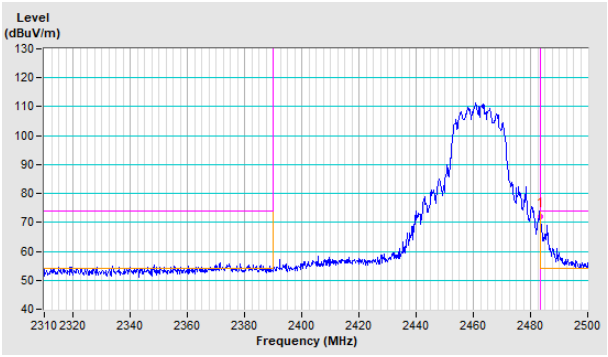


Vertical (Average)

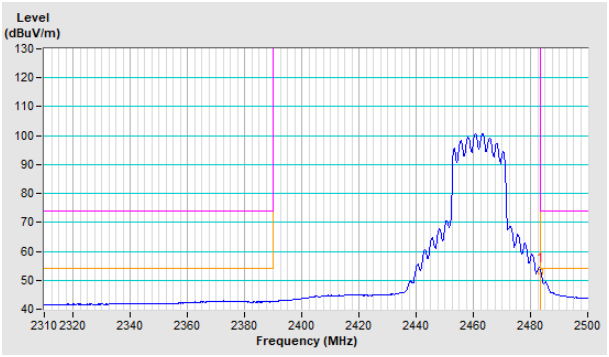


Channel 11

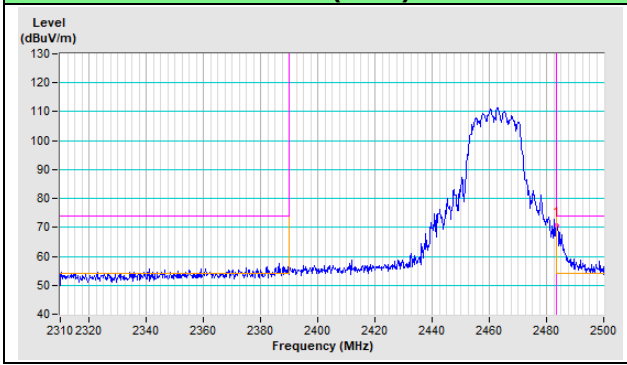
Horizontal (Peak)



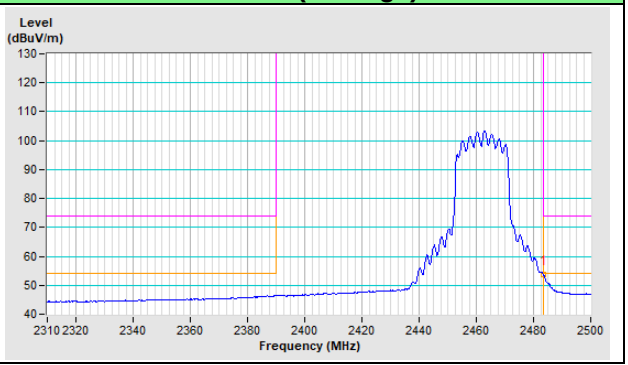
Horizontal (Average)



Vertical (Peak)



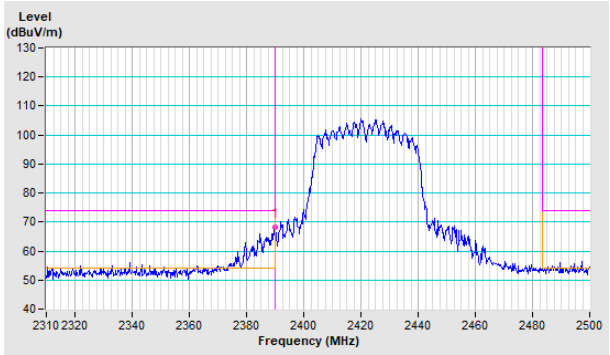
Vertical (Average)



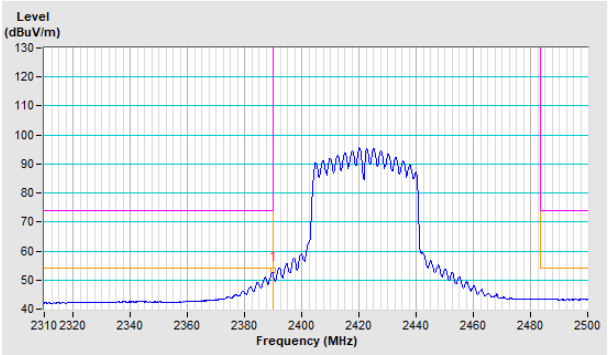
802.11n (HT40)

Channel 3

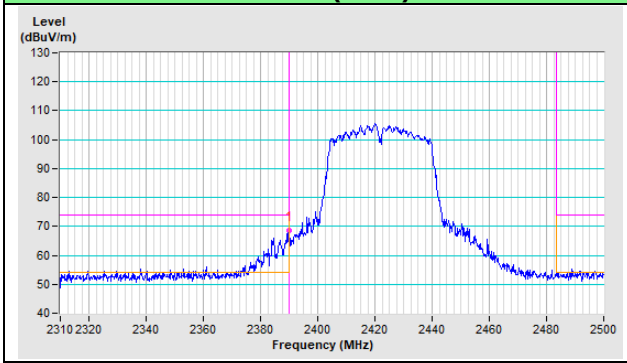
Horizontal (Peak)



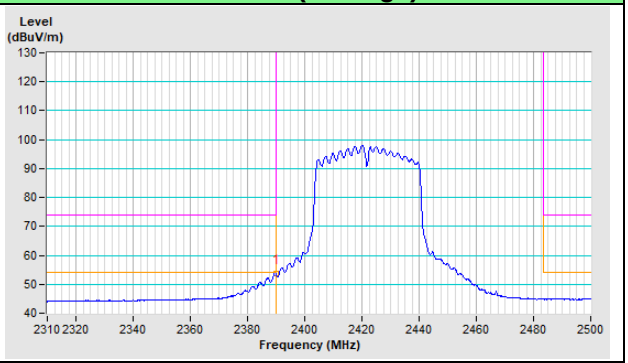
Horizontal (Average)



Vertical (Peak)

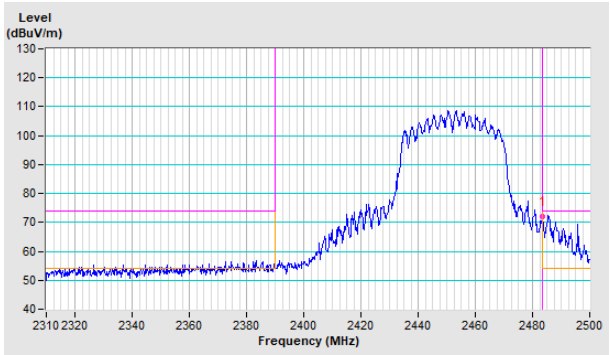


Vertical (Average)

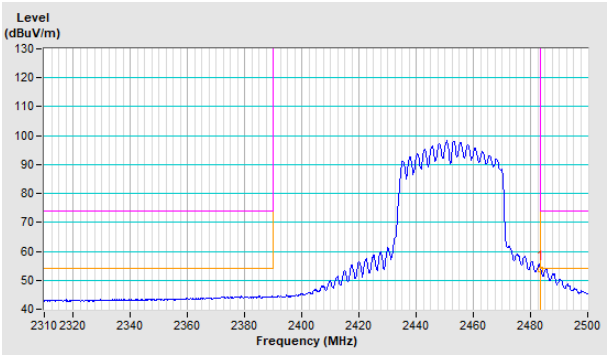


Channel 9

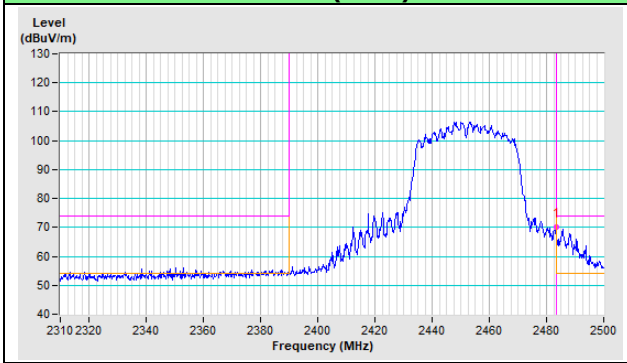
Horizontal (Peak)



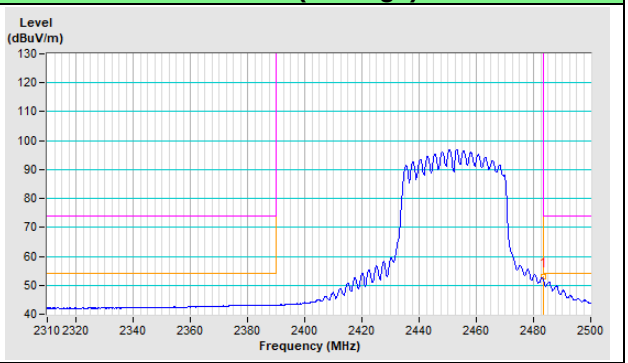
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



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

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