FCC Test Report

Report No.:	RFBDKG-WTW-P20110147
FCC ID:	JNZVR0020
Test Model:	VR0020
Received Date:	Nov. 10, 2020
Test Date:	Mar. 15 to Apr. 15, 2021
Issued Date:	May 07, 2021
Applicant:	Logitech Far East Ltd
Address:	7700 Gateway Boulevard Newark California 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

Testing Laboratory
2022

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Release Control Record

Issue No.	Description	Date Issued
RFBDKG-WTW-P20110147	Original release.	May 07, 2021

1 Certificate of Conformity

Product:	Camera and Speakerphone
Brand:	Logitech
Test Model:	VR0020
Sample Status:	Engineering sample
Applicant:	Logitech Far East Ltd
Test Date:	Mar. 15 to Apr. 15, 2021
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 : Cherry Chuo , **Date:** May 07, 2021

Cherry Chuo / Specialist

Approved by : , **Date:** May 07, 2021

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 -5.21 dB at 27.64844 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -4.2 dB at 2487.77 MHz, 2483.50 MHz, 34.12 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:
1. For 2.4 GHz band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A.
2. 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	1.9 dB
Conducted emissions	-	2.5 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.4 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Camera and Speakerphone
Brand	Logitech
Test Model	VR0020
Status of EUT	Engineering sample
Power Supply Rating	19 Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462 GHz **5GHz:** 5.18 ~ 5.24 GHz, 5.26 ~ 5.32 GHz, 5.50 ~ 5.72 GHz, 5.745 ~ 5.825 GHz
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): 25 802.11n (HT40), 802.11ac (VHT40): 12 802.11ac (VHT80): 6
Output Power	**2.4GHz:** 383.963 mW **5.18 ~ 5.24 GHz:** 69.047 mW **5.26 ~ 5.32 GHz:** 73.738 mW **5.50 ~ 5.72 GHz:** 82.227 mW **5.745 ~ 5.825 GHz:** 214.244 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1, Remote controller x 1 (Brand: Logitech / Model: RR0016)
Data Cable Supplied	USB Cable x 1 (2.2m, Unshielded), HDMI Cable x 1 (2m, Unshielded)

Note:

1. Simultaneously transmission condition.

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

2. The EUT could be supplied with a power adapter as the following table:

Brand	Model No.	Spec.
Logi	DSA-90PFE-19 3 190474	Input: 100-240 Vac, 500 mA, 50-60 Hz, 1.5 A AC input cable: Unshielded, 1 m Output: 19 Vdc, 4.74 A DC output cable: Unshielded, 1.5 m, with one core

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

Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
ANT 0	Chain 0	FIH	PCB	7.35	2.4~2.4835	Monopole	i-pex(MHF)	85
				7.92	5.15~5.25			
				8.71	5.25~5.35			
				8.7	5.47~5.725			
				7.7	5.725~5.85			
ANT 1	Chain 1	FIH	PCB	5.06	2.4~2.4835	Monopole	i-pex(MHF)	100
				7.12	5.15~5.25			
				7.5	5.25~5.35			
				7.02	5.47~5.725			
				6.17	5.725~5.85			
Note: The Bluetooth technology will fix transmission on Chain (0).								

4. 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		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11a	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ac (VHT80)	2TX	2RX

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.
6. The above Antenna information is declared by manufacturer, the laboratory shall not be held responsible.

3.2 Description of Test Modes

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

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):

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

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	11	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	11	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:

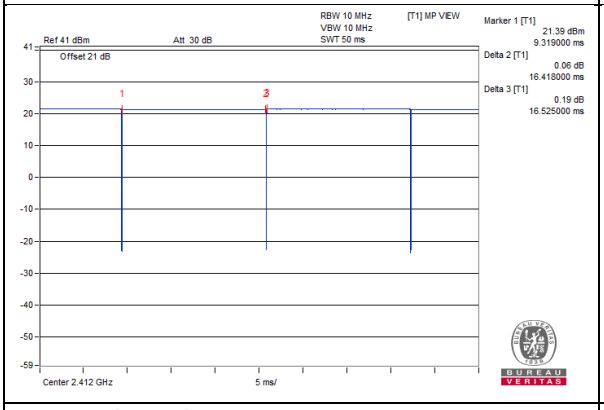
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 75%RH	120Vac, 60Hz	Gary Cheng
RE<1G	22deg. C, 66%RH	120Vac, 60Hz	Sampson Chen
PLC	25deg. C, 75%RH	120Vac, 60Hz	Sampson Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	Eric Peng

3.3 Duty Cycle of Test Signal

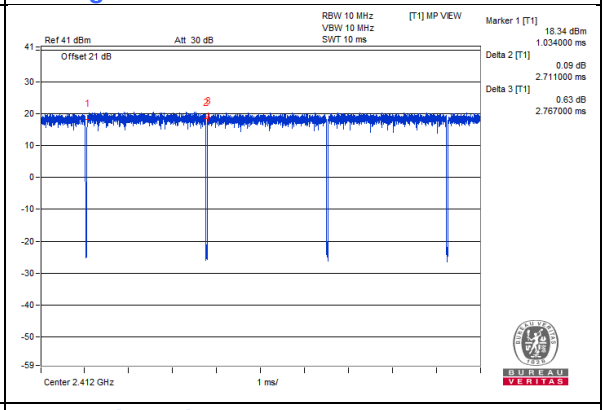
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 16.418 ms /16.525 ms=0.994
802.11g: Duty cycle = 2.711 ms /2.767ms=0.98
802.11n (HT20): Duty cycle = 2.517 ms /2.557 ms=0.984
802.11n (HT40): Duty cycle = 1.231 ms /1.301 ms=0.946, Duty factor = 10 * log (1/Duty cycle) = 0.24 dB

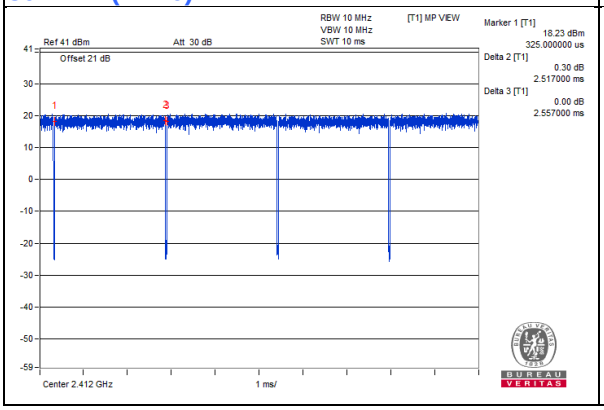
802.11b



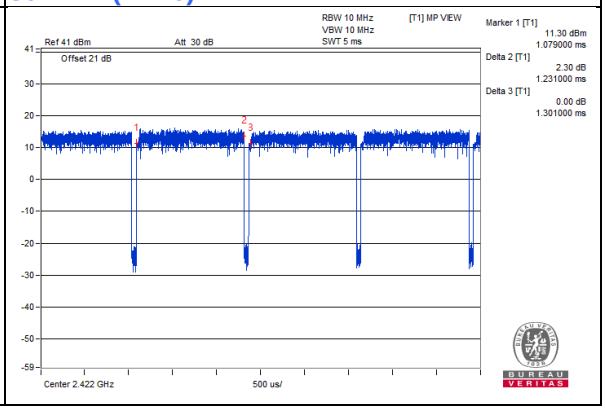
802.11g



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.	MIC POD	Logitech	V-U0049	NA	NA	Supplied by client
B.	TAP Touch Controller	Logitech	V-U0053	NA	NA	Supplied by client
C.	Dongle	SanDisk	Ultra Flair USB 3.0	NA	NA	Provided by Lab
D.	Dongle	SanDisk	Ultra Flair USB 3.0	NA	NA	Provided by Lab
E.	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	NA	Provided by Lab
F.	Monitor	DELL	P2415Q	CN-0J1P7F-QDC00-85L-13GB-A09	FCC DoC	Provided by Lab
G.	Monitor	NEOKA	NA	NA	NA	Provided by Lab
H.	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	NA	Provided by Lab

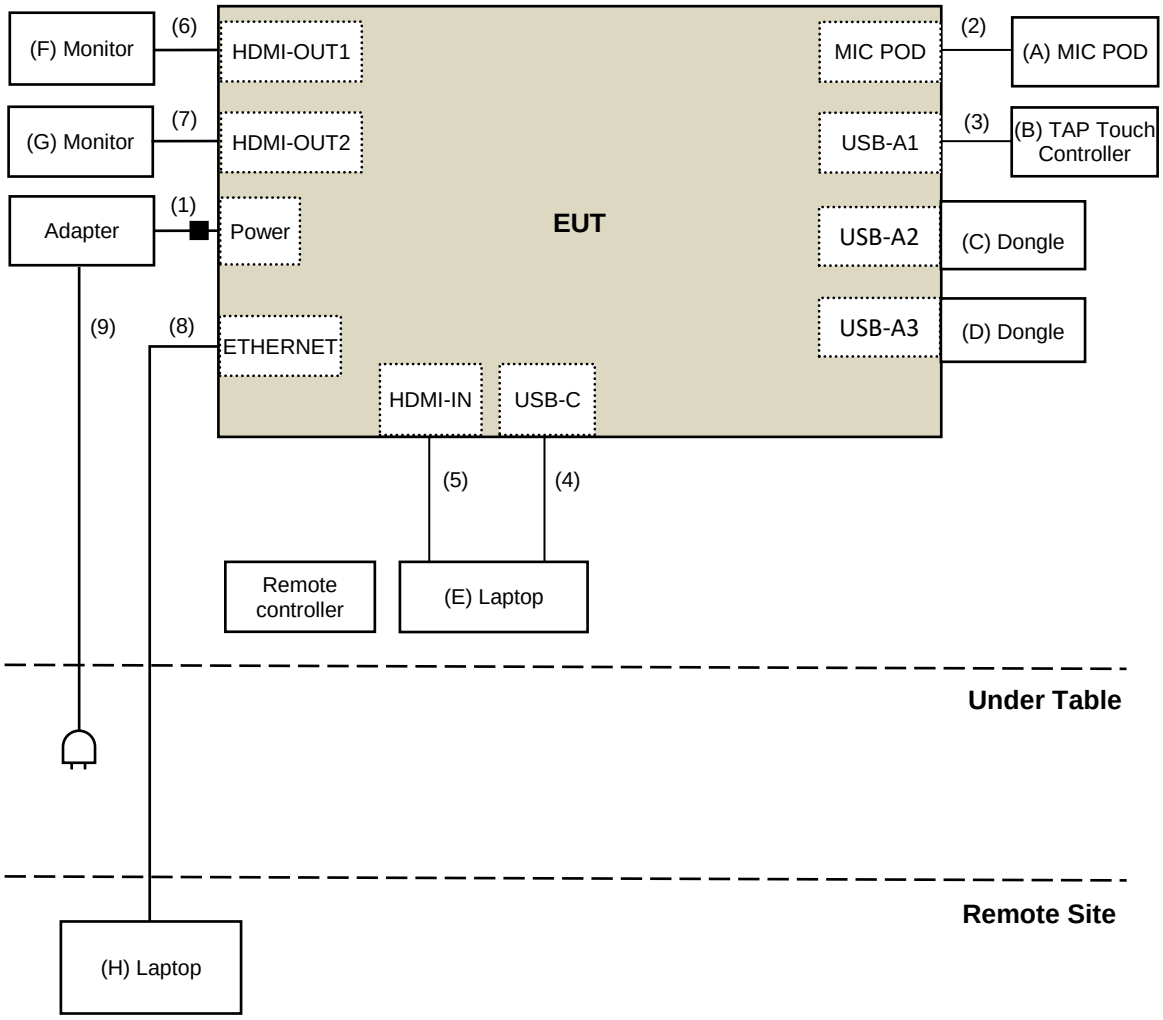
Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.5	No	1	Supplied by client
2.	Micro USB Cable	1	3	No	0	Supplied by client
3.	USB A to Type C Cable	1	2.2	No	0	Supplied by client
4.	USB A to Type C Cable	1	2.2	No	0	Supplied by client
5.	HDMI Cable	1	1.8	No	0	Supplied by client
6.	HDMI Cable	1	1.8	No	0	Supplied by client
7.	HDMI Cable	1	1.8	No	0	Supplied by client
8.	RJ-45 Cable	1	10	No	0	Provided by Lab
9.	AC Cable	1	1	No	0	Supplied by client

Note: The core(s) is(are) originally attached to the cable(s).

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 and Band-Edge Test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 06, 2020	July 05, 2021
Pre-Amplifier EMCI	EMC001340	980142	May 25, 2020	May 24, 2021
Loop Antenna Electro-Metrics	EM-6879	264	Mar. 05, 2021	Mar. 04, 2022
RF Cable	5D-FB	LOOPCAB-001	Jan. 07, 2021	Jan. 06, 2022
RF Cable	5D-FB	LOOPCAB-002	Jan. 07, 2021	Jan. 06, 2022
Pre-Amplifier Mini-Circuits	ZFL-1000VH2	QA0838008	Oct. 20, 2020	Oct. 19, 2021
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 05, 2020	Nov. 04, 2021
RF Cable	8D	966-3-1	Mar. 16, 2021	Mar. 15, 2022
RF Cable	8D	966-3-2	Mar. 16, 2021	Mar. 15, 2022
RF Cable	8D	966-3-3	Mar. 16, 2021	Mar. 15, 2022
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 24, 2020	Sep. 23, 2021
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 22, 2020	Nov. 21, 2021
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 11, 2021	Jan. 10, 2022
RF Cable	EMC104-SM-SM-1500	180504	Apr. 29, 2020	Apr. 28, 2021
RF Cable	EMC104-SM-SM-2000	180601	June 09, 2020	June 08, 2021
RF Cable	EMC104-SM-SM-6000	180602	June 09, 2020	June 08, 2021
Spectrum Analyzer Keysight	N9030A	MY54490679	July 13, 2020	July 12, 2021
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 11, 2021	Jan. 10, 2022
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 22, 2020	Nov. 21, 2021
RF Cable	EMC102-KM-KM-1200	160924	Jan. 11, 2021	Jan. 10, 2022
RF Cable	EMC-KM-KM-4000	200214	Mar. 10, 2021	Mar. 09, 2022
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

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. 3.
3. Tested Date: Apr. 09 to 15, 2021

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	May 29, 2020	May 28, 2021
Power meter Anritsu	ML2495A	1529002	July 22, 2020	July 21, 2021
Power sensor Anritsu	MA2411B	1339443	July 22, 2020	July 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
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. 15, 2021

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:

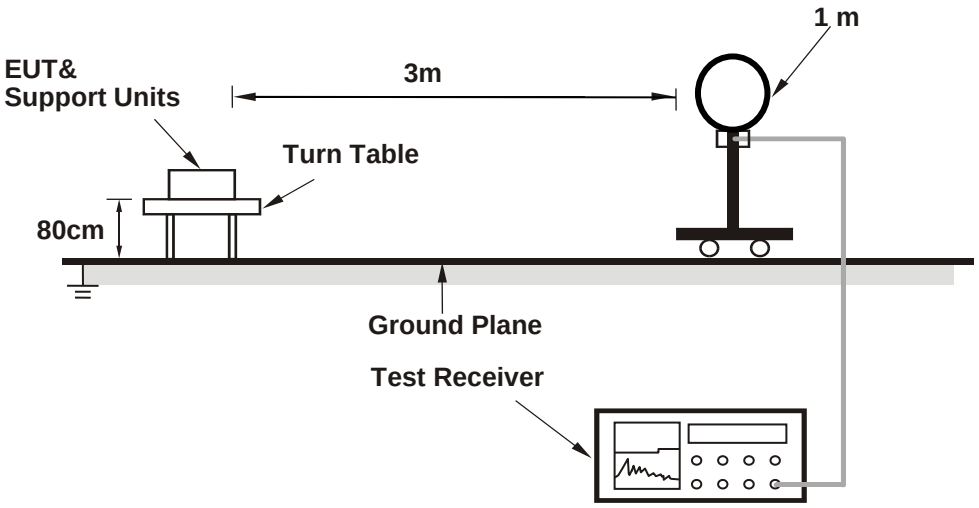
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

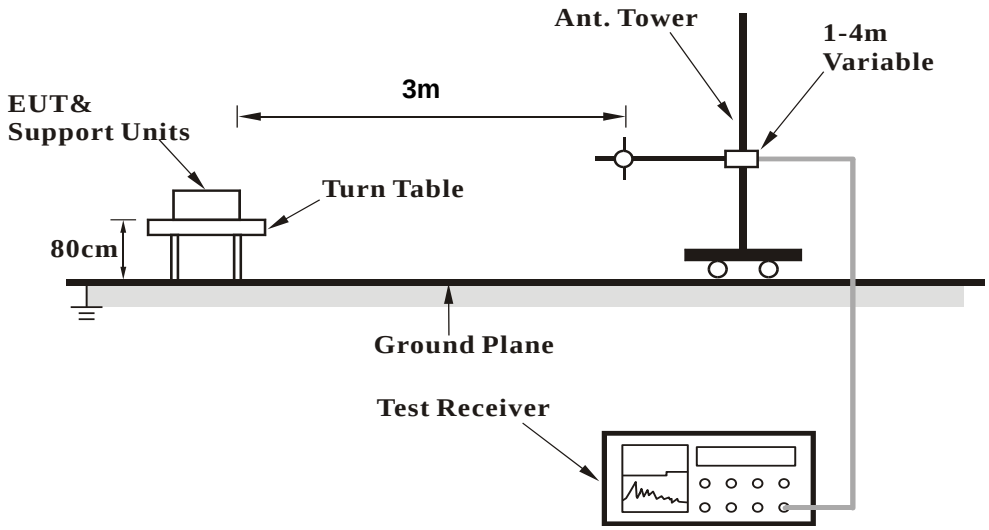
No deviation.

4.1.5 Test Setup

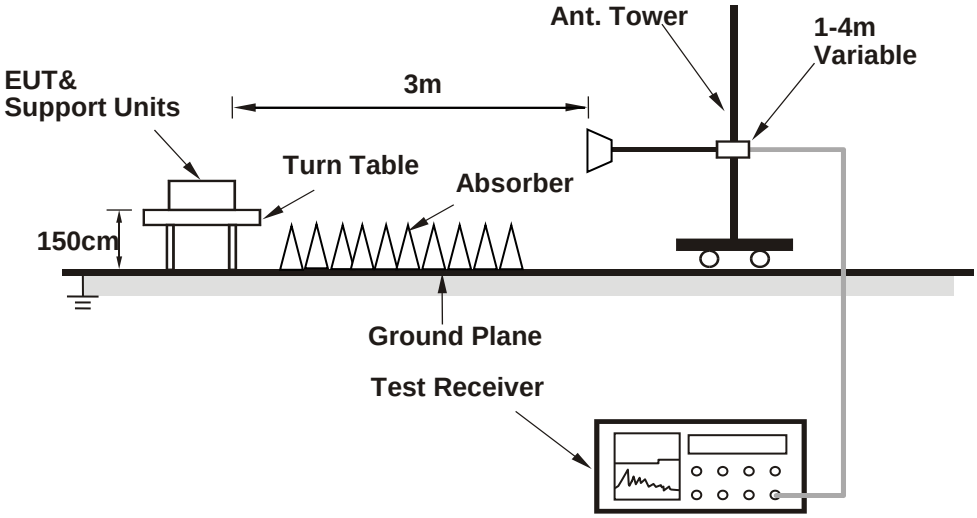
For Radiated emission below 30MHz



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. Placed the EUT on the testing table.
b. Controlling software (QDART_Version 4.0.00156.0) has been activated to set the EUT under transmission condition continuously at specific channel frenquency.

4.1.7 Test Results

Above 1GHz Data：

RF Mode	TX 802.11b	**Channel**	CH 1：2412 MHz
Frequency Range	1GHz ~ 25GHz	**Detector Function**	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (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	3.80 H	346	59.0	-0.9
2	2390.00	47.6 AV	54.0	-6.4	3.80 H	346	48.5	-0.9
3	*2412.00	108.3 PK			3.80 H	346	109.2	-0.9
4	*2412.00	105.9 AV			3.80 H	346	106.8	-0.9
5	4824.00	50.4 PK	74.0	-23.6	1.98 H	137	46.4	4.0
6	4824.00	49.6 AV	54.0	-4.4	1.98 H	137	45.6	4.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (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	58.0 PK	74.0	-16.0	3.72 V	181	58.9	-0.9
2	2390.00	49.7 AV	54.0	-4.3	3.72 V	181	50.6	-0.9
3	*2412.00	110.4 PK			3.72 V	181	111.3	-0.9
4	*2412.00	108.6 AV			3.72 V	181	109.5	-0.9
5	4824.00	46.3 PK	74.0	-27.7	1.53 V	303	42.3	4.0
6	4824.00	44.3 AV	54.0	-9.7	1.53 V	303	40.3	4.0

Remarks:

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

RF Mode	TX 802.11b	Channel	CH 6：2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.1 PK	74.0	-17.9	3.62 H	348	57.0	-0.9
2	2390.00	44.2 AV	54.0	-9.8	3.62 H	348	45.1	-0.9
3	*2437.00	110.3 PK			3.62 H	348	111.2	-0.9
4	*2437.00	108.2 AV			3.62 H	348	109.1	-0.9
5	2483.50	54.1 PK	74.0	-19.9	3.62 H	348	54.9	-0.8
6	2483.50	43.3 AV	54.0	-10.7	3.62 H	348	44.1	-0.8
7	4874.00	50.3 PK	74.0	-23.7	2.04 H	139	46.1	4.2
8	4874.00	49.6 AV	54.0	-4.4	2.04 H	139	45.4	4.2
9	7311.00	50.9 PK	74.0	-23.1	2.02 H	206	40.7	10.2
10	7311.00	47.4 AV	54.0	-6.6	2.02 H	206	37.2	10.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	57.2 PK	74.0	-16.8	3.92 V	196	58.1	-0.9
2	2390.00	45.7 AV	54.0	-8.3	3.92 V	196	46.6	-0.9
3	*2437.00	111.4 PK			3.92 V	196	112.3	-0.9
4	*2437.00	109.7 AV			3.92 V	196	110.6	-0.9
5	2483.50	55.7 PK	74.0	-18.3	3.92 V	196	56.5	-0.8
6	2483.50	44.6 AV	54.0	-9.4	3.92 V	196	45.4	-0.8
7	4874.00	47.8 PK	74.0	-26.2	1.54 V	310	43.6	4.2
8	4874.00	45.7 AV	54.0	-8.3	1.54 V	310	41.5	4.2
9	7311.00	50.2 PK	74.0	-23.8	2.37 V	194	40.0	10.2
10	7311.00	45.3 AV	54.0	-8.7	2.37 V	194	35.1	10.2

Remarks:

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

RF Mode	TX 802.11b	Channel	CH 11：2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (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			3.80 H	359	111.2	-0.8
2	*2462.00	108.3 AV			3.80 H	359	109.1	-0.8
3	2483.50	58.1 PK	74.0	-15.9	3.80 H	359	58.9	-0.8
4	2483.50	47.6 AV	54.0	-6.4	3.80 H	359	48.4	-0.8
5	2487.77	58.3 PK	74.0	-15.7	3.80 H	359	59.1	-0.8
6	**2487.77**	**49.8 AV**	**54.0**	**-4.2**	**3.80 H**	**359**	**50.6**	**-0.8**
7	4924.00	50.3 PK	74.0	-23.7	2.00 H	154	46.1	4.2
8	4924.00	49.4 AV	54.0	-4.6	2.00 H	154	45.2	4.2
9	7386.00	50.6 PK	74.0	-23.4	2.01 H	217	40.3	10.3
10	7386.00	47.0 AV	54.0	-7.0	2.01 H	217	36.7	10.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	111.5 PK			3.99 V	243	112.3	-0.8
2	*2462.00	109.6 AV			3.99 V	243	110.4	-0.8
3	2483.50	57.1 PK	74.0	-16.9	3.99 V	243	57.9	-0.8
4	**2483.50**	**49.8 AV**	**54.0**	**-4.2**	**3.99 V**	**243**	**50.6**	**-0.8**
5	2487.77	57.5 PK	74.0	-16.5	3.99 V	243	58.3	-0.8
6	2487.77	48.7 AV	54.0	-5.3	3.99 V	243	49.5	-0.8
7	4924.00	47.2 PK	74.0	-26.8	1.58 V	311	43.0	4.2
8	4924.00	45.3 AV	54.0	-8.7	1.58 V	311	41.1	4.2
9	7386.00	50.1 PK	74.0	-23.9	2.34 V	204	39.8	10.3
10	7386.00	45.2 AV	54.0	-8.8	2.34 V	204	34.9	10.3

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.

RF Mode	TX 802.11g	Channel	CH 1：2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (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	3.63 H	335	61.3	-0.9
2	2390.00	48.3 AV	54.0	-5.7	3.63 H	335	49.2	-0.9
3	*2412.00	107.3 PK			3.63 H	335	108.2	-0.9
4	*2412.00	99.2 AV			3.63 H	335	100.1	-0.9
5	4824.00	47.6 PK	74.0	-26.4	2.02 H	111	43.6	4.0
6	4824.00	45.4 AV	54.0	-8.6	2.02 H	111	41.4	4.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	60.9 PK	74.0	-13.1	3.67 V	191	61.8	-0.9
2	2390.00	49.5 AV	54.0	-4.5	3.67 V	191	50.4	-0.9
3	*2412.00	108.9 PK			3.67 V	191	109.8	-0.9
4	*2412.00	100.9 AV			3.67 V	191	101.8	-0.9
5	4824.00	45.3 PK	74.0	-28.7	1.53 V	311	41.3	4.0
6	4824.00	42.6 AV	54.0	-11.4	1.53 V	311	38.6	4.0

Remarks:

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

RF Mode	TX 802.11g	Channel	CH 6：2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	65.4 PK	74.0	-8.6	2.89 H	331	66.3	-0.9
2	2390.00	47.3 AV	54.0	-6.7	2.89 H	331	48.2	-0.9
3	*2437.00	113.3 PK			2.89 H	331	114.2	-0.9
4	*2437.00	101.8 AV			2.89 H	331	102.7	-0.9
5	2483.50	61.7 PK	74.0	-12.3	2.89 H	331	62.5	-0.8
6	2483.50	47.9 AV	54.0	-6.1	2.89 H	331	48.7	-0.8
7	4874.00	48.9 PK	74.0	-25.1	2.02 H	126	44.7	4.2
8	4874.00	47.2 AV	54.0	-6.8	2.02 H	126	43.0	4.2
9	7311.00	48.4 PK	74.0	-25.6	2.02 H	207	38.2	10.2
10	7311.00	45.3 AV	54.0	-8.7	2.02 H	207	35.1	10.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	64.5 PK	74.0	-9.5	3.27 V	329	65.4	-0.9
2	2390.00	48.5 AV	54.0	-5.5	3.27 V	329	49.4	-0.9
3	*2437.00	113.1 PK			3.27 V	329	114.0	-0.9
4	*2437.00	102.4 AV			3.27 V	329	103.3	-0.9
5	2483.50	62.2 PK	74.0	-11.8	3.27 V	329	63.0	-0.8
6	2483.50	47.8 AV	54.0	-6.2	3.27 V	329	48.6	-0.8
7	4874.00	46.5 PK	74.0	-27.5	1.57 V	319	42.3	4.2
8	4874.00	44.3 AV	54.0	-9.7	1.57 V	319	40.1	4.2
9	7311.00	49.6 PK	74.0	-24.4	2.42 V	205	39.4	10.2
10	7311.00	44.2 AV	54.0	-9.8	2.42 V	205	34.0	10.2

Remarks:

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

RF Mode	TX 802.11g	Channel	CH 11：2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (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			3.61 H	328	111.2	-0.8
2	*2462.00	100.3 AV			3.61 H	328	101.1	-0.8
3	2483.50	59.0 PK	74.0	-15.0	3.61 H	328	59.8	-0.8
4	2483.50	48.6 AV	54.0	-5.4	3.61 H	328	49.4	-0.8
5	4924.00	47.6 PK	74.0	-26.4	1.98 H	112	43.4	4.2
6	4924.00	45.6 AV	54.0	-8.4	1.98 H	112	41.4	4.2
7	7386.00	47.6 PK	74.0	-26.4	2.02 H	197	37.3	10.3
8	7386.00	44.3 AV	54.0	-9.7	2.02 H	197	34.0	10.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.1 PK			3.36 V	259	111.9	-0.8
2	*2462.00	101.8 AV			3.36 V	259	102.6	-0.8
3	2483.50	61.7 PK	74.0	-12.3	3.36 V	259	62.5	-0.8
4	2483.50	49.5 AV	54.0	-4.5	3.36 V	259	50.3	-0.8
5	4924.00	45.3 PK	74.0	-28.7	1.50 V	326	41.1	4.2
6	4924.00	42.7 AV	54.0	-11.3	1.50 V	326	38.5	4.2
7	7386.00	49.0 PK	74.0	-25.0	2.45 V	208	38.7	10.3
8	7386.00	43.8 AV	54.0	-10.2	2.45 V	208	33.5	10.3

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.

RF Mode	TX 802.11n (HT20)	Channel	CH 1：2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (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	62.2 PK	74.0	-11.8	3.65 H	325	63.1	-0.9
2	2390.00	48.7 AV	54.0	-5.3	3.65 H	325	49.6	-0.9
3	*2412.00	107.3 PK			3.65 H	325	108.2	-0.9
4	*2412.00	96.4 AV			3.65 H	325	97.3	-0.9
5	4824.00	47.5 PK	74.0	-26.5	1.99 H	115	43.5	4.0
6	4824.00	45.0 AV	54.0	-9.0	1.99 H	115	41.0	4.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	64.6 PK	74.0	-9.4	3.30 V	283	65.5	-0.9
2	2390.00	49.7 AV	54.0	-4.3	3.30 V	283	50.6	-0.9
3	*2412.00	108.8 PK			3.30 V	283	109.7	-0.9
4	*2412.00	97.5 AV			3.30 V	283	98.4	-0.9
5	4824.00	44.9 PK	74.0	-29.1	1.52 V	303	40.9	4.0
6	4824.00	42.3 AV	54.0	-11.7	1.52 V	303	38.3	4.0

Remarks:

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

RF Mode	TX 802.11n (HT20)	Channel	CH 6：2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.0 PK	74.0	-8.0	2.91 H	344	66.9	-0.9
2	2390.00	47.8 AV	54.0	-6.2	2.91 H	344	48.7	-0.9
3	*2437.00	113.0 PK			2.91 H	344	113.9	-0.9
4	*2437.00	101.7 AV			2.91 H	344	102.6	-0.9
5	2483.50	61.1 PK	74.0	-12.9	2.91 H	344	61.9	-0.8
6	2483.50	47.4 AV	54.0	-6.6	2.91 H	344	48.2	-0.8
7	4874.00	48.3 PK	74.0	-25.7	2.06 H	131	44.1	4.2
8	4874.00	46.8 AV	54.0	-7.2	2.06 H	131	42.6	4.2
9	7311.00	47.8 PK	74.0	-26.2	2.05 H	200	37.6	10.2
10	7311.00	44.9 AV	54.0	-9.1	2.05 H	200	34.7	10.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	64.1 PK	74.0	-9.9	3.24 V	328	65.0	-0.9
2	2390.00	48.2 AV	54.0	-5.8	3.24 V	328	49.1	-0.9
3	*2437.00	113.5 PK			3.24 V	328	114.4	-0.9
4	*2437.00	102.7 AV			3.24 V	328	103.6	-0.9
5	2483.50	61.9 PK	74.0	-12.1	3.24 V	328	62.7	-0.8
6	2483.50	47.6 AV	54.0	-6.4	3.24 V	328	48.4	-0.8
7	4874.00	46.6 PK	74.0	-27.4	1.59 V	321	42.4	4.2
8	4874.00	44.2 AV	54.0	-9.8	1.59 V	321	40.0	4.2
9	7311.00	50.0 PK	74.0	-24.0	2.47 V	216	39.8	10.2
10	7311.00	44.5 AV	54.0	-9.5	2.47 V	216	34.3	10.2

Remarks:

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

RF Mode	TX 802.11n (HT20)	Channel	CH 11：2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (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	109.6 PK			3.61 H	329	110.4	-0.8
2	*2462.00	98.2 AV			3.61 H	329	99.0	-0.8
3	2483.50	61.4 PK	74.0	-12.6	3.61 H	329	62.2	-0.8
4	2483.50	48.6 AV	54.0	-5.4	3.61 H	329	49.4	-0.8
5	4924.00	47.8 PK	74.0	-26.2	1.99 H	124	43.6	4.2
6	4924.00	45.9 AV	54.0	-8.1	1.99 H	124	41.7	4.2
7	7386.00	47.6 PK	74.0	-26.4	2.01 H	192	37.3	10.3
8	7386.00	44.2 AV	54.0	-9.8	2.01 H	192	33.9	10.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	110.7 PK			3.27 V	274	111.5	-0.8
2	*2462.00	99.7 AV			3.27 V	274	100.5	-0.8
3	2483.50	63.0 PK	74.0	-11.0	3.27 V	274	63.8	-0.8
4	2483.50	49.5 AV	54.0	-4.5	3.27 V	274	50.3	-0.8
5	4924.00	44.6 PK	74.0	-29.4	1.51 V	326	40.4	4.2
6	4924.00	42.2 AV	54.0	-11.8	1.51 V	326	38.0	4.2
7	7386.00	48.9 PK	74.0	-25.1	2.45 V	193	38.6	10.3
8	7386.00	43.6 AV	54.0	-10.4	2.45 V	193	33.3	10.3

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.

RF Mode	TX 802.11n (HT40)	Channel	CH 3：2422 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (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	59.3 PK	74.0	-14.7	3.63 H	324	60.2	-0.9
2	2390.00	49.2 AV	54.0	-4.8	3.63 H	324	50.1	-0.9
3	*2422.00	101.5 PK			3.63 H	324	102.4	-0.9
4	*2422.00	91.8 AV			3.63 H	324	92.7	-0.9
5	4844.00	46.3 PK	74.0	-27.7	2.03 H	134	42.2	4.1
6	4844.00	44.3 AV	54.0	-9.7	2.03 H	134	40.2	4.1
7	7266.00	45.1 PK	74.0	-28.9	1.97 H	197	35.0	10.1
8	7266.00	43.2 AV	54.0	-10.8	1.97 H	197	33.1	10.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	60.6 PK	74.0	-13.4	3.41 V	184	61.5	-0.9
2	2390.00	49.4 AV	54.0	-4.6	3.41 V	184	50.3	-0.9
3	*2422.00	103.5 PK			3.41 V	184	104.4	-0.9
4	*2422.00	93.7 AV			3.41 V	184	94.6	-0.9
5	4844.00	45.3 PK	74.0	-28.7	1.48 V	336	41.2	4.1
6	4844.00	42.7 AV	54.0	-11.3	1.48 V	336	38.6	4.1
7	7266.00	48.4 PK	74.0	-25.6	2.47 V	185	38.3	10.1
8	7266.00	43.2 AV	54.0	-10.8	2.47 V	185	33.1	10.1

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.

RF Mode	TX 802.11n (HT40)	Channel	CH 6：2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (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	3.02 H	342	61.3	-0.9
2	2390.00	49.2 AV	54.0	-4.8	3.02 H	342	50.1	-0.9
3	*2437.00	104.6 PK			3.02 H	342	105.5	-0.9
4	*2437.00	95.8 AV			3.02 H	342	96.7	-0.9
5	2483.50	59.4 PK	74.0	-14.6	3.02 H	342	60.2	-0.8
6	2483.50	46.4 AV	54.0	-7.6	3.02 H	342	47.2	-0.8
7	4874.00	46.7 PK	74.0	-27.3	2.08 H	123	42.5	4.2
8	4874.00	44.7 AV	54.0	-9.3	2.08 H	123	40.5	4.2
9	7311.00	45.3 PK	74.0	-28.7	1.99 H	189	35.1	10.2
10	7311.00	43.7 AV	54.0	-10.3	1.99 H	189	33.5	10.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	60.8 PK	74.0	-13.2	3.20 V	261	61.7	-0.9
2	2390.00	49.7 AV	54.0	-4.3	3.20 V	261	50.6	-0.9
3	*2437.00	105.4 PK			3.20 V	261	106.3	-0.9
4	*2437.00	96.7 AV			3.20 V	261	97.6	-0.9
5	2483.50	60.2 PK	74.0	-13.8	3.20 V	261	61.0	-0.8
6	2483.50	48.5 AV	54.0	-5.5	3.20 V	261	49.3	-0.8
7	4874.00	44.4 PK	74.0	-29.6	1.50 V	317	40.2	4.2
8	4874.00	42.2 AV	54.0	-11.8	1.50 V	317	38.0	4.2
9	7311.00	49.0 PK	74.0	-25.0	2.43 V	203	38.8	10.2
10	7311.00	43.9 AV	54.0	-10.1	2.43 V	203	33.7	10.2

Remarks:

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

RF Mode	TX 802.11n (HT40)	Channel	CH 9：2452 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (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	103.3 PK			3.69 H	326	104.1	-0.8
2	*2452.00	94.8 AV			3.69 H	326	95.6	-0.8
3	2483.50	59.1 PK	74.0	-14.9	3.69 H	326	59.9	-0.8
4	2483.50	48.3 AV	54.0	-5.7	3.69 H	326	49.1	-0.8
5	4904.00	45.8 PK	74.0	-28.2	2.06 H	125	41.6	4.2
6	4904.00	43.8 AV	54.0	-10.2	2.06 H	125	39.6	4.2
7	7356.00	45.1 PK	74.0	-28.9	1.99 H	184	34.7	10.4
8	7356.00	43.3 AV	54.0	-10.7	1.99 H	184	32.9	10.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (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	104.8 PK			3.39 V	262	105.6	-0.8
2	*2452.00	96.0 AV			3.39 V	262	96.8	-0.8
3	2483.50	60.5 PK	74.0	-13.5	3.39 V	262	61.3	-0.8
4	2483.50	49.5 AV	54.0	-4.5	3.39 V	262	50.3	-0.8
5	4904.00	44.1 PK	74.0	-29.9	1.50 V	327	39.9	4.2
6	4904.00	41.9 AV	54.0	-12.1	1.50 V	327	37.7	4.2
7	7356.00	48.8 PK	74.0	-25.2	2.44 V	182	38.4	10.4
8	7356.00	43.5 AV	54.0	-10.5	2.44 V	182	33.1	10.4

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.

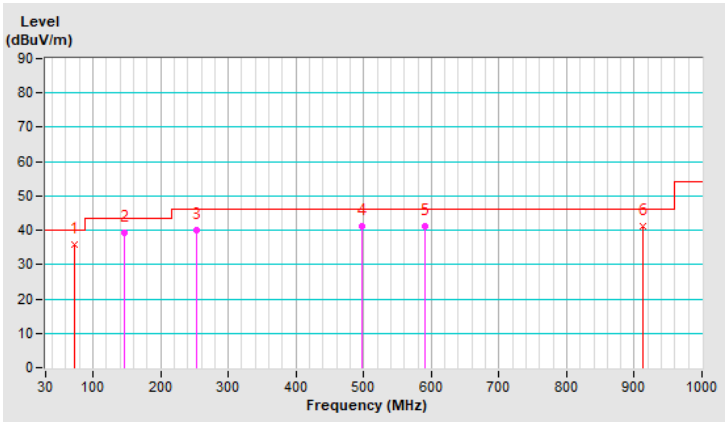
Below 1GHz Worst-Case Data

RF Mode	TX 802.11b	Channel	CH 11：2462 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	73.31	35.7 QP	40.0	-4.3	3.00 H	131	47.0	-11.3
2	145.69	39.1 QP	43.5	-4.4	2.00 H	151	46.8	-7.7
3	253.91	39.9 QP	46.0	-6.1	1.00 H	241	48.4	-8.5
4	497.23	41.2 QP	46.0	-4.8	2.00 H	333	42.3	-1.1
5	589.99	41.3 QP	46.0	-4.7	1.50 H	81	40.4	0.9
6	912.03	41.0 QP	46.0	-5.0	1.50 H	211	33.8	7.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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.

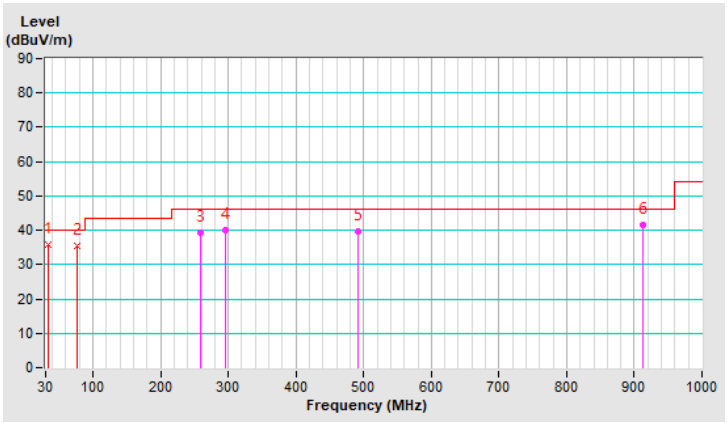


RF Mode	TX 802.11b	Channel	CH 11：2462 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	**34.12**	**35.8 QP**	**40.0**	**-4.2**	**1.00 V**	**325**	**44.9**	**-9.1**
2	76.80	35.5 QP	40.0	-4.5	3.00 V	146	47.7	-12.2
3	258.60	39.1 QP	46.0	-6.9	2.00 V	0	47.4	-8.3
4	294.93	39.9 QP	46.0	-6.1	1.50 V	360	46.7	-6.8
5	491.53	39.6 QP	46.0	-6.4	1.00 V	152	40.8	-1.2
6	912.00	41.7 QP	46.0	-4.3	1.00 V	199	34.6	7.1

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. 20, 2020	Oct. 19, 2021
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 27, 2020	Oct. 26, 2021
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 26, 2021	Mar. 25, 2022
50 ohms Terminator	50	3	Oct. 26, 2020	Oct. 25, 2021
RF Cable	5D-FB	COCCAB-001	Sep. 26, 2020	Sep. 25, 2021
Fixed attenuator EMCI	STI02-2200-10	005	Aug. 29, 2020	Aug. 28, 2021
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: Apr. 09, 2021

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.

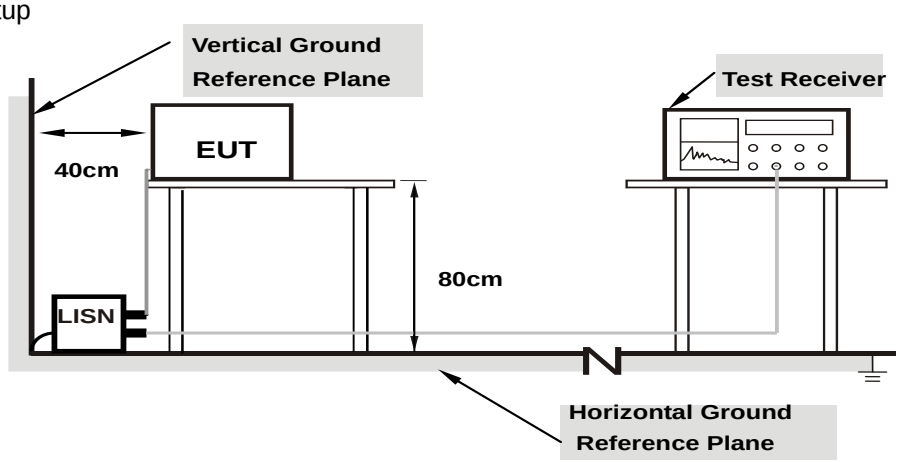
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

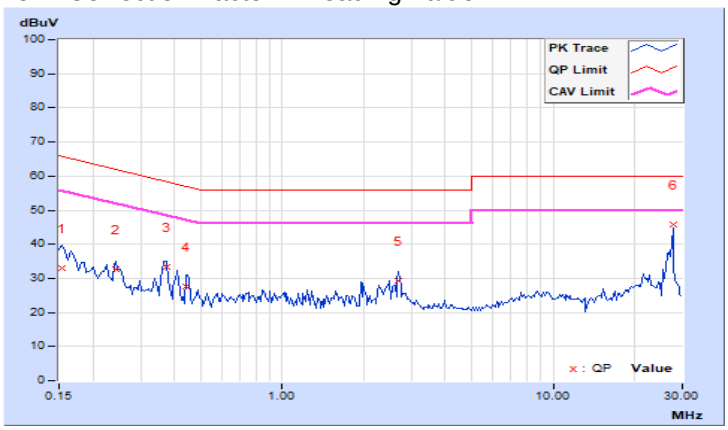
4.2.7 Test Results

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	9.95	23.18	14.33	33.13	24.28	65.79	55.79	-32.66	-31.51
2	0.24375	9.97	22.84	13.01	32.81	22.98	61.97	51.97	-29.16	-28.99
3	0.37266	9.99	23.40	20.48	33.39	30.47	58.44	48.44	-25.05	-17.97
4	0.44297	9.99	17.46	10.11	27.45	20.10	57.01	47.01	-29.56	-26.91
5	2.69922	10.10	19.08	2.49	29.18	12.59	56.00	46.00	-26.82	-33.41
6	**27.64844**	**11.27**	**34.38**	**33.52**	**45.65**	**44.79**	**60.00**	**50.00**	**-14.35**	**-5.21**

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

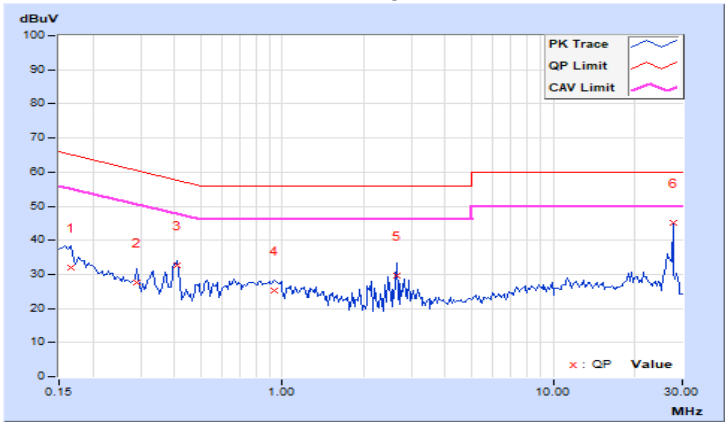


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.16562	9.93	22.07	16.76	32.00	26.69	65.18	55.18	-33.18	-28.49
2	0.29063	9.95	17.65	11.02	27.60	20.97	60.51	50.51	-32.91	-29.54
3	0.41172	9.96	22.54	17.55	32.50	27.51	57.61	47.61	-25.11	-20.10
4	0.93516	10.00	15.13	6.46	25.13	16.46	56.00	46.00	-30.87	-29.54
5	2.63672	10.07	19.46	1.46	29.53	11.53	56.00	46.00	-26.47	-34.47
6	**27.64844**	**10.91**	**34.35**	**33.88**	**45.26**	**44.79**	**60.00**	**50.00**	**-14.74**	**-5.21**

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

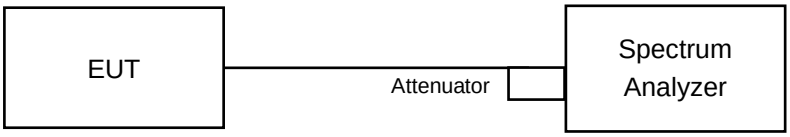


4.3 6dB Bandwidth Measurement

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. In order to obtain results more easily, change max hold to view. It has no effect on the result

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	8.13	9.09	0.5	Pass
6	2437	9.59	9.11	0.5	Pass
11	2462	8.13	9.55	0.5	Pass

802.11g

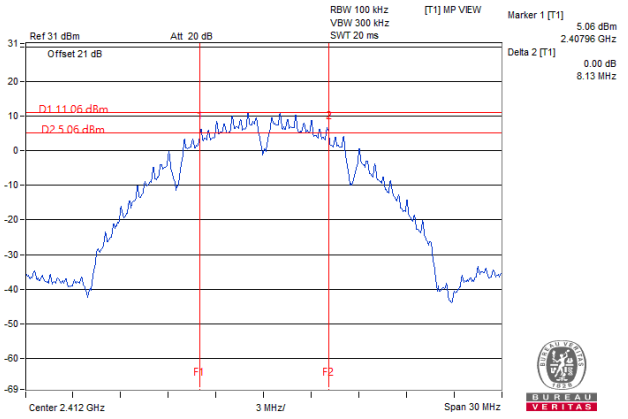
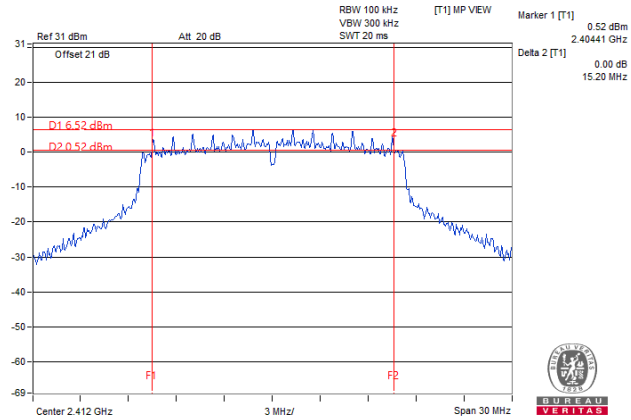
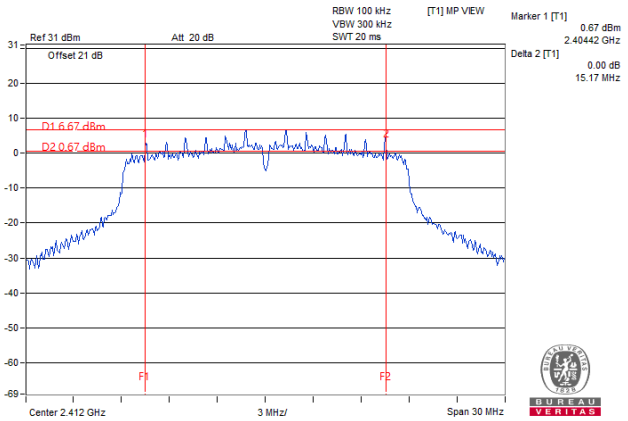
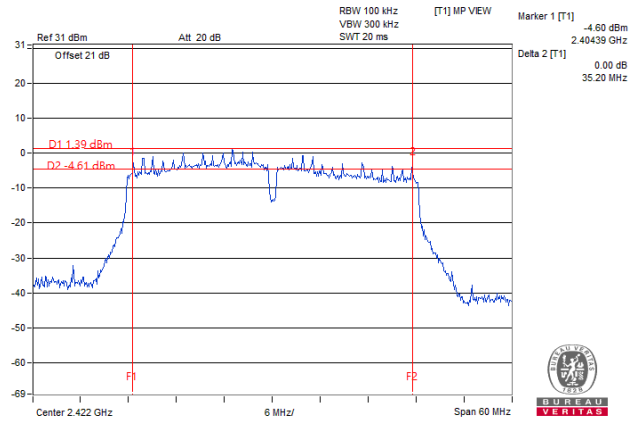
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.21	15.2	0.5	Pass
6	2437	16.07	16.34	0.5	Pass
11	2462	15.54	15.78	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.17	15.18	0.5	Pass
6	2437	16.99	17.55	0.5	Pass
11	2462	16.03	15.75	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.2	35.22	0.5	Pass
6	2437	36.56	36.5	0.5	Pass
9	2452	35.2	35.32	0.5	Pass

Spectrum Plot of Worst Value	
802.11b_Chain 0 / CH1	**802.11g_Chain 1 / CH1**
	
802.11n (HT20)_Chain 0 / CH1	**802.11n (HT40)_Chain 0 / CH3**
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

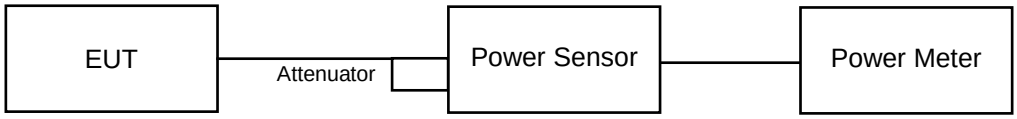
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

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

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak 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.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.83	20.85	242.678	23.85	28.65	Pass
6	2437	21.84	22.50	330.585	25.19	28.65	Pass
11	2462	22.47	22.65	360.681	25.57	28.65	Pass

Note: The max. gain is 7.35 dBi > 6dBi , so the power limit shall be reduced to 30-(7.35-6) = 28.65dBm.

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.80	19.62	187.121	22.72	28.65	Pass
6	2437	22.64	23.01	383.64	25.84	28.65	Pass
11	2462	19.70	19.87	190.376	22.80	28.65	Pass

Note: The max. gain is 7.35 dBi > 6dBi , so the power limit shall be reduced to 30-(7.35-6) = 28.65dBm.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.76	19.59	185.615	22.69	28.65	Pass
6	2437	22.68	22.98	383.963	25.84	28.65	Pass
11	2462	19.45	19.57	178.678	22.52	28.65	Pass

Note: The max. gain is 7.35 dBi > 6dBi , so the power limit shall be reduced to 30-(7.35-6) = 28.65dBm.

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	17.96	18.30	130.126	21.14	28.65	Pass
6	2437	19.02	19.12	161.458	22.08	28.65	Pass
9	2452	18.57	18.72	146.418	21.66	28.65	Pass

Note: The max. gain is 7.35 dBi > 6dBi , so the power limit shall be reduced to 30-(7.35-6) = 28.65dBm.

FOR AVERAGE POWER

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	18.42	18.88	146.77	21.67
6	2437	19.88	20.65	213.42	23.29
11	2462	20.45	20.84	232.256	23.66

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	15.09	15.54	68.095	18.33
6	2437	19.52	19.95	188.392	22.75
11	2462	15.07	15.54	67.946	18.32

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	14.95	15.22	64.527	18.10
6	2437	19.56	19.92	188.54	22.75
11	2462	14.81	15.22	63.535	18.03

802.11n (HT40)

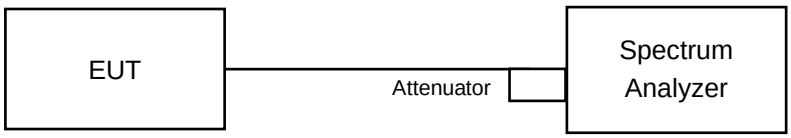
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
3	2422	12.54	12.79	36.958	15.68
6	2437	13.35	13.61	44.589	16.49
11	2462	12.85	13.08	39.599	15.98

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 (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
1	2412	-6.57	-2.16	-0.82	4.71	Pass
6	2437	-6.44	-0.64	0.37	4.71	Pass
11	2462	-5.68	-1.32	0.04	4.71	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] = 9.29dBi > 6dBi , so the power density limit shall be reduced to 8-(9.29-6) = 4.71dBm.

802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
1	2412	-6.86	-8.46	-4.58	4.71	Pass
6	2437	-3.60	-5.03	-1.25	4.71	Pass
11	2462	-7.90	-7.99	-4.93	4.71	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] = 9.29dBi > 6dBi , so the power density limit shall be reduced to 8-(9.29-6) = 4.71dBm.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
1	2412	-8.07	-8.45	-5.25	4.71	Pass
6	2437	-4.93	-3.86	-1.35	4.71	Pass
11	2462	-9.28	-8.87	-6.06	4.71	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] = 9.29dBi > 6dBi , so the power density limit shall be reduced to 8-(9.29-6) = 4.71dBm.

802.11n (HT40)

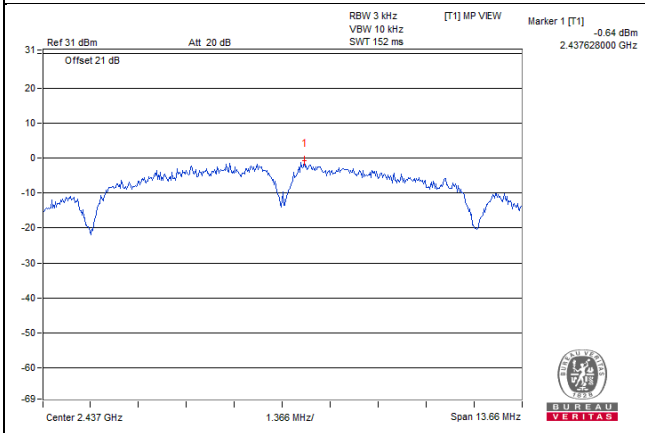
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
3	2422	-13.48	-14.58	-10.98	4.71	Pass
6	2437	-14.90	-14.60	-11.74	4.71	Pass
11	2462	-13.87	-14.18	-11.01	4.71	Pass

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

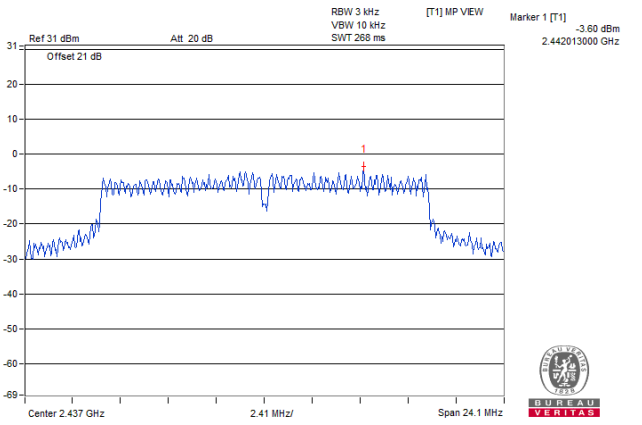
2. Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 9.29dBi > 6dBi , so the power density limit shall be reduced to 8-(9.29-6) = 4.71dBm.

Spectrum Plot of Worst Value

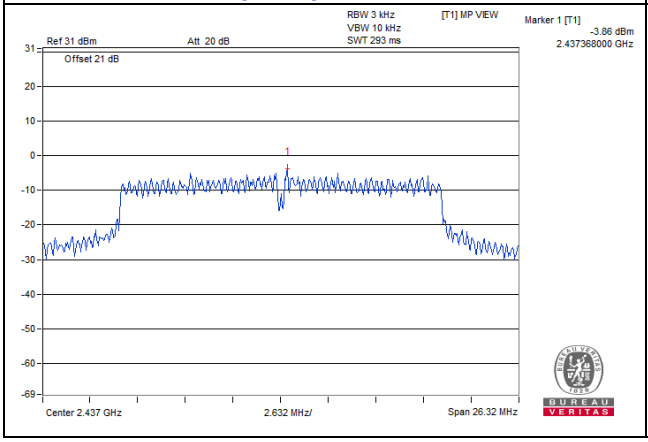
802.11b_Chain 1 / CH6



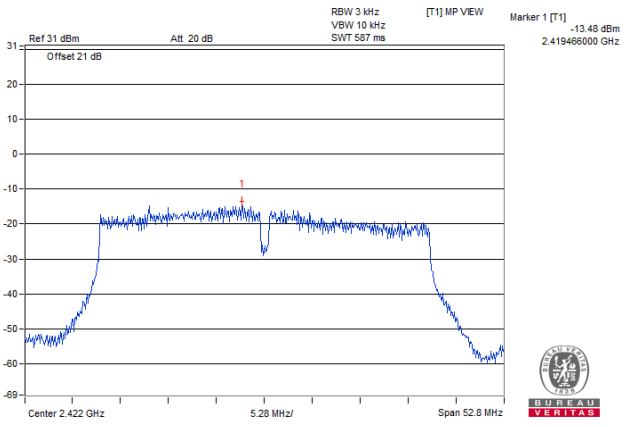
802.11g_Chain 0 / CH6



802.11n (HT20) _Chain 1 / CH6



802.11n (HT40) _Chain 0 / CH3

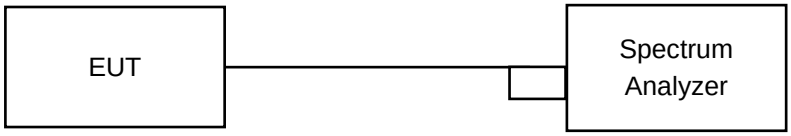


4.6 Conducted Out of Band Emission Measurement

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.. In order to obtain results more easily, change max hold to view. It has no effect on the result.

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.
   In order to obtain results more easily, change max hold to view. It has no effect on the result.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Same as Item 4.3.6

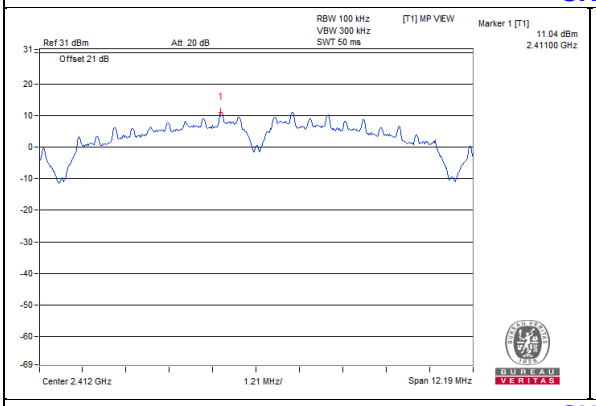
4.6.7 Test Results

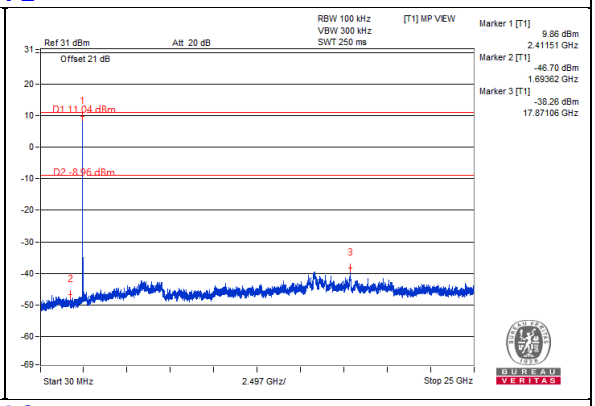
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

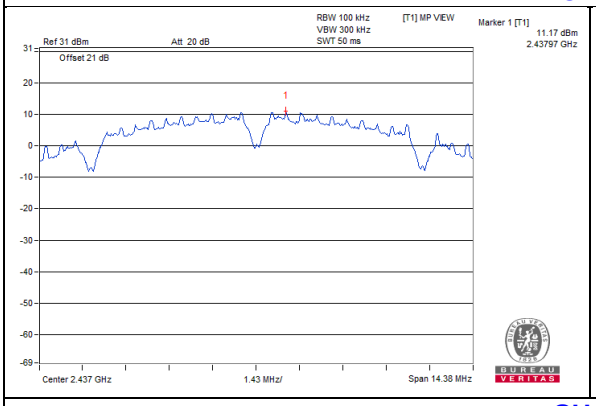
Chain 0

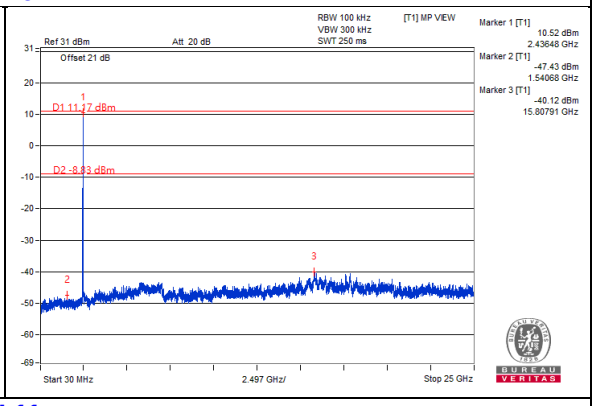
CH 1



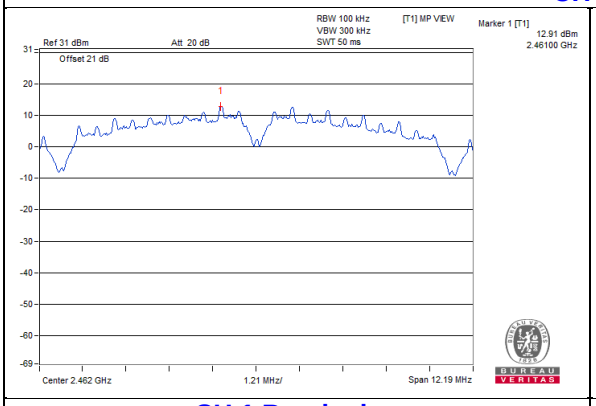


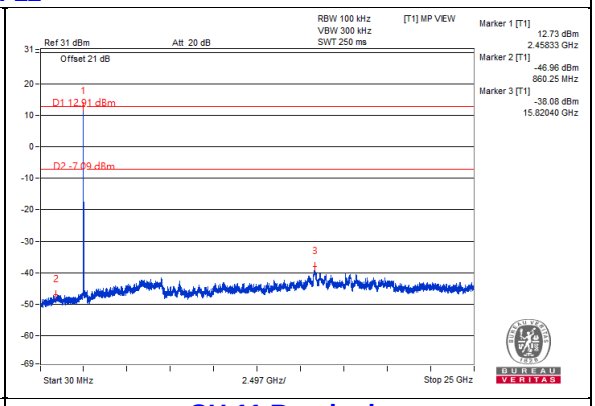
CH 6



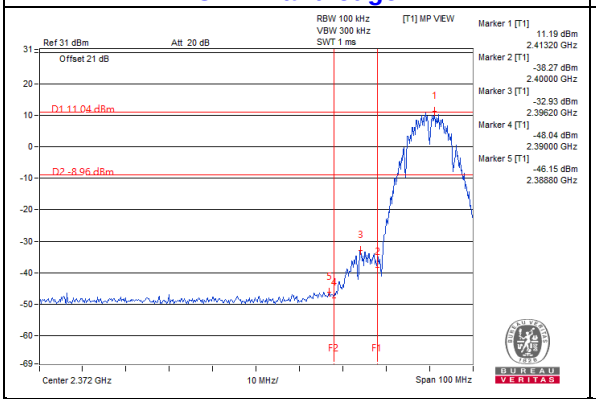


CH 11

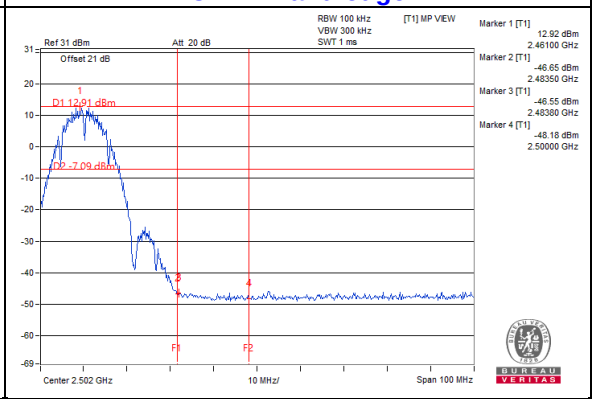




CH 1 Band edge

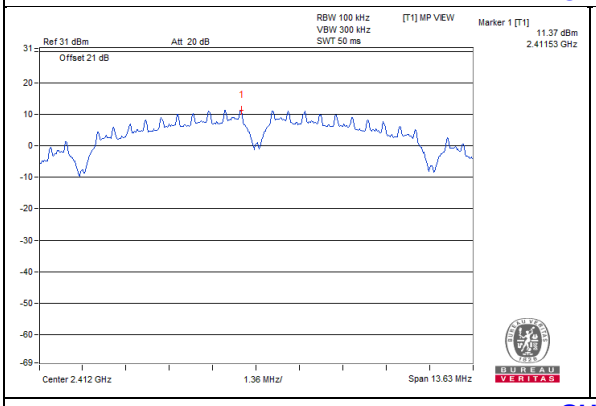


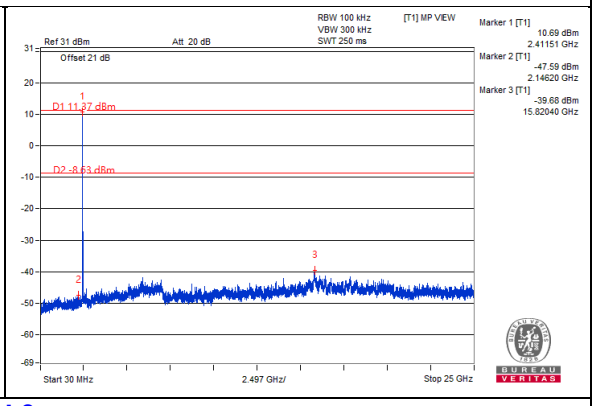
CH 11 Band edge



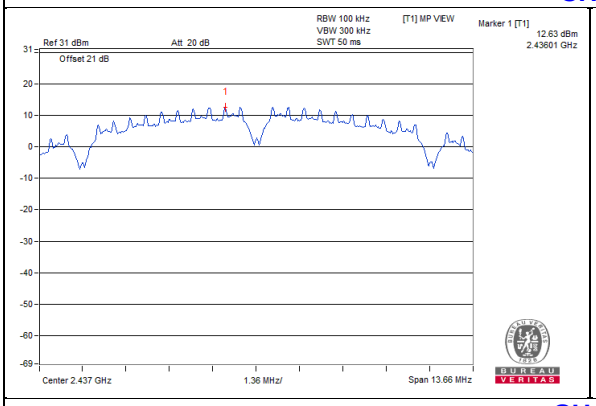
Chain 1

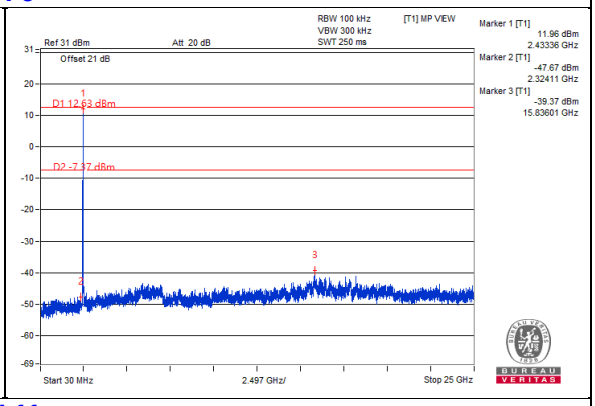
CH 1



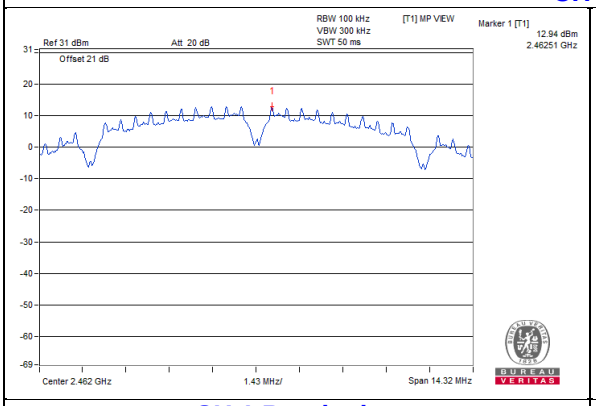


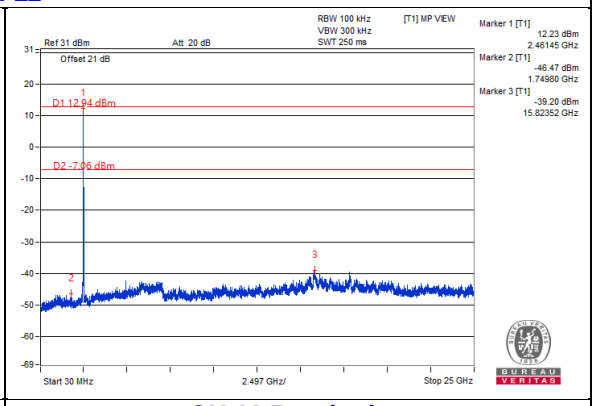
CH 6



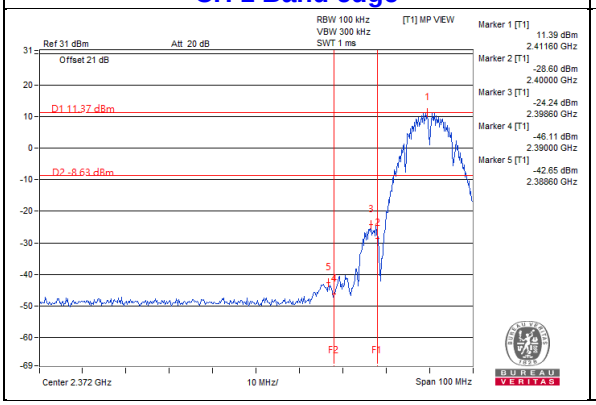


CH 11

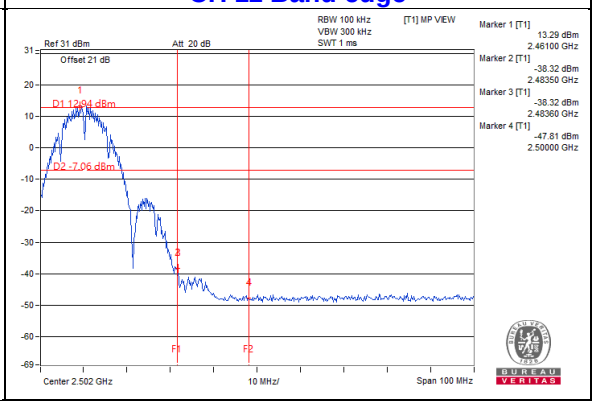




CH 1 Band edge



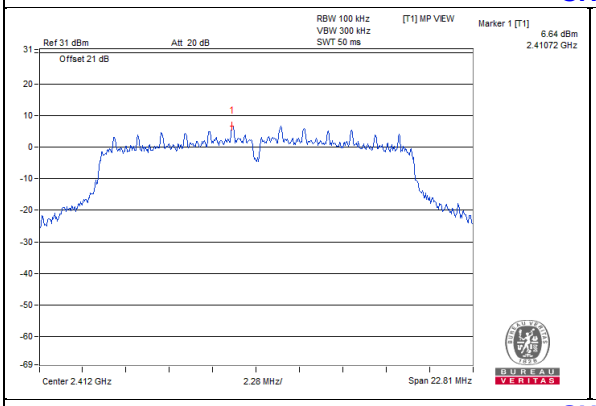
CH 11 Band edge

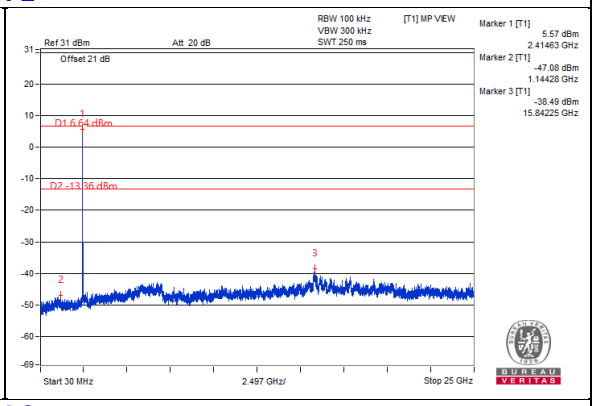


802.11g

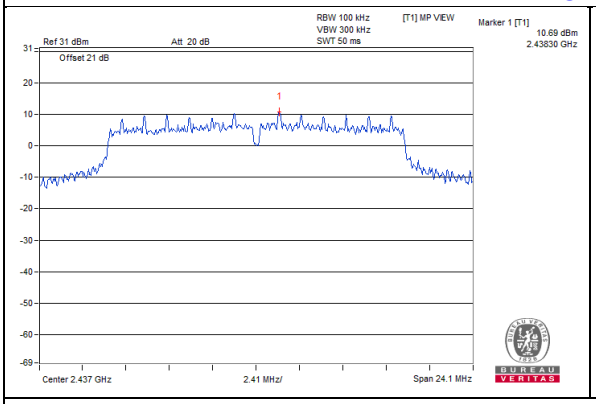
Chain 0

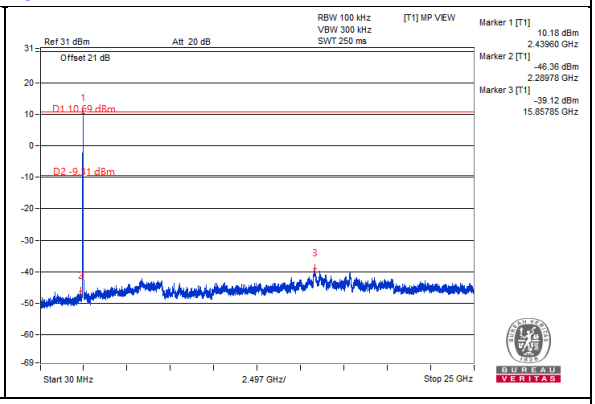
CH 1



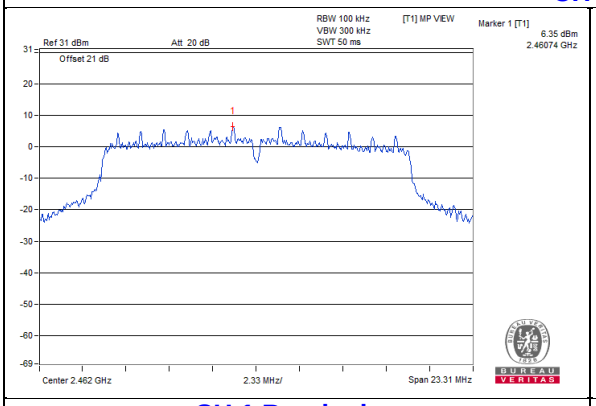


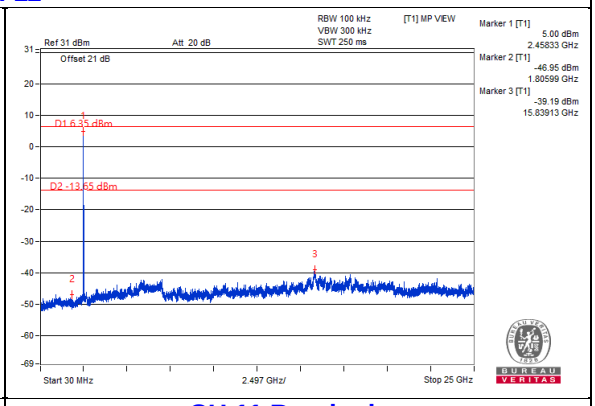
CH 6



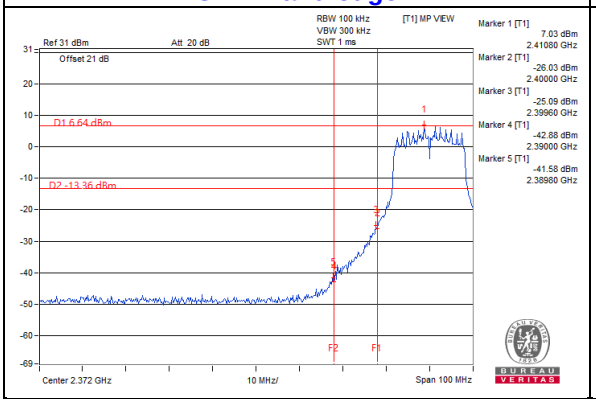


CH 11

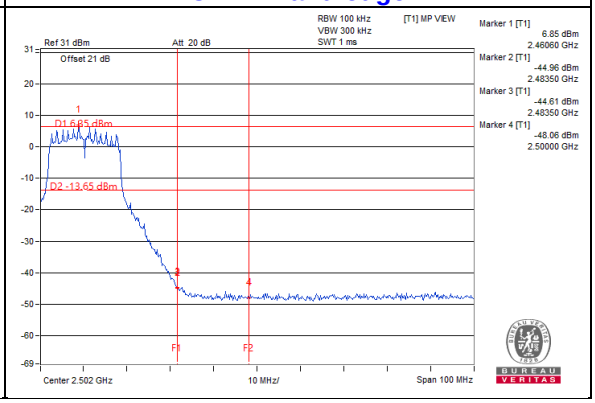




CH 1 Band edge

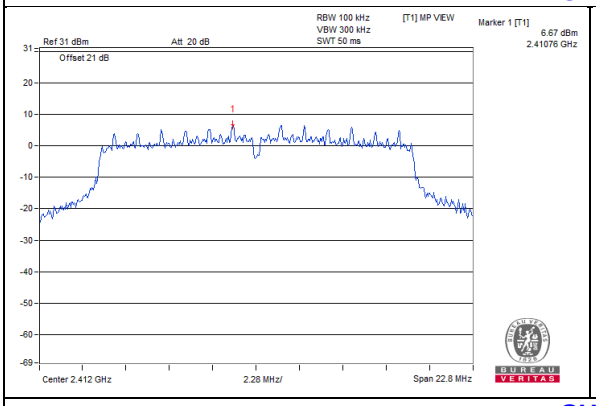


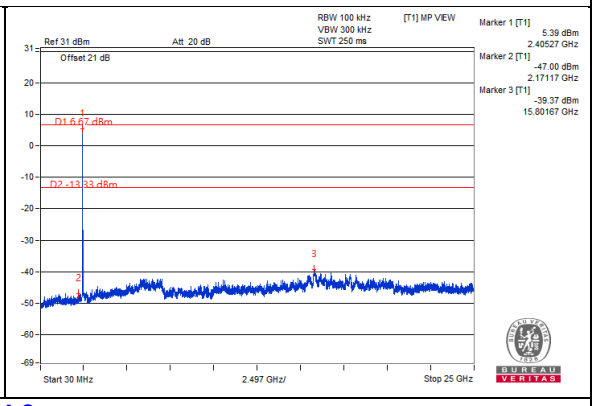
CH 11 Band edge



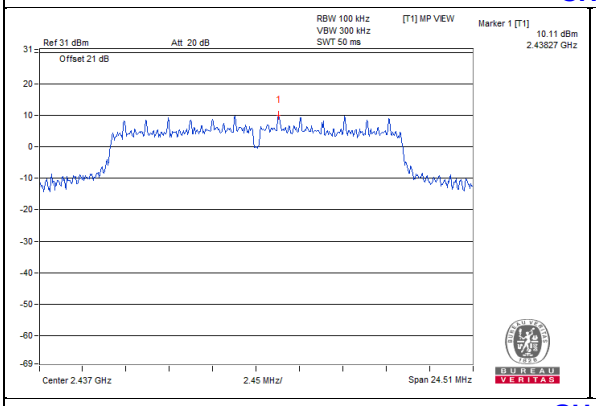
Chain 1

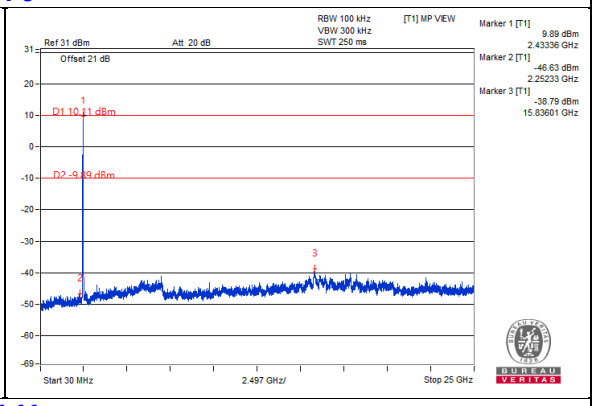
CH 1



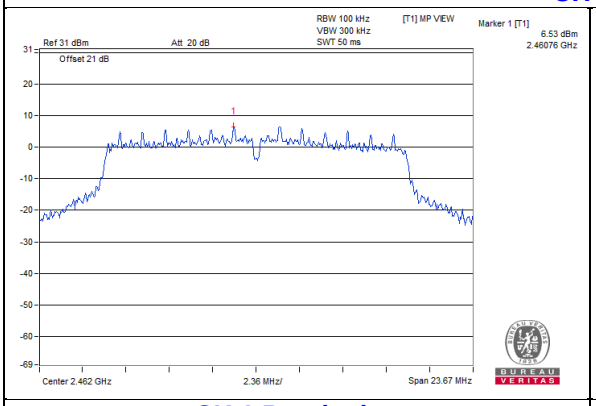


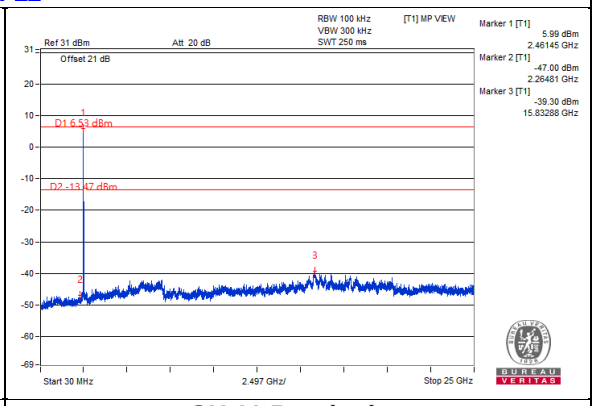
CH 6



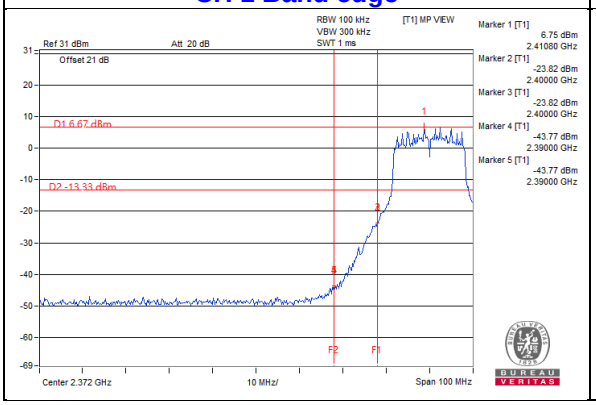


CH 11

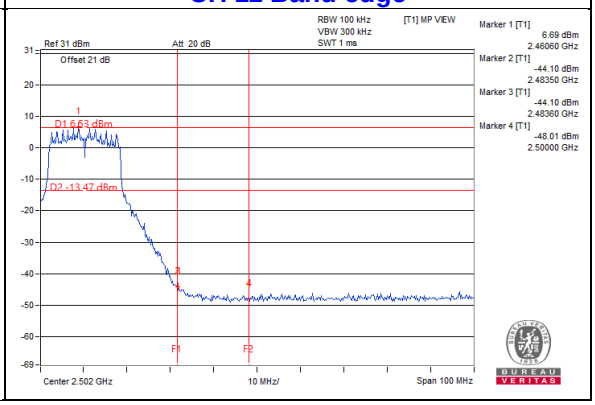




CH 1 Band edge



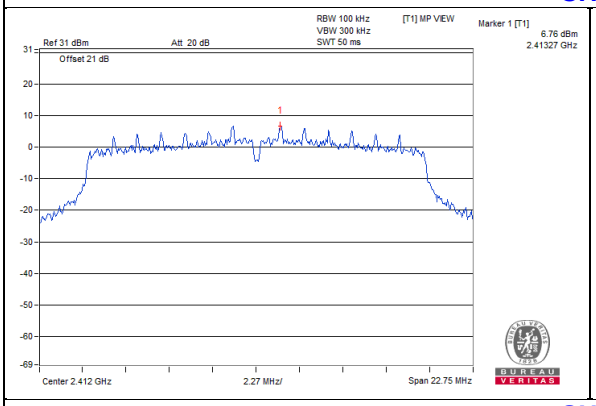
CH 11 Band edge

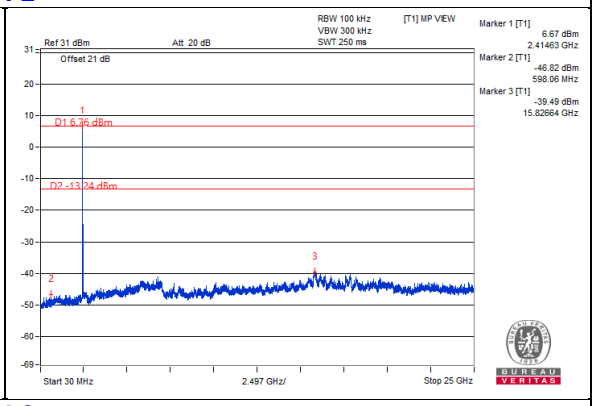


802.11n (HT20)

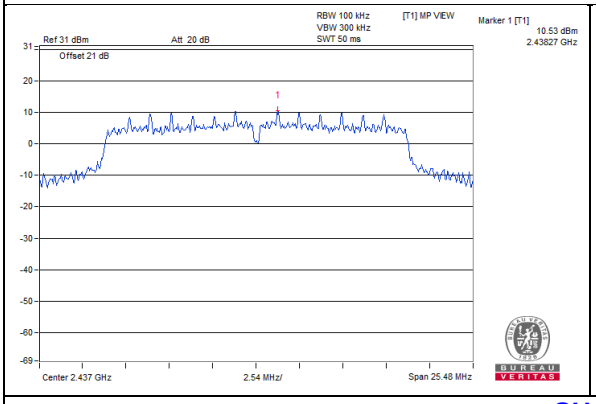
Chain 0

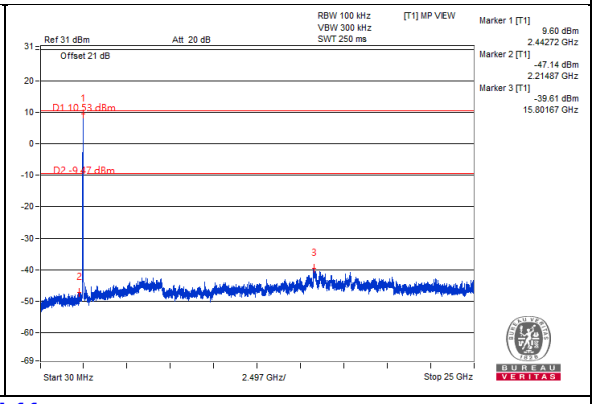
CH 1



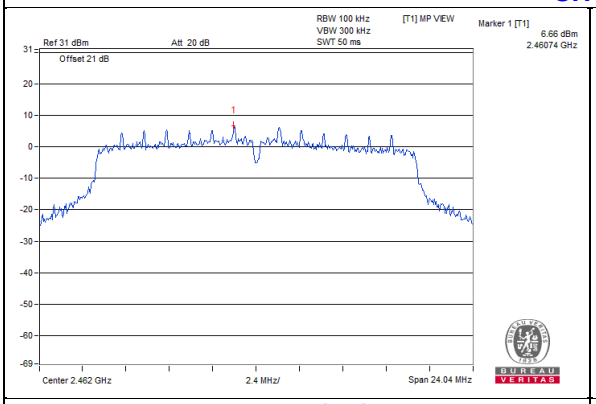


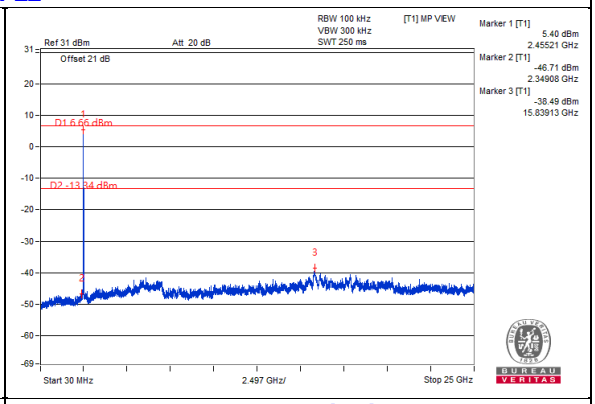
CH 6



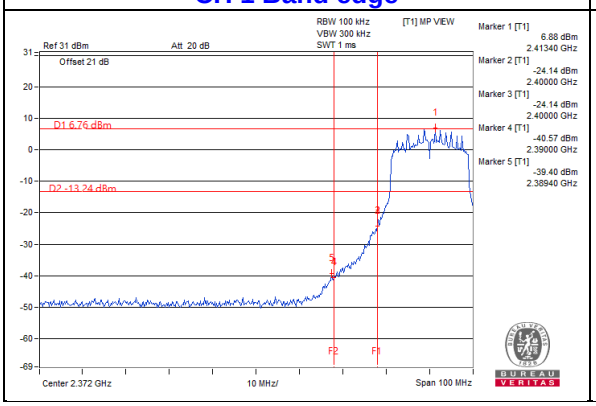


CH 11

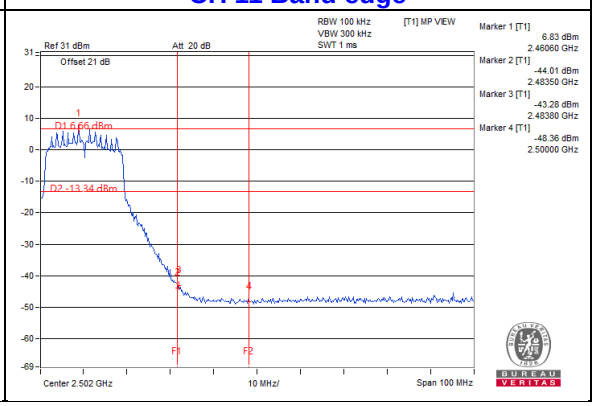




CH 1 Band edge

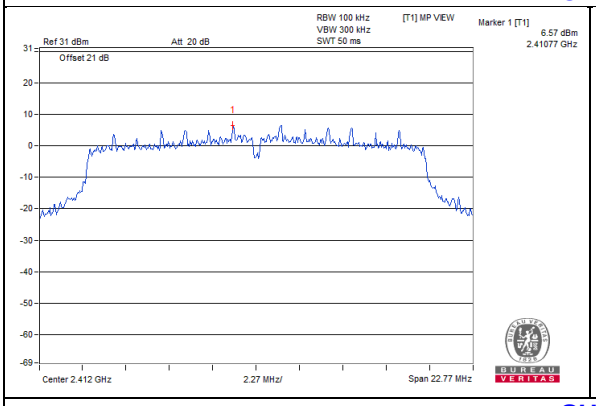


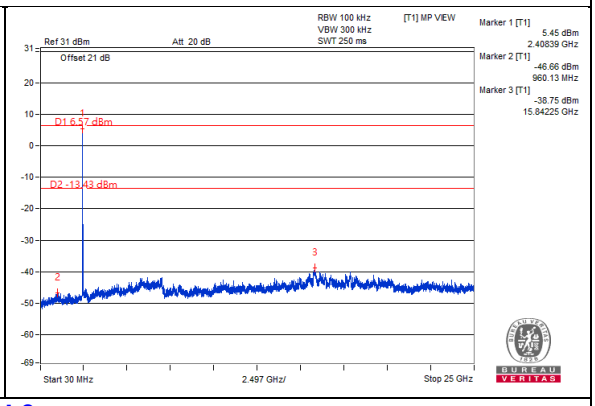
CH 11 Band edge



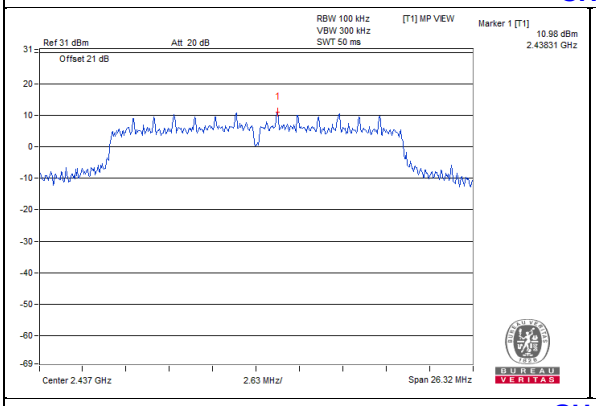
Chain 1

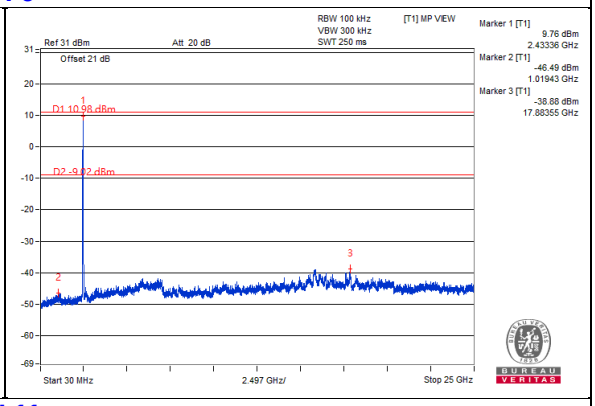
CH 1



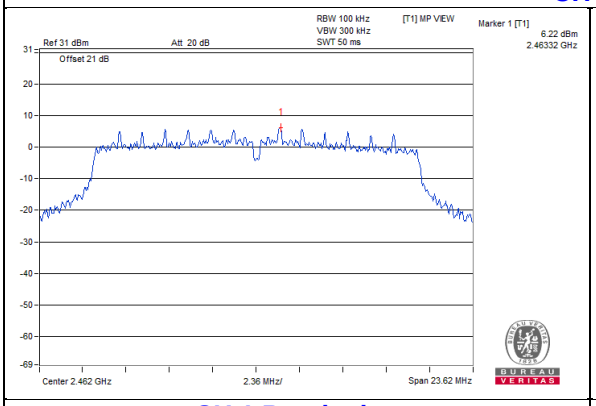


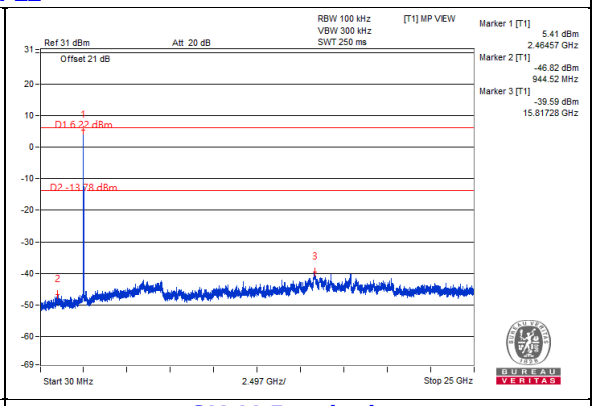
CH 6



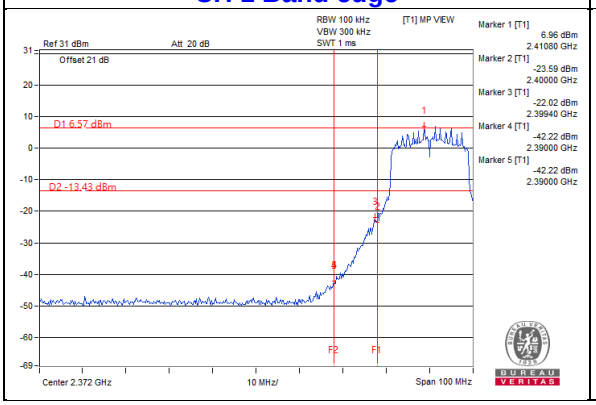


CH 11

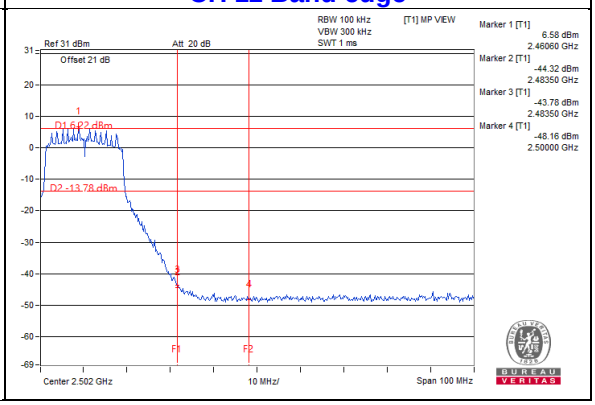




CH 1 Band edge



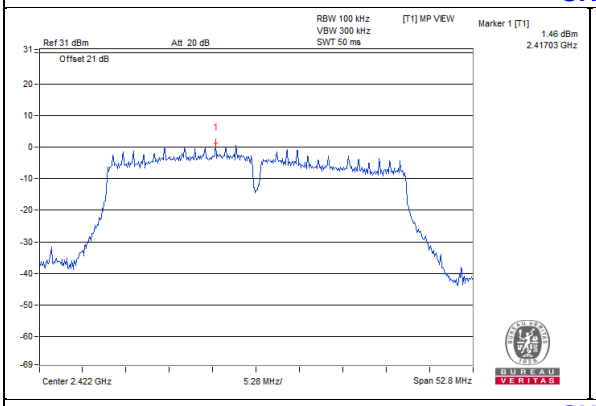
CH 11 Band edge

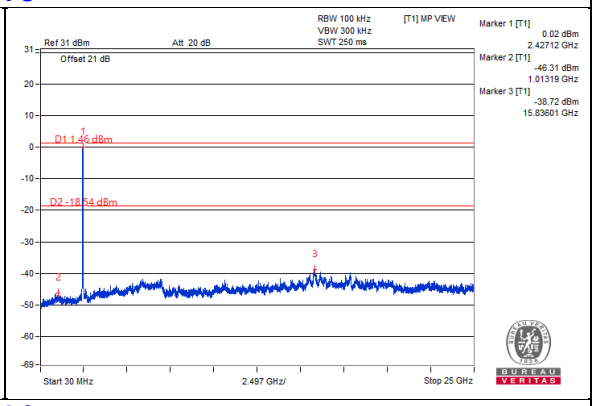


802.11n (HT40)

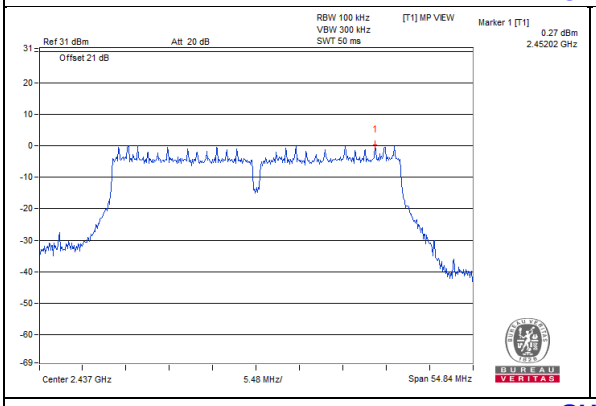
Chain 0

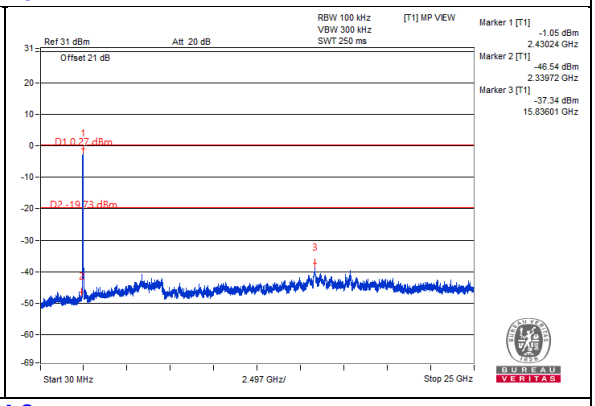
CH 3



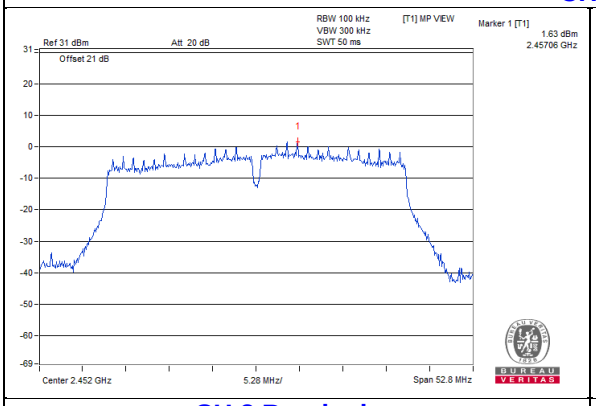


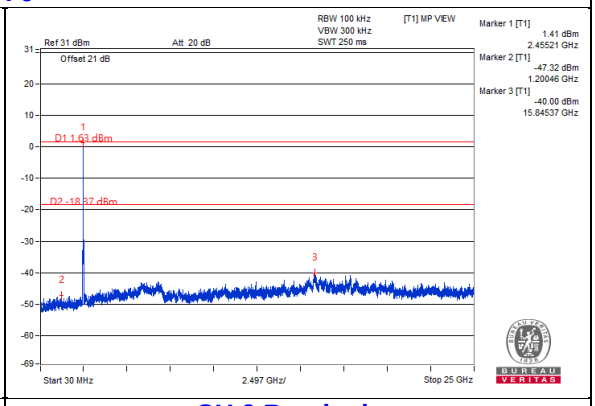
CH 6



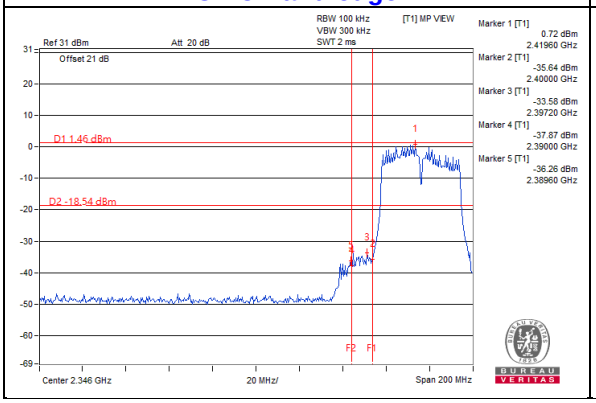


CH 9

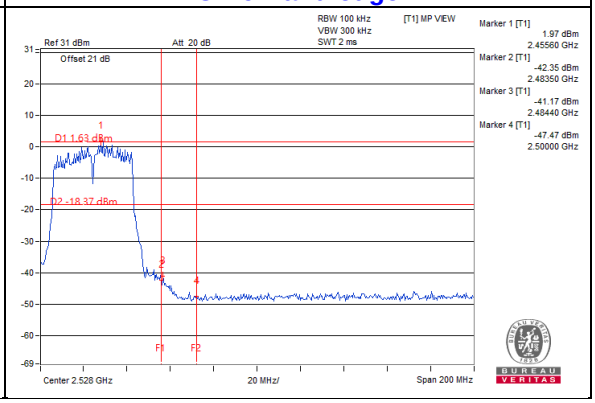




CH 3 Band edge

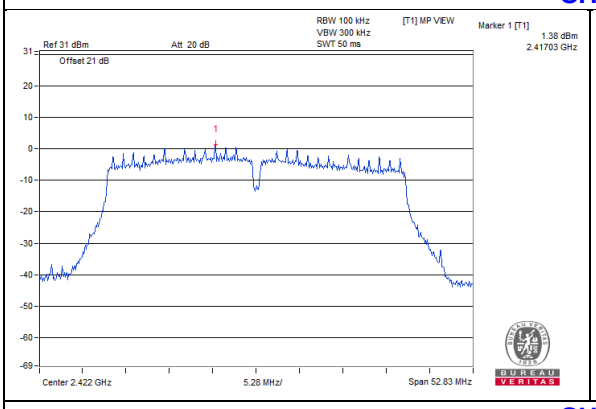


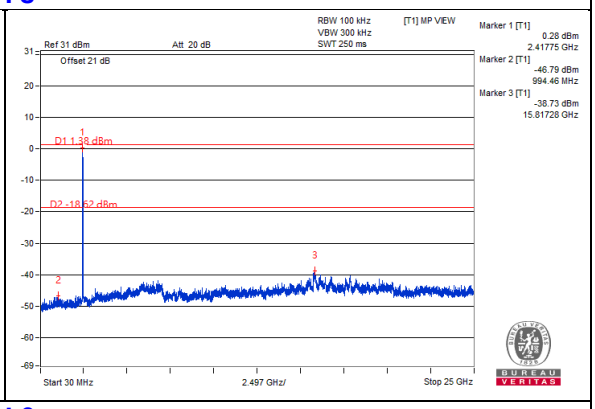
CH 9 Band edge



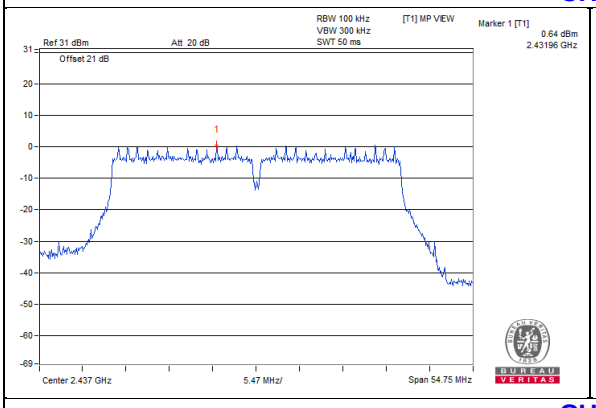
Chain 1

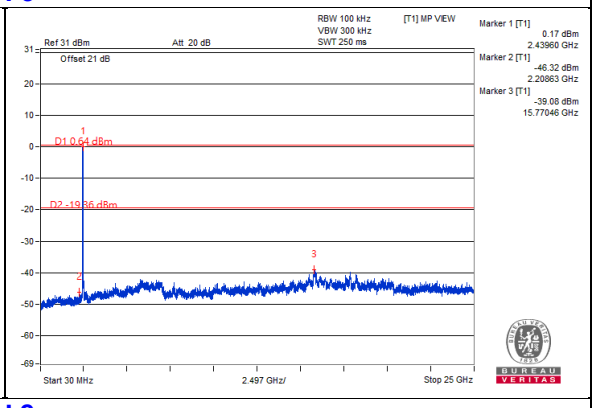
CH 3



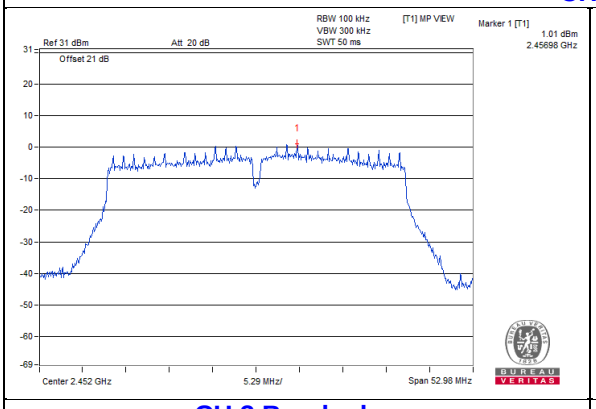


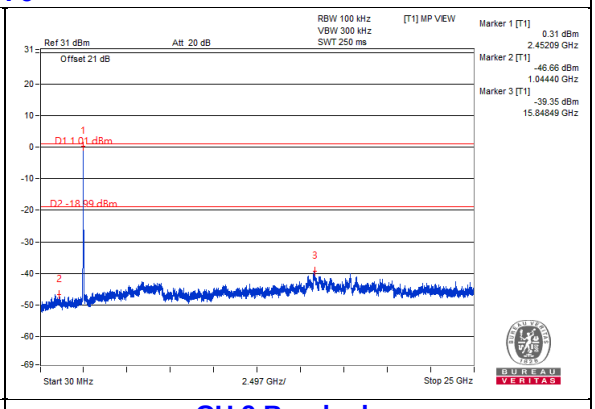
CH 6



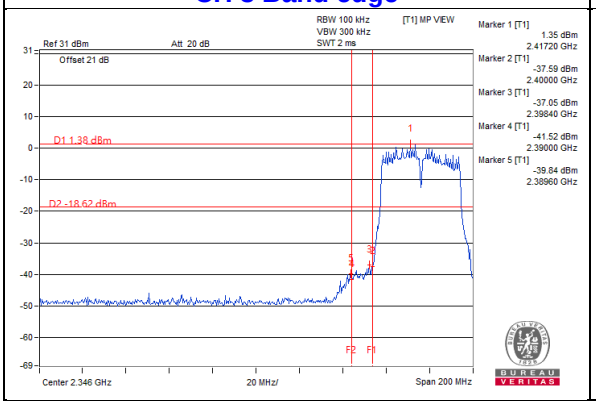


CH 9

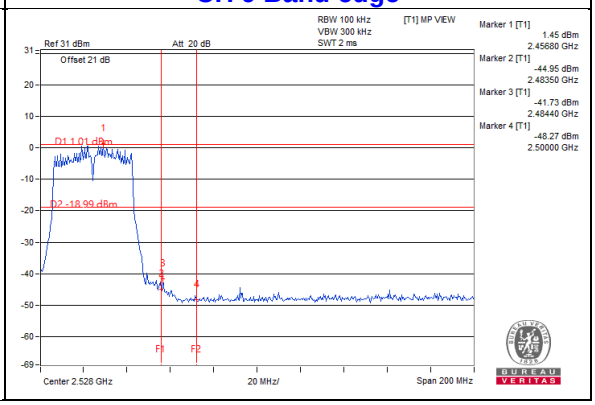




CH 3 Band edge



CH 9 Band edge



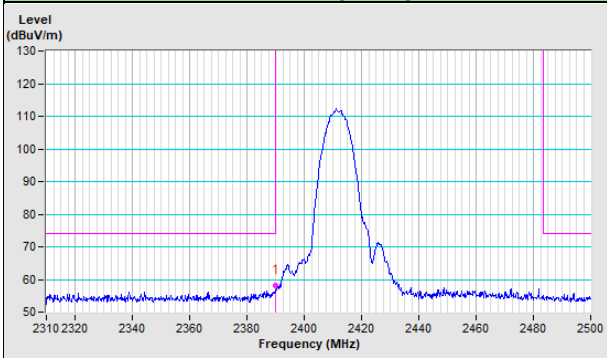
5 Pictures of Test Arrangements

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

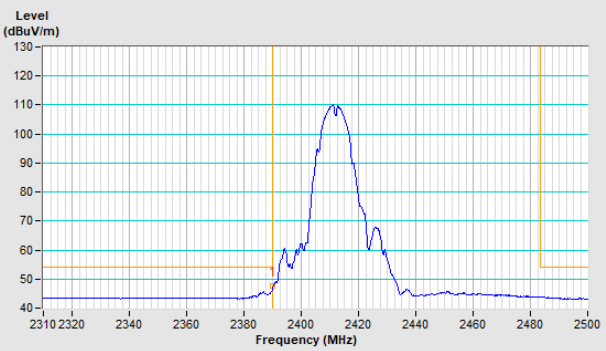
Annex A - Band-Edge Measurement

802.11b Channel 1

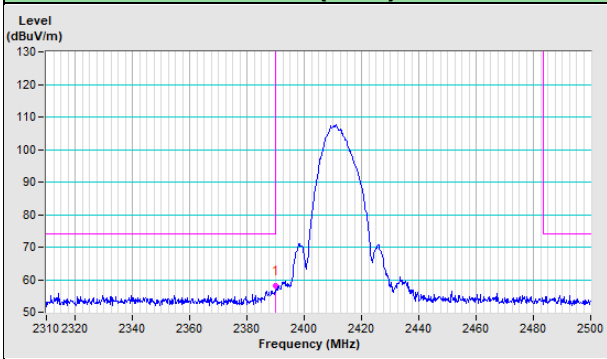
Horizontal (Peak)



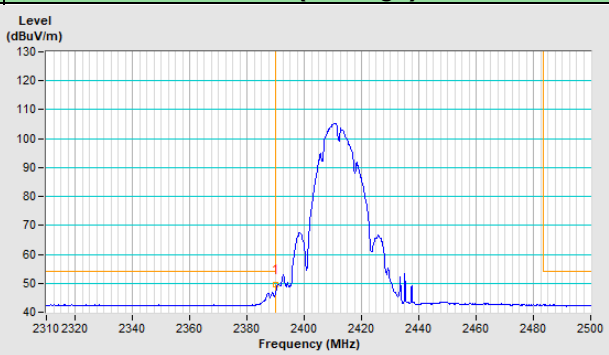
Horizontal (Average)



Vertical (Peak)

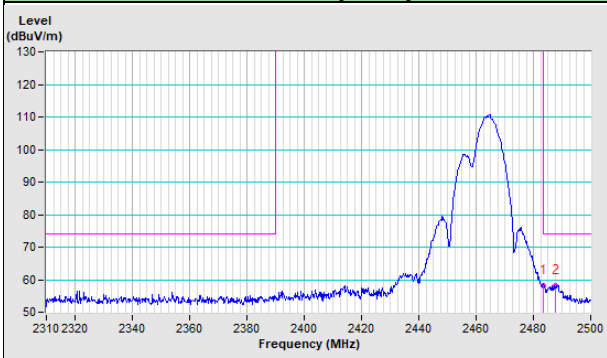


Vertical (Average)

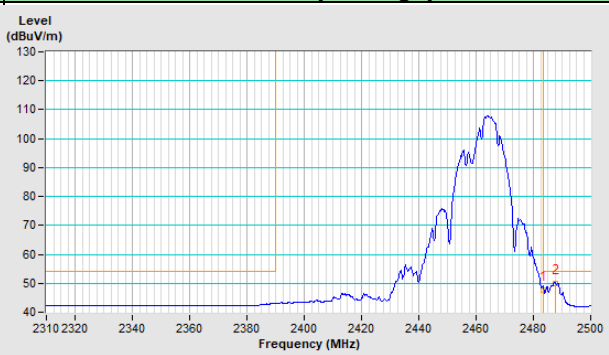


802.11b Channel 11

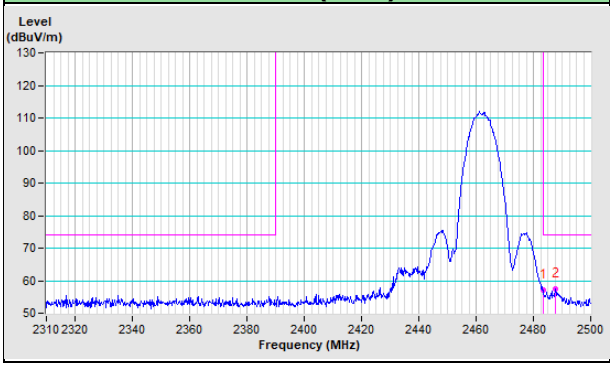
Horizontal (Peak)



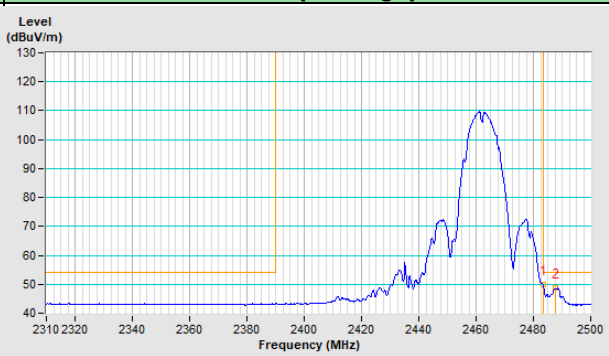
Horizontal (Average)



Vertical (Peak)

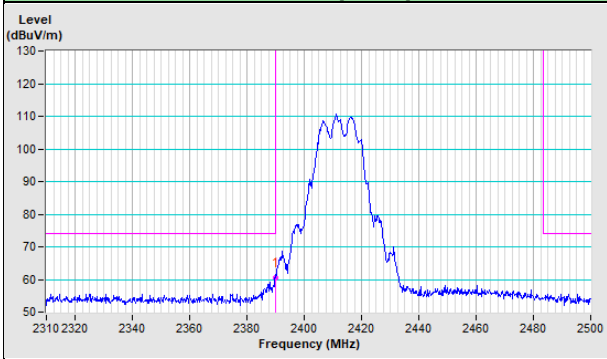


Vertical (Average)

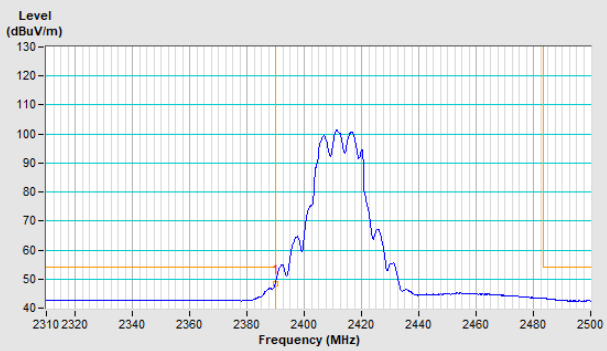


802.11g Channel 1

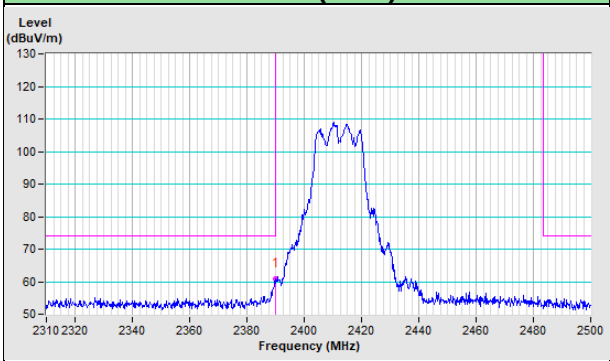
Horizontal (Peak)



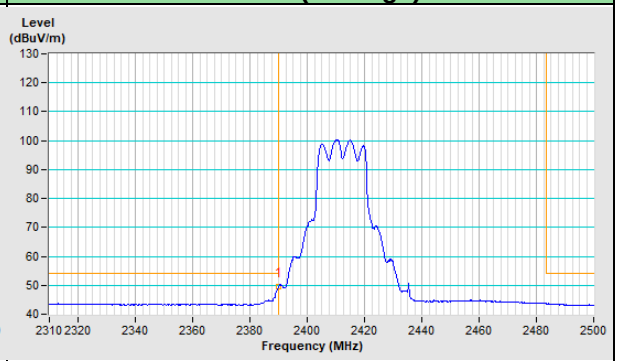
Horizontal (Average)



Vertical (Peak)

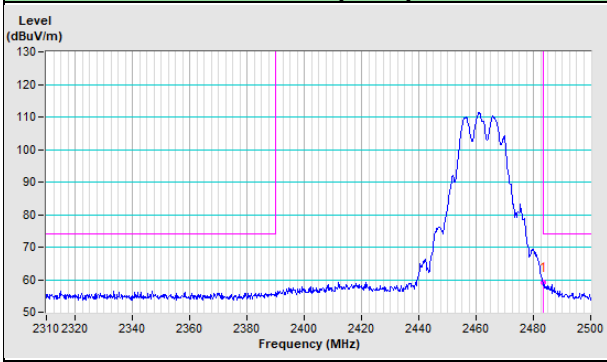


Vertical (Average)

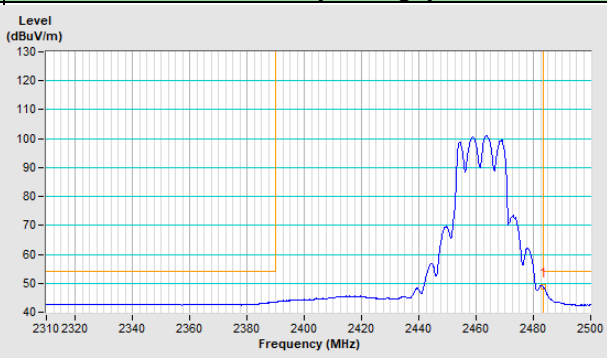


802.11g Channel 11

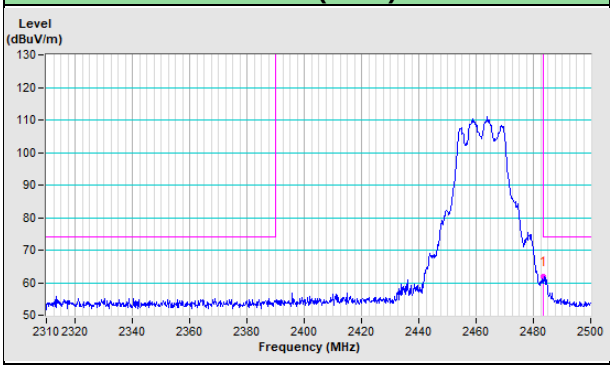
Horizontal (Peak)



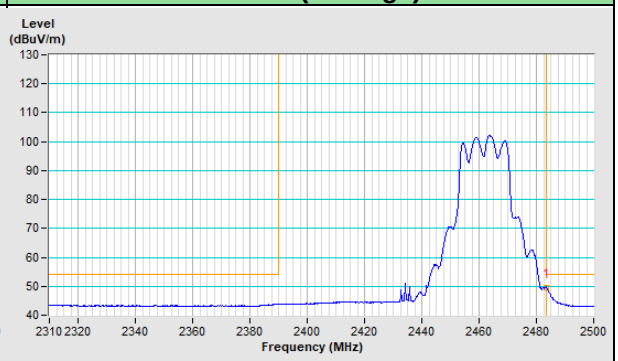
Horizontal (Average)



Vertical (Peak)

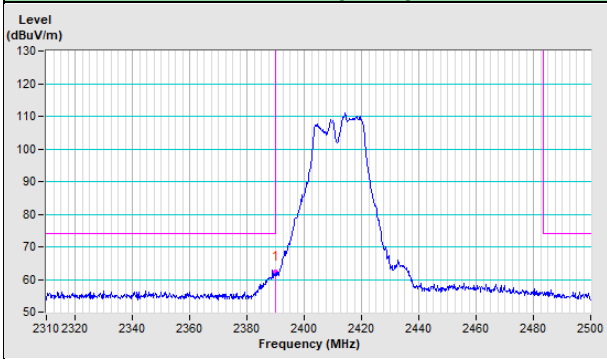


Vertical (Average)

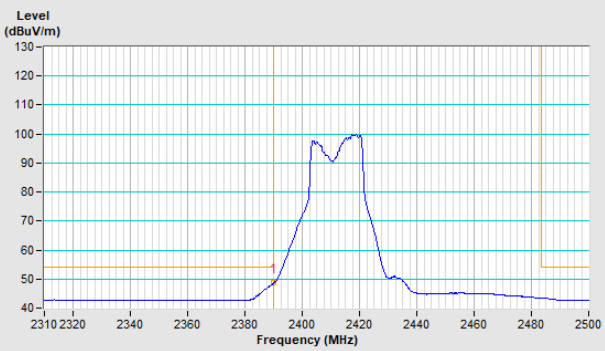


802.11n (HT20) Channel 1

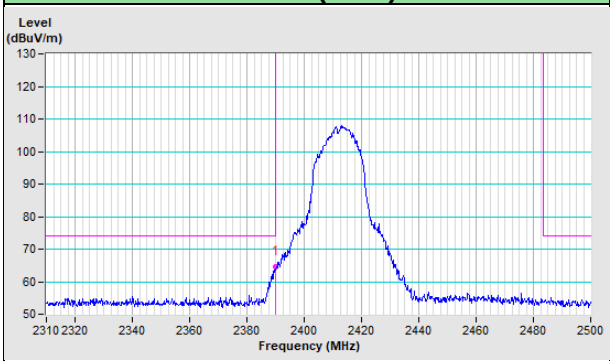
Horizontal (Peak)



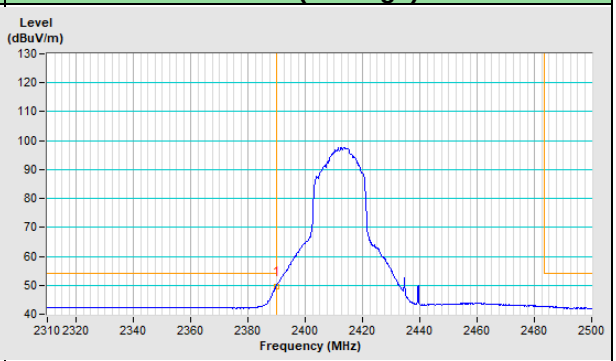
Horizontal (Average)



Vertical (Peak)

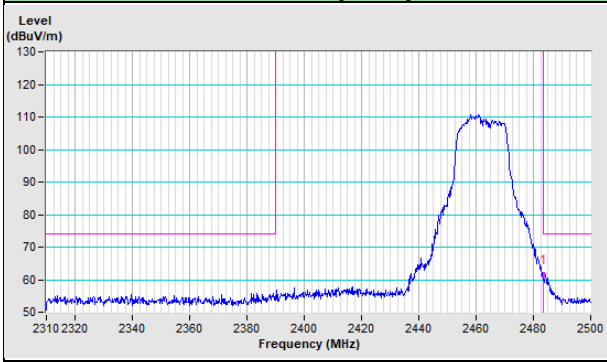


Vertical (Average)

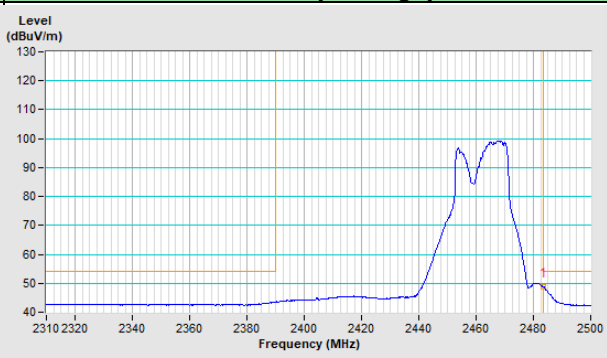


802.11n (HT20) Channel 11

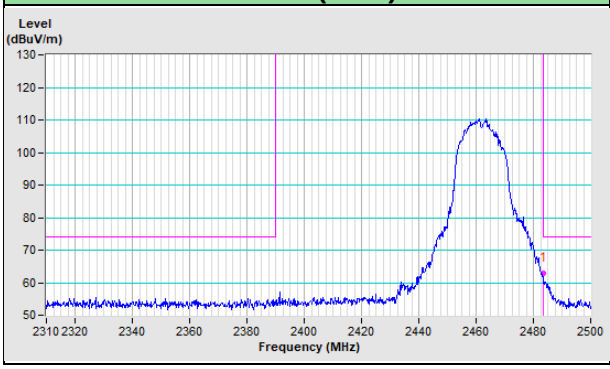
Horizontal (Peak)



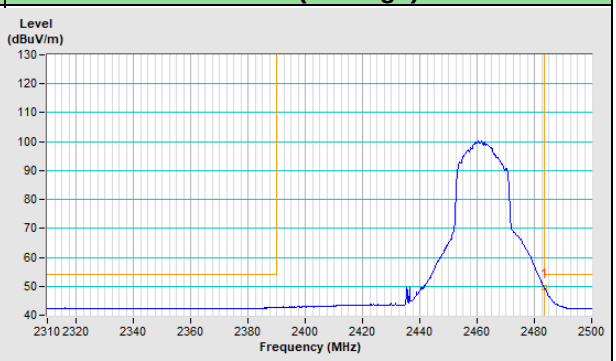
Horizontal (Average)



Vertical (Peak)

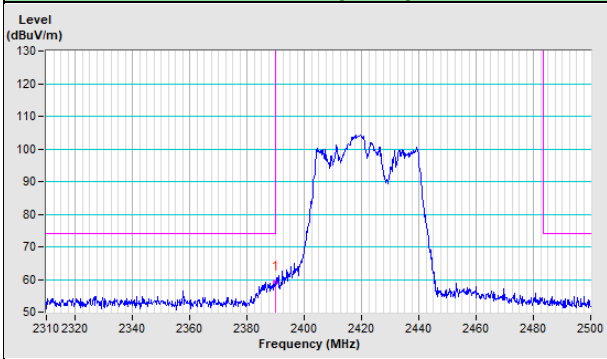


Vertical (Average)

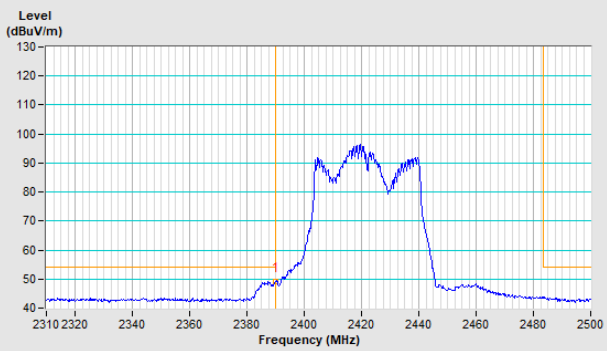


802.11n (HT40) Channel 3

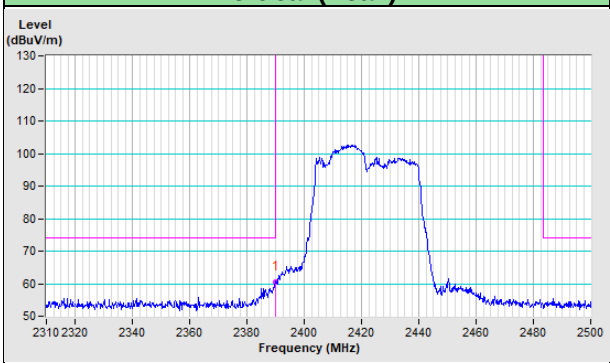
Horizontal (Peak)



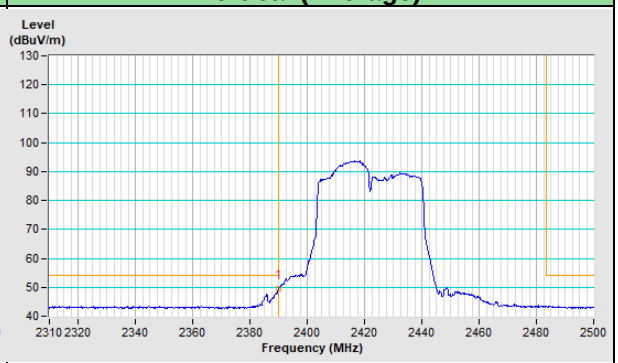
Horizontal (Average)



Vertical (Peak)

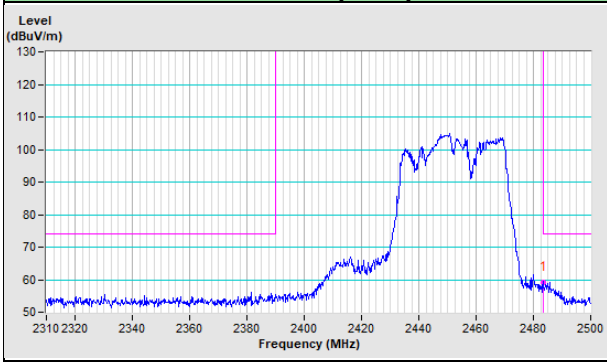


Vertical (Average)

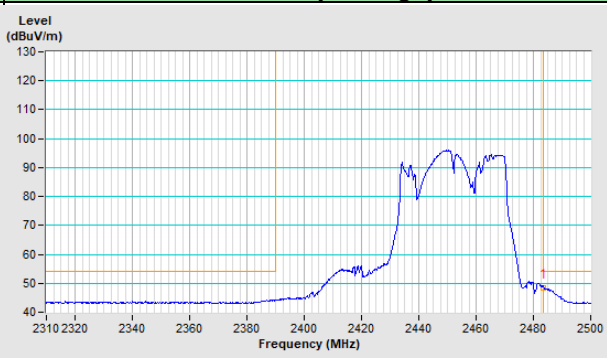


802.11n (HT40) Channel 9

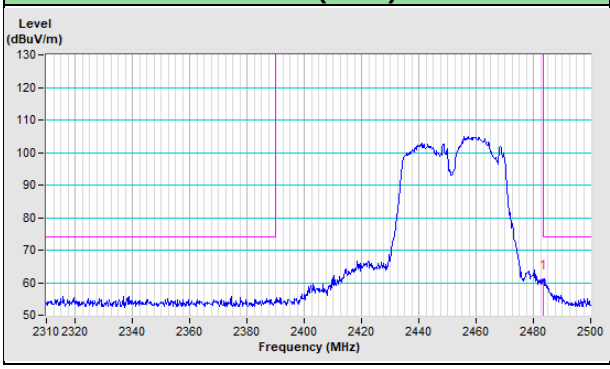
Horizontal (Peak)



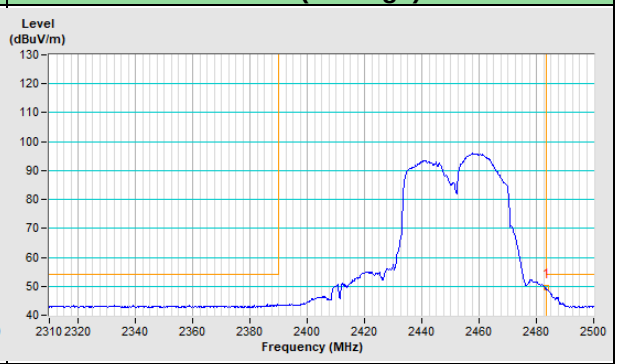
Horizontal (Average)



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.

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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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