

FCC Test Report

Report No.: RFBEIH-WTW-P20120144

FCC ID: P27XHB1

Test Model: XHB1

Series Model: XHB1xxxxxxxx ; SCHB1AExxxxxxxx

(the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, a to z, "blank" or "-", for marketing purpose)

Received Date: Dec. 04, 2020

Test Date: Dec. 25, 2020 to Jan. 04, 2021

Issued Date: Jan. 18, 2021

Applicant: Sercomm Corp.

Address: 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.

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 Lab (A): Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
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**FCC Registration /
Designation Number:** 723255 / TW2022

Test Lab (B): Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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R.O.C.

**FCC Registration /
Designation Number:** 198487 / TW2021



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Release Control Record

Issue No.	Description	Date Issued
RFBEIH-WTW-P20120144	Original release.	Jan. 18, 2021

1 Certificate of Conformity

Product: Comcast Xfinity Home Doorbell Camera

Brand: Sercomm, Comcast, Xfinity

Test Model: XHB1

Series Model: XHB1xxxxxxx ; SCHB1AExxxxxxx

(the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, a to z, "blank" or "-", for marketing purpose)

Sample Status: Engineering sample


Applicant: Sercomm Corp.

Test Date: Dec. 25, 2020 to Jan. 04, 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. This report contains AC Line Conducted Emissions test data that was produced under subcontract by Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories.

Prepared by :  _____, **Date:** Jan. 18, 2021
Joyce Kuo / Specialist

Approved by :  _____, **Date:** Jan. 18, 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 -16.97dB at 12.67188MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 2390.00MHz, 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

Note:

- For 2.4GHz band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
- 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) (\pm)
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	Comcast Xfinity Home Doorbell Camera
Brand	Sercomm, Comcast, Xfinity
Test Model	XHB1
Series Model	XHB1xxxxxxx ; SCHB1AExxxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, a to z, "blank" or "-", for marketing purpose)
Status of EUT	Engineering sample
Power Supply Rating	AC 16~24 V, 50/60Hz
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 in 2.4GHz
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 150 Mbps 802.11ac: up to 433.3 Mbps
Operating Frequency	2.4GHz: 2.412 ~ 2.462 GHz 5GHz: 5.18 ~ 5.32 GHz, 5.50 ~ 5.58 GHz & 5.66 ~ 5.70 GHz, 5.745 ~ 5.825 GHz
Number of Channel	2.4GHz: 802.11b, 802.11g, 802.11n (HT20), VHT20: 11 802.11n (HT40), VHT40: 7 5GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 21 802.11n (HT40), 802.11ac (VHT40): 9 802.11ac (VHT80): 4
Output Power	2.412 ~ 2.462 GHz: 928.966 mW 5.18 ~ 5.24GHz: 58.884 mW 5.26 ~ 5.32GHz: 48.753 mW 5.50 ~ 5.58 GHz & 5.66 ~ 5.70 GHz: 191.867 mW 5.745 ~ 5.825GHz: 459.198 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Battery x1
Data Cable Supplied	NA

Note:

1. The EUT has below model names, which are identical to each other in all aspects except for the following table:

Brand	Model No.	Description
Sercomm	XHB1	For marketing purposes.
Sercomm	XHB1xxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, a to z, "blank" or "-", for marketing purpose)	
Comcast, Xfinity	SCHB1AExxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, a to z, "blank" or "-", for marketing purpose)	

From the above models, model: **XHB1** was selected as representative model for the test and its data was recorded in this report.

2. WLAN & Bluetooth technology cannot transmit at same time.

3. The EUT has below radios as following table:

Radio 1	Radio 2
WLAN 2.4GHz + WLAN 5GHz	Bluetooth

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

Main source			
Frequency Range (GHz)	Antenna Peak Gain (dBi)	Antenna Type	Antenna Connector
2.4~2.5	3.03	PIFA	NA
5.15~5.25	5.24		
5.25~5.35	6.09		
5.47~5.725	6.56		
5.725~5.85	6.27		
2 nd source			
Frequency Range (GHz)	Antenna Peak Gain (dBi)	Antenna Type	Antenna Connector
2.4~2.5	3	PIFA	NA
5.15~5.25	5.2		
5.25~5.35	6.0		
5.47~5.725	6.3		
5.725~5.85	6.0		

Note: The maximum gain was chosen for test.

5. The EUT must be supplied with a battery as following table:

Brand	Model No.	Spec.
Energy Master Limited	FT602025P	DC Output: 3.7V, 240mAh

6. The EUT was pre-tested under the following test modes :

Pre-test Mode	Description
Mode A	Adapter Mode
Mode B	Battery Mode

The worst radiated emissions were found in Mode A for below 1GHz. Therefore only the test data of the modes were recorded in this report.

7. The EUT incorporates a SISO function:

2.4GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11b	1TX	1RX
802.11g	1TX	1RX
802.11n (HT20)	1TX	1RX
802.11n (HT40)	1TX	1RX
VHT20	1TX	1RX
VHT40	1TX	1RX
5GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11a	1TX	1RX
802.11n (HT20)	1TX	1RX
802.11n (HT40)	1TX	1RX
802.11ac (VHT20)	1TX	1RX
802.11ac (VHT40)	1TX	1RX
802.11ac (VHT80)	1TX	1RX

Note:

- Note: The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and VHT mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer to section 3.2.1)
8. 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.
9. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

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

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

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
-	√	√	√	√	-

Where **RE \geq 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
VHT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1GHz):

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

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

Power Line Conducted Emission Test:

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

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

Antenna Port Conducted Measurement:

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

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
VHT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	Input Power (System)	TESTED BY
RE \geq 1G	24deg. C, 68%RH	120Vac, 60Hz	Ryan Du
RE $<$ 1G	25deg. C, 68%RH	120Vac, 60Hz	Tom Yang
PLC	25deg. C, 64%RH	120Vac, 60Hz	Dalen Dai
APCM	25deg. C, 60%RH	120Vac, 60Hz	Jyunchun Lin

3.3 Duty Cycle of Test Signal

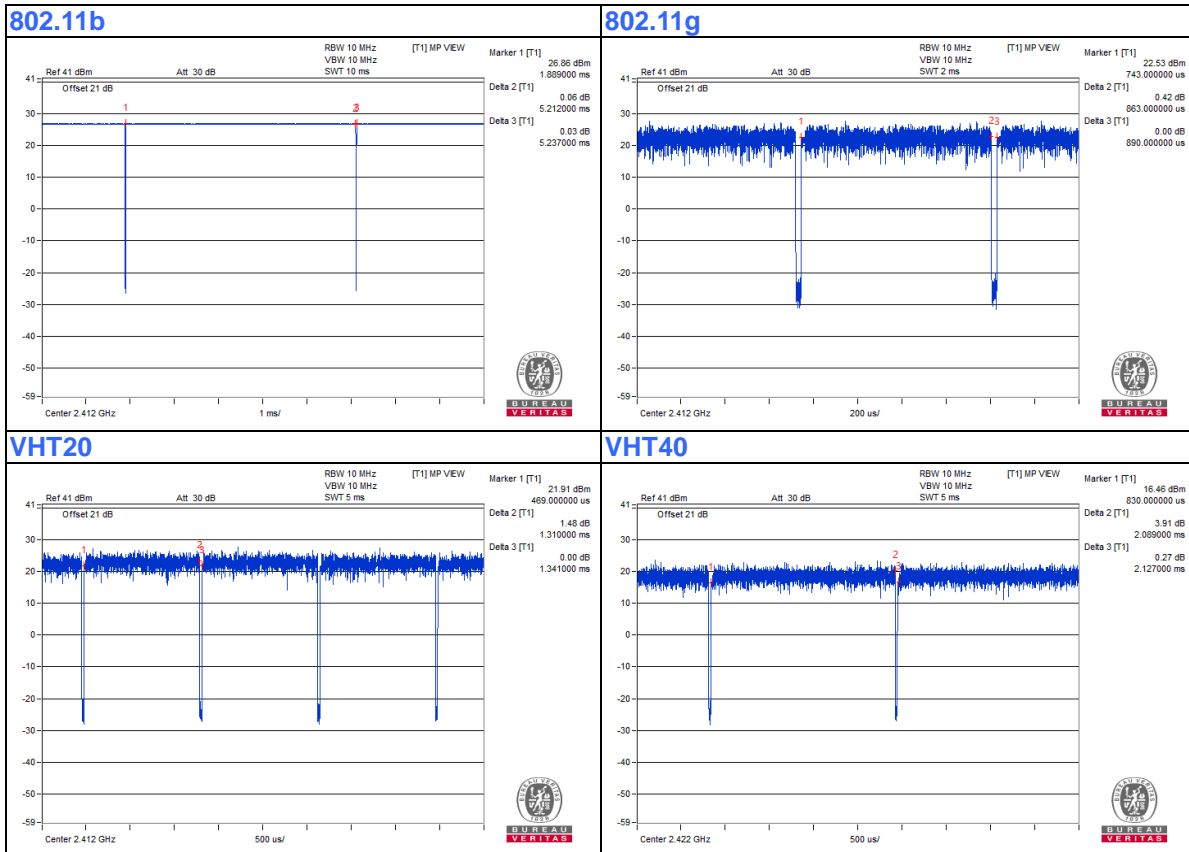
Duty cycle of test signal is $\geq 98\%$, duty factor is not required.
 Duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11b: Duty cycle = $5.212 \text{ ms} / 5.237 \text{ ms} = 0.995$

802.11g: Duty cycle = $0.863 \text{ ms} / 0.89 \text{ ms} = 0.97$, Duty factor = $10 * \log(1/\text{Duty cycle}) = 0.13 \text{ dB}$

VHT20: Duty cycle = $1.31 \text{ ms} / 1.341 \text{ ms} = 0.977$, Duty factor = $10 * \log(1/\text{Duty cycle}) = 0.10 \text{ dB}$

VHT40: Duty cycle = $2.089 \text{ ms} / 2.127 \text{ ms} = 0.982$



3.4 Description of Support Units

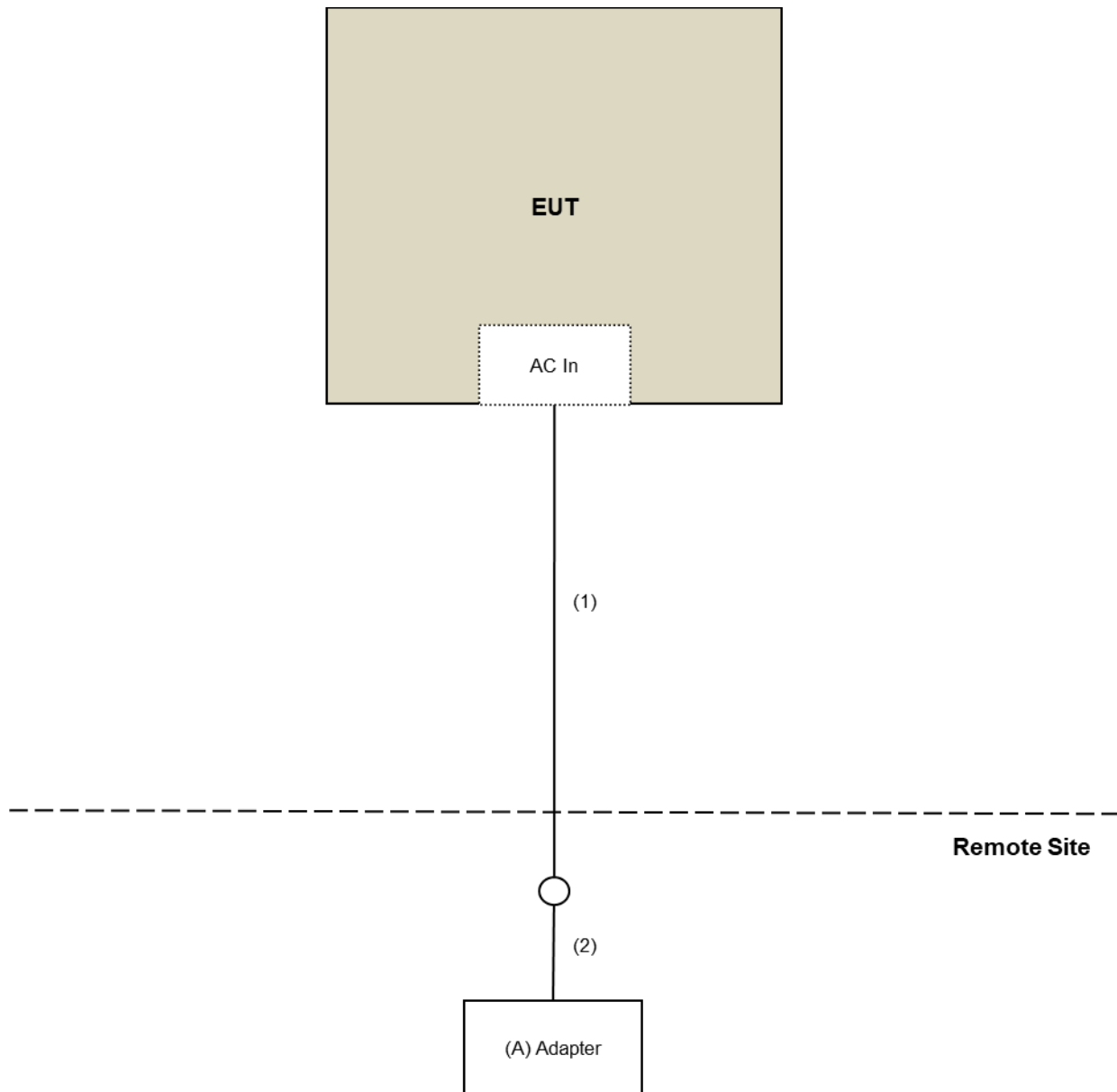
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No	FCC ID	Remarks
A.	Adapter	Xfinity	NBA12A240050HU	NA	NA	Supplied by client

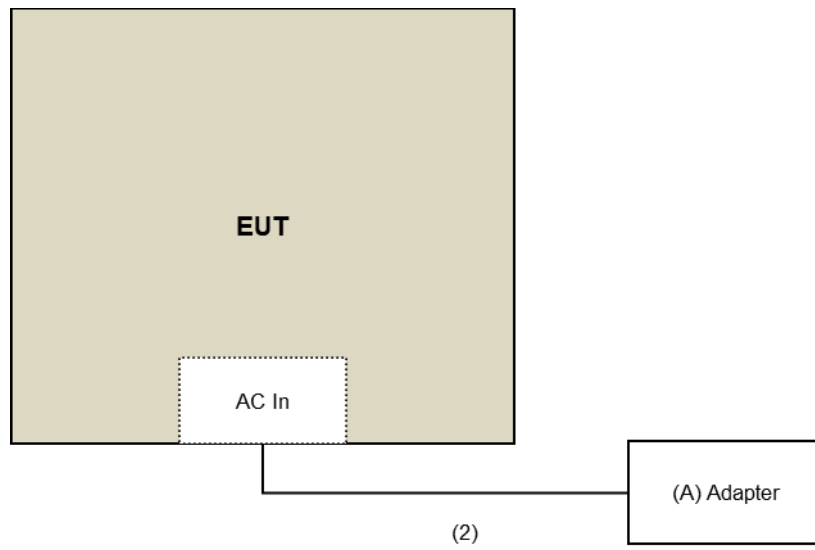
ID	Descriptions (Cables)	Qty	Length (m)	Shielding (Yes/No)	Cores (Number)	Remarks
1	AC Cable	1	10	No	0	Provided by Lab
2	AC Cable	1	2	No	0	Supplied by client

3.4.1 Configuration of System under Test

For Radiated Emissions test:



For Conducted Emissions 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

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 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	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-05	Apr. 28, 2020	Apr. 27, 2021
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 05, 2020	Nov. 04, 2021
RF Cable	8D	966-3-1	Mar. 17, 2020	Mar. 16, 2021
RF Cable	8D	966-3-2	Mar. 17, 2020	Mar. 16, 2021
RF Cable	8D	966-3-3	Mar. 17, 2020	Mar. 16, 2021
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. 15, 2020	Jan. 14, 2021
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. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 22, 2020	Nov. 21, 2021
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC-KM-KM-4000	200214	Mar. 11, 2020	Mar. 10, 2021
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: Dec. 25 to 30, 2020

For other test

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: Dec. 30, 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:

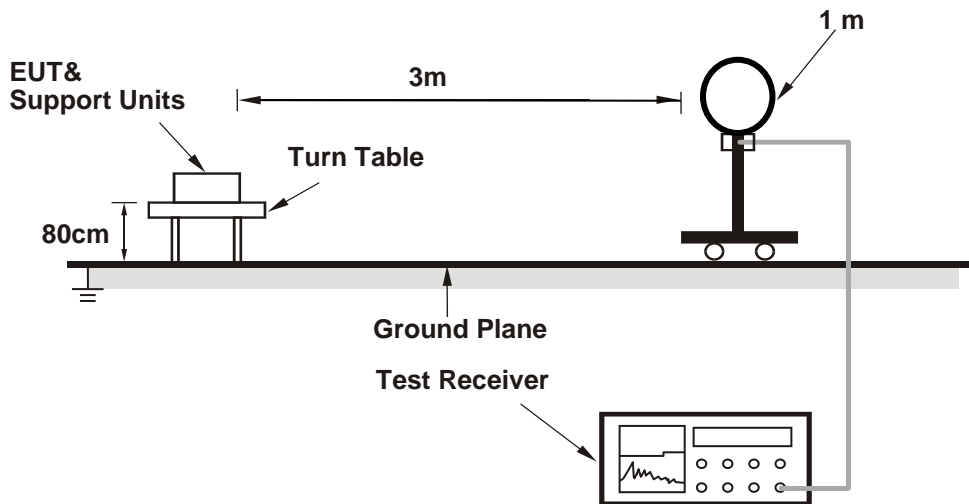
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) 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

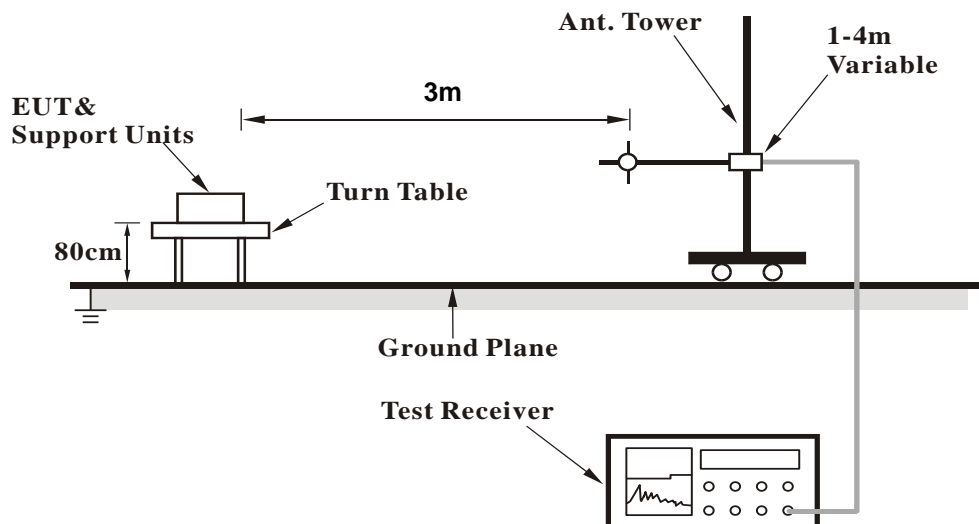
No deviation.

4.1.5 Test Setup

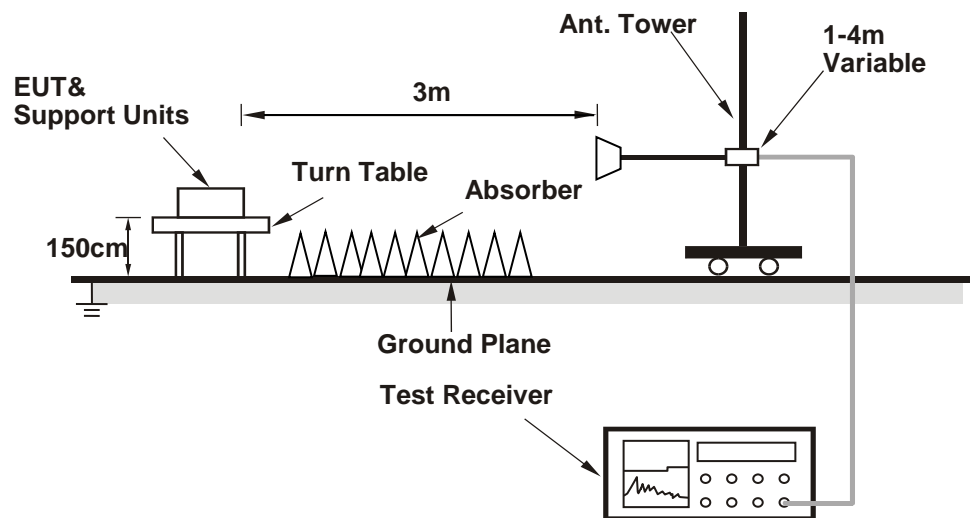
For Radiated emission below 30MHz



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 (HyperTerminal paste XHB1 WiFi 2.4G.txt command) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

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	2378.00	61.1 PK	74.0	-12.9	1.00 H	174	62.5	-1.4
2	2378.00	45.2 AV	54.0	-8.8	1.00 H	174	46.6	-1.4
3	2389.33	58.7 PK	74.0	-15.3	1.00 H	174	60.1	-1.4
4	2389.33	51.7 AV	54.0	-2.3	1.00 H	174	53.1	-1.4
5	*2412.00	110.1 PK			1.00 H	174	111.5	-1.4
6	*2412.00	107.8 AV			1.00 H	174	109.2	-1.4
7	4824.00	49.2 PK	74.0	-24.8	1.24 H	226	45.7	3.5
8	4824.00	44.2 AV	54.0	-9.8	1.24 H	226	40.7	3.5
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	2389.30	56.0 PK	74.0	-18.0	1.26 V	181	57.4	-1.4
2	2389.30	47.5 AV	54.0	-6.5	1.26 V	181	48.9	-1.4
3	*2412.00	106.4 PK			1.26 V	181	107.8	-1.4
4	*2412.00	103.9 AV			1.26 V	181	105.3	-1.4
5	4824.00	45.8 PK	74.0	-28.2	1.54 V	206	42.3	3.5
6	4824.00	42.3 AV	54.0	-11.7	1.54 V	206	38.8	3.5

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.

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	57.3 PK	74.0	-16.7	1.02 H	159	58.7	-1.4
2	2390.00	45.6 AV	54.0	-8.4	1.02 H	159	47.0	-1.4
3	*2437.00	110.3 PK			1.02 H	159	111.8	-1.5
4	*2437.00	108.2 AV			1.02 H	159	109.7	-1.5
5	2483.50	56.7 PK	74.0	-17.3	1.02 H	159	58.1	-1.4
6	2483.50	45.3 AV	54.0	-8.7	1.02 H	159	46.7	-1.4
7	4874.00	49.2 PK	74.0	-24.8	1.21 H	238	45.5	3.7
8	4874.00	44.0 AV	54.0	-10.0	1.21 H	238	40.3	3.7
9	7311.00	45.7 PK	74.0	-28.3	1.50 H	190	35.9	9.8
10	7311.00	38.0 AV	54.0	-16.0	1.50 H	190	28.2	9.8

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	53.4 PK	74.0	-20.6	1.22 V	189	54.8	-1.4
2	2390.00	42.3 AV	54.0	-11.7	1.22 V	189	43.7	-1.4
3	*2437.00	107.3 PK			1.22 V	189	108.8	-1.5
4	*2437.00	104.9 AV			1.22 V	189	106.4	-1.5
5	2483.50	53.6 PK	74.0	-20.4	1.22 V	189	55.0	-1.4
6	2483.50	41.6 AV	54.0	-12.4	1.22 V	189	43.0	-1.4
7	4874.00	45.4 PK	74.0	-28.6	1.52 V	192	41.7	3.7
8	4874.00	42.1 AV	54.0	-11.9	1.52 V	192	38.4	3.7
9	7311.00	43.5 PK	74.0	-30.5	1.68 V	134	33.7	9.8
10	7311.00	34.1 AV	54.0	-19.9	1.68 V	134	24.3	9.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	110.6 PK			1.05 H	174	112.0	-1.4
2	*2462.00	108.2 AV			1.05 H	174	109.6	-1.4
3	2486.90	64.4 PK	74.0	-9.6	1.05 H	174	65.8	-1.4
4	2486.90	51.0 AV	54.0	-3.0	1.05 H	174	52.4	-1.4
5	4924.00	49.6 PK	74.0	-24.4	1.27 H	254	45.9	3.7
6	4924.00	44.2 AV	54.0	-9.8	1.27 H	254	40.5	3.7
7	7386.00	46.2 PK	74.0	-27.8	1.54 H	197	36.4	9.8
8	7386.00	38.4 AV	54.0	-15.6	1.54 H	197	28.6	9.8

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	106.8 PK			1.26 V	182	108.2	-1.4
2	*2462.00	104.5 AV			1.26 V	182	105.9	-1.4
3	2485.80	58.7 PK	74.0	-15.3	1.26 V	182	60.1	-1.4
4	2485.80	44.7 AV	54.0	-9.3	1.26 V	182	46.1	-1.4
5	2486.90	54.7 PK	74.0	-19.3	1.26 V	182	56.1	-1.4
6	2486.90	46.1 AV	54.0	-7.9	1.26 V	182	47.5	-1.4
7	4924.00	46.1 PK	74.0	-27.9	1.57 V	207	42.4	3.7
8	4924.00	42.5 AV	54.0	-11.5	1.57 V	207	38.8	3.7
9	7386.00	42.9 PK	74.0	-31.1	1.62 V	139	33.1	9.8
10	7386.00	33.7 AV	54.0	-20.3	1.62 V	139	23.9	9.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	72.9 PK	74.0	-1.1	1.03 H	173	74.3	-1.4
2	2390.00	52.7 AV	54.0	-1.3	1.03 H	173	54.1	-1.4
3	*2412.00	108.6 PK			1.03 H	173	110.0	-1.4
4	*2412.00	98.2 AV			1.03 H	173	99.6	-1.4
5	4824.00	42.1 PK	74.0	-31.9	1.23 H	236	38.6	3.5
6	4824.00	36.4 AV	54.0	-17.6	1.23 H	236	32.9	3.5
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	64.0 PK	74.0	-10.0	1.24 V	180	65.4	-1.4
2	2390.00	49.9 AV	54.0	-4.1	1.24 V	180	51.3	-1.4
3	*2412.00	105.5 PK			1.24 V	180	106.9	-1.4
4	*2412.00	95.3 AV			1.24 V	180	96.7	-1.4
5	4824.00	40.6 PK	74.0	-33.4	1.46 V	212	37.1	3.5
6	4824.00	36.2 AV	54.0	-17.8	1.46 V	212	32.7	3.5

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.

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	67.4 PK	74.0	-6.6	1.03 H	175	68.8	-1.4
2	2390.00	51.0 AV	54.0	-3.0	1.03 H	175	52.4	-1.4
3	*2437.00	114.9 PK			1.03 H	175	116.4	-1.5
4	*2437.00	104.0 AV			1.03 H	175	105.5	-1.5
5	2483.50	67.2 PK	74.0	-6.8	1.03 H	175	68.6	-1.4
6	2483.50	49.9 AV	54.0	-4.1	1.03 H	175	51.3	-1.4
7	4874.00	42.7 PK	74.0	-31.3	1.23 H	248	39.0	3.7
8	4874.00	37.3 AV	54.0	-16.7	1.23 H	248	33.6	3.7
9	7311.00	43.5 PK	74.0	-30.5	1.52 H	178	33.7	9.8
10	7311.00	33.8 AV	54.0	-20.2	1.52 H	178	24.0	9.8

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	61.2 PK	74.0	-12.8	1.31 V	180	62.6	-1.4
2	2390.00	48.3 AV	54.0	-5.7	1.31 V	180	49.7	-1.4
3	*2437.00	110.3 PK			1.31 V	180	111.8	-1.5
4	*2437.00	100.1 AV			1.31 V	180	101.6	-1.5
5	2483.50	60.3 PK	74.0	-13.7	1.31 V	180	61.7	-1.4
6	2483.50	45.2 AV	54.0	-8.8	1.31 V	180	46.6	-1.4
7	4874.00	41.1 PK	74.0	-32.9	1.47 V	197	37.4	3.7
8	4874.00	36.7 AV	54.0	-17.3	1.47 V	197	33.0	3.7
9	7311.00	43.1 PK	74.0	-30.9	1.66 V	134	33.3	9.8
10	7311.00	34.1 AV	54.0	-19.9	1.66 V	134	24.3	9.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	107.7 PK			1.00 H	174	109.1	-1.4
2	*2462.00	97.7 AV			1.00 H	174	99.1	-1.4
3	2483.50	70.8 PK	74.0	-3.2	1.00 H	174	72.2	-1.4
4	2483.50	52.7 AV	54.0	-1.3	1.00 H	174	54.1	-1.4
5	4924.00	42.3 PK	74.0	-31.7	1.24 H	245	38.6	3.7
6	4924.00	36.4 AV	54.0	-17.6	1.24 H	245	32.7	3.7
7	7386.00	43.7 PK	74.0	-30.3	1.52 H	179	33.9	9.8
8	7386.00	33.9 AV	54.0	-20.1	1.52 H	179	24.1	9.8
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	103.9 PK			1.24 V	194	105.3	-1.4
2	*2462.00	93.6 AV			1.24 V	194	95.0	-1.4
3	2483.50	64.5 PK	74.0	-9.5	1.24 V	194	65.9	-1.4
4	2483.50	47.4 AV	54.0	-6.6	1.24 V	194	48.8	-1.4
5	4924.00	40.9 PK	74.0	-33.1	1.50 V	201	37.2	3.7
6	4924.00	35.5 AV	54.0	-18.5	1.50 V	201	31.8	3.7
7	7386.00	42.5 PK	74.0	-31.5	1.66 V	122	32.7	9.8
8	7386.00	33.7 AV	54.0	-20.3	1.66 V	122	23.9	9.8

Remarks:

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

RF Mode	TX VHT20	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	68.4 PK	74.0	-5.6	1.05 H	174	69.8	-1.4
2	2390.00	52.9 AV	54.0	-1.1	1.05 H	174	54.3	-1.4
3	*2412.00	109.1 PK			1.05 H	174	110.5	-1.4
4	*2412.00	97.6 AV			1.05 H	174	99.0	-1.4
5	4824.00	43.0 PK	74.0	-31.0	1.18 H	243	39.5	3.5
6	4824.00	36.9 AV	54.0	-17.1	1.18 H	243	33.4	3.5

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	68.2 PK	74.0	-5.8	1.26 V	182	69.6	-1.4
2	2390.00	50.2 AV	54.0	-3.8	1.26 V	182	51.6	-1.4
3	*2412.00	105.7 PK			1.26 V	182	107.1	-1.4
4	*2412.00	94.9 AV			1.26 V	182	96.3	-1.4
5	4824.00	40.5 PK	74.0	-33.5	1.49 V	193	37.0	3.5
6	4824.00	35.4 AV	54.0	-18.6	1.49 V	193	31.9	3.5

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.

RF Mode	TX VHT20	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	71.6 PK	74.0	-2.4	1.05 H	174	73.0	-1.4
2	2390.00	52.7 AV	54.0	-1.3	1.05 H	174	54.1	-1.4
3	*2437.00	114.6 PK			1.05 H	174	116.1	-1.5
4	*2437.00	103.9 AV			1.05 H	174	105.4	-1.5
5	2483.50	72.9 PK	74.0	-1.1	1.05 H	174	74.3	-1.4
6	2483.50	51.7 AV	54.0	-2.3	1.05 H	174	53.1	-1.4
7	4874.00	42.2 PK	74.0	-31.8	1.18 H	238	38.5	3.7
8	4874.00	36.9 AV	54.0	-17.1	1.18 H	238	33.2	3.7
9	7311.00	43.4 PK	74.0	-30.6	1.57 H	185	33.6	9.8
10	7311.00	33.7 AV	54.0	-20.3	1.57 H	185	23.9	9.8

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	67.5 PK	74.0	-6.5	1.27 V	189	68.9	-1.4
2	2390.00	50.5 AV	54.0	-3.5	1.27 V	189	51.9	-1.4
3	*2437.00	110.1 PK			1.27 V	189	111.6	-1.5
4	*2437.00	99.8 AV			1.27 V	189	101.3	-1.5
5	2483.50	65.3 PK	74.0	-8.7	1.27 V	189	66.7	-1.4
6	2483.50	48.6 AV	54.0	-5.4	1.27 V	189	50.0	-1.4
7	4874.00	41.5 PK	74.0	-32.5	1.46 V	199	37.8	3.7
8	4874.00	37.1 AV	54.0	-16.9	1.46 V	199	33.4	3.7
9	7311.00	43.1 PK	74.0	-30.9	1.69 V	146	33.3	9.8
10	7311.00	34.2 AV	54.0	-19.8	1.69 V	146	24.4	9.8

Remarks:

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

RF Mode	TX VHT20	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	107.8 PK			1.06 H	174	109.2	-1.4
2	*2462.00	97.3 AV			1.06 H	174	98.7	-1.4
3	2483.50	68.7 PK	74.0	-5.3	1.06 H	174	70.1	-1.4
4	2483.50	52.8 AV	54.0	-1.2	1.06 H	174	54.2	-1.4
5	4924.00	42.9 PK	74.0	-31.1	1.19 H	245	39.2	3.7
6	4924.00	36.9 AV	54.0	-17.1	1.19 H	245	33.2	3.7
7	7386.00	43.7 PK	74.0	-30.3	1.51 H	184	33.9	9.8
8	7386.00	33.6 AV	54.0	-20.4	1.51 H	184	23.8	9.8
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	103.9 PK			1.26 V	203	105.3	-1.4
2	*2462.00	93.7 AV			1.26 V	203	95.1	-1.4
3	2483.50	64.6 PK	74.0	-9.4	1.26 V	203	66.0	-1.4
4	2483.50	48.7 AV	54.0	-5.3	1.26 V	203	50.1	-1.4
5	4924.00	40.8 PK	74.0	-33.2	1.51 V	200	37.1	3.7
6	4924.00	35.3 AV	54.0	-18.7	1.51 V	200	31.6	3.7
7	7386.00	43.0 PK	74.0	-31.0	1.61 V	113	33.2	9.8
8	7386.00	34.1 AV	54.0	-19.9	1.61 V	113	24.3	9.8

Remarks:

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

RF Mode	TX VHT40	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	67.5 PK	74.0	-6.5	1.51 H	174	68.9	-1.4
2	2390.00	52.9 AV	54.0	-1.1	1.51 H	174	54.3	-1.4
3	*2422.00	103.6 PK			1.51 H	174	105.0	-1.4
4	*2422.00	94.9 AV			1.51 H	174	96.3	-1.4
5	4844.00	42.9 PK	74.0	-31.1	1.19 H	242	39.3	3.6
6	4844.00	36.8 AV	54.0	-17.2	1.19 H	242	33.2	3.6
7	7266.00	43.8 PK	74.0	-30.2	1.47 H	177	34.1	9.7
8	7266.00	33.5 AV	54.0	-20.5	1.47 H	177	23.8	9.7

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	66.0 PK	74.0	-8.0	1.22 V	180	67.4	-1.4
2	2390.00	50.1 AV	54.0	-3.9	1.22 V	180	51.5	-1.4
3	*2422.00	101.1 PK			1.22 V	180	102.5	-1.4
4	*2422.00	90.9 AV			1.22 V	180	92.3	-1.4
5	4844.00	40.9 PK	74.0	-33.1	1.51 V	186	37.3	3.6
6	4844.00	35.5 AV	54.0	-18.5	1.51 V	186	31.9	3.6
7	7266.00	43.0 PK	74.0	-31.0	1.65 V	99	33.3	9.7
8	7266.00	34.2 AV	54.0	-19.8	1.65 V	99	24.5	9.7

Remarks:

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

RF Mode	TX VHT40	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	69.1 PK	74.0	-4.9	1.00 H	175	70.5	-1.4
2	2390.00	52.3 AV	54.0	-1.7	1.00 H	175	53.7	-1.4
3	*2437.00	106.1 PK			1.00 H	175	107.6	-1.5
4	*2437.00	96.7 AV			1.00 H	175	98.2	-1.5
5	2483.50	69.9 PK	74.0	-4.1	1.00 H	175	71.3	-1.4
6	2483.50	52.7 AV	54.0	-1.3	1.00 H	175	54.1	-1.4
7	4874.00	43.3 PK	74.0	-30.7	1.18 H	236	39.6	3.7
8	4874.00	37.2 AV	54.0	-16.8	1.18 H	236	33.5	3.7
9	7311.00	43.6 PK	74.0	-30.4	1.44 H	171	33.8	9.8
10	7311.00	33.4 AV	54.0	-20.6	1.44 H	171	23.6	9.8
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	65.9 PK	74.0	-8.1	1.25 V	170	67.3	-1.4
2	2390.00	49.7 AV	54.0	-4.3	1.25 V	170	51.1	-1.4
3	*2437.00	102.9 PK			1.25 V	170	104.4	-1.5
4	*2437.00	93.5 AV			1.25 V	170	95.0	-1.5
5	2483.50	66.1 PK	74.0	-7.9	1.25 V	170	67.5	-1.4
6	2483.50	49.8 AV	54.0	-4.2	1.25 V	170	51.2	-1.4
7	4874.00	40.8 PK	74.0	-33.2	1.54 V	203	37.1	3.7
8	4874.00	35.2 AV	54.0	-18.8	1.54 V	203	31.5	3.7
9	7311.00	42.9 PK	74.0	-31.1	1.56 V	106	33.1	9.8
10	7311.00	34.3 AV	54.0	-19.7	1.56 V	106	24.5	9.8

Remarks:

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

RF Mode	TX VHT40	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	103.4 PK			1.29 H	175	104.8	-1.4
2	*2452.00	94.5 AV			1.29 H	175	95.9	-1.4
3	2483.50	67.9 PK	74.0	-6.1	1.29 H	175	69.3	-1.4
4	2483.50	52.6 AV	54.0	-1.4	1.29 H	175	54.0	-1.4
5	4904.00	42.8 PK	74.0	-31.2	1.24 H	235	39.1	3.7
6	4904.00	36.7 AV	54.0	-17.3	1.24 H	235	33.0	3.7
7	7356.00	44.6 PK	74.0	-29.4	1.55 H	170	34.7	9.9
8	7356.00	34.0 AV	54.0	-20.0	1.55 H	170	24.1	9.9
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	99.7 PK			1.30 V	204	101.1	-1.4
2	*2452.00	89.7 AV			1.30 V	204	91.1	-1.4
3	2483.50	62.6 PK	74.0	-11.4	1.30 V	204	64.0	-1.4
4	2483.50	48.1 AV	54.0	-5.9	1.30 V	204	49.5	-1.4
5	4904.00	41.2 PK	74.0	-32.8	1.54 V	196	37.5	3.7
6	4904.00	35.6 AV	54.0	-18.4	1.54 V	196	31.9	3.7
7	7356.00	42.5 PK	74.0	-31.5	1.69 V	109	32.6	9.9
8	7356.00	34.0 AV	54.0	-20.0	1.69 V	109	24.1	9.9

Remarks:

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

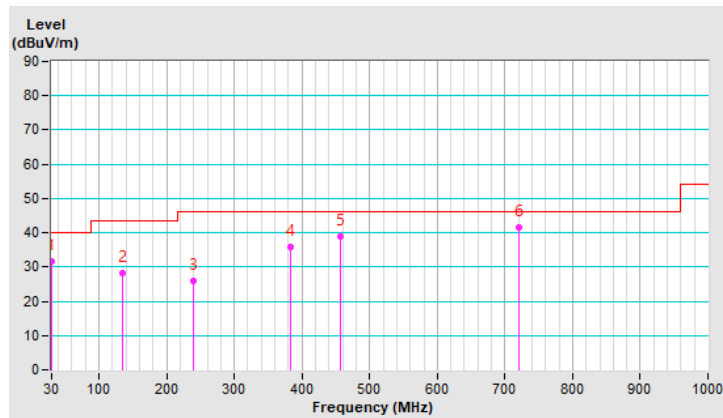
Below 1GHz Data:

RF Mode	TX 802.11g	Channel	CH 6 : 2437 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	30.10	31.7 QP	40.0	-8.3	3.00 H	82	40.5	-8.8
2	134.37	28.2 QP	43.5	-15.3	1.50 H	296	36.0	-7.8
3	240.03	25.8 QP	46.0	-20.2	1.00 H	83	34.0	-8.2
4	384.03	35.9 QP	46.0	-10.1	2.00 H	204	39.4	-3.5
5	456.00	39.0 QP	46.0	-7.0	2.00 H	258	40.3	-1.3
6	720.01	41.5 QP	46.0	-4.5	1.00 H	243	37.3	4.2

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.

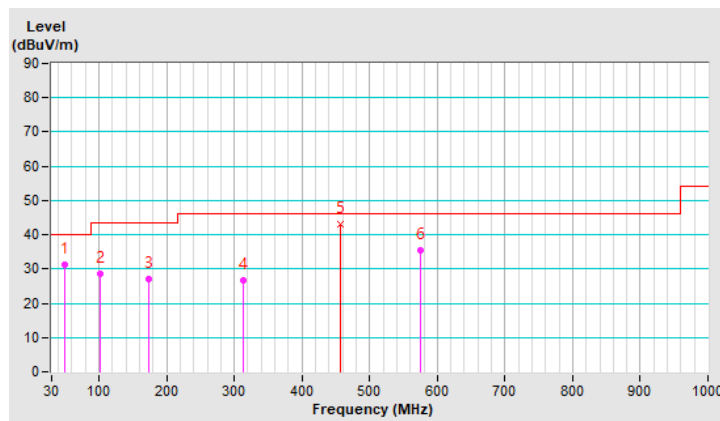


RF Mode	TX 802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	49.38	31.4 QP	40.0	-8.6	1.50 V	309	38.9	-7.5
2	102.27	28.5 QP	43.5	-15.0	1.00 V	69	39.7	-11.2
3	172.64	27.1 QP	43.5	-16.4	1.50 V	360	34.9	-7.8
4	313.05	26.5 QP	46.0	-19.5	3.00 V	56	31.8	-5.3
5	456.01	43.0 QP	46.0	-3.0	1.00 V	107	44.3	-1.3
6	575.99	35.6 QP	46.0	-10.4	1.00 V	338	34.2	1.4

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 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
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	100276	Apr. 16, 2020	Apr. 15, 2021
SCHWARZBECK Artificial Mains Network (for EUT)	NSLK 8128	8128-244	Nov. 19, 2020	Nov. 18, 2021
LISN With Adapter (for EUT)	AD10	C05Ada-001	Nov. 19, 2020	Nov. 18, 2021
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 14, 2020	May 13, 2021
R&S Artificial Mains Network (for peripherals)	ESH3-Z5	100220	Dec. 1, 2020	Nov. 30, 2021
Software	Cond_V7.3.7.4	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C05.01	Jan. 30, 2020	Jan. 29, 2021

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 5
- 3 Tested Date: Jan. 04, 2021

4.2.3 Test Procedures

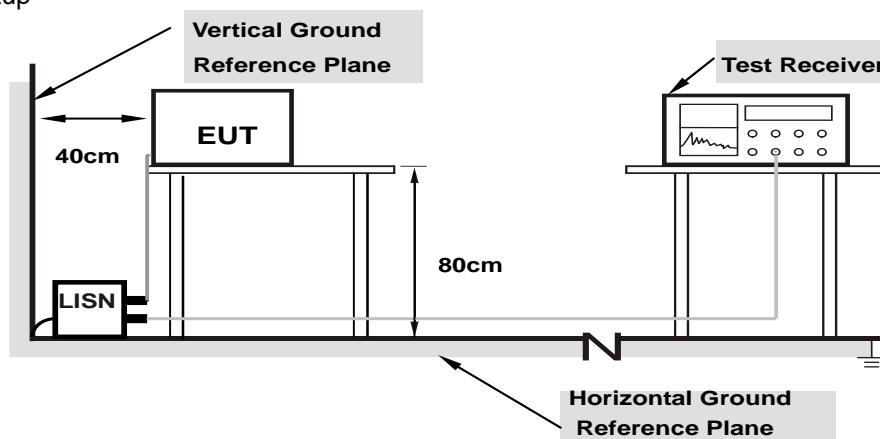
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- 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.

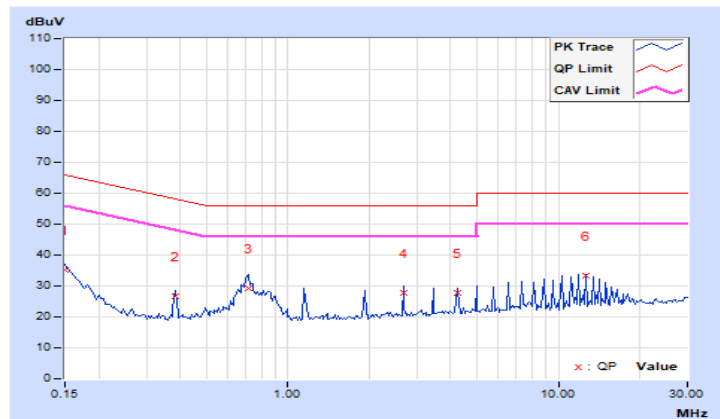
4.2.7 Test Results (Subcontract Item)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.15000	9.93	25.39	15.77	35.32	25.70	66.00	56.00	-30.68
2	0.38438	9.95	16.84	16.58	26.79	26.53	58.18	48.18	-31.39	-21.65
3	0.71250	9.98	19.25	13.07	29.23	23.05	56.00	46.00	-26.77	-22.95
4	2.68750	10.14	17.67	17.40	27.81	27.54	56.00	46.00	-28.19	-18.46
5	4.22266	10.28	17.65	17.38	27.93	27.66	56.00	46.00	-28.07	-18.34
6	12.67188	10.87	22.49	22.16	33.36	33.03	60.00	50.00	-26.64	-16.97

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

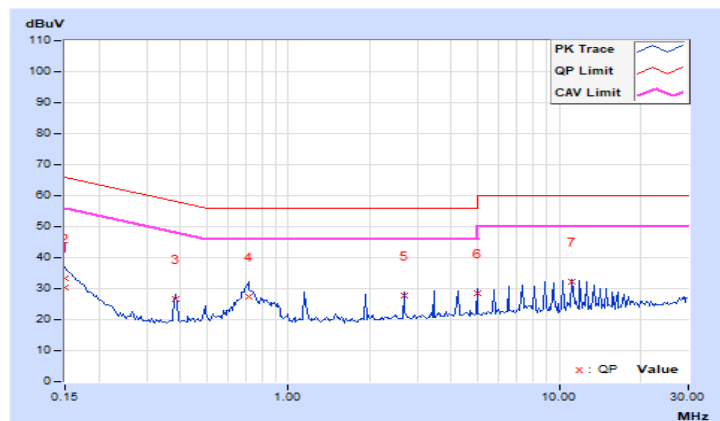


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.96	20.51	-6.30	30.47	3.66	66.00	56.00	-35.53	-52.34
2	0.15000	9.96	23.52	14.22	33.48	24.18	66.00	56.00	-32.52	-31.82
3	0.38438	10.00	16.53	16.22	26.53	26.22	58.18	48.18	-31.65	-21.96
4	0.71250	10.02	17.41	11.17	27.43	21.19	56.00	46.00	-28.57	-24.81
5	2.68750	10.17	17.49	17.11	27.66	27.28	56.00	46.00	-28.34	-18.72
6	4.99219	10.33	18.19	17.74	28.52	28.07	56.00	46.00	-27.48	-17.93
7	11.13672	10.74	21.30	21.07	32.04	31.81	60.00	50.00	-27.96	-18.19

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

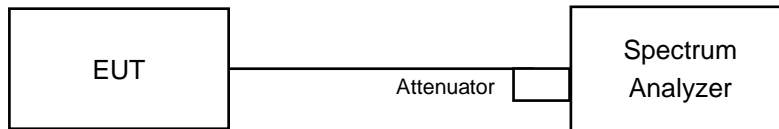


4.3 6dB Bandwidth Measurement

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) $\geq 3 \times$ 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
1	2412	10.09	0.5	PASS
6	2437	10.11	0.5	PASS
11	2462	10.11	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.4	0.5	PASS
6	2437	16.39	0.5	PASS
11	2462	16.42	0.5	PASS

VHT20

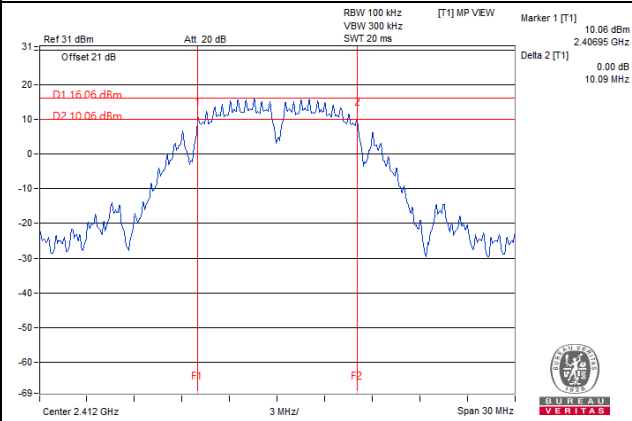
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	17.64	0.5	PASS
6	2437	17.63	0.5	PASS
11	2462	17.63	0.5	PASS

VHT40

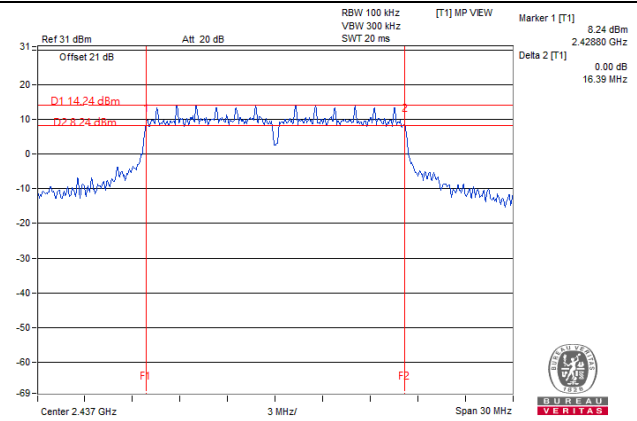
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	36.5	0.5	PASS
6	2437	36.44	0.5	PASS
9	2452	36.48	0.5	PASS

Spectrum Plot of Worst Value

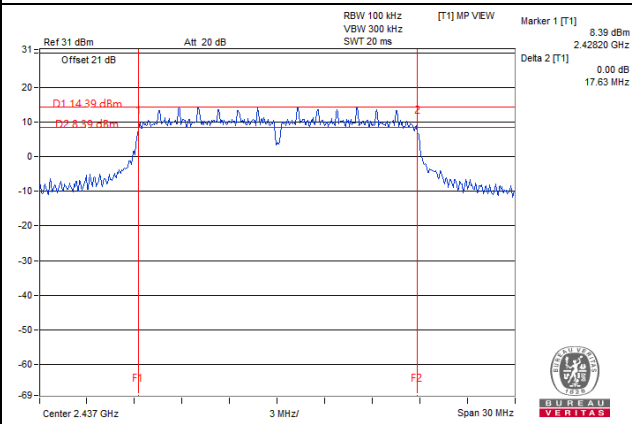
802.11b : CH1



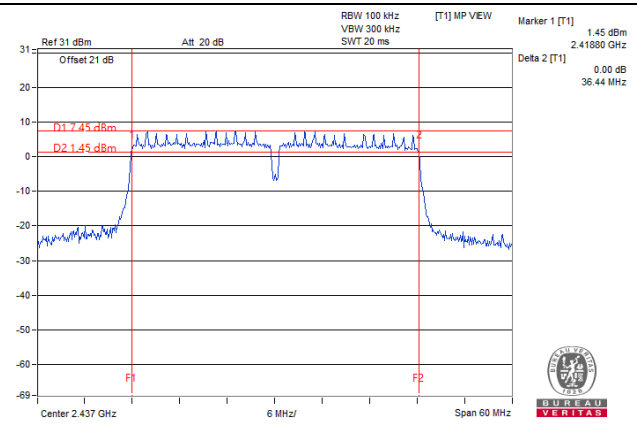
802.11g : CH6



VHT20 : CH6



VHT40 : CH6

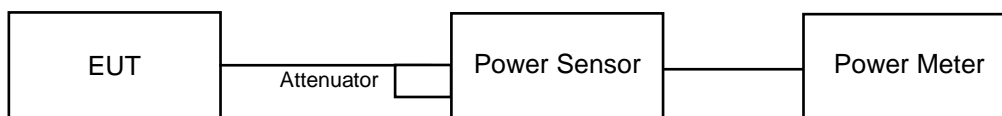


4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

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

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	690.24	28.39	30	Pass
6	2437	751.623	28.76	30	Pass
11	2462	724.436	28.60	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	839.46	29.24	30	Pass
6	2437	920.45	29.64	30	Pass
11	2462	729.458	28.63	30	Pass

VHT20

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	724.436	28.60	30	Pass
6	2437	928.966	29.68	30	Pass
11	2462	610.942	27.86	30	Pass

VHT40

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
3	2422	543.25	27.35	30	Pass
6	2437	756.833	28.79	30	Pass
9	2452	509.331	27.07	30	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	382.825	25.83
6	2437	454.988	26.58
11	2462	428.549	26.32

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	153.462	21.86
6	2437	533.335	27.27
11	2462	116.145	20.65

VHT20

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	122.462	20.88
6	2437	529.663	27.24
11	2462	105.439	20.23

VHT40

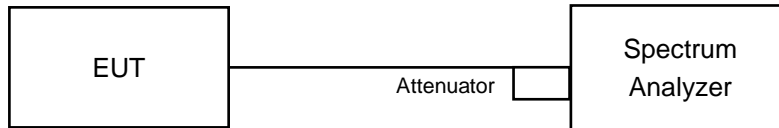
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	94.624	19.76
6	2437	153.462	21.86
9	2452	81.846	19.13

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: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d. Set the VBW $\geq 3 \times \text{RBW}$.
- 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

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	1.69	8	Pass
6	2437	3.58	8	Pass
11	2462	3.86	8	Pass

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-4.18	8	Pass
6	2437	-0.66	8	Pass
11	2462	-4.67	8	Pass

VHT20

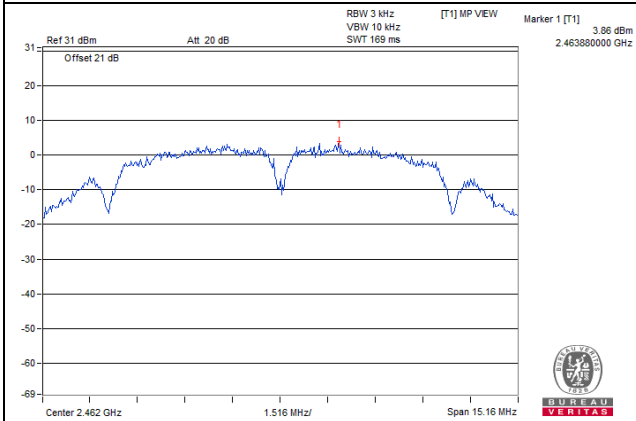
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-4.94	8	Pass
6	2437	-0.17	8	Pass
11	2462	-4.70	8	Pass

VHT40

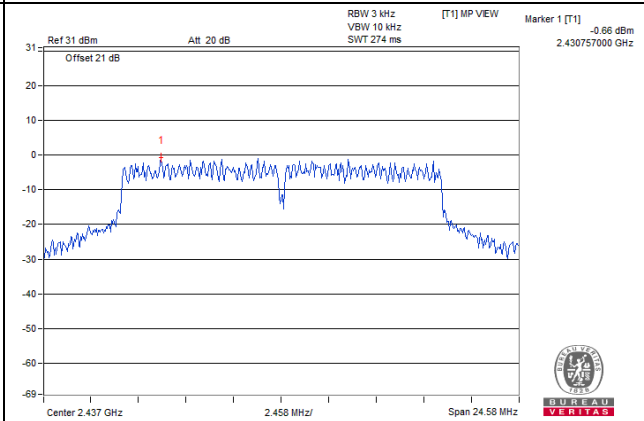
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
3	2422	-8.77	8	Pass
6	2437	-6.85	8	Pass
9	2452	-9.26	8	Pass

Spectrum Plot of Worst Value

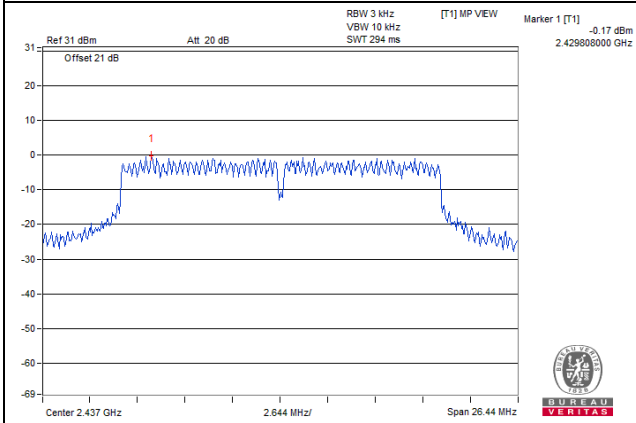
802.11b : CH11



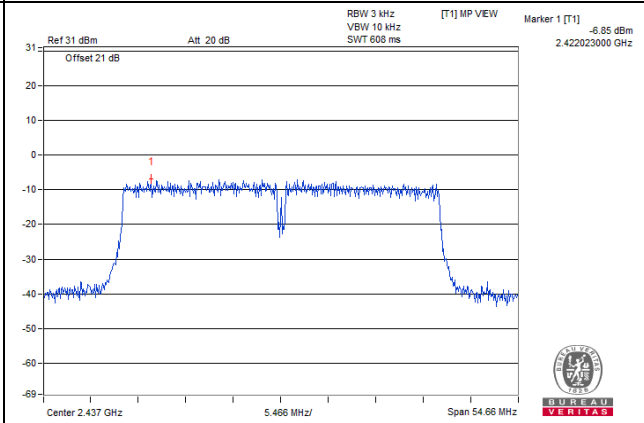
802.11g : CH6



VHT20 : CH6



VHT40 : CH6

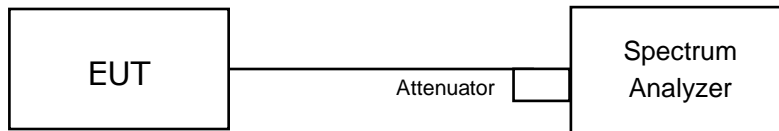


4.6 Conducted Out of Band Emission Measurement

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 \geq 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 \geq 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

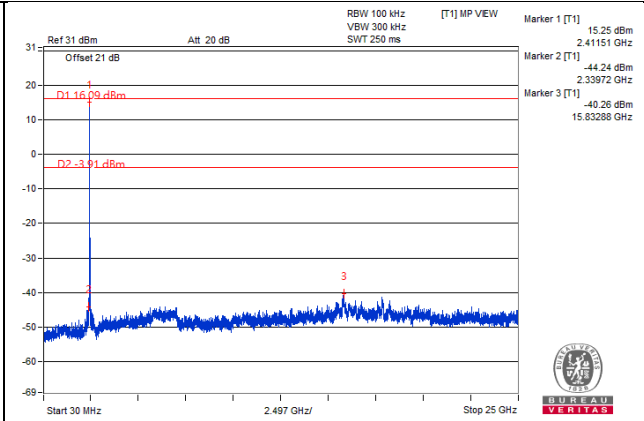
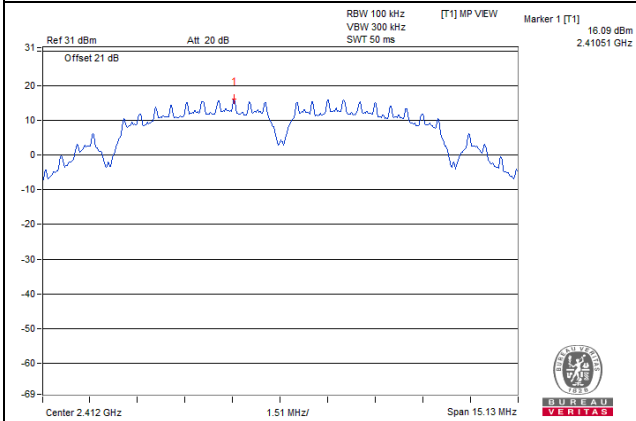
Same as Item 4.3.6

4.6.7 Test Results

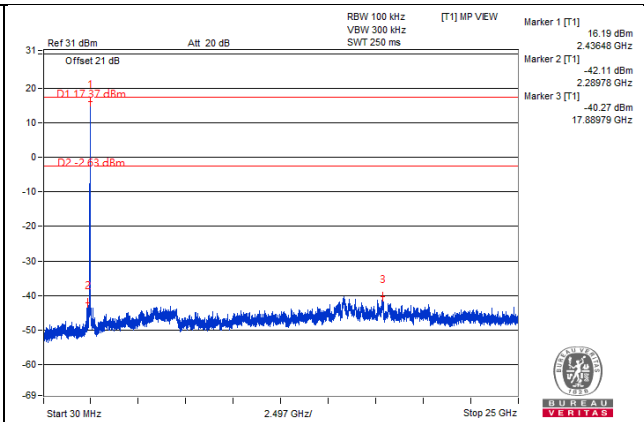
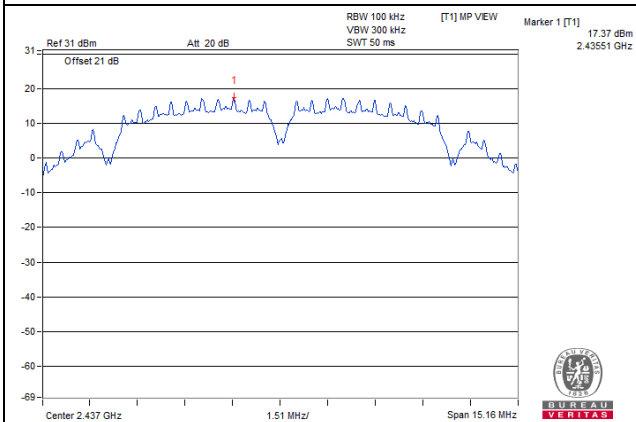
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

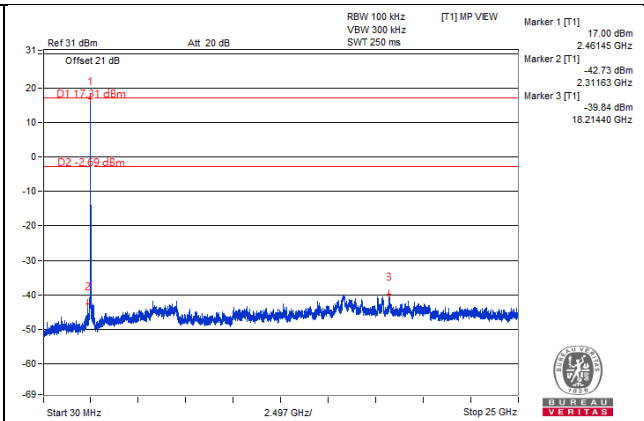
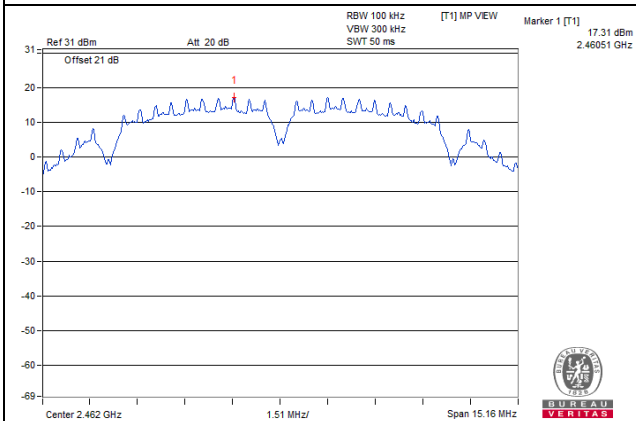
CH 1



CH 6

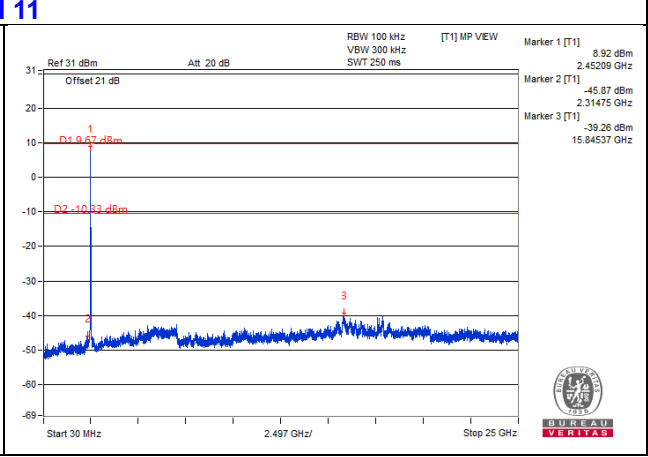
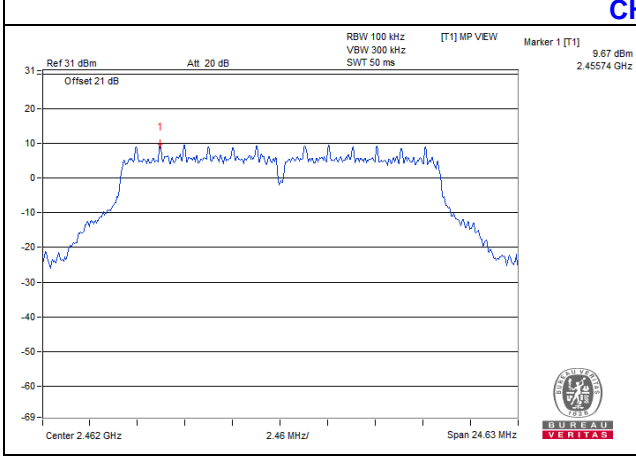
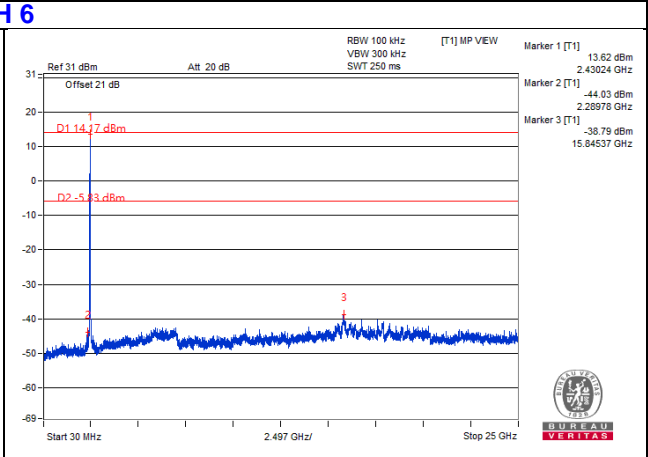
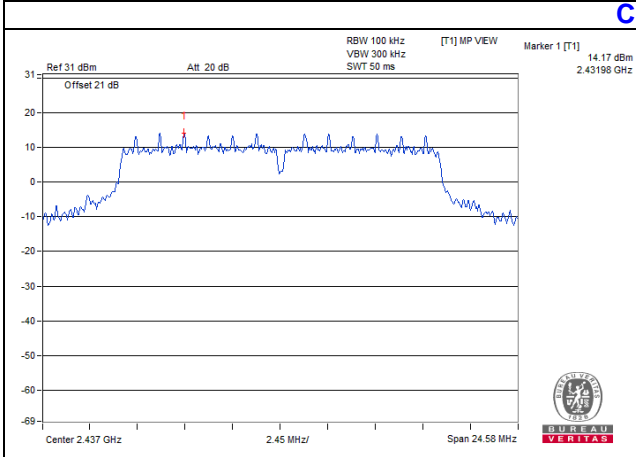
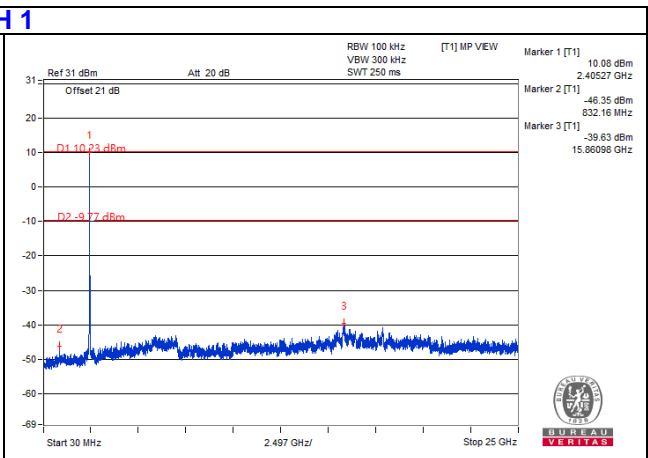
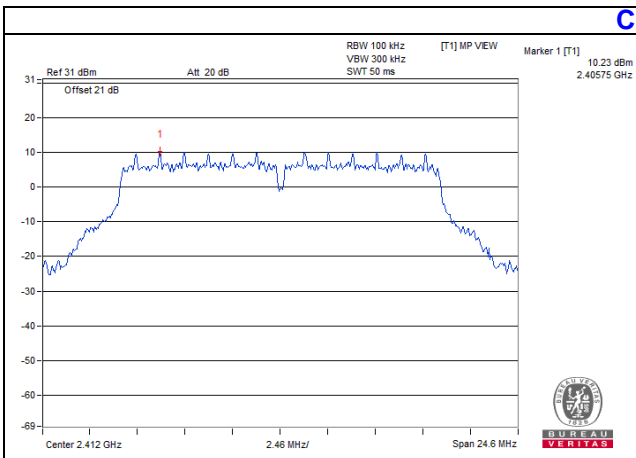
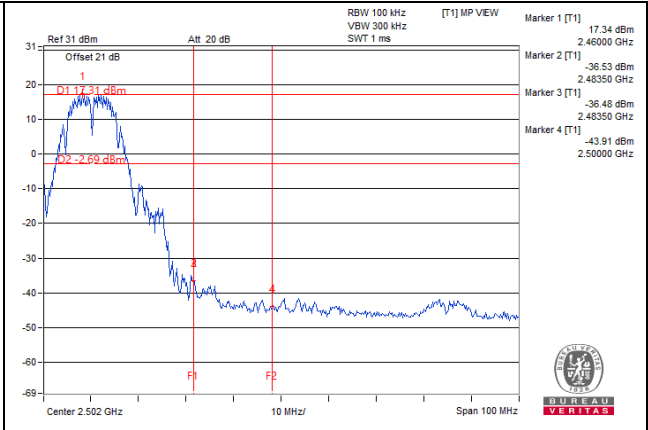
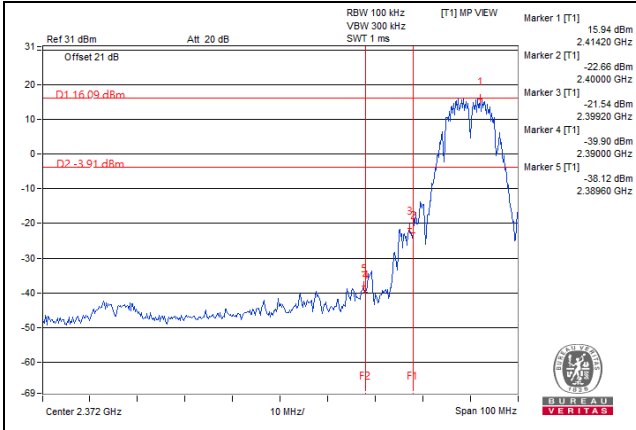


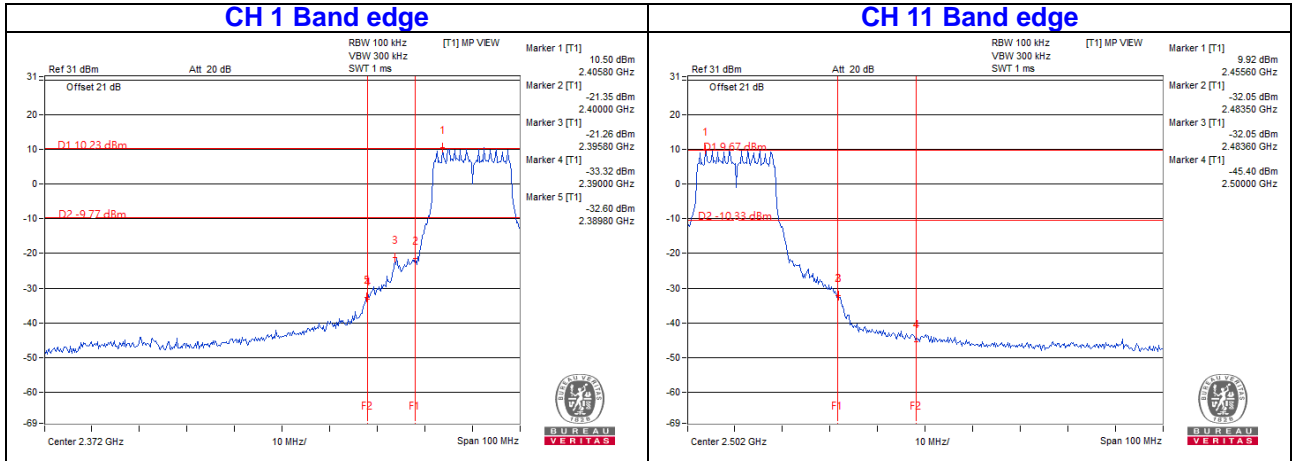
CH 11



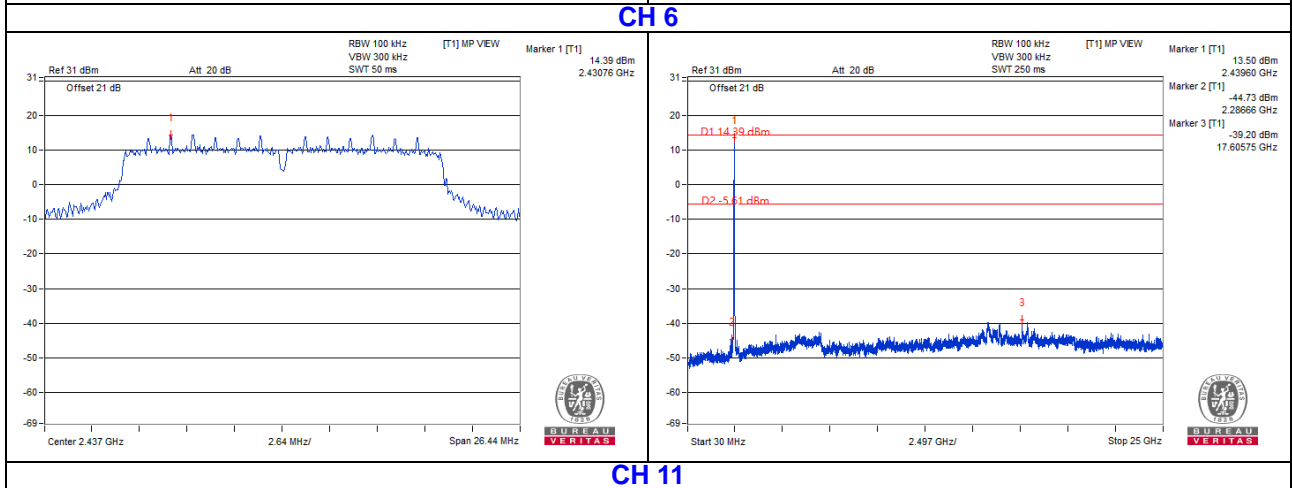
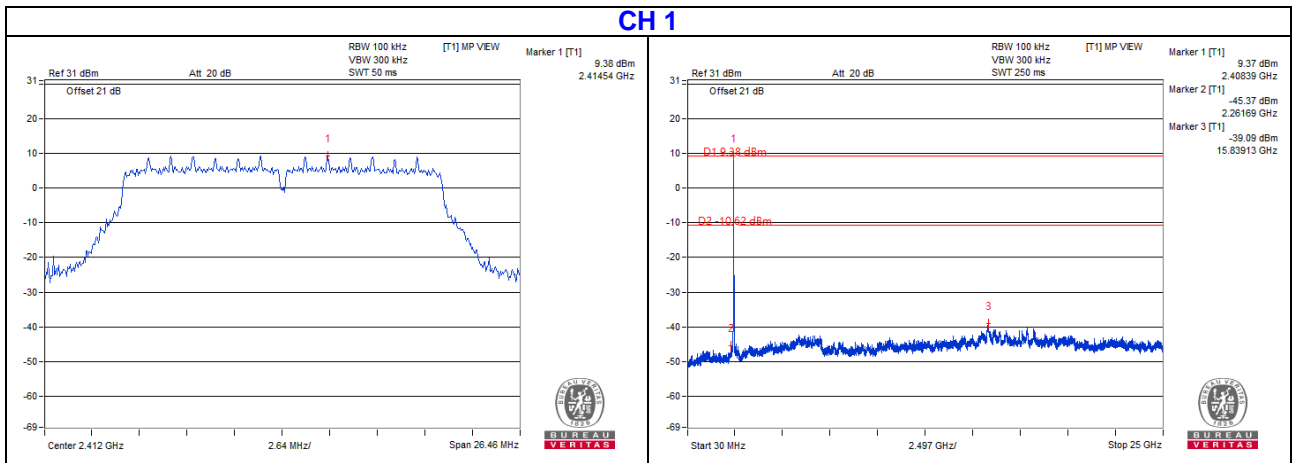
CH 1 Band edge

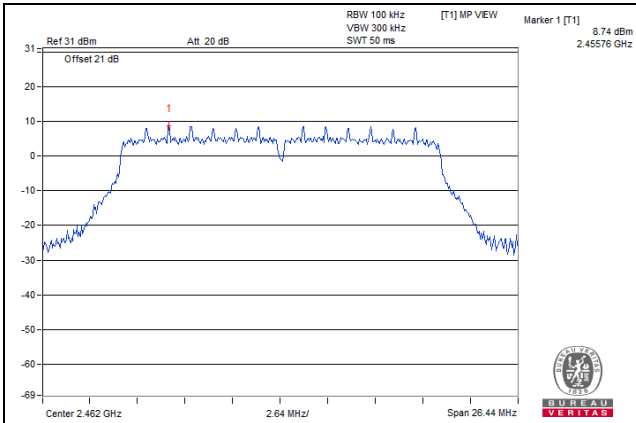
CH 11 Band edge



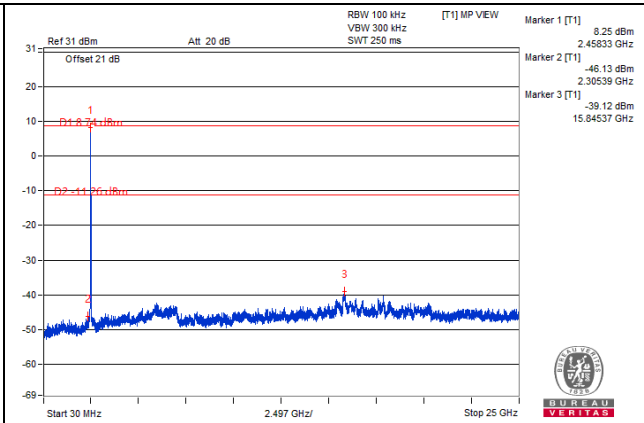


VHT20

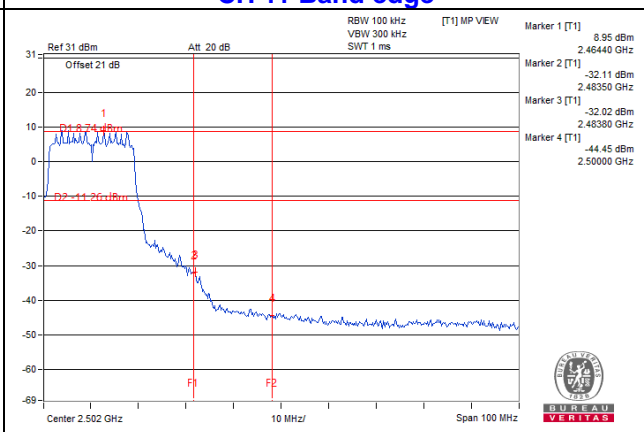
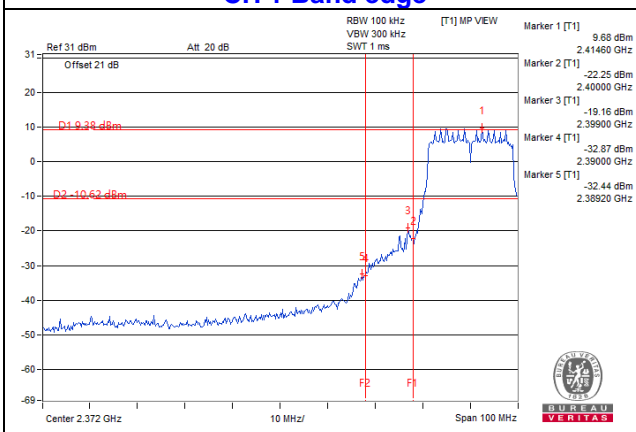




CH 1 Band edge

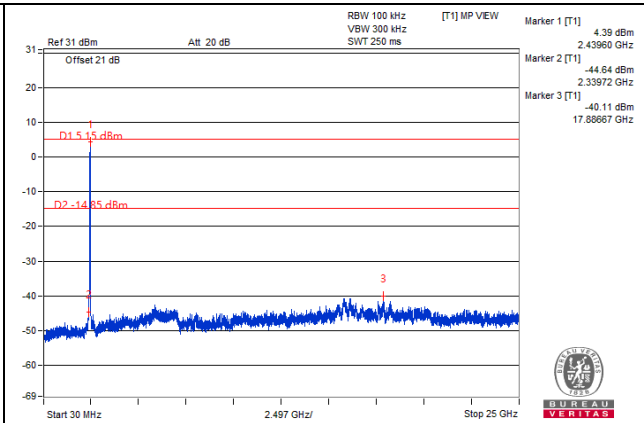
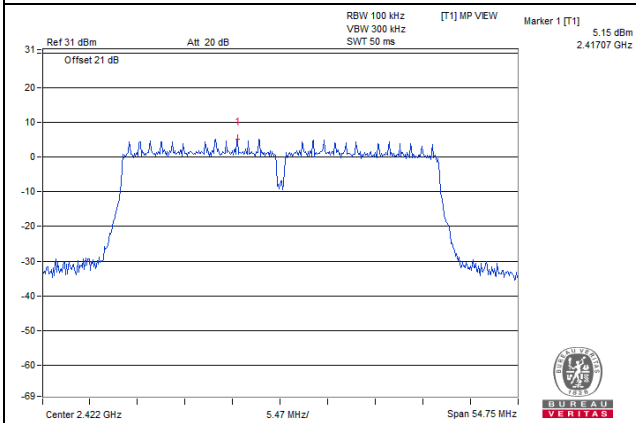


CH 11 Band edge

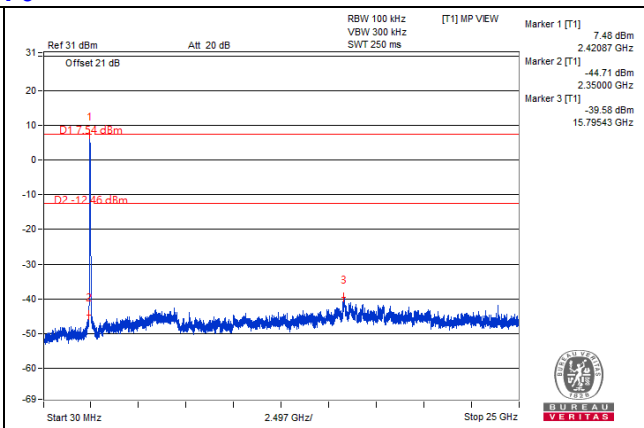
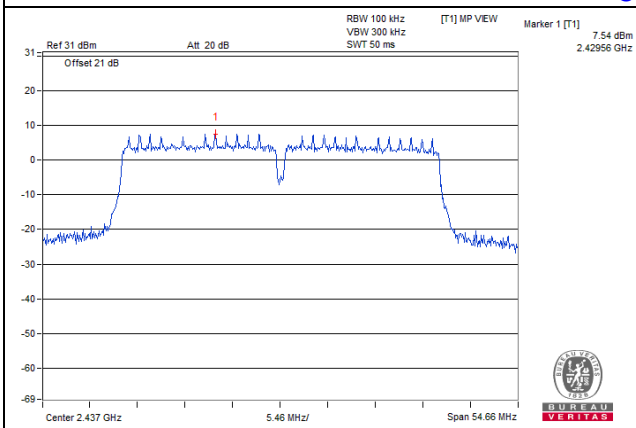


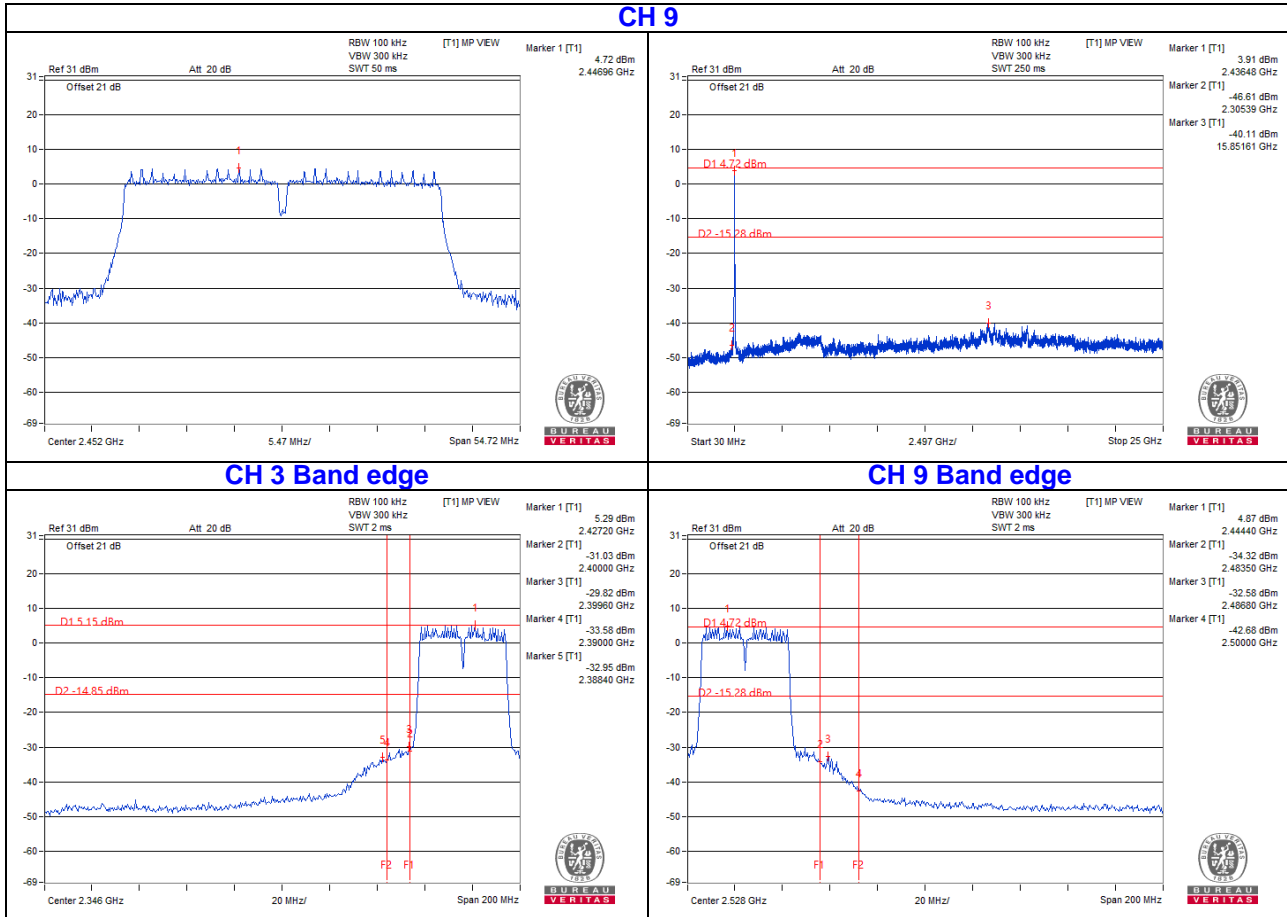
VHT40

CH 3



CH 6

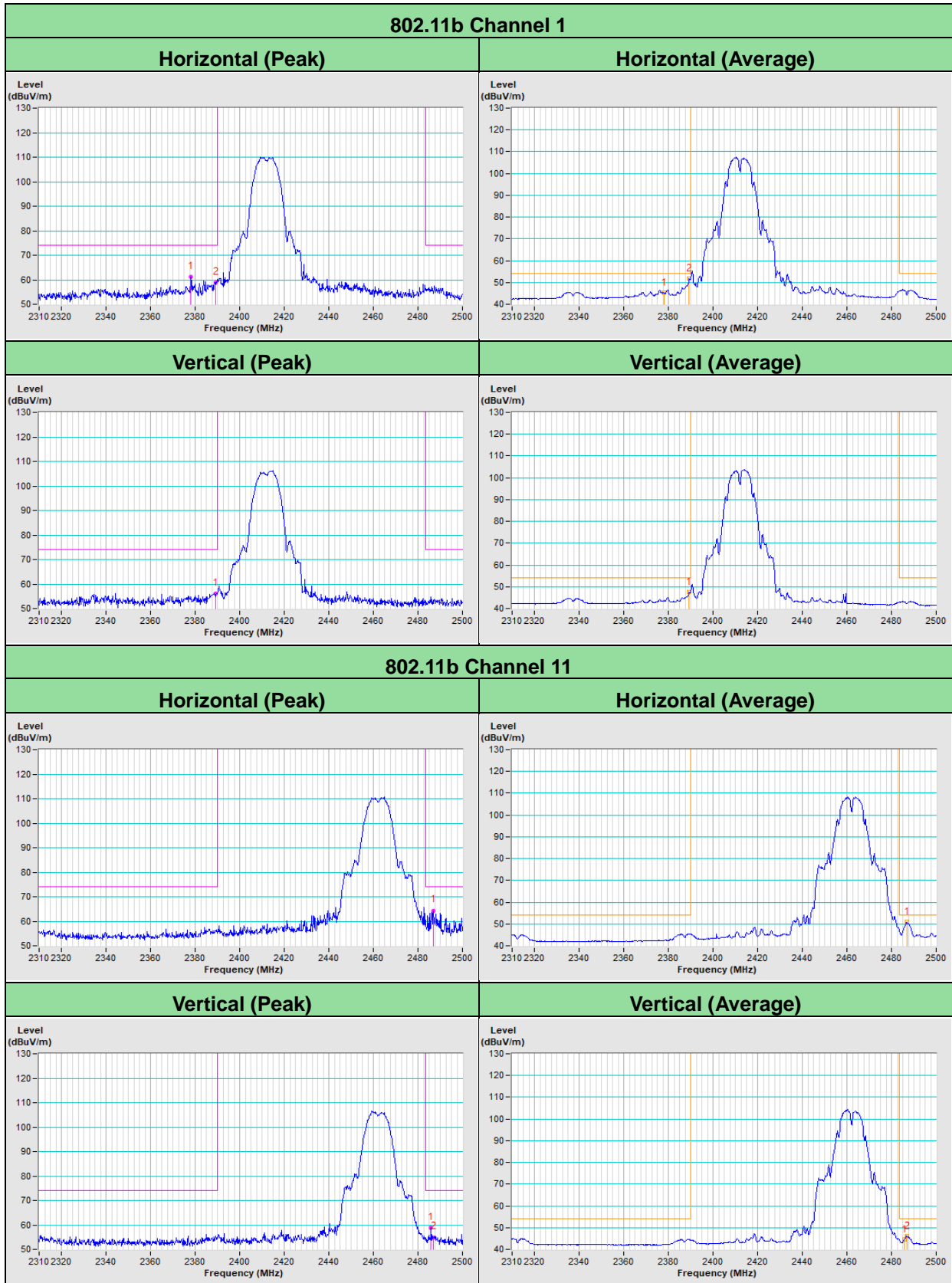




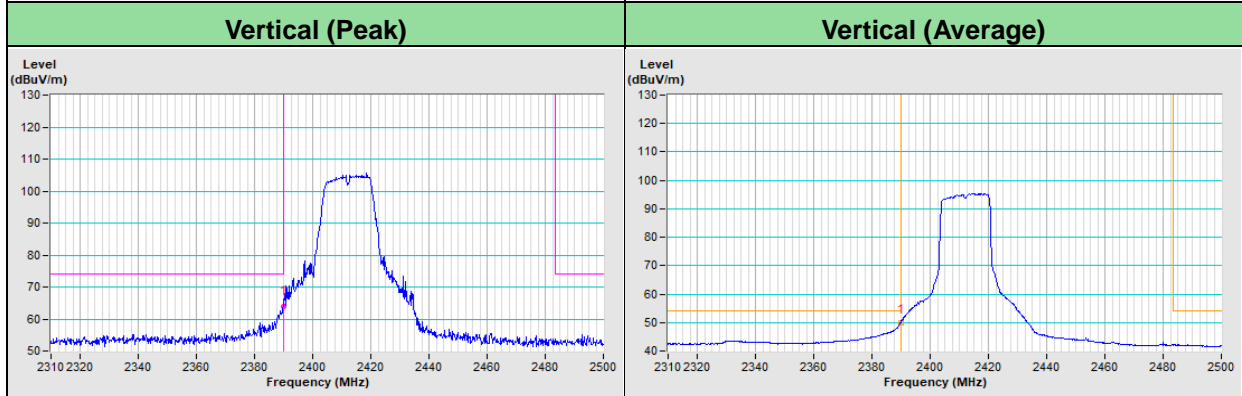
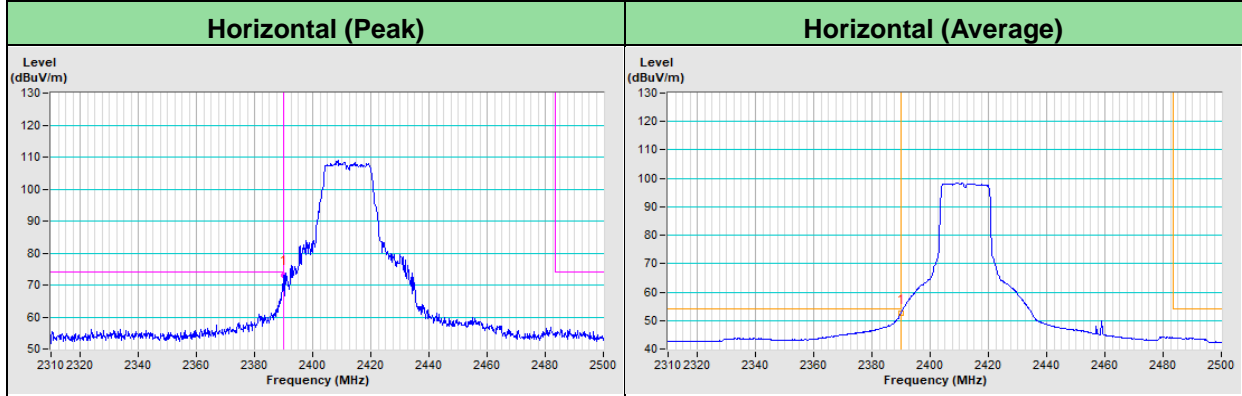
5 Pictures of Test Arrangements

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

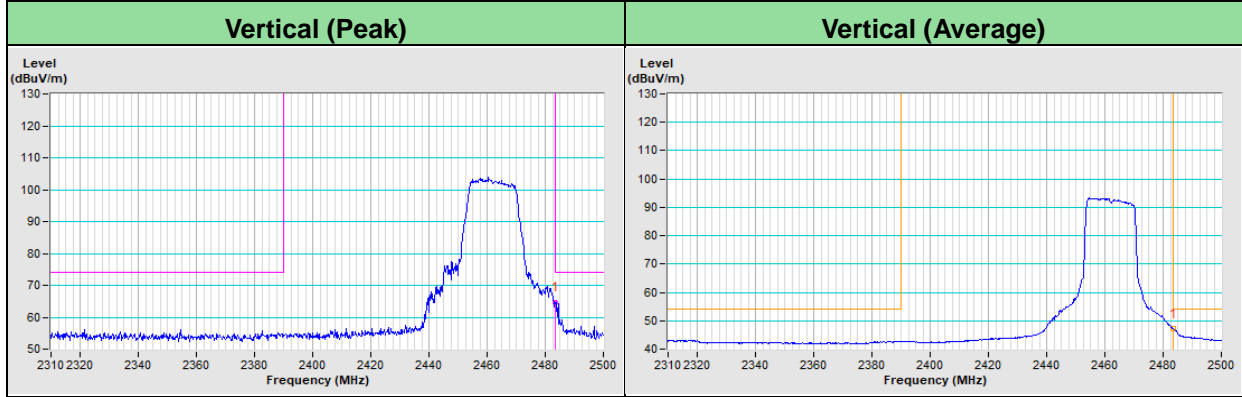
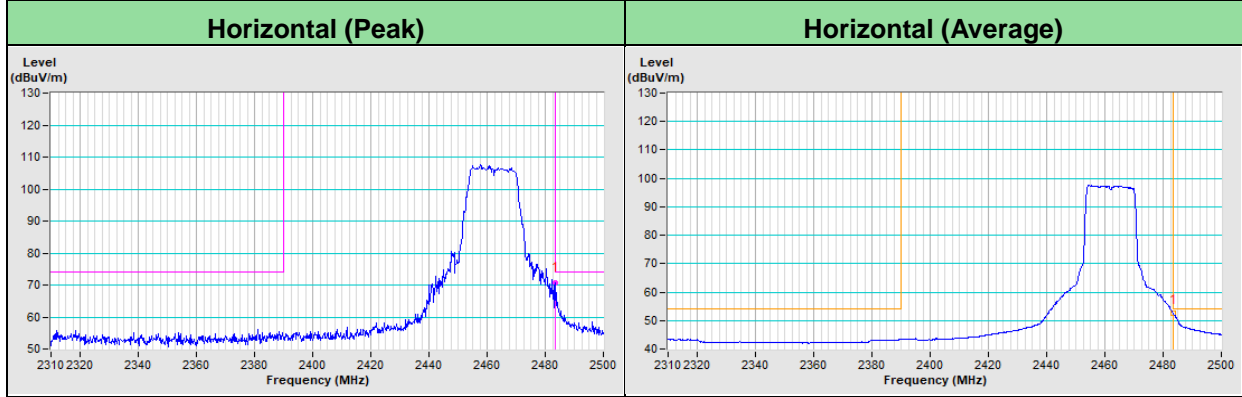
Annex A - Band-Edge Measurement

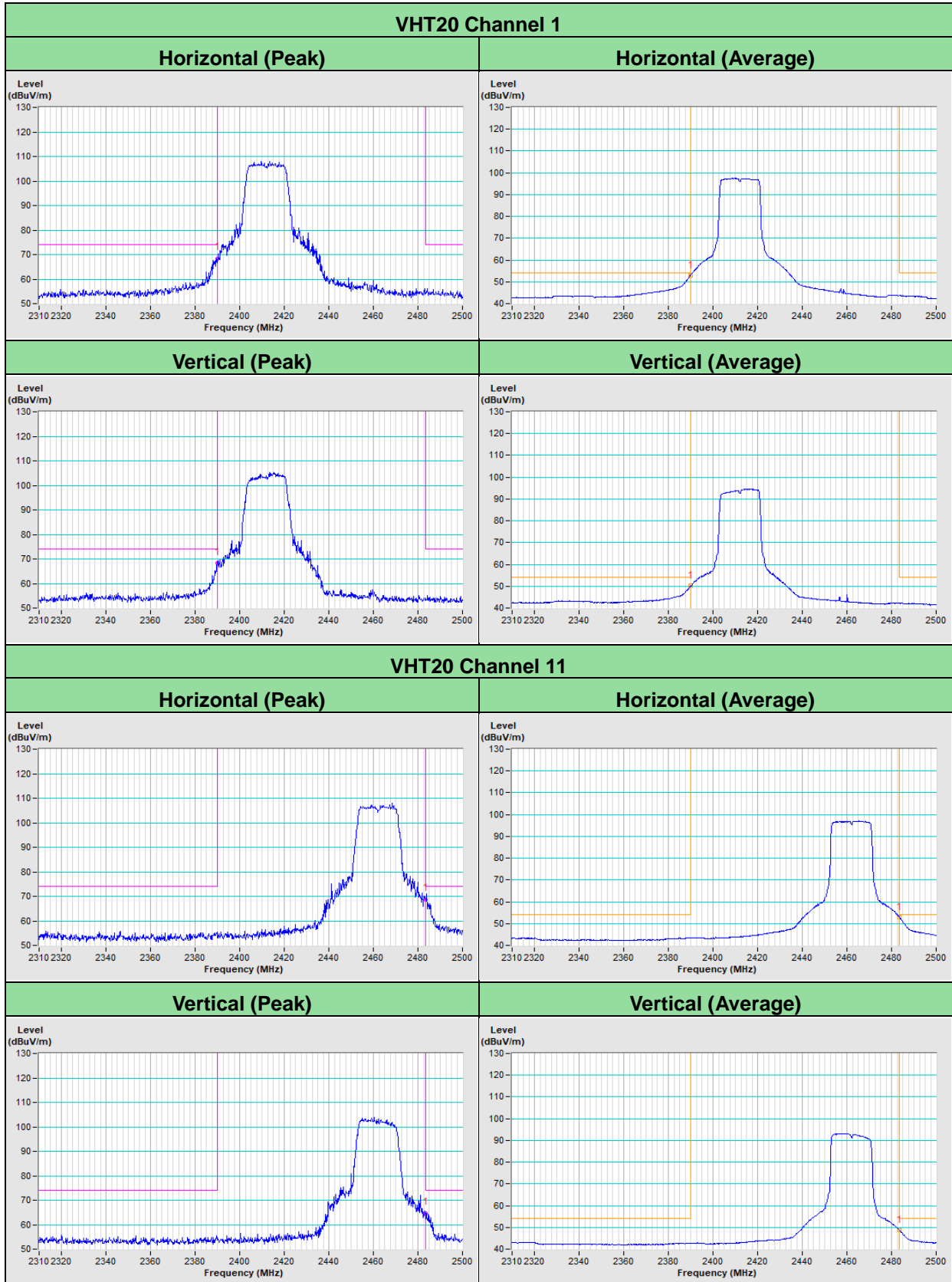


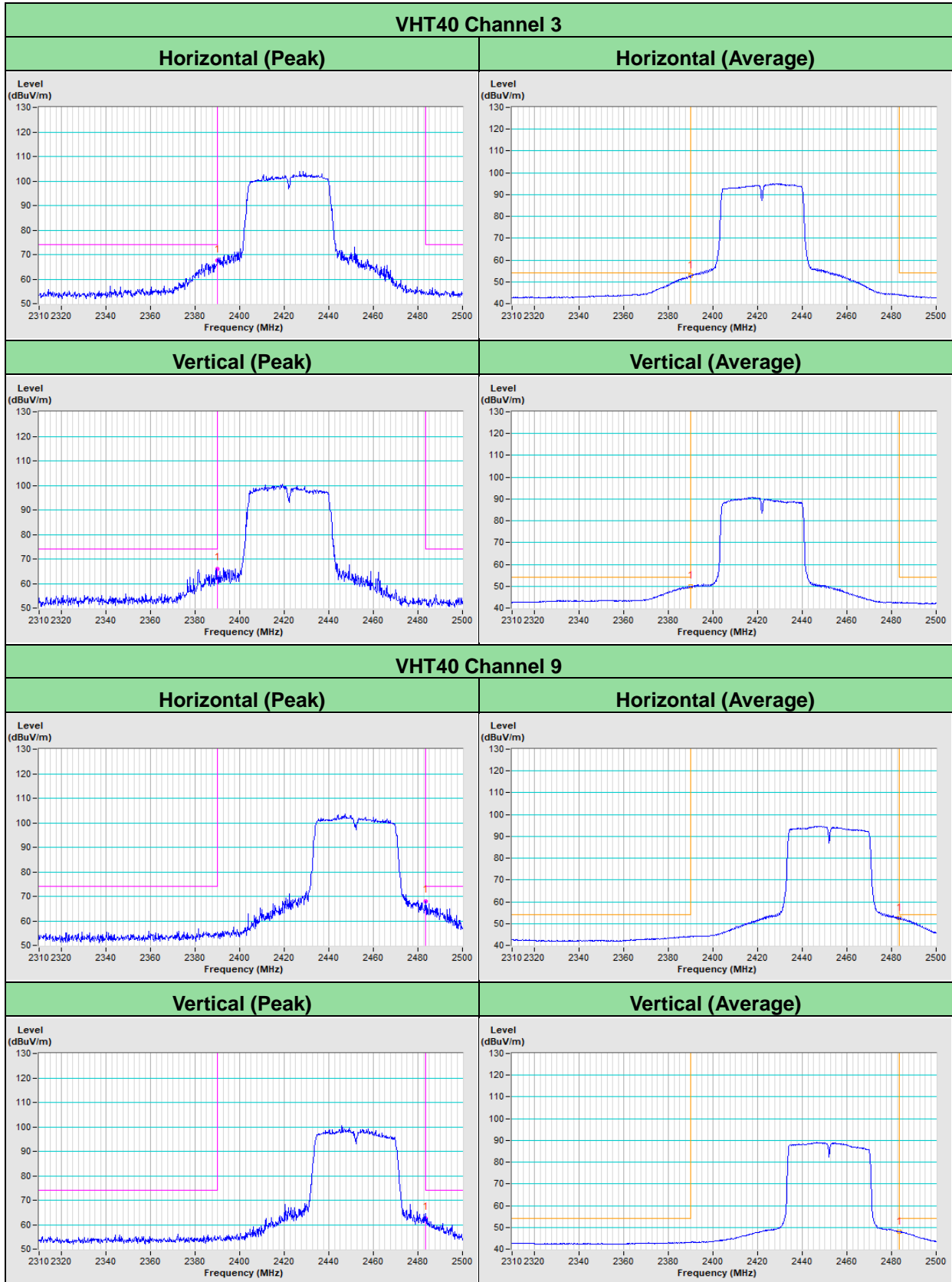
802.11g Channel 1



802.11g Channel 11







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 accredited and approved 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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