

FCC Test Report

Report No.: RFBDQY-WTW-P21010024

FCC ID: 2ASXXPAX1800

Test Model: PAX1800

Received Date: Jan. 05, 2021

Test Date: Jan. 25 to Feb. 02, 2021

Issued Date: Mar. 24, 2021

Applicant: Plasma Cloud Limited

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RFBDQY-WTW-P21010024	Original release.	Mar. 24, 2021

1 Certificate of Conformity

Product: WiFi 6 AP

Brand: Plasma Cloud Limited

Test Model: PAX1800

Sample Status: Mass Market

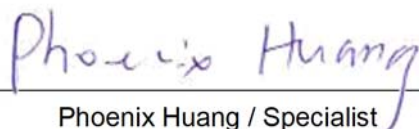
Applicant: Plasma Cloud Limited

Test Date: Jan. 25 to Feb. 02, 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 :


Phoenix Huang / Specialist

Date:

Mar. 24, 2021

Approved by :



Date:

Mar. 24, 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 -5.46 dB at 25.15625 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1 dB at 2390.00 MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF) not a standard connector.

Note:

- For 2.4 GHz band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A.
- 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	5.5 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.1 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	WiFi 6 AP
Brand	Plasma Cloud Limited
Test Model	PAX1800
Status of EUT	Mass Market
Power Supply Rating	12Vdc from power adapter or 48~54 Vdc from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz 1024QAM for OFDMA in 11ax HE mode
Modulation Technology	DSSS, OFDM, OFDMA
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 866.7 Mbps 802.11ax: up to 1201.0 Mbps
Operating Frequency	2.4GHz: 2.412 ~ 2.462 GHz 5GHz: 5.18 ~ 5.24 GHz, 5.745 ~ 5.825 GHz
Number of Channel	2.4GHz: 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7 5GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 9 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2
Output Power	2.4GHz: CDD Mode: 767.304 mW Beamforming Mode: 767.304 mW 5GHz: CDD Mode: 5.18 ~ 5.24GHz: 380.504 mW 5.745 ~ 5.825GHz: 426.857 mW Beamforming Mode: 5.18 ~ 5.24GHz: 351.415 mW 5.745 ~ 5.825GHz: 424.785 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Wall shelf x 1
Data Cable Supplied	NA

Note:

1. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	WLAN 5GHz

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

2. The EUT has below radios as following table:

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

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

Antenna No.	Chain No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	2.4GHz Chain1	3.9	2.4~2.5	PIFA	i-pex(MHF)
2	2.4GHz Chain0	3	2.4~2.5	PIFA	i-pex(MHF)
3	5GHz Chain1	4.7	5.15~5.85	PIFA	i-pex(MHF)
4	5GHz Chain0	5.6	5.15~5.85	PIFA	i-pex(MHF)

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

Test Mode	Description
Mode A	Power from adapter
Mode B	Power from POE

Note: From the above modes, the Radiated Emission and AC Power Conducted Emission test worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

5. The EUT incorporates a MIMO function:

2.4GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
VHT20	2TX	2RX
VHT40	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	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
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX

Note:

- All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
- The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
- The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz), VHT mode for 20MHz (40MHz) and 802.11ax mode for 20MHz (40MHz), therefore the manufacturer will control the power for 802.11n/ VHT mode is the same as the 802.11ax mode or more lower than it and investigated worst case to representative mode in test report. (Final test mode refer to section 3.2.1)

6. 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.
7. 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), VHT20, 802.11ax (HE20):

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

7 channels are provided for 802.11n (HT40), VHT40, 802.11ax (HE40):

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.

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE PARAMETER
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1Mb/s
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6Mb/s
802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0
802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0

Radiated Emission Test (Below 1GHz):

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE PARAMETER
802.11ax (HE20)	1 to 11	6	OFDMA	BPSK	MCS0

Power Line Conducted Emission Test:

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE PARAMETER
802.11ax (HE20)	1 to 11	6	OFDMA	BPSK	MCS0

Antenna Port Conducted Measurement:

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE PARAMETER
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1Mb/s
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6Mb/s
VHT20 (output power only)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
VHT40 (output power only)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0
802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0
802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0
Beamforming Mode (output power only)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE PARAMETER
VHT20	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
VHT40	3 to 9	3, 6, 9	OFDM	BPSK	MCS0
802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0
802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power (System)	Tested By
RE $\geq$ 1G	25deg. C, 75%RH	120Vac, 60Hz	Carter Lin
RE<1G	26deg. C, 66%RH	120Vac, 60Hz	Sampson Chen
PLC	25deg. C, 71%RH	120Vac, 60Hz	Sampson Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	Kevin Ko

3.3 Duty Cycle of Test Signal

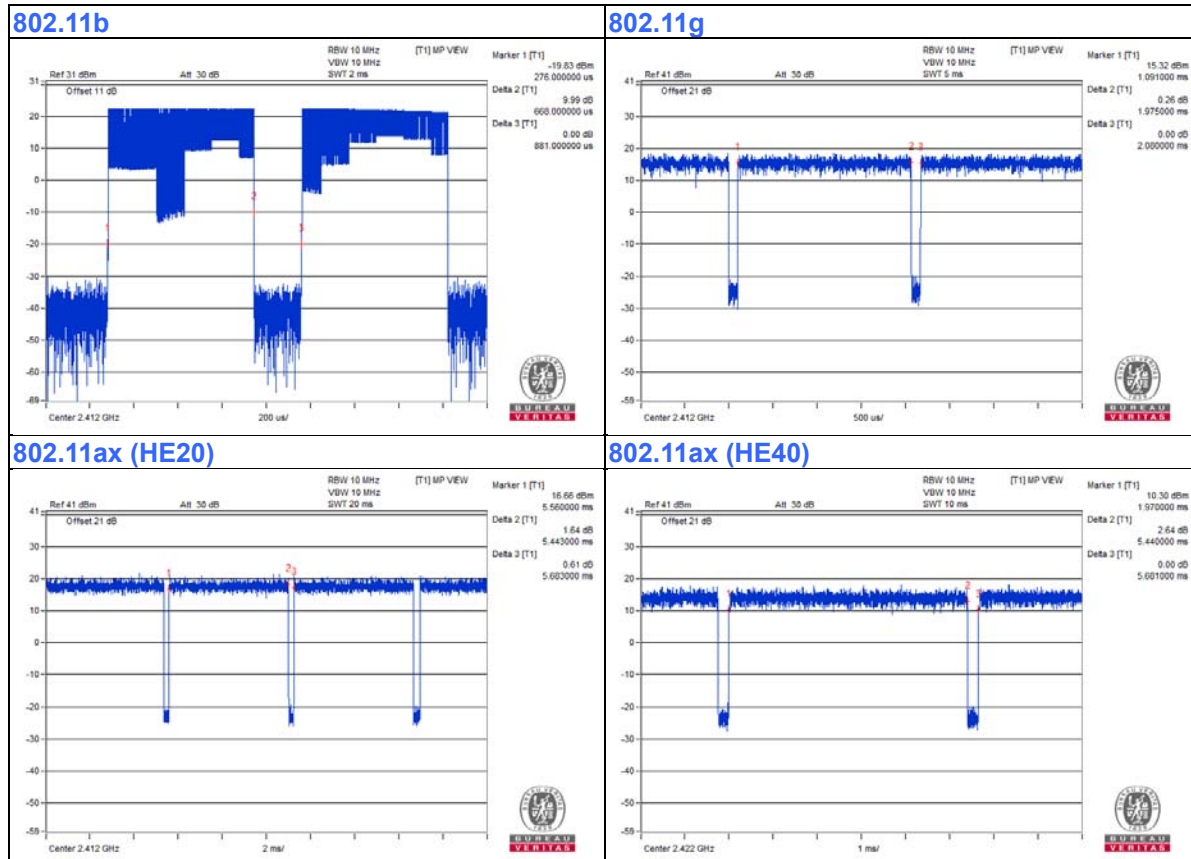
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 0.668 ms/0.881 ms = 0.758, Duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 1.2 \text{ dB}$

802.11g: Duty cycle = 1.975 ms/2.08 ms = 0.95, Duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.22 \text{ dB}$

802.11ax (HE20): Duty cycle = 5.443 ms/5.683 ms = 0.958, Duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.19 \text{ dB}$

802.11ax (HE40): Duty cycle = 5.44 ms/5.681 ms = 0.958, Duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.19 \text{ dB}$



3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	NA	Provided by Lab
B.	POE Adapter	BulletPoE	BPI100-GH	NA	NA	Supplied by client
C.	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	NA	Provided by Lab

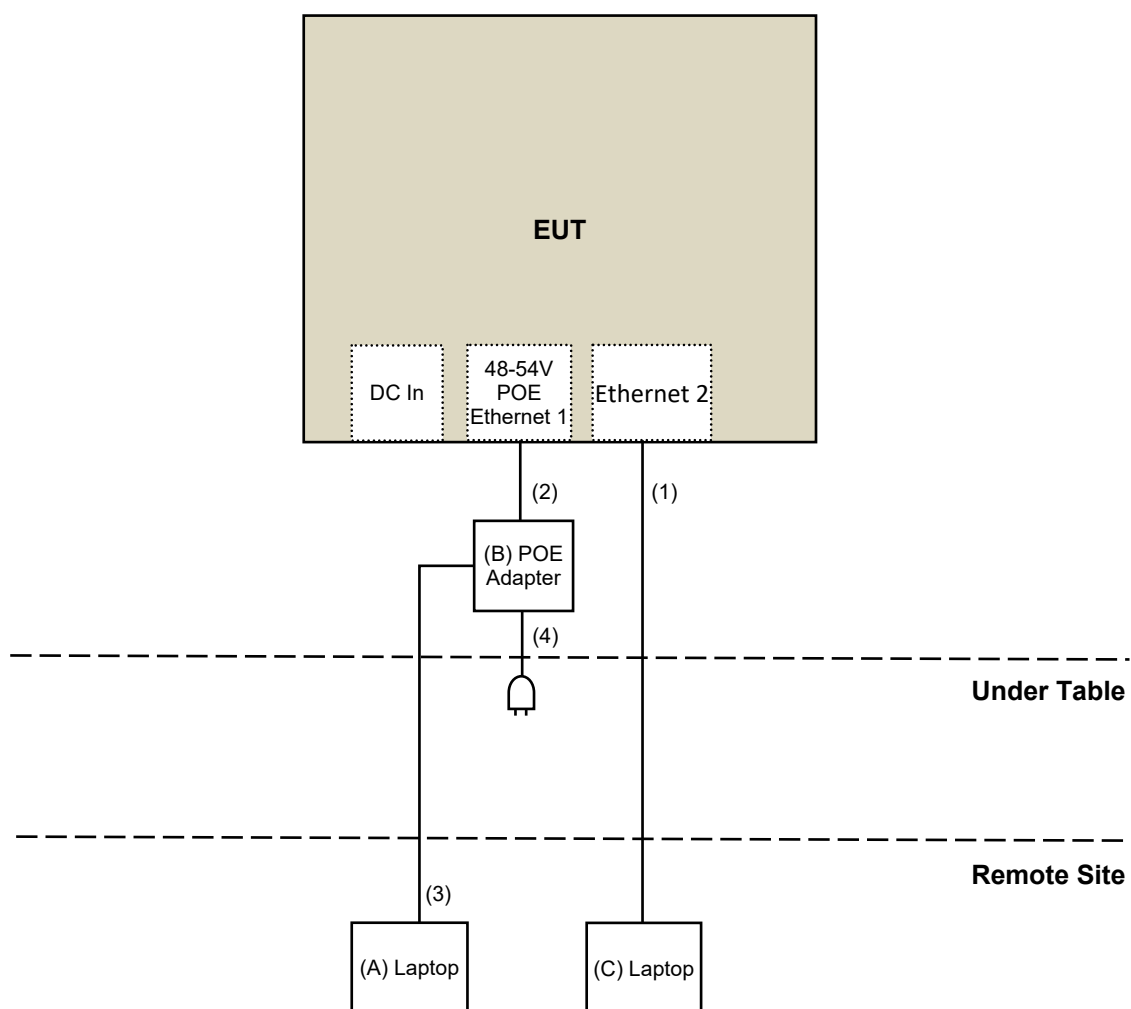
Note:

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

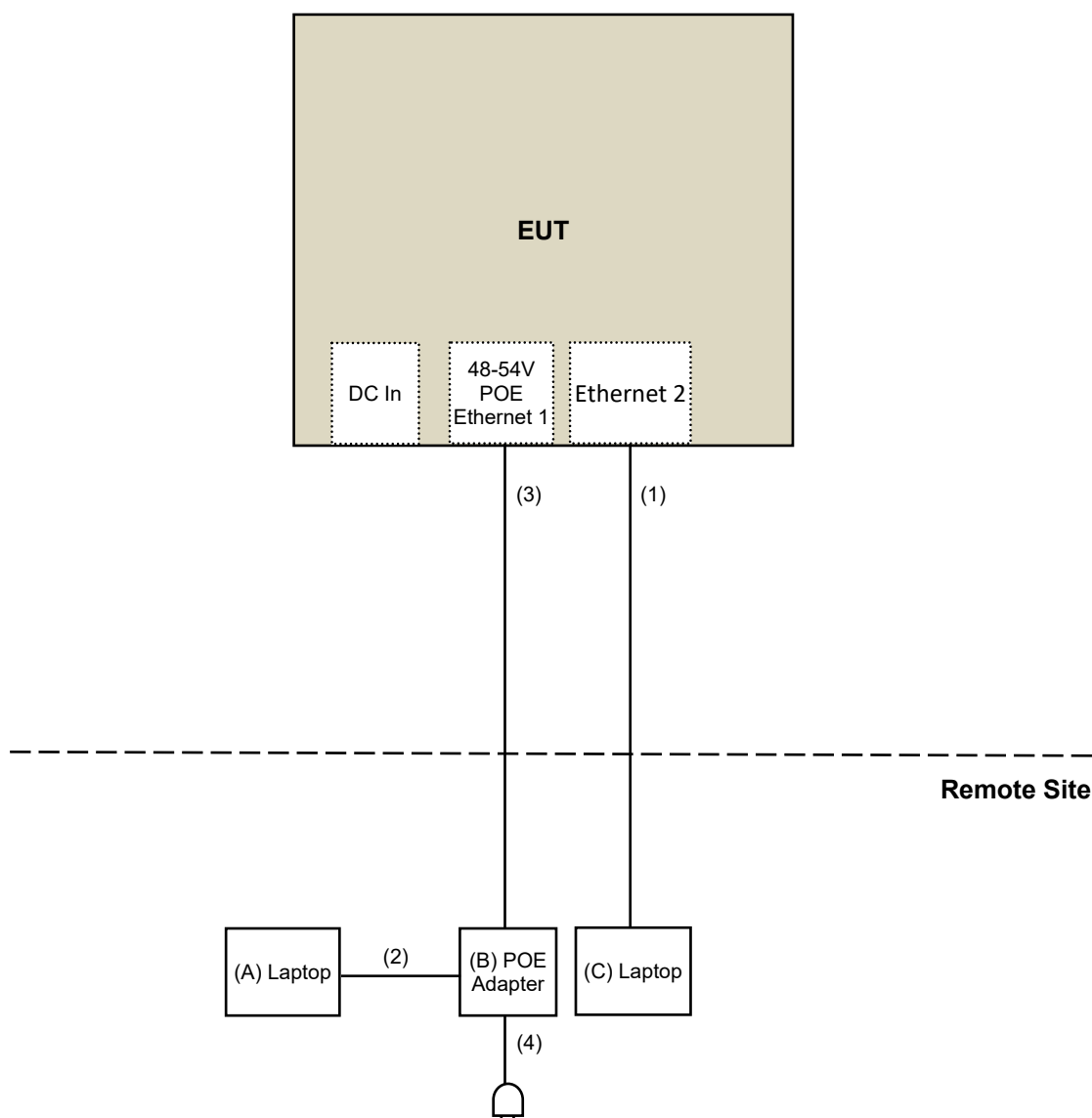
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	1.8	No	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	AC Cable	1	1.5	No	0	Supplied by client

3.4.1 Configuration of System under Test

For AC Power Conducted Emission test



For Radiated Emission test:



3.5 General Description of Applied Standards and References

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

Test Standard:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

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

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Test Instruments

For Radiated Emission test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 01, 2020	Nov. 30, 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	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-1000VH2B	AMP-ZFL-02	Oct. 21, 2020	Oct. 20, 2021
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 06, 2020	Nov. 05, 2021
RF Cable	8D	966-6-1	Apr. 04, 2020	Apr. 03, 2021
RF Cable	8D	966-4-2	Mar. 18, 2020	Mar. 17, 2021
RF Cable	8D	966-4-3	Mar. 18, 2020	Mar. 17, 2021
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-03	Jan. 11, 2021	Jan. 10, 2022
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 22, 2020	Nov. 21, 2021
Pre-Amplifier EMCI	EMC 12630 SE	980638	Apr. 08, 2020	Apr. 07, 2021
RF Cable	EMC104-SM-SM-1200	160922	Dec. 25, 2020	Dec. 24, 2021
RF Cable	EMC104-SM-SM-2000	180502	Apr. 29, 2020	Apr. 28, 2021
RF Cable	EMC104-SM-SM-6000	180418	Apr. 29, 2020	Apr. 28, 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. 11, 2020	Mar. 10, 2021
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 4.
3. Tested Date: Jan. 25 to 31, 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: Feb. 02, 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:

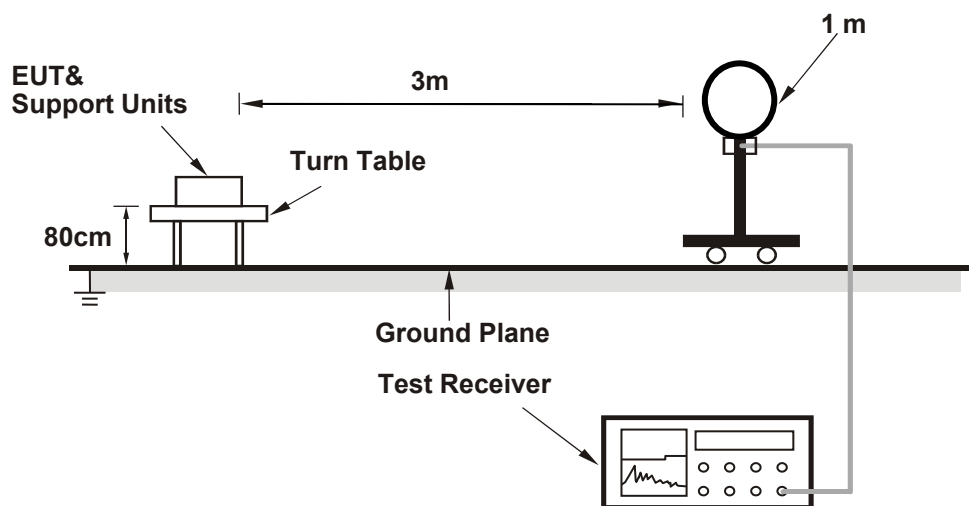
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

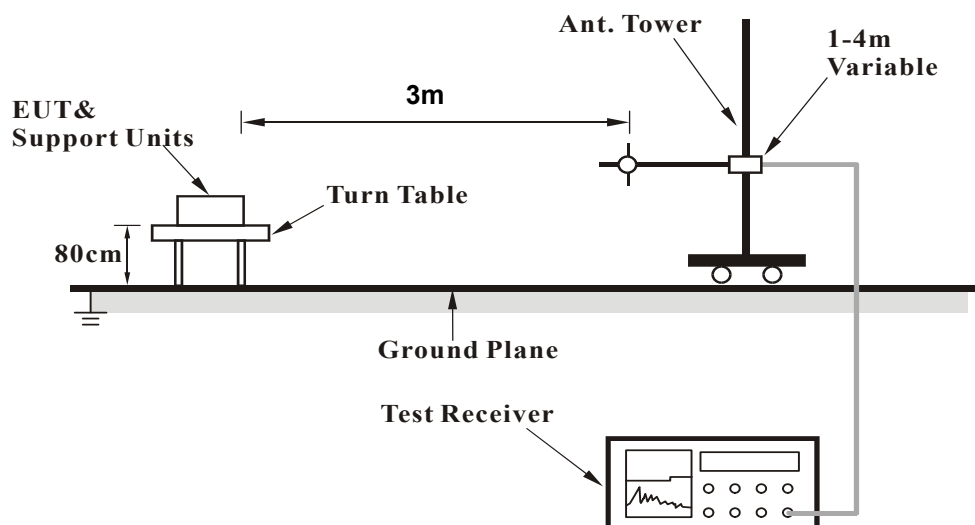
No deviation.

4.1.5 Test Setup

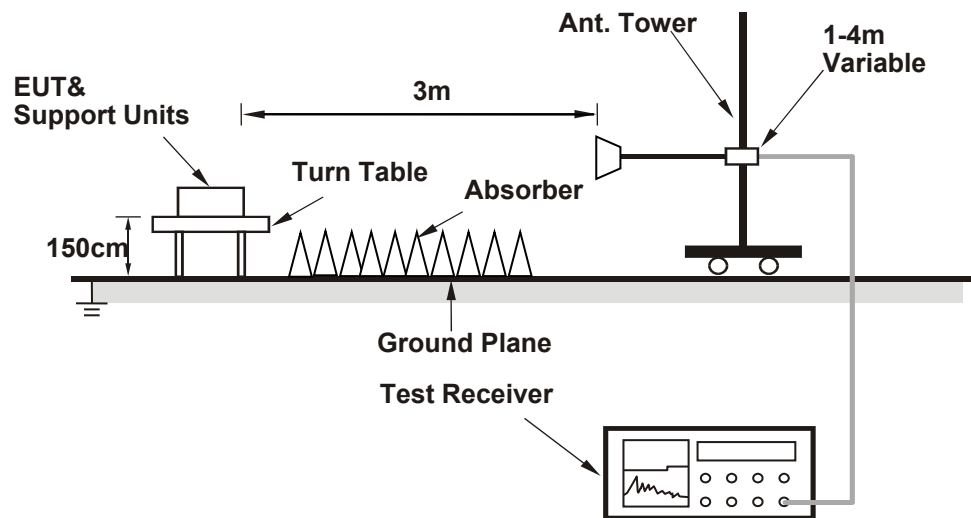
For Radiated emission below 30MHz



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

- Placed the EUT on the testing table.
- Controlling software (qdart_conn.win.1.0_installer_00076.1) 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	2387.30	57.0 PK	74.0	-17.0	1.38 H	36	61.4	-4.4
2	2387.30	48.6 AV	54.0	-5.4	1.38 H	36	53.0	-4.4
3	*2412.00	111.5 PK			1.38 H	36	115.9	-4.4
4	*2412.00	109.3 AV			1.38 H	36	113.7	-4.4
5	4824.00	50.4 PK	74.0	-23.6	1.39 H	360	50.3	0.1
6	4824.00	48.8 AV	54.0	-5.2	1.39 H	360	48.7	0.1
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	2388.20	55.7 PK	74.0	-18.3	2.47 V	9	60.1	-4.4
2	2388.20	48.5 AV	54.0	-5.5	2.47 V	9	52.9	-4.4
3	*2412.00	110.6 PK			2.47 V	9	115.0	-4.4
4	*2412.00	108.4 AV			2.47 V	9	112.8	-4.4
5	4824.00	54.3 PK	74.0	-19.7	1.58 V	330	54.2	0.1
6	4824.00	53.4 AV	54.0	-0.6	1.58 V	330	53.3	0.1

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 802.11b	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	54.9 PK	74.0	-19.1	1.42 H	40	59.4	-4.5
2	2390.00	43.5 AV	54.0	-10.5	1.42 H	40	48.0	-4.5
3	*2437.00	109.9 PK			1.42 H	40	114.3	-4.4
4	*2437.00	108.0 AV			1.42 H	40	112.4	-4.4
5	2483.50	54.7 PK	74.0	-19.3	1.42 H	40	59.2	-4.5
6	2483.50	43.3 AV	54.0	-10.7	1.42 H	40	47.8	-4.5
7	4874.00	47.3 PK	74.0	-26.7	1.50 H	357	47.2	0.1
8	4874.00	46.0 AV	54.0	-8.0	1.50 H	357	45.9	0.1
9	7311.00	56.2 PK	74.0	-17.8	1.86 H	73	49.9	6.3
10	7311.00	53.0 AV	54.0	-1.0	1.86 H	73	46.7	6.3

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	2390.00	54.7 PK	74.0	-19.3	2.51 V	3	59.2	-4.5
2	2390.00	43.7 AV	54.0	-10.3	2.51 V	3	48.2	-4.5
3	*2437.00	109.4 PK			2.51 V	3	113.8	-4.4
4	*2437.00	107.2 AV			2.51 V	3	111.6	-4.4
5	2483.50	54.4 PK	74.0	-19.6	2.51 V	3	58.9	-4.5
6	2483.50	43.2 AV	54.0	-10.8	2.51 V	3	47.7	-4.5
7	4874.00	52.9 PK	74.0	-21.1	1.42 V	329	52.8	0.1
8	4874.00	51.8 AV	54.0	-2.2	1.42 V	329	51.7	0.1
9	7311.00	56.5 PK	74.0	-17.5	1.82 V	42	50.2	6.3
10	7311.00	53.3 AV	54.0	-0.7	1.82 V	42	47.0	6.3

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 802.11b	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	108.5 PK			2.00 H	32	112.9	-4.4
2	*2462.00	106.3 AV			2.00 H	32	110.7	-4.4
3	2487.50	54.7 PK	74.0	-19.3	2.00 H	32	59.2	-4.5
4	2487.50	43.7 AV	54.0	-10.3	2.00 H	32	48.2	-4.5
5	4924.00	49.3 PK	74.0	-24.7	3.41 H	120	49.0	0.3
6	4924.00	47.8 AV	54.0	-6.2	3.41 H	120	47.5	0.3
7	7386.00	56.2 PK	74.0	-17.8	2.28 H	144	49.6	6.6
8	7386.00	53.4 AV	54.0	-0.6	2.28 H	144	46.8	6.6
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	107.5 PK			2.55 V	4	111.9	-4.4
2	*2462.00	105.6 AV			2.55 V	4	110.0	-4.4
3	2486.80	54.9 PK	74.0	-19.1	2.55 V	4	59.4	-4.5
4	2486.80	43.6 AV	54.0	-10.4	2.55 V	4	48.1	-4.5
5	4924.00	53.8 PK	74.0	-20.2	1.27 V	330	53.5	0.3
6	4924.00	52.5 AV	54.0	-1.5	1.27 V	330	52.2	0.3
7	7386.00	54.7 PK	74.0	-19.3	1.60 V	37	48.1	6.6
8	7386.00	51.7 AV	54.0	-2.3	1.60 V	37	45.1	6.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The 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	66.5 PK	74.0	-7.5	1.51 H	320	71.0	-4.5
2	2390.00	53.6 AV	54.0	-0.4	1.51 H	320	58.1	-4.5
3	*2412.00	110.9 PK			1.51 H	320	115.3	-4.4
4	*2412.00	100.7 AV			1.51 H	320	105.1	-4.4
5	4824.00	52.4 PK	74.0	-21.6	3.00 H	140	52.3	0.1
6	4824.00	39.4 AV	54.0	-14.6	3.00 H	140	39.3	0.1
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	2388.80	59.7 PK	74.0	-14.3	2.49 V	5	64.1	-4.4
2	2388.80	47.1 AV	54.0	-6.9	2.49 V	5	51.5	-4.4
3	*2412.00	107.8 PK			2.49 V	5	112.2	-4.4
4	*2412.00	98.2 AV			2.49 V	5	102.6	-4.4
5	4824.00	58.8 PK	74.0	-15.2	1.44 V	329	58.7	0.1
6	4824.00	45.6 AV	54.0	-8.4	1.44 V	329	45.5	0.1

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 802.11g	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	61.1 PK	74.0	-12.9	1.54 H	316	65.6	-4.5
2	2390.00	48.8 AV	54.0	-5.2	1.54 H	316	53.3	-4.5
3	*2437.00	117.5 PK			1.54 H	316	121.9	-4.4
4	*2437.00	107.3 AV			1.54 H	316	111.7	-4.4
5	2483.50	64.2 PK	74.0	-9.8	1.54 H	316	68.7	-4.5
6	2483.50	50.3 AV	54.0	-3.7	1.54 H	316	54.8	-4.5
7	4874.00	52.2 PK	74.0	-21.8	2.94 H	132	52.1	0.1
8	4874.00	39.5 AV	54.0	-14.5	2.94 H	132	39.4	0.1
9	7311.00	66.0 PK	74.0	-8.0	2.67 H	143	59.7	6.3
10	7311.00	52.6 AV	54.0	-1.4	2.67 H	143	46.3	6.3

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	2390.00	59.7 PK	74.0	-14.3	2.47 V	1	64.2	-4.5
2	2390.00	47.0 AV	54.0	-7.0	2.47 V	1	51.5	-4.5
3	*2437.00	115.1 PK			2.47 V	1	119.5	-4.4
4	*2437.00	105.0 AV			2.47 V	1	109.4	-4.4
5	2483.50	59.9 PK	74.0	-14.1	2.47 V	1	64.4	-4.5
6	2483.50	47.3 AV	54.0	-6.7	2.47 V	1	51.8	-4.5
7	4874.00	58.2 PK	74.0	-15.8	1.50 V	331	58.1	0.1
8	4874.00	45.3 AV	54.0	-8.7	1.50 V	331	45.2	0.1
9	7311.00	66.8 PK	74.0	-7.2	1.77 V	37	60.5	6.3
10	7311.00	53.4 AV	54.0	-0.6	1.77 V	37	47.1	6.3

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 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	109.9 PK			1.71 H	318	114.3	-4.4
2	*2462.00	99.6 AV			1.71 H	318	104.0	-4.4
3	2483.50	67.7 PK	74.0	-6.3	1.71 H	318	72.2	-4.5
4	2483.50	53.7 AV	54.0	-0.3	1.71 H	318	58.2	-4.5
5	4924.00	52.3 PK	74.0	-21.7	2.99 H	142	52.0	0.3
6	4924.00	39.4 AV	54.0	-14.6	2.99 H	142	39.1	0.3
7	7386.00	65.8 PK	74.0	-8.2	2.72 H	136	59.2	6.6
8	7386.00	52.4 AV	54.0	-1.6	2.72 H	136	45.8	6.6
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	105.8 PK			2.66 V	4	110.2	-4.4
2	*2462.00	97.1 AV			2.66 V	4	101.5	-4.4
3	2483.50	59.1 PK	74.0	-14.9	2.66 V	4	63.6	-4.5
4	2483.50	48.8 AV	54.0	-5.2	2.66 V	4	53.3	-4.5
5	4924.00	59.0 PK	74.0	-15.0	1.46 V	318	58.7	0.3
6	4924.00	45.8 AV	54.0	-8.2	1.46 V	318	45.5	0.3
7	7386.00	66.6 PK	74.0	-7.4	1.76 V	24	60.0	6.6
8	7386.00	53.4 AV	54.0	-0.6	1.76 V	24	46.8	6.6

Remarks:

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

RF Mode	TX 802.11ax (HE20)	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	2388.30	66.4 PK	74.0	-7.6	1.50 H	319	70.8	-4.4
2	2388.30	53.5 AV	54.0	-0.5	1.50 H	319	57.9	-4.4
3	*2412.00	111.5 PK			1.50 H	319	115.9	-4.4
4	*2412.00	99.1 AV			1.50 H	319	103.5	-4.4
5	4824.00	51.5 PK	74.0	-22.5	1.79 H	112	51.4	0.1
6	4824.00	38.6 AV	54.0	-15.4	1.79 H	112	38.5	0.1
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	68.5 PK	74.0	-5.5	2.47 V	8	73.0	-4.5
2	2390.00	53.9 AV	54.0	-0.1	2.47 V	8	58.4	-4.5
3	*2412.00	108.5 PK			2.47 V	8	112.9	-4.4
4	*2412.00	96.3 AV			2.47 V	8	100.7	-4.4
5	4824.00	52.6 PK	74.0	-21.4	1.46 V	319	52.5	0.1
6	4824.00	41.7 AV	54.0	-12.3	1.46 V	319	41.6	0.1

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 802.11ax (HE20)	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	64.3 PK	74.0	-9.7	1.48 H	321	68.8	-4.5
2	2390.00	51.8 AV	54.0	-2.2	1.48 H	321	56.3	-4.5
3	*2437.00	118.1 PK			1.48 H	321	122.5	-4.4
4	*2437.00	106.0 AV			1.48 H	321	110.4	-4.4
5	2483.50	65.5 PK	74.0	-8.5	1.48 H	321	70.0	-4.5
6	2483.50	52.4 AV	54.0	-1.6	1.48 H	321	56.9	-4.5
7	4874.00	51.8 PK	74.0	-22.2	1.74 H	124	51.7	0.1
8	4874.00	38.9 AV	54.0	-15.1	1.74 H	124	38.8	0.1
9	7311.00	63.7 PK	74.0	-10.3	2.68 H	145	57.4	6.3
10	7311.00	52.5 AV	54.0	-1.5	2.68 H	145	46.2	6.3

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	2390.00	61.7 PK	74.0	-12.3	1.92 V	3	66.2	-4.5
2	2390.00	48.9 AV	54.0	-5.1	1.92 V	3	53.4	-4.5
3	*2437.00	113.5 PK			1.92 V	3	117.9	-4.4
4	*2437.00	102.4 AV			1.92 V	3	106.8	-4.4
5	2483.50	59.5 PK	74.0	-14.5	1.92 V	3	64.0	-4.5
6	2483.50	45.7 AV	54.0	-8.3	1.92 V	3	50.2	-4.5
7	4874.00	52.3 PK	74.0	-21.7	1.41 V	331	52.2	0.1
8	4874.00	41.6 AV	54.0	-12.4	1.41 V	331	41.5	0.1
9	7311.00	61.9 PK	74.0	-12.1	1.73 V	38	55.6	6.3
10	7311.00	49.7 AV	54.0	-4.3	1.73 V	38	43.4	6.3

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 802.11ax (HE20)	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	110.1 PK			1.51 H	317	114.5	-4.4
2	*2462.00	98.5 AV			1.51 H	317	102.9	-4.4
3	2484.90	66.1 PK	74.0	-7.9	1.51 H	317	70.6	-4.5
4	2484.90	53.8 AV	54.0	-0.2	1.51 H	317	58.3	-4.5
5	4924.00	51.8 PK	74.0	-22.2	1.78 H	119	51.5	0.3
6	4924.00	38.9 AV	54.0	-15.1	1.78 H	119	38.6	0.3
7	7386.00	63.4 PK	74.0	-10.6	2.73 H	155	56.8	6.6
8	7386.00	52.0 AV	54.0	-2.0	2.73 H	155	45.4	6.6
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	106.4 PK			1.89 V	3	110.8	-4.4
2	*2462.00	94.4 AV			1.89 V	3	98.8	-4.4
3	2483.50	64.6 PK	74.0	-9.4	1.89 V	3	69.1	-4.5
4	2483.50	51.6 AV	54.0	-2.4	1.89 V	3	56.1	-4.5
5	4924.00	52.4 PK	74.0	-21.6	1.43 V	321	52.1	0.3
6	4924.00	41.4 AV	54.0	-12.6	1.43 V	321	41.1	0.3
7	7386.00	61.5 PK	74.0	-12.5	1.71 V	52	54.9	6.6
8	7386.00	49.6 AV	54.0	-4.4	1.71 V	52	43.0	6.6

Remarks:

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

RF Mode	TX 802.11ax (HE40)	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	2387.00	66.2 PK	74.0	-7.8	1.72 H	320	70.6	-4.4
2	2387.00	53.3 AV	54.0	-0.7	1.72 H	320	57.7	-4.4
3	*2422.00	106.1 PK			1.72 H	320	110.5	-4.4
4	*2422.00	94.1 AV			1.72 H	320	98.5	-4.4
5	4844.00	51.9 PK	74.0	-22.1	1.76 H	127	51.8	0.1
6	4844.00	39.2 AV	54.0	-14.8	1.76 H	127	39.1	0.1
7	7266.00	60.8 PK	74.0	-13.2	2.67 H	152	54.6	6.2
8	7266.00	49.3 AV	54.0	-4.7	2.67 H	152	43.1	6.2
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	2384.00	65.4 PK	74.0	-8.6	2.43 V	0	69.8	-4.4
2	2384.00	52.9 AV	54.0	-1.1	2.43 V	0	57.3	-4.4
3	*2422.00	102.9 PK			2.43 V	0	107.3	-4.4
4	*2422.00	91.6 AV			2.43 V	0	96.0	-4.4
5	4844.00	50.1 PK	74.0	-23.9	1.46 V	335	50.0	0.1
6	4844.00	40.5 AV	54.0	-13.5	1.46 V	335	40.4	0.1
7	7266.00	59.9 PK	74.0	-14.1	1.76 V	52	53.7	6.2
8	7266.00	47.0 AV	54.0	-7.0	1.76 V	52	40.8	6.2

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 802.11ax (HE40)	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	65.8 PK	74.0	-8.2	1.68 H	315	70.3	-4.5
2	2390.00	53.2 AV	54.0	-0.8	1.68 H	315	57.7	-4.5
3	*2437.00	108.1 PK			1.68 H	315	112.5	-4.4
4	*2437.00	95.6 AV			1.68 H	315	100.0	-4.4
5	2483.50	61.0 PK	74.0	-13.0	1.68 H	315	65.5	-4.5
6	2483.50	48.6 AV	54.0	-5.4	1.68 H	315	53.1	-4.5
7	4874.00	51.1 PK	74.0	-22.9	1.74 H	105	51.0	0.1
8	4874.00	38.5 AV	54.0	-15.5	1.74 H	105	38.4	0.1
9	7311.00	60.9 PK	74.0	-13.1	2.71 H	148	54.6	6.3
10	7311.00	49.6 AV	54.0	-4.4	2.71 H	148	43.3	6.3

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	2390.00	65.2 PK	74.0	-8.8	2.70 V	8	69.7	-4.5
2	2390.00	52.0 AV	54.0	-2.0	2.70 V	8	56.5	-4.5
3	*2437.00	104.3 PK			2.70 V	8	108.7	-4.4
4	*2437.00	92.8 AV			2.70 V	8	97.2	-4.4
5	2483.50	58.3 PK	74.0	-15.7	2.70 V	8	62.8	-4.5
6	2483.50	44.8 AV	54.0	-9.2	2.70 V	8	49.3	-4.5
7	4874.00	50.0 PK	74.0	-24.0	1.45 V	325	49.9	0.1
8	4874.00	40.5 AV	54.0	-13.5	1.45 V	325	40.4	0.1
9	7311.00	60.1 PK	74.0	-13.9	1.79 V	40	53.8	6.3
10	7311.00	47.1 AV	54.0	-6.9	1.79 V	40	40.8	6.3

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 802.11ax (HE40)	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	105.3 PK			1.74 H	322	109.7	-4.4
2	*2452.00	94.2 AV			1.74 H	322	98.6	-4.4
3	2486.50	65.9 PK	74.0	-8.1	1.74 H	322	70.4	-4.5
4	2486.50	53.5 AV	54.0	-0.5	1.74 H	322	58.0	-4.5
5	4904.00	51.7 PK	74.0	-22.3	1.79 H	116	51.5	0.2
6	4904.00	38.7 AV	54.0	-15.3	1.79 H	116	38.5	0.2
7	7356.00	61.0 PK	74.0	-13.0	2.69 H	150	54.6	6.4
8	7356.00	49.5 AV	54.0	-4.5	2.69 H	150	43.1	6.4
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	105.4 PK			2.70 V	349	109.8	-4.4
2	*2452.00	92.6 AV			2.70 V	349	97.0	-4.4
3	2483.50	65.0 PK	74.0	-9.0	2.70 V	349	69.5	-4.5
4	2483.50	52.0 AV	54.0	-2.0	2.70 V	349	56.5	-4.5
5	4904.00	50.0 PK	74.0	-24.0	1.41 V	331	49.8	0.2
6	4904.00	40.6 AV	54.0	-13.4	1.41 V	331	40.4	0.2
7	7356.00	59.6 PK	74.0	-14.4	1.82 V	57	53.2	6.4
8	7356.00	46.7 AV	54.0	-7.3	1.82 V	57	40.3	6.4

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.

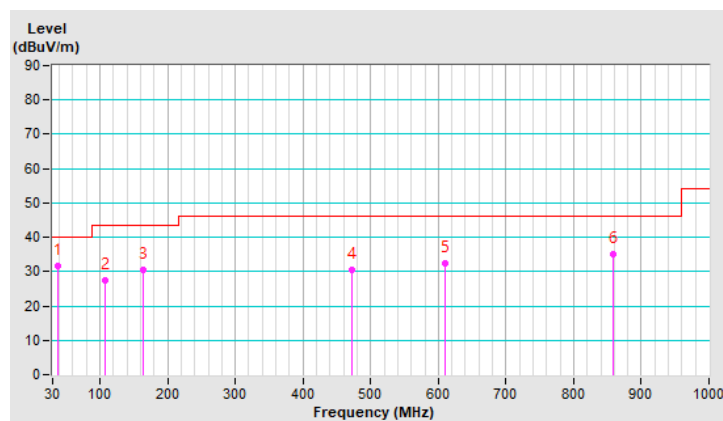
Below 1GHz Data:

RF Mode	TX 802.11ax (HE20)	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	38.64	31.8 QP	40.0	-8.2	2.00 H	355	41.0	-9.2
2	107.14	27.5 QP	43.5	-16.0	1.50 H	10	39.3	-11.8
3	164.49	30.5 QP	43.5	-13.0	1.50 H	344	39.3	-8.8
4	472.41	30.5 QP	46.0	-15.5	2.00 H	315	34.3	-3.8
5	611.00	32.5 QP	46.0	-13.5	1.00 H	311	33.2	-0.7
6	857.64	35.2 QP	46.0	-10.8	1.50 H	20	32.1	3.1

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.

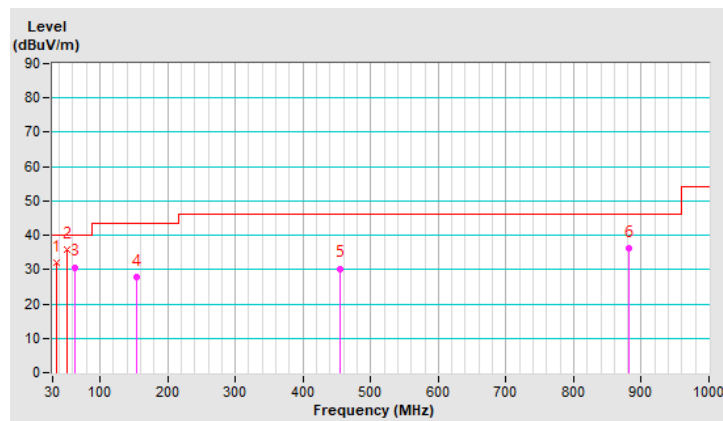


RF Mode	TX 802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	35.17	31.9 QP	40.0	-8.1	1.00 V	0	41.7	-9.8
2	50.69	35.9 QP	40.0	-4.1	1.00 V	360	44.7	-8.8
3	63.08	30.7 QP	40.0	-9.3	1.00 V	136	40.3	-9.6
4	154.55	27.9 QP	43.5	-15.6	2.00 V	107	36.4	-8.5
5	454.93	30.3 QP	46.0	-15.7	1.50 V	176	34.4	-4.1
6	882.61	36.2 QP	46.0	-9.8	1.50 V	96	32.6	3.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The 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. 19, 2020	Mar. 18, 2021
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: Jan. 30, 2021

4.2.3 Test Procedures

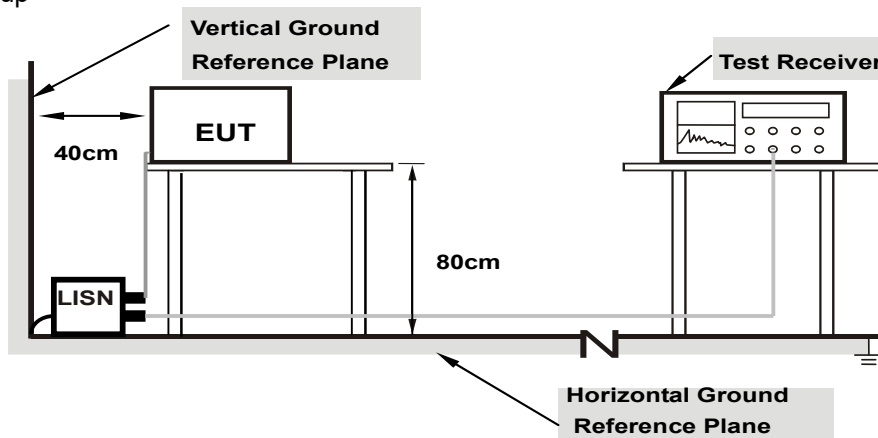
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

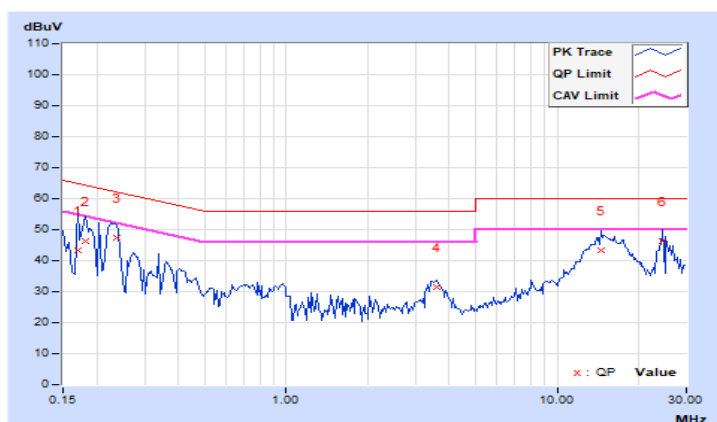
4.2.7 Test Results

RF Mode	TX 802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.16953	9.96	33.48	9.97	43.44	19.93	64.98	54.98	-21.54	-35.05
2	0.18125	9.96	36.21	24.65	46.17	34.61	64.43	54.43	-18.26	-19.82
3	0.23594	9.97	37.57	26.94	47.54	36.91	62.24	52.24	-14.70	-15.33
4	3.60938	10.15	21.30	9.01	31.45	19.16	56.00	46.00	-24.55	-26.84
5	14.55859	10.80	32.59	26.88	43.39	37.68	60.00	50.00	-16.61	-12.32
6	24.60156	11.22	35.06	31.94	46.28	43.16	60.00	50.00	-13.72	-6.84

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

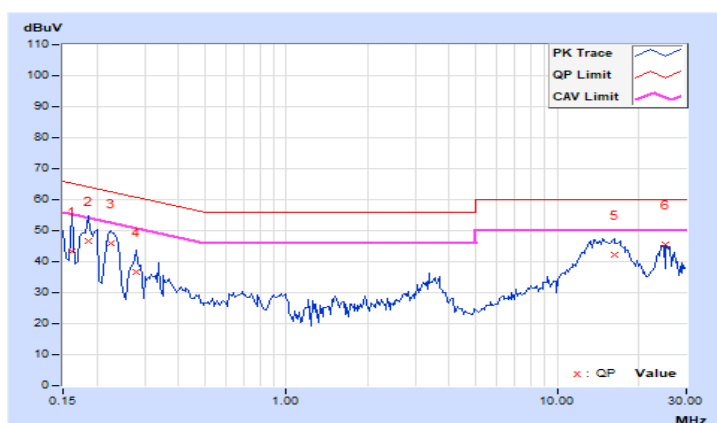


RF Mode	TX 802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.16172	9.93	33.54	7.10	43.47	17.03	65.38	55.38	-21.91	-38.35
2	0.18516	9.94	36.76	24.81	46.70	34.75	64.25	54.25	-17.55	-19.50
3	0.22422	9.95	36.07	23.01	46.02	32.96	62.66	52.66	-16.64	-19.70
4	0.27891	9.95	26.74	15.40	36.69	25.35	60.85	50.85	-24.16	-25.50
5	16.25781	10.69	31.46	26.19	42.15	36.88	60.00	50.00	-17.85	-13.12
6	25.15625	10.91	34.57	33.63	45.48	44.54	60.00	50.00	-14.52	-5.46

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

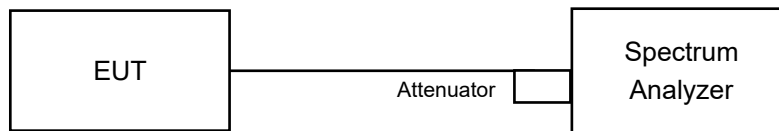


4.3 6dB Bandwidth Measurement

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

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	8.06	7.58	0.5	Pass
6	2437	7.58	7.6	0.5	Pass
11	2462	8.05	7.14	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.35	15.83	0.5	Pass
6	2437	16.08	16.00	0.5	Pass
11	2462	16.32	15.79	0.5	Pass

802.11ax (HE20)

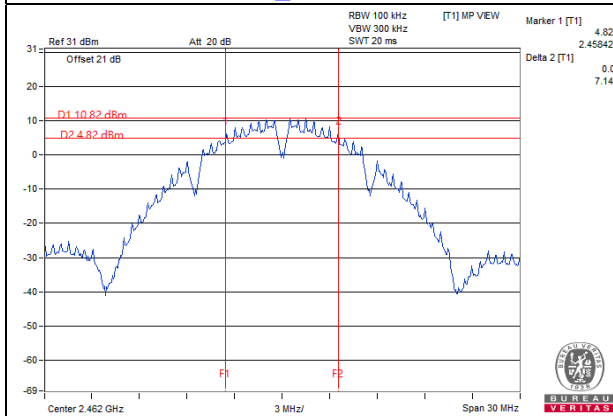
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	18.02	17.93	0.5	Pass
6	2437	17.24	18.52	0.5	Pass
11	2462	17.78	18.60	0.5	Pass

802.11ax (HE40)

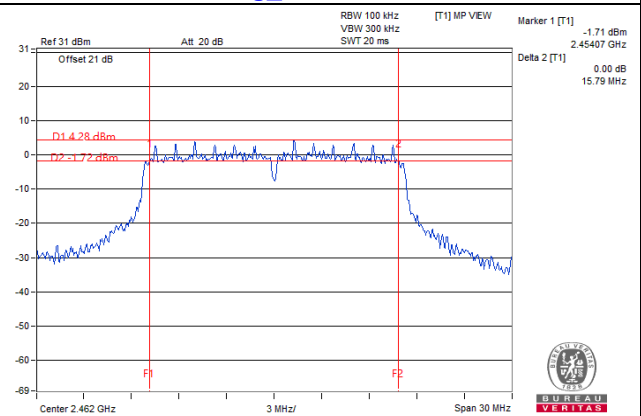
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	37.58	37.80	0.5	Pass
6	2437	37.47	37.93	0.5	Pass
9	2452	36.99	37.70	0.5	Pass

Spectrum Plot of Worst Value

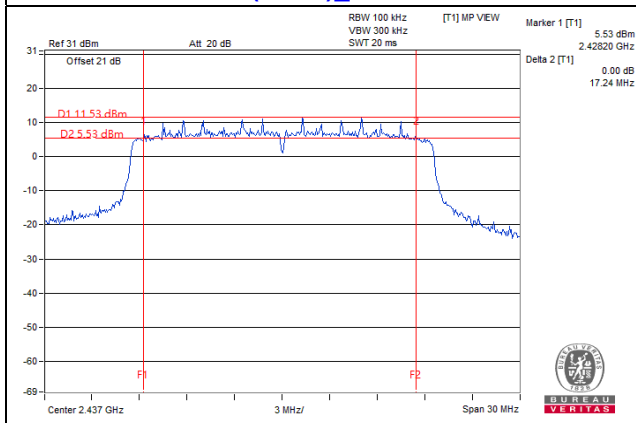
802.11b_Chain 1 / CH11



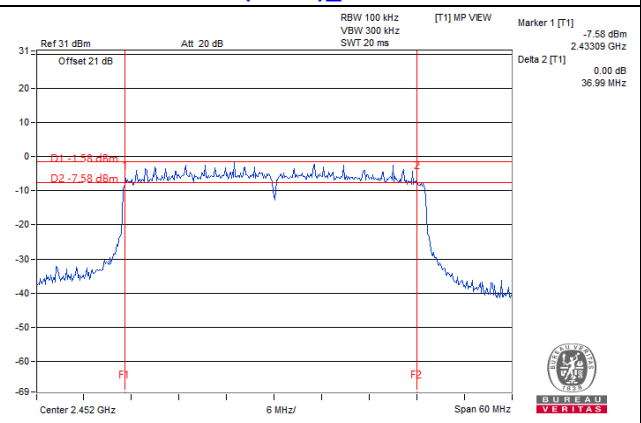
802.11g_Chain 1 / CH11



802.11ax (HE20)_Chain 0 / CH6



802.11ax (HE40)_Chain 0 / CH9



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,

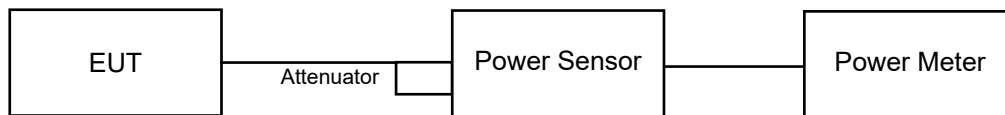
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

CDD Mode

For Peak Power Output

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	21.76	21.34	286.113	24.57	30	Pass
6	2437	19.84	19.40	183.479	22.64	30	Pass
11	2462	20.62	20.45	226.263	23.55	30	Pass

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	18.78	18.64	148.623	21.72	30	Pass
6	2437	25.48	25.58	714.593	28.54	30	Pass
11	2462	20.22	19.83	201.357	23.04	30	Pass

VHT20

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.50	18.57	142.739	21.55	30	Pass
6	2437	25.52	25.73	730.562	28.64	30	Pass
11	2462	20.33	20.25	213.82	23.30	30	Pass

VHT40

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	16.64	16.58	91.631	19.62	30	Pass
6	2437	18.11	17.76	124.418	20.95	30	Pass
9	2452	17.84	17.17	112.933	20.53	30	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.67	18.66	147.072	21.68	30	Pass
6	2437	25.64	26.03	767.304	28.85	30	Pass
11	2462	20.45	20.47	222.347	23.47	30	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	16.93	16.69	95.983	19.82	30	Pass
6	2437	18.19	17.96	128.435	21.09	30	Pass
9	2452	17.88	17.33	115.452	20.62	30	Pass

For Average Power Output

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	19.04	18.76	155.33	21.91
6	2437	17.24	16.75	100.281	20.01
11	2462	17.93	17.84	122.9	20.90

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.62	13.52	45.505	16.58
6	2437	21.03	20.65	242.91	23.85
11	2462	14.76	14.49	58.042	17.64

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.56	12.51	35.854	15.55
6	2437	21.27	20.93	257.847	24.11
11	2462	13.80	13.95	48.82	16.89

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	10.59	10.69	23.177	13.65
6	2437	12.06	12.03	32.028	15.06
9	2452	11.28	11.22	26.671	14.26

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.62	12.57	36.353	15.61
6	2437	21.50	21.22	273.688	24.37
11	2462	14.06	14.17	51.59	17.13

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	10.80	10.77	23.963	13.80
6	2437	12.27	12.04	32.861	15.17
9	2452	11.52	11.45	28.154	14.50

Beamforming Mode

For Peak Power Output

VHT20

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.50	18.57	142.739	21.55	29.53	Pass
6	2437	25.52	25.73	730.562	28.64	29.53	Pass
11	2462	20.33	20.25	213.82	23.30	29.53	Pass

Note: The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20}) / 2] = 6.47\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (6.47 - 6) = 29.53\text{dBm}$.

VHT40

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	16.64	16.58	91.631	19.62	29.53	Pass
6	2437	18.11	17.76	124.418	20.95	29.53	Pass
9	2452	17.84	17.17	112.933	20.53	29.53	Pass

Note: The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20}) / 2] = 6.47\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (6.47 - 6) = 29.53\text{dBm}$.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.67	18.66	147.072	21.68	29.53	Pass
6	2437	25.64	26.03	767.304	28.85	29.53	Pass
11	2462	20.45	20.47	222.347	23.47	29.53	Pass

Note: The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20}) / 2] = 6.47\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (6.47 - 6) = 29.53\text{dBm}$.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	16.93	16.69	95.983	19.82	29.53	Pass
6	2437	18.19	17.96	128.435	21.09	29.53	Pass
9	2452	17.88	17.33	115.452	20.62	29.53	Pass

Note: The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20}) / 2] = 6.47\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (6.47 - 6) = 29.53\text{dBm}$.

For Average Power Output

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.56	12.51	35.854	15.55
6	2437	21.27	20.93	257.847	24.11
11	2462	13.80	13.95	48.82	16.89

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	10.59	10.69	23.177	13.65
6	2437	12.06	12.03	32.028	15.06
9	2452	11.28	11.22	26.671	14.26

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.62	12.57	36.353	15.61
6	2437	21.50	21.22	273.688	24.37
11	2462	14.06	14.17	51.59	17.13

802.11ax (HE40)

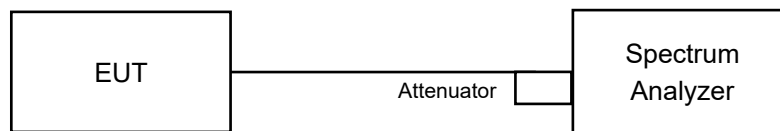
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	10.80	10.77	23.963	13.80
6	2437	12.27	12.04	32.861	15.17
9	2452	11.52	11.45	28.154	14.50

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

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- 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	-0.45	-2.23	1.76	7.53	Pass
6	2437	-1.62	-4.09	0.33	7.53	Pass
11	2462	-2.08	0.61	2.48	7.53	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
 2. The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20}) / 2] = 6.47\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.47-6) = 7.53\text{dBm}$.

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	-12.37	-13.35	-9.82	7.53	Pass
6	2437	-4.67	-5.96	-2.26	7.53	Pass
11	2462	-12.13	-12.04	-9.07	7.53	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
 2. The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20}) / 2] = 6.47\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.47-6) = 7.53\text{dBm}$.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
1	2412	-13.23	-12.59	-9.89	7.53	Pass
6	2437	-4.43	-4.62	-1.51	7.53	Pass
11	2462	-11.61	-12.35	-8.95	7.53	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
 2. The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20}) / 2] = 6.47\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.47-6) = 7.53\text{dBm}$.

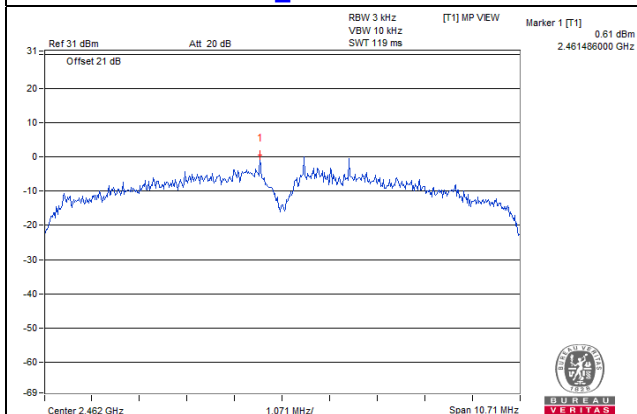
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
3	2422	-18.09	-17.55	-14.80	7.53	Pass
6	2437	-16.16	-16.16	-13.15	7.53	Pass
9	2452	-17.89	-17.41	-14.63	7.53	Pass

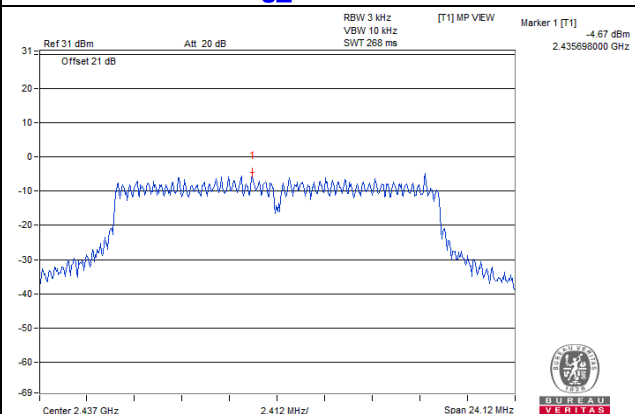
- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
 2. The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20}) / 2] = 6.47\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.47-6) = 7.53\text{dBm}$.

Spectrum Plot of Worst Value

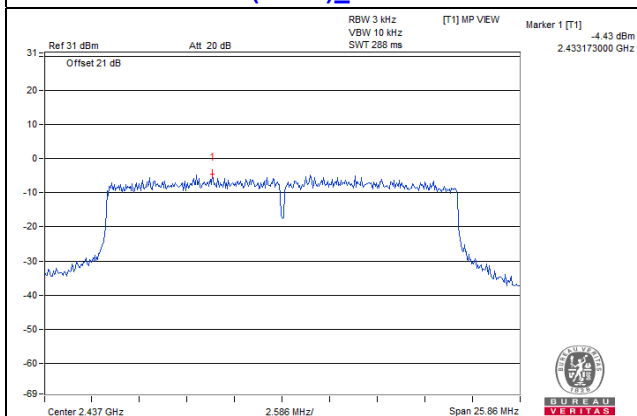
802.11b_Chain 1 / CH11



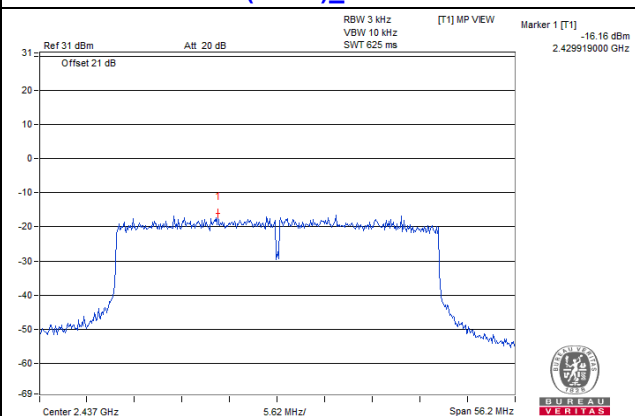
802.11g_Chain 0 / CH6



802.11ax (HE20)_Chain 0 / CH6



802.11ax (HE40)_Chain 0 / CH6

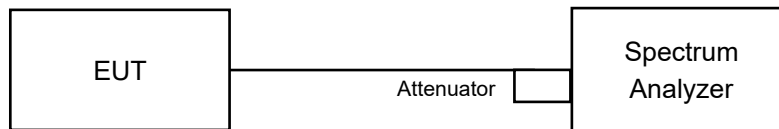


4.6 Conducted Out of Band Emission Measurement

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 OOB

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

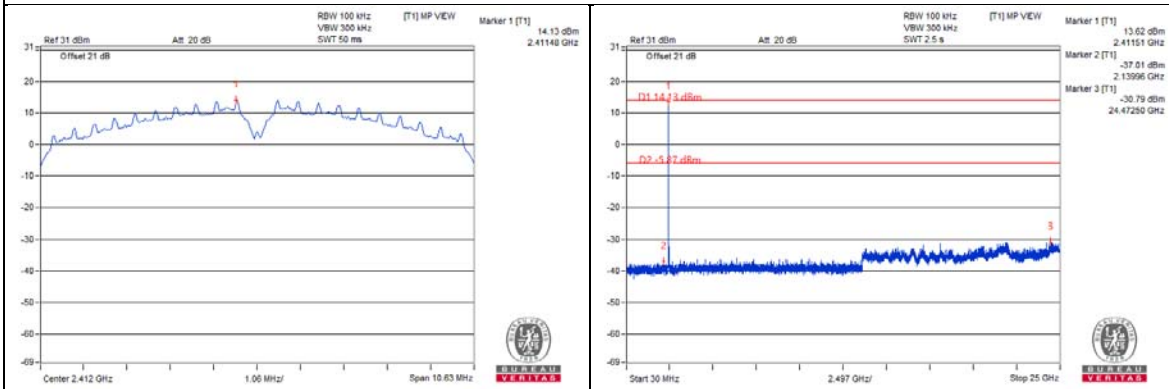
Same as Item 4.3.6

4.6.7 Test Results

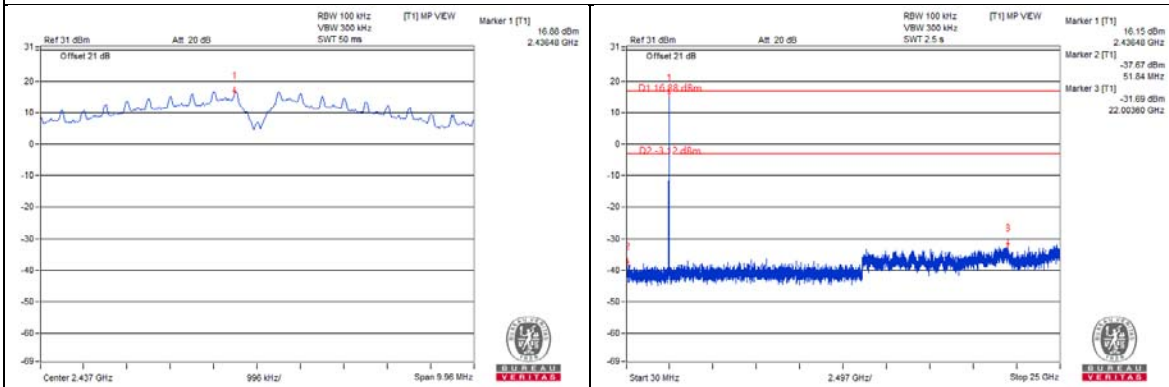
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b
Chain 0

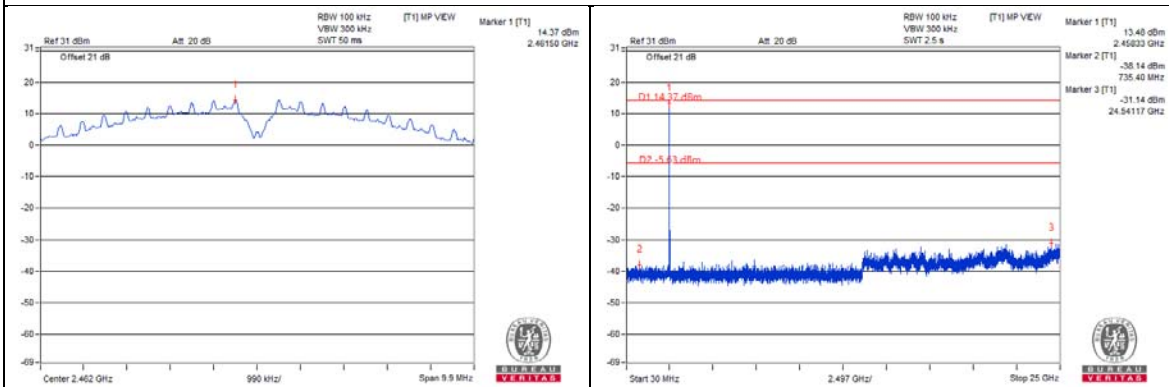
CH 1



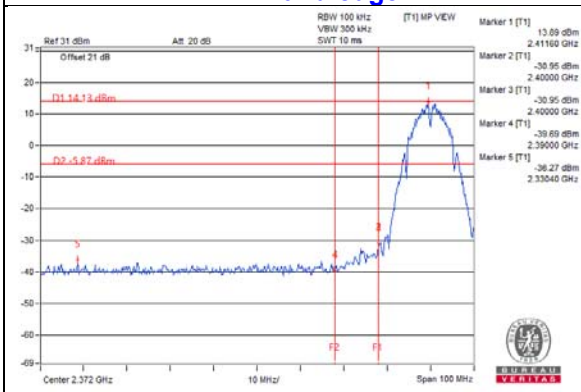
CH 6



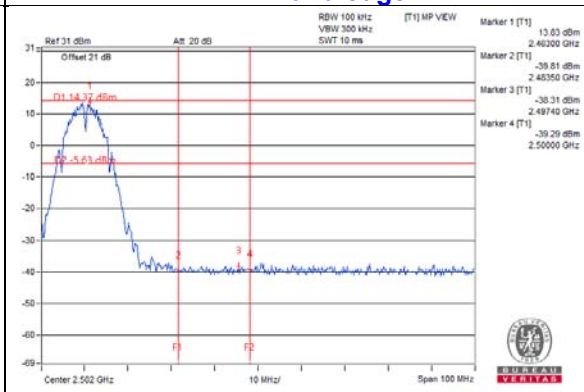
CH 11



CH 1 Band edge

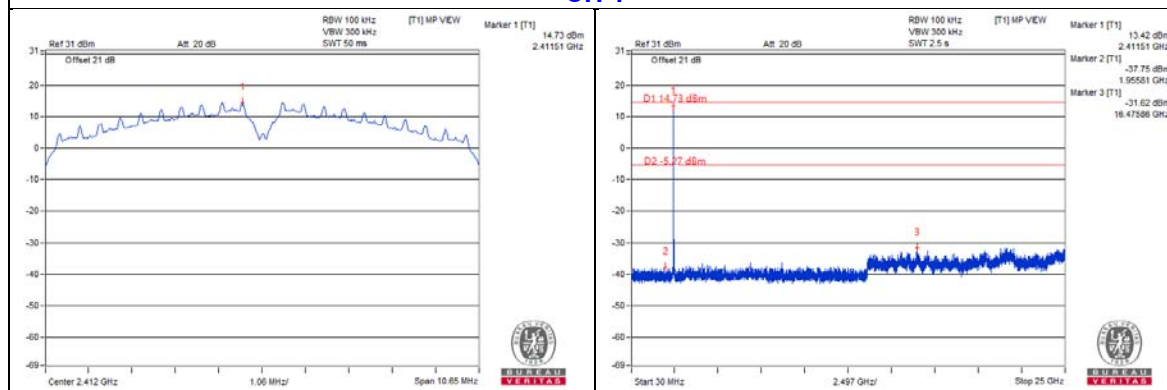


CH 11 Band edge

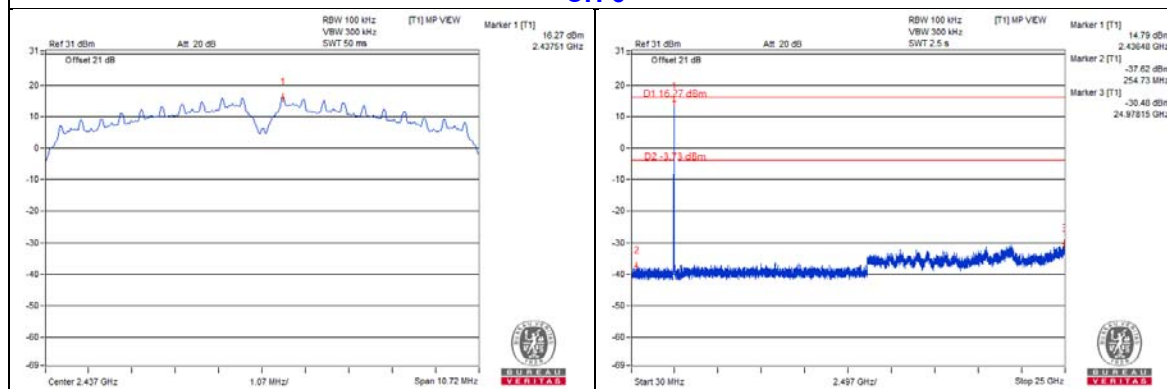


Chain 1

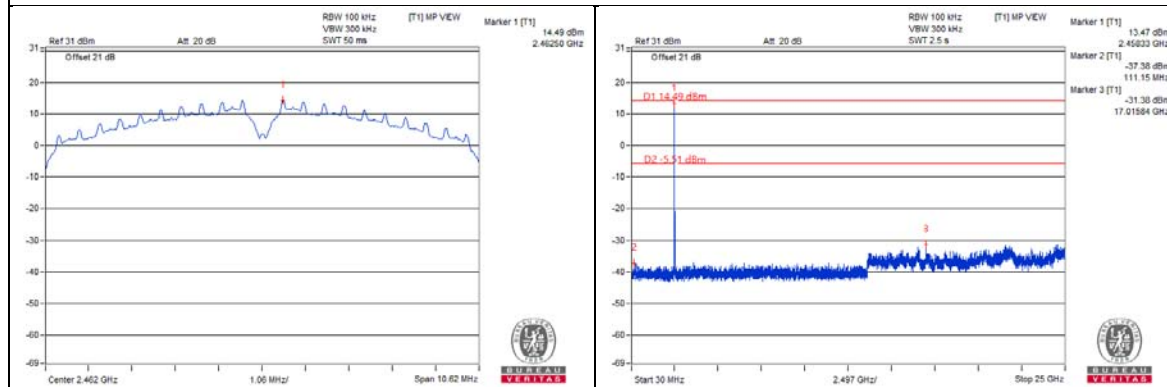
CH 1



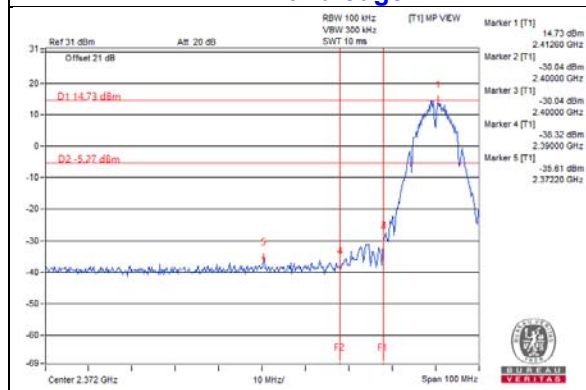
CH 6



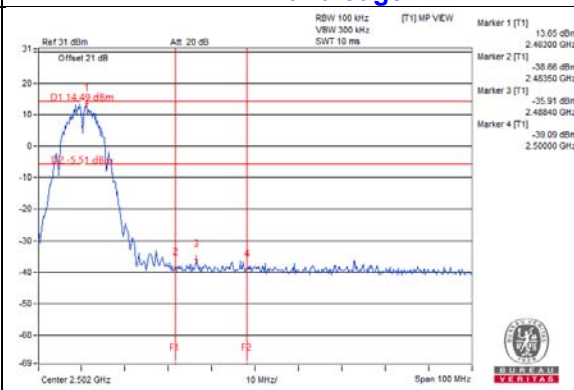
CH 11



CH 1 Band edge

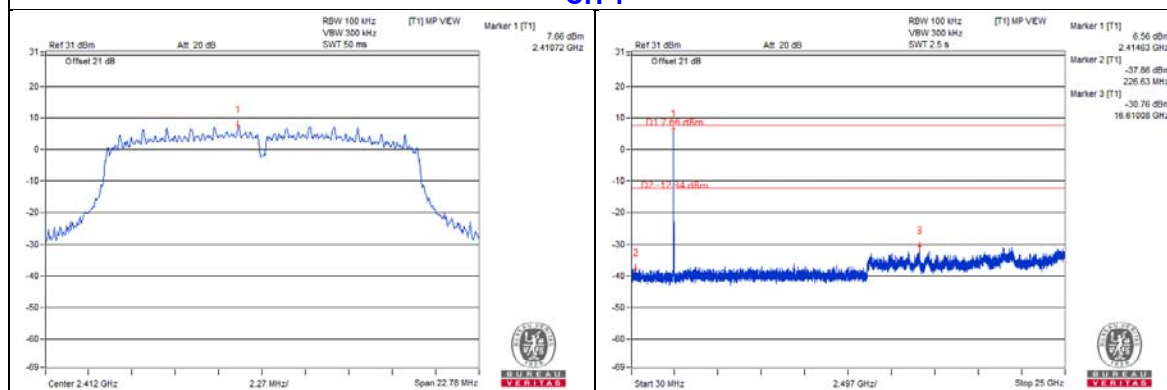


CH 11 Band edge

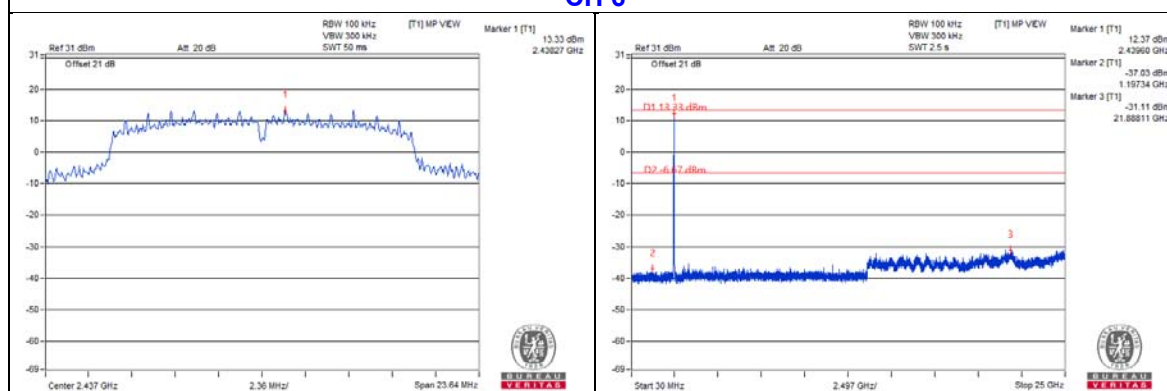


802.11g Chain 0

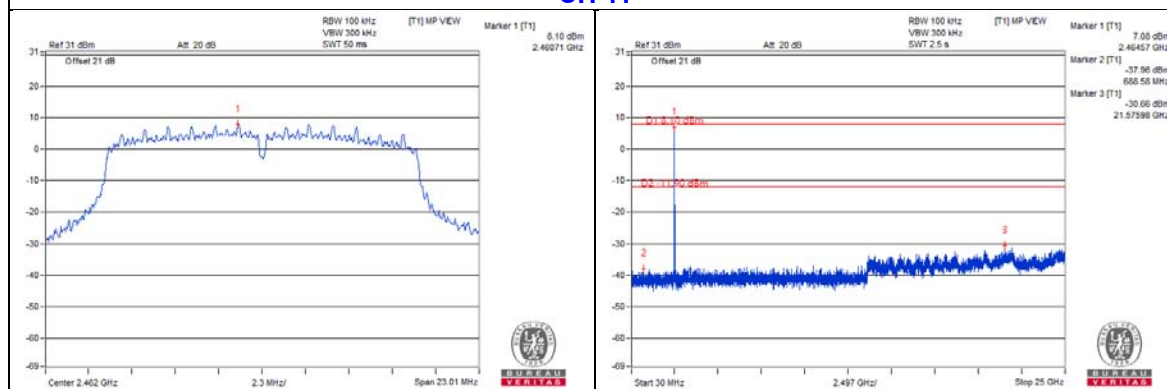
CH 1



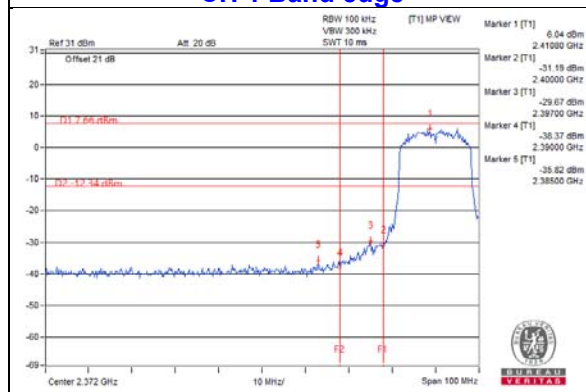
CH 6



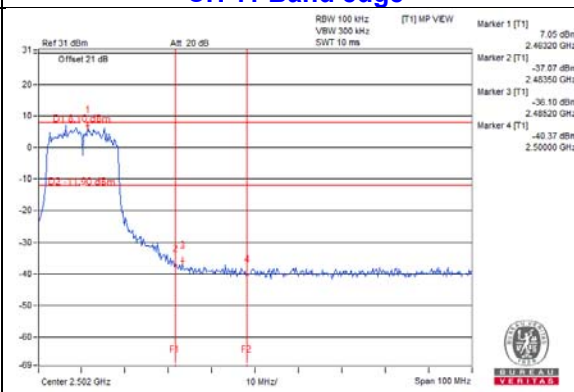
CH 11



CH 1 Band edge

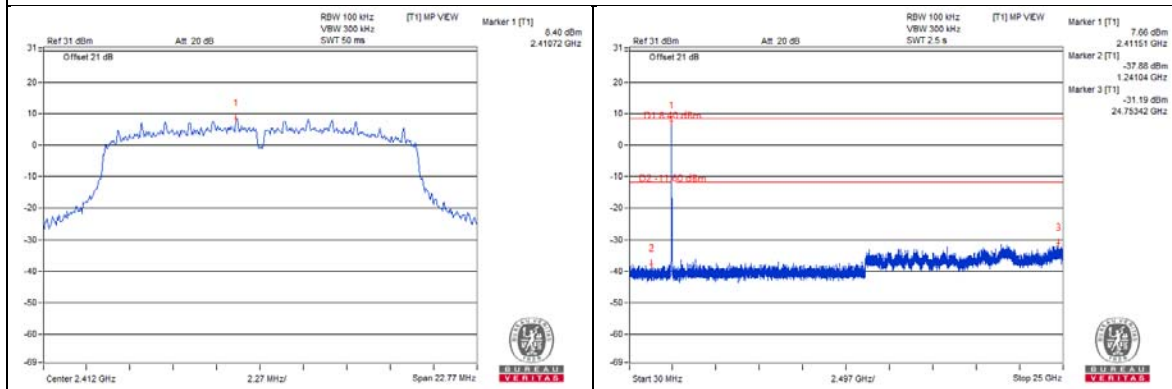


CH 11 Band edge

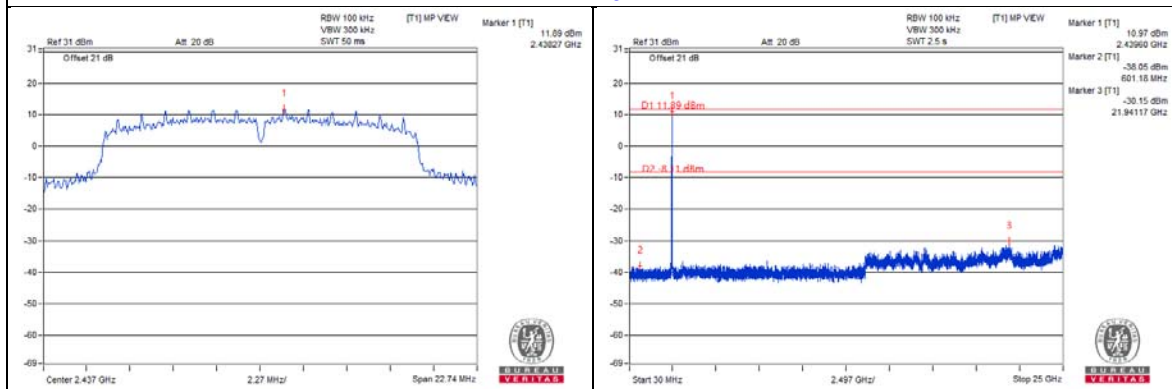


Chain 1

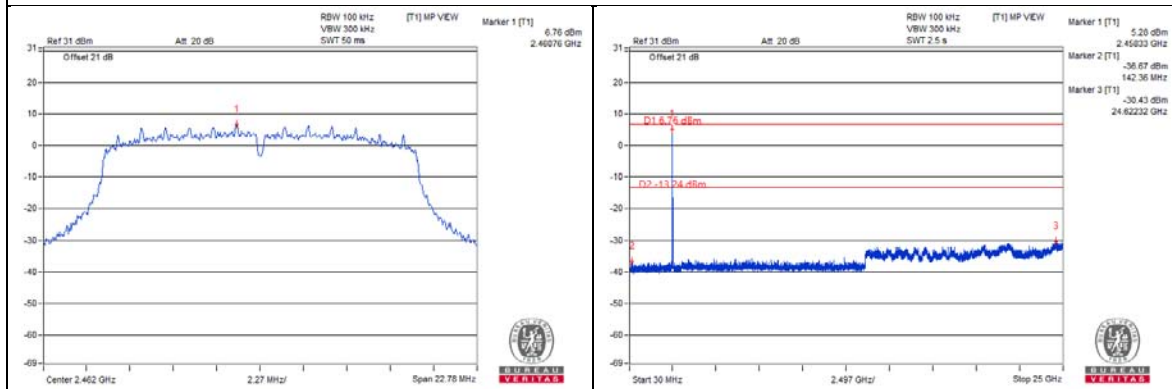
CH 1



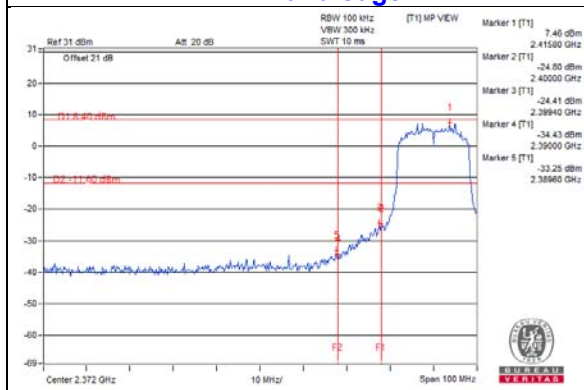
CH 6



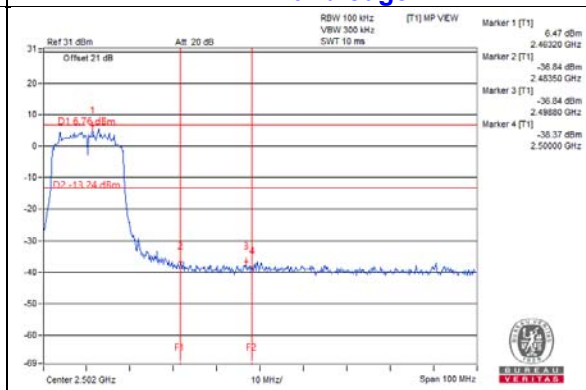
CH 11



CH 1 Band edge

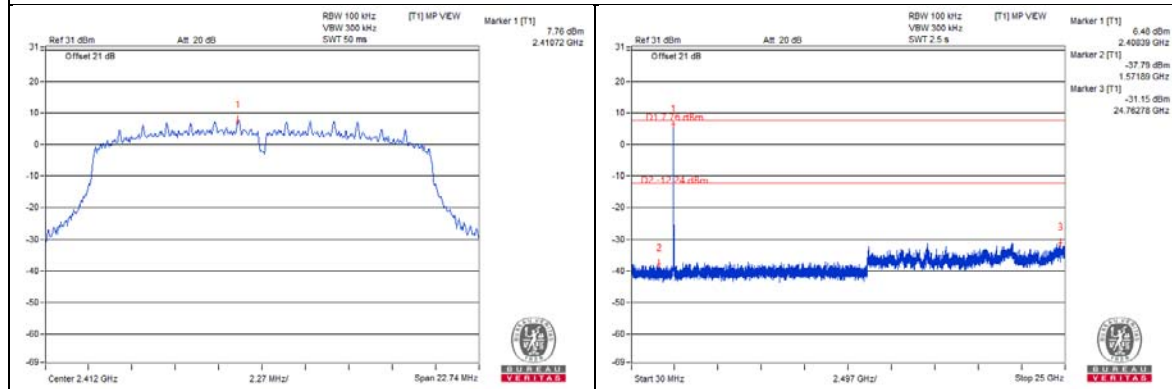


CH 11 Band edge

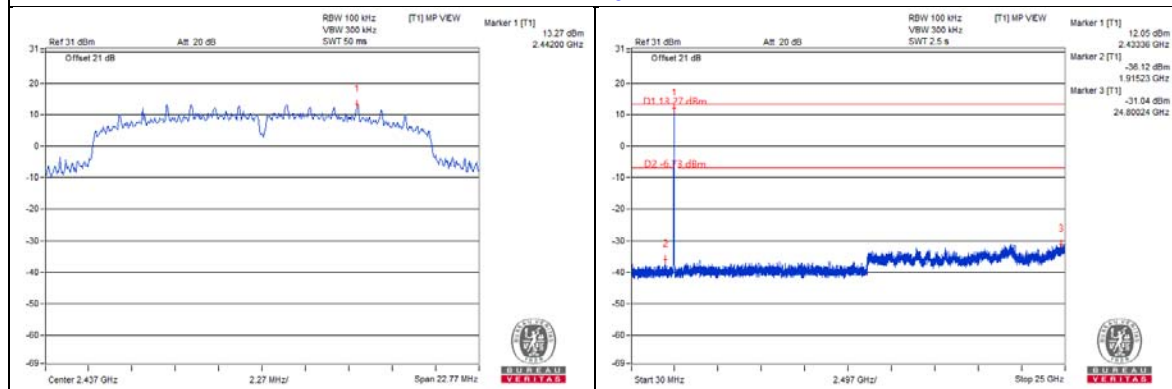


802.11ax (HE20) Chain 0

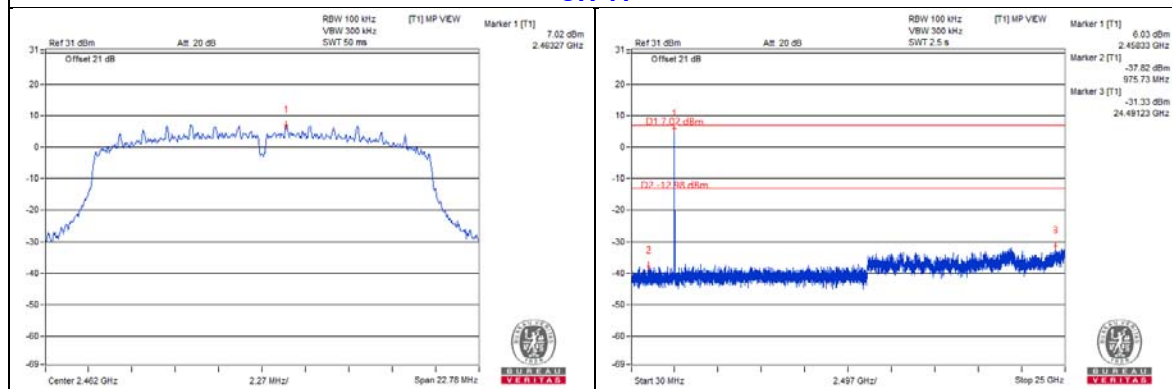
CH 1



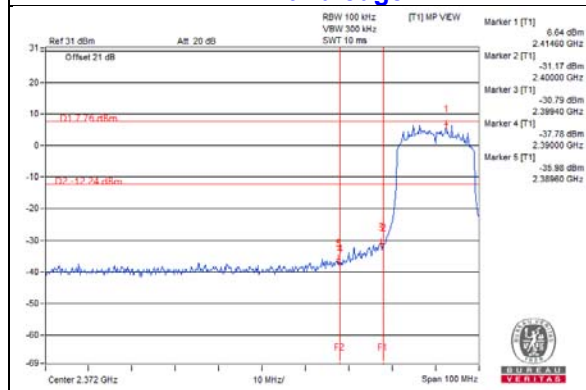
CH 6



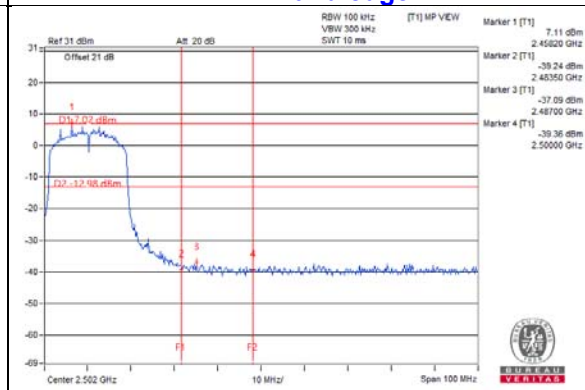
CH 11



CH 1 Band edge

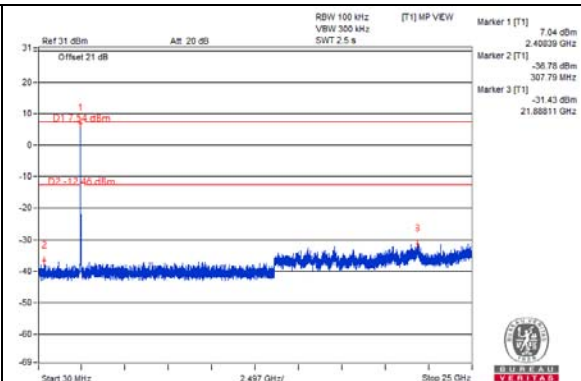
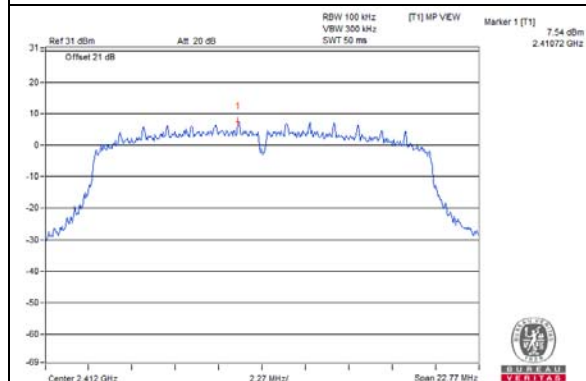


CH 11 Band edge

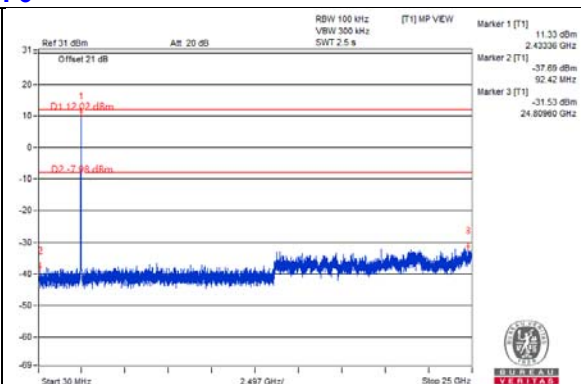
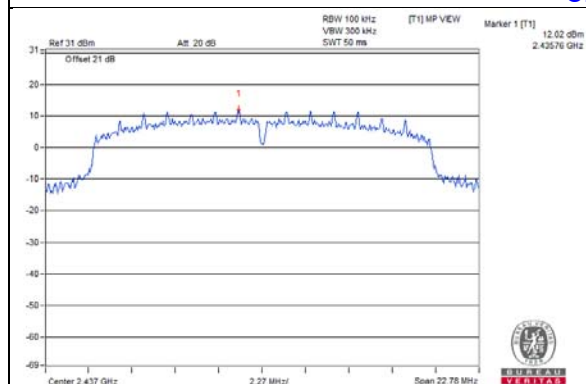


Chain 1

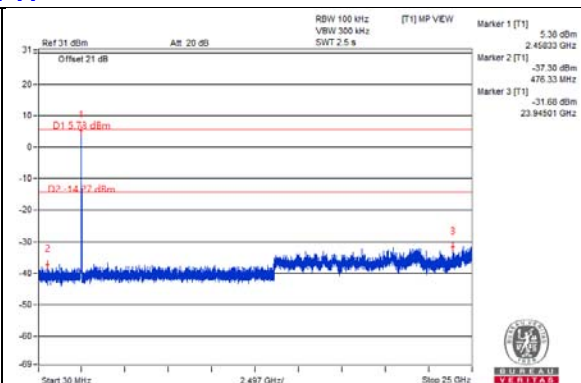
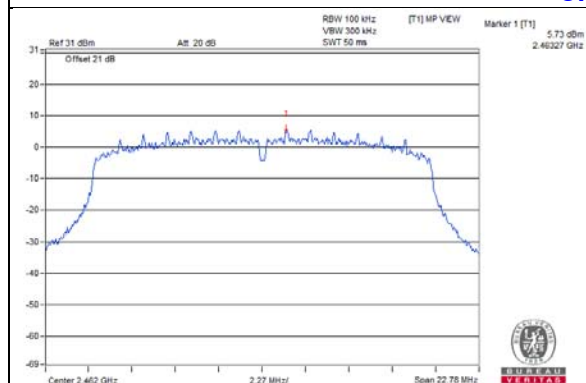
CH 1



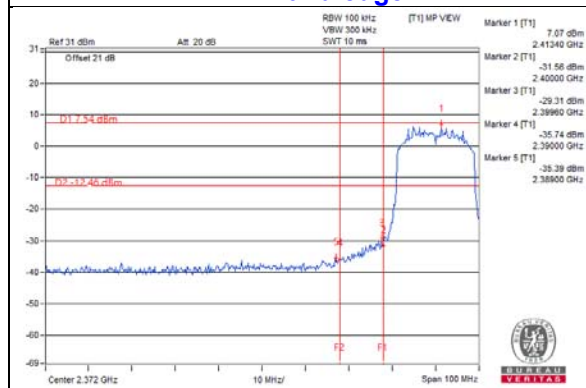
CH 6



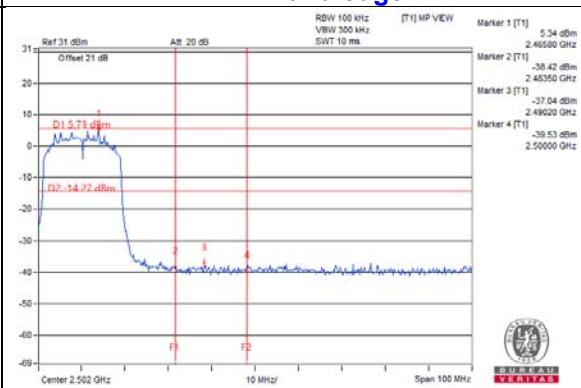
CH 11



CH 1 Band edge

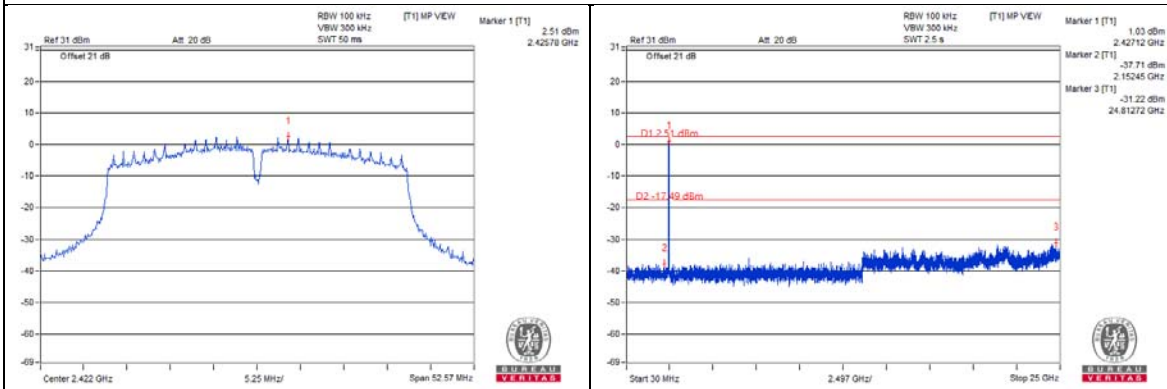


CH 11 Band edge

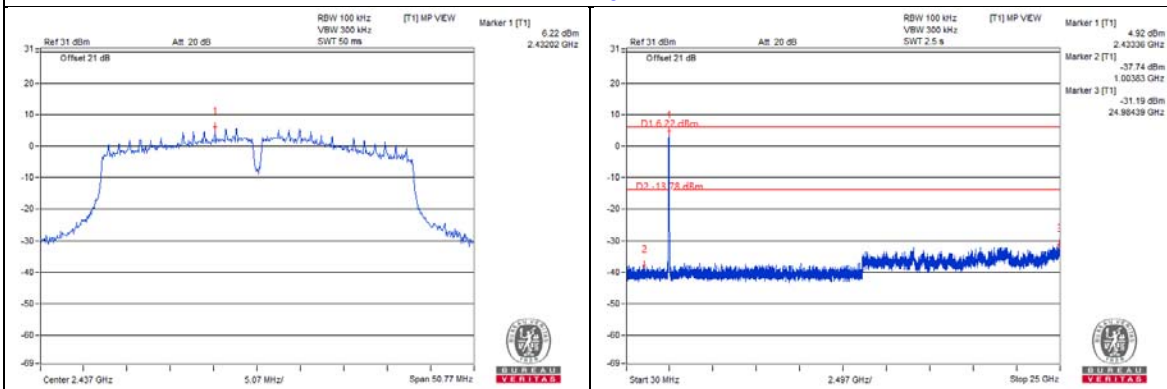


802.11ax (HE40) Chain 0

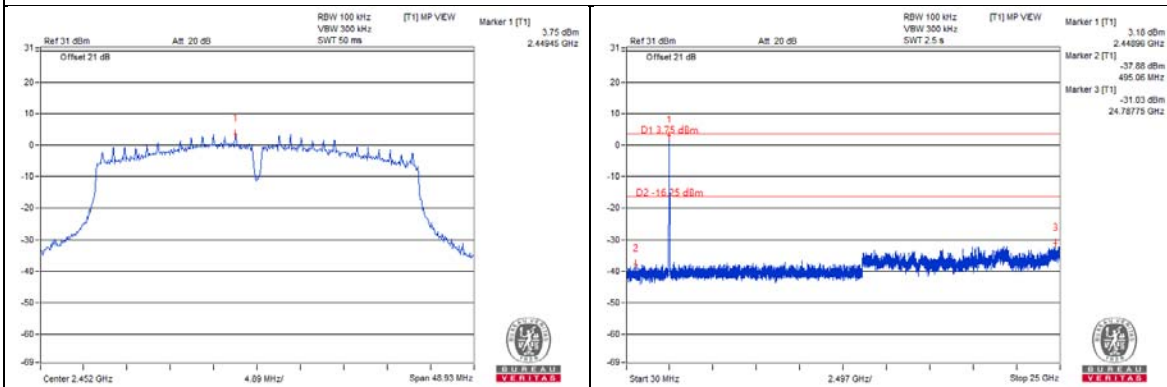
CH 3



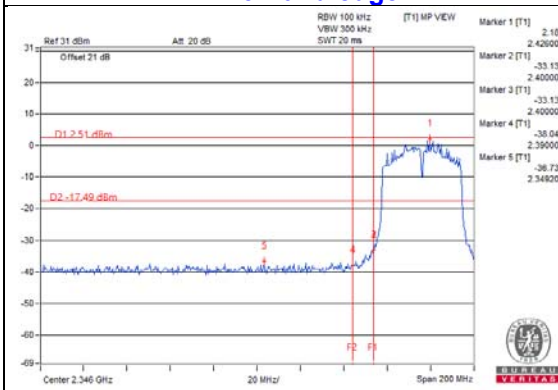
CH 6



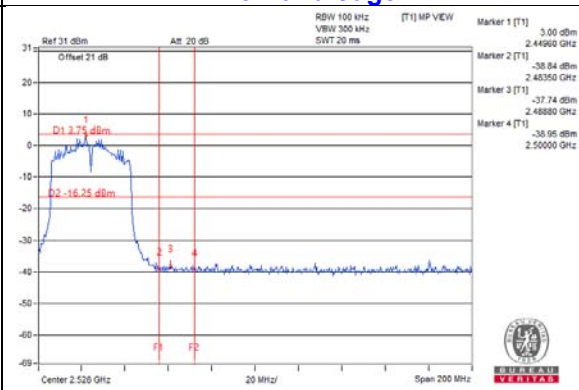
CH 9



CH 3 Band edge

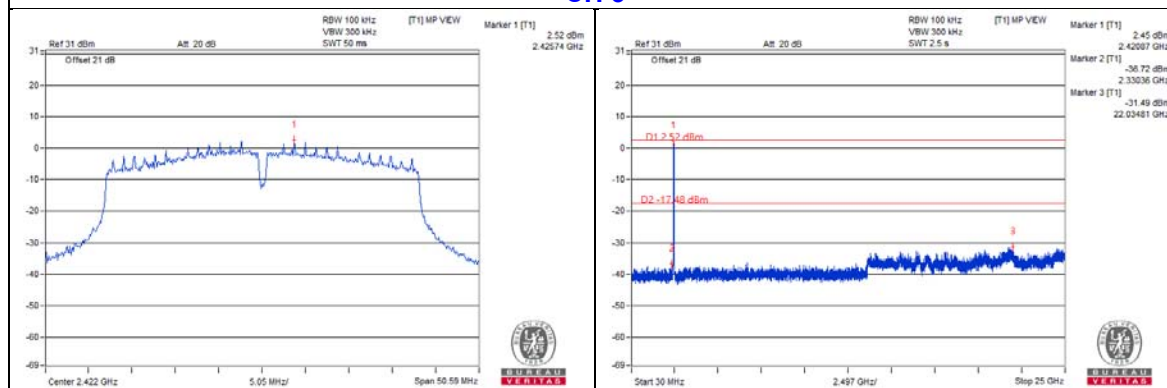


CH 9 Band edge

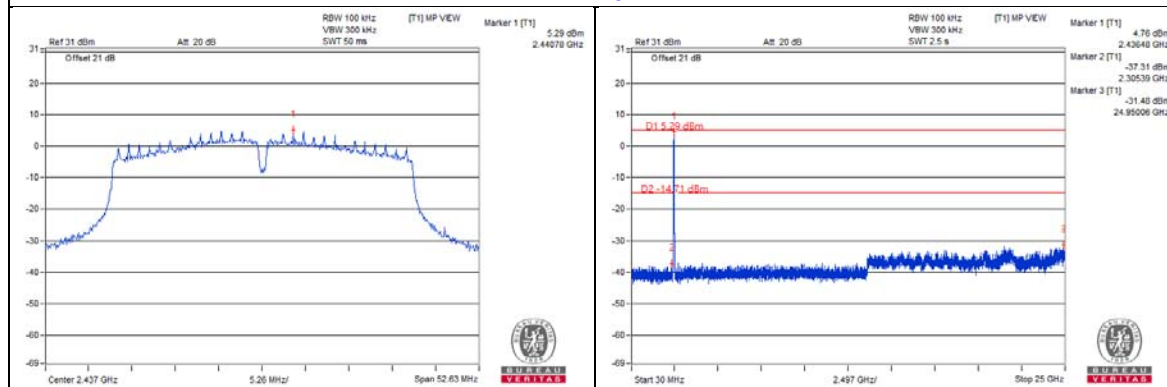


Chain 1

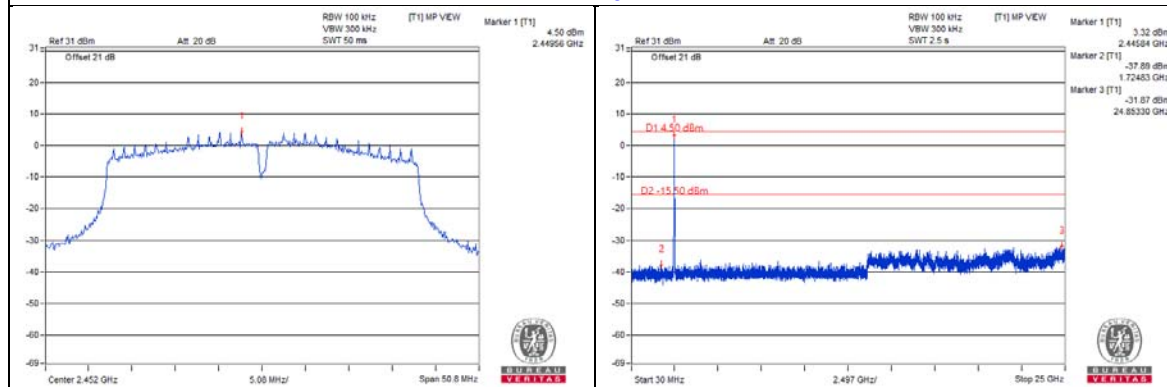
CH 3



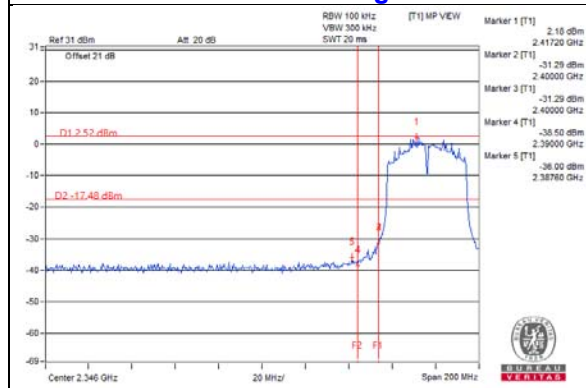
CH 6



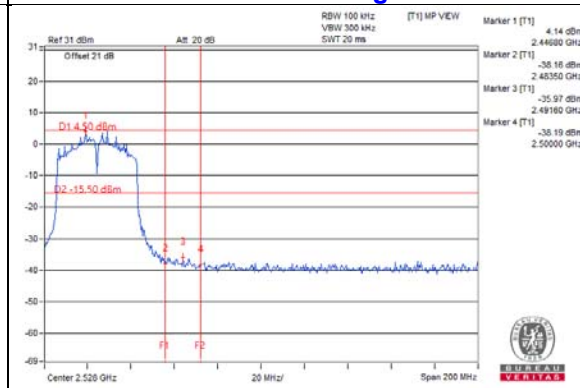
CH 9



CH 3 Band edge



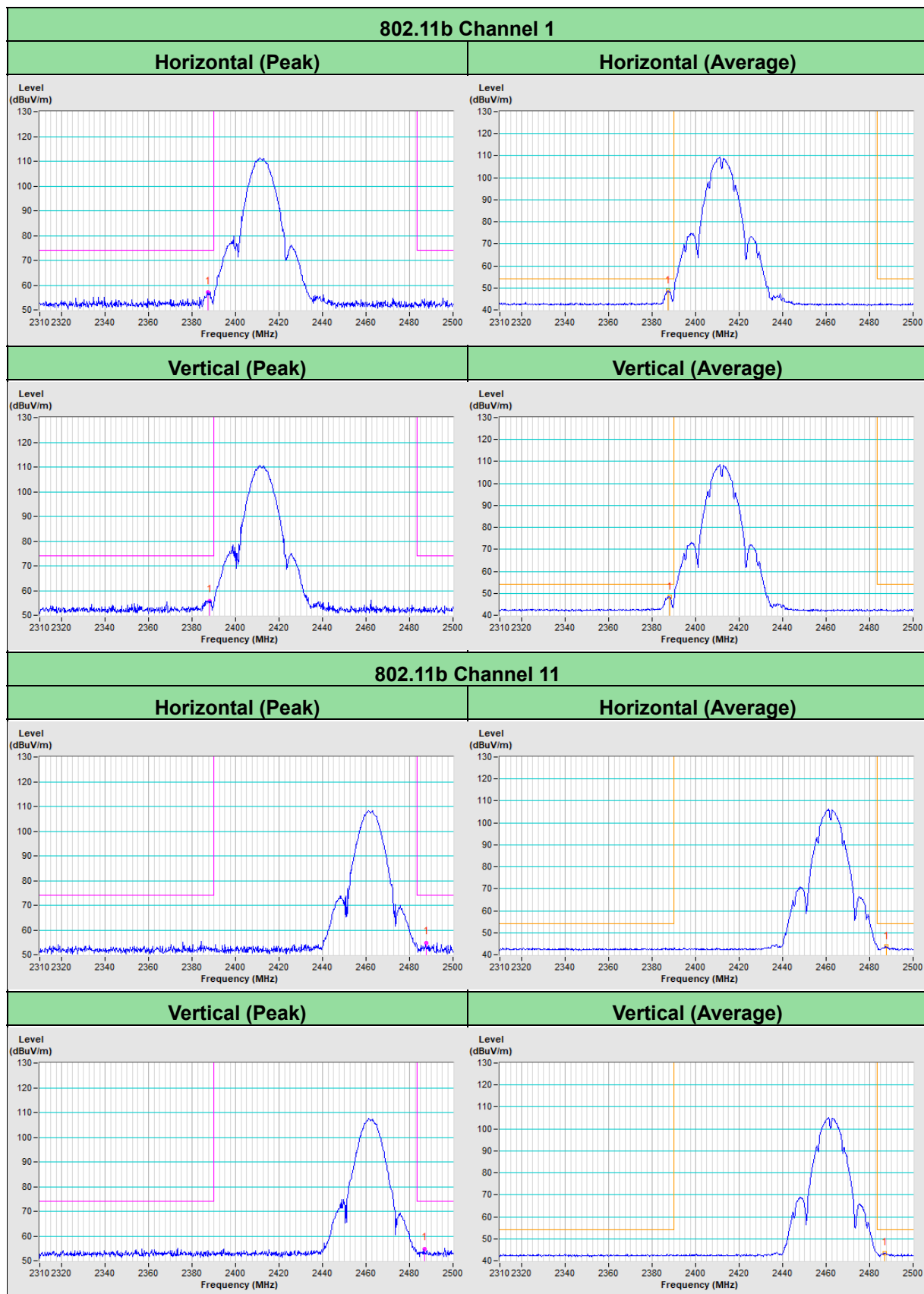
CH 9 Band edge

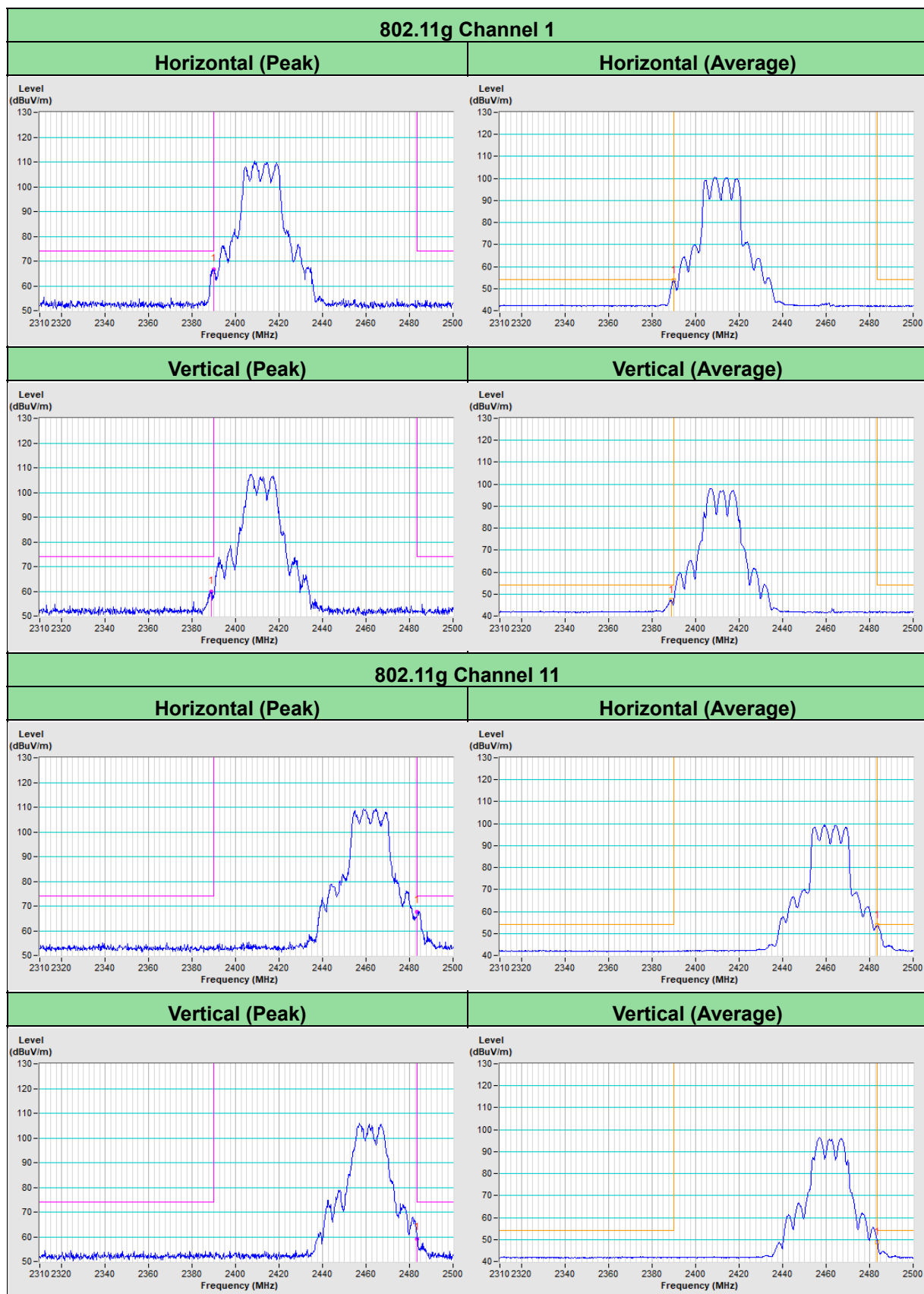


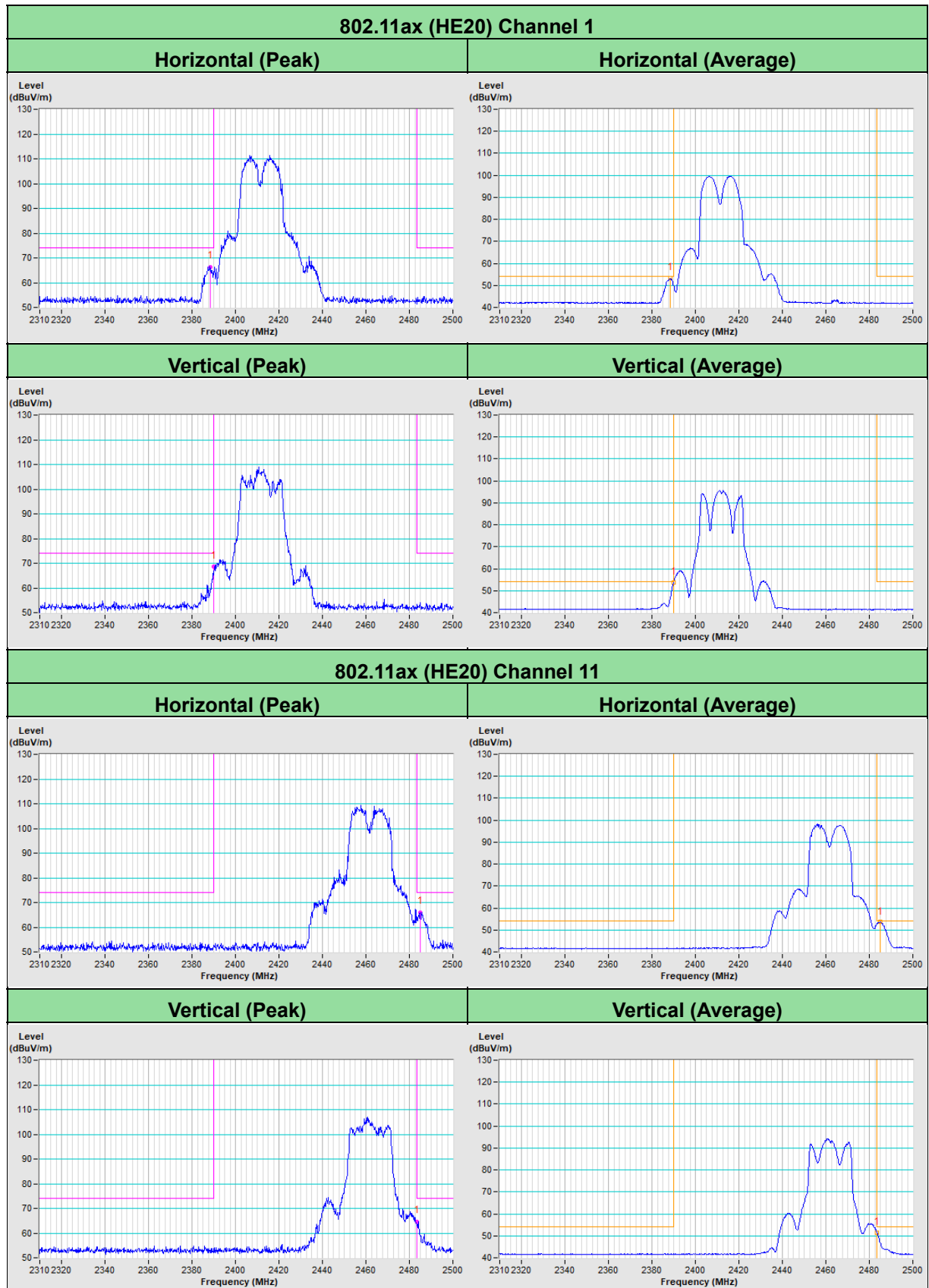
5 Pictures of Test Arrangements

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

Annex A - Band-Edge Measurement

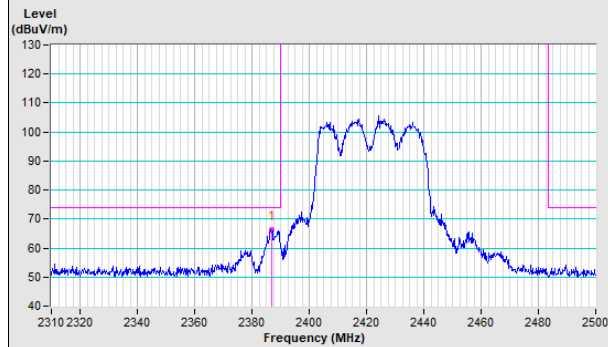




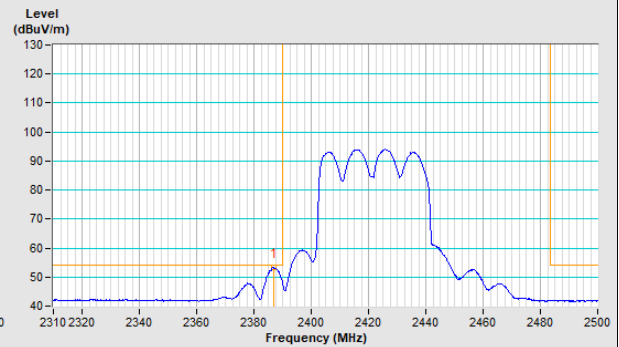


802.11ax (HE40) Channel 3

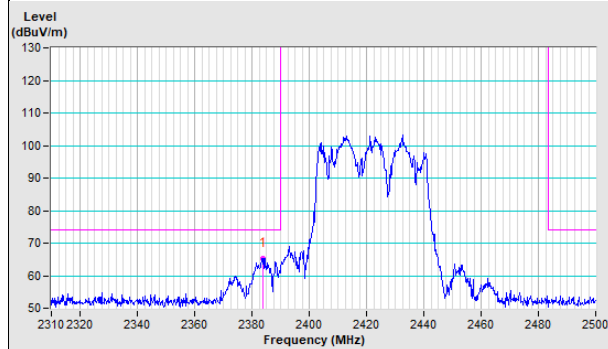
Horizontal (Peak)



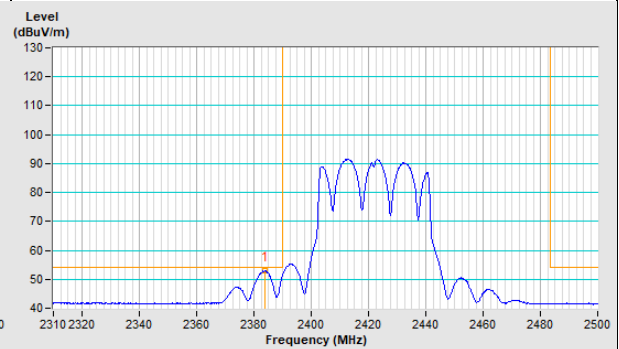
Horizontal (Average)



Vertical (Peak)

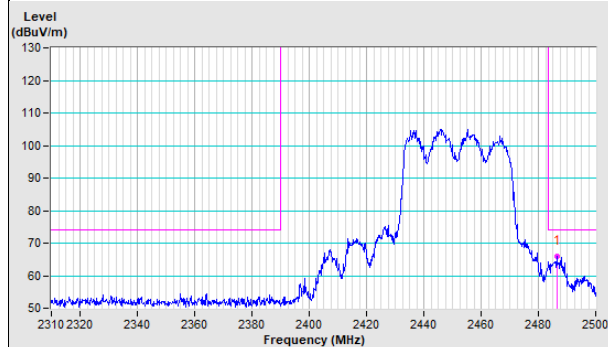


Vertical (Average)

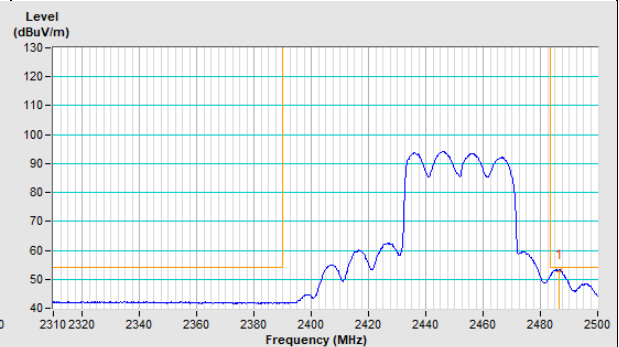


802.11ax (HE40) Channel 9

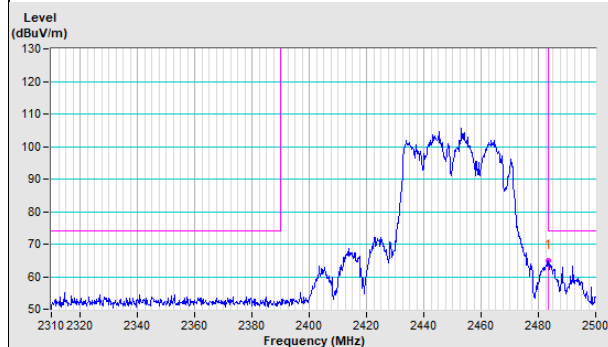
Horizontal (Peak)



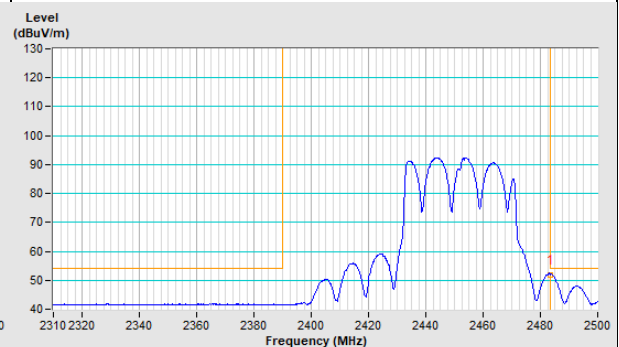
Horizontal (Average)



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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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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