

FCC Test Report (2.4GHz WLAN)

Report No.: RFBHKO-WTW-P21090237

FCC ID: 2AUS4-NFD1

Test Model: NF-D1

Received Date: 2021/9/8

Test Date: 2021/9/10 ~ 2021/11/1

Issued Date: 2021/11/15

Applicant: Neatframe AS

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

Issue No.	Description	Date Issued
RFBHKO-WTW-P21090237	Original release.	2021/11/15

1 Certificate of Conformity

Product: Neat Bar Pro

Brand: neat.

Test Model: NF-D1

Sample Status: Engineering sample

Applicant: Neatframe AS

Test Date: 2021/9/10 ~ 2021/11/1

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 RF characteristics under the conditions specified in this report.

Prepared by :

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Date: 2021/11/15

Jeremy Lin / Project Engineer

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 -4.59dB at 0.46250MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.99dB at 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	Antenna connector is ipex not a standard connector.

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 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.

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	3.00 dB
Conducted Emissions	9kHz ~ 40GHz	2.63 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.38 dB
	30MHz ~ 1GHz	5.70 dB
Radiated Emissions above 1 GHz	Above 1GHz	5.21 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Neat Bar Pro
Brand	neat.
Test Model	NF-D1
Status of EUT	Engineering sample
Power Supply Rating	AC I/P: 100-240V, 50/60Hz, 1.2A
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/HT40): up to 300Mbps VHT20/VHT40: up to 400Mbps 802.11ax: up to 573.5Mbps
Operating Frequency	2412MHz ~ 2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7
Output Power	303.181mW
Antenna Type	Refer to note as below
Antenna Connector	Refer to note as below
Accessory Device	Neat pad <Brand: neat., Model: A1C>
Data Cable Supplied	Shielded HDMI cable (2.0m) Shielded LAN cable (3.0m) Non-shielded AC 2-Pin cable (3.0m)

Note:

1. WLAN 2.4GHz & WLAN 5GHz & Bluetooth & mmWave technologies cannot transmit at same time.

2. The EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	TX Function
802.11b	2TX
802.11g	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
VHT20	2TX
VHT40	2TX
802.11ax (HE20)	2TX
802.11ax (HE40)	2TX

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40 on 802.11n 256QAM and HE20/HE40 on 802.11ax mode. Therefore the investigated worst case is the representative mode in test report. (Final test mode refer section 3.2.1)

3. The following antennas were provided to the EUT.

Ant. 1 Gain (dBi)	Ant. 2 Gain (dBi)	Antenna Type	Antenna Connector
3.64	3.01	PCB	ipex

4. 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.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20), VHT20, 802.11ax (HE20):

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). VHT40, 802.11ax (HE40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G**: Radiated Emission above 1GHz & Bandedge Measurement **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

Radiated Emission Test (Above 1GHz):

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
-	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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11g	1 to 11	11	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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11g	1 to 11	11	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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
-	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

* 802.11n (HT20), 802.11n (HT40), VHT20, VHT40 are for Conducted Power Measurement only.

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	22deg. C, 58%RH	120Vac, 60Hz	Jed Wu
RE<1G	25deg. C, 72%RH	120Vac, 60Hz	Ian Chang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Ian Chang
APCM	25deg. C, 76%RH	120Vac, 60Hz	Dalen Dai

3.3 Duty Cycle of Test Signal

If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

If duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11b: Duty cycle = 100%

802.11g: Duty cycle = $0.396/0.612 = 0.647$, Duty factor = $10 * \log(1/0.647) = 1.89$

802.11ax (HE20): Duty cycle = 100%

802.11ax (HE40): Duty cycle = 100%



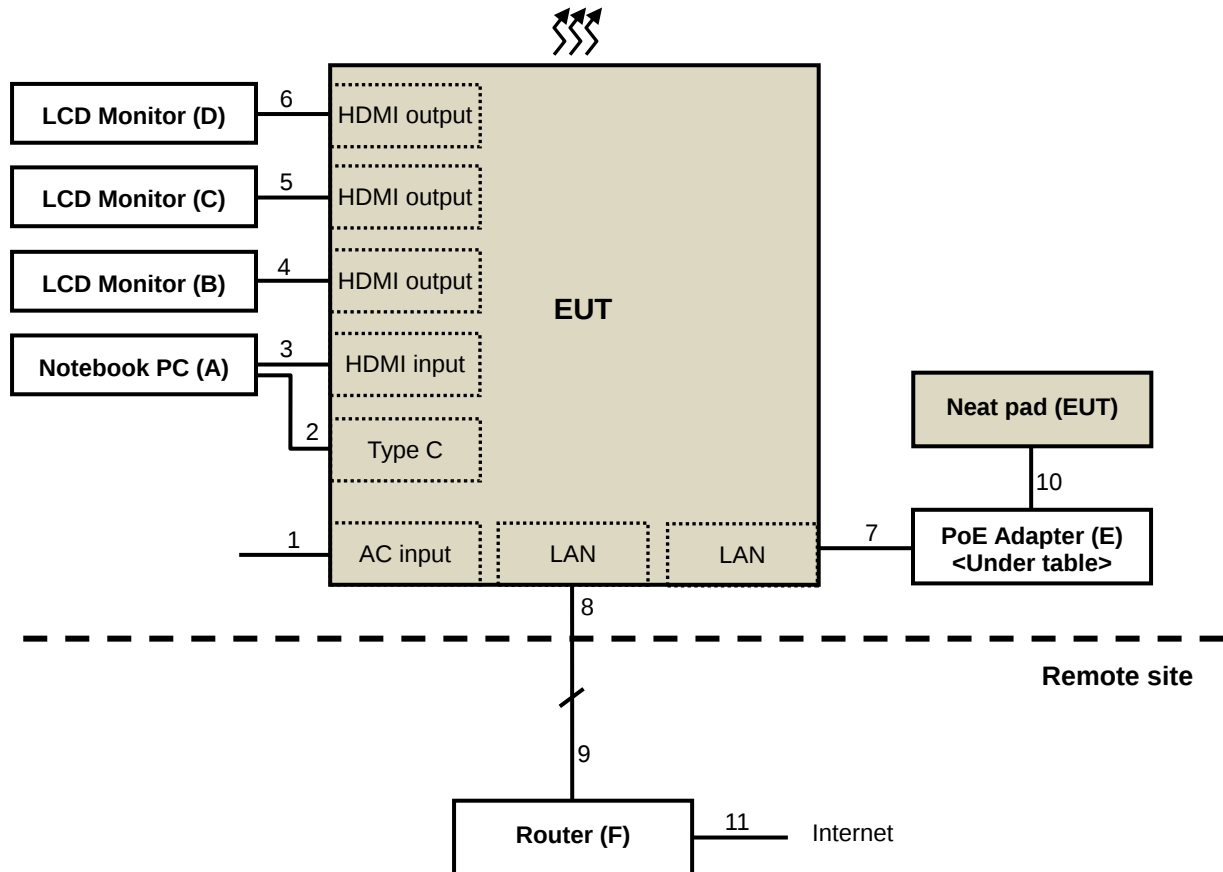
3.4 Description of Support Units

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.	Notebook PC	DELL	Latitude 5401	7FJL3X2	N/A	Provided by Lab
B.	LCD Monitor	ASUS	VG289	N/A	N/A	Supplied by applicant
C.	LCD Monitor	ASUS	VG289	N/A	N/A	Supplied by applicant
D.	LCD Monitor	ASUS	VG289	N/A	N/A	Supplied by applicant
E.	POE Adapter	PHIHONG	POE16R-1AFG	N/A	N/A	Supplied by applicant
F.	Router	TOTO Link	N300RB	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/ No)	Cores (Qty.)	Remarks
1.	AC cable	1	3	N	0	Supplied by applicant
2.	USB Type C cable	1	1.7	Y	0	Supplied by applicant
3.	HDMI cable	1	2	Y	0	Supplied by applicant
4.	HDMI cable	1	1.5	Y	0	Supplied by applicant
5.	HDMI cable	1	1.5	Y	0	Supplied by applicant
6.	HDMI cable	1	1.5	Y	0	Supplied by applicant
7.	LAN cable	1	3	Y	0	Supplied by applicant
8.	LAN cable	1	3	Y	0	Supplied by applicant
9.	LAN cable	1	10	Y	0	Provided by Lab (RJ45, Cat.5e)
10.	LAN cable	1	1	N	0	Provided by Lab (RJ45, Cat.5e)
11.	LAN cable	1	1	N	0	Provided by Lab (RJ45, Cat.5e)

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test standard:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

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

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

4.1.2 Test Instruments

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver Agilent	N9038A	MY51210129	2021/3/12	2022/3/11
Software BVADT	ADT_Radiated_V8.7.08	NA	NA	NA
Software BVADT	ADT_RF Test Software V6.6.5.4	NA	NA	NA
Auto Control System(Antenna Tower, Table, Controller) ADT	SC100+AT100+TT100	0306	NA	NA
Pre_Amplifier EMCI	EMC001340	980269	2021/6/29	2022/6/28
LOOP ANTENNA EMCI	LPA600	270	2021/9/2	2023/9/1
RF Coaxial Cable Pacific	8D-FB	Cable-CH6-02	2021/7/13	2022/7/12
Pre_Amplifier HP	8447D	2432A03504	2021/2/18	2022/2/17
Bi-log Broadband Antenna Schwarzbeck	VULB9168	139	2020/11/6	2021/11/5
Attenuator Mini-Circuits	UNAT-5+	PAD-CH6-01	2021/7/13	2022/7/12
RF Coaxial Cable Pacific	8D-FB	Cable-CH6-02	2021/7/13	2022/7/12
Antenna(Horn) EMCO	3115	00028257	2020/11/22	2021/11/21
Test Receiver Agilent	N9038A	MY51210129	2021/3/12	2022/3/11
Pre-amplifier HP	8449B	3008A01201	2021/2/19	2022/2/18
RF Coaxial Cable NEAT BAR PROER SUHNER	SF-102	Cable-CH6-01	2021/7/8	2022/7/7
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	2021/5/28	2022/5/27
Fix tool for Boresight	BAF-01	5	NA	NA
Pre_Amplifier MITEQ	AMF-6F-260400-33-8P	892164	2021/2/19	2022/2/18
Antenna(Horn) Schwarzbeck	BBHA-9170	BBHA9170190	2020/11/22	2021/11/21
Spectrum Analyzer R&S	FSV40	101544	2021/5/24	2022/5/23
RF Coaxial Cable WOKEN	WC01	Cable-CH10-03	2021/7/8	2022/7/7
RF Coaxial Cable Rosnol	K1K50-UP0279-K1K50-3000	Cable-CH10(3m)-04	2021/7/8	2022/7/7
Highpass filter SUHNER	11SH10-7000/T18000-O/OP	SN 4	2021/5/28	2022/5/27

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
 2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in LK - 966 chamber 1.
 4. Tested Date: 2021/9/10 ~ 2021/11/1

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:

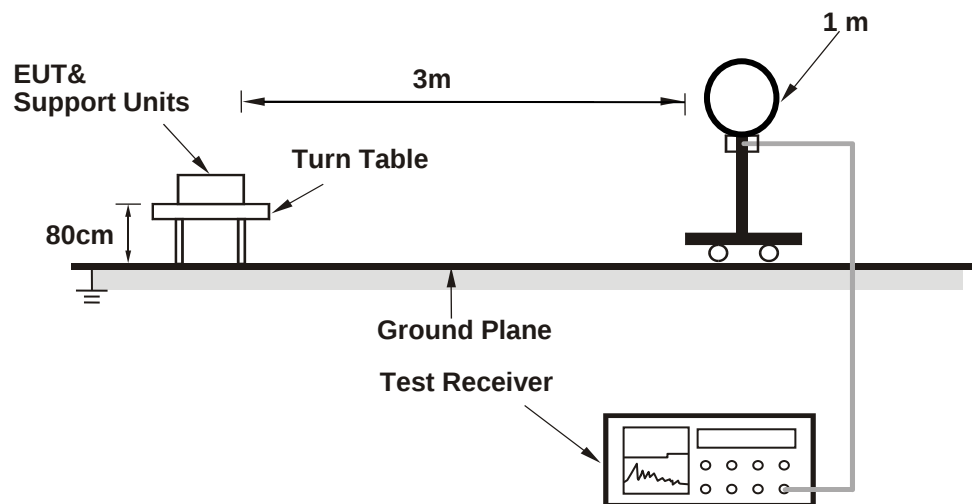
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.
(802.11b: RBW = 1MHz, VBW = 10Hz; 802.11g: RBW = 1MHz, VBW = 2.7kHz;
802.11ax (HE20): RBW = 1MHz, VBW = 10Hz; 802.11ax (HE40): RBW = 1MHz, VBW = 10Hz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

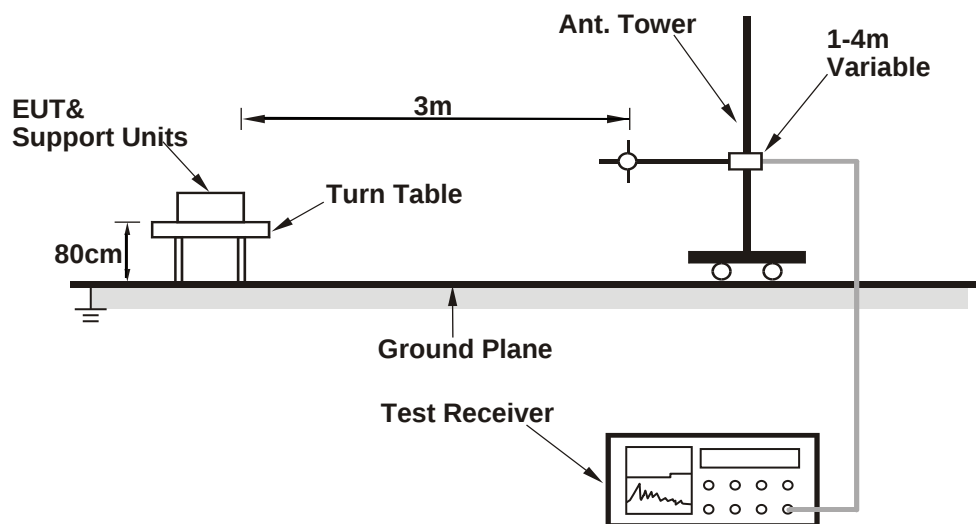
No deviation.

4.1.5 Test Setup

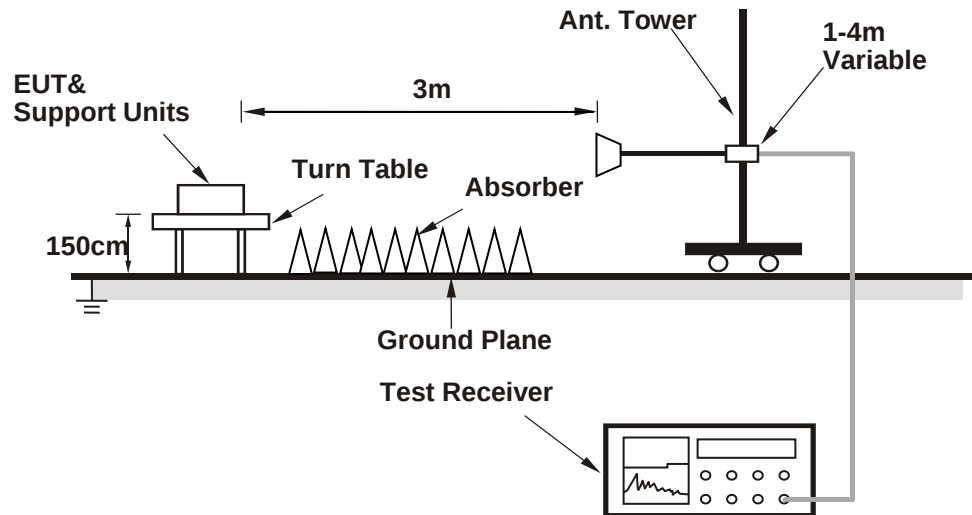
For Radiated emission below 30MHz



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.
- Video camera of EUT captured video image, then sent messages to ext. monitors.
- Notebook sent messages to EUT.
- Neat pad sent messages to EUT.
- EUT sent messages to ext. monitors.
- The necessary accessories enable the system in full functions.

4.1.7 Test Results

ABOVE 1GHz DATA

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	54.52 PK	74.00	-19.48	2.65 H	307	56.80	-2.28
2	2390.00	42.60 AV	54.00	-11.40	2.65 H	307	44.88	-2.28
3	*2412.00	108.74 PK			2.65 H	307	110.93	-2.19
4	*2412.00	106.74 AV			2.65 H	307	108.93	-2.19
5	4824.00	46.78 PK	74.00	-27.22	1.41 H	297	41.12	5.66
6	4824.00	37.12 AV	54.00	-16.88	1.41 H	297	31.46	5.66
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	55.80 PK	74.00	-18.20	2.08 V	224	58.08	-2.28
2	2390.00	44.79 AV	54.00	-9.21	2.08 V	224	47.07	-2.28
3	*2412.00	111.93 PK			2.08 V	224	114.12	-2.19
4	*2412.00	109.92 AV			2.08 V	224	112.11	-2.19
5	4824.00	48.13 PK	74.00	-25.87	1.99 V	275	42.47	5.66
6	4824.00	40.52 AV	54.00	-13.48	1.99 V	275	34.86	5.66

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	*2437.00	107.58 PK			2.63 H	308	109.73	-2.15
2	*2437.00	106.42 AV			2.63 H	308	108.57	-2.15
3	4874.00	46.25 PK	74.00	-27.75	1.38 H	302	40.56	5.69
4	4874.00	35.79 AV	54.00	-18.21	1.38 H	302	30.10	5.69
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	*2437.00	110.56 PK			1.86 V	288	112.71	-2.15
2	*2437.00	109.42 AV			1.86 V	288	111.57	-2.15
3	4874.00	47.90 PK	74.00	-26.10	2.13 V	269	42.21	5.69
4	4874.00	39.15 AV	54.00	-14.85	2.13 V	269	33.46	5.69

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	107.39 PK			2.40 H	309	109.45	-2.06
2	*2462.00	105.48 AV			2.40 H	309	107.54	-2.06
3	2483.50	54.27 PK	74.00	-19.73	2.40 H	309	56.21	-1.94
4	2483.50	42.32 AV	54.00	-11.68	2.40 H	309	44.26	-1.94
5	4924.00	46.73 PK	74.00	-27.27	1.36 H	295	40.96	5.77
6	4924.00	36.98 AV	54.00	-17.02	1.36 H	295	31.21	5.77
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.97 PK			1.83 V	287	113.03	-2.06
2	*2462.00	109.11 AV			1.83 V	287	111.17	-2.06
3	2483.50	55.25 PK	74.00	-18.75	1.83 V	287	57.19	-1.94
4	2483.50	43.84 AV	54.00	-10.16	1.83 V	287	45.78	-1.94
5	4924.00	47.96 PK	74.00	-26.04	2.04 V	270	42.19	5.77
6	4924.00	40.03 AV	54.00	-13.97	2.04 V	270	34.26	5.77

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	55.79 PK	74.00	-18.21	1.19 H	51	58.07	-2.28
2	2390.00	45.18 AV	54.00	-8.82	1.19 H	51	47.46	-2.28
3	*2412.00	107.51 PK			1.19 H	51	109.70	-2.19
4	*2412.00	99.72 AV			1.19 H	51	101.91	-2.19
5	4824.00	45.34 PK	74.00	-28.66	1.32 H	293	39.68	5.66
6	4824.00	34.51 AV	54.00	-19.49	1.32 H	293	28.85	5.66
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	59.20 PK	74.00	-14.80	1.88 V	293	61.48	-2.28
2	2390.00	48.20 AV	54.00	-5.80	1.88 V	293	50.48	-2.28
3	*2412.00	111.38 PK			1.88 V	293	113.57	-2.19
4	*2412.00	103.32 AV			1.88 V	293	105.51	-2.19
5	4824.00	46.33 PK	74.00	-27.67	1.27 V	286	40.67	5.66
6	4824.00	34.92 AV	54.00	-19.08	1.27 V	286	29.26	5.66

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	*2437.00	107.68 PK			3.15 H	301	109.83	-2.15
2	*2437.00	99.88 AV			3.15 H	301	102.03	-2.15
3	4874.00	45.58 PK	74.00	-28.42	1.30 H	295	39.89	5.69
4	4874.00	34.81 AV	54.00	-19.19	1.30 H	295	29.12	5.69
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	*2437.00	111.41 PK			1.85 V	290	113.56	-2.15
2	*2437.00	103.18 AV			1.85 V	290	105.33	-2.15
3	4874.00	46.70 PK	74.00	-27.30	1.24 V	284	41.01	5.69
4	4874.00	35.92 AV	54.00	-18.08	1.24 V	284	30.23	5.69

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	106.58 PK			1.99 H	309	108.64	-2.06
2	*2462.00	98.83 AV			1.99 H	309	100.89	-2.06
3	2483.50	54.34 PK	74.00	-19.66	1.99 H	309	56.28	-1.94
4	2483.50	43.36 AV	54.00	-10.64	1.99 H	309	45.30	-1.94
5	4924.00	45.44 PK	74.00	-28.56	1.27 H	292	39.67	5.77
6	4924.00	34.54 AV	54.00	-19.46	1.27 H	292	28.77	5.77
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.54 PK			1.99 V	289	113.60	-2.06
2	*2462.00	103.37 AV			1.99 V	289	105.43	-2.06
3	2483.50	59.40 PK	74.00	-14.60	1.99 V	289	61.34	-1.94
4	2483.50	48.31 AV	54.00	-5.69	1.99 V	289	50.25	-1.94
5	4924.00	46.80 PK	74.00	-27.20	1.26 V	283	41.03	5.77
6	4924.00	36.35 AV	54.00	-17.65	1.26 V	283	30.58	5.77

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	2390.00	54.93 PK	74.00	-19.07	1.20 H	51	57.21	-2.28
2	2390.00	43.96 AV	54.00	-10.04	1.20 H	51	46.24	-2.28
3	*2412.00	108.22 PK			1.20 H	51	110.41	-2.19
4	*2412.00	97.27 AV			1.20 H	51	99.46	-2.19
5	4824.00	45.55 PK	74.00	-28.45	1.67 H	188	39.89	5.66
6	4824.00	34.61 AV	54.00	-19.39	1.67 H	188	28.95	5.66
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.84 PK	74.00	-16.16	1.88 V	293	60.12	-2.28
2	2390.00	45.05 AV	54.00	-8.95	1.88 V	293	47.33	-2.28
3	*2412.00	112.70 PK			1.88 V	293	114.89	-2.19
4	*2412.00	101.22 AV			1.88 V	293	103.41	-2.19
5	4824.00	46.03 PK	74.00	-27.97	1.11 V	261	40.37	5.66
6	4824.00	34.70 AV	54.00	-19.30	1.11 V	261	29.04	5.66

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	*2437.00	109.12 PK			2.65 H	304	111.27	-2.15
2	*2437.00	97.91 AV			2.65 H	304	100.06	-2.15
3	4874.00	45.95 PK	74.00	-28.05	1.63 H	184	40.26	5.69
4	4874.00	34.87 AV	54.00	-19.13	1.63 H	184	29.18	5.69
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	*2437.00	112.61 PK			1.85 V	292	114.76	-2.15
2	*2437.00	101.23 AV			1.85 V	292	103.38	-2.15
3	4874.00	46.34 PK	74.00	-27.66	1.15 V	256	40.65	5.69
4	4874.00	35.17 AV	54.00	-18.83	1.15 V	256	29.48	5.69

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	108.20 PK			1.98 H	311	110.26	-2.06
2	*2462.00	96.96 AV			1.98 H	311	99.02	-2.06
3	2483.50	56.70 PK	74.00	-17.30	1.98 H	311	58.64	-1.94
4	2483.50	45.15 AV	54.00	-8.85	1.98 H	311	47.09	-1.94
5	4924.00	45.20 PK	74.00	-28.80	1.61 H	181	39.43	5.77
6	4924.00	34.08 AV	54.00	-19.92	1.61 H	181	28.31	5.77
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	112.75 PK			2.01 V	290	114.81	-2.06
2	*2462.00	101.51 AV			2.01 V	290	103.57	-2.06
3	2483.50	62.95 PK	74.00	-11.05	2.01 V	290	64.89	-1.94
4	2483.50	49.86 AV	54.00	-4.14	2.01 V	290	51.80	-1.94
5	4924.00	46.00 PK	74.00	-28.00	1.21 V	263	40.23	5.77
6	4924.00	34.89 AV	54.00	-19.11	1.21 V	263	29.12	5.77

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	2390.00	56.24 PK	74.00	-17.76	1.20 H	49	58.52	-2.28
2	2390.00	44.81 AV	54.00	-9.19	1.20 H	49	47.09	-2.28
3	*2422.00	106.38 PK			1.20 H	49	108.55	-2.17
4	*2422.00	94.99 AV			1.20 H	49	97.16	-2.17
5	4844.00	45.61 PK	74.00	-28.39	1.87 H	134	39.92	5.69
6	4844.00	34.68 AV	54.00	-19.32	1.87 H	134	28.99	5.69
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.49 PK	74.00	-16.51	1.84 V	290	59.77	-2.28
2	2390.00	45.90 AV	54.00	-8.10	1.84 V	290	48.18	-2.28
3	*2422.00	109.61 PK			1.84 V	290	111.78	-2.17
4	*2422.00	98.25 AV			1.84 V	290	100.42	-2.17
5	4844.00	45.86 PK	74.00	-28.14	2.13 V	158	40.17	5.69
6	4844.00	35.07 AV	54.00	-18.93	2.13 V	158	29.38	5.69

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	*2437.00	106.71 PK			3.22 H	300	108.86	-2.15
2	*2437.00	95.54 AV			3.22 H	300	97.69	-2.15
3	4874.00	45.54 PK	74.00	-28.46	1.82 H	149	39.85	5.69
4	4874.00	34.72 AV	54.00	-19.28	1.82 H	149	29.03	5.69
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	*2437.00	109.51 PK			1.85 V	290	111.66	-2.15
2	*2437.00	98.74 AV			1.85 V	290	100.89	-2.15
3	4874.00	45.71 PK	74.00	-28.29	2.33 V	142	40.02	5.69
4	4874.00	34.88 AV	54.00	-19.12	2.33 V	142	29.19	5.69

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	106.28 PK			2.39 H	311	108.39	-2.11
2	*2452.00	94.65 AV			2.39 H	311	96.76	-2.11
3	2483.50	59.02 PK	74.00	-14.98	2.39 H	311	60.96	-1.94
4	2483.50	48.17 AV	54.00	-5.83	2.39 H	311	50.11	-1.94
5	4904.00	45.49 PK	74.00	-28.51	1.91 H	142	39.78	5.71
6	4904.00	34.59 AV	54.00	-19.41	1.91 H	142	28.88	5.71
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	109.78 PK			2.03 V	292	111.89	-2.11
2	*2452.00	99.07 AV			2.03 V	292	101.18	-2.11
3	2483.50	65.68 PK	74.00	-8.32	2.03 V	292	67.62	-1.94
4	2483.50	53.01 AV	54.00	-0.99	2.03 V	292	54.95	-1.94
5	4904.00	46.27 PK	74.00	-27.73	2.28 V	154	40.56	5.71
6	4904.00	35.18 AV	54.00	-18.82	2.28 V	154	29.47	5.71

Remarks:

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

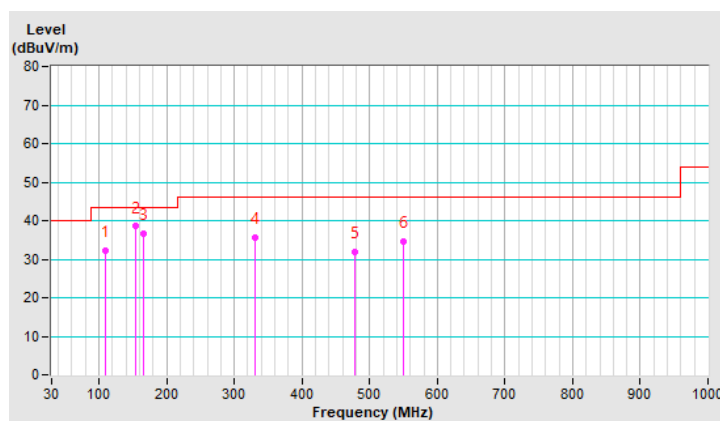
BELOW 1GHz WORST-CASE DATA

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	110.03	32.23 QP	43.50	-11.27	3.26 H	198	41.99	-9.76
2	153.97	38.50 QP	43.50	-5.00	2.25 H	344	44.66	-6.16
3	165.02	36.65 QP	43.50	-6.85	1.94 H	347	42.97	-6.32
4	329.92	35.69 QP	46.00	-10.31	1.08 H	309	38.97	-3.28
5	477.61	31.87 QP	46.00	-14.13	2.39 H	211	32.17	-0.30
6	549.92	34.72 QP	46.00	-11.28	2.28 H	152	33.90	0.82

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.

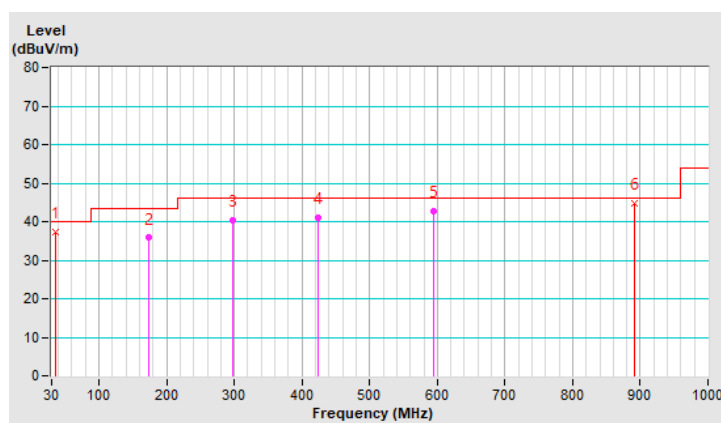


RF Mode	TX 802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	36.24	37.29 QP	40.00	-2.71	1.08 V	87	45.47	-8.18
2	173.32	35.83 QP	43.50	-7.67	1.27 V	117	42.45	-6.62
3	296.99	40.32 QP	46.00	-5.68	1.18 V	68	44.59	-4.27
4	424.01	41.10 QP	46.00	-4.90	1.52 V	175	42.45	-1.35
5	594.01	42.83 QP	46.00	-3.17	1.62 V	141	40.68	2.15
6	890.98	44.83 QP	46.00	-1.17	1.85 V	360	37.24	7.59

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 ESR3 R&S	ESR3	102412	2021/1/29	2022/1/28
LISN SCHWARZBECK	NSLK 8128	8128-244	2020/11/19	2021/11/18
LISN SCHWARZBECK	NNLK8129	8129229	2021/5/20	2022/5/19
DC LISN SCHWARZBECK	NNLK 8121	8121-808	2021/4/18	2022/4/17
LISN SCHWARZBECK	NNLK 8121	8121-731	2021/4/28	2022/4/27
LISN R&S	ENV216	101196	2021/4/26	2022/4/25
LISN R&S	ESH3-Z5	100220	2020/12/1	2021/11/30
LISN R&S	ESH3-Z6	844950/018	2021/7/25	2022/7/24
DC LISN R&S	ESH3-Z6	100219	2021/7/25	2022/7/24
High Voltage Probe Schwarzbeck	TK9420	00982	2021/1/8	2022/1/7
RF Coaxial Cable Commate	5D-FB	Cable-CO5-01	2021/1/29	2022/1/28
Attenuator STI	STI02-2200-10	NO.4	2021/9/3	2022/9/2
50 Ohms Terminator LYNICS	0900510	E1-01-305	2021/2/17	2022/2/16
Isolation Transformer Erika Fiedler	D-65396	017	2021/9/9	2022/9/8
Software BVADT	Cond_V7.3.7.4	NA	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 Linkou Conduction05

3. The VCCI Site Registration No. C-11093.

4. Tested Date: 2021/10/27

4.2.3 Test Procedures

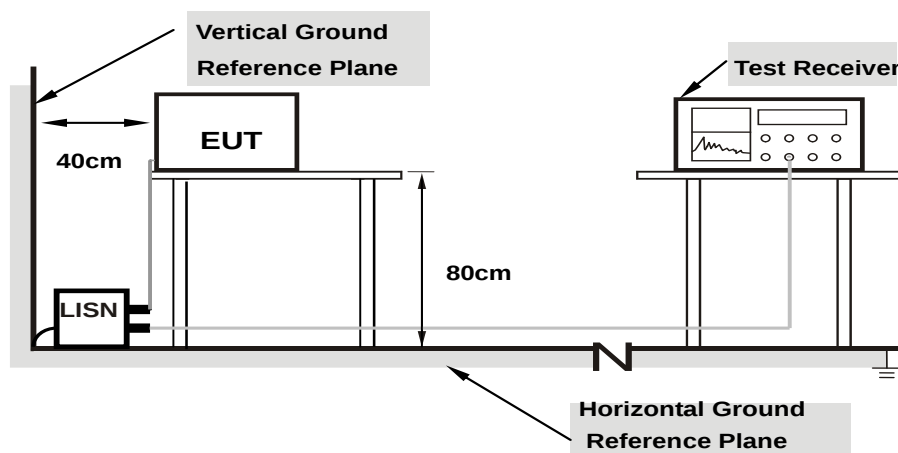
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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 Item 4.1.6.

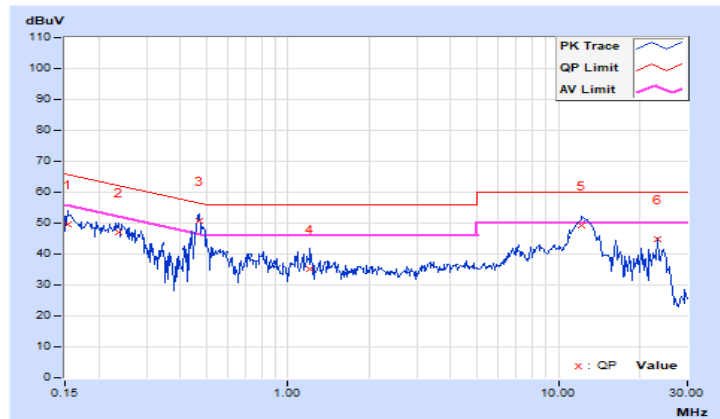
4.2.7 Test Results

RF Mode	TX 802.11g	Channel	CH 11 : 2462 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	0.15391	9.88	39.85	31.72	49.73	41.60	65.79	55.79	-16.06	-14.19
2	0.23594	9.88	37.10	29.60	46.98	39.48	62.24	52.24	-15.26	-12.76
3	0.47031	9.91	40.83	31.73	50.74	41.64	56.51	46.51	-5.77	-4.87
4	1.20313	9.96	25.24	17.13	35.20	27.09	56.00	46.00	-20.80	-18.91
5	12.19922	10.27	38.99	32.77	49.26	43.04	60.00	50.00	-10.74	-6.96
6	23.12891	10.48	34.49	33.44	44.97	43.92	60.00	50.00	-15.03	-6.08

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

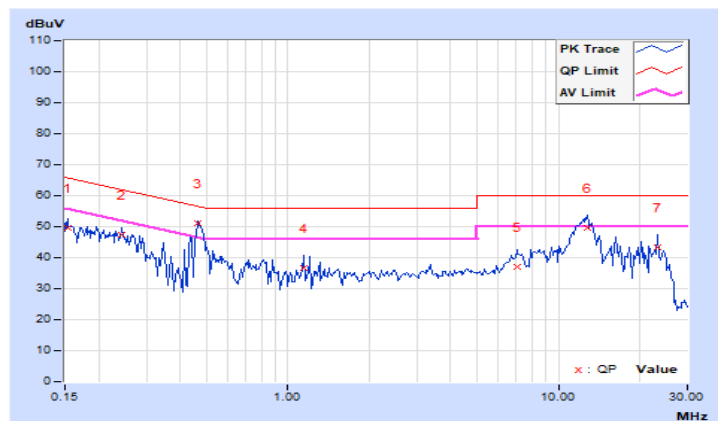


RF Mode	TX 802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.15391	9.89	39.72	30.91	49.61	40.80	65.79	55.79	-16.18	-14.99
2	0.24375	9.89	37.54	29.01	47.43	38.90	61.97	51.97	-14.54	-13.07
3	0.46250	9.92	41.02	32.14	50.94	42.06	56.65	46.65	-5.71	-4.59
4	1.14844	9.97	26.84	17.53	36.81	27.50	56.00	46.00	-19.19	-18.50
5	7.00391	10.14	26.76	19.87	36.90	30.01	60.00	50.00	-23.10	-19.99
6	12.74609	10.31	39.41	32.79	49.72	43.10	60.00	50.00	-10.28	-6.90
7	23.12891	10.50	32.85	32.33	43.35	42.83	60.00	50.00	-16.65	-7.17

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

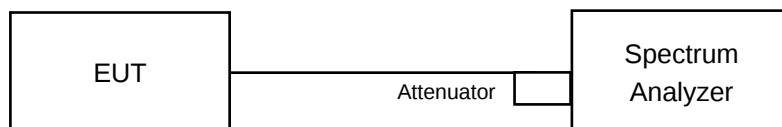


4.3 6dB Bandwidth Measurement

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

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
Spectrum Analyzer R&S	FSV40	101042	2021/9/9	2022/9/8

- 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 LK - Oven
 3. Tested Date: 2021/10/29

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	8.14	8.14	0.5	Pass
6	2437	8.14	8.14	0.5	Pass
11	2462	8.14	8.14	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.34	16.02	0.5	Pass
6	2437	16.33	15.99	0.5	Pass
11	2462	16.33	15.99	0.5	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	18.79	18.56	0.5	Pass
6	2437	18.77	18.63	0.5	Pass
11	2462	18.84	18.69	0.5	Pass

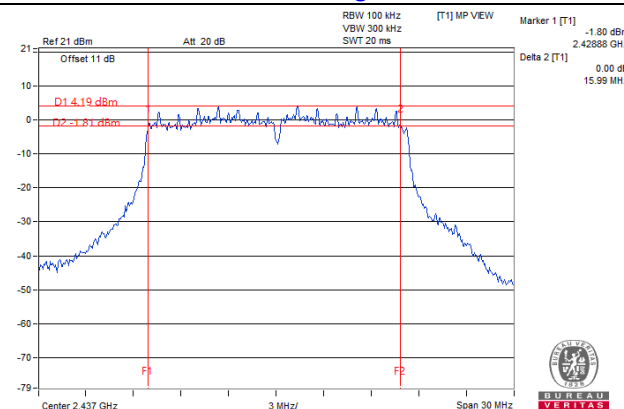
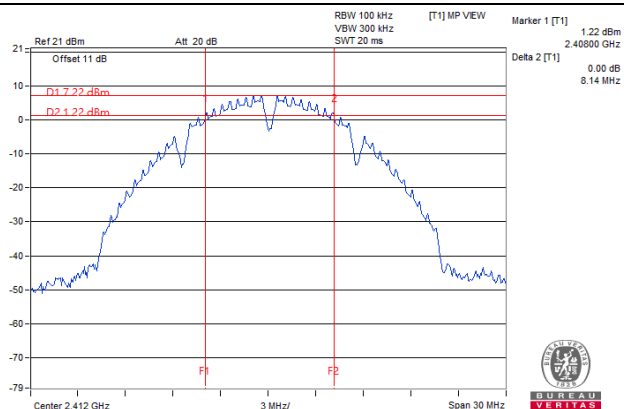
802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	38.01	37.38	0.5	Pass
6	2437	37.97	37.39	0.5	Pass
9	2452	37.79	37.51	0.5	Pass

Spectrum Plot of Worst Value

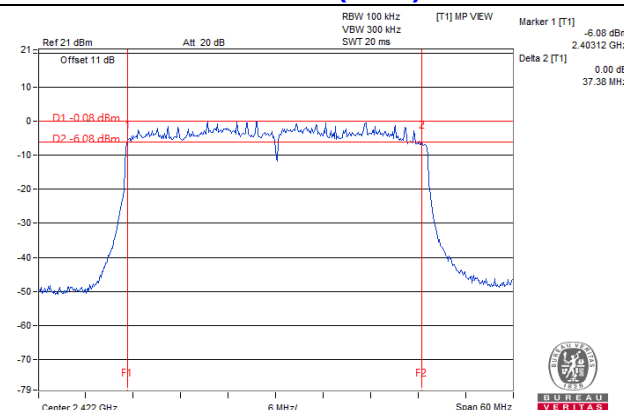
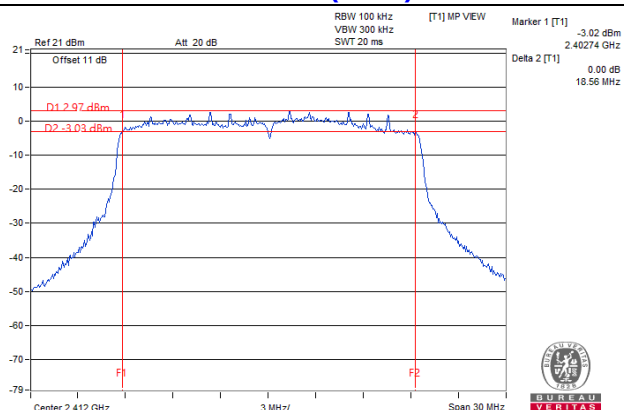
802.11b

802.11g



802.11ax (HE20)

802.11ax (HE40)



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,

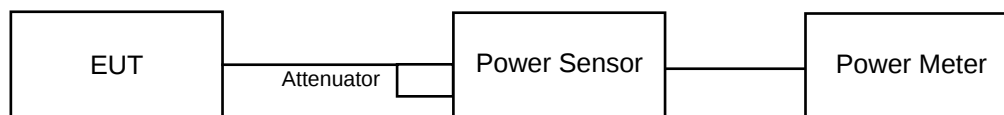
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
Pulse Power Sensor Anritsu	MA2411B	0738404	2021/4/15	2022/4/14
Peak Power meter Anritsu	ML2495A	0842014	2021/4/15	2022/4/14

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 LK - Oven

3. Tested Date: 2021/10/29

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 (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.65	21.24	225.303	23.53	30	Pass
6	2437	18.98	20.84	200.407	23.02	30	Pass
11	2462	19.93	21.22	230.835	23.63	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.86	22.10	284.080	24.53	30	Pass
6	2437	20.37	22.49	286.312	24.57	30	Pass
11	2462	20.79	22.63	303.181	24.82	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.01	21.96	257.267	24.10	30	Pass
6	2437	20.04	22.02	260.146	24.15	30	Pass
11	2462	20.16	22.06	264.447	24.22	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	20.27	22.01	265.269	24.24	30	Pass
6	2437	20.52	22.19	278.297	24.45	30	Pass
9	2452	20.51	22.41	286.641	24.57	30	Pass

VHT20

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.03	21.98	258.454	24.12	30	Pass
6	2437	20.06	22.05	261.716	24.18	30	Pass
11	2462	20.19	22.10	266.653	24.26	30	Pass

VHT40

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	20.31	22.05	267.723	24.28	30	Pass
6	2437	20.55	22.22	280.226	24.48	30	Pass
9	2452	20.53	22.43	287.964	24.59	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.05	22.01	260.013	24.15	30	Pass
6	2437	20.09	22.09	263.902	24.21	30	Pass
11	2462	20.21	22.14	268.636	24.29	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	20.35	22.07	269.457	24.30	30	Pass
6	2437	20.59	22.26	282.819	24.52	30	Pass
9	2452	20.57	22.47	290.629	24.63	30	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	17.10	18.43	120.949	20.83
6	2437	16.50	18.06	108.642	20.36
11	2462	17.35	18.70	128.456	21.09

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.81	15.12	56.552	17.52
6	2437	13.50	15.13	54.971	17.40
11	2462	13.71	15.64	60.140	17.79

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.55	14.01	43.165	16.35
6	2437	12.43	14.06	42.967	16.33
11	2462	12.39	14.42	45.007	16.53

802.11n (HT40)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	12.55	14.03	43.282	16.36
6	2437	12.64	14.19	44.608	16.49
9	2452	12.80	14.56	47.631	16.78

VHT20

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.57	14.03	43.365	16.37
6	2437	12.44	14.08	43.125	16.35
11	2462	12.42	14.45	45.319	16.56

VHT40

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	12.60	14.04	43.548	16.39
6	2437	12.66	14.22	44.874	16.52
9	2452	12.82	14.58	47.850	16.80

802.11ax (HE20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	12.62	14.04	43.632	16.40
6	2437	12.46	14.11	43.383	16.37
11	2462	12.45	14.48	45.634	16.59

802.11ax (HE40)

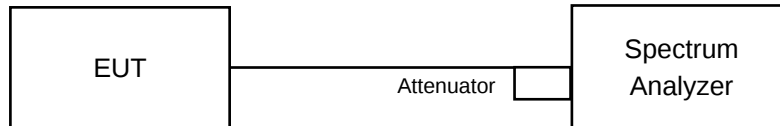
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	12.63	14.08	43.909	16.43
6	2437	12.71	14.25	45.271	16.56
9	2452	12.86	14.62	48.293	16.84

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.3.3 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

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-8.96	3.01	-5.95	7.66	Pass
	6	2437	-9.04	3.01	-6.03	7.66	Pass
	11	2462	-8.98	3.01	-5.97	7.66	Pass
1	1	2412	-7.79	3.01	-4.78	7.66	Pass
	6	2437	-7.63	3.01	-4.62	7.66	Pass
	11	2462	-7.18	3.01	-4.17	7.66	Pass

Note:

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is measure value add 10 log (N_{ANT}) dB.
- Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 6.34\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.34-6)=7.66\text{dBm/3kHz}$.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-13.27	3.01	-10.26	7.66	Pass
	6	2437	-13.07	3.01	-10.06	7.66	Pass
	11	2462	-13.21	3.01	-10.20	7.66	Pass
1	1	2412	-12.02	3.01	-9.01	7.66	Pass
	6	2437	-12.36	3.01	-9.35	7.66	Pass
	11	2462	-11.60	3.01	-8.59	7.66	Pass

Note:

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is measure value add 10 log (N_{ANT}) dB.
- Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 6.34\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.34-6)=7.66\text{dBm/3kHz}$.

802.11ax (HE20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-13.44	3.01	-10.43	7.66	Pass
	6	2437	-13.67	3.01	-10.66	7.66	Pass
	11	2462	-13.19	3.01	-10.18	7.66	Pass
1	1	2412	-11.75	3.01	-8.74	7.66	Pass
	6	2437	-11.82	3.01	-8.81	7.66	Pass
	11	2462	-11.23	3.01	-8.22	7.66	Pass

Note:

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is measure value add 10 log (N_{ANT}) dB.
- Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 6.34\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.34-6)=7.66\text{dBm/3kHz}$.

802.11ax (HE40)

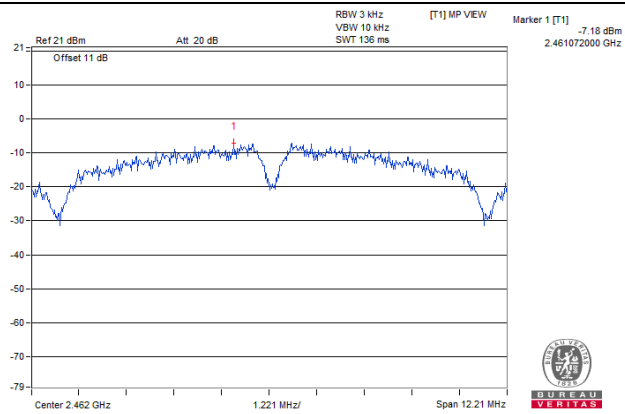
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-16.09	3.01	-13.08	7.66	Pass
	6	2437	-15.88	3.01	-12.87	7.66	Pass
	9	2452	-15.47	3.01	-12.46	7.66	Pass
1	3	2422	-13.84	3.01	-10.83	7.66	Pass
	6	2437	-14.68	3.01	-11.67	7.66	Pass
	9	2452	-14.00	3.01	-10.99	7.66	Pass

Note:

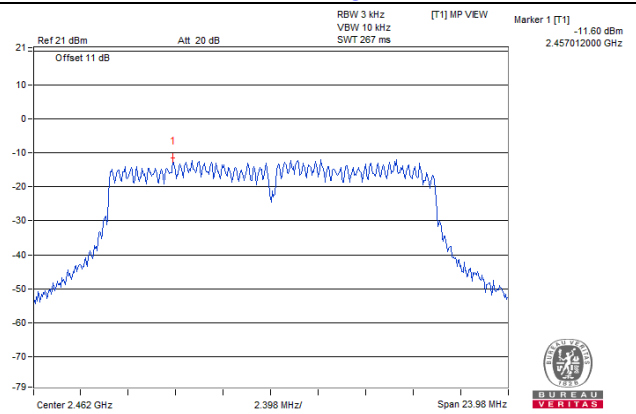
- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is measure value add 10 log (N_{ANT}) dB.
- Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 6.34\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.34-6)=7.66\text{dBm/3kHz}$.

Spectrum Plot of Worst Value

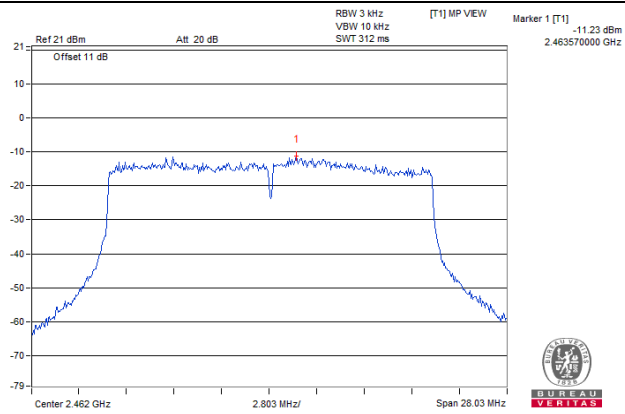
802.11b



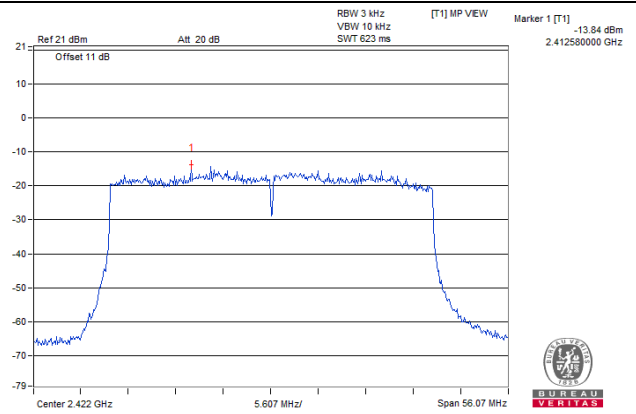
802.11g



802.11ax (HE20)



802.11ax (HE40)

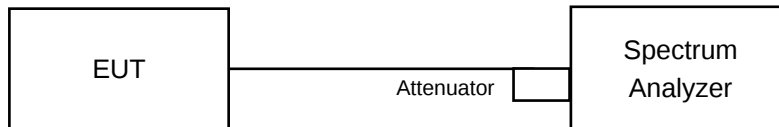


4.6 Conducted Out of Band Emission Measurement

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 4.3.3 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

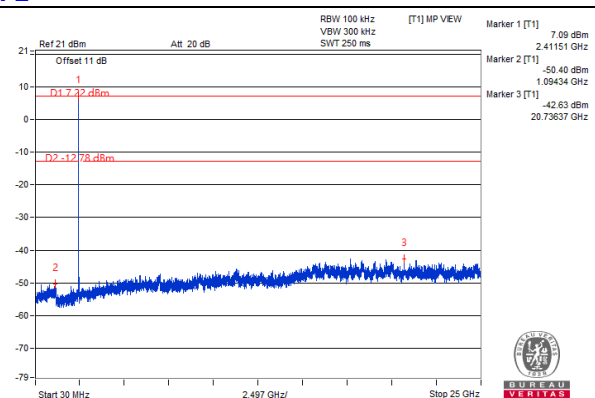
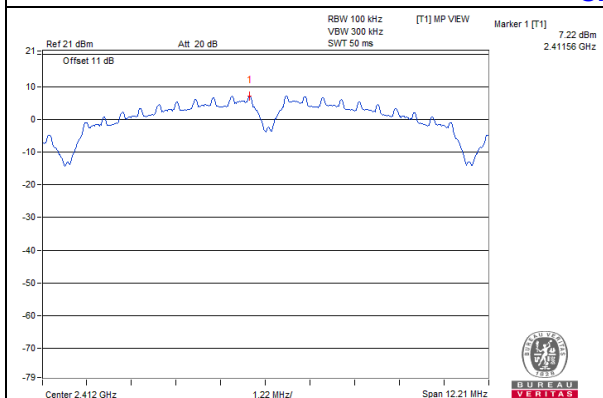
Same as Item 4.3.6

4.6.7 Test Results

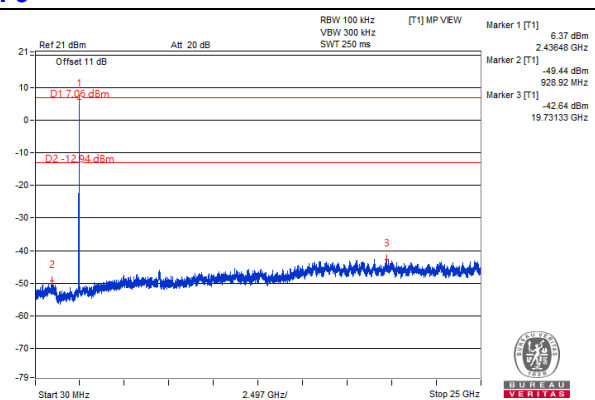
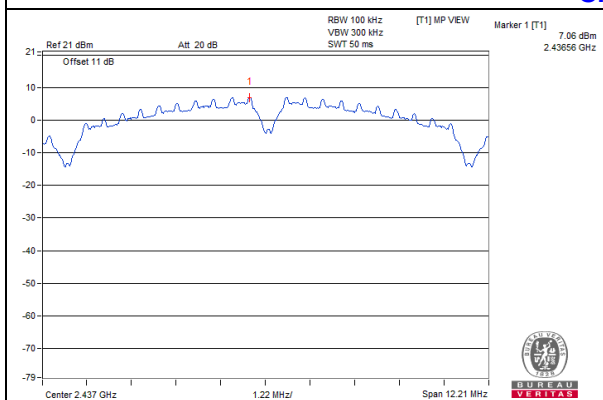
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b: Chain 0

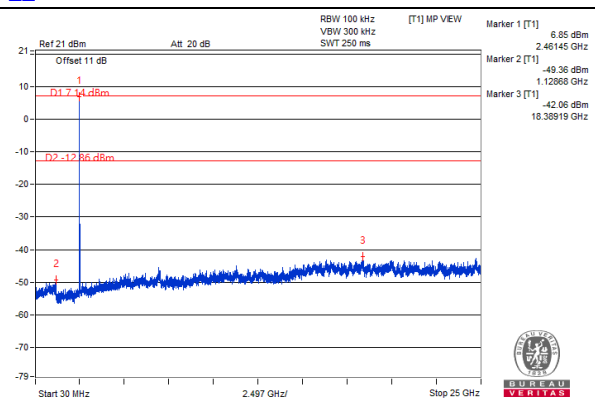
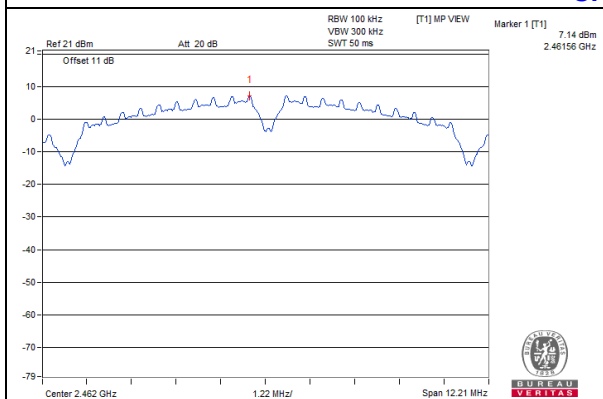
CH 1



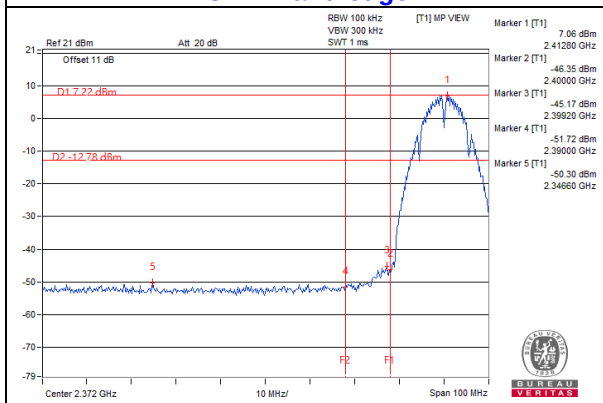
CH 6



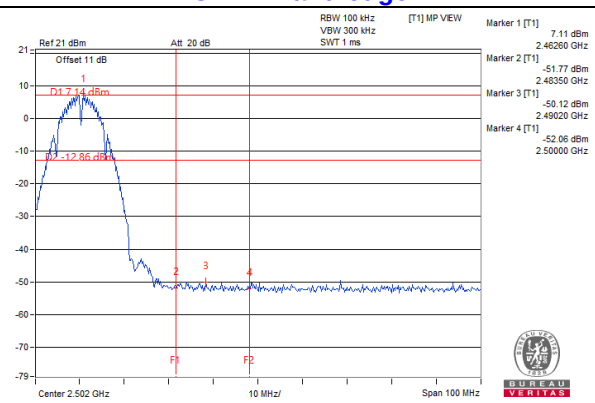
CH 11



CH 1 Band edge

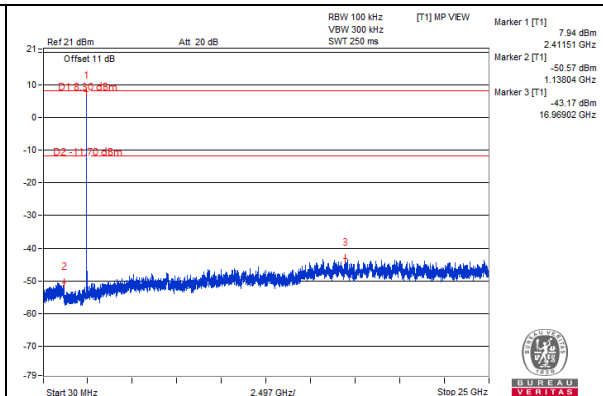
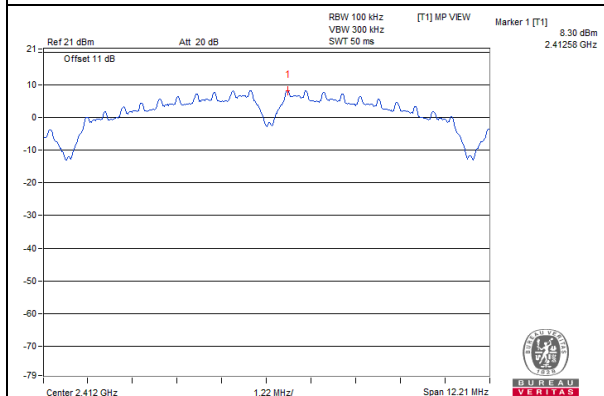


CH 11 Band edge

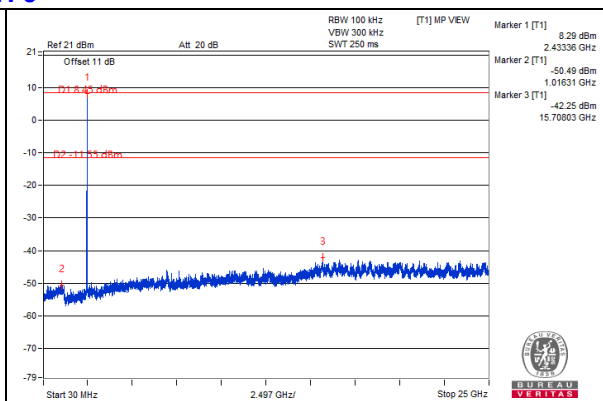
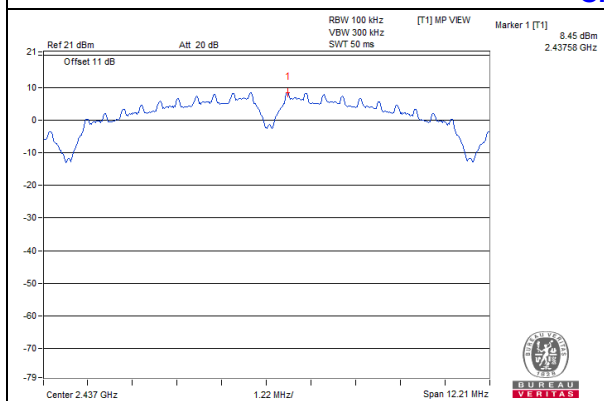


802.11b: Chain 1

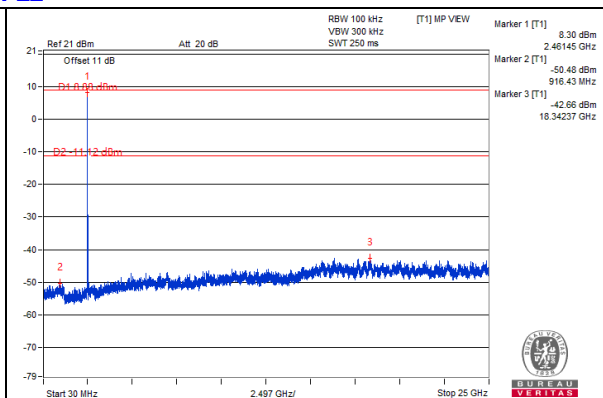
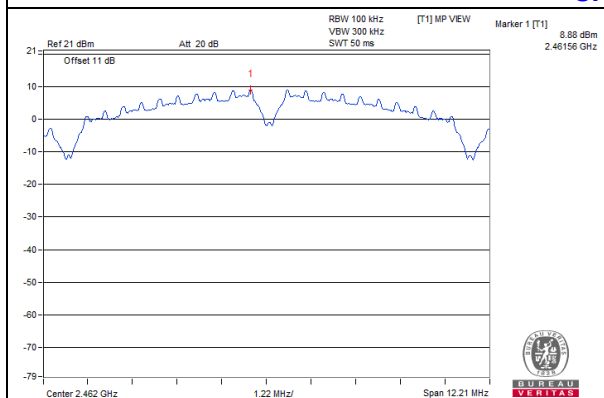
CH 1



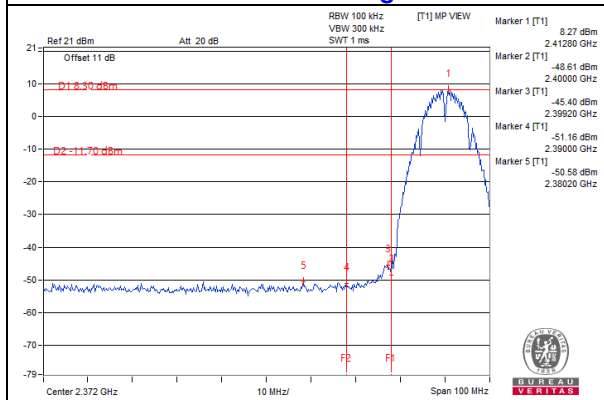
CH 6



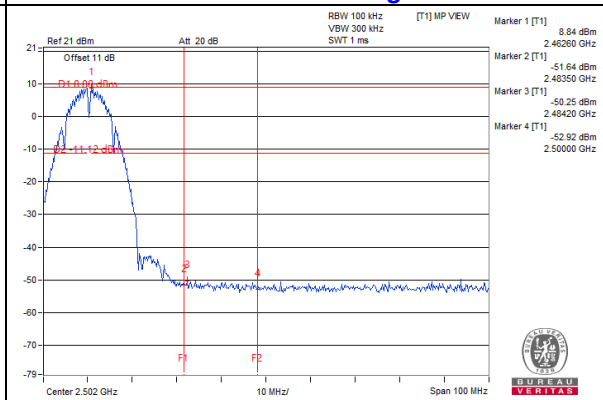
CH 11



CH 1 Band edge

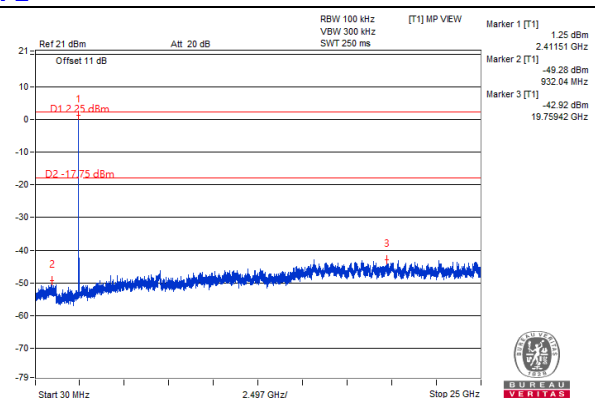
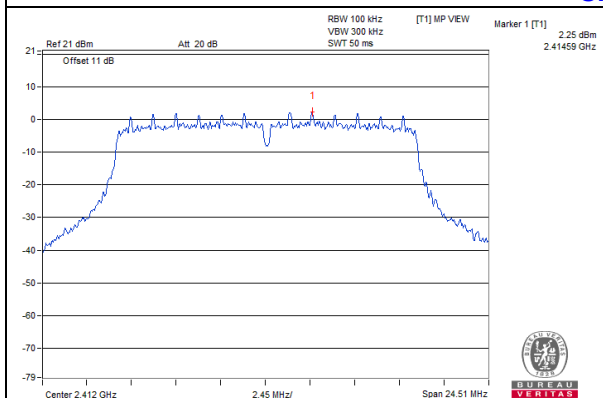


CH 11 Band edge

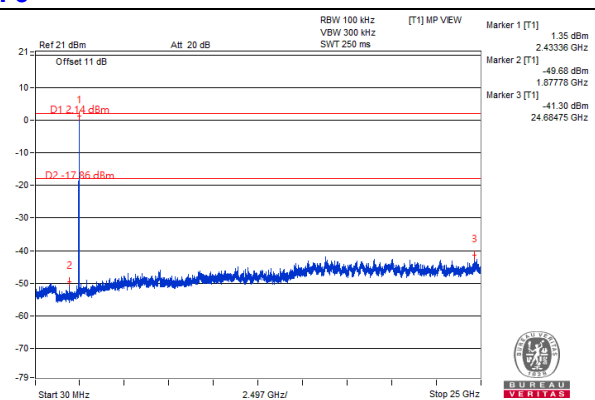
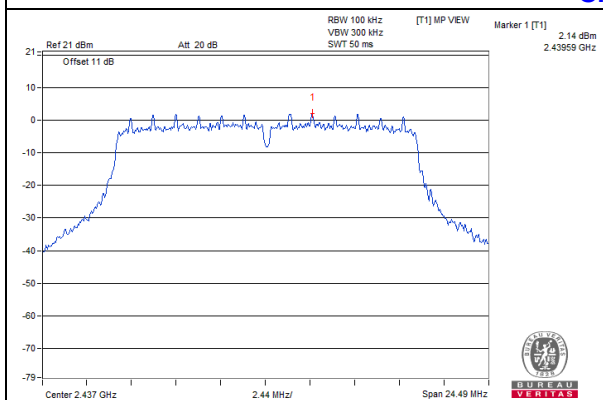


802.11g: Chain 0

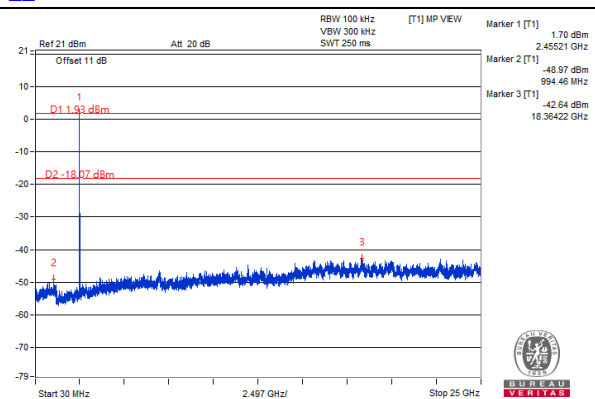
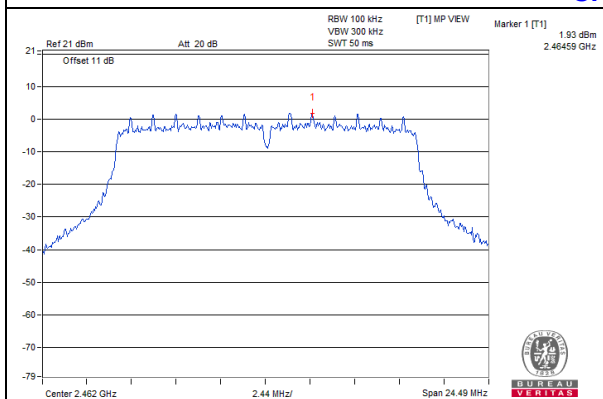
CH 1



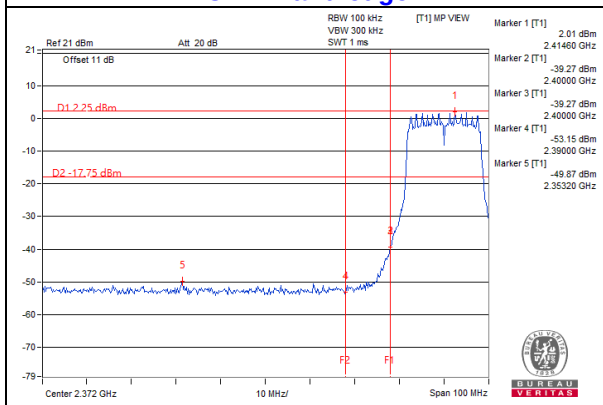
CH 6



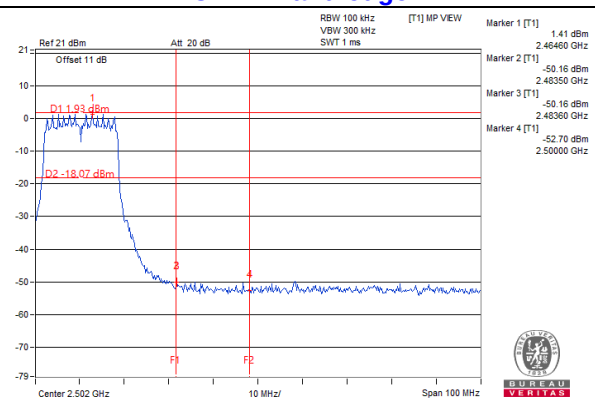
CH 11



CH 1 Band edge

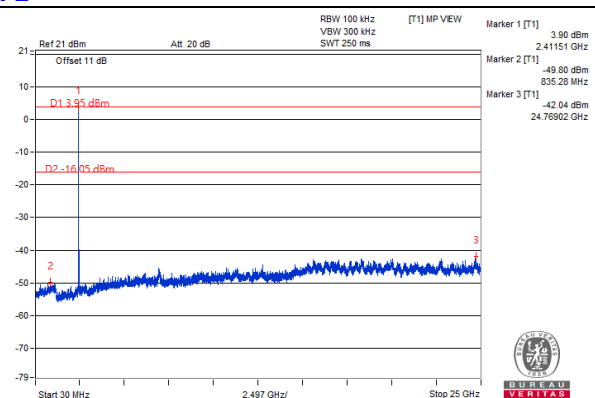
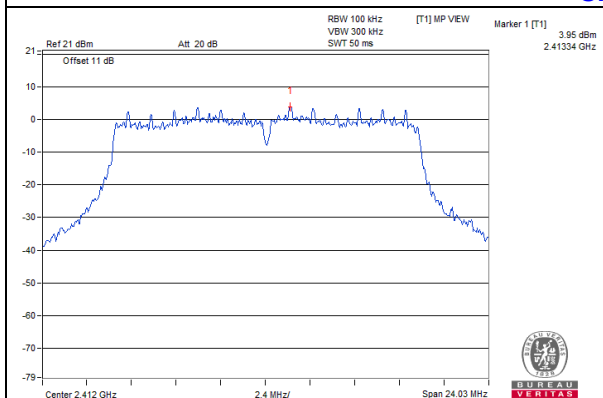


CH 11 Band edge

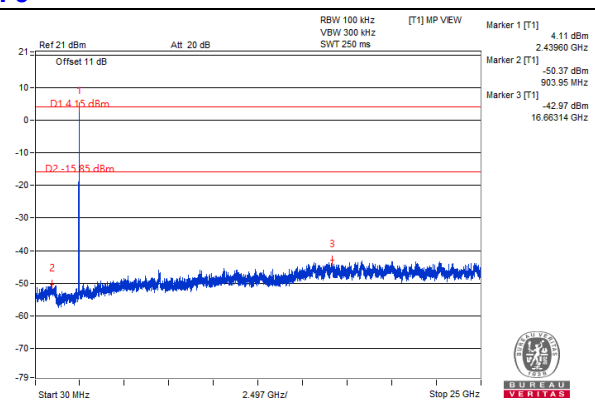
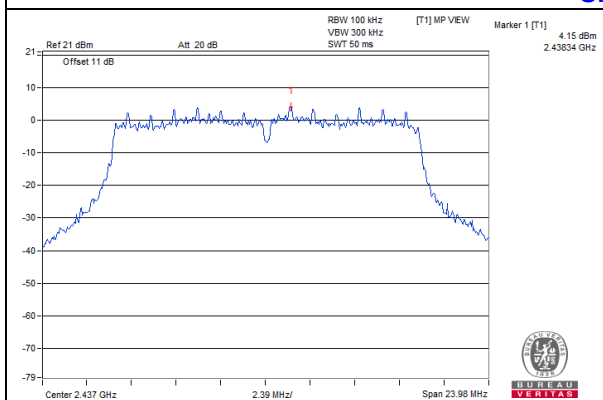


802.11g: Chain 1

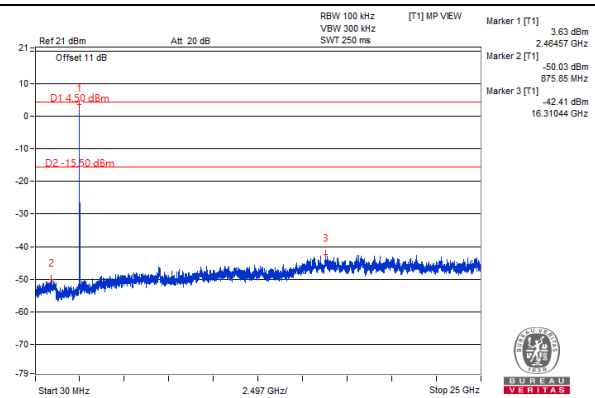
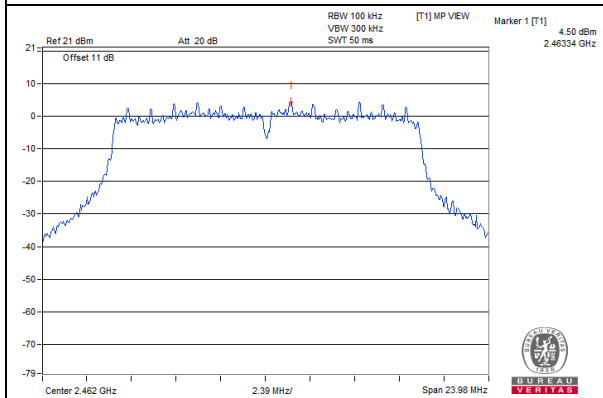
CH 1



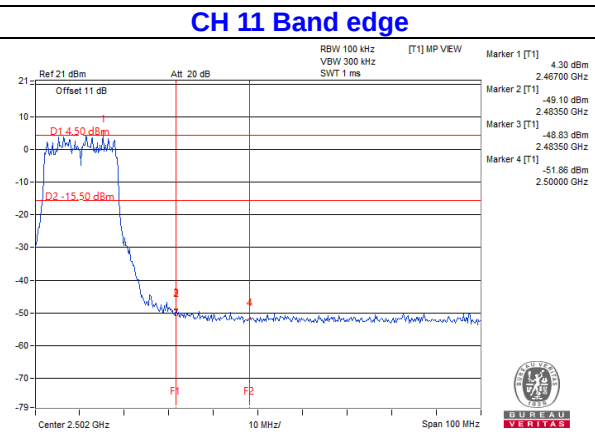
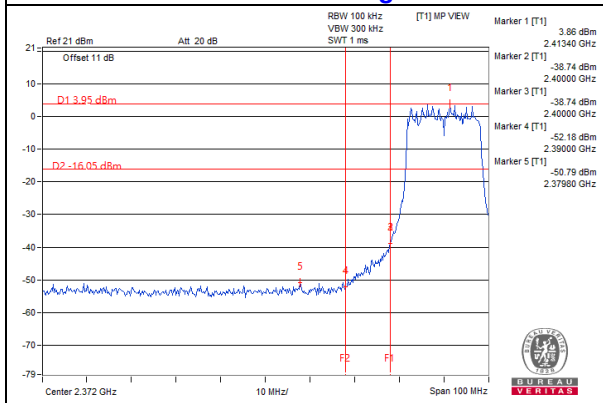
CH 6



CH 11

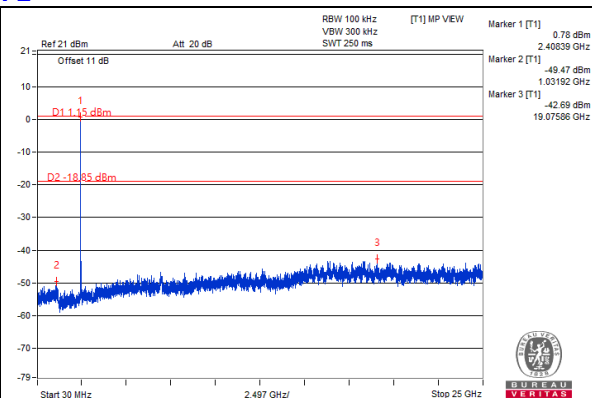
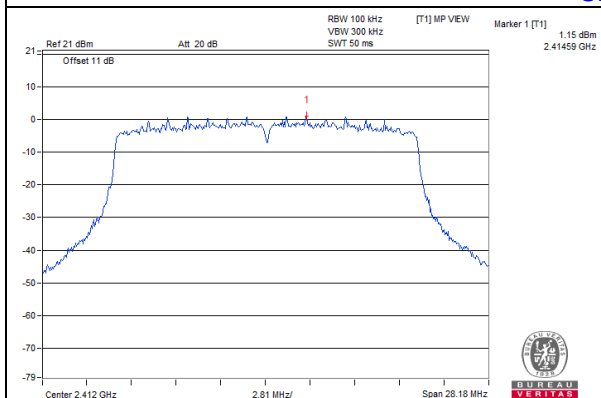


CH 1 Band edge

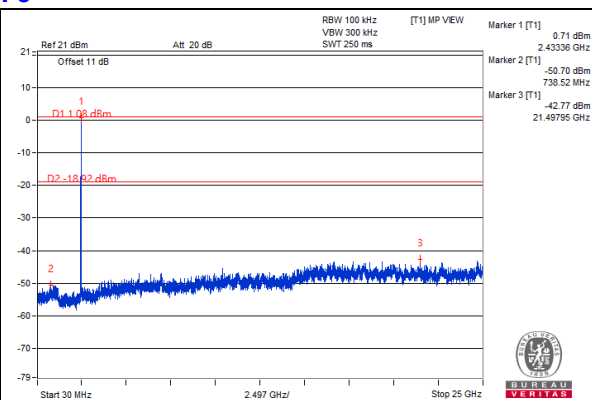
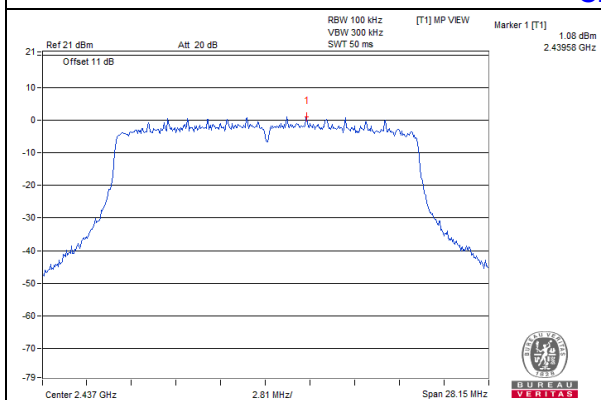


802.11ax (HE20): Chain 0

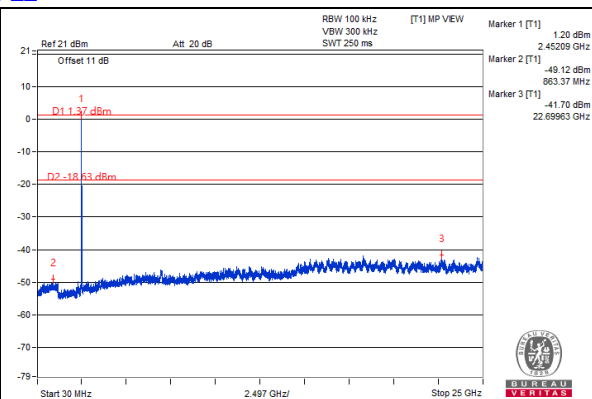
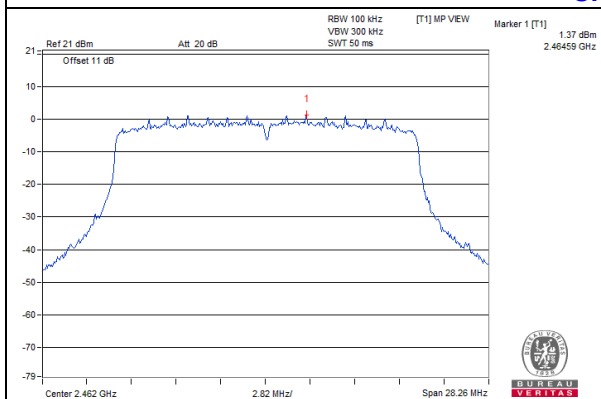
CH 1



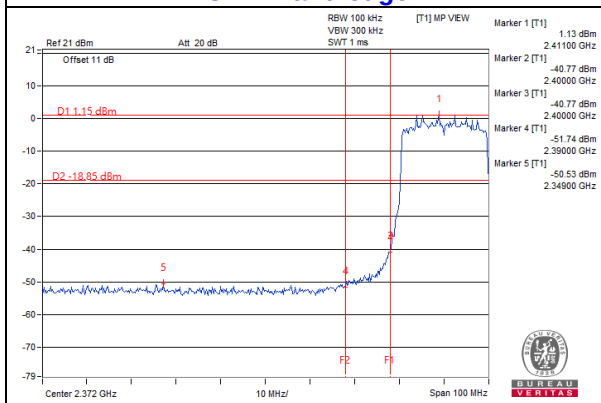
CH 6



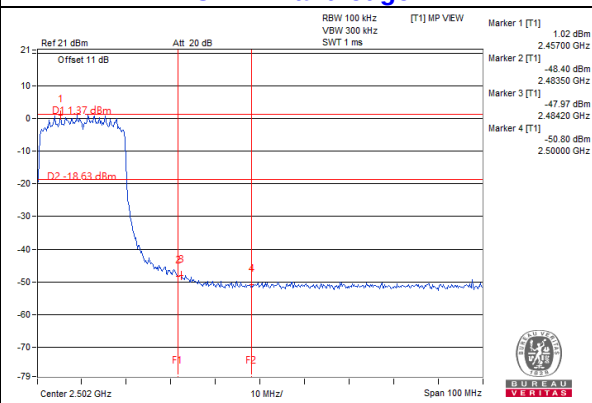
CH 11



CH 1 Band edge

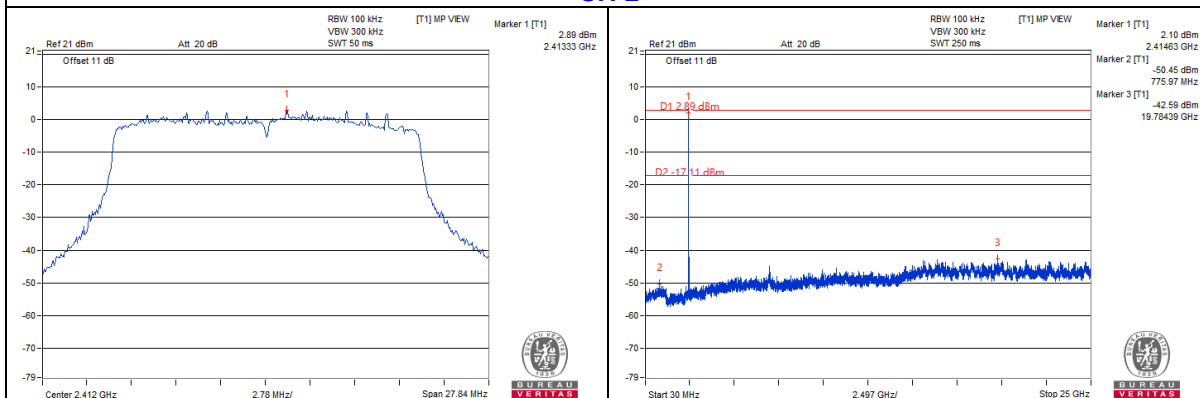


CH 11 Band edge

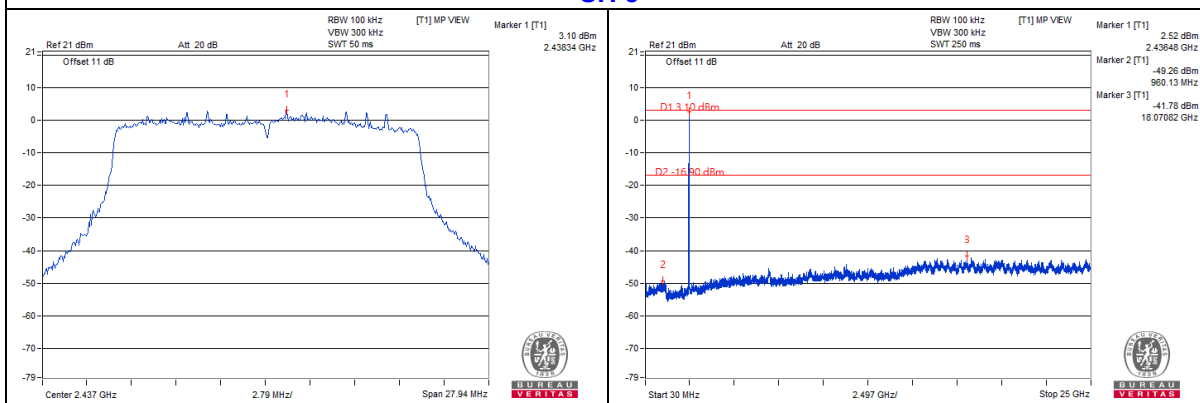


802.11ax (HE20): Chain 1

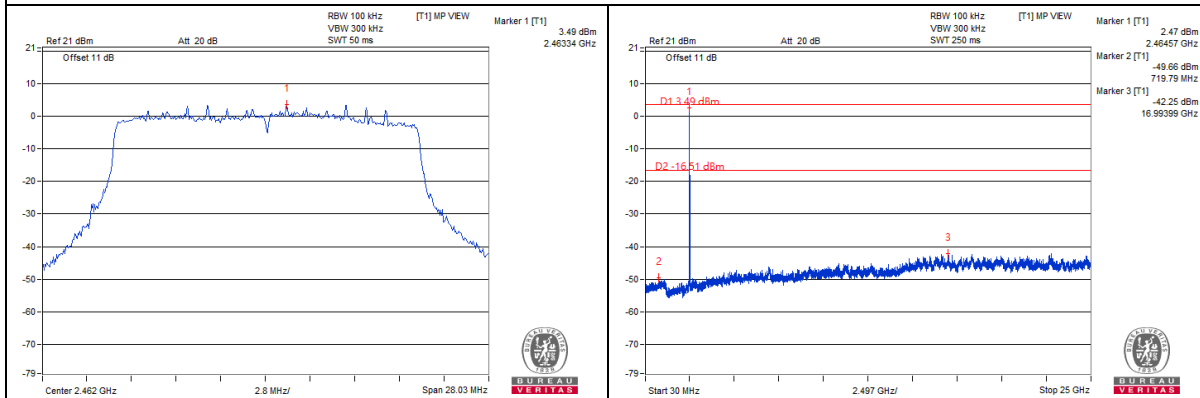
CH 1



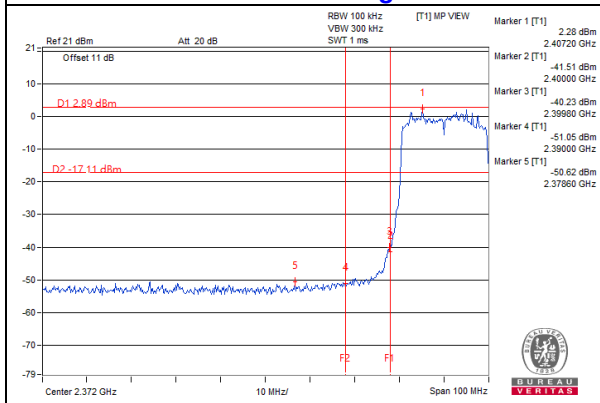
CH 6



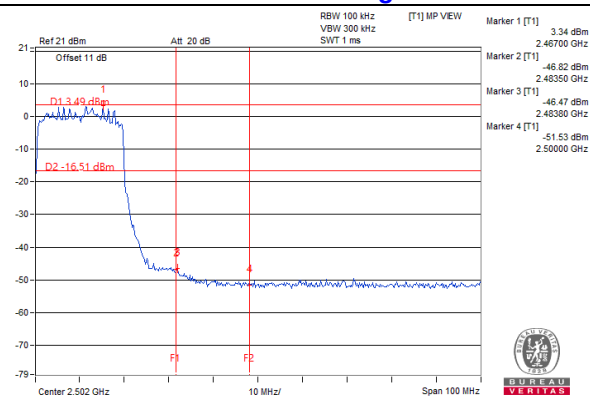
CH 11



CH 1 Band edge

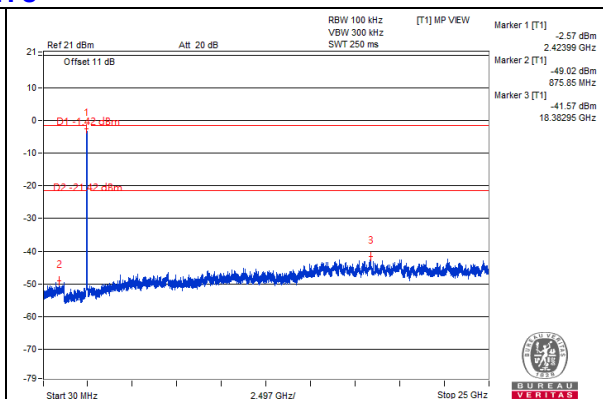
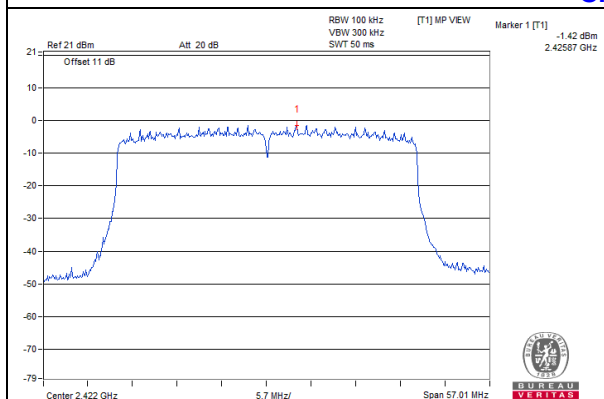


CH 11 Band edge

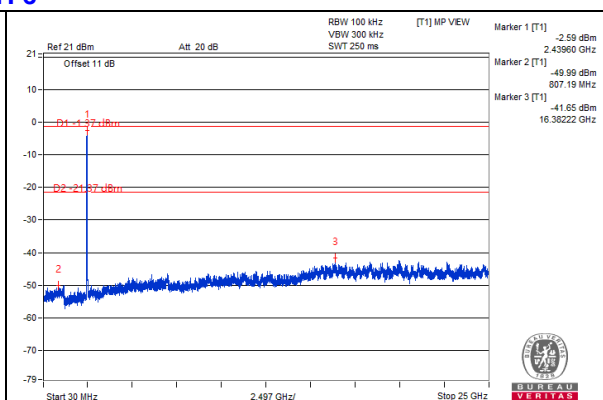
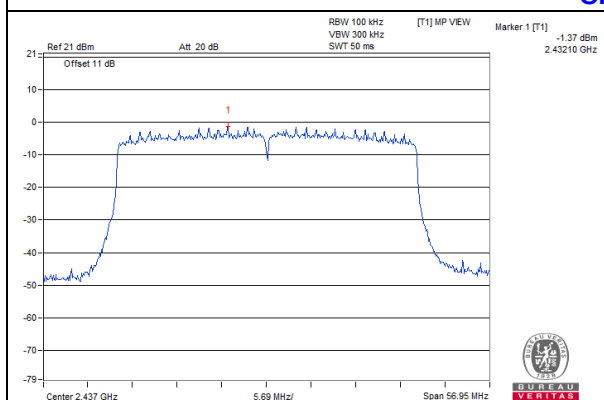


802.11ax (HE40): Chain 0

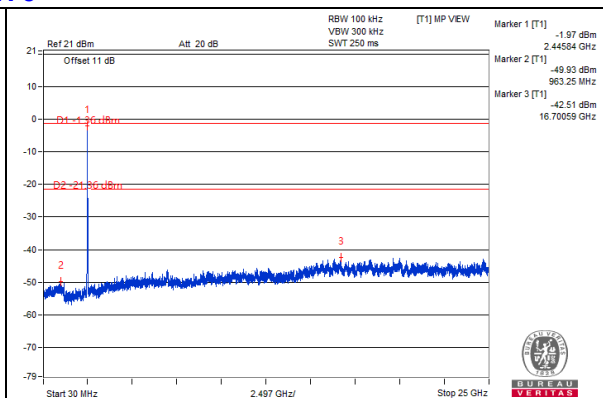
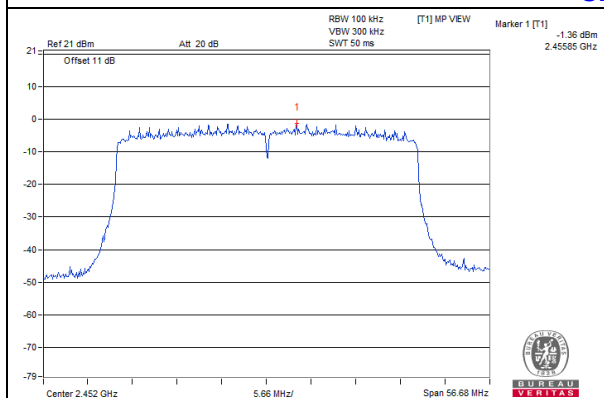
CH 3



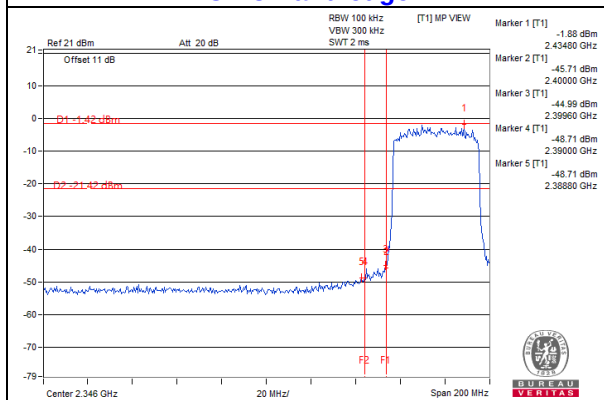
CH 6



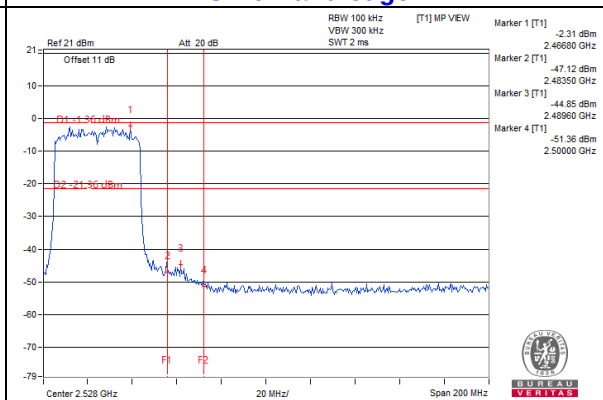
CH 9



CH 3 Band edge

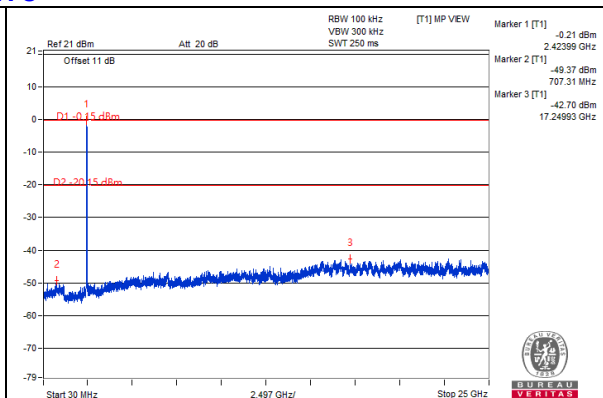
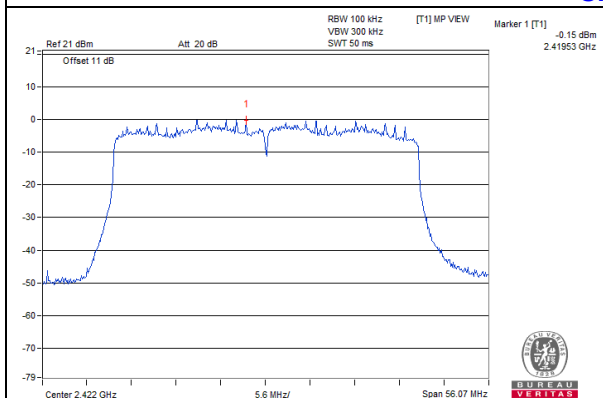


CH 9 Band edge

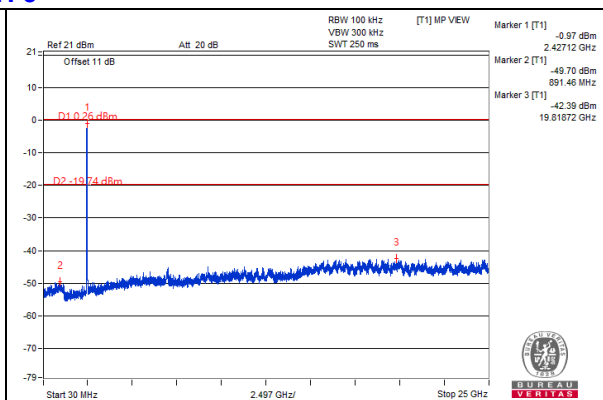
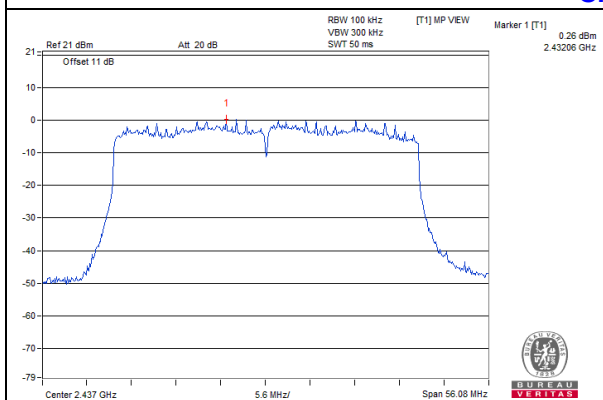


802.11ax (HE40): Chain 1

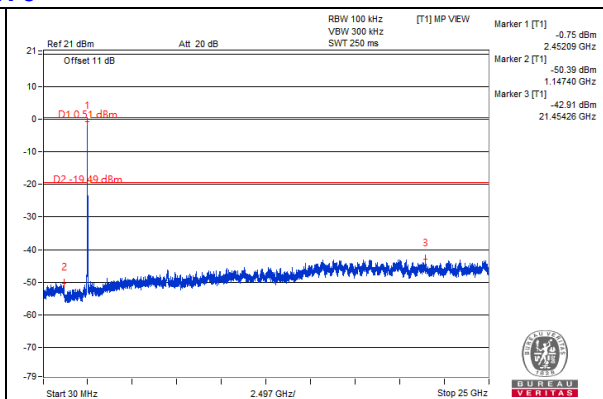
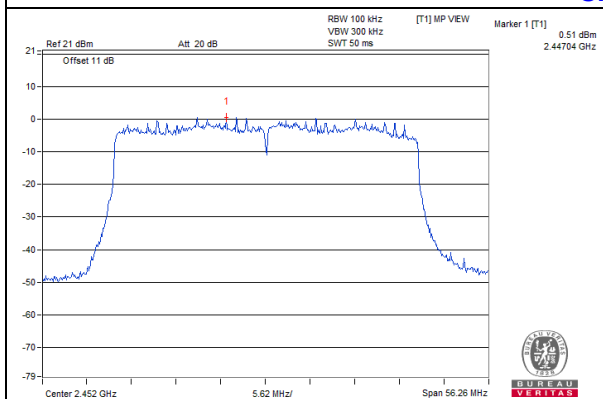
CH 3



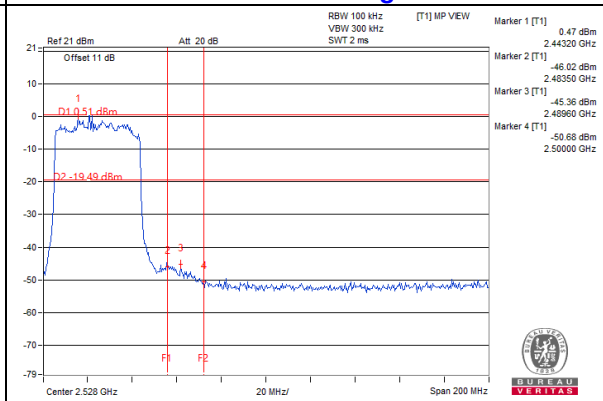
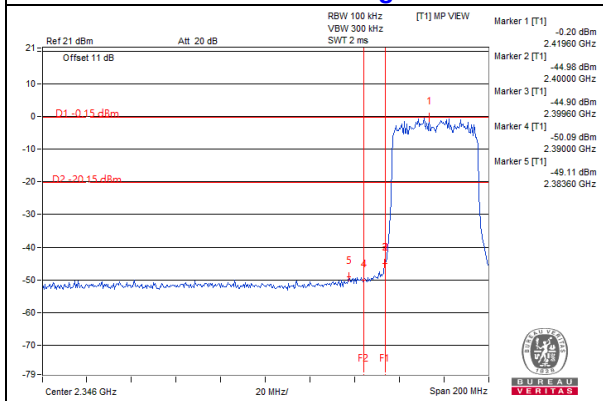
CH 6



CH 9



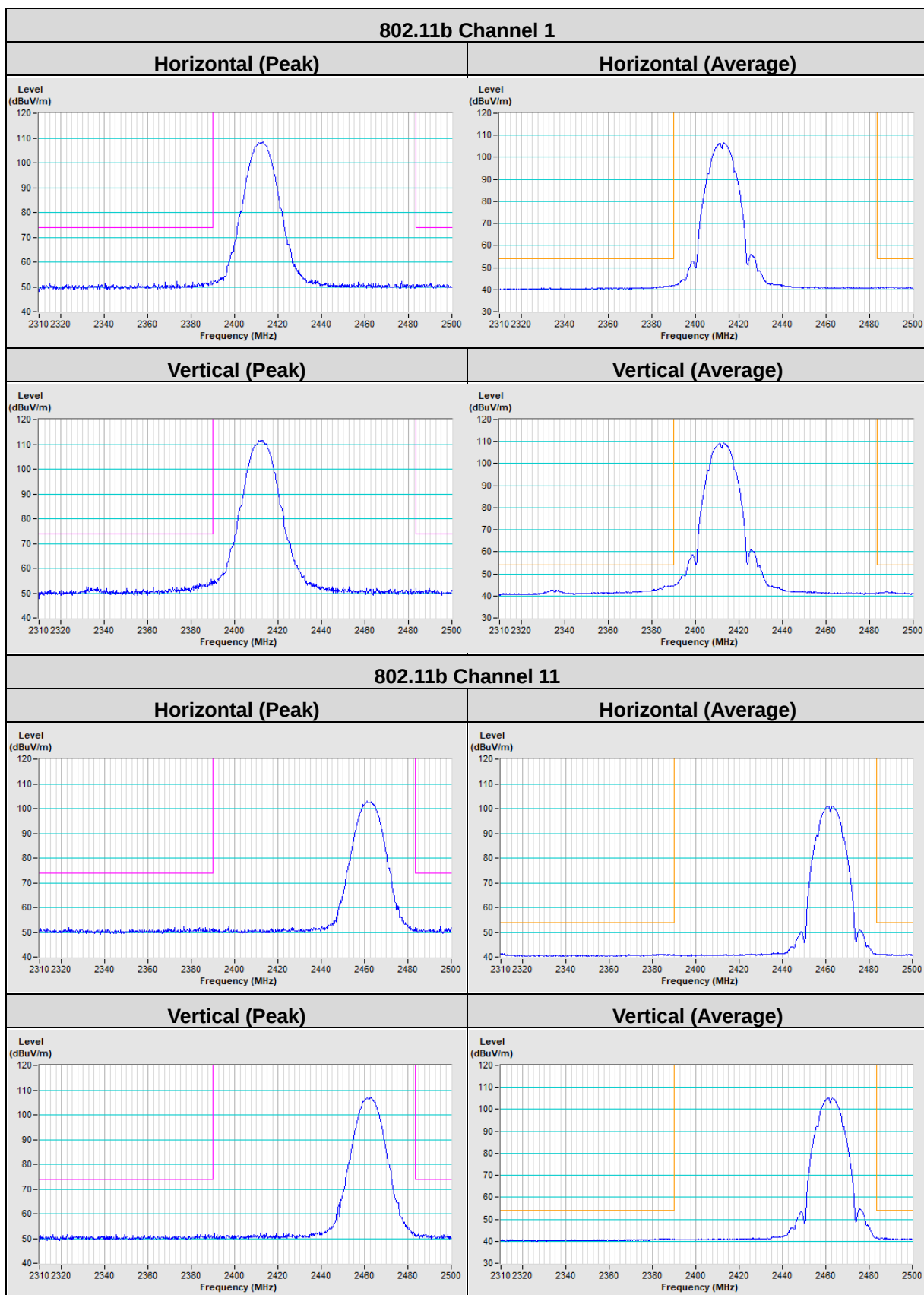
CH 3 Band edge

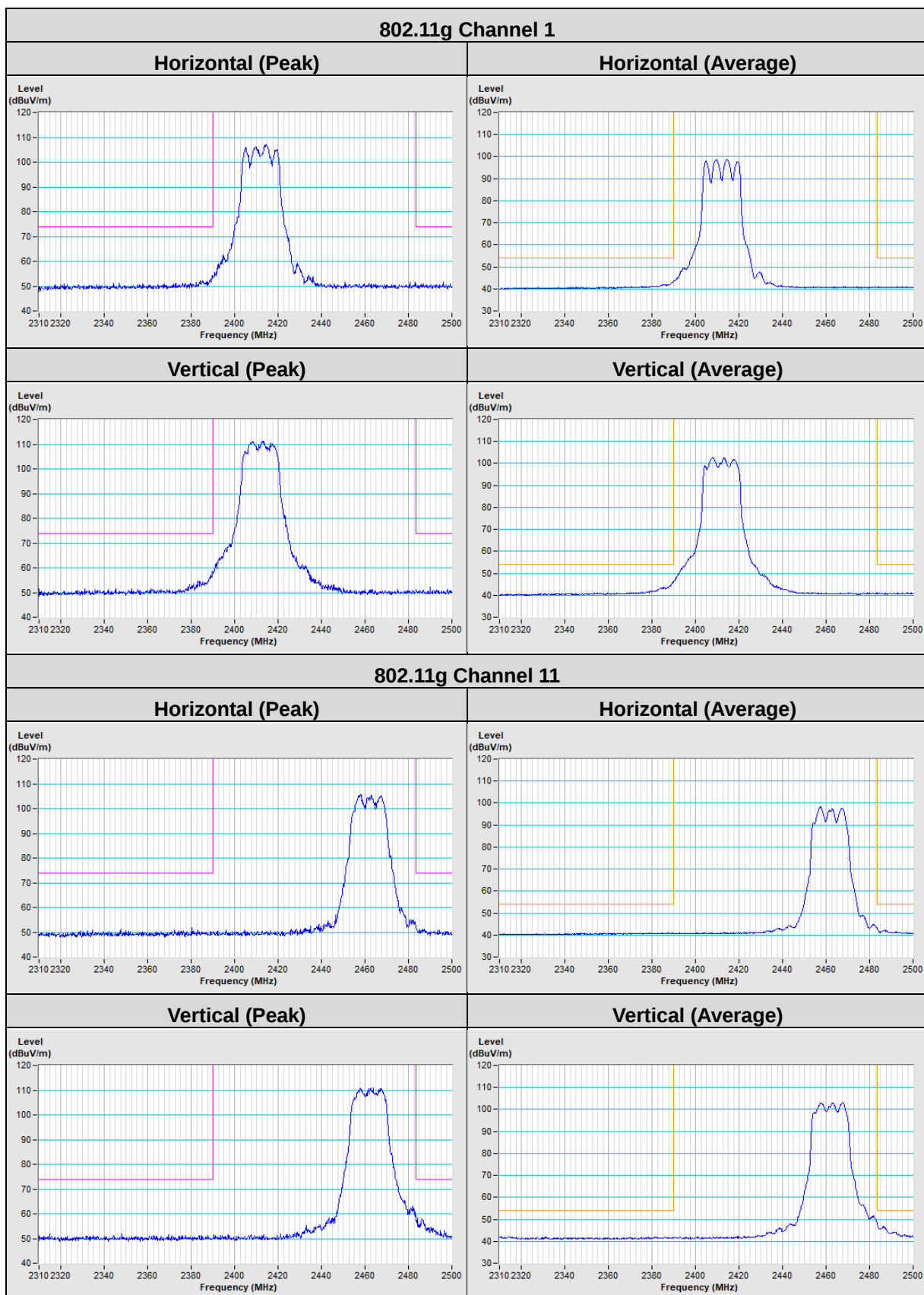


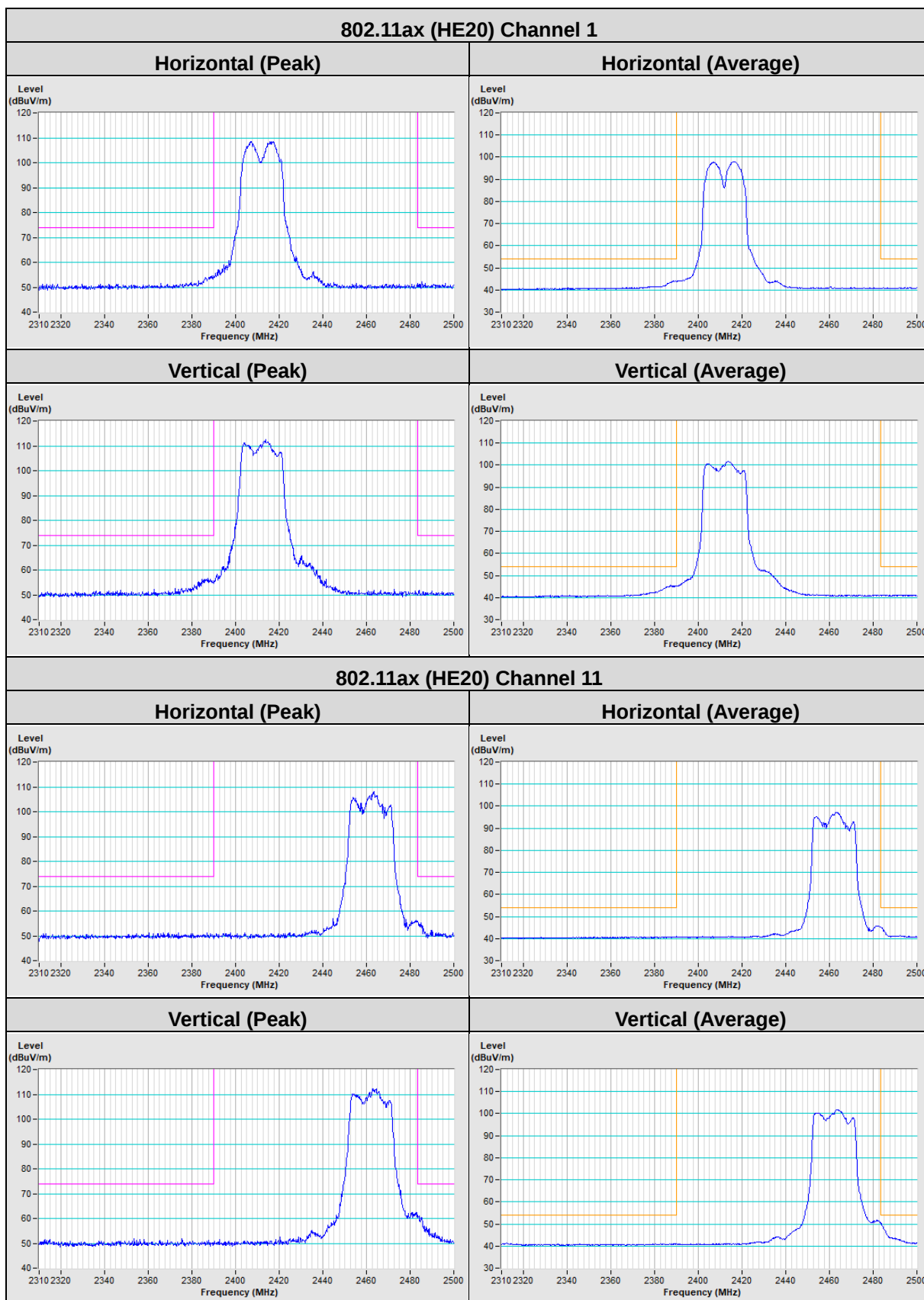
5 Pictures of Test Arrangements

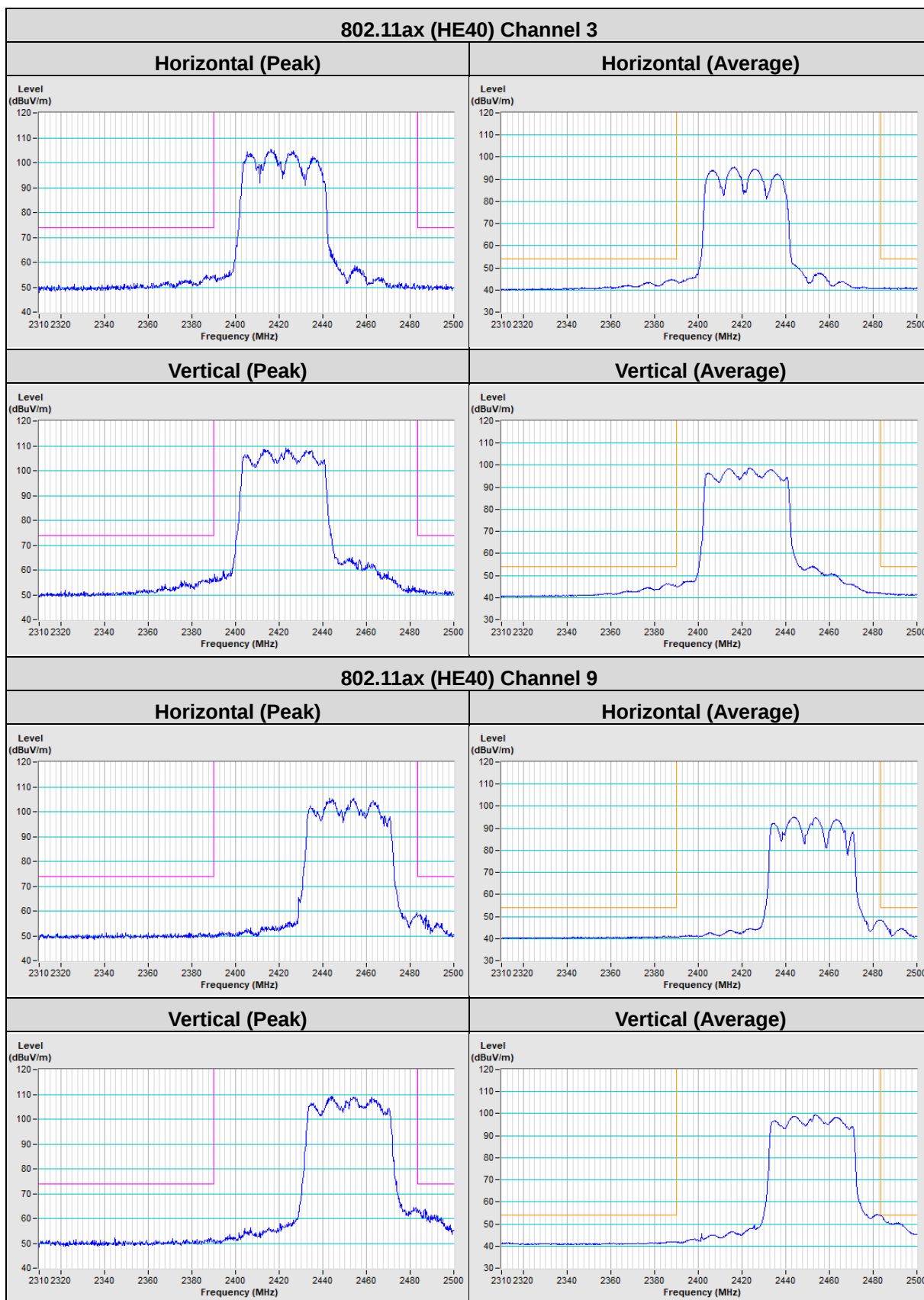
Please refer to the attached file (Test Setup Photo).

Annex A- Band Edge Measurement









Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---