

FCC Test Report

Report No.: RFBDYS-WTW-P21030161

FCC ID: Q6G-AP430CR

Test Model: AP430CR

Received Date: Mar. 11, 2021

Test Date: Mar. 18 ~ Apr. 19, 2021

Issued Date: May 03, 2021

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
RFBDYS-WTW-P21030161	Original Release	May 03, 2021

1 Certificate of Conformity

Product: Wireless Access Point

Brand: WatchGuard

Test Model: AP430CR

Sample Status: Engineering Sample

Applicant: WatchGuard Technologies, Inc.

Test Date: Mar. 18 ~ Apr. 19, 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 RF characteristics under the conditions specified in this report.

Prepared by : Pettie Chen, **Date:** May 03, 2021
Pettie Chen / Senior Specialist

Approved by : Bruce Chen, **Date:** May 03, 2021
Bruce Chen / Senior 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 -13.60dB at 29.93MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.6dB at 37.75MHz.
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 R-N type(F) not a standard connector.

Note:

- For 2.4G band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Access Point
Brand	WatchGuard
Test Model	AP430CR
Sample Status	Engineering Sample
Power Supply Rating	54Vdc from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK 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 (HT20/40): up to 300Mbps 802.11ac (VHT20/40): up to 400Mbps 802.11ax: up to 573.5Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	2G traffic radio (Radio 1): 802.11b, 802.11g, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 11 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 7 Scanning radio (Radio 3): 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	2G traffic radio (Radio 1): CDD Mode: 424.892mW Beamforming Mode: 186.810mW Scanning radio (Radio 3): CDD Mode: 314.817mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	NA

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Radio	Modulation Mode	Beamforming Mode	TX Function
2G traffic radio (Radio 1)	802.11b	Not Support	2TX
	802.11g	Not Support	2TX
	802.11n (HT20)	Not Support	2TX
	802.11n (HT40)	Not Support	2TX
	802.11ac (VHT20)	Support	2TX
	802.11ac (VHT40)	Support	2TX
	802.11ax (HE20)	Support	2TX
	802.11ax (HE40)	Support	2TX
Scanning radio (Radio 3)	802.11b	Not Support	2TX
	802.11g	Not Support	2TX
	802.11n (HT20)	Not Support	2TX
	802.11n (HT40)	Not Support	2TX

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40 on 802.11ac mode 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)

* For 802.11n, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

2. The EUT consumes power from the following POE. (Support unit only)

POE	
Brand	EnGenius
Model	EPA5006GAT
Input Power	100-240Vac, 0.8A, 50-60Hz
Output Power	54Vdc, 0.6A

3. The following antennas were provided to the EUT.

Antenna Type	Dipole
Antenna Connector	N-type Plug
Frequency (MHz)	Gain (dBi)
2400	5.1
2450	5.0
2500	5.5
4900	6.1
5150	6.5
5250	6.4
5350	6.7
5450	7.2
5550	6.6
5650	6.6
5750	7.0
5850	6.9

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

4. 5GHz traffic radio (Radio 2) and 5G Scanning radio (Radio 3) cannot transmit in the same band at same time. 2G traffic radio (Radio 1) and 2G Scanning radio (Radio 3) cannot transmit at same time.
Spurious emission of the simultaneous operation has been evaluated and no non-compliance was found.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), 802.11ac (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), 802.11ac (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 $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE $\geq$ 1G: Radiated Emission above 1GHz & Bandedge Measurement

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
2. Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.

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)	Remark
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 1
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
-	802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0	
-	802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0	
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 3
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	

Radiated Emission Test (Below 1GHz):

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

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
-	802.11g	1 to 11	6	OFDM	BPSK	6.0	Radio 1
-	802.11g	1 to 11	6	OFDM	BPSK	6.0	Radio 3

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)	Remark
-	802.11g	1 to 11	6	OFDM	BPSK	6.0	Radio 1
-	802.11g	1 to 11	6	OFDM	BPSK	6.0	Radio 3

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)	Remark
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 1
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
-	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	
-	802.11ac (VHT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	
-	802.11ac (VHT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	
-	802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0	
-	802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0	
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 3
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	23 deg. C, 67% RH	54Vdc	Edison Lee
RE<1G	23 deg. C, 67% RH	54Vdc	Edison Lee
PLC	23 deg. C, 69% RH	54Vdc	Edison Lee
APCM	25 deg. C, 60% RH	54Vdc	Jisyong Wang

3.3 Duty Cycle of Test Signal

2G traffic radio (Radio 1)

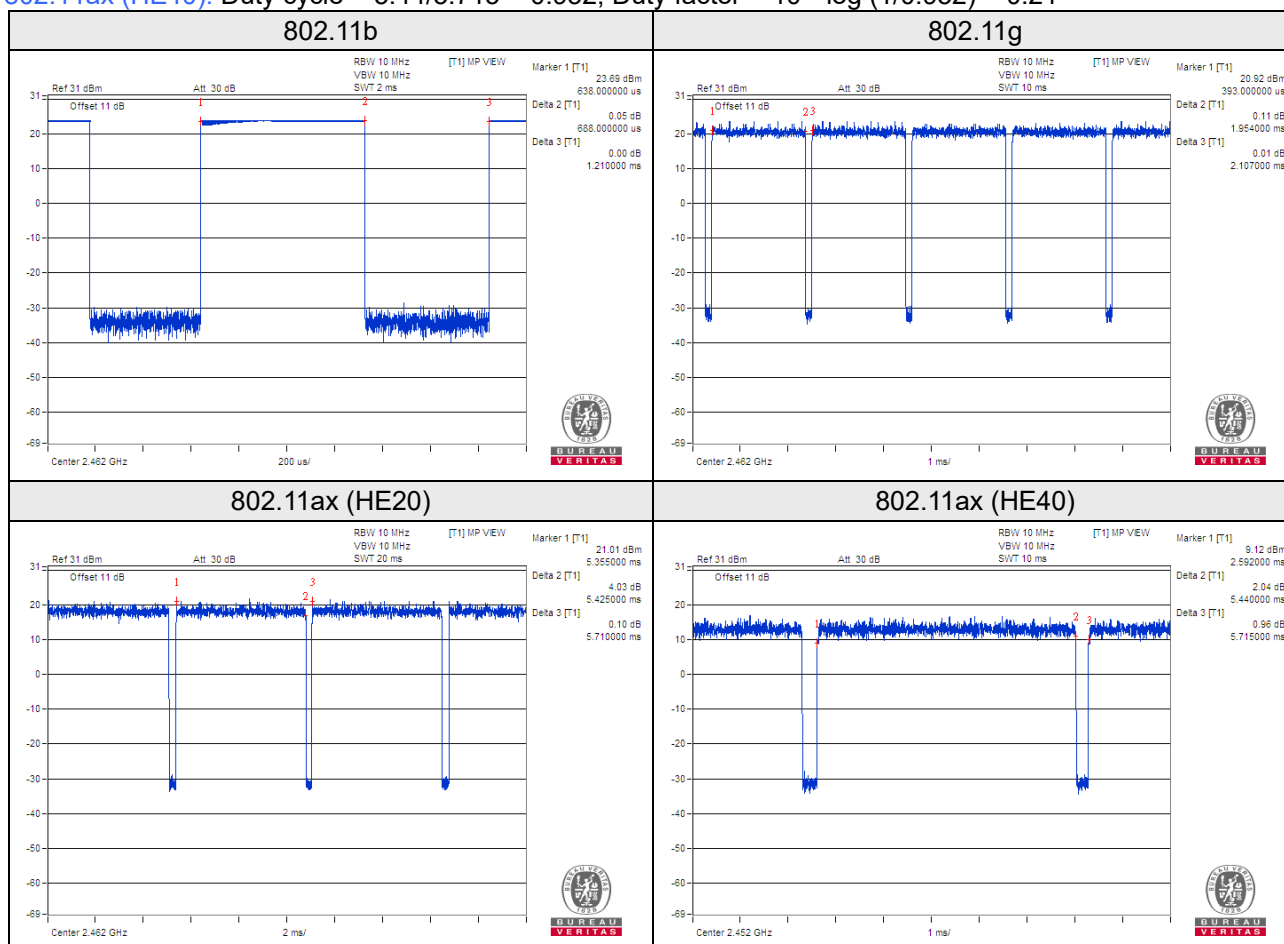
Duty cycle of test signal is < 98%, duty factor is required.

802.11b: Duty cycle = $0.688/1.21 = 0.569$, Duty factor = $10 * \log(1/0.569) = 2.45$

802.11g: Duty cycle = $1.954/2.107 = 0.927$, Duty factor = $10 * \log(1/0.927) = 0.33$

802.11ax (HE20): Duty cycle = $5.425/5.71 = 0.95$, Duty factor = $10 * \log(1/0.95) = 0.22$

802.11ax (HE40): Duty cycle = $5.44/5.715 = 0.952$, Duty factor = $10 * \log(1/0.952) = 0.21$



Scanning radio (Radio 3)

802.11b: Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

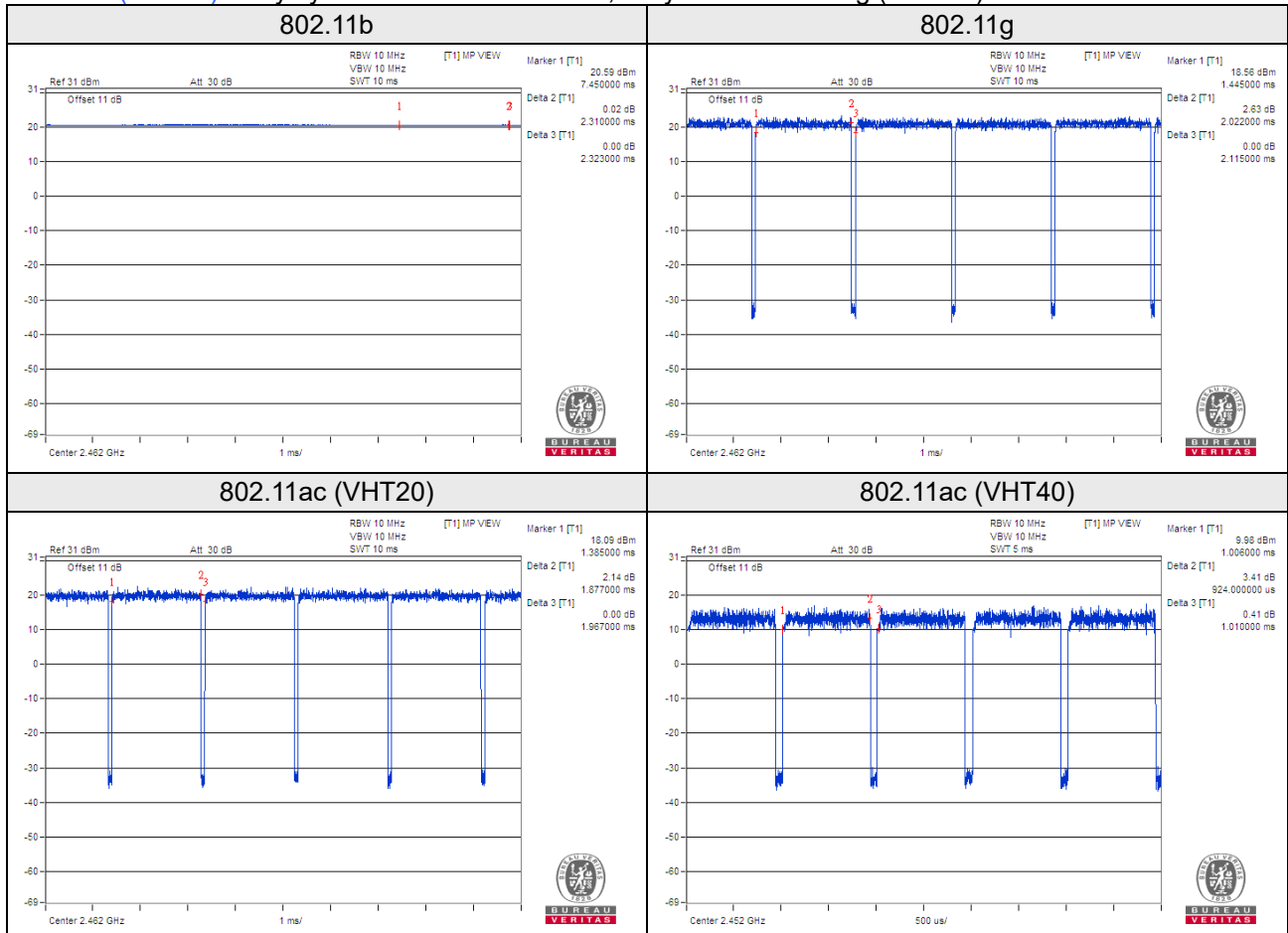
802.11g, 802.11ac (VHT20), 802.11ac (VHT40): Duty cycle of test signal is $< 98\%$, duty factor is required.

802.11b: Duty cycle = 100%

802.11g: Duty cycle = $2.022/2.115 = 0.956$, Duty factor = $10 * \log(1/0.956) = 0.2$

802.11ac (VHT20): Duty cycle = $1.877/1.967 = 0.954$, Duty factor = $10 * \log(1/0.954) = 0.2$

802.11ac (VHT40): Duty cycle = $0.924/1.01 = 0.915$, Duty factor = $10 * \log(1/0.915) = 0.39$



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.

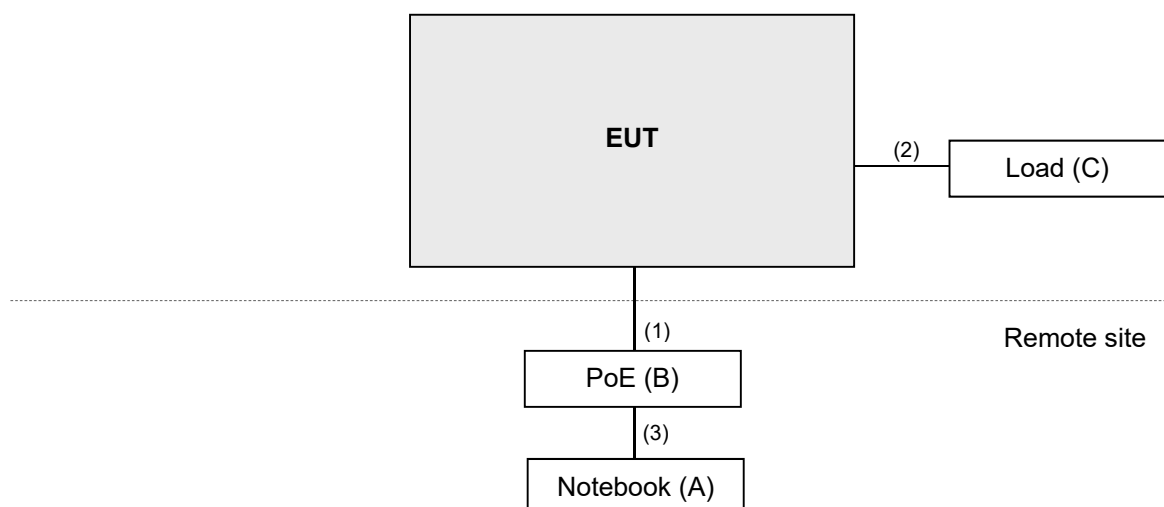
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	POE	EnGenius	EPA5006GAT	NA	NA	-
C.	Load	NA	NA	NA	NA	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN	1	1.5	N	0	RJ45, Cat5e
2.	LAN	1	1.5	N	0	RJ45, Cat5e
3.	LAN	1	7	N	0	RJ45, Cat5e

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 30dB 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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102579	Jul. 07, 2020	Jul. 06, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 09, 2020	Jun. 08, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 04, 2020	Nov. 03, 2021
HORN Antenna SCHWARZBECK	9120D	209	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Loop Antenna TESEQ	HLA 6121	45745	Jul. 06, 2020	Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 16, 2020	Aug. 15, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 22, 2021	Mar. 21, 2022
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM- SM-8000	Cable-CH3-03 (309224+170907)	Aug. 16, 2020	Aug. 15, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/MY 55210005	Jul. 13, 2020	Jul. 12, 2021

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 HwaYa Chamber 3.

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 detect 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:

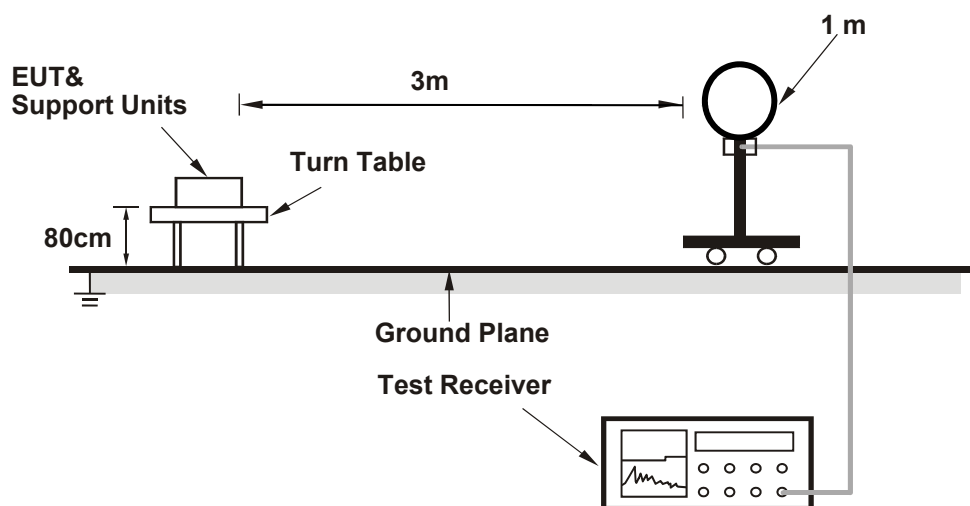
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.
2G traffic radio (Radio 1)
(802.11b: RBW = 1MHz, VBW = 3kHz; 802.11g: RBW = 1MHz, VBW = 1kHz; 802.11ax (HE20): RBW = 1MHz, VBW = 1kHz; 802.11ax (HE40): RBW = 1MHz, VBW = 1kHz)
Scanning radio (Radio 3)
(802.11b: RBW = 1MHz, VBW = 10Hz; 802.11g: RBW = 1MHz, VBW = 1kHz; 802.11ac (VHT20): RBW = 1MHz, VBW = 1kHz; 802.11ac (VHT40): RBW = 1MHz, VBW = 3kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

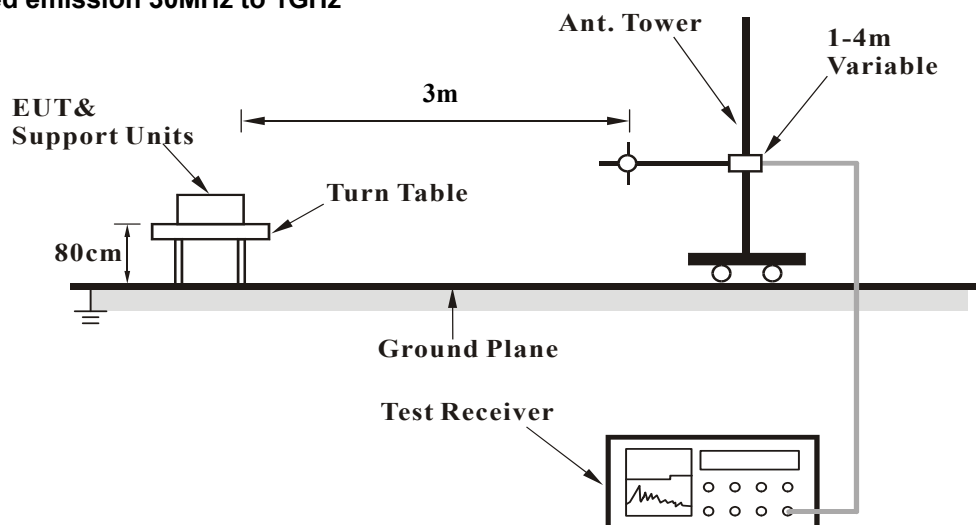
No deviation.

4.1.5 Test Setup

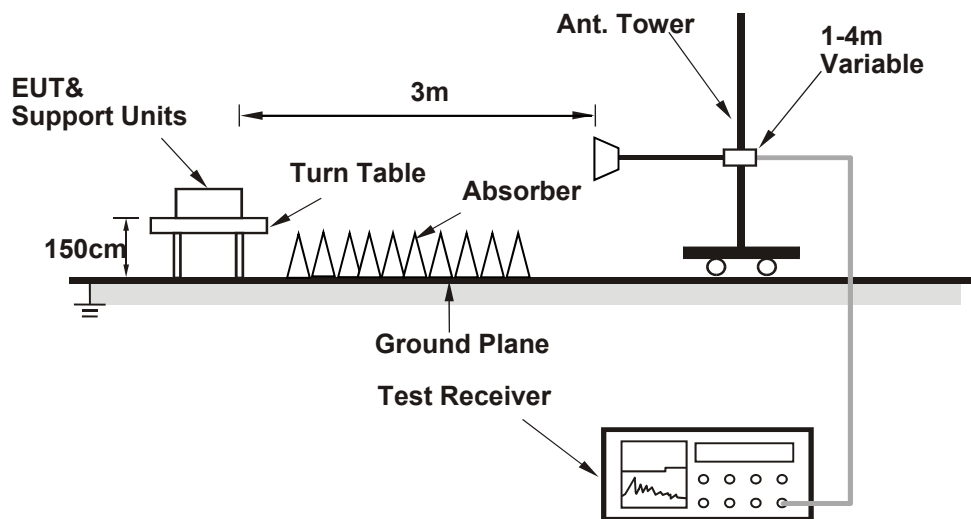
For Radiated emission below 30MHz



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.
- Prepared a notebook to act as a communication partner and placed it outside of testing area.
- The communication partner connected with EUT via an RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz Data:

2G traffic radio (Radio 1)

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	59.8 PK	74.0	-14.2	3.11 H	209	25.4	34.4
2	2390.00	46.4 AV	54.0	-7.6	3.11 H	209	12.0	34.4
3	*2412.00	109.9 PK			3.09 H	205	75.6	34.3
4	*2412.00	107.4 AV			3.09 H	205	73.1	34.3
5	4824.00	41.0 PK	74.0	-33.0	1.57 H	47	34.8	6.2
6	4824.00	30.4 AV	54.0	-23.6	1.57 H	47	24.2	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	2390.00	59.8 PK	74.0	-14.2	1.38 V	13	25.4	34.4
2	2390.00	48.5 AV	54.0	-5.5	1.38 V	13	14.1	34.4
3	*2412.00	117.0 PK			1.40 V	13	82.7	34.3
4	*2412.00	114.5 AV			1.40 V	13	80.2	34.3
5	4824.00	55.7 PK	74.0	-18.3	1.57 V	11	49.5	6.2
6	4824.00	52.5 AV	54.0	-1.5	1.57 V	11	46.3	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 802.11b	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	107.4 PK			3.03 H	208	73.1	34.3
2	*2437.00	106.1 AV			3.03 H	208	71.8	34.3
3	4874.00	48.1 PK	74.0	-25.9	1.49 H	55	42.0	6.1
4	4874.00	36.7 AV	54.0	-17.3	1.49 H	55	30.6	6.1
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	*2437.00	115.2 PK			1.29 V	17	80.9	34.3
2	*2437.00	113.0 AV			1.29 V	17	78.7	34.3
3	4874.00	56.6 PK	74.0	-17.4	1.27 V	10	50.5	6.1
4	4874.00	52.5 AV	54.0	-1.5	1.27 V	10	46.4	6.1

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 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	108.7 PK			3.22 H	216	74.3	34.4
2	*2462.00	107.6 AV			3.22 H	216	73.2	34.4
3	2483.50	59.4 PK	74.0	-14.6	3.12 H	210	25.0	34.4
4	2483.50	48.2 AV	54.0	-5.8	3.12 H	210	13.8	34.4
5	4924.00	47.4 PK	74.0	-26.6	1.66 H	38	41.3	6.1
6	4924.00	37.3 AV	54.0	-16.7	1.66 H	38	31.2	6.1
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	*2462.00	117.8 PK			1.51 V	9	83.4	34.4
2	*2462.00	115.4 AV			1.51 V	9	81.0	34.4
3	2483.50	61.6 PK	74.0	-12.4	1.40 V	12	27.2	34.4
4	2483.50	51.8 AV	54.0	-2.2	1.40 V	12	17.4	34.4
5	4924.00	55.4 PK	74.0	-18.6	1.26 V	38	49.3	6.1
6	4924.00	52.7 AV	54.0	-1.3	1.26 V	38	46.6	6.1

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 1 : 2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.5 PK	74.0	-13.5	3.33 H	219	26.1	34.4
2	2390.00	47.4 AV	54.0	-6.6	3.33 H	219	13.0	34.4
3	*2412.00	110.7 PK			3.28 H	214	76.4	34.3
4	*2412.00	101.1 AV			3.28 H	214	66.8	34.3
5	4824.00	48.4 PK	74.0	-25.6	1.49 H	33	42.2	6.2
6	4824.00	35.4 AV	54.0	-18.6	1.49 H	33	29.2	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	2390.00	64.5 PK	74.0	-9.5	1.33 V	230	30.1	34.4
2	2390.00	52.9 AV	54.0	-1.1	1.33 V	230	18.5	34.4
3	*2412.00	117.5 PK			1.40 V	8	83.2	34.3
4	*2412.00	108.3 AV			1.40 V	8	74.0	34.3
5	4824.00	53.7 PK	74.0	-20.3	1.38 V	6	47.5	6.2
6	4824.00	40.8 AV	54.0	-13.2	1.38 V	6	34.6	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 802.11g	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	110.5 PK			3.19 H	213	76.2	34.3
2	*2437.00	101.2 AV			3.19 H	213	66.9	34.3
3	4874.00	47.9 PK	74.0	-26.1	1.66 H	50	41.8	6.1
4	4874.00	35.1 AV	54.0	-18.9	1.66 H	50	29.0	6.1
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	*2437.00	117.8 PK			1.56 V	14	83.5	34.3
2	*2437.00	108.7 AV			1.56 V	14	74.4	34.3
3	4874.00	52.9 PK	74.0	-21.1	1.45 V	9	46.8	6.1
4	4874.00	41.3 AV	54.0	-12.7	1.45 V	9	35.2	6.1

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 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	106.4 PK			3.28 H	204	72.0	34.4
2	*2462.00	97.4 AV			3.28 H	204	63.0	34.4
3	2483.50	59.7 PK	74.0	-14.3	3.33 H	210	25.3	34.4
4	2483.50	48.6 AV	54.0	-5.4	3.33 H	210	14.2	34.4
5	4924.00	48.0 PK	74.0	-26.0	1.44 H	48	41.9	6.1
6	4924.00	34.6 AV	54.0	-19.4	1.44 H	48	28.5	6.1
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	*2462.00	115.1 PK			1.49 V	10	80.7	34.4
2	*2462.00	106.1 AV			1.49 V	10	71.7	34.4
3	2483.50	66.4 PK	74.0	-7.6	1.51 V	24	32.0	34.4
4	2483.50	53.0 AV	54.0	-1.0	1.51 V	24	18.6	34.4
5	4924.00	58.5 PK	74.0	-15.5	1.38 V	6	52.4	6.1
6	4924.00	44.3 AV	54.0	-9.7	1.38 V	6	38.2	6.1

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 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	59.7 PK	74.0	-14.3	3.28 H	317	25.3	34.4
2	2390.00	48.0 AV	54.0	-6.0	3.28 H	317	13.6	34.4
3	*2412.00	112.5 PK			3.22 H	215	78.2	34.3
4	*2412.00	99.7 AV			3.22 H	215	65.4	34.3
5	4824.00	48.3 PK	74.0	-25.7	1.66 H	62	42.1	6.2
6	4824.00	35.2 AV	54.0	-18.8	1.66 H	62	29.0	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	2390.00	66.1 PK	74.0	-7.9	1.26 V	2	31.7	34.4
2	2390.00	52.6 AV	54.0	-1.4	1.26 V	2	18.2	34.4
3	*2412.00	120.5 PK			1.44 V	20	86.2	34.3
4	*2412.00	106.8 AV			1.44 V	20	72.5	34.3
5	4824.00	52.5 PK	74.0	-21.5	1.34 V	15	46.3	6.2
6	4824.00	37.7 AV	54.0	-16.3	1.34 V	15	31.5	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 (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	113.8 PK			3.52 H	216	79.5	34.3
2	*2437.00	100.8 AV			3.52 H	216	66.5	34.3
3	4874.00	47.4 PK	74.0	-26.6	1.58 H	32	41.3	6.1
4	4874.00	34.7 AV	54.0	-19.3	1.58 H	32	28.6	6.1
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	*2437.00	121.6 PK			1.26 V	20	87.3	34.3
2	*2437.00	108.5 AV			1.26 V	20	74.2	34.3
3	4874.00	53.9 PK	74.0	-20.1	1.34 V	25	47.8	6.1
4	4874.00	37.6 AV	54.0	-16.4	1.34 V	25	31.5	6.1

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 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	106.9 PK			3.12 H	218	72.5	34.4
2	*2462.00	94.4 AV			3.12 H	218	60.0	34.4
3	2483.50	59.8 PK	74.0	-14.2	3.09 H	305	25.4	34.4
4	2483.50	48.6 AV	54.0	-5.4	3.09 H	305	14.2	34.4
5	4924.00	47.7 PK	74.0	-26.3	1.44 H	42	41.6	6.1
6	4924.00	34.7 AV	54.0	-19.3	1.44 H	42	28.6	6.1
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	*2462.00	115.3 PK			1.48 V	4	80.9	34.4
2	*2462.00	102.3 AV			1.48 V	4	67.9	34.4
3	2483.50	67.1 PK	74.0	-6.9	1.53 V	15	32.7	34.4
4	2483.50	53.0 AV	54.0	-1.0	1.53 V	15	18.6	34.4
5	4924.00	56.0 PK	74.0	-18.0	1.50 V	33	49.9	6.1
6	4924.00	39.0 AV	54.0	-15.0	1.50 V	33	32.9	6.1

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 (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	60.3 PK	74.0	-13.7	3.22 H	230	25.9	34.4
2	2390.00	48.0 AV	54.0	-6.0	3.22 H	230	13.6	34.4
3	*2422.00	107.3 PK			3.16 H	225	73.0	34.3
4	*2422.00	95.0 AV			3.16 H	225	60.7	34.3
5	4844.00	47.0 PK	74.0	-27.0	1.58 H	49	40.9	6.1
6	4844.00	34.3 AV	54.0	-19.7	1.58 H	49	28.2	6.1
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	64.8 PK	74.0	-9.2	1.50 V	9	30.4	34.4
2	2390.00	53.1 AV	54.0	-0.9	1.50 V	9	18.7	34.4
3	*2422.00	113.8 PK			1.38 V	9	79.5	34.3
4	*2422.00	102.1 AV			1.38 V	9	67.8	34.3
5	4844.00	52.4 PK	74.0	-21.6	1.29 V	24	46.3	6.1
6	4844.00	38.4 AV	54.0	-15.6	1.29 V	24	32.3	6.1

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 (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	107.1 PK			3.28 H	212	72.8	34.3
2	*2437.00	94.9 AV			3.28 H	212	60.6	34.3
3	2483.50	59.0 PK	74.0	-15.0	3.30 H	217	24.6	34.4
4	2483.50	48.4 AV	54.0	-5.6	3.30 H	217	14.0	34.4
5	4874.00	47.8 PK	74.0	-26.2	1.70 H	52	41.7	6.1
6	4874.00	35.0 AV	54.0	-19.0	1.70 H	52	28.9	6.1
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	*2437.00	116.2 PK			1.32 V	19	81.9	34.3
2	*2437.00	103.5 AV			1.32 V	19	69.2	34.3
3	2483.50	66.2 PK	74.0	-7.8	1.63 V	11	31.8	34.4
4	2483.50	52.6 AV	54.0	-1.4	1.63 V	11	18.2	34.4
5	4874.00	55.9 PK	74.0	-18.1	1.33 V	30	49.8	6.1
6	4874.00	38.1 AV	54.0	-15.9	1.33 V	30	32.0	6.1

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 (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	102.9 PK			3.31 H	203	68.6	34.3
2	*2452.00	88.9 AV			3.31 H	203	54.6	34.3
3	2483.50	59.0 PK	74.0	-15.0	3.21 H	189	24.6	34.4
4	2483.50	48.6 AV	54.0	-5.4	3.21 H	189	14.2	34.4
5	4904.00	48.3 PK	74.0	-25.7	1.55 H	31	42.2	6.1
6	4904.00	35.1 AV	54.0	-18.9	1.55 H	31	29.0	6.1
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	*2452.00	112.3 PK			1.50 V	14	78.0	34.3
2	*2452.00	98.6 AV			1.50 V	14	64.3	34.3
3	2483.50	65.6 PK	74.0	-8.4	1.47 V	18	31.2	34.4
4	2483.50	53.1 AV	54.0	-0.9	1.47 V	18	18.7	34.4
5	4904.00	56.3 PK	74.0	-17.7	1.28 V	29	50.2	6.1
6	4904.00	38.4 AV	54.0	-15.6	1.28 V	29	32.3	6.1

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.

Scanning radio (Radio 3)

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	59.7 PK	74.0	-14.3	2.00 H	195	25.3	34.4
2	2390.00	47.0 AV	54.0	-7.0	2.00 H	195	12.6	34.4
3	*2412.00	102.6 PK			2.08 H	192	68.3	34.3
4	*2412.00	100.0 AV			2.08 H	192	65.7	34.3
5	4824.00	47.6 PK	74.0	-26.4	1.90 H	200	41.2	6.4
6	4824.00	37.6 AV	54.0	-16.4	1.90 H	200	31.2	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	2390.00	61.1 PK	74.0	-12.9	1.37 V	174	26.7	34.4
2	2390.00	52.6 AV	54.0	-1.4	1.37 V	174	18.2	34.4
3	*2412.00	110.5 PK			1.43 V	166	76.2	34.3
4	*2412.00	108.1 AV			1.43 V	166	73.8	34.3
5	4824.00	54.7 PK	74.0	-19.3	1.55 V	143	48.3	6.4
6	4824.00	51.6 AV	54.0	-2.4	1.55 V	143	45.2	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.

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	102.0 PK			2.06 H	200	67.7	34.3
2	*2437.00	99.5 AV			2.06 H	200	65.2	34.3
3	4874.00	47.1 PK	74.0	-26.9	1.85 H	196	41.3	5.8
4	4874.00	36.9 AV	54.0	-17.1	1.85 H	196	31.1	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.8 PK			1.17 V	162	75.5	34.3
2	*2437.00	107.4 AV			1.17 V	162	73.1	34.3
3	4874.00	57.0 PK	74.0	-17.0	1.63 V	137	51.2	5.8
4	4874.00	53.2 AV	54.0	-0.8	1.63 V	137	47.4	5.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	100.6 PK			1.85 H	199	66.2	34.4
2	*2462.00	98.4 AV			1.85 H	199	64.0	34.4
3	2483.50	58.6 PK	74.0	-15.4	1.78 H	192	24.2	34.4
4	2483.50	48.2 AV	54.0	-5.8	1.78 H	192	13.8	34.4
5	4924.00	47.5 PK	74.0	-26.5	1.78 H	203	41.8	5.7
6	4924.00	36.2 AV	54.0	-17.8	1.78 H	203	30.5	5.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	108.9 PK			1.45 V	169	74.5	34.4
2	*2462.00	106.4 AV			1.45 V	169	72.0	34.4
3	2483.50	61.1 PK	74.0	-12.9	1.55 V	166	26.7	34.4
4	2483.50	50.8 AV	54.0	-3.2	1.55 V	166	16.4	34.4
5	4924.00	55.7 PK	74.0	-18.3	1.66 V	139	50.0	5.7
6	4924.00	52.9 AV	54.0	-1.1	1.66 V	139	47.2	5.7

Remarks:

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

RF Mode	TX 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	*2412.00	104.9 PK			2.09 H	203	70.6	34.3
2	*2412.00	95.0 AV			2.09 H	203	60.7	34.3
3	2483.50	60.2 PK	74.0	-13.8	2.11 H	206	25.8	34.4
4	2483.50	48.6 AV	54.0	-5.4	2.11 H	206	14.2	34.4
5	4824.00	47.5 PK	74.0	-26.5	1.80 H	203	41.1	6.4
6	4824.00	35.6 AV	54.0	-18.4	1.80 H	203	29.2	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	2390.00	65.6 PK	74.0	-8.4	1.31 V	162	31.2	34.4
2	2390.00	53.0 AV	54.0	-1.0	1.31 V	162	18.6	34.4
3	*2412.00	111.5 PK			1.51 V	174	77.2	34.3
4	*2412.00	102.0 AV			1.51 V	174	67.7	34.3
5	4824.00	50.9 PK	74.0	-23.1	1.62 V	141	44.5	6.4
6	4824.00	37.6 AV	54.0	-16.4	1.62 V	141	31.2	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.

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	107.3 PK			2.04 H	195	73.0	34.3
2	*2437.00	97.0 AV			2.04 H	195	62.7	34.3
3	4874.00	47.9 PK	74.0	-26.1	1.90 H	201	42.1	5.8
4	4874.00	37.3 AV	54.0	-16.7	1.90 H	201	31.5	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	114.3 PK			1.30 V	169	80.0	34.3
2	*2437.00	104.4 AV			1.30 V	169	70.1	34.3
3	4874.00	54.6 PK	74.0	-19.4	1.64 V	199	48.8	5.8
4	4874.00	41.3 AV	54.0	-12.7	1.64 V	199	35.5	5.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	102.8 PK			2.18 H	195	68.4	34.4
2	*2462.00	93.6 AV			2.18 H	195	59.2	34.4
3	2483.50	59.5 PK	74.0	-14.5	2.11 H	195	25.1	34.4
4	2483.50	49.0 AV	54.0	-5.0	2.11 H	195	14.6	34.4
5	4924.00	47.8 PK	74.0	-26.2	1.88 H	203	42.1	5.7
6	4924.00	35.7 AV	54.0	-18.3	1.88 H	203	30.0	5.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.1 PK			1.54 V	175	77.7	34.4
2	*2462.00	101.6 AV			1.54 V	175	67.2	34.4
3	2483.50	66.8 PK	74.0	-7.2	1.71 V	169	32.4	34.4
4	2483.50	52.9 AV	54.0	-1.1	1.71 V	169	18.5	34.4
5	4924.00	51.7 PK	74.0	-22.3	1.54 V	196	46.0	5.7
6	4924.00	39.2 AV	54.0	-14.8	1.54 V	196	33.5	5.7

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.5 PK	74.0	-14.5	1.66 H	190	25.1	34.4
2	2390.00	46.6 AV	54.0	-7.4	1.66 H	190	12.2	34.4
3	*2412.00	102.5 PK			1.53 H	192	68.2	34.3
4	*2412.00	93.4 AV			1.53 H	192	59.1	34.3
5	4824.00	47.6 PK	74.0	-26.4	1.90 H	201	41.2	6.4
6	4824.00	34.6 AV	54.0	-19.4	1.90 H	201	28.2	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	2390.00	64.6 PK	74.0	-9.4	1.64 V	151	30.2	34.4
2	2390.00	52.2 AV	54.0	-1.8	1.64 V	151	17.8	34.4
3	*2412.00	110.9 PK			1.17 V	169	76.6	34.3
4	*2412.00	101.1 AV			1.17 V	169	66.8	34.3
5	4824.00	47.7 PK	74.0	-26.3	1.55 V	144	41.3	6.4
6	4824.00	36.6 AV	54.0	-17.4	1.55 V	144	30.2	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.

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	106.3 PK			2.06 H	195	72.0	34.3
2	*2437.00	96.3 AV			2.06 H	195	62.0	34.3
3	4874.00	47.6 PK	74.0	-26.4	1.87 H	193	41.8	5.8
4	4874.00	36.3 AV	54.0	-17.7	1.87 H	193	30.5	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	114.4 PK			1.43 V	166	80.1	34.3
2	*2437.00	104.2 AV			1.43 V	166	69.9	34.3
3	4874.00	54.0 PK	74.0	-20.0	1.57 V	192	48.2	5.8
4	4874.00	40.5 AV	54.0	-13.5	1.57 V	192	34.7	5.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	101.7 PK			2.03 H	193	67.3	34.4
2	*2462.00	91.4 AV			2.03 H	193	57.0	34.4
3	2483.50	59.4 PK	74.0	-14.6	2.00 H	191	25.0	34.4
4	2483.50	48.6 AV	54.0	-5.4	2.00 H	191	14.2	34.4
5	4924.00	46.2 PK	74.0	-27.8	1.82 H	193	40.5	5.7
6	4924.00	33.9 AV	54.0	-20.1	1.82 H	193	28.2	5.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.2 PK			1.14 V	166	76.8	34.4
2	*2462.00	100.8 AV			1.14 V	166	66.4	34.4
3	2483.50	65.4 PK	74.0	-8.6	1.75 V	167	31.0	34.4
4	2483.50	52.7 AV	54.0	-1.3	1.75 V	167	18.3	34.4
5	4924.00	47.5 PK	74.0	-26.5	1.71 V	158	41.8	5.7
6	4924.00	35.9 AV	54.0	-18.1	1.71 V	158	30.2	5.7

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.8 PK	74.0	-13.2	2.11 H	201	26.4	34.4
2	2390.00	48.0 AV	54.0	-6.0	2.11 H	201	13.6	34.4
3	*2422.00	97.3 PK			2.04 H	201	63.0	34.3
4	*2422.00	87.3 AV			2.04 H	201	53.0	34.3
5	4844.00	47.4 PK	74.0	-26.6	2.01 H	231	41.3	6.1
6	4844.00	35.2 AV	54.0	-18.8	2.01 H	231	29.1	6.1
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	65.1 PK	74.0	-8.9	1.29 V	172	30.7	34.4
2	2390.00	52.7 AV	54.0	-1.3	1.29 V	172	18.3	34.4
3	*2422.00	104.7 PK			1.28 V	167	70.4	34.3
4	*2422.00	94.5 AV			1.28 V	167	60.2	34.3
5	4844.00	47.3 PK	74.0	-26.7	1.51 V	163	41.2	6.1
6	4844.00	35.9 AV	54.0	-18.1	1.51 V	163	29.8	6.1

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.6 PK	74.0	-13.4	2.00 H	188	26.2	34.4
2	2390.00	47.4 AV	54.0	-6.6	2.00 H	188	13.0	34.4
3	*2437.00	99.6 PK			2.02 H	191	65.3	34.3
4	*2437.00	89.5 AV			2.02 H	191	55.2	34.3
5	4874.00	46.9 PK	74.0	-27.1	1.85 H	193	41.1	5.8
6	4874.00	35.0 AV	54.0	-19.0	1.85 H	193	29.2	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	67.5 PK	74.0	-6.5	1.72 V	166	33.1	34.4
2	2390.00	52.5 AV	54.0	-1.5	1.72 V	166	18.1	34.4
3	*2437.00	108.9 PK			1.40 V	165	74.6	34.3
4	*2437.00	98.0 AV			1.40 V	165	63.7	34.3
5	4874.00	47.5 PK	74.0	-26.5	1.62 V	177	41.7	5.8
6	4874.00	36.0 AV	54.0	-18.0	1.62 V	177	30.2	5.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	95.7 PK			2.22 H	190	61.4	34.3
2	*2452.00	86.1 AV			2.22 H	190	51.8	34.3
3	2483.50	59.2 PK	74.0	-14.8	2.12 H	192	24.8	34.4
4	2483.50	48.7 AV	54.0	-5.3	2.12 H	192	14.3	34.4
5	4904.00	46.1 PK	74.0	-27.9	1.99 H	208	40.5	5.6
6	4904.00	34.4 AV	54.0	-19.6	1.99 H	208	28.8	5.6
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	*2452.00	104.6 PK			1.30 V	170	70.3	34.3
2	*2452.00	93.8 AV			1.30 V	170	59.5	34.3
3	2483.50	64.6 PK	74.0	-9.4	1.62 V	168	30.2	34.4
4	2483.50	52.6 AV	54.0	-1.4	1.62 V	168	18.2	34.4
5	4904.00	46.4 PK	74.0	-27.6	1.57 V	149	40.8	5.6
6	4904.00	35.4 AV	54.0	-18.6	1.57 V	149	29.8	5.6

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.

Below 1GHz worst-case data:

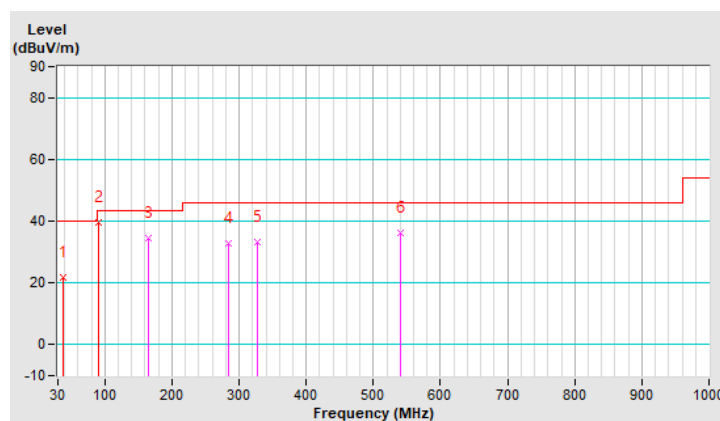
2G traffic radio (Radio 1)

RF Mode	TX 802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	30MHz ~ 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	37.70	21.6 QP	40.0	-18.4	2.00 H	147	31.6	-10.0
2	91.09	39.6 QP	43.5	-3.9	2.00 H	120	53.9	-14.3
3	164.96	34.3 QP	43.5	-9.2	1.49 H	303	42.9	-8.6
4	284.45	32.7 QP	46.0	-13.3	1.00 H	129	39.6	-6.9
5	328.03	33.2 QP	46.0	-12.8	1.00 H	260	39.0	-5.8
6	540.30	36.0 QP	46.0	-10.0	1.49 H	144	37.4	-1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

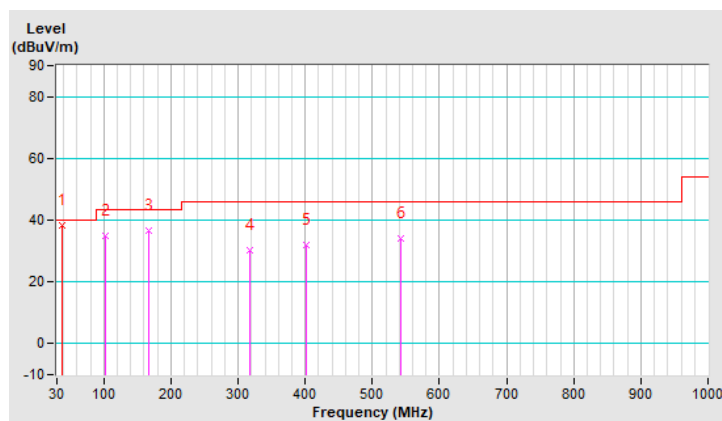


RF Mode	TX 802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	37.72	38.2 QP	40.0	-1.8	1.50 V	15	48.2	-10.0
2	103.10	35.1 QP	43.5	-8.4	1.00 V	94	47.8	-12.7
3	166.36	36.5 QP	43.5	-7.0	1.00 V	204	45.1	-8.6
4	318.19	30.4 QP	46.0	-15.6	1.00 V	216	36.5	-6.1
5	402.54	31.9 QP	46.0	-14.1	1.51 V	262	36.6	-4.7
6	541.71	34.1 QP	46.0	-11.9	1.00 V	248	35.5	-1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



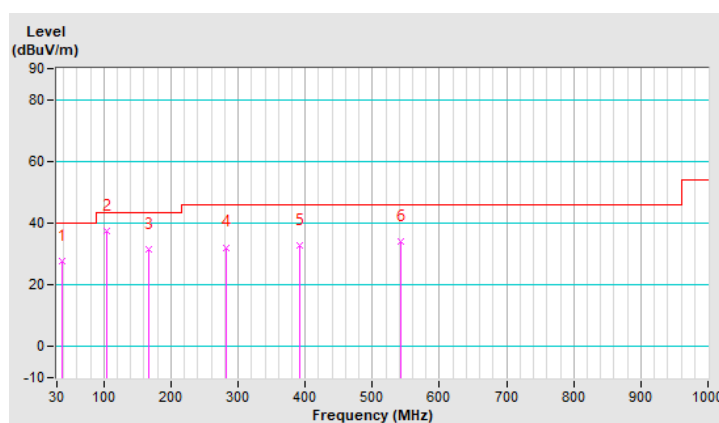
Scanning radio (Radio 3)

RF Mode	TX 802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	30MHz ~ 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	37.03	27.8 QP	40.0	-12.2	1.50 H	121	37.8	-10.0
2	104.51	37.6 QP	43.5	-5.9	1.00 H	98	50.1	-12.5
3	166.36	31.5 QP	43.5	-12.0	2.00 H	113	40.1	-8.6
4	281.64	32.2 QP	46.0	-13.8	1.00 H	255	39.1	-6.9
5	392.70	32.6 QP	46.0	-13.4	1.50 H	134	37.4	-4.8
6	541.71	34.1 QP	46.0	-11.9	1.00 H	140	35.5	-1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

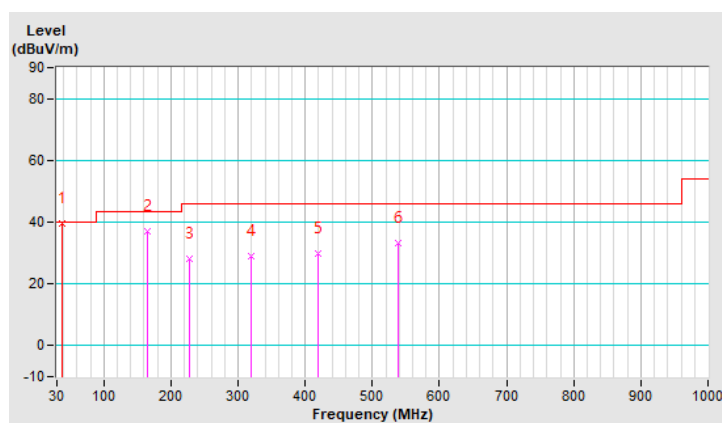


RF Mode	TX 802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	37.75	39.4 QP	40.0	-0.6	1.00 V	14	49.4	-10.0
2	164.96	36.9 QP	43.5	-6.6	1.00 V	171	45.5	-8.6
3	226.81	28.2 QP	46.0	-17.8	1.50 V	171	38.7	-10.5
4	319.59	29.1 QP	46.0	-16.9	1.50 V	223	35.2	-6.1
5	419.41	29.8 QP	46.0	-16.2	1.00 V	247	33.9	-4.1
6	538.90	33.4 QP	46.0	-12.6	2.00 V	72	34.8	-1.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2020	Sep. 03, 2021
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 28, 2021	Jan. 27, 2022
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 18, 2020	Aug. 17, 2021
Software ADT	BV ADT_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 HwaYa Shielded Room 2 (Conduction 2).

3. The VCCI Site Registration No. is C-12047.

4.2.3 Test Procedures

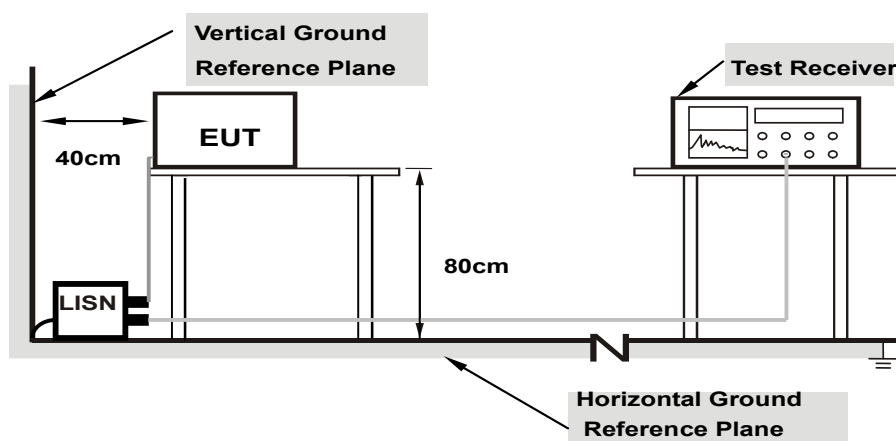
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

Worst-case data:

2G traffic radio (Radio 1)

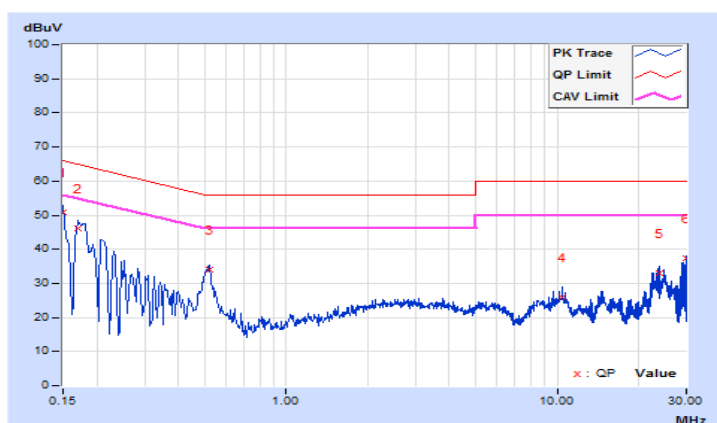
802.11g

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 69%RH
Tested by	Edison Lee	Test Date	2021/03/25

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	0.15000	10.07	40.86	22.07	50.93	32.14	66.00	56.00	-15.07	-23.86
2	0.17000	10.07	36.15	18.72	46.22	28.79	64.96	54.96	-18.74	-26.17
3	0.51800	10.10	24.05	19.26	34.15	29.36	56.00	46.00	-21.85	-16.64
4	10.45000	10.33	15.71	11.31	26.04	21.64	60.00	50.00	-33.96	-28.36
5	23.75400	10.36	22.53	21.07	32.89	31.43	60.00	50.00	-27.11	-18.57
6	29.93000	10.20	27.19	25.65	37.39	35.85	60.00	50.00	-22.61	-14.15

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

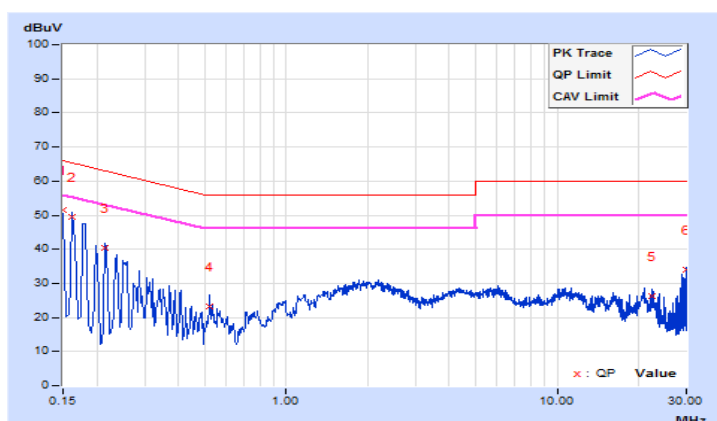


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 69%RH
Tested by	Edison Lee	Test Date	2021/03/25

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	0.15000	10.08	41.45	23.34	51.53	33.42	66.00	56.00	-14.47	-22.58
2	0.16200	10.08	39.35	22.50	49.43	32.58	65.36	55.36	-15.93	-22.78
3	0.21400	10.08	30.27	14.57	40.35	24.65	63.05	53.05	-22.70	-28.40
4	0.52200	10.11	13.17	2.94	23.28	13.05	56.00	46.00	-32.72	-32.95
5	22.32984	10.59	15.65	12.65	26.24	23.24	60.00	50.00	-33.76	-26.76
6	29.93000	10.38	23.50	22.12	33.88	32.50	60.00	50.00	-26.12	-17.50

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



Scanning radio (Radio 3)

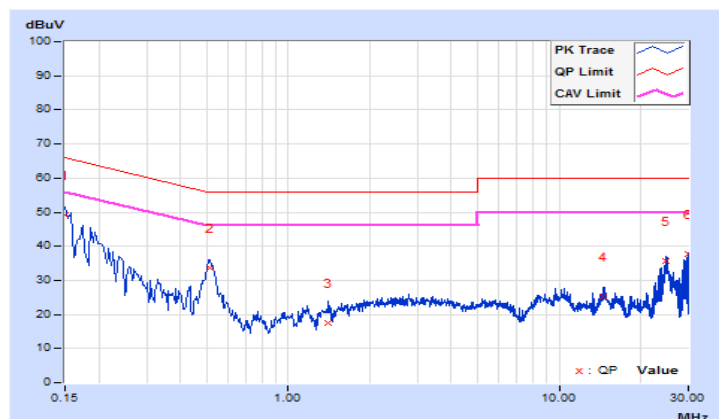
802.11g

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 69%RH
Tested by	Edison Lee	Test Date	2021/03/25

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	0.15000	10.07	39.22	20.40	49.29	30.47	66.00	56.00	-16.71	-25.53
2	0.51200	10.10	23.73	16.74	33.83	26.84	56.00	46.00	-22.17	-19.16
3	1.41000	10.15	7.24	1.91	17.39	12.06	56.00	46.00	-38.61	-33.94
4	14.49000	10.37	14.75	10.16	25.12	20.53	60.00	50.00	-34.88	-29.47
5	24.94200	10.33	25.41	21.58	35.74	31.91	60.00	50.00	-24.26	-18.09
6	29.93000	10.20	27.45	26.20	37.65	36.40	60.00	50.00	-22.35	-13.60

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

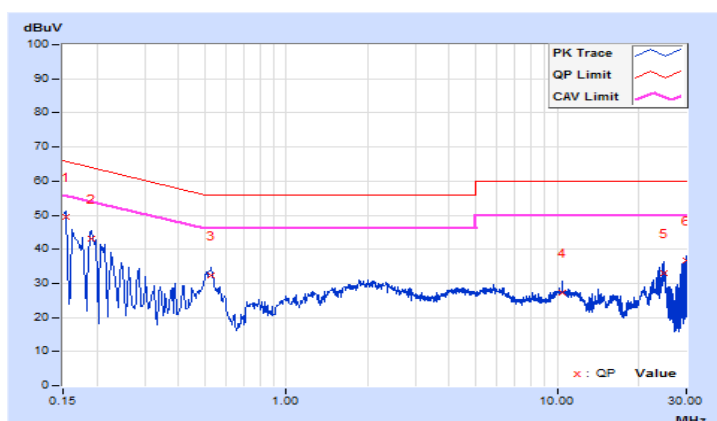


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 69%RH
Tested by	Edison Lee	Test Date	2021/03/25

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	0.15400	10.08	39.27	23.21	49.35	33.29	65.78	55.78	-16.43	-22.49
2	0.19000	10.08	32.88	16.09	42.96	26.17	64.04	54.04	-21.08	-27.87
3	0.52984	10.11	22.15	15.86	32.26	25.97	56.00	46.00	-23.74	-20.03
4	10.45000	10.42	16.84	12.04	27.26	22.46	60.00	50.00	-32.74	-27.54
5	24.70600	10.52	22.57	18.17	33.09	28.69	60.00	50.00	-26.91	-21.31
6	29.92600	10.38	26.36	24.50	36.74	34.88	60.00	50.00	-23.26	-15.12

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

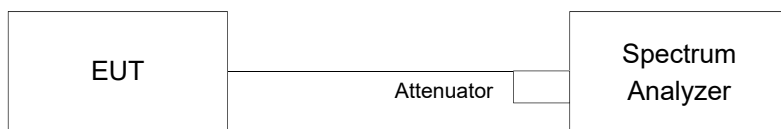


4.3 6dB Bandwidth Measurement

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

2G traffic radio (Radio 1)

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	7.58	7.11	0.5	Pass
6	2437	7.60	8.10	0.5	Pass
11	2462	7.54	7.09	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.35	16.36	0.5	Pass
6	2437	16.36	16.35	0.5	Pass
11	2462	16.36	16.37	0.5	Pass

802.11ax (HE20)

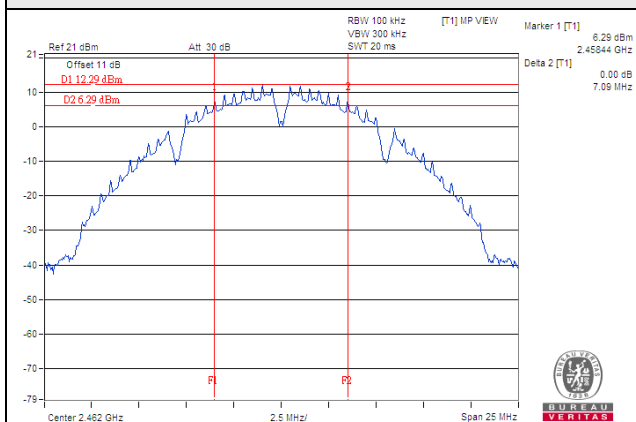
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	18.84	18.98	0.5	Pass
6	2437	18.76	18.84	0.5	Pass
11	2462	18.82	18.88	0.5	Pass

802.11ax (HE40)

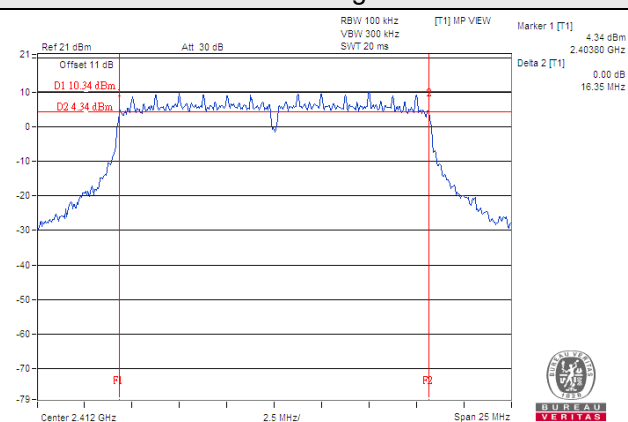
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	37.82	37.96	0.5	Pass
6	2437	37.63	37.90	0.5	Pass
9	2452	38.02	37.93	0.5	Pass

Spectrum Plot of Worst Value

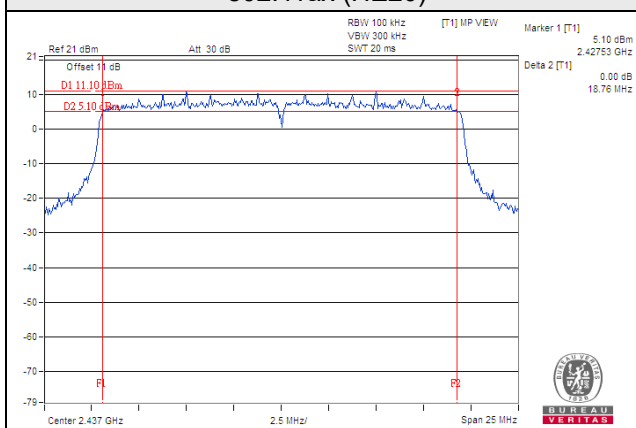
802.11b



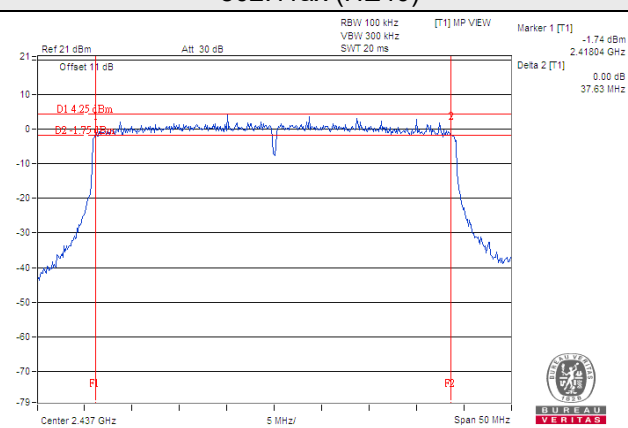
802.11g



802.11ax (HE20)



802.11ax (HE40)



Scanning radio (Radio 3)

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	10.12	10.13	0.5	Pass
6	2437	10.13	10.11	0.5	Pass
11	2462	10.13	10.12	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.34	16.35	0.5	Pass
6	2437	16.36	16.37	0.5	Pass
11	2462	16.39	16.39	0.5	Pass

802.11ac (VHT20)

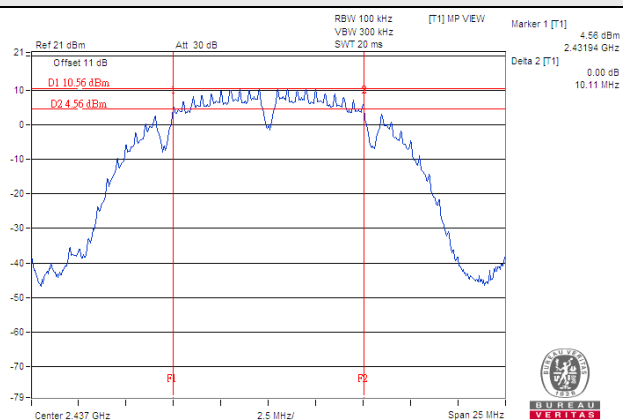
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.21	16.71	0.5	Pass
6	2437	17.34	16.92	0.5	Pass
11	2462	17.61	17.58	0.5	Pass

802.11ac (VHT40)

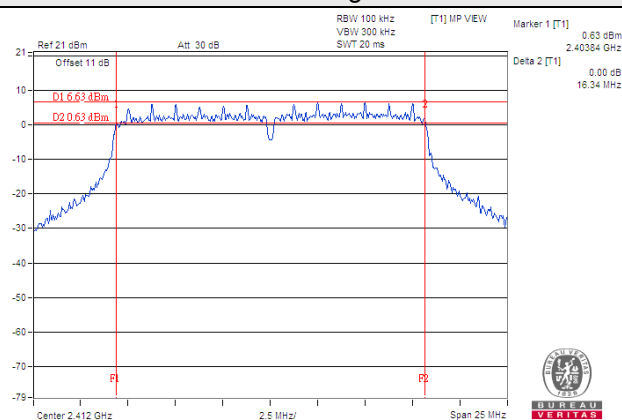
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.81	35.86	0.5	Pass
6	2437	35.58	35.79	0.5	Pass
9	2452	35.58	35.36	0.5	Pass

Spectrum Plot of Worst Value

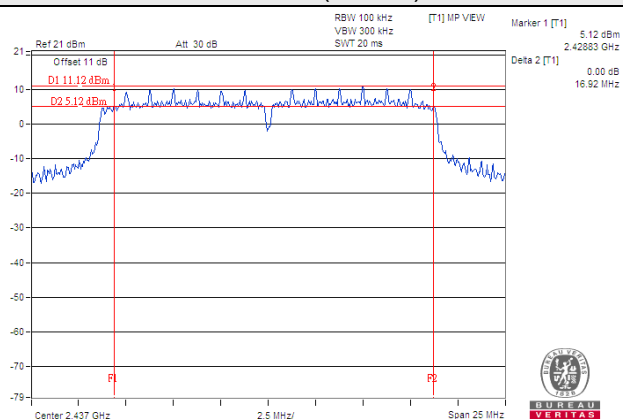
802.11b



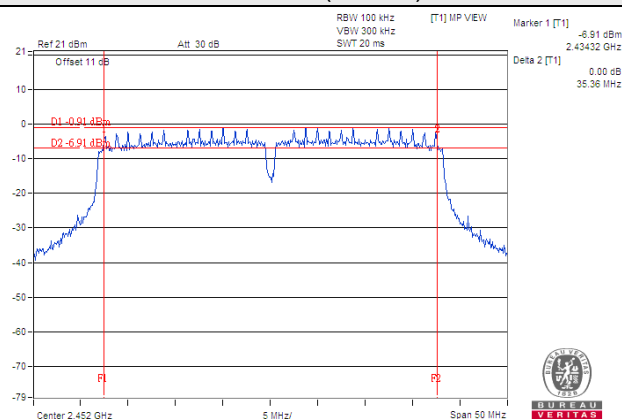
802.11g



802.11ac (VHT20)



802.11ac (VHT40)



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,

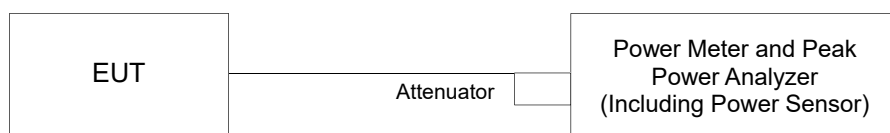
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

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

2G traffic radio (Radio 1)

CDD Mode

802.11b

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.35	21.89	326.316	25.14	30	Pass
6	2437	21.02	20.69	243.693	23.87	30	Pass
11	2462	21.20	21.13	261.544	24.18	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.47	22.07	337.668	25.28	30	Pass
6	2437	23.52	23.01	424.892	26.28	30	Pass
11	2462	18.62	18.02	136.165	21.34	30	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.96	20.40	234.386	23.70	30	Pass
6	2437	22.95	22.41	371.423	25.70	30	Pass
11	2462	15.45	15.43	69.989	18.45	30	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.63	18.86	168.746	22.27	30	Pass
6	2437	19.36	18.90	163.923	22.15	30	Pass
9	2452	14.03	13.52	47.784	16.79	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.98	20.43	235.722	23.72	30	Pass
6	2437	22.98	22.43	373.594	25.72	30	Pass
11	2462	15.47	15.45	70.312	18.47	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	19.67	18.89	170.129	22.31	30	Pass
6	2437	19.38	18.92	164.679	22.17	30	Pass
9	2452	14.07	13.55	48.173	16.83	30	Pass

Beamforming Mode

802.11ac (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.95	17.39	117.201	20.69	27.49	Pass
6	2437	19.94	19.40	185.724	22.69	27.49	Pass
11	2462	12.44	12.42	34.997	15.44	27.49	Pass

Note: Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6 dBi, so the power limit shall be reduced to 30-(8.51-6) = 27.49 dBm.

802.11ac (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	16.62	15.85	84.379	19.26	27.49	Pass
6	2437	16.35	15.89	81.967	19.14	27.49	Pass
9	2452	11.02	10.51	23.893	13.78	27.49	Pass

Note: Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6 dBi, so the power limit shall be reduced to 30-(8.51-6) = 27.49 dBm.

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.97	17.42	117.869	20.71	27.49	Pass
6	2437	19.97	19.42	186.810	22.71	27.49	Pass
11	2462	12.46	12.44	35.159	15.46	27.49	Pass

Note: Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6 dBi, so the power limit shall be reduced to 30-(8.51-6) = 27.49 dBm.

802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	16.66	15.88	85.070	19.30	27.49	Pass
6	2437	16.37	15.91	82.345	19.16	27.49	Pass
9	2452	11.06	10.54	24.088	13.82	27.49	Pass

Note: Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6 dBi, so the power limit shall be reduced to 30-(8.51-6) = 27.49 dBm.

Scanning radio (Radio 3)

802.11b

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.12	19.97	202.113	23.06	30	Pass
6	2437	21.17	20.72	248.950	23.96	30	Pass
11	2462	21.29	20.98	259.900	24.15	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.14	18.02	128.550	21.09	30	Pass
6	2437	22.02	21.92	314.817	24.98	30	Pass
11	2462	18.78	18.45	145.493	21.63	30	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.23	17.01	103.079	20.13	30	Pass
6	2437	21.75	21.64	295.505	24.71	30	Pass
11	2462	17.52	17.47	112.341	20.51	30	Pass

802.11ac (VHT40)

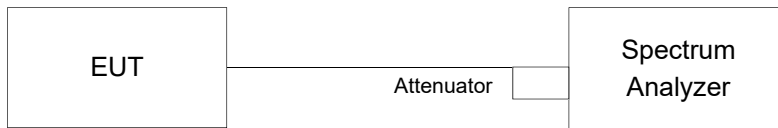
Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	14.32	14.27	53.770	17.31	30	Pass
6	2437	17.91	17.62	119.611	20.78	30	Pass
9	2452	14.37	13.82	51.452	17.11	30	Pass

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

For Average Power (Duty cycle $\geq 98\%$)

- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- Sweep time = auto couple.
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.

For Average Power (Duty cycle $< 98\%$)

- Measure the duty cycle (x).
- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- Sweep time = auto couple.
- Do not use sweep triggering. Allow sweep to "free run".
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.
- Add $10 \log (1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

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

2G traffic radio (Radio 1)

802.11b

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-17.21	3.01	2.45	-11.75	5.49	Pass
	6	2437	-18.88	3.01	2.45	-13.42	5.49	Pass
	11	2462	-18.33	3.01	2.45	-12.87	5.49	Pass
1	1	2412	-16.62	3.01	2.45	-11.16	5.49	Pass
	6	2437	-17.81	3.01	2.45	-12.35	5.49	Pass
	11	2462	-18.26	3.01	2.45	-12.80	5.49	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $5.5 \text{ dBi} + 10\log(2) = 8.51 \text{ dBi} > 6\text{dBi}$, so the limit shall be reduced to $8-(8.51-6) = 5.49\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11g

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-15.61	3.01	0.33	-12.27	5.49	Pass
	6	2437	-15.25	3.01	0.33	-11.91	5.49	Pass
	11	2462	-19.74	3.01	0.33	-16.40	5.49	Pass
1	1	2412	-15.72	3.01	0.33	-12.38	5.49	Pass
	6	2437	-15.13	3.01	0.33	-11.79	5.49	Pass
	11	2462	-19.49	3.01	0.33	-16.15	5.49	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $5.5 \text{ dBi} + 10\log(2) = 8.51 \text{ dBi} > 6\text{dBi}$, so the limit shall be reduced to $8-(8.51-6) = 5.49\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-18.89	3.01	0.22	-15.66	5.49	Pass
	6	2437	-16.90	3.01	0.22	-13.67	5.49	Pass
	11	2462	-23.87	3.01	0.22	-20.64	5.49	Pass
1	1	2412	-18.47	3.01	0.22	-15.24	5.49	Pass
	6	2437	-16.53	3.01	0.22	-13.30	5.49	Pass
	11	2462	-24.07	3.01	0.22	-20.84	5.49	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6dBi, so the limit shall be reduced to 8-(8.51-6) = 5.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

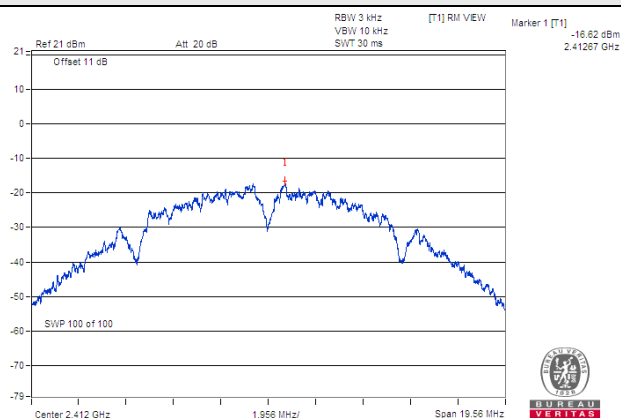
TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-22.87	3.01	0.21	-19.65	5.49	Pass
	6	2437	-23.10	3.01	0.21	-19.88	5.49	Pass
	9	2452	-28.76	3.01	0.21	-25.54	5.49	Pass
1	3	2422	-22.80	3.01	0.21	-19.58	5.49	Pass
	6	2437	-23.06	3.01	0.21	-19.84	5.49	Pass
	9	2452	-28.22	3.01	0.21	-25.00	5.49	Pass

Note:

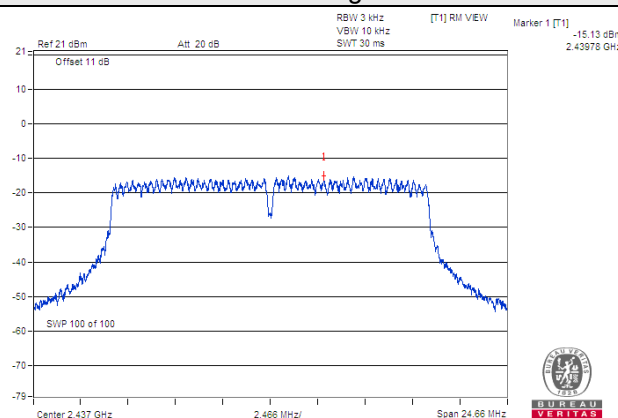
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6dBi, so the limit shall be reduced to 8-(8.51-6) = 5.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

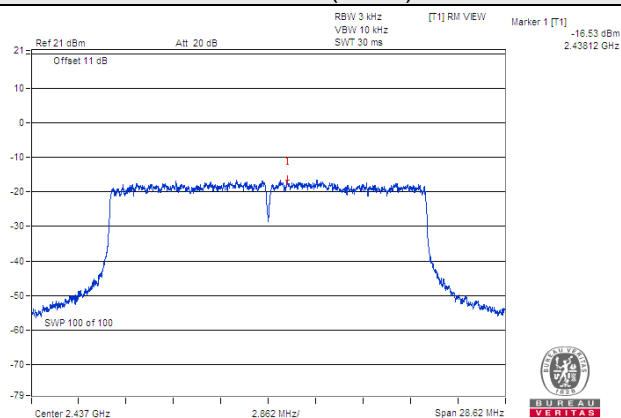
802.11b



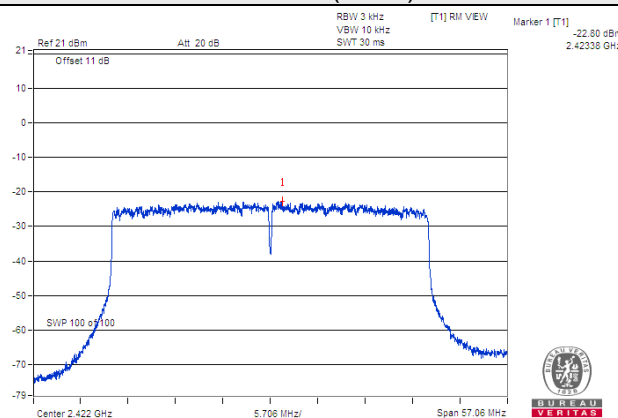
802.11g



802.11ax (HE20)



802.11ax (HE40)



Scanning radio (Radio 3)

802.11b

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-15.18	3.01	-12.17	5.49	Pass
	6	2437	-13.94	3.01	-10.93	5.49	Pass
	11	2462	-16.71	3.01	-13.70	5.49	Pass
1	1	2412	-15.03	3.01	-12.02	5.49	Pass
	6	2437	-14.53	3.01	-11.52	5.49	Pass
	11	2462	-15.94	3.01	-12.93	5.49	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6dBi, so the limit shall be reduced to 8-(8.51-6) = 5.49dBm.

802.11g

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-18.86	3.01	0.20	-15.65	5.49	Pass
	6	2437	-15.17	3.01	0.20	-11.96	5.49	Pass
	11	2462	-19.41	3.01	0.20	-16.20	5.49	Pass
1	1	2412	-19.27	3.01	0.20	-16.06	5.49	Pass
	6	2437	-15.66	3.01	0.20	-12.45	5.49	Pass
	11	2462	-19.75	3.01	0.20	-16.54	5.49	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6dBi, so the limit shall be reduced to 8-(8.51-6) = 5.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-21.14	3.01	0.20	-17.93	5.49	Pass
	6	2437	-15.62	3.01	0.20	-12.41	5.49	Pass
	11	2462	-21.23	3.01	0.20	-18.02	5.49	Pass
1	1	2412	-20.99	3.01	0.20	-17.78	5.49	Pass
	6	2437	-15.89	3.01	0.20	-12.68	5.49	Pass
	11	2462	-21.11	3.01	0.20	-17.90	5.49	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 5.5 dBi + 10log(2) = 8.51 dBi > 6dBi, so the limit shall be reduced to 8-(8.51-6) = 5.49dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

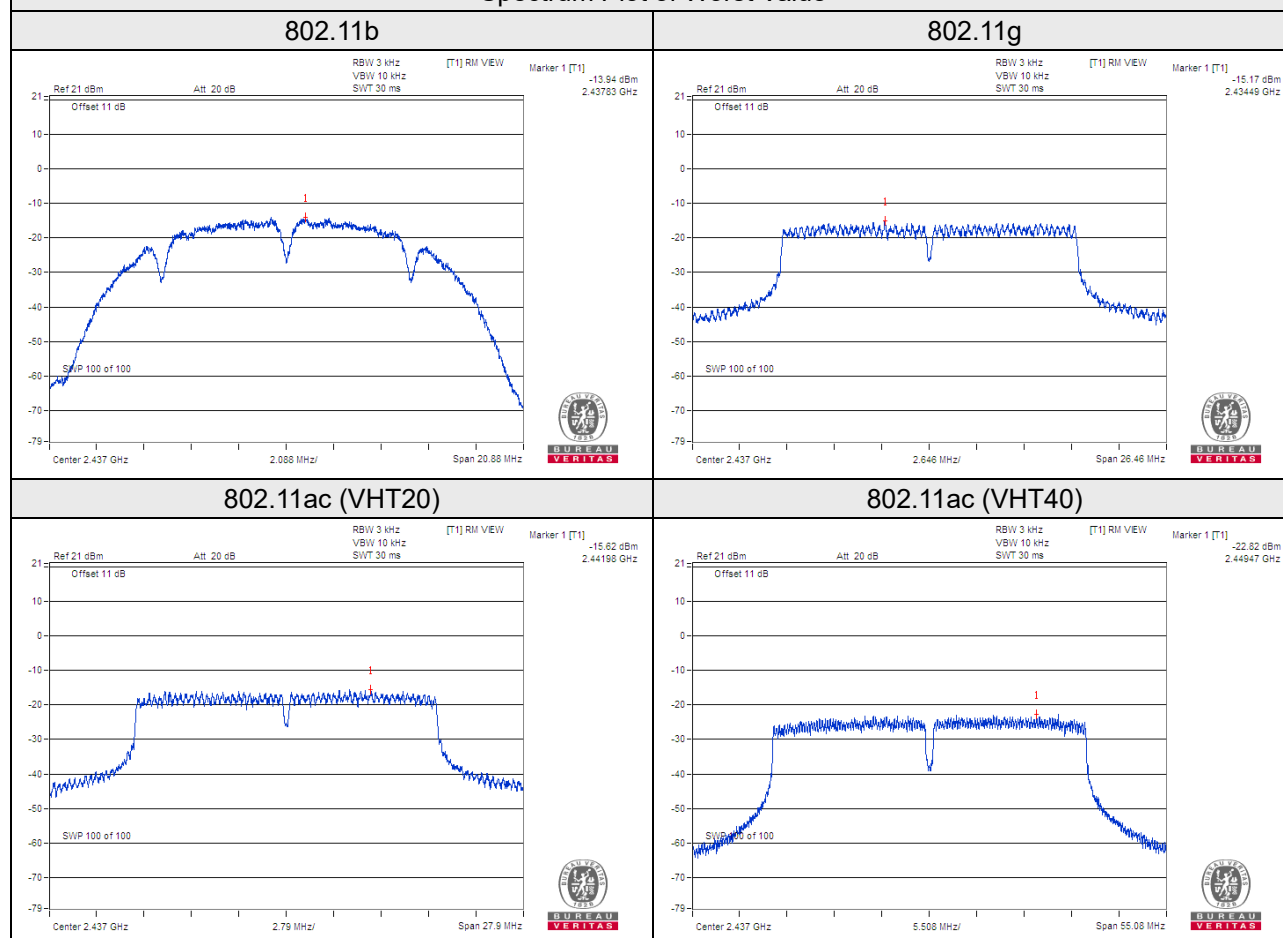
802.11ac (VHT40)

TX chain	Channel	Freq. (MHz)	PSD W/O Duty Factor (dBm/3kHz)	10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-26.13	3.01	0.39	-22.73	5.49	Pass
	6	2437	-22.82	3.01	0.39	-19.42	5.49	Pass
	9	2452	-26.87	3.01	0.39	-23.47	5.49	Pass
1	3	2422	-26.79	3.01	0.39	-23.39	5.49	Pass
	6	2437	-23.40	3.01	0.39	-20.00	5.49	Pass
	9	2452	-27.22	3.01	0.39	-23.82	5.49	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $5.5 \text{ dBi} + 10\log(2) = 8.51 \text{ dBi} > 6\text{dBi}$, so the limit shall be reduced to $8 - (8.51 - 6) = 5.49\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

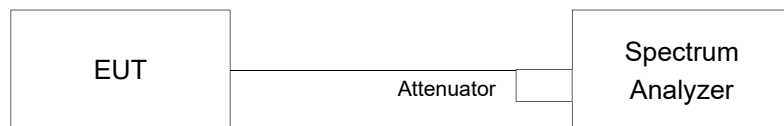


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below -30dB 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

- Set the RBW = 100 kHz.
- Set the VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- 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

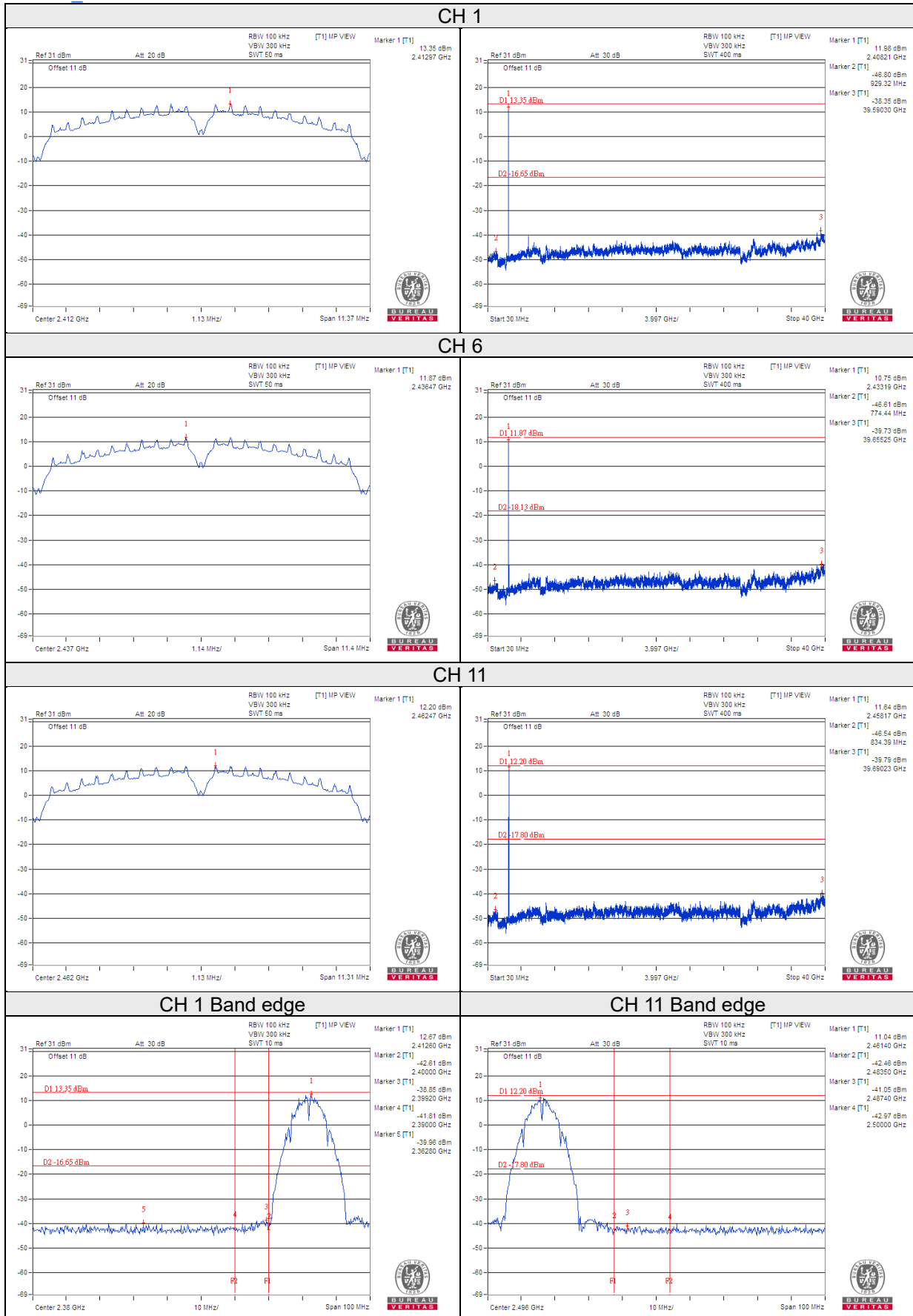
4.6.7 Test Results

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

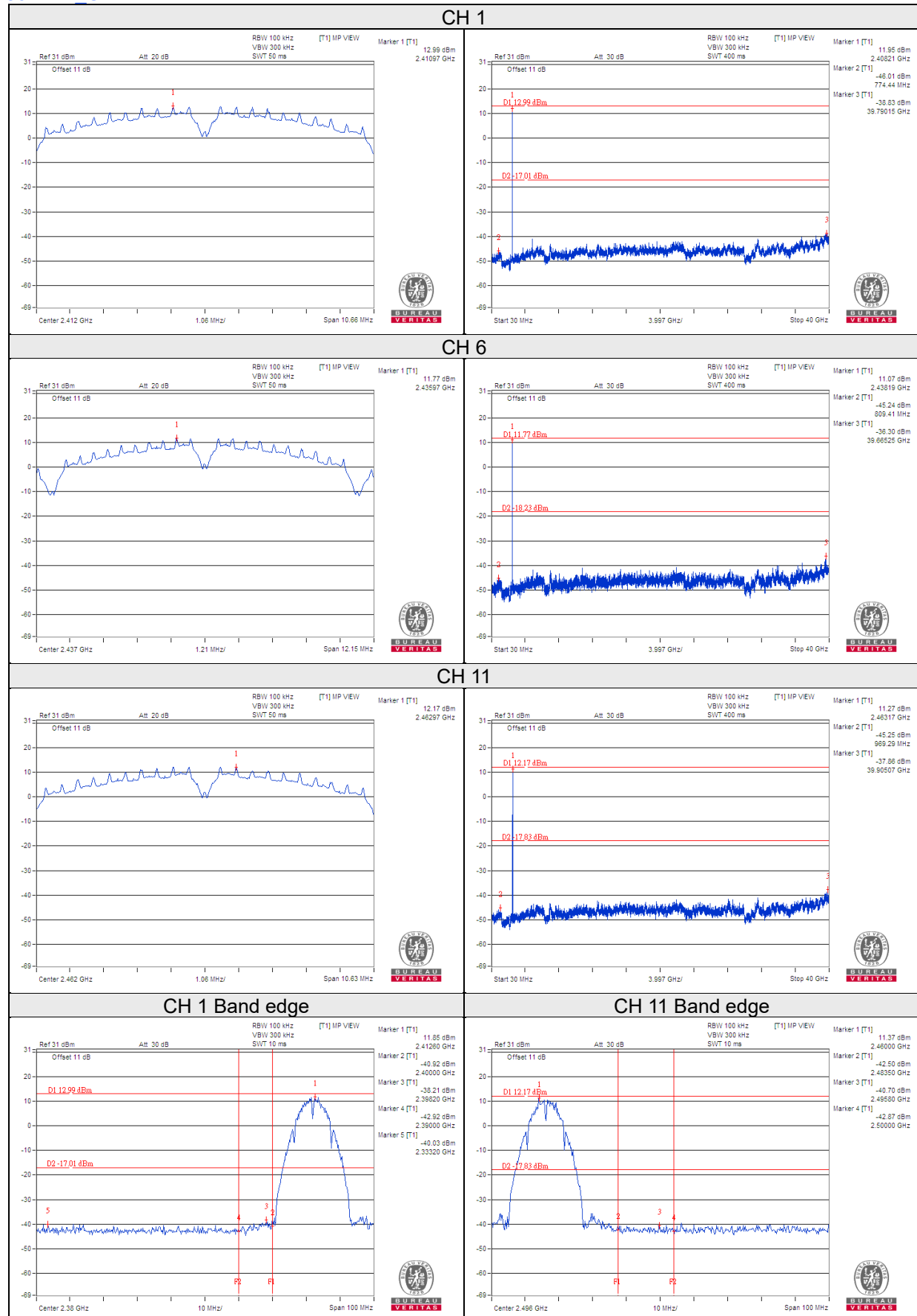
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

2G traffic radio (Radio 1)

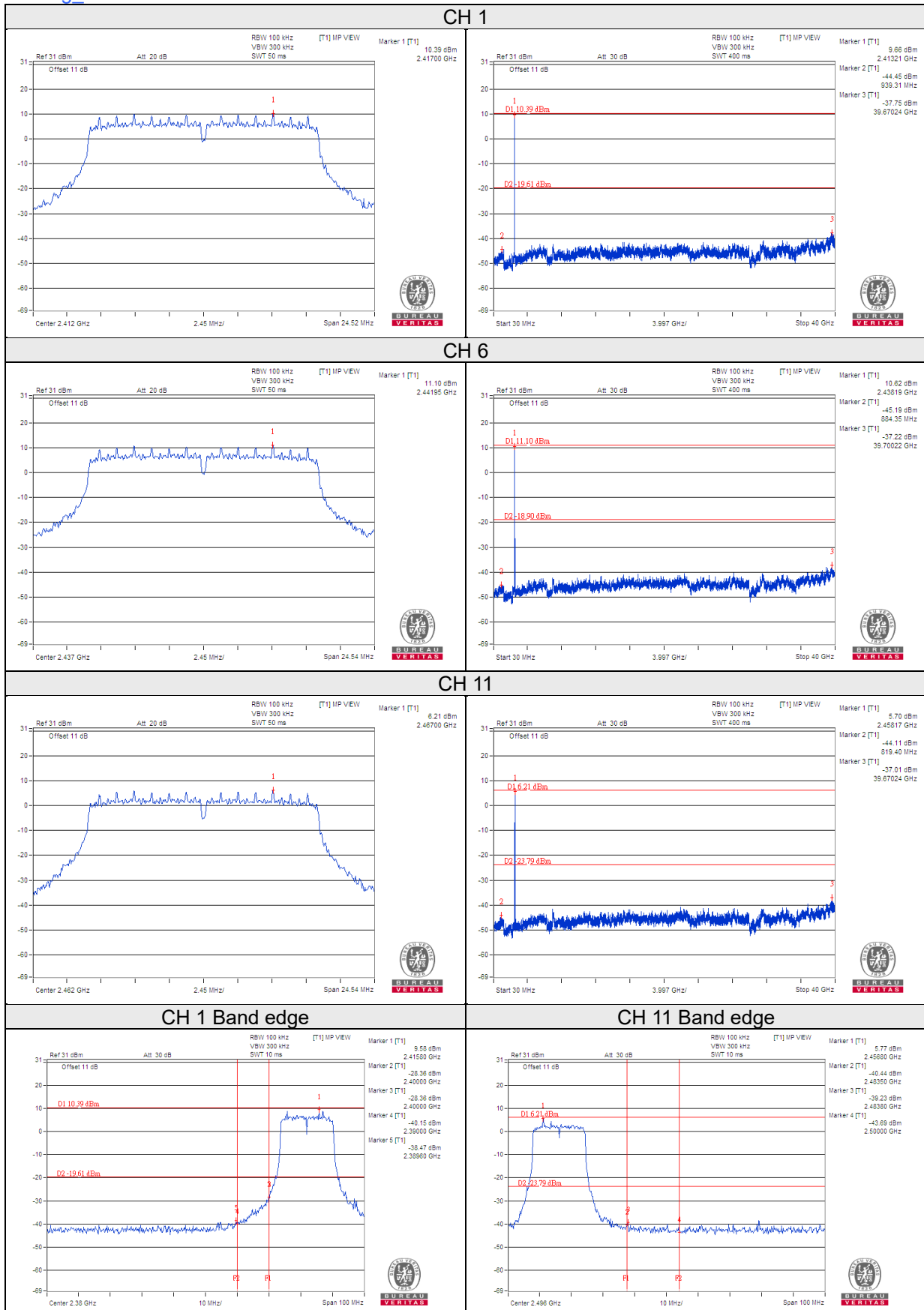
802.11b_Chain 0



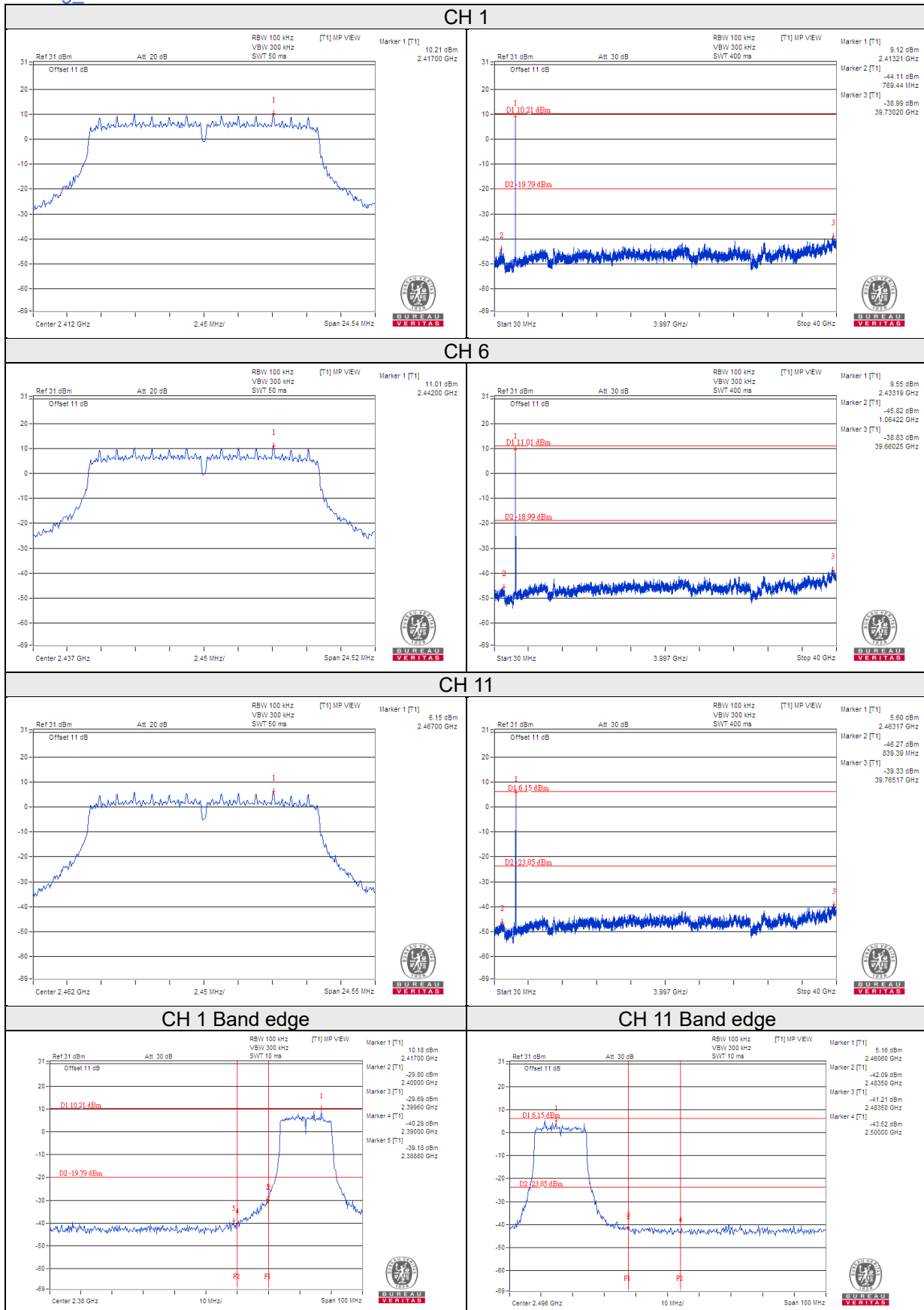
802.11b_Chain 1



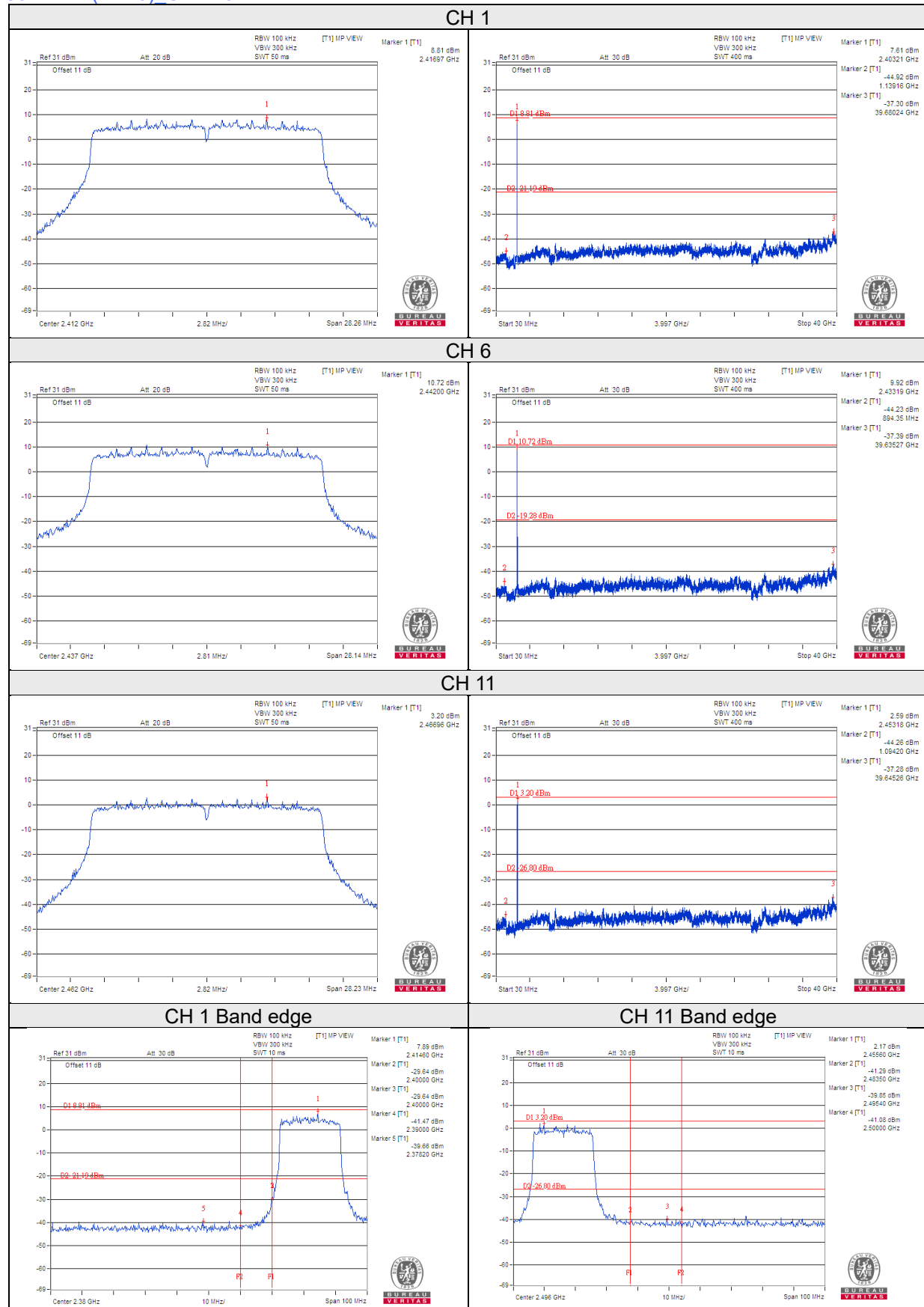
802.11g_Chain 0



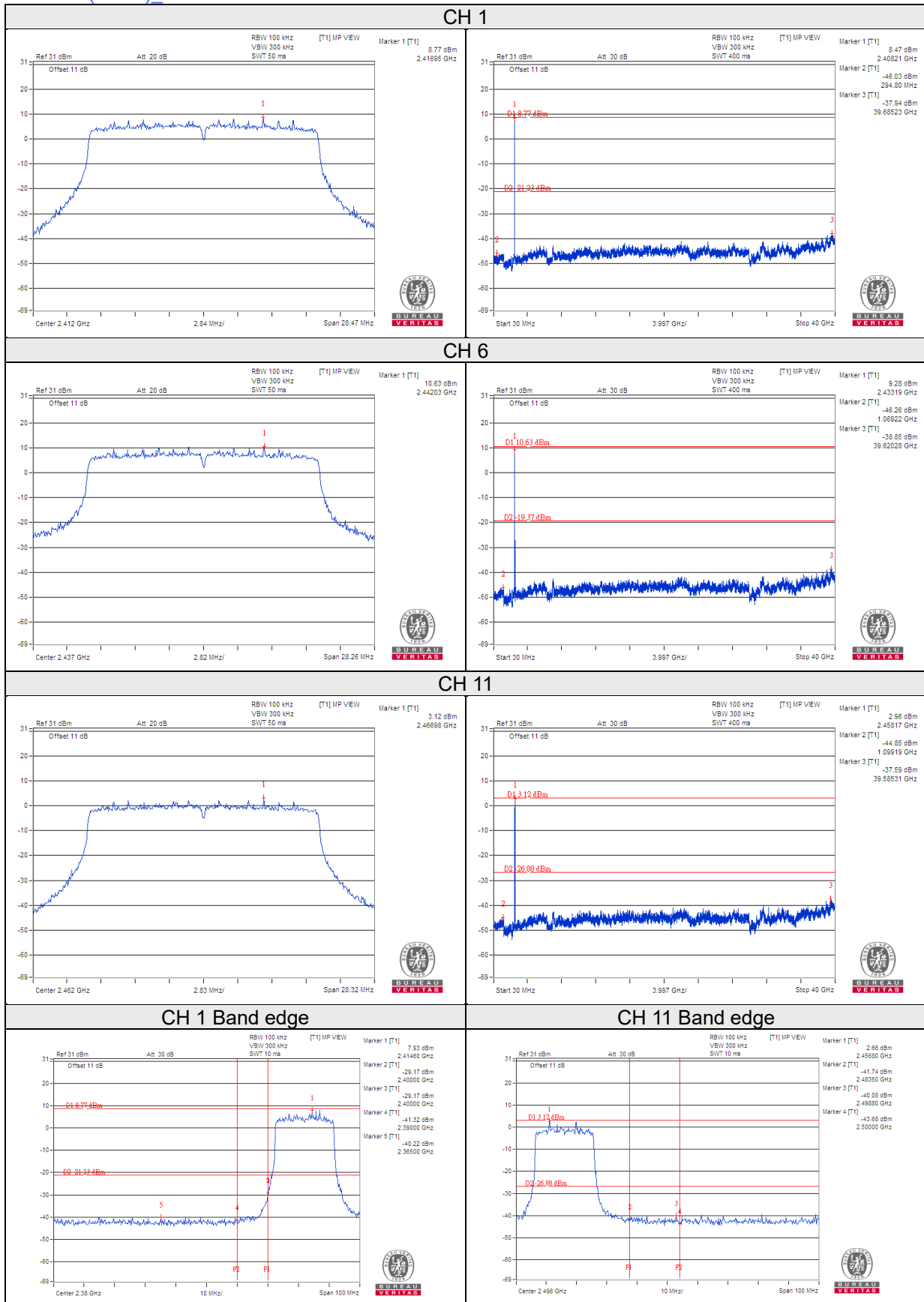
802.11g_Chain 1



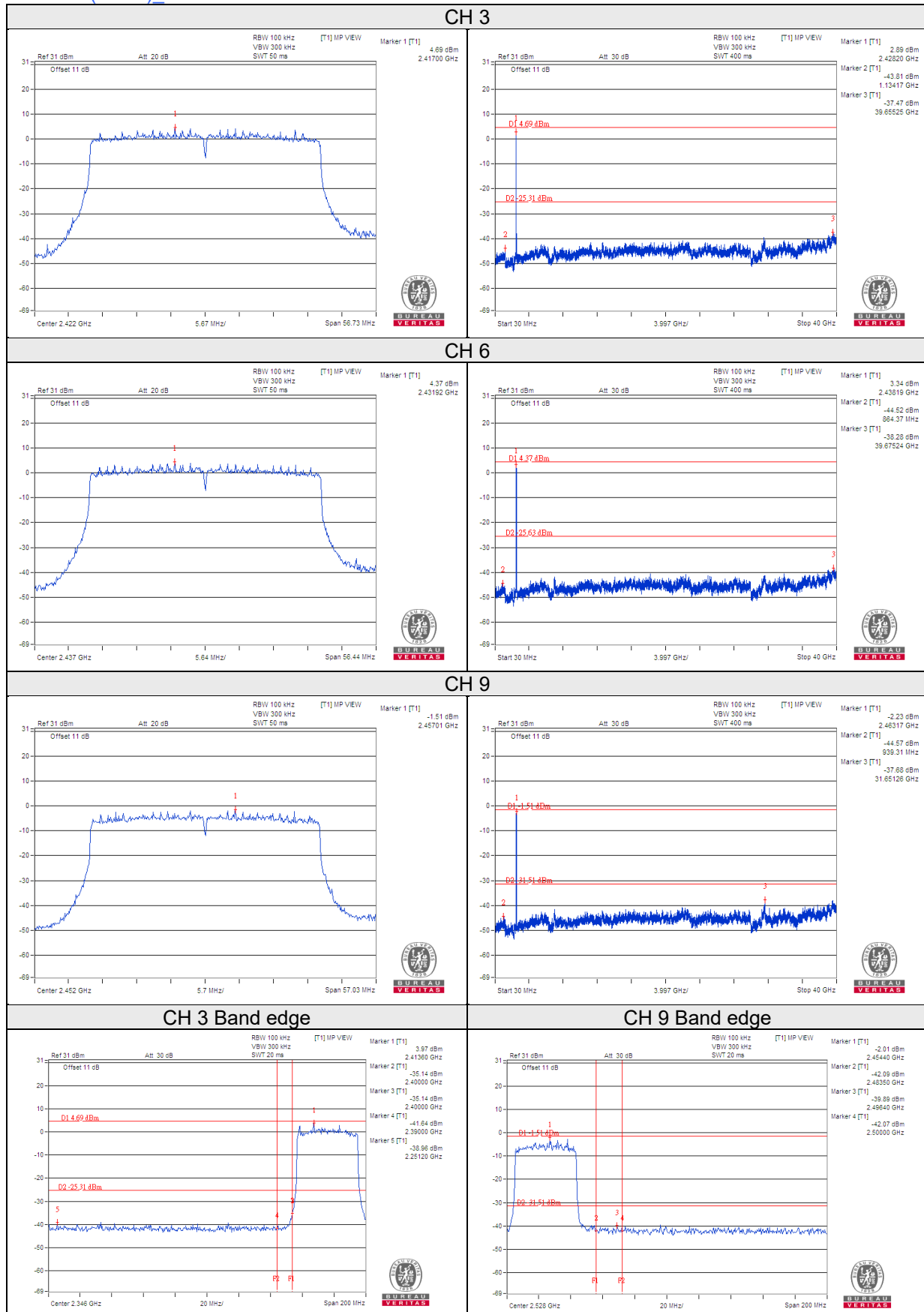
802.11ax (HE20) Chain 0



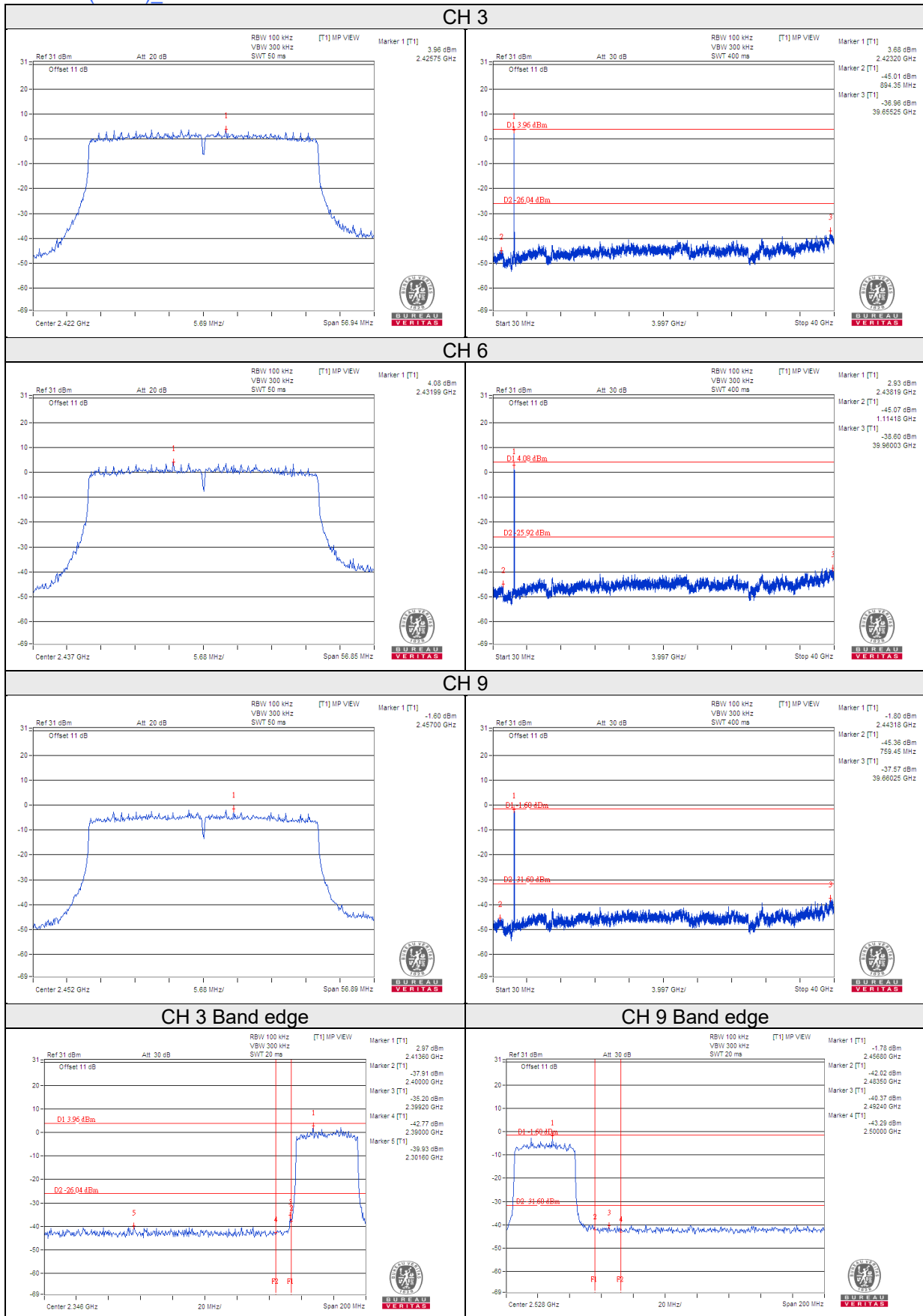
802.11ax (HE20)_Chain 1



802.11ax (HE40)_Chain 0

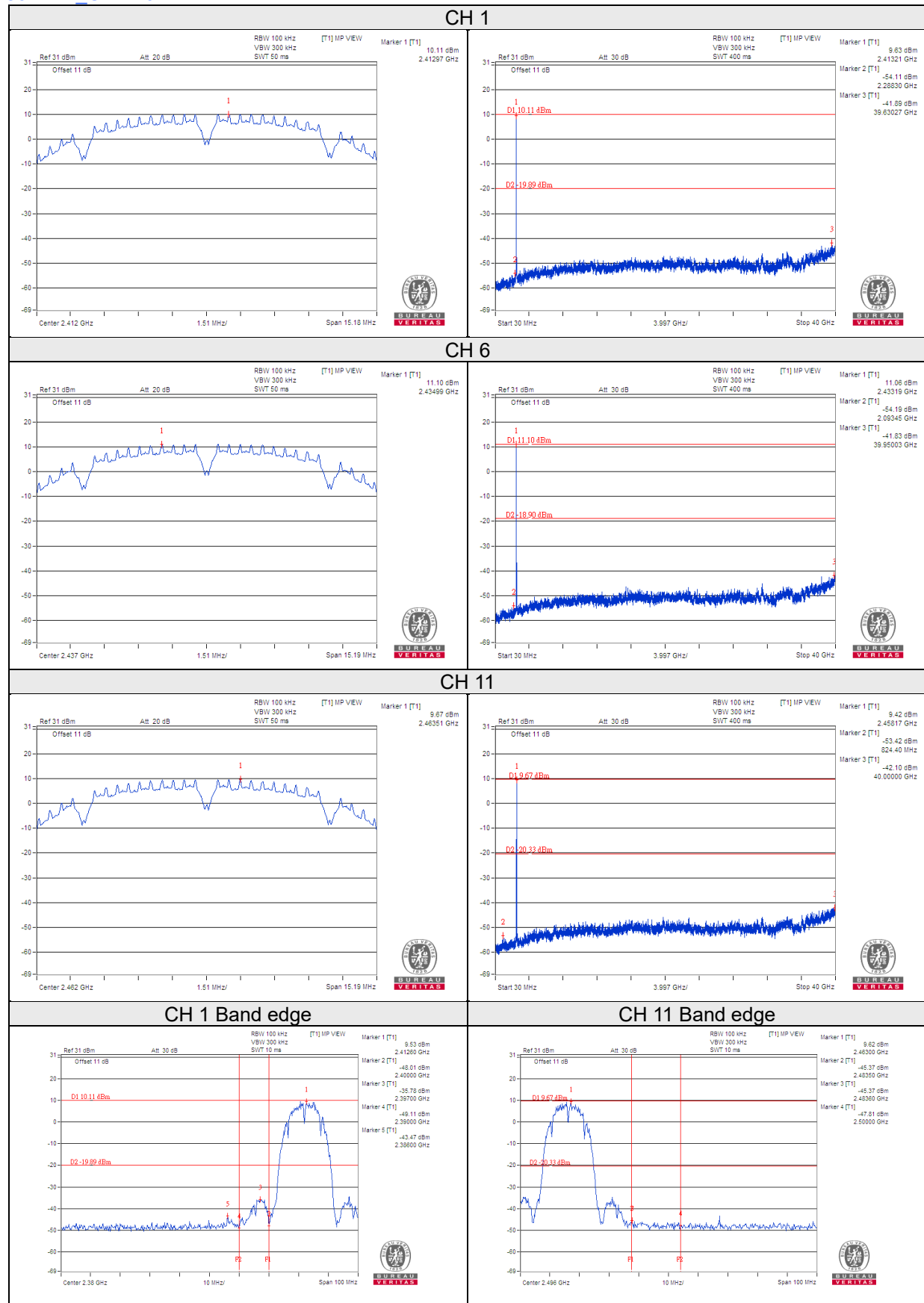


802.11ax (HE40)_Chain 1

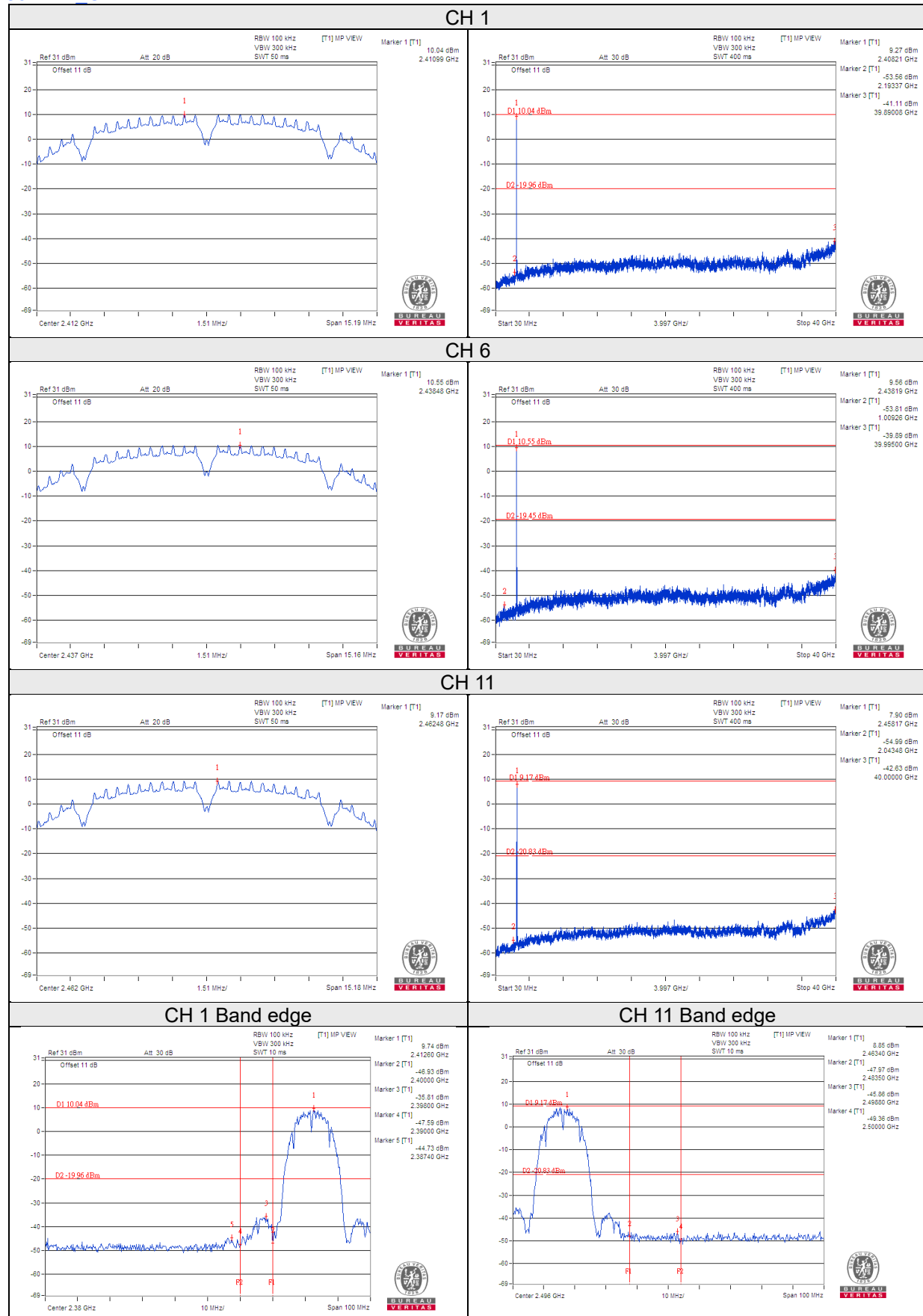


Scanning radio (Radio 3)

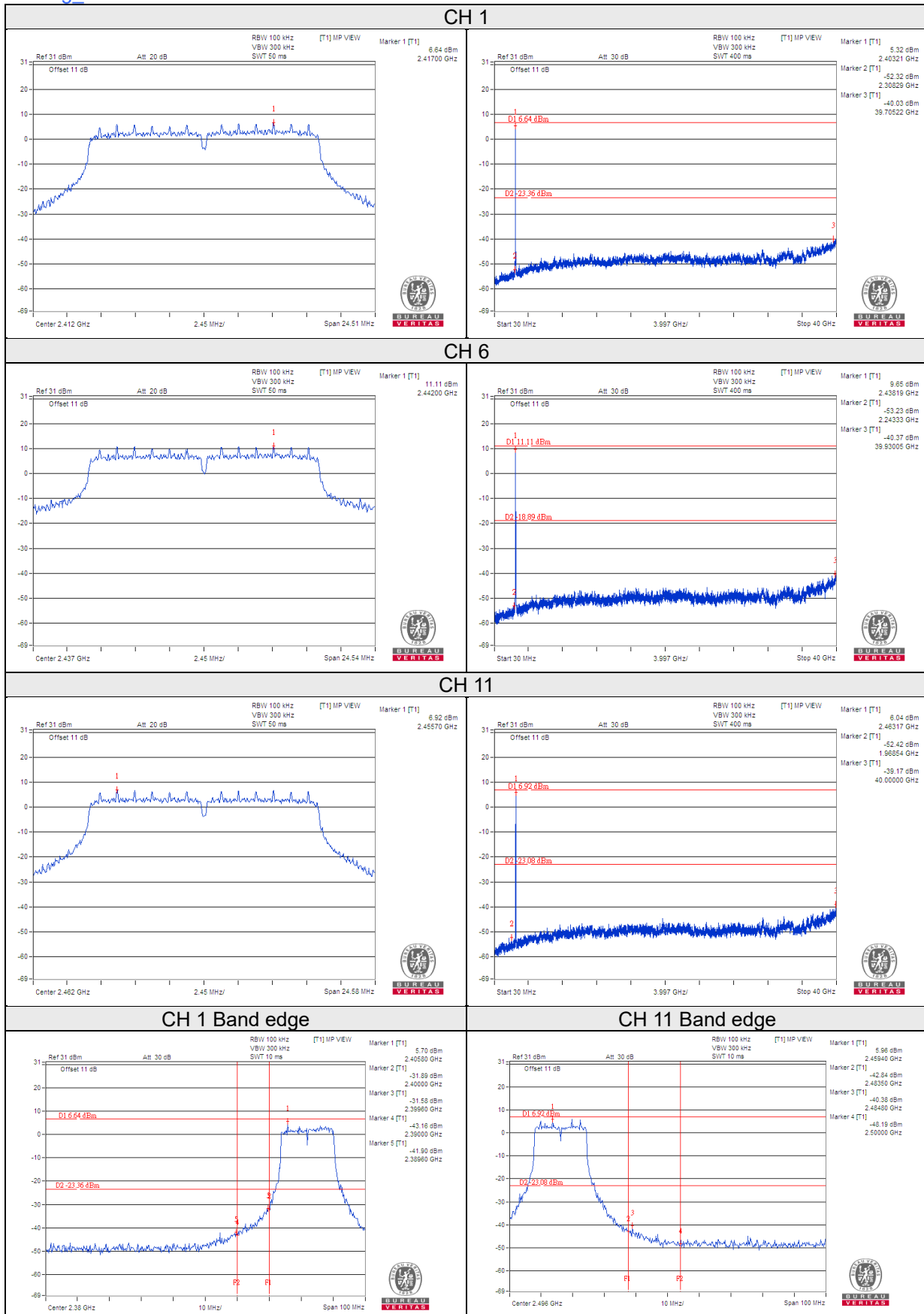
802.11b_Chain 0



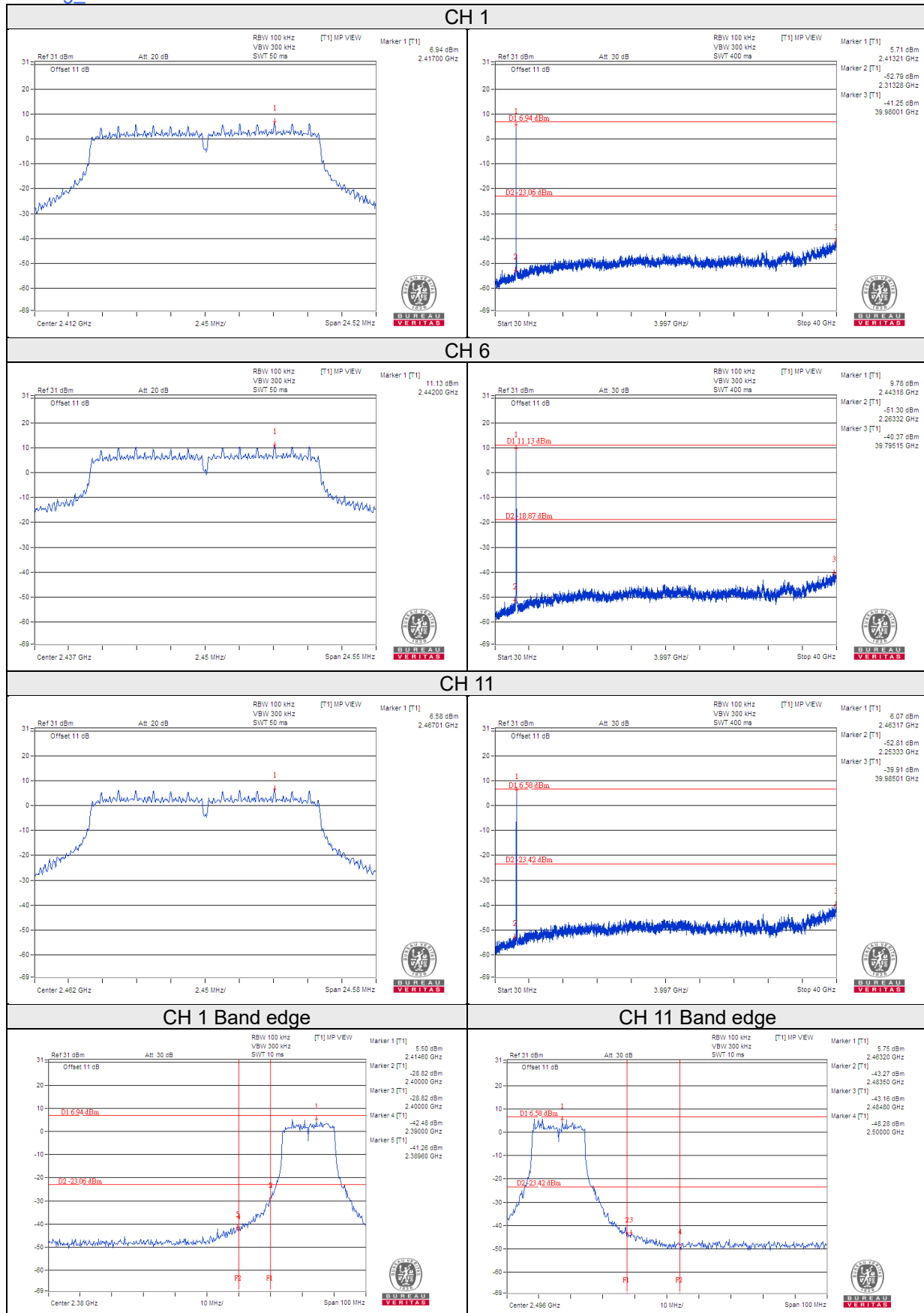
802.11b_Chain 1



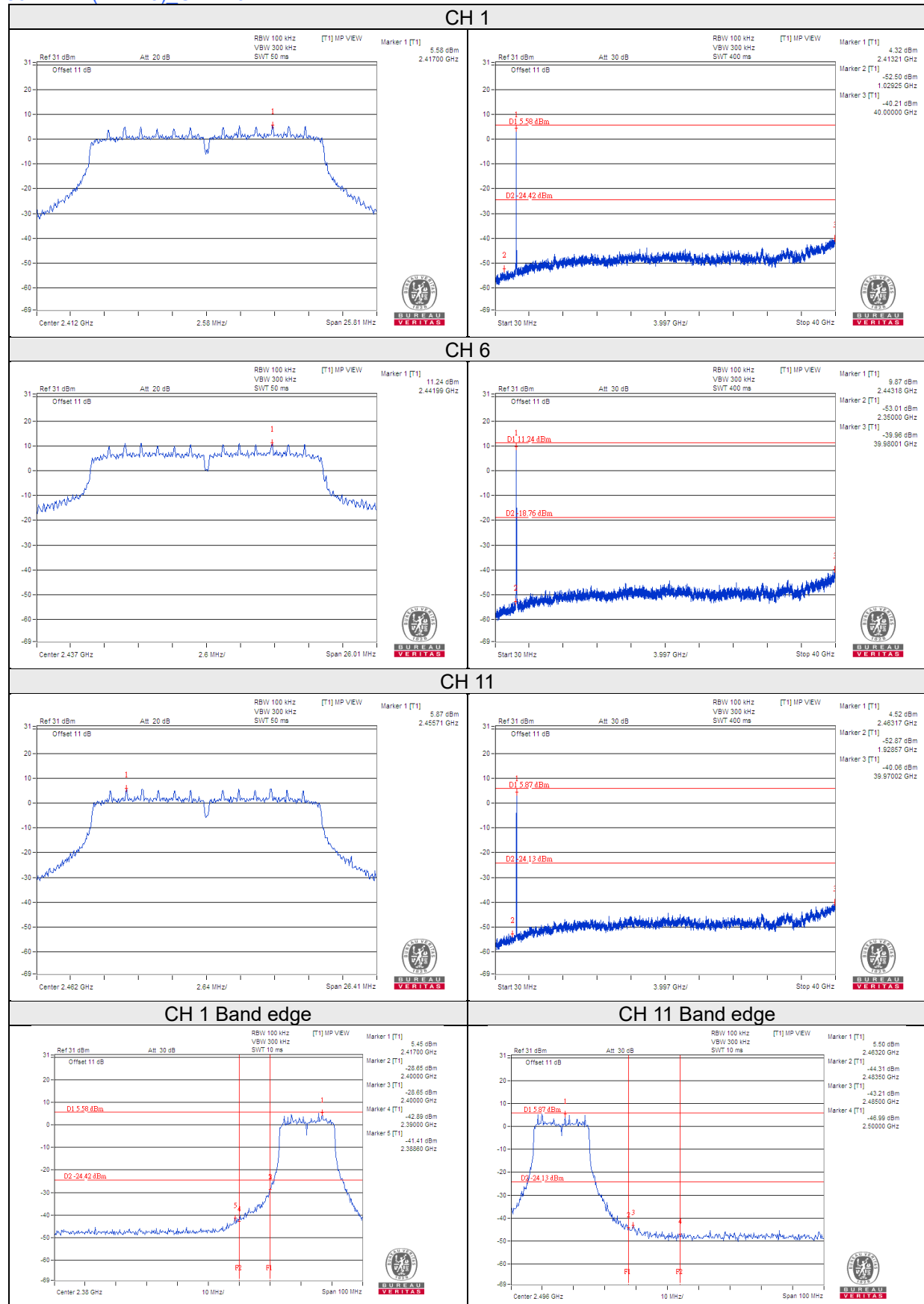
802.11g_Chain 0



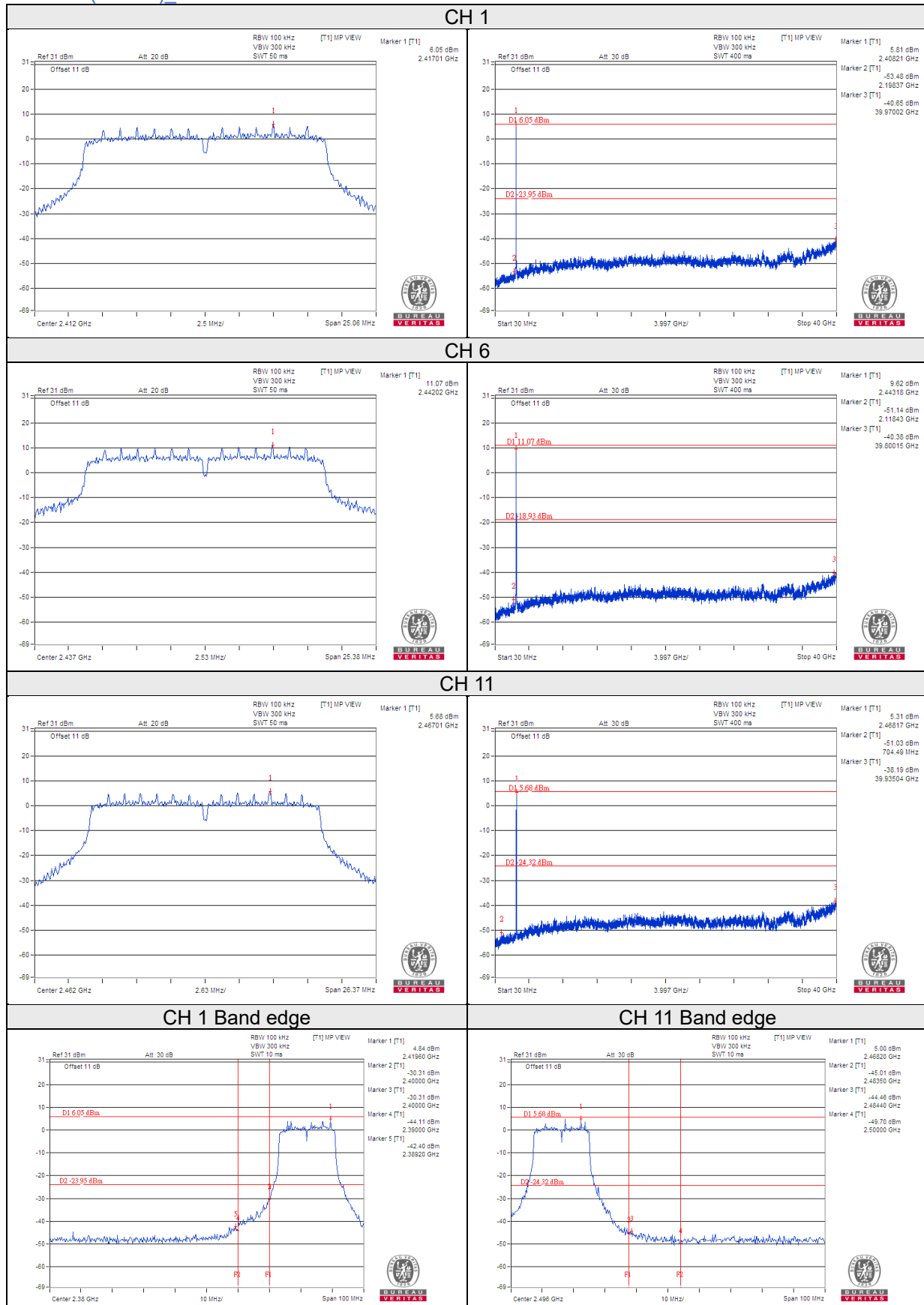
802.11g_Chain 1



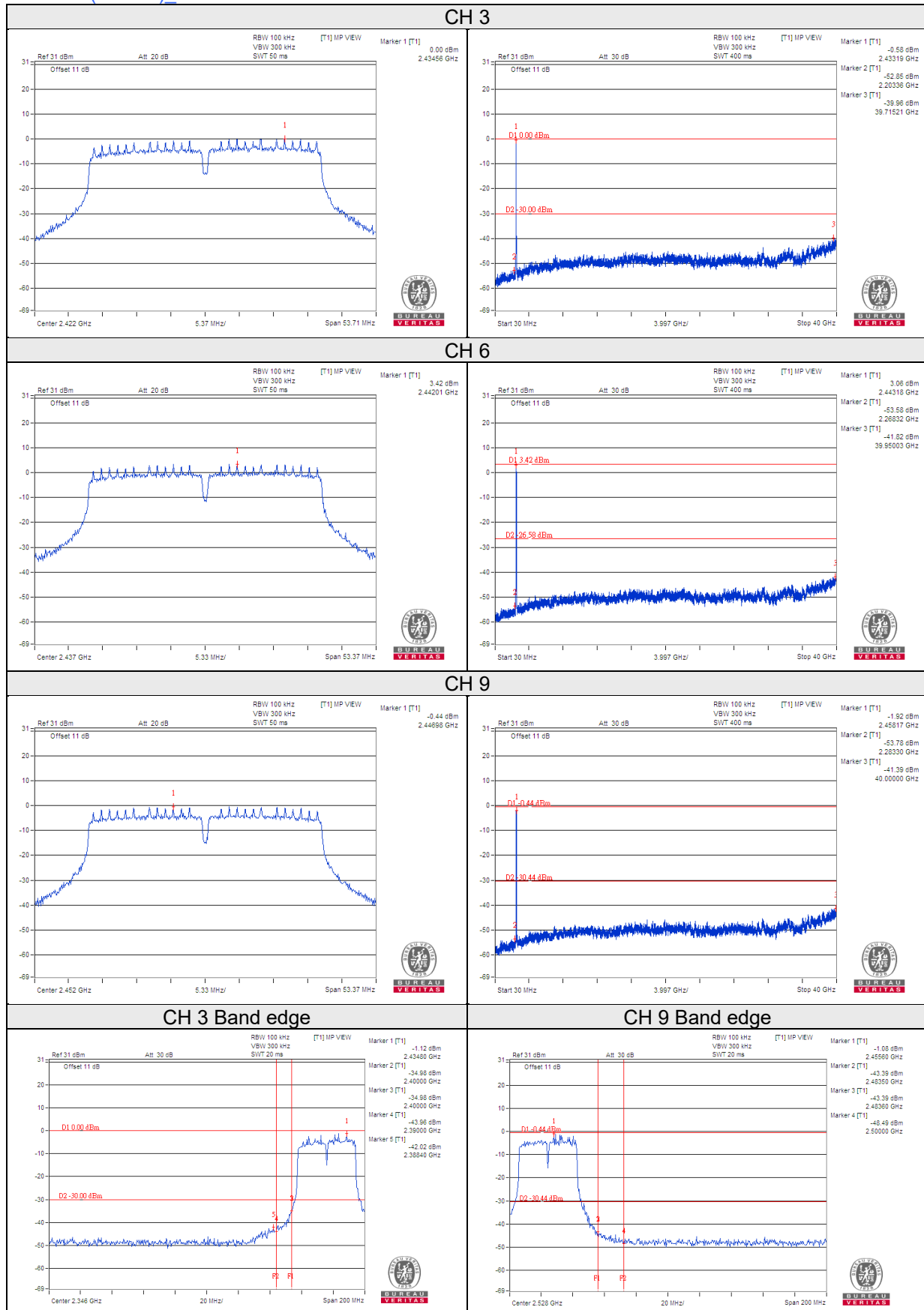
802.11ac (VHT20) Chain 0



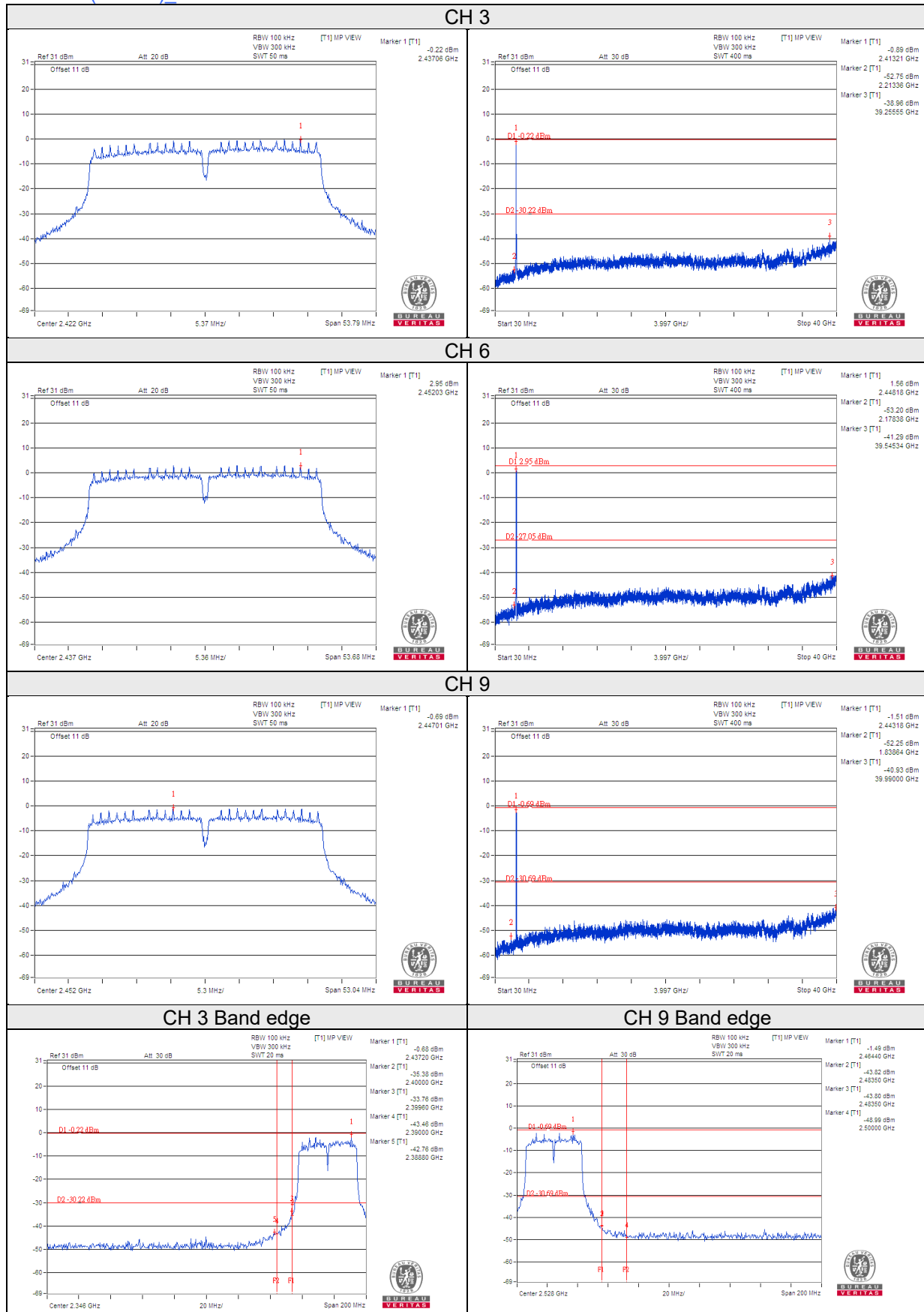
802.11ac (VHT20)_Chain 1



802.11ac (VHT40)_Chain 0



802.11ac (VHT40)_Chain 1

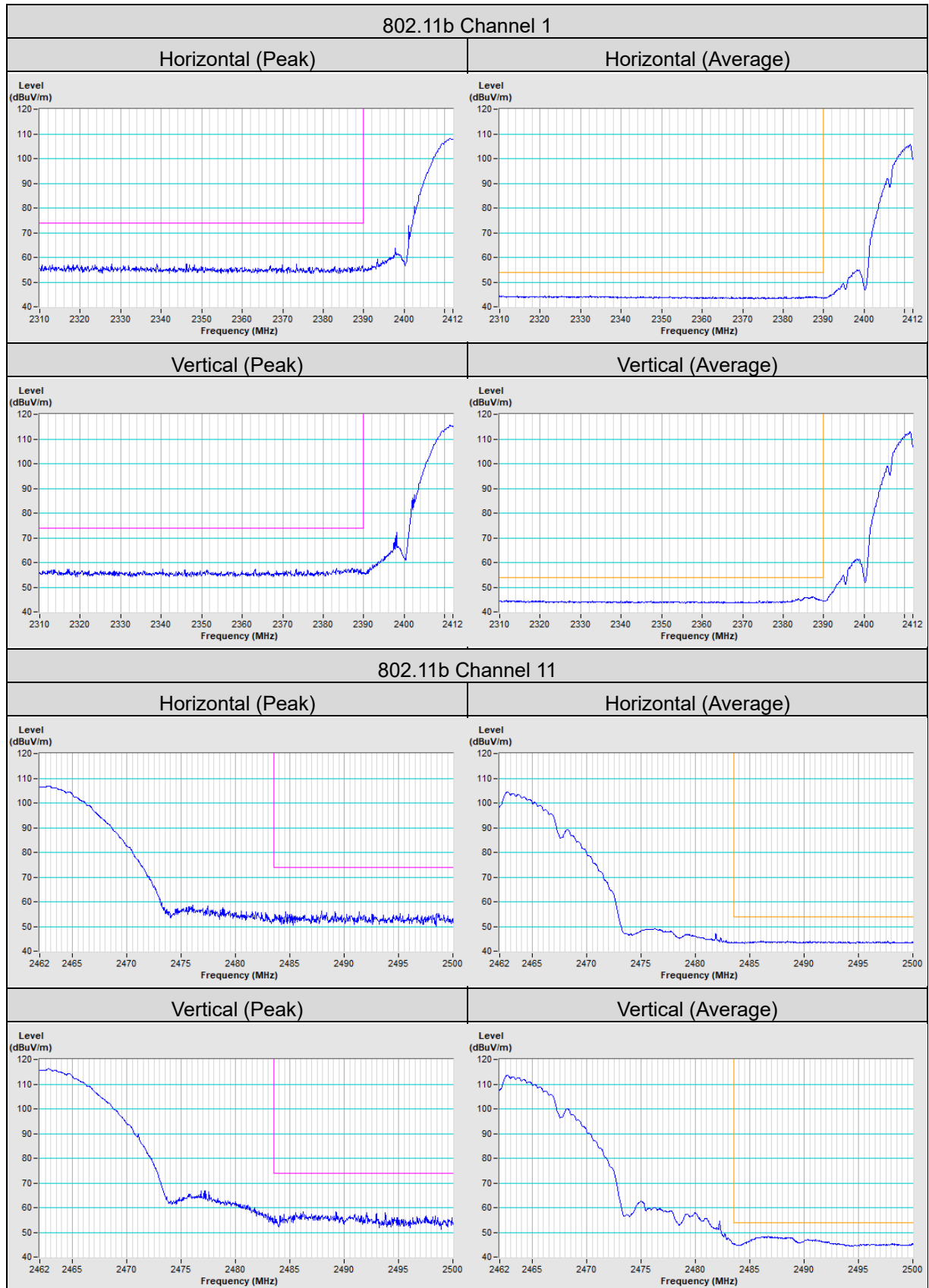


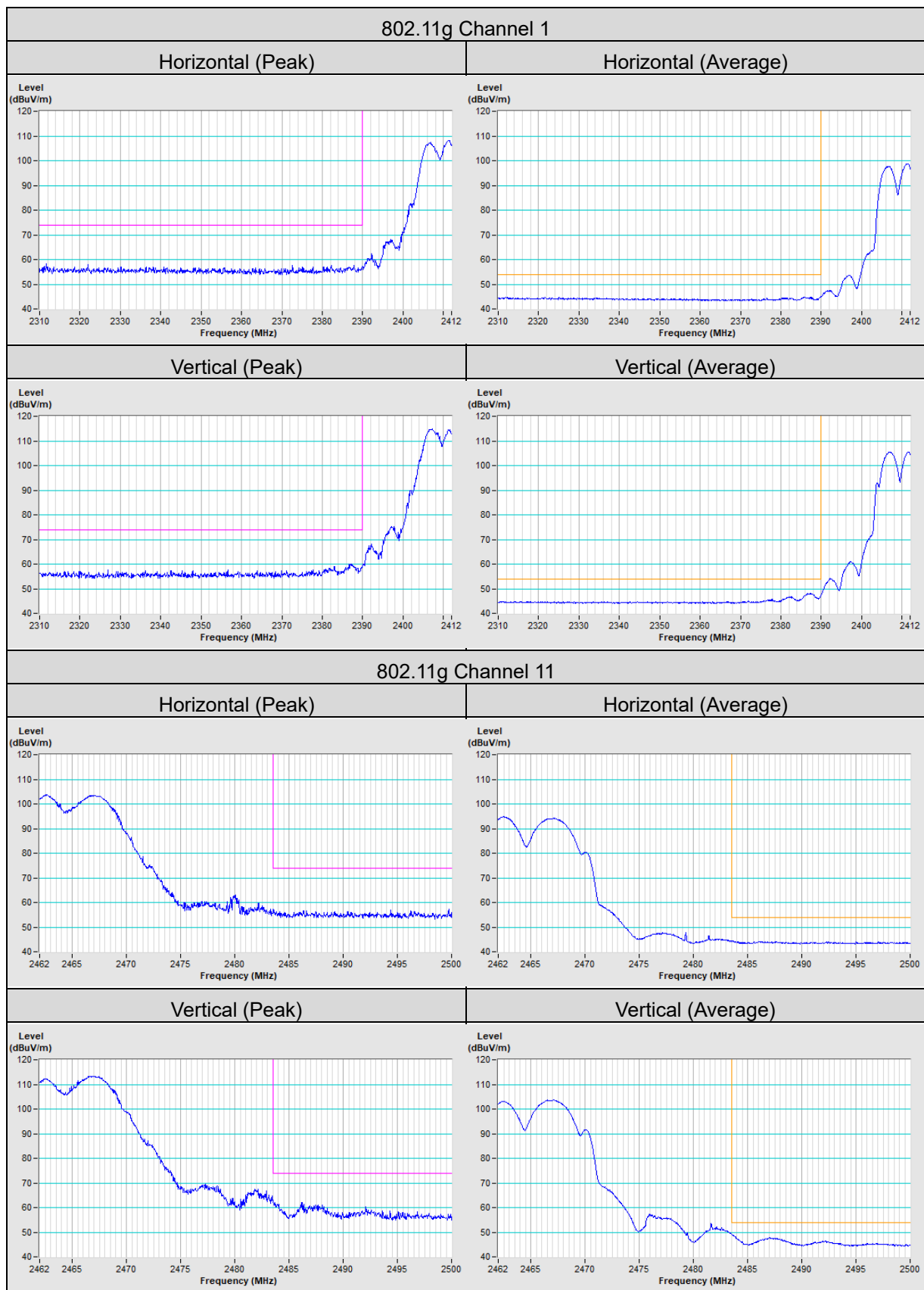
5 Pictures of Test Arrangements

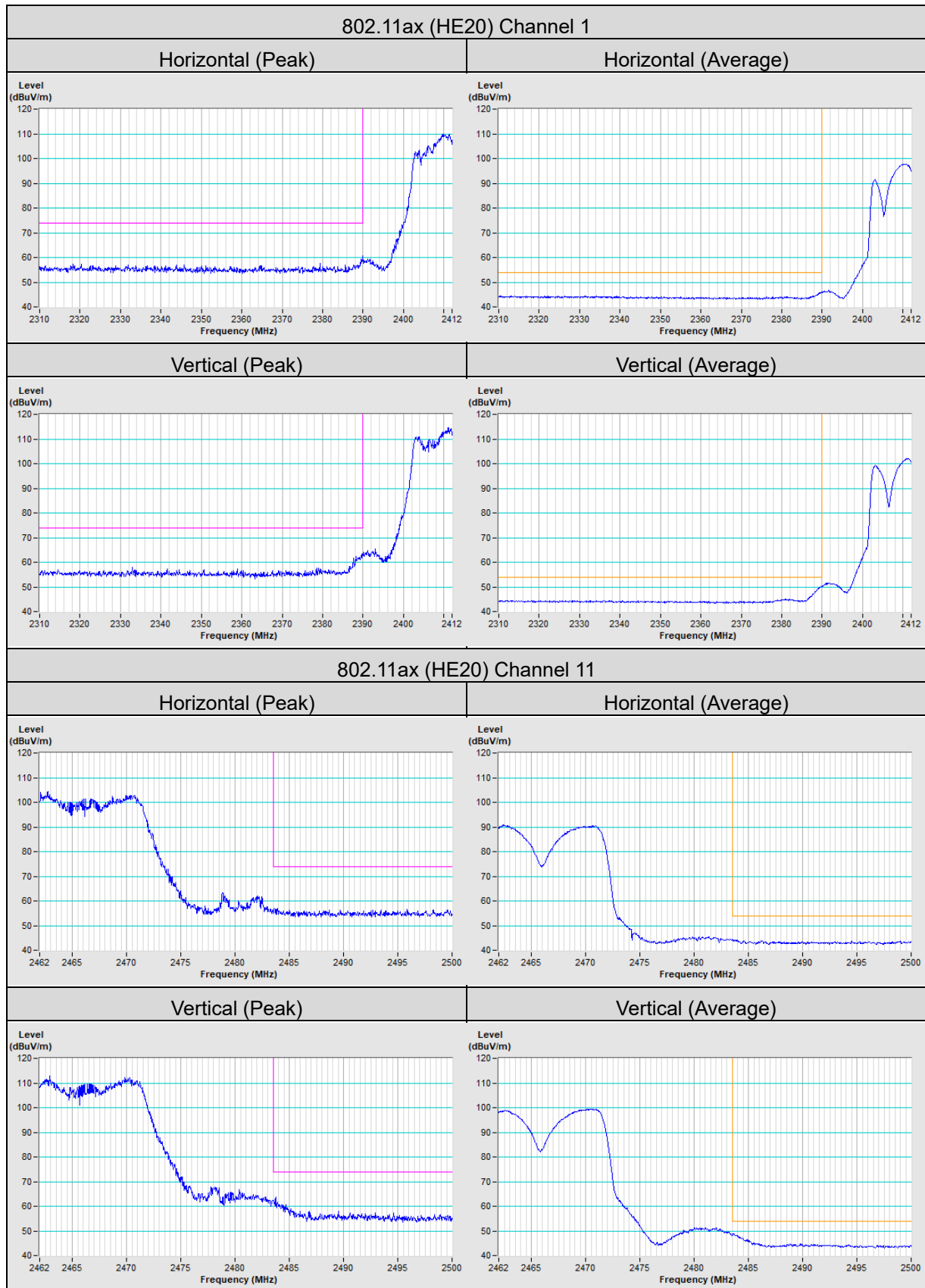
Please refer to the attached file (Test Setup Photo).

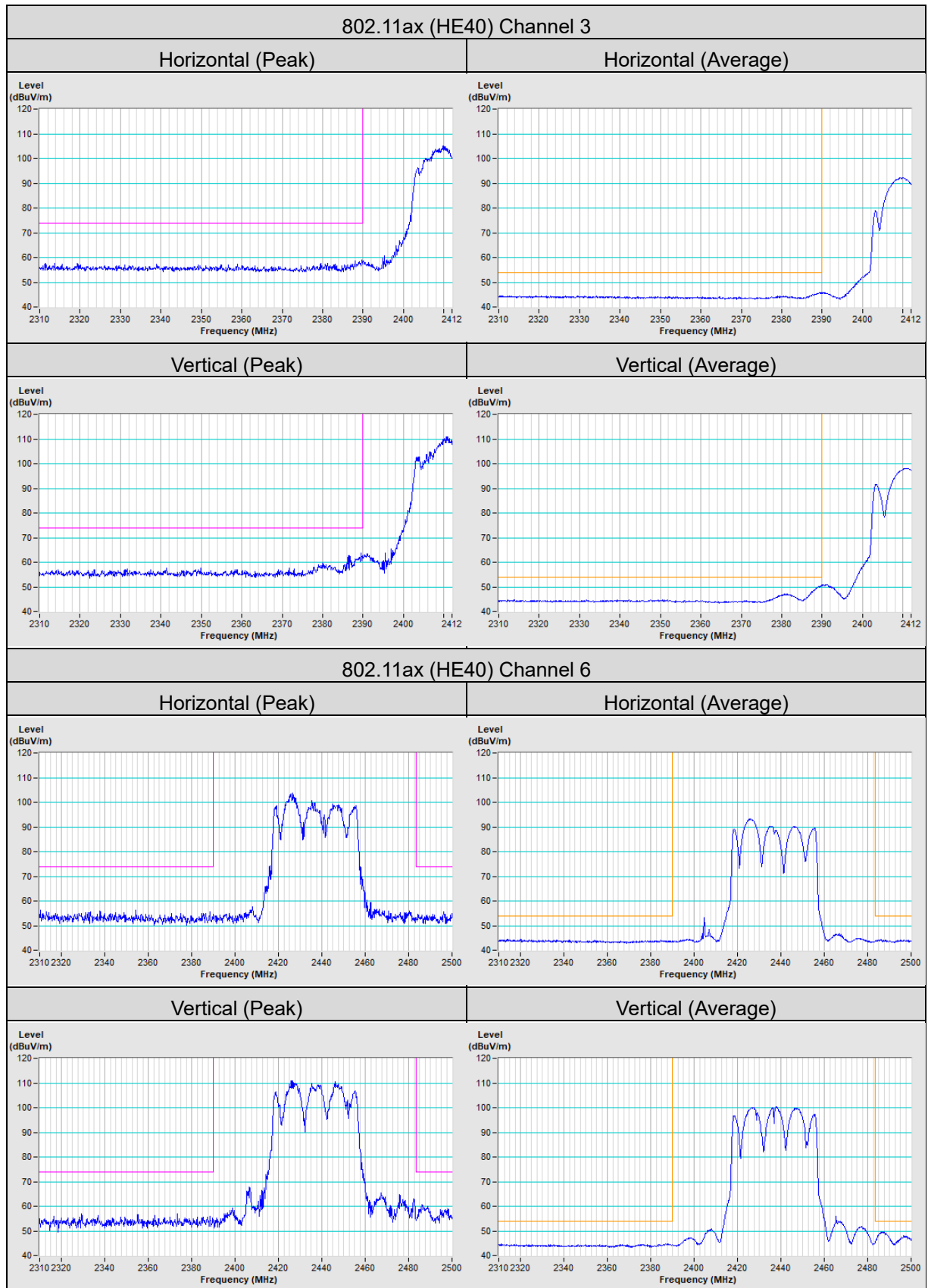
Annex A - Band Edge Measurement

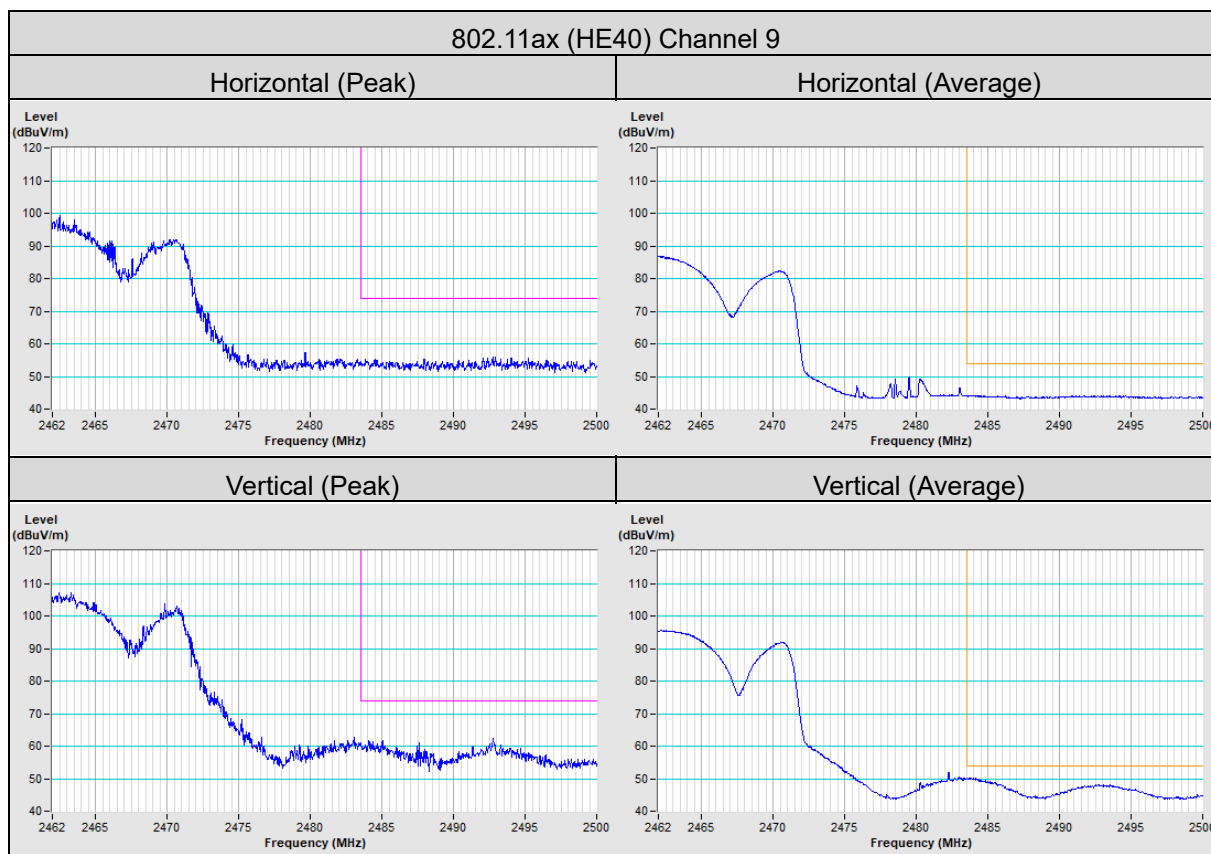
2G traffic radio (Radio 1)



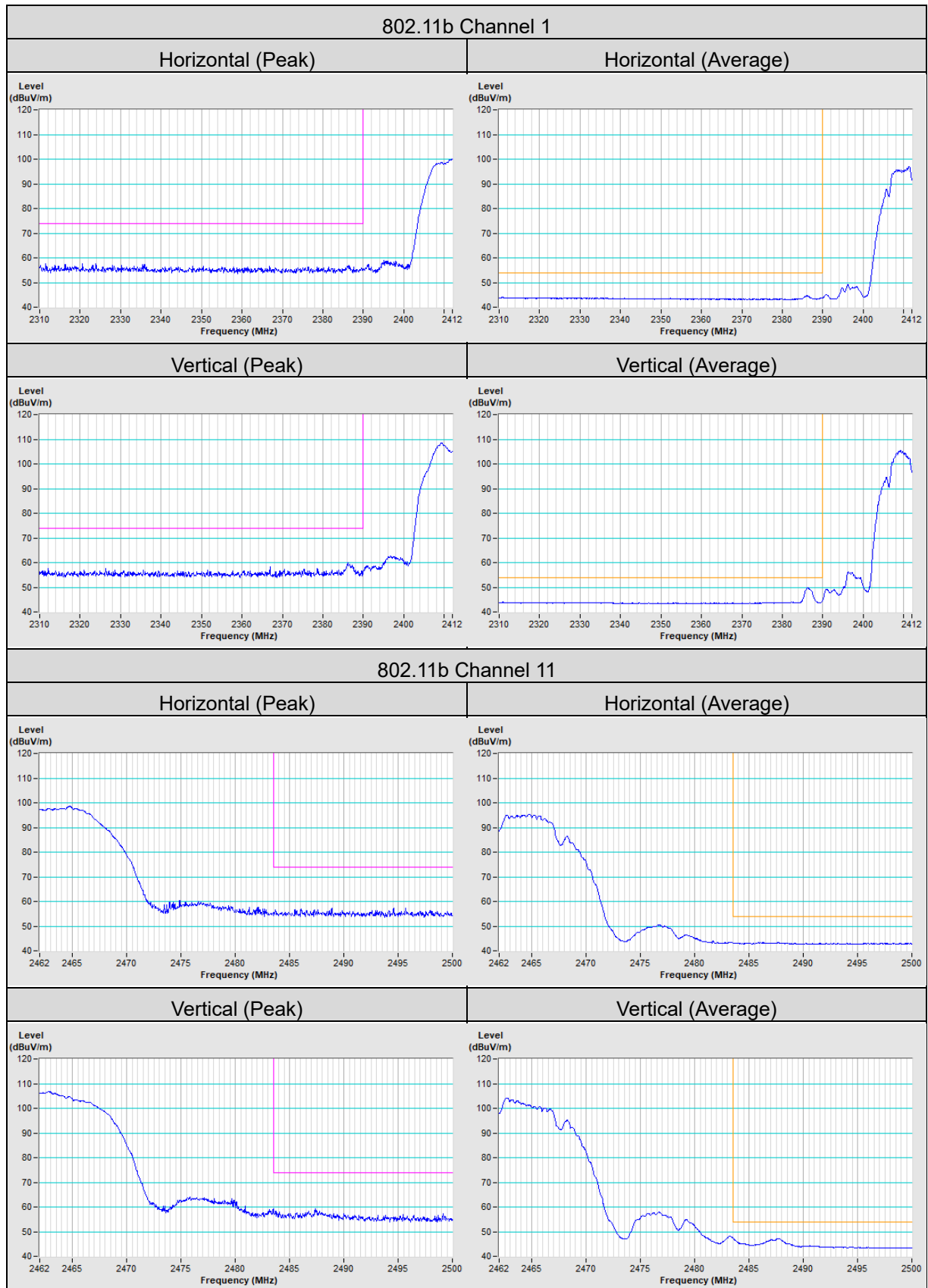


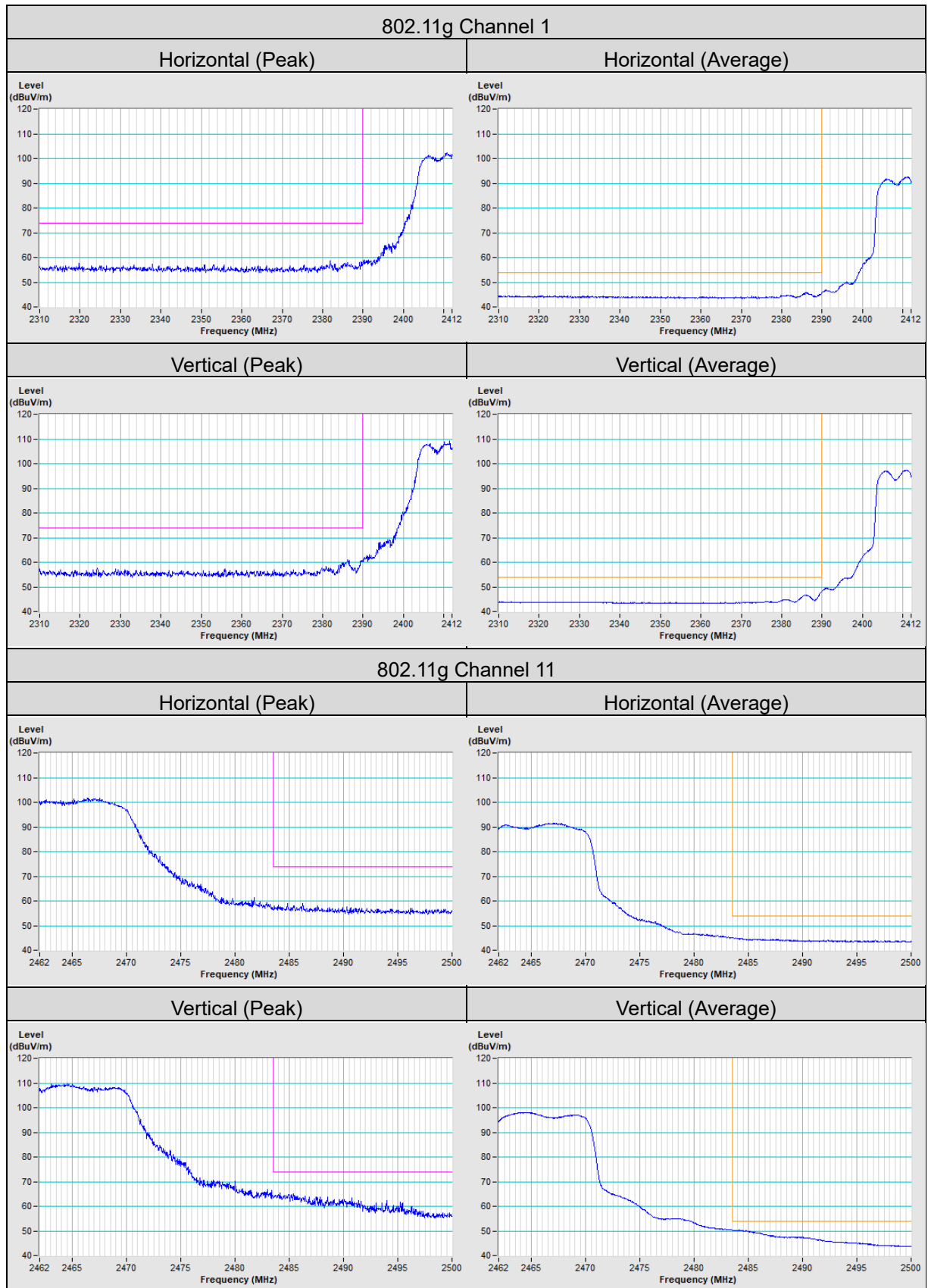


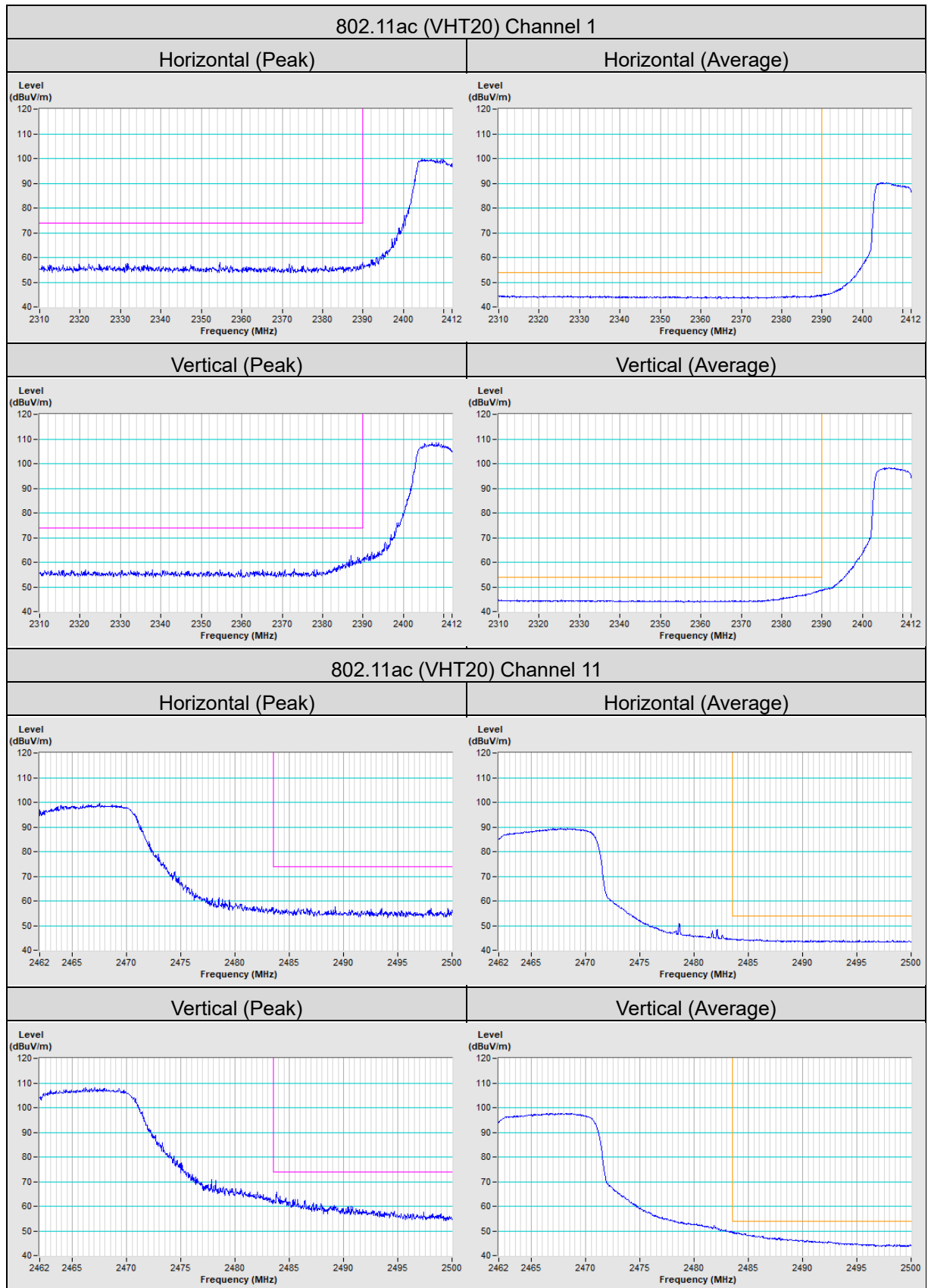


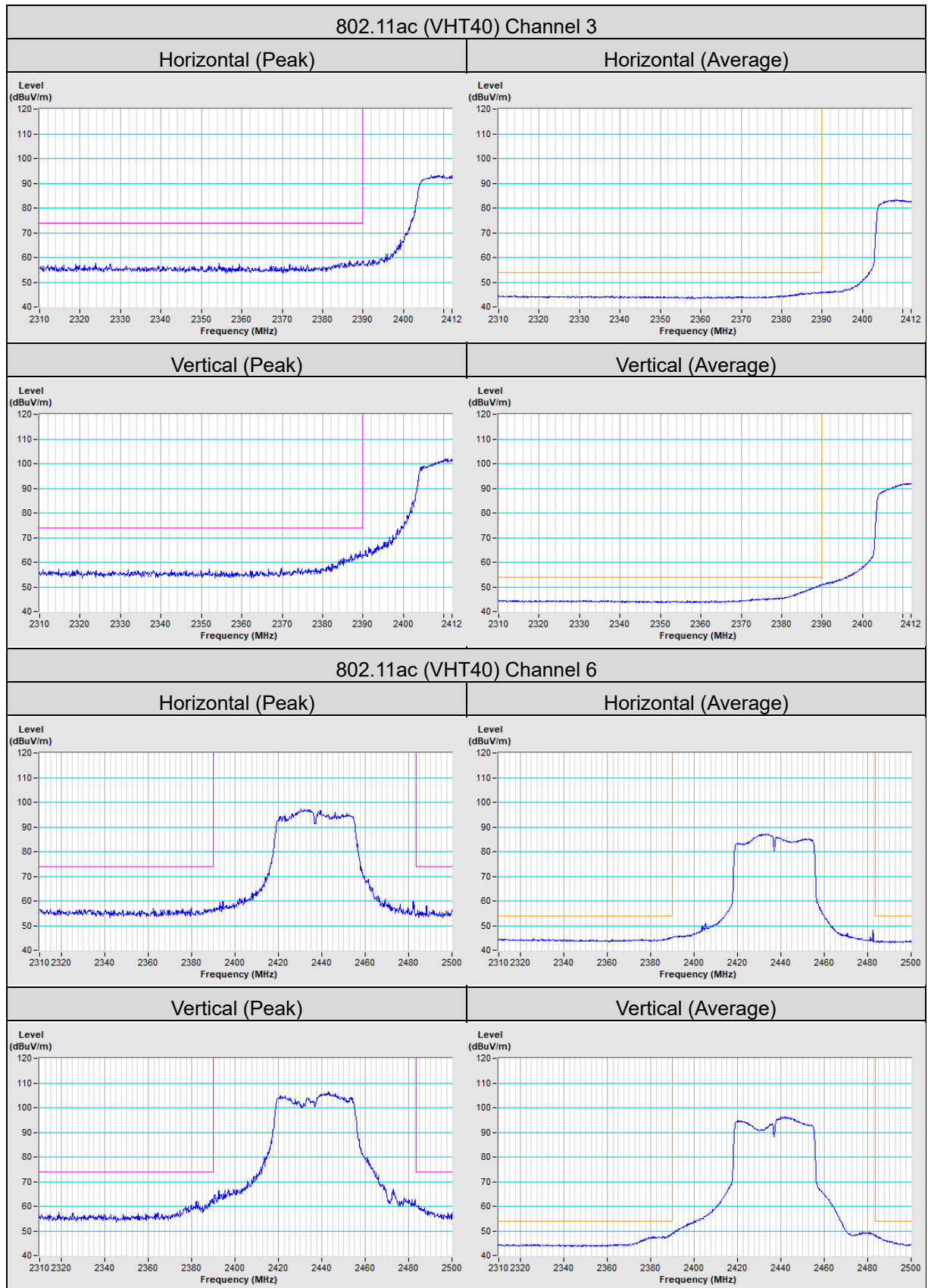


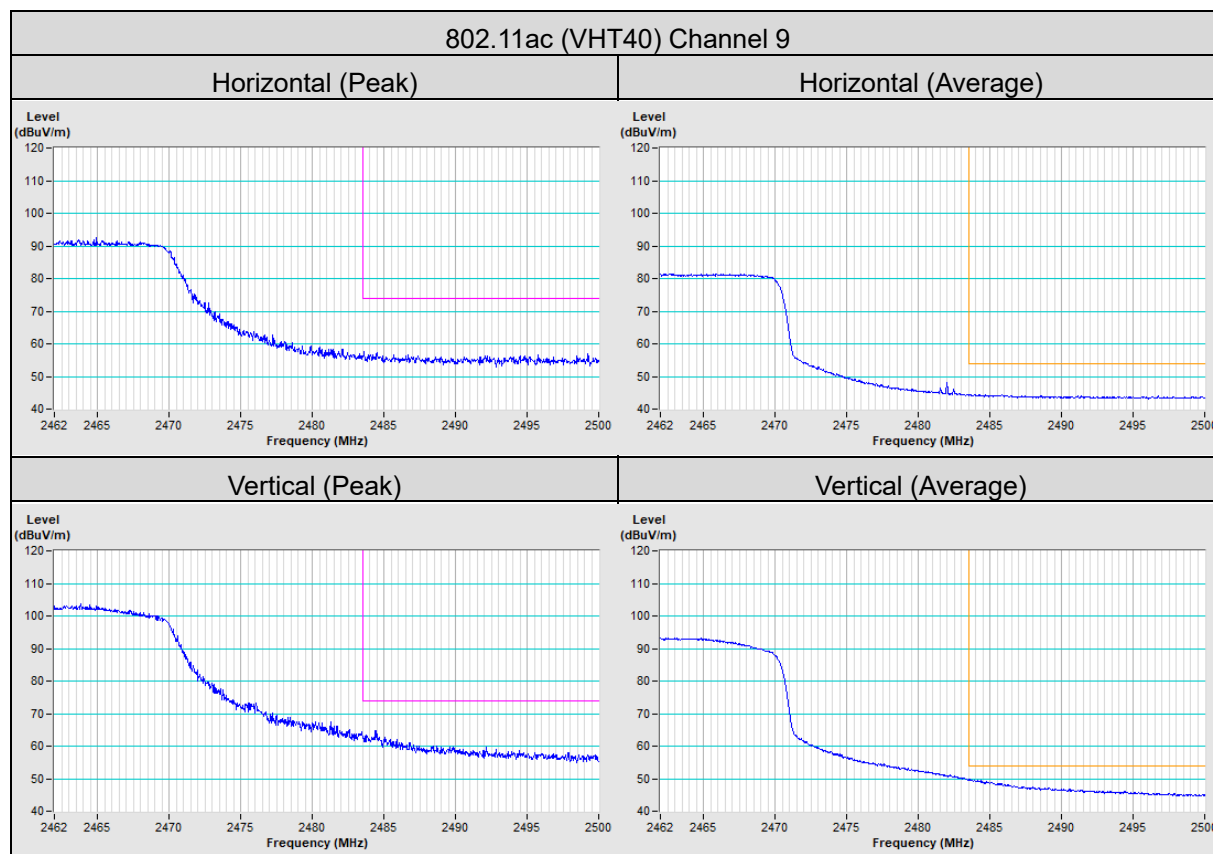
Scanning radio (Radio 3)











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 and approved according to ISO/IEC 17025.

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

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