

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Report No.: RFBCMN-WTW-P23100614
FCC ID: Q3N-RS38
Product: Mobile Computer
Brand: CIPHERLAB
Model No.: RS38
Series Model: RS38WO (Refer to item 3.1 for more details)
Received Date: 2023/11/12
Test Date: 2024/1/8 ~ 2024/7/9
Issued Date: 2024/8/5
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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories
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Test Location(2): No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / 198487 / TW2021 for Test Location(1)
Designation Number: 788550 / TW0003 for Test Location(2)

Approved by:

Jeremy Lin
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, Date:

2024/8/5

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Prepared by : Polly Chien / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBCMNI-WTW-P23100614	Original release.	2024/8/5

1 Certificate

Product: Mobile Computer
Brand: CIPHERLAB
Test Model: RS38
Series Model: RS38WO (Refer to item 3.1 for more details)
Sample Status: Engineering sample
Applicant: Cipherlab Co., Ltd.
Test Date: 2024/1/8 ~ 2024/7/9
Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Measurement procedure: ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01

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.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -20.46 dB at 0.39800 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -14.0 dB at 908.82 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.3 dB at 2390.00 and 2483.50 MHz
15.203	Antenna Requirement	Pass	Antenna connector is Spring not a standard connector.

Note: 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:

Parameter	Specification	Uncertainty (±)
RF Output Power	-	1.1 dB
Power Spectral Density	-	1.3 dB
6 dB Bandwidth	-	960 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.7 dB
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.88 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	Mobile Computer
Brand	CIPHERLAB
Test Model	RS38
Series Model	RS38WO
Model Difference	Refer to note
Status of EUT	Engineering sample
Power Supply Rating	3.87 Vdc (from battery) 5 Vdc (from adapter or host equipment)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA in 11ax mode
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: up to 300Mbps 802.11ax: up to 573.5 Mbps
Operating Frequency	2.412 GHz ~ 2.462 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), 802.11ax (HE20): 11 802.11n (HT40), 802.11ax (HE40): 7
Resource Unit (RU)	26-tone, 52-tone, 106-tone
Output Power	562.434 mW (27.50 dBm)

Note:

1. All models are listed as below. After pretesting, RS38 was the worst case and chosen for final test.

Brand	Model	Difference
CIPHERLAB	RS38	WWAN+WLAN
	RS38WO	WLAN only

* The hardware of the two models has not changed, only the software is used to turn off WWAN.

2. The EUT uses following accessories.

Item	Brand	Model	Specification
Adapter	Channel WELL Technology	2AEA010BC3D	AC Input: 100-240 Vac, 50/60 Hz, 0.35 A DC Output: 5.0 Vdc, 2.0 A, 10.0 W
Reader 1	Zebra	SE4770	-
Reader 2	Zebra	SE4100	-
Reader 3	Zebra	SE5500	-
1st Battery	CIPHERLAB	BA-0174A5	3.87 Vdc, 4500 mAh, 17.42 Wh
2nd Battery	Chongqing VDL Electronics Co., Ltd	341322PM4	3.85 Vdc, 90 mAh
USB To Type C Cable	SUNCA CO., LTD	1Q11512211-XJ	0.9 m

* After pretesting, Reader 1 and 1st Battery were the worst case and chosen for final test.

3. Simultaneously transmission condition.

Condition	Technology
1	WWAN + WLAN 2.4G (Ant. 4) + WLAN 5G (Ant. 2) + BT
2	WWAN + WLAN 2.4G (MIMO)
3	WWAN + WLAN 5G (MIMO) + BT
4	WWAN + WLAN 6G (MIMO)

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

4. The EUT support OFDMA and RU mode, therefore partial RU combination were investigated and the worst case scenario was identified. (The worst case data were presented in section 3.4)

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 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna	Antenna Type	Connector Type	Frequency (MHz)	Peak Gain (dBi)
Ant. 2	LDS	Spring	2400-2483.5	1.0
			5150-5250	0.5
			5250-5350	0.5
			5470-5725	0.5
			5725-5850	0.5
			5925-6425	-1.0
			6425-6525	-1.8
			6525-6875	-1.2
			6875-7125	-2.7
Ant. 4	LDS	Spring	2400-2483.5	1.0
			5150-5250	0.5
			5250-5350	0.5
			5470-5725	0.5
			5725-5850	0.5
			5955-6425	-0.8
			6425-6525	-1.5
			6525-6875	-1.3
			6875-7125	-2.6

*Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a MIMO function:

2.4 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (RU26/52/106)	2TX	2RX

Note:

1. The EUT don't support Beamforming mode.
2. The EUT support OFDMA and RU mode, therefore partial RU combination were investigated and the worst case scenario was identified.
3. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz) and 802.11ax mode for 20 MHz (40 MHz), therefore the investigated worst case to representative mode in test report. (The worst case data were presented in section 3.4)

3.3 Channel List

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

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

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

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

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition. 2. 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).
Worst Case:	1. EUT Worst Condition: Y-axis

Following channel(s) was (were) selected for the final test as listed below:

Test Item	Mode	Tested Channel	Modulation	Data Rate Parameter	RU/MRU Index
RF Output Power	802.11b	1, 6, 11	DBPSK	1Mb/s	NA
	802.11g	1, 6, 11	BPSK	6Mb/s	NA
	802.11n (HT20)	1, 6, 11	BPSK	MCS0	NA
	802.11n (HT40)	3, 6, 9	BPSK	MCS0	NA
	802.11ax (HE20)	1, 6, 11	BPSK	MCS0	NA
	802.11ax (HE40)	3, 6, 9	BPSK	MCS0	NA
	802.11ax (HE20) 26-tone RU	1, 6, 11	BPSK	MCS0	0, 0, 8
	802.11ax (HE20) 52-tone RU	1, 6, 11	BPSK	MCS0	37, 37, 40
	802.11ax (HE20) 106-tone RU	1, 6, 11	BPSK	MCS0	53, 53, 54
Power Spectral Density / 6 dB Bandwidth	802.11b	1, 6, 11	DBPSK	1Mb/s	NA
	802.11g	1, 6, 11	BPSK	6Mb/s	NA
	802.11n (HT20)	1, 6, 11	BPSK	MCS0	NA
	802.11n (HT40)	3, 6, 9	BPSK	MCS0	NA
	802.11ax (HE20) 26-tone RU	1, 6, 11	BPSK	MCS0	0, 0, 8
	802.11ax (HE20) 52-tone RU	1, 6, 11	BPSK	MCS0	37, 37, 40
	802.11ax (HE20) 106-tone RU	1, 6, 11	BPSK	MCS0	53, 53, 54
Conducted Out of Band Emissions	802.11b	1, 6, 11	DBPSK	1Mb/s	NA
	802.11g	1, 6, 11	BPSK	6Mb/s	NA
	802.11n (HT20)	1, 6, 11	BPSK	MCS0	NA
	802.11n (HT40)	3, 6, 9	BPSK	MCS0	NA
	802.11ax (HE20) 26-tone RU	1, 6, 11	BPSK	MCS0	0, 0, 8
	802.11ax (HE20) 52-tone RU	1, 6, 11	BPSK	MCS0	37, 37, 40
	802.11ax (HE20) 106-tone RU	1, 6, 11	BPSK	MCS0	53, 53, 54
AC Power Conducted Emissions	802.11n (HT20)	6	BPSK	MCS0	NA
Unwanted Emissions below 1 GHz	802.11n (HT20)	6	BPSK	MCS0	NA

Test Item	Mode	Tested Channel	Modulation	Data Rate Parameter	RU/MRU Index
Unwanted Emissions above 1 GHz	802.11b	1, 6, 11	DBPSK	1Mb/s	NA
	802.11g	1, 6, 11	BPSK	6Mb/s	NA
	802.11n (HT20)	1, 6, 11	BPSK	MCS0	NA
	802.11n (HT40)	3, 6, 9	BPSK	MCS0	NA
	802.11ax (HE20) 26-tone RU	1, 6, 11	BPSK	MCS0	0, 0, 8
	802.11ax (HE20) 52-tone RU	1, 6, 11	BPSK	MCS0	37, 37, 40
	802.11ax (HE20) 106-tone RU	1, 6, 11	BPSK	MCS0	53, 53, 54

3.5 Duty Cycle of Test Signal

802.11b: Duty cycle = 1.415 ms / 1.441 ms x 100% = 98.2%

802.11g: Duty cycle = 2.105 ms / 2.11 ms x 100% = 99.8%

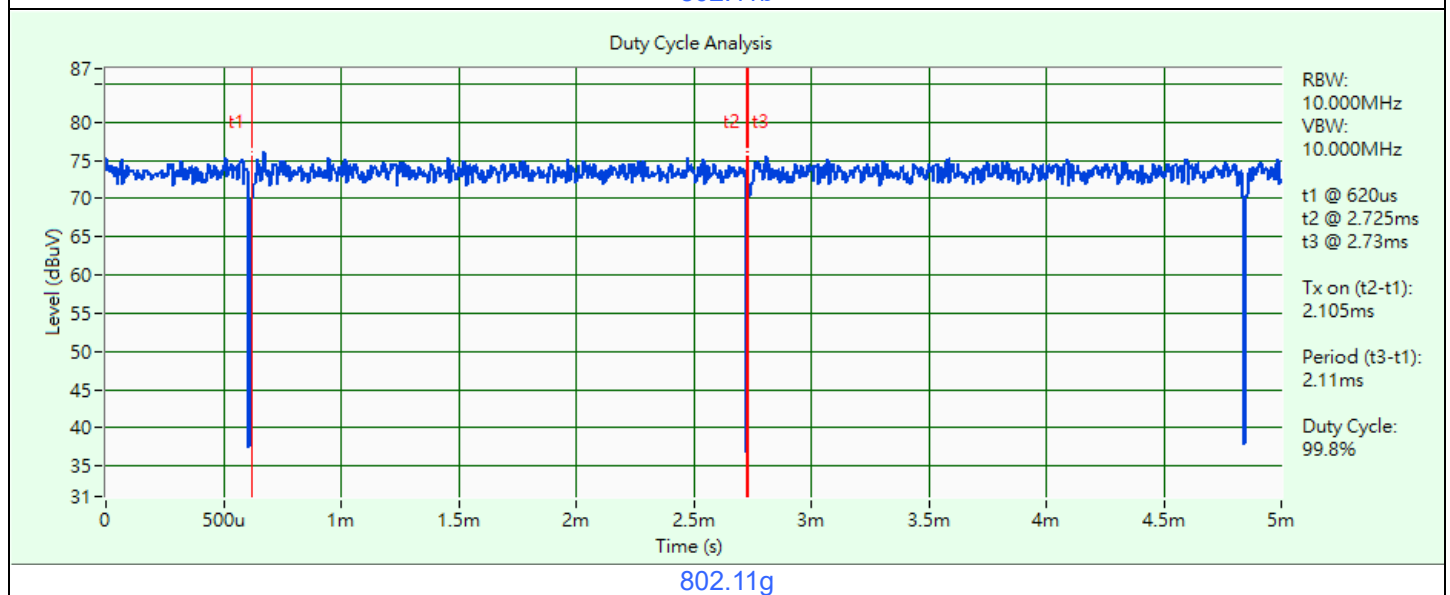
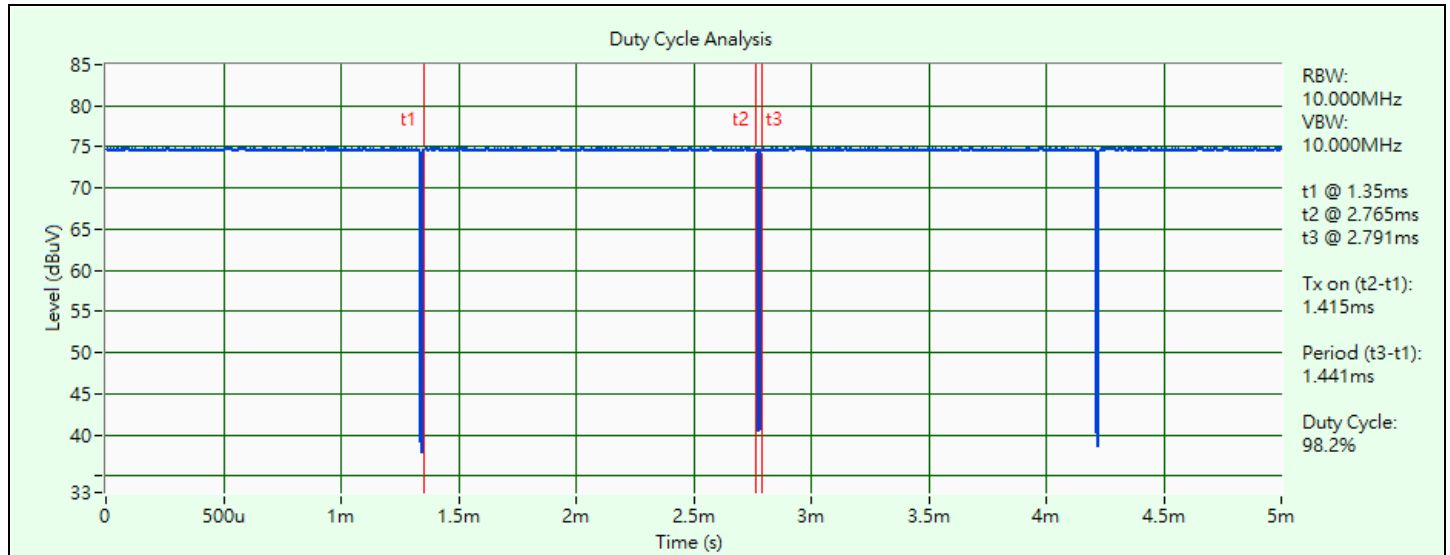
802.11n (HT20): Duty cycle = 0.686 ms / 0.698 ms x 100% = 98.3%

802.11n (HT40): Duty cycle = 0.582 ms / 0.594 ms x 100% = 98.0%

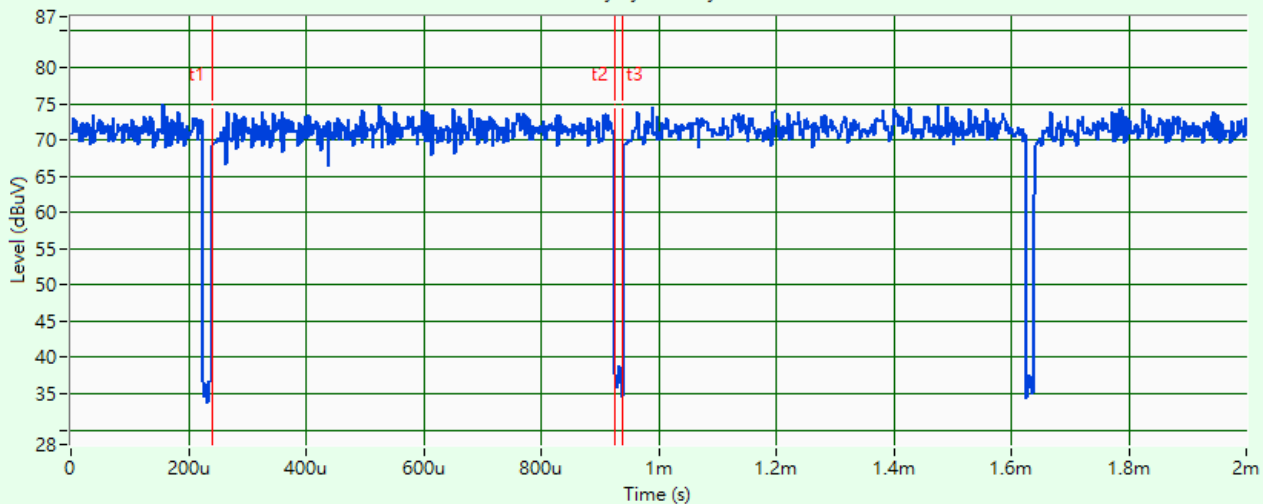
802.11ax (HE20) 26-tone RU: Duty cycle = 100 ms / 100 ms x 100% = 100.0%

802.11ax (HE20) 52-tone RU: Duty cycle = 100 ms / 100 ms x 100% = 100.0%

802.11ax (HE20) 106-tone RU: Duty cycle = 100 ms / 100 ms x 100% = 100.0%

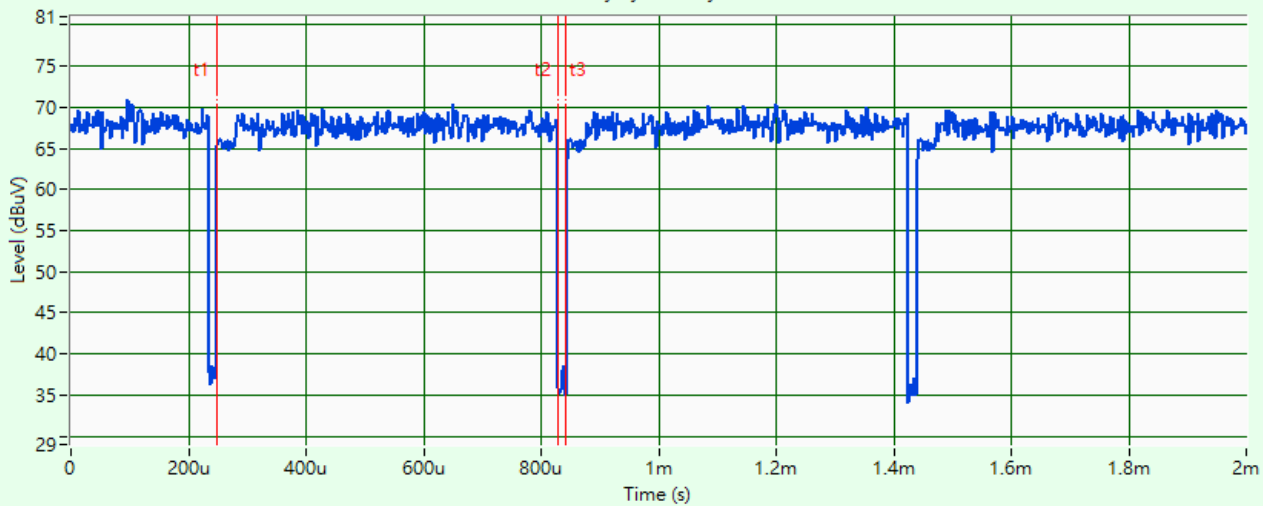


Duty Cycle Analysis



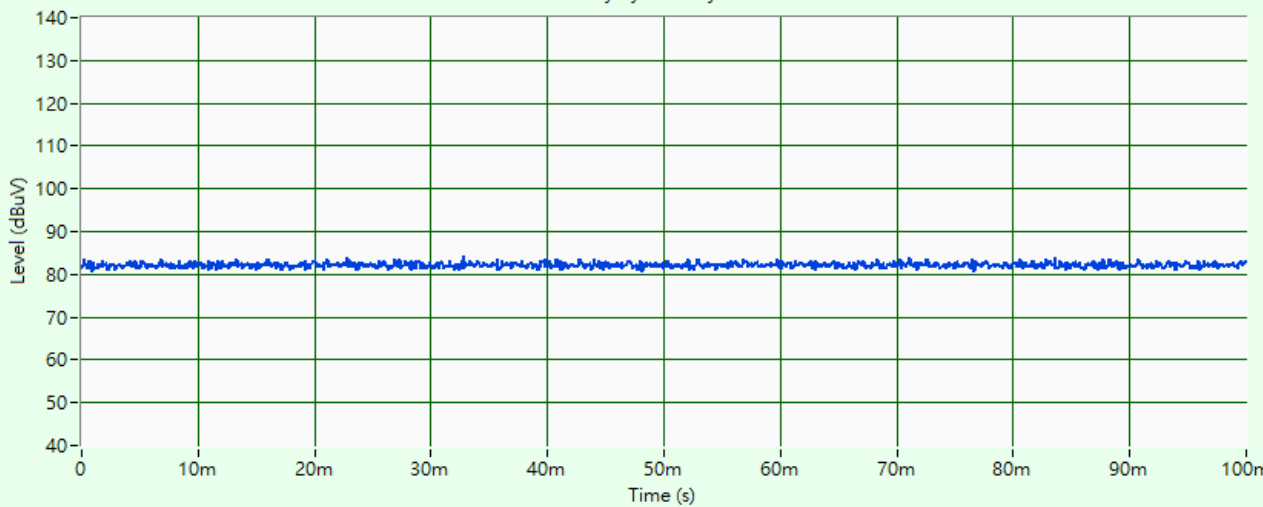
802.11n (HT20)

Duty Cycle Analysis



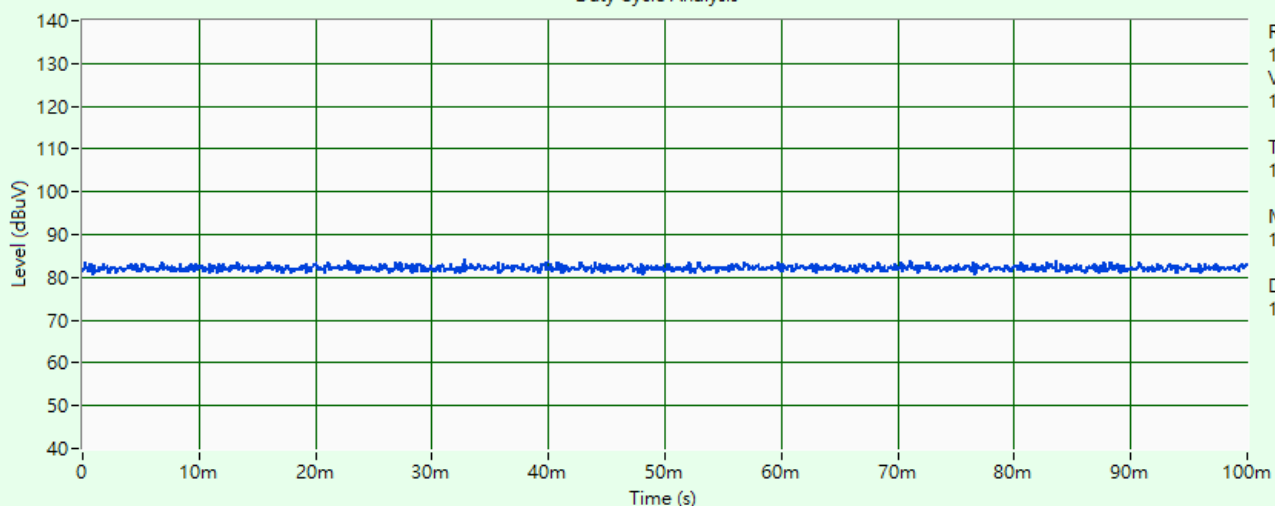
802.11n (HT40)

Duty Cycle Analysis



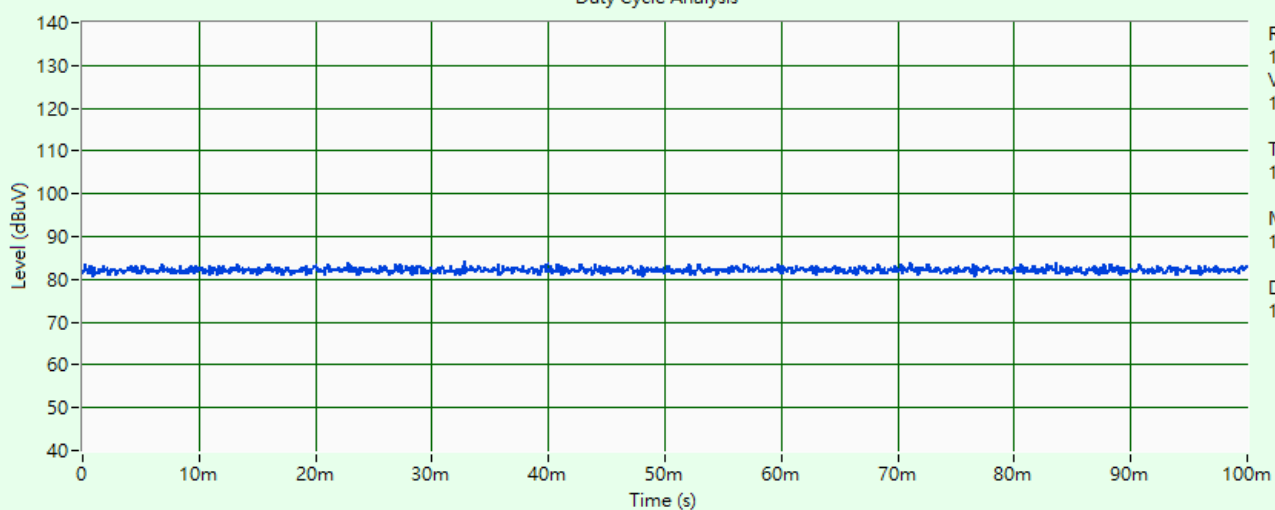
802.11ax (HE20) 26-tone RU

Duty Cycle Analysis



802.11ax (HE20) 52-tone RU

Duty Cycle Analysis

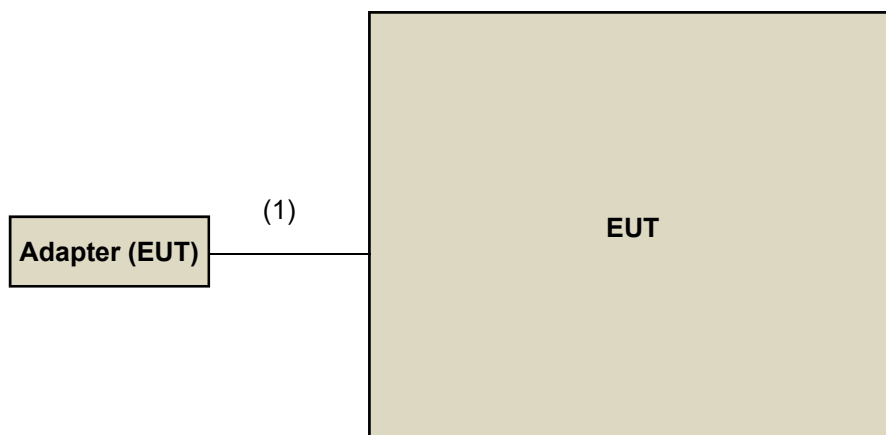


802.11ax (HE20) 106-tone RU

3.6 Test Program Used and Operation Descriptions

Controlling software QRCT V4.0 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



Under Table

Remote Site

3.8 Configuration of Peripheral Devices and Cable Connections

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB To Type C Cable	1	0.9	Y	0	Accessory of EUT

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Pulse Power Sensor Anritsu	MA2411B	0738404	2024/5/13	2025/5/12
RF Power Meter Anritsu	ML2495A	0842014	2024/5/13	2025/5/12
USB Wideband Power Sensor Keysight	U2021XA	U2021XA_001	2024/6/7	2025/6/6

Notes:

1. The test was performed in LK - Oven
2. Tested Date: 2024/7/9

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
PXA Signal Analyzer Keysight	N9030A	MY54490260	2023/7/13	2024/7/12
Signal Analyzer R&S	FSV40	101042	2023/9/5	2024/9/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in LK - Oven
2. Tested Date: 2024/7/9

4.3 6 dB Bandwidth

Refer to section 4.2 to get the tested date and information of the instruments.

4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get the tested date and information of the instruments.

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance HUBER+SUHNER	E1-011276	01	2023/2/1	2024/1/31
	E1-011312	10	2023/1/30	2024/1/29
	E1-011591	17	2023/2/1	2024/1/31
DC-LISN Schwarzbeck	NNBM 8126G	8126G-069	2023/11/7	2024/11/6
EMI Test Receiver R&S	ESR3	102783	2023/12/13	2024/12/12
Fixed Attenuator SGH	BNC10W10dB	PAD-COND2-01	2023/9/2	2024/9/1
LISN R&S	ESH2-Z5	100100	2023/3/7	2024/3/6
	ESH3-Z5	100312	2023/9/12	2024/9/11
RF Coaxial Cable Woken	5D-FB	Cable-cond2-01	2023/9/2	2024/9/1
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2023/8/31	2024/8/30

Notes:

1. The test was performed in HY - Conduction 2.
2. Tested Date: 2024/1/16

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2023/10/16	2024/10/15
EXA Signal Analyzer Agilent	N9010A	MY52220207	2023/12/28	2024/12/27
Loop Antenna Electro-Metrics	EM-6879	269	2023/9/23	2024/9/22
Loop Antenna TESEQ	HLA 6121	45745	2023/8/8	2024/8/7
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Preamplifier EMCI	EMC 330H	980112	2023/9/27	2024/9/26
	EMC001340	980201	2023/9/27	2024/9/26
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2023/9/27	2024/9/26
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2024/1/15

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
EXA Signal Analyzer Agilent	N9010A	MY52220207	2023/12/28	2024/12/27
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2023/11/12	2024/11/11
	BBHA 9170	148	2023/11/12	2024/11/11
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Notch Filter Micro-Tronics	BRM50716	060	2023/12/25	2024/12/24
Preamplifier EMCI	EMC 012645	980115	2023/9/27	2024/9/26
	EMC 184045	980116	2023/9/27	2024/9/26
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2023/7/8	2024/7/7
	EMC102-KM-KM-3000	150929	2023/7/8	2024/7/7
	EMC104-SM-SM- 8000+3000	171005	2023/9/27	2024/9/26
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	2023/9/27	2024/9/26
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2024/1/8 ~ 2024/1/19

5 Limits of Test Items

5.1 RF Output Power

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

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.

5.2 Power Spectral Density

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

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

Below 20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

5.5 AC Power Conducted Emissions

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

Notes:

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 0.50 MHz.

5.6 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB 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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.7 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

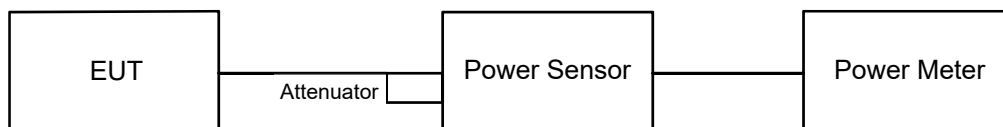
Notes:

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 1000 MHz, 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 20 dB under any condition of modulation.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



6.1.2 Test Procedure

Peak Power:

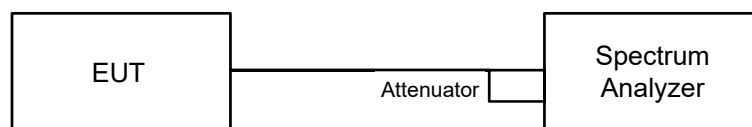
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average Power:

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.

6.2 Power Spectral Density

6.2.1 Test Setup

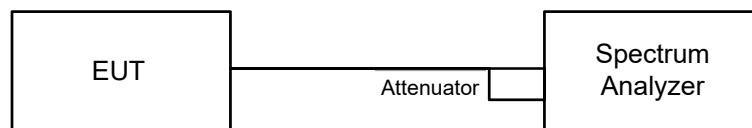


6.2.2 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: 3 kHz.
- Set the VBW $\geq 3 \times$ 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.

6.3 6 dB Bandwidth

6.3.1 Test Setup

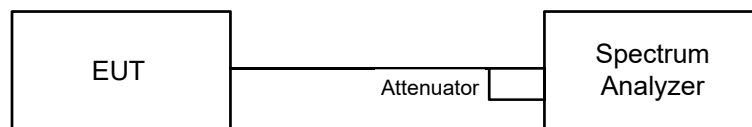


6.3.2 Test Procedure

- Set resolution bandwidth (RBW) = 100 kHz.
- 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.

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

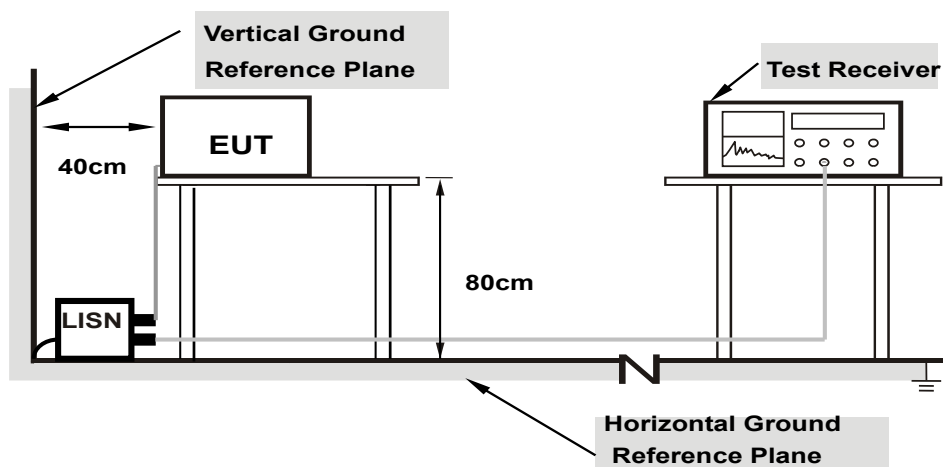
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

- Set RBW = 100 kHz.
- Set VBW ≥ 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.

6.5 AC Power Conducted Emissions

6.5.1 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).

6.5.2 Test Procedure

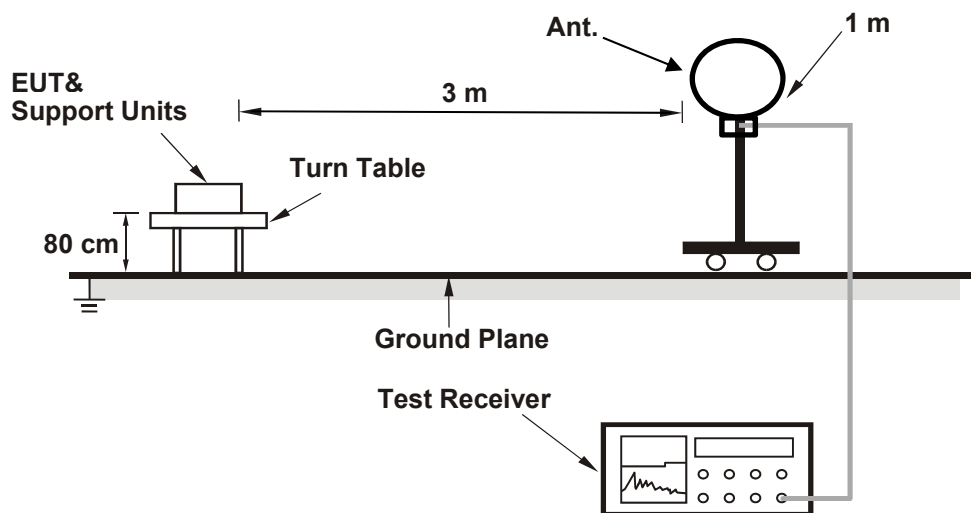
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH 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 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

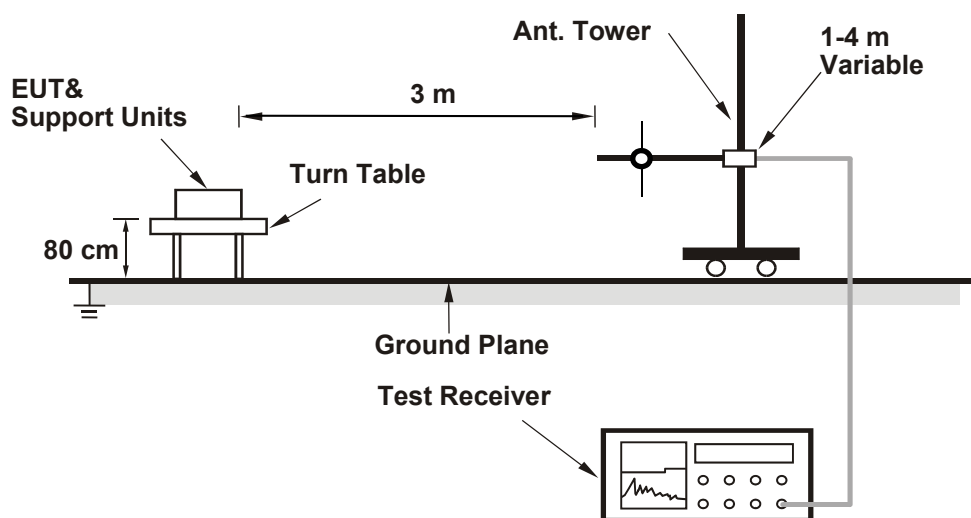
6.6 Unwanted Emissions below 1 GHz

6.6.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.6.2 Test Procedure

For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters 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. 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, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

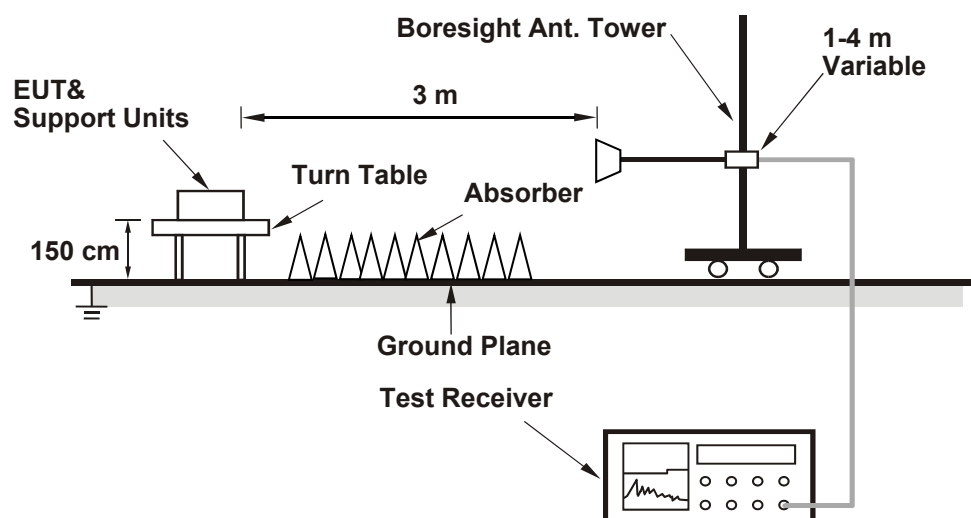
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

6.7 Unwanted Emissions above 1 GHz

6.7.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.7.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- 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.

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai
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For Peak Power

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	20.92	20.94	247.76	23.94	30	Pass
6	2437	21.75	20.55	263.125	24.20	30	Pass
11	2462	21.74	20.76	268.404	24.29	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	24.54	24.32	554.842	27.44	30	Pass
6	2437	24.45	24.28	546.529	27.38	30	Pass
11	2462	24.15	24.39	534.805	27.28	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	24.43	24.40	552.755	27.43	30	Pass
6	2437	24.43	24.55	562.434	27.50	30	Pass
11	2462	24.36	24.58	559.976	27.48	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	24.28	24.43	545.249	27.37	30	Pass
6	2437	24.27	24.34	538.945	27.32	30	Pass
9	2452	24.29	24.20	531.561	27.26	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	24.17	24.10	518.256	27.15	30	Pass
6	2437	24.41	23.93	523.23	27.19	30	Pass
11	2462	24.58	23.98	537.113	27.30	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	23.55	24.45	505.077	27.03	30	Pass
6	2437	24.22	24.40	539.664	27.32	30	Pass
9	2452	23.59	23.61	458.175	26.61	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) 26-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	23.93	23.93	494.345	26.94	30	Pass
6	2437	24.31	23.78	508.555	27.06	30	Pass
11	2462	24.48	23.81	520.98	27.17	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) 52-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	24.07	23.90	500.741	27.00	30	Pass
6	2437	24.30	23.68	502.499	27.01	30	Pass
11	2462	24.37	23.76	511.211	27.09	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) 106-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	23.96	23.99	499.497	26.99	30	Pass
6	2437	24.17	23.70	495.639	26.95	30	Pass
11	2462	24.39	23.83	516.335	27.13	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	18.16	18.16	130.927	21.17
6	2437	18.98	17.92	141.012	21.49
11	2462	18.94	17.92	140.287	21.47

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	18.41	18.15	134.656	21.29
6	2437	18.36	18.11	133.263	21.25
11	2462	17.92	18.15	127.257	21.05

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	18.21	18.21	132.443	21.22
6	2437	18.16	18.25	132.298	21.22
11	2462	18.24	18.23	133.208	21.25

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
3	2422	18.02	18.16	128.851	21.10
6	2437	18.16	18.11	130.178	21.15
9	2452	17.88	17.91	123.178	20.91

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	18.02	17.98	126.193	21.01
6	2437	18.13	17.89	126.531	21.02
11	2462	18.28	17.71	126.318	21.01

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
3	2422	17.05	17.11	102.103	20.09
6	2437	17.85	17.86	122.048	20.87
9	2452	17.02	17.04	100.933	20.04

802.11ax (HE20) 26-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	17.89	17.87	122.753	20.89
6	2437	17.97	17.71	121.681	20.85
11	2462	18.17	17.55	122.5	20.88

802.11ax (HE20) 52-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	17.83	17.73	119.966	20.79
6	2437	17.91	17.71	120.822	20.82
11	2462	18.03	17.47	119.38	20.77

802.11ax (HE20) 106-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	17.81	17.77	120.236	20.80
6	2437	17.89	17.76	121.221	20.84
11	2462	18.09	17.51	120.781	20.82

7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai
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802.11b

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
Chain 0	1	2412	-5.81	3.01	-2.8	8	Pass
	6	2437	-6.24	3.01	-3.23	8	Pass
	11	2462	-6.22	3.01	-3.21	8	Pass
Chain 1	1	2412	-5.85	3.01	-2.84	8	Pass
	6	2437	-6.37	3.01	-3.36	8	Pass
	11	2462	-6.28	3.01	-3.27	8	Pass

Notes:

1. Method E) 2) c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 4.01 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11g

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
Chain 0	1	2412	-9.1	3.01	-6.09	8	Pass
	6	2437	-8.9	3.01	-5.89	8	Pass
	11	2462	-8.64	3.01	-5.63	8	Pass
Chain 1	1	2412	-9.66	3.01	-6.65	8	Pass
	6	2437	-8.83	3.01	-5.82	8	Pass
	11	2462	-9.09	3.01	-6.08	8	Pass

Notes:

1. Method E) 2) c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 4.01 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
Chain 0	1	2412	-8.5	3.01	-5.49	8	Pass
	6	2437	-8.11	3.01	-5.1	8	Pass
	11	2462	-7.82	3.01	-4.81	8	Pass
Chain 1	1	2412	-8.7	3.01	-5.69	8	Pass
	6	2437	-8.67	3.01	-5.66	8	Pass
	11	2462	-8.15	3.01	-5.14	8	Pass

Notes:

1. Method E) 2) c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 4.01 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
Chain 0	3	2422	-11.02	3.01	-8.01	8	Pass
	6	2437	-11.42	3.01	-8.41	8	Pass
	9	2452	-11.94	3.01	-8.93	8	Pass
Chain 1	3	2422	-10.55	3.01	-7.54	8	Pass
	6	2437	-11.05	3.01	-8.04	8	Pass
	9	2452	-11.56	3.01	-8.55	8	Pass

Notes:

1. Method E) 2) c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 4.01 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20) 26-tone RU

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
Chain 0	1	2412	1.96	3.01	4.97	8	Pass
	6	2437	0.35	3.01	3.36	8	Pass
	11	2462	0.81	3.01	3.82	8	Pass
Chain 1	1	2412	1.96	3.01	4.97	8	Pass
	6	2437	0.4	3.01	3.41	8	Pass
	11	2462	1.08	3.01	4.09	8	Pass

Notes:

1. Method E) 2) c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 4.01 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE20) 52-tone RU

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
Chain 0	1	2412	-2.51	3.01	0.5	8	Pass
	6	2437	-2.96	3.01	0.05	8	Pass
	11	2462	-2.19	3.01	0.82	8	Pass
Chain 1	1	2412	-1.9	3.01	1.11	8	Pass
	6	2437	-3.08	3.01	-0.07	8	Pass
	11	2462	-1.9	3.01	1.11	8	Pass

Notes:

1. Method E) 2) c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 4.01 dBi < 6 dBi, so the power density limit shall not be reduced.

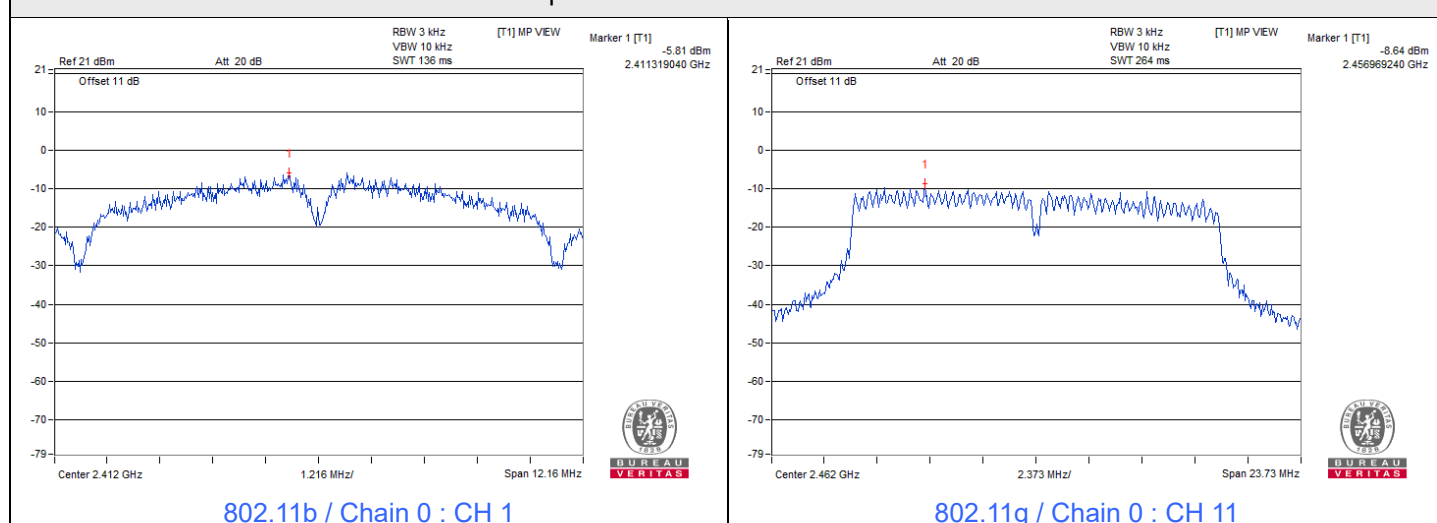
802.11ax (HE20) 106-tone RU

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
Chain 0	1	2412	-4.01	3.01	-1	8	Pass
	6	2437	-5.01	3.01	-2	8	Pass
	11	2462	-6.42	3.01	-3.41	8	Pass
Chain 1	1	2412	-4.64	3.01	-1.63	8	Pass
	6	2437	-5.1	3.01	-2.09	8	Pass
	11	2462	-6.49	3.01	-3.48	8	Pass

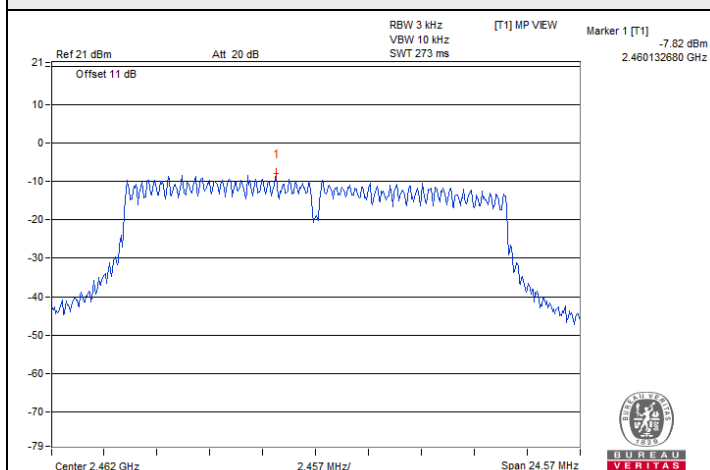
Notes:

1. Method E) 2) c) Measure and add 10 log(NANT) dB of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 4.01 dBi < 6 dBi, so the power density limit shall not be reduced.

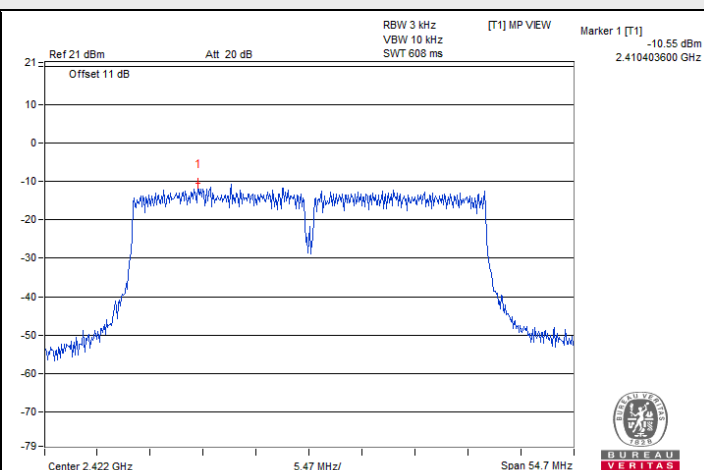
Spectrum Plot of Maximum Value



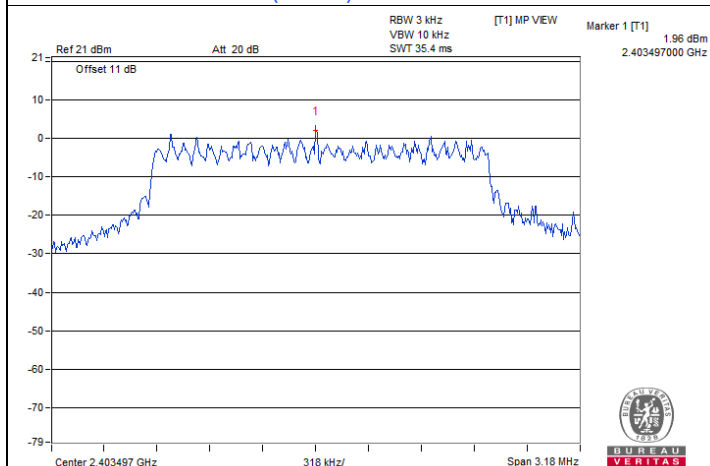
Spectrum Plot of Maximum Value



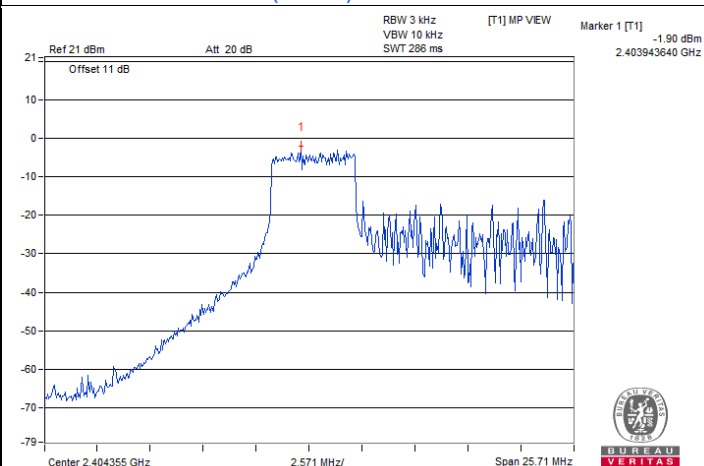
802.11n (HT20) / Chain 0 : CH 11



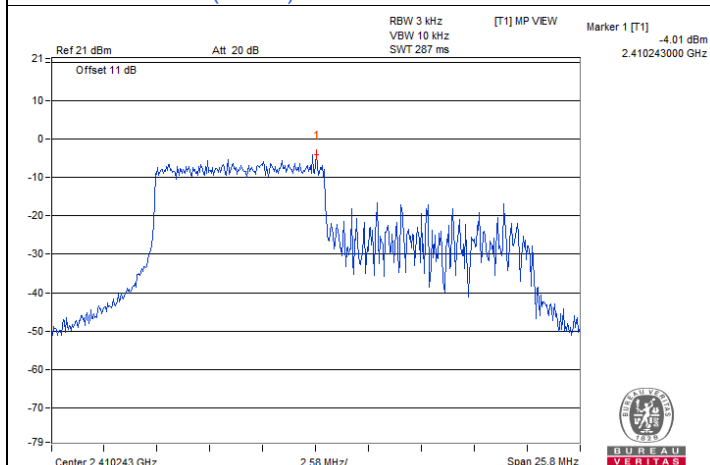
802.11n (HT40) / Chain 1 : CH 3



802.11ax (HE20) 26-tone RU / Chain 0 : CH 1



802.11ax (HE20) 52-tone RU / Chain 1 : CH 1



802.11ax (HE20) 106-tone RU / Chain 0 : CH 1

7.3 6 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai
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802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	8.11	8.11	0.5	Pass
6	2437	7.17	7.18	0.5	Pass
11	2462	7.61	8.11	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	16.36	16.35	0.5	Pass
6	2437	16.35	16.35	0.5	Pass
11	2462	15.82	15.80	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	17.32	16.87	0.5	Pass
6	2437	17.21	17.30	0.5	Pass
11	2462	16.38	16.41	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	2422	36.41	36.47	0.5	Pass
6	2437	35.86	35.85	0.5	Pass
9	2452	35.76	35.79	0.5	Pass

802.11ax (HE20) 26-tone RU

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	2.12	2.14	0.5	Pass
6	2437	2.14	2.15	0.5	Pass
11	2462	17.14	17.11	0.5	Pass

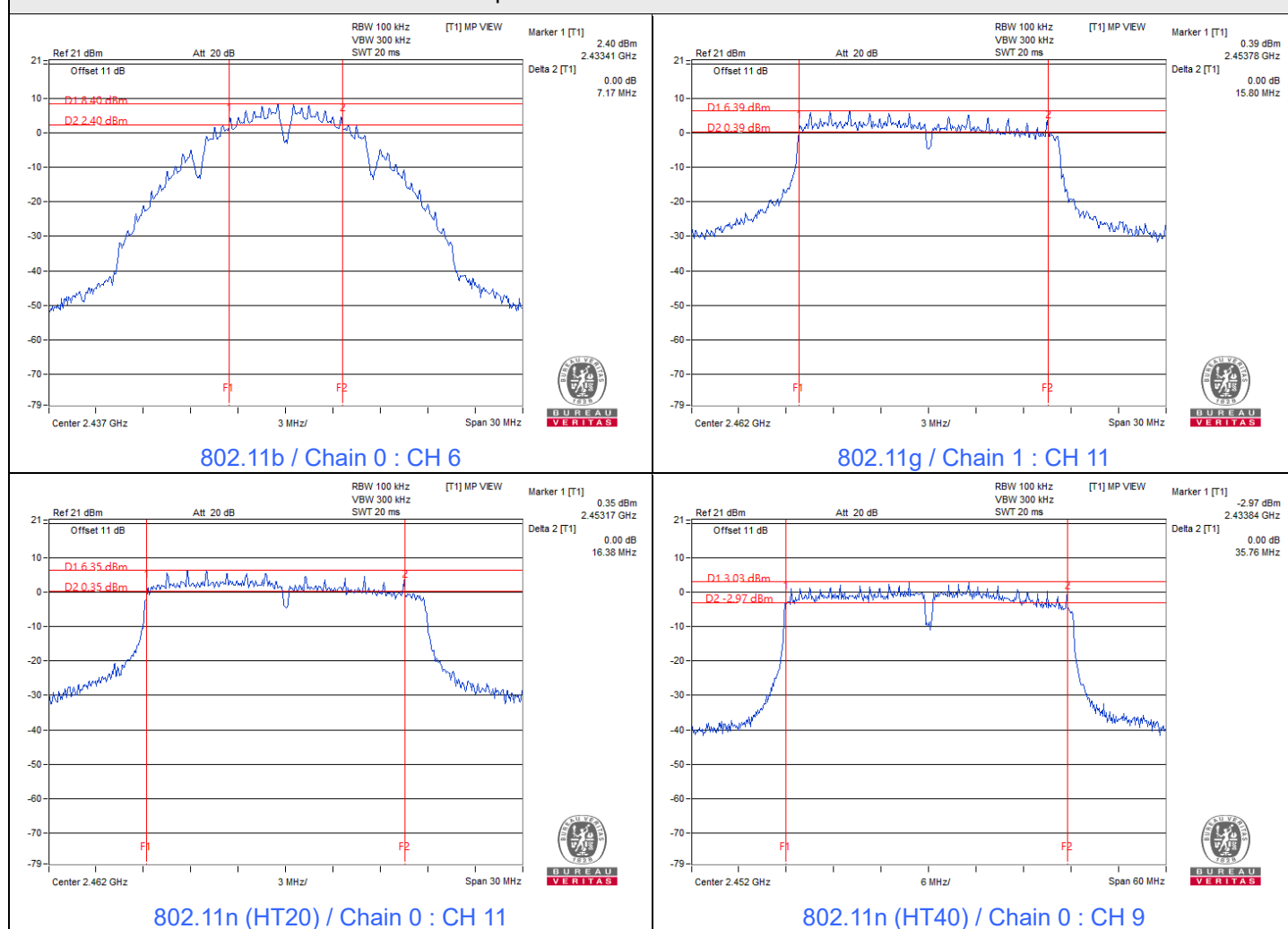
802.11ax (HE20) 52-tone RU

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	17.12	17.14	0.5	Pass
6	2437	17.16	17.16	0.5	Pass
11	2462	17.22	17.21	0.5	Pass

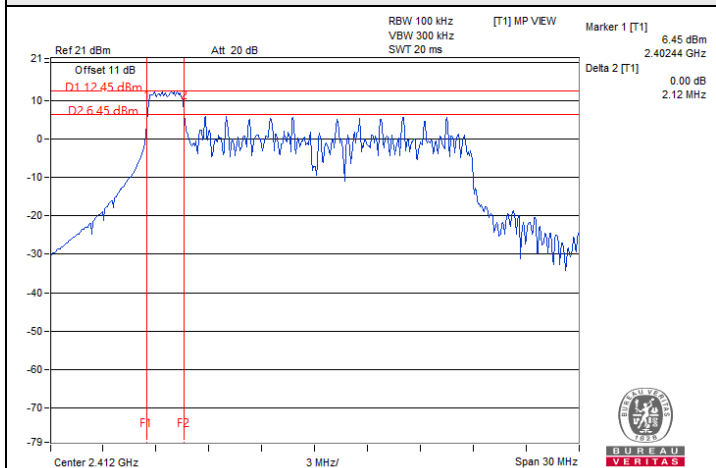
802.11ax (HE20) 106-tone RU

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	17.20	17.22	0.5	Pass
6	2437	18.21	18.21	0.5	Pass
11	2462	18.38	18.38	0.5	Pass

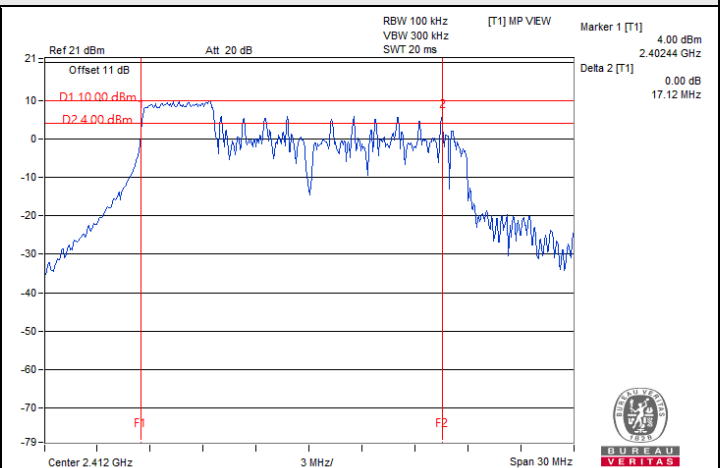
Spectrum Plot of Minimum Value



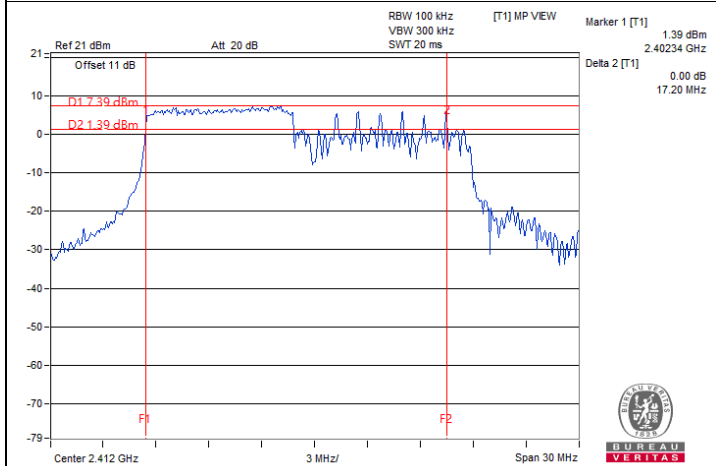
Spectrum Plot of Minimum Value



802.11ax (HE20) 26-tone RU / Chain 0 : CH 1



802.11ax (HE20) 52-tone RU / Chain 0 : CH 1

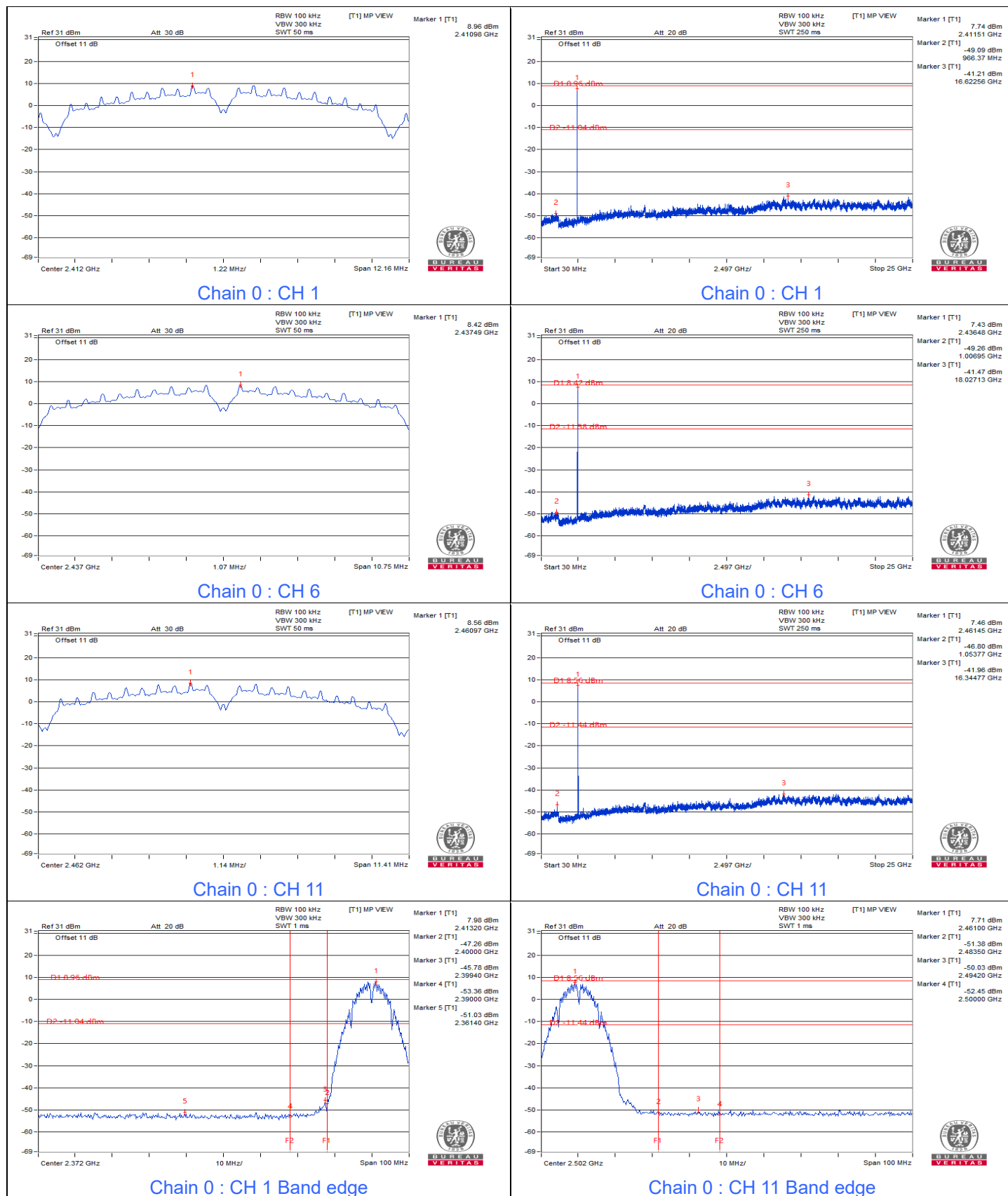


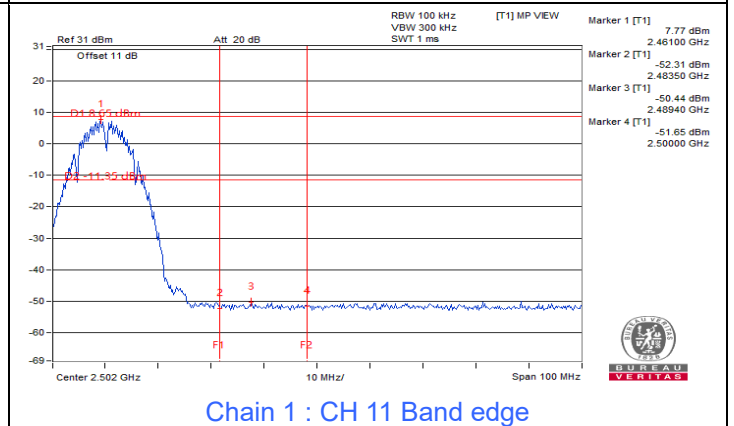
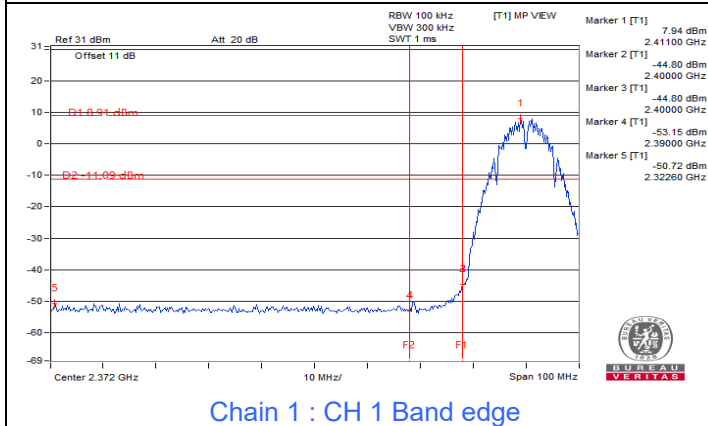
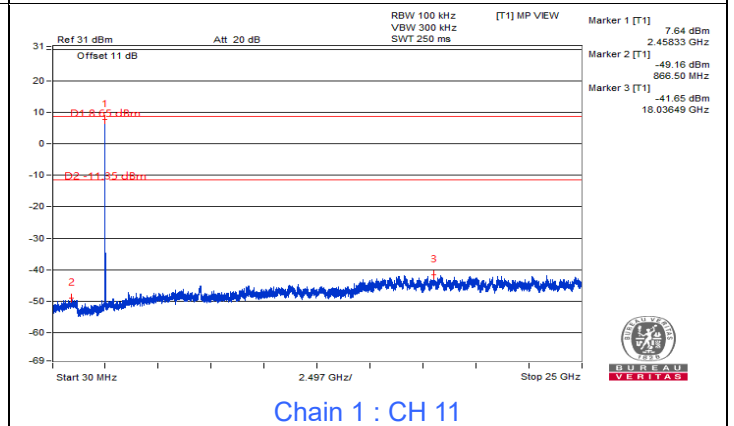
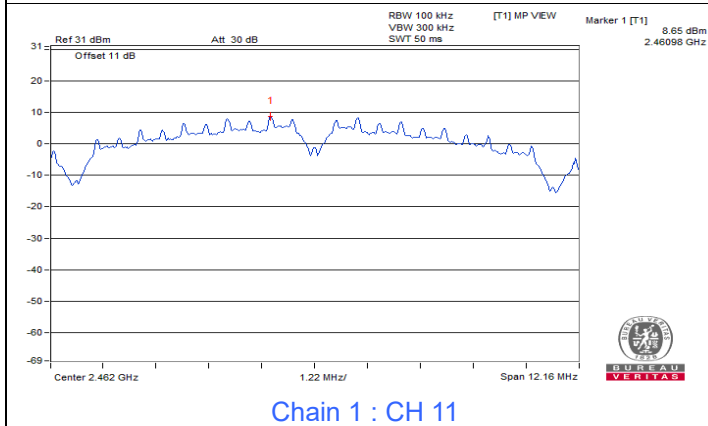
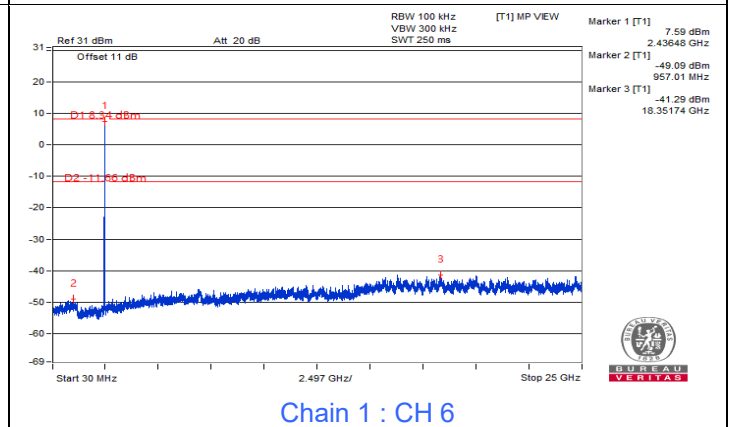
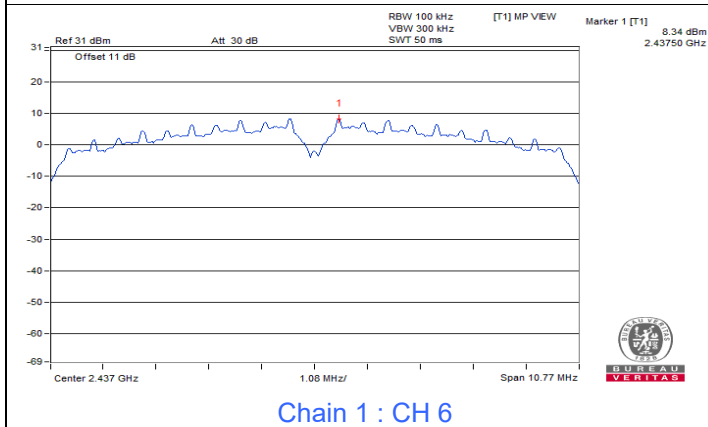
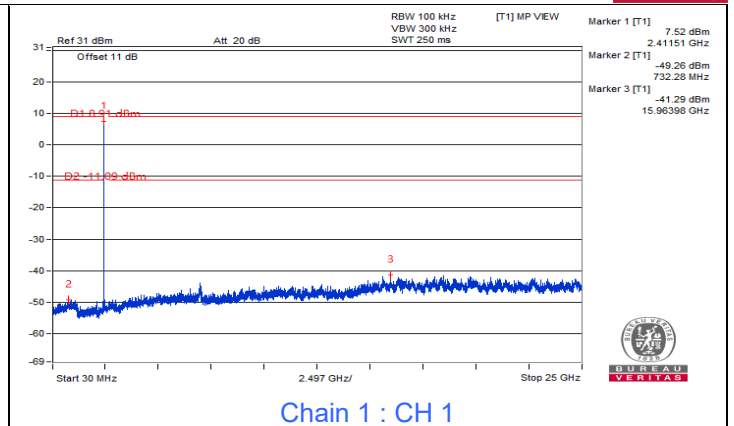
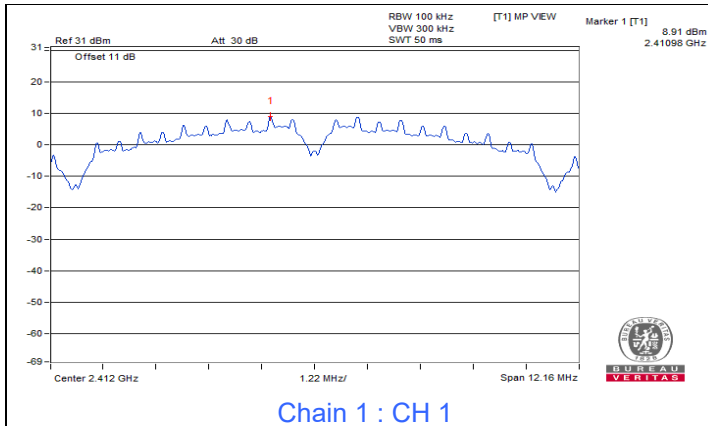
802.11ax (HE20) 106-tone RU / Chain 0 : CH 1

7.4 Conducted Out of Band Emissions

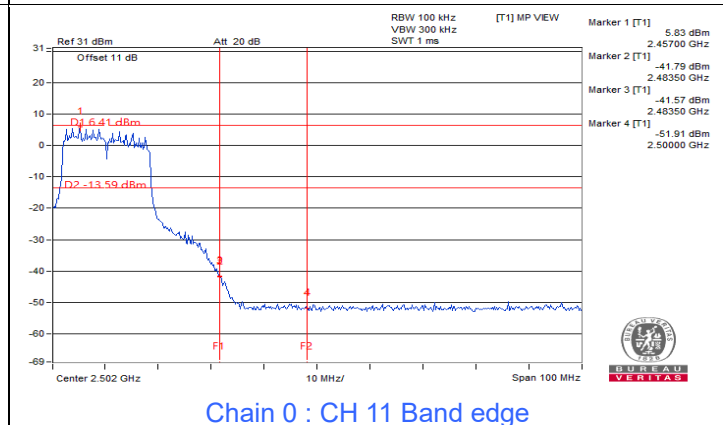
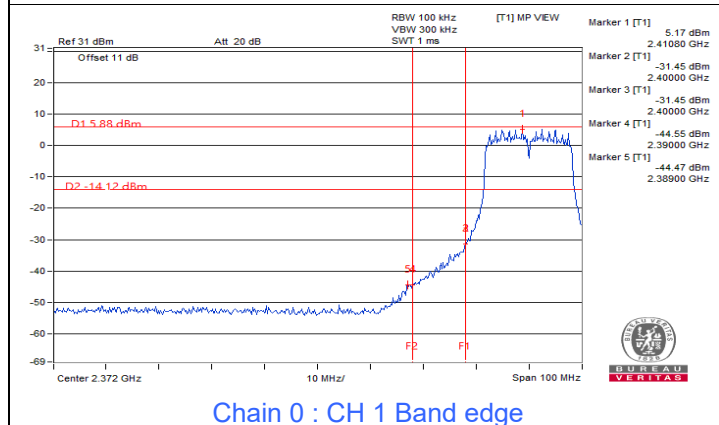
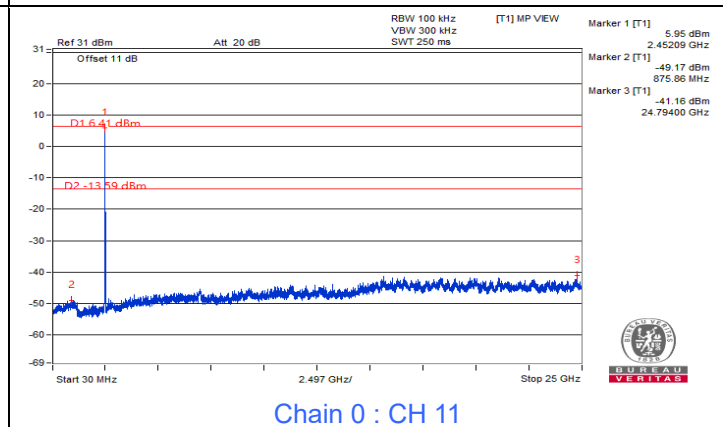
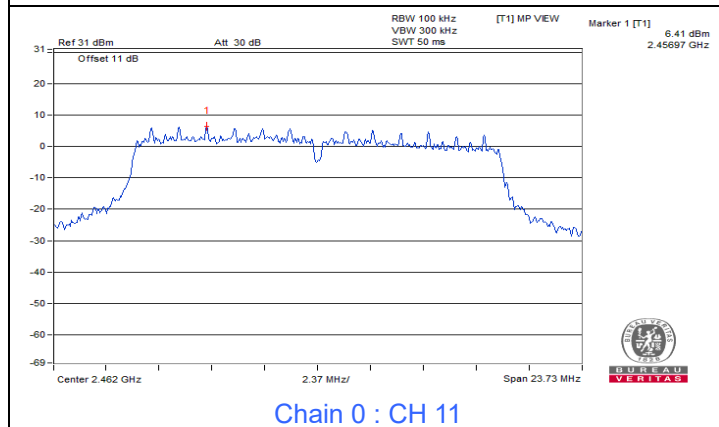
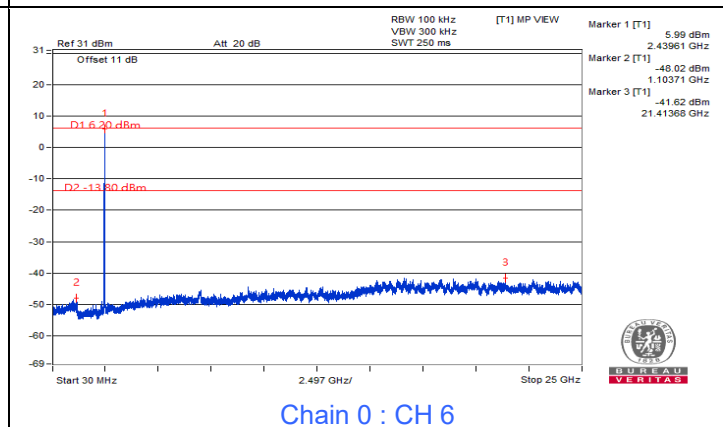
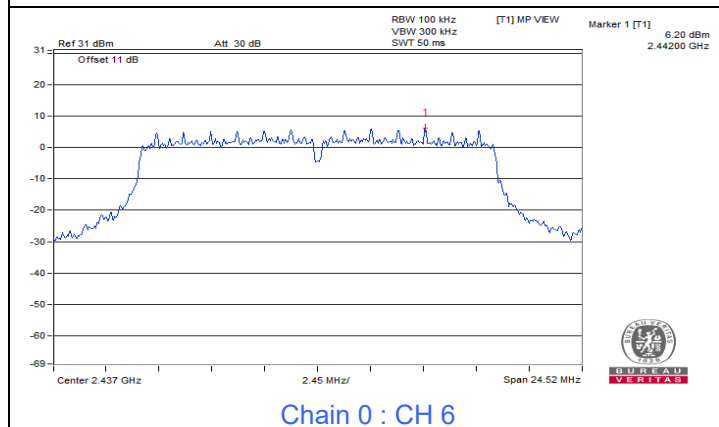
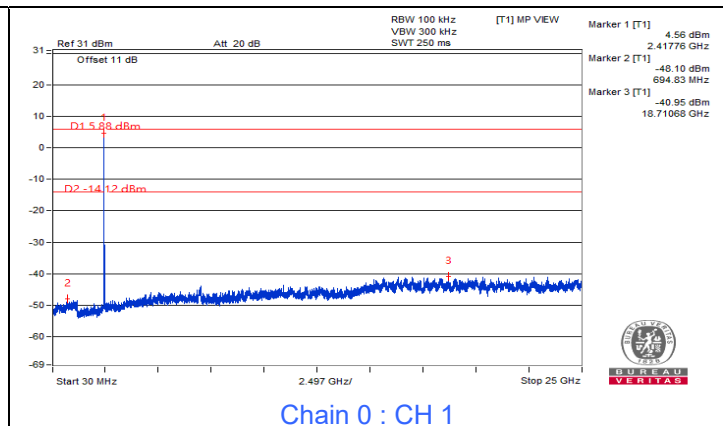
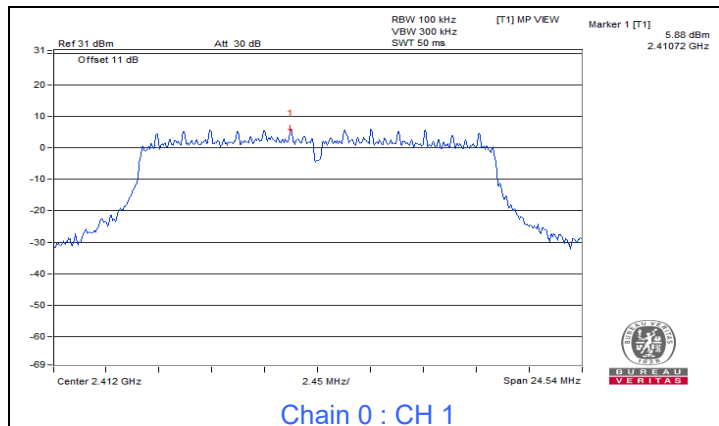
Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 76% RH	Tested By:	Dalen Dai
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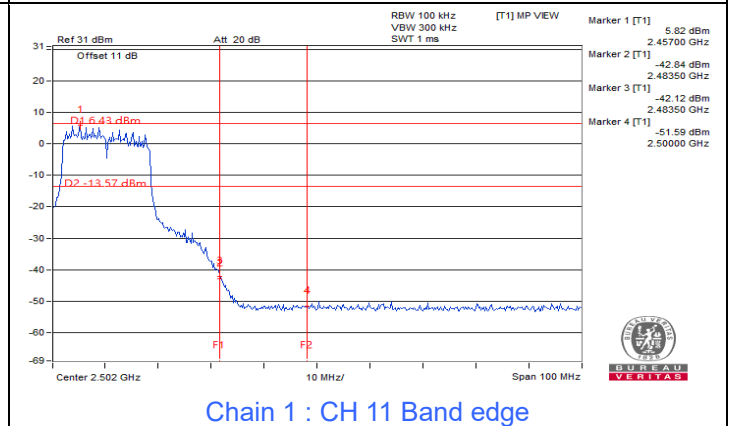
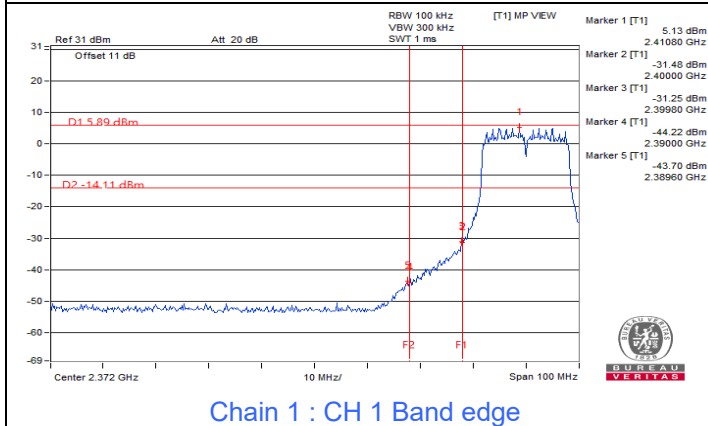
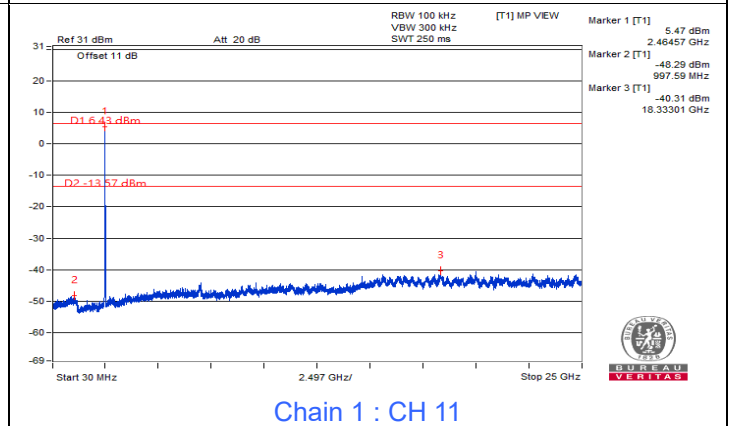
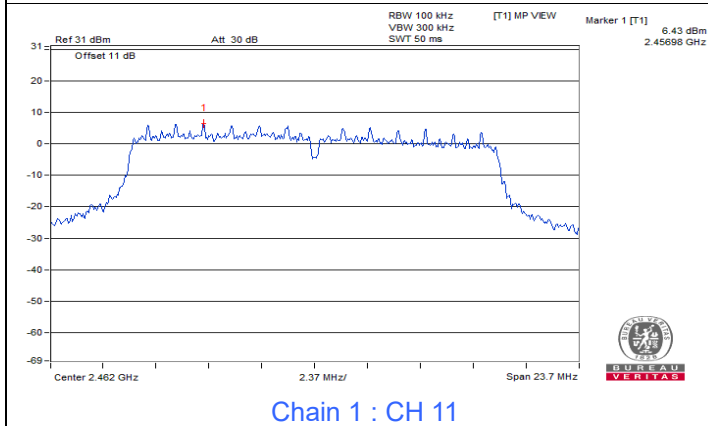
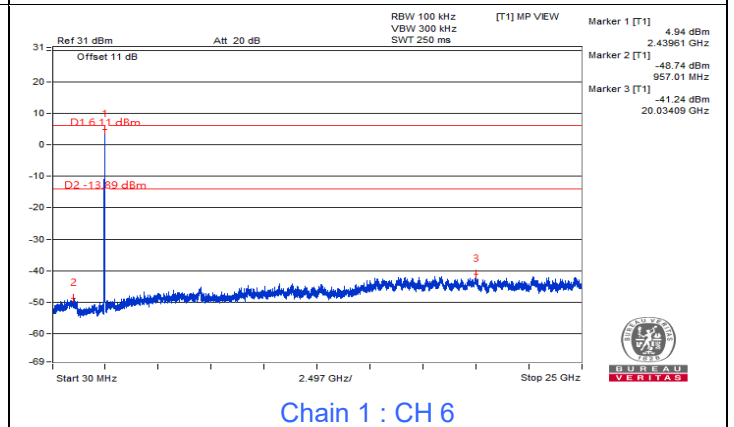
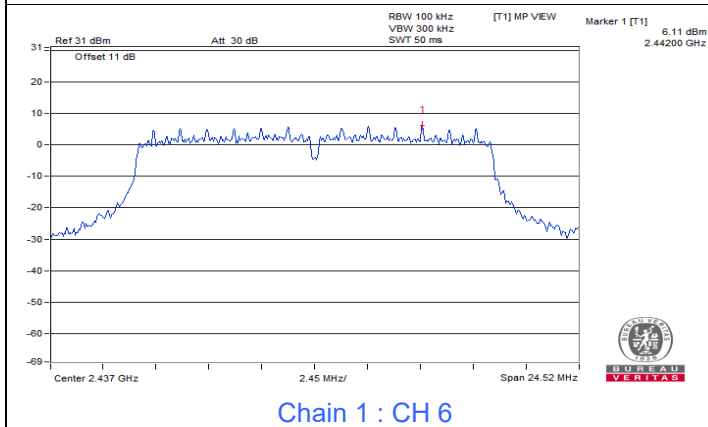
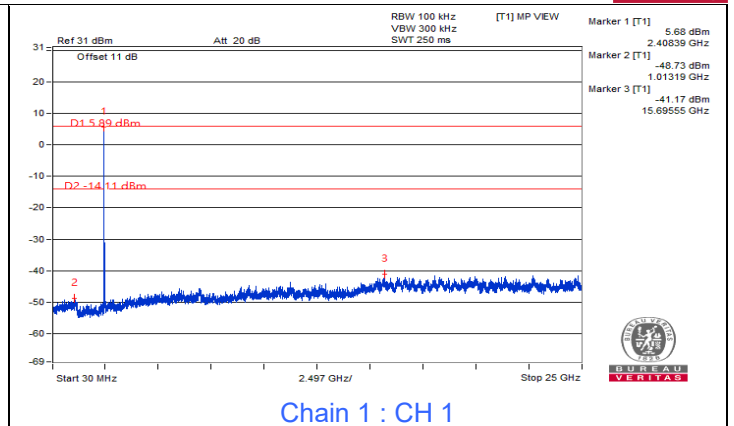
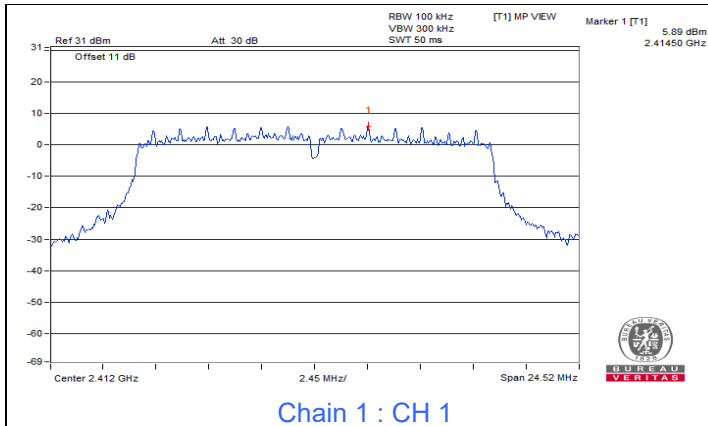
802.11b



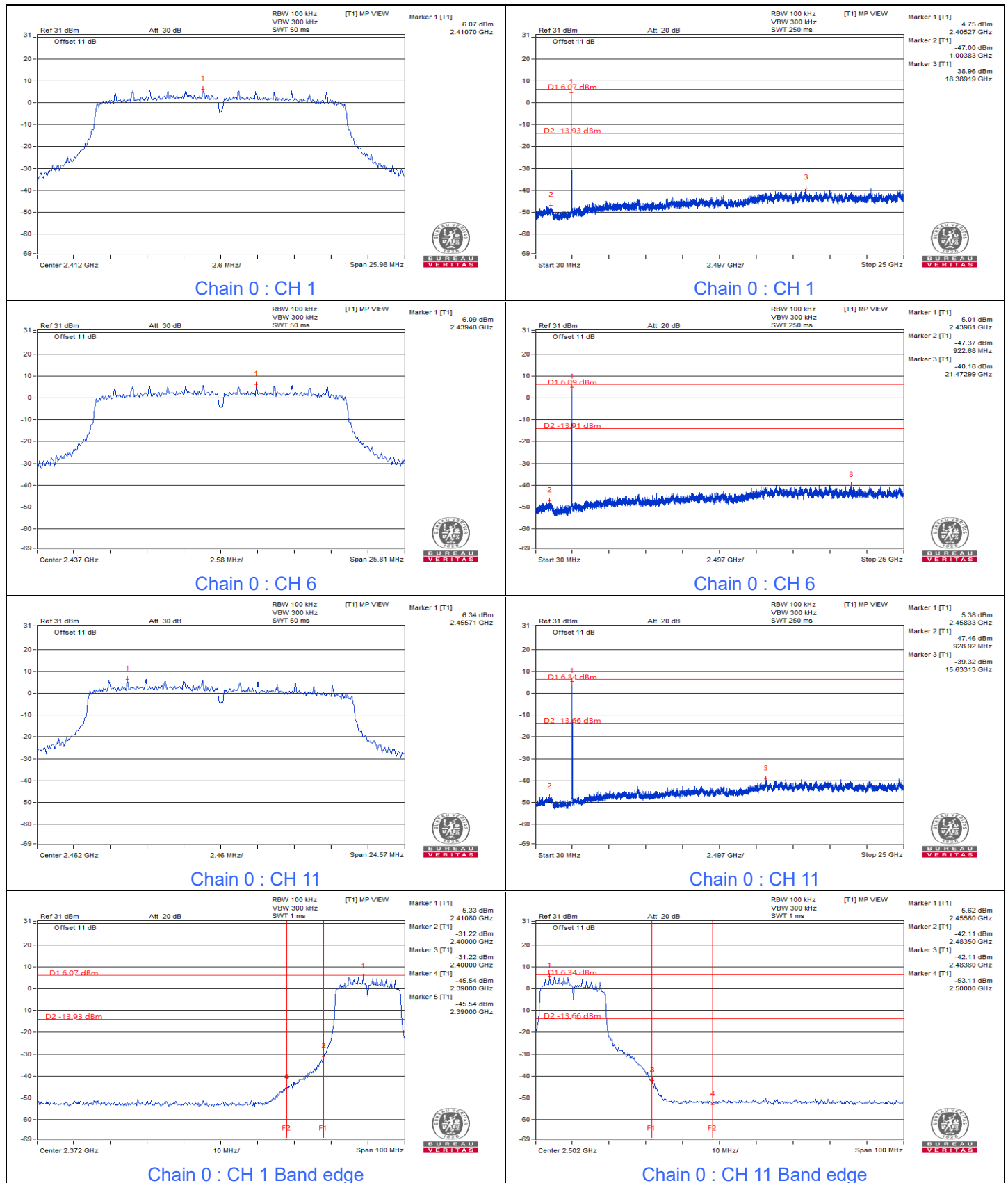


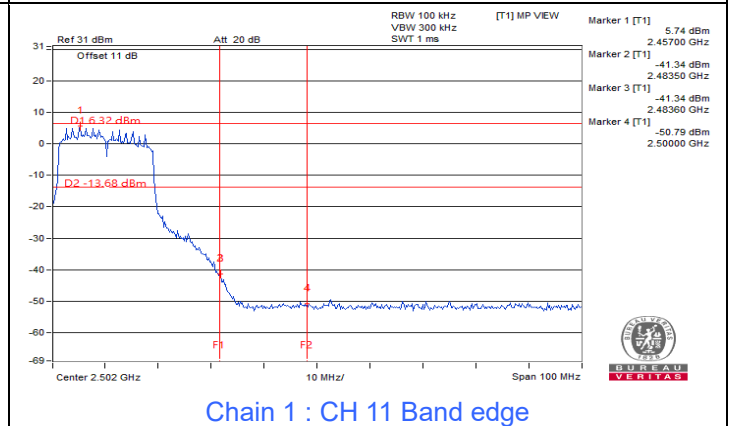
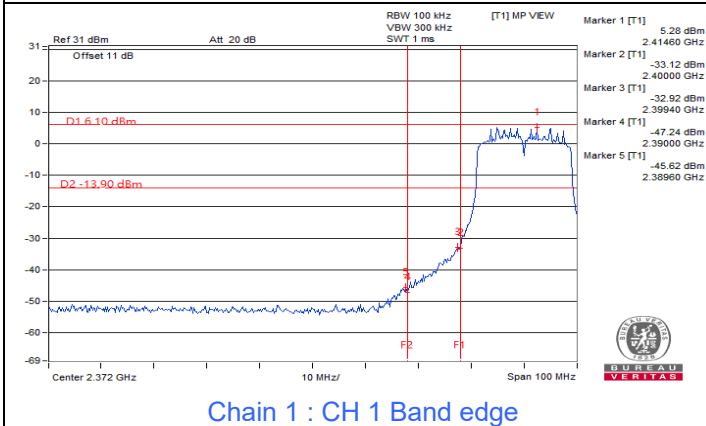
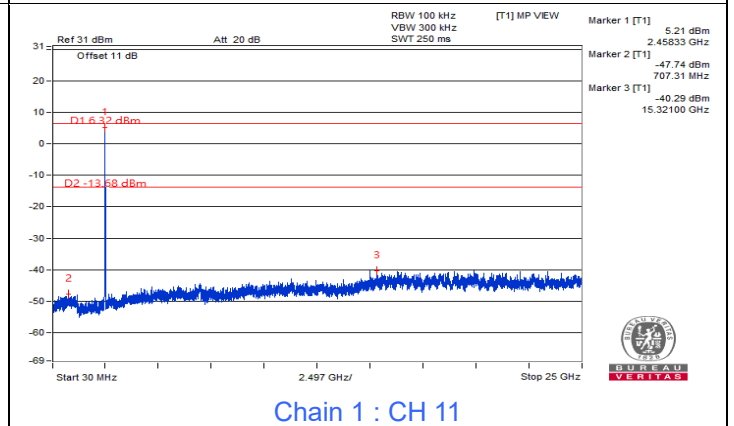
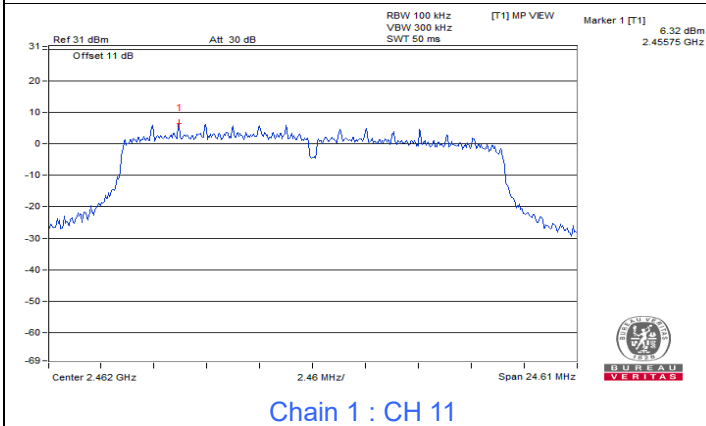
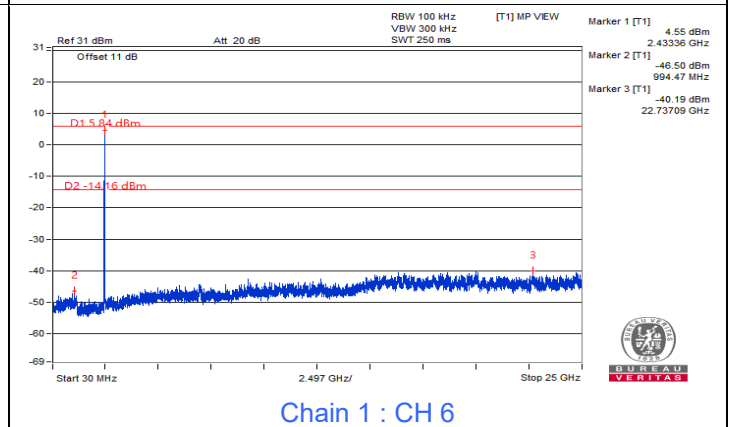
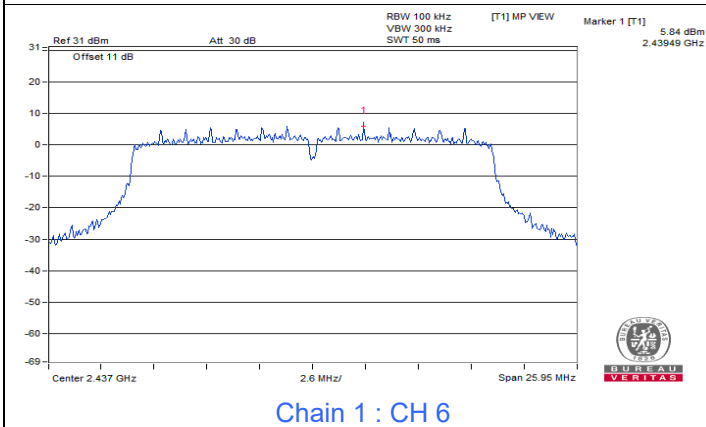
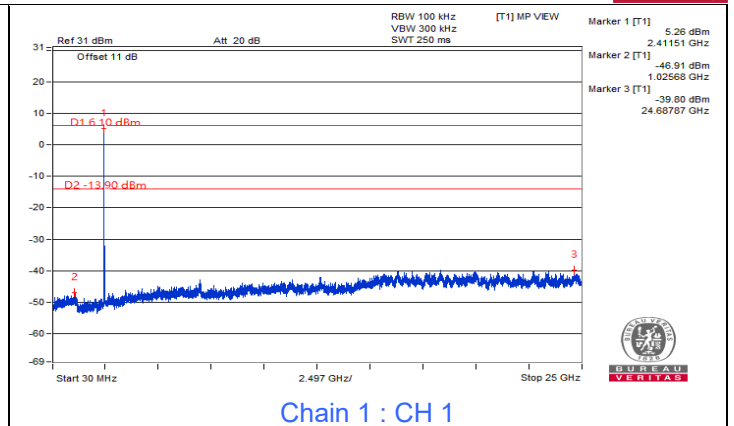
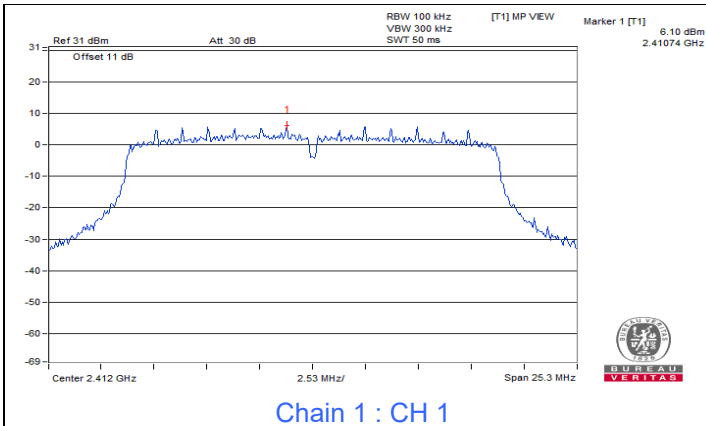
802.11g



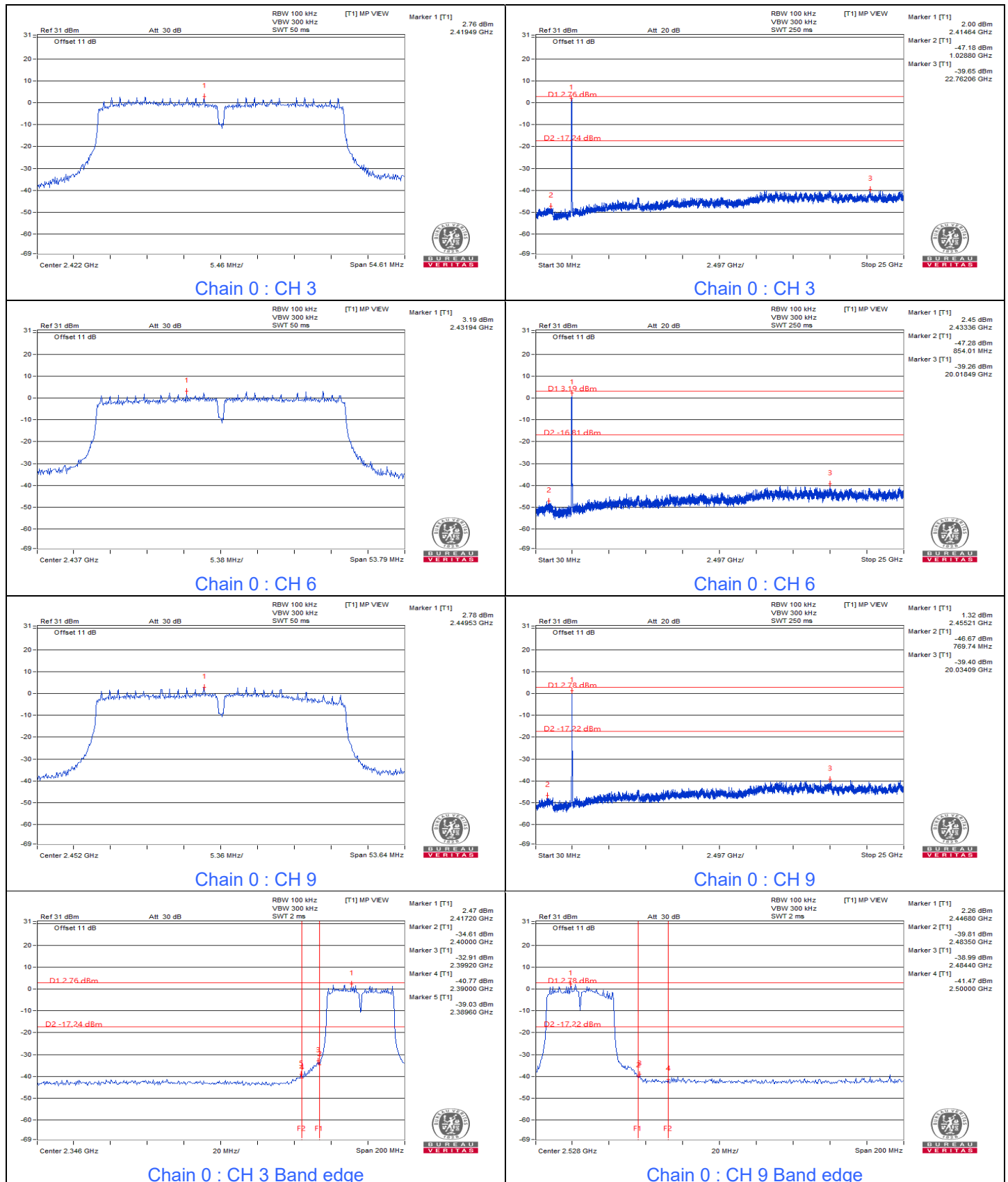


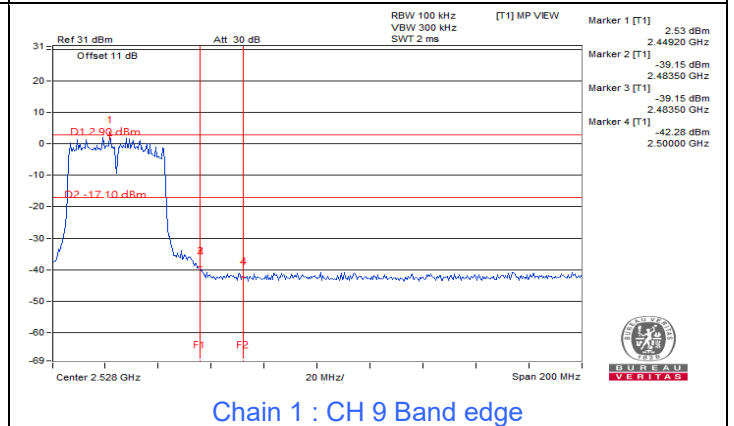
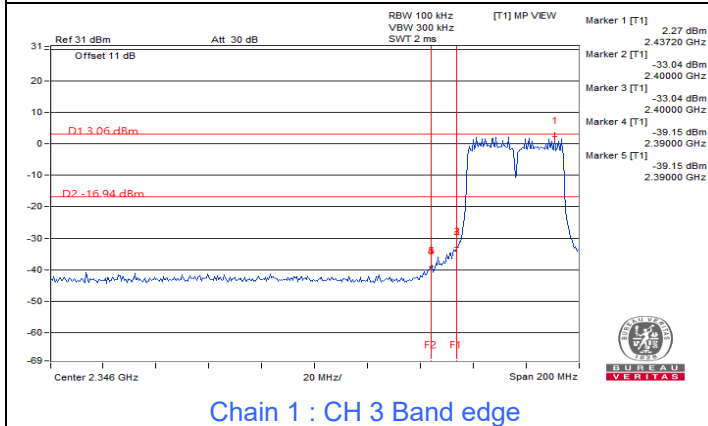
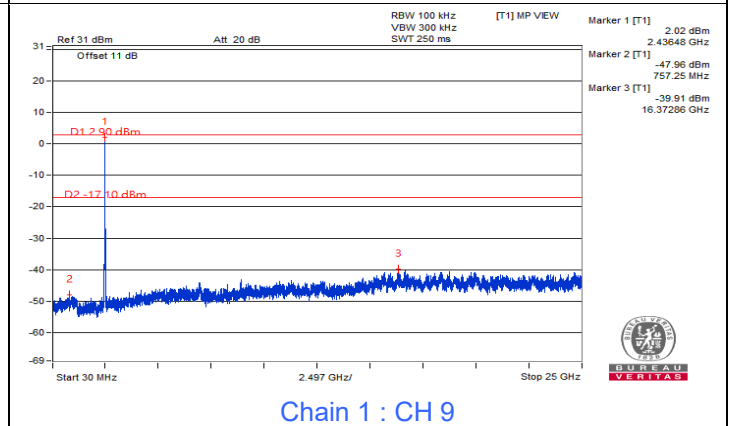
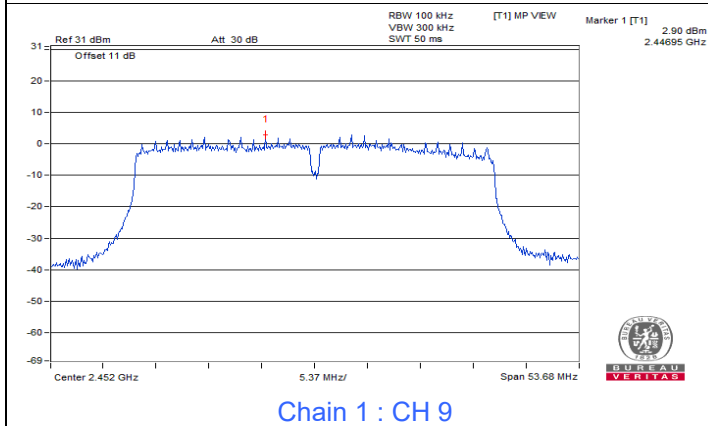
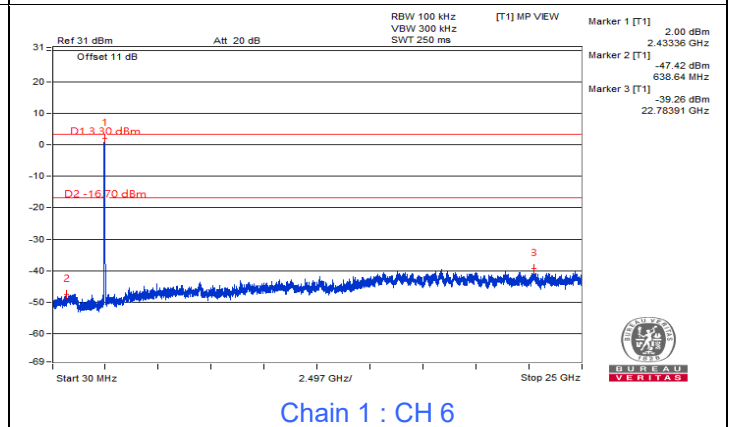
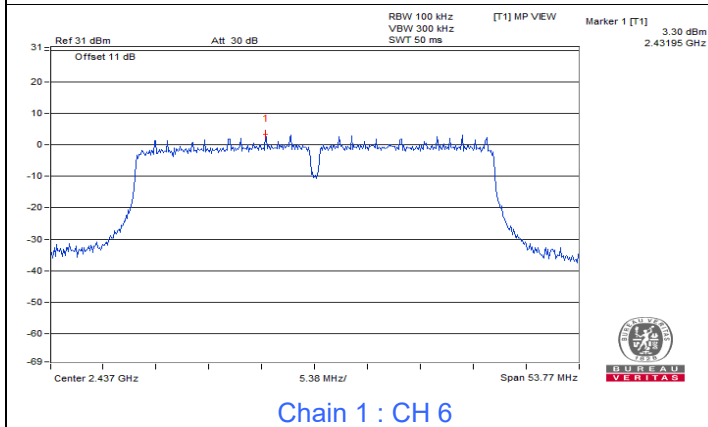
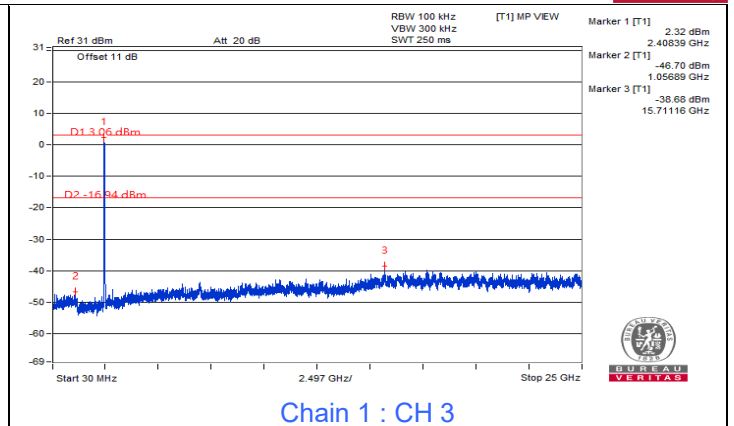
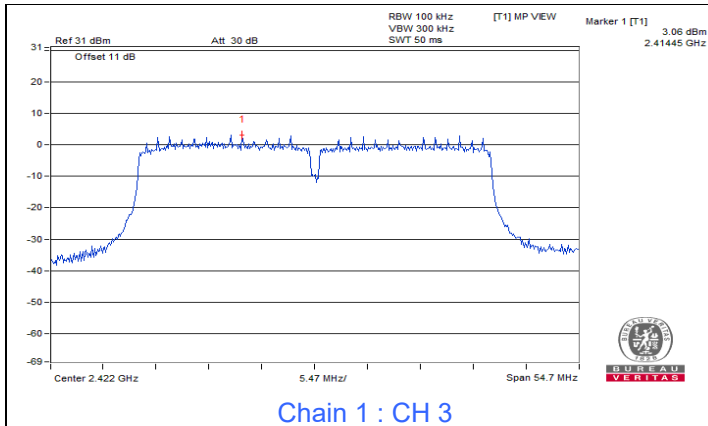
802.11n (HT20)



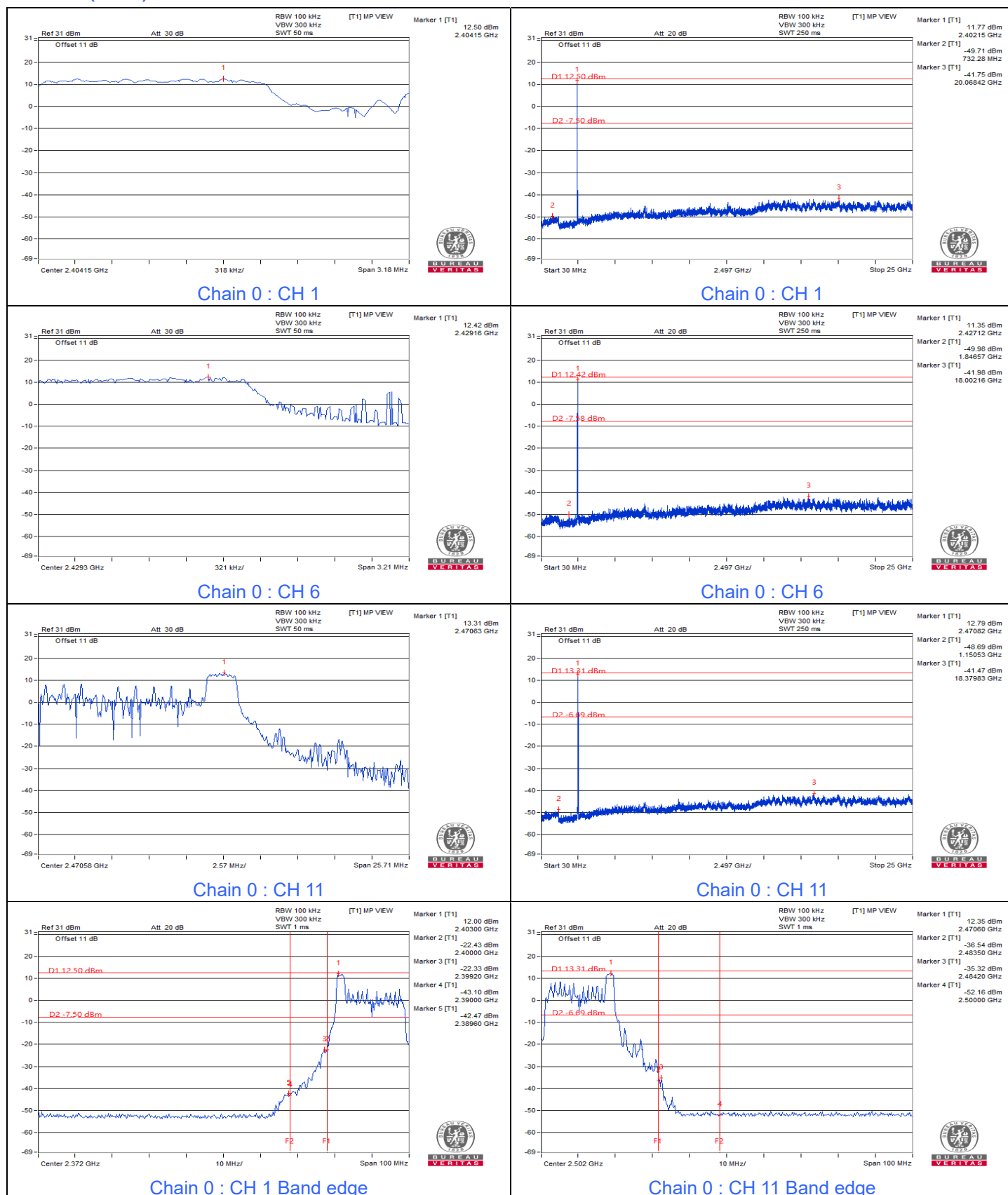


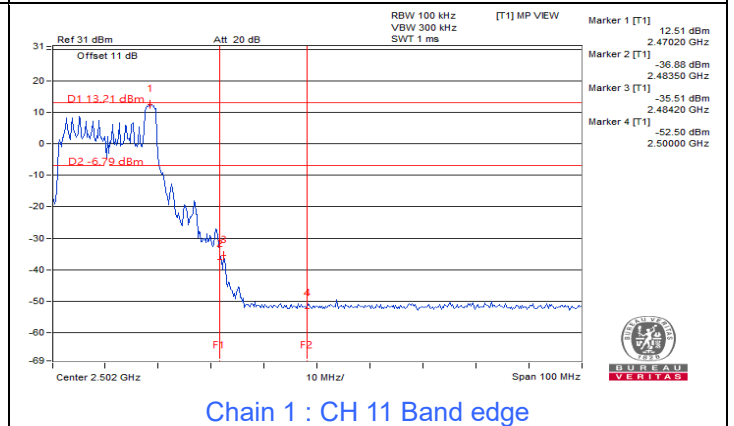
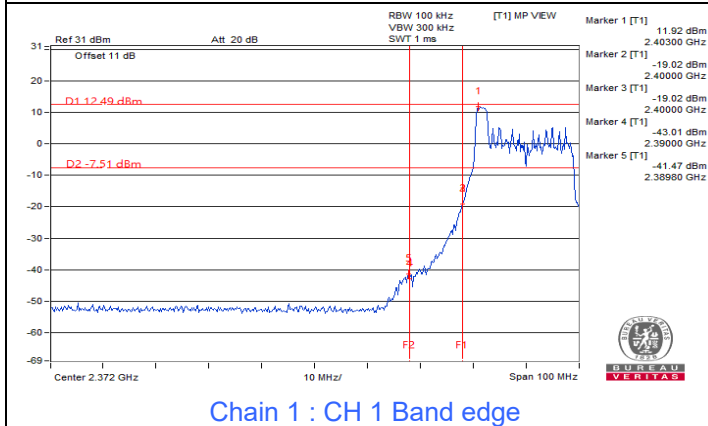
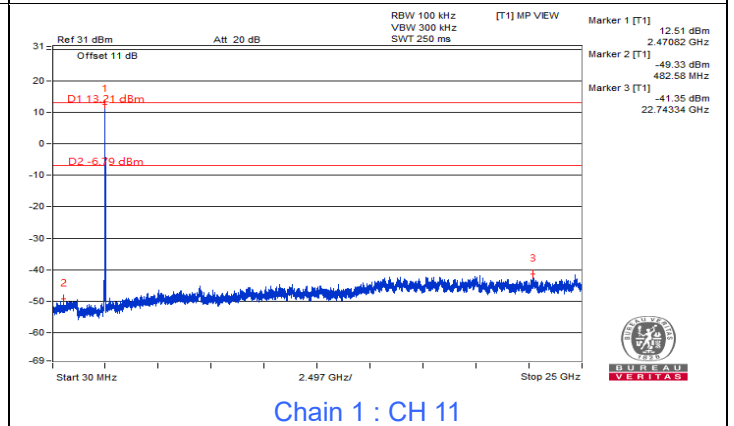
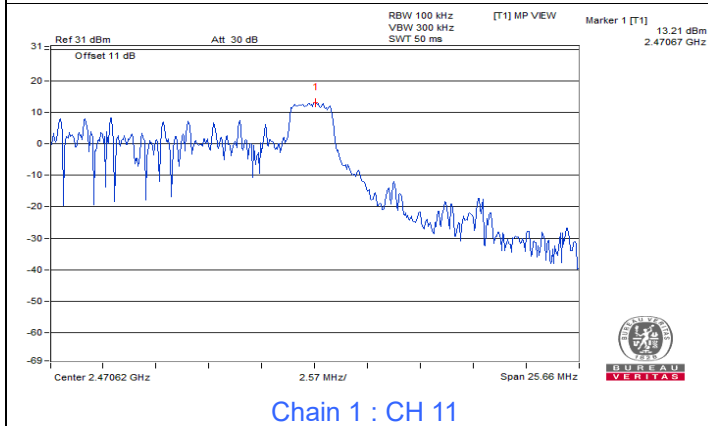
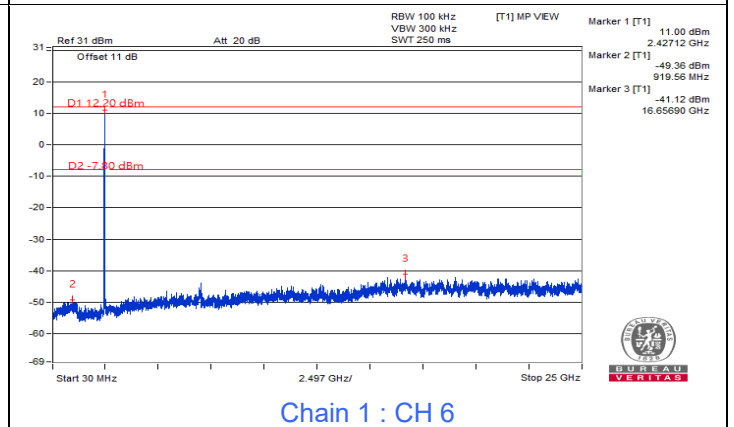
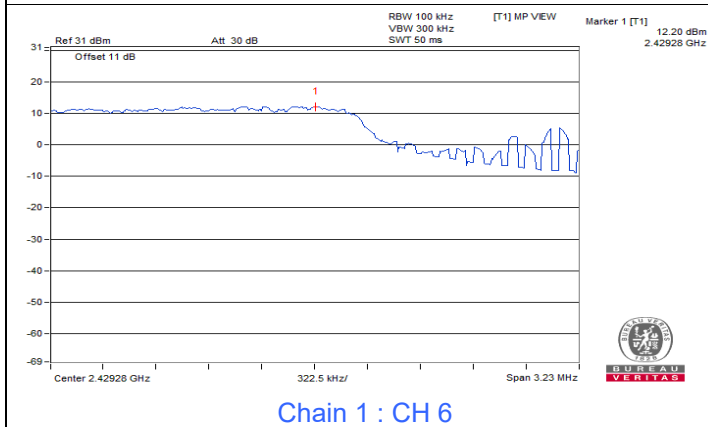
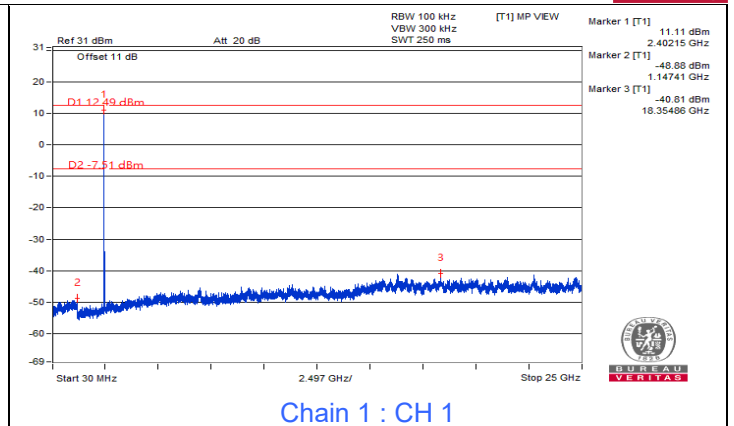
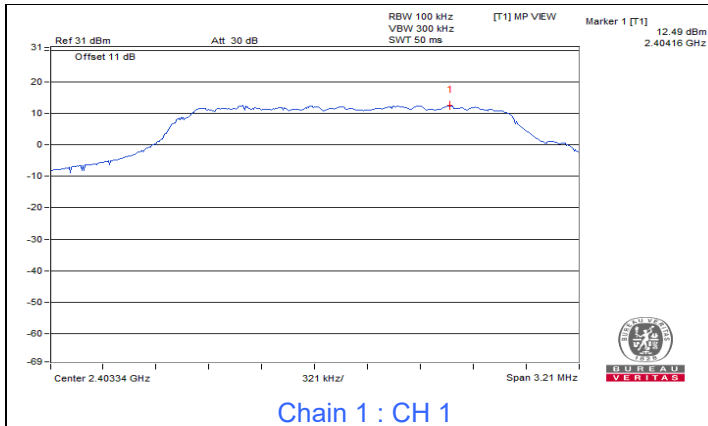
802.11n (HT40)





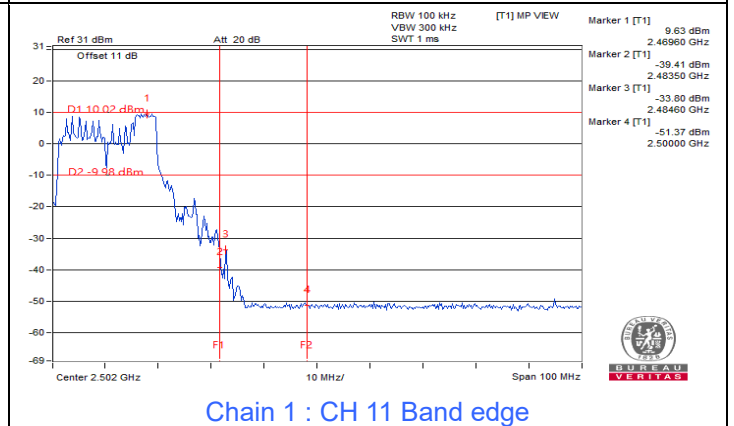
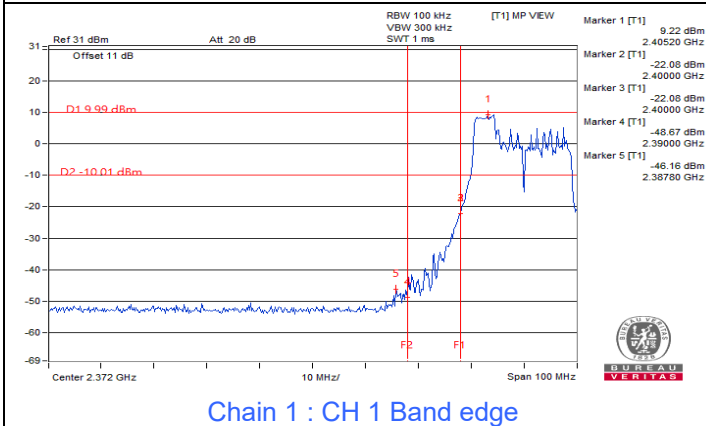
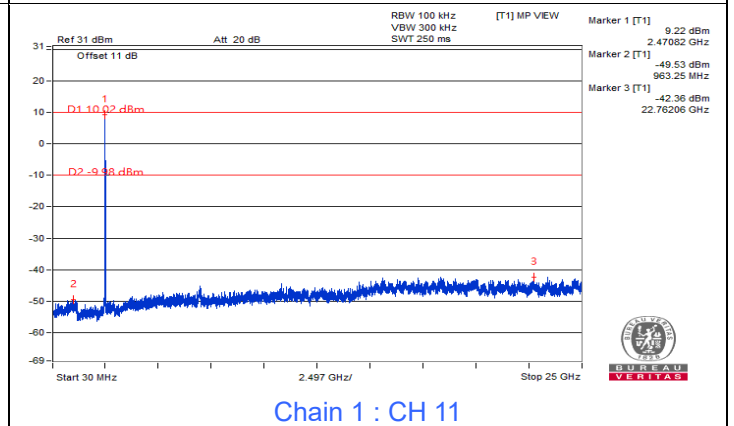
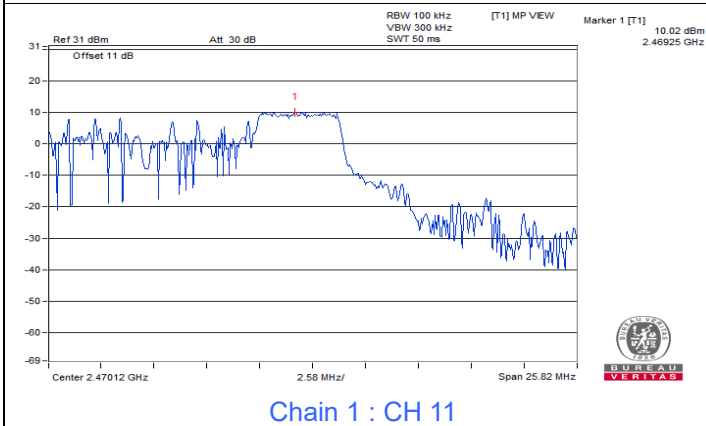
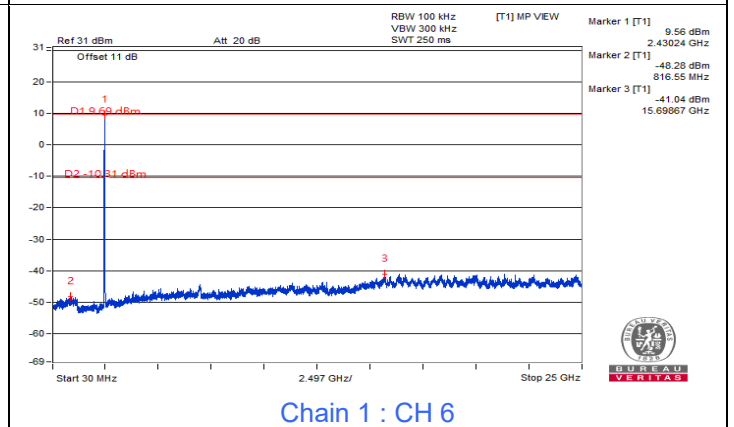
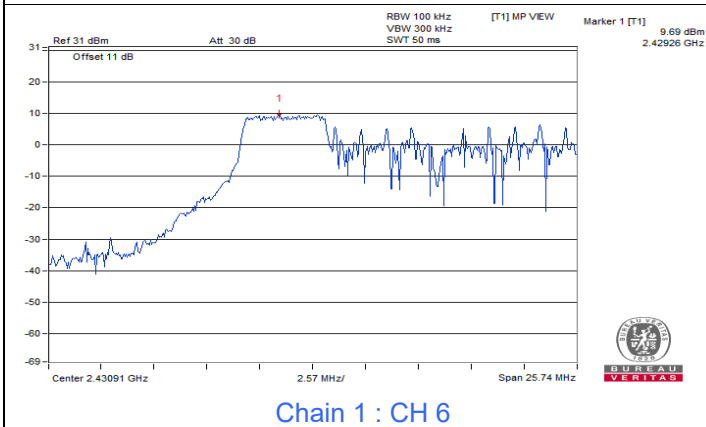
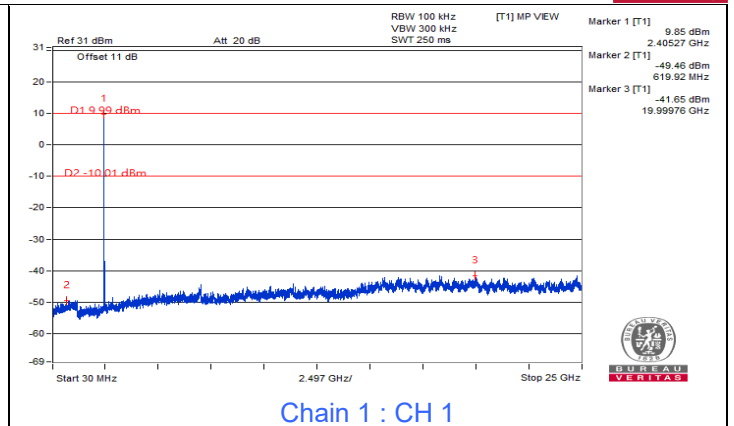
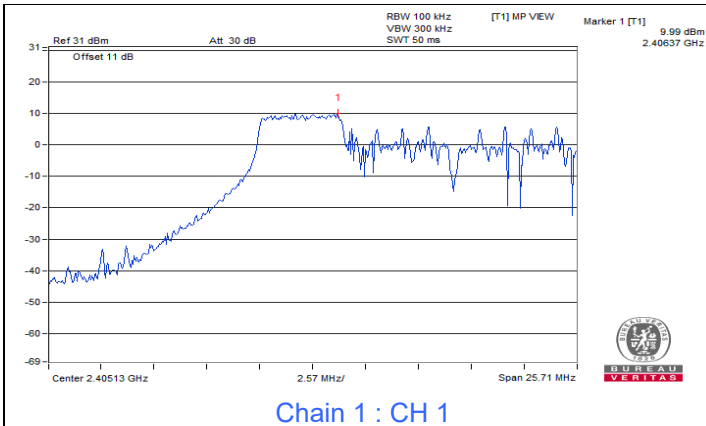
802.11ax (HE20) 26-tone RU



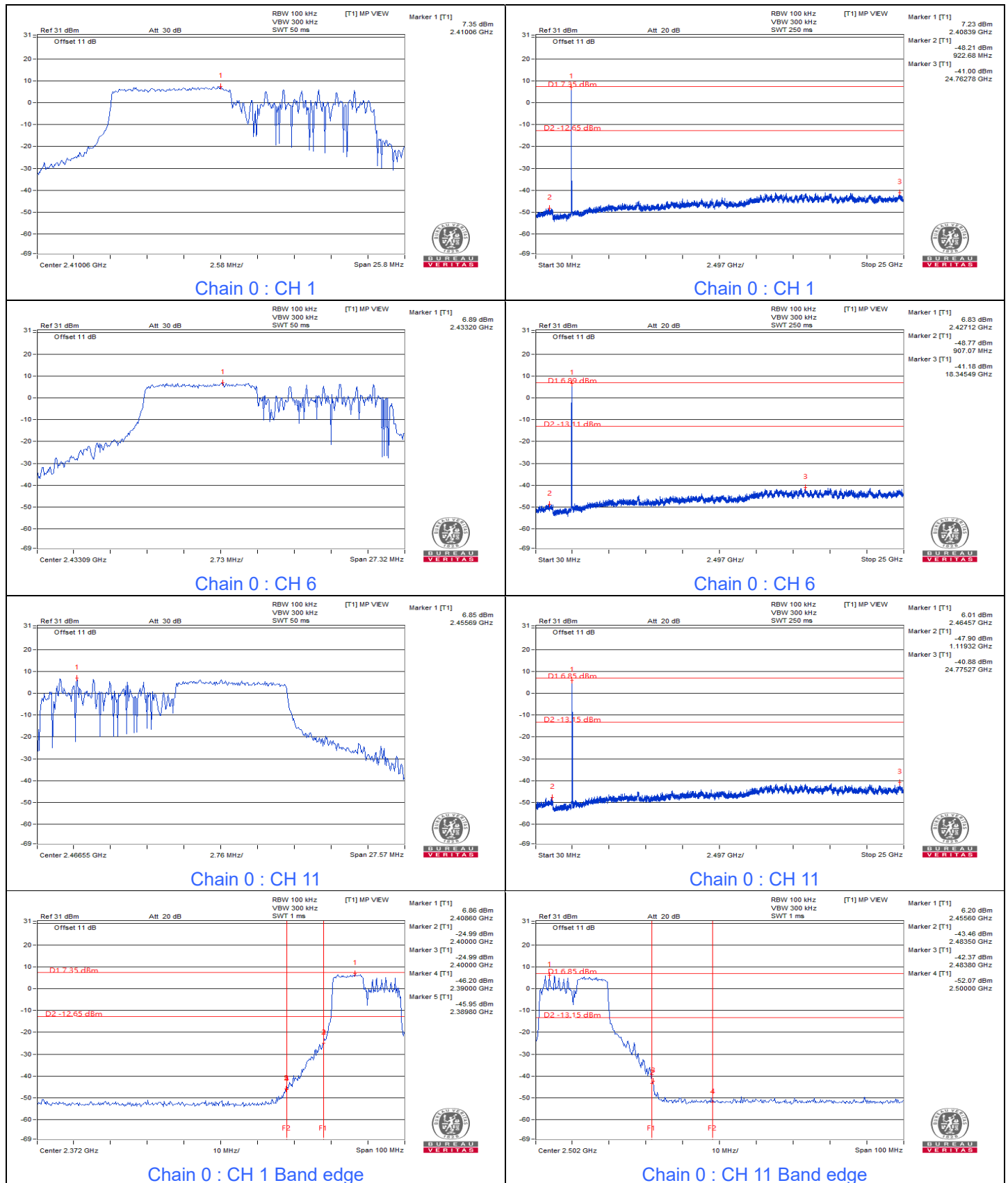


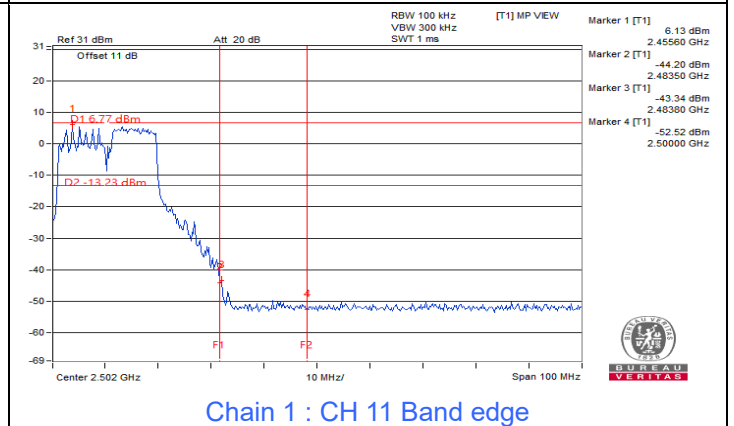
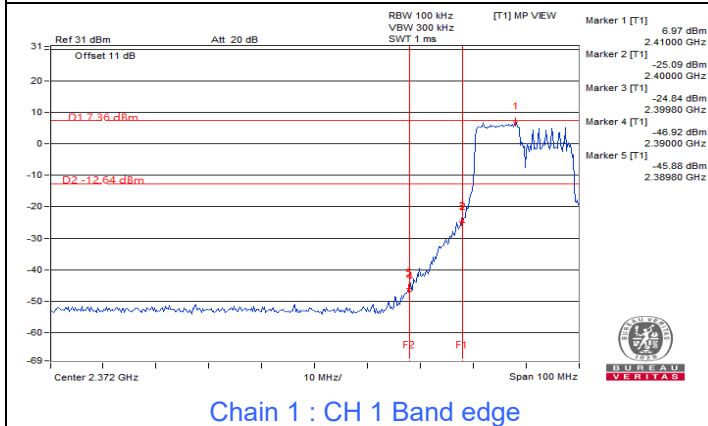
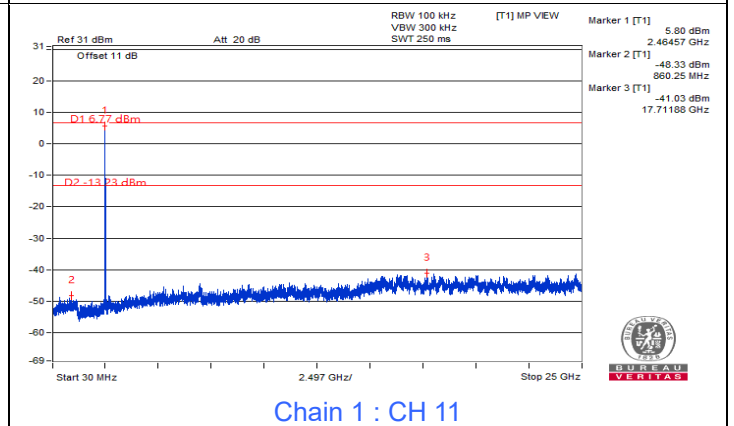
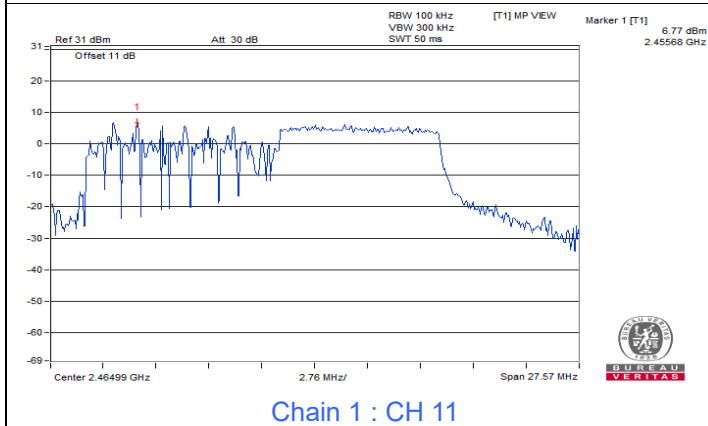
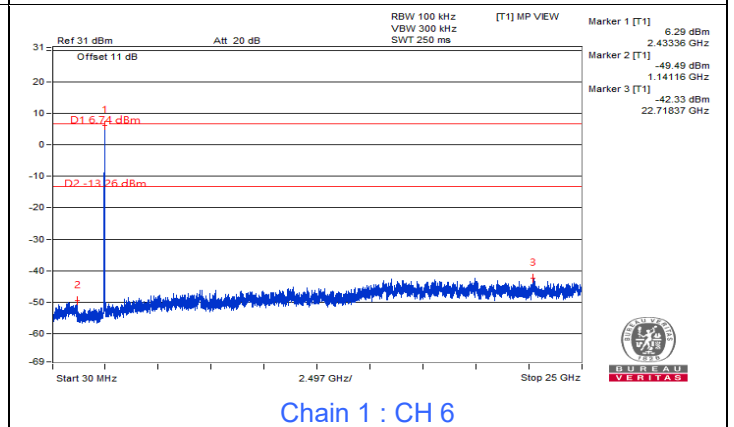
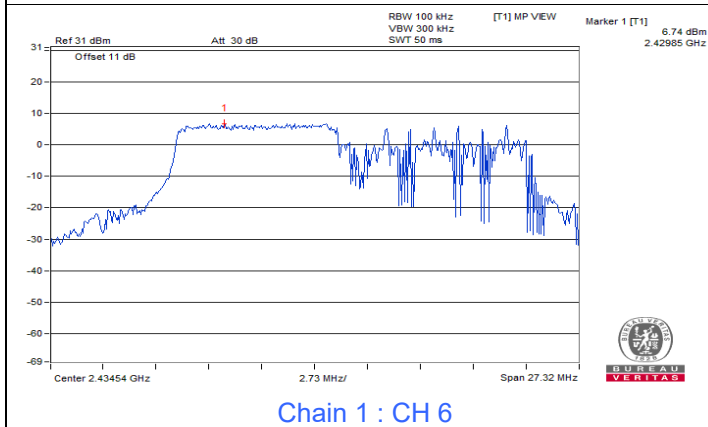
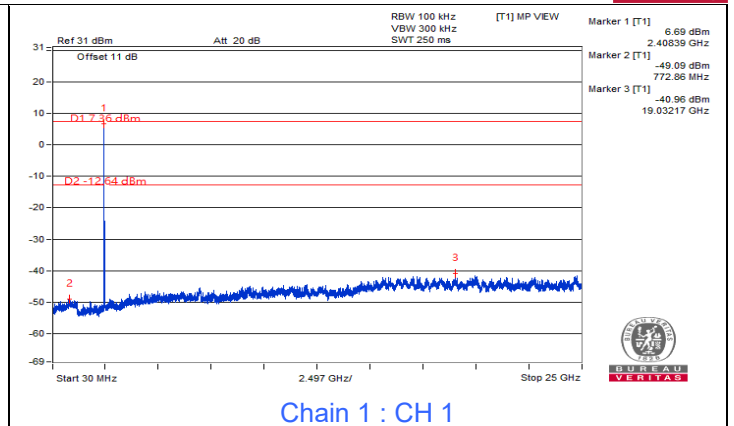
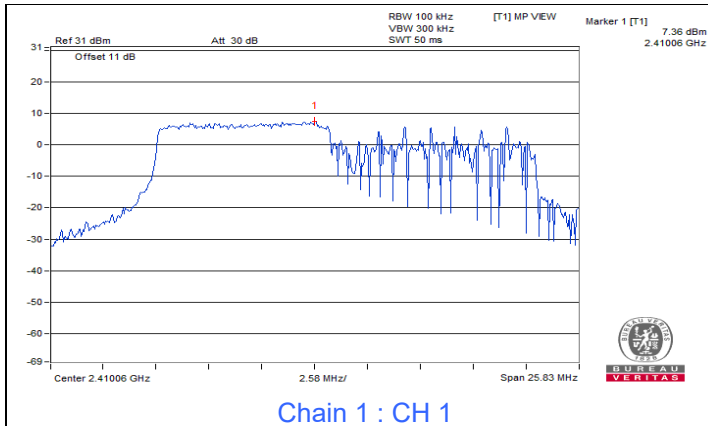
802.11ax (HE20) 52-tone RU





802.11ax (HE20) 106-tone RU





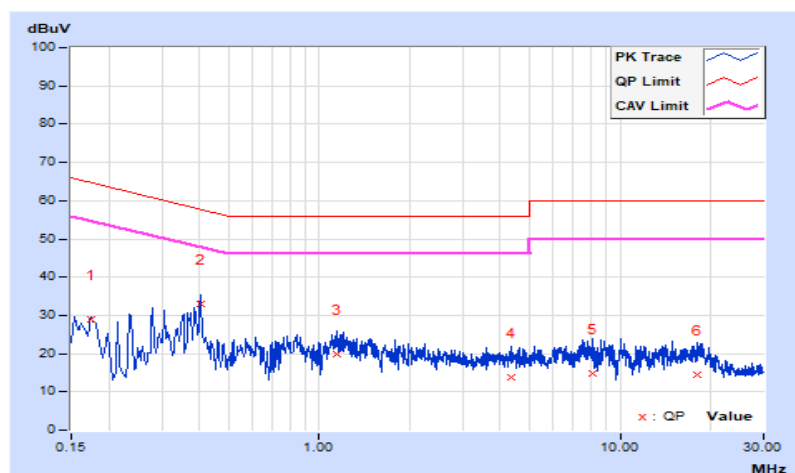
7.5 AC Power Conducted Emissions

RF Mode	802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	Vincent Chen		

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	0.17400	10.38	18.42	15.34	28.80	25.72	64.77	54.77	-35.97	-29.05
2	0.40200	10.49	22.61	12.44	33.10	22.93	57.81	47.81	-24.71	-24.88
3	1.15000	10.54	9.44	2.47	19.98	13.01	56.00	46.00	-36.02	-32.99
4	4.33800	10.66	3.15	1.84	13.81	12.50	56.00	46.00	-42.19	-33.50
5	8.15000	10.71	4.25	2.03	14.96	12.74	60.00	50.00	-45.04	-37.26
6	18.06200	10.91	3.70	2.35	14.61	13.26	60.00	50.00	-45.39	-36.74

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

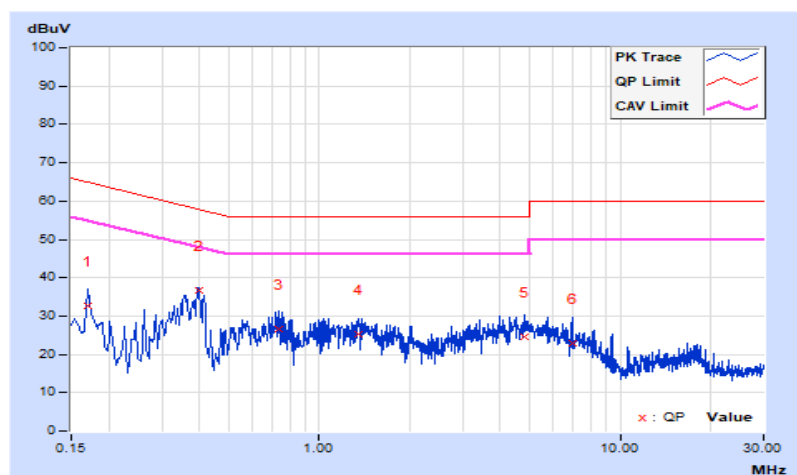


RF Mode	802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	Vincent Chen		

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	0.17000	10.42	22.27	12.00	32.69	22.42	64.96	54.96	-32.27	-32.54
2	0.39800	10.53	26.27	16.91	36.80	27.44	57.90	47.90	-21.10	-20.46
3	0.73800	10.55	16.15	6.20	26.70	16.75	56.00	46.00	-29.30	-29.25
4	1.35800	10.57	14.52	5.27	25.09	15.84	56.00	46.00	-30.91	-30.16
5	4.83000	10.75	13.87	4.62	24.62	15.37	56.00	46.00	-31.38	-30.63
6	6.92600	10.79	12.18	3.39	22.97	14.18	60.00	50.00	-37.03	-35.82

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



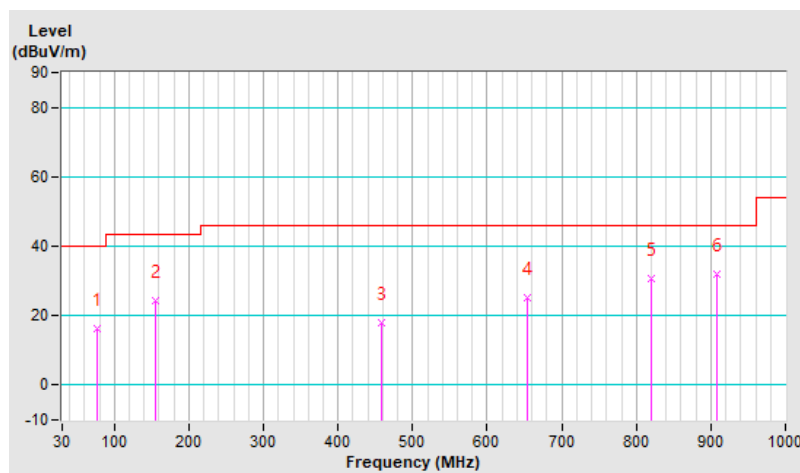
7.6 Unwanted Emissions below 1 GHz

RF Mode	802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 78% RH
Tested By	vincent chen		

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	76.56	16.1 QP	40.0	-23.9	2.00 H	18	32.5	-16.4
2	156.10	24.3 QP	43.5	-19.2	1.50 H	28	36.9	-12.6
3	457.77	18.0 QP	46.0	-28.0	1.00 H	18	25.9	-7.9
4	653.71	25.0 QP	46.0	-21.0	2.00 H	18	28.9	-3.9
5	819.58	30.8 QP	46.0	-15.2	1.00 H	322	31.7	-0.9
6	908.82	32.0 QP	46.0	-14.0	1.50 H	168	32.6	-0.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

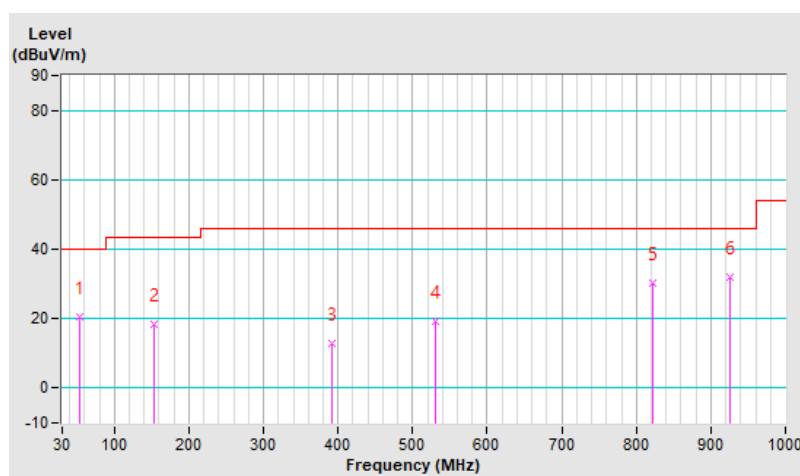


RF Mode	802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 78% RH
Tested By	vincent chen		

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	53.28	20.6 QP	40.0	-19.4	1.00 V	18	33.1	-12.5
2	154.16	18.2 QP	43.5	-25.3	2.00 V	107	30.8	-12.6
3	391.81	12.8 QP	46.0	-33.2	2.00 V	259	22.6	-9.8
4	531.49	19.1 QP	46.0	-26.9	2.00 V	264	25.3	-6.2
5	821.52	30.4 QP	46.0	-15.6	1.00 V	320	31.3	-0.9
6	925.31	31.9 QP	46.0	-14.1	1.50 V	180	32.3	-0.4

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 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.7 Unwanted Emissions above 1 GHz

RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.4 PK	74.0	-12.6	1.09 H	307	26.6	34.8
2	2390.00	48.3 AV	54.0	-5.7	1.09 H	307	13.5	34.8
3	*2412.00	107.0 PK			1.09 H	307	72.2	34.8
4	*2412.00	103.9 AV			1.09 H	307	69.1	34.8
5	4824.00	55.1 PK	74.0	-18.9	1.02 H	142	45.8	9.3
6	4824.00	41.7 AV	54.0	-12.3	1.02 H	142	32.4	9.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.7 PK	74.0	-12.3	2.65 V	134	26.9	34.8
2	2390.00	48.6 AV	54.0	-5.4	2.65 V	134	13.8	34.8
3	*2412.00	111.1 PK			2.65 V	135	76.3	34.8
4	*2412.00	107.7 AV			2.65 V	135	72.9	34.8
5	4824.00	55.9 PK	74.0	-18.1	1.00 V	86	46.6	9.3
6	4824.00	42.4 AV	54.0	-11.6	1.00 V	86	33.1	9.3

Remarks:

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

RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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			1.00 H	143	72.6	34.8
2	*2437.00	104.8 AV			1.00 H	143	70.0	34.8
3	4874.00	55.4 PK	74.0	-18.6	1.06 H	151	45.9	9.5
4	4874.00	42.1 AV	54.0	-11.9	1.06 H	151	32.6	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.0 PK			1.31 V	244	75.2	34.8
2	*2437.00	106.6 AV			1.31 V	244	71.8	34.8
3	4874.00	56.1 PK	74.0	-17.9	1.05 V	92	46.6	9.5
4	4874.00	42.6 AV	54.0	-11.4	1.05 V	92	33.1	9.5

Remarks:

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

RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	108.0 PK			1.00 H	316	73.0	35.0
2	*2462.00	104.9 AV			1.00 H	316	69.9	35.0
3	2483.50	61.7 PK	74.0	-12.3	1.00 H	316	26.7	35.0
4	2483.50	48.1 AV	54.0	-5.9	1.00 H	316	13.1	35.0
5	4924.00	54.8 PK	74.0	-19.2	1.12 H	139	45.3	9.5
6	4924.00	42.1 AV	54.0	-11.9	1.12 H	139	32.6	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.6 PK			1.53 V	243	75.6	35.0
2	*2462.00	107.5 AV			1.53 V	243	72.5	35.0
3	2483.50	62.5 PK	74.0	-11.5	1.53 V	243	27.5	35.0
4	2483.50	48.7 AV	54.0	-5.3	1.53 V	243	13.7	35.0
5	4924.00	56.1 PK	74.0	-17.9	1.06 V	100	46.6	9.5
6	4924.00	43.0 AV	54.0	-11.0	1.06 V	100	33.5	9.5

Remarks:

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

RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.9 PK	74.0	-7.1	3.09 H	322	32.1	34.8
2	2390.00	51.0 AV	54.0	-3.0	3.09 H	322	16.2	34.8
3	*2412.00	109.3 PK			3.09 H	322	74.5	34.8
4	*2412.00	98.5 AV			3.09 H	322	63.7	34.8
5	4824.00	54.5 PK	74.0	-19.5	1.10 H	154	45.2	9.3
6	4824.00	41.4 AV	54.0	-12.6	1.10 H	154	32.1	9.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.7 PK	74.0	-5.3	2.01 V	274	33.9	34.8
2	2390.00	53.4 AV	54.0	-0.6	2.01 V	274	18.6	34.8
3	*2412.00	111.0 PK			2.01 V	274	76.2	34.8
4	*2412.00	99.9 AV			2.01 V	274	65.1	34.8
5	4824.00	55.9 PK	74.0	-18.1	1.15 V	103	46.6	9.3
6	4824.00	42.5 AV	54.0	-11.5	1.15 V	103	33.2	9.3

Remarks:

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

RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	109.8 PK			1.00 H	315	75.0	34.8
2	*2437.00	98.7 AV			1.00 H	315	63.9	34.8
3	4874.00	56.0 PK	74.0	-18.0	1.13 H	152	46.5	9.5
4	4874.00	41.9 AV	54.0	-12.1	1.13 H	152	32.4	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	112.0 PK			2.46 V	268	77.2	34.8
2	*2437.00	101.2 AV			2.46 V	268	66.4	34.8
3	4874.00	57.0 PK	74.0	-17.0	1.08 V	102	47.5	9.5
4	4874.00	42.9 AV	54.0	-11.1	1.08 V	102	33.4	9.5

Remarks:

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

RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.4 PK			1.16 H	309	75.4	35.0
2	*2462.00	99.2 AV			1.16 H	309	64.2	35.0
3	2483.50	67.2 PK	74.0	-6.8	1.16 H	309	32.2	35.0
4	2483.50	51.9 AV	54.0	-2.1	1.16 H	309	16.9	35.0
5	4924.00	55.2 PK	74.0	-18.8	1.15 H	139	45.7	9.5
6	4924.00	41.6 AV	54.0	-12.4	1.15 H	139	32.1	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.4 PK			2.17 V	271	76.4	35.0
2	*2462.00	100.7 AV			2.17 V	271	65.7	35.0
3	2483.50	69.1 PK	74.0	-4.9	2.17 V	271	34.1	35.0
4	2483.50	53.7 AV	54.0	-0.3	2.17 V	271	18.7	35.0
5	4924.00	55.8 PK	74.0	-18.2	1.11 V	88	46.3	9.5
6	4924.00	43.0 AV	54.0	-11.0	1.11 V	88	33.5	9.5

Remarks:

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

RF Mode	802.11n (HT20)	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.9 PK	74.0	-7.1	2.57 H	42	32.1	34.8
2	2390.00	50.7 AV	54.0	-3.3	2.57 H	42	15.9	34.8
3	*2412.00	109.4 PK			2.57 H	42	74.6	34.8
4	*2412.00	97.2 AV			2.57 H	42	62.4	34.8
5	4824.00	54.6 PK	74.0	-19.4	1.22 H	136	45.3	9.3
6	4824.00	41.5 AV	54.0	-12.5	1.22 H	136	32.2	9.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	71.2 PK	74.0	-2.8	1.00 V	98	36.4	34.8
2	2390.00	53.3 AV	54.0	-0.7	1.00 V	98	18.5	34.8
3	*2412.00	111.9 PK			1.00 V	98	77.1	34.8
4	*2412.00	98.9 AV			1.00 V	98	64.1	34.8
5	4824.00	55.7 PK	74.0	-18.3	1.36 V	110	46.4	9.3
6	4824.00	42.4 AV	54.0	-11.6	1.36 V	110	33.1	9.3

Remarks:

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

RF Mode	802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	112.2 PK			1.85 H	180	77.4	34.8
2	*2437.00	98.1 AV			1.85 H	180	63.3	34.8
3	4874.00	54.9 PK	74.0	-19.1	1.21 H	144	45.4	9.5
4	4874.00	42.0 AV	54.0	-12.0	1.21 H	144	32.5	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	111.3 PK			1.00 V	97	76.5	34.8
2	*2437.00	99.5 AV			1.00 V	97	64.7	34.8
3	4874.00	46.0 PK	74.0	-28.0	1.11 V	105	36.5	9.5
4	4874.00	42.9 AV	54.0	-11.1	1.11 V	105	33.4	9.5

Remarks:

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

RF Mode	802.11n (HT20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.3 PK			2.41 H	41	74.3	35.0
2	*2462.00	97.2 AV			2.41 H	41	62.2	35.0
3	2483.50	68.2 PK	74.0	-5.8	2.41 H	41	33.2	35.0
4	2483.50	50.7 AV	54.0	-3.3	2.41 H	41	15.7	35.0
5	4924.00	55.1 PK	74.0	-18.9	1.11 H	146	45.6	9.5
6	4924.00	31.0 AV	54.0	-23.0	1.11 H	146	21.5	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.2 PK			1.00 V	98	76.2	35.0
2	*2462.00	99.0 AV			1.00 V	98	64.0	35.0
3	2483.50	68.5 PK	74.0	-5.5	1.00 V	98	33.5	35.0
4	2483.50	51.5 AV	54.0	-2.5	1.00 V	98	16.5	35.0
5	4924.00	56.0 PK	74.0	-18.0	1.07 V	89	46.5	9.5
6	4924.00	42.9 AV	54.0	-11.1	1.07 V	89	33.4	9.5

Remarks:

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

RF Mode	802.11n (HT40)	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	71.2 PK	74.0	-2.8	1.19 H	123	36.4	34.8
2	2390.00	53.4 AV	54.0	-0.6	1.19 H	123	18.6	34.8
3	*2422.00	107.5 PK			1.19 H	123	72.7	34.8
4	*2422.00	94.8 AV			1.19 H	123	60.0	34.8
5	4844.00	54.9 PK	74.0	-19.1	1.18 H	154	45.6	9.3
6	4844.00	41.8 AV	54.0	-12.2	1.18 H	154	32.5	9.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	73.4 PK	74.0	-0.6	1.00 V	98	38.6	34.8
2	2390.00	53.7 AV	54.0	-0.3	1.00 V	98	18.9	34.8
3	*2422.00	108.1 PK			1.00 V	98	73.3	34.8
4	*2422.00	96.0 AV			1.00 V	98	61.2	34.8
5	4844.00	55.8 PK	74.0	-18.2	1.16 V	109	46.5	9.3
6	4844.00	42.5 AV	54.0	-11.5	1.16 V	109	33.2	9.3

Remarks:

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

RF Mode	802.11n (HT40)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	108.1 PK			2.65 H	49	73.3	34.8
2	*2437.00	95.1 AV			2.65 H	49	60.3	34.8
3	4874.00	54.8 PK	74.0	-19.2	1.06 H	142	45.3	9.5
4	4874.00	41.7 AV	54.0	-12.3	1.06 H	142	32.2	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.5 PK			1.00 V	100	75.7	34.8
2	*2437.00	96.6 AV			1.00 V	100	61.8	34.8
3	4874.00	55.9 PK	74.0	-18.1	1.20 V	107	46.4	9.5
4	4874.00	42.7 AV	54.0	-11.3	1.20 V	107	33.2	9.5

Remarks:

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

RF Mode	802.11n (HT40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	107.7 PK			1.17 H	126	72.6	35.1
2	*2452.00	95.5 AV			1.17 H	126	60.4	35.1
3	2483.50	70.1 PK	74.0	-3.9	1.17 H	126	35.1	35.0
4	2483.50	52.9 AV	54.0	-1.1	1.17 H	126	17.9	35.0
5	4904.00	55.0 PK	74.0	-19.0	1.12 H	148	45.5	9.5
6	4904.00	41.9 AV	54.0	-12.1	1.12 H	148	32.4	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	109.4 PK			1.00 V	101	74.3	35.1
2	*2452.00	97.3 AV			1.00 V	101	62.2	35.1
3	2483.50	72.6 PK	74.0	-1.4	1.00 V	101	37.6	35.0
4	2483.50	53.4 AV	54.0	-0.6	1.00 V	101	18.4	35.0
5	4904.00	55.8 PK	74.0	-18.2	1.15 V	99	46.3	9.5
6	4904.00	42.6 AV	54.0	-11.4	1.15 V	99	33.1	9.5

Remarks:

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

Partial RU

RF Mode	802.11ax (HE20) 26-tone RU	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	71.5 PK	74.0	-2.5	1.50 H	122	36.7	34.8
2	2390.00	46.9 AV	54.0	-7.1	1.50 H	122	12.1	34.8
3	*2412.00	116.2 PK			1.50 H	122	81.4	34.8
4	*2412.00	106.2 AV			1.50 H	122	71.4	34.8
5	4824.00	54.9 PK	74.0	-19.1	1.11 H	154	45.6	9.3
6	4824.00	41.8 AV	54.0	-12.2	1.11 H	154	32.5	9.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	69.4 PK	74.0	-4.6	1.32 V	244	34.6	34.8
2	2390.00	47.0 AV	54.0	-7.0	1.32 V	244	12.2	34.8
3	*2412.00	117.2 PK			1.32 V	244	82.4	34.8
4	*2412.00	106.6 AV			1.32 V	244	71.8	34.8
5	4824.00	55.8 PK	74.0	-18.2	1.41 V	105	46.5	9.3
6	4824.00	42.5 AV	54.0	-11.5	1.41 V	105	33.2	9.3

Remarks:

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

RF Mode	802.11ax (HE20) 26-tone RU	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	118.6 PK			1.04 H	124	83.8	34.8
2	*2437.00	108.4 AV			1.04 H	124	73.6	34.8
3	4874.00	55.1 PK	74.0	-18.9	1.15 H	157	45.6	9.5
4	4874.00	42.1 AV	54.0	-11.9	1.15 H	157	32.6	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	118.9 PK			1.10 V	244	84.1	34.8
2	*2437.00	108.8 AV			1.10 V	244	74.0	34.8
3	4874.00	56.2 PK	74.0	-17.8	1.00 V	112	46.7	9.5
4	4874.00	43.2 AV	54.0	-10.8	1.00 V	112	33.7	9.5

Remarks:

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

RF Mode	802.11ax (HE20) 26-tone RU	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	117.7 PK			2.25 H	192	82.7	35.0
2	*2462.00	107.5 AV			2.25 H	192	72.5	35.0
3	2483.50	69.1 PK	74.0	-4.9	2.25 H	192	34.1	35.0
4	2483.50	47.0 AV	54.0	-7.0	2.25 H	192	12.0	35.0
5	4924.00	55.1 PK	74.0	-18.9	1.03 H	151	45.6	9.5
6	4924.00	42.0 AV	54.0	-12.0	1.03 H	151	32.5	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	117.7 PK			1.18 V	243	82.7	35.0
2	*2462.00	107.3 AV			1.18 V	243	72.3	35.0
3	2483.50	71.7 PK	74.0	-2.3	1.18 V	243	36.7	35.0
4	2483.50	48.2 AV	54.0	-5.8	1.18 V	243	13.2	35.0
5	4924.00	56.2 PK	74.0	-17.8	1.12 V	99	46.7	9.5
6	4924.00	43.2 AV	54.0	-10.8	1.12 V	99	33.7	9.5

Remarks:

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

RF Mode	802.11ax (HE20) 52-tone RU	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	71.9 PK	74.0	-2.1	1.88 H	182	37.1	34.8
2	2390.00	47.3 AV	54.0	-6.7	1.88 H	182	12.5	34.8
3	*2412.00	114.9 PK			1.88 H	192	80.1	34.8
4	*2412.00	104.1 AV			1.88 H	192	69.3	34.8
5	4824.00	55.0 PK	74.0	-19.0	1.24 H	158	45.7	9.3
6	4824.00	41.9 AV	54.0	-12.1	1.24 H	158	32.6	9.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	70.2 PK	74.0	-3.8	1.00 V	109	35.4	34.8
2	2390.00	47.1 AV	54.0	-6.9	1.00 V	109	12.3	34.8
3	*2412.00	117.9 PK			1.00 V	109	83.1	34.8
4	*2412.00	106.5 AV			1.00 V	109	71.7	34.8
5	4824.00	56.0 PK	74.0	-18.0	1.35 V	102	46.7	9.3
6	4824.00	42.9 AV	54.0	-11.1	1.35 V	102	33.6	9.3

Remarks:

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

RF Mode	802.11ax (HE20) 52-tone RU	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	117.6 PK			1.01 H	123	82.8	34.8
2	*2437.00	106.1 AV			1.01 H	123	71.3	34.8
3	4874.00	55.1 PK	74.0	-18.9	1.11 H	152	45.6	9.5
4	4874.00	42.2 AV	54.0	-11.8	1.11 H	152	32.7	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	117.9 PK			1.12 V	247	83.1	34.8
2	*2437.00	106.4 AV			1.12 V	247	71.6	34.8
3	4874.00	56.0 PK	74.0	-18.0	1.25 V	110	46.5	9.5
4	4874.00	43.0 AV	54.0	-11.0	1.25 V	110	33.5	9.5

Remarks:

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

RF Mode	802.11ax (HE20) 52-tone RU	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	115.3 PK			2.28 H	193	80.3	35.0
2	*2462.00	104.6 AV			2.28 H	193	69.6	35.0
3	2483.50	70.0 PK	74.0	-4.0	2.28 H	193	35.0	35.0
4	2483.50	47.1 AV	54.0	-6.9	2.28 H	193	12.1	35.0
5	4924.00	55.1 PK	74.0	-18.9	1.21 H	144	45.6	9.5
6	4924.00	41.9 AV	54.0	-12.1	1.21 H	144	32.4	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	117.6 PK			1.19 V	245	82.6	35.0
2	*2462.00	105.5 AV			1.19 V	245	70.5	35.0
3	2483.50	70.3 PK	74.0	-3.7	1.19 V	245	35.3	35.0
4	2483.50	47.1 AV	54.0	-6.9	1.19 V	245	12.1	35.0
5	4924.00	56.0 PK	74.0	-18.0	1.02 V	111	46.5	9.5
6	4924.00	42.9 AV	54.0	-11.1	1.02 V	111	33.4	9.5

Remarks:

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

RF Mode	802.11ax (HE20) 106-tone RU	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	72.3 PK	74.0	-1.7	1.05 H	135	37.5	34.8
2	2390.00	50.3 AV	54.0	-3.7	1.05 H	135	15.5	34.8
3	*2412.00	114.0 PK			1.05 H	135	79.2	34.8
4	*2412.00	102.4 AV			1.05 H	135	67.6	34.8
5	4824.00	54.9 PK	74.0	-19.1	1.05 H	99	45.6	9.3
6	4824.00	42.0 AV	54.0	-12.0	1.05 H	99	32.7	9.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.4 PK	74.0	-5.6	1.00 V	107	33.6	34.8
2	2390.00	49.8 AV	54.0	-4.2	1.00 V	107	15.0	34.8
3	*2412.00	115.3 PK			1.00 V	107	80.5	34.8
4	*2412.00	104.3 AV			1.00 V	107	69.5	34.8
5	4824.00	55.0 PK	74.0	-19.0	1.20 V	141	45.7	9.3
6	4824.00	41.9 AV	54.0	-12.1	1.20 V	141	32.6	9.3

Remarks:

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

RF Mode	802.11ax (HE20) 106-tone RU	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	116.4 PK			1.00 H	126	81.6	34.8
2	*2437.00	105.4 AV			1.00 H	126	70.6	34.8
3	4874.00	55.1 PK	74.0	-18.9	1.15 H	147	45.6	9.5
4	4874.00	41.9 AV	54.0	-12.1	1.15 H	147	32.4	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	117.3 PK			1.28 V	255	82.5	34.8
2	*2437.00	105.9 AV			1.28 V	255	71.1	34.8
3	4874.00	56.2 PK	74.0	-17.8	1.13 V	89	46.7	9.5
4	4874.00	43.1 AV	54.0	-10.9	1.13 V	89	33.6	9.5

Remarks:

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

RF Mode	802.11ax (HE20) 106-tone RU	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	William Su		

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	114.0 PK			2.23 H	192	79.0	35.0
2	*2462.00	102.0 AV			2.23 H	192	67.0	35.0
3	2483.50	71.5 PK	74.0	-2.5	2.23 H	192	36.5	35.0
4	2483.50	50.2 AV	54.0	-3.8	2.23 H	192	15.2	35.0
5	4924.00	54.9 PK	74.0	-19.1	1.02 H	152	45.4	9.5
6	4924.00	42.0 AV	54.0	-12.0	1.02 H	152	32.5	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	116.5 PK			1.18 V	243	81.5	35.0
2	*2462.00	103.5 AV			1.18 V	243	68.5	35.0
3	2483.50	68.5 PK	74.0	-5.5	1.18 V	243	33.5	35.0
4	2483.50	49.1 AV	54.0	-4.9	1.18 V	243	14.1	35.0
5	4924.00	56.0 PK	74.0	-18.0	1.18 V	102	46.5	9.5
6	4924.00	42.8 AV	54.0	-11.2	1.18 V	102	33.3	9.5

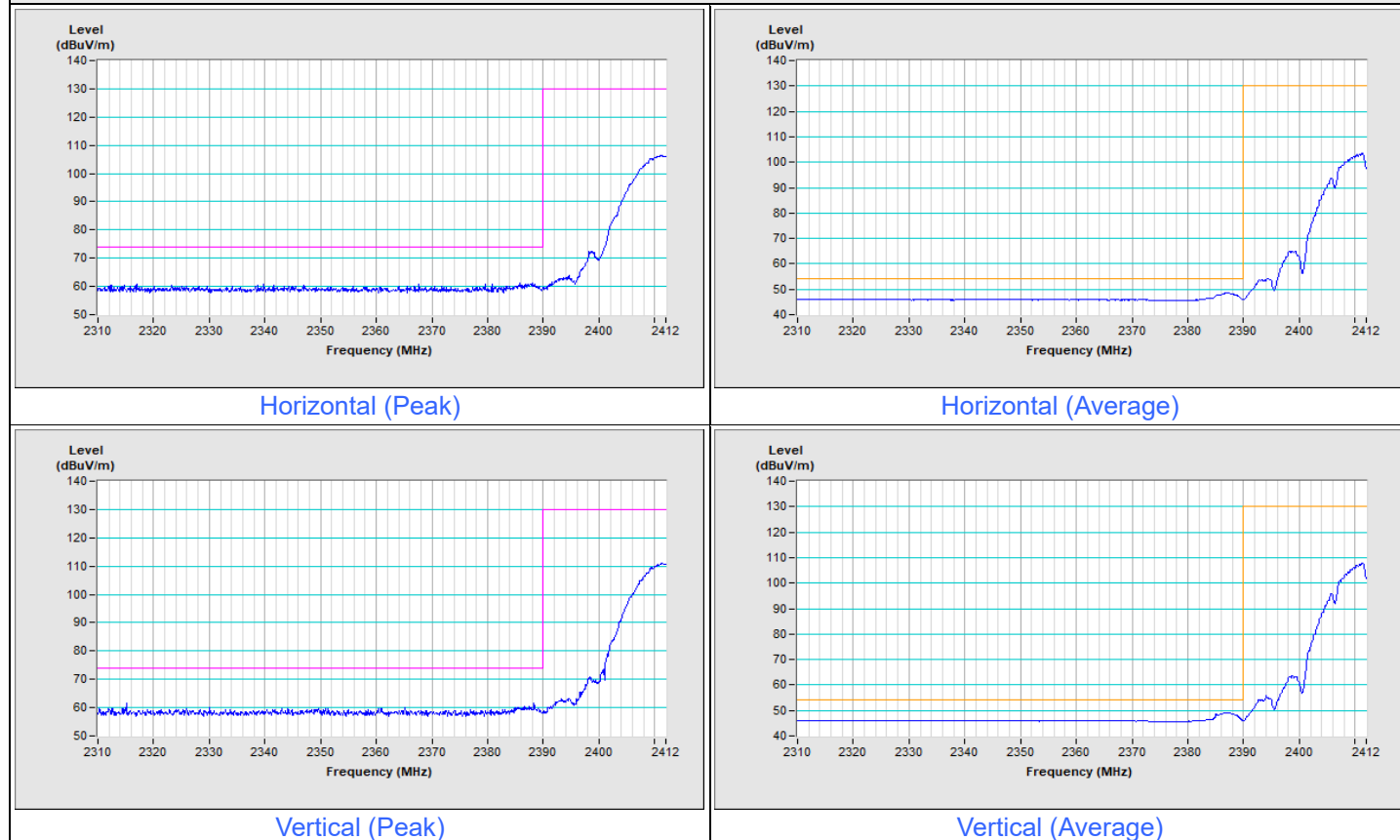
Remarks:

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

Plot of Band Edge

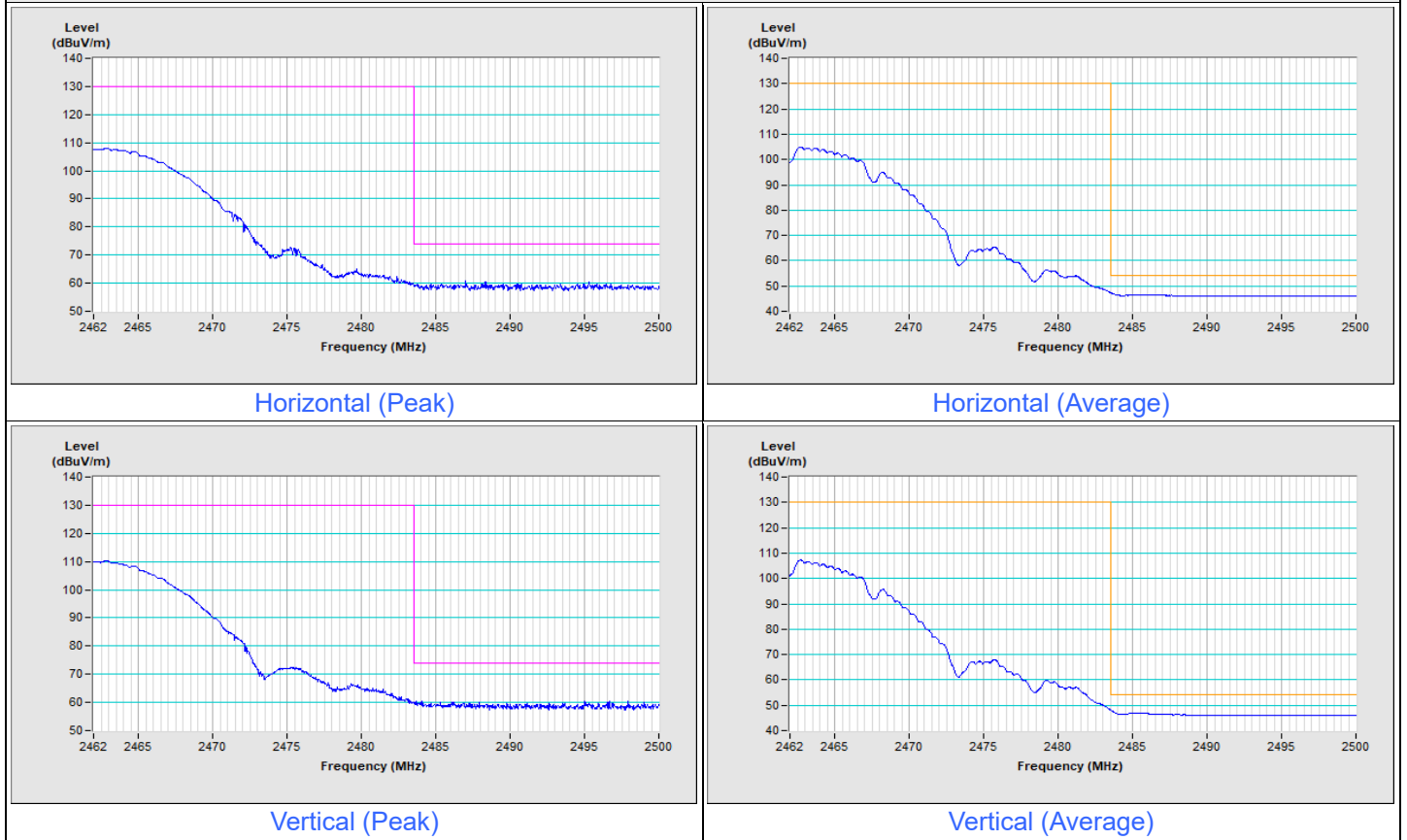
Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11b Channel 1



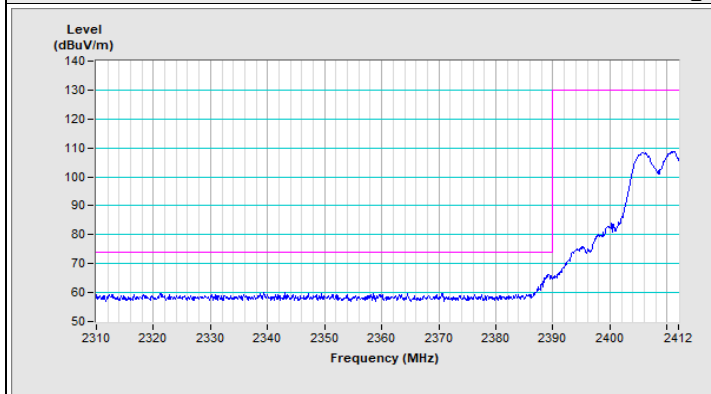
Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11b Channel 11

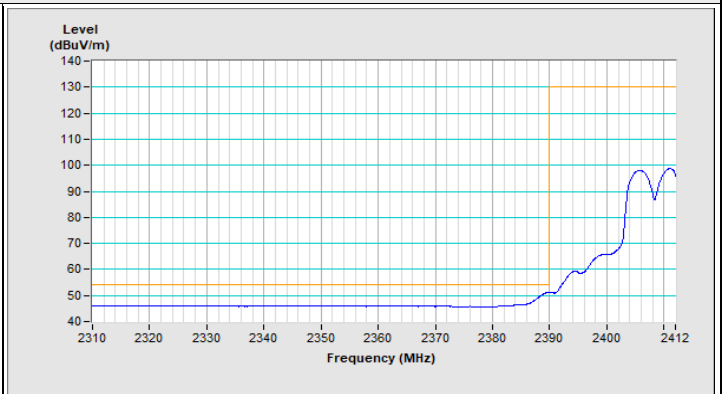


Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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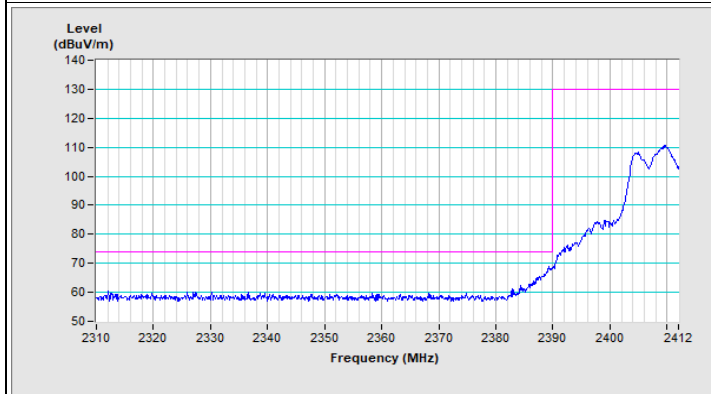
802.11g Channel 1



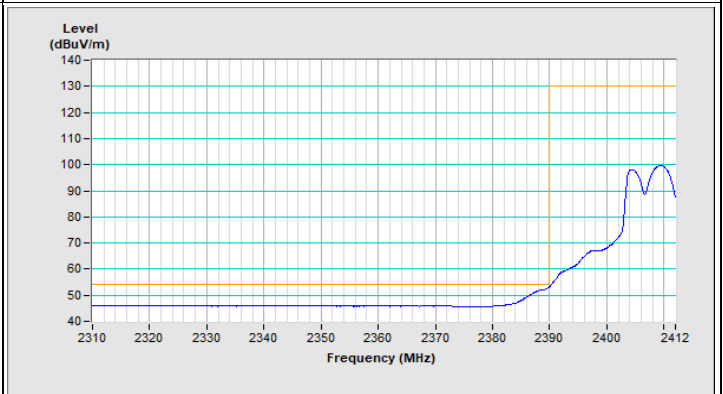
Horizontal (Peak)



Horizontal (Average)



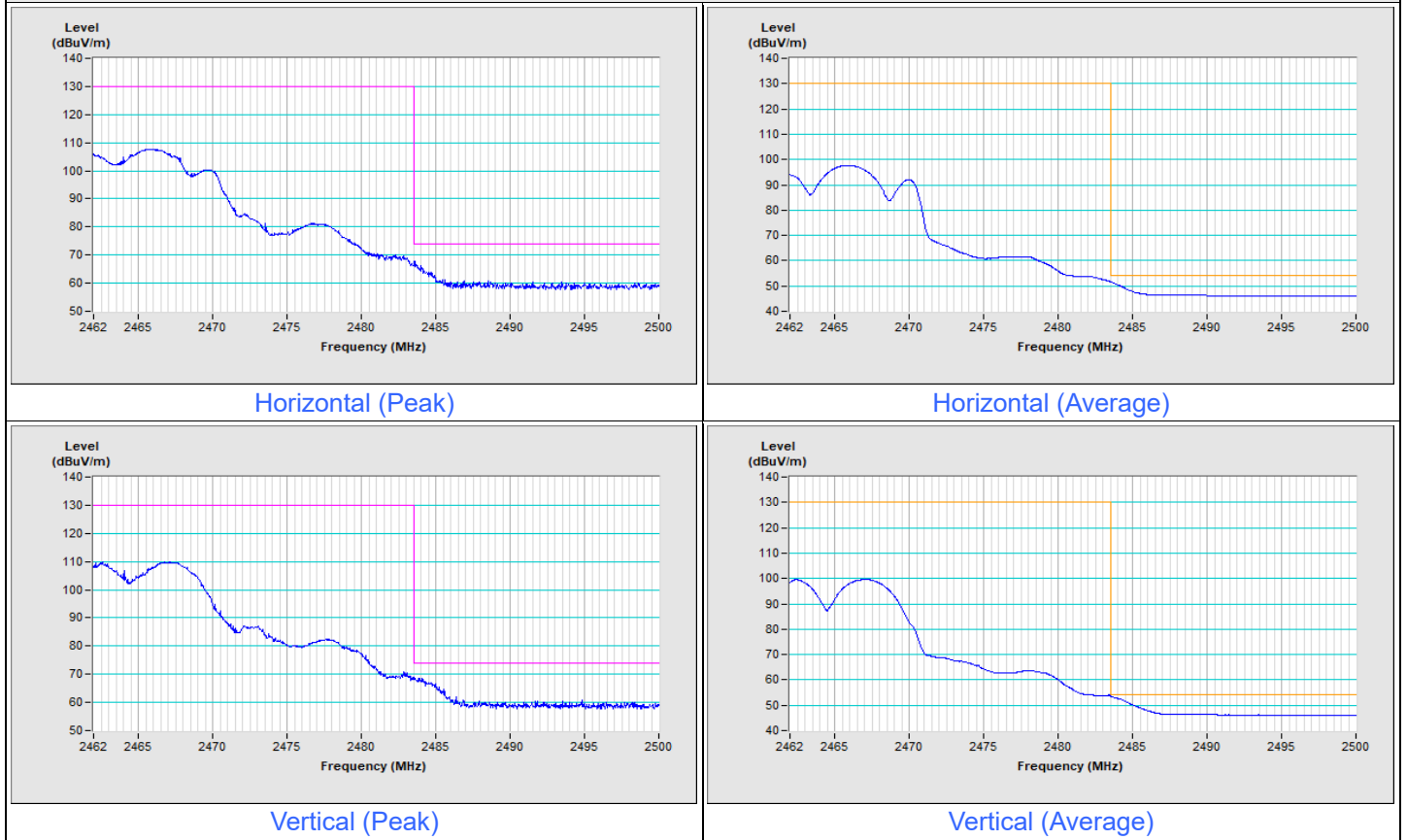
Vertical (Peak)



Vertical (Average)

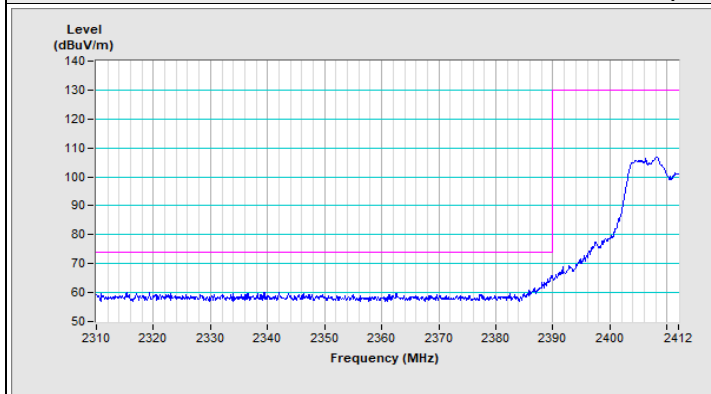
Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11g Channel 11

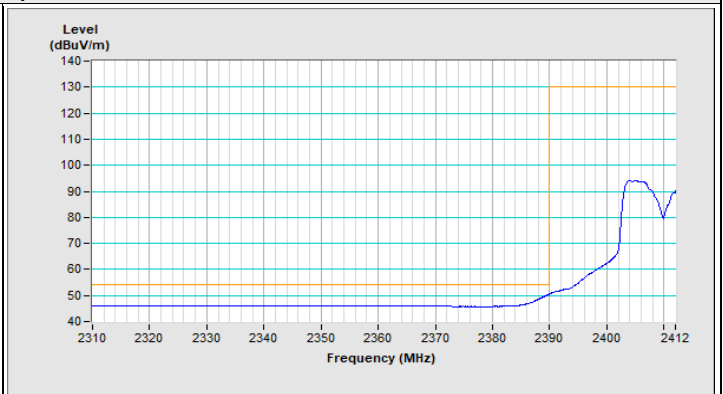


Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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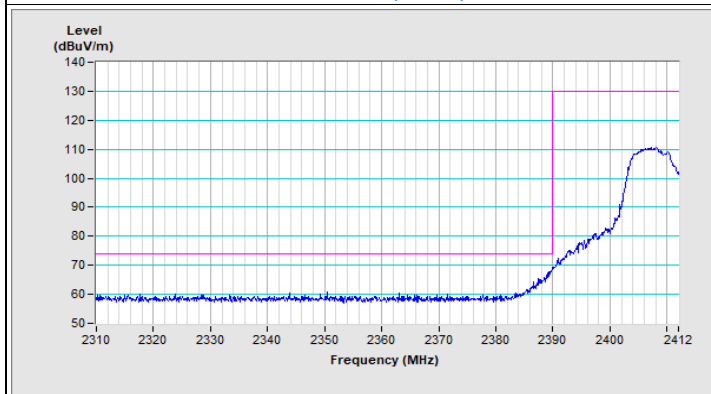
802.11n (HT20) Channel 1



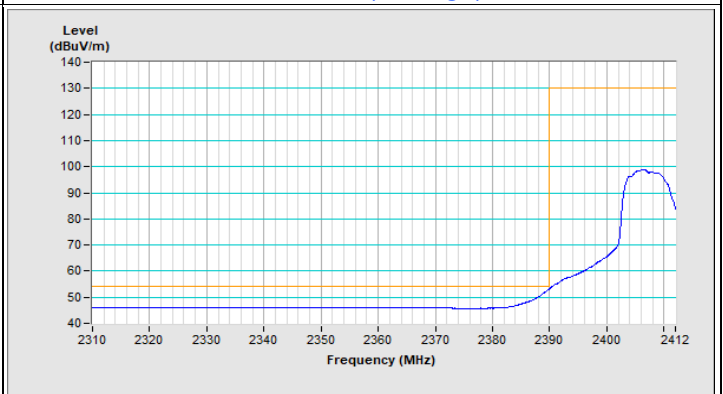
Horizontal (Peak)



Horizontal (Average)



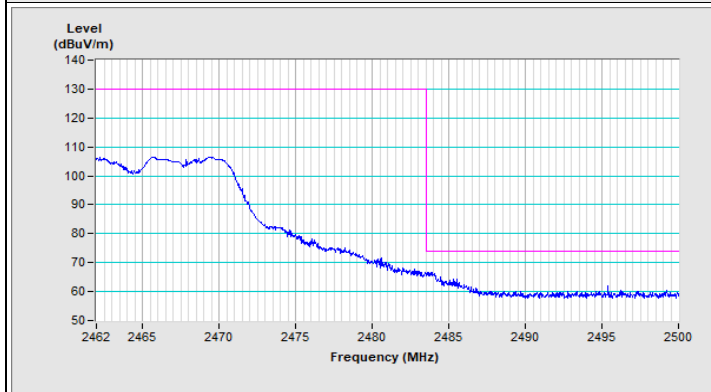
Vertical (Peak)



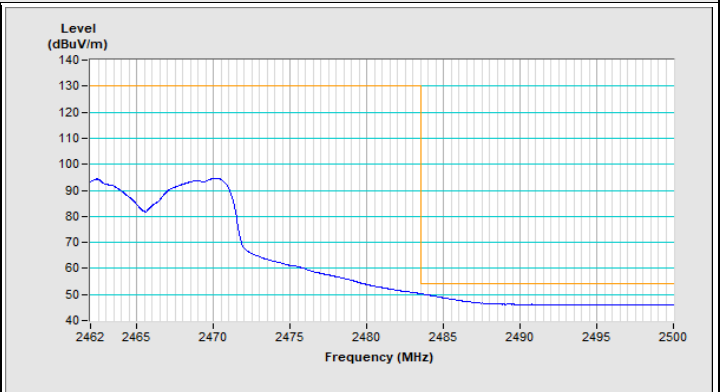
Vertical (Average)

Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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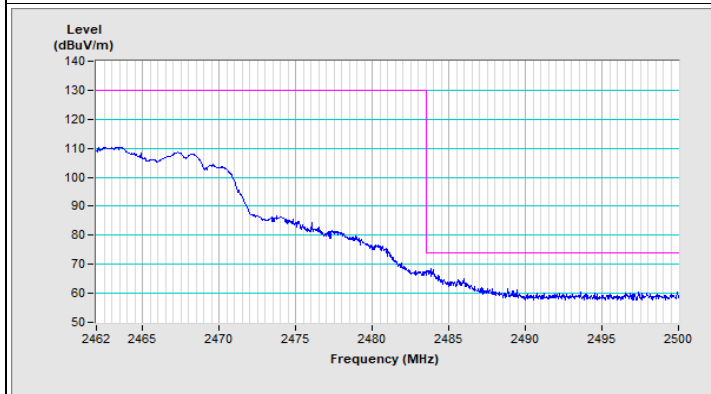
802.11n (HT20) Channel 11



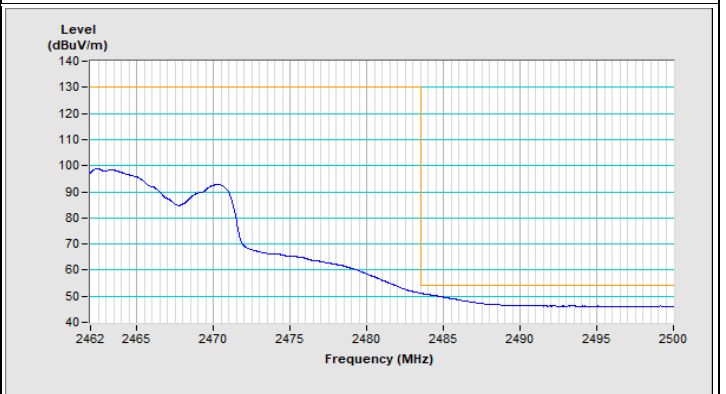
Horizontal (Peak)



Horizontal (Average)



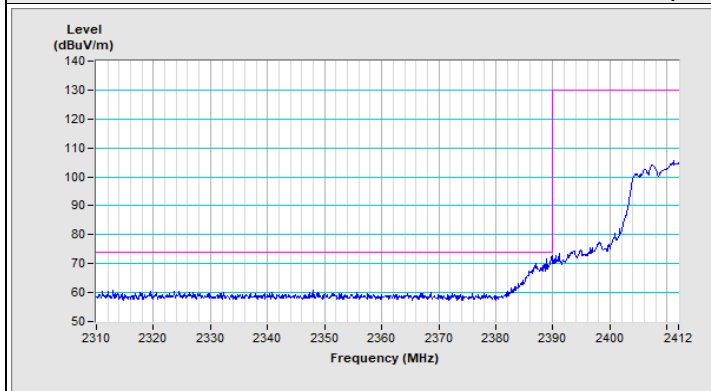
Vertical (Peak)



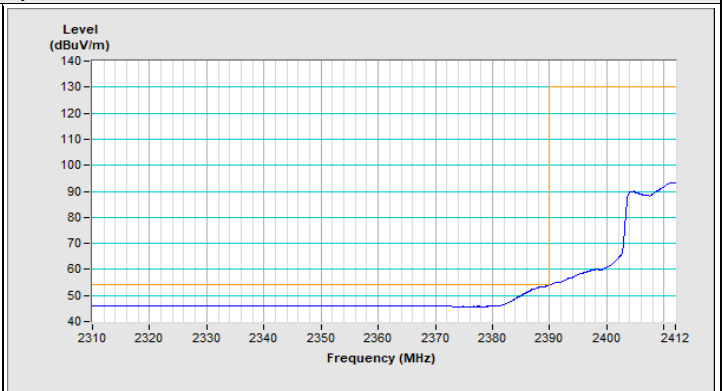
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB= 3kHz, DET=Peak
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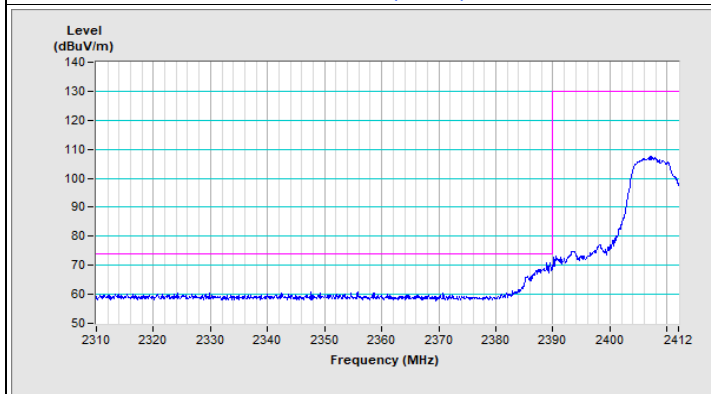
802.11n (HT40) Channel 3



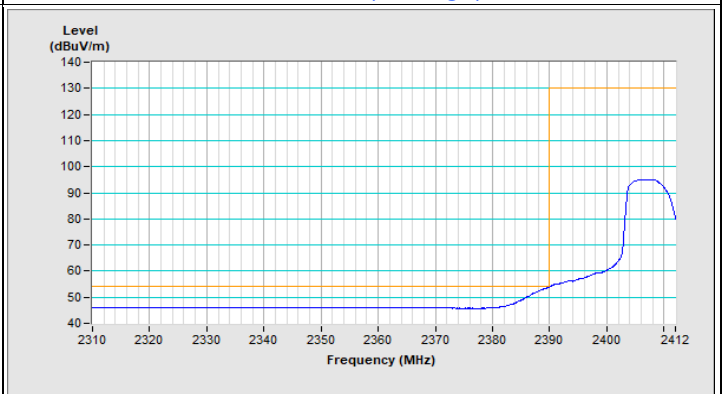
Horizontal (Peak)



Horizontal (Average)



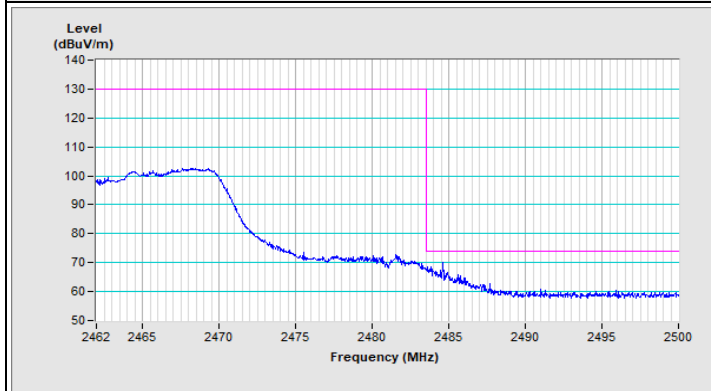
Vertical (Peak)



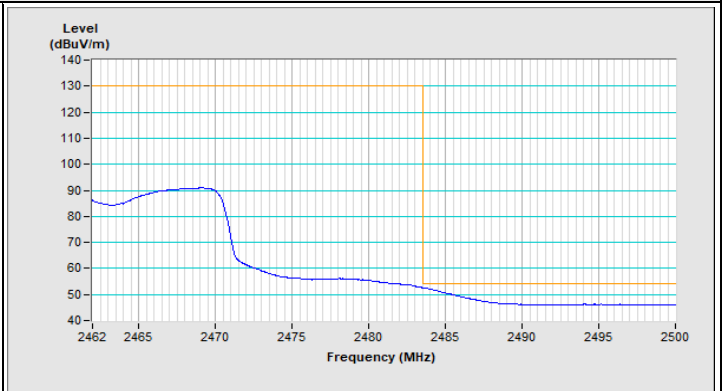
Vertical (Average)

Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB= 3kHz, DET=Peak
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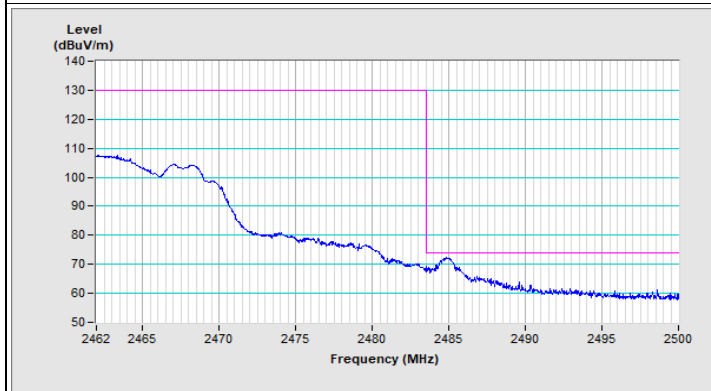
802.11n (HT40) Channel 9



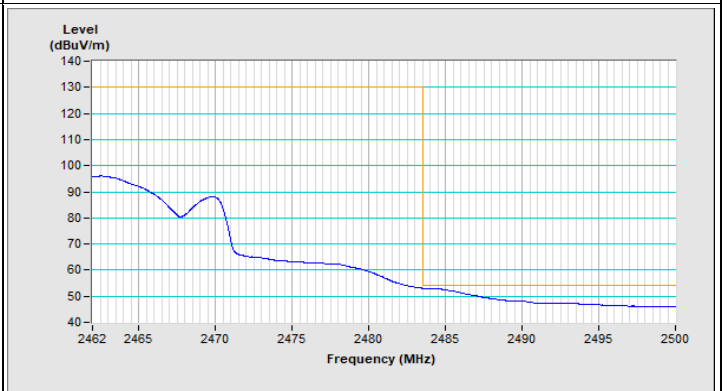
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)

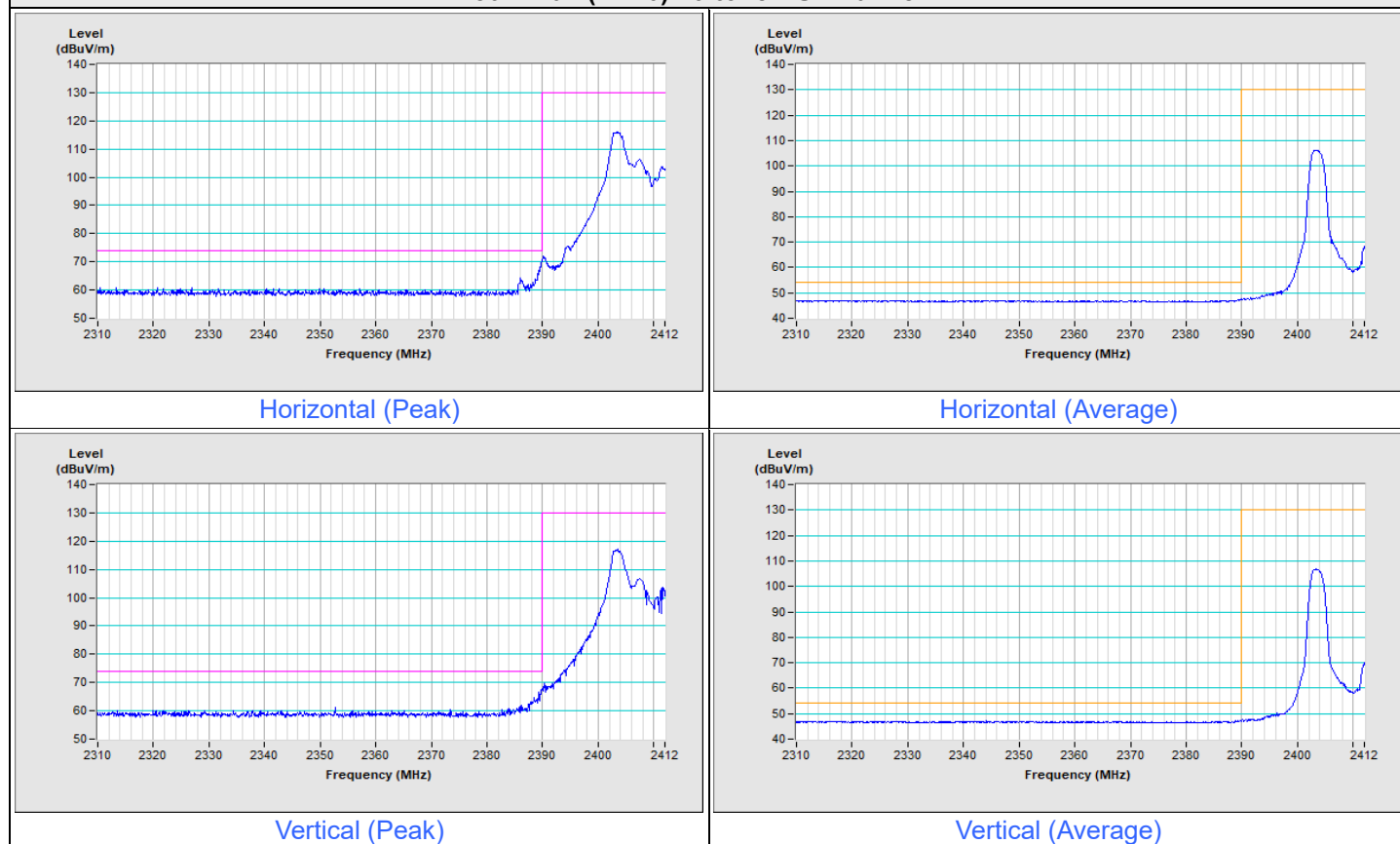


Vertical (Average)

RU Plot of Band Edge

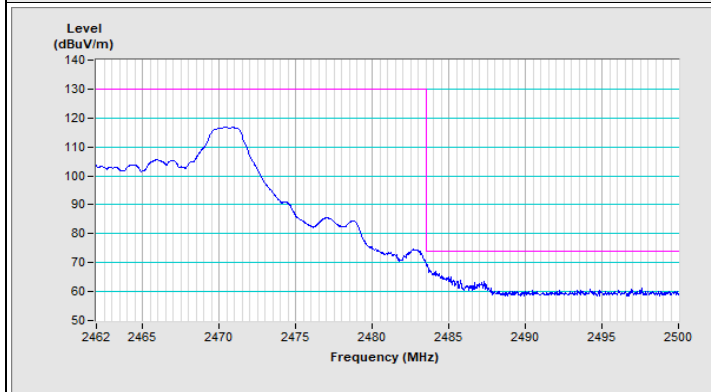
Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11ax (HE20) 26-tone RU Channel 1

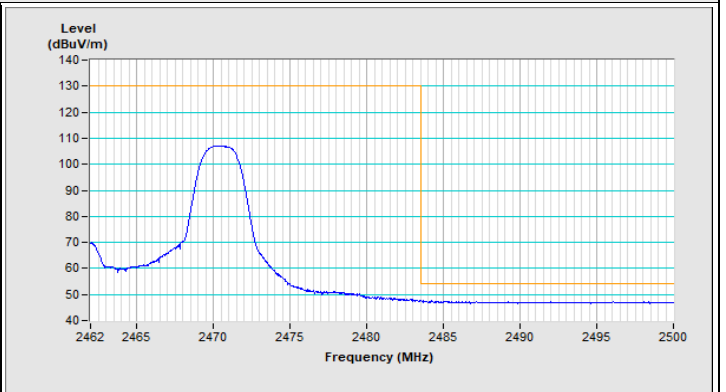


Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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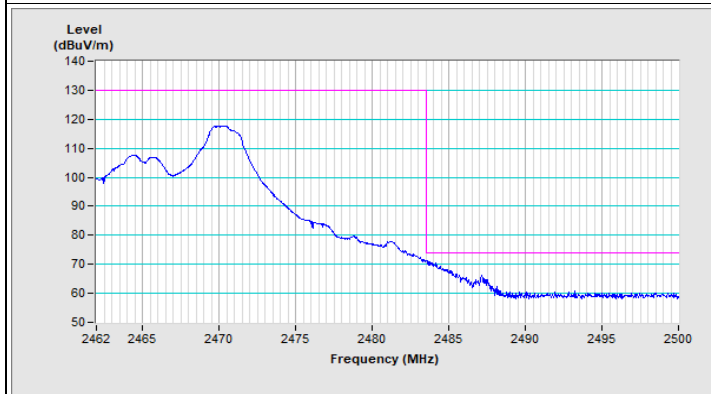
802.11ax (HE20) 26-tone RU Channel 11



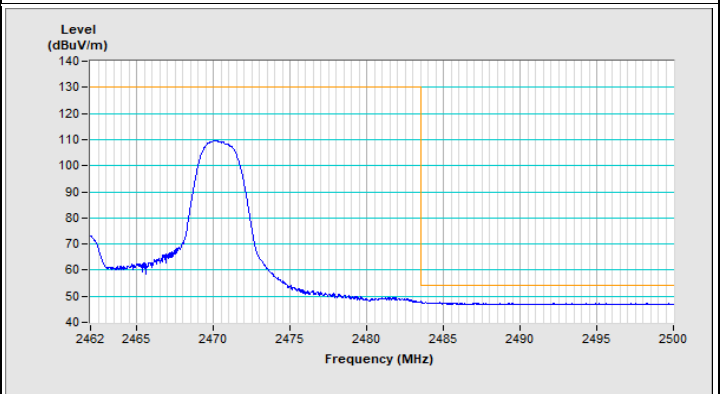
Horizontal (Peak)



Horizontal (Average)



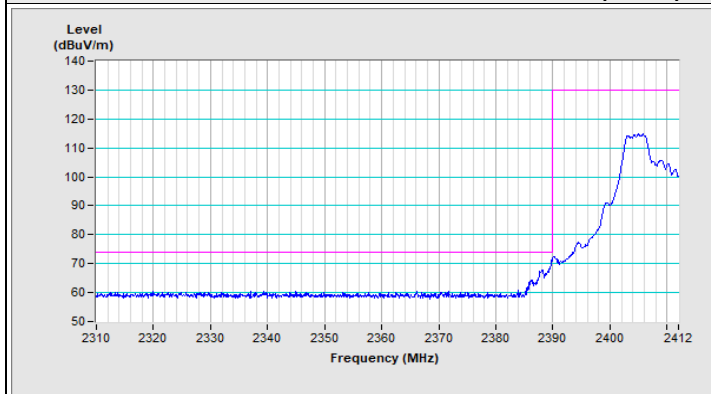
Vertical (Peak)



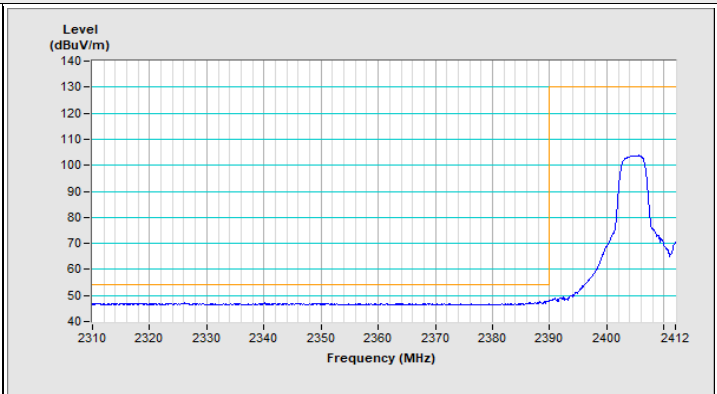
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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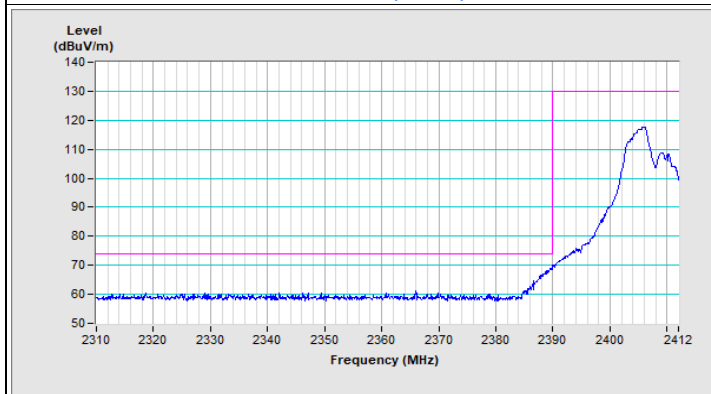
802.11ax (HE20) 52-tone RU Channel 1



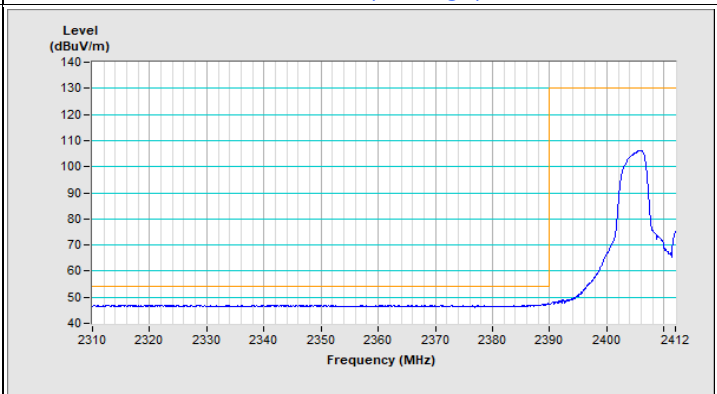
Horizontal (Peak)



Horizontal (Average)



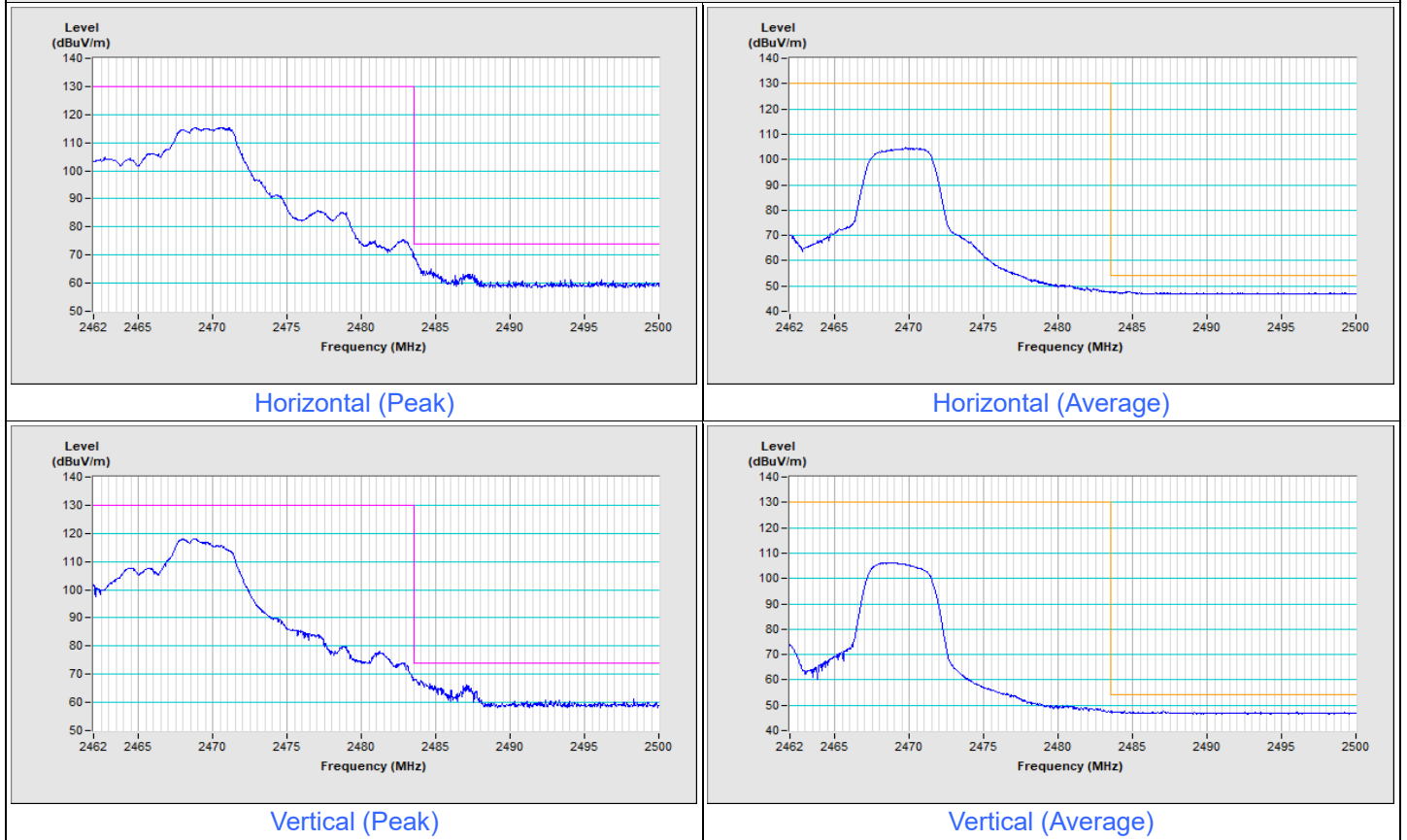
Vertical (Peak)



Vertical (Average)

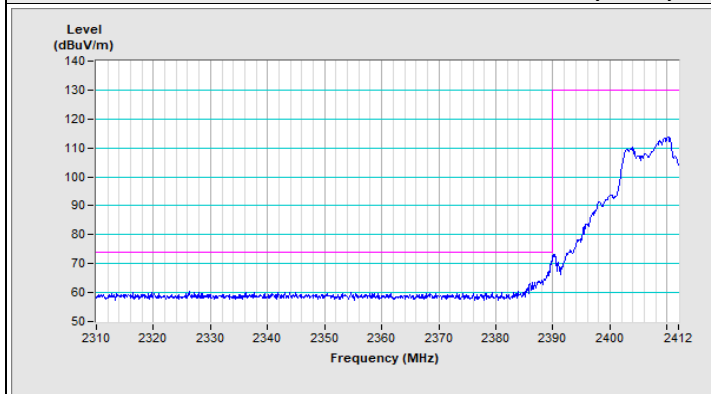
Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11ax (HE20) 52-tone RU Channel 11

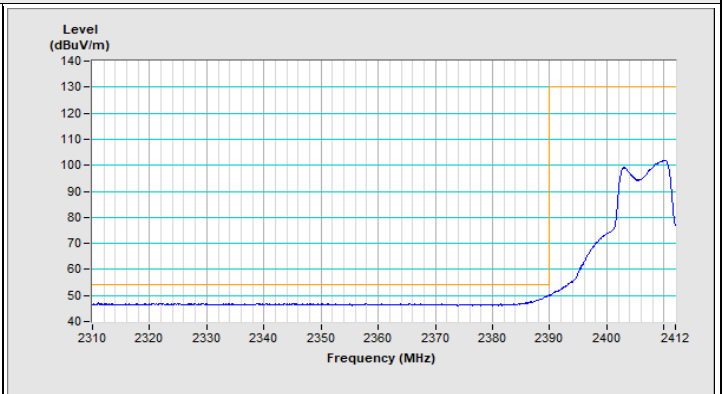


Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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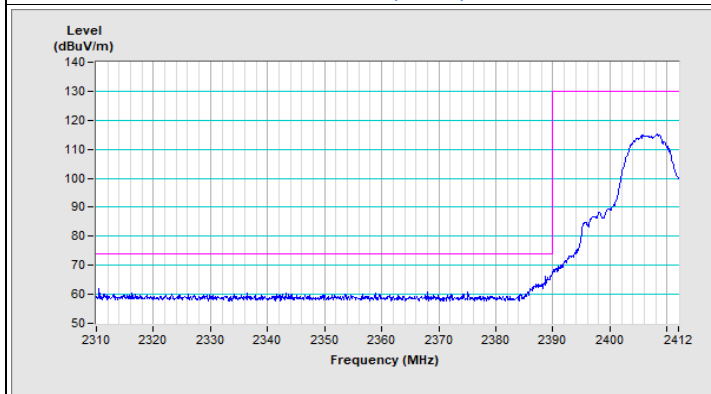
802.11ax (HE20) 106-tone RU Channel 1



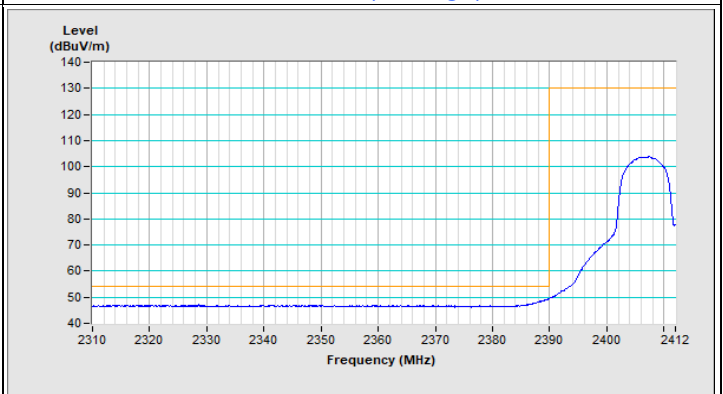
Horizontal (Peak)



Horizontal (Average)



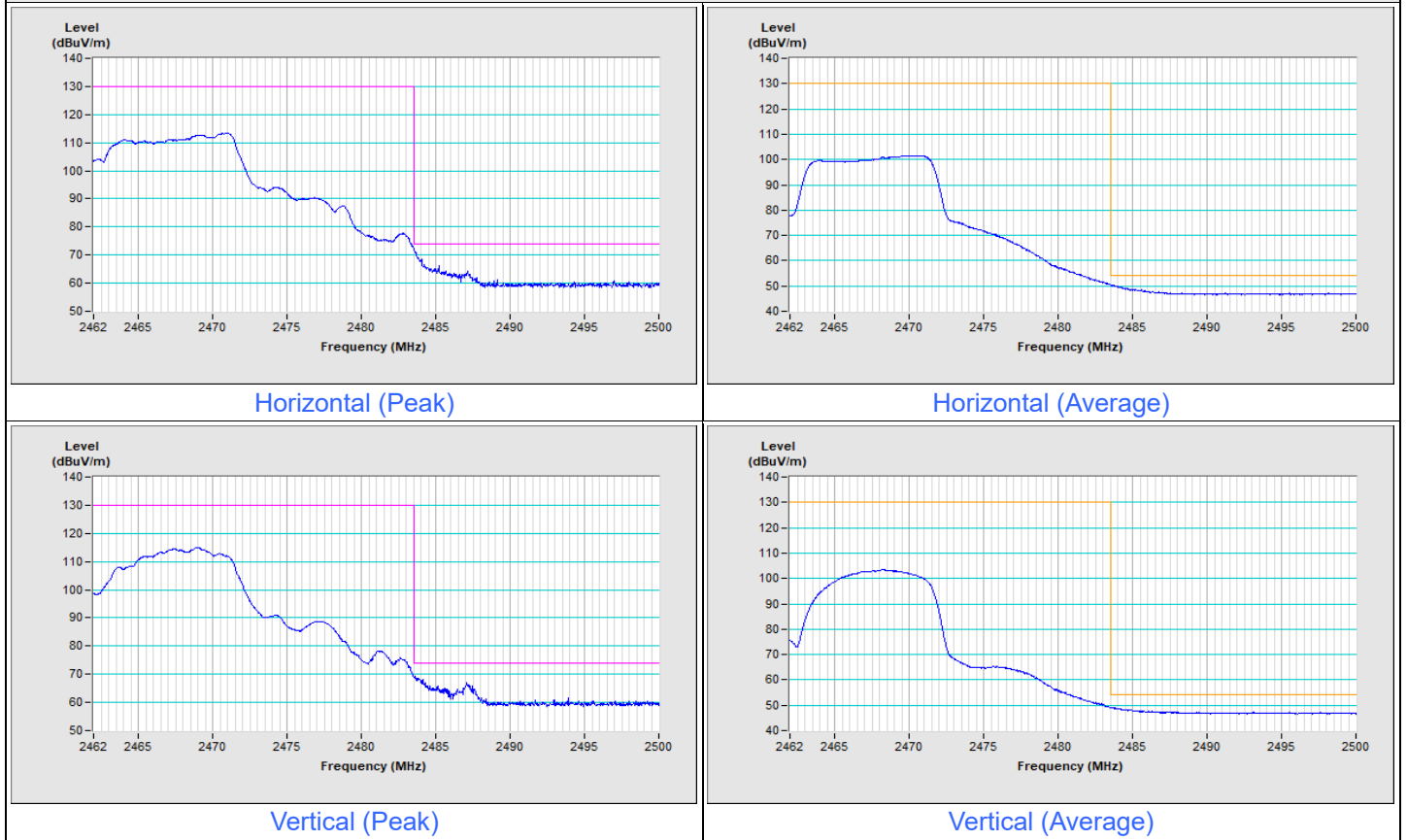
Vertical (Peak)



Vertical (Average)

Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11ax (HE20) 106-tone RU Channel 11



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 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:

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Email: service.adt@bureauveritas.com

Web Site: <http://ee.bureauveritas.com.tw>

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

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