TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart C (Section 15.247)**
Report No.:	RFBBQZ-WTW-P22100778-1
FCC ID:	PY323100585
Product:	Quad-band WiFi 7 Orbi 9 Router & Quad-band WiFi 7 Orbi 9 Satellite
Brand:	NETGEAR
Model No.:	RBE971
Series Model:	RBE970
Received Date:	2022/11/2
Test Date:	2022/11/2 ~ 2023/5/15
Issued Date:	2023/5/26
Applicant and Manufacturer:	NETGEAR, Inc.
Address:	350 East Plumeria Drive San Jose, CA 95134
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Approved by: Jeremy Lin , **Date:** 2023/5/26

Jeremy Lin / Project Engineer

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Prepared by : Lena Wang / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBBQZ-WTW-P22100778-1	Original Release	2023/5/26

1 Certificate

Product:	Quad-band WiFi 7 Orbi 9 Router & Quad-band WiFi 7 Orbi 9 Satellite
Brand:	NETGEAR
Test Model:	RBE971
Series Model:	RBE970
Sample Status:	Engineering Sample
Applicant and Manufacturer:	NETGEAR, Inc.
Test Date:	2022/11/2 ~ 2023/5/15
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 -16.93 dB at 0.49608 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.7 dB at 43.58 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.1 dB at 2390.00, 2486.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF).

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:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.79 dB
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.99 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.64 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 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	Quad-band WiFi 7 Orbi 9 Router & Quad-band WiFi 7 Orbi 9 Satellite
Brand	NETGEAR
Test Model	RBE971
Series Model	RBE970
Model Difference	Refer to Note as below
Status of EUT	Engineering Sample
Power Supply Rating	Refer to Note as below
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT mode 1024QAM for OFDMA in 11ax mode only
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to 600 Mbps VHT: up to 800 Mbps 802.11ax: up to 1147.1 Mbps
Operating Frequency	2412 ~ 2462 MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7
Output Power	CDD Mode: 865.056 mW (29.37 dBm) Beamforming Mode: 837.469 mW (29.23 dBm)

Note:

1. All models are listed as below.

Brand	Product	Model	Difference
NETGEAR	Quad-band WiFi 7 Orbi 9 Router	RBE971	DFS Function: Master With 10G Internet port*1, 10G Ethernet port*1, Lan port*4
	Quad-band WiFi 7 Orbi 9 Satellite	RBE970	DFS Function: Master & Client (Easy Mech) With 10G Ethernet port*1, Lan port*2
*This product have two different colors of housing (black & white) for marketing purpose			

2. The EUT uses following accessories.

AC Adapter 1			
Brand	Model	Part Number	Specification
NETGEAR	2AEC060K 1	332-11586-01	AC Input : 100-240V ~ 50/60Hz 1.7A DC Output : 19.0V, 3.16A 60.0W DC Output Cable : 1.8m non-shielded and without core Plug : US/ISED Color: White
AC Adapter 2			
Brand	Model	Part Number	Specification
NETGEAR	AD2003F10	332-11488-02	AC Input : 100-240V ~ 50/60Hz 1.5A DC Output : 19.0V, 3.16A 60.0W DC Output Cable : 1.8m non-shielded and without core Plug : US/ISED Color: White

AC Adapter 3			
Brand	Model	Part Number	Specification
NETGEAR	2AEC060K 1	332-11578-01	AC Input : 100-240V ~ 50/60Hz 1.7A DC Output : 19.0V, 3.16A 60.0W DC Output Cable : 1.8m non-shielded and without core Plug : US/ISED Color: Black
AC Adapter 4			
Brand	Model	Part Number	Specification
NETGEAR	AD2003F10	332-11480-02	AC Input : 100-240V ~ 50/60Hz 1.5A DC Output : 19.0V, 3.16A 60.0W DC Output Cable : 1.8m non-shielded and without core Plug : US/ISED Color: Black
Ethernet Cable			
Brand	Model	Specification	
NETGEAR	312-10146-01	Signal Line : 2m, Unshielded	

* Adapter 1 & 3, 2 & 4 are same PA vendor with same category, the design is the same, only difference is color.

3. Simultaneously transmission condition.

Condition	Technology			
1	WLAN (2.4GHz)	WLAN (5GHz Radio 1)	WLAN (5GHz Radio 2)	WLAN (6GHz)
2	WLAN (2.4GHz)	WLAN (5GHz Radio 1)	WLAN (5.9GHz Radio 2)	WLAN (6GHz)
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.				

4. 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 Type	Dipole
Connector Type	ipex(MHF)
Antenna Gain	Directional Gain (dBi)
2400~2483.5 MHz	6.14
5150~5250 MHz	6.33
5250~5350 MHz	6.32
5470~5725 MHz	6.25
5725~5850 MHz	6.29

* The detailed antenna information, please refer to the BV CPS report no.: RFBBQZ-WTW-P22100778.

2. The EUT incorporates a MIMO function:

Modulation Mode	Beamforming Mode	Tx & Rx Configuration	
802.11b	Not Support	4TX	4RX
802.11g	Not Support	4TX	4RX
802.11n (HT20)	Support	4TX	4RX
802.11n (HT40)	Support	4TX	4RX
VHT20	Support	4TX	4RX
VHT40	Support	4TX	4RX
802.11ax (HE20)	Support	4TX	4RX
802.11ax (HE40)	Support	4TX	4RX

Note:

1. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
2. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), VHT mode for 20 MHz (40 MHz) and 802.11ax mode for 20 MHz (40 MHz), therefore the manufacturer will control the power for 802.11n/VHT mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report.
3. For 802.11ax, the EUT not support Partial RU.

3.3 Channel List

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), VHT20, 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), VHT40, 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

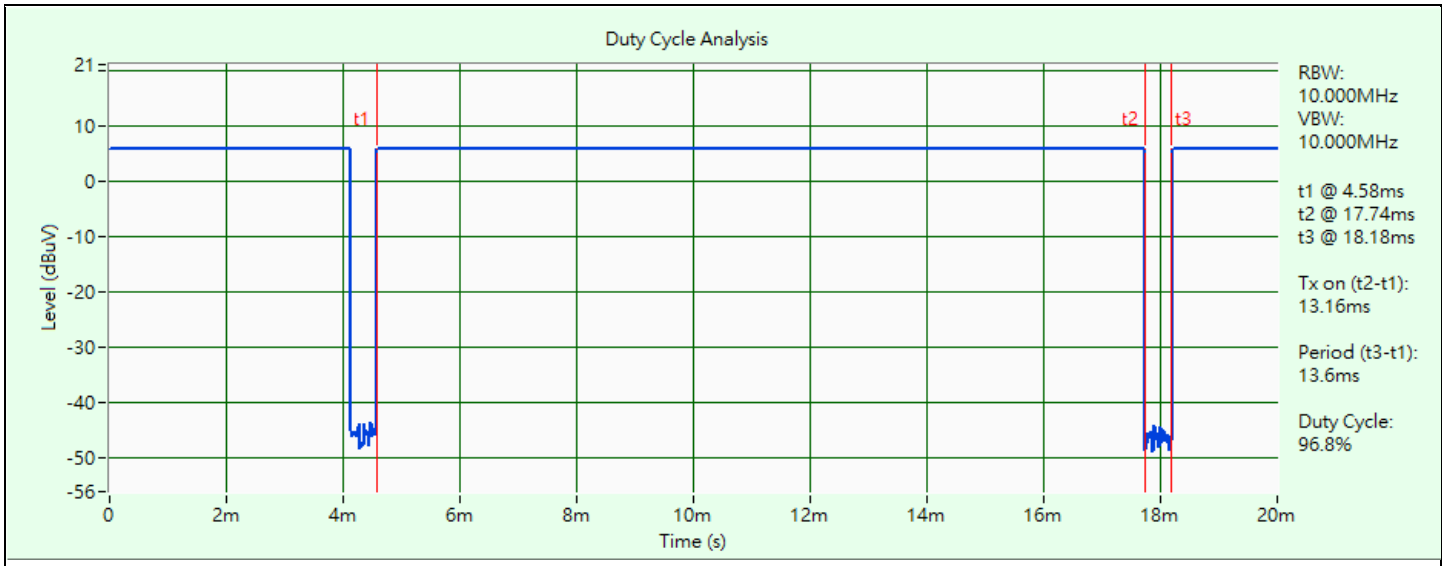
Pre-Scan:	1. The AC Adapter has the following models: 2AEC060K 1 / AD2003F10. Pre-scan these models of AC Adapters and find the worst case as a representative test condition.
Worst Case:	1. AC Adapter Worst Condition:AD2003F10

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

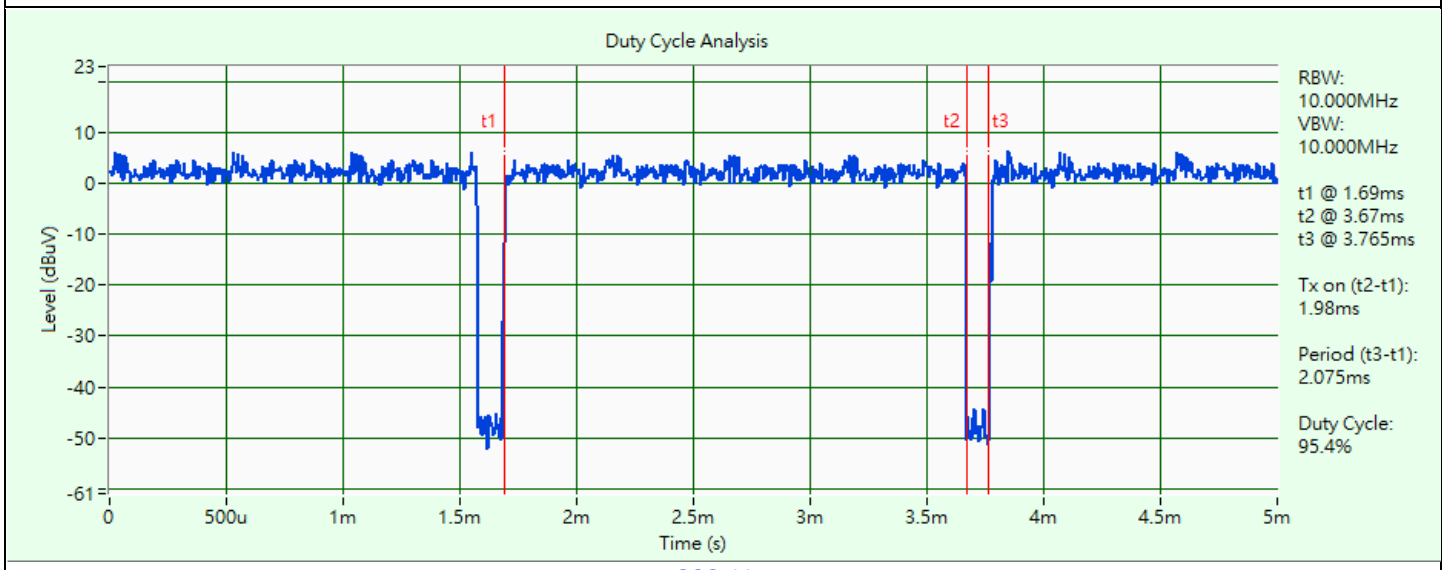
Test Item	EUT Configure Mode	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD & Beamforming	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD & Beamforming	3, 6, 9	BPSK	MCS0
Power Spectral Density	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0
6 dB Bandwidth / Conducted Out of Band Emissions	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0
AC Power Conducted Emissions	A, B	802.11g	CDD	1	BPSK	6Mb/s
Unwanted Emissions below 1 GHz	A, B	802.11g	CDD	1	BPSK	6Mb/s
Unwanted Emissions above 1 GHz	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0
EUT Configure Mode:	A	EUT (RBE971) + AC Adapter 2 (AD2003F10)				
	B	EUT (RBE970) + AC Adapter 2 (AD2003F10)				
*The EUT is only tested while standing.						

3.5 Duty Cycle of Test Signal

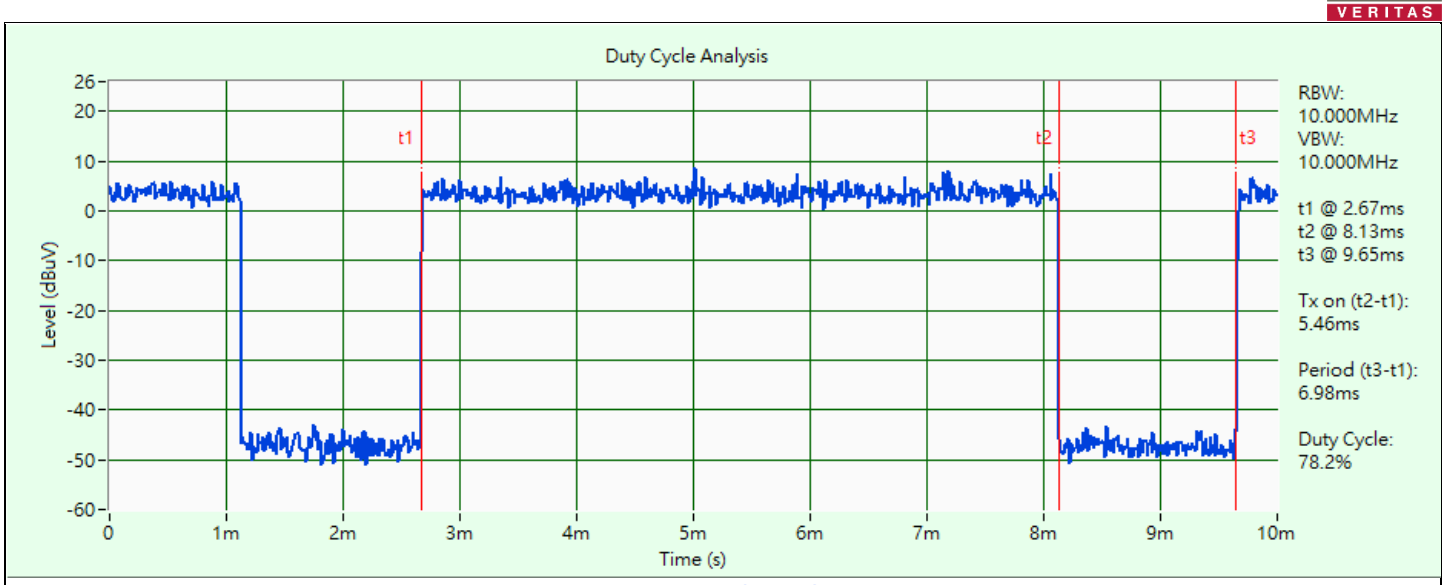
802.11b: Duty cycle = 13.16 ms / 13.6 ms x 100% = 96.8%, duty factor = 10 * log (1/Duty cycle) = 0.14 dB
802.11g: Duty cycle = 1.98 ms / 2.075 ms x 100% = 95.4%, duty factor = 10 * log (1/Duty cycle) = 0.20 dB
802.11ax (HE20): Duty cycle = 5.46 ms / 6.98 ms x 100% = 78.2%, duty factor = 10 * log (1/Duty cycle) = 1.07 dB
802.11ax (HE40): Duty cycle = 5.45 ms / 6.97 ms x 100% = 78.2%, duty factor = 10 * log (1/Duty cycle) = 1.07 dB



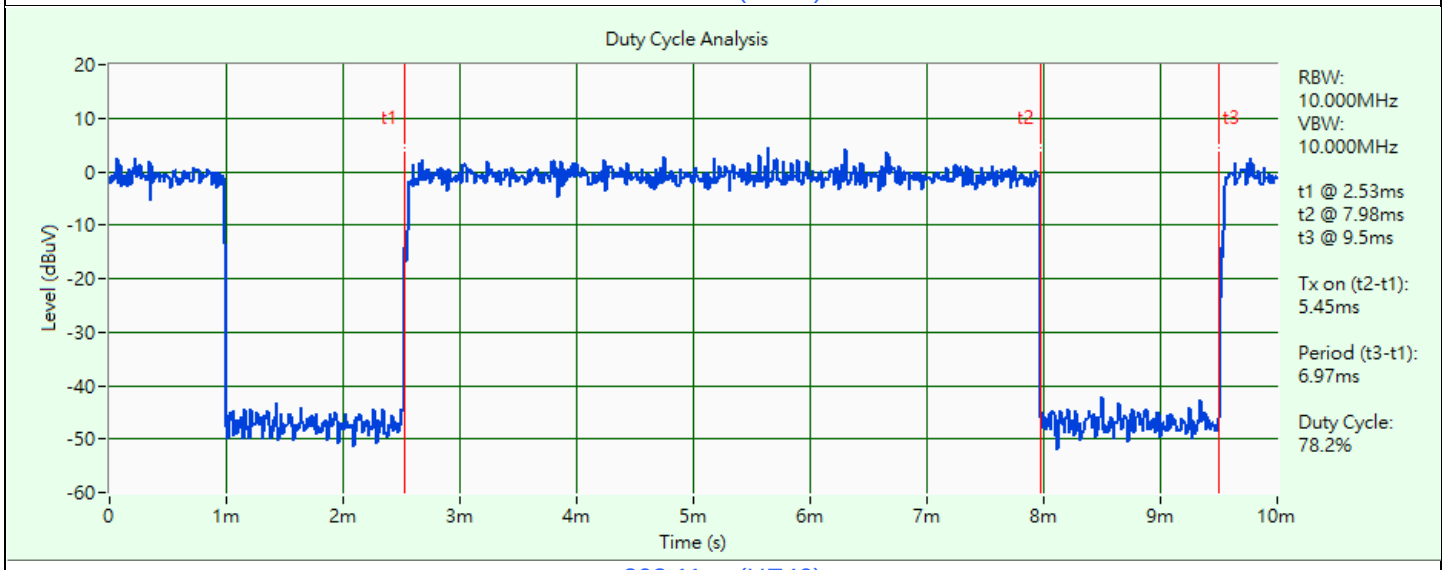
802.11b



802.11g



802.11ax (HE20)



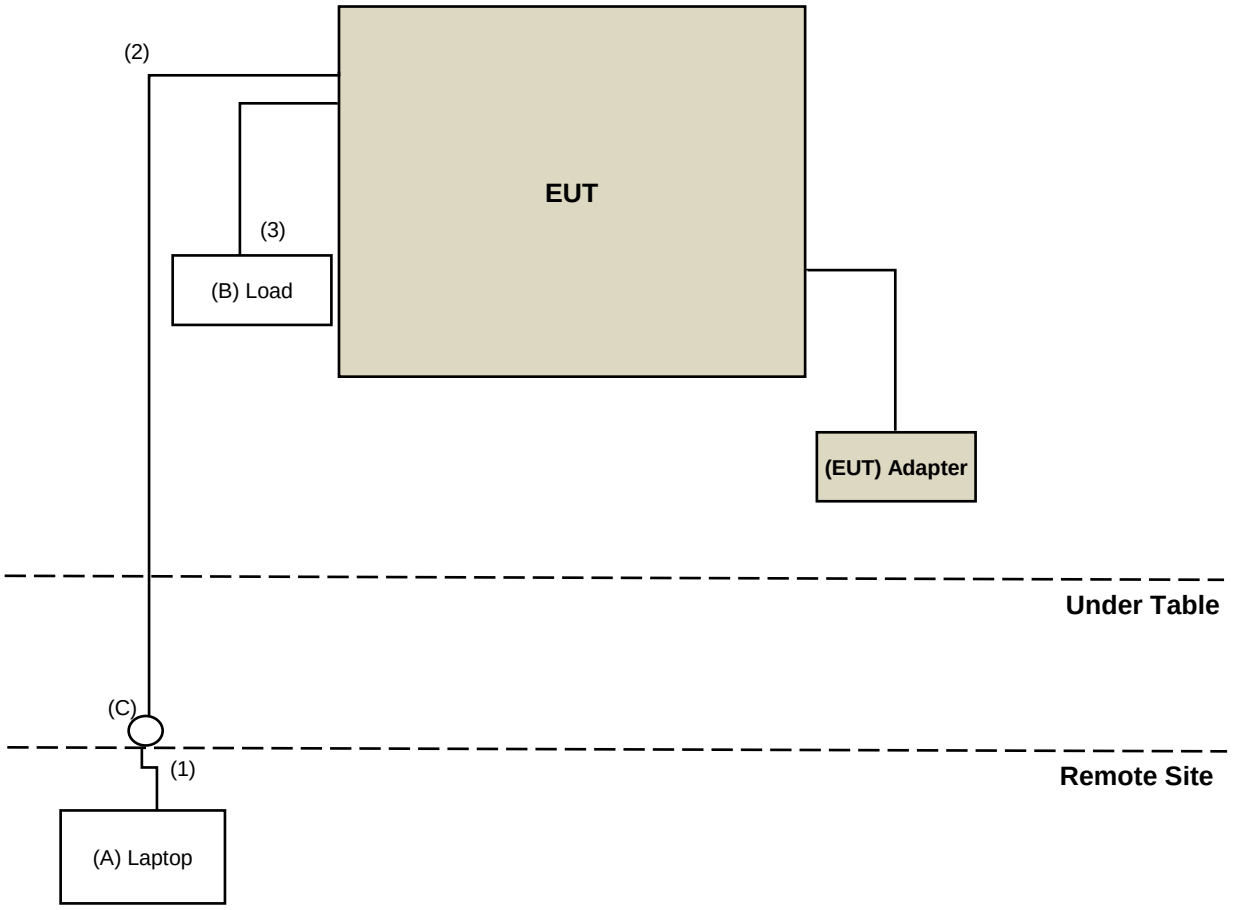
802.11ax (HE40)

3.6 Test Program Used and Operation Descriptions

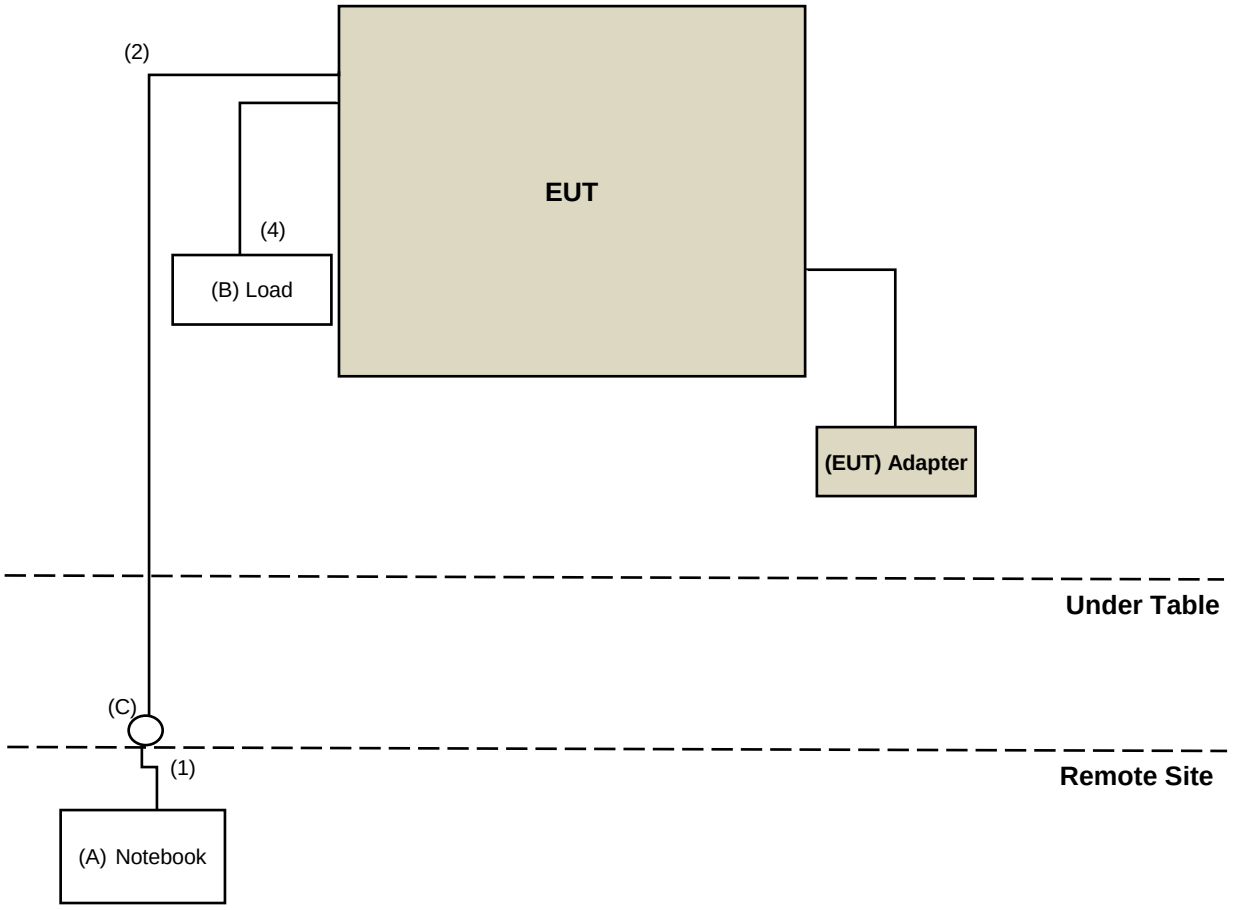
Controlling software QSPR Version 5.0-00202 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

Mode A



Mode B



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Notebook	DELL	E5430	2RL3YW1	N/A	Provided by Lab
B	Load	N/A	N/A	N/A	N/A	Provided by Lab
C	Lan connector	N/A	N/A	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	10	N	N	Provided by Lab
2	RJ-45 Cable	1	2	N	N	Supplied by applicant
3	RJ-45 Cable	5	1.5	N	N	Provided by Lab
4	RJ-45 Cable	2	1.5	N	N	Provided by Lab

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
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	2022/7/13	2023/7/12

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/5/10

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Signal and spectrum analyzer R&S	FSV3044	101105	2023/2/22	2024/2/21
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/5/10

4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get information of the instruments.

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
LISN R&S	ESH3-Z5	100116	2023/2/15	2024/2/14
		100311	2022/9/12	2023/9/11
LISN ROHDE & SCHWARZ	ENV216	101826	2023/3/23	2024/3/22
RF Coaxial Cable WOKEN	5D-FB	Cable-cond1-01	2023/1/7	2024/1/6
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A
Test Receiver Rohde&Schwarz	ESCI	100613	2022/12/5	2023/12/4
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2022/8/31	2023/8/30

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2023/3/23 ~ 2023/5/15

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower inn-co GmbH	MA 4000	010303	N/A	N/A
Bi_Log Antenna Schwarbeck	VULB9168	9168-155	2022/10/21	2023/10/20
Loop Antenna EMCI	EM-6879	269	2022/9/19	2023/9/18
Loop Antenna TESEQ	HLA 6121	45745	2022/7/27	2023/7/26
Pre-amplifier EMCI	EMC001340	980201	2022/9/23	2023/9/22
Pre_Amplifier Agilent	8447D	2944A10631	2022/5/14	2023/5/13
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2023/1/7	2024/1/6
RF Coaxial Cable WOKEN	8D-FB	Cable-CH4-01	2022/7/9	2023/7/8
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101582	2022/4/13	2023/4/12
		101866	2023/1/10	2024/1/9
Test Receiver R&S	ESR3+	102782	2022/12/12	2023/12/11
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 3.
2. Tested Date: 2023/3/17

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower inn-co GmbH	MA 4000	010303	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	9120D	9120D-408	2021/11/14 2022/11/13	2022/11/13 2023/11/12
	BBHA 9170	9170-480	2021/11/14 2022/11/13	2022/11/13 2023/11/12
		BBHA9170241	2022/10/20	2023/10/19
		BBHA9170243	2021/11/14 2022/11/13	2022/11/13 2023/11/12
Pre-Ammlifier EMCI	EMC 184045	980116	2022/10/1	2023/9/30
Pre_Amplifier KEYSIGHT	83017A	MY53270295	2022/5/14	2023/5/13
RF cable HUBER+SUHNER	Sucoflex 104	MY 13380+295012/04	2022/5/14	2023/5/13
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2022/7/9	2023/7/8
	EMC102-KM-KM-3000	150929	2022/7/9	2023/7/8
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03(250724)	2022/5/14	2023/5/13
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101582	2022/4/13	2023/4/12
Test Receiver R&S	ESR3+	102782	2021/12/10 2022/12/12	2022/12/9 2023/12/11
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 3.
2. Tested Date: 2022/11/2 ~ 2023/2/24

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 30 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 30 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 30 dB below the highest level of the desired power:

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

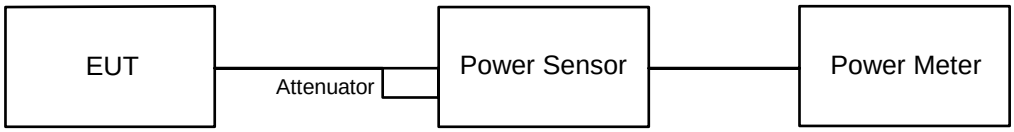
Notes:

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

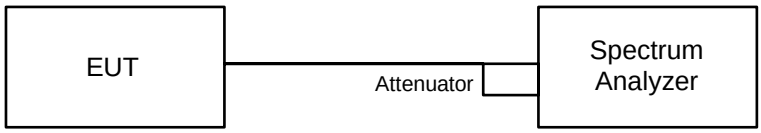


6.1.2 Test Procedure

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

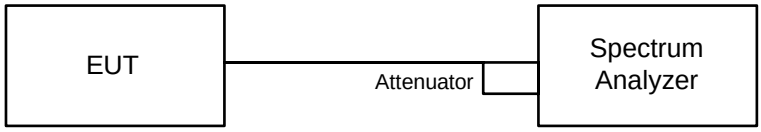


6.2.2 Test Procedure

a. Measure the duty cycle (x).
b. Set instrument center frequency to DTS channel center frequency.
c. Set span to at least 1.5 times the OBW.
d. Set RBW to: 3 kHz.
e. Set VBW ≥3 x RBW.
f. Detector = power averaging (RMS) or sample detector (when RMS not available).
g. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h. Sweep time = auto couple.
i. Do not use sweep triggering. Allow sweep to “free run”.
j. Employ trace averaging (RMS) mode over a minimum of 100 traces.
k. Use the peak marker function to determine the maximum amplitude level.
l. Note: If Duty cycle < 98%, Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

6.3 6 dB Bandwidth

6.3.1 Test Setup

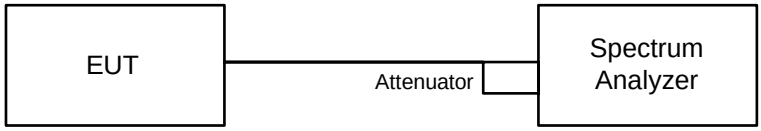


6.3.2 Test Procedure

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

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

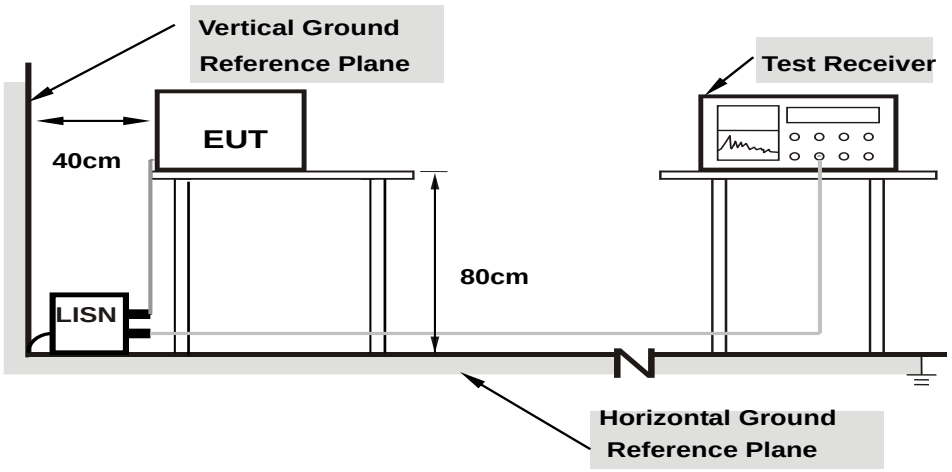
a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep = auto couple.
e. Trace Mode = max hold.
f. Allow trace to fully stabilize.
g. 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

a. 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

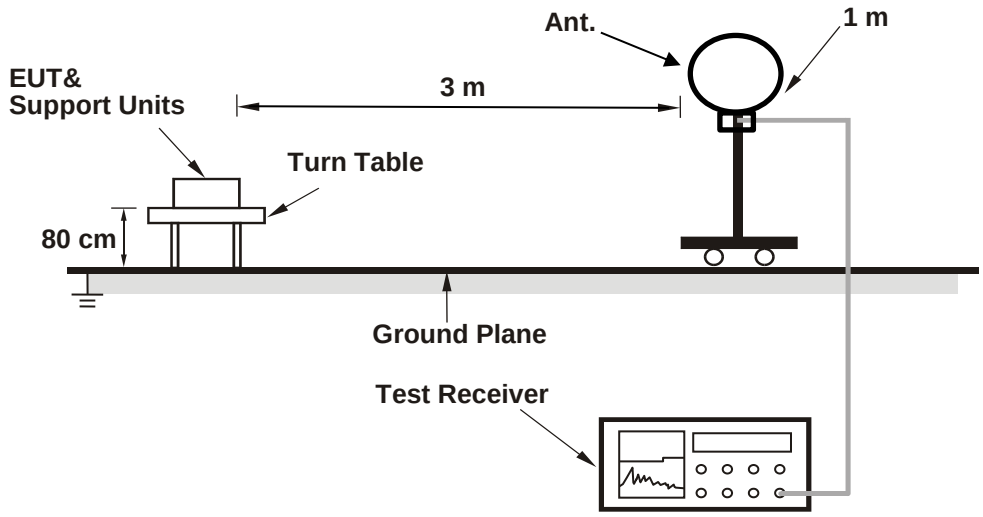
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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.

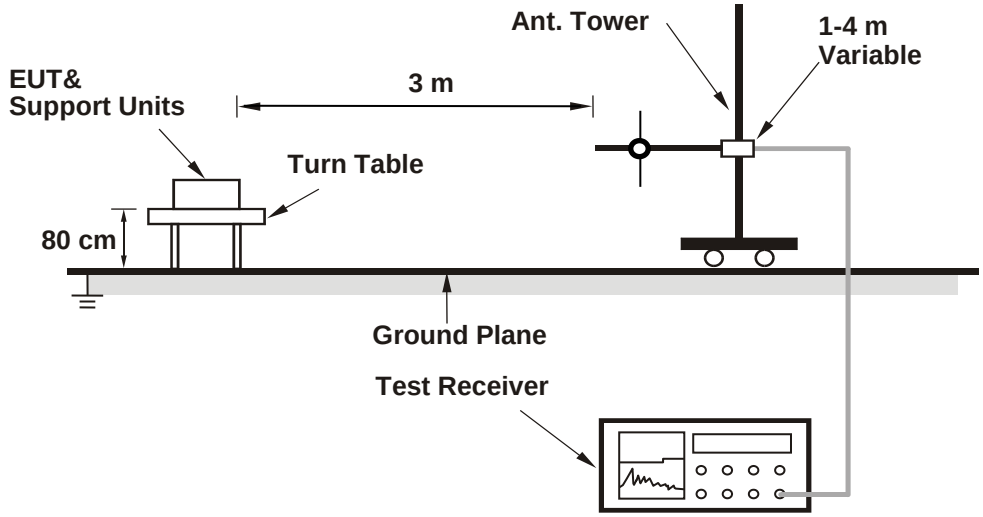
6.6 Unwanted Emissions below 1 GHz

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.

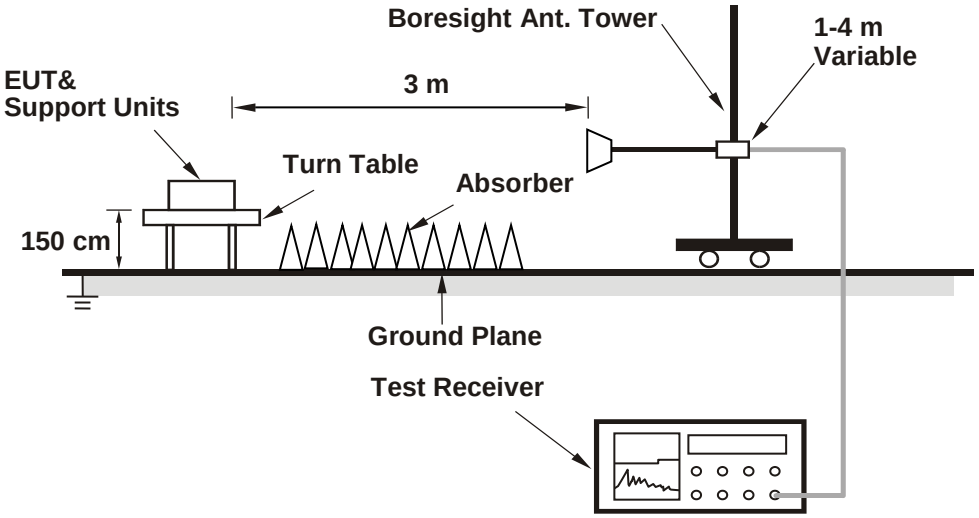
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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

a. 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.

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 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:

1. 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.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
3. 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, 60% RH	Tested By:	Wayne Lin

CDD Mode

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	23.32	23.09	22.91	23.15	820.459	29.14	30	Pass
6	2437	23.39	22.94	22.84	23.35	823.643	29.16	30	Pass
11	2462	23.17	23.14	22.99	22.84	804.931	29.06	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1.14 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	23.51	23.20	23.58	23.09	**865.056**	**29.37**	30	Pass
6	2437	23.08	22.95	23.05	23.21	811.726	29.09	30	Pass
11	2462	22.71	22.53	22.59	22.07	708.315	28.50	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1.14 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	23.22	23.04	22.98	23.26	821.712	29.15	30	Pass
6	2437	23.25	23.09	23.11	23.38	837.469	29.23	30	Pass
11	2462	22.48	22.39	22.49	22.41	701.991	28.46	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1.14 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	21.06	21.22	21.31	21.02	521.759	27.17	30	Pass
6	2437	21.87	21.76	21.82	21.77	606.153	27.83	30	Pass
9	2452	15.50	15.40	15.69	15.48	142.541	21.54	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1.14 dBi < 6 dBi, so the output power limit shall not be reduced.

Beamforming Mode

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	23.22	23.04	22.98	23.26	821.712	29.15	29.86	Pass
6	2437	23.25	23.09	23.11	23.38	**837.469**	**29.23**	29.86	Pass
11	2462	22.48	22.39	22.49	22.41	701.991	28.46	29.86	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. The directional gain is 6.14 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.14-6) = 29.86 dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	21.06	21.22	21.31	21.02	521.759	27.17	29.86	Pass
6	2437	21.87	21.76	21.82	21.77	606.153	27.83	29.86	Pass
9	2452	15.50	15.40	15.69	15.48	142.541	21.54	29.86	Pass

Notes:

1. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
2. The directional gain is 6.14 dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.14-6) = 29.86 dBm.

7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin

802.11b

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	-6.11	-6.30	-6.44	-6.23	0.14	-0.11	7.86	Pass
6	2437	-6.05	-6.54	-6.69	-6.06	0.14	-0.16	7.86	Pass
11	2462	-6.32	-6.36	-6.54	-6.66	0.14	-0.30	7.86	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. The directional gain is 6.14 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.14-6) = 7.86 dBm/3kHz.

802.11g

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	-11.44	-11.72	-11.32	-11.88	0.20	-5.36	7.86	Pass
6	2437	-11.04	-10.19	-11.13	-10.85	0.20	-4.56	7.86	Pass
11	2462	-11.44	-11.63	-11.51	-12.00	0.20	-5.42	7.86	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. The directional gain is 6.14 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.14-6) = 7.86 dBm/3kHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	-13.14	-13.34	-13.40	-13.04	1.07	-6.14	7.86	Pass
6	2437	-13.11	-13.28	-13.19	-12.96	1.07	-6.05	7.86	Pass
11	2462	-13.92	-13.95	-13.84	-13.90	1.07	-6.81	7.86	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. The directional gain is 6.14 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.14-6) = 7.86 dBm/3kHz.

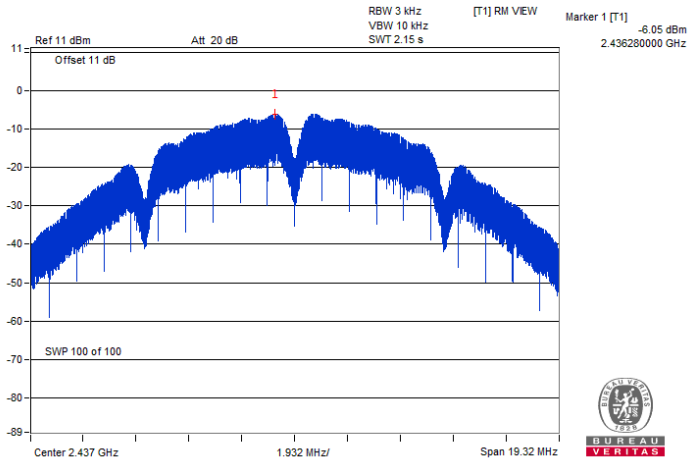
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	-18.32	-18.16	-17.99	-18.42	1.07	-11.13	7.86	Pass
6	2437	-17.54	-17.65	-17.59	-17.64	1.07	-10.52	7.86	Pass
9	2452	-23.88	-23.94	-23.59	-23.88	1.07	-16.73	7.86	Pass

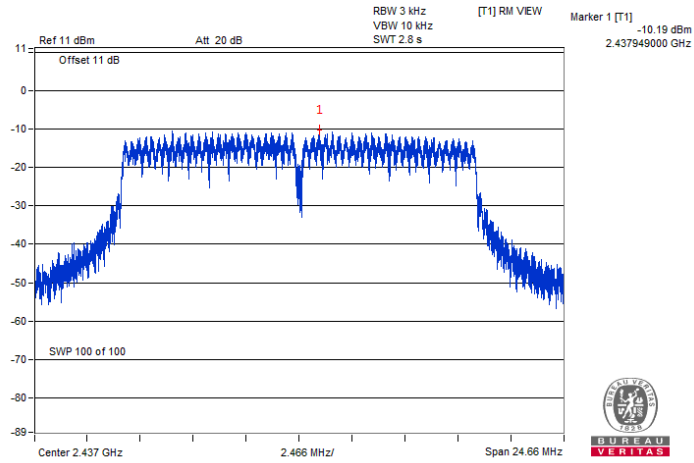
Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain is the measured value according to KDB 662911 D03 Method of MIMO Antenna Gain Measurement.
3. The directional gain is 6.14 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.14-6) = 7.86 dBm/3kHz.

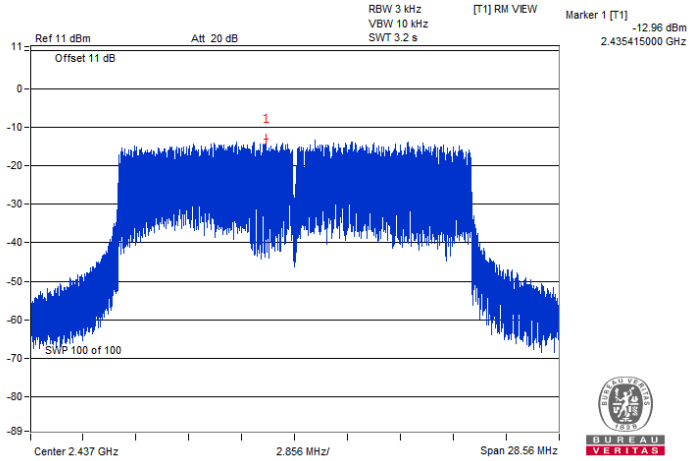
Spectrum Plot of Maximum Value



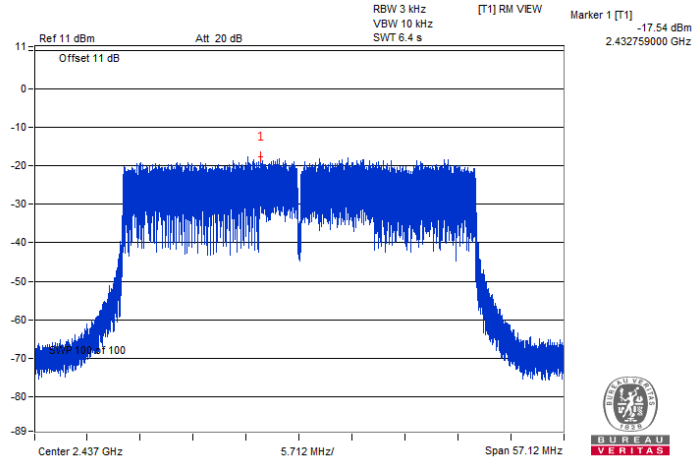
802.11b / Chain 0 : CH 6



802.11g / Chain 1 : CH 6



802.11ax (HE20) / Chain 3 : CH 6



802.11ax (HE40) / Chain 0 : CH 6

7.3 6 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	7.61	7.18	7.55	7.18	0.5	Pass
6	2437	7.07	7.10	7.06	7.06	0.5	Pass
11	2462	7.17	7.60	7.61	7.17	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	16.37	16.09	15.95	16.38	0.5	Pass
6	2437	16.38	16.33	16.09	16.12	0.5	Pass
11	2462	16.38	16.36	16.08	16.38	0.5	Pass

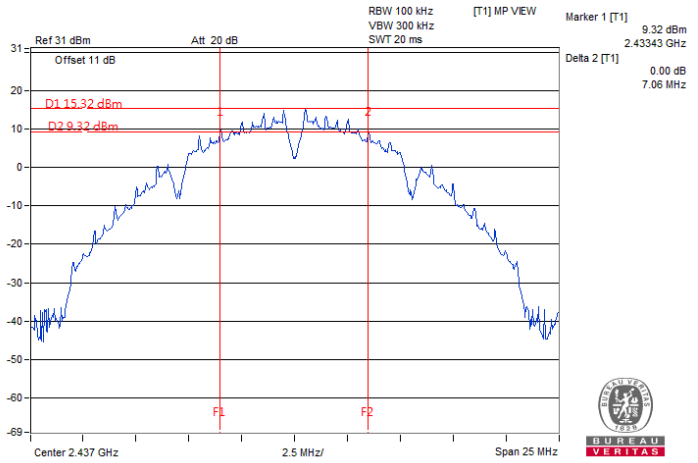
802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	18.70	18.72	18.72	18.89	0.5	Pass
6	2437	18.83	18.91	18.93	18.77	0.5	Pass
11	2462	18.84	18.92	18.88	18.90	0.5	Pass

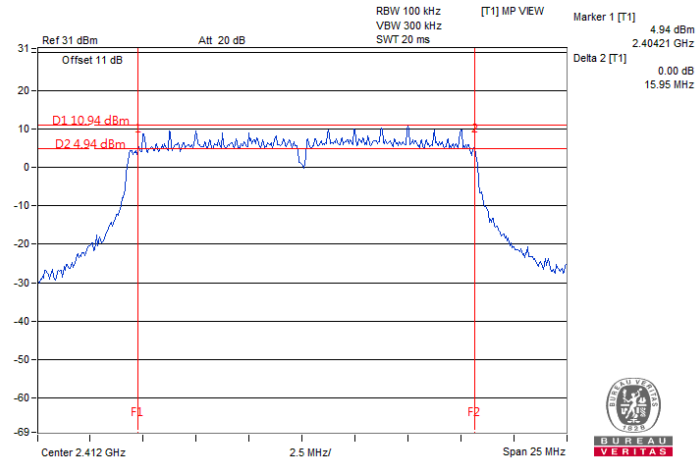
802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
3	2422	36.92	37.11	37.91	37.90	0.5	Pass
6	2437	37.99	37.92	38.16	37.88	0.5	Pass
9	2452	38.10	38.03	38.05	36.97	0.5	Pass

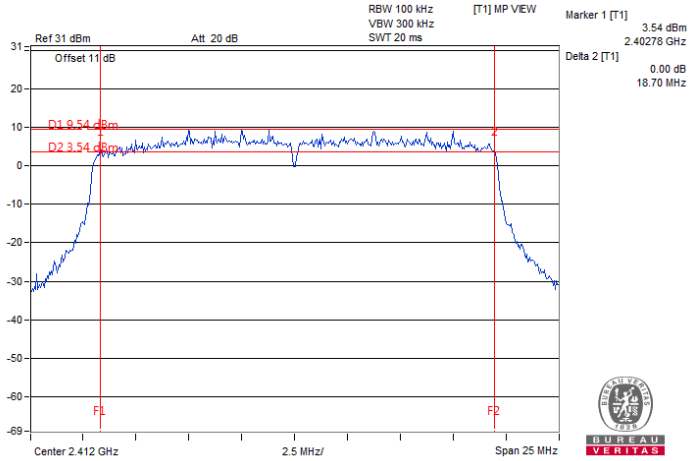
Spectrum Plot of Minimum Value



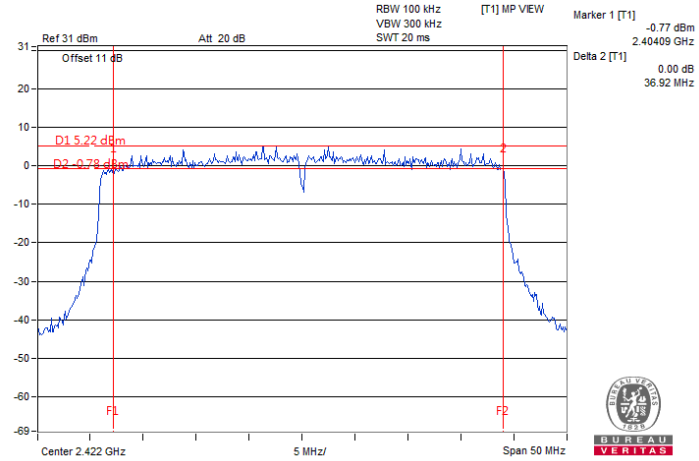
802.11b / Chain 2 : CH 6



802.11g / Chain 2 : CH 1



802.11ax (HE20) / Chain 0 : CH 1

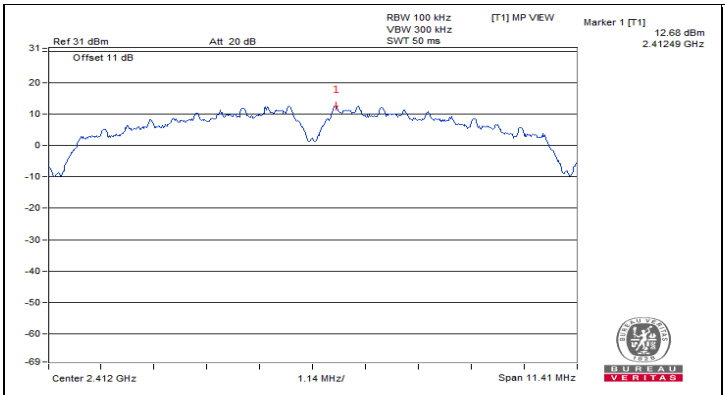


802.11ax (HE40) / Chain 0 : CH 3

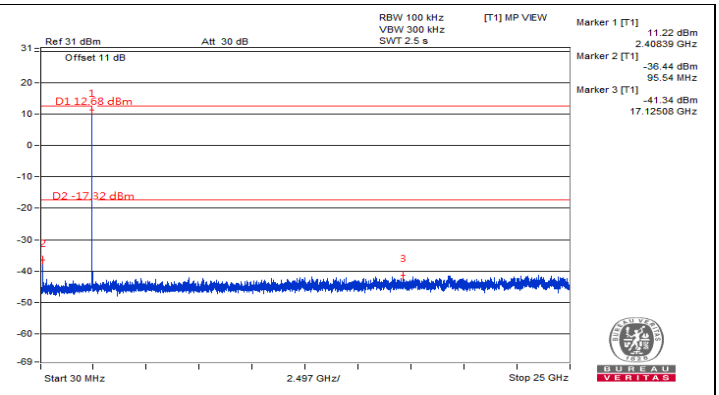
7.4 Conducted Out of Band Emissions

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin

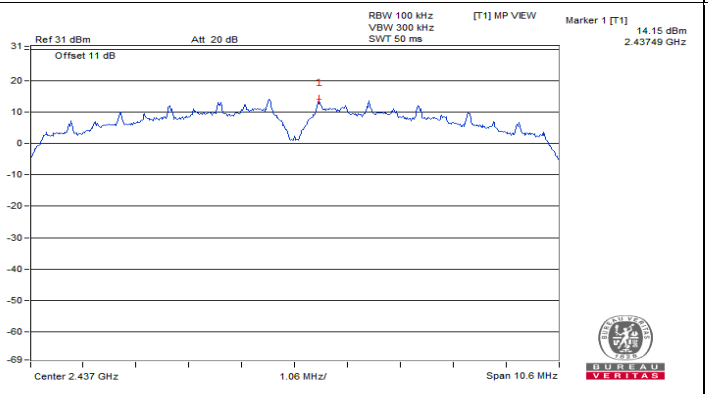
802.11b



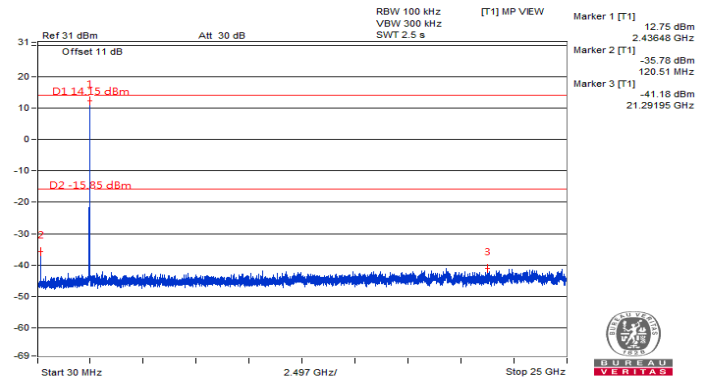
Chain 0 : CH 1



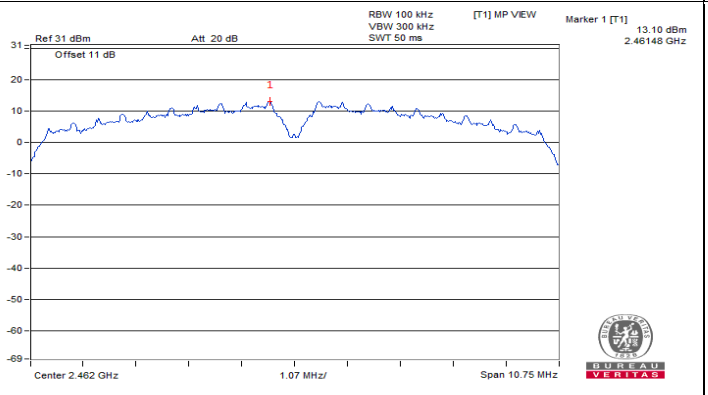
Chain 0 : CH 1



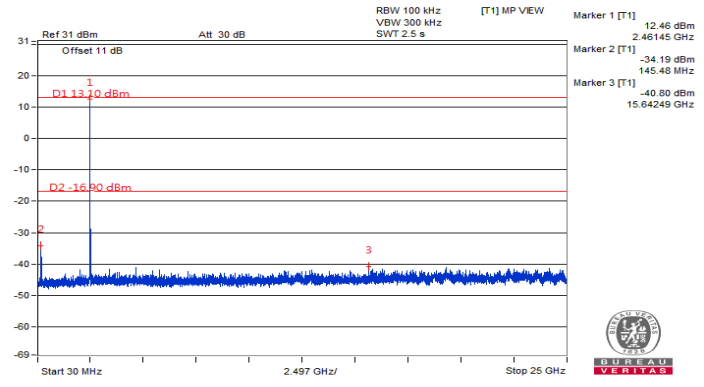
Chain 0 : CH 6



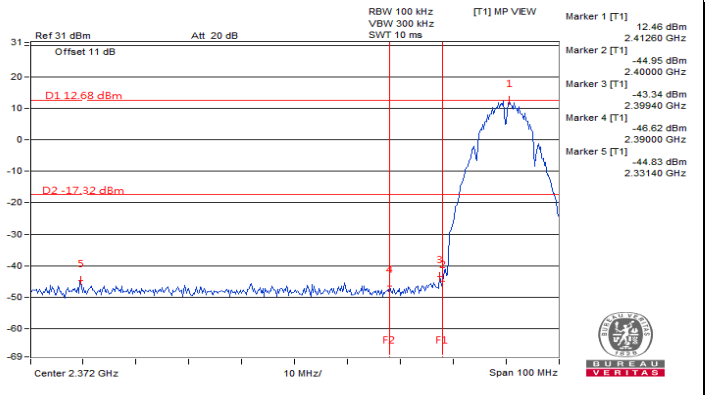
Chain 0 : CH 6



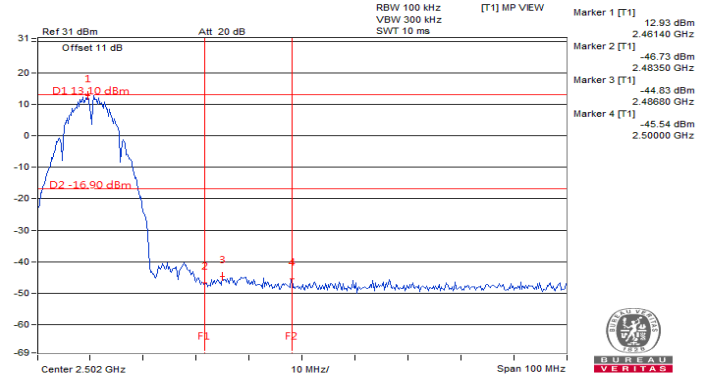
Chain 0 : CH 11



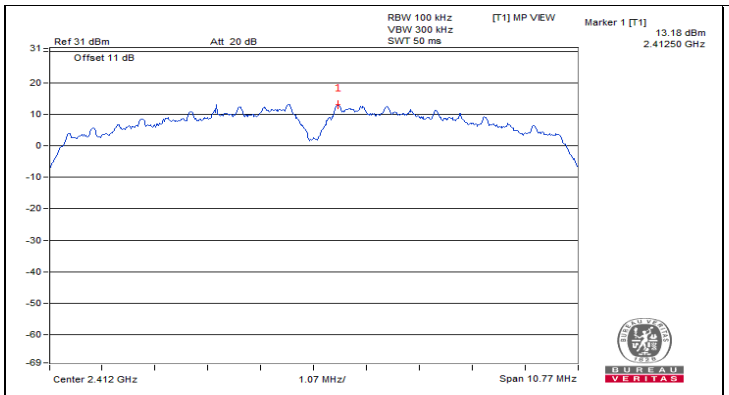
Chain 0 : CH 11



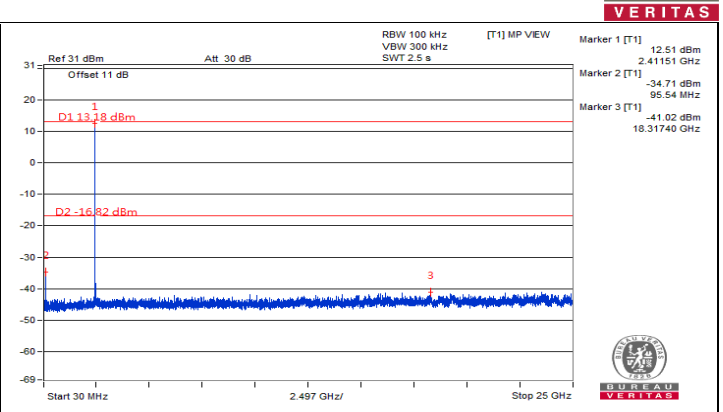
Chain 0 : CH 1 Band edge



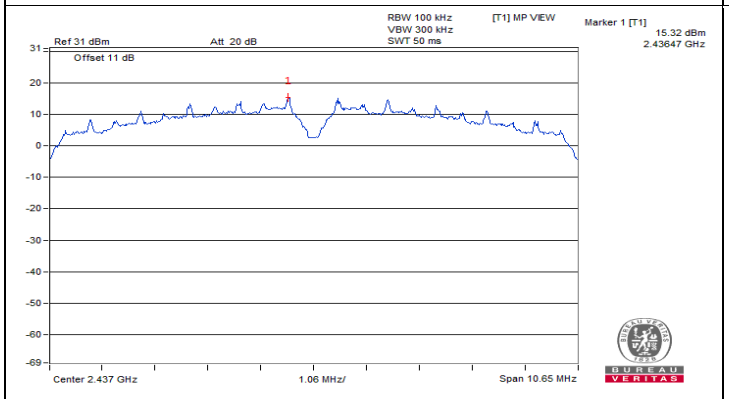
Chain 0 : CH 11 Band edge



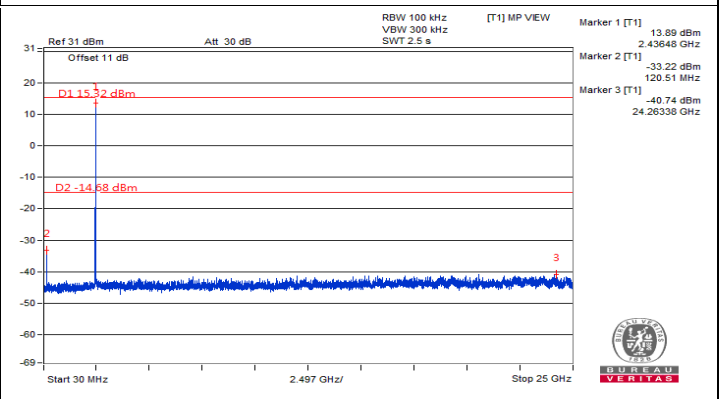
Chain 1 : CH 1



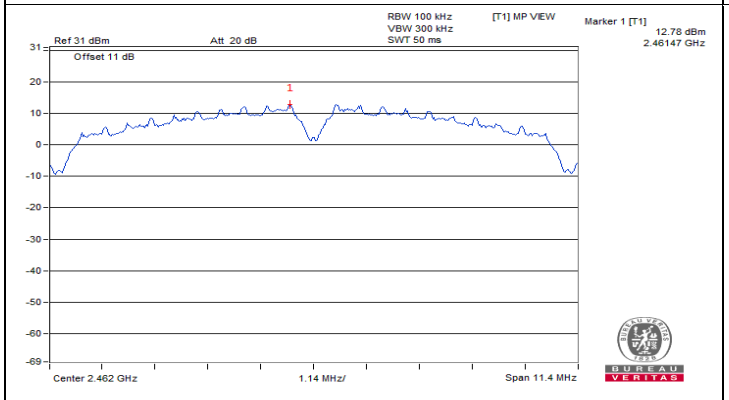
Chain 1 : CH 1



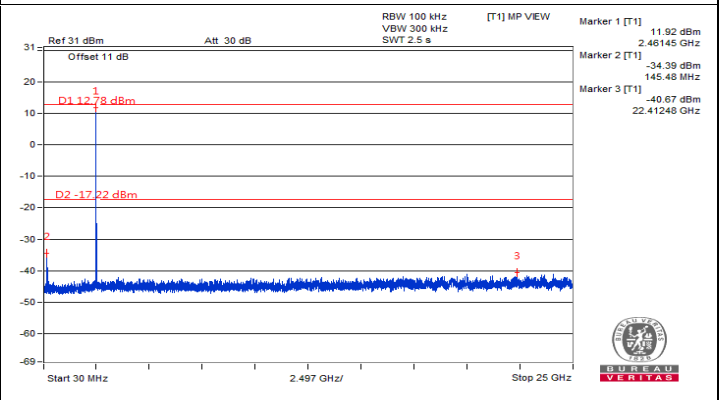
Chain 1 : CH 6



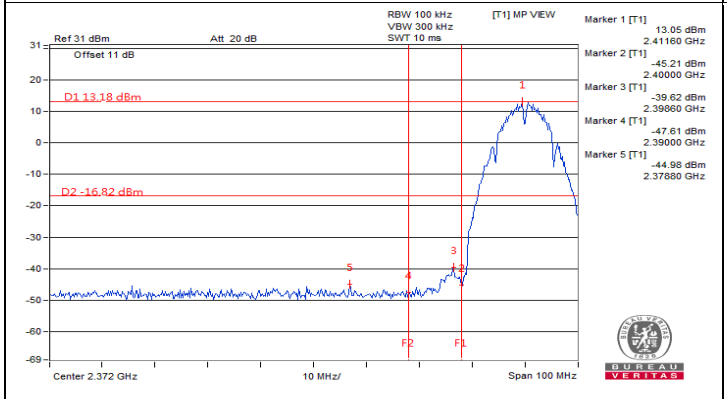
Chain 1 : CH 6



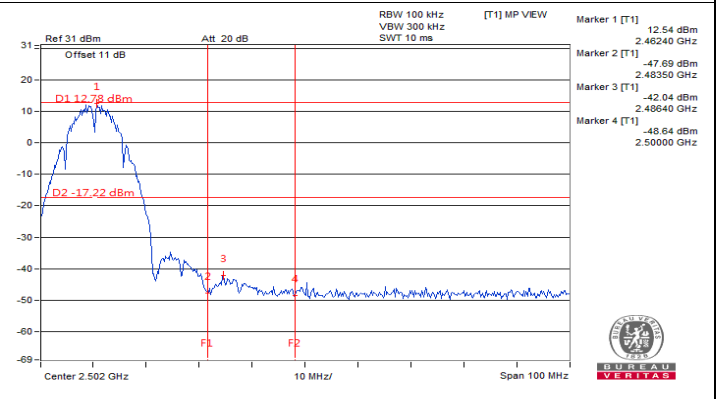
Chain 1 : CH 11



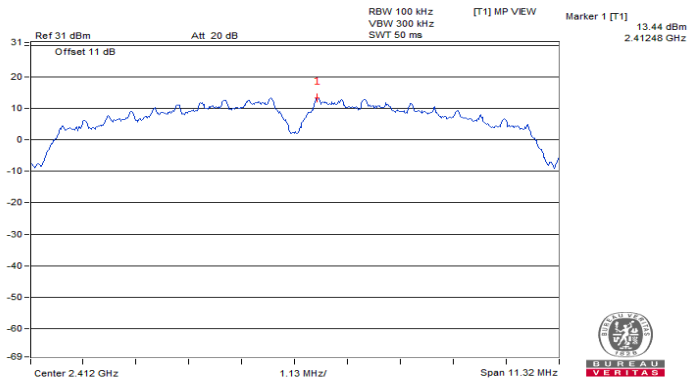
Chain 1 : CH 11



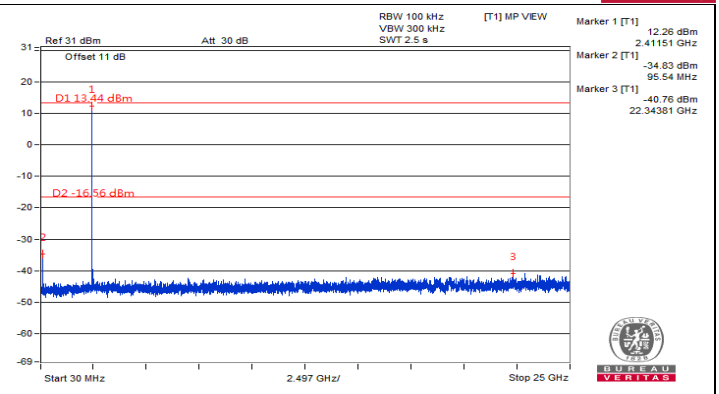
Chain 1 : CH 1 Band edge



Chain 1 : CH 11 Band edge



Chain 2 : CH 1



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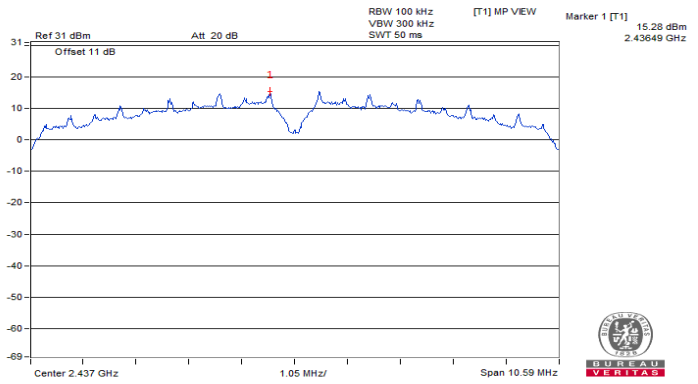
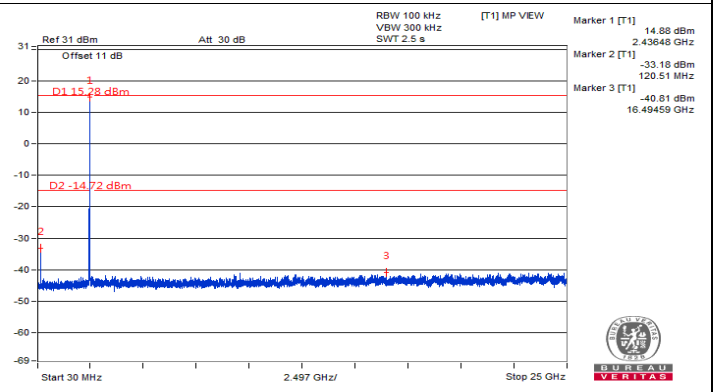


Chain 2 : CH 6



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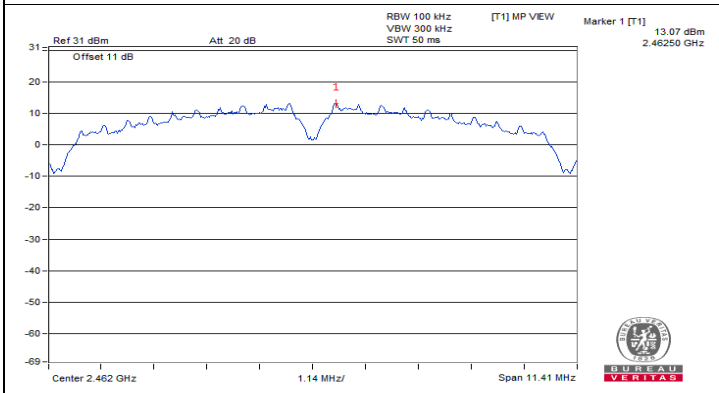
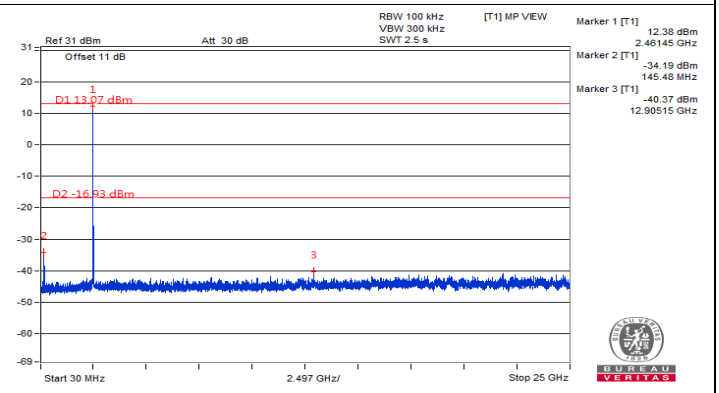
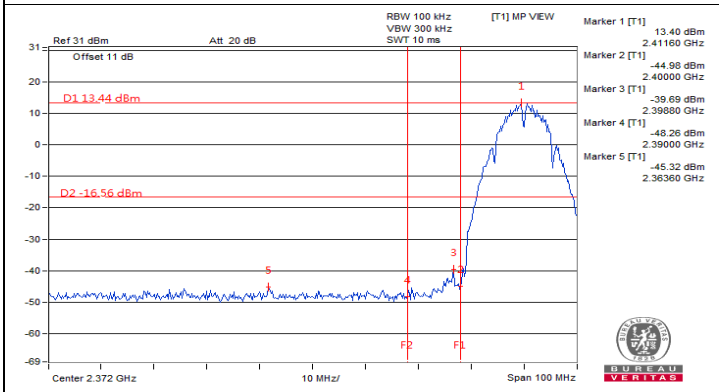


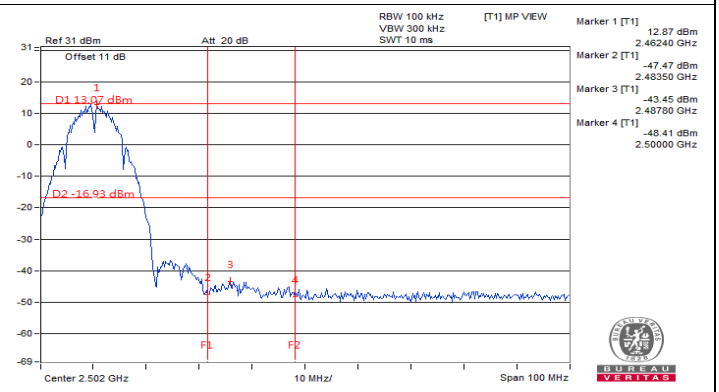
Chain 2 : CH 11



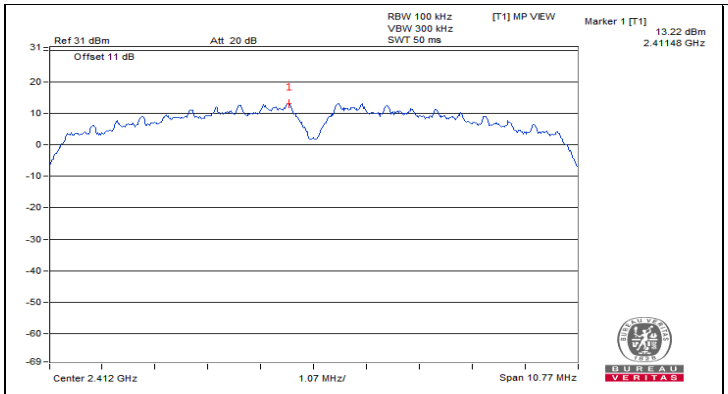
Chain 2 : CH 11



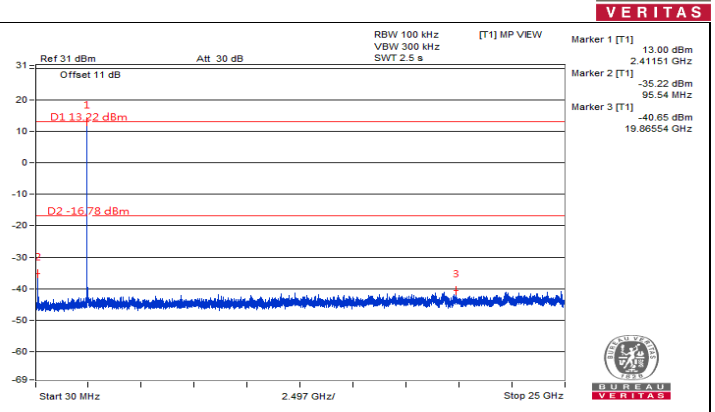
Chain 2 : CH 1 Band edge



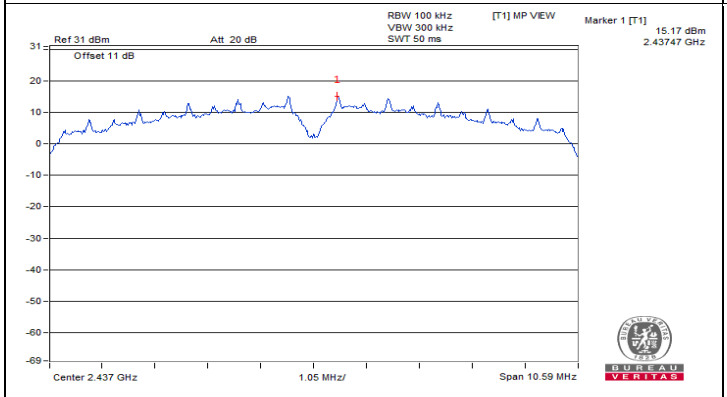
Chain 2 : CH 11 Band edge



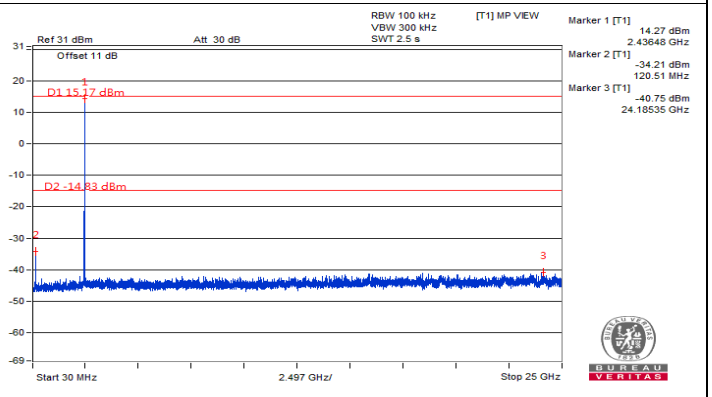
Chain 3 : CH 1



Chain 3 : CH 1



Chain 3 : CH 6



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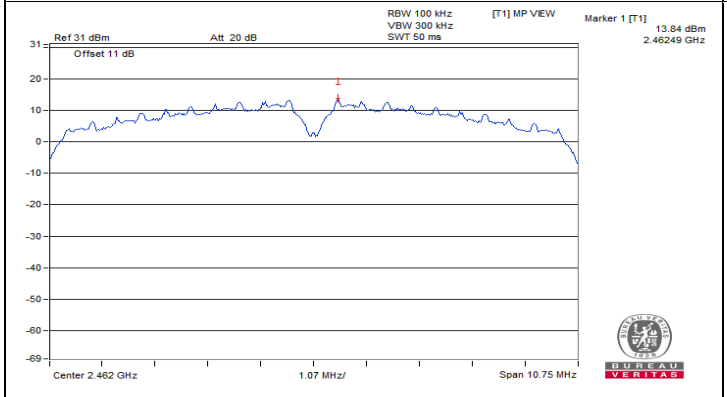
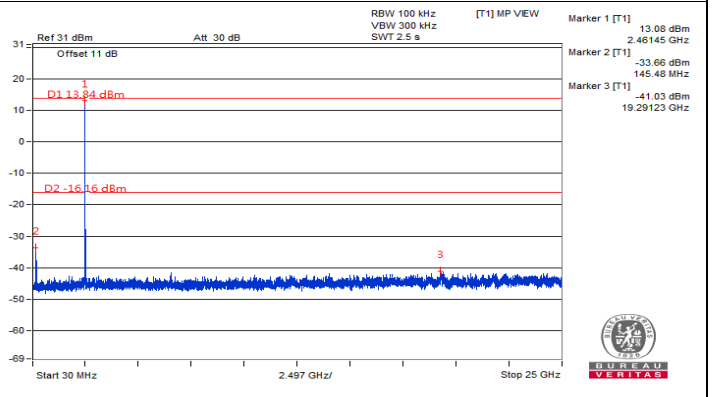
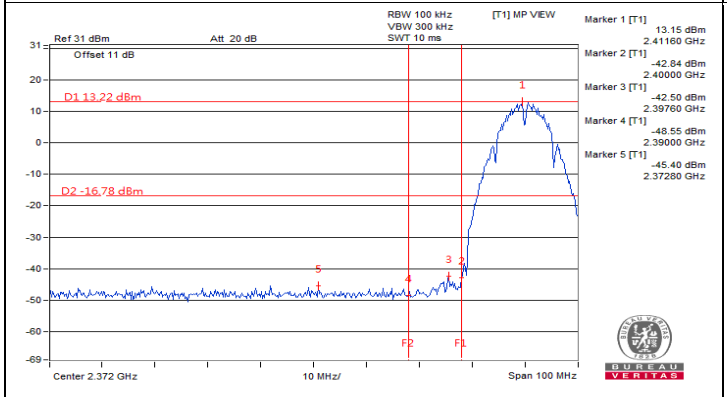


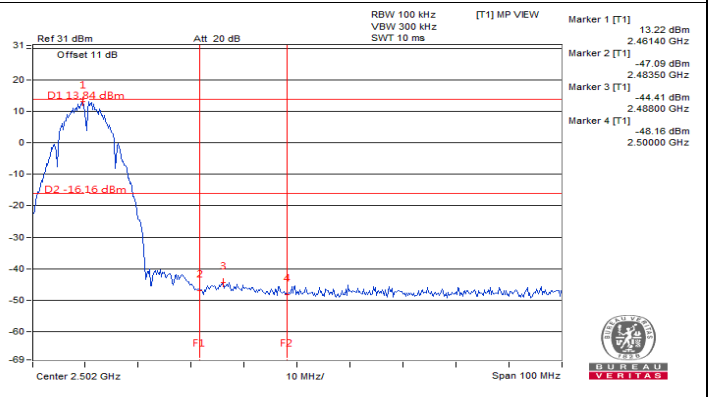
Chain 3 : CH 11



Chain 3 : CH 11



Chain 3 : CH 1 Band edge



Chain 3 : CH 11 Band edge

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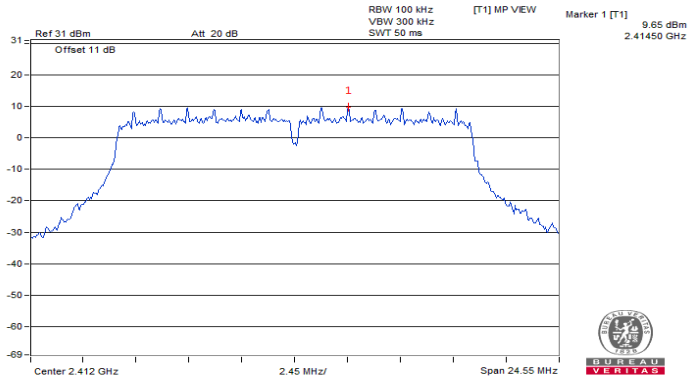
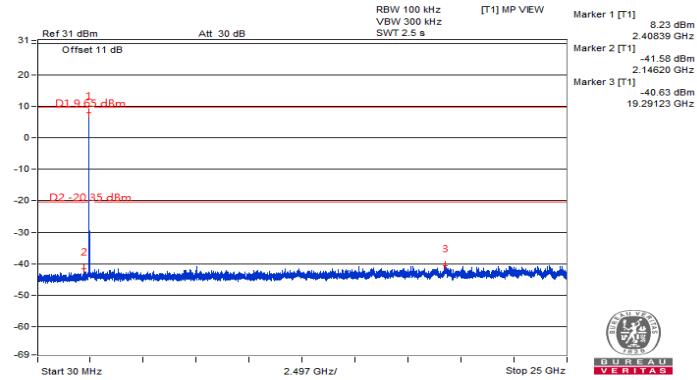


Chain 0 : CH 1



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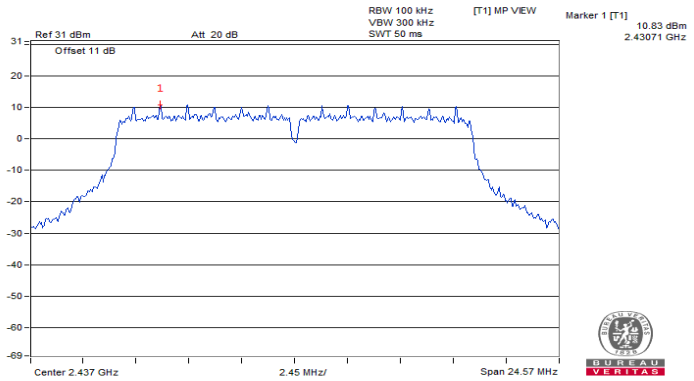
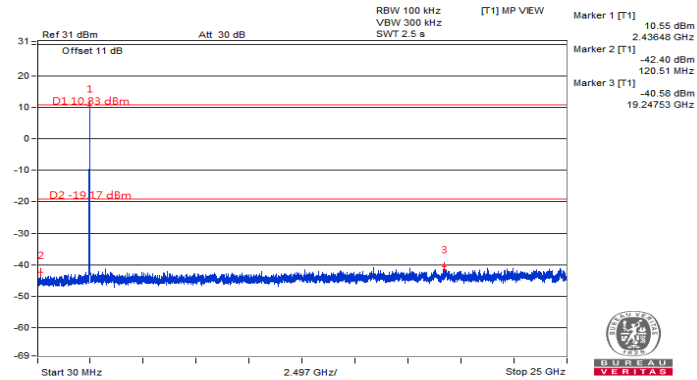
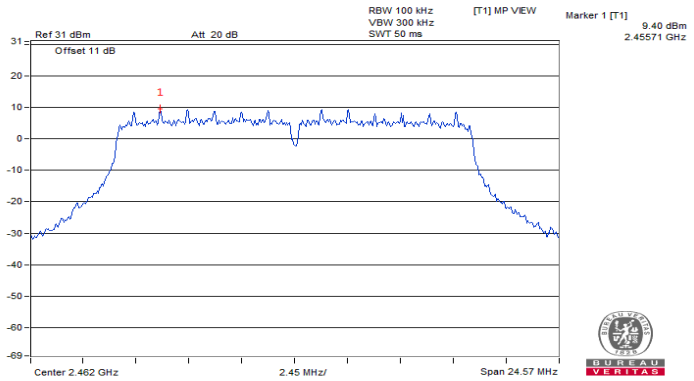


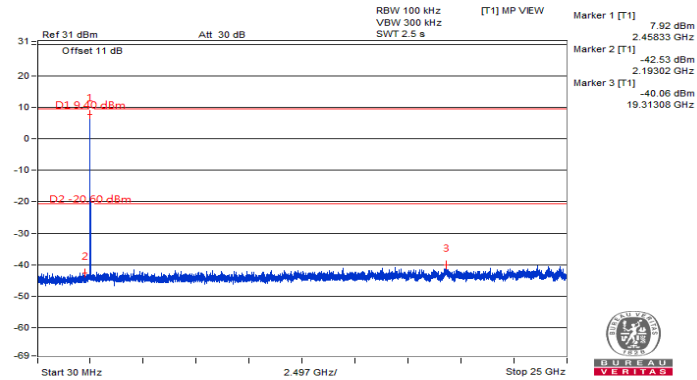
Chain 0 : CH 6



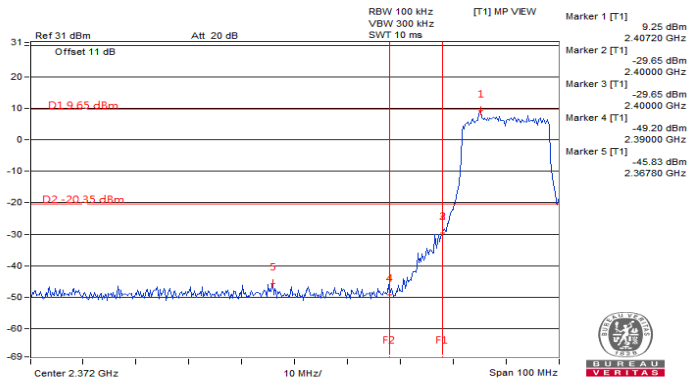
Chain 0 : CH 6



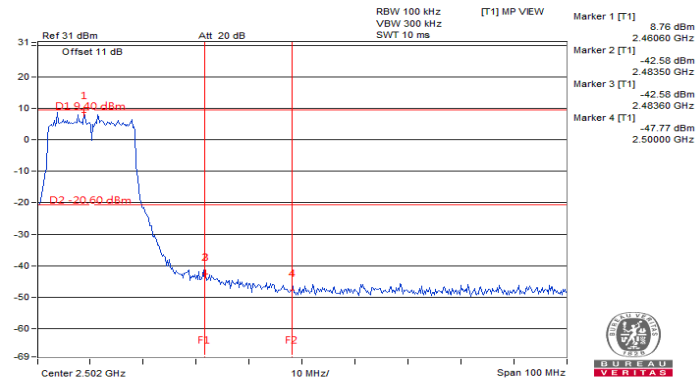
Chain 0 : CH 11



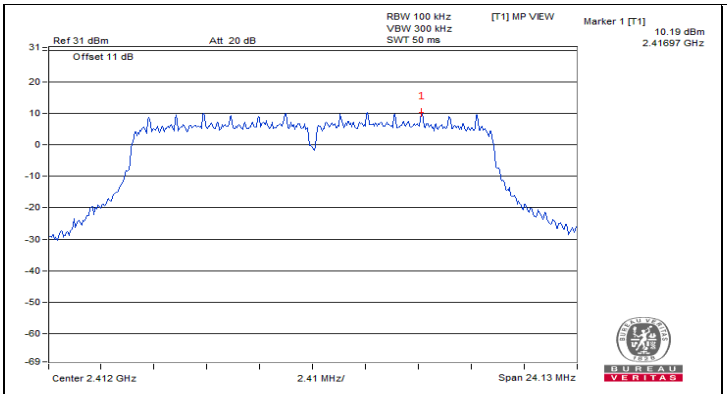
Chain 0 : CH 11



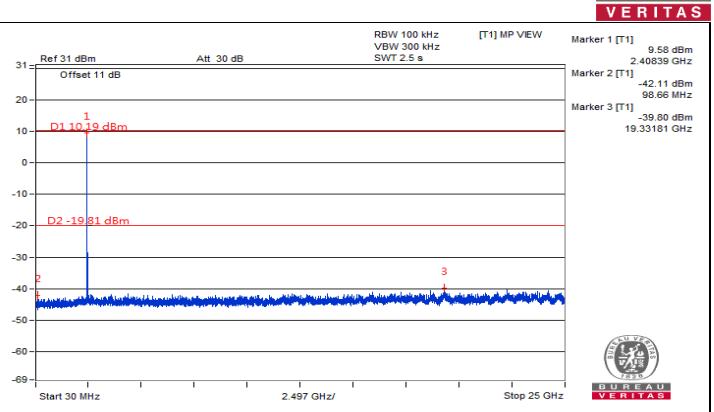
Chain 0 : CH 1 Band edge



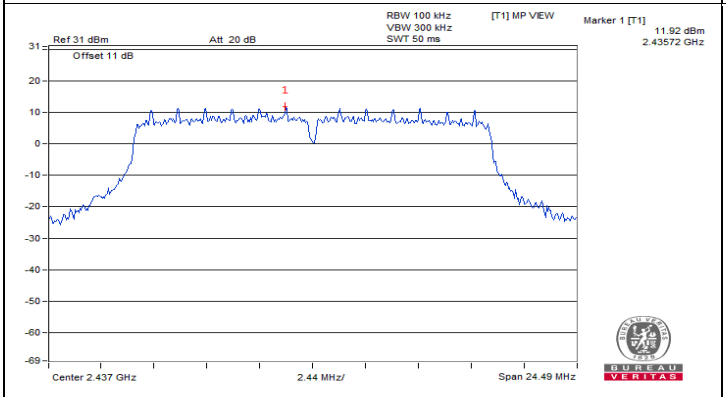
Chain 0 : CH 11 Band edge



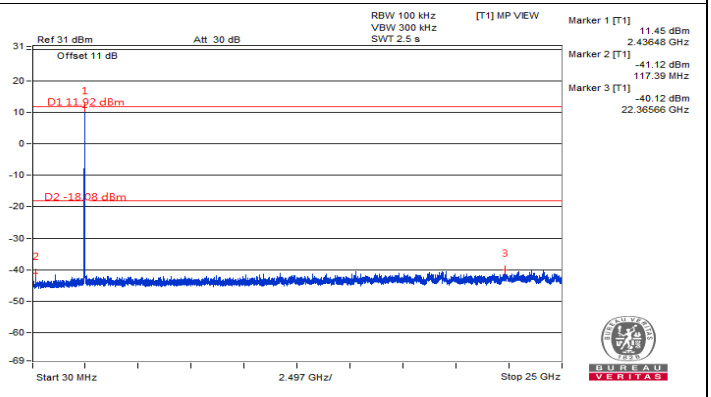
Chain 1 : CH 1



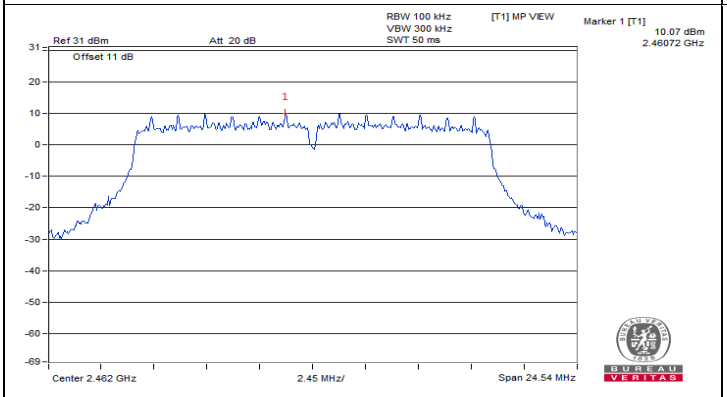
Chain 1 : CH 1



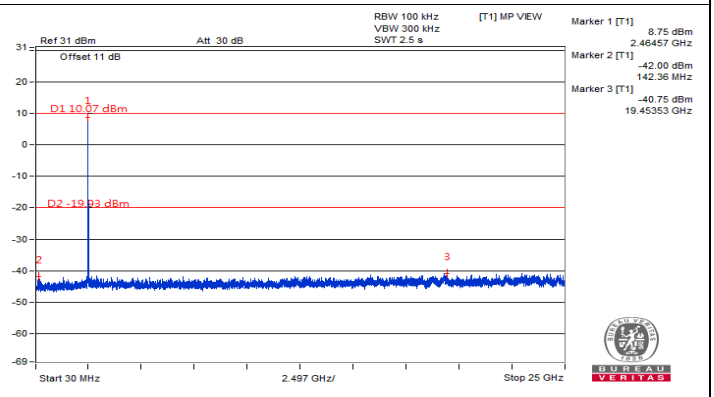
Chain 1 : CH 6



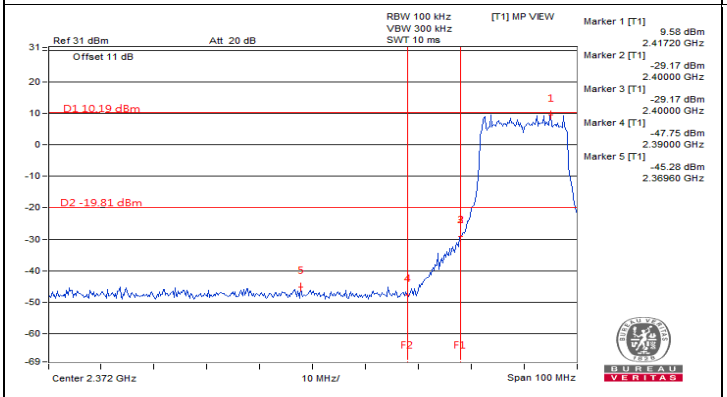
Chain 1 : CH 6



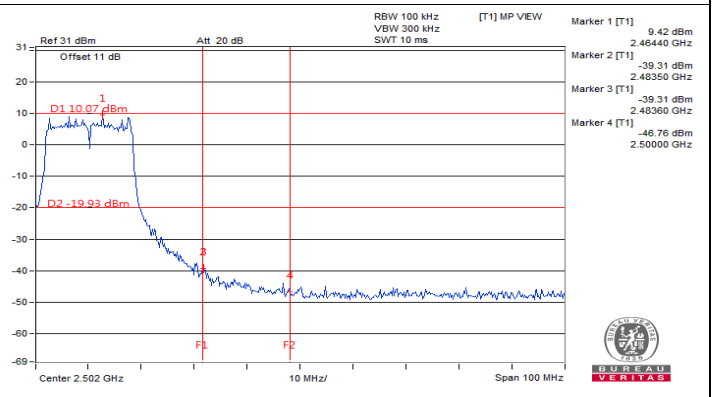
Chain 1 : CH 11



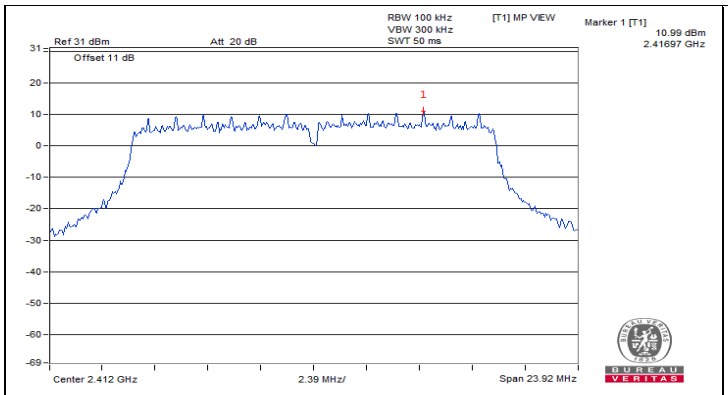
Chain 1 : CH 11



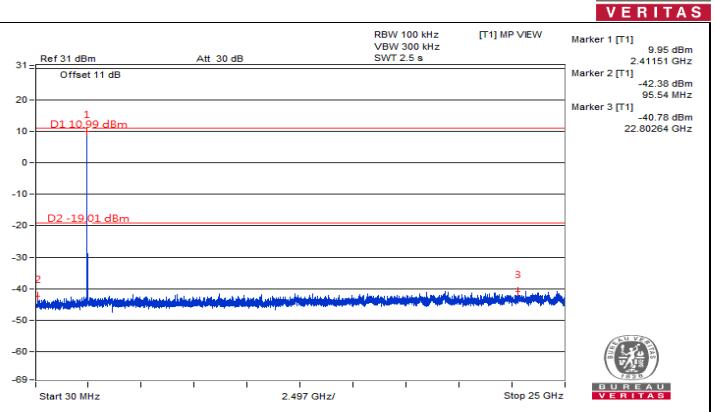
Chain 1 : CH 1 Band edge



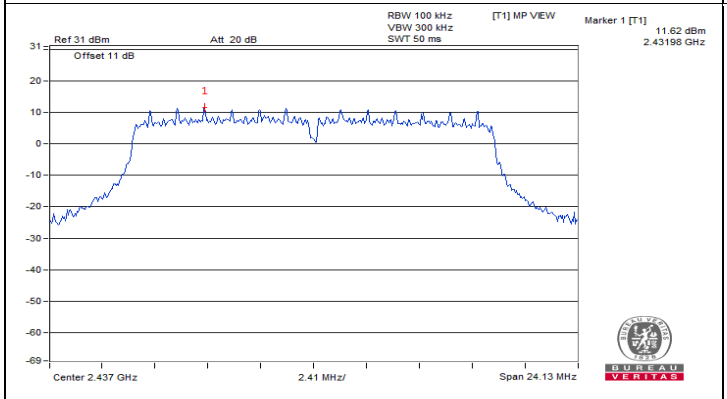
Chain 1 : CH 11 Band edge



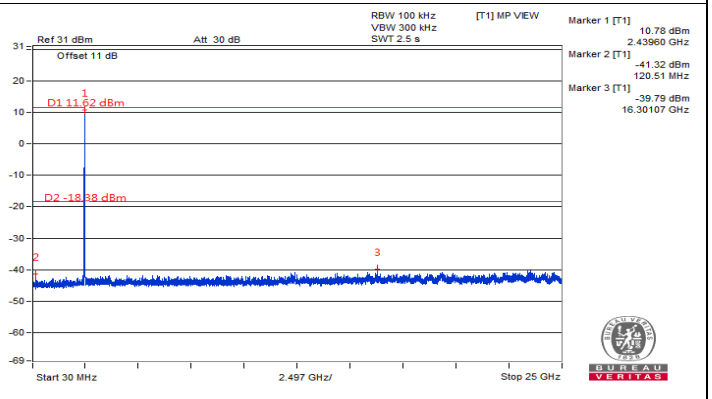
Chain 2 : CH 1



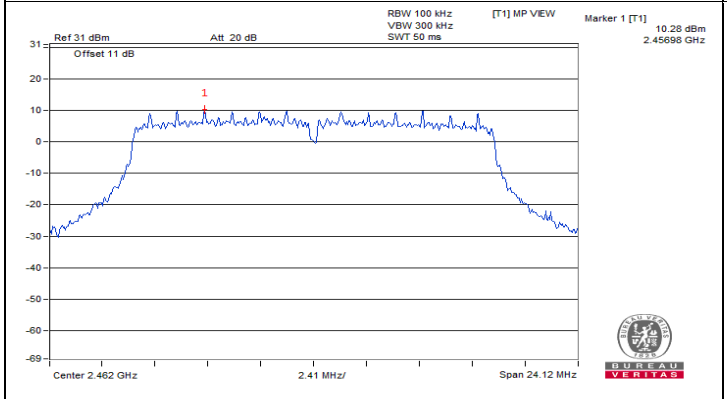
Chain 2 : CH 1



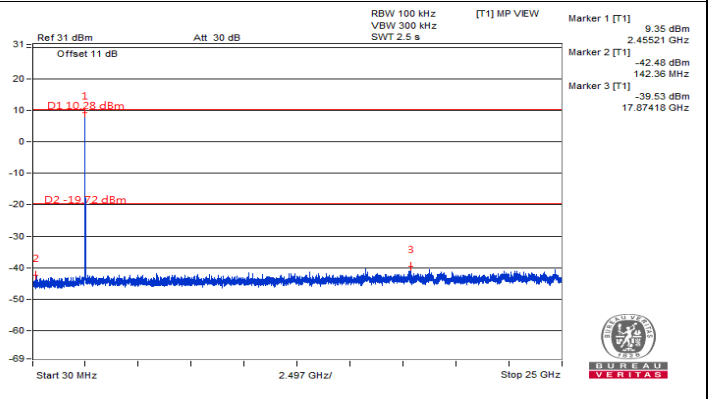
Chain 2 : CH 6



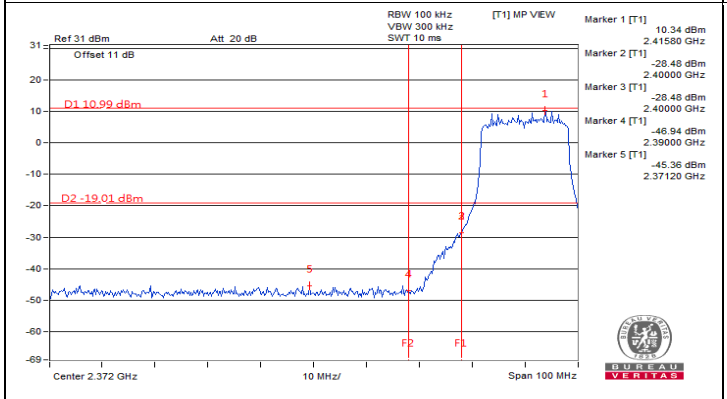
Chain 2 : CH 6



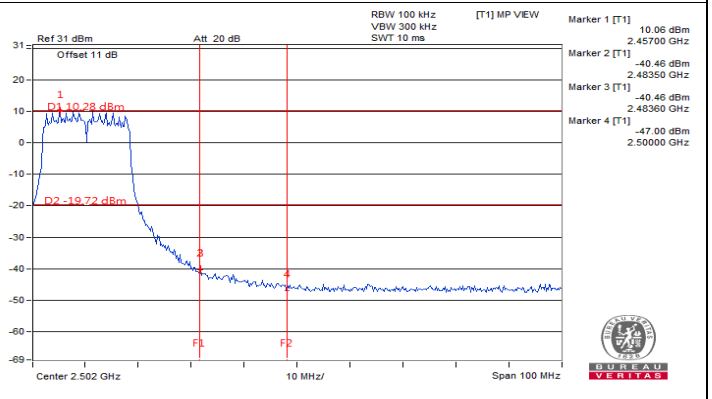
Chain 2 : CH 11



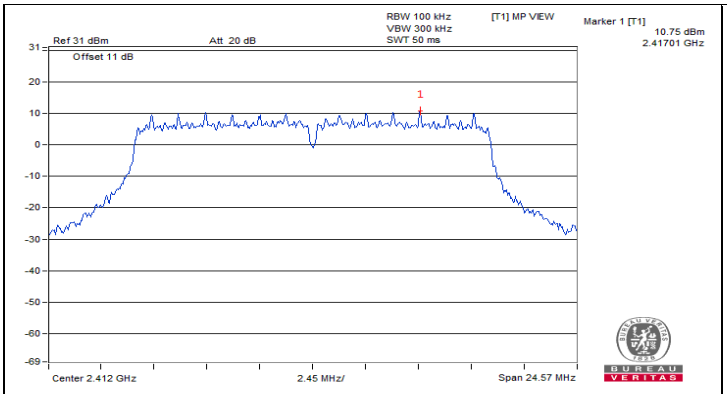
Chain 2 : CH 11



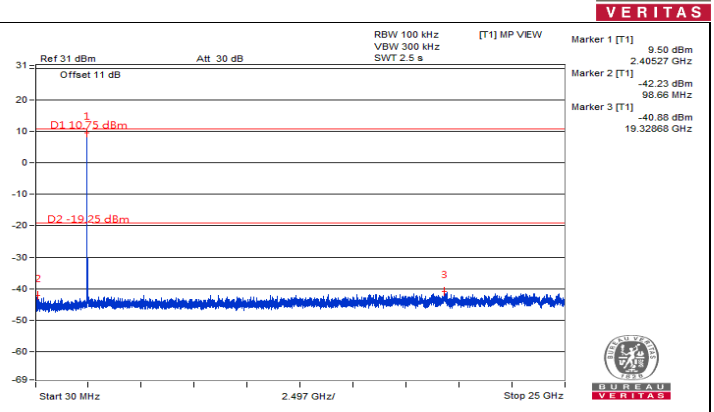
Chain 2 : CH 1 Band edge



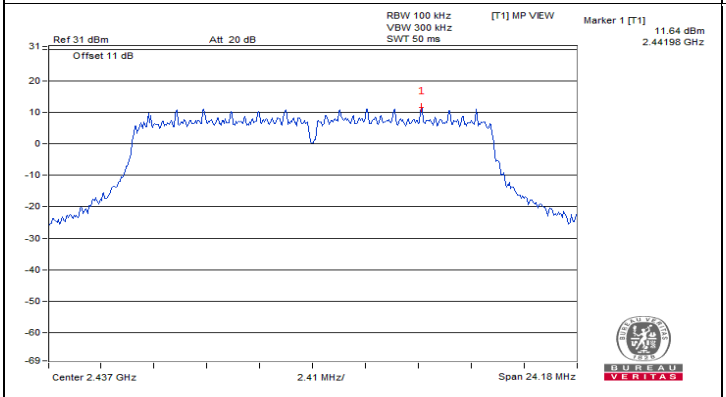
Chain 2 : CH 11 Band edge



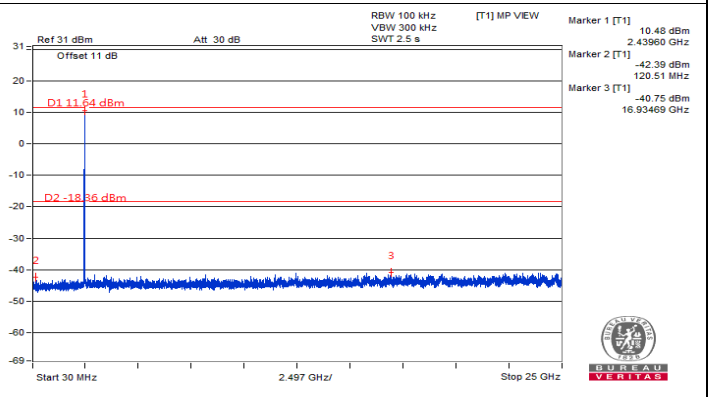
Chain 3 : CH 1



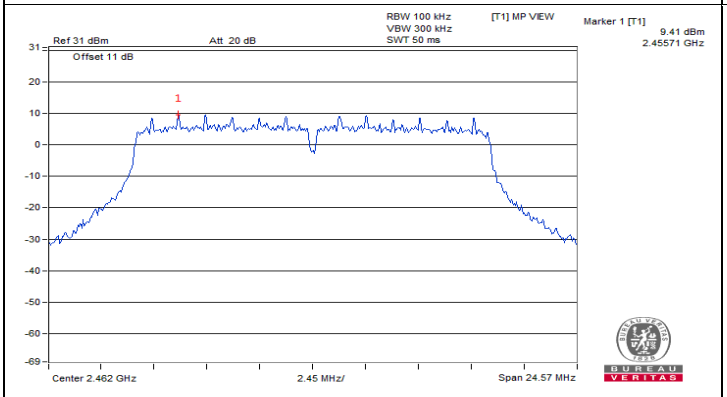
Chain 3 : CH 1



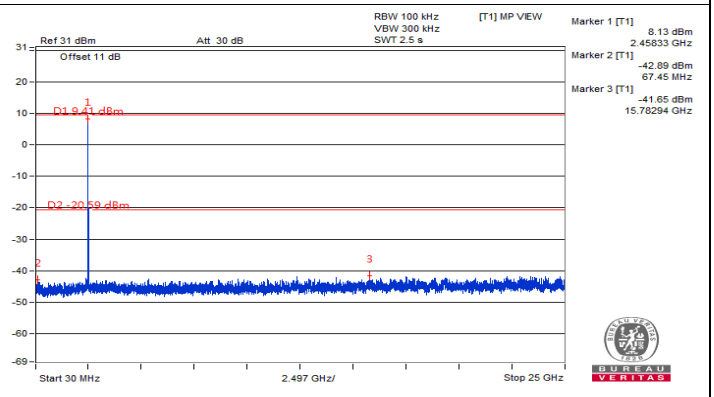
Chain 3 : CH 6



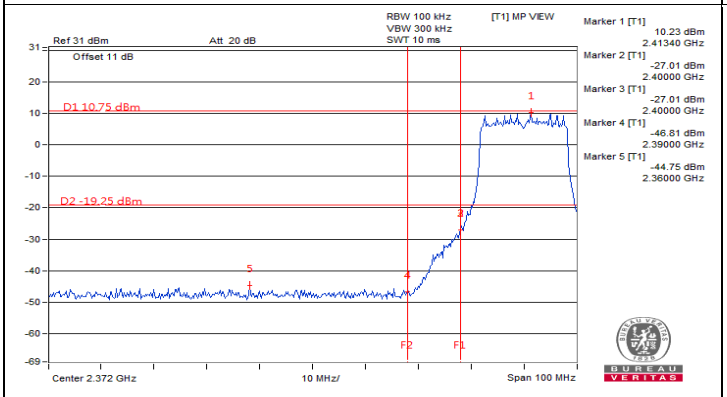
Chain 3 : CH 6



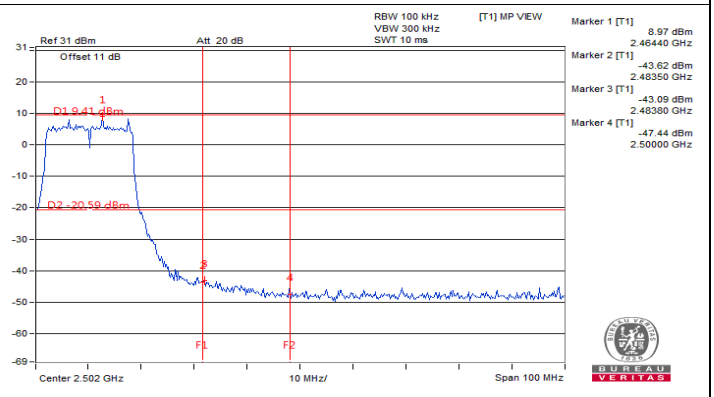
Chain 3 : CH 11



Chain 3 : CH 11



Chain 3 : CH 1 Band edge



Chain 3 : CH 11 Band edge

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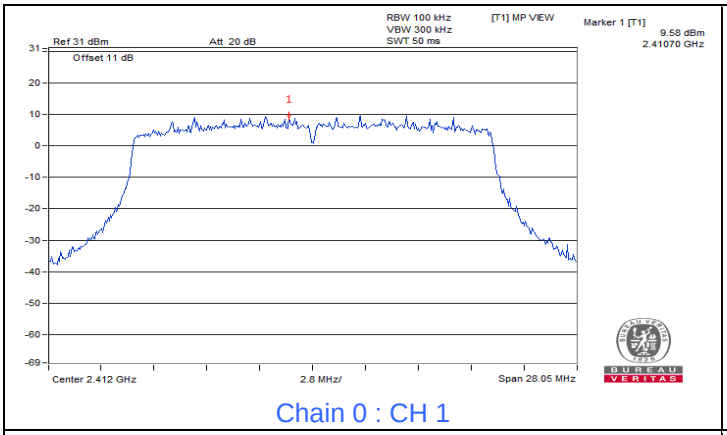
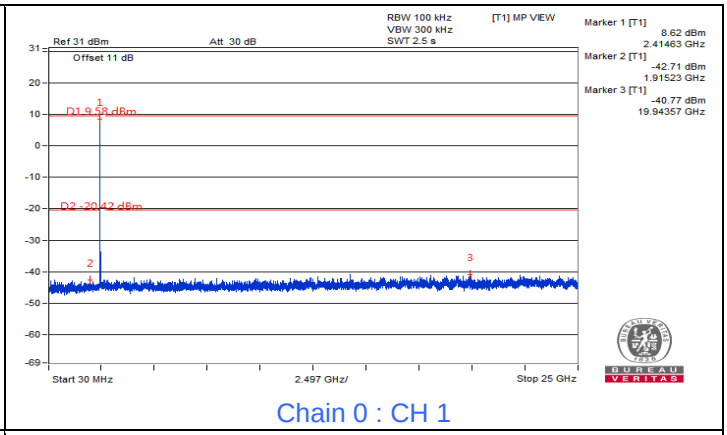
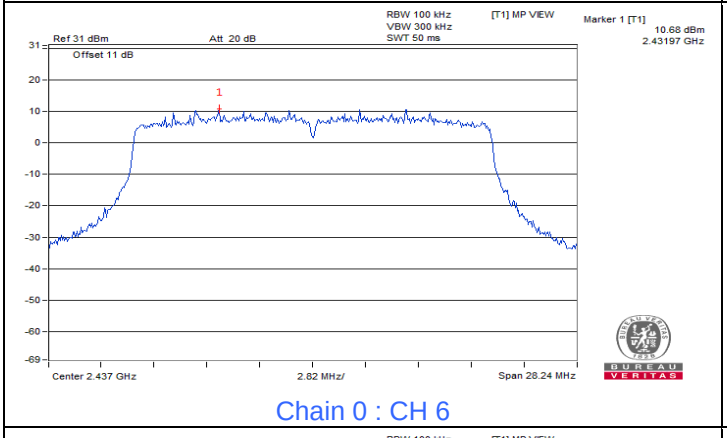


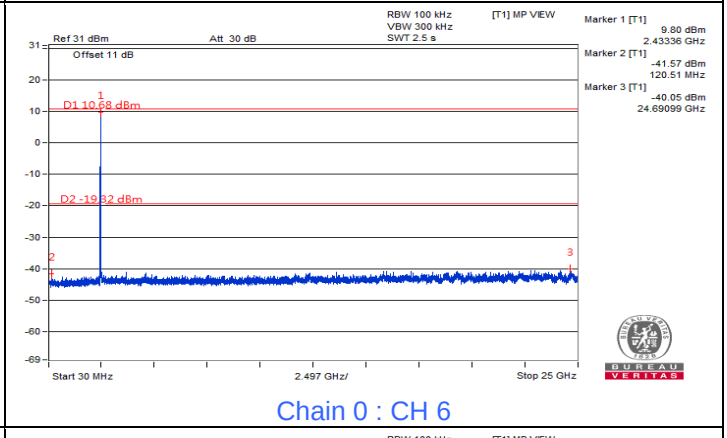
Chain 0 : CH 1



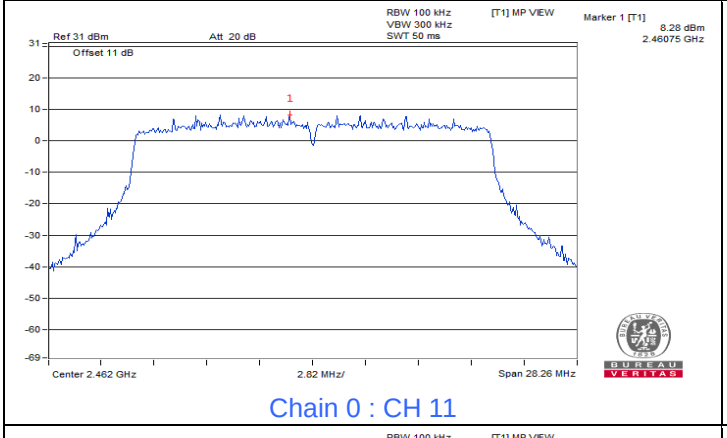
Chain 0 : CH 1



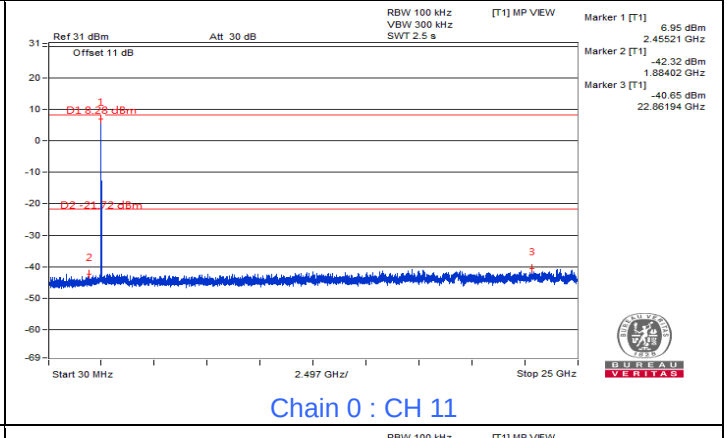
Chain 0 : CH 6



Chain 0 : CH 6



Chain 0 : CH 11



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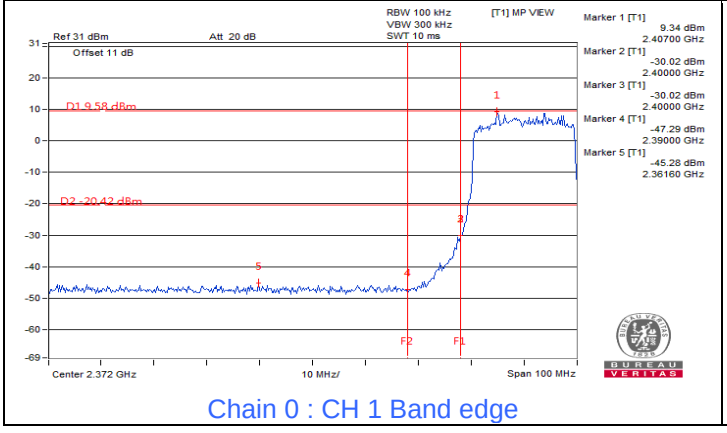
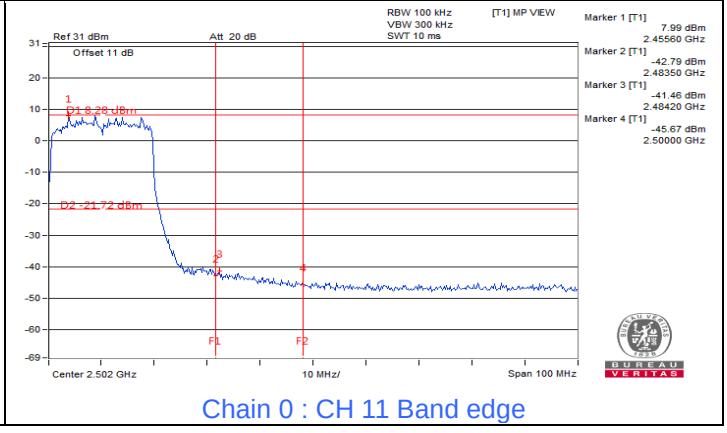
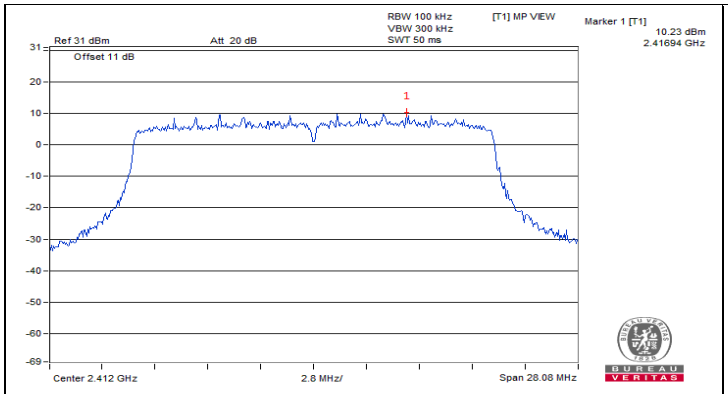


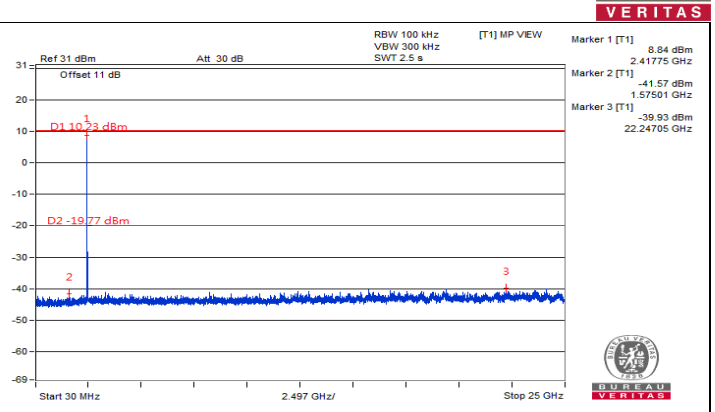
Chain 0 : CH 1 Band edge



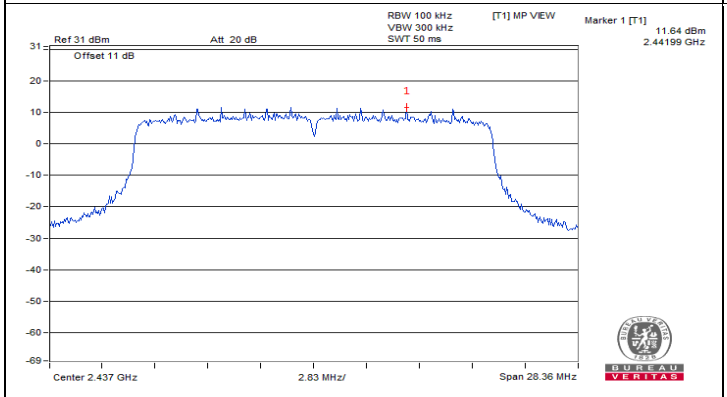
Chain 0 : CH 11 Band edge



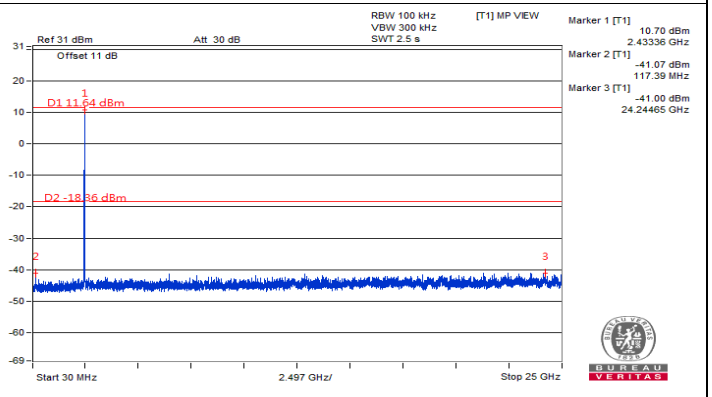
Chain 1 : CH 1



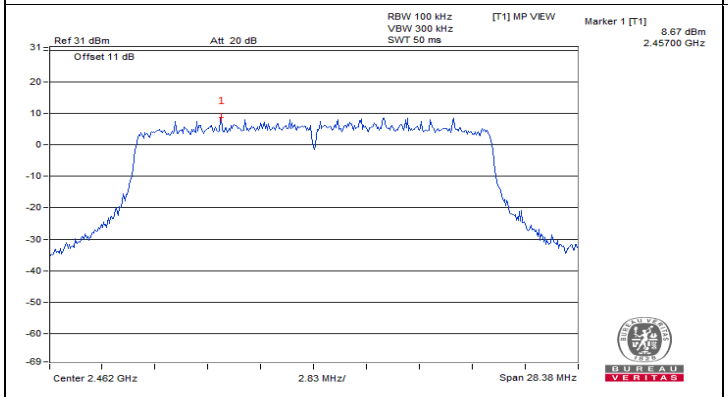
Chain 1 : CH 1



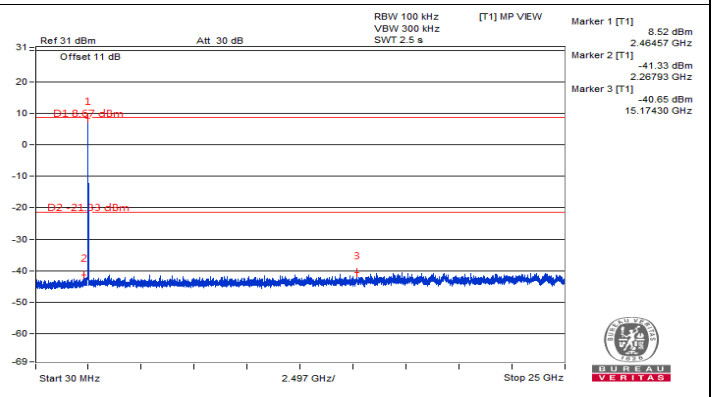
Chain 1 : CH 6



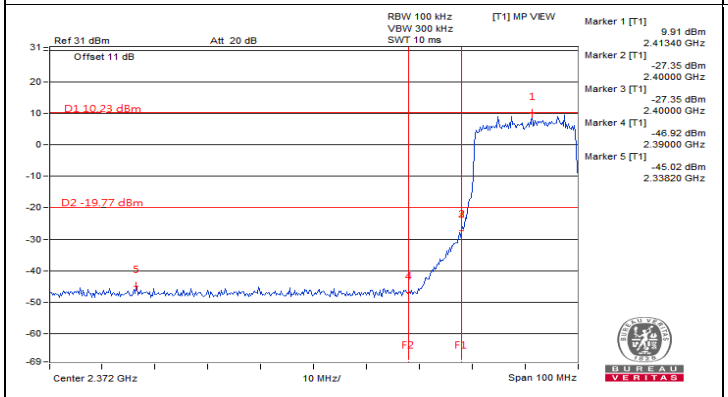
Chain 1 : CH 6



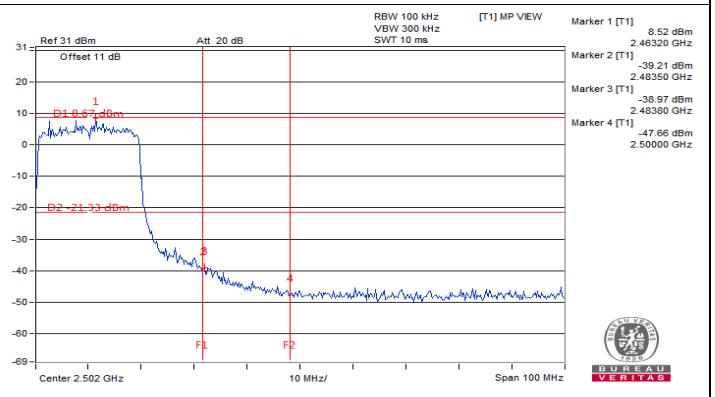
Chain 1 : CH 11



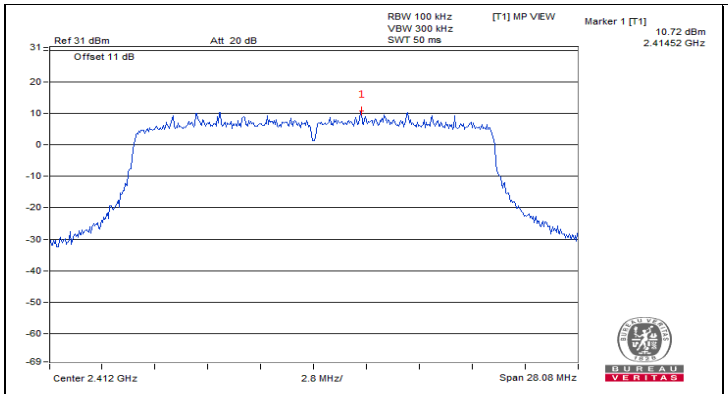
Chain 1 : CH 11



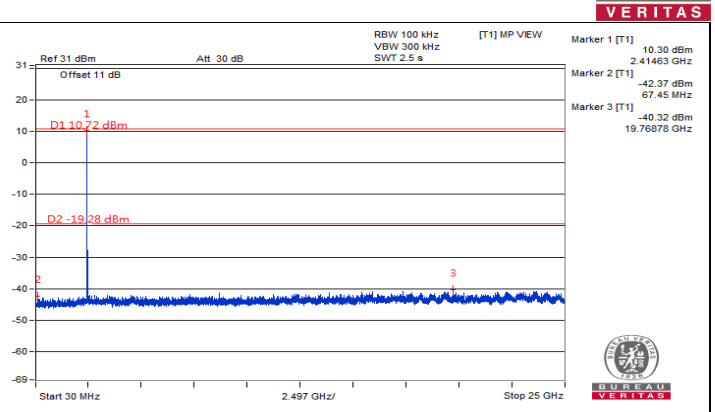
Chain 1 : CH 1 Band edge



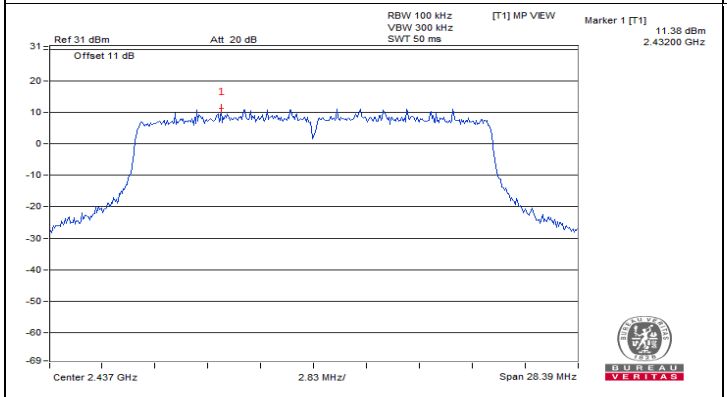
Chain 1 : CH 11 Band edge



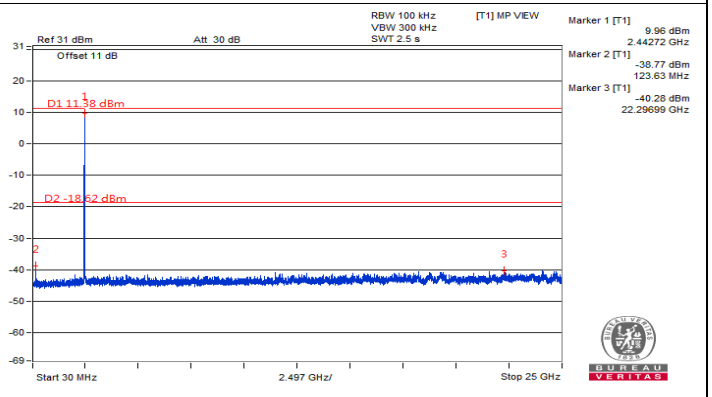
Chain 2 : CH 1



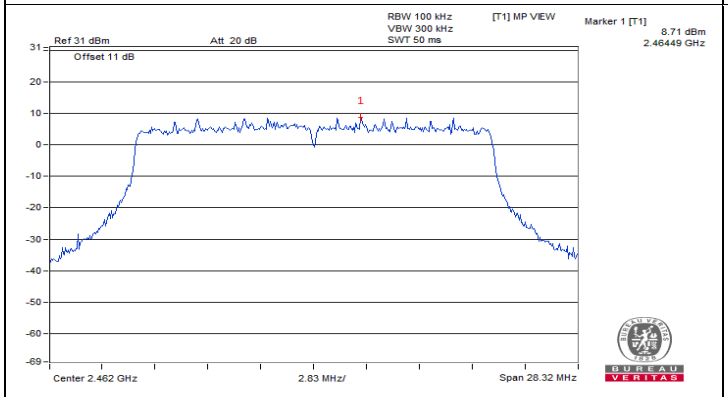
Chain 2 : CH 1



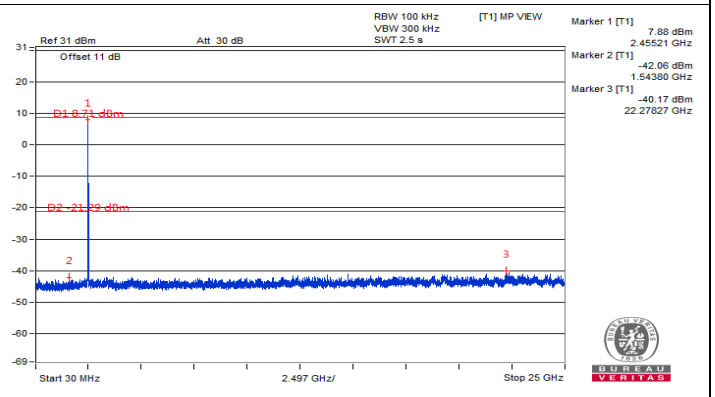
Chain 2 : CH 6



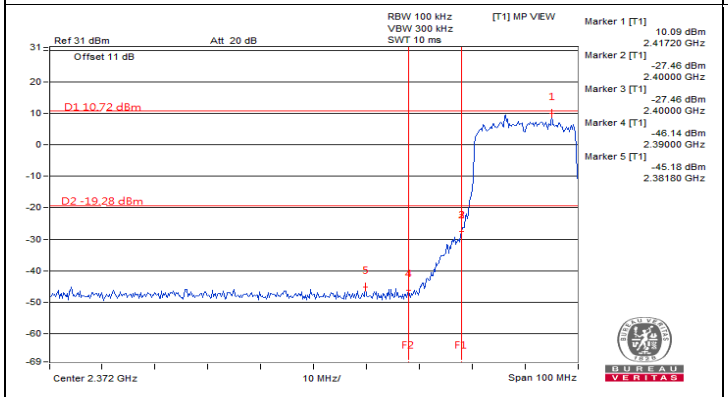
Chain 2 : CH 6



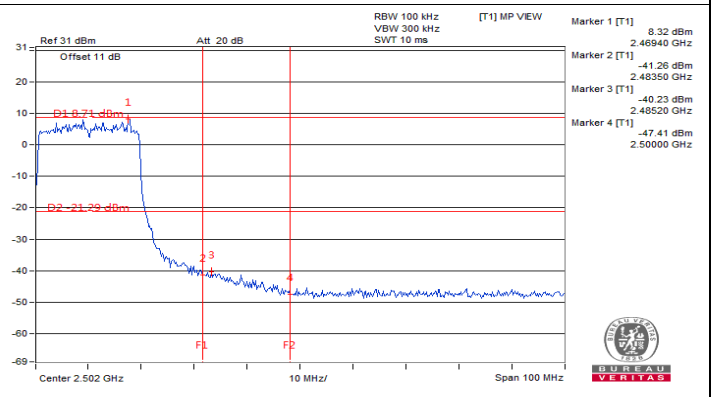
Chain 2 : CH 11



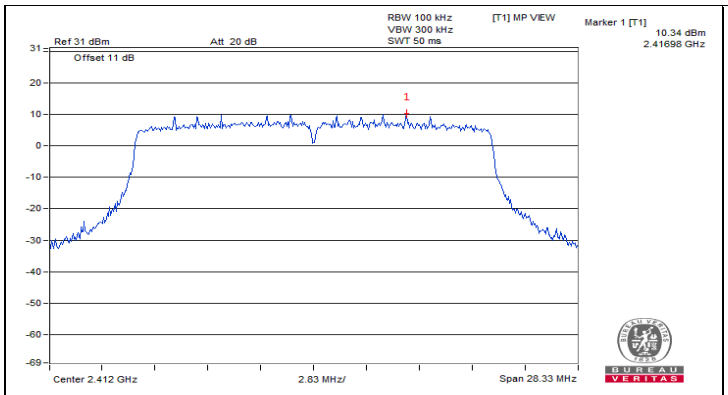
Chain 2 : CH 11



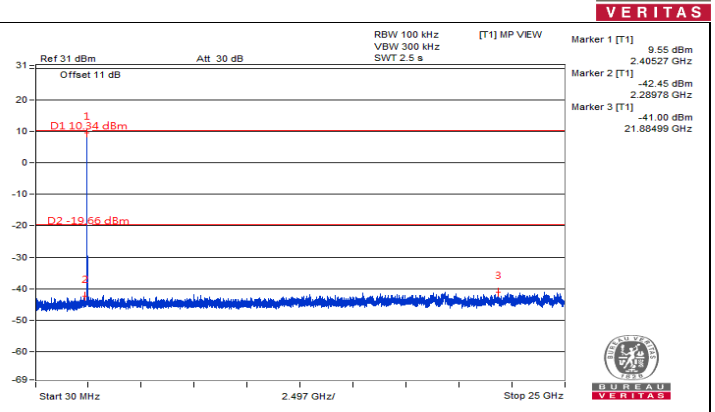
Chain 2 : CH 1 Band edge



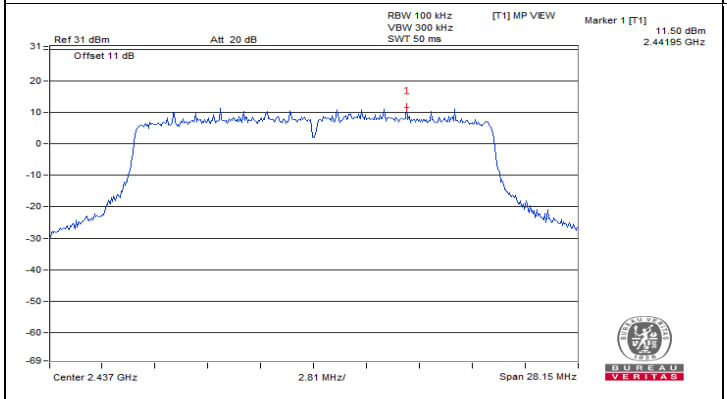
Chain 2 : CH 11 Band edge



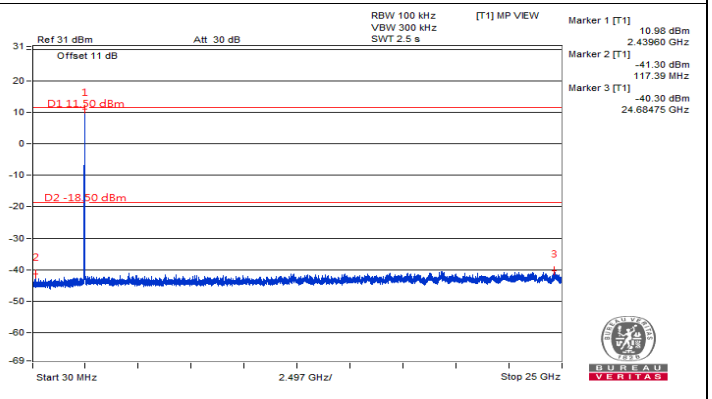
Chain 3 : CH 1



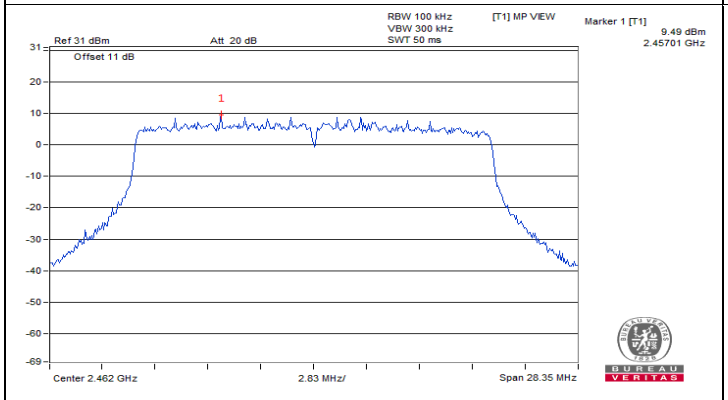
Chain 3 : CH 1



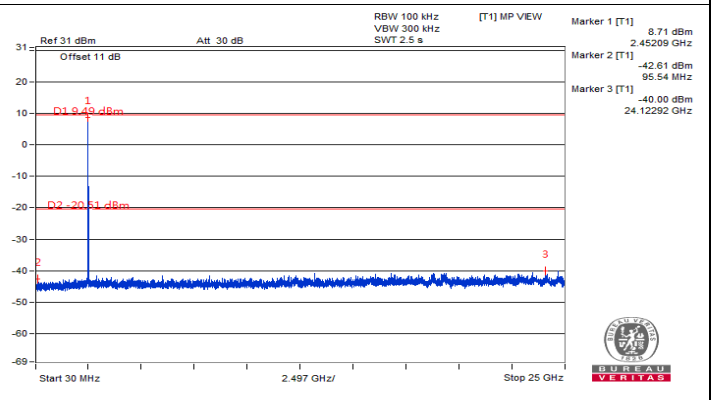
Chain 3 : CH 6



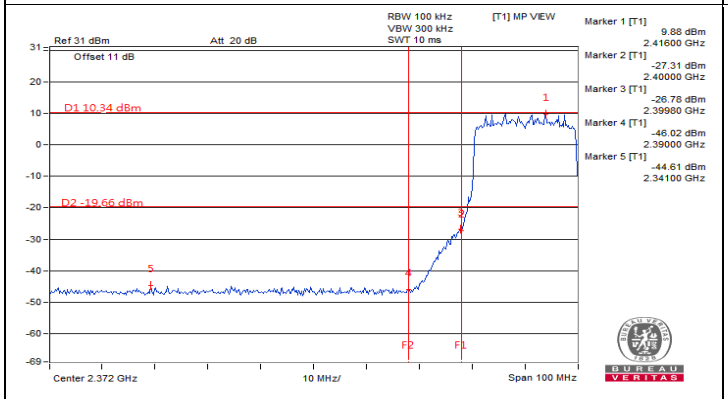
Chain 3 : CH 6



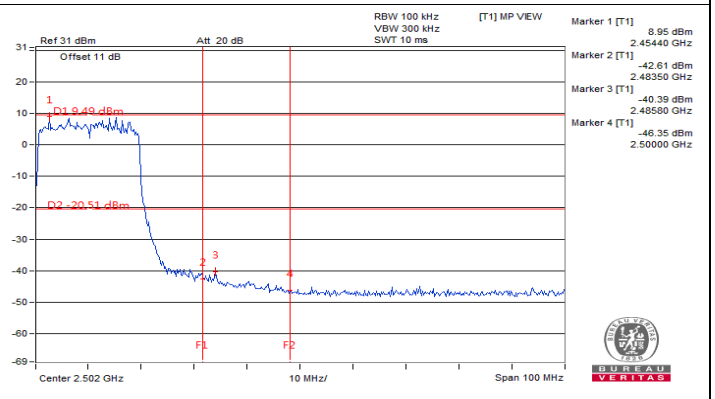
Chain 3 : CH 11



Chain 3 : CH 11

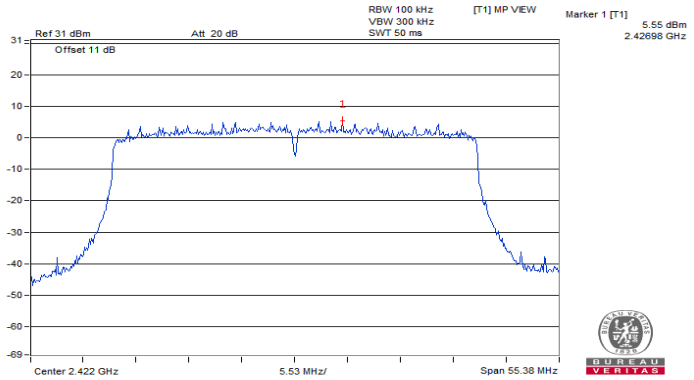


Chain 3 : CH 1 Band edge

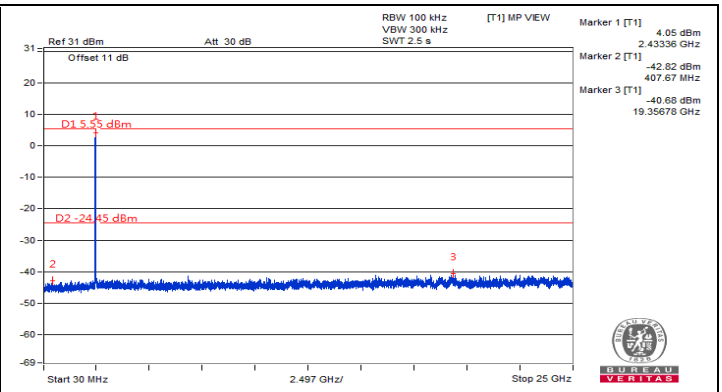


Chain 3 : CH 11 Band edge

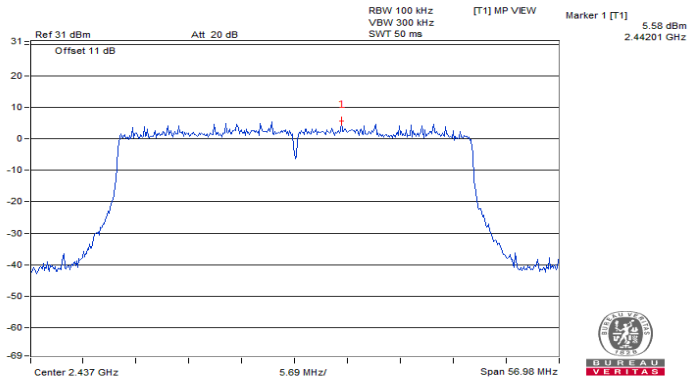
802.11ax (HE40)



Chain 0 : CH 3



Chain 0 : CH 3



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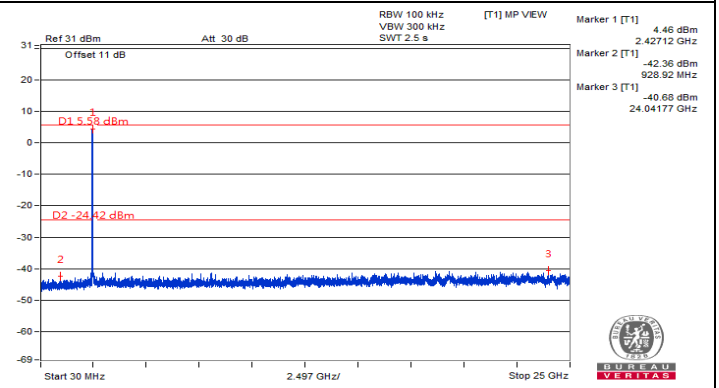
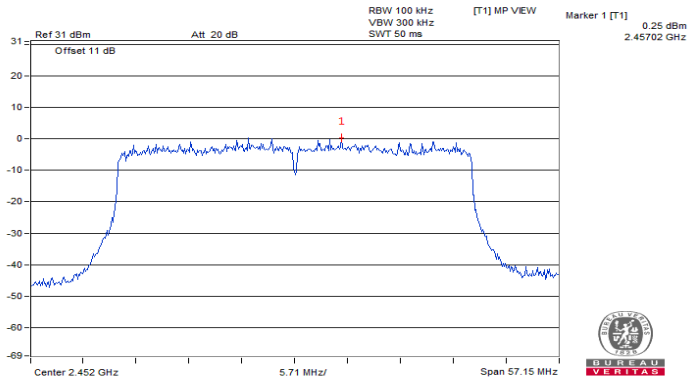
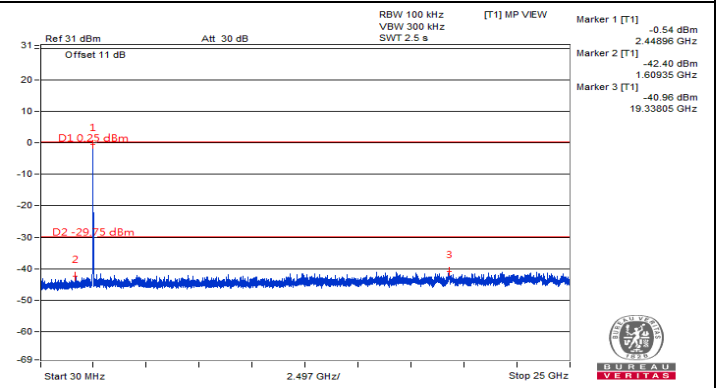


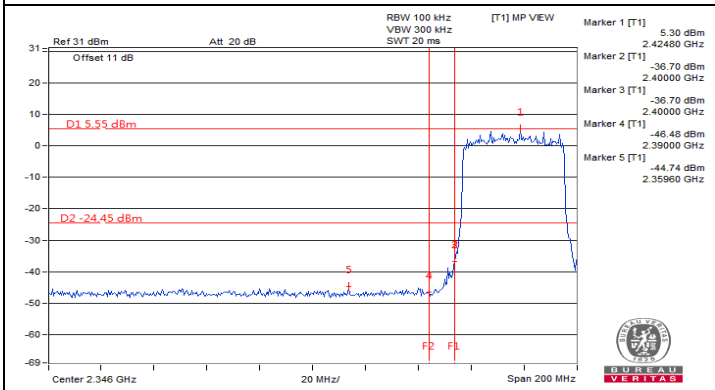
Chain 0 : CH 6



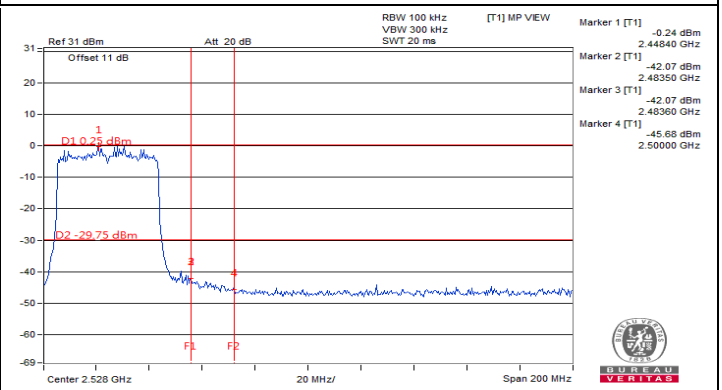
Chain 0 : CH 9



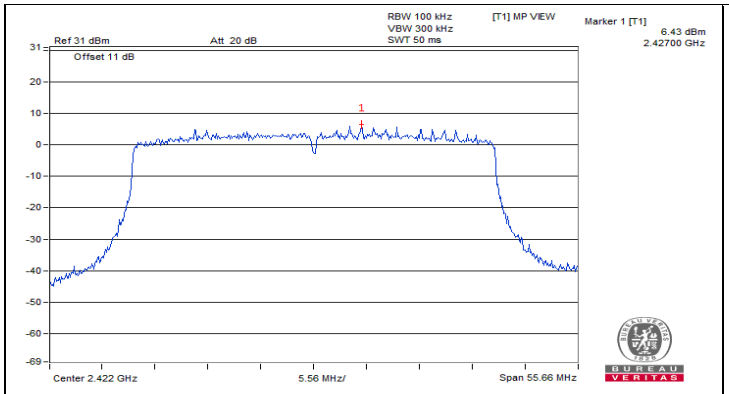
Chain 0 : CH 9



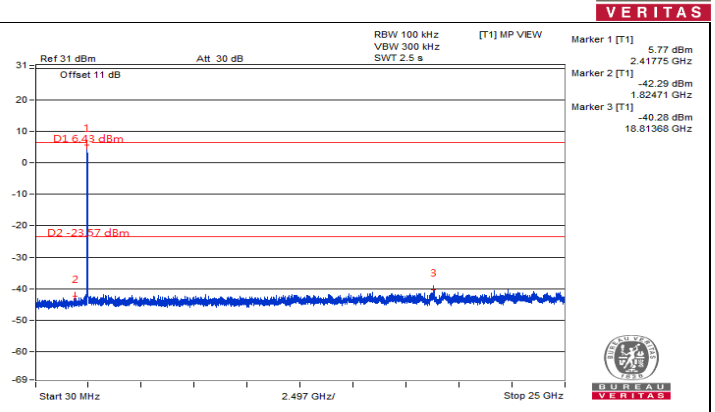
Chain 0 : CH 3 Band edge



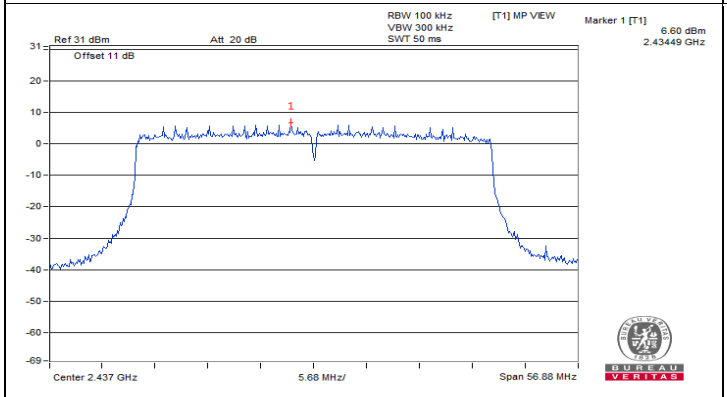
Chain 0 : CH 9 Band edge



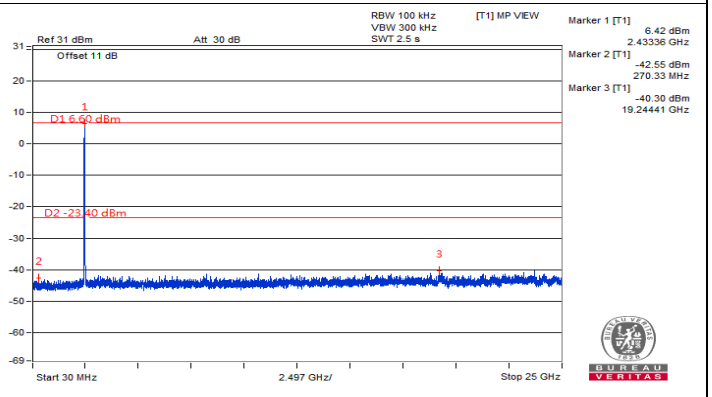
Chain 1 : CH 3



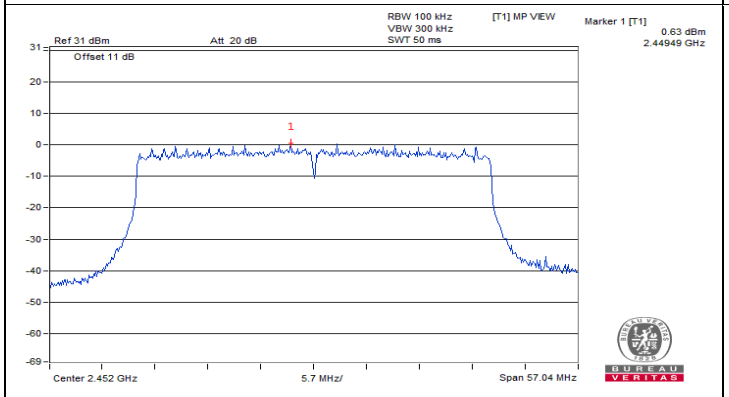
Chain 1 : CH 3



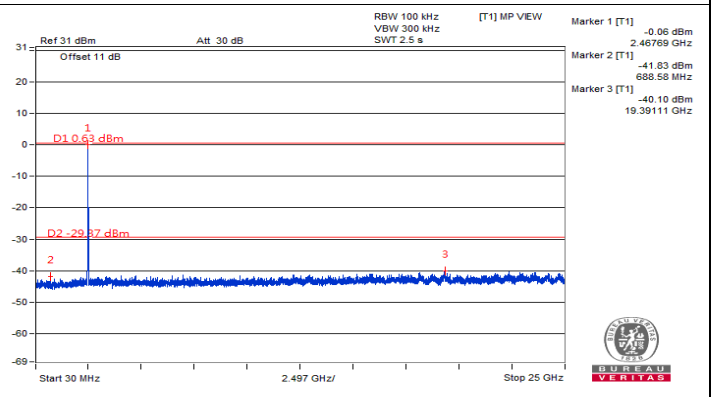
Chain 1 : CH 6



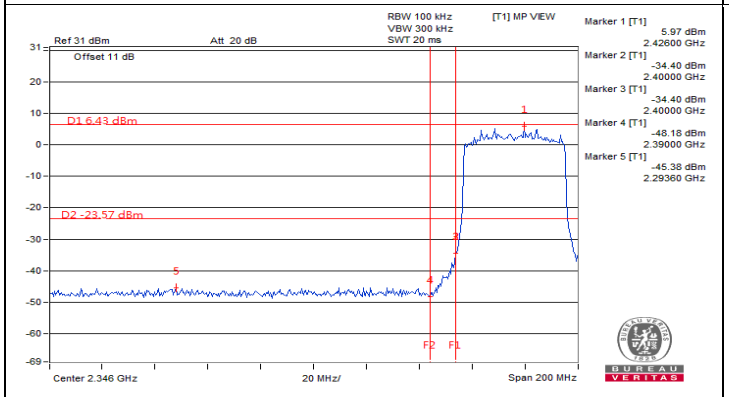
Chain 1 : CH 6



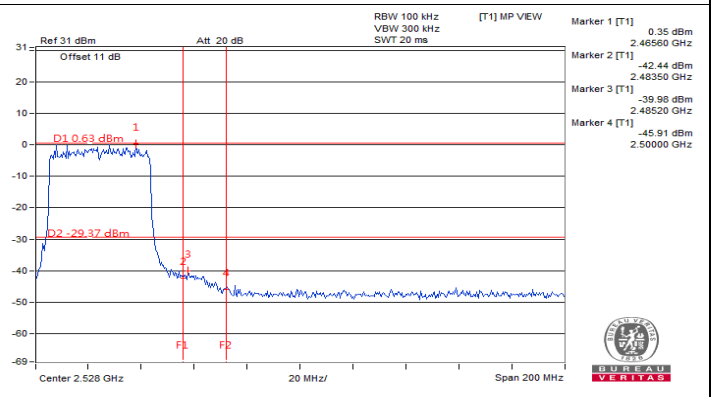
Chain 1 : CH 9



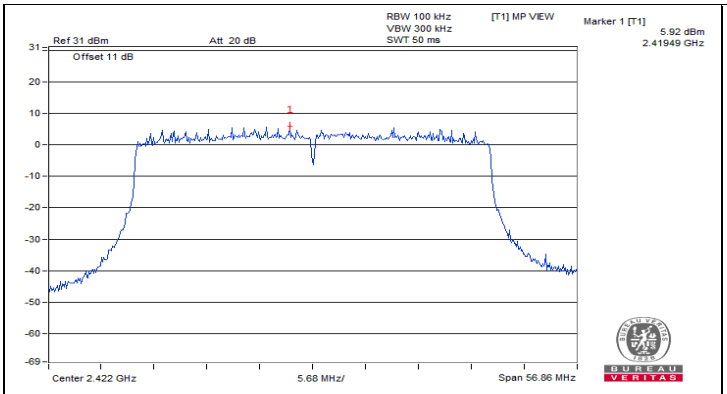
Chain 1 : CH 9



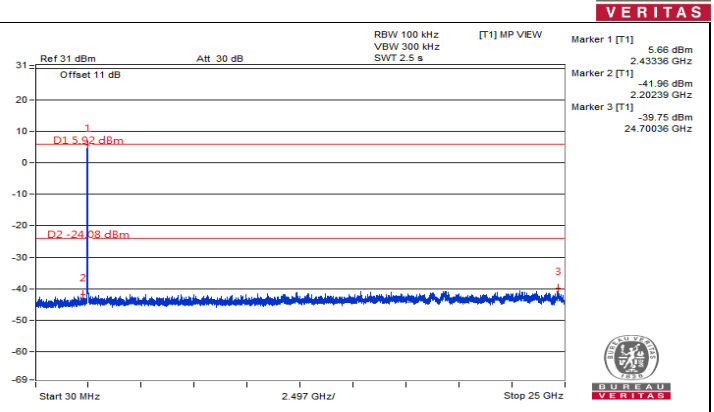
Chain 1 : CH 3 Band edge



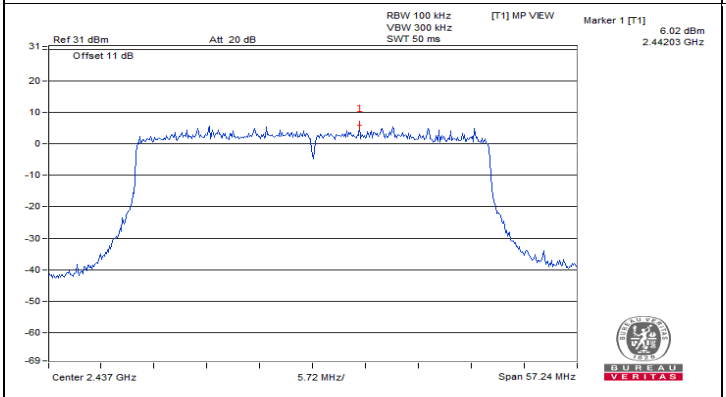
Chain 1 : CH 9 Band edge



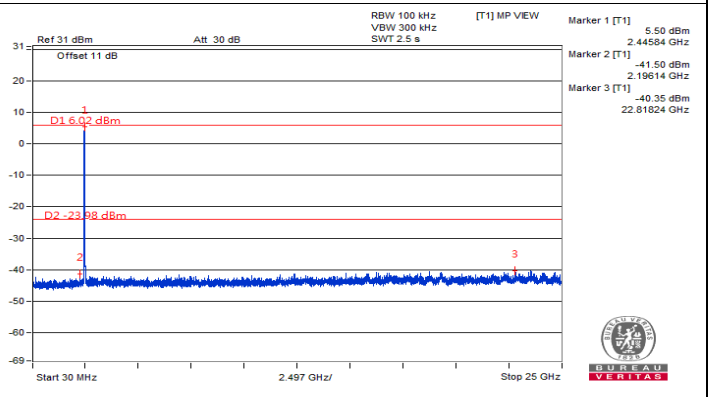
Chain 2 : CH 3



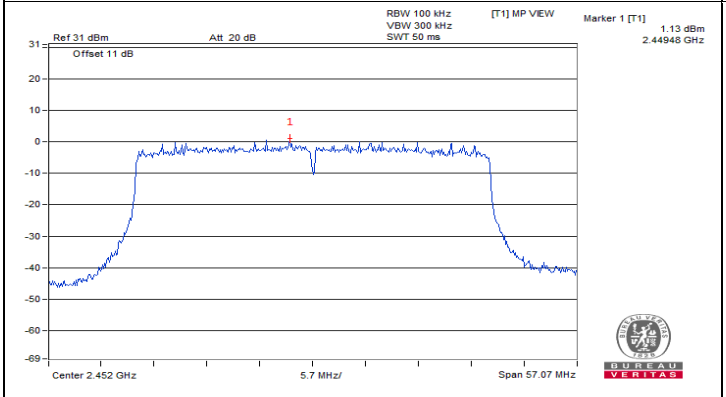
Chain 2 : CH 3



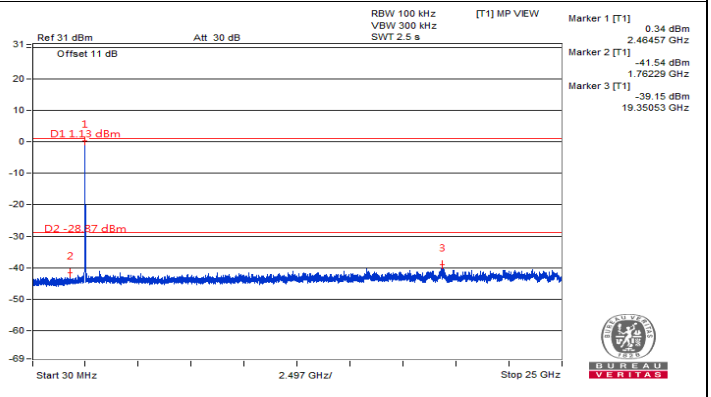
Chain 2 : CH 6



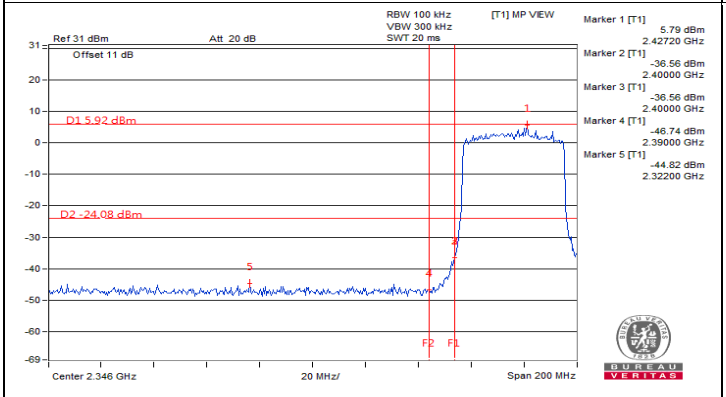
Chain 2 : CH 6



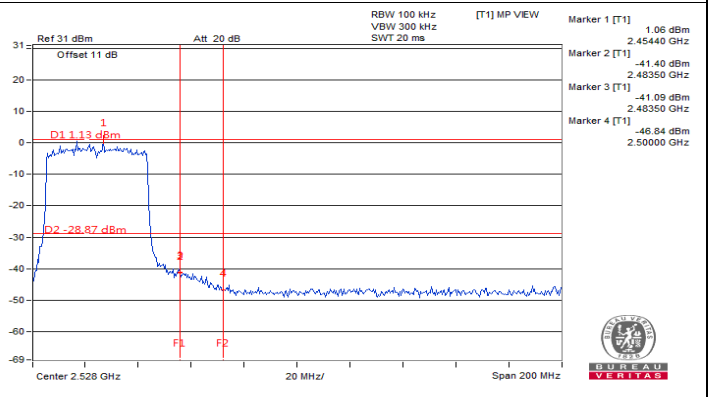
Chain 2 : CH 9



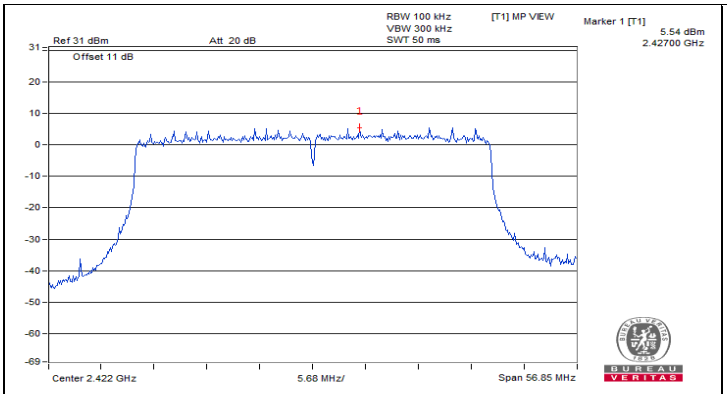
Chain 2 : CH 9



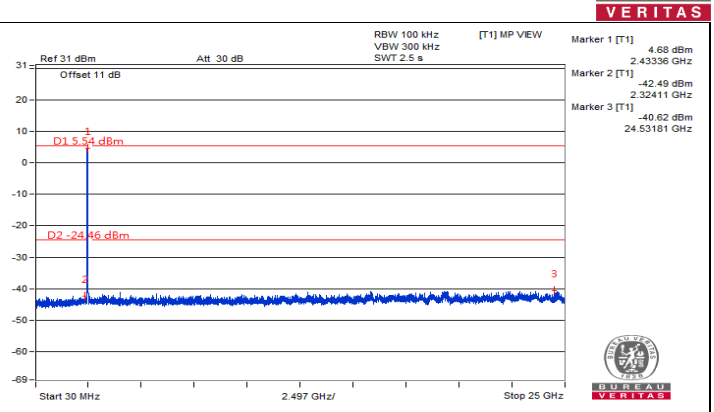
Chain 2 : CH 3 Band edge



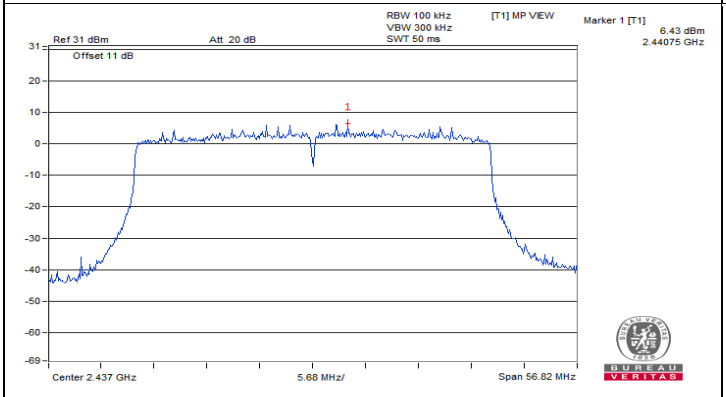
Chain 2 : CH 9 Band edge



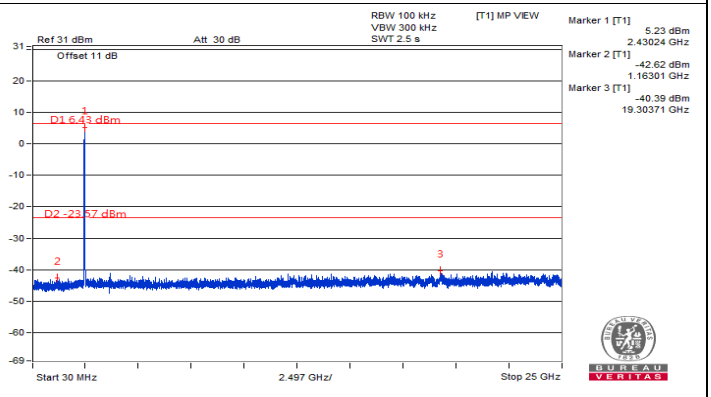
Chain 3 : CH 3



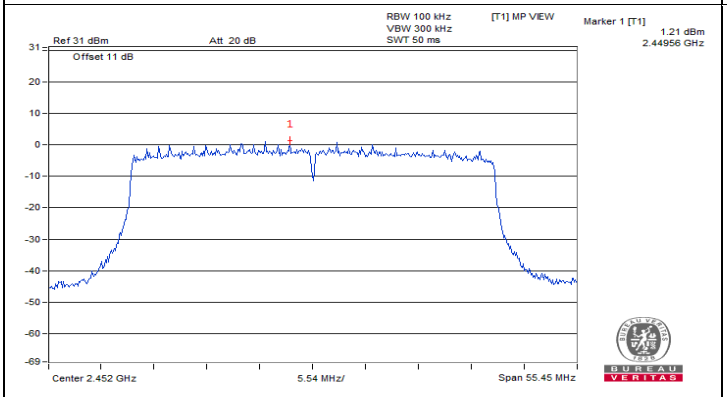
Chain 3 : CH 3



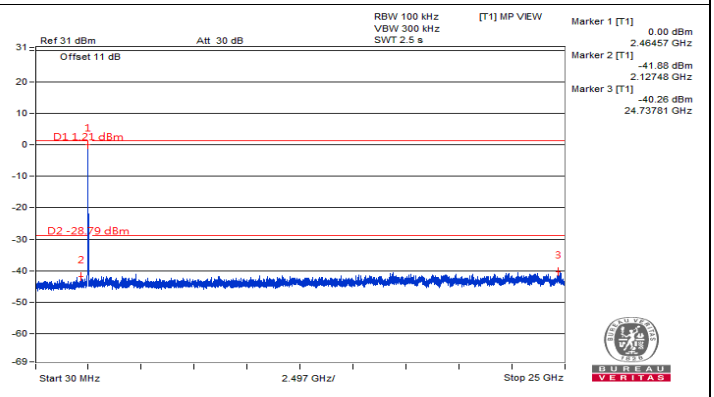
Chain 3 : CH 6



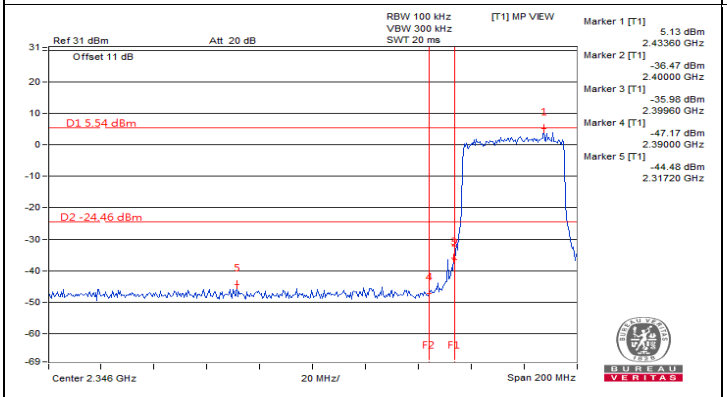
Chain 3 : CH 6



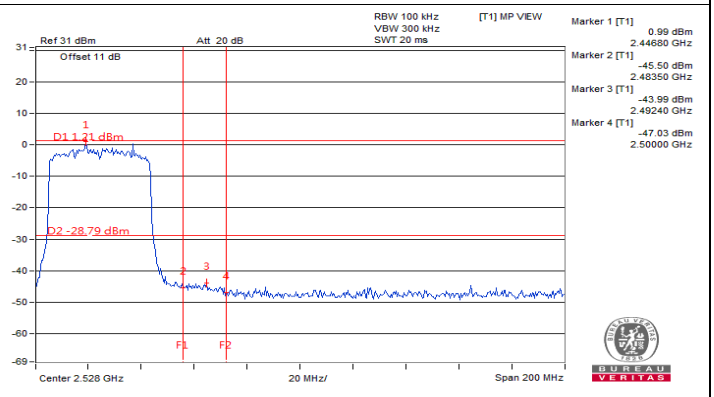
Chain 3 : CH 9



Chain 3 : CH 9



Chain 3 : CH 3 Band edge



Chain 3 : CH 9 Band edge

7.5 AC Power Conducted Emissions

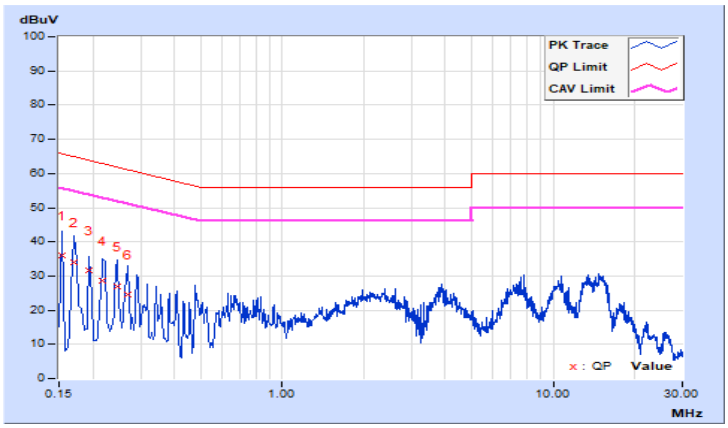
Mode A

RF Mode	802.11g	**Channel**	CH 1：2412 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 70% RH
Tested By	Luis Lee		

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	0.15400	0.19	35.83	19.36	36.02	19.55	65.78	55.78	-29.76	-36.23
2	0.17000	0.21	33.95	13.05	34.16	13.26	64.96	54.96	-30.80	-41.70
3	0.19400	0.23	31.31	14.01	31.54	14.24	63.86	53.86	-32.32	-39.62
4	0.21800	0.24	28.36	13.57	28.60	13.81	62.89	52.89	-34.29	-39.08
5	0.24600	0.25	26.63	19.34	26.88	19.59	61.89	51.89	-35.01	-32.30
6	0.26992	0.26	24.24	8.74	24.50	9.00	61.12	51.12	-36.62	-42.12

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

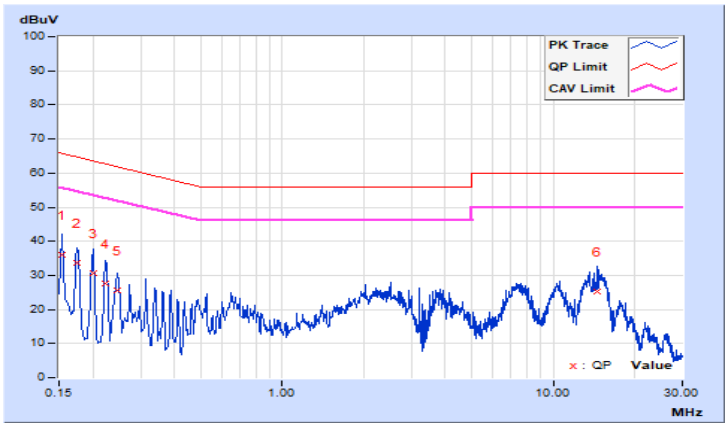


RF Mode	802.11g	**Channel**	CH 1：2412 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 70% RH
Tested By	Luis Lee		

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15400	0.22	35.78	18.42	36.00	18.64	65.78	55.78	-29.78	-37.14
2	0.17400	0.24	33.44	12.56	33.68	12.80	64.77	54.77	-31.09	-41.97
3	0.20200	0.26	30.39	18.18	30.65	18.44	63.53	53.53	-32.88	-35.09
4	0.22200	0.27	27.38	8.06	27.65	8.33	62.74	52.74	-35.09	-44.41
5	0.24600	0.28	25.38	12.89	25.66	13.17	61.89	51.89	-36.23	-38.72
6	14.51400	0.92	24.40	18.19	25.32	19.11	60.00	50.00	-34.68	-30.89

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



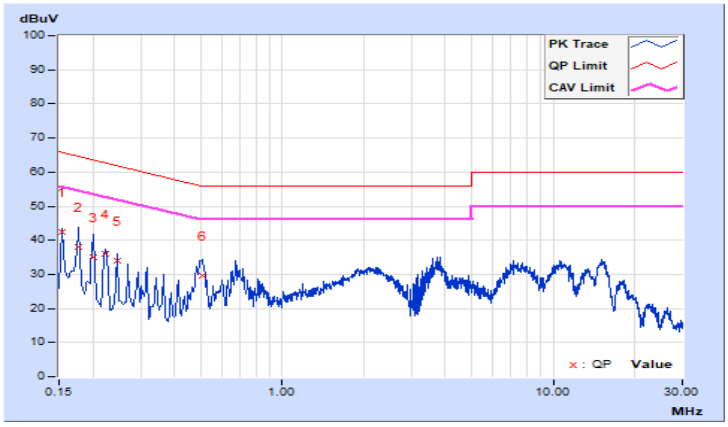
Mode B

RF Mode	802.11g	Channel	CH 1：2412 MHz
Frequency Range	150kHz ~ 30MHz	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	Luis Lee		

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	0.15400	9.66	32.90	22.34	42.56	32.00	65.78	55.78	-23.22	-23.78
2	0.17800	9.68	28.53	12.70	38.21	22.38	64.58	54.58	-26.37	-32.20
3	0.20200	9.70	25.38	8.56	35.08	18.26	63.53	53.53	-28.45	-35.27
4	0.22200	9.71	26.48	13.59	36.19	23.30	62.74	52.74	-26.55	-29.44
5	0.24600	9.72	24.29	12.43	34.01	22.15	61.89	51.89	-27.88	-29.74
6	0.50932	9.80	19.75	13.01	29.55	22.81	56.00	46.00	-26.45	-23.19

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

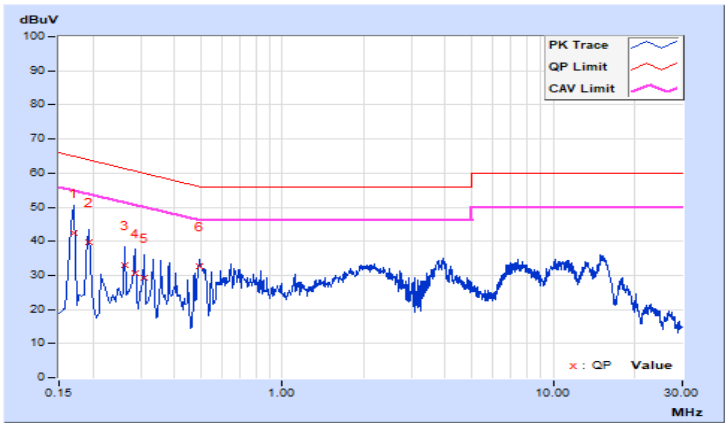


RF Mode	802.11g	**Channel**	CH 1：2412 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Luis Lee		

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	9.68	32.88	21.02	42.56	30.70	64.96	54.96	-22.40	-24.26
2	0.19367	9.69	29.99	19.05	39.68	28.74	63.88	53.88	-24.20	-25.14
3	0.26200	9.72	23.21	12.37	32.93	22.09	61.37	51.37	-28.44	-29.28
4	0.28600	9.73	20.88	8.80	30.61	18.53	60.64	50.64	-30.03	-32.11
5	0.31000	9.74	19.72	9.04	29.46	18.78	59.97	49.97	-30.51	-31.19
6	**0.49608**	**9.78**	**22.73**	**19.36**	**32.51**	**29.14**	**56.07**	**46.07**	**-23.56**	**-16.93**

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

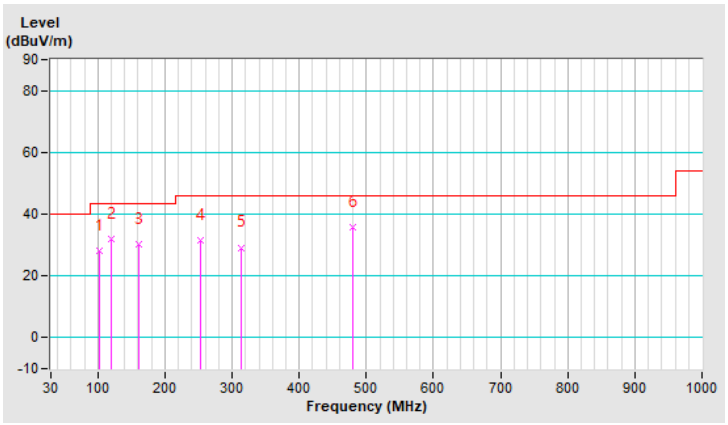
Mode A

RF Mode	802.11g	Channel	CH 1：2412 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 70% RH
Tested By	Luis Lee		

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	101.78	28.2 QP	43.5	-15.3	1.00 H	100	41.3	-13.1
2	119.24	31.8 QP	43.5	-11.7	1.49 H	288	42.8	-11.0
3	160.95	30.4 QP	43.5	-13.1	1.00 H	244	38.9	-8.5
4	253.10	31.7 QP	46.0	-14.3	1.00 H	268	40.8	-9.1
5	314.21	29.2 QP	46.0	-16.8	1.00 H	144	36.3	-7.1
6	480.08	35.7 QP	46.0	-10.3	1.49 H	169	40.2	-4.5

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 of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

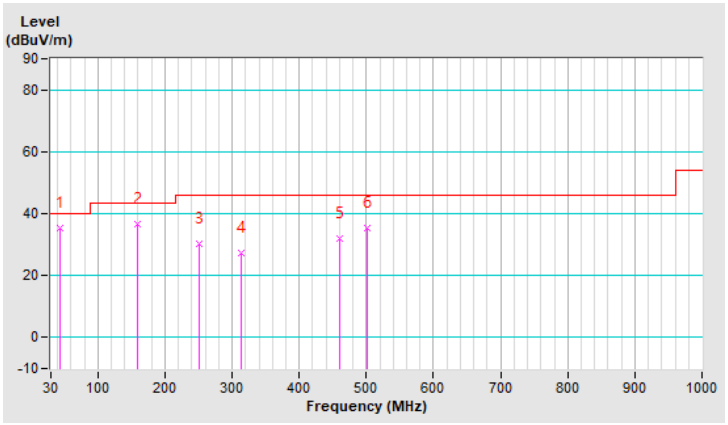


RF Mode	802.11g	**Channel**	CH 1：2412 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	24°C, 70% RH
Tested By	Luis Lee		

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	**43.58**	**35.3 QP**	**40.0**	**-4.7**	**1.00 V**	**354**	**44.5**	**-9.2**
2	159.01	36.5 QP	43.5	-7.0	1.00 V	247	45.0	-8.5
3	250.19	30.4 QP	46.0	-15.6	1.00 V	89	39.6	-9.2
4	313.24	27.5 QP	46.0	-18.5	1.49 V	80	34.6	-7.1
5	460.68	32.0 QP	46.0	-14.0	1.00 V	1	36.6	-4.6
6	500.45	35.2 QP	46.0	-10.8	1.00 V	123	39.3	-4.1

Remarks:

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



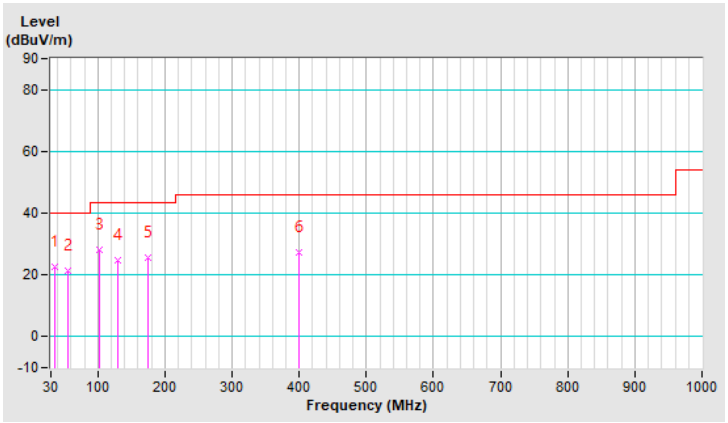
Mode B

RF Mode	802.11g	Channel	CH 1：2412 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 70% RH
Tested By	Luis Lee		

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	35.82	22.5 QP	40.0	-17.5	1.49 H	165	32.4	-9.9
2	56.19	21.2 QP	40.0	-18.8	1.49 H	190	30.3	-9.1
3	101.78	28.2 QP	43.5	-15.3	1.00 H	100	41.3	-13.1
4	129.91	24.6 QP	43.5	-18.9	1.49 H	252	34.5	-9.9
5	174.53	25.5 QP	43.5	-18.0	1.49 H	295	34.7	-9.2
6	399.57	27.5 QP	46.0	-18.5	1.00 H	230	33.4	-5.9

Remarks:

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

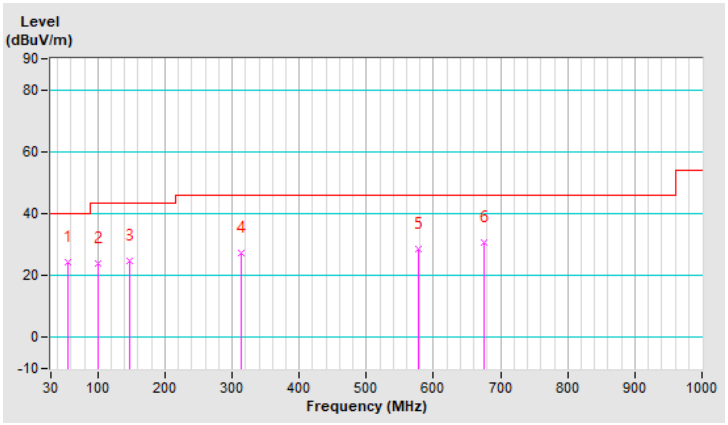


RF Mode	802.11g	**Channel**	CH 1：2412 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	24°C, 70% RH
Tested By	Luis Lee		

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	56.19	24.3 QP	40.0	-15.7	1.00 V	10	33.4	-9.1
2	100.81	23.8 QP	43.5	-19.7	1.49 V	41	37.0	-13.2
3	147.37	24.8 QP	43.5	-18.7	1.00 V	228	33.4	-8.6
4	313.24	27.5 QP	46.0	-18.5	1.49 V	80	34.6	-7.1
5	578.05	28.5 QP	46.0	-17.5	1.49 V	123	31.1	-2.6
6	676.02	30.5 QP	46.0	-15.5	1.00 V	286	31.2	-0.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be 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 (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	2390.00	59.8 PK	74.0	-14.2	1.27 H	133	24.9	34.9
2	2390.00	46.2 AV	54.0	-7.8	1.27 H	133	11.3	34.9
3	*2412.00	116.2 PK			1.27 H	133	81.3	34.9
4	*2412.00	113.7 AV			1.27 H	133	78.8	34.9
5	4824.00	52.7 PK	74.0	-21.3	1.73 H	219	39.2	13.5
6	4824.00	42.6 AV	54.0	-11.4	1.73 H	219	29.1	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	2390.00	59.0 PK	74.0	-15.0	1.80 V	26	24.1	34.9
2	2390.00	46.8 AV	54.0	-7.2	1.80 V	26	11.9	34.9
3	*2412.00	125.2 PK			1.80 V	26	90.3	34.9
4	*2412.00	122.6 AV			1.80 V	26	87.7	34.9
5	4824.00	52.6 PK	74.0	-21.4	2.05 V	34	39.1	13.5
6	4824.00	45.2 AV	54.0	-8.8	2.05 V	34	31.7	13.5

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 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	115.6 PK			1.50 H	23	80.9	34.7
2	*2437.00	113.4 AV			1.50 H	23	78.7	34.7
3	4874.00	51.2 PK	74.0	-22.8	1.80 H	223	37.9	13.3
4	4874.00	41.8 AV	54.0	-12.2	1.80 H	223	28.5	13.3
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	*2437.00	123.6 PK			1.86 V	3	88.9	34.7
2	*2437.00	121.8 AV			1.86 V	3	87.1	34.7
3	4874.00	51.6 PK	74.0	-22.4	1.74 V	7	38.3	13.3
4	4874.00	42.1 AV	54.0	-11.9	1.74 V	7	28.8	13.3

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 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	114.3 PK			1.50 H	27	79.6	34.7
2	*2462.00	111.9 AV			1.50 H	27	77.2	34.7
3	2487.70	61.7 PK	74.0	-12.3	1.50 H	27	27.0	34.7
4	2487.70	49.7 AV	54.0	-4.3	1.50 H	27	15.0	34.7
5	4924.00	51.1 PK	74.0	-22.9	1.76 H	220	38.0	13.1
6	4924.00	40.3 AV	54.0	-13.7	1.76 H	220	27.2	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	120.6 PK			2.21 V	116	85.9	34.7
2	*2462.00	118.2 AV			2.21 V	116	83.5	34.7
3	2483.50	63.3 PK	74.0	-10.7	2.21 V	116	28.6	34.7
4	2483.50	53.2 AV	54.0	-0.8	2.21 V	116	18.5	34.7
5	4924.00	50.5 PK	74.0	-23.5	2.20 V	95	37.4	13.1
6	4924.00	39.7 AV	54.0	-14.3	2.20 V	95	26.6	13.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, 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 (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.1 PK	74.0	-14.9	1.44 H	37	24.2	34.9
2	2390.00	46.1 AV	54.0	-7.9	1.44 H	37	11.2	34.9
3	*2412.00	115.5 PK			1.44 H	37	80.6	34.9
4	*2412.00	106.0 AV			1.44 H	37	71.1	34.9
5	4824.00	52.5 PK	74.0	-21.5	1.72 H	236	39.0	13.5
6	4824.00	39.1 AV	54.0	-14.9	1.72 H	236	25.6	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	67.1 PK	74.0	-6.9	1.11 V	256	32.2	34.9
2	**2390.00**	**53.9 AV**	**54.0**	**-0.1**	**1.11 V**	**256**	**19.0**	**34.9**
3	*2412.00	121.6 PK			1.11 V	256	86.7	34.9
4	*2412.00	112.2 AV			1.11 V	256	77.3	34.9
5	4824.00	50.7 PK	74.0	-23.3	2.26 V	99	37.2	13.5
6	4824.00	40.1 AV	54.0	-13.9	2.26 V	99	26.6	13.5

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 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	118.7 PK			1.93 H	36	84.0	34.7
2	*2437.00	109.4 AV			1.93 H	36	74.7	34.7
3	4874.00	52.1 PK	74.0	-21.9	1.68 H	214	38.8	13.3
4	4874.00	38.9 AV	54.0	-15.1	1.68 H	214	25.6	13.3
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	*2437.00	126.6 PK			1.62 V	18	91.9	34.7
2	*2437.00	116.5 AV			1.62 V	18	81.8	34.7
3	4874.00	52.8 PK	74.0	-21.2	2.39 V	169	39.5	13.3
4	4874.00	39.3 AV	54.0	-14.7	2.39 V	169	26.0	13.3

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 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	115.1 PK			2.04 H	17	80.4	34.7
2	*2462.00	105.9 AV			2.04 H	17	71.2	34.7
3	2483.50	60.2 PK	74.0	-13.8	2.04 H	17	25.5	34.7
4	2483.50	48.7 AV	54.0	-5.3	2.04 H	17	14.0	34.7
5	4924.00	51.8 PK	74.0	-22.2	1.79 H	230	38.7	13.1
6	4924.00	38.6 AV	54.0	-15.4	1.79 H	230	25.5	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	122.8 PK			1.21 V	325	88.1	34.7
2	*2462.00	112.3 AV			1.21 V	325	77.6	34.7
3	2483.50	67.1 PK	74.0	-6.9	1.21 V	325	32.4	34.7
4	2483.50	53.5 AV	54.0	-0.5	1.21 V	325	18.8	34.7
5	4924.00	50.4 PK	74.0	-23.6	2.15 V	101	37.3	13.1
6	4924.00	39.6 AV	54.0	-14.4	2.15 V	101	26.5	13.1

Remarks:

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

RF Mode	802.11ax (HE20)	Channel	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	61.7 PK	74.0	-12.3	2.04 H	17	26.8	34.9
2	2390.00	48.7 AV	54.0	-5.3	2.04 H	17	13.8	34.9
3	*2412.00	122.3 PK			2.04 H	17	87.4	34.9
4	*2412.00	109.3 AV			2.04 H	17	74.4	34.9
5	4824.00	52.5 PK	74.0	-21.5	1.82 H	236	39.0	13.5
6	4824.00	39.2 AV	54.0	-14.8	1.82 H	236	25.7	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.0 PK	74.0	-6.0	2.10 V	340	33.1	34.9
2	2390.00	53.8 AV	54.0	-0.2	2.10 V	340	18.9	34.9
3	*2412.00	127.1 PK			2.10 V	340	92.2	34.9
4	*2412.00	114.8 AV			2.10 V	340	79.9	34.9
5	4824.00	53.1 PK	74.0	-20.9	2.44 V	152	39.6	13.5
6	4824.00	39.7 AV	54.0	-14.3	2.44 V	152	26.2	13.5

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)	**Channel**	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	123.1 PK			2.09 H	20	88.4	34.7
2	*2437.00	110.4 AV			2.09 H	20	75.7	34.7
3	4874.00	52.5 PK	74.0	-21.5	1.92 H	217	39.2	13.3
4	4874.00	38.9 AV	54.0	-15.1	1.92 H	217	25.6	13.3
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	*2437.00	130.1 PK			1.70 V	346	95.4	34.7
2	*2437.00	117.3 AV			1.70 V	346	82.6	34.7
3	4874.00	53.1 PK	74.0	-20.9	2.36 V	172	39.8	13.3
4	4874.00	39.3 AV	54.0	-14.7	2.36 V	172	26.0	13.3

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)	Channel	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	115.9 PK			2.04 H	24	81.2	34.7
2	*2462.00	102.9 AV			2.04 H	24	68.2	34.7
3	2483.50	61.6 PK	74.0	-12.4	2.04 H	24	26.9	34.7
4	2483.50	49.4 AV	54.0	-4.6	2.04 H	24	14.7	34.7
5	4924.00	52.2 PK	74.0	-21.8	1.77 H	232	39.1	13.1
6	4924.00	38.6 AV	54.0	-15.4	1.77 H	232	25.5	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	122.3 PK			2.58 V	281	87.6	34.7
2	*2462.00	108.9 AV			2.58 V	281	74.2	34.7
3	2486.00	67.1 PK	74.0	-6.9	2.58 V	281	32.4	34.7
4	**2486.00**	**53.9 AV**	**54.0**	**-0.1**	**2.58 V**	**281**	**19.2**	**34.7**
5	4924.00	52.6 PK	74.0	-21.4	2.39 V	163	39.5	13.1
6	4924.00	38.8 AV	54.0	-15.2	2.39 V	163	25.7	13.1

Remarks:

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

RF Mode	802.11ax (HE40)	Channel	CH 3：2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.1 PK	74.0	-14.9	1.86 H	28	24.2	34.9
2	2390.00	46.9 AV	54.0	-7.1	1.86 H	28	12.0	34.9
3	*2422.00	114.9 PK			1.86 H	28	80.0	34.9
4	*2422.00	102.6 AV			1.86 H	28	67.7	34.9
5	2483.50	62.4 PK	74.0	-11.6	1.86 H	28	27.7	34.7
6	2483.50	50.8 AV	54.0	-3.2	1.86 H	28	16.1	34.7
7	4844.00	52.1 PK	74.0	-21.9	1.77 H	223	38.7	13.4
8	4844.00	38.8 AV	54.0	-15.2	1.77 H	223	25.4	13.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.6 PK	74.0	-14.4	1.23 V	247	24.7	34.9
2	2390.00	47.4 AV	54.0	-6.6	1.23 V	247	12.5	34.9
3	*2422.00	120.2 PK			1.23 V	247	85.3	34.9
4	*2422.00	107.0 AV			1.23 V	247	72.1	34.9
5	2483.50	65.3 PK	74.0	-8.7	1.23 V	247	30.6	34.7
6	2483.50	53.5 AV	54.0	-0.5	1.23 V	247	18.8	34.7
7	4844.00	50.9 PK	74.0	-23.1	2.11 V	105	37.5	13.4
8	4844.00	39.9 AV	54.0	-14.1	2.11 V	105	26.5	13.4

Remarks:

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

RF Mode	802.11ax (HE40)	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	115.8 PK			1.90 H	27	81.1	34.7
2	*2437.00	103.5 AV			1.90 H	27	68.8	34.7
3	2495.60	63.8 PK	74.0	-10.2	1.90 H	27	29.1	34.7
4	2495.60	51.0 AV	54.0	-3.0	1.90 H	27	16.3	34.7
5	4874.00	51.7 PK	74.0	-22.3	1.76 H	228	38.4	13.3
6	4874.00	38.9 AV	54.0	-15.1	1.76 H	228	25.6	13.3
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	*2437.00	120.4 PK			1.19 V	266	85.7	34.7
2	*2437.00	108.4 AV			1.19 V	266	73.7	34.7
3	2493.20	66.9 PK	74.0	-7.1	1.19 V	266	32.2	34.7
4	2493.20	53.6 AV	54.0	-0.4	1.19 V	266	18.9	34.7
5	4874.00	50.5 PK	74.0	-23.5	2.09 V	115	37.2	13.3
6	4874.00	40.1 AV	54.0	-13.9	2.09 V	115	26.8	13.3

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.

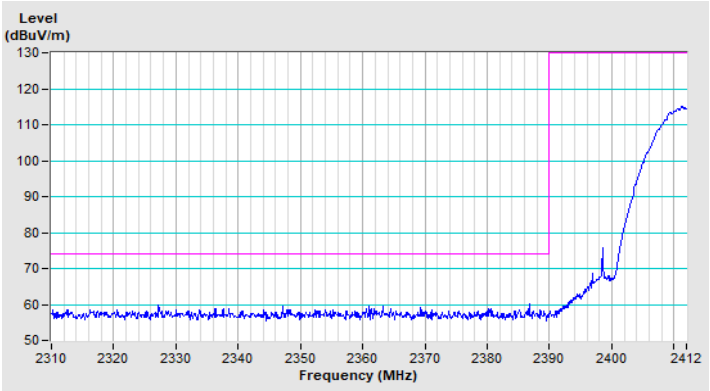
RF Mode	802.11ax (HE40)	Channel	CH 9：2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 68% RH
Tested By	Luis Lee/TitanHSU		

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	110.1 PK			1.73 H	22	75.4	34.7
2	*2452.00	98.3 AV			1.73 H	22	63.6	34.7
3	2490.40	61.8 PK	74.0	-12.2	1.73 H	22	27.1	34.7
4	2490.40	49.7 AV	54.0	-4.3	1.73 H	22	15.0	34.7
5	4904.00	52.2 PK	74.0	-21.8	1.78 H	225	38.9	13.3
6	4904.00	38.7 AV	54.0	-15.3	1.78 H	225	25.4	13.3
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	*2452.00	115.7 PK			1.25 V	251	81.0	34.7
2	*2452.00	103.7 AV			1.25 V	251	69.0	34.7
3	2483.50	66.7 PK	74.0	-7.3	1.25 V	251	32.0	34.7
4	2483.50	53.6 AV	54.0	-0.4	1.25 V	251	18.9	34.7
5	4904.00	50.5 PK	74.0	-23.5	2.10 V	114	37.2	13.3
6	4904.00	39.8 AV	54.0	-14.2	2.10 V	114	26.5	13.3

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.

802.11b Channel 1



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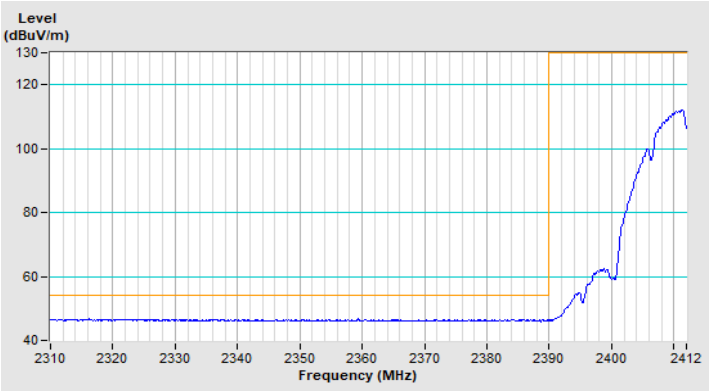

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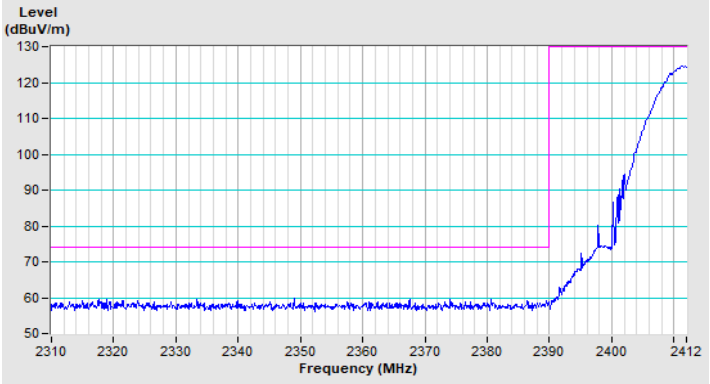
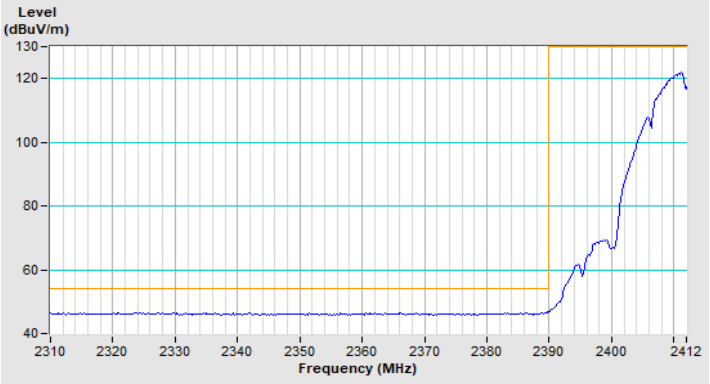
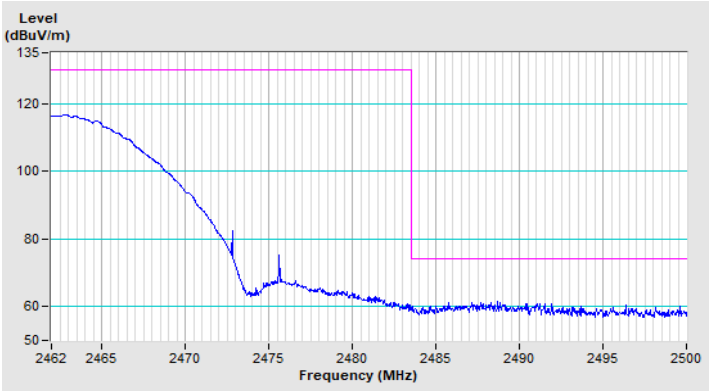


Vertical (Peak)

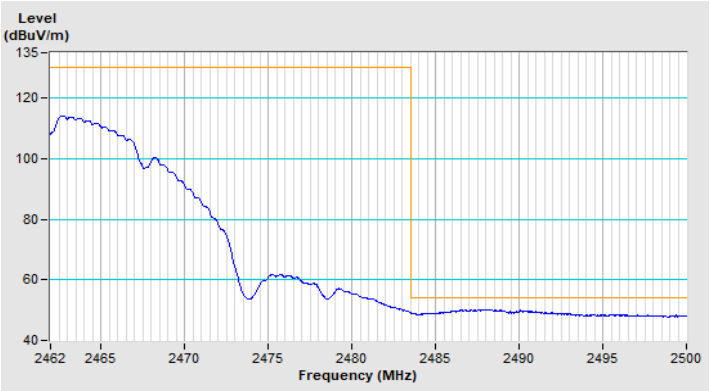


Vertical (Average)

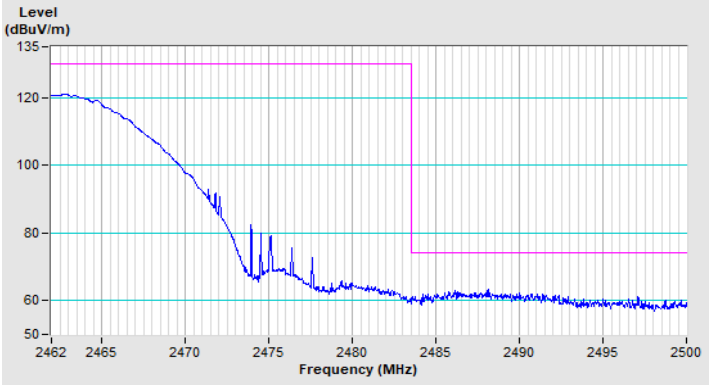
802.11b Channel 11



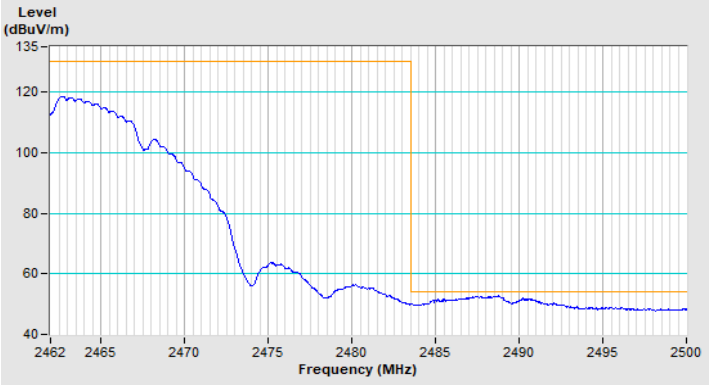
Horizontal (Peak)



Horizontal (Average)

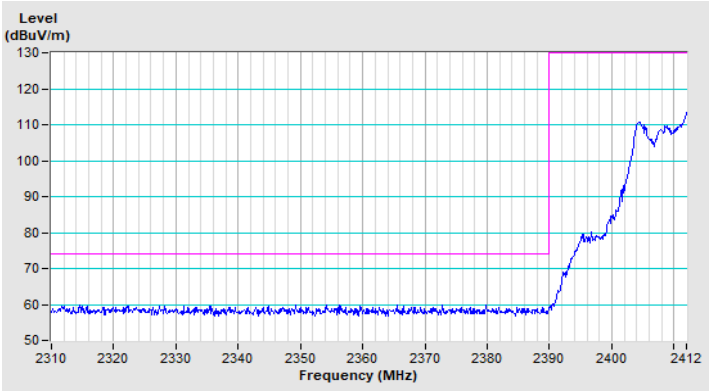


Vertical (Peak)

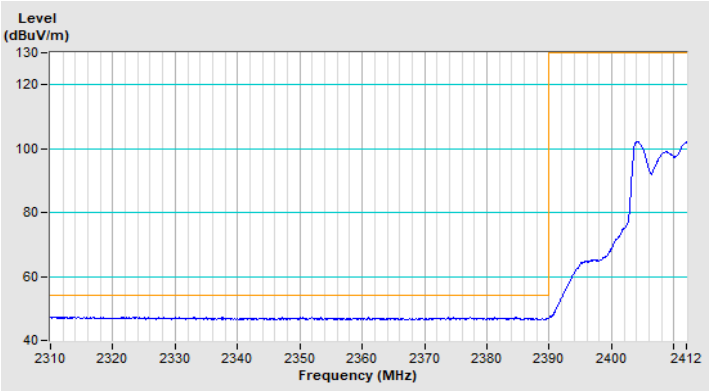


Vertical (Average)

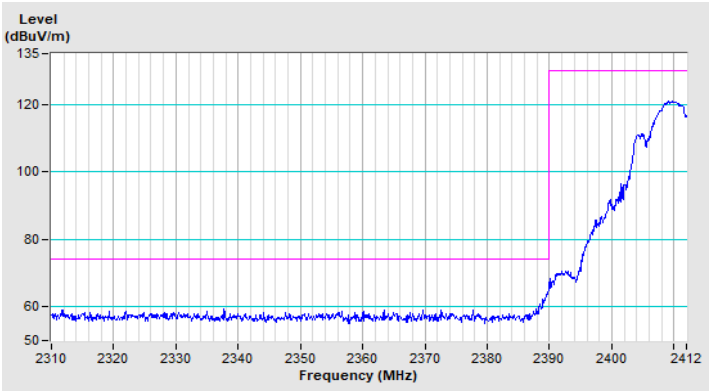
802.11g Channel 1



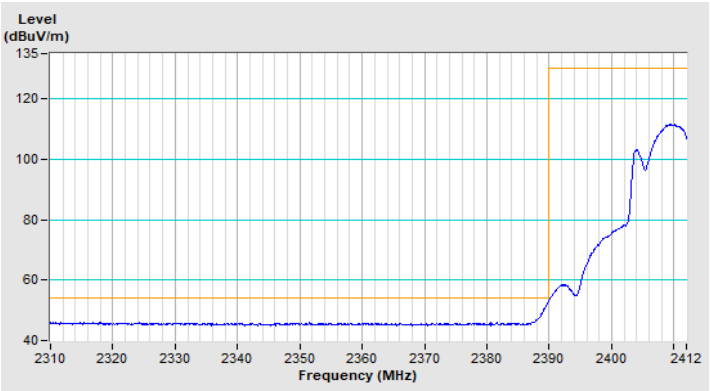
Horizontal (Peak)



Horizontal (Average)

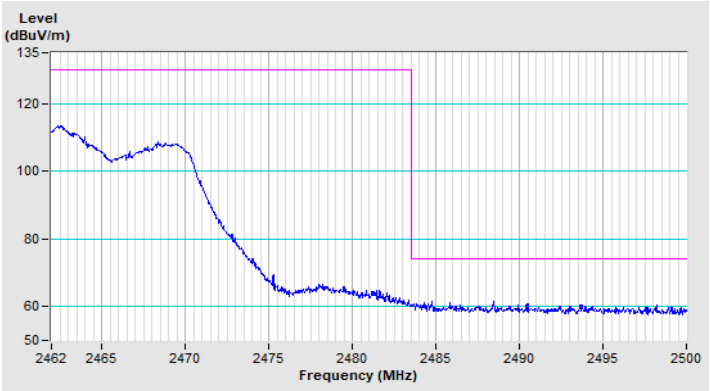


Vertical (Peak)

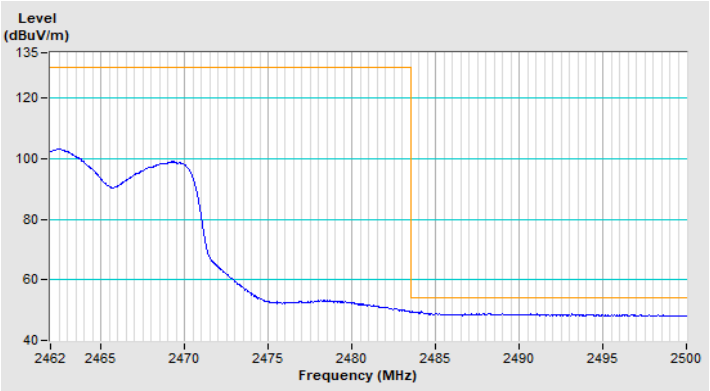


Vertical (Average)

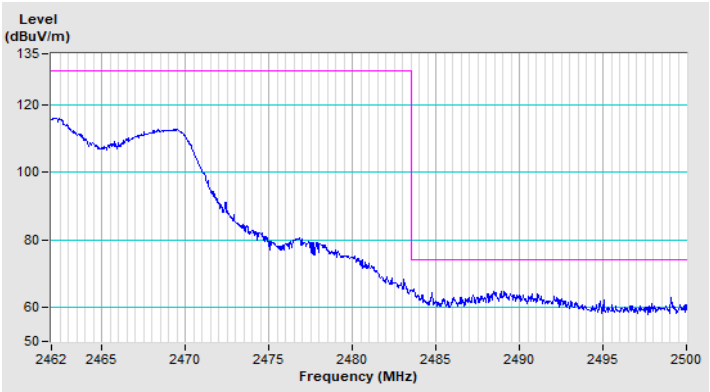
802.11g Channel 11



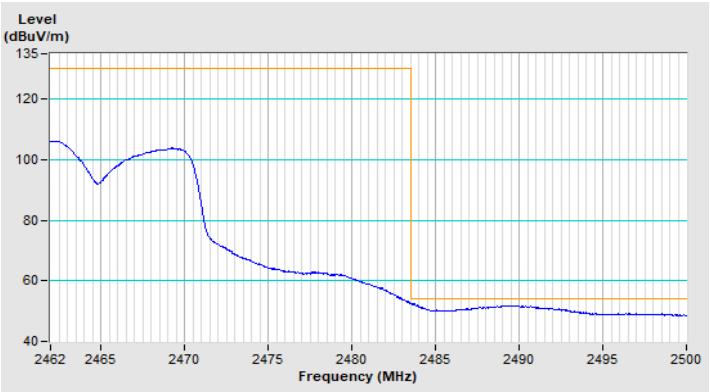
Horizontal (Peak)



Horizontal (Average)

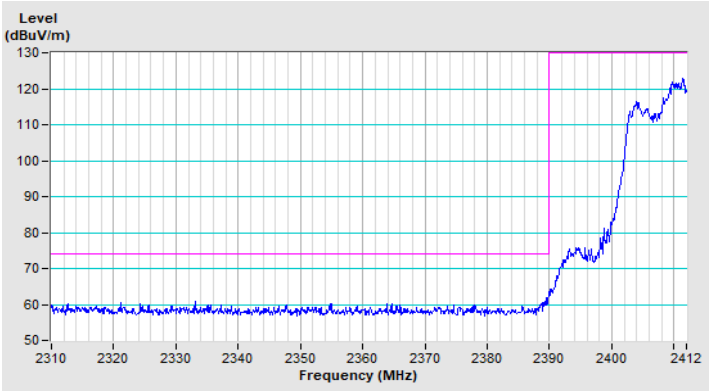


Vertical (Peak)

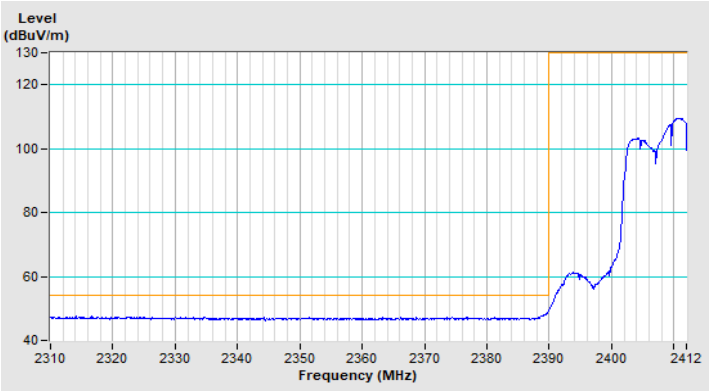


Vertical (Average)

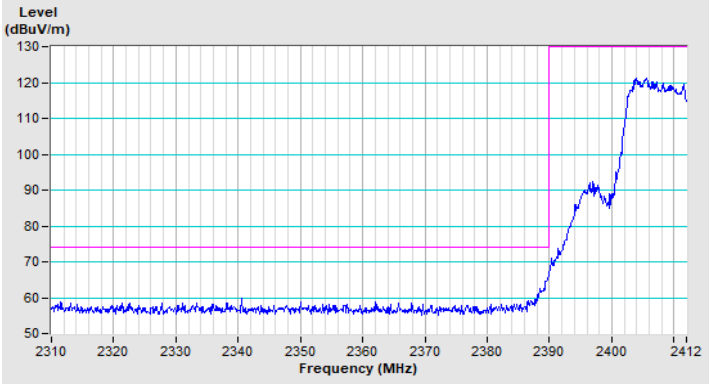
802.11ax (HE20) Channel 1



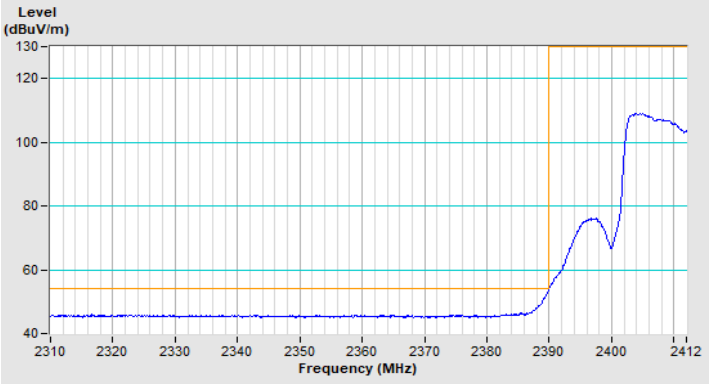
Horizontal (Peak)



Horizontal (Average)

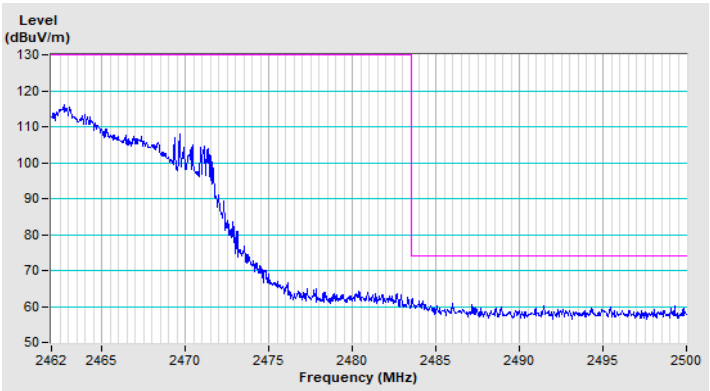


Vertical (Peak)

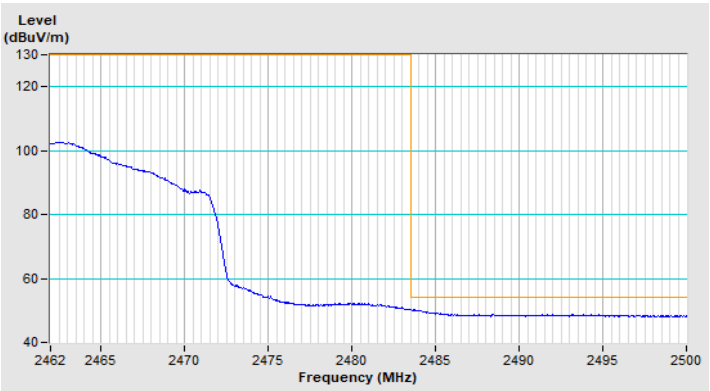


Vertical (Average)

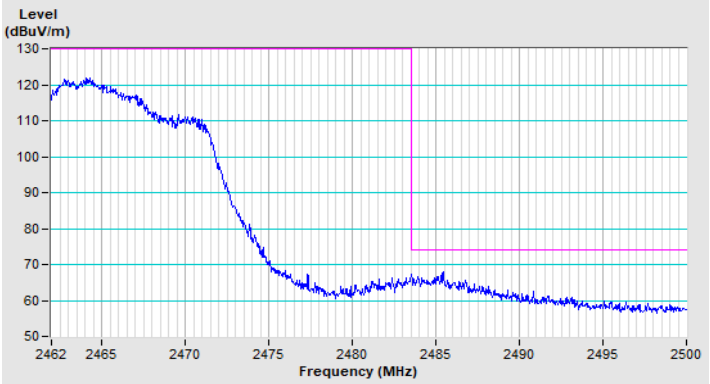
802.11ax (HE20) Channel 11



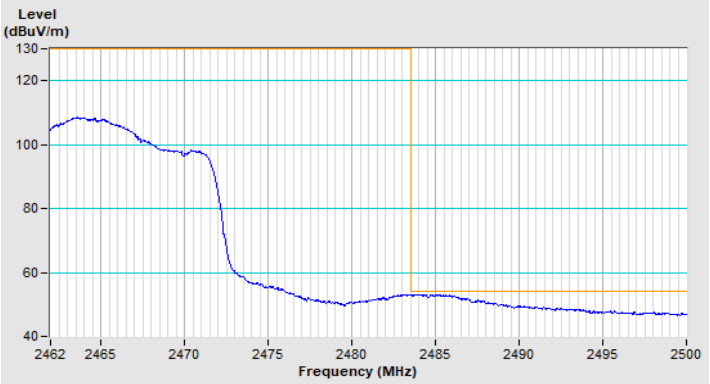
Horizontal (Peak)



Horizontal (Average)

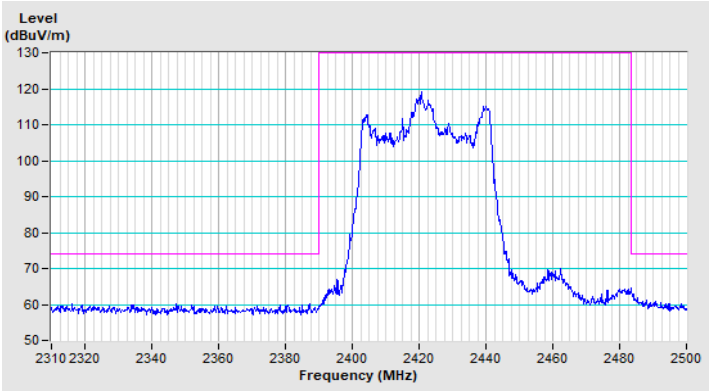


Vertical (Peak)

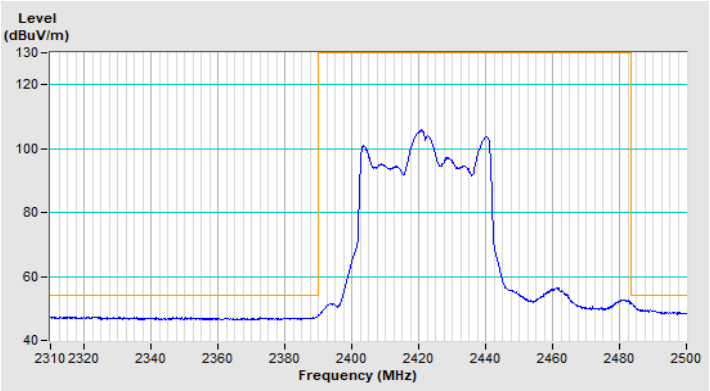


Vertical (Average)

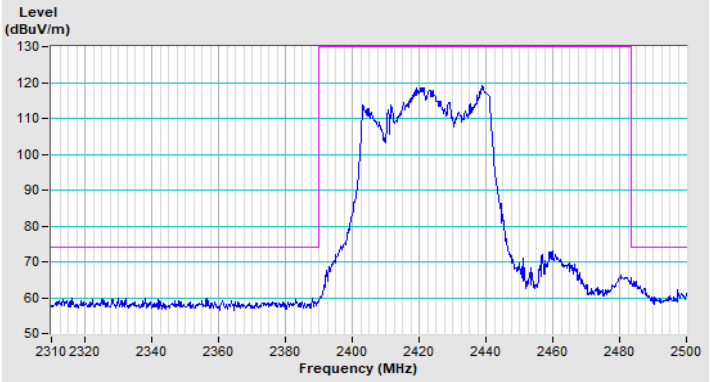
802.11ax (HE40) Channel 3



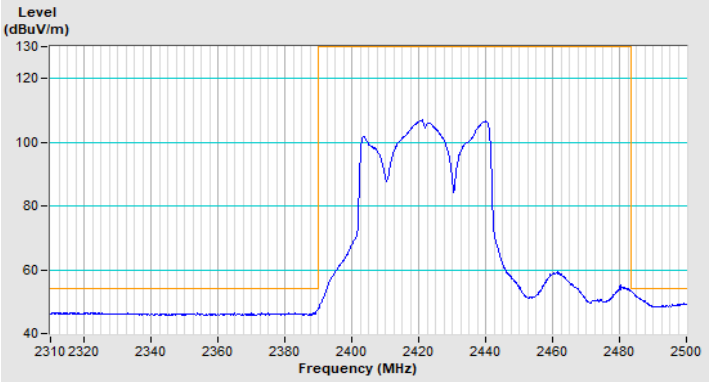
Horizontal (Peak)



Horizontal (Average)

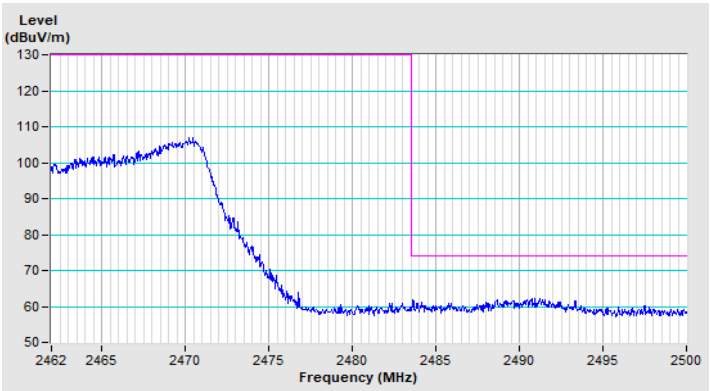


Vertical (Peak)

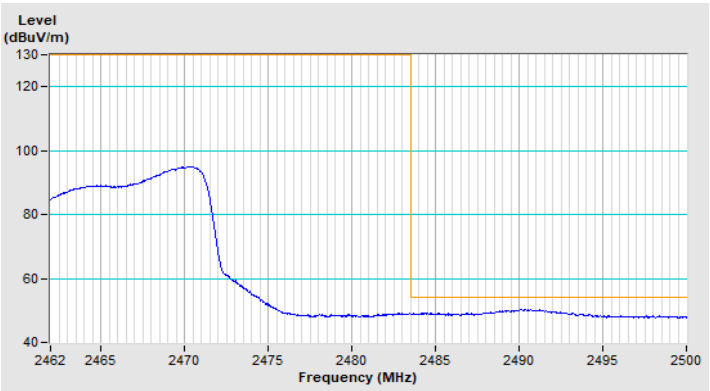


Vertical (Average)

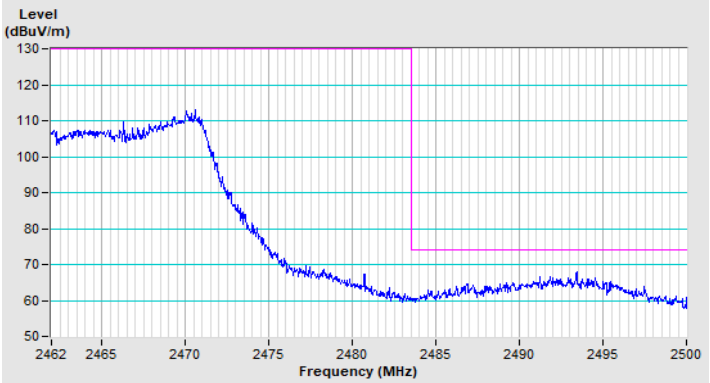
802.11ax (HE40) Channel 9



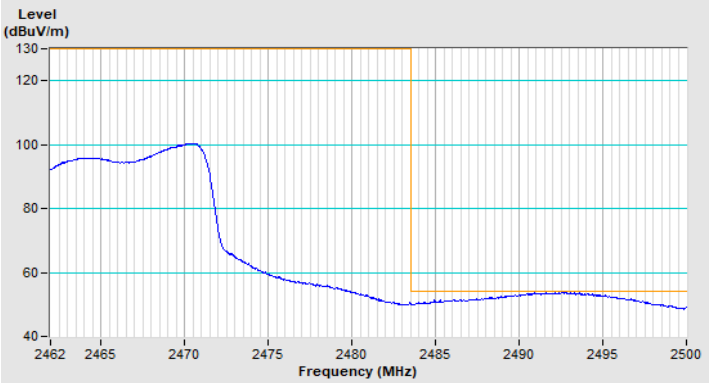
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



Vertical (Average)

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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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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