

FCC Test Report

Report No.: RFBAOZ-WTW-P20090314

FCC ID: WT8DNWAP840E

Test Model: AP840E

Received Date: Sep. 08, 2020

Test Date: Sep. 08 to Oct. 26, 2020

Issued Date: Jan. 21, 2021

Applicant: Datto, Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

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Test Location : E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RFBAOZ-WTW-P20090314	Original release.	Jan. 21, 2021

1 Certificate of Conformity

Product: WiFi6 outdoor-indoor (IP55) Access Point

Brand: datto

Test Model: AP840E

Sample Status: ENGINEERING SAMPLE

Applicant: Datto, Inc.

Test Date: Sep. 08 to Oct. 26, 2020

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :

Cherry Chuo

Cherry Chuo / Specialist

Date:

Jan. 21, 2021

Approved by :

Clark Lin

Clark Lin / Technical Manager

Date:

Jan. 21, 2021

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -4.71 dB at 0.37656 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1 dB at 2387.30MHz, 2483.50MHz and 2390.00 MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is R-SMA not a standard connector.
-	Occupied Bandwidth Measurement	-	Reference only

Note:

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.9 dB
Conducted Emissions	-	2.5 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.5 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.1 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	WiFi6 outdoor-indoor (IP55) Access Point
Brand	datto
Test Model	AP840E
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	48-54 Vdc / 0.5 A from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT20/40 in 2.4GHz 1024QAM for OFDMA in 11ax HE mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 600 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps
Operating Frequency	2.4GHz: 2.412 ~ 2.462 GHz 5GHz: 5.18 ~ 5.24 GHz, 5.745 ~ 5.825 GHz
Number of Channel	2.4GHz: 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 13 802.11n (HT40), VHT40, 802.11ax (HE40): 9 5GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 9 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2
Output Power	Mode 1: (Dipole Antenna) CDD Mode: 2.4GHz: 682.775 mW 5.18 ~ 5.24GHz: 454.676 mW 5.745 ~ 5.825GHz: 825.623 mW Beamforming Mode: 2.4GHz: 415.579 mW 5.18 ~ 5.24GHz: 209.889 mW 5.745 ~ 5.825GHz: 215.222 mW Mode 2: (Patch Antenna) CDD Mode: 2.4GHz: 436.049 mW 5.18 ~ 5.24GHz: 482.55 mW 5.745 ~ 5.825GHz: 946.467 mW Beamforming Mode: 2.4GHz: 214.514 mW 5.18 ~ 5.24GHz: 248.144 mW 5.745 ~ 5.825GHz: 242.37 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3	Radio 4
WLAN 2.4GHz	WLAN 5GHz	Bluetooth	2.4G/5G Background Scanning (Rx only)

2. Simultaneously transmission condition.

Condition	Technology		
1	WLAN (2.4GHz)	WLAN (5GHz)	Bluetooth

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

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

Ant. Set No.	RF Chain No.	Brand	Model No.	Ant. Net Gain (dBi)	Freq. Range (GHz)	Ant. Type	Connector Type	Cable Length
1	Chain 0 Chain 1 Chain 2 Chain 3	Nienyi	NYS4436	3.5 6.5	2.4~2.4835 5.15~5.85	Dipole	R-SMA	200 mm
2	Chain 0 Chain 1 Chain 2 Chain 3	TerraWave	M6060060M P1D43620	6 6	2.4~2.4835 5.15~5.85	Patch	R-SMA	914.4 mm (36" w/ connector)
3 (Background Ant)	-	Hong Lin	290-20458	6.45 4.5	2.4~2.4835 5.15~5.85	PIFA	i-pex(MHF)	140 mm
4 (BT Ant)	-	Hong Lin	290-20458	3.79	2.4~2.4835	PIFA	i-pex(MHF)	130 mm

4. The EUT incorporates a MIMO function.

2.4GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11b	4TX	4RX
802.11g	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
VHT20	4TX	4RX
VHT40	4TX	4RX
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
5GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11a	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
802.11ac (VHT20)	4TX	4RX
802.11ac (VHT40)	4TX	4RX
802.11ac (VHT80)	4TX	4RX
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
802.11ax (HE80)	4TX	4RX

Note:

1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. 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.
3. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz), VHT mode for 20MHz (40MHz) and 802.11ax mode for 20MHz (40MHz), therefore the manufacturer will control the power for 802.11n/ VHT mode is the same as the 802.11ax mode or more lower than it and investigated worst case to representative mode in test report. (Final test mode refer to section 3.2.1)

5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.
6. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

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

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

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
1	√	√	√	√	With Dipole antenna
2	√	√	√	√	With Patch antenna

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

Radiated Emission Test (Above 1GHz):

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

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

Radiated Emission Test (Below 1GHz):

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Rate Parameter
802.11g	1 to 11	6	OFDM	BPSK	6 Mb/s

Power Line Conducted Emission Test:

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

CDD Mode					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	Data Rate Parameter
802.11g	1 to 11	6	OFDM	BPSK	6 Mb/s

Antenna Port Conducted Measurement:

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

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

Test Condition:

Applicable To	Environmental Conditions	Input Power (System)	Tested By
RE $\geq$ 1G	25deg. C, 75%RH	120Vac, 60Hz	Eric Peng
RE $<$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Cater Lin
PLC	25deg. C, 64%RH	120Vac, 60Hz	Sampson Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	Jyunchun Lin

3.3 Duty Cycle of Test Signal

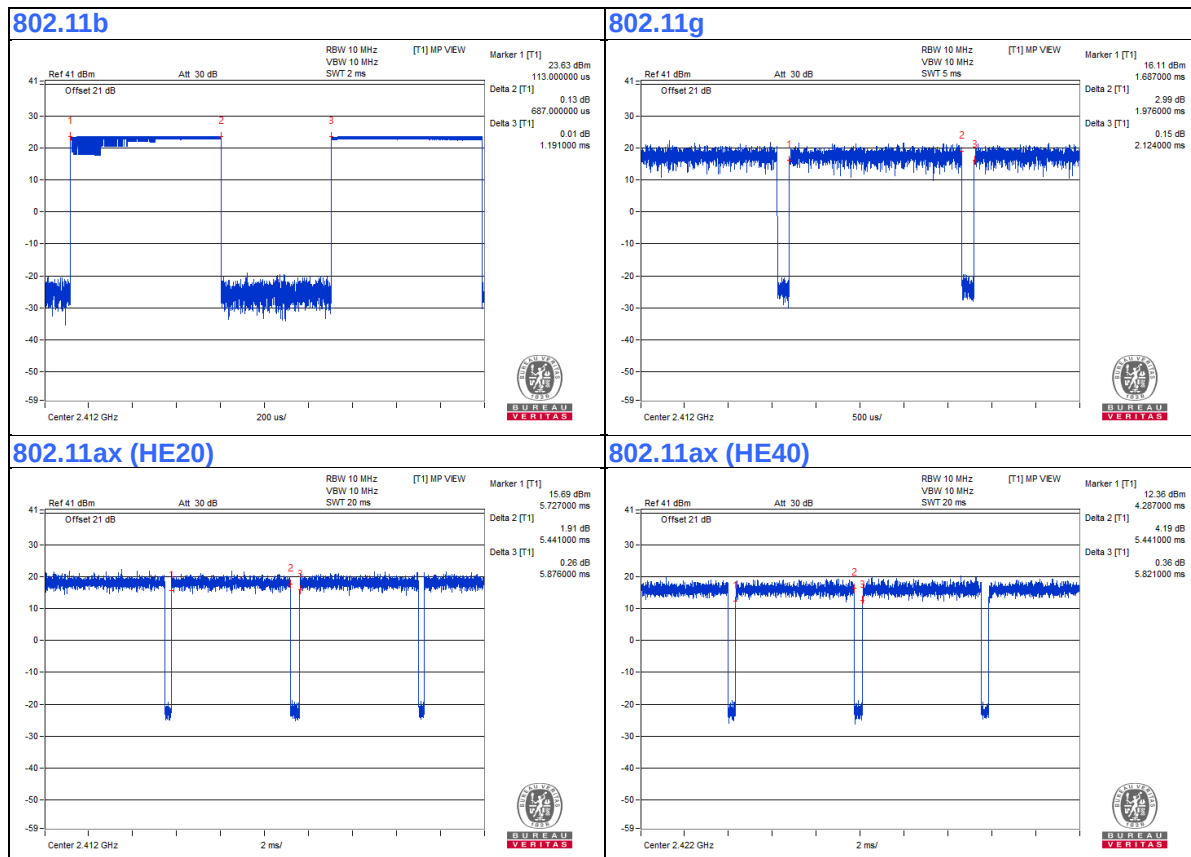
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 0.687 ms/1.191 ms= 0.577, Duty factor = $10 * \log(1/\text{Duty cycle}) = 2.39 \text{ dB}$

802.11g: Duty cycle = 1.976 ms/2.124 ms= 0.93, Duty factor = $10 * \log(1/\text{Duty cycle}) = 0.31 \text{ dB}$

802.11ax (HE20): Duty cycle = 5.441 ms/5.876 ms= 0.926, Duty factor = $10 * \log(1/\text{Duty cycle}) = 0.33 \text{ dB}$

802.11ax (HE40): Duty cycle = 5.441 ms/ 5.821 ms= 0.935, Duty factor = $10 * \log(1/\text{Duty cycle}) = 0.29 \text{ dB}$



3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Switch	D-Link	DGS-1005D	DR8WC92000523	NA	Provided by Lab
B.	POE	PHIHONG	POE29U-560	NA	NA	Supplied by client
C.	Laptop	DELL	E5430	GM1SKV1	FCC DoC	Provided by Lab

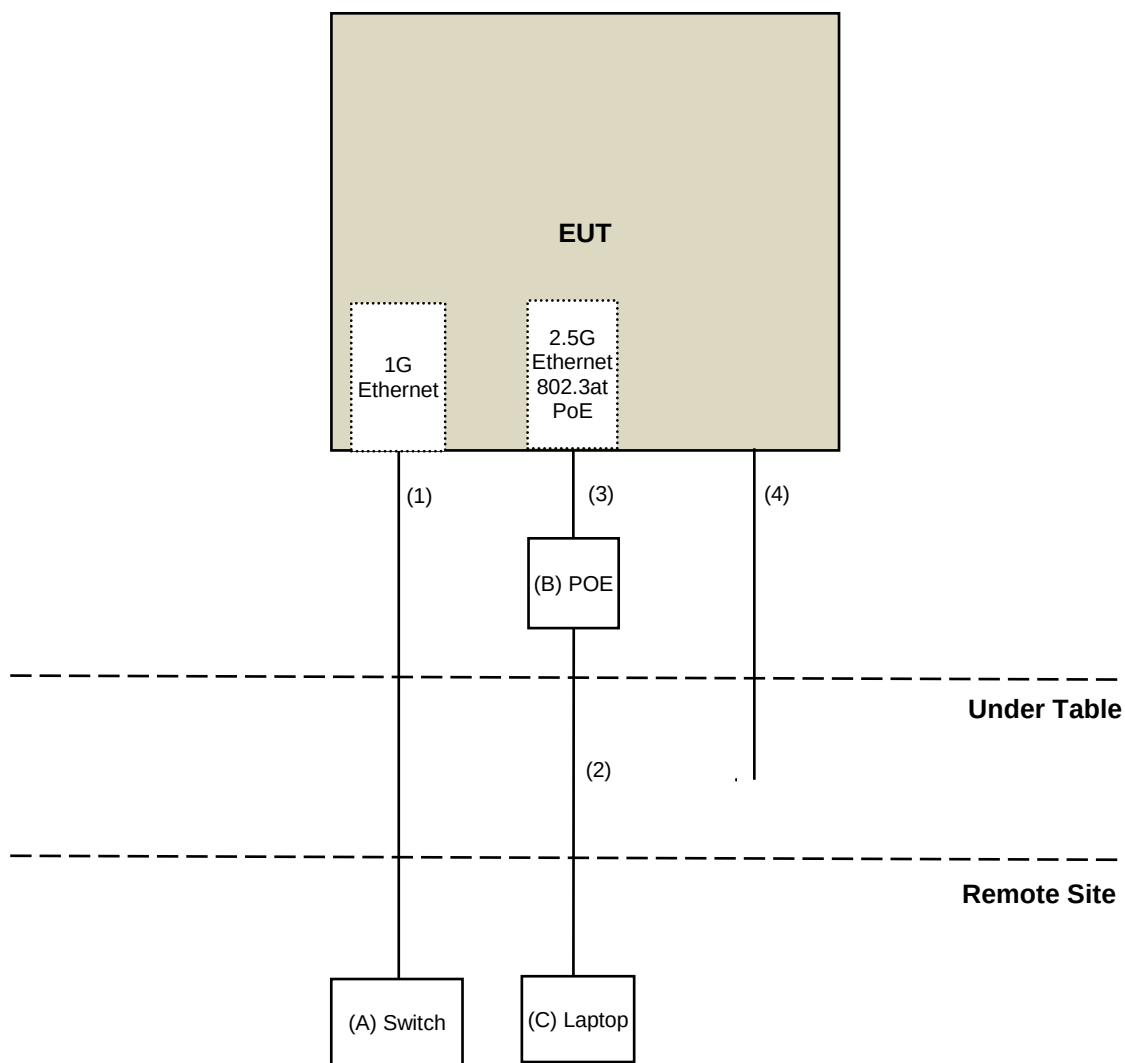
Note:

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

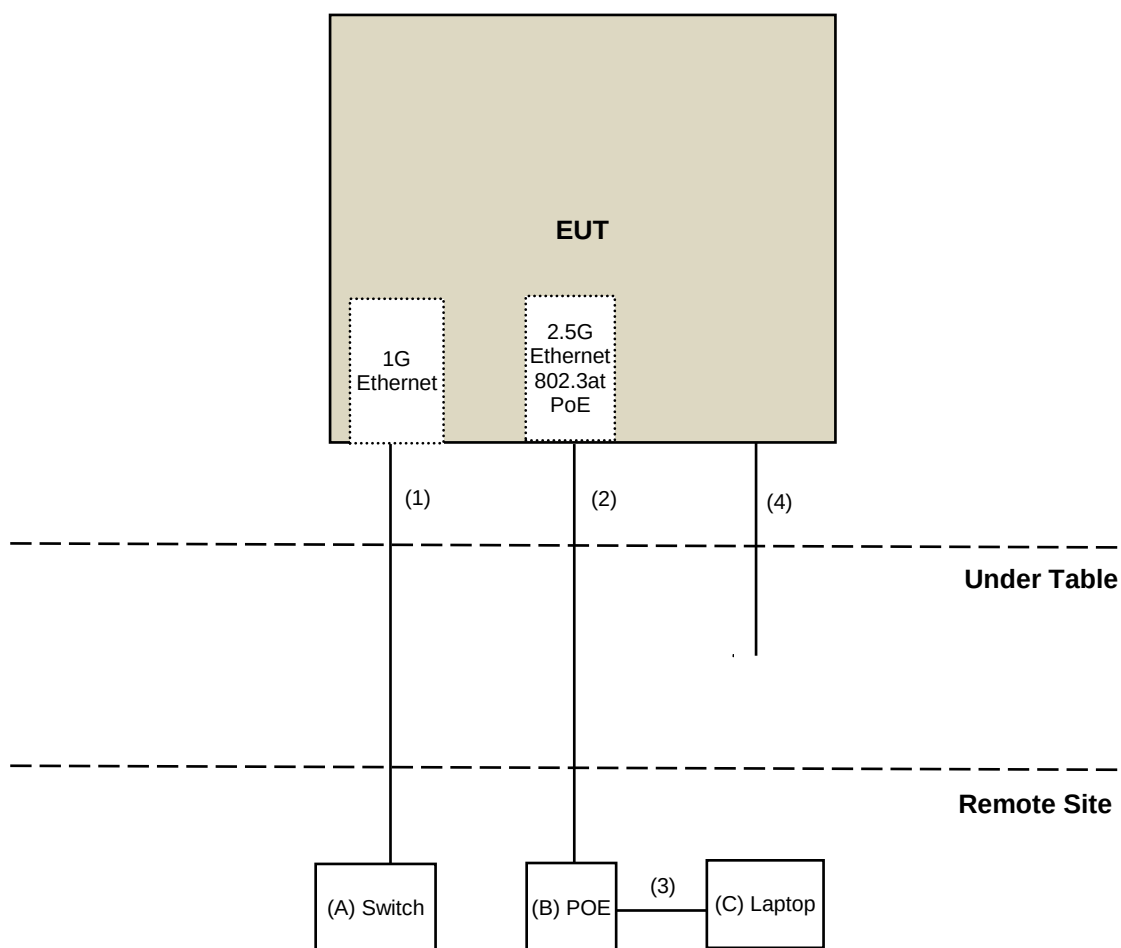
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	1	1	No	0	Provided by Lab
4.	GND Cable	1	3	No	0	Provided by Lab

3.4.1 Configuration of System under Test

AC Power Conducted Emissions test



Radiated Emissions test:



3.5 General Description of Applied Standards and references

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

Test standard:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

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

References Test Guidance :

KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

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

NOTE:

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

4.1.2 Test Instruments

For Radiated Emission:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 25, 2020	May 24, 2021
Loop Antenna Electro-Metrics	EM-6879	264	Feb. 18, 2020	Feb. 17, 2021
RF Cable	NA	LOOPCAB-001	Jan. 08, 2020	Jan. 07, 2021
RF Cable	NA	LOOPCAB-002	Jan. 08, 2020	Jan. 07, 2021
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Oct. 23, 2019	Oct. 22, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 11, 2019	Nov. 10, 2020
RF Cable	8D	966-4-1	Mar. 18, 2020	Mar. 17, 2021
RF Cable	8D	966-4-2	Mar. 18, 2020	Mar. 17, 2021
RF Cable	8D	966-4-3	Mar. 18, 2020	Mar. 17, 2021
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Sep. 24, 2020	Sep. 23, 2021
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC 12630 SE	980638	Apr. 08, 2020	Apr. 07, 2021
RF Cable	EMC104-SM-SM-1200	160923	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-2000	180502	Apr. 29, 2020	Apr. 28, 2021
RF Cable	EMC104-SM-SM-6000	180418	Apr. 29, 2020	Apr. 28, 2021
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC-KM-KM-4000	200214	Mar. 11, 2020	Mar. 10, 2021
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 4.
3. Tested Date: Oct. 15 to 20, 2020

For Bangedge test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC 12630 SE	980638	Apr. 08, 2020	Apr. 07, 2021
RF Cable	EMC104-SM-SM-1200	160923	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-2000	180502	Apr. 29, 2020	Apr. 28, 2021
RF Cable	EMC104-SM-SM-6000	180418	Apr. 29, 2020	Apr. 28, 2021
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC-KM-KM-4000	200214	Mar. 11, 2020	Mar. 10, 2021
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 4.
3. Tested Date: Sep. 08 to 28, 2020

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	May 29, 2020	May 28, 2021
Power meter Anritsu	ML2495A	1529002	July 22, 2020	July 21, 2021
Power sensor Anritsu	MA2411B	1339443	July 22, 2020	July 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

NOTE:

1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Oct. 26, 2020

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

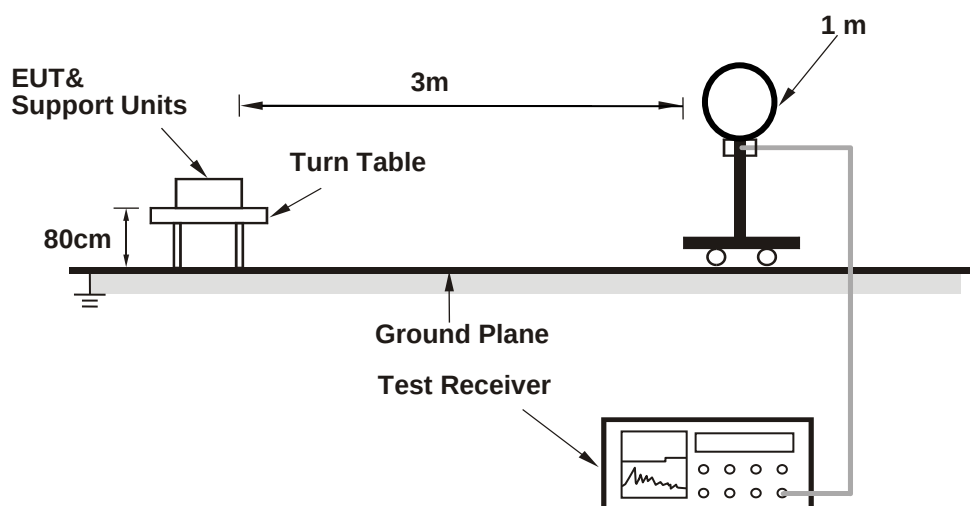
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

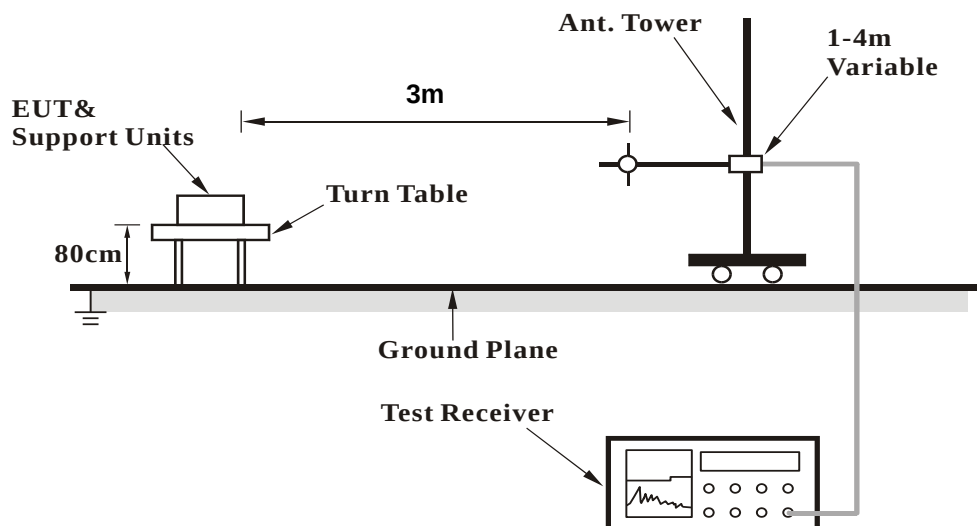
No deviation.

4.1.5 Test Setup

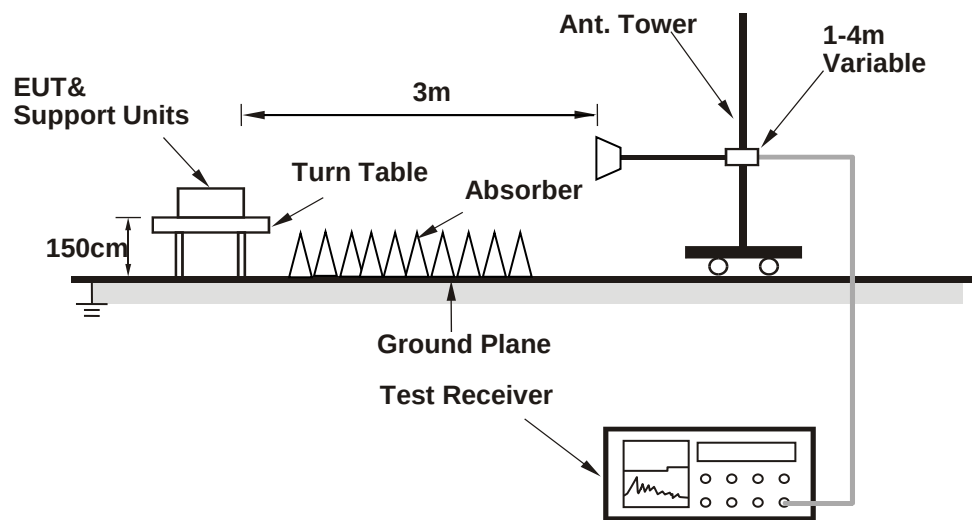
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Connected the EUT with the Laptop which is placed on remote site.
- Controlling software (QRCT_V 4.0.00156.0) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results (Mode 1)

ABOVE 1GHz DATA

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2387.30	57.5 PK	74.0	-16.5	3.79 H	234	61.6	-4.1
2	2387.30	49.6 AV	54.0	-4.4	3.79 H	234	53.7	-4.1
3	*2412.00	105.1 PK			3.79 H	234	109.2	-4.1
4	*2412.00	103.0 AV			3.79 H	234	107.1	-4.1
5	4824.00	51.9 PK	74.0	-22.1	3.27 H	331	51.8	0.1
6	4824.00	50.0 AV	54.0	-4.0	3.27 H	331	49.9	0.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2387.30	60.4 PK	74.0	-13.6	1.05 V	86	64.5	-4.1
2	2387.30	53.9 AV	54.0	-0.1	1.05 V	86	58.0	-4.1
3	*2412.00	114.1 PK			1.05 V	86	118.2	-4.1
4	*2412.00	112.0 AV			1.05 V	86	116.1	-4.1
5	4824.00	43.3 PK	74.0	-30.7	2.37 V	216	43.2	0.1
6	4824.00	41.4 AV	54.0	-12.6	2.37 V	216	41.3	0.1

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.4 PK	74.0	-18.6	3.47 H	148	59.5	-4.1
2	2390.00	43.9 AV	54.0	-10.1	3.47 H	148	48.0	-4.1
3	*2437.00	106.4 PK			3.47 H	148	110.5	-4.1
4	*2437.00	104.7 AV			3.47 H	148	108.8	-4.1
5	2483.50	54.6 PK	74.0	-19.4	3.47 H	148	58.7	-4.1
6	2483.50	43.4 AV	54.0	-10.6	3.47 H	148	47.5	-4.1
7	4874.00	53.3 PK	74.0	-20.7	3.31 H	316	53.2	0.1
8	4874.00	51.2 AV	54.0	-2.8	3.31 H	316	51.1	0.1
9	7311.00	52.5 PK	74.0	-21.5	3.58 H	316	45.9	6.6
10	7311.00	48.9 AV	54.0	-5.1	3.58 H	316	42.3	6.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.2 PK	74.0	-18.8	2.72 V	84	59.3	-4.1
2	2390.00	43.7 AV	54.0	-10.3	2.72 V	84	47.8	-4.1
3	*2437.00	113.6 PK			2.72 V	84	117.7	-4.1
4	*2437.00	111.9 AV			2.72 V	84	116.0	-4.1
5	2483.50	54.8 PK	74.0	-19.2	2.72 V	84	58.9	-4.1
6	2483.50	44.1 AV	54.0	-9.9	2.72 V	84	48.2	-4.1
7	4874.00	44.7 PK	74.0	-29.3	2.34 V	225	44.6	0.1
8	4874.00	42.2 AV	54.0	-11.8	2.34 V	225	42.1	0.1
9	7311.00	55.7 PK	74.0	-18.3	2.34 V	198	49.1	6.6
10	7311.00	53.3 AV	54.0	-0.7	2.34 V	198	46.7	6.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	105.0 PK			3.63 H	300	109.1	-4.1
2	*2462.00	103.6 AV			3.63 H	300	107.7	-4.1
3	2488.80	59.4 PK	74.0	-14.6	3.63 H	300	63.5	-4.1
4	2488.80	52.8 AV	54.0	-1.2	3.63 H	300	56.9	-4.1
5	4924.00	53.1 PK	74.0	-20.9	3.27 H	322	52.9	0.2
6	4924.00	50.4 AV	54.0	-3.6	3.27 H	322	50.2	0.2
7	7386.00	51.7 PK	74.0	-22.3	3.52 H	313	44.9	6.8
8	7386.00	48.2 AV	54.0	-5.8	3.52 H	313	41.4	6.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.9 PK			2.75 V	101	117.0	-4.1
2	*2462.00	111.8 AV			2.75 V	101	115.9	-4.1
3	2486.80	59.6 PK	74.0	-14.4	2.75 V	101	63.7	-4.1
4	2486.80	53.5 AV	54.0	-0.5	2.75 V	101	57.6	-4.1
5	4924.00	44.0 PK	74.0	-30.0	2.36 V	227	43.8	0.2
6	4924.00	41.8 AV	54.0	-12.2	2.36 V	227	41.6	0.2
7	7386.00	55.0 PK	74.0	-19.0	2.29 V	197	48.2	6.8
8	7386.00	52.8 AV	54.0	-1.2	2.29 V	197	46.0	6.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.2 PK	74.0	-18.8	3.82 H	246	59.3	-4.1
2	2390.00	43.2 AV	54.0	-10.8	3.82 H	246	47.3	-4.1
3	*2412.00	102.4 PK			3.82 H	246	106.5	-4.1
4	*2412.00	93.5 AV			3.82 H	246	97.6	-4.1
5	4824.00	42.4 PK	74.0	-31.6	3.27 H	319	42.3	0.1
6	4824.00	30.9 AV	54.0	-23.1	3.27 H	319	30.8	0.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.7 PK	74.0	-7.3	1.02 V	90	70.8	-4.1
2	2390.00	53.5 AV	54.0	-0.5	1.02 V	90	57.6	-4.1
3	*2412.00	111.3 PK			1.02 V	90	115.4	-4.1
4	*2412.00	101.9 AV			1.02 V	90	106.0	-4.1
5	4824.00	40.3 PK	74.0	-33.7	2.18 V	37	40.2	0.1
6	4824.00	27.9 AV	54.0	-26.1	2.18 V	37	27.8	0.1

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.5 PK	74.0	-16.5	3.98 H	238	61.6	-4.1
2	2390.00	45.2 AV	54.0	-8.8	3.98 H	238	49.3	-4.1
3	*2437.00	110.3 PK			3.98 H	238	114.4	-4.1
4	*2437.00	100.7 AV			3.98 H	238	104.8	-4.1
5	2483.50	59.1 PK	74.0	-14.9	3.98 H	238	63.2	-4.1
6	2483.50	45.4 AV	54.0	-8.6	3.98 H	238	49.5	-4.1
7	4874.00	50.3 PK	74.0	-23.7	3.23 H	317	50.2	0.1
8	4874.00	38.1 AV	54.0	-15.9	3.23 H	317	38.0	0.1
9	7311.00	44.7 PK	74.0	-29.3	3.23 H	316	38.1	6.6
10	7311.00	32.0 AV	54.0	-22.0	3.23 H	316	25.4	6.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	65.7 PK	74.0	-8.3	1.02 V	90	69.8	-4.1
2	2390.00	52.5 AV	54.0	-1.5	1.02 V	90	56.6	-4.1
3	*2437.00	115.9 PK			1.02 V	90	120.0	-4.1
4	*2437.00	106.3 AV			1.02 V	90	110.4	-4.1
5	2483.50	64.5 PK	74.0	-9.5	1.02 V	90	68.6	-4.1
6	2483.50	49.1 AV	54.0	-4.9	1.02 V	90	53.2	-4.1
7	4874.00	40.5 PK	74.0	-33.5	2.16 V	45	40.4	0.1
8	4874.00	28.3 AV	54.0	-25.7	2.16 V	45	28.2	0.1
9	7311.00	42.5 PK	74.0	-31.5	3.31 V	255	35.9	6.6
10	7311.00	30.6 AV	54.0	-23.4	3.31 V	255	24.0	6.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	103.6 PK			3.98 H	305	107.7	-4.1
2	*2462.00	94.4 AV			3.98 H	305	98.5	-4.1
3	2483.50	63.8 PK	74.0	-10.2	3.98 H	305	67.9	-4.1
4	2483.50	51.2 AV	54.0	-2.8	3.98 H	305	55.3	-4.1
5	4924.00	43.6 PK	74.0	-30.4	3.17 H	309	43.4	0.2
6	4924.00	32.4 AV	54.0	-21.6	3.17 H	309	32.2	0.2
7	7386.00	43.0 PK	74.0	-31.0	3.18 H	312	36.2	6.8
8	7386.00	31.3 AV	54.0	-22.7	3.18 H	312	24.5	6.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.4 PK			2.93 V	259	115.5	-4.1
2	*2462.00	102.3 AV			2.93 V	259	106.4	-4.1
3	2483.50	64.7 PK	74.0	-9.3	2.93 V	259	68.8	-4.1
4	2483.50	53.6 AV	54.0	-0.4	2.93 V	259	57.7	-4.1
5	4924.00	40.4 PK	74.0	-33.6	2.22 V	34	40.2	0.2
6	4924.00	28.4 AV	54.0	-25.6	2.22 V	34	28.2	0.2
7	7386.00	42.7 PK	74.0	-31.3	3.36 V	267	35.9	6.8
8	7386.00	30.9 AV	54.0	-23.1	3.36 V	267	24.1	6.8

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.4 PK	74.0	-17.6	3.80 H	235	60.5	-4.1
2	2390.00	44.5 AV	54.0	-9.5	3.80 H	235	48.6	-4.1
3	*2412.00	106.4 PK			3.80 H	235	110.5	-4.1
4	*2412.00	93.2 AV			3.80 H	235	97.3	-4.1
5	4824.00	42.4 PK	74.0	-31.6	2.45 H	183	42.3	0.1
6	4824.00	32.7 AV	54.0	-21.3	2.45 H	183	32.6	0.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2389.60	66.9 PK	74.0	-7.1	1.03 V	86	71.0	-4.1
2	2389.60	53.2 AV	54.0	-0.8	1.03 V	86	57.3	-4.1
3	*2412.00	114.7 PK			1.03 V	86	118.8	-4.1
4	*2412.00	101.6 AV			1.03 V	86	105.7	-4.1
5	4824.00	41.9 PK	74.0	-32.1	2.26 V	148	41.8	0.1
6	4824.00	29.9 AV	54.0	-24.1	2.26 V	148	29.8	0.1

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	54.1 PK	74.0	-19.9	1.53 H	222	58.2	-4.1
2	2390.00	42.6 AV	54.0	-11.4	1.53 H	222	46.7	-4.1
3	*2437.00	108.9 PK			1.53 H	222	113.0	-4.1
4	*2437.00	98.6 AV			1.53 H	222	102.7	-4.1
5	2483.50	54.3 PK	74.0	-19.7	1.53 H	222	58.4	-4.1
6	2483.50	42.8 AV	54.0	-11.2	1.53 H	222	46.9	-4.1
7	4874.00	47.7 PK	74.0	-26.3	2.46 H	178	47.6	0.1
8	4874.00	37.4 AV	54.0	-16.6	2.46 H	178	37.3	0.1
9	7311.00	51.6 PK	74.0	-22.4	2.46 H	200	45.0	6.6
10	7311.00	40.2 AV	54.0	-13.8	2.46 H	200	33.6	6.6

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2384.14	65.0 PK	74.0	-9.0	3.01 V	260	69.1	-4.1
2	2384.14	51.5 AV	54.0	-2.5	3.01 V	260	55.6	-4.1
3	*2437.00	119.8 PK			3.01 V	260	123.9	-4.1
4	*2437.00	107.4 AV			3.01 V	260	111.5	-4.1
5	2493.20	67.9 PK	74.0	-6.1	3.01 V	260	72.0	-4.1
6	2493.20	53.7 AV	54.0	-0.3	3.01 V	260	57.8	-4.1
7	4874.00	44.3 PK	74.0	-29.7	2.26 V	154	44.2	0.1
8	4874.00	32.8 AV	54.0	-21.2	2.26 V	154	32.7	0.1
9	7311.00	50.3 PK	74.0	-23.7	2.26 V	201	43.7	6.6
10	7311.00	39.6 AV	54.0	-14.4	2.26 V	201	33.0	6.6

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	107.2 PK			1.00 H	7	111.3	-4.1
2	*2462.00	93.7 AV			1.00 H	7	97.8	-4.1
3	2484.20	61.5 PK	74.0	-12.5	1.00 H	7	65.6	-4.1
4	2484.20	48.6 AV	54.0	-5.4	1.00 H	7	52.7	-4.1
5	4924.00	43.4 PK	74.0	-30.6	2.43 H	187	43.2	0.2
6	4924.00	32.0 AV	54.0	-22.0	2.43 H	187	31.8	0.2
7	7386.00	46.7 PK	74.0	-27.3	2.47 H	185	39.9	6.8
8	7386.00	35.8 AV	54.0	-18.2	2.47 H	185	29.0	6.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	115.1 PK			2.86 V	260	119.2	-4.1
2	*2462.00	102.2 AV			2.86 V	260	106.3	-4.1
3	2483.50	67.1 PK	74.0	-6.9	2.86 V	260	71.2	-4.1
4	2483.50	53.9 AV	54.0	-0.1	2.86 V	260	58.0	-4.1
5	4924.00	42.4 PK	74.0	-31.6	2.31 V	151	42.2	0.2
6	4924.00	30.2 AV	54.0	-23.8	2.31 V	151	30.0	0.2
7	7386.00	44.8 PK	74.0	-29.2	2.30 V	208	38.0	6.8
8	7386.00	33.2 AV	54.0	-20.8	2.30 V	208	26.4	6.8

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.7 PK	74.0	-14.3	1.16 H	23	63.8	-4.1
2	2390.00	47.3 AV	54.0	-6.7	1.16 H	23	51.4	-4.1
3	*2422.00	101.8 PK			1.16 H	23	105.9	-4.1
4	*2422.00	88.9 AV			1.16 H	23	93.0	-4.1
5	4844.00	43.5 PK	74.0	-30.5	2.49 H	175	43.4	0.1
6	4844.00	31.8 AV	54.0	-22.2	2.49 H	175	31.7	0.1
7	7266.00	44.4 PK	74.0	-29.6	2.52 H	194	37.9	6.5
8	7266.00	34.4 AV	54.0	-19.6	2.52 H	194	27.9	6.5
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	2380.60	67.9 PK	74.0	-6.1	1.02 V	86	72.0	-4.1
2	2380.60	53.7 AV	54.0	-0.3	1.02 V	86	57.8	-4.1
3	*2422.00	111.9 PK			1.02 V	86	116.0	-4.1
4	*2422.00	99.1 AV			1.02 V	86	103.2	-4.1
5	4844.00	41.4 PK	74.0	-32.6	2.33 V	151	41.3	0.1
6	4844.00	29.2 AV	54.0	-24.8	2.33 V	151	29.1	0.1
7	7266.00	44.4 PK	74.0	-29.6	2.39 V	178	37.9	6.5
8	7266.00	31.9 AV	54.0	-22.1	2.39 V	178	25.4	6.5

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.

RF Mode	TX 802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.3 PK	74.0	-12.7	1.00 H	7	65.4	-4.1
2	2390.00	49.6 AV	54.0	-4.4	1.00 H	7	53.7	-4.1
3	*2437.00	103.7 PK			1.00 H	7	107.8	-4.1
4	*2437.00	91.5 AV			1.00 H	7	95.6	-4.1
5	2491.50	60.7 PK	74.0	-13.3	1.00 H	7	64.7	-4.0
6	2491.50	46.8 AV	54.0	-7.2	1.00 H	7	50.8	-4.0
7	4874.00	43.7 PK	74.0	-30.3	2.43 H	172	43.6	0.1
8	4874.00	32.0 AV	54.0	-22.0	2.43 H	172	31.9	0.1
9	7311.00	44.8 PK	74.0	-29.2	2.46 H	207	38.2	6.6
10	7311.00	34.5 AV	54.0	-19.5	2.46 H	207	27.9	6.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.5 PK	74.0	-7.5	1.02 V	86	70.6	-4.1
2	2390.00	53.4 AV	54.0	-0.6	1.02 V	86	57.5	-4.1
3	*2437.00	112.1 PK			1.02 V	86	116.2	-4.1
4	*2437.00	100.0 AV			1.02 V	86	104.1	-4.1
5	2495.60	66.0 PK	74.0	-8.0	1.02 V	86	70.1	-4.1
6	2495.60	51.6 AV	54.0	-2.4	1.02 V	86	55.7	-4.1
7	4874.00	41.8 PK	74.0	-32.2	2.33 V	136	41.7	0.1
8	4874.00	30.4 AV	54.0	-23.6	2.33 V	136	30.3	0.1
9	7311.00	44.8 PK	74.0	-29.2	2.34 V	193	38.2	6.6
10	7311.00	32.3 AV	54.0	-21.7	2.34 V	193	25.7	6.6

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	102.4 PK			1.00 H	7	106.5	-4.1
2	*2452.00	89.0 AV			1.00 H	7	93.1	-4.1
3	2496.20	67.6 PK	74.0	-6.4	1.00 H	7	71.7	-4.1
4	2496.20	49.5 AV	54.0	-4.5	1.00 H	7	53.6	-4.1
5	4904.00	43.3 PK	74.0	-30.7	2.47 H	179	43.2	0.1
6	4904.00	31.7 AV	54.0	-22.3	2.47 H	179	31.6	0.1
7	7356.00	44.0 PK	74.0	-30.0	2.50 H	195	37.3	6.7
8	7356.00	34.1 AV	54.0	-19.9	2.50 H	195	27.4	6.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	109.4 PK			2.96 V	260	113.5	-4.1
2	*2452.00	97.3 AV			2.96 V	260	101.4	-4.1
3	2488.60	66.5 PK	74.0	-7.5	2.96 V	260	70.6	-4.1
4	2488.60	53.7 AV	54.0	-0.3	2.96 V	260	57.8	-4.1
5	4904.00	41.7 PK	74.0	-32.3	2.33 V	148	41.6	0.1
6	4904.00	30.1 AV	54.0	-23.9	2.33 V	148	30.0	0.1
7	7356.00	44.7 PK	74.0	-29.3	2.29 V	208	38.0	6.7
8	7356.00	31.8 AV	54.0	-22.2	2.29 V	208	25.1	6.7

Remarks:

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

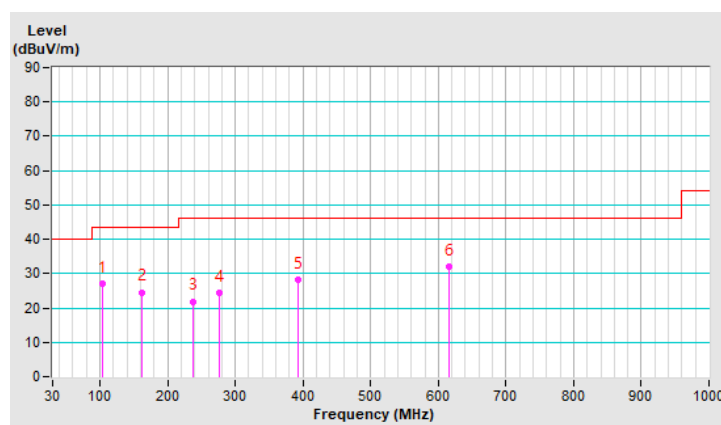
Below 1GHz Data:

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	103.74	26.9 QP	43.5	-16.6	3.00 H	264	38.2	-11.3
2	161.24	24.6 QP	43.5	-18.9	4.00 H	88	32.2	-7.6
3	237.94	21.9 QP	46.0	-24.1	2.00 H	253	31.0	-9.1
4	275.43	24.3 QP	46.0	-21.7	3.00 H	360	31.6	-7.3
5	392.63	28.2 QP	46.0	-17.8	4.00 H	198	32.2	-4.0
6	615.76	32.0 QP	46.0	-14.0	3.00 H	254	30.0	2.0

Remarks:

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

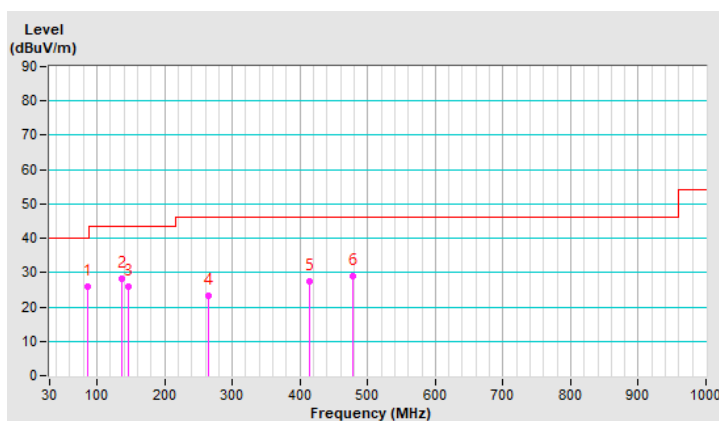


RF Mode	TX 802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBUV)	Correction Factor (dB/m)
1	85.92	25.8 QP	40.0	-14.2	2.00 V	26	39.4	-13.6
2	137.09	28.3 QP	43.5	-15.2	2.00 V	268	36.5	-8.2
3	146.33	25.8 QP	43.5	-17.7	3.00 V	290	33.4	-7.6
4	265.27	23.4 QP	46.0	-22.6	2.00 V	211	31.2	-7.8
5	414.65	27.4 QP	46.0	-18.6	2.00 V	245	30.9	-3.5
6	478.99	29.1 QP	46.0	-16.9	2.00 V	205	30.8	-1.7

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.1.8 Test Results (Mode 2)

ABOVE 1GHz DATA

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2387.20	56.8 PK	74.0	-17.2	1.12 H	148	60.9	-4.1
2	2387.20	47.9 AV	54.0	-6.1	1.12 H	148	52.0	-4.1
3	*2412.00	114.6 PK			1.12 H	148	118.7	-4.1
4	*2412.00	113.0 AV			1.12 H	148	117.1	-4.1
5	4824.00	47.9 PK	74.0	-26.1	3.37 H	225	47.8	0.1
6	4824.00	46.4 AV	54.0	-7.6	3.37 H	225	46.3	0.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2387.40	60.5 PK	74.0	-13.5	1.53 V	161	64.6	-4.1
2	2387.40	53.7 AV	54.0	-0.3	1.53 V	161	57.8	-4.1
3	*2412.00	120.3 PK			1.53 V	161	124.4	-4.1
4	*2412.00	118.6 AV			1.53 V	161	122.7	-4.1
5	4824.00	50.1 PK	74.0	-23.9	3.68 V	291	50.0	0.1
6	4824.00	48.9 AV	54.0	-5.1	3.68 V	291	48.8	0.1

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.7 PK	74.0	-15.3	1.12 H	138	62.8	-4.1
2	2390.00	49.8 AV	54.0	-4.2	1.12 H	138	53.9	-4.1
3	*2437.00	115.9 PK			1.12 H	138	120.0	-4.1
4	*2437.00	114.8 AV			1.12 H	138	118.9	-4.1
5	2483.50	59.4 PK	74.0	-14.6	1.12 H	138	63.5	-4.1
6	2483.50	52.3 AV	54.0	-1.7	1.12 H	138	56.4	-4.1
7	4874.00	47.6 PK	74.0	-26.4	3.33 H	228	47.5	0.1
8	4874.00	46.5 AV	54.0	-7.5	3.33 H	228	46.4	0.1
9	7311.00	39.4 PK	74.0	-34.6	2.10 H	239	32.8	6.6
10	7311.00	35.8 AV	54.0	-18.2	2.10 H	239	29.2	6.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2388.20	59.6 PK	74.0	-14.4	1.18 V	173	63.7	-4.1
2	2388.20	50.3 AV	54.0	-3.7	1.18 V	173	54.4	-4.1
3	*2437.00	122.4 PK			1.18 V	173	126.5	-4.1
4	*2437.00	120.3 AV			1.18 V	173	124.4	-4.1
5	2485.70	60.7 PK	74.0	-13.3	1.18 V	173	64.8	-4.1
6	2485.70	53.1 AV	54.0	-0.9	1.18 V	173	57.2	-4.1
7	4874.00	50.1 PK	74.0	-23.9	3.66 V	306	50.0	0.1
8	4874.00	49.0 AV	54.0	-5.0	3.66 V	306	48.9	0.1
9	7311.00	41.6 PK	74.0	-32.4	3.49 V	297	35.0	6.6
10	7311.00	38.2 AV	54.0	-15.8	3.49 V	297	31.6	6.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	113.9 PK			1.47 H	245	118.0	-4.1
2	*2462.00	112.1 AV			1.47 H	245	116.2	-4.1
3	2483.50	56.4 PK	74.0	-17.6	1.47 H	245	60.5	-4.1
4	2483.50	49.5 AV	54.0	-4.5	1.47 H	245	53.6	-4.1
5	4924.00	48.0 PK	74.0	-26.0	3.36 H	240	47.8	0.2
6	4924.00	46.6 AV	54.0	-7.4	3.36 H	240	46.4	0.2
7	7386.00	39.1 PK	74.0	-34.9	2.16 H	227	32.3	6.8
8	7386.00	35.6 AV	54.0	-18.4	2.16 H	227	28.8	6.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	121.1 PK			1.00 V	173	125.2	-4.1
2	*2462.00	118.9 AV			1.00 V	173	123.0	-4.1
3	2483.50	61.8 PK	74.0	-12.2	1.00 V	173	65.9	-4.1
4	2483.50	53.8 AV	54.0	-0.2	1.00 V	173	57.9	-4.1
5	4924.00	50.3 PK	74.0	-23.7	3.61 V	320	50.1	0.2
6	4924.00	49.1 AV	54.0	-4.9	3.61 V	320	48.9	0.2
7	7386.00	41.1 PK	74.0	-32.9	3.53 V	312	34.3	6.8
8	7386.00	37.8 AV	54.0	-16.2	3.53 V	312	31.0	6.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	54.8 PK	74.0	-19.2	1.25 H	146	58.9	-4.1
2	2390.00	44.7 AV	54.0	-9.3	1.25 H	146	48.8	-4.1
3	*2412.00	113.2 PK			1.25 H	146	117.3	-4.1
4	*2412.00	105.5 AV			1.25 H	146	109.6	-4.1
5	4824.00	43.1 PK	74.0	-30.9	3.75 H	255	43.0	0.1
6	4824.00	31.1 AV	54.0	-22.9	3.75 H	255	31.0	0.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2388.60	67.9 PK	74.0	-6.1	1.69 V	197	72.0	-4.1
2	2388.60	53.5 AV	54.0	-0.5	1.69 V	197	57.6	-4.1
3	*2412.00	119.5 PK			1.69 V	197	123.6	-4.1
4	*2412.00	109.5 AV			1.69 V	197	113.6	-4.1
5	4824.00	46.4 PK	74.0	-27.6	2.86 V	282	46.3	0.1
6	4824.00	35.0 AV	54.0	-19.0	2.86 V	282	34.9	0.1

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.0 PK	74.0	-19.0	1.26 H	155	59.1	-4.1
2	2390.00	45.2 AV	54.0	-8.8	1.26 H	155	49.3	-4.1
3	*2437.00	118.5 PK			1.26 H	155	122.6	-4.1
4	*2437.00	110.6 AV			1.26 H	155	114.7	-4.1
5	2483.50	55.4 PK	74.0	-18.6	1.26 H	155	59.5	-4.1
6	2483.50	45.1 AV	54.0	-8.9	1.26 H	155	49.2	-4.1
7	4874.00	43.3 PK	74.0	-30.7	3.83 H	254	43.2	0.1
8	4874.00	31.1 AV	54.0	-22.9	3.83 H	254	31.0	0.1
9	7311.00	42.7 PK	74.0	-31.3	2.34 H	265	36.1	6.6
10	7311.00	30.5 AV	54.0	-23.5	2.34 H	265	23.9	6.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.4 PK	74.0	-7.6	1.49 V	172	70.5	-4.1
2	2390.00	53.5 AV	54.0	-0.5	1.49 V	172	57.6	-4.1
3	*2437.00	123.0 PK			1.49 V	172	127.1	-4.1
4	*2437.00	114.3 AV			1.49 V	172	118.4	-4.1
5	2483.50	64.9 PK	74.0	-9.1	1.49 V	172	69.0	-4.1
6	2483.50	50.0 AV	54.0	-4.0	1.49 V	172	54.1	-4.1
7	4874.00	46.8 PK	74.0	-27.2	2.81 V	307	46.7	0.1
8	4874.00	35.2 AV	54.0	-18.8	2.81 V	307	35.1	0.1
9	7311.00	45.3 PK	74.0	-28.7	2.70 V	259	38.7	6.6
10	7311.00	32.1 AV	54.0	-21.9	2.70 V	259	25.5	6.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	113.4 PK			1.58 H	151	117.5	-4.1
2	*2462.00	105.5 AV			1.58 H	151	109.6	-4.1
3	2483.50	63.4 PK	74.0	-10.6	1.58 H	151	67.5	-4.1
4	2483.50	52.5 AV	54.0	-1.5	1.58 H	151	56.6	-4.1
5	4924.00	43.0 PK	74.0	-31.0	3.78 H	259	42.8	0.2
6	4924.00	31.0 AV	54.0	-23.0	3.78 H	259	30.8	0.2
7	7386.00	42.4 PK	74.0	-31.6	2.31 H	262	35.6	6.8
8	7386.00	30.0 AV	54.0	-24.0	2.31 H	262	23.2	6.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	119.7 PK			1.70 V	197	123.8	-4.1
2	*2462.00	109.8 AV			1.70 V	197	113.9	-4.1
3	2483.50	65.7 PK	74.0	-8.3	1.70 V	197	69.8	-4.1
4	2483.50	53.4 AV	54.0	-0.6	1.70 V	197	57.5	-4.1
5	4924.00	46.3 PK	74.0	-27.7	2.84 V	297	46.1	0.2
6	4924.00	34.8 AV	54.0	-19.2	2.84 V	297	34.6	0.2
7	7386.00	44.9 PK	74.0	-29.1	2.71 V	256	38.1	6.8
8	7386.00	32.0 AV	54.0	-22.0	2.71 V	256	25.2	6.8

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	64.2 PK	74.0	-9.8	1.54 H	144	68.3	-4.1
2	2390.00	51.6 AV	54.0	-2.4	1.54 H	144	55.7	-4.1
3	*2412.00	117.6 PK			1.54 H	144	121.7	-4.1
4	*2412.00	105.9 AV			1.54 H	144	110.0	-4.1
5	4824.00	45.1 PK	74.0	-28.9	2.92 H	213	45.0	0.1
6	4824.00	33.4 AV	54.0	-20.6	2.92 H	213	33.3	0.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2388.20	67.3 PK	74.0	-6.7	1.75 V	161	71.4	-4.1
2	2388.20	53.5 AV	54.0	-0.5	1.75 V	161	57.6	-4.1
3	*2412.00	123.5 PK			1.75 V	161	127.6	-4.1
4	*2412.00	110.5 AV			1.75 V	161	114.6	-4.1
5	4824.00	45.2 PK	74.0	-28.8	2.79 V	296	45.1	0.1
6	4824.00	33.3 AV	54.0	-20.7	2.79 V	296	33.2	0.1

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2386.40	63.5 PK	74.0	-10.5	1.57 H	142	67.6	-4.1
2	2386.40	50.6 AV	54.0	-3.4	1.57 H	142	54.7	-4.1
3	*2437.00	121.0 PK			1.57 H	142	125.1	-4.1
4	*2437.00	119.3 AV			1.57 H	142	123.4	-4.1
5	2484.60	57.3 PK	74.0	-16.7	1.57 H	142	61.4	-4.1
6	2484.60	45.8 AV	54.0	-8.2	1.57 H	142	49.9	-4.1
7	4874.00	45.5 PK	74.0	-28.5	2.82 H	226	45.4	0.1
8	4874.00	33.8 AV	54.0	-20.2	2.82 H	226	33.7	0.1
9	7311.00	54.1 PK	74.0	-19.9	2.93 H	270	47.5	6.6
10	7311.00	41.3 AV	54.0	-12.7	2.93 H	270	34.7	6.6

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2386.40	66.3 PK	74.0	-7.7	1.41 V	170	70.4	-4.1
2	2386.40	53.8 AV	54.0	-0.2	1.41 V	170	57.9	-4.1
3	*2437.00	126.1 PK			1.41 V	170	130.2	-4.1
4	*2437.00	114.2 AV			1.41 V	170	118.3	-4.1
5	2484.60	68.5 PK	74.0	-5.5	1.41 V	170	72.6	-4.1
6	2484.60	52.8 AV	54.0	-1.2	1.41 V	170	56.9	-4.1
7	4874.00	45.6 PK	74.0	-28.4	2.73 V	307	45.5	0.1
8	4874.00	33.7 AV	54.0	-20.3	2.73 V	307	33.6	0.1
9	7311.00	44.8 PK	74.0	-29.2	2.56 V	309	38.2	6.6
10	7311.00	32.7 AV	54.0	-21.3	2.56 V	309	26.1	6.6

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.0 PK			1.22 H	121	116.1	-4.1
2	*2462.00	101.9 AV			1.22 H	121	106.0	-4.1
3	2483.50	59.1 PK	74.0	-14.9	1.22 H	121	63.2	-4.1
4	2483.50	47.9 AV	54.0	-6.1	1.22 H	121	52.0	-4.1
5	4924.00	45.2 PK	74.0	-28.8	2.87 H	212	45.0	0.2
6	4924.00	33.7 AV	54.0	-20.3	2.87 H	212	33.5	0.2
7	7386.00	53.9 PK	74.0	-20.1	2.98 H	274	47.1	6.8
8	7386.00	41.1 AV	54.0	-12.9	2.98 H	274	34.3	6.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	118.9 PK			1.15 V	172	123.0	-4.1
2	*2462.00	106.0 AV			1.15 V	172	110.1	-4.1
3	2483.50	66.7 PK	74.0	-7.3	1.15 V	172	70.8	-4.1
4	2483.50	53.6 AV	54.0	-0.4	1.15 V	172	57.7	-4.1
5	4924.00	45.5 PK	74.0	-28.5	2.74 V	300	45.3	0.2
6	4924.00	33.5 AV	54.0	-20.5	2.74 V	300	33.3	0.2
7	7386.00	44.6 PK	74.0	-29.4	2.60 V	318	37.8	6.8
8	7386.00	32.4 AV	54.0	-21.6	2.60 V	318	25.6	6.8

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2385.10	60.8 PK	74.0	-13.2	1.75 H	145	64.9	-4.1
2	2385.10	49.8 AV	54.0	-4.2	1.75 H	145	53.9	-4.1
3	*2422.00	111.2 PK			1.75 H	145	115.3	-4.1
4	*2422.00	100.8 AV			1.75 H	145	104.9	-4.1
5	4844.00	44.4 PK	74.0	-29.6	2.80 H	204	44.3	0.1
6	4844.00	32.9 AV	54.0	-21.1	2.80 H	204	32.8	0.1
7	7266.00	54.1 PK	74.0	-19.9	3.00 H	273	47.6	6.5
8	7266.00	41.0 AV	54.0	-13.0	3.00 H	273	34.5	6.5
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	2384.80	71.0 PK	74.0	-3.0	1.64 V	169	75.1	-4.1
2	2384.80	53.6 AV	54.0	-0.4	1.64 V	169	57.7	-4.1
3	*2422.00	118.8 PK			1.64 V	169	122.9	-4.1
4	*2422.00	106.0 AV			1.64 V	169	110.1	-4.1
5	4844.00	45.9 PK	74.0	-28.1	2.72 V	299	45.8	0.1
6	4844.00	33.9 AV	54.0	-20.1	2.72 V	299	33.8	0.1
7	7266.00	44.6 PK	74.0	-29.4	2.56 V	323	38.1	6.5
8	7266.00	32.6 AV	54.0	-21.4	2.56 V	323	26.1	6.5

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.

RF Mode	TX 802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.2 PK	74.0	-15.8	1.80 H	156	62.3	-4.1
2	2390.00	48.9 AV	54.0	-5.1	1.80 H	156	53.0	-4.1
3	*2437.00	104.3 PK			1.80 H	156	108.4	-4.1
4	*2437.00	102.5 AV			1.80 H	156	106.6	-4.1
5	2485.10	62.1 PK	74.0	-11.9	1.80 H	156	66.2	-4.1
6	2485.10	50.6 AV	54.0	-3.4	1.80 H	156	54.7	-4.1
7	4874.00	44.8 PK	74.0	-29.2	2.86 H	217	44.7	0.1
8	4874.00	33.3 AV	54.0	-20.7	2.86 H	217	33.2	0.1
9	7311.00	54.0 PK	74.0	-20.0	3.02 H	263	47.4	6.6
10	7311.00	41.3 AV	54.0	-12.7	3.02 H	263	34.7	6.6

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.8 PK	74.0	-5.2	1.43 V	171	72.9	-4.1
2	2390.00	53.9 AV	54.0	-0.1	1.43 V	171	58.0	-4.1
3	*2437.00	120.7 PK			1.43 V	171	124.8	-4.1
4	*2437.00	107.9 AV			1.43 V	171	112.0	-4.1
5	2485.10	67.3 PK	74.0	-6.7	1.43 V	171	71.4	-4.1
6	2485.10	53.7 AV	54.0	-0.3	1.43 V	171	57.8	-4.1
7	4874.00	45.3 PK	74.0	-28.7	2.70 V	303	45.2	0.1
8	4874.00	33.3 AV	54.0	-20.7	2.70 V	303	33.2	0.1
9	7311.00	44.4 PK	74.0	-29.6	2.62 V	322	37.8	6.6
10	7311.00	32.4 AV	54.0	-21.6	2.62 V	322	25.8	6.6

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	109.3 PK			1.97 H	152	113.4	-4.1
2	*2452.00	99.6 AV			1.97 H	152	103.7	-4.1
3	2493.70	63.3 PK	74.0	-10.7	1.97 H	152	67.4	-4.1
4	2493.70	51.7 AV	54.0	-2.3	1.97 H	152	55.8	-4.1
5	4904.00	44.8 PK	74.0	-29.2	2.85 H	200	44.7	0.1
6	4904.00	33.2 AV	54.0	-20.8	2.85 H	200	33.1	0.1
7	7356.00	54.2 PK	74.0	-19.8	3.03 H	284	47.5	6.7
8	7356.00	41.3 AV	54.0	-12.7	3.03 H	284	34.6	6.7

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	116.5 PK			1.62 V	168	120.6	-4.1
2	*2452.00	103.6 AV			1.62 V	168	107.7	-4.1
3	2495.00	66.8 PK	74.0	-7.2	1.62 V	168	70.9	-4.1
4	2495.00	53.6 AV	54.0	-0.4	1.62 V	168	57.7	-4.1
5	4904.00	45.8 PK	74.0	-28.2	2.72 V	284	45.7	0.1
6	4904.00	33.9 AV	54.0	-20.1	2.72 V	284	33.8	0.1
7	7356.00	44.9 PK	74.0	-29.1	2.64 V	303	38.2	6.7
8	7356.00	32.8 AV	54.0	-21.2	2.64 V	303	26.1	6.7

Remarks:

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

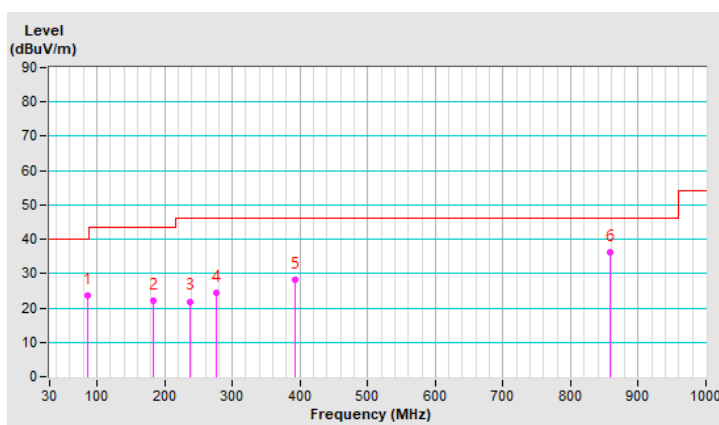
Below 1GHz Data:

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	85.94	23.5 QP	40.0	-16.5	2.00 H	47	37.2	-13.7
2	182.58	22.1 QP	43.5	-21.4	3.00 H	249	31.7	-9.6
3	237.94	21.9 QP	46.0	-24.1	2.00 H	253	31.0	-9.1
4	275.43	24.3 QP	46.0	-21.7	3.00 H	360	31.6	-7.3
5	392.63	28.2 QP	46.0	-17.8	4.00 H	198	32.2	-4.0
6	858.36	36.2 QP	46.0	-9.8	2.00 H	304	30.4	5.8

Remarks:

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

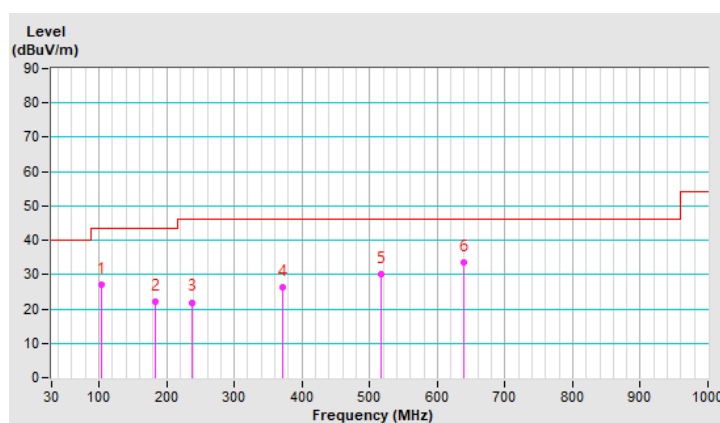


RF Mode	TX 802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	103.74	26.9 QP	43.5	-16.6	3.00 V	264	38.2	-11.3
2	182.58	22.1 QP	43.5	-21.4	3.00 V	249	31.7	-9.6
3	237.94	21.9 QP	46.0	-24.1	2.00 V	253	31.0	-9.1
4	372.34	26.4 QP	46.0	-19.6	2.00 V	314	30.9	-4.5
5	516.16	29.9 QP	46.0	-16.1	2.00 V	238	30.7	-0.8
6	638.41	33.5 QP	46.0	-12.5	4.00 V	114	31.2	2.3

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 of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 19, 2020	Mar. 18, 2021
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 26, 2020	Sep. 25, 2021
Fixed attenuator EMCI	STI02-2200-10	005	Aug. 29, 2020	Aug. 28, 2021
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
- 3 Tested Date: Oct. 12, 2020

4.2.3 Test Procedures

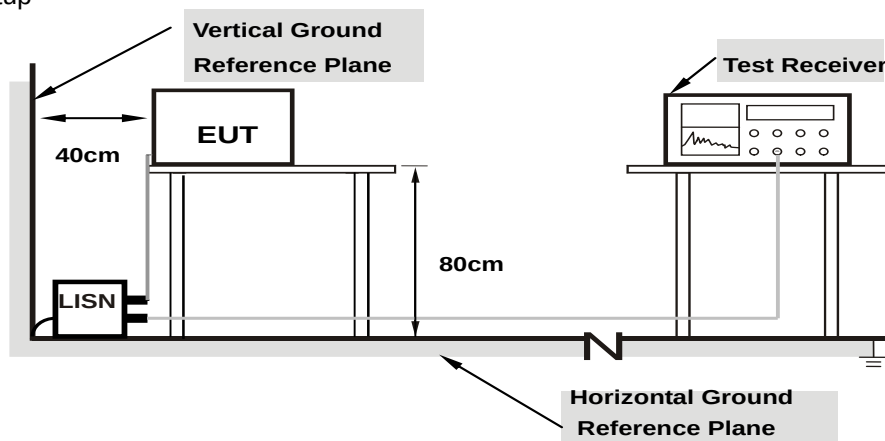
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

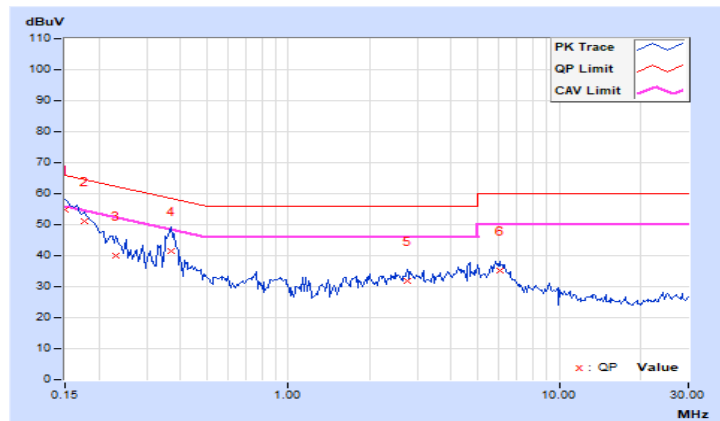
4.2.7 Test Results (Mode 1)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBUV)		Emission Level (dBUV)		Limit (dBUV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.91	45.05	30.39	54.96	40.30	66.00	56.00	-11.04	-15.70
2	0.17734	9.92	41.10	24.88	51.02	34.80	64.61	54.61	-13.59	-19.81
3	0.23203	9.93	30.25	17.40	40.18	27.33	62.38	52.38	-22.20	-25.05
4	0.36875	9.95	31.44	22.58	41.39	32.53	58.53	48.53	-17.14	-16.00
5	2.75391	10.06	21.64	16.93	31.70	26.99	56.00	46.00	-24.30	-19.01
6	6.01953	10.23	25.08	20.82	35.31	31.05	60.00	50.00	-24.69	-18.95

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

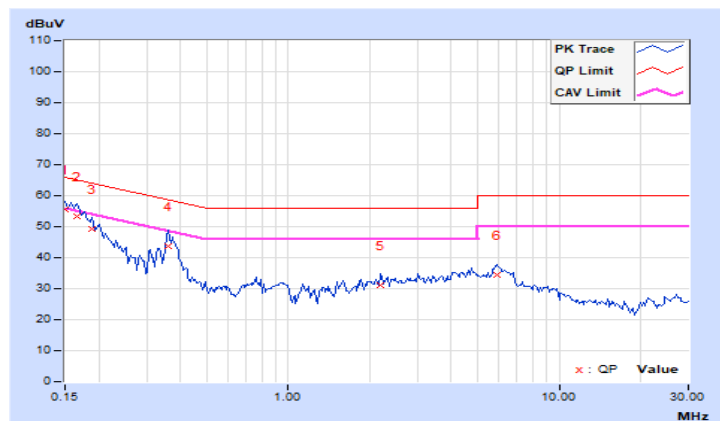


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.91	45.74	31.21	55.65	41.12	66.00	56.00	-10.35	-14.88
2	0.16562	9.92	43.45	27.05	53.37	36.97	65.18	55.18	-11.81	-18.21
3	0.18906	9.93	39.31	22.90	49.24	32.83	64.08	54.08	-14.84	-21.25
4	0.36094	9.95	33.90	26.50	43.85	36.45	58.71	48.71	-14.86	-12.26
5	2.19531	10.03	21.16	15.96	31.19	25.99	56.00	46.00	-24.81	-20.01
6	5.86719	10.18	24.38	19.89	34.56	30.07	60.00	50.00	-25.44	-19.93

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



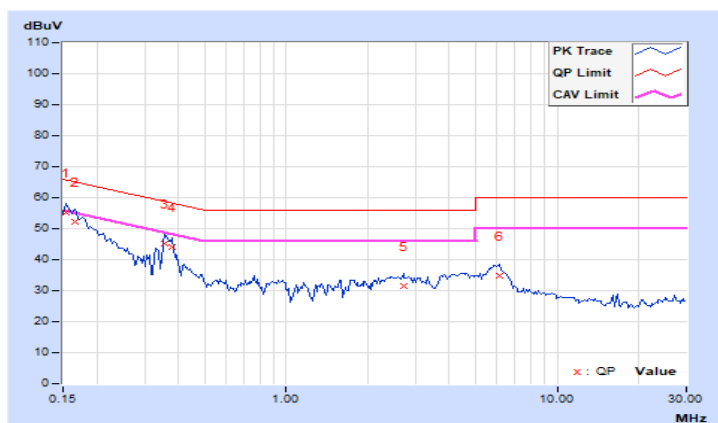
4.2.8 Test Results (Mode 2)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.91	45.25	29.52	55.16	39.43	65.79	55.79	-10.63	-16.36
2	0.16562	9.92	42.46	25.83	52.38	35.75	65.18	55.18	-12.80	-19.43
3	0.35703	9.95	35.23	31.57	45.18	41.52	58.80	48.80	-13.62	-7.28
4	0.38047	9.95	33.95	30.83	43.90	40.78	58.27	48.27	-14.37	-7.49
5	2.71875	10.06	21.51	16.86	31.57	26.92	56.00	46.00	-24.43	-19.08
6	6.13672	10.23	24.62	20.39	34.85	30.62	60.00	50.00	-25.15	-19.38

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

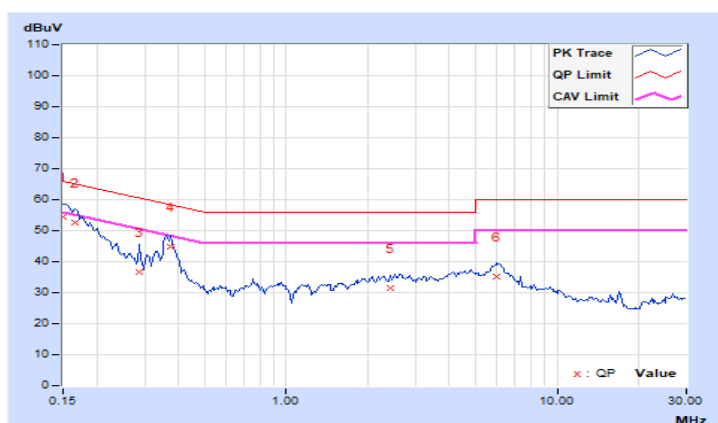


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.91	44.69	30.07	54.60	39.98	66.00	56.00	-11.40	-16.02
2	0.16562	9.92	42.66	25.89	52.58	35.81	65.18	55.18	-12.60	-19.37
3	0.28672	9.94	26.78	17.18	36.72	27.12	60.62	50.62	-23.90	-23.50
4	0.37656	9.95	34.77	33.69	44.72	43.64	58.35	48.35	-13.63	-4.71
5	2.42969	10.04	21.57	16.76	31.61	26.80	56.00	46.00	-24.39	-19.20
6	5.98828	10.18	24.89	20.56	35.07	30.74	60.00	50.00	-24.93	-19.26

Remarks:

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

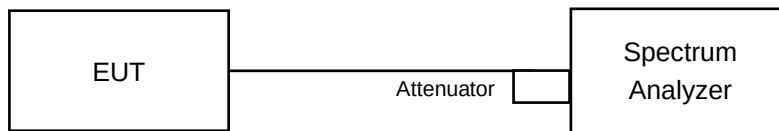


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results (Mode 1)

CDD Mode

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	8.04	7.64	8.11	8.06	0.5	Pass
6	2437	9.09	8.01	9.08	8.08	0.5	Pass
11	2462	9.07	8.07	9.07	8.6	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	16.4	16.1	16.4	16.41	0.5	Pass
6	2437	16.39	16.41	16.41	16.4	0.5	Pass
11	2462	16.41	16.34	16.43	16.41	0.5	Pass

802.11ax (HE20)

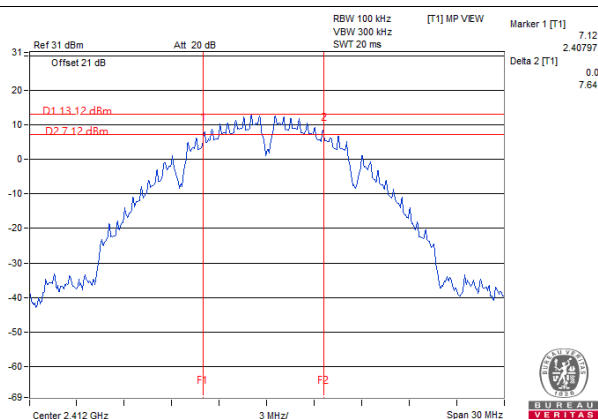
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	18.58	18.99	18.79	18.92	0.5	Pass
6	2437	18.47	18.7	18.57	18.83	0.5	Pass
11	2462	18.91	18.82	18.42	18.98	0.5	Pass

802.11ax (HE40)

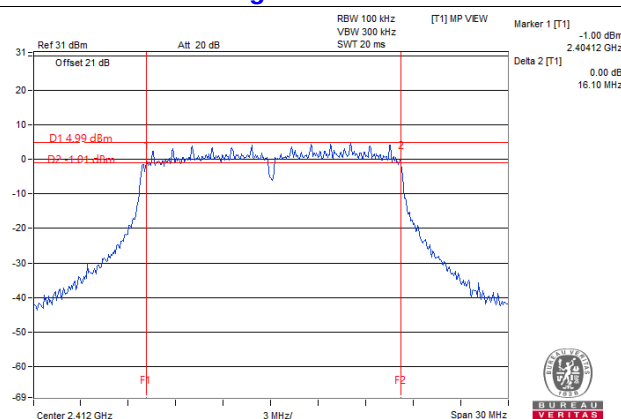
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
3	2422	37.81	37.56	37.8	38.03	0.5	Pass
6	2437	37.99	37.66	37.55	37.99	0.5	Pass
9	2452	37.98	37.01	37.55	37.91	0.5	Pass

Spectrum Plot of Worst Value

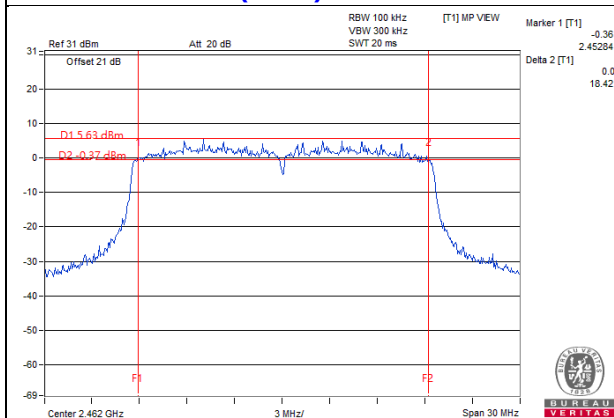
802.11b / Chain 1 : CH1



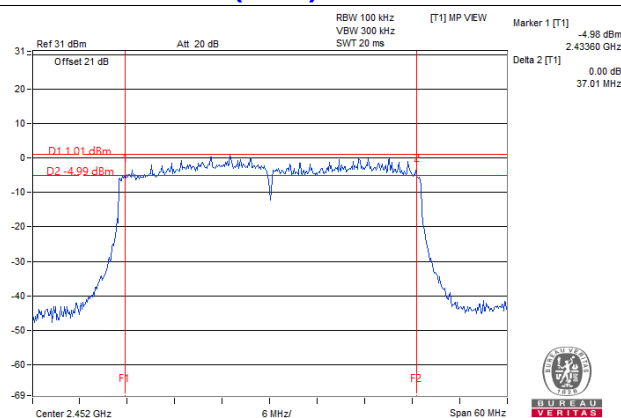
802.11g / Chain 1 : CH1



802.11ax (HE20) / Chain 2 : CH11



802.11ax (HE40) / Chain 1 : CH9



4.3.8 Test Results (Mode 2)

CDD Mode

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	8.07	7.62	8.07	7.58	0.5	Pass
6	2437	9.09	8.01	9.08	8.08	0.5	Pass
11	2462	7.64	8.06	8.08	8.08	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	15.87	15.99	16.42	16.4	0.5	Pass
6	2437	16.1	16.36	16.38	16.41	0.5	Pass
11	2462	16.08	16.37	16.41	16.4	0.5	Pass

802.11ax (HE20)

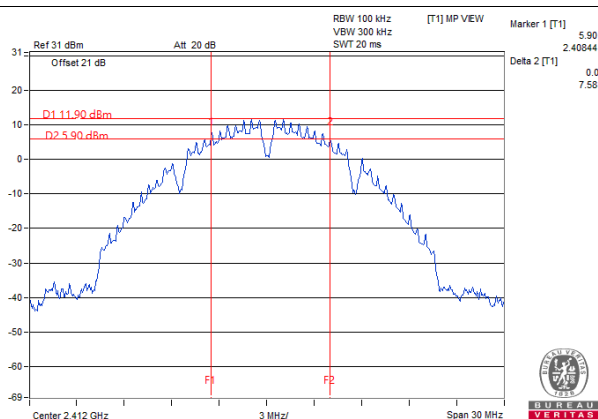
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	18.97	18.88	18.76	18.96	0.5	Pass
6	2437	19.04	18.93	18.53	18.85	0.5	Pass
11	2462	18.94	18.86	18.69	18.96	0.5	Pass

802.11ax (HE40)

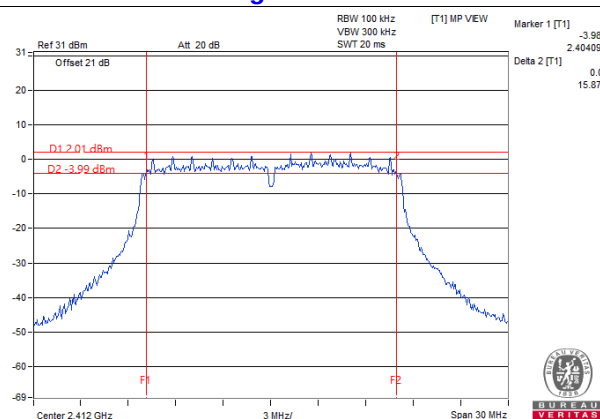
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
3	2422	37.82	37.81	37.93	38.15	0.5	Pass
6	2437	37.68	36.99	37.89	38.11	0.5	Pass
9	2452	36.94	37.46	37.84	37.98	0.5	Pass

Spectrum Plot of Worst Value

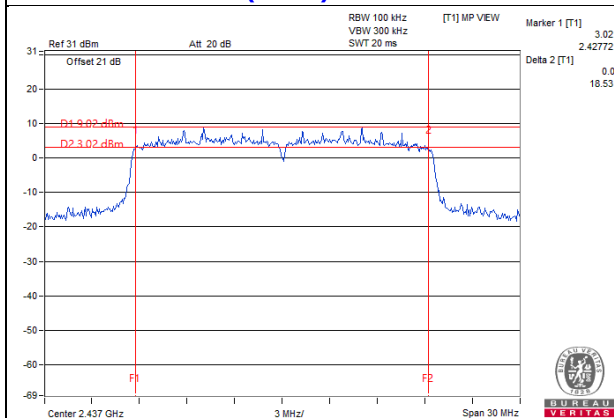
802.11b / Chain 3 : CH1



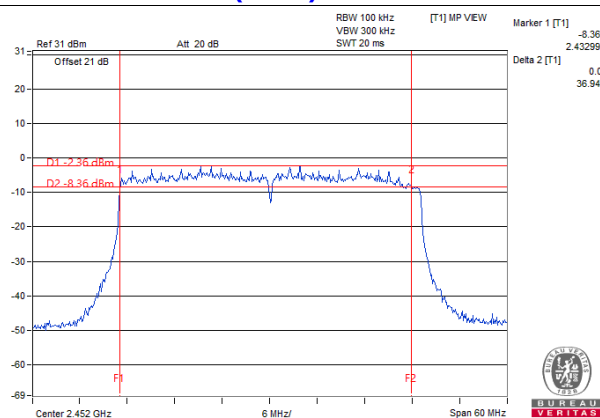
802.11g / Chain 0 : CH1



802.11ax (HE20) / Chain 2 : CH6

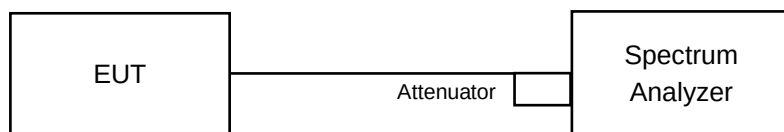


802.11ax (HE40) / Chain 0 : CH9



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

4.4.4 Deviation from Test Standard

No deviation.

4.4.5 EUT Operating Conditions

Same as Item 4.3.6.

4.4.6 Test Results (Mode 1)

CDD Mode

802.11b

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain0	Chain1	Chain2	Chain3
1	2412	13.65	13.22	13.92	13.22
6	2437	14.6	13.48	15.14	13.92
11	2462	14.4	13.8	14.4	14.04

802.11g

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain0	Chain1	Chain2	Chain3
1	2412	16.43	16.44	16.44	16.44
6	2437	28.68	26.76	29.4	27.84
11	2462	16.56	16.43	16.56	16.44

802.11ax (HE20)

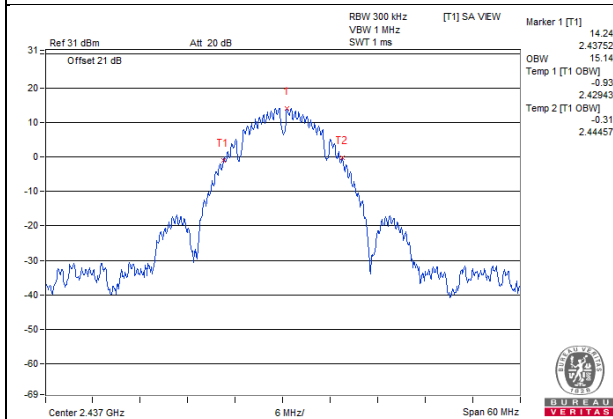
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain0	Chain1	Chain2	Chain3
1	2412	18.96	18.96	18.96	18.96
6	2437	21	20	26.16	19.92
11	2462	18.96	18.96	18.96	18.96

802.11ax (HE40)

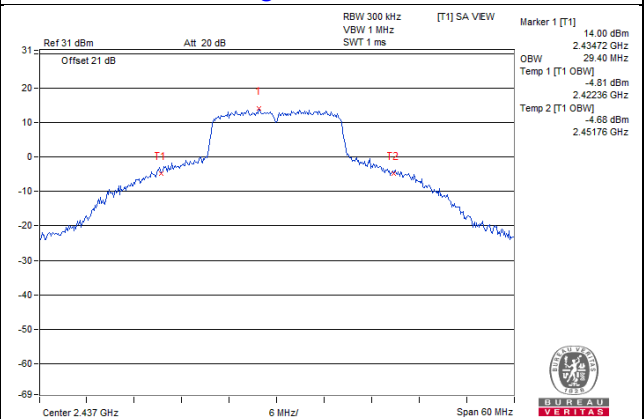
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain0	Chain1	Chain2	Chain3
3	2422	37.92	37.92	37.92	38.26
6	2437	38.16	37.92	37.92	38.16
9	2452	38.16	37.92	38.16	38.16

Spectrum Plot of Max. Value

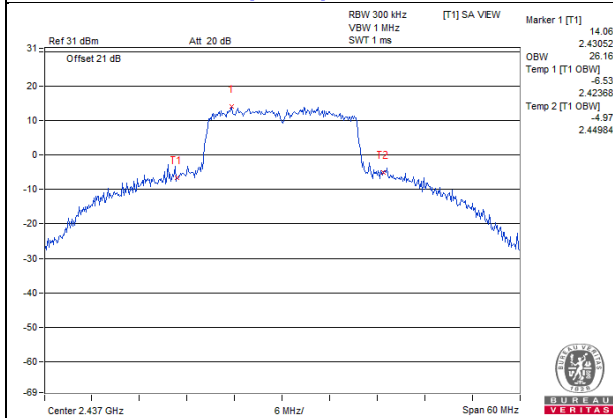
802.11b / Chain 2: CH6



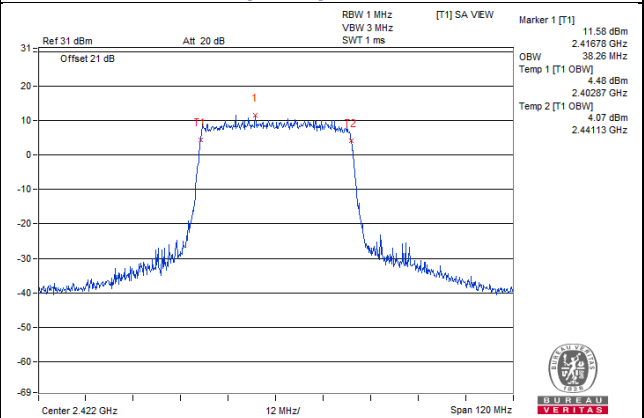
802.11g / Chain 2: CH6



802.11ax (HE20) / Chain 2: CH 6



802.11ax (HE40) / Chain 3: CH3



4.4.7 Test Results (Mode 2)

CDD Mode

802.11b

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain0	Chain1	Chain2	Chain3
1	2412	13.4	13.4	13.4	13.22
6	2437	14.6	13.48	15.14	13.92
11	2462	13.8	13.8	13.92	13.56

802.11g

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain0	Chain1	Chain2	Chain3
1	2412	16.43	16.43	16.43	16.43
6	2437	16.8	16.92	18.09	16.7
11	2462	16.44	16.44	16.56	16.44

802.11ax (HE20)

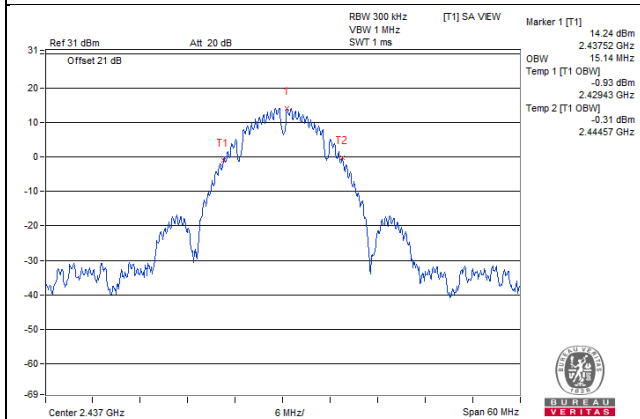
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain0	Chain1	Chain2	Chain3
1	2412	18.96	18.96	18.96	18.96
6	2437	19.2	19.14	19.32	19.2
11	2462	18.96	18.96	18.96	18.96

802.11ax (HE40)

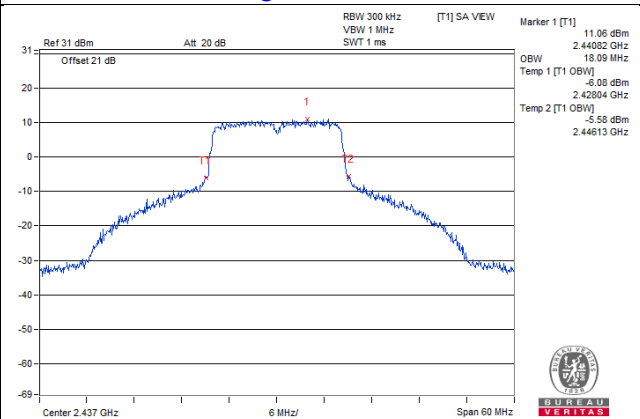
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain0	Chain1	Chain2	Chain3
3	2422	38.16	37.92	37.92	38.16
6	2437	37.92	37.92	37.92	37.92
9	2452	38.16	37.92	38.16	38.16

Spectrum Plot of Max. Value

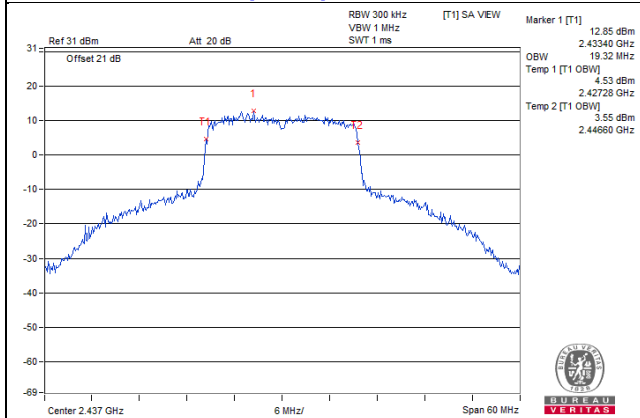
802.11b / Chain 2: CH6



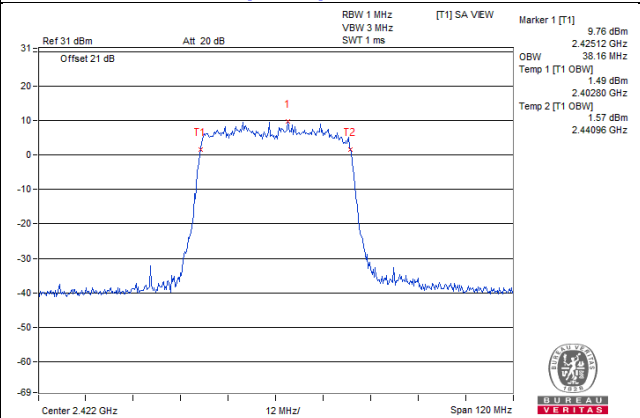
802.11g / Chain 2: CH6



802.11ax (HE20) / Chain 2: CH 6



802.11ax (HE40) / Chain 0: CH3



4.5 Conducted Output Power Measurement

4.5.1 Limits of Conducted Output Power Measurement

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

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

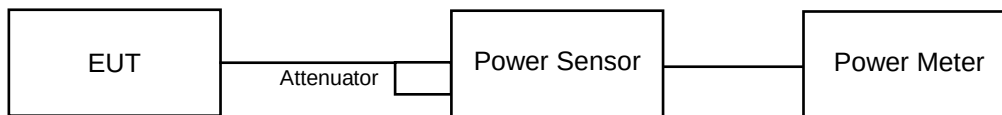
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as Item 4.3.6.

4.5.7 Test Results (Mode 1)

CDD Mode

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	19.17	19.57	19.47	19.01	341.305	25.33	30.00	Pass
6	2437	20.52	20.54	20.39	20.03	436.049	26.40	30.00	Pass
11	2462	19.92	20.17	19.98	19.96	400.791	26.03	30.00	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.94	15.45	15.50	15.19	134.782	21.30	30.00	Pass
6	2437	22.17	22.19	22.66	22.25	682.775	28.34	30.00	Pass
11	2462	15.72	16.07	16.02	16.01	157.68	21.98	30.00	Pass

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.38	14.76	14.84	14.62	116.791	20.67	30.00	Pass
6	2437	20.53	20.67	20.85	20.43	461.687	26.64	30.00	Pass
11	2462	15.71	15.81	15.85	16.00	153.616	21.86	30.00	Pass

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	14.75	15.02	15.21	14.80	125.012	20.97	30.00	Pass
6	2437	16.31	16.37	16.62	16.33	174.981	22.43	30.00	Pass
9	2452	13.68	13.86	14.07	13.85	97.45	19.89	30.00	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.68	14.96	15.04	14.90	123.528	20.92	30.00	Pass
6	2437	20.74	20.97	21.06	20.70	488.736	26.89	30.00	Pass
11	2462	15.93	16.11	16.05	16.20	161.965	22.09	30.00	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	14.96	15.30	15.43	15.01	131.827	21.20	30.00	Pass
6	2437	16.52	16.67	16.84	16.63	185.658	22.69	30.00	Pass
9	2452	13.96	14.16	14.27	14.07	103.207	20.14	30.00	Pass

Beamforming Mode

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.38	14.76	14.84	14.62	116.791	20.67	26.48	Pass
6	2437	19.87	20.04	19.96	19.82	393	25.94	26.48	Pass
11	2462	15.71	15.81	15.85	16.00	153.616	21.86	26.48	Pass

Note: Directional gain = $3.5\text{dBi} + 10\log(4) = 9.52\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (9.52 - 6) = 26.48\text{dBm}$.

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	14.75	15.02	15.21	14.80	125.012	20.97	26.48	Pass
6	2437	16.31	16.37	16.62	16.33	174.981	22.43	26.48	Pass
9	2452	13.68	13.86	14.07	13.85	97.45	19.89	26.48	Pass

Note: Directional gain = $3.5\text{dBi} + 10\log(4) = 9.52\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (9.52 - 6) = 26.48\text{dBm}$.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.68	14.96	15.04	14.90	123.528	20.92	26.48	Pass
6	2437	20.12	20.29	20.20	20.05	415.578	26.19	26.48	Pass
11	2462	15.93	16.11	16.05	16.20	161.965	22.09	26.48	Pass

Note: Directional gain = 3.5dBi + 10log(4) = 9.52dBi > 6dBi , so the power limit shall be reduced to 30-(9.52-6) = 26.48dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	14.96	15.30	15.43	15.01	131.827	21.20	26.48	Pass
6	2437	16.52	16.67	16.84	16.63	185.658	22.69	26.48	Pass
9	2452	13.96	14.16	14.27	14.07	103.207	20.14	26.48	Pass

Note: Directional gain = 3.5dBi + 10log(4) = 9.52dBi > 6dBi , so the power limit shall be reduced to 30-(9.52-6) = 26.48dBm.

4.5.8 Test Results (Mode 2)

CDD Mode

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	18.43	18.56	18.53	18.02	276.114	24.41	30.00	Pass
6	2437	20.52	20.54	20.39	20.03	436.049	26.40	30.00	Pass
11	2462	18.63	18.64	18.64	18.34	287.407	24.58	30.00	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	13.01	13.46	13.35	13.20	84.701	19.28	30.00	Pass
6	2437	18.88	19.08	19.06	18.92	316.699	25.01	30.00	Pass
11	2462	13.72	14.16	14.11	14.02	100.61	20.03	30.00	Pass

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	15.18	15.19	15.36	15.01	132.049	21.21	30.00	Pass
6	2437	19.06	18.89	18.94	18.70	310.458	24.92	30.00	Pass
11	2462	10.81	10.69	10.93	10.75	48.045	16.82	30.00	Pass

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	12.94	13.02	13.19	12.80	79.623	19.01	30.00	Pass
6	2437	14.90	14.79	15.08	14.72	122.892	20.90	30.00	Pass
9	2452	11.39	11.38	11.75	11.28	55.903	17.47	30.00	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	15.38	15.49	15.56	15.22	139.155	21.43	30.00	Pass
6	2437	19.27	19.19	19.15	19.00	329.17	25.17	30.00	Pass
11	2462	11.03	10.99	11.13	11.05	50.944	17.07	30.00	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	13.15	13.23	13.49	13.01	84.026	19.24	30.00	Pass
6	2437	15.11	15.08	15.38	15.02	130.928	21.17	30.00	Pass
9	2452	11.67	11.65	11.95	11.50	59.104	17.72	30.00	Pass

Beamforming Mode

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	15.18	15.19	15.36	15.01	132.049	21.21	23.98	Pass
6	2437	17.01	17.04	17.23	16.95	203.206	23.08	23.98	Pass
11	2462	10.81	10.69	10.93	10.75	48.045	16.82	23.98	Pass

Note: Directional gain = 6dBi + 10log(4)= 12.02dBi > 6dBi , so the power limit shall be reduced to 30-(12.02-6) = 23.98dBm.

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	12.94	13.02	13.19	12.80	79.623	19.01	23.98	Pass
6	2437	14.90	14.79	15.08	14.72	122.892	20.90	23.98	Pass
9	2452	11.39	11.38	11.75	11.28	55.903	17.47	23.98	Pass

Note: Directional gain = 6dBi + 10log(4)= 12.02dBi > 6dBi , so the power limit shall be reduced to 30-(12.02-6) = 23.98dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	15.38	15.49	15.56	15.22	139.155	21.43	23.98	Pass
6	2437	17.23	17.27	17.48	17.19	214.514	23.31	23.98	Pass
11	2462	11.03	10.99	11.13	11.05	50.944	17.07	23.98	Pass

Note: Directional gain = 6dBi + 10log(4)= 12.02dBi > 6dBi , so the power limit shall be reduced to 30-(12.02-6) = 23.98dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	13.15	13.23	13.49	13.01	84.026	19.24	23.98	Pass
6	2437	15.11	15.08	15.38	15.02	130.928	21.17	23.98	Pass
9	2452	11.67	11.65	11.95	11.50	59.104	17.72	23.98	Pass

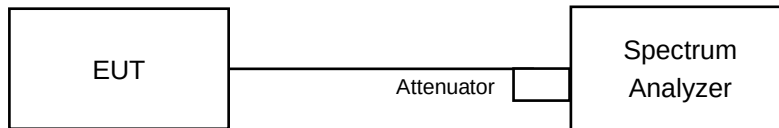
Note: Directional gain = 6dBi + 10log(4)= 12.02dBi > 6dBi , so the power limit shall be reduced to 30-(12.02-6) = 23.98dBm.

4.6 Power Spectral Density Measurement

4.6.1 Limits of Power Spectral Density Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Same as Item 4.3.6

4.6.7 Test Results (Mode 1)

CDD Mode

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
1	2412	-14.90	-14.73	-14.35	-15.61	2.39	-6.46	4.48	Pass
6	2437	-12.82	-12.64	-13.90	-12.60	2.39	-4.55	4.48	Pass
11	2462	-14.26	-14.61	-14.38	-13.91	2.39	-5.87	4.48	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = $3.5\text{dBi} + 10\log(4) = 9.52\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (9.52 - 6) = 4.48\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
1	2412	-20.21	-19.79	-19.87	-20.02	0.31	-13.64	4.48	Pass
6	2437	-13.11	-12.83	-11.65	-12.97	0.31	-6.27	4.48	Pass
11	2462	-19.53	-18.98	-19.21	-19.32	0.31	-12.92	4.48	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = $3.5\text{dBi} + 10\log(4) = 9.52\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (9.52 - 6) = 4.48\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
1	2412	-21.85	-20.97	-21.72	-21.70	0.33	-15.19	4.48	Pass
6	2437	-15.32	-14.97	-14.96	-16.47	0.33	-9.03	4.48	Pass
11	2462	-19.85	-19.76	-19.89	-20.76	0.33	-13.69	4.48	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = $3.5\text{dBi} + 10\log(4) = 9.52\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (9.52 - 6) = 4.48\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

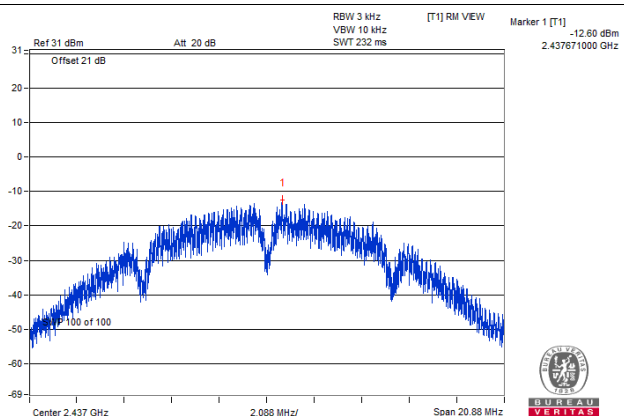
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
3	2422	-23.67	-22.98	-23.15	-23.42	0.29	-16.98	4.48	Pass
6	2437	-21.82	-21.64	-21.55	-22.67	0.29	-15.58	4.48	Pass
9	2452	-24.77	-24.16	-23.73	-24.93	0.29	-18.06	4.48	Pass

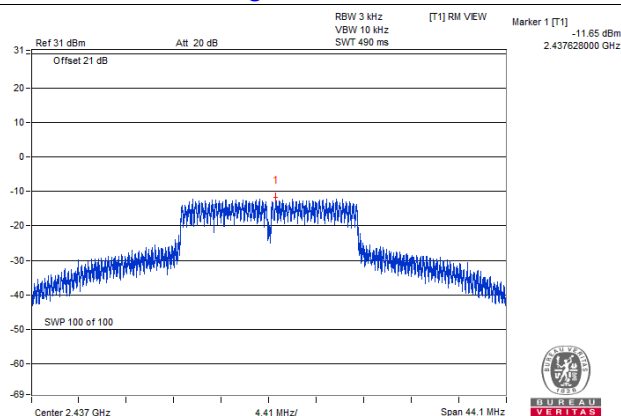
- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = $3.5\text{dBi} + 10\log(4) = 9.52\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (9.52 - 6) = 4.48\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

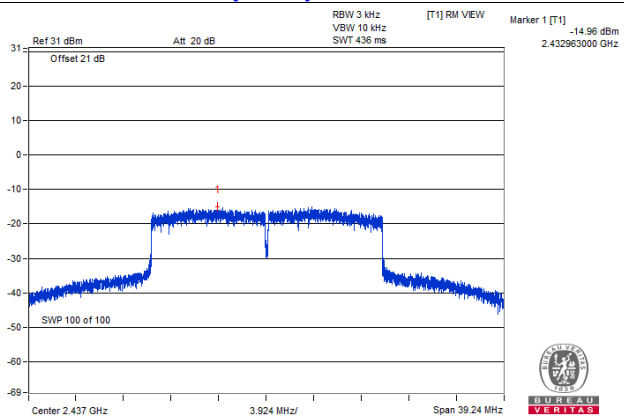
802.11b / Chain 3 : CH6



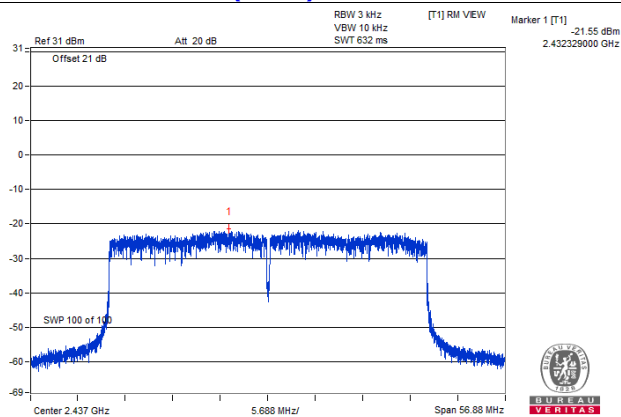
802.11g / Chain 2 : CH6



802.11ax (HE20) / Chain 2 : CH6



802.11ax (HE40) / Chain 2 : CH6



4.6.8 Test Results (Mode 2)

CDD Mode

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
1	2412	-15.46	-14.34	-15.45	-16.37	2.39	-6.93	1.98	Pass
6	2437	-12.82	-12.64	-13.90	-12.60	2.39	-4.55	1.98	Pass
11	2462	-15.44	-13.43	-14.15	-14.03	2.39	-5.79	1.98	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = $6\text{dBi} + 10\log(4) = 12.02\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (12.02 - 6) = 1.98\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
1	2412	-22.40	-22.00	-21.61	-21.61	0.31	-15.56	1.98	Pass
6	2437	-16.46	-16.23	-15.96	-16.85	0.31	-10.03	1.98	Pass
11	2462	-21.48	-21.29	-20.65	-21.71	0.31	-14.93	1.98	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = $6\text{dBi} + 10\log(4) = 12.02\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (12.02 - 6) = 1.98\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
1	2412	-21.61	-21.02	-20.77	-21.47	0.33	-14.85	1.98	Pass
6	2437	-18.05	-17.59	-17.26	-18.08	0.33	-11.38	1.98	Pass
11	2462	-25.36	-25.57	-25.39	-25.92	0.33	-19.20	1.98	Pass

- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = $6\text{dBi} + 10\log(4) = 12.02\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (12.02 - 6) = 1.98\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

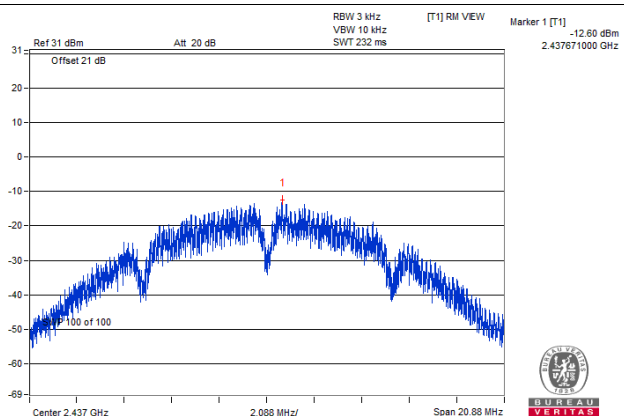
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
3	2422	-25.31	-25.00	-25.04	-25.66	0.29	-18.93	1.98	Pass
6	2437	-23.94	-23.14	-23.41	-24.53	0.29	-17.41	1.98	Pass
9	2452	-26.86	-26.61	-26.51	-26.96	0.29	-20.42	1.98	Pass

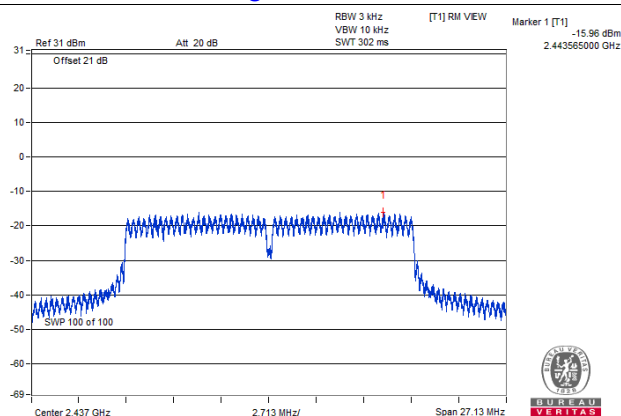
- Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = $6\text{dBi} + 10\log(4) = 12.02\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8 - (12.02 - 6) = 1.98\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

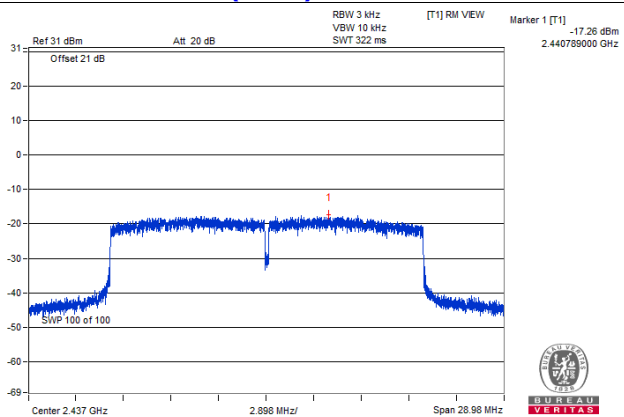
802.11b / Chain 3 : CH6



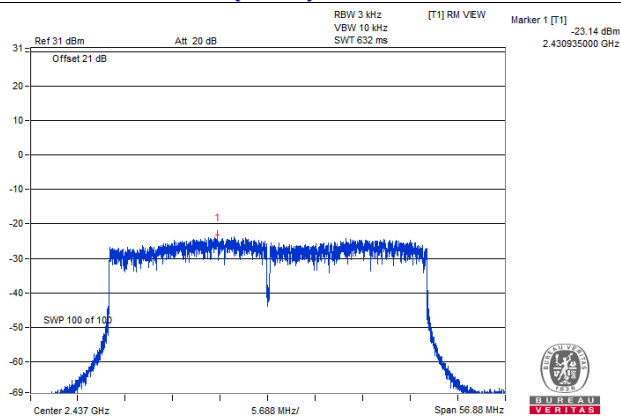
802.11g / Chain 2 : CH6



802.11ax (HE20) / Chain 2 : CH6



802.11ax (HE40) / Chain 1 : CH6

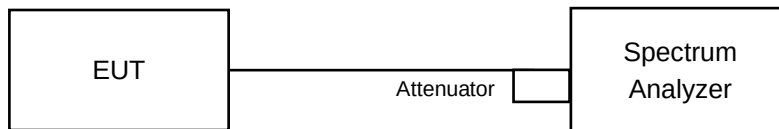


4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.7.5 Deviation from Test Standard

No deviation.

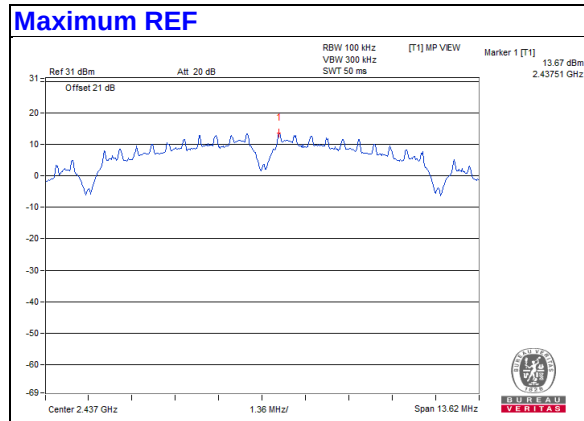
4.7.6 EUT Operating Condition

Same as Item 4.3.6

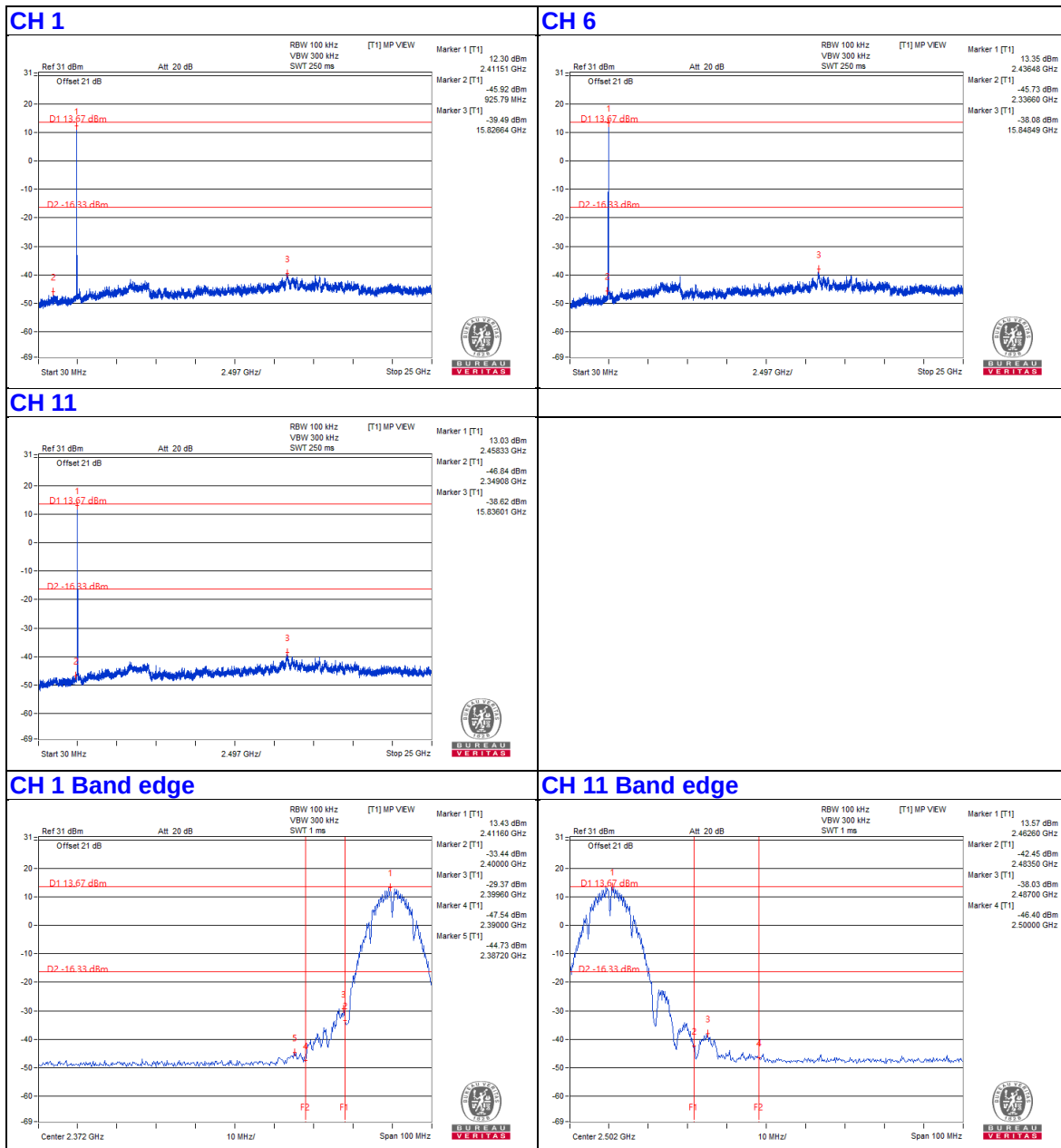
4.7.7 Test Results

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

For Mode 1 :
802.11b

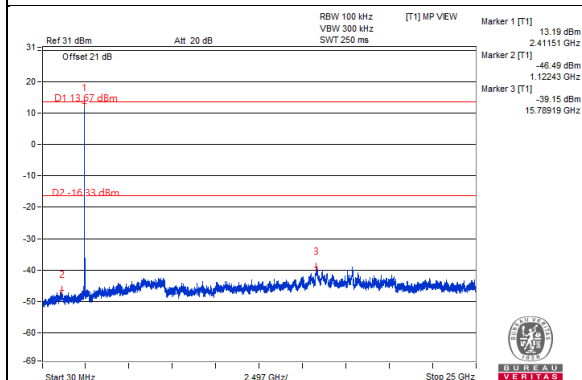


Chain 0

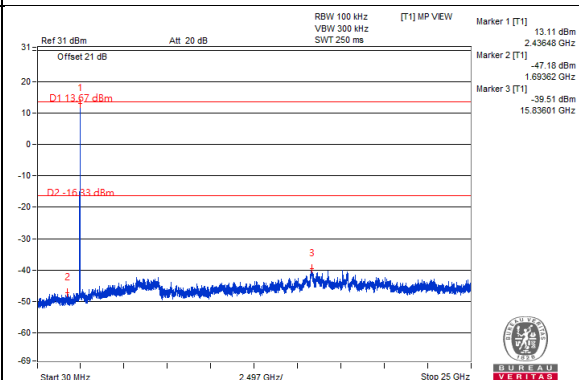


Chain 1

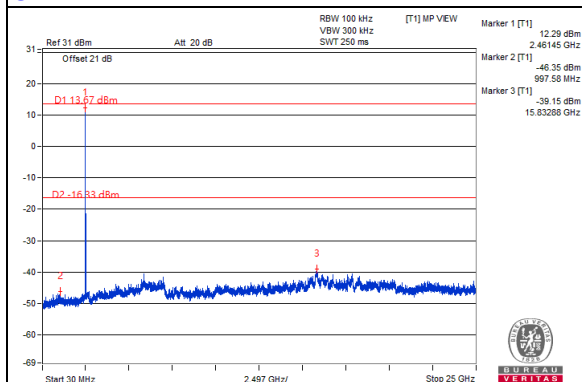
CH 1



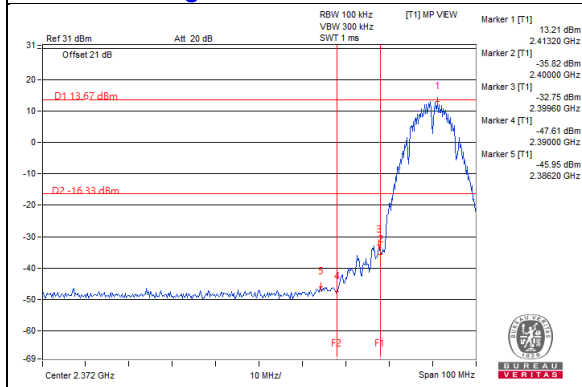
CH 6



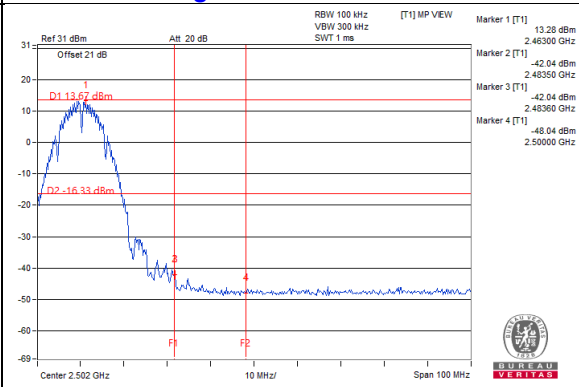
CH 11



CH 1 Band edge

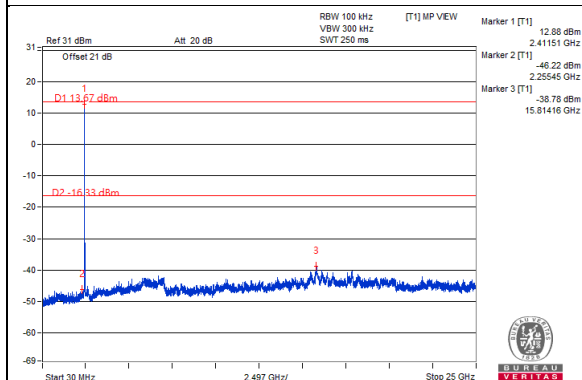


CH 11 Band edge

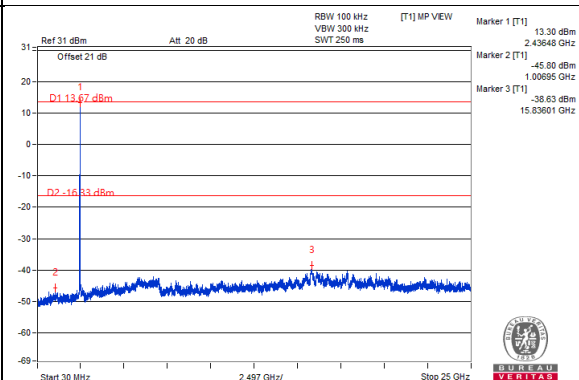


Chain 2

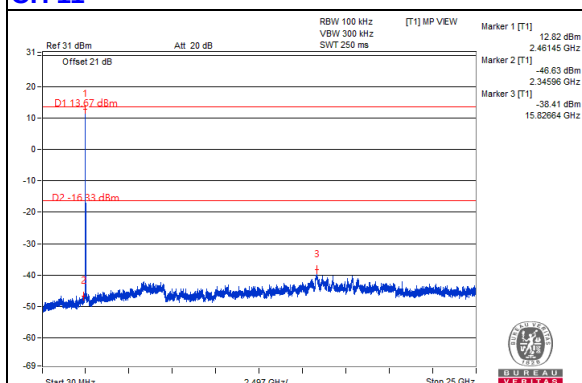
CH 1



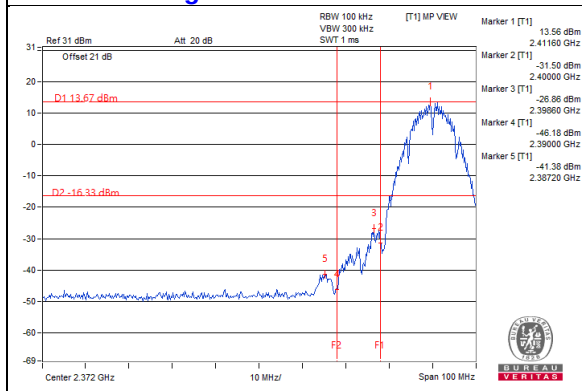
CH 6



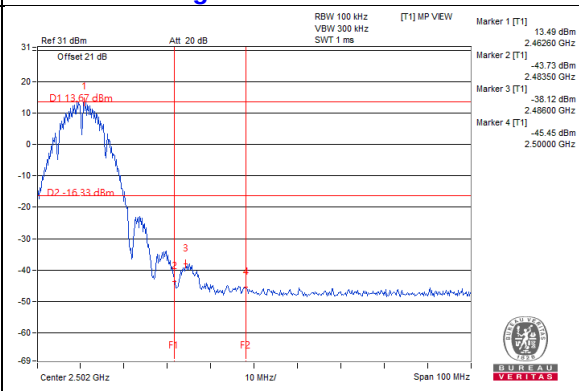
CH 11



CH 1 Band edge

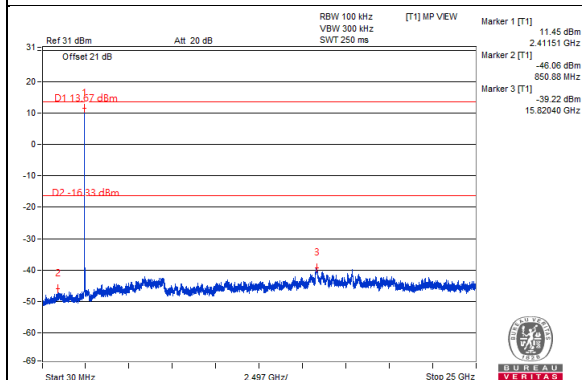


CH 11 Band edge

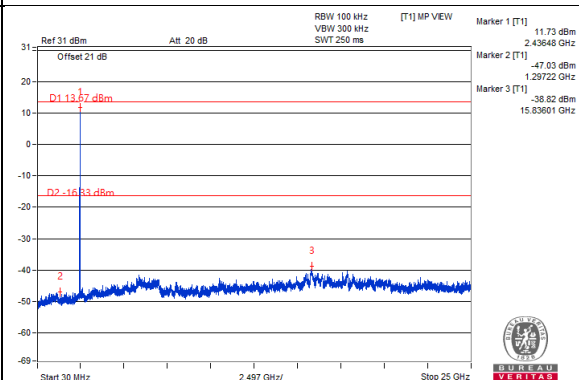


Chain 3

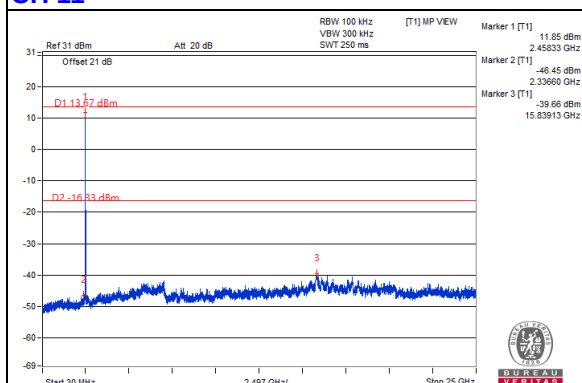
CH 1



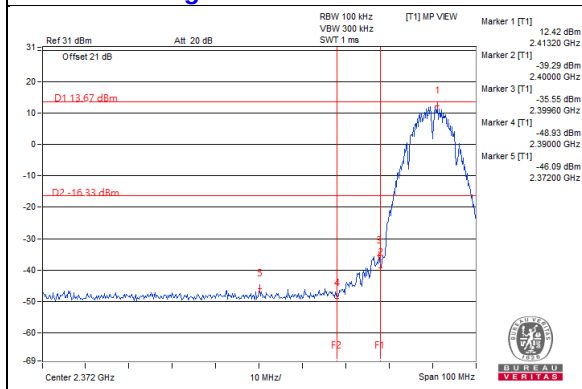
CH 6



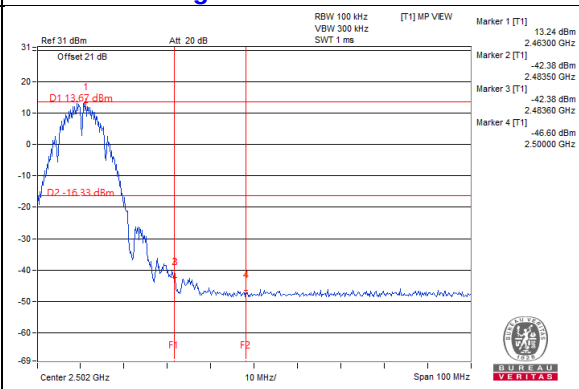
CH 11



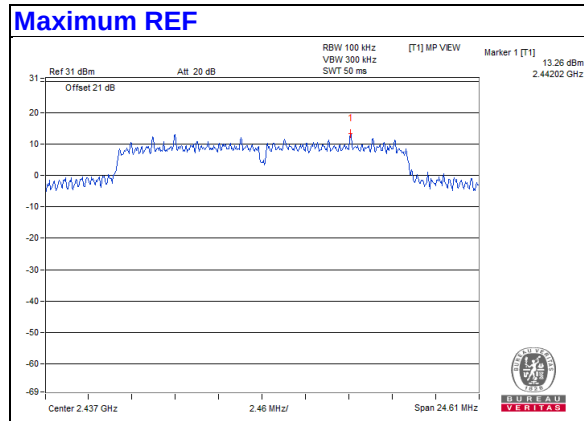
CH 1 Band edge



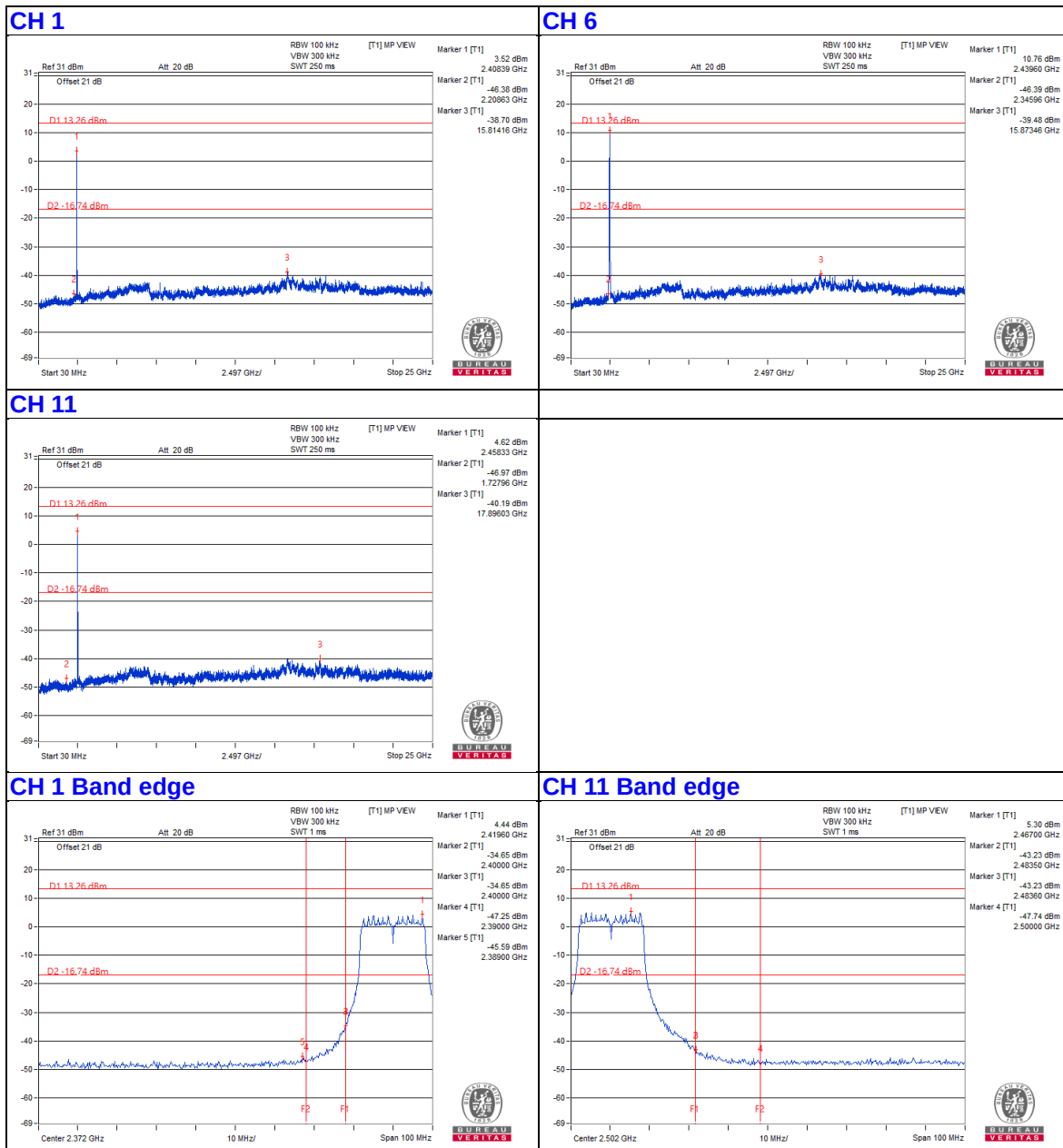
CH 11 Band edge



802.11g

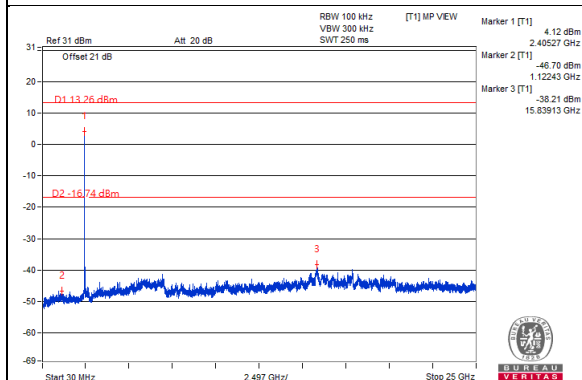


Chain 0

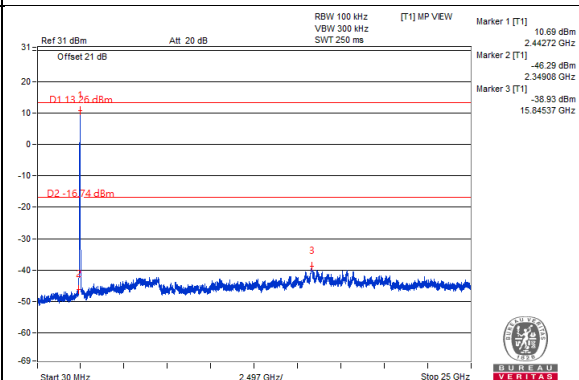


Chain 1

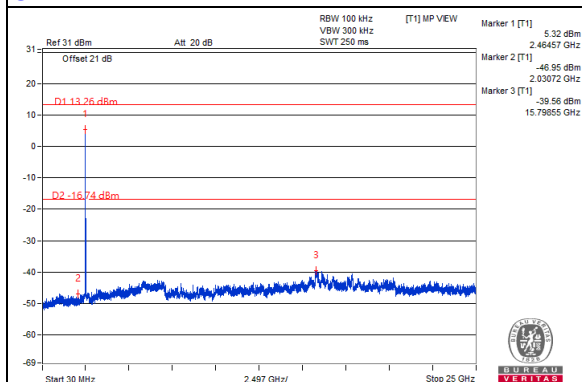
CH 1



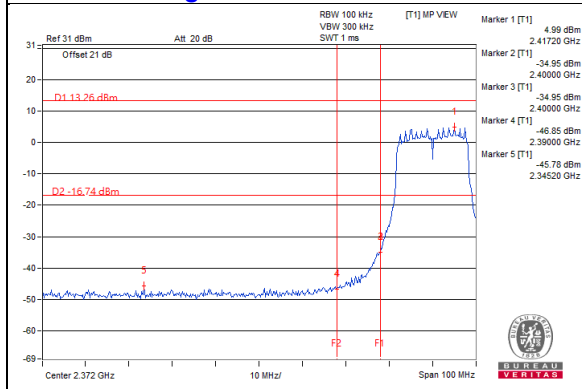
CH 6



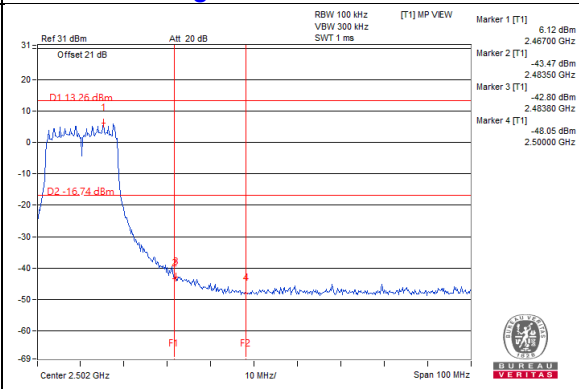
CH 11



CH 1 Band edge

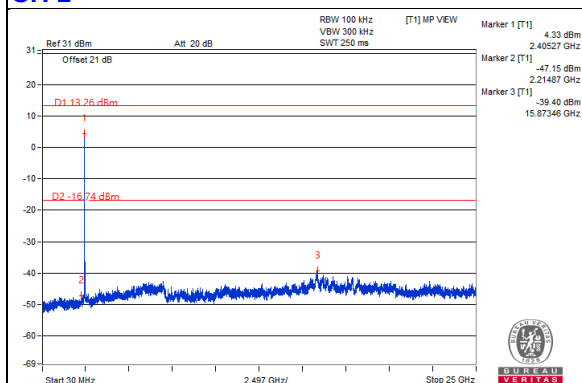


CH 11 Band edge

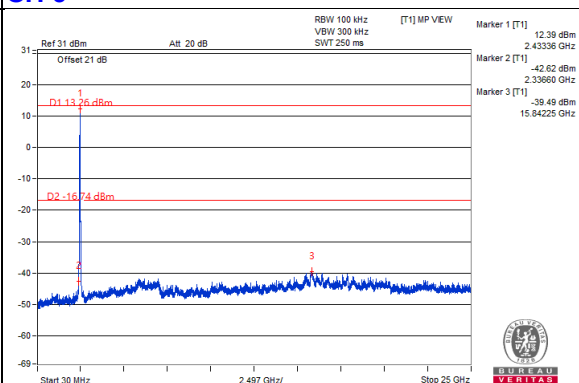


Chain 2

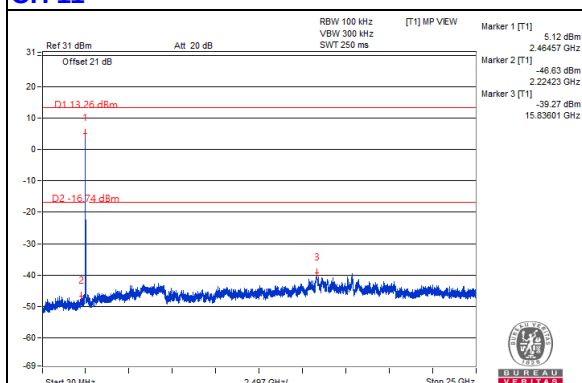
CH 1



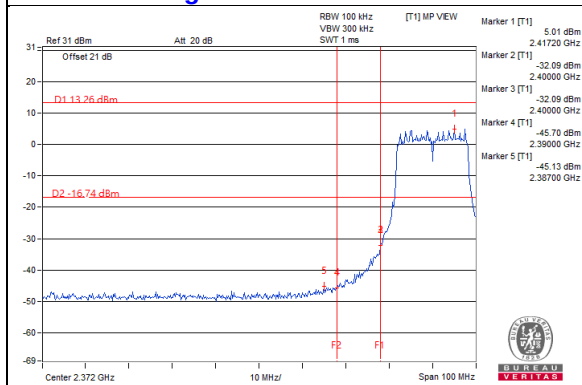
CH 6



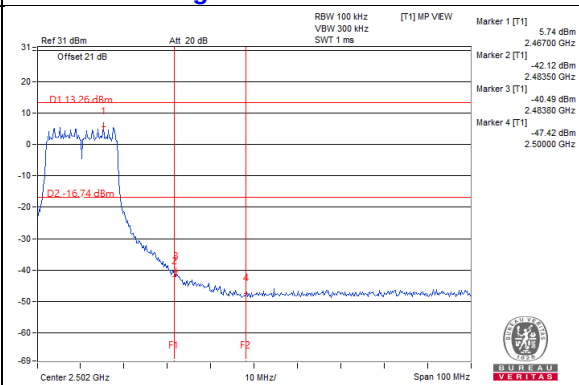
CH 11



CH 1 Band edge

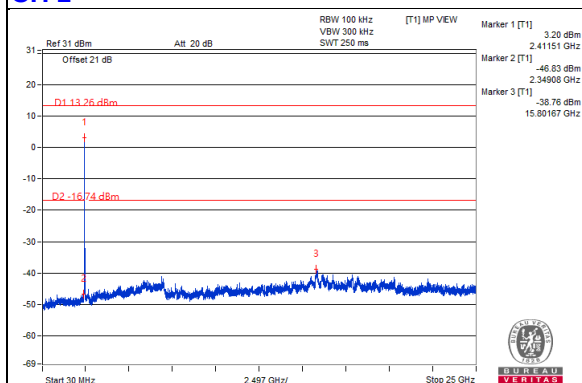


CH 11 Band edge

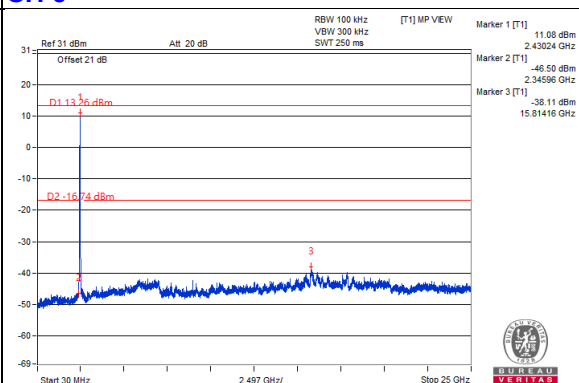


Chain 3

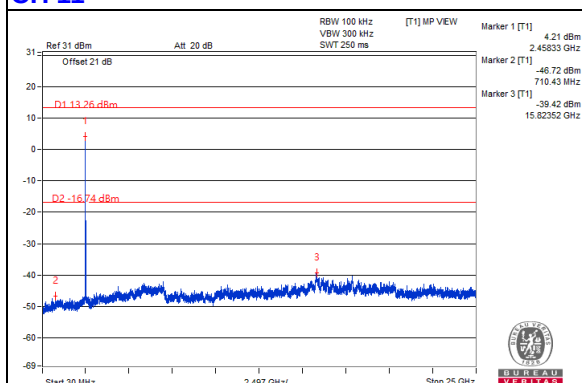
CH 1



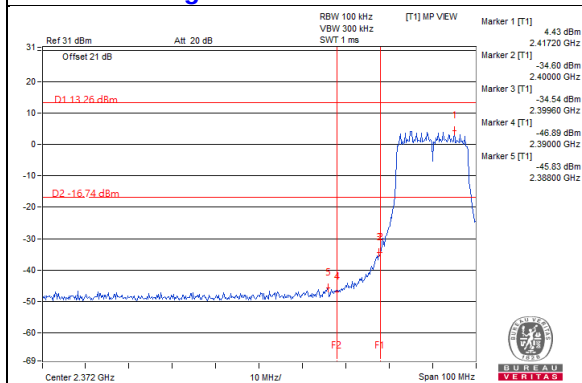
CH 6



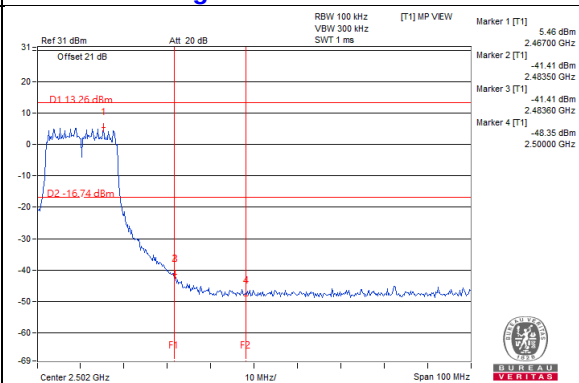
CH 11



CH 1 Band edge

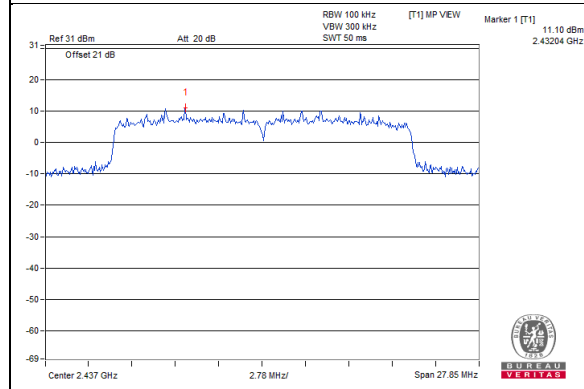


CH 11 Band edge



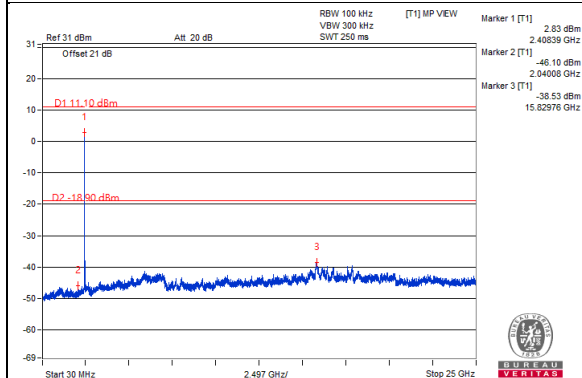
802.11ax (HE20)

Maximum REF

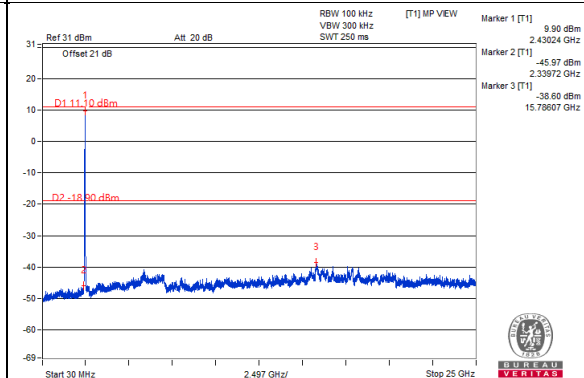


Chain 0

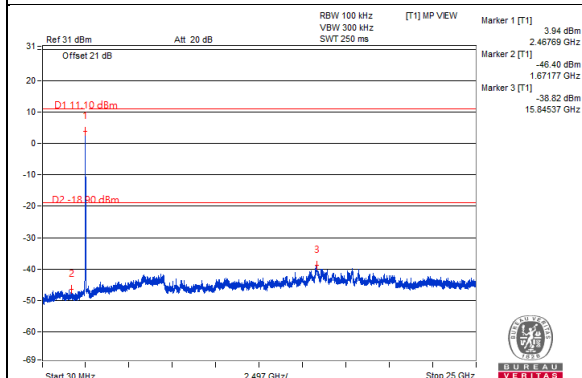
CH 1



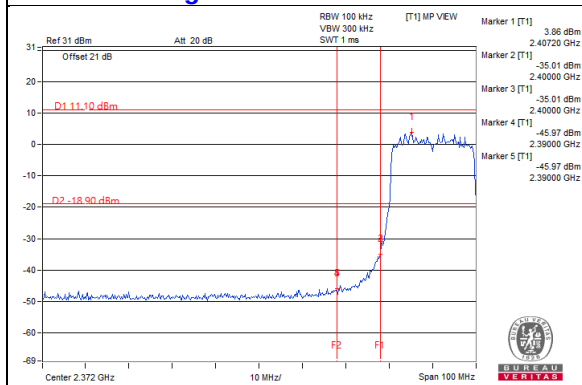
CH 6



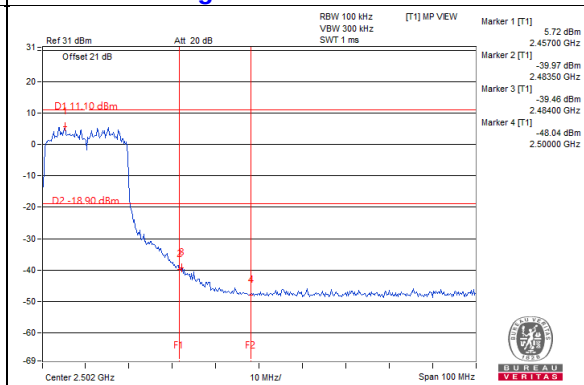
CH 11



CH 1 Band edge

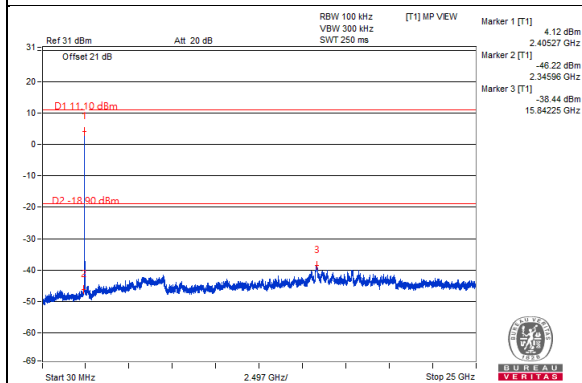


CH 11 Band edge

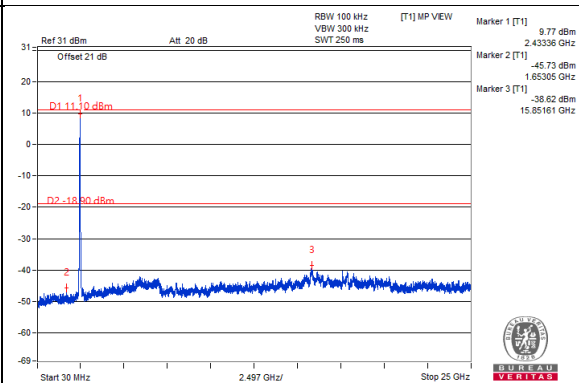


Chain 1

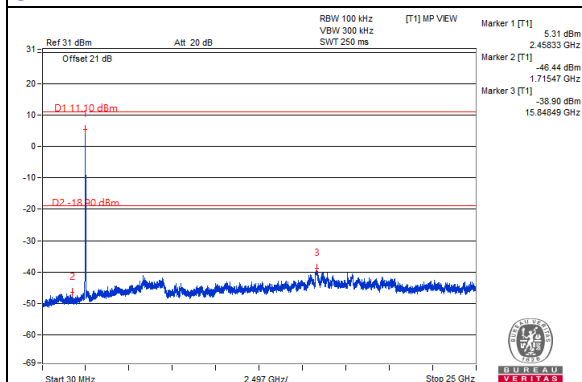
CH 1



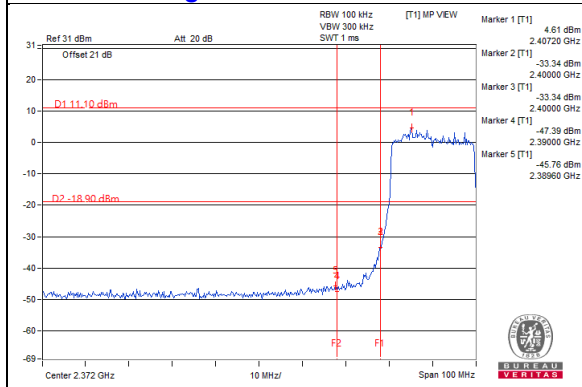
CH 6



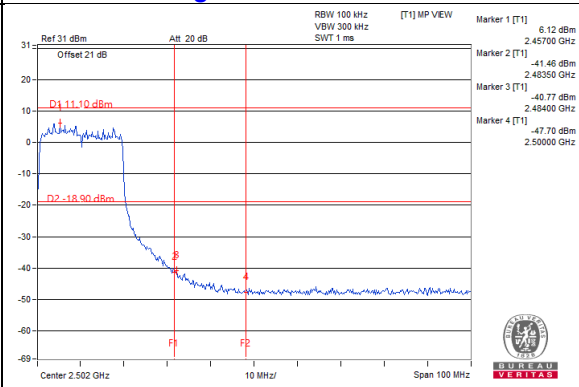
CH 11



CH 1 Band edge

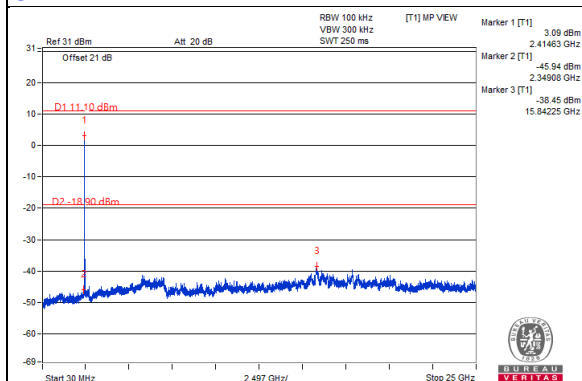


CH 11 Band edge

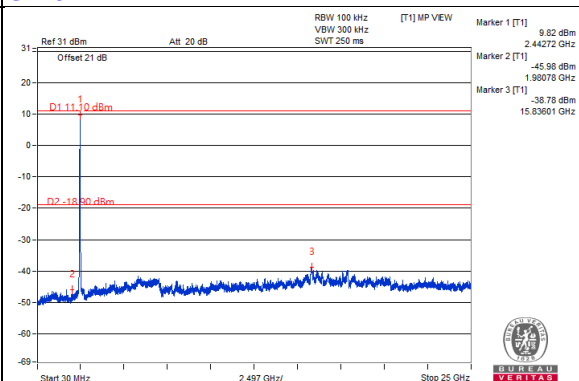


Chain 2

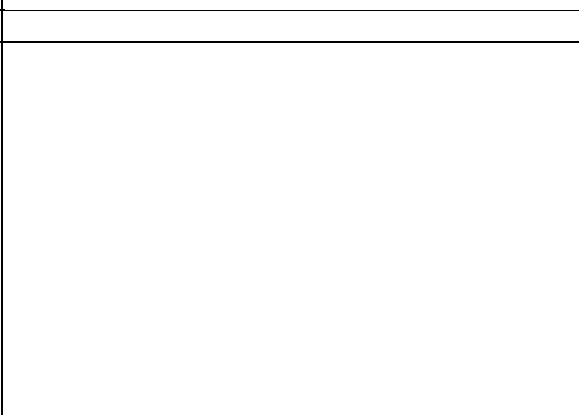
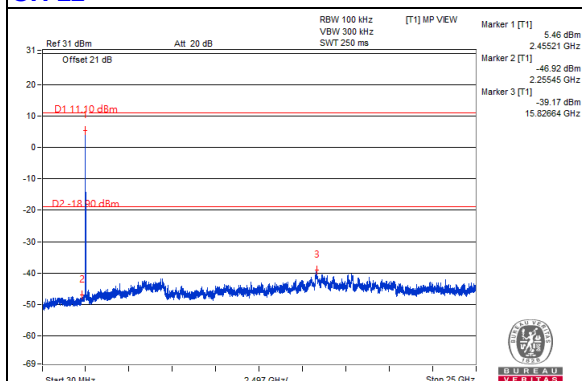
CH 1



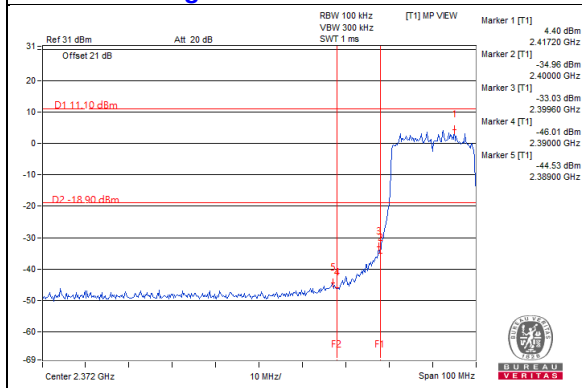
CH 6



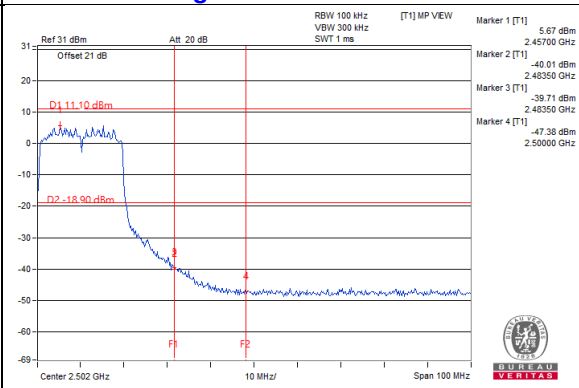
CH 11



CH 1 Band edge

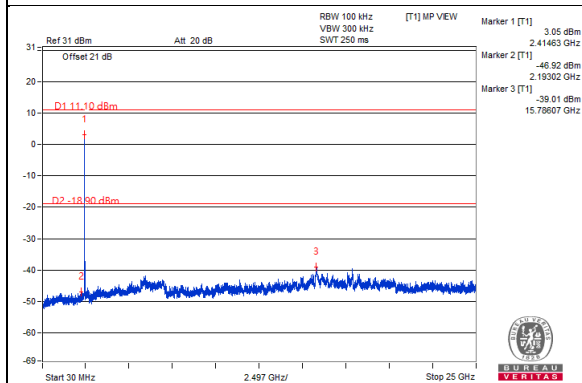


CH 11 Band edge

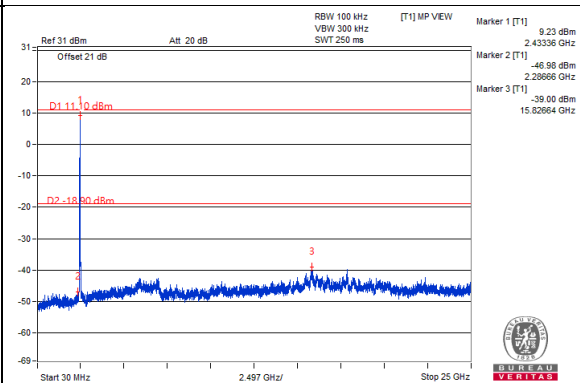


Chain 3

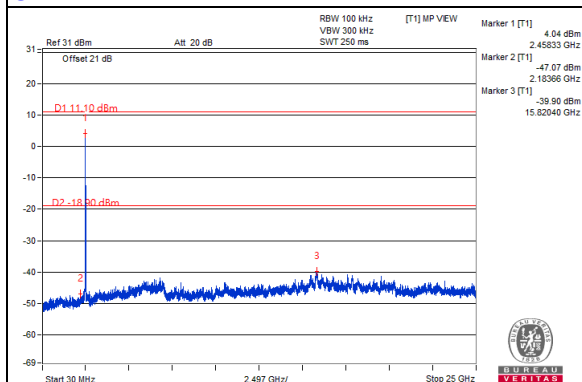
CH 1



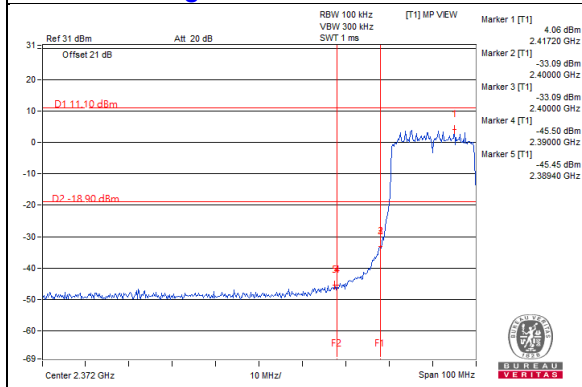
CH 6



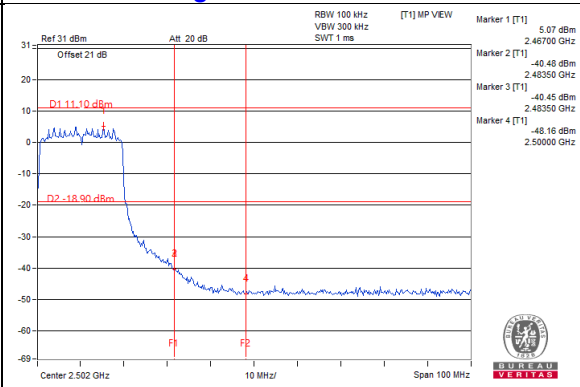
CH 11



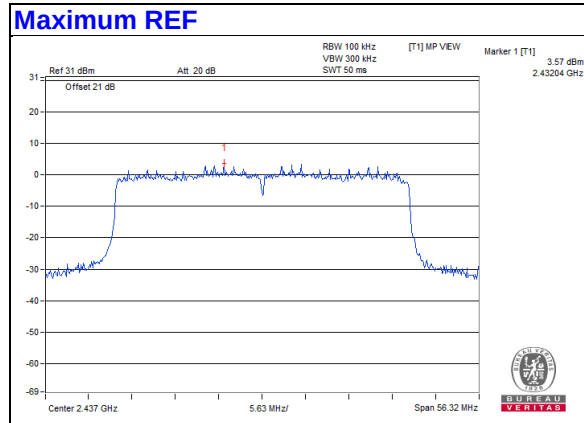
CH 1 Band edge



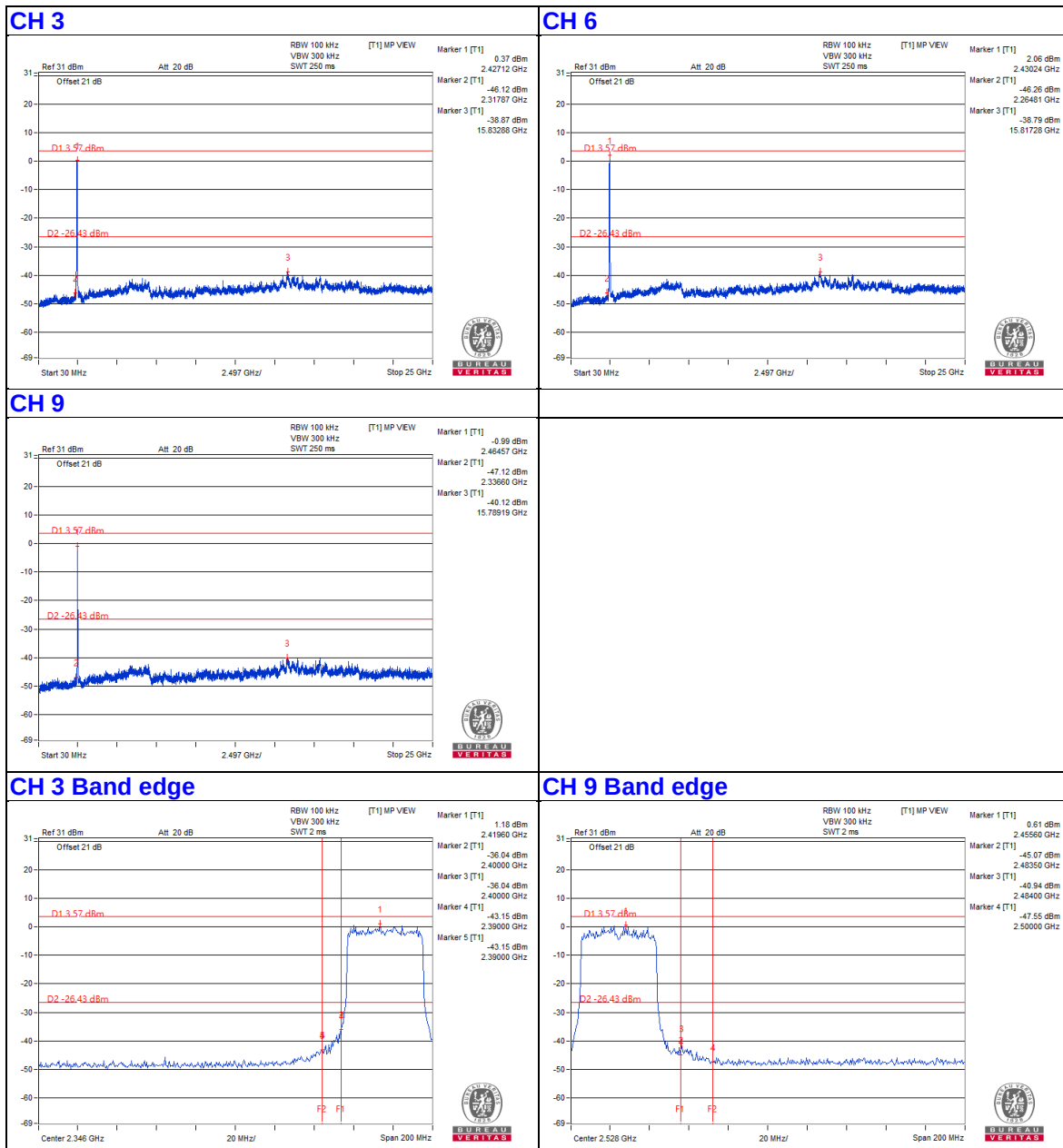
CH 11 Band edge



802.11ax (HE40)

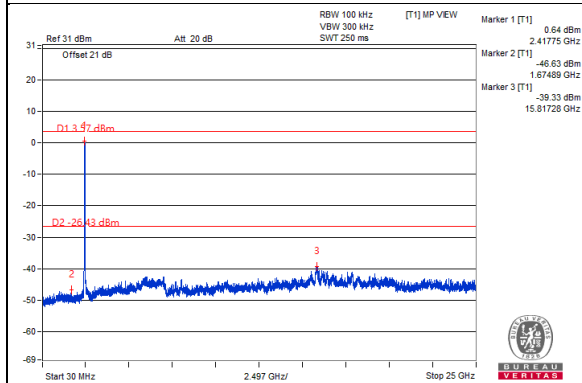


Chain 0

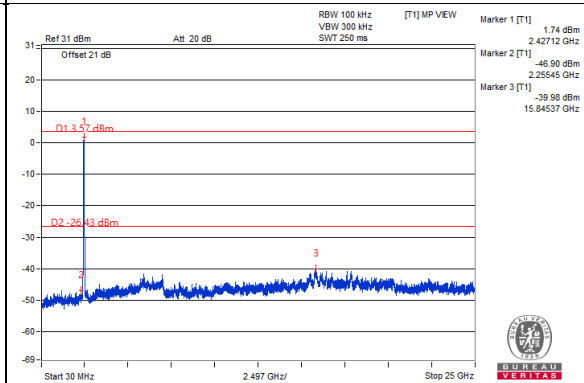


Chain 1

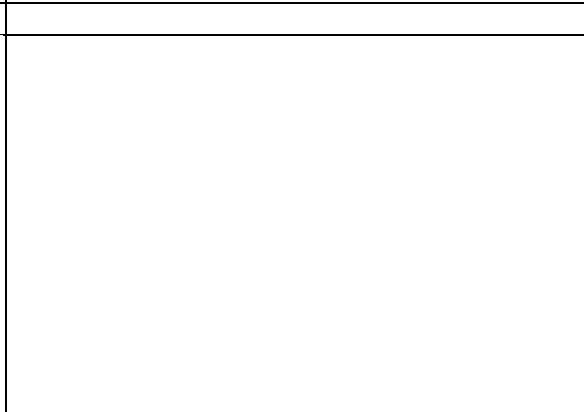
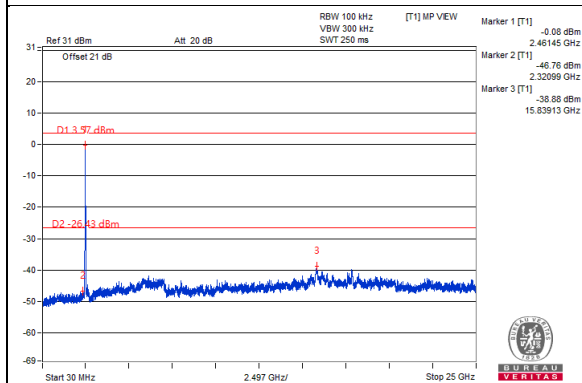
CH 3



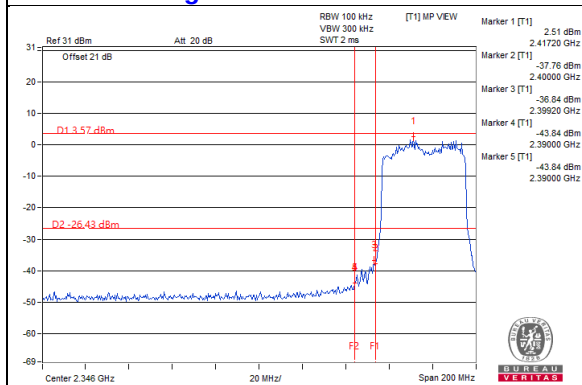
CH 6



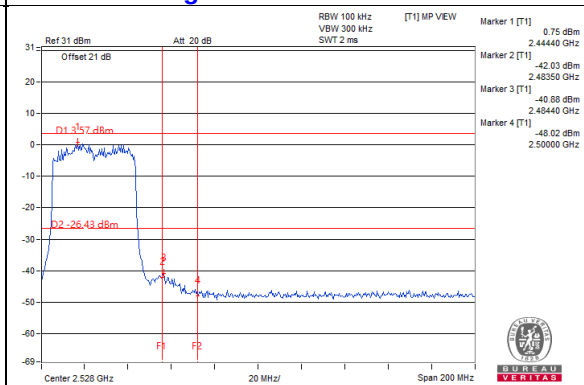
CH 9



CH 3 Band edge

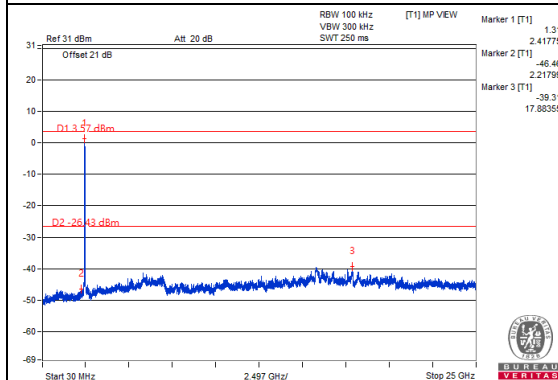


CH 9 Band edge

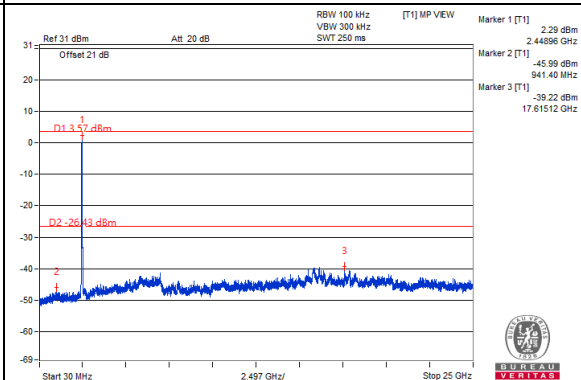


Chain 2

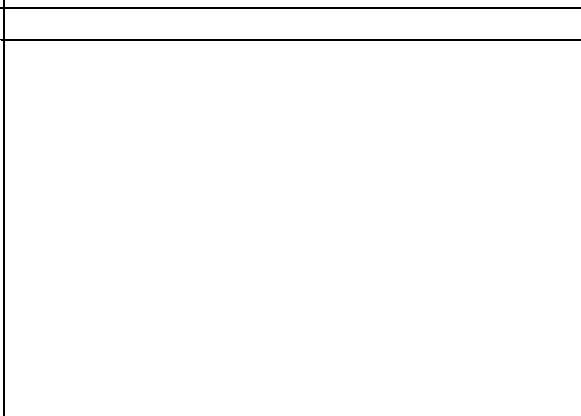
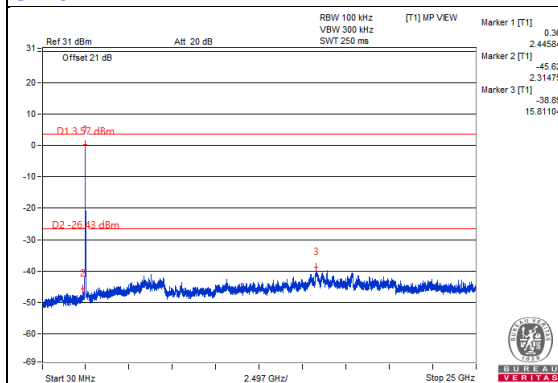
CH 3



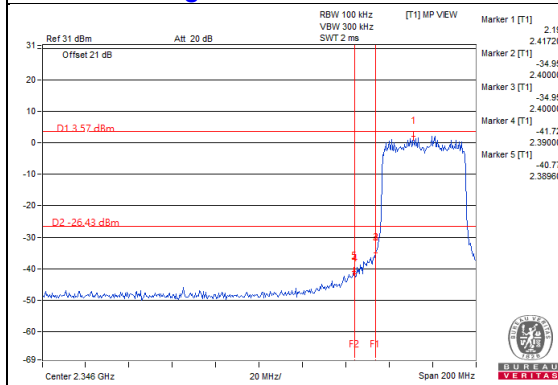
CH 6



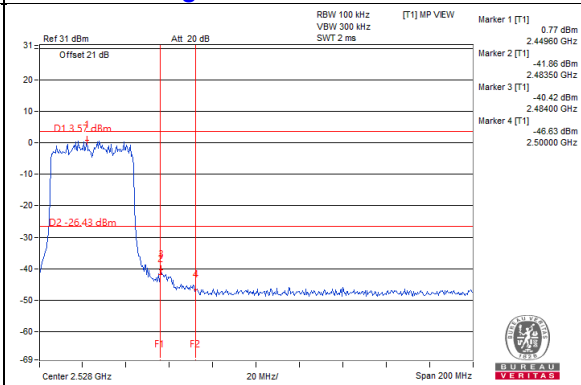
CH 9



CH 3 Band edge

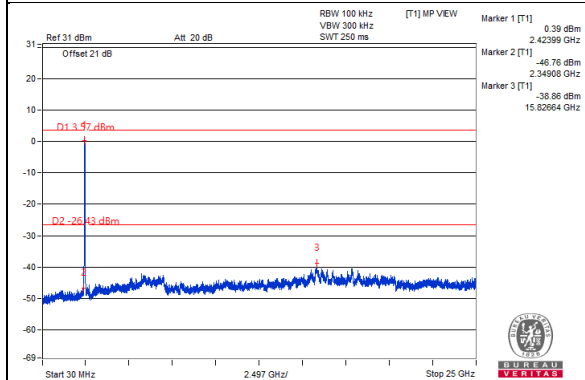


CH 9 Band edge

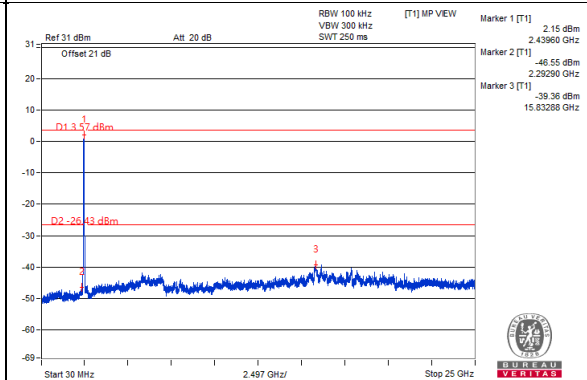


Chain 3

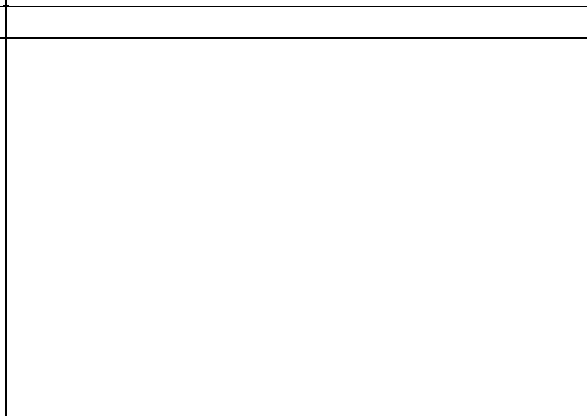
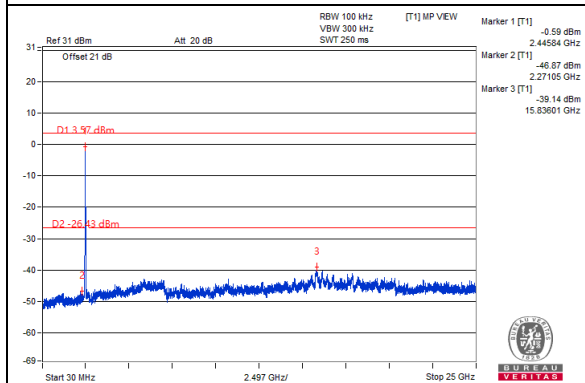
CH 3



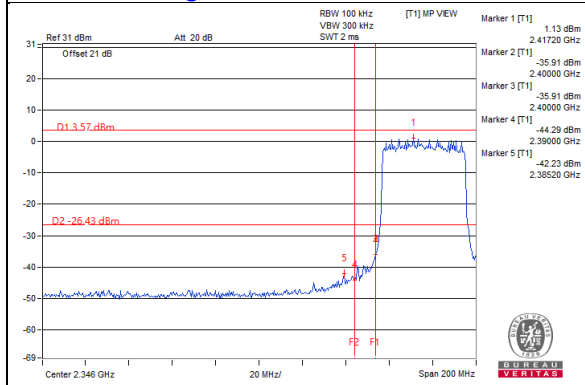
CH 6



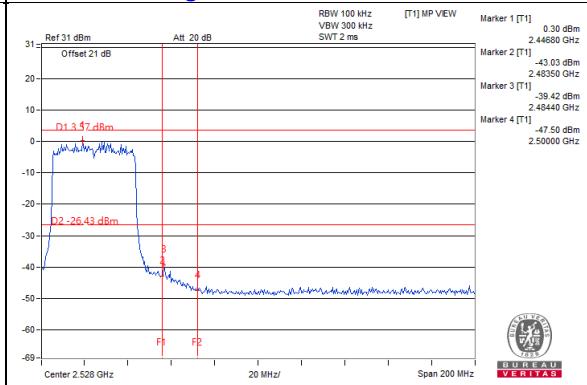
CH 9



CH 3 Band edge

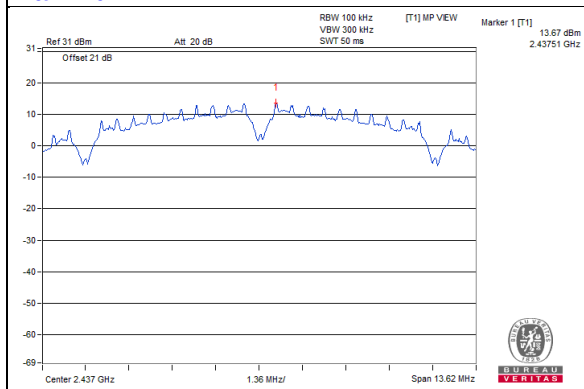


CH 9 Band edge



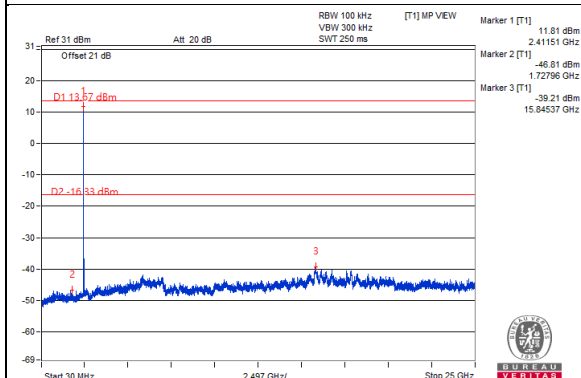
For Mode 2: 802.11b

Maximum REF

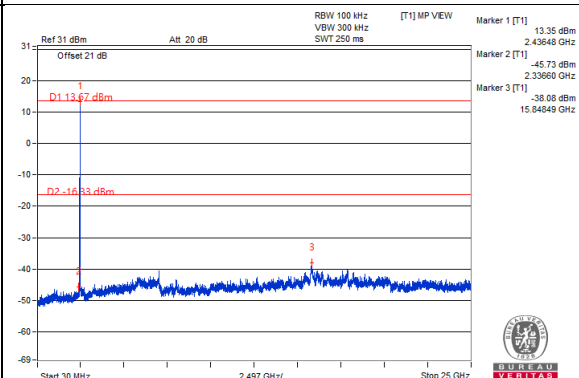


Chain 0

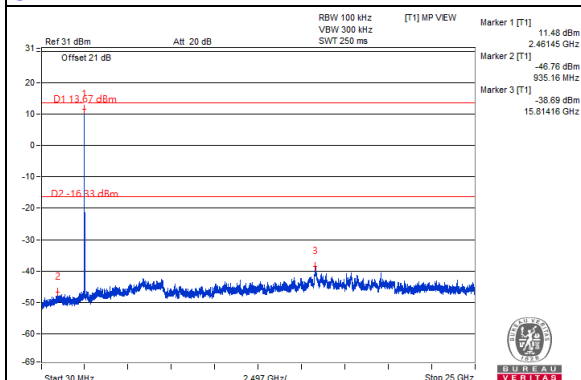
CH 1



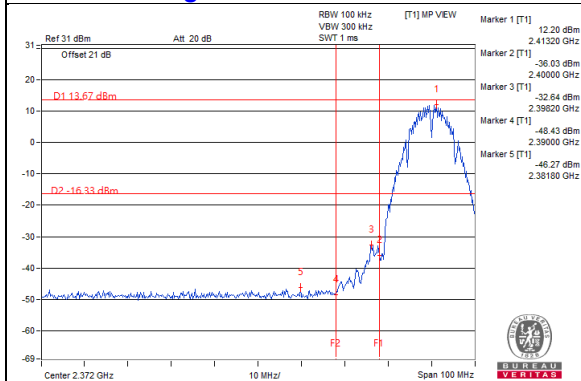
CH 6



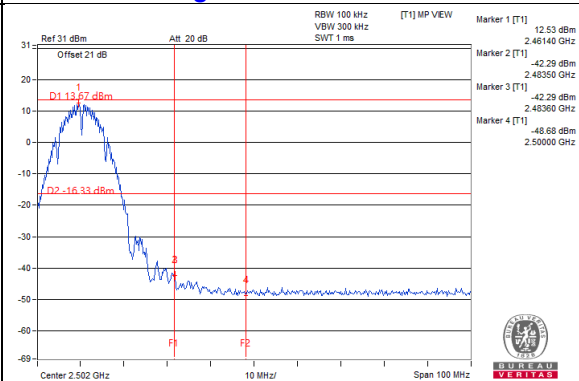
CH 11



CH 1 Band edge

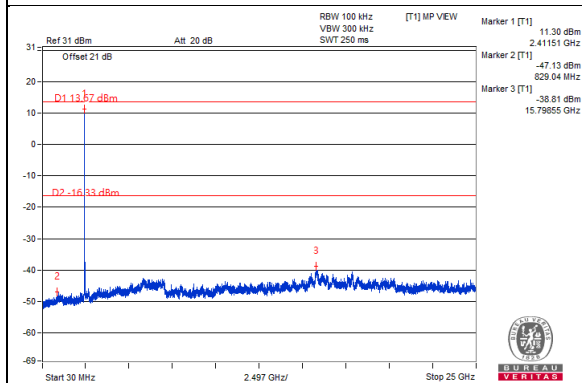


CH 11 Band edge

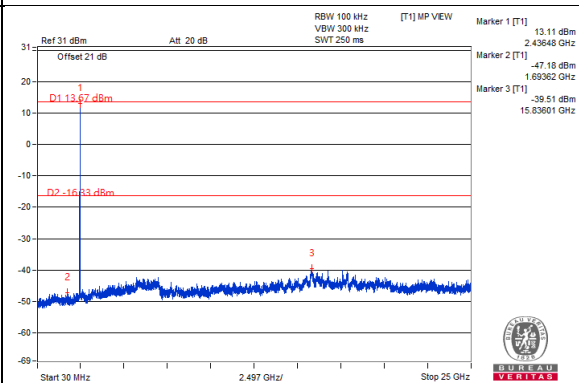


Chain 1

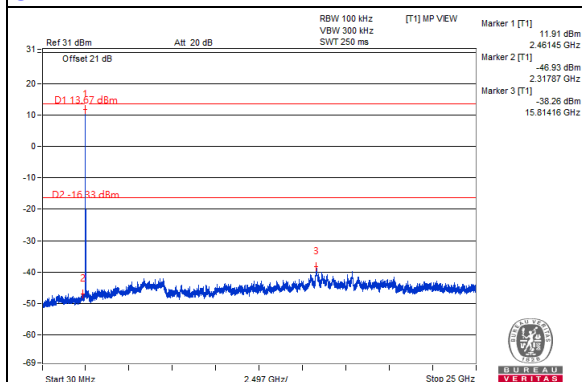
CH 1



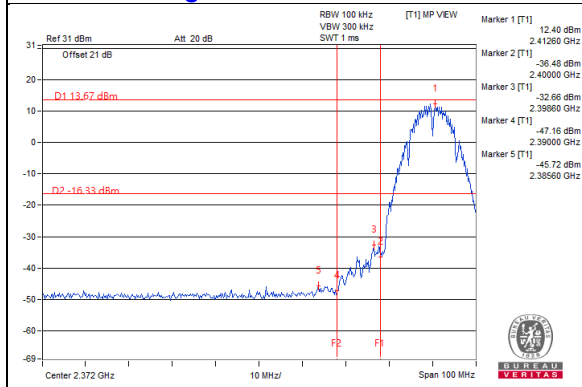
CH 6



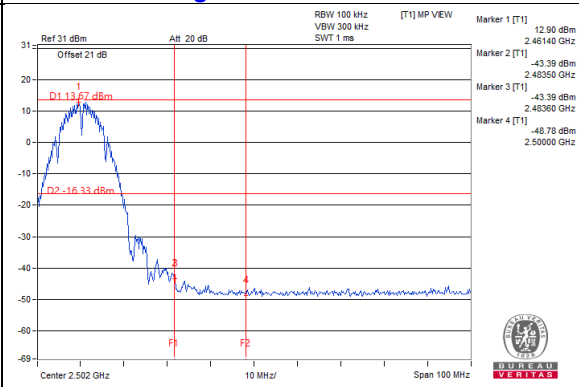
CH 11



CH 1 Band edge

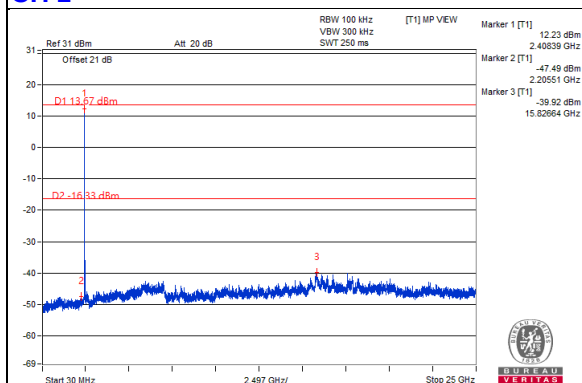


CH 11 Band edge

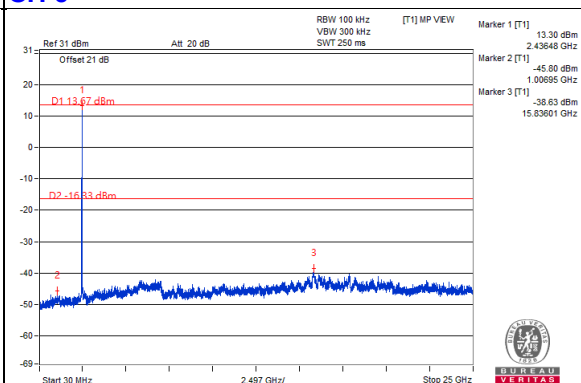


Chain 2

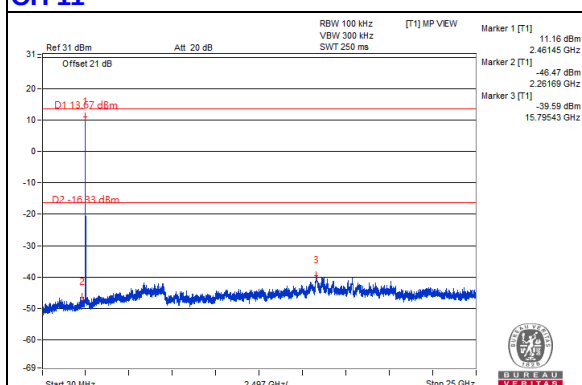
CH 1



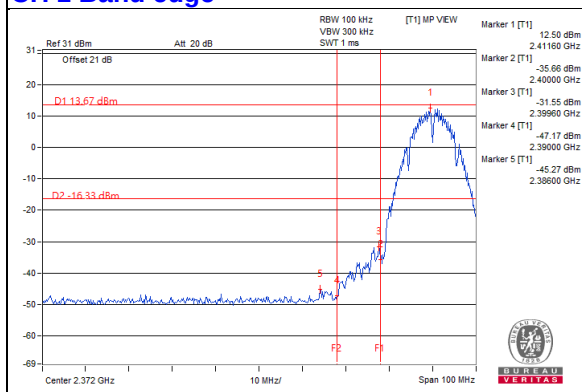
CH 6



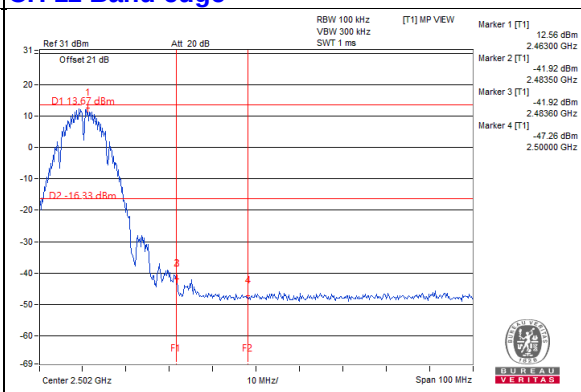
CH 11



CH 1 Band edge

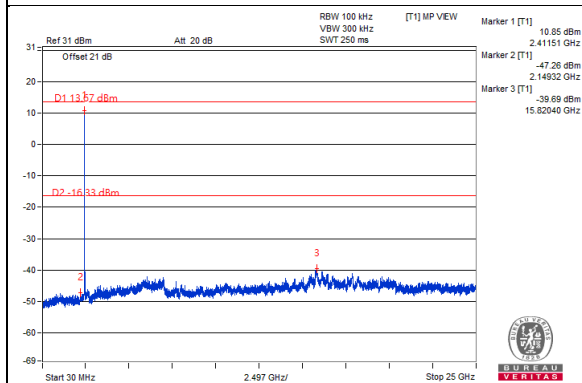


CH 11 Band edge

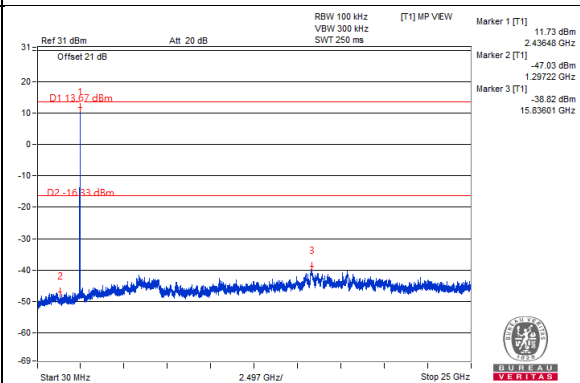


Chain 3

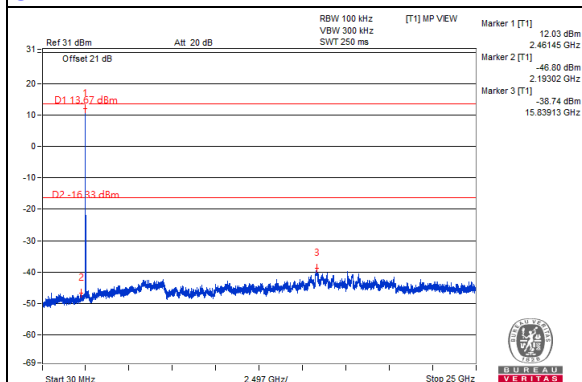
CH 1



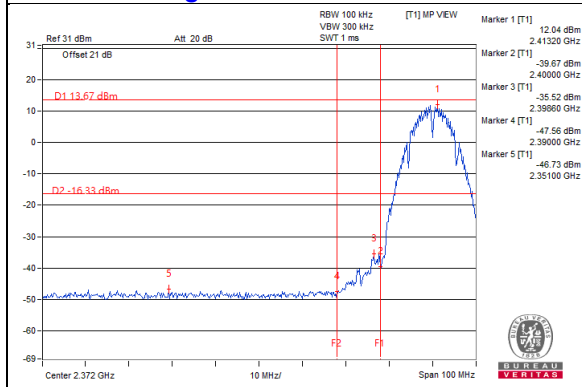
CH 6



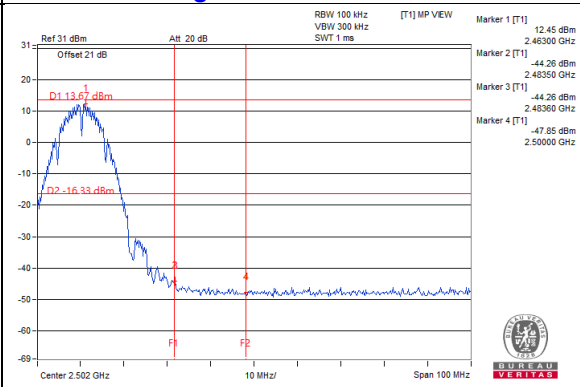
CH 11



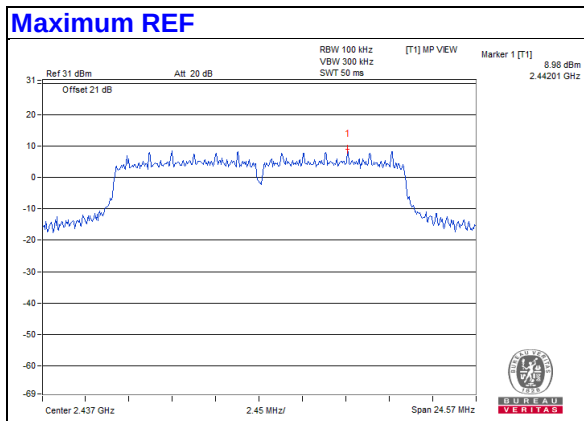
CH 1 Band edge



CH 11 Band edge

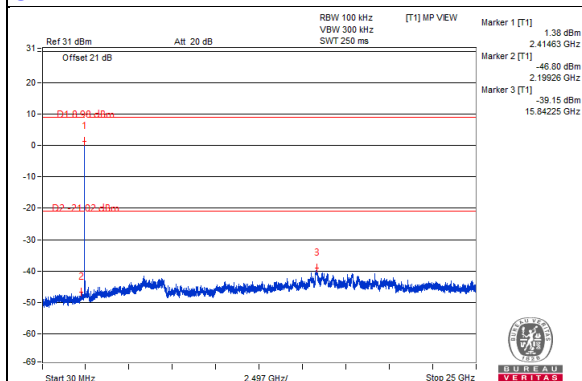


802.11g

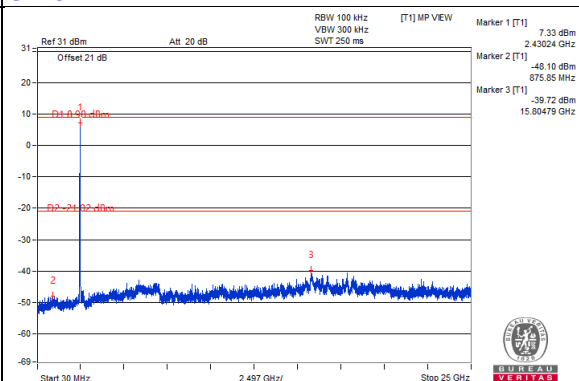


Chain 0

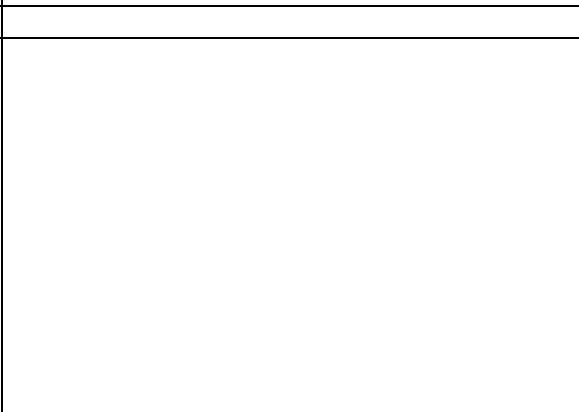
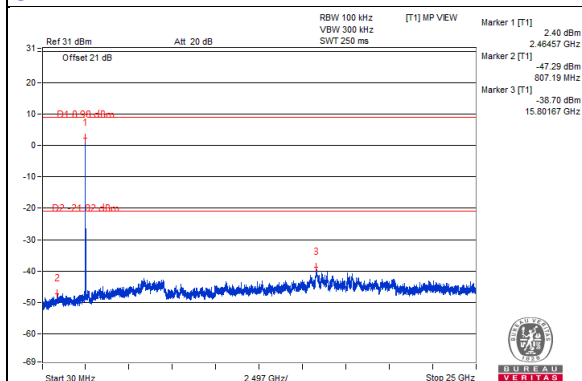
CH 1



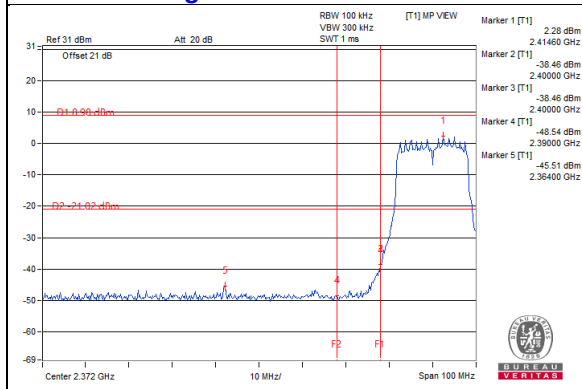
CH 6



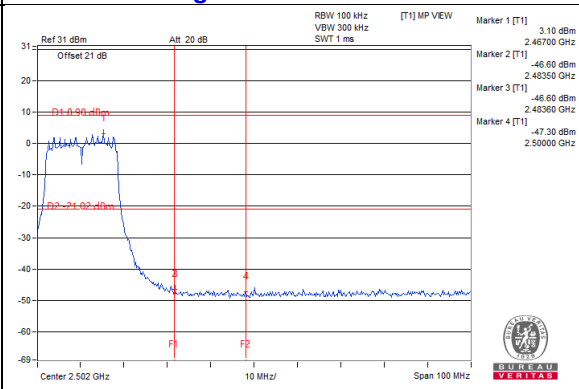
CH 11



CH 1 Band edge

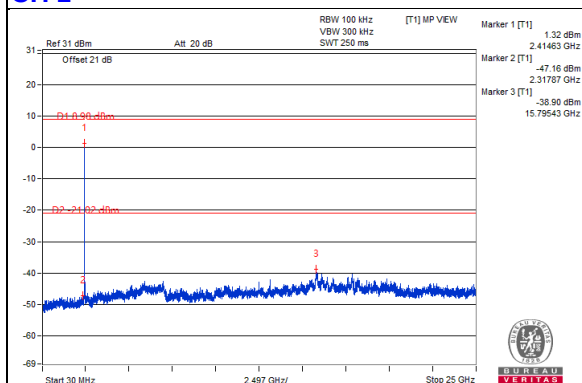


CH 11 Band edge

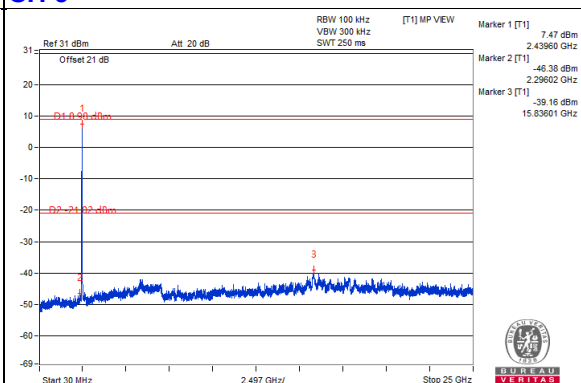


Chain 1

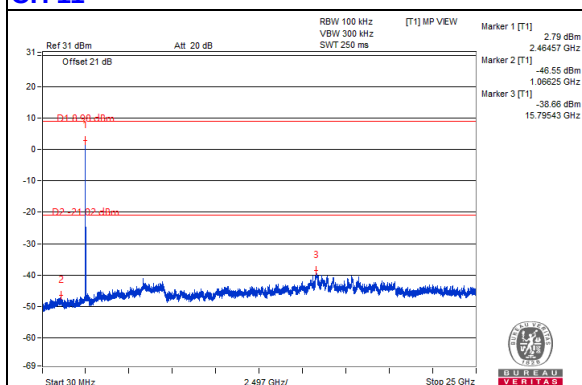
CH 1



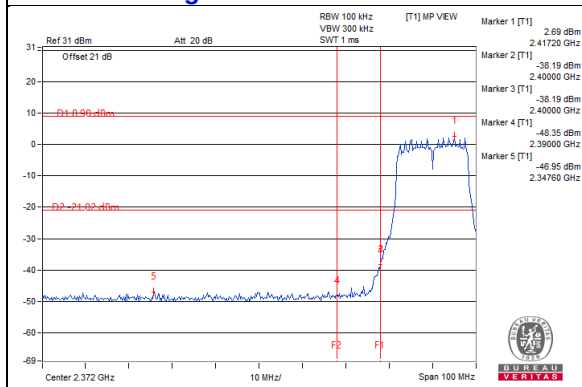
CH 6



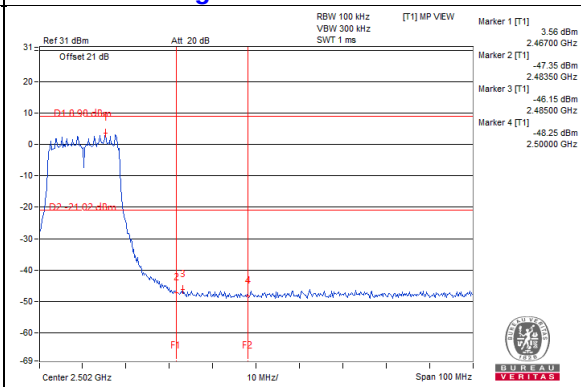
CH 11



CH 1 Band edge

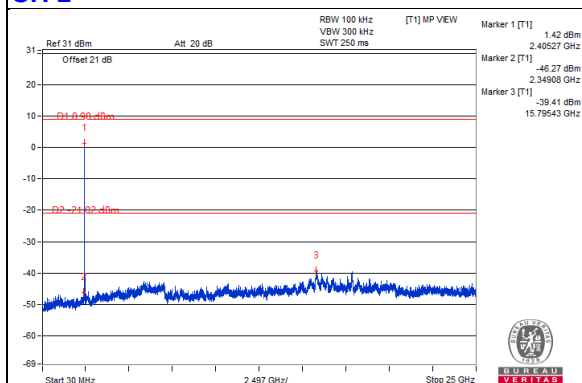


CH 11 Band edge

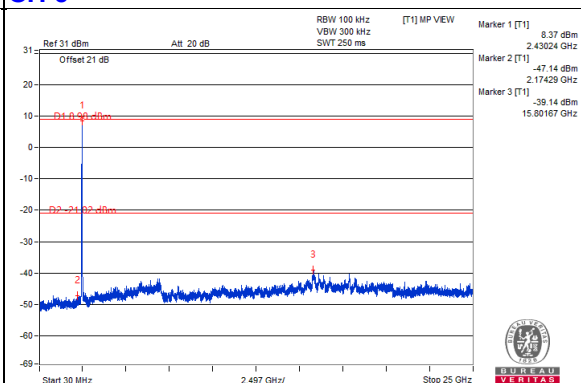


Chain 2

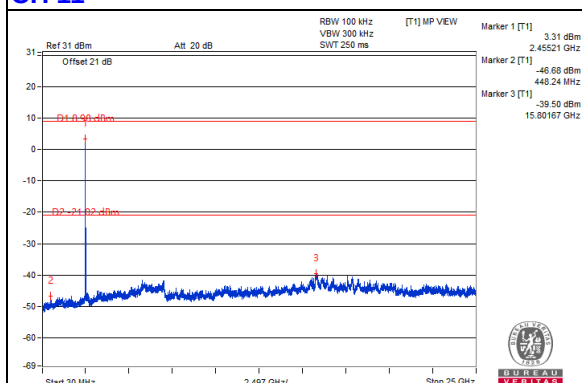
CH 1



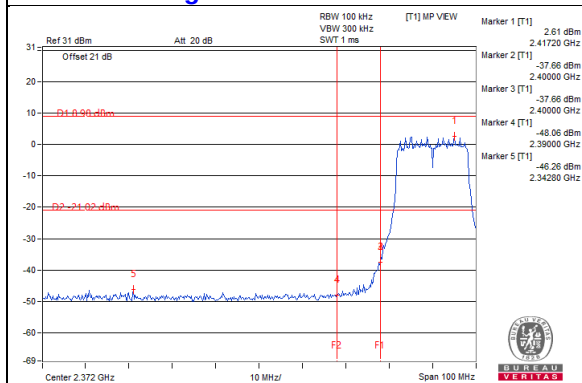
CH 6



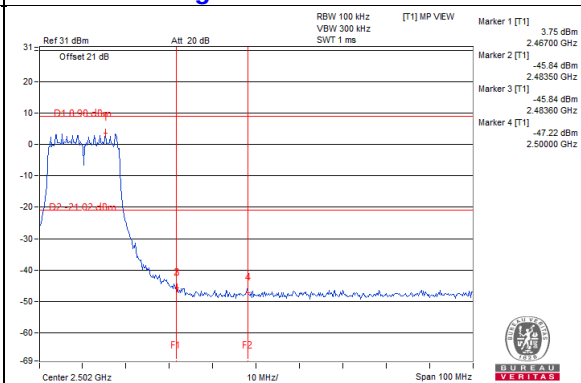
CH 11



CH 1 Band edge

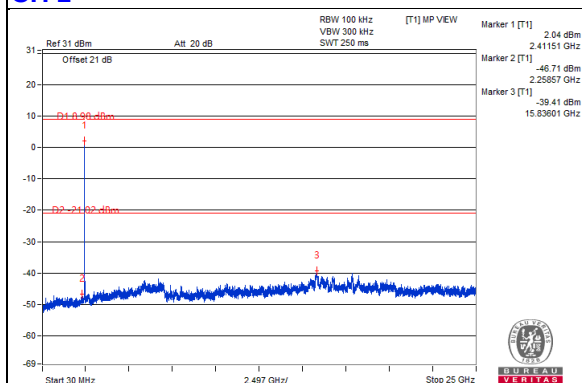


CH 11 Band edge

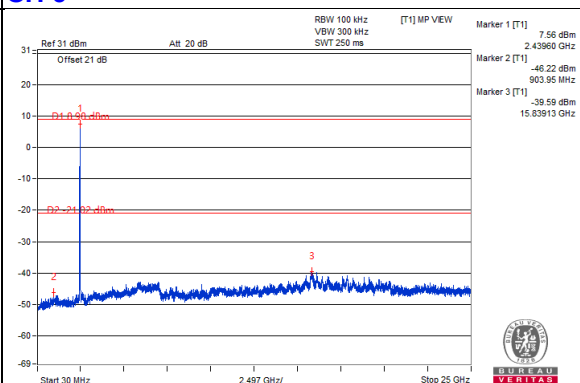


Chain 3

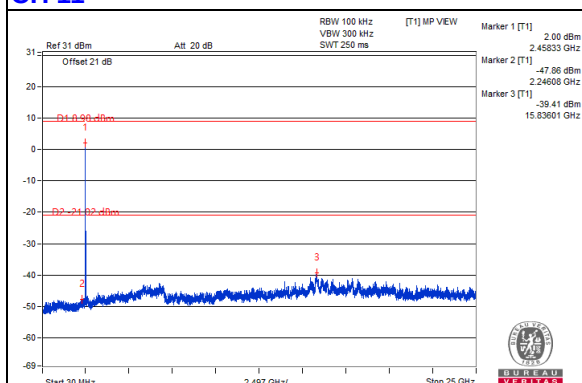
CH 1



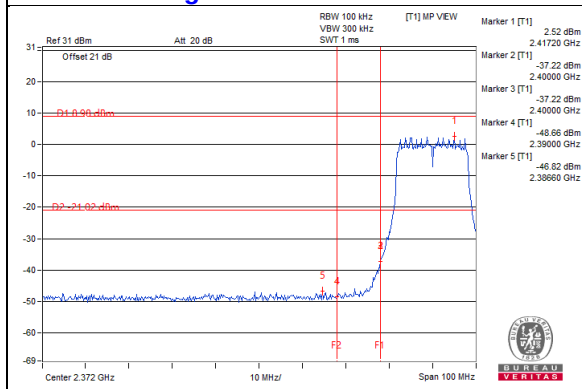
CH 6



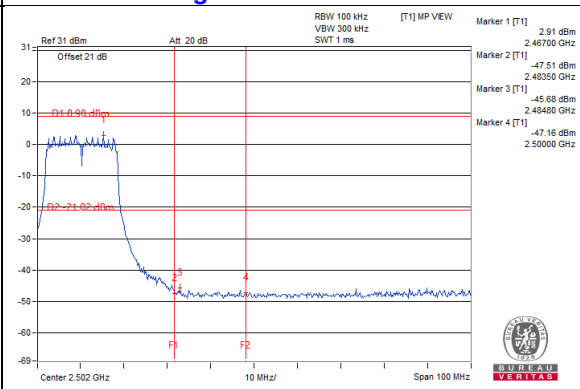
CH 11



CH 1 Band edge

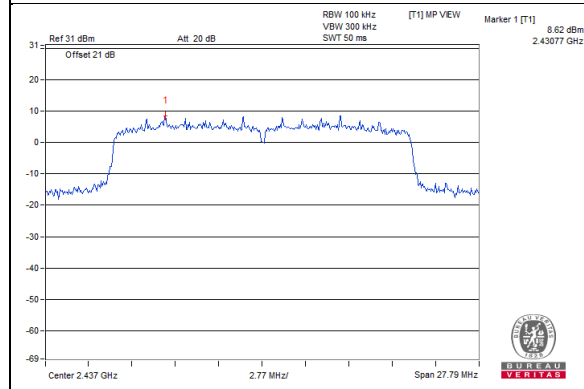


CH 11 Band edge



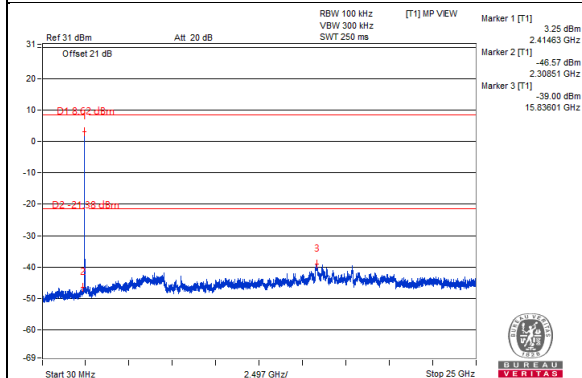
802.11ax (HE20)

Maximum REF

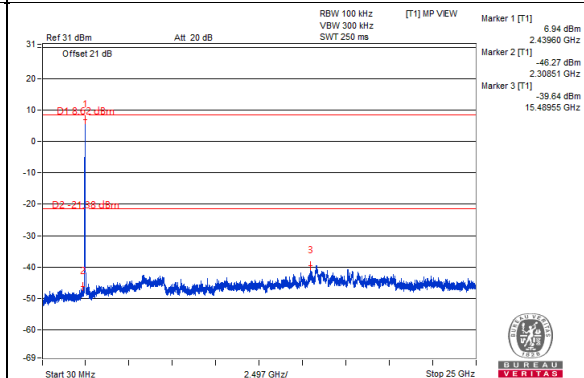


Chain 0

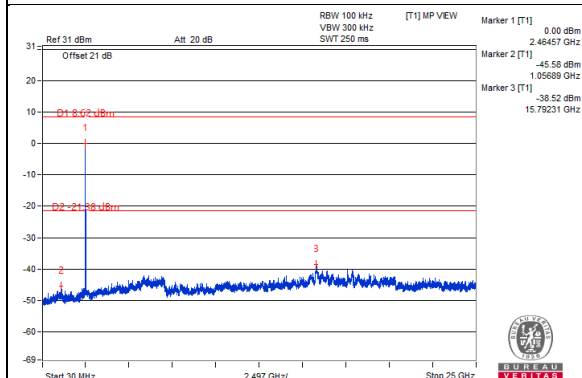
CH 1



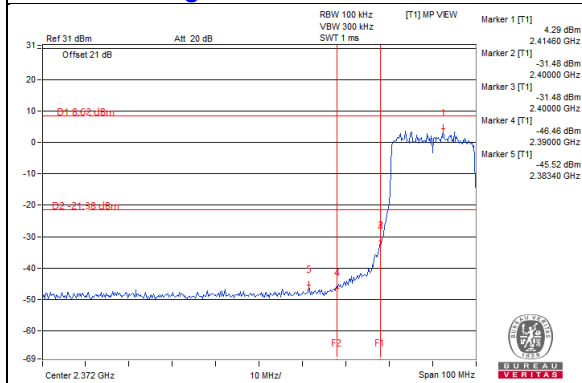
CH 6



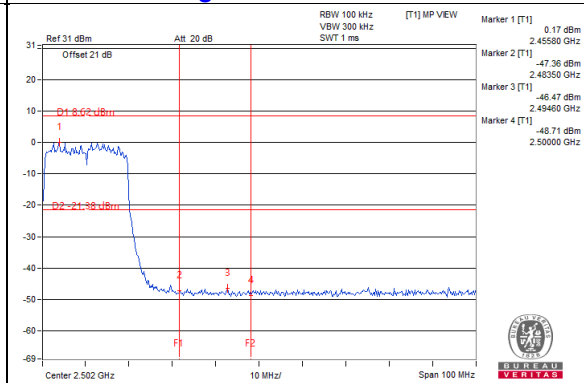
CH 11



CH 1 Band edge

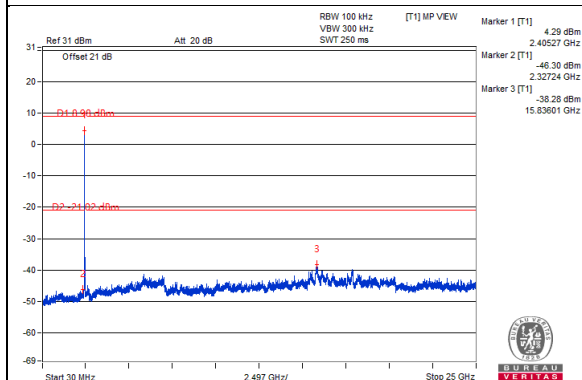


CH 11 Band edge

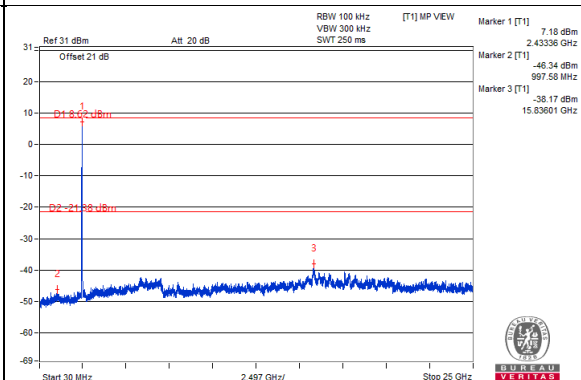


Chain 1

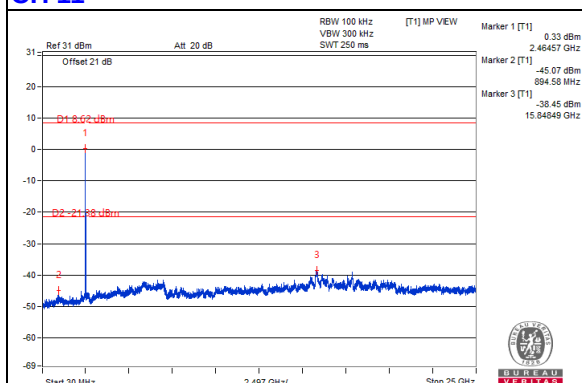
CH 1



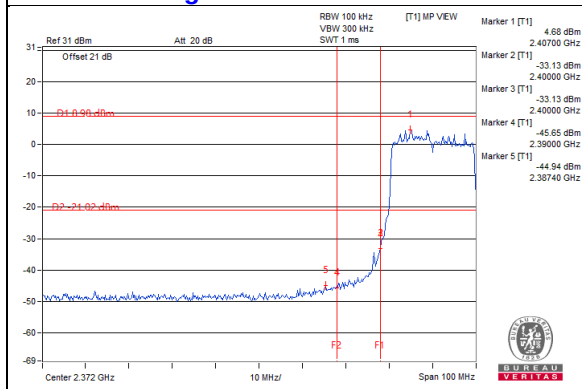
CH 6



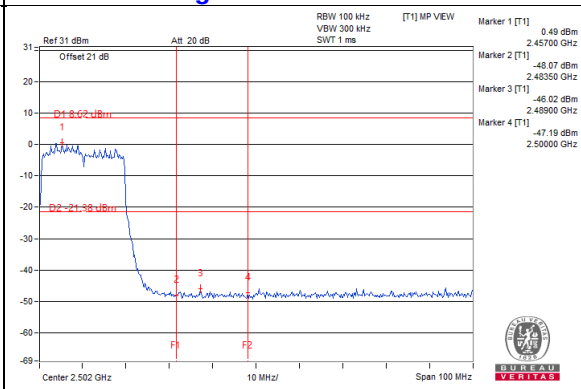
CH 11



CH 1 Band edge

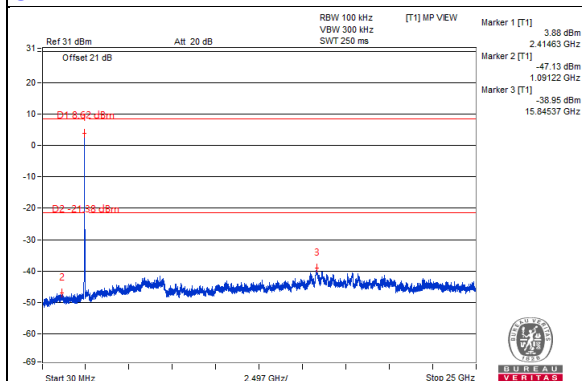


CH 11 Band edge

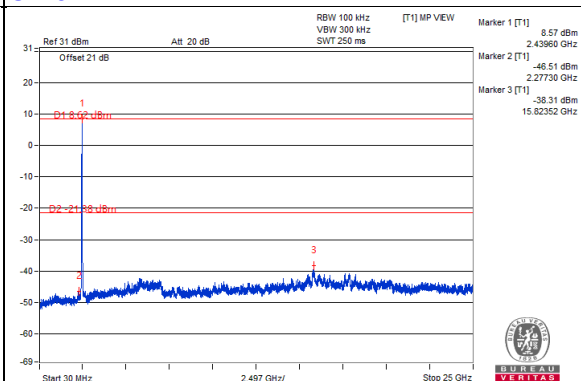


Chain 2

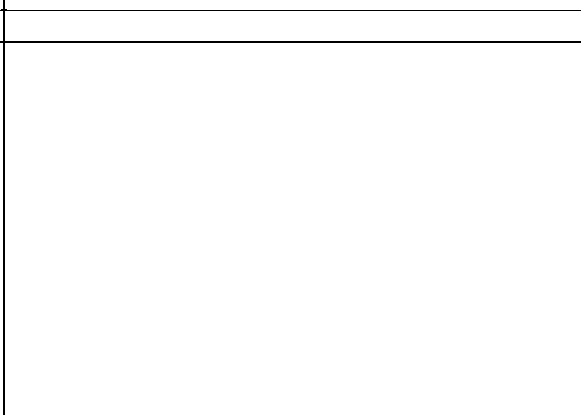
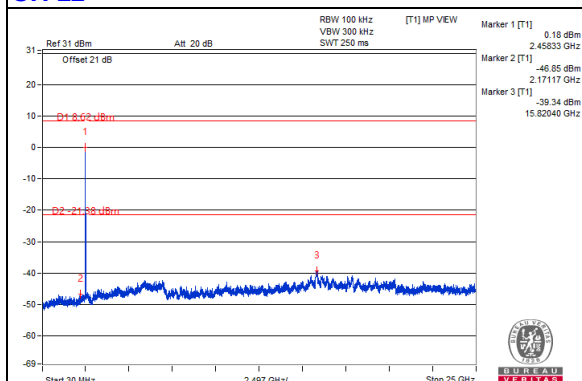
CH 1



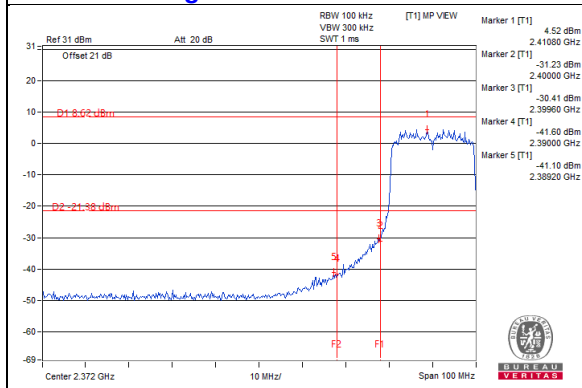
CH 6



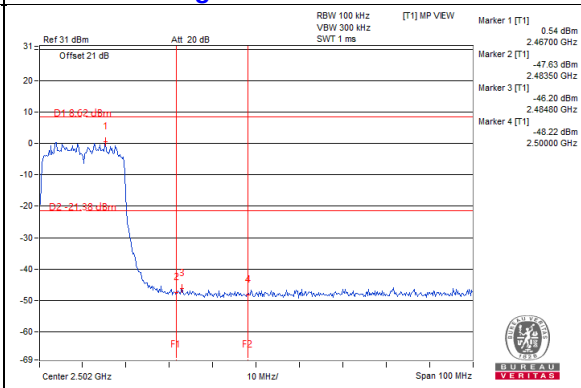
CH 11



CH 1 Band edge

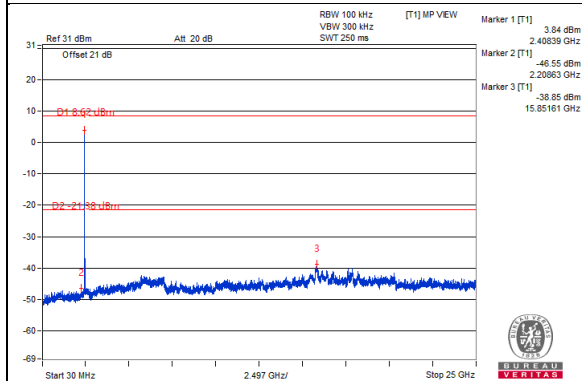


CH 11 Band edge

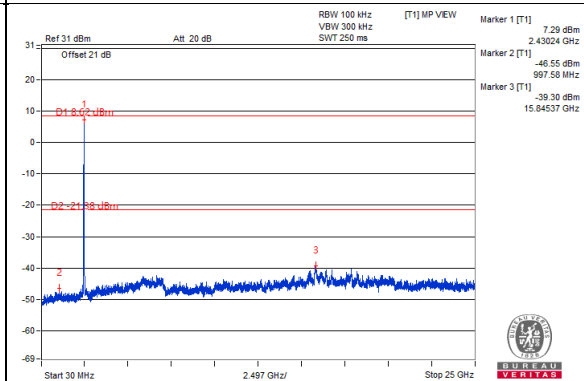


Chain 3

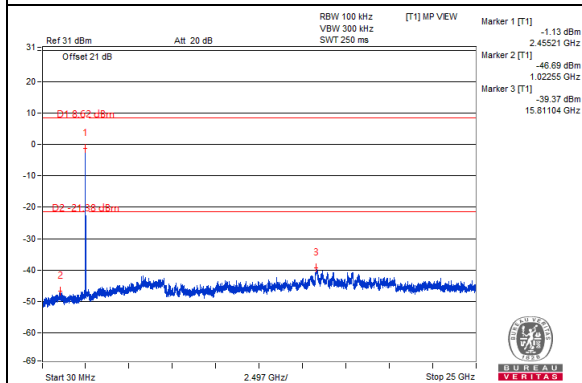
CH 1



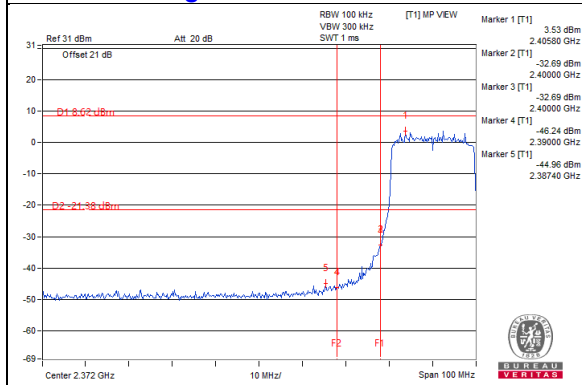
CH 6



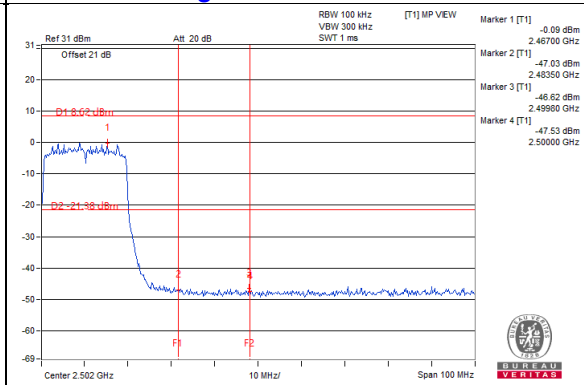
CH 11



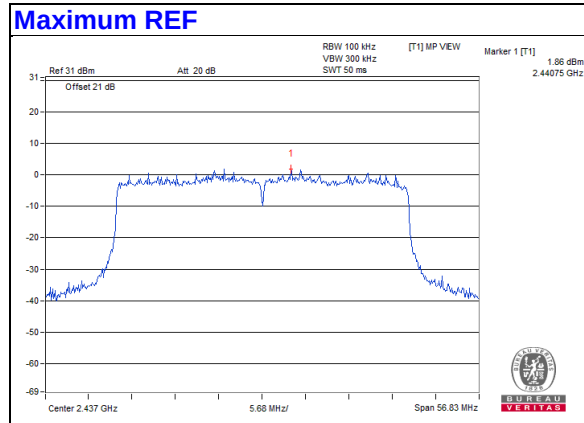
CH 1 Band edge



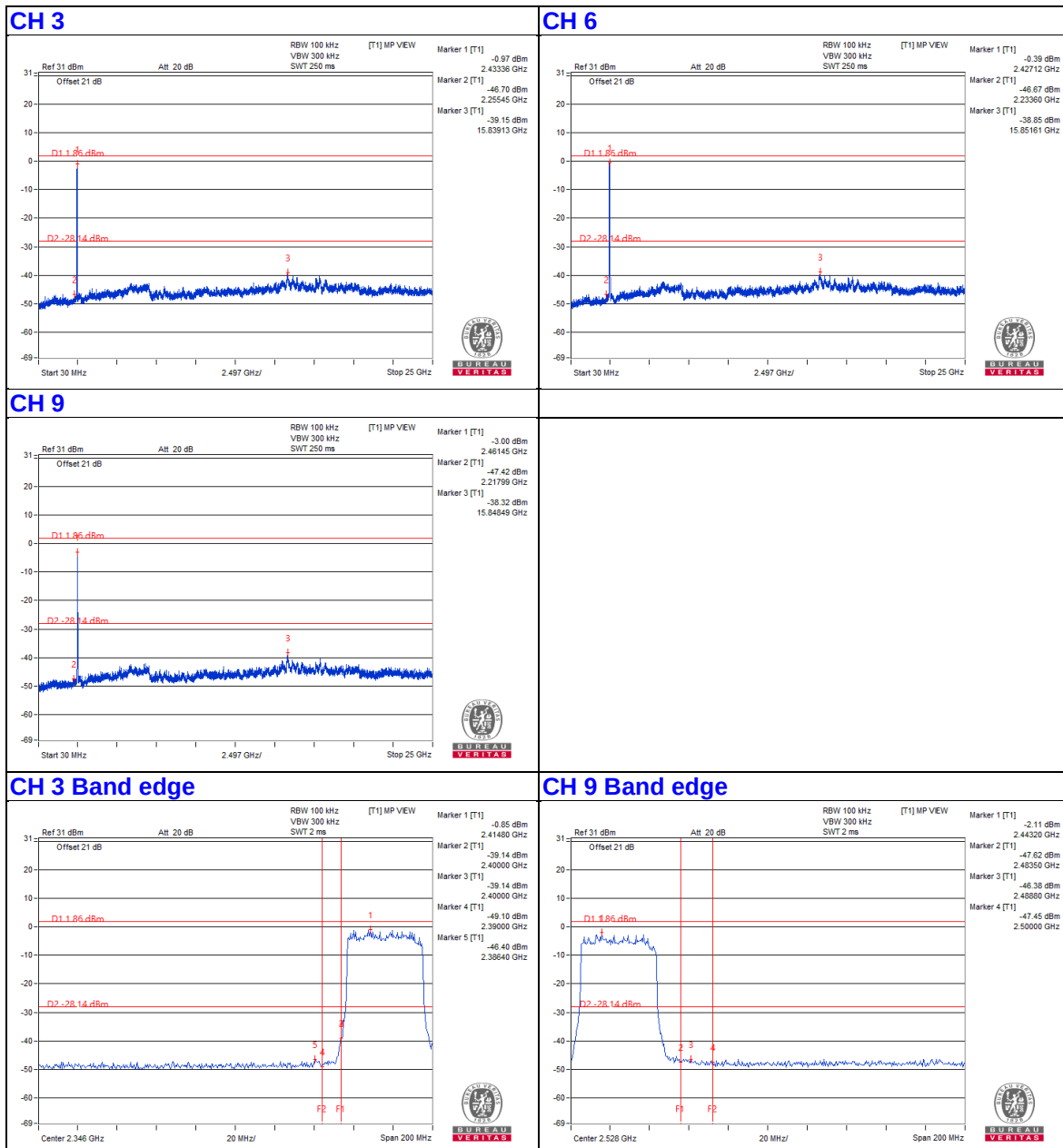
CH 11 Band edge



802.11ax (HE40)

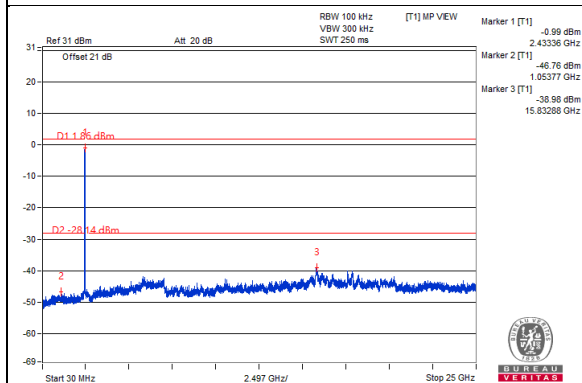


Chain 0

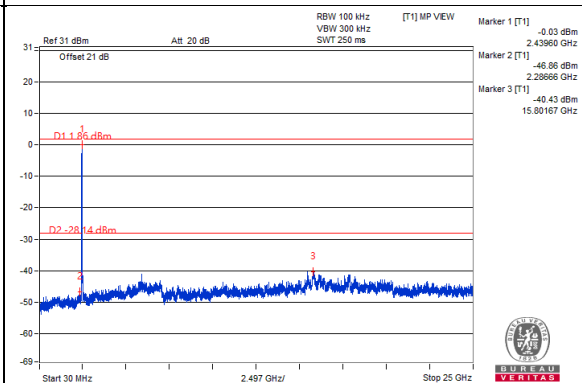


Chain 1

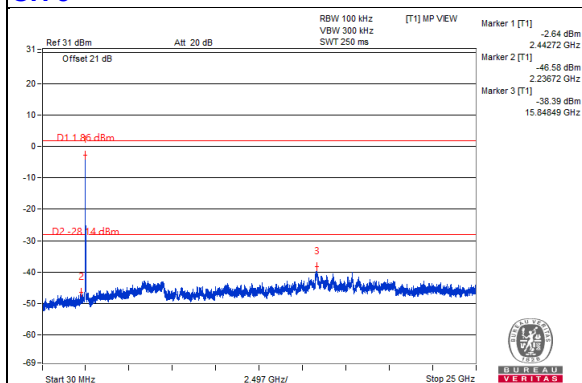
CH 3



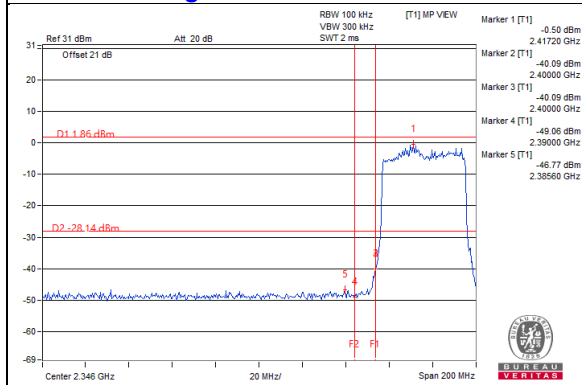
CH 6



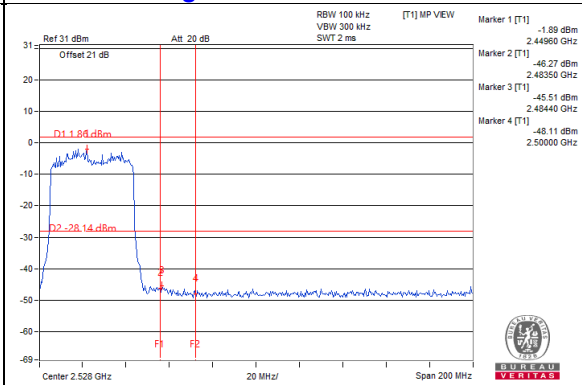
CH 9



CH 3 Band edge

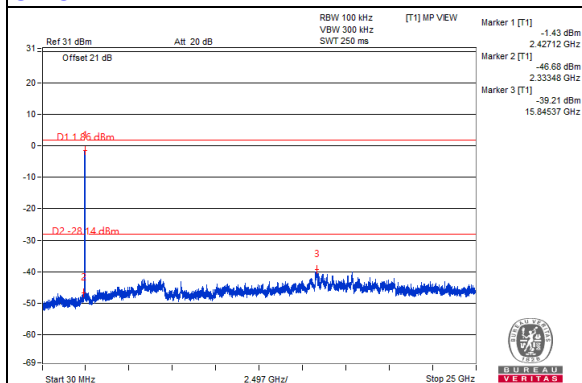


CH 9 Band edge

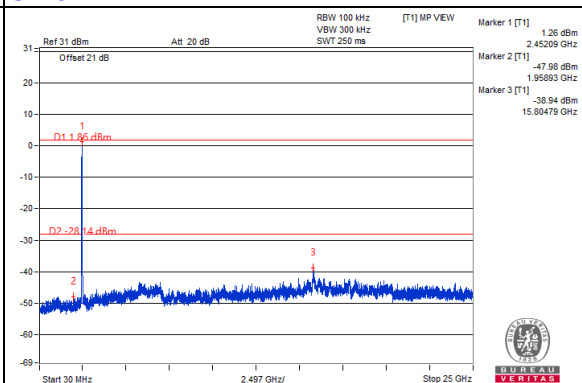


Chain 2

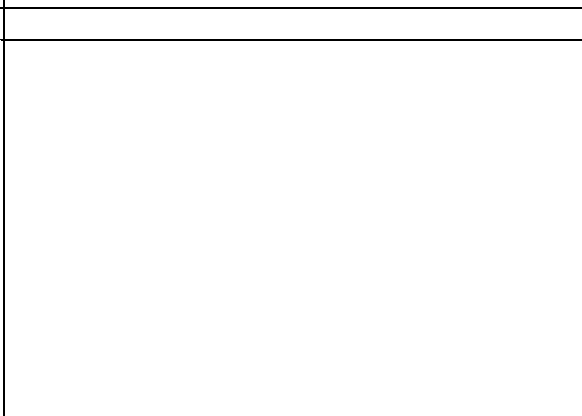
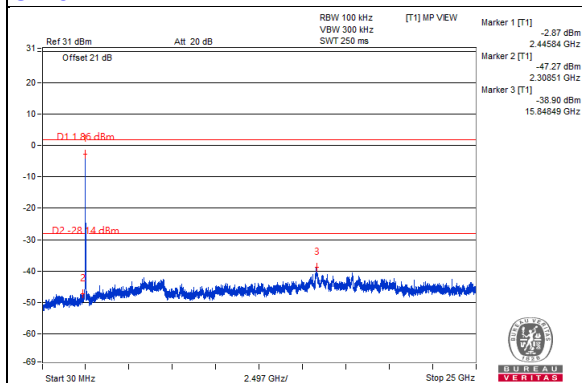
CH 3



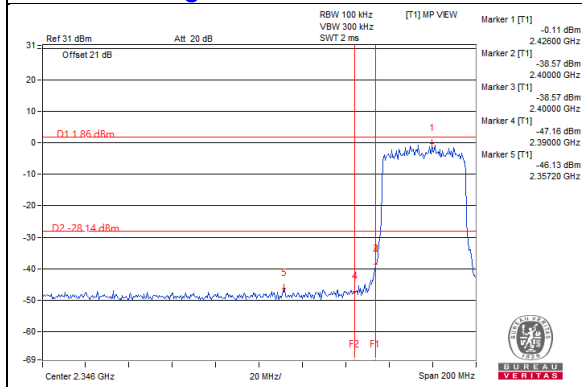
CH 6



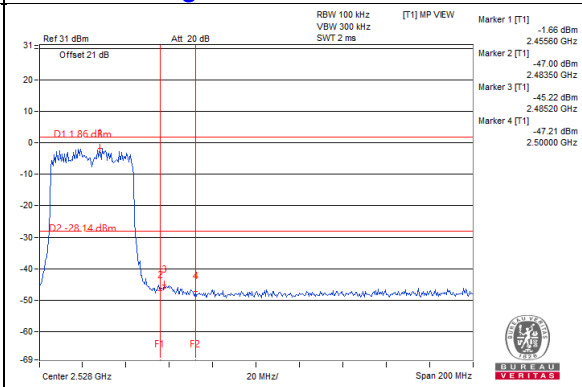
CH 9



CH 3 Band edge

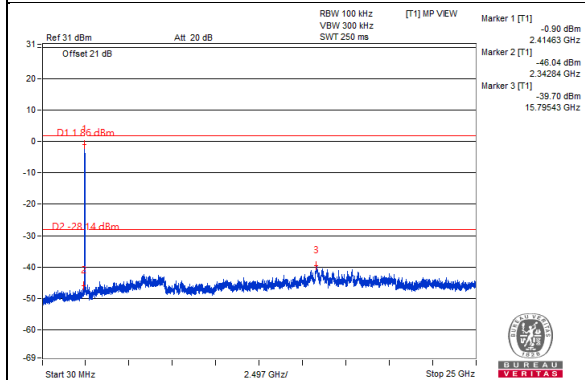


CH 9 Band edge

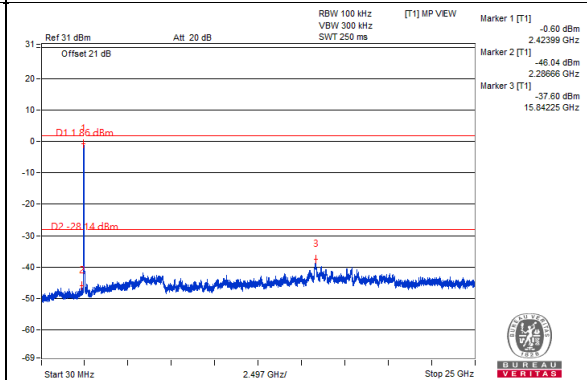


Chain 3

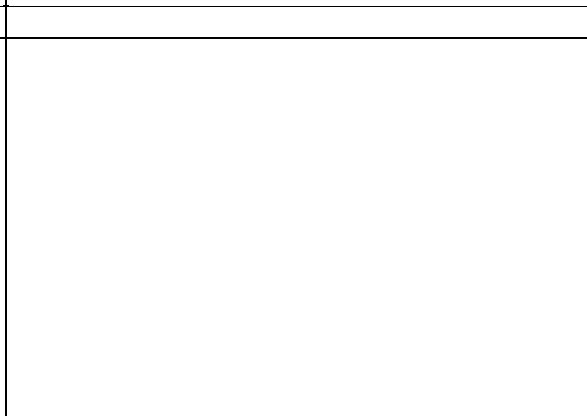
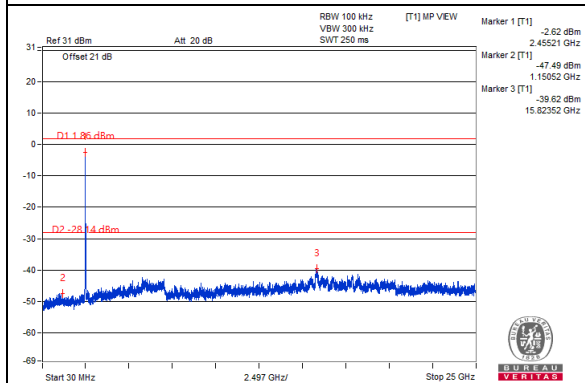
CH 3



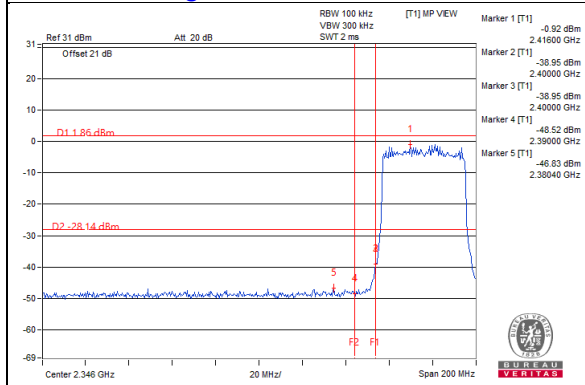
CH 6



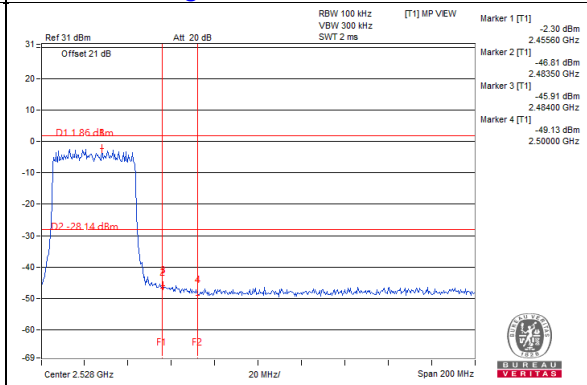
CH 9



CH 3 Band edge



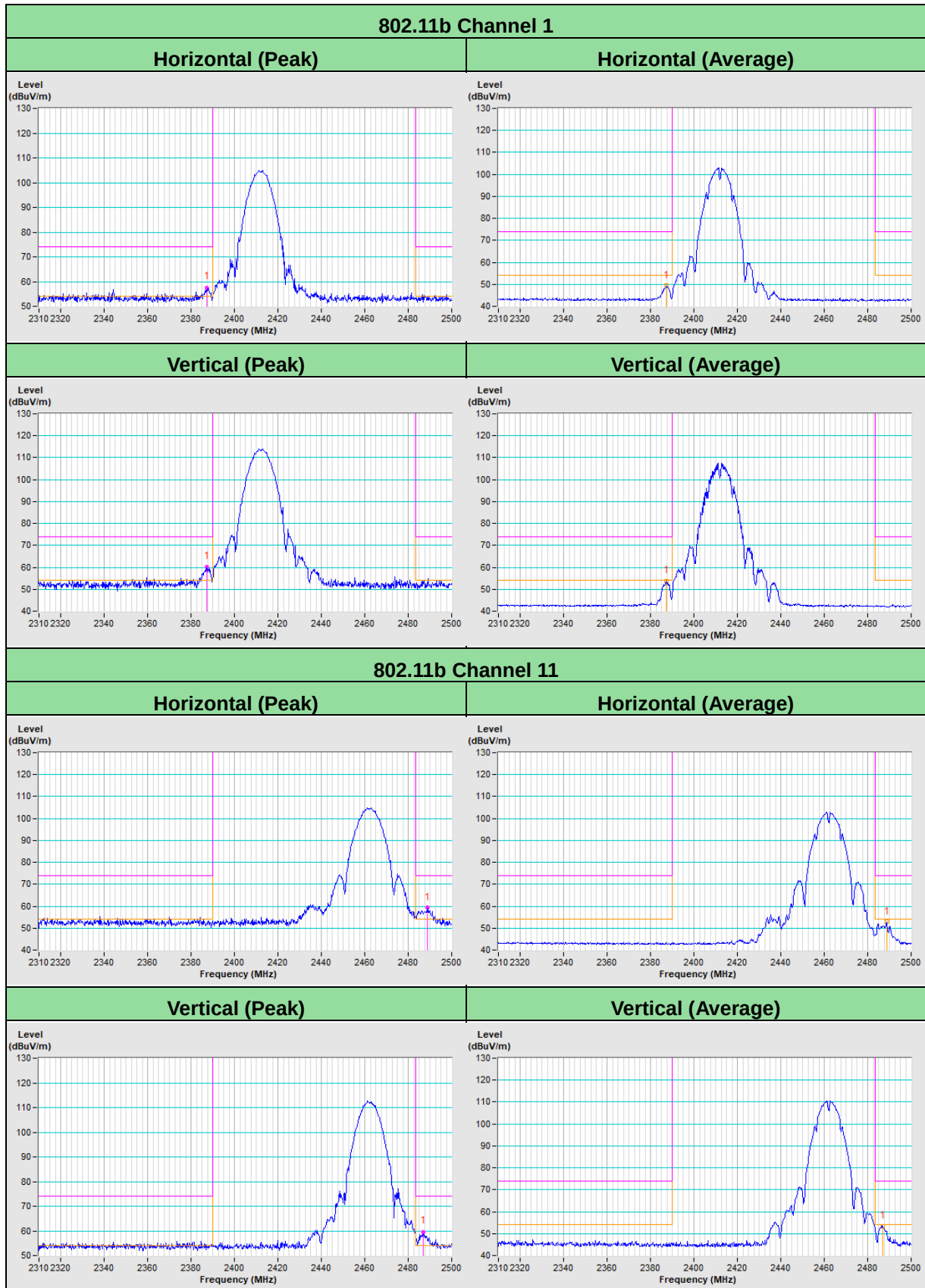
CH 9 Band edge

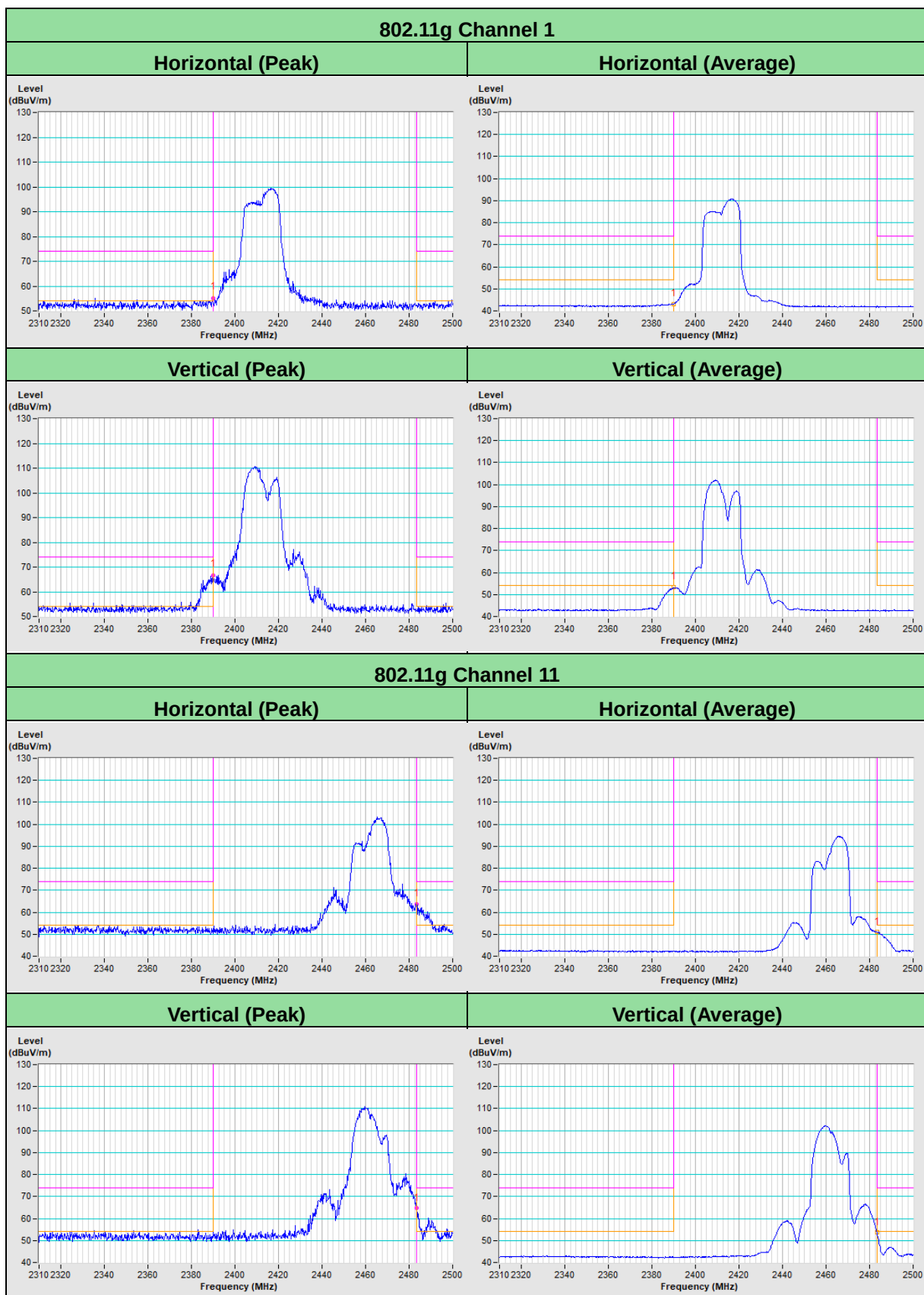


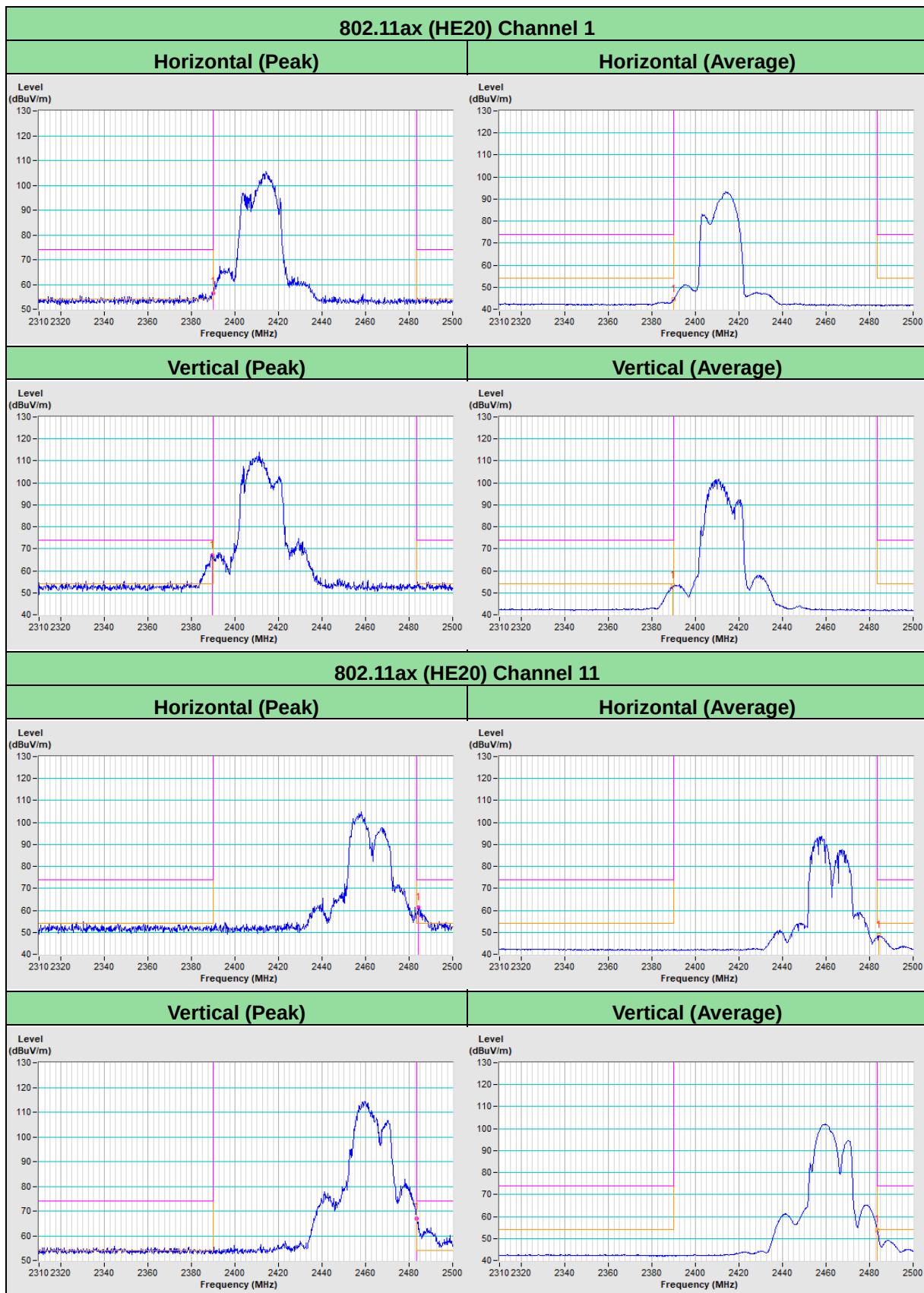
5 Pictures of Test Arrangements

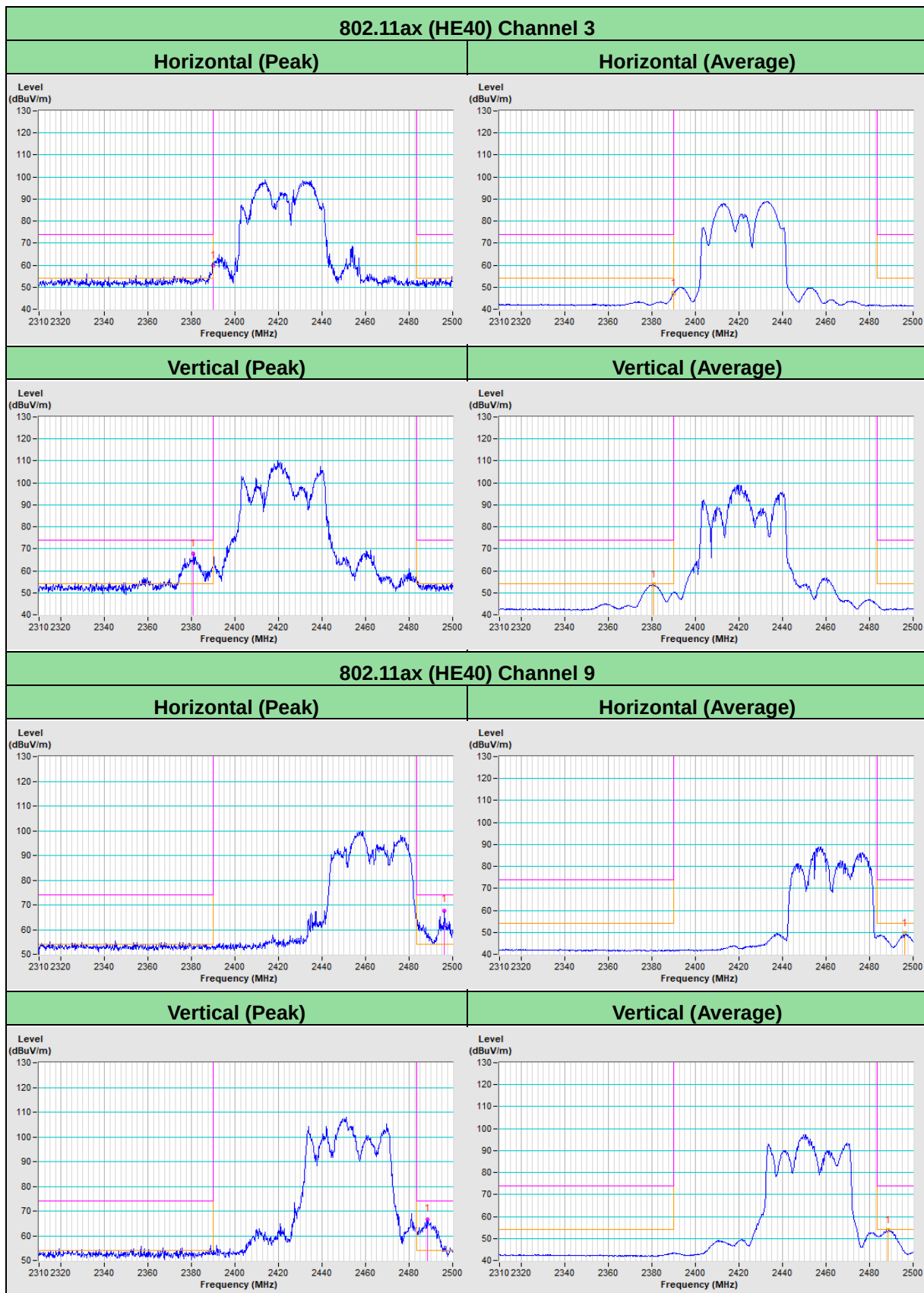
Please refer to the attached file (Test Setup Photo).

Annex A.1- Band-edge measurement (Mode 1)

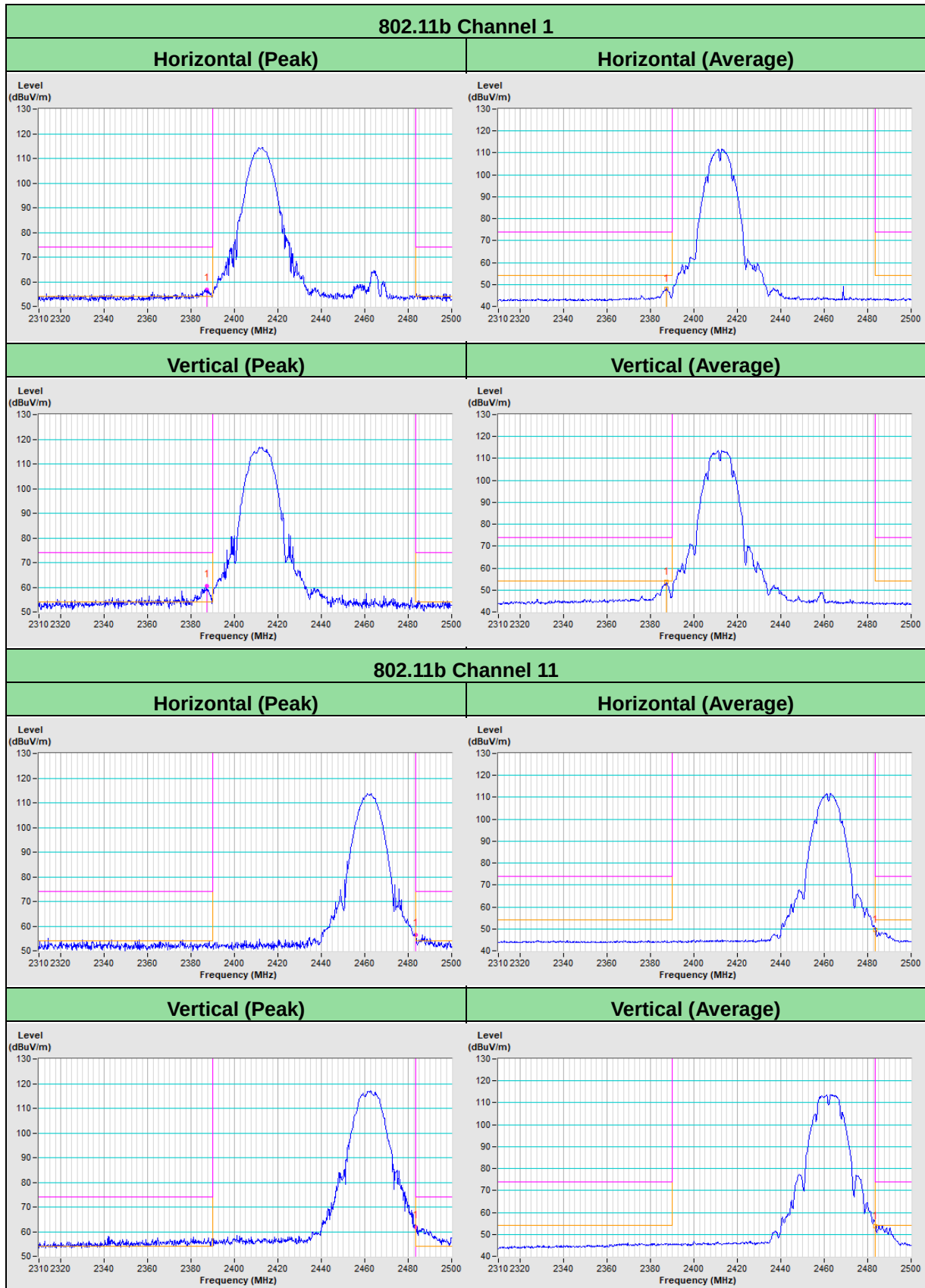


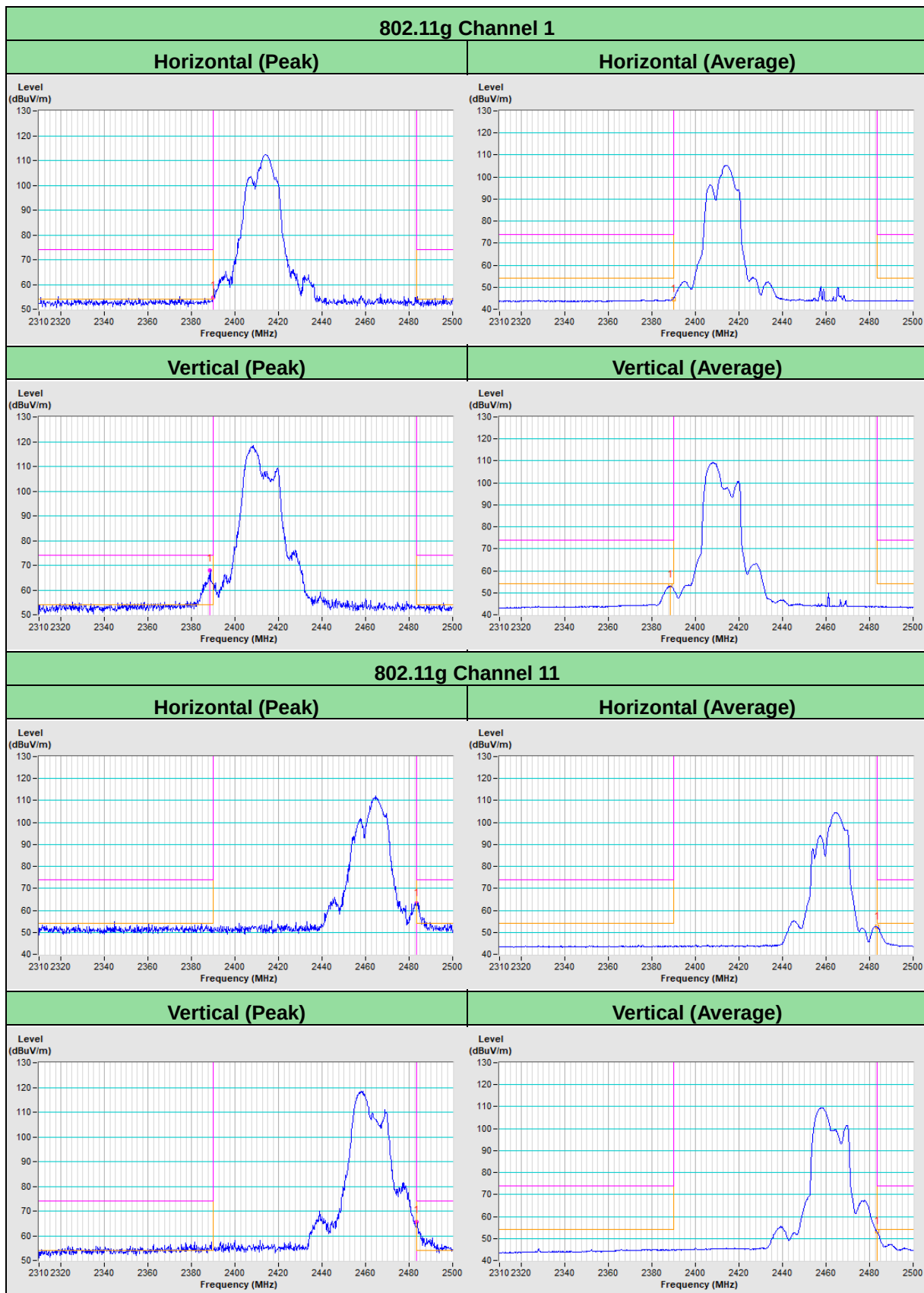


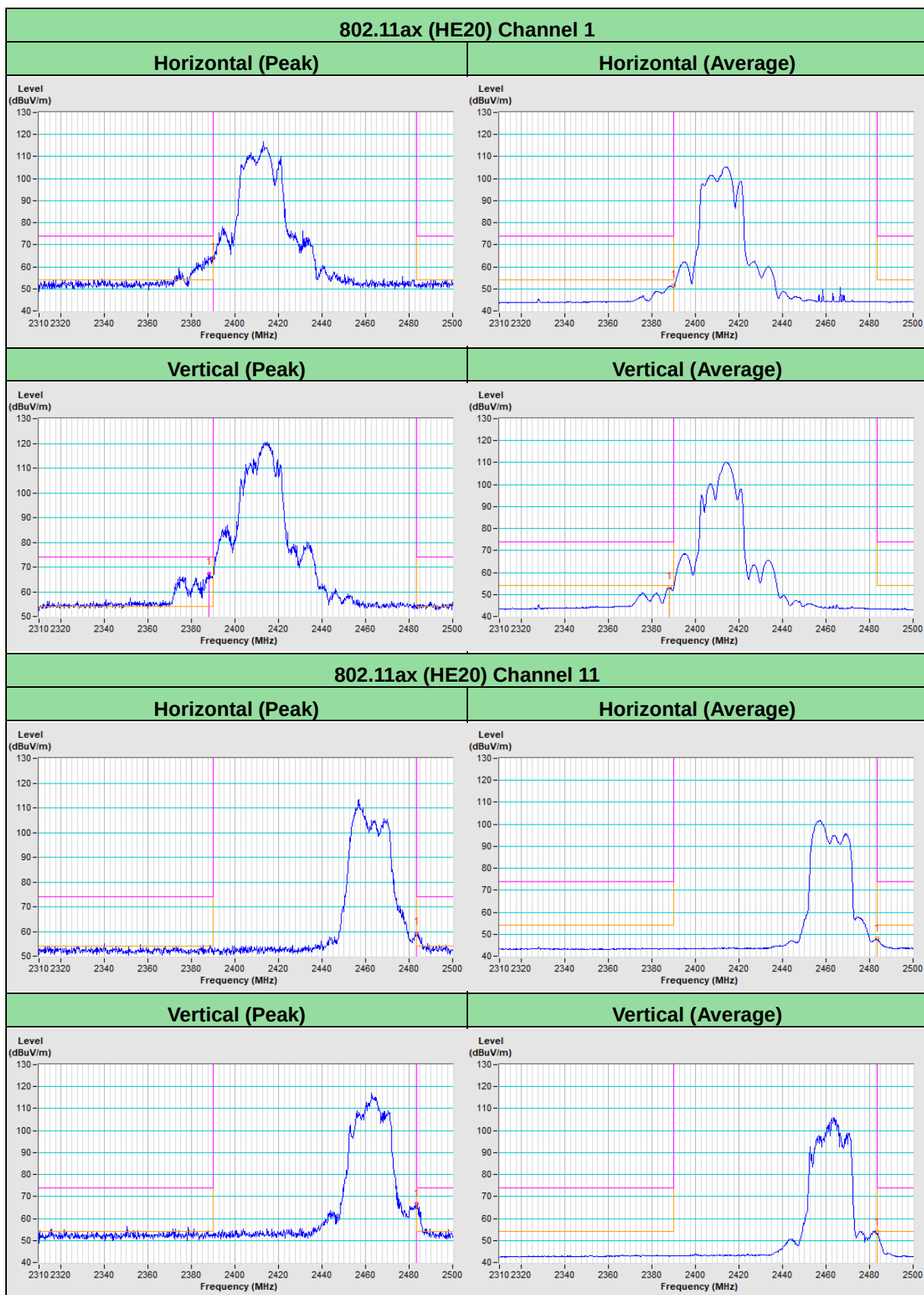


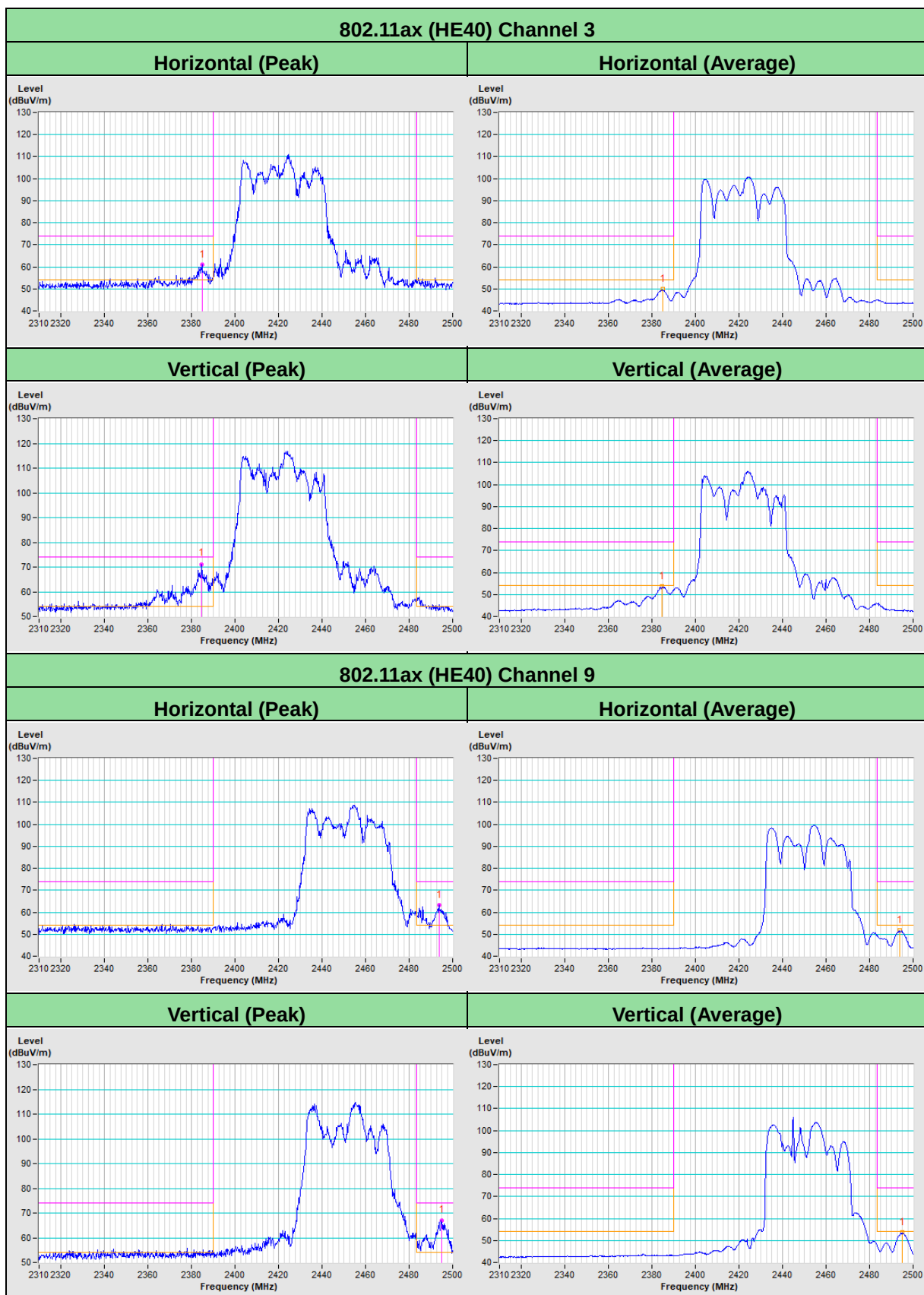


Annex A.2- Band-edge measurement (Mode 2)









Appendix – Information of the Testing Laboratories

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

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

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Fax: 886-2-26051924

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Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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