FCC Test Report

Report No.: RFBDYS-WTW-P21040408

FCC ID: 2AKCZ-106

Test Model: APL66-106

Received Date: Apr. 20, 2021

Test Date: Apr. 29 ~ Jul. 09, 2021

Issued Date: Oct. 04, 2021

Applicant: SonicWall Inc.

Address: 1033 McCarthy Blvd., Milpitas, CA 95035, USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

FCC Registration / Designation Number: 788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RFBDYS-WTW-P21040408	Original Release	Oct. 04, 2021

1 Certificate of Conformity

Product: Wireless Access Point

Brand: SONICWALL

Test Model: APL66-106

Sample Status: Engineering Sample

Applicant: SonicWall Inc.

Test Date: Apr. 29 ~ Jul. 09, 2021

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

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

Prepared by : Pettie Chen , **Date:** Oct. 04, 2021

Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Oct. 04, 2021

Bruce Chen / Senior Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -9.92dB at 0.15000MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.9dB at 2483.50MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	Pass	Meet the requirement of limit.
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector are I-PEX not a standard connector.

Note:

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

2.1 Measurement Uncertainty

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

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

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Access Point
Brand	SONICWALL
Test Model	APL66-106
Sample Status	Engineering Sample
Power Supply Rating	12Vdc from Adapter 48~56Vdc from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/40): up to 600Mbps 802.11n (VHT20/40): up to 800Mbps 802.11ax: up to 1147.1Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	2G traffic radio (Radio 2): 802.11b, 802.11g, 802.11n (HT20), 802.11n (VHT20), 802.11ax (HE20): 11 802.11n (HT40), 802.11n (VHT40), 802.11ax (HE40): 7 Scanning radio (Radio 3): 802.11b, 802.11g, 802.11n (HT20), 802.11n (VHT20): 11 802.11n (HT40), 802.11n (VHT40): 7
Output Power	2G traffic radio (Radio 2): CDD Mode: 723.579mW Beamforming Mode: 285.824mW Scanning radio (Radio 3): CDD Mode: 185.780mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Adapter (Optional)
Cable Supplied	NA

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Radio	Modulation Mode	Beamforming Mode	TX Function
2G traffic radio (Radio 2)	802.11b	Not Support	4TX
	802.11g	Not Support	4TX
	802.11n (HT20)	Not Support	4TX
	802.11n (HT40)	Not Support	4TX
	802.11n (VHT20)	Support	4TX
	802.11n (VHT40)	Support	4TX
	802.11ax (HE20)	Support	4TX
	802.11ax (HE40)	Support	4TX
Scanning radio (Radio 3)	802.11b	Not Support	1TX
	802.11g	Not Support	1TX
	802.11n (HT20)	Not Support	1TX
	802.11n (HT40)	Not Support	1TX
	802.11n (VHT20)	Not Support	1TX
	802.11n (VHT40)	Not Support	1TX

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

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

2. The EUT consumes power from the following adapter and PoE.

Adapter (Optional)	
Brand	Sunny
Model	SYS1546-3612-T3
Input Power	100-240Vac, 1.5A MAX, 50-60Hz
Output Power	12Vdc, 3.0A
Power cord	Non-shielded AC (0.5m) Non-shielded DC (1.86m) with one core

POE (Support unit only)	
Brand	EnGenius
Model	PNA90BGS-54
Input Power	100-240Vac, 1.5A, 50-60Hz
Output Power	48~56Vdc, 1.7A

3. The following antennas were provided to the EUT.

Antenna Type	PIFA					
Antenna Connector	I-PEX					
Antenna No.	Gain (dBi)					
	2400MHz	2450MHz	2500MHz	5150MHz	5500MHz	5850MHz
2G1 (Ant1)	3.30	3.87	3.32	-	-	-
2G2 (Ant2)	2.89	4.21	4.24	-	-	-
2G3 (Ant3)	4.08	4.54	4.39	-	-	-
2G4 (Ant4)	4.89	4.66	4.06	-	-	-
5G1 (Ant5)	-	-	-	4.29	4.65	4.37
5G2 (Ant5)	-	-	-	4.54	4.28	4.63
5G3 (Ant6)	-	-	-	5.27	5.25	4.87
5G4 (Ant6)	-	-	-	3.75	4.93	4.55
5G5 (Ant7)	-	-	-	3.94	4.15	4.30
5G6 (Ant7)	-	-	-	4.44	3.91	3.68
5G7 (Ant8)	-	-	-	4.74	4.31	4.67
5G8 (Ant8)	-	-	-	4.63	4.12	3.74
Scan (Ant9)	3.96	4.91	4.84	4.85	5.23	5.23
BLE (Ant10)	3.14	4.05	3.80	-	-	-

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

4. The simultaneous operation mode was determined by client.

No	Mode
1	2GHz traffic radio (Radio 2) + 5GHz traffic radio (Radio 1) + 5GHz Scanning radio (Radio 3) + BLE
2	5GHz traffic radio (Radio 1) + 2GHz Scanning radio (Radio 3) + BLE

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

3.2 Description of Test Modes

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

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

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	EUT power from adapter
B	-	√	√	-	EUT power from PoE

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

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.
2. For radiated emission (below 1GHz) and power line conducted emission test items chosen the worst maximum power mode.
3. "-" means no effect.

Radiated Emission Test (Above 1GHz):

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

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 2
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
A	802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0	
A	802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0	
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 3
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
A	802.11n (VHT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	
A	802.11n (VHT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	

Radiated Emission Test (Below 1GHz):

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

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
A, B	802.11g	1 to 11	6	OFDM	BPSK	6.0	Radio 2
A, B	802.11b	1 to 11	6	DSSS	DBPSK	1.0	Radio 3

Power Line Conducted Emission Test:

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

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
A, B	802.11g	1 to 11	6	OFDM	BPSK	6.0	Radio 2
A, B	802.11b	1 to 11	6	DSSS	DBPSK	1.0	Radio 3

Transmit Power Measurement:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 2
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
A	802.11n (VHT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	
A	802.11n (VHT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	
A	802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0	
A	802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0	
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 3
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
A	802.11n (VHT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	
A	802.11n (VHT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	

Bandwidth, Power Spectral Density Measurement:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)	Remark
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 2
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
A	802.11ax (HE20)	1 to 11	1, 6, 11	OFDMA	BPSK	MCS0	
A	802.11ax (HE40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0	
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Radio 3
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	
A	802.11n (VHT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	
A	802.11n (VHT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	

Test Condition:

Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE≥1G	23 deg. C, 69% RH	120Vac, 60Hz	Edison Lee, Adair Peng
RE<1G	23 deg. C, 67% RH	120Vac, 60Hz 56Vdc	Adair Peng
PLC	24 deg. C, 69% RH	120Vac, 60Hz 56Vdc	Adair Peng
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Jisyong Wang

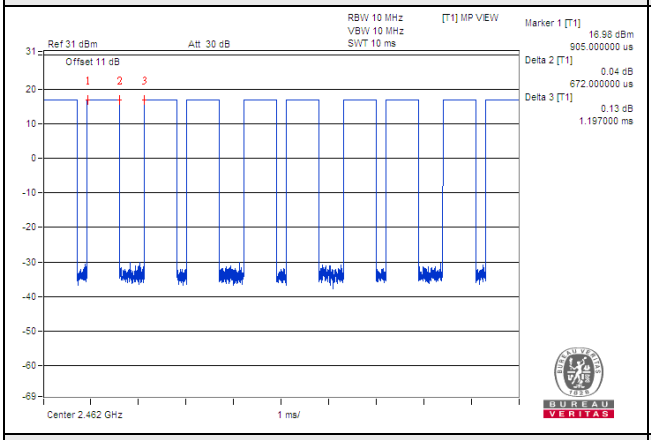
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is ≥ 98%, duty factor is not required.
Duty cycle of test signal is < 98%, duty factor is required.

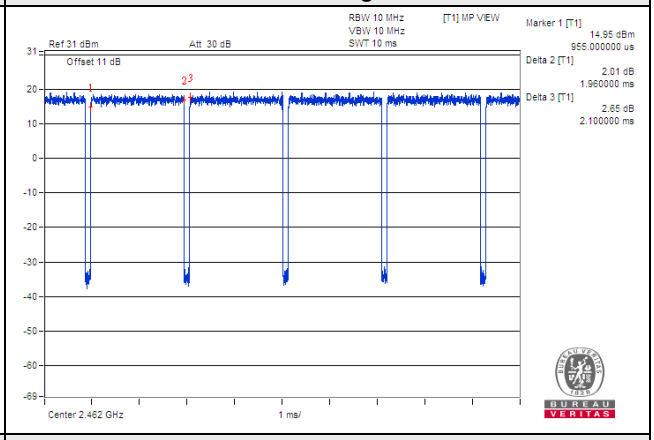
2G traffic radio (Radio 2)

802.11b: Duty cycle = 0.672/1.197 = 0.561, Duty factor = 10 * log (1/0.561) = 2.51
802.11g: Duty cycle = 1.96/2.1 = 0.933, Duty factor = 10 * log (1/0.933) = 0.3
802.11ax (HE20): Duty cycle = 5.425/5.71 = 0.95, Duty factor = 10 * log (1/0.95) = 0.22
802.11ax (HE40): Duty cycle = 5.420/5.735 = 0.945, Duty factor = 10 * log (1/0.945) = 0.25

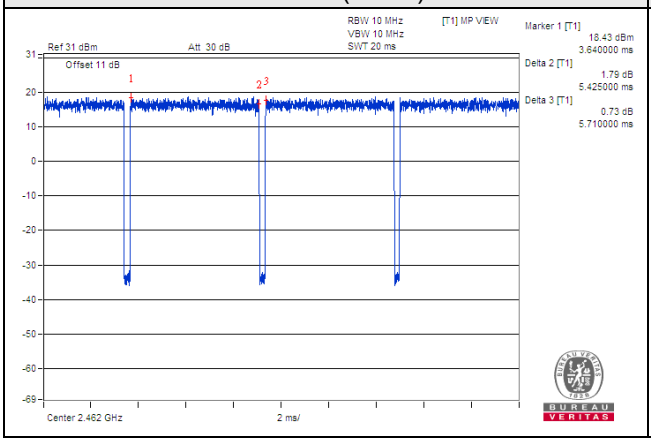
802.11b



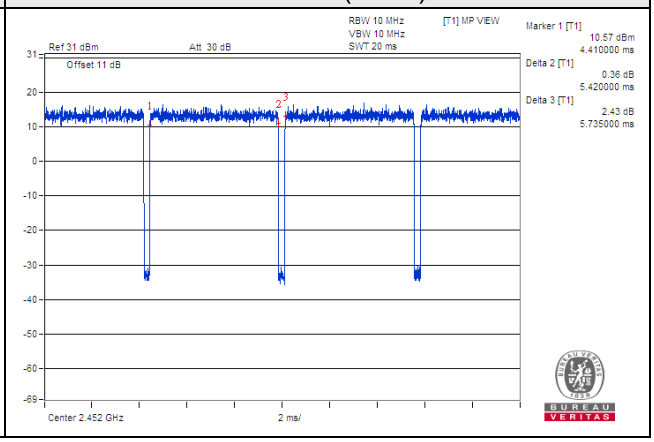
802.11g



802.11ax (HE20)

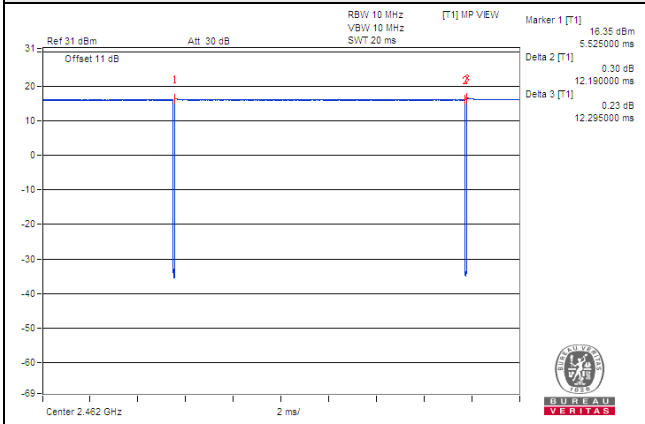
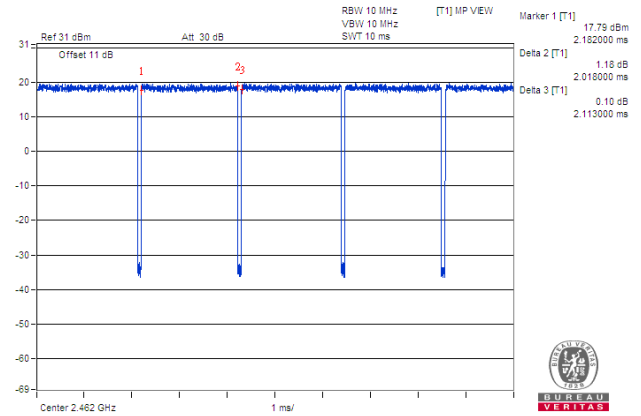
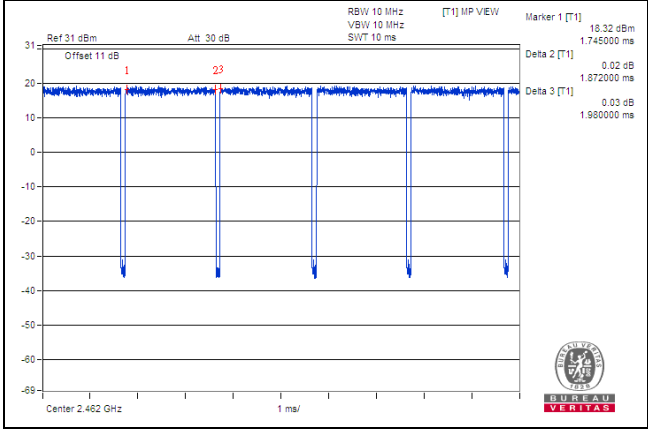
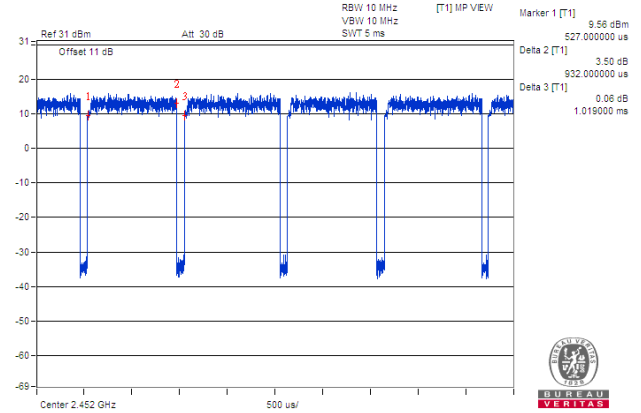


802.11ax (HE40)



Scanning radio (Radio 3)

802.11b: Duty cycle = 12.19/12.295 = 0.991
802.11g: Duty cycle = 2.018/2.113 = 0.955, Duty factor = 10 * log (1/0.955) = 0.2
802.11n (VHT20): Duty cycle = 1.872/1.98 = 0.945, Duty factor = 10 * log (1/0.945) = 0.24
802.11n (VHT40): Duty cycle = 0.932/1.019 = 0.915, Duty factor = 10 * log (1/0.915) = 0.39

802.11b	802.11g
	
802.11n (VHT20)	**802.11n (VHT40)**
	

3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	Adapter	Sunny	SYS1546-3612-T3	NA	NA	Provided by client (Optional)
C.	802.3AT/ AF GIGABIT SINGLE PORT PoE INJECTOR	EnGenius	PNA90BGS-54	NA	NA	Provided by client
D.	Flash	HP	v250W	NA	NA	-

Note:

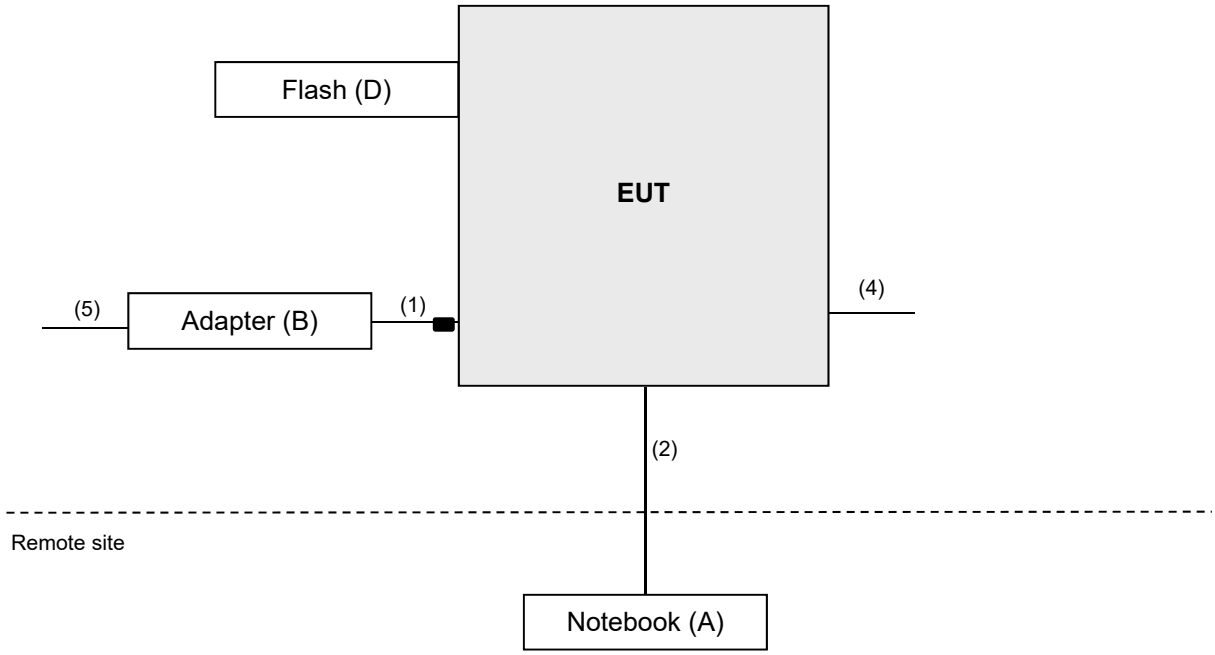
1. All power cords of the above support units are non-shielded (1.8m).
2. Items A acted as communication partner to transfer data.

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Power cable	1	1.86	N	1	Provided by client
2.	LAN cable	1	7.0	N	0	RJ45, Cat5e
3.	LAN cable	1	1.5	N	0	RJ45, Cat5e
4.	Console cable	1	1.5	N	0	Provided by labs
5.	AC Power cable	1	0.5	N	0	Provided by client (Optional) (Brand: KING-CORD, Model: KC-001)
6.	AC Power cable	1	0.6	N	0	Provided by client (Brand: I-SHENG, Model: SP-305B)

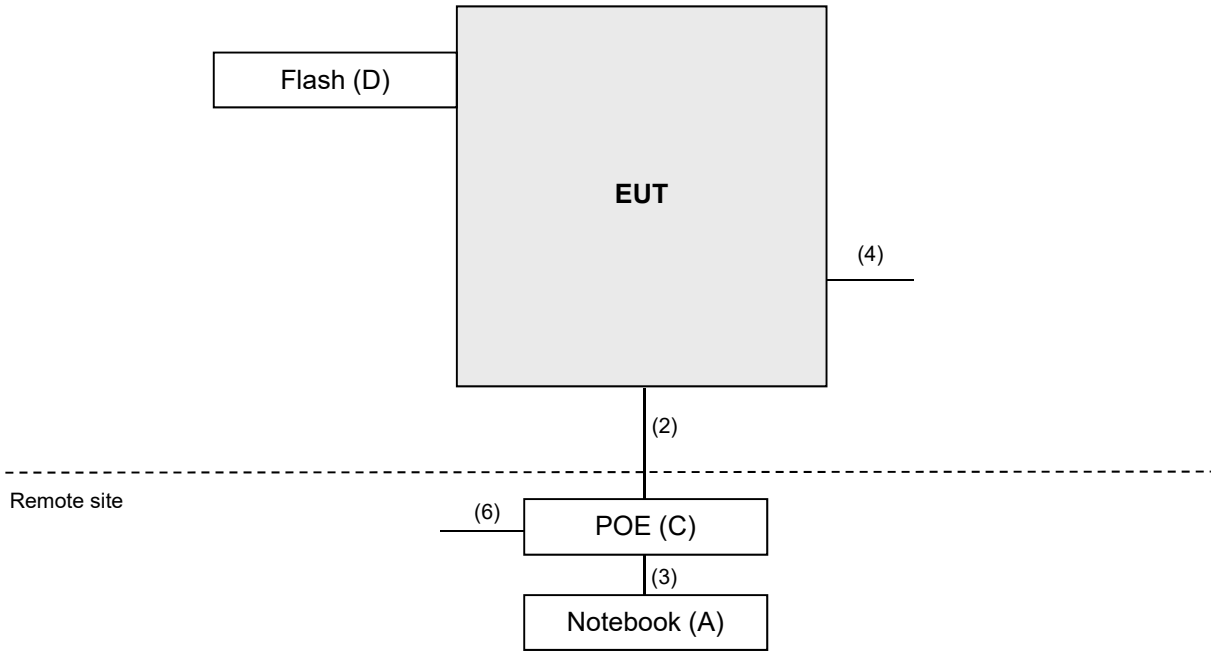
Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test

Test Mode A



Test Mode B



3.5 General Description of Applied Standards and References

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

Test standard:
FCC Part 15, Subpart C (15.247)
ANSI C63.10:2013

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

References Test Guidance:
KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102579	Jul. 07, 2020	Jul. 06, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 09, 2020 Jun. 07, 2021	Jun. 08, 2021 Jun. 06, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 04, 2020	Nov. 03, 2021
HORN Antenna SCHWARZBECK	9120D	209	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 16, 2020	Aug. 15, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 22, 2021	Mar. 21, 2022
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM- SM-8000	Cable-CH3-03 (309224+170907)	Aug. 16, 2020	Aug. 15, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/MY 55210005	Jul. 13, 2020	Jul. 12, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

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

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

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

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.

2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
   2G traffic radio (Radio 2)
   (802.11b: RBW = 1MHz, VBW = 3kHz; 802.11g: RBW = 1MHz, VBW = 1kHz; 802.11ax (HE20): RBW = 1MHz, VBW = 1kHz; 802.11ax (HE40): RBW = 1MHz, VBW = 1kHz)
   Scanning radio (Radio 3)
   (802.11b: RBW = 1MHz, VBW = 10Hz; 802.11g: RBW = 1MHz, VBW = 1kHz; 802.11n (VHT20): RBW = 1MHz, VBW = 1kHz; 802.11n (VHT40): RBW = 1MHz, VBW = 3kHz)

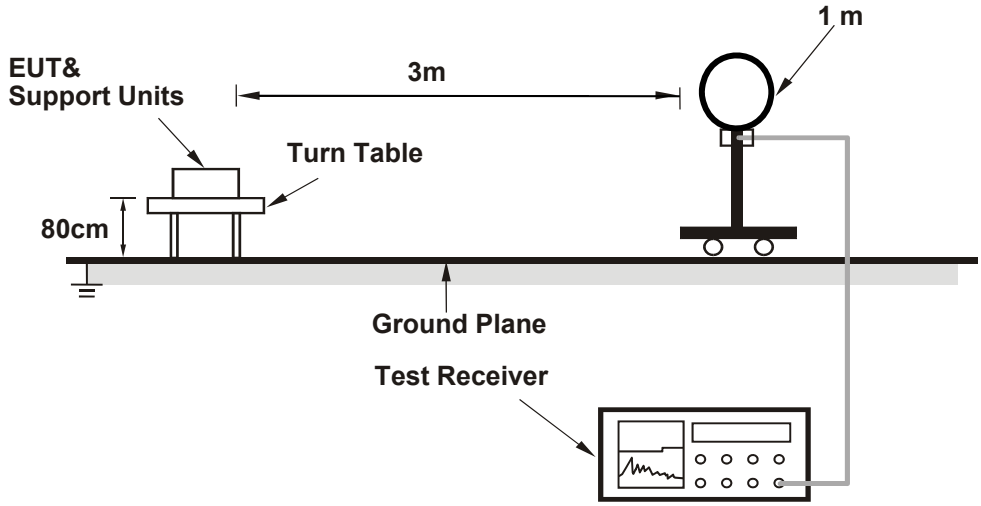
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

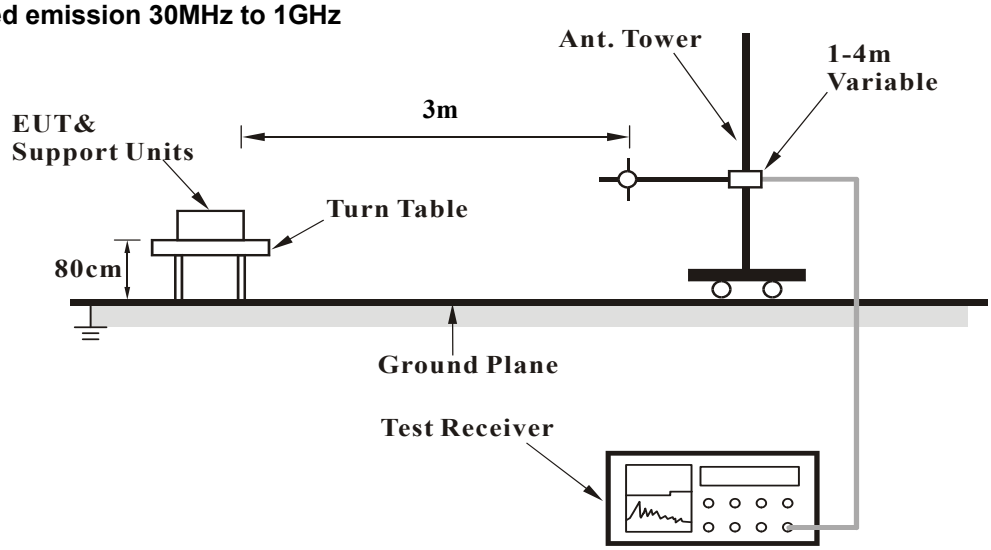
No deviation.

4.1.5 Test Setup

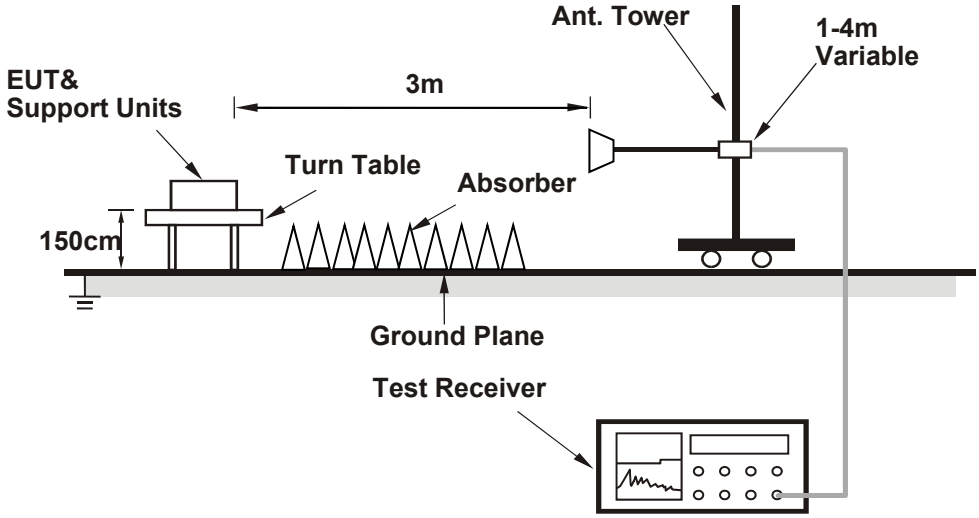
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.

b. Prepared a notebook to act as a communication partner and placed it outside of testing area.

c. The communication partner connected with EUT via an RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

2G traffic radio (Radio 2)

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.3 PK	74.0	-14.7	1.44 H	316	24.9	34.4
2	2390.00	47.4 AV	54.0	-6.6	1.44 H	316	13.0	34.4
3	*2412.00	110.5 PK			1.47 H	317	76.2	34.3
4	*2412.00	108.0 AV			1.47 H	317	73.7	34.3
5	4824.00	54.8 PK	74.0	-19.2	1.35 H	285	48.4	6.4
6	4824.00	51.3 AV	54.0	-2.7	1.35 H	285	44.9	6.4
7	12060.00	60.5 PK	74.0	-13.5	1.56 H	282	43.4	17.1
8	12060.00	52.7 AV	54.0	-1.3	1.56 H	282	35.6	17.1
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	58.8 PK	74.0	-15.2	1.02 V	311	24.4	34.4
2	2390.00	46.4 AV	54.0	-7.6	1.02 V	311	12.0	34.4
3	*2412.00	111.2 PK			1.00 V	318	76.9	34.3
4	*2412.00	108.7 AV			1.00 V	318	74.4	34.3
5	4824.00	54.4 PK	74.0	-19.6	1.61 V	43	48.0	6.4
6	4824.00	50.8 AV	54.0	-3.2	1.61 V	43	44.4	6.4
7	12060.00	59.8 PK	74.0	-14.2	1.72 V	358	42.7	17.1
8	12060.00	47.7 AV	54.0	-6.3	1.72 V	358	30.6	17.1

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	*2437.00	110.2 PK			1.57 H	333	75.9	34.3
2	*2437.00	107.5 AV			1.57 H	333	73.2	34.3
3	4874.00	51.3 PK	74.0	-22.7	2.19 H	298	45.5	5.8
4	4874.00	46.8 AV	54.0	-7.2	2.19 H	298	41.0	5.8
5	12185.00	60.7 PK	74.0	-13.3	1.48 H	39	43.1	17.6
6	12185.00	52.8 AV	54.0	-1.2	1.48 H	39	35.2	17.6
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	*2437.00	108.9 PK			1.47 V	131	74.6	34.3
2	*2437.00	106.5 AV			1.47 V	131	72.2	34.3
3	4874.00	52.7 PK	74.0	-21.3	1.99 V	40	46.9	5.8
4	4874.00	47.1 AV	54.0	-6.9	1.99 V	40	41.3	5.8
5	12185.00	60.1 PK	74.0	-13.9	1.77 V	356	42.5	17.6
6	12185.00	48.0 AV	54.0	-6.0	1.77 V	356	30.4	17.6

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	114.1 PK			1.50 H	281	79.7	34.4
2	*2462.00	111.6 AV			1.50 H	281	77.2	34.4
3	2483.50	59.6 PK	74.0	-14.4	1.52 H	269	25.2	34.4
4	2483.50	50.4 AV	54.0	-3.6	1.52 H	269	16.0	34.4
5	4924.00	52.0 PK	74.0	-22.0	1.44 H	293	46.3	5.7
6	4924.00	45.9 AV	54.0	-8.1	1.44 H	293	40.2	5.7
7	12310.00	60.8 PK	74.0	-13.2	2.28 H	129	43.6	17.2
8	12310.00	51.4 AV	54.0	-2.6	2.28 H	129	34.2	17.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.7 PK			3.34 V	8	78.3	34.4
2	*2462.00	110.4 AV			3.34 V	8	76.0	34.4
3	2483.50	60.9 PK	74.0	-13.1	3.29 V	6	26.5	34.4
4	2483.50	52.4 AV	54.0	-1.6	3.29 V	6	18.0	34.4
5	4924.00	53.2 PK	74.0	-20.8	2.15 V	342	47.5	5.7
6	4924.00	48.7 AV	54.0	-5.3	2.15 V	342	43.0	5.7
7	12310.00	59.7 PK	74.0	-14.3	1.62 V	10	42.5	17.2
8	12310.00	51.3 AV	54.0	-2.7	1.62 V	10	34.1	17.2

Remarks:

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

RF Mode	TX 802.11g	Channel	CH 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	66.4 PK	74.0	-7.6	1.02 H	306	32.0	34.4
2	2390.00	52.4 AV	54.0	-1.6	1.02 H	306	18.0	34.4
3	*2412.00	114.3 PK			1.44 H	293	80.0	34.3
4	*2412.00	104.5 AV			1.44 H	293	70.2	34.3
5	4824.00	55.2 PK	74.0	-18.8	1.51 H	286	48.8	6.4
6	4824.00	36.7 AV	54.0	-17.3	1.51 H	286	30.3	6.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.4 PK	74.0	-14.6	1.01 V	321	25.0	34.4
2	2390.00	46.7 AV	54.0	-7.3	1.01 V	321	12.3	34.4
3	*2412.00	107.9 PK			1.00 V	310	73.6	34.3
4	*2412.00	99.0 AV			1.00 V	310	64.7	34.3
5	4824.00	48.6 PK	74.0	-25.4	1.35 V	43	42.2	6.4
6	4824.00	35.9 AV	54.0	-18.1	1.35 V	43	29.5	6.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	120.5 PK			1.24 H	45	86.2	34.3
2	*2437.00	111.0 AV			1.24 H	45	76.7	34.3
3	4874.00	55.8 PK	74.0	-18.2	1.42 H	288	50.0	5.8
4	4874.00	37.5 AV	54.0	-16.5	1.42 H	288	31.7	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	116.8 PK			2.16 V	337	82.5	34.3
2	*2437.00	107.0 AV			2.16 V	337	72.7	34.3
3	4874.00	48.6 PK	74.0	-25.4	1.48 V	63	42.8	5.8
4	4874.00	36.0 AV	54.0	-18.0	1.48 V	63	30.2	5.8

Remarks:

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

RF Mode	TX 802.11g	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	115.3 PK			1.21 H	47	80.9	34.4
2	*2462.00	105.6 AV			1.21 H	47	71.2	34.4
3	2483.50	62.6 PK	74.0	-11.4	1.19 H	65	28.2	34.4
4	2483.50	52.4 AV	54.0	-1.6	1.19 H	65	18.0	34.4
5	4924.00	54.9 PK	74.0	-19.1	1.50 H	288	49.2	5.7
6	4924.00	36.9 AV	54.0	-17.1	1.50 H	288	31.2	5.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.1 PK			1.34 V	322	74.7	34.4
2	*2462.00	99.6 AV			1.34 V	322	65.2	34.4
3	2483.50	67.0 PK	74.0	-7.0	1.46 V	349	32.6	34.4
4	2483.50	51.9 AV	54.0	-2.1	1.46 V	349	17.5	34.4
5	4924.00	46.6 PK	74.0	-27.4	1.66 V	38	40.9	5.7
6	4924.00	33.6 AV	54.0	-20.4	1.66 V	38	27.9	5.7

Remarks:

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

RF Mode	TX 802.11ax (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	66.3 PK	74.0	-7.7	1.31 H	308	31.9	34.4
2	2390.00	52.4 AV	54.0	-1.6	1.31 H	308	18.0	34.4
3	*2412.00	114.2 PK			1.18 H	294	79.9	34.3
4	*2412.00	106.7 AV			1.18 H	294	72.4	34.3
5	4824.00	53.9 PK	74.0	-20.1	1.44 H	290	47.5	6.4
6	4824.00	36.3 AV	54.0	-17.7	1.44 H	290	29.9	6.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.9 PK	74.0	-10.1	1.39 V	360	29.5	34.4
2	2390.00	49.4 AV	54.0	-4.6	1.39 V	360	15.0	34.4
3	*2412.00	111.3 PK			1.35 V	356	77.0	34.3
4	*2412.00	99.3 AV			1.35 V	356	65.0	34.3
5	4824.00	46.9 PK	74.0	-27.1	1.50 V	59	40.5	6.4
6	4824.00	34.0 AV	54.0	-20.0	1.50 V	59	27.6	6.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	119.8 PK			1.52 H	283	85.5	34.3
2	*2437.00	108.3 AV			1.52 H	283	74.0	34.3
3	2483.50	67.3 PK	74.0	-6.7	1.00 H	307	32.9	34.4
4	2483.50	52.8 AV	54.0	-1.2	1.00 H	307	18.4	34.4
5	4874.00	54.7 PK	74.0	-19.3	1.69 H	277	48.9	5.8
6	4874.00	36.6 AV	54.0	-17.4	1.69 H	277	30.8	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	114.3 PK			1.41 V	314	80.0	34.3
2	*2437.00	102.3 AV			1.41 V	314	68.0	34.3
3	2483.50	61.4 PK	74.0	-12.6	1.40 V	311	27.0	34.4
4	2483.50	50.0 AV	54.0	-4.0	1.40 V	311	15.6	34.4
5	4874.00	47.1 PK	74.0	-26.9	1.61 V	48	41.3	5.8
6	4874.00	34.1 AV	54.0	-19.9	1.61 V	48	28.3	5.8

Remarks:

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

RF Mode	TX 802.11ax (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	114.6 PK			1.47 H	279	80.2	34.4
2	*2462.00	102.4 AV			1.47 H	279	68.0	34.4
3	2483.50	67.3 PK	74.0	-6.7	1.44 H	279	32.9	34.4
4	**2483.50**	**53.1 AV**	**54.0**	**-0.9**	**1.44 H**	**279**	**18.7**	**34.4**
5	4924.00	42.6 PK	74.0	-31.4	1.55 H	272	36.9	5.7
6	4924.00	35.6 AV	54.0	-18.4	1.55 H	272	29.9	5.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.4 PK			1.32 V	317	75.0	34.4
2	*2462.00	97.3 AV			1.32 V	317	62.9	34.4
3	2483.50	59.7 PK	74.0	-14.3	1.33 V	325	25.3	34.4
4	2483.50	49.0 AV	54.0	-5.0	1.33 V	325	14.6	34.4
5	4924.00	46.2 PK	74.0	-27.8	1.48 V	28	40.5	5.7
6	4924.00	33.6 AV	54.0	-20.4	1.48 V	28	27.9	5.7

Remarks:

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

RF Mode	TX 802.11ax (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	65.3 PK	74.0	-8.7	1.17 H	300	30.9	34.4
2	2390.00	52.6 AV	54.0	-1.4	1.17 H	300	18.2	34.4
3	*2422.00	113.2 PK			1.37 H	293	78.9	34.3
4	*2422.00	103.0 AV			1.37 H	293	68.7	34.3
5	4844.00	48.0 PK	74.0	-26.0	1.39 H	288	41.9	6.1
6	4844.00	34.7 AV	54.0	-19.3	1.39 H	288	28.6	6.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.9 PK	74.0	-12.1	1.20 V	344	27.5	34.4
2	2390.00	48.4 AV	54.0	-5.6	1.20 V	344	14.0	34.4
3	*2422.00	106.3 PK			1.16 V	357	72.0	34.3
4	*2422.00	94.3 AV			1.16 V	357	60.0	34.3
5	4844.00	47.2 PK	74.0	-26.8	1.52 V	44	41.1	6.1
6	4844.00	34.2 AV	54.0	-19.8	1.52 V	44	28.1	6.1

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	116.5 PK			1.30 H	297	82.2	34.3
2	*2437.00	103.6 AV			1.30 H	297	69.3	34.3
3	2483.50	64.4 PK	74.0	-9.6	1.44 H	286	30.0	34.4
4	2483.50	52.7 AV	54.0	-1.3	1.44 H	286	18.3	34.4
5	4874.00	47.9 PK	74.0	-26.1	1.55 H	266	42.1	5.8
6	4874.00	35.4 AV	54.0	-18.6	1.55 H	266	29.6	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.2 PK			1.40 V	356	74.9	34.3
2	*2437.00	96.6 AV			1.40 V	356	62.3	34.3
3	2483.50	61.1 PK	74.0	-12.9	1.44 V	335	26.7	34.4
4	2483.50	49.4 AV	54.0	-4.6	1.44 V	335	15.0	34.4
5	4874.00	46.1 PK	74.0	-27.9	1.50 V	37	40.3	5.8
6	4874.00	33.9 AV	54.0	-20.1	1.50 V	37	28.1	5.8

Remarks:

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

RF Mode	TX 802.11ax (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	112.1 PK			1.32 H	311	77.8	34.3
2	*2452.00	100.5 AV			1.32 H	311	66.2	34.3
3	2483.50	65.3 PK	74.0	-8.7	1.24 H	302	30.9	34.4
4	2483.50	52.5 AV	54.0	-1.5	1.24 H	302	18.1	34.4
5	4904.00	42.8 PK	74.0	-31.2	1.44 H	293	37.2	5.6
6	4904.00	33.8 AV	54.0	-20.2	1.44 H	293	28.2	5.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	106.7 PK			1.06 V	309	72.4	34.3
2	*2452.00	93.4 AV			1.06 V	309	59.1	34.3
3	2483.50	62.9 PK	74.0	-11.1	1.01 V	308	28.5	34.4
4	2483.50	12.6 AV	54.0	-41.4	1.01 V	308	14.8	-2.2
5	4904.00	46.4 PK	74.0	-27.6	1.33 V	50	40.8	5.6
6	4904.00	33.9 AV	54.0	-20.1	1.33 V	50	28.3	5.6

Remarks:

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

Scanning radio (Radio 3)

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.4 PK	74.0	-11.6	2.53 H	40	28.0	34.4
2	2390.00	53.0 AV	54.0	-1.0	2.53 H	40	18.6	34.4
3	*2412.00	114.8 PK			2.27 H	34	80.5	34.3
4	*2412.00	112.2 AV			2.27 H	34	77.9	34.3
5	4824.00	52.7 PK	74.0	-21.3	1.47 H	319	46.3	6.4
6	4824.00	46.8 AV	54.0	-7.2	1.47 H	319	40.4	6.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.5 PK	74.0	-13.5	3.50 V	323	26.1	34.4
2	2390.00	48.9 AV	54.0	-5.1	3.50 V	323	14.5	34.4
3	*2412.00	109.3 PK			3.61 V	341	75.0	34.3
4	*2412.00	106.7 AV			3.61 V	341	72.4	34.3
5	4824.00	53.7 PK	74.0	-20.3	1.60 V	43	47.3	6.4
6	4824.00	47.8 AV	54.0	-6.2	1.60 V	43	41.4	6.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	113.0 PK			2.49 H	31	78.7	34.3
2	*2437.00	110.5 AV			2.49 H	31	76.2	34.3
3	4874.00	53.3 PK	74.0	-20.7	1.45 H	320	47.5	5.8
4	4874.00	48.6 AV	54.0	-5.4	1.45 H	320	42.8	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.1 PK			3.49 V	6	74.8	34.3
2	*2437.00	106.6 AV			3.49 V	6	72.3	34.3
3	4874.00	55.0 PK	74.0	-19.0	2.00 V	39	49.2	5.8
4	4874.00	50.4 AV	54.0	-3.6	2.00 V	39	44.6	5.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.6 PK			2.94 H	42	78.2	34.4
2	*2462.00	110.1 AV			2.94 H	42	75.7	34.4
3	2484.00	61.7 PK	74.0	-12.3	2.56 H	35	27.3	34.4
4	2484.00	50.3 AV	54.0	-3.7	2.56 H	35	15.9	34.4
5	4924.00	51.7 PK	74.0	-22.3	1.88 H	324	46.0	5.7
6	4924.00	46.1 AV	54.0	-7.9	1.88 H	324	40.4	5.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	107.9 PK			3.00 V	13	73.5	34.4
2	*2462.00	105.4 AV			3.00 V	13	71.0	34.4
3	2484.00	59.4 PK	74.0	-14.6	3.21 V	357	25.0	34.4
4	2484.00	48.4 AV	54.0	-5.6	3.21 V	357	14.0	34.4
5	4924.00	52.9 PK	74.0	-21.1	2.05 V	43	47.2	5.7
6	4924.00	48.0 AV	54.0	-6.0	2.05 V	43	42.3	5.7

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.4 PK	74.0	-7.6	2.58 H	34	32.0	34.4
2	2390.00	52.4 AV	54.0	-1.6	2.58 H	34	18.0	34.4
3	*2412.00	112.5 PK			3.03 H	35	78.2	34.3
4	*2412.00	102.4 AV			3.03 H	35	68.1	34.3
5	4824.00	48.4 PK	74.0	-25.6	1.59 H	297	42.0	6.4
6	4824.00	35.4 AV	54.0	-18.6	1.59 H	297	29.0	6.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.9 PK	74.0	-12.1	1.23 V	341	27.5	34.4
2	2390.00	48.0 AV	54.0	-6.0	1.23 V	341	13.6	34.4
3	*2412.00	107.2 PK			1.07 V	335	72.9	34.3
4	*2412.00	96.6 AV			1.07 V	335	62.3	34.3
5	4824.00	49.2 PK	74.0	-24.8	1.69 V	53	42.8	6.4
6	4824.00	36.1 AV	54.0	-17.9	1.69 V	53	29.7	6.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	64.8 PK	74.0	-9.2	2.51 H	35	30.4	34.4
2	2390.00	52.3 AV	54.0	-1.7	2.51 H	35	17.9	34.4
3	*2437.00	112.5 PK			2.45 H	34	78.2	34.3
4	*2437.00	101.8 AV			2.45 H	34	67.5	34.3
5	2483.50	64.9 PK	74.0	-9.1	2.57 H	39	30.5	34.4
6	2483.50	52.9 AV	54.0	-1.1	2.57 H	39	18.5	34.4
7	4874.00	47.9 PK	74.0	-26.1	1.61 H	285	42.1	5.8
8	4874.00	34.6 AV	54.0	-19.4	1.61 H	285	28.8	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.7 PK	74.0	-14.3	1.11 V	341	25.3	34.4
2	2390.00	47.4 AV	54.0	-6.6	1.11 V	341	13.0	34.4
3	*2437.00	106.9 PK			1.02 V	336	72.6	34.3
4	*2437.00	97.0 AV			1.02 V	336	62.7	34.3
5	2483.50	61.4 PK	74.0	-12.6	1.09 V	337	27.0	34.4
6	2483.50	50.2 AV	54.0	-3.8	1.09 V	337	15.8	34.4
7	4874.00	48.8 PK	74.0	-25.2	1.72 V	49	43.0	5.8
8	4874.00	35.6 AV	54.0	-18.4	1.72 V	49	29.8	5.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.4 PK			2.43 H	37	76.0	34.4
2	*2462.00	100.5 AV			2.43 H	37	66.1	34.4
3	2483.50	67.8 PK	74.0	-6.2	2.63 H	43	33.4	34.4
4	2483.50	52.4 AV	54.0	-1.6	2.63 H	43	18.0	34.4
5	4924.00	47.6 PK	74.0	-26.4	1.57 H	301	41.9	5.7
6	4924.00	34.4 AV	54.0	-19.6	1.57 H	301	28.7	5.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	105.6 PK			1.05 V	336	71.2	34.4
2	*2462.00	95.7 AV			1.05 V	336	61.3	34.4
3	2483.50	62.4 PK	74.0	-11.6	1.11 V	339	28.0	34.4
4	2483.50	49.6 AV	54.0	-4.4	1.11 V	339	15.2	34.4
5	4924.00	48.4 PK	74.0	-25.6	1.65 V	50	42.7	5.7
6	4924.00	35.3 AV	54.0	-18.7	1.65 V	50	29.6	5.7

Remarks:

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

RF Mode	TX 802.11n (VHT20)	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	66.1 PK	74.0	-7.9	2.53 H	40	31.7	34.4
2	2390.00	52.9 AV	54.0	-1.1	2.53 H	40	18.5	34.4
3	*2412.00	111.5 PK			2.43 H	37	77.2	34.3
4	*2412.00	101.1 AV			2.43 H	37	66.8	34.3
5	4824.00	48.6 PK	74.0	-25.4	1.68 H	309	42.2	6.4
6	4824.00	35.5 AV	54.0	-18.5	1.68 H	309	29.1	6.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.2 PK	74.0	-13.8	1.13 V	331	25.8	34.4
2	2390.00	48.8 AV	54.0	-5.2	1.13 V	331	14.4	34.4
3	*2412.00	107.3 PK			1.06 V	336	73.0	34.3
4	*2412.00	96.9 AV			1.06 V	336	62.6	34.3
5	4824.00	49.4 PK	74.0	-24.6	1.75 V	56	43.0	6.4
6	4824.00	36.2 AV	54.0	-17.8	1.75 V	56	29.8	6.4

Remarks:

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

RF Mode	TX 802.11n (VHT20)	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	63.6 PK	74.0	-10.4	2.81 H	39	29.2	34.4
2	2390.00	51.5 AV	54.0	-2.5	2.81 H	39	17.1	34.4
3	*2437.00	112.3 PK			2.45 H	37	78.0	34.3
4	*2437.00	102.2 AV			2.45 H	37	67.9	34.3
5	2483.50	64.4 PK	74.0	-9.6	2.90 H	40	30.0	34.4
6	2483.50	52.7 AV	54.0	-1.3	2.90 H	40	18.3	34.4
7	4874.00	48.0 PK	74.0	-26.0	1.53 H	292	42.2	5.8
8	4874.00	34.9 AV	54.0	-19.1	1.53 H	292	29.1	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.2 PK	74.0	-13.8	1.21 V	341	25.8	34.4
2	2390.00	47.6 AV	54.0	-6.4	1.21 V	341	13.2	34.4
3	*2437.00	107.9 PK			1.26 V	338	73.6	34.3
4	*2437.00	97.7 AV			1.26 V	338	63.4	34.3
5	2483.50	60.6 PK	74.0	-13.4	1.20 V	339	26.2	34.4
6	2483.50	49.8 AV	54.0	-4.2	1.20 V	339	15.4	34.4
7	4874.00	48.6 PK	74.0	-25.4	1.72 V	47	42.8	5.8
8	4874.00	35.7 AV	54.0	-18.3	1.72 V	47	29.9	5.8

Remarks:

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

RF Mode	TX 802.11n (VHT20)	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	109.8 PK			2.40 H	37	75.4	34.4
2	*2462.00	99.6 AV			2.40 H	37	65.2	34.4
3	2483.50	65.7 PK	74.0	-8.3	2.65 H	45	31.3	34.4
4	2483.50	52.4 AV	54.0	-1.6	2.65 H	45	18.0	34.4
5	4924.00	47.9 PK	74.0	-26.1	1.67 H	299	42.2	5.7
6	4924.00	34.6 AV	54.0	-19.4	1.67 H	299	28.9	5.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	104.6 PK			1.01 V	334	70.2	34.4
2	*2462.00	94.7 AV			1.01 V	334	60.3	34.4
3	2483.50	61.8 PK	74.0	-12.2	1.08 V	330	27.4	34.4
4	2483.50	49.7 AV	54.0	-4.3	1.08 V	330	15.3	34.4
5	4924.00	48.6 PK	74.0	-25.4	1.75 V	56	42.9	5.7
6	4924.00	35.2 AV	54.0	-18.8	1.75 V	56	29.5	5.7

Remarks:

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

RF Mode	TX 802.11n (VHT40)	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	64.4 PK	74.0	-9.6	2.03 H	36	30.0	34.4
2	2390.00	52.4 AV	54.0	-1.6	2.03 H	36	18.0	34.4
3	*2422.00	106.4 PK			2.27 H	37	72.1	34.3
4	*2422.00	95.8 AV			2.27 H	37	61.5	34.3
5	4844.00	49.3 PK	74.0	-24.7	1.71 H	293	43.2	6.1
6	4844.00	35.4 AV	54.0	-18.6	1.71 H	293	29.3	6.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.1 PK	74.0	-11.9	1.17 V	330	27.7	34.4
2	2390.00	48.8 AV	54.0	-5.2	1.17 V	330	14.4	34.4
3	*2422.00	101.6 PK			1.07 V	336	67.3	34.3
4	*2422.00	91.1 AV			1.07 V	336	56.8	34.3
5	4844.00	49.6 PK	74.0	-24.4	1.63 V	57	43.5	6.1
6	4844.00	35.7 AV	54.0	-18.3	1.63 V	57	29.6	6.1

Remarks:

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

RF Mode	TX 802.11n (VHT40)	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	63.9 PK	74.0	-10.1	2.52 H	34	29.5	34.4
2	2390.00	51.1 AV	54.0	-2.9	2.52 H	34	16.7	34.4
3	*2437.00	107.3 PK			2.41 H	38	73.0	34.3
4	*2437.00	96.4 AV			2.41 H	38	62.1	34.3
5	2483.50	66.2 PK	74.0	-7.8	2.62 H	43	31.8	34.4
6	2483.50	52.3 AV	54.0	-1.7	2.62 H	43	17.9	34.4
7	4874.00	49.1 PK	74.0	-24.9	1.63 H	305	43.3	5.8
8	4874.00	35.0 AV	54.0	-19.0	1.63 H	305	29.2	5.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.9 PK	74.0	-14.1	1.14 V	330	25.5	34.4
2	2390.00	47.7 AV	54.0	-6.3	1.14 V	330	13.3	34.4
3	*2437.00	103.1 PK			1.06 V	333	68.8	34.3
4	*2437.00	92.2 AV			1.06 V	333	57.9	34.3
5	2483.50	61.1 PK	74.0	-12.9	1.05 V	339	26.7	34.4
6	2483.50	49.6 AV	54.0	-4.4	1.05 V	339	15.2	34.4
7	4874.00	49.5 PK	74.0	-24.5	1.75 V	46	43.7	5.8
8	4874.00	35.4 AV	54.0	-18.6	1.75 V	46	29.6	5.8

Remarks:

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

RF Mode	TX 802.11n (VHT40)	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	103.8 PK			2.43 H	32	69.5	34.3
2	*2452.00	92.7 AV			2.43 H	32	58.4	34.3
3	2483.50	65.6 PK	74.0	-8.4	2.67 H	38	31.2	34.4
4	2483.50	52.9 AV	54.0	-1.1	2.67 H	38	18.5	34.4
5	4904.00	48.4 PK	74.0	-25.6	1.63 H	307	42.8	5.6
6	4904.00	34.5 AV	54.0	-19.5	1.63 H	307	28.9	5.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	99.2 PK			1.02 V	335	64.9	34.3
2	*2452.00	88.7 AV			1.02 V	335	54.4	34.3
3	2483.50	61.8 PK	74.0	-12.2	1.11 V	330	27.4	34.4
4	2483.50	50.2 AV	54.0	-3.8	1.11 V	330	15.8	34.4
5	4904.00	49.0 PK	74.0	-25.0	1.77 V	59	43.4	5.6
6	4904.00	35.2 AV	54.0	-18.8	1.77 V	59	29.6	5.6

Remarks:

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

Below 1GHz worst-case data:

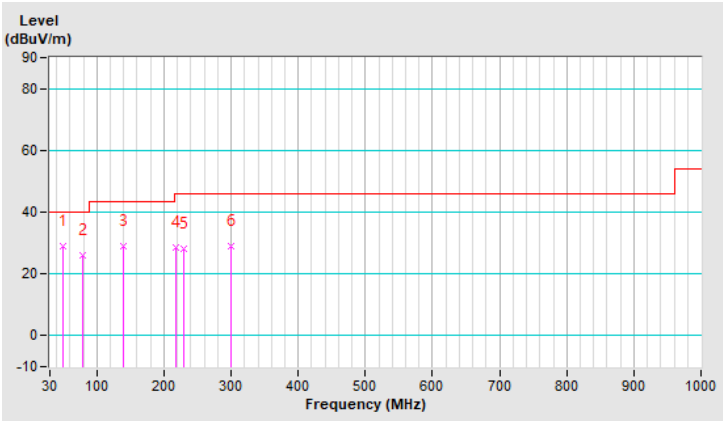
2G traffic radio (Radio 2)

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

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	49.68	28.9 QP	40.0	-11.1	1.51 H	197	38.0	-9.1
2	79.20	26.0 QP	40.0	-14.0	1.51 H	277	39.1	-13.1
3	139.65	28.9 QP	43.5	-14.6	2.00 H	125	37.9	-9.0
4	216.97	28.5 QP	46.0	-17.5	1.00 H	149	39.1	-10.6
5	229.62	28.3 QP	46.0	-17.7	1.51 H	166	38.7	-10.4
6	299.91	28.9 QP	46.0	-17.1	1.00 H	321	35.5	-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 of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

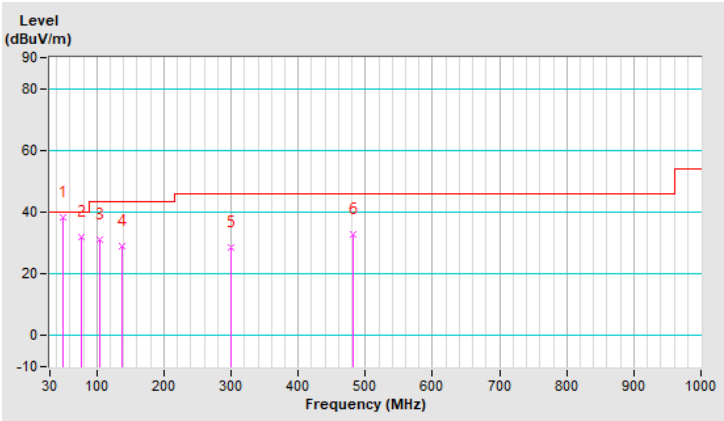


RF Mode	TX 802.11g	Channel	CH 6：2437 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	A		

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	49.68	38.3 QP	40.0	-1.7	1.49 V	269	47.4	-9.1
2	76.39	32.1 QP	40.0	-7.9	1.00 V	297	44.6	-12.5
3	104.51	31.1 QP	43.5	-12.4	1.00 V	101	43.6	-12.5
4	138.25	28.9 QP	43.5	-14.6	1.49 V	16	38.0	-9.1
5	299.91	28.5 QP	46.0	-17.5	1.49 V	295	35.1	-6.6
6	481.26	32.7 QP	46.0	-13.3	1.00 V	76	35.3	-2.6

Remarks:

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

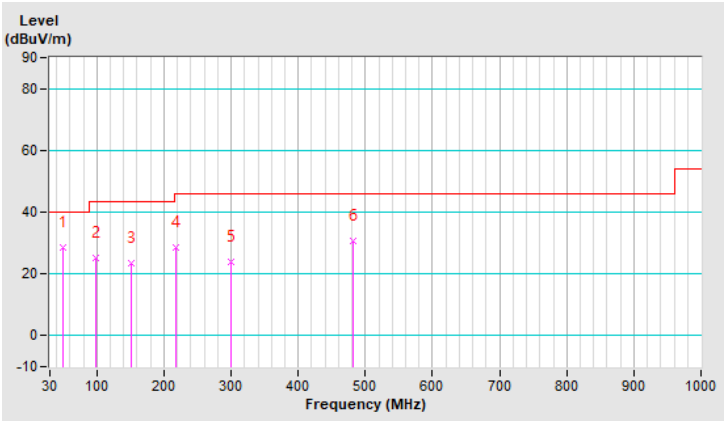


RF Mode	TX 802.11g	Channel	CH 6：2437 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	B		

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	49.68	28.6 QP	40.0	-11.4	1.00 H	95	37.7	-9.1
2	97.48	25.0 QP	43.5	-18.5	1.50 H	291	38.7	-13.7
3	150.90	23.4 QP	43.5	-20.1	1.50 H	281	32.0	-8.6
4	216.97	28.7 QP	46.0	-17.3	2.00 H	153	39.3	-10.6
5	299.91	23.7 QP	46.0	-22.3	1.00 H	333	30.3	-6.6
6	481.26	30.6 QP	46.0	-15.4	1.50 H	351	33.2	-2.6

Remarks:

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

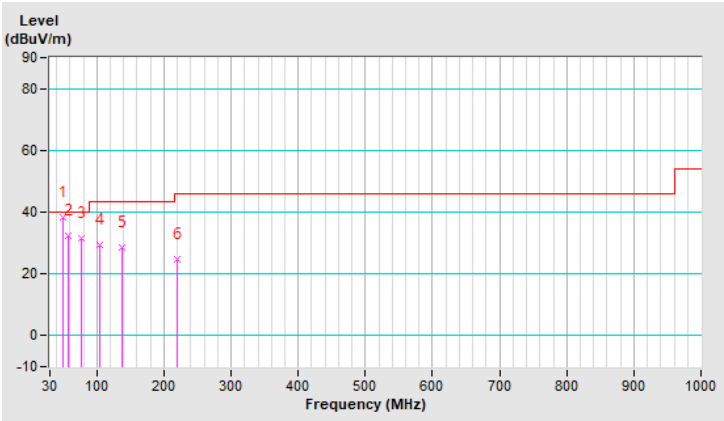


RF Mode	TX 802.11g	Channel	CH 6：2437 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	B		

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	49.68	38.1 QP	40.0	-1.9	1.00 V	5	47.2	-9.1
2	56.71	32.2 QP	40.0	-7.8	1.50 V	69	41.5	-9.3
3	76.39	31.5 QP	40.0	-8.5	1.50 V	345	44.0	-12.5
4	104.51	29.2 QP	43.5	-14.3	1.00 V	6	41.7	-12.5
5	138.25	28.6 QP	43.5	-14.9	1.50 V	36	37.7	-9.1
6	219.78	24.8 QP	46.0	-21.2	1.00 V	172	35.3	-10.5

Remarks:

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



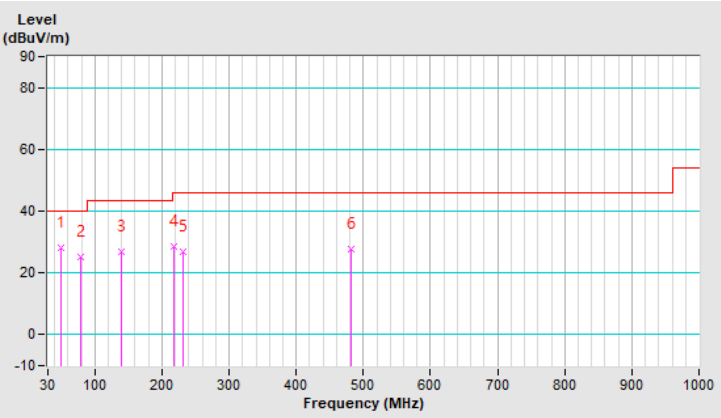
Scanning radio (Radio 3)

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

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	49.68	28.3 QP	40.0	-11.7	1.00 H	199	37.4	-9.1
2	79.20	25.2 QP	40.0	-14.8	1.50 H	267	38.3	-13.1
3	139.65	26.9 QP	43.5	-16.6	1.50 H	166	35.9	-9.0
4	216.97	28.5 QP	46.0	-17.5	2.00 H	270	39.1	-10.6
5	231.03	27.0 QP	46.0	-19.0	1.50 H	168	37.3	-10.3
6	481.26	27.7 QP	46.0	-18.3	1.00 H	21	30.3	-2.6

Remarks:

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

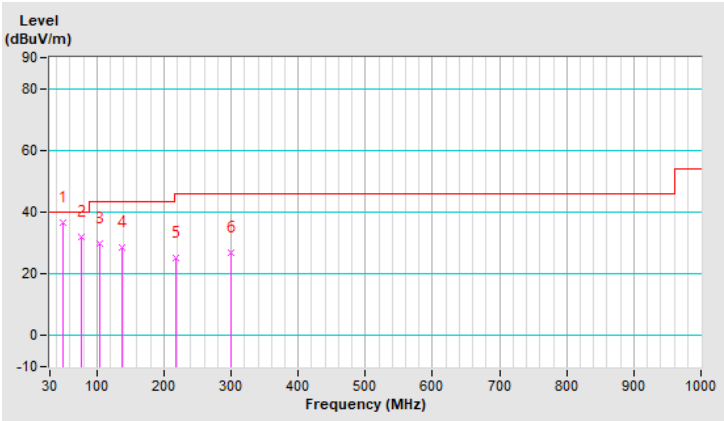


RF Mode	TX 802.11b	Channel	CH 6：2437 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	A		

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	49.68	36.5 QP	40.0	-3.5	1.00 V	342	45.6	-9.1
2	76.39	32.0 QP	40.0	-8.0	1.50 V	219	44.5	-12.5
3	104.51	29.8 QP	43.5	-13.7	2.00 V	85	42.3	-12.5
4	138.25	28.6 QP	43.5	-14.9	1.50 V	56	37.7	-9.1
5	216.97	25.3 QP	46.0	-20.7	1.00 V	174	35.9	-10.6
6	299.91	26.9 QP	46.0	-19.1	1.50 V	280	33.5	-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 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.

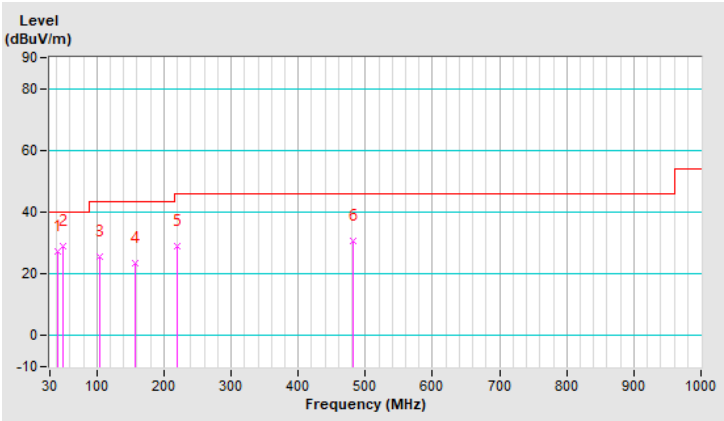


RF Mode	TX 802.11b	Channel	CH 6：2437 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	B		

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	41.25	27.5 QP	40.0	-12.5	1.00 H	286	36.8	-9.3
2	49.68	28.8 QP	40.0	-11.2	1.50 H	79	37.9	-9.1
3	104.51	25.6 QP	43.5	-17.9	1.50 H	325	38.1	-12.5
4	157.93	23.6 QP	43.5	-19.9	1.00 H	263	32.0	-8.4
5	219.78	28.8 QP	46.0	-17.2	1.50 H	146	39.3	-10.5
6	481.26	30.7 QP	46.0	-15.3	2.00 H	355	33.3	-2.6

Remarks:

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

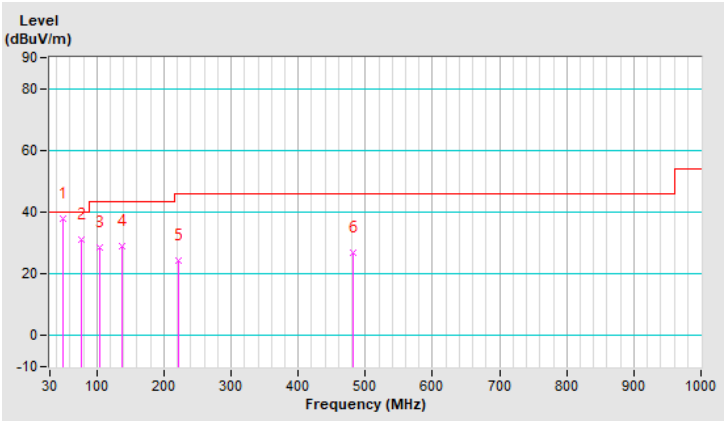


RF Mode	TX 802.11b	Channel	CH 6：2437 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	B		

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	49.68	37.7 QP	40.0	-2.3	1.50 V	355	46.8	-9.1
2	76.39	31.1 QP	40.0	-8.9	1.50 V	45	43.6	-12.5
3	104.51	28.7 QP	43.5	-14.8	1.00 V	75	41.2	-12.5
4	138.25	28.9 QP	43.5	-14.6	1.50 V	57	38.0	-9.1
5	222.59	24.5 QP	46.0	-21.5	1.00 V	157	35.1	-10.6
6	481.26	27.0 QP	46.0	-19.0	2.00 V	98	29.6	-2.6

Remarks:

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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2020	Sep. 03, 2021
LISN ROHDE & SCHWARZ (EUT)	NNBL 8226-2	8226-142	Jul. 31, 2020	Jul. 30, 2021
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 18, 2020	Aug. 17, 2021
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2 (Conduction 2).
3. The VCCI Site Registration No. is C-12047.

4.2.3 Test Procedures

a. 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.

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

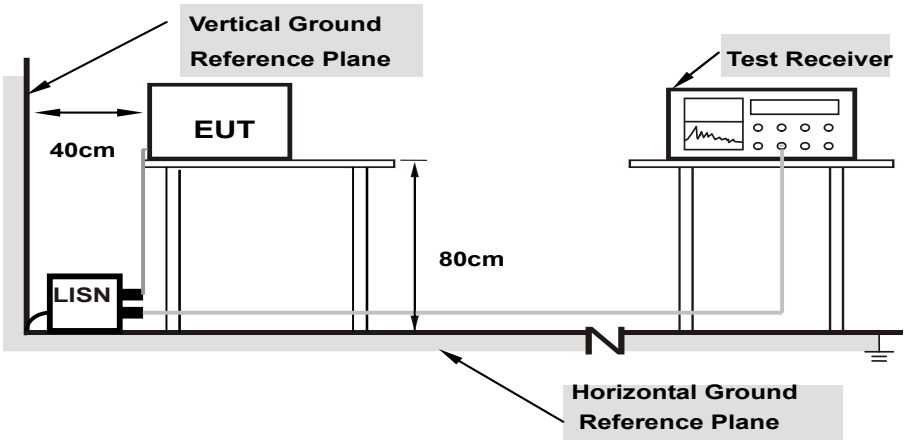
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

Worst-case data:

2G traffic radio (Radio 2)

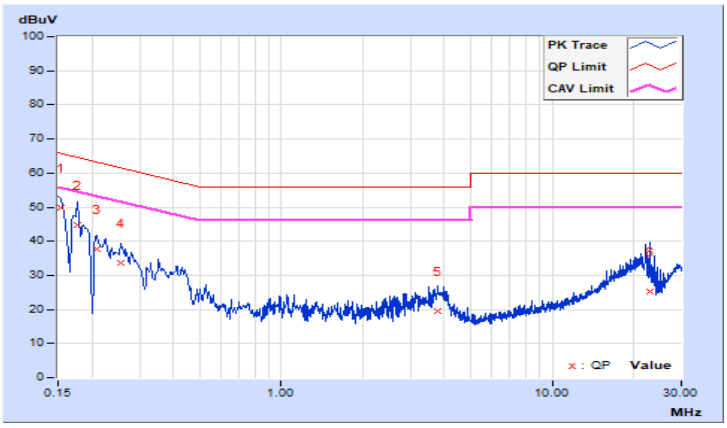
802.11g

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.07	39.73	24.79	49.80	34.86	65.79	55.79	-15.99	-20.93
2	0.17737	10.07	34.70	18.61	44.77	28.68	64.61	54.61	-19.84	-25.93
3	0.20838	10.08	27.59	10.48	37.67	20.56	63.27	53.27	-25.60	-32.71
4	0.25557	10.08	23.61	12.53	33.69	22.61	61.57	51.57	-27.88	-28.96
5	3.77848	10.21	9.36	1.77	19.57	11.98	56.00	46.00	-36.43	-34.02
6	22.89838	10.38	14.74	5.84	25.12	16.22	60.00	50.00	-34.88	-33.78

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.

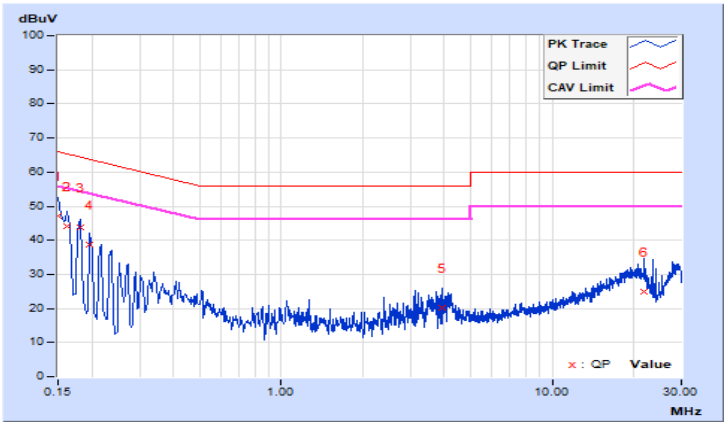


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	37.22	22.56	47.30	32.64	66.00	56.00	-18.70	-23.36
2	0.16173	10.08	34.10	16.09	44.18	26.17	65.37	55.37	-21.19	-29.20
3	0.18122	10.08	33.67	17.98	43.75	28.06	64.43	54.43	-20.68	-26.37
4	0.19692	10.08	28.49	11.24	38.57	21.32	63.74	53.74	-25.17	-32.42
5	3.94270	10.26	10.02	2.54	20.28	12.80	56.00	46.00	-35.72	-33.20
6	21.94825	10.60	14.27	5.80	24.87	16.40	60.00	50.00	-35.13	-33.60

Remarks:

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

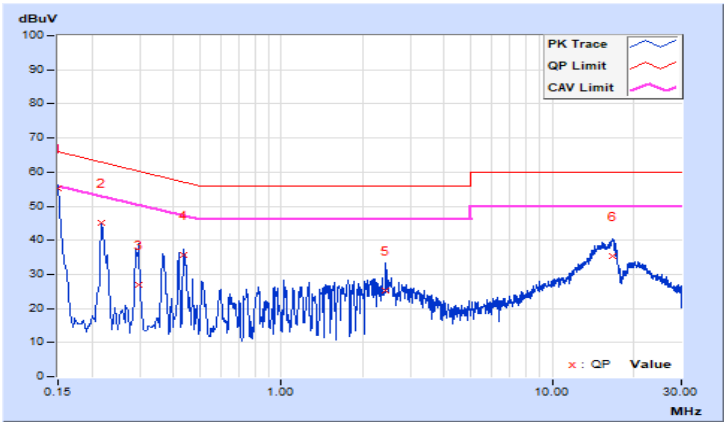


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**10.07**	**45.31**	**36.01**	**55.38**	**46.08**	**66.00**	**56.00**	**-10.62**	**-9.92**
2	0.21647	10.08	34.99	21.78	45.07	31.86	62.95	52.95	-17.88	-21.09
3	0.29858	10.08	16.87	1.22	26.95	11.30	60.28	50.28	-33.33	-38.98
4	0.43543	10.09	25.52	18.63	35.61	28.72	57.15	47.15	-21.54	-18.43
5	2.42953	10.17	15.23	1.35	25.40	11.52	56.00	46.00	-30.60	-34.48
6	16.70103	10.40	24.97	11.78	35.37	22.18	60.00	50.00	-24.63	-27.82

Remarks:

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

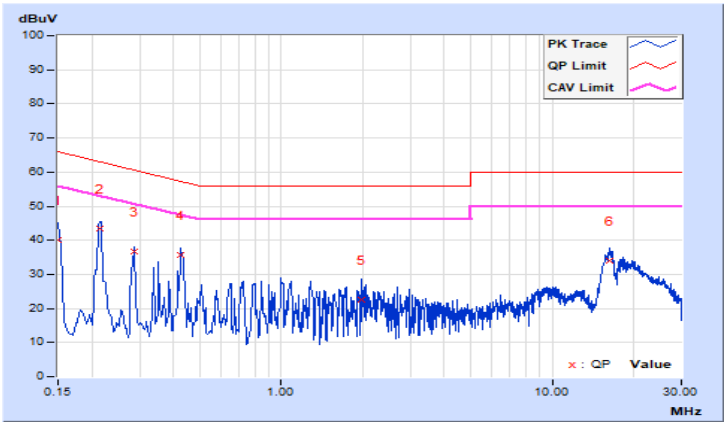


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	30.11	20.88	40.19	30.96	66.00	56.00	-25.81	-25.04
2	0.21282	10.08	33.25	24.22	43.33	34.30	63.09	53.09	-19.76	-18.79
3	0.28663	10.09	26.47	15.24	36.56	25.33	60.62	50.62	-24.06	-25.29
4	0.42761	10.10	25.45	18.03	35.55	28.13	57.30	47.30	-21.75	-19.17
5	1.98379	10.17	12.45	2.02	22.62	12.19	56.00	46.00	-33.38	-33.81
6	16.31785	10.56	23.39	10.58	33.95	21.14	60.00	50.00	-26.05	-28.86

Remarks:

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



Scanning radio (Radio 3)

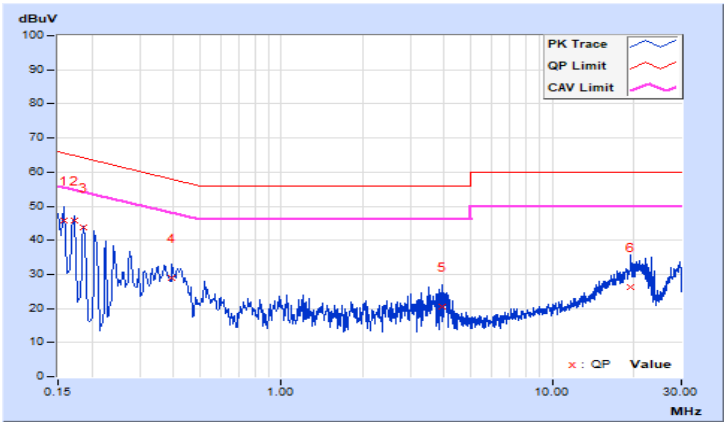
802.11b

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15782	10.07	35.64	18.63	45.71	28.70	65.58	55.58	-19.87	-26.88
2	0.17328	10.07	35.56	20.57	45.63	30.64	64.80	54.80	-19.17	-24.16
3	0.18519	10.08	33.78	18.01	43.86	28.09	64.25	54.25	-20.39	-26.16
4	0.39633	10.09	18.74	11.15	28.83	21.24	57.93	47.93	-29.10	-26.69
5	3.93879	10.22	10.38	1.93	20.60	12.15	56.00	46.00	-35.40	-33.85
6	19.53578	10.44	15.93	8.76	26.37	19.20	60.00	50.00	-33.63	-30.80

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.

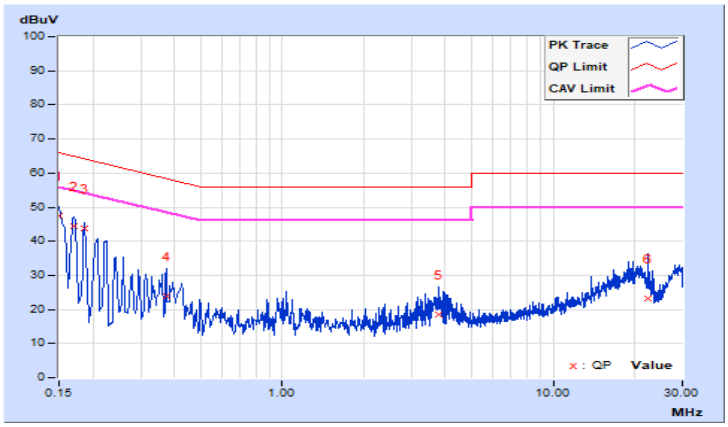


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	37.28	23.33	47.36	33.41	66.00	56.00	-18.64	-22.59
2	0.16955	10.08	34.26	17.42	44.34	27.50	64.98	54.98	-20.64	-27.48
3	0.18519	10.08	33.53	17.80	43.61	27.88	64.25	54.25	-20.64	-26.37
4	0.37287	10.10	13.84	5.84	23.94	15.94	58.44	48.44	-34.50	-32.50
5	3.78239	10.25	8.35	1.92	18.60	12.17	56.00	46.00	-37.40	-33.83
6	22.52693	10.58	12.75	3.70	23.33	14.28	60.00	50.00	-36.67	-35.72

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.

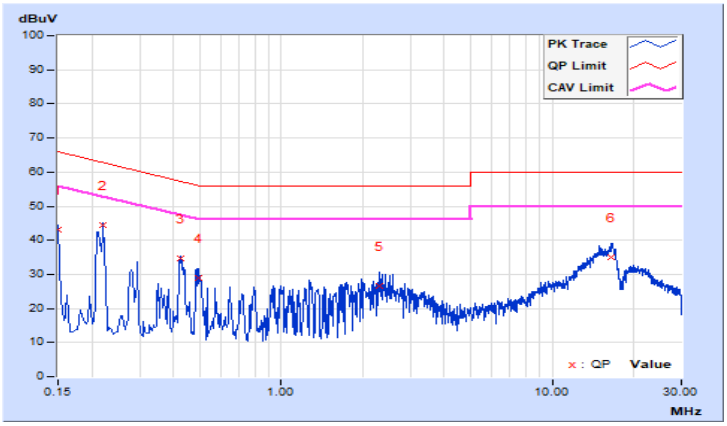


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.07	33.11	23.67	43.18	33.74	66.00	56.00	-22.82	-22.26
2	0.22038	10.08	34.22	21.94	44.30	32.02	62.80	52.80	-18.50	-20.78
3	0.42370	10.09	24.50	13.49	34.59	23.58	57.38	47.38	-22.79	-23.80
4	0.49799	10.10	18.92	10.00	29.02	20.10	56.03	46.03	-27.01	-25.93
5	2.30441	10.17	16.36	2.36	26.53	12.53	56.00	46.00	-29.47	-33.47
6	16.50944	10.40	24.77	11.54	35.17	21.94	60.00	50.00	-24.83	-28.06

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.

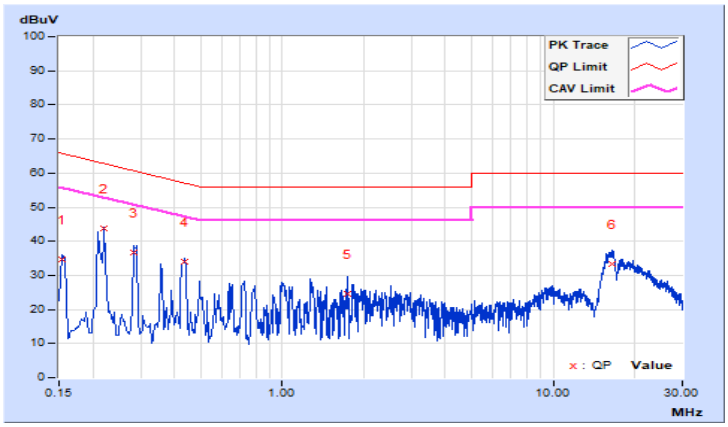


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.08	24.75	8.43	34.83	18.51	65.79	55.79	-30.96	-37.28
2	0.22038	10.08	33.54	20.42	43.62	30.50	62.80	52.80	-19.18	-22.30
3	0.28294	10.09	26.67	12.86	36.76	22.95	60.73	50.73	-23.97	-27.78
4	0.43543	10.10	23.77	18.88	33.87	28.98	57.15	47.15	-23.28	-18.17
5	1.74919	10.16	14.58	2.57	24.74	12.73	56.00	46.00	-31.26	-33.27
6	16.48207	10.56	22.90	10.60	33.46	21.16	60.00	50.00	-26.54	-28.84

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.

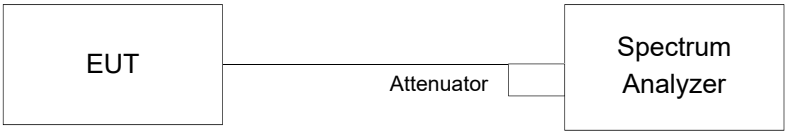


4.3 6dB Bandwidth Measurement

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

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

b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = peak.

c. Trace mode = max hold.

d. Sweep = auto couple.

e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

2G traffic radio (Radio 2)

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	8.11	7.15	7.62	7.10	0.50	Pass
6	2437	8.09	7.60	8.03	7.59	0.50	Pass
11	2462	7.58	8.05	7.57	7.58	0.50	Pass

802.11g

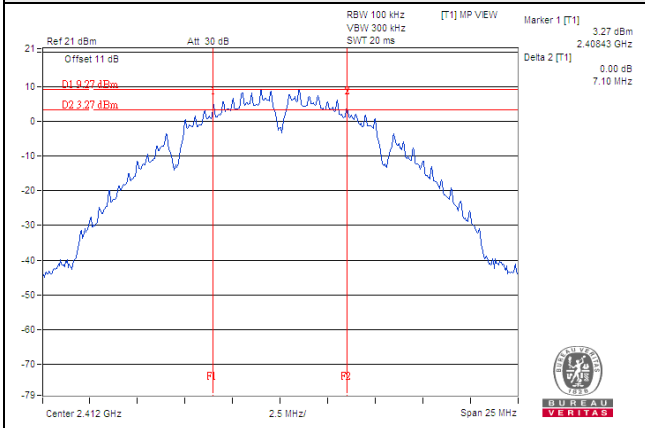
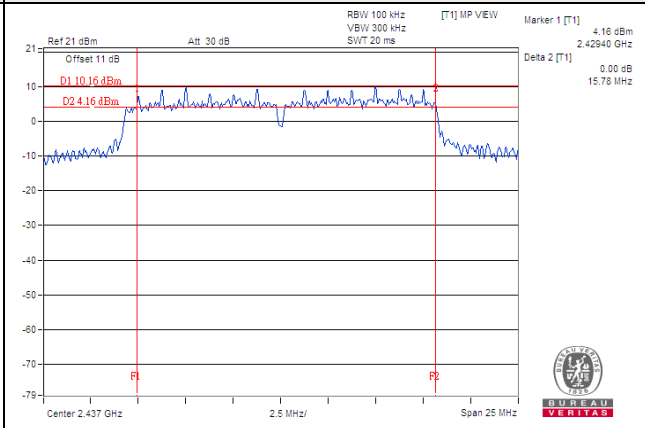
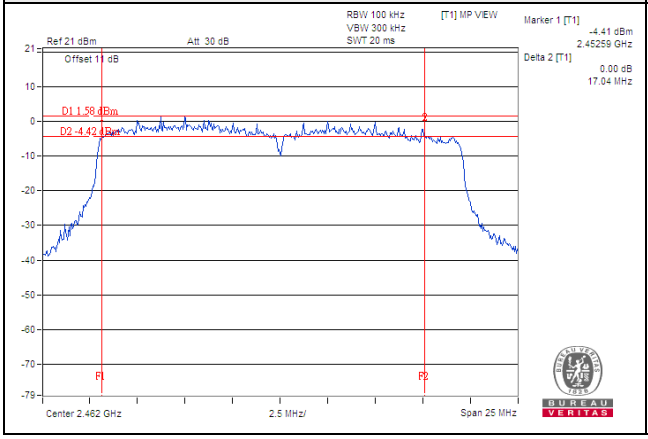
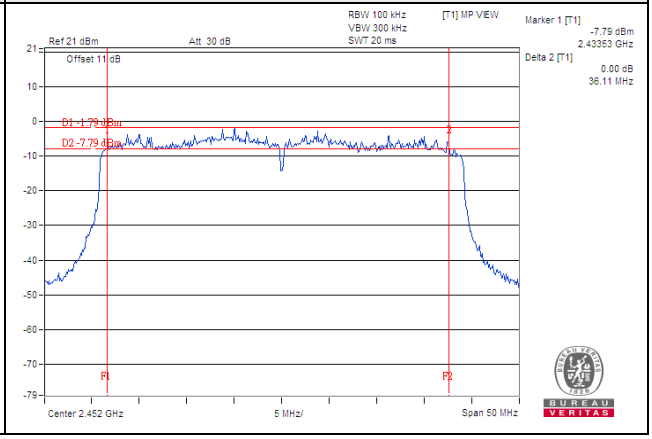
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	16.12	16.34	16.35	16.34	0.50	Pass
6	2437	15.80	15.78	15.80	15.80	0.50	Pass
11	2462	16.39	16.40	16.39	16.40	0.50	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	18.78	18.71	18.78	18.69	0.50	Pass
6	2437	18.70	18.73	18.66	18.83	0.50	Pass
11	2462	17.79	17.28	17.04	18.55	0.50	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	37.28	37.46	37.44	37.68	0.50	Pass
6	2437	37.76	37.19	37.44	37.51	0.50	Pass
9	2452	36.40	36.11	36.76	36.48	0.50	Pass

Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11ax (HE20)	802.11ax (HE40)
	

Scanning radio (Radio 3)

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	7.58	0.50	Pass
6	2437	7.13	0.50	Pass
11	2462	8.05	0.50	Pass

802.11g

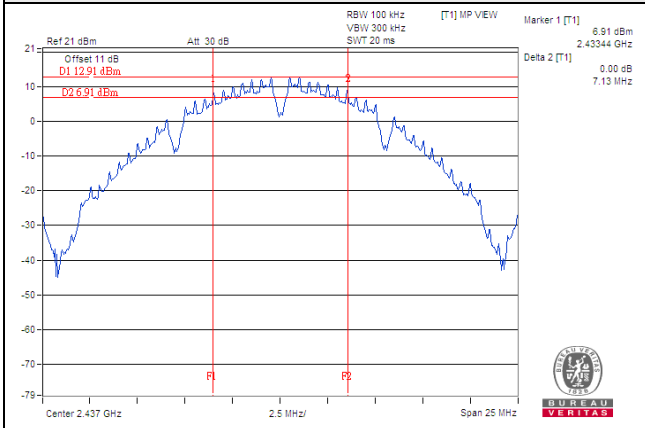
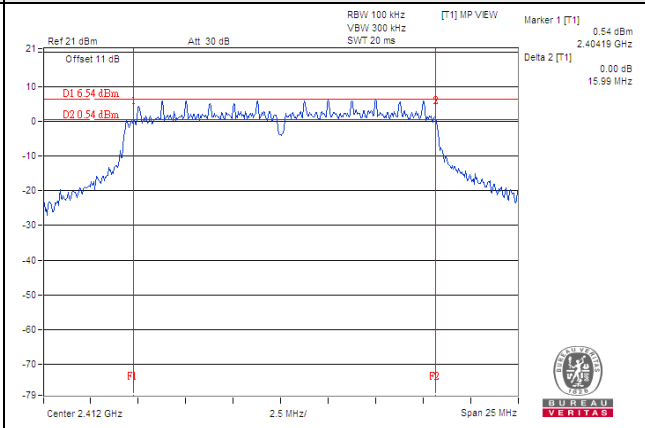
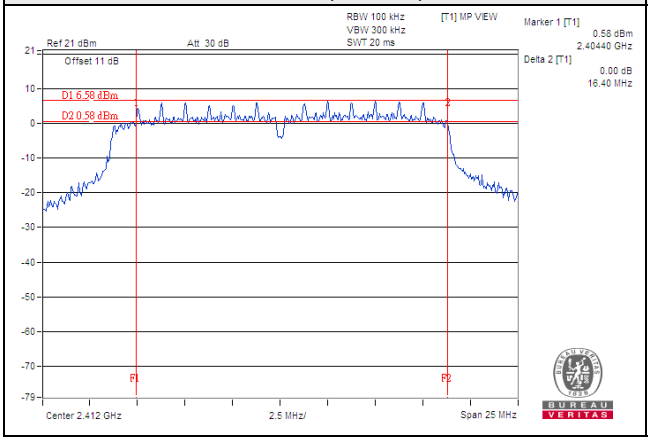
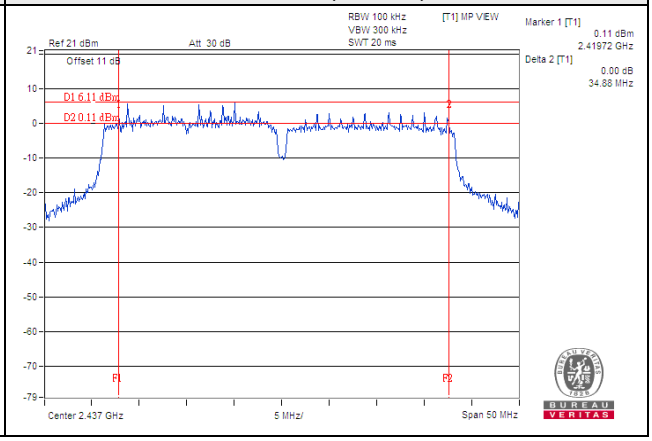
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.99	0.50	Pass
6	2437	16.34	0.50	Pass
11	2462	16.09	0.50	Pass

802.11n (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.40	0.50	Pass
6	2437	16.97	0.50	Pass
11	2462	17.21	0.50	Pass

802.11n (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	35.84	0.50	Pass
6	2437	34.88	0.50	Pass
9	2452	35.32	0.50	Pass

Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (VHT20)	802.11n (VHT40)
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

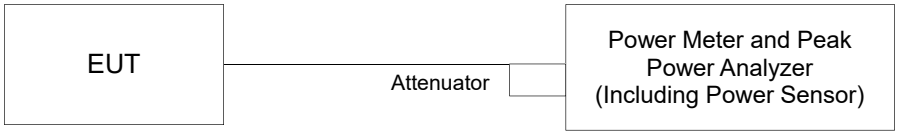
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as item 4.3.6.

4.4.7 Test Results

2G traffic radio (Radio 2)

CDD Mode

802.11b

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	17.72	18.08	18.03	17.92	248.902	23.96	30	Pass
6	2437	17.66	18.09	18.01	17.88	247.379	23.93	30	Pass
11	2462	17.17	17.59	17.61	17.46	222.926	23.48	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.64	14.84	15.17	15.06	124.534	20.95	30	Pass
6	2437	22.46	22.51	22.54	22.78	**723.579**	28.59	30	Pass
11	2462	14.51	14.68	14.49	14.85	116.294	20.66	30	Pass

802.11n (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.45	14.87	15.06	15.04	122.530	20.88	30	Pass
6	2437	18.16	18.64	18.30	18.42	275.688	24.40	30	Pass
11	2462	13.41	13.52	12.62	13.39	84.527	19.27	30	Pass

802.11n (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	14.13	14.35	14.70	14.46	110.547	20.44	30	Pass
6	2437	14.82	15.20	15.24	15.32	130.912	21.17	30	Pass
9	2452	12.88	12.75	12.30	13.11	75.692	18.79	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.62	14.92	15.08	15.21	125.419	20.98	30	Pass
6	2437	18.33	18.77	18.49	18.56	285.824	24.56	30	Pass
11	2462	13.45	13.66	12.79	13.44	86.449	19.37	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	14.27	14.42	14.79	14.54	112.974	20.53	30	Pass
6	2437	14.99	15.37	15.32	15.42	134.860	21.30	30	Pass
9	2452	12.97	12.77	12.43	13.21	77.178	18.87	30	Pass

Beamforming Mode

802.11n (VHT20)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.45	14.87	15.06	15.04	122.530	20.88	25.59	Pass
6	2437	18.16	18.64	18.30	18.42	275.688	24.40	25.59	Pass
11	2462	13.41	13.52	12.62	13.39	84.527	19.27	25.59	Pass

Note: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/4$] = 10.41 dBi > 6dBi, so the power limit shall be reduced to 30 - (10.41 - 6) = 25.59dBm.

802.11n (VHT40)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	14.13	14.35	14.70	14.46	110.547	20.44	25.59	Pass
6	2437	14.82	15.20	15.24	15.32	130.912	21.17	25.59	Pass
9	2452	12.88	12.75	12.30	13.11	75.692	18.79	25.59	Pass

Note: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/4$] = 10.41 dBi > 6dBi, so the power limit shall be reduced to 30 - (10.41 - 6) = 25.59dBm.

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	14.62	14.92	15.08	15.21	125.419	20.98	25.59	Pass
6	2437	18.33	18.77	18.49	18.56	**285.824**	24.56	25.59	Pass
11	2462	13.45	13.66	12.79	13.44	86.449	19.37	25.59	Pass

Note: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/4$] = 10.41 dBi > 6dBi, so the power limit shall be reduced to 30 - (10.41 - 6) = 25.59dBm.

802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	14.27	14.42	14.79	14.54	112.974	20.53	25.59	Pass
6	2437	14.99	15.37	15.32	15.42	134.860	21.30	25.59	Pass
9	2452	12.97	12.77	12.43	13.21	77.178	18.87	25.59	Pass

Note: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/4$] = 10.41 dBi > 6dBi, so the power limit shall be reduced to 30 - (10.41 - 6) = 25.59dBm.

Scanning radio (Radio 3)

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	140.281	21.47	30.00	Pass
6	2437	**185.780**	22.69	30.00	Pass
11	2462	184.502	22.66	30.00	Pass

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	61.944	17.92	30.00	Pass
6	2437	100.231	20.01	30.00	Pass
11	2462	56.885	17.55	30.00	Pass

802.11n (VHT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	62.373	17.95	30.00	Pass
6	2437	121.619	20.85	30.00	Pass
11	2462	49.204	16.92	30.00	Pass

802.11n (VHT40)

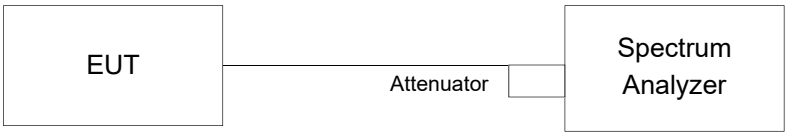
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	34.834	15.42	30.00	Pass
6	2437	65.615	18.17	30.00	Pass
9	2452	28.510	14.55	30.00	Pass

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

For Average Power (Duty cycle ≥ 98%)

a. Set instrument center frequency to DTS channel center frequency.

b. Set span to at least 1.5 times the OBW.

c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.

d. Set VBW ≥3 x RBW.

e. Detector = power averaging (RMS) or sample detector (when RMS not available).

f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.

g. Sweep time = auto couple.

h. Employ trace averaging (RMS) mode over a minimum of 100 traces.

i. Use the peak marker function to determine the maximum amplitude level.

For Average Power (Duty cycle < 98%)

a. Measure the duty cycle (x).

b. Set instrument center frequency to DTS channel center frequency.

c. Set span to at least 1.5 times the OBW.

d. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.

e. Set VBW ≥3 x RBW.

f. Detector = power averaging (RMS) or sample detector (when RMS not available).

g. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.

h. Sweep time = auto couple.

i. Do not use sweep triggering. Allow sweep to “free run”.

j. Employ trace averaging (RMS) mode over a minimum of 100 traces.

k. Use the peak marker function to determine the maximum amplitude level.

l. Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as item 4.3.6

4.5.7 Test Results

2G traffic radio (Radio 2)

802.11b

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3kHz)	10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-21.03	6.02	2.51	-12.50	3.59	Pass
	6	2437	-20.53	6.02	2.51	-12.00	3.59	Pass
	11	2462	-20.50	6.02	2.51	-11.97	3.59	Pass
1	1	2412	-20.82	6.02	2.51	-12.29	3.59	Pass
	6	2437	-21.45	6.02	2.51	-12.92	3.59	Pass
	11	2462	-22.07	6.02	2.51	-13.54	3.59	Pass
2	1	2412	-21.44	6.02	2.51	-12.91	3.59	Pass
	6	2437	-21.25	6.02	2.51	-12.72	3.59	Pass
	11	2462	-21.48	6.02	2.51	-12.95	3.59	Pass
3	1	2412	-21.15	6.02	2.51	-12.62	3.59	Pass
	6	2437	-20.53	6.02	2.51	-12.00	3.59	Pass
	11	2462	-20.50	6.02	2.51	-11.97	3.59	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure value and add 10 log (N_{ANT}) dB.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/4$] = 10.41dBi > 6dBi, so the power density limit shall be reduced to 8 - (10.41 - 6) = 3.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11g

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3kHz)	10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-22.29	6.02	0.30	-15.97	3.59	Pass
	6	2437	-15.50	6.02	0.30	-9.18	3.59	Pass
	11	2462	-23.04	6.02	0.30	-16.72	3.59	Pass
1	1	2412	-23.28	6.02	0.30	-16.96	3.59	Pass
	6	2437	-15.89	6.02	0.30	-9.57	3.59	Pass
	11	2462	-23.23	6.02	0.30	-16.91	3.59	Pass
2	1	2412	-22.92	6.02	0.30	-16.60	3.59	Pass
	6	2437	-15.71	6.02	0.30	-9.39	3.59	Pass
	11	2462	-23.53	6.02	0.30	-17.21	3.59	Pass
3	1	2412	-23.05	6.02	0.30	-16.73	3.59	Pass
	6	2437	-16.42	6.02	0.30	-10.10	3.59	Pass
	11	2462	-23.14	6.02	0.30	-16.82	3.59	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure value and add 10 log (N_{ANT}) dB.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/4$] = 10.41dBi > 6dBi, so the power density limit shall be reduced to 8 - (10.41 - 6) = 3.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3kHz)	10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-24.43	6.02	0.22	-18.19	3.59	Pass
	6	2437	-20.02	6.02	0.22	-13.78	3.59	Pass
	11	2462	-25.10	6.02	0.22	-18.86	3.59	Pass
1	1	2412	-24.61	6.02	0.22	-18.37	3.59	Pass
	6	2437	-20.02	6.02	0.22	-13.78	3.59	Pass
	11	2462	-24.94	6.02	0.22	-18.70	3.59	Pass
2	1	2412	-24.29	6.02	0.22	-18.05	3.59	Pass
	6	2437	-19.99	6.02	0.22	-13.75	3.59	Pass
	11	2462	-25.32	6.02	0.22	-19.08	3.59	Pass
3	1	2412	-24.63	6.02	0.22	-18.39	3.59	Pass
	6	2437	-20.02	6.02	0.22	-13.78	3.59	Pass
	11	2462	-25.10	6.02	0.22	-18.86	3.59	Pass

Note:

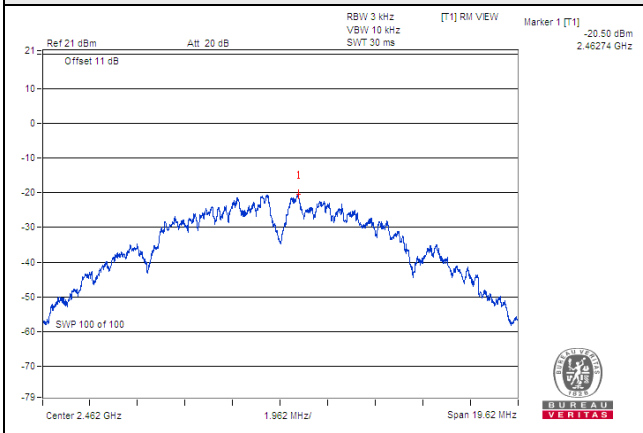
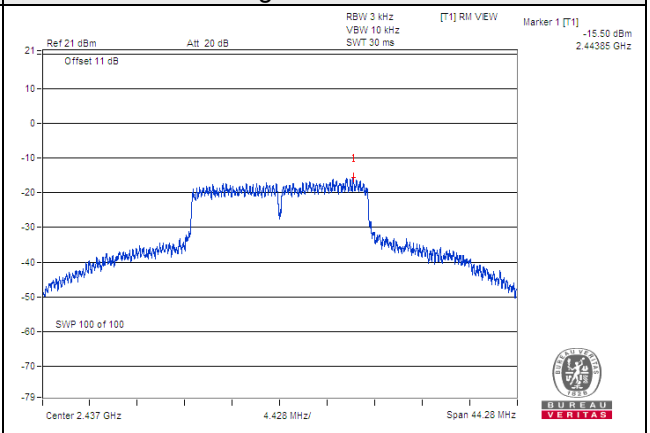
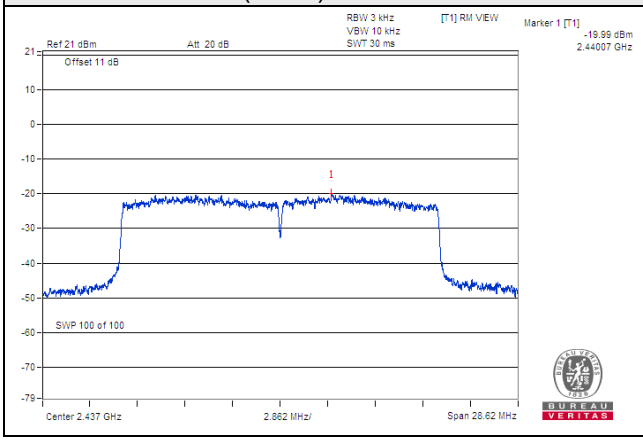
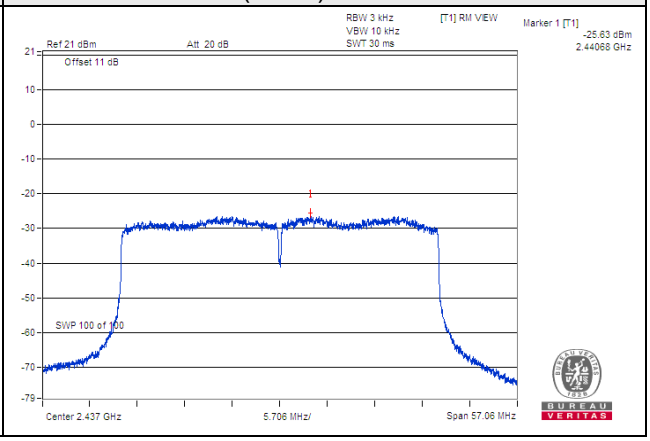
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure value and add 10 log (N_{ANT}) dB.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/4$] = 10.41dBi > 6dBi, so the power density limit shall be reduced to 8 - (10.41 - 6) = 3.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3kHz)	10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	3	2422	-27.03	6.02	0.25	-20.76	3.59	Pass
	6	2437	-25.63	6.02	0.25	-19.36	3.59	Pass
	9	2452	-28.18	6.02	0.25	-21.91	3.59	Pass
1	3	2422	-27.33	6.02	0.25	-21.06	3.59	Pass
	6	2437	-26.58	6.02	0.25	-20.31	3.59	Pass
	9	2452	-28.24	6.02	0.25	-21.97	3.59	Pass
3	3	2422	-26.73	6.02	0.25	-20.46	3.59	Pass
	6	2437	-26.46	6.02	0.25	-20.19	3.59	Pass
	9	2452	-28.54	6.02	0.25	-22.27	3.59	Pass
4	3	2422	-27.66	6.02	0.25	-21.39	3.59	Pass
	6	2437	-26.12	6.02	0.25	-19.85	3.59	Pass
	9	2452	-28.21	6.02	0.25	-21.94	3.59	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure value and add 10 log (N_{ANT}) dB.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/4$] = 10.41dBi > 6dBi, so the power density limit shall be reduced to 8 - (10.41 - 6) = 3.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11b / Chain 0 / CH 11	802.11g / Chain 0 / CH 6
	
802.11ax (HE20) / Chain 2 / CH 6	802.11ax (HE40) / Chain 0 / CH 6
	

Scanning radio (Radio 3)

802.11b

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
1	2412	-13.25	8.00	Pass
6	2437	-13.11	8.00	Pass
11	2462	-13.60	8.00	Pass

802.11g

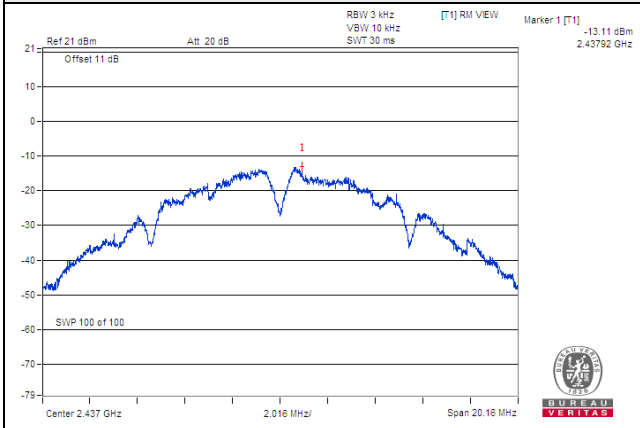
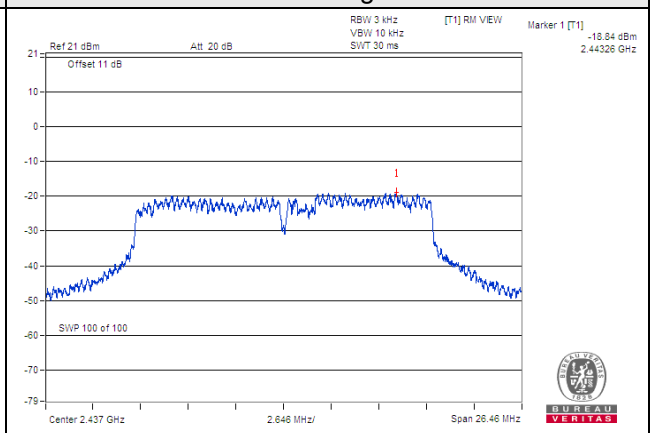
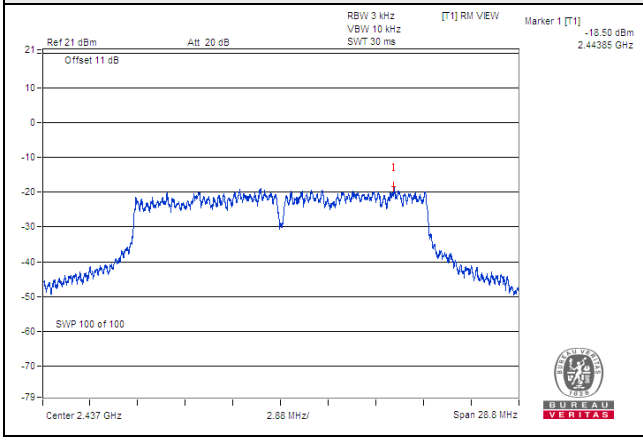
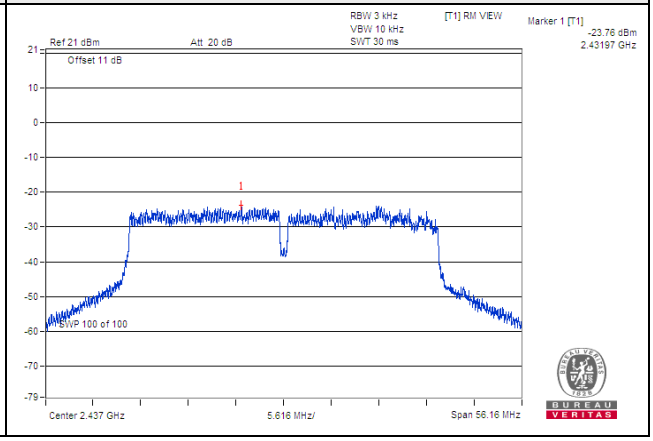
Channel	Frequency (MHz)	PSD W/O Duty Factor (dBm/3kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
1	2412	-20.67	0.20	-20.47	8.00	Pass
6	2437	-18.84	0.20	-18.64	8.00	Pass
11	2462	-20.82	0.20	-20.62	8.00	Pass

802.11n (VHT20)

Channel	Frequency (MHz)	PSD W/O Duty Factor (dBm/3kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
1	2412	-20.53	0.24	-20.29	8.00	Pass
6	2437	-18.50	0.24	-18.26	8.00	Pass
11	2462	-22.20	0.24	-21.96	8.00	Pass

802.11n (VHT40)

Channel	Frequency (MHz)	PSD W/O Duty Factor (dBm/3kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
3	2422	-26.84	0.39	-26.45	8.00	Pass
6	2437	-23.76	0.39	-23.37	8.00	Pass
9	2452	-27.34	0.39	-26.95	8.00	Pass

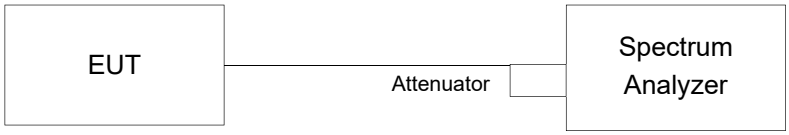
Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (VHT20)	802.11n (VHT40)
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep = auto couple.
e. Trace Mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Same as item 4.3.6

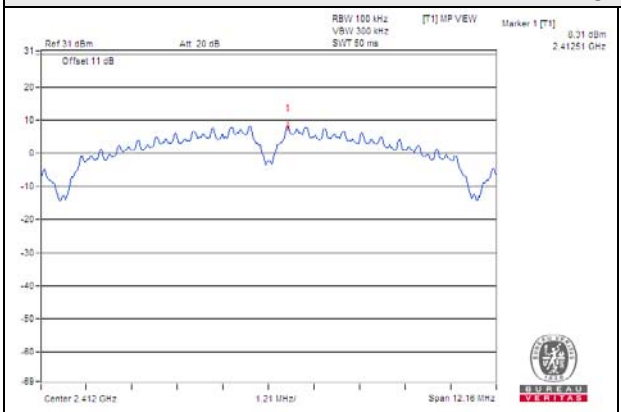
4.6.7 Test Results

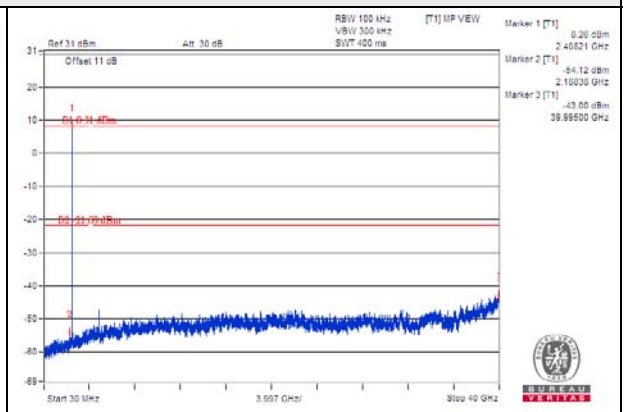
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

2G traffic radio (Radio 2)

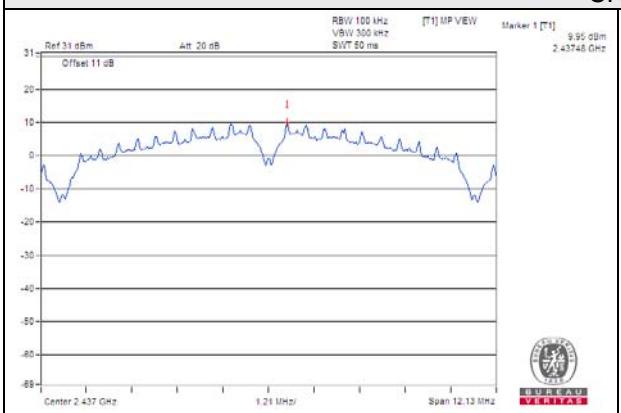
802.11b_Chain 0

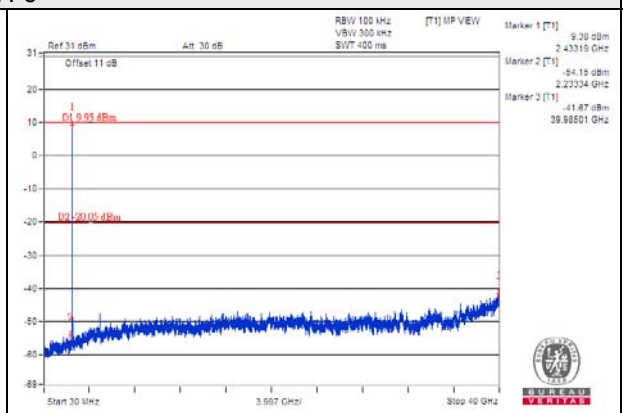
CH 1



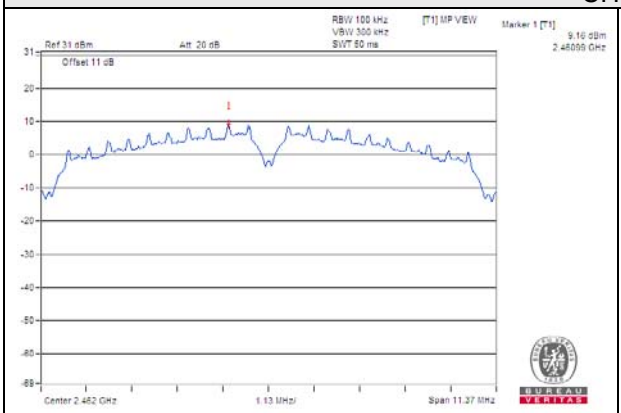


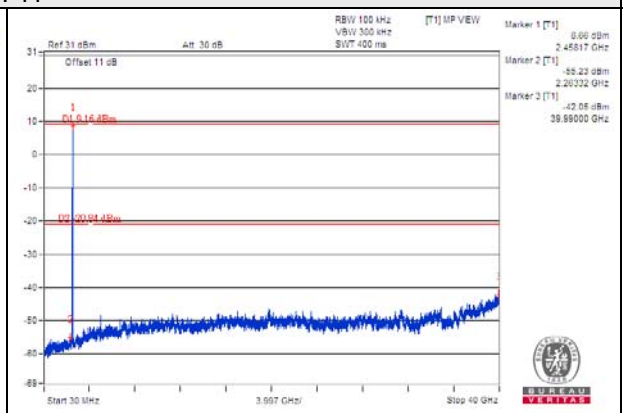
CH 6



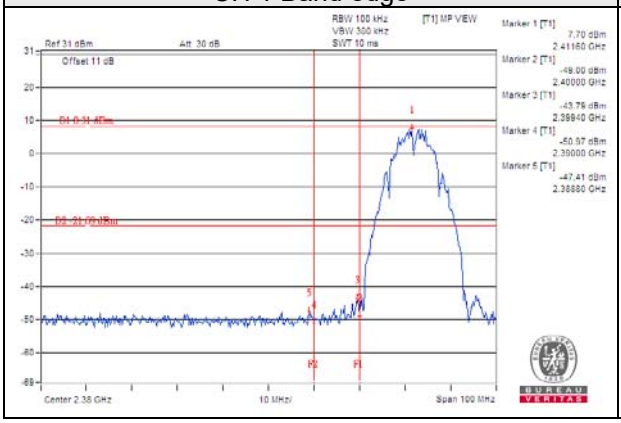


CH 11

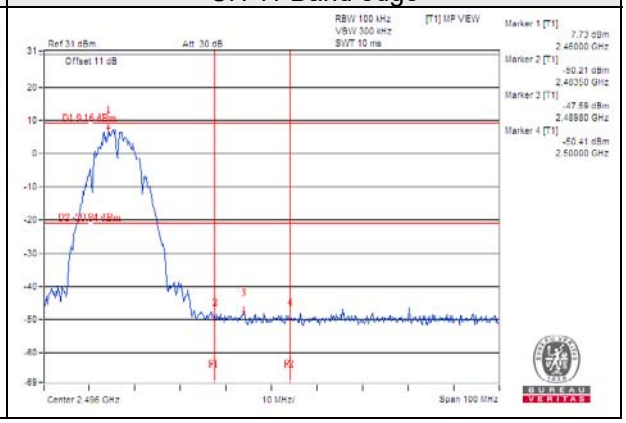




CH 1 Band edge

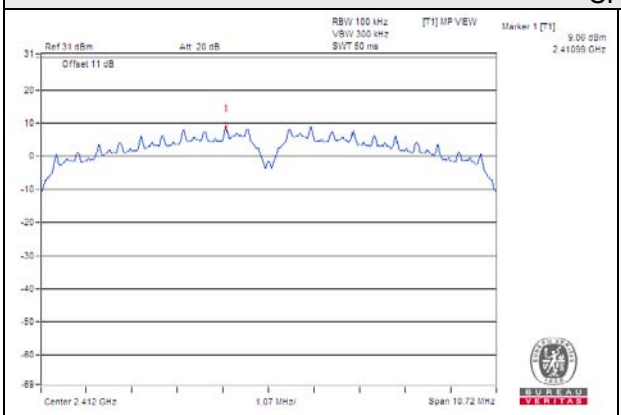


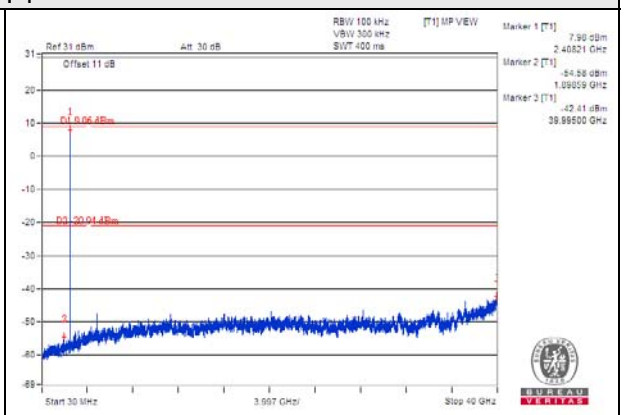
CH 11 Band edge



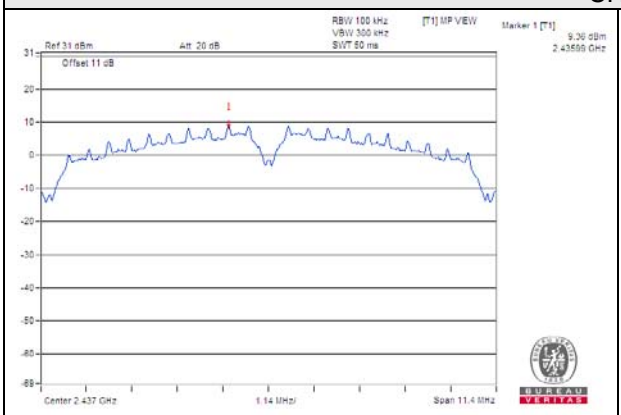
802.11b_Chain 1

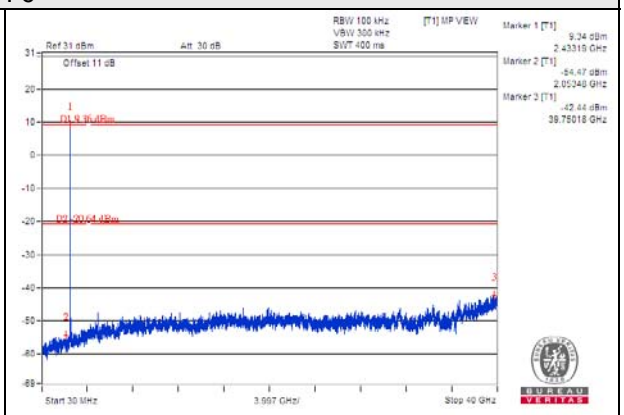
CH 1



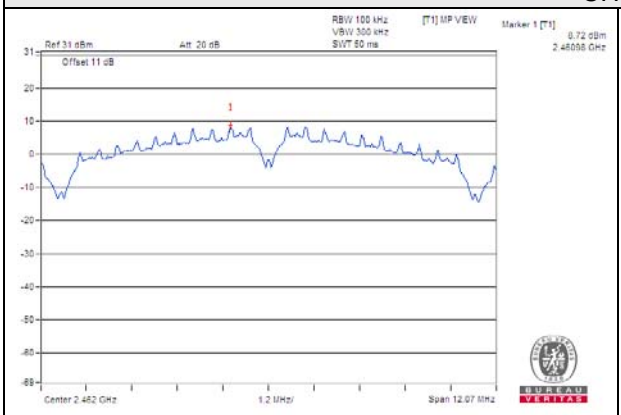


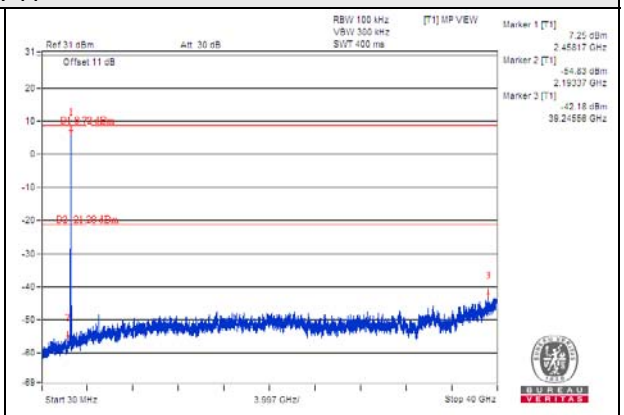
CH 6



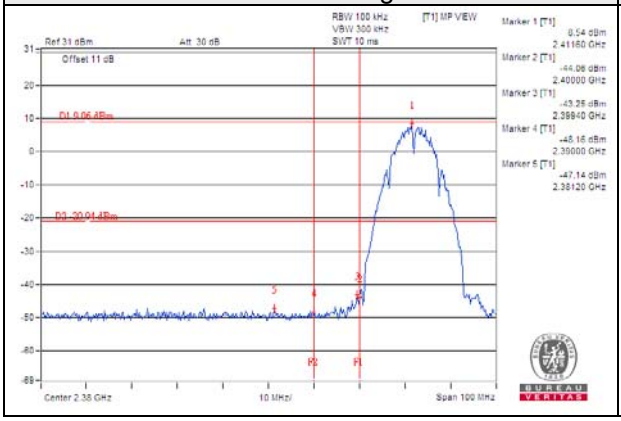


CH 11

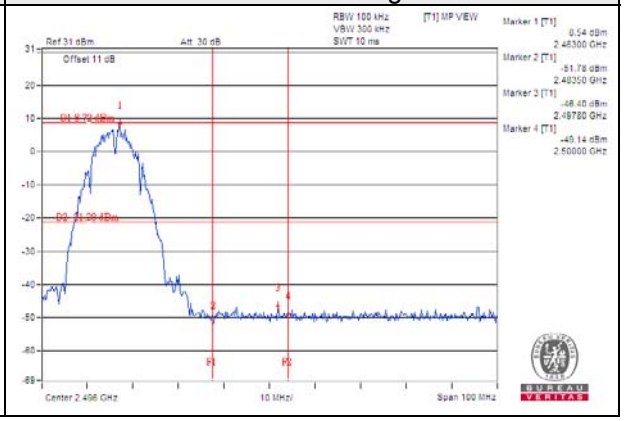




CH 1 Band edge

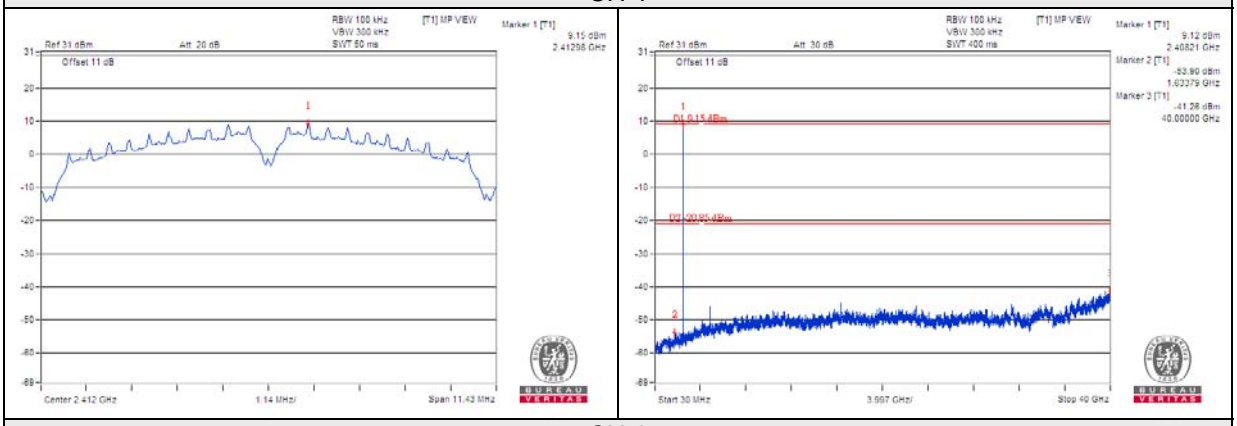


CH 11 Band edge

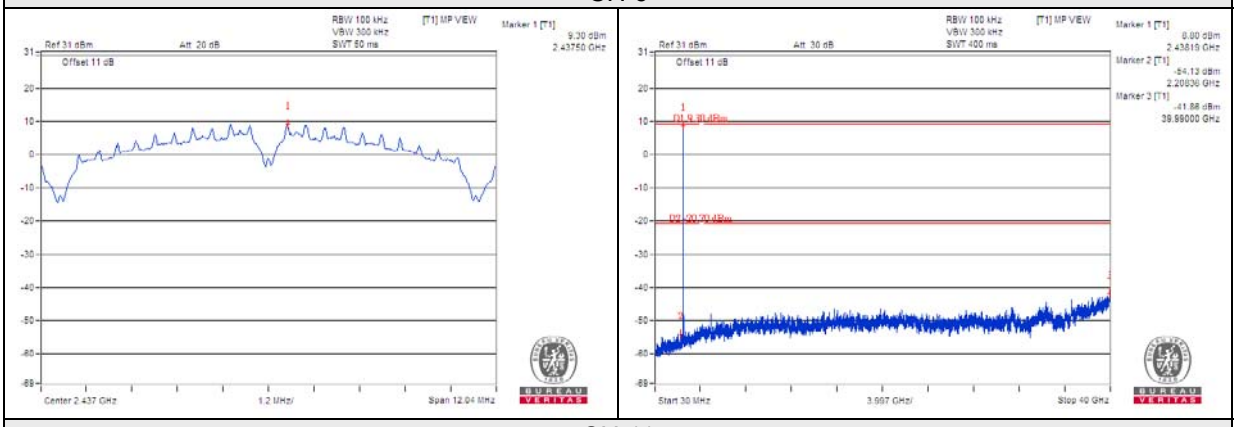


802.11b_Chain 2

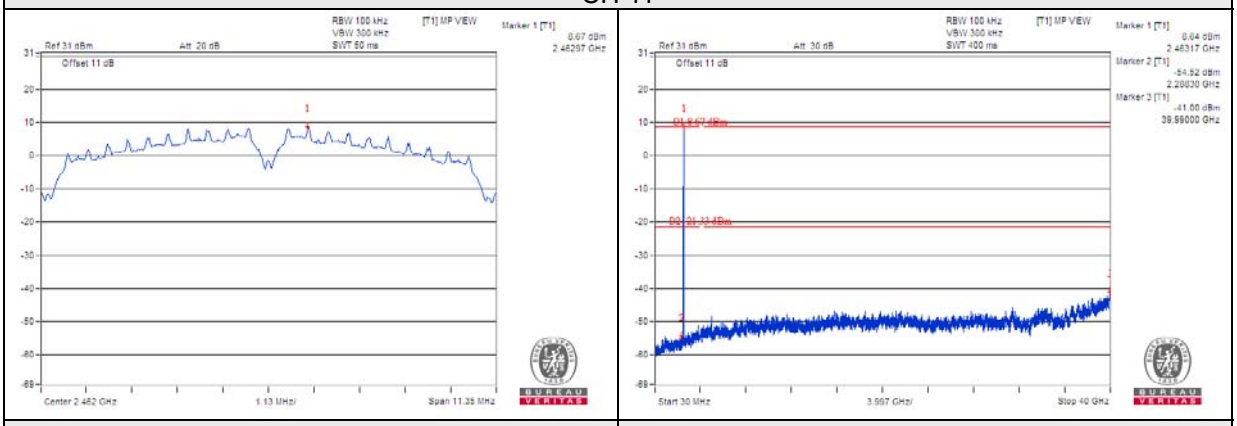
CH 1



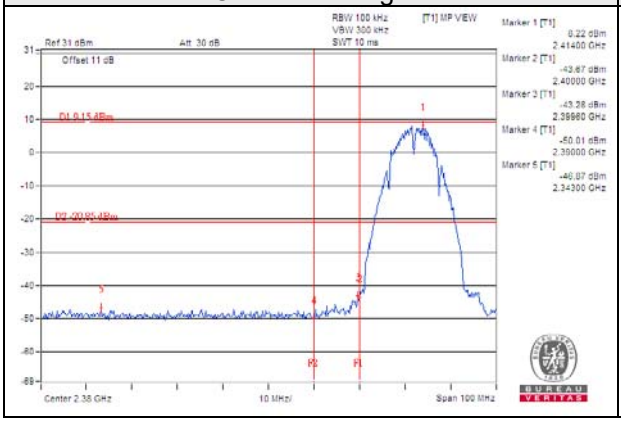
CH 6



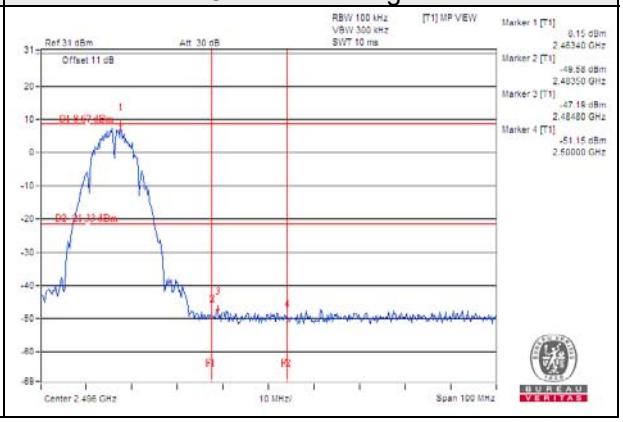
CH 11



CH 1 Band edge

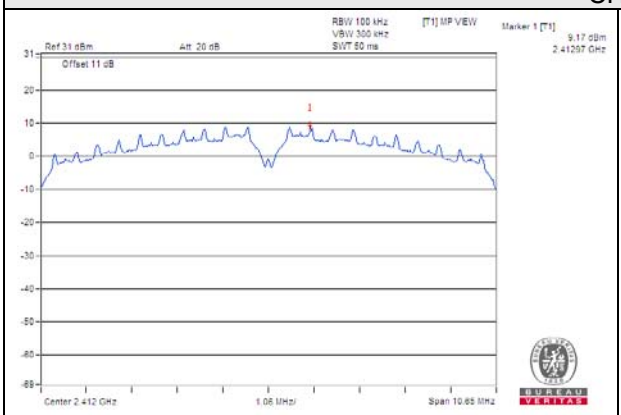


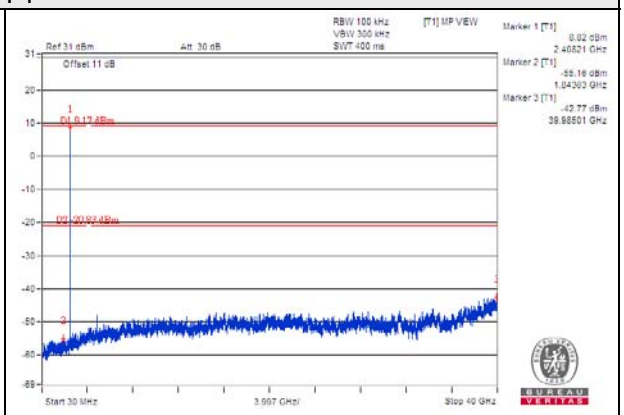
CH 11 Band edge



802.11b_Chain 3

CH 1





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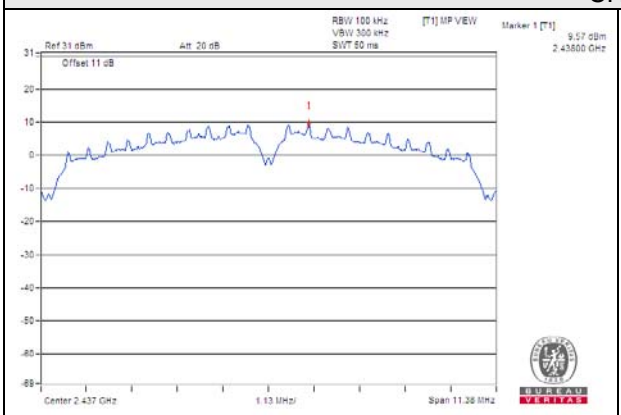

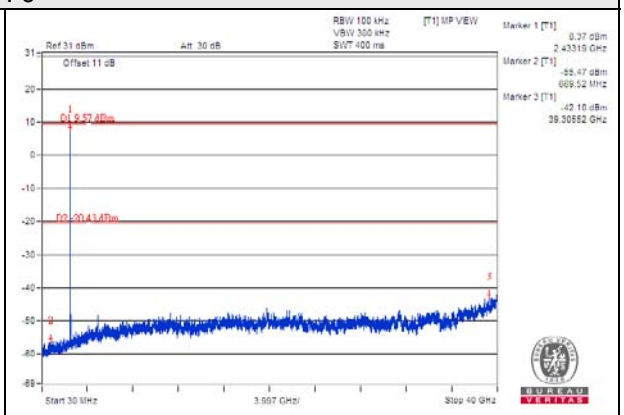

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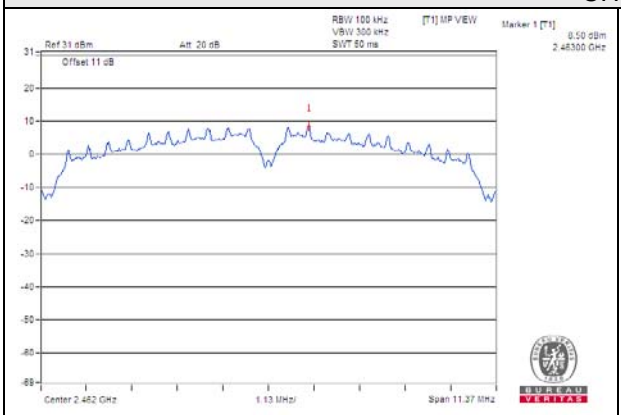
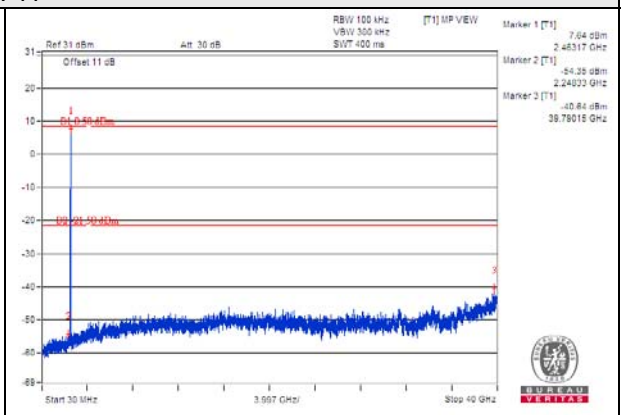
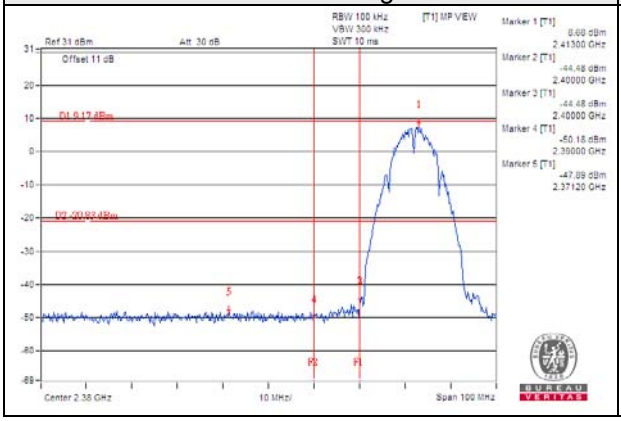
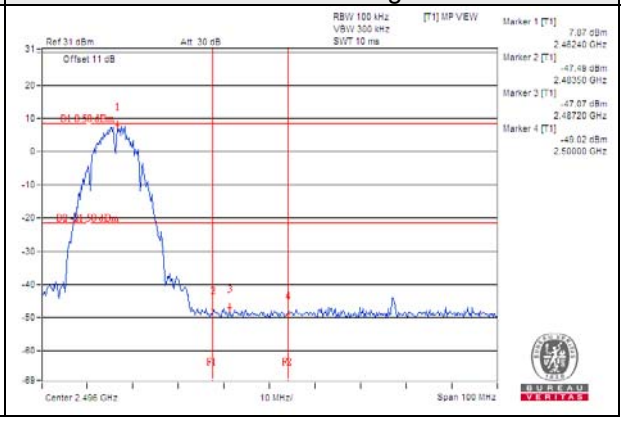




CH 1 Band edge

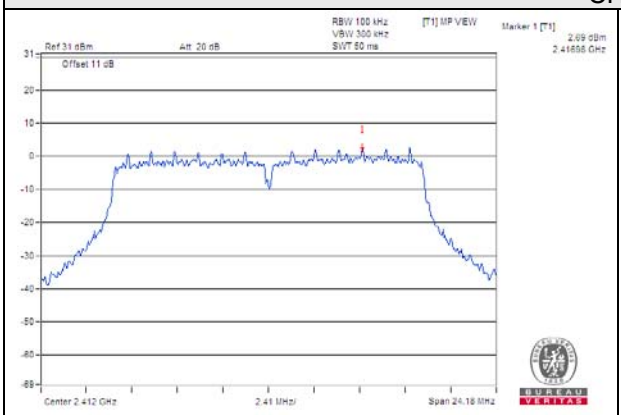


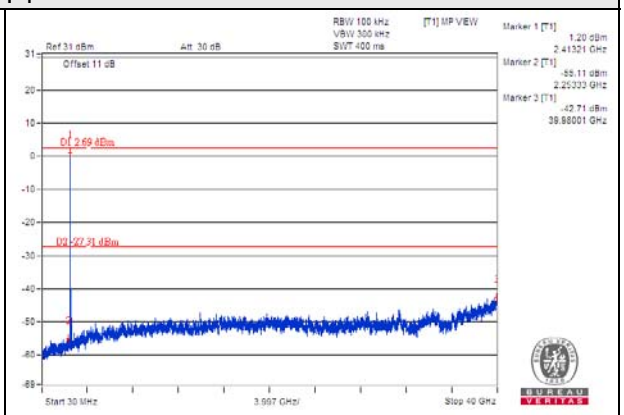
CH 11 Band edge



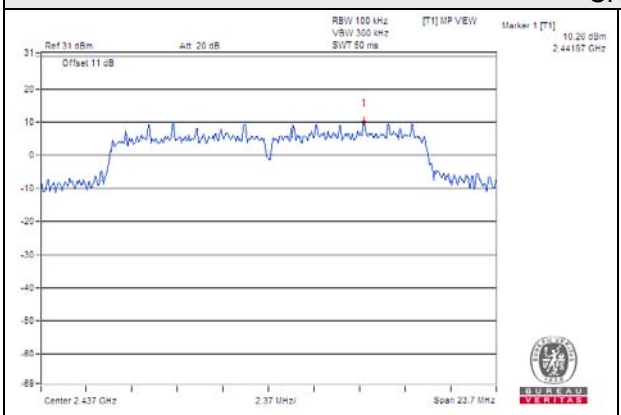
802.11g_Chain 0

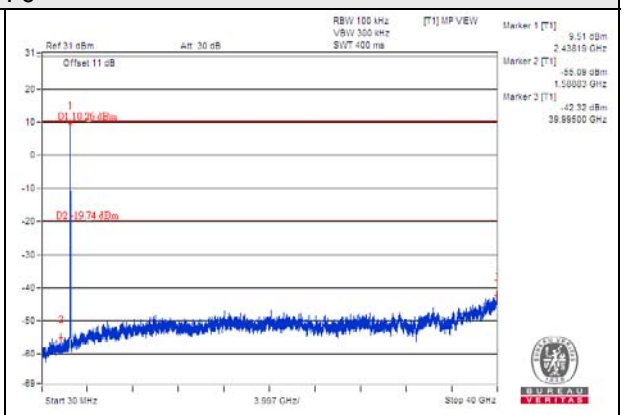
CH 1



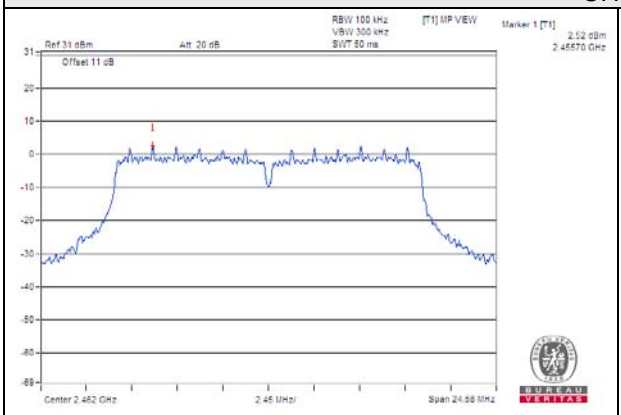


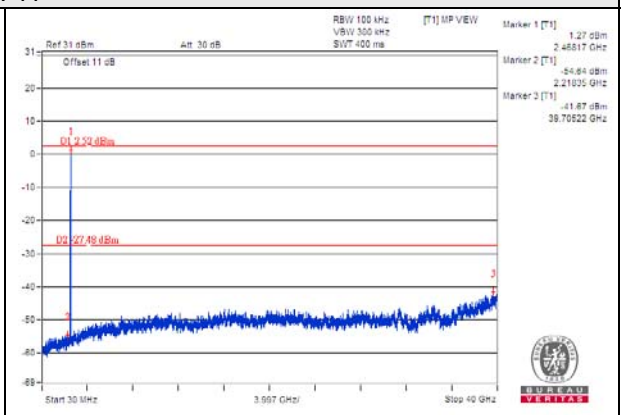
CH 6



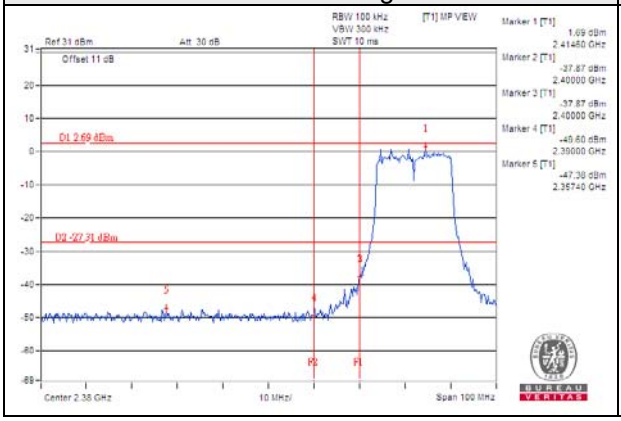


CH 11

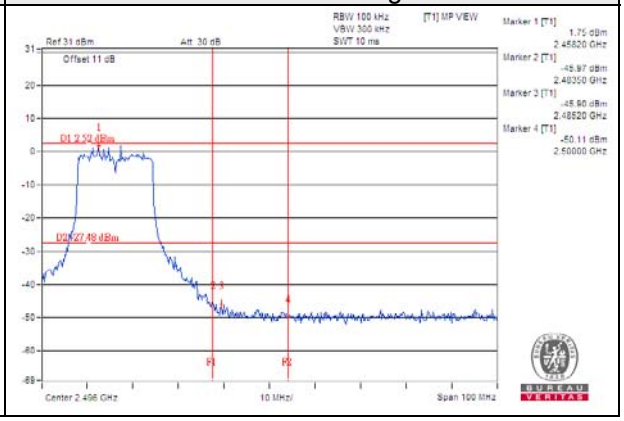




CH 1 Band edge

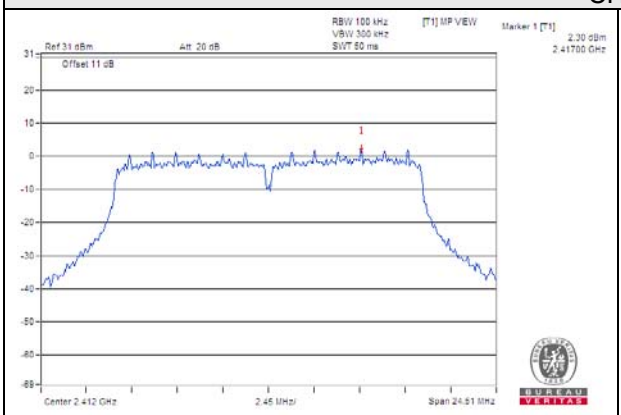


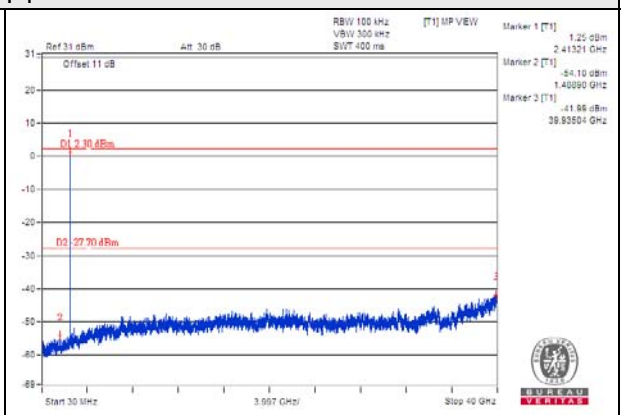
CH 11 Band edge



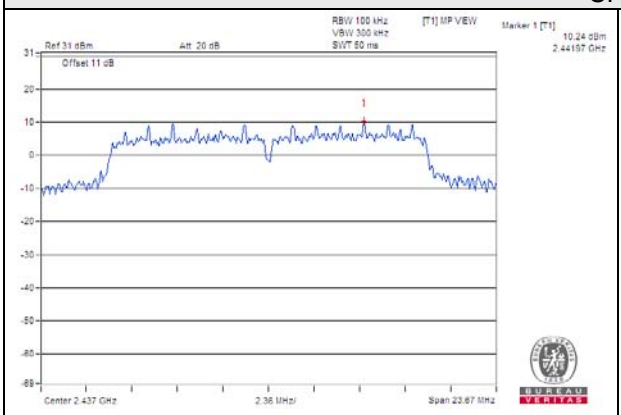
802.11g_Chain 1

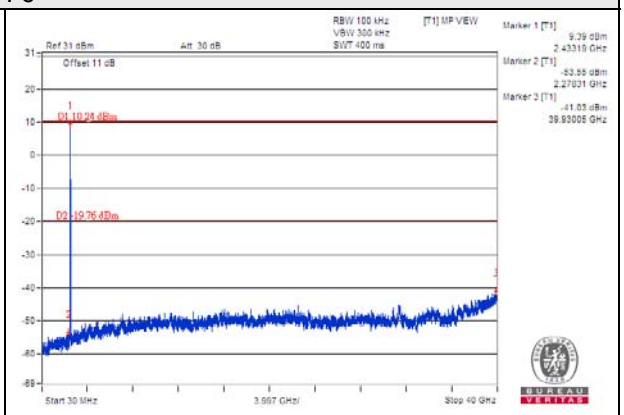
CH 1



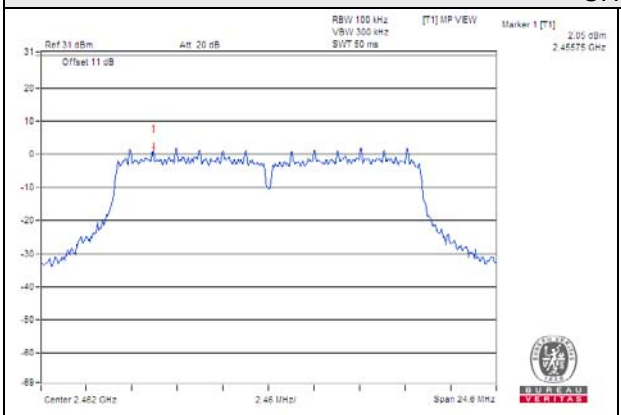


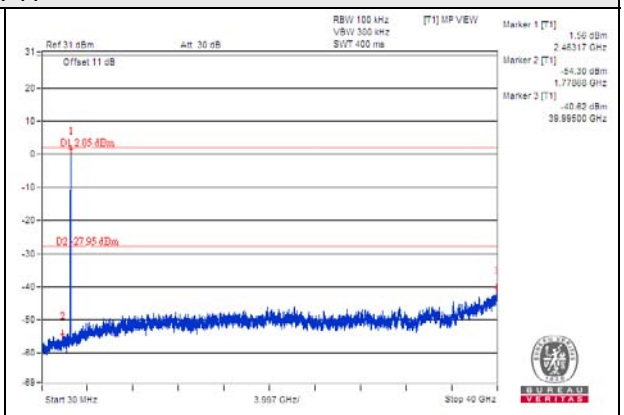
CH 6



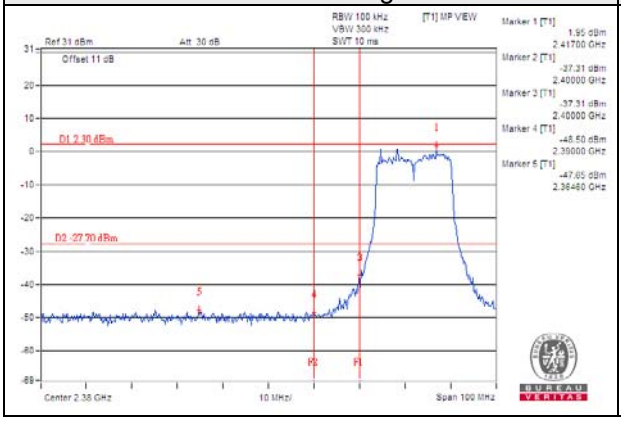


CH 11

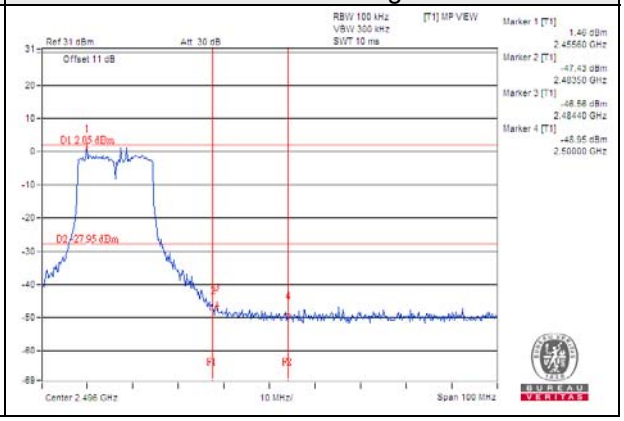




CH 1 Band edge

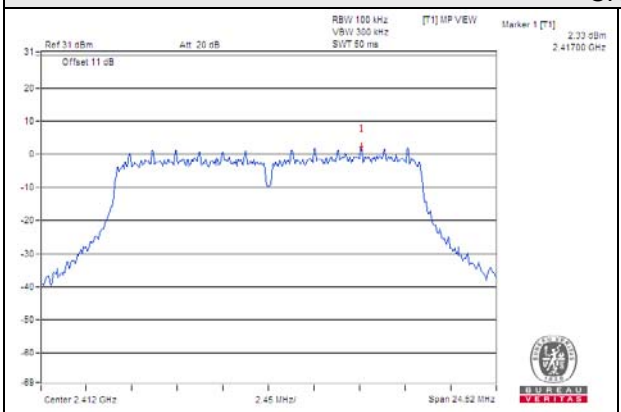


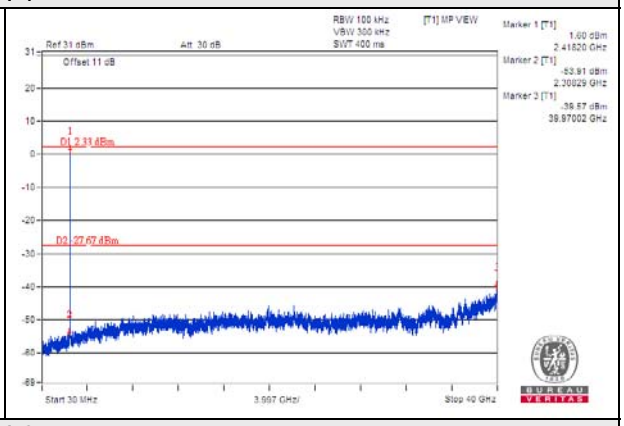
CH 11 Band edge



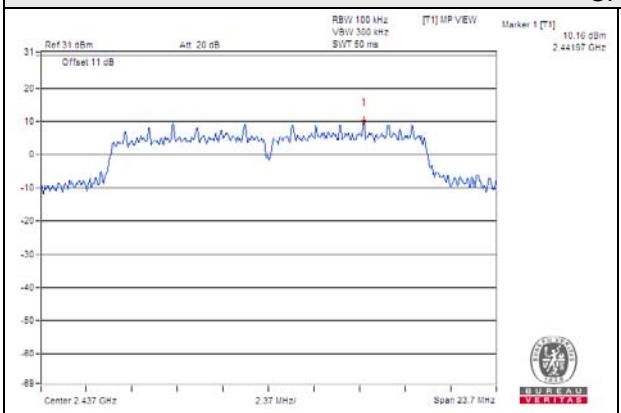
802.11g_Chain 2

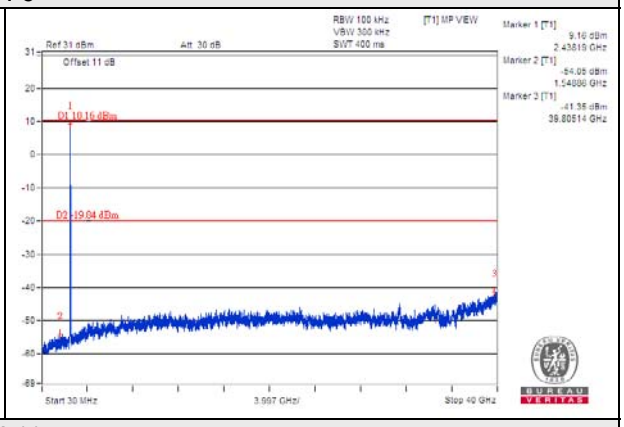
CH 1



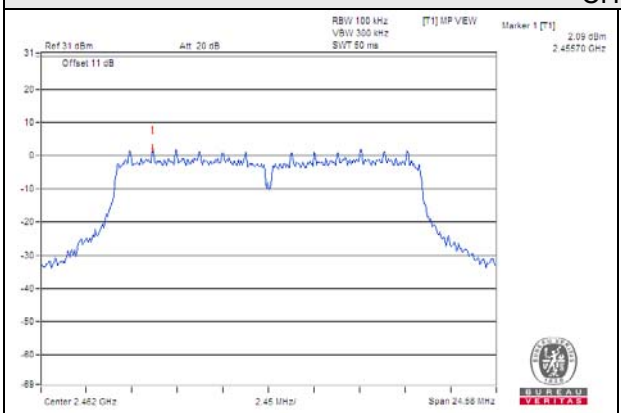


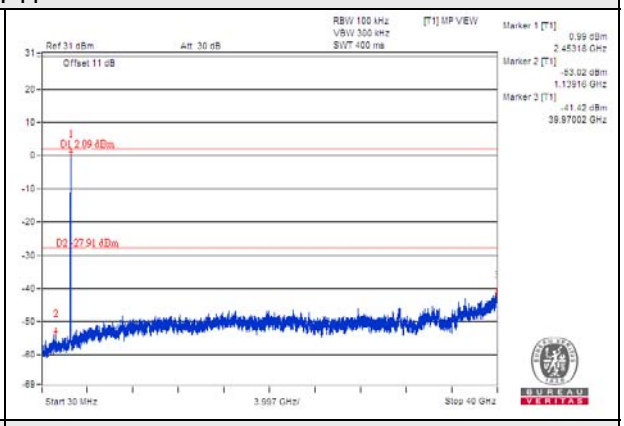
CH 6



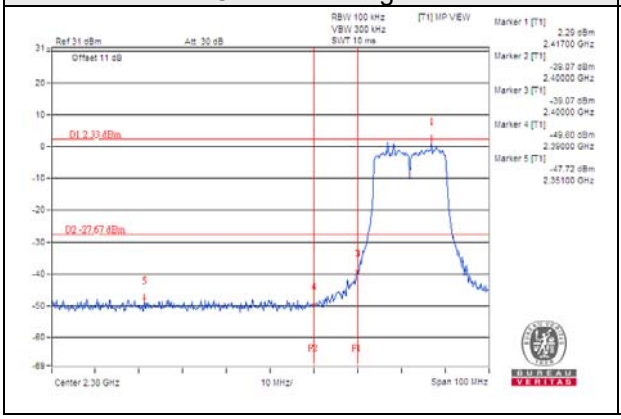


CH 11

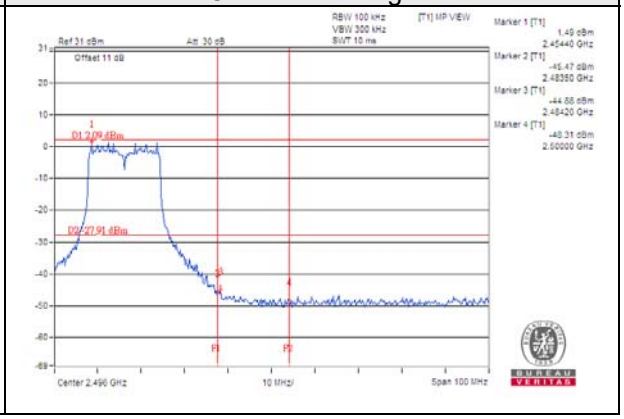




CH 1 Band edge

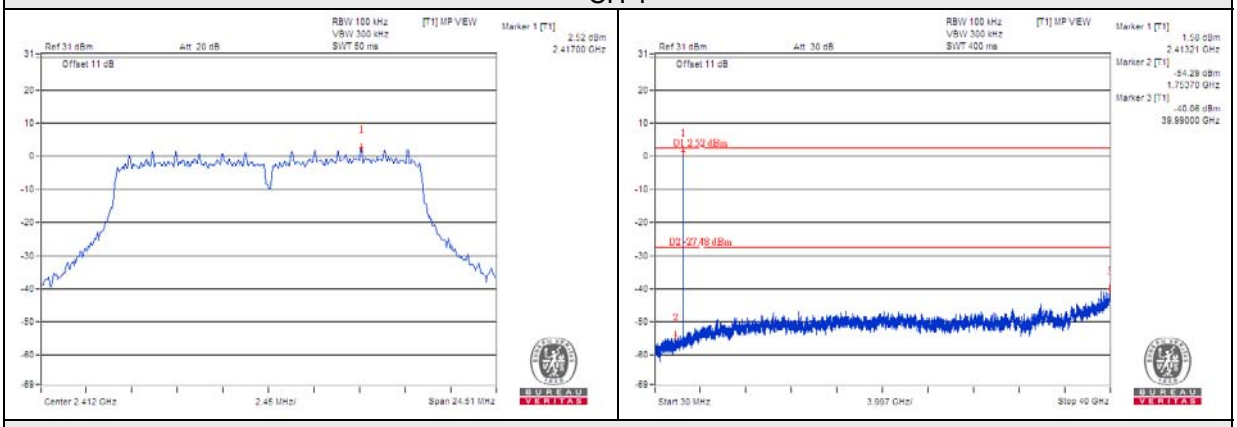


CH 11 Band edge

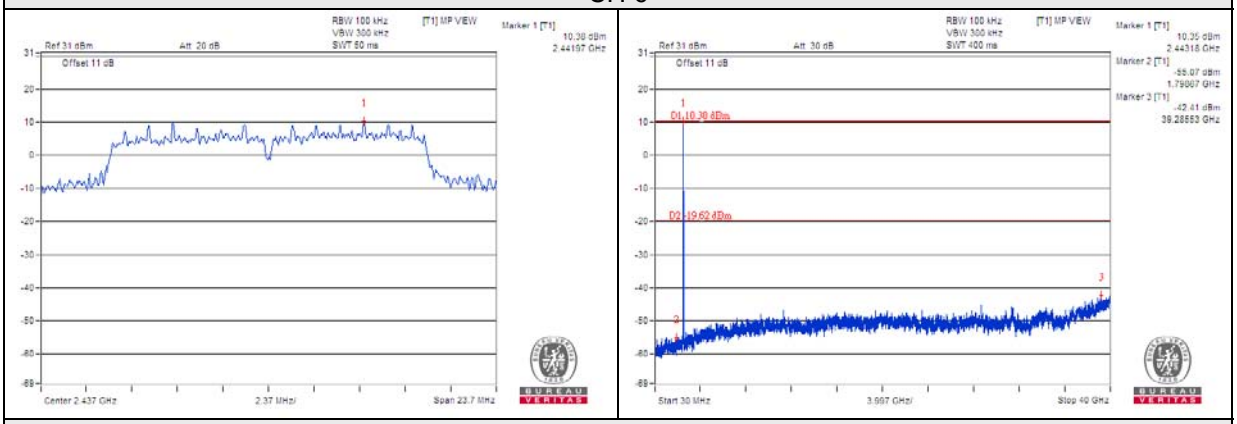


802.11g_Chain 3

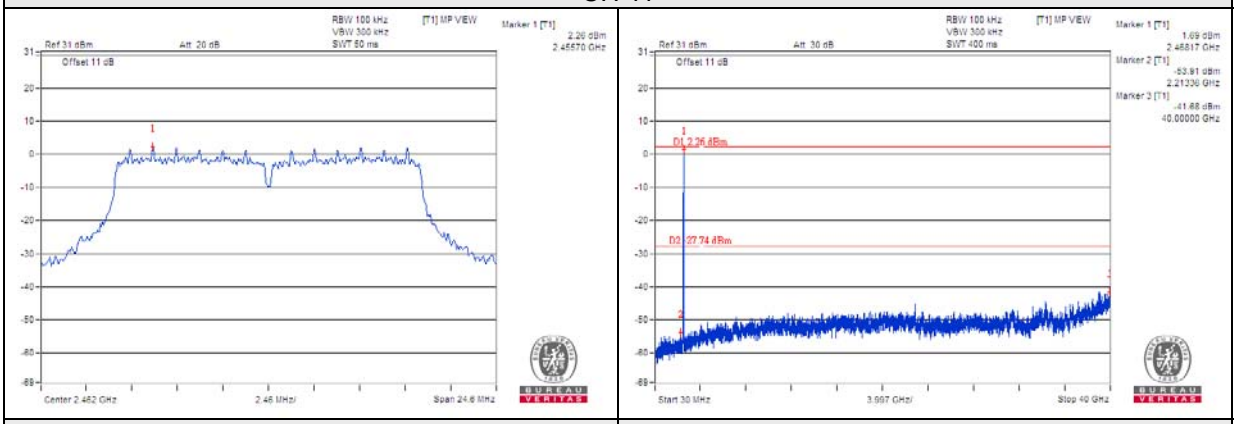
CH 1



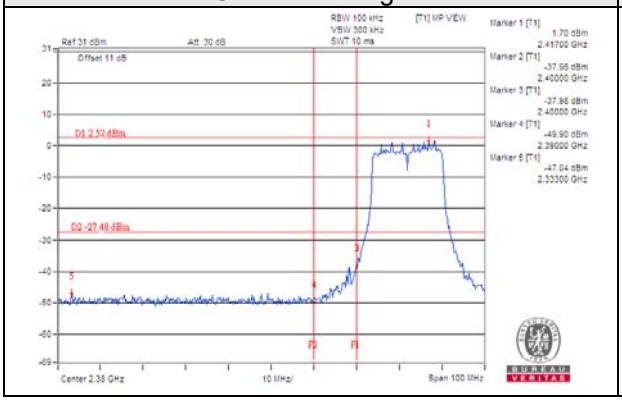
CH 6



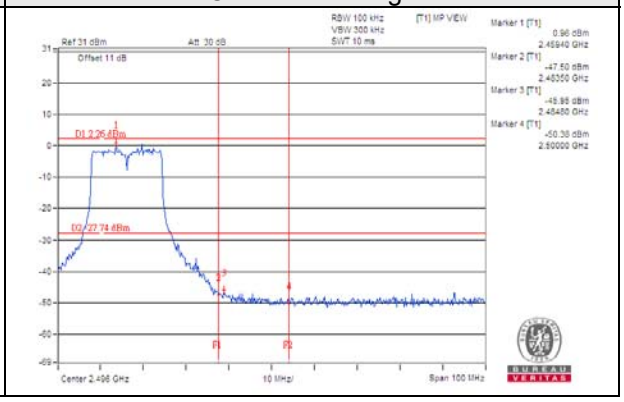
CH 11



CH 1 Band edge

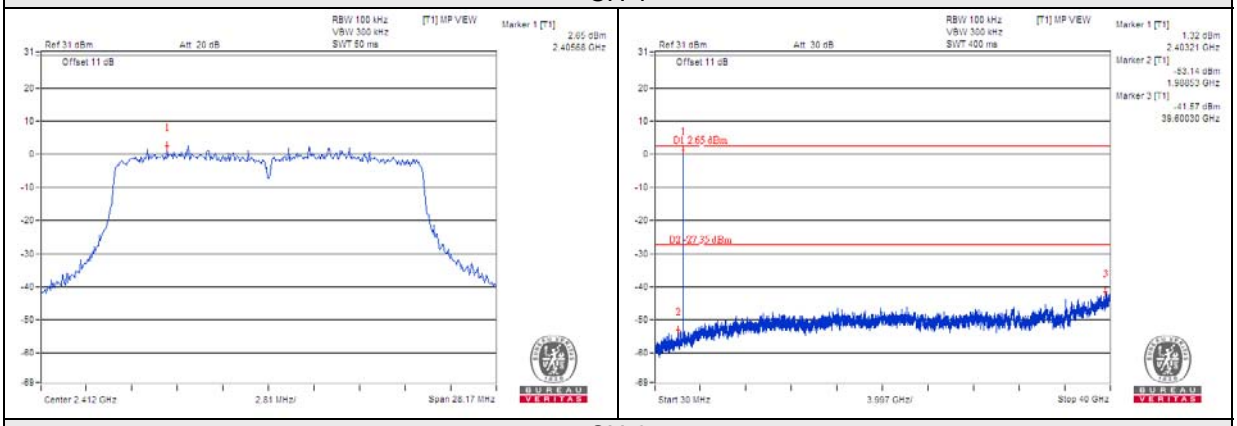


CH 11 Band edge

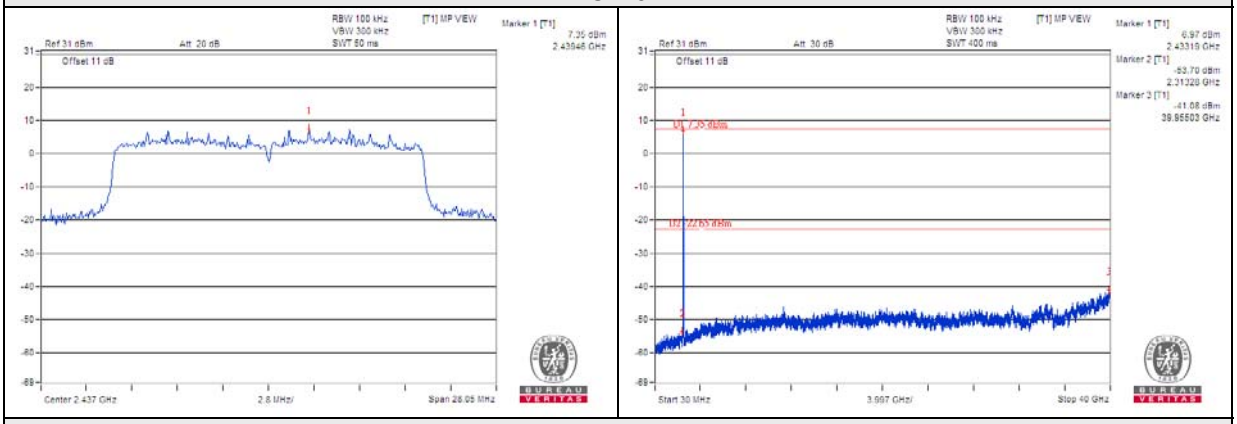


802.11ax (HE20)_Chain 0

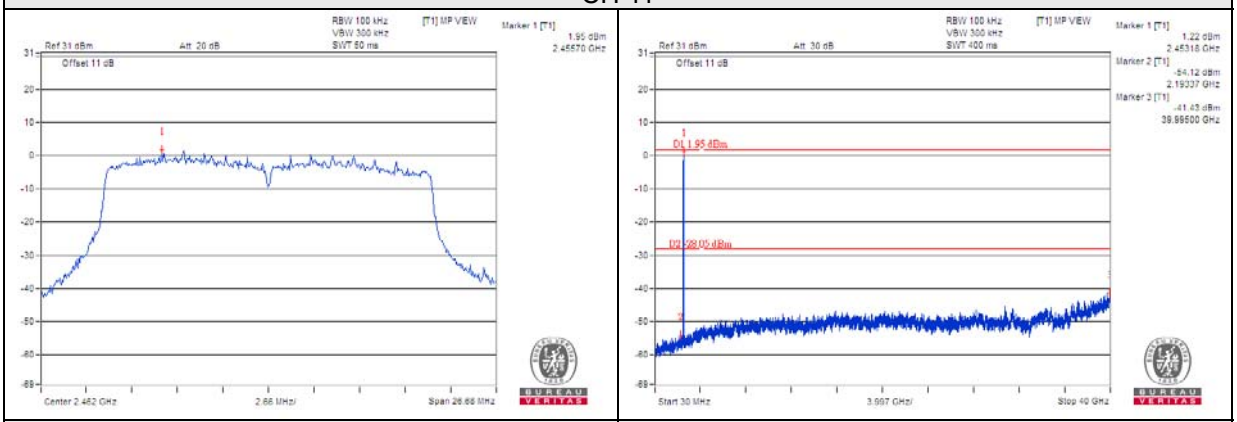
CH 1



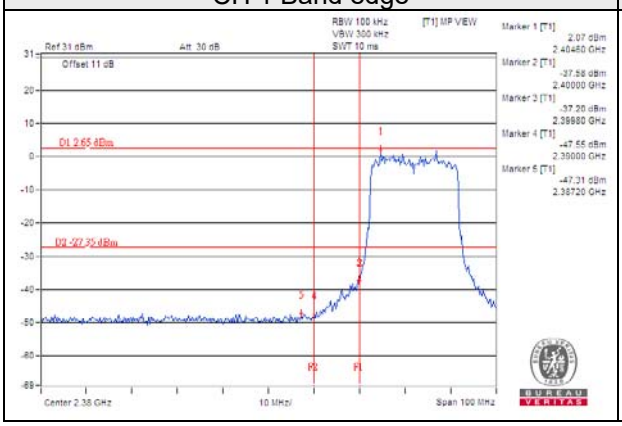
CH 6



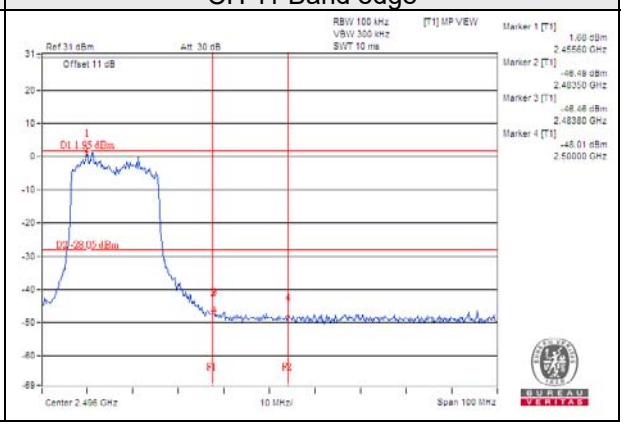
CH 11



CH 1 Band edge

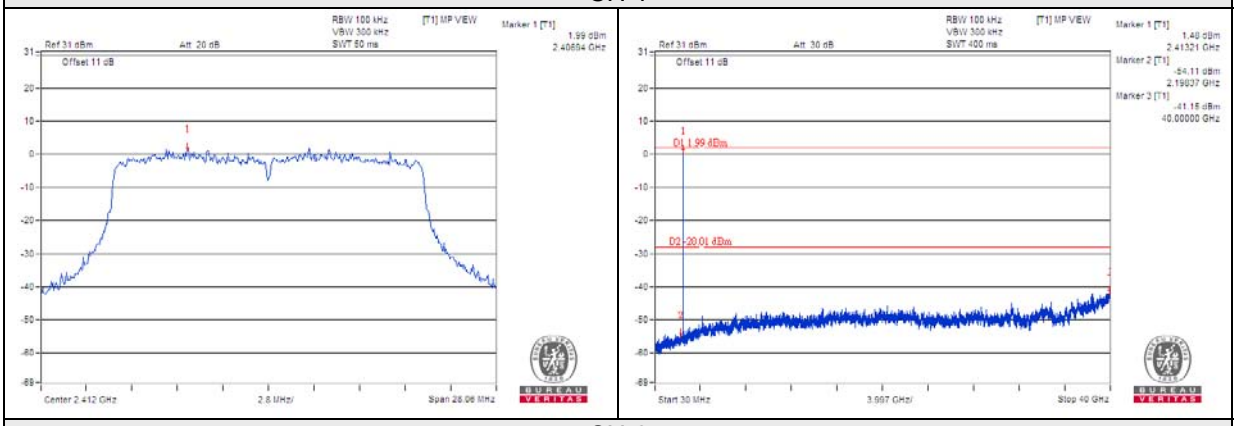


CH 11 Band edge

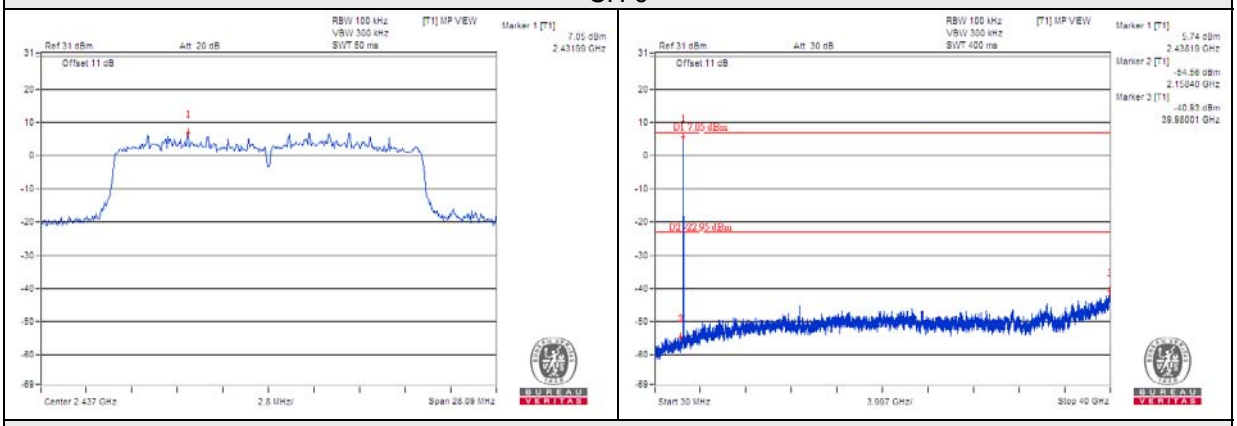


802.11ax (HE20)_Chain 1

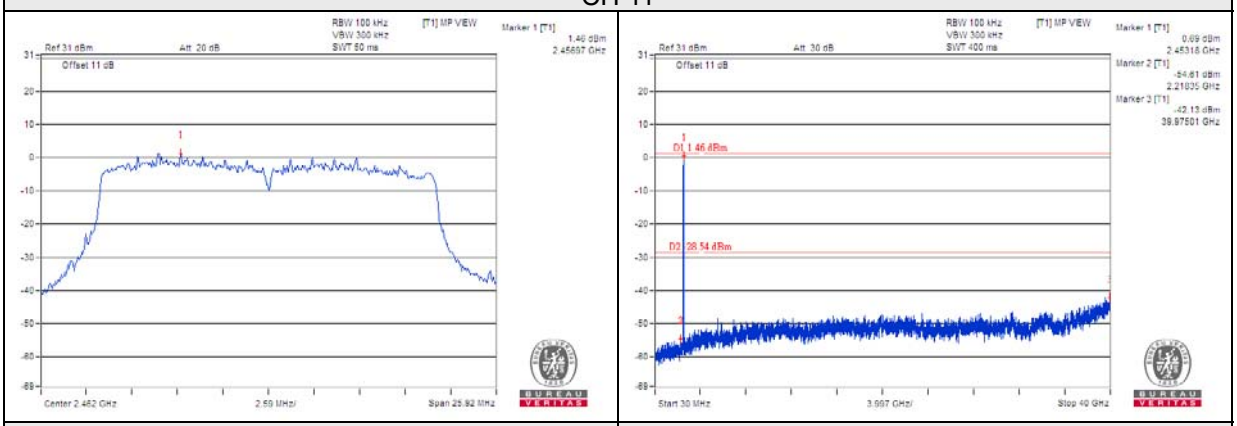
CH 1



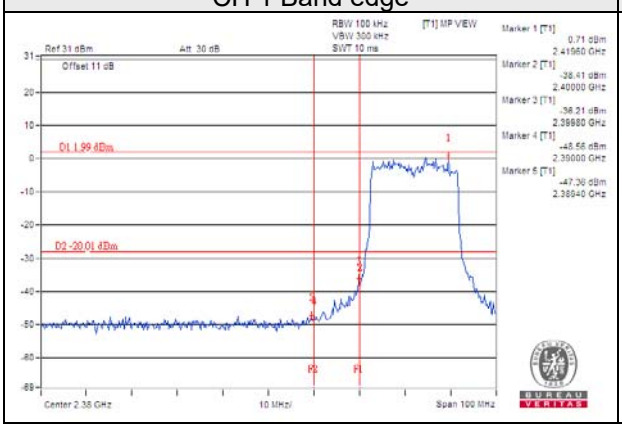
CH 6



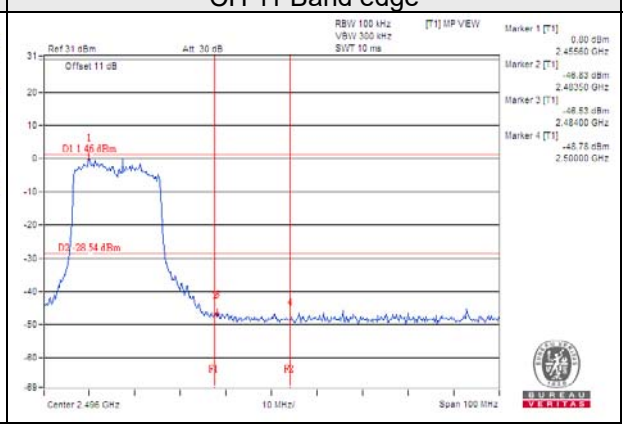
CH 11



CH 1 Band edge

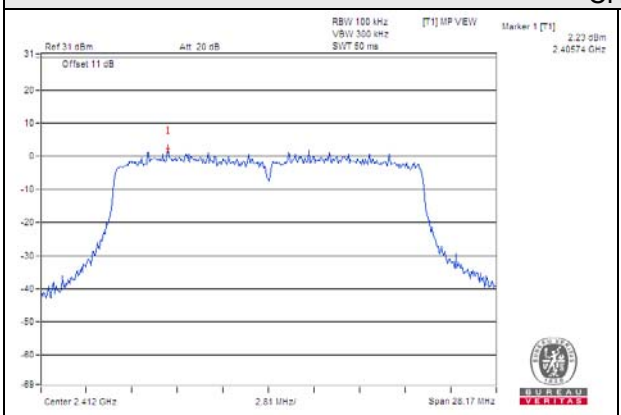


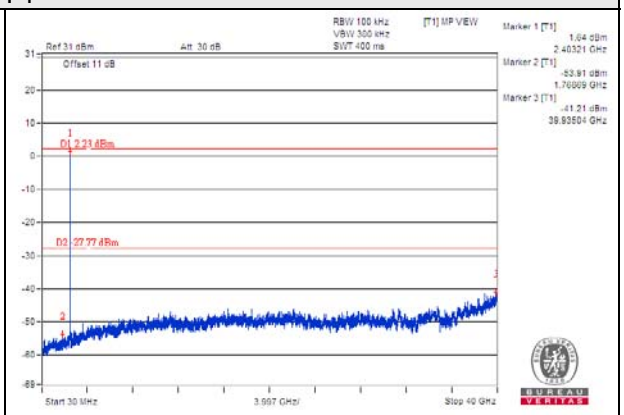
CH 11 Band edge



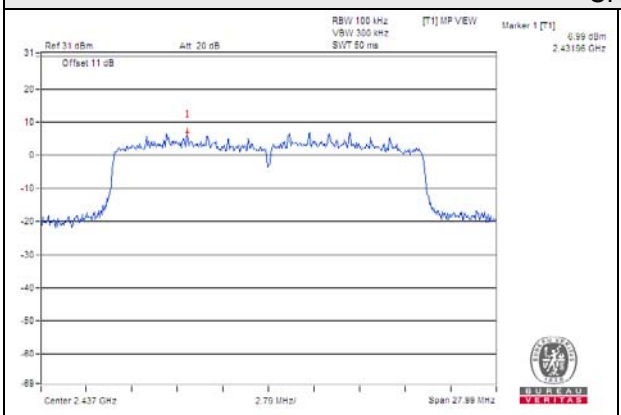
802.11ax (HE20)_Chain 2

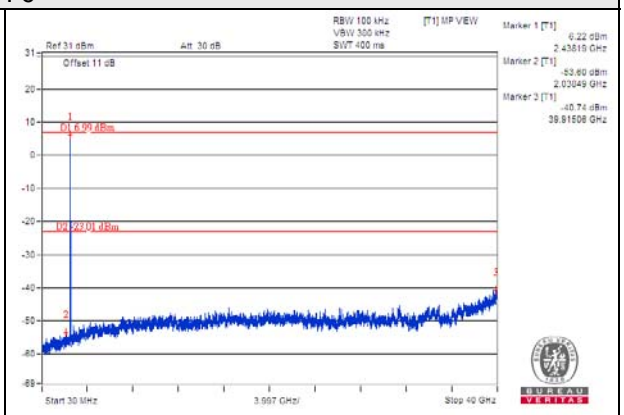
CH 1



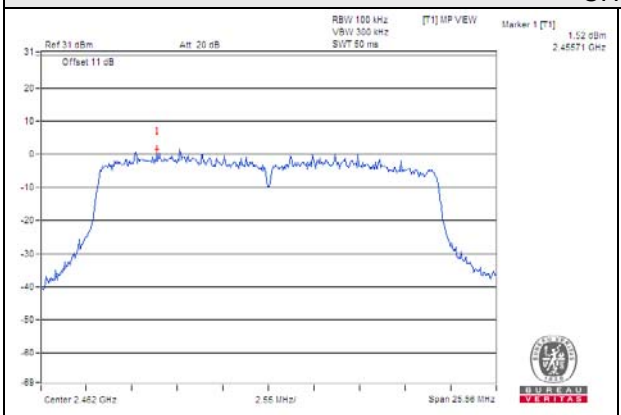


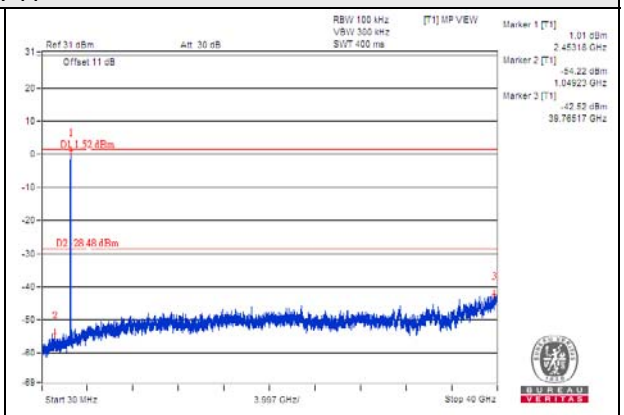
CH 6



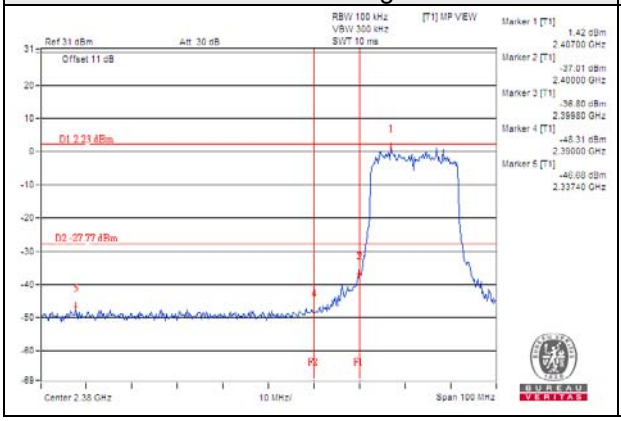


CH 11

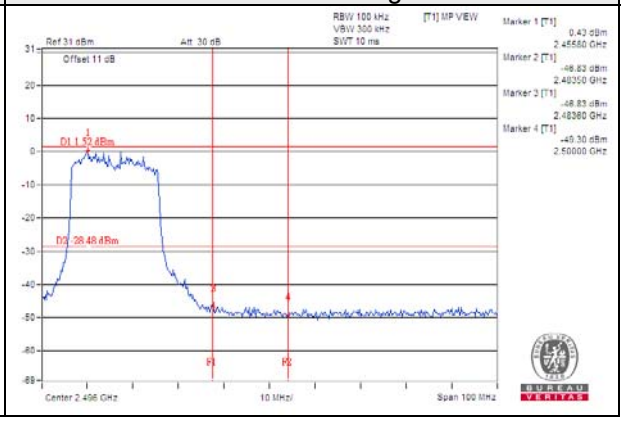




CH 1 Band edge

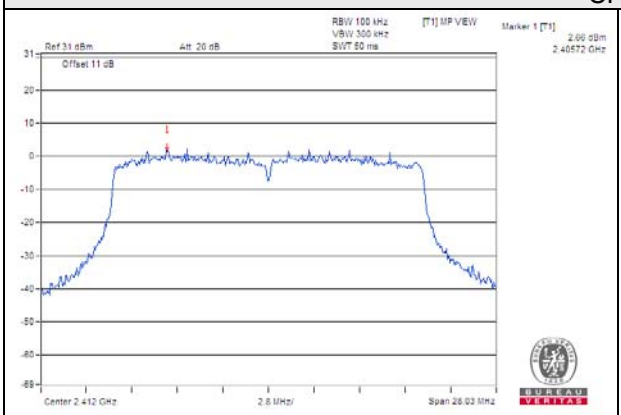


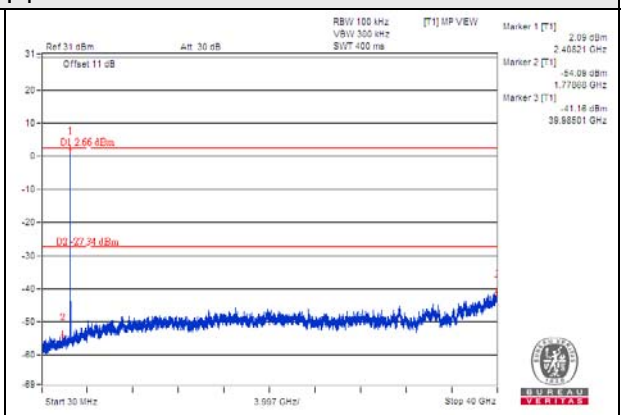
CH 11 Band edge



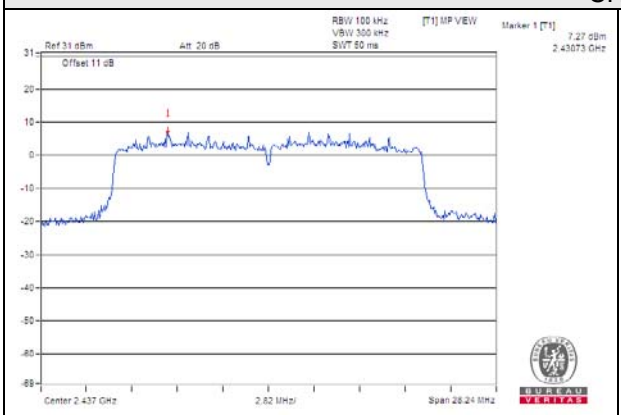
802.11ax (HE20)_Chain 3

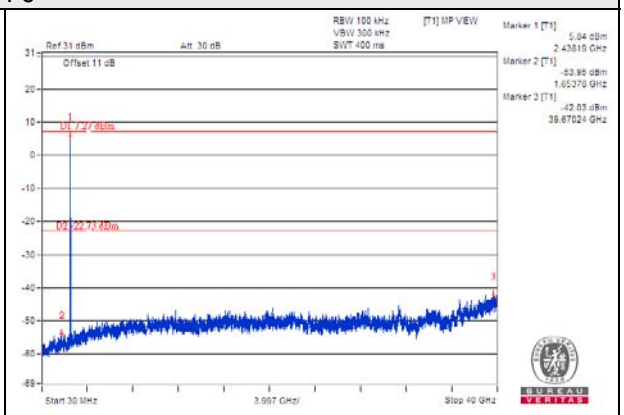
CH 1



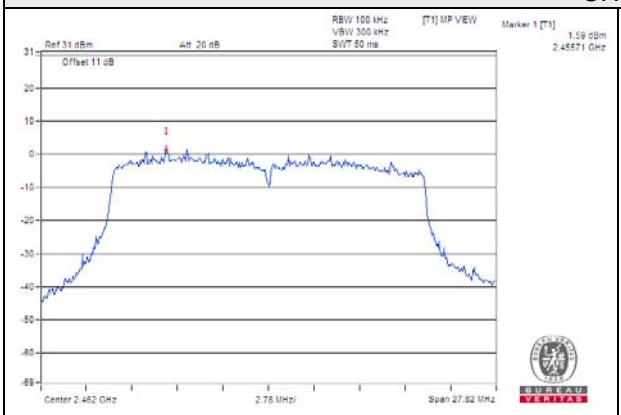


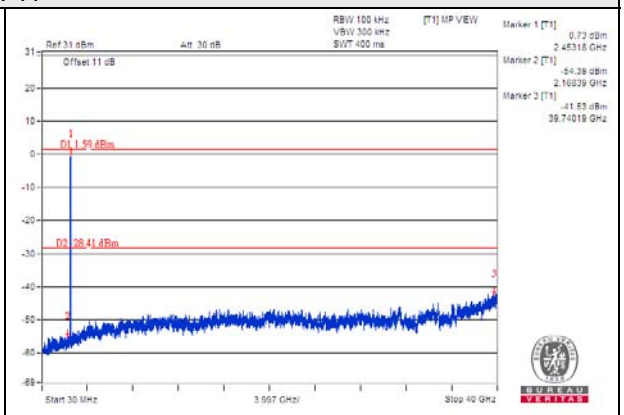
CH 6



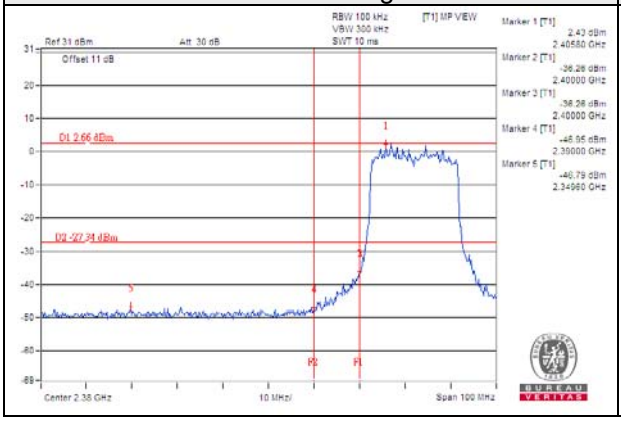


CH 11

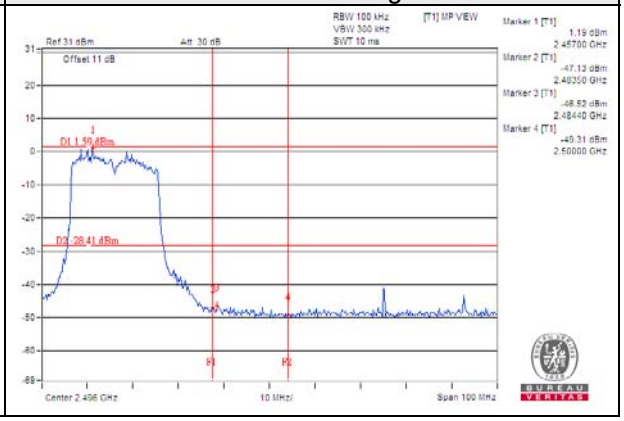




CH 1 Band edge

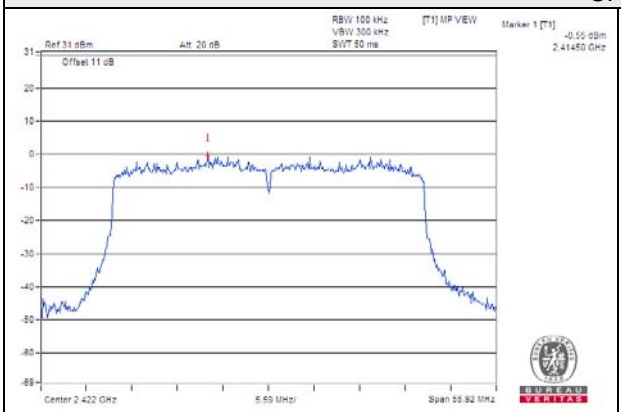


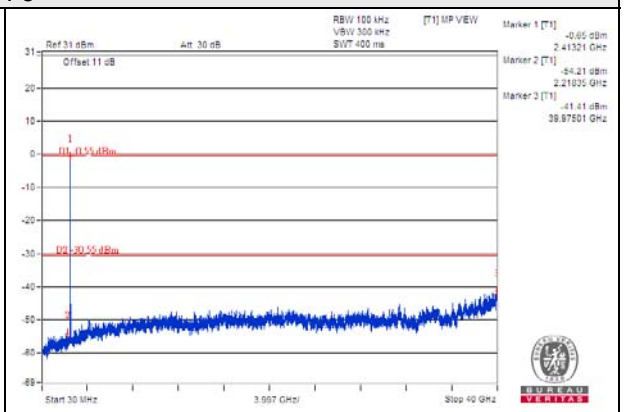
CH 11 Band edge



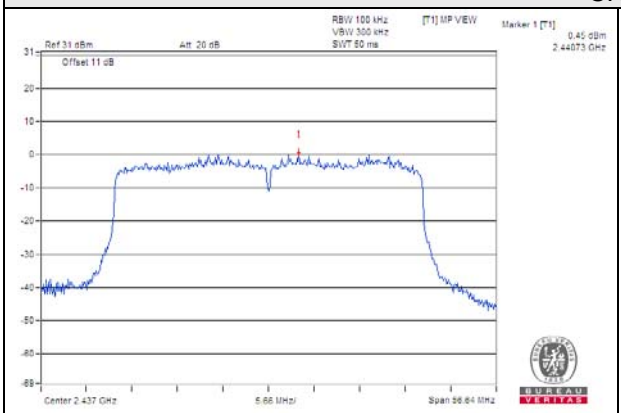
802.11ax (HE40)_Chain 0

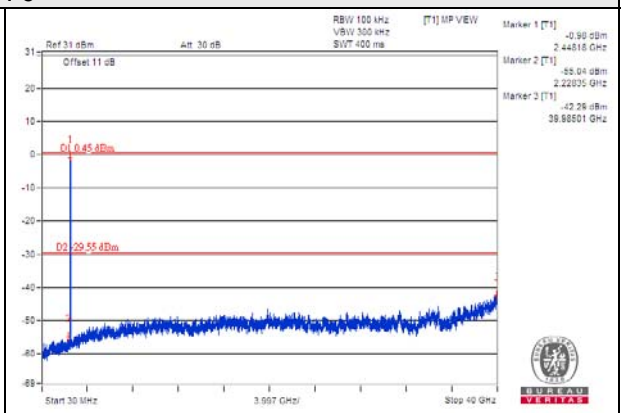
CH 3



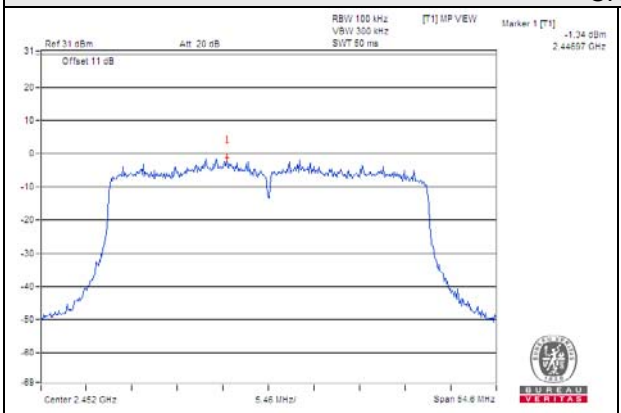


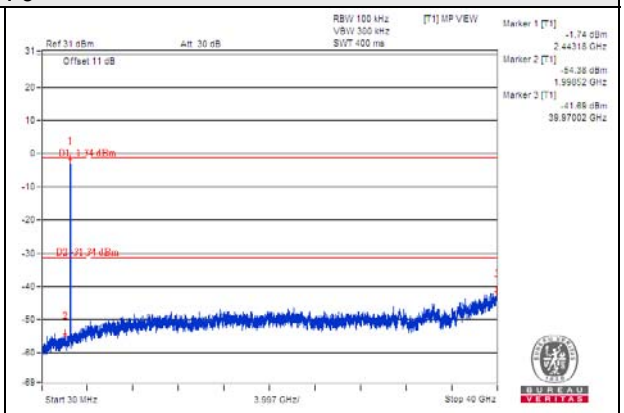
CH 6



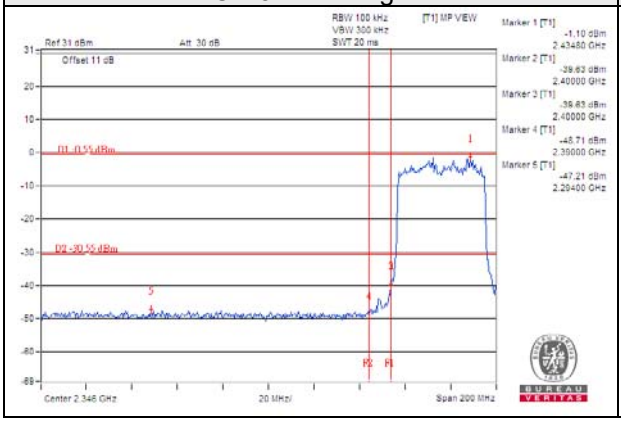


CH 9

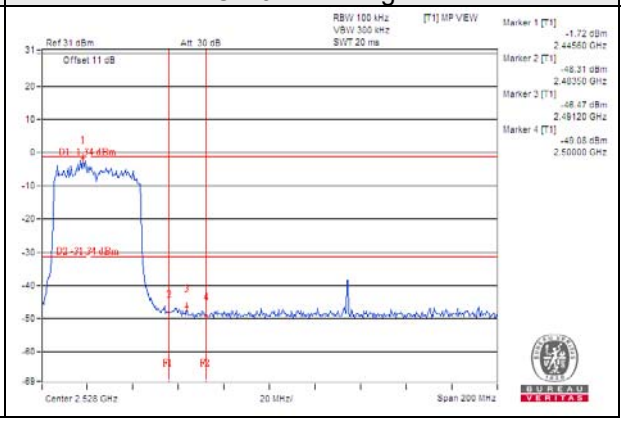




CH 3 Band edge

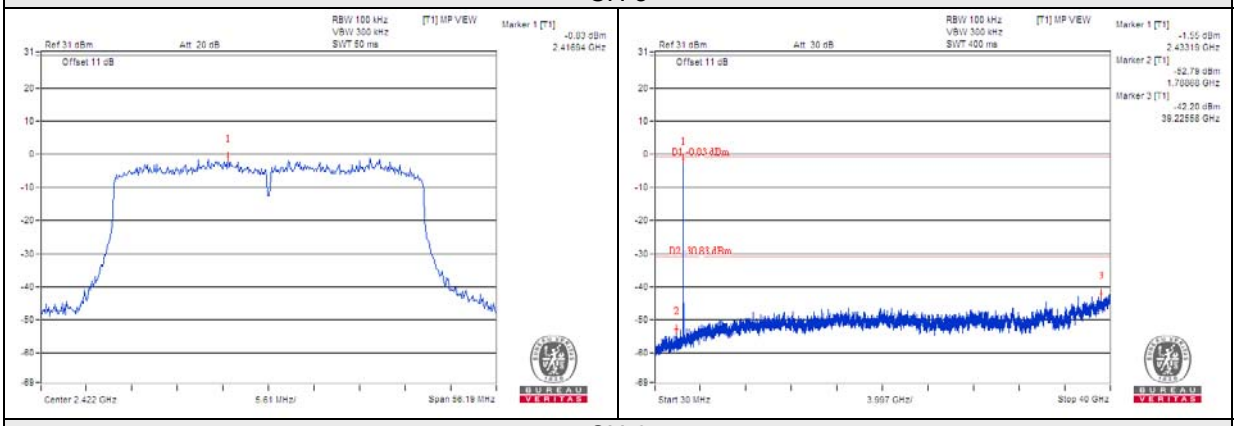


CH 9 Band edge

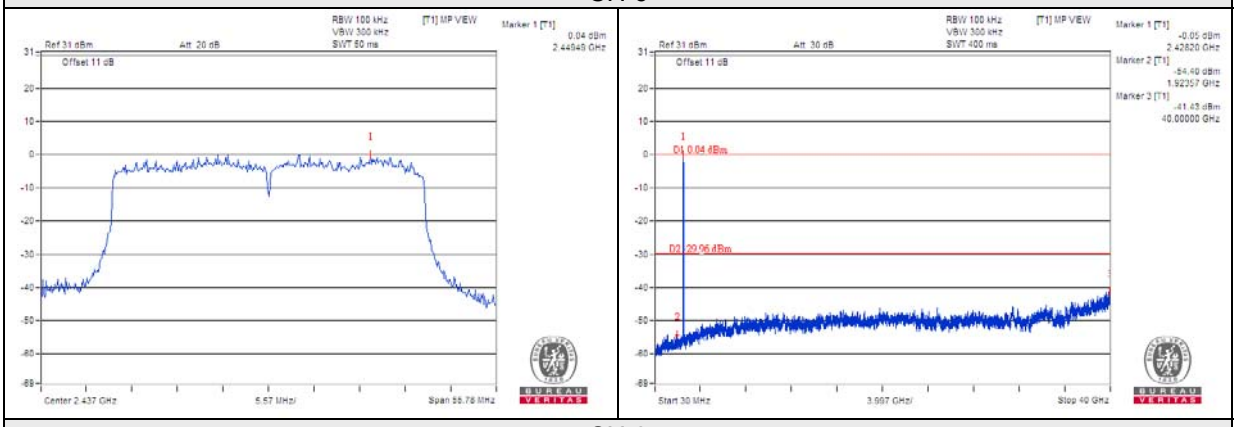


802.11ax (HE40)_Chain 1

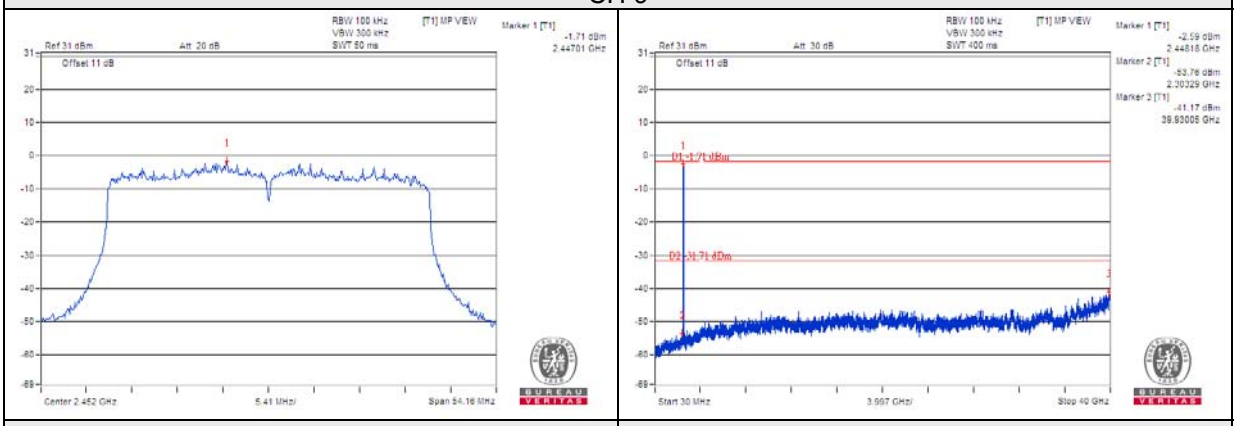
CH 3



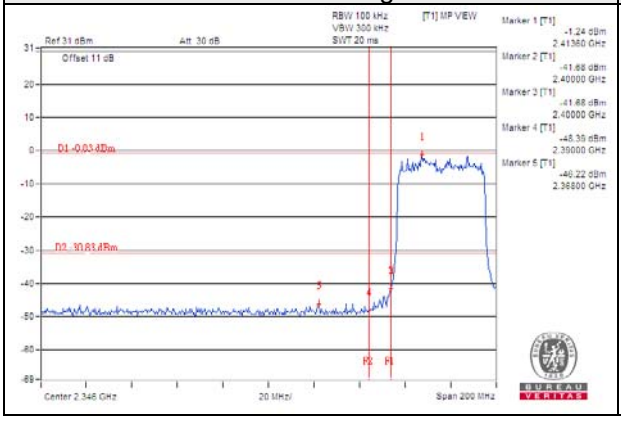
CH 6



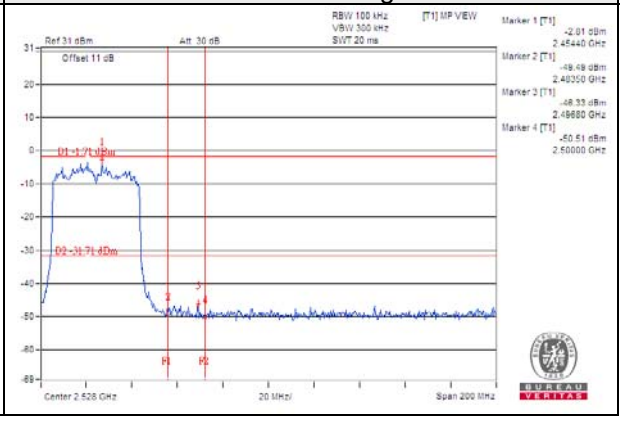
CH 9



CH 3 Band edge

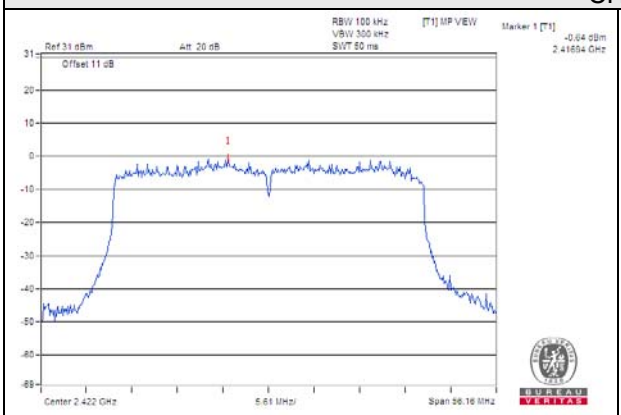


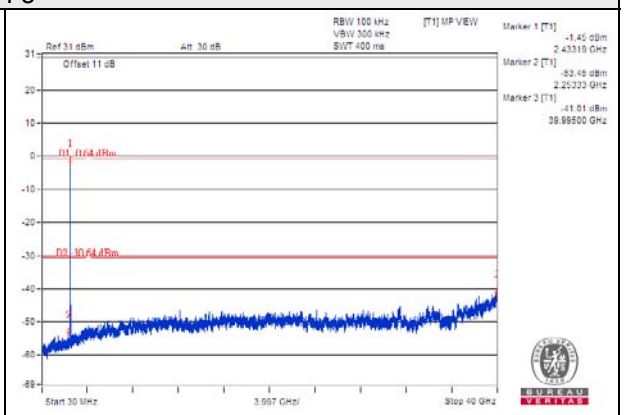
CH 9 Band edge



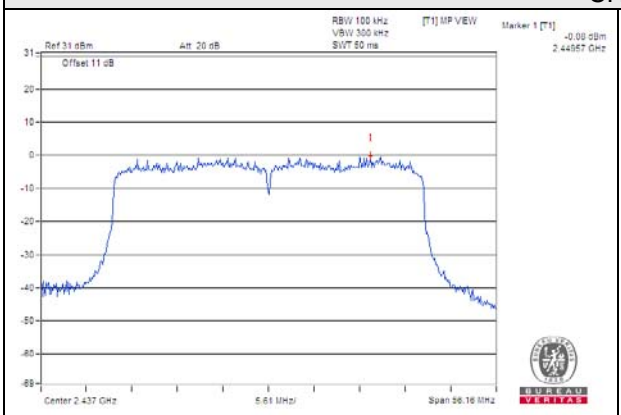
802.11ax (HE40)_Chain 2

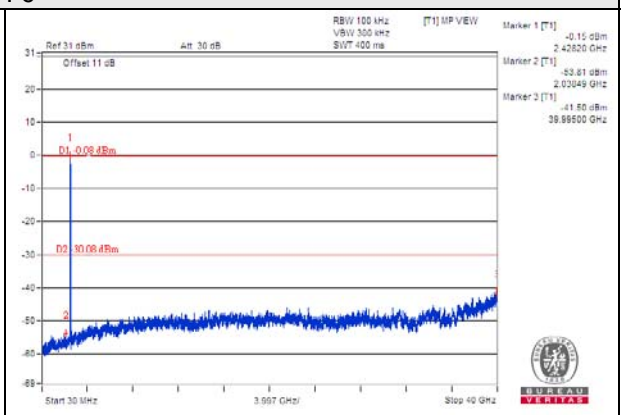
CH 3



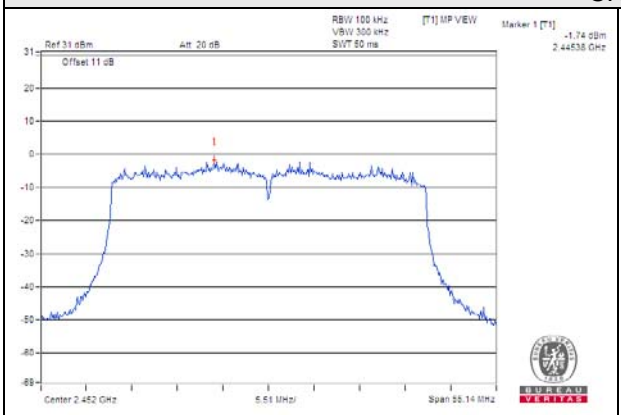


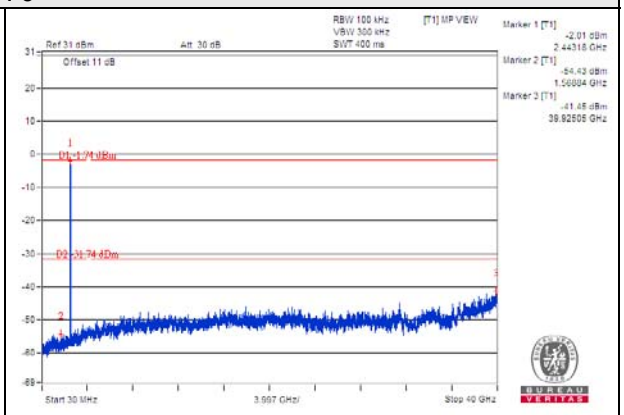
CH 6



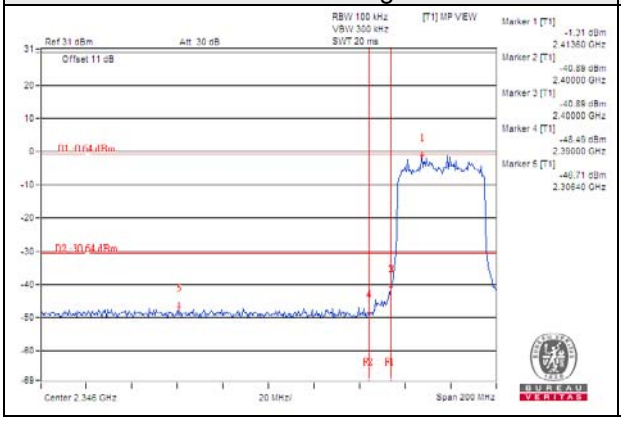


CH 9

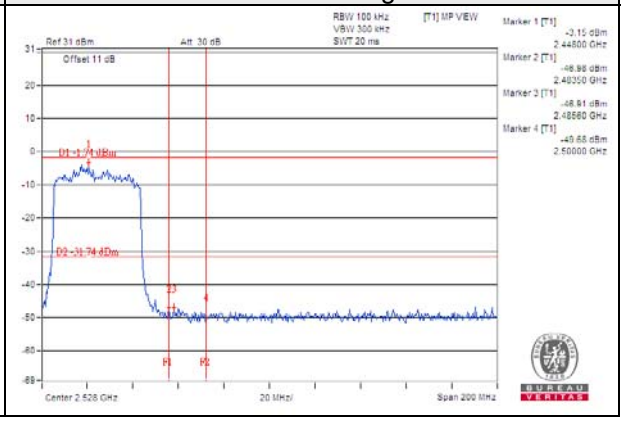




CH 3 Band edge

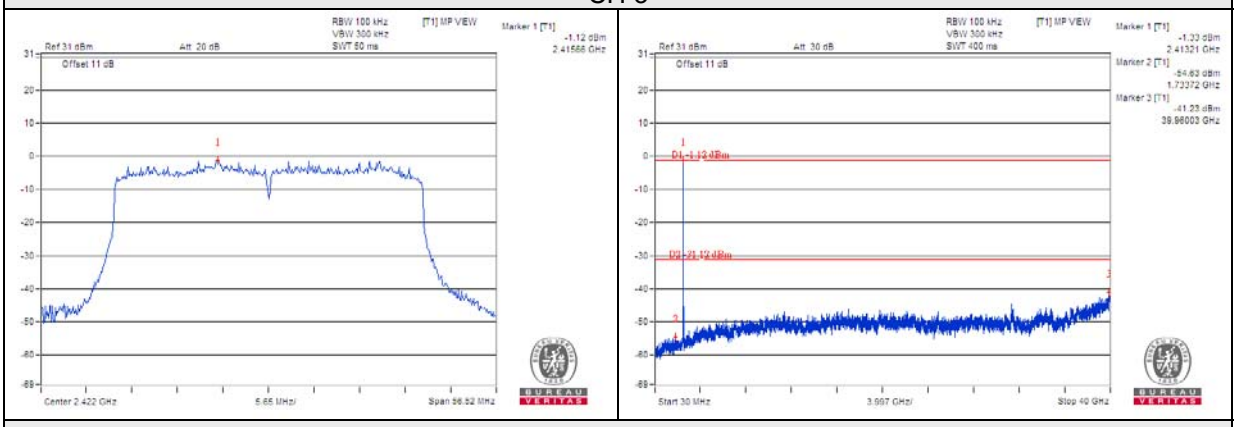


CH 9 Band edge

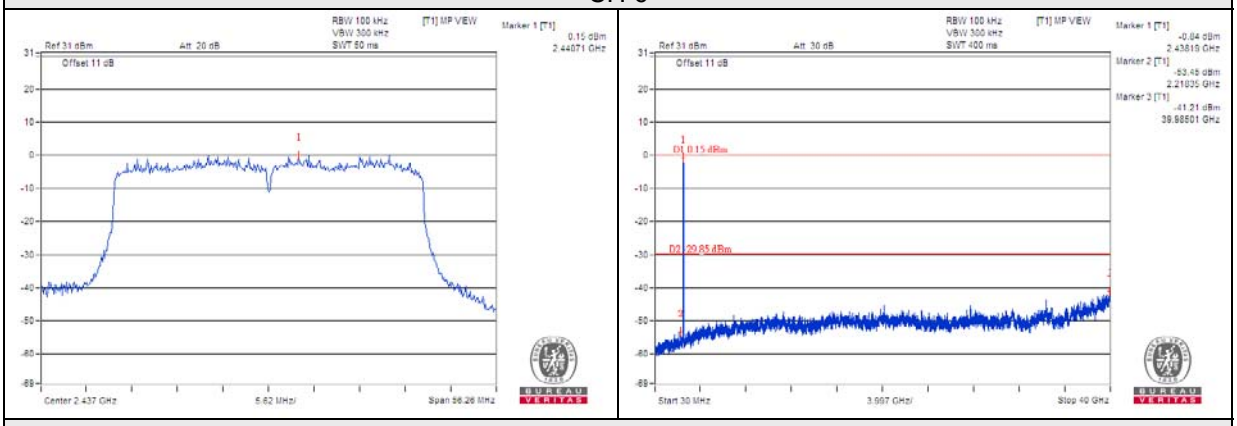


802.11ax (HE40)_Chain 3

CH 3



CH 6



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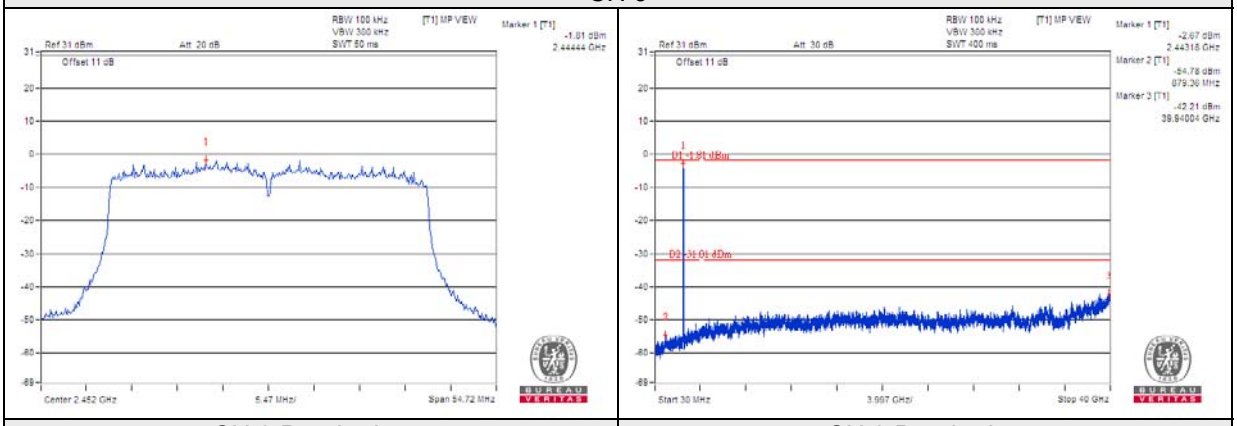

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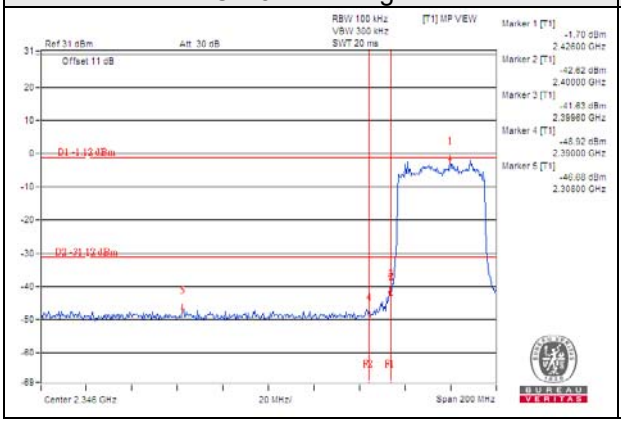
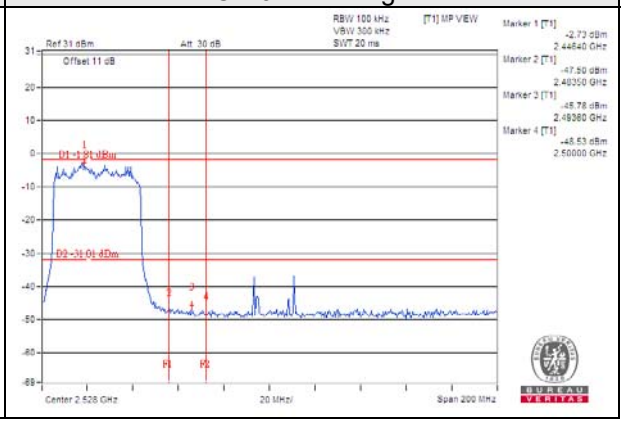


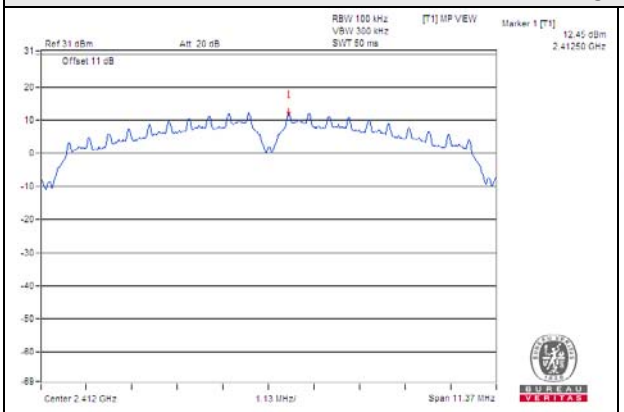
CH 9 Band edge

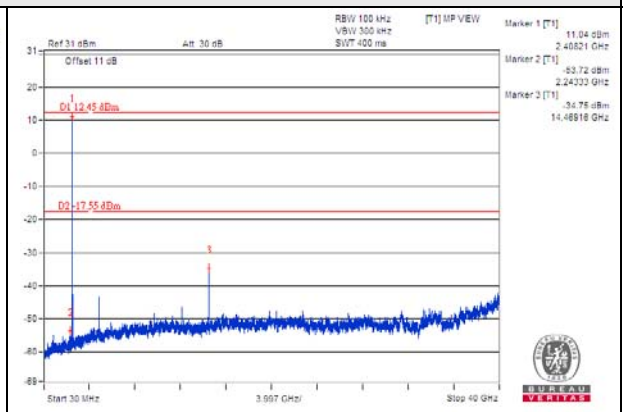


Scanning radio (Radio 3)

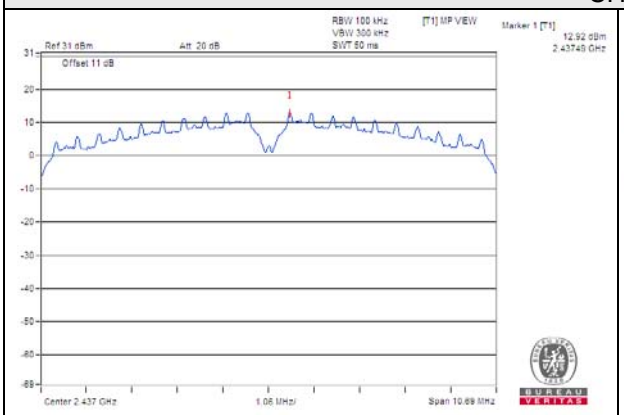
802.11b

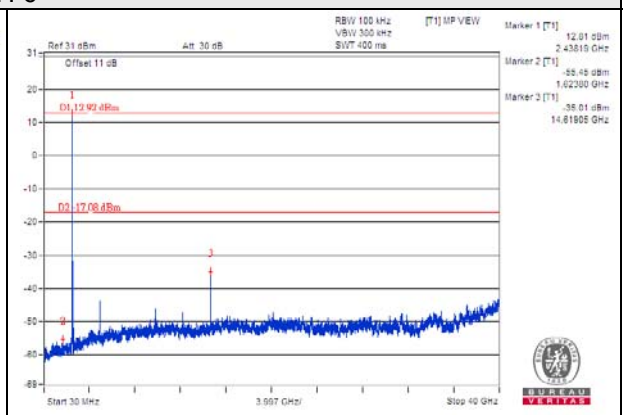
CH 1



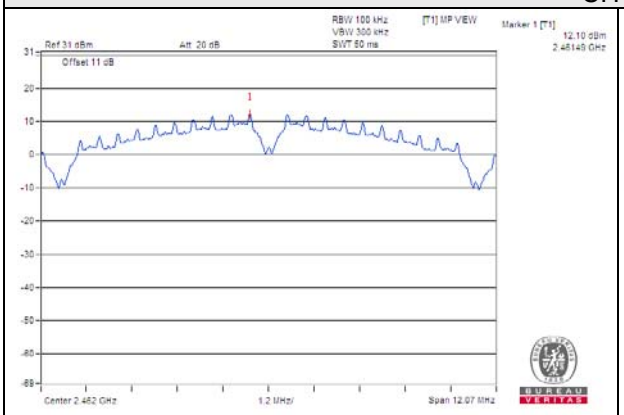


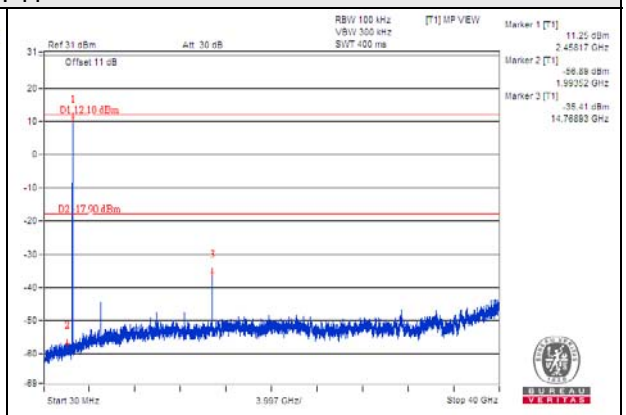
CH 6



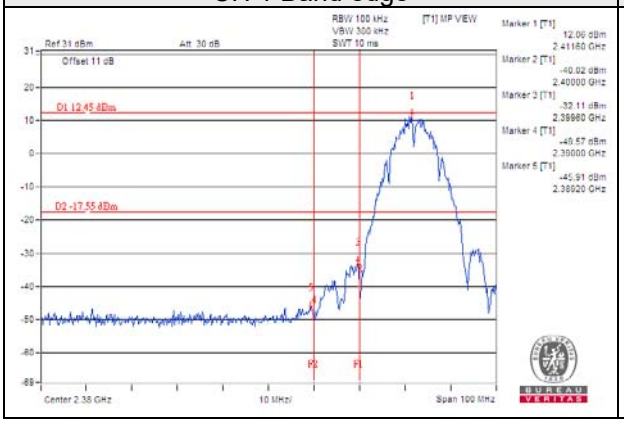


CH 11

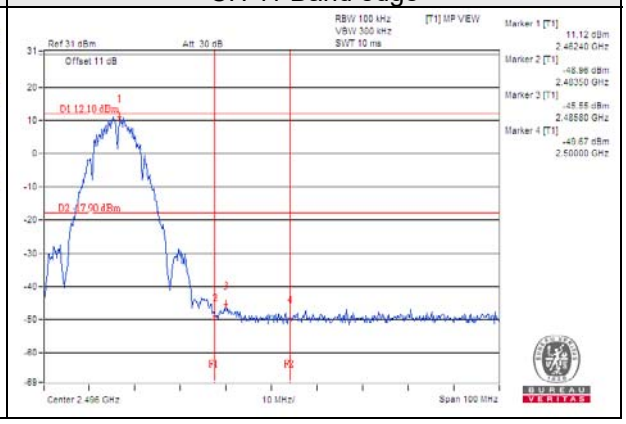




CH 1 Band edge

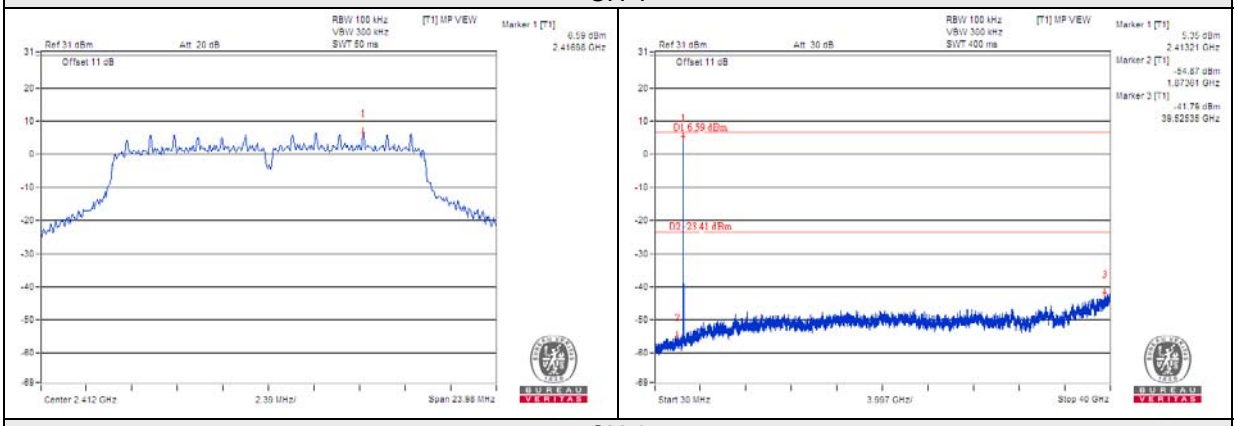


CH 11 Band edge

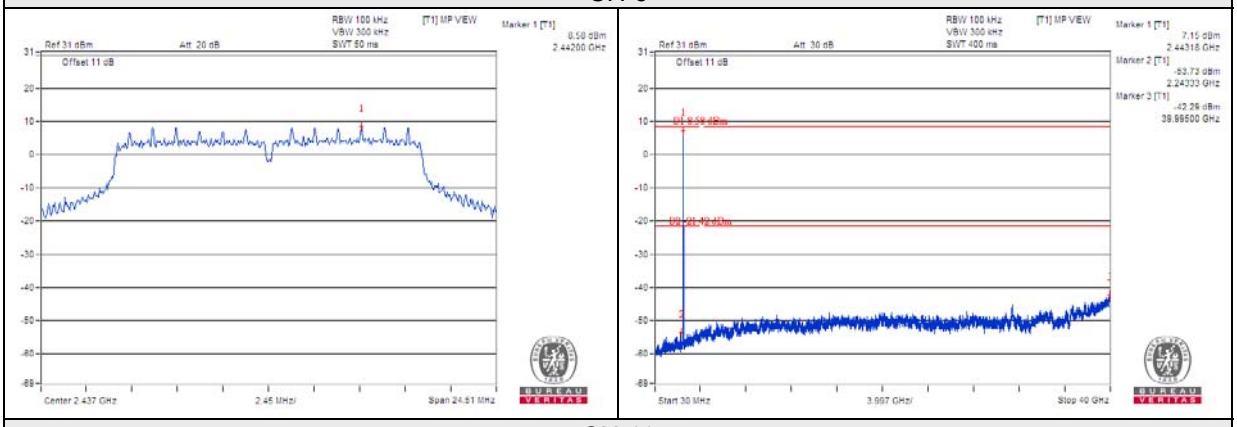


802.11g

CH 1



CH 6



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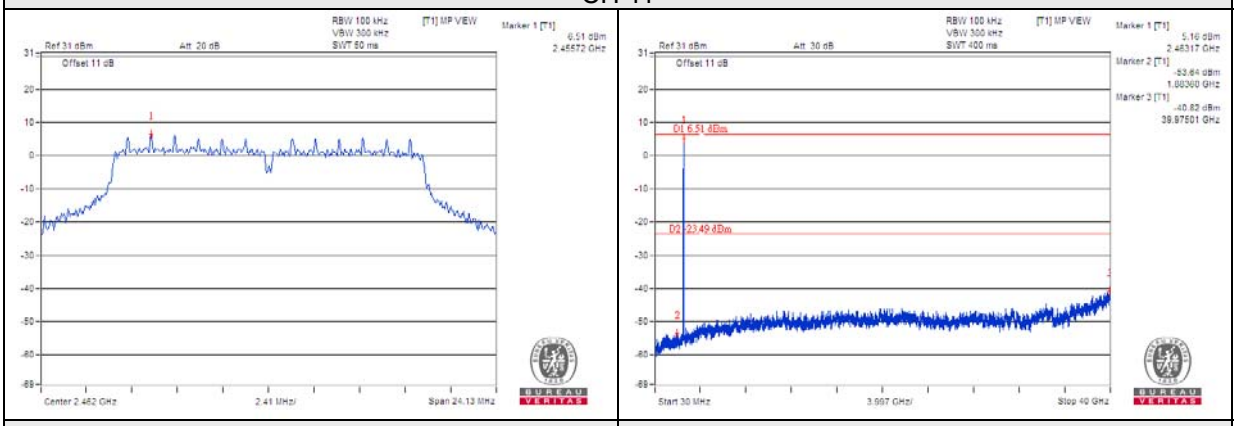

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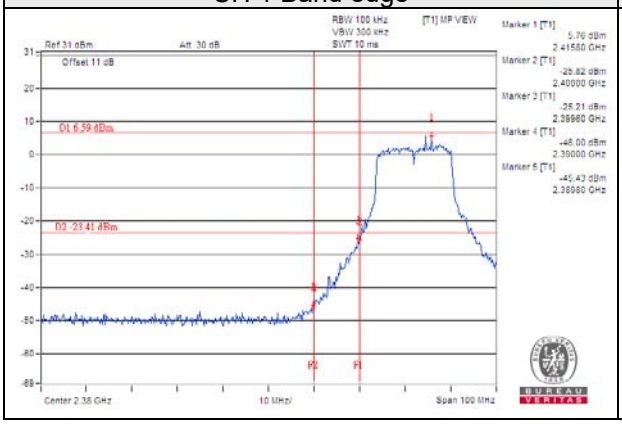
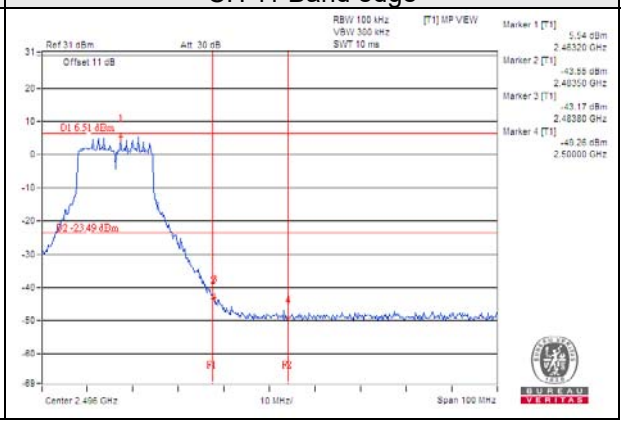
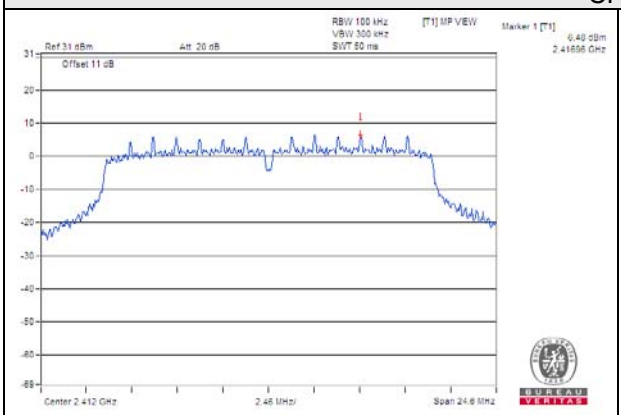


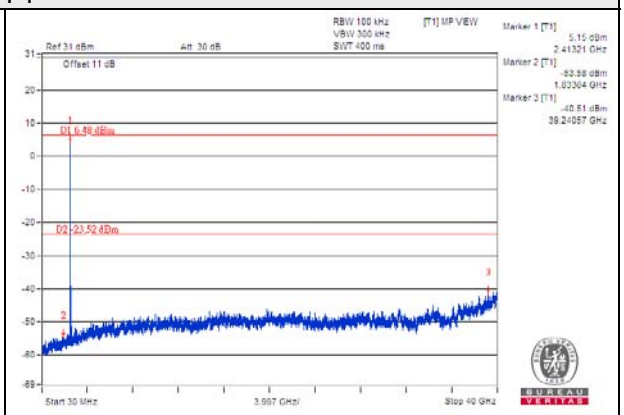
CH 11 Band edge



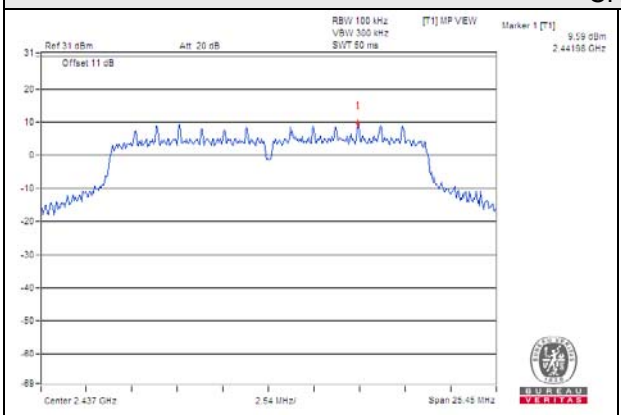
802.11n (VHT20)

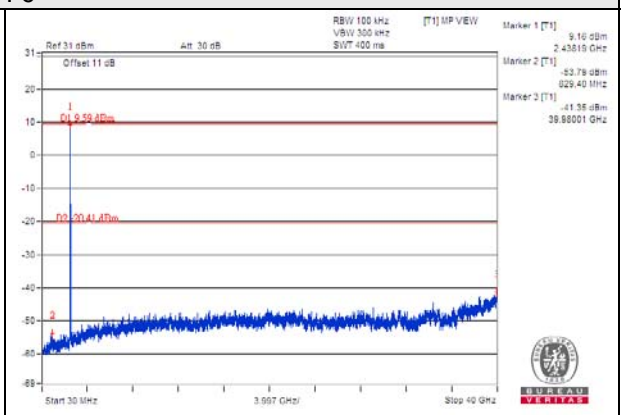
CH 1



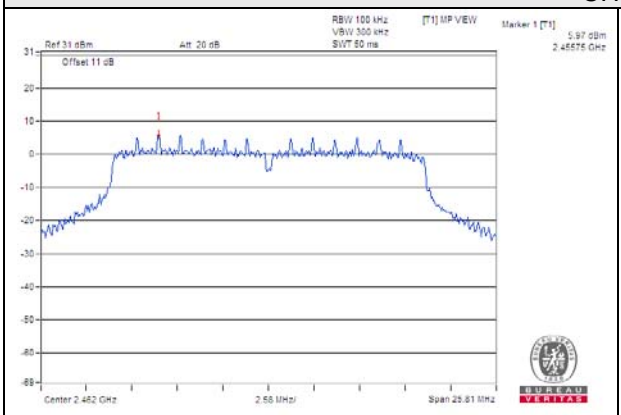


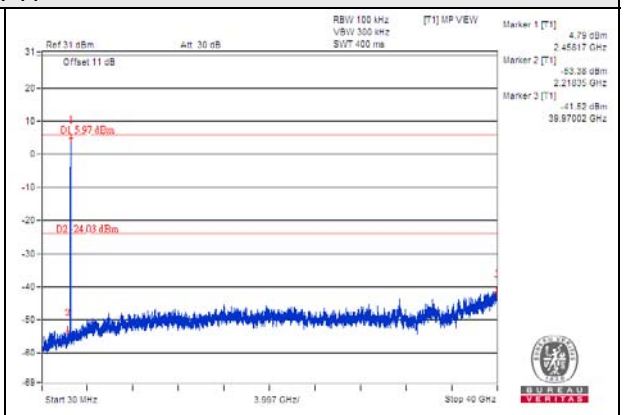
CH 6



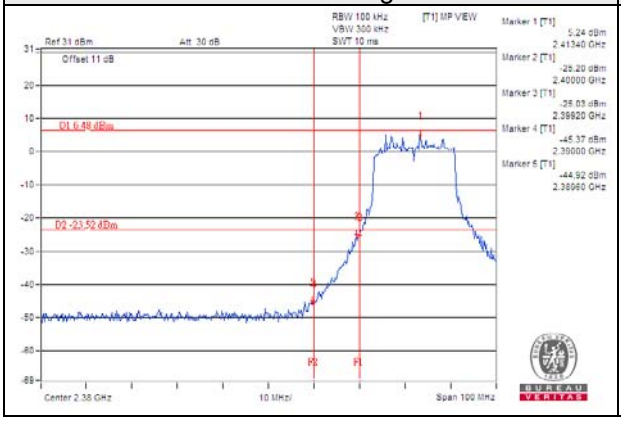


CH 11

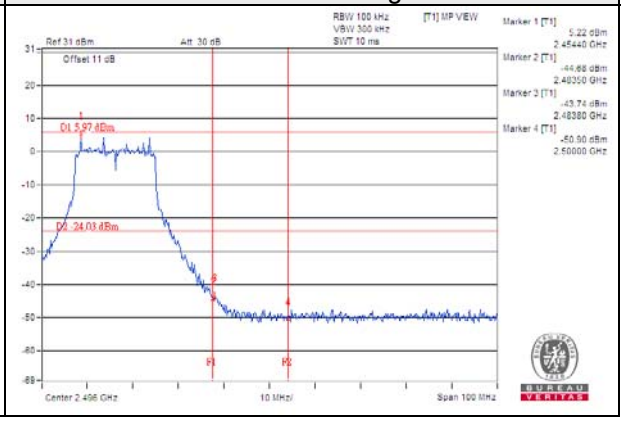




CH 1 Band edge

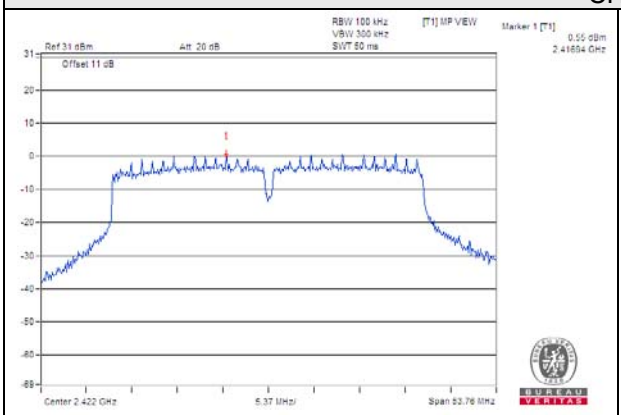


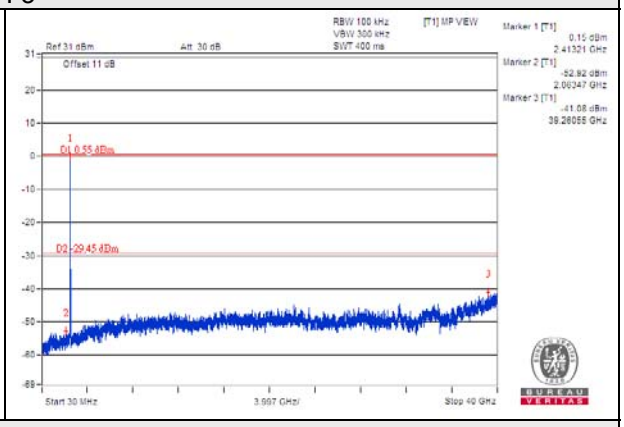
CH 11 Band edge



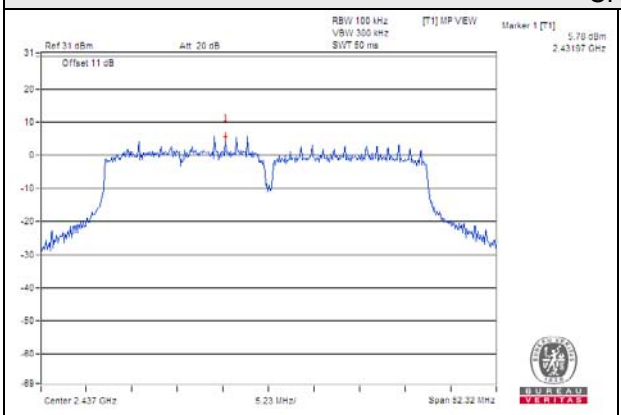
802.11n (VHT40)

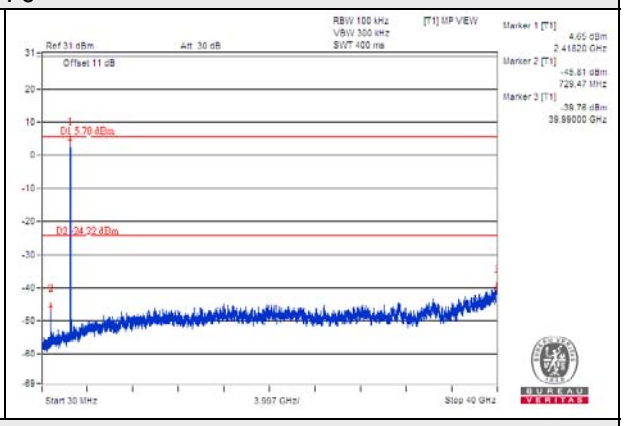
CH 3



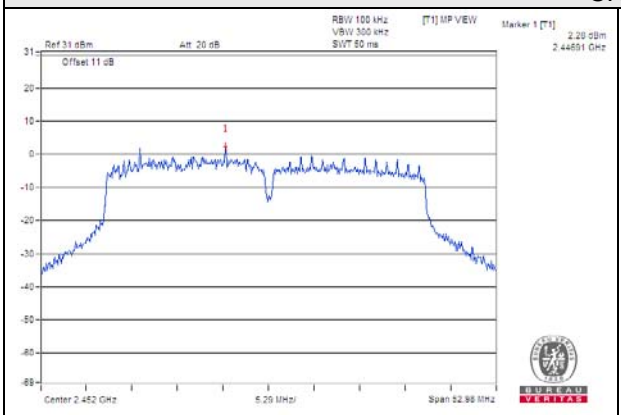


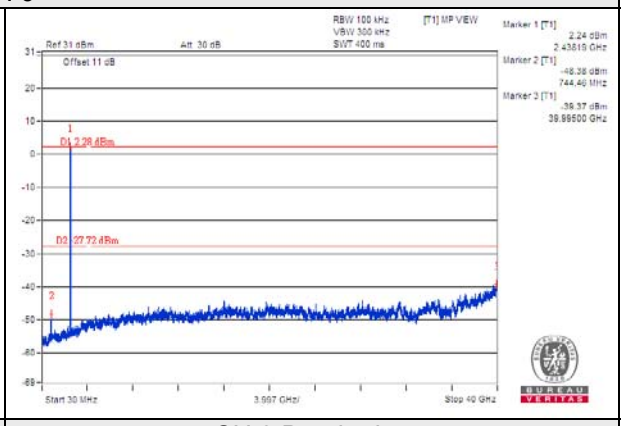
CH 6



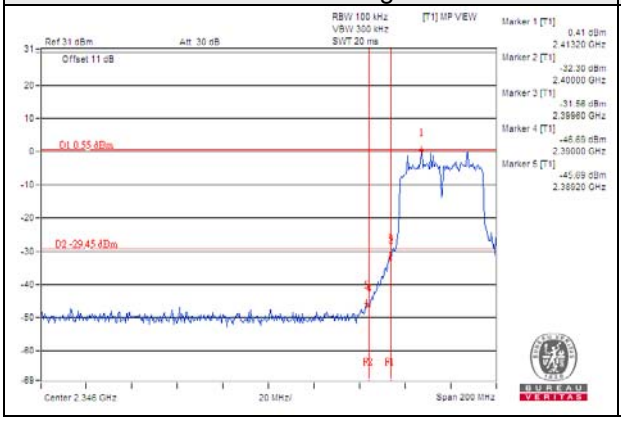


CH 9

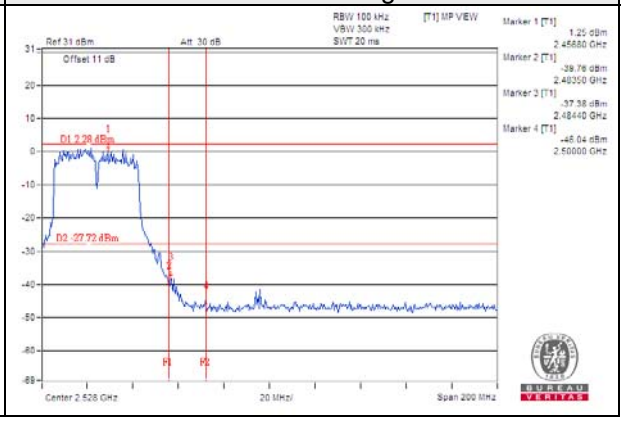




CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

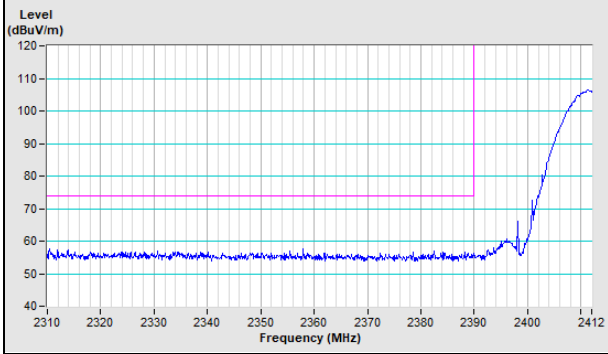
Please refer to the attached file (Test Setup Photo).

Annex A - Band Edge Measurement

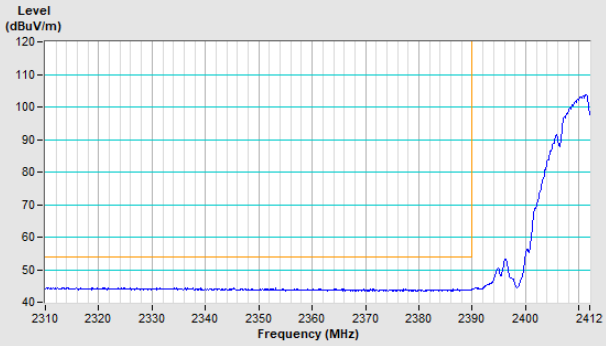
2G traffic radio (Radio 2)

802.11b Channel 1

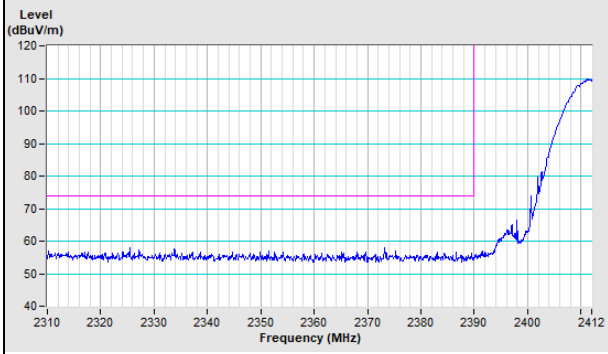
Horizontal (Peak)



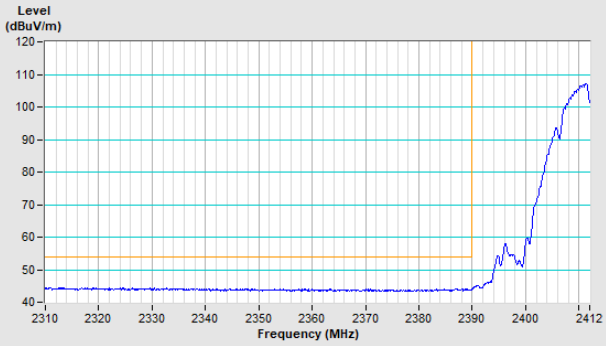
Horizontal (Average)



Vertical (Peak)

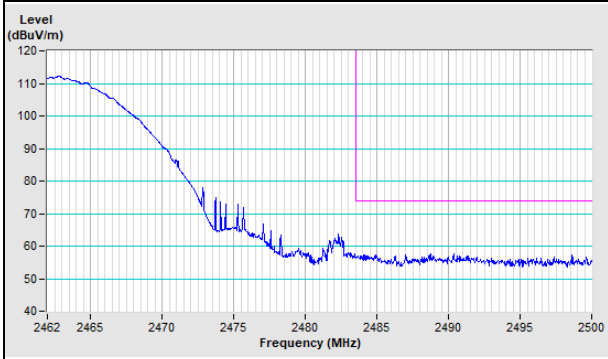


Vertical (Average)

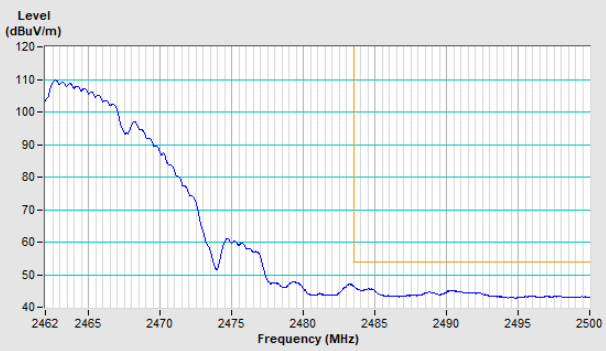


802.11b Channel 11

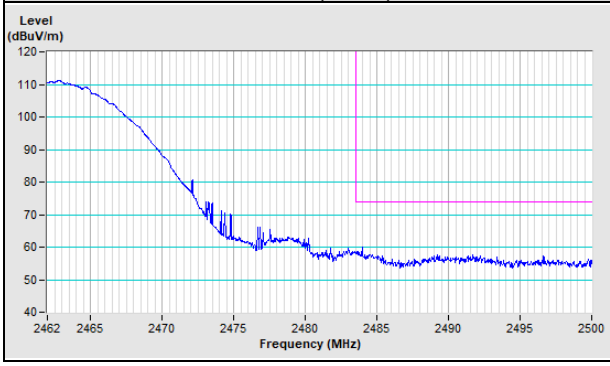
Horizontal (Peak)



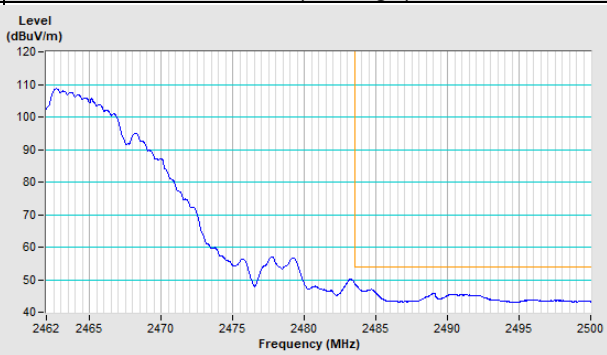
Horizontal (Average)



Vertical (Peak)

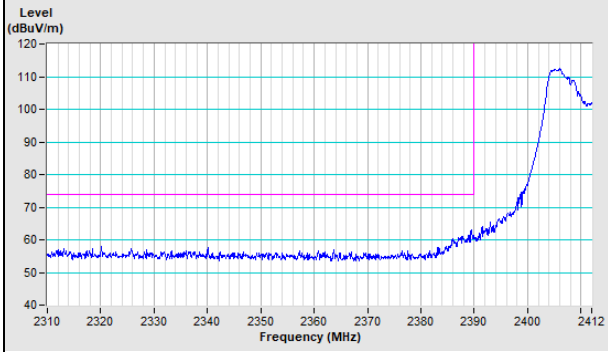


Vertical (Average)

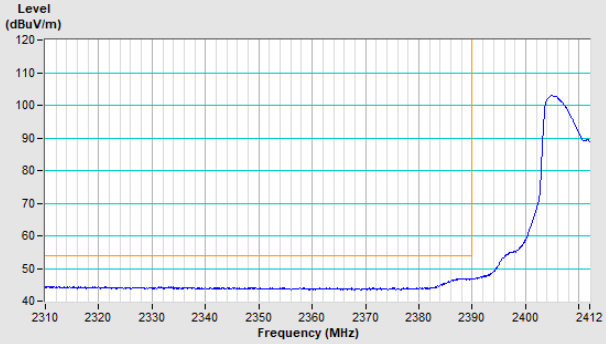


802.11g Channel 1

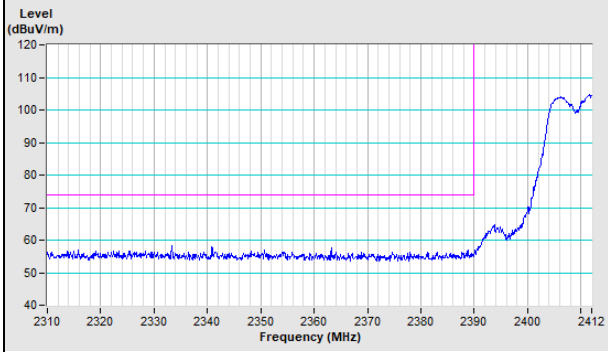
Horizontal (Peak)



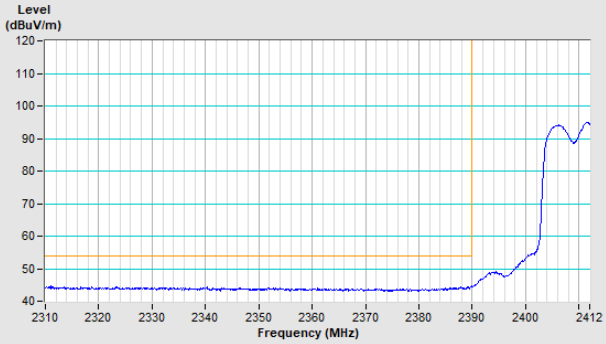
Horizontal (Average)



Vertical (Peak)

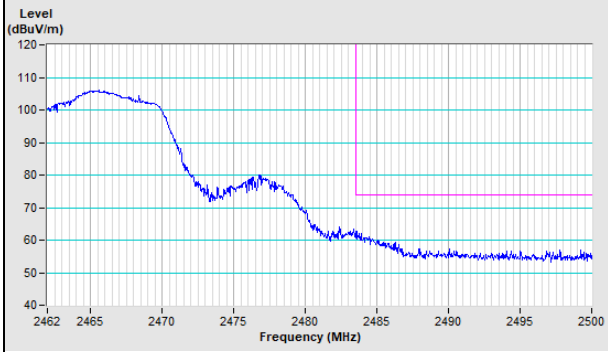


Vertical (Average)

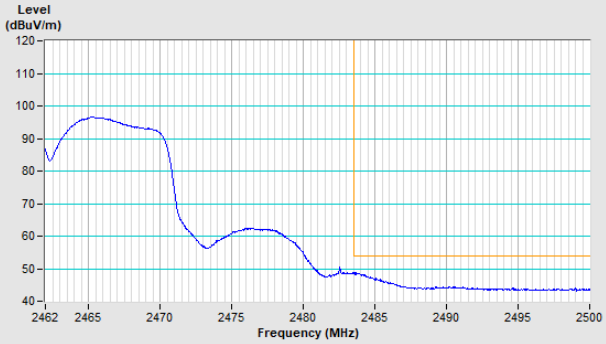


802.11g Channel 11

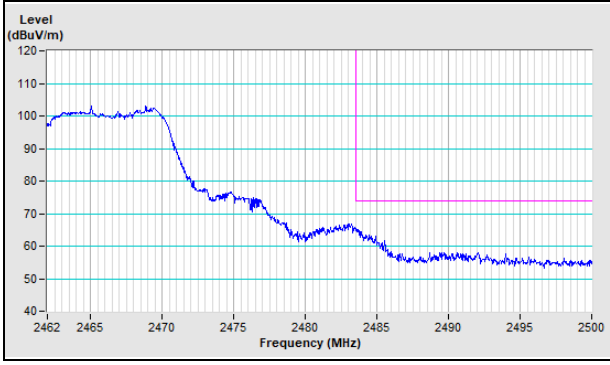
Horizontal (Peak)



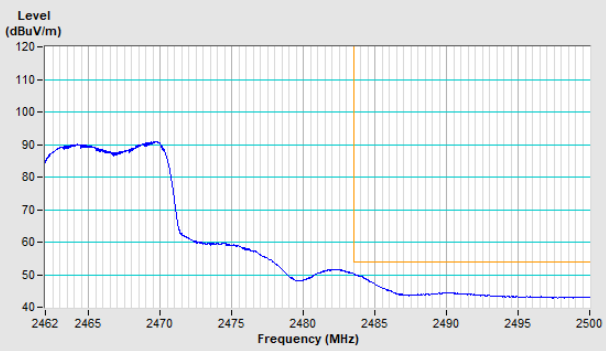
Horizontal (Average)



Vertical (Peak)

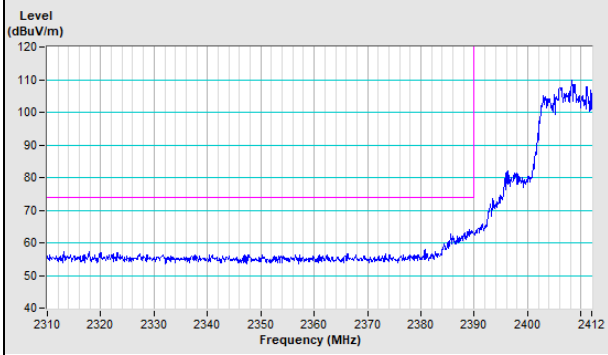


Vertical (Average)

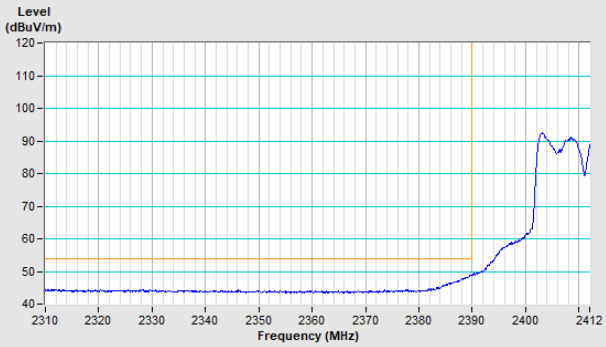


802.11ax (HE20) Channel 1

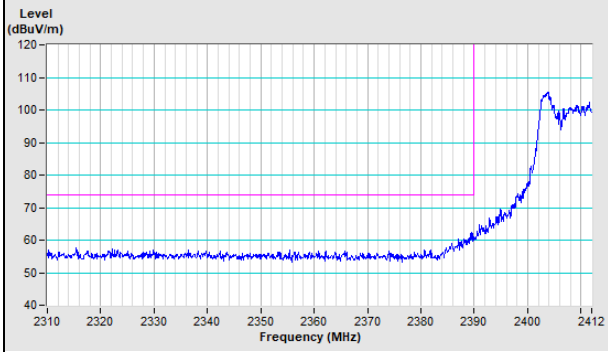
Horizontal (Peak)



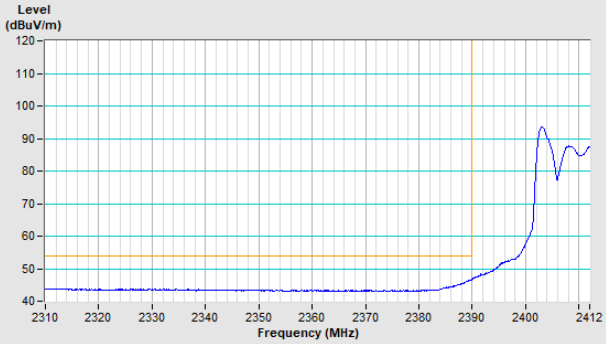
Horizontal (Average)



Vertical (Peak)

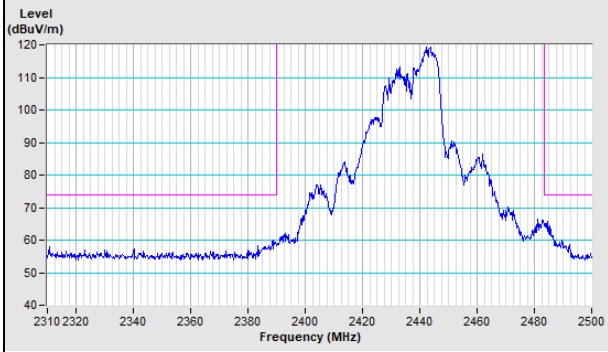


Vertical (Average)

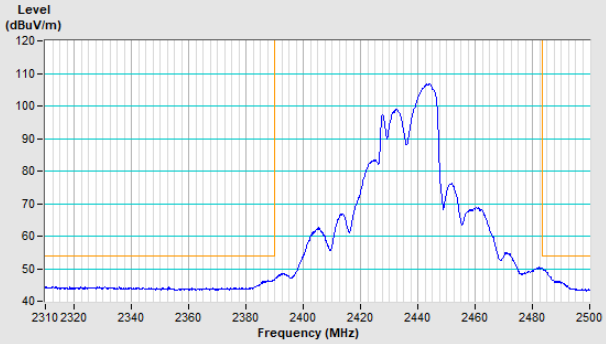


802.11ax (HE20) Channel 6

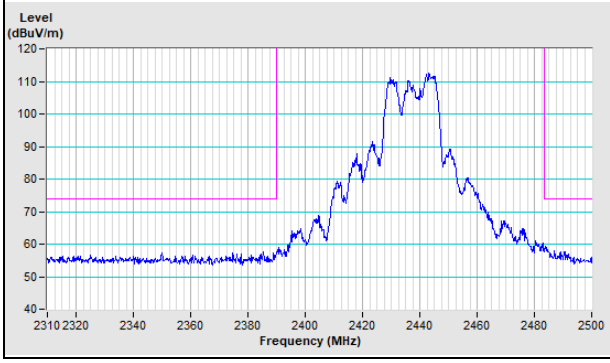
Horizontal (Peak)



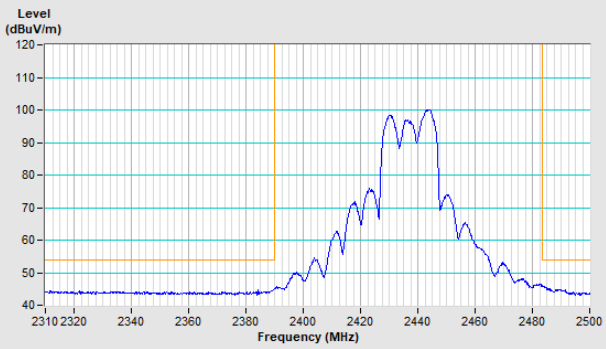
Horizontal (Average)

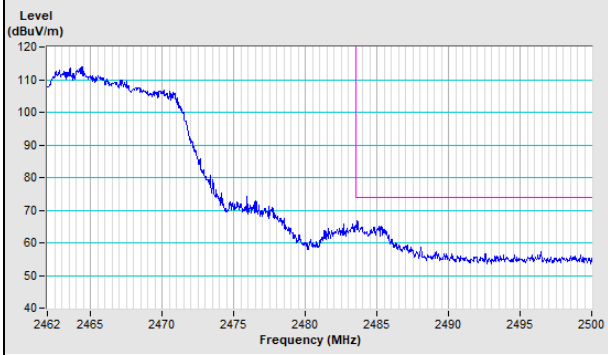
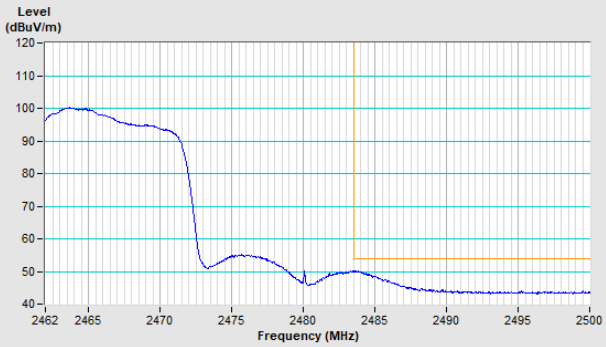
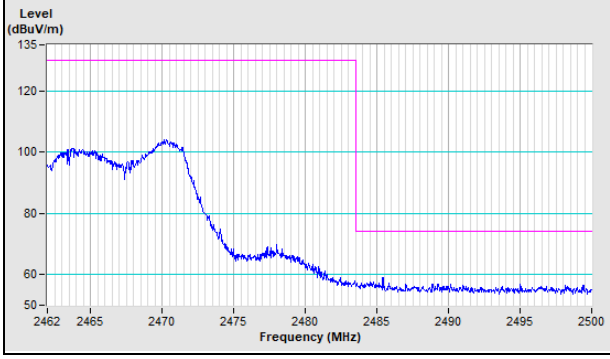
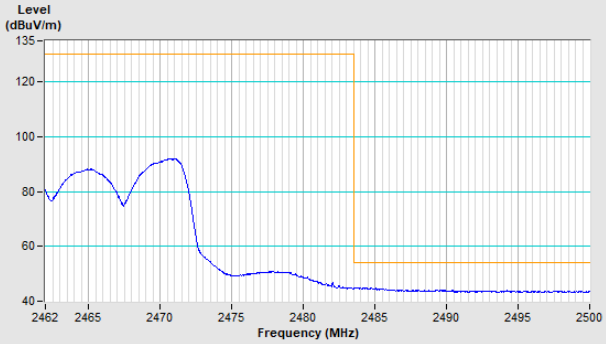


Vertical (Peak)



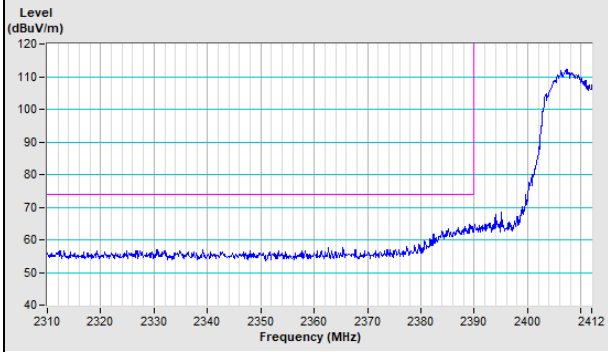
Vertical (Average)



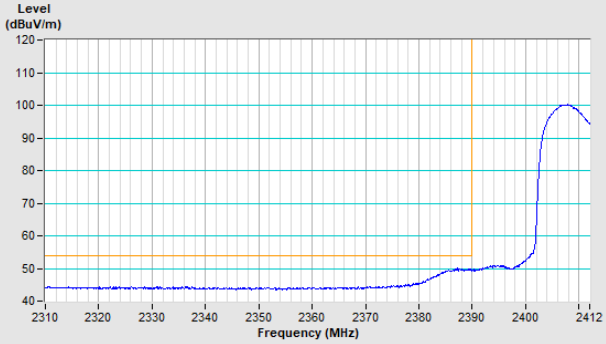
802.11ax (HE20) Channel 11	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE40) Channel 3

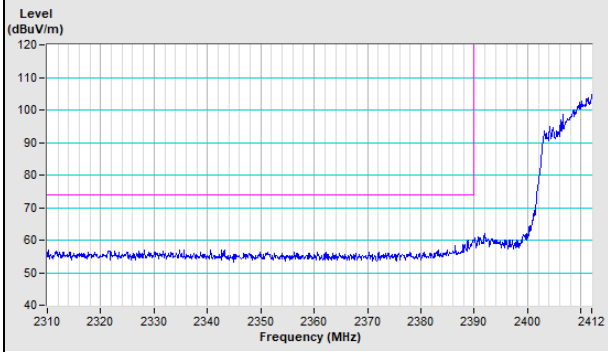
Horizontal (Peak)



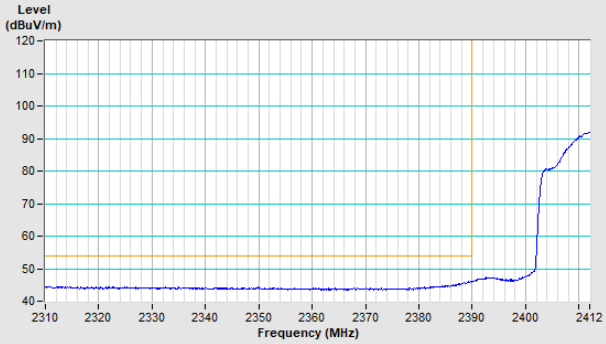
Horizontal (Average)



Vertical (Peak)

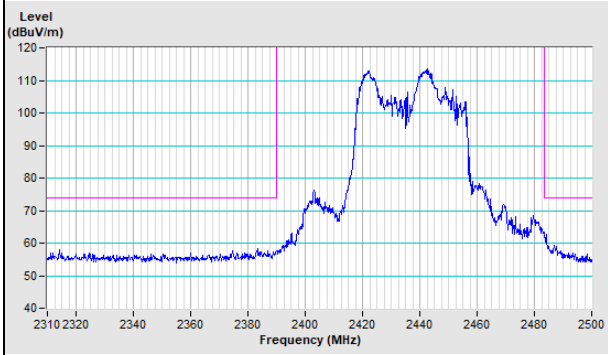


Vertical (Average)

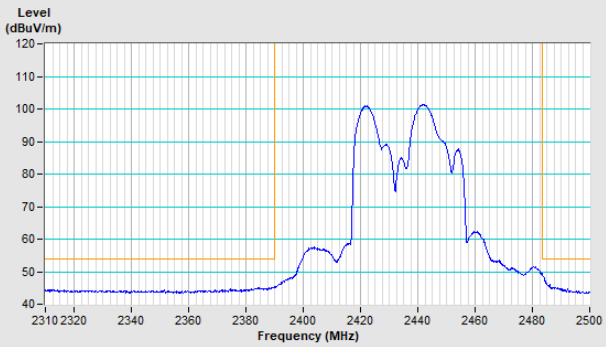


802.11ax (HE40) Channel 6

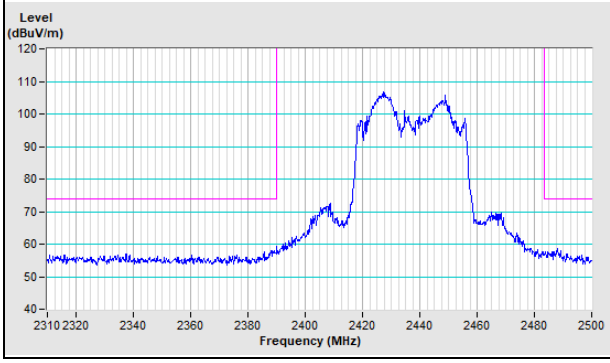
Horizontal (Peak)



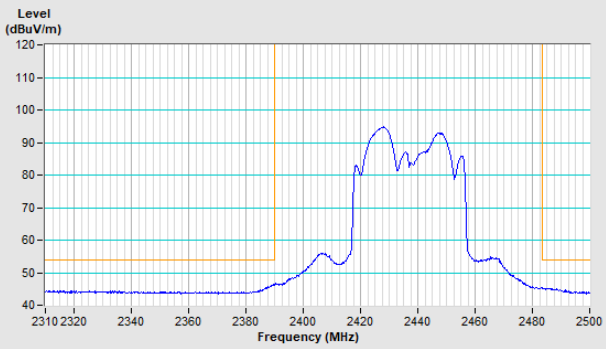
Horizontal (Average)

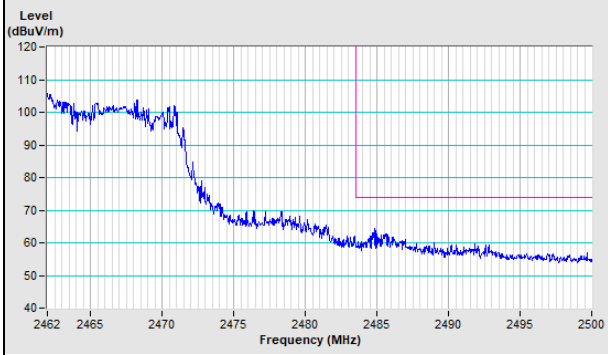
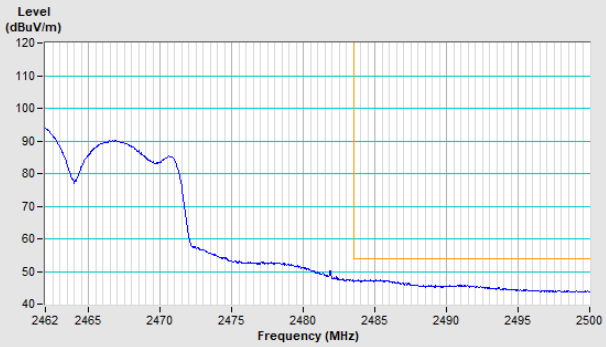
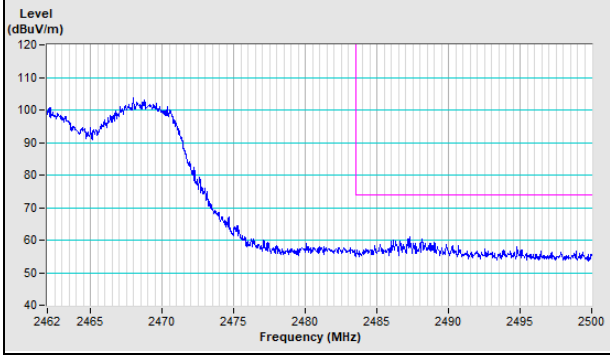
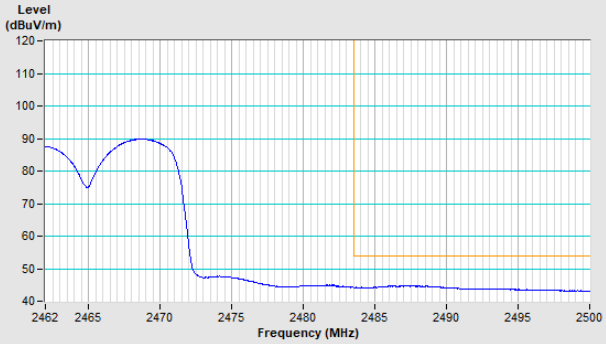


Vertical (Peak)



Vertical (Average)

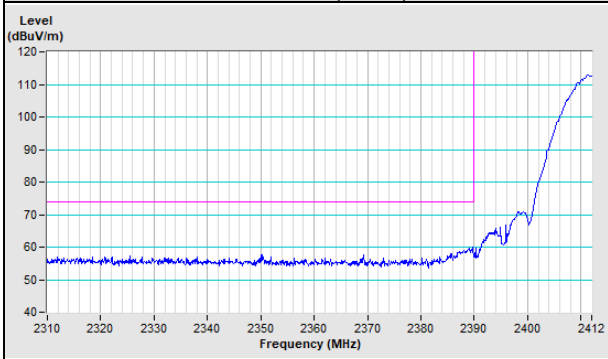


802.11ax (HE40) Channel 9	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

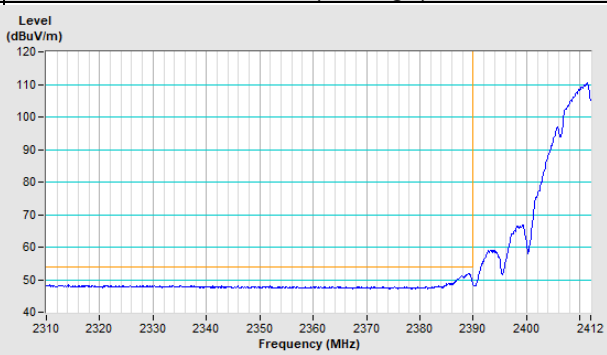
Scanning radio (Radio 3)

802.11b Channel 1

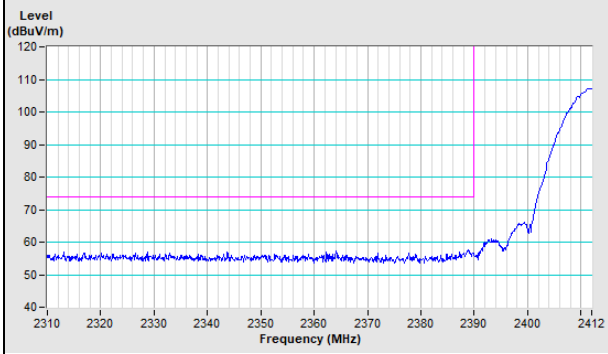
Horizontal (Peak)



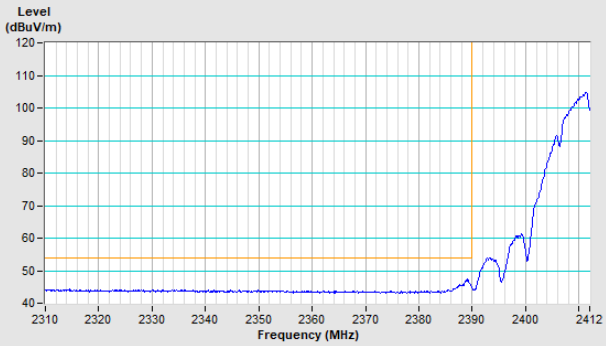
Horizontal (Average)



Vertical (Peak)

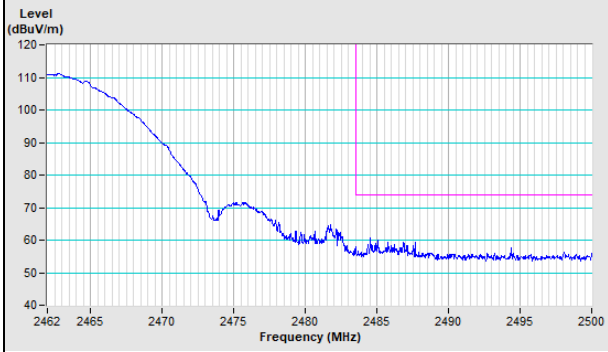


Vertical (Average)

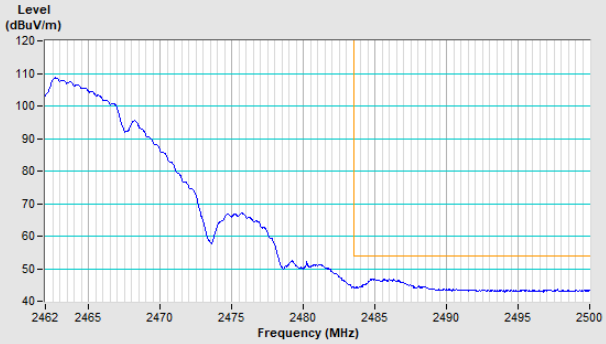


802.11b Channel 11

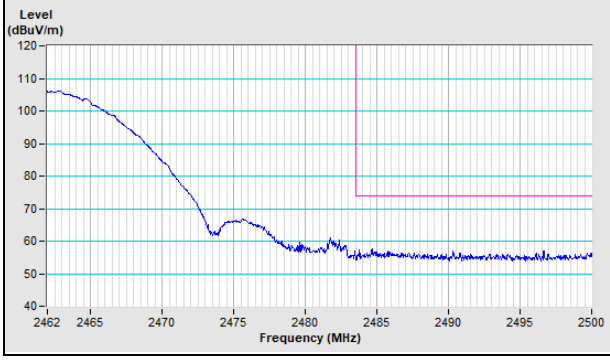
Horizontal (Peak)



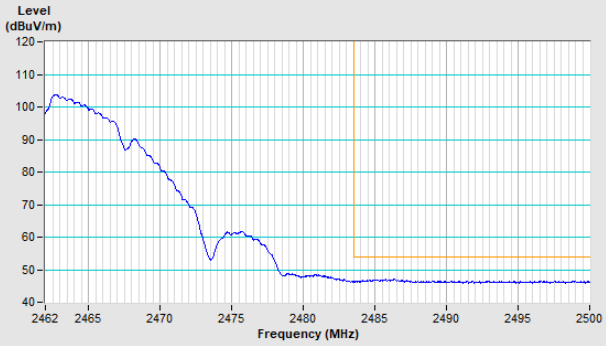
Horizontal (Average)



Vertical (Peak)

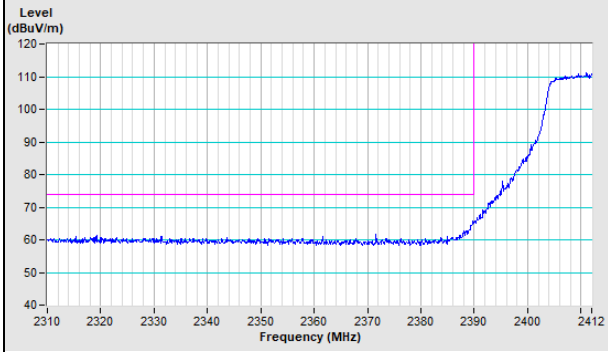


Vertical (Average)

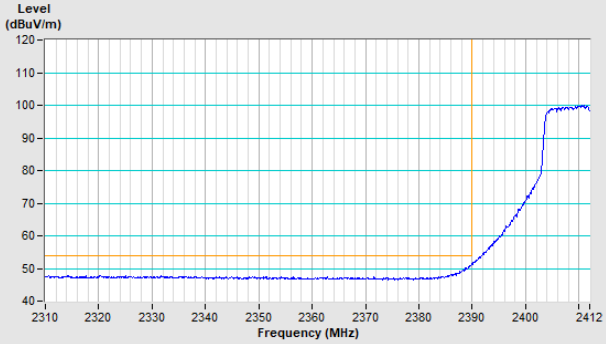


802.11g Channel 1

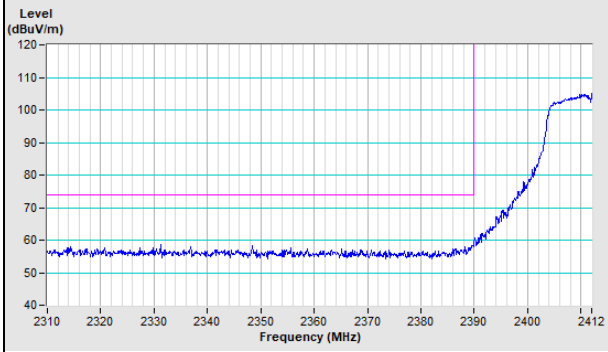
Horizontal (Peak)



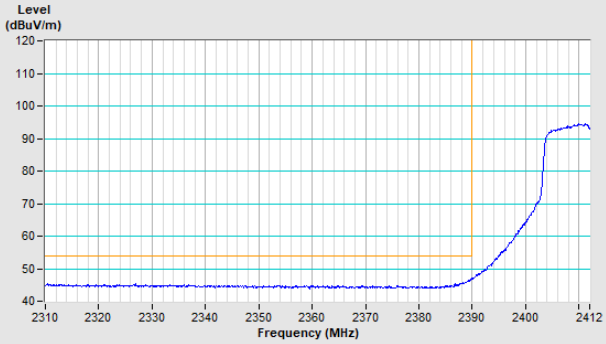
Horizontal (Average)



Vertical (Peak)

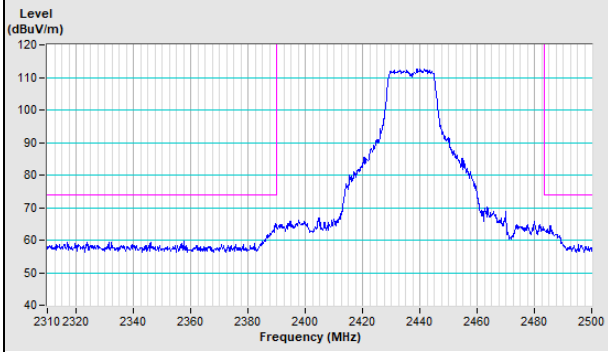


Vertical (Average)

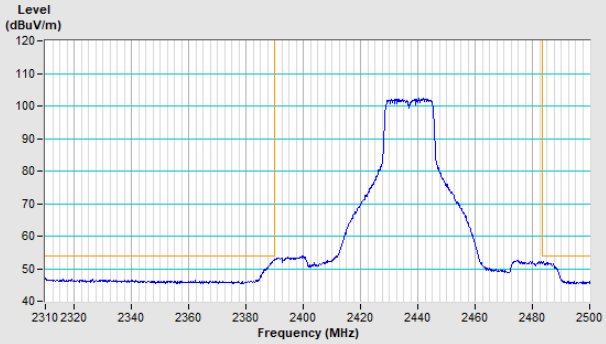


802.11g Channel 6

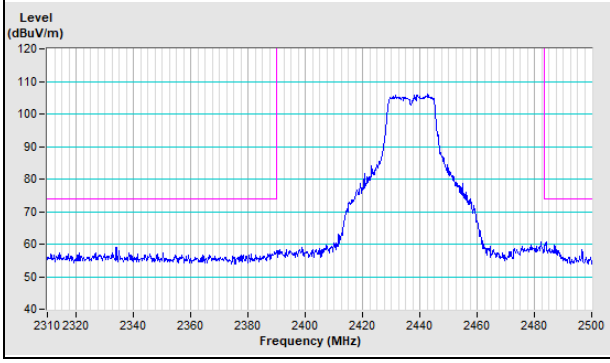
Horizontal (Peak)



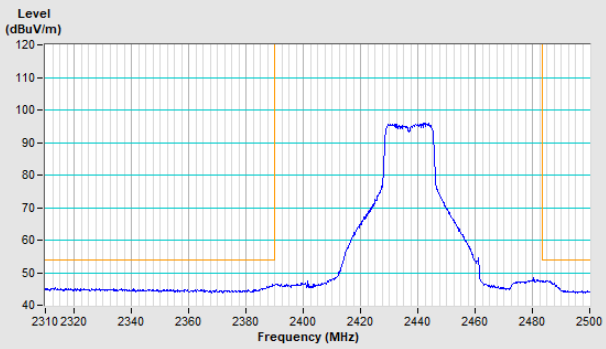
Horizontal (Average)

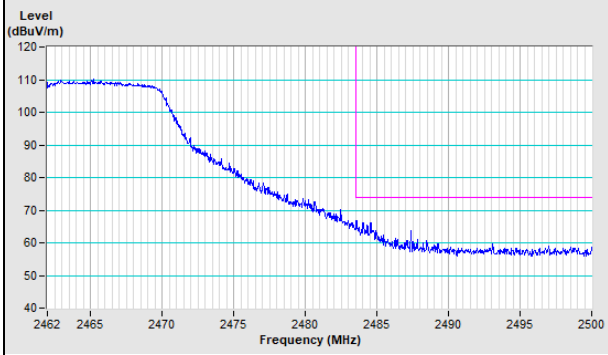
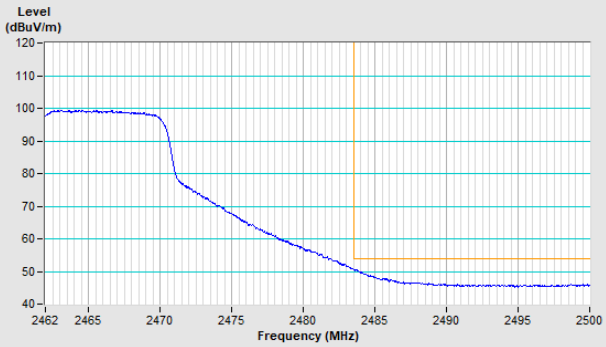
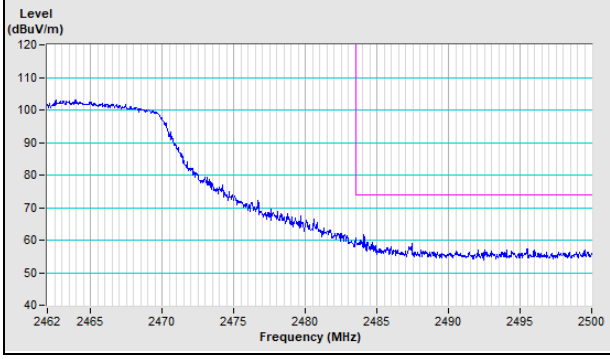
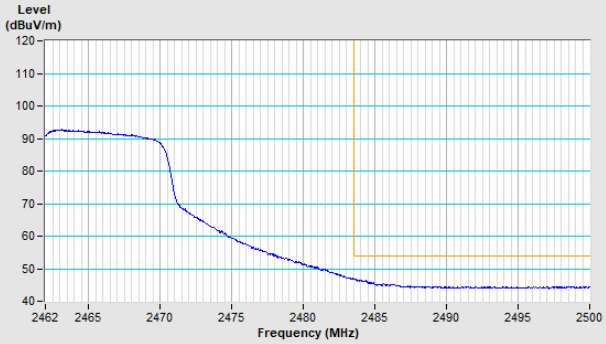


Vertical (Peak)



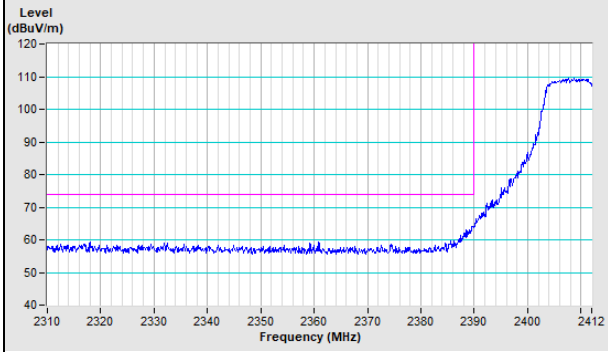
Vertical (Average)



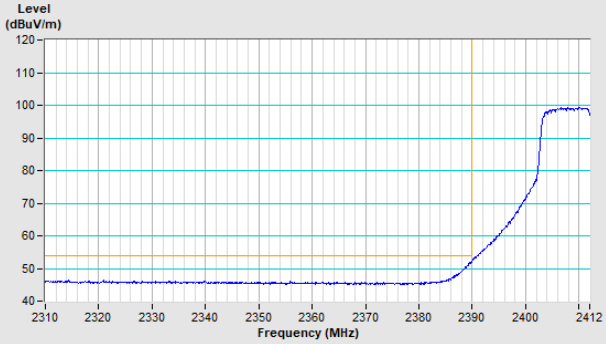
802.11g Channel 11	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11n (VHT20) Channel 1

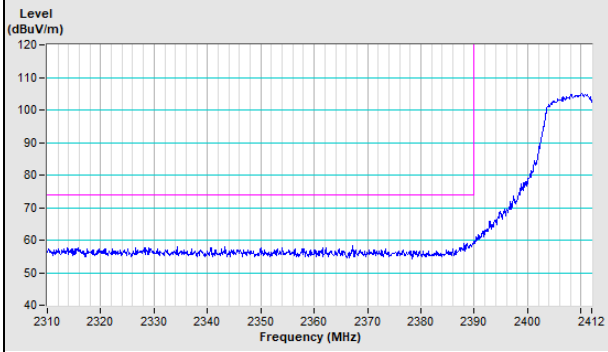
Horizontal (Peak)



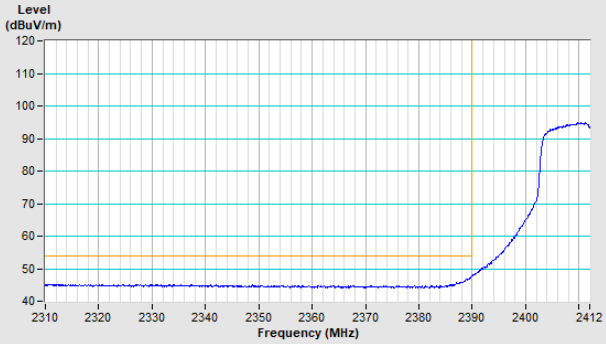
Horizontal (Average)



Vertical (Peak)

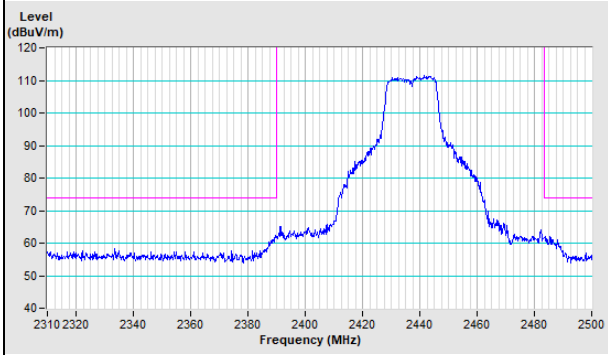


Vertical (Average)

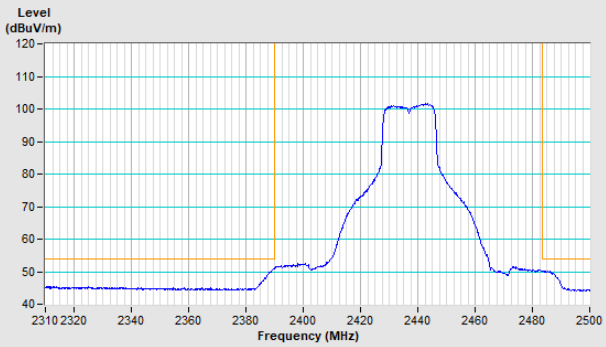


802.11n (VHT20) Channel 6

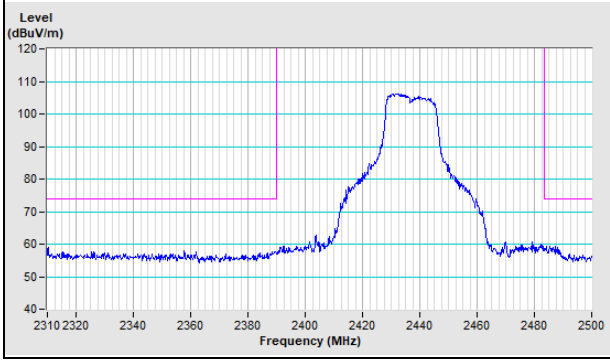
Horizontal (Peak)



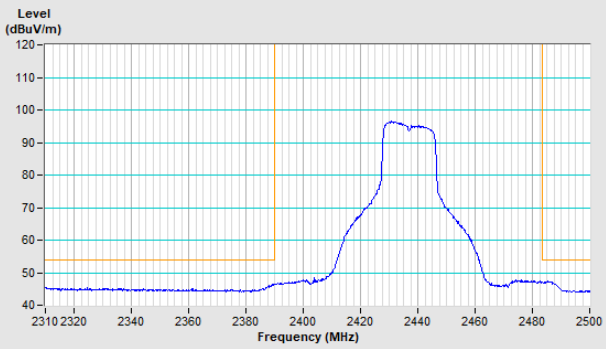
Horizontal (Average)

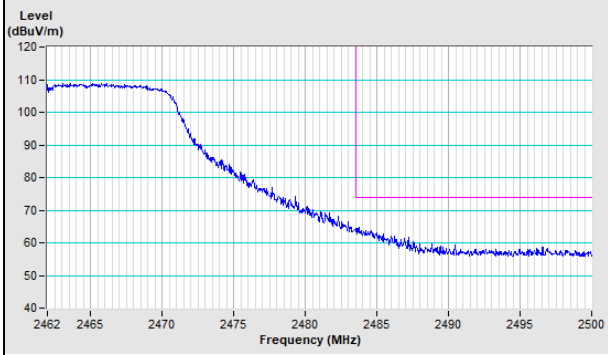
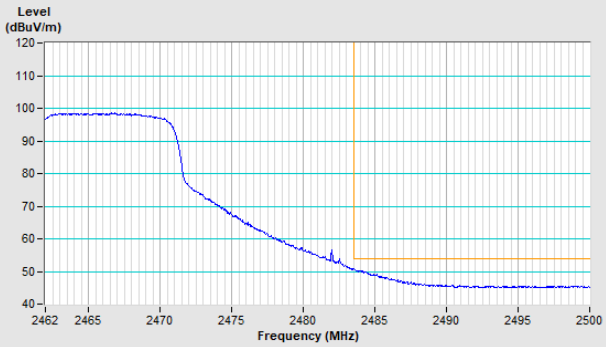
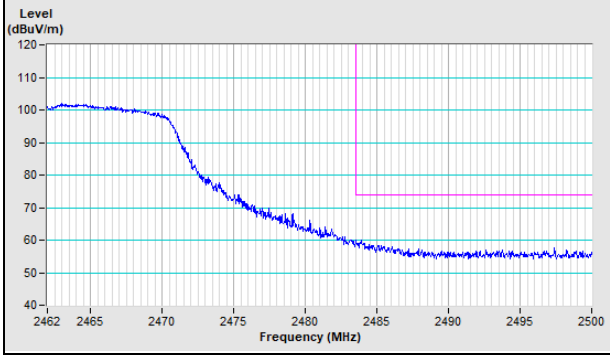
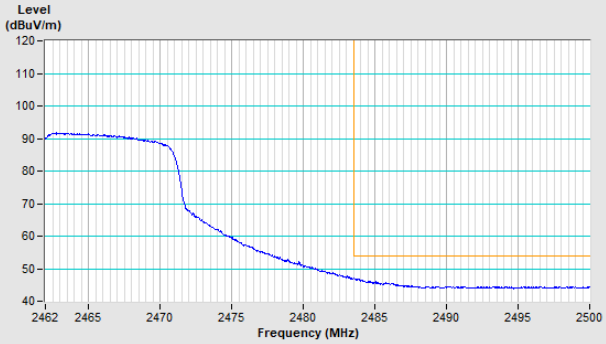


Vertical (Peak)



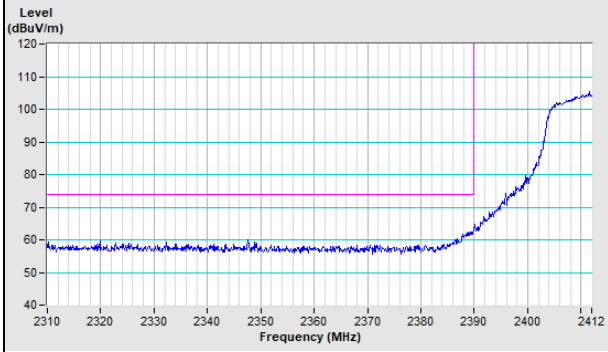
Vertical (Average)



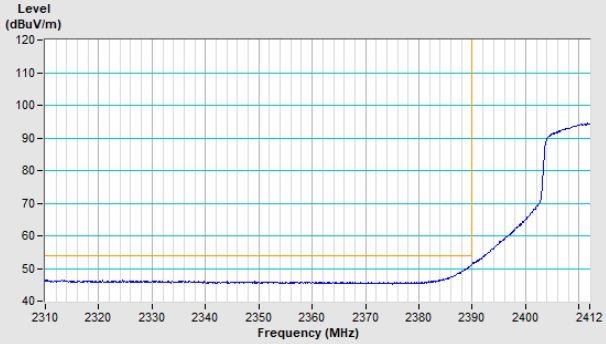
802.11n (VHT20) Channel 11	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11n (VHT40) Channel 3

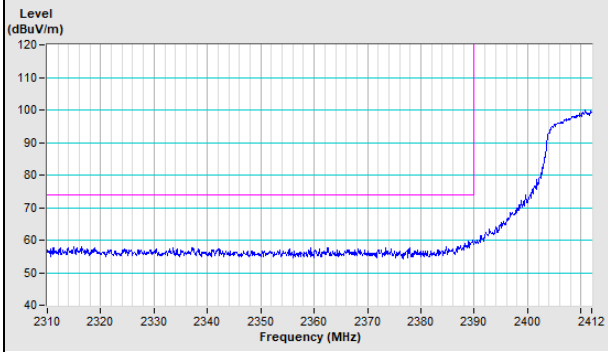
Horizontal (Peak)



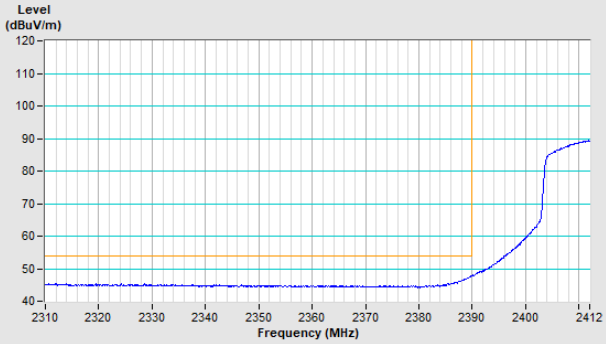
Horizontal (Average)



Vertical (Peak)

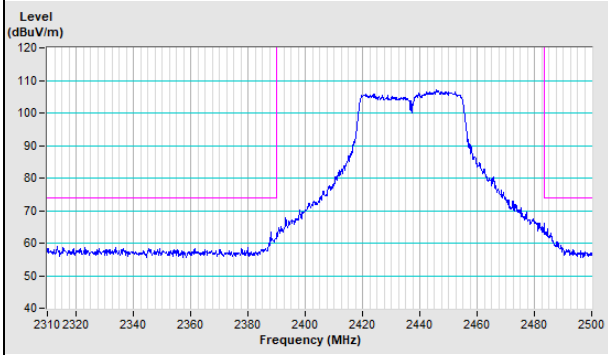


Vertical (Average)

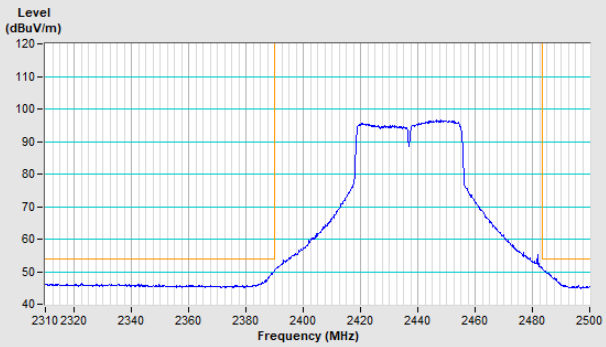


802.11n (VHT40) Channel 6

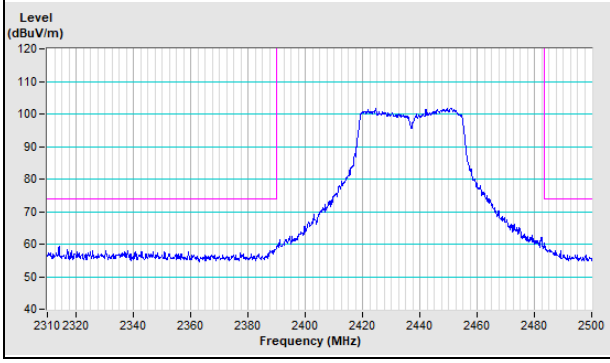
Horizontal (Peak)



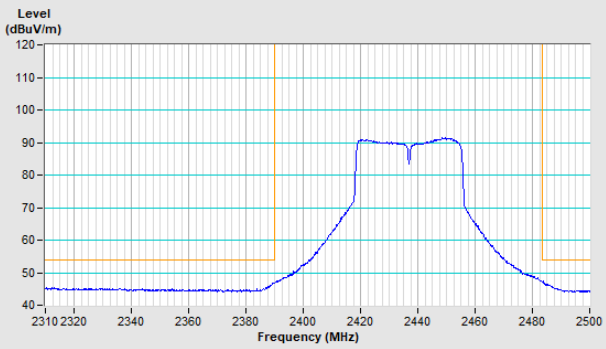
Horizontal (Average)

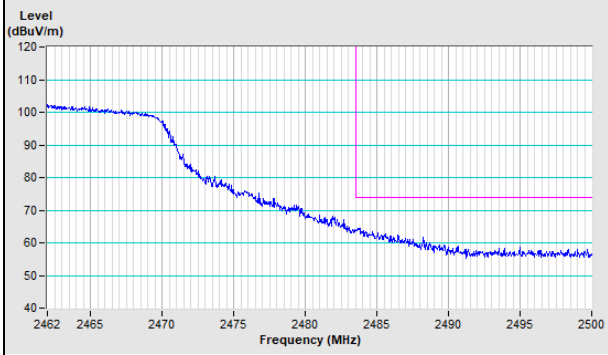
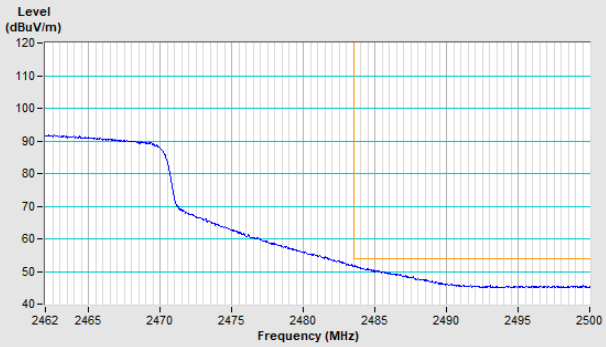
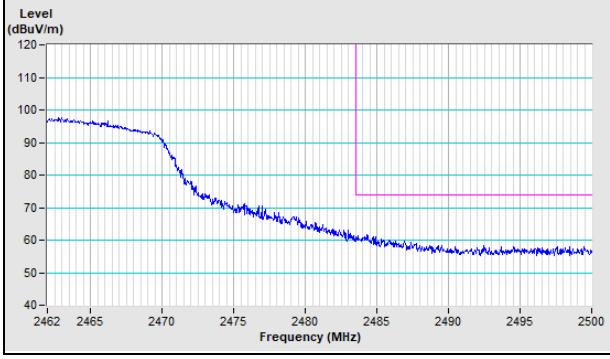
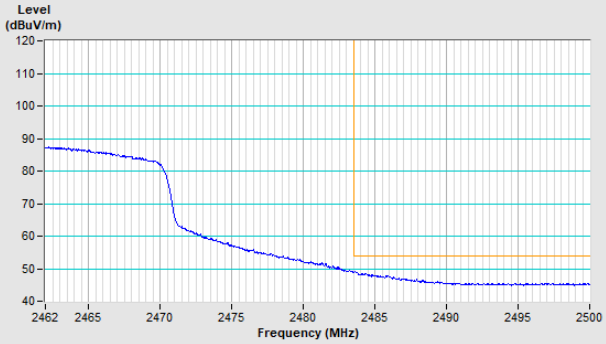


Vertical (Peak)



Vertical (Average)



802.11n (VHT40) Channel 9	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Appendix – Information of the Testing Laboratories

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

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

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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