FCC Test Report

Report No.:	RF191203C33
FCC ID:	KA2AP1955A1
Test Model:	DAP-1950
Series Model:	DAP-1955 (refer to item 3.1 for more details)
Received Date:	Dec. 04, 2019
Test Date:	Dec. 27, 2019 ~ Jan. 11, 2020
Issued Date:	Jan. 17, 2020
Applicant:	D-Link Corporation
Address:	17595 Mt. Herrmann, Fountain Valley, California, United States, 92708
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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The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies

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Release Control Record

Issue No.	Description	Date Issued
RF191203C33	Original release	Jan. 17, 2020

1 Certificate of Conformity

Product:	AC1900 High Performance Mesh Wi-Fi Range Extender (refer to item 3.1 for more details)
Brand:	D-Link
Test Model:	DAP-1950
Series Model:	DAP-1955 (refer to item 3.1 for more details)
Sample Status:	Engineering sample
Applicant:	D-Link Corporation
Test Date:	Dec. 27, 2019 ~ Jan. 11, 2020
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10:2013

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

Prepared by : Polly Chien , **Date:** Jan. 17, 2020

Polly Chien / Specialist

Approved by : Bruce Chen , **Date:** Jan. 17, 2020

Bruce Chen / Senior Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -19.27dB at 0.15391MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.4dB at 2483.50MHz & 2390.000MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	Pass	Meet the requirement of limit.
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

Note:
Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.74 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 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	AC1900 High Performance Mesh Wi-Fi Range Extender (Refer to note)
Brand	D-Link
Test Model	DAP-1950
Series Model	DAP-1955
Model Difference	Refer to note for more details
Status of EUT	Engineering sample
Power Supply Rating	100~240Vac
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 600.0Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20), 802.11n (VHT20) 7 for 802.11n (HT40), 802.11n (VHT40)
Output Power	CDD Mode: 718.620mW Beamforming Mode: 441.650mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The following models are provided to this EUT. The model DAP-1950 was chosen for final test.

Model	Product	Difference
DAP-1950	AC1900 High Performance Mesh Wi-Fi Range Extender	Marketing purpose only. No actual HW/SW difference.
DAP-1955	AC1900 Gigabit Dualband 3*3 11AC MU-MIMO Wi-Fi Range Extender	

2. The EUT incorporates a MIMO function. Physically, the EUT provides 3 completed transmitters and 3 receivers.

Band	Modulation Mode	Beamforming Mode	TX Function
2.4GHz	802.11b	Not Support	3TX
	802.11g	Not Support	3TX
	802.11n (HT20)	Support	3TX
	802.11n (HT40)	Support	3TX
	802.11n (VHT20)	Support	3TX
	802.11n (VHT40)	Support	3TX

* The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40. After pre-testing, 802.11n (VHT20/VHT40) power is lower than 802.11n (HT20/HT40), therefore 802.11n (HT20/HT40) is the worst case to representative mode in test report. (Final test mode refer section 3.2.1)
* For 802.11n, CDD mode is the worst case for final radiated emission and power line conducted emission tests after pretesting CDD mode and beamforming mode.

3. The EUT uses following antennas.

No.	Antenna type	Connector	Gain (dBi)	
			2.4GHz	5GHz
1	Dipole	i-pex(MHF)	3.0	4.5
2	Dipole	i-pex(MHF)	2.9	4.3
3	Dipole	i-pex(MHF)	2.0	4.1

3.2 Description of Test Modes

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

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):

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	
-	√	√	√	√	-

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 **Z-plane**.
2. Radiated emission (below 1GHz) and power line conducted emission test items chosen the worst maximum fundamental frequency emission level channel.

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)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11g	1 to 11	6	OFDM	BPSK	6.0

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)
-	802.11g	1 to 11	6	OFDM	BPSK	6.0

Antenna Port Conducted Measurement:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5
-	802.11n (VHT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (VHT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

*802.11n (VHT20), 802.11n (VHT40) is for Conducted power Measurement only

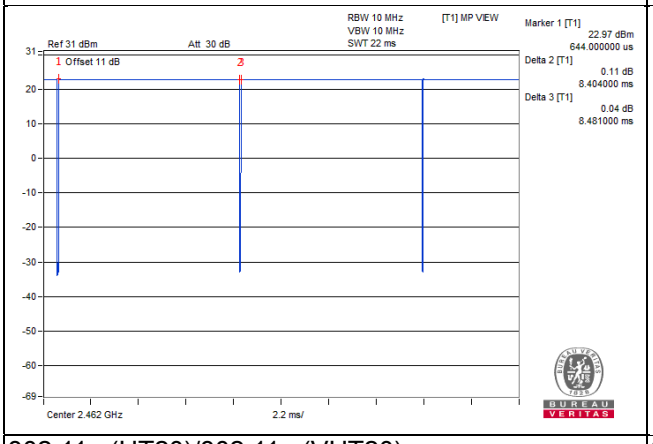
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 66%RH	120Vac, 60Hz	Han Wu
RE<1G	22deg. C, 66%RH	120Vac, 60Hz	Greg Lin
PLC	25deg. C, 75%RH	120Vac, 60Hz	Greg Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chris Lin

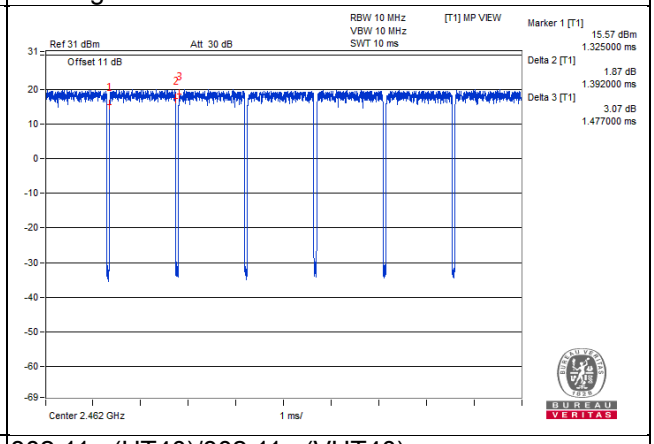
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is > 98 %, duty factor is not required.
Duty cycle of test signal is < 98%, duty factor shall be considered.
802.11b: Duty cycle = 8.404/8.481 = 0.991
802.11g: Duty cycle = 1.392/1.477 = 0.942, Duty factor = 10 * log(1/0.942) = 0.26
802.11n (HT20)/802.11n (VHT20): Duty cycle = 1.307/1.377 = 0.949, Duty factor = 10 * log(1/0.949) = 0.23
802.11n (HT40)/802.11n (VHT40): Duty cycle = 0.642/0.715 = 0.898, Duty factor = 10 * log(1/0.898) = 0.47

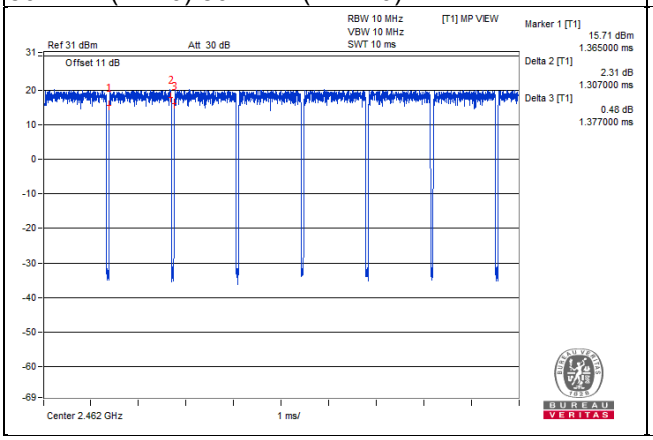
802.11b



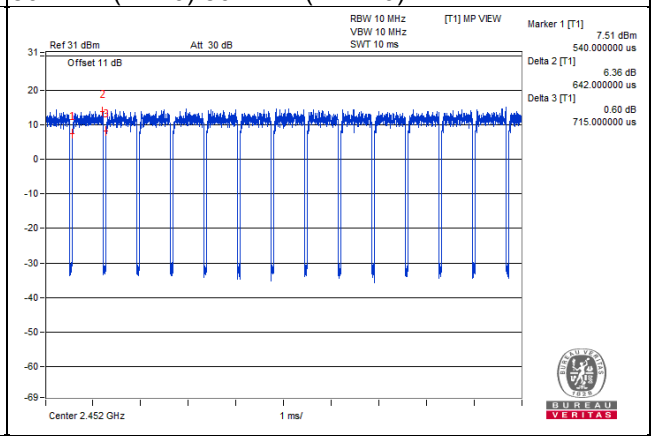
802.11g



802.11n (HT20)/802.11n (VHT20)



802.11n (HT40)/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.

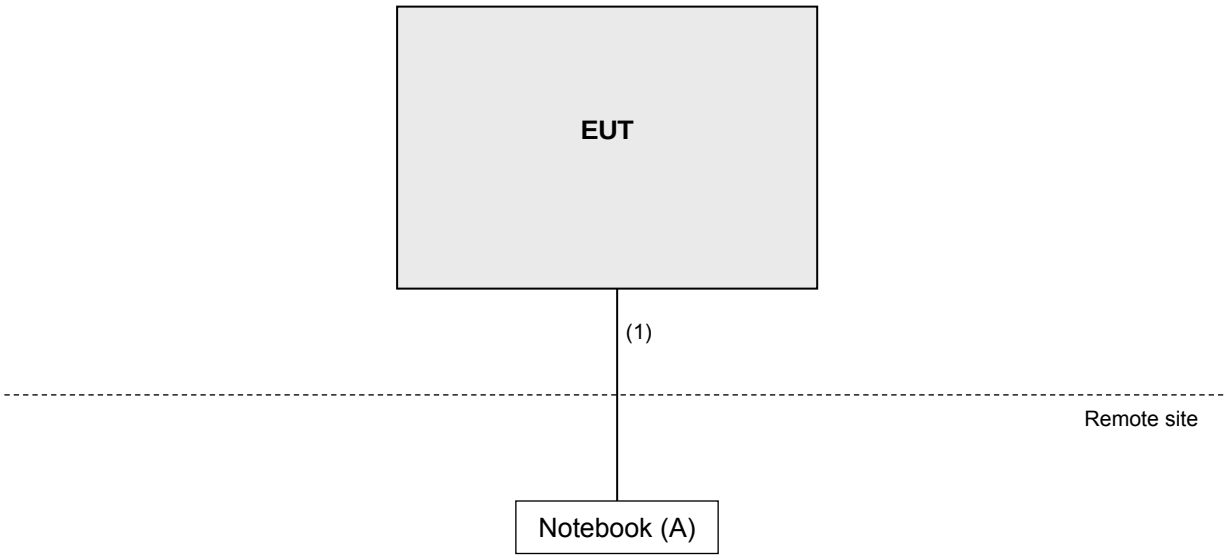
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45, Cat5e	1	5	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

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

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

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

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

4 Test Types and Results (For 2.4GHz Band)

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.	Date of Calibration	Due Date of Calibration
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 15, 2019	Apr. 14, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2019	Jun. 11, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 07, 2019	Nov. 06, 2020
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jul. 11, 2019	Jul. 10, 2020
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 19, 2019	Feb. 18, 2020
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 19, 2019	Jan. 18, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Jul. 11, 2019	Jul. 10, 2020
RF signal cable Woken	8D-FB	Cable-CH9-01	Jul. 30, 2019	Jul. 29, 2020
Software BV ADT	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 15, 2019	Jul. 14, 2020

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 9.

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 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Peak detection at frequency above 1GHz.

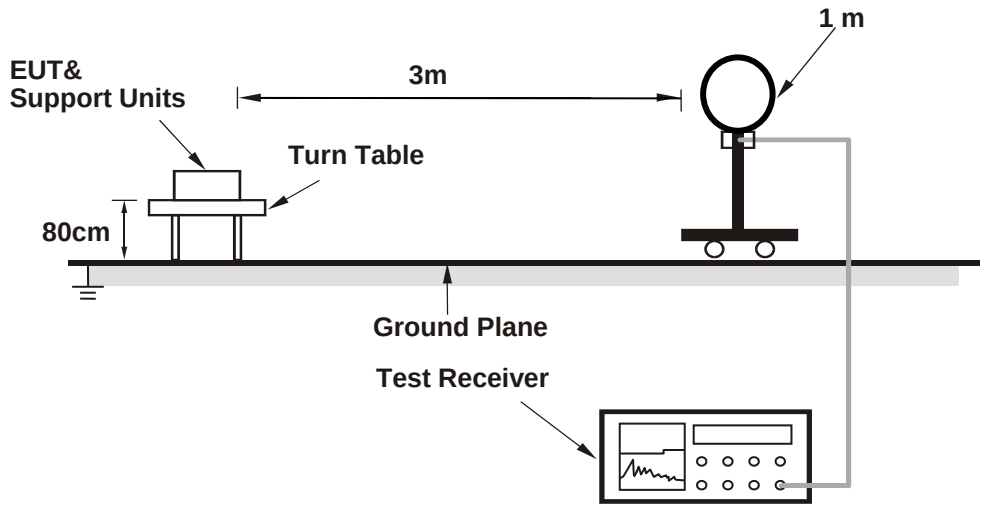
   (802.11b: RBW = 1MHz, VBW = 10Hz; 802.11g: RBW = 1MHz, VBW = 1kHz; 802.11n (HT20): RBW = 1MHz, VBW = 1kHz; 802.11n (HT40): RBW = 1MHz, VBW = 3kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

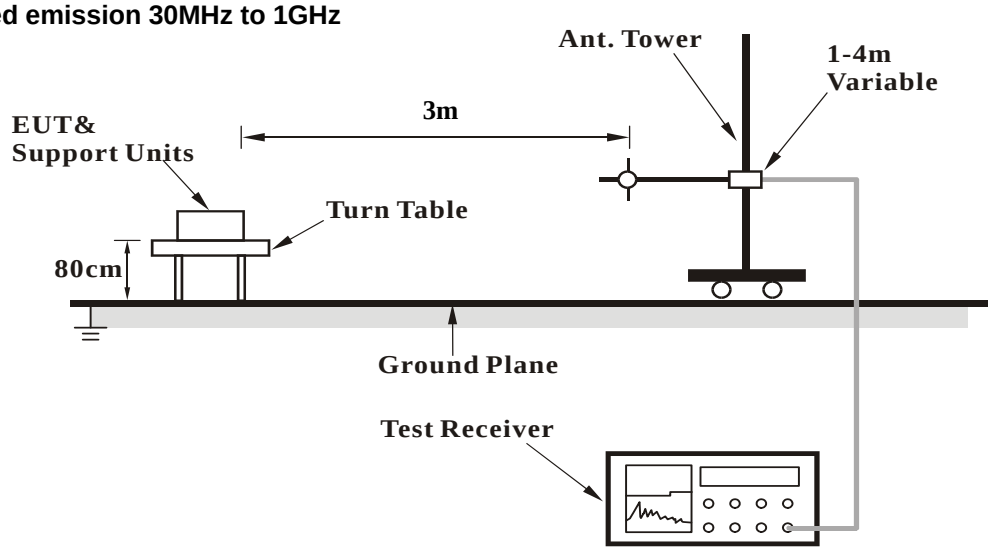
No deviation.

4.1.5 Test Set Up

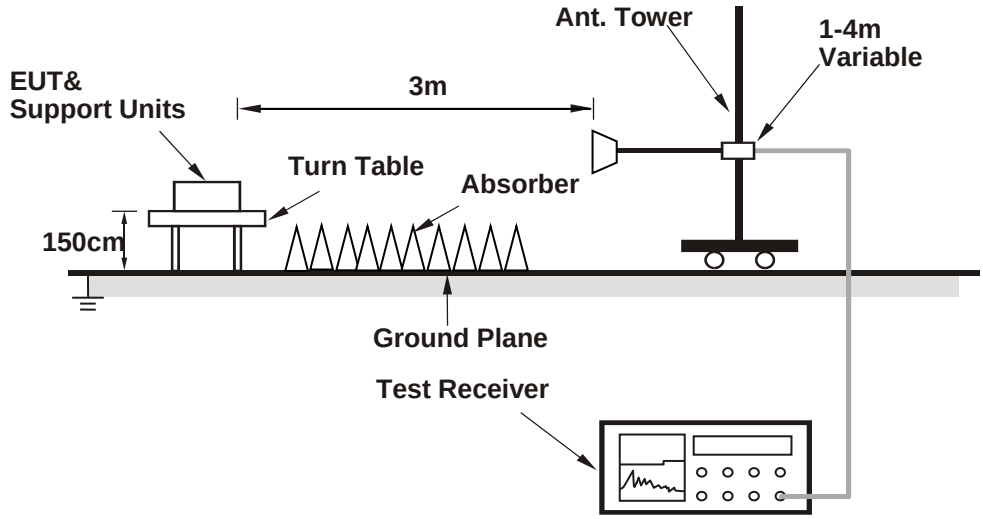
For Radiated emission below 30MHz



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

4.1.7 Test Results

Above 1GHz Worst-case Data:

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (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	58.9 PK	74.0	-15.1	2.86 H	179	27.0	31.9
2	2390.00	48.0 AV	54.0	-6.0	2.86 H	179	16.1	31.9
3	*2412.00	109.3 PK			3.20 H	179	77.4	31.9
4	*2412.00	105.6 AV			3.20 H	179	73.7	31.9
5	4824.00	52.8 PK	74.0	-21.2	1.73 H	285	49.0	3.8
6	4824.00	49.3 AV	54.0	-4.7	1.73 H	285	45.5	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (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	60.4 PK	74.0	-13.6	1.55 V	148	28.5	31.9
2	2390.00	52.4 AV	54.0	-1.6	1.55 V	148	20.5	31.9
3	*2412.00	120.6 PK			1.04 V	159	88.7	31.9
4	*2412.00	117.1 AV			1.04 V	159	85.2	31.9
5	4824.00	52.3 PK	74.0	-21.7	1.53 V	155	48.5	3.8
6	4824.00	48.8 AV	54.0	-5.2	1.53 V	155	45.0	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.8 PK			3.16 H	182	75.9	31.9
2	*2437.00	104.1 AV			3.16 H	182	72.2	31.9
3	2483.50	59.5 PK	74.0	-14.5	3.06 H	176	27.5	32.0
4	2483.50	48.6 AV	54.0	-5.4	3.06 H	176	16.6	32.0
5	4874.00	55.0 PK	74.0	-19.0	1.76 H	294	51.2	3.8
6	4874.00	52.2 AV	54.0	-1.8	1.76 H	294	48.4	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (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	119.1 PK			1.18 V	199	87.2	31.9
2	*2437.00	115.5 AV			1.18 V	199	83.6	31.9
3	2483.50	61.4 PK	74.0	-12.6	1.08 V	171	29.4	32.0
4	**2483.50**	**53.6 AV**	**54.0**	**-0.4**	**1.08 V**	**171**	**21.6**	**32.0**
5	4874.00	54.4 PK	74.0	-19.6	1.70 V	166	50.6	3.8
6	4874.00	51.5 AV	54.0	-2.5	1.70 V	166	47.7	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (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	107.7 PK			3.24 H	183	75.8	31.9
2	*2462.00	104.0 AV			3.24 H	183	72.1	31.9
3	2483.50	59.4 PK	74.0	-14.6	2.97 H	175	27.4	32.0
4	2483.50	48.3 AV	54.0	-5.7	2.97 H	175	16.3	32.0
5	4924.00	52.5 PK	74.0	-21.5	1.75 H	281	48.7	3.8
6	4924.00	48.3 AV	54.0	-5.7	1.75 H	281	44.5	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	119.1 PK			1.15 V	161	87.2	31.9
2	*2462.00	115.4 AV			1.15 V	161	83.5	31.9
3	2483.50	60.9 PK	74.0	-13.1	1.97 V	174	28.9	32.0
4	2483.50	52.4 AV	54.0	-1.6	1.97 V	174	20.4	32.0
5	4924.00	51.8 PK	74.0	-22.2	1.62 V	150	48.0	3.8
6	4924.00	47.7 AV	54.0	-6.3	1.62 V	150	43.9	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (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	2.64 H	173	34.4	31.9
2	2390.00	48.5 AV	54.0	-5.5	2.64 H	173	16.6	31.9
3	*2412.00	103.6 PK			2.72 H	170	71.7	31.9
4	*2412.00	94.0 AV			2.72 H	170	62.1	31.9
5	4824.00	49.0 PK	74.0	-25.0	1.82 H	294	45.2	3.8
6	4824.00	35.0 AV	54.0	-19.0	1.82 H	294	31.2	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.2 PK	74.0	-4.8	2.01 V	238	37.3	31.9
2	2390.00	52.7 AV	54.0	-1.3	2.01 V	238	20.8	31.9
3	*2412.00	114.8 PK			1.38 V	195	82.9	31.9
4	*2412.00	105.3 AV			1.38 V	195	73.4	31.9
5	4824.00	48.1 PK	74.0	-25.9	2.49 V	187	44.3	3.8
6	4824.00	34.3 AV	54.0	-19.7	2.49 V	187	30.5	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (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	109.9 PK			2.81 H	182	78.0	31.9
2	*2437.00	100.1 AV			2.81 H	182	68.2	31.9
3	2483.50	63.4 PK	74.0	-10.6	2.74 H	171	31.4	32.0
4	2483.50	48.7 AV	54.0	-5.3	2.74 H	171	16.7	32.0
5	4874.00	52.7 PK	74.0	-21.3	1.69 H	273	48.9	3.8
6	4874.00	38.4 AV	54.0	-15.6	1.69 H	273	34.6	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	121.0 PK			1.78 V	222	89.1	31.9
2	*2437.00	111.4 AV			1.78 V	222	79.5	31.9
3	2483.50	68.8 PK	74.0	-5.2	2.36 V	219	36.8	32.0
4	2483.50	52.4 AV	54.0	-1.6	2.36 V	219	20.4	32.0
5	4874.00	52.1 PK	74.0	-21.9	2.54 V	191	48.3	3.8
6	4874.00	37.9 AV	54.0	-16.1	2.54 V	191	34.1	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.7 PK			2.79 H	173	69.8	31.9
2	*2462.00	92.3 AV			2.79 H	173	60.4	31.9
3	2483.50	65.7 PK	74.0	-8.3	2.67 H	164	33.7	32.0
4	2483.50	49.2 AV	54.0	-4.8	2.67 H	164	17.2	32.0
5	4924.00	48.6 PK	74.0	-25.4	1.66 H	291	44.8	3.8
6	4924.00	34.7 AV	54.0	-19.3	1.66 H	291	30.9	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.1 PK			2.03 V	225	81.2	31.9
2	*2462.00	103.8 AV			2.03 V	225	71.9	31.9
3	2483.50	69.8 PK	74.0	-4.2	1.78 V	218	37.8	32.0
4	2483.50	53.3 AV	54.0	-0.7	1.78 V	218	21.3	32.0
5	4924.00	48.2 PK	74.0	-25.8	2.53 V	176	44.4	3.8
6	4924.00	34.2 AV	54.0	-19.8	2.53 V	176	30.4	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (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	64.1 PK	74.0	-9.9	2.76 H	176	32.2	31.9
2	2390.00	48.8 AV	54.0	-5.2	2.76 H	176	16.9	31.9
3	*2412.00	102.5 PK			2.82 H	183	70.6	31.9
4	*2412.00	92.5 AV			2.82 H	183	60.6	31.9
5	4824.00	48.4 PK	74.0	-25.6	1.79 H	288	44.6	3.8
6	4824.00	34.6 AV	54.0	-19.4	1.79 H	288	30.8	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.8 PK	74.0	-6.2	1.41 V	221	35.9	31.9
2	2390.00	52.9 AV	54.0	-1.1	1.41 V	221	21.0	31.9
3	*2412.00	114.0 PK			1.62 V	229	82.1	31.9
4	*2412.00	104.0 AV			1.62 V	229	72.1	31.9
5	4824.00	47.6 PK	74.0	-26.4	2.49 V	195	43.8	3.8
6	4824.00	34.0 AV	54.0	-20.0	2.49 V	195	30.2	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (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	109.3 PK			2.76 H	171	77.4	31.9
2	*2437.00	99.3 AV			2.76 H	171	67.4	31.9
3	2483.50	64.7 PK	74.0	-9.3	2.70 H	164	32.7	32.0
4	2483.50	48.5 AV	54.0	-5.5	2.70 H	164	16.5	32.0
5	4874.00	52.5 PK	74.0	-21.5	1.69 H	276	48.7	3.8
6	4874.00	38.3 AV	54.0	-15.7	1.69 H	276	34.5	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (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	120.7 PK			1.78 V	223	88.8	31.9
2	*2437.00	110.7 AV			1.78 V	223	78.8	31.9
3	2483.50	72.1 PK	74.0	-1.9	1.60 V	279	40.1	32.0
4	2483.50	52.5 AV	54.0	-1.5	1.60 V	279	20.5	32.0
5	4874.00	51.7 PK	74.0	-22.3	2.43 V	187	47.9	3.8
6	4874.00	37.8 AV	54.0	-16.2	2.43 V	187	34.0	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.4 PK			2.91 H	182	69.5	31.9
2	*2462.00	91.5 AV			2.91 H	182	59.6	31.9
3	2483.50	65.4 PK	74.0	-8.6	2.76 H	168	33.4	32.0
4	2483.50	48.7 AV	54.0	-5.3	2.76 H	168	16.7	32.0
5	4924.00	48.5 PK	74.0	-25.5	1.64 H	279	44.7	3.8
6	4924.00	34.5 AV	54.0	-19.5	1.64 H	279	30.7	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.9 PK			1.67 V	224	81.0	31.9
2	*2462.00	103.0 AV			1.67 V	224	71.1	31.9
3	2483.50	68.2 PK	74.0	-5.8	1.81 V	220	36.2	32.0
4	2483.50	52.4 AV	54.0	-1.6	1.81 V	220	20.4	32.0
5	4924.00	48.3 PK	74.0	-25.7	2.63 V	203	44.5	3.8
6	4924.00	34.4 AV	54.0	-19.6	2.63 V	203	30.6	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.2 PK	74.0	-9.8	2.65 H	158	32.3	31.9
2	2390.00	49.2 AV	54.0	-4.8	2.65 H	158	17.3	31.9
3	*2422.00	96.6 PK			2.74 H	166	64.7	31.9
4	*2422.00	87.1 AV			2.74 H	166	55.2	31.9
5	4844.00	45.9 PK	74.0	-28.1	1.82 H	275	42.2	3.7
6	4844.00	35.4 AV	54.0	-18.6	1.82 H	275	31.7	3.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.1 PK	74.0	-6.9	1.72 V	167	35.2	31.9
2	**2390.00**	**53.6 AV**	**54.0**	**-0.4**	**1.72 V**	**167**	**21.7**	**31.9**
3	*2422.00	106.5 PK			1.49 V	175	74.6	31.9
4	*2422.00	98.3 AV			1.49 V	175	66.4	31.9
5	4844.00	45.1 PK	74.0	-28.9	1.74 V	164	41.4	3.7
6	4844.00	34.9 AV	54.0	-19.1	1.74 V	164	31.2	3.7

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.0 PK			2.96 H	187	70.1	31.9
2	*2437.00	92.1 AV			2.96 H	187	60.2	31.9
3	2483.50	64.6 PK	74.0	-9.4	2.77 H	173	32.6	32.0
4	2483.50	48.7 AV	54.0	-5.3	2.77 H	173	16.7	32.0
5	4874.00	46.2 PK	74.0	-27.8	1.81 H	294	42.4	3.8
6	4874.00	34.5 AV	54.0	-19.5	1.81 H	294	30.7	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.5 PK			1.17 V	159	79.6	31.9
2	*2437.00	103.4 AV			1.17 V	159	71.5	31.9
3	2483.50	68.5 PK	74.0	-5.5	1.38 V	169	36.5	32.0
4	2483.50	52.8 AV	54.0	-1.2	1.38 V	169	20.8	32.0
5	4874.00	45.6 PK	74.0	-28.4	1.97 V	158	41.8	3.8
6	4874.00	34.0 AV	54.0	-20.0	1.97 V	158	30.2	3.8

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (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	97.1 PK			2.96 H	184	65.2	31.9
2	*2452.00	87.3 AV			2.96 H	184	55.4	31.9
3	2483.50	63.9 PK	74.0	-10.1	2.83 H	167	31.9	32.0
4	2483.50	49.5 AV	54.0	-4.5	2.83 H	167	17.5	32.0
5	4904.00	45.4 PK	74.0	-28.6	1.85 H	290	41.7	3.7
6	4904.00	32.5 AV	54.0	-21.5	1.85 H	290	28.8	3.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	107.1 PK			1.25 V	166	75.2	31.9
2	*2452.00	98.6 AV			1.25 V	166	66.7	31.9
3	2483.50	66.4 PK	74.0	-7.6	1.39 V	165	34.4	32.0
4	2483.50	53.4 AV	54.0	-0.6	1.39 V	165	21.4	32.0
5	4904.00	44.3 PK	74.0	-29.7	1.44 V	150	40.6	3.7
6	4904.00	31.9 AV	54.0	-22.1	1.44 V	150	28.2	3.7

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

Below 1GHz Worst-case Data:

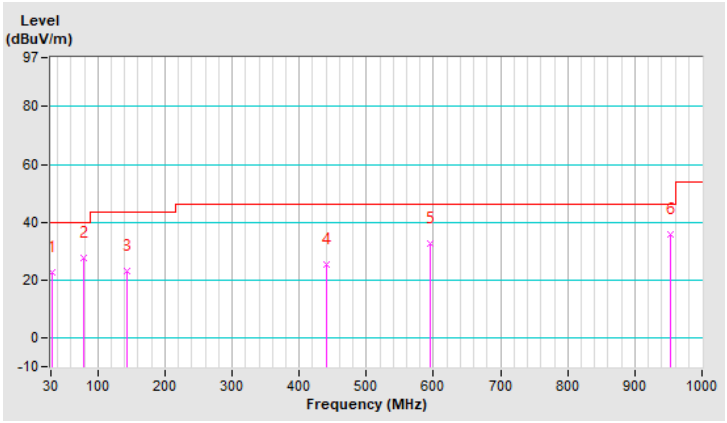
802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.94	22.7 QP	40.0	-17.3	1.25 H	185	34.1	-11.4
2	79.47	27.6 QP	40.0	-12.4	1.00 H	83	41.4	-13.8
3	142.52	23.0 QP	43.5	-20.5	1.50 H	115	32.7	-9.7
4	440.31	25.5 QP	46.0	-20.5	1.50 H	15	30.1	-4.6
5	595.51	32.7 QP	46.0	-13.3	1.00 H	159	34.6	-1.9
6	952.47	36.0 QP	46.0	-10.0	1.25 H	336	31.5	4.5

Remarks:

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

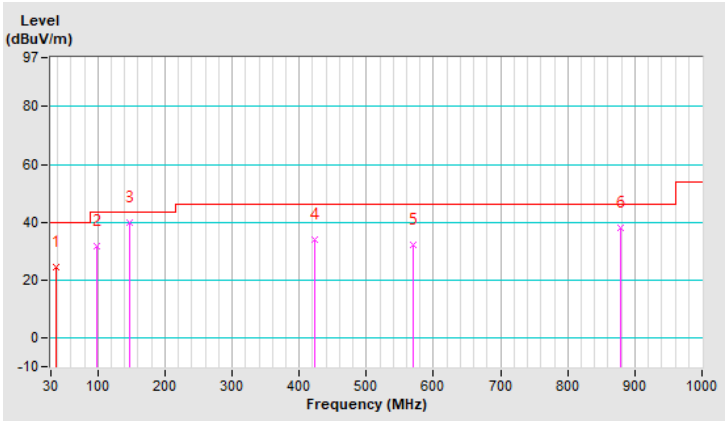


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.76	24.6 QP	40.0	-15.4	1.25 V	195	35.3	-10.7
2	97.90	31.6 QP	43.5	-11.9	1.50 V	297	45.8	-14.2
3	147.37	40.0 QP	43.5	-3.5	1.00 V	115	49.3	-9.3
4	423.82	33.9 QP	46.0	-12.1	1.00 V	260	39.1	-5.2
5	569.32	32.3 QP	46.0	-13.7	1.25 V	226	34.8	-2.5
6	879.72	38.1 QP	46.0	-7.9	1.50 V	4	35.4	2.7

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. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20dB 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.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 11, 2019	Dec. 10, 2020
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 22, 2019	Aug. 21, 2020
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 1.
3. The VCCI Site Registration No. is C-12040.

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.

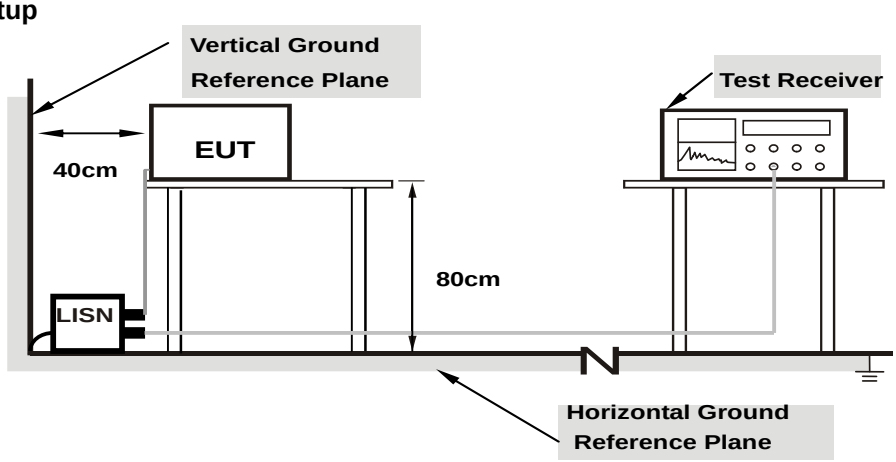
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

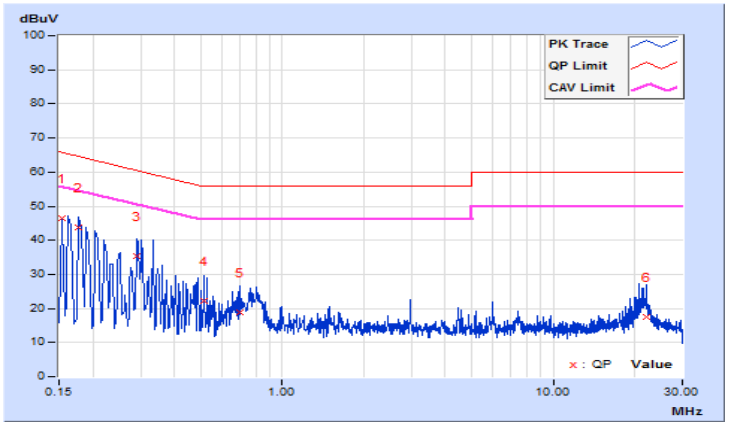
Worst-case data: 802.11g

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15391**	**9.67**	**36.85**	**22.17**	**46.52**	**31.84**	**65.79**	**55.79**	**-19.27**	**-23.95**
2	0.17737	9.66	33.97	19.36	43.63	29.02	64.61	54.61	-20.98	-25.59
3	0.29076	9.67	25.66	7.35	35.33	17.02	60.50	50.50	-25.17	-33.48
4	0.51363	9.70	12.53	4.03	22.23	13.73	56.00	46.00	-33.77	-32.27
5	0.70131	9.71	9.14	2.55	18.85	12.26	56.00	46.00	-37.15	-33.74
6	22.06946	9.99	7.40	1.12	17.39	11.11	60.00	50.00	-42.61	-38.89

Remarks:

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

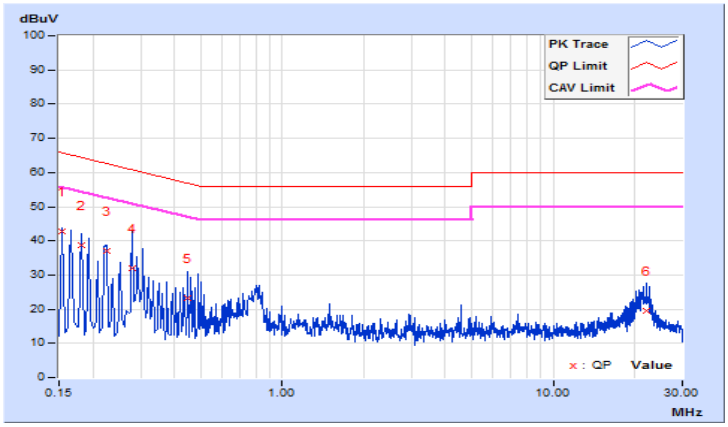


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.64	33.04	18.31	42.68	27.95	65.79	55.79	-23.11	-27.84
2	0.18128	9.64	29.17	14.18	38.81	23.82	64.43	54.43	-25.62	-30.61
3	0.22429	9.64	27.32	13.77	36.96	23.41	62.66	52.66	-25.70	-29.25
4	0.27903	9.65	22.31	9.02	31.96	18.67	60.84	50.84	-28.88	-32.17
5	0.44716	9.66	13.48	2.10	23.14	11.76	56.93	46.93	-33.79	-35.17
6	22.04991	10.07	9.32	1.86	19.39	11.93	60.00	50.00	-40.61	-38.07

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.

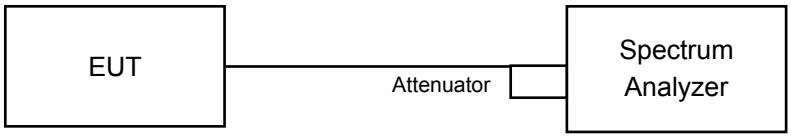


4.3 6dB Bandwidth Measurement

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

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	9.10	9.10	8.60	0.5	Pass
6	2437	10.10	10.13	10.07	0.5	Pass
11	2462	9.12	8.13	9.06	0.5	Pass

802.11g

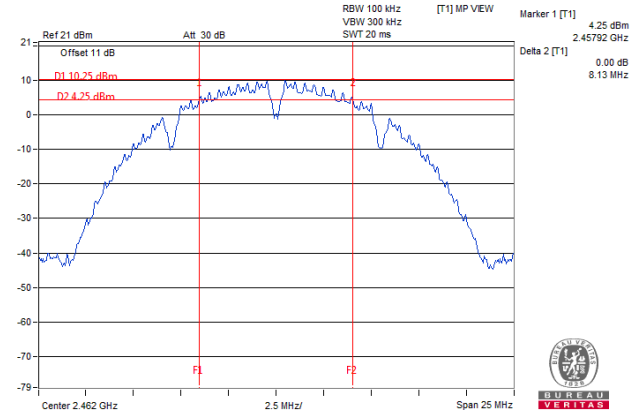
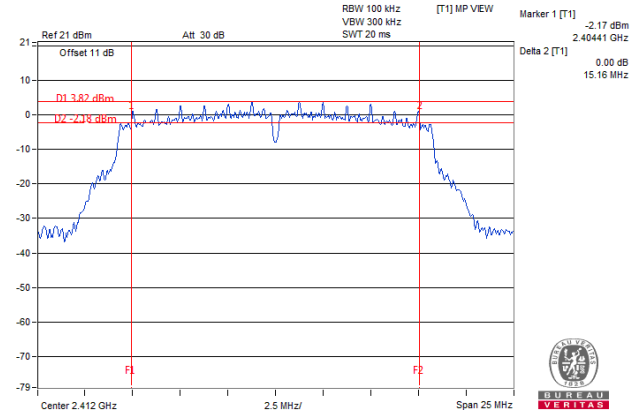
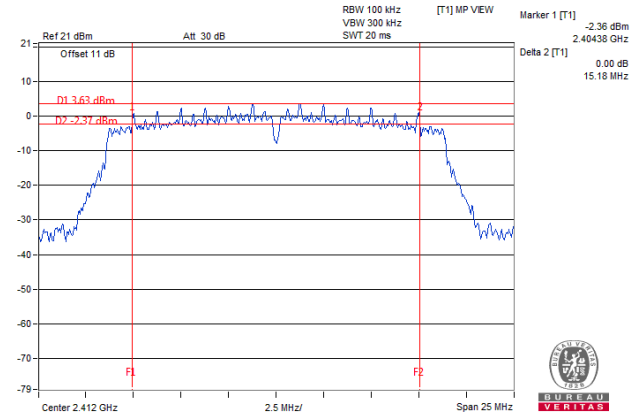
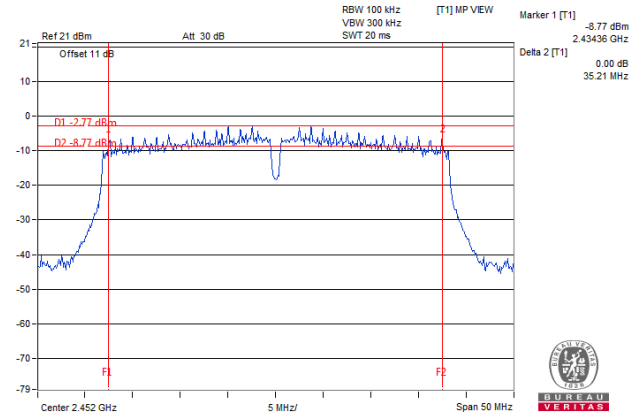
Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	15.17	15.18	15.16	0.5	Pass
6	2437	15.20	15.19	15.19	0.5	Pass
11	2462	15.20	15.19	15.19	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
1	2412	15.19	15.78	15.18	0.5	Pass
6	2437	15.19	15.19	15.19	0.5	Pass
11	2462	15.19	15.77	15.19	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)			Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2		
3	2422	35.28	35.30	35.24	0.5	Pass
6	2437	35.27	35.28	35.25	0.5	Pass
9	2452	35.27	35.21	35.26	0.5	Pass

Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (HT20)	802.11n (HT40)
	

4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

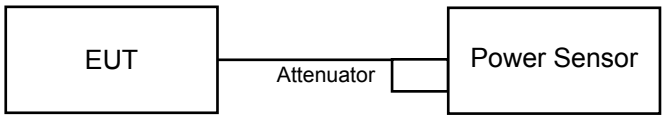
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

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				
1	2412	21.51	21.31	20.89	399.530	26.02	30.00	Pass
6	2437	23.71	24.04	23.62	**718.620**	28.56	30.00	Pass
11	2462	19.91	20.04	19.84	295.257	24.70	30.00	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				
1	2412	15.96	15.82	15.36	111.996	20.49	30.00	Pass
6	2437	22.01	22.00	21.53	459.577	26.62	30.00	Pass
11	2462	15.05	15.35	14.97	97.671	19.90	30.00	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	15.20	15.23	14.81	96.725	19.86	30.00	Pass
6	2437	21.63	21.89	21.51	441.650	26.45	30.00	Pass
11	2462	14.58	15.22	14.75	91.828	19.63	30.00	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	10.71	10.47	10.24	33.487	15.25	30.00	Pass
6	2437	15.65	15.91	15.61	112.114	20.50	30.00	Pass
9	2452	10.57	10.86	10.67	35.260	15.47	30.00	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				
1	2412	15.11	15.20	14.78	95.608	19.80	30.00	Pass
6	2437	21.61	21.85	21.49	438.915	26.42	30.00	Pass
11	2462	14.52	15.19	14.71	90.931	19.59	30.00	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				
3	2422	10.65	10.41	10.21	33.099	15.20	30.00	Pass
6	2437	15.61	15.85	15.54	110.661	20.44	30.00	Pass
9	2452	10.52	10.81	10.63	34.883	15.43	30.00	Pass

Beamforming Mode

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
1	2412	15.20	15.23	14.81	96.725	19.86	28.58	Pass
6	2437	21.63	21.89	21.51	**441.650**	26.45	28.58	Pass
11	2462	14.58	15.22	14.75	91.828	19.63	28.58	Pass

Note: Beamforming gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$] = 7.42dBi > 6dBi, so the power limit shall be reduced to 30-(7.42-6) = 28.58dBm.

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)			Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2				
3	2422	10.71	10.47	10.24	33.487	15.25	28.58	Pass
6	2437	15.65	15.91	15.61	112.114	20.50	28.58	Pass
9	2452	10.57	10.86	10.67	35.260	15.47	28.58	Pass

Note: Beamforming gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$] = 7.42dBi > 6dBi, so the power limit shall be reduced to 30-(7.42-6) = 28.58dBm.

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				
1	2412	15.11	15.20	14.78	95.608	19.80	28.58	Pass
6	2437	21.61	21.85	21.49	438.915	26.42	28.58	Pass
11	2462	14.52	15.19	14.71	90.931	19.59	28.58	Pass

Note: Beamforming gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$] = 7.42dBi > 6dBi, so the power limit shall be reduced to 30-(7.42-6) = 28.58dBm.

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				
3	2422	10.65	10.41	10.21	33.099	15.20	28.58	Pass
6	2437	15.61	15.85	15.54	110.661	20.44	28.58	Pass
9	2452	10.52	10.81	10.63	34.883	15.43	28.58	Pass

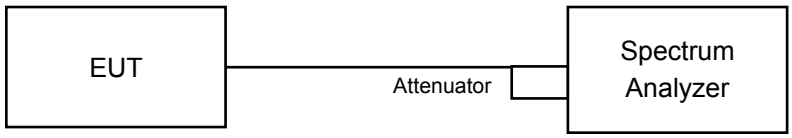
Note: Beamforming gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$] = 7.42dBi > 6dBi, so the power limit shall be reduced to 30-(7.42-6) = 28.58dBm.

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 band during any time interval of continuous transmission.

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 AVG. 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 AVG. 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

802.11b

TX chain	Channel	Frequency (MHz)	PSD (dBm/10kHz)	10 log (N=3) dB	Total PSD (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-6.63	4.77	-1.86	6.58	Pass
	6	2437	-4.49	4.77	0.28	6.58	Pass
	11	2462	-6.84	4.77	-2.07	6.58	Pass
1	1	2412	-7.04	4.77	-2.27	6.58	Pass
	6	2437	-4.70	4.77	0.07	6.58	Pass
	11	2462	-7.78	4.77	-3.01	6.58	Pass
2	1	2412	-6.97	4.77	-2.20	6.58	Pass
	6	2437	-4.52	4.77	0.25	6.58	Pass
	11	2462	-8.06	4.77	-3.29	6.58	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$] = 7.42dBi > 6dBi, so the power density limit shall be reduced to 8-(7.42-6) = 6.58dBm.

802.11g

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=3) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-13.87	4.77	0.26	-8.84	6.58	Pass
	6	2437	-8.20	4.77	0.26	-3.17	6.58	Pass
	11	2462	-15.07	4.77	0.26	-10.04	6.58	Pass
1	1	2412	-14.31	4.77	0.26	-9.28	6.58	Pass
	6	2437	-8.00	4.77	0.26	-2.97	6.58	Pass
	11	2462	-15.04	4.77	0.26	-10.01	6.58	Pass
2	1	2412	-14.67	4.77	0.26	-9.64	6.58	Pass
	6	2437	-8.51	4.77	0.26	-3.48	6.58	Pass
	11	2462	-15.08	4.77	0.26	-10.05	6.58	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$] = 7.42dBi > 6dBi, so the power density limit shall be reduced to 8-(7.42-6) = 6.58dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

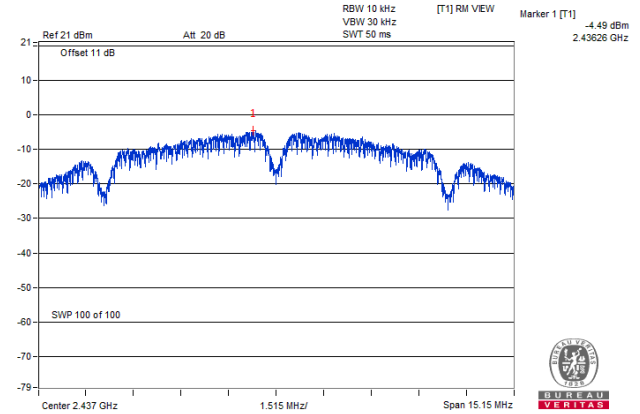
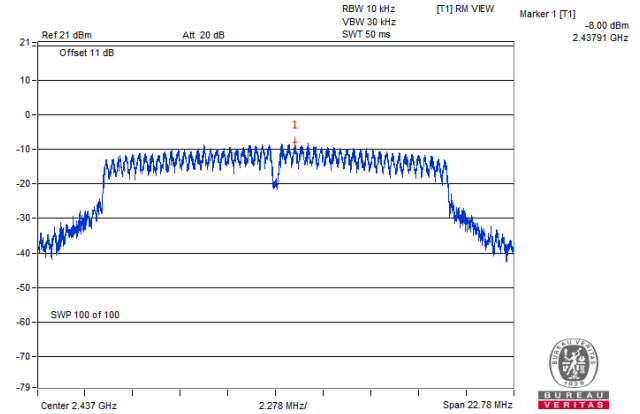
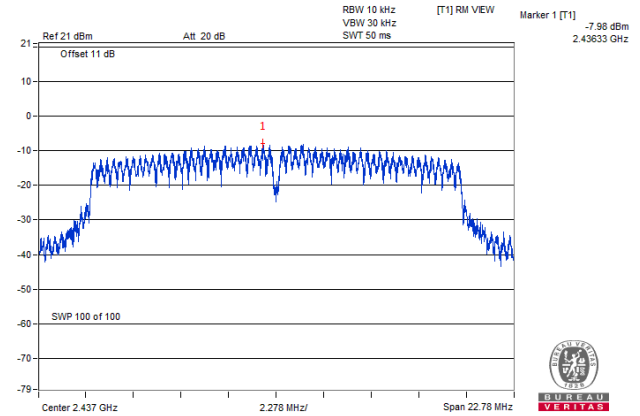
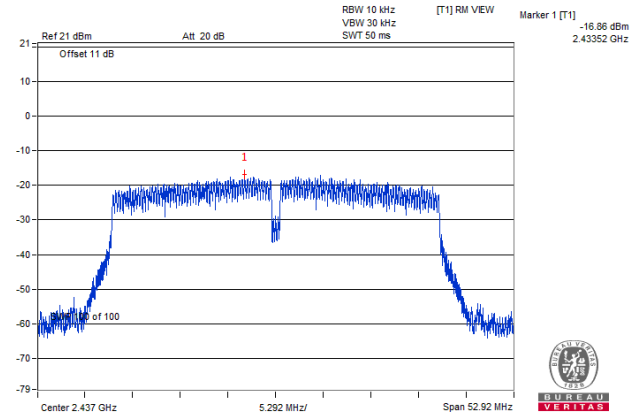
TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=3) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-15.02	4.77	0.23	-10.02	6.58	Pass
	6	2437	-8.49	4.77	0.23	-3.49	6.58	Pass
	11	2462	-15.29	4.77	0.23	-10.29	6.58	Pass
1	1	2412	-14.52	4.77	0.23	-9.52	6.58	Pass
	6	2437	-7.98	4.77	0.23	-2.98	6.58	Pass
	11	2462	-14.72	4.77	0.23	-9.72	6.58	Pass
2	1	2412	-14.54	4.77	0.23	-9.54	6.58	Pass
	6	2437	-8.49	4.77	0.23	-3.49	6.58	Pass
	11	2462	-14.81	4.77	0.23	-9.81	6.58	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$] = 7.42dBi > 6dBi, so the power density limit shall be reduced to 8-(7.42-6) = 6.58dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX chain	Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/10kHz)	10 log (N=3) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	3	2422	-22.37	4.77	0.47	-17.13	6.58	Pass
	6	2437	-17.61	4.77	0.47	-12.37	6.58	Pass
	9	2452	-22.52	4.77	0.47	-17.28	6.58	Pass
1	3	2422	-22.97	4.77	0.47	-17.73	6.58	Pass
	6	2437	-16.86	4.77	0.47	-11.62	6.58	Pass
	9	2452	-21.88	4.77	0.47	-16.64	6.58	Pass
2	3	2422	-22.65	4.77	0.47	-17.41	6.58	Pass
	6	2437	-17.56	4.77	0.47	-12.32	6.58	Pass
	9	2452	-22.35	4.77	0.47	-17.11	6.58	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/3$] = 7.42dBi > 6dBi, so the power density limit shall be reduced to 8-(7.42-6) = 6.58dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

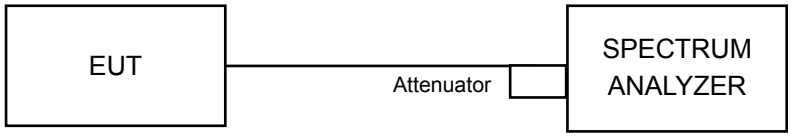
Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (HT20)	802.11n (HT40)
	

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 = average.

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

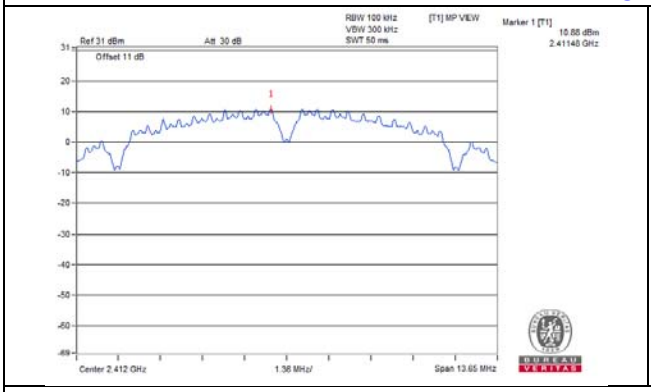
4.6.7 Test Results

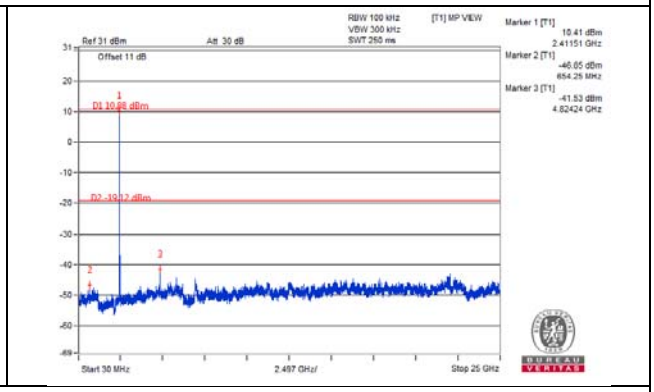
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

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.

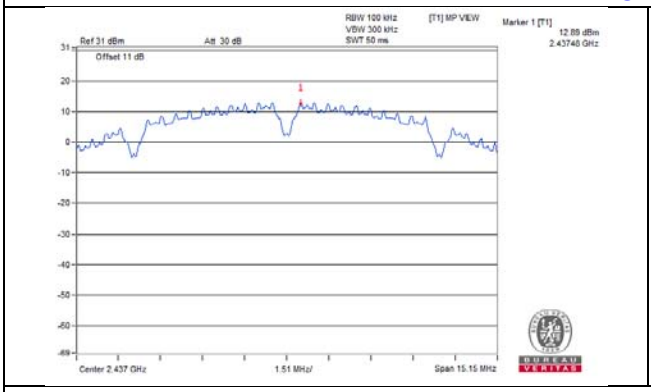
802.11b
CHAIN 0

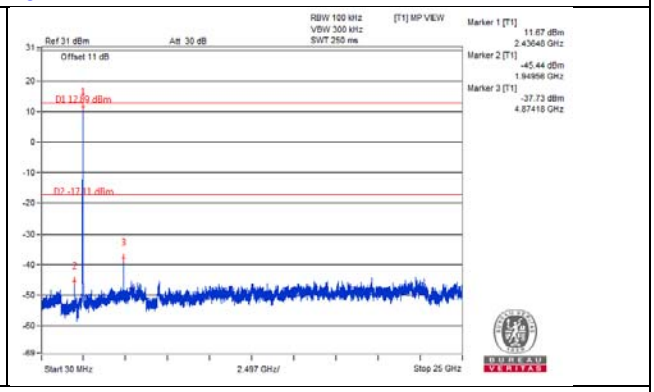
CH 1



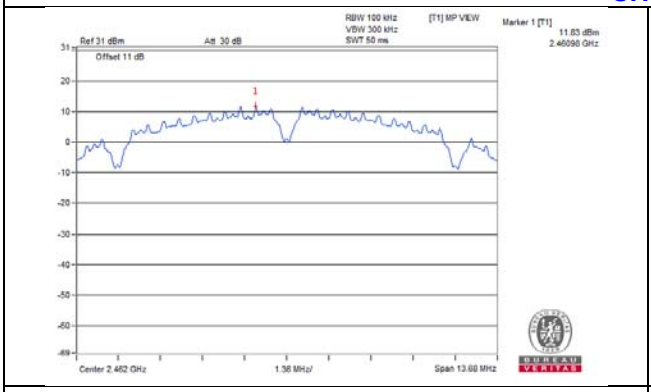


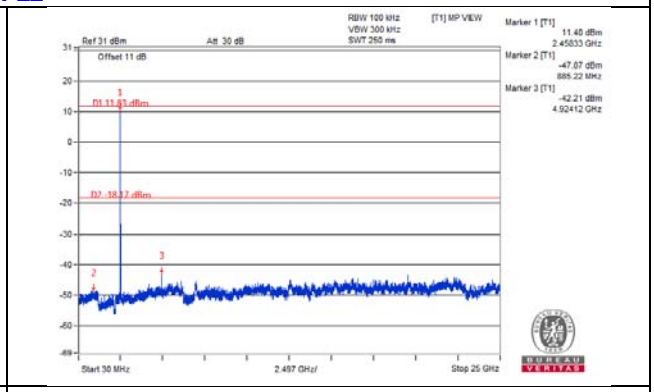
CH 6



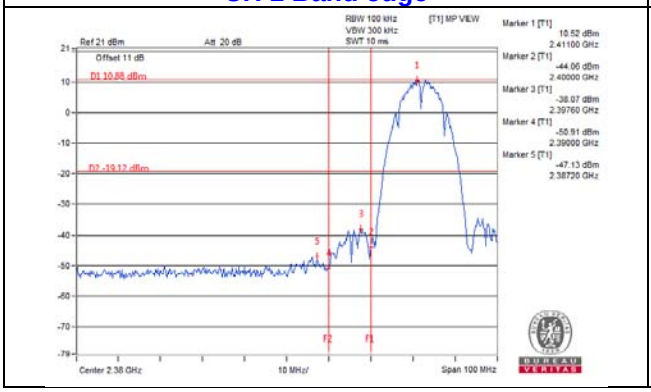


CH 11

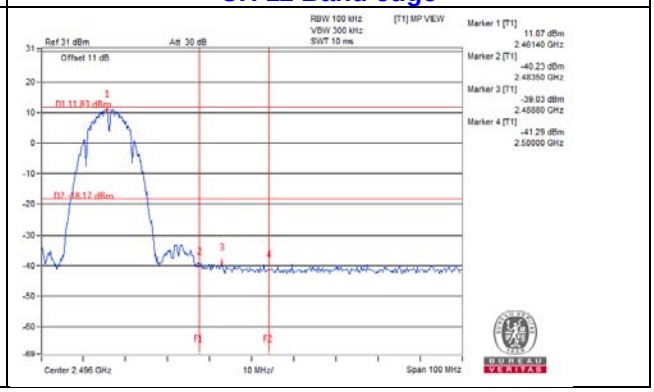




CH 1 Band edge

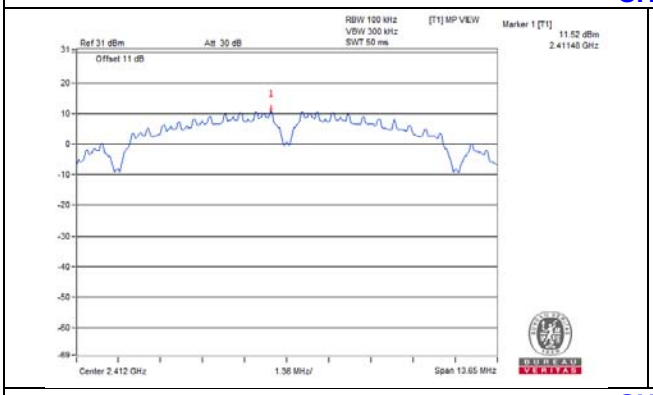


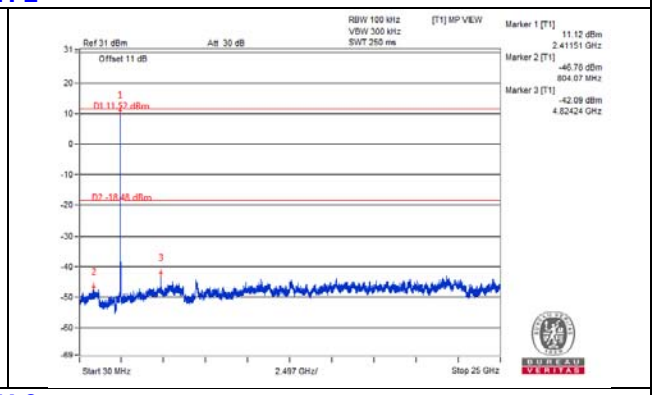
CH 11 Band edge



CHAIN 1

CH 1





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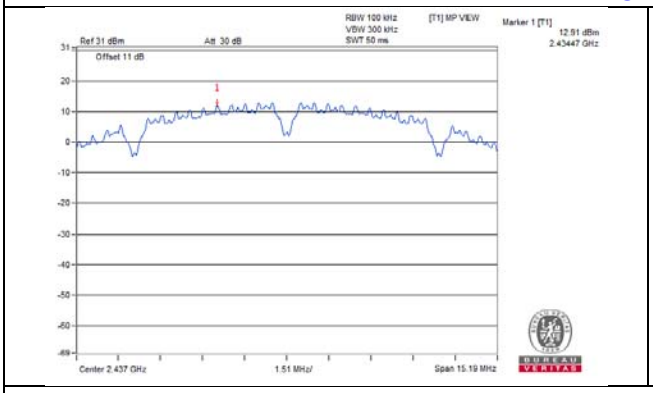
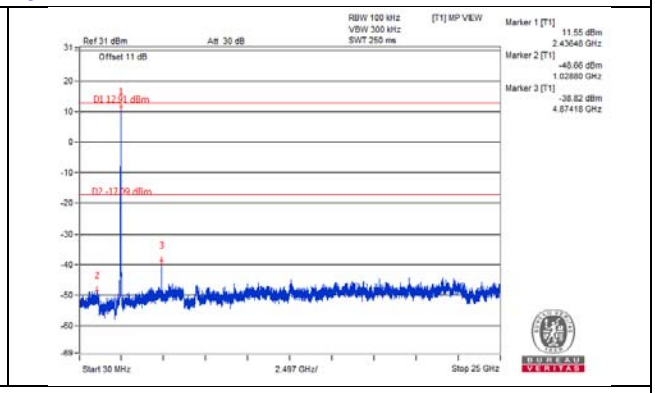
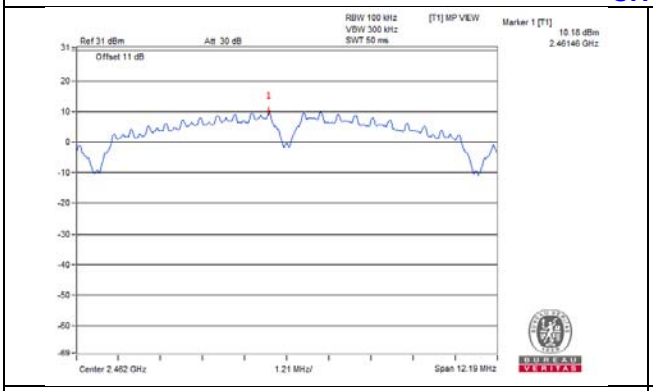
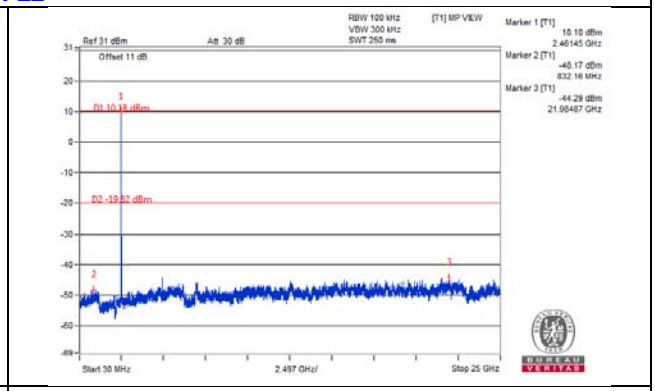


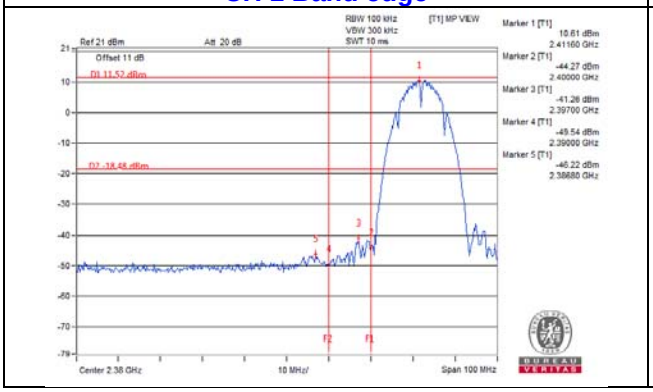


CH 11

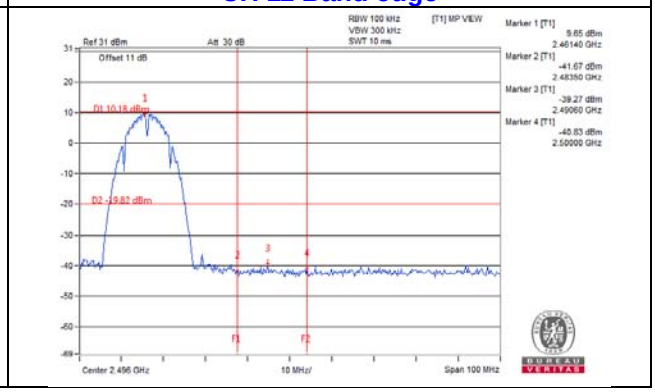




CH 1 Band edge

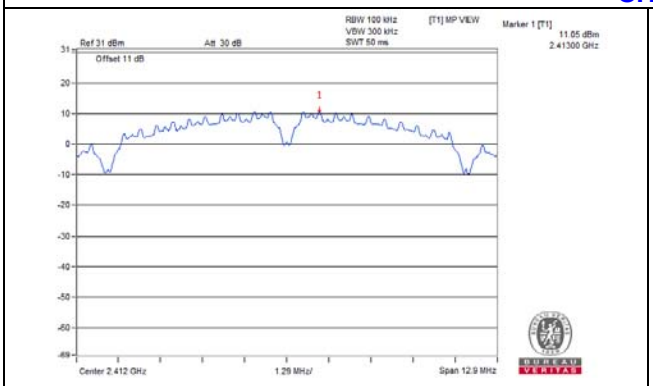


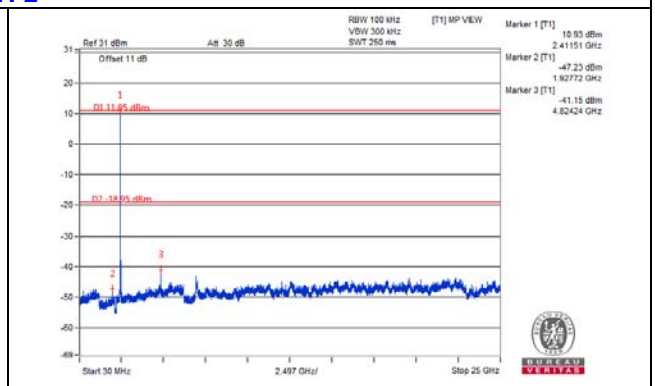
CH 11 Band edge



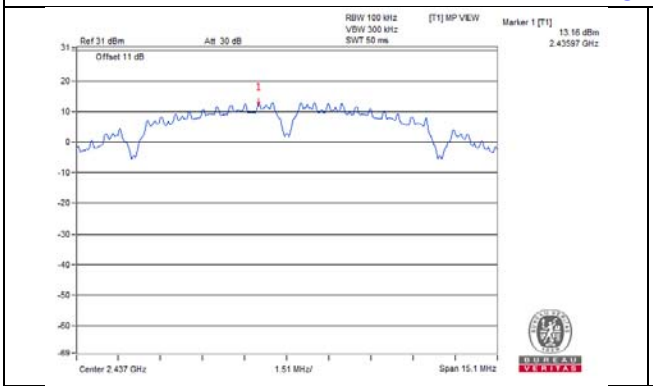
CHAIN 2

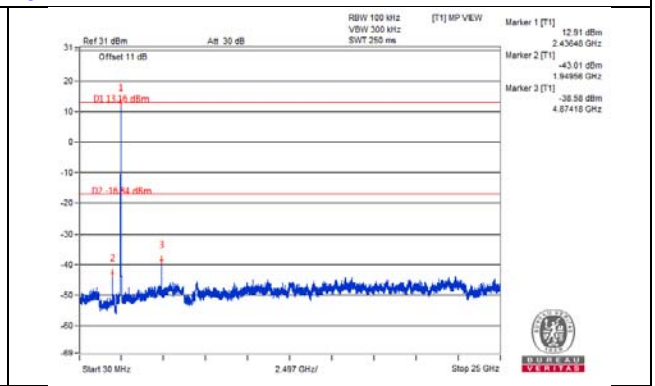
CH 1



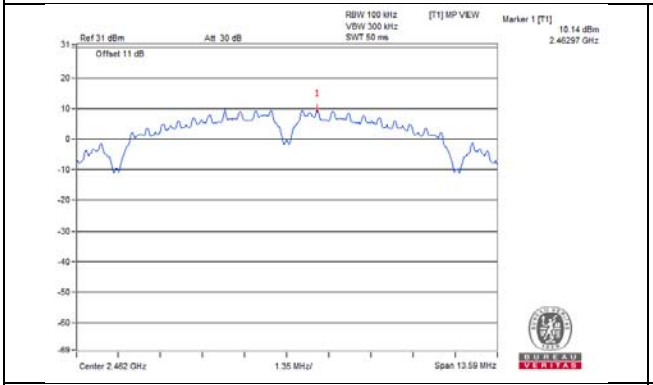


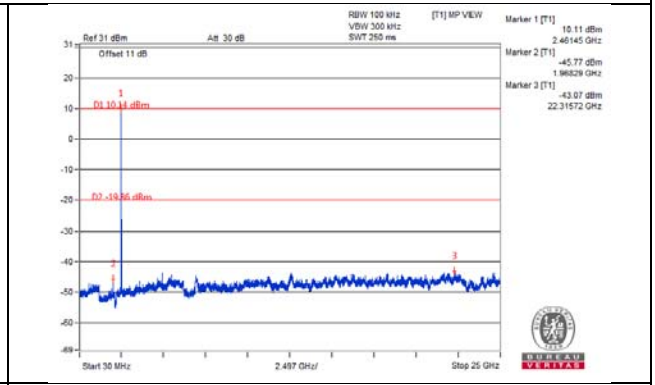
CH 6



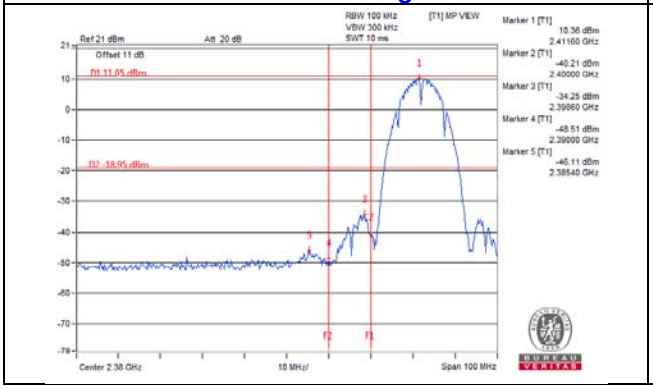


CH 11

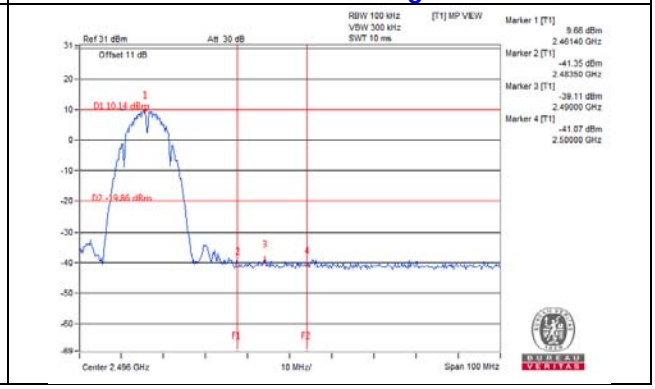




CH 1 Band edge

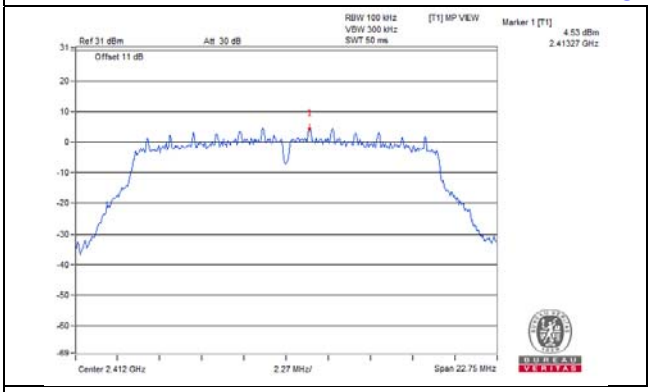


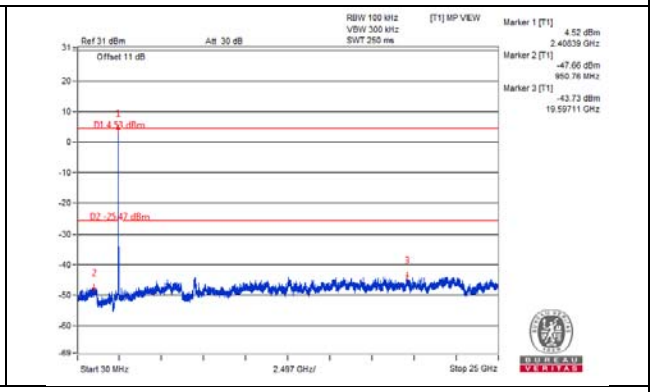
CH 11 Band edge



802.11g
CHAIN 0

CH 1





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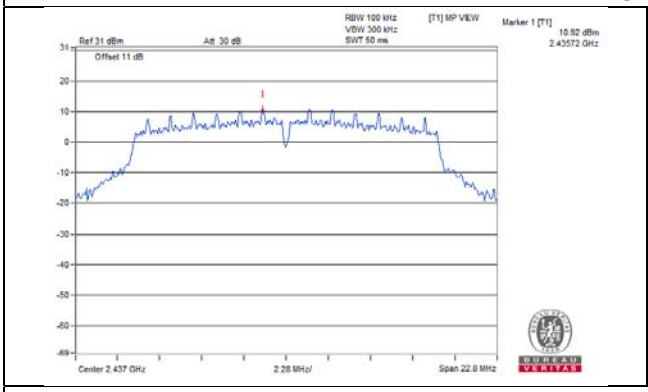
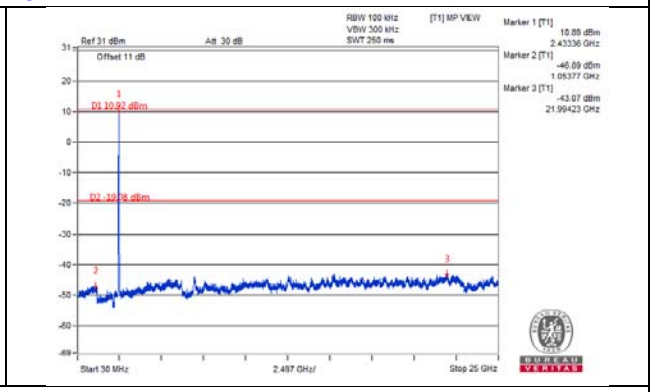
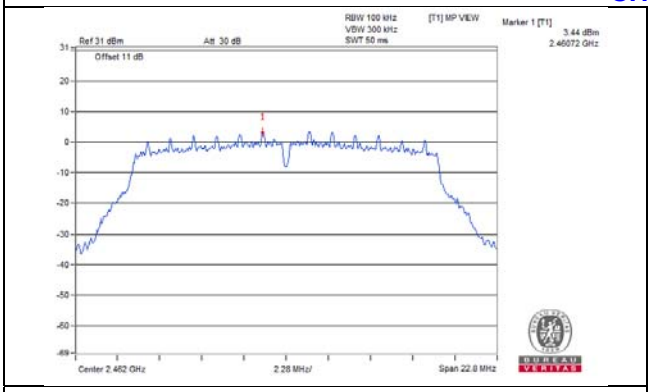
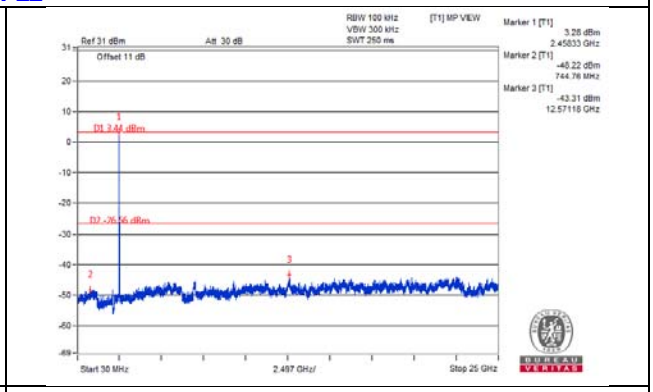


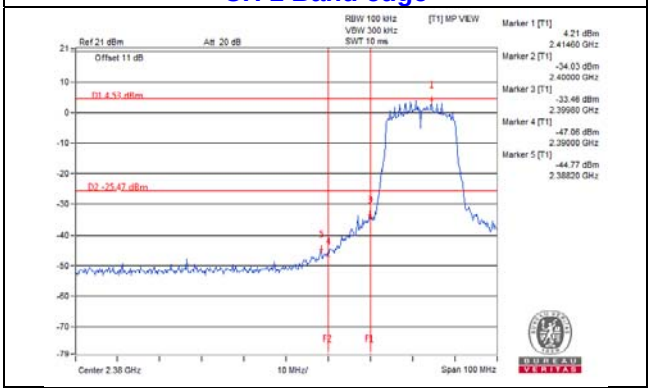


CH 11





CH 1 Band edge



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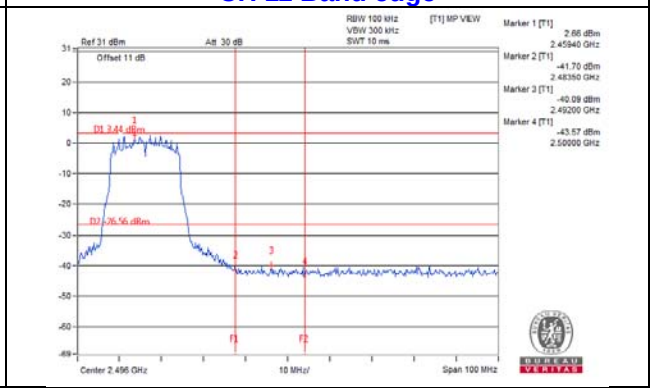
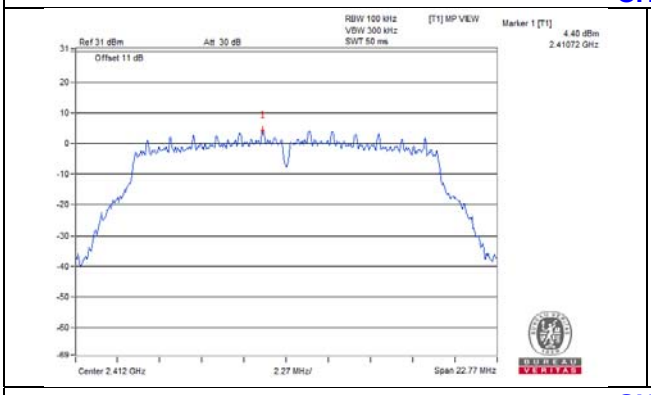
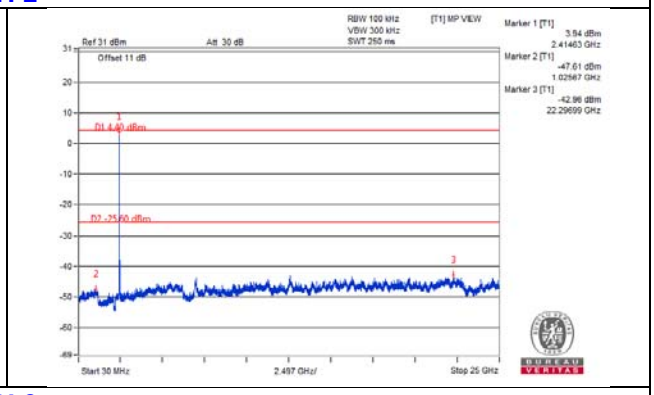


CHAIN 1

CH 1





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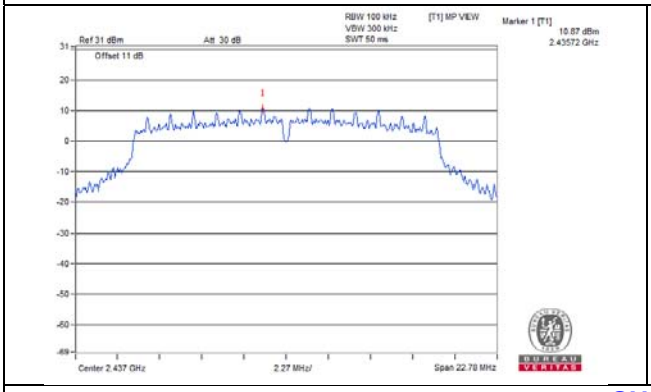

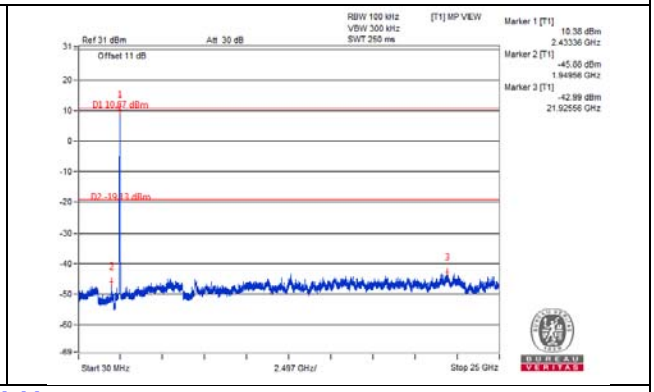

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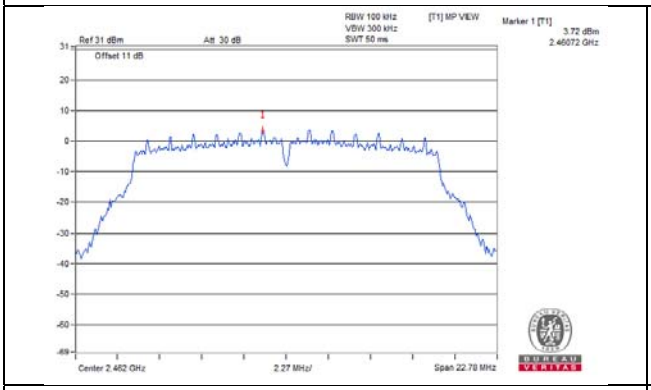

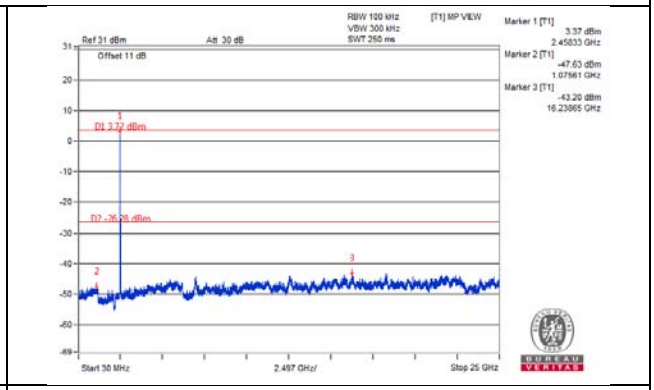

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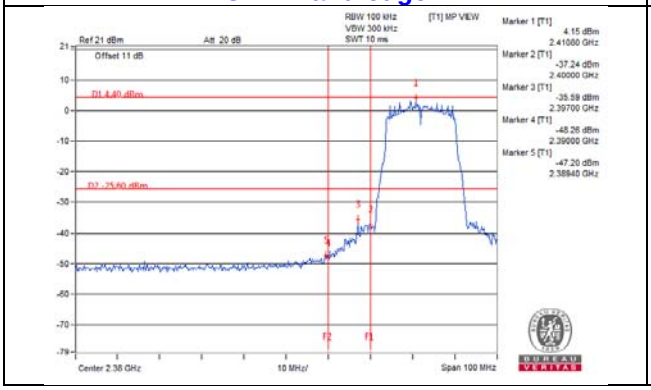

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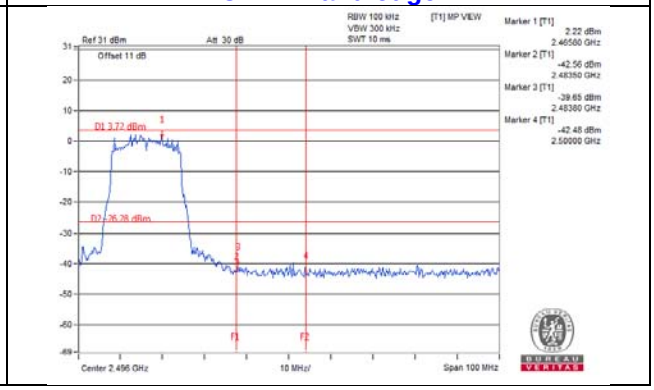

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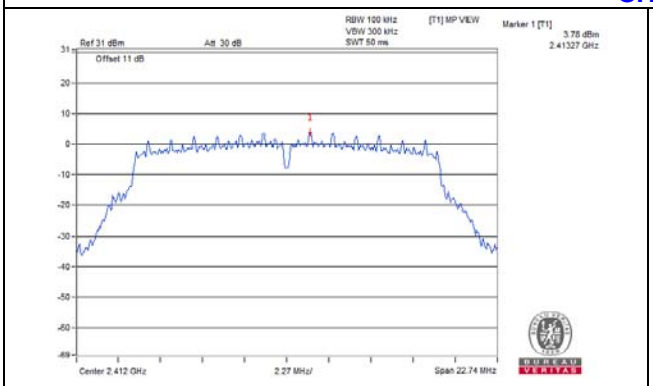

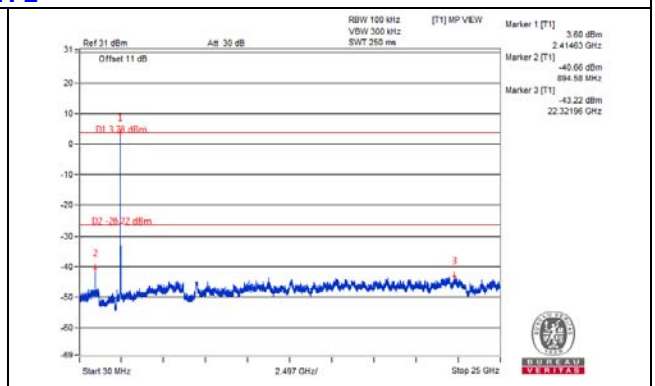

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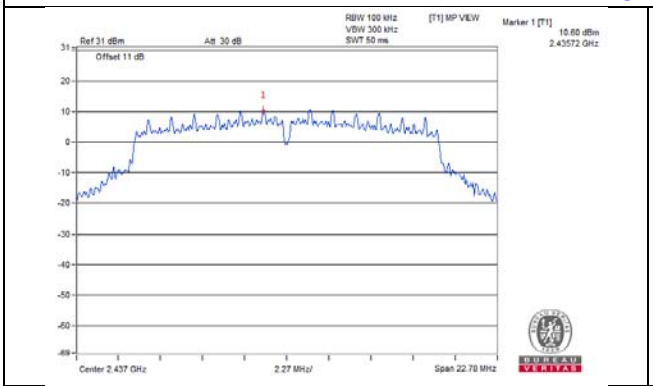

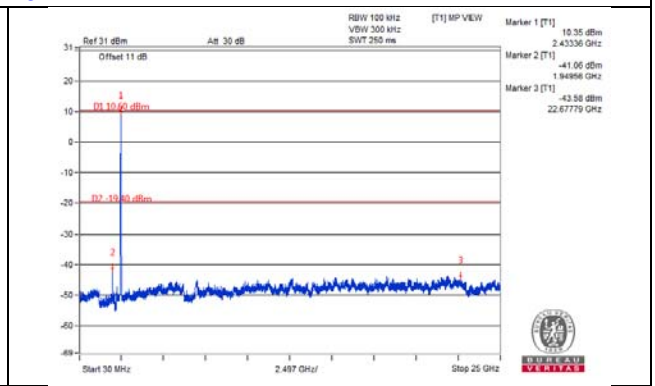

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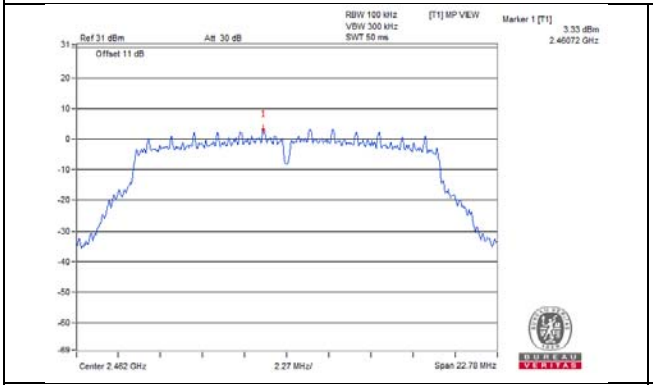

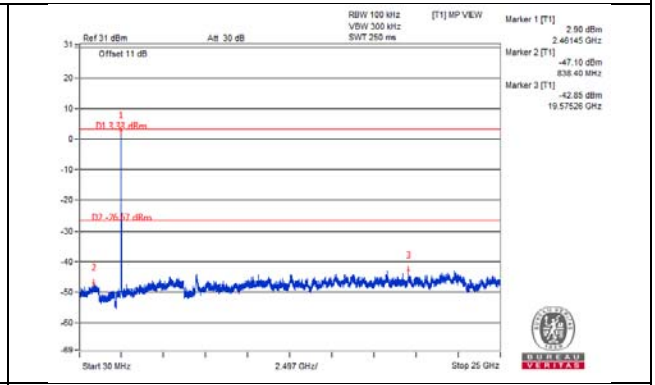

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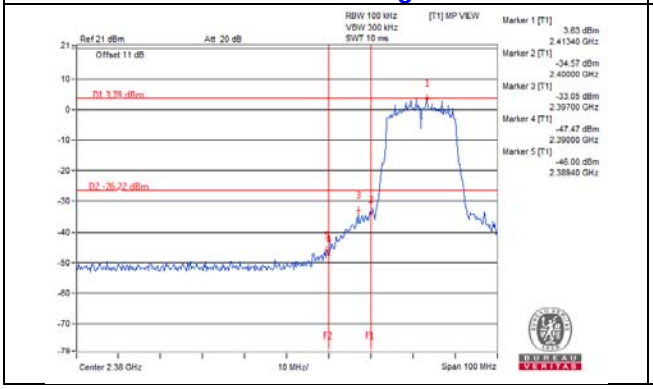

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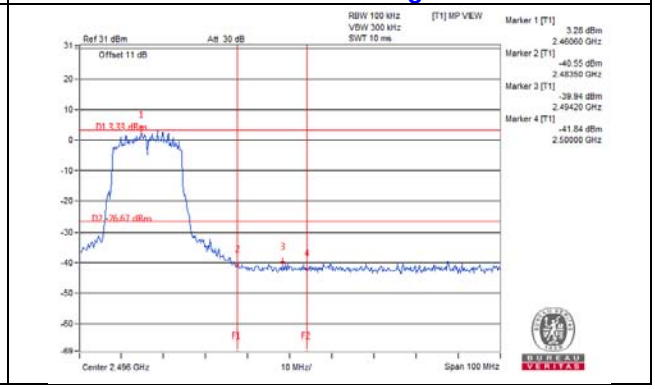

802.11n (HT20)
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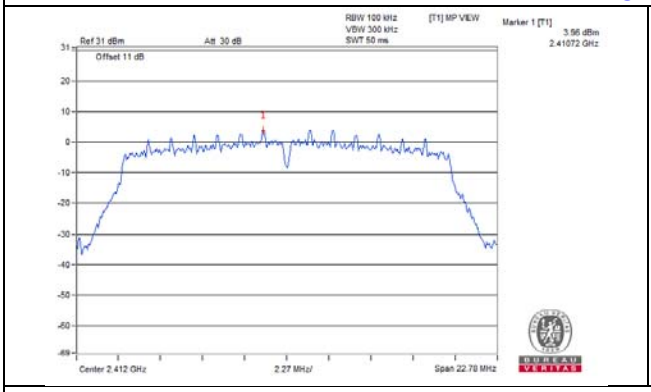

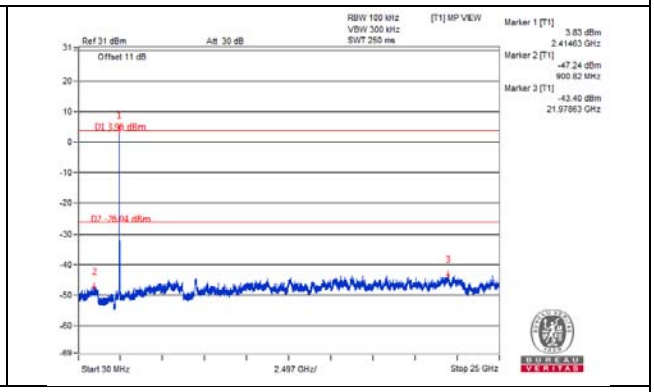

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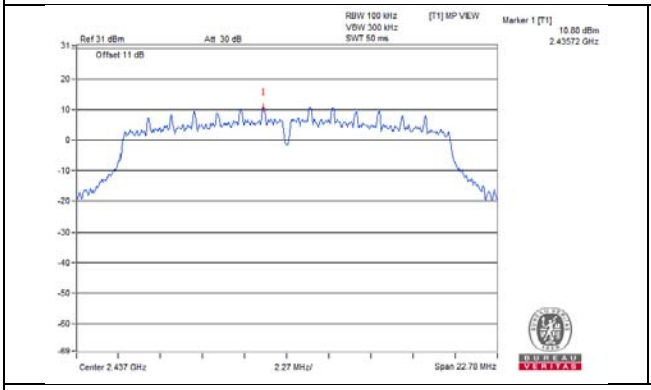

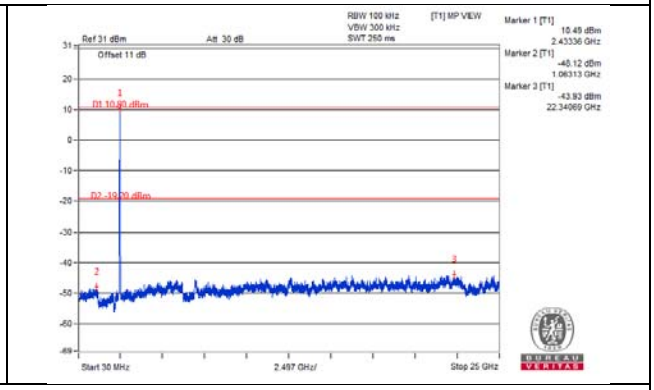

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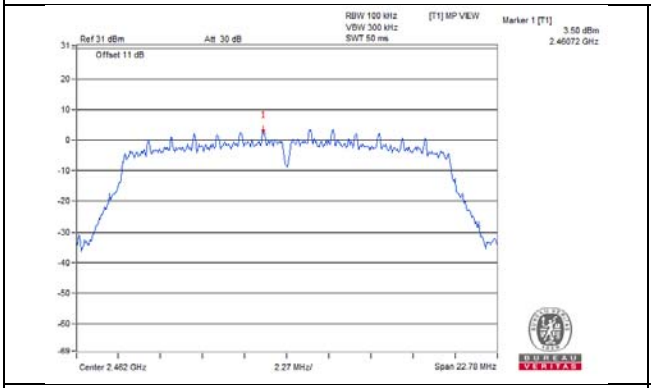

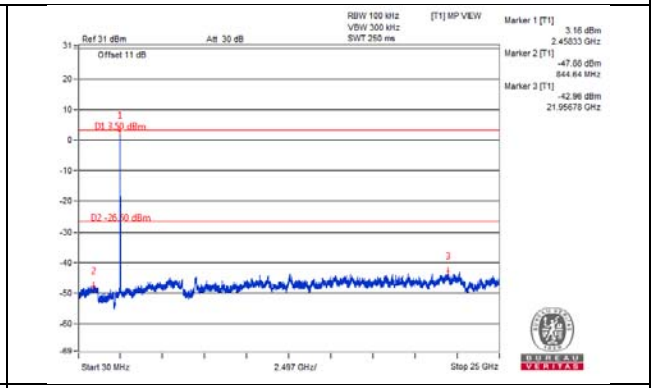

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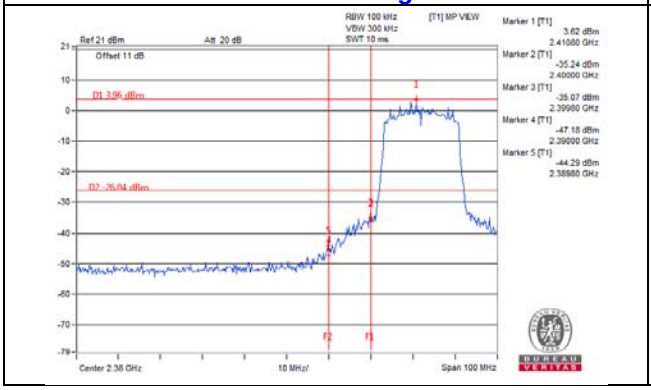

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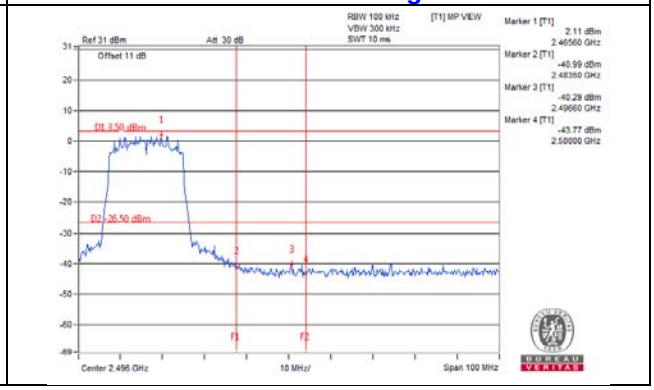
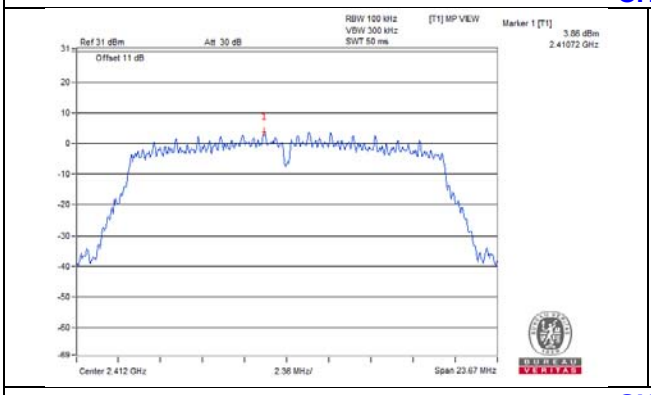
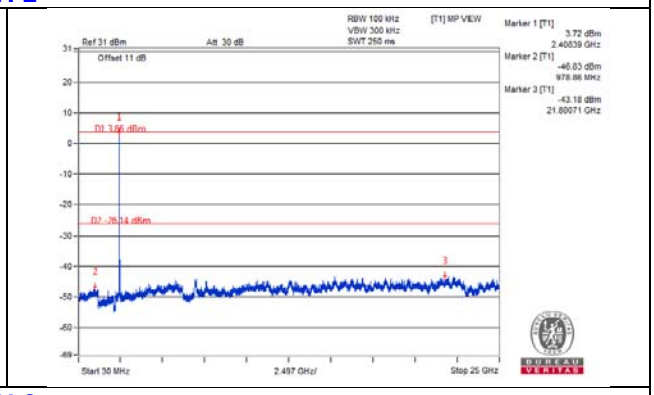


CHAIN 1

CH 1





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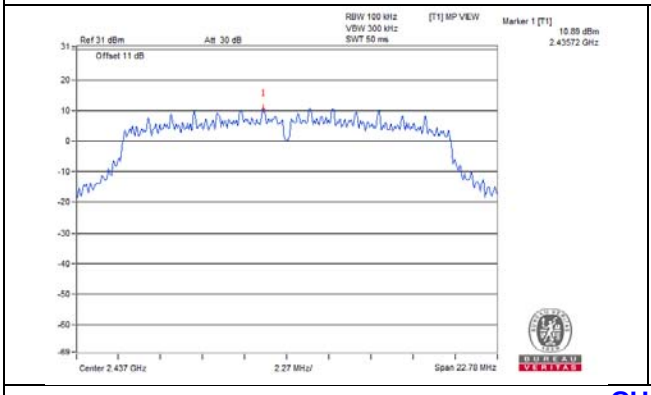

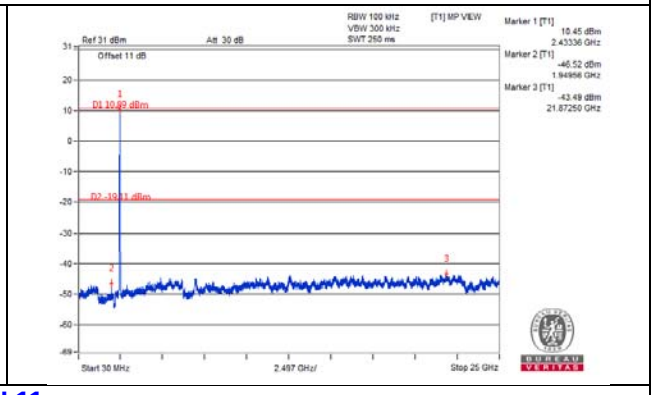

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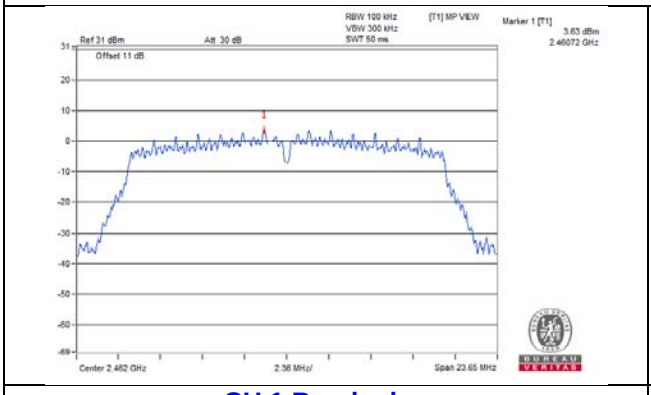

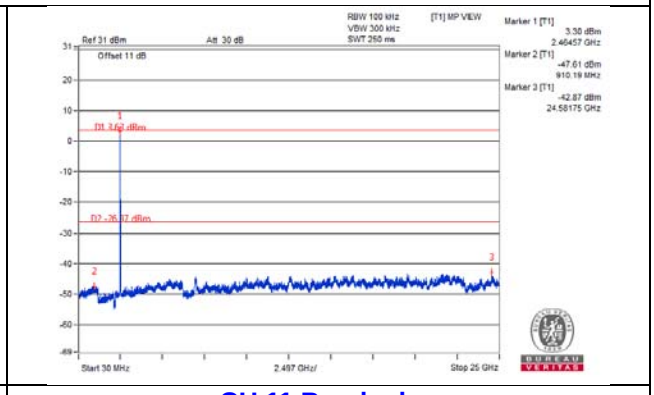

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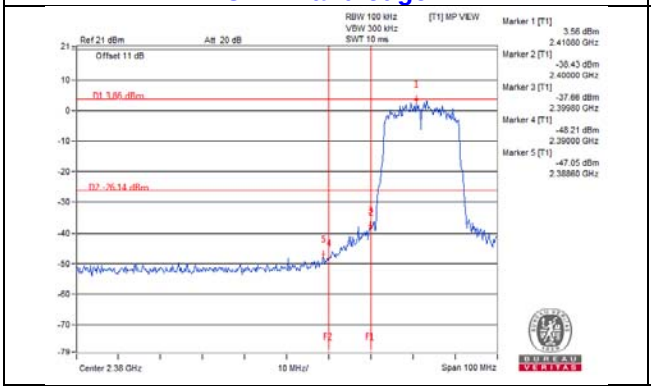

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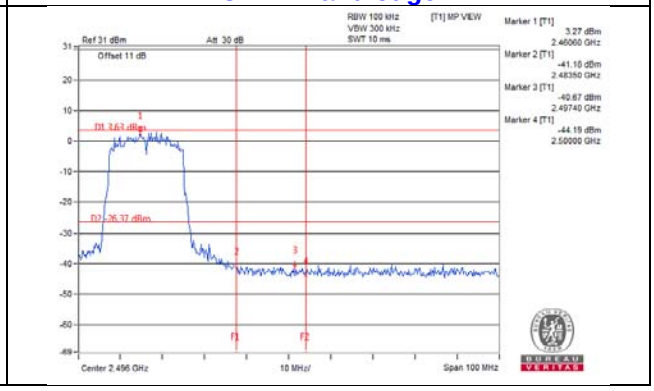
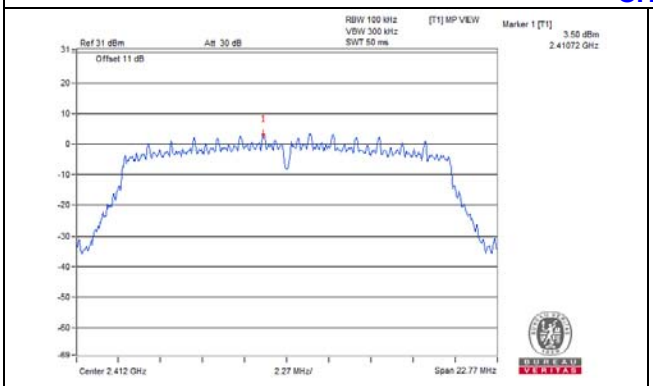
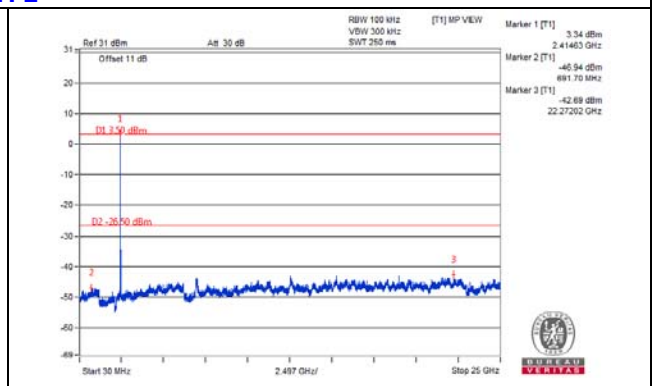


CHAIN 2

CH 1





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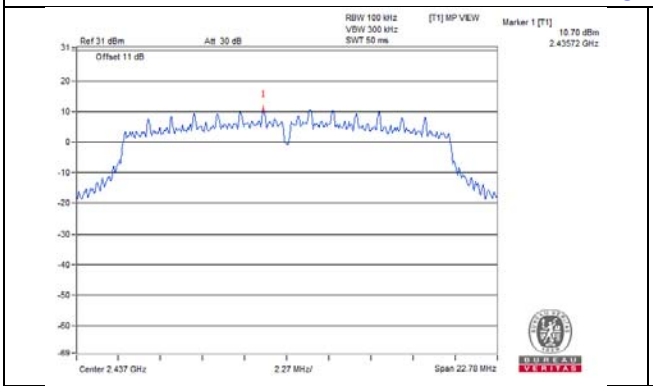

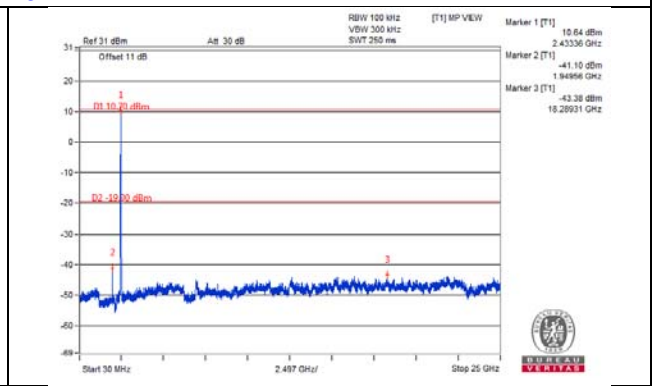

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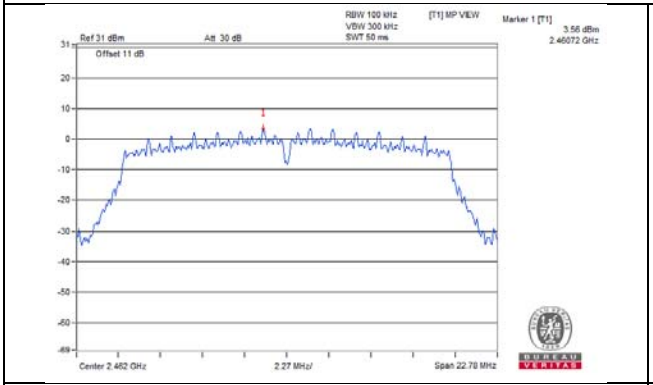
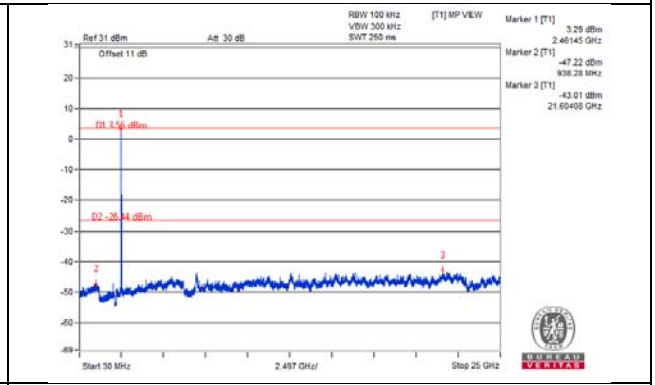
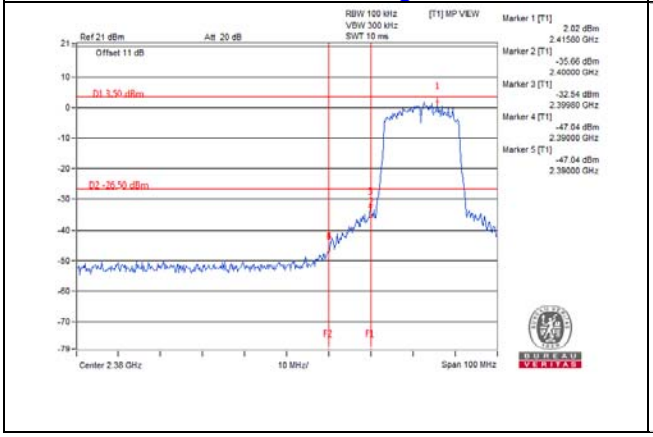




CH 1 Band edge



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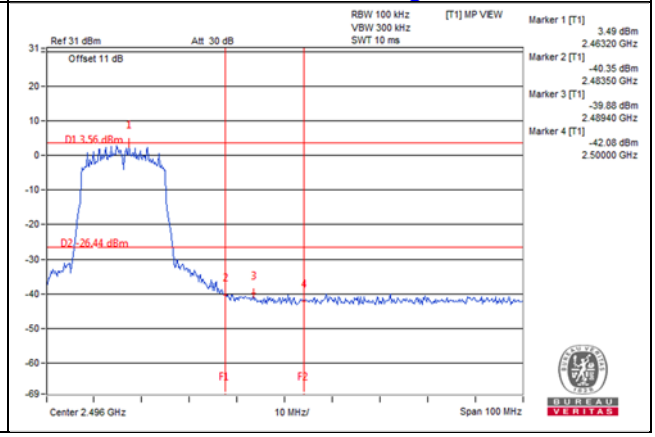

802.11n (HT40)
CHAIN 0

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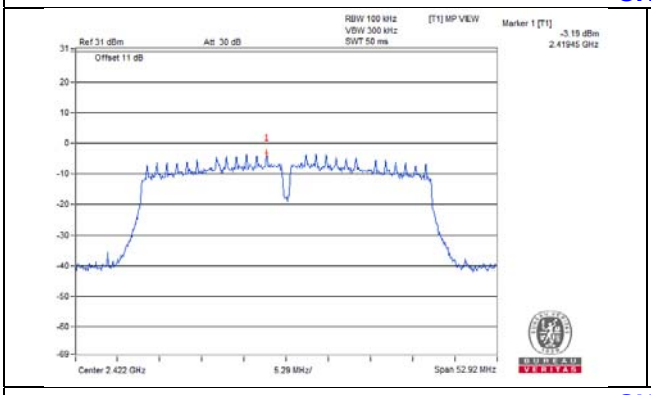

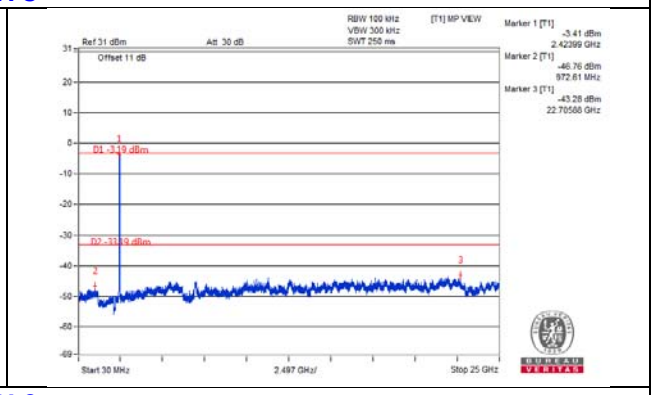

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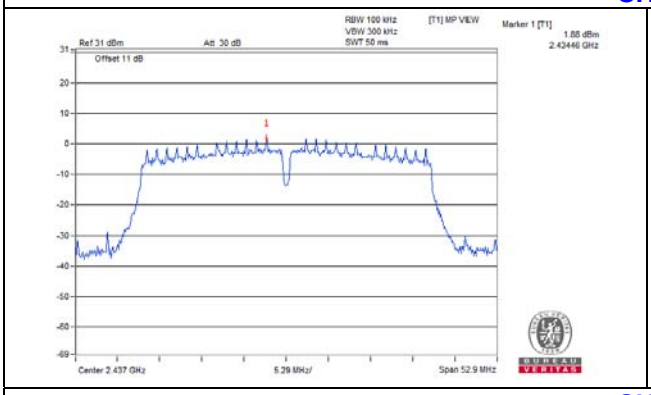

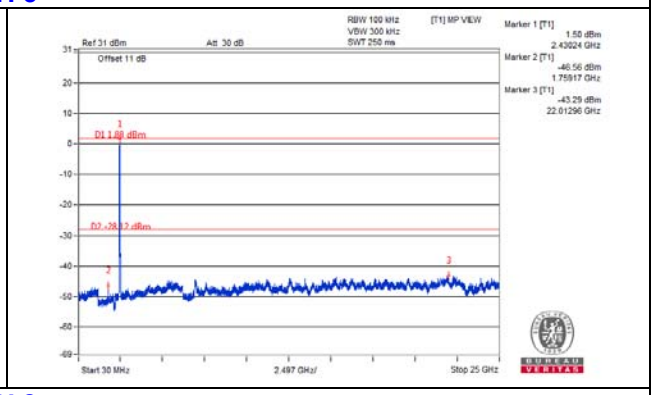

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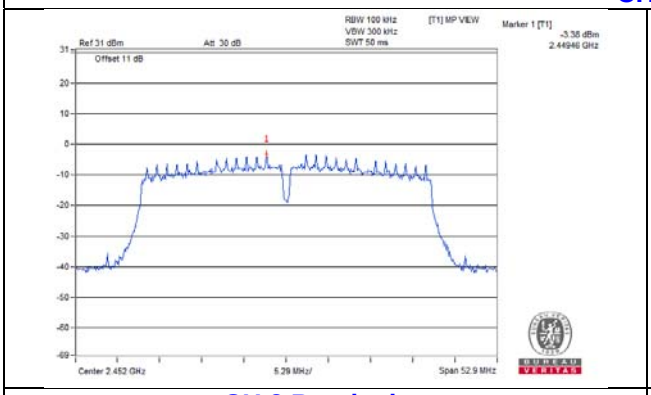
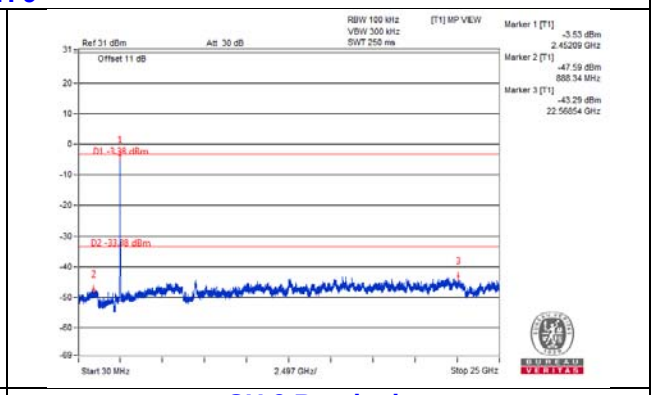
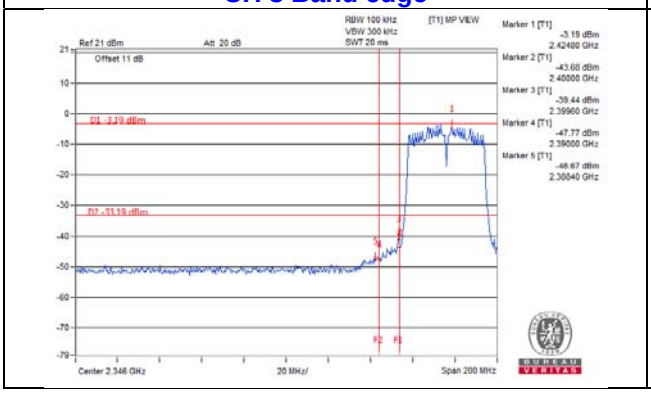
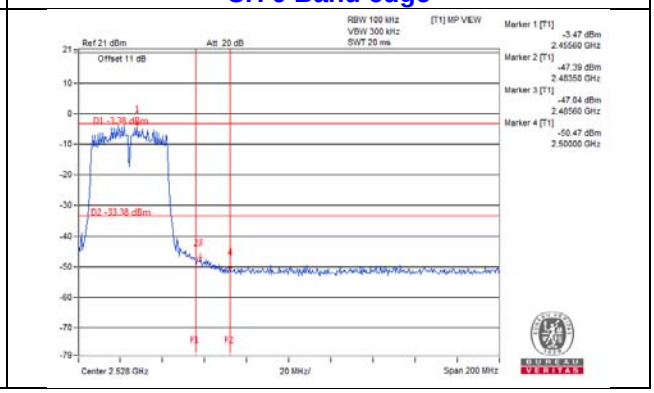




CH 3 Band edge

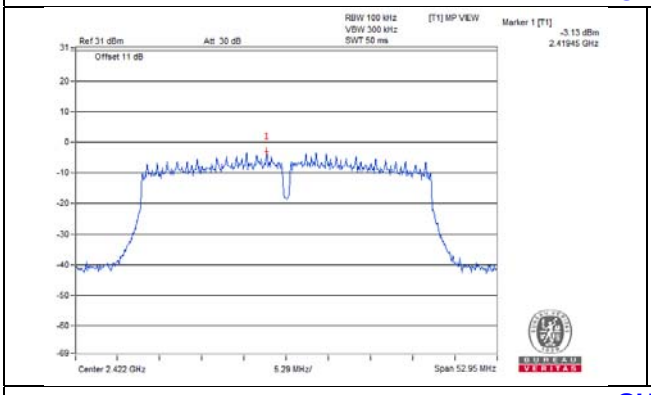


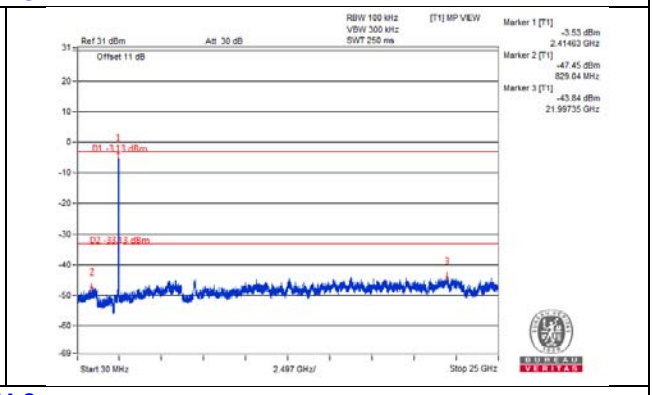
CH 9 Band edge



CHAIN 1

CH 3





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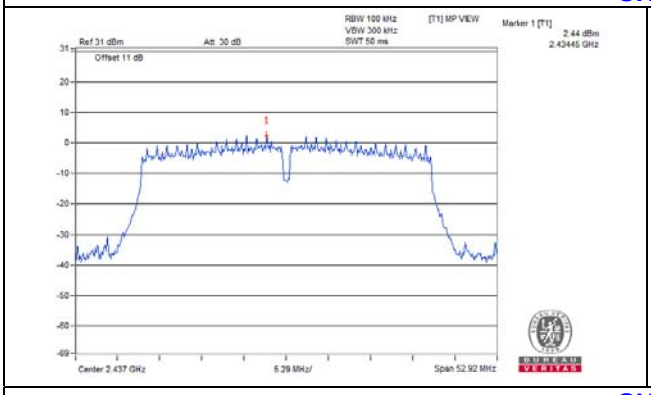

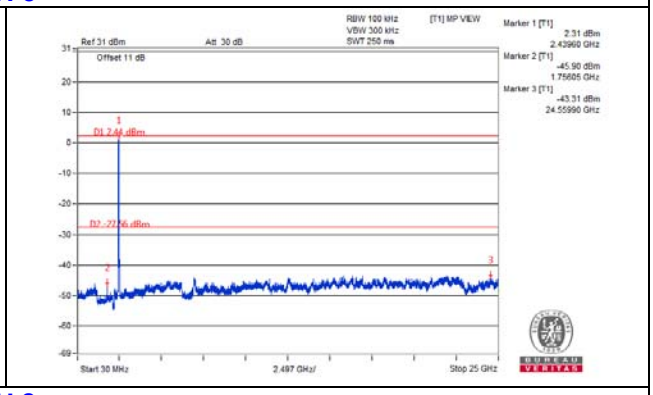

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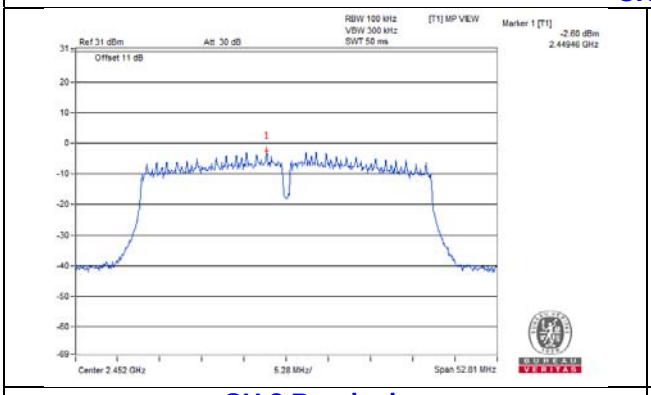
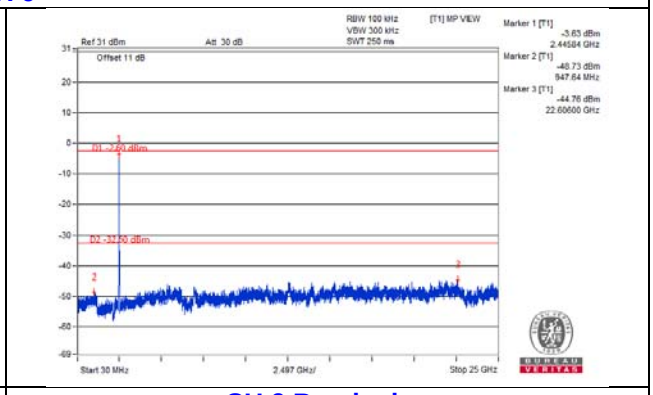
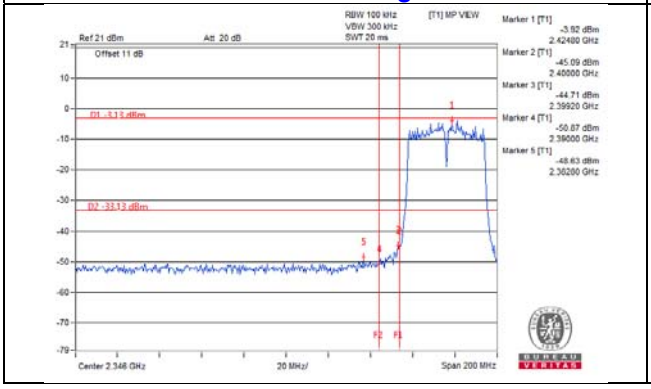
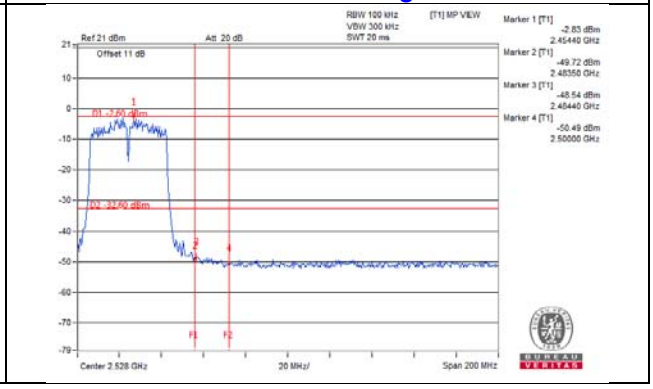




CH 3 Band edge

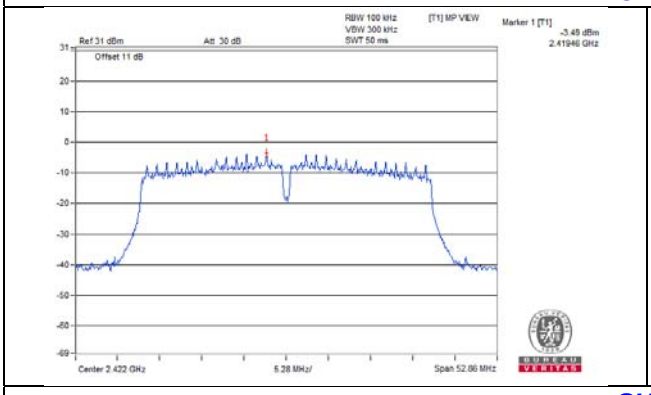


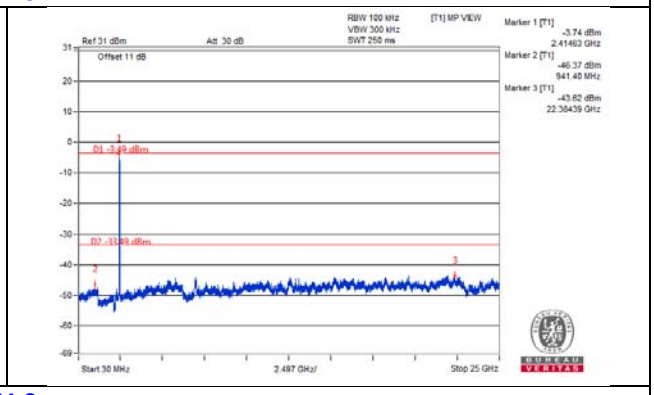
CH 9 Band edge



CHAIN 2

CH 3





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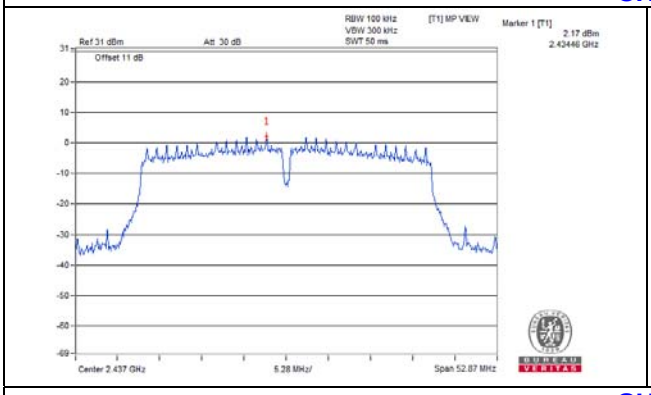
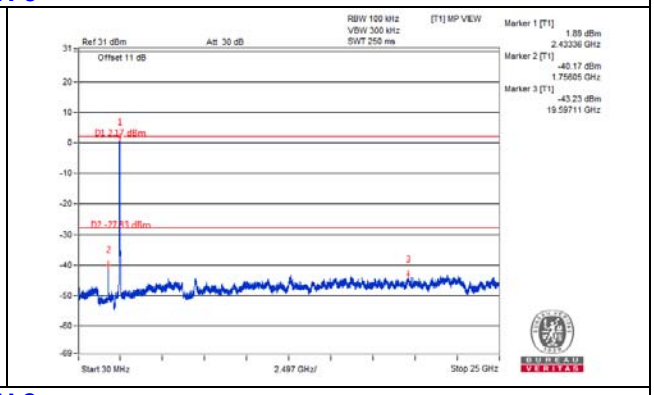
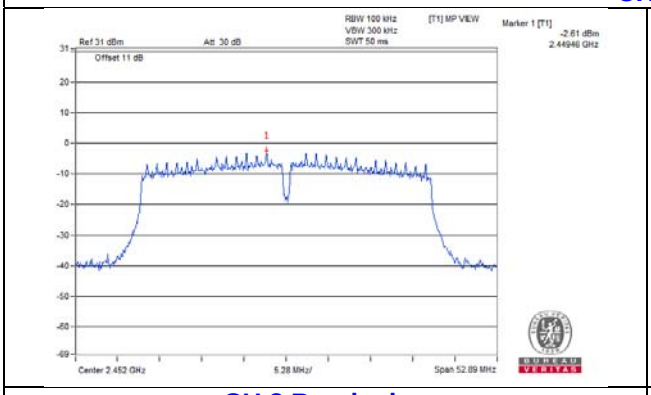
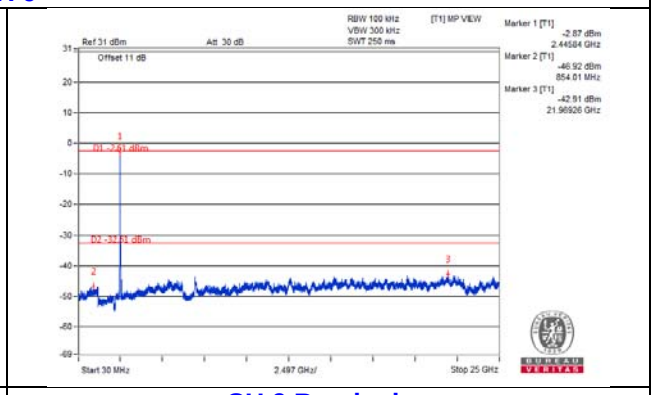




CH 9





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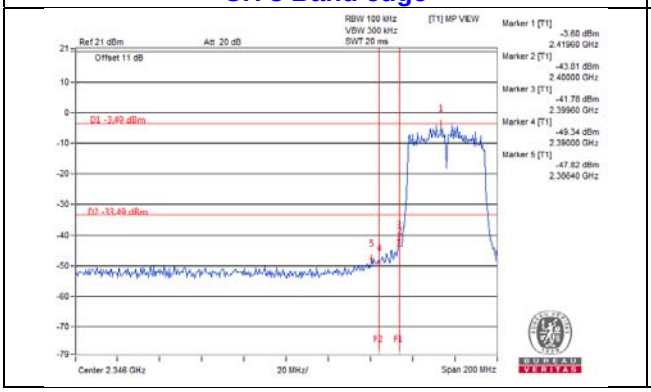

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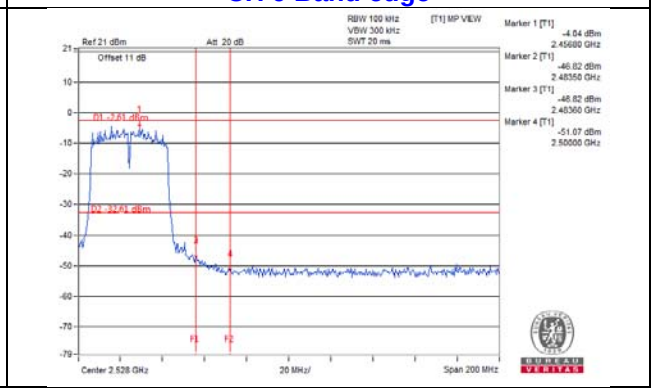

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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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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