FCC Test Report

Report No.:	RF200107C19
FCC ID:	Q87-03530
Test Model:	RE7000 V2
Series Model:	RE6900, RE7100 (Refer to Section 3.1 for more details)
Received Date:	Jan. 07, 2020
Test Date:	Jan. 14, 2020 ~ Jan. 17, 2020
Issued Date:	Feb. 04, 2020
Applicant:	LINKSYS LLC
Address:	121 Theory Drive Irvine California 92617 United State
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

Testing Laboratory
2021

Table of Contents

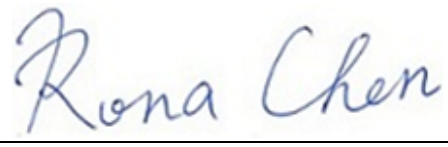
Release Control Record

Issue No.	Description	Date Issued
RF200107C19	Original Release	Feb. 04, 2020

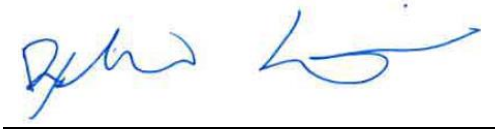
1 Certificate of Conformity

Product:	Linksys MAX-STREAM AC1900+ WiFi Range Extender
Brand:	LINKSYS
Test Model:	RE7000 V2
Series Model:	RE6900, RE7100 (Refer to Section 3.1 for more details)
Sample Status:	Engineering Sample
Applicant:	LINKSYS LLC
Test Date:	Jan. 14, 2020 ~ Jan. 17, 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 :  , **Date:** Feb. 04, 2020

Rona Chen / Specialist

Approved by :  , **Date:** Feb. 04, 2020

Dylan Chiou / 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 -18.20 dB at 0.15400 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.1 dB at 2487.70 MHz. & 2390.00 MHz. & 2483.50 MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	Pass	Reference only
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	No antenna connector is used.

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	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	3.59 dB
	200 MHz ~ 1000 MHz	3.60 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Linksys MAX-STREAM AC1900+ WiFi Range Extender
Brand	LINKSYS
Test Model	RE7000 V2
Series Model	RE6900, RE7100
Status of EUT	Engineering Sample
Power Supply Rating	120 Vac (AC Main)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to 300.0 Mbps.
Operating Frequency	2412 ~ 2462 MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	325.098 mW
Antenna Type	Refer to Note as below
Antenna Connector	Refer to Note as below
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. The models are listed as below.

Brand Name	Model Name	Difference
LINKSYS	RE7000 V2	Belkin sell the same product to different marketing segment basing on the same platform.
	RE6900	
	RE7100	

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

Modulation Mode	Tx Function	Beamforming
802.11b	2TX	Not Support
802.11g	2TX	Not Support
802.11n (HT20)	2TX	Not Support
802.11n (HT40)	2TX	Not Support

3. The antenna information of EUT are listed as below.

No.	Antenna Band	Antenna Type	2.4 GHz Gain (peak)	5 GHz Gain (peak)	Antenna Connector	Command
1	5G single Band	METAL	-	5150 MHz：3.06 5550 MHz：3.19 5850 MHz：2.44	Switch connector (J6)	5G：Chain0
2	2.4G & 5G Dual Band	PCB	2400 MHz：3.28 2450 MHz：3.06 2500 MHz：2.77	5150 MHz：3.09 5550 MHz：3.26 5850 MHz：3.38	I-Pex connector (J26)	5G：Chain1 2G：Chain1
3	2.4G & 5G Dual Band	PCB	2400 MHz：2.81 2450 MHz：2.89 2500 MHz：3.31	5150 MHz：3.22 5550 MHz：2.93 5850 MHz：3.16	I-Pex connector (J27)	5G：Chain2 2G：Chain0
4	5G single Band	METAL	-	5150 MHz：2.29 5550 MHz：3.05 5850 MHz：3.16	Switch connector (J36)	5G：Chain3
* The antenna connector of 5G single Band METAL type antenna is only for conduct debug use						

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

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

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

7 channels are provided for 802.11n (HT40):

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

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 1 GHz **RE<1G:** Radiated Emission below 1 GHz
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. "-"means no effect.

Radiated Emission Test (Above 1 GHz):

☒ 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 1 GHz):

☒ 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	11	DSSS	DBPSK	1.0

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)
-	802.11b	1 to 11	11	DSSS	DBPSK	1.0

Bandedge Measurement:

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

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

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jones Chang
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Noah Chang
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jones Chang
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Ivan Tseng

3.3 Duty Cycle of Test Signal

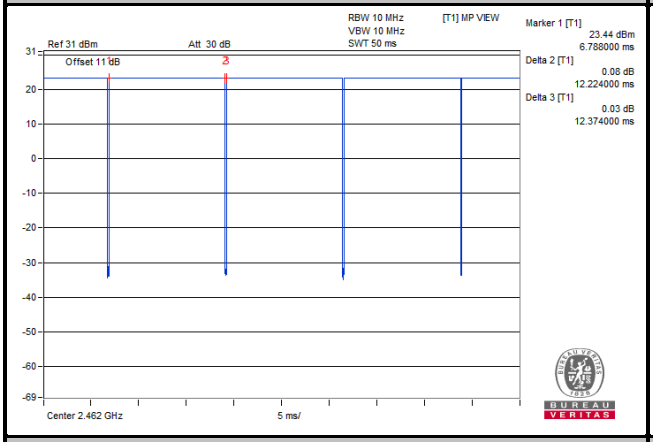
802.11b: Duty cycle of test signal is ≥ 98 %, duty factor is not required.

802.11g: Duty cycle = 2.030/2.178 = 0.932, Duty factor = 10 * log(1/0.932) = 0.31

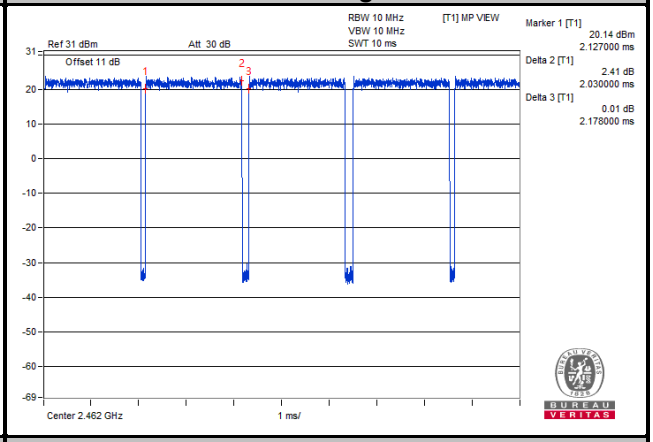
802.11n (HT20): Duty cycle = 1.878/2.058 = 0.913, Duty factor = 10 * log(1/0.913) = 0.40

802.11n (HT40): Duty cycle = 0.930/1.084 = 0.858, Duty factor = 10 * log(1/0.858) = 0.67

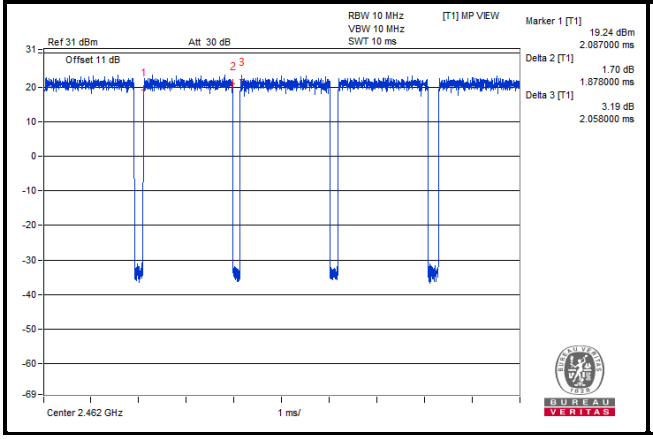
802.11b



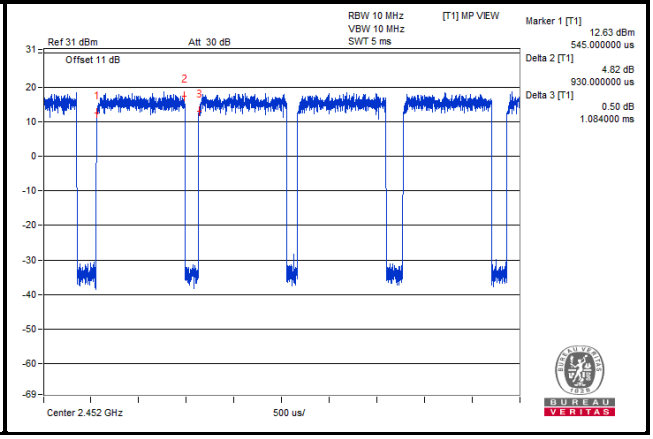
802.11g



802.11n (HT20)



802.11n (HT40)



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.

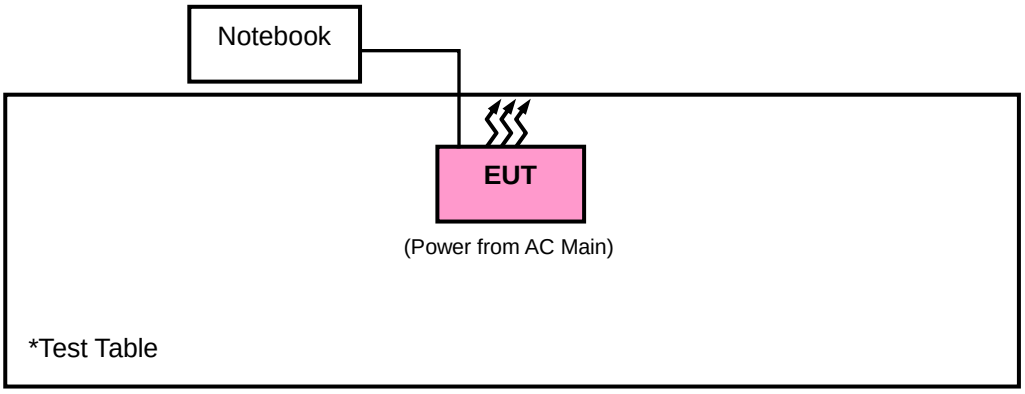
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Notebook	DELL	E5410	1HC2XM1	N/A

No.	Signal Cable Description of The Above Support Units
1.	6m non-shielded LAN cable

Note:

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

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 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 20 dB below the highest level of the desired power:

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

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 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

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	100269	Jun. 04, 2019	Jun. 03, 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 EMCI	EM-6879	269	Sep. 16, 2019	Sep. 15, 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 Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 19, 2019	Jan. 18, 2020
RF Coaxial 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
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 05, 2019	Sep. 04, 2020
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 30 MHz

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 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) 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 detected 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:

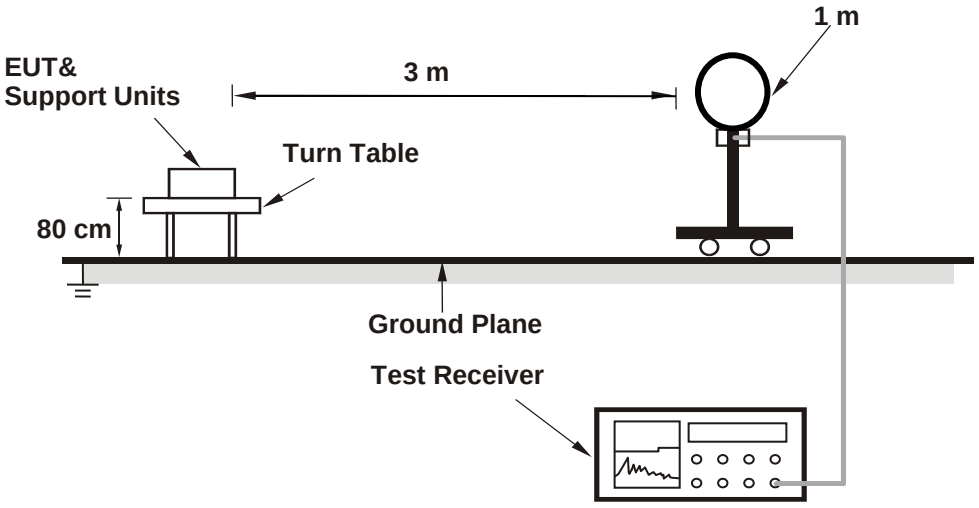
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
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 Average detection (AV) at frequency above 1 GHz. (11b: RBW = 1 MHz, VBW =10 Hz ; 11g: RBW = 1 MHz, VBW = 1 kHz ;
   11n (HT20): RBW = 1 MHz, VBW = 1 kHz ; 11n (HT40): RBW = 1 MHz, VBW = 3 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

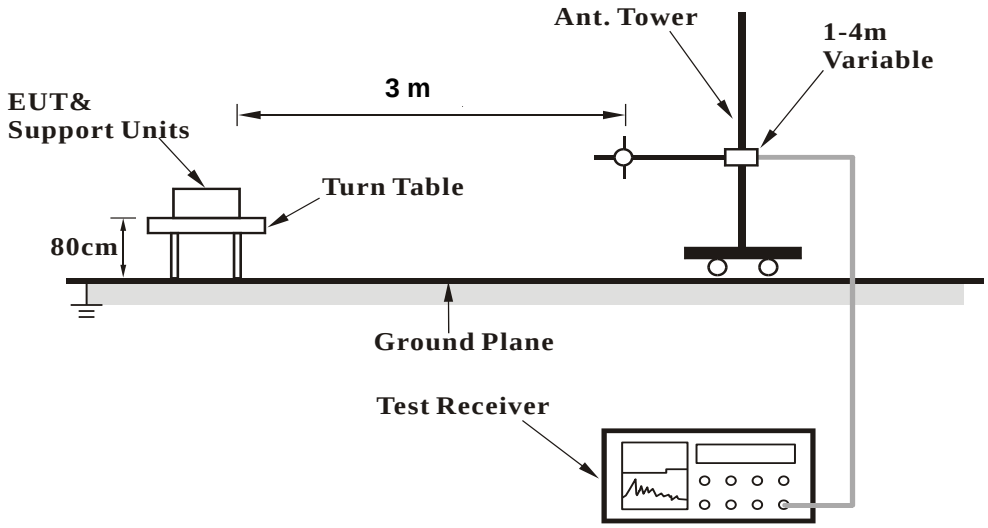
No deviation.

4.1.5 Test Set Up

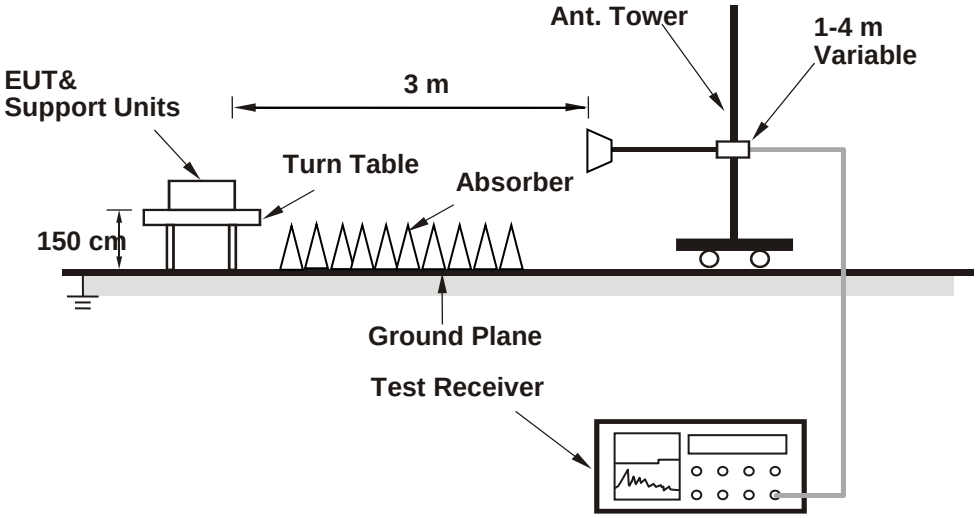
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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 a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz 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	57.2 PK	74.0	-16.8	3.10 H	197	56.8	0.4
2	2390.00	48.0 AV	54.0	-6.0	3.10 H	197	47.6	0.4
3	*2412.00	107.5 PK			3.06 H	197	107.0	0.5
4	*2412.00	105.1 AV			3.06 H	197	104.6	0.5
5	4824.00	41.4 PK	74.0	-32.6	1.34 H	225	31.6	9.8
6	4824.00	36.3 AV	54.0	-17.7	1.34 H	225	26.5	9.8
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	59.9 PK	74.0	-14.1	1.16 V	218	59.5	0.4
2	2390.00	52.4 AV	54.0	-1.6	1.16 V	218	52.0	0.4
3	*2412.00	111.5 PK			1.16 V	218	111.0	0.5
4	*2412.00	108.7 AV			1.16 V	218	108.2	0.5
5	4824.00	40.5 PK	74.0	-33.5	1.66 V	213	30.7	9.8
6	4824.00	32.4 AV	54.0	-21.6	1.66 V	213	22.6	9.8

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.

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	2390.00	53.9 PK	74.0	-20.1	1.36 H	231	53.5	0.4
2	2390.00	42.7 AV	54.0	-11.3	1.36 H	231	42.3	0.4
3	*2437.00	104.8 PK			1.36 H	231	104.2	0.6
4	*2437.00	102.6 AV			1.36 H	231	102.0	0.6
5	2483.50	55.5 PK	74.0	-18.5	1.36 H	231	54.7	0.8
6	2483.50	42.7 AV	54.0	-11.3	1.36 H	231	41.9	0.8
7	4874.00	41.7 PK	74.0	-32.3	1.00 H	101	31.9	9.8
8	4874.00	36.6 AV	54.0	-17.4	1.00 H	101	26.8	9.8
9	7311.00	45.9 PK	74.0	-28.1	2.27 H	123	30.1	15.8
10	7311.00	32.5 AV	54.0	-21.5	2.27 H	123	16.7	15.8
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	56.6 PK	74.0	-17.4	1.10 V	219	56.2	0.4
2	2390.00	45.1 AV	54.0	-8.9	1.10 V	219	44.7	0.4
3	*2437.00	110.9 PK			1.10 V	219	110.3	0.6
4	*2437.00	108.6 AV			1.10 V	219	108.0	0.6
5	2483.50	56.9 PK	74.0	-17.1	1.10 V	219	56.1	0.8
6	2483.50	43.6 AV	54.0	-10.4	1.10 V	219	42.8	0.8
7	4874.00	40.7 PK	74.0	-33.3	1.69 V	201	30.9	9.8
8	4874.00	32.8 AV	54.0	-21.2	1.69 V	201	23.0	9.8
9	7311.00	45.4 PK	74.0	-28.6	1.32 V	197	29.6	15.8
10	7311.00	32.3 AV	54.0	-21.7	1.32 V	197	16.5	15.8

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.

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	104.2 PK			1.42 H	215	103.5	0.7
2	*2462.00	101.9 AV			1.42 H	215	101.2	0.7
3	2483.50	54.0 PK	74.0	-20.0	1.38 H	221	53.2	0.8
4	2483.50	46.3 AV	54.0	-7.7	1.38 H	221	45.5	0.8
5	2487.70	56.1 PK	74.0	-17.9	1.38 H	221	55.3	0.8
6	2487.70	49.6 AV	54.0	-4.4	1.38 H	221	48.8	0.8
7	4924.00	38.8 PK	74.0	-35.2	2.09 H	41	29.0	9.8
8	4924.00	28.7 AV	54.0	-25.3	2.09 H	41	18.9	9.8
9	7386.00	45.0 PK	74.0	-29.0	1.95 H	81	29.2	15.8
10	7386.00	32.5 AV	54.0	-21.5	1.95 H	81	16.7	15.8
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	110.3 PK			2.17 V	238	109.6	0.7
2	*2462.00	107.6 AV			2.17 V	238	106.9	0.7
3	2483.50	57.1 PK	74.0	-16.9	2.17 V	238	56.3	0.8
4	2483.50	49.7 AV	54.0	-4.3	2.17 V	238	48.9	0.8
5	2487.70	59.2 PK	74.0	-14.8	2.17 V	238	58.4	0.8
6	**2487.70**	**52.9 AV**	**54.0**	**-1.1**	**2.17 V**	**238**	**52.1**	**0.8**
7	4924.00	41.0 PK	74.0	-33.0	1.18 V	261	31.2	9.8
8	4924.00	26.1 AV	54.0	-27.9	1.18 V	261	16.3	9.8
9	7386.00	45.3 PK	74.0	-28.7	2.08 V	231	29.5	15.8
10	7386.00	32.3 AV	54.0	-21.7	2.08 V	231	16.5	15.8

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.

802.11g

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	53.8 PK	74.0	-20.2	1.48 H	211	53.4	0.4
2	2390.00	41.5 AV	54.0	-12.5	1.48 H	211	41.1	0.4
3	*2412.00	101.8 PK			1.42 H	221	101.3	0.5
4	*2412.00	91.8 AV			1.42 H	221	91.3	0.5
5	4824.00	40.7 PK	74.0	-33.3	1.35 H	234	30.9	9.8
6	4824.00	35.8 AV	54.0	-18.2	1.35 H	234	26.0	9.8
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	65.3 PK	74.0	-8.7	2.50 V	217	64.9	0.4
2	**2390.00**	**52.9 AV**	**54.0**	**-1.1**	**2.50 V**	**217**	**52.5**	**0.4**
3	*2412.00	110.8 PK			2.50 V	217	110.3	0.5
4	*2412.00	101.0 AV			2.50 V	217	100.5	0.5
5	4824.00	40.8 PK	74.0	-33.2	1.72 V	200	31.0	9.8
6	4824.00	32.4 AV	54.0	-21.6	1.72 V	200	22.6	9.8

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.

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	2390.00	49.5 PK	74.0	-24.5	1.53 H	227	49.1	0.4
2	2390.00	37.5 AV	54.0	-16.5	1.53 H	227	37.1	0.4
3	*2437.00	106.4 PK			1.32 H	228	105.8	0.6
4	*2437.00	91.4 AV			1.32 H	228	90.8	0.6
5	2483.50	50.1 PK	74.0	-23.9	1.56 H	233	49.3	0.8
6	2483.50	38.3 AV	54.0	-15.7	1.56 H	233	37.5	0.8
7	4874.00	41.8 PK	74.0	-32.2	1.00 H	104	32.0	9.8
8	4874.00	36.7 AV	54.0	-17.3	1.00 H	104	26.9	9.8
9	7311.00	45.7 PK	74.0	-28.3	2.27 H	109	29.9	15.8
10	7311.00	32.0 AV	54.0	-22.0	2.27 H	109	16.2	15.8
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	60.9 PK	74.0	-13.1	2.45 V	217	60.5	0.4
2	2390.00	48.9 AV	54.0	-5.1	2.45 V	217	48.5	0.4
3	*2437.00	116.4 PK			2.45 V	217	115.8	0.6
4	*2437.00	106.9 AV			2.45 V	217	106.3	0.6
5	2483.50	60.3 PK	74.0	-13.7	2.45 V	217	59.5	0.8
6	2483.50	47.7 AV	54.0	-6.3	2.45 V	217	46.9	0.8
7	4874.00	40.1 PK	74.0	-33.9	1.67 V	201	30.3	9.8
8	4874.00	32.4 AV	54.0	-21.6	1.67 V	201	22.6	9.8
9	7311.00	45.1 PK	74.0	-28.9	1.36 V	206	29.3	15.8
10	7311.00	32.1 AV	54.0	-21.9	1.36 V	206	16.3	15.8

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.

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	102.6 PK			1.29 H	226	101.9	0.7
2	*2462.00	92.8 AV			1.29 H	226	92.1	0.7
3	2483.50	56.3 PK	74.0	-17.7	1.29 H	229	55.5	0.8
4	2483.50	44.1 AV	54.0	-9.9	1.29 H	229	43.3	0.8
5	4924.00	41.2 PK	74.0	-32.8	1.28 H	240	31.4	9.8
6	4924.00	36.2 AV	54.0	-17.8	1.28 H	240	26.4	9.8
7	7386.00	44.6 PK	74.0	-29.4	1.27 H	256	28.8	15.8
8	7386.00	31.2 AV	54.0	-22.8	1.27 H	256	15.4	15.8
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	110.1 PK			2.31 V	213	109.4	0.7
2	*2462.00	100.6 AV			2.31 V	213	99.9	0.7
3	2483.50	66.9 PK	74.0	-7.1	2.31 V	213	66.1	0.8
4	2483.50	52.8 AV	54.0	-1.2	2.31 V	213	52.0	0.8
5	4924.00	41.5 PK	74.0	-32.5	1.74 V	189	31.7	9.8
6	4924.00	33.5 AV	54.0	-20.5	1.74 V	189	23.7	9.8
7	7386.00	43.4 PK	74.0	-30.6	1.77 V	204	27.6	15.8
8	7386.00	31.5 AV	54.0	-22.5	1.77 V	204	15.7	15.8

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.

802.11n (HT20)

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	54.6 PK	74.0	-19.4	1.38 H	233	54.2	0.4
2	2390.00	40.9 AV	54.0	-13.1	1.38 H	233	40.5	0.4
3	*2412.00	99.6 PK			1.30 H	241	99.1	0.5
4	*2412.00	89.5 AV			1.30 H	241	89.0	0.5
5	4824.00	41.4 PK	74.0	-32.6	1.32 H	226	31.6	9.8
6	4824.00	36.3 AV	54.0	-17.7	1.32 H	226	26.5	9.8
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	66.0 PK	74.0	-8.0	2.48 V	218	65.6	0.4
2	**2390.00**	**52.9 AV**	**54.0**	**-1.1**	**2.48 V**	**218**	**52.5**	**0.4**
3	*2412.00	109.9 PK			2.48 V	218	109.4	0.5
4	*2412.00	99.9 AV			2.48 V	218	99.4	0.5
5	4824.00	40.6 PK	74.0	-33.4	1.71 V	211	30.8	9.8
6	4824.00	32.1 AV	54.0	-21.9	1.71 V	211	22.3	9.8

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.

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	2390.00	50.1 PK	74.0	-23.9	1.50 H	241	49.7	0.4
2	2390.00	38.2 AV	54.0	-15.8	1.50 H	241	37.8	0.4
3	*2437.00	105.5 PK			1.35 H	240	104.9	0.6
4	*2437.00	94.6 AV			1.35 H	240	94.0	0.6
5	2483.50	50.5 PK	74.0	-23.5	1.55 H	236	49.7	0.8
6	2483.50	39.5 AV	54.0	-14.5	1.55 H	236	38.7	0.8
7	4874.00	41.1 PK	74.0	-32.9	1.00 H	117	31.3	9.8
8	4874.00	36.3 AV	54.0	-17.7	1.00 H	117	26.5	9.8
9	7311.00	45.7 PK	74.0	-28.3	2.24 H	99	29.9	15.8
10	7311.00	31.9 AV	54.0	-22.1	2.24 H	99	16.1	15.8
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	60.0 PK	74.0	-14.0	2.50 V	212	59.6	0.4
2	2390.00	47.9 AV	54.0	-6.1	2.50 V	212	47.5	0.4
3	*2437.00	115.2 PK			2.50 V	212	114.6	0.6
4	*2437.00	104.9 AV			2.50 V	212	104.3	0.6
5	2483.50	60.9 PK	74.0	-13.1	2.50 V	212	60.1	0.8
6	2483.50	47.3 AV	54.0	-6.7	2.50 V	212	46.5	0.8
7	4874.00	40.2 PK	74.0	-33.8	1.66 V	208	30.4	9.8
8	4874.00	32.3 AV	54.0	-21.7	1.66 V	208	22.5	9.8
9	7311.00	45.2 PK	74.0	-28.8	1.38 V	194	29.4	15.8
10	7311.00	32.4 AV	54.0	-21.6	1.38 V	194	16.6	15.8

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.

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	98.8 PK			1.25 H	232	98.1	0.7
2	*2462.00	90.4 AV			1.25 H	232	89.7	0.7
3	2483.50	56.5 PK	74.0	-17.5	1.29 H	227	55.7	0.8
4	2483.50	44.0 AV	54.0	-10.0	1.29 H	227	43.2	0.8
5	4924.00	41.2 PK	74.0	-32.8	1.25 H	239	31.4	9.8
6	4924.00	34.2 AV	54.0	-19.8	1.25 H	239	24.4	9.8
7	7386.00	44.4 PK	74.0	-29.6	1.26 H	243	28.6	15.8
8	7386.00	31.1 AV	54.0	-22.9	1.26 H	243	15.3	15.8
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	109.7 PK			1.78 V	202	109.0	0.7
2	*2462.00	99.3 AV			1.78 V	202	98.6	0.7
3	2483.50	67.3 PK	74.0	-6.7	1.78 V	202	66.5	0.8
4	**2483.50**	**52.9 AV**	**54.0**	**-1.1**	**1.78 V**	**202**	**52.1**	**0.8**
5	4924.00	41.8 PK	74.0	-32.2	1.75 V	205	32.0	9.8
6	4924.00	33.9 AV	54.0	-20.1	1.75 V	205	24.1	9.8
7	7386.00	43.3 PK	74.0	-30.7	1.80 V	204	27.5	15.8
8	7386.00	31.4 AV	54.0	-22.6	1.80 V	204	15.6	15.8

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.

802.11n (HT40)

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	59.5 PK	74.0	-14.5	1.31 H	213	59.1	0.4
2	2390.00	46.8 AV	54.0	-7.2	1.31 H	213	46.4	0.4
3	*2422.00	92.7 PK			1.28 H	235	92.1	0.6
4	*2422.00	81.5 AV			1.28 H	235	80.9	0.6
5	4844.00	42.2 PK	74.0	-31.8	1.14 H	79	32.4	9.8
6	4844.00	32.7 AV	54.0	-21.3	1.14 H	79	22.9	9.8
7	7266.00	43.2 PK	74.0	-30.8	2.25 H	104	27.5	15.7
8	7266.00	33.1 AV	54.0	-20.9	2.25 H	104	17.4	15.7
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	65.6 PK	74.0	-8.4	2.48 V	211	65.2	0.4
2	**2390.00**	**52.9 AV**	**54.0**	**-1.1**	**2.48 V**	**211**	**52.5**	**0.4**
3	*2422.00	103.9 PK			2.48 V	211	103.3	0.6
4	*2422.00	92.3 AV			2.48 V	211	91.7	0.6
5	4844.00	41.1 PK	74.0	-32.9	1.68 V	217	31.3	9.8
6	4844.00	31.1 AV	54.0	-22.9	1.68 V	217	21.3	9.8
7	7266.00	42.6 PK	74.0	-31.4	1.37 V	169	26.9	15.7
8	7266.00	32.4 AV	54.0	-21.6	1.37 V	169	16.7	15.7

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.

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	2390.00	54.6 PK	74.0	-19.4	1.32 H	250	54.2	0.4
2	2390.00	42.9 AV	54.0	-11.1	1.32 H	250	42.5	0.4
3	*2437.00	98.9 PK			1.39 H	244	98.3	0.6
4	*2437.00	87.6 AV			1.39 H	244	87.0	0.6
5	2483.50	51.9 PK	74.0	-22.1	1.30 H	256	51.1	0.8
6	2483.50	38.6 AV	54.0	-15.4	1.30 H	256	37.8	0.8
7	4874.00	41.8 PK	74.0	-32.2	1.11 H	88	32.0	9.8
8	4874.00	32.5 AV	54.0	-21.5	1.11 H	88	22.7	9.8
9	7311.00	43.5 PK	74.0	-30.5	2.30 H	117	27.7	15.8
10	7311.00	33.6 AV	54.0	-20.4	2.30 H	117	17.8	15.8
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	64.8 PK	74.0	-9.2	2.29 V	222	64.4	0.4
2	**2390.00**	**52.9 AV**	**54.0**	**-1.1**	**2.29 V**	**222**	**52.5**	**0.4**
3	*2437.00	109.2 PK			2.29 V	222	108.6	0.6
4	*2437.00	98.2 AV			2.29 V	222	97.6	0.6
5	2483.50	62.2 PK	74.0	-11.8	2.29 V	222	61.4	0.8
6	2483.50	47.9 AV	54.0	-6.1	2.29 V	222	47.1	0.8
7	4874.00	40.7 PK	74.0	-33.3	1.70 V	204	30.9	9.8
8	4874.00	30.9 AV	54.0	-23.1	1.70 V	204	21.1	9.8
9	7311.00	44.0 PK	74.0	-30.0	1.35 V	185	28.2	15.8
10	7311.00	32.1 AV	54.0	-21.9	1.35 V	185	16.3	15.8

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.

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	95.4 PK			1.34 H	252	94.9	0.5
2	*2452.00	84.9 AV			1.34 H	252	84.4	0.5
3	2483.50	60.5 PK	74.0	-13.5	1.29 H	266	59.7	0.8
4	2483.50	47.1 AV	54.0	-6.9	1.29 H	266	46.3	0.8
5	4904.00	41.1 PK	74.0	-32.9	1.07 H	97	31.2	9.9
6	4904.00	32.0 AV	54.0	-22.0	1.07 H	97	22.1	9.9
7	7356.00	42.9 PK	74.0	-31.1	2.35 H	107	26.9	16.0
8	7356.00	33.1 AV	54.0	-20.9	2.35 H	107	17.1	16.0
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	105.8 PK			2.45 V	217	105.3	0.5
2	*2452.00	95.1 AV			2.45 V	217	94.6	0.5
3	2483.50	67.3 PK	74.0	-6.7	2.45 V	217	66.5	0.8
4	2483.50	52.7 AV	54.0	-1.3	2.45 V	217	51.9	0.8
5	4904.00	40.6 PK	74.0	-33.4	1.65 V	211	30.7	9.9
6	4904.00	31.0 AV	54.0	-23.0	1.65 V	211	21.1	9.9
7	7356.00	41.7 PK	74.0	-32.3	1.36 V	182	25.7	16.0
8	7356.00	32.0 AV	54.0	-22.0	1.36 V	182	16.0	16.0

REMARKS:

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

Below 1GHz Worst-Case Data

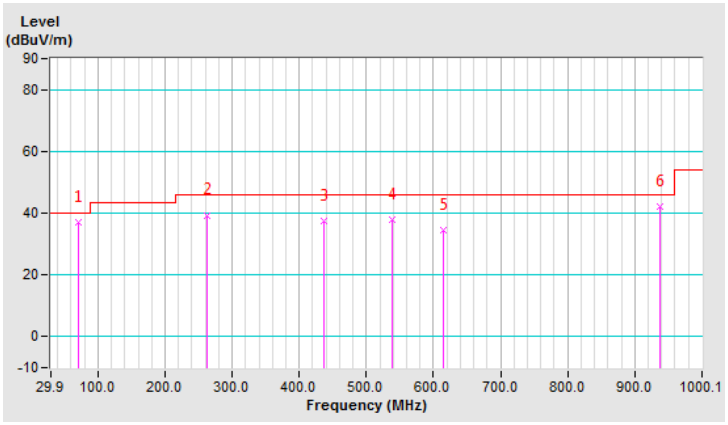
802.11b

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	70.65	37.2 QP	40.0	-2.8	1.49 H	309	47.9	-10.7
2	262.75	39.4 QP	46.0	-6.6	1.49 H	314	48.1	-8.7
3	437.38	37.6 QP	46.0	-8.4	1.49 H	314	41.3	-3.7
4	538.28	38.0 QP	46.0	-8.0	1.00 H	7	40.0	-2.0
5	613.96	34.4 QP	46.0	-11.6	1.99 H	7	33.8	0.6
6	938.01	42.1 QP	46.0	-3.9	1.00 H	254	34.2	7.9

REMARKS:

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

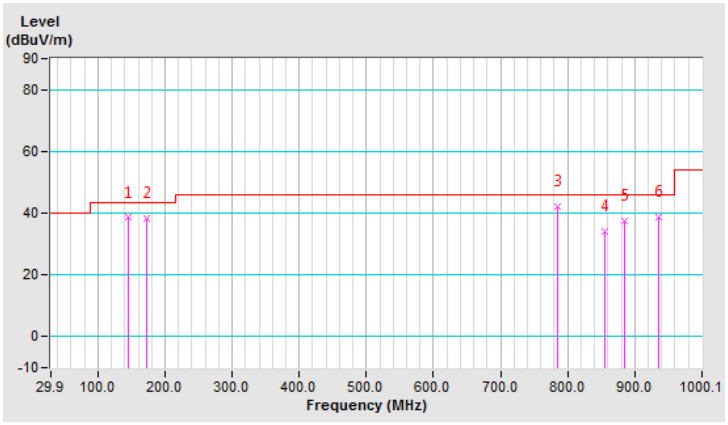


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	144.38	38.5 QP	43.5	-5.0	1.01 V	113	47.4	-8.9
2	173.49	38.1 QP	43.5	-5.4	1.01 V	347	47.5	-9.4
3	784.72	42.1 QP	46.0	-3.9	1.01 V	307	37.4	4.7
4	854.57	34.1 QP	46.0	-11.9	1.01 V	239	28.0	6.1
5	885.62	37.5 QP	46.0	-8.5	1.01 V	290	31.1	6.4
6	936.07	38.6 QP	46.0	-7.4	1.01 V	316	30.7	7.9

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 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 0.50 MHz.

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/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN/AMN 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

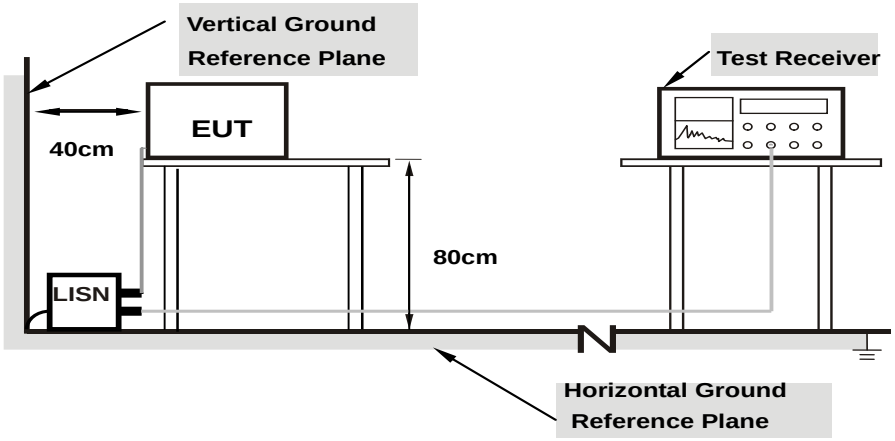
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling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

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

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

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

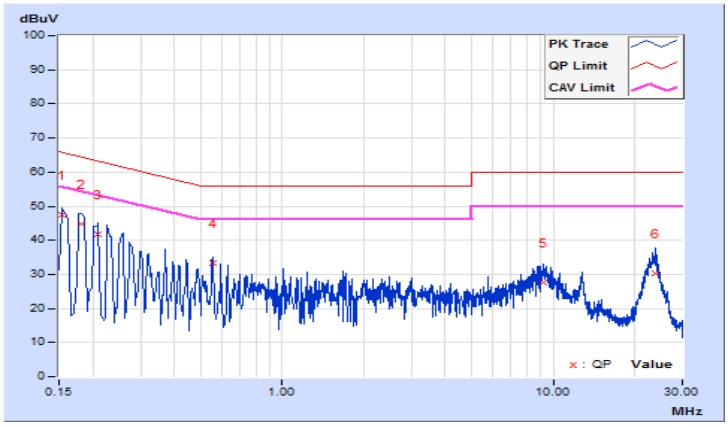
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 75%RH
Tested by	Jones Chang	Test Date	2020/1/17

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15400**	**9.71**	**37.87**	**24.45**	**47.58**	**34.16**	**65.78**	**55.78**	**-18.20**	**-21.62**
2	0.18200	9.75	34.88	22.09	44.63	31.84	64.39	54.39	-19.76	-22.55
3	0.20960	9.79	31.85	17.31	41.64	27.10	63.22	53.22	-21.58	-26.12
4	0.55400	9.93	23.44	17.56	33.37	27.49	56.00	46.00	-22.63	-18.51
5	9.25800	10.30	17.37	4.83	27.67	15.13	60.00	50.00	-32.33	-34.87
6	23.99000	10.44	19.82	10.87	30.26	21.31	60.00	50.00	-29.74	-28.69

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

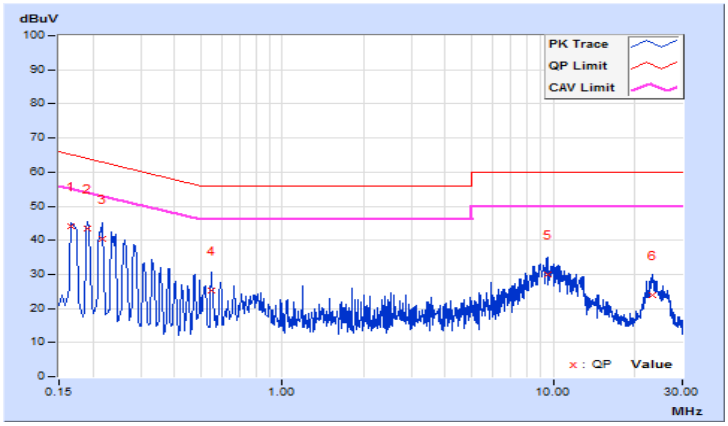


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 75%RH
Tested by	Jones Chang	Test Date	2020/1/17

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16600	9.72	34.43	18.76	44.15	28.48	65.16	55.16	-21.01	-26.68
2	0.19000	9.78	33.76	20.34	43.54	30.12	64.04	54.04	-20.50	-23.92
3	0.21800	9.81	30.68	17.57	40.49	27.38	62.89	52.89	-22.40	-25.51
4	0.54600	9.88	15.51	6.19	25.39	16.07	56.00	46.00	-30.61	-29.93
5	9.52600	10.24	19.71	6.24	29.95	16.48	60.00	50.00	-30.05	-33.52
6	23.40600	10.51	13.24	6.33	23.75	16.84	60.00	50.00	-36.25	-33.16

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

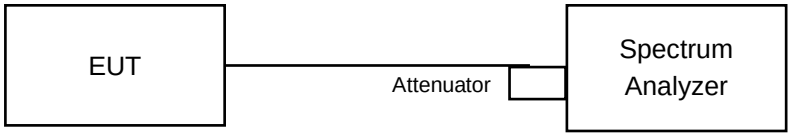


4.3 6 dB Bandwidth Measurement

4.3.1 Limits of 6 dB Bandwidth Measurement

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	10.09	10.11	0.5	Pass
6	2437	10.11	10.14	0.5	Pass
11	2462	10.13	10.12	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.15	15.15	0.5	Pass
6	2437	15.19	15.16	0.5	Pass
11	2462	15.17	15.15	0.5	Pass

802.11n (HT20)

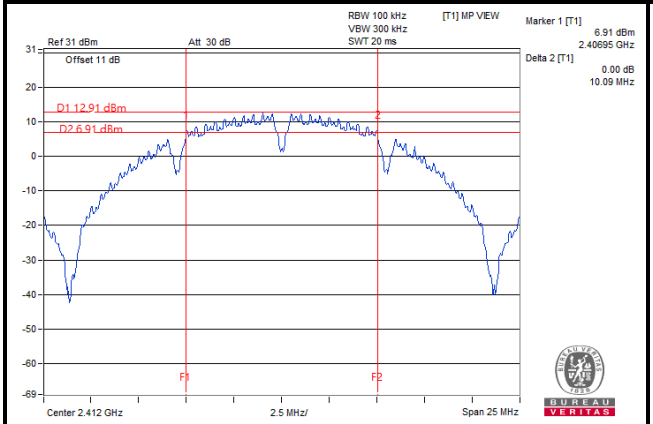
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.15	15.14	0.5	Pass
6	2437	15.16	15.16	0.5	Pass
11	2462	15.17	15.72	0.5	Pass

802.11n (HT40)

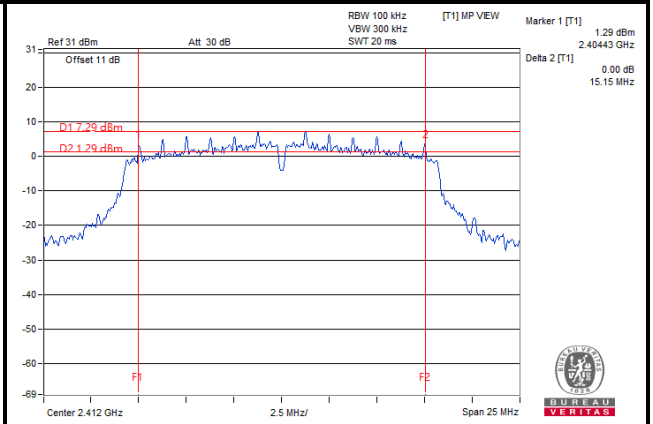
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.23	35.19	0.5	Pass
6	2437	35.17	35.10	0.5	Pass
9	2452	35.10	35.22	0.5	Pass

Spectrum Plot of Worst Value

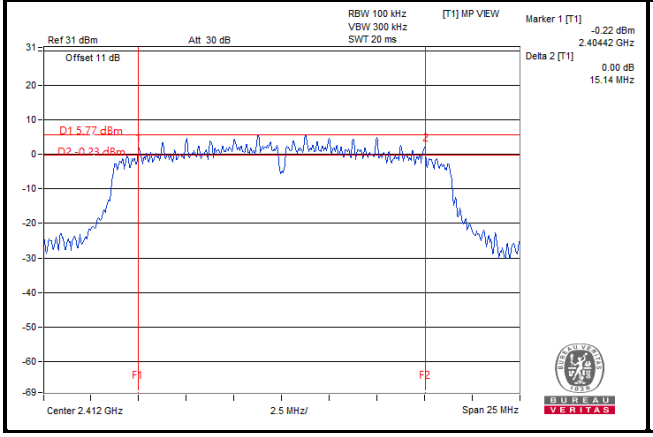
802.11b



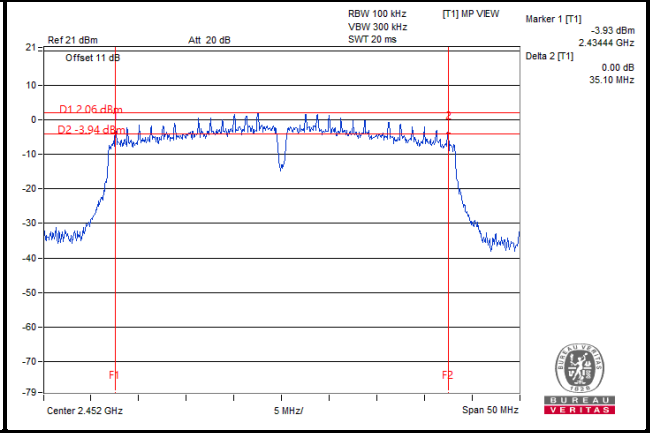
802.11g



802.11n (HT20)

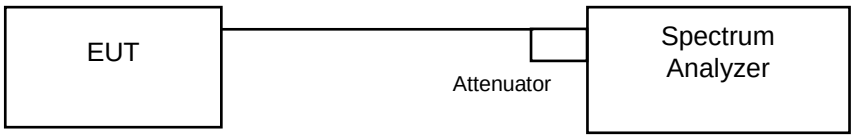


802.11n (HT40)



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Deviation from Test Standard

No deviation.

4.4.5 EUT Operating Conditions

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

4.4.6 Test Results

802.11b

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
1	2412	15.91	15.30	Pass
6	2437	15.74	15.84	Pass
11	2462	15.60	14.88	Pass

802.11g

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
1	2412	16.92	16.56	Pass
6	2437	19.92	19.08	Pass
11	2462	17.16	16.61	Pass

802.11n (HT20)

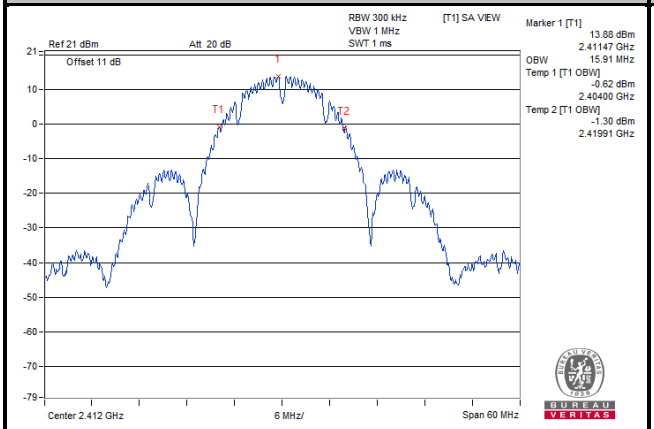
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
1	2412	17.76	17.64	Pass
6	2437	19.65	19.32	Pass
11	2462	17.88	17.64	Pass

802.11n (HT40)

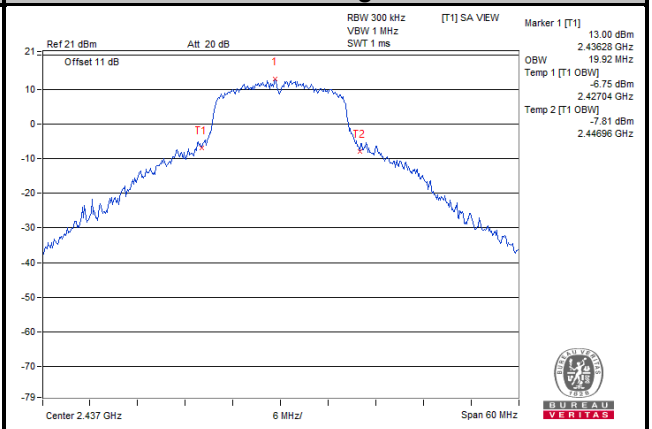
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Pass / Fail
		Chain 0	Chain 1	
3	2422	36.00	36.24	Pass
6	2437	36.24	36.60	Pass
9	2452	36.09	36.24	Pass

Spectrum Plot of Worst Value

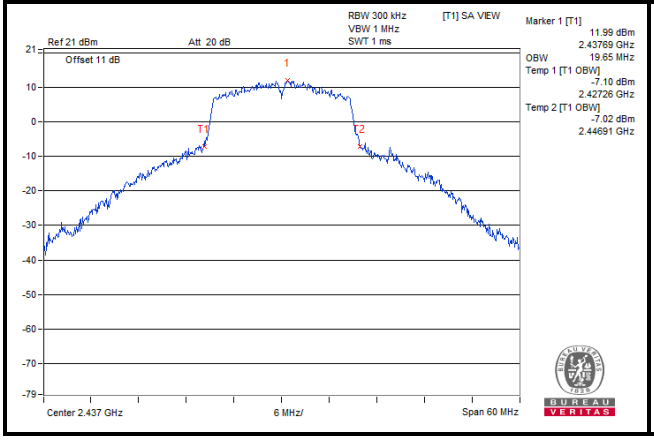
802.11b



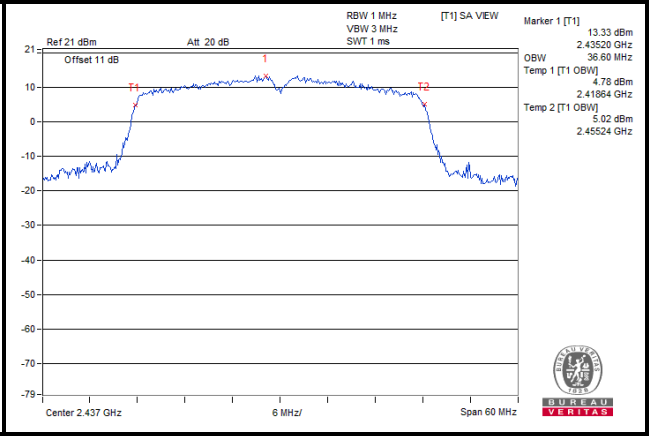
802.11g



802.11n (HT20)



802.11n (HT40)



4.5 Conducted Output Power Measurement

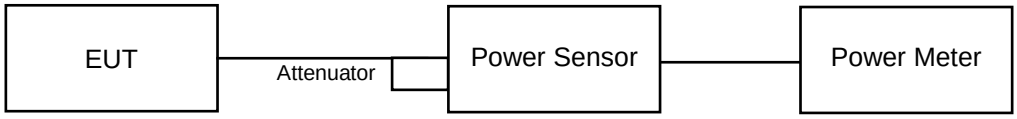
4.5.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)
Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) 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(NANT/NSS) dB.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

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

4.5.7 Test Results

802.11b

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.32	21.37	307.696	24.88	30	Pass
6	2437	21.90	22.31	325.098	25.12	30	Pass
11	2462	21.37	21.06	264.732	24.23	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	16.85	16.93	97.734	19.90	30	Pass
6	2437	20.95	21.53	266.684	24.26	30	Pass
11	2462	17.88	18.04	125.056	20.97	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	15.77	16.12	78.683	18.96	30	Pass
6	2437	20.83	21.42	259.736	24.15	30	Pass
11	2462	16.83	17.29	101.775	20.08	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	13.11	13.31	41.893	16.22	30	Pass
6	2437	17.47	17.97	118.508	20.74	30	Pass
9	2452	14.45	15.08	60.072	17.79	30	Pass

4.6 Power Spectral Density Measurement

4.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz band during any time interval of continuous transmission.

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

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

802.11b

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-11.03	3.01	-8.02	7.69	Pass
	6	2437	-11.23	3.01	-8.22	7.69	Pass
	11	2462	-11.00	3.01	-7.99	7.69	Pass
1	1	2412	-12.75	3.01	-9.74	7.69	Pass
	6	2437	-11.49	3.01	-8.48	7.69	Pass
	11	2462	-12.09	3.01	-9.08	7.69	Pass

NOTE:

1. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 6.31 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.31-6) = 7.69 dBm.
2. Method 2) C) of power density measurement of KDB 662911 is using for calculating total power density.

802.11g

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-17.68	3.01	-14.36	7.69	Pass
	6	2437	-14.14	3.01	-10.82	7.69	Pass
	11	2462	-17.24	3.01	-13.92	7.69	Pass
1	1	2412	-17.81	3.01	-14.49	7.69	Pass
	6	2437	-13.45	3.01	-10.13	7.69	Pass
	11	2462	-16.83	3.01	-13.51	7.69	Pass

NOTE:

1. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 6.31 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.31-6) = 7.69 dBm.
2. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.

802.11n (HT20)

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-19.14	3.01	-15.73	7.69	Pass
	6	2437	-15.17	3.01	-11.76	7.69	Pass
	11	2462	-18.32	3.01	-14.91	7.69	Pass
1	1	2412	-19.46	3.01	-16.05	7.69	Pass
	6	2437	-14.86	3.01	-11.45	7.69	Pass
	11	2462	-18.22	3.01	-14.81	7.69	Pass

NOTE:

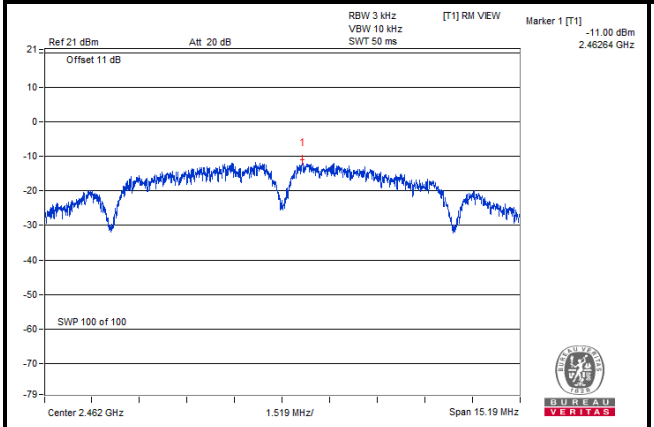
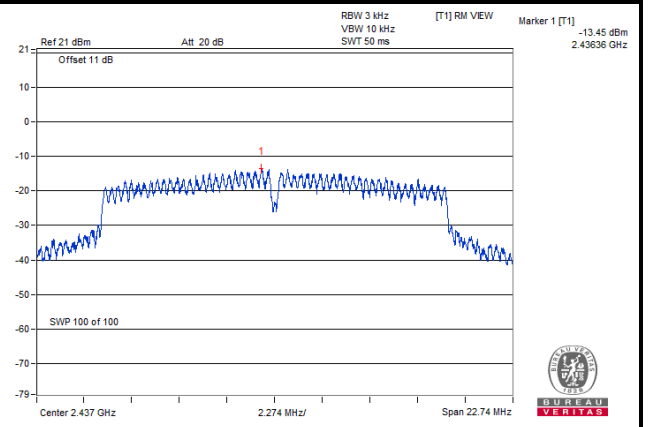
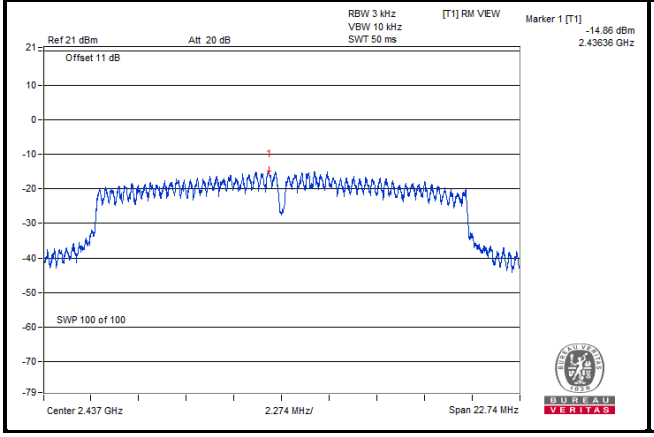
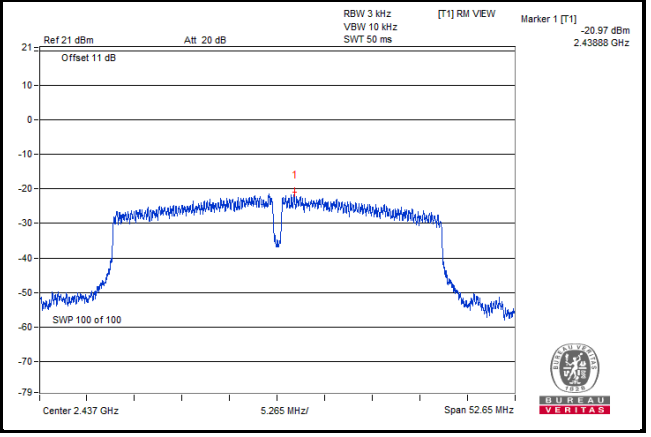
1. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 6.31 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.31-6) = 7.69 dBm.
2. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.

802.11n (HT40)

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	3	2422	-26.24	3.01	-22.56	7.69	Pass
	6	2437	-21.59	3.01	-17.91	7.69	Pass
	9	2452	-24.22	3.01	-20.54	7.69	Pass
1	3	2422	-25.90	3.01	-22.22	7.69	Pass
	6	2437	-20.97	3.01	-17.29	7.69	Pass
	9	2452	-24.56	3.01	-20.88	7.69	Pass

NOTE:

1. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 6.31 dBi > 6 dBi, so the power density limit shall be reduced to 8-(6.31-6) = 7.69 dBm.
2. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.

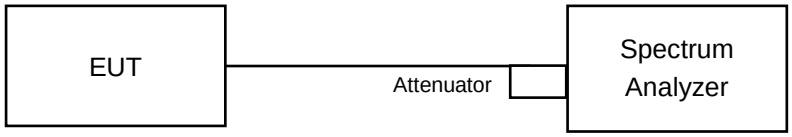
Spectrum Plot of Worst Value	
802.11b	802.11g
	
802.11n (HT20)	802.11n (HT40)
	

4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out of Band Emission Measurement

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

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOBE

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

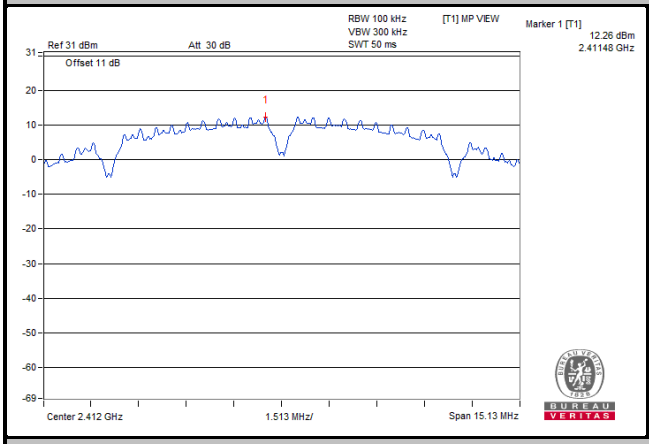
The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

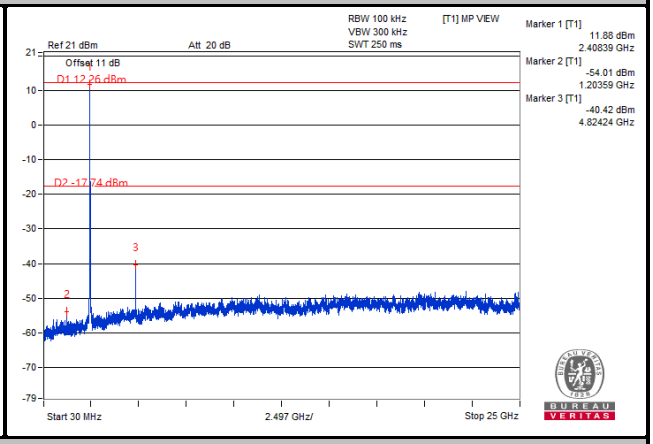
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 30 dB offset below D1. It shows compliance with the requirement.

802.11b

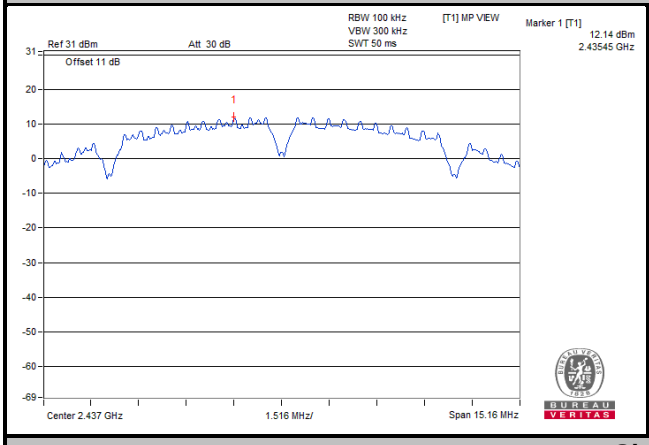
CHAIN 0

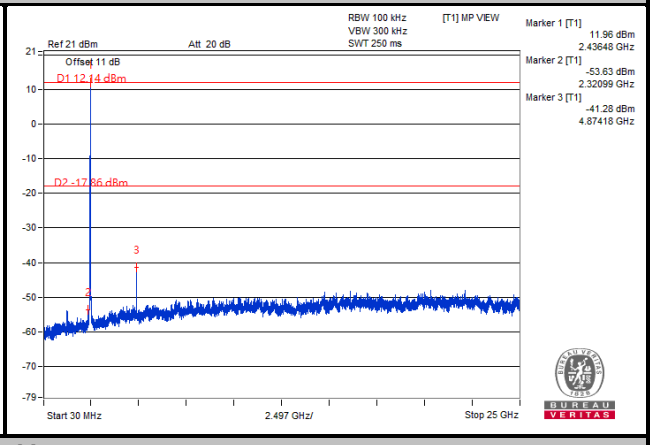
Ch 1



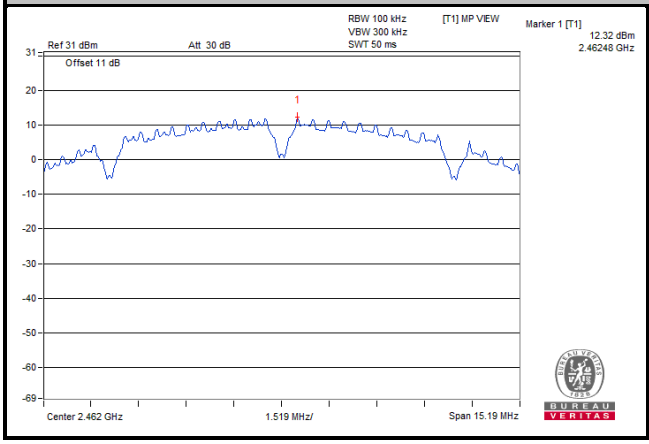


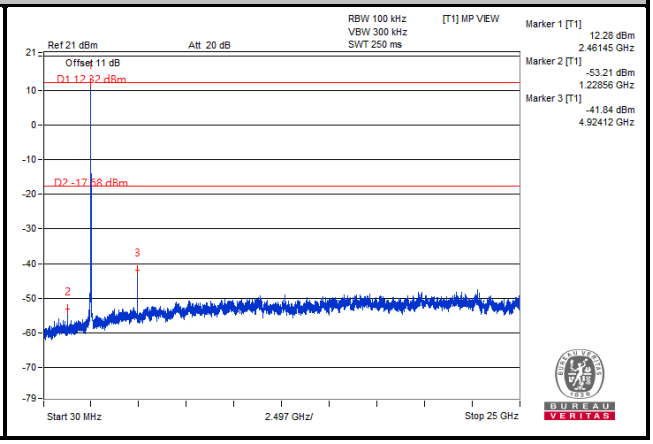
Ch 6

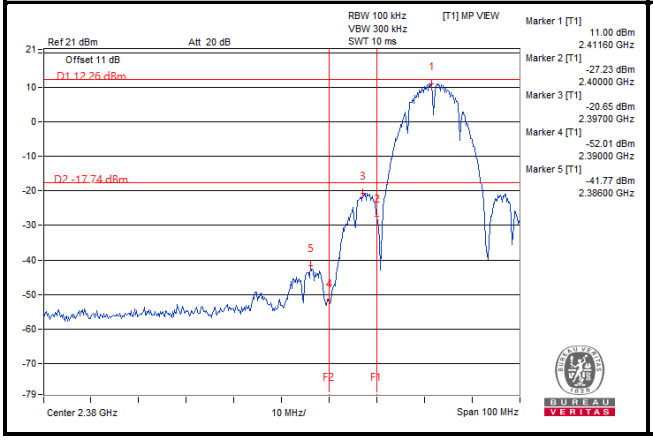
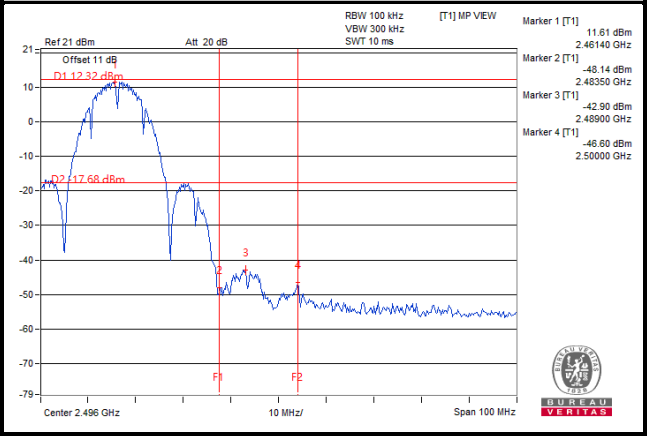




Ch 11

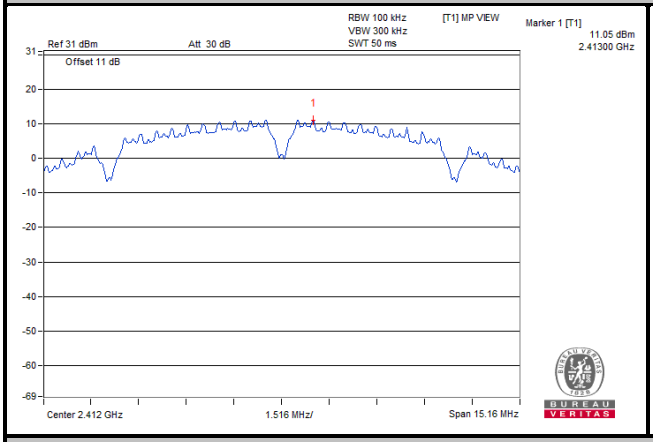


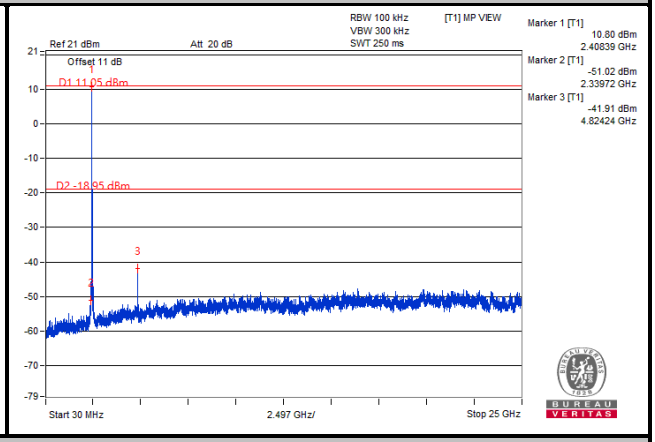


Ch 1 Band Edge	Ch 11 Band Edge
	

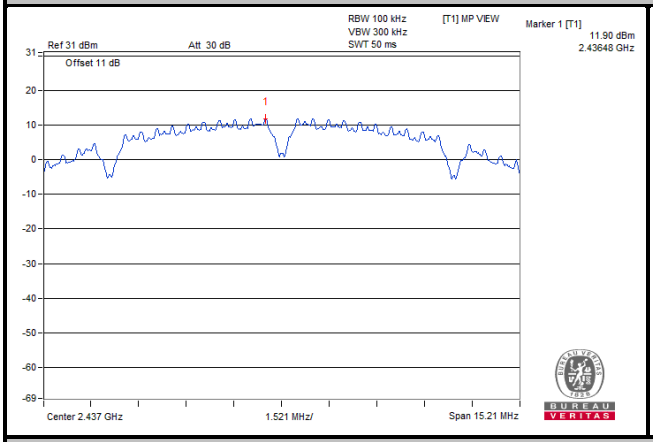
CHAIN 1

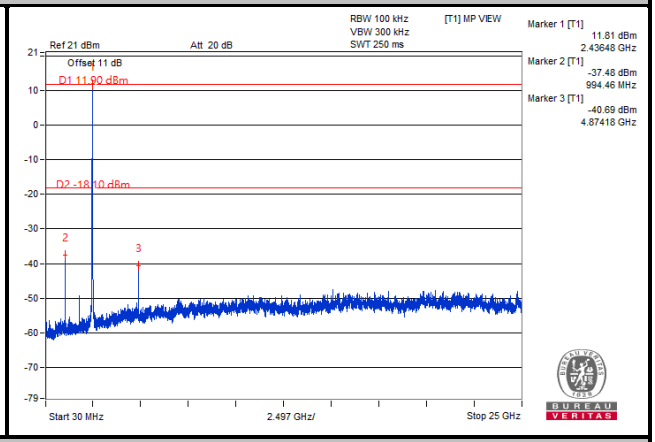
Ch 1



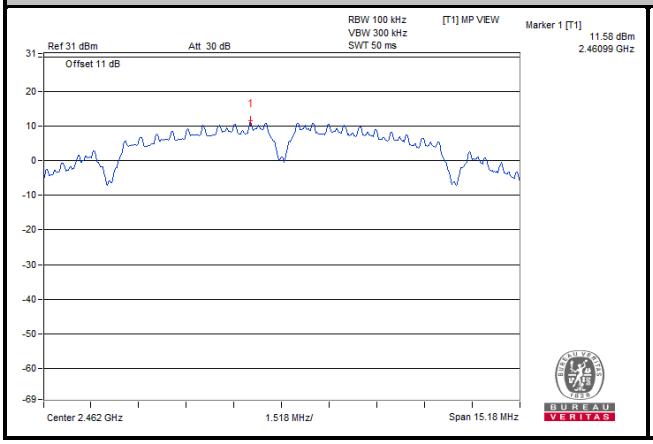


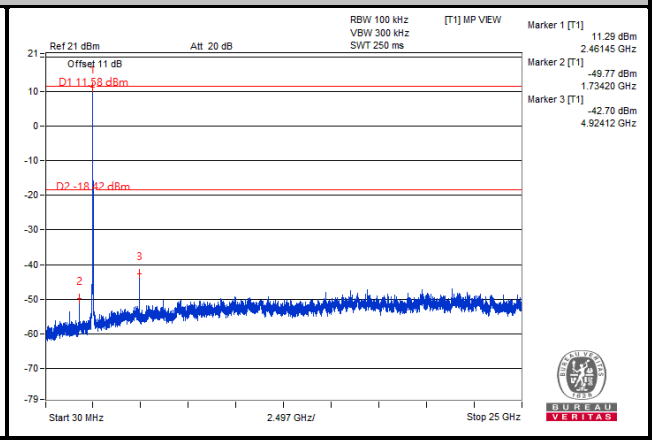
Ch 6

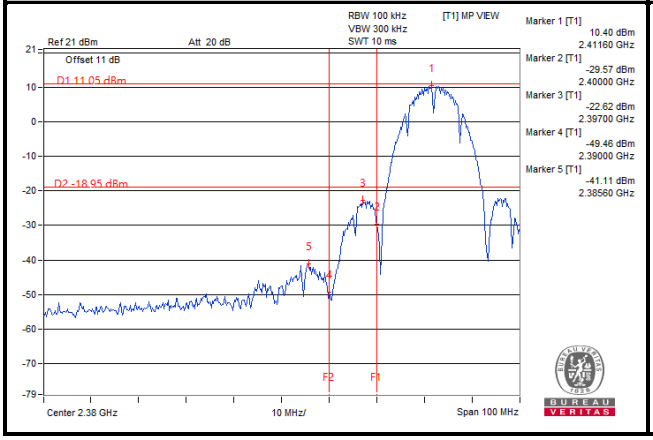
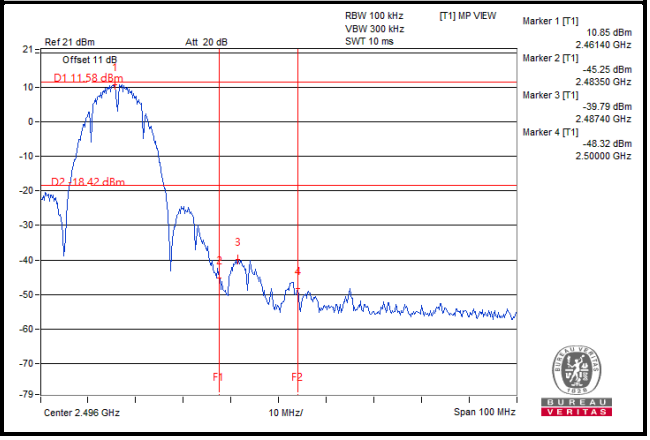




Ch 11



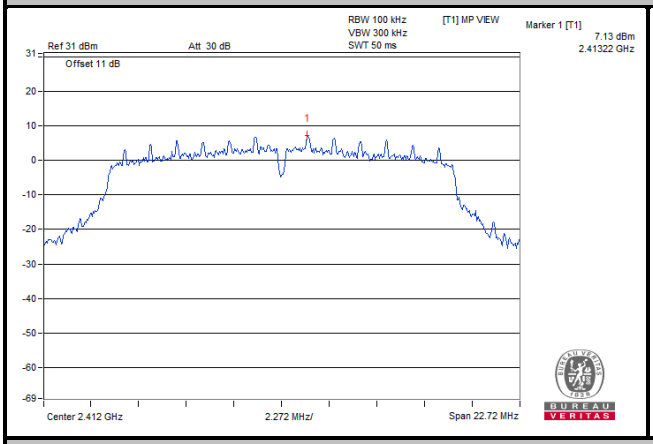


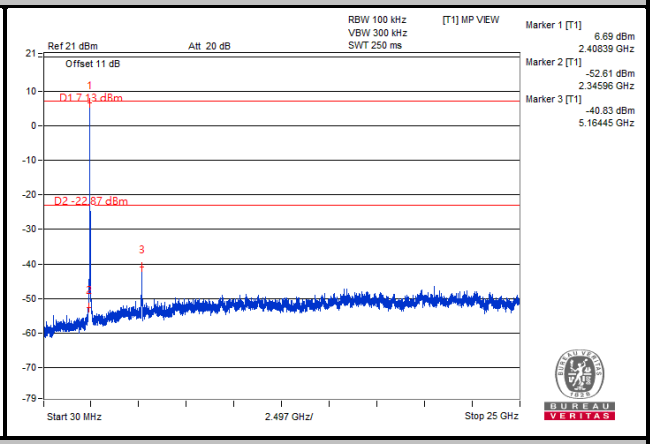
Ch 1 Band Edge	Ch 11 Band Edge
	

802.11g

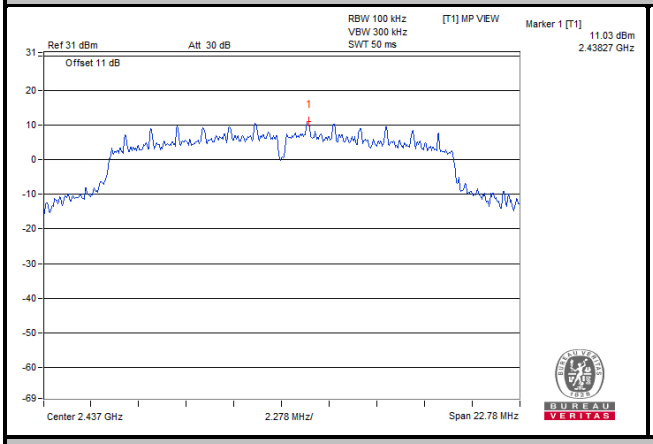
CHAIN 0

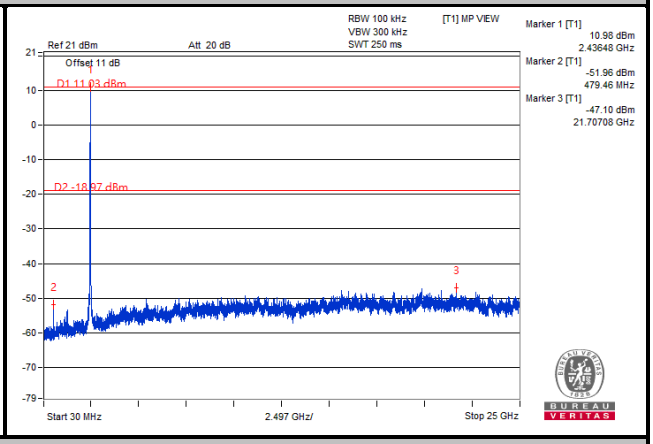
Ch 1



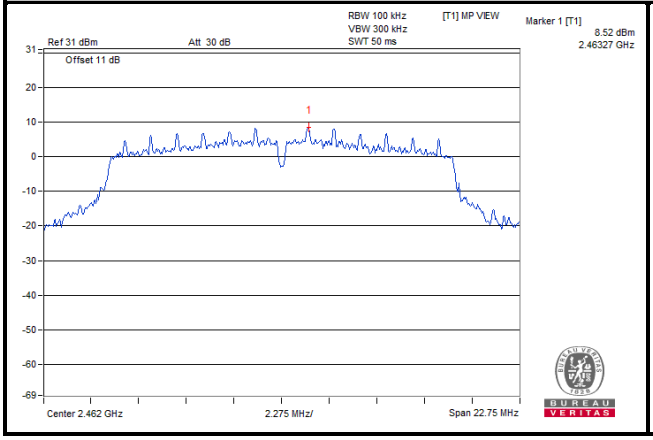


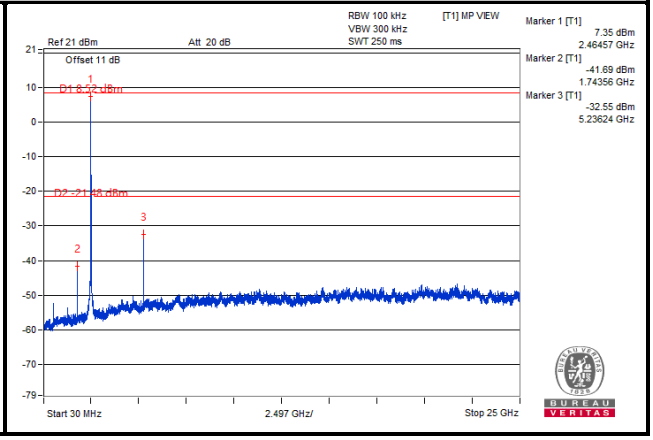
Ch 6



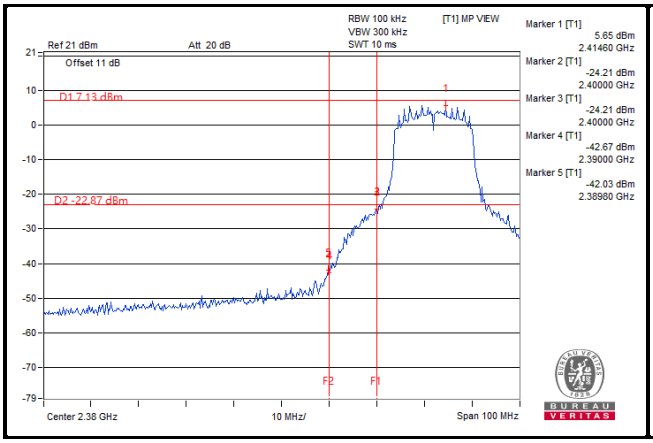


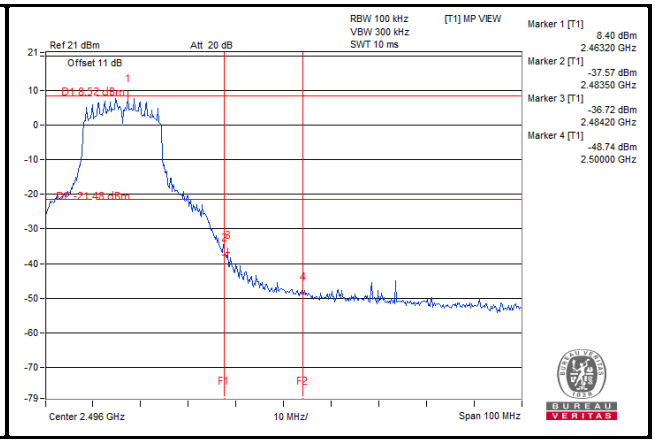
Ch 11





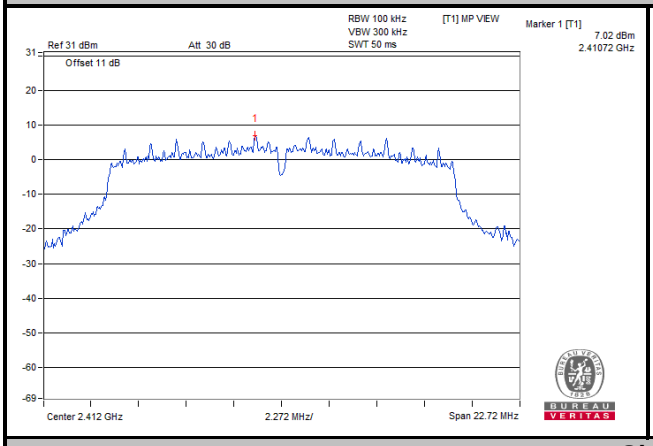
Ch 1 Band Edge	Ch 11 Band Edge

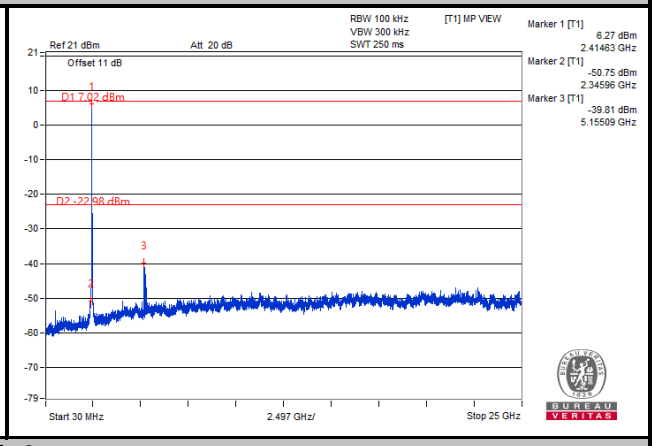




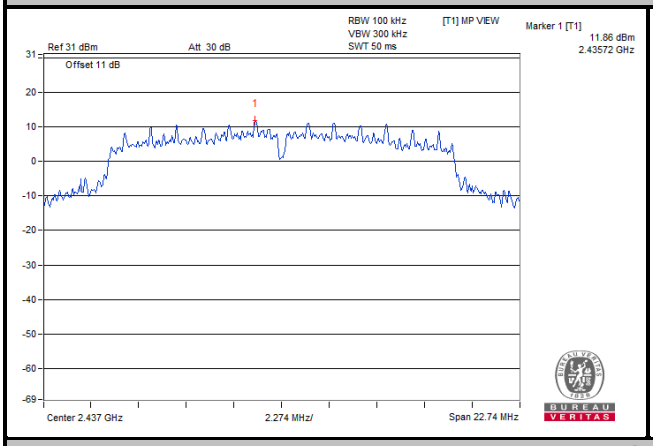
CHAIN 1

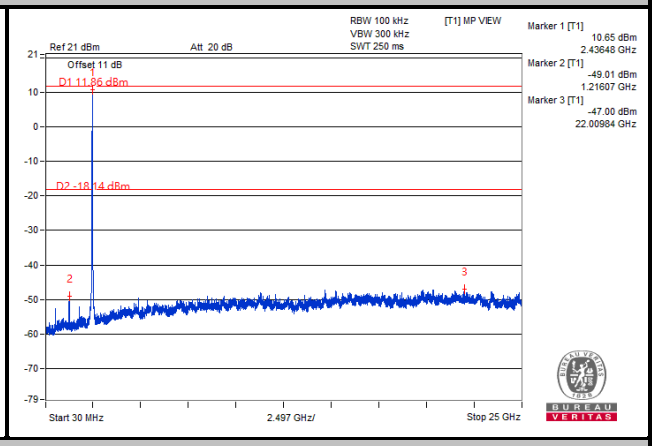
Ch 1



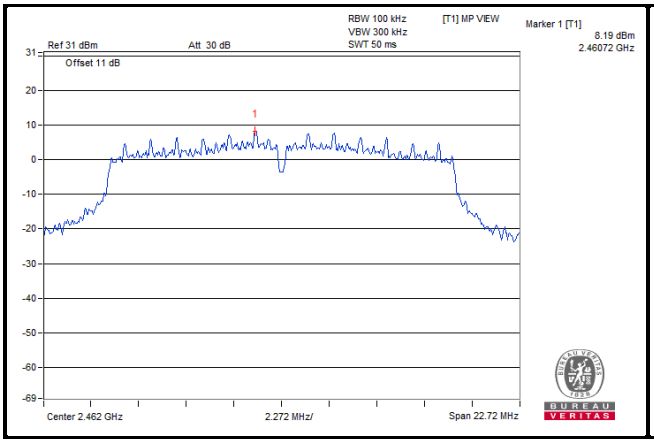


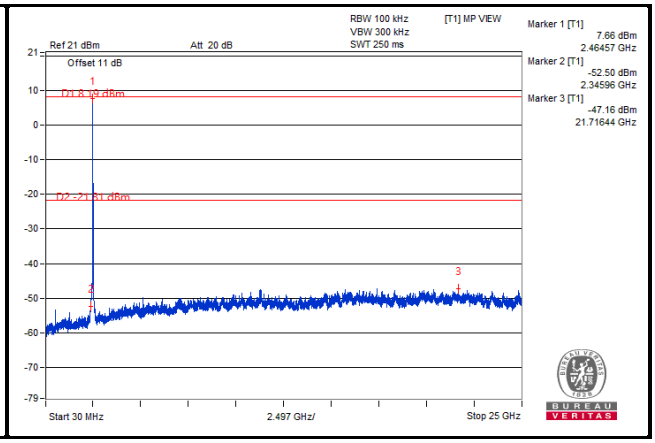
Ch 6



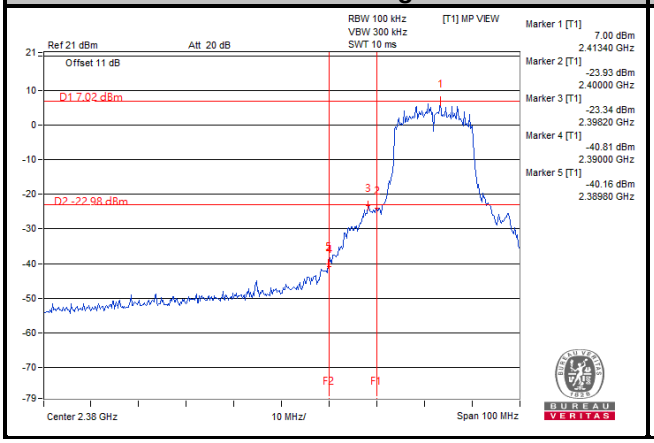


Ch 11

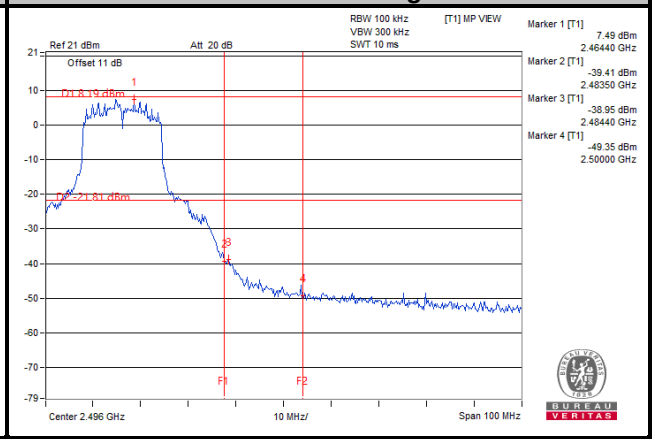




Ch 1 Band Edge



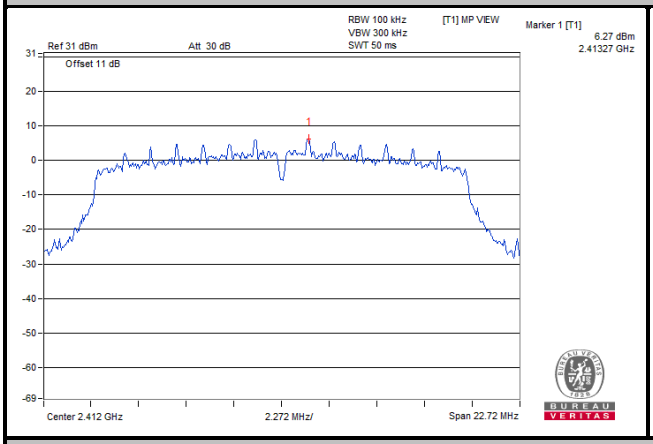
Ch 11 Band Edge

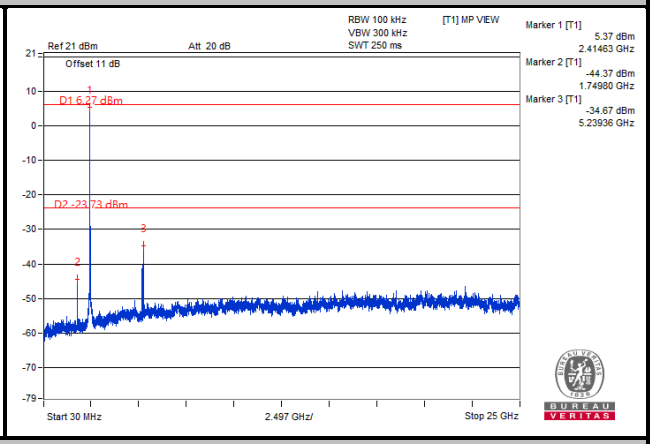


802.11n (HT20)

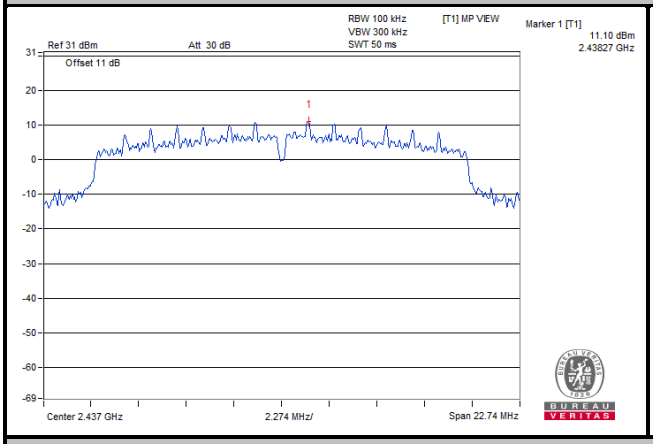
CHAIN 0

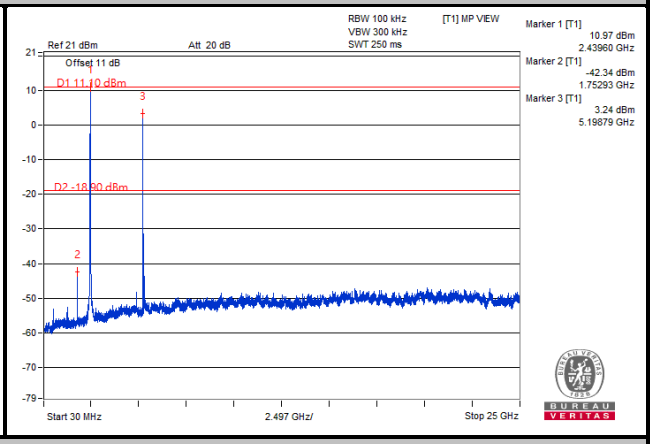
Ch 1



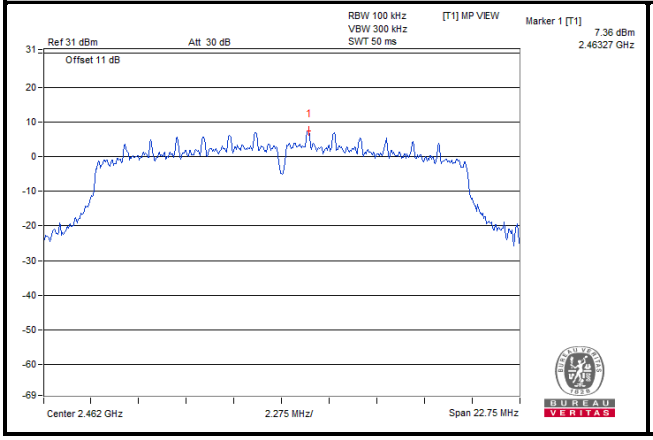


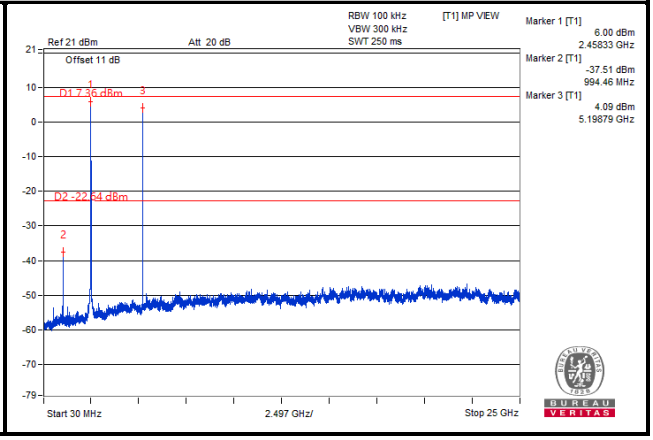
Ch 6

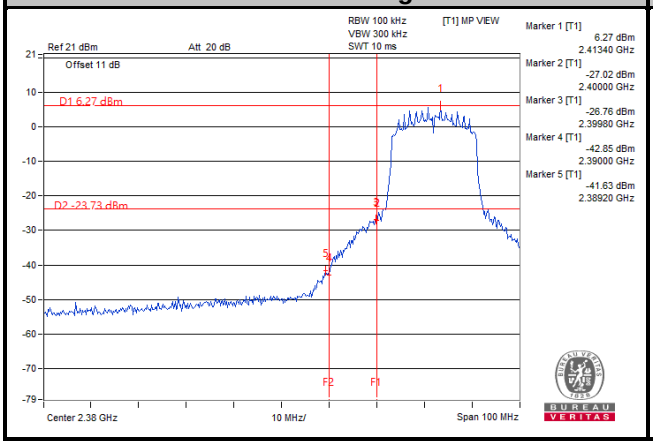
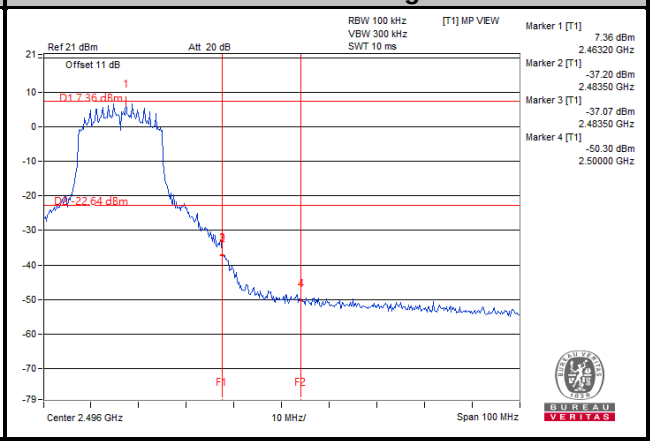




Ch 11

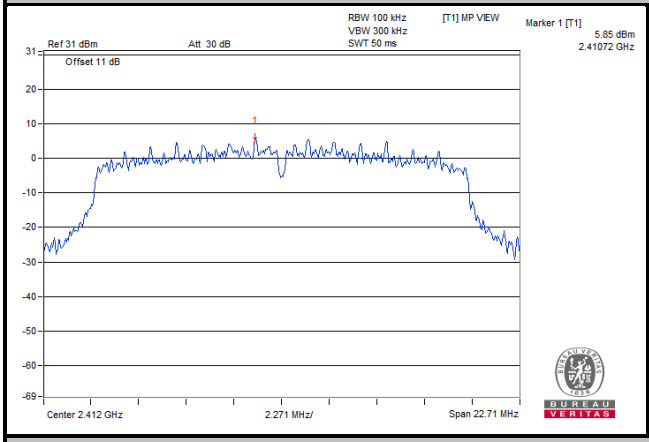


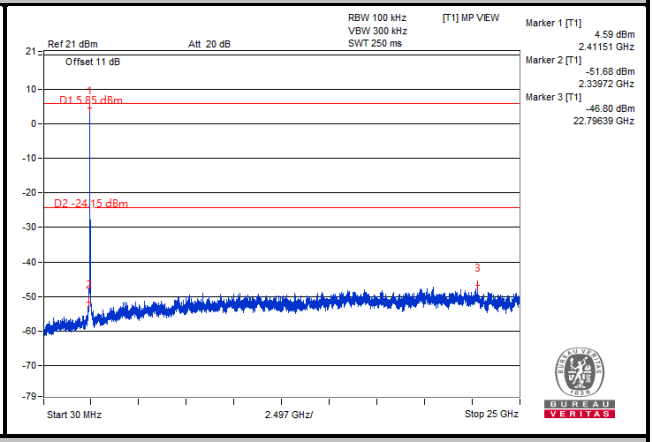


Ch 1 Band Edge	Ch 11 Band Edge
	

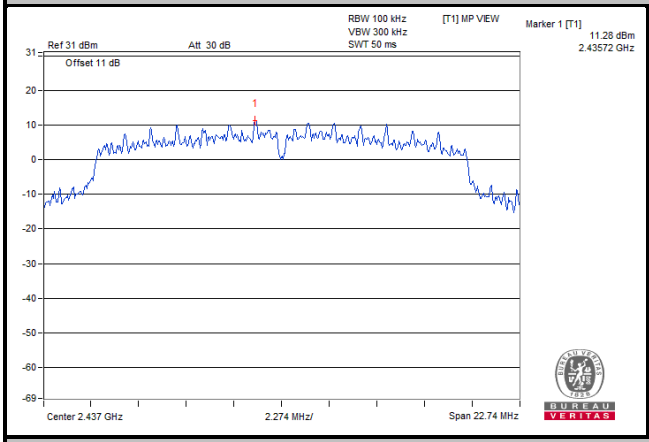
CHAIN 1

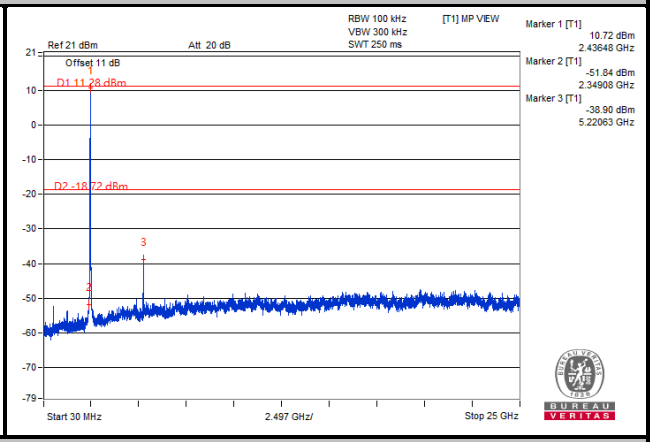
Ch 1



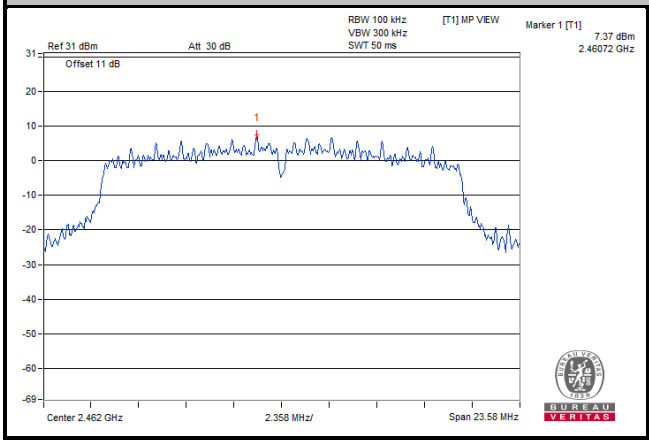


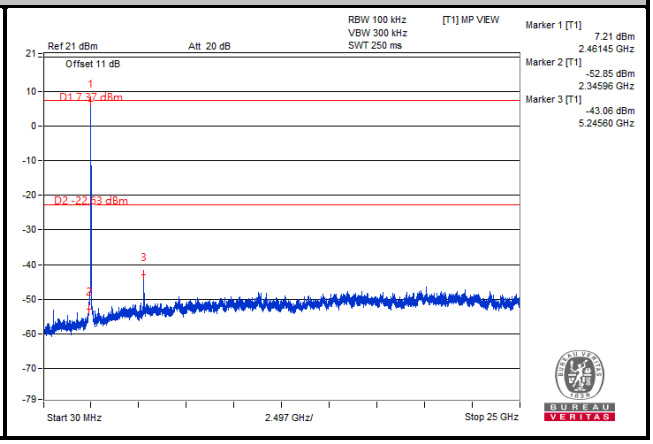
Ch 6

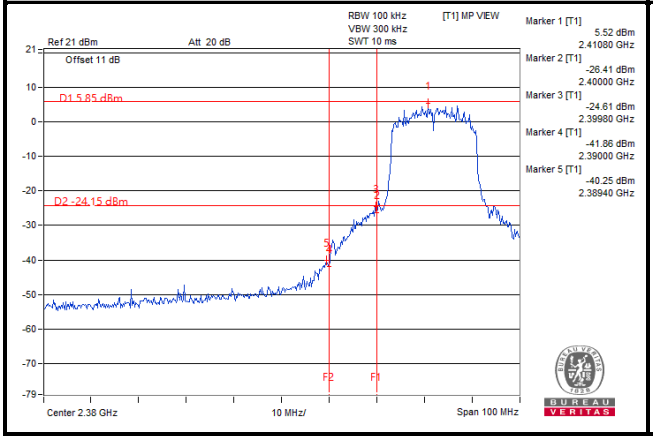
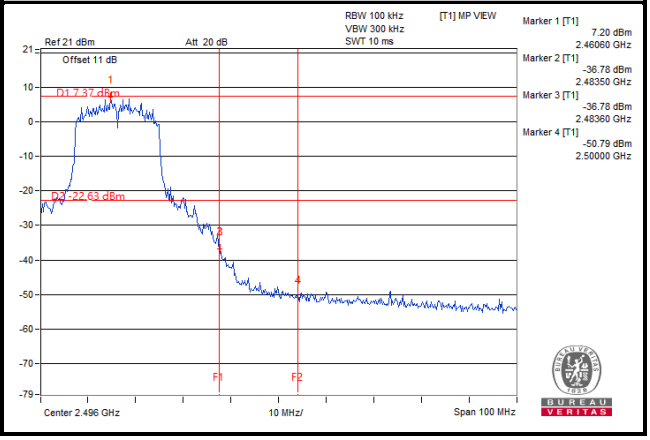




Ch 11



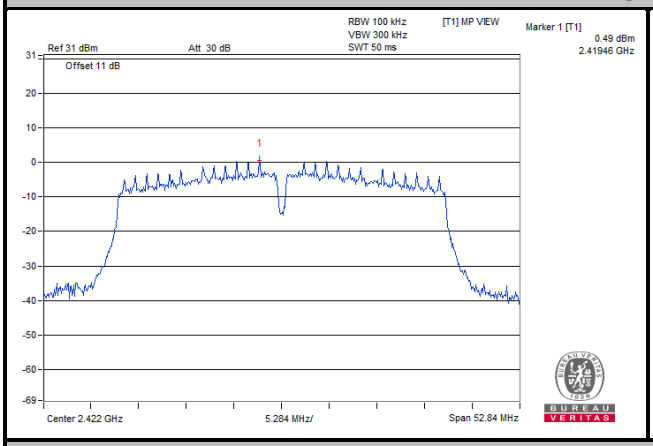


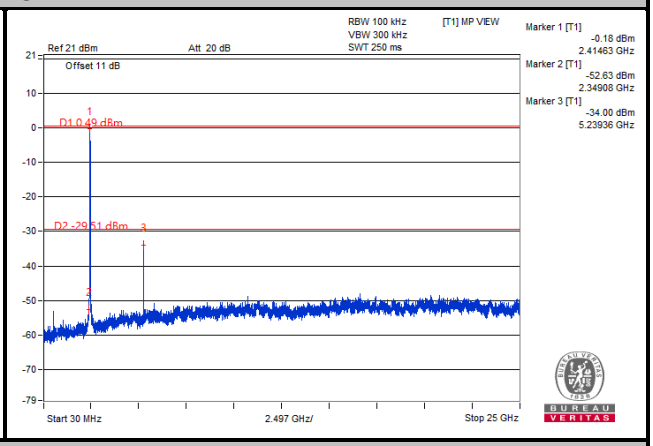
Ch 1 Band Edge	Ch 11 Band Edge
	

802.11n (HT40)

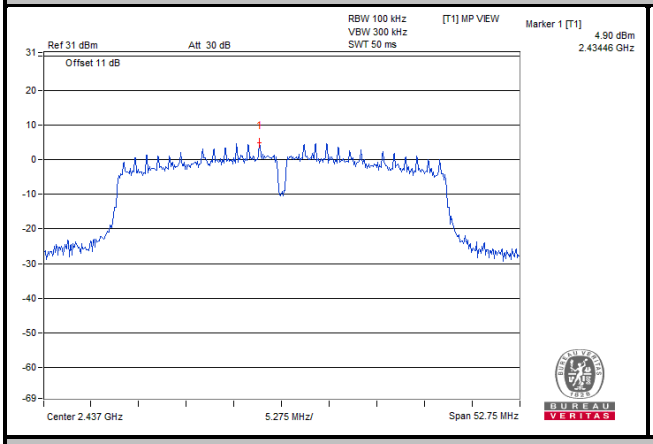
CHAIN 0

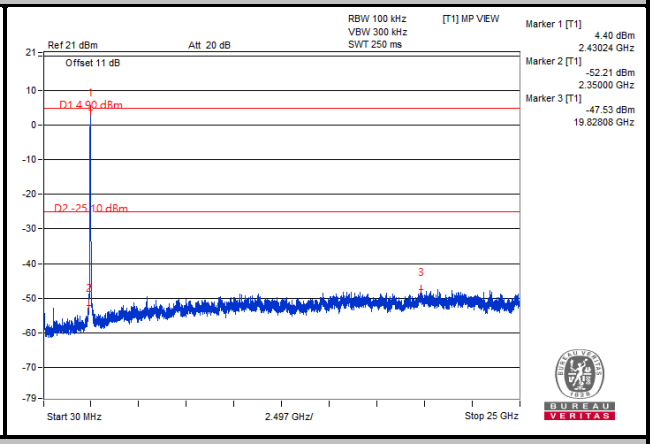
Ch 3



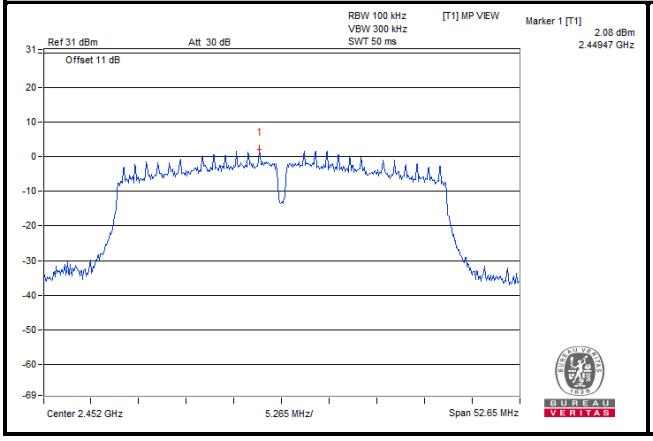


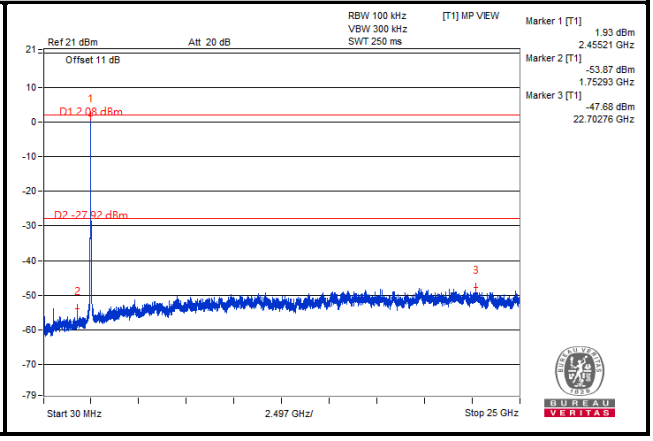
Ch 6

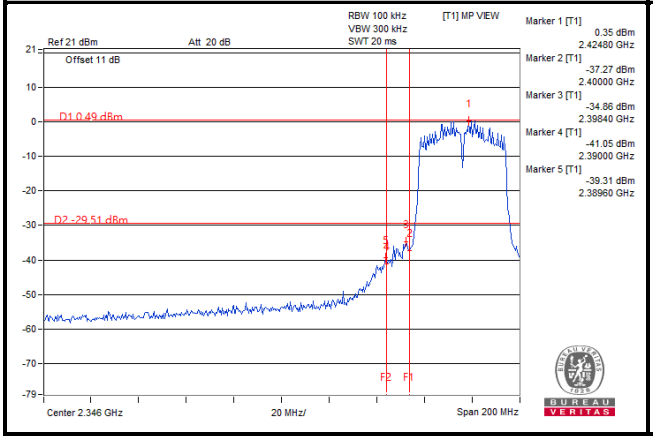
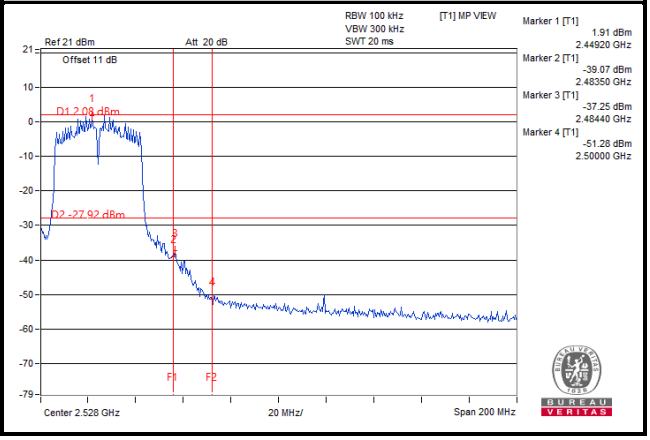




Ch 9

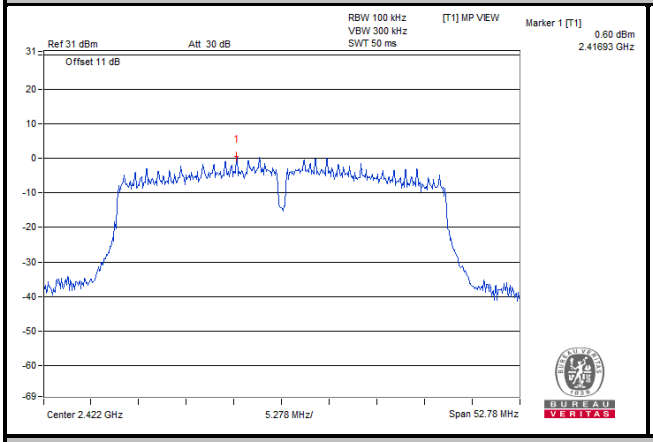


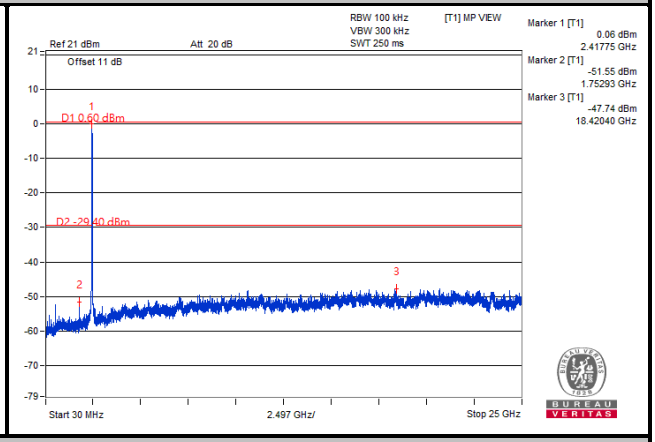


Ch 3 Band Edge	Ch 9 Band Edge
	

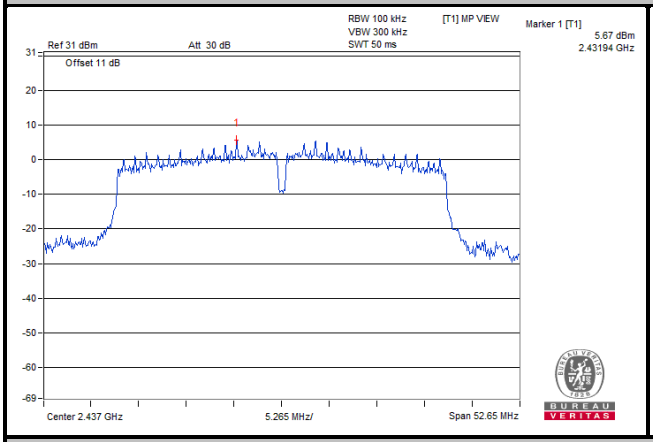
CHAIN 1

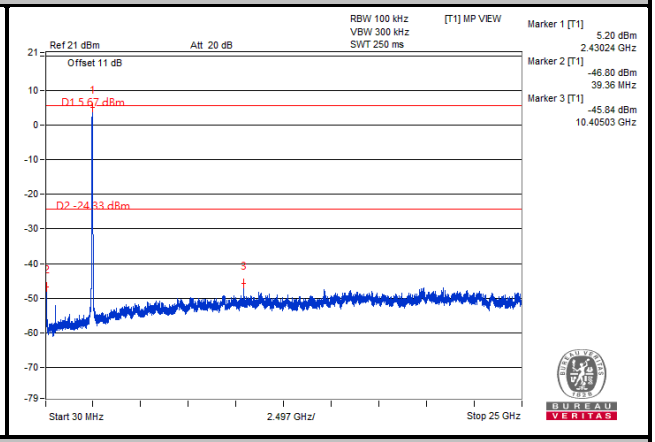
Ch 3



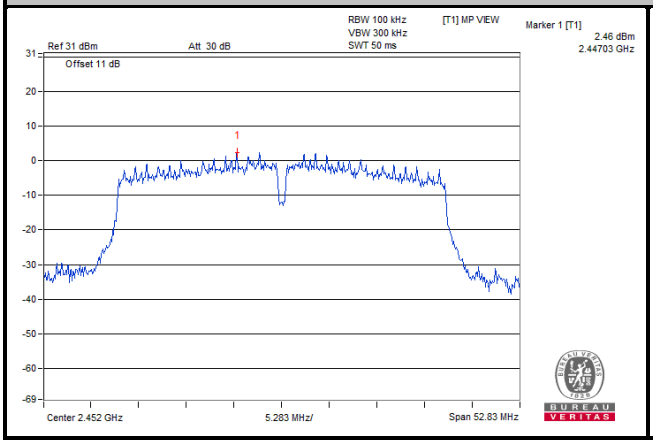


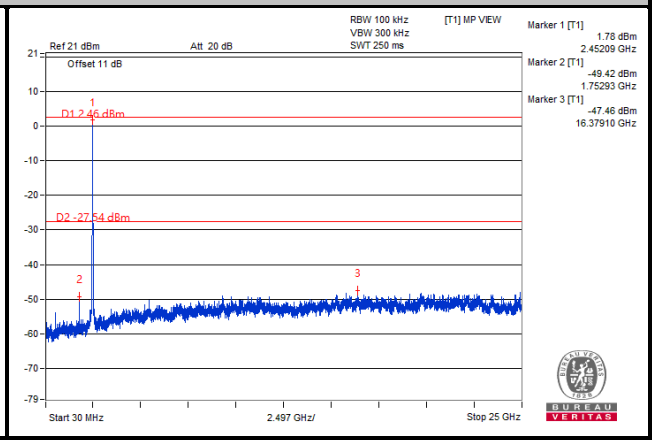
Ch 6

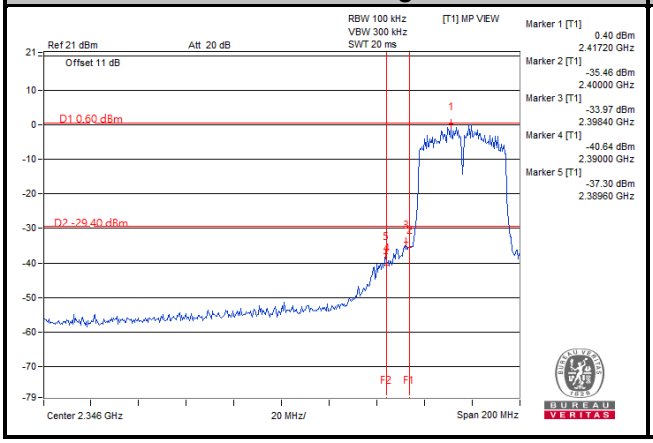
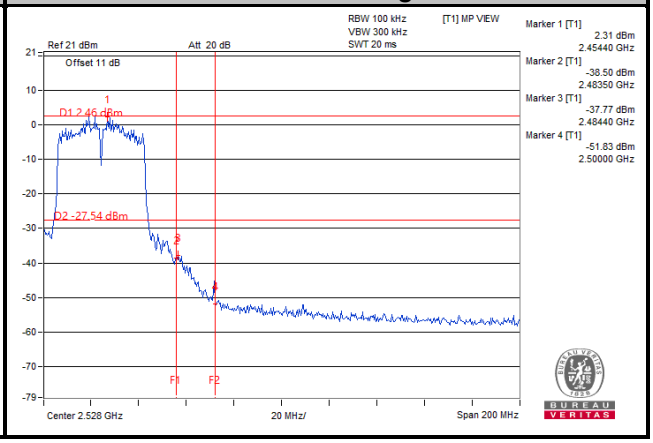




Ch 9





Ch 3 Band Edge	Ch 9 Band Edge
	

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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

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.

--- END ---