

## FCC Test Report

**Report No.:** RF190910E04

**FCC ID:** 2AUYB-TXXX

**Test Model:** TLP3-71300-5120-24-T

**Received Date:** Sep. 10, 2019

**Test Date:** Sep. 20 to 25, 2019

**Issued Date:** Oct. 17, 2019

**Applicant:** Leonton Technologies Co., Ltd.

**Address:** 9F-1., No. 43, Fuxing Rd., Xindian Dist., New Taipei City 231, Taiwan

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

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**FCC Registration /  
Designation Number:** 723255 / TW2022



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### Release Control Record

Issue No.	Description	Date Issued
RF190910E04	Original release.	Oct. 17, 2019

## 1 Certificate of Conformity

**Product:** Wifi module

**Brand:** Leonton

**Test Model:** TLP3-71300-5120-24-T

**Sample Status:** MASS-PRODUCTION

**Applicant:** Leonton Technologies Co., Ltd.

**Test Date:** Sep. 20 to 25, 2019

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

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

**Prepared by :** Wendy Wu , **Date:** Oct. 17, 2019  
Wendy Wu / Specialist

**Approved by :** Clark Lin , **Date:** Oct. 17, 2019  
Clark Lin / Technical Manager

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -4.42 dB, 0.54663MHz
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2483.50MHz, 2390.00MHz
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is R-SMA not a standard connector.

### 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) ( $\pm$ )
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.8 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.0 dB
	30MHz ~ 1GHz	4.9 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	4.9 dB
	18GHz ~ 40GHz	5.2 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	Wifi module
Brand	Leonton
Test Model	TLP3-71300-5120-24-T
Status of EUT	MASS-PRODUCTION
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 150Mbps 802.11ac: up to 433.3Mbps
Operating Frequency	<b>2.4GHz:</b> 2.412 ~ 2.462 GHz <b>5GHz:</b> 5.18~ 5.24 GHz, 5.745 ~ 5.825 GHz
Number of Channel	<b>2.4GHz:</b> 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 <b>5GHz:</b> 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	<b>2.412 ~ 2.462GHz:</b> 725.429 mW <b>5.18 ~ 5.24GHz:</b> 101.224 mW <b>5.745 ~ 5.825GHz:</b> 121.016 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

- 2.4GHz & 5GHz technology can't transmit at same time.
- The antennas provided to the EUT, please refer to the following table:

Ant. No.	Chain No.	Antenna Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	Chain 0	3	2.4~2.4835	Dipole	R-SMA
		5	5.15~5.85		
2	Chain 1	3	2.4~2.4835	Dipole	R-SMA
		5	5.15~5.85		

3. The EUT incorporates a MIMO function.

<b>2.4GHz Band</b>		
<b>MODULATION MODE</b>	<b>TX &amp; RX CONFIGURATION</b>	
<b>802.11b</b>	1TX Diversity	1RX Diversity
<b>802.11g</b>	1TX Diversity	1RX Diversity
<b>802.11n (HT20)</b>	2TX	2RX
<b>802.11n (HT40)</b>	2TX	2RX
<b>5GHz Band</b>		
<b>MODULATION MODE</b>	<b>TX &amp; RX CONFIGURATION</b>	
<b>802.11a</b>	1TX Diversity	1RX Diversity
<b>802.11n (HT20)</b>	2TX	2RX
<b>802.11n (HT40)</b>	2TX	2RX
<b>802.11ac VHT20</b>	2TX	2RX
<b>802.11ac VHT40</b>	2TX	2RX
<b>802.11ac VHT80</b>	2TX	2RX

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, 802.11n (HT20):

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):

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

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

**RE $\geq$ 1G:** Radiated Emission above 1GHz & Bandedge Measurement

**RE<1G:** Radiated Emission below 1GHz

**PLC:** Power Line Conducted Emission

**APCM:** Antenna Port Conducted Measurement

#### **Radiated Emission Test (Above 1GHz):**

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

#### **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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

### 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
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 (System)	TESTED BY
RE $\geq$ 1G	22deg. C, 72%RH	120Vac, 60Hz	Jeff Lee
RE $<$ 1G	22deg. C, 71%RH	120Vac, 60Hz	Jeff Lee
PLC	23deg. C, 76%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

### 3.3 Duty Cycle of Test Signal

If duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.

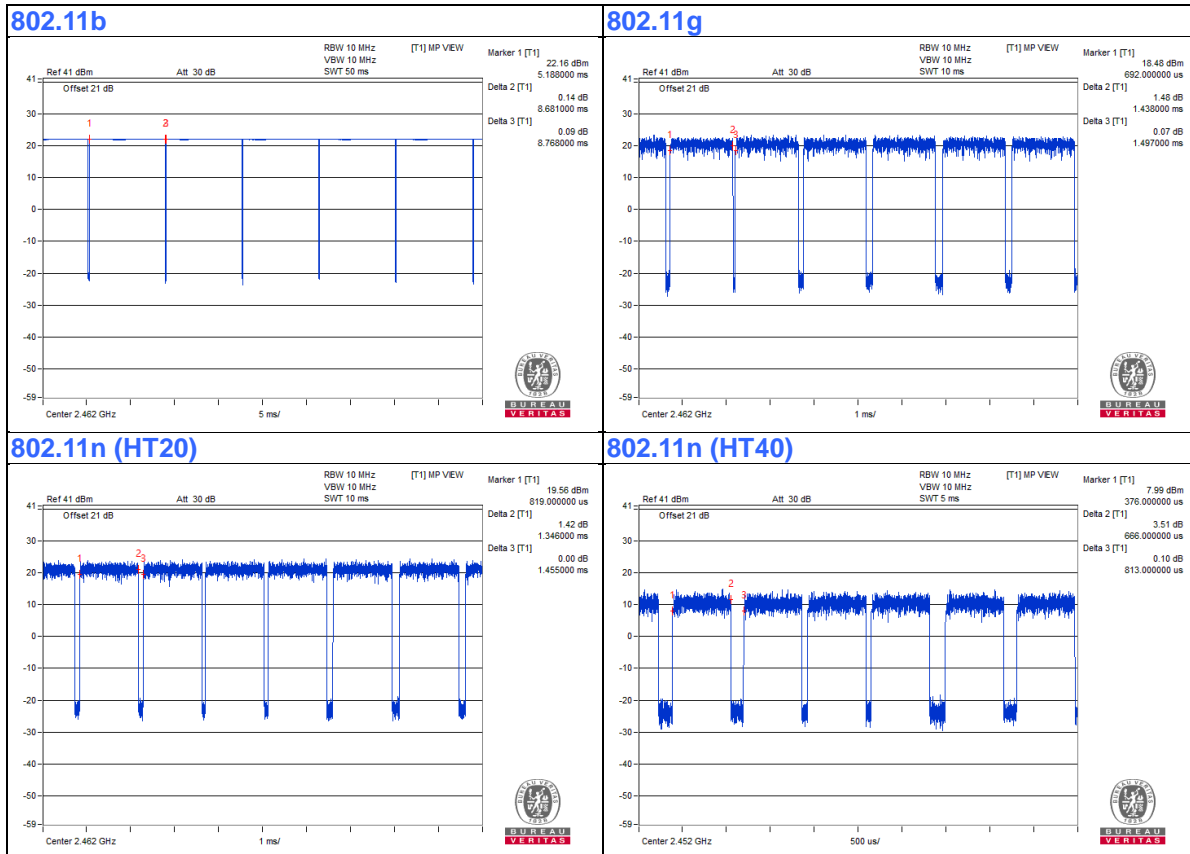
If duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

**802.11b:** Duty cycle =  $8.681 \text{ ms} / 8.768 \text{ ms} = 0.99$

**802.11g:** Duty cycle =  $1.438 \text{ ms} / 1.497 \text{ ms} = 0.961$ , Duty factor =  $10 * \log(1/\text{Duty cycle}) = 0.17$

**802.11n (HT20):** Duty cycle =  $1.346 \text{ ms} / 1.455 \text{ ms} = 0.925$ , Duty factor =  $10 * \log(1/\text{Duty cycle}) = 0.34$

**802.11n (HT40):** Duty cycle =  $0.666 \text{ ms} / 0.813 \text{ ms} = 0.819$ , Duty factor =  $10 * \log(1/\text{Duty cycle}) = 0.87$



### 3.4 Description of Support Units

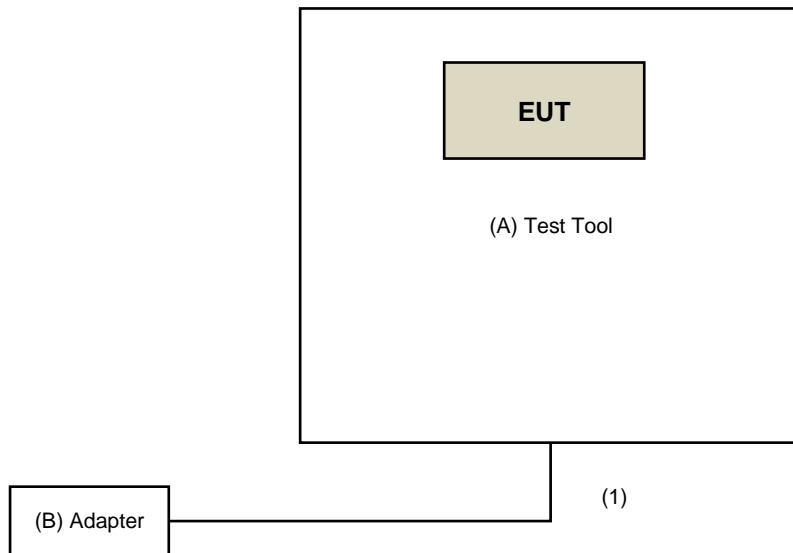
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Test Tool	Leonton Technologies Co., Ltd.	NA	NA	NA	Supplied by client
B.	Adapter	Powertron Electronics	PA1024-120IB20 0	NA	NA	Supplied by client

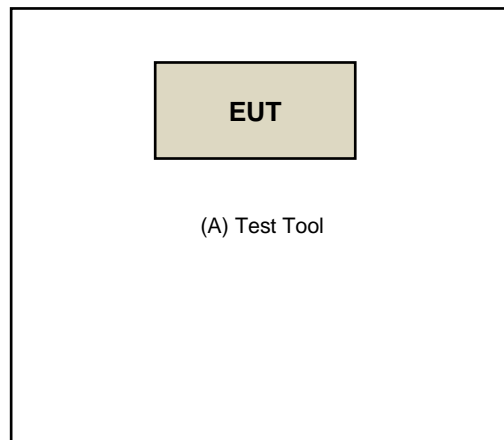
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	AC Cable	1	1.5	No	0	Supplied by client

### 3.4.1 Configuration of System under Test

For Conduction emission test:



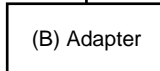
For other test:



(1)



Under Table



### 3.5 General Description of Applied Standards

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

**FCC Part 15, Subpart C (15.247)**  
**KDB 558074 D01 15.247 Meas Guidance v05r02**  
**KDB 662911 D01 Multiple Transmitter Output v02r01**

**ANSI C63.10-2013**

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



## 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 20dB 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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ESR7 R&S	ESR7	102026	Apr. 24, 2019	Apr. 23, 2020
Spectrum Analyzer Keysight	N9030B	MY57141948	May 25, 2019	May 24, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 30, 2019	May 29, 2020
Loop Antenna Electro-Metrics	EM-6879	264	Jan. 22, 2019	Jan. 21, 2020
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier EMCI	EMC330N	980538	Apr. 30, 2019	Apr. 29, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB9168	9168-0842	Nov. 21, 2018	Nov. 20, 2019
RF Cable	8D	966-5-1	May 03, 2019	May 02, 2020
RF Cable	8D	966-5-2	May 03, 2019	May 02, 2020
RF Cable	8D	966-5-3	May 03, 2019	May 02, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-1819	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980509	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-1500	180503	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-2000	180501	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-6000	180505	May 03, 2019	May 02, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 04, 2019	June 03, 2020
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 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 966 Chamber No. 5.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Sep. 20 to 23, 2019

#### 4.1.3 Test Procedures

##### **For Radiated emission below 30MHz**

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

##### **NOTE:**

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

##### **For Radiated emission above 30MHz**

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

##### **Note:**

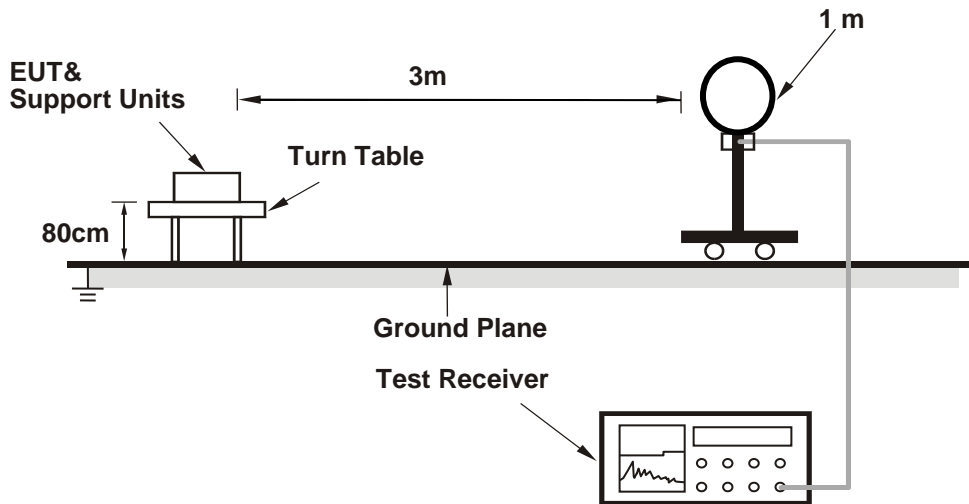
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

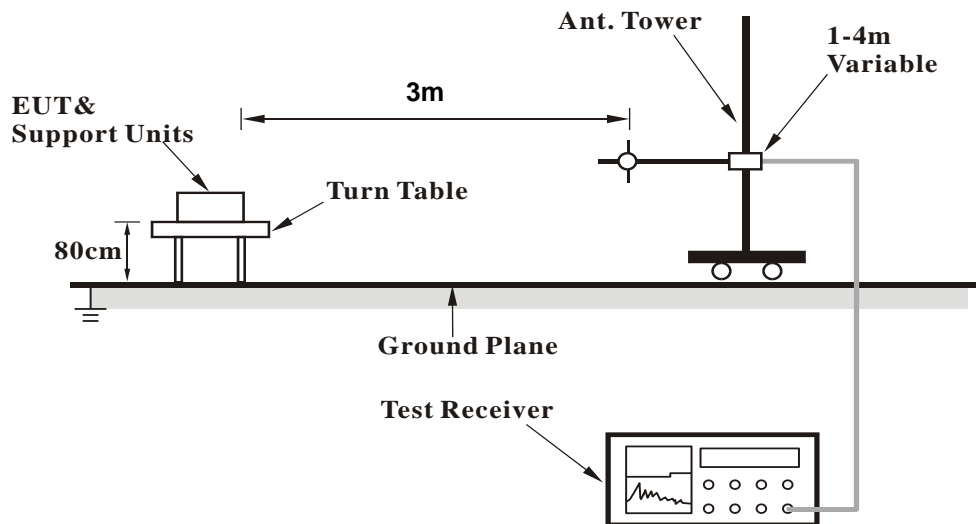
No deviation.

4.1.5 Test Setup

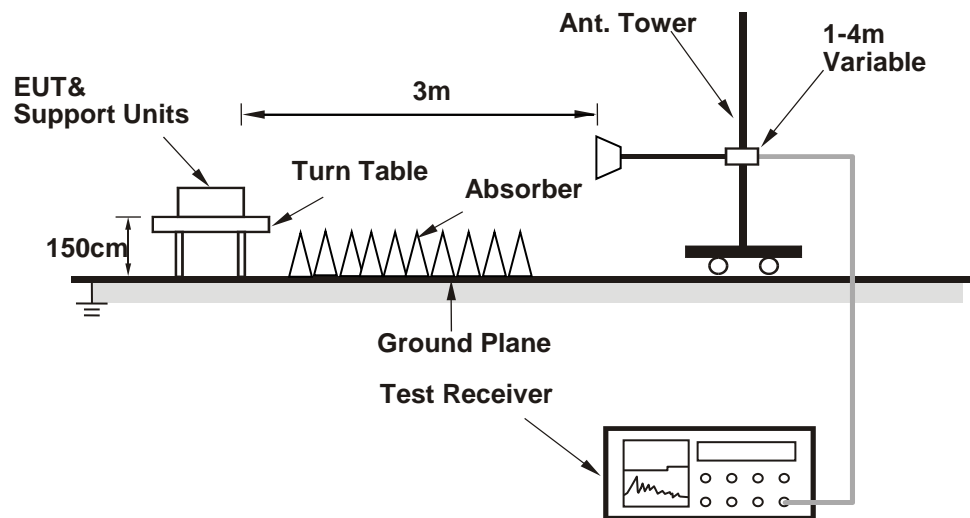
**For Radiated emission below 30MHz**



**For Radiated emission 30MHz to 1GHz**



### For Radiated emission above 1GHz



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

#### 4.1.6 EUT Operating Conditions

- a. Placed the EUT on the testing table.
- b. Controlling software (MT7612E\_AP\_QA\_Tool\_V1.0.3.4) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

## 4.1.7 Test Results

## Above 1GHz Data :

## 802.11b

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

**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	53.5 PK	74.0	-20.5	1.51 H	147	56.6	-3.1
2	2390.00	44.0 AV	54.0	-10.0	1.51 H	147	47.1	-3.1
3	*2412.00	95.7 PK			1.51 H	147	98.8	-3.1
4	*2412.00	92.8 AV			1.51 H	147	95.9	-3.1
5	4824.00	43.4 PK	74.0	-30.6	2.43 H	133	42.2	1.2
6	4824.00	40.3 AV	54.0	-13.7	2.43 H	133	39.1	1.2

**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	64.2 PK	74.0	-9.8	1.52 V	36	67.3	-3.1
2	2390.00	53.5 AV	54.0	-0.5	1.52 V	36	56.6	-3.1
3	*2412.00	111.1 PK			1.52 V	36	114.2	-3.1
4	*2412.00	108.5 AV			1.52 V	36	111.6	-3.1
5	4824.00	47.0 PK	74.0	-27.0	1.70 V	33	45.8	1.2
6	4824.00	44.8 AV	54.0	-9.2	1.70 V	33	43.6	1.2

**REMARKS:**

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

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

**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	50.5 PK	74.0	-23.5	1.54 H	135	53.6	-3.1
2	2390.00	43.1 AV	54.0	-10.9	1.54 H	135	46.2	-3.1
3	*2437.00	98.5 PK			1.54 H	135	101.6	-3.1
4	*2437.00	95.3 AV			1.54 H	135	98.4	-3.1
5	2483.50	50.5 PK	74.0	-23.5	1.54 H	135	53.6	-3.1
6	2483.50	40.1 AV	54.0	-13.9	1.54 H	135	43.2	-3.1
7	4874.00	45.1 PK	74.0	-28.9	4.00 H	228	43.9	1.2
8	4874.00	43.5 AV	54.0	-10.5	4.00 H	228	42.3	1.2
9	7311.00	44.5 PK	74.0	-29.5	1.12 H	255	37.3	7.2
10	7311.00	33.0 AV	54.0	-21.0	1.12 H	255	25.8	7.2

**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	1.74 V	103	63.1	-3.1
2	2390.00	53.5 AV	54.0	-0.5	1.74 V	103	56.6	-3.1
3	*2437.00	113.6 PK			1.74 V	103	116.7	-3.1
4	*2437.00	111.3 AV			1.74 V	103	114.4	-3.1
5	2483.50	59.9 PK	74.0	-14.1	1.74 V	103	63.0	-3.1
6	2483.50	50.6 AV	54.0	-3.4	1.74 V	103	53.7	-3.1
7	4874.00	48.7 PK	74.0	-25.3	1.91 V	338	47.5	1.2
8	4874.00	46.2 AV	54.0	-7.8	1.91 V	338	45.0	1.2
9	7311.00	43.9 PK	74.0	-30.1	2.51 V	264	36.7	7.2
10	7311.00	32.5 AV	54.0	-21.5	2.51 V	264	25.3	7.2

**REMARKS:**

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



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

**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	95.5 PK			1.51 H	142	98.6	-3.1
2	*2462.00	92.7 AV			1.51 H	142	95.8	-3.1
3	2483.50	56.6 PK	74.0	-17.4	1.51 H	142	59.7	-3.1
4	2483.50	43.2 AV	54.0	-10.8	1.51 H	142	46.3	-3.1
5	4924.00	50.8 PK	74.0	-23.2	3.97 H	240	49.5	1.3
6	4924.00	49.5 AV	54.0	-4.5	3.97 H	240	48.2	1.3
7	7386.00	43.2 PK	74.0	-30.8	1.10 H	262	35.9	7.3
8	7386.00	31.2 AV	54.0	-22.8	1.10 H	262	23.9	7.3

**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	111.0 PK			1.51 V	49	114.1	-3.1
2	*2462.00	108.6 AV			1.51 V	49	111.7	-3.1
3	2483.50	65.8 PK	74.0	-8.2	1.51 V	49	68.9	-3.1
4	2483.50	53.5 AV	54.0	-0.5	1.51 V	49	56.6	-3.1
5	4924.00	51.0 PK	74.0	-23.0	1.75 V	49	49.7	1.3
6	4924.00	49.5 AV	54.0	-4.5	1.75 V	49	48.2	1.3
7	7386.00	43.2 PK	74.0	-30.8	2.16 V	179	35.9	7.3
8	7386.00	31.6 AV	54.0	-22.4	2.16 V	179	24.3	7.3

**REMARKS:**

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

**802.11g**

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

**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	58.5 PK	74.0	-15.5	1.46 H	134	61.6	-3.1
2	2390.00	44.1 AV	54.0	-9.9	1.46 H	134	47.2	-3.1
3	*2412.00	94.7 PK			1.46 H	134	97.8	-3.1
4	*2412.00	85.4 AV			1.46 H	134	88.5	-3.1
5	4824.00	44.3 PK	74.0	-29.7	3.96 H	252	43.1	1.2
6	4824.00	31.6 AV	54.0	-22.4	3.96 H	252	30.4	1.2

**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	67.3 PK	74.0	-6.7	1.60 V	34	70.4	-3.1
2	2390.00	53.8 AV	54.0	-0.2	1.60 V	34	56.9	-3.1
3	*2412.00	110.7 PK			1.60 V	34	113.8	-3.1
4	*2412.00	101.5 AV			1.60 V	34	104.6	-3.1
5	4824.00	42.2 PK	74.0	-31.8	1.37 V	139	41.0	1.2
6	4824.00	31.0 AV	54.0	-23.0	1.37 V	139	29.8	1.2

**REMARKS:**

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

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

**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	53.6 PK	74.0	-20.4	1.48 H	145	56.7	-3.1
2	2390.00	41.6 AV	54.0	-12.4	1.48 H	145	44.7	-3.1
3	*2437.00	99.7 PK			1.48 H	145	102.8	-3.1
4	*2437.00	90.6 AV			1.48 H	145	93.7	-3.1
5	2483.50	57.1 PK	74.0	-16.9	1.48 H	145	60.2	-3.1
6	2483.50	41.7 AV	54.0	-12.3	1.48 H	145	44.8	-3.1
7	4874.00	44.6 PK	74.0	-29.4	3.99 H	229	43.4	1.2
8	4874.00	32.9 AV	54.0	-21.1	3.99 H	229	31.7	1.2
9	7311.00	43.0 PK	74.0	-31.0	1.15 H	259	35.8	7.2
10	7311.00	32.3 AV	54.0	-21.7	1.15 H	259	25.1	7.2

**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	64.0 PK	74.0	-10.0	1.64 V	55	67.1	-3.1
2	2390.00	51.8 AV	54.0	-2.2	1.64 V	55	54.9	-3.1
3	*2437.00	115.5 PK			1.64 V	55	118.6	-3.1
4	*2437.00	106.2 AV			1.64 V	55	109.3	-3.1
5	2483.50	66.1 PK	74.0	-7.9	1.64 V	55	69.2	-3.1
6	2483.50	51.9 AV	54.0	-2.1	1.64 V	55	55.0	-3.1
7	4874.00	45.0 PK	74.0	-29.0	1.56 V	103	43.8	1.2
8	4874.00	33.5 AV	54.0	-20.5	1.56 V	103	32.3	1.2
9	7311.00	43.9 PK	74.0	-30.1	2.50 V	274	36.7	7.2
10	7311.00	32.5 AV	54.0	-21.5	2.50 V	274	25.3	7.2

**REMARKS:**

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

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

**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	95.9 PK			1.49 H	134	99.0	-3.1
2	*2462.00	85.8 AV			1.49 H	134	88.9	-3.1
3	2483.50	61.2 PK	74.0	-12.8	1.49 H	134	64.3	-3.1
4	2483.50	43.2 AV	54.0	-10.8	1.49 H	134	46.3	-3.1
5	4924.00	44.2 PK	74.0	-29.8	4.00 H	137	42.9	1.3
6	4924.00	31.4 AV	54.0	-22.6	4.00 H	137	30.1	1.3
7	7386.00	43.3 PK	74.0	-30.7	1.28 H	152	36.0	7.3
8	7386.00	32.4 AV	54.0	-21.6	1.28 H	152	25.1	7.3

**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	111.4 PK			1.52 V	50	114.5	-3.1
2	*2462.00	102.0 AV			1.52 V	50	105.1	-3.1
3	2483.50	70.3 PK	74.0	-3.7	1.52 V	50	73.4	-3.1
4	2483.50	53.5 AV	54.0	-0.5	1.52 V	50	56.6	-3.1
5	4924.00	46.2 PK	74.0	-27.8	1.75 V	320	44.9	1.3
6	4924.00	33.5 AV	54.0	-20.5	1.75 V	320	32.2	1.3
7	7386.00	43.5 PK	74.0	-30.5	2.48 V	258	36.2	7.3
8	7386.00	32.4 AV	54.0	-21.6	2.48 V	258	25.1	7.3

**REMARKS:**

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

**802.11n (HT20)**

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

**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	56.0 PK	74.0	-18.0	1.15 H	140	59.1	-3.1
2	2390.00	44.6 AV	54.0	-9.4	1.15 H	140	47.7	-3.1
3	*2412.00	98.9 PK			1.15 H	140	102.0	-3.1
4	*2412.00	89.7 AV			1.15 H	140	92.8	-3.1
5	4824.00	36.2 PK	74.0	-37.8	3.98 H	249	35.0	1.2
6	4824.00	28.1 AV	54.0	-25.9	3.98 H	249	26.9	1.2

**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	67.5 PK	74.0	-6.5	1.84 V	86	70.6	-3.1
2	2390.00	53.7 AV	54.0	-0.3	1.84 V	86	56.8	-3.1
3	*2412.00	111.8 PK			1.84 V	86	114.9	-3.1
4	*2412.00	102.6 AV			1.84 V	86	105.7	-3.1
5	4824.00	45.5 PK	74.0	-28.5	1.45 V	111	44.3	1.2
6	4824.00	34.2 AV	54.0	-19.8	1.45 V	111	33.0	1.2

**REMARKS:**

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

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

**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	54.9 PK	74.0	-19.1	1.53 H	151	58.0	-3.1
2	2390.00	44.7 AV	54.0	-9.3	1.53 H	151	47.8	-3.1
3	*2437.00	102.5 PK			1.53 H	151	105.6	-3.1
4	*2437.00	89.1 AV			1.53 H	151	92.2	-3.1
5	2483.50	59.0 PK	74.0	-15.0	1.53 H	151	62.1	-3.1
6	2483.50	43.7 AV	54.0	-10.3	1.53 H	151	46.8	-3.1
7	4874.00	40.5 PK	74.0	-33.5	1.56 H	134	39.3	1.2
8	4874.00	29.6 AV	54.0	-24.4	1.56 H	134	28.4	1.2
9	7311.00	42.9 PK	74.0	-31.1	2.14 H	269	35.7	7.2
10	7311.00	32.0 AV	54.0	-22.0	2.14 H	269	24.8	7.2

**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	65.0 PK	74.0	-9.0	1.99 V	71	68.1	-3.1
2	2390.00	53.6 AV	54.0	-0.4	1.99 V	71	56.7	-3.1
3	*2437.00	119.3 PK			1.99 V	71	122.4	-3.1
4	*2437.00	110.8 AV			1.99 V	71	113.9	-3.1
5	2483.50	68.6 PK	74.0	-5.4	1.99 V	71	71.7	-3.1
6	2483.50	52.4 AV	54.0	-1.6	1.99 V	71	55.5	-3.1
7	4874.00	51.0 PK	74.0	-23.0	1.40 V	98	49.8	1.2
8	4874.00	39.6 AV	54.0	-14.4	1.40 V	98	38.4	1.2
9	7311.00	43.0 PK	74.0	-31.0	1.50 V	244	35.8	7.2
10	7311.00	32.4 AV	54.0	-21.6	1.50 V	244	25.2	7.2

**REMARKS:**

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

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

**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	98.1 PK			1.47 H	154	101.2	-3.1
2	*2462.00	86.6 AV			1.47 H	154	89.7	-3.1
3	2483.50	51.8 PK	74.0	-22.2	1.47 H	154	54.9	-3.1
4	2483.50	44.6 AV	54.0	-9.4	1.47 H	154	47.7	-3.1
5	4924.00	40.9 PK	74.0	-33.1	3.99 H	229	39.6	1.3
6	4924.00	29.8 AV	54.0	-24.2	3.99 H	229	28.5	1.3
7	7386.00	42.8 PK	74.0	-31.2	1.10 H	257	35.5	7.3
8	7386.00	32.0 AV	54.0	-22.0	1.10 H	257	24.7	7.3

**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	116.6 PK			1.83 V	97	119.7	-3.1
2	*2462.00	107.0 AV			1.83 V	97	110.1	-3.1
3	2483.50	68.9 PK	74.0	-5.1	1.83 V	97	72.0	-3.1
4	<b>2483.50</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.83 V</b>	<b>97</b>	<b>57.0</b>	<b>-3.1</b>
5	4924.00	47.6 PK	74.0	-26.4	1.50 V	112	46.3	1.3
6	4924.00	36.2 AV	54.0	-17.8	1.50 V	112	34.9	1.3
7	7386.00	43.2 PK	74.0	-30.8	1.51 V	216	35.9	7.3
8	7386.00	32.2 AV	54.0	-21.8	1.51 V	216	24.9	7.3

**REMARKS:**

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

**802.11n (HT40)**

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

**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	56.2 PK	74.0	-17.8	1.46 H	161	59.3	-3.1
2	2390.00	45.0 AV	54.0	-9.0	1.46 H	161	48.1	-3.1
3	*2422.00	95.1 PK			1.46 H	161	98.2	-3.1
4	*2422.00	82.2 AV			1.46 H	161	85.3	-3.1
5	4844.00	40.4 PK	74.0	-33.6	3.99 H	240	39.2	1.2
6	4844.00	29.2 AV	54.0	-24.8	3.99 H	240	28.0	1.2
7	7266.00	43.2 PK	74.0	-30.8	1.14 H	275	36.1	7.1
8	7266.00	32.1 AV	54.0	-21.9	1.14 H	275	25.0	7.1

**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	68.1 PK	74.0	-5.9	1.92 V	99	71.2	-3.1
2	2390.00	53.8 AV	54.0	-0.2	1.92 V	99	56.9	-3.1
3	*2422.00	107.3 PK			1.92 V	99	110.4	-3.1
4	*2422.00	97.5 AV			1.92 V	99	100.6	-3.1
5	4844.00	43.3 PK	74.0	-30.7	1.47 V	91	42.1	1.2
6	4844.00	31.7 AV	54.0	-22.3	1.47 V	91	30.5	1.2
7	7266.00	42.5 PK	74.0	-31.5	1.52 V	244	35.4	7.1
8	7266.00	31.8 AV	54.0	-22.2	1.52 V	244	24.7	7.1

**REMARKS:**

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



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

**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	57.1 PK	74.0	-16.9	1.51 H	131	60.2	-3.1
2	2390.00	48.2 AV	54.0	-5.8	1.51 H	131	51.3	-3.1
3	*2437.00	96.7 PK			1.51 H	131	99.8	-3.1
4	*2437.00	85.5 AV			1.51 H	131	88.6	-3.1
5	2483.50	56.6 PK	74.0	-17.4	1.51 H	131	59.7	-3.1
6	2483.50	47.9 AV	54.0	-6.1	1.51 H	131	51.0	-3.1
7	4874.00	40.6 PK	74.0	-33.4	3.94 H	230	39.4	1.2
8	4874.00	29.7 AV	54.0	-24.3	3.94 H	230	28.5	1.2
9	7311.00	42.5 PK	74.0	-31.5	1.06 H	275	35.3	7.2
10	7311.00	31.7 AV	54.0	-22.3	1.06 H	275	24.5	7.2

**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	66.9 PK	74.0	-7.1	1.95 V	113	70.0	-3.1
2	2390.00	53.9 AV	54.0	-0.1	1.95 V	113	57.0	-3.1
3	*2437.00	108.2 PK			1.95 V	113	111.3	-3.1
4	*2437.00	100.1 AV			1.95 V	113	103.2	-3.1
5	2483.50	66.5 PK	74.0	-7.5	1.95 V	113	69.6	-3.1
6	2483.50	52.5 AV	54.0	-1.5	1.95 V	113	55.6	-3.1
7	4874.00	44.8 PK	74.0	-29.2	1.40 V	102	43.6	1.2
8	4874.00	33.2 AV	54.0	-20.8	1.40 V	102	32.0	1.2
9	7311.00	43.4 PK	74.0	-30.6	1.49 V	217	36.2	7.2
10	7311.00	32.3 AV	54.0	-21.7	1.49 V	217	25.1	7.2

**REMARKS:**

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

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

**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	95.1 PK			1.49 H	151	98.2	-3.1
2	*2452.00	82.3 AV			1.49 H	151	85.4	-3.1
3	2483.50	56.5 PK	74.0	-17.5	1.49 H	151	59.6	-3.1
4	2483.50	45.1 AV	54.0	-8.9	1.49 H	151	48.2	-3.1
5	4904.00	40.7 PK	74.0	-33.3	4.00 H	234	39.4	1.3
6	4904.00	30.0 AV	54.0	-24.0	4.00 H	234	28.7	1.3
7	7356.00	43.7 PK	74.0	-30.3	1.08 H	263	36.5	7.2
8	7356.00	32.5 AV	54.0	-21.5	1.08 H	263	25.3	7.2

**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	105.5 PK			1.91 V	88	108.6	-3.1
2	*2452.00	97.7 AV			1.91 V	88	100.8	-3.1
3	2483.50	66.0 PK	74.0	-8.0	1.91 V	88	69.1	-3.1
4	2483.50	53.5 AV	54.0	-0.5	1.91 V	88	56.6	-3.1
5	4904.00	43.3 PK	74.0	-30.7	1.44 V	96	42.0	1.3
6	4904.00	31.6 AV	54.0	-22.4	1.44 V	96	30.3	1.3
7	7356.00	42.8 PK	74.0	-31.2	1.47 V	232	35.6	7.2
8	7356.00	32.0 AV	54.0	-22.0	1.47 V	232	24.8	7.2

**REMARKS:**

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

Below 1GHz Data:

802.11n (HT20)

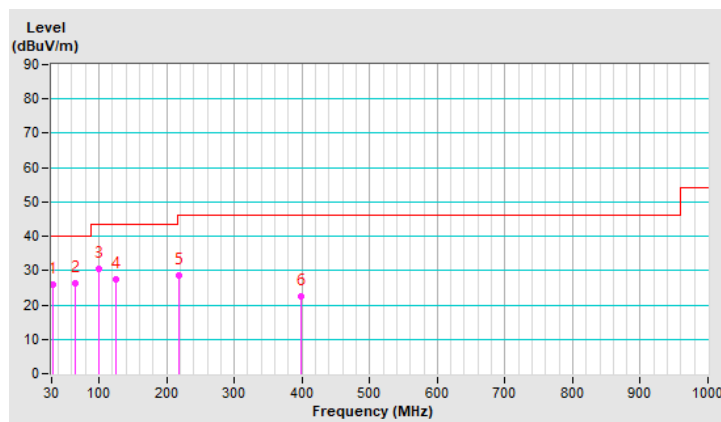
<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9kHz ~ 1GHz		

**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	31.99	26.0 QP	40.0	-14.0	2.00 H	110	40.4	-14.4
2	65.20	26.2 QP	40.0	-13.8	3.00 H	264	40.7	-14.5
3	99.41	30.5 QP	43.5	-13.0	2.00 H	264	47.8	-17.3
4	125.08	27.5 QP	43.5	-16.0	1.50 H	263	42.1	-14.6
5	217.93	28.5 QP	46.0	-17.5	1.50 H	137	44.0	-15.5
6	398.33	22.5 QP	46.0	-23.5	1.00 H	83	32.5	-10.0

**REMARKS:**

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



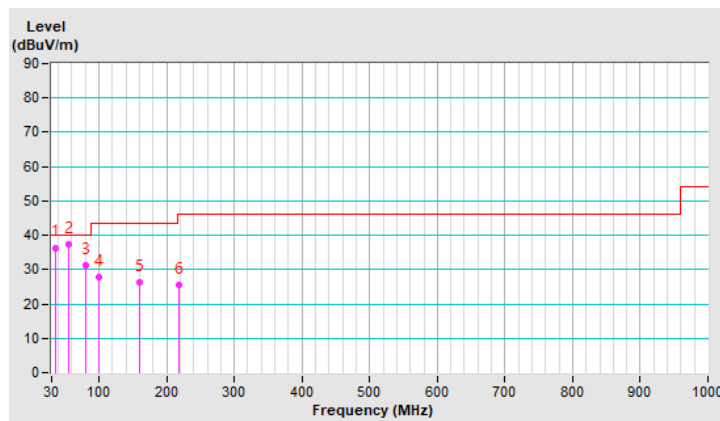
<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9kHz ~ 1GHz		

**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	36.22	36.4 QP	40.0	-3.6	1.00 V	353	50.3	-13.9
2	55.31	37.3 QP	40.0	-2.7	1.00 V	164	50.5	-13.2
3	80.54	31.3 QP	40.0	-8.7	1.50 V	174	49.2	-17.9
4	99.90	27.7 QP	43.5	-15.8	1.50 V	214	45.0	-17.3
5	160.72	26.4 QP	43.5	-17.1	1.00 V	188	39.4	-13.0
6	218.29	25.4 QP	46.0	-20.6	1.50 V	238	40.9	-15.5

**REMARKS:**

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



## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

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

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

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

### 4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2018	Oct. 23, 2019
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 22, 2018	Oct. 21, 2019
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
50 ohms Terminator	N/A	3	Oct. 22, 2018	Oct. 21, 2019
RF Cable	5D-FB	COCCAB-001	Sep. 28, 2018	Sep. 27, 2019
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 14, 2019	Mar. 13, 2020
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. Tested Date: Sep. 25, 2019

#### 4.2.3 Test Procedures

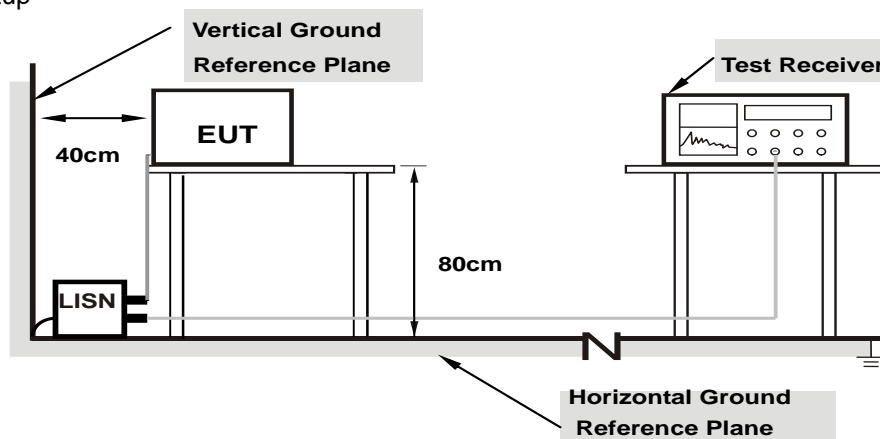
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



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

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

#### 4.2.6 EUT Operating Conditions

Same as 4.1.6.

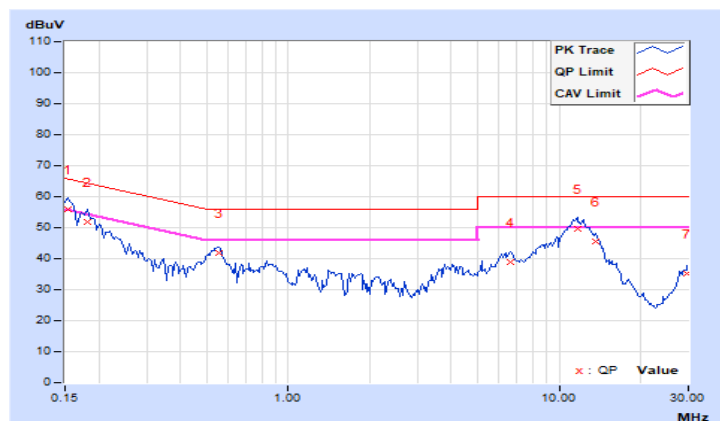
#### 4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.97	45.82	31.14	55.79	41.11	65.79	55.79	-10.00	-14.68
2	0.18125	9.98	41.75	26.83	51.73	36.81	64.43	54.43	-12.70	-17.62
3	0.55234	10.00	31.91	24.91	41.91	34.91	56.00	46.00	-14.09	-11.09
4	6.63281	10.44	28.45	22.69	38.89	33.13	60.00	50.00	-21.11	-16.87
5	11.69141	10.77	38.90	33.75	49.67	44.52	60.00	50.00	-10.33	-5.48
6	13.56250	10.91	34.78	29.90	45.69	40.81	60.00	50.00	-14.31	-9.19
7	29.79688	11.68	23.46	18.69	35.14	30.37	60.00	50.00	-24.86	-19.63

#### 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.

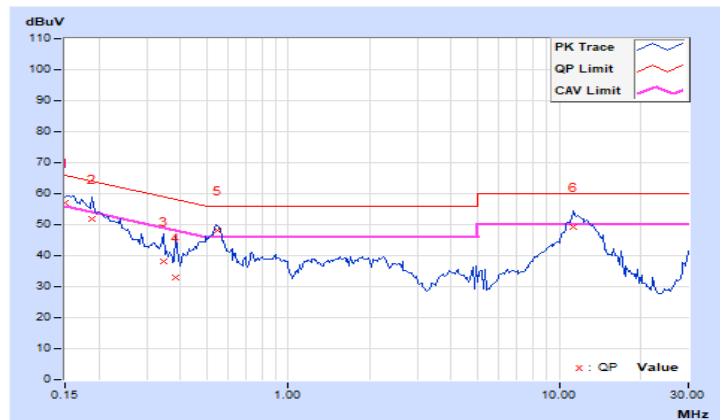


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	
1	0.15000	9.95	47.14	31.12	57.09	41.07	66.00	56.00	-8.91	-14.93
2	0.18906	9.96	41.89	28.76	51.85	38.72	64.08	54.08	-12.23	-15.36
3	0.34531	9.97	28.22	19.32	38.19	29.29	59.07	49.07	-20.88	-19.78
4	0.38438	9.98	22.88	13.62	32.86	23.60	58.18	48.18	-25.32	-24.58
<b>5</b>	<b>0.54663</b>	<b>9.99</b>	<b>38.06</b>	<b>31.59</b>	<b>48.05</b>	<b>41.58</b>	<b>56.00</b>	<b>46.00</b>	<b>-7.95</b>	<b>-4.42</b>
6	11.28125	10.63	38.66	33.75	49.29	44.38	60.00	50.00	-10.71	-5.62

**REMARKS:**

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



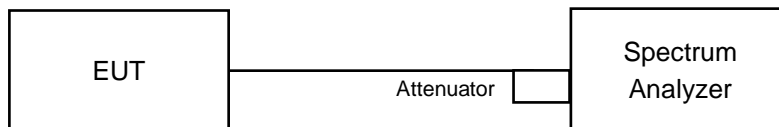


### 4.3 6dB Bandwidth Measurement

#### 4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 Test Setup



#### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.3.4 Test Procedure

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

#### 4.3.5 Deviation from Test Standard

No deviation.

#### 4.3.6 EUT Operating Conditions

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

#### 4.3.7 Test Result

##### 802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	10.11	0.5	Pass
6	2437	10.17	0.5	Pass
11	2462	10.12	0.5	Pass

##### 802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.33	0.5	Pass
6	2437	15.71	0.5	Pass
11	2462	16.33	0.5	Pass

##### 802.11n (HT20)

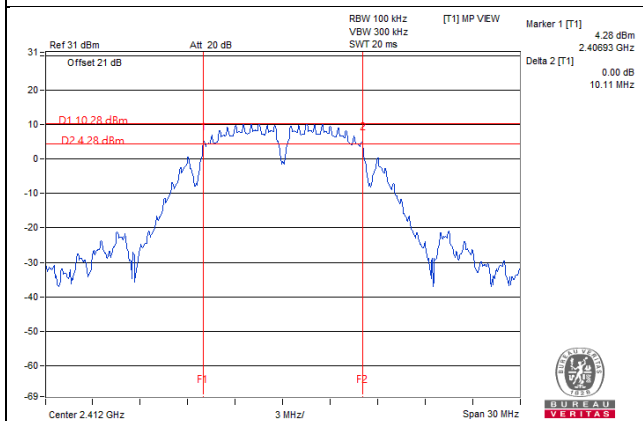
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.72	16.46	0.5	Pass
6	2437	16.39	16.95	0.5	Pass
11	2462	16.95	16.38	0.5	Pass

##### 802.11n (HT40)

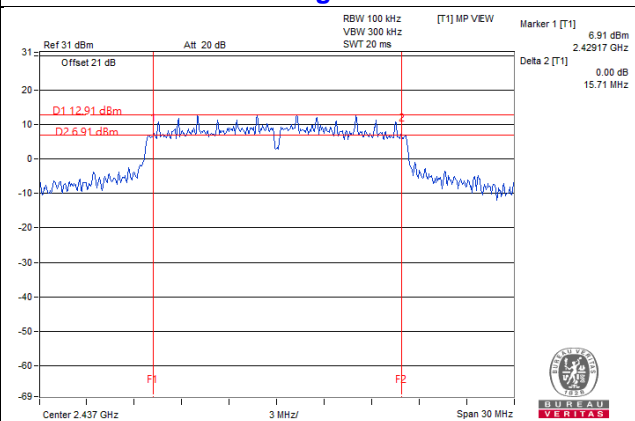
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.43	35.43	0.5	Pass
6	2437	35.42	35.36	0.5	Pass
9	2452	35.45	35.43	0.5	Pass

### Spectrum Plot of Worst Value

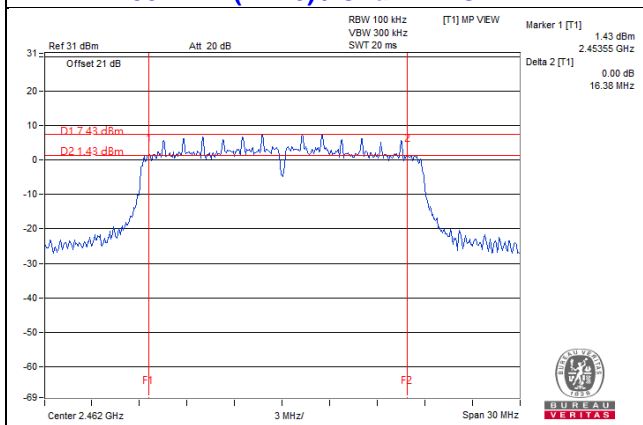
#### 802.11b / CH1



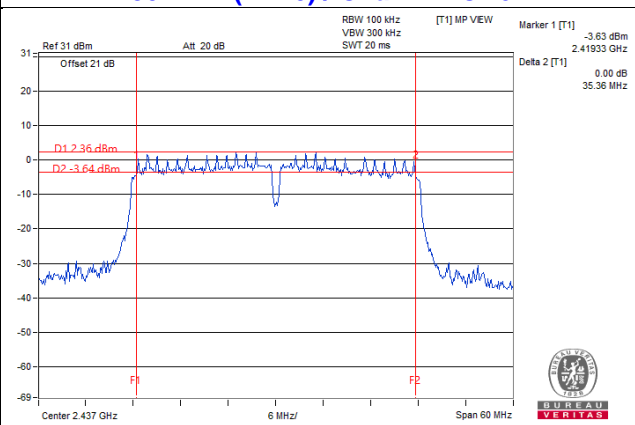
#### 802.11g / CH6



#### 802.11n (HT20) / Chain 1 : CH11



#### 802.11n (HT40) / Chain 1 : CH6



## 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,

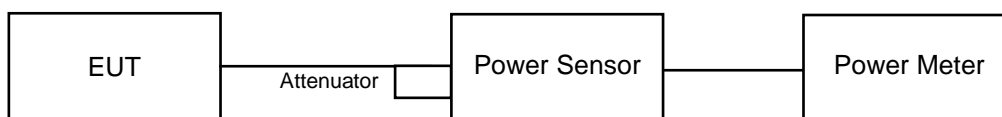
Array Gain = 0 dB (i.e., no array gain) for  $NANT \leq 4$ ;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any NANT;

Array Gain =  $5 \log(NANT/NSS)$  dB or 3 dB, whichever is less for 20-MHz channel widths with  $NANT \geq 5$ .

For power measurements on all other devices: Array Gain =  $10 \log(NANT/NSS)$  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

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

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 FOR PEAK POWER

##### 802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	251.189	24.00	30	Pass
6	2437	370.681	25.69	30	Pass
11	2462	214.289	23.31	30	Pass

##### 802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	271.644	24.34	30	Pass
6	2437	392.645	25.94	30	Pass
11	2462	298.538	24.75	30	Pass

##### 802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.40	21.90	328.662	25.17	30	Pass
6	2437	25.52	25.67	725.429	28.61	30	Pass
11	2462	24.92	24.77	610.372	27.86	30	Pass

##### 802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	20.58	20.44	224.95	23.52	30	Pass
6	2437	23.54	23.58	453.978	26.57	30	Pass
9	2452	20.79	20.44	230.612	23.63	30	Pass

## FOR AVERAGE POWER

### 802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	133.66	21.26
6	2437	257.632	24.11
11	2462	102.802	20.12

### 802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	56.624	17.53
6	2437	196.336	22.93
11	2462	59.841	17.77

### 802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	23.442	24.378	47.82	16.80
6	2437	144.544	138.676	283.22	24.52
11	2462	73.451	66.527	139.978	21.46

### 802.11n (HT40)

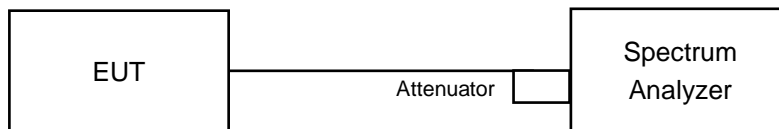
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	13.772	13.74	27.512	14.40
6	2437	43.752	41.02	84.772	19.28
9	2452	13.335	13.804	27.139	14.34

## 4.5 Power Spectral Density Measurement

### 4.5.1 Limits of Power Spectral Density Measurement

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

### 4.5.2 Test Setup



### 4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.5.4 Test Procedure

- 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:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d. Set the VBW  $\geq 3 \times \text{RBW}$ .
- 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.

### 4.5.5 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

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-5.13	8	Pass
6	2437	-1.70	8	Pass
11	2462	-5.85	8	Pass

##### 802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-9.22	8	Pass
6	2437	-3.67	8	Pass
11	2462	-9.48	8	Pass

##### 802.11n (HT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-12.86	3.01	-9.85	7.99	Pass
	6	2437	-6.04	3.01	-3.03	7.99	Pass
	11	2462	-7.57	3.01	-4.56	7.99	Pass
1	1	2412	-13.18	3.01	-10.17	7.99	Pass
	6	2437	-5.71	3.01	-2.70	7.99	Pass
	11	2462	-8.08	3.01	-5.07	7.99	Pass

**Note:** 1. Directional gain =  $3\text{dBi} + 10\log(2) = 6.01\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $8-(6.01-6) = 7.99\text{dBm}$ .

##### 802.11n (HT40)

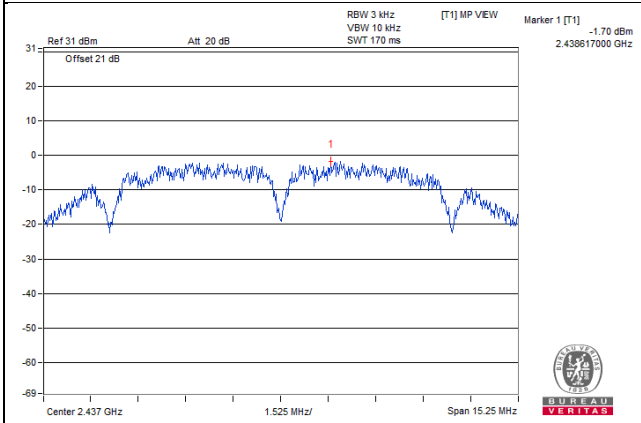
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-17.27	3.01	-14.26	7.99	Pass
	6	2437	-12.97	3.01	-9.96	7.99	Pass
	9	2452	-17.86	3.01	-14.85	7.99	Pass
1	3	2422	-18.68	3.01	-15.67	7.99	Pass
	6	2437	-13.51	3.01	-10.50	7.99	Pass
	9	2452	-19.31	3.01	-16.30	7.99	Pass

**Note:** 1. Directional gain =  $3\text{dBi} + 10\log(2) = 6.01\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $8-(6.01-6) = 7.99\text{dBm}$ .

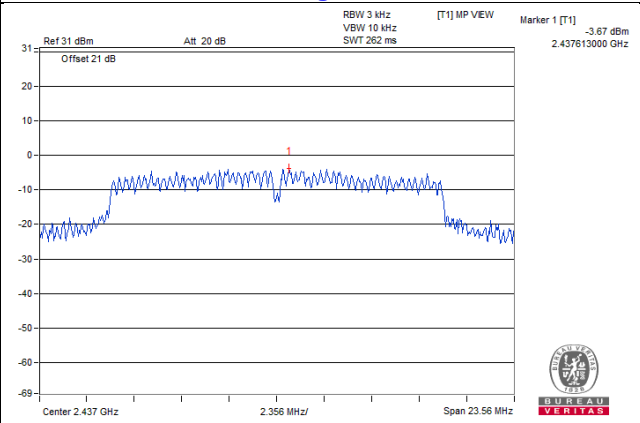


### Spectrum Plot of Worst Value

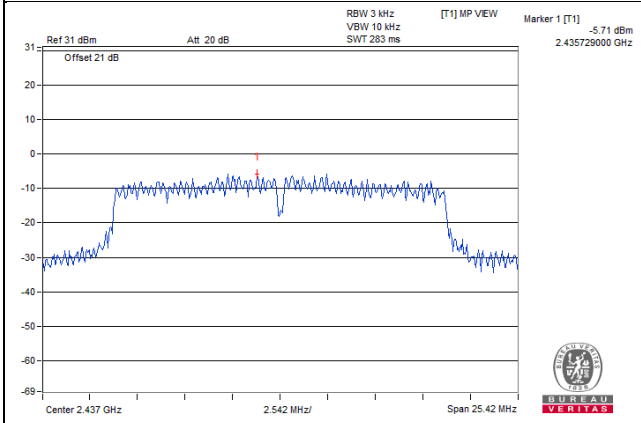
**802.11b / CH6**



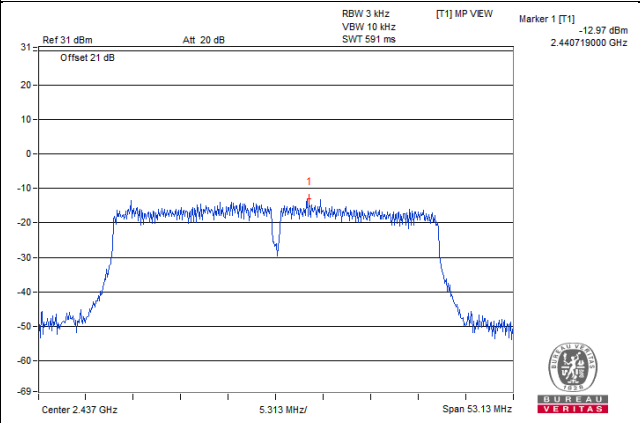
**802.11g / CH6**



**802.11n (HT20) / Chain 1 : CH6**



**802.11n (HT40) / Chain 0 : CH6**

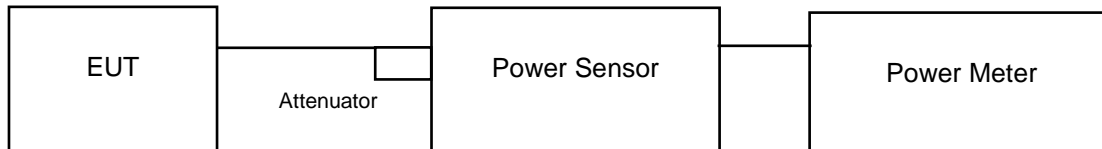


## 4.6 Conducted Out of Band Emission Measurement

### 4.6.1 Limits of Conducted Out of Band Emission Measurement

Below -20dB 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

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

#### MEASUREMENT PROCEDURE OOB

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

### 4.6.5 Deviation from Test Standard

No deviation.

### 4.6.6 EUT Operating Condition

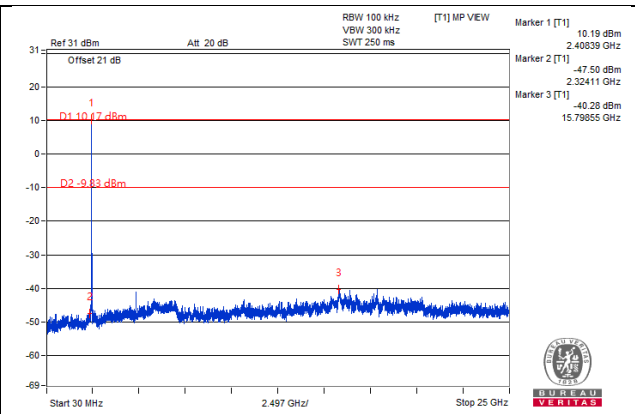
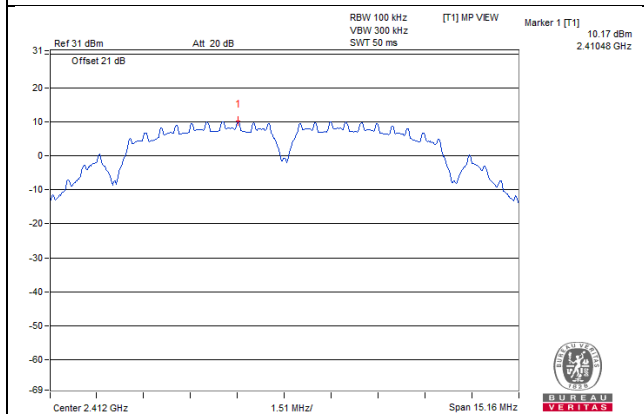
Same as Item 4.3.6.

### 4.6.7 Test Results

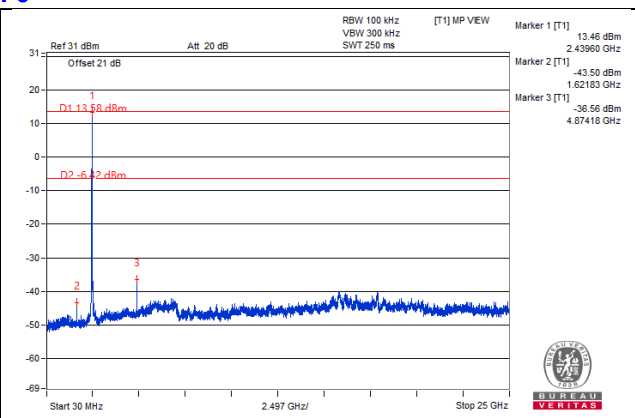
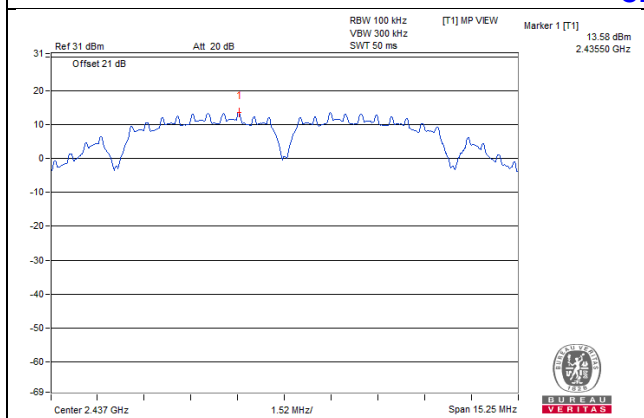
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

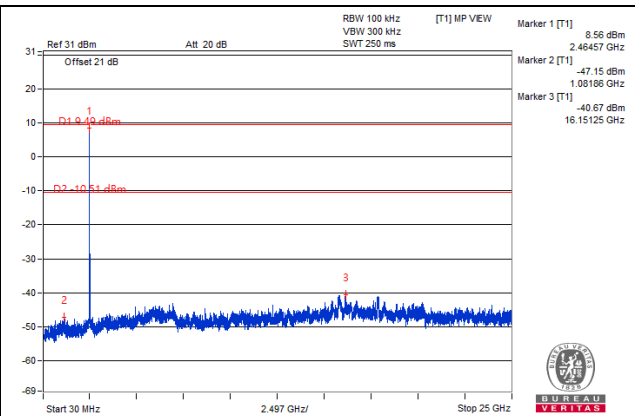
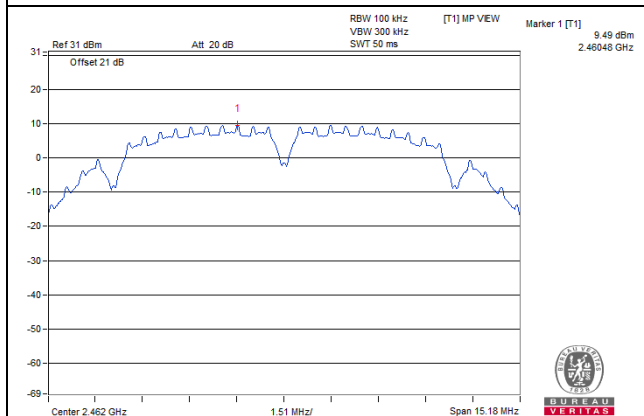
CH 1



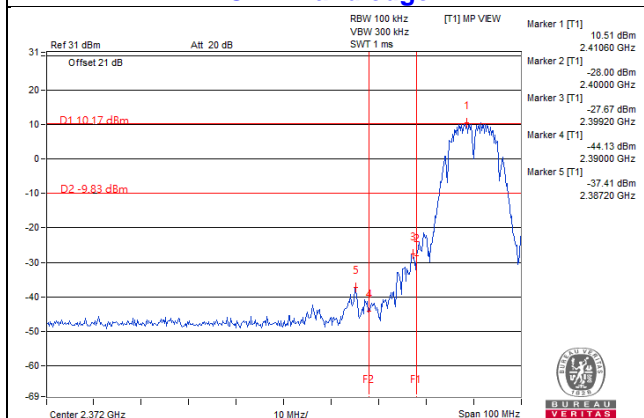
CH 6



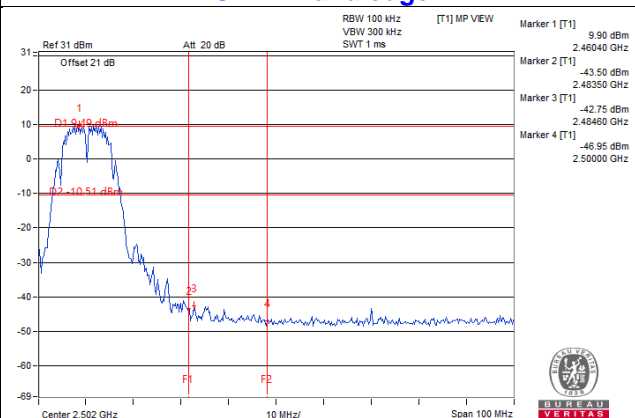
CH 11



CH 1 Band edge

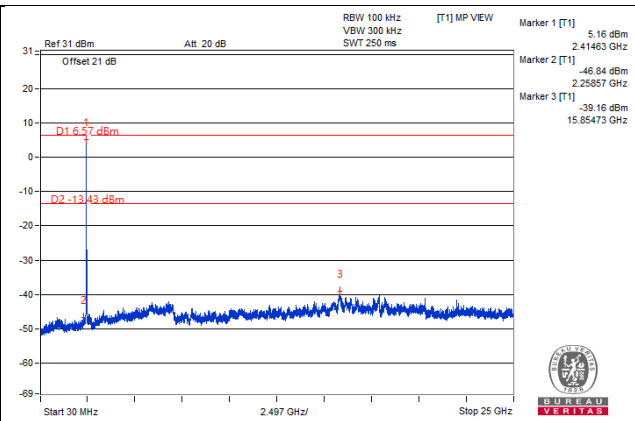
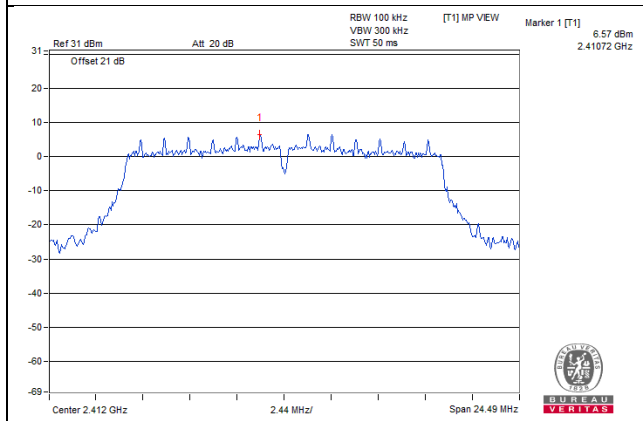


CH 11 Band edge

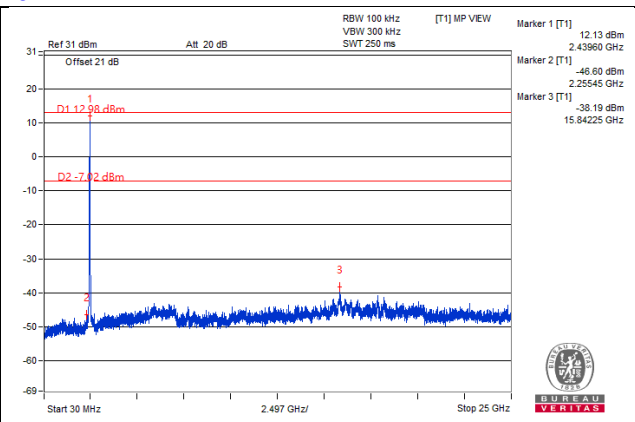
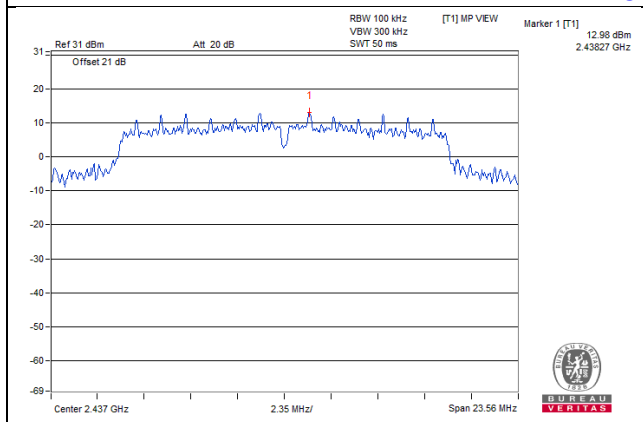


# 802.11g

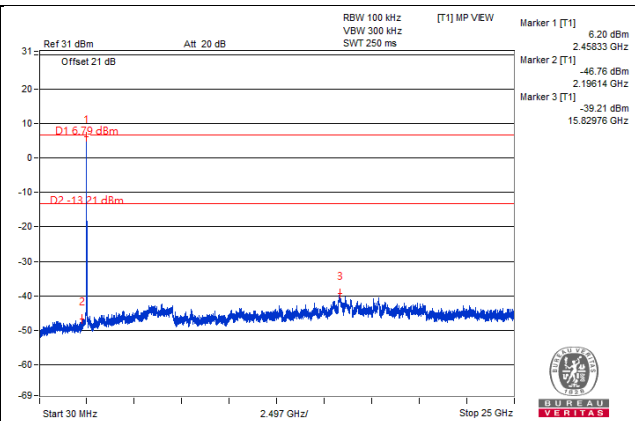
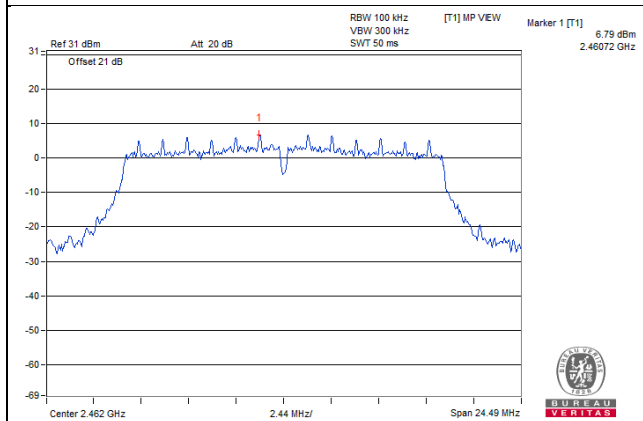
## CH 1



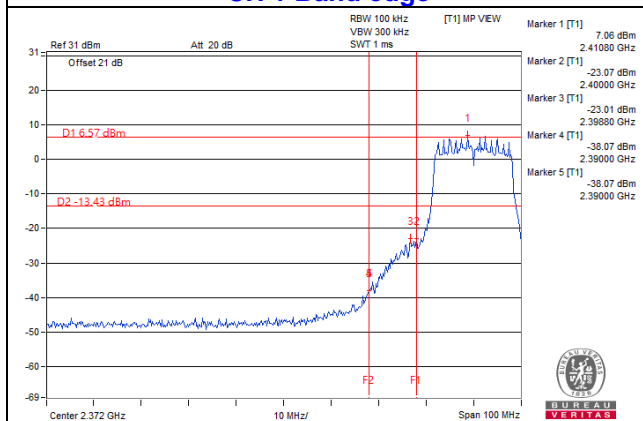
## CH 6



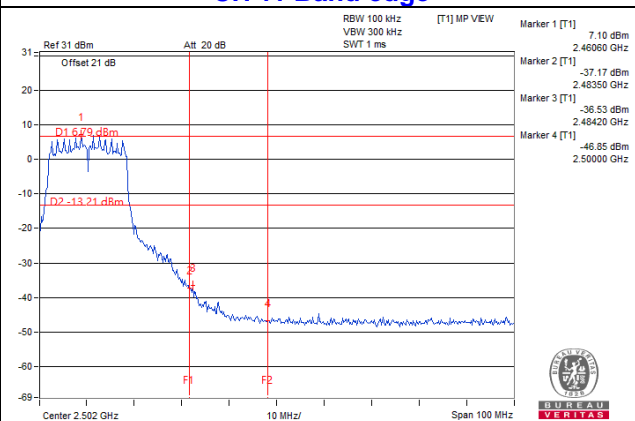
## CH 11



## CH 1 Band edge

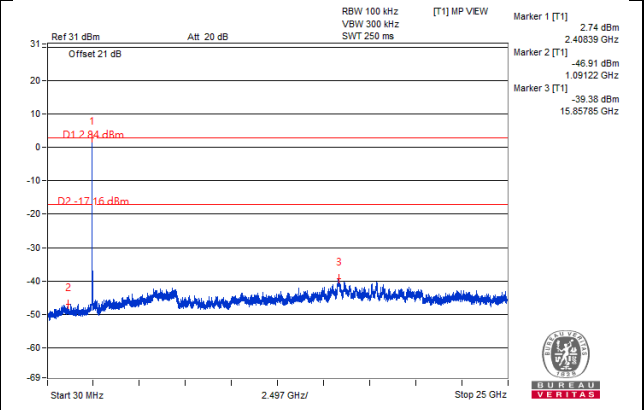
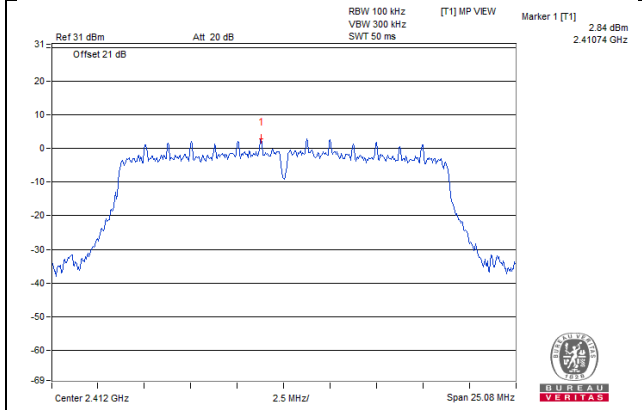


## CH 11 Band edge

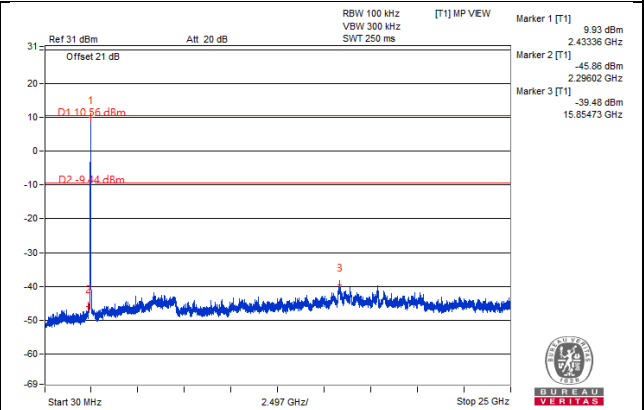
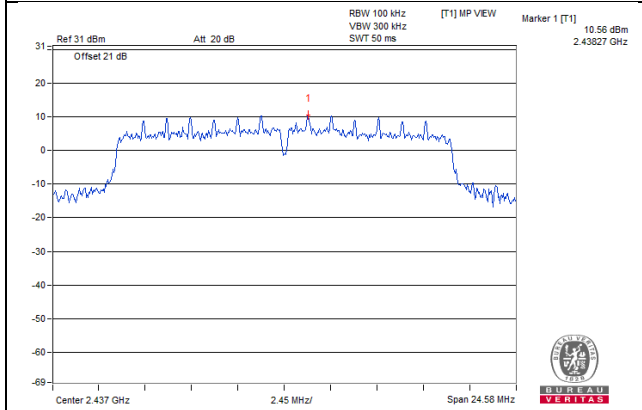


802.11n (HT20)  
CHAIN 0

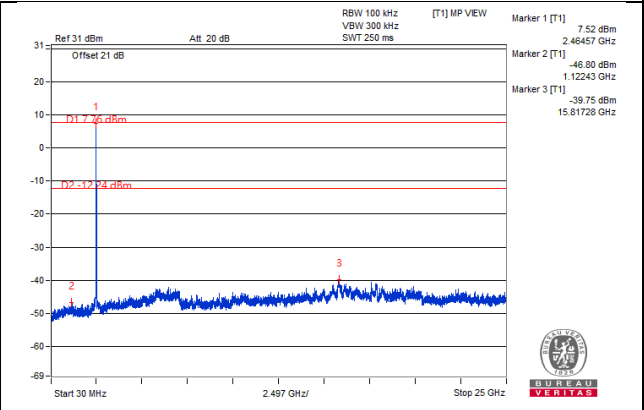
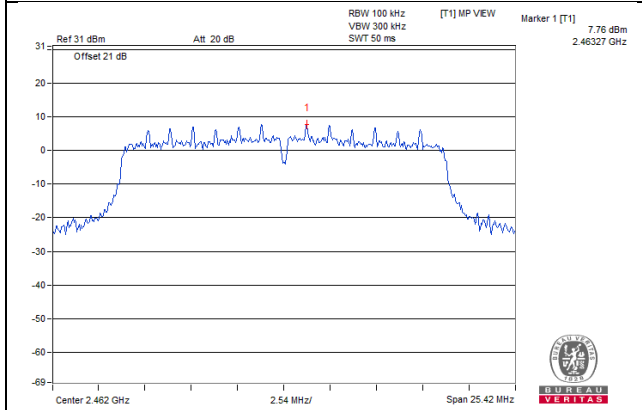
CH 1



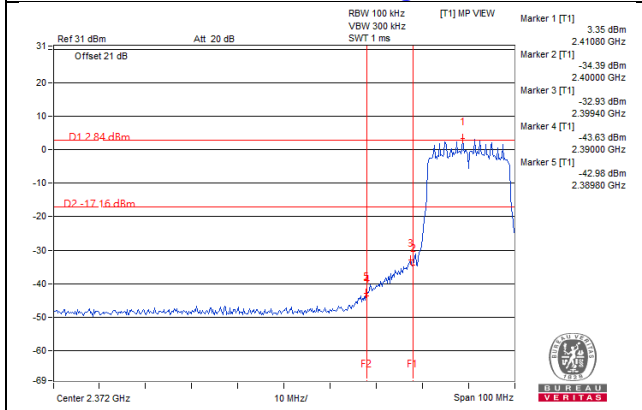
CH 6



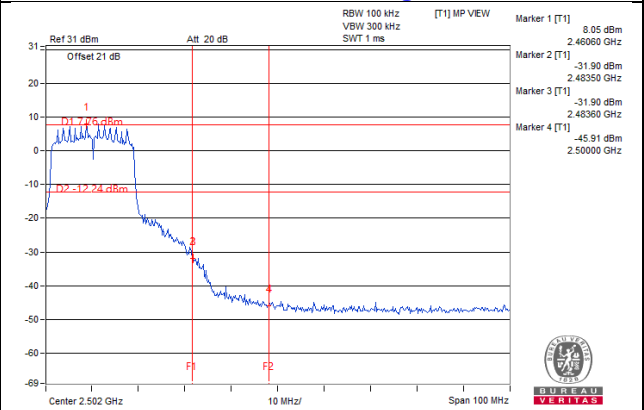
CH 11



CH 1 Band edge

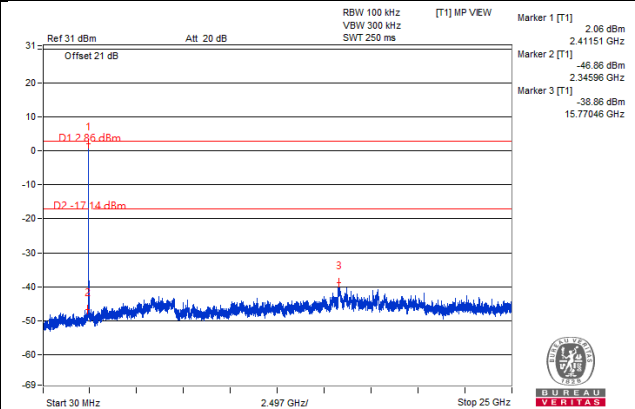
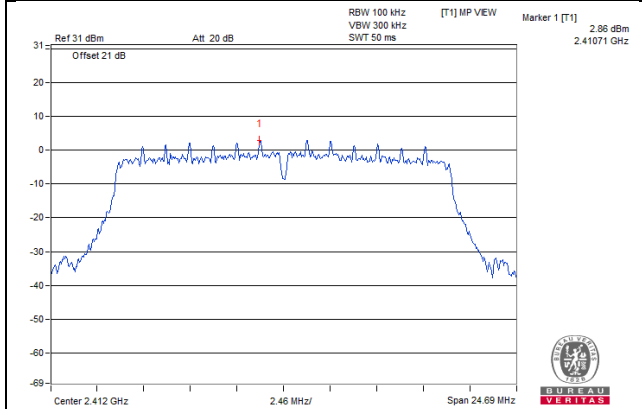


CH 11 Band edge

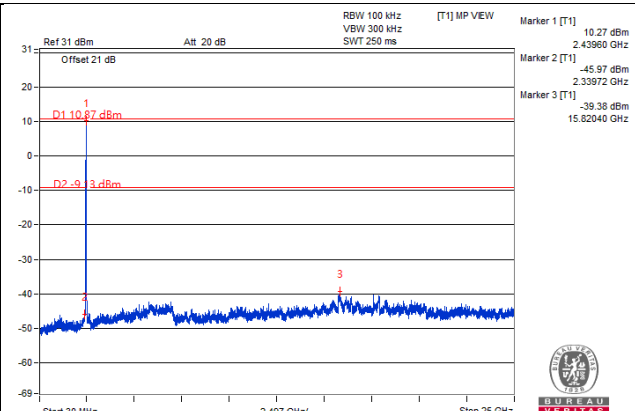
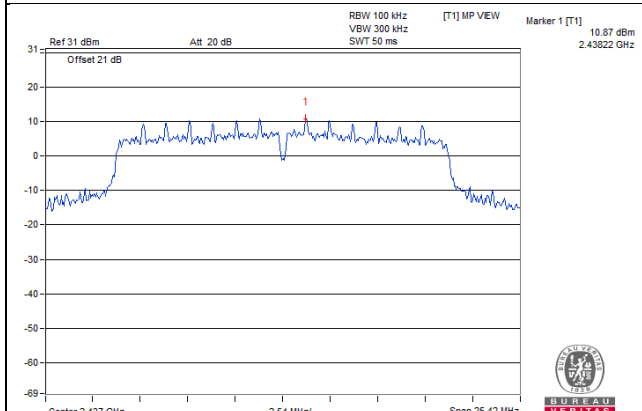


CHAIN 1

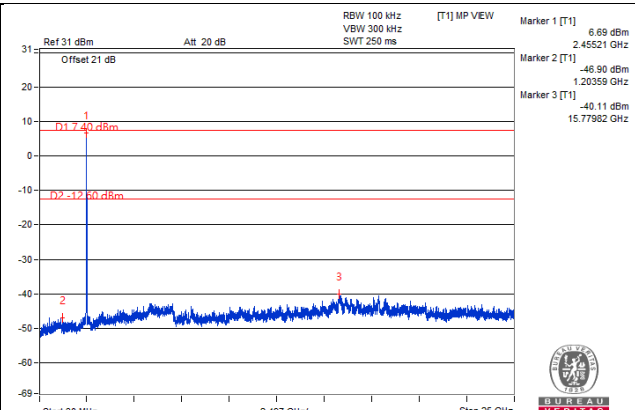
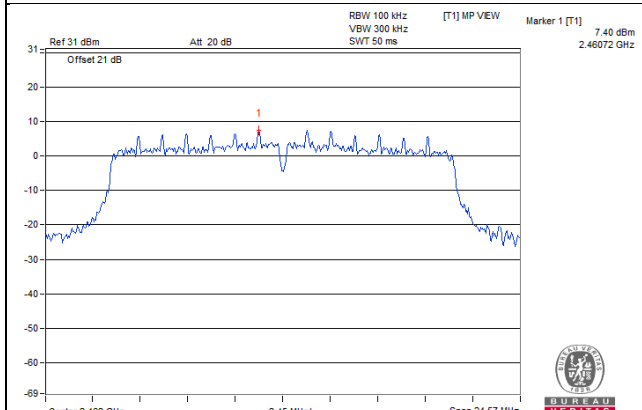
CH 1



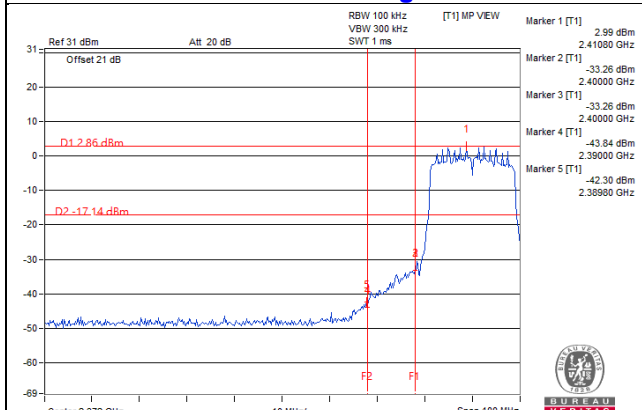
CH 6



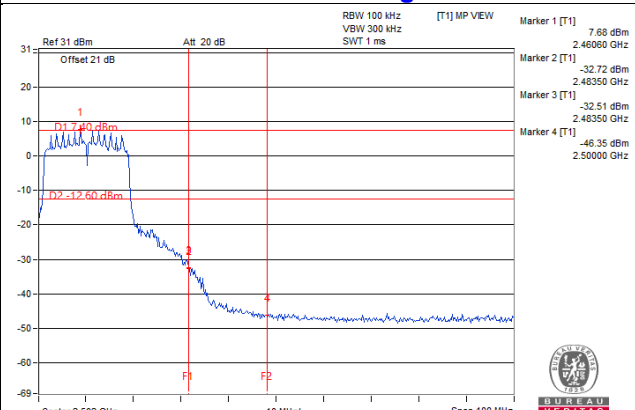
CH 11



CH 1 Band edge

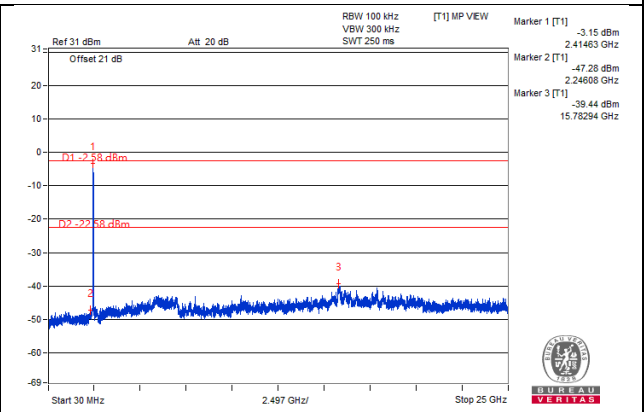
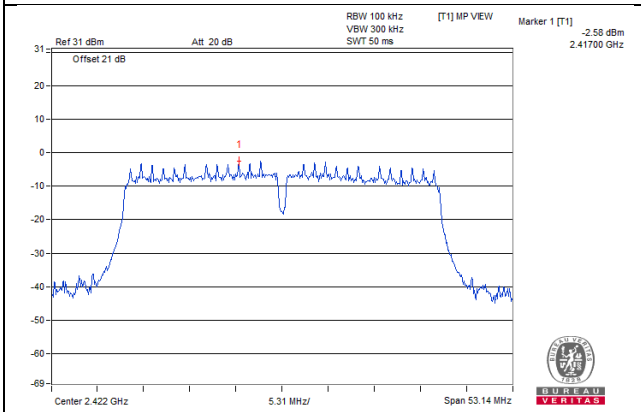


CH 11 Band edge

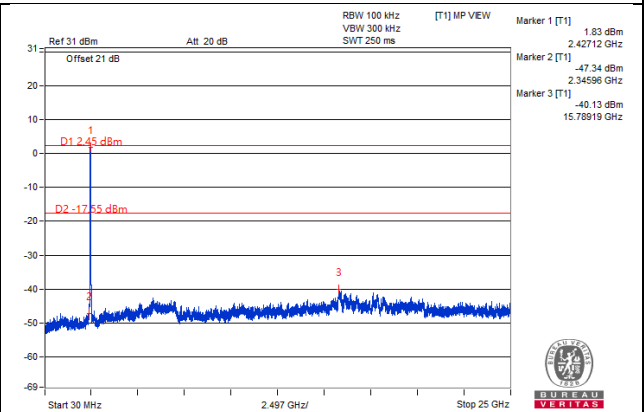
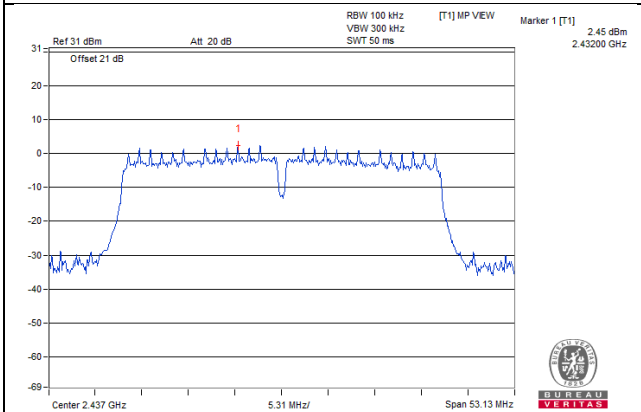


802.11n (HT40)  
Chain 0

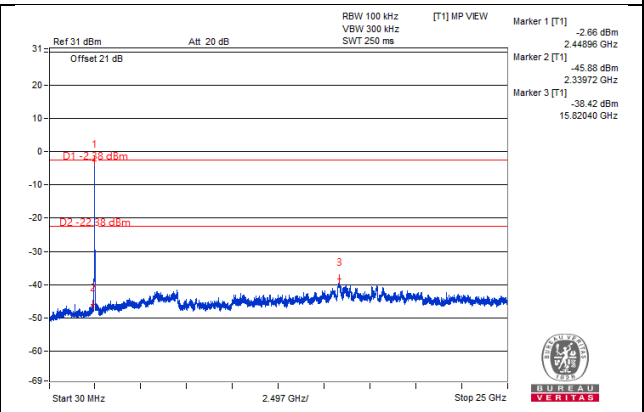
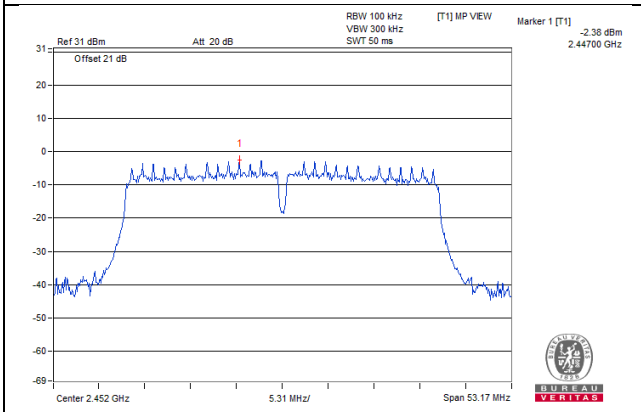
CH 3



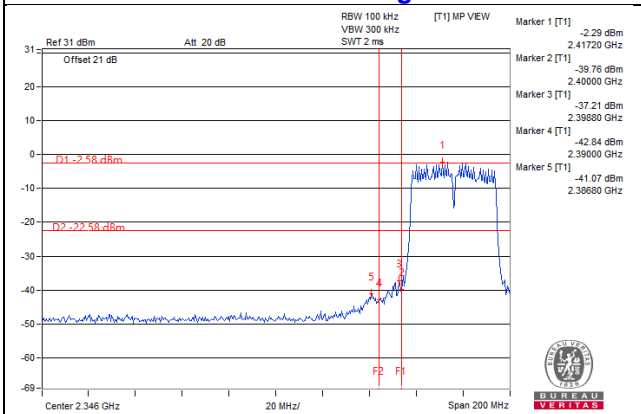
CH 6



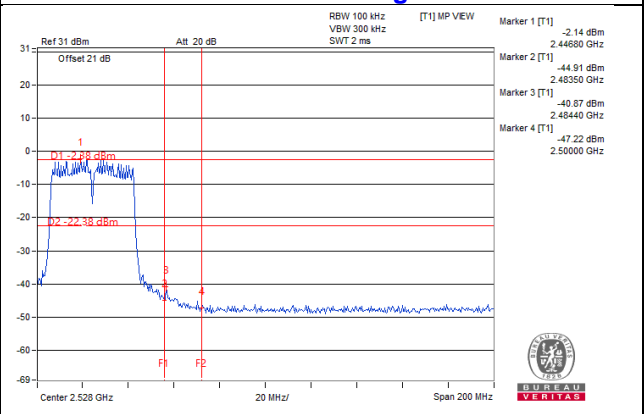
CH 9



CH 3 Band edge

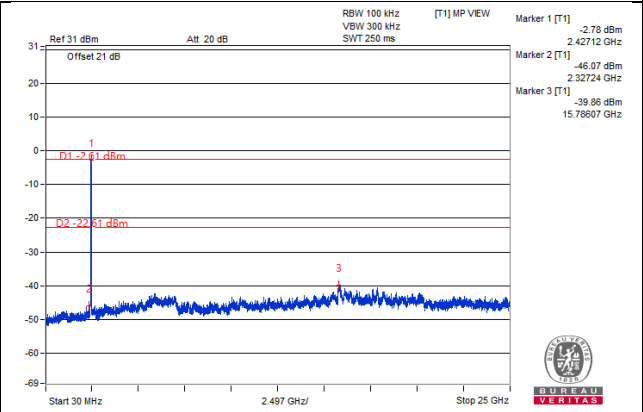
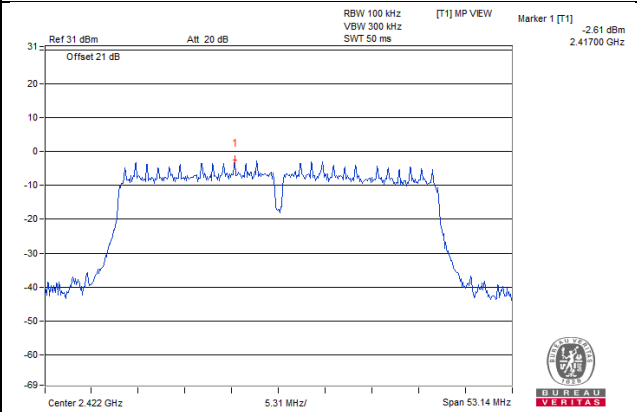


CH 9 Band edge

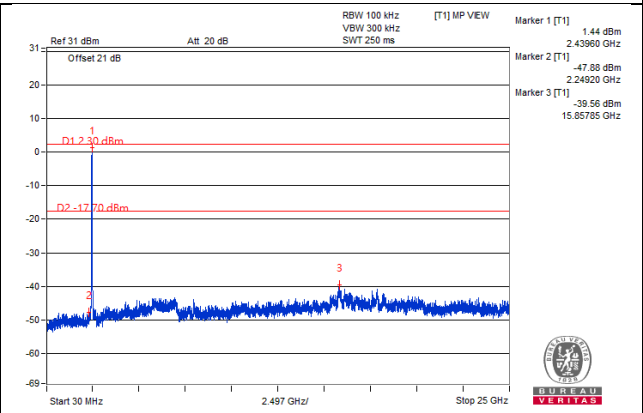
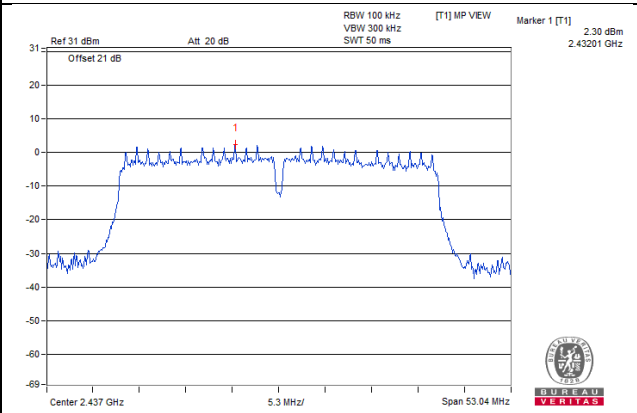


### Chain 1

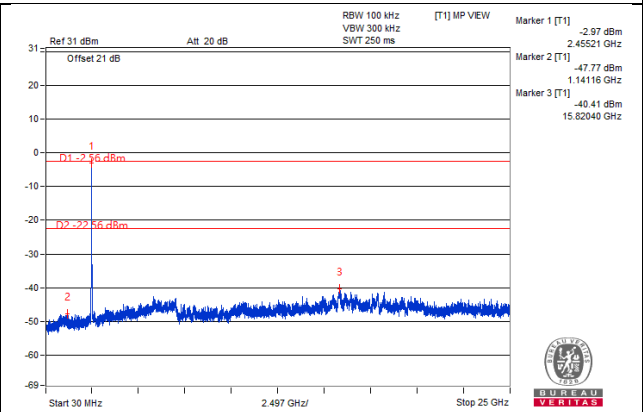
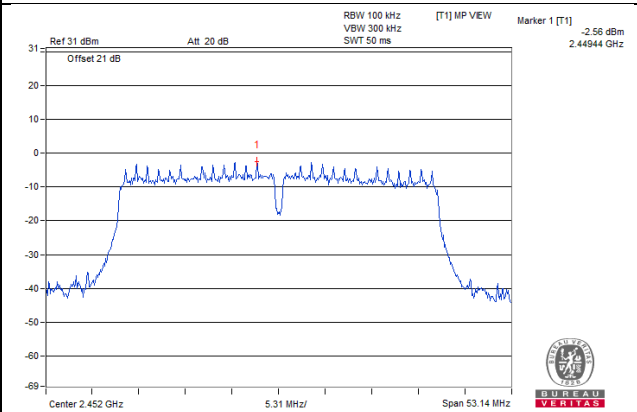
### CH 3



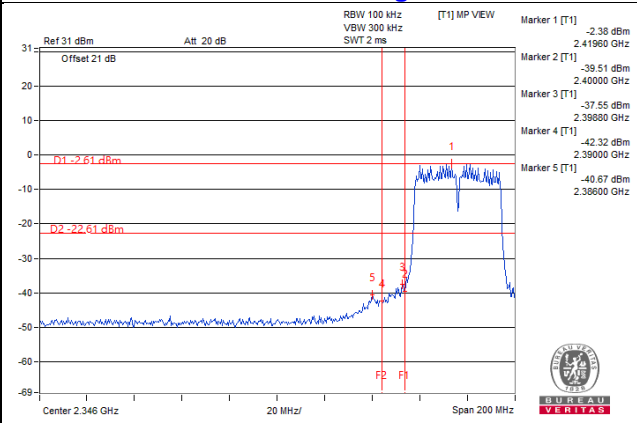
### CH 6



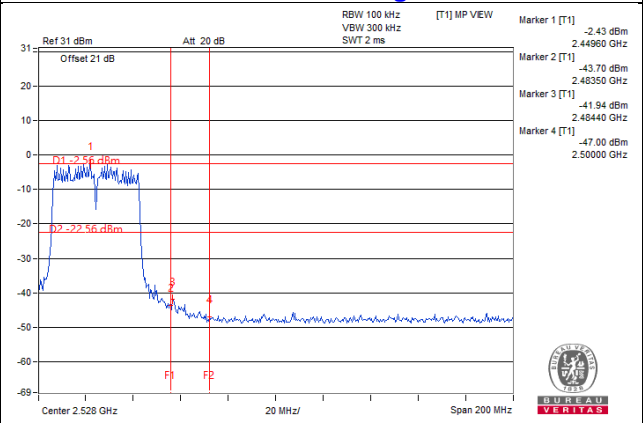
### CH 9



### 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:

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

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

--- END ---