APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
Guangzhou Dingchang Electronic Co., Ltd.

Android motherboard
Model No.: DC_RK3288_GB_v6.13B

FCC ID: 2AWH8-DCRK3288GB

Prepared for	:	Guangzhou Dingchang Electronic Co., Ltd.
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Report No.	:	ATE20200471
Date of Test	:	May 15-26, 2020
Date of Report	:	May 27, 2020

TABLE OF CONTENTS

Description Page

Test Report Certification
1. GENERAL INFORMATION 5
1.1. Description of Device (EUT) 5
1.2. Carrier Frequency of Channels 6
1.3. Accessory and Auxiliary Equipment 6
1.4. Description of Test Facility 7
1.5. Measurement Uncertainty 7
2. MEASURING DEVICE AND TEST EQUIPMENT 8
3. OPERATION OF EUT DURING TESTING 9
3.1. Operating Mode 9
3.2. Configuration and peripherals 9
4. TEST PROCEDURES AND RESULTS 10
5. POWER LINE CONDUCTED MEASUREMENT 11
5.1. Block Diagram of Test Setup 11
5.2. Power Line Conducted Emission Measurement Limits 12
5.3. Configuration of EUT on Measurement 12
5.4. Operating Condition of EUT 12
5.5. Test Procedure 12
5.6. Data Sample 13
5.7. Power Line Conducted Emission Measurement Results 13
6. DUTY CYCLE MEASUREMENT 16
6.1. Block Diagram of Test Setup 16
6.2. EUT Configuration on Measurement 16
6.3. Operating Condition of EUT 16
6.4. Test Procedure 16
6.5. Test Result 17
7. 6DB BANDWIDTH MEASUREMENT 20
7.1. Block Diagram of Test Setup 20
7.2. The Requirement For Section 15.247(a)(2) 20
7.3. EUT Configuration on Measurement 20
7.4. Operating Condition of EUT 20
7.5. Test Procedure 20
7.6. Test Result 21
8. 99% OCCUPIED BANDWIDTH 27
8.1. Block Diagram of Test Setup 27
8.2. The Requirement For ANSI C63.10: 2013 Section 6.9.3 27
8.3. EUT Configuration on Measurement 27
8.4. Operating Condition of EUT 27
8.5. Test Procedure 28
8.6. Measurement Result 29
9. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER 35
9.1. Block Diagram of Test Setup 35
9.2. The Requirement For Section 15.247(b)(3) 35

9.3. EUT Configuration on Measurement 35
9.4. Operating Condition of EUT 35
9.5. Test Procedure 35
9.6. Test Result 36
10. POWER SPECTRAL DENSITY MEASUREMENT 42
10.1. Block Diagram of Test Setup 42
10.2. The Requirement For Section 15.247(e) 42
10.3. EUT Configuration on Measurement 42
10.4. Operating Condition of EUT 42
10.5. Test Procedure 43
10.6. Test Result 44
11. BAND EDGE COMPLIANCE TEST 50
11.1. Block Diagram of Test Setup 50
11.2. The Requirement For Section 15.247(d) 50
11.3. EUT Configuration on Measurement 50
11.4. Operating Condition of EUT 50
11.5. Test Procedure 51
11.6. Test Result 52
12. RADIATED SPURIOUS EMISSION TEST 61
12.1. Block Diagram of Test Setup 61
12.2. The Limit For Section 15.247(d) 62
12.3. Restricted bands of operation 63
12.4. Configuration of EUT on Measurement 63
12.5. Operating Condition of EUT 64
12.6. Test Procedure 64
12.7. Data Sample 65
12.8. The Field Strength of Radiation Emission Measurement Results 65
13. ANTENNA REQUIREMENT 78
13.1. The Requirement 78
13.2. Antenna Construction 78

Test Report Certification

Applicant	:	Guangzhou Dingchang Electronic Co., Ltd.
Manufacturer	:	Guangzhou Dingchang Electronic Co., Ltd.
EUT	:	Android motherboard
Model No.	:	DC_RK3288_GB_v6.13B

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013

The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558074 v05r02 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test :	May 15-26, 2020
Date of Report :	May 27, 2020

Prepared by : (Bob Wang, Engineer)

Approved & Authorized Signer : (Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Android motherboard
Model Number	:	DC_RK3288_GB_v6.13B
Trade Mark	:	定昌
Frequency Range	:	802.11b/g/n(20MHz): 2412-2462MHz
Number of Channels	:	802.11b/g/n (20MHz):11
Antenna Gain	:	4dBi
Type of Antenna	:	Integral Antenna
Power Supply	:	DC 12V(Powered by adapter)
Data Rate	:	802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 150Mbps
Modulation Type	:	DSSS, OFDM
Applicant	:	Guangzhou Dingchang Electronic Co., Ltd.
Address	:	3 / F, building I, Kaida Industrial Park, xinshuikeng, Dalong street, Panyu District, Guangzhou City, Guangdong Province, China
Manufacturer	:	Guangzhou Dingchang Electronic Co., Ltd.
Address	:	3 / F, building I, Kaida Industrial Park, xinshuikeng, Dalong street, Panyu District, Guangzhou City, Guangdong Province, China
Date of sample receiver	:	May 6, 2020
Date of Test	:	May 15-26, 2020
Sample No.	:	2000427

1.2.Carrier Frequency of Channels

802.11b, 802.11g, 802.11n (20MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	---	---

1.3.Accessory and Auxiliary Equipment

Adapter	:	Model: SO-1202 Input: AC 120V; 60Hz Output: DC 12V; 2A
LCD Monitor (CE, FCC: DOC, VCCI)	:	Manufacturer: DELL M/N: 1704FPTt

1.4.Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISEDC) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd.
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.5.Measurement Uncertainty

Radiated emission expanded uncertainty (9kHz-30MHz)	:	U=2.66dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	:	U=4.28dB, k=2
Radiated emission expanded uncertainty (1G-18GHz)	:	U=4.98dB, k=2
Radiated emission expanded uncertainty (18G-26.5GHz)	:	U=5.06dB, k=2
Conduction Emission Expanded Uncertainty (Mains ports, 9kHz-30MHz)	:	U=2.72dB, k=2
Conduction Emission Expanded Uncertainty (Telecommunication ports, 150kHz-30MHz)	:	U=2.94dB, k=2
Power disturbance Expanded Uncertainty	:	U=2.92dB, k=2
Harmonic current expanded uncertainty	:	U=0.512%, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 04, 2020	1 Year
EMI Test Receiver	Rohde&Schwarz	ESR	101526/003	Jan. 04, 2020	1 Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 04, 2020	1 Year
Pre-Amplifier	Agilent	8447D	294A10619	Jan. 04, 2020	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 04, 2020	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 04, 2020	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 04, 2020	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 04, 2020	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 04, 2020	1 Year
Open Switch and Control Unit	Rohde&Schwarz	OSP120 + OSP-B157	101244 + 100866	Jan. 04, 2020	1 Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 04, 2020	1 Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 04, 2020	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375 /2510-60/11SS	N/A	Jan. 04, 2020	1 Year
Conducted Emission Test Software: ES-K1 V1.71					
Radiated Emission Test Software: EZ_EMC V1.1.4.2					

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: **1.802.11b Transmitting mode**
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

2.802.11g Transmitting mode
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

3.802.11n (20MHz) Transmitting mode
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

3.2.Configuration and peripherals

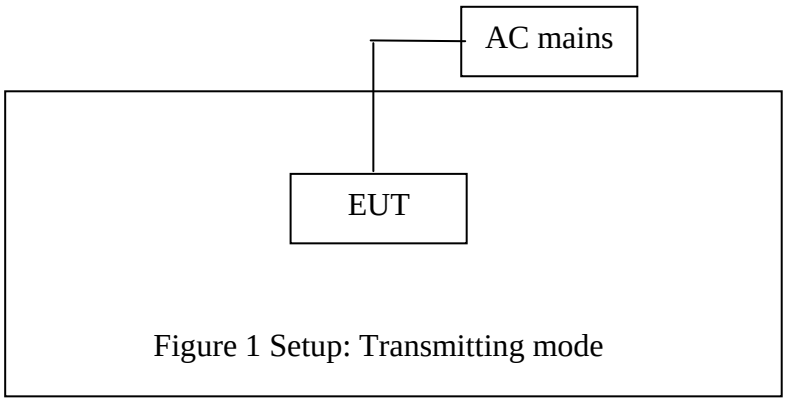


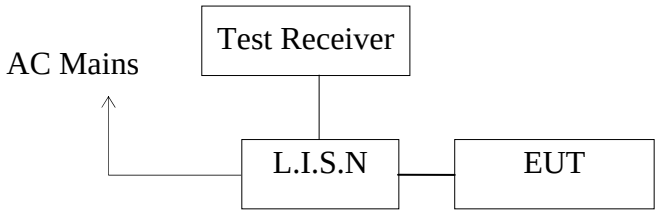
Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

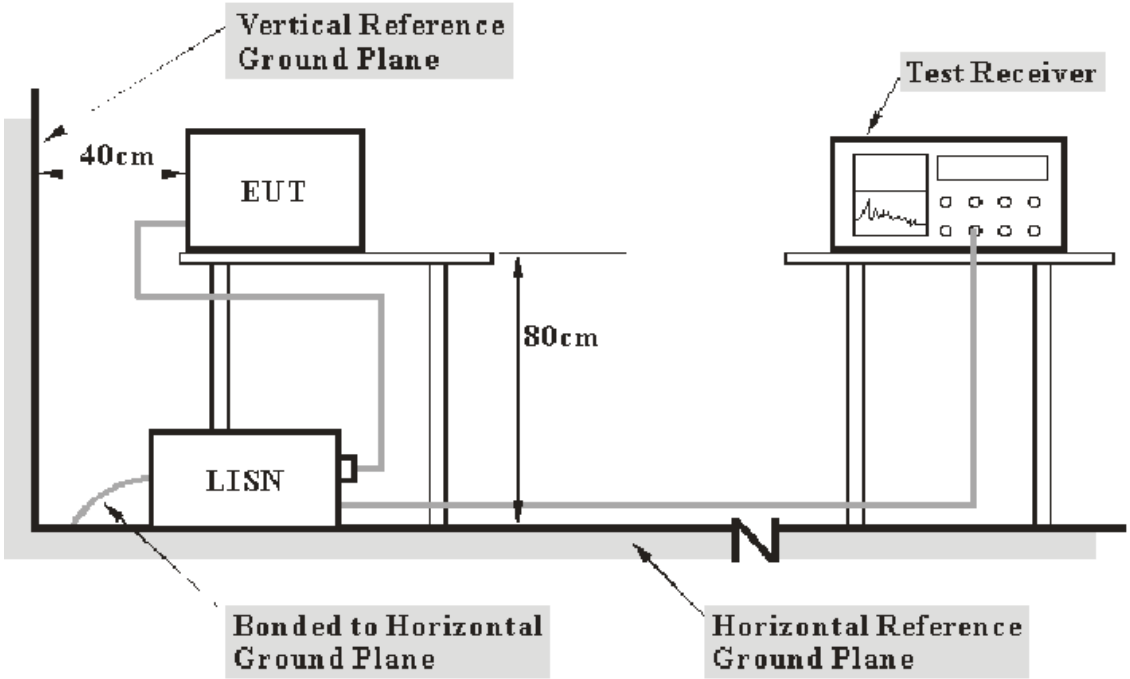
FCC Rules	Description of Test	Result
Section 15.207	Power Line Conducted Emission	Compliant
KDB558074 v05r02 D01 DTS Meas Guidance v04	Duty cycle	Compliant
Section 15.247(a)(2)	6dB Bandwidth Test	Compliant
ANSI C63.10: 2013 Section 6.9.3	99% occupied Bandwidth	Compliant
Section 15.247(b)(3)	Maximum Peak Output Power Test	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209	Radiated Spurious Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. POWER LINE CONDUCTED MEASUREMENT

5.1.Block Diagram of Test Setup



5.1.1. Test System Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

5.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

5.3.Configuration of EUT on Measurement

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in test mode and measure it.

5.5.Test Procedure

The EUT is put on the plane 0.8 m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

5.6.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.5	51.1	34.2	56.0	46.0	4.9	11.8	Pass

Frequency(MHz) = Emission frequency in MHz
Transducer value(dB) = Insertion loss of LISN + Cable Loss
Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value
Limit (dBμV) = Limit stated in standard
Margin = Limit (dBμV) - Level (dBμV)

Calculation Formula:
Margin = Limit (dBμV) - Level (dBμV)

5.7.Power Line Conducted Emission Measurement Results

PASS.
Test Lab: Shielding room

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.
Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

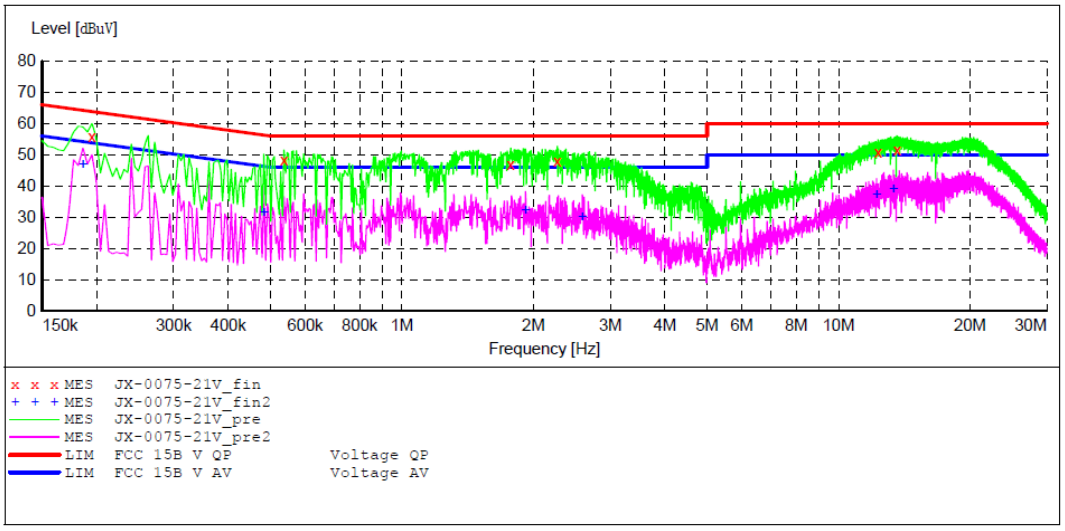
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  Android motherboard M/N:DC_RK3288_GB_v6.13B
Manufacturer:         Dingchang
Operating Condition:  WIFI Communication
Test Site:            1#Shielding Room
Operator:             Ben
Test Specification:   L  120V/60Hz
Comment:              Report NO.:ATE20190471
Start of Test:        2020-5-20 / 9:47:45
```

SCAN TABLE: "V 150K-30MHz fin"

```
  Short Description:            _SUB_STD_VTERM2 1.70
  Start      Stop       Step       Detector  Meas.     IF      Transducer
  Frequency  Frequency  Width                Time      Bandw.
  150.0 kHz  30.0 MHz   4.5 kHz    QuasiPeak 1.0 s     9 kHz   NSLK8126 2008
                                   Average
```



MEASUREMENT RESULT: "JX-0075-21V_fin"

2020-5-20 9:50

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.195000	55.70	10.8	64	8.1	QP	L1	GND
0.537000	48.40	11.0	56	7.6	QP	L1	GND
1.774500	46.90	11.2	56	9.1	QP	L1	GND
2.269500	48.20	11.3	56	7.8	QP	L1	GND
12.309000	51.00	11.6	60	9.0	QP	L1	GND
13.605000	51.50	11.6	60	8.5	QP	L1	GND

MEASUREMENT RESULT: "JX-0075-21V_fin2"

2020-5-20 9:50

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.186000	46.80	10.8	54	7.4	AV	L1	GND
0.483000	31.60	11.0	46	14.7	AV	L1	GND
1.918500	32.30	11.3	46	13.7	AV	L1	GND
2.589000	30.20	11.3	46	15.8	AV	L1	GND
12.214500	37.50	11.6	50	12.5	AV	L1	GND
13.344000	38.90	11.6	50	11.1	AV	L1	GND

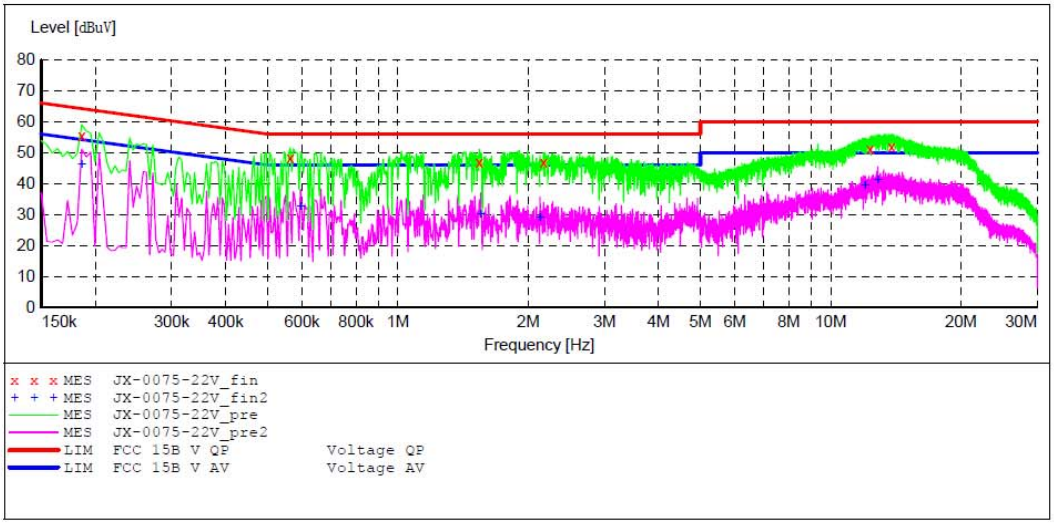
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  Android motherboard M/N:DC_RK3288_GB_v6.13B
Manufacturer:         Dingchang
Operating Condition:  WIFI Communication
Test Site:            1#Shielding Room
Operator:             Ben
Test Specification:   N  120V/60Hz
Comment:              Report NO.:ATE20190471
Start of Test:        2020-5-20 / 9:51:08
```

SCAN TABLE: "V 150K-30MHz fin"

```
  Short Description:            _SUB_STD_VTERM2 1.70
  Start      Stop       Step      Detector  Meas.     IF      Transducer
  Frequency  Frequency  Width               Time      Bandw.
  150.0 kHz  30.0 MHz   4.5 kHz   QuasiPeak 1.0 s     9 kHz   NSLK8126 2008
                                  Average
```



MEASUREMENT RESULT: "JX-0075-22V_fin"

2020-5-20 9:53

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.186000	55.50	10.8	64	8.7	QP	N	GND
0.564000	48.50	11.0	56	7.5	QP	N	GND
1.540500	46.90	11.2	56	9.1	QP	N	GND
2.170500	46.90	11.3	56	9.1	QP	N	GND
12.340500	51.40	11.6	60	8.6	QP	N	GND
13.830000	52.00	11.6	60	8.0	QP	N	GND

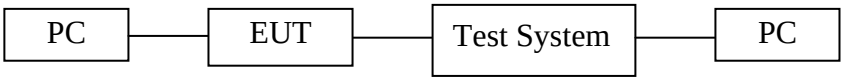
MEASUREMENT RESULT: "JX-0075-22V_fin2"

2020-5-20 9:53

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.186000	46.20	10.8	54	8.0	AV	N	GND
0.595500	32.50	11.0	46	13.5	AV	N	GND
1.554000	30.00	11.2	46	16.0	AV	N	GND
2.130000	28.90	11.3	46	17.1	AV	N	GND
12.007500	39.40	11.6	50	10.6	AV	N	GND
12.849000	41.20	11.6	50	8.8	AV	N	GND

6. DUTY CYCLE MEASUREMENT

6.1.Block Diagram of Test Setup



6.2.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.3.Operating Condition of EUT

6.3.1.Setup the EUT and simulator as shown as Section 6.1.

6.3.2.Turn on the power of all equipment.

6.3.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz frequency to transmit.

6.4.Test Procedure

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:
1. A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on- and off-times of the transmitted signal.
2. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on- and off-times of the transmitted signal
a. Set the center frequency of the instrument to the centre frequency of the transmission
b. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value(10MHz).
c. Set detector = Peak or average.
d. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100.
(For example, if VBW and/or RBW are limited to 3MHz, then the zero-span method of measuring duty cycle shall not be used if T≤16.7 microseconds.)

6.5.Test Result

Test Lab: Shielding room

The test was performed with 802.11b			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Middle	2437	96.31%	0.16

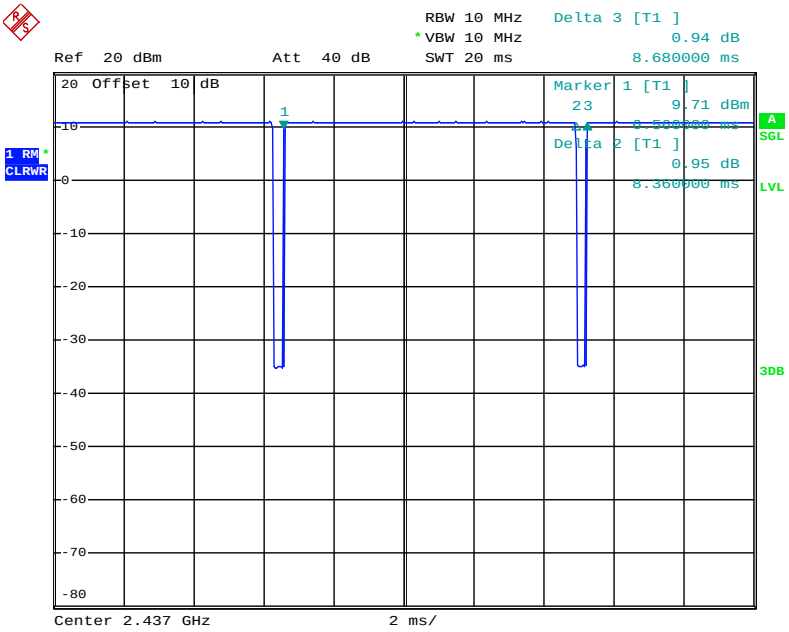
The test was performed with 802.11g			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Middle	2437	91.89%	0.37

The test was performed with 802.11n (Bandwidth: 20 MHz)			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Middle	2437	83.33%	0.79

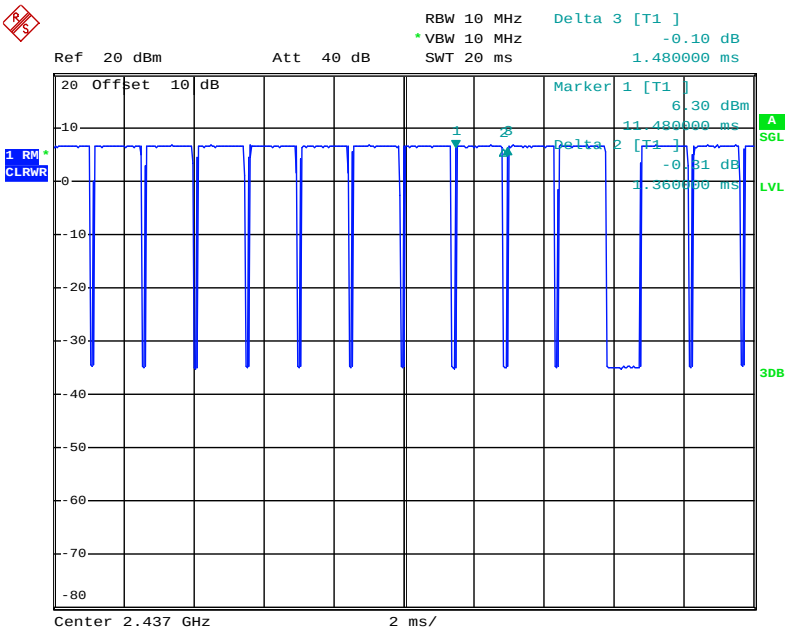
Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 11Mbps for 802.11b mode and 54Mbps for 802.11g mode and MCS7 for 802.11n(20MHz) mode.

The spectrum analyzer plots are attached as below.

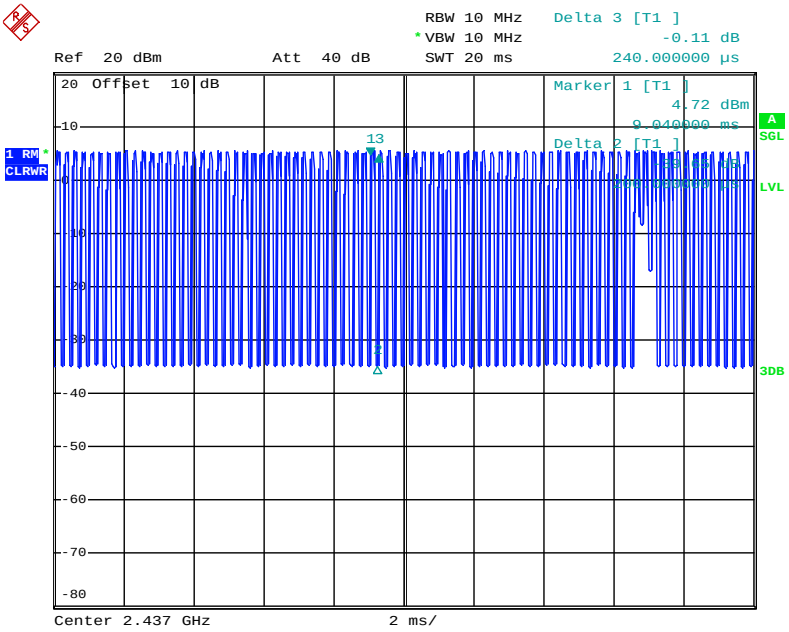
802.11b Channel Middle 2437MHz



802.11g Channel Middle 2437MHz

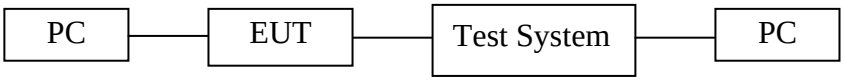


802.11n Channel Middle 2437MHz(20MHz)



7. 6DB BANDWIDTH MEASUREMENT

7.1.Block Diagram of Test Setup



7.2.The Requirement For Section 15.247(a)(2)

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

7.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.4.Operating Condition of EUT

7.4.1.Setup the EUT and simulator as shown as Section 7.1.

7.4.2.Turn on the power of all equipment.

7.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz frequency to transmit.

7.5.Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) ⩾ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.6.Test Result

Test Lab: Shielding room

The test was performed with 802.11b			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	10.08	> 0.5MHz
Middle	2437	10.08	> 0.5MHz
High	2462	10.08	> 0.5MHz

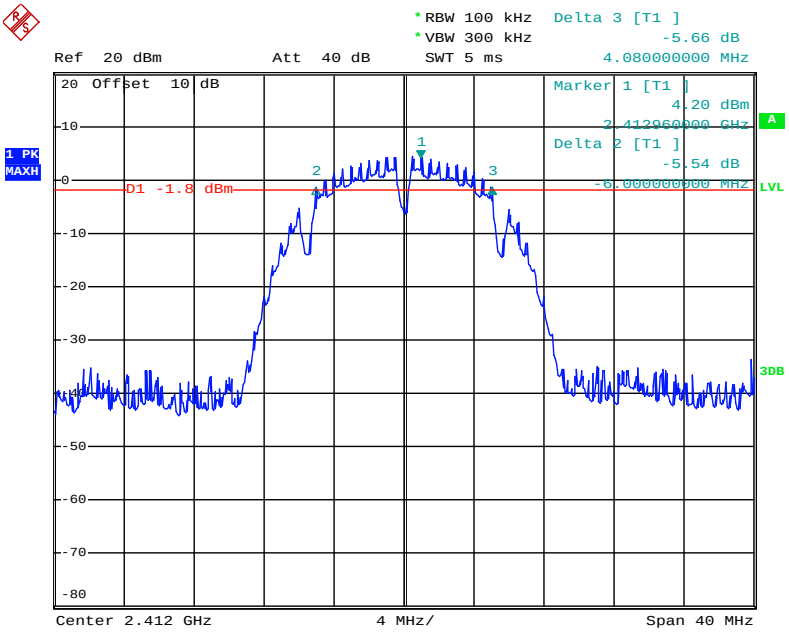
The test was performed with 802.11g			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	16.32	> 0.5MHz
Middle	2437	16.32	> 0.5MHz
High	2462	16.32	> 0.5MHz

The test was performed with 802.11n (Bandwidth: 20 MHz)			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	17.68	> 0.5MHz
Middle	2437	17.68	> 0.5MHz
High	2462	17.60	> 0.5MHz

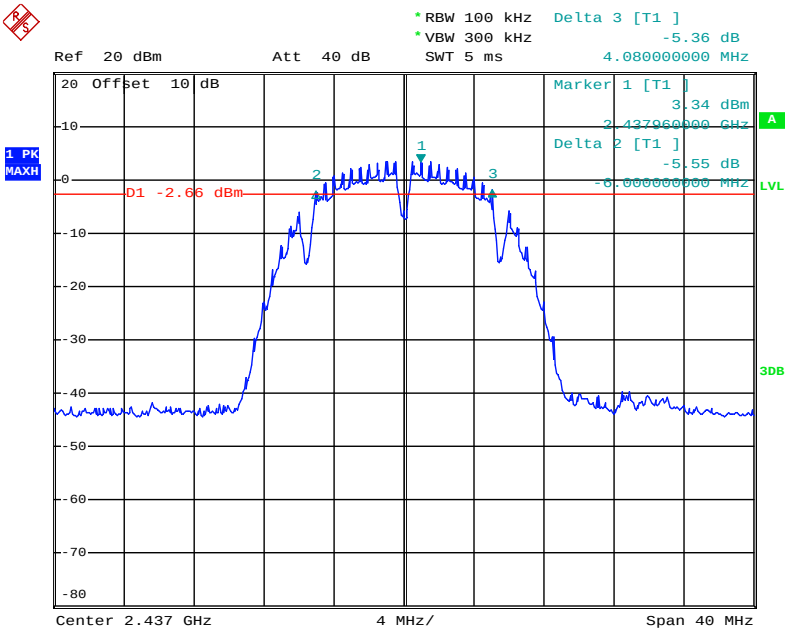
Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 11Mbps for 802.11b mode and 54Mbps for 802.11g mode and MCS7 for 802.11n(20MHz) mode.

The spectrum analyzer plots are attached as below.

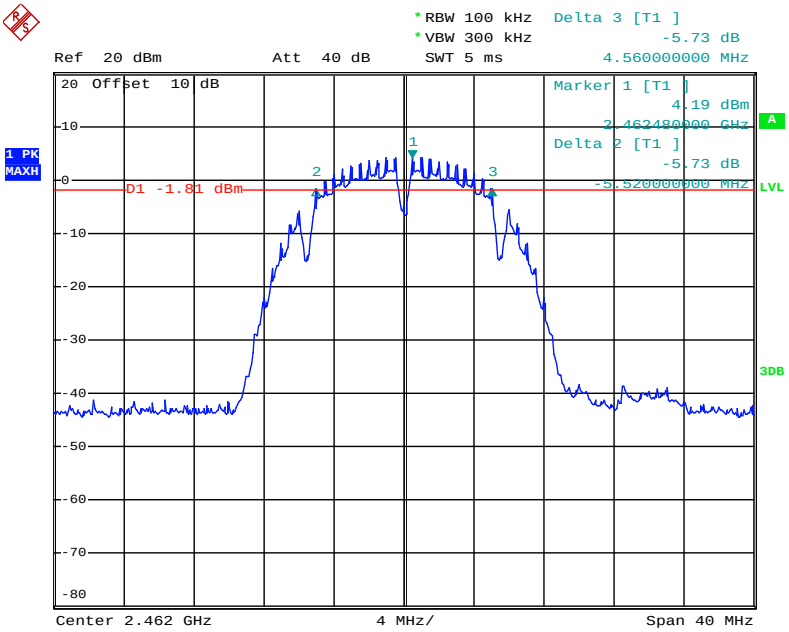
802.11b Channel Low 2412MHz



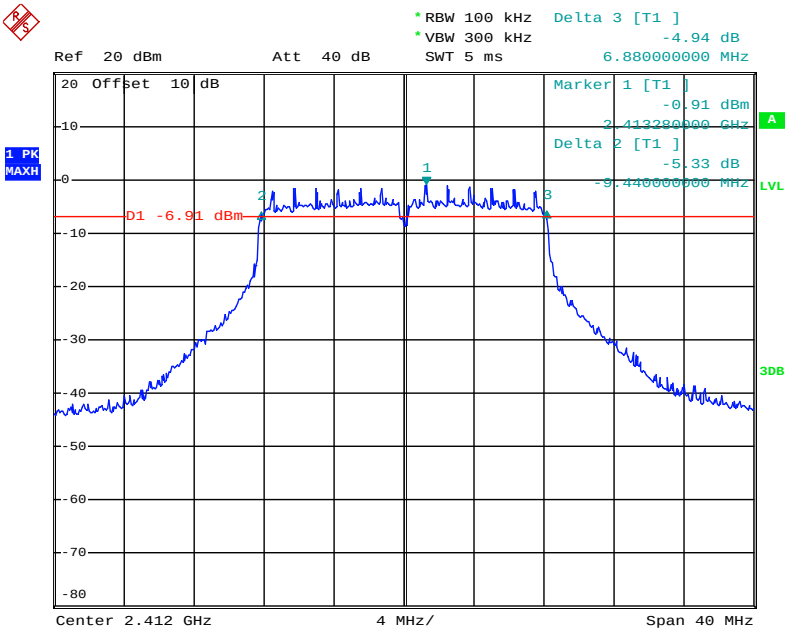
802.11b Channel Middle 2437MHz



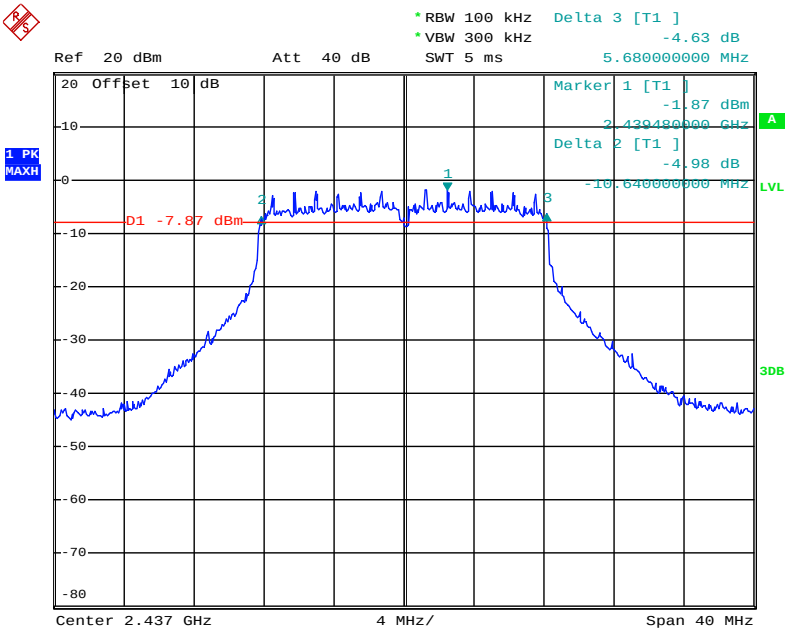
802.11b Channel High 2462MHz



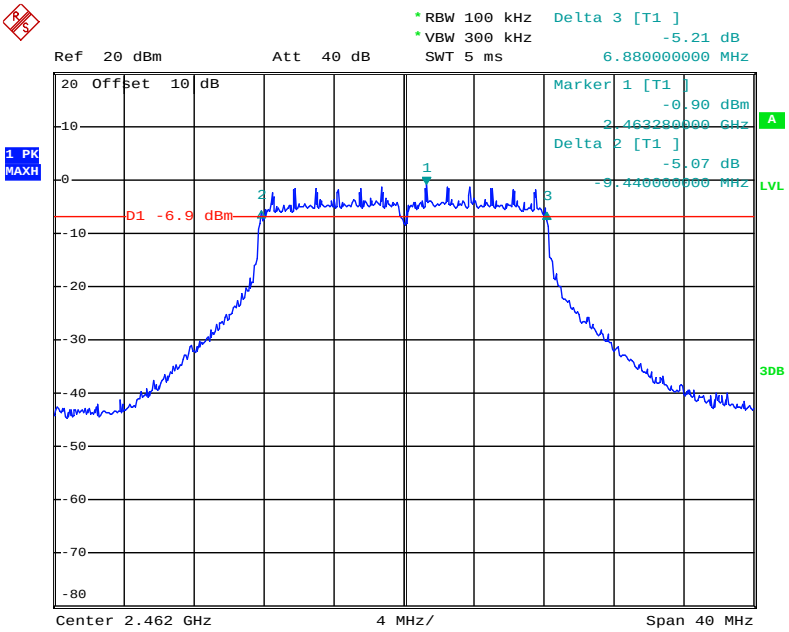
802.11g Channel Low 2412MHz



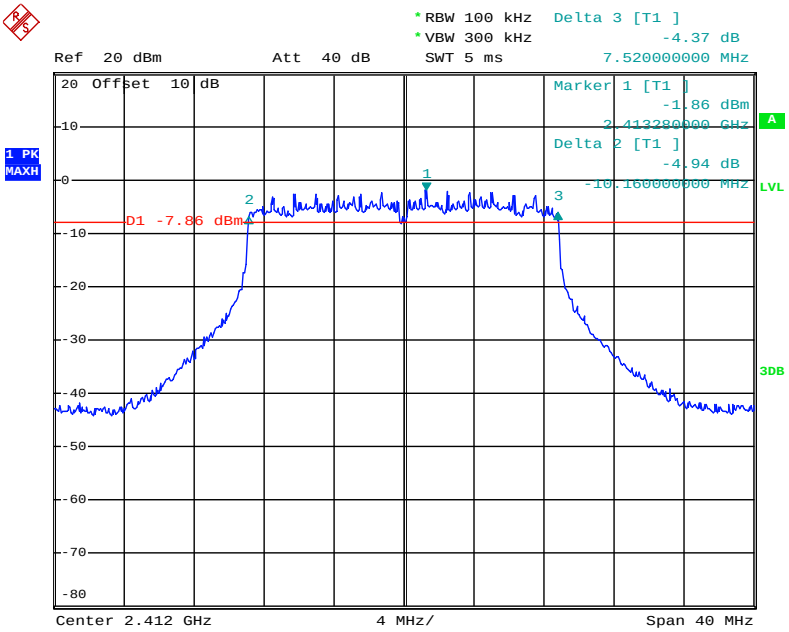
802.11g Channel Middle 2437MHz



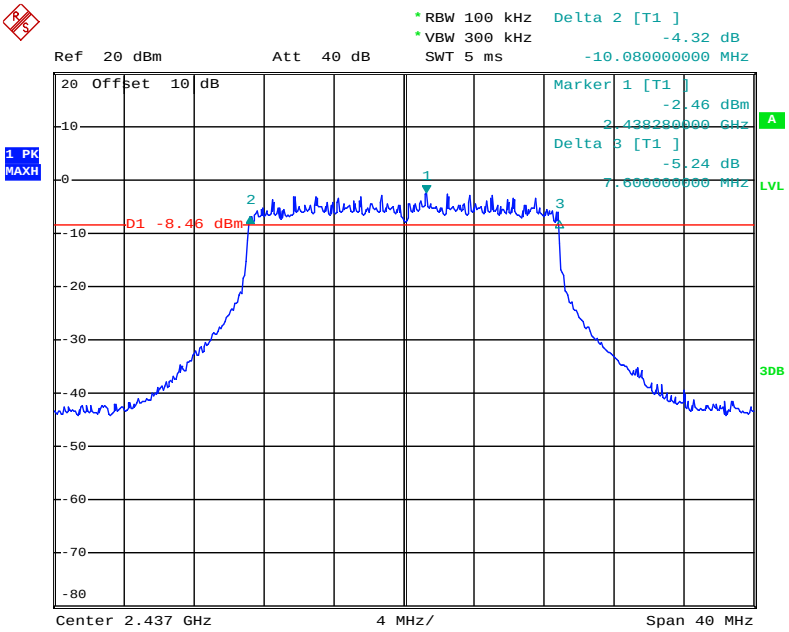
802.11g Channel High 2462MHz



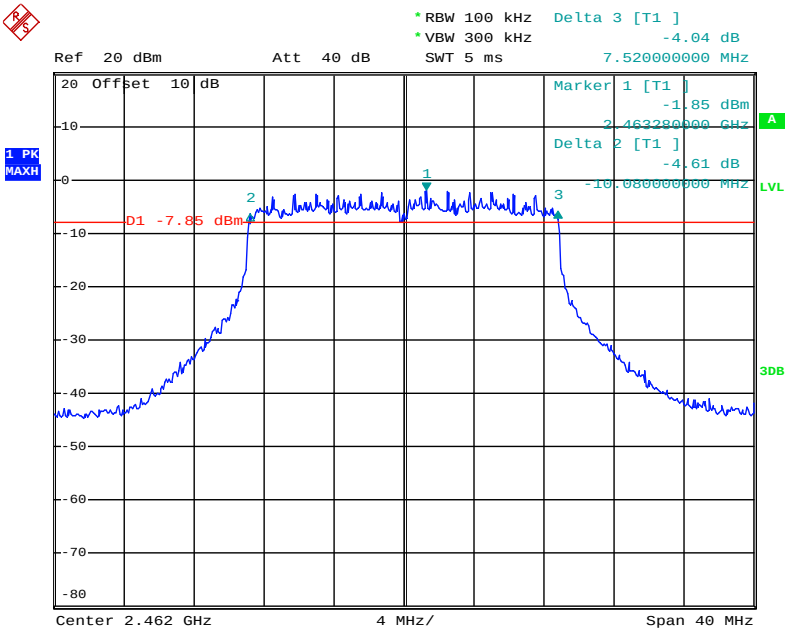
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz(20MHz)

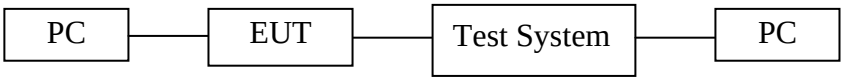


802.11n Channel High 2462MHz(20MHz)



8. 99% OCCUPIED BANDWIDTH

8.1.Block Diagram of Test Setup



8.2.The Requirement For ANSI C63.10: 2013 Section 6.9.3

ANSI C63.10: 2013 Section 6.9.3: The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

8.3.EUT Configuration on Measurement

The following equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz frequency to transmit.

8.5.Test Procedure

8.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable. The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

8.5.2.The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

8.5.3.A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

8.5.4.Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

8.6.Measurement Result

Test Lab: Shielding room

The test was performed with 802.11b		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
Low	2412	12.88
Middle	2437	12.96
High	2462	12.88

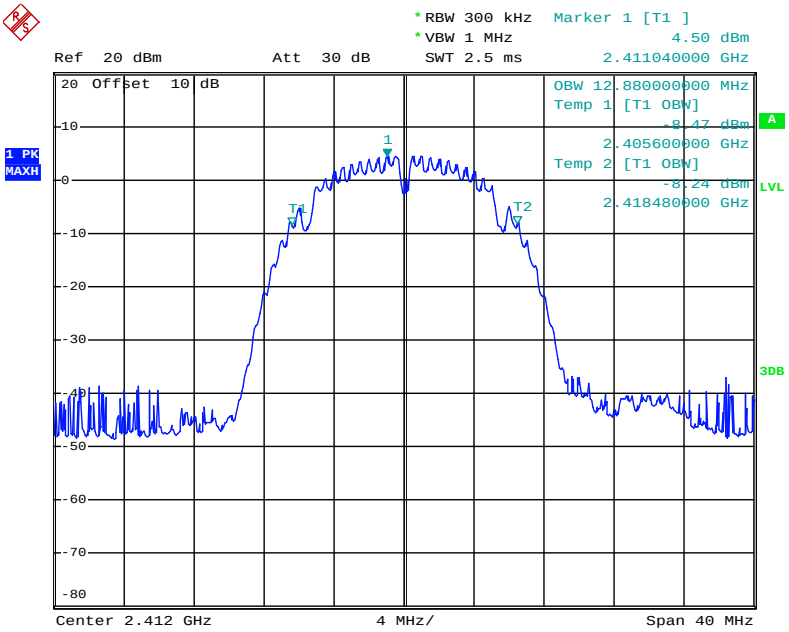
The test was performed with 802.11g		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
Low	2412	17.28
Middle	2437	17.20
High	2462	17.20

The test was performed with 802.11n (Bandwidth: 20 MHz)		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
Low	2412	18.00
Middle	2437	18.00
High	2462	18.00

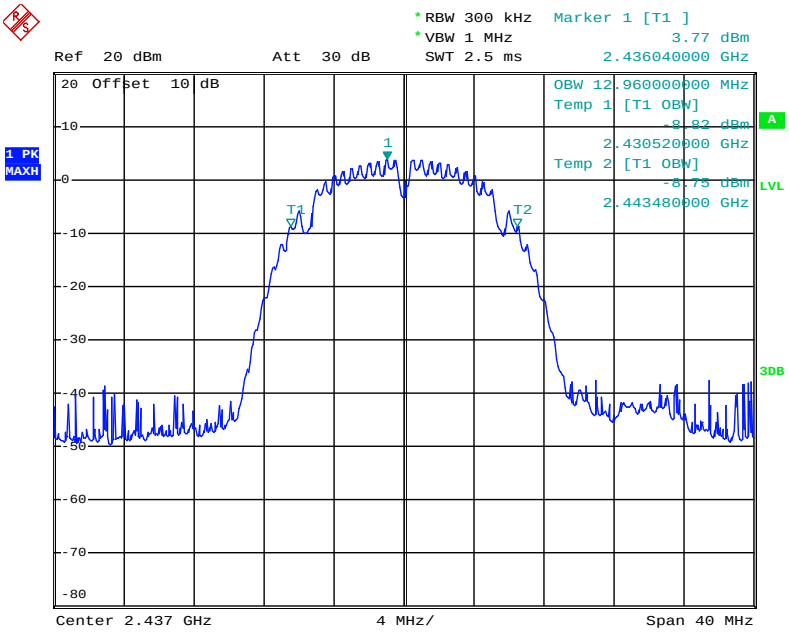
Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 11Mbps for 802.11b mode and 54Mbps for 802.11g mode and MCS7 for 802.11n(20MHz) mode.

The spectrum analyzer plots are attached as below.

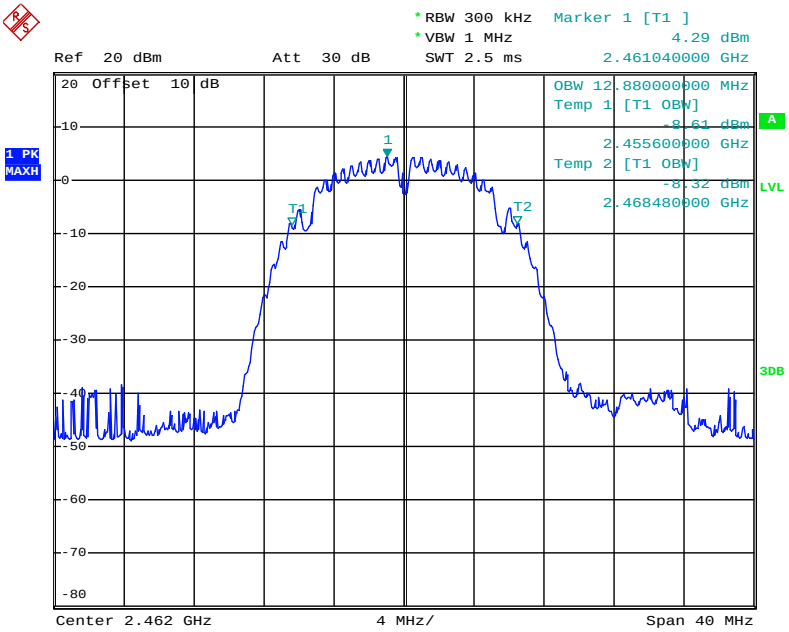
802.11b Channel Low 2412MHz



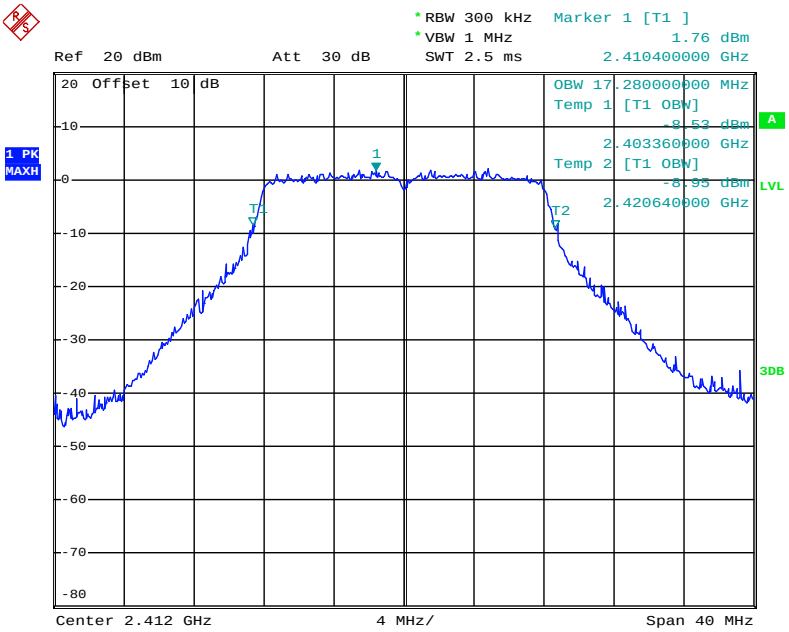
802.11b Channel Middle 2437MHz



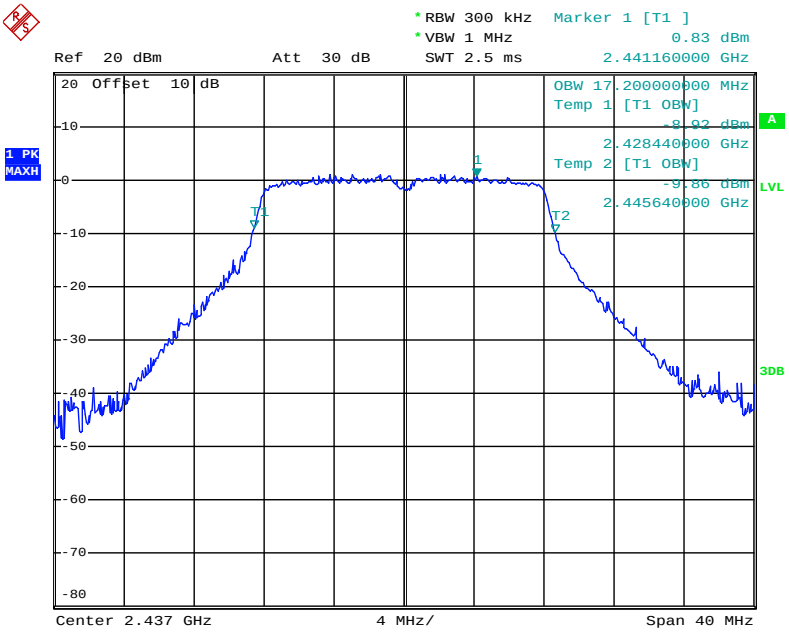
802.11b Channel High 2462MHz



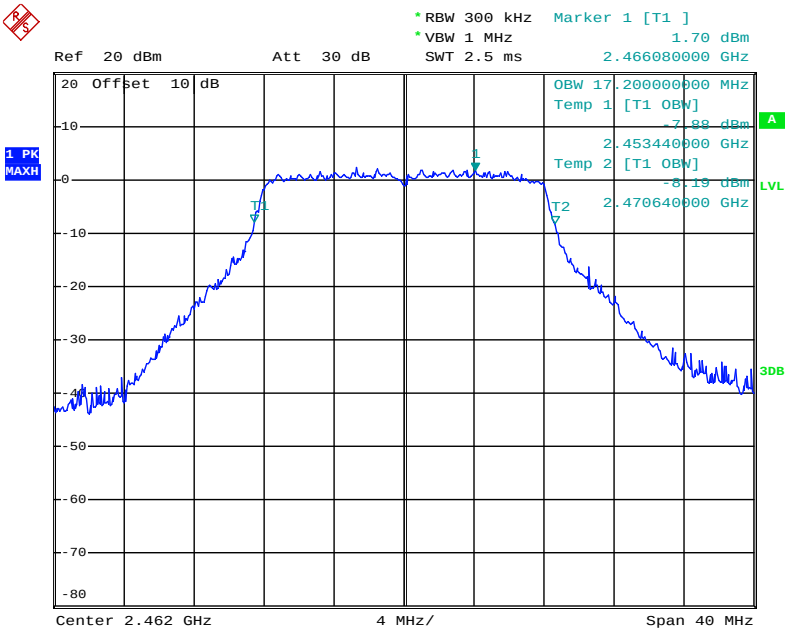
802.11g Channel Low 2412MHz



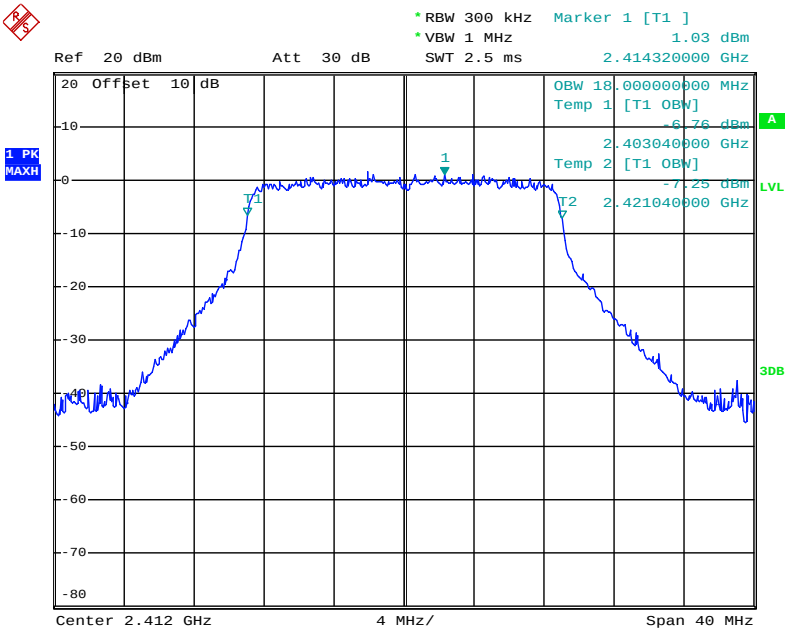
802.11g Channel Middle 2437MHz



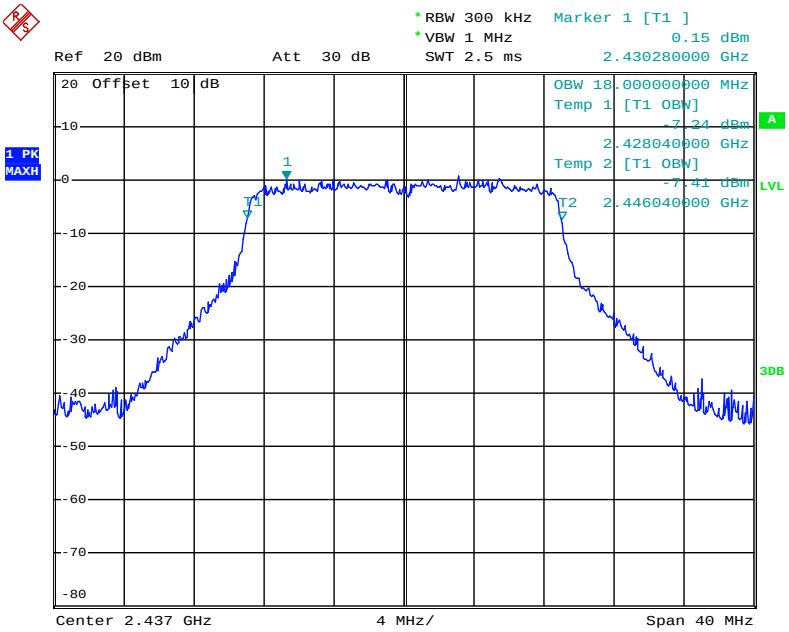
802.11g Channel High 2462MHz



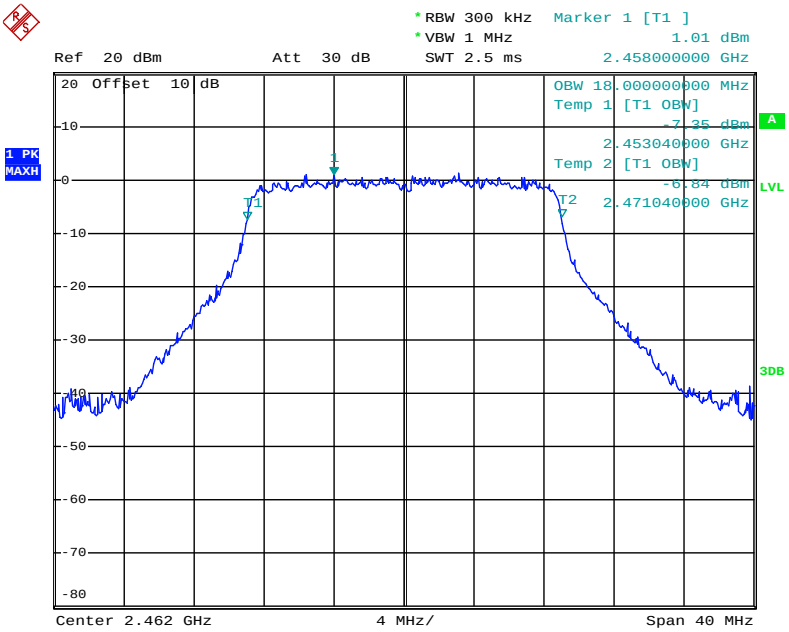
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz(20MHz)

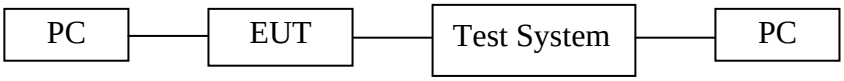


802.11n Channel High 2462MHz(20MHz)



9. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

9.1.Block Diagram of Test Setup



9.2.The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

9.3.EUT Configuration on Measurement

The equipment is installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4.Operating Condition of EUT

9.4.1.Setup the EUT and simulator as shown as Section 9.1.

9.4.2.Turn on the power of all equipment.

9.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz frequency to transmit.

9.5.Test Procedure

9.5.1.The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558074 v05r02 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements.

9.5.2.The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.3.Set RBW = 1-5% of the OBW, not to exceed 1 MHz, VBW ⩾ 3 x RBW, Sweep time = auto, Set span to at least 1.5 times the OBW, Detector = RMS.

9.5.4.Measurement the Maximum conducted (average) output power.

9.6.Test Result

Test Lab: Shielding room

Final power= Ave output power+10log(1/ duty cycle)

The test was performed with 802.11b						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (W)	Limits dBm / W
Low	2412	15.81	0.16	15.97	0.0395	30 dBm / 1 W
Middle	2437	15.17	0.16	15.33	0.0341	30 dBm / 1 W
High	2462	15.72	0.16	15.88	0.0387	30 dBm / 1 W

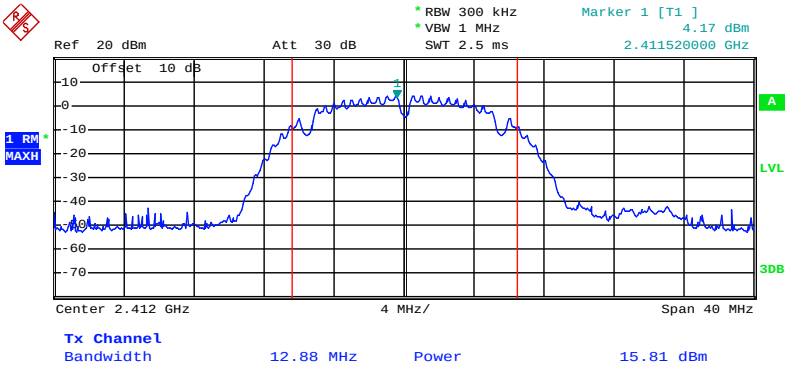
The test was performed with 802.11g						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (W)	Limits dBm / W
Low	2412	14.00	0.37	14.37	0.0274	30 dBm / 1 W
Middle	2437	13.38	0.37	13.75	0.0237	30 dBm / 1 W
High	2462	13.83	0.37	14.20	0.0263	30 dBm / 1 W

The test was performed with 802.11n (20MHz)						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (W)	Limits dBm / W
Low	2412	13.58	0.79	14.37	0.0274	30 dBm / 1 W
Middle	2437	12.80	0.79	13.59	0.0228	30 dBm / 1 W
High	2462	13.43	0.79	14.22	0.0264	30 dBm / 1 W

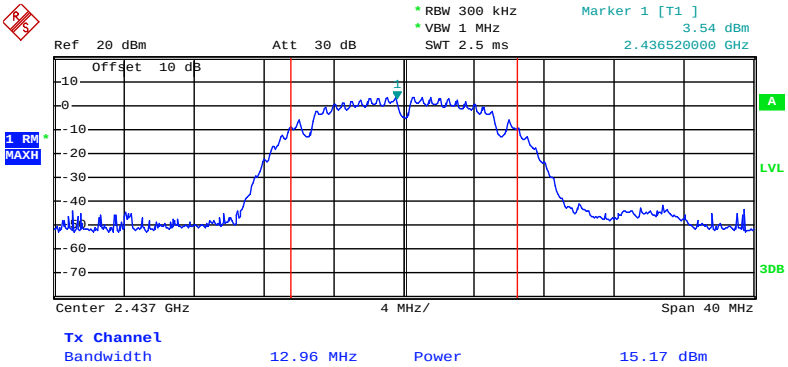
Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 11Mbps for 802.11b mode and 54Mbps for 802.11g mode and MCS7 for 802.11n(20MHz) mode.

The spectrum analyzer plots are attached as below.

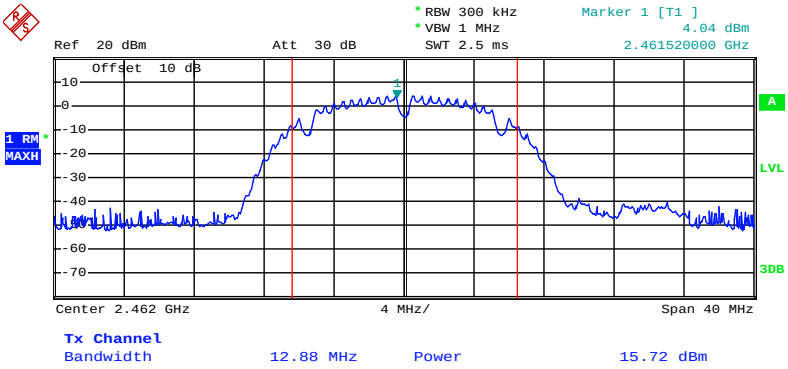
802.11b Channel Low 2412MHz



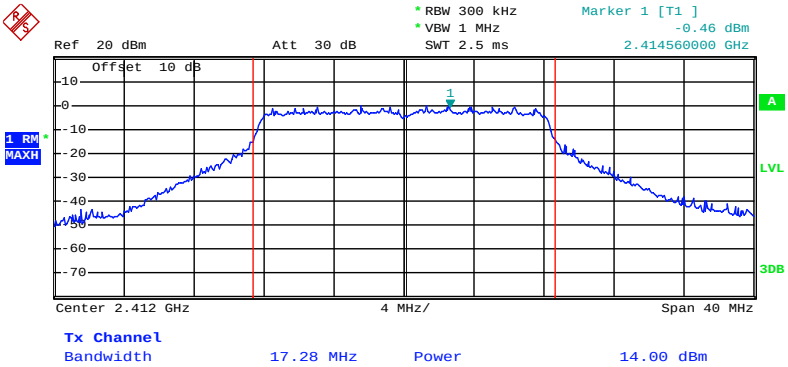
802.11b Channel Middle 2437MHz



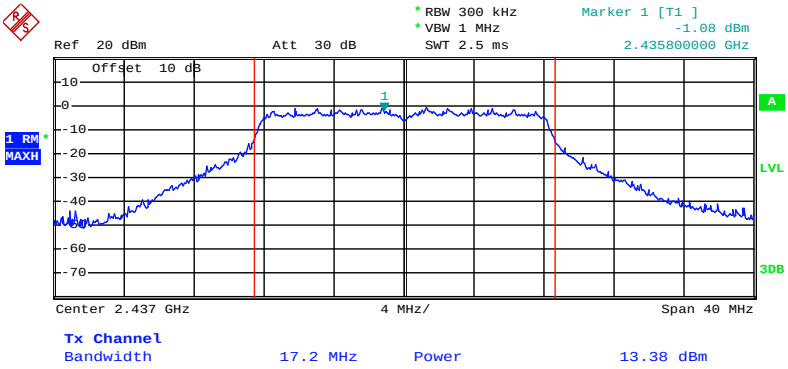
802.11b Channel High 2462MHz



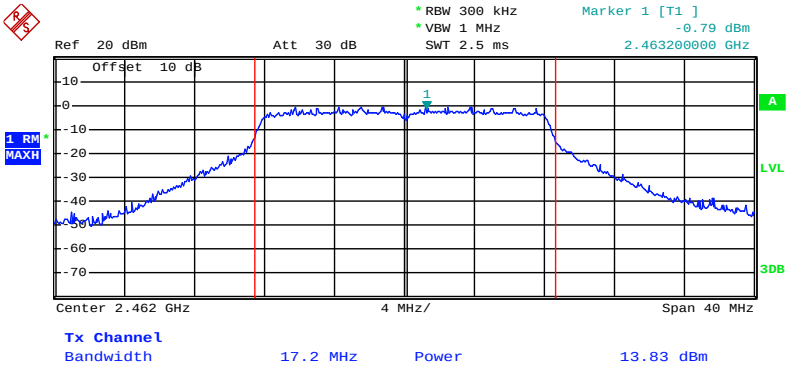
802.11g Channel Low 2412MHz



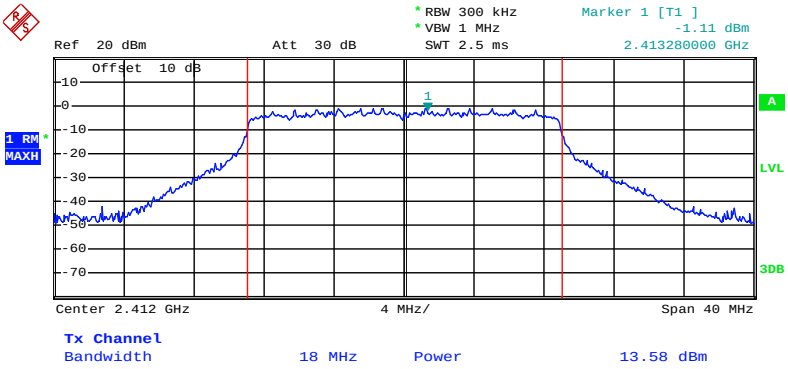
802.11g Channel Middle 2437MHz



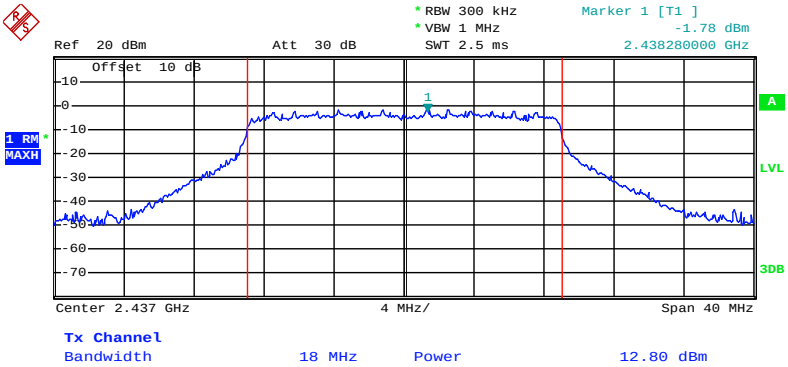
802.11g Channel High 2462MHz



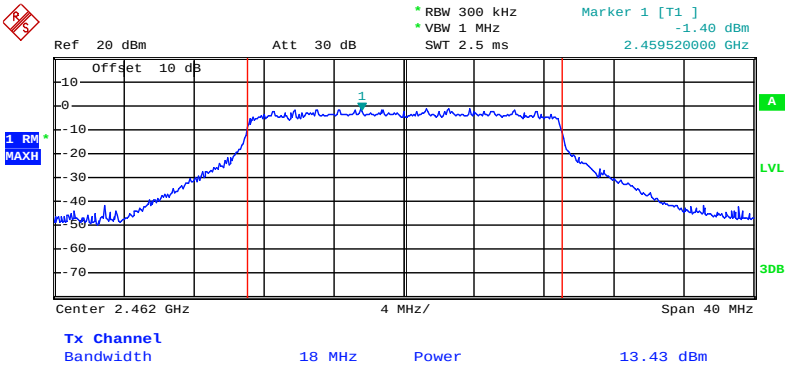
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz (20MHz)

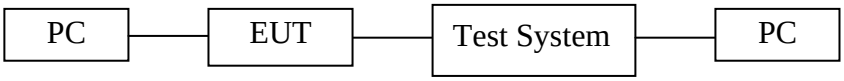


802.11n Channel High 2462MHz (20MHz)



10.POWER SPECTRAL DENSITY MEASUREMENT

10.1.Block Diagram of Test Setup



10.2.The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

10.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.4.Operating Condition of EUT

10.4.1.Setup the EUT and simulator as shown as Section 10.1.

10.4.2.Turn on the power of all equipment.

10.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 . We select 2412MHz, 2437MHz, 2462MHz frequency to transmit.

10.5.Test Procedure

10.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

10.5.2.Measurement Procedure AVGPSD-2:

This procedure is applicable when the EUT cannot be configured to transmit continuously(i.e., duty cycle<98%), and when sweep triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, and when the transmission duty is constant(i.e., duty cycle variations are less than ±2%):

Measure the dyty cycle(x) of the transmitter output signal as described in Section 6.0.

Set instrument center frequency to DTS channel center frequency.
Set span to at least 1.5×OBW.
Set RBW to: 3kHz≤ RBW≤100kHz.
Set VBW≥ 3×RBW
Detector=power averaging(RMS) or sample detector(when RMS not available).
Ensure that the number of measurement points in sweep≥2×span/RBW.
Sweep time=auto couple.
Do not use sweep triggering. Allow sweep to “free run”.
Employ trace averaging(RMS) mode over a minimum of 100 traces.
Use the peak maker function to determine the maximum amplitude level.
Add 10log(1/x), where x is the duty cycle measured in step(a, to the measured PSD to compute the average PSD during the actual transmission time.
If resultant value exceeds the limit, then reduce RBW(no less than 3kHz) and repeat(note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

10.6.Test Result

Test Lab: Shielding room

The test was performed with 802.11b					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm/3KHz)	10log(1/ duty cycle)	Final Power Spectral Density (dBm/3KHz)	Limits (dBm/3KHz)
Low	2412	-18.28	0.16	-18.12	8 dBm
Middle	2437	-19.23	0.16	-19.07	8 dBm
High	2462	-18.45	0.16	-18.29	8 dBm

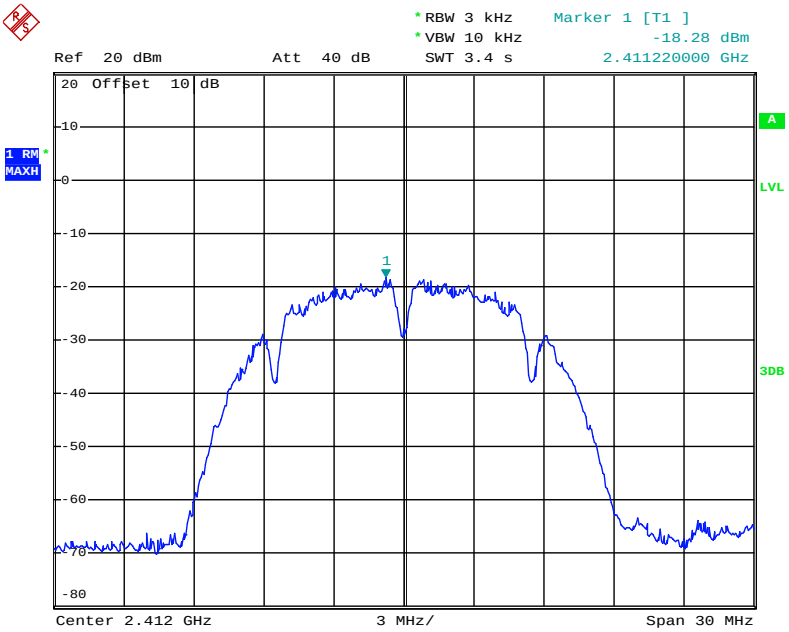
The test was performed with 802.11g					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm/3KHz)	10log(1/ duty cycle)	Final Power Spectral Density (dBm/3KHz)	Limits (dBm/3KHz)
Low	2412	-23.19	0.37	-22.82	8 dBm
Middle	2437	-24.81	0.37	-24.47	8 dBm
High	2462	-23.80	0.37	-23.43	8 dBm

The test was performed with 802.11n (20MHz)					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm/3KHz)	10log(1/ duty cycle)	Final Power Spectral Density (dBm/3KHz)	Limits (dBm/3KHz)
Low	2412	-24.46	0.79	-23.67	8 dBm
Middle	2437	-23.65	0.79	-22.86	8 dBm
High	2462	-25.00	0.79	-24.21	8 dBm

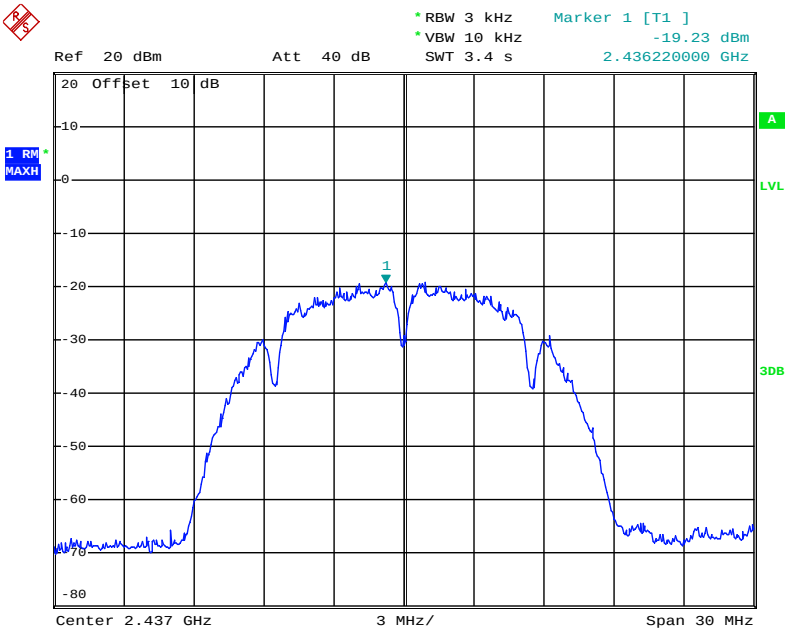
Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 11Mbps for 802.11b mode and 54Mbps for 802.11g mode and MCS7 for 802.11n(20MHz) mode.

The spectrum analyzer plots are attached as below.

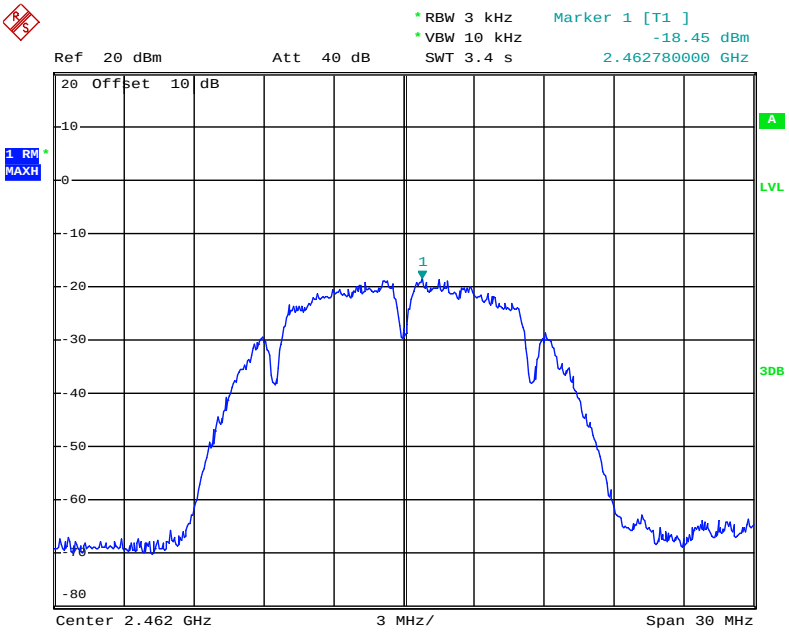
802.11b Channel Low 2412MHz



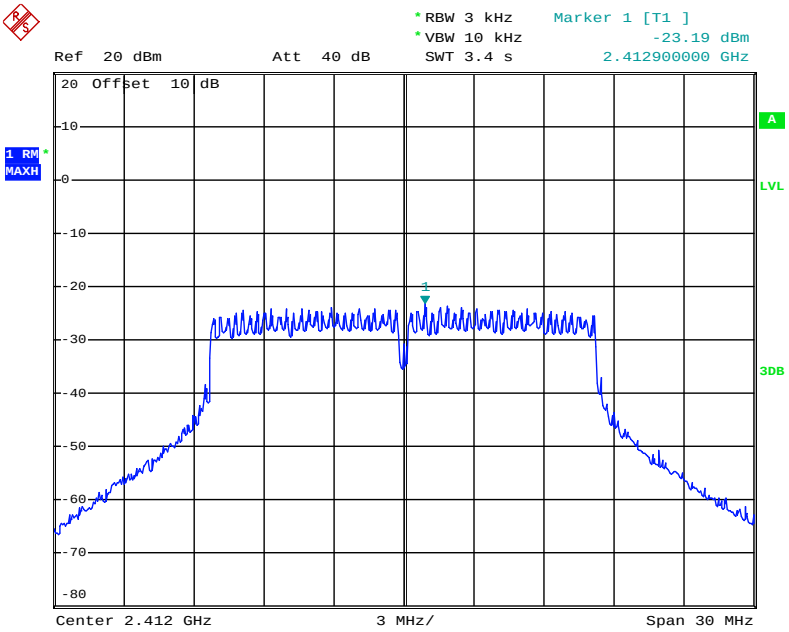
802.11b Channel Middle 2437MHz



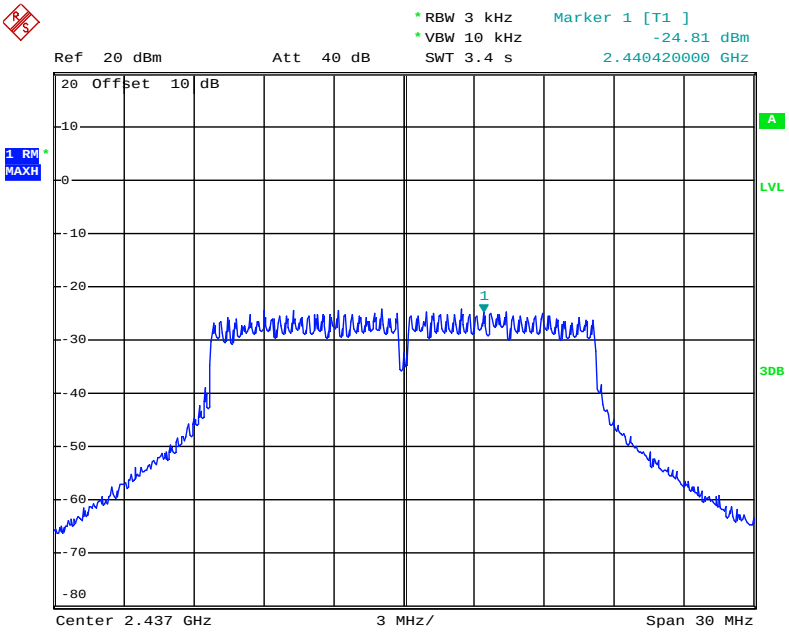
802.11b Channel High 2462MHz



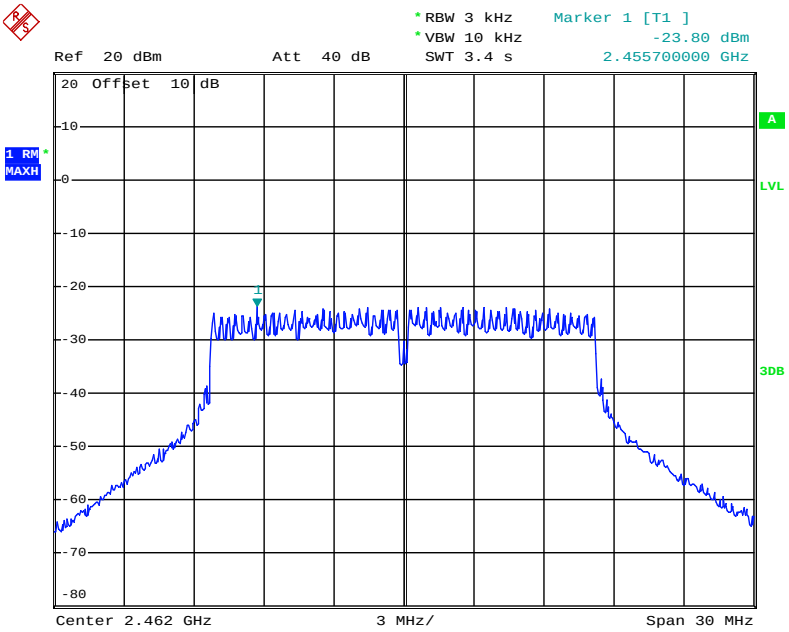
802.11g Channel Low 2412MHz



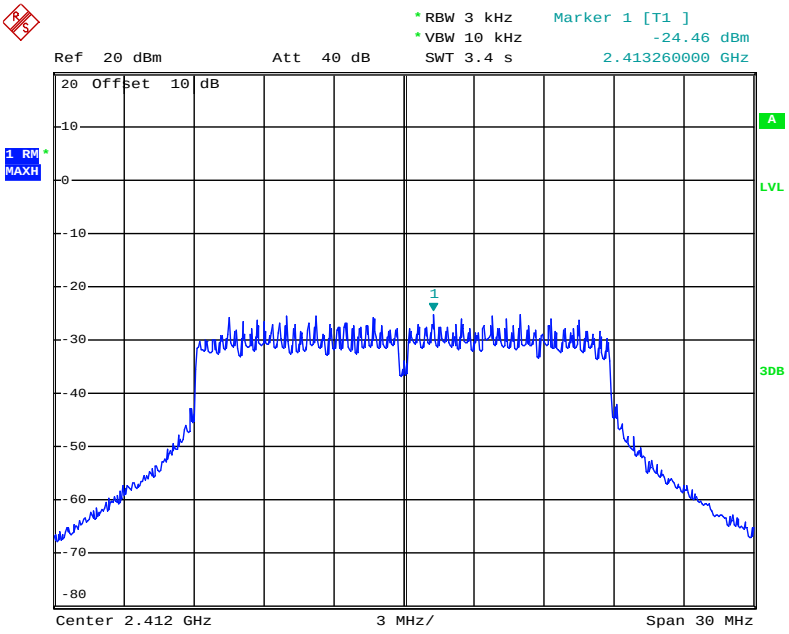
802.11g Channel Middle 2437MHz



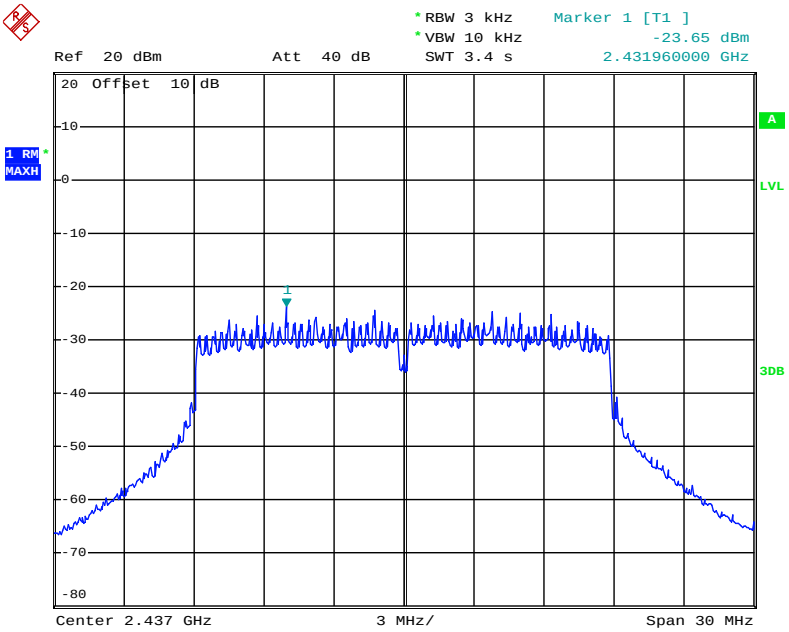
802.11g Channel High 2462MHz



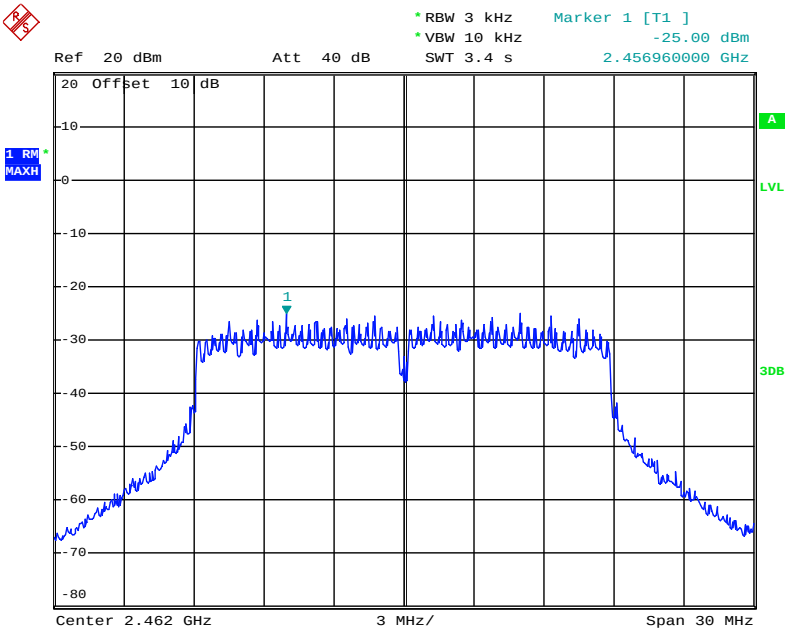
802.11n Channel Low 2412MHz (20MHz)



802.11n Channel Middle 2437MHz (20MHz)

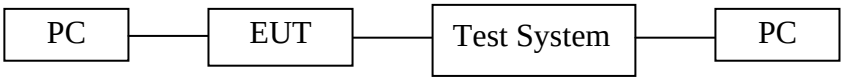


802.11n Channel High 2462MHz(20MHz)



11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



11.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 MHz. We select 2412MHz, 2462MHz TX frequency to transmit.

11.5.Test Procedure

Conducted Band Edge:

11.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

11.5.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.

Radiate Band Edge:

11.5.1.The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.

11.5.2.The turntable was rotated for 360 degrees to determine the position of maximum emission level.

11.5.3.EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

11.5.4.Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

11.5.5.RBW=1MHz, VBW=1MHz

11.5.6.The band edges was measured and recorded.

11.6.Test Result

Test Lab: Shielding room

The test was performed with 802.11b		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	39.04	> 30dBc
2483.5	39.42	> 30dBc

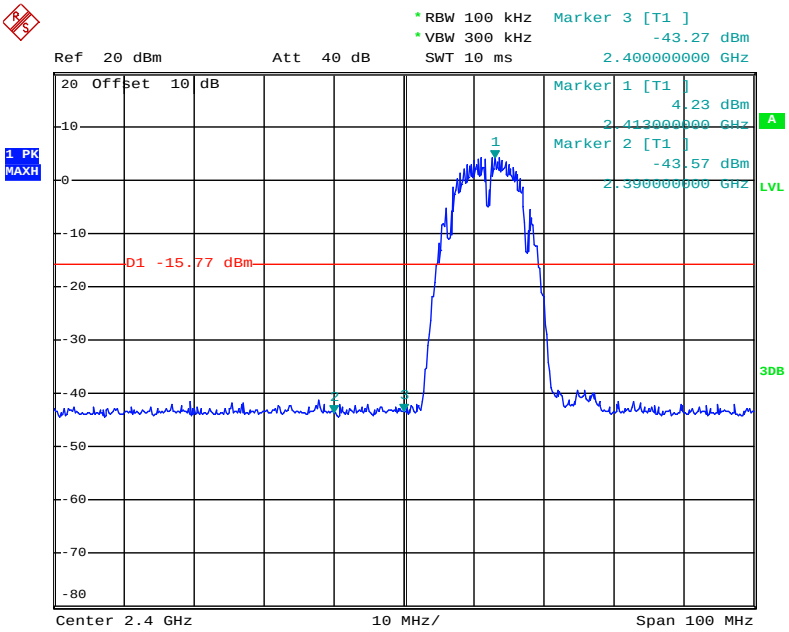
The test was performed with 802.11g		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	32.40	> 30dBc
2483.5	41.77	> 30dBc

The test was performed with 802.11n (20MHz)		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	31.22	> 30dBc
2483.5	42.31	> 30dBc

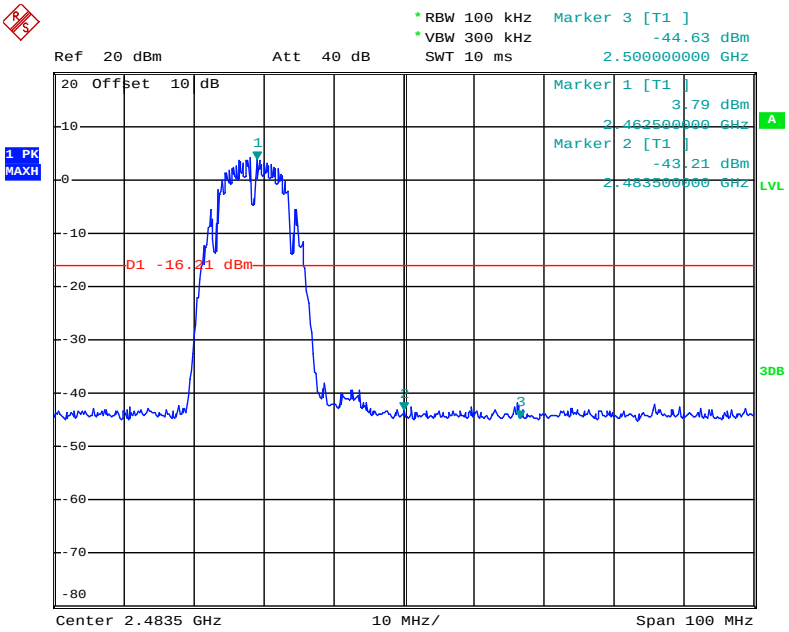
Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 11Mbps for 802.11b mode and 54Mbps for 802.11g mode and MCS7 for 802.11n(20MHz) mode.

The spectrum analyzer plots are attached as below.

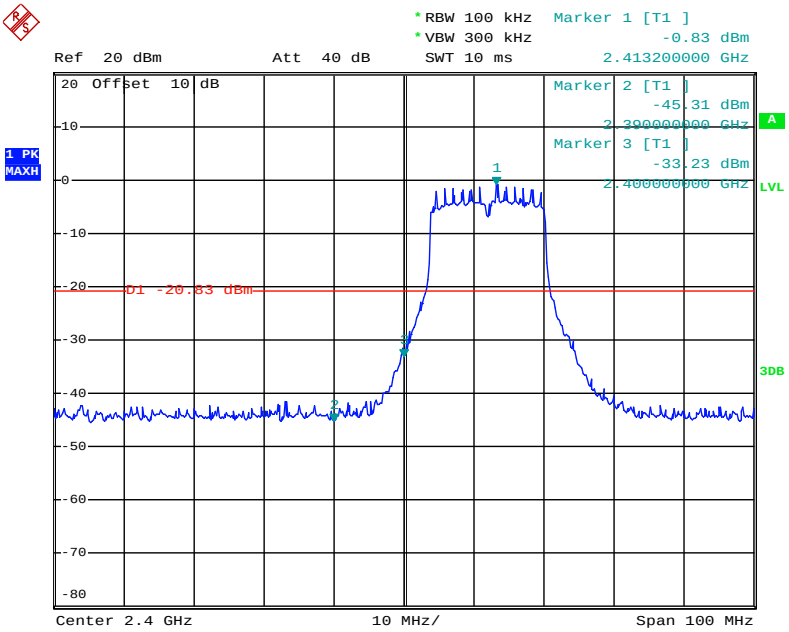
802.11b Channel Low 2412MHz



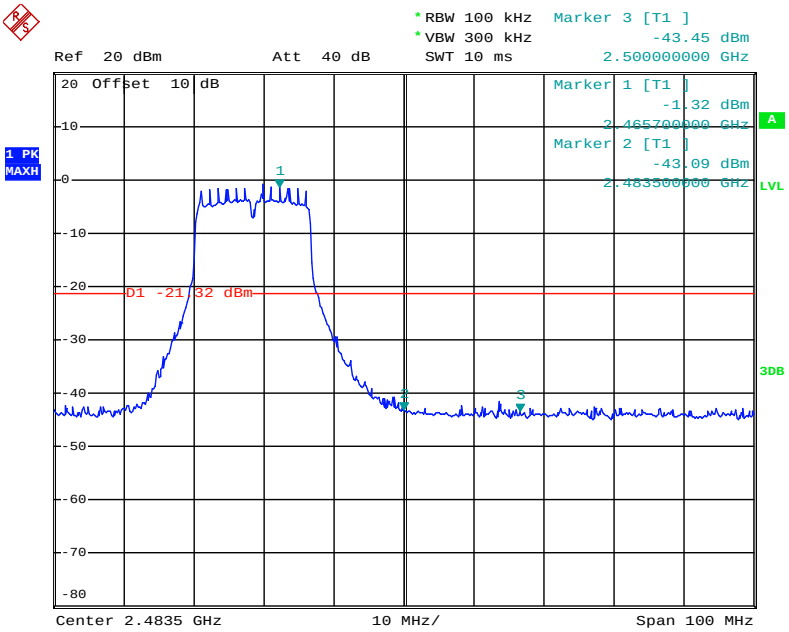
802.11b Channel High 2462MHz



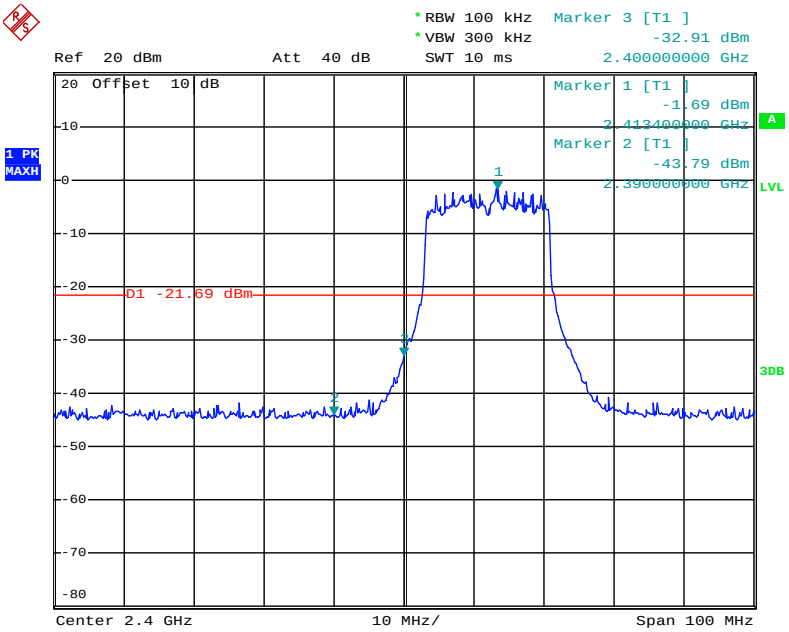
802.11g Channel Low 2412MHz



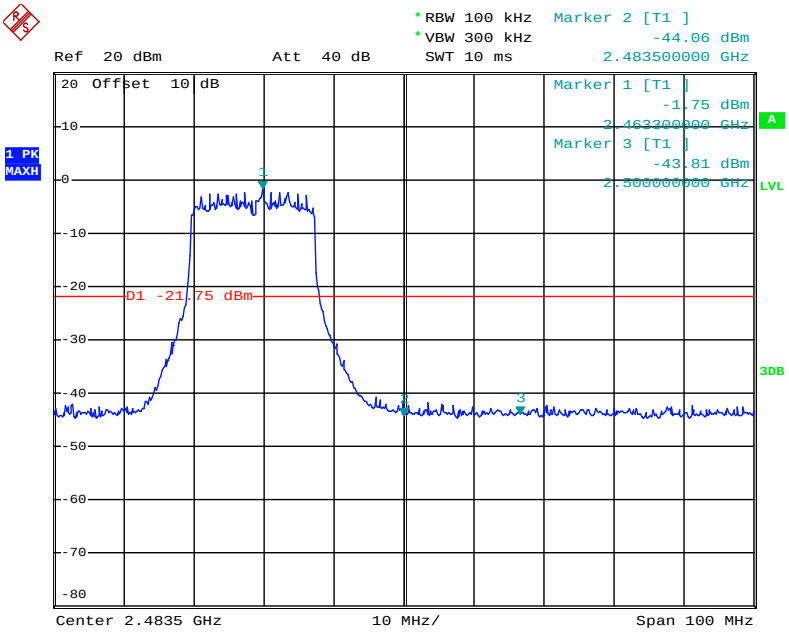
802.11g Channel High 2462MHz



802.11n Channel Low 2412MHz (20MHz)



802.11n Channel High 2462MHz (20MHz)



Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

   Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

Let the EUT work in TX modes then measure it.
We select 2412MHz, 2462MHz TX frequency to transmit(802.11b/g/n20 mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:
1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
3. We tested 802.11b/g/n mode the all and the worst-case(802.11b) emissions are reported.

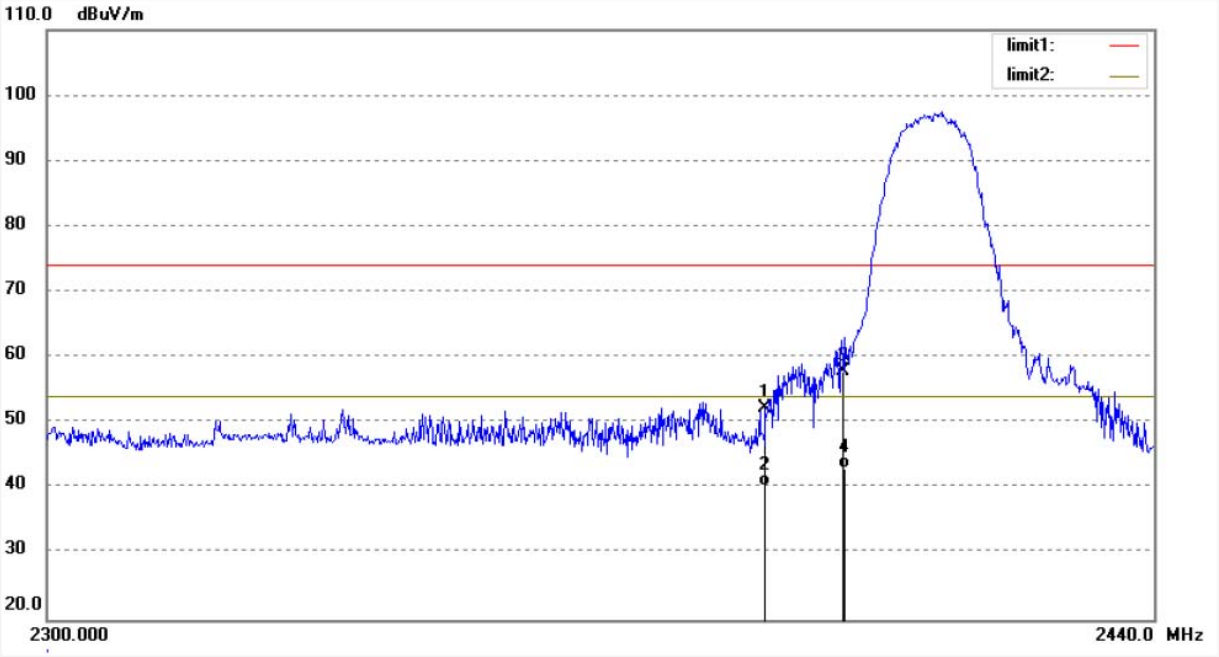
Noto: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 11Mbps for 802.11b mode and 54Mbps for 802.11g mode and MCS7 for 802.11n(20MHz) mode.

Test Lab: 3m Anechoic chamber

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: br #10	Polarization: Vertical
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/43/02
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 1)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	51.52	0.79	52.31	74.00	-21.69	peak	150	128	
2	2390.000	39.51	0.79	40.30	54.00	-13.70	AVG	150	128	
3	2400.000	57.09	0.88	57.97	74.00	-16.03	peak	150	206	
4	2400.000	42.12	0.88	43.00	54.00	-11.00	AVG	150	206	

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
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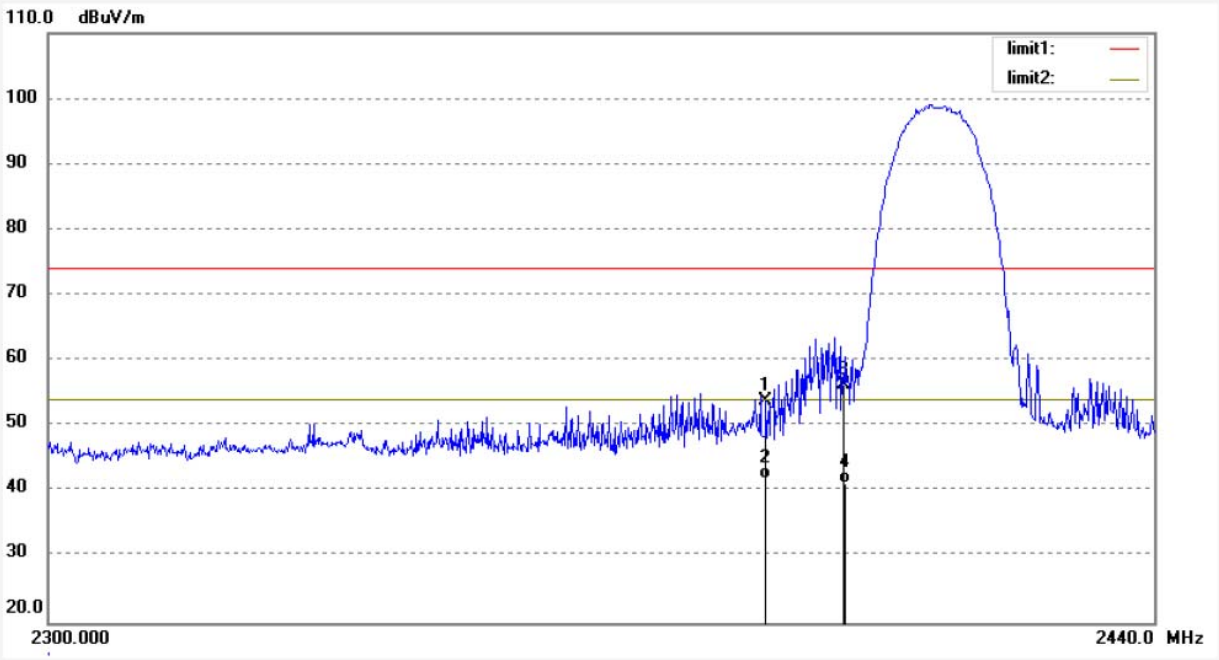
Fax:+86-0755-26503396

Job No.: br #9	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/41/30
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 1)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	53.18	0.79	53.97	74.00	-20.03	peak	250	159	
2	2390.000	41.21	0.79	42.00	54.00	-12.00	AVG	250	159	
3	2400.000	55.44	0.88	56.32	74.00	-17.68	peak	250	206	
4	2400.000	40.42	0.88	41.30	54.00	-12.70	AVG	250	206	

ACCURATE TECHNOLOGY CO., LTD.
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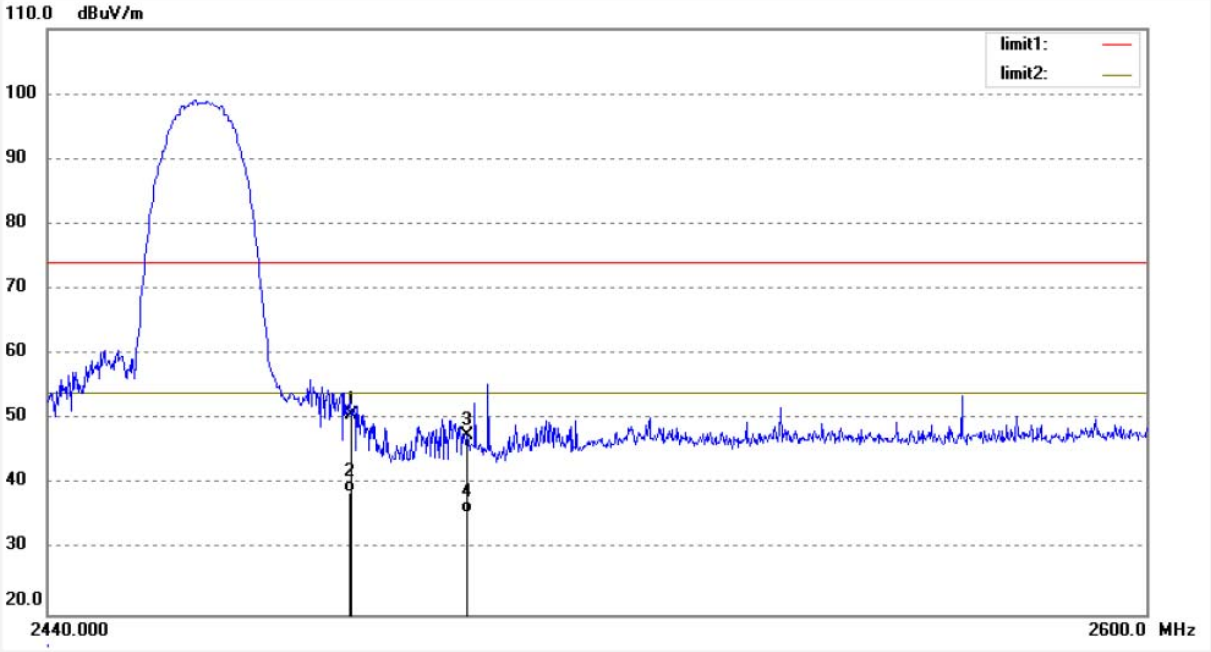
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: br #8	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/39/06
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 11)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471

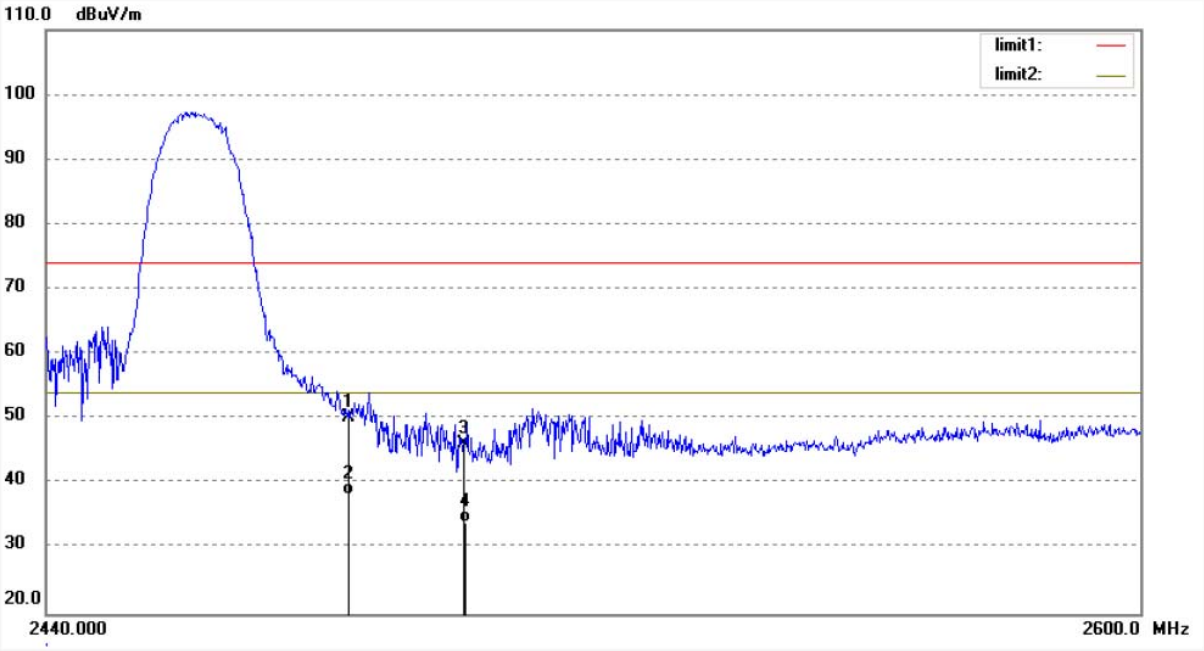


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	49.61	1.10	50.71	74.00	-23.29	peak	250	156	
2	2483.500	37.60	1.10	38.70	54.00	-15.30	AVG	250	156	
3	2500.000	46.48	1.10	47.58	74.00	-26.42	peak	250	206	
4	2500.000	34.50	1.10	35.60	54.00	-18.40	AVG	250	206	

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: br #7	Polarization: Vertical
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/37/43
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 11)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	49.25	1.10	50.35	74.00	-23.65	peak	150	126	
2	2483.500	37.20	1.10	38.30	54.00	-15.70	AVG	150	126	
3	2500.000	45.02	1.10	46.12	74.00	-27.88	peak	150	196	
4	2500.000	33.00	1.10	34.10	54.00	-19.90	AVG	150	196	

12.RADIATED SPURIOUS EMISSION TEST

12.1.Block Diagram of Test Setup

Block diagram of connection between the EUT and peripherals

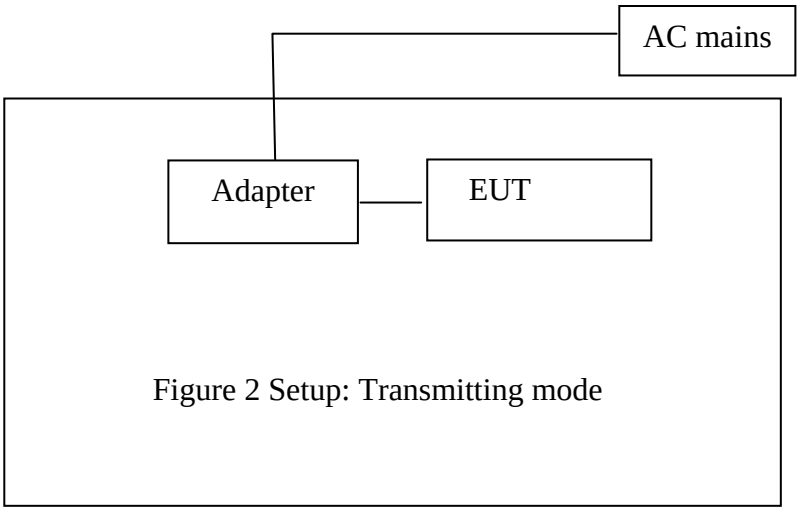
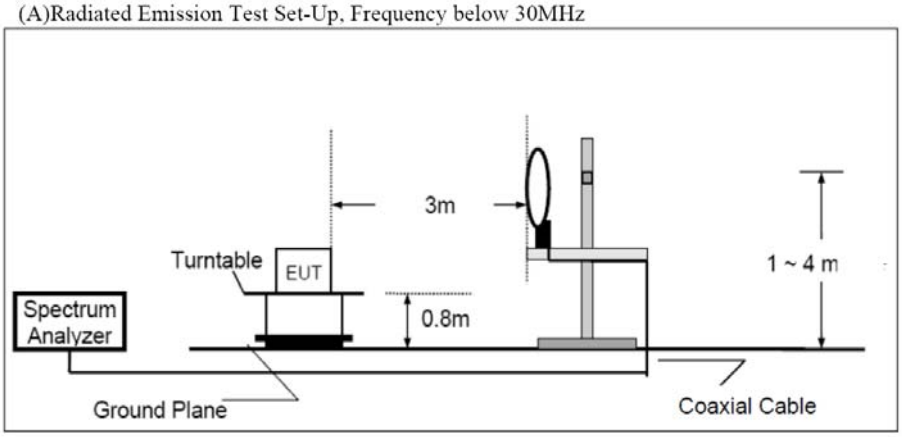


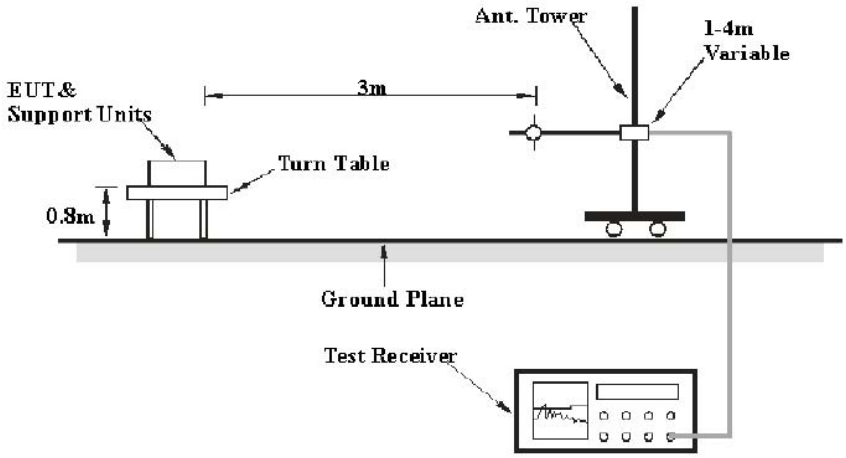
Figure 2 Setup: Transmitting mode

12.1.1.Semi-Anechoic Chamber Test Setup Diagram

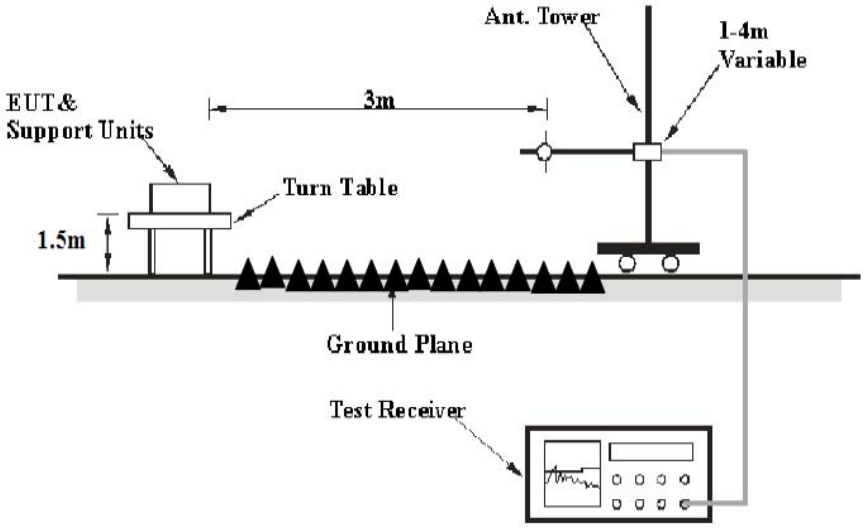
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(B)Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



12.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

12.3.Restricted bands of operation

12.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

12.4.Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

12.5.Operating Condition of EUT

12.5.1.Setup the EUT and simulator as shown as Section 10.1.

12.5.2.Turn on the power of all equipment.

12.5.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 MHz. We select 2412MHz, 2462MHz TX frequency to transmit.

12.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground(Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement.

The frequency range from 30MHz to 26500MHz is checked.
Result = Reading + Corrected Factor
Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain
During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

12.7.Data Sample

Frequency (MHz)	Reading (dBμv)	Factor (dB/m)	Result (dBμv/m)	Limit (dBμv/m)	Margin (dB)	Remark
X.XX	48.69	-13.35	35.34	46	-10.66	QP

Frequency(MHz) = Emission frequency in MHz
Reading(dBμv) = Uncorrected Analyzer/Receiver reading
Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain
Result(dBμv/m) = Reading(dBμv) + Factor(dB/m)
Limit (dBμv/m) = Limit stated in standard
Margin (dB) = Result(dBμv/m) - Limit (dBμv/m)
QP = Quasi-peak Reading

Calculation Formula:
Margin(dB) = Result (dBμV/m)–Limit(dBμV/m)
Result(dBμV/m)= Reading(dBμV)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

12.8.The Field Strength of Radiation Emission Measurement Results

Test Lab: 3m Anechoic chamber

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. The radiation emissions from 9KHz-30MHz and 18-26.5GHz are not reported, because the test values lower than the limits of 20dB.

3. We tested 802.11b/g/n mode the all data rate and the worst case data for this channel to be 11Mbps for 802.11b mode.

The spectrum analyzer plots are attached as below.

Below 1G

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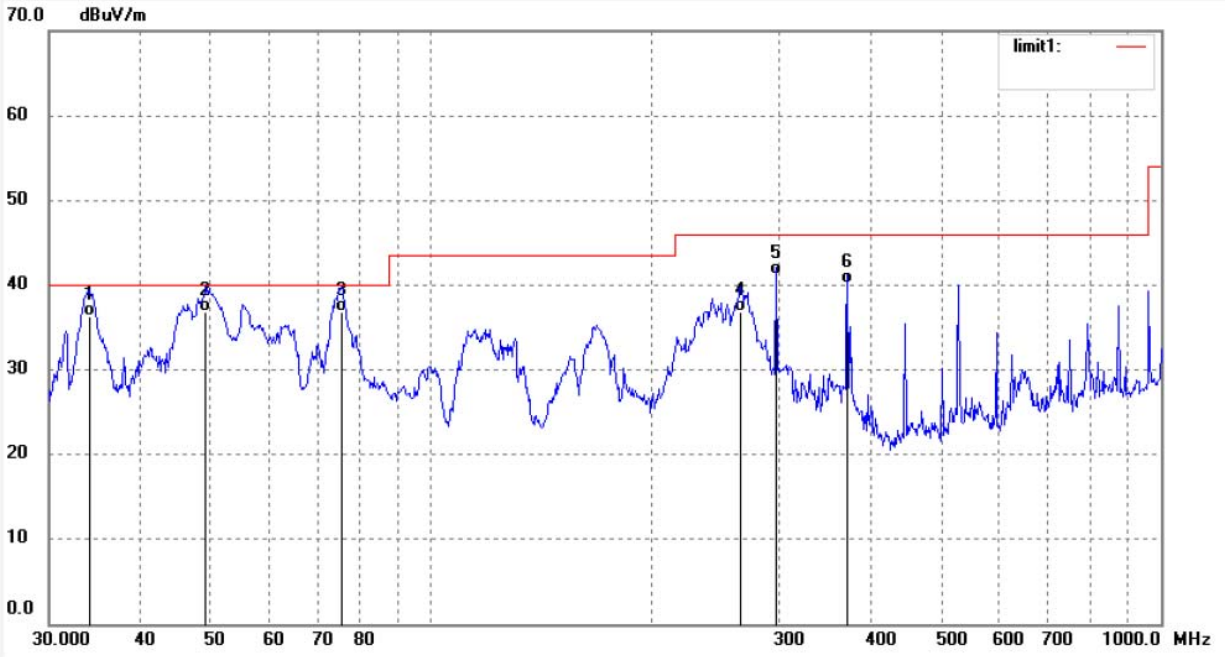
Job No.: jp2020 #126	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/15/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 8/29/13
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 1)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	34.0363	47.53	-11.13	36.40	40.00	-3.60	QP	200	84	
2	49.1865	50.51	-13.61	36.90	40.00	-3.10	QP	200	96	
3	75.4462	54.54	-17.74	36.80	40.00	-3.20	QP	200	125	
4	265.6757	48.19	-11.39	36.80	46.00	-9.20	QP	200	136	
5	297.2241	51.54	-10.34	41.20	46.00	-4.80	QP	200	189	
6	372.0045	48.68	-8.48	40.20	46.00	-5.80	QP	200	216	

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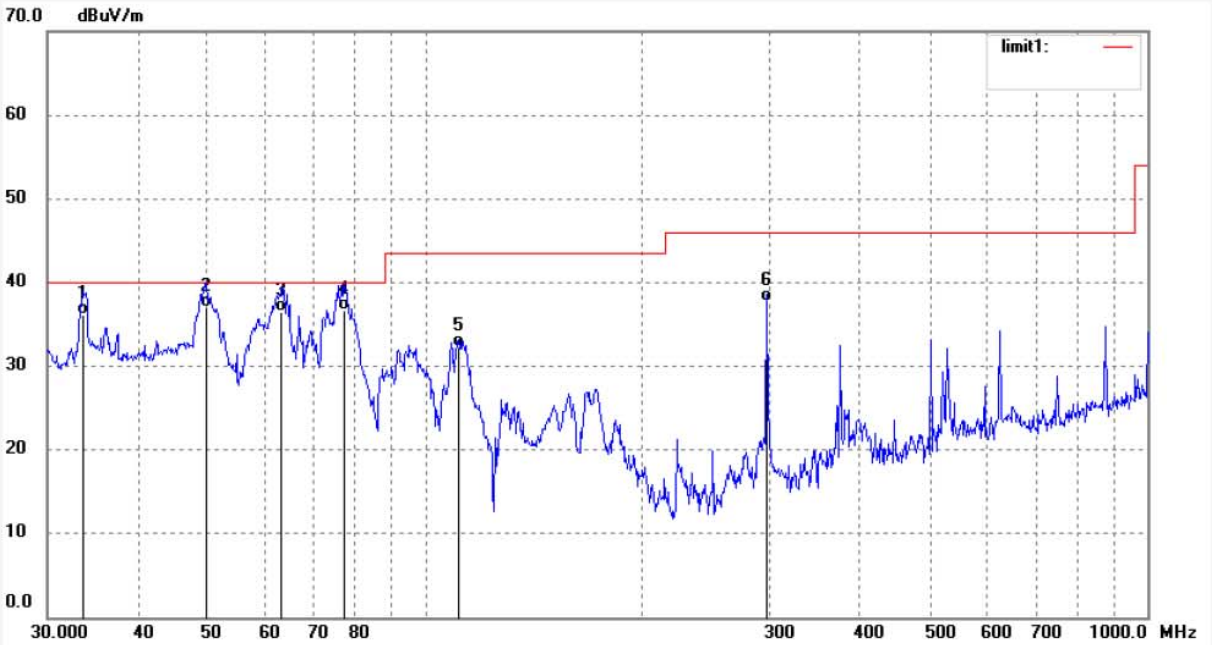
Job No.: jp2020 #127	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/15/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 8/29/22
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 1)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.5623	47.09	-10.99	36.10	40.00	-3.90	QP	100	101	
2	49.7068	50.61	-13.61	37.00	40.00	-3.00	QP	100	126	
3	63.3132	52.63	-16.13	36.50	40.00	-3.50	QP	100	156	
4	77.3212	54.35	-17.65	36.70	40.00	-3.30	QP	100	185	
5	111.3468	46.90	-14.70	32.20	43.50	-11.30	QP	100	198	
6	297.2241	48.04	-10.34	37.70	46.00	-8.30	QP	100	217	

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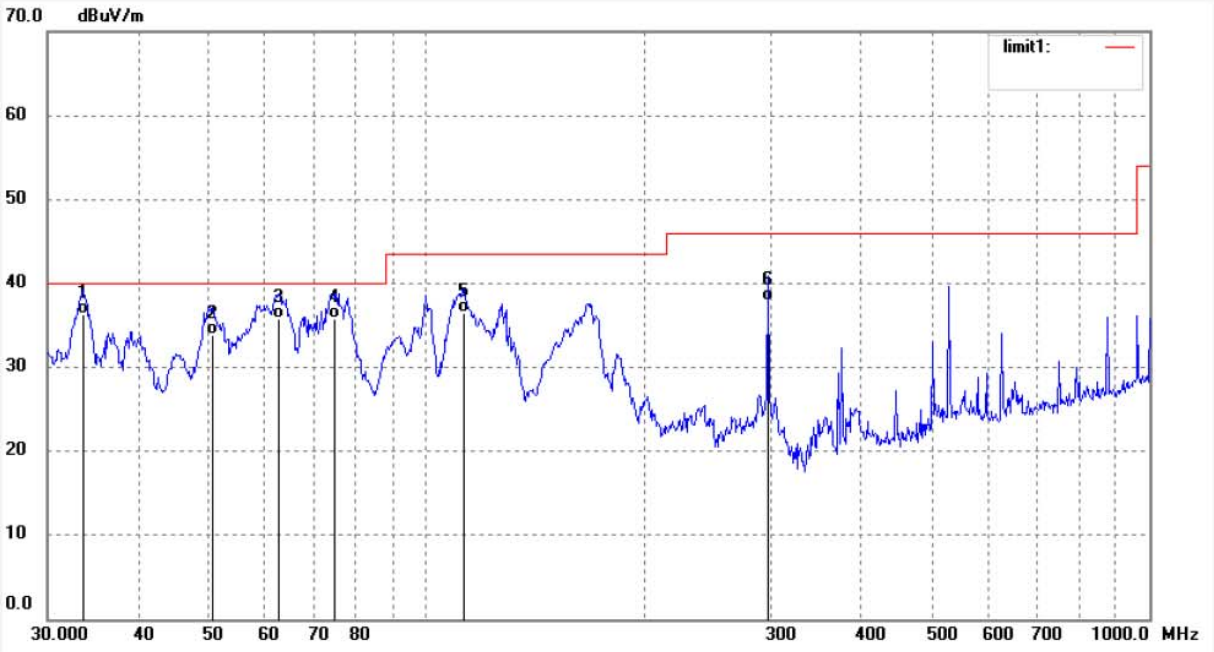
Job No.: jp2020 #128	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/15/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 8/30/09
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 6)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.5623	47.29	-10.99	36.30	40.00	-3.70	QP	100	89	
2	50.7637	47.56	-13.66	33.90	40.00	-6.10	QP	100	106	
3	62.6507	51.69	-15.89	35.80	40.00	-4.20	QP	100	136	
4	74.6568	53.51	-17.71	35.80	40.00	-4.20	QP	100	186	
5	112.9196	50.96	-14.46	36.50	43.50	-7.00	QP	100	197	
6	297.2241	48.24	-10.34	37.90	46.00	-8.10	QP	100	218	

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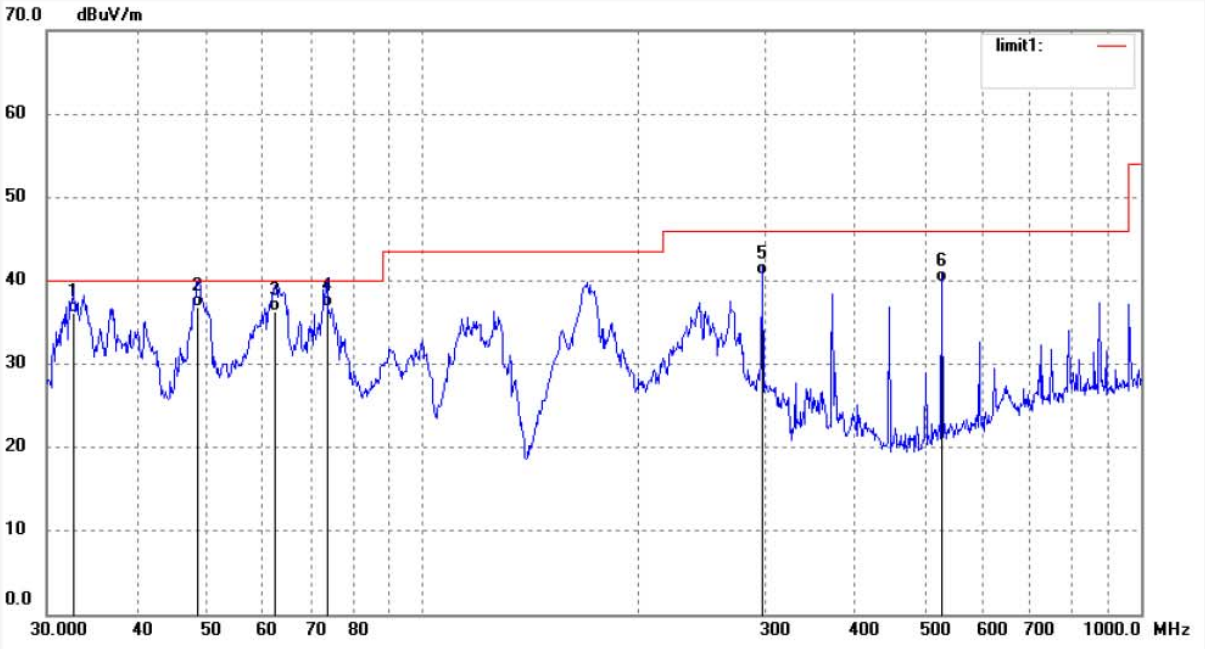
Job No.: jp2020 #129	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/15/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 8/30/22
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 6)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.7486	46.95	-10.75	36.20	40.00	-3.80	QP	200	102	
2	48.6719	50.41	-13.61	36.80	40.00	-3.20	QP	200	126	
3	62.4313	52.21	-15.81	36.40	40.00	-3.60	QP	200	145	
4	73.6170	54.48	-17.58	36.90	40.00	-3.10	QP	200	186	
5	297.2241	51.04	-10.34	40.70	46.00	-5.30	QP	200	198	
6	528.2458	45.12	-5.22	39.90	46.00	-6.10	QP	200	245	

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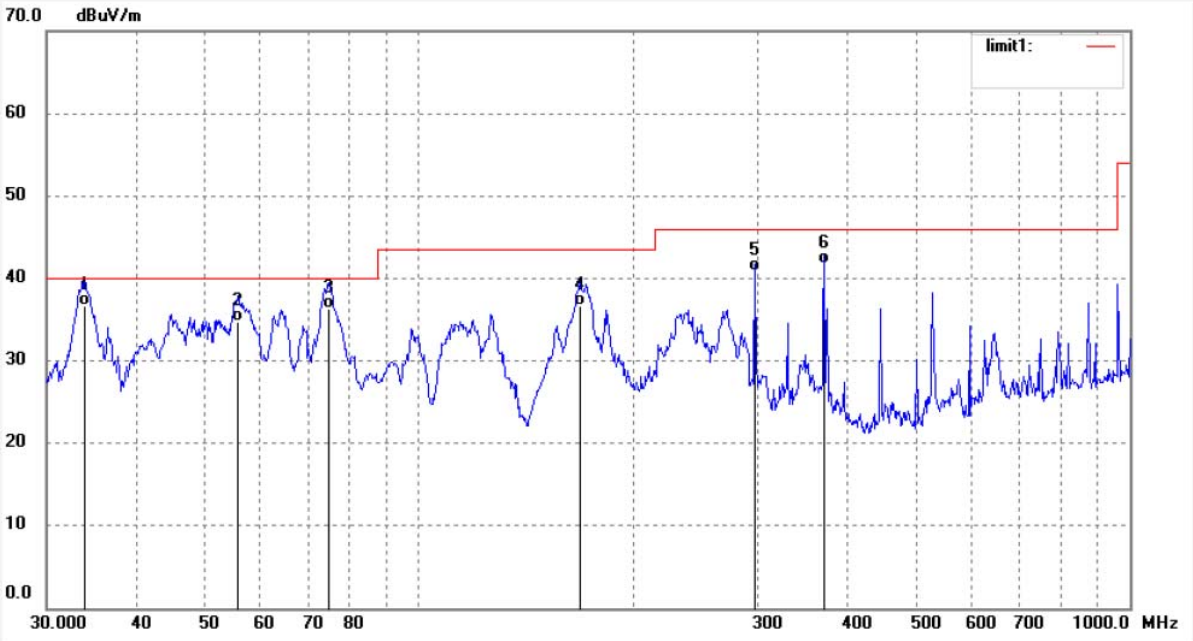
Job No.: jp2020 #130	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/15/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 8/31/14
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 11)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.9174	47.70	-11.10	36.60	40.00	-3.40	QP	200	81	
2	55.8046	48.93	-14.13	34.80	40.00	-5.20	QP	200	98	
3	74.6568	54.11	-17.71	36.40	40.00	-3.60	QP	200	106	
4	168.4138	51.53	-14.93	36.60	43.50	-6.90	QP	200	186	
5	297.2241	51.14	-10.34	40.80	46.00	-5.20	QP	200	196	
6	372.0045	50.28	-8.48	41.80	46.00	-4.20	QP	200	218	

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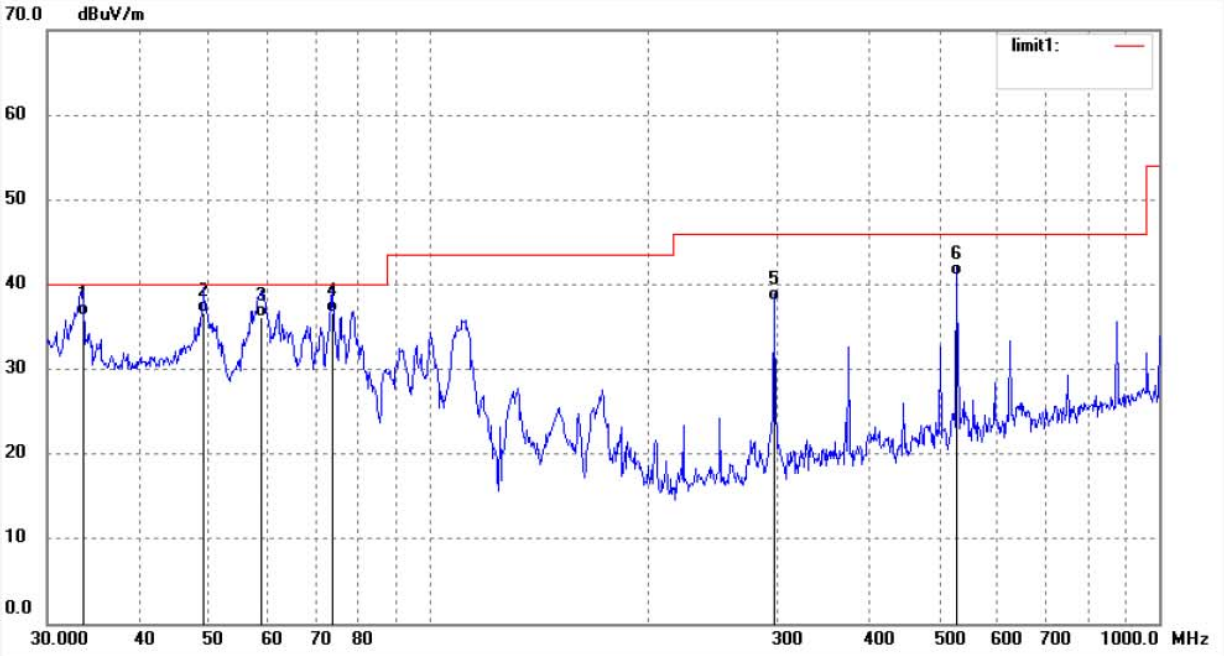
Job No.: jp2020 #131	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/15/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 8/31/25
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 11)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.5623	47.29	-10.99	36.30	40.00	-3.70	QP	100	89	
2	49.0144	50.31	-13.61	36.70	40.00	-3.30	QP	100	106	
3	59.0251	50.95	-14.75	36.20	40.00	-3.80	QP	100	145	
4	73.6170	54.18	-17.58	36.60	40.00	-3.40	QP	100	186	
5	297.2241	48.34	-10.34	38.00	46.00	-8.00	QP	100	193	
6	528.2458	46.32	-5.22	41.10	46.00	-4.90	QP	100	236	

Above 1G

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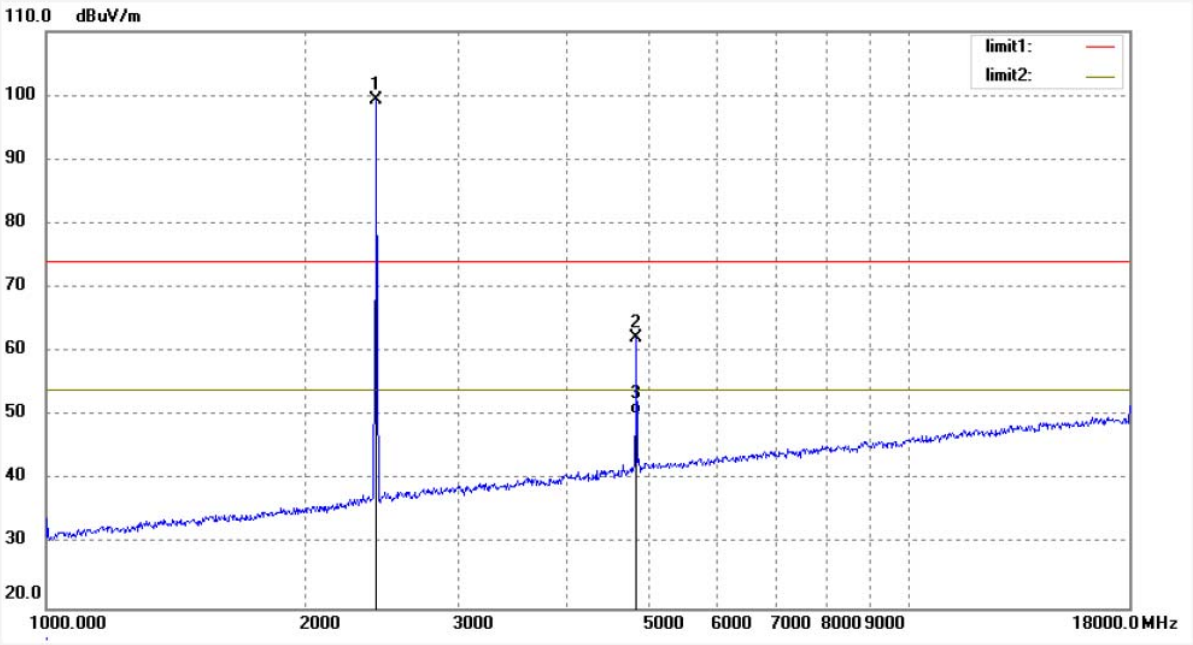
Job No.: br #1	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/22/09
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 1)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2412.000	98.42	0.94	99.36			peak	250	129	
2	4824.000	54.57	7.65	62.22	74.00	-11.78	peak	250	163	
3	4824.000	42.55	7.65	50.20	54.00	-3.80	AVG	250	163	

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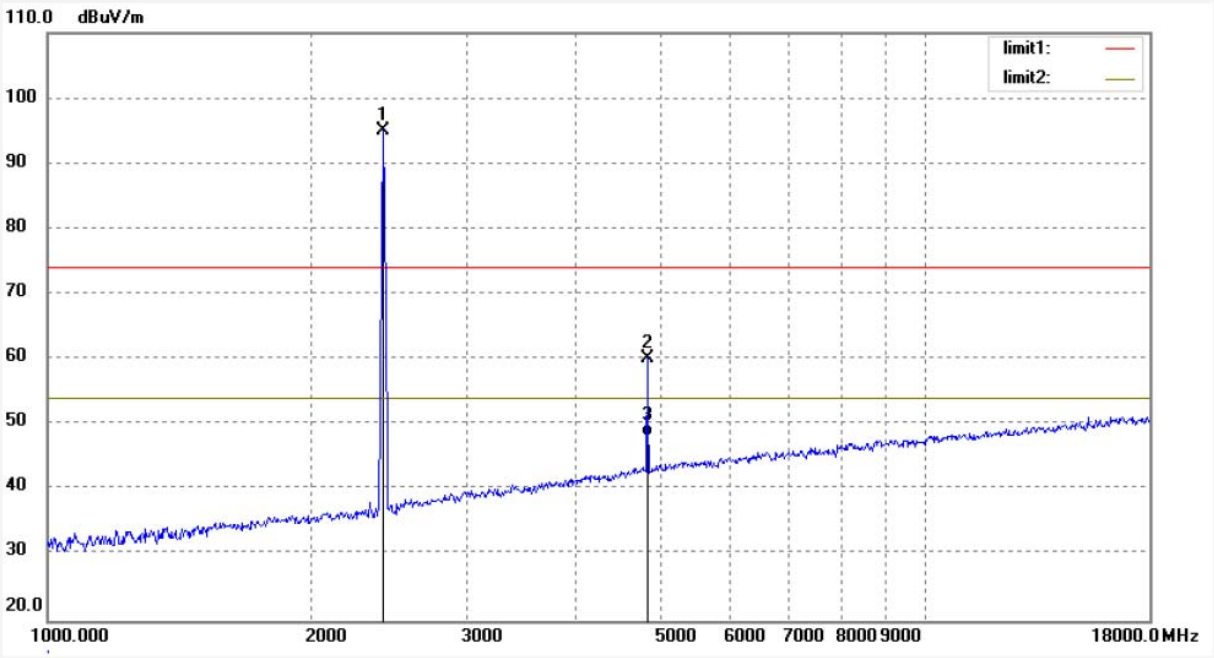
Job No.: br #2	Polarization: Vertical
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/24/38
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 1)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2412.000	93.99	0.94	94.93			peak	150	158	
2	4824.000	52.67	7.53	60.20	74.00	-13.80	peak	150	196	
3	4824.000	40.67	7.53	48.20	54.00	-5.80	AVG	150	196	

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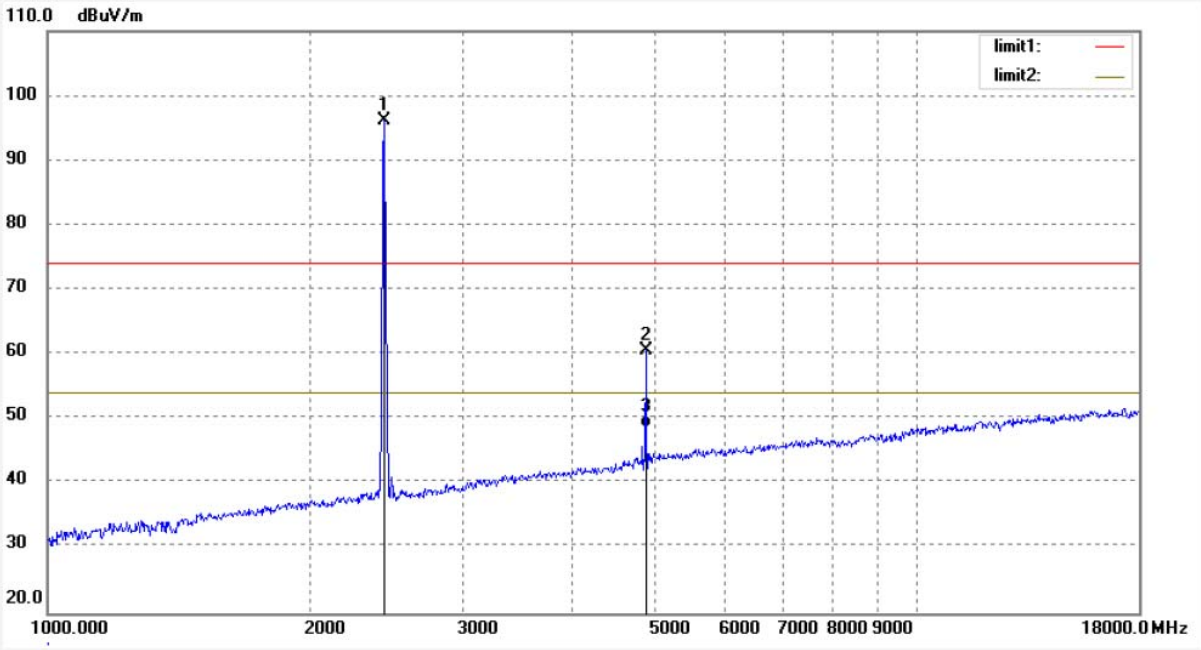
Job No.: br #3	Polarization: Vertical
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/27/02
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 6)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2437.000	95.16	1.03	96.19			peak	150	176	
2	4874.000	52.51	8.04	60.55	74.00	-13.45	peak	150	202	
3	4874.000	40.56	8.04	48.60	54.00	-5.40	AVG	150	202	

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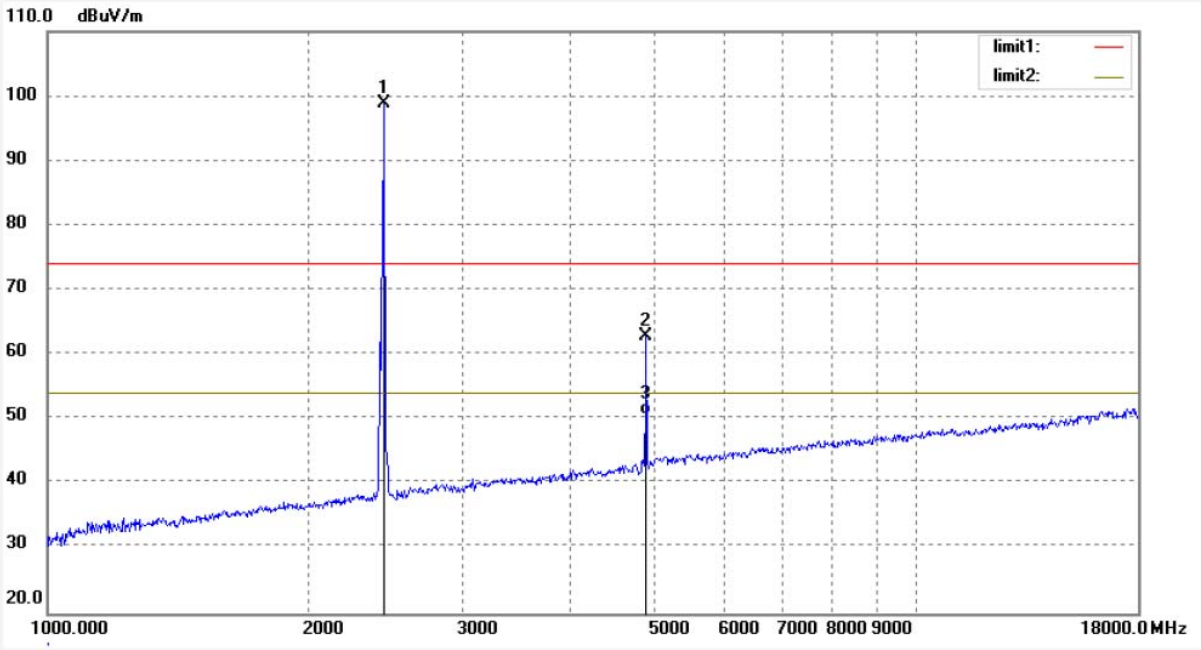
Job No.: br #4	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/31/03
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 6)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2437.000	97.81	1.06	98.87			peak	250	136	
2	4874.000	54.60	8.17	62.77	74.00	-11.23	peak	250	185	
3	4874.000	42.63	8.17	50.80	54.00	-3.20	AVG	250	185	

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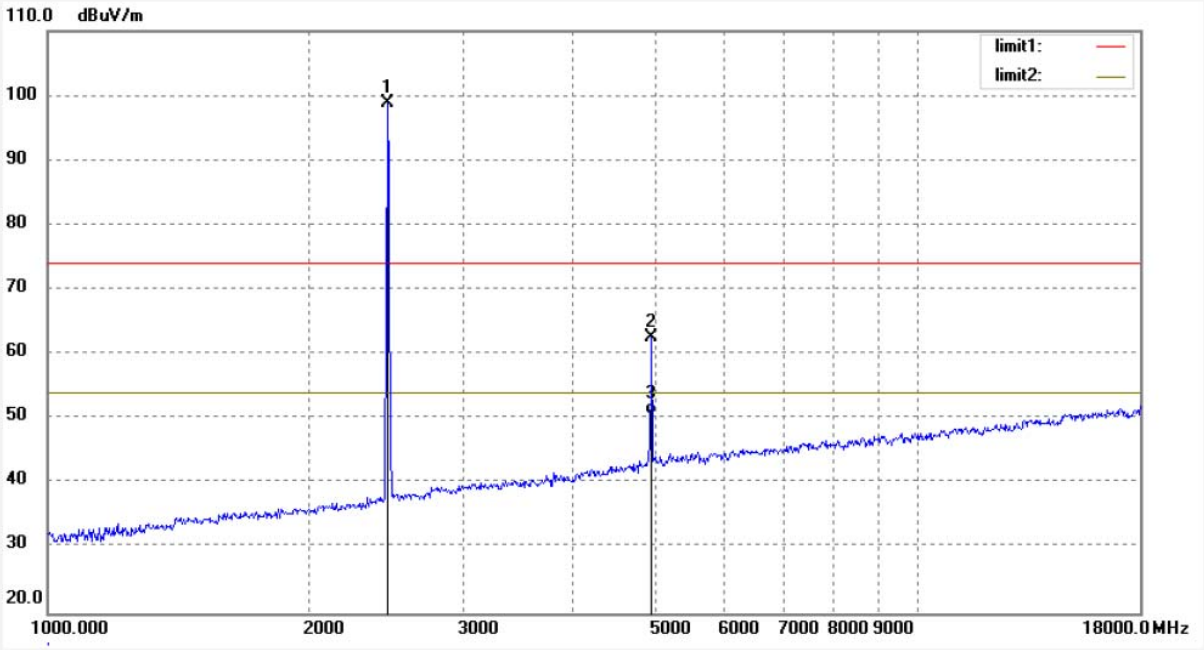
Job No.: br #5	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/33/56
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 11)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2462.000	97.87	1.09	98.96			peak	250	175	
2	4924.000	54.21	8.52	62.73	74.00	-11.27	peak	250	206	
3	4924.000	42.28	8.52	50.80	54.00	-3.20	AVG	250	206	

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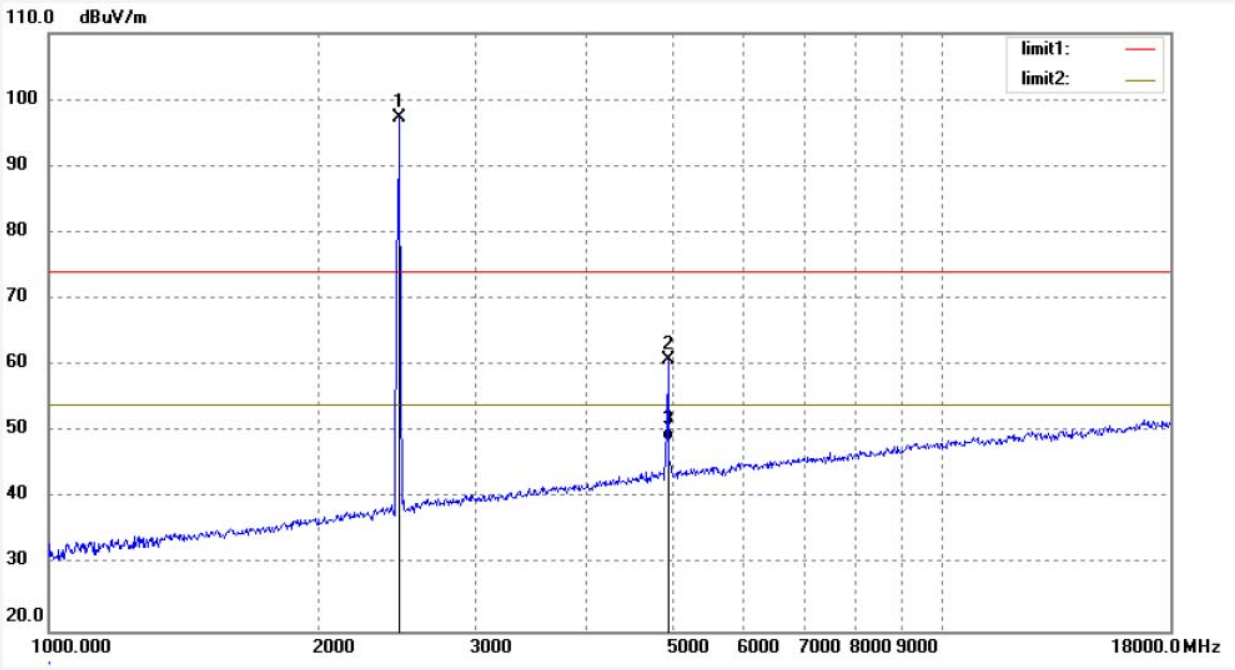
Job No.: br #6	Polarization: Vertical
Standard: FCC PK	Power Source: DC 12V
Test item: Radiation Test	Date: 20/05/26/
Temp.(C)/Hum.(%) 23 C / 48 %	Time: 10/35/19
EUT: Android motherboard	Engineer Signature: Ben
Mode: TX 802.11b(Chanel 11)	Distance: 3m
Model: DC_RK3288_GB_v6.13B	
Manufacturer: Dingchang	

Note: Report NO.:ATE20200471



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2462.000	96.11	1.09	97.20			peak	150	152	
2	4924.000	52.30	8.44	60.74	74.00	-13.26	peak	150	186	
3	4924.000	40.36	8.44	48.80	54.00	-5.20	AVG	150	186	

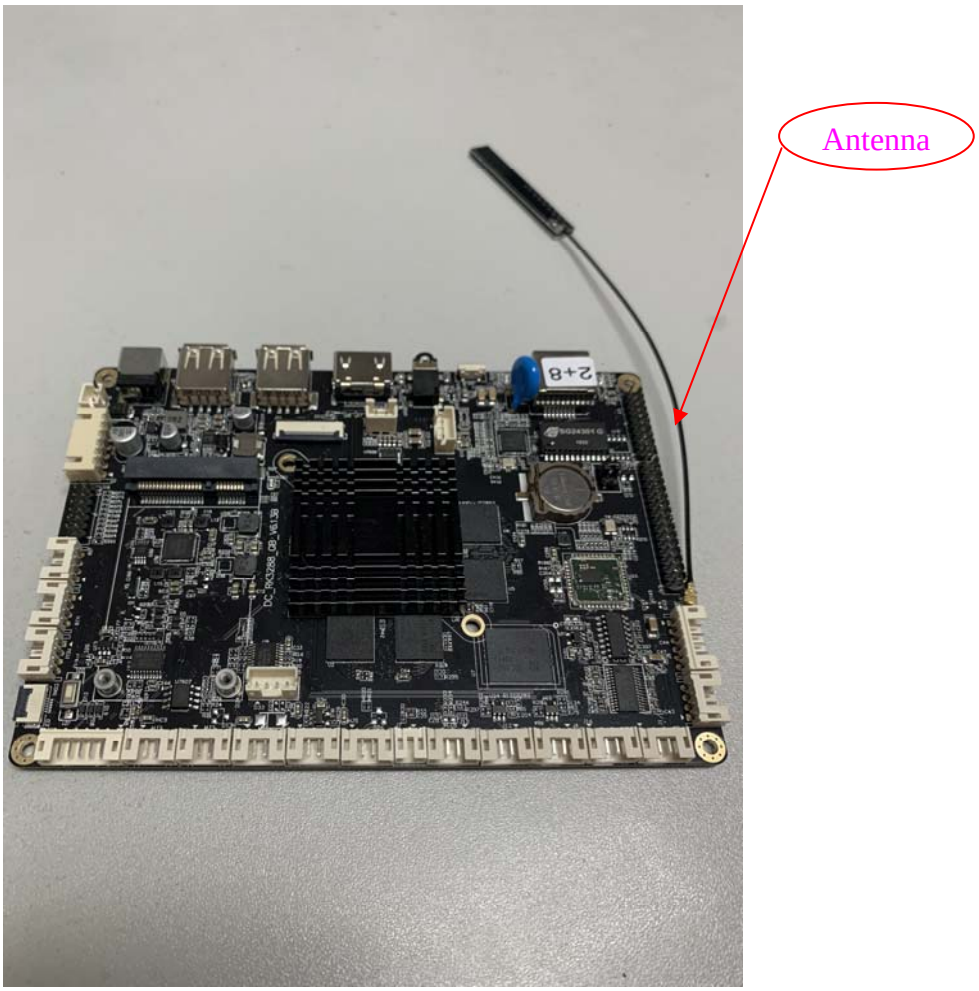
13. ANTENNA REQUIREMENT

13.1. The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

13.2. Antenna Construction

Device is equipped with PCB Antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 4dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



---------- THE END OF TEST REPORT ----------