

## APPLICATION CERTIFICATION

On Behalf of  
LIMITS Technology Limited

LIMITS  
Model No.: Rev 1

FCC ID: 2AHNI-REV1

Prepared for : LIMITS Technology Limited  
Address : The Boathouse, Silversands, Hawkcraig Road, Aberdour,  
Fife, KY3 0TZ, UK

Prepared by : ACCURATE TECHNOLOGY CO., LTD  
Address : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.  
Science & Industry Park, Nanshan, Shenzhen, Guangdong  
P.R. China

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Report Number : ATE20160254  
Date of Test : March 3-5, 2016  
Date of Report : March 8, 2016

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## Test Report Certification

Applicant : LIMITS Technology Limited

Manufacturer : LIMITS

EUT Description : LIMITS

(A) Model No.: Rev 1

(B) Trade Mark: LIMITS

(C) Power Supply: DC 3V

Measurement Procedure Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.249: 2015**  
**ANSI C63.10: 2013**

The EUT was tested according to FCC 47CFR 15.249 for compliance to FCC 47CFR 15.249 requirements

The device described above is tested by 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 15.249 limits. The measurement results are contained in this test report and 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 ACCURATE TECHNOLOGY CO. LTD.

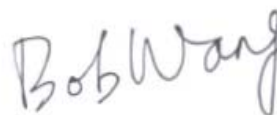
Date of Test :

March 3-5, 2016

Date of Report:

March 8, 2016

Prepared by :



(Bob Wang, Engineer)

Approved & Authorized Signer :



(Sean Lu, Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

EUT : LIMITS

Model Number : Rev 1  
Trade Mark : LIMITS  
Power Supply : DC 3V  
Modulation: : GMSK  
Frequency Range : 2.402-2.480GHz  
Number of Channels : 40  
Type of Antenna : Integral Antenna  
Max antenna gain : 0dBi

Applicant : LIMITS Technology Limited  
Address : The Boathouse, Silversands, Hawkraig Road, Aberdour,  
Fife, KY3 0TZ, UK

Manufacturer : LIMITS  
Address : The Boathouse, Silversands, Hawkraig Road, Aberdour,  
Fife, KY3 0TZ, UK

Date of sample : March 1, 2016  
received  
Date of Test : March 3, 2016

### 1.2. Special Accessory and Auxiliary Equipment

N/A

### 1.3. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC  
The Registration Number is 752051

Listed by Industry Canada  
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee  
for Laboratories  
The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.  
Science & Industry Park, Nanshan, Shenzhen, Guangdong  
P.R. China

### 1.4. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2  
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2  
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2  
(Above 1GHz)

## 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. 9, 2016	Jan. 8, 2017
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 9, 2016	Jan. 8, 2017
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 9, 2016	Jan. 8, 2017
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 9, 2016	Jan. 8, 2017
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 14, 2016	Jan. 13, 2017
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 14, 2016	Jan. 13, 2017
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 14, 2016	Jan. 13, 2017
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 14, 2016	Jan. 13, 2017
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 9, 2016	Jan. 8, 2017
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 9, 2016	Jan. 8, 2017

### 3. OPERATION OF EUT DURING TESTING

#### 3.1.Operating Mode

The mode is used: **Transmitting mode**

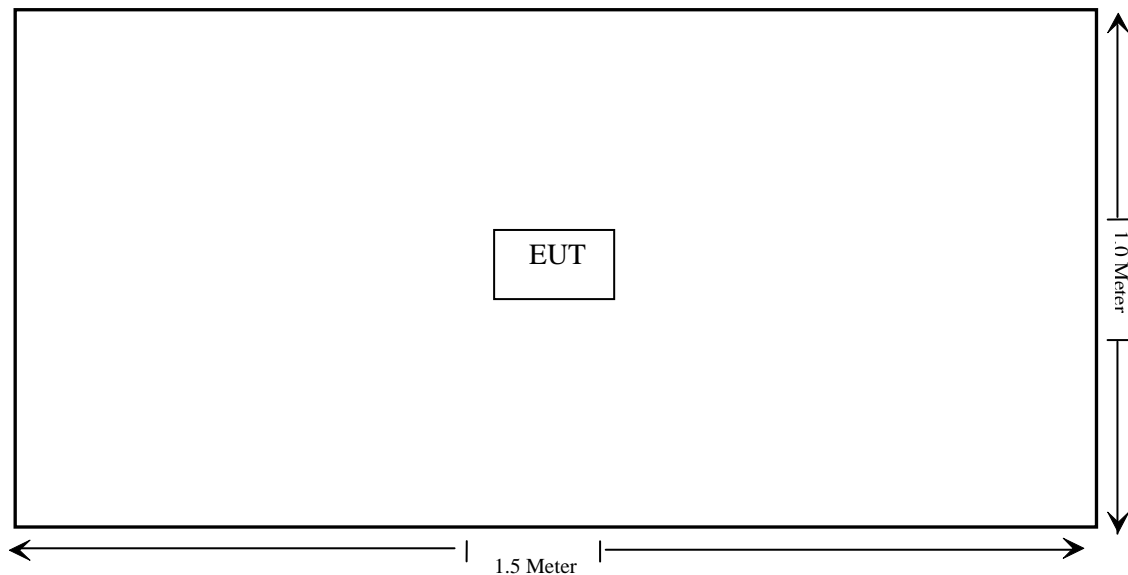
Low Channel: 2402MHz

Middle Channel: 2440MHz

High Channel: 2480MHz

#### 3.2.Configuration and peripherals

Block Diagram of Test Setup



#### 4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.215(c)	20dB Bandwidth	Compliant
Section 15.249(d)	Band Edge Compliance Test	Compliant
Section 15.205(a), Section 15.209(a), Section 15.249, Section 15.35	Radiated Spurious Emission Test	Compliant
Section 15.207	AC Power Line Conducted Emission Test	N/A (Battery power supply)
Section 15.203	Antenna Requirement	Compliant

Remark: "N/A" means "Not applicable".



## 5. 20DB BANDWIDTH MEASUREMENT

### 5.1. Block Diagram of Test Setup



### 5.2. The Requirement For Section 15.215(c)

The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset while the long-term distribution appears evenly distributed.

### 5.3. Operating Condition of EUT

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

5.3.2. Turn on the power of all equipment.

5.3.3. Let the EUT work in TX modes measure it. The transmit frequency is 2402, 2440, 2480MHz.

### 5.4. Test Procedure

5.4.1. Place the EUT on the table and set it in transmitting mode.

5.4.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

5.4.3. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz, Detector function=peak, Trace=max hold, Sweep=auto.

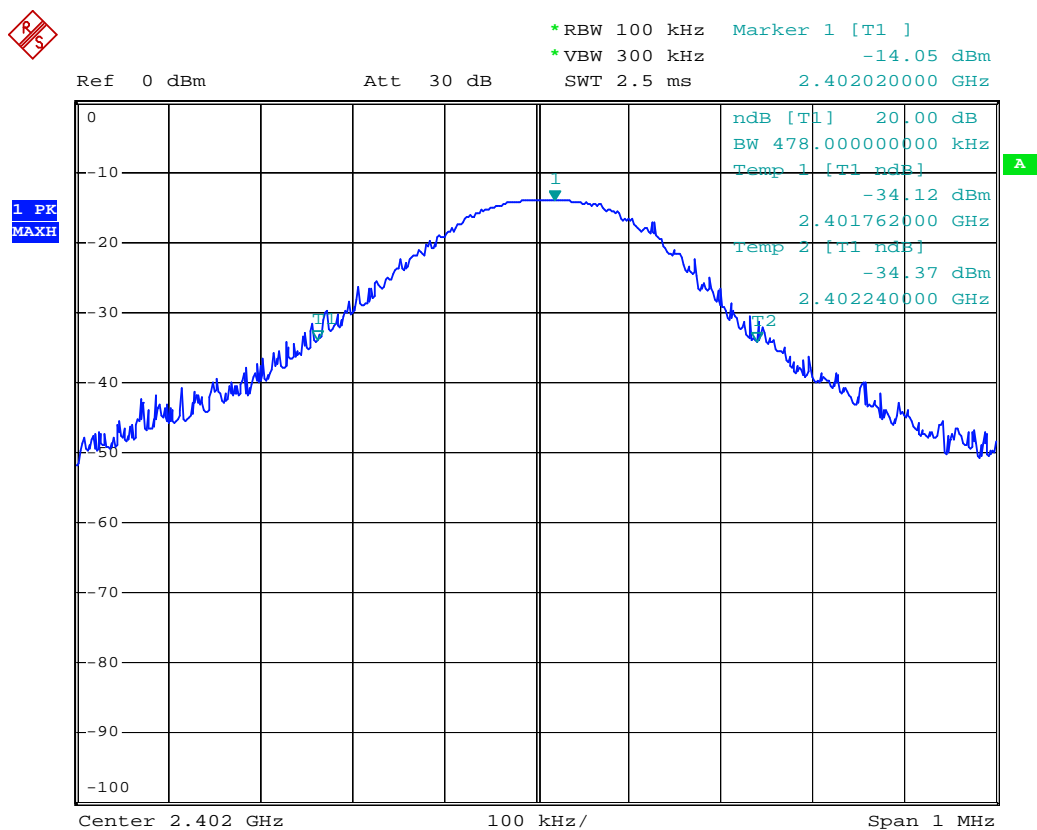
5.4.4. Set the measured low, middle and high frequency and test 20dB bandwidth with spectrum analyzer.

## 5.5. Test Result

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2402	0.48
Mid	2440	0.45
High	2480	0.45

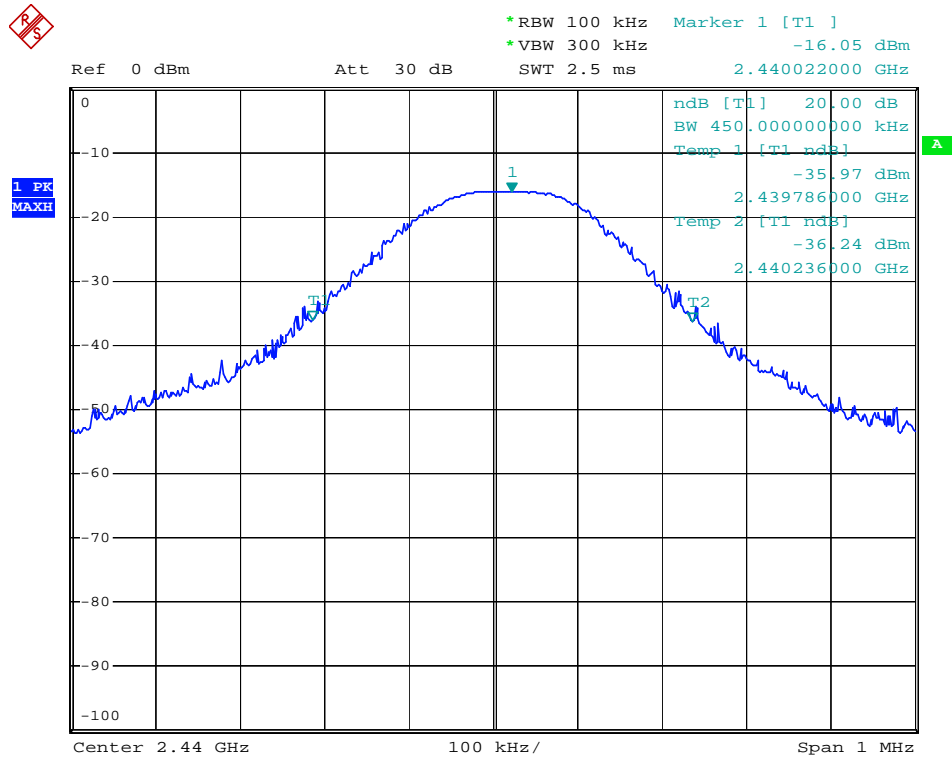
The spectrum analyzer plots are attached as below.

### Low channel



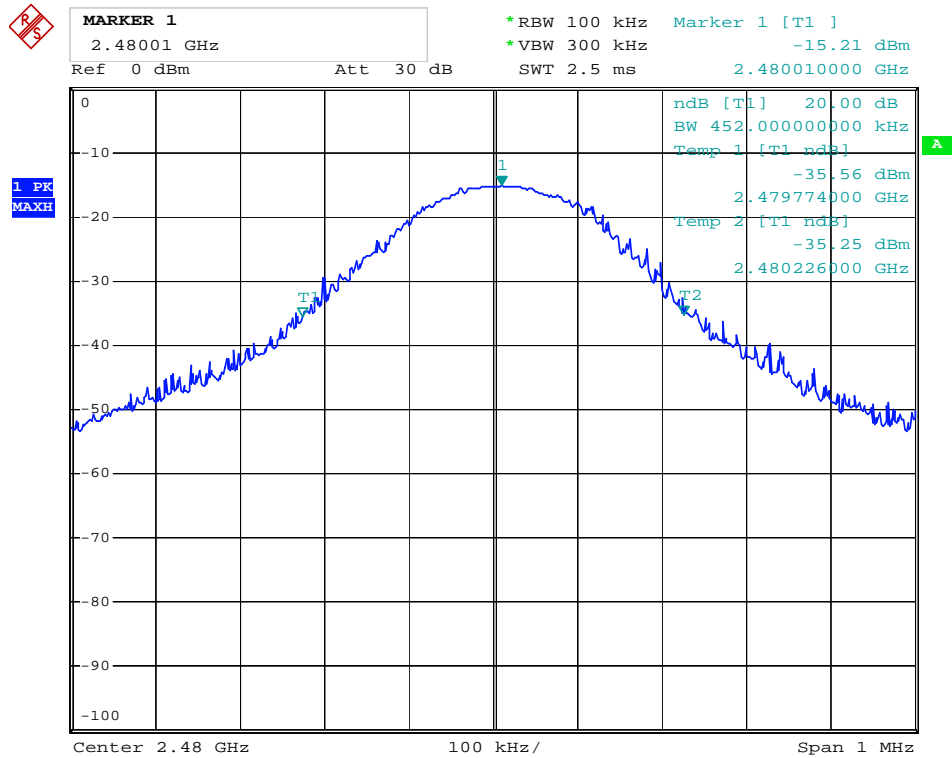
Date: 5.MAR.2016 10:30:29

## Middle channel



Date: 5.MAR.2016 10:17:38

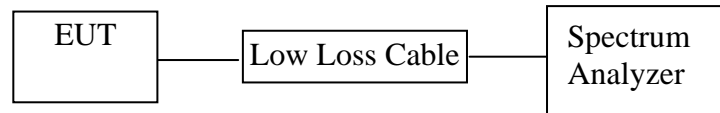
## High channel



Date: 5.MAR.2016 09:39:46

## 6. BAND EDGE COMPLIANCE TEST

### 6.1. Block Diagram of Test Setup



### 6.2. The Requirement For Section 15.249

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 A8.4(4), the attenuation required 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).

### 6.3. 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.

### 6.4. Operating Condition of EUT

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

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it. The transmit frequency is 2402, 2480 MHz.

### 6.5. Test Procedure

Conducted Band Edge:

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

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

Radiated Band Edge:

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. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX modes then measure it.

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

## 6.6. Test Result

**Pass**

## Radiated Band Edge Result



### ACCURATE TECHNOLOGY CO., LTD.

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Site: 1# Chamber

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Job No.: STAR2016 #294

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2402MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Vertical

Power Source: DC 3V

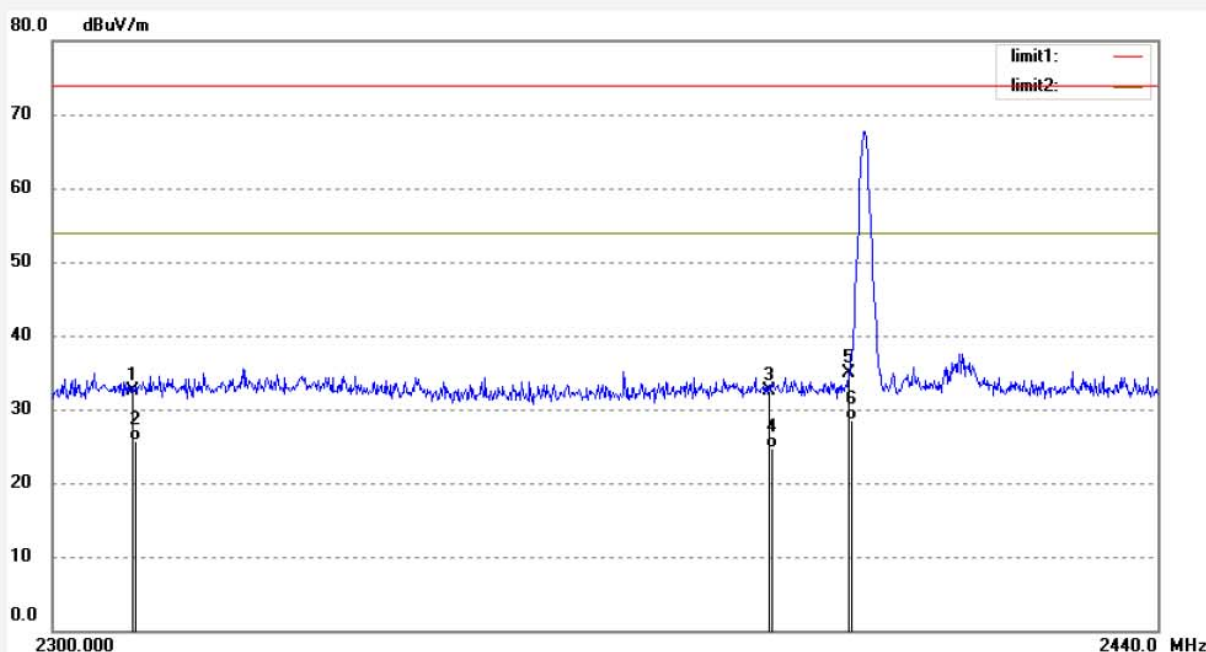
Date: 2016/03/03

Time: 16:02:24

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	40.30	-7.87	32.43	74.00	-41.57	peak			
2	2310.000	33.65	-7.87	25.78	54.00	-28.22	AVG			
3	2390.000	40.22	-7.64	32.58	74.00	-41.42	peak			
4	2390.000	32.40	-7.64	24.76	54.00	-29.24	AVG			
5	2400.000	42.46	-7.61	34.85	74.00	-39.15	peak			
6	2400.000	36.14	-7.61	28.53	54.00	-25.47	AVG			



## ACCURATE TECHNOLOGY CO., LTD.

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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #293

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2402MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Horizontal

Power Source: DC 3V

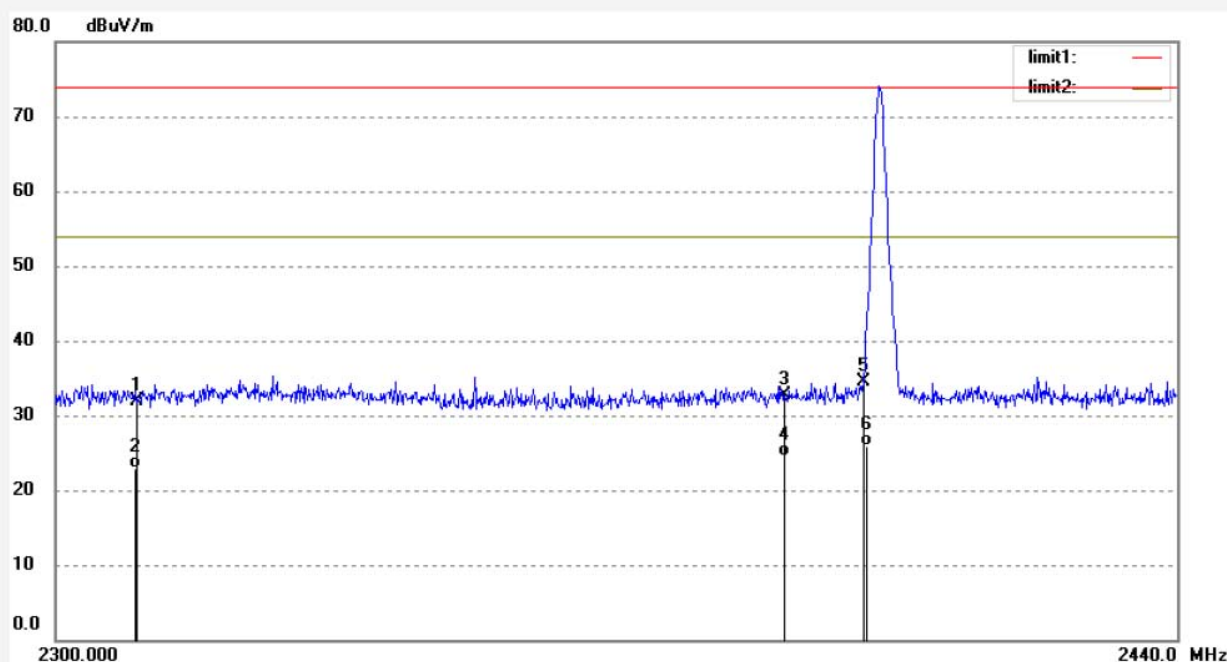
Date: 2016/03/03

Time: 15:57:57

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	39.83	-7.87	31.96	74.00	-42.04	peak			
2	2310.000	30.74	-7.87	22.87	54.00	-31.13	AVG			
3	2390.000	40.40	-7.64	32.76	74.00	-41.24	peak			
4	2390.000	32.07	-7.64	24.43	54.00	-29.57	AVG			
5	2400.000	42.16	-7.61	34.55	74.00	-39.45	peak			
6	2400.000	33.45	-7.61	25.84	54.00	-28.16	AVG			





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Site: 1# Chamber

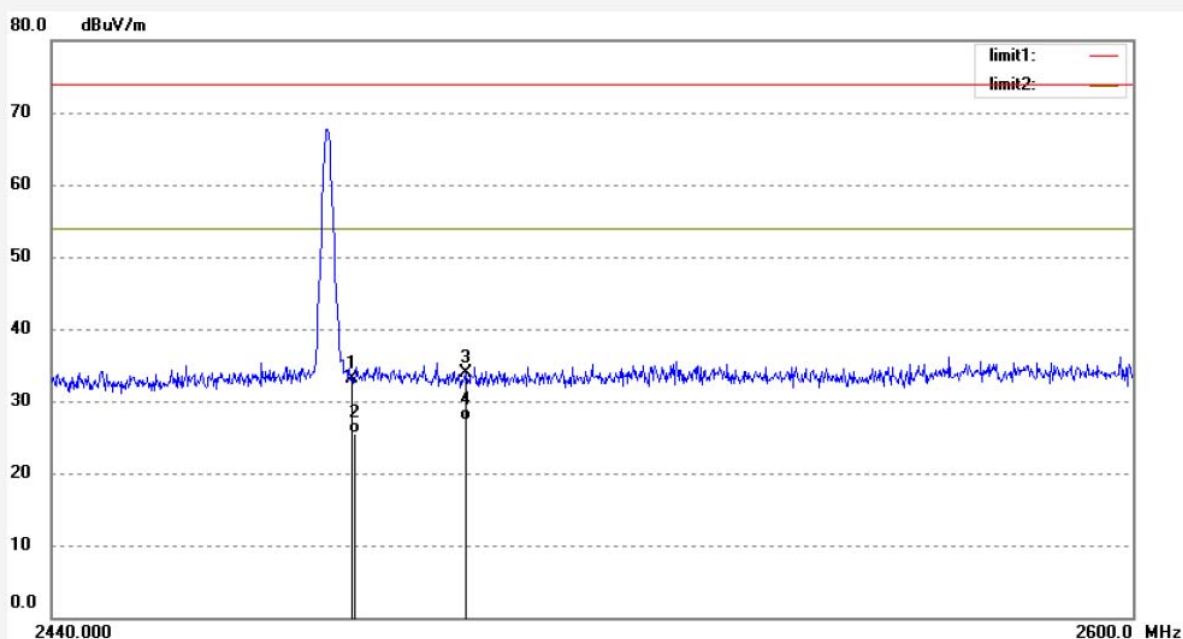
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #292  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LIMITS  
Mode: TX 2480MHz  
Model: Rev 1  
Manufacturer: LIMITS

Polarization: Horizontal  
Power Source: DC 3V  
Date: 2016/03/03  
Time: 15:46:49  
Engineer Signature: star  
Distance: 3m

Note: Report No.:ATE20160254



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	40.52	-7.37	33.15	74.00	-40.85	peak			
2	2483.500	32.78	-7.37	25.41	54.00	-28.59	AVG			
3	2500.000	41.20	-7.32	33.88	74.00	-40.12	peak			
4	2500.000	34.69	-7.32	27.37	54.00	-26.63	AVG			





## ACCURATE TECHNOLOGY CO., LTD.

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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #291

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2480MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Vertical

Power Source: DC 3V

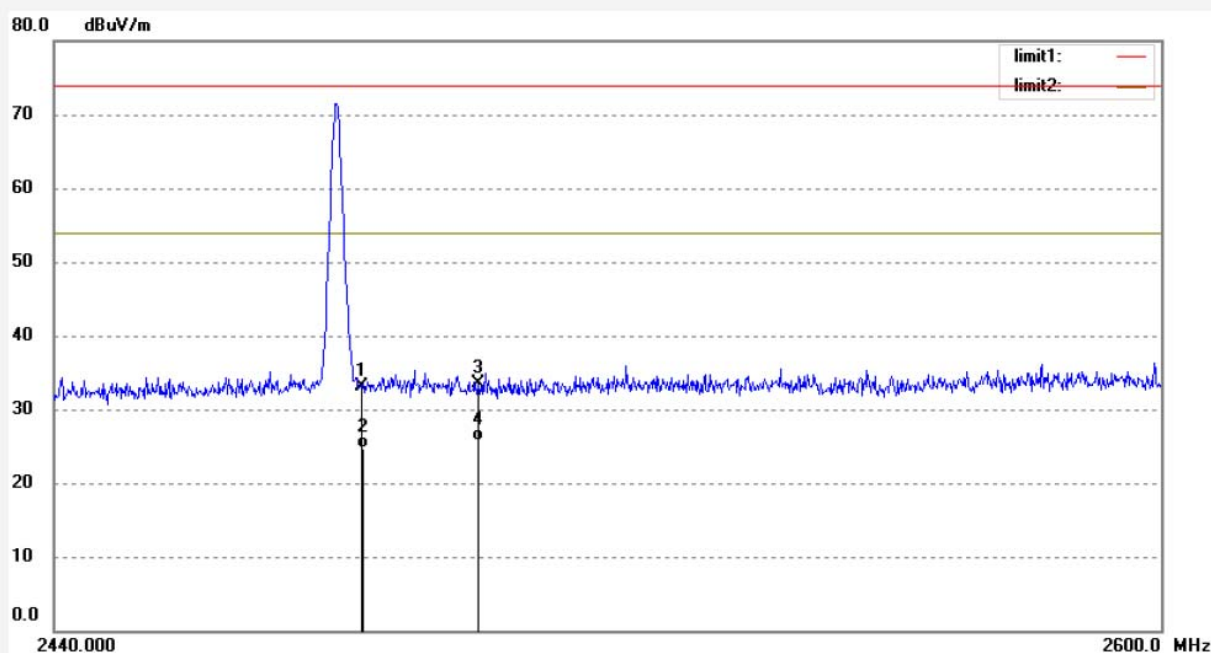
Date: 2016/03/03

Time: 15:42:33

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254

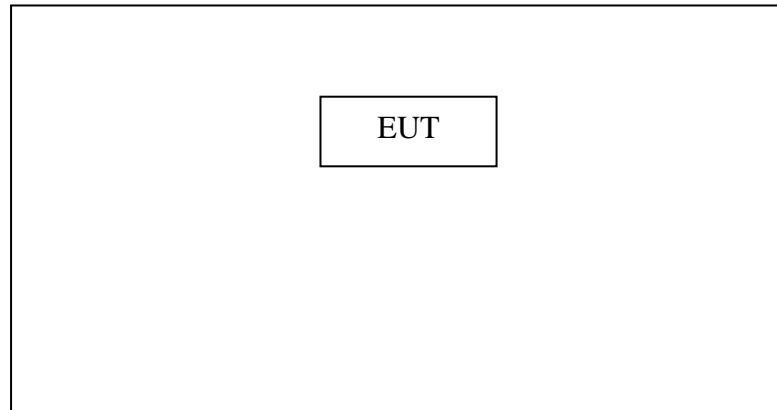


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	40.45	-7.37	33.08	74.00	-40.92	peak			
2	2483.500	32.14	-7.37	24.77	54.00	-29.23	AVG			
3	2500.000	40.78	-7.32	33.46	74.00	-40.54	peak			
4	2500.000	33.00	-7.32	25.68	54.00	-28.32	AVG			

## 7. RADIATED SPURIOUS EMISSION TEST

### 7.1. Block Diagram of Test Setup

#### 7.1.1. Block diagram of connection between the EUT and peripherals



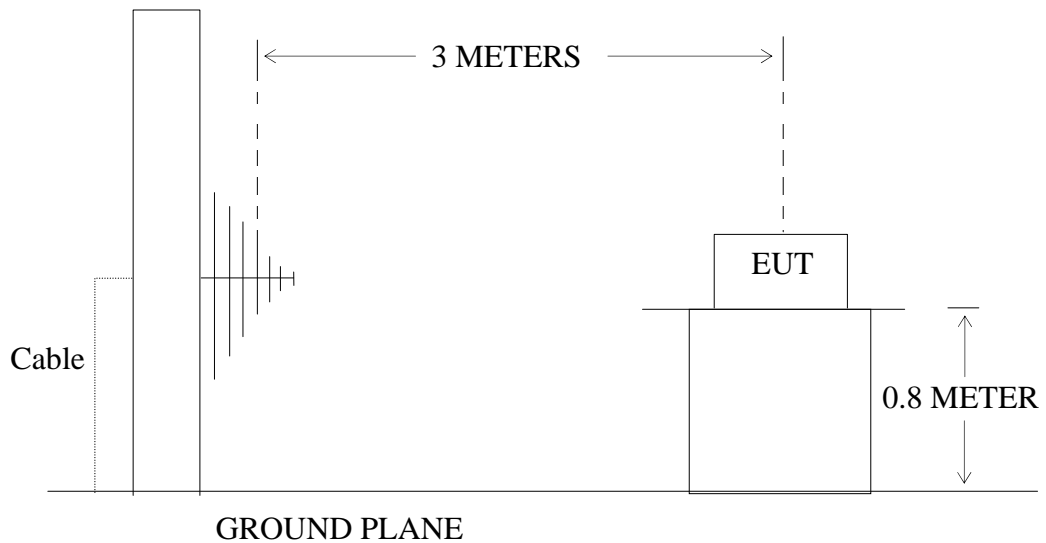
Setup: Transmitting mode

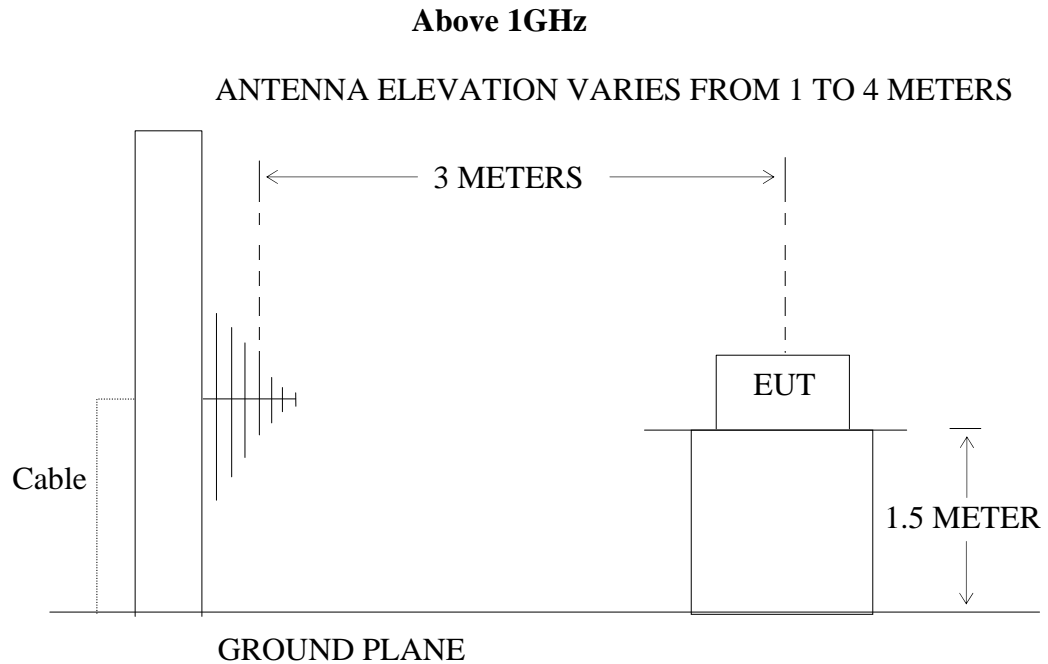
(EUT: LIMITS)

#### 7.1.2. Semi-Anechoic Chamber Test Setup Diagram

**Below 1GHz**

ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS





## 7.2.The Limit For Section 15.249

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 A8.4(4), 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).

### 7.3.Restricted bands of operation

#### 7.3.1.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
<sup>1</sup> 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	( <sup>2</sup> )
13.36-13.41			

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510

<sup>2</sup>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 Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

### 7.4.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.

### 7.5.Operating Condition of EUT

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

7.5.2.Turn on the power of all equipment.

7.5.3.Let the EUT work in TX modes measure it. The transmit frequency is 2402, 2440, 2480MHz.

## 7.6. 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 EUT was tested in 3 orthogonal planes.

The frequency range from 30MHz to 25000MHz 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.

## 7.7.The Field Strength of Radiation Emission Measurement Results

### PASS.

#### For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
---	---	---	---	---	---	Vertical
---	---	---	---	---	---	Vertical
---	---	---	---	---	---	Vertical
---	---	---	---	---	---	Horizontal
---	---	---	---	---	---	Horizontal
---	---	---	---	---	---	Horizontal

#### For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
-	-	-	-	-	-	-	-	-	-	Vertical
-	-	-	-	-	-	-	-	-	-	Horizontal

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

2. \*: Denotes restricted band of operation.

3. The EUT is tested radiation emission at Low, Middle, High channel in three axes. The worst emissions are reported in all channels.

4. The radiation emissions from 18-25GHz are not reported, because the test values lower than the limits of 20dB.



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #295

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2402MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Vertical

Power Source: DC 3V

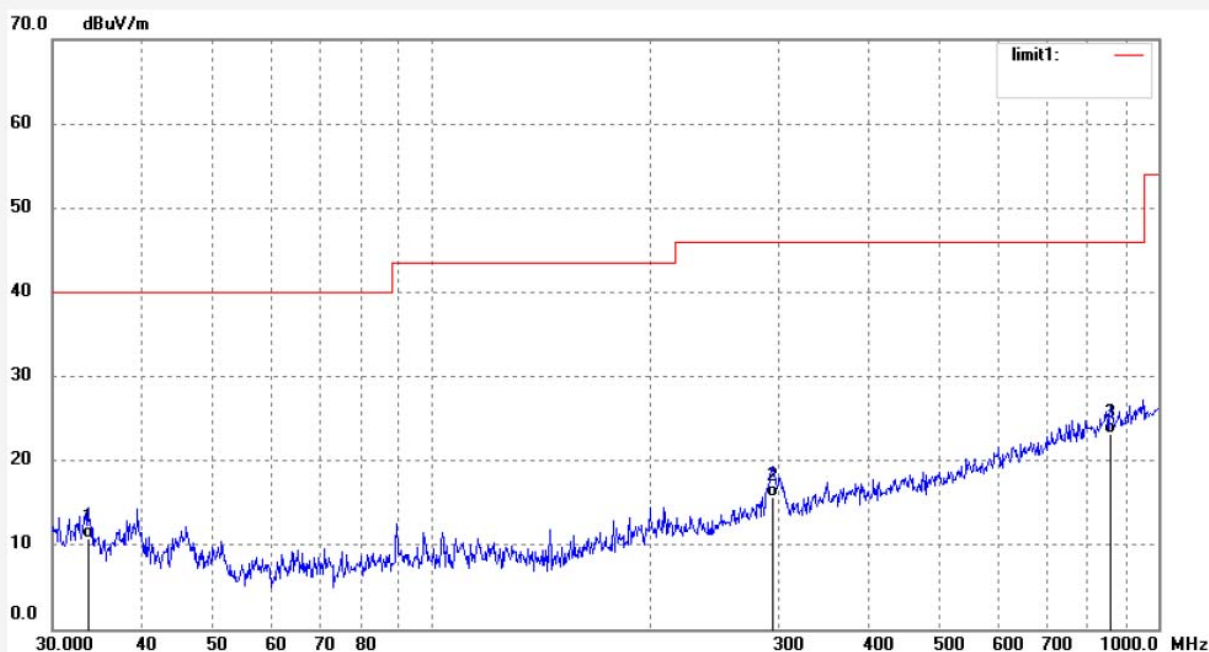
Date: 2016/03/03

Time: 16:13:00

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.5700	28.00	-17.30	10.70	40.00	-29.30	QP			
2	294.4260	32.10	-16.38	15.72	46.00	-30.28	QP			
3	859.7753	28.04	-4.89	23.15	46.00	-22.85	QP			





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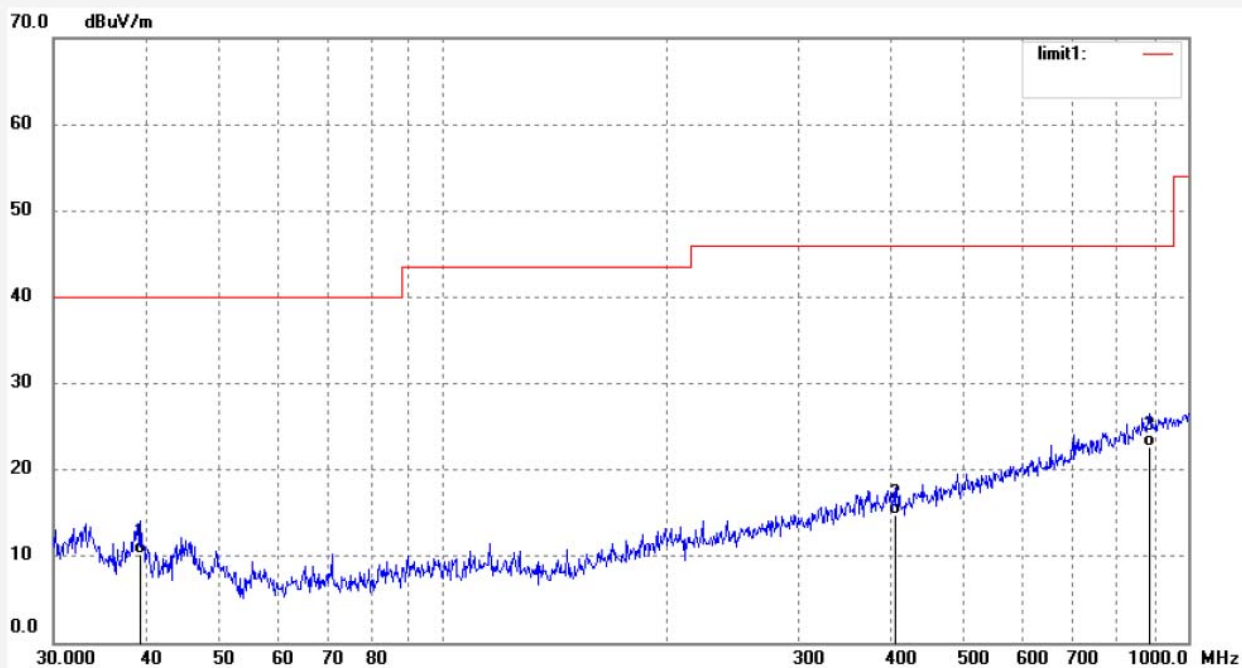
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: STAR2016 #296  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LIMITS  
Mode: TX 2402MHz  
Model: Rev 1  
Manufacturer: LIMITS

Polarization: Horizontal  
Power Source: DC 3V  
Date: 2016/03/03  
Time: 16:17:41  
Engineer Signature: star  
Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	39.3203	29.14	-18.88	10.26	40.00	-29.74	QP			
2	403.9334	28.64	-13.92	14.72	46.00	-31.28	QP			
3	887.3977	27.05	-4.39	22.66	46.00	-23.34	QP			





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Site: 1# Chamber

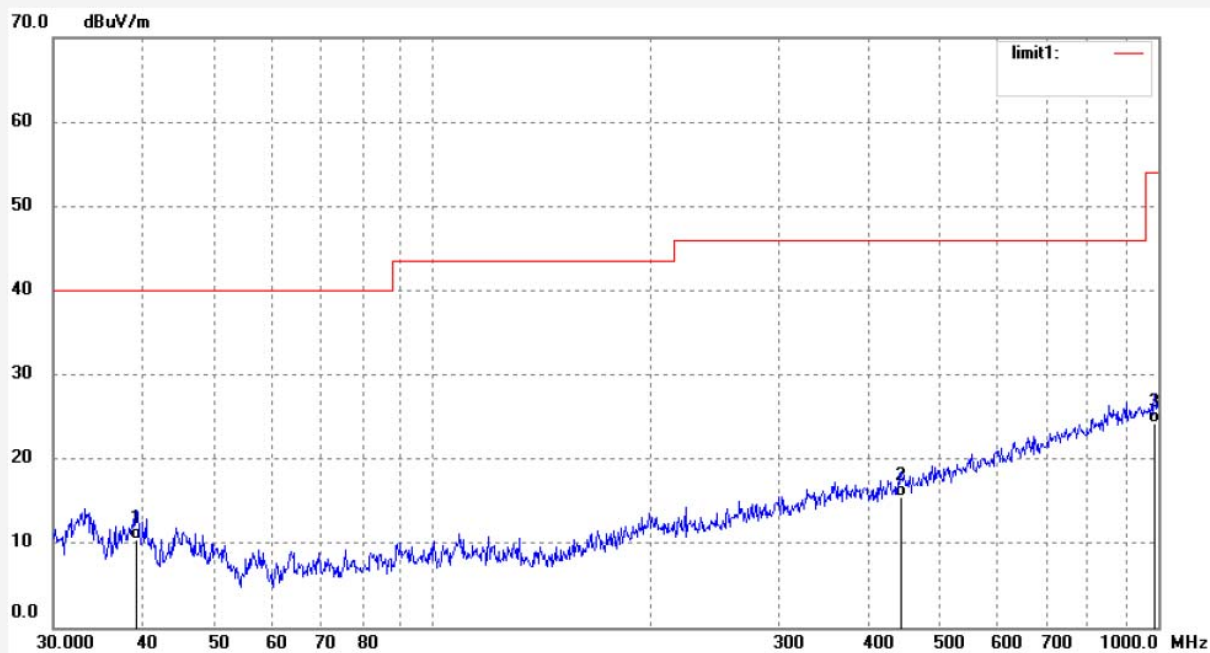
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #297  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LIMITS  
Mode: TX 2440MHz  
Model: Rev 1  
Manufacturer: LIMITS

Polarization: Horizontal  
Power Source: DC 3V  
Date: 2016/03/03  
Time: 16:25:20  
Engineer Signature: star  
Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	39.0449	29.14	-18.80	10.34	40.00	-29.66	QP			
2	442.5722	28.64	-13.19	15.45	46.00	-30.55	QP			
3	989.5145	27.14	-2.85	24.29	54.00	-29.71	QP			



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Site: 1# Chamber

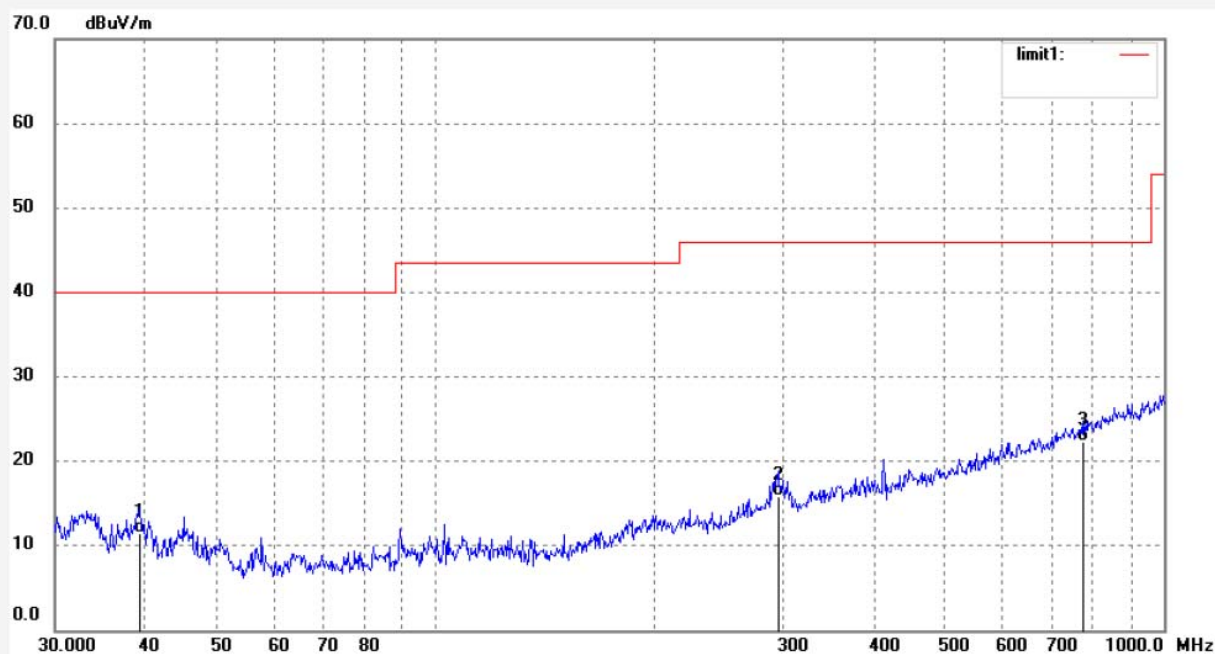
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #298  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LIMITS  
Mode: TX 2440MHz  
Model: Rev 1  
Manufacturer: LIMITS

Polarization: Vertical  
Power Source: DC 3V  
Date: 2016/03/03  
Time: 16:30:37  
Engineer Signature: star  
Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	39.3203	30.28	-18.88	11.40	40.00	-28.60	QP			
2	295.4623	32.11	-16.35	15.76	46.00	-30.24	QP			
3	773.7612	28.67	-6.35	22.32	46.00	-23.68	QP			



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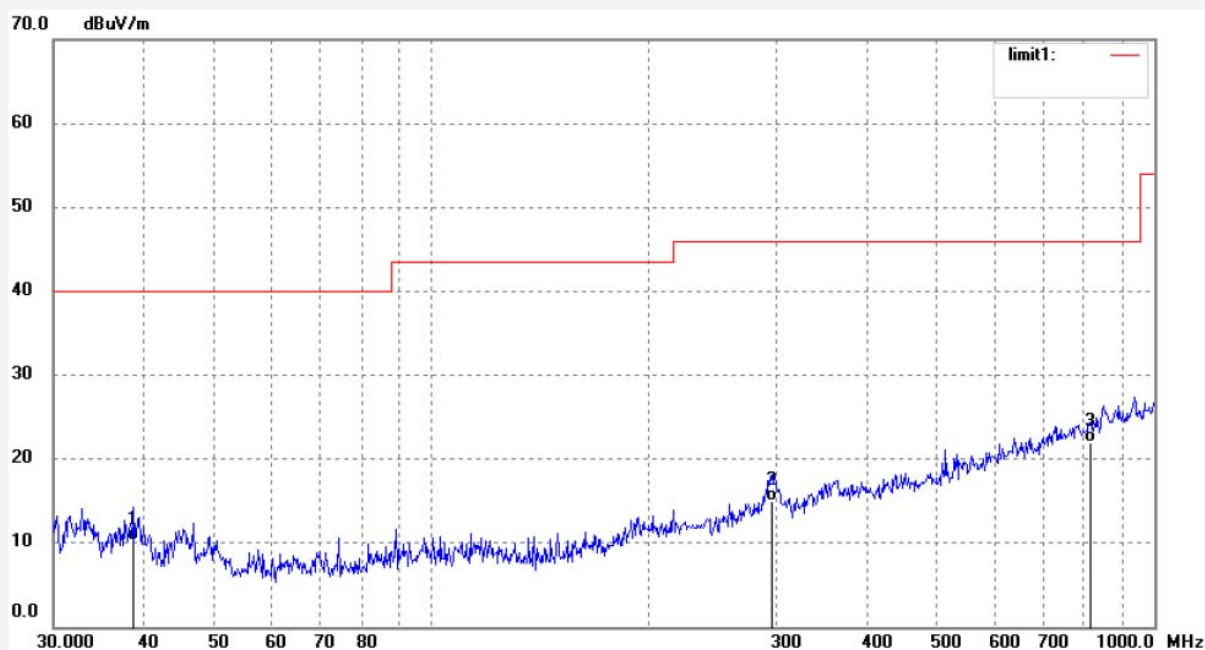
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: STAR2016 #299  
Standard: FCC Class B 3M Radiated  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LIMITS  
Mode: TX 2480MHz  
Model: Rev 1  
Manufacturer: LIMITS

Polarization: Vertical  
Power Source: DC 3V  
Date: 2016/03/03  
Time: 16:37:15  
Engineer Signature: star  
Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	38.7714	28.97	-18.71	10.26	40.00	-29.74	QP			
2	295.4623	31.24	-16.35	14.89	46.00	-31.11	QP			
3	815.6352	27.66	-5.61	22.05	46.00	-23.95	QP			





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Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: STAR2016 #300

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2480MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Horizontal

Power Source: DC 3V

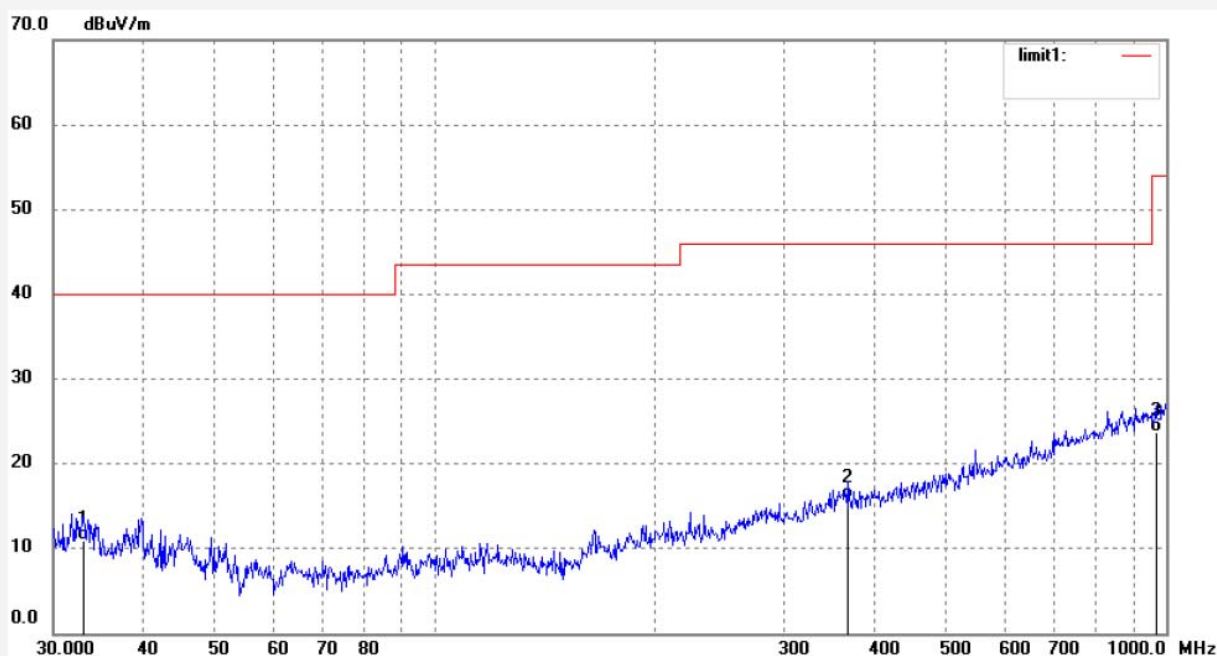
Date: 2016/03/03

Time: 16:41:49

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.9854	28.10	-17.22	10.88	40.00	-29.12	QP			
2	367.3752	30.01	-14.24	15.77	46.00	-30.23	QP			
3	968.8725	26.78	-3.15	23.63	54.00	-30.37	QP			



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #285

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2402MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Horizontal

Power Source: DC 3V

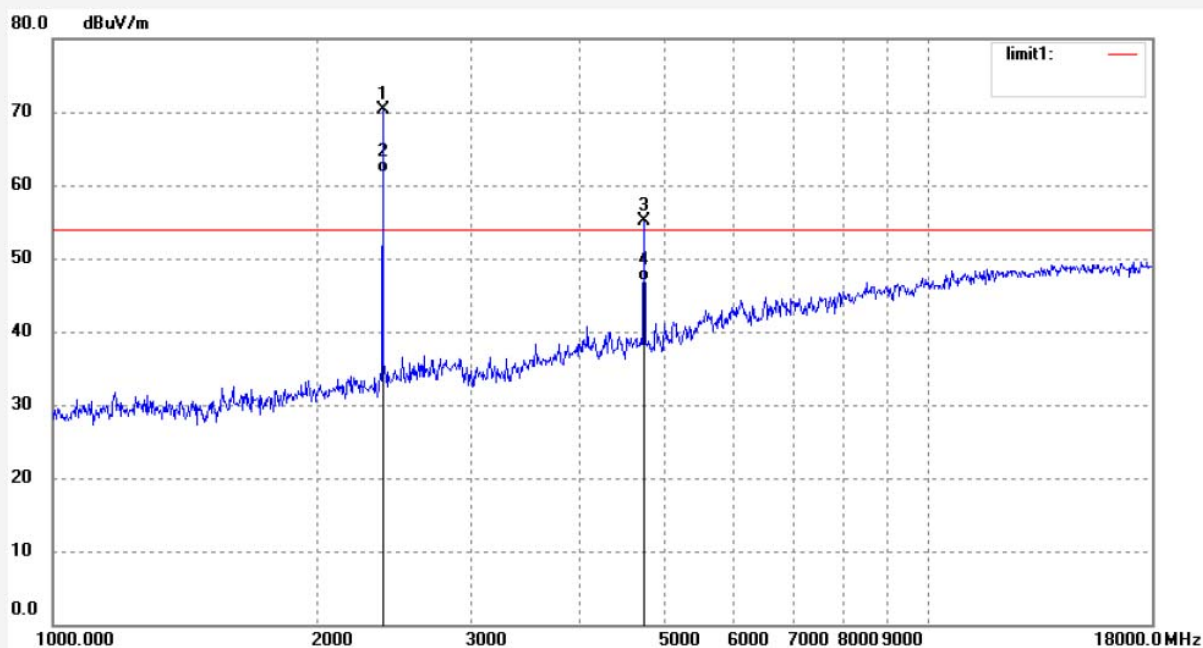
Date: 2016/03/03

Time: 15:10:49

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	77.95	-7.67	70.28	114.00	-43.72	peak			
2	2402.000	69.45	-7.67	61.78	94.00	-32.22	AVG			
3	4804.000	56.89	-1.77	55.12	74.00	-18.88	peak			
4	4804.000	48.71	-1.77	46.94	54.00	-7.06	AVG			



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #286

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2402MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Vertical

Power Source: DC 3V

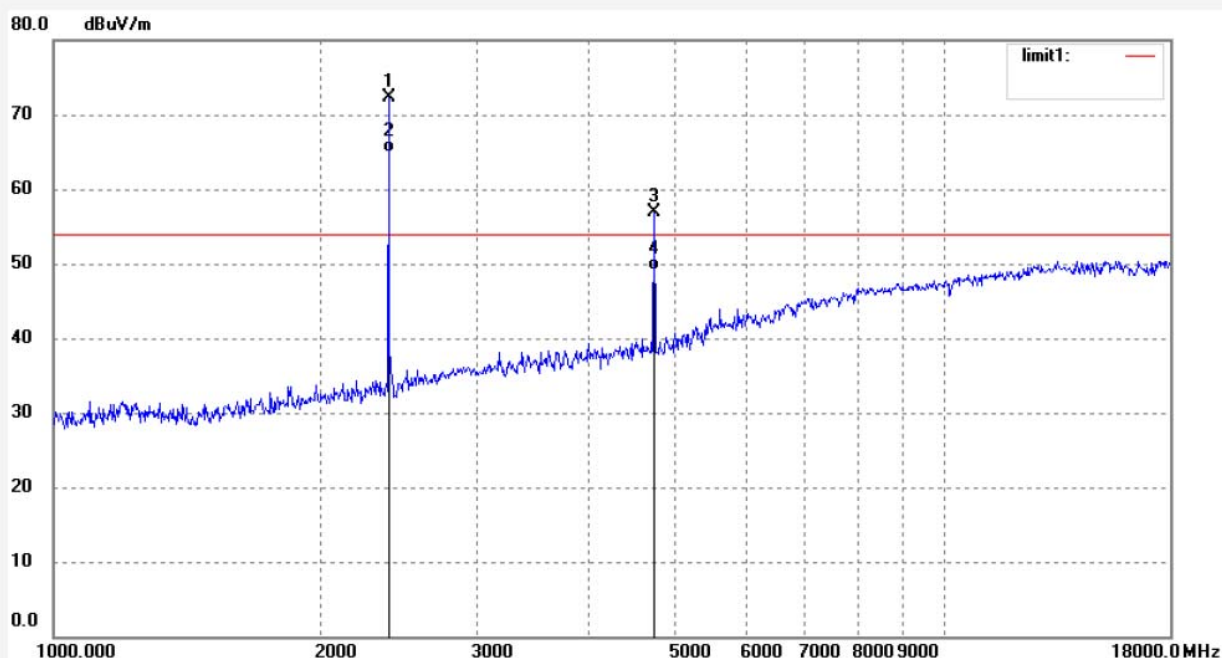
Date: 2016/03/03

Time: 15:14:24

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	80.02	-7.67	72.35	114.00	-41.65	peak			
2	2402.000	72.67	-7.67	65.00	94.00	-29.00	AVG			
3	4804.000	58.66	-1.77	56.89	74.00	-17.11	peak			
4	4804.000	50.95	-1.77	49.18	54.00	-4.82	AVG			





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Job No.: STAR2016 #287

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2440MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Vertical

Power Source: DC 3V

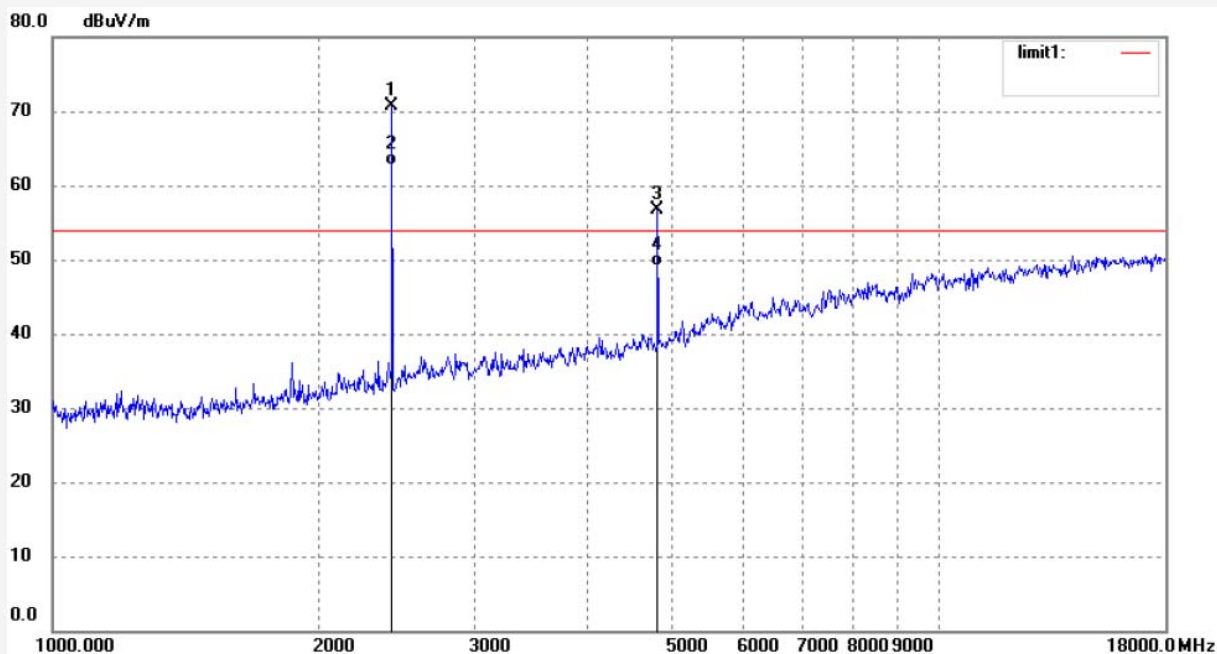
Date: 2016/03/03

Time: 15:21:27

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	78.18	-7.56	70.62	114.00	-43.38	peak			
2	2440.000	70.24	-7.56	62.68	94.00	-31.32	AVG			
3	4880.000	58.17	-1.50	56.67	74.00	-17.33	peak			
4	4880.000	50.57	-1.50	49.07	54.00	-4.93	AVG			



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #288

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2440MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Horizontal

Power Source: DC 3V

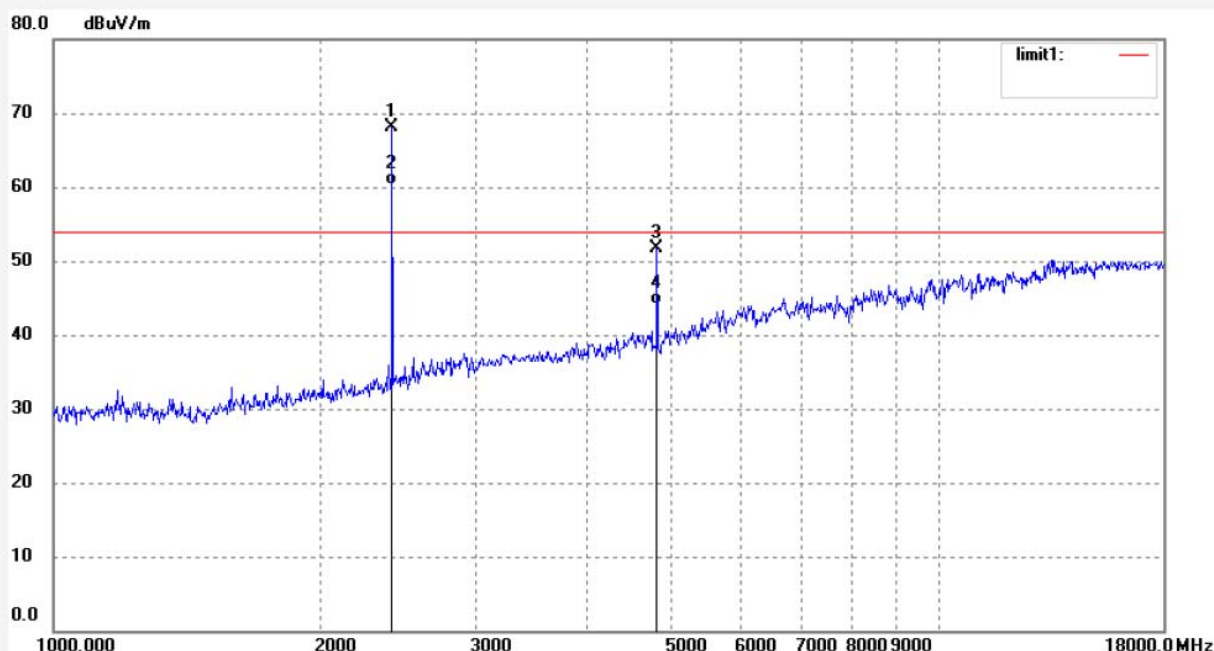
Date: 2016/03/03

Time: 15:25:17

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	75.66	-7.56	68.10	114.00	-45.90	peak			
2	2440.000	67.90	-7.56	60.34	94.00	-33.66	AVG			
3	4880.000	53.29	-1.50	51.79	74.00	-22.21	peak			
4	4880.000	45.63	-1.50	44.13	54.00	-9.87	AVG			





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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #289

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2480MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Horizontal

Power Source: DC 3V

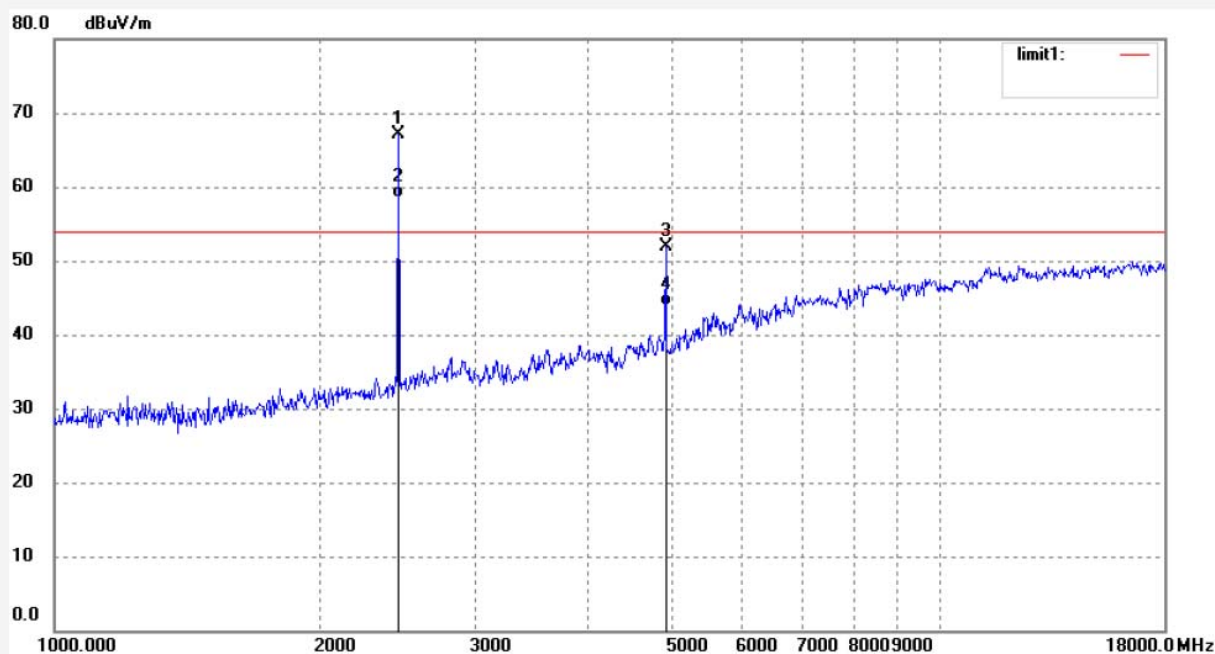
Date: 2016/03/03

Time: 15:32:00

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	74.51	-7.47	67.04	114.00	-46.96	peak			
2	2480.000	66.00	-7.47	58.53	94.00	-35.47	AVG			
3	4960.000	53.13	-1.17	51.96	74.00	-22.04	peak			
4	4960.000	45.10	-1.17	43.93	54.00	-10.07	AVG			



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2016 #290

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LIMITS

Mode: TX 2480MHz

Model: Rev 1

Manufacturer: LIMITS

Polarization: Vertical

Power Source: DC 3V

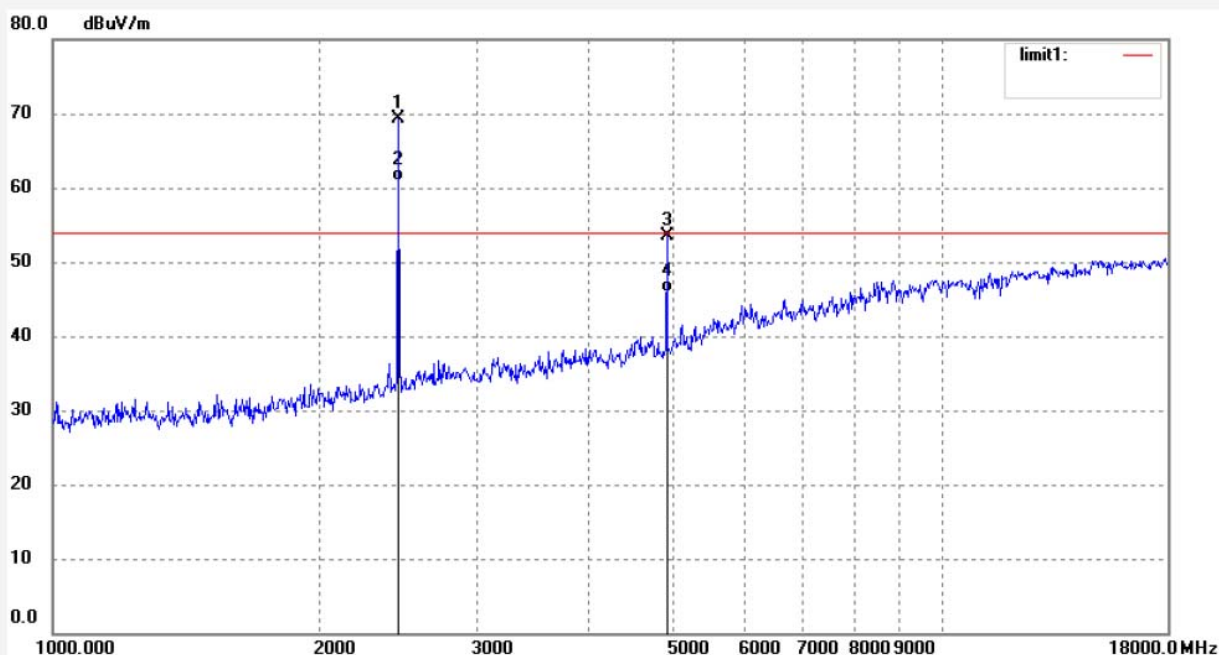
Date: 2016/03/03

Time: 15:36:02

Engineer Signature: star

Distance: 3m

Note: Report No.:ATE20160254



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	76.75	-7.47	69.28	114.00	-44.72	peak			
2	2480.000	68.42	-7.47	60.95	94.00	-33.05	AVG			
3	4960.000	54.72	-1.17	53.55	74.00	-20.45	peak			
4	4960.000	47.14	-1.17	45.97	54.00	-8.03	AVG			

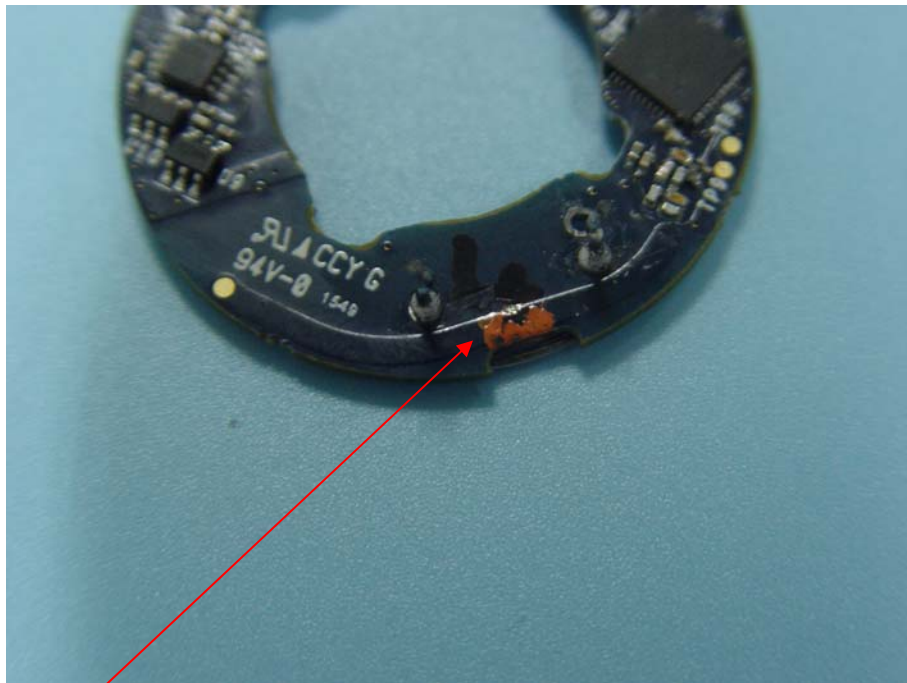
## 8. ANTENNA REQUIREMENT

### 8.1.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.

### 8.2.Antenna Construction

Device is equipped with Integral antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 0dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



**Antenna**