

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
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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.

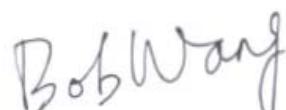
Date of Test :

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 received | : | March 1, 2016 |
| 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 (9kHz-30MHz) | = 3.08dB, k=2 |
| Radiated emission expanded uncertainty (30MHz-1000MHz) | = 4.42dB, k=2 |
| Radiated emission expanded uncertainty (Above 1GHz) | = 4.06dB, 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. 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**

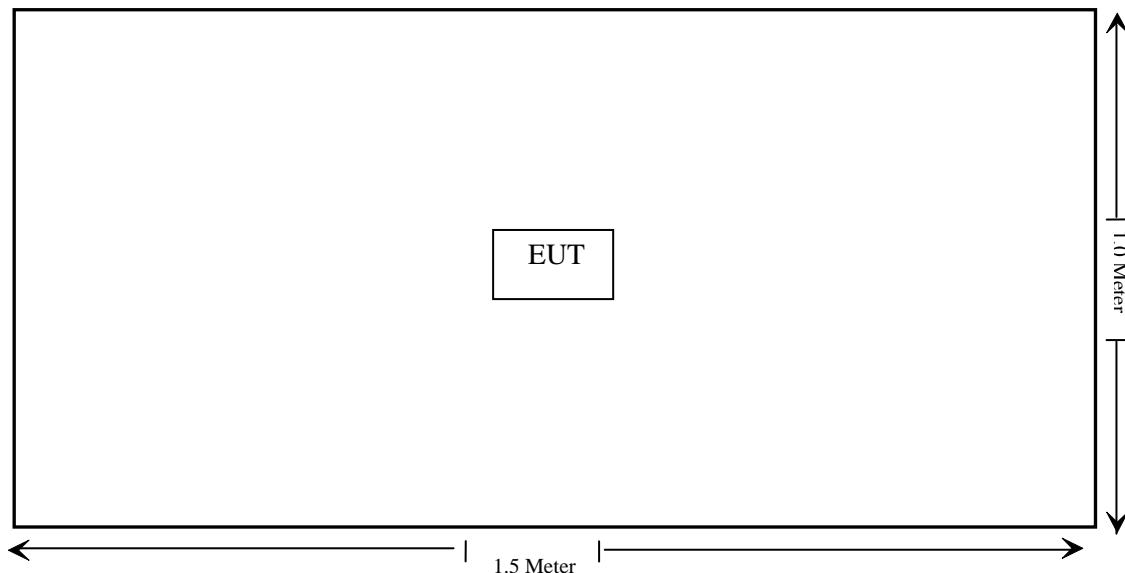
Low Channel: 2402MHz

Middle Channel: 2440MHz

High Channel: 2480MHz

3.2. Configuration and peripherals

Block Diagram of Test Setup



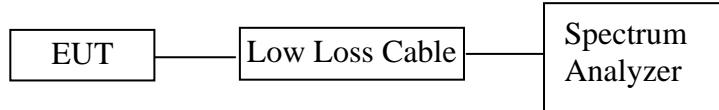
4. TEST PROCEDURES AND RESULTS

| 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.

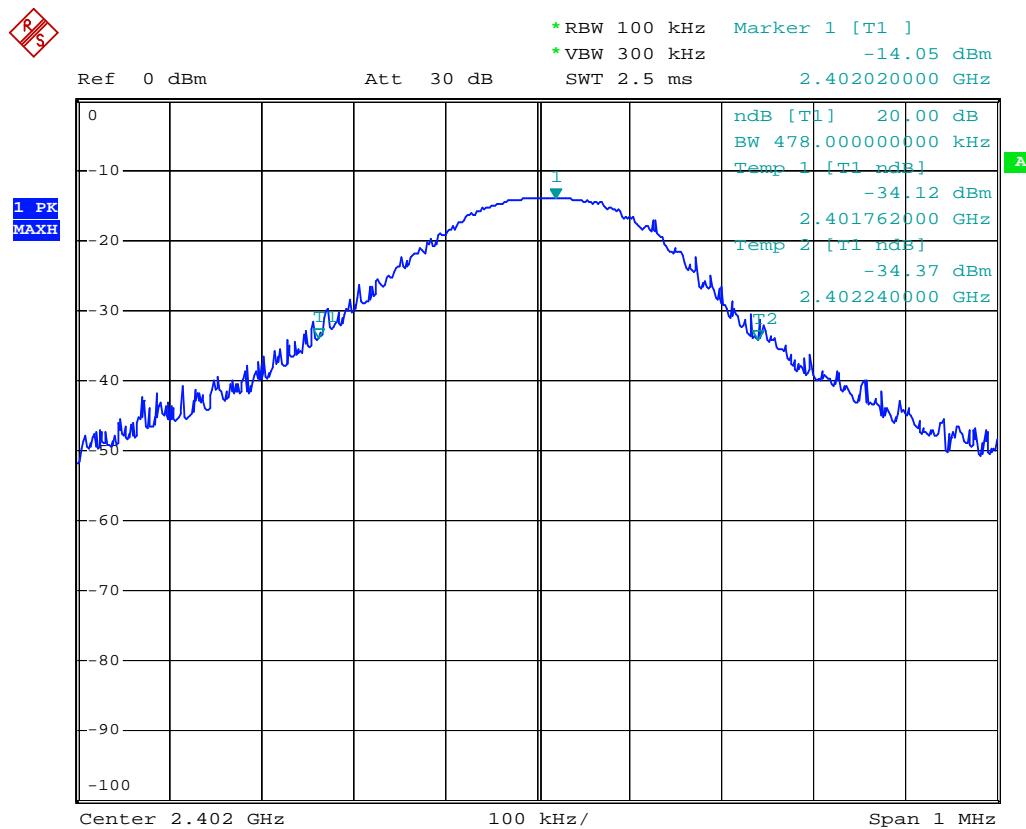
5.4.4. Set the measured low, middle and high frequency and test 20dB bandwidth with spectrum analyzer.

5.5. Test Result

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

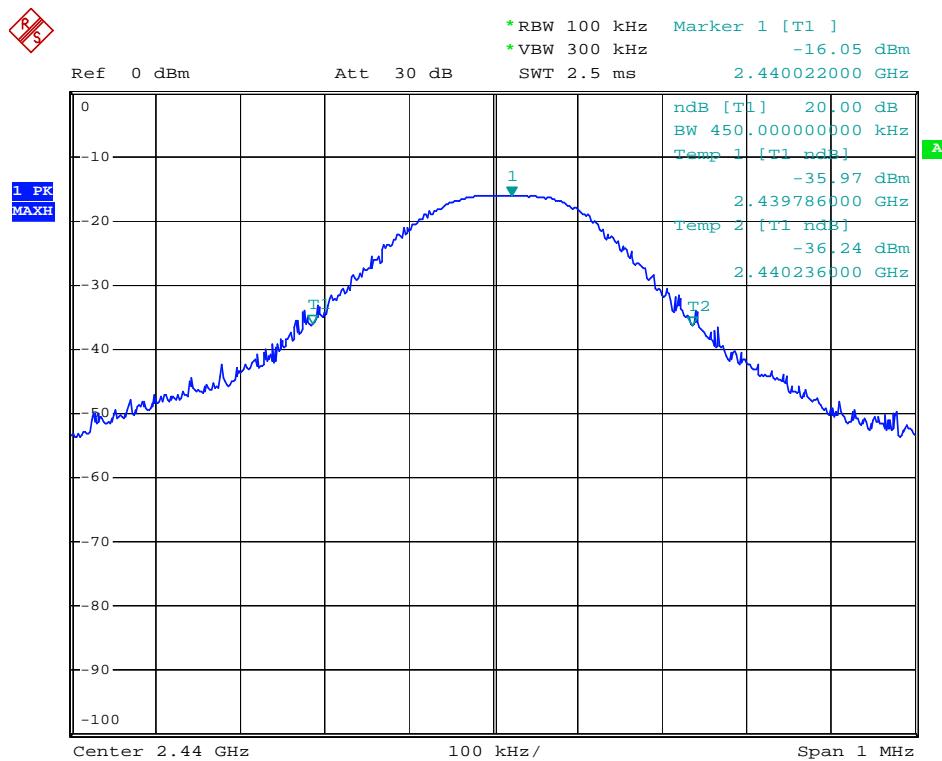
The spectrum analyzer plots are attached as below.

Low channel



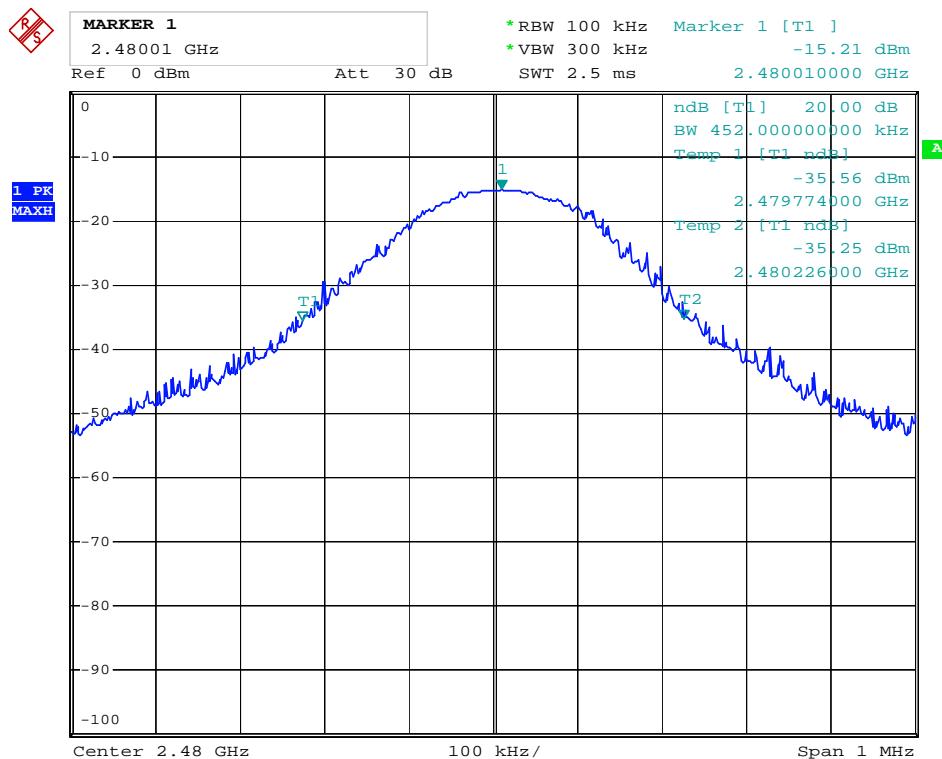
Date: 5.MAR.2016 10:30:29

Middle channel



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

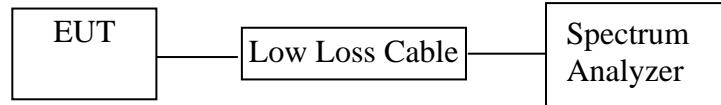
High channel



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

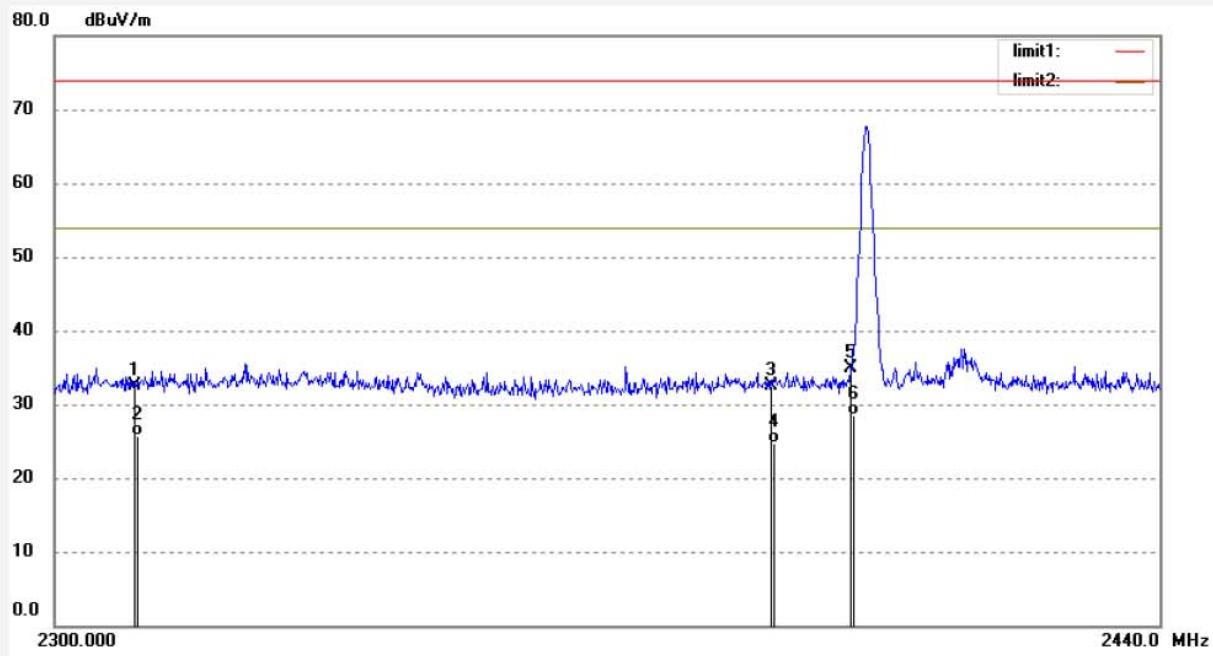
Radiated Band Edge Result



ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.ChinaSite: 1# Chamber
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| | | | |
|--------------------|------------------------|---------------------|------------|
| Job No.: | STAR2016 #294 | Polarization: | Vertical |
| Standard: | FCC PK | Power Source: | DC 3V |
| Test item: | Radiation Test | Date: | 2016/03/03 |
| Temp. (C)/Hum.(%) | 25 C / 55 % | Time: | 16:02:24 |
| EUT: | LIMITS | Engineer Signature: | star |
| Mode: | TX 2402MHz | Distance: | 3m |
| Model: | Rev 1 | | |
| Manufacturer: | LIMITS | | |
| 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 | | | |



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Site: 1# Chamber
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Job No.: STAR2016 #293

Polarization: Horizontal

Standard: FCC PK

Power Source: DC 3V

Test item: Radiation Test

Date: 2016/03/03

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

Time: 15:57:57

EUT: LIMITS

Engineer Signature: star

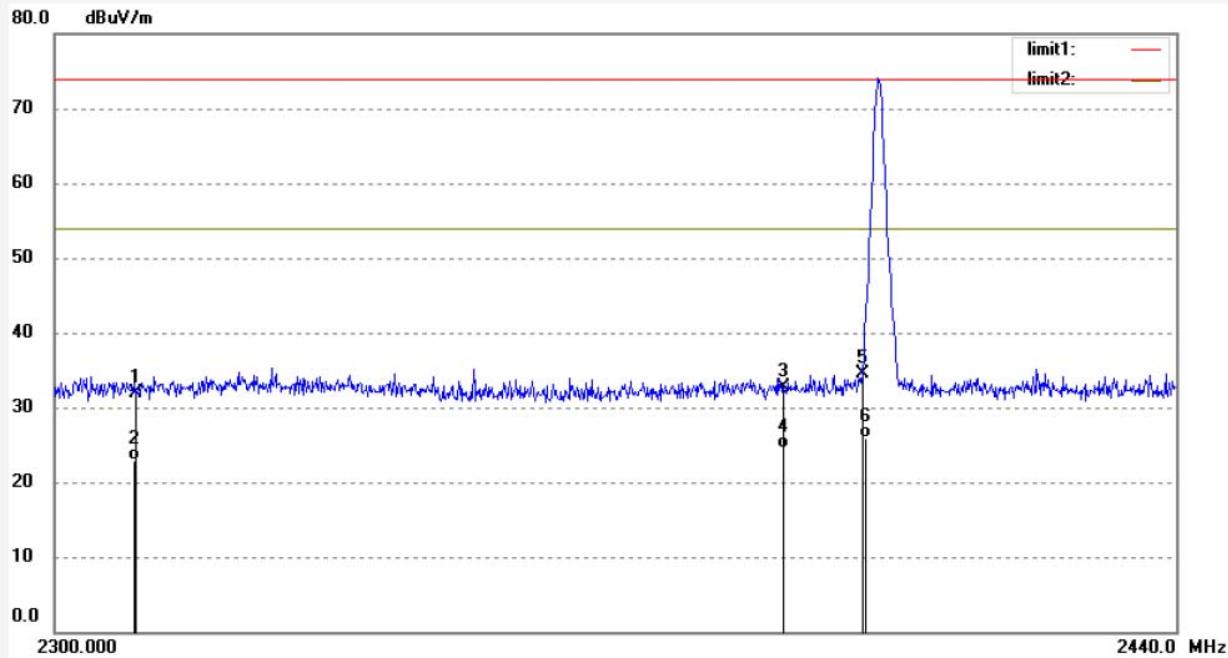
Mode: TX 2402MHz

Distance: 3m

Model: Rev 1

Manufacturer: LIMITS

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 | | | |

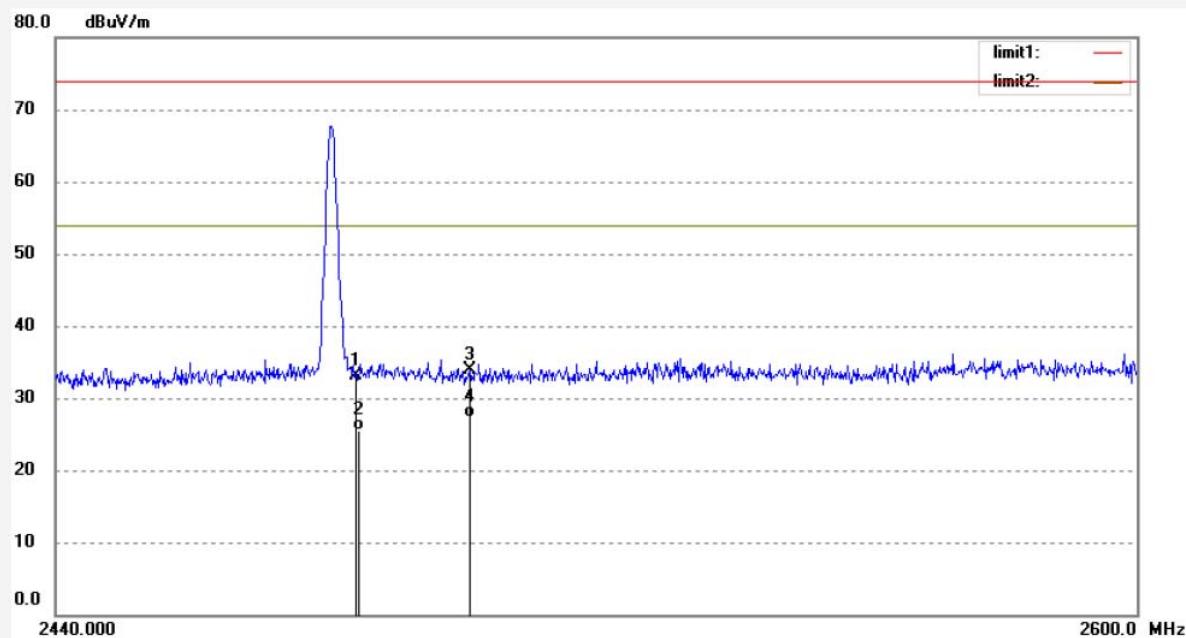


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Fax:+86-0755-26503396

| | |
|--------------------------------|--------------------------|
| Job No.: STAR2016 #292 | Polarization: Horizontal |
| Standard: FCC PK | Power Source: DC 3V |
| Test item: Radiation Test | Date: 2016/03/03 |
| Temp. (C)/Hum.(%) 25 C / 55 % | Time: 15:46:49 |
| EUT: LIMITS | Engineer Signature: star |
| Mode: TX 2480MHz | Distance: 3m |
| Model: Rev 1 | |
| Manufacturer: LIMITS | |
| 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 | | | |



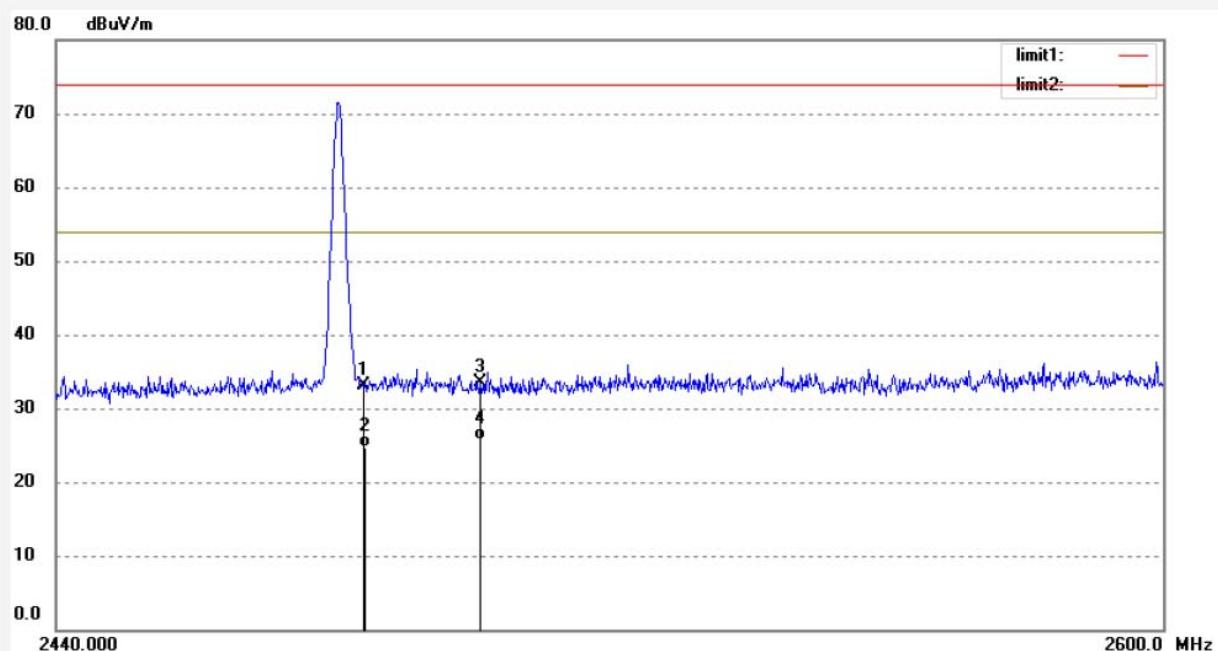
ACCURATE TECHNOLOGY CO., LTD.

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Site: 1# Chamber
Tel:+86-0755-26503290
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| | | | |
|-------------------|----------------|---------------------|------------|
| Job No.: | STAR2016 #291 | Polarization: | Vertical |
| Standard: | FCC PK | Power Source: | DC 3V |
| Test item: | Radiation Test | Date: | 2016/03/03 |
| Temp.(C)/Hum.(%) | 25 C / 55 % | Time: | 15:42:33 |
| EUT: | LIMITS | Engineer Signature: | star |
| Mode: | TX 2480MHz | Distance: | 3m |
| Model: | Rev 1 | | |
| Manufacturer: | LIMITS | | |

Note: Report No.:ATE20160254

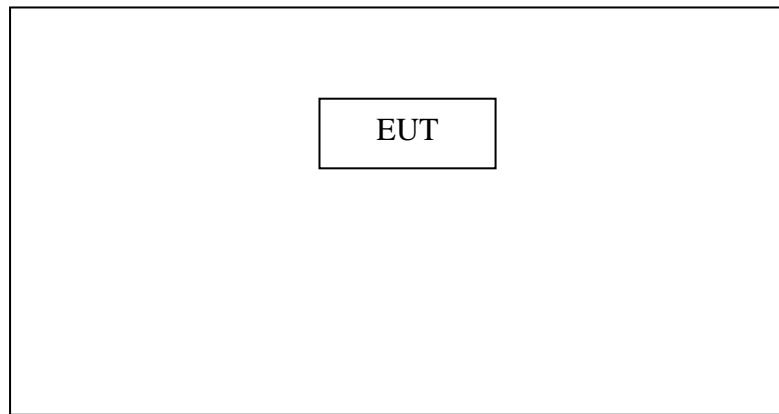


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 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



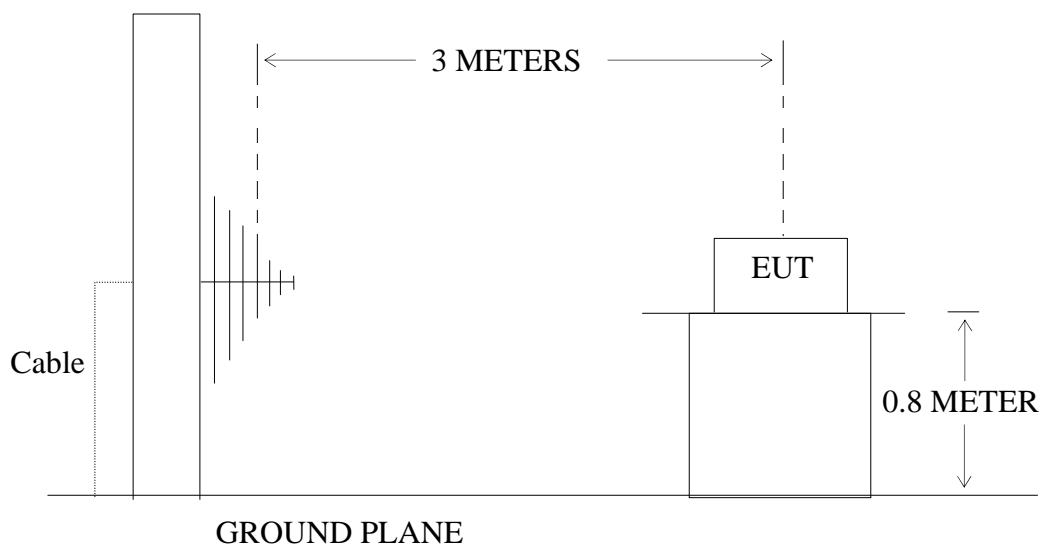
Setup: Transmitting mode

(EUT: LIMITS)

7.1.2. Semi-Anechoic Chamber Test Setup Diagram

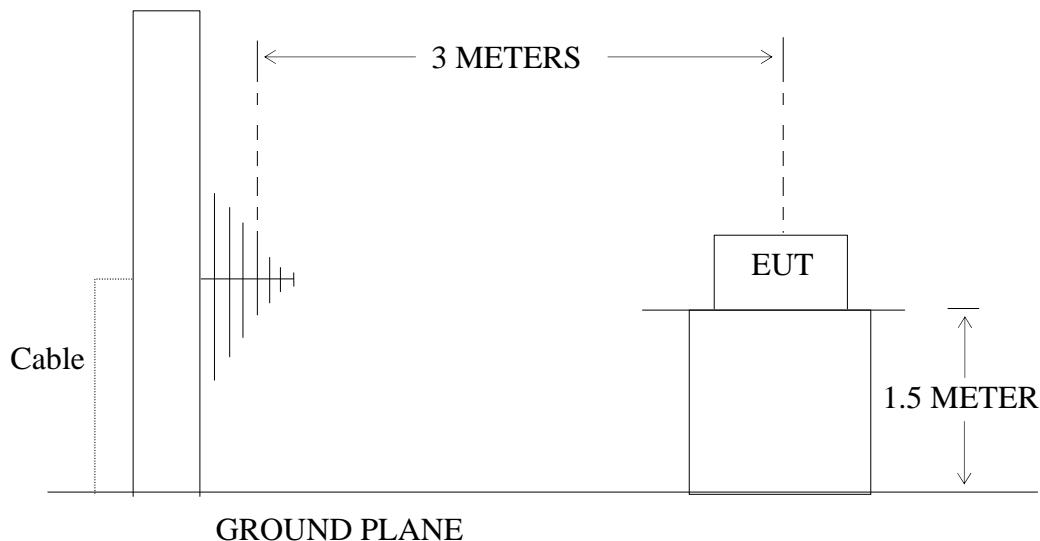
Below 1GHz

ANTENNA ELEVATION VARIES FROM 1 TO 4 METERS



Above 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 |
| 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 | | | |

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 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 (dB μ V/m) | Factor Corr. (dB) | Result | Limit | Margin | Polarization |
|--------------------|---------------------------|-------------------------|--------|-------|--------|--------------|
| | | | QP | QP | QP | |
| --- | --- | --- | --- | --- | --- | Vertical |
| --- | --- | --- | --- | --- | --- | Vertical |
| --- | --- | --- | --- | --- | --- | Vertical |
| --- | --- | --- | --- | --- | --- | Horizontal |
| --- | --- | --- | --- | --- | --- | Horizontal |
| --- | --- | --- | --- | --- | --- | Horizontal |

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

| Frequency (MHz) | Reading(dB μ V/m) | | Factor Corr. (dB) | Result(dB μ V/m) | | Limit(dB μ V/m) | | Margin(dB μ V/m) | | Polarizati on |
|--------------------|-----------------------|------|----------------------|----------------------|------|---------------------|------|----------------------|------|------------------|
| | 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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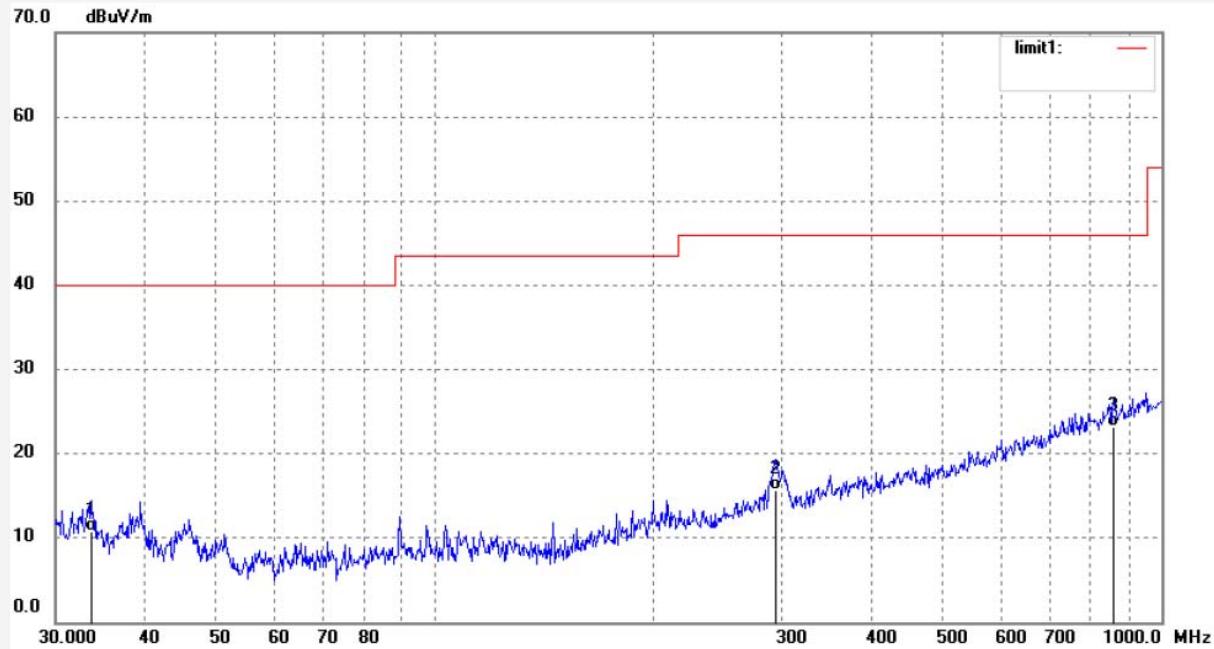
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Science & Industry Park,Nanshan Shenzhen,P.R.China

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 | | | |

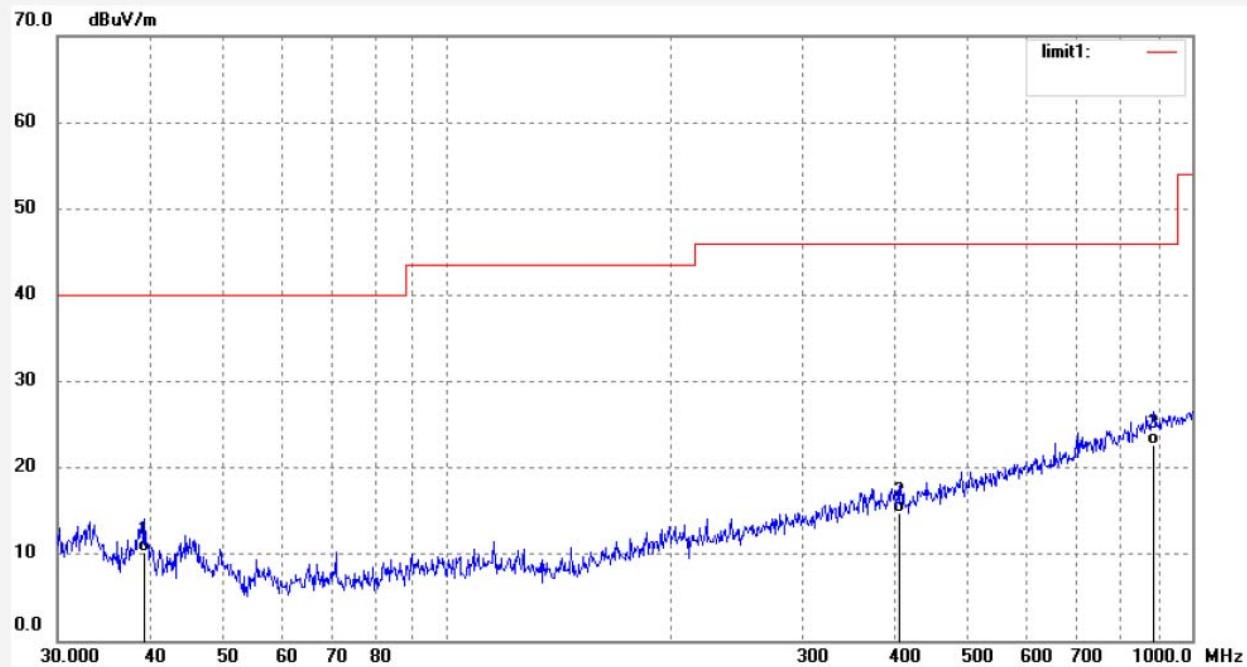


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Fax:+86-0755-26503396

| | |
|-----------------------------------|--------------------------|
| Job No.: STAR2016 #296 | Polarization: Horizontal |
| Standard: FCC Class B 3M Radiated | Power Source: DC 3V |
| Test item: Radiation Test | Date: 2016/03/03 |
| Temp. (C)/Hum.(%) 25 C / 55 % | Time: 16:17:41 |
| EUT: LIMITS | Engineer Signature: star |
| Mode: TX 2402MHz | Distance: 3m |
| Model: Rev 1 | |
| Manufacturer: LIMITS | |
| 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 | | | |

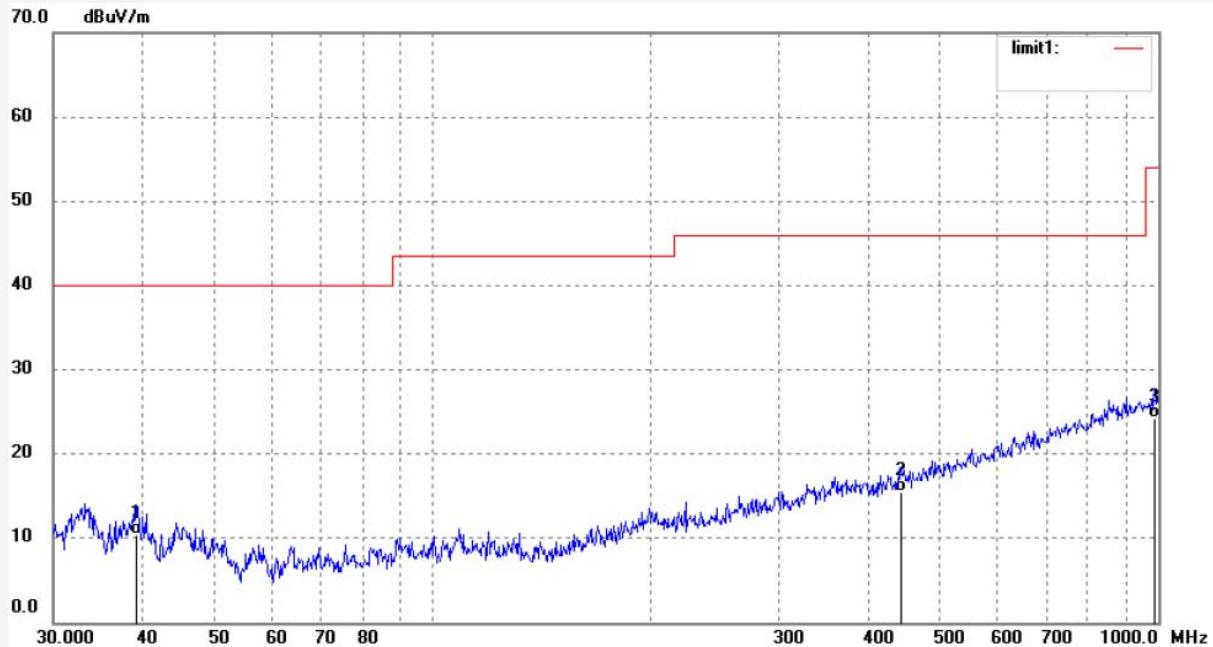


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| | |
|-----------------------------------|--------------------------|
| Job No.: STAR2016 #297 | Polarization: Horizontal |
| Standard: FCC Class B 3M Radiated | Power Source: DC 3V |
| Test item: Radiation Test | Date: 2016/03/03 |
| Temp.(C)/Hum.(%) 25 C / 55 % | Time: 16:25:20 |
| EUT: LIMITS | Engineer Signature: star |
| Mode: TX 2440MHz | Distance: 3m |
| Model: Rev 1 | |
| Manufacturer: LIMITS | |
| 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 | | | |

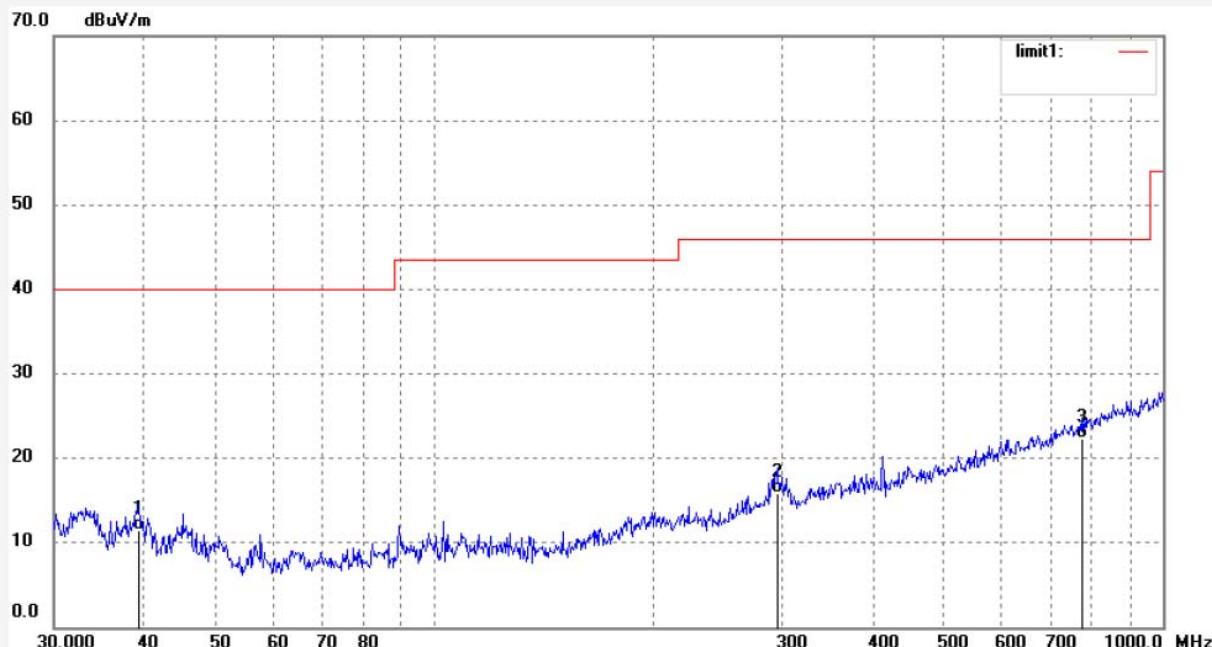


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| | | | |
|-------------------|-------------------------|---------------------|------------|
| Job No.: | STAR2016 #298 | Polarization: | Vertical |
| Standard: | FCC Class B 3M Radiated | Power Source: | DC 3V |
| Test item: | Radiation Test | Date: | 2016/03/03 |
| Temp.(C)/Hum.(%) | 25 C / 55 % | Time: | 16:30:37 |
| EUT: | LIMITS | Engineer Signature: | star |
| Mode: | TX 2440MHz | Distance: | 3m |
| Model: | Rev 1 | | |
| Manufacturer: | LIMITS | | |
| 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 | | | |



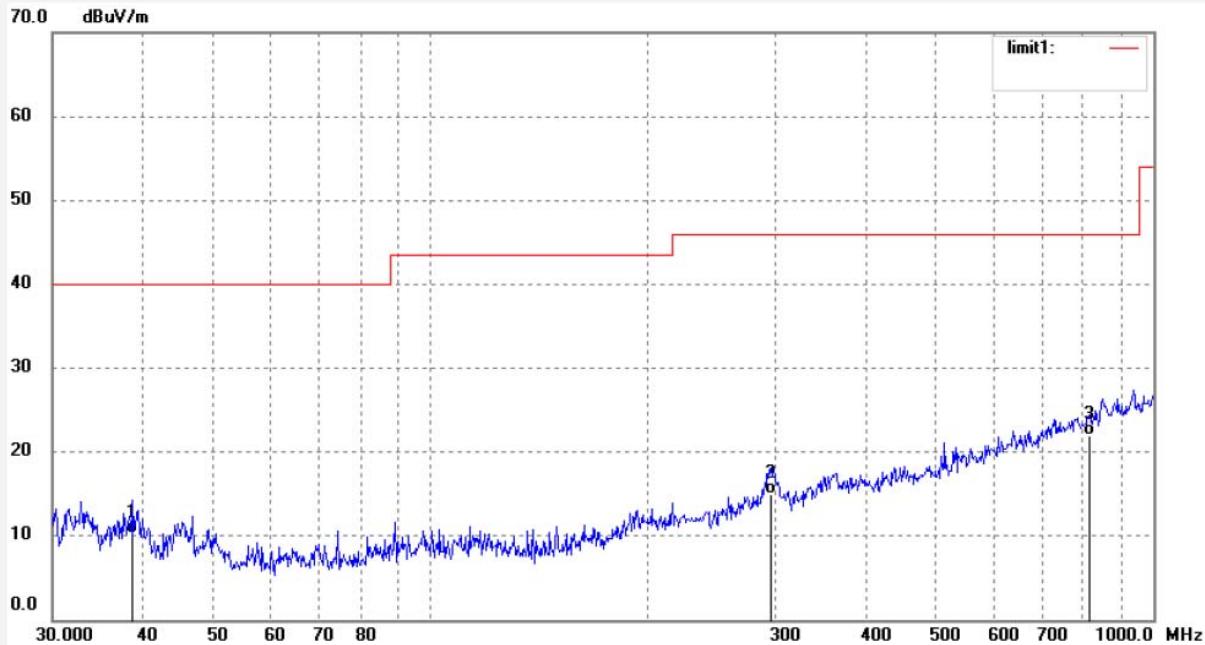
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Site: 1# Chamber
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| | |
|-----------------------------------|--------------------------|
| Job No.: STAR2016 #299 | Polarization: Vertical |
| Standard: FCC Class B 3M Radiated | Power Source: DC 3V |
| Test item: Radiation Test | Date: 2016/03/03 |
| Temp.(C)/Hum.(%) 25 C / 55 % | Time: 16:37:15 |
| EUT: LIMITS | Engineer Signature: star |
| Mode: TX 2480MHz | Distance: 3m |
| Model: Rev 1 | |
| Manufacturer: LIMITS | |

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 | | | |



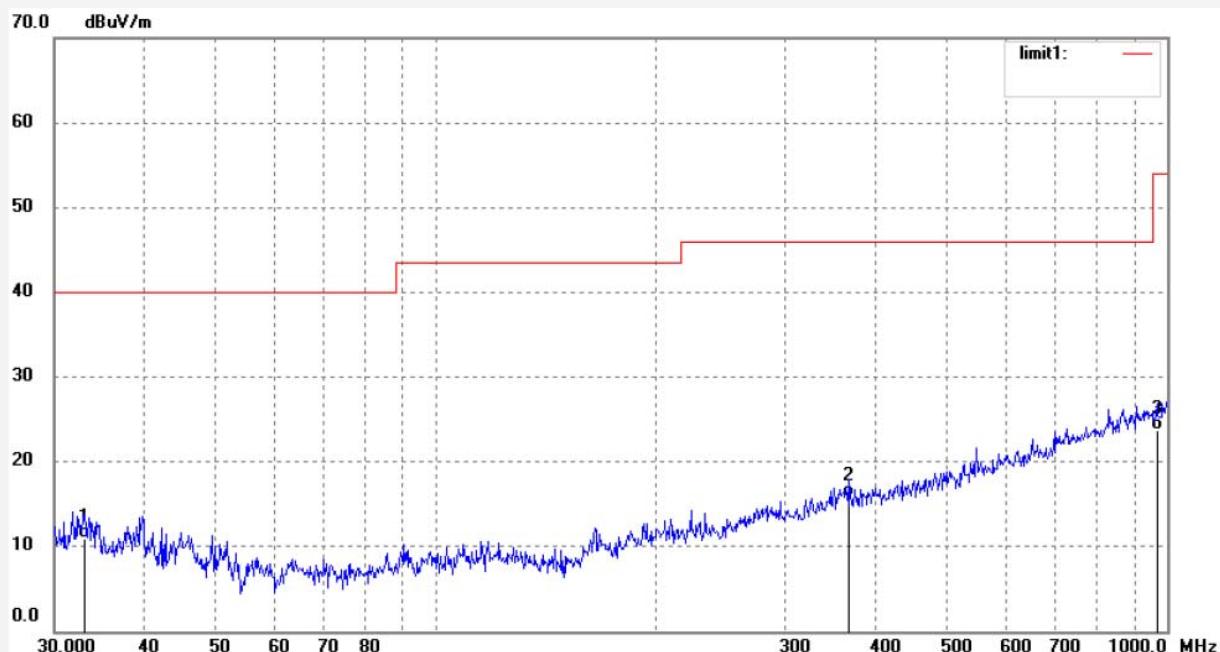
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| | |
|-----------------------------------|--------------------------|
| Job No.: STAR2016 #300 | Polarization: Horizontal |
| Standard: FCC Class B 3M Radiated | Power Source: DC 3V |
| Test item: Radiation Test | Date: 2016/03/03 |
| Temp.(C)/Hum.(%) 25 C / 55 % | Time: 16:41:49 |
| EUT: LIMITS | Engineer Signature: star |
| Mode: TX 2480MHz | Distance: 3m |
| Model: Rev 1 | |
| Manufacturer: LIMITS | |

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 | | | |

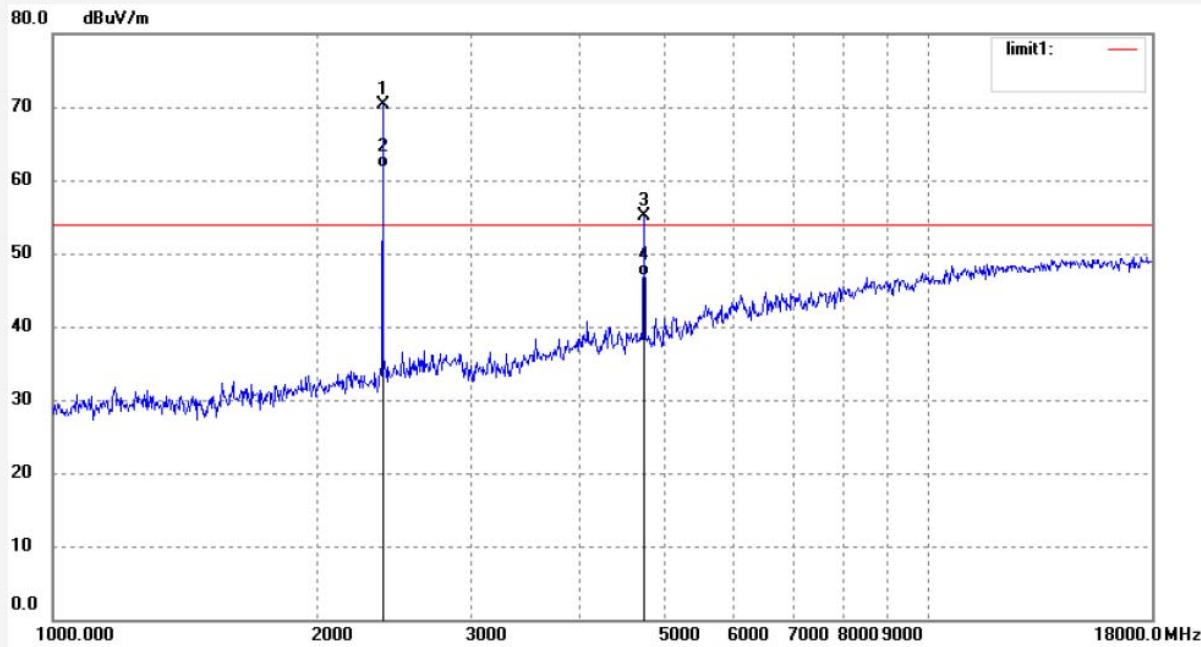


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| | | | |
|------------------------------|-------------------------|---------------------|------------|
| Job No.: | STAR2016 #285 | Polarization: | Horizontal |
| Standard: | FCC Class B 3M Radiated | Power Source: | DC 3V |
| Test item: | Radiation Test | Date: | 2016/03/03 |
| Temp. (C)/Hum.(%) | 25 C / 55 % | Time: | 15:10:49 |
| EUT: | LIMITS | Engineer Signature: | star |
| Mode: | TX 2402MHz | Distance: | 3m |
| Model: | Rev 1 | | |
| Manufacturer: | LIMITS | | |
| 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 | | | |

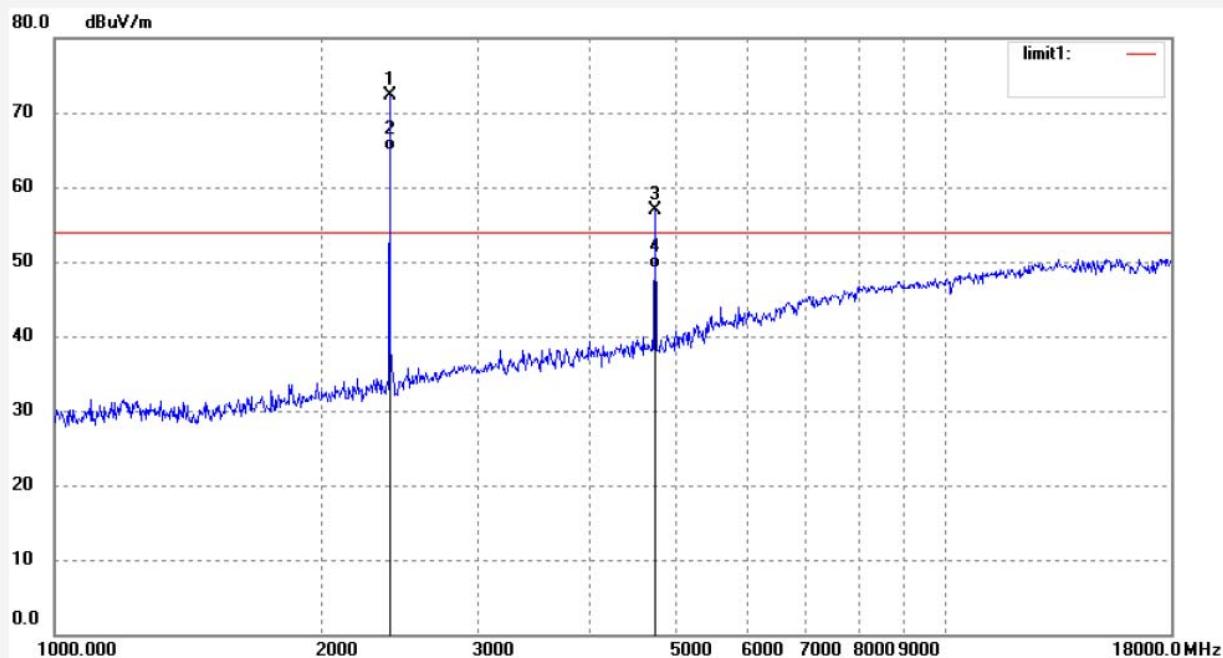


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Site: 1# Chamber
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| | |
|-----------------------------------|--------------------------|
| Job No.: STAR2016 #286 | Polarization: Vertical |
| Standard: FCC Class B 3M Radiated | Power Source: DC 3V |
| Test item: Radiation Test | Date: 2016/03/03 |
| Temp. (C)/Hum.(%) 25 C / 55 % | Time: 15:14:24 |
| EUT: LIMITS | Engineer Signature: star |
| Mode: TX 2402MHz | Distance: 3m |
| Model: Rev 1 | |
| Manufacturer: LIMITS | |
| 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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Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR2016 #287

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: DC 3V

Test item: Radiation Test

Date: 2016/03/03

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

Time: 15:21:27

EUT: LIMITS

Engineer Signature: star

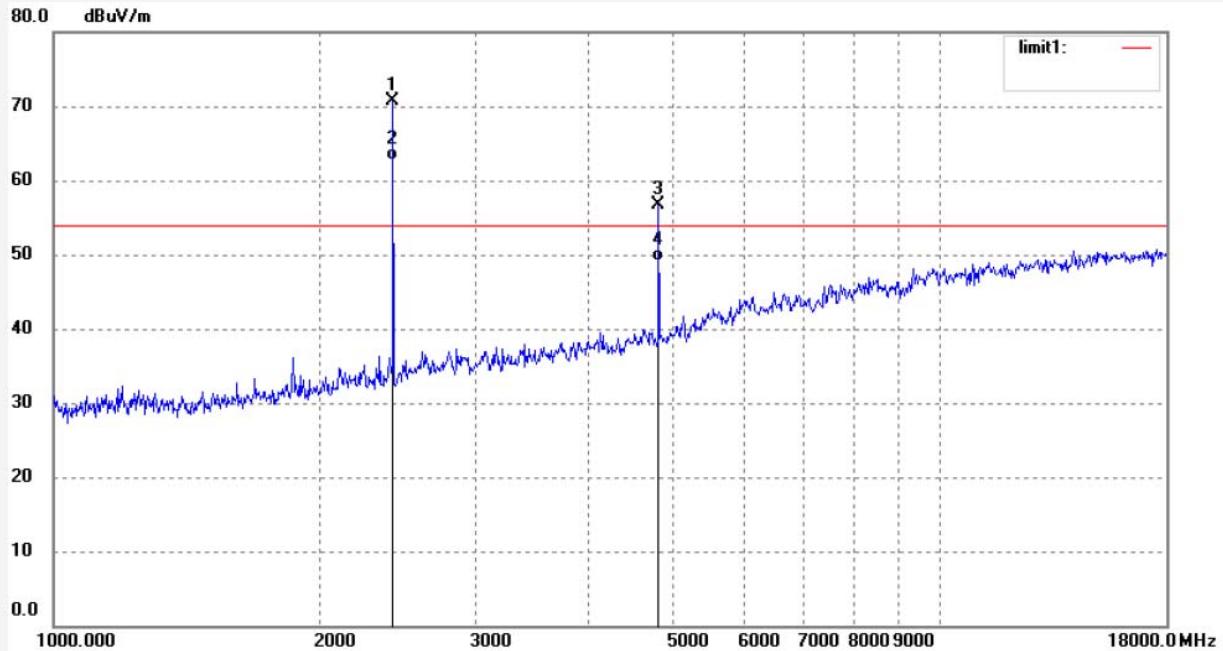
Mode: TX 2440MHz

Distance: 3m

Model: Rev 1

Manufacturer: LIMITS

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 | | | |



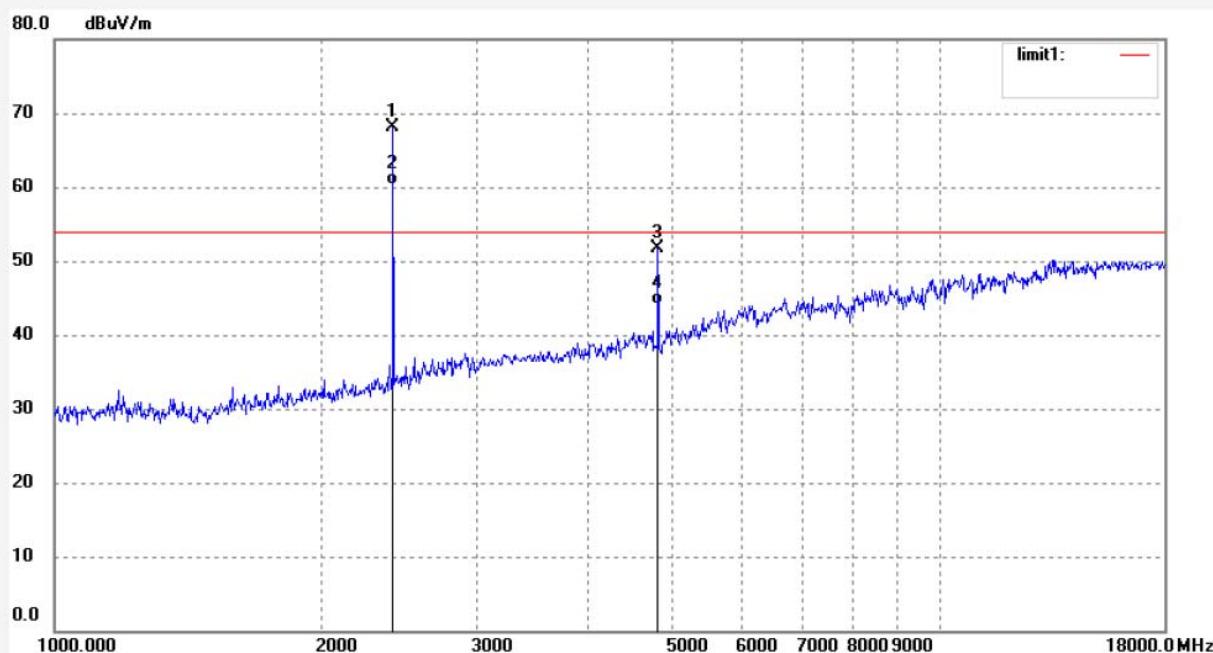
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Site: 1# Chamber
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| | |
|-----------------------------------|--------------------------|
| Job No.: STAR2016 #288 | Polarization: Horizontal |
| Standard: FCC Class B 3M Radiated | Power Source: DC 3V |
| Test item: Radiation Test | Date: 2016/03/03 |
| Temp.(C)/Hum.(%) 25 C / 55 % | Time: 15:25:17 |
| EUT: LIMITS | Engineer Signature: star |
| Mode: TX 2440MHz | Distance: 3m |
| Model: Rev 1 | |
| Manufacturer: LIMITS | |

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 | | | |



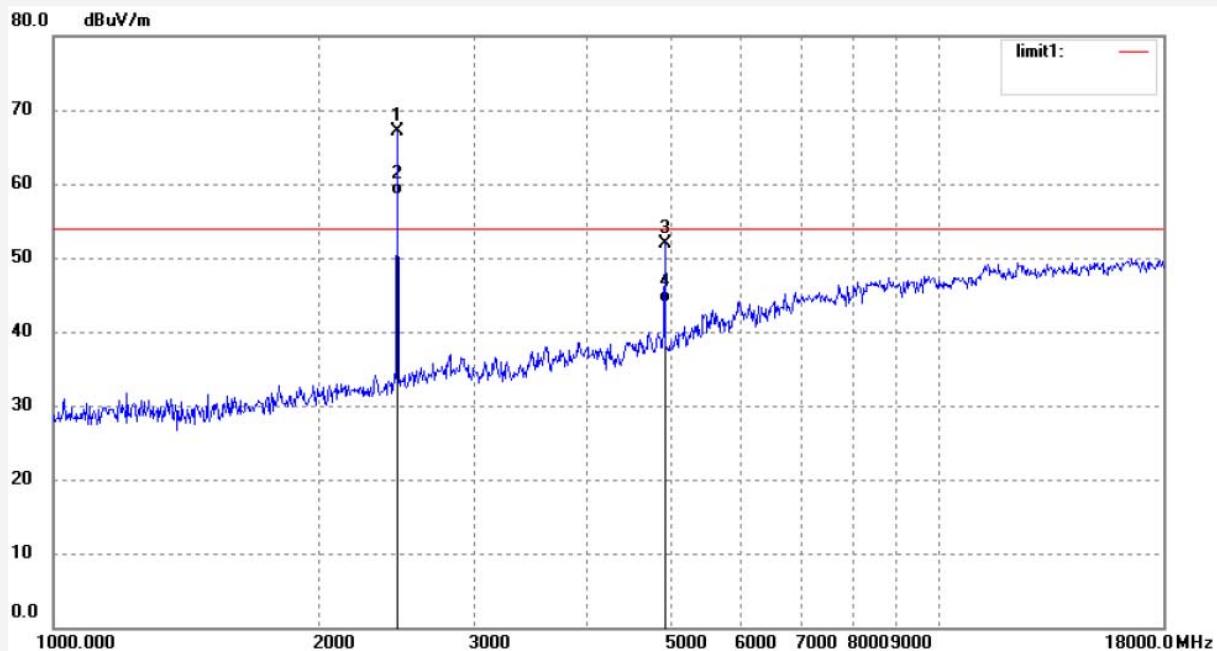
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Site: 1# Chamber
Tel:+86-0755-26503290
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| | | | |
|--------------------|-------------------------|---------------------|------------|
| Job No.: | STAR2016 #289 | Polarization: | Horizontal |
| Standard: | FCC Class B 3M Radiated | Power Source: | DC 3V |
| Test item: | Radiation Test | Date: | 2016/03/03 |
| Temp. (C)/Hum.(%) | 25 C / 55 % | Time: | 15:32:00 |
| EUT: | LIMITS | Engineer Signature: | star |
| Mode: | TX 2480MHz | Distance: | 3m |
| Model: | Rev 1 | | |
| Manufacturer: | LIMITS | | |

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
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Job No.: STAR2016 #290

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: DC 3V

Test item: Radiation Test

Date: 2016/03/03

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

Time: 15:36:02

EUT: LIMITS

Engineer Signature: star

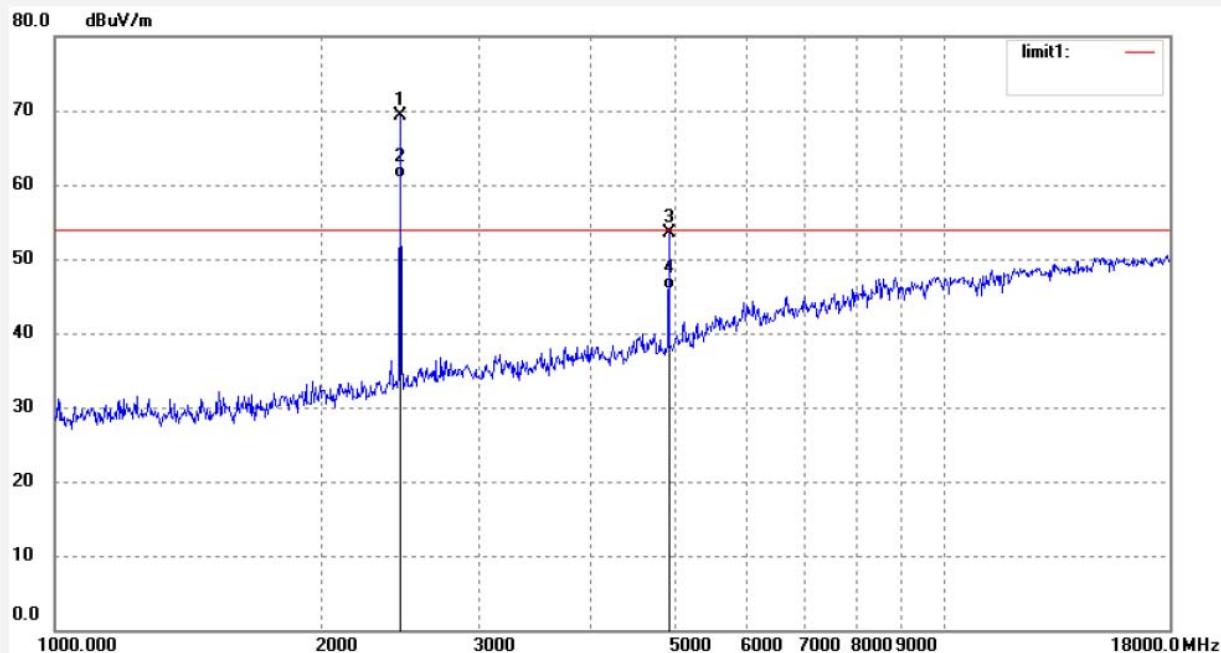
Mode: TX 2480MHz

Distance: 3m

Model: Rev 1

Manufacturer: LIMITS

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.

