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Report No.: SZEM111000445301

Page : 1 of 38

FCC REPORT

Application No: SZEM1110004453RF
Applicant: Unifat Technology Ltd
Product Name: 2.4GHz 15dBm GFSK Transceiver module
Operation Frequency: 2414.250MHz to 2464.875MHz
FCC ID: RII24RFMDLV01
Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247:2010
Date of Receipt: 2011-12-30
Date of Test: 2011-12-30 to 2012-03-16
Date of Issue: 2012-03-19

| | |
|----------------------|---------------|
| Test Result : | PASS * |
|----------------------|---------------|

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

A blue circular stamp from SGS-CSTC EMC LAB, SHEN ZHEN, with a handwritten signature in blue ink over it.

Jack Zhang
EMC Laboratory Manager

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This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the SGS PRODUCT CERTIFICATION MARK.. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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3 Test Summary

| Test Item | Section in CFR 47 | Result |
|-----------------------------|-------------------|--------|
| Antenna requirement | 15.203/15.247 (c) | Pass |
| Conducted Peak Output Power | 15.247 (b)(3) | Pass |
| 6dB Occupied Bandwidth | 15.247 (a)(2) | Pass |
| Power Spectral Density | 15.247 (e) | Pass |
| Radiated Emission | 15.205/15.209 | Pass |
| Band Edge | 15.247(d) | Pass |

Remark: Pass: The EUT complies with the essential requirements in the standard.

Fail: The EUT does not comply with the essential requirements in the standard.





4 General Information

4.1 Client Information

| | |
|--------------------------------------|--|
| Applicant: | Unifat Technology Ltd |
| Address of Applicant: | 7/F, Sui Hong Ind. Bldg, 547-549 Castle Peak Rd, Kwai Chung, N.T, H.K. |
| Manufacturer/Factory: | New Spirit Electronic Technology Development (Shenzhen) Co., Ltd. |
| Address of Manufacturer/ Factory: | 4/F., East Block, Shengtang Building, No. 1 Tairan Ninth Road, Chegongmiao, Futian District, Shenzhen, China |

4.2 General Description of E.U.T.

| | |
|----------------------|--------------------------------------|
| EUT Name: | 2.4GHz 15dBm GFSK Transceiver module |
| Model No.: | KMD7121-06 |
| Operation Frequency: | 2414.250MHz~2464.875MHz |
| Channel numbers: | 16 |
| Channel separation: | 3.6MHz |
| Modulation type: | GFSK |
| Antenna Type: | Integral |
| Antenna gain: | 2.0dBi |
| Power supply: | 3.3V DC |



| Operation Frequency each of channel | | | | | | | |
|-------------------------------------|-------------|---------|-------------|---------|-------------|---------|-------------|
| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1 | 2414.250MHz | 5 | 2427.750MHz | 9 | 2441.250MHz | 13 | 2454.750MHz |
| 2 | 2417.625MHz | 6 | 2431.125MHz | 10 | 2444.625MHz | 14 | 2458.125MHz |
| 3 | 2421.000MHz | 7 | 2434.500MHz | 11 | 2448.000MHz | 15 | 2461.250MHz |
| 4 | 2424.375MHz | 8 | 2437.875MHz | 12 | 2451.375MHz | 16 | 2464.875MHz |

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Channel | Frequency |
|---------------------|-------------|
| The lowest channel | 2414.250MHz |
| The middle channel | 2448.000MHz |
| The Highest channel | 2464.875MHz |

4.3 Test environment and mode

| Test Environment: | |
|-----------------------|---|
| Temperature: | 24.0 °C |
| Humidity: | 50 % RH |
| Atmospheric Pressure: | 1015 mbar |
| Test mode: | |
| Transmitting mode: | The EUT transmitted the continuous modulation test signal at the specific channel(s). |

4.4 Description of Support Units

The EUT has been tested with associated equipment below.

| Description | Manufacturer | Model No. |
|--------------|------------------|-----------|
| Test fixture | Supply by client | N/A |

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- CNAS (No. CNAS L2929)**
 CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.
- VCCI**
 The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, T-1153 and C-2383 respectively.
- FCC – Registration No.: 556682**
 SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.
- Industry Canada (IC)**
 The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.7 Other Information Requested by the Customer

None.

4.8 Test Instruments list

| RE in Chamber | | | | | |
|---------------|---|------------------------------------|-----------|---------------|---------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Due date (yyyy-mm-dd) |
| 1 | 3m Semi-Anechoic Chamber | ETS-LINDGREN | N/A | SEL0017 | 2012-06-10 |
| 2 | Shielding effectiveness of Anechoic Chamber | ChangZhou ZhongYu | 854 | SEL0169 | 2012-06-10 |
| 3 | EMI Test Receiver | Rohde & Schwarz | ESIB26 | SEL0023 | 2012-05-26 |
| 4 | EMI Test software | AUDIX | E3 | SEL0050 | N/A |
| 5 | Coaxial cable | SGS | N/A | SEL0028 | 2012-05-29 |
| 6 | BiConiLog Antenna (26-3000MHz) | ETS-LINDGREN | 3142C | SEL0015 | 2012-10-29 |
| 7 | Pre-amplifier (0.1-1300MHz) | Agilent Technologies | 8447D | SEL0053 | 2012-05-26 |
| 8 | Pre-Amplifier (0.1-26.5GHz) | Compliance Directions Systems Inc. | PAP-0126 | SEL0168 | 2012-10-26 |
| 9 | Double-ridged horn (1-18GHz) | ETS-LINDGREN | 3117 | SEL0006 | 2012-10-29 |
| 10 | Horn Antenna (18-26GHz) | ETS-LINDGREN | 3160 | SEL0076 | 2012-10-29 |
| 11 | Band filter | Amindeon | Asi 3314 | SEL0094 | 2012-05-26 |
| 12 | Active Loop Antenna | Beijing Daze | ZN30900A | SEL0097 | 2012-10-28 |

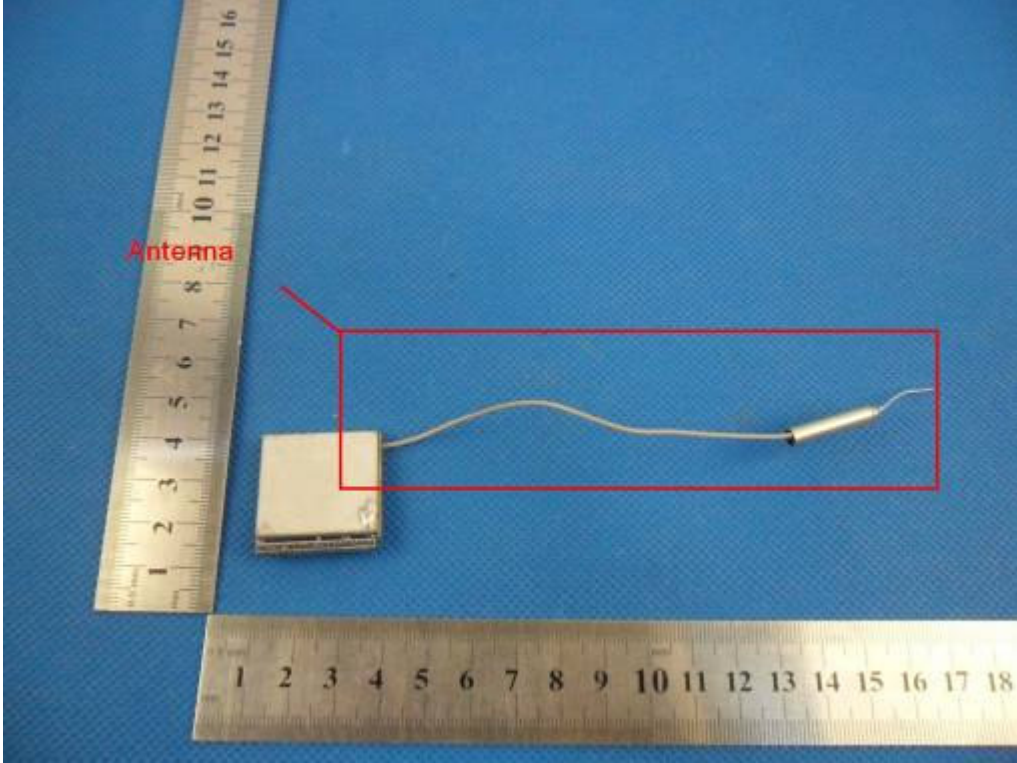


| RF conducted | | | | | |
|--------------|-------------------|-----------------|-----------|---------------|---------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Due date (yyyy-mm-dd) |
| 1 | Spectrum Analyzer | Rohde & Schwarz | FSP 30 | SEL0154 | 2012-10-23 |
| 2 | Coaxial cable | SGS | N/A | SEL0028 | 2012-05-29 |

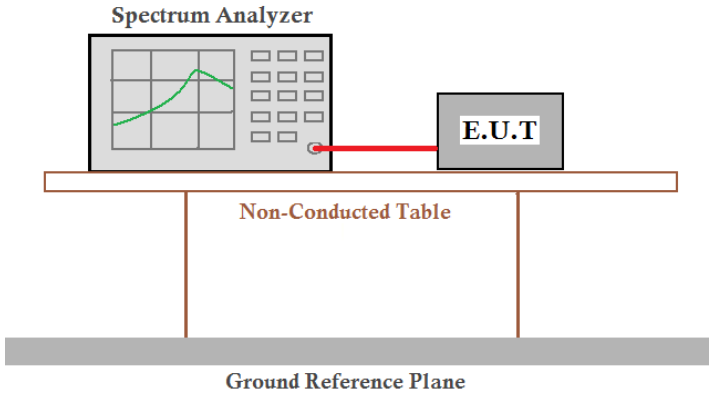
| General used equipment | | | | | |
|------------------------|---------------------------------|--------------|-----------|--------------------|---------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Due date (yyyy-mm-dd) |
| 1 | Humidity/ Temperature Indicator | Shanghai | ZJ1-2B | SEL0102 to SEL0103 | 2012-10-27 |
| 2 | Humidity/ Temperature Indicator | Shanghai | ZJ1-2B | SEL0101 | 2012-10-27 |
| 3 | Barometer | ChangChun | DYM3 | SEL0088 | 2012-05-18 |

5 Test results and Measurement Data

5.1 Antenna requirement:

| | |
|---|-------------------------------------|
| Standard requirement: | FCC Part15 C Section 15.203 /247(c) |
| <p>15.203 requirement: <i>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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i></p> <p>15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.</p> | |
| E.U.T Antenna: | 2.0dBi |
|  | |

5.2 Conducted Peak Output Power

| | |
|-------------------|---|
| Test Requirement: | FCC Part15 C Section 15.247 (b)(3) |
| Test Method: | ANSI C63.10:2009 |
| Limit: | 30dBm |
| Test setup: |  <p><i>Remark:</i> Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</p> |
| Test Instruments: | Refer to section 4.8 for details |
| Test results: | Pass |

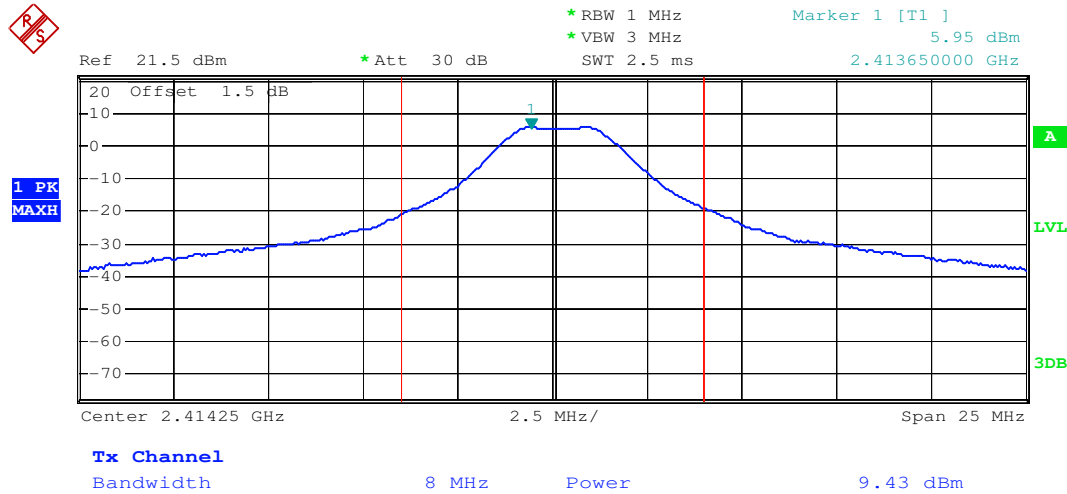
Measurement Data

| GFSK mode | | | |
|--------------|-------------------------|-------------|--------|
| Test channel | Peak Output Power (dBm) | Limit (dBm) | Result |
| Lowest | 9.43 | 30.00 | Pass |
| Middle | 8.30 | 30.00 | Pass |
| Highest | 7.68 | 30.00 | Pass |

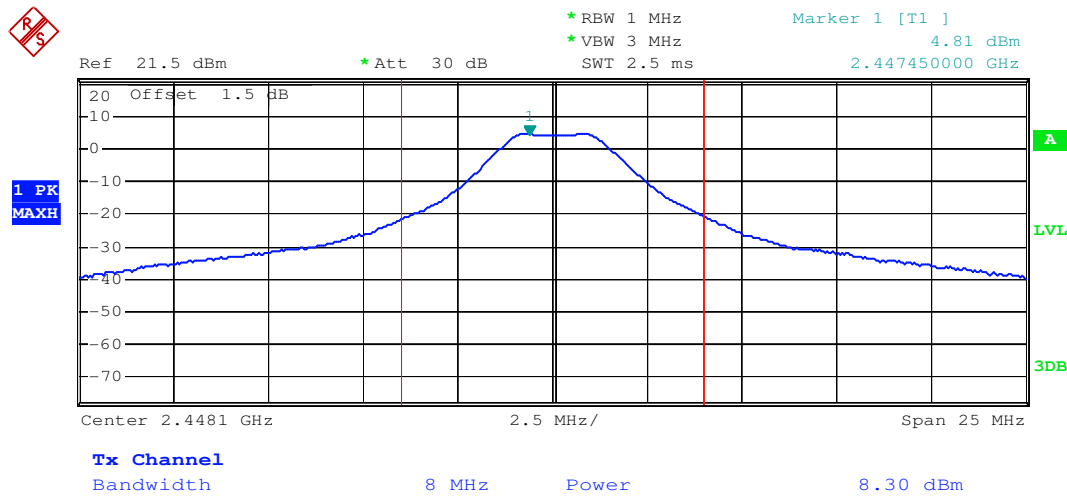


Test plot as follows:

| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Lowest |
|------------|------|---------------|--------|



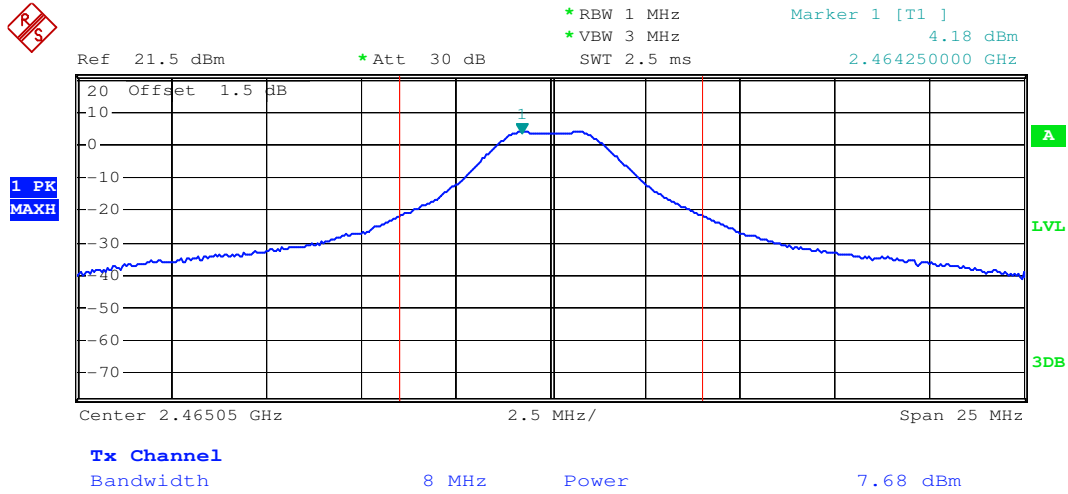
| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Middle |
|------------|------|---------------|--------|



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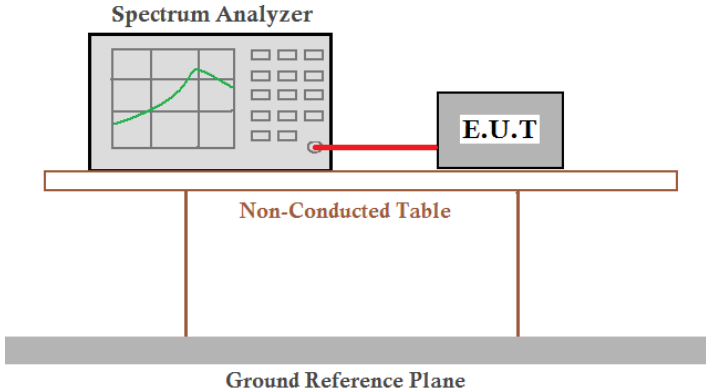


| | | | |
|------------|------|---------------|---------|
| Test mode: | GFSK | Test channel: | Highest |
|------------|------|---------------|---------|



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5.3 6dB Occupy Bandwidth

| | |
|-------------------|--|
| Test Requirement: | FCC Part15 C Section 15.247 (a)(2) |
| Test Method: | ANSI C63.10:2009 |
| Limit: | >500kHz |
| Test setup: |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p> |
| Test Instruments: | Refer to section 4.8 for details |
| Test results: | Pass |

Measurement Data

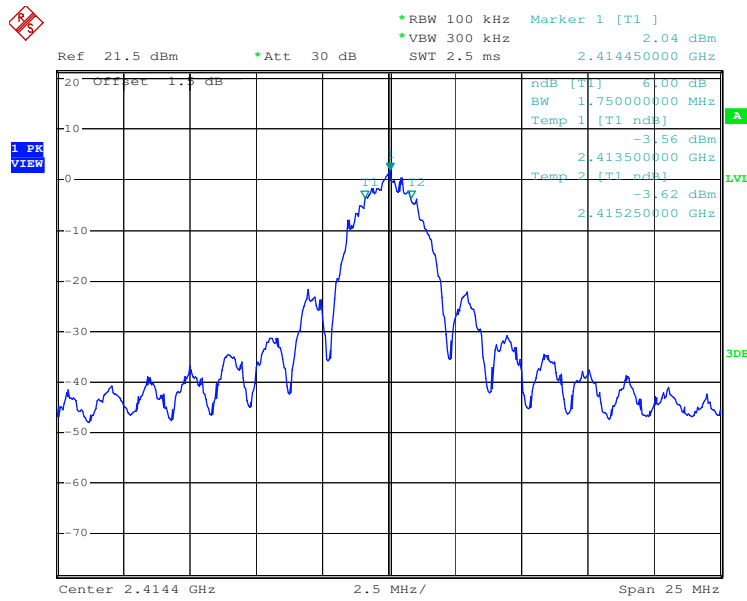
| GFSK mode | | | |
|--------------|----------------------------|-------------|--------|
| Test channel | 6dB Occupy Bandwidth (MHz) | Limit (kHz) | Result |
| Lowest | 1.75 | >500 | Pass |
| Middle | 2.05 | >500 | Pass |
| Highest | 1.35 | >500 | Pass |



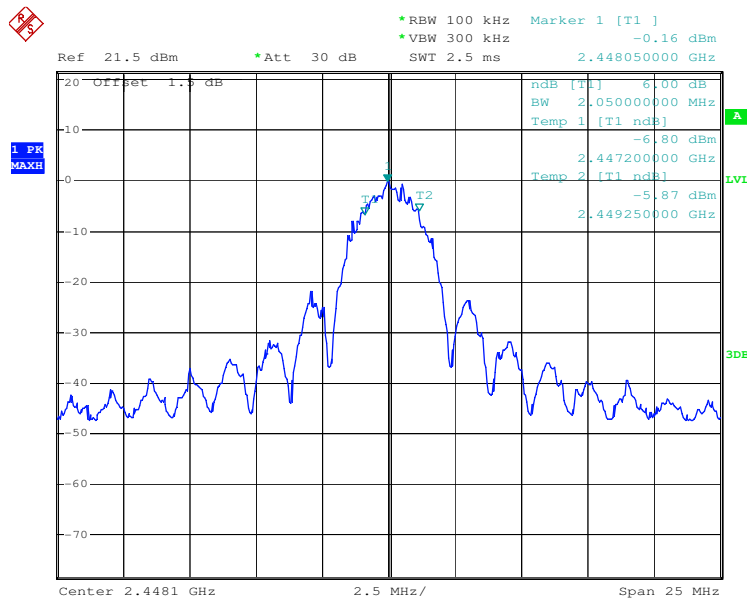


Test plot as follows:

| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Lowest |
|------------|------|---------------|--------|



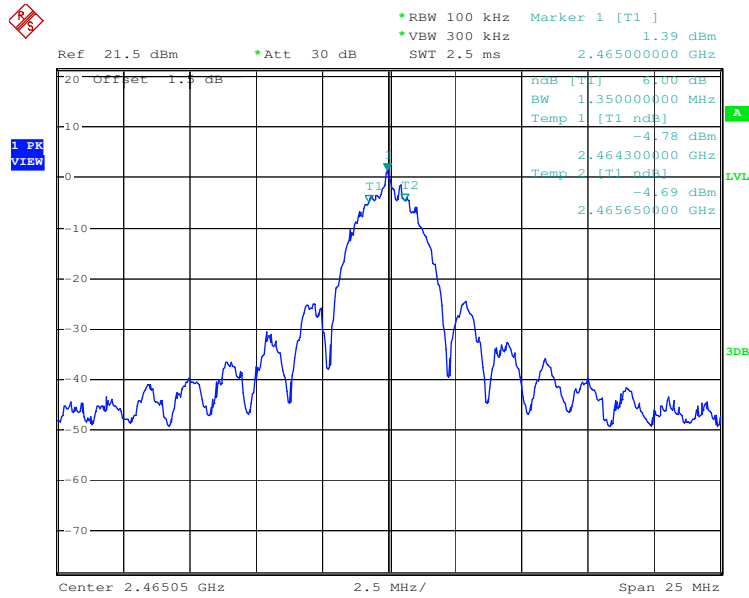
| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Middle |
|------------|------|---------------|--------|



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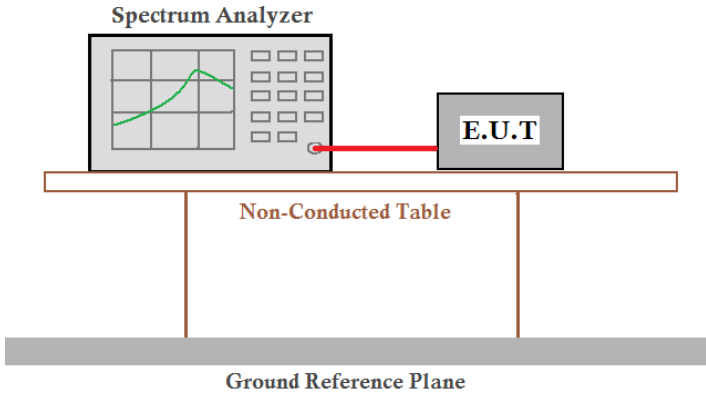


| | | | |
|------------|------|---------------|---------|
| Test mode: | GFSK | Test channel: | Highest |
|------------|------|---------------|---------|



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5.4 Power Spectral Density

| | |
|-------------------|---|
| Test Requirement: | FCC Part15 C Section 15.247 (e) |
| Test Method: | ANSI C63.10:2009 |
| Limit: | <8dBm |
| Test setup: |  <p><i>Remark:</i> Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</p> |
| Test Instruments: | Refer to section 4.8 for details |
| Test results: | Pass |

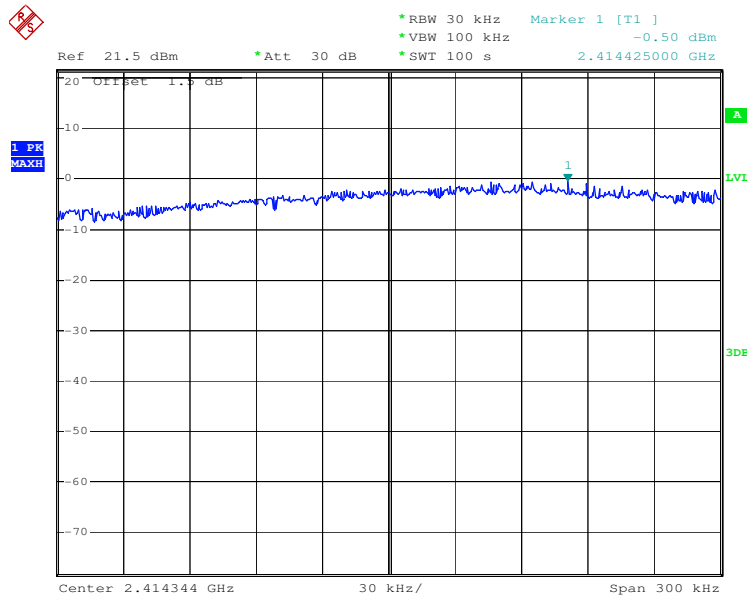
Measurement Data

| GFSK mode | | | |
|--------------|------------------------------|-------------|--------|
| Test channel | Power Spectral Density (dBm) | Limit (dBm) | Result |
| Lowest | -0.50 | <8.00 | Pass |
| Middle | -1.77 | <8.00 | Pass |
| Highest | -2.17 | <8.00 | Pass |

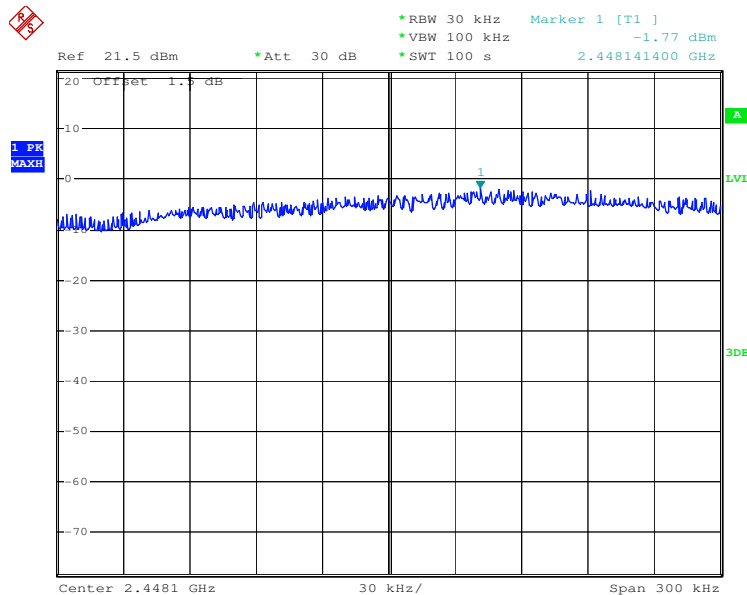


Test plot as follows:

| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Lowest |
|------------|------|---------------|--------|



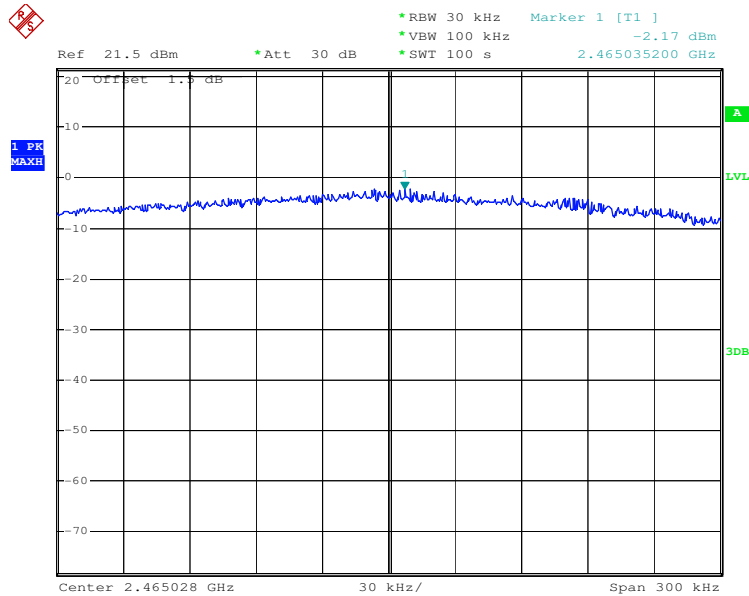
| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Middle |
|------------|------|---------------|--------|



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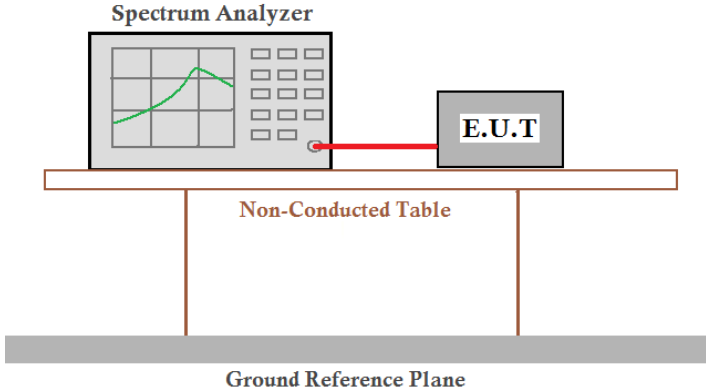


| | | | |
|------------|------|---------------|---------|
| Test mode: | GFSK | Test channel: | Highest |
|------------|------|---------------|---------|



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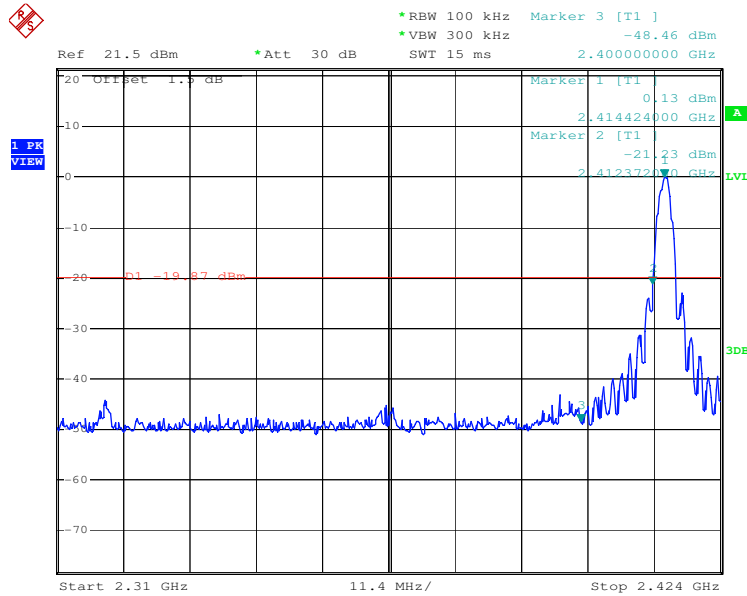
5.5 Band Edge

| | |
|-------------------|---|
| Test Requirement: | FCC Part15 C Section 15.247 (d) |
| Test Method: | ANSI C63.10:2009 |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. |
| Test setup: |  <p><i>Remark:</i> Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</p> |
| Test Instruments: | Refer to section 4.8 for details |
| Test results: | Pass |

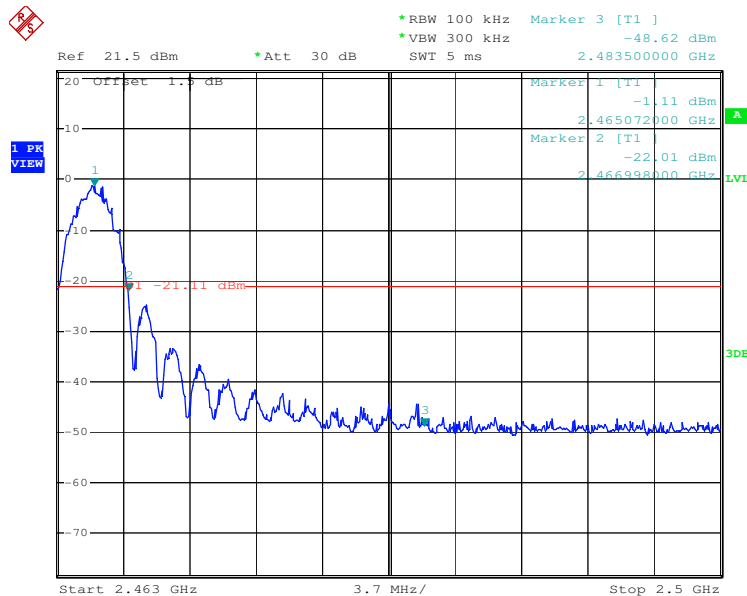


Test plot as follows:

| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Lowest |
|------------|------|---------------|--------|

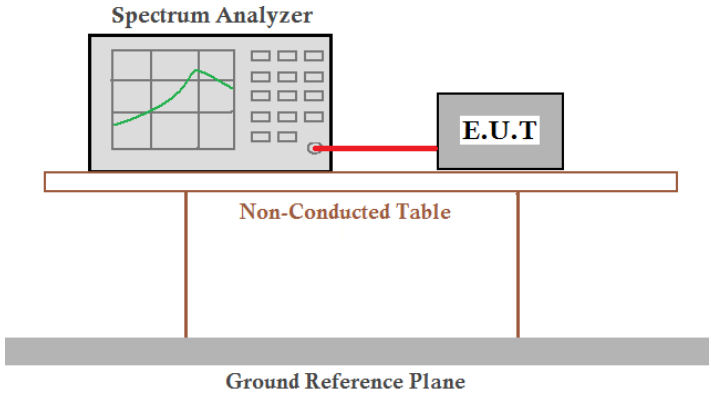


| | | | |
|------------|------|---------------|---------|
| Test mode: | GFSK | Test channel: | Highest |
|------------|------|---------------|---------|



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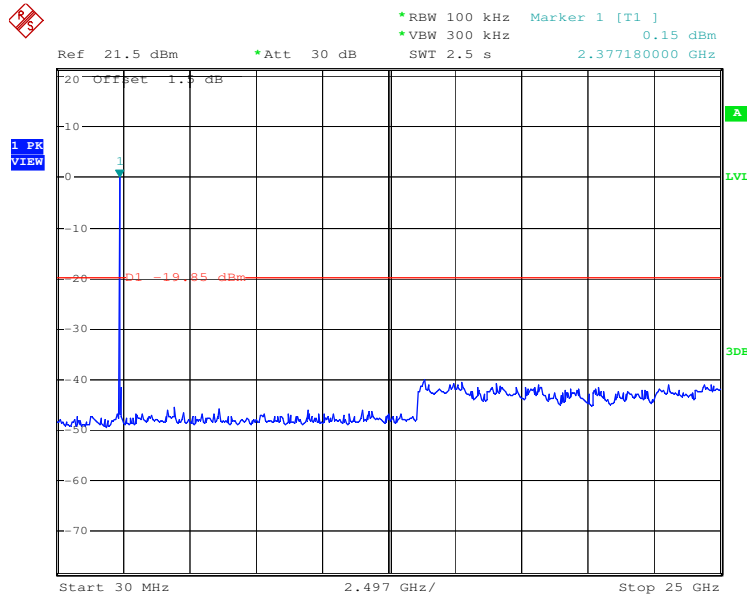
5.6 RF Antenna Conducted spurious emissions

| | |
|-------------------|---|
| Test Requirement: | FCC Part15 C Section 15.247 (d) |
| Test Method: | ANSI C63.10:2009 |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. |
| Test setup: |  <p><i>Remark: Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</i></p> |
| Test Instruments: | Refer to section 4.8 for details |
| Test results: | Pass |

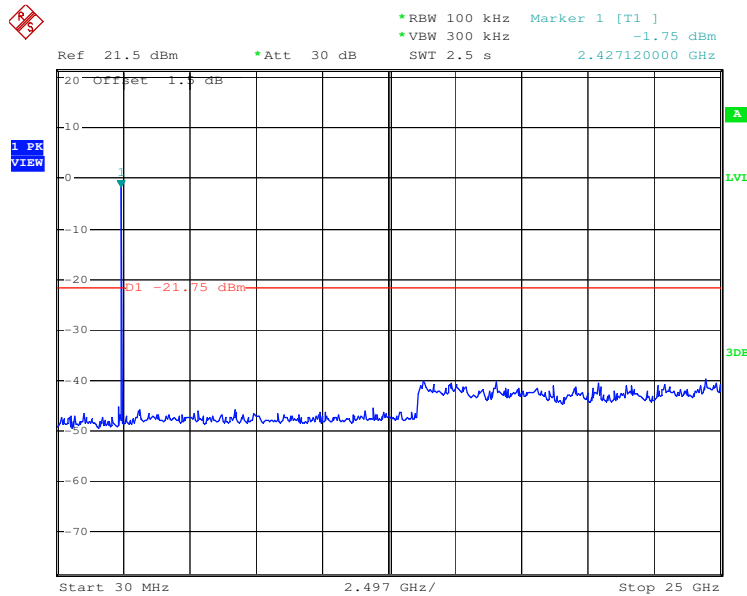


Test plot as follows:

| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Lowest |
|------------|------|---------------|--------|



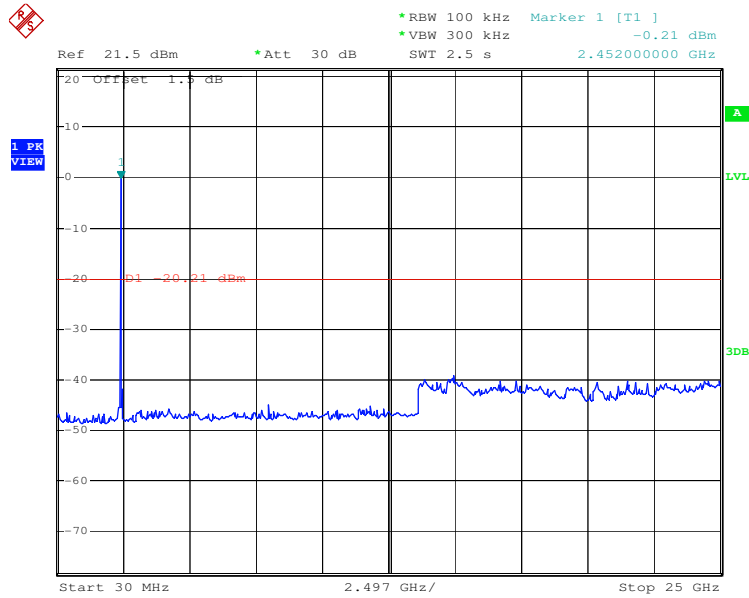
| | | | |
|------------|------|---------------|--------|
| Test mode: | GFSK | Test channel: | Middle |
|------------|------|---------------|--------|



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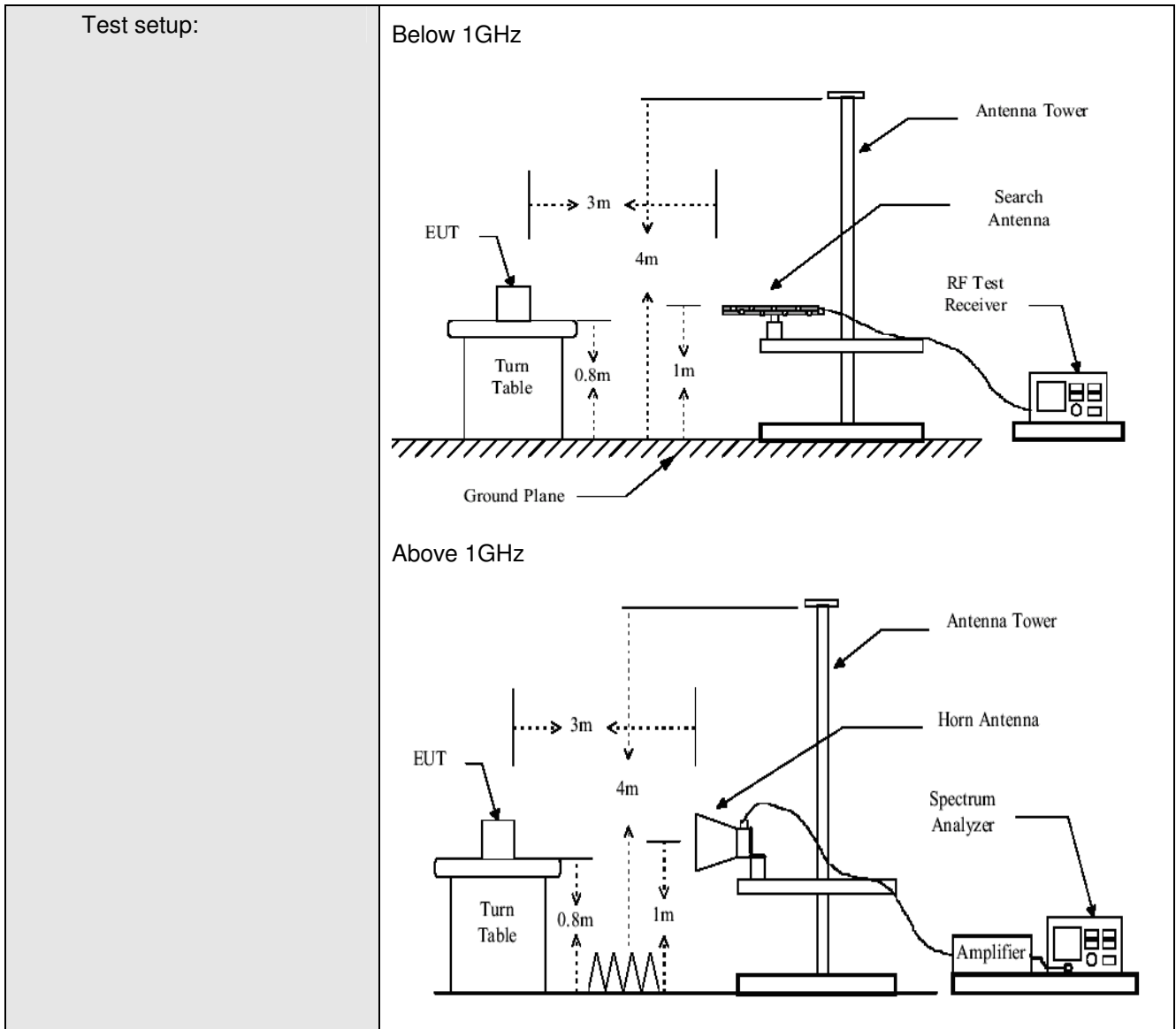
| | | | |
|------------|------|---------------|---------|
| Test mode: | GFSK | Test channel: | Highest |
|------------|------|---------------|---------|



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5.7 Radiated Emission

| | | | | | |
|-----------------------|--|--------------------|--------|------------------|------------------|
| Test Requirement: | FCC Part15 C Section 15.209 and 15.205 | | | | |
| Test Method: | ANSI C63.10: 2009 | | | | |
| Test Frequency Range: | 30MHz to 25GHz | | | | |
| Test site: | Measurement Distance: 3m (Semi-Anechoic Chamber) | | | | |
| Receiver setup: | Frequency | Detector | RBW | VBW | Remark |
| | 30MHz-1GHz | Quasi-peak | 100kHz | 300kHz | Quasi-peak Value |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak Value |
| | | Peak | 1MHz | 10Hz | Average Value |
| Limit: | Frequency | Limit (dBuV/m @3m) | | Remark | |
| | 30MHz-88MHz | 40.0 | | Quasi-peak Value | |
| | 88MHz-216MHz | 43.5 | | Quasi-peak Value | |
| | 216MHz-960MHz | 46.0 | | Quasi-peak Value | |
| | 960MHz-1GHz | 54.0 | | Quasi-peak Value | |
| | Above 1GHz | 54.0 | | Average Value | |
| 74.0 | | Peak Value | | | |
| Test Procedure: | <p>The E.U.T and its simulators are placed on a turn table which is 0.8meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.</p> <p>Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2009 on radiated measurement.</p> <p>The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.</p> | | | | |
| Test Instruments: | Refer to section 4.8 for details | | | | |
| Test mode: | Transmitting mode. | | | | |
| Test results: | Pass | | | | |



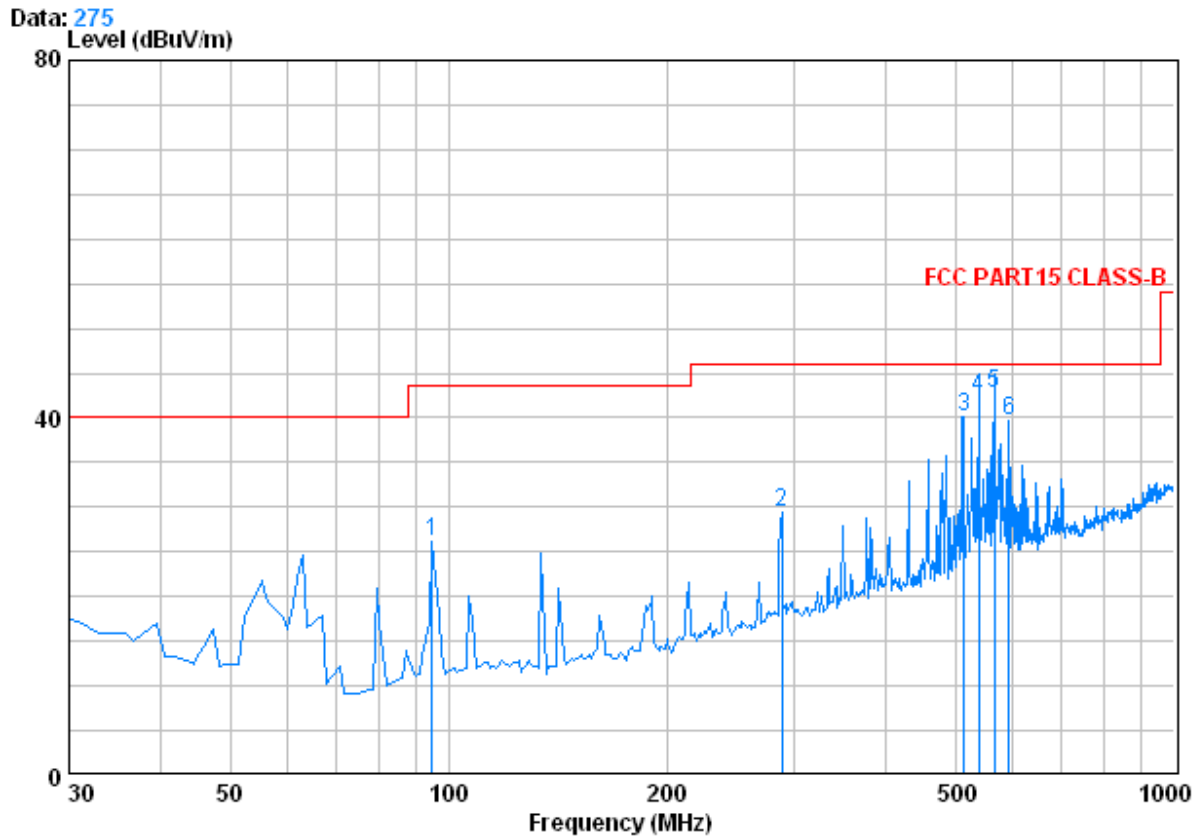
Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

5.7.1 Radiated emission below 1GHz

Vertical:

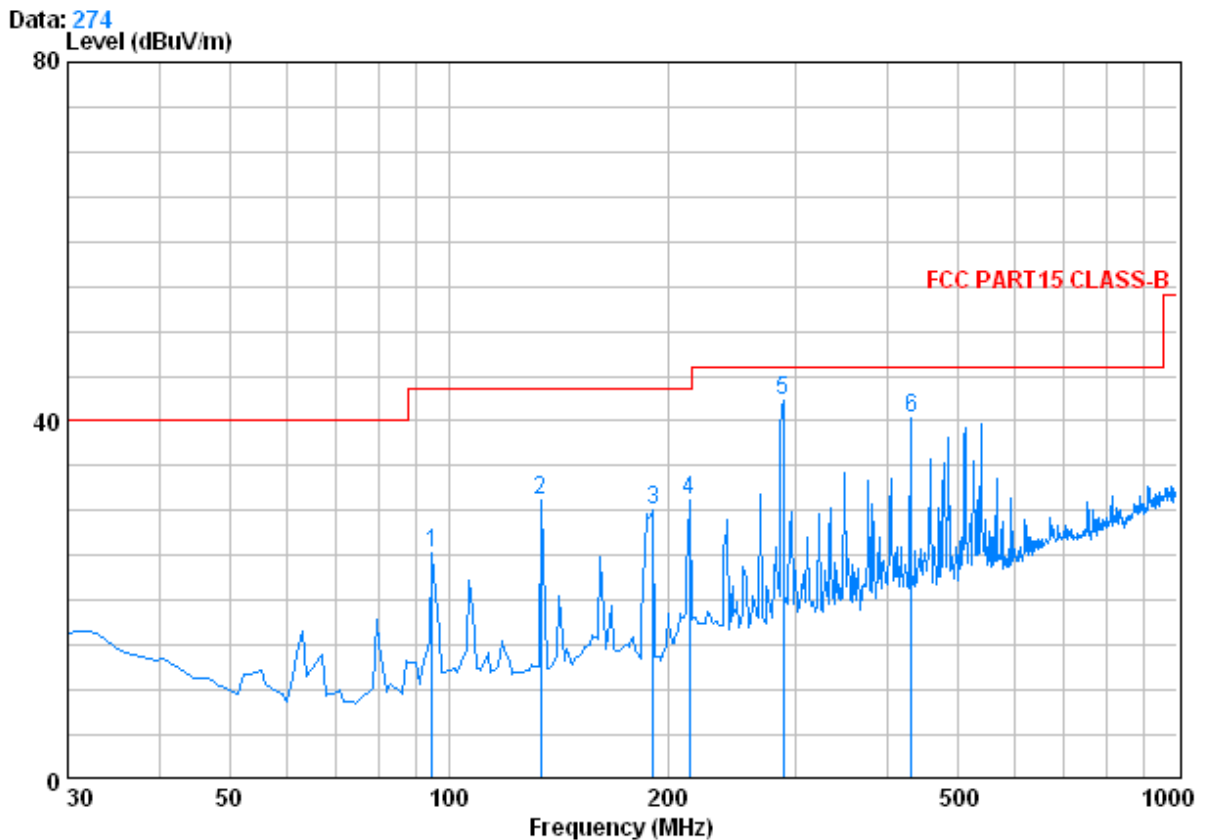


Condition : FCC PART15 CLASS-B 3m 0042673 VERTICAL
EUT : 2.4GHz 15dBm GFSK Transceiver module
Mode : Tx

| | Freq | CableAntenna Loss | Preamp Factor | Read Level | Limit Line | Over Limit |
|---|---------|-------------------|---------------|------------|------------|------------|
| | MHz | dB | dB/m | dBuV | dBuV/m | dB |
| 1 | 94.990 | 1.15 | 8.91 | 27.21 | 43.50 | -17.37 |
| 2 | 288.020 | 1.85 | 13.40 | 26.43 | 46.00 | -16.65 |
| 3 | 513.060 | 2.61 | 18.18 | 27.67 | 46.00 | -5.83 |
| 4 | 537.310 | 2.64 | 18.72 | 27.63 | 46.00 | -3.77 |
| 5 | 564.470 | 2.67 | 19.02 | 27.59 | 46.00 | -3.19 |
| 6 | 591.630 | 2.69 | 19.57 | 27.55 | 46.00 | -6.27 |



Horizontal:



Condition : FCC PART15 CLASS-B 3m 0042673 HORIZONTAL
 EUT : 2.4GHz 15dBm GFSK Transceiver module
 Mode : Tx

| | Freq | CableAntenna Loss | Antenna Factor | Preamplifier Factor | Read Level | Level | Limit Line | Over Limit |
|---|---------|-------------------|----------------|---------------------|------------|--------|------------|------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 94.990 | 1.15 | 8.91 | 27.21 | 42.44 | 25.29 | 43.50 | -18.21 |
| 2 | 133.790 | 1.29 | 7.86 | 26.99 | 48.95 | 31.11 | 43.50 | -12.39 |
| 3 | 191.020 | 1.39 | 10.11 | 26.73 | 45.33 | 30.10 | 43.50 | -13.40 |
| 4 | 214.300 | 1.49 | 10.93 | 26.65 | 45.38 | 31.15 | 43.50 | -12.35 |
| 5 | 288.020 | 1.85 | 13.40 | 26.43 | 53.55 | 42.37 | 46.00 | -3.63 |
| 6 | 431.580 | 2.34 | 16.53 | 27.33 | 48.70 | 40.23 | 46.00 | -5.77 |

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5.7.2 Transmitter emission above 1GHz

| | | | | | |
|------------|------|---------------|--------|---------|------|
| Test mode: | GFSK | Test channel: | Lowest | Remark: | Peak |
|------------|------|---------------|--------|---------|------|

| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Preamp Factor (dB) | Read Level (dBuV) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|-----------------|-----------------|-----------------------|--------------------|-------------------|----------------|---------------------|-----------------|--------------|
| 1787.250 | 2.70 | 30.20 | 39.47 | 50.97 | 44.40 | 74.00 | -29.60 | Vertical |
| 3561.500 | 3.79 | 33.28 | 40.72 | 50.21 | 46.56 | 74.00 | -27.44 | Vertical |
| 4827.422 | 4.70 | 34.68 | 41.64 | 53.91 | 51.65 | 74.00 | -22.35 | Vertical |
| 6393.250 | 5.23 | 36.16 | 40.58 | 52.04 | 52.85 | 74.00 | -21.15 | Vertical |
| 7368.500 | 5.96 | 35.95 | 39.74 | 50.42 | 52.59 | 74.00 | -21.41 | Vertical |
| 9530.500 | 6.01 | 37.23 | 37.86 | 47.13 | 52.51 | 74.00 | -21.49 | Vertical |
| 1587.500 | 2.57 | 28.84 | 39.39 | 50.70 | 42.72 | 74.00 | -31.28 | Horizontal |
| 3467.500 | 3.72 | 33.21 | 40.65 | 50.84 | 47.12 | 74.00 | -26.88 | Horizontal |
| 4827.422 | 4.70 | 34.68 | 41.64 | 58.31 | 56.05 | 74.00 | -17.95 | Horizontal |
| 5394.500 | 4.92 | 34.78 | 41.45 | 51.03 | 49.28 | 74.00 | -24.72 | Horizontal |
| 6675.250 | 5.30 | 36.13 | 40.33 | 52.16 | 53.26 | 74.00 | -20.74 | Horizontal |
| 8872.500 | 6.16 | 36.49 | 38.44 | 48.00 | 52.21 | 74.00 | -21.79 | Horizontal |

| | | | | | |
|------------|------|---------------|--------|---------|---------|
| Test mode: | GFSK | Test channel: | Lowest | Remark: | Average |
|------------|------|---------------|--------|---------|---------|

| Frequency (MHz) | Cable loss (dB) | Antenna factors (dB/m) | Preamp factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Limit (dBuV/m) | Over limit | polarization |
|-----------------|-----------------|------------------------|--------------------|----------------------|-------------------------|----------------|------------|--------------|
| 1787.250 | 2.70 | 30.20 | 39.47 | 43.84 | 37.27 | 54.00 | -16.73 | Vertical |
| 3561.500 | 3.79 | 33.28 | 40.72 | 47.17 | 43.52 | 54.00 | -10.48 | Vertical |
| 4827.422 | 4.70 | 34.68 | 41.64 | 45.18 | 42.92 | 54.00 | -11.08 | Vertical |
| 6393.250 | 5.23 | 36.16 | 40.58 | 46.15 | 46.96 | 54.00 | -7.04 | Vertical |
| 7368.500 | 5.96 | 35.95 | 39.74 | 42.75 | 44.92 | 54.00 | -9.08 | Vertical |
| 9530.500 | 6.01 | 37.23 | 37.86 | 39.16 | 44.54 | 54.00 | -9.46 | Vertical |
| 1587.500 | 2.57 | 28.84 | 39.39 | 43.68 | 35.70 | 54.00 | -18.30 | Horizontal |
| 3467.500 | 3.72 | 33.21 | 40.65 | 42.87 | 39.15 | 54.00 | -14.85 | Horizontal |
| 4827.422 | 4.70 | 34.68 | 41.64 | 49.86 | 47.60 | 54.00 | -6.40 | Horizontal |
| 6675.250 | 5.30 | 36.13 | 40.33 | 43.11 | 44.21 | 54.00 | -9.79 | Horizontal |
| 8872.500 | 6.16 | 36.49 | 38.44 | 38.17 | 42.38 | 54.00 | -11.62 | Horizontal |
| 8872.500 | 6.16 | 36.49 | 38.44 | 38.96 | 43.17 | 54.00 | -10.83 | Horizontal |

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| | | | | | |
|------------|------|---------------|--------|---------|------|
| Test mode: | GFSK | Test channel: | Middle | Remark: | Peak |
|------------|------|---------------|--------|---------|------|

| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Preamp Factor (dB) | Read Level (dBuV) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|-----------------|-----------------|-----------------------|--------------------|-------------------|----------------|---------------------|-----------------|--------------|
| 1787.250 | 2.70 | 30.20 | 39.47 | 50.55 | 43.98 | 74.00 | -30.02 | Vertical |
| 3338.250 | 3.59 | 33.26 | 40.55 | 49.07 | 45.37 | 74.00 | -28.63 | Vertical |
| 4313.500 | 4.37 | 34.69 | 41.26 | 49.91 | 47.71 | 74.00 | -26.29 | Vertical |
| 5641.250 | 5.00 | 35.12 | 41.24 | 50.75 | 49.63 | 74.00 | -24.37 | Vertical |
| 7074.750 | 5.62 | 35.83 | 39.99 | 50.27 | 51.73 | 74.00 | -22.27 | Vertical |
| 9248.500 | 6.08 | 36.89 | 38.11 | 46.16 | 51.02 | 74.00 | -22.98 | Vertical |
| 1787.250 | 2.70 | 30.20 | 39.47 | 50.21 | 43.64 | 74.00 | -30.36 | Horizontal |
| 3620.250 | 3.84 | 33.34 | 40.76 | 49.62 | 46.04 | 74.00 | -27.96 | Horizontal |
| 4877.500 | 4.72 | 34.59 | 41.68 | 51.68 | 49.31 | 74.00 | -24.69 | Horizontal |
| 6193.500 | 5.18 | 35.94 | 40.76 | 51.56 | 51.92 | 74.00 | -22.08 | Horizontal |
| 6957.250 | 5.50 | 35.85 | 40.08 | 51.45 | 52.72 | 74.00 | -21.28 | Horizontal |
| 8778.500 | 6.17 | 36.43 | 38.52 | 47.86 | 51.94 | 74.00 | -22.06 | Horizontal |

| | | | | | |
|------------|------|---------------|--------|---------|---------|
| Test mode: | GFSK | Test channel: | Middle | Remark: | Average |
|------------|------|---------------|--------|---------|---------|

| Frequency (MHz) | Cable loss (dB) | Antenna factors (dB/m) | Preamp factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Limit (dBuV/m) | Over limit | polarization |
|-----------------|-----------------|------------------------|--------------------|----------------------|-------------------------|----------------|------------|--------------|
| 1787.250 | 2.70 | 30.20 | 39.47 | 42.84 | 36.27 | 54.00 | -17.73 | Vertical |
| 3338.250 | 3.59 | 33.26 | 40.55 | 38.50 | 34.80 | 54.00 | -19.20 | Vertical |
| 4313.500 | 4.37 | 34.69 | 41.26 | 43.58 | 41.38 | 54.00 | -12.62 | Vertical |
| 5641.250 | 5.00 | 35.12 | 41.24 | 43.57 | 42.45 | 54.00 | -11.55 | Vertical |
| 7074.750 | 5.62 | 35.83 | 39.99 | 43.79 | 45.25 | 54.00 | -8.75 | Vertical |
| 9248.500 | 6.08 | 36.89 | 38.11 | 39.77 | 44.63 | 54.00 | -9.37 | Vertical |
| 1787.250 | 2.70 | 30.20 | 39.47 | 42.14 | 35.57 | 54.00 | -18.43 | Horizontal |
| 3620.250 | 3.84 | 33.34 | 40.76 | 43.18 | 39.60 | 54.00 | -14.40 | Horizontal |
| 4877.500 | 4.72 | 34.59 | 41.68 | 45.81 | 43.44 | 54.00 | -10.56 | Horizontal |
| 6193.500 | 5.18 | 35.94 | 40.76 | 46.95 | 47.31 | 54.00 | -6.69 | Horizontal |
| 6957.250 | 5.50 | 35.85 | 40.08 | 43.74 | 45.01 | 54.00 | -8.99 | Horizontal |
| 8778.500 | 6.17 | 36.43 | 38.52 | 40.57 | 44.65 | 54.00 | -9.35 | Horizontal |

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| | | | | | |
|------------|------|---------------|---------|---------|------|
| Test mode: | GFSK | Test channel: | Highest | Remark: | Peak |
|------------|------|---------------|---------|---------|------|

| Frequency (MHz) | Cable Loss (dB) | Antenna Factor (dB/m) | Preamp Factor (dB) | Read Level (dBuV) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|-----------------|-----------------|-----------------------|--------------------|-------------------|----------------|---------------------|-----------------|--------------|
| 1728.500 | 2.66 | 29.83 | 39.45 | 55.14 | 48.18 | 74.00 | -25.82 | Vertical |
| 3479.250 | 3.72 | 33.21 | 40.65 | 49.84 | 46.12 | 74.00 | -27.88 | Vertical |
| 4701.250 | 4.62 | 34.87 | 41.56 | 49.99 | 47.92 | 74.00 | -26.08 | Vertical |
| 5911.500 | 5.09 | 35.56 | 41.01 | 51.10 | 50.74 | 74.00 | -23.26 | Vertical |
| 7662.250 | 6.23 | 36.00 | 39.48 | 49.05 | 51.80 | 74.00 | -22.20 | Vertical |
| 10670.250 | 6.14 | 38.37 | 37.73 | 46.36 | 53.14 | 74.00 | -20.86 | Vertical |
| 1728.500 | 2.66 | 29.83 | 39.45 | 52.97 | 46.01 | 74.00 | -27.99 | Horizontal |
| 3326.500 | 3.59 | 33.27 | 40.54 | 50.12 | 46.44 | 74.00 | -27.56 | Horizontal |
| 4325.250 | 4.37 | 34.73 | 41.28 | 50.63 | 48.45 | 74.00 | -25.55 | Horizontal |
| 6428.500 | 5.24 | 36.20 | 40.55 | 50.47 | 51.36 | 74.00 | -22.64 | Horizontal |
| 7368.500 | 5.96 | 35.95 | 39.74 | 49.74 | 51.91 | 74.00 | -22.09 | Horizontal |
| 10529.250 | 6.10 | 38.31 | 37.67 | 46.41 | 53.15 | 74.00 | -20.85 | Horizontal |

| | | | | | |
|------------|------|---------------|---------|---------|---------|
| Test mode: | GFSK | Test channel: | Highest | Remark: | Average |
|------------|------|---------------|---------|---------|---------|

| Frequency (MHz) | Cable loss (dB) | Antenna factors (dB/m) | Preamp factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Limit (dBuV/m) | Over limit | polarization |
|-----------------|-----------------|------------------------|--------------------|----------------------|-------------------------|----------------|------------|--------------|
| 1728.500 | 2.66 | 29.83 | 39.45 | 48.19 | 41.23 | 54.00 | -12.77 | Vertical |
| 3479.250 | 3.72 | 33.21 | 40.65 | 43.88 | 40.16 | 54.00 | -13.84 | Vertical |
| 4701.250 | 4.62 | 34.87 | 41.56 | 41.67 | 39.60 | 54.00 | -14.40 | Vertical |
| 5911.500 | 5.09 | 35.56 | 41.01 | 43.17 | 42.81 | 54.00 | -11.19 | Vertical |
| 7662.250 | 6.23 | 36.00 | 39.48 | 43.73 | 46.48 | 54.00 | -7.52 | Vertical |
| 10670.250 | 6.14 | 38.37 | 37.73 | 38.19 | 44.97 | 54.00 | -9.03 | Vertical |
| 1728.500 | 2.66 | 29.83 | 39.45 | 47.16 | 40.20 | 54.00 | -13.80 | Horizontal |
| 3326.500 | 3.59 | 33.27 | 40.54 | 43.20 | 39.52 | 54.00 | -14.48 | Horizontal |
| 4325.250 | 4.37 | 34.73 | 41.28 | 42.58 | 40.40 | 54.00 | -13.60 | Horizontal |
| 6428.500 | 5.24 | 36.20 | 40.55 | 43.74 | 44.63 | 54.00 | -9.37 | Horizontal |
| 7368.500 | 5.96 | 35.95 | 39.74 | 43.17 | 45.34 | 54.00 | -8.66 | Horizontal |
| 10529.250 | 6.10 | 38.31 | 37.67 | 40.18 | 46.92 | 54.00 | -7.08 | Horizontal |

Remark: The disturbance above 11GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

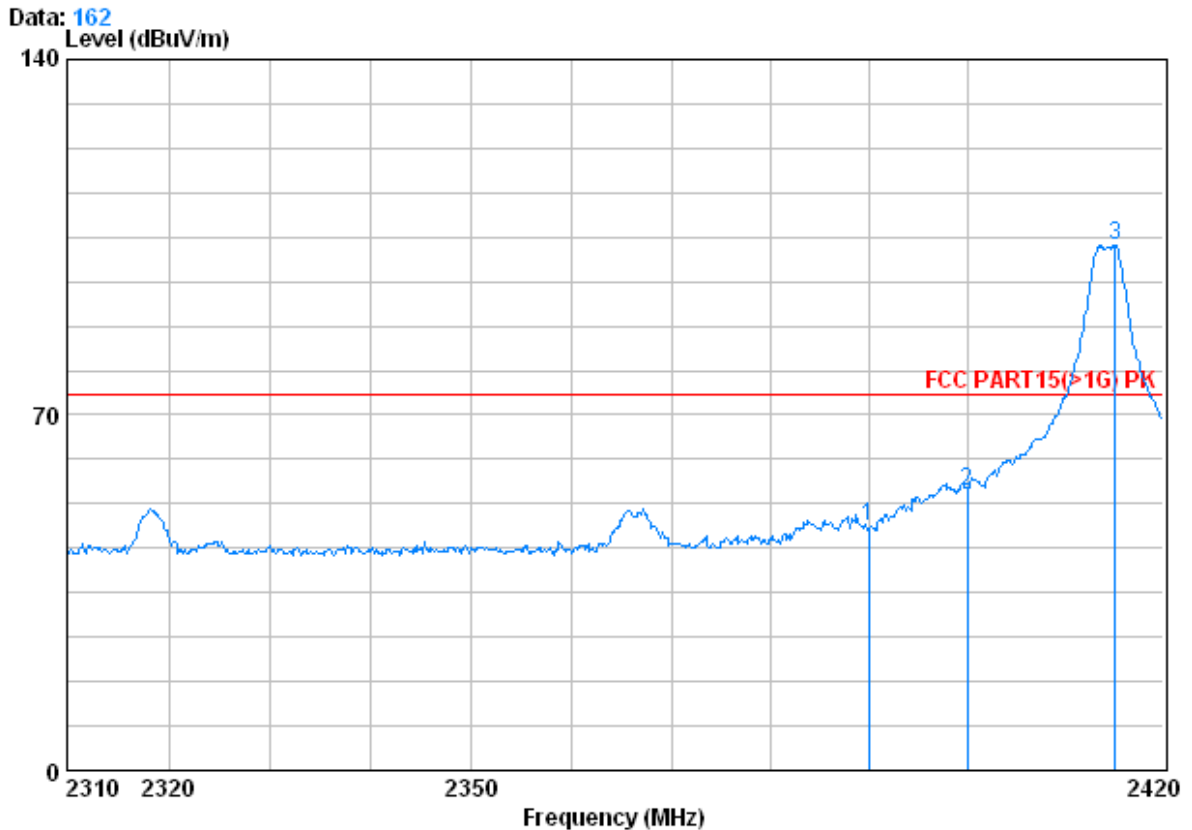
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5.7.3 Band Edge and Restricted band (Radiated measurement)

| | | | | | |
|------------|--------------|---------------|--------|---------|------|
| Test mode: | Transmitting | Test channel: | Lowest | Remark: | Peak |
|------------|--------------|---------------|--------|---------|------|

Vertical:



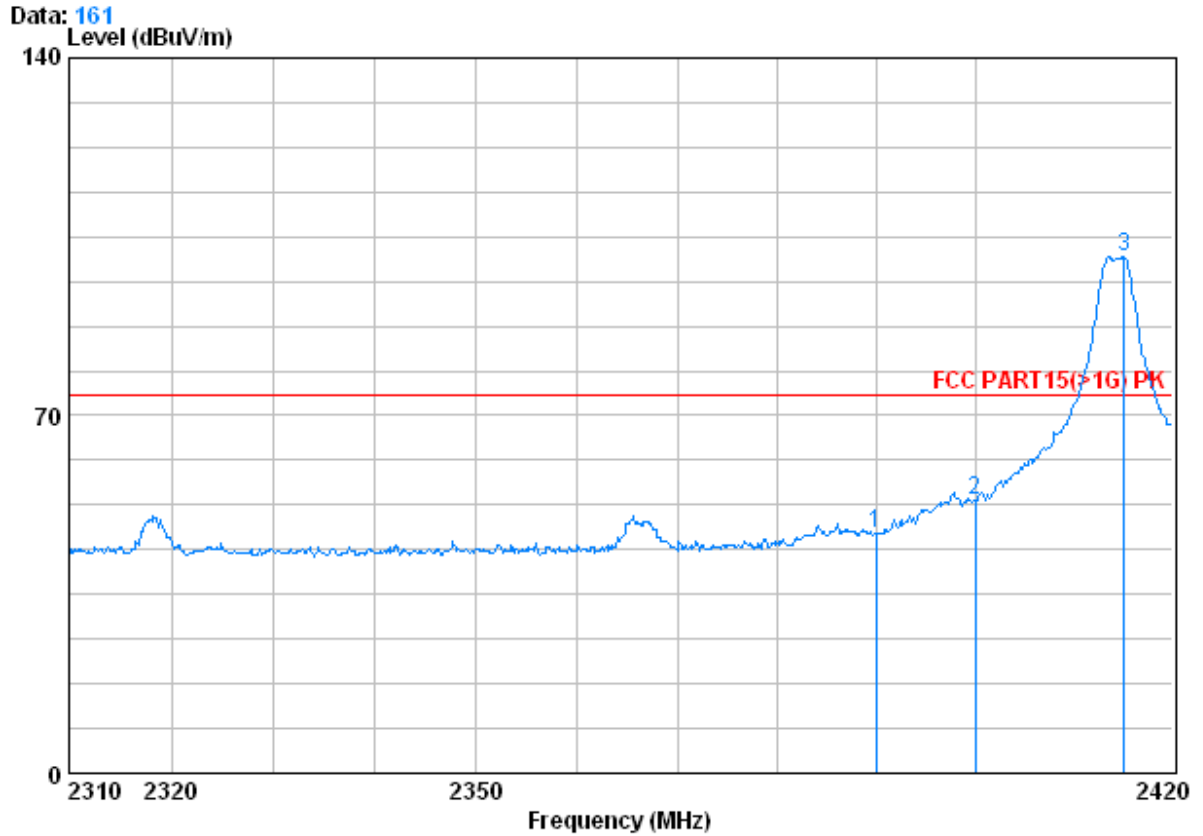
Condition : FCC PART15(>1G) PK 3m VERTICAL
 EUT : 2.4GHz 15dBm GFSK Transceiver module
 Job No. : 4453RF
 Mode : 2415.25MHz bandedge

| | Cable | Antenna | Preamp | Read | Limit | Over | |
|------|-------|---------|--------|--------|--------|--------|--------|
| Freq | Loss | Factor | Factor | Level | Line | Limit | |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 2.98 | 32.51 | 39.85 | 52.25 | 47.89 | 74.00 | -26.11 |
| 2 | 2.98 | 32.51 | 39.86 | 59.28 | 54.92 | 74.00 | -19.08 |
| 3 X | 2.99 | 32.54 | 39.86 | 107.85 | 103.53 | 74.00 | 29.53 |

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Horizontal:



Condition : FCC PART15(>1G) PK 3m HORIZONTAL
 EUT : 2.4GHz 15dBm GFSK Transceiver module
 Job No. : 4453RF
 Mode : 2415.25MHz bandedge

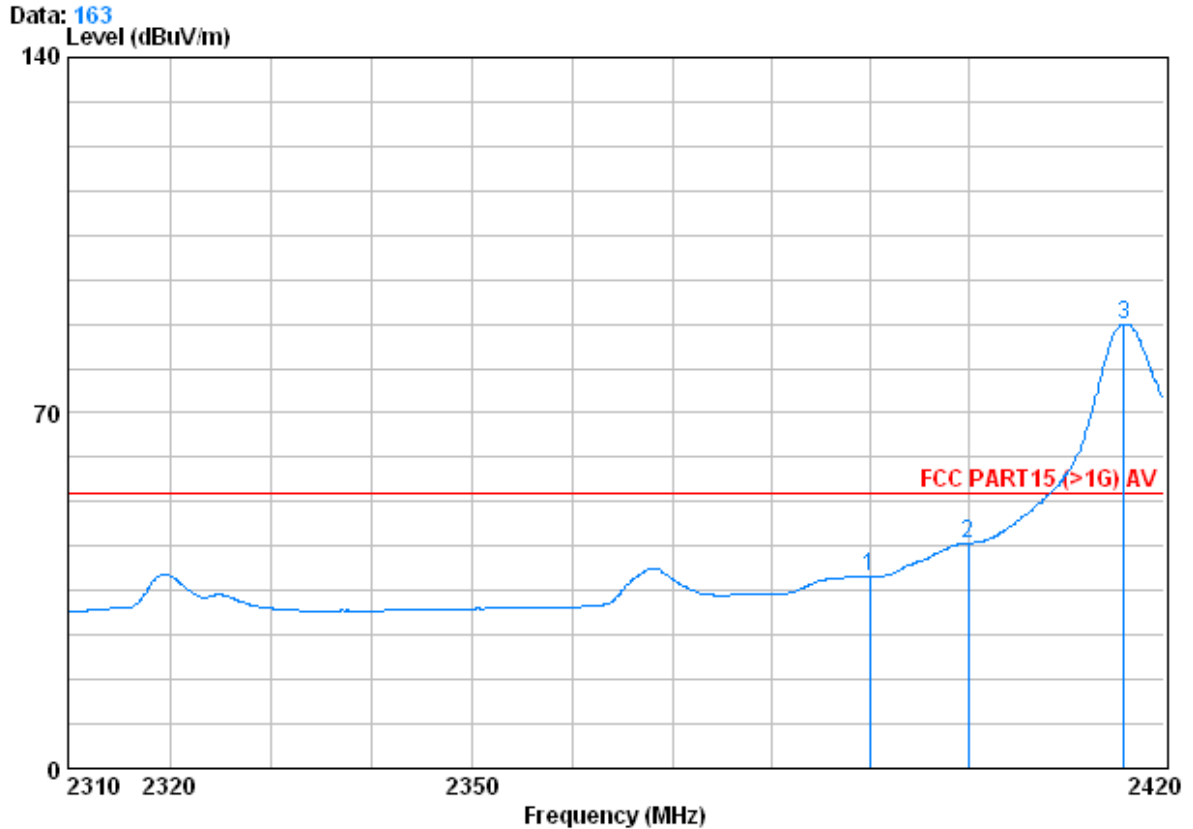
| | Freq | Cable Loss | Antenna Factor | Preamp Factor | Read Level | Limit Level | Limit Line | Over Limit |
|-----|----------|------------|----------------|---------------|------------|-------------|------------|------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 2390.000 | 2.98 | 32.51 | 39.85 | 51.31 | 46.96 | 74.00 | -27.04 |
| 2 | 2400.000 | 2.98 | 32.51 | 39.86 | 57.72 | 53.35 | 74.00 | -20.65 |
| 3 X | 2415.050 | 2.99 | 32.54 | 39.86 | 105.38 | 101.05 | 74.00 | 27.05 |

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| | | | | | |
|------------|--------------|---------------|--------|---------|---------|
| Test mode: | Transmitting | Test channel: | Lowest | Remark: | Average |
|------------|--------------|---------------|--------|---------|---------|

Vertical:



Condition : FCC PART15 (>1G) AV 3m VERTICAL
EUT : 2.4GHz 15dBm GFSK Transceiver module
Job No. : 4453RF
Mode : 2415.25MHz bandedge

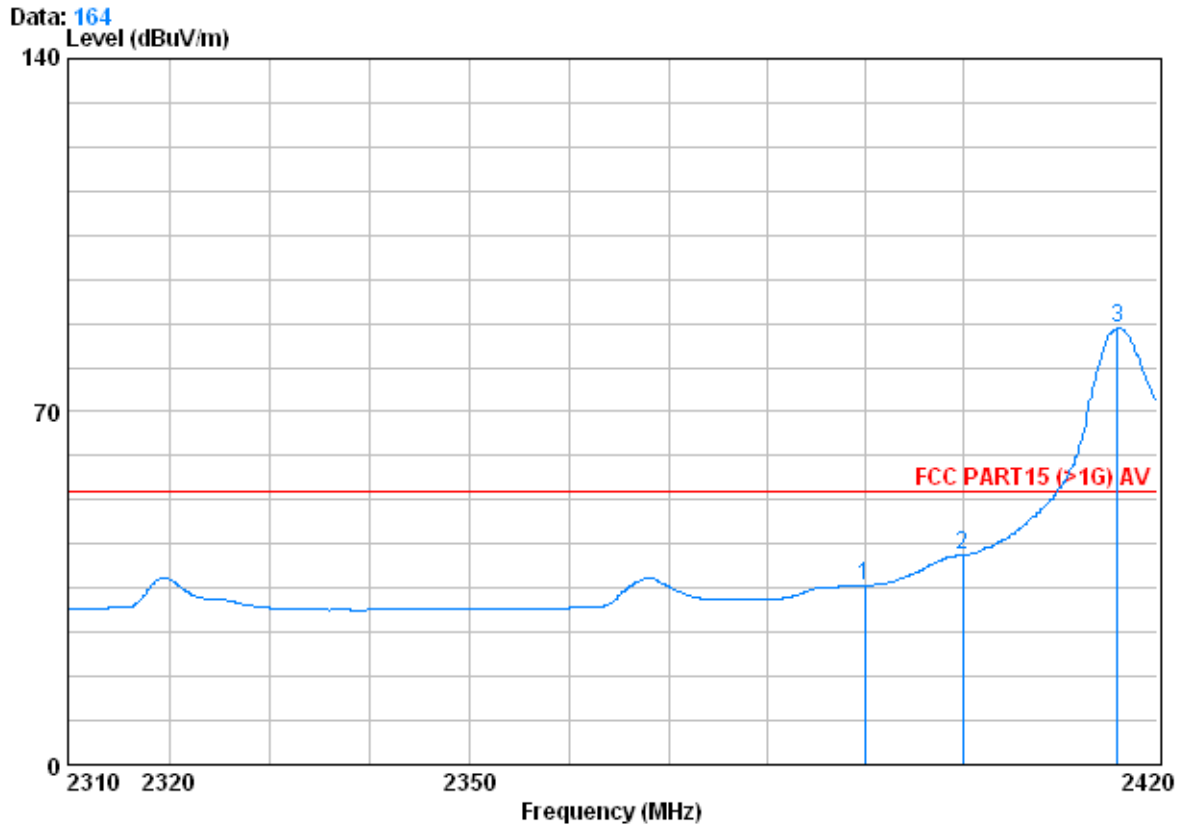
| | Freq | Cable Loss | Antenna Factor | Preamplifier | Read Level | Limit Line | Over Limit |
|-----|----------|------------|----------------|--------------|------------|------------|------------|
| | MHz | dB | dB/m | Factor | dBuV | dBuV/m | dB |
| 1 | 2390.000 | 2.98 | 32.51 | 39.85 | 42.18 | 54.00 | -16.18 |
| 2 | 2400.000 | 2.98 | 32.51 | 39.86 | 48.76 | 54.00 | -9.60 |
| 3 X | 2415.930 | 2.99 | 32.54 | 39.88 | 91.87 | 54.00 | 33.53 |



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Horizontal:



Condition : FCC PART15 (>1G) AV 3m HORIZONTAL
 EUT : 2.4GHz 15dBm GFSK Transceiver module
 Job No. : 4453RF
 Mode : 2415.25MHz bandedge

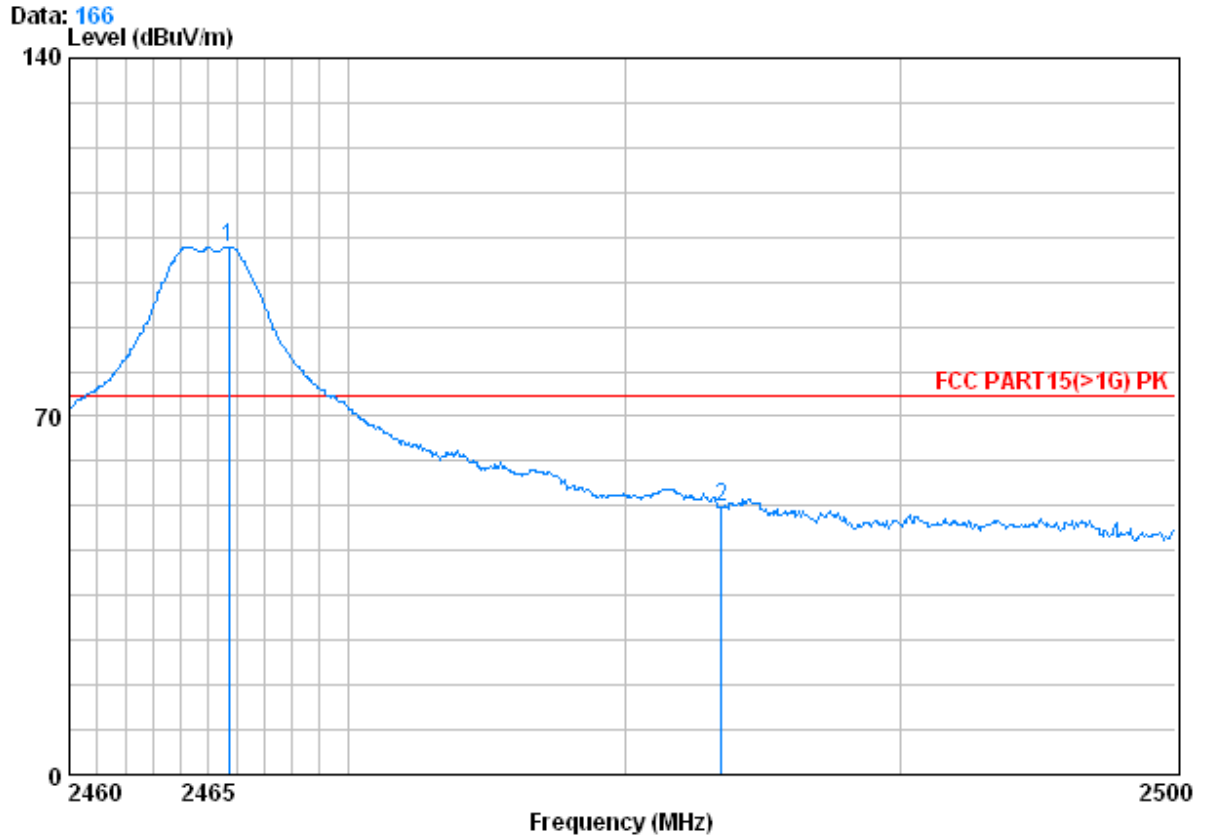
| | Freq | Cable Loss | Antenna Factor | Preamp Factor | Read Level | Limit Level | Limit Line | Over Limit |
|-----|----------|------------|----------------|---------------|------------|-------------|------------|------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 2390.000 | 2.98 | 32.51 | 39.85 | 39.85 | 35.50 | 54.00 | -18.50 |
| 2 | 2400.000 | 2.98 | 32.51 | 39.86 | 45.93 | 41.57 | 54.00 | -12.43 |
| 3 X | 2415.930 | 2.99 | 32.54 | 39.88 | 90.82 | 86.48 | 54.00 | 32.48 |

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| | | | | | |
|------------|--------------|---------------|---------|---------|------|
| Test mode: | Transmitting | Test channel: | Highest | Remark: | Peak |
|------------|--------------|---------------|---------|---------|------|

Vertical:



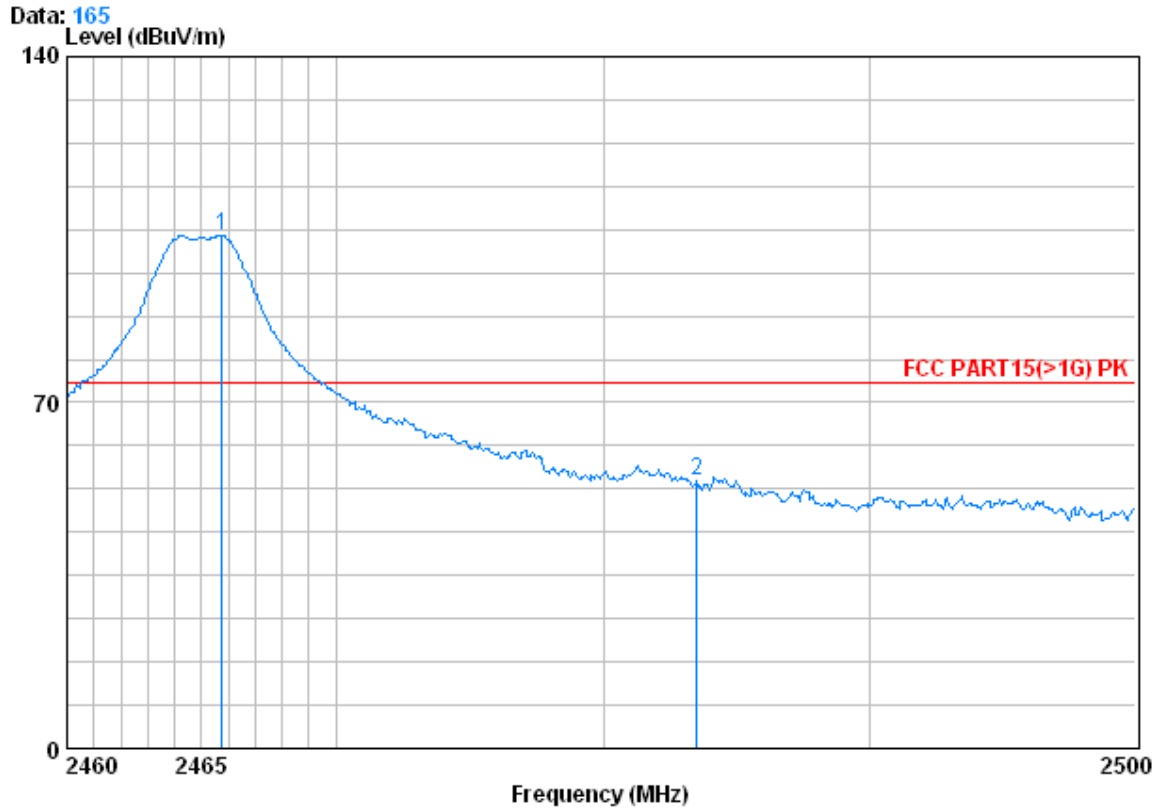
Condition : FCC PART15(>1G) PK 3m VERTICAL
 EUT : 2.4GHz 15dBm GFSK Transceiver module
 Job No. : 4453RF
 Mode : 2464.875MHz bandedge

| | Freq | Cable | Antenna | Preamp | Read | Limit | Over |
|-----|----------|-------|---------|--------|--------|--------|--------------|
| | | Loss | Factor | Factor | Level | Line | Limit |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m |
| 1 X | 2465.720 | 3.02 | 32.64 | 39.91 | 107.41 | 103.16 | 74.00 29.16 |
| 2 | 2483.500 | 3.03 | 32.67 | 39.92 | 56.33 | 52.11 | 74.00 -21.89 |

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Horizontal:



Condition : FCC PART15(>1G) PK 3m HORIZONTAL
 EUT : 2.4GHz 15dBm GFSK Transceiver module
 Job No. : 4453RF
 Mode : 2464.875MHz bandedge

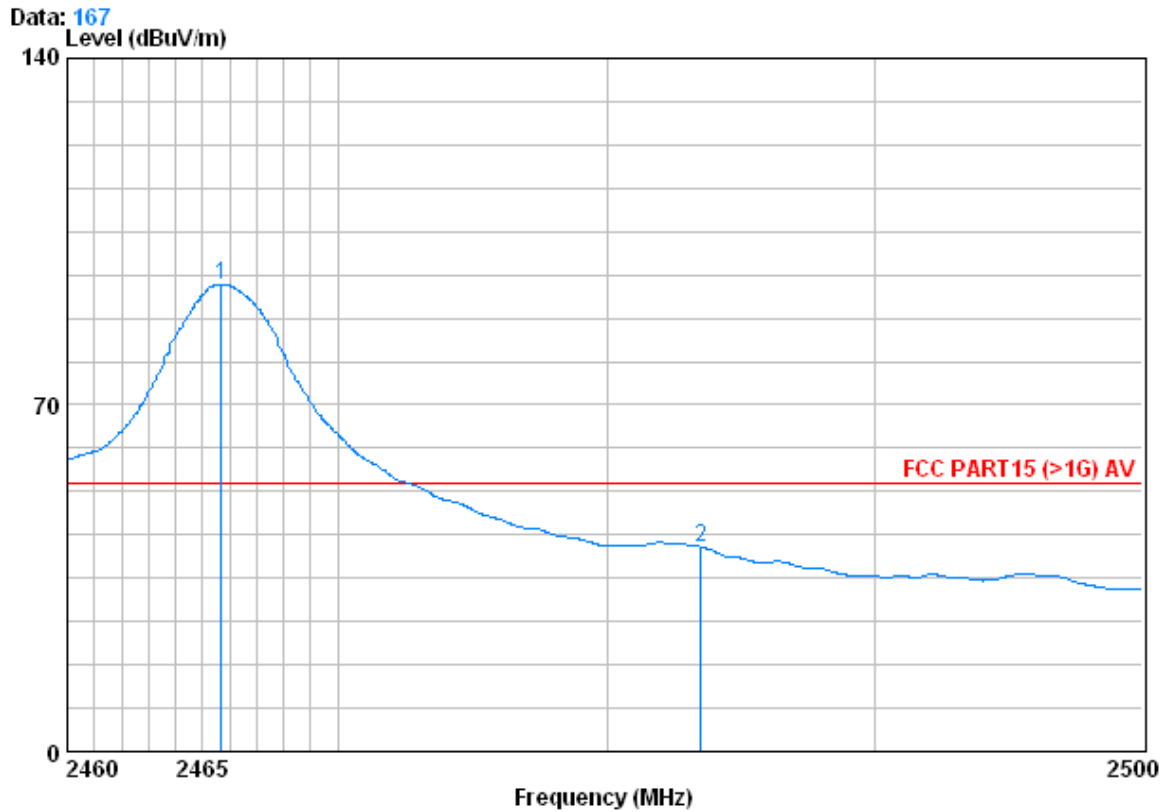
| | | Cable | Antenna | Preamp | Read | | Limit | Over |
|-----|----------|-------|---------|--------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 X | 2465.750 | 3.02 | 32.64 | 39.91 | 108.13 | 103.88 | 74.00 | 29.88 |
| 2 | 2483.500 | 3.03 | 32.67 | 39.92 | 58.21 | 53.99 | 74.00 | -20.01 |

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| | | | | | |
|------------|--------------|---------------|---------|---------|---------|
| Test mode: | Transmitting | Test channel: | Highest | Remark: | Average |
|------------|--------------|---------------|---------|---------|---------|

Vertical:



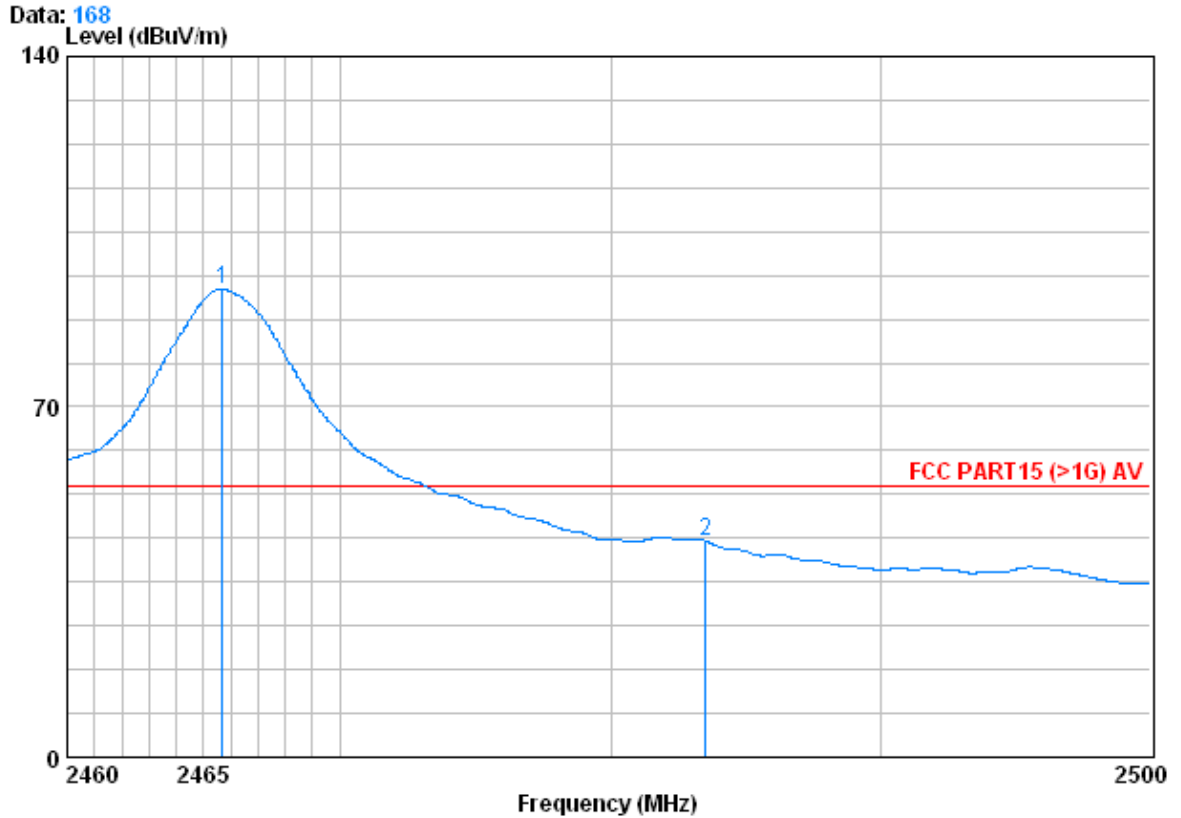
Condition : FCC PART15 (>1G) AV 3m VERTICAL
EUT : 2.4GHz 15dBm GFSK Transceiver module
Job No. : 4453RF
Mode : 2464.875MHz bandedge

| | Freq | Cable Loss | Antenna Factor | Preamplifier | Read Level | Level | Limit | Over |
|---|----------|------------|----------------|--------------|------------|--------|--------|--------|
| | MHz | dB | dB/m | Factor | dBuV | dBuV/m | dBuV/m | Limit |
| 1 | 2465.680 | 3.02 | 32.64 | 39.91 | 98.63 | 94.39 | 54.00 | 40.39 |
| 2 | 2483.500 | 3.03 | 32.67 | 39.92 | 45.49 | 41.27 | 54.00 | -12.73 |

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Horizontal:



Condition : FCC PART15 (>1G) AV 3m HORIZONTAL
 EUT : 2.4GHz 15dBm GFSK Transceiver module
 Job No. : 4453RF
 Mode : 2464.875MHz bandedge

| | Freq | Cable Loss | Antenna Factor | Preamp Factor | Read Level | Limit Level | Limit Line | Over Limit |
|---|----------|------------|----------------|---------------|------------|-------------|------------|------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 2465.680 | 3.02 | 32.64 | 39.91 | 97.72 | 93.47 | 54.00 | 39.47 |
| 2 | 2483.500 | 3.03 | 32.67 | 39.92 | 47.39 | 43.18 | 54.00 | -10.82 |

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