

**FCC/IC - TEST REPORT**Report Number : **68.950.17.026.02** Date of Issue: August 16, 2017Model : **HB32TX**Product Type : **Baby Monitor**Applicant : **Shenzhen Videotimes Technology Co., Ltd.**Address : **Jinmeiwei First Industry Park, Xingye West Road, Bao'an**
District, Shenzhen 518000 ChinaProduction Facility : **Shenzhen Videotimes Technology Co., Ltd.**Address : **Floor 6, Building 3, Section 5, Honghualing Industrial South Park,**
Liuxian Avenue, Taoyuan Street, Nanshan District, Shenzhen, ChinaTest Result : **Positive** **Negative**Total pages : **36**

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1 Table of Contents

| | | |
|-----|---|----|
| 1 | Table of Contents..... | 2 |
| 2 | Details about the Test Laboratory | 3 |
| 3 | Description of the Equipment Under Test..... | 4 |
| 4 | Summary of Test Standards..... | 5 |
| 5 | Summary of Test Results | 6 |
| 6 | General Remarks..... | 7 |
| 7 | Test Setups..... | 8 |
| 8 | Systems test configuration | 9 |
| 9 | Technical Requirement | 10 |
| 9.1 | Conducted Emission | 10 |
| 9.2 | Conducted peak output power | 13 |
| 9.3 | 20 dB bandwidth | 15 |
| 9.4 | Carrier Frequency Separation | 18 |
| 9.5 | Number of hopping frequencies | 21 |
| 9.6 | Dwell Time | 23 |
| 9.7 | Spurious RF conducted emissions | 25 |
| 9.8 | Band edge testing | 29 |
| 9.9 | Spurious radiated emissions for transmitter | 31 |
| 10 | Test Equipment List | 35 |
| 11 | System Measurement Uncertainty | 36 |



2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
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P. R. China

FCC Registration No.: 514049

IC Registration No: 10320A-1

Telephone: 86 755 8828 6998
Fax: 86 755 8828 5299

3 Description of the Equipment Under Test

| | |
|----------------------------|---|
| Product: | Baby Monitor |
| Model no.: | HB32TX |
| FCC ID: | 2AF2R-HB32TX |
| IC: | 20674-HB32TX |
| Rating: | 6VDC, 600mA Powered by external power supply Adaptor Input: 100-240VAC, 50/60Hz; 150mA Adaptor Output: 6.0V, 600mA |
| RF Transmission Frequency: | 2403.5-2475.5MHz |
| No. of Operated Channel: | 49 |
| Modulation: | GFSK |
| Antenna Type: | Integral Antenna |
| Antenna Gain: | 1.2dBi |
| Description of the EUT: | The Equipment Under Test (EUT) is a Baby Monitor operated at 2.4GHz |

Channel List:

| Channel | Frequency(MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| 1 | 2403.5 | 13 | 2421.5 | 25 | 2439.5 | 37 | 2457.5 |
| 2 | 2405 | 14 | 2423 | 26 | 2441 | 38 | 2459 |
| 3 | 2406.5 | 15 | 2424.5 | 27 | 2442.5 | 39 | 2460.5 |
| 4 | 2408 | 16 | 2426 | 28 | 2444 | 40 | 2462 |
| 5 | 2409.5 | 17 | 2427.5 | 29 | 2445.5 | 41 | 2463.5 |
| 6 | 2411 | 18 | 2429 | 30 | 2447 | 42 | 2465 |
| 7 | 2412.5 | 19 | 2430.5 | 31 | 2448.5 | 43 | 2466.5 |
| 8 | 2414 | 20 | 2432 | 32 | 2450 | 44 | 2468 |
| 9 | 2415.5 | 21 | 2433.5 | 33 | 2451.5 | 45 | 2469.5 |
| 10 | 2417 | 22 | 2435 | 34 | 2453 | 46 | 2471 |
| 11 | 2418.5 | 23 | 2436.5 | 35 | 2454.5 | 47 | 2472.5 |
| 12 | 2420 | 24 | 2438 | 36 | 2456 | 48 | 2474 |
| | | | | | | 49 | 2475.5 |



4 Summary of Test Standards

| Test Standards | |
|--|---|
| FCC Part 15 Subpart C 10-1-2016 Edition | PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators |
| RSS-Gen Issue 4 November 2014 | General Requirements for the Certification of Radio Apparatus |
| RSS-247 Issue 2 February 2017 | RSS-247 —Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices |

All the test methods were according to Public Notice DA 00-705 -Frequency Hopper Spread Spectrum Test Procedure released by FCC on March 30, 2000 and C63.10 (2014).

5 Summary of Test Results

| Technical Requirements | | | | | | | |
|---|------------------------------|---|------------|--------------|-------------------------------------|--------------------------|-------------------------------------|
| FCC Part 15 Subpart C, RSS-Gen, RSS-247 | | | | | | | |
| Test Condition | | | Page s | Test Site | Test Result | | |
| | | | | | Pas s | Fai l | N/ A |
| §15.207 | RSS-GEN A8.8 | Conducted emission AC power port | 10 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247 (b) (1) | RSS-247 5.4(4) | Conducted peak output power | 13 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(a)(1) | RSS-247 5.1(2) | 20dB bandwidth | 15 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(a)(1) | RSS-247 5.1(2) | Carrier frequency separation | 18 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(a)(1)(iii) | RSS-247 5.1(3) | Number of hopping frequencies | 20 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(a)(1)(iii) | RSS-247 5.1(3) | Dwell Time | 22 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(a)(2) | RSS-247 5.2 (1) | 6dB bandwidth | --- | --- | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(e) | RSS-247 5.2 (2) | Power spectral density | --- | --- | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.247(d) | RSS-247 5.5 | Spurious RF conducted emissions | 26 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(d) | RSS-247 5.5 | Band edge | 30 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.247(d) & §15.209 | RSS-247 5.5 & RSSGEN 6.13 | Spurious radiated emissions for transmitter | 32 | Site 1 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.203 | RSSGEN 8.3 | Antenna requirement | See note 2 | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an integral antenna, which gain is 1.2dBi. In accordance to §15.203 and § RSSGEN 8.3, it is considered sufficiently to comply with the provisions of this section.



6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2AF2R-HB32TX, IC: 20674-HB32TX complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules, RSS-Gen and RSS-210.

SUMMARY:

All tests according to the regulations cited on page 5 were

n - Performed

o - **Not** Performed

The Equipment Under Test

n - **Fulfills** the general approval requirements.

o - **Does not** fulfill the general approval requirements.

Sample Received Date: July 31, 2017

Testing Start Date: July 31, 2017

Testing End Date: August 15, 2017

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Reviewed by:

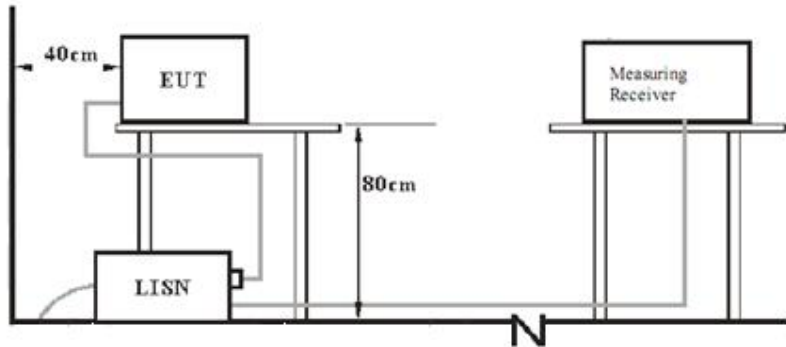
Prepared by:

John Zhi
EMC Project Manager

Alan Xiong
EMC Project Engineer

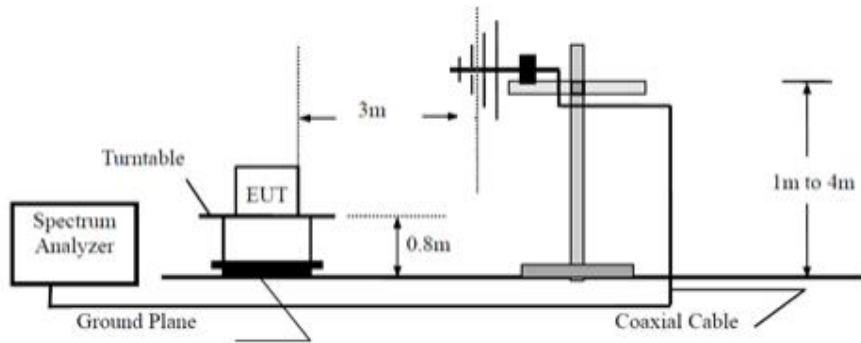
7 Test Setups

7.1 AC Power Line Conducted Emission test setups

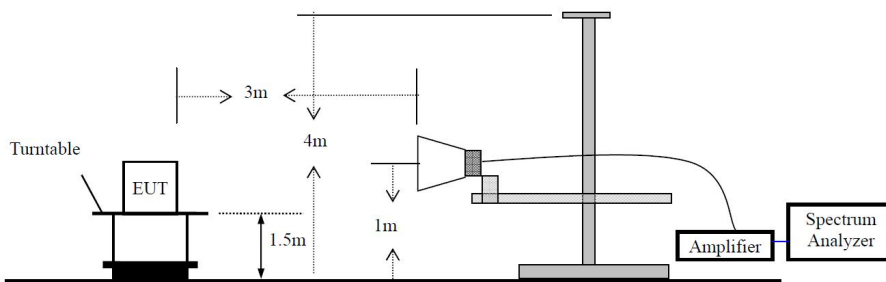


7.2 Radiated test setups

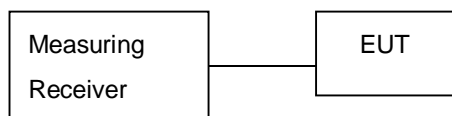
Below 1GHz



Above 1GHz



7.3 Conducted RF test setups



8 Systems test configuration

Auxiliary Equipment Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO.(SHIELD) | S/N(LENGTH) |
|-------------|--------------|-------------------|-------------|
| --- | --- | --- | --- |

Test software which used to control the EUT in continues transmitting mode

The system was configured to hopping mode and non-hopping mode.

Hopping mode: typical working mode (normal hopping status)

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power

9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

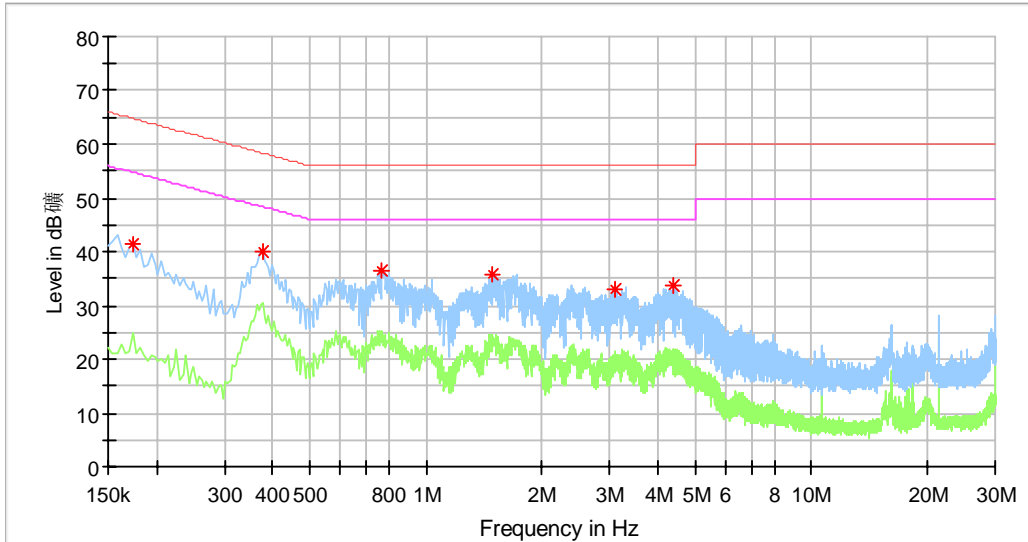
According to §15.207 & RSS-GEN A8.8, conducted emissions limit as below:

| Frequency MHz | QP Limit dB μ V | AV Limit dB μ V |
|------------------|------------------------|------------------------|
| 0.150-0.500 | 66-56* | 56-46* |
| 0.500-5 | 56 | 46 |
| 5-30 | 60 | 50 |

Decreasing linearly with logarithm of the frequency



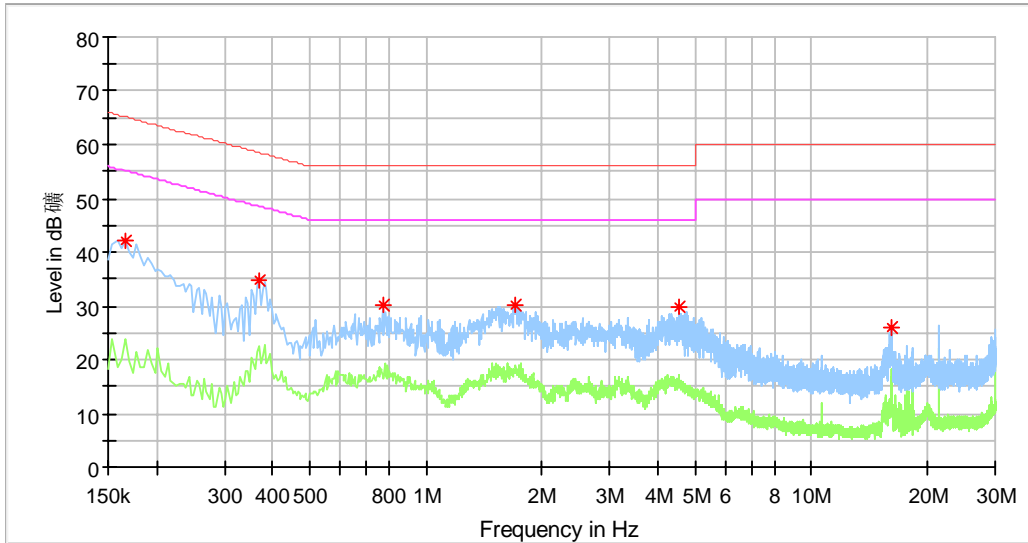
Product Type : Baby Monitor
 M/N : HB32TX
 Operating Condition : Transmitting
 Test Specification : Line
 Comment : AC 120V/60Hz
 Remark : Model:RJ-AS060600U003



| Frequency (MHz) | MaxPeak (dBµV) | Average (dBµV) | Limit (dBµV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------|------------|
| 0.174000 | 41.30 | --- | 64.77 | 23.47 | L1 | 10.3 |
| 0.378000 | 40.16 | --- | 58.32 | 18.16 | L1 | 11.1 |
| 0.770000 | 36.36 | --- | 56.00 | 19.64 | L1 | 10.3 |
| 1.494000 | 35.87 | --- | 56.00 | 20.13 | L1 | 10.4 |
| 3.090000 | 33.00 | --- | 56.00 | 23.00 | L1 | 10.4 |
| 4.398000 | 33.71 | --- | 56.00 | 22.29 | L1 | 10.5 |



Product Type : Baby Monitor
 M/N : HB32TX
 Operating Condition : Transmitting
 Test Specification : Neutral
 Comment : AC 120V/60Hz
 Remark : Model:RJ-AS060600U003



| Frequency (MHz) | MaxPeak (dBµV) | Average (dBµV) | Limit (dBµV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------|------------|
| 0.166000 | 42.06 | --- | 65.16 | 23.09 | N | 10.3 |
| 0.370000 | 34.82 | --- | 58.50 | 23.68 | N | 10.3 |
| 0.774000 | 30.21 | --- | 56.00 | 25.79 | N | 10.4 |
| 1.702000 | 30.26 | --- | 56.00 | 25.74 | N | 10.4 |
| 4.554000 | 29.93 | --- | 56.00 | 26.07 | N | 10.5 |
| 16.226000 | 25.96 | --- | 60.00 | 34.04 | N | 11.0 |

Remark: Worst case adapter test record only.



9.2 Conducted peak output power

Test Method

1. Use the following spectrum analyzer settings:
 Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
 RBW > the 20 dB bandwidth of the emission being measured, VBW ≥ RBW,
 Sweep = auto, Detector function = peak, Trace = max hold
2. Add a correction factor to the display.
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power

Limits

According to §15.247 (b) (1) & RSS-247 5.4(4), conducted peak output power limit as below:

| Frequency Range MHz | Limit W | Limit dBm |
|------------------------|------------|--------------|
| 2400-2483.5 | ≤1 | ≤30 |



Conducted peak output power

GFSK modulation Test Result

| Frequency MHz | Conducted Peak Output Power dBm | Result |
|--------------------------|---------------------------------------|--------|
| Low channel 2403.5MHz | 17.40 | Pass |
| Middle channel 2439.5MHz | 17.42 | Pass |
| High channel 2475.5MHz | 16.88 | Pass |



9.3 20 dB bandwidth

Test Method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit [kHz]

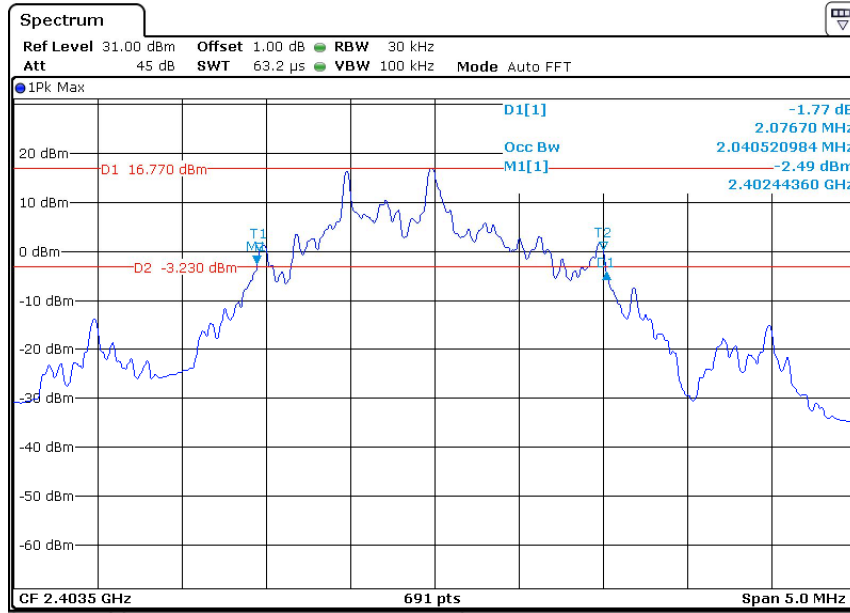
N/A



20 dB bandwidth

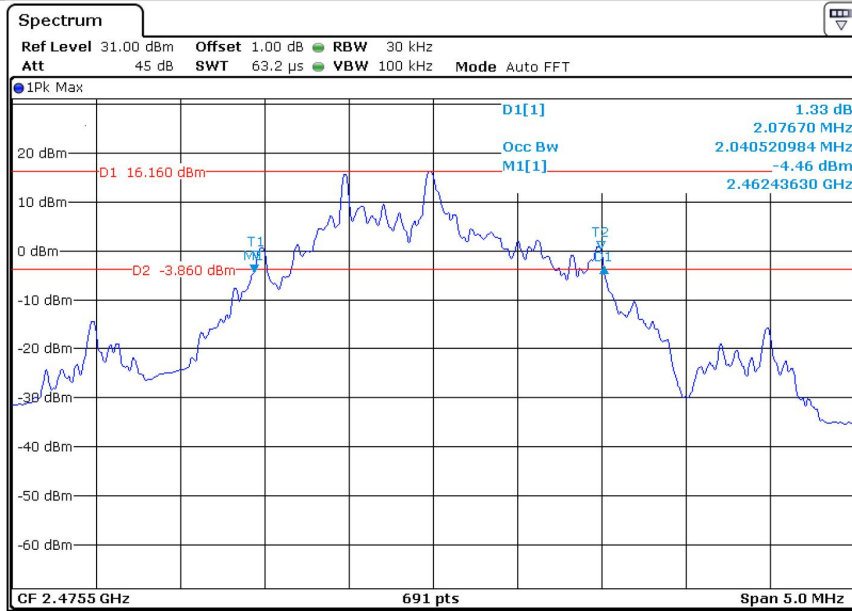
GFSK Modulation test result

| Frequency MHz | 20 dB Bandwidth kHz | Limit kHz | Result |
|------------------|------------------------|--------------|--------|
| 2403.5 | 2076.7 | -- | Pass |
| 2439.5 | 2083.9 | -- | Pass |
| 2475.5 | 2076.7 | -- | Pass |





20 dB bandwidth





9.4 Carrier Frequency Separation

Test Method

1. Use the following spectrum analyzer settings:
Span = wide enough to capture the peaks of two adjacent channels, RBW \geq 1% of the span, VBW) \geq RBW, Sweep = auto, Detector function = peak
2. By using the Max-Hold function record the separation of two adjacent channels.
3. Measure the frequency difference of these two adjacent channels by spectrum analyzer marker function.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit
kHz

≥25KHz or 2/3 of the 20 dB bandwidth which is greater

GFSK Modulation Limit

| Frequency MHz | 2/3 of 20 dB Bandwidth kHz |
|------------------|-------------------------------|
| 2403.5 | 1384.5 |
| 2439.5 | 1389.3 |
| 2460.5 | 1384.5 |

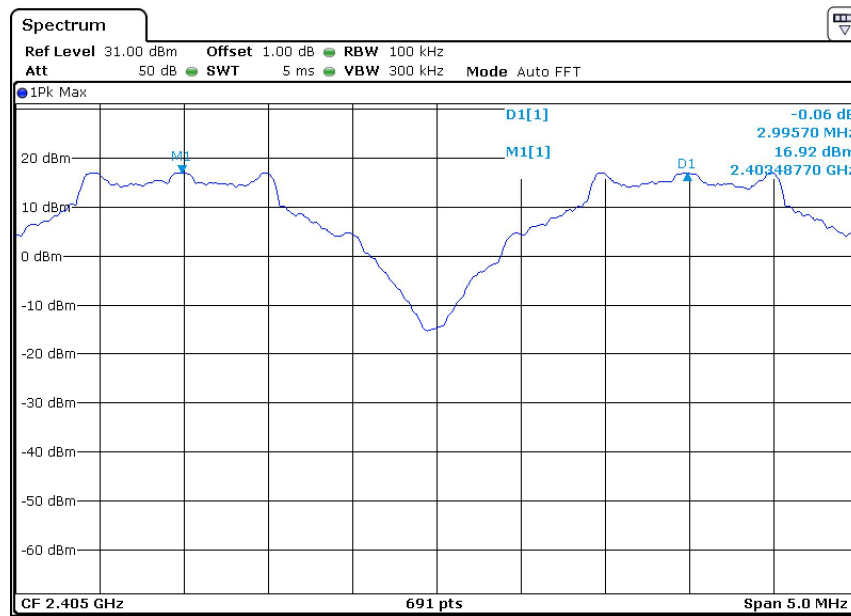


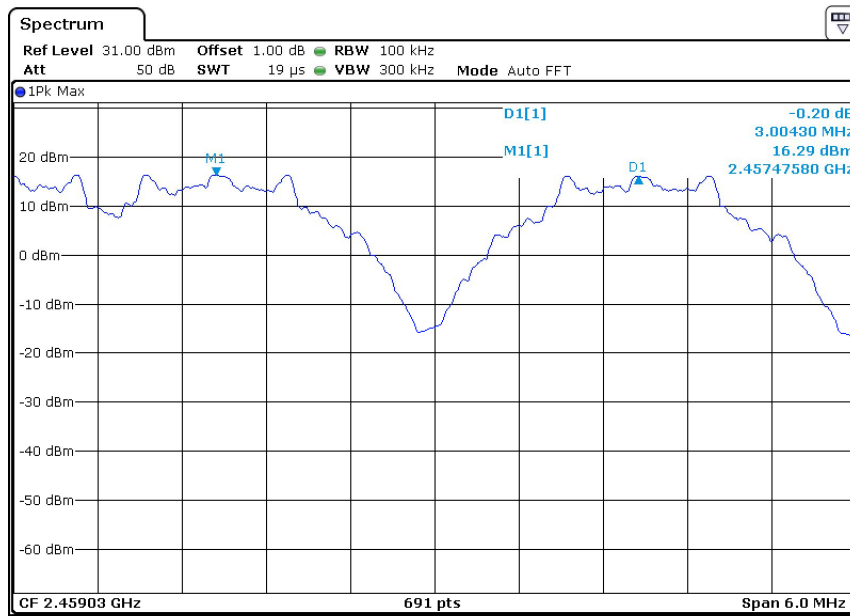
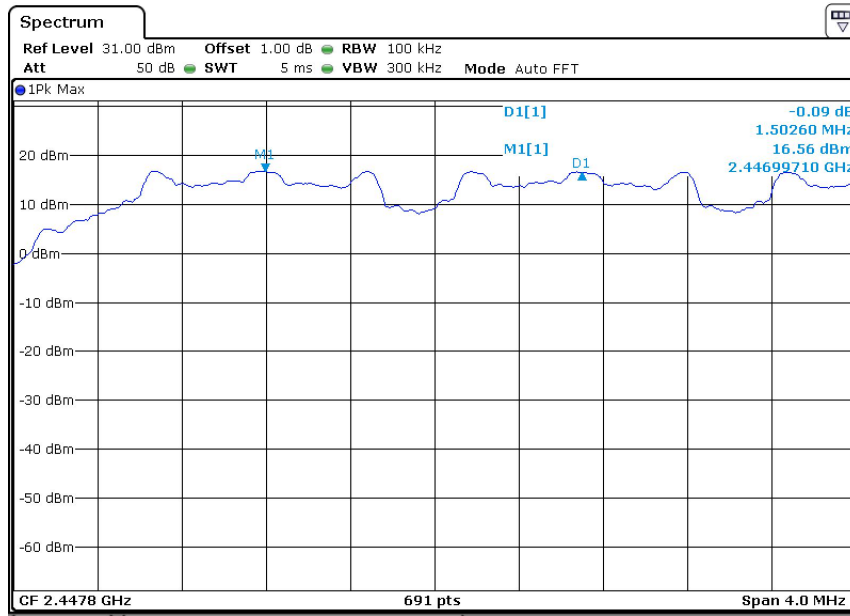
Carrier Frequency Separation

Test result: The measurement was performed with the typical configuration (normal hopping status), here GFSK modulation mode was used to show compliance.

GFSK Modulation test result

| Frequency MHz | Carrier Frequency Separation kHz | Result |
|------------------|-------------------------------------|--------|
| 2403.5 | 2995.7 | Pass |
| 2439.5 | 1052.6 | Pass |
| 2460.5 | 3004.3 | Pass |





9.5 Number of hopping frequencies

Test Method

1. Use the following spectrum analyzer settings:
Span = wide enough to capture the peaks of two adjacent channels, RBW \geq 1% of the span, VBW) \geq RBW, Sweep = auto, Detector function = peak
2. Set the spectrum analyzer on Max-Hold Mode, and then keep the EUT in hopping mode.
3. Record all the signals from each channel until each one has been recorded.
4. Repeat above procedures until all frequencies measured were complete.

Limit

**Limit
number**

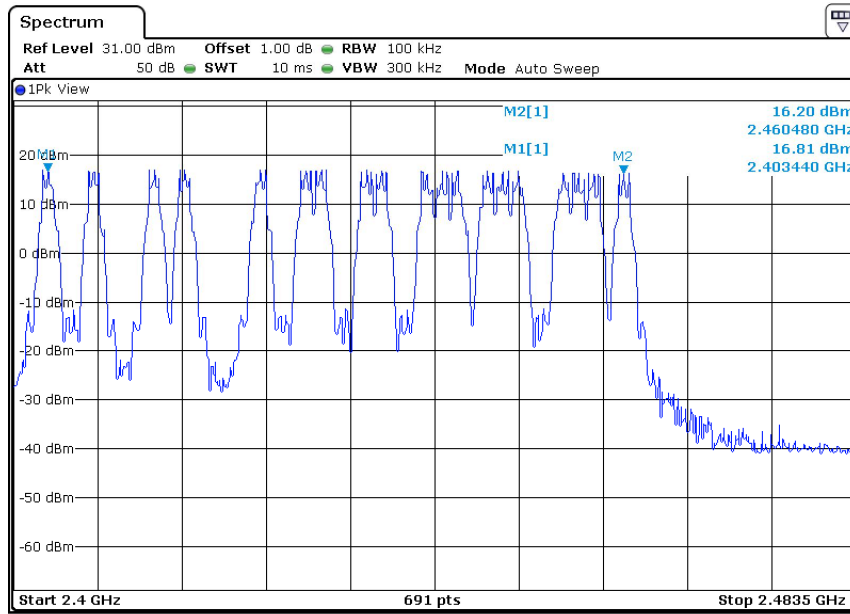
≥ 15



Number of hopping frequencies

Test result: The measurement was performed with the typical configuration (normal hopping status), Here GFSK modulation mode was used to show compliance.

| Number of hopping frequencies | Result |
|-------------------------------|--------|
| 49 | Pass |



Remark: The number of total hopping frequencies up to 49 and only 19 channels will hopping at the same time.

9.6 Dwell Time

Test Method

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.
Equipment mode: Spectrum analyzer
2. RBW: 1MHz; VBW: 1MHz; SPAN: Zero Span
3. Adjust the center frequency of spectrum analyzer on any frequency be measured.
4. Measure the Dwell Time by spectrum analyzer Marker function.
5. Repeat above procedures until all frequencies measured were complete.

Limit

According to §15.247(a)(1)(iii) & RSS-210 A8.1(c) The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Dwell time

The maximum dwell time shall be 0.4 s.

We test all mode and worse case recorded in the report.

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:

The duration for dwell time calculation: $0.4 [s] * \text{hopping number} = 0.4 [s] * 20 [ch] = 8.0 [s*ch]$;

The burst width, which is directly measured, refers to the duration on one channel hop.

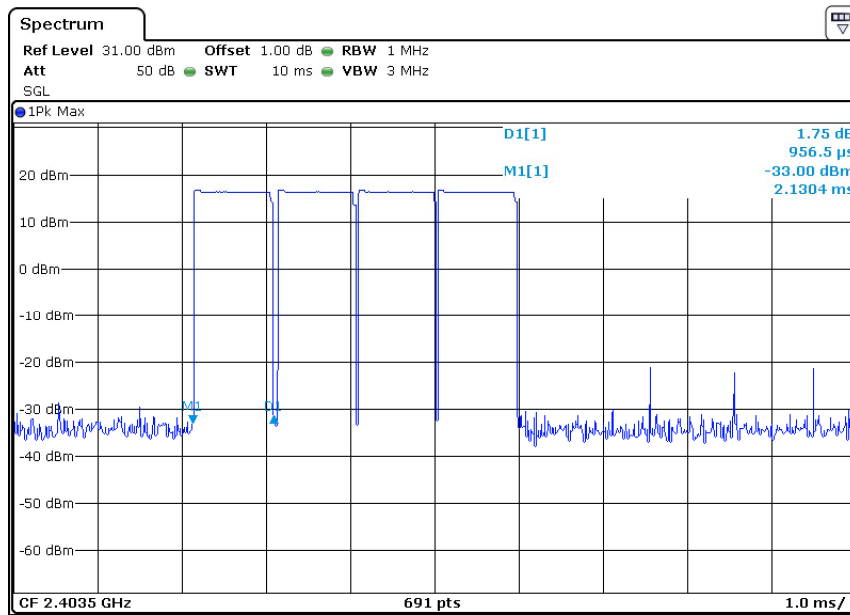
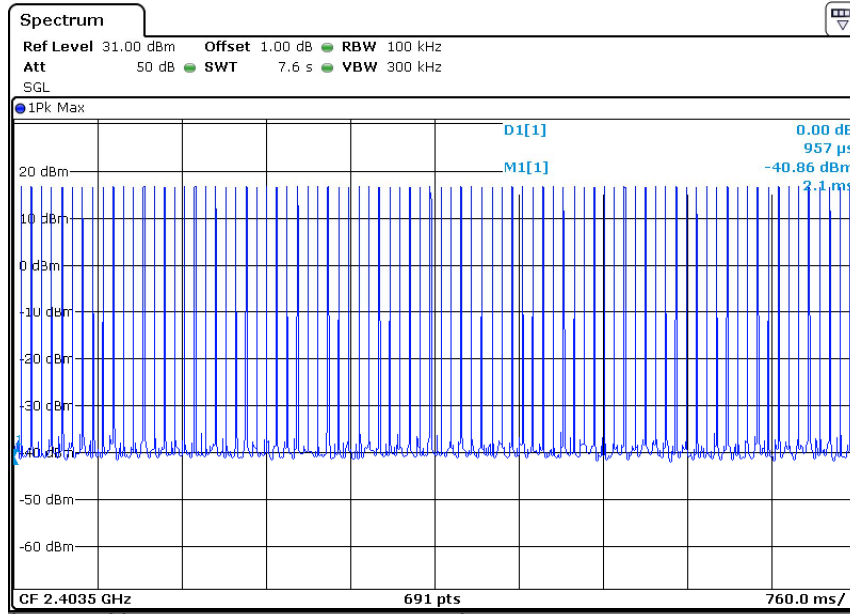
The maximum number of hopping channels in 8.0s $= 9 * (8.0 / 0.8) = 90$

Test Result

| Modulation | Frequency | Reading (ms) | Total Hops | Test Result (ms) | Limit (ms) | Result |
|------------|-----------|--------------|------------|------------------|------------|--------|
| GFSK | 2403.5MHz | 3.826 | 83 | 317.56 | < 400 | Pass |



GFSK Modulation-2403.5MHz





9.7 Spurious RF conducted emissions

Test Method

1. Use the following spectrum analyzer settings:
 Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
 RBW = 100 kHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
3. The level displayed must comply with the limit specified in this Section. Submit these plots.
4. Repeat above procedures until all frequencies measured were complete.

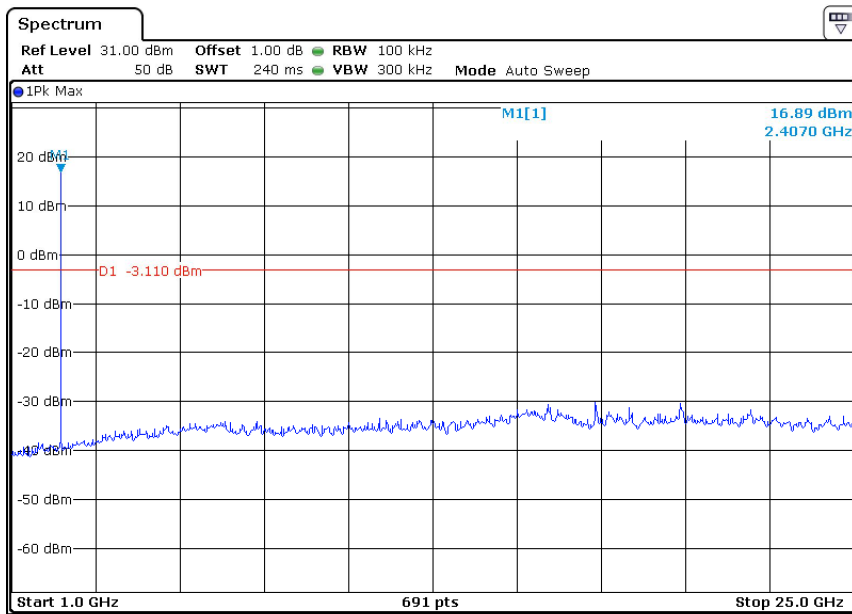
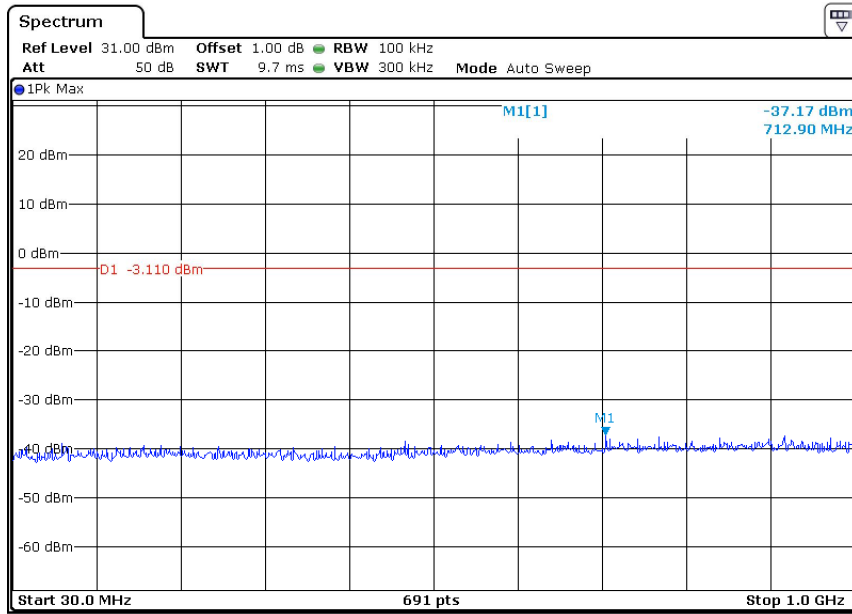
Limit

| Frequency Range MHz | Limit (dBc) |
|------------------------|-------------|
| 30-25000 | -20 |



Spurious RF conducted emissions

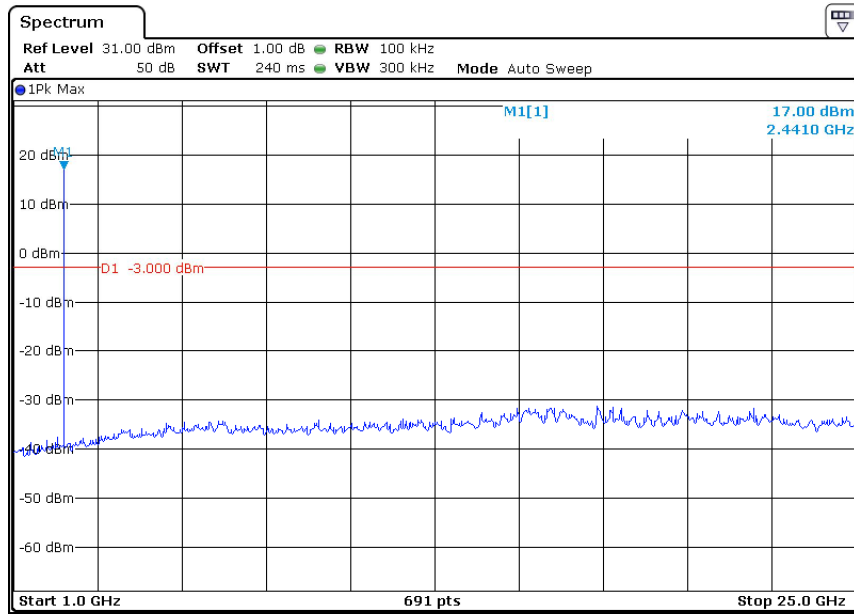
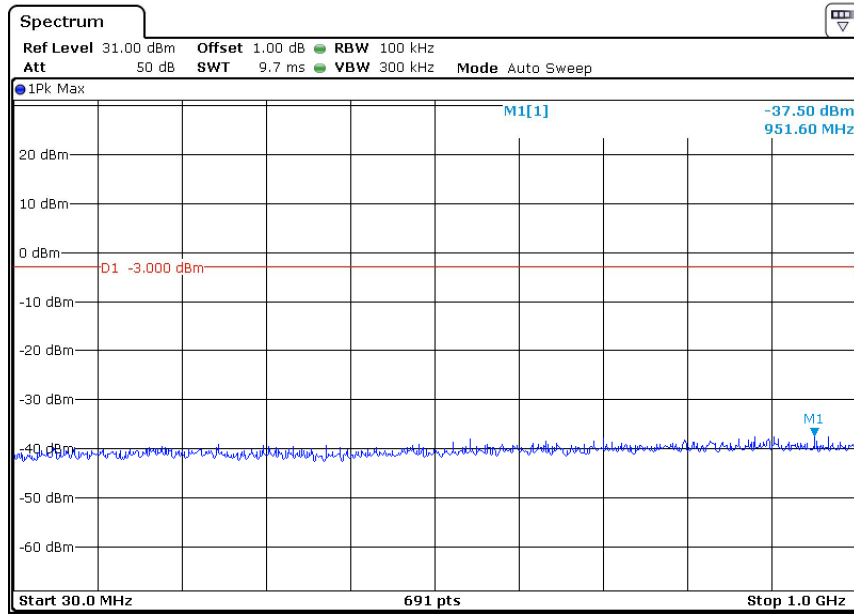
2403.5MHz





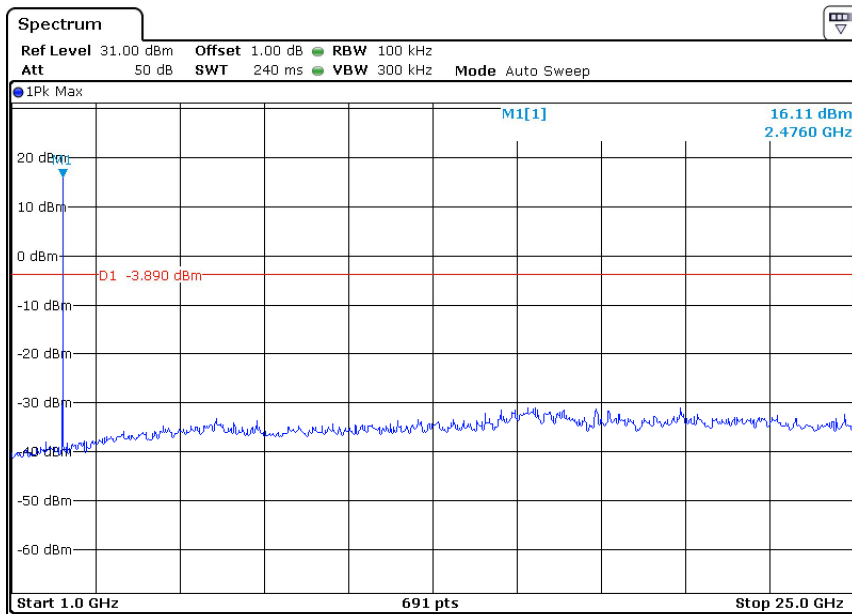
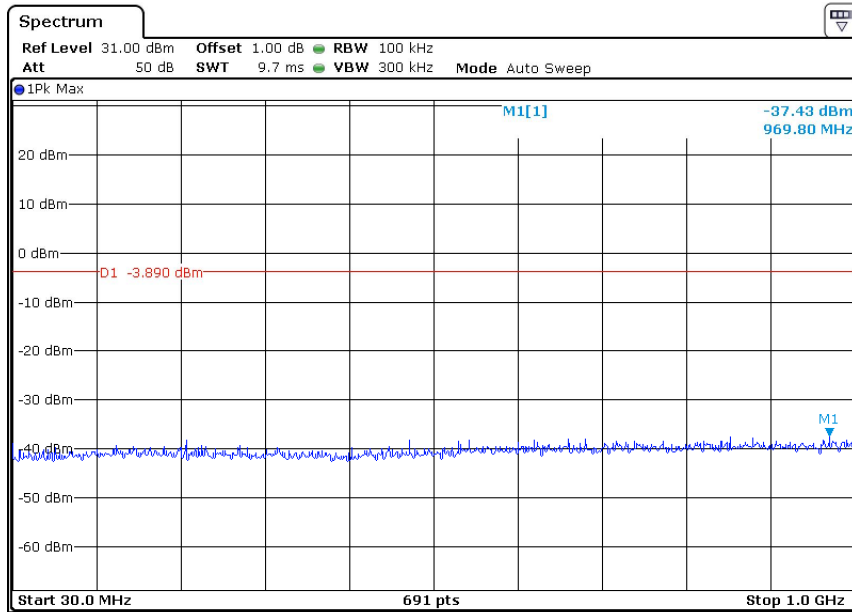
Spurious RF conducted emissions

2439.5MHz



Spurious RF conducted emissions

2475.5MHz



Remark: Testing is carried out with frequency rang 30MHz to 25GHz, which above 12.75GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

9.8 Band edge testing

Test Method

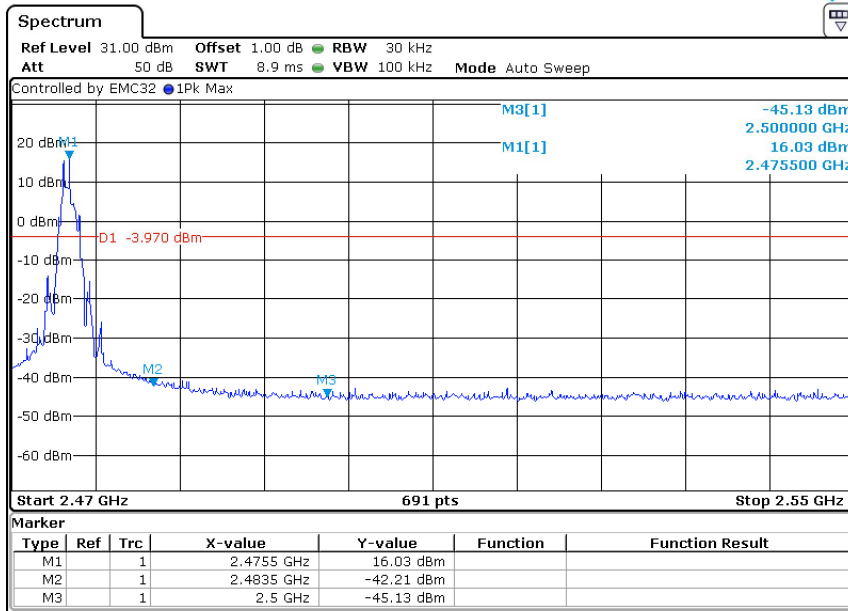
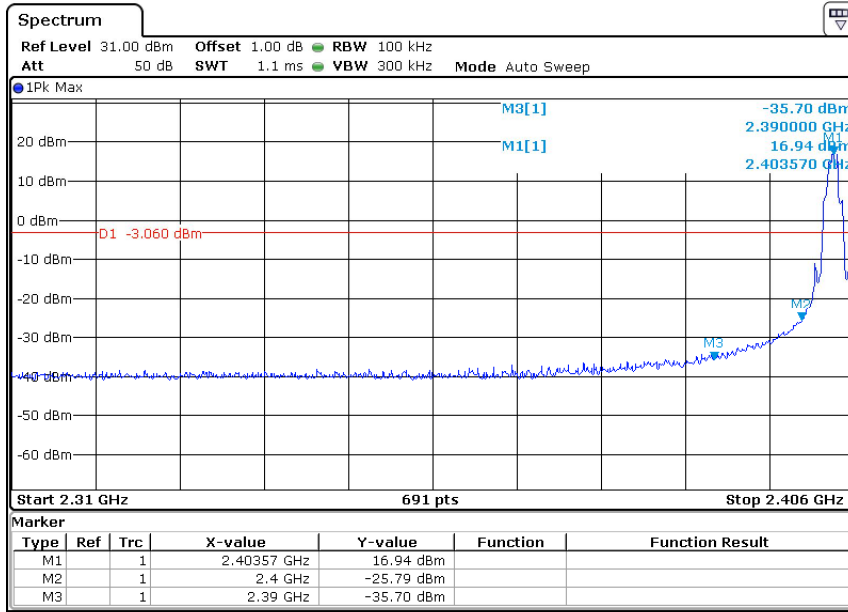
- 1 Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz, VBW \geq RBW, Sweep = auto, Detector function = peak, Trace = max hold
- 2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
- 3 The level displayed must comply with the limit specified in this Section.
- 4 Repeat the test at the hopping off and hopping on mode, submit all the plots.

Limit:

According to §15.247(d) & RSS-210 A8.5, in any 100 kHz bandwidth outside the frequency bands 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, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) and RSS-Gen7.2.2, must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)) and RSS-Gen.

Band edge testing

GFSK Modulation Test Result:



Remark: Above test record based on FHSS mode worst case.

9.9 Spurious radiated emissions for transmitter

Test Method

- 1: The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2: The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
- 3: The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4: For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- 5: Use the following spectrum analyzer settings According to C63.10:

For Above 1GHz

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW \geq RBW for peak measurement and VBW = 10Hz for average measurement, Sweep = auto, Detector function = peak, Trace = max hold.

For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 KHz, VBW \geq RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Note:

- 1: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.
- 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (20log(1/duty cycle)).
- 4: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.



Limit

According to part 15.247(d) & RSS-247 5.5, the radio emission outside the operating frequency band 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. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209 & RSSGEN 6.13.

| Frequency MHz | Field Strength uV/m | Field Strength dBµV/m | Detector |
|------------------|------------------------|--------------------------|----------|
| 30-88 | 100 | 40 | QP |
| 88-216 | 150 | 43.5 | QP |
| 216-960 | 200 | 46 | QP |
| 960-1000 | 500 | 54 | QP |
| Above 1000 | 500 | 54 | AV |
| Above 1000 | 5000 | 74 | PK |

Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case (which is subject to the maximum EIRP, GFSK mode) test result is listed in the report.

Transmitting spurious emission test result as below:

GFSK Modulation 2403.5MHz Test Result:

| Frequency | Emission Level | Polarization | Limit | Detector | Margin | Result |
|------------|----------------|--------------|--------|----------|--------|--------|
| MHz | dBuV/m | | dBuV/m | | dBuV/m | |
| 141.33 | 29.47 | Horizontal | 43.50 | QP | 14.03 | Pass |
| 272.02 | 34.28 | Horizontal | 46.00 | QP | 11.72 | Pass |
| 737.02 | 40.39 | Horizontal | 46.00 | QP | 5.61 | Pass |
| 138.640000 | 26.28 | Vertical | 43.50 | QP | 17.22 | Pass |
| 197.325000 | 24.89 | Vertical | 43.50 | QP | 18.61 | Pass |
| 282.685000 | 35.17 | Vertical | 46.00 | QP | 10.83 | Pass |
| *4807 | 42.29 | Horizontal | 74 | PK | 31.71 | Pass |
| 7210.5 | 42.42 | Horizontal | 74 | PK | 31.58 | Pass |
| *12017.5 | 47.00 | Horizontal | 74 | PK | 27.00 | Pass |
| *4807 | 36.52 | Vertical | 74 | PK | 37.48 | Pass |
| 7210.5 | 40.50 | Vertical | 74 | PK | 33.50 | Pass |
| *12017.5 | 43.35 | Vertical | 74 | PK | 30.65 | Pass |

GFSK Modulation 2439.5MHz Test Result:

| Frequency | Emission Level | Polarization | Limit | Detector | Margin | Result |
|------------|----------------|--------------|--------|----------|--------|--------|
| MHz | dBuV/m | | dBuV/m | | dBuV/m | |
| 141.33 | 29.47 | Horizontal | 43.50 | QP | 14.03 | Pass |
| 272.02 | 34.28 | Horizontal | 46.00 | QP | 11.72 | Pass |
| 737.02 | 40.39 | Horizontal | 46.00 | QP | 5.61 | Pass |
| 138.640000 | 26.28 | Vertical | 43.50 | QP | 17.22 | Pass |
| 197.325000 | 24.89 | Vertical | 43.50 | QP | 18.61 | Pass |
| 282.685000 | 35.17 | Vertical | 46.00 | QP | 10.83 | Pass |
| *4879 | 44.30 | Horizontal | 74 | PK | 29.70 | Pass |
| 9758 | 45.67 | Horizontal | 74 | PK | 28.33 | Pass |
| *12197.5 | 46.73 | Horizontal | 74 | PK | 27.27 | Pass |
| *4879 | 37.01 | Vertical | 74 | PK | 36.99 | Pass |
| 9758 | 42.98 | Vertical | 74 | PK | 31.02 | Pass |
| *12197.5 | 46.83 | Vertical | 74 | PK | 27.17 | Pass |

GFSK Modulation 2475.5MHz Test Result:

| Frequency | Emission Level | Polarization | Limit | Detector | Margin | Result |
|------------|----------------|--------------|--------|----------|--------|--------|
| MHz | dBuV/m | | dBuV/m | | dBuV/m | |
| 141.33 | 29.47 | Horizontal | 43.50 | QP | 14.03 | Pass |
| 272.02 | 34.28 | Horizontal | 46.00 | QP | 11.72 | Pass |
| 737.02 | 40.39 | Horizontal | 46.00 | QP | 5.61 | Pass |
| 138.640000 | 26.28 | Vertical | 43.50 | QP | 17.22 | Pass |
| 197.325000 | 24.89 | Vertical | 43.50 | QP | 18.61 | Pass |
| 282.685000 | 35.17 | Vertical | 46.00 | QP | 10.83 | Pass |
| *4951 | 41.91 | Horizontal | 74 | PK | 32.09 | Pass |
| 7426.5 | 45.15 | Horizontal | 74 | PK | 28.85 | Pass |
| *12377.5 | 52.72 | Horizontal | 74 | PK | 21.28 | Pass |
| *4951 | 37.18 | Vertical | 74 | PK | 36.82 | Pass |
| *12377.5 | 50.96 | Vertical | 74 | PK | 23.04 | Pass |

Remark:

- (1) Data of measurement within 30-1000MHz frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
- (2) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.
- (3) Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain
Below 1GHz: Corrector factor = Antenna Factor + Cable Loss

10 Test Equipment List

List of Test Instruments

| | DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | CAL. DUE DATE |
|----|-------------------------------------|-----------------|------------------|---------------|---------------|
| C | Signal Generator | Rohde & Schwarz | SMB100A | 108272 | 2018-7-7 |
| | Signal Analyzer | Rohde & Schwarz | FSV40 | 101030 | 2018-7-7 |
| | Vector Signal Generator | Rohde & Schwarz | SMU 200A | 105324 | 2018-7-7 |
| | RF Switch Module | Rohde & Schwarz | OSP120/OS P-B157 | 101226/100851 | 2018-7-7 |
| RE | EMI Test Receiver | Rohde & Schwarz | ESR 26 | 101269 | 2018-7-14 |
| | Trilog Super Broadband Test Antenna | Schwarzbeck | VULB 9163 | 707 | 2018-7-14 |
| | Horn Antenna | Rohde & Schwarz | HF907 | 102294 | 2018-7-14 |
| | Pre-amplifier | Rohde & Schwarz | SCU 18 | 102230 | 2018-7-14 |
| | 3m Semi-anechoic chamber | TDK | 9X6X6 | ---- | 2020-7-7 |
| CE | EMI Test Receiver | Rohde & Schwarz | ESR 3 | 101782 | 2018-7-14 |
| | LISN | Rohde & Schwarz | ENV4200 | 100249 | 2018-7-14 |
| | LISN | Rohde & Schwarz | ENV432 | 101318 | 2018-7-14 |
| | LISN | Rohde & Schwarz | ENV216 | 100326 | 2018-7-14 |

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth and 99% Occupied Bandwidth
- Power spectral density*
- Spurious RF conducted emissions
- Band edge

11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

| System Measurement Uncertainty | |
|---|--|
| Test Items | Extended Uncertainty |
| Uncertainty for Radiated Spurious Emission 25MHz-3000MHz | Horizontal: 4.98dB; Vertical: 5.06dB; |
| Uncertainty for Radiated Spurious Emission 3000MHz-18000MHz | Horizontal: 4.95dB; Vertical: 4.94dB; |
| Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz | Horizontal: 5.14dB; Vertical: 5.12dB; |
| Uncertainty for Conducted RF test | Power level test involved: 2.06dB Frequency test involved: 1.16×10^{-7} |

---THE END---