

TEST REPORT

Application No.: SZCR2504001597WM
Applicant: Sonim Technologies, Inc.
Address of Applicant: 4445 Eastgate Mall, Suite 200, San Diego, California 92121 United States
Manufacturer: Sonim Technologies, Inc.
Address of Manufacturer: 4445 Eastgate Mall, Suite 200, San Diego, California 92121 United States
Equipment Under Test (EUT):
EUT Name: smartphone
Model No.: X800
Type No.: S1003/S1001/S1004/S1005/S1006/S1010
Trade Mark: Sonim
FCC ID: WYPS1003
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2025-04-22
Date of Test: 2025-04-24 to 2025-04-25
Date of Issue: 2025-05-07

| | |
|---------------------|--------------|
| Test Result: | Pass* |
|---------------------|--------------|

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

Keny Xu

Keny Xu
EMC Laboratory Manager



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch (EMC) Laboratory

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Report No.: SZCR250400159703

Page: 2 of 24

| Revision Record | | | | |
|-----------------|---------|------------|----------|----------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2025-05-07 | | Original |
| | | | | |
| | | | | |

| | | | | |
|--------------------------|--|------------------------------|--|--|
| Authorized for issue by: | | | | |
| | | Calvin Weng | | |
| | | Calvin Weng/Project Engineer | | |
| | | Eric Fu | | |
| | | Eric Fu/Reviewer | | |



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2 Test Summary

| Radio Spectrum Matter Part | | | | |
|---|----------------------------------|------------------------------------|---|--------|
| Item | Standard | Method | Requirement | Result |
| Radiated Emissions which fall in the restricted bands | 47 CFR Part 15, Subpart C 15.247 | ANSI C63.10 (2013) Section 6.10.5 | 47 CFR Part 15, Subpart C 15.205 & 15.209 | Pass |
| Radiated Spurious Emissions Below 1GHz | | ANSI C63.10 (2013) Section 6.4,6.5 | 47 CFR Part 15, Subpart C 15.205 & 15.209 | Pass |
| Radiated Spurious Emissions Above 1GHz | | ANSI C63.10 (2013) Section 6.6 | 47 CFR Part 15, Subpart C 15.205 & 15.209 | Pass |

Remark:

Model No.: X800

This test report (Ref. No.: SZCR250400159703) is only valid with the original test report (Ref. No.: SZCR241000381003).

According to the declaration from the applicant, the models in this report and models in original report were identical, only difference with being added an alternative battery and LCD.

Considering to the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for retest.

Therefore in this report Radiated Emission were spot checked on model and shown the data in this report, other tests please refer to original report SZCR241000381003.



3 Contents

| | Page |
|---|------|
| 1 Cover Page | 1 |
| 2 Test Summary | 3 |
| 3 Contents | 4 |
| 4 General Information | 5 |
| 4.1 Details of E.U.T. | 5 |
| 4.2 Description of Support Units | 5 |
| 4.3 Measurement Uncertainty | 5 |
| 4.4 Test Location | 6 |
| 4.5 Test Facility | 6 |
| 4.6 Deviation from Standards | 6 |
| 4.7 Abnormalities from Standard Conditions | 6 |
| 5 Equipment List | 7 |
| 6 Radio Spectrum Matter Test Results | 9 |
| 6.1 Radiated Emissions which fall in the restricted bands | 9 |
| 6.1.1 E.U.T. Operation | 9 |
| 6.1.2 Test Mode Description | 9 |
| 6.1.3 Test Setup Diagram | 10 |
| 6.1.4 Measurement Procedure and Data | 11 |
| 6.2 Radiated Spurious Emissions Below 1GHz | 16 |
| 6.2.1 E.U.T. Operation | 16 |
| 6.2.2 Test Mode Description | 16 |
| 6.2.3 Test Setup Diagram | 17 |
| 6.2.4 Measurement Procedure and Data | 17 |
| 6.3 Radiated Spurious Emissions Above 1GHz | 20 |
| 6.3.1 E.U.T. Operation | 20 |
| 6.3.2 Test Mode Description | 20 |
| 6.3.3 Test Setup Diagram | 20 |
| 6.3.4 Measurement Procedure and Data | 21 |
| 7 Test Setup Photo | 24 |
| 8 EUT Constructional Details (EUT Photos) | 24 |



4 General Information

4.1 Details of E.U.T.

| | |
|----------------------|--|
| Power supply: | DC3.87V by Li-ion battery(5000mAh) Recharged by AC/DC power adapter Adapter M/N:1-CHUSQ302-097 Adapter Manufacturer: HUIZHOU PUAN ELEOTRONICS CO.,LTD Adapter output: 5V/3A,9V/2A,12V/1.5A Battery M/N:BAT-05000-21S Battery Manufacturer: Tianjin Lishen Juyuan New Energy Technology Co., Ltd. |
| Cable(s): | USB type C cable M/N: HX-YLMK-16 1.5m shielded cable without ferrite core USB type C cable manufacturer: HUIZHOU WASHIN ELECTRONICS CO.,LTD |
| Operation Frequency: | 2402MHz to 2480MHz |
| Modulation Type: | GFSK |
| Number of Channels: | 40 |
| Channel Spacing: | 2MHz |
| Antenna Type: | PIFA Antenna |
| Antenna Gain: | Ant9:1.6dBi, Ant10: 0.6dBi |

Remark:The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|-------------|--------------|-----------|------------|
| -- | -- | -- | -- |

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

| Test Item | Measurement Uncertainty |
|---|--|
| Radiated Emissions which fall in the restricted bands | $\pm 6.0\text{dB}$ (Below 1GHz); $\pm 4.6\text{dB}$ (Above 1GHz) |
| Radiated Spurious Emissions Below 1GHz | $\pm 6.0\text{dB}$ for 3m; $\pm 5.0\text{dB}$ for 10m |
| Radiated Spurious Emissions Above 1GHz | $\pm 4.6\text{dB}$ (1-18GHz); $\pm 4.8\text{dB}$ (18-40GHz) |

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (CISPR/ETSI Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.



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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400159703

Page: 6 of 24

4.4 Test Location

All tests were performed at:

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

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

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

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI (Member No. 1937)

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1336

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

| Radiated Emissions which fall in the restricted bands | | | | | |
|---|-----------------|-----------------|---------------|------------|--------------|
| Equipment | Manufacturer | Model No. | Inventory No. | Cal Date | Cal Due Date |
| Signal & Spectrum Analyzer | Rohde & Schwarz | FSV | SZ-WRG-M-048 | 2025-01-07 | 2026-01-06 |
| Low Noise Amplifier 30M-8GHz | Tonscend | TAP30M8G30 | SZ-WRG-M-050 | 2025-01-07 | 2026-01-06 |
| Double Ridge Horn Antenna 1GHz-18GHz | SCHWARZBECK | BBHA 9120 D | SZ-WRG-M-055 | 2023-12-21 | 2025-12-20 |
| RSE Test Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Chamber | CRTSGSSAC966 | N/A | SZ-WRG-C-063 | 2025-01-06 | 2028-01-05 |
| Humidity and Temperature Indicator | deli | 8838 | SEM002-46 | 2024-07-24 | 2025-07-23 |

| Radiated Spurious Emissions Below 1GHz | | | | | |
|--|----------------------|-----------------|---------------|------------|--------------|
| Equipment | Manufacturer | Model No. | Inventory No. | Cal Date | Cal Due Date |
| Loop Antenna | ETS-Lindgren | 6502 | SEM003-08 | 2023-11-20 | 2025-11-19 |
| 3m Semi-Anechoic Chamber | ETS-LINDGREN | N/A | SEM001-01 | 2023-06-19 | 2026-06-18 |
| MXE EMI Receiver | Agilent Technologies | N9038A | SEM004-15 | 2024-08-14 | 2025-08-13 |
| BiConiLog Antenna | ETS-LINDGREN | 3142C | SEM003-01 | 2023-09-16 | 2025-09-15 |
| Pre-Amplifier | Agilent Technologies | 8447D | SEM005-01 | 2025-03-04 | 2026-03-03 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM025-01 | 2024-07-06 | 2025-07-05 |





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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400159703

Page: 8 of 24

| Radiated Spurious Emissions Above 1GHz | | | | | |
|--|-----------------|-----------------|---------------|------------|--------------|
| Equipment | Manufacturer | Model No. | Inventory No. | Cal Date | Cal Due Date |
| Signal & Spectrum Analyzer | Rohde & Schwarz | FSV | SZ-WRG-M-048 | 2025-01-07 | 2026-01-06 |
| Low Noise Amplifier 1G-18GHz | Tonscend | TAP01018050 | SZ-WRG-M-051 | 2025-01-07 | 2026-01-06 |
| Low Noise Amplifier 18G-40GHz | Tonscend | TAP18040048 | SZ-WRG-M-052 | 2025-01-08 | 2026-01-07 |
| Double Ridge Horn Antenna 1GHz-18GHz | SCHWARZBECK | BBHA 9120 D | SZ-WRG-M-055 | 2023-12-21 | 2025-12-20 |
| SHF-EHF Horn 15GHz-40GHz | SCHWARZBECK | BBHA 9170 | SZ-WRG-M-056 | 2023-12-25 | 2025-12-24 |
| RSE Test Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Chamber | CRTSGSSAC966 | N/A | SZ-WRG-C-063 | 2025-01-06 | 2028-01-05 |
| Humidity and Temperature Indicator | deli | 8838 | SEM002-46 | 2024-07-24 | 2025-07-23 |

| General used equipment | | | | | |
|---------------------------------|---|-----------|---------------|------------|--------------|
| Equipment | Manufacturer | Model No. | Inventory No. | Cal Date | Cal Due Date |
| Humidity/ Temperature Indicator | deli | 8838 | SEM002-32 | 2024-07-24 | 2025-07-23 |
| Humidity/ Temperature Indicator | deli | 8838 | SEM002-33 | 2024-07-24 | 2025-07-23 |
| Barometer | Changchun Meteorological Industry Factory | DYM3 | SEM002-01 | 2025-03-03 | 2026-03-02 |



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6 Radio Spectrum Matter Test Results

6.1 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.10.5

Limit:

| Frequency(MHz) | Field strength(microvolts/meter) | Measurement distance(meters) |
|----------------|----------------------------------|------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

6.1.1 E.U.T. Operation

Operating Environment:

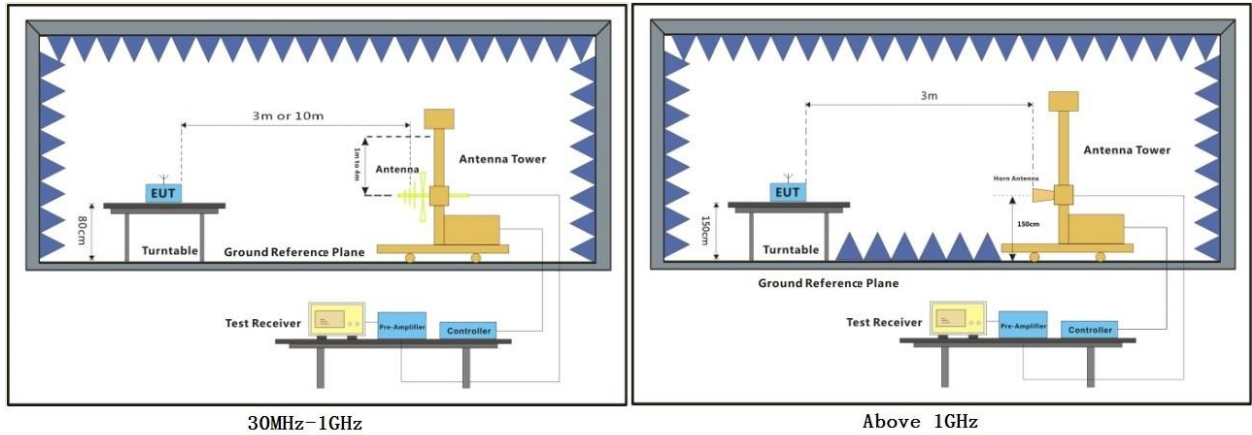
Temperature: 23.5 °C Humidity: 40.2 % RH Atmospheric Pressure: 1020 mbar

6.1.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Pre-scan | 02 | TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Final test | 03 | TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation. |



6.1.3 Test Setup Diagram



30MHz-1GHz

Above 1GHz



6.1.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height 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.
- e. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

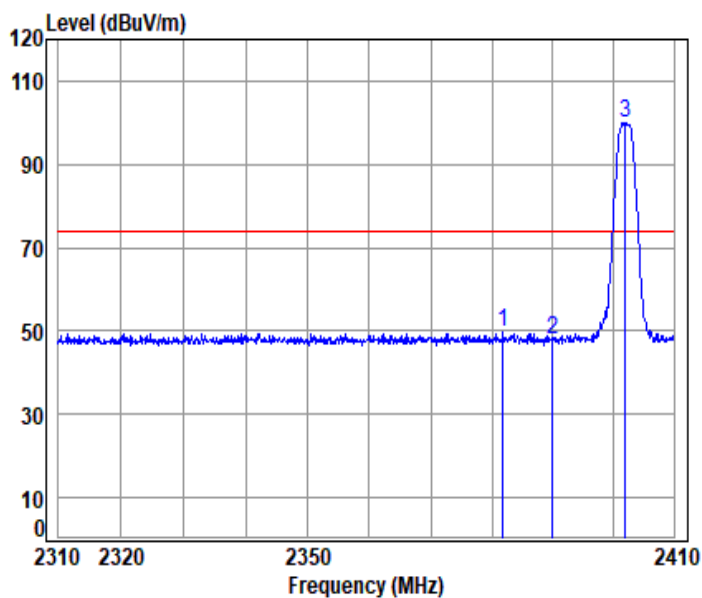
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Remark 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

Remark 4: For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



BLE_2M_TX_CH_00_Horizontal-Peak



Condition: 3m HORIZONTAL

Job No : 01597WM/01599WM

Mode : 2402 Band edge

: BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|------|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 2381.773 | 6.82 | 27.43 | 31.54 | 47.22 | 49.93 | 74.00 | -24.07 | peak |
| 2 | 2390.000 | 6.82 | 27.46 | 31.54 | 44.98 | 47.72 | 74.00 | -26.28 | peak |
| 3 pp | 2402.000 | 6.84 | 27.50 | 31.54 | 97.13 | 99.93 | 74.00 | 25.93 | peak |



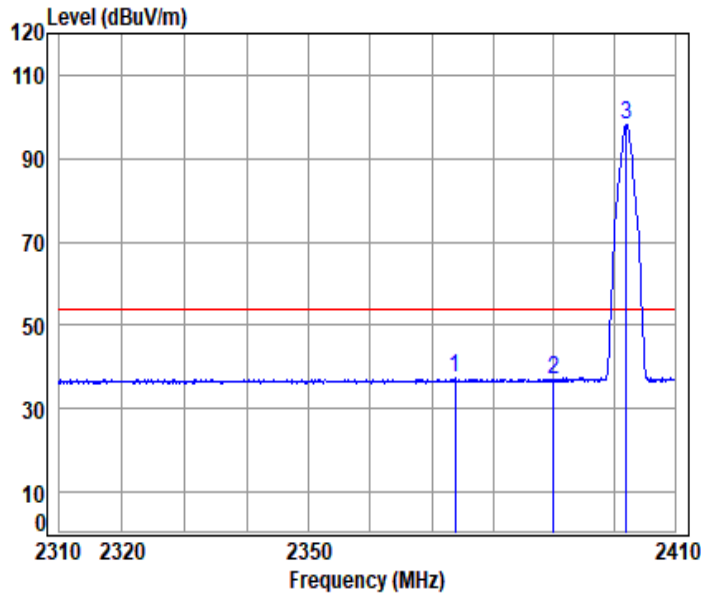
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Report No.: SZCR250400159703

Page: 13 of 24

BLE_2M_TX_CH_00_Horizontal-AVG



Condition: 3m HORIZONTAL

Job No : 01597WM/01599WM

Mode : 2402 Band edge

: BLE 2M

| | | Cable | Ant | Preamp | Read | Limit | Over | |
|------|----------|--------|--------|--------|--------|--------|-------|----------------|
| Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 2373.813 | 6.82 | 27.40 | 31.54 | 34.60 | 37.28 | 54.00 | -16.72 Average |
| 2 | 2390.000 | 6.82 | 27.46 | 31.54 | 34.12 | 36.86 | 54.00 | -17.14 Average |
| 3 | 2402.000 | 6.84 | 27.50 | 31.54 | 95.19 | 97.99 | 54.00 | 43.99 Average |



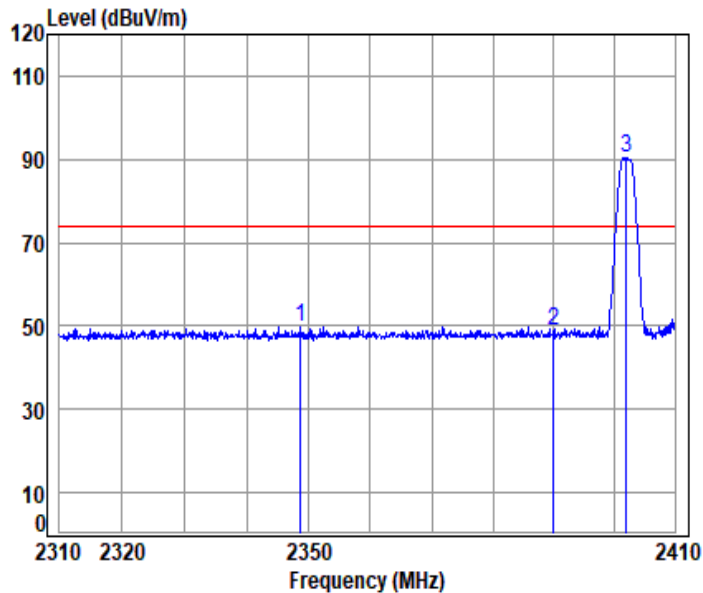
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BLE_2M_TX_CH_00_Vertical-Peak



Condition: 3m VERTICAL

Job No : 01597WM/01599WM

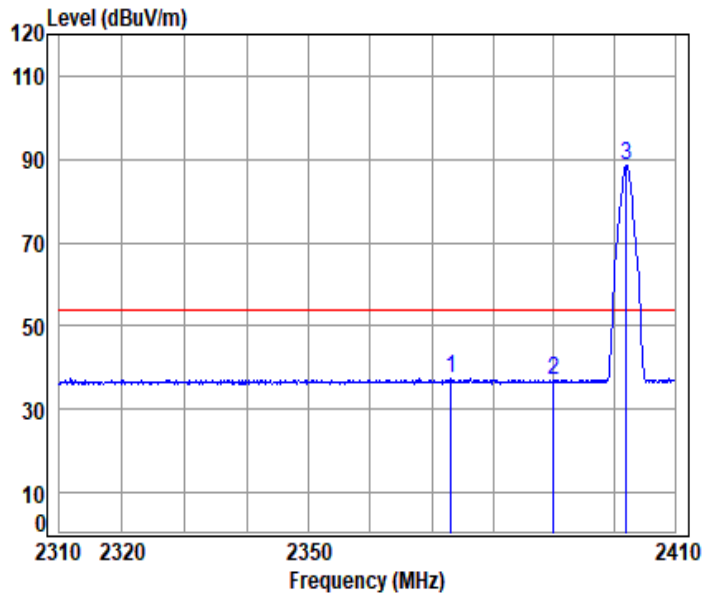
Mode : 2402 Band edge

: BLE 2M

| | Cable | Ant | Preamp | Read | Limit | Over | |
|------|-------------|--------|--------|-------|--------|--------|-------------------|
| Freq | Loss | Factor | Factor | Level | Line | Limit | Remark |
| MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 2348.696 | 6.80 | 27.30 | 31.53 | 47.19 | 49.76 | 74.00 -24.24 peak |
| 2 | 2390.000 | 6.82 | 27.46 | 31.54 | 46.02 | 48.76 | 74.00 -25.24 peak |
| 3 | pp 2402.000 | 6.84 | 27.50 | 31.54 | 87.68 | 90.48 | 74.00 16.48 peak |



BLE_2M_TX_CH_00_Verical-AVG



Condition: 3m VERTICAL

Job No : 01597WM/01599WM

Mode : 2402 Band edge

: BLE 2M

| | | Cable | Ant | Preamp | Read | Limit | Over | |
|---|-------------|-------|--------|--------|-------|--------|--------|----------------|
| | Freq | Loss | Factor | Factor | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 2373.209 | 6.82 | 27.39 | 31.54 | 34.81 | 37.48 | 54.00 | -16.52 Average |
| 2 | 2390.000 | 6.82 | 27.46 | 31.54 | 34.02 | 36.76 | 54.00 | -17.24 Average |
| 3 | pp 2402.000 | 6.84 | 27.50 | 31.54 | 85.72 | 88.52 | 54.00 | 34.52 Average |



6.2 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5

Limit:

| Frequency(MHz) | Field strength(microvolts/meter) | Measurement distance(meters) |
|----------------|----------------------------------|------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| 960-1000 | 500 | 3 |

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C

Humidity: 44.5 % RH

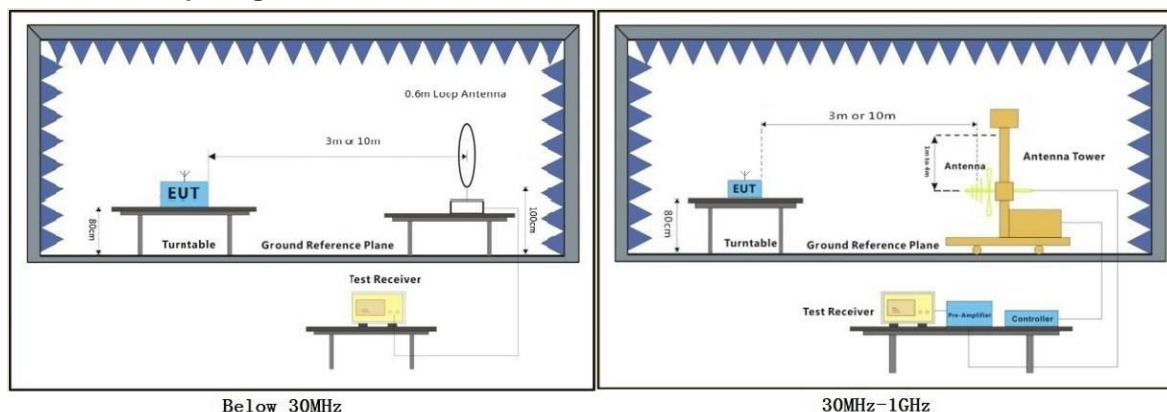
Atmospheric Pressure: 1020 mbar

6.2.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Pre-scan | 03 | TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation. |



6.2.3 Test Setup Diagram



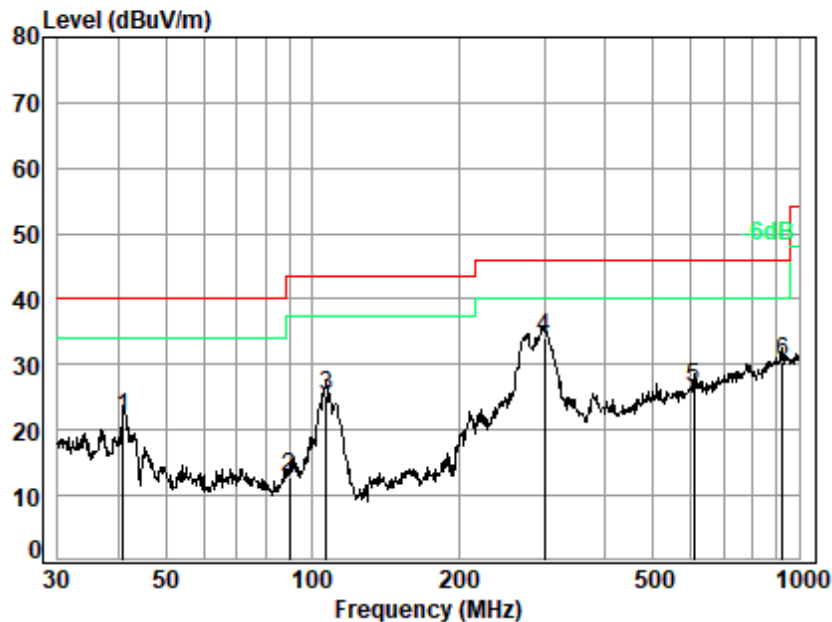
6.2.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height 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.
- 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark:

- Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test Mode: 02; Polarity: Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : 01599WM/01597WM
Test Mode: 02

| | Ant | Cable | Preamp | Read | | Limit | Over | |
|------|---------|-------|--------|-------|--------|--------|-------|-----------|
| Freq | Factor | Loss | Factor | Level | Level | Line | Limit | Remark |
| MHz | dB/m | dB | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 40.845 | 15.98 | 0.79 | 27.76 | 32.87 | 21.88 | 40.00 | -18.12 QP |
| 2 | 89.905 | 11.72 | 1.16 | 27.62 | 27.64 | 12.90 | 43.50 | -30.60 QP |
| 3 | 106.759 | 12.15 | 1.27 | 27.56 | 39.49 | 25.35 | 43.50 | -18.15 QP |
| 4 q | 300.367 | 18.05 | 2.20 | 26.75 | 40.46 | 33.96 | 46.00 | -12.04 QP |
| 5 | 607.787 | 24.61 | 3.27 | 27.95 | 26.54 | 26.47 | 46.00 | -19.53 QP |
| 6 | 925.756 | 28.18 | 4.19 | 26.58 | 24.73 | 30.52 | 46.00 | -15.48 QP |



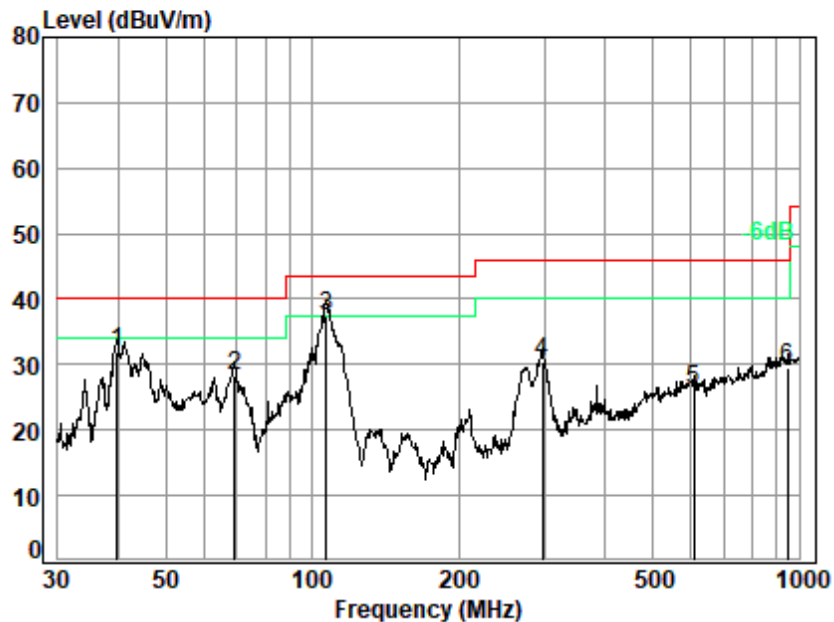
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Test Mode: 02; Polarity: Vertical



Site : chamber

Condition: 3m VERTICAL

Job No. : 01599WM/01597WM

Test Mode: 02

| | Ant | Cable | Preamp | Read | | Limit | Over | |
|------|---------|-------|--------|-------|--------|--------|-------|-----------|
| Freq | Factor | Loss | Factor | Level | Level | Line | Limit | Remark |
| MHz | dB/m | dB | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 39.715 | 16.54 | 0.78 | 27.76 | 42.32 | 31.88 | 40.00 | -8.12 QP |
| 2 | 69.357 | 10.64 | 1.02 | 27.68 | 44.36 | 28.34 | 40.00 | -11.66 QP |
| 3 q | 106.759 | 12.15 | 1.27 | 27.56 | 51.53 | 37.39 | 43.50 | -6.11 QP |
| 4 | 297.224 | 17.69 | 2.19 | 26.76 | 37.39 | 30.51 | 46.00 | -15.49 QP |
| 5 | 607.787 | 24.61 | 3.27 | 27.95 | 26.29 | 26.22 | 46.00 | -19.78 QP |
| 6 | 948.761 | 28.23 | 4.25 | 26.42 | 23.50 | 29.56 | 46.00 | -16.44 QP |



6.3 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

| Frequency(MHz) | Field strength(microvolts/meter) | Measurement distance(meters) |
|----------------|----------------------------------|------------------------------|
| Above 1000 | 500 | 3 |

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

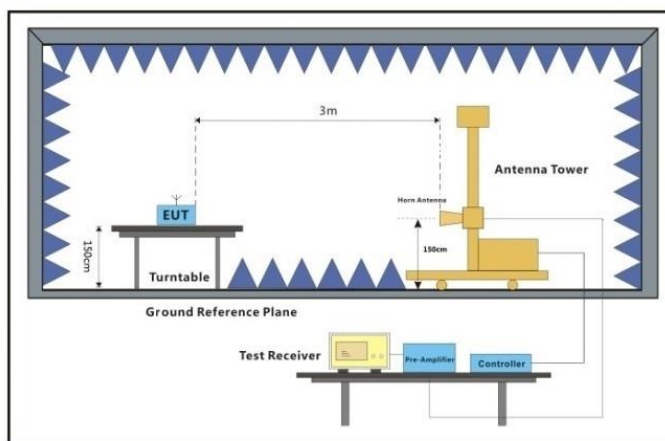
Humidity: 40.2 % RH

Atmospheric Pressure: 1020 mbar

6.3.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Pre-scan | 03 | TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation. |

6.3.3 Test Setup Diagram



Above 1GHz



6.3.4 Measurement Procedure and Data

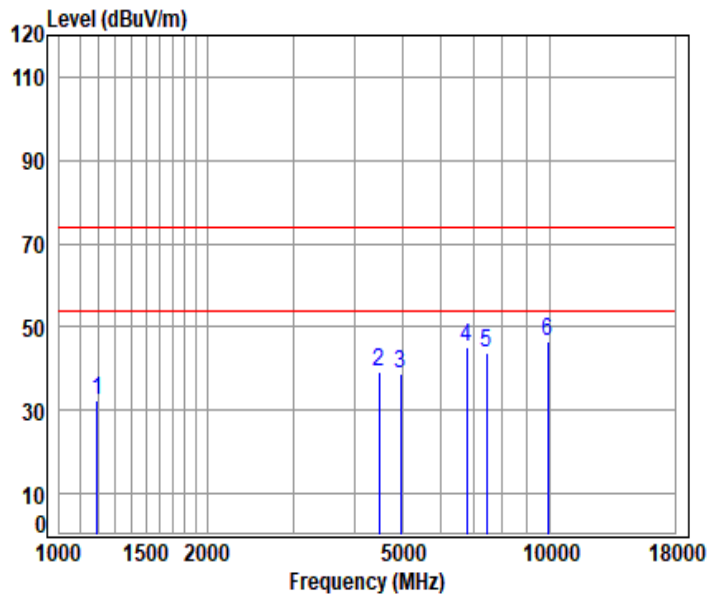
- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height 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.
- d. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- 4: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
- 5:For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle<98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



BLE_1M_TX_CH_39_Horizontal



Condition: 3m HORIZONTAL

Job No : 01597WM/01599WM

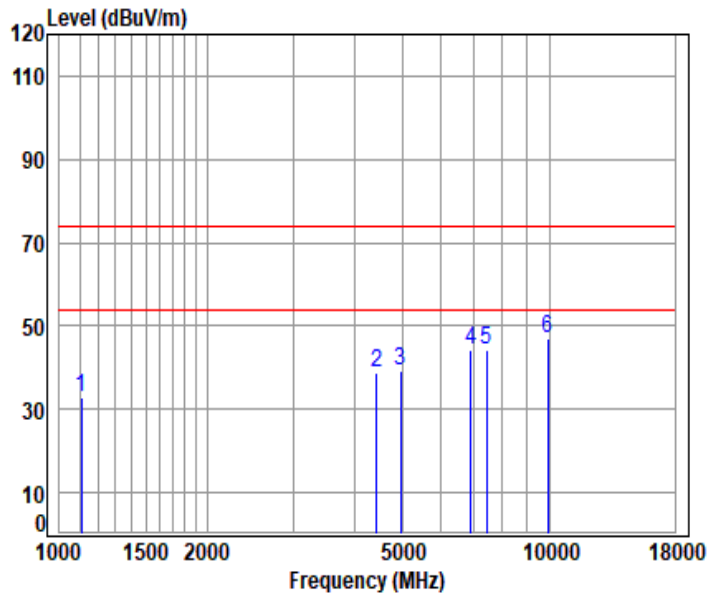
Mode : 2480 TX RSE

: BLE 1M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|------|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1192.811 | 7.18 | 25.31 | 54.70 | 54.73 | 32.52 | 74.00 | -41.48 | peak |
| 2 | 4495.125 | 8.56 | 31.58 | 55.95 | 55.23 | 39.42 | 74.00 | -34.58 | peak |
| 3 | 4960.000 | 9.07 | 32.20 | 56.27 | 53.94 | 38.94 | 74.00 | -35.06 | peak |
| 4 | 6776.265 | 10.94 | 35.81 | 56.74 | 55.16 | 45.17 | 74.00 | -28.83 | peak |
| 5 | 7440.000 | 11.08 | 36.78 | 56.35 | 52.37 | 43.88 | 74.00 | -30.12 | peak |
| 6 pp | 9920.000 | 12.73 | 38.90 | 54.17 | 49.06 | 46.52 | 74.00 | -27.48 | peak |



BLE_1M_TX_CH_39_Vertical



Condition: 3m VERTICAL

Job No : 01597WM/01599WM

Mode : 2480 TX RSE

: BLE 1M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|------|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1109.660 | 7.11 | 25.56 | 54.70 | 55.08 | 33.05 | 74.00 | -40.95 | peak |
| 2 | 4443.453 | 8.55 | 31.37 | 55.91 | 54.77 | 38.78 | 74.00 | -35.22 | peak |
| 3 | 4960.000 | 9.07 | 32.20 | 56.27 | 54.39 | 39.39 | 74.00 | -34.61 | peak |
| 4 | 6914.763 | 10.94 | 36.17 | 56.72 | 53.95 | 44.34 | 74.00 | -29.66 | peak |
| 5 | 7440.000 | 11.08 | 36.78 | 56.35 | 52.93 | 44.44 | 74.00 | -29.56 | peak |
| 6 pp | 9920.000 | 12.73 | 38.90 | 54.17 | 49.54 | 47.00 | 74.00 | -27.00 | peak |



7 Test Setup Photo

Refer to Appendix - Test Setup Photo for SZCR2504001597WM

8 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for SZCR2504001597WM

- End of the Report -

