# TEST REPORT

| | |
|---|---|
| **Application No.:** | SUCR2607000644TL |
| **FCC ID:** | 2AH25T5F1AA |
| **Applicant:** | Shanghai Sunmi Technology Co., Ltd. |
| **Address of Applicant:** | Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China |
| **Manufacturer:** | Shanghai Sunmi Technology Co., Ltd. |
| **Address of Manufacturer:** | Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China |
| **Equipment Under Test (EUT):** | |
| **EUT Name:** | Wireless data POS System |
| **Model No.:** | T5F1A |
| **Trade Mark:** | SUNMI |
| **Standard(s) :** | 47 CFR Part 15, Subpart C 15.225 |
| **Date of Receipt:** | 2026-07-14 |
| **Date of Test:** | 2026-07-17 to 2026-08-07 |
| **Date of Issue:** | 2026-10-13 |
| **Test Result:** | **Pass*** |

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

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| Revision Record | | | |
|---|---|---|---|
| ***Version*** | **Description** | ***Date*** | ***Remark*** |
| 00 | Original | 2026-10-13 | / |
| | | | |
| | | | |

| | | | | |
|---|---|---|---|---|
| **Authorized for issue by:** | | | | |
| **Prepared By** | | Hayley Zhang<br>**Hayley_Zhang/Project Engineer** | | |
| **Approved By** | | Cedar Cheng<br>**Cedar Cheng /Reviewer** | | |

# 2 Test Summary

| Radio Spectrum Technical Requirement | | | | |
|---|---|---|---|---|
| **Item** | **Standard** | **Method** | **Requirement** | **Result** |
| Antenna Requirement | 47 CFR Part 15, Subpart C 15.225 | N/A | 47 CFR Part 15, Subpart C 15.203 | Pass |

| Radio Spectrum Matter Part | | | | |
|---|---|---|---|---|
| **Item** | **Standard** | **Method** | **Requirement** | **Result** |
| Conducted Emissions at Mains Terminals (150kHz-30MHz) | 47 CFR Part 15, Subpart C 15.225 | ANSI C63.10-2020+Cor.1-2023 Section 6.2 | 47 CFR Part 15, Subpart C 15.207 | Pass |
| Emission Mask | | ANSI C63.10-2020+Cor.1-2023 Section 6.4 | 47 CFR Part 15, Subpart C 15.225(a)&(b)&(C ) | Pass |
| Radiated Emissions (9kHz-30MHz) | | ANSI C63.10-2020+Cor.1-2023 Section 6.4 | 47 CFR Part 15, Subpart C 15.225(d) & 15.209 | Pass |
| Radiated Emissions (30MHz-1GHz) | | ANSI C63.10-2020+Cor.1-2023 Section 6.5 | 47 CFR Part 15, Subpart C 15.225(d) & 15.209 | Pass |
| 20dB Bandwidth | | ANSI C63.10-2020+Cor.1-2023 Section 6.9 | 47 CFR Part 15, Subpart C 15.215 | Pass |
| Frequency tolerance | | ANSI C63.10-2020+Cor.1-2023 Section 6.8 | 47 CFR Part 15, Subpart C 15.225(e) | Pass |

Remark:

This test report (Report No.: SUCR260700064407 issue on 2026/10/13) is based on the original test report (Report No.: SUCR260700064208 issue on 2026/08/14).

Review this report and original report, this report just changing the parts according to the declaration letter from client.

Therefore in this report all items do not need to retest and all test data in this report are based on the previous report with report number SUCR260700064208 issue on 2026/08/14.

# 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 Environment Parameter ..... 5
4.3 Description of Support Units ..... 5
4.4 Measurement Uncertainty & Decision Rule ..... 6
4.5 Test Location ..... 7
4.6 Test Facility ..... 7
4.7 Deviation from Standards ..... 7
4.8 Abnormalities from Standard Conditions ..... 7

**5 Equipment List ..... 8**

**6 Radio Spectrum Technical Requirement ..... 10**

6.1 Antenna Requirement ..... 10

**7 Radio Spectrum Matter Test Results ..... 11**

7.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) ..... 11
7.2 Emission Mask ..... 15
7.3 Radiated Emissions (9kHz-30MHz) ..... 16
7.4 Radiated Emissions (30MHz-1GHz) ..... 18
7.5 20dB Bandwidth ..... 20
7.6 Frequency tolerance ..... 21

**8 Test Setup Photo ..... 22**

**9 EUT Constructional Details (EUT Photos) ..... 22**

**10 Appendix ..... 23**

# 4 General Information

## 4.1 Details of E.U.T.

| | |
|---|---|
| Power supply: | Adapter(TPA-418G050200UU01):<br>Input: 100-240V~50/60Hz 0.3A<br>Output: 5.0V,2.0A |
| Operation Frequency: | 13.56MHz |
| Modulation Type: | ASK |
| Antenna Type: | FPC ANT |

## 4.2 Environment Parameter

| Environment Parameter | Selected Values During Tests | |
|---|---|---|
| Relative Humidity | 41-44% | |
| Value | Temperature(°C) | Voltage(V) |
| NTNV | 20-23 | 7.7 |
| NTLV | 20-23 | 6.6 |
| NTHV | 20-23 | 8.8 |
| LTNV | -20 | 7.7 |
| HTNV | 50 | 7.7 |
| Note:<br>NV:Normal Voltage LV:Low Extreme Test Voltage HV:High Extreme Test Voltage<br>NT:Normal Temperature LT:Low Extreme Test Temperature HT:High Extreme Test Temperature | | |

## 4.3 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|---|---|---|---|
| -- | -- | -- | -- |
| The EUT has been tested as an independent unit. | | | |

## 4.4 Measurement Uncertainty & Decision Rule

| No. | Item | Measurement Uncertainty |
|---|---|---|
| 1 | Radio Frequency | ± 7.25 x $10^{-8}$ |
| 2 | Duty cycle | ± 0.37% |
| 3 | Occupied Bandwidth | ± 3% |
| 4 | Conduction emission | ± 3.0dB (150kHz to 30MHz) |
| 5 | RF conducted power | ± 0.75dB |
| 6 | RF power density | ± 2.84dB |
| 7 | Conducted Spurious emissions | ± 0.75dB |
| 8 | RF Radiated power | ±1.56dB (9KHz-30MHz) |
| | | ±4.80dB (30MHz-1GHz) |
| | | ±4.80dB (1GHz-18GHz) |
| | | ±4.80dB (18GHz-40GHz) |
| 9 | Temperature test | ± 1°C |
| 10 | Humidity test | ± 3% |
| 11 | Supply voltages | ± 1% |
| 12 | Time | ± 3% |

Remark:
The $U_{lab}$ (lab Uncertainty) is less than $U_{cispr/ETSI}$ (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.

## 4.5 Test Location

All tests were performed at:

SGS Tongfang Technical Services (Suzhou) Co., Ltd.

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone

No tests were sub-contracted.

Note:

1.SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).

2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).

3. Sample source: sent by customer.

## 4.6 Test Facility

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

**• A2LA (Certificate No. 6336.01)**

SGS Tongfang Technical Services (Suzhou) Co., Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA).

**• FCC (Designation Number: CN1312)**

This site has been recognized as an accredited testing laboratory. Test Firm Registration Number:717327

**• ISED (CAB Identifier: CN0120)**

This site has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 27594

## 4.7 Deviation from Standards

None

## 4.8 Abnormalities from Standard Conditions

None

# 5 Equipment List

| Item | Equipment | Manufacturer | Model | Inventory No | Cal Date | Cal. Due Date |
|---|---|---|---|---|---|---|
| **Conducted Emission at Mains Terminals** | | | | | | |
| 1 | EMI Test Receive | R&S | ESR7 | SUWI-01-10-01 | 1/14/2026 | 1/13/2027 |
| 2 | LISN | R&S | ENV216 | SUWI-01-19-03 | 4/22/2026 | 4/21/2027 |
| 3 | LISN | Schwarzbeck | ENV216 | SUWI-01-19-04 | 4/22/2026 | 4/21/2027 |
| 4 | Test Software | Tonscend | JS32-CE_4.0.0.2 | SUWI-02-09-05 | N.C.R | N.C.R |
| 5 | Test Cable | Tonscend | NA | SUWI-01-03-04 | 4/22/2026 | 4/21/2027 |
| **RF Conducted Test** | | | | | | |
| 1 | Signal Analyzer | ROHDE&SCHWARZ | FSW43 | SUWI-01-02-04 | 1/14/2026 | 1/13/2027 |
| 2 | Signal Analyzer | KEYSIGHT | N9020A | SUWI-01-02-15 | 11/21/2025 | 11/20/2026 |
| 3 | MXG Vector signal genitor | KEYSIGHT | N5182B | SUWI-01-38-01 | 1/14/2026 | 1/13/2027 |
| 4 | Signal Generator | ROHDE&SCHWARZ | SMW200A | SUWI-01-07-08 | 1/14/2026 | 1/13/2027 |
| 5 | Signal Generator | ROHDE&SCHWARZ | SMW100A | SUWI-01-08-01 | 1/14/2026 | 1/13/2027 |
| 6 | MXG Vector Signal Generator | ROHDE&SCHWARZ | SMR20 | SUWI-01-33-01 | 11/21/2025 | 11/20/2026 |
| 7 | Wideband Radio Communication Tester | ROHDE&SCHWARZ | CMW500 | SUWI-01-16-13 | 4/22/2026 | 4/21/2027 |
| 8 | Wideband Radio Communication Test Station | Anritsu | MT8000A | SUWI-01-34-02 | 11/21/2025 | 11/20/2026 |
| 9 | Wideband Radio Communication Tester | Anritsu | MT8821C | SUWI-01-26-03 | 11/21/2025 | 11/20/2026 |
| 10 | Power meter | Anritsu | ML2495A | SUWI-01-31-01 | 11/21/2025 | 11/20/2026 |
| 11 | Pulse power sensor | Anritsu | MA2411B | SUWI-01-32-01 | 11/21/2025 | 11/20/2026 |
| 12 | DC Power Supply | HYELEC | HY3005B | SUWI-01-18-01 | 1/14/2026 | 1/13/2027 |
| 13 | Temperature and humidity meter | MingGao | TH101B | SUWI-01-01-07 | 2/11/2026 | 2/10/2027 |
| 14 | Temperature Chamber | GIANT FORCE | ICT-017-40-SP-SD | SUWI-01-13-02 | 5/7/2026 | 5/6/2027 |
| 15 | Measurement Software | TST | TST 272 V2.02 | SUWI-03-55-03 | NCR | NCR |
| 16 | RF Control unit | TST | TSCB3023R2 | SUWI-02-20-01 | NCR | NCR |
| 17 | RFCables | Tonscend | NA | SUWI-01-03-01 | 1/15/2026 | 1/14/2027 |
| **RF Radiated Test** | | | | | | |
| 1 | Semi-Anechoic Chamber | Brilliant-emc | N/A | SUWI-04-02-01 | 6/9/2026 | 6/8/2029 |
| 2 | Signal Analyzer | ROHDE&SCHWARZ | FSW43 | SUWI-01-02-04 | 1/14/2026 | 1/13/2027 |
| 3 | Signal Analyzer | KEYSIGHT | N9020A | SUWI-01-02-07 | 11/20/2025 | 11/19/2026 |
| 4 | Test receiver | ROHDE&SCHWARZ | ESR7 | SUWI-01-10-01 | 1/14/2026 | 1/13/2027 |
| 5 | Signal Generator | ROHDE&SCHWARZ | SMW100A | SUWI-01-18-01 | 1/14/2026 | 1/13/2027 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | Receiving antenna | SCHWRZBECK MESS-ELEKTRONIK | VULB 9168 | SUWI-01-11-04 | 11/29/2025 | 11/28/2027 |
| 7 | Receiving antenna | SCHWRZBECK MESS-ELEKTRONIK | BBHA 9120D | SUWI-01-11-02 | 5/7/2025 | 5/6/2027 |
| 8 | Receiving antenna | SCHWRZBECK MESS-ELEKTRONIK | BBHA 9170 | SUWI-01-11-03 | 5/7/2025 | 5/6/2027 |
| 9 | Active Loop Antenna | SCHWRZBECK MESS-ELEKTRONIK | FMZB 1519B | SUWI-01-21-01 | 5/7/2025 | 5/6/2027 |
| 10 | Amplifier | Tonscend | TAP9K3G40 | SUWI-01-14-01 | 1/14/2026 | 1/13/2027 |
| 11 | Amplifier | Tonscend | TAP01018050 | SUWI-01-14-02 | 1/14/2026 | 1/13/2027 |
| 12 | Amplifier | Tonscend | TAP18040048 | SUWI-01-14-03 | 1/14/2026 | 1/13/2027 |
| 13 | Wideband Radio Communication Tester | Anritsu | MT8820C | SUWI-01-26-01 | 8/25/2025 | 8/24/2026 |
| 14 | Wideband Radio Communication Tester | Anritsu | MT8821C | SUWI-01-26-03 | 8/25/2025 | 8/24/2026 |
| 15 | Wideband Radio Communication Tester | ROHDE&SCHWARZ | CMW500 | SUWI-01-16-09 | 8/26/2025 | 8/25/2026 |
| 16 | Radio Communication Analyzer | StarPoint | SP9500E | SUWI-01-28-06 | 11/21/2025 | 11/20/2026 |
| 17 | Signal Generator | ROHDE&SCHWARZ | SMB100A | SUWI-01-08-01 | 1/14/2026 | 1/13/2027 |
| 18 | DC Power Supply | HYELEC | HY3005B | SUWI-01-18-01 | 1/14/2026 | 1/13/2027 |
| 19 | Temperature and humidity meter | MingGao | TH101B | SUWI-01-01-05 | 2/11/2026 | 2/10/2027 |
| 20 | Measurement Software | Tonscend | JS32-RE 4.0.0.0 | SUWI-02-09-06 | NCR | NCR |
| 21 | RF Control unit | Tonscend | JS0806-1 | SUWI-02-20-01 | NCR | NCR |
| 22 | RFCables | Tonscend | NA | SUWI-01-03-02 | 1/15/2026 | 1/14/2027 |

# 6 Radio Spectrum Technical Requirement

## 6.1 Antenna Requirement

### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

### 6.1.2 Conclusion

15.203 requirement:

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.

EUT Antenna:

The antenna is Loop Antenna and no consideration of replacement.

Antenna location: Refer to Internal photos

# 7 Radio Spectrum Matter Test Results

## 7.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207
Test Method: ANSI C63.10-2020+Cor.1-2023 Section 6.2

Limit:

| Frequency range (MHz) | Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

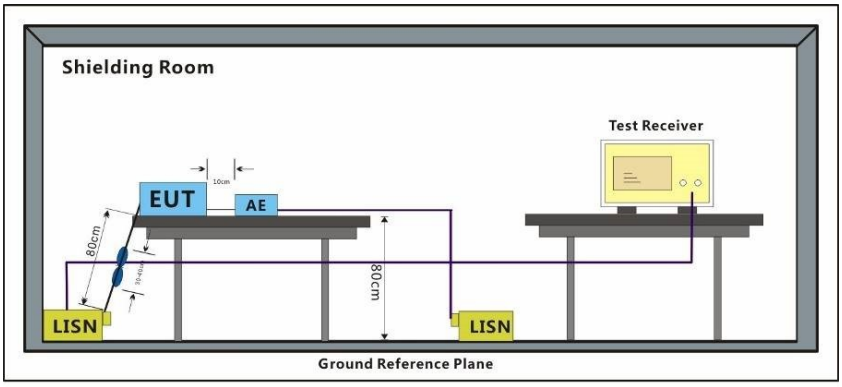
### 7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 23 °C Humidity: 41 % RH Atmospheric Pressure: 1001 mbar

### 7.1.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|---|---|---|
| Final test | 06 | TX mode with modulation |

### 7.1.3 Test Setup Diagram



### 7.1.4 Measurement Procedure and Data

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

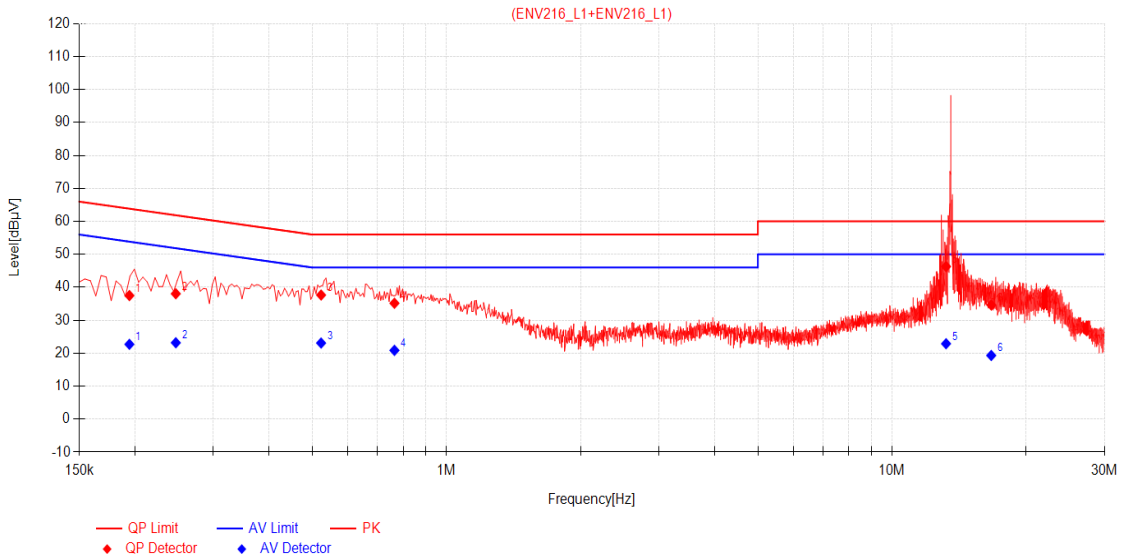
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: Level=Read Level+ Cable Loss+ LISN Factor

| Phase: | Line |
|---|---|



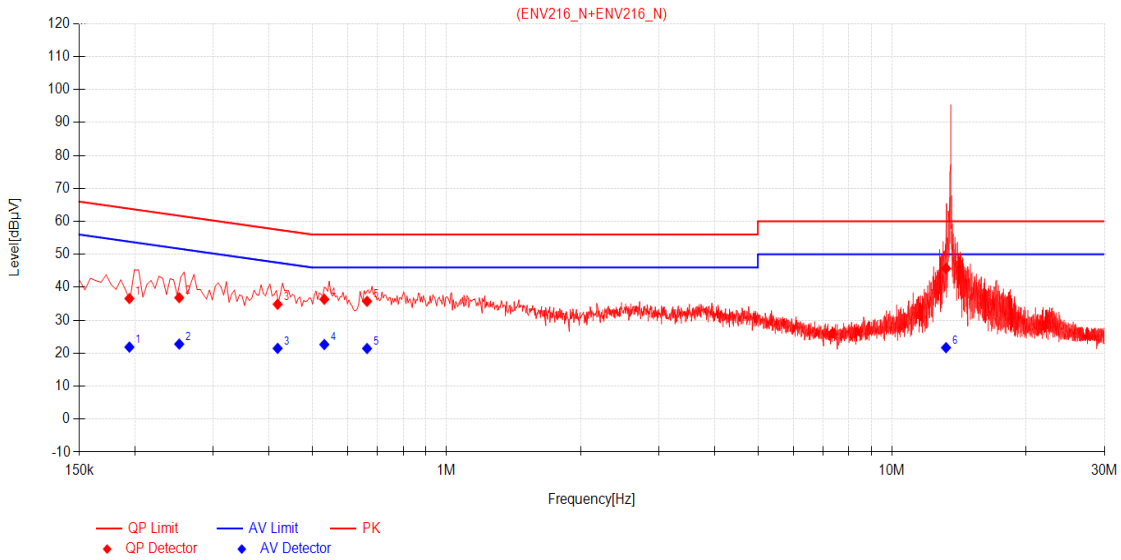

**Final Data List**

| NO. | Frequency [MHz] | Factor [dB] | QP Reading [dBµV] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Reading [dBµV] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1945 | 9.96 | 27.53 | 37.49 | 63.84 | 26.35 | 12.73 | 22.69 | 53.84 | 31.15 | PASS |
| 2 | 0.2472 | 9.96 | 28.08 | 38.04 | 61.85 | 23.81 | 13.21 | 23.17 | 51.85 | 28.68 | PASS |
| 3 | 0.5236 | 9.94 | 27.71 | 37.65 | 56.00 | 18.35 | 13.15 | 23.09 | 46.00 | 22.91 | PASS |
| 4 | 0.7649 | 9.95 | 25.20 | 35.15 | 56.00 | 20.85 | 10.91 | 20.86 | 46.00 | 25.14 | PASS |
| 5 | 13.2215 | 10.45 | 35.85 | 46.30 | 60.00 | 13.70 | 12.43 | 22.88 | 50.00 | 27.12 | PASS |
| 6 | 16.6965 | 10.76 | 23.87 | 34.63 | 60.00 | 25.37 | 8.56 | 19.32 | 50.00 | 30.68 | PASS |

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Value =Reading[dBµV] + Factor(Lisn factor[dB] + cable loss[dB]).
3. Margin = Limit[dBµV] – Value[dBµV]
4. The maximum signal in the above plot is the transmitter's fundamental frequency.

| Phase: | Neutral |
|---|---|




**Final Data List**

| NO. | Frequency [MHz] | Factor [dB] | QP Reading [dBµV] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Reading [dBµV] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1945 | 9.97 | 26.61 | 36.58 | 63.84 | 27.26 | 11.89 | 21.86 | 53.84 | 31.98 | PASS |
| 2 | 0.2516 | 9.97 | 26.86 | 36.83 | 61.71 | 24.88 | 12.80 | 22.77 | 51.71 | 28.94 | PASS |
| 3 | 0.4183 | 9.93 | 24.91 | 34.84 | 57.48 | 22.64 | 11.54 | 21.47 | 47.48 | 26.01 | PASS |
| 4 | 0.5324 | 9.91 | 26.45 | 36.36 | 56.00 | 19.64 | 12.73 | 22.64 | 46.00 | 23.36 | PASS |
| 5 | 0.6640 | 9.92 | 25.81 | 35.73 | 56.00 | 20.27 | 11.51 | 21.43 | 46.00 | 24.57 | PASS |
| 6 | 13.2215 | 10.60 | 35.12 | 45.72 | 60.00 | 14.28 | 11.08 | 21.68 | 50.00 | 28.32 | PASS |

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Value =Reading[dBµV] + Factor(Lisn factor[dB] + cable loss[dB]).
3. Margin = Limit[dBµV] – Value[dBµV]
4. The maximum signal in the above plot is the transmitter's fundamental frequency.

## 7.2 Emission Mask

Test Requirement 47 CFR Part 15, Subpart C 15.225(a)&(b)&(C )

Test Method: ANSI C63.10-2020+Cor.1-2023 Section 6.4

### 7.2.1 E.U.T. Operation

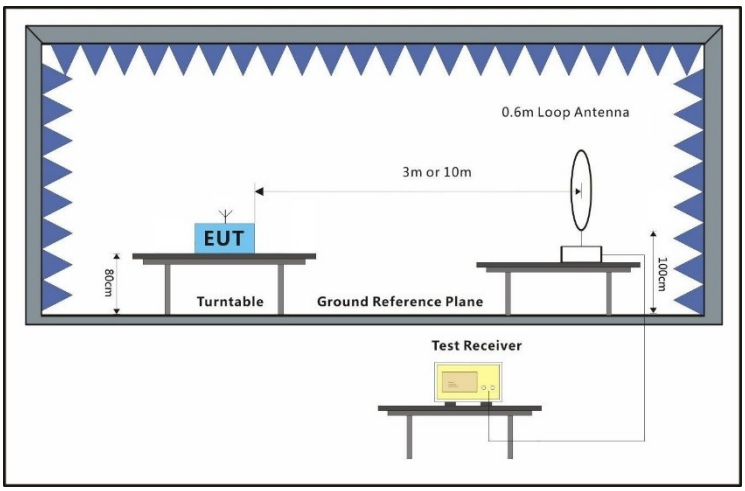
Operating Environment:

Temperature: 23 °C Humidity: 41 % RH Atmospheric Pressure: 1001 mbar

### 7.2.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|---|---|---|
| Final test | 06 | TX mode with modulation |

### 7.2.3 Test Setup Diagram




### 7.2.4 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Please Refer to Appendix for Details

## 7.3 Radiated Emissions (9kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209

Test Method: ANSI C63.10-2020+Cor.1-2023 Section 6.4

Limit:

| Frequency(MHz) | Field strength (microvolts/meter) | Limit (dBuV/m) | Detector | Measurement Distance (meters) |
|---|---|---|---|---|
| 0.009-0.490 | 2400/F(kHz) | - | - | 300 |
| 0.490-1.705 | 24000/F(kHz) | - | - | 30 |
| 1.705-30 | 30 | - | - | 30 |

Note

1. The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.
2. At frequencies below 1GHz, measurements may be performed at a distance different to specified in the regulations.

Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor+ Aux Factor (if applicable)

The aux factor needs to be added when measurements are performed at a distance other than the limit distance provided.

EX. Below 30MHz, Aux Factor = 40 dB/decade of distance, the aux factor is 40log(3/300) = -80dB (for 3m test distance).

### 7.3.1 E.U.T. Operation

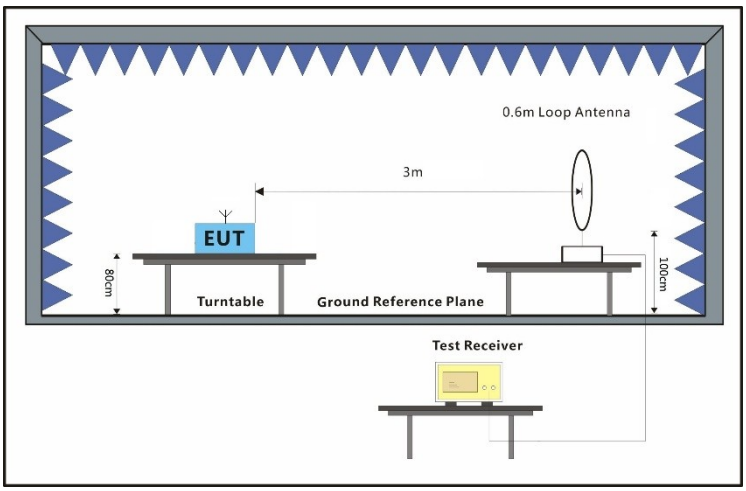
Operating Environment:

Temperature: 23 °C Humidity: 41 % RH Atmospheric Pressure: 1001 mbar

### 7.3.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|---|---|---|
| Final test | 06 | TX mode with modulation |

### 7.3.3 Test Setup Diagram



### 7.3.4 Measurement Procedure and Data

a. For below 30MHz, the EUT was placed on the top of a rotating table 0.8m above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3m away from the interference-receiving antenna which was mounted on the antenna tower 1m above the ground.

c. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

d. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

e. 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.

f. Test the EUT in the lowest channel, the middle channel, the Highest channel.

g. 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.

h. Repeat above procedures until all frequencies measured was complete.

Remark:

1. 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 below 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.

Please Refer to Appendix for Details

## 7.4 Radiated Emissions (30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209

Test Method: ANSI C63.10-2020+Cor.1-2023 Section 6.5

Limit:

| Frequency(MHz) | Field strength(microvolts/meter) | Measurement distance(meters) |
|---|---|---|
| 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 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. | | |

Note

1. At frequencies below 1GHz, measurements may be performed at a distance different to specified in the regulations.

Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor+ Aux Factor (if applicable)

The aux factor needs to be added when measurements are performed at a distance other than the limit distance provided.

EX. Above 30MHz, Aux Factor = 20 dB/decade of distance, the aux factor is 20log(10/3) = 10.46dB (for 10m test distance).

### 7.4.1 E.U.T. Operation

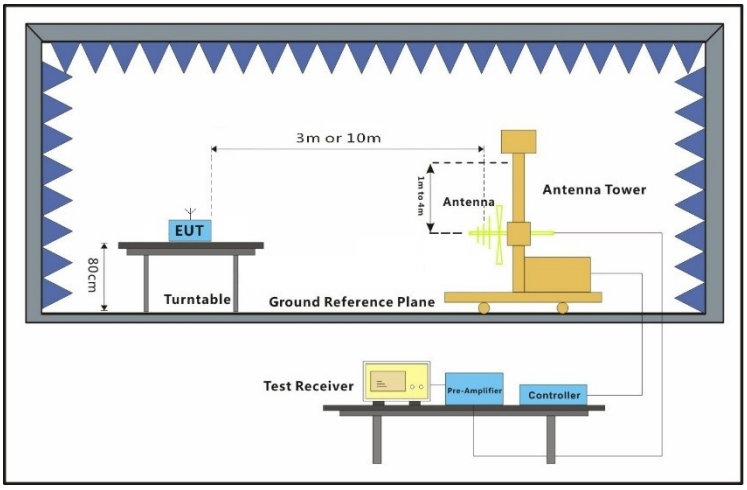
Operating Environment:

Temperature: 23 °C Humidity: 41 % RH Atmospheric Pressure: 1001 mbar

### 7.4.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|---|---|---|
| Final test | 06 | TX mode with modulation |

### 7.4.3 Test Setup Diagram




### 7.4.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8m above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3m or 10m away from the interference-receiving antenna, which was mounted on the variable-height antenna tower.

c. The antenna height is varied from 1m to 4m 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 1m to 4m 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 quasi-peak 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. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the worst-case test curve is displayed.

Please Refer to Appendix for Details

## 7.5 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215

Test Method: ANSI C63.10-2020+Cor.1-2023 Section 6.9

### 7.5.1 E.U.T. Operation

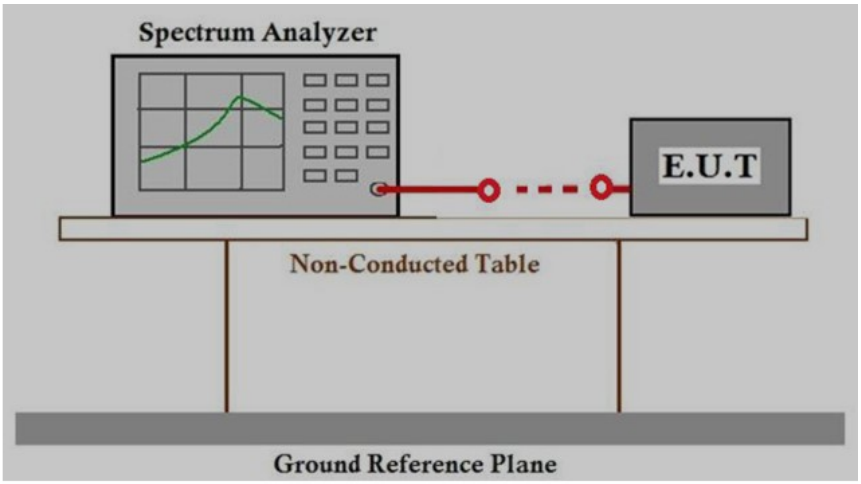
Operating Environment:

Temperature: 23 °C Humidity: 41 % RH Atmospheric Pressure: 1001 mbar

### 7.5.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|---|---|---|
| Final test | 06 | TX mode with modulation |

### 7.5.3 Test Setup Diagram




### 7.5.4 Measurement Procedure and Data

The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

Please Refer to Appendix for Details

## 7.6 Frequency tolerance

Test Requirement 47 CFR Part 15, Subpart C 15.225(e)
Test Method: ANSI C63.10-2020+Cor.1-2023 Section 6.8
Measurement Distance: 3m

Limit:
±0.01

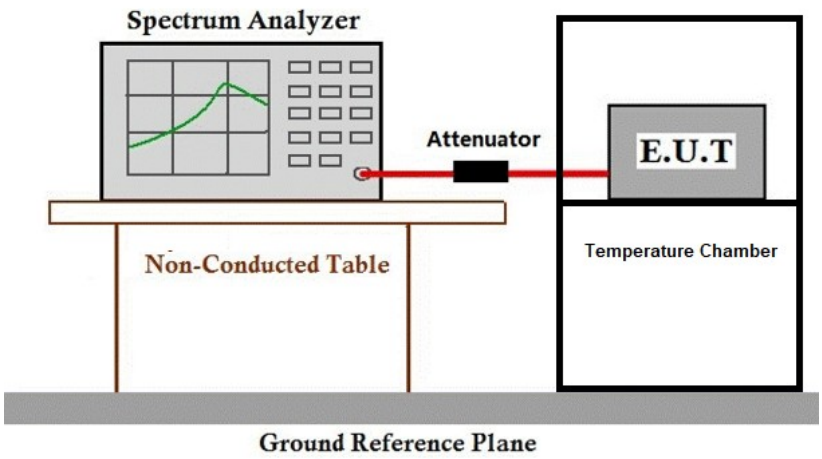
### 7.6.1 E.U.T. Operation

Operating Environment:
Temperature: 20 °C Humidity: 44 % RH Atmospheric Pressure: 1001 mbar

### 7.6.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|---|---|---|
| Final test | 06 | TX mode with modulation |

### 7.6.3 Test Setup Diagram




### 7.6.4 Measurement Procedure and Data

The EUT was placed in an environmental test chamber and powered such that control element received normal voltage and the transmitter provided maximum RF output.

Please Refer to Appendix for Details

# 8 Test Setup Photo

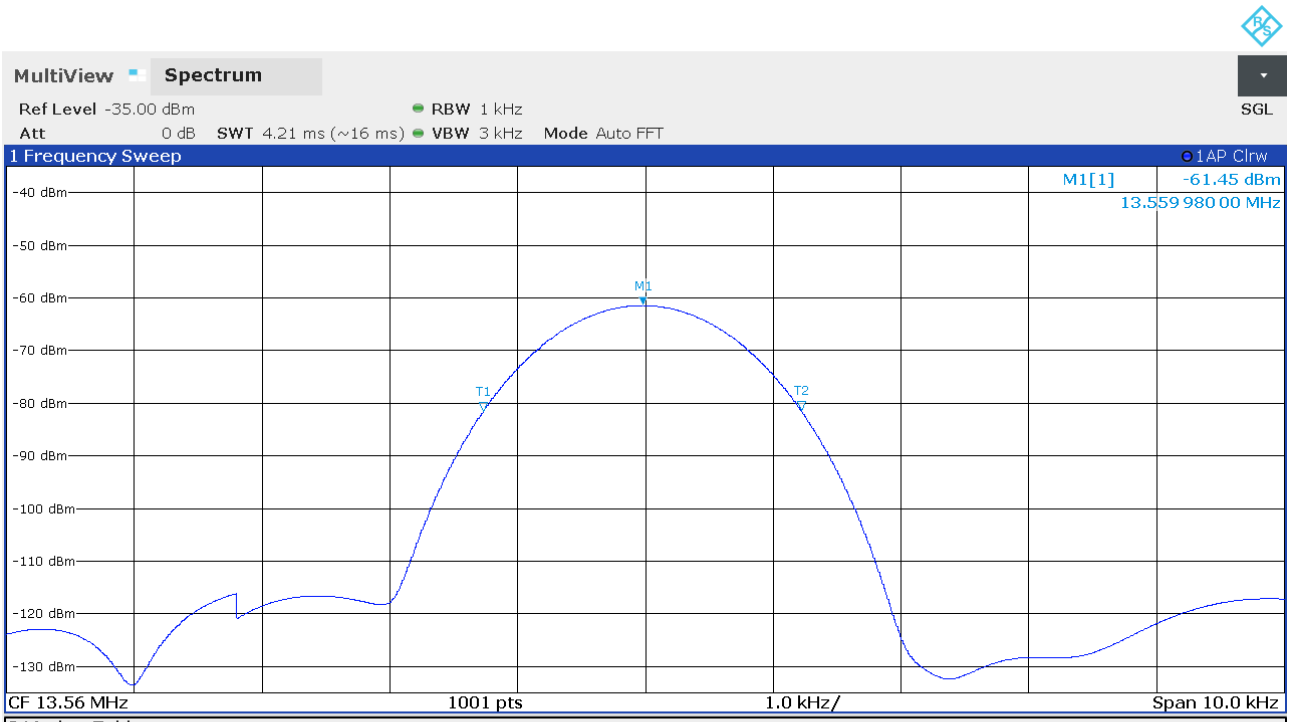
Refer to Appendix C.3 - Test Setup Photo for SUCR2607000644TL

# 9 EUT Constructional Details (EUT Photos)

Refer to Appendix C.1_External Photos for SUCR2607000644TL and Appendix C.2_Internal Photos for SUCR2607000644TL

# 10 Appendix

## 20dB Bandwidth




2 Marker Table

| Type | Ref | Trc | X-Value | Y-Value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | **13.559 98 MHz** | **-61.45 dBm** | ndB | 20.0 dB |
| T1 | | 1 | 13.558 731 MHz | -81.55 dBm | ndB down BW | **2.49 kHz** |
| T2 | | 1 | 13.561 219 MHz | -81.44 dBm | Q Factor | 5 451.2 |

## Frequency tolerance

| Declared Frequency (MHz) | | 13.56MHz | | | |
|---|---|---|---|---|---|
| Startup | | | | | |
| Temperature (°C) | Voltage(VDC) | Measurement Frequency(MHz) | Frequency Tolerance (%) | Limit (%) | Result |
| 50 | 7.7 | 13.55995 | 0.0005 | ±0.01 | Pass |
| 40 | | 13.55997 | 0.0003 | | Pass |
| 30 | | 13.55997 | 0.0003 | | Pass |
| 20 | | 13.55998 | 0.0002 | | Pass |
| 10 | | 13.55995 | 0.0005 | | Pass |
| 0 | | 13.55997 | 0.0003 | | Pass |
| -10 | | 13.55994 | 0.0006 | | Pass |
| -20 | | 13.55993 | 0.0007 | | Pass |
| 20 | 8.8 | 13.55996 | 0.0004 | | Pass |
| | 6.6 | 13.55997 | 0.0003 | | Pass |

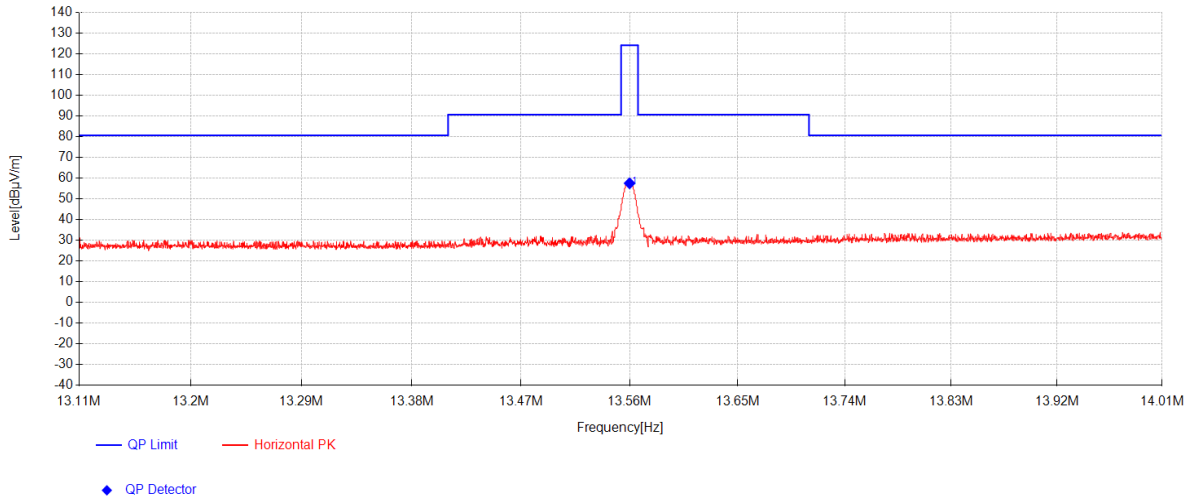
| Declared Frequency (MHz) | | 13.56MHz | | | |
|---|---|---|---|---|---|
| 2mins | | | | | |
| Temperature (°C) | Voltage(VDC) | Measurement Frequency(MHz) | Frequency Tolerance (%) | Limit (%) | Result |
| 50 | 7.7 | 13.55997 | 0.0003 | ±0.01 | Pass |
| 40 | | 13.55998 | 0.0002 | | Pass |
| 30 | | 13.55995 | 0.0005 | | Pass |
| 20 | | 13.55994 | 0.0006 | | Pass |
| 10 | | 13.55999 | 0.0001 | | Pass |
| 0 | | 13.55996 | 0.0004 | | Pass |
| -10 | | 13.55995 | 0.0005 | | Pass |
| -20 | | 13.55999 | 0.0001 | | Pass |
| 20 | 8.8 | 13.55996 | 0.0004 | | Pass |
| | 6.6 | 13.55998 | 0.0002 | | Pass |

| Declared Frequency (MHz) | | 13.56MHz | | | |
|---|---|---|---|---|---|
| 5mins | | | | | |
| Temperature (°C) | Voltage(VDC) | Measurement Frequency(MHz) | Frequency Tolerance (%) | Limit (%) | Result |
| 50 | 7.7 | 13.55988 | 0.0002 | ±0.01 | Pass |
| 40 | | 13.55999 | 0.0001 | | Pass |
| 30 | | 13.55996 | 0.0004 | | Pass |
| 20 | | 13.55983 | 0.0007 | | Pass |
| 10 | | 13.55994 | 0.0006 | | Pass |
| 0 | | 13.55995 | 0.0005 | | Pass |
| -10 | | 13.55977 | 0.0003 | | Pass |
| -20 | | 13.55994 | 0.0006 | | Pass |
| 20 | 8.8 | 13.55995 | 0.0005 | | Pass |
| | 6.6 | 13.55988 | 0.0002 | | Pass |

| Declared Frequency (MHz) | | 13.56MHz | | | |
|---|---|---|---|---|---|
| 10mins | | | | | |
| Temperature (°C) | Voltage(VDC) | Measurement Frequency(MHz) | Frequency Tolerance (%) | Limit (%) | Result |
| 50 | 7.7 | 13.55997 | 0.0003 | ±0.01 | Pass |
| 40 | | 13.55988 | 0.0002 | | Pass |
| 30 | | 13.55999 | 0.0001 | | Pass |
| 20 | | 13.55995 | 0.0005 | | Pass |
| 10 | | 13.55994 | 0.0006 | | Pass |
| 0 | | 13.55995 | 0.0005 | | Pass |
| -10 | | 13.55999 | 0.0001 | | Pass |
| -20 | | 13.55986 | 0.0004 | | Pass |
| 20 | 8.8 | 13.55997 | 0.0003 | | Pass |
| | 6.6 | 13.55996 | 0.0004 | | Pass |

# Field Strength of Fundamental Emissions

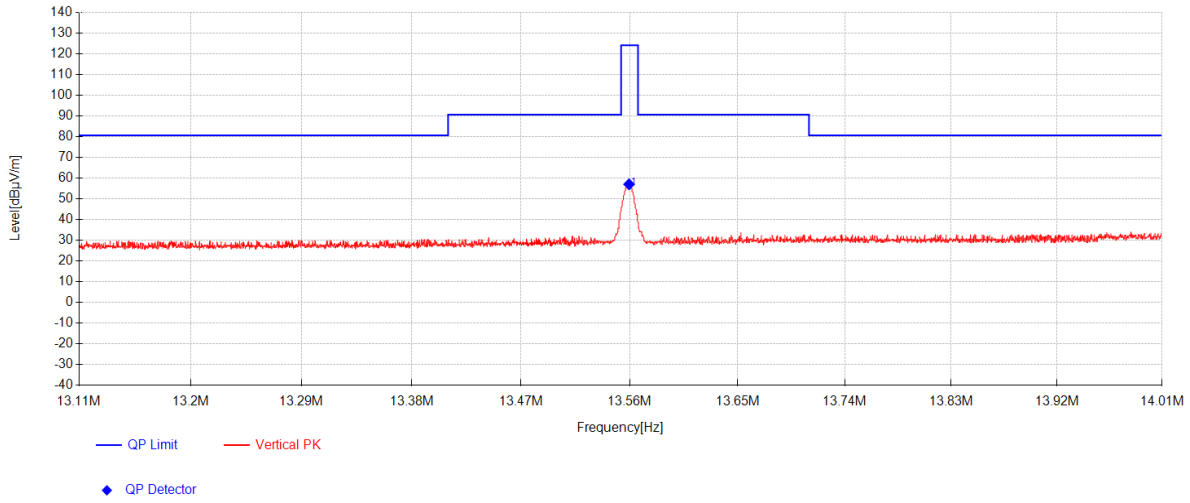
## NFC_Emission Mask




| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | AF [dB/m] | Factor [dB] | QP Value [dBµV/m] | QP Limit [dBµV/m] | QP Margin [dB] | Polarity |
| 1 | 13.56 | 36.71 | 19.97 | 0.69 | 57.37 | 124.00 | 66.63 | Coaxial |

Remark:

1. The Quasi-Peak measurements were performed on the EUT.
2. Value = Reading + Antenna Factor + Factor.
3. Factor=Cable loss.



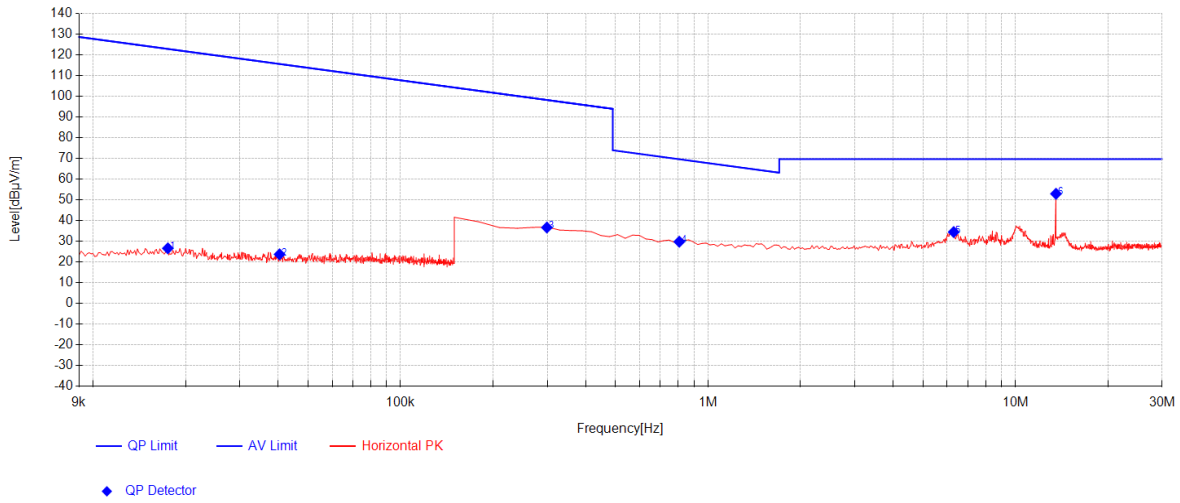

| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBμV] | AF [dB/m] | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Polarity |
| 1 | 13.5596 | 36.20 | 19.97 | 0.69 | 56.86 | 124.00 | 67.14 | Coplanar |

Remark:

1. The Quasi-Peak measurements were performed on the EUT.
2. Value = Reading + Antenna Factor + Factor.
3. Factor=Cable loss.

# Radiated Spurious Emissions

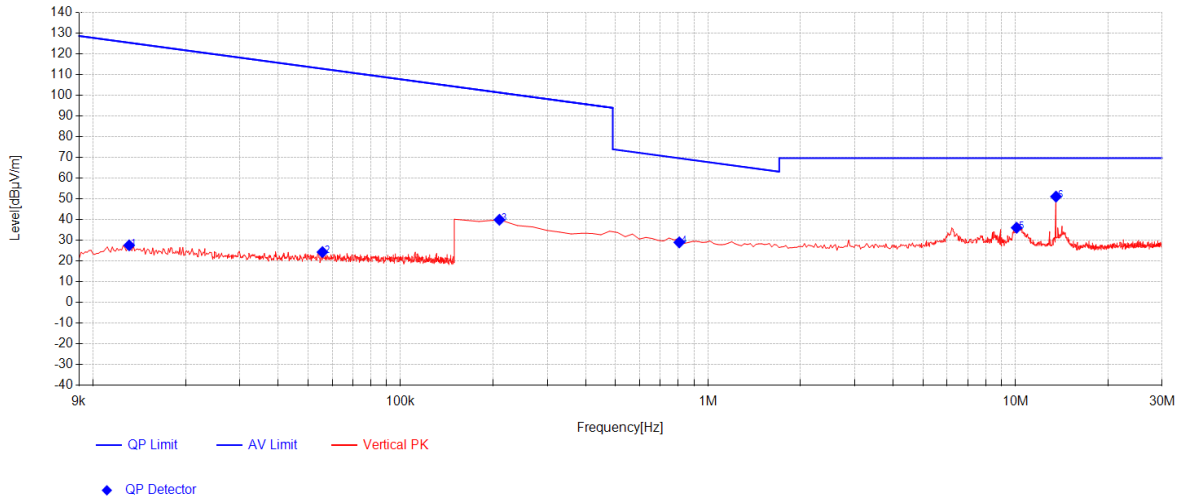
## NFC_RSE below 30M




| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBμV] | AF [dB/m] | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Polarity |
| 4 | 0.8067 | 9.06 | 20.12 | 0.45 | 29.63 | 69.47 | 39.84 | Coaxial |
| 5 | 6.2991 | 13.46 | 20.30 | 0.55 | 34.31 | 69.54 | 35.23 | Coaxial |
| 6 | 13.5526 | 32.11 | 19.97 | 0.69 | 52.77 | 69.54 | 16.77 | Coaxial |
| NO. | Frequency [MHz] | AV Reading [dBμV] | AF [dB/m] | Factor [dB] | AV Value [dBμV/m] | AV Limit [dBμV/m] | AV Margin [dB] | Polarity |
| 1 | 0.0175 | 6.35 | 19.67 | 0.43 | 26.45 | 122.74 | 96.29 | Coaxial |
| 2 | 0.0404 | 3.27 | 19.85 | 0.43 | 23.55 | 115.47 | 91.92 | Coaxial |
| 3 | 0.2992 | 16.18 | 19.89 | 0.44 | 36.50 | 98.08 | 61.58 | Coaxial |

Remark:

1. The Quasi-Peak measurements were performed on the EUT.
2. Value = Reading + Antenna Factor + Factor.
3. Factor=Cable loss.

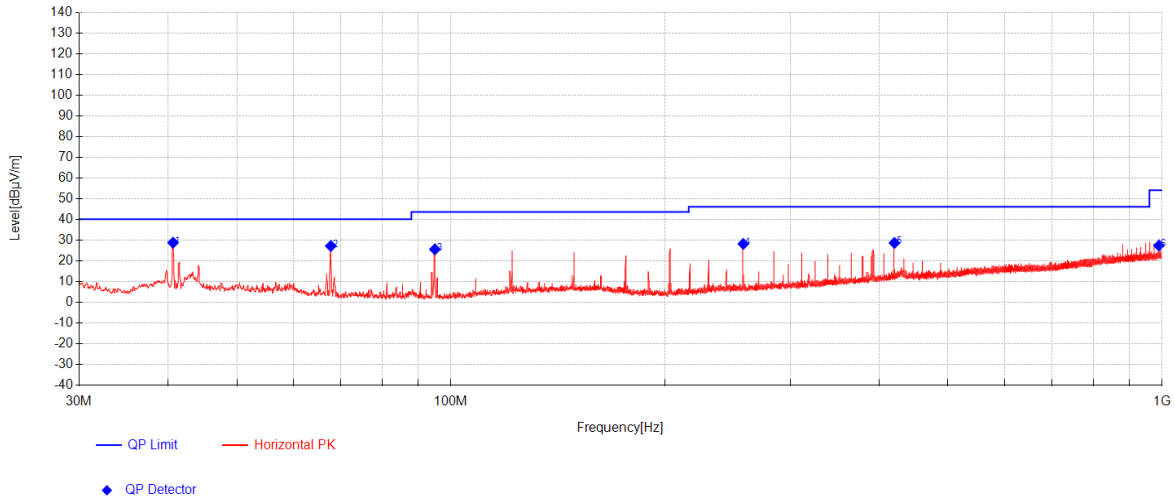



| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | AF [dB/m] | Factor [dB] | QP Value [dBµV/m] | QP Limit [dBµV/m] | QP Margin [dB] | Polarity |
| 4 | 0.8067 | 8.27 | 20.12 | 0.45 | 28.84 | 69.47 | 40.63 | Coplanar |
| 5 | 10.09 | 15.12 | 20.15 | 0.62 | 35.89 | 69.54 | 33.65 | Coplanar |
| 6 | 13.5526 | 30.26 | 19.97 | 0.69 | 50.92 | 69.54 | 18.62 | Coplanar |
| NO. | Frequency [MHz] | AV Reading [dBµV] | AF [dB/m] | Factor [dB] | AV Value [dBµV/m] | AV Limit [dBµV/m] | AV Margin [dB] | Polarity |
| 1 | 0.0131 | 7.35 | 19.63 | 0.43 | 27.41 | 125.25 | 97.84 | Coplanar |
| 2 | 0.0557 | 3.82 | 19.90 | 0.43 | 24.15 | 112.68 | 88.53 | Coplanar |
| 3 | 0.2097 | 19.47 | 19.83 | 0.43 | 39.74 | 101.17 | 61.43 | Coplanar |

Remark:

1. The Quasi-Peak measurements were performed on the EUT.
2. Value = Reading + Antenna Factor + Factor.
3. Factor=Cable loss.

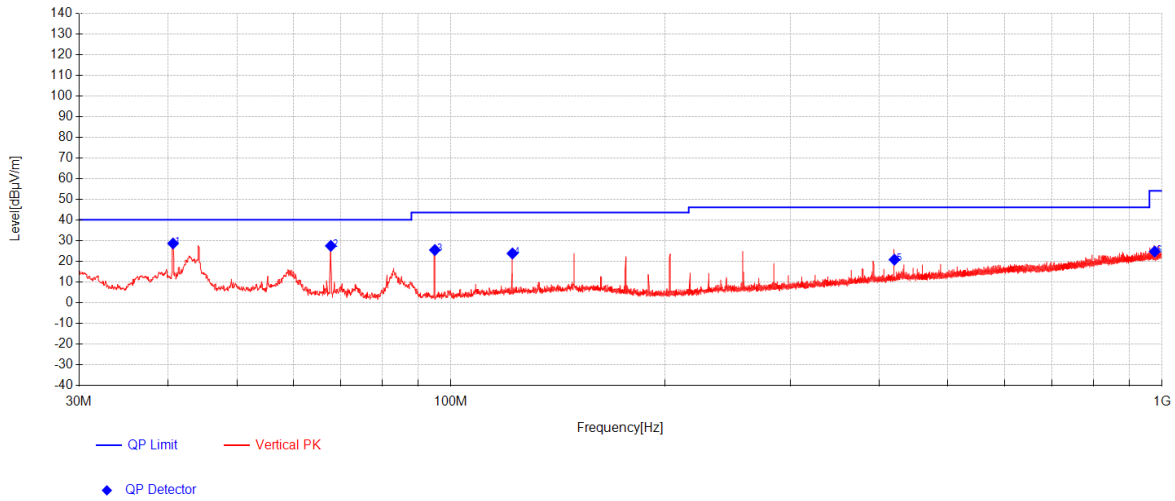
## NFC_RSE above 30M




| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | AF [dB/m] | Factor [dB] | QP Value [dBµV/m] | QP Limit [dBµV/m] | QP Margin [dB] | Polarity |
| 1 | 40.67 | 49.33 | 13.22 | -33.85 | 28.70 | 40.00 | 11.30 | Horizontal |
| 2 | 67.7761 | 49.86 | 10.67 | -33.45 | 27.08 | 40.00 | 12.92 | Horizontal |
| 3 | 94.9361 | 49.62 | 9.05 | -33.19 | 25.47 | 43.50 | 18.03 | Horizontal |
| 4 | 257.6806 | 48.28 | 11.72 | -31.90 | 28.10 | 46.00 | 17.90 | Horizontal |
| 5 | 420.3711 | 43.35 | 16.13 | -30.91 | 28.56 | 46.00 | 17.44 | Horizontal |
| 6 | 989.9228 | 30.76 | 24.42 | -27.91 | 27.27 | 54.00 | 26.73 | Horizontal |

Remark:

1. The Quasi-Peak measurements were performed on the EUT.
2. Final Value Level = Reading + Antenna Factor + Factor.
3. Factor=Cable loss – Preamplifier Factor.




| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBμV] | AF [dB/m] | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Polarity |
| 1 | 40.6729 | 49.19 | 13.22 | -33.85 | 28.56 | 40.00 | 11.44 | Vertical |
| 2 | 67.7761 | 50.16 | 10.67 | -33.45 | 27.38 | 40.00 | 12.62 | Vertical |
| 3 | 94.9361 | 49.52 | 9.05 | -33.19 | 25.37 | 43.50 | 18.13 | Vertical |
| 4 | 122.0422 | 44.98 | 11.62 | -32.90 | 23.70 | 43.50 | 19.80 | Vertical |
| 5 | 420.3711 | 35.51 | 16.13 | -30.91 | 20.72 | 46.00 | 25.28 | Vertical |
| 6 | 976.3967 | 28.33 | 24.31 | -28.00 | 24.64 | 54.00 | 29.36 | Vertical |

Remark:

1. The Quasi-Peak measurements were performed on the EUT.
2. Final Value Level = Reading + Antenna Factor + Factor.
3. Factor=Cable loss – Preamplifier Factor.

- End of the Report -