Testing Laboratory 3785

# FCC Radio Test Report

| | | |
|---|---|---|
| **FCC ID** | : | **2AFZZ16SG** |
| **Equipment** | : | **Mobile Phone** |
| **Brand Name** | : | **Redmi** |
| **Model Name** | : | **2201116SG** |
| **Applicant** | : | **Xiaomi Communications Co., Ltd.<br>#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road,<br>Haidian District, Beijing, China, 100085** |
| **Manufacturer** | : | **Xiaomi Communications Co., Ltd.<br>#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road,<br>Haidian District, Beijing, China, 100085** |
| **Standard** | : | **47 CFR FCC Part 15.225** |

**The product was received on Nov. 14, 2021, and testing was started from Dec. 14, 2021 and completed on Dec. 20, 2021. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.**

**The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.**

Approved by: Allen Lin

***SPORTON INTERNATIONAL INC. Hsinhua Laboratory***

*No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan*

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# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR1N2204AR | 01 | Initial issue of report | Jan. 03, 2022 |
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# Summary of Test Result

| Report Clause | Ref. Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---|---|---|---|---|
| 1.1.2 | 15.203 | Antenna Requirement | PASS | - |
| 3.1 | 15.207 | AC Power-line Conducted Emissions | PASS | - |
| 3.2 | 15.215(c) | Emission Bandwidth | PASS | - |
| 3.3 | 15.225(e) | Frequency Stability | PASS | |
| 3.4 | 15.225(a)~(d) | Field Strength of Fundamental Emissions and Spectrum Mask | PASS | - |
| 3.5 | 15.225(d) | Transmitter Radiated Unwanted Emissions | PASS | - |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and explanations:** |
| None |

**Reviewed by: Ben Tseng**

**Report Producer: Michelle Tsai**

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

| RF General Information | | | | | |
|---|---|---|---|---|---|
| Frequency Range(MHz) | Type | Mode | Ch. Frequency (MHz) | Channel Number | Field Strength (dBuV/m) |
| 13.553 – 13.567 | NFC-A (ISO 14443-3A)<br>NFC-B (ISO 14443-3B)<br>NFC-V (ISO 15693) | NFC | 13.56 | 1 | 57.36 |

Note :
- Field strength performed peak level at 3m.
- Uses a ASK modulation.

### 1.1.2 Antenna Information

| Ant. | Brand | Model Name | Antenna Type | Connector |
|---|---|---|---|---|
| 1 | MI | K6S | FPC | N/A |

**For NFC function:**

For NFC mode (1TX/1RX)

Ant. 1 could transmit/receive simultaneously.

### 1.1.3 EUT Information

| Operational Condition | |
|---|---|
| **EUT Power Type** | From AC Adapter / Host system / Battery |
| **Type of EUT** | |
| ☒ | Stand-alone |
| ☐ | Combined (EUT where the radio part is fully integrated within another device)<br>Combined Equipment - Brand Name / Model No.: |
| ☐ | Plug-in radio (EUT intended for a variety of host systems)<br>Host System - Brand Name / Model No.: |
| ☐ | Other: |

### 1.1.4 Test Signal Duty Cycle

| Duty Cycle Operation Restriction | | | |
|---|---|---|---|
| The transmitter is used for | | The transmitter is operated | |
| ☒ | Inductive applications | ☒ | Automatically triggered |
| ☐ | Duty cycle fixed mode | ☒ | Duty cycle random mode |
| ☒ | **Duty cycle mode - NFC-A (ISO 14443-3A)** | | |
| Declare transmitter duty cycle / 1 hour = | | 100% | |
| ☒ | **Duty cycle mode - NFC-B (ISO 14443-3B)** | | |
| Declare transmitter duty cycle / 1 hour = | | 100% | |
| ☐ | **Duty cycle mode - NFC-F ( ISO 18092)** | | |
| Declare transmitter duty cycle / 1 hour = | | 100% | |
| ☒ | **Duty cycle mode - NFC-V (ISO 15693)** | | |
| Declare transmitter duty cycle / 1 hour = | | 100% | |

## 1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF:

- KDB 414788 D01 v01r01

## 1.3 Testing Location Information

| **Test Lab.：Sporton International Inc. Hsinhua Laboratory** | | | | |
|---|---|---|---|---|
| ☒ Hsinhua | **ADD:** No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan | | | |
| **(TAF:** 3785**)** | **TEL:** 886-3-327-3456 | | **FAX:** 886-3-327-0973 | |
| Test site Designation No. TW3785 with FCC. | | | | |
| **Test Condition** | **Test Site No.** | **Test Engineer** | **Test Environment** | **Test Date** |
| AC Conduction | CO04-HY | Jack Tang | 20.6~21.3°C / 53~59% | 20/Dec/2021 |
| RF Conducted | TH01-HY | Barry Hsiao | 23.2~26.9°C / 50~60% | 16/Dec/2021~20/Dec/2021 |
| Radiated | 03CH02-HY | Jack Tang | 20.1~21.8°C / 51~56% | 14/Dec/2021~16/Dec/2021 |
| ☐ Wen 33rd.St. | **ADD:** No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan | | | |
| **(TAF:** 3785**)** | **TEL:** 886-3-318-0787 | | **FAX:** 886-3-318-0287 | |
| Test site Designation No. TW0008 with FCC. | | | | |

## 1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

| Test Items | Uncertainty | Remark |
|---|---|---|
| Conducted Emission (150kHz ~ 30MHz) | 0.9 dB | Confidence levels of 95% |
| Radiated Emission (9kHz ~ 30MHz) | 2.4 dB | Confidence levels of 95% |
| Radiated Emission (30MHz ~ 1,000MHz) | 3.7 dB | Confidence levels of 95% |
| Conducted Emission | 1.0 dB | Confidence levels of 95% |
| Temperature | 0.41 °C | Confidence levels of 95% |
| Humidity | 3.4 % | Confidence levels of 95% |

# 2 Test Configuration of EUT

## 2.1 Test Condition

| Condition Item | Abbreviation/Remark | Remark |
|---|---|---|
| TnomVnom | Tnom | 20°C |
| - | Vnom | 3.87V |
| Freq. Stability | Abbreviation | Remark |
| -20°C | - | - |
| -10°C | - | - |
| 0°C | - | - |
| 10°C | - | - |
| 20°C | - | - |
| 30°C | - | - |
| 40°C | - | - |
| 50°C | - | - |
| 20°C-4.45V | - | - |
| 20°C-3.87V | - | - |
| 20°C-3.28V | - | - |

## 2.2 Test Channel Mode

| Test Software Version | N/A |
|---|---|

Note: The EUT transmits RF signal continuously by itself.

| Mode | Power Setting |
|---|---|
| NFC | - |
| 13.56MHz | default |

## 2.3 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | AC power-line conducted emissions |
| **Condition** | AC power-line conducted measurement for line and neutral |
| **Operating Mode** | CTX |
| | Adapter Mode |

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | Emission Bandwidth, Frequency Stability |
| **Test Condition** | Conducted measurement |

| The Worst Case Mode for Following Conformance Tests | | | |
|---|---|---|---|
| **Tests Item** | Field Strength of Fundamental Emissions<br>Transmitter Radiated Unwanted Emissions | | |
| **Test Condition** | Radiated measurement | | |
| **Pretest Mode** | ☒ 1. NFC-A (ISO 14443-3A) | | |
| | ☒ 2. NFC-B (ISO 14443-3B) | | |
| | ☐ 3. NFC-F ( ISO 18092) | | |
| | ☒ 4. NFC-V (ISO 15693) | | |
| Mode 1 configuration was pretested and found to be the worst case and measured during the test. | | | |
| **Operating Mode** | CTX | | |
| | Adapter Mode | | |
| **Orthogonal Planes of EUT** | **X Plane** | **Y Plane** | **Z Plane** |
| |  |  |  |
| **Worst Planes of EUT** | | V | |

## 2.4 Accessories

| | | | | |
|---|---|---|---|---|
| **AC Adapter** | Brand Name | MI | Model Name | MDY-12-EJ |
| | Manufacturer | Salcomp | | |
| | Power Rating | I/P: 100 - 240 Vac, 50/60Hz, 1.7A,<br>Normal O/P:5.0Vdc, 3.0A, 15W,<br>fast O/P: 5.0 - 20 Vdc, 6.2 - 3.25A, 67W | | |
| **Battery 1** | Brand Name | MI | Model Name | BN5E |
| | Manufacturer | Dongguan Amperex Technology Limited | | |
| | Power Rating | 3.87 Vdc, 4900 mAh | Type | Li-ion |
| **Battery 2** | Brand Name | MI | Model Name | BN5E |
| | Manufacturer | Zhejiang sunwoda electronic Co., Ltd | | |
| | Power Rating | 3.87 Vdc, 4900 mAh | Type | Li-ion |
| **USB Cable 1** | Brand Name | MI | Model Name | H26250 |
| | Manufacturer | Dehong | | |
| | Signal Line | 1.0 meter, non-shielded cable, without ferrite core | | |
| **USB Cable 2** | Brand Name | MI | Model Name | L26250 |
| | Manufacturer | Lux | | |
| | Signal Line | 1.0 meter, non-shielded cable, without ferrite core | | |

Reminder: Regarding to more detail and other information, please refer to user manual.

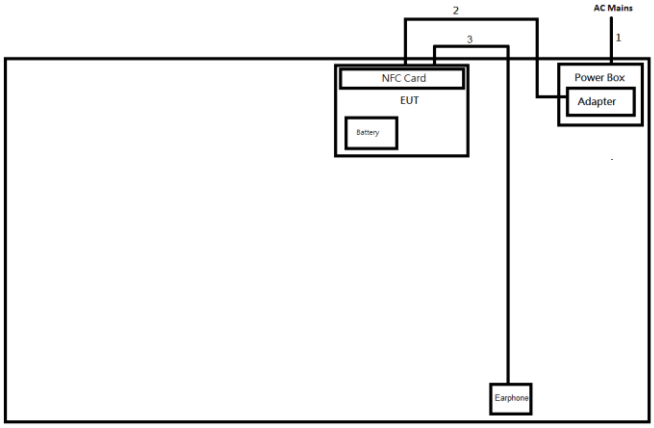
## 2.5 Support Equipment

| Support Equipment – AC Conduction and Radiated | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** | **Remark** |
| 1 | Notebook | HP | HSTNN-142C | - | - |
| 2 | AC Power Cable | Power sync | AC Power Cable | - | - |
| 3 | Adapter (For NB) | HP | HSTNN-CA40 | - | - |
| 4 | Earphone | MI | EM023 | - | Provided by Customer |
| 5 | NFC Card | Sporton | Sporton | - | Provided by Sporton |

| Support Equipment – Conducted | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** | **Remark** |
| 1 | DC Power Supply | GW | GPS-3030DD | - | - |
| 2 | NFC Card | Sporton | Sporton | - | Provided by Sporton |

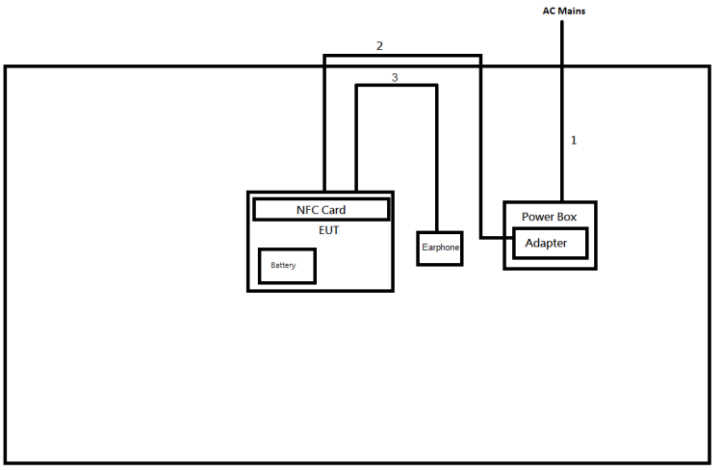
## 2.6 Test Setup Diagram

**Test Setup Diagram – AC Line Conducted Emission Test**




| Item | Connection | Shielded | Length(m) | Remark |
|---|---|---|---|---|
| 1 | AC Power cable | No | 1.8 | - |
| 2 | USB cable | No | 1.0 | - |
| 2 | Audio cable | No | 1.25 | - |

**Test Setup Diagram - Radiated Test**




| Item | Connection | Shielded | Length(m) | Remark |
|---|---|---|---|---|
| 1 | AC Power cable | No | 1.8 | - |
| 2 | USB cable | No | 1.0 | - |
| 2 | Audio cable | No | 1.25 | - |

# 3 Transmitter Test Result

## 3.1 AC Power-line Conducted Emissions

### 3.1.1 AC Power-line Conducted Emissions Limit

| AC Power-line Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

### 3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.1.3 Test Procedures

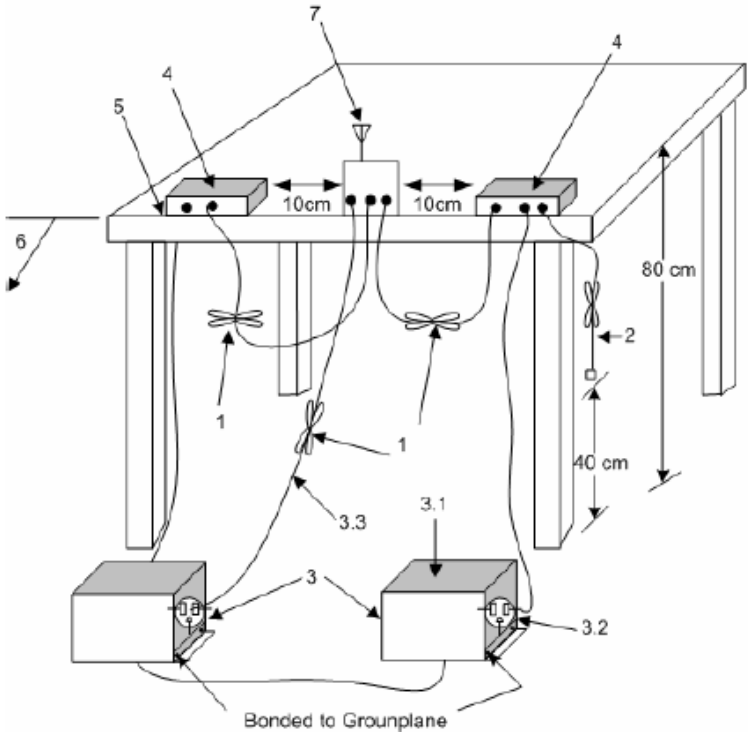
| Test Method | |
|---|---|
| ☒ | Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions. |
| ☒ | If AC conducted emissions fall in operating band, then following below test method confirm final result. |
| ☐ | Accept measurements done with a suitable dummy load replacing the antenna under the following conditions:<br>(1) Perform the AC line conducted tests with the antenna connected to determine compliance with FCC 15.207 limits outside the transmitter's fundamental emission band;<br>(2) Retest with a dummy load to determine compliance with FCC 15.207 limits within the transmitter's fundamental emission band. |
| ☒ | For a device with a permanent antenna operating at or below 30 MHz, accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions:<br>(1) Perform the AC line conducted tests with the permanent antenna to determine compliance with the FCC 15.207 limits outside the transmitter's fundamental emission band;<br>(2) Retest with a dummy load in lieu of the permanent antenna to determine compliance with the FCC 15.207 limits within the transmitter's fundamental emission band. |

### 3.1.4 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Raw(Read Level) +LISN(LISN Factor) + CL(Cable Loss) + AT(Attenuator).

### 3.1.5 Test Setup

**AC Power-line Conducted Emissions**




1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50Ωloads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

### 3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

## 3.2 Emission Bandwidth

### 3.2.1 Emission Bandwidth Limit

| 20dB Bandwidth Limit |
|---|
| ☒ Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (13.553 – 13.567). |

### 3.2.2 Measuring Instruments

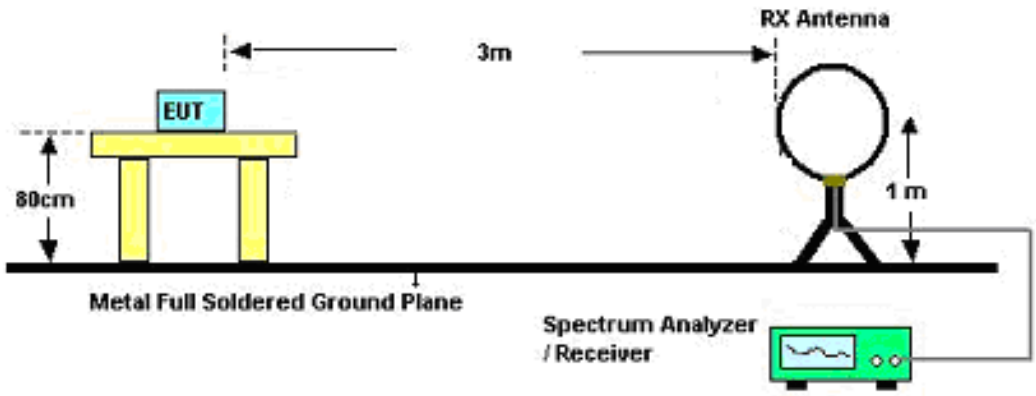
Refer a test equipment and calibration data table in this test report.

### 3.2.3 Test Procedures

| Test Method |
|---|
| ☒ Because the measured signal is CW or CW-like adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW. |
| ☒ For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level. |

### 3.2.4 Test Setup

**Emission Bandwidth**




### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

# 3.3 Frequency Stability

## 3.3.1 Frequency Stability Limit

| Frequency Stability Limit |
|---|
| ☒ Carrier frequency stability shall be maintained to ±0.01% (±100 ppm). |

## 3.3.2 Measuring Instruments

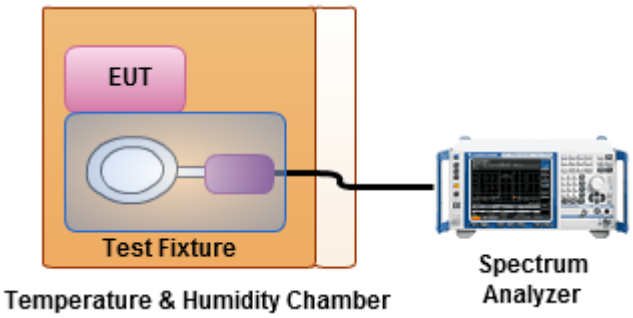
Refer a test equipment and calibration data table in this test report.

## 3.3.3 Test Procedures

| Test Method | |
|---|---|
| ☒ | Refer as ANSI C63.10, clause 6.8 for frequency stability tests |
| | ☒ Frequency stability with respect to ambient temperature |
| | ☒ Frequency stability when varying supply voltage |
| ☐ | For conducted measurement. |
| ☒ | For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level. |

## 3.3.4 Test Setup

**Frequency Stability**




## 3.3.5 Test Result of Frequency Stability

Refer as Appendix C

# 3.4 Field Strength of Fundamental Emissions and Spectrum Mask

## 3.4.1 Field Strength of Fundamental Emissions and Spectrum Mask Limit

| Field Strength of Fundamental Emissions | | | | | |
|---|---|---|---|---|---|
| **Emissions** | **(uV/m)@30m** | **(dBuV/m)@30m** | **(dBuV/m)@10m** | **(dBuV/m)@3m** | **(dBuV/m)@1m** |
| fundamental | 15848 | 84.0 | 103.1 | 124.0 | 143.1 |
| Quasi peak measurement of the fundamental. | | | | | |

| Spectrum Mask | | | | | |
|---|---|---|---|---|---|
| **Freq. of Emission (MHz)** | **(uV/m)@30m** | **(dBuV/m)@30m** | **(dBuV/m)@10m** | **(dBuV/m)@3m** | **(dBuV/m)@1m** |
| 1.705~13.110 | 30 | 29.5 | 48.6 | 69.5 | 88.6 |
| 13.110~13.410 | 106 | 40.5 | 59.6 | 80.5 | 99.6 |
| 13.410~13.553 | 334 | 50.5 | 69.6 | 90.5 | 109.6 |
| 13.553~13.567 | 15848 | 84.0 | 103.1 | 124.0 | 143.1 |
| 13.567~13.710 | 334 | 50.5 | 69.6 | 90.5 | 109.6 |
| 13.710~14.010 | 106 | 40.5 | 59.6 | 80.5 | 99.6 |
| 14.010~30.000 | 30 | 29.5 | 48.6 | 69.5 | 88.6 |

## 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

## 3.4.3 Test Procedures

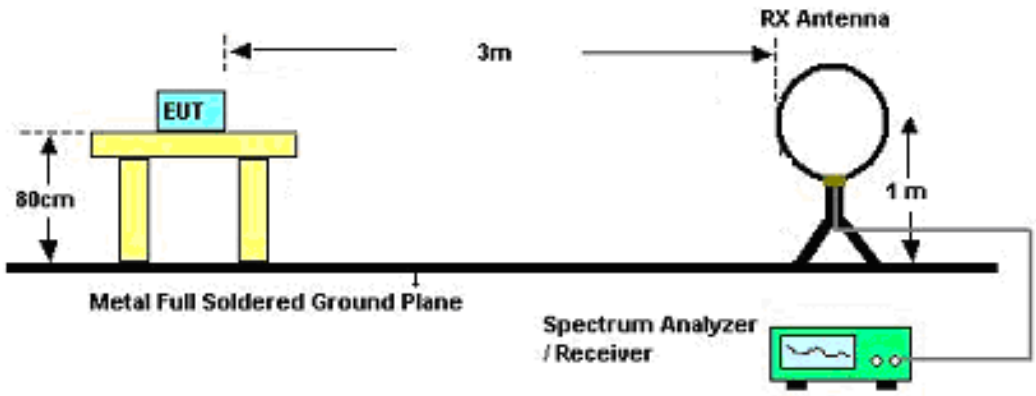
| Test Method | |
|---|---|
| ☒ | Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz and test distance is 3m. |
| ☒ | At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods. |
| ☐ | The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor. |
| ☒ | The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade). |
| ☒ | For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level. |

## 3.4.4 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor).

### 3.4.5 Test Setup

**Field Strength of Fundamental Emissions and Spectrum Mask**




### 3.4.6 Test Result of Field Strength of Fundamental Emissions and Spectrum Mask

Refer as Appendix C

# 3.5 Transmitter Radiated Unwanted Emissions

## 3.5.1 Transmitter Radiated Unwanted Emissions Limit

| Transmitter Radiated Unwanted Emissions Limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

## 3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.5.3 Test Procedures

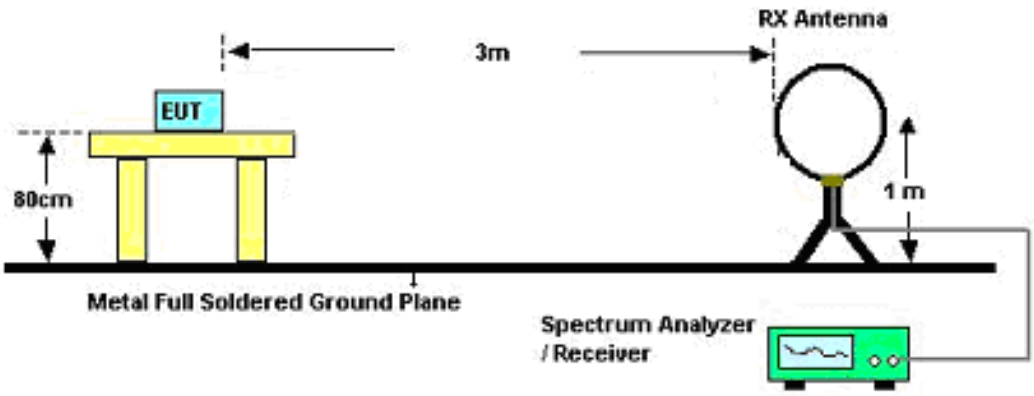
| Test Method | | |
|---|---|---|
| ☒ | Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m. | |
| ☒ | Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz and test distance is 3m. | |
| ☒ | At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods. | |
| | ☐ | The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor. |
| | ☒ | The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade). |
| ☒ | For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level. | |
| ☒ | The any unwanted emissions level shall not exceed the fundamental emission level. | |
| ☒ | All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported. | |
| ☒ | KDB 414788 D01 v01r01 Open-Field Test Sites and Chamber Correlation Justification. | |
| | ▪ | Based on FCC 15.31(f)(2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field. |
| | ▪ | Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result. |

### 3.5.4 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

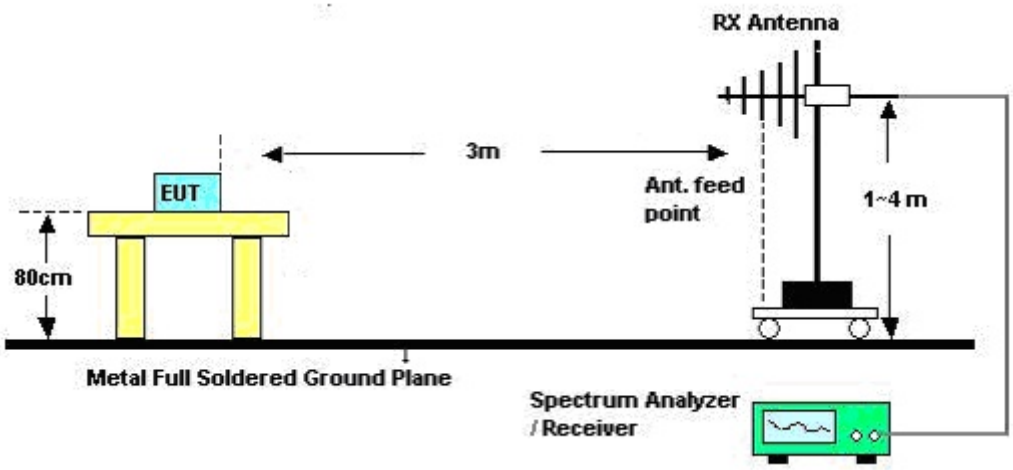
### 3.5.5 Test Setup

**Transmitter Radiated Unwanted Emissions**




Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. The center of the loop shall be 1 m above the ground.

**Transmitter Radiated Bandedge Emissions**




Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna. the antenna height shall be varied from 1 m to 4 m.

### 3.5.6 Transmitter Radiated Unwanted Emissions

Refer as Appendix D

# 4 Test Equipment and Calibration Data

**Instrument for AC Conduction**

| Instrument | Manufacturer / Brand | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|---|
| EMI Test Receiver | R&S | ESR3 | 102051 | 9kHz ~ 3.6GHz | 21/May/2021 | 20/May/2022 |
| LISN | R&S | ENV216 | 101274 | 9kHz ~ 30MHz | 13/May/2021 | 12/May/2022 |
| LISN (Support Unit) | SCHWARZBECK MESS-ELEKTRONIK | NSLK 8127 | 8127477 | 9kHz ~ 30MHz | 25/Feb/2021 | 24/Feb/2022 |
| RF Cable 5m | TITAN | TITAN | CO04-cable-01 | 0.1MHz~200MHz | 03/Mar/2021 | 02/Mar/2022 |

**Instrument for Conducted Test**

| Instrument | Manufacturer / Brand | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|---|
| Signal Analyzer | R&S | FSV 40 | 101013 | 10Hz~40GHz | 30/Mar/2021 | 29/Mar/2022 |
| Programmable Temp. & Humi. Chamber | Giant Force | GTH-225-20-SP-SD | MAA1112-007 | -20~100℃ | 21/May/2021 | 20/May/2022 |
| SMB100A Signal Generator | R&S | SMB100A03 | 181147 | 100kHz~40GHz | 21/Oct/2021 | 20/Oct/2022 |
| Pulse Sensor | Anritsu | MA2411B | 0917017 | 300MHz~40GHz | 23/Feb/2021 | 22/Feb/2022 |
| Power Meter | Anritsu | ML2495A | 0949003 | 300MHz~40GHz | 23/Feb/2021 | 22/Feb/2022 |

**Instrument for Radiated Test**

| Instrument | Manufacturer / Brand | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|---|
| 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH02-HY | 30MHz~1GHz 3m | 02/Aug/2021 | 01/Aug/2022 |
| Signal Analyzer | R&S | FSP40 | 100593 | 9kHz~40GHz | 12/Mar/2021 | 11/Mar/2022 |
| Amplifier | Agilent | 8447D | 2944A11149 | 100kHz~1.3GHz | 29/Jun/2021 | 28/Jun/2022 |
| Bilog Antenna & 5dB Attenuator | SCHAFFNER / MTJ | CBL 6112B / MTJ6102-05 | 2723 / 2 | 30MHz~1GHz | 04/Sep/2021 | 03/Sep/2022 |
| RF Cable | MVE | 400LL | MVE-1-0802 | 9kHz~30MHz | 05/May/2021 | 04/May/2022 |
| RF Cable | MVE | 400LL | MVE-1-0802 | 30MHz~1GHz | 05/May/2021 | 04/May/2022 |
| Loop Antenna | TESEQ | HLA 6120 | 31244 | 9kHz~30MHz | 16/Mar/2021 | 15/Mar/2022 |
| EMI Test Receiver | R&S | ESR3 | 102052 | 9kHz~3.6GHz | 19/Apr/2021 | 18/Apr/2022 |

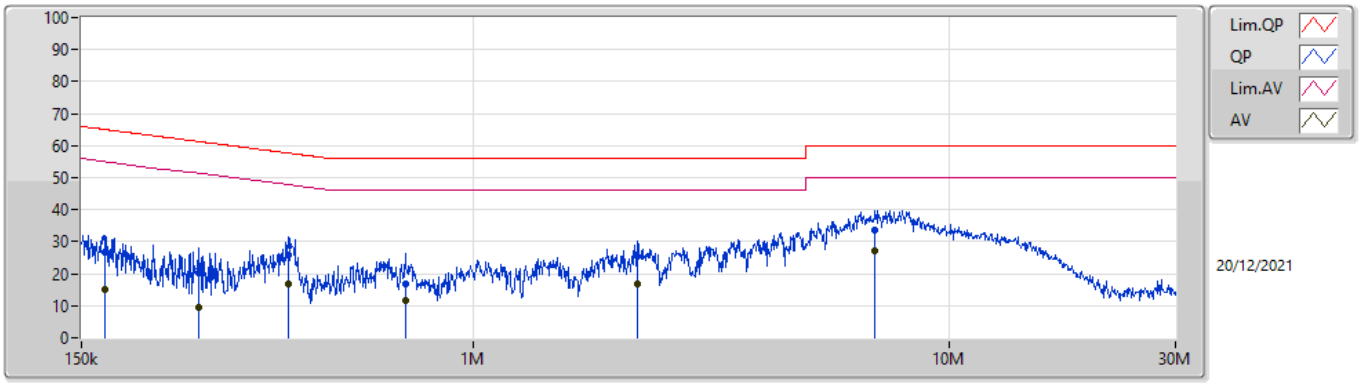
**Summary**

| Mode | Result | Type | Freq (Hz) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | AV | 7.009M | 27.18 | 50.00 | -22.82 | Line |

**Mode Configure**

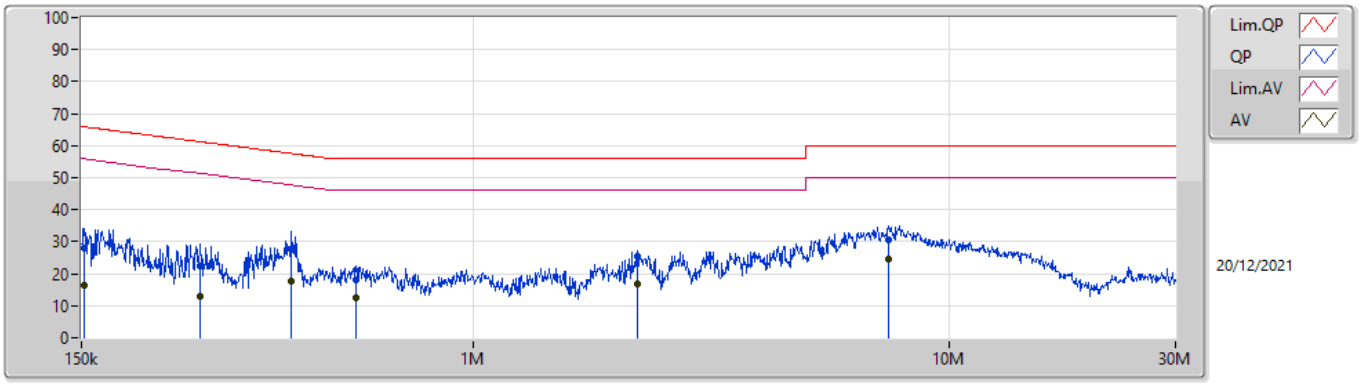
| Mode | Result | Type | Freq (Hz) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Condition | Comments |
|---|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | QP | 167.739k | 26.61 | 65.06 | -38.45 | Line | - |
| Mode 1 | Pass | AV | 167.739k | 15.23 | 55.06 | -39.83 | Line | - |
| Mode 1 | Pass | QP | 265.468k | 20.35 | 61.26 | -40.91 | Line | - |
| Mode 1 | Pass | AV | 265.468k | 9.30 | 51.26 | -41.96 | Line | - |
| Mode 1 | Pass | QP | 408.557k | 25.88 | 57.68 | -31.80 | Line | - |
| Mode 1 | Pass | AV | 408.557k | 16.84 | 47.68 | -30.84 | Line | - |
| Mode 1 | Pass | QP | 720.179k | 16.89 | 56.00 | -39.11 | Line | - |
| Mode 1 | Pass | AV | 720.179k | 11.66 | 46.00 | -34.34 | Line | - |
| Mode 1 | Pass | QP | 2.211M | 25.57 | 56.00 | -30.43 | Line | - |
| Mode 1 | Pass | AV | 2.211M | 16.61 | 46.00 | -29.39 | Line | - |
| Mode 1 | Pass | QP | 7.009M | 33.70 | 60.00 | -26.30 | Line | - |
| Mode 1 | Pass | AV | 7.009M | 27.18 | 50.00 | -22.82 | Line | - |
| Mode 1 | Pass | QP | 152.414k | 28.21 | 65.87 | -37.66 | Neutral | - |
| Mode 1 | Pass | AV | 152.414k | 16.59 | 55.87 | -39.28 | Neutral | - |
| Mode 1 | Pass | QP | 266.53k | 22.23 | 61.22 | -38.99 | Neutral | - |
| Mode 1 | Pass | AV | 266.53k | 12.75 | 51.22 | -38.47 | Neutral | - |
| Mode 1 | Pass | QP | 415.134k | 27.63 | 57.55 | -29.92 | Neutral | - |
| Mode 1 | Pass | AV | 415.134k | 17.79 | 47.55 | -29.76 | Neutral | - |
| Mode 1 | Pass | QP | 566.784k | 18.10 | 56.00 | -37.90 | Neutral | - |
| Mode 1 | Pass | AV | 566.784k | 12.49 | 46.00 | -33.51 | Neutral | - |
| Mode 1 | Pass | QP | 2.211M | 25.48 | 56.00 | -30.52 | Neutral | - |
| Mode 1 | Pass | AV | 2.211M | 16.70 | 46.00 | -29.30 | Neutral | - |
| Mode 1 | Pass | QP | 7.471M | 30.70 | 60.00 | -29.30 | Neutral | - |
| Mode 1 | Pass | AV | 7.471M | 24.69 | 50.00 | -25.31 | Neutral | - |

## Conducted Emissions at Powerline_Mode 1




| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | LISN | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 167.739k | 26.61 | 65.06 | -38.45 | 9.98 | Line | - | 16.63 | 0.03 | 0.04 | 9.91 |
| AV | 167.739k | 15.23 | 55.06 | -39.83 | 9.98 | Line | - | 5.25 | 0.03 | 0.04 | 9.91 |
| QP | 265.468k | 20.35 | 61.26 | -40.91 | 10.00 | Line | - | 10.35 | 0.04 | 0.05 | 9.91 |
| AV | 265.468k | 9.30 | 51.26 | -41.96 | 10.00 | Line | - | -0.70 | 0.04 | 0.05 | 9.91 |
| QP | 408.557k | 25.88 | 57.68 | -31.80 | 10.01 | Line | - | 15.87 | 0.04 | 0.06 | 9.91 |
| AV | 408.557k | 16.84 | 47.68 | -30.84 | 10.01 | Line | - | 6.83 | 0.04 | 0.06 | 9.91 |
| QP | 720.179k | 16.89 | 56.00 | -39.11 | 10.04 | Line | - | 6.85 | 0.05 | 0.07 | 9.92 |
| AV | 720.179k | 11.66 | 46.00 | -34.34 | 10.04 | Line | - | 1.62 | 0.05 | 0.07 | 9.92 |
| QP | 2.211M | 25.57 | 56.00 | -30.43 | 10.11 | Line | - | 15.46 | 0.08 | 0.11 | 9.92 |
| AV | 2.211M | 16.61 | 46.00 | -29.39 | 10.11 | Line | - | 6.50 | 0.08 | 0.11 | 9.92 |
| QP | 7.009M | 33.70 | 60.00 | -26.30 | 10.28 | Line | - | 23.42 | 0.17 | 0.18 | 9.93 |
| AV | 7.009M | 27.18 | 50.00 | -22.82 | 10.28 | Line | - | 16.90 | 0.17 | 0.18 | 9.93 |

## Conducted Emissions at Powerline_Mode 1




| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | LISN | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 152.414k | 28.21 | 65.87 | -37.66 | 9.99 | Neutral | - | 18.22 | 0.04 | 0.04 | 9.91 |
| AV | 152.414k | 16.59 | 55.87 | -39.28 | 9.99 | Neutral | - | 6.60 | 0.04 | 0.04 | 9.91 |
| QP | 266.53k | 22.23 | 61.22 | -38.99 | 10.00 | Neutral | - | 12.23 | 0.04 | 0.05 | 9.91 |
| AV | 266.53k | 12.75 | 51.22 | -38.47 | 10.00 | Neutral | - | 2.75 | 0.04 | 0.05 | 9.91 |
| QP | 415.134k | 27.63 | 57.55 | -29.92 | 10.01 | Neutral | - | 17.62 | 0.04 | 0.06 | 9.91 |
| AV | 415.134k | 17.79 | 47.55 | -29.76 | 10.01 | Neutral | - | 7.78 | 0.04 | 0.06 | 9.91 |
| QP | 566.784k | 18.10 | 56.00 | -37.90 | 10.02 | Neutral | - | 8.08 | 0.04 | 0.07 | 9.91 |
| AV | 566.784k | 12.49 | 46.00 | -33.51 | 10.02 | Neutral | - | 2.47 | 0.04 | 0.07 | 9.91 |
| QP | 2.211M | 25.48 | 56.00 | -30.52 | 10.10 | Neutral | - | 15.38 | 0.07 | 0.11 | 9.92 |
| AV | 2.211M | 16.70 | 46.00 | -29.30 | 10.10 | Neutral | - | 6.60 | 0.07 | 0.11 | 9.92 |
| QP | 7.471M | 30.70 | 60.00 | -29.30 | 10.30 | Neutral | - | 20.40 | 0.19 | 0.18 | 9.93 |
| AV | 7.471M | 24.69 | 50.00 | -25.31 | 10.30 | Neutral | - | 14.39 | 0.19 | 0.18 | 9.93 |

## Summary

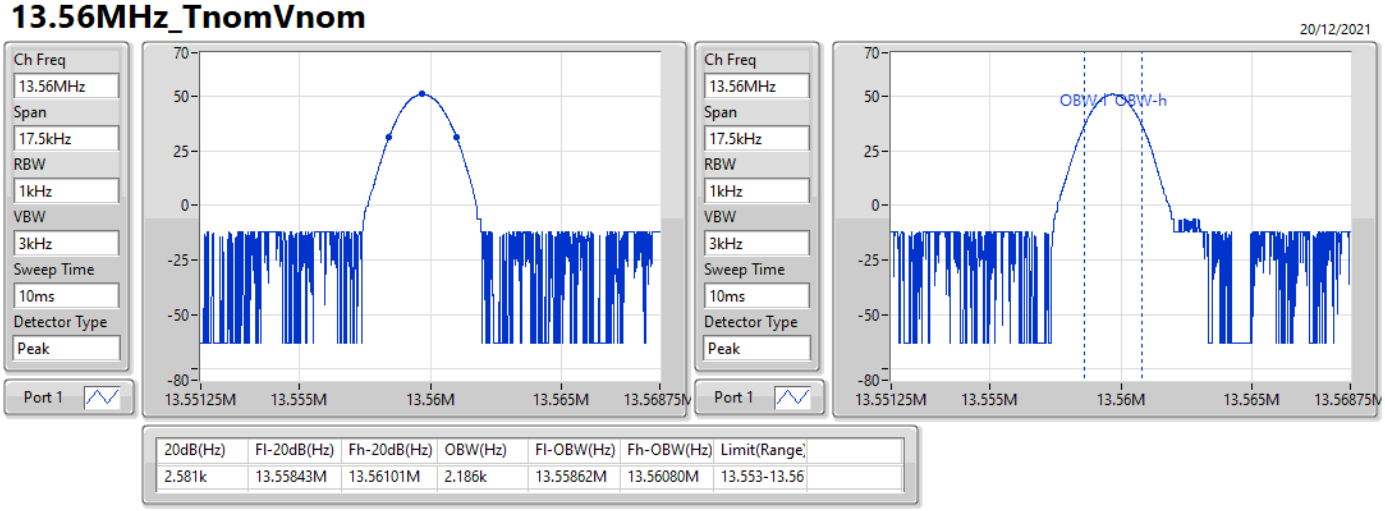
| Mode | 20dB (Hz) | Fl-20dB (Hz) | Fh-20dB (Hz) | OBW (Hz) | Limit (Range) |
|---|---|---|---|---|---|
| 13.553-13.567MHz | - | - | - | - | - |
| NFC | 2.581k | 13.55843M | 13.56101M | 2.186k | 13.553-13.567 |

## Result

| Mode | Result | 20dB (Hz) | Fl-20dB (Hz) | Fh-20dB (Hz) | OBW (Hz) | Fl-OBW (Hz) | Fh-OBW (Hz) | Limit (Range) |
|---|---|---|---|---|---|---|---|---|
| NFC | - | - | - | - | - | - | - | - |
| 13.56MHz_TnomVnom | Pass | 2.581k | 13.55843M | 13.56101M | 2.186k | 13.55862M | 13.56080M | 13.553-13.567 |

**NFC** **EBW**

**13.56MHz_TnomVnom**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Range |
|---|---|---|---|---|---|---|
| 2.581k | 13.55843M | 13.56101M | 2.186k | 13.55862M | 13.56080M | 13.553-13.56 |

## Summary

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB) | Dist (m) | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13.553-13.567MHz | - | - | - | - | - | - | - | - | - | - | - |
| NFC | Pass | PK | 1.702M | 53.51 | 63.02 | -9.51 | 20.61 | 3 | 0 | 1.00 | - |

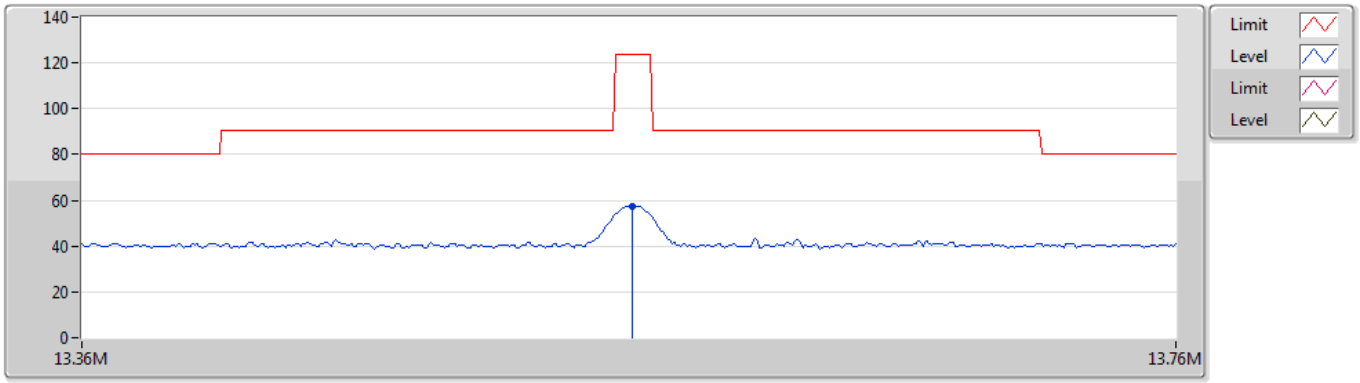
## Result

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB) | Dist (m) | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NFC | - | - | - | - | - | - | - | - | - | - | - |
| 13.56MHz_Adapter | Pass | PK | 13.56M | 57.36 | 124.00 | -66.64 | 23.33 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 10.128k | 55.57 | 127.46 | -71.89 | 19.33 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 35.226k | 50.22 | 116.65 | -66.43 | 21.43 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 111.93k | 53.55 | 106.61 | -53.06 | 20.19 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 388.8k | 56.89 | 95.80 | -38.91 | 20.72 | 3 | 0 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 1.105M | 49.09 | 66.77 | -17.68 | 20.69 | 3 | 0 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 1.702M | 53.51 | 63.02 | -9.51 | 20.61 | 3 | 0 | 1.00 | - |

## NFC Operating below 30MHz

16/12/2021

### 13.56MHz_Adapter

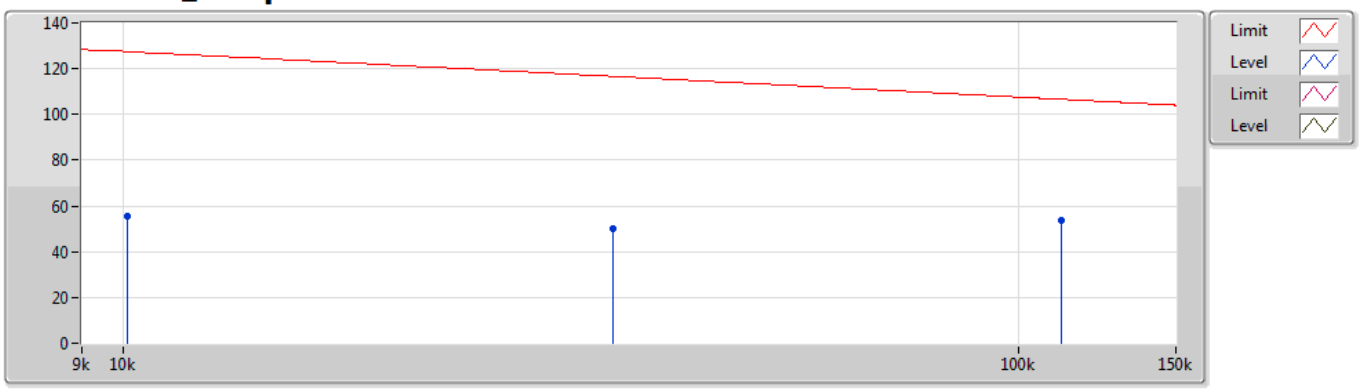



| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) | (dB) | (dB) | (dB) |
| PK | 13.56M | 57.36 | 124.00 | -66.64 | 23.33 | 3 | Horizontal | 360 | 1.00 | - | 34.03 | 22.65 | 0.68 | - |

## NFC Operating below 30MHz

16/12/2021

## 13.56MHz_Adapter

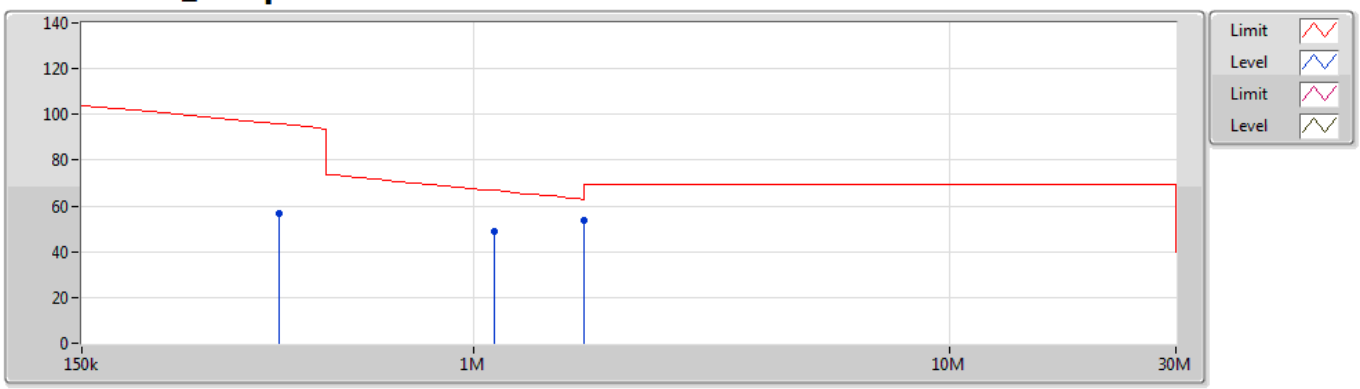



| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) | (dB) | (dB) | (dB) |
| PK | 10.128k | 55.57 | 127.46 | -71.89 | 19.33 | 3 | Horizontal | 360 | 1.00 | - | 36.24 | 19.13 | 0.20 | - |
| PK | 35.226k | 50.22 | 116.65 | -66.43 | 21.43 | 3 | Horizontal | 360 | 1.00 | - | 28.79 | 21.21 | 0.22 | - |
| PK | 111.93k | 53.55 | 106.61 | -53.06 | 20.19 | 3 | Horizontal | 360 | 1.00 | - | 33.36 | 19.96 | 0.23 | - |

## NFC Operating below 30MHz

16/12/2021

## 13.56MHz_Adapter




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) | (dB) | (dB) | (dB) |
| PK | 388.8k | 56.89 | 95.80 | -38.91 | 20.72 | 3 | Horizontal | 0 | 1.00 | - | 36.17 | 20.45 | 0.27 | - |
| PK | 1.105M | 49.09 | 66.77 | -17.68 | 20.69 | 3 | Horizontal | 0 | 1.00 | - | 28.40 | 20.37 | 0.32 | - |
| PK | 1.702M | 53.51 | 63.02 | -9.51 | 20.61 | 3 | Horizontal | 0 | 1.00 | - | 32.90 | 20.25 | 0.36 | - |

## Summary

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB) | Dist (m) | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13.553-13.567MHz | - | - | - | - | - | - | - | - | - | - | - |
| NFC | Pass | PK | 423.82M | 37.12 | 46.00 | -8.88 | -3.29 | 3 | 360 | 1.00 | - |

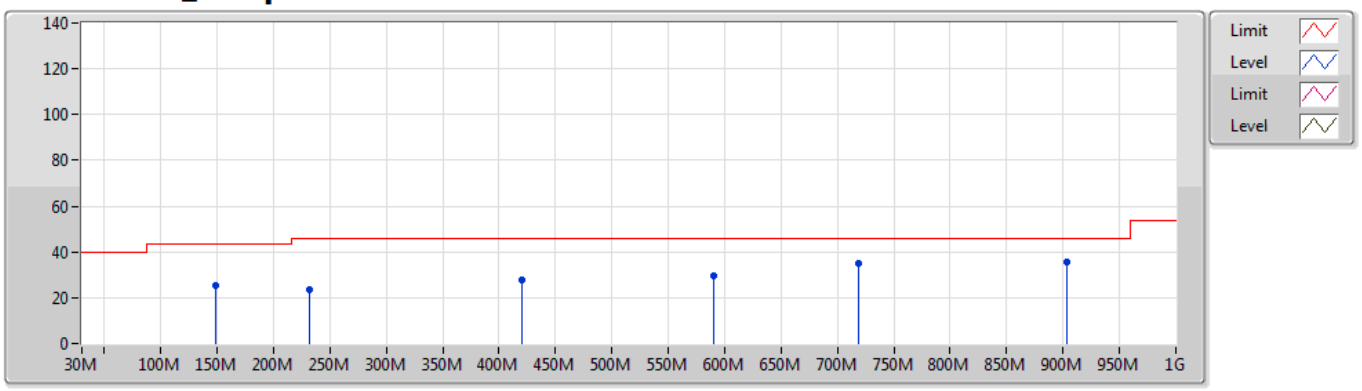
## Result

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB) | Dist (m) | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NFC | - | - | - | - | - | - | - | - | - | - | - |
| 13.56MHz_Adapter | Pass | PK | 148.34M | 25.19 | 43.50 | -18.31 | -10.16 | 3 | 0 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 231.76M | 23.46 | 46.00 | -22.54 | -9.52 | 3 | 0 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 419.94M | 27.53 | 46.00 | -18.47 | -3.30 | 3 | 0 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 590.66M | 29.67 | 46.00 | -16.33 | -1.20 | 3 | 0 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 718.7M | 35.03 | 46.00 | -10.97 | -0.12 | 3 | 0 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 903M | 35.89 | 46.00 | -10.11 | 2.30 | 3 | 0 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 167.74M | 23.14 | 43.50 | -20.36 | -10.73 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 272.5M | 26.16 | 46.00 | -19.84 | -6.78 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 423.82M | 37.12 | 46.00 | -8.88 | -3.29 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 648.86M | 30.62 | 46.00 | -15.38 | -0.56 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 745.86M | 35.89 | 46.00 | -10.11 | 0.47 | 3 | 360 | 1.00 | - |
| 13.56MHz_Adapter | Pass | PK | 947.62M | 34.32 | 46.00 | -11.68 | 2.95 | 3 | 360 | 1.00 | - |

## NFC Operating above 30MHz

16/12/2021

## 13.56MHz_Adapter

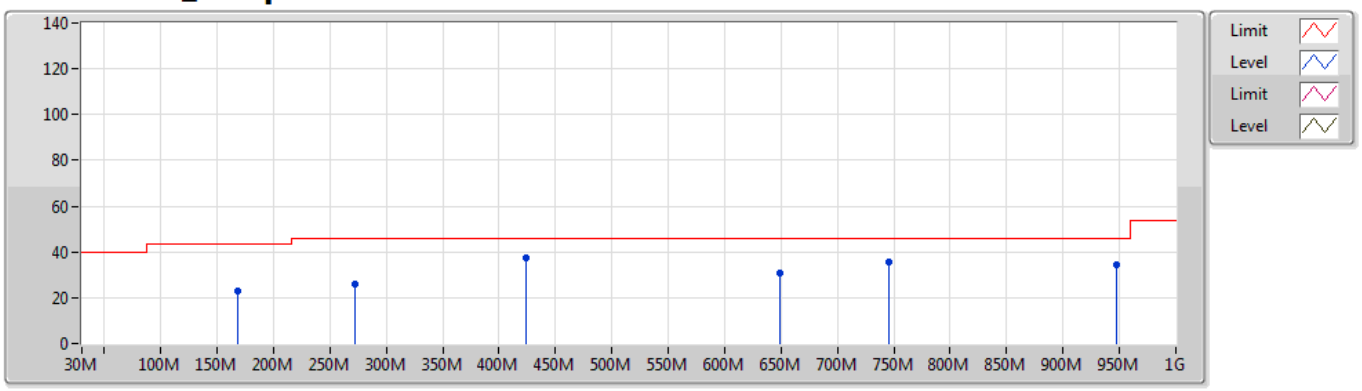



| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) | (dB) | (dB) | (dB) |
| PK | 148.34M | 25.19 | 43.50 | -18.31 | -10.16 | 3 | Vertical | 0 | 1.00 | - | 35.35 | 15.72 | 1.69 | 27.57 |
| PK | 231.76M | 23.46 | 46.00 | -22.54 | -9.52 | 3 | Vertical | 0 | 1.00 | - | 32.98 | 15.53 | 2.08 | 27.13 |
| PK | 419.94M | 27.53 | 46.00 | -18.47 | -3.30 | 3 | Vertical | 0 | 1.00 | - | 30.83 | 21.80 | 2.80 | 27.90 |
| PK | 590.66M | 29.67 | 46.00 | -16.33 | -1.20 | 3 | Vertical | 0 | 1.00 | - | 30.87 | 23.87 | 3.34 | 28.41 |
| PK | 718.7M | 35.03 | 46.00 | -10.97 | -0.12 | 3 | Vertical | 0 | 1.00 | - | 35.15 | 24.42 | 3.64 | 28.18 |
| PK | 903M | 35.89 | 46.00 | -10.11 | 2.30 | 3 | Vertical | 0 | 1.00 | - | 33.59 | 25.68 | 4.11 | 27.49 |

## NFC Operating above 30MHz

16/12/2021

### 13.56MHz_Adapter




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) | (dB) | (dB) | (dB) |
| PK | 167.74M | 23.14 | 43.50 | -20.36 | -10.73 | 3 | Horizontal | 360 | 1.00 | - | 33.87 | 14.97 | 1.80 | 27.50 |
| PK | 272.5M | 26.16 | 46.00 | -19.84 | -6.78 | 3 | Horizontal | 360 | 1.00 | - | 32.94 | 18.02 | 2.24 | 27.04 |
| PK | 423.82M | 37.12 | 46.00 | -8.88 | -3.29 | 3 | Horizontal | 360 | 1.00 | - | 40.41 | 21.81 | 2.82 | 27.92 |
| PK | 648.86M | 30.62 | 46.00 | -15.38 | -0.56 | 3 | Horizontal | 360 | 1.00 | - | 31.18 | 24.20 | 3.45 | 28.21 |
| PK | 745.86M | 35.89 | 46.00 | -10.11 | 0.47 | 3 | Horizontal | 360 | 1.00 | - | 35.42 | 24.86 | 3.69 | 28.08 |
| PK | 947.62M | 34.32 | 46.00 | -11.68 | 2.95 | 3 | Horizontal | 360 | 1.00 | - | 31.37 | 26.06 | 4.18 | 27.29 |

**Summary**

| Mode | Result | Ch (Hz) | Center (Hz) | ppm | Limit (ppm) | Port | Remark |
|---|---|---|---|---|---|---|---|
| 13.553-13.567MHz | - | - | - | - | - | - | - |
| NFC | Pass | 13.56M | 13.559717M | 20.9045 | 100 | 1 | 2 min |

## Result

| Mode | Result | Ch (Hz) | Center (Hz) | ppm | Limit (ppm) | Port | Remark |
|---|---|---|---|---|---|---|---|
| NFC | - | - | - | - | - | - | - |
| 13.56MHz_-20°C | Pass | 13.56M | 13.559771M | 16.9042 | 100 | 1 | 0 min |
| 13.56MHz_-20°C | Pass | 13.56M | 13.559774M | 16.6462 | 100 | 1 | 2 min |
| 13.56MHz_-20°C | Pass | 13.56M | 13.559777M | 16.4526 | 100 | 1 | 5 min |
| 13.56MHz_-20°C | Pass | 13.56M | 13.559759M | 17.743 | 100 | 1 | 10 min |
| 13.56MHz_-10°C | Pass | 13.56M | 13.559781M | 16.13 | 100 | 1 | 0 min |
| 13.56MHz_-10°C | Pass | 13.56M | 13.559774M | 16.6462 | 100 | 1 | 2 min |
| 13.56MHz_-10°C | Pass | 13.56M | 13.559779M | 16.3236 | 100 | 1 | 5 min |
| 13.56MHz_-10°C | Pass | 13.56M | 13.559776M | 16.5171 | 100 | 1 | 10 min |
| 13.56MHz_0°C | Pass | 13.56M | 13.559782M | 16.0655 | 100 | 1 | 0 min |
| 13.56MHz_0°C | Pass | 13.56M | 13.559786M | 15.8074 | 100 | 1 | 2 min |
| 13.56MHz_0°C | Pass | 13.56M | 13.55978M | 16.259 | 100 | 1 | 5 min |
| 13.56MHz_0°C | Pass | 13.56M | 13.55978M | 16.259 | 100 | 1 | 10 min |
| 13.56MHz_10°C | Pass | 13.56M | 13.559785M | 15.8719 | 100 | 1 | 0 min |
| 13.56MHz_10°C | Pass | 13.56M | 13.559789M | 15.5493 | 100 | 1 | 2 min |
| 13.56MHz_10°C | Pass | 13.56M | 13.559783M | 16.0009 | 100 | 1 | 5 min |
| 13.56MHz_10°C | Pass | 13.56M | 13.559785M | 15.8719 | 100 | 1 | 10 min |
| 13.56MHz_20°C | Pass | 13.56M | 13.559772M | 16.8397 | 100 | 1 | 0 min |
| 13.56MHz_20°C | Pass | 13.56M | 13.559773M | 16.7752 | 100 | 1 | 2 min |
| 13.56MHz_20°C | Pass | 13.56M | 13.559773M | 16.7752 | 100 | 1 | 5 min |
| 13.56MHz_20°C | Pass | 13.56M | 13.559781M | 16.13 | 100 | 1 | 10 min |
| 13.56MHz_30°C | Pass | 13.56M | 13.559788M | 15.6138 | 100 | 1 | 0 min |
| 13.56MHz_30°C | Pass | 13.56M | 13.559736M | 19.485 | 100 | 1 | 2 min |
| 13.56MHz_30°C | Pass | 13.56M | 13.559773M | 16.7752 | 100 | 1 | 5 min |
| 13.56MHz_30°C | Pass | 13.56M | 13.559776M | 16.5171 | 100 | 1 | 10 min |
| 13.56MHz_40°C | Pass | 13.56M | 13.559755M | 18.0656 | 100 | 1 | 0 min |
| 13.56MHz_40°C | Pass | 13.56M | 13.559752M | 18.3237 | 100 | 1 | 2 min |
| 13.56MHz_40°C | Pass | 13.56M | 13.559759M | 17.8075 | 100 | 1 | 5 min |
| 13.56MHz_40°C | Pass | 13.56M | 13.559753M | 18.1946 | 100 | 1 | 10 min |
| 13.56MHz_50°C | Pass | 13.56M | 13.559755M | 18.0656 | 100 | 1 | 0 min |
| 13.56MHz_50°C | Pass | 13.56M | 13.559717M | 20.9045 | 100 | 1 | 2 min |
| 13.56MHz_50°C | Pass | 13.56M | 13.559728M | 20.0657 | 100 | 1 | 5 min |
| 13.56MHz_50°C | Pass | 13.56M | 13.559772M | 16.8397 | 100 | 1 | 10 min |
| 13.56MHz_20°C-4.45V | Pass | 13.56M | 13.55978M | 16.1945 | 100 | 1 | 0 min |
| 13.56MHz_20°C-4.45V | Pass | 13.56M | 13.559776M | 16.5171 | 100 | 1 | 2 min |
| 13.56MHz_20°C-4.45V | Pass | 13.56M | 13.559775M | 16.5816 | 100 | 1 | 5 min |
| 13.56MHz_20°C-4.45V | Pass | 13.56M | 13.559774M | 16.6462 | 100 | 1 | 10 min |
| 13.56MHz_20°C-3.87V | Pass | 13.56M | 13.559776M | 16.5171 | 100 | 1 | 0 min |
| 13.56MHz_20°C-3.87V | Pass | 13.56M | 13.559776M | 16.5171 | 100 | 1 | 2 min |
| 13.56MHz_20°C-3.87V | Pass | 13.56M | 13.559777M | 16.4526 | 100 | 1 | 5 min |
| 13.56MHz_20°C-3.87V | Pass | 13.56M | 13.559772M | 16.8397 | 100 | 1 | 10 min |
| 13.56MHz_20°C-3.28V | Pass | 13.56M | 13.559778M | 16.3881 | 100 | 1 | 0 min |
| 13.56MHz_20°C-3.28V | Pass | 13.56M | 13.55977M | 16.9687 | 100 | 1 | 2 min |
| 13.56MHz_20°C-3.28V | Pass | 13.56M | 13.559776M | 16.5171 | 100 | 1 | 5 min |

| Mode | Result | Ch (Hz) | Center (Hz) | ppm | Limit (ppm) | Port | Remark |
|---|---|---|---|---|---|---|---|
| 13.56MHz_20°C-3.28V | Pass | 13.56M | 13.559787M | 15.7429 | 100 | 1 | 10 min |