



# **TEST REPORT**

Applicant Name: CWELL TECHNOLOGY CO., LTD

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Lai Chi Kok Kowloon, Hong Kong

Report Number: SZNS220808-35867E-RF-00D

FCC ID: 2A8NJ-W555

Test Standard (s)

FCC PART 15.225

**Sample Description** 

Product Type: 4G Smartphone

Model No.: W555

Multiple Model(s) No.: W555C,W555H(Please refer to DOS for Model difference)

Trade Mark: UNIWA
Date Received: 2022/08/08
Report Date: 2022/09/08

Test Result: Pass\*

**Prepared and Checked By:** 

**Approved By:** 

Roger, Ling

Roger Ling

**EMC** Engineer

•

Candy Li EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "\* ".

Shenzhen Accurate Technology Co., Ltd. is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk \*\*. Customer model name, addresses, names, trademarks etc. are not considered data.

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<sup>\*</sup> In the configuration tested, the EUT complied with the standards above.

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### **GENERALINFORMATION**

### **Product Description for Equipment under Test (EUT)**

| Frequency Range          | 13.56 MHz   |
|--------------------------|---|
| E-field Strength         | 83.57dBuV/m@3m  |
| Modulation Technique     | ASK   |
| Voltage Range            | DC 3.7V from battery or DC 5V from adapter  |
| Sample serial number     | SZNS220808-35867E-RF-S1 (Assigned by ATC)   |
| Sample/EUT Status        | Good condition  |
| Normal/Extreme Condition | L.V.: Low Voltage $3.5V_{DC}$<br>N.V.: Normal Voltage $3.7V_{DC}$<br>H.V.: High Voltage $4.2V_{DC}$ |
| Adapter information      | Model: A-0718<br>Input: AC 100-240V, 50/60Hz,0.3A<br>Output: DC 5V, 2A                              |

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# **Objective**

This Type approval report is in accordance with Part 2- Subpart J, and Part 15-Subparts A and C of the Federal Communication Commissions rules.

The objective is to determine the compliance of the EUT with FCC rules, section 15.203, 15.205, 15.207, 15.209 and 15.225.

### **Test Methodology**

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

#### **Measurement Uncertainty**

| Parameter              |                    | Uncertainty            |
|------------------------|--------------------|------------------------|
| Occupied Char          | nnel Bandwidth     | 5%                     |
| RF Fre                 | equency            | 0.082*10 <sup>-7</sup> |
| RF output pov          | wer, conducted     | 0.73dB                 |
| Unwanted Emis          | ssion, conducted   | 1.6dB                  |
| AC Power Lines C       | onducted Emissions | 2.72dB                 |
|                        | 9kHz - 30MHz       | 2.66dB                 |
|                        | 30MHz - 1GHz       | 4.28dB                 |
| Emissions,<br>Radiated | 1GHz - 18GHz       | 4.98dB                 |
| Radiated               | 18GHz -26.5GHz     | 5.06dB                 |
|                        | 26.5GHz -40GHz     | 4.72dB                 |
| Temperature            |                    | 1℃                     |
| Hun                    | nidity             | 6%                     |
| Supply                 | voltages           | 0.4%                   |

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

### **Test Facility**

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

# SYSTEM TEST CONFIGURATION

### Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

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### **EUT Exercise Software**

No Exercise Software was used.

# **Equipment Modifications**

No modification on the EUT.

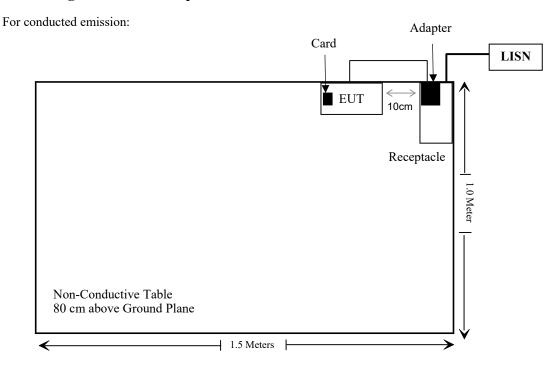
# **Support Equipment List and Details**

| Manufacturer | cturer Description Model |         | Serial Number |  |
|--------------|--------------------------|---------|---------------|--|
| Unknown      | Card                     | Unknown | Unknown       |  |

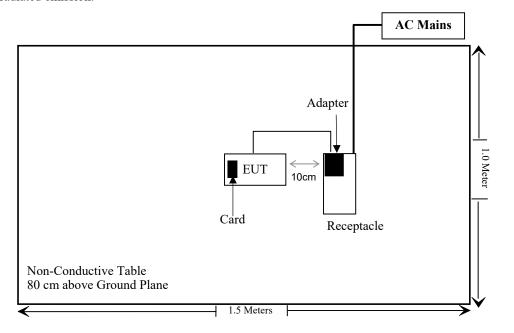
### **External I/O Cable**

| Cable Description                 | Length (m) | From Port | То      |
|-----------------------------------|------------|-----------|---------|
| Un-shielding Detachable USB Cable | 1.0        | EUT       | Adapter |

# **Block Diagram of Test Setup**



For radiated emission:



# **SUMMARY OF TEST RESULTS**

| FCC Rules                    | Description of Test        | Result    |
|------------------------------|----------------------------|-----------|
| §15.203                      | Antenna Requirement        | Compliant |
| §15.207                      | AC Line Conducted Emission | Compliant |
| \$15.225<br>\$15.209\$15.205 | Radiated Emission Test     | Compliant |
| §15.225(e)                   | Frequency Stability        | Compliant |
| §15.215(c)                   | 20dB Emission Bandwidth    | Compliant |

| Manufacturer             | Description Model Serial Number |                  | Calibration<br>Date | Calibration<br>Due Date |            |  |  |
|--------------------------|---------------------------------|------------------|---------------------|-------------------------|------------|--|--|
| Conducted Emissions Test |                                 |                  |                     |                         |            |  |  |
| Rohde& Schwarz           | EMI Test Receiver               | ESCI             | 100784              | 2021/12/13              | 2022/12/12 |  |  |
| Rohde & Schwarz          | L.I.S.N.                        | ENV216           | 101314              | 2021/12/13              | 2022/12/12 |  |  |
| Anritsu Corp             | 50 Coaxial Switch               | MP59B            | 6100237248          | 2021/12/13              | 2022/12/12 |  |  |
| Unknown                  | RF Coaxial Cable                | No.17            | N0350               | 2021/12/14              | 2022/12/13 |  |  |
| Conducted Emission Tes   | st Software: e3 19821b (V       | (9)              |                     | •                       |            |  |  |
|                          | Radia                           | ated Emission Te | est                 |                         |            |  |  |
| Rohde& Schwarz           | Test Receiver                   | ESR              | 102725              | 2021/12/13              | 2022/12/12 |  |  |
| SONOMA<br>INSTRUMENT     | Amplifier                       | 310 N            | 186131              | 2021/11/09              | 2022/11/08 |  |  |
| SCHWARZBECK              | LOOP ANTENNA                    | FMZB1516         | 1516131             | 2021/12/22              | 2024/12/21 |  |  |
| Schwarzbeck              | Bilog Antenna                   | VULB9163         | 9163-323            | 2021/07/06              | 2024/07/05 |  |  |
| Radiated Emission Test   | Software: e3 19821b (V9)        | )                |                     |                         |            |  |  |
| Unknown                  | RF Coaxial Cable                | No.12            | N040                | 2021/12/14              | 2022/12/13 |  |  |
| Unknown                  | RF Coaxial Cable                | No.13            | N300                | 2021/12/14              | 2022/12/13 |  |  |
| Unknown                  | RF Coaxial Cable                | No.14            | N800                | 2021/12/14              | 2022/12/13 |  |  |
| Gongwen                  | Temp. & Humid.<br>Chamber       | HSD-500          | 109                 | 2021/10/14              | 2022/10/13 |  |  |
|                          | Fre                             | quency Stability | ,                   |                         | _          |  |  |
| Rohde& Schwarz           | Test Receiver                   | ESR              | 102725              | 2021/12/13              | 2022/12/12 |  |  |
| SCHWARZBECK              | LOOP ANTENNA                    | FMZB1516         | 1516131             | 2020/01/05              | 2023/01/04 |  |  |
| Gongwen                  | Temp. & Humid.<br>Chamber       | HSD-500          | 109                 | 2021/10/14              | 2022/10/13 |  |  |
| Fluke                    | Multi Meter                     | 45               | 7664009             | 2021/12/14              | 2022/12/13 |  |  |
| Manson                   | DC Power Source                 | KPS-6604         | ATCS-205            | NCR                     | NCR        |  |  |

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<sup>\*</sup> Statement of Traceability: Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

# FCC§15.203 - ANTENNA REQUIREMENT

#### **Applicable Standard**

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 shall be considered sufficient to comply with the provisions of this section.

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#### **Antenna Connected Construction**

The EUT has one internal antenna arrangement for NFC which was permanently attached; fulfill the requirement of this section. Please refer to the EUT photos.

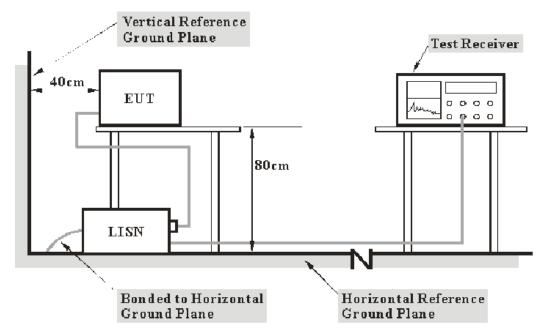
Result: Compliant.

# FCC §15.207 - AC LINE CONDUCTED EMISSION

#### **Applicable Standard**

FCC§15.207

#### **EUT Setup**



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Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

#### **EMI Test Receiver Setup**

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| Frequency Range | IF B/W |
|-----------------|--------|
| 150 kHz – 30MHz | 9 kHz  |

#### **Test Procedure**

During the conducted emission test, the adapter of Host was connected to the outlet of the LISN.

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Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

#### **Corrected Factor & Margin Calculation**

The Corrected factor is calculated by addingLISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

Correction Factor = LISN VDF + Cable Loss

The "Over Limit" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7dB means the emission is 7 dB below the limit. The equation for margincal culation is as follows:

Over limit = Result – Limit Result = Reading + Factor

#### **Test Data**

#### **Environmental Conditions**

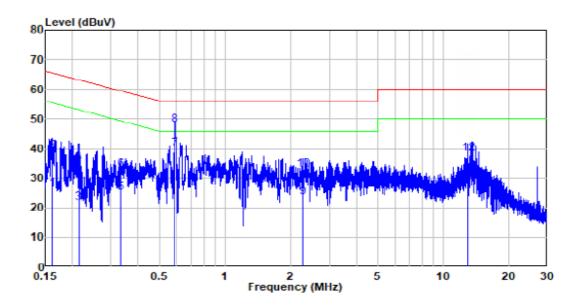
| Temperature:       | 24°C      |
|--------------------|-----------|
| Relative Humidity: | 42%       |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Jason on 2022-08-24.

Test mode: Transmitting

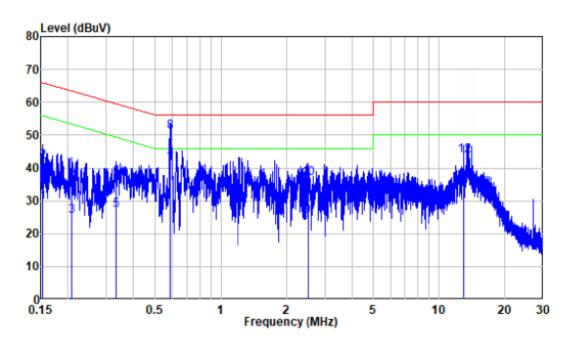
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# AC 120 V/60 Hz, Line:



|    | Fred   | Factor   | Read<br>Level | Level | Limit<br>Line | Over   | Remark  |
|----|--------|----------|---------------|-------|---------------|--------|---------|
|    |        | , ac coi |               |       |               |        | remar k |
|    | MHz    | dB       | dBuV          | dBuV  | dBuV          | dB     |         |
| 1  | 0.161  | 9.80     | 16.32         | 26.12 | 55.39         | -29.27 | Average |
| 2  | 0.161  | 9.80     | 29.32         | 39.12 | 65.39         | -26.27 | QP      |
| 3  | 0.213  | 9.80     | 12.02         | 21.82 | 53.08         | -31.26 | Average |
| 4  | 0.213  | 9.80     | 25.13         | 34.93 | 63.08         | -28.15 | QP      |
| 5  | 0.334  | 9.80     | 15.33         | 25.13 | 49.35         | -24.22 | Average |
| 6  | 0.334  | 9.80     | 23.10         | 32.90 | 59.35         | -26.45 | QP      |
| 7  | 0.589  | 9.81     | 29.92         | 39.73 | 46.00         | -6.27  | Average |
| 8  | 0.589  | 9.81     | 38.14         | 47.95 | 56.00         | -8.05  | QP      |
| 9  | 2.279  | 9.82     | 13.79         | 23.61 | 46.00         | -22.39 | Average |
| 10 | 2.279  | 9.82     | 23.08         | 32.90 | 56.00         | -23.10 | QP      |
| 11 | 12.980 | 9.93     | 16.68         | 26.61 | 50.00         | -23.39 | Average |
| 12 | 12.980 | 9.93     | 28.47         | 38.40 | 60.00         | -21.60 | OP      |

# **AC 120V/ 60 Hz, Neutral:**



|    |        |        | Read  |       | Limit | 0ver   |         |
|----|--------|--------|-------|-------|-------|--------|---------|
|    | Freq   | Factor | Level | Level | Line  | Limit  | Remark  |
|    | MHz    | dB     | dBuV  | dBuV  | dBuV  | dB     |         |
| 1  | 0.153  | 9.80   | 19.64 | 29.44 | 55.83 | -26.39 | Average |
| 2  | 0.153  | 9.80   | 32.23 | 42.03 | 65.83 | -23.80 | QP      |
| 3  | 0.208  | 9.80   | 15.57 | 25.37 | 53.28 | -27.91 | Average |
| 4  | 0.208  | 9.80   | 27.32 | 37.12 | 63.28 | -26.16 | QP      |
| 5  | 0.333  | 9.80   | 17.44 | 27.24 | 49.39 | -22.15 | Average |
| 6  | 0.333  | 9.80   | 27.23 | 37.03 | 59.39 | -22.36 | QP      |
| 7  | 0.589  | 9.81   | 31.13 | 40.94 | 46.00 | -5.06  | Average |
| 8  | 0.589  | 9.81   | 41.23 | 51.04 | 56.00 | -4.96  | QP      |
| 9  | 2.510  | 9.83   | 15.64 | 25.47 | 46.00 | -20.53 | Average |
| 10 | 2.510  | 9.83   | 26.87 | 36.70 | 56.00 | -19.30 | QP      |
| 11 | 12.980 | 10.03  | 25.76 | 35.79 | 50.00 | -14.21 | Average |
| 12 | 12.980 | 10.03  | 33.60 | 43.63 | 60.00 | -16.37 | QP      |

# FCC§15.225, §15.205& §15.209 - RADIATED EMISSIONS TEST

#### **Applicable Standard**

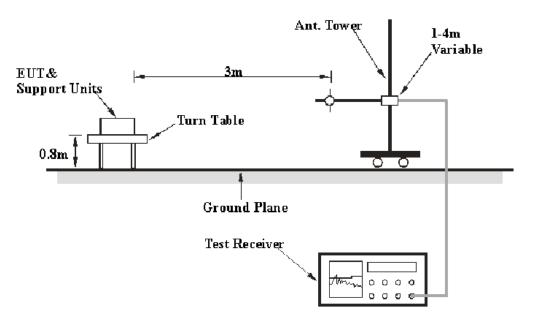
As per FCC Part 15.225

- (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

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- (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

#### **EUT Setup**



Note: Antenna is set up at 1m during test for below 30MHz.

The radiated emission tests were performed in the 3-meter chamber a test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

#### **EMI Test Receiver Setup**

According to FCC Rules, 47 CFR 15.33, the EUT emissions were investigated up to 1000 MHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

| Frequency Range  | RBW     | Video B/W | IF B/W | Detector |
|------------------|---------|-----------|--------|----------|
| 9 kHz – 150 kHz  | 300 Hz  | 1kHz      | /      | QP       |
| 150 kHz –30MHz   | 10 kHz  | 30 kHz    | /      | QP       |
| 30MHz – 1000 MHz | 100 kHz | 300 kHz   | /      | QP       |

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#### **Corrected Amplitude & Margin Calculation**

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Factor = Antenna Factor + Cable Loss- Amplifier Gain Corrected Amplitude= Meter Reading + Corrected Factor

The "Over Limit or Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over Limit / Margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Over Limit / Margin = Level / Result – Limit Level / Result = Reading level + Factor

#### **Test Data**

#### **Environmental Conditions**

| Temperature:       | 27°C      |
|--------------------|-----------|
| Relative Humidity: | 57 %      |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Level Li on 2022-09-06 for below 30MHz and on 2022-08-24 for above 30MHz.

Test mode: Transmitting(Pre-scan in the X,Y and Z axes of orientation, the worst case X-axes of orientation was recorded)

Note: when the result of Peak below the limit of QP more than 6dB, just the peak value was record.

1) Spurious Emissions (9 kHz~30 MHz):

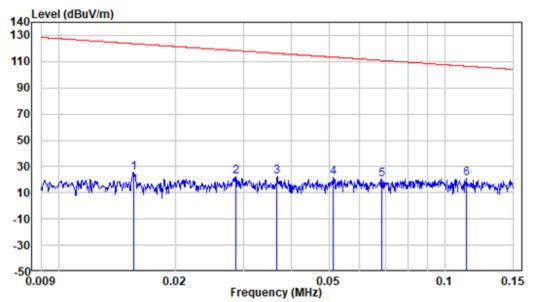
Part 15 Section 15.31(f)(2) (9kHz-30MHz)

Limit @ 3m=Limit @ 300m-40\*log(3(m)/300(m))

Limit @ 3m = Limit @ 30m - 40\*log(3(m)/30(m))

### Ground-parallel

### $9 \text{ kHz} \sim 150 \text{ kHz}$



Site : chamber

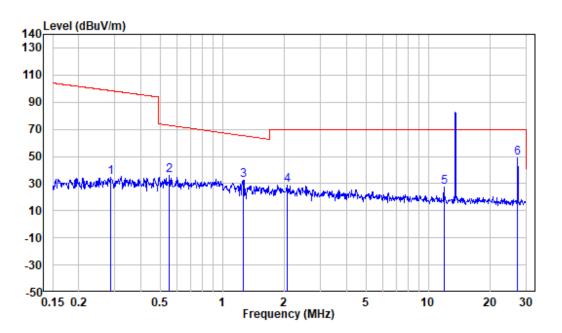
Condition: 3m

Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Ground-parallel

|   | Freq  | Factor |       |        | Limit<br>Line |        | Remark |
|---|-------|--------|-------|--------|---------------|--------|--------|
|   | MHz   | dB/m   | dBuV  | dBuV/m | dBuV/m        | dB     |        |
| 1 | 0.016 | -11.54 | 36.82 | 25.28  | 123.73        | -98.45 | Peak   |
| 2 | 0.029 | -11.64 | 34.17 | 22.53  | 118.43        | -95.90 | Peak   |
| 3 | 0.037 | -11.60 | 33.71 | 22.11  | 116.30        | -94.19 | Peak   |
| 4 | 0.051 | -11.53 | 33.04 | 21.51  | 113.42        | -91.91 | Peak   |
| 5 | 0.068 | -11.57 | 31.64 | 20.07  | 110.90        | -90.83 | Peak   |
| 6 | 0.114 | -11.71 | 32.44 | 20.73  | 106.50        | -85.77 | Peak   |

#### 150 kHz~30 MHz



Site : chamber

Condition: 3m

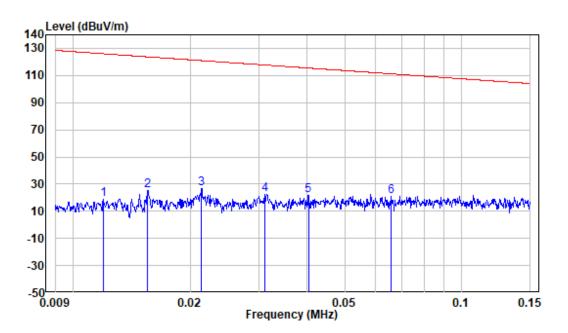
Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Ground-parallel

|   | Freq   | Factor |       |        | Limit<br>Line |        | Remark |
|---|--------|--------|-------|--------|---------------|--------|--------|
|   | MHz    | dB/m   | dBuV  | dBuV/m | dBuV/m        | dB     |        |
| 1 | 0.288  | -11.83 | 46.26 | 34.43  | 98.42         | -63.99 | Peak   |
| 2 | 0.552  | -11.66 | 47.73 | 36.07  | 72.74         | -36.67 | Peak   |
| 3 |        | -11.52 | 44.26 | 32.74  | 65.36         | -32.62 | Peak   |
| 4 |        | -11.35 | 40.43 | 29.08  | 69.54         | -40.46 | Peak   |
| 5 | 11.933 | -10.90 | 38.28 | 27.38  | 69.54         | -42.16 | Peak   |
| 6 | 27.127 | -9.97  | 58.84 | 48.87  | 69.54         | -20.67 | Peak   |

Perpendicular

### 9 kHz~150 kHz



Site : chamber

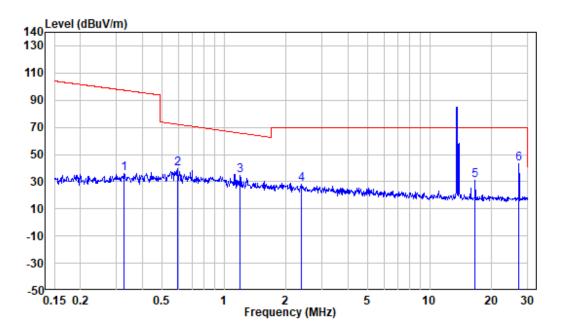
Condition: 3m

Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Perpendicular

|   | Freq  | Factor |       |        |        | Over<br>Limit | Remark |
|---|-------|--------|-------|--------|--------|---------------|--------|
|   | MHz   | dB/m   | dBuV  | dBuV/m | dBuV/m | dB            |        |
| 1 | 0.012 | -11.43 | 30.00 | 18.57  | 126.05 | -107.48       | Peak   |
| 2 | 0.016 | -11.54 | 37.03 | 25.49  | 123.75 | -98.26        | Peak   |
| 3 | 0.021 | -11.69 | 38.63 | 26.94  | 120.99 | -94.05        | Peak   |
| 4 | 0.031 | -11.63 | 34.23 | 22.60  | 117.72 | -95.12        | Peak   |
| 5 | 0.040 | -11.58 | 33.30 | 21.72  | 115.49 | -93.77        | Peak   |
| 6 | 0.066 | -11.56 | 32.86 | 21.30  | 111.22 | -89.92        | Peak   |

#### 150 kHz~30 MHz



Site : chamber

Condition: 3m

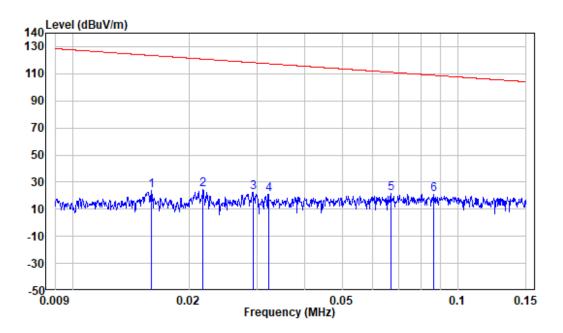
Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Perpendicular

|   | Freq   | Factor |       |        | Limit<br>Line |        | Remark |
|---|--------|--------|-------|--------|---------------|--------|--------|
|   | MHz    | dB/m   | dBuV  | dBuV/m | dBuV/m        | dB     |        |
| 1 | 0.327  | -11.79 | 47.97 | 36.18  | 97.32         | -61.14 | Peak   |
| 2 | 0.598  | -11.72 | 51.10 | 39.38  | 72.03         | -32.65 | Peak   |
| 3 | 1.197  | -11.53 | 45.99 | 34.46  | 65.88         | -31.42 | Peak   |
| 4 | 2.384  | -11.54 | 39.79 | 28.25  | 69.54         | -41.29 | Peak   |
| 5 | 16.661 | -10.59 | 41.26 | 30.67  | 69.54         | -38.87 | Peak   |
| 6 | 27.127 | -9.97  | 52.86 | 42.89  | 69.54         | -26.65 | Peak   |

#### Parallel

### 9 kHz~150 kHz



Site : chamber

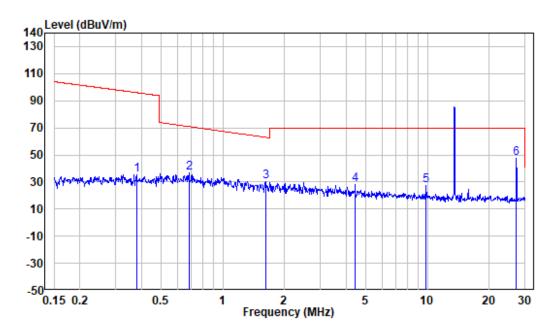
Condition: 3m

Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Parallel

|   | Freq  | Factor |       |        | Limit<br>Line |        | Remark |
|---|-------|--------|-------|--------|---------------|--------|--------|
|   | MHz   | dB/m   | dBuV  | dBuV/m | dBuV/m        | dB     |        |
| 1 | 0.016 | -11.56 | 35.50 | 23.94  | 123.51        | -99.57 | Peak   |
| 2 | 0.022 | -11.69 | 36.04 | 24.35  | 120.85        | -96.50 | Peak   |
| 3 | 0.029 | -11.64 | 33.84 | 22.20  | 118.26        | -96.06 | Peak   |
| 4 | 0.032 | -11.63 | 32.78 | 21.15  | 117.45        | -96.30 | Peak   |
| 5 | 0.067 | -11.57 | 33.60 | 22.03  | 111.10        | -89.07 | Peak   |
| 6 | 0.086 | -11.57 | 32.77 | 21.20  | 108.90        | -87.70 | Peak   |

#### 150 kHz~30 MHz



Site : chamber

Condition: 3m

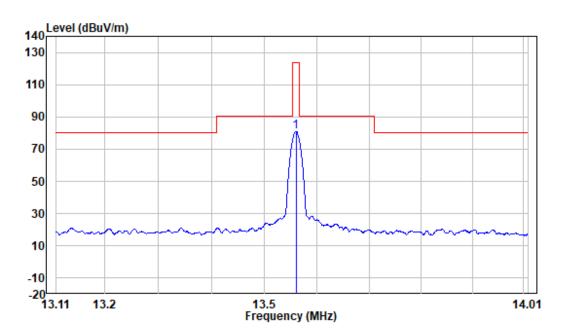
Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Parallel

|   | Freq   | Factor |       |        | Limit<br>Line |        | Remark |
|---|--------|--------|-------|--------|---------------|--------|--------|
|   | MHz    | dB/m   | dBuV  | dBuV/m | dBuV/m        | dB     |        |
| 1 | 0.379  | -11.73 | 46.74 | 35.01  | 96.03         | -61.02 | Peak   |
| 2 | 0.683  | -11.84 | 48.95 | 37.11  | 70.86         | -33.75 | Peak   |
| 3 | 1.619  | -11.43 | 41.87 | 30.44  | 63.20         | -32.76 | Peak   |
| 4 | 4.430  | -11.69 | 40.19 | 28.50  | 69.54         | -41.04 | Peak   |
| 5 | 9.861  | -10.98 | 38.67 | 27.69  | 69.54         | -41.85 | Peak   |
| 6 | 27.127 | -9.97  | 57.29 | 47.32  | 69.54         | -22.22 | Peak   |

### 2) Emission Mask & Fundamental:

### Ground-parallel



Site : chamber

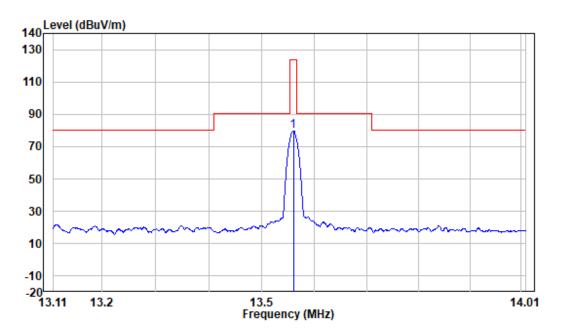
Condition: 3m

Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Ground-parallel

|   | Freq | Factor |  | Limit<br>Line |              | Remark |
|---|------|--------|--|---------------|--------------|--------|
| 1 |      | dB/m   |  |               | dB<br>-42.96 | Peak   |

# Perpendicular:



Site : chamber

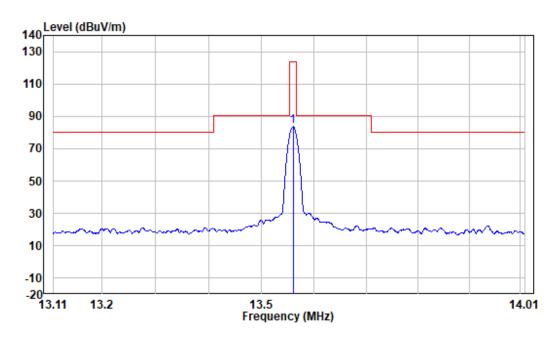
Condition: 3m

Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Perpendicular

|   | Freq   | Factor |       | Level |        | Over<br>Limit | Remark |
|---|--------|--------|-------|-------|--------|---------------|--------|
|   |        | dB/m   |       |       |        | dB            |        |
| 1 | 13.560 | -10.92 | 90.64 | 79.72 | 124.00 | -44.28        | Peak   |

#### Parallel:



Site : chamber

Condition: 3m

Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC Note : Parallel

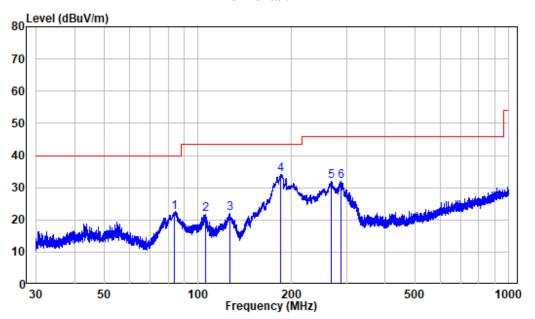
Read Limit Over
Freq Factor Level Level Line Limit Remark

MHz dB/m dBuV dBuV/m dBuV/m dB

1 13.560 -10.92 94.49 83.57 124.00 -40.43 Peak

### 3) Spurious Emissions (30 MHz~1GHz):





Site : chamber

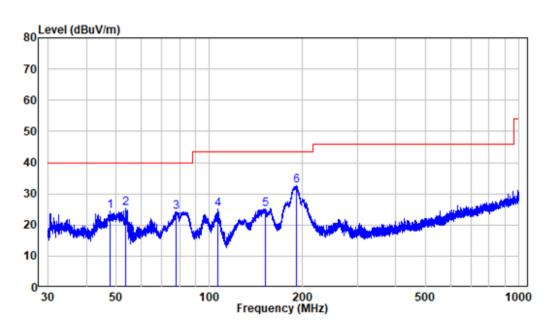
Condition: 3m HORIZONTAL

Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC

|   | Freq    | Factor |       |        | Limit<br>Line |        | Remark |
|---|---------|--------|-------|--------|---------------|--------|--------|
|   | MHz     | dB/m   | dBuV  | dBuV/m | dBuV/m        | ——dB   |        |
| 1 | 83.632  | -16.16 | 38.53 | 22.37  | 40.00         | -17.63 | Peak   |
| 2 | 105.503 | -11.88 | 33.59 | 21.71  | 43.50         | -21.79 | Peak   |
| 3 | 126.273 | -14.44 | 36.33 | 21.89  | 43.50         | -21.61 | Peak   |
| 4 | 184.652 | -12.22 | 46.37 | 34.15  | 43.50         | -9.35  | Peak   |
| 5 | 268.015 | -10.32 | 42.21 | 31.89  | 46.00         | -14.11 | Peak   |
| 6 | 287.486 | -9.37  | 41.44 | 32.07  | 46.00         | -13.93 | Peak   |

#### Vertical:



Site : chamber Condition: 3m VERTICAL

Job No. : SZNS220808-35867E-RF

Test Mode: Charging+NFC

|   | Freq    | Factor |       |        | Limit<br>Line |        | Remark |
|---|---------|--------|-------|--------|---------------|--------|--------|
|   | MHz     | dB/m   | dBuV  | dBuV/m | dBuV/m        | dB     |        |
| 1 | 47.763  | -10.00 | 34.37 | 24.37  | 40.00         | -15.63 | Peak   |
| 2 | 53.552  | -10.27 | 35.53 | 25.26  | 40.00         | -14.74 | Peak   |
| 3 | 77.763  | -16.59 | 40.80 | 24.21  | 40.00         | -15.79 | Peak   |
| 4 | 106.712 | -11.95 | 36.90 | 24.95  | 43.50         | -18.55 | Peak   |
| 5 | 151.797 | -15.17 | 40.28 | 25.11  | 43.50         | -18.39 | Peak   |
| 6 | 191.074 | -11.40 | 43.94 | 32.54  | 43.50         | -10.96 | Peak   |

# FCC§15.225(e) - FREQUENCY STABILITY

#### **Applicable Standard**

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Report No.: SZNS220808-35867E-RF-00D

#### **Test Procedure**

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and inductive antenna was connected to a Spectrum Analyzer. The EUT was placed inside the temperature chamber.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external DC power supplySource. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

#### **Test Data**

#### **Environmental Conditions**

| Temperature:       | 25°C      |
|--------------------|-----------|
| Relative Humidity: | 57%       |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Level Li on 2022-09-06.

Test Mode: Transmitting

Test Result: Pass

| Voltage Supply (V <sub>DC</sub> ) | Temperature<br>(°C) | Measured<br>Frequency<br>(MHz) | Frequency<br>Error<br>(%) | Part 15.225<br>Limit<br>(%) |
|-----------------------------------|---------------------|--------------------------------|---------------------------|-----------------------------|
| N.V.                              | -20                 | 13.559746                      | -0.00187                  | ±0.01                       |
|                                   | -10                 | 13.559714                      | -0.00211                  | ±0.01                       |
|                                   | 0                   | 13.559736                      | -0.00195                  | ±0.01                       |
|                                   | 10                  | 13.559731                      | -0.00198                  | ±0.01                       |
|                                   | 20                  | 13.559726                      | -0.00202                  | ±0.01                       |
|                                   | 30                  | 13.559717                      | -0.00209                  | ±0.01                       |
|                                   | 40                  | 13.559701                      | -0.00221                  | ±0.01                       |
|                                   | 50                  | 13.559696                      | -0.00224                  | ±0.01                       |
| L.V.                              | 20                  | 13.559720                      | -0.00206                  | ±0.01                       |
| H.V.                              | 20                  | 13.559727                      | -0.00201                  | ±0.01                       |

Note: the extreme voltage was declared by the applicant.

# FCC§15.215(c) -20dBEMISSION BANDWIDTH

#### Requirement

Per 15.215 (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Report No.: SZNS220808-35867E-RF-00D

#### **Test Procedure**

Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.

#### **Test Data**

#### **Environmental Conditions**

| Temperature:       | 25°C      |
|--------------------|-----------|
| Relative Humidity: | 57%       |
| ATM Pressure:      | 101.0 kPa |

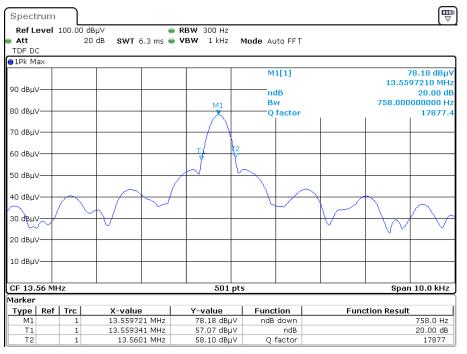
The testing was performed by Level Li on 2022-09-06.

Test Mode: Transmitting

Test Result: Pass

| Test Frequency | 20dB Bandwidth |
|----------------|----------------|
| (MHz)          | (kHz)          |
| 13.56          | 0.758          |

#### 20 dB Emission Bandwidth



Date: 6.SEP.2022 23:25:56

\*\*\*\*\* END OF REPORT \*\*\*\*\*