# FCC TEST REPORT

# FCC ID: 2AH4J-LOCK420

On Behalf of

Consumer 2.0

Rently Smart Bolt Elite

Model No.: LOCK420-8Z, LOCK420-4Z

| | | |
|---|---|---|
| Prepared for | : | Consumer 2.0 |
| Address | : | 6300 Wilshire Blvd Suite 620, Los Angeles, CA 90048, United States |

| | | |
|---|---|---|
| Prepared By | : | Shenzhen PSI Testing Co., Ltd. |
| Address | : | 1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China |

| | | |
|---|---|---|
| Report Number | : | psi2503155-C01-R03 |
| Date of Receipt | : | Dec. 24, 2024 |
| Date of Test | : | Dec. 24, 2024-Apr. 14, 2025 |
| Date of Report | : | Apr. 14, 2025 |
| Version Number | : | V0 |

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# TEST REPORT DECLARATION

| | | |
|---|---|---|
| Applicant | : | Consumer 2.0 |
| Address | : | 6300 Wilshire Blvd Suite 620, Los Angeles, CA 90048, United States |
| Manufacturer | : | Consumer 2.0 |
| Address | : | 6300 Wilshire Blvd Suite 620, Los Angeles, CA 90048, United States |
| EUT Description | : | Rently Smart Bolt Elite |
| | (A) Model No. | : LOCK420-8Z, LOCK420-4Z |
| | (B) Trademark | : N/A |

Measurement Standard Used:

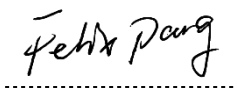
**FCC Rules and Regulations Part 15 Subpart C Section 15.225**

**ANSI C63.10:2013**

**Test Result: PASS**

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC Part 15C requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen PSI Testing Co., Ltd.

| | | |
|---|---|---|
| Tested by (name + signature).....: | Felix Pang<br>Test Engineer |  |
| Approved by (name + signature).....: | Simple Guan<br>Project Manager |  |
| Date of issue.....: | Apr. 14, 2025 | |

**Revision History**

| Revision | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V0 | Apr. 14, 2025 | Initial released Issue | Felix Pang |

# 1. General Information

## 1.1. Description of Device (EUT)

| | | |
|---|---|---|
| Product Name | : | Rently Smart Bolt Elite |
| Model No. | : | LOCK420-8Z, LOCK420-4Z |
| Diff | : | LOCK420-8Z is tested model, other models are derivative models . The models are identical in circuit, only different on the model names and battery capacity and size |
| Power supply | : | Input: DC 5V via adapter, DC 6V powered by battery |
| Radio Technology | : | NFC |
| Operation frequency | : | 13.56MHz |
| Channel No. | : | 1 Channel |
| Modulation | : | ASK |
| Antenna Type | : | PCB antenna, Antenna gain 0dBi. Antenna information is provided by applicant. |
| Software version | : | N/A |
| Hardware Version/ FVIN | : | N/A |

Note: In this report, the main test model is LOCK420-8Z, and the main test model serial number is LOCK420-4Z.

## 1.2. Accessories of Device (EUT)

Accessories 1 : N/A

Manufacturer : N/A

Model : N/A

Rating : N/A

## 1.3. Ancillary Equipment Details

| No. | Description | Manufacturer | Model | Serial Number |
|---|---|---|---|---|
| 1 | AC/DC ADAPTER | HUAWEI | HW-050450C00 | AE |
| 2 | N/A | N/A | N/A | N/A |

## 1.4. Test Lab Information

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

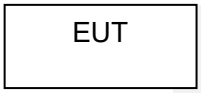
September 13, 2023 File on Federal Communication Commission
Registration Number: 916281

# 2. Summary of test

## 2.1. Summary of test result

| Description of Test Item | Standard | | Results |
|---|---|---|---|
| | FCC | IC | |
| Conducted Emission | 15.207 | RSS-GEN 8.8 | PASS |
| Radiated emissions | 15.209 | RSS-Gen 8.9 | PASS |
| Fundamental field strength limit | 15.225 | RSS 210 B.6 | PASS |
| Frequency stability | 15.225 | RSS 210 B.6 | PASS |
| 20Db Emission Bandwidth | 15.225 | RSS 210 B.6 | PASS |
| Antenna Requirement | 15.203 | RSS-GEN(6.8) | PASS |

## 2.2. Block Diagram




## 2.3. Test mode

| Tested mode, channel, and data rate information | | |
|---|---|---|
| Mode | Channel | Frequency(MHz) |
| 1 | CH1 | 13.56 |
| Note: According exploratory test, EUT will have maximum output power in those data rate. So those data rate were used for all test. | | |

## 2.4. Test Conditions

| | |
|---|---|
| Temperature range | 21-25℃ |
| Humidity range | 40-75% |
| Pressure range | 86-106kPa |

## 2.5. Measurement Uncertainty (95% confidence levels, k=2)

| Item | Uncertainty |
|---|---|
| Uncertainty for Power point Conducted Emissions Test | 2.17dB |
| Uncertainty for Radiation Emission test in 3m chamber (below 30MHz) | 3.5dB |
| Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz) | 2.74dB(Polarize: V) |
| | 2.76dB(Polarize: H) |
| Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz) | 4.29dB(Polarize: V) |
| | 4.82dB(Polarize: H) |
| Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz) | 4.31dB(Polarize: V) |
| | 4.30dB(Polarize: H) |
| Uncertainty for radio frequency | 48.24KHz |
| Uncertainty for conducted RF Power | 0.41dB |
| Uncertainty for Power Spectral Density | 0.39 dB |

## 2.6. Test Equipment

| Item | Equipment | Manufacturer | Model No. | Serial No. | Firmware Version | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|---|
| 1. | 9*6*6 anechoic chamber | SKET | 9*6*6 | N/A | / | 2022.12.20 | 3 Year |
| 2. | Test Receiver | Rohde&Schwarz | ESCI 7 | 101032/003 | 4.42 SP3 | 2024.12.18 | 1 Year |
| 3. | L.I.S.N.#1 | Rohde&Schwarz | ENV216 | 102282 | / | 2024.12.18 | 1 Year |
| 4. | L.I.S.N.#2 | RFT | NNB111 | 13835240 | / | 2024.12.18 | 1 Year |
| 5. | Loop Antenna | Schwarz beck | FMZB 1519B | 00128 | / | 2025.01.02 | 2 Year |
| 6. | Bilog Antenna | Schwarz beck | VULB 9168 | 01448 | / | 2025.01.02 | 2 Year |
| 7. | Spectrum Analyzer | Rohde&Schwarz | FSV-40N | 101648 | 3.70 | 2024.12.18 | 1 Year |
| 8. | Horn Antenna | Schwarz beck | BBHA 9120 D | 02706 | / | 2025.01.02 | 2 Year |
| 9. | Amplifier | SKET | LAPA_01G18G-45dB | SK2022032901 | / | 2024.12.18 | 1 Year |
| 10. | Horn Antenna | Schwarz beck | BBHA 9170 | 00946 | / | 2024.12.31 | 2 Year |
| 11. | Amplifier | SKET | LNPA_0118G-45 | SK2020010801 | / | 2024.12.18 | 1 Year |
| 12 | RF Power Probe | Rohde&Schwarz | NRP-Z11 | 1138.3004.02-1111533-Fz | / | 2024.12.18 | 1 Year |
| 13 | RF Sensor Unit | Tachoy | TR1029-2 | 20220428P008 | / | 2024.12.18 | 1 Year |
| 14 | Spectrum Analyzer | Agilent | N9020A | MY51281067 | A.14.03 | 2024.12.18 | 1 Year |
| 15 | Temp. & Humid Chamber | Auchno | 9606 | / | / | 2024.12.18 | 1 Year |
| 16 | Regulated DC Power Supply | Xinouhua | ADC120V10A | 202211251638 | | 2024.12.18 | 1 Year |
| 17 | Cable | SKET | Cable-RE-1 | #02/#03 | / | 2024.12.18 | 1 Year |
| 18 | Cable | SKET | Cable-RE-2 | #01 | / | 2024.12.18 | 1 Year |
| 19 | Cable | SKET | Cable-RE-3 | #04 | / | 2024.12.18 | 1 Year |
| 20 | Cable | SKET | Cable-CE-1 | A-E-24 | / | 2024.12.18 | 1 Year |
| 21 | 6dB Attenuator | Schwarzbeck | DGA 9552N 6dB | CK4186 | / | 2024.12.18 | 1 Year |

For Test Software Information

| Item | Software Name | Manufacturer | Version |
|---|---|---|---|
| RE | EZ_EMC | Farad | PSI-3A1 |
| CE | EZ_EMC | Farad | PSI-3A1 |
| RF | RTS | TACHOY | V1.0.0 |

# 3. Occupied bandwidth and 20dB Bandwidth

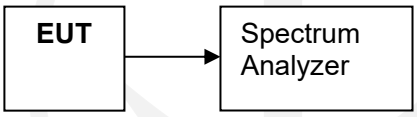
## 3.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in FCC part 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.

## 3.2. Test Procedure

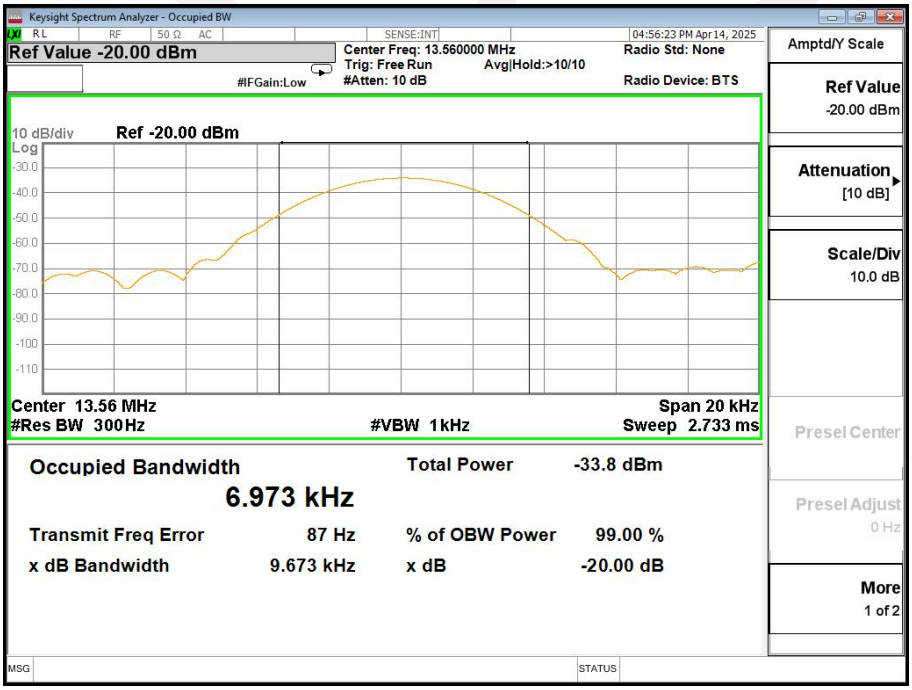
1. The transmitter output was directly connected to a spectrum analyzer with a 50Ω cable. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 3KHz RBW and 10kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.
2. The test receiver set RBW =1-5%BW, VBW≥3*RBW, Sweep time set auto, detail see the test plot for 99% Bandwidth.

## 3.3. Test Setup




## 3.4. Test Result

| Modulation | Frequency (MHz) | 20dB bandwidth (kHz) | Result |
|---|---|---|---|
| ASK | 13.56 | 9.673 | Pass |



# 4. Radiated emissions

## 4.1. Limit

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|---|---|---|---|---|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | $20\log^{(2400/F(kHz))} + 80$ |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | $20\log^{(24000/F(kHz))} + 40$ |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | $20\log^{(30)} + 40$ |
| 30 ~ 88 | 100 | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150 | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200 | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

Note:

a) The tighter limit applies at the band edges.
For example: F.S limit at 88MHz is 100uV/m

b) If measurement is made at 3m distance, then F.S Limit at 3m distance is adjusted by using the formula of $L_{d1} = L_{d2} * (d2/d1)^2$.
For example:
F.S Limit at 30m(d2) distance is 30uV/m($L_{d2}$), then F.S Limit at 3m(d1) distance is
$L_{d1}$ = 30uV/m * $(30/3)^2$ = 100 * 30uV/m = 69.54 dBuV/m

(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.

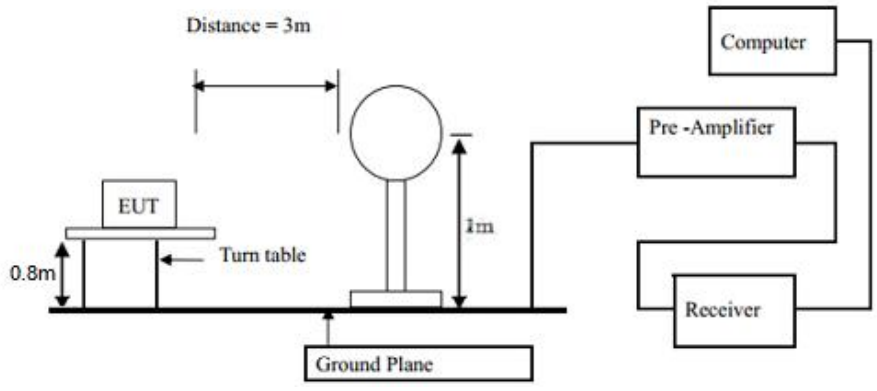
(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(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.

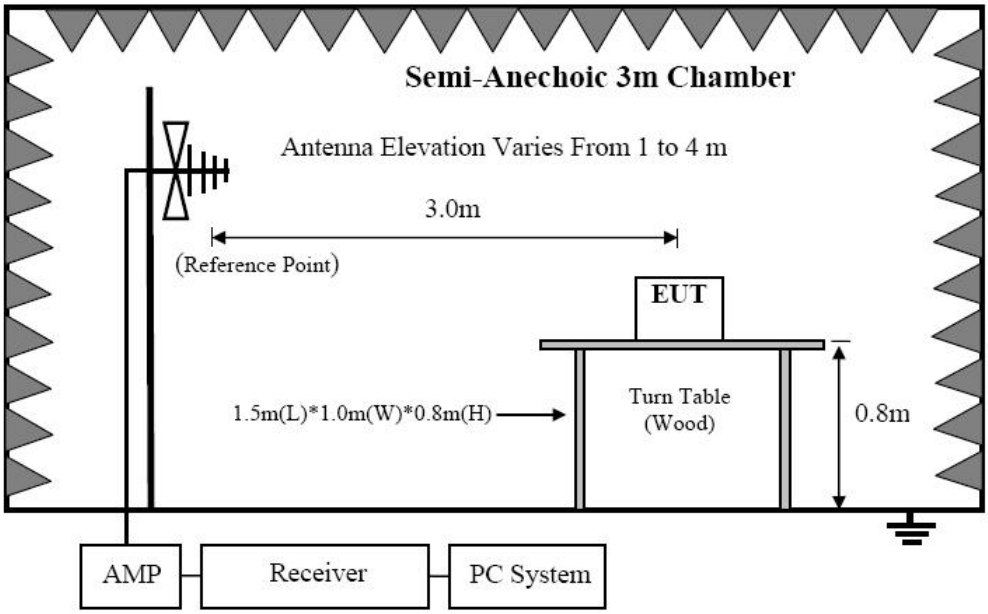
(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

## 4.2. Block Diagram of Test setup

In 3m Anechoic Chamber Test Setup Diagram for below 30MHz



In 3m Anechoic Chamber Test Setup Diagram for frequency 30MHz-1GHz




## 4.3. Test Procedure

**Procedure of Preliminary Test**

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 4.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.10:2013. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Receiver quickly scanned from 9KHz to 30MHz and 30MHz to 1GHz The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The test mode(s) described in clause 2.4 were scanned during the preliminary test:

After the preliminary scan, we found the test mode producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

**Procedure of Final Test**

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

The Receiver scanned from9KHz to 30MHz and 30MHz to 1GHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 200Hz for 9 KHz to 150 KHz measure, 10 KHz for 150 KHz to 30MHz measure and 120 KHz for 30 MHz to 1GHz measure.

## 4.4. Test Result

| From 9KHz to 30MHz: | | | |
|---|---|---|---|
| Test Date | : 2025.3.17 | Temperature | : 26℃ |
| Test Engineer | : Felix Pang | Humidity | : 54% |
| Test Mode | : NFC | | |
| Test Results | : **PASS** | | |
| Note: 1. The test results are listed in next pages.<br>2. This mode is worst case mode, so this report only reflected the worst mode.<br>3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the quasi-peak detector need not be carried out. | | | |

**Test Frequency: 9KHz-30MHz**

| Frequency (MHz) | Reading Result (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|
| 0.635 | 21.66 | 20.62 | 42.28 | 71.55 | -29.27 | QP |
| 1.438 | 15.78 | 20.74 | 36.52 | 64.33 | -27.81 | QP |
| 1.618 | 16.15 | 20.17 | 36.32 | 63.42 | -27.1 | QP |
| 3.235 | 16.14 | 20.41 | 36.55 | 69.54 | -32.99 | QP |
| 6.637 | 17.64 | 20.61 | 38.25 | 69.54 | -31.29 | QP |
| 19.143 | 18.14 | 19.18 | 37.32 | 69.54 | -32.22 | QP |
| Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin = Absolute Level – Limit | | | | | | |

Note:

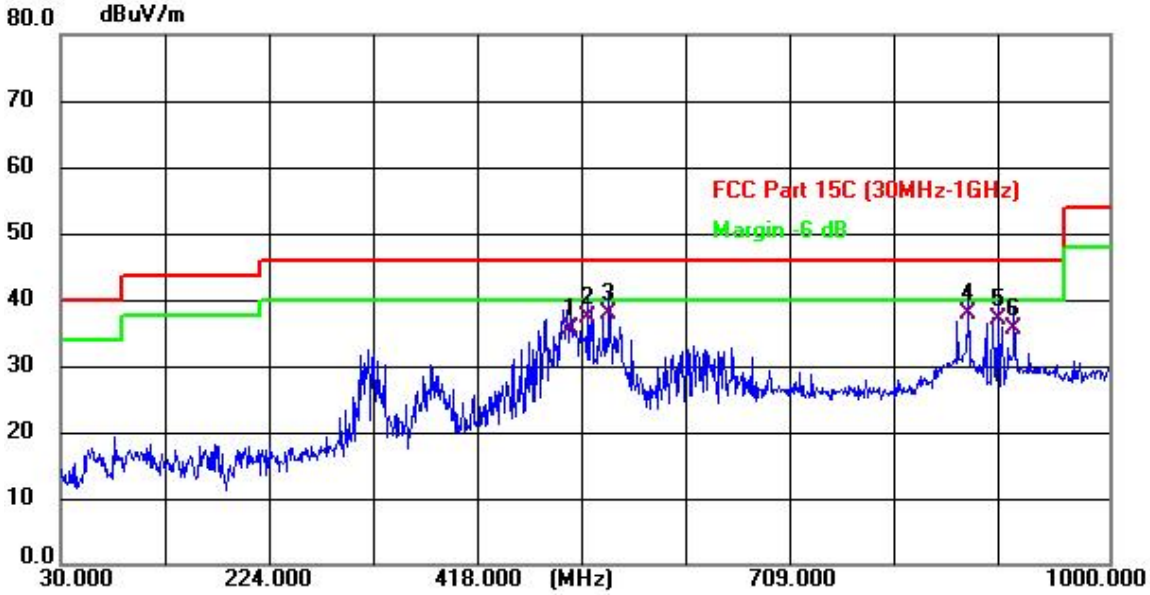
Distance extrapolation factor =40log(Specific distance/ test distance)( dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor.

| From 30MHz to 1000MHz: | | | | | |
|---|---|---|---|---|---|
| Test Date | : | 2025.3.17 | Temperature | : | 26℃ |
| Test Engineer | : | Felix Pang | Humidity | : | 54% |
| Test Mode | : | NFC | | | |
| Test Results | : | **PASS** | | | |
| Note: | 1. The test results are listed in next pages.<br>2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. | | | | |

**Model: LOCK420-8Z**

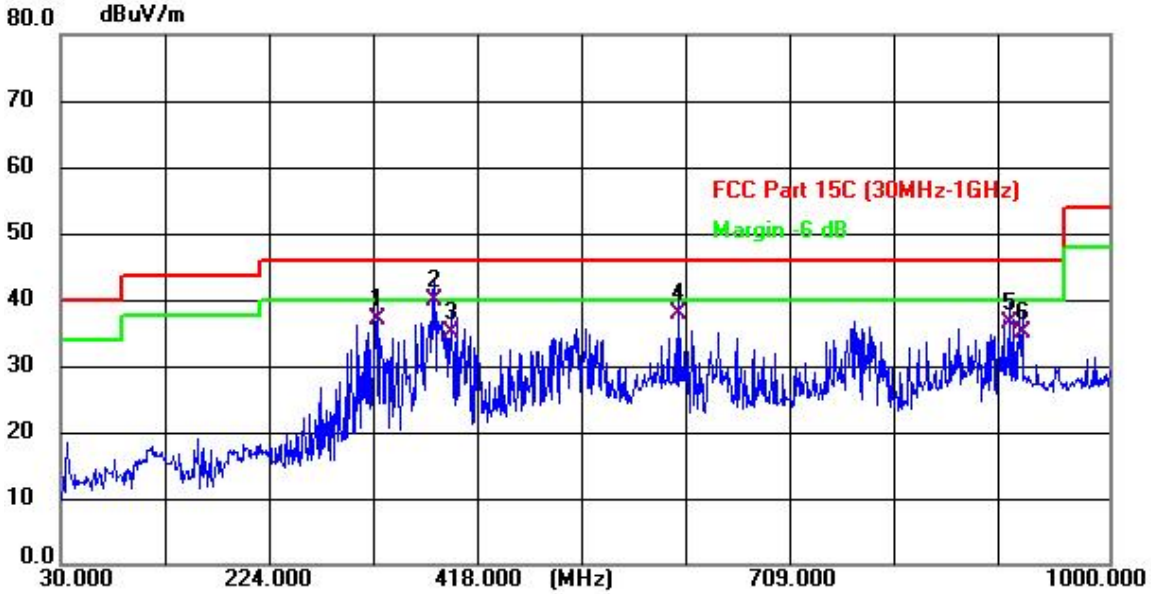
**Polarization: Vertical**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 502.390 | 39.60 | -4.01 | 35.59 | 46.00 | -10.41 | QP |
| 2 | 517.910 | 41.11 | -3.71 | 37.40 | 46.00 | -8.60 | QP |
| 3 * | 537.310 | 41.30 | -3.34 | 37.96 | 46.00 | -8.04 | QP |
| 4 | 870.020 | 35.75 | 2.08 | 37.83 | 46.00 | -8.17 | QP |
| 5 | 898.150 | 34.43 | 2.51 | 36.94 | 46.00 | -9.06 | QP |
| 6 | 911.730 | 33.05 | 2.65 | 35.70 | 46.00 | -10.30 | QP |

Note: Level = Reading + Factor Margin = Level - Limit

**Polarization: Horizontal**

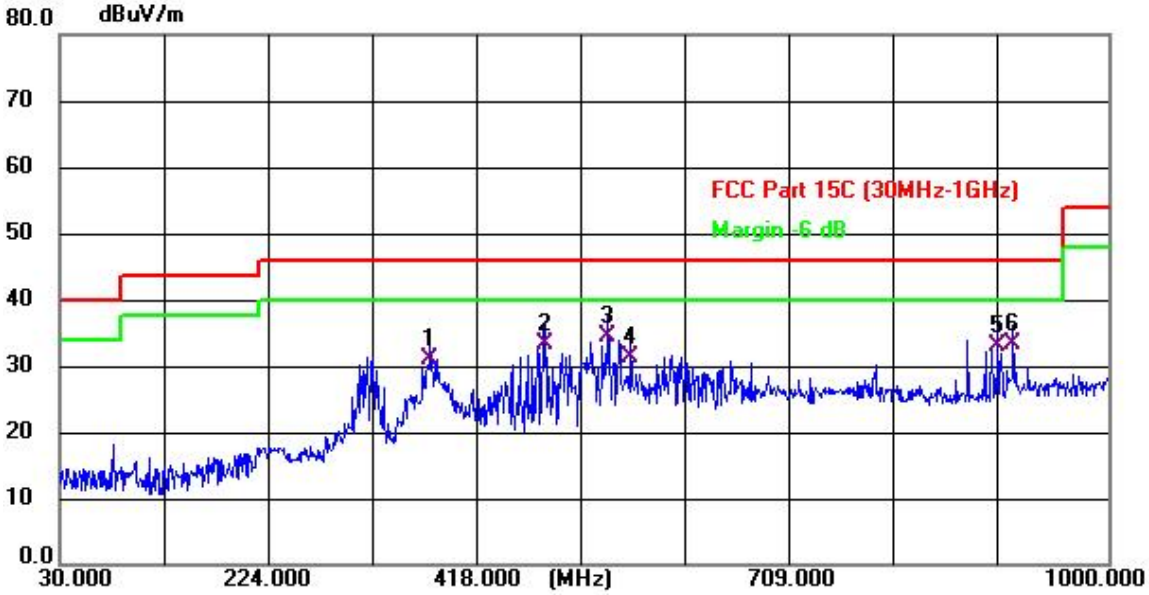



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 322.940 | 44.69 | -7.62 | 37.07 | 46.00 | -8.93 | QP |
| 2 * | 375.320 | 46.33 | -6.42 | 39.91 | 46.00 | -6.09 | QP |
| 3 | 390.840 | 41.10 | -6.06 | 35.04 | 46.00 | -10.96 | QP |
| 4 | 602.300 | 40.09 | -2.12 | 37.97 | 46.00 | -8.03 | QP |
| 5 | 908.820 | 33.87 | 2.62 | 36.49 | 46.00 | -9.51 | QP |
| 6 | 919.490 | 32.39 | 2.73 | 35.12 | 46.00 | -10.88 | QP |

Note: Level = Reading + Factor Margin = Level - Limit

**Model: LOCK420-4Z**

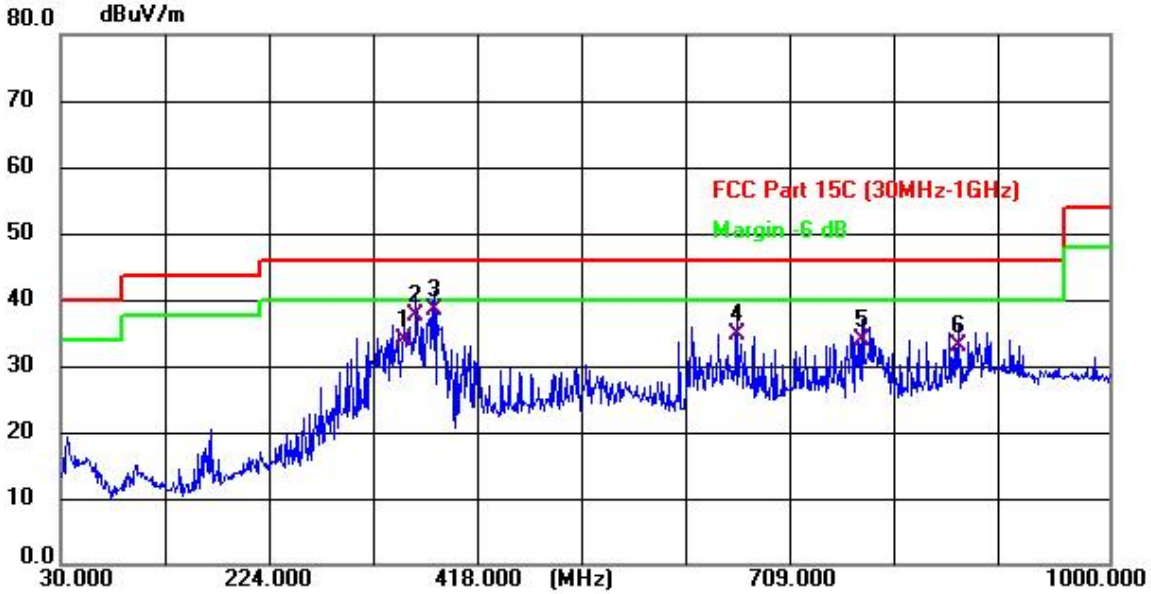
**Polarization: Vertical**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 372.410 | 37.62 | -6.49 | 31.13 | 46.00 | -14.87 | QP |
| 2 | 479.110 | 37.83 | -4.42 | 33.41 | 46.00 | -12.59 | QP |
| 3 * | 537.310 | 37.80 | -3.34 | 34.46 | 46.00 | -11.54 | QP |
| 4 | 558.650 | 34.17 | -2.94 | 31.23 | 46.00 | -14.77 | QP |
| 5 | 898.150 | 30.43 | 2.51 | 32.94 | 46.00 | -13.06 | QP |
| 6 | 911.730 | 30.55 | 2.65 | 33.20 | 46.00 | -12.80 | QP |

Note: Level = Reading + Factor Margin = Level - Limit

**Polarization: Horizontal**



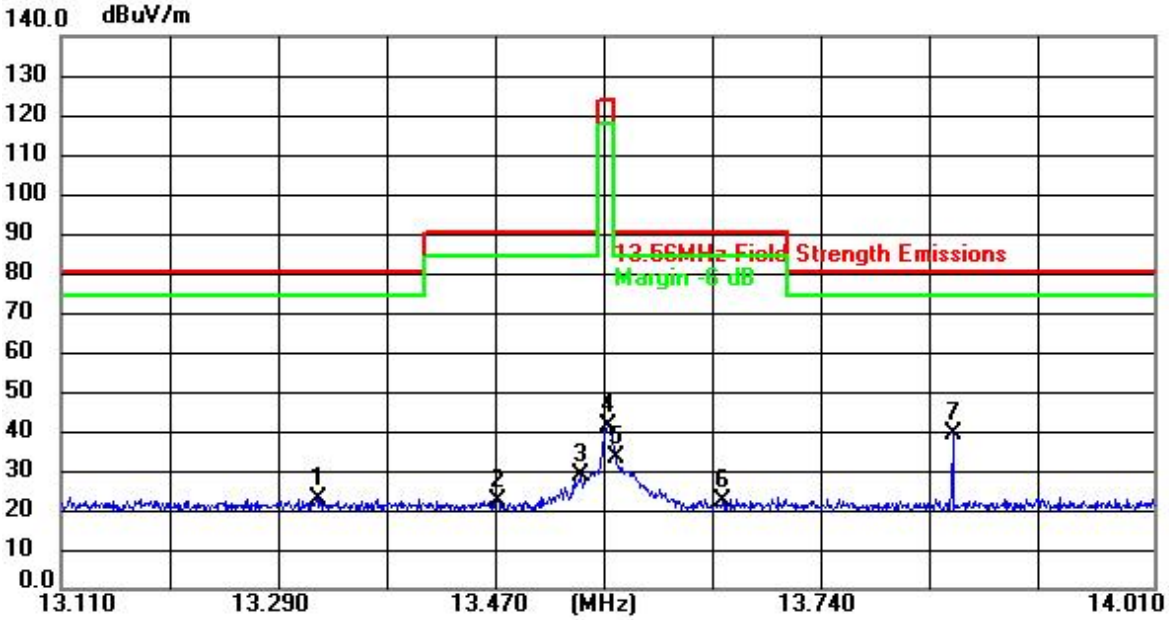

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 348.160 | 40.86 | -7.04 | 33.82 | 46.00 | -12.18 | QP |
| 2 | 358.830 | 44.31 | -6.79 | 37.52 | 46.00 | -8.48 | QP |
| 3 * | 375.320 | 44.83 | -6.42 | 38.41 | 46.00 | -7.59 | QP |
| 4 | 655.650 | 35.76 | -1.16 | 34.60 | 46.00 | -11.40 | QP |
| 5 | 772.050 | 33.29 | 0.65 | 33.94 | 46.00 | -12.06 | QP |
| 6 | 860.320 | 31.19 | 1.94 | 33.13 | 46.00 | -12.87 | QP |

Note: Level = Reading + Factor Margin = Level - Limit

**Field Strength Emissions Result**

| | | | |
|---|---|---|---|
| **Temperature** | 24°C | **Relative Humidity** | 56% |
| **Test Mode** | NFC | | |

Note: 1: 30m to 3m correction factor calculation: 40*Log(30m/3m)=40
2: --Means other frequency and mode comply with standard requirements and at least have 20dB margin.
3: Correct Factor=Cable Loss+ Antenna Factor- Amplifier Gain
Measurement Result=Reading + Correct Factor
Margin=Measurement Result-Limit




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 13.321500 | 26.43 | -3.48 | 22.95 | 80.50 | -57.55 | peak |
| 2 | 13.470000 | 25.65 | -3.48 | 22.17 | 90.50 | -68.33 | peak |
| 3 | 13.537500 | 32.44 | -3.48 | 28.96 | 90.50 | -61.54 | peak |
| 4 | 13.560000 | 44.51 | -3.48 | 41.03 | 124.00 | -82.97 | peak |
| 5 | 13.567200 | 36.72 | -3.48 | 33.24 | 90.50 | -57.26 | peak |
| 6 | 13.655400 | 25.57 | -3.48 | 22.09 | 90.50 | -68.41 | peak |
| 7 * | 13.844400 | 42.78 | -3.48 | 39.30 | 80.50 | -41.20 | peak |

# 5. Frequency stability

## 5.1. Test limit

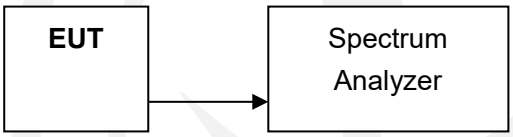
Please refer section RSS 210 B.6 & 15.225e.

Regulation 15.225(e) The frequency tolerance of the carrier signal shall be maintained within +/-0.01%(±100 ppm) 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.

## 5.2. Test Procedure

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 5.3. Test Setup

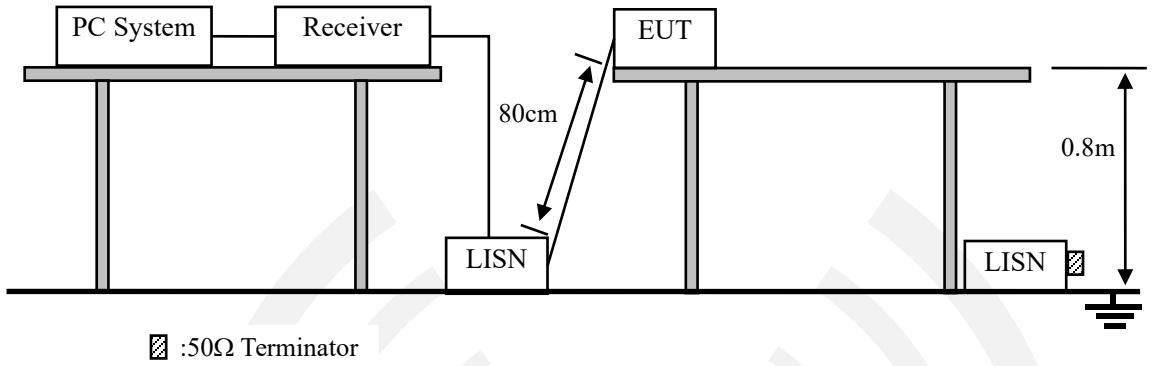


## 5.4. Test Results

| Assigned Frequency(MHz): 13.56MHz | | | | |
|---|---|---|---|---|
| Voltage (V) | Temperature ℃ | Measured Frequency (MHz) | Frequency stability (MHz) | Limit |
| Low DC 10.8V | +20℃ | 13.560162 | 0.000162 | ±100 ppm ±0.001356MHz |
| Normal DC 12V | -10℃ | 13.560167 | 0.000167 | |
| | -5℃ | 13.560166 | 0.000166 | |
| | 0℃ | 13.560180 | 0.000180 | |
| | +10℃ | 13.560154 | 0.000154 | |
| | +20℃ | 13.560180 | 0.000180 | |
| | +30℃ | 13.560154 | 0.000154 | |
| | +40℃ | 13.560158 | 0.000158 | |
| | +50℃ | 13.560171 | 0.000171 | |
| | +60℃ | 13.560171 | 0.000171 | |
| High DC 13.2V | +20℃ | 13.560165 | 0.000165 | |
| **Results: Pass** | | | | |

# 6. Power Line Conducted Emissions

## 6.1. Block Diagram of Test Setup




## 6.2. Limit

| Frequency | Maximum RF Line Voltage | |
|---|---|---|
| | Quasi-Peak Level dB(μV) | Average Level dB(μV) |
| 150kHz ~ 500kHz | 66 ~ 56* | 56 ~ 46* |
| 500kHz ~ 5MHz | 56 | 46 |
| 5MHz ~ 30MHz | 60 | 50 |

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

## 6.3. Test Procedure

(1) The EUT was placed on a non-metallic table, 80cm above the ground plane.

(2) Setup the EUT and simulator as shown in 10.1

(3) The EUT Power connected to the power mains through a power adapter and a line impedance stabilization network (L.I.S.N1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N1), this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C64.10:2013 on conducted Emission test.

(4) The bandwidth of test receiver is set at 10KHz.

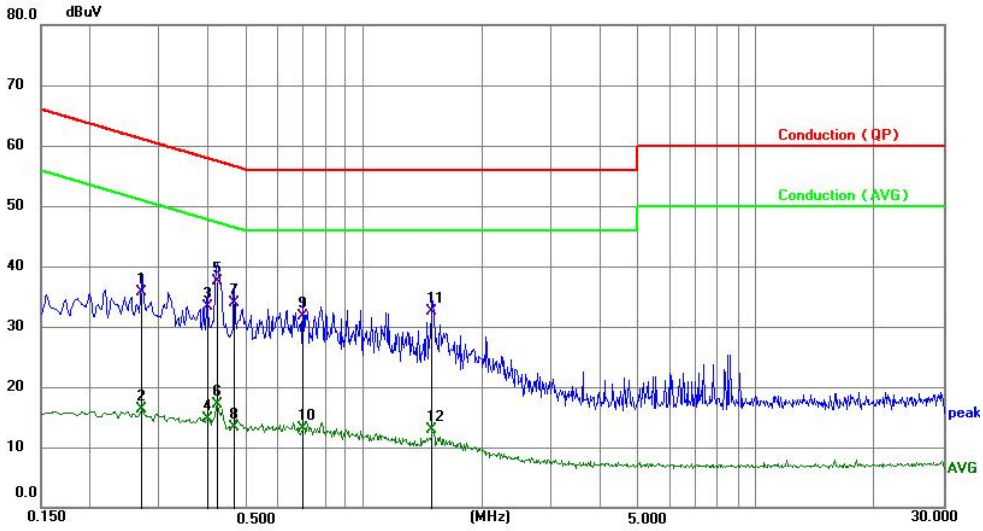
(5) The frequency range from 150 KHz to 30MHz is checked.

## 6.4. Test Result

| | | | | | |
|---|---|---|---|---|---|
| Test Date | : | 2025.3.17 | Temperature | : | 26℃ |
| Test Engineer | : | Felix Pang | Humidity | : | 54% |
| Test Mode | : | NFC | | | |
| Test Results | : | **PASS** | | | |
| Note: | 1. The test results are listed in next pages.<br>2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.<br>3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out. | | | | |

**Model: LOCK420-8Z**

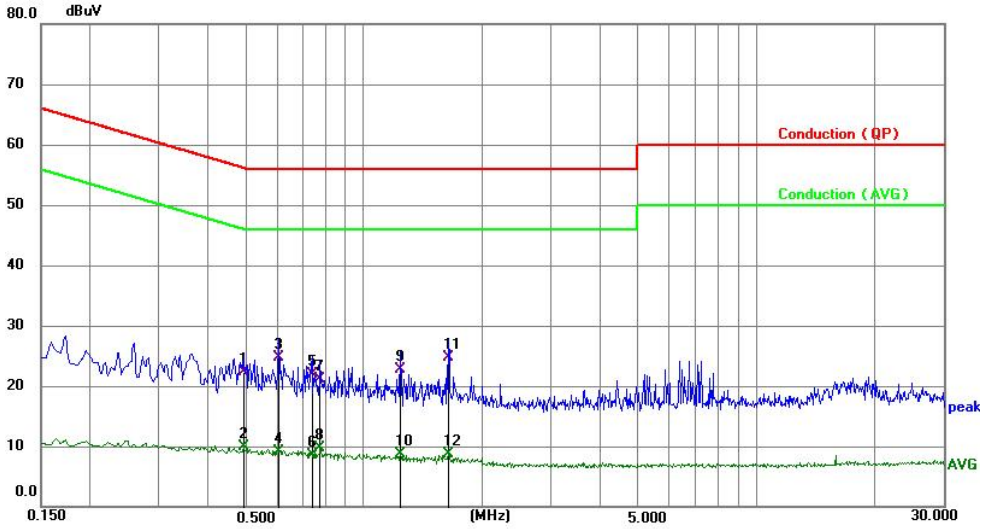
**Polarization: L**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.2714 | 25.83 | 9.94 | 35.77 | 61.07 | -25.30 | QP |
| 2 | 0.2714 | 6.40 | 9.94 | 16.34 | 51.07 | -34.73 | AVG |
| 3 | 0.3975 | 23.35 | 9.99 | 33.34 | 57.91 | -24.57 | QP |
| 4 | 0.3975 | 4.76 | 9.99 | 14.75 | 47.91 | -33.16 | AVG |
| 5 * | 0.4200 | 27.51 | 9.99 | 37.50 | 57.45 | -19.95 | QP |
| 6 | 0.4200 | 7.14 | 9.99 | 17.13 | 47.45 | -30.32 | AVG |
| 7 | 0.4650 | 23.91 | 10.01 | 33.92 | 56.60 | -22.68 | QP |
| 8 | 0.4650 | 3.39 | 10.01 | 13.40 | 46.60 | -33.20 | AVG |
| 9 | 0.6990 | 21.73 | 10.04 | 31.77 | 56.00 | -24.23 | QP |
| 10 | 0.6990 | 3.00 | 10.04 | 13.04 | 46.00 | -32.96 | AVG |
| 11 | 1.4910 | 22.38 | 10.07 | 32.45 | 56.00 | -23.55 | QP |
| 12 | 1.4910 | 2.87 | 10.07 | 12.94 | 46.00 | -33.06 | AVG |

Note: Level = Reading + Factor Margin = Level - Limit

**Polarization: N**

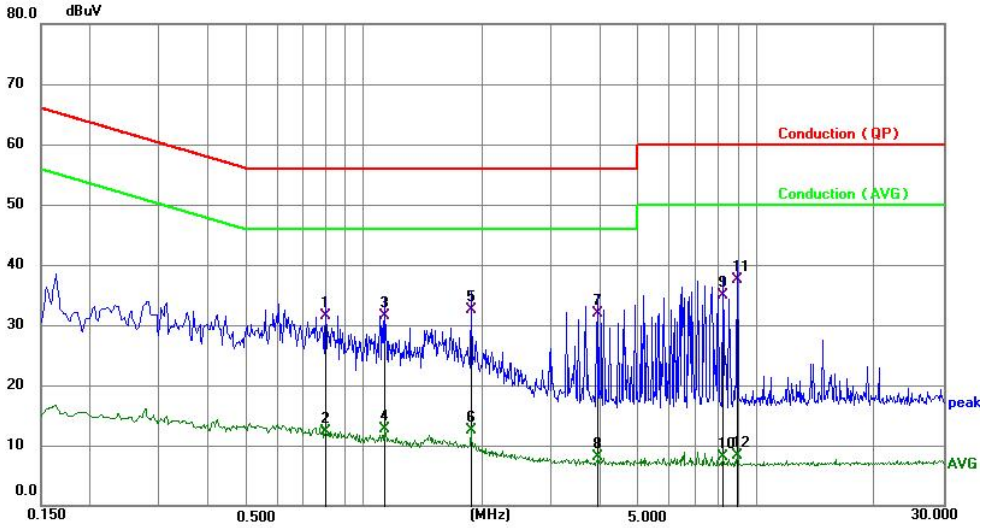



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.4920 | 12.32 | 10.02 | 22.34 | 56.13 | -33.79 | QP |
| 2 | 0.4920 | -0.20 | 10.02 | 9.82 | 46.13 | -36.31 | AVG |
| 3 * | 0.6045 | 14.75 | 10.03 | 24.78 | 56.00 | -31.22 | QP |
| 4 | 0.6045 | -0.90 | 10.03 | 9.13 | 46.00 | -36.87 | AVG |
| 5 | 0.7350 | 11.86 | 10.04 | 21.90 | 56.00 | -34.10 | QP |
| 6 | 0.7350 | -1.60 | 10.04 | 8.44 | 46.00 | -37.56 | AVG |
| 7 | 0.7710 | 10.98 | 10.04 | 21.02 | 56.00 | -34.98 | QP |
| 8 | 0.7710 | -0.31 | 10.04 | 9.73 | 46.00 | -36.27 | AVG |
| 9 | 1.2390 | 12.69 | 10.06 | 22.75 | 56.00 | -33.25 | QP |
| 10 | 1.2390 | -1.27 | 10.06 | 8.79 | 46.00 | -37.21 | AVG |
| 11 | 1.6440 | 14.72 | 10.06 | 24.78 | 56.00 | -31.22 | QP |
| 12 | 1.6440 | -1.27 | 10.06 | 8.79 | 46.00 | -37.21 | AVG |

Note: Level = Reading + Factor Margin = Level - Limit

**Model: LOCK420-4Z**

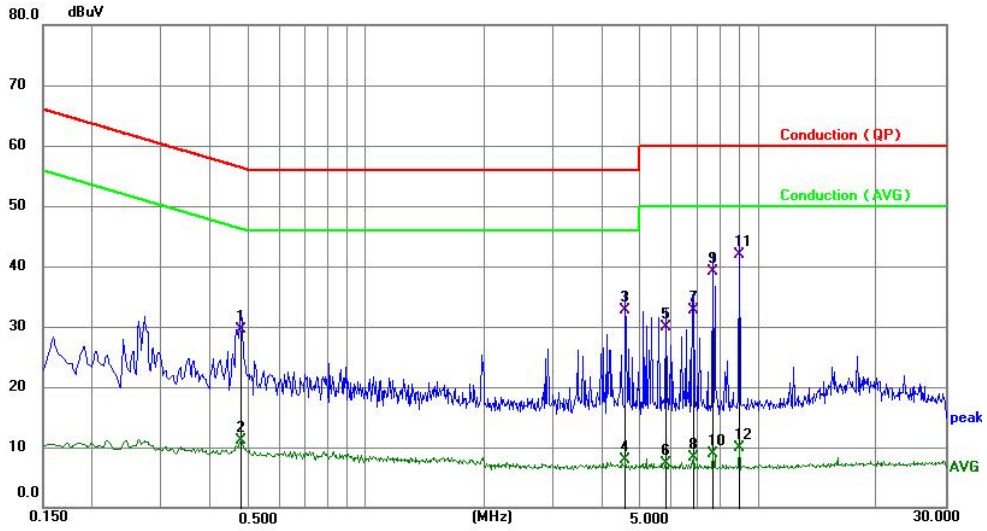
**Polarization: L**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.7980 | 21.44 | 10.04 | 31.48 | 56.00 | -24.52 | QP |
| 2 | 0.7980 | 2.28 | 10.04 | 12.32 | 46.00 | -33.68 | AVG |
| 3 | 1.1265 | 21.39 | 10.06 | 31.45 | 56.00 | -24.55 | QP |
| 4 | 1.1265 | 2.56 | 10.06 | 12.62 | 46.00 | -33.38 | AVG |
| 5 | 1.8690 | 22.50 | 10.06 | 32.56 | 56.00 | -23.44 | QP |
| 6 | 1.8690 | 2.47 | 10.06 | 12.53 | 46.00 | -33.47 | AVG |
| 7 | 3.9615 | 21.85 | 10.09 | 31.94 | 56.00 | -24.06 | QP |
| 8 | 3.9615 | -1.98 | 10.09 | 8.11 | 46.00 | -37.89 | AVG |
| 9 | 8.2230 | 24.86 | 10.09 | 34.95 | 60.00 | -25.05 | QP |
| 10 | 8.2230 | -1.94 | 10.09 | 8.15 | 50.00 | -41.85 | AVG |
| 11 * | 8.9384 | 27.32 | 10.09 | 37.41 | 60.00 | -22.59 | QP |
| 12 | 8.9384 | -1.72 | 10.09 | 8.37 | 50.00 | -41.63 | AVG |

Note: Level = Reading + Factor Margin = Level - Limit

**Polarization: N**




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 0.4784 | 19.40 | 10.01 | 29.41 | 56.37 | -26.96 | QP |
| 2 | 0.4784 | 1.13 | 10.01 | 11.14 | 46.37 | -35.23 | AVG |
| 3 | 4.5780 | 22.62 | 10.11 | 32.73 | 56.00 | -23.27 | QP |
| 4 | 4.5780 | -2.28 | 10.11 | 7.83 | 46.00 | -38.17 | AVG |
| 5 | 5.8155 | 19.75 | 10.12 | 29.87 | 60.00 | -30.13 | QP |
| 6 | 5.8155 | -2.90 | 10.12 | 7.22 | 50.00 | -42.78 | AVG |
| 7 | 6.8505 | 22.60 | 10.11 | 32.71 | 60.00 | -27.29 | QP |
| 8 | 6.8505 | -1.81 | 10.11 | 8.30 | 50.00 | -41.70 | AVG |
| 9 | 7.6515 | 28.94 | 10.10 | 39.04 | 60.00 | -20.96 | QP |
| 10 | 7.6515 | -1.12 | 10.10 | 8.98 | 50.00 | -41.02 | AVG |
| 11 * | 8.9205 | 31.73 | 10.09 | 41.82 | 60.00 | -18.18 | QP |
| 12 | 8.9205 | -0.24 | 10.09 | 9.85 | 50.00 | -40.15 | AVG |

Note: Level = Reading + Factor Margin = Level - Limit

# 7. Antenna Requirements

## 7.1. Limit

For intentional device, according to RSS-Gen Section 6.8 and FCC 47 CFR Section 15.203, 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. And according to FCC 47 CFR Section 15.209, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

## 7.2. Antenna Connected Construction

The antenna is internal antenna and no consideration of replacement. Please see EUT photo for details.

## 7.3. Results

The EUT antenna is PCB Antenna. It complies with the standard requirement.

## 8. Photos of test setup

Reference to the **appendix I Test Setup Photo** for details.

## 9. Photos of EUT

Reference to the **appendix II external photos** and **appendix III internal photos** for details.

**------ END OF REPORT------**