| | | | | |
|---|---|---|---|---|
| **Prüfbericht-Nr.:** *Test Report No.:* | **50379539 001** | **Auftrags-Nr.:** *Order No.:* | 168138262 | **Seite 1 von 17** *Page 1 of 17* |
| **Kunden-Referenz-Nr.:** *Client Reference No.:* | N/A | **Auftragsdatum:** *Order date:* | 24.02.2020 | |
| **Auftraggeber:** *Client:* | Chongqing Changan Automobile Co., Ltd.<br>No. 260 Jianxin Dong Road, Jiangbei District, 400023 Chongqing, P.R. China | | | |
| **Prüfgegenstand:** *Test item:* | Smart Key Assy | | | |
| **Bezeichnung / Typ-Nr.:** *Identification / Type No.:* | 3608030-BU81-AA | | | |
| **Auftrags-Inhalt:** *Order content:* | Test Report | | | |
| **Prüfgrundlage:** *Test specification:* | CFR47 FCC Part 15.203<br>CFR47 FCC Part 15.231<br>CFR47 FCC Part 2.1093 | | | |

| | | |
|---|---|---|
| **Wareneingangsdatum:** *Date of receipt:* | 05.03.2020 | Refer to Photo Documentation |
| **Prüfmuster-Nr.:** *Test sample No.:* | A001056581-001 | |
| **Prüfzeitraum:** *Testing period:* | 05.03.2020 – 30.04.2020 | |
| **Ort der Prüfung:** *Place of testing:* | TÜV Rheinland (Shenzhen) Co., Ltd. | |
| **Prüflaboratorium:** *Testing laboratory:* | TÜV Rheinland (Shenzhen) Co., Ltd. | |
| **Prüfergebnis*:** *Test result*:* | PASS | |

| **geprüft von /** *tested by:* | | | **kontrolliert von /** *reviewed by:* | | |
|---|---|---|---|---|---|
| 31.07.2020 | Hardy Suo / Assistant Project Manager | | 31.07.2020 | Sam Lin / Technical Certifier | |
| **Datum** *Date* | **Name / Stellung** *Name / Position* | **Unterschrift** *Signature* | **Datum** *Date* | **Name / Stellung** *Name / Position* | **Unterschrift** *Signature* |

**Sonstiges /** *Other:*

FCC ID: 2AVTF360803081

**Zustand des Prüfgegenstandes bei Anlieferung:** *Condition of the test item at delivery:* Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

| | | | | | |
|---|---|---|---|---|---|
| * Legende: | 1 = sehr gut | 2 = gut | 3 = befriedigend | 4 = ausreichend | 5 = mangelhaft |
| | P(ass) = entspricht o.g. Prüfgrundlage(n) | | F(ail) = entspricht nicht o.g. Prüfgrundlage(n) | N/A = nicht anwendbar | N/T = nicht getestet |
| *Legend:* | *1 = very good* | *2 = good* | *3 = satisfactory* | *4 = sufficient* | *5 = poor* |
| | *P(ass) = passed a.m. test specification(s)* | | *F(ail) = failed a.m. test specification(s)* | *N/A = not applicable* | *N/T = not tested* |

**Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.**
*This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.*

V04

# TEST SUMMARY

5.1.1 Antenna Requirement
RESULT: Pass
5.1.2 Deactivation of the Transmission
RESULT: Pass
5.1.3 20dB Emission Bandwidth
RESULT: Pass
5.1.4 Field strength of fundamental and Unwanted Emissions in the Spurious Domain
RESULT: Pass
5.1.5 Radio Frequency Exposure Compliance
RESULT: Pass

# CONTENTS

**1. GENERAL REMARKS ..... 4**
1.1 COMPLEMENTARY MATERIALS ..... 4
1.2 TEST STANDARD(S) ..... 4
**2. TEST SITES ..... 4**
2.1 TEST FACILITIES ..... 4
2.2 TEST DATE ..... 4
2.3 LIST OF TEST AND MEASUREMENT INSTRUMENTS ..... 5
2.4 TRACEABILITY ..... 6
2.5 CALIBRATION ..... 6
2.6 LOCATION OF ORIGINAL DATA ..... 6
2.7 STATUS OF FACILITY USED FOR TESTING ..... 6
**3. GENERAL PRODUCT INFORMATION ..... 7**
3.1 PRODUCT FUNCTION AND INTENDED USE ..... 7
3.2 RATINGS AND SYSTEM DETAILS ..... 7
3.3 INDEPENDENT OPERATION MODES ..... 7
3.4 NOISE GENERATING AND NOISE SUPPRESSING PARTS ..... 7
3.5 SUBMITTED DOCUMENTS ..... 8
**4. TEST SET-UP AND OPERATION MODES ..... 9**
4.1 PRINCIPLE OF CONFIGURATION SELECTION ..... 9
4.2 TEST OPERATION AND TEST SOFTWARE ..... 9
4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT ..... 9
4.4 COUNTERMEASURES TO ACHIEVE ERM COMPLIANCE ..... 9
4.5 TEST SETUP DIAGRAM ..... 10
**5. TEST RESULTS ..... 12**
5.1 ESSENTIAL REQUIREMENTS OF STANDARD ..... 12
5.1.1 Antenna Requirement ..... 12
5.1.2 Deactivation of the Transmission ..... 13
5.1.3 20dB Emission Bandwidth ..... 14
5.1.4 Field strength of fundamental and Unwanted Emissions in the Spurious Domain 15
5.1.5 Radio Frequency Exposure Compliance ..... 16
**6. SYSTEM MEASUREMENT UNCERTAINTY ..... 17**
**7. LIST OF TABLES ..... 17**

# 1. GENERAL REMARKS

## 1.1 COMPLEMENTARY MATERIALS

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of radio spectrum

Appendix B: Photographs of the Test Set-Up

## 1.2 TEST STANDARD(S)

| | |
|---|---|
| Applied Rules: | CFR47 FCC Part 15.203<br>CFR47 FCC Part 15.231<br>CFR47 FCC Part 2.1093 |
| Test Method: | ANSI C63.10:2013 |

# 2. TEST SITES

## 2.1 TEST FACILITIES

Test Facilities: TÜV Rheinland (Shenzhen) Co., Ltd.

Address:
No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, P.R. China

## 2.2 TEST DATE

Date: 05.03.2020 – 30.04.2020

## 2.3 LIST OF TEST AND MEASUREMENT INSTRUMENTS

**Table 1: List of Test and Measurement Equipment**

| Unwanted Emission Testing (TS9975) | | | | | |
|---|---|---|---|---|---|
| **Equip. No.** | **Description** | **Manufacturer** | **Model** | **Serial No.** | **Calibrated until (DD.MM.YYYY)** |
| 1826021 | EMI Test Receiver | R&S | ESR 7 | 102021 | 19.08.2020 |
| 1826023 | Signal Analyzer | R&S | FSV 40 | 101439 | 21.08.2020 |
| 1826024 | System Controller Interface | R&S | SCI-100 | S10010038 | N/A |
| 1826026 | OSP | R&S | OSP 120 | 102040 | N/A |
| 1826028 | Pre-amplifier | R&S | SCU08F1 | 08320031 | 20.08.2020 |
| 1826029 | Amplifier | R&S | SCU-18F | 180070 | 20.08.2020 |
| 1826030 | Amplifier | R&S | SCU40A | 100475 | 20.09.2020 |
| 1826031 | Trilog Broadband Antenna (30 MHz - 7 GHz) | Schwarzbeck | VULB 9162 | 193 | 02.09.2020 |
| 1826034 | Active Loop Antenna | Schwarzbeck | FMZB 1513 | 302 | 01.09.2020 |
| 1826036 | Test software | R&S | V10.40.10-EMC32 | N/A | N/A |
| 1826037 | Control PC | Dell | OptiPlex 7050 | 36NV9P2 | N/A |
| 1826433 | 3m Semi-Anechoic Chamber | Albatross | SAC-3m | APC17151-SAC | 06.07.2020 |

## 2.4 TRACEABILITY

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

## 2.5 CALIBRATION

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

## 2.6 LOCATION OF ORIGINAL DATA

The original copies of all test data taken during actual testing were attached at Appendix A of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

## 2.7 STATUS OF FACILITY USED FOR TESTING

The TÜV Rheinland (Shenzhen) Co., Ltd. facility located at No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

# 3. GENERAL PRODUCT INFORMATION

## 3.1 PRODUCT FUNCTION AND INTENDED USE

The EUT is a Smart Key Assy for vehicular use.

## 3.2 RATINGS AND SYSTEM DETAILS

**Table 2: Technical Characteristics of EUT**

| General Information of EUT | Description |
|---|---|
| Kind of Equipment: | Smart Key Assy |
| Type Designation: | 3608030-BU81-AA |
| FCC ID: | 2AVTF360803081 |
| Type of Equipment: | Portable device |
| Operating Frequency Band: | 433.05 – 434.79MHz |
| Operating Frequencies: | 433.42 MHz, 433.92 MHz, 434.42 MHz |
| Modulation Type: | FSK |
| Antenna Type: | Integral Antenna |
| Antenna Gain: | 2 dBi |
| Operating Voltage: | DC 3V Li-MnO2 cell battery |
| Operating Temperature Range: | -40°C ~ +85°C |

## 3.3 INDEPENDENT OPERATION MODES

The basic operation modes are:

A. Transmitting
   1. 433.42MHz
   2. 433.92MHz
   3. 434.42MHz
B. Idle
C. Off

## 3.4 NOISE GENERATING AND NOISE SUPPRESSING PARTS

Refer to the Circuit Diagram.

## 3.5 SUBMITTED DOCUMENTS

☒- Block Diagram
☐- PCB Layout
☒- Rating Label
☒- Photo Documentation
☒- Circuit Diagram
☒- Bill of Material
☒- Instruction Manual

# 4. TEST SET-UP AND OPERATION MODES

## 4.1 PRINCIPLE OF CONFIGURATION SELECTION

**Radio Spectrum:** The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

## 4.2 TEST OPERATION AND TEST SOFTWARE

Test operation refers to test setup in chapter 5.

**Table 3: Test Environments**

| Environment Parameter | Selected Values During Tests | | |
|---|---|---|---|
| | Temperature | Voltage (Battery) | Relative Humidity |
| Normal (NTNV) | 24°C | 3V | Ambient |
| LTLV | - | - | - |
| LTHV | - | - | - |
| HTLV | - | - | - |
| HTHV | - | - | - |

## 4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT

The EUT was tested together with the following accessories:

**Table 4: List of Accessories and Auxiliary Equipment**

| Description | Manufacturer | Model | S/N |
|---|---|---|---|
| -- | -- | -- | -- |

## 4.4 COUNTERMEASURES TO ACHIEVE ERM COMPLIANCE

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF). No additional measures were employed to achieve compliance.

## 4.5 TEST SETUP DIAGRAM

**Diagram of Measurement Configuration for Radiation Test**

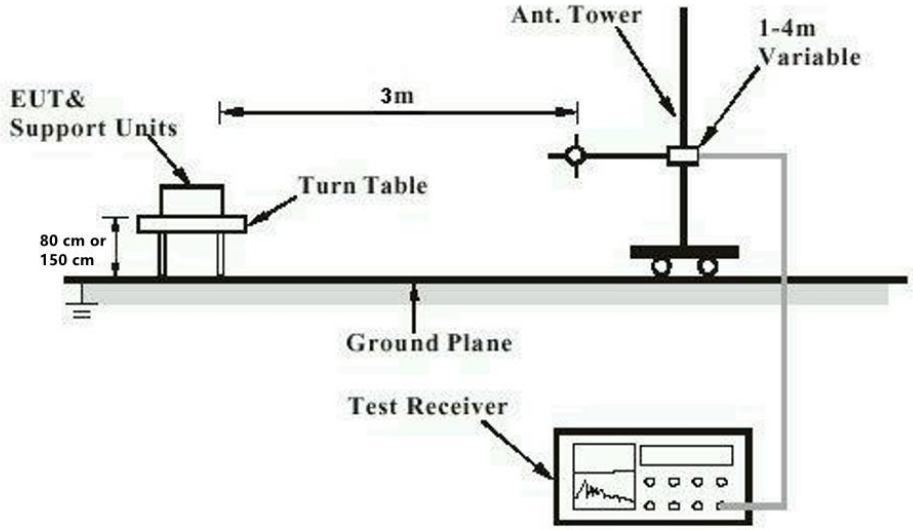



**Diagram of Measurement Equipment Configuration for Conduction Measurement**

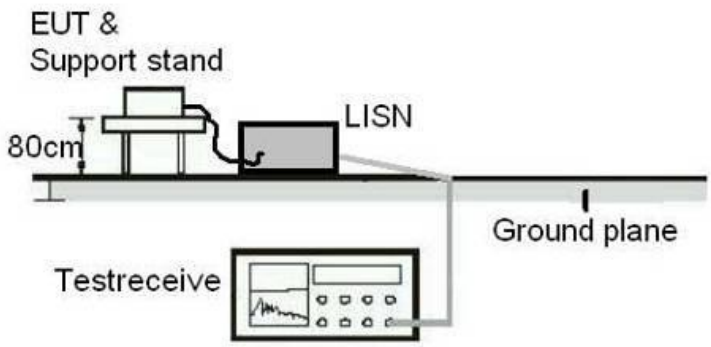
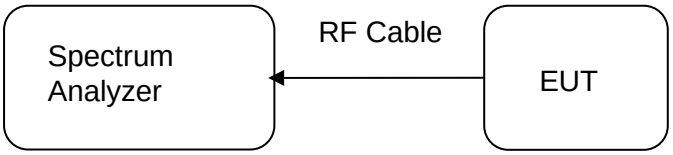


**Diagram of Measurement Equipment Configuration for Transmitter Measurement**



# 5. TEST RESULTS

## 5.1 Essential Requirements of Standard

### 5.1.1 Antenna Requirement

**RESULT:** **Pass**

| | | |
|---|---|---|
| Test standard | : | CFR47 FCC Part 15.203 |
| Limit | : | CFR47 FCC Part 15.203 |
| Kind of test site | : | Shielding Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 05.03.2020 – 30.04.2020 |
| Input voltage | : | 3V |
| Test environment | : | Normal test conditions |
| Operation mode | : | A |
| Ambient temperature | : | 23 ºC |
| Relative humidity | : | 50% |
| Atmospheric pressure | : | 101.0 kPa |

According to the manufacturer declared, the EUT has an integral antenna, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to compliance the provision.

Refer to EUT photo for details.

## 5.1.2 Deactivation of the Transmission

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | CFR47 FCC Part 15.231 |
| Basic standard | : | ANSI C 63.10:2013 |
| Test requirement | : | CFR47 FCC Part 15.231 (a)(1) |
| Limit | : | A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. |
| Test suite | : | Shielding Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 05.03.2020 – 30.04.2020 |
| Test environment: | : | Normal test conditions |
| Operation mode | : | A |
| Ambient temperature | : | 24°C |
| Relative humidity | : | 55% |
| Atmospheric pressure | : | 101kPa |

**Conclusion:**

Refer to attached Appendix A for details of test results.

## 5.1.3 20dB Emission Bandwidth

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | CFR47 FCC Part 15.231 |
| Basic standard | : | ANSI C 63.10:2013 |
| Test requirement | : | CFR47 FCC Part 15.231 (c) |
| Limit | : | CFR47 FCC Part 15.231 (c) |
| Test suite | : | 3m Semi Anechoic Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 05.03.2020 – 30.04.2020 |
| Test environment: | : | Normal test conditions |
| Operation mode | : | A |
| Ambient temperature | : | 24°C |
| Relative humidity | : | 55% |
| Atmospheric pressure | : | 101kPa |

**Conclusion:**

Refer to attached Appendix A for details of test results.

## 5.1.4 Field strength of fundamental and Unwanted Emissions in the Spurious Domain

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | CFR47 FCC Part 15.231<br>CFR47 FCC Part 15.205<br>CFR47 FCC Part 15.209 |
| Basic standard | : | ANSI C 63.10:2013 |
| Test requirement | : | CFR47 FCC Part 15.231 (b)(1)(2)(3) |
| Limit | : | CFR47 FCC Part 15.231 (b) |
| Test suite | : | 3m Semi Anechoic Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 05.03.2020 – 30.04.2020 |
| Test environment: | : | Normal test conditions |
| Operation mode | : | A |
| Ambient temperature | : | 24°C |
| Relative humidity | : | 55% |
| Atmospheric pressure | : | 101kPa |

**Conclusion:**

Refer to attached Appendix A for details of test results.

## 5.1.5 Radio Frequency Exposure Compliance

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | CFR47 FCC Part 2.1093 |
| Limit : | | FCC KDB Publication 447498 D01 v06 |

**Measurement Record for CFR47 FCC Part 2.1093**

The minimum distance for the EUT is less than 5mm.

The maximum specified e.r.p.: 71.34dBuV/m@3m=-23.82dBm=0.004mW

According to KDB 447498 D01 v06 4.3.1 a)

Exempted Power for this device: 9.5mW, hence the EUT is compliance with the RF exposure.

# 6. System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

**Table 5: System Measurement Uncertainty**

| Items | | Extended Uncertainty |
|---|---|---|
| RE | Radiated emission 9 kHz - 30 MHz | ±3.97 dB |
| | Radiated emission 30 MHz - 1 GHz | ±4.30 dB |
| Remark: 95% Confidence Levels, K=2. | | |

# 7. LIST OF TABLES

Table 1: List of Test and Measurement Equipment .....5
Table 2: Technical Characteristics of EUT .....7
Table 3: Test Environments .....9
Table 4: List of Accessories and Auxiliary Equipment .....9
Table 5: System Measurement Uncertainty.....17

# Appendix A

# Test Results

**APPENDIX A.1: TEST RESULTS OF DEACTIVATION OF THE TRANSMISSION ..... 2**

**APPENDIX A.2: TEST RESULTS OF 20DB EMISSION BANDWIDTH ..... 3**

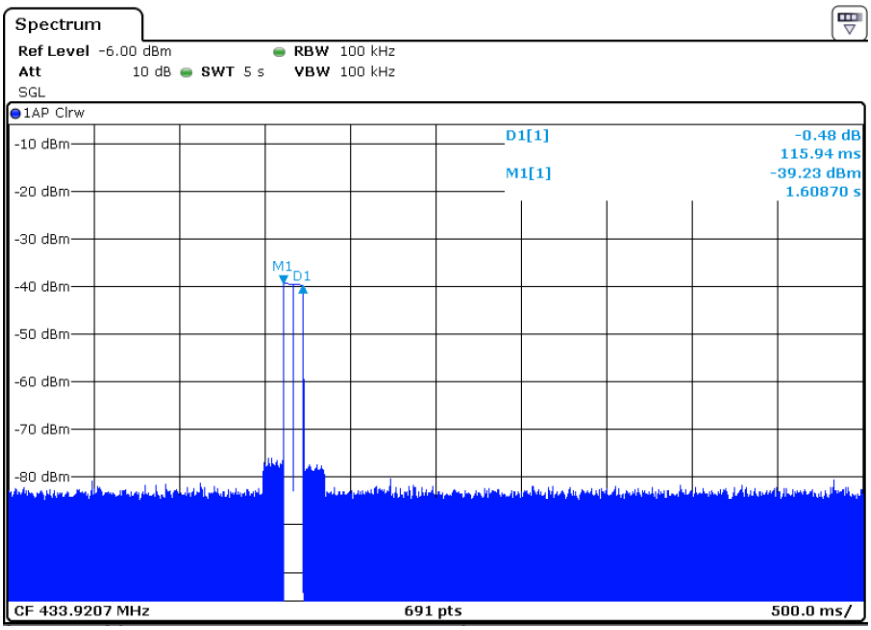
**APPENDIX A.3: TEST RESULTS OF FIELD STRENGTH OF FUNDAMENTAL AND UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN ..... 5**

A.3.1 LOW CHANNEL, HORIZONTAL ..... 5
A.3.2 LOW CHANNEL, VERTICAL ..... 7
A.3.3 MIDDLE CHANNEL, HORIZONTAL ..... 9
A.3.4 MIDDLE CHANNEL, VERTICAL ..... 11
A.3.5 HIGH CHANNEL, HORIZONTAL ..... 13
A.3.6 HIGH CHANNEL, VERTICAL ..... 15

## APPENDIX A.1: TEST RESULTS OF DEACTIVATION OF THE TRANSMISSION

Test Results

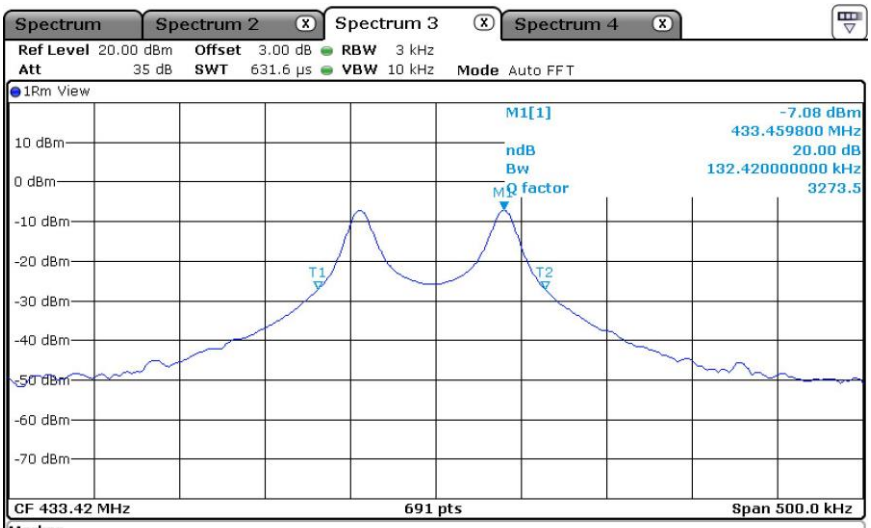
| Operation Mode | Duration Time (S) | Limit (S) | Result |
|---|---|---|---|
| A | 0.116 | 5 | Pass |

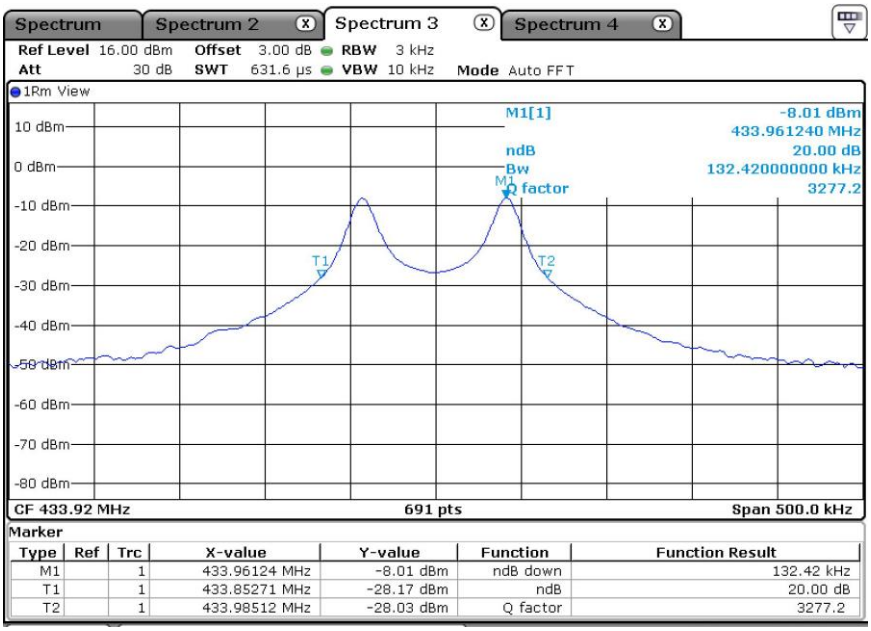


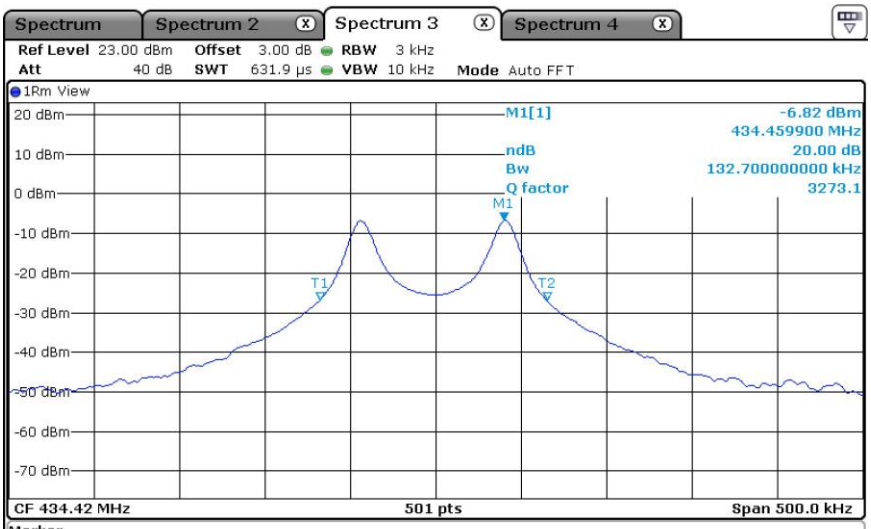
## APPENDIX A.2: TEST RESULTS OF 20DB EMISSION BANDWIDTH

Test Results

| Operation Freqnency (MHz) | 20dB Emission Bandwidth (MHz) | Limit (MHz) | Result |
|---|---|---|---|
| 433.42 | 0.132 | 1.084 | Pass |
| 433.92 | 0.132 | 1.085 | Pass |
| 434.42 | 0.133 | 1.086 | Pass |






Marker

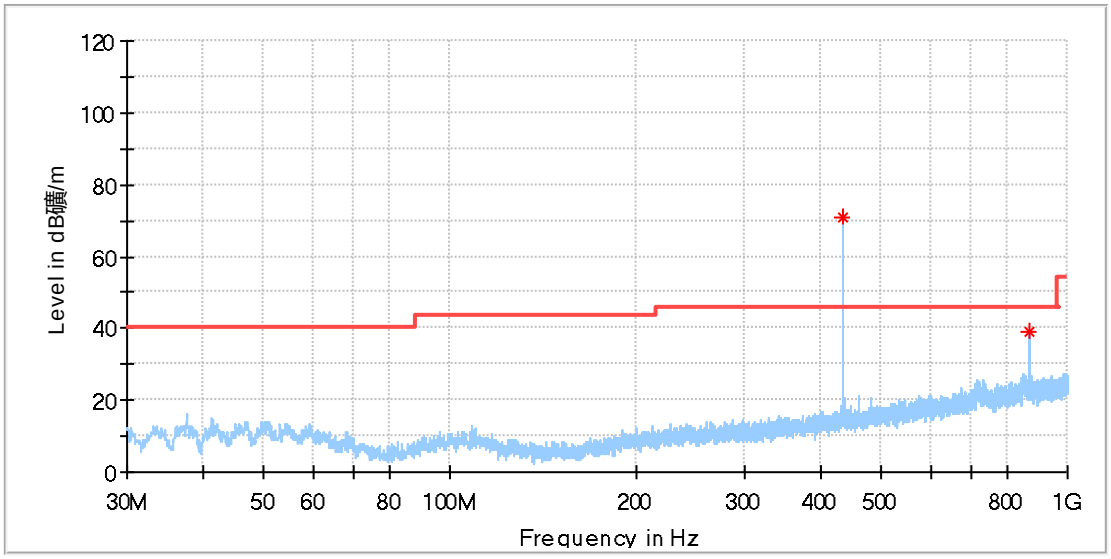
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 434.4599 MHz | -6.82 dBm | ndB down | 132.7 kHz |
| T1 | | 1 | 434.3521 MHz | -26.89 dBm | ndB | 20.00 dB |
| T2 | | 1 | 434.4849 MHz | -26.96 dBm | Q factor | 3273.1 |

## APPENDIX A.3: TEST RESULTS OF FIELD STRENGTH OF FUNDAMENTAL AND UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

A.3.1 Low Channel, Horizontal

# EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_Low |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



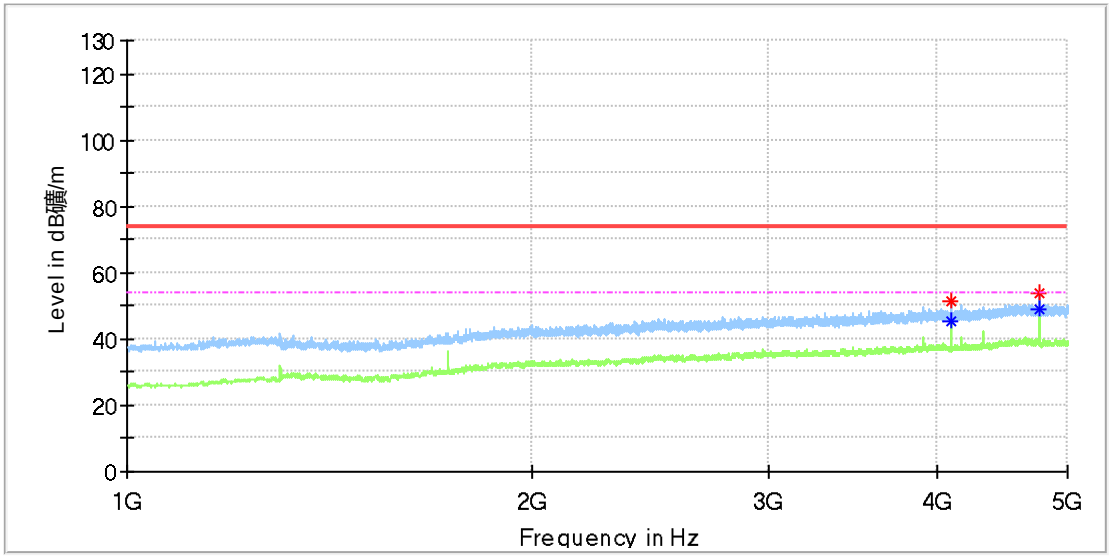

# Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 433.374500 | 70.82 | --- | 46.00 | -24.82 | 100.0 | H | 278.0 | -13.5 |
| 866.916000 | 39.20 | --- | 46.00 | 6.80 | 100.0 | H | 129.0 | -5.7 |

Remark: the limit for field strength of fundamental is 100.12dBuV/m (PK), 80.12dBuV/m (AV).

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_Low |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



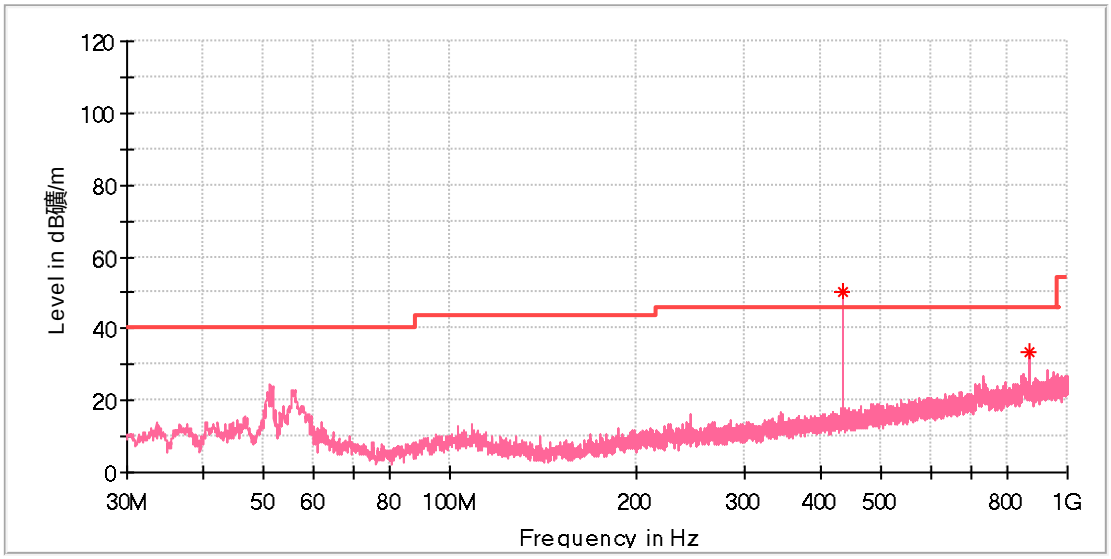

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 4100.437500 | 51.27 | --- | 74.00 | 22.73 | 100.0 | H | 321.0 | 10.1 |
| 4100.437500 | --- | 45.54 | 54.00 | 8.46 | 100.0 | H | 321.0 | 10.1 |
| 4767.362500 | 53.97 | --- | 74.00 | 20.03 | 100.0 | H | 129.0 | 11.8 |
| 4768.287500 | --- | 49.16 | 54.00 | 4.84 | 100.0 | H | 3.0 | 11.8 |

A.3.2 Low Channel, Vertical

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_Low |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



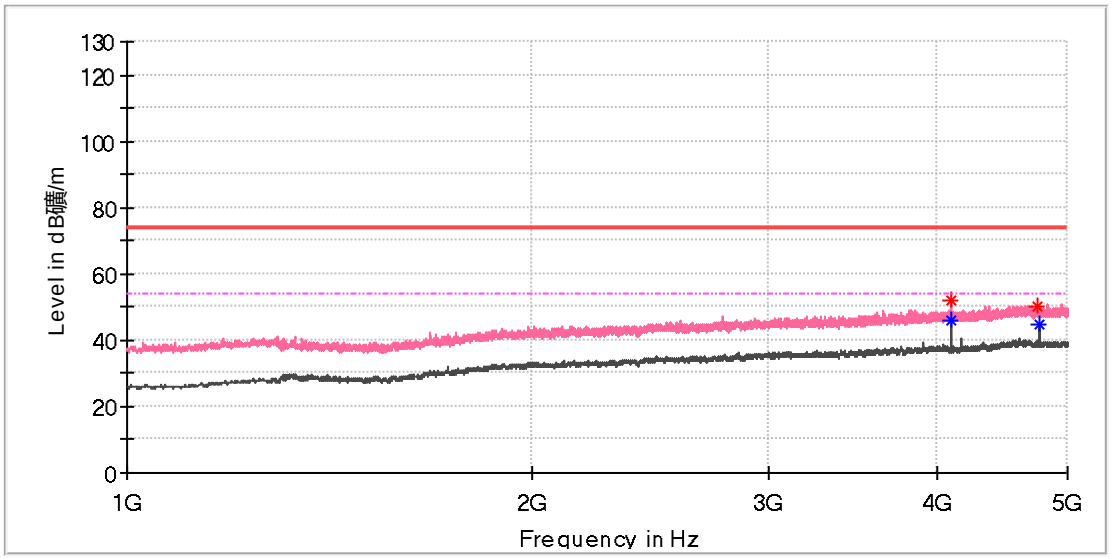

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 433.471500 | 50.29 | --- | 46.00 | -4.29 | 100.0 | V | 331.0 | -13.5 |
| 866.916000 | 33.50 | --- | 46.00 | 12.50 | 100.0 | V | 107.0 | -5.7 |

Remark: the limit for field strength of fundamental is 100.12dBuV/m (PK), 80.12dBuV/m (AV).

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_Low |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



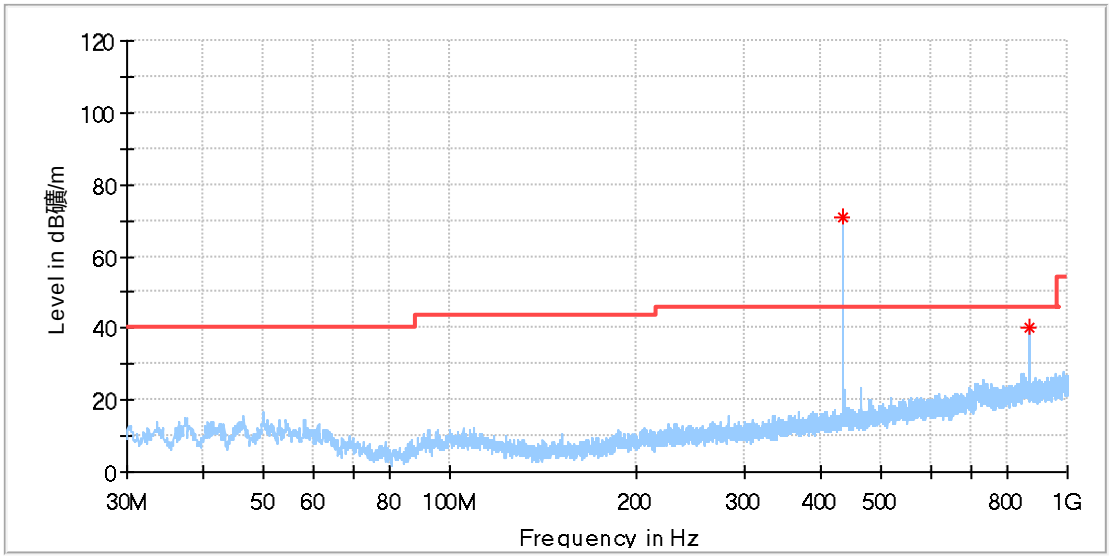

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 4100.900000 | --- | 45.77 | 54.00 | 8.23 | 100.0 | V | 86.0 | 10.1 |
| 4101.825000 | 52.06 | --- | 74.00 | 21.94 | 100.0 | V | 184.0 | 10.1 |
| 4756.262500 | 50.21 | --- | 74.00 | 23.79 | 100.0 | V | 110.0 | 11.8 |
| 4768.287500 | --- | 44.80 | 54.00 | 9.20 | 100.0 | V | 45.0 | 11.8 |

A.3.3 Middle Channel, Horizontal

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_Mid |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



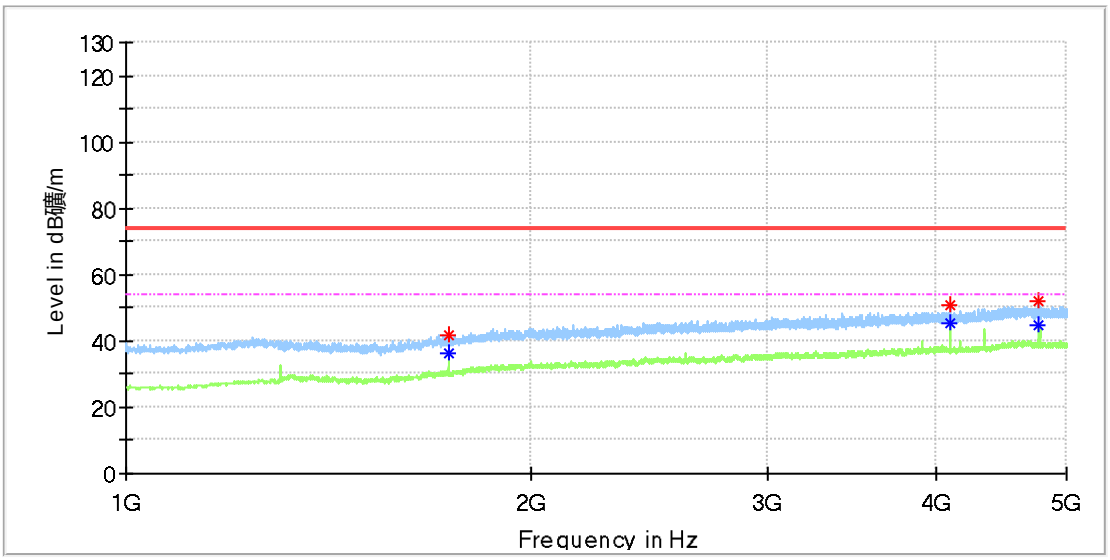

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 867.740500 | 40.20 | --- | 46.00 | 5.80 | 100.0 | H | 104.0 | -5.7 |
| 433.956500 | 70.76 | --- | 46.00 | -24.76 | 100.0 | H | 274.0 | -13.5 |

Remark: the limit for field strength of fundamental is 100.14dBuV/m (PK), 80.14dBuV/m (AV).

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_Mid |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



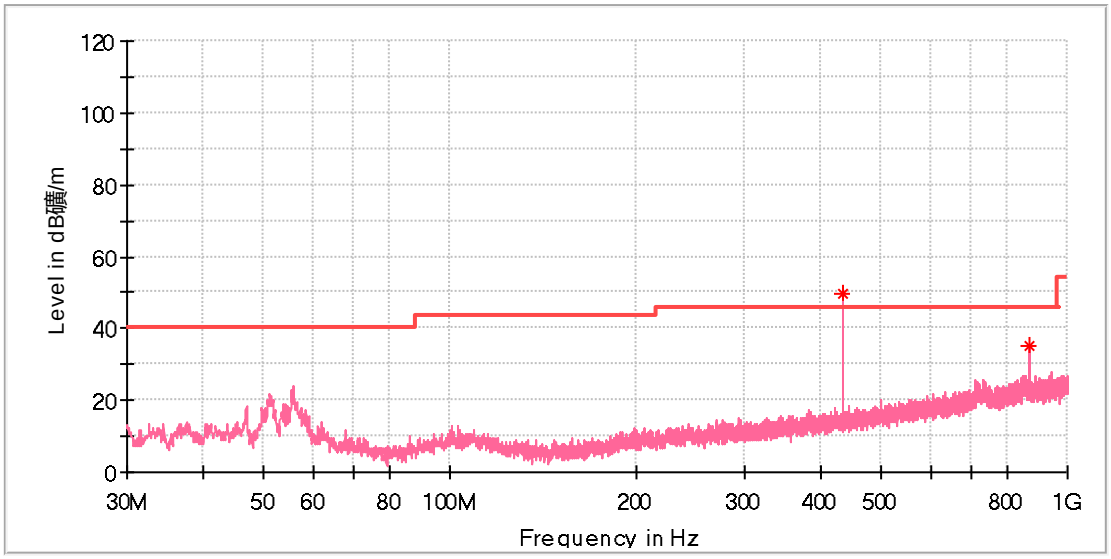

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 1735.675000 | 41.98 | --- | 74.00 | 32.02 | 100.0 | H | 260.0 | 3.6 |
| 1735.675000 | --- | 36.02 | 54.00 | 17.98 | 100.0 | H | 260.0 | 3.6 |
| 4100.437500 | 50.62 | --- | 74.00 | 23.38 | 100.0 | H | 260.0 | 10.1 |
| 4100.900000 | --- | 45.53 | 54.00 | 8.47 | 100.0 | H | 96.0 | 10.1 |
| 4772.912500 | 51.72 | --- | 74.00 | 22.28 | 100.0 | H | 4.0 | 11.8 |
| 4773.375000 | --- | 44.79 | 54.00 | 9.21 | 100.0 | H | 4.0 | 11.8 |

A.3.4 Middle Channel, Vertical

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_Mid |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



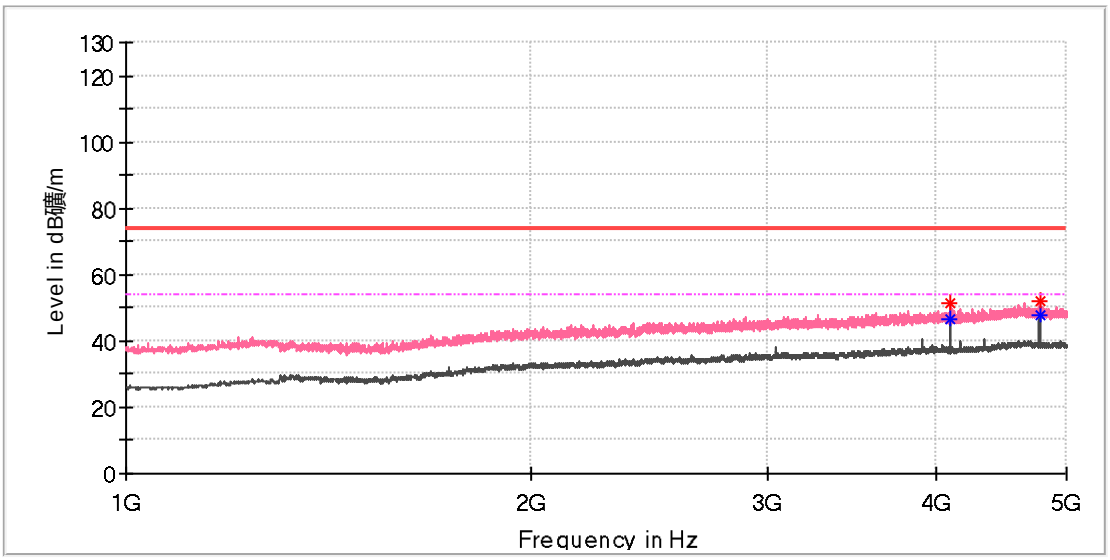

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 433.859500 | 49.89 | --- | 46.00 | -3.89 | 100.0 | V | 161.0 | -13.5 |
| 867.789000 | 35.18 | --- | 46.00 | 10.82 | 100.0 | V | 234.0 | -5.7 |

Remark: the limit for field strength of fundamental is 100.14dBuV/m (PK), 80.14dBuV/m (AV).

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_Mid |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



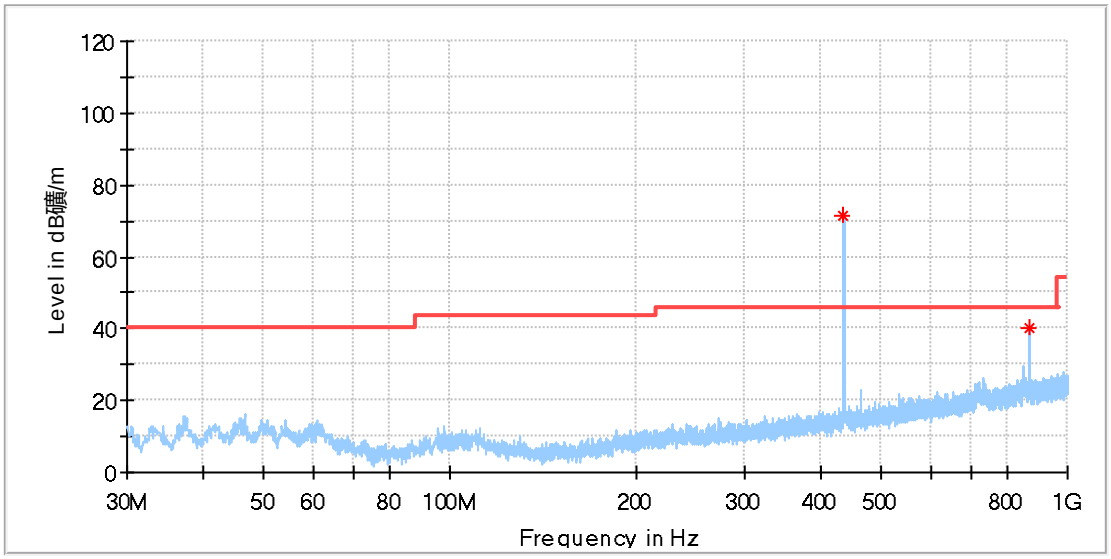

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 4100.437500 | --- | 46.64 | 54.00 | 7.36 | 100.0 | V | 243.0 | 10.1 |
| 4100.900000 | 51.28 | --- | 74.00 | 22.72 | 100.0 | V | 184.0 | 10.1 |
| 4773.837500 | 52.00 | --- | 74.00 | 22.00 | 100.0 | V | 35.0 | 11.8 |
| 4773.837500 | --- | 47.51 | 54.00 | 6.49 | 100.0 | V | 35.0 | 11.8 |

A.3.5 High Channel, Horizontal

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_High |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



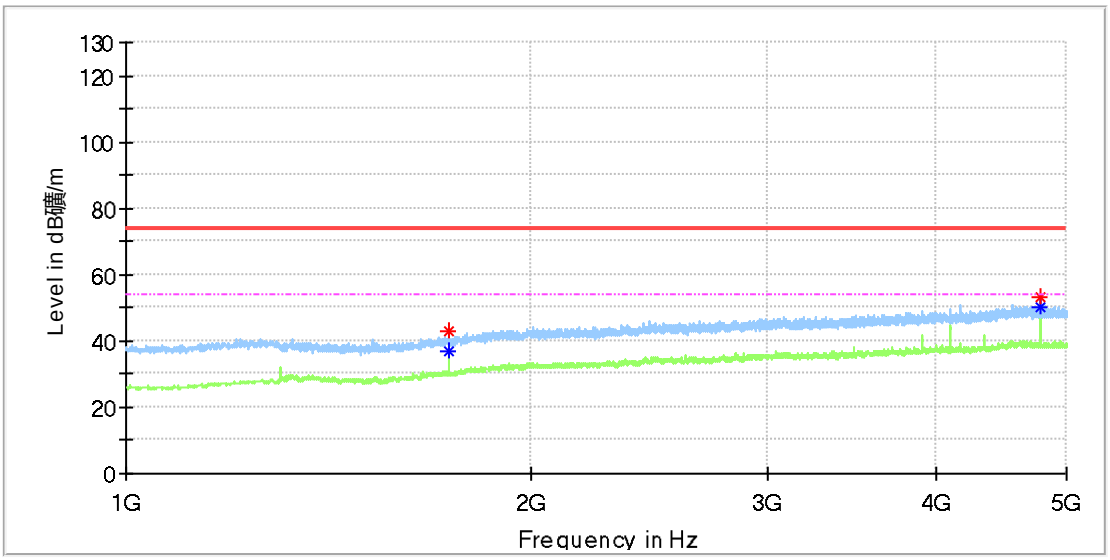

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 434.441500 | 71.34 | --- | 46.00 | -25.34 | 100.0 | H | 266.0 | -13.5 |
| 868.759000 | 39.92 | --- | 46.00 | 6.08 | 100.0 | H | 96.0 | -5.7 |

Remark: the limit for field strength of fundamental is 100.17dBuV/m (PK), 80.17dBuV/m (AV).

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_High |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



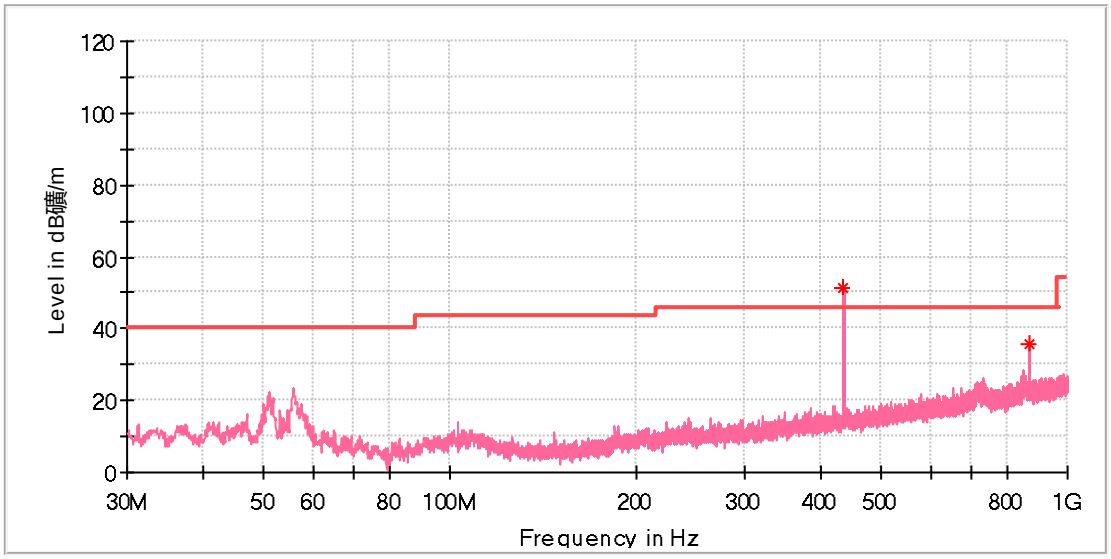

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 1737.062500 | 42.80 | --- | 74.00 | 31.20 | 100.0 | H | 321.0 | 3.6 |
| 1737.062500 | --- | 36.84 | 54.00 | 17.16 | 100.0 | H | 321.0 | 3.6 |
| 4778.462500 | 53.48 | --- | 74.00 | 20.52 | 100.0 | H | 152.0 | 11.8 |
| 4779.387500 | --- | 49.96 | 54.00 | 4.04 | 100.0 | H | 152.0 | 11.8 |

A.3.6 High Channel, Vertical

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_High |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |



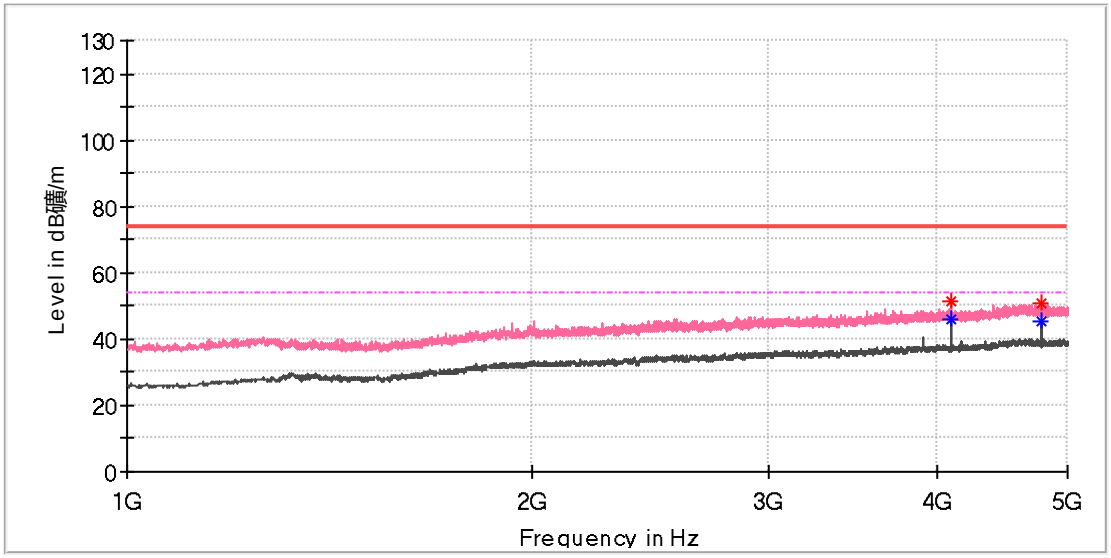

## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 434.393000 | 51.19 | --- | 46.00 | -5.19 | 100.0 | V | 313.0 | -13.5 |
| 868.759000 | 35.98 | --- | 46.00 | 10.02 | 100.0 | V | 239.0 | -5.7 |

Remark: the limit for field strength of fundamental is 100.17dBuV/m (PK), 80.17dBuV/m (AV).

## EUT Information

| | |
|---|---|
| EUT Name: | Smart Key |
| Model: | 3608030-BU51-AA |
| Test Mode: | TX_High |
| Test Voltage:: | Full Battery |
| Remark: | Temp 23 Humi:45% |
| Test Standard: | FCC 15.231 |
| Tested By: | Kei Zhang |
| Reviewed By: | Terry Yin |




## Critical_Freqs

| Frequency (MHz) | MaxPeak | Average (dBµV/m | Limit (dBµV/m | Margin | Height | Pol | Azimuth | Corr. (dB/m |
|---|---|---|---|---|---|---|---|---|
| 4099.512500 | 51.28 | --- | 74.00 | 22.72 | 100.0 | V | 331.0 | 10.1 |
| 4100.437500 | --- | 46.06 | 54.00 | 7.94 | 100.0 | V | 304.0 | 10.1 |
| 4778.925000 | --- | 45.09 | 54.00 | 8.91 | 100.0 | V | 86.0 | 11.8 |
| 4778.925000 | 50.86 | --- | 74.00 | 23.14 | 100.0 | V | 86.0 | 11.8 |