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Shenzhen Branch**

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Report No.: SZEM180800739001
Page: 1 of 17

TEST REPORT

Application No.: SZEM1808007390CR
Applicant: ShenZhen KaiXingHui Technology Co., Ltd.
Address of Applicant: 206, 2nd Floor G Bldg. Hengchangrong Xinghui Industrial Park, Huaning Rd, Dalang St. Longhua Dist. Shenzhen, China
Manufacturer: ShenZhen KaiXingHui Technology Co., Ltd.
Address of Manufacturer: 206, 2nd Floor G Bldg. Hengchangrong Xinghui Industrial Park, Huaning Rd, Dalang St. Longhua Dist. Shenzhen, China
Factory: ShenZhen KaiXingHui Technology Co., Ltd.
Address of Factory: 206, 2nd Floor G Bldg. Hengchangrong Xinghui Industrial Park, Huaning Rd, Dalang St. Longhua Dist. Shenzhen, China
Equipment Under Test (EUT):
EUT Name: Wireless charger
Model No.: X1, X2, X3 ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
FCC ID: 2AOSUX1
Standard(s) : 47 CFR Part 18
Date of Receipt: 2018-08-14
Date of Test: 2018-08-15 to 2018-08-17
Date of Issue: 2018-08-20

| | |
|---------------------|--------------|
| Test Result: | Pass* |
|---------------------|--------------|

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



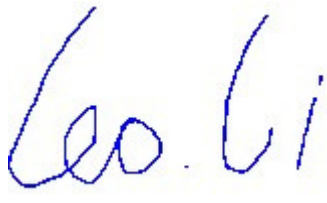

Keny Xu
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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| <i>Revision Record</i> | | | | |
|------------------------|----------------|-------------|-----------------|---------------|
| <i>Version</i> | <i>Chapter</i> | <i>Date</i> | <i>Modifier</i> | <i>Remark</i> |
| 01 | | 2018-08-20 | | Original |
| | | | | |
| | | | | |

| Authorized for issue by: | | | | |
|--------------------------|--|---|--|--|
| | |  | | |
| | | <hr/> | | |
| | | Leo Li /Project Engineer | | |
| | |  | | |
| | | <hr/> | | |
| | | Eric Fu /Reviewer | | |

2 Test Summary

| Radio Spectrum Matter Part | | | | |
|---|----------------|-------------------|-------------|--------|
| Item | Standard | Method | Requirement | Result |
| Conducted Emissions at Mains Terminals (150kHz-30MHz) | 47 CFR Part 18 | FCC OST/MP-5:1986 | N/A | Pass |
| Radiated Emissions (9kHz-30MHz) | 47 CFR Part 18 | FCC OST/MP-5:1986 | N/A | Pass |

Remark:

Model No.: X1, X2, X3

Only the model X1 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on model number.



3 Contents

| | Page |
|---|-----------|
| 1 COVER PAGE | 1 |
| 2 TEST SUMMARY | 3 |
| 3 CONTENTS | 4 |
| 4 GENERAL INFORMATION | 5 |
| 4.1 DETAILS OF E.U.T. | 5 |
| 4.2 DESCRIPTION OF SUPPORT UNITS | 5 |
| 4.3 MEASUREMENT UNCERTAINTY | 5 |
| 4.4 TEST LOCATION..... | 6 |
| 4.5 TEST FACILITY..... | 6 |
| 4.6 DEVIATION FROM STANDARDS..... | 6 |
| 4.7 ABNORMALITIES FROM STANDARD CONDITIONS | 6 |
| 5 EQUIPMENT LIST | 7 |
| 6 RADIO SPECTRUM MATTER TEST RESULTS | 8 |
| 6.1 CONDUCTED DISTURBANCE..... | 8 |
| 6.1.1 <i>E.U.T. Operation</i> | 8 |
| 6.1.2 <i>Test Setup Diagram</i> | 8 |
| 6.1.3 <i>Measurement Procedure and Data</i> | 8 |
| 6.1 RADIATED EMISSION | 11 |
| 6.1.1 <i>E.U.T. Operation</i> | 12 |
| 6.1.2 <i>Test Setup Diagram</i> | 12 |
| 6.1.3 <i>Measurement Procedure and Data</i> | 12 |
| 7 PHOTOGRAPHS | 16 |
| 7.1 CONDUCTED DISTURBANCE TEST SETUP | 16 |
| 7.2 RADIATED EMISSION TEST SETUP..... | 16 |
| 7.3 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)..... | 17 |

4 General Information

4.1 Details of E.U.T.

| | |
|----------------------|--|
| Power supply: | DC 5.0V or DC 9V from USB port Input: DC 5.0V/2A, DC 9V/1.67A Output: 5.0W(DC 5.0V/1A), 7.5W(DC 5.0V1.5A), 10W(DC 9.0V/1.1A) |
| Cable: | USB cable: 100cm shielded |
| Operation frequency: | 109.455-175.321kHz |
| Antenna type: | Inductive Loop Coil Antenna |
| Modulation type: | Load modulation |
| Remark: | Tests were conducted in both load modes and the worst case (10W) is reported only. |

4.2 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|--------------|--------------|-----------|----------------|
| Adapter | SAMSUNG | EP-TA200 | R37J8YA7W71DK3 |
| iPhone 8 | Apple | A1863 | F4GVQ656JC6D |
| Mobile Phone | SAMSUNG | SM-G9500 | R28J9140LPB |

4.3 Measurement Uncertainty

| No. | Item | Measurement Uncertainty |
|-----|---------------------------------|---------------------------------|
| 1 | Radio Frequency | $\pm 7.25 \times 10^{-8}$ |
| 2 | Duty cycle | $\pm 0.37\%$ |
| 3 | Occupied Bandwidth | $\pm 3\%$ |
| 4 | RF conducted power | $\pm 0.75\text{dB}$ |
| 5 | RF power density | $\pm 2.84\text{dB}$ |
| 6 | Conducted Spurious emissions | $\pm 0.75\text{dB}$ |
| 7 | RF Radiated power | $\pm 4.5\text{dB}$ (below 1GHz) |
| | | $\pm 4.8\text{dB}$ (above 1GHz) |
| 8 | Radiated Spurious emission test | $\pm 4.5\text{dB}$ (Below 1GHz) |
| | | $\pm 4.8\text{dB}$ (Above 1GHz) |
| 9 | Temperature test | $\pm 1^\circ\text{C}$ |
| 10 | Humidity test | $\pm 3\%$ |
| 11 | Supply voltages | $\pm 1.5\%$ |
| 12 | Time | $\pm 3\%$ |



4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

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

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



5 Equipment List

| Conducted disturbance | | | | | |
|-----------------------|-------------------|---------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Shielding Room | ChangZhou ZhongYu | GB-88 | SEM001-06 | 2017-05-10 | 2020-05-09 |
| Measurement Software | AUDIX | e3 V5.4.1221d | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM024-01 | 2018-07-12 | 2019-07-11 |
| LISN | Rohde & Schwarz | ENV216 | SEM007-01 | 2017-09-27 | 2018-09-26 |
| LISN | ETS-LINDGREN | 3816/2 | SEM007-02 | 2018-04-02 | 2019-04-01 |
| EMI Test Receiver | Rohde & Schwarz | ESCI | SEM004-02 | 2018-04-02 | 2019-04-01 |

| Radiated emission | | | | | |
|---------------------------------------|----------------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| 10m Semi-Anechoic Chamber | SAEMC | FSAC1018 | SEM001-03 | 2018-03-31 | 2021-03-30 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM029-01 | 2018-07-12 | 2019-07-11 |
| EMI Test Receiver (9kHz-7GHz) | Rohde & Schwarz | ESR | SEM004-03 | 2018-04-02 | 2019-04-01 |
| Trilog-Broadband Antenna (25MHz-2GHz) | Schwarzbeck | VULB9168 | SEM003-18 | 2016-01-26 | 2019-01-25 |
| Pre-amplifier | Sonoma Instrument Co | 310N | SEM005-04 | 2018-04-13 | 2019-04-12 |
| Active Loop Antenna | ETS-Lindgren | 6502 | SEM003-08 | 2017-08-22 | 2020-08-21 |

| General used equipment | | | | | |
|---------------------------------|---|----------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory | ZJ1-2B | SEM002-03 | 2017-09-29 | 2018-09-28 |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory | ZJ1-2B | SEM002-04 | 2017-09-29 | 2018-09-28 |
| Humidity/ Temperature Indicator | Mingle | N/A | SEM002-08 | 2017-09-29 | 2018-09-28 |
| Barometer | Changchun Meteorological Industry Factory | DYM3 | SEM002-01 | 2018-04-08 | 2019-04-07 |

6 Radio Spectrum Matter Test Results

6.1 Conducted disturbance

Test Requirement 47 CFR Part 18
 Test Method: FCC OST/MP-5:1986
 Limit:

| Frequency of emission(MHz) | Conducted limit(dBμV) | |
|----------------------------|-----------------------|-----------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

*Decreases with the logarithm of the frequency.

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 20.4 °C Humidity: 51.1 % RH Atmospheric Pressure: 1000 mbar

Pretest these mode to find the worst case:

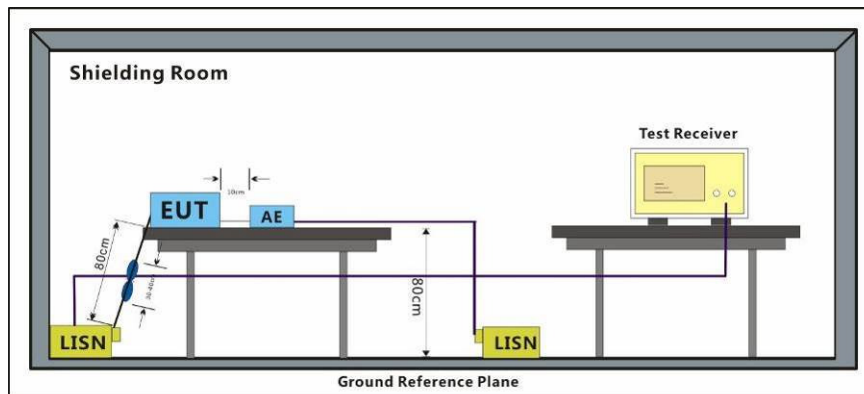
- a: Normal Working_9V
- b: Normal Working_5V

Test were conducted in three load modes and only the worst case is submitted.

The worst case for final test:

- a: Normal Working_9V

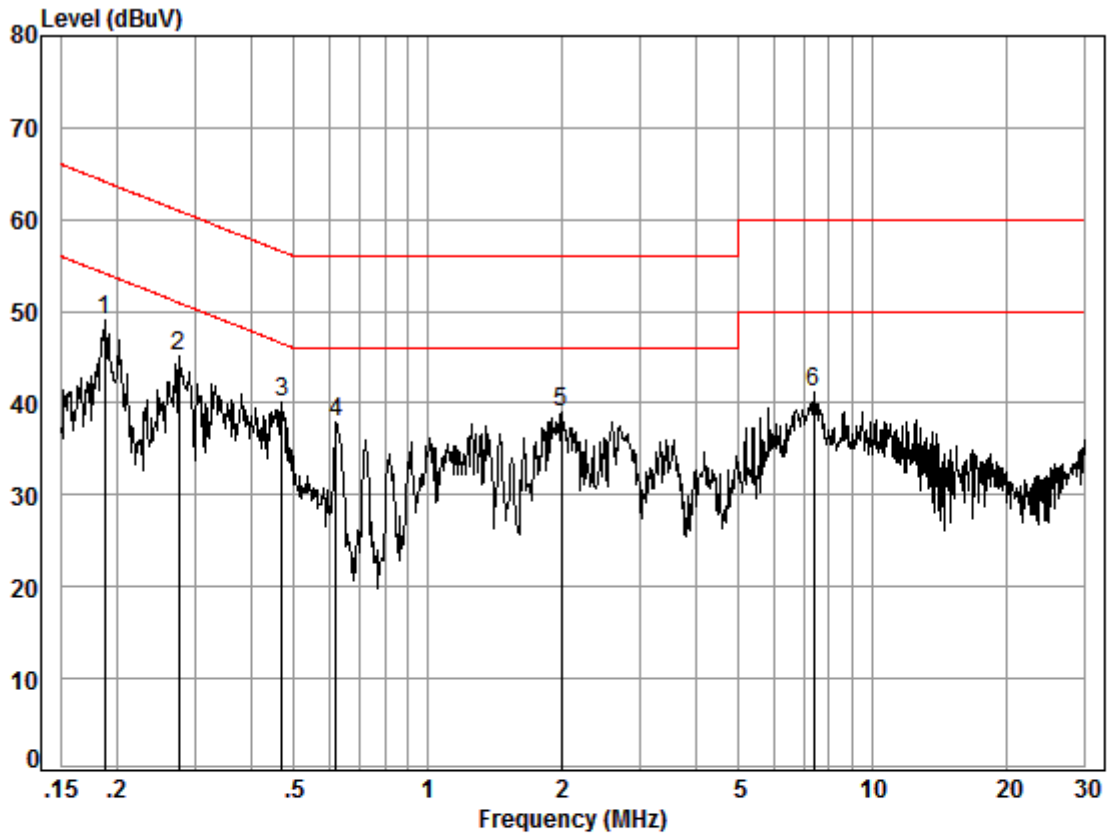
6.1.2 Test Setup Diagram



6.1.3 Measurement Procedure and Data



Mode:a; Line:Live Line

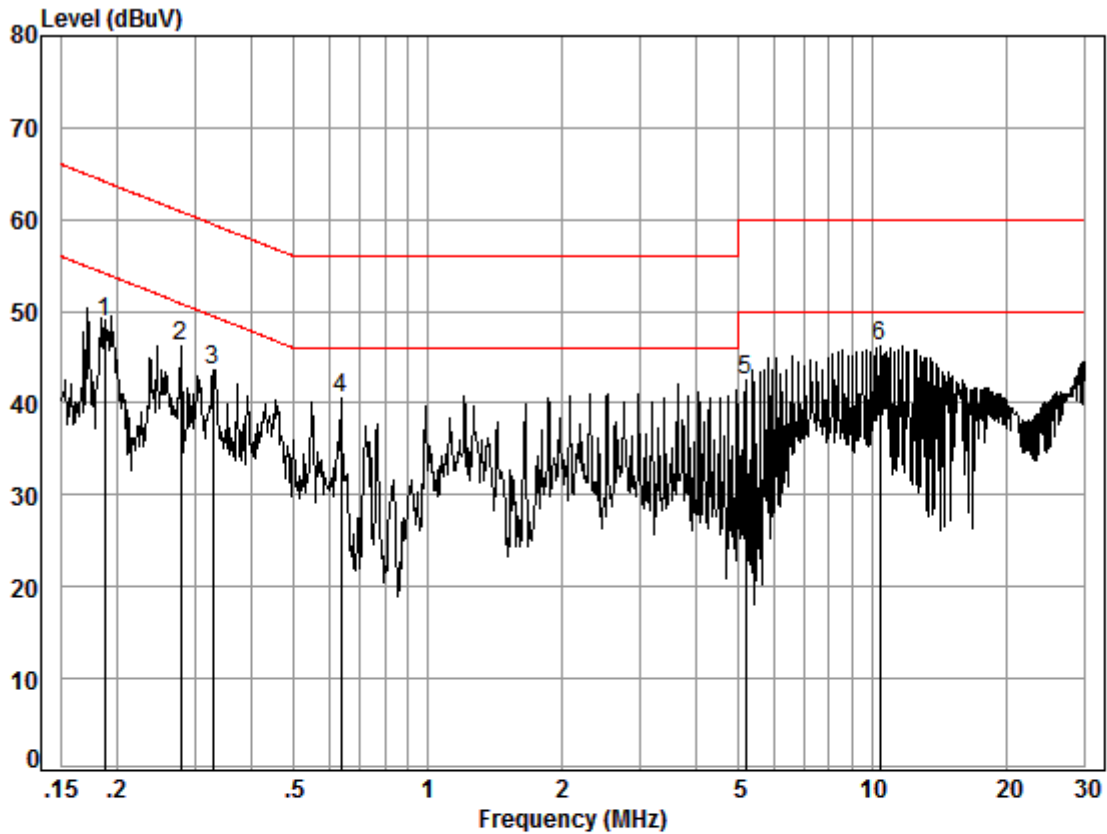


Site : Shielding Room
Condition: Line
Job No. : 07390CR
Test mode: a

| | Freq | Cable Loss | LISM Factor | Read Level | Limit Line | Over Limit | Remark |
|---|------|------------|-------------|------------|------------|------------|--------|
| | MHz | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.19 | 0.03 | 9.51 | 39.43 | 48.97 | -5.18 | Peak |
| 2 | 0.28 | 0.03 | 9.51 | 35.49 | 45.03 | -5.91 | Peak |
| 3 | 0.47 | 0.04 | 9.49 | 30.66 | 40.19 | -6.30 | Peak |
| 4 | 0.62 | 0.06 | 9.52 | 28.37 | 37.95 | -8.05 | Peak |
| 5 | 2.00 | 0.15 | 9.51 | 29.42 | 39.08 | -6.92 | Peak |
| 6 | 7.41 | 0.18 | 9.60 | 31.33 | 41.11 | -8.89 | Peak |



Mode:a; Line:Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 07390CR
Test mode: a

| | Freq | Cable Loss | LISM Factor | Read Level | Limit | Over | Remark |
|---|-------|------------|-------------|------------|-------|-------|--------|
| | MHz | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.19 | 0.03 | 9.58 | 39.25 | 48.86 | -5.29 | Peak |
| 2 | 0.28 | 0.03 | 9.58 | 36.62 | 46.23 | -4.62 | Peak |
| 3 | 0.33 | 0.03 | 9.58 | 34.04 | 43.65 | -5.84 | Peak |
| 4 | 0.64 | 0.06 | 9.62 | 30.80 | 40.48 | -5.52 | Peak |
| 5 | 5.19 | 0.20 | 9.69 | 32.63 | 42.52 | -7.48 | Peak |
| 6 | 10.40 | 0.20 | 9.79 | 36.19 | 46.18 | -3.82 | Peak |

6.1 Radiated emission

Test Requirement: 47 CFR Part 18
Test Method: FCC OST/MP-5:1986
Frequency Range: 9kHz-30MHz
Limit:

| Equipment | Operating frequency | RF Power generated by equipment (watts) | Field strength limit (uV/m) | Distance (meters) |
|---|-----------------------|---|---------------------------------|-------------------|
| Any type unless otherwise specified | Any ISM frequency | Below 500 | 25 | 300 |
| (miscellaneous). | | 500 or more | 25 × SQRT(power/500) | 300 (1) |
| | Any non-ISM frequency | Below 500 | 15 | 300 |
| | | 500 or more | 15 × SQRT(power/500) | 300 (1) |
| Industrial heaters and RF stabilized arc welders. | On or below 5,725 MHz | Any | 10 | 1,600 |
| | Above 5,725 MHz | Any | (2) | (2) |
| Medical diathermy | Any ISM frequency | Any | 25 | 300 |
| | Any non-ISM frequency | Any | 15 | 300 |
| Ultrasonic | Below 490 kHz | Below 500 | 2,400/F(kHz) | 300 |
| | | 500 or more | 2,400/F(kHz) × SQRT(power/500). | 300 (3) |
| | 490 to 1,600 kHz | Any | 24,000/F(kHz) | 30 |
| | Above 1,600 kHz | Any | 15 | 30 |
| Induction cooking ranges | Below 90 kHz | Any | 1,500 | 30 (4) |
| | On or above 90 kHz | Any | 300 | 30 (4) |

(1) Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

(2) Reduced to the greatest extent possible.

(3) Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment is not permitted the increase in field strength

(4) otherwise permitted here for over 500 watts.

Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 55 % RH Atmospheric Pressure: 1015 mbar

Pretest these mode to find the worst case:

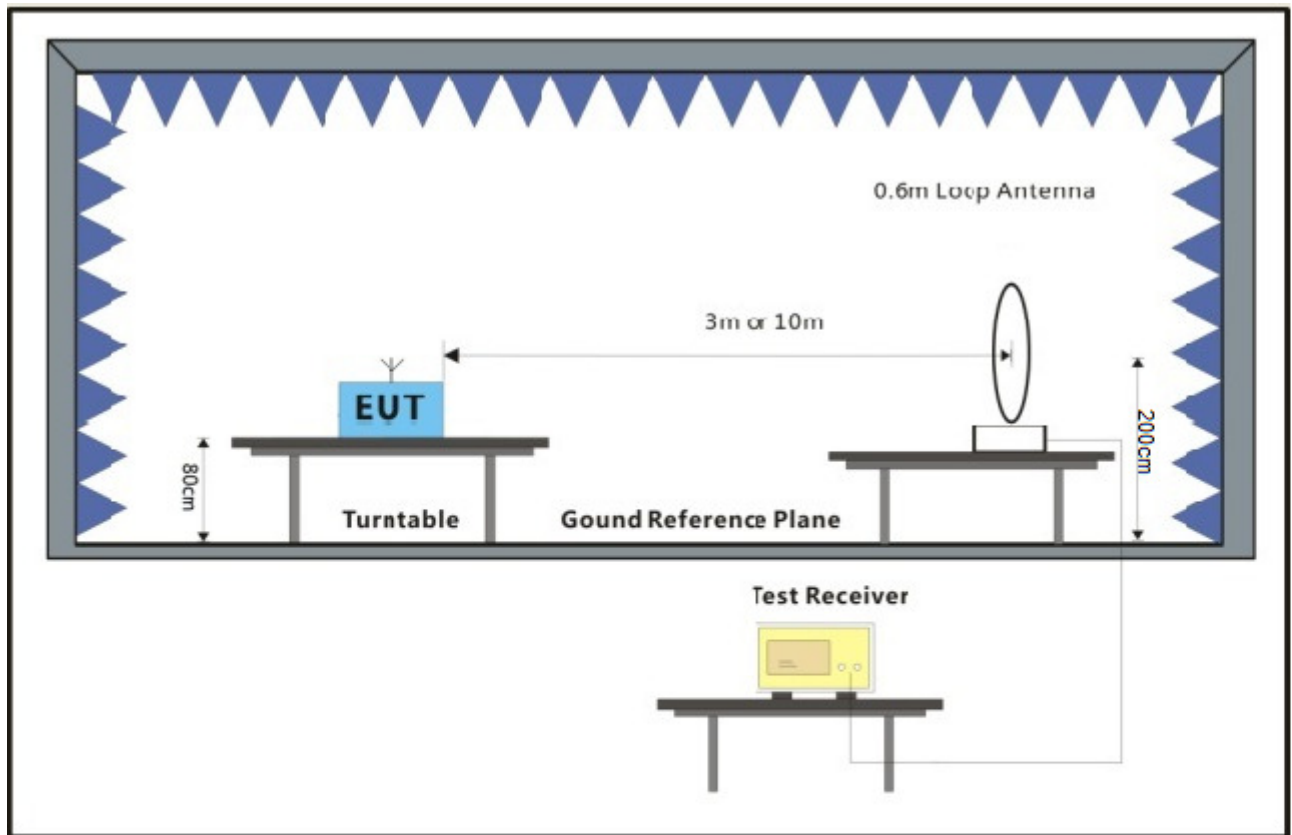
- a: Normal Working_9V
- b: Normal Working_5V

Test were conducted in three load modes and only the worst case is submitted.

The worst case for final test:

- a: Normal Working_9V

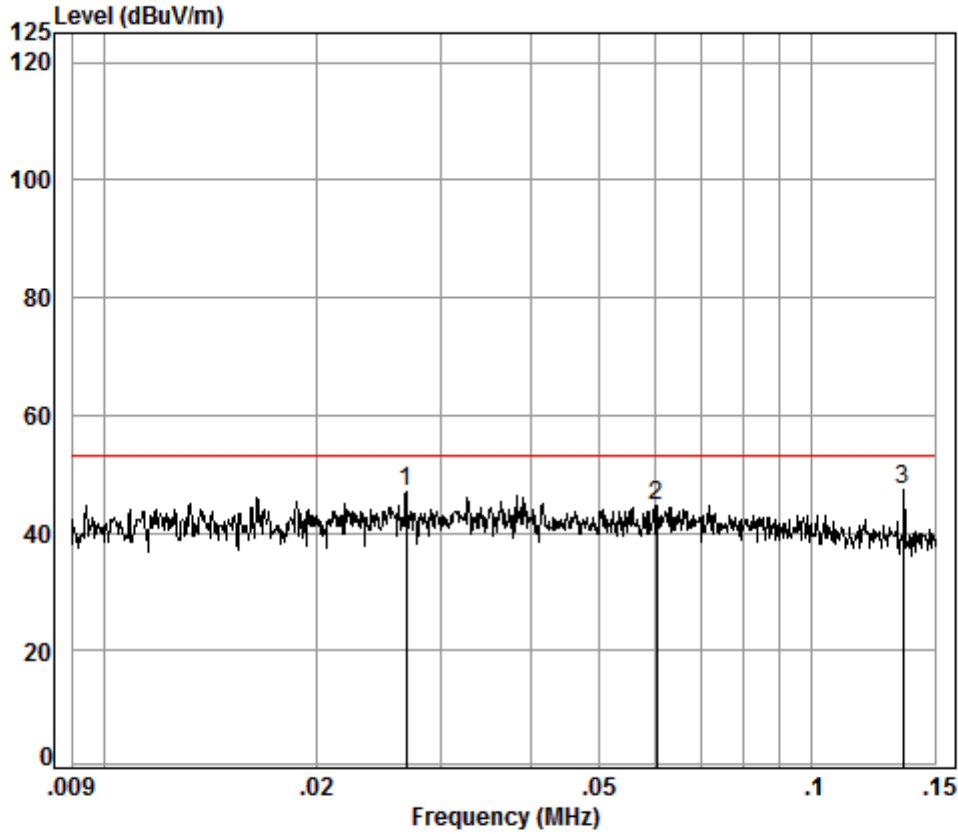
6.1.2 Test Setup Diagram



6.1.3 Measurement Procedure and Data



Mode a:
9kHz-150kHz

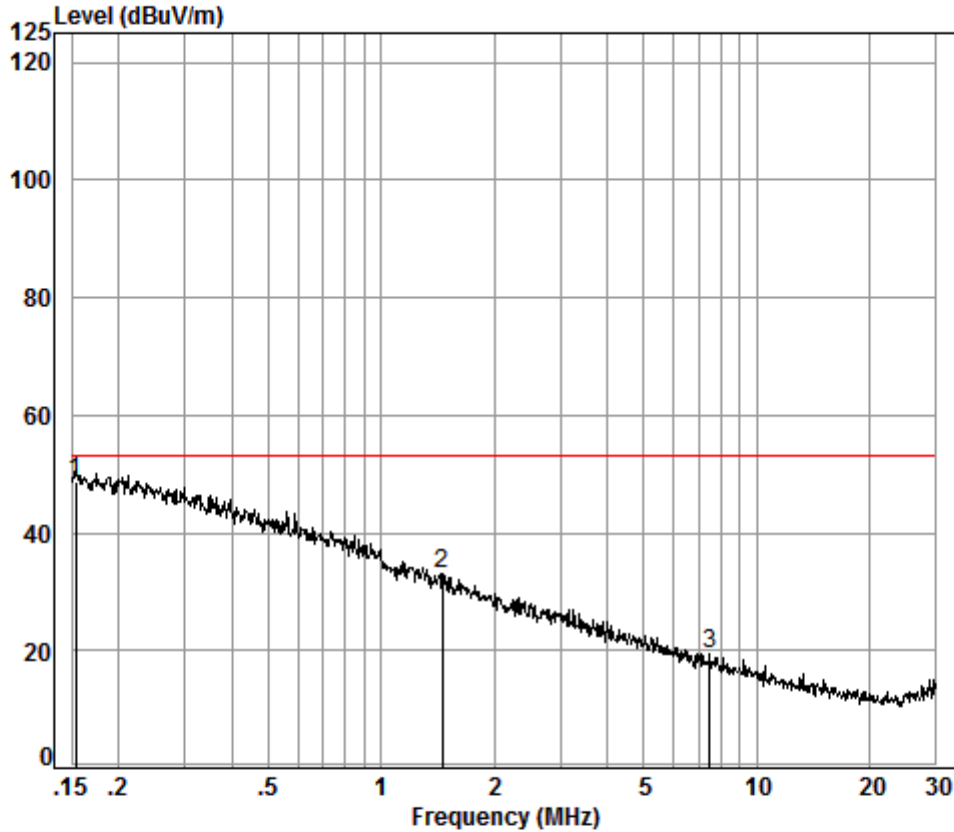


Condition: 10m
Job No. : 07390CR
Test Mode: a

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit Line | Over Limit |
|------|------|------------|------------|---------------|------------|--------|------------|------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 0.03 | 0.19 | 14.18 | 31.94 | 64.47 | 46.90 | 53.06 | -6.16 |
| 2 | 0.06 | 0.10 | 12.26 | 32.40 | 64.81 | 44.77 | 53.06 | -8.29 |
| 3 pp | 0.13 | 0.06 | 11.78 | 32.67 | 68.06 | 47.23 | 53.06 | -5.83 |



Mode a:
150kHz-30MHz



Condition: 10m
Job No. : 07390CR
Test Mode: a

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit Line | Over Limit |
|------|------|------------|------------|---------------|------------|--------|------------|------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 pp | 0.15 | 0.07 | 11.72 | 32.67 | 69.73 | 48.85 | 53.06 | -4.21 |
| 2 | 1.46 | 0.29 | 12.05 | 32.65 | 53.27 | 32.96 | 53.06 | -20.10 |
| 3 | 7.49 | 0.46 | 11.20 | 32.66 | 40.54 | 19.54 | 53.06 | -33.52 |



The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$$L_{300} / L_{10} = D_{10} / D_{300}$$

Note:

L₃₀₀: Level @ 300m distance. Unit: uV/m;

L₁₀: Level @ 10m distance. Unit: uV/m;

D₃₀₀: 300m distance. Unit: m

D₁₀: 10m distance. Unit: m

The level at 300m test distance is below:

| Frequency (MHz) | Level @ 10m (dBuV/m) | Level @ 10m (uV/m) | Level @ 300m (uV/m) | Level @ 300m (dBuV/m) | Limit @ 300m (dBuV/m) | Margin (dB) |
|-----------------|----------------------|--------------------|---------------------|-----------------------|-----------------------|-------------|
| 0.03 | 46.90 | 221.31 | 7.38 | 17.36 | 23.52 | -6.16 |
| 0.06 | 44.77 | 173.18 | 5.77 | 15.23 | 23.52 | -8.29 |
| 0.13 | 47.23 | 229.88 | 7.66 | 17.69 | 23.52 | -5.83 |
| 0.15 | 48.85 | 277.01 | 9.23 | 19.31 | 23.52 | -4.21 |
| 1.46 | 32.96 | 44.46 | 1.48 | 3.42 | 23.52 | -20.10 |
| 7.49 | 19.54 | 9.48 | 0.32 | -10.00 | 23.52 | -33.52 |

Remark:

- 1 This product belong to any non-ISM frequency equipment, the field strength limit is 15uV/m at 300 meter
- 2 Limit: $20\log(15\text{uV/m})=23.52\text{dBuV/m}$

7 Photographs

7.1 Conducted disturbance Test Setup



7.2 Radiated emission Test Setup





7.3 EUT Constructional Details (EUT Photos)

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1808007390CR.

- End of the Report -