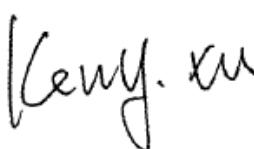


Report No.: SZEM181200117101
Page: 1 of 17

TEST REPORT

| | |
|------------------------------------|---|
| Application No.: | SZEM1812001171CR |
| Applicant: | Dongguan Kechenda Electronic Technology Co., Ltd. |
| Address of Applicant: | Kechenda Industrial Zone, No. 2, Guliao 2Rd, Tangxia Town, Dongguan, Guangdong, China |
| Manufacturer: | Dongguan Kechenda Electronic Technology Co., Ltd. |
| Address of Manufacturer: | Kechenda Industrial Zone, No. 2, Guliao 2Rd, Tangxia Town, Dongguan, Guangdong, China |
| Factory: | Dongguan Kechenda Electronic Technology Co., Ltd. |
| Address of Factory: | Kechenda Industrial Zone, No. 2, Guliao 2Rd, Tangxia Town, Dongguan, Guangdong, China |
| Equipment Under Test (EUT): | |
| EUT Name: | WIRELESS CHARGER |
| Model No.: | SS68-WC-TA |
| Trade mark: | VIVITAR |
| FCC ID: | 2AORG-AST-WR018-A |
| Standard(s) : | 47 CFR Part 18 |
| Date of Receipt: | 2018-12-29 |
| Date of Test: | 2018-12-29 to 2019-01-03 |
| Date of Issue: | 2019-01-07 |
| Test Result: | Pass* |

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



Keny Xu
EMC Laboratory Manager



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Testing & Inspection Laboratory

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| Revision Record | | | | |
|------------------------|----------------|-------------|-----------------|---------------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2019-01-07 | | Original |
| | | | | |
| | | | | |

| | | | |
|---------------------------------|--|------------------------------------|--|
| Authorized for issue by: | | | |
| | | Bill Chen | |
| | | Bill Chen /Project Engineer | |
| | | Eric Fu | |
| | | Eric Fu /Reviewer | |



2 Test Summary

| Radio Spectrum Matter Part | | | | |
|----------------------------|----------------|----------|-------------|--------|
| Item | Standard | Method | Requirement | Result |
| Conducted disturbance | 47 CFR Part 18 | FCC MP-5 | Part 18.307 | Pass |
| Radiated emission | 47 CFR Part 18 | FCC MP-5 | Part 18.305 | Pass |

SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Inspection Center EEC Laboratory

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4 General Information

4.1 Details of E.U.T.

| | |
|----------------------|--|
| Power supply: | Input: DC 5V/1.5A (max) Output: DC 5V/1A (max) |
| USB cable: | 24cm unshielded |
| Antenna Type: | Loop Antenna |
| Modulation Type: | Load Modulation |
| Operation Frequency: | 104.58kHz to 204.01kHz |
| Remark: | This device has been tested the worst status of full load and the device has been tested with load at zero charge, intermediate charge, and full charge. |

4.2 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|--------------|--------------|----------------|-----------------|
| Adapter | Apple | A1357 W010A051 | REF. No.SEA0500 |
| 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 | $\pm 1\text{ }^{\circ}\text{C}$ |
| 10 | Humidity test | $\pm 3\%$ |
| 11 | Supply voltages | $\pm 1.5\%$ |
| 12 | Time | $\pm 3\%$ |



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 | 2018-09-25 | 2019-09-24 |
| 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 (30MHz-1GHz) | Schwarzbeck | VULB9168 | SEM003-18 | 2016-06-29 | 2019-06-28 |
| 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 | 2018-09-27 | 2019-09-26 |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory | ZJ1-2B | SEM002-04 | 2018-09-27 | 2019-09-26 |
| Humidity/ Temperature Indicator | Mingle | N/A | SEM002-08 | 2018-09-27 | 2019-09-26 |
| 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 Part 18.307
Test Method: FCC MP-5
Limit:

| Frequency of emission (MHz) | Conducted limit (dB μ V) | |
|-----------------------------|------------------------------|-----------|
| | 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:

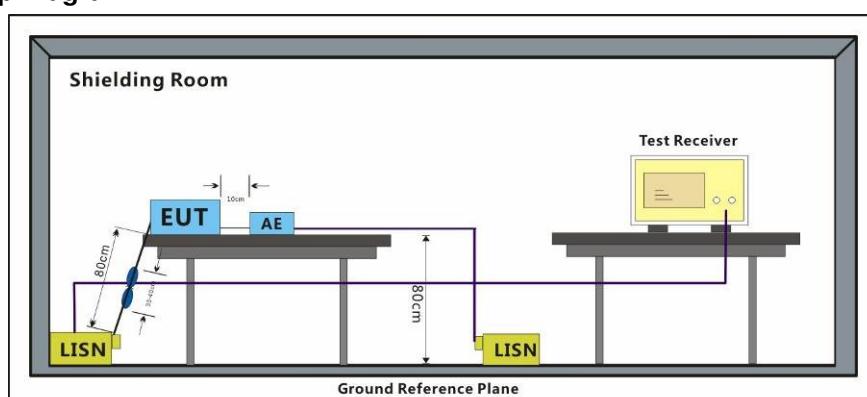
Temperature: 25 °C Humidity: 48 % RH Atmospheric Pressure: 1030 mbar

Test mode

- a: Normal Working mode, keep charging with mobile phone in low battery
- b: Normal Working mode, keep charging with mobile phone in intermediate battery
- c: Normal Working mode, keep charging with mobile phone in full battery
- d: Normal Working mode, keep EUT working with full load.
- e: Normal Working mode, keep EUT working with half load
- f: Normal Working mode, keep EUT working with no load

Test Worse case a: Normal Working mode, keep charging with mobile phone in low battery

6.1.2 Test Setup Diagram



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6.1.3 Measurement Procedure and Data

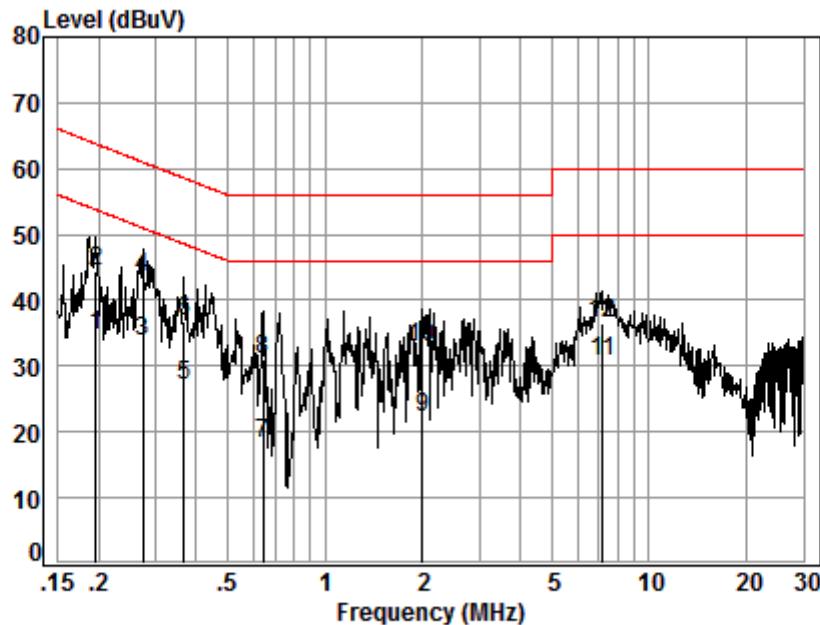
Test Procedure:

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.

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Mode:a; Line:Live Line



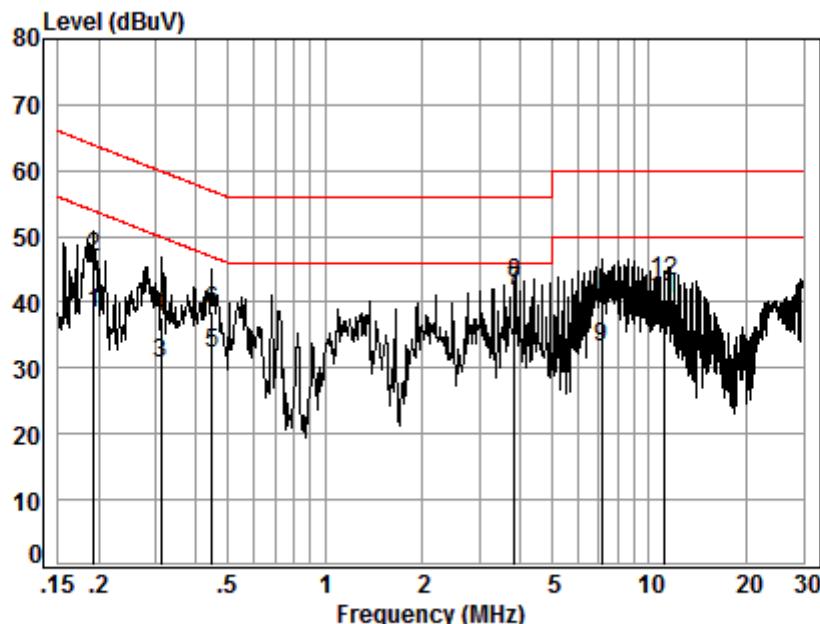
Site : Shielding Room
Condition: Line
Job No. : 01171CR
Test mode: a

| Freq | Cable | LISN | Read | Limit | | Over | Remark |
|------|-------|--------|-------|-------|-------|-------|----------------|
| | Loss | Factor | Level | Level | Line | Limit | |
| | MHz | dB | dB | dBuV | dBuV | dBuV | dB |
| 1 | 0.20 | 0.02 | 9.66 | 24.99 | 34.67 | 53.76 | -19.09 Average |
| 2 | 0.20 | 0.02 | 9.66 | 34.84 | 44.52 | 63.76 | -19.24 QP |
| 3 | 0.27 | 0.04 | 9.67 | 23.97 | 33.68 | 50.98 | -17.30 Average |
| 4 | 0.27 | 0.04 | 9.67 | 33.68 | 43.39 | 60.98 | -17.59 QP |
| 5 | 0.37 | 0.05 | 9.67 | 17.27 | 26.99 | 48.56 | -21.57 Average |
| 6 | 0.37 | 0.05 | 9.67 | 27.14 | 36.86 | 58.56 | -21.70 QP |
| 7 | 0.64 | 0.07 | 9.67 | 8.62 | 18.36 | 46.00 | -27.64 Average |
| 8 | 0.64 | 0.07 | 9.67 | 21.27 | 31.01 | 56.00 | -24.99 QP |
| 9 | 1.99 | 0.16 | 9.72 | 12.30 | 22.18 | 46.00 | -23.82 Average |
| 10 | 1.99 | 0.16 | 9.72 | 23.04 | 32.92 | 56.00 | -23.08 QP |
| 11 | 7.18 | 0.17 | 9.78 | 20.70 | 30.65 | 50.00 | -19.35 Average |
| 12 | 7.18 | 0.17 | 9.78 | 26.46 | 36.41 | 60.00 | -23.59 QP |

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Mode:a; Line:Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 01171CR
Test mode: a

| Freq | Cable | LISN | Read | Limit | Over | Remark | |
|------|-------|--------|-------|-------|-------|--------|----------------|
| | Loss | Factor | Level | | | | |
| | MHz | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.19 | 0.02 | 9.64 | 28.77 | 38.43 | 53.89 | -15.46 Average |
| 2 | 0.19 | 0.02 | 9.64 | 37.18 | 46.84 | 63.89 | -17.05 QP |
| 3 | 0.31 | 0.04 | 9.64 | 20.92 | 30.60 | 49.93 | -19.33 Average |
| 4 | 0.31 | 0.04 | 9.64 | 27.92 | 37.60 | 59.93 | -22.33 QP |
| 5 | 0.45 | 0.06 | 9.65 | 22.68 | 32.39 | 46.93 | -14.54 Average |
| 6 | 0.45 | 0.06 | 9.65 | 29.00 | 38.71 | 56.93 | -18.22 QP |
| 7 | 3.85 | 0.16 | 9.69 | 31.78 | 41.63 | 46.00 | -4.37 Average |
| 8 | 3.85 | 0.16 | 9.69 | 33.04 | 42.89 | 56.00 | -13.11 QP |
| 9 | 7.14 | 0.17 | 9.76 | 23.18 | 33.11 | 50.00 | -16.89 Average |
| 10 | 7.14 | 0.17 | 9.76 | 29.59 | 39.52 | 60.00 | -20.48 QP |
| 11 | 11.13 | 0.18 | 9.98 | 30.20 | 40.36 | 50.00 | -9.64 Average |
| 12 | 11.13 | 0.18 | 9.98 | 33.09 | 43.25 | 60.00 | -16.75 QP |

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6.2 Radiated emission

Test Requirement Part 18.305

Test Method: FCC MP-5

Measurement Distance: 3m

Limit:

(b) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

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

¹Field strength may not exceed 10 $\mu\text{V}/\text{m}$ 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.

²Reduced to the greatest extent possible.

³Field strength may not exceed 10 $\mu\text{V}/\text{m}$ at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.

⁴Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

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6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1030 mbar

Test mode a: Normal Working mode, keep charging with mobile phone in low battery

b: Normal Working mode, keep charging with mobile phone in intermediate battery

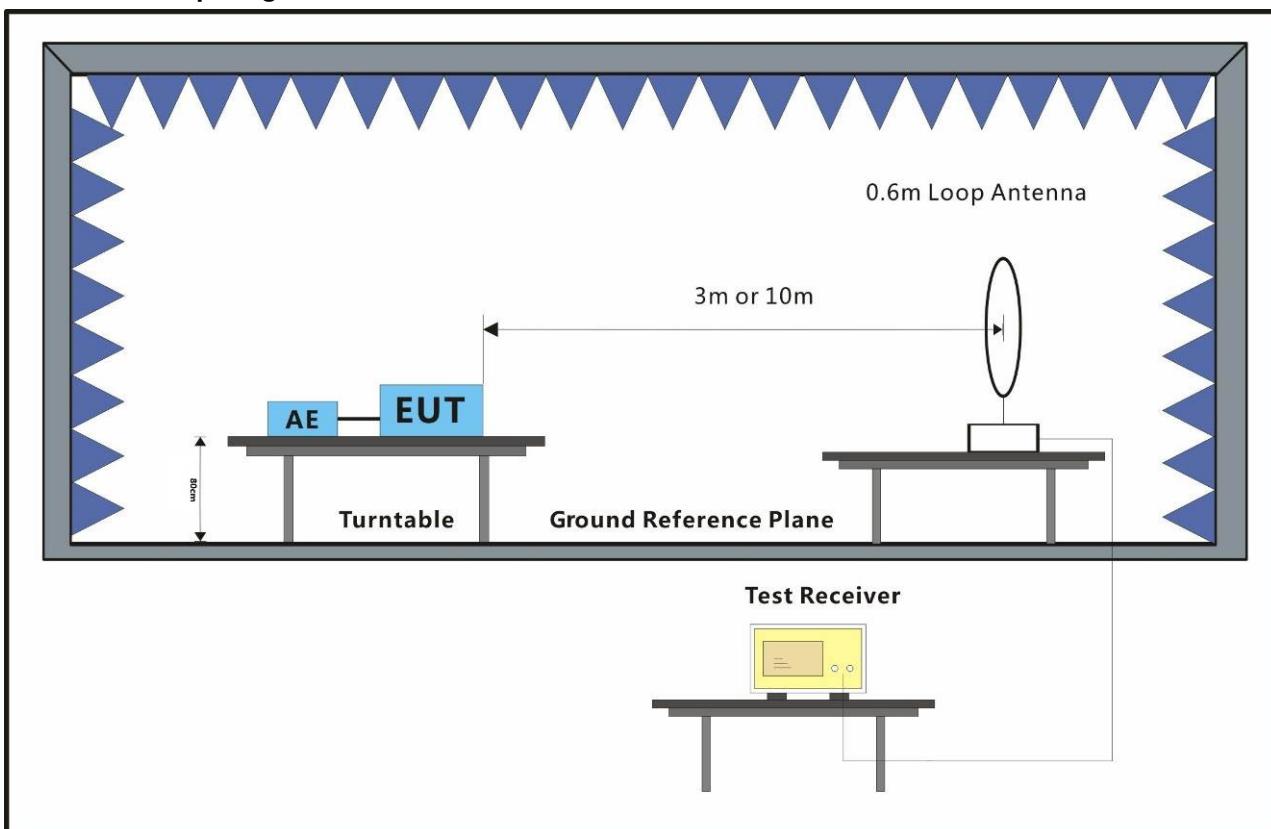
c: Normal Working mode, keep charging with mobile phone in full battery

d: Normal Working mode, keep EUT working with full load.

e: Normal Working mode, keep EUT working with half load

f: Normal Working mode, keep EUT working with no load

Test Worse case a: Normal Working mode, keep charging with mobile phone in low battery

6.2.2 Test Setup Diagram

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6.2.3 Measurement Procedure and Data

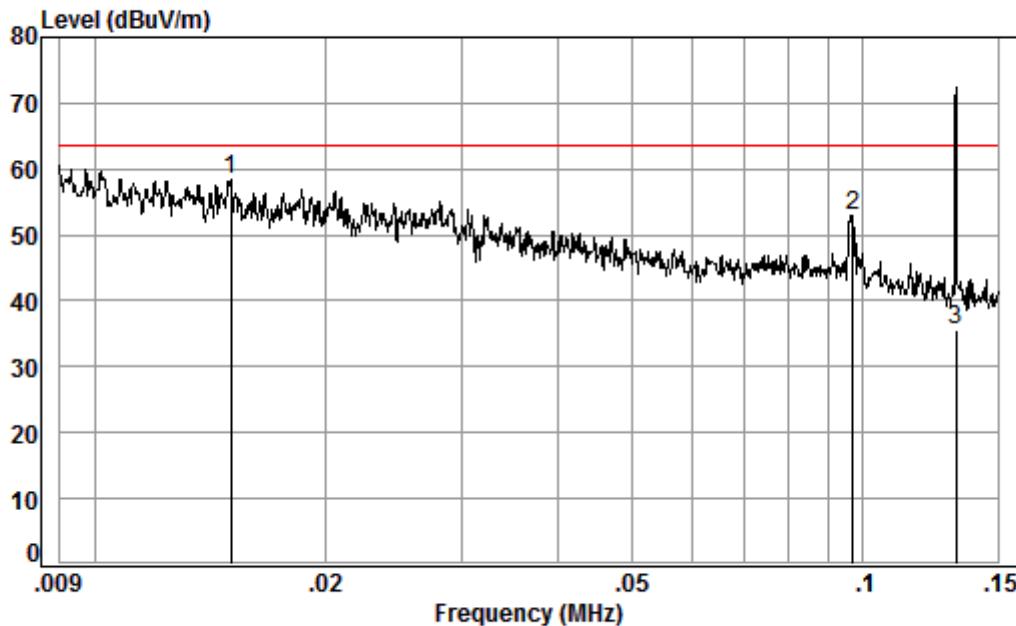
Test Procedure:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber(30MHz-1000MHz) and 10 meter semi-anechoic chamber(9kHz-30MHz). The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters(30MHz-1000MHz) and 3 meter (9kHz-30MHz) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Above 30MHz: The Analyzer/Receiver scanned from 30MHz to 1000MHz. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. Below 30MHz: The Analyzer/Receiver scanned from 9kHz to 30MHz. The antenna height is 2 meters above the ground to determine the maximum value of the field strength.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 2 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Repeat above procedures until all frequencies measured was complete.
- i. Measurement Requirement:
 - 1) This product belongs to non-ISM equipment, the field strength limit is 15uV/m at 300 meter distance.
 - 2) Limit: $20\log(15\mu\text{V}/\text{m}) + 20\log(300/3) = 23.52 + 40 = 63.52\text{dBuV}/\text{m}$ at 3 meters distance

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Mode a:
9kHz-150kHz



Condition: 3m
Job No. : 01171CR
Test Mode: a

| Freq | Cable | Ant | Preamp | Read | Limit | Over | Remark | |
|------|-------|------|--------|--------|-------|-------|--------|----------------|
| | MHz | Loss | Factor | Factor | Level | Level | Line | Limit |
| 1 pp | 0.02 | 0.25 | 16.78 | 31.62 | 72.88 | 58.29 | 63.52 | -5.23 Peak |
| 2 | 0.10 | 0.05 | 12.01 | 32.66 | 73.67 | 53.07 | 63.52 | -10.45 Peak |
| 3 av | 0.13 | 0.06 | 11.79 | 32.67 | 56.40 | 35.58 | 63.52 | -27.94 Average |



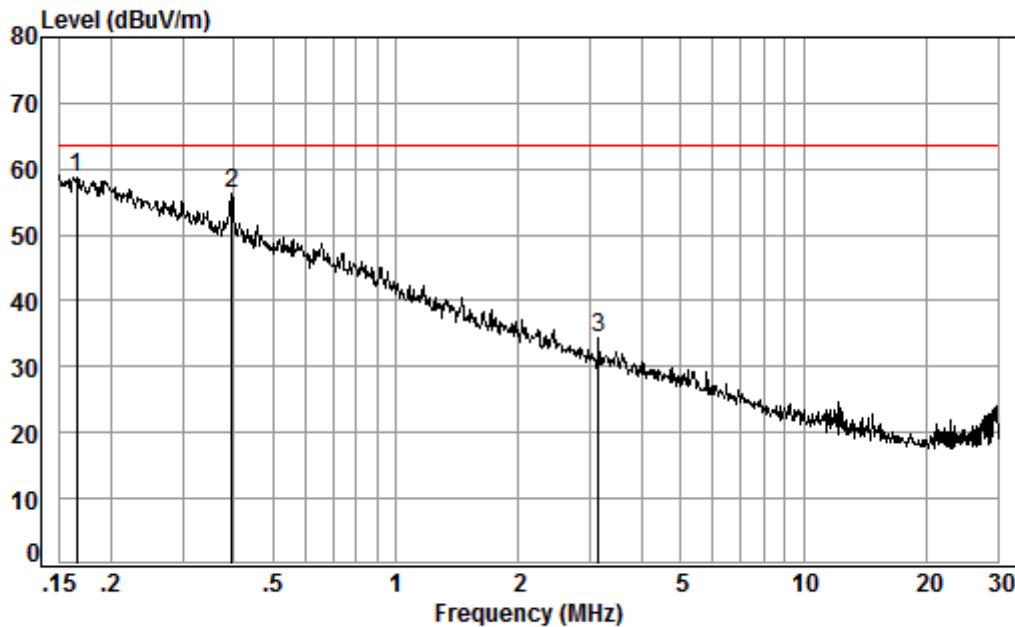
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No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Mode a:
150kHz-30MHz



Condition: 3m
Job No. : 01171CR
Test Mode: a

| Freq | Cable | Ant | Preamp | Read | Limit | | Over | Remark |
|------|-------|--------|--------|-------|-------|--------|--------|-------------|
| | Loss | Factor | Factor | Level | Level | Line | Limit | |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 pp | 0.17 | 0.07 | 11.76 | 32.67 | 79.59 | 58.75 | 63.52 | -4.77 Peak |
| 2 | 0.40 | 0.10 | 11.80 | 32.66 | 77.09 | 56.33 | 63.52 | -7.19 Peak |
| 3 | 3.14 | 0.38 | 12.18 | 32.65 | 54.51 | 34.42 | 63.52 | -29.10 Peak |

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7 Photographs

7.1 Test Setup

Please refer to setup photos..

7.2 EUT Constructional Details (EUT Photos)

Please refer to external and internal photos for details.

- End of the Report -

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No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com