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Shenzhen Branch**

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Report No.: SZEM180700609401
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TEST REPORT

Application No.: SZEM1807006094CR
Applicant: acv GmbH
Address of Applicant: Strassburger Allee 10-12, 41812 Erkelenz, Germany
Manufacturer: DerSun / NERA TECH (HK) LIMITED
Address of Manufacturer: Huameiju Business Centre, Xinhua Road, Bao'an District, Floor 7, Zone A, Shenzhen, China
Factory: acv GmbH
Address of Factory: Strassburger Allee 10-12, 41812 Erkelenz, Germany
Equipment Under Test (EUT):
EUT Name: Wireless charging kit
Model No.: 240000-01-023, 240000-01-025, 241250-51-5, 241250-51-1 ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade mark: Inbay
FCC ID: 2AQWT241250511
Standard(s) : 47 CFR Part 18
Date of Receipt: 2018-07-10
Date of Test: 2018-07-13
Date of Issue: 2018-07-18

| | |
|---------------------|--------------|
| 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 | | 2018-07-18 | | Original |
| | | | | |
| | | | | |

| Authorized for issue by: | | | | |
|--------------------------|--|---|--|--|
| | |  | | |
| | | <hr/> | | |
| | | Moon Zhang /Project Engineer | | |
| | |  | | |
| | | <hr/> | | |
| | | 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 |

Remark:

Model No.: 240000-01-023, 240000-01-025, 241250-51-5, 241250-51-1

Only the model 241250-51-1 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only difference on housing and color.

The wireless charging PCB (240000-01-09) of these 4 applications is always the same.

240000-01-025 is a subsystem which houses the PCB in a plastic housing

240000-01-023 is a subsystem which houses the PCB in an aluminum housing with plastic cover

241250-51-1 is the full assembly application (for Renault Megane) using the subsystem 240000-01-025

241250-51-5 is the full assembly application (for Renault Megane) using the subsystem 240000-01-023



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4 General Information

4.1 Details of E.U.T.

| | |
|----------------------|---|
| Power supply: | INPUT:DC 12V ADAPTOR MODEL:GME36A-120300FDS INPUT:AC 100-240V 50/60Hz 1.2A OUTPUT:DC 12V 3A |
| Output power: | 5W |
| Cable: | DC POWER CABEL: 60CM ADAPTOR: DC POWER CABLE: 120CM AC POWER CABLE:130CM |
| Operation frequency: | 134.6-193.5kHz |
| Antenna type: | Inductive Loop Coil Antenna |
| Modulation type: | Load modulation |

4.2 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|---------------|--------------------|-----------|-----------------|
| DC power | ZHAOXIN | RXN-305D | REF. No.SEA2700 |
| Load receiver | SUPPLIED BY CLIENT | 10W | N/A |
| 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 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

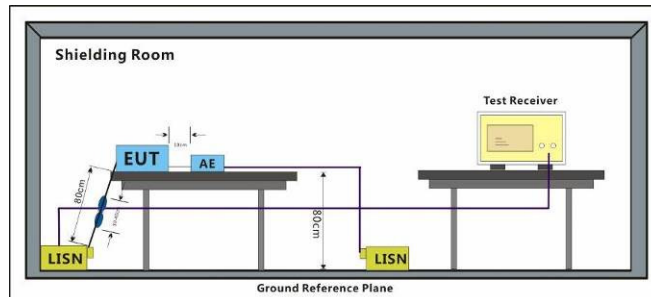
Operating Environment:

Temperature: 24.8 °C Humidity: 43.1 % RH Atmospheric Pressure: 1005 mbar

Test mode: a:Charged by adaptor_Keep the EUT charging.

Test is conducted in three load modes(low(99%), medium(50%) , high(1%) load and full load mode and only the worst case(full load mode) is submitted.

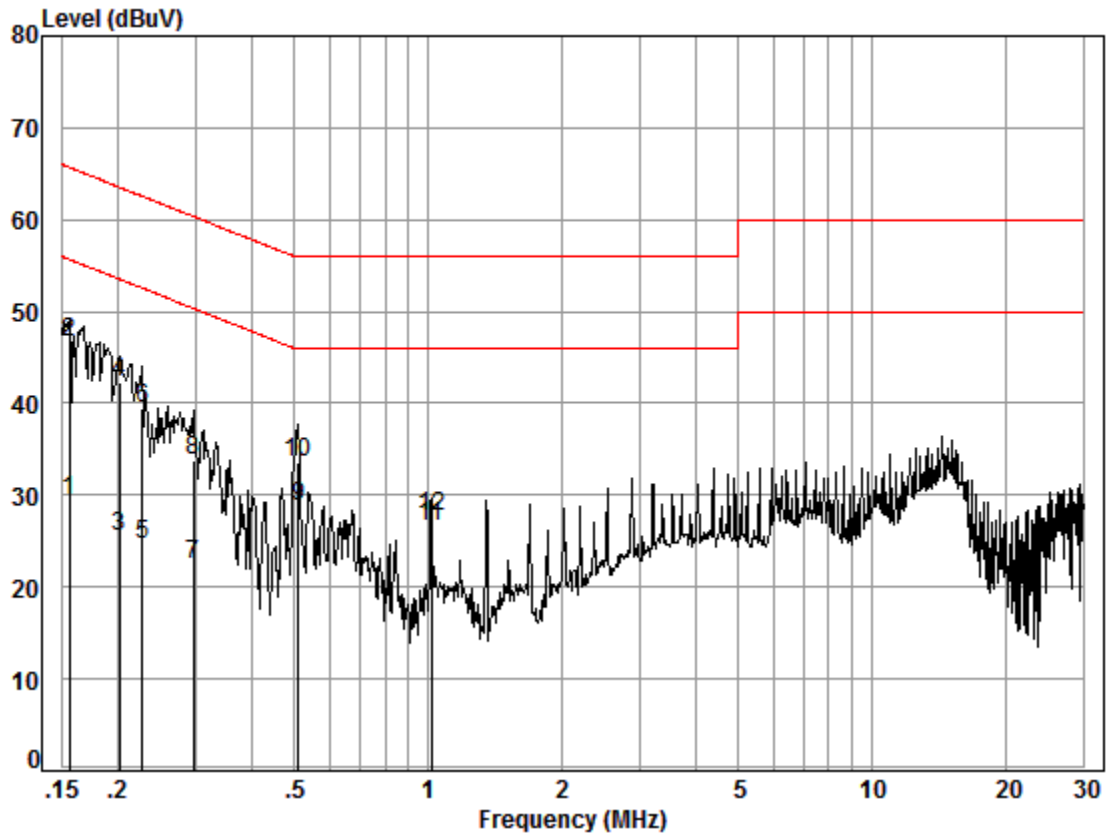
6.1.2 Test Setup Diagram



6.1.3 Measurement Procedure and Data



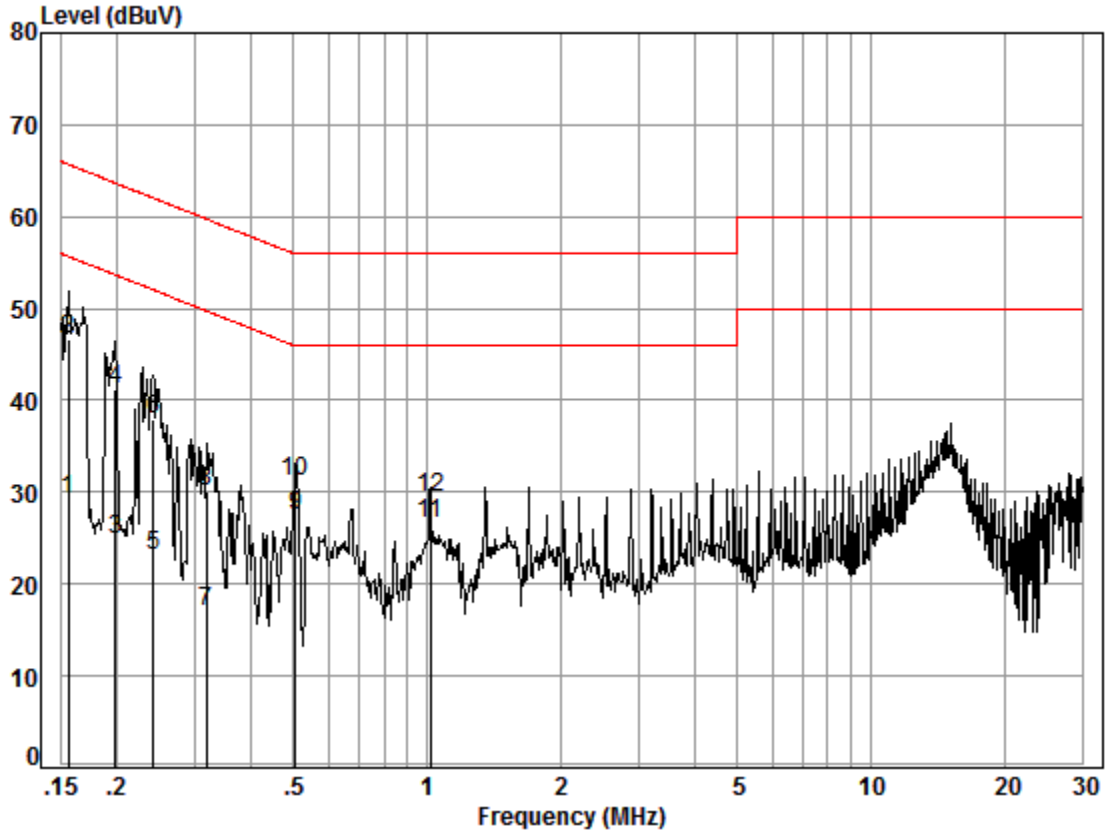
Mode:a; Line:Live Line



Site : Shielding Room
Condition: Line
Job No. : 06094CR
Test mode: a

| | Freq | Cable Loss | LISN Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|----|------|------------|-------------|------------|-------|------------|------------|---------|
| | MHz | dB | dB | dBuV | dBuV | dBuV | dB | |
| 1 | 0.16 | 0.02 | 9.51 | 19.91 | 29.44 | 55.69 | -26.25 | Average |
| 2 | 0.16 | 0.02 | 9.51 | 37.11 | 46.64 | 65.69 | -19.05 | QP |
| 3 | 0.20 | 0.03 | 9.50 | 15.90 | 25.43 | 53.54 | -28.11 | Average |
| 4 | 0.20 | 0.03 | 9.50 | 32.70 | 42.23 | 63.54 | -21.31 | QP |
| 5 | 0.23 | 0.03 | 9.51 | 15.07 | 24.61 | 52.57 | -27.96 | Average |
| 6 | 0.23 | 0.03 | 9.51 | 29.95 | 39.49 | 62.57 | -23.08 | QP |
| 7 | 0.30 | 0.03 | 9.51 | 12.92 | 22.46 | 50.37 | -27.91 | Average |
| 8 | 0.30 | 0.03 | 9.51 | 24.20 | 33.74 | 60.37 | -26.63 | QP |
| 9 | 0.51 | 0.04 | 9.49 | 19.31 | 28.84 | 46.00 | -17.16 | Average |
| 10 | 0.51 | 0.04 | 9.49 | 24.13 | 33.66 | 56.00 | -22.34 | QP |
| 11 | 1.02 | 0.10 | 9.50 | 16.89 | 26.49 | 46.00 | -19.51 | Average |
| 12 | 1.02 | 0.10 | 9.50 | 18.18 | 27.78 | 56.00 | -28.22 | QP |

Mode:a; Line:Neutral Line



Site : Shielding Room
 Condition: Neutral
 Job No. : 06094CR
 Test mode: a

| | Freq | Cable Loss | LISN Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|----|------|------------|-------------|------------|-------|------------|------------|---------|
| | MHz | dB | dB | dBuV | dBuV | dBuV | dB | |
| 1 | 0.16 | 0.02 | 9.58 | 19.66 | 29.26 | 55.69 | -26.43 | Average |
| 2 | 0.16 | 0.02 | 9.58 | 37.06 | 46.66 | 65.69 | -19.03 | QP |
| 3 | 0.20 | 0.03 | 9.57 | 15.24 | 24.84 | 53.67 | -28.83 | Average |
| 4 | 0.20 | 0.03 | 9.57 | 31.70 | 41.30 | 63.67 | -22.37 | QP |
| 5 | 0.24 | 0.03 | 9.58 | 13.55 | 23.16 | 52.04 | -28.88 | Average |
| 6 | 0.24 | 0.03 | 9.58 | 28.27 | 37.88 | 62.04 | -24.16 | QP |
| 7 | 0.32 | 0.03 | 9.58 | 7.44 | 17.05 | 49.75 | -32.70 | Average |
| 8 | 0.32 | 0.03 | 9.58 | 20.57 | 30.18 | 59.75 | -29.57 | QP |
| 9 | 0.50 | 0.04 | 9.60 | 17.91 | 27.55 | 46.00 | -18.45 | Average |
| 10 | 0.50 | 0.04 | 9.60 | 21.50 | 31.14 | 56.00 | -24.86 | QP |
| 11 | 1.02 | 0.10 | 9.63 | 16.86 | 26.59 | 46.00 | -19.41 | Average |
| 12 | 1.02 | 0.10 | 9.63 | 19.74 | 29.47 | 56.00 | -26.53 | QP |

6.2 Radiated emission

Test Requirement Part 18.305
Test Method: FCC MP-5
Measurement Distance: 10m
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 | 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 | $2,400/F(\text{kHz})$ | 300 |
| | | 500 or more | $2,400/F(\text{kHz}) \times \text{SQRT}(\text{power}/500)$ | ³ 300 |
| | 490 to 1,600 kHz | Any | $24,000/F(\text{kHz})$ | 30 |
| | Above 1,600 kHz | Any | 15 | 30 |
| Induction cooking ranges | Below 90 kHz | Any | 1,500 | ⁴ 30 |
| | On or above 90 kHz | Any | 300 | ⁴ 30 |

¹Field 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.

²Reduced to the greatest extent possible.

³Field strength may not exceed 10 µV/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.

Remark:

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

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1005 mbar

Pretest these modes to find the worst case:
 a:Charged by adaptor_Keep the EUT charging.
 b: DC 12V input_Keep the EUT charging.

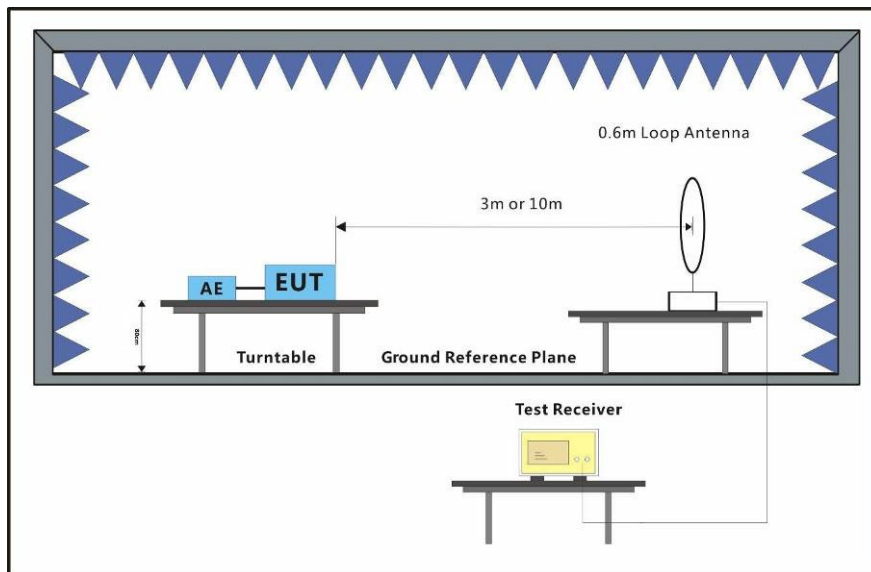
The worst case for final test:

Test is conducted in three load modes(low(99%), medium(50%) , high(1%) load and full load mode and only the worst case(full load mode) is submitted.

a:Charged by adaptor_Keep the EUT charging.

Test is conducted in three load modes(low(99%), medium(50%) , high(1%) load and full load mode and only the worst case(full load mode) is submitted.

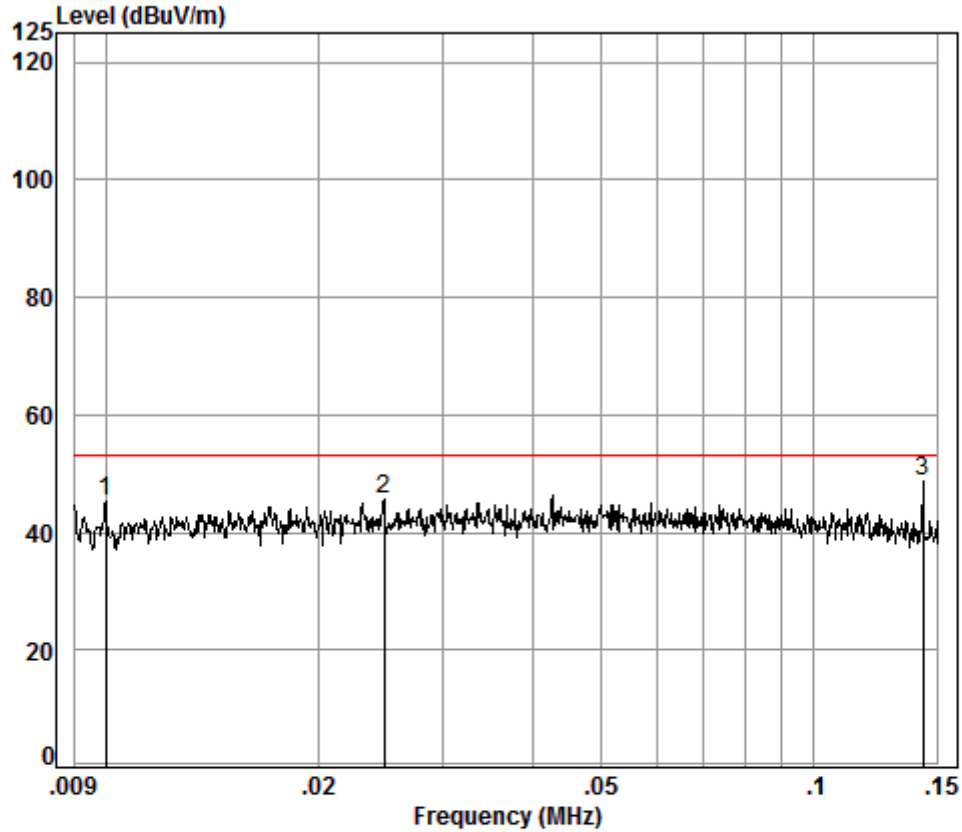
6.2.2 Test Setup Diagram



6.2.3 Measurement Procedure and Data



Frequency range: 0.009-0.15MHz

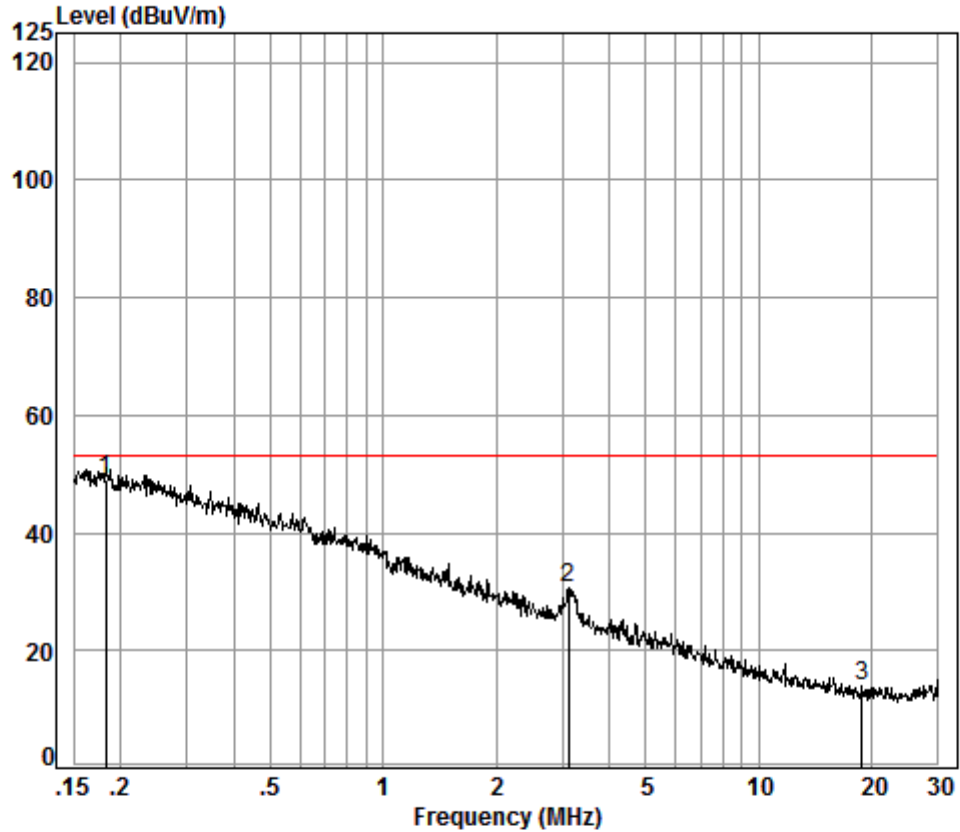


Condition: 10m
Job No. : 06094CR
Test Mode: a

| | 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 | 0.01 | 0.29 | 19.31 | 32.55 | 58.10 | 45.15 | 53.06 | -7.91 |
| 2 | 0.02 | 0.20 | 14.40 | 32.55 | 63.51 | 45.56 | 53.06 | -7.50 |
| 3 pp | 0.14 | 0.07 | 11.74 | 32.56 | 69.34 | 48.59 | 53.06 | -4.47 |



Frequency range: 0.15-30MHz



Condition: 10m
Job No. : 06094CR
Test Mode: a

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit | Over Limit |
|------|-------|------------|------------|---------------|------------|--------|--------|------------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 pp | 0.18 | 0.08 | 11.82 | 32.56 | 69.63 | 48.97 | 53.06 | -4.09 |
| 2 | 3.11 | 0.39 | 12.19 | 32.54 | 50.64 | 30.68 | 53.06 | -22.38 |
| 3 | 18.82 | 0.66 | 9.69 | 32.50 | 35.96 | 13.81 | 53.06 | -39.25 |



7 Photographs

7.1 Test Setup

Please refer to test setup.

7.2 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.

- End of the Report -