
RF Test Report

Report No.: AGC04094190507EE17

PRODUCT DESIGNATION : Aluminium 5.000 mAh Wireless Pocket Powerbank
BRAND NAME : N/A
MODEL NAME : P324.49
APPLICANT : Xindao B.V.
DATE OF ISSUE : Jul. 04, 2019
STANDARD(S) : ETSI EN 303 417 V1.1.1(2017-09)
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd.

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Report Revise Record

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0 | / | Jul. 04, 2019 | Valid | Initial Release |



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1. TEST RESULT CERTIFICATION

| | |
|---------------------------------|---|
| Applicant | Xindao B.V. |
| Address | P.O. Box 3082, 2280 GB, Rijswijk, The Netherlands |
| manufacturer | Xindao B.V. |
| Address | P.O. Box 3082, 2280 GB, Rijswijk, The Netherlands |
| Factory | Xindao B.V. |
| Address | P.O. Box 3082, 2280 GB, Rijswijk, The Netherlands |
| Product Designation | Aluminium 5.000 mAh Wireless Pocket Powerbank |
| Brand Name | N/A |
| Test Model | P324.49 |
| Date of test | May 23, 2019 to Jul. 03, 2019 |
| Deviation | None |
| Condition of Test Sample | Normal |
| Test Result | Pass |
| Report Template | AGCRT-EC-RF |

The above equipment was tested by SHENZHEN ATTESTATION OF GLOBAL COMPLIANCE (SHENZHEN) CO., LTD. for compliance with the requirements set forth in the European Standard ETSI EN 303 417 V1.1.1. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By



Calvin Liu(Liu Junchen)

Jul. 03, 2019

Reviewed By



Max Zhang(Zhang Yi)

Jul. 04, 2019

Approved By



Forrest Lei(Lei Yonggang)
Authorized Officer

Jul. 04, 2019

2. EUT DESCRIPTION

Details of technical specification refer to the description in follows:

| | |
|-----------------------------------|---|
| Hardware Version | SP0509-V03 |
| Software Version | V1.0 |
| Operate Frequency | Energy transmission: 110-205kHz Data communication:156.6KHz |
| OCW | 0.728kHz |
| Test Channels | Energy transmission: Low channel 110KHz, High channel 205kHz Data communication:156.6KHz |
| Antenna Type | Integral antenna |
| Operational Mode(See note) | Mode 1: base station in stand-by, idle mode Mode 2: communication before charging, adjustment charging mode / position Mode 3: communication Mode 4: energy transmission |
| Power Supply | DC 5V 1.5A by micro-USB or DC 3.7V by Battery |

NOTE: 1. For more information, please refer to User's Manual.

2. During the initial establishment of the charging mode (mode 2), no or very low emission occur (below the sensitivity level of the test set-up), so the mode 2 can be assumed as irrelevant for the test.

3. Mode 3 and mode 4 have been performed within one set-up, worst-case alignment. But each mode have been tested separately with specific test software.

4. The maximum temperature of 40 is not a standard requirement and is measured according to the maximum service temperature stated by the manufacturer.



3. DESCRIPTION OF TEST ITEMS

| Harmonised Standard ETSI EN 303 417 | | |
|-------------------------------------|--|--|
| Requirement | | Requirement Conditionality |
| No | Description | |
| 1 | Permitted range of operating frequencies | <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable |
| 2 | Operating frequency ranges | <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable |
| 3 | H-field requirements | <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable |
| 4 | Transmitter spurious emissions | <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable |
| 5 | Transmitter out of band (OOB) emissions | <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable |
| 6 | WPT system unwanted conducted emissions | <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> Not Applicable |
| 7 | Receiver blocking | <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable |

4. TEST FACILITY

| | |
|-----------|--|
| Test Site | Attestation of Global Compliance (Shenzhen) Co., Ltd |
| Location | 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China |

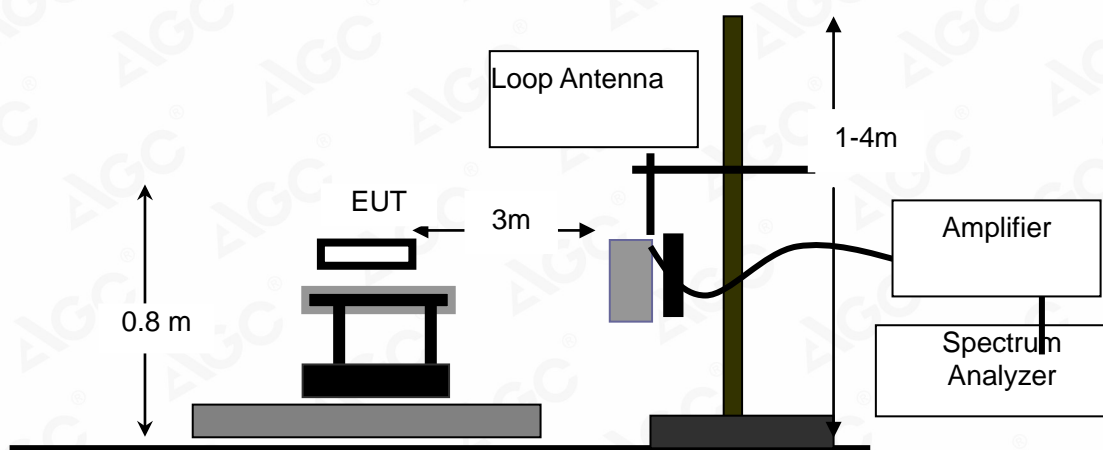
5. ETSI EN 303 417 REQUIREMENT

5.1 TRANSMITTER H-FIELD REQUIREMENTS

MEASUREMENT EQUIPMENT USED:

| NAME OF EQUIPMENT | MANUFACTURER | MODEL | S/N | Cal. Date | Cal. Due |
|-------------------|--------------|----------|--------|---------------|---------------|
| TEST RECEIVER | R&S | ESCI | 10096 | Jun. 12, 2019 | Jun. 11, 2020 |
| Amplifier | EM | EM30180 | 060552 | Jun. 12, 2019 | Jun. 11, 2020 |
| LOOP ANTENNA | A.H. | SAS-526B | -- | Mar. 01, 2018 | Feb. 28, 2020 |

TEST SETUP:



TEST LIMITS:

The H-field limit in dBμA/m at 3 m, H_{3m} , is determined by the following equation:

$$H_{3m} = H_{10m} + C_3 \text{ (F.2)}$$

Where: H_{10m} is the H-field limit in dBμA/m at 10 m distance according to the present document; and C_3 is a conversion factor in dB determined from figure F.2.

According to EN 303 417 Tablet 3,

Table 3: H-field limits

| Frequency range [MHz] | H-field strength limit [dBμA/m at 10 m] | Comments |
|-------------------------|---|------------|
| $0,019 \leq f < 0,021$ | 72 | |
| $0,059 \leq f < 0,061$ | 69,1 descending 10 dB/dec above 0,059 MHz | See note 1 |
| $0,079 \leq f < 0,090$ | 67,8 descending 10 dB/dec above 0,079 MHz | See note 2 |
| $0,100 \leq f < 0,119$ | 42 | |
| $0,119 \leq f < 0,135$ | 66 descending 10 dB/dec above 0,119 MHz | See note 1 |
| $0,135 \leq f < 0,140$ | 42 | |
| $0,140 \leq f < 0,1485$ | 37,7 | |
| $0,1485 \leq f < 0,30$ | -5 | |
| $6,765 \leq f < 6,795$ | 42 | |

NOTE 1: Limit is 42 dBμA/m for the following spot frequencies: 60 kHz ± 250 Hz and 129,1 kHz ± 500 Hz.
NOTE 2: At the time of preparation of the present document the feasibility of increased limits for high power wireless power transmission systems to charge vehicles [1.4] was prepared. New specific requirements for such systems (e.g. higher H-field emission limits in the 79 - 90 kHz band) will be reflected within a future revision of the present document.

The limit at 10 m (H_{10m}) is -5dBμA/m.

Owing to the frequency EUT is 156.6kHz, so the C_3 approach to 31.2dB.

So the $H_{3m} = 26.2\text{dB}\mu\text{A/m}$.

Correction factor, C_3 , for limits at 3 m distance, dB

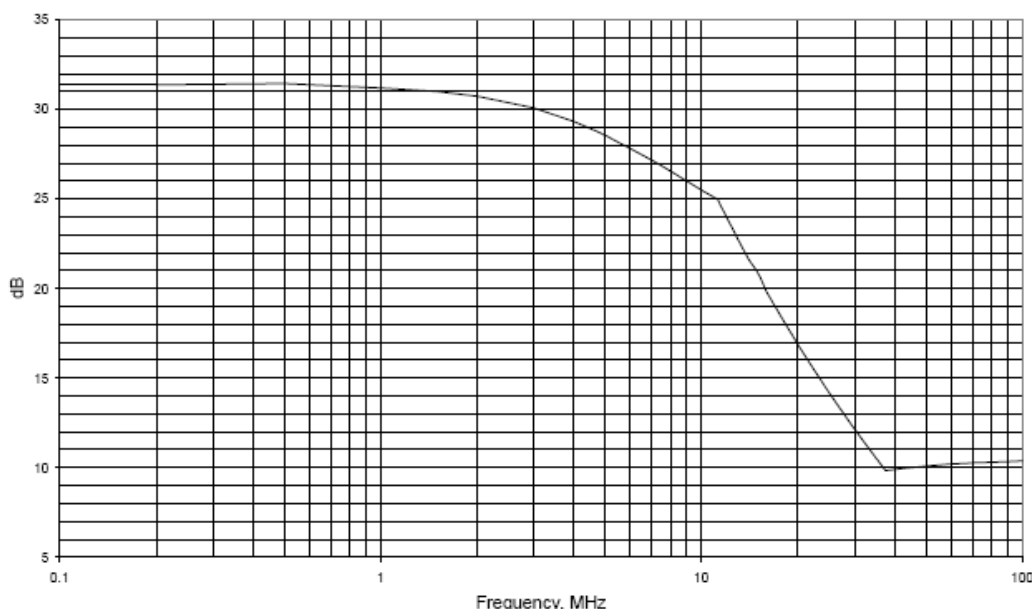


Figure F.2: Conversion factor C_3 versus frequency

TEST PROCEDURE:

The EUT was placed on the top of an insulating table 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

The H-field is measured with a shielded loop antenna connected to a measurement receiver.

The measuring bandwidth and detector type of the measurement receiver shall be in accordance with EN 300 330 V2.1.1 Table 11.

The EUT operate with modulation under normal and extreme conditions.

TEST RESULTS:

Test Mode: Mode 1

Extreme conditions state

| conditions | Test Temp | Test Volt.(V) | Note |
|------------|-----------|---------------|------------|
| TN/VN | 25°C | 5.0 | Worst case |
| TL/ VL | -10°C | 4.5 | |
| TH/ML | 40°C | 4.5 | |
| TL/VH | -10°C | 5.0 | |
| TH/VH | 40°C | 5.0 | |

Test results tested at 3m test sites:

| Freq. | Antenna Factor | Reading Level | Corrected Level | Limit |
|--------|----------------|---------------|-----------------|----------|
| (MHz) | (dB/m) | (dBuA) | (dBuA/m) | (dBuA/m) |
| 0.1566 | 23.53 | -3.34 | 20.19 | 26.20 |

Test results calculated to 10m test sites:

| Freq. | Antenna Factor | Reading Level | Corrected Level | Limit |
|--------|----------------|---------------|-----------------|----------|
| (MHz) | (dB/m) | (dBuA) | (dBuA/m) | (dBuA/m) |
| 0.1566 | 23.53 | -34.54 | -11.01 | -5.00 |

Test Mode: Mode 3

Extreme conditions state

| conditions | Test Temp | Test Volt.(V) | Note |
|------------|-----------|---------------|------------|
| TN/VN | 25℃ | 5.0 | Worst case |
| TL/ VL | -10℃ | 4.5 | |
| TH/VL | 40℃ | 4.5 | |
| TL/VH | -10℃ | 5.0 | |
| TH/VH | 40℃ | 5.0 | |

Test results tested at 3m test sites:

| Freq. | Antenna Factor | Reading Level | Corrected Level | Limit |
|--------|----------------|---------------|-----------------|----------|
| (MHz) | (dB/m) | (dBuA) | (dBuA/m) | (dBuA/m) |
| 0.1566 | 23.53 | -3.55 | 19.98 | 26.20 |

Test results calculated to 10m test sites:

| Freq. | Antenna Factor | Reading Level | Corrected Level | Limit |
|--------|----------------|---------------|-----------------|----------|
| (MHz) | (dB/m) | (dBuA) | (dBuA/m) | (dBuA/m) |
| 0.1566 | 23.53 | -34.75 | -11.22 | -5.00 |



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Test Mode: Mode 4

Extreme conditions state

| conditions | Test Temp | Test Volt.(V) | Note |
|------------|-----------|---------------|------------|
| TN/VN | 25℃ | 5.0 | Worst case |
| TL/ VL | -10℃ | 4.5 | |
| TH/VL | 40℃ | 4.5 | |
| TL/VH | -10℃ | 5.0 | |
| TH/VH | 40℃ | 5.0 | |

Test results tested at 3m test sites:

| Freq. | Antenna Factor | Reading Level | Corrected Level | Limit |
|--------|----------------|---------------|-----------------|----------|
| (MHz) | (dB/m) | (dBuA) | (dBuA/m) | (dBuA/m) |
| 0.1128 | 23.53 | -5.47 | 18.06 | 73.20 |
| 0.1285 | 23.53 | -4.23 | 19.30 | 96.87 |
| 0.2035 | 23.53 | -3.29 | 20.24 | 26.20 |

Test results calculated to 10m test sites:

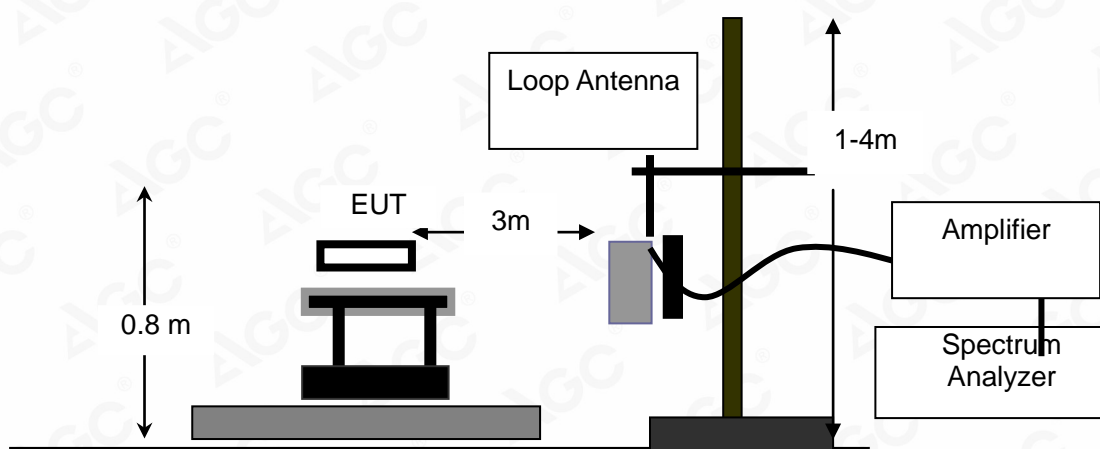
| Freq. | Antenna Factor | Reading Level | Corrected Level | Limit |
|--------|----------------|---------------|-----------------|----------|
| (MHz) | (dB/m) | (dBuA) | (dBuA/m) | (dBuA/m) |
| 0.1128 | 23.53 | -36.67 | -13.14 | 42.00 |
| 0.1285 | 23.53 | -35.43 | -11.90 | 65.67 |
| 0.2035 | 23.53 | -34.49 | -10.96 | -5.00 |

5.2 OPERATING FREQUENCY RANGES

MEASUREMENT EQUIPMENT USED:

| NAME OF EQUIPMENT | MANUFACTURER | MODEL | S/N | Cal. Date | Cal. Due |
|-------------------|--------------|----------|--------|---------------|---------------|
| TEST RECEIVER | R&S | ESCI | 10096 | Jun. 12, 2019 | Jun. 11, 2020 |
| Amplifier | EM | EM30180 | 060552 | Jun. 12, 2019 | Jun. 11, 2020 |
| LOOP ANTENNA | A.H. | SAS-526B | -- | Mar. 01, 2018 | Feb. 28, 2020 |

TEST SETUP:



TEST PROCEDURE:

- 1). The EUT was placed on a turn table which is 0.8m above ground plane.
- 2). The EUT was modulated by normal signal,
- 3). Set SPA Center Frequency = fundamental frequency, RBW=VBW=200Hz, Span=5kHz, Detector=RMS. The 99 % OBW function shall be used to determine the operating frequency range, fH is the frequency of the upper marker resulting from the OFR, fL is the frequency of the lower marker resulting from the OFR.
- 4). Both normal test condition and extreme test condition applied

LIMITS

The operating frequency range for emissions shall be within one of the following limits: 19 - 21 kHz, 59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz.

TEST RESULT

Test Mode: Mode 3

Frequency Range Test Result

| Test Temperature | Test Voltage (V DC) | Lowest Frequency (fL) | Highest Frequency (fH) | Limit |
|------------------|---------------------|-----------------------|------------------------|-----------------|
| -10℃ | 4.5 | 156.238kHz | 156.963kHz | 100kHz≤&≤300kHz |
| | 5.0 | 156.239kHz | 156.960kHz | 100kHz≤&≤300kHz |
| 25℃ | 5.0 | 156.236kHz | 156.964kHz | 100kHz≤&≤300kHz |
| 40℃ | 4.5 | 156.238kHz | 156.963kHz | 100kHz≤&≤300kHz |
| | 5.0 | 156.237kHz | 156.962kHz | 100kHz≤&≤300kHz |
| OFR | | 0.728kHz | | |
| Results | | PASS | | |

Test Mode: Mode 1

Frequency Range Test Result

| Test Temperature | Test Voltage (V DC) | Lowest Frequency (fL) | Highest Frequency (fH) | Limit |
|------------------|---------------------|-----------------------|------------------------|-----------------|
| -10℃ | 4.5 | 156.200kHz | 157.003kHz | 100kHz≤&≤300kHz |
| | 5.0 | 156.199kHz | 157.004kHz | 100kHz≤&≤300kHz |
| 25℃ | 5.0 | 156.195kHz | 157.005kHz | 100kHz≤&≤300kHz |
| 40℃ | 4.5 | 156.195kHz | 157.001kHz | 100kHz≤&≤300kHz |
| | 5.0 | 156.197kHz | 157.004kHz | 100kHz≤&≤300kHz |
| OFR | | 0.810 kHz | | |
| Results | | PASS | | |



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Test Mode: Mode 4

Frequency Range Test Result

| Test Temperature | Test Voltage (V DC) | Lowest Frequency (fL) | Highest Frequency (fH) | Limit |
|------------------|---------------------|-----------------------|------------------------|-----------------|
| -10℃ | 4.5 | 112.423kHz | 203.881kHz | 100kHz≤&≤300kHz |
| | 5.0 | 112.423kHz | 203.877kHz | 100kHz≤&≤300kHz |
| 25℃ | 5.0 | 112.419kHz | 203.882kHz | 100kHz≤&≤300kHz |
| 40℃ | 4.5 | 112.420kHz | 203.877kHz | 100kHz≤&≤300kHz |
| | 5.0 | 112.422kHz | 203.880kHz | 100kHz≤&≤300kHz |
| OFR | | 91.463kHz | | |
| Results | | PASS | | |

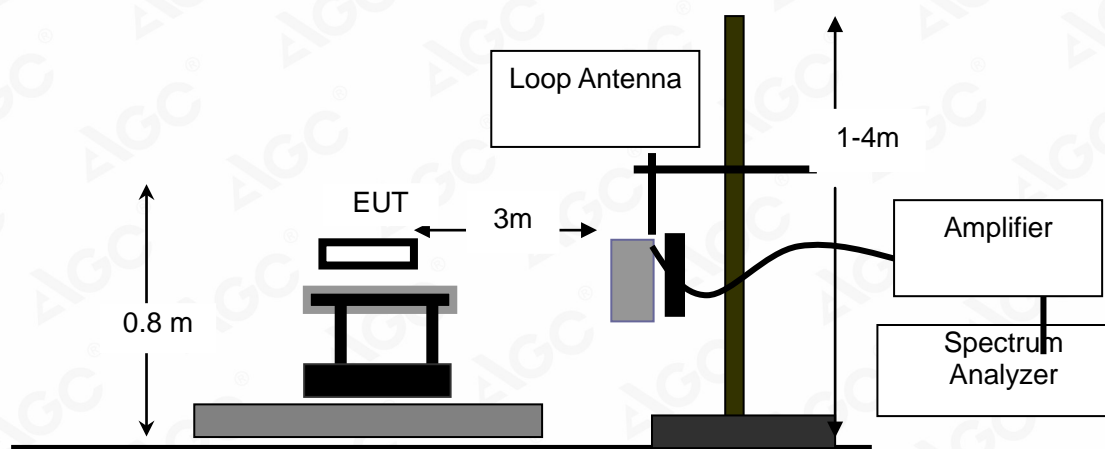
NOTE: All the modes had been tested, but only the worst data recorded in the report.

5.3 TRANSMITTER OUT OF BAND (OOB) EMISSIONS

MEASUREMENT EQUIPMENT USED:

| NAME OF EQUIPMENT | MANUFACTURER | MODEL | S/N | Cal. Date | Cal. Due |
|-------------------|--------------|----------|--------|---------------|---------------|
| TEST RECEIVER | R&S | ESCI | 10096 | Jun. 12, 2019 | Jun. 11, 2020 |
| Amplifier | EM | EM30180 | 060552 | Jun. 12, 2019 | Jun. 11, 2020 |
| LOOP ANTENNA | A.H. | SAS-526B | -- | Mar. 01, 2018 | Feb. 28, 2020 |

TEST SETUP:



TEST PROCEDURE:

- 1). The EUT was placed on a turn table which is 0.8m above ground plane.
- 2). The EUT was modulated by normal signal,
- 3). Set SPA Center Frequency = fundamental frequency, RBW=VBW=200Hz, Span=5KHz, Detector=RMS. The 99 % OBW function shall be used to determine the operating frequency range, fH is the frequency of the upper marker resulting from the OFR, fL is the frequency of the lower marker resulting from the OFR.
- 4). Both normal test condition and extreme test condition applied

LIMITS

The OOB limits are visualized in figures; they are descending from the intentional limits from Table 3 at f_H/f_L with 10 dB/decade.

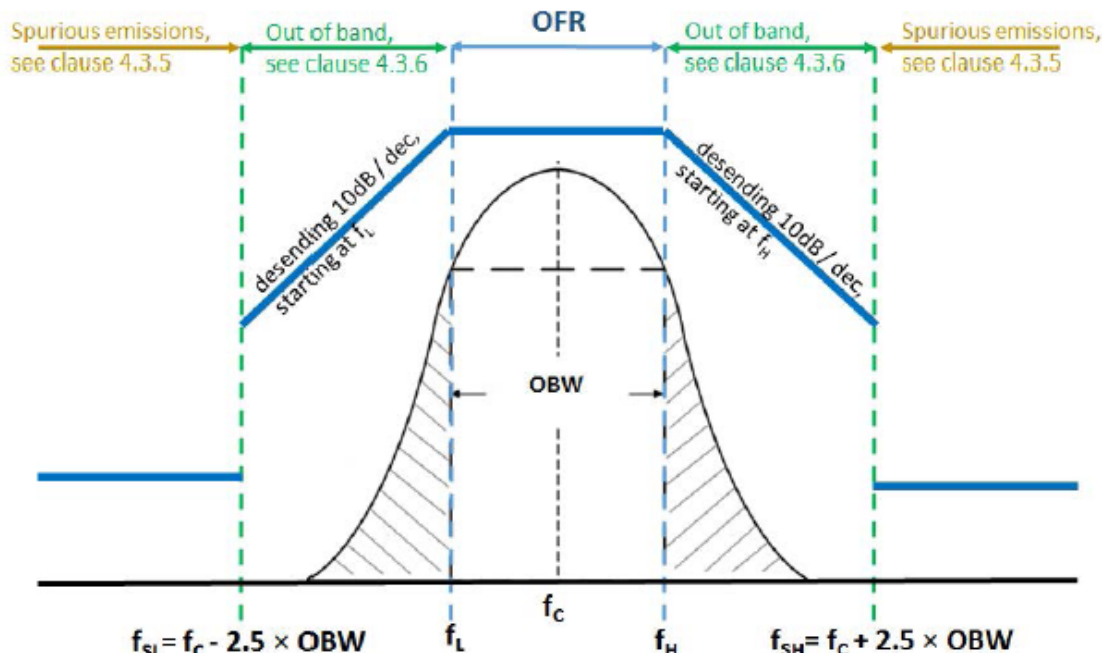


Figure 4: Out of band and spurious domain of a single frequency WPT system

TEST RESULT

Test Mode: Mode 3

| Frequency range (KHz) | | Maximum level @10m (dBuA/m) | Limit @ 10m (dBuA/m) | Result |
|-----------------------|--------------------|-----------------------------|----------------------|--------|
| fSL -fL | 154.780 to 156.236 | Less than -20.17 | See figure 4 | Pass |
| fL | 156.236 | -20.17 | -5.00 | Pass |
| fH | 156.964 | -20.69 | -5.00 | Pass |
| fH - fSH | 156.964 to 158.42 | Less than -20.69 | See figure 4 | Pass |

Test Mode: Mode 1

| frequency range (KHz) | | Maximum level @10m (dBuA/m) | Limit @ 10m (dBuA/m) | Result |
|-----------------------|--------------------|-----------------------------|----------------------|--------|
| fSL -fL | 154.575 to 156.195 | Less than -20.38 | See figure 4 | Pass |
| fL | 156.195 | -20.38 | -5.00 | Pass |
| fH | 157.005 | -20.90 | -5.00 | Pass |
| fH - fSH | 157.005 to 158.625 | Less than -20.9 | See figure 4 | Pass |

Test Mode: Mode 4

| Frequency range (KHz) | | Maximum level @10m (dBuA/m) | Limit @ 10m (dBuA/m) | Result |
|-----------------------|--------------------|--------------------------------|-------------------------|--------|
| fSL -fL | 110.893 to 112.419 | Less than -22.3 | See figure 4 | Pass |
| fL | 112.419 | -22.30 | 42.00 | Pass |
| fH | 203.882 | -20.64 | -5.00 | Pass |
| fH - fSH | 203.882 to 205.408 | Less than -20.64 | See figure 4 | Pass |

NOTE: All the modes had been tested, but only the worst data recorded in the report.



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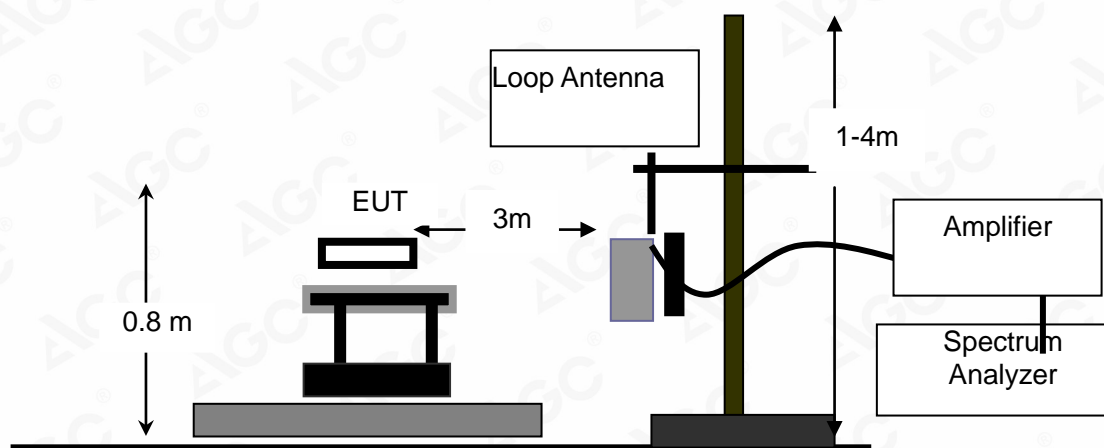
5.4 TRANSMITTER SPURIOUS EMISSIONS

MEASUREMENT EQUIPMENT USED:

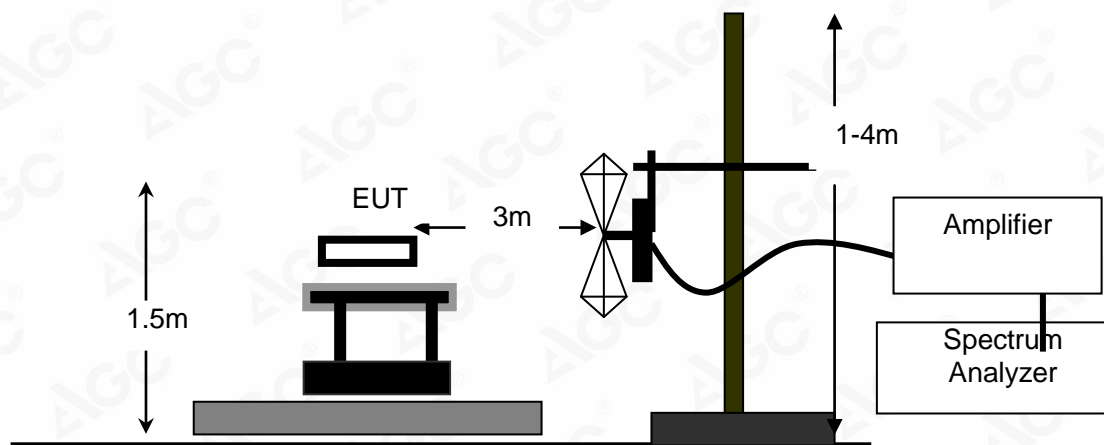
| NAME OF EQUIPMENT | MANUFACTURER | MODEL | S/N | Cal. Date | Cal. Due |
|-------------------|--------------|----------|--------|---------------|---------------|
| TEST RECEIVER | R&S | ESCI | 10096 | Jun. 12, 2019 | Jun. 11, 2020 |
| Amplifier | EM | EM30180 | 060552 | Jun. 12, 2019 | Jun. 11, 2020 |
| LOOP ANTENNA | A.H. | SAS-526B | -- | Mar. 01, 2018 | Feb. 28, 2020 |
| ANTENNA | SCHWARZBECK | VULB9168 | 494 | Mar. 01, 2018 | Feb. 28, 2020 |

TEST SETUP:

FREQUENCY RANGE (9KHZ-30MHZ)

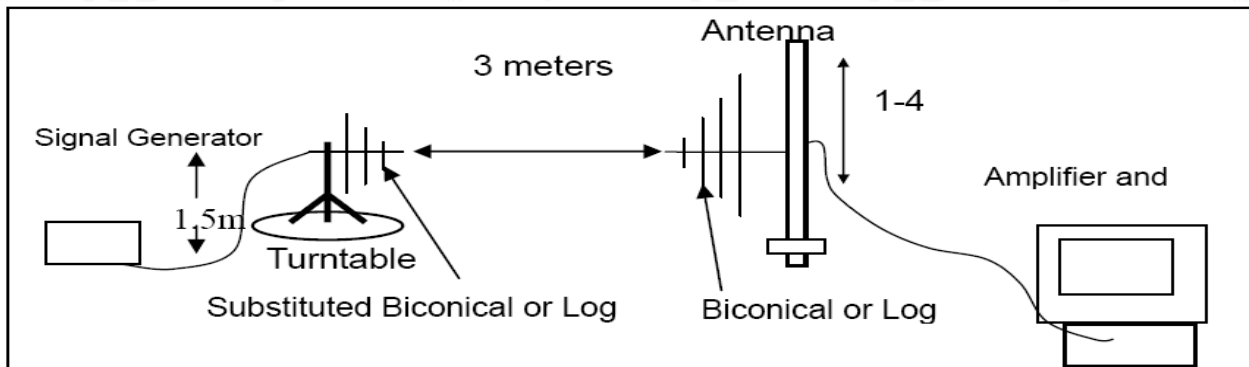


FREQUENCY RANGE (ABOVE 30MHZ)



SUBSTITUTION METHOD:

RADIATED BELOW 1GHZ



TEST PROCEDURE:

For test method of frequency range (9 kHz-30MHz)

The EUT was placed on the top of an insulating table 0.8 meters above the ground at a semi-anechoic chamber.

The table was rotated 360 degrees to determine the position of the highest radiation.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

The H-field is measured with a shielded loop antenna connected to a measurement receiver.

The measuring bandwidth and detector type of the measurement receiver shall be in accordance with EN 300 330 Table 1.

For test method of frequency range (30 MHz-1000MHz)

EUT was placed on a 1.5m height wooden table. The search antenna is placed at 3m distances from the EUT and search antenna height is from 1-4m. With the transmitter operating at continuously mode, the turntable was slowly rotated to locate the direction of maximum emission. Once maximum direction is determined, the search antenna was raised and lowered in both vertical and horizontal polarizations.

The EUT was removed from the turntable and replaced with a linearly polarized antenna connected to a calibrated RF signal generator. The RF generator was set to a measured emission frequency and the search antenna was raised and lowered to produce a maximum received reading. The generator output was increased to match the radiated emission reading measured previously, and the result expressed in dB EIRP or ERP, correcting for substitution antenna gain at each frequency.

LIMITS OF RADIATED DISTURBANCES

Below 30MHz

Table 4

| State (see note) | Frequency $9 \text{ kHz} \leq f < 10 \text{ MHz}$ | Frequency $10 \text{ MHz} \leq f < 30 \text{ MHz}$ |
|--|---|--|
| Operating | 27 dB μ A/m at 9 kHz descending 10 dB/dec | -3,5 dB μ A/m |
| Standby | 5,5 dB μ A/m at 9 kHz descending 10 dB/dec | -25 dB μ A/m |
| NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2. | | |

Table 5

| State (see note) | 47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz | Other frequencies between 30 MHz to 1 000 MHz |
|--|---|--|
| Operating | 4 nW | 250 nW |
| Standby | 2 nW | 2 nW |
| NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2. | | |



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TEST LIMITS & RESULT

Test Mode: Mode 3

FREQUENCY RANGE (9KHZ-30MHZ)

| Operation Mode | | | | | |
|----------------|---------------|--------------|----------------|----------------|----------------|
| Frequency | Reading level | Total Factor | Emission level | Limit | Margin |
| (MHz) | (dB μ A) | (dB/m) | (dB μ A/m) | (dB μ A/m) | (dB μ A/m) |
| 0.045 | -8.12 | -7.96 | -16.08 | 19.98 | 36.06 |
| 0.282 | -11.08 | -7.96 | -19.04 | 12.03 | 31.07 |
| 0.848 | -12.64 | -7.96 | -20.60 | 7.26 | 27.85 |
| 2.186 | -14.46 | -3.98 | -18.44 | 3.15 | 21.59 |
| 2.158 | -13.11 | -3.09 | -16.20 | 3.20 | 19.40 |
| 3.653 | -12.80 | -1.25 | -14.05 | 0.92 | 14.97 |

Remark:

(1) Corrected Power (dBm) = Total Factor + Reading Level

(2) Measuring frequencies from 9KHz to the 30MHz.

(3) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



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FREQUENCY RANGE (ABOVE 30MHZ)

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

| Frequency | Reading Level | Antenna | S.G. | Cable Loss | Ant.Gain | Emission Level | Limit | Margin |
|-----------|---------------|--------------|--------|------------|----------|----------------|--------|--------|
| (MHz) | (dBuv/m) | Polarization | (dBm) | (dB) | (dBi) | (dBm) | (dBm) | (dB) |
| 84.38 | 31.10 | V | -60.81 | 0.48 | 0.54 | -60.75 | -36.00 | 24.75 |
| 130.32 | 30.89 | V | -58.52 | 0.49 | 0.10 | -58.91 | -36.00 | 22.91 |
| 240.08 | 30.69 | V | -65.63 | 0.52 | 6.60 | -59.55 | -36.00 | 23.55 |
| 325.89 | 30.63 | V | -67.60 | 0.53 | 6.10 | -62.03 | -36.00 | 26.03 |
| 335.11 | 31.28 | V | -65.67 | 0.53 | 5.90 | -60.30 | -36.00 | 24.30 |
| 827.08 | 31.96 | V | -66.25 | 0.66 | 6.45 | -60.46 | -54.00 | 6.46 |
| 84.26 | 32.34 | H | -58.95 | 0.48 | 0.54 | -58.89 | -36.00 | 22.89 |
| 131.00 | 30.29 | H | -62.02 | 0.49 | 0.10 | -62.41 | -36.00 | 26.41 |
| 242.72 | 30.41 | H | -66.53 | 0.52 | 6.72 | -60.33 | -36.00 | 24.33 |
| 325.79 | 30.57 | H | -67.24 | 0.53 | 6.10 | -61.67 | -36.00 | 25.67 |
| 735.42 | 31.19 | H | -64.21 | 0.59 | 6.60 | -58.20 | -54.00 | 4.20 |
| 827.39 | 30.69 | H | -64.39 | 0.66 | 6.45 | -58.59 | -54.00 | 4.59 |

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Mode: Mode 4(The low channel is the worst case)
FREQUENCY RANGE (9KHZ-30MHZ)

| Operation Mode | | | | | |
|----------------|---------------|--------------|----------------|----------------|----------------|
| Frequency | Reading level | Total Factor | Emission level | Limit | Margin |
| (MHz) | (dB μ A) | (dB/m) | (dB μ A/m) | (dB μ A/m) | (dB μ A/m) |
| 0.061 | -7.69 | -7.96 | -15.65 | 18.72 | 34.37 |
| 0.233 | -11.09 | -7.96 | -19.05 | 12.87 | 31.92 |
| 0.542 | -12.86 | -7.96 | -20.82 | 9.20 | 30.02 |
| 1.646 | -14.74 | -3.98 | -18.72 | 4.38 | 23.10 |
| 3.404 | -13.11 | -3.09 | -16.20 | 1.22 | 17.43 |
| 4.870 | -12.57 | -1.25 | -13.82 | -0.33 | 13.48 |

Remark:

(1) Corrected Power (dBm) = Total Factor + Reading Level

(2) Measuring frequencies from 9KHz to the 30MHz.

(3) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



FREQUENCY RANGE (ABOVE 30MHZ)

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

| Frequency | Reading Level | Antenna | S.G. | Cable Loss | Ant.Gain | Emission Level | Limit | Margin |
|-----------|---------------|--------------|--------|------------|----------|----------------|--------|--------|
| (MHz) | (dBuv/m) | Polarization | (dBm) | (dB) | (dBi) | (dBm) | (dBm) | (dB) |
| 84.52 | 30.66 | V | -58.64 | 0.48 | 0.54 | -58.58 | -36.00 | 22.58 |
| 129.64 | 31.12 | V | -61.51 | 0.49 | 0.14 | -61.86 | -36.00 | 25.86 |
| 239.56 | 31.17 | V | -67.31 | 0.52 | 6.60 | -61.23 | -36.00 | 25.23 |
| 326.10 | 30.32 | V | -65.54 | 0.53 | 6.10 | -59.97 | -36.00 | 23.97 |
| 334.91 | 31.55 | V | -65.17 | 0.53 | 5.94 | -59.76 | -36.00 | 23.76 |
| 827.39 | 31.61 | V | -66.52 | 0.66 | 6.45 | -60.73 | -54.00 | 6.73 |
| 83.34 | 31.87 | H | -57.54 | 0.48 | 0.38 | -57.64 | -36.00 | 21.64 |
| 130.99 | 30.12 | H | -61.01 | 0.49 | 0.10 | -61.40 | -36.00 | 25.40 |
| 242.65 | 30.42 | H | -68.35 | 0.52 | 6.72 | -62.15 | -36.00 | 26.15 |
| 325.98 | 30.72 | H | -67.28 | 0.53 | 6.10 | -61.71 | -36.00 | 25.71 |
| 735.34 | 30.65 | H | -65.52 | 0.59 | 6.60 | -59.52 | -54.00 | 5.52 |
| 827.99 | 30.77 | H | -66.31 | 0.66 | 6.45 | -60.51 | -54.00 | 6.51 |

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Mode: Mode 1
FREQUENCY RANGE (9KHZ-30MHZ)

| Standby Mode | | | | | |
|--------------|---------------|--------------|----------------|----------------|----------------|
| Frequency | Reading level | Total Factor | Emission level | Limit | Margin |
| (MHz) | (dB μ A) | (dB/m) | (dB μ A/m) | (dB μ A/m) | (dB μ A/m) |
| 0.052 | -7.74 | -7.96 | -15.70 | -2.12 | 13.57 |
| 0.289 | -10.04 | -7.96 | -18.00 | -9.57 | 8.43 |
| 0.546 | -11.20 | -7.96 | -19.16 | -12.33 | 6.82 |
| 1.688 | -23.19 | -3.98 | -27.17 | -17.23 | 9.94 |
| 3.239 | -27.99 | -3.09 | -31.08 | -20.06 | 11.02 |
| 5.275 | -26.55 | -1.25 | -27.80 | -22.18 | 5.62 |

Remark:

- (1) Corrected Power (dBm) = Total Factor + Reading Level
- (2) Measuring frequencies from 9KHz to the 30MHz.
- (3) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

| Frequency | Reading Level | Antenna | S.G. | Cable Loss | Ant.Gain | Emission Level | Limit | Margin |
|-----------|---------------|--------------|--------|------------|----------|----------------|--------|--------|
| (MHz) | (dBuV/m) | Polarization | (dBm) | (dB) | (dBi) | (dBm) | (dBm) | (dB) |
| 115.25 | 30.64 | V | -72.23 | 0.48 | 1.40 | -71.31 | -57.00 | 14.31 |
| 177.29 | 32.32 | V | -73.72 | 0.51 | 3.06 | -71.17 | -57.00 | 14.17 |
| 229.55 | 29.79 | V | -77.52 | 0.52 | 6.84 | -71.20 | -57.00 | 14.20 |
| 496.07 | 30.00 | V | -77.76 | 0.56 | 7.04 | -71.28 | -57.00 | 14.28 |
| 664.59 | 30.73 | V | -77.31 | 0.59 | 6.98 | -70.92 | -57.00 | 13.92 |
| 880.05 | 31.03 | V | -76.12 | 0.69 | 5.90 | -70.92 | -57.00 | 13.92 |
| 84.14 | 31.86 | H | -71.34 | 0.48 | 0.54 | -71.28 | -57.00 | 14.28 |
| 110.17 | 31.27 | H | -71.77 | 0.48 | 1.40 | -70.85 | -57.00 | 13.85 |
| 219.63 | 30.81 | H | -77.36 | 0.52 | 7.38 | -70.50 | -57.00 | 13.50 |
| 485.16 | 30.87 | H | -77.52 | 0.56 | 7.00 | -71.08 | -57.00 | 14.08 |
| 555.29 | 31.05 | H | -79.83 | 0.57 | 6.80 | -73.60 | -57.00 | 16.60 |
| 634.69 | 30.70 | H | -78.82 | 0.58 | 7.22 | -72.18 | -57.00 | 15.18 |

Note: 1. The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

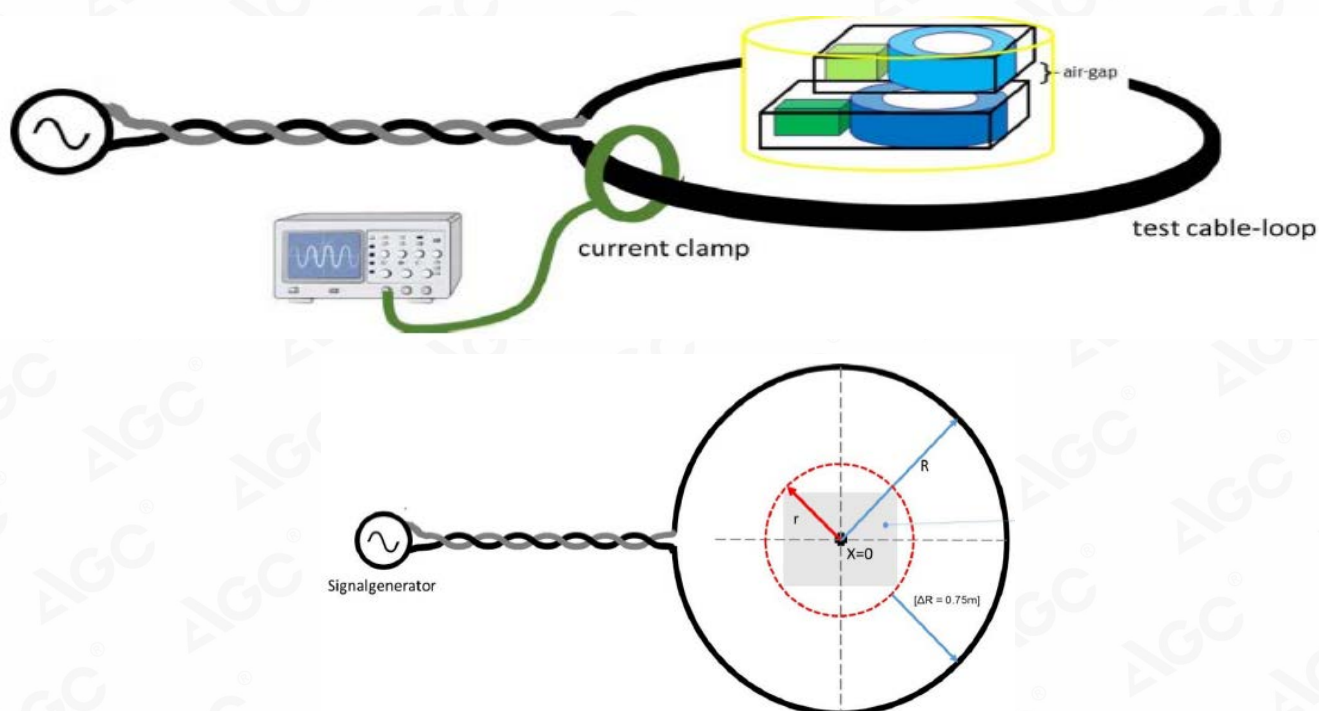
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

5.5 RECEIVER BLOCKING

MEASUREMENT EQUIPMENT USED:

| NAME OF EQUIPMENT | MANUFACTURER | MODEL | S/N | Cal. Date | Cal. Due |
|--------------------------------------|--------------|----------|----------|---------------|---------------|
| MXG X-Series Vector Signal Generator | Agilent | N5182B | N/A | Sep. 20, 2018 | Sep. 19, 2019 |
| LOOP ANTENNA | LAPLACE | RF300 | N/A | Mar. 01, 2018 | Feb. 28, 2020 |
| Clamp meter | PROVA | PROVA-11 | 17200101 | Sep. 20, 2018 | Sep. 19, 2019 |

TEST SETUP:



TEST PROCEDURE:

- 1). The test shall be carried out inside a test chamber according to clauses C.1.1 and C.1.2 in ETSI EN 300 330
- 2). A test loop with a radius r shall be used to create the magnetic field; the test loop shall lie on a non-metallic ground and the minimum distance to metallic objects (e.g. ground plane) shall be 0,75 m. The EUT shall be placed to the centre of the test-loop
- 3). The test loop shall be sufficiently large so that the test loop itself does not influence the WPT system; The radius R of the test-loop shall be in minimum $\Delta R = 0,75$ m larger than the maximum dimension r of the EUT.

$$R \geq r + \Delta R.$$

The maximum H-Field can be calculated from the loop current I (into the test-loop) with the following formula:

$$H = I/2R$$

4) The required output current to achieve the required magnetic field at the WPT system shall be generated with a signal generator (unmodulated signal) at the test frequencies. For each test frequency the "reaction" of the device shall be recorded and checked against the performance criterion

LIMITS

The EUT shall achieve the wanted performance criterion, in the presence of the blocking signal.

Table 6: Receiver blocking limits

| | In-band signal | OOB signal | Remote-band signal |
|--|---|----------------------------|--------------------------------------|
| Frequency | Centre frequency (f_c) of the WPT system (see clause 4.3.3) | $f = f_c \pm F$ (see note) | $f = f_c \pm 10 \times F$ (see note) |
| Signal level field strength at the EUT | 72 dBμA/m | 72 dBμA/m | 82 dBμA/m |
| NOTE: F = OFR see clause 4.3.3. | | | |

TEST RESULT

Test Mode: Mode 3

| Test Frequency(KHz) | | Signal level @ EUT | Performance | Result |
|---------------------|---------|--------------------|------------------|--------|
| In-band signal | 156.600 | 72dBuA/m | No function loss | Pass |
| OOB signal | 155.872 | 72dBuA/m | No function loss | Pass |
| | 157.328 | 72dBuA/m | No function loss | Pass |
| Remote-band signal | 149.320 | 82dBuA/m | No function loss | Pass |
| | 163.880 | 82dBuA/m | No function loss | Pass |

Test Mode: Mode 1

| Test Frequency(KHz) | | Signal level @ EUT | Performance | Result |
|---------------------|---------|--------------------|------------------|--------|
| In-band signal | 156.600 | 72dBuA/m | No function loss | Pass |
| OOB signal | 155.790 | 72dBuA/m | No function loss | Pass |
| | 157.410 | 72dBuA/m | No function loss | Pass |
| Remote-band signal | 148.500 | 82dBuA/m | No function loss | Pass |
| | 164.700 | 82dBuA/m | No function loss | Pass |



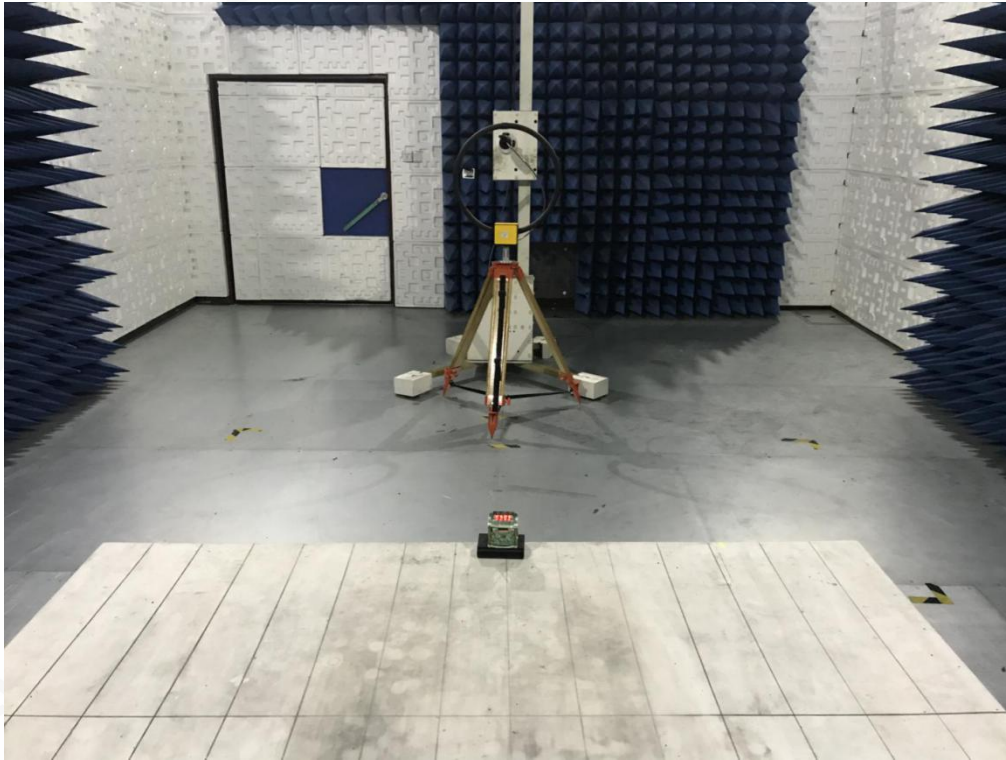
6. INTERPRETATION OF MEASUREMENT RESULTS

All the measurement equipments and accessories have been carefully selected to meet the maximum measurement uncertainty specified below:

| | |
|--|-------------------------------|
| RF Frequency | $\pm 1 \times 10^{-7}$ |
| RF Power, Conducted | $\pm 0.75\text{dB}$ |
| Maximum Frequency Deviation: _ Within 300Hz and 6KHz of Audio Frequency _ Within 6KHz and 25KHz of Audio Frequency | $\pm 5\%$ $\pm 3\text{dB}$ |
| Adjacent channel power | $\pm 3\text{dB}$ |
| Conducted Emission of Transmitter, Valid Up to 12.75GHz | $\pm 4\text{dB}$ |
| Conducted Emissions of Receivers | $\pm 3\text{dB}$ |
| Radiated Emission of Transmitter, Valid Up to 12.75GHz | $\pm 6\text{dB}$ |

P.S. Uncertainty figures are valid to confidence level of 95% calculated according to the methods described in the ETSI TR 100 028.

APPENDIX 1: PHOTOGRAPHS OF TEST SETUP



----END OF REPORT----