



TEST REPORT

ETSI EN 303 417 V1.1.1 (2017-09)

Report Reference No.....: TZ190300592-WPT

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Date of issue.....: 2019/3/25

Testing Laboratory Name: Shenzhen Tongzhou Testing Co.,Ltd

Address.....: 1th Floor, Building 1, Haomai High-tech Park, Huating Road 387,
Dalang Street, Longhua, Shenzhen, China

Applicant's name.....:

Address.....:

Test specification :

Standard: ETSI EN 300 330 V2.1.1 (2017-02)

TRF Originator.....: Shenzhen Tongzhou Testing Co.,Ltd

Master TRF.....: Dated 2017-03

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Test item description: Wireless Charging Speaker with Time display

Trade Mark: /

Manufacturer.....:

Model/Type reference.....: RS06

List Model: B75,RS06D, B75D, RS06C, B75C

Hardware Version.....: V2.0

Software Version: V1.0

Operation Frequency.....: 110KHz – 205KHz

Ratings.....: DC 3.7V by battery

Result.....: **PASS**



TEST REPORT

| | | |
|--------------------------|------------------------|---------------|
| Test Report No. : | TZ190300592-WPT | 2019/3/25 |
| | | Date of issue |

Equipment under Test : Wireless Charging Speaker with Time display

Model /Type : RS06

Listed Models : B75,RS06D, B75D, RS06C, B75C

Applicant :

Address :

Manufacturer :

Address :

| | |
|---------------------|-------------|
| Test Result: | PASS |
|---------------------|-------------|

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



Contents

| | | |
|-----------|--|------------------|
| 1. | <u>TEST STANDARDS</u> | <u>4</u> |
| 2. | <u>SUMMARY</u> | <u>5</u> |
| 2.1. | General Remarks | 5 |
| 2.2. | Product Description | 5 |
| 2.3. | Equipment Under Test | 5 |
| 2.4. | EUT configuration | 6 |
| 2.5. | Modifications | 6 |
| 2.6. | NOTE | 6 |
| 3. | <u>TEST ENVIRONMENT</u> | <u>7</u> |
| 3.1. | Address of the test laboratory | 7 |
| 3.2. | Environmental conditions | 7 |
| 3.3. | Test Description | 7 |
| 3.4. | Statement of the measurement uncertainty | 9 |
| 3.5. | Equipment Used during the Test | 10 |
| 4. | <u>TEST CONDITIONS AND RESULTS</u> | <u>11</u> |
| 4.1. | ETSI EN 300 330 REQUIREMENTS | 11 |
| 4.1.1. | Operating Frequency Range | 11 |
| 4.1.2. | Transmitter H-field..... | 14 |
| 4.1.3. | Transmitter radiated spurious domain emission limits < 30 MHz..... | 17 |
| 4.1.4. | Transmitter radiated spurious domain emission limits > 30 MHz..... | 19 |
| 4.1.5. | Transmitter out of band (OOB) emissions..... | 20 |
| 5. | <u>TEST SETUP PHOTOS OF THE EUT</u> | <u>22</u> |
| 6. | <u>EXTERNAL AND INTERNAL PHOTOS OF THE EUT</u> | <u>23</u> |



1. TEST STANDARDS

The tests were performed according to following standards:

[ETSI EN 303 417 V1.1.1 \(2017-09\)](#) –Wireless power transmission systems, using technologies other than radio frequency beam in the 19 - 21 kHz, 59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz ranges; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU



2. SUMMARY

2.1. General Remarks

| | | |
|--------------------------------|---|-----------|
| Date of receipt of test sample | : | 2019/3/18 |
| Testing commenced on | : | 2019/3/18 |
| Testing concluded on | : | 2019/3/25 |

2.2. Product Description

| | |
|------------------------|---|
| Name of EUT | Wireless Charging Speaker with Time display |
| Model(s) Number | RS06 |
| List Models | B75,RS06D, B75D, RS06C, B75C |
| Difference description | All the same except for the model name. |
| Hardware version | V2.0 |
| Software version | V1.0 |
| Antenna Type | Integral |

| Wireless Type | Working Frequency | Modulation Type | Version |
|---------------|-------------------|---------------------------|----------|
| WPT | 110KHz – 205KHz | CW | |
| Bluetooth | 2402MHz-2480MHz | GFSK,8DPSK, π /4DQPSK | V3.0+EDR |

2.3. Equipment Under Test

Power supply system utilised

| | | | |
|----------------------|---|---|---------------------------------|
| Power supply voltage | : | <input type="radio"/> 230V/ 50 Hz | <input type="radio"/> 120V/60Hz |
| | | <input type="radio"/> 12 V DC | <input type="radio"/> 24 V DC |
| | | <input checked="" type="radio"/> Other (specified in blank below) | |

DC 5V

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

| | | |
|-----------|---------|---------------------|
| ○ Adapter | Model : | GKYPG0200050EU2 |
| | Input: | AC 100-240V 50/60Hz |
| | Output: | 5V/2A |

2.5. Modifications

No modifications were implemented to meet testing criteria.

2.6. NOTE

| Function | Test Standards | Reference Report |
|-----------|---|------------------|
| Bluetooth | ETSI EN 300 328 V2.1.1 (2016-11) | TZ190300592-EDR |
| WPT | ETSI EN 303 417 V1.1.1 (2017-09) | TZ190300592-WPT |
| EMC | Draft ETSI EN 301 489-1 V2.2.0 (2017-03) Final draft ETSI EN 301 489-3 V2.1.1 (2017-03) Draft ETSI EN 301 489-17 V3.2.0 (2017-03) EN 55032: 2015 EN 55035: 2017 EN 61000-3-2: 2014 EN 61000-3-3: 2013 | TZ190300592-RE |



3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Tongzhou Testing Co.,Ltd

1th Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street, Longhua, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Condition:

Normal Temperature: 25°C

Normal Voltage: DC 5.0V

Extreme Condition:

High Temperature: 40°C

Low Temperature: -20°C

High Voltage: DC 5.5V

Low Voltage: DC 4.5V

Comon Condition:

Relative Humidity: 20 % to 75 %.

3.3. Test Description

3.4.1 Main Terms

Verdict

Verdict of each test cases.

Test Case

Test cases identification number and description in ETSI specification.

3.4.2 Terms used in Condition column

Normal Condition:

NTC Normal Voltage, Normal Temperature

Extreme Condition:

HTHV High Voltage, High Temperature

LTHV High Voltage, Low Temperature

HTLV Low Voltage, High Temperature

LTLV Low Voltage, Low Temperature

3.4.3 Terms used in Verdict column

Pass

This test cases has been tested, and EUT is conformant to the applied standards in the given frequency band.

Fail

This test cases has been tested, but EUT is not conformant to the applied standards in the given frequency band.

N/A

This test case is either not required/not applicable in the specified band or is not applicable for the EUT.

Inc

Test case result is ambiguous in the given frequency band.

Decl

Declaration is received from the client to demonstrate the conformity to the relevant specification in the given frequency band.

BR

This test cases is not tested in the given frequency band, but this testcases was tested with pass result for the initial model in the given frequency band.



3.4.4 Summary of measurement results

| ETSI EN 303 417 requirements | | |
|--|---|------|
| Permitted range of operating frequencies | ETSI EN 303 417 V1.1.1 Sub-clause 4.3.2 | PASS |
| Operating frequency ranges | ETSI EN 303 417 V1.1.1 Sub-clause 4.3.3 | PASS |
| H-field requirements | ETSI EN 303 417 V1.1.1 Sub-clause 4.3.4 | PASS |
| Transmitter spurious emissions | ETSI EN 303 417 V1.1.1 Sub-clause 4.3.5 | PASS |
| Transmitter out of band (OOB) emissions | ETSI EN 303 417 V1.1.1 Sub-clause 4.3.6 | PASS |
| WPT system unwanted conducted emissions | ETSI EN 303 417 V1.1.1 Sub-clause 4.3.7 | N/A |
| Receiver blocking | ETSI EN 303 417 V1.1.1 Sub-clause 4.4.2 | N/A |

3.4. Statement of the measurement uncertainty

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated and shall correspond to an expansion factor (coverage factor) $k = 1,96$ or $k = 2$ (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Principles for the calculation of measurement uncertainty are contained in ETSI TR 100 028 [i.6] and [i.7], in particular in annex D of the ETSI TR 100 028-2 [i.7]. and is documented in the Shenzhen Tongzhou Testing Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device

Hereafter the best measurement capability for Shenzhen Tongzhou Testing Co., Ltd. is reported:

| No. | Item | Uncertainty |
|-----|--|------------------------|
| 1 | Radio Frequency | $\pm 1 \times 10^{-8}$ |
| 2 | RF Power (up to 160 W) | $\pm 0,32$ dB |
| 3 | Radiated RF power | ± 4.5 dB |
| 4 | Adjacent channel power | ± 2.3 dB |
| 5 | Conducted spurious emission of transmitter valid up to 12,75 GHz | ± 3.2 dB |
| 6 | Conducted spurious emission of receiver, valid up to 12,75 GHz | ± 3.2 dB |
| 7 | Two-signal measurement, valid up to 4 GHz | ± 2.3 dB |
| 8 | Three-signal measurement | ± 1.5 dB |
| 9 | Radiated emission of the transmitter, valid up to 4 GHz | ± 4.5 dB |
| 10 | Radiated emission of receiver, valid up to 4 GHz | ± 4.5 dB |
| 11 | Transmitter intermodulation | ± 1.6 dB |
| 12 | Receiver desensitization (duplex operation) | ± 0.3 dB |
| 13 | Temperature | 0.5 °C |
| 14 | Humidity | 5 % |



3.5. Equipment Used during the Test

| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|------|------------------------|----------------------|---------------------------|-----------------|------------------|----------------------|
| 1 | ULTRA-ROADBAND ANTENNA | Sunol Sciences Corp. | VULB 9163 | 958 | 2019/3/180 | 2020/11/19 |
| 3 | EMI Test Receiver | R&S | ESCI-7 | 100849/003 | 2019/1/3 | 2020/1/2 |
| 4 | Controller | EM Electronics | Controller EM 1000 | N/A | -- | -- |
| 5 | Amplifier | schwarzbeck | BBV 9743 | 209 | 2019/1/3 | 2020/1/2 |
| 6 | Climate Chamber | KRUOMR | KRM-1000 | KRM1607290 1 | 2019/1/3 | 2020/1/2 |
| 7 | High-Pass Filter | K&L | 9SH10-2700/X127 50-O/O | N/A | 2019/1/3 | 2020/1/2 |
| 8 | High-Pass Filter | K&L | 41H10-1375/U127 50-O/O | N/A | 2019/1/3 | 2020/1/2 |
| 9 | RF Cable | HUBER+SUHNER | RG214 | N/A | 2019/1/3 | 2020/1/2 |
| 10 | Signal Generator | Agilent | N5182A | MY47420864 | 2019/1/3 | 2020/1/2 |
| 11 | Signal Generator | Agilent | E4421B | US40051744 | 2019/1/3 | 2020/1/2 |
| 12 | Loop Antenna | schwarzbeck | FMZB 1519 B | 23 | 2018/11/20 | 2020/11/19 |

4. TEST CONDITIONS AND RESULTS

4.1. ETSI EN 303 417 REQUIREMENTS

4.1.1. Operating Frequency Range

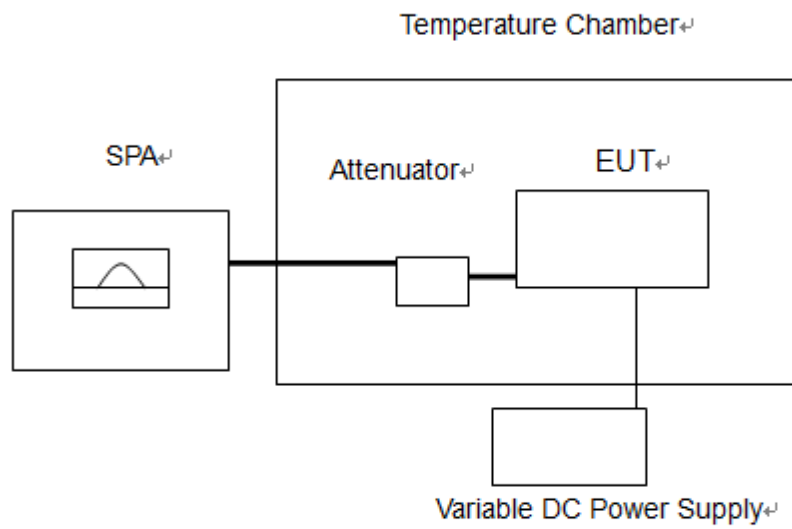
LIMIT

These radio equipment types are capable of operating in the permitted frequency bands within the 9 kHz to 30 MHz range as specified in table 1.

Table 1: WPT systems within the permitted frequency bands below 30 MHz

| | WPT frequency range | Frequency Bands | Applications |
|----------------------|---------------------|------------------------|--------------|
| Transmit and Receive | 1 | 19 kHz to 21 kHz | WPT systems |
| Transmit and Receive | 2 | 59 kHz to 61 kHz | WPT systems |
| Transmit and Receive | 3 | 79 kHz to 90 kHz | WPT systems |
| Transmit and Receive | 4 | 100 kHz to 119 kHz | WPT systems |
| Transmit and Receive | | 119 kHz to 140 kHz | WPT systems |
| Transmit and Receive | | 140 kHz to 148,5 kHz | WPT systems |
| Transmit and Receive | | 148,5 kHz to 300 kHz | WPT systems |
| Transmit and Receive | 5 | 6 765 kHz to 6 795 kHz | WPT systems |

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 6.2.2

**TEST RESULTS**

| Test Condition | Test Frequency(KHz) | FL (KHz) | FH (KHz) | Limit | Result |
|----------------|---------------------|----------|----------|-----------------|--------|
| NTC | 172.14 | 161.01 | 183.22 | 100KHz – 300KHz | Pass |

4.1.2. Transmitter H-field

LIMIT

The frequency ranges and limits of the present document are shown in table 2. The limits are based on the European Commission Decision for SRDs [i.10], CEPT/ERC/REC 70-03 [i.1].

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 [i.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. | | |



For calculation rules for limits at other measurement distances, see annex H.

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

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

where:

H_{10m} is the H-field limit in dB μ A/m at 10 m distance according to the present document; and

C_3 is a conversion factor in dB determined from figure H.2.

For 172KHz

$$H_{3m} = H_{10m} + 31.5 = -5 + 31.5 \text{ (dB}\mu\text{A/m)} = 26.5 \text{ dB}\mu\text{A/m.}$$

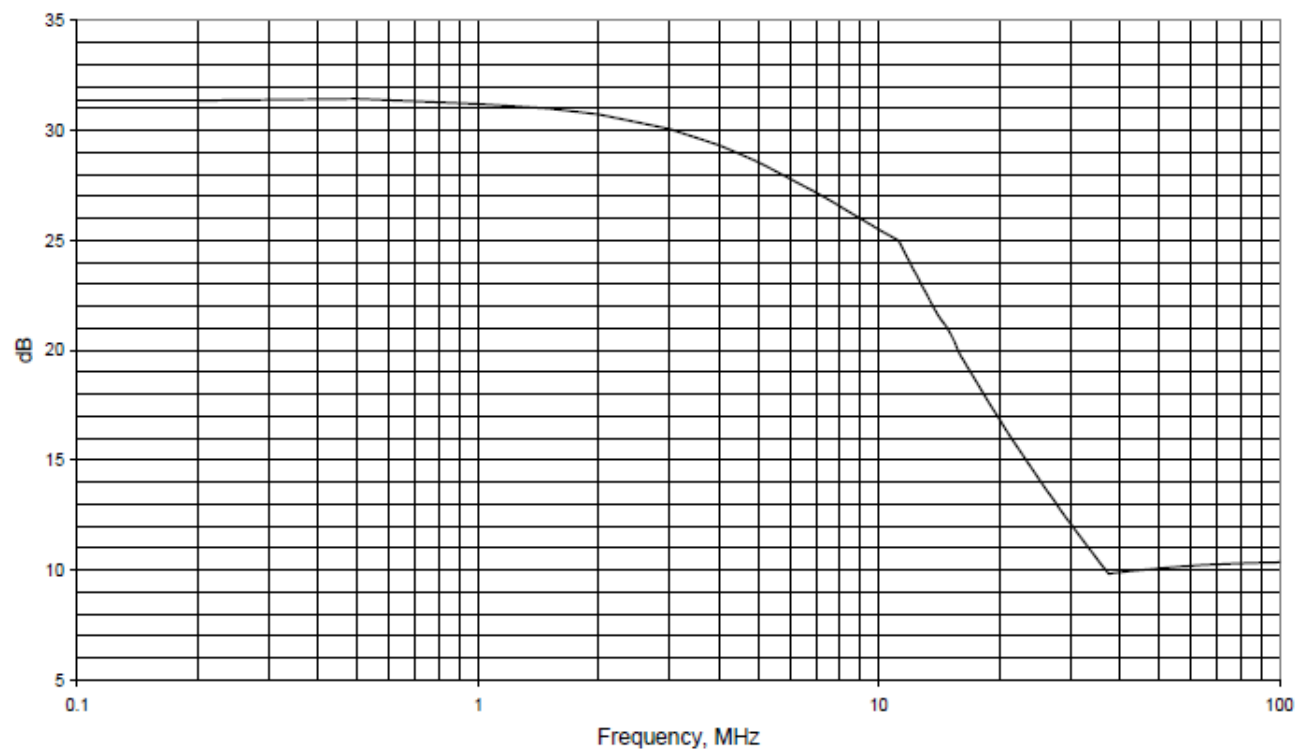
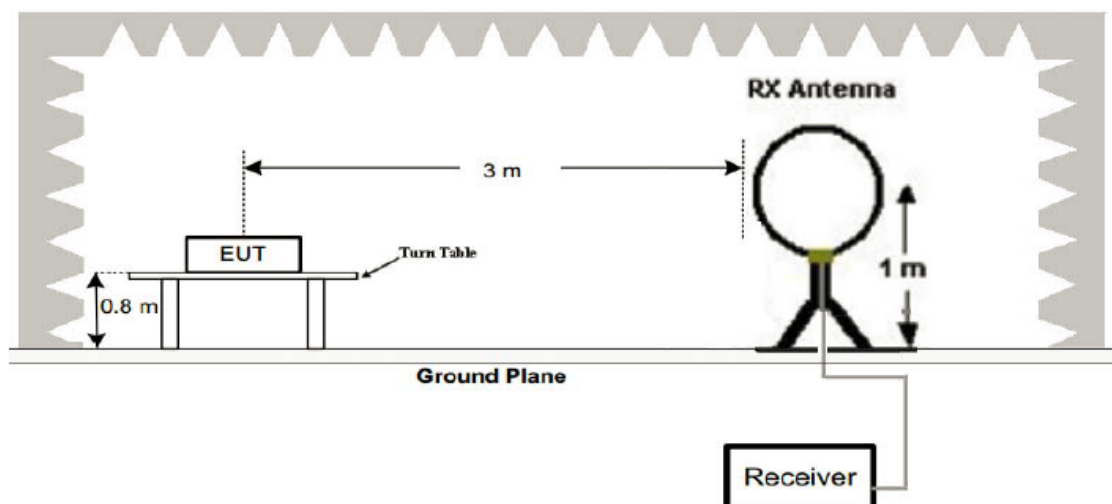


Figure H.2: Conversion factor C_3 versus frequency

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 6.2.1

TEST RESULTS

Test results tested at 3m test sites:

| Freq. (KHz) | Antenna Factor (dB/m) | Reading Level (dBuA) | Corrected Level(3m) (dBuA/m) | Conversion factor(3m-10m)dB | Corrected Level convert 3m to 10m((dBuA/m)) | Limit(10m) (dBuA/m) |
|-------------|-----------------------|----------------------|------------------------------|-----------------------------|---|---------------------|
| 172.14 | -14.47 | 35.12 | 20.65 | -31.5 | -10.85 | -5 |

Corrected Level(3m)(dBuA/m) + Conversion factor(3m-10m)dB = Corrected Level convert 3m to 10m((dBuA/m))

Corrected Level (dBuV/m) = Corrected Level (dBuA/m) +51.5(dB)= 20.65+51.5=72.15 (dBuV/m)
And eirp = $p_t \times g_t = (E \times d)^2 / 30$ refer to FCC KDB 412172 D01 Determining ERP and EIRP v01r01
Eirp(dBm) = $E(\text{dBuV/m}) - 95.2(\text{dB}) = -23.05 (\text{dBm})$

4.1.3. Transmitter radiated spurious domain emission limits < 30 MHz

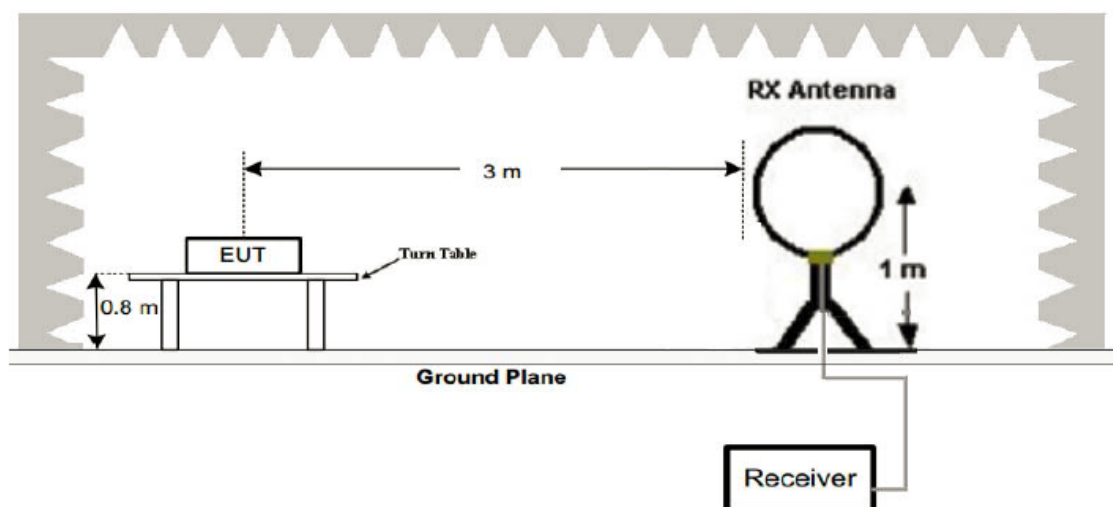
LIMIT

The radiated field strength of the spurious domain emissions below 30 MHz shall not exceed the generated H-field dB μ A/m at 10 m given in table 5.

Table 5

| State | 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 3 dB/oct | -3,5 dB μ A/m |
| Standby | 5,5 dB μ A/m at 9 kHz descending 3 dB/oct | -25 dB μ A/m |

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 6.2.1

**TEST RESULTS****FREQUENCY RANGE (9KHZ-30MHZ)**

| OPERATION MODE | | | | | |
|-----------------|---------------------|-------------------|----------------------|---|--------------|
| Frequency (MHz) | Reading level (dBm) | Total Factor (dB) | Emission level (dBm) | Limit (dBm) | Margin (dBm) |
| -- | -- | -- | -- | 27 dBuA/m at 9KHz descending 3dB/oct (9KHz – 10MHz) | -- |
| -- | -- | -- | -- | | -- |
| -- | -- | -- | -- | -3.5 dBuA/m (10MHz – 30MHz) | -- |
| -- | -- | -- | -- | | -- |

| STANDBY MODE | | | | | |
|-----------------|---------------------|-------------------|----------------------|--|--------------|
| Frequency (MHz) | Reading level (dBm) | Total Factor (dB) | Emission level (dBm) | Limit (dBm) | Margin (dBm) |
| -- | -- | -- | -- | 5.5 dBuA/m at 9KHz descending 3dB/oct (9KHz – 10MHz) | -- |
| -- | -- | -- | -- | | -- |
| -- | -- | -- | -- | -22 dBuA/m (10MHz – 30MHz) | -- |
| -- | -- | -- | -- | | -- |

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.

4.1.4. Transmitter radiated spurious domain emission limits > 30 MHz

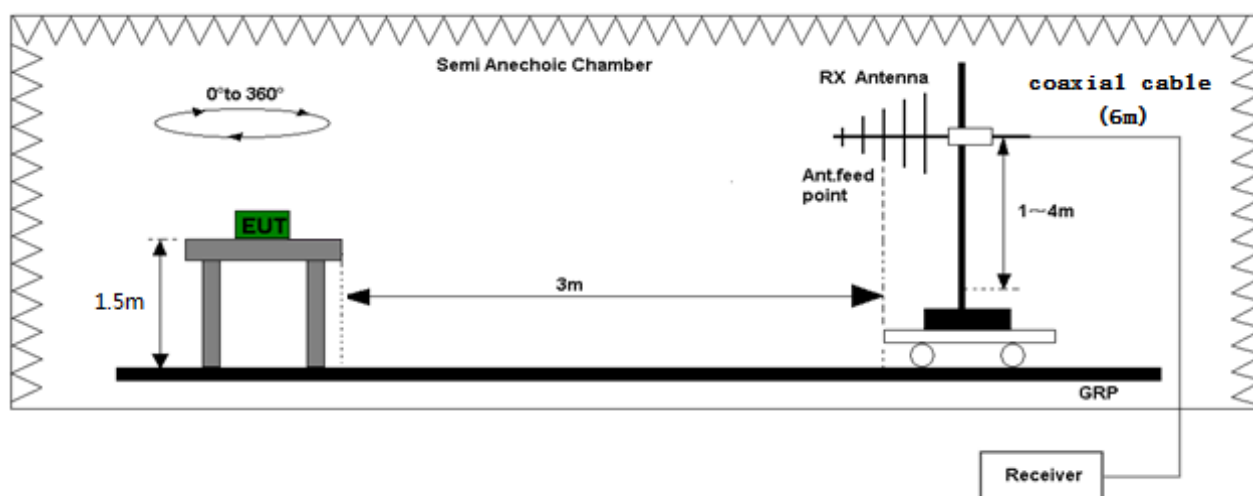
LIMIT

The power of any radiated emission shall not exceed the values given in table 6.

Table 6

| State | 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 |

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 6.2.1

TEST RESULTS

| Fre. (MHz) | ANT. Pol. | ERP (dBm) | Limit | Margin | Conclusion |
|---|-----------|-----------|-------|--------|------------|
| Opearting | | | | | |
| 49.18 | V | -67.03 | -54 | 13.03 | PASS |
| 61.45 | H | -48.86 | -36 | 12.86 | PASS |
| 191.44 | V | -70.36 | -54 | 16.36 | PASS |
| 291.66 | H | -52.74 | -36 | 16.74 | PASS |
| Standby | | | | | |
| 42.82 | V | -63.44 | -57 | 6.44 | PASS |
| 74.70 | H | -67.23 | -57 | 10.23 | PASS |
| 303.42 | V | -66.75 | -57 | 9.75 | PASS |
| 230.27 | H | -64.22 | -57 | 7.22 | PASS |
| Note: | | | | | |
| 1. Cable loss and antenna gain was combined in the calculated result. | | | | | |
| 2. No record for margin above 20dB. | | | | | |

4.1.5. Transmitter out of band (OOB) emissions

LIMIT

ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 4.3.6.3

The OOB limits are visualized in Figures 4 and 5; they are descending from the intentional limits from Table 3 at f_H/f_L with 10 dB/decade.

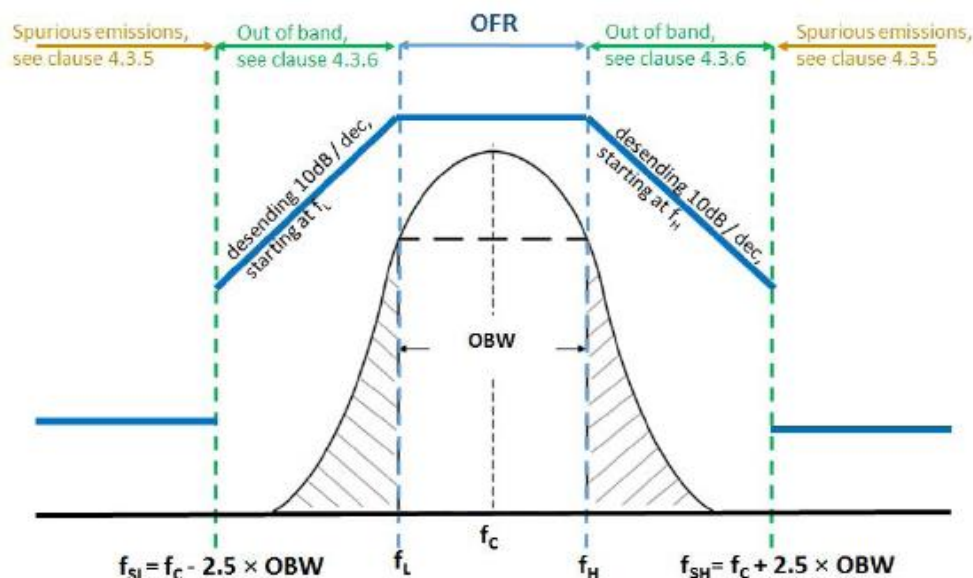


Figure 4: Out of band and spurious domain of a single frequency WPT system

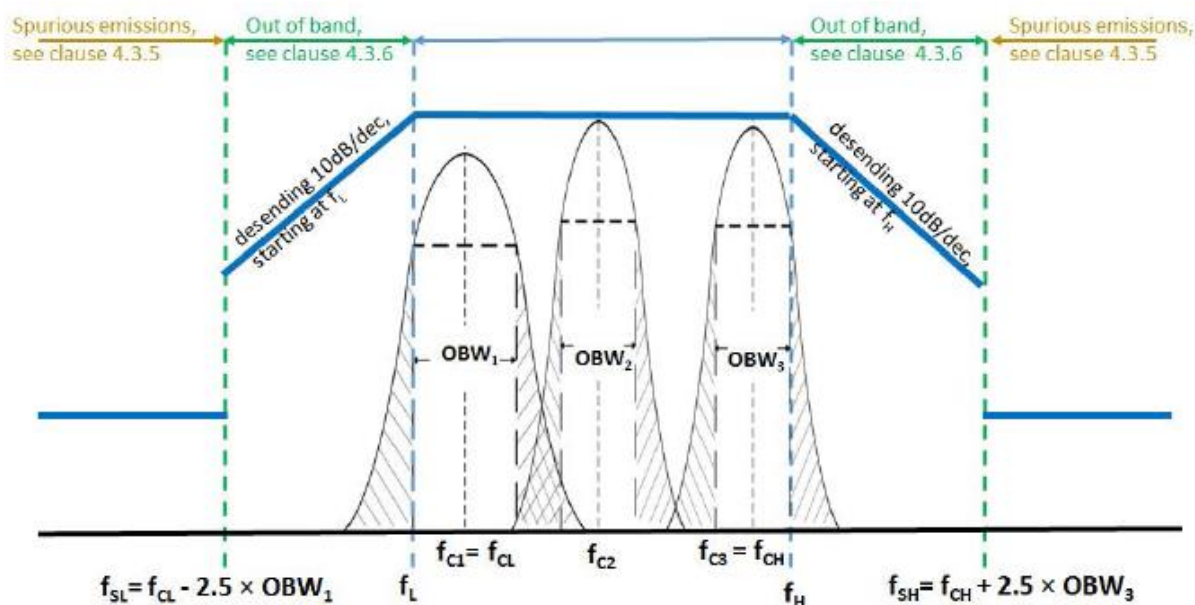
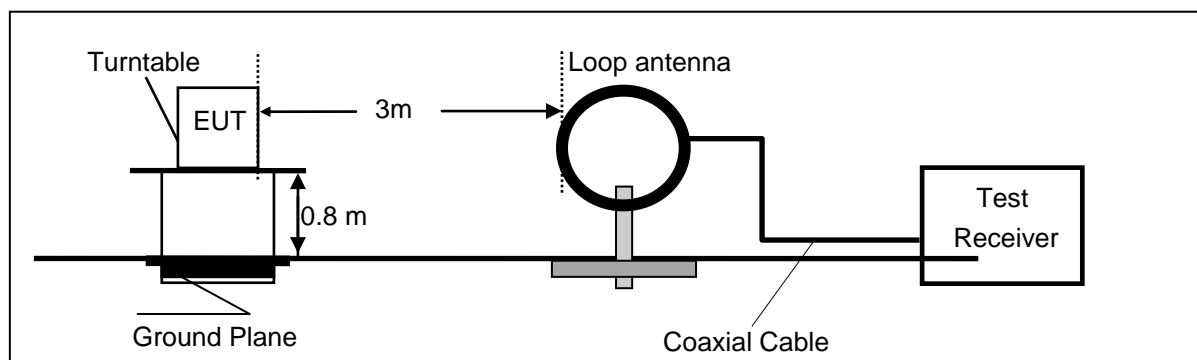


Figure 5: Out of band and spurious domain of a multi - frequency system (during one WPT system cycle time)

TEST CONFIGURATION

Below 30MHz



TEST PROCEDURE

Please refer to ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 6.2.1

TEST RESULTS

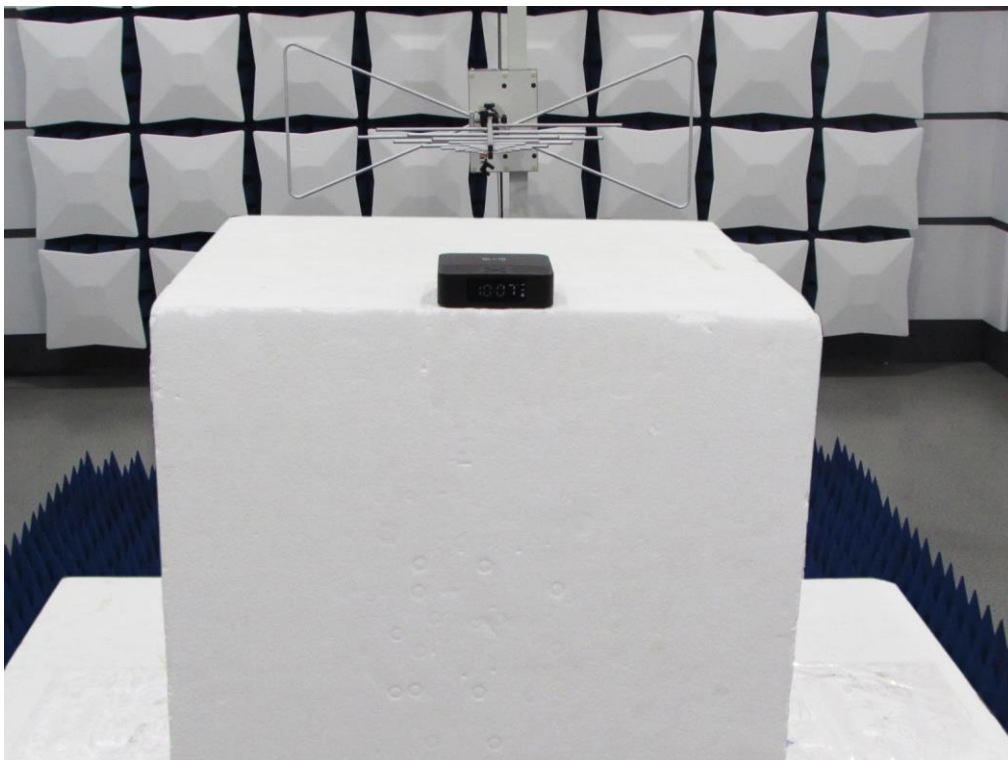
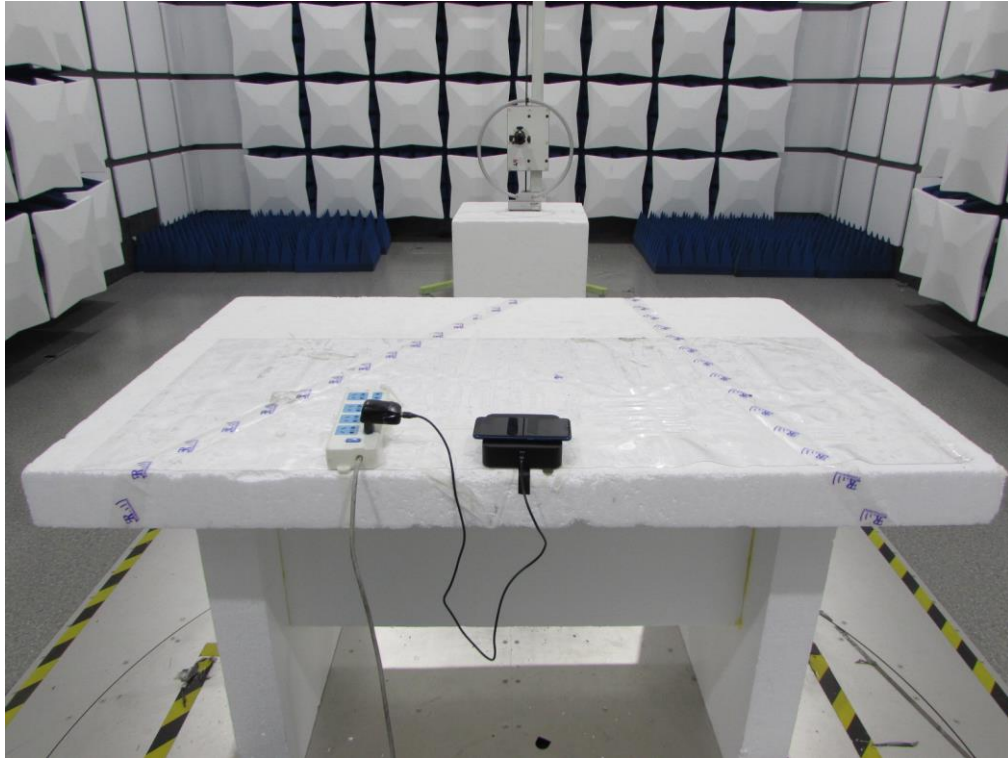
Remark: Only record worst case as below:

| Freq. (KHz) | Antenna Factor (dB/m) | Reading Level (dBuA) | Corrected Level(3m) (dBuA/m) | Conversion factor(3m-10m)dB | Corrected Level convert 3m to 10m((dBuA/m)) | Limit(10m) (dBuA/m) |
|-------------|-----------------------|----------------------|------------------------------|-----------------------------|---|---------------------|
| 161.06 | -14.47 | 30.51 | 16.04 | -31.5 | -15.46 | -5 |
| 183.05 | -14.47 | 30.07 | 16.04 | -31.5 | -15.46 | -5 |

Remark:

- 1) Margin=limit-Measurement Result.
- 2) For the H-field limit in dBuA/m at 3 m, please refer to EN 300 330 Annex H

5. Test Setup Photos of the EUT





6. External and Internal Photos of the EUT

Reference to the test report No. TZ190300592-RE

.....End of Report.....