

RF Test Report

Report No.: AGC04094181201EE17

PRODUCT DESIGNATION : Vibe wireless charging speaker
BRAND NAME : N/A
MODEL NAME : P328.06
CLIENT : Xindao B.V.
DATE OF ISSUE : Jan. 10, 2019
STANDARD(S) : ETSI EN 303417 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	/	Jan. 10, 2019	Valid	Initial Release

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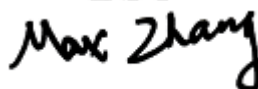
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1. TEST RESULT CERTIFICATION

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	Vibe wireless charging speaker
Brand Name	N/A
Test Model	P328.06
Date of test	Jan. 03, 2019 to Jan. 10, 2019
Deviation	None
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-EC-EMC

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 303417 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



Max Zhang(Zhang Yi)

Jan. 10, 2019

Reviewed By



Bart Xie(Xie Xiaobin)

Jan. 10, 2019

Approved By



Forrest Lei(Lei Yonggang)

Authorized Officer

Jan. 10, 2019

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2. EUT DESCRIPTION

Details of technical specification refer to the description in follows:

Hardware Version	V1.2
Software Version	V1.2
The permitted range of operating frequencies used	105-148KHz
Test Frequency	146.5KHz
Number of Channels	1 Channel
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 by adapter

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

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.

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.

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3. DESCRIPTION OF TEST ITEMS

Harmonised Standard ETSI EN 303417		
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 type="checkbox"/> Applicable <input checked="" 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

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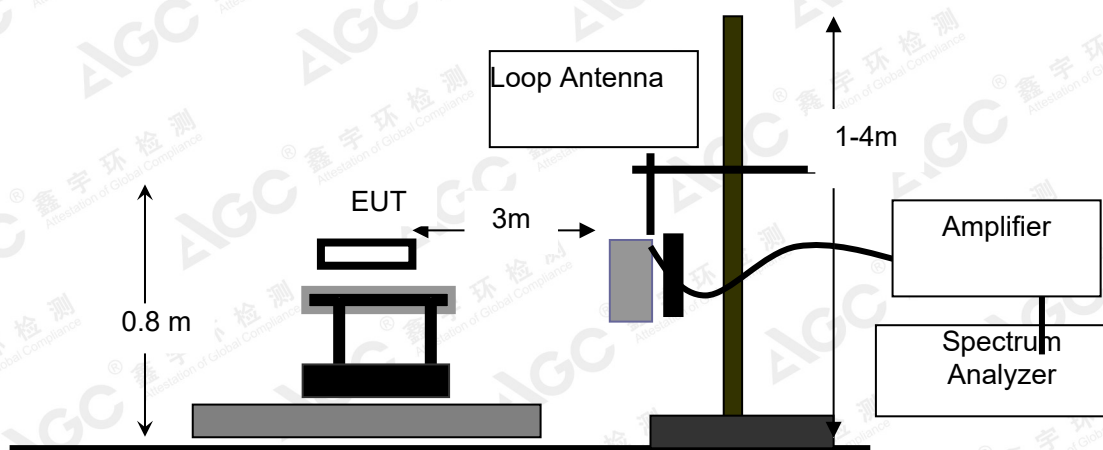
5. ETSI EN 303417 REQUIREMENT

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	100096	Jun.12, 2018	Jun.11, 2019
Amplifier	EM	EM30180	060552	Jun.12, 2018	Jun.11, 2019
LOOP ANTENNA	R&S	HM525	N/A	Mar. 01, 2018	Feb. 28, 2020

TEST SETUP:



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TEST LIMITS:

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

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

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 F.2.

According to EN 303 417 Tablet 3,

Table 3: H-field limits

Frequency range [MHz]	H-field strength limit [dB μ A/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 dB μ A/m for the following spot frequencies: 60 kHz \pm 250 Hz and 129,1 kHz \pm 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= 37.7dB μ A/m.

Owing to the frequency EUT is 146.5kHz, so the C_3 approach to 31.2dB.

So the H_{3m} = 68.9dB μ A/m.

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

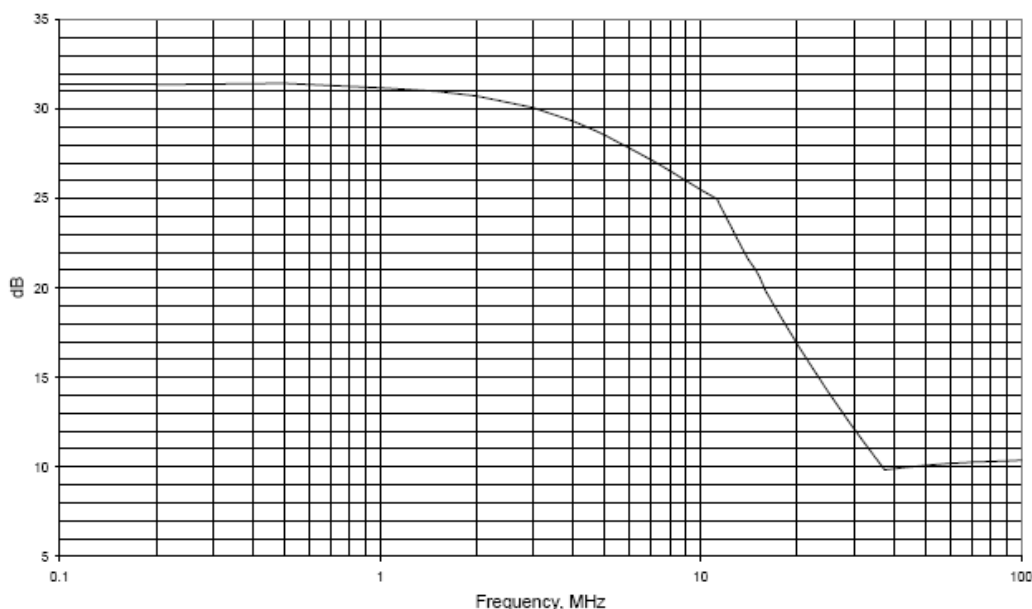


Figure F.2: Conversion factor C_3 versus frequency

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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/VL	45°C	4.5	
TL/VH	-10°C	5.0	
TH/VH	45°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)
0.1465	23.54	8.42	31.96	68.9

Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1465	23.54	-22.78	0.76	37.7

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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/ML	45℃	4.5	
TL/VH	-10℃	5.0	
TH/VH	45℃	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)
0.1465	23.54	9.21	32.75	68.9

Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1465	23.54	-21.99	1.55	37.7

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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/ML	45℃	4.5	
TL/VH	-10℃	5.0	
TH/VH	45℃	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)
0.1465	23.54	10.25	33.79	68.9

Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1465	23.54	-20.95	2.59	37.7

Remark:

- (1) Corrected Level (dBuA/m) = Reading Level + Antenna Factor
- (2) For the calculated method, please refer to Annex F at EN 300330.
- (3) All extreme conditions were considered for test, but only record the worst case.

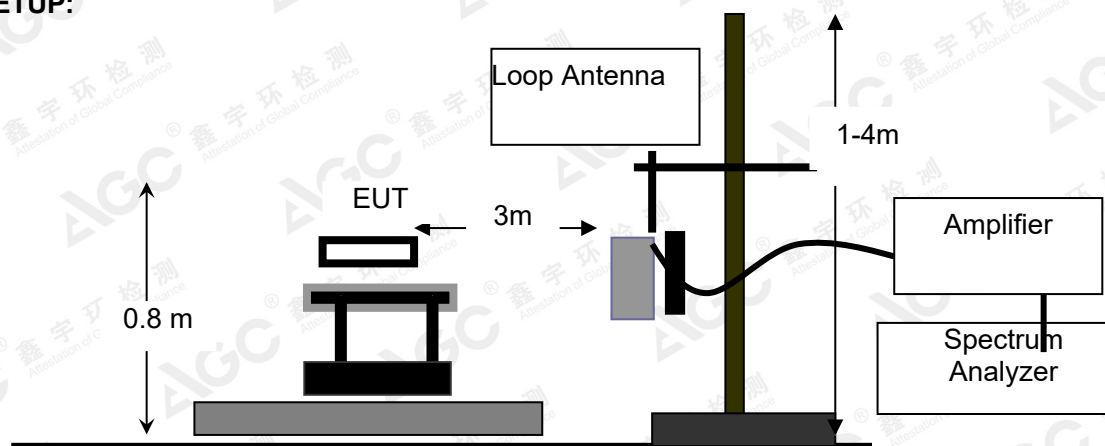
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5.2 OPERATING FREQUENCY RANGES

MEASUREMENT EQUIPMENT USED:

NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	100096	Jun.12, 2018	Jun.11, 2019
Amplifier	EM	EM30180	060552	Jun.12, 2018	Jun.11, 2019
LOOP ANTENNA	R&S	HM525	N/A	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 1

Frequency Range Test Result

Test Temperature	Test Voltage (V DC)	Upper Frequency (kHz)	Lower Frequency (kHz)	Limit
-10℃	4.5	146.045	146.931	100kHz≤&≤300kHz
	5.0	146.042	146.934	100kHz≤&≤300kHz
25℃	5.0	146.041	146.930	100kHz≤&≤300kHz
55℃	4.5	146.044	146.932	100kHz≤&≤300kHz
	5.0	146.042	146.933	100kHz≤&≤300kHz
OFR		0.893kHz		
Results		PASS		

Test Mode: Mode 3

Frequency Range Test Result

Test Temperature	Test Voltage (V DC)	Upper Frequency (kHz)	Lower Frequency (kHz)	Limit
-10℃	4.5	146.042	146.931	100kHz≤&≤300kHz
	5.0	146.041	146.931	100kHz≤&≤300kHz
25℃	5.0	146.042	146.932	100kHz≤&≤300kHz
55℃	4.5	146.042	146.932	100kHz≤&≤300kHz
	5.0	146.041	146.932	100kHz≤&≤300kHz
OFR		0.889kHz		
Results		PASS		

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Test Mode: Mode 4

Frequency Range Test Result

Test Temperature	Test Voltage (V DC)	Upper Frequency (kHz)	Lower Frequency (kHz)	Limit
-10℃	4.5	146.039	146.934	100kHz≤&≤300kHz
	5.0	146.041	146.935	100kHz≤&≤300kHz
25℃	5.0	146.041	146.934	100kHz≤&≤300kHz
55℃	4.5	146.039	146.935	100kHz≤&≤300kHz
	5.0	146.041	146.934	100kHz≤&≤300kHz
OFR		0.895kHz		
Results		PASS		

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

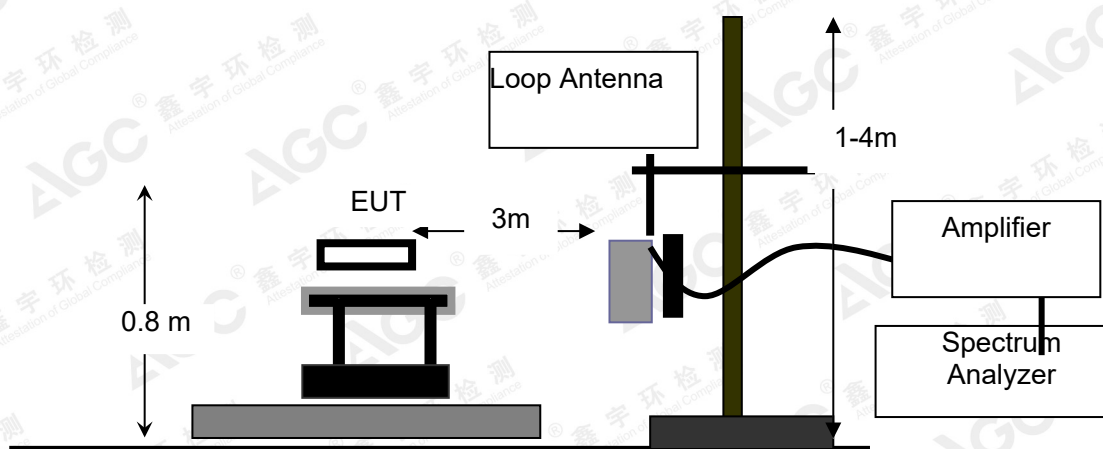
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5.3 TRANSMITTER OUT OF BAND (OOB) EMISSIONS

MEASUREMENT EQUIPMENT USED:

NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	100096	Jun.12, 2018	Jun.11, 2019
Amplifier	EM	EM30180	060552	Jun.12, 2018	Jun.11, 2019
LOOP ANTENNA	R&S	HM525	N/A	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

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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.

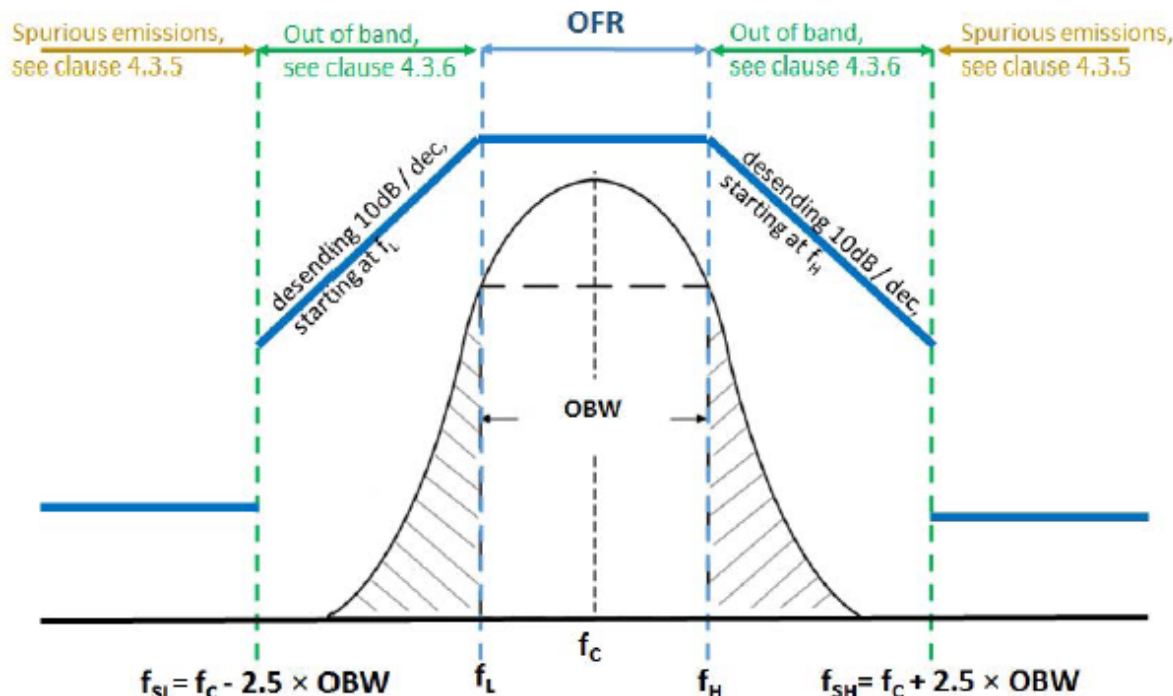


Figure 4: Out of band and spurious domain of a single frequency WPT system

TEST RESULT

Test Mode: Mode 3

Frequency range (KHz)		Maximum level @10m (dBuA/m)	Limit @ 10m (dBuA/m)	Result
$f_{SL} - f_L$	144.285 to 146.041	Less than -18.21	See figure 4	Pass
f_L	146.041	-18.21	37.7	Pass
f_H	146.930	-18.18	37.7	Pass
$f_H - f_{SH}$	146.93 to 148.715	Less than -18.18	See figure 4	Pass

Test Mode: Mode 1

Frequency range (KHz)		Maximum level @10m (dBuA/m)	Limit @ 10m (dBuA/m)	Result
$f_{SL} - f_L$	144.2775 to 146.042	Less than -18.55	See figure 4	Pass
f_L	146.042	-18.55	37.7	Pass
f_H	146.932	-18.47	37.7	Pass
$f_H - f_{SH}$	146.932 to 148.7225	Less than -18.47	See figure 4	Pass

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Test Mode: Mode 4

Frequency range (KHz)		Maximum level @10m (dBuA/m)	Limit @ 10m (dBuA/m)	Result
fSL -fL	144.2625 to 146.041	Less than -16.85	See figure 4	Pass
fL	146.041	-16.85	37.7	Pass
fH	146.934	-15.74	37.7	Pass
fH - fSH	146.934 to 148.7375	Less than -15.74	See figure 4	Pass

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

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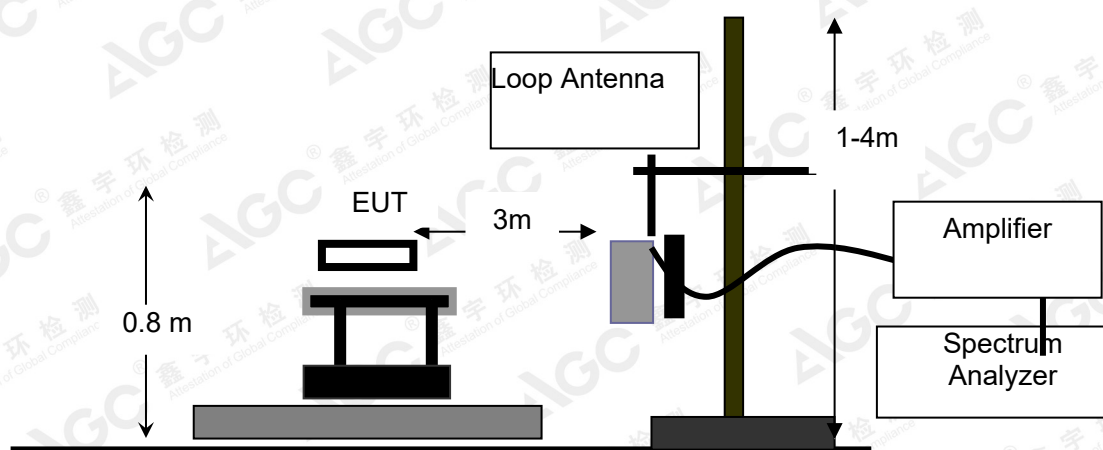
5.4 TRANSMITTER SPURIOUS EMISSIONS

MEASUREMENT EQUIPMENT USED:

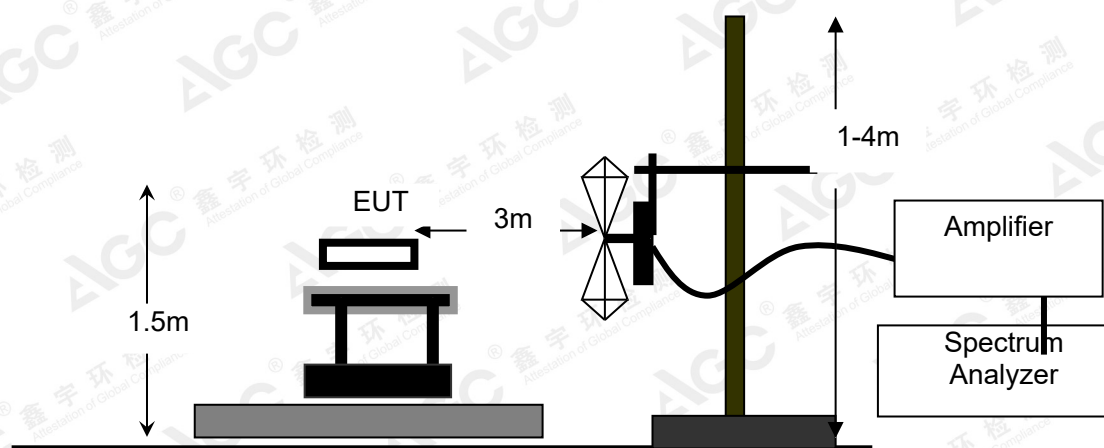
NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	100096	Jun.12, 2018	Jun.11, 2019
Amplifier	EM	EM30180	060552	Jun.12, 2018	Jun.11, 2019
LOOP ANTENNA	R&S	HM525	N/A	Mar. 01, 2018	Feb. 28, 2020
ANTENNA	SCHWARZBECK	VULB9168	494	Mar. 01, 2018	Feb. 28, 2020

TEST SETUP:

FREQUENCY RANGE (9KHZ-30MHZ)



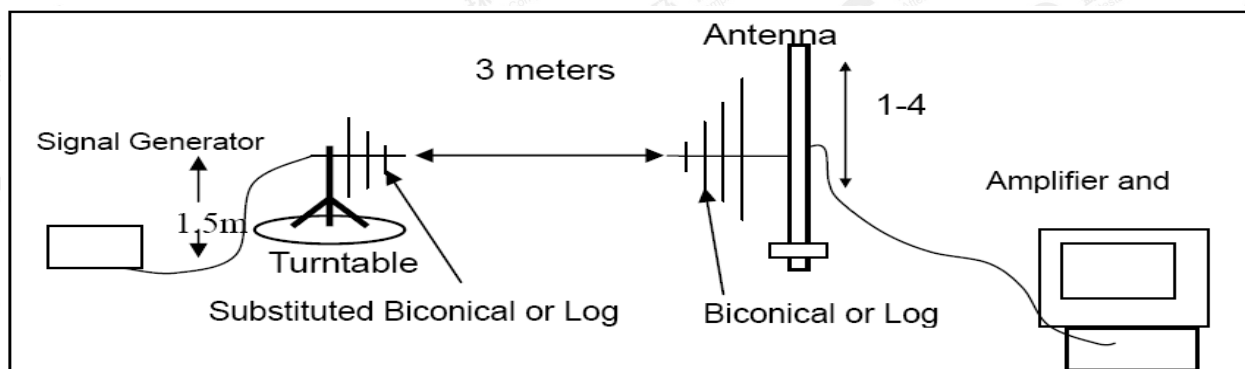
FREQUENCY RANGE (ABOVE 30MHZ)



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SUBSTITUTION METHOD:

RADIATED BELOW 1GHZ



TEST PROCEDURE:

For test method of frequency range (9kHz-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)
0.038	-7.85	-7.96	-15.81	20.74	36.55
0.242	-11.42	-7.96	-19.38	12.70	32.08
0.417	-13.47	-7.96	-21.43	10.34	31.77
1.535	-13.85	-3.98	-17.83	4.68	22.51
2.751	-17.42	-3.09	-20.51	2.15	22.66
3.814	-15.21	-1.25	-16.46	0.73	17.19

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)
79.25	29.10	V	-64.01	0.04	-0.30	-64.35	-36.00	28.35
236.69	28.99	V	-70.31	0.11	6.60	-63.82	-36.00	27.82
381.52	27.59	V	-71.18	0.28	6.49	-64.97	-36.00	28.97
384.52	29.97	V	-69.46	0.28	6.46	-63.28	-36.00	27.28
426.40	26.93	V	-72.15	0.33	6.98	-65.50	-36.00	29.50
831.02	30.71	V	-67.37	0.66	6.37	-61.66	-54.00	7.66
139.33	30.88	H	-62.66	0.05	0.00	-62.71	-36.00	26.71
341.06	33.08	H	-64.79	0.23	5.68	-59.34	-36.00	23.34
394.32	30.09	H	-70.20	0.30	6.48	-64.02	-36.00	28.02
457.92	28.25	H	-70.31	0.37	6.61	-64.07	-36.00	28.07
615.82	31.41	H	-68.48	0.50	6.70	-62.29	-54.00	8.29
766.70	30.79	H	-68.01	0.62	6.78	-61.85	-54.00	7.85

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.

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Test Mode: Mode 4
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)
0.037	-8.42	-7.96	-16.38	20.86	37.24
0.238	-11.75	-7.96	-19.71	12.78	32.49
0.412	-13.41	-7.96	-21.37	10.39	31.76
1.531	-14.25	-3.98	-18.23	4.69	22.92
2.744	-16.18	-3.09	-19.27	2.16	21.43
3.825	-14.59	-1.25	-15.84	0.72	16.56

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)
78.97	29.15	V	-63.72	0.04	-0.50	-64.26	-36.00	28.26
238.84	29.68	V	-70.20	0.11	6.60	-63.71	-36.00	27.71
380.02	27.77	V	-71.87	0.28	6.50	-65.65	-36.00	29.65
384.85	29.45	V	-69.18	0.28	6.46	-63.00	-36.00	27.00
422.52	27.58	V	-73.08	0.33	7.06	-66.35	-36.00	30.35
830.76	31.31	V	-67.18	0.66	6.30	-61.54	-54.00	7.54
138.72	31.64	H	-61.28	0.05	0.00	-61.33	-36.00	25.33
338.79	31.68	H	-67.32	0.23	5.78	-61.78	-36.00	25.78
394.34	29.81	H	-70.25	0.30	6.48	-64.06	-36.00	28.06
456.59	27.53	H	-71.07	0.37	6.58	-64.86	-36.00	28.86
612.82	30.73	H	-69.40	0.50	6.58	-63.32	-54.00	9.32
766.27	30.89	H	-68.85	0.62	6.78	-62.69	-54.00	8.69

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.

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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)
0.035	-8.41	-7.96	-16.37	-0.40	15.97
0.231	-11.25	-7.96	-19.21	-8.59	10.62
0.424	-13.35	-7.96	-21.31	-11.23	10.08
1.512	-24.21	-3.98	-28.19	-16.75	11.44
2.154	-26.14	-3.09	-29.23	-18.29	10.94
3.874	-24.51	-1.25	-25.76	-20.84	4.92

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)
87.67	29.81	V	-65.24	0.04	0.98	-64.30	-57.00	7.30
240.27	30.48	V	-69.77	0.12	6.60	-63.29	-57.00	6.29
315.35	28.93	V	-71.23	0.20	6.25	-65.18	-57.00	8.18
382.72	28.91	V	-71.43	0.28	6.48	-65.23	-57.00	8.23
478.53	28.73	V	-70.24	0.39	6.88	-63.75	-57.00	6.75
828.03	30.87	V	-67.57	0.66	6.40	-61.83	-57.00	4.83
137.72	28.41	H	-65.33	0.05	0.00	-65.38	-57.00	8.38
334.94	29.03	H	-70.13	0.23	5.94	-64.42	-57.00	7.42
396.87	29.94	H	-70.07	0.30	6.52	-63.85	-57.00	6.85
568.63	29.80	H	-69.03	0.47	6.82	-62.68	-57.00	5.68
615.60	28.67	H	-70.49	0.50	6.70	-64.30	-57.00	7.30
817.36	29.90	H	-70.53	0.65	6.89	-64.29	-57.00	7.29

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.

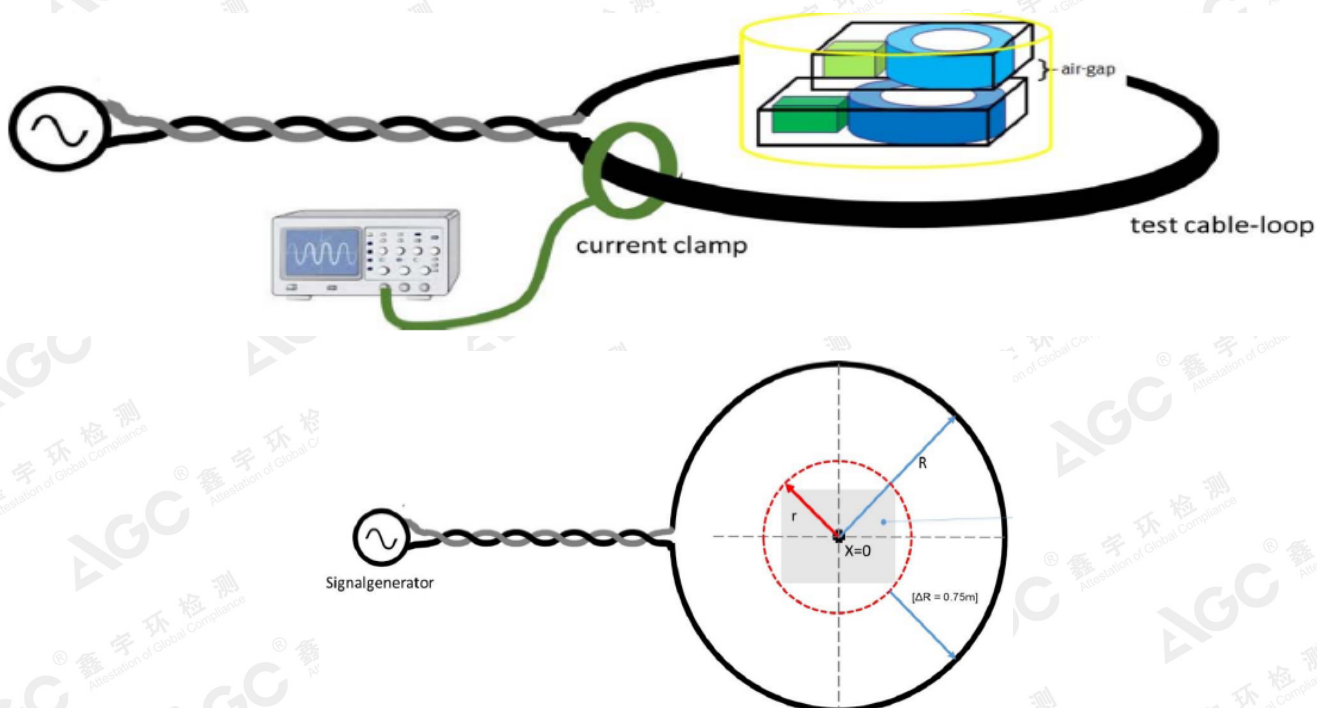
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5.5 RECEIVER BLOCKING

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:

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$$H=I/2R$$

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 dB μ A/m	72 dB μ A/m	82 dB μ A/m

NOTE: $F = \text{OFR}$ see clause 4.3.3.

TEST RESULT

Test Mode: Mode 3

Test Frequency(KHz)		Signal level @ EUT	Performance	Result
In-band signal	146.500	72dBuA/m	No function loss	Pass
OOB signal	145.614	72dBuA/m	No function loss	Pass
	147.386	72dBuA/m	No function loss	Pass
Remote-band signal	137.640	82dBuA/m	No function loss	Pass
	155.360	82dBuA/m	No function loss	Pass

Test Mode: Mode 1

Test Frequency(KHz)		Signal level @ EUT	Performance	Result
In-band signal	146.500	72dBuA/m	No function loss	Pass
OOB signal	145.611	72dBuA/m	No function loss	Pass
	147.389	72dBuA/m	No function loss	Pass
Remote-band signal	137.610	82dBuA/m	No function loss	Pass
	155.390	82dBuA/m	No function loss	Pass

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6. INTERPRETATION OF MEASUREMENT RESULTS

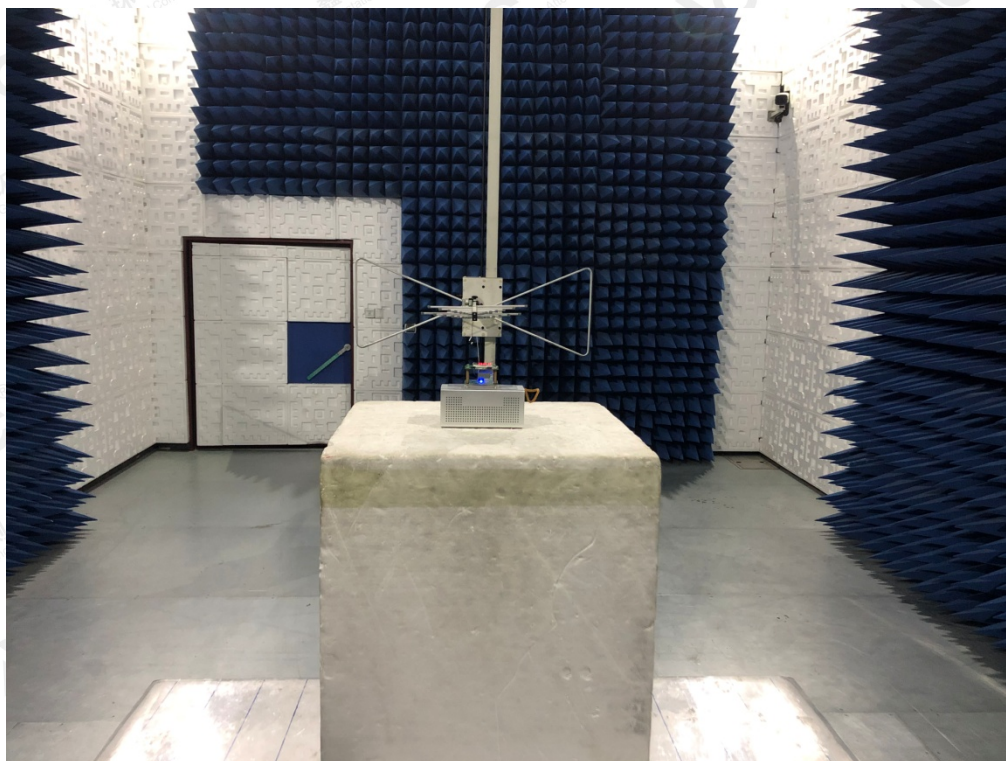
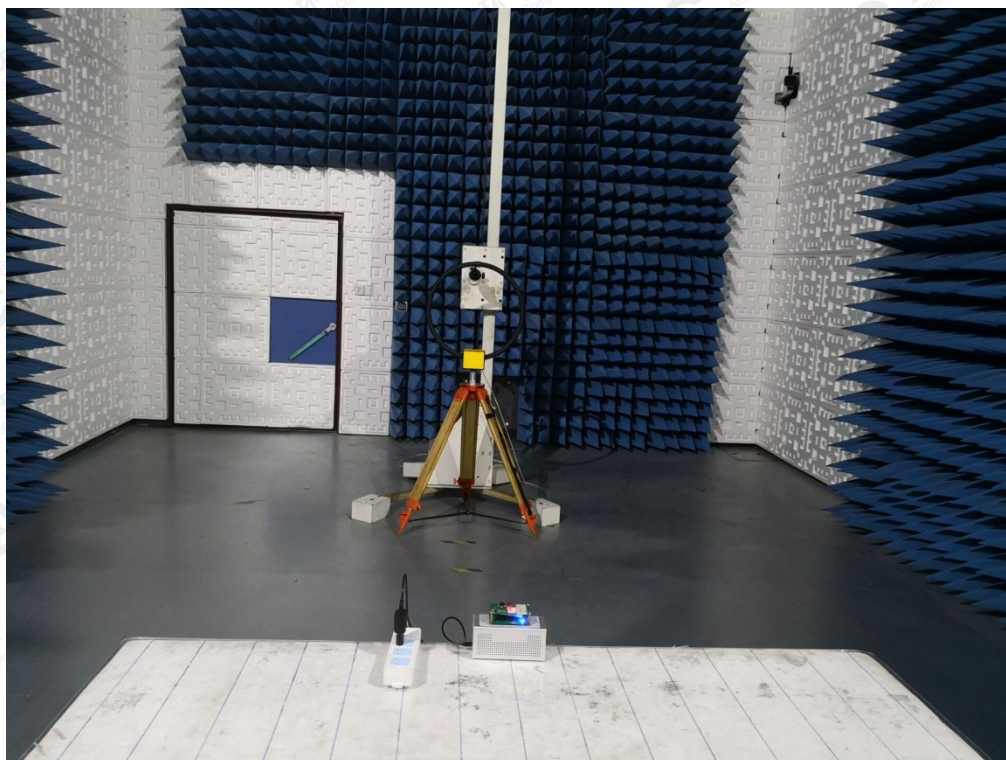
All the measurement equipments and accessories have been carefully selected to meet the maximum measurement uncertainty specified below:

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.

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APPENDIX 1: PHOTOGRAPHS OF TEST SETUP
RADIATED EMISSION TEST



----END OF REPORT----

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