

RF Test Report

Report No.: AGC01978190501EE17

PRODUCT DESIGNATION : Air Mousepad with 5W wireless charging, black

BRAND NAME : N/A

MODEL NAME : P308.251

CLIENT :

DATE OF ISSUE : May 24, 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	/	May 24, 2019	Valid	Initial Release

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1. TEST RESULT CERTIFICATION

Applicant	
Address	
manufacturer	
Address	
Factory	
Address	
Product Designation	Air Mousepad with 5W wireless charging, black
Brand Name	N/A
Test Model	P308.251
Date of test	May 13, 2019 to May 23, 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.

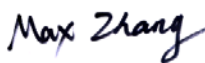
Tested By



Erik Yang(Yang Jianmin)

May 23, 2019

Reviewed By



Max Zhang(Zhang Yi)

May 24, 2019

Approved By



 Forrest Lei(Lei Yonggang)
 Authorized Officer

May 24, 2019

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2. EUT DESCRIPTION

Details of technical specification refer to the description in follows:

Hardware Version	V1.0
Software Version	V1.0
Operate Frequency	Energy transmission: 110-205kHz Data communication:115.3KHz
OCW	0.710kHz
Test Channels	Energy transmission: Low channel 110KHz, High channel 205kHz Data communication:115.3KHz
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 1A by Micro-USB

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.

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3. DESCRIPTION OF TEST ITEMS

Harmonised Standard ETSI EN 303 417		
Requirement		Requirement Conditionality
No	Description	
1	Permitted range of operating frequencies	☒ Applicable ☐ Not Applicable
2	Operating frequency ranges	☒ Applicable ☐ Not Applicable
3	H-field requirements	☒ Applicable ☐ Not Applicable
4	Transmitter spurious emissions	☒ Applicable ☐ Not Applicable
5	Transmitter out of band (OOB) emissions	☒ Applicable ☐ Not Applicable
6	WPT system unwanted conducted emissions	☐ Applicable ☒ Not Applicable
7	Receiver blocking	☒ Applicable ☐ 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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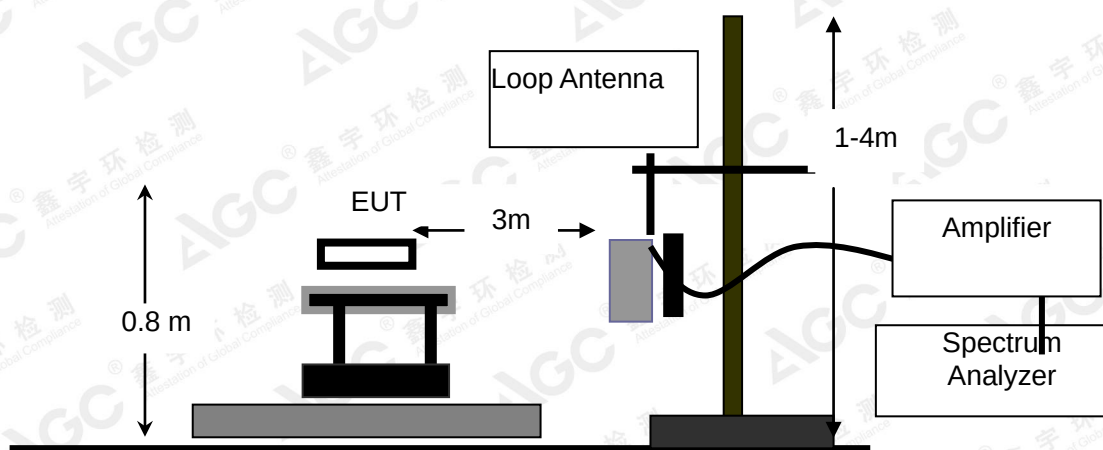
5. ETSI EN 303 417 REQUIREMENT

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	100096	Jun. 12, 2018	Jun. 11, 2019
Amplifier	EM	EM30180	060552	Jun. 12, 2018	Jun. 11, 2019
LOOP ANTENNA	A.H.	SAS-526B	--	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= 42dB μ A/m.

Owing to the frequency EUT is 115.3kHz, so the C_3 approach to 31.2dB.

So the $H_{3m} = 73.2\text{dB}\mu\text{A/m}$.

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

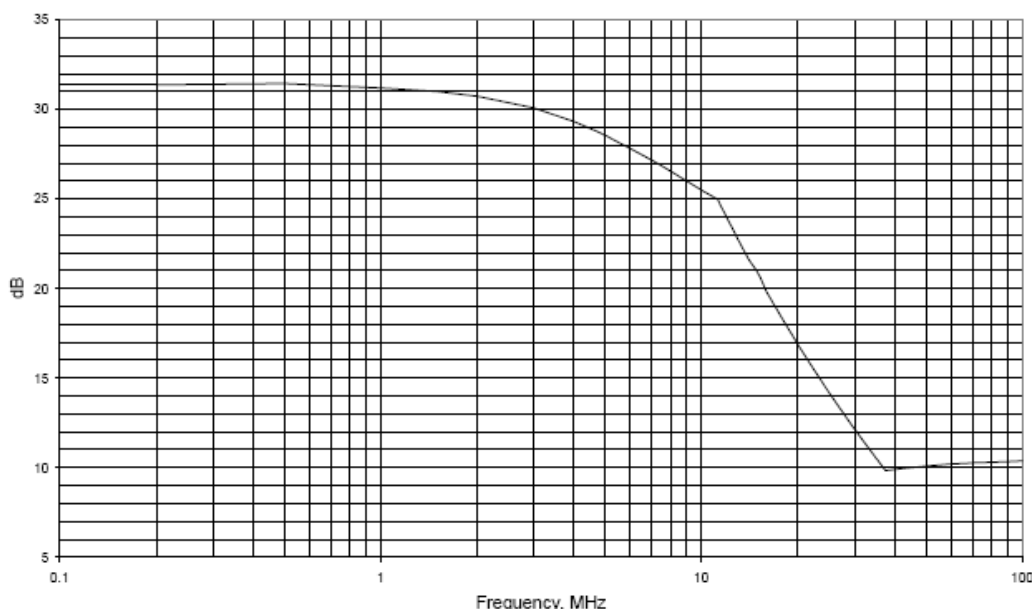


Figure F.2: Conversion factor C_3 versus frequency

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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/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)
0.1153	23.54	-4.52	19.02	73.2

Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1153	23.54	-35.72	-12.18	42

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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/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)
0.1153	23.54	-4.68	18.86	73.2

Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1153	23.54	-35.88	-12.34	42

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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)
0.1121	23.54	-1.26	22.28	73.20
0.1470	23.54	-3.27	20.27	68.90
0.2050	23.54	-4.25	19.29	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)
0.1121	23.54	-32.46	-8.92	42.00
0.1470	23.54	-34.47	-10.93	37.7
0.2050	23.54	-35.45	-11.91	-5.00

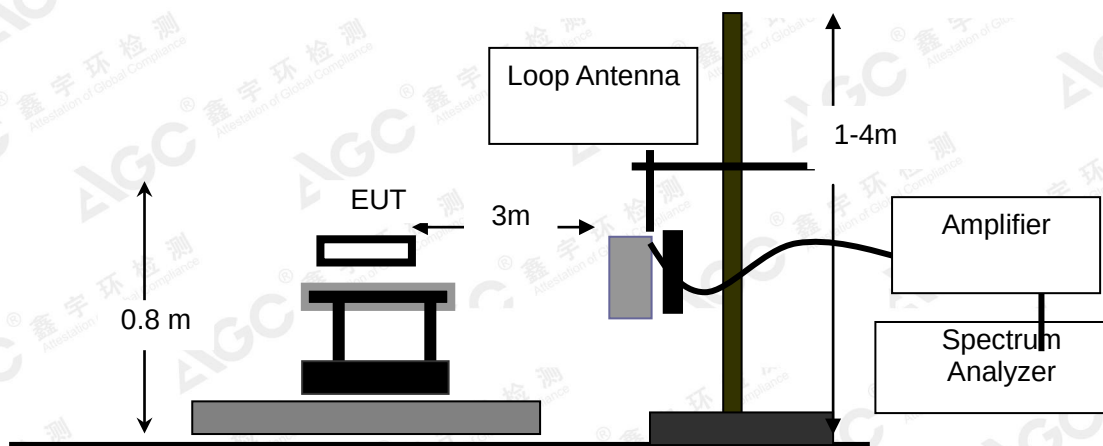
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5.2 OPERATING FREQUENCY RANGES

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	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.

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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	114.941KHz	115.651KHz	100kHz≤&≤300kHz
	5.0	114.943KHz	115.653KHz	100kHz≤&≤300kHz
25℃	5.0	114.945KHz	115.655KHz	100kHz≤&≤300kHz
40℃	4.5	114.942KHz	115.652KHz	100kHz≤&≤300kHz
	5.0	114.946KHz	115.656KHz	100kHz≤&≤300kHz
OFR		0.710kHz		
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	114.935KHz	115.661KHz	100kHz≤&≤300kHz
	5.0	114.936KHz	115.662KHz	100kHz≤&≤300kHz
25℃	5.0	114.937KHz	115.663KHz	100kHz≤&≤300kHz
40℃	4.5	114.938KHz	115.664KHz	100kHz≤&≤300kHz
	5.0	114.939KHz	115.665KHz	100kHz≤&≤300kHz
OFR		0.726kHz		
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	111.731kHz	205.367kHz	100kHz≤&≤300kHz
	5.0	111.733kHz	205.369kHz	100kHz≤&≤300kHz
25℃	5.0	111.735kHz	205.371kHz	100kHz≤&≤300kHz
40℃	4.5	111.734kHz	205.370kHz	100kHz≤&≤300kHz
	5.0	111.736kHz	205.372kHz	100kHz≤&≤300kHz
OFR		93.636kHz		
Results		PASS		

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

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Attestation of Global Compliance

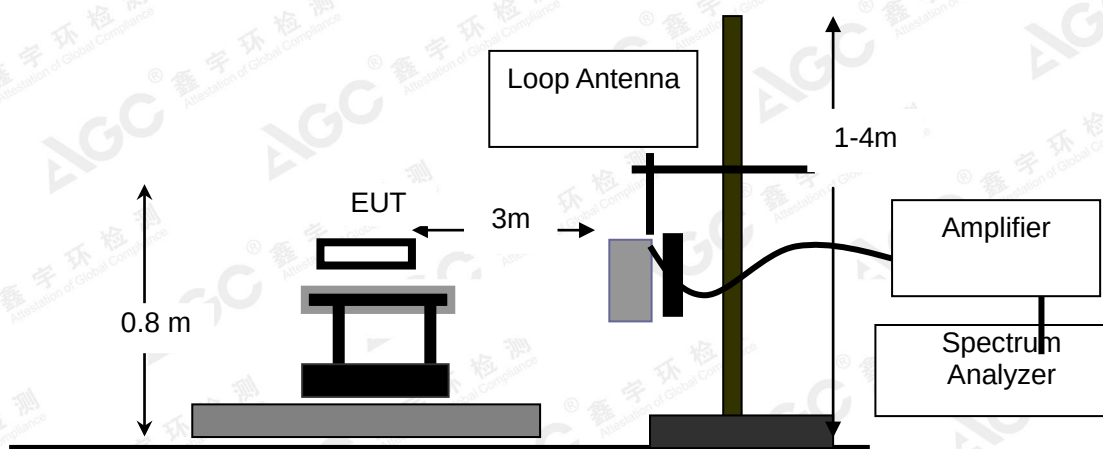
 Tel: +86-755 2908 1955 Fax: +86-755 2600 8484 E-mail: agc@agc-cert.com 400 089 2118
 Add: 2/F, Building 2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China

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	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

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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.

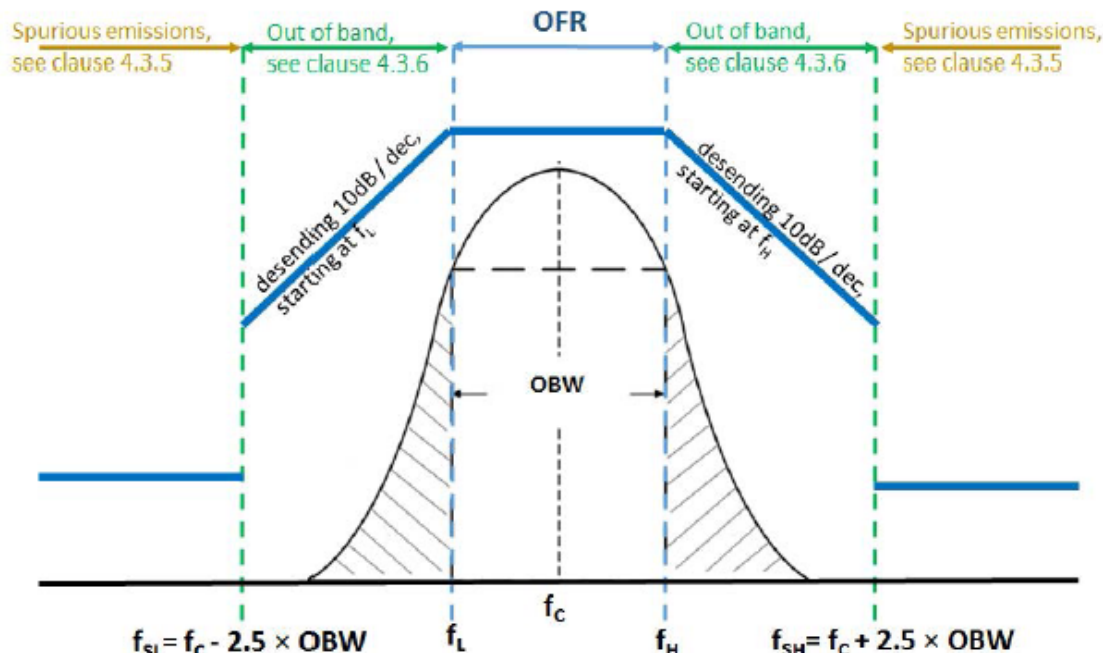


Figure 4: Out of band and spurious domain of a single frequency WPT system

TEST RESULT

Test Mode: Mode 3

Frequency range (KHz)		Maximum level @10m (dBuA/m)	Limit @ 10m (dBuA/m)	Result
fSL -fL	113.525 to 114.945	Less than -17.96	See figure 4	Pass
fL	114.945	-17.96	42	Pass
fH	115.655	-17.83	42	Pass
fH - fSH	115.655 to 117.075	Less than -17.83	See figure 4	Pass

Test Mode: Mode 1

Frequency range (KHz)		Maximum level @10m (dBuA/m)	Limit @ 10m (dBuA/m)	Result
fSL -fL	113.485 to 114.937	Less than -18.32	See figure 4	Pass
fL	114.937	-18.32	42	Pass
fH	115.663	-18.16	42	Pass
fH - fSH	115.663 to 117.115	Less than -18.16	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	110.275 to 111.735	Less than -17.35	See figure 4	Pass
fL	111.735	-17.35	42	Pass
fH	205.371	-16.42	-5	Pass
fH - fSH	205.371 to 206.855	Less than -16.42	See figure 4	Pass

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

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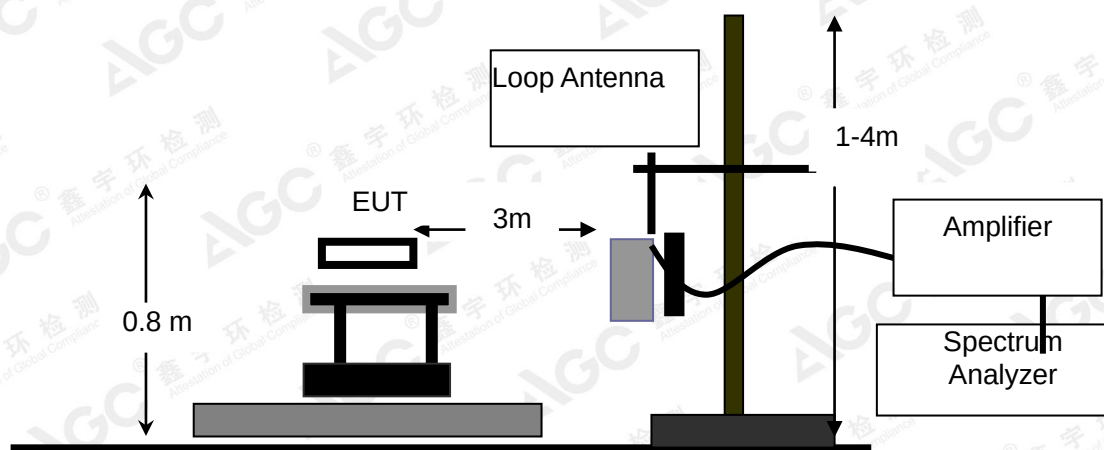
5.4 TRANSMITTER SPURIOUS EMISSIONS

MEASUREMENT EQUIPMENT USED:

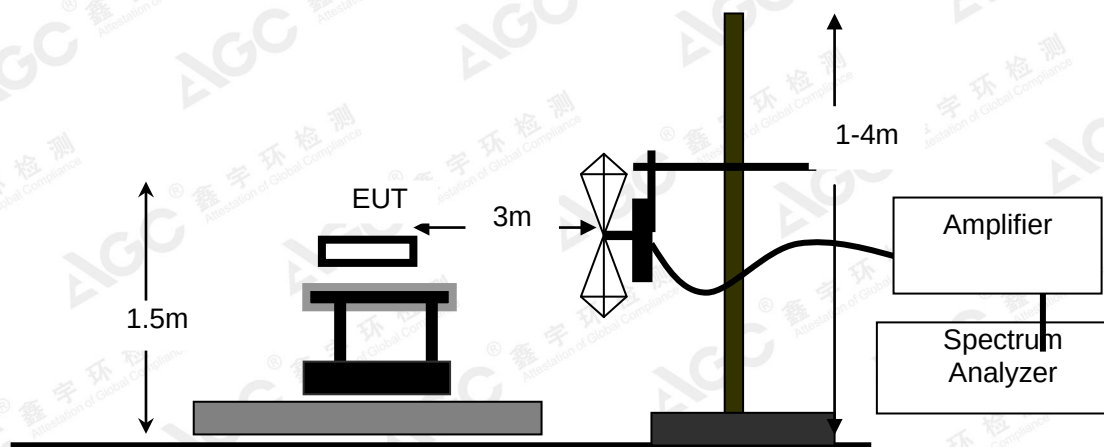
NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	100096	Jun. 12, 2018	Jun. 11, 2019
Amplifier	EM	EM30180	060552	Jun. 12, 2018	Jun. 11, 2019
LOOP ANTENNA	A.H.	SAS-526B	--	Mar. 01, 2018	Feb. 28, 2020
ANTENNA	SCHWARZBECK	VULB9168	494	Mar. 01, 2018	Feb. 28, 2020

TEST SETUP:

FREQUENCY RANGE (9KHZ-30MHZ)



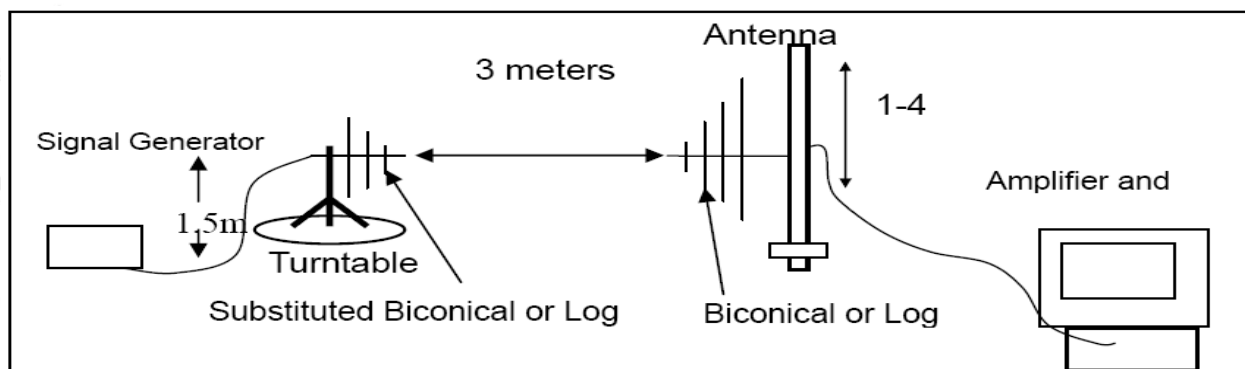
FREQUENCY RANGE (ABOVE 30MHZ)



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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.

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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)
0.042	-6.92	-7.96	-14.88	20.31	35.19
0.247	-10.99	-7.96	-18.95	12.62	31.57
0.422	-12.27	-7.96	-20.23	10.29	30.52
1.540	-10.99	-3.98	-14.97	4.67	19.64
2.755	-13.21	-3.09	-16.30	2.14	18.44
3.818	-14.08	-1.25	-15.33	0.72	16.05

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)
84.92	30.92	V	-61.07	0.48	0.54	-61.01	-36.00	25.01
130.33	30.40	V	-61.62	0.49	0.10	-62.01	-36.00	26.01
239.92	30.79	V	-64.94	0.52	6.60	-58.86	-36.00	22.86
326.46	30.17	V	-65.60	0.53	6.10	-60.03	-36.00	24.03
334.76	31.54	V	-64.38	0.53	5.94	-58.97	-36.00	22.97
827.20	31.77	V	-65.08	0.66	6.45	-59.29	-54.00	5.29
83.39	31.84	H	-60.33	0.48	0.38	-60.43	-36.00	24.43
131.25	30.24	H	-59.56	0.49	0.08	-59.97	-36.00	23.97
242.43	30.51	H	-68.67	0.52	6.72	-62.47	-36.00	26.47
326.05	31.29	H	-65.81	0.53	6.10	-60.24	-36.00	24.24
735.08	30.80	H	-64.83	0.59	6.60	-58.83	-54.00	4.83
827.32	31.29	H	-66.36	0.66	6.45	-60.57	-54.00	6.57

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(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)
0.039	-6.94	-7.96	-14.9	20.63	35.53
0.243	-11.01	-7.96	-18.97	12.69	31.66
0.419	-12.29	-7.96	-20.25	10.32	30.57
1.537	-11.01	-3.98	-14.99	4.68	19.67
2.752	-13.24	-3.09	-16.33	2.15	18.48
3.816	-14.1	-1.25	-15.35	0.73	16.08

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)
84.83	30.64	V	-60.71	0.48	0.54	-60.65	-36.00	24.65
129.80	30.77	V	-61.16	0.49	0.14	-61.51	-36.00	25.51
240.33	31.23	V	-67.49	0.52	6.60	-61.41	-36.00	25.41
326.49	30.27	V	-67.42	0.53	6.10	-61.85	-36.00	25.85
334.38	31.54	V	-64.10	0.53	5.94	-58.69	-36.00	22.69
827.44	32.20	V	-66.28	0.66	6.45	-60.49	-54.00	6.49
84.21	31.62	H	-57.67	0.48	0.54	-57.61	-36.00	21.61
131.47	31.10	H	-59.29	0.49	0.08	-59.70	-36.00	23.70
243.22	29.92	H	-65.84	0.52	6.78	-59.58	-36.00	23.58
325.71	30.85	H	-64.73	0.53	6.10	-59.16	-36.00	23.16
735.40	30.72	H	-65.25	0.59	6.60	-59.24	-54.00	5.24
827.96	31.15	H	-64.61	0.66	6.45	-58.82	-54.00	4.82

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	-8.76	-7.96	-16.72	-0.40	16.32
0.234	-11.65	-7.96	-19.61	-8.65	10.96
0.405	-12.58	-7.96	-20.54	-11.03	9.51
1.527	-22.75	-3.98	-26.73	-16.80	9.93
2.638	-25.96	-3.09	-29.05	-19.17	9.88
3.815	-22.43	-1.25	-23.68	-20.77	2.91

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)
115.23	30.46	V	-72.05	0.48	1.40	-71.13	-57.00	14.13
176.93	31.93	V	-73.27	0.51	2.88	-70.90	-57.00	13.90
229.06	29.98	V	-77.54	0.52	6.84	-71.22	-57.00	14.22
496.41	30.47	V	-77.73	0.56	7.04	-71.25	-57.00	14.25
664.82	30.75	V	-76.97	0.59	6.98	-70.58	-57.00	13.58
879.84	30.48	V	-76.05	0.69	5.87	-70.87	-57.00	13.87
84.79	31.52	H	-70.82	0.48	0.54	-70.76	-57.00	13.76
110.12	30.56	H	-71.87	0.48	1.40	-70.95	-57.00	13.95
218.67	30.69	H	-77.75	0.52	7.46	-70.81	-57.00	13.81
484.99	30.35	H	-77.52	0.56	6.98	-71.10	-57.00	14.10
554.75	30.55	H	-80.21	0.57	6.78	-74.00	-57.00	17.00
84.79	31.52	H	-70.82	0.48	0.54	-70.76	-57.00	13.76

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.

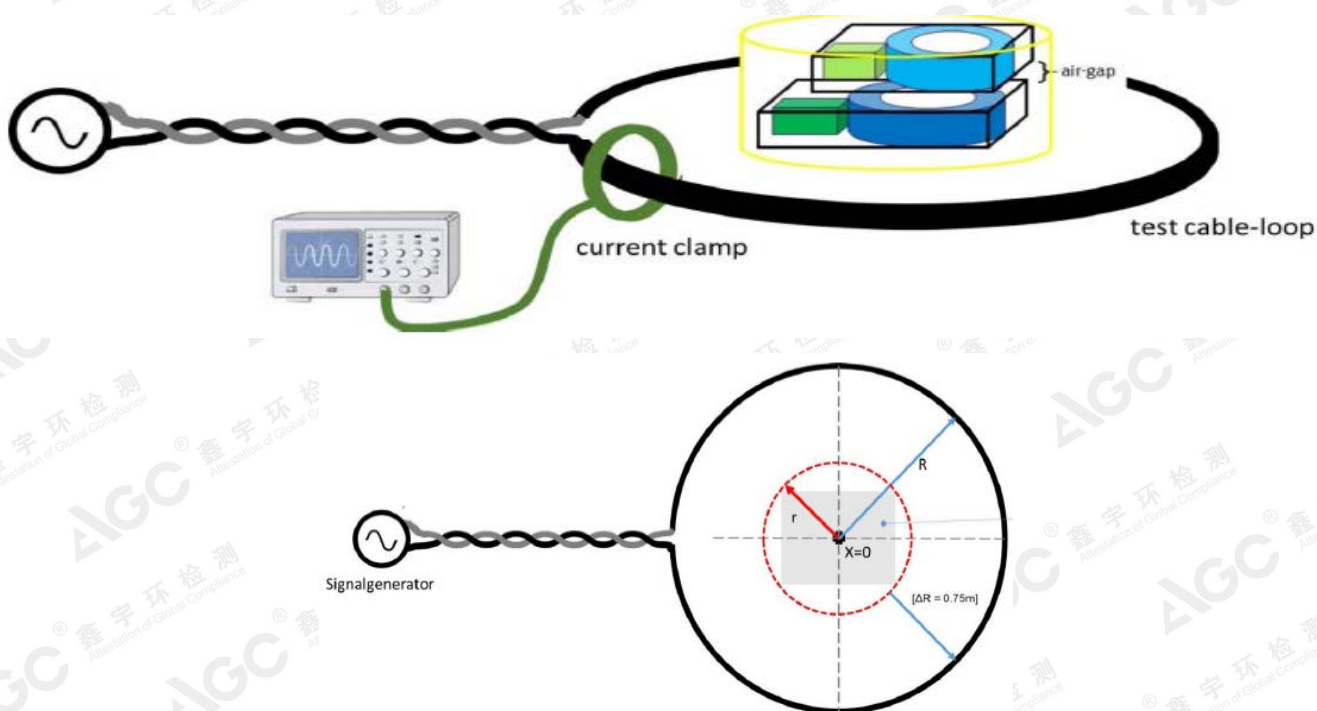
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5.5 RECEIVER BLOCKING

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:

$$H = I/2R$$

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

TEST RESULT

Test Mode: Mode 3

Test Frequency(KHz)		Signal level @ EUT	Performance	Result
In-band signal	115.300	72dBuA/m	No function loss	Pass
OOB signal	114.590	72dBuA/m	No function loss	Pass
	116.010	72dBuA/m	No function loss	Pass
Remote-band signal	108.200	82dBuA/m	No function loss	Pass
	122.400	82dBuA/m	No function loss	Pass

Test Mode: Mode 1

Test Frequency(KHz)		Signal level @ EUT	Performance	Result
In-band signal	115.300	72dBuA/m	No function loss	Pass
OOB signal	114.574	72dBuA/m	No function loss	Pass
	116.026	72dBuA/m	No function loss	Pass
Remote-band signal	108.040	82dBuA/m	No function loss	Pass
	122.560	82dBuA/m	No function loss	Pass

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6. INTERPRETATION OF MEASUREMENT RESULTS

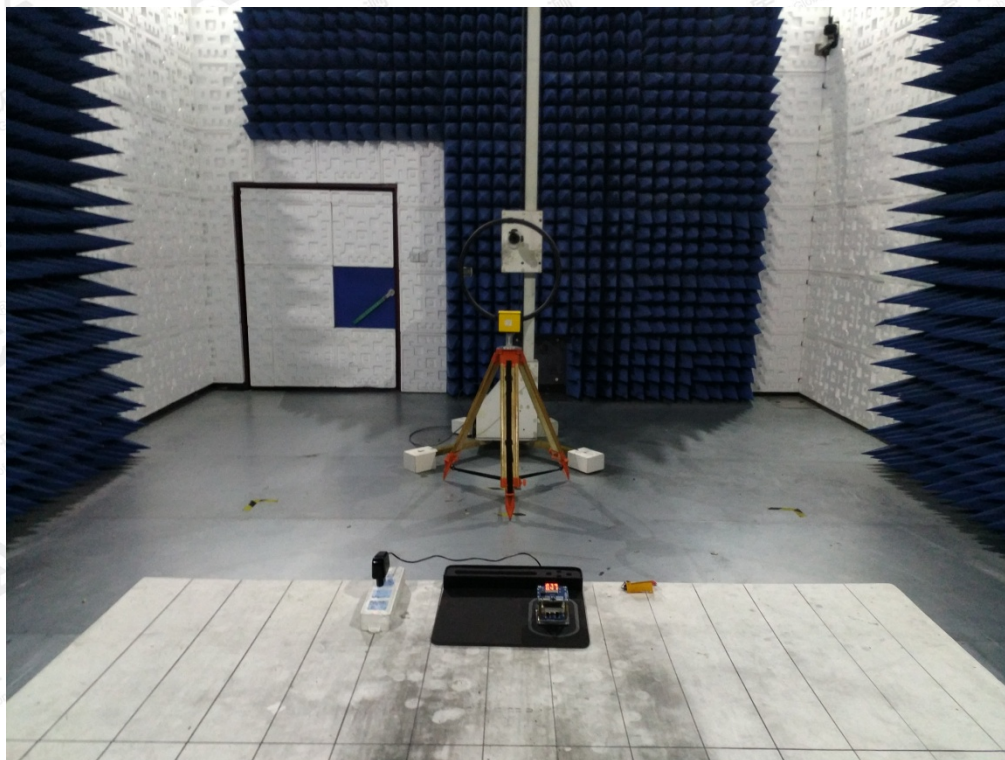
All the measurement equipments and accessories have been carefully selected to meet the maximum measurement uncertainty specified below:

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



----END OF REPORT----

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