

# **RF Test Report**

Report No.: AGC01978180105EE17

Portfolio with wireless power bank

**BRAND NAME** N/A

MODEL NAME P773.871

**MANUFACTURER** Xindao B.V.

**DATE OF ISSUE** Mar. 14, 2018

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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Page 2 of 22

# **Report Revise Record**

1	Report Version	Revise Time	Issued Date	Valid Version	Notes
4	V1.0	plience I State	Mar. 14, 2018	Valid	Initial Release

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Report No.: AGC01978180105EE17 Page 2 of 22

# **TABLE OF CONTENTS**

1. TEST RESULT CERTIFICATION	3
2. EUT DESCRIPTION	4
3. DESCRIPTION OF TEST ITEMS	5
4. TEST FACILITY	5
5. ETSI EN 303 417 REQUIREMENT	6
5.1 TRANSMITTER H-FIELD REQUIREMENTS	6
5.2 OPERATING FREQUENCY RANGES	9
5.3 TRANSMITTER OUT OF BAND (OOB) EMISSIONS	11
5.4 TRANSMITTER SPURIOUS EMISSIONS	14
5.5 RECEIVER BLOCKING	19
6. INTERPRETATION OF MEASUREMENT RESULTS	21
APPENDIX 1: PHOTOGRAPHS OF TEST SETUP	

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Report No.: AGC01978180105EE17 Page 3 of 22

# 1. TEST RESULT CERTIFICATION

Manufacturer	Xindao B.V.
Address	VERRIJN STUARTLAAN 1D 2288EK RIJSWIJK NETHERLANDS
Factory	
Address	
Product Designation	Portfolio with wireless power bank
Brand Name	N/A
Test Model	P773.871
Date of test	Mar. 12, 2018 to Mar. 14, 2018
Deviation	None Of the Control o
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 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	Max 2h	my
	Max Zhang(Zhang Yi)	Mar. 14, 2018
Reviewed by	Bores	e The Market
	Bart Xie(Xie Xiaobin))	Mar. 14, 2018
Approved By	Forver & ce	DE THE STATE OF TH
(S) Final count Compliant	Forrest Lei(Lei Yonggang)	Mar. 14, 2018

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Page 4 of 22

# 2. EUT DESCRIPTION

Details of technical specification refer to the description in follows:

Hardware Version	G006_A V1.1, G006B_A V1.1
Software Version	V1.0
The permitted range of operating frequencies used	110-205KHz
Test Frequency	178KHz
Number of Channels	1 Channel
Antenna Type	Integral antenna
Operational Mode	Mode 3: communication Mode 4: energy transmission
Power Supply	DC 3.7V

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

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Page 5 of 22

# 3. DESCRIPTION OF TEST ITEMS

	Harmonised Standard ETSI EN 303 417						
	Requirement	Requirement Conditionality					
No	Description	_ Requirement Conditionality					
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	B112-B113, Building 12, Baoan Building Materials Center, No.1 of Xixiang Inner
Location	Ring Road, Baoan District, Shenzhen, Guangdong, P.R.China

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Page 6 of 22

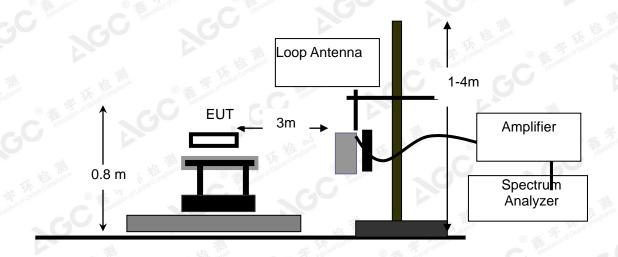
# 5. ETSI EN 303 417 REQUIREMENT

# **5.1 TRANSMITTER H-FIELD REQUIREMENTS**

# **MEASUREMENT EQUIPMENT USED:**

Jan 10110	State of State	The state of the s			
NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	100096	June. 29, 2017	June. 28, 2018
Amplifier	EM _	EM30180	060552	June. 29, 2017	June. 28, 2018
Loop Antenna	A.H.	SAS-526B	G	Mar. 01, 2018	Feb. 28, 2019

## **TEST SETUP:**



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Page 7 of 22

# **TEST LIMITS:**

The H-field limit in dBµA/m at 3 m, H<sub>3m</sub>, is determined by the following equation:

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

Where: H<sub>10m</sub> is the H-field limit in dBμA/m at 10 m distance according to the present document; and C<sub>3</sub> is a conversion factor in dB determined from figure F.2.

The limit at 10 m( $H_{10m}$ ) is -5 dB $\mu$ A/m.

Owing to the frequency EUT is 164.5kHz, so the C<sub>3</sub> approach to 31.5dB.

Then the limit at  $3m(H_{3m}) = H_{10m} + C_3 = -5 + 31.5 = 26.5 \text{ dB}\mu\text{A/m}$ .

The H Field Strength shall not exceed the values 26.5 dBuA/m 3m Distance under normal test conditions.

Correction factor, C3, for limits at 3 m distance, dB

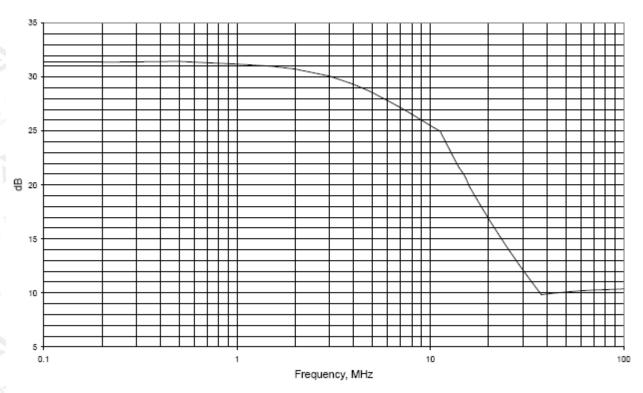


Figure F.2: Conversion factor C<sub>3</sub> versus frequency

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Page 8 of 22

# **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 4

## Extreme conditions state

conditions	Test Temp	Test Volt.(V)	Note 1
TN/VN	25℃	3.70	Worst case
TL/ VL	-10°C	3.15	700
TH/VL	45℃	3.15	TIM:
TL/VH	-10℃	3.70	To Browning
TH/VH	<b>45</b> ℃	3.70	@ # Hallon

# Test results tested at 3m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit	
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)	
0.178	23.54	-17.55	5.99	26.5	

# Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.178	23.54	-49.05	-25.51	-5 cC

# 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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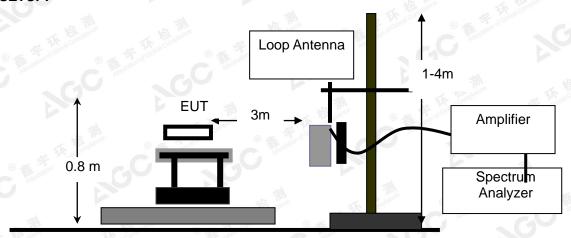
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Page 9 of 22

# 5.2 OPERATING FREQUENCY RANGES MEASUREMENT EQUIPMENT USED:

					Alles
NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	100096	June. 29, 2017	June. 28, 2018
Amplifier	EM	EM30180	060552	June. 29, 2017	June. 28. 2018
Loop Antenna	A.H.	SAS-526B	of Global Control of Global Co	Mar. 01, 2018	Feb. 28, 2019

## **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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Page 10 of 22

# **TEST RESULT**

# Frequency Range Test Result

		Upper	Lower	
Test Temperature	Test Voltage (V DC)	Upper Frequency (kHZ)	Lower Frequency (kHZ)	Limit
-10℃	3.15	177.422	178.571 -	100kHz≤&≤300kHz
-10 C	3.70	177.421	178.574	100kHz≤&≤300kHz
25℃	3.70	177.422	178.572	100kHz≤&≤300kHz
AF°C	3.15	177.422	178.571	100kHz≤&≤300kHz
<b>45</b> ℃	3.70	177.424	178.577	100kHz≤&≤300kHz
Res	ults	The Copy Comple	(8) Milestation of	PASS

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

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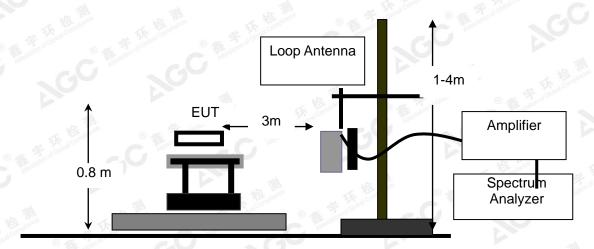
Page 11 of 22

# 5.3 TRANSMITTER OUT OF BAND (OOB) EMISSIONS

# **MEASUREMENT EQUIPMENT USED:**

-	The Alexander		7 102	760P* A(A)*	
NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	100096	June. 29, 2017	June. 28, 2018
Amplifier	EM	EM30180	060552	June. 29, 2017	June. 28, 2018
Loop Antenna	A.H.	SAS-526B	- (Sobolin Allestall	Mar. 01, 2018	Feb. 28, 2019

### **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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Report No.: AGC01978180105EE17 Page 12 of 22

# **LIMITS**

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

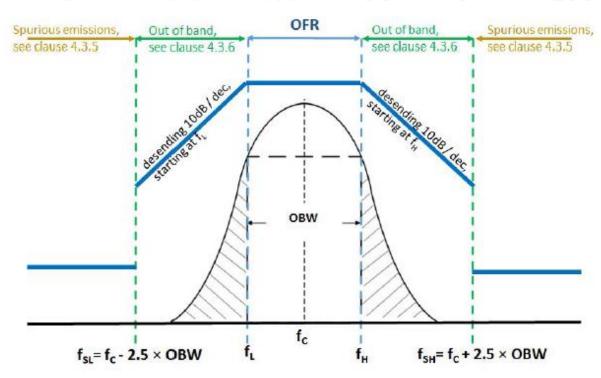


Figure 4: Out of band and spurious domain of a single frequency WPT system

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Page 13 of 22

# **TEST RESULT**

Freque	Frequency range (KHz) Limit(dbuA/m)		Result
fSL -fL	175.5KHz-177.5KHz	See figure 4	Pass
Committee of Land Condition	177.5KHz	-5	Pass
G fH	178.5KHz	-fill -5	Pass
fH - fSH	178.5KHz-180.5KHz	See figure 4	Pass

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

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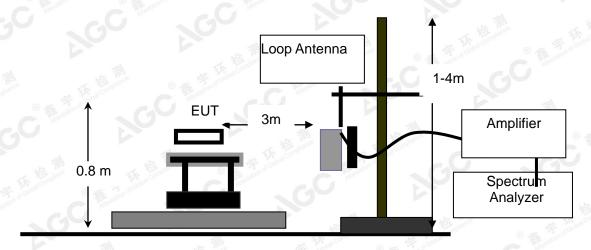
Page 14 of 22

# **MEASUREMENT EQUIPMENT USED:**

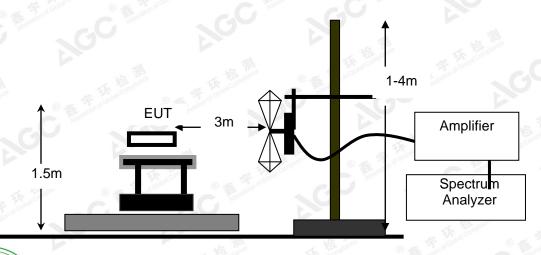
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NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
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Amplifier	EM	EM30180	060552	June. 29, 2017	June. 30, 2018
Loop Antenna	A.H.	SAS-526B	of Globa @ Allegali	Mar. 01, 2018	Feb. 28, 2019
ANTENNA	SCHWARZBECK	VULB9168	494	Mar. 01, 2018	Feb. 28, 2019

# **TEST SETUP:**

FREQUENCY RANGE (9KHZ-30MHZ)



FREQUENCY RANGE (ABOVE 30MHZ)



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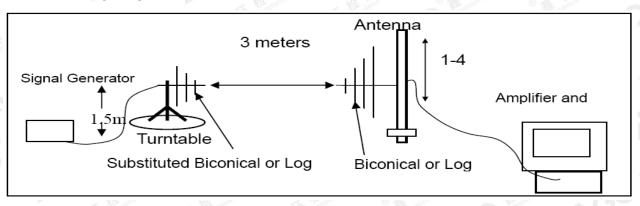
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Page 15 of 22

# **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 kHz ≤ f < 10 MHz	Frequency 10 MHz ≤ f < 30 MHz		
Operating		27 dBμA/m at 9 kHz descending 10 dB/dec	-3,5 dBμA/m		
Standby		5,5 dBμA/m at 9 kHz descending 10 dB/dec	-25 dBμA/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" mea	ans mode 2, 3 and 4 according to Table 2; "	standby" means mode 1 according to
Table 2.	-	•

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Page 17 of 22

# **TEST LIMITS & RESULT**

# FREQUENCY RANGE (9KHZ-30MHZ)

拉利	ALS THE	OPE	ERATION MODE	GO GO	100
Frequency	Reading level	Total Factor	Emission level	10M Limit	Margin
(MHz)	(dBµA/m)	(dB )	(dB µA/m)	(dBµA/m)	(dBµA/m)
1	<u></u>	···	ond Co F. Thomas	27 dBµA/m at 9KHz	Attestation—
The State of the S	- 环境	alliance The state of the state	- Allestofforto	descending 10dB/dec (9KHz – 10MHz)	
Allos lation of	Rites - Honor of Co.	(02-	G	-3.5 dBµA/m(10MHz –	
-0				30MHz)	9 4

## Remark:

- (1) Corrected Power (dBm) = Total Factor + Reading Level
- (2) Measuring frequencies from 9KHz to the 30MHz.

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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Page 18 of 22

# 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)
77.22	27.73	V	-64.21	0.04	-0.70	-64.95	-36.00	28.95
235.30	29.78	Tollance V ®	-70.02	0.11	6.60	-63.53	-36.00	27.53
379.02	28.14	V	-70.87	0.28	6.51	-64.64	-36.00	28.64
388.11	30.30	V	-68.40	0.29	6.42	-62.26	-36.00	26.26
425.87	26.99	V	-73.30	0.33	7.00	-66.64	-36.00	30.64
827.42	31.43	V	-67.75	0.66	6.45	-61.95	-54.00	7.95
8 <b>%</b>	n of Global	Food Global (8)	語 station of Glov	C.C		30		
140.46	32.18	H-C	-60.93	0.05	0.00	-60.98	-36.00	24.98
339.10	32.63	Н	-66.93	0.23	5.74	-61.42	-36.00	25.42
394.90	28.76	Н	-70.55	0.30	6.48	-64.36	-36.00	28.36
455.76	27.67	H Francisco	-71.51	0.37	6.55	-65.33	-36.00	29.33
613.89	31.61	Н	-67.41	0.50	6.62	-61.29	-54.00	7.29
766.43	31.69	Н	-67.69	0.62	6.78	-61.52	-54.00	7.52

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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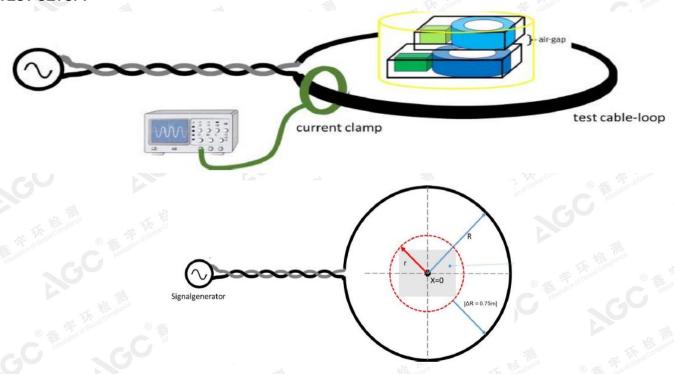
Page 19 of 22

# 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. 21, 2017	Sep. 20, 2018
LOOP ANTENNA	LAPLACE	RF300	N/A	Mar. 01, 2017	Feb. 28, 2018
Clamp meter	PROVA	PROVA-11	17200101	Oct. 09, 2017	Oct. 08, 2018

# **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.

$$R >= r + \Delta R$$
.

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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Report No.: AGC01978180105EE17 Page 20 of 22

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

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 <sub>c</sub> ) of the WPT	f = f <sub>c</sub> ± F (see note)	f = f <sub>c</sub> ± 10 × F (see note)		
	system (see clause 4.3.3)				
Signal level field strength at	72 dBµA/m	72 dBµA/m	82 dBµA/m		
the EUT		-	-		
NOTE: F = OFR see clause 4.3.3.					

### **TEST RESULT**

Test Mode: Mode 3

Tool model model		101		
Test F	Frequency(KHz)	Performance	Result	
In-band signal	119.5	No function loss	Pass	
OOB signal	118.5	No function loss	Pass	
OOD Signal	120.5	No function loss	Pass	
Remote-band	109.5	No function loss	Pass	
signal	129.5	No function loss	Pass	

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Page 21 of 22

# 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	± 1 x 10 <sup>-7</sup>
RF Power, Conducted	± 0.75dB
Maximum Frequency Deviation: _ Within 300Hz and 6KHz of Audio Frequency _ Within 6KHz and 25KHz of Audio Frequency	± 5% ± 3dB
Adjacent channel power	± 3dB
Conducted Emission of Transmitter, Valid Up to 12.75GHz	± 4dB
Conducted Emissions of Receivers	± 3dB
Radiated Emission of Transmitter, Valid Up to 12.75GHz	± 6dB

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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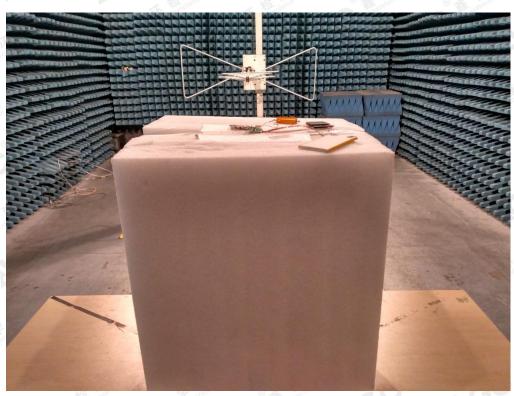
IGC 8 Attestation of Global Compliance



Page 22 of 22

# **APPENDIX 1: PHOTOGRAPHS OF TEST SETUP**

RADIATED EMISSION TEST



----END OF REPORT---

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