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TEST REPORT

Applicant:

Address of Applicant:

Manufacturer/Factory:

Address of Manufacturer/Factory:

Equipment Under Test (EUT)

Product Name: WIRELESS CHARGER

Brand Name:

Model No.:

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

Date of sample receipt: August 3, 2022

Date of Test: August 3, 2022 To August 11, 2022

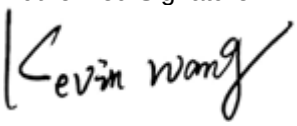
Date of report issue: August 11, 2022

Test Result : Pass *

*In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Authorized Signature



Kevin Wang

Laboratory Manager

2 Version

Version No.	Date	Description
00	*August 11, 2022*	*Original*

Prepared By: Gary Wang ***Date:*** *August 11, 2022*

Project Engineer

Reviewed By: Kevin wang ***Date:*** *August 11, 2022*

Reviewer

3 Contents

4 Test Summary

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Operating frequency range(s) (OFR)	EN 303 417 V1.1.1	EN 303 417 V1.1.1 Clause 6.2.1	EN 303 417 V1.1.1 Clause 4.3.3	Pass
H-field	EN 303 417 V1.1.1	EN 303 417 V1.1.1 Clause 6.2.1	EN 303 417 V1.1.1 Clause 4.3.4	Pass
Transmitter spurious emissions	EN 303 417 V1.1.1	EN 303 417 V1.1.1 Clause 6.2.1	EN 303 417 V1.1.1 Clause 4.3.5	Pass
Transmitter out of band (OOB) emissions	EN 303 417 V1.1.1	EN 303 417 V1.1.1 Clause 6.2.1	EN 303 417 V1.1.1 Clause 4.3.6	Pass
Receiver blocking	EN 303 417 V1.1.1	EN 303 417 V1.1.1 Clause 6.3.2	EN 303 417 V1.1.1 Clause 4.4.2	Pass

5 General Information

5.1 General Description of E.U.T.

Product Name:	WIRELESS CHARGER
Model No.:	W90-R
Operation Frequency:	100-300kHz
Modulation type:	ASK
Antenna Type:	Coil Antenna
Antenna Gain:	0dBi
Power Supply:	Input: DC 9V, 2A Output:15W

5.2 Test mode

Operating mode	Keep the EUT in operating mode
Stadby mode	Keep the EUT in idle mode.

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
HUAWEI	Mobile Phone	P40	N/A

5.4 Deviation from Standards

Biconical and log periodic antennas were used instead of dipole antennas.

5.5 Abnormalities from Standard Conditions

None.

5.6 Other Information Requested by the Customer

None.

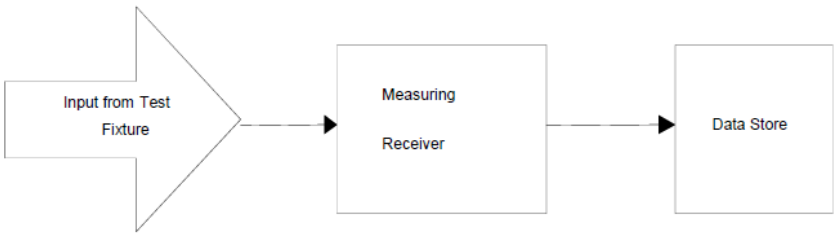
6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Jul. 2 2022	Jul. 1 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jun. 28 2022	Jun. 27 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Jun. 28 2022	Jun. 27 2023
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	Jun. 28 2022	Jun. 27 2023
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Jun. 28 2022	Jun. 27 2023
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Jun. 28 2022	Jun. 27 2023
9	Coaxial Cable	GTS	N/A	GTS211	Jun. 28 2022	Jun. 27 2023
10	Coaxial cable	GTS	N/A	GTS210	Jun. 28 2022	Jun. 27 2023
11	Coaxial Cable	GTS	N/A	GTS212	Jun. 28 2022	Jun. 27 2023
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jun. 28 2022	Jun. 27 2023
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	Jun. 28 2022	Jun. 27 2023
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Jun. 28 2022	Jun. 27 2023
15	Band filter	Amindeon	82346	GTS219	Jun. 28 2022	Jun. 27 2023
16	Power Meter	Anritsu	ML2495A	GTS540	Jun. 28 2022	Jun. 27 2023
17	Power Sensor	Anritsu	MA2411B	GTS541	Jun. 28 2022	Jun. 27 2023
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	Jun. 28 2022	Jun. 27 2023
19	Splitter	Agilent	11636B	GTS237	Jun. 28 2022	Jun. 27 2023
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	Jun. 28 2022	Jun. 27 2023
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Jun. 28 2022	Jun. 27 2023
22	Amplifier	TDK	PA-02-02	GTS574	Jun. 28 2022	Jun. 27 2023
23	Amplifier	TDK	PA-02-03	GTS576	Jun. 28 2022	Jun. 27 2023
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	Jun. 28 2022	Jun. 27 2023

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	Jun. 28 2022	Jun. 27 2023
2	Barometer	ChangChun	DYM3	GTS255	Jun. 28 2022	Jun. 27 2023

7 Radio Spectrum Matter Test Results

7.1 Oprating frequency range(s) (OFR)

Test Requirement:	ETSI EN303 417 Clause 4.3.3					
Test Method:	ETSI EN303 417 Clause 6.2.1					
Receiver setup:	• Start frequency: lower than the lower edge of the permitted frequency range / requested by the essential requirements in clause 4.3.3. • Stop frequency: higher than the upper edge of the permitted frequency range / requested by the essential requirements in clause 4.3.3. • Resolution Bandwidth: see ETSI EN 300 330 [1], clause 5.12, Table 11. • Video Bandwidth: > Resolution bandwidth. • Detector mode: see ETSI EN 300 330 [1], clause 5.12, Table 11. • Display mode: Max. hold. • Sweep time: the sweep time shall be chosen in such a way that the time of each sub-operational mode / operational mode (WPT system operation cycle) is taken into account.					
Limit:	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 setup diagram:						
Test Instruments:	Refer to section 6 for details					
Test mode:	Operating mode					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Measurement Record:	Uncertainty: ± 1 x 10^{-7}					

Measurement Data:

Measurement Conditions		fL(kHz)	fH(kHz)	Limit (kHz)	Result
Tnormal (24℃)	Vnor: 9.0V dc	110	205.0	100-300	Pass

7.2 H-field

Test Requirement:	ETSI EN303 417 Clause 4.3.4
Test Method:	ETSI EN303 417 Clause 6.2.1
Test site:	Measurement Distance: 3m
Limit:	

Table 3: H-field limits

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

Limit for measurement at 3m distance

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

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

where:

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

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

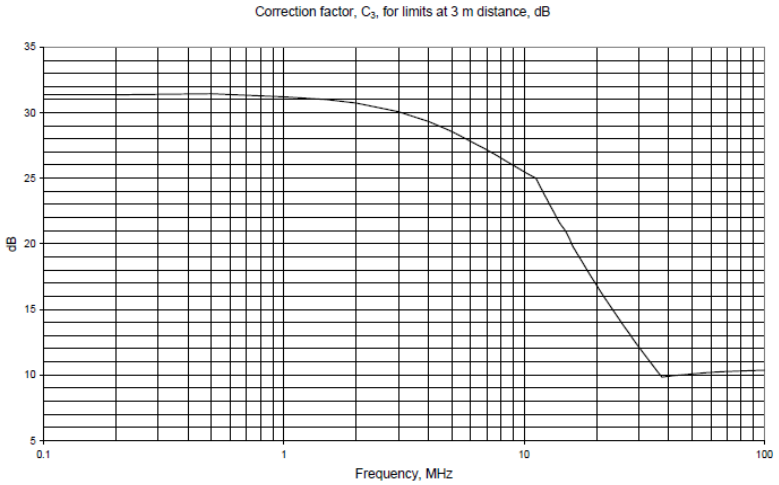
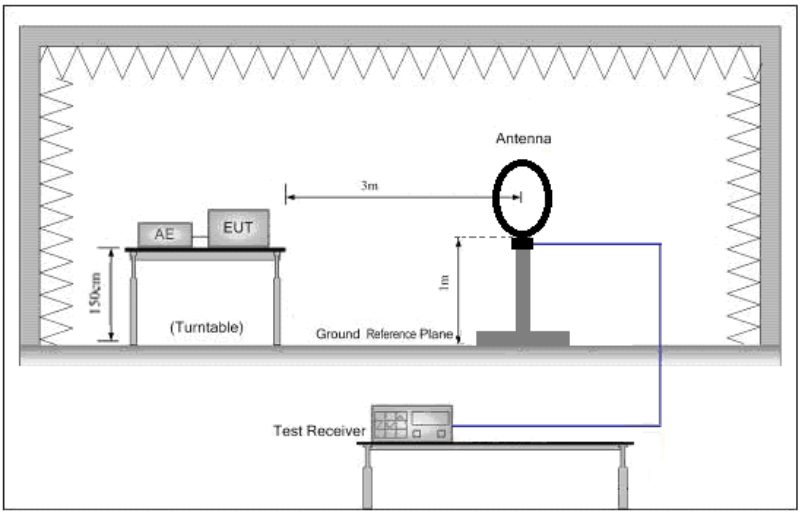


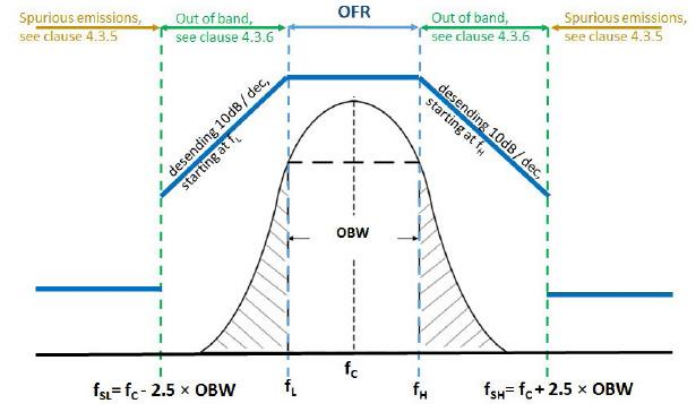
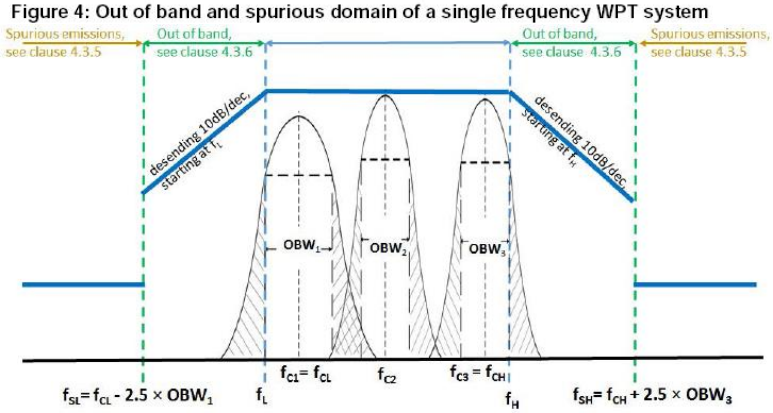
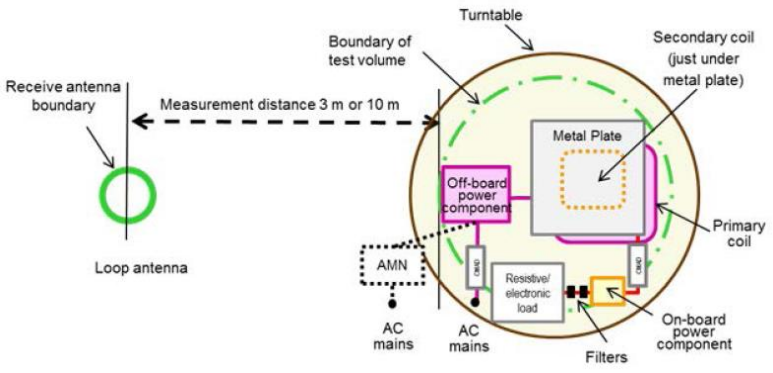
Figure H.2: Conversion factor C_3 versus frequency

Test setup diagram:						
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Operating mode					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Measurement Record:	Uncertainty: ± 4.5dB					

Measurement Data:

Frequency (kHz)	Measured Level (dBμA/m at 3m)	Limit (dBμA/m at 10m)	Conversion factor C3	Limit (dBμA/m at 3m)	Result
139	18.87	42	31.2	73.2	Pass

7.3 Transmitter out of band(OOB) emissions

Test Requirement:	ETSI EN303 417 Clause 4.3.6
Test Method:	ETSI EN303 417 Clause 6.2
Limit:	 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 setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Measurement Record:	Uncertainty: ± 1 x 10^{-7}

Measurement Data:

For the H-Field emission is below the unwanted radiated emissions limit, the OOB test result complied with the OOB requirement.

7.4 Transmitter spurious emissions

Test Requirement:	ETSI EN303 417 Clause 4.3.5
Test Method:	ETSI EN303 417 Clause 6.2.1
Limit:	

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.		

The power of any radiated spurious emission between 30 MHz and 1 GHz shall not exceed the values given in Table

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.		

Limit for measurement at 3m distance

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

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

where:

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

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

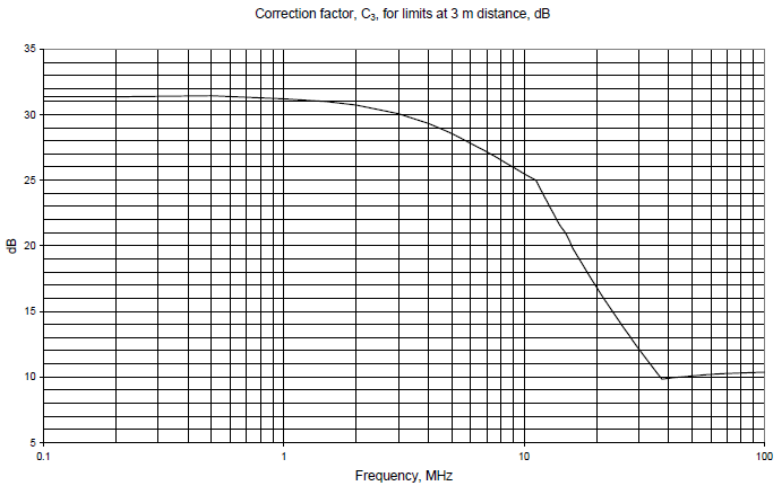
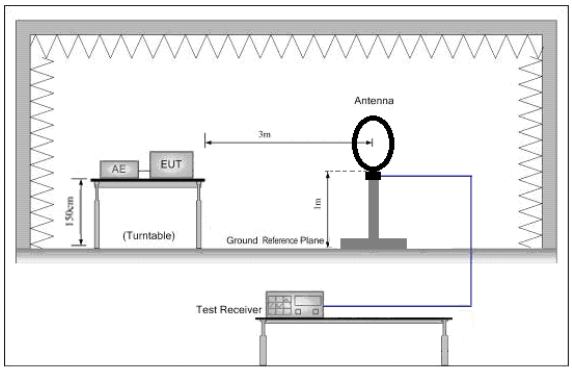
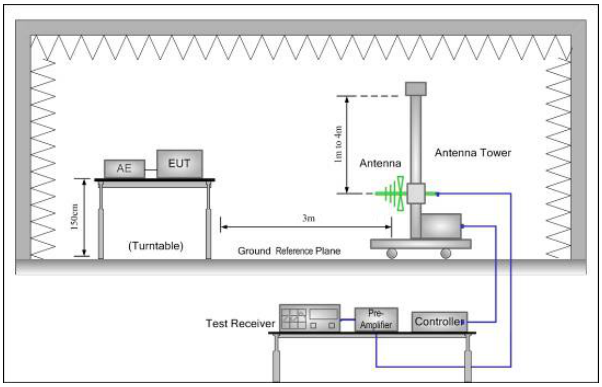


Figure H.2: Conversion factor C_3 versus frequency

Test setup diagram:	 					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Operating mode					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Measurement Record:						Uncertainty: 4.64dB

Measurement Data:

Freq (MHz)	Spurious Emission Level@3m(dBuA/m)	Limit(dBuA/m) @3m	Conversion factor C3	Limit(dBuA/m) @10m	Over Limit
0.016	13.56	55.7	31.2	24.5	-42.14
0.056	14.69	50.26	31.2	19.06	-35.57
0.601	0.22	44.31	31.2	13.11	-44.09
1.536	1.31	35.87	31.2	4.67	-34.56
3.418	2.76	32.4	31.2	1.2	-29.64
8.972	0.89	28.22	31.2	-2.98	-27.33

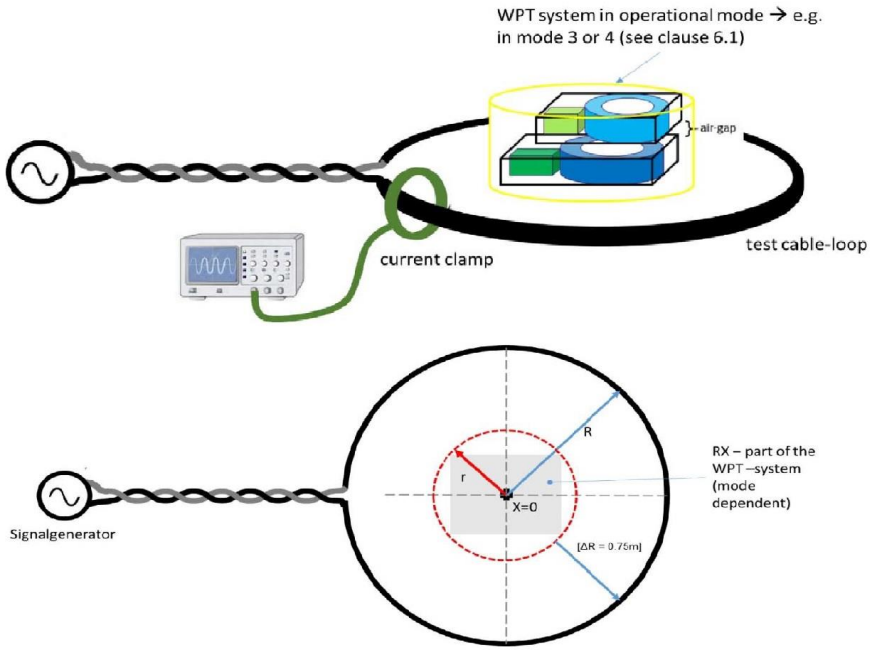
Freq (MHz)	Spurious Emission Level(dBm)	Limit_Line (dBm)	Over_Limit (dB)	Polaxis
30.872	-79.20	-36.00	-43.2	V
37.155	-79.28	-36.00	-43.28	V
139.826	-82.71	-36.00	-46.71	V
304.183	-77.40	-36.00	-41.4	V
611.528	-74.31	-54.00	-20.31	V
805.541	-79.16	-36.00	-43.16	V
141.641	-75.37	-36.00	-39.37	H
153.532	-75.04	-36.00	-39.04	H
296.642	-82.32	-36.00	-46.32	H
569.523	-74.21	-54.00	-20.21	H
778.911	-74.51	-54.00	-20.51	H
965.542	-79.53	-36.00	-43.53	H

7.5 Receiver blocking

Test Requirement:	ETSI EN303 417 Clause 4.4.2
Test Method:	ETSI EN303 417 Clause 6.3.2
Limit:	Table 6: Receiver blocking limits

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

Test setup diagram:



Test Instruments:	Refer to section 6.0 for details					
Test mode:	Operating mode					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Measurement Record:						Uncertainty: N/A

Measurement Data:

For each test frequency the "reaction" of the device be recorded and checked against the performance criterion. The WPT system meets the wanted performance criterion at all times, So the test is passed.

8 EUT Constructional Details

Reference to the test report No. EBO2208016-E031

------End------