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

for

Cablecard Multi-Functional Wireless Charger

MODEL: [REDACTED]

Trade Mark: N/A

Test Report Number: WSCT-R&E200300047A-WPT

Issued Date: 31 March 2020

Issued for

Issued By

World Standardization Certification & Testing Group (Shenzhen) Co., Ltd.

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Report No. WSCT-R&E200300047A-WPT

Issued: 31 March 2020

Revised: None

Revision History Of Report

Rev.	Issue No.	Revisions	Effect Page	Revised By
00	WSCT-R&E200300047A-WPT	Initial Issue	ALL	Wang Fengbing



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1. TEST CERTIFICATION

Product: Cablecard Multi-Functional Wireless Charger**Model:** [REDACTED]**Trade Mark:** N/A**Applicant:** [REDACTED]**Manufacturer:** [REDACTED]**Tested:** 13 March 2020 ~ 28 March 2020**Applicable Standards:** ETSI EN 303 417 V1.1.1 (2017-09)**TRF No.:**

Deviation from Applicable Standard

None

The above equipment has been tested by World Standardization Certification & Testing Group (Shenzhen) Co., Ltd. And found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Meng Zhenxi
(Meng Zhenxi)

Date: 31 March 2020

Check By: Sol Qin
(Sol Qin)

Date: 31 March 2020



Approved By: Wang Fengbing
(Wang Fengbing)

Date: 31. march. 2020



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2. EUT DESCRIPTION

2.1. General information

Product	Cablecard Multi-Functional Wireless Charger
Model	
Trade Mark	N/A
Software Version	N/A
Hardware Version	N/A
EUT Type	<input checked="" type="checkbox"/> Engineering Sample. <input type="checkbox"/> Product Sample, <input type="checkbox"/> Mass Product Sample.
Antenna Type	Coil Antenna
EUT Power Rating	Micro USB Input: 5V 2A Wireless Output: 5W
Type of the Equipment	Portable Equipment
Operating Frequency	110KHZ-205KHZ
Operational Mode	Mode 4: energy transmission
Modulation type	MSK

Note: N/A stands for no applicable.





3. Test Standards and Results

The EUT has been tested according to ETSI EN 303 417 V1.1.1 (2017-09)

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

The EUT has been tested according to the following specifications:

EN Reference		ETSI EN 303 417 V1.1.1 (2017-09)	Result
No.	Sub clause	Test Items	
1	4.3.2	Permitted range of operating frequencies	PASS
2	4.3.3	Operating frequency range(s)(OFR)	PASS
3	4.3.4	H-field requirements	PASS
4	4.3.5	Transmitter spurious emissions	PASS
5	4.3.6	Transmitter out of band (OOB) emissions	PASS
6	4.3.7	WPT system unwanted conducted emissions	N/A





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3.1. TEST EQUIPMENTS

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibrated	Calibrated until	Use or Not
EMI Test Receiver	R&S	ESCI	100005	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
HORN ANTENNA	COMPLIANCE ENGINEERING	CE18000	--	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Bi-log Antenna	SUNOL Sciences	JB3	A021907	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Broadband Antenna	SCHWARZBECK	VULB9161	9161-4079	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-114 1	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
pre-amplifier	CDSI	PAP-1G18-38	--	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
System Controller	CT	SC100	-	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Spectrum analyzer	R&S	FSU26	200409	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
DC Source	ZHAOXIN	RXN-3010D	200800687 5	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
H & T Chamber	Guangzhou gongwen	GDJS-500-40	0329	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
MXG Vector Signal Generator	KEYSIGHT	N5182B	53060646	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
EXG Analog Signal Generator	Agilent	N5171B	40060472	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
MXA Signal Analyzer	Agilent	N9020A	54123254	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
USB Wideband Power Sensor	Agilent	U2021XA	52110008	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Simultaneous Sampling DAQ	Agilent	U2531A	53100008	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Coaxial cable	Megalon	LMR400	N/A	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
GPIO cable	megalon	GPIOB	N/A	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Cable	H+S	SUCOFLEX	102(0.2m)	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Cable	H+S	SUCOFLEX	102(1.5m)	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Anechoic chamber	SAEMC	966	-	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Universal Radio Communication Tester	Rohde & Schwarz	CMW500	103974	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Loop antenna	ZHINAN	ZN30900A	--	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>
Bluetooth Test Set	ANRITSU	MT8852	-	2019-11-05	2020-11-04	<input checked="" type="checkbox"/>



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3.2 Measurement Uncertainty

PARAMETER	UNCERTAINTY
Transmitter H-field requirements	$U = 1.84\text{dB}, k=2$
Transmitter radiated spurious domain emission limits < 30 MHz	$U = 1.84\text{dB}, k=2$
Transmitter radiated spurious domain emission limits > 30 MHz	$U = 5.02\text{dB}, k=2$
Operating frequency ranges	$U = 66\text{Hz}, k=2$
Modulation bandwidth	$U = 66\text{Hz}, k=2$
Transmitter Frequency stability	$U = 66\text{Hz}, k=2$



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4. STANDARD REQUIREMENT

4.2. Transmitter conformance requirements

Limits

The permitted range of operating frequencies for intentional emissions shall be entirely within the frequency bands in table 1.

Description

The permitted range of operating frequencies is the frequency range over which the equipment is authorized to operate.

Conformance

The permitted range of operating frequencies used by the EUT shall be declared by the manufacturer.

Note: Operating frequency of EUT is 110KHZ-205KHZ, which meets the standard frequency band requirements in ETSI EN 303 417 V1.1.1 (2017-09) table 1





4.2. Operating frequency ranges

Limits

The operating frequency ranges for intentional emissions shall be entirely within the frequency bands in table 1.

Test Procedure

The operating frequency range(s) of the WPT system are determined by the lowest (fL) and highest frequency (fH) as occupied by the power envelope.

Test Configuration

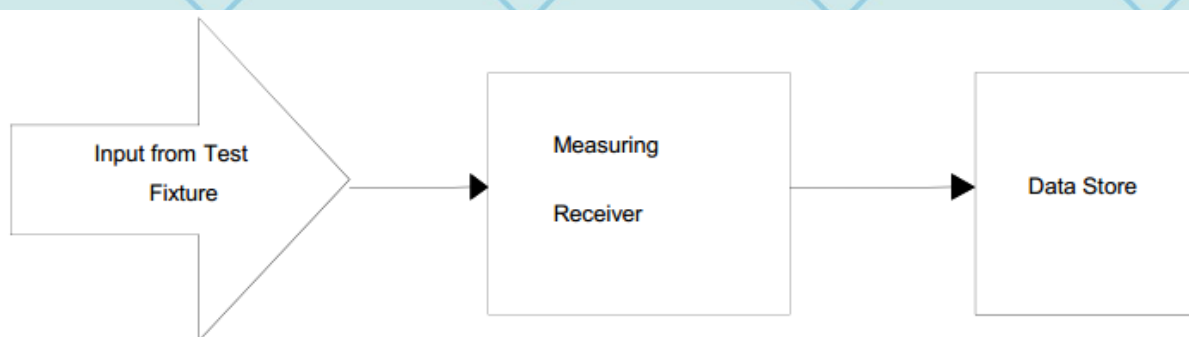


Figure 1: Test set-up for measurement of the operating frequencies

Environmental Conditions

Temperature:	25°C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

Test Result

Bandwidth Measured (kHz)		Limit (kHz)	
Lowest frequency	Highest frequency	Lower	Higher
110	205	100	300





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4.3. H-Field requirements

Limits

The H-field limits in Table 3 are EU wide harmonised according to EC Decision 2013/752/EU [i.2].

Further information is available in CEPT/ERC/REC 70-03 [i.1].

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.

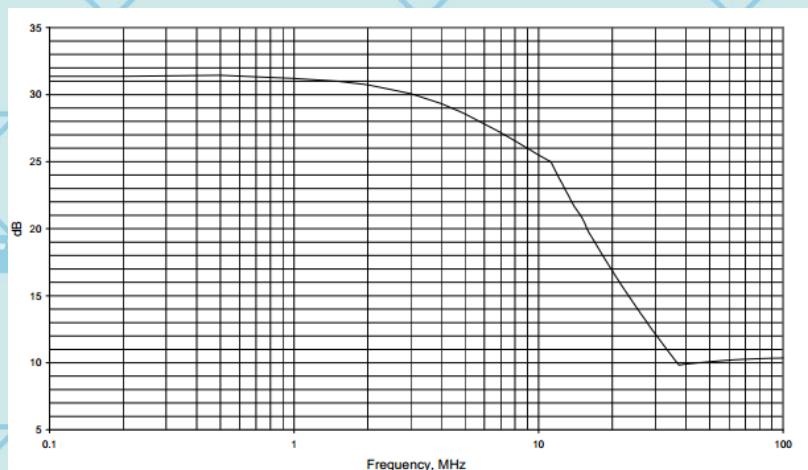
Limits for measurements at 3 m distance

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

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

$$H_{3m} = H_{10m} + C3$$

C3 is a conversion factor in dB determined from figure H.2.



H.2.

Test Procedure

The conformance test suite for H-field requirements shall be as defined in clause 6.2.1 of ETSI EN 303 417 V1.1.1 (2017-09)



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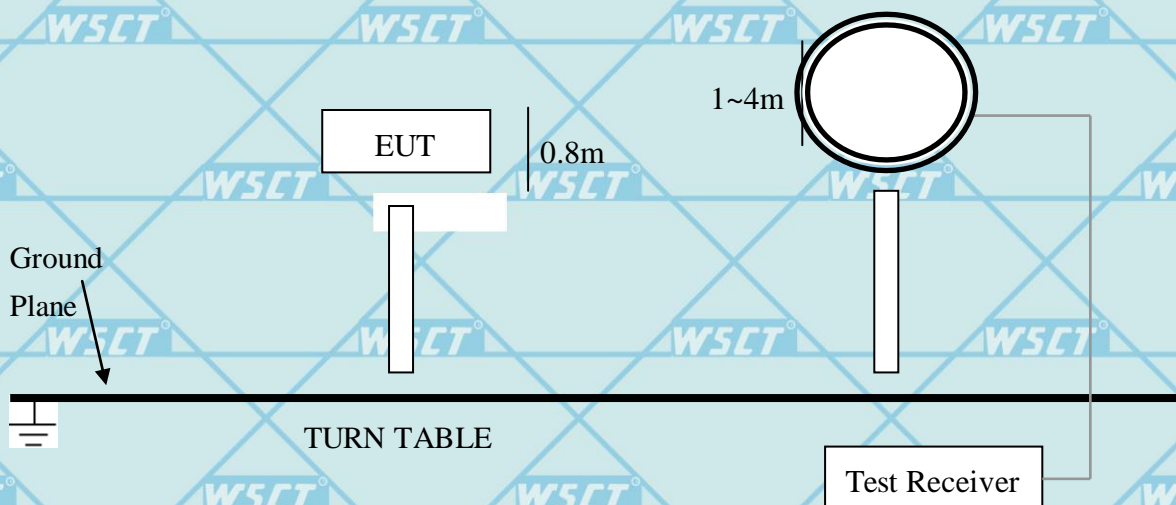
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Test Configuration



Environmental Conditions

Temperature:	25℃
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

Test Result

The worst case:

Frequency	Measuring Bandwidth	H-field Level	Limit
132.5kHz	10 kHz	20.6 dBμA/m	96.93dBμA/m@3m

Note: The frequency point is the worst frequency point ($H_{3m} = H_{10m} + C_3$, $C_3=31.4$ see figure H.2)



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4.4. Transmitter spurious emissions

Limits

The radiated field strength of spurious emissions below 30 MHz shall not exceed the generated H-field given in Table 4.

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.		

The power of any radiated spurious emission between 30 MHz and 1 GHz shall not exceed the values given in Table 5.

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.		

Test Procedure

The conformance test suite for unwanted emissions shall be as defined in clause 6.2.1 of ETSI EN 303 417 V1.1.1 (2017-09).





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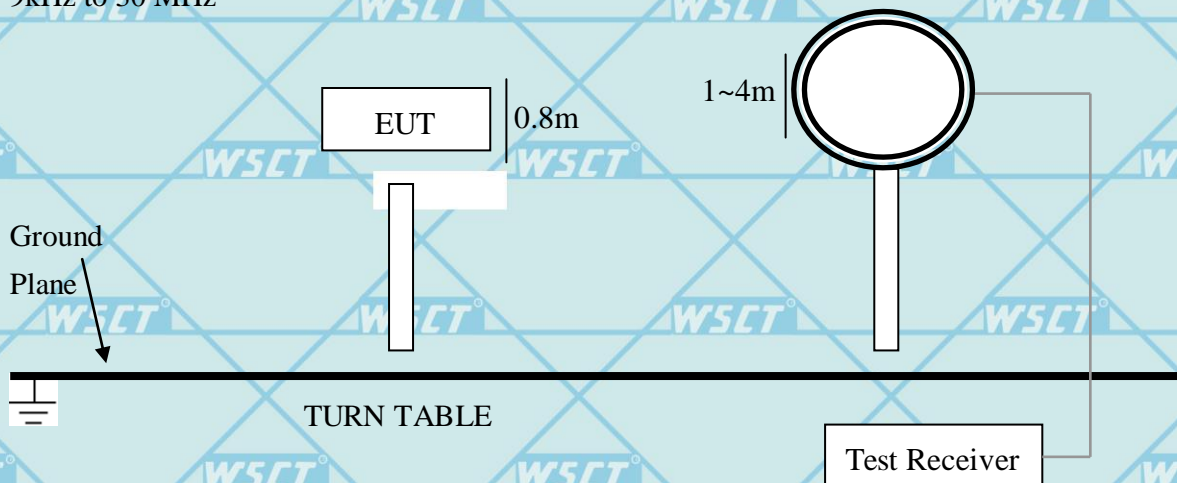
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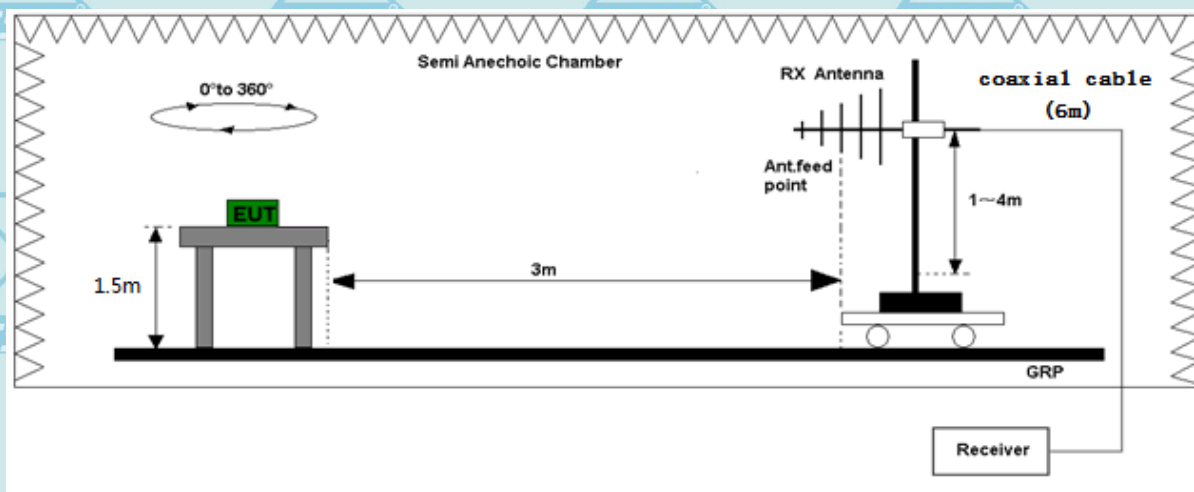
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Test Configuration

9kHz to 30 MHz



30 MHz and 1 GHz



Test Result



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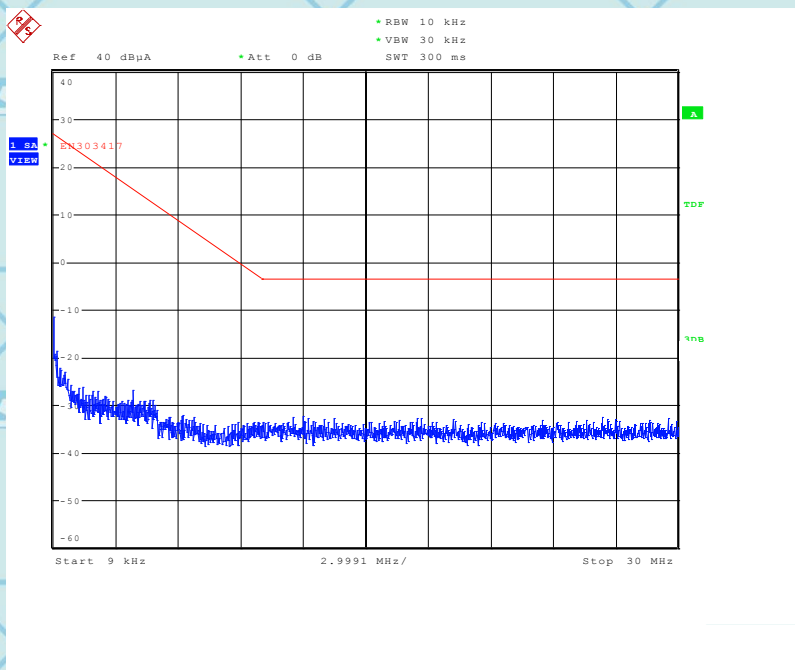
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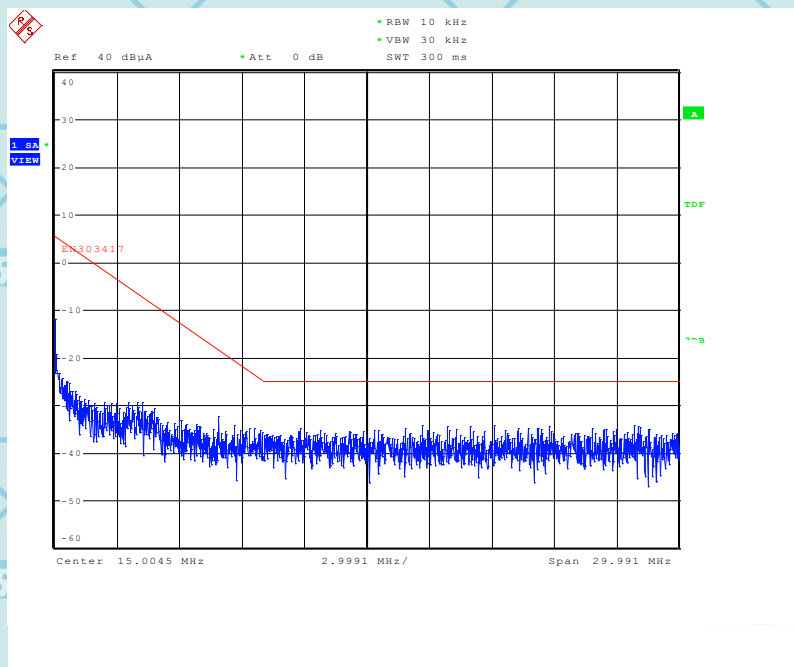
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9kHz to 30 MHz

Transmit State



Standby State



Note: The fundamental wave frequencies have been filtered out



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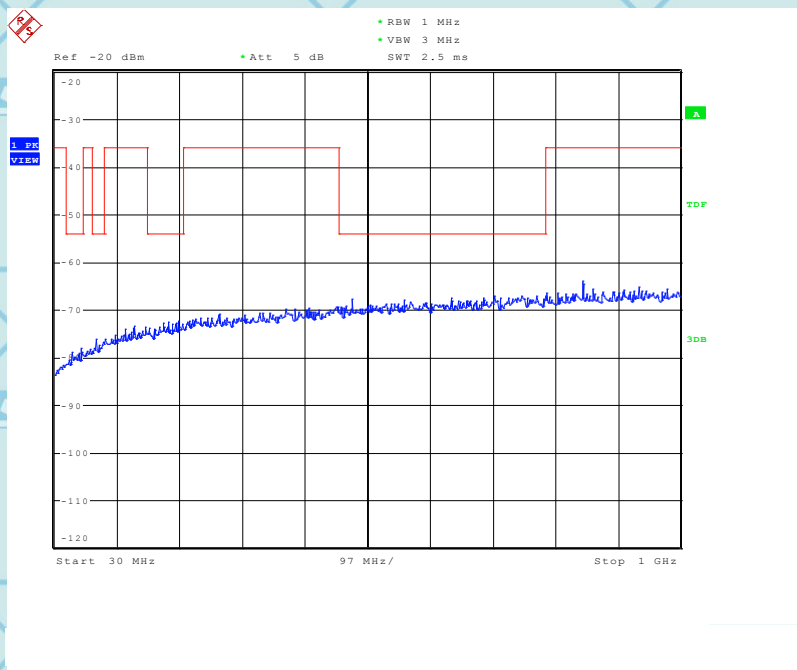
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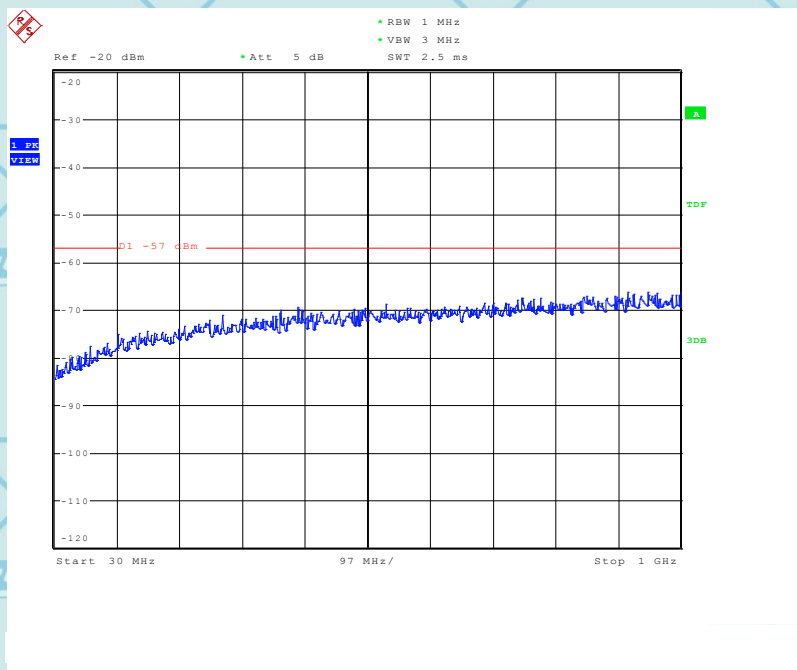
30 MHz and 1 GHz

Test Result

Transmit State



Standby State



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4.5. Transmitter out of band (OOB) emissions

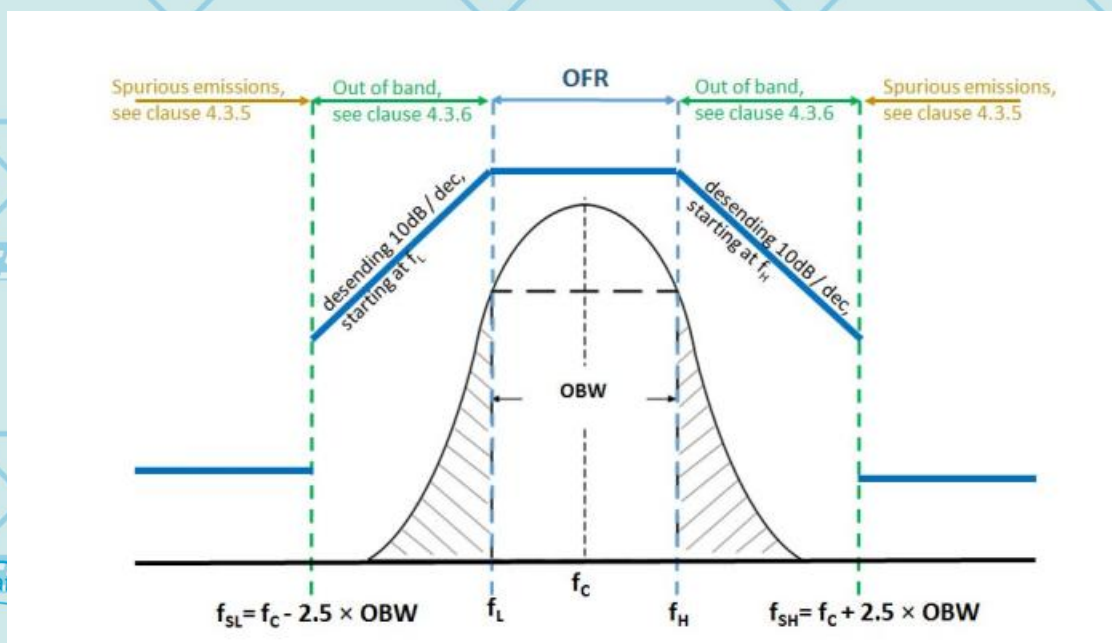
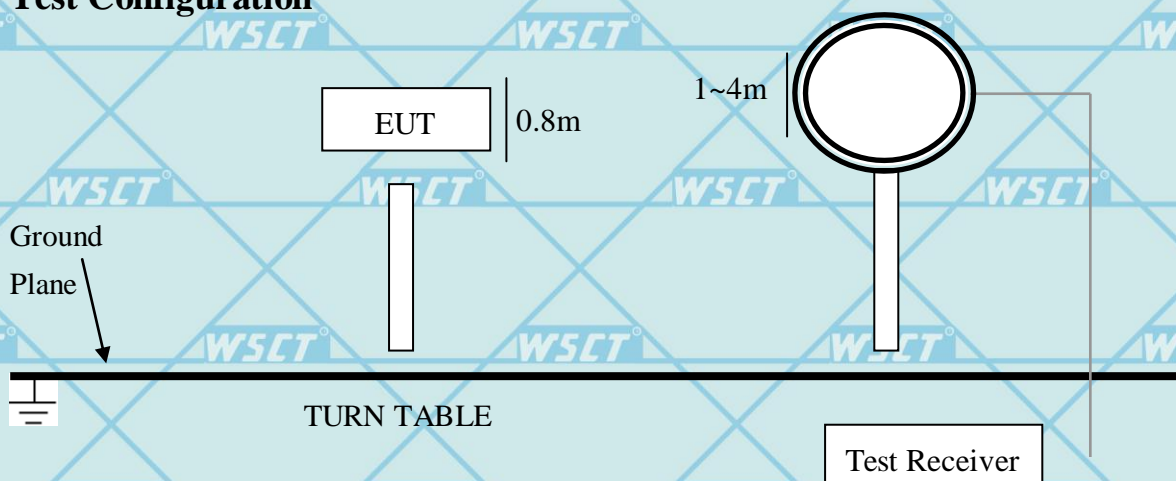
Limits

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

Test Procedure

The conformance test suite for Transmitter out of band emissions is provided in clause 6.2.1 of ETSI EN 303 417 V1.1.1 (2017-09)

Test Configuration





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Test Result

The worst case:

Frequency range (KHz)		Emission Level (dbuA/m)	Limit(dbuA/m) @3m	Result
fSL	107.5	-68.65	96.35	Pass
fL	127.5	-68.53	97.10	Pass
fH	137.5	-80.72	73.40	Pass
fSH	157.5	-81.46	72.81	Pass

Note: $f_c=132.5\text{KHz}$ $OBW=10\text{KHz}$ ($H3m = H10m + C3$, $C3=31.4$ see figure H.2)



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4.6. WPT system unwanted conducted emissions

N/A (For the Qi equipment, it does not support that a cable transmits current.)

4.7. Receiver blocking

N/A (For the Qi equipment, it does not support receiver mode, and this requirement only applies to all WPT systems operation in Mode 1, Mode 2 and Mode 3.)





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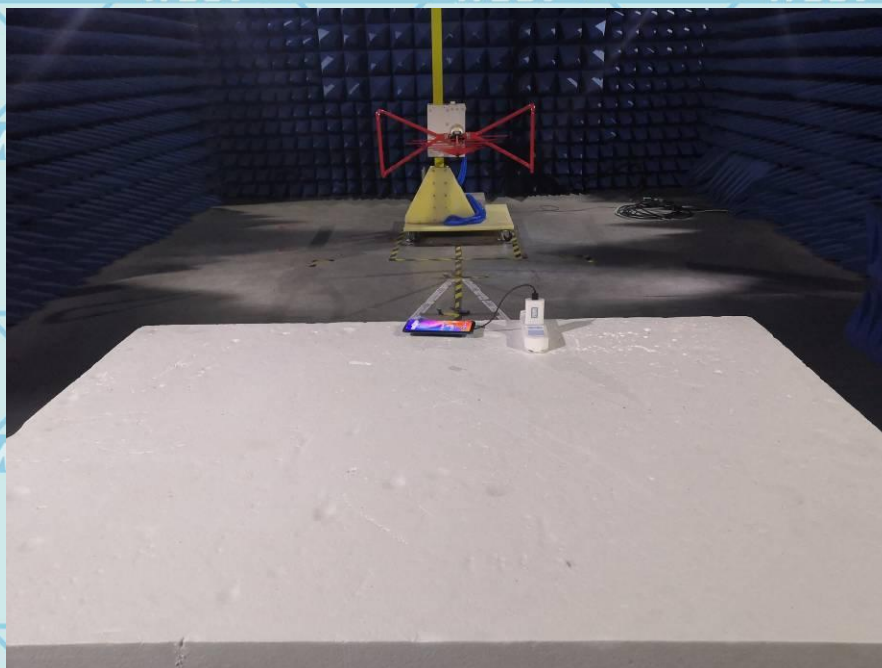
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5. TEST SETUP PHOTOGRAPHS

RADIATED EMISSION TEST BELOW 1GHz



For PHOTOGRAPHS OF EUT, Please refer to the EMC report.

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