



# TEST REPORT

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

Report Reference No.: HTT191112046E-2

Compiled by

( position+printed name+signature): Jack Chen

Jack Chen

Supervised by

( position+printed name+signature): Owen Hu

Owen Hu

Approved by

( position+printed name+signature): Kevin Yang

Kevin Yang

Date of issue: Nov.06,2019

Testing Laboratory Name : Shenzhen HTT Technology Co., Ltd.

Address: 1F, B Building, Huafeng International Robotics Industrial Park,  
Gushu, Xixiang Street, Bao'an District, Shenzhen

Applicant's name:

Address:

**Test specification:**

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

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Test item description : Wireless Powerbank

Trade Mark : N/A

Manufacturer :

Model/Type reference:

Listed Models : N/A

Ratings: Battery size: 5000mAh /18.5Wh

Micro Input:5V--- 2A

Lighting input:5V--- 1A

Type Input:5V--- 2A

Wireless Input: 5V--- 0.8A

USB output: 5V--- 2A

Wireless output: 5V--- 1A

Result: PASS





## TEST REPORT

<b>Test Report No. :</b> <b>HTT191112046E-2</b>	Nov.06,2019 Date of issue
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Equipment under Test     :    Wireless Powerbank

Model Name                :    W166

Serial Model              :    N/A

Trade Mark                :    N/A

**Applicant**                :

Address                    :

**Manufacturer**           :

Address                    :

<b>Test Result</b>	<b>PASS</b>
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



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# 1 SUMMARY

## 1.1 TEST STANDARDS

The tests were performed according to following standards:

**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

## 1.2 Test Description

ETSI EN 303 417 requirements		
Permitted range of operating frequencies	ETSI EN 303 417 V1.1.1 Sub-clause 4.3.2	PASS
Operating frequency ranges	ETSI EN 303 417 V1.1.1 Sub-clause 4.3.3	PASS
H-field requirements	ETSI EN 303 417 V1.1.1 Sub-clause 4.3.4	PASS
Transmitter spurious emissions	ETSI EN 303 417 V1.1.1 Sub-clause 4.3.5	PASS
Transmitter out of band (OOB) emissions	ETSI EN 303 417 V1.1.1 Sub-clause 4.3.6	PASS
WPT system unwanted conducted emissions	ETSI EN 303 417 V1.1.1 Sub-clause 4.3.7	N/A
Receiver blocking	ETSI EN 303 417 V1.1.1 Sub-clause 4.4.2	N/A

## 1.3 Address of the test laboratory

**Shenzhen HTT Technology Co., Ltd..**

1F, B Building, Huafeng International Robotics Industrial Park, Gushu, Xixiang Street, Bao'an District, Shenzhen

## 1.4 Statement of the measurement uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**.

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	Above 1GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

## 2 GENERAL INFORMATION

### 2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature	Normal Temperature:	25°C
	High Temperature:	55°C
	Low Temperature:	-20°C
Voltage	Normal Voltage	5.00V
	High Voltage	5.75V
	Low Voltage	4.25V
Other	Relative Humidity	55 %
	Air Pressure	101 kPa

### 2.2 General Description of EUT

Product Name:	Wireless Powerbank
Model:	W166
Trade Mark:	N/A
Power supply:	Battery size: 5000mAh /18.5Wh Micro Input:5V--- 2A Lighting input:5V--- 1A Type Input:5V--- 2A Wireless Input: 5V--- 0.8A USB output: 5V--- 2A Wireless output: 5V--- 1A
Operation frequency:	125KHz
Antenna type:	Inductive loop coil antenna
Antenna Gain:	0 dBi

Note: For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

### 2.3 Operational modes

The can operate the operation mode description as bellow:

Operational Mode	Description
<input type="checkbox"/> 1	Base station in stand-by, idle mode
<input type="checkbox"/> 2	Communication before charging, adjustment charging mode / position
<input type="checkbox"/> 3	Communication
<input checked="" type="checkbox"/> 4	Energy transmission



## 2.4 Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2019/05/02	2020/05/01
Bilog Antenna	Sunol Sciences Corp.	JB1	A061714	2019/05/02	2020/05/01
EMI Test Receiver	R&S	ESCI	103710	2019/05/02	2020/05/01
Spectrum Analyzer	Agilent	E4407B	MY45108355	2019/05/02	2020/05/01
Spectrum Analyzer	Agilent	N9010A	MY49100188	2019/05/02	2020/05/01
Controller	EM Electronics	Controller EM 1000	N/A	2019/05/02	2020/05/01
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2019/05/02	2020/05/01
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062014	2019/05/02	2020/05/01
LISN	R&S	ENV216	101316	2019/05/02	2020/05/01
LISN	R&S	ESH2-Z5	860014/010	2019/05/02	2020/05/01
Pre-Amplifier	Agilent	8447D	2944A10176	2019/05/02	2020/05/01
Pre-Amplifier	Agilent	8449B	3008A05.006	2019/05/02	2020/05/01
SIGNAL GENERATOR	HP	8647A	3200A00852	2019/05/02	2020/05/01
Wideband Peak Power Meter	Anritsu	ML2495A	220.23.35	2019/05/02	2020/05/01
Climate Chamber	ESPEC	EL-10KA	A20120523	2019/05/02	2020/05/01
High-Pass Filter	K&L	9SH10-2700/ X12750-O/O	/	2019/05/02	2020/05/01
High-Pass Filter	K&L	41H10-1375/ U12750-O/O	/	2019/05/02	2020/05/01
RF Cable	HUBER+SUHNER	RG214	/	2019/05/02	2020/05/01
Vector Signal Generator	Agilent	E4438C	102226	2019/05/02	2020/05/01
Power Sensor	Rohde&Schwarz	OSP-120 (including B157)	115683	2019/05/02	2020/05/01
10 dB Coaxial Coupler	Agilent	87300C	MY49100232	2019/05/02	2020/05/01

The calibration interval is one year.

## 2.5 Modifications

No modifications were implemented to meet testing criteria.



### **3 TEST ITEM AND RESULTS**

#### **3.1 Operating frequency range**

##### **LIMIT**

##### **ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 4.3.2.3**

The permitted range of operating frequency range(s) for intentional emissions shall be within 19 - 21 kHz, 59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz.

##### **TEST RESULTS**

##### **Pass**

The manufacturer declares the ranges of this device are 110-205 KHz, Belong to 100 - 300 kHz band.

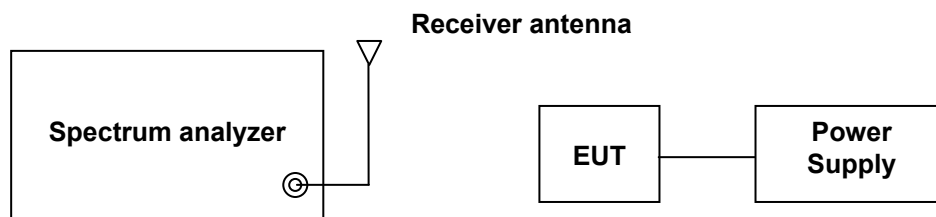
## 3.2 Operating frequency range

### LIMIT

#### ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 4.3.3.3

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 CONFIGURATION



### TEST PROCEDURE

The OBW function of the spectrum analyser shall be used with a limit of 99 % to determine the operating frequency range:

- $f_H$  is the frequency of the upper marker resulting from the OBW.
  - $f_L$  is the frequency of the lower marker resulting from the OBW.
- The following values shall be recorded:
- $f_H$  as the frequency of the upper marker resulting from the "OBW"-function of a spectrum analyser, using 99 % of the power (see Figure 1). Alternatively the frequency above the centre frequency  $f_c$  shall be recorded where the level is 23 dB lower than the maximum;
  - $f_L$  as the frequency of the lower marker resulting from the "OBW"-function of a spectrum analyser, using 99 % of the power (see Figure 1). Alternatively the frequency below the centre frequency shall be recorded where the level is 23 dB lower than the maximum;
- $$f_c = \frac{f_H + f_L}{2};$$
- $f_c$  is the centre frequency.
  - $OFR = f_H - f_L$ .

### TEST RESULTS

$f_L$ (KHz)	$f_H$ (KHz)	Limit	Result
122.34KHz	129.68KHz	119 - 140KHz	Pass



### 3.3 H-field requirements

#### LIMIT

#### ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 4.3.4.3

The radiated H-field in the direction of maximum field strength under specified conditions of measurement shall not exceed as table below:

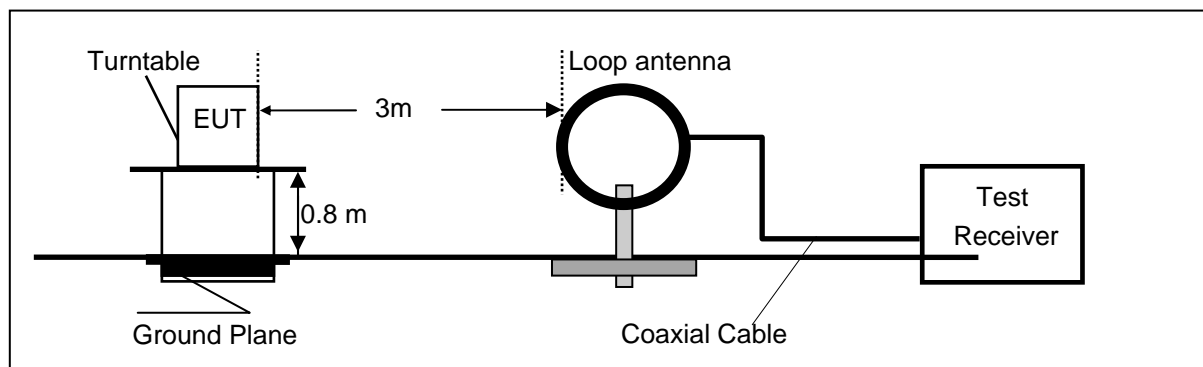
**Table 3: H-field limits**

Frequency range [MHz]	H-field strength limit [dB $\mu$ 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 $\mu$ 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 [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.

#### TEST CONFIGURATION

##### Below 30MHz



#### TEST PROCEDURE

Follow the test description in section 6.2.1 of ETSI EN 303 417 V1.1.1 (2017-09)

#### TEST RESULTS

Test Condition		Measurement Result	
Temperature ( °C )	Voltage ( V )	Measured Power (dB $\mu$ A/m)	Limit (dB $\mu$ A/m)
T Nor ( 25°C )	5.00	23.02	42.00
T min ( -20°C )	5.00	21.34	42.00
	5.00	20.52	42.00
T Max ( +55°C )	5.00	22.47	42.00
	5.00	21.82	42.00
Result		PASS	

### 3.4 Transmitter spurious emissions

#### LIMIT

##### ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 4.3.5.3

The radiated field strength of spurious emissions below 30 MHz shall not exceed the generated H-field given in table below:

**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 $\mu$ A/m at 9 kHz descending 10 dB/dec	-3,5 dB $\mu$ A/m
Standby	5,5 dB $\mu$ A/m at 9 kHz descending 10 dB/dec	-25 dB $\mu$ A/m
NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2.		

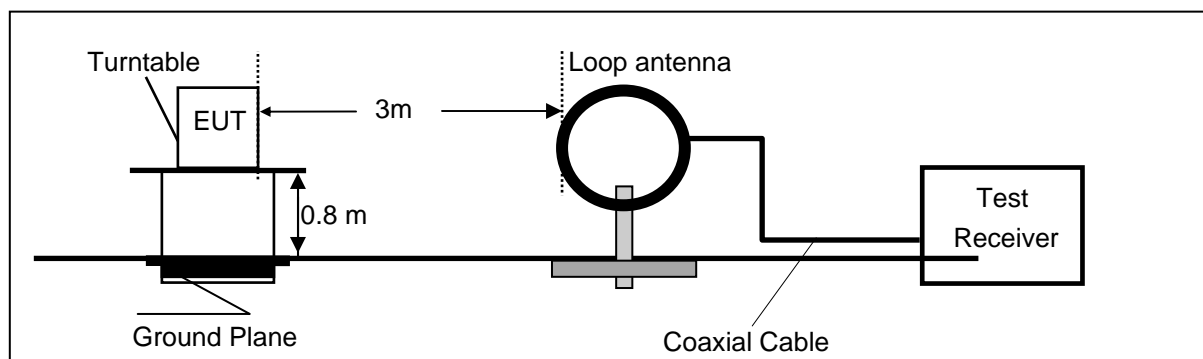
The power of any radiated emission above 30MHz shall not exceed the values given in table below.

**Table 5**

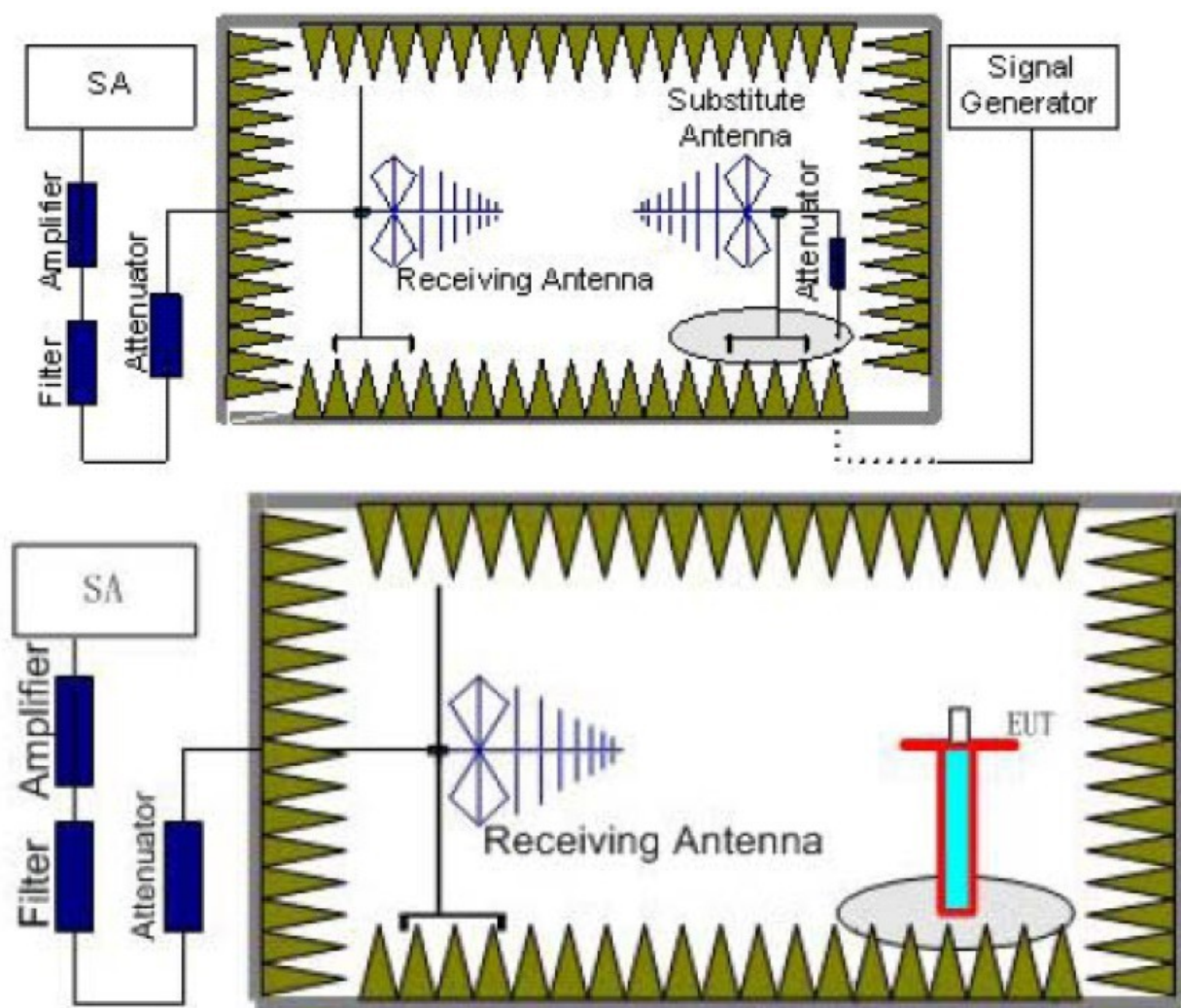
State (see note)	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies between 30 MHz to 1 000 MHz
Operating	4 nW	250 nW
Standby	2 nW	2 nW
NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2.		

#### TEST CONFIGURATION

##### Below 30MHz



##### Effective Radiated Power measurement (30 MHz to 1GHz)



## TEST PROCEDURE

Follow the test description in section 6.2.1 of ETSI EN 303 417 V1.1.1 (2017-09)

**TEST RESULTS*****Blow 30MHz***

Frequency (MHz)	Pol./Ant	Measurement Result (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Test Result
1.256	/	-23.14	0.82	24.08	Pass
7.486	/	-20.24	0.1	20.31	Pass
18.475	/	-32.47	-3.5	29.14	Pass

***For 30MHz-1GHz***

Frequency (MHz)	Pol./Ant	Measurement Result (dBm)	Limit (dBm)	Margin (dB)	Test Result
46.351	V	-54.36	-36	19.62	Pass
62.572	V	-62.69	-54	8.12	Pass
70.952	V	-65.76	-54	11.42	Pass
--	--	--	--		
47.436	H	-55.46	-36	20.35	Pass
60.782	H	-62.35	-54	5.34	Pass
69.395	H	-55.47	-54	4.45	Pass
--	--	--	--	--	

### 3.5 Transmitter out of band (OOB) emissions

#### LIMIT

#### ETSI EN 303 417 V1.1.1 (2017-09) Sub-clause 4.3.6.3

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

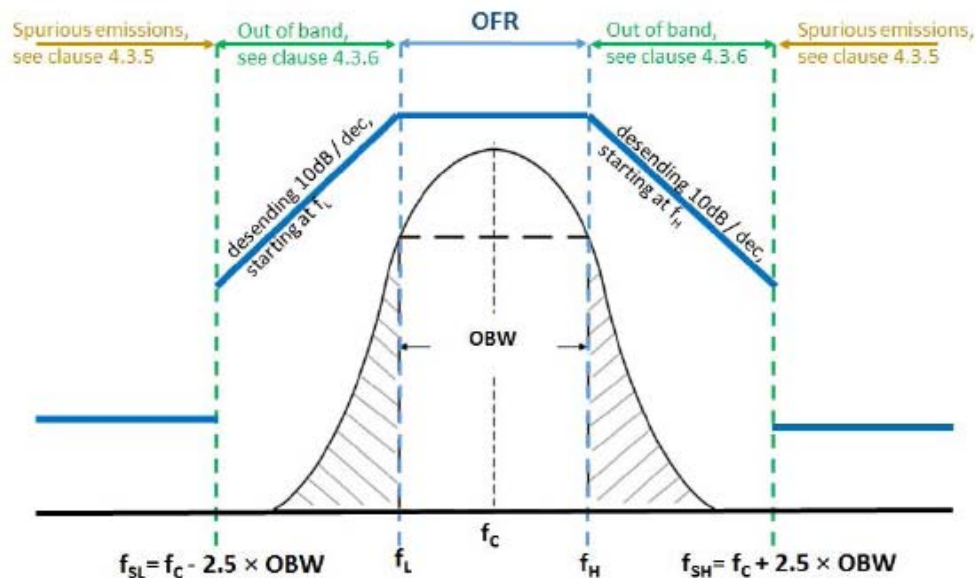


Figure 4: Out of band and spurious domain of a single frequency WPT system

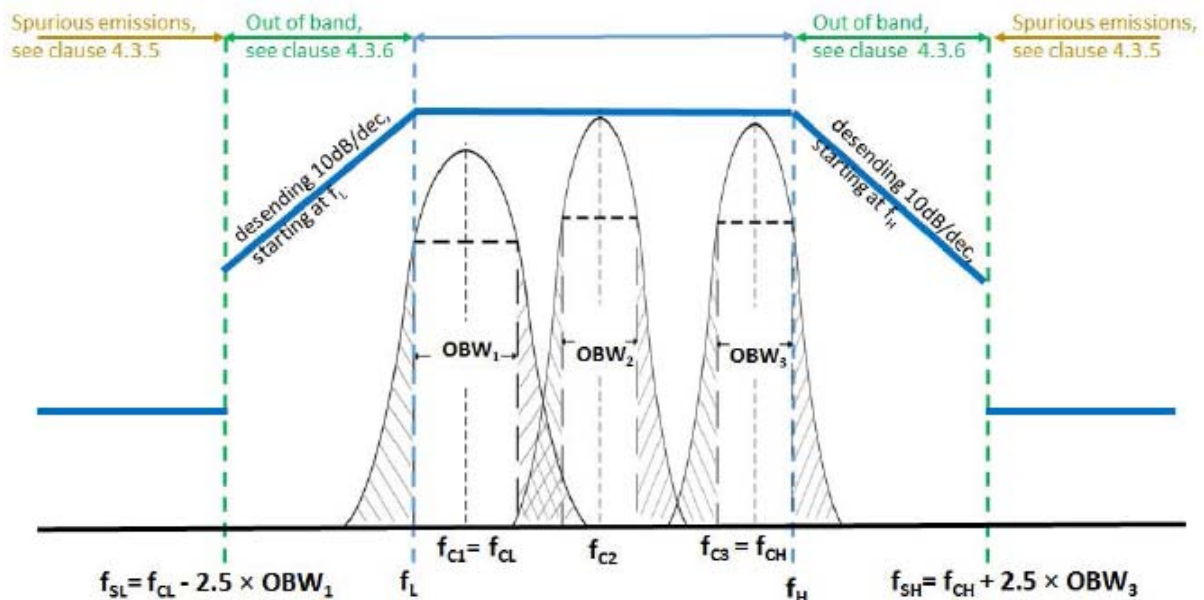
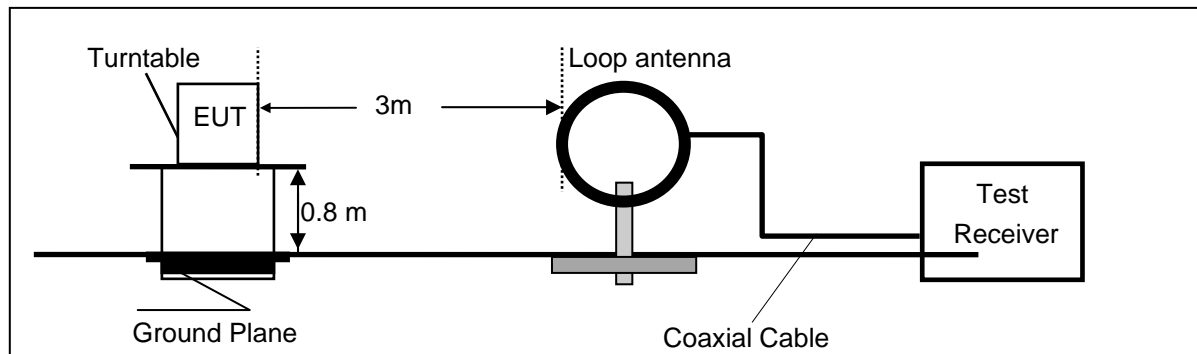


Figure 5: Out of band and spurious domain of a multi-frequency system (during one WPT system cycle time)

## TEST CONFIGURATION

### Below 30MHz



## TEST PROCEDURE

Follow the test description in section 6.2.1 of ETSI EN 303 417 V1.1.1 (2017-09)

## TEST RESULTS

Remark: Only record worst case as below:

Frequency (MHz)	Pol./Ant	Measurement Result (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Test Result
112.24KHz	/	6.587	41.25	34.663	Pass
205.34KHz	/	7.875	41.25	33.375	Pass



#### **4 Test Setup Photos of the EUT**

Reference to the test report No. HTT191112046E-1

#### **5 External and Internal Photos of the EUT**

Reference to the test report No. HTT191112046E-1

\*\*\*\*\* End of Report \*\*\*\*\*