

APPLICATION CERTIFICATION FCC Part 15C&IC  
On Behalf of  
THUMBS UK(UK)LTD

Wireless Charging Pad  
Model No.: WIRCHRBLKPRM,  
WIRCHRPNKPRM

FCC ID: 2AHHEWIRCHRPRM

Prepared for : THUMBS UK(UK)LTD  
Address : Unit L, Braintree Industrial Estate, Braintree Road HA4 0EJ,  
Ruislip, LONDON, United Kingdom

Prepared by : Shenzhen Accurate Technology Co., Ltd.  
Address : 1/F., Building A, Changyuan New Material Port, Science &  
Industry Park, Nanshan District, Shenzhen, Guangdong, P.R.  
China

Tel: +86-755-26503290

Fax: +86-755-26503396

Report No. : ATE20190805  
Date of Test : March 16-May 29, 2019  
Date of Report : May 31, 2019

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## Test Report Declaration

Applicant : THUMBS UK(UK)LTD  
Address : Unit L, Braintree Industrial Estate, Braintree Road HA4 0EJ, Ruislip, LONDON, United Kingdom  
Product : Wireless Charging Pad  
Model No. : WIRCHRBLKPRM, WIRCHRPNKPRM  
(Note: The product has two kinds of color shell, black for model WIRCHRBLKPRM and purple for model WIRCHRPNKPRM. The purple sample was tested.)

Measurement Procedure Used:

**FCC CFR47 Part 15 Subpart C Section 15.207 and 15.209**  
**ANSI C63.10: 2013**

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both radiated and conducted emissions. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test : March 16-May 29, 2019  
Date of Report : May 31, 2019

Prepared by : Star Yang  
(Star Yang, Engineer)

Approved & Authorized Signer : Sean Liu  
(Sean Liu, Manager)

## 1. TEST RESULTS SUMMARY

Test Items	Test Standard	Test Results
AC Power Line Conducted Emission	FCC Part 15.207	Pass
Radiated Emission	FCC Part 15.209	Pass
Occupied Bandwidth	FCC Part 15.215(c)	N/A
Antenna Requirement	FCC Part 15.203	Pass
Remark: The model number shown on the test datas is 'WD07', the final version of applicant was changed to 'WIRCHRPNKPRM' by client		

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

Wireless Charging Pad		
Operating Frequency	:	110-205KHz
Type of Modulation	:	FSK
Type of Antenna	:	Induction coil
Operating Voltage	:	Input: DC 5V

### 2.2. Test Mode

Test Item	EMI Test Modes
Conducted Emission	Max. Power Output
Radiated Emission	Max. Power Output

### 2.3. Special Accessory and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Fast charging supply adapter	UGREEN	CD122	N/A
Iphone8S PLUS	Apple	MQ8G2ZP/A	C39V9DEPJCLM

## 2.4. Description of Test Facility

- EMC Lab : Recognition of accreditation by Federal Communications Commission (FCC)  
The Designation Number is CN1189  
The Registration Number is 708358
- Listed by Innovation, Science and Economic Development Canada (ISED)  
The Registration Number is 5077A-2
- Accredited by China National Accreditation Service for Conformity Assessment (CNAS)  
The Registration Number is CNAS L3193
- Accredited by American Association for Laboratory Accreditation (A2LA)  
The Certificate Number is 4297.01
- Name of Firm : Shenzhen Accurate Technology Co., Ltd  
Site Location : 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

## 2.5. Measurement Uncertainty

- Conducted emission expanded uncertainty : U=2.23dB, k=2
- Radiated emission expanded uncertainty (9kHz-30MHz) : U=3.08dB, k=2
- Radiated emission expanded uncertainty (30MHz-1000MHz) : U=4.42dB, k=2
- Radiated emission expanded uncertainty (Above 1GHz) : U=4.06dB, k=2

### 3. MEASURING DEVICE AND TEST EQUIPMENT

#### 3.1. The Equipment Used to Measure Conducted Emission

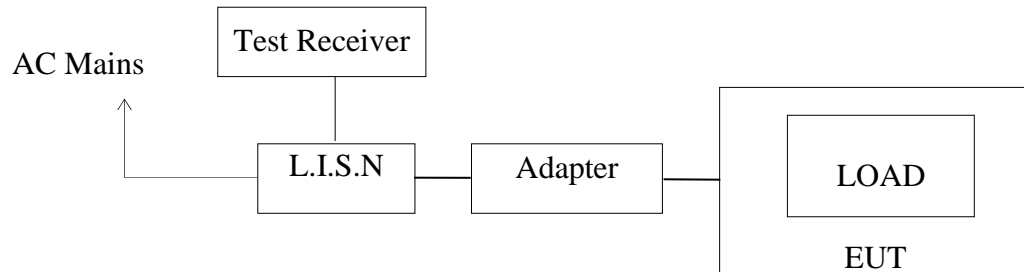
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	100307	Jan.05, 2019	1 Year
2.	L.I.S.N.	Schwarzbeck	NLSK8126	8126431	Jan.05, 2019	1 Year
3.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100305	Jan.05, 2019	1 Year
4.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283936	Jan.05, 2019	1 Year
5.	RF Coaxial Cable	SUHNER	N-2m	No.2	Jan.05, 2019	1 Year
6.	Measurement Software: ES-K1 V1.71					

#### 3.2. The Equipment Used to Measure Radiated Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Rohde&Schwarz	FSV40	101495	Jan.05, 2019	1 Year
2.	Test Receiver	Rohde& Schwarz	ESR	101817	Jan.05, 2019	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan.05, 2019	1 Year
4.	Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan.05, 2019	1 Year
5.	Pre-Amplifier	Agilent	8447D	294A10619	Jan.05, 2019	1 Year
6.	50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	Jan.05, 2019	1 Year
7.	RF Coaxial Cable	RESENBERGER	N-12m	No.11	Jan.05, 2019	1 Year
8.	RF Coaxial Cable	RESENBERGER	N-0.5m	No.12	Jan.05, 2019	1 Year
9.	RF Coaxial Cable	SUHNER	N-2m	No.13	Jan.05, 2019	1 Year
10.	RF Coaxial Cable	SUHNER	N-0.5m	No.15	Jan.05, 2019	1 Year
11.	RF Coaxial Cable	SUHNER	N-2m	No.16	Jan.05, 2019	1 Year
12.	RF Coaxial Cable	RESENBERGER	N-6m	No.17	Jan.05, 2019	1 Year
13.	Measurement Software: EZ_EMV V1.1.4.2					

## 4. AC POWER LINE CONDUCTED EMISSION TEST

### 4.1. Block Diagram of Test Setup



### 4.2. AC Power Line Conducted Emission Test Limits

Frequency (MHz)	Limit dB( $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

NOTE1: The lower limit shall apply at the transition frequencies.  
 NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

### 4.3. Configuration of EUT on Test

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

### 4.4. Operating Condition of EUT

- 4.4.1. Setup the EUT and simulator as shown as Section 4.1.
- 4.4.2. Turn on the power of all equipment.
- 4.4.3. Let the EUT work in test mode and measure it.



#### 4.5. Test Procedure

The EUT is put on the plane 0.8 m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

#### 4.6. Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.6	25.3	17.0	59.0	49.0	33.7	32.0	Pass

Transducer value = Insertion loss of LISN + Cable Loss  
 Result = Quasi-peak Level/Average Level + Transducer value  
 Limit = Limit stated in standard

Calculation Formula:

Margin = Limit – Reading level value – Transducer value

#### 4.7. Test Results

**Pass.**

The frequency range from 150kHz to 30MHz is checked.

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.

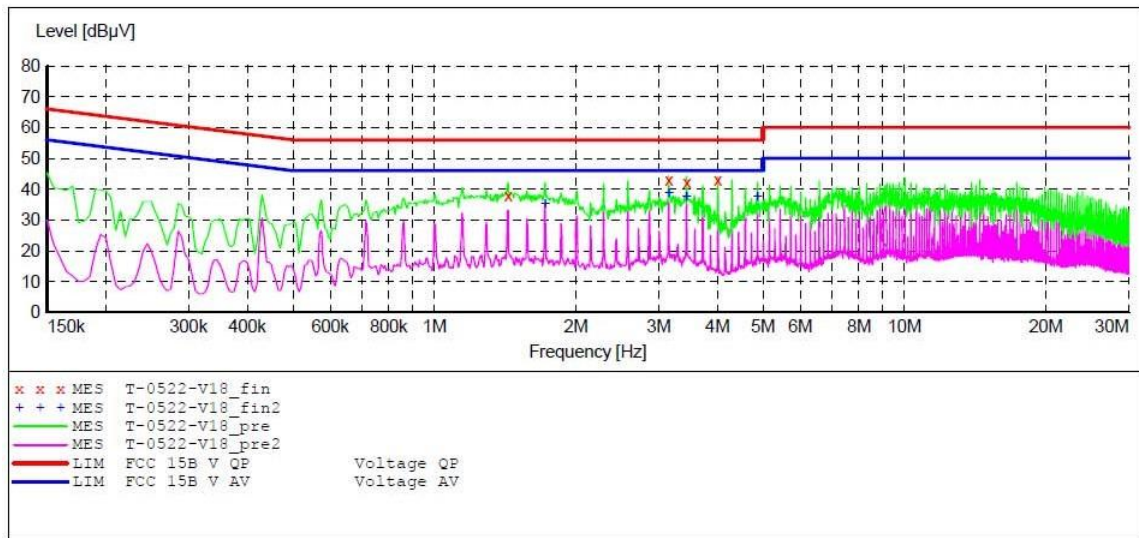
**ACCURATE TECHNOLOGY CO.,LTD**

**CONDUCTED EMISSION STANDARD FCC PART 15 C**

EUT: Primark AW19 Wireless Charger M/N:WD07  
 Manufacturer: THUMBS UK(UK)LTD  
 Operating Condition: Max. Power Output  
 Test Site: 1#Shielding Room  
 Operator: WADE  
 Test Specification: L 120V/60Hz  
 Comment:  
 Start of Test: 5/22/2019 /

**SCAN TABLE: "V 9K-30MHz fin"**

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	Average			
			QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
			Average			



**MEASUREMENT RESULT: "T-0522-V18\_fin"**

5/22/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
1.435000	37.90	10.9	56	18.1	QP	L1	GND
3.150000	42.80	11.1	56	13.2	QP	L1	GND
3.440000	42.30	11.1	56	13.7	QP	L1	GND
4.010000	42.80	11.1	56	13.2	QP	L1	GND

**MEASUREMENT RESULT: "T-0522-V18\_fin2"**

5/22/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
1.720000	35.20	10.9	46	10.8	AV	L1	GND
3.150000	38.50	11.1	46	7.5	AV	L1	GND
3.440000	37.50	11.1	46	8.5	AV	L1	GND
4.870000	37.60	11.1	46	8.4	AV	L1	GND

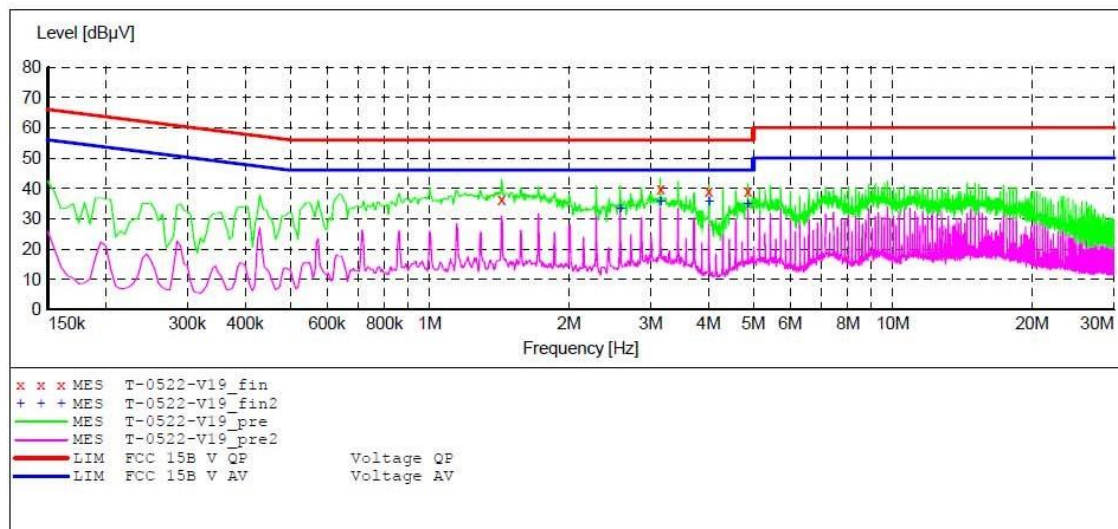
**ACCURATE TECHNOLOGY CO., LTD**

**CONDUCTED EMISSION STANDARD FCC PART 15 C**

EUT: Primark AW19 Wireless Charger M/N:WD07  
 Manufacturer: THUMBS UK (UK) LTD  
 Operating Condition: Max. Power Output  
 Test Site: 1#Shielding Room  
 Operator: WADE  
 Test Specification: N 120V/60Hz  
 Comment:  
 Start of Test: 5/22/2019 /

**SCAN TABLE: "V 9K-30MHz fin"**

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	Average	1.0 s	9 kHz	NSLK8126 2008



**MEASUREMENT RESULT: "T-0522-V19\_fin"**

5/22/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
1.430000	36.20	10.9	56	19.8	QP	N	GND
3.150000	39.90	11.1	56	16.1	QP	N	GND
4.010000	39.20	11.1	56	16.8	QP	N	GND
4.870000	38.90	11.1	56	17.1	QP	N	GND

**MEASUREMENT RESULT: "T-0522-V19\_fin2"**

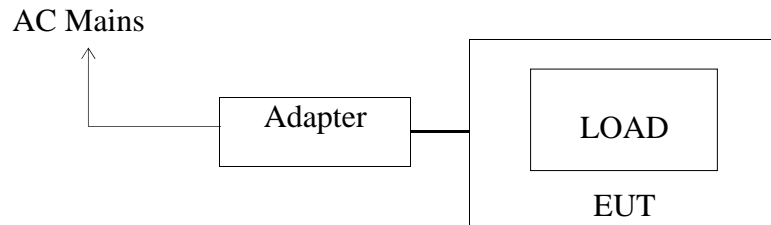
5/22/2019

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
2.580000	33.20	11.0	46	12.8	AV	N	GND
3.150000	35.40	11.1	46	10.6	AV	N	GND
4.010000	35.50	11.1	46	10.5	AV	N	GND
4.870000	34.80	11.1	46	11.2	AV	N	GND

## 5. RADIATED EMISSION TEST

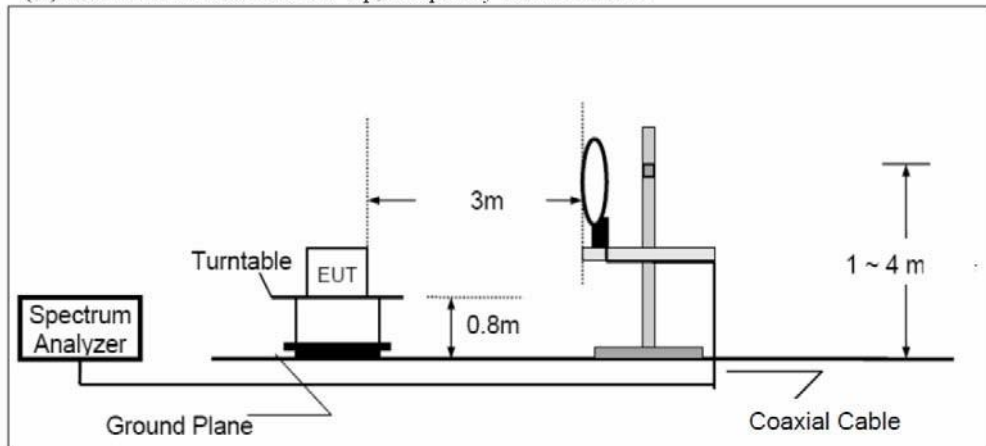
### 5.1. Block Diagram of Test

#### 5.1.1. Block diagram of connection between the EUT and simulators

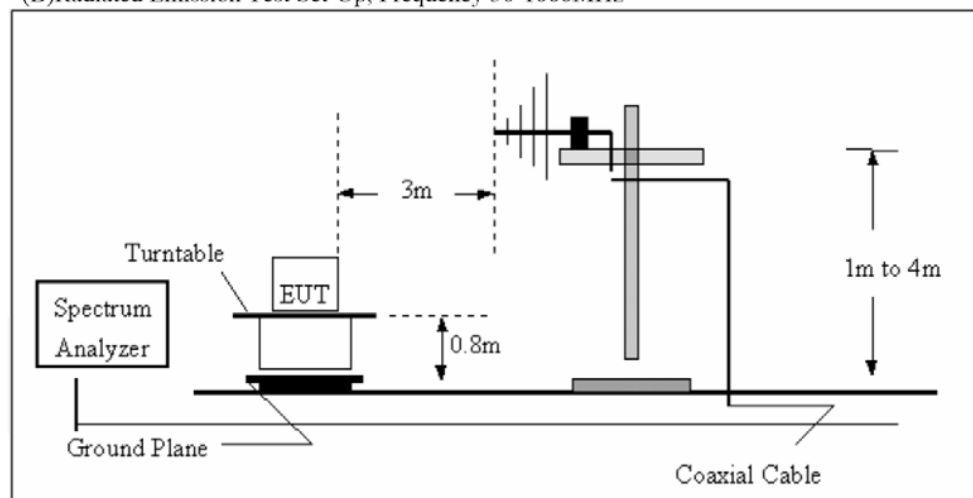


#### 5.1.2. Block diagram of test setup (In chamber)

(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30-1000MHz



## 5.2. Radiated Emission Test Limit

Frequency (MHz)	Field Strength Limitation		Field Strength Limitation at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100 * 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

Limit: [2400/125=19.2uV/m@300m](#)

Distance Correction Factor=40log(test distance/specific distance)

## 5.3. EUT Configuration on Test

The equipments are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 5.4. Operating Condition of EUT

- 5.4.1. Setup the EUT and simulator as shown as Section 5.1.
- 5.4.2. Turn on the power of all equipment.
- 5.4.3. Let the EUT work in test mode and measure it.



## 5.5. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated emission measurement.

From 9kHz to 30MHz at distance 3m The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

From 30MHz to 1000MHz at distance 3m The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.

The final measurement will be performed with an EMI Receiver set to Quasi Peak detector for the frequency bands 9kHz to 90kHz and 110 to 490 kHz where an average detector will be used according to Section 15.209(d)(2).

The final level, expressed in dBuV/m, is arrived at by taking the reading from the EMI receiver(Level dBuV) and adding the antenna correction factor and cable loss factor(Factor dB) to it. This result then has to be compared with the relevant FCC limit. The resolution bandwidth during the measurement is as follows:

9kHz – 150kHz: ResBW: 200Hz

150kHz – 30MHz: ResBW: 9kHz

The bandwidth of the EMI test receiver is set at 120kHz from 30MHz to 1000MHz.

### 5.6. Data Sample

Frequency(MHz)	Reading (dB $\mu$ v)	Factor (dB/m)	Result (dB $\mu$ v/m)	Limit (dB $\mu$ v/m)	Margin (dB)	Remark
X.XX	49.83	-22.03	27.80	43.50	-15.70	QP

Frequency(MHz) = Emission frequency in MHz

Reading(dB $\mu$ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m)= Antenna factor + Cable Loss – Amplifier gain

Result(dB $\mu$ v/m) = Reading + Factor

Limit (dB $\mu$ v/m)= Limit stated in standard

Calculation Formula:

Margin(dB) = Result (dB $\mu$ v/m)–Limit(dB $\mu$ v/m)

Result(dB $\mu$ v/m)= Reading(dB $\mu$ v)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

### 5.7. Test Result

**Pass.**

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectrum analyzer plots are attached as below.

From 9kHz to 30MHz:

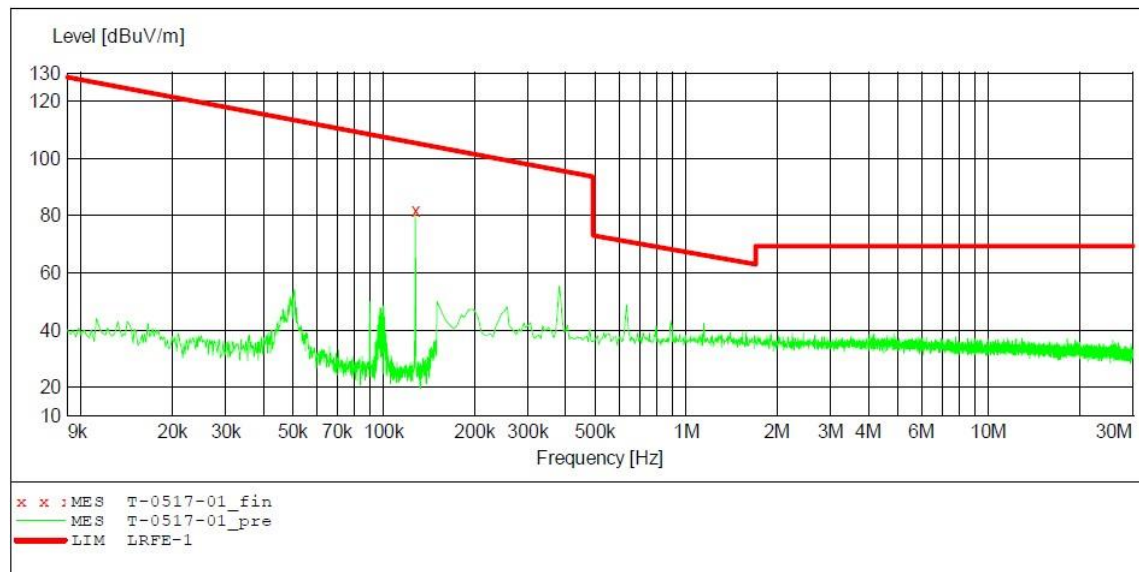
ACCURATE TECHNOLOGY CO., LTD

**RADIATED EMISSION STANDARD FCC PART 15 C**

EUT: Primark AW19 Wireless Charger M/N:WD07  
 Manufacturer: THUMBS UK(UK)LTD  
 Operating Condition: Max. Power Output  
 Test Site: 2# Chamber  
 Operator: wade  
 Test Specification: DC 5V  
 Comment: X  
 Start of Test: 2019-5-17 /

**SCAN TABLE: "LFRE(E) Fin"**

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516E
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516E



**MEASUREMENT RESULT: "T-0517-01\_fin"**

2019-5-17

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
0.127000	81.75	/	/	/	PK	/	/	X



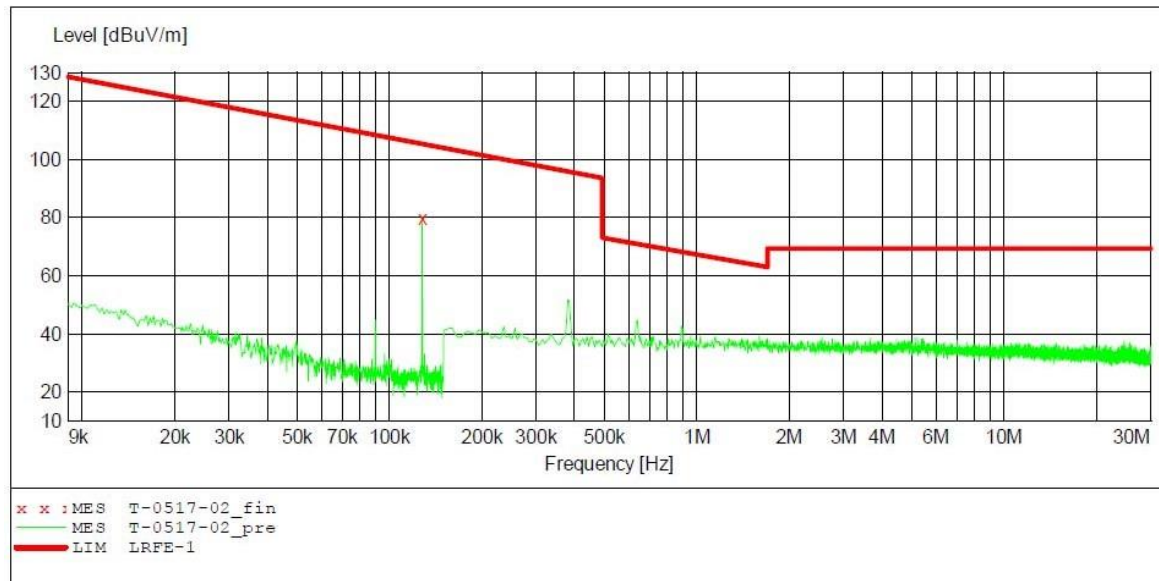
**ACCURATE TECHNOLOGY CO., LTD**

**RADIATED EMISSION STANDARD FCC PART 15 C**

EUT: Primark AW19 Wireless Charger M/N:WD07  
 Manufacturer: THUMBS UK(UK) LTD  
 Operating Condition: Max. Power Output  
 Test Site: 2# Chamber  
 Operator: wade  
 Test Specification: DC 5V  
 Comment: Y  
 Start of Test: 2019-5-17 /

**SCAN TABLE: "LFRE(E) Fin"**

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516E
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516E



**MEASUREMENT RESULT: "T-0517-02\_fin"**

2019-5-17

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
0.127400	79.80	/	/	/	PK	/	/	Y

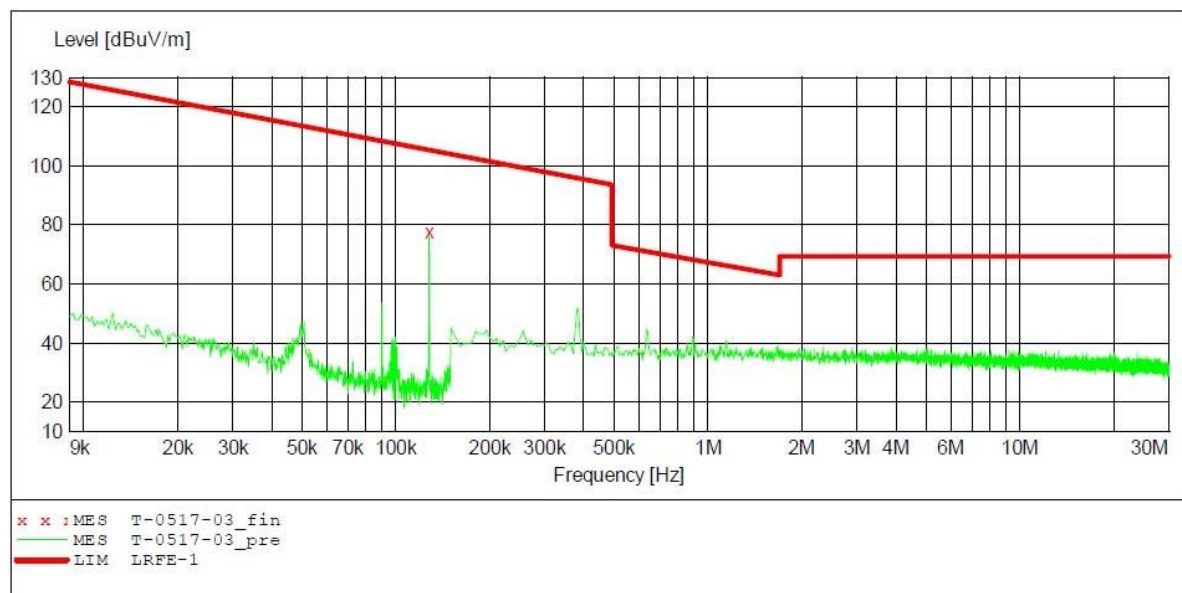
**ACCURATE TECHNOLOGY CO., LTD**

**RADIATED EMISSION STANDARD FCC PART 15 C**

EUT: Primark AW19 Wireless Charger M/N:WD07  
 Manufacturer: THUMBS UK(UK)LTD  
 Operating Condition: Max. Power Output  
 Test Site: 2# Chamber  
 Operator: wade  
 Test Specification: DC 5V  
 Comment: Z  
 Start of Test: 2019-5-17 /

**SCAN TABLE: "LFRE(E) Fin"**

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516E
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516E



**MEASUREMENT RESULT: "T-0517-03\_fin"**

2019-5-17

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
0.127400	77.60	/	/	/	PK	/	/	Z

From 30MHz to 1000MHz:



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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

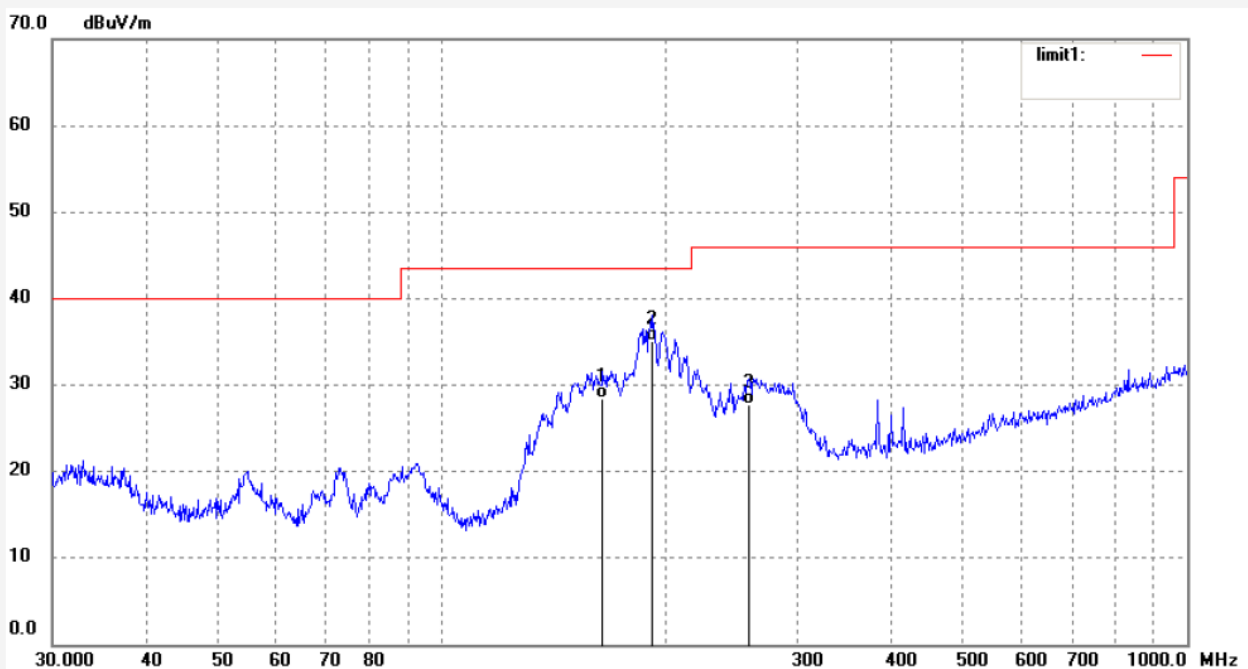
Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: tuv2018 #2450	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 19/05/16/
Temp.( C)/Hum.(%) 23 C / 48 %	Time:
EUT: Primark AW19 Wireless Charger	Engineer Signature: WADE
Mode: Max. Power Output	Distance: 3m
Model: WD07	
Manufacturer: THUMBS UK(UK)LTD	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	164.3301	42.84	-14.34	28.50	43.50	-15.00	QP			
2	191.0738	47.47	-12.44	35.03	43.50	-8.47	QP			
3	258.3263	38.25	-10.49	27.76	46.00	-18.24	QP			

Job No.: tuv2018 #2449

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: Primark AW19 Wireless Charger

Mode: Max. Power Output

Model: WD07

Manufacturer: THUMBS UK(UK)LTD

Polarization: Vertical

Power Source: DC 5V

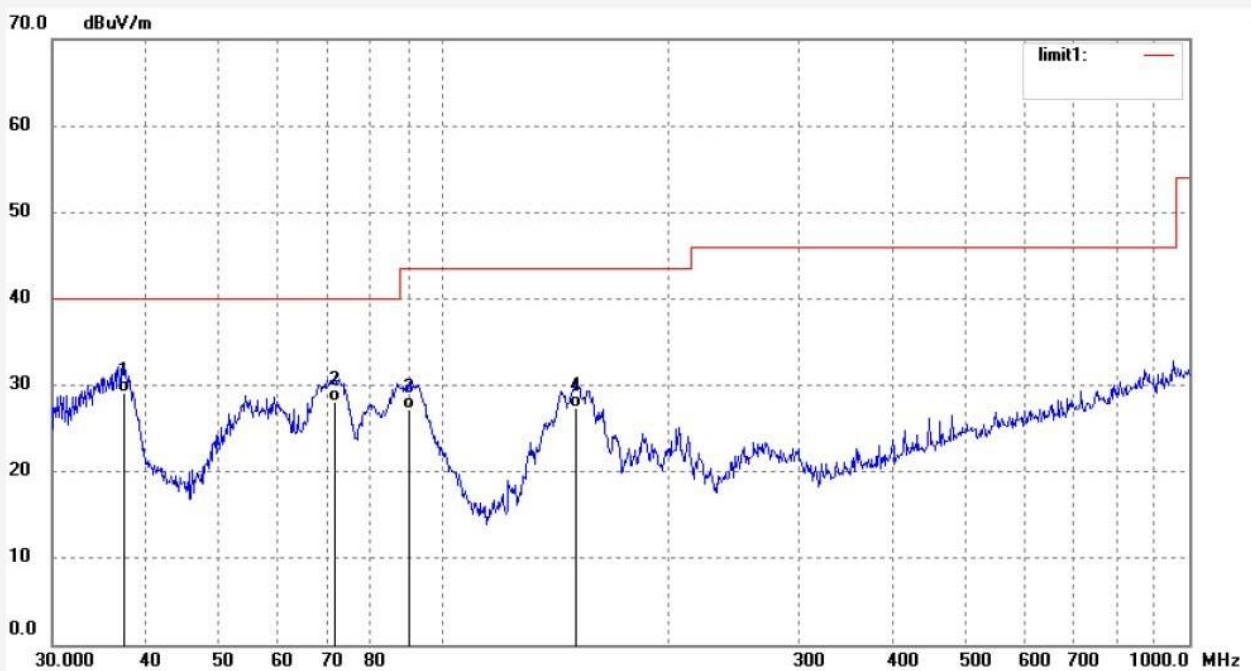
Date: 19/05/16/

Time:

Engineer Signature: WADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	37.4164	40.16	-10.95	29.21	40.00	-10.79	QP			
2	71.8319	44.31	-16.30	28.01	40.00	-11.99	QP			
3	90.2205	42.28	-15.00	27.28	43.50	-16.22	QP			
4	150.5378	42.46	-15.04	27.42	43.50	-16.08	QP			

## 6. OCCUPIED BANDWIDTH TEST

### 6.1. The Requirement For Section 15.215(c)

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment compliance with the 20dB attenuation specification may be based on measurement at the intentional radiator's antenna output terminal unless the intentional radiator uses a permanently attached antenna, in which case compliance shall be demonstrated by measuring the radiated emissions.

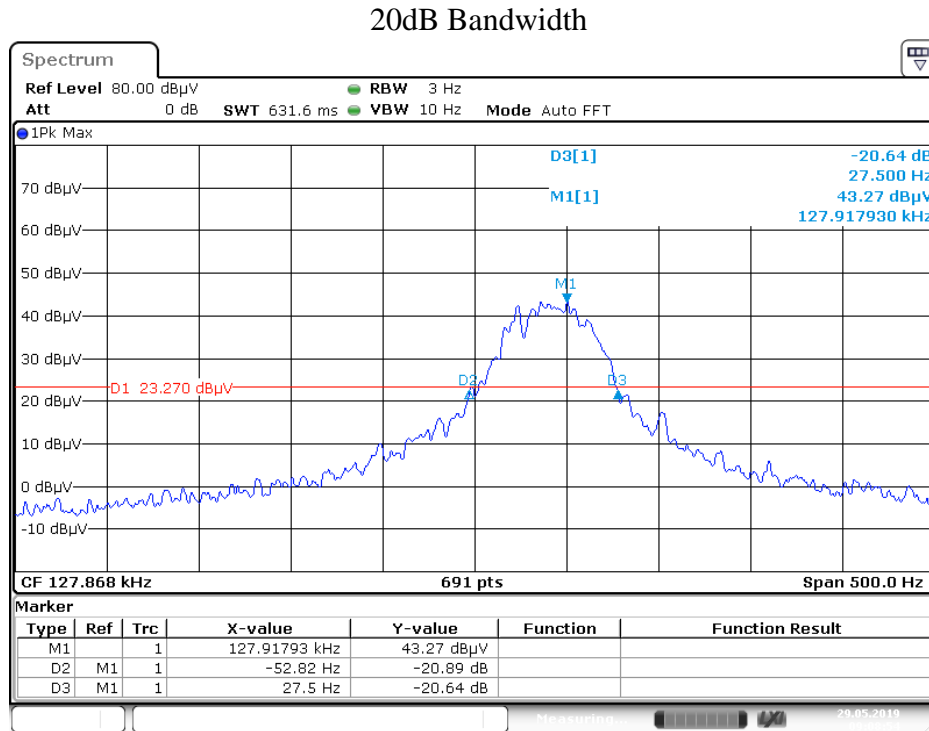
### 6.2. Test Procedure

Use the following spectrum analyzer settings:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency
- b) Span = approximately 2 to 5 times the OBW
- c) RBW = 1% to 5% of the OBW
- d) VBW  $\geq 3 \times$  RBW
- e) Sweep = auto;
- f) Detector function = peak
- g) Trace = max hold
- h) All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down bandwidth of the emission.

### 6.3. Test Result

Frequency (KHz)	20dB Bandwidth (KHz)
127.868	0.08



Date: 29.MAY.2019 09:08:55

## 7. ANTENNA REQUIREMENT

### 7.1. The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

### 7.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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