# TEST REPORT

FCC ID: 2AON7TZUMICLOCK Product: LED Speaker Clock Charging Pad Model No.: 841351153553 Additional Model No.: N/A Trade Mark: TZUMI Report No.: TCT171221E045 Issued Date: Jan. 12, 2018

Issued for:

TZUMI Electronics, LLC 16 EAST 34TH STREET 16TH FLOOR NEW YORK NY 10016

Shenzhen TCT Testing Technology Co., Ltd. 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China TEL: +86-755-27673339

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## TABLE OF CONTENTS

1.	Test Certification	3
2.	Test Result Summary	4
3.	EUT Description	5
4.	Genera Information	
	4.1. Test environment and mode	6
	4.2. Description of Support Units	6
5.	Facilities and Accreditations	7
	5.1. Facilities	7
	5.2. Location	
	5.3. Measurement Uncertainty	7
6.	Test Results and Measurement Data	8
	6.1. Antenna requirement	8
	6.2. Conducted Emission	9
	6.3. Radiated Spurious Emission Measurement	13
Α	ppendix A: Photographs of Test Setup	
Α	ppendix B: Photographs of EUT	

## 

#### Report No.: TCT171221E045

## 1. Test Certification

Product:	LED Speaker Clock Charging Pad					
Model No.:	841351153553					
Additional Model No.:	N/A					
Trade Mark:	TZUMI					
Applicant:	TZUMI Electronics, LLC					
Address:	16 EAST 34TH STREET 16TH FLOOR NEW YORK NY 10016					
Manufacturer:	Shenzhen Aodasen Technology CO., Ltd					
Address:	3F Building A, He Shengjia Industrial Park, Huafe Bao'an District, Shenzhen, China	ng Road, Longhua,				
Date of Test:	Dec. 22, 2017 – Jan. 11, 2018					
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart C					

The above equipment has been tested by Shenzhen Tongce Testing Lab. 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:	Garon	Date:	Jan. 11, 2018	
	Garen	)	$(\mathcal{C})$	(C <sup>1</sup> )
Reviewed By:	Lon Three on	Date:	Jan. 12, 2018	
	Joe Zhou	CT		
Approved By:	omsm 2015	BA Date:	Jan. 12, 2018	
	Tomsin			
			Page	3 of 23



## 2. Test Result Summary

Report No.: TCT171221E045

Require	ment		CFR 47 S	ection		Result	
Antenna requirement		equirement §15.203				PASS PASS PASS	
	Ver Line Conducted §15.207						
ourious E	Emission §15.209(a)(f)						
	Ś		Ś				(Second
ail: Test item d ⁄A: Test case d	loes not meet th does not apply t	ne requirement. to the test objec	ct.	rd.			
	ower Line Emiss ourious E ASS: Test item ail: Test item of (A: Test case of	ower Line Conducted Emission Durious Emission ASS: Test item meets the requ ail: Test item does not meet the A: Test case does not apply to	ower Line Conducted         Emission         ourious       Emission         ASS: Test item meets the requirement.         ail: Test item does not meet the requirement         (A: Test case does not apply to the test object	ower Line Conducted Emission       §15.20         ourious Emission       §15.209         ASS: Test item meets the requirement.       ail: Test item does not meet the requirement.         A: Test case does not apply to the test object.	ower Line Conducted Emission       §15.207         ourious Emission       §15.209(a)(f)         ASS: Test item meets the requirement.       all: Test item does not meet the requirement.	ower Line Conducted Emission       §15.207         ourious Emission       §15.209(a)(f)         ASS: Test item meets the requirement.         wil: Test item does not meet the requirement.         YA: Test case does not apply to the test object.	ower Line Conducted Emission§15.207PASSourious Emission§15.209(a)(f)PASSASS: Test item meets the requirement. wil: Test item does not meet the requirement. (A: Test case does not apply to the test object.(a)



## 3. EUT Description

Product:	LED Speaker Clock Charging Pad
Model No.:	841351153553
Additional Model No.:	N/A
Trade Mark:	ТΖՍМІ
Hardware Version:	1.0
Software Version:	1.0
<b>Operation Frequency:</b>	110-205KHz
Number of Channel:	20 Channels
Modulation Technology:	MSK
Antenna Type:	Inductive loop coil Antenna
Antenna Gain:	0dBi
Power Supply:	Rechargeable Li-ion Battery DC 3.7V

#### **Operation Frequency each of channel**

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	0.110	6	0.135	11	0.160	16	0.185
2	0.115	57	0.140	12	0.165	17	0.190 🗸 🖓
3	0.120	8	0.145	13	0.170	18	0.195
4	0.125	9	0.150	14	0.175	19	0.200
5	0.130	10	0.155	15	0.180	20	0.205
					$\sim$		



## 4. Genera Information

**FCT**通测检测 TESTING CENTRE TECHNOLOGY

## 4.1. Test environment and mode

Operating Environment:						
Temperature:	25.0 °C					
Humidity:	56 % RH					
Atmospheric Pressure:	1010 mbar					
Test Mode:						
Engineering mode:	Keen the ELIT in continuous transmitting					

Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 98.46%) with Fully-charged battery.

The sample was placed (0.1m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

## 4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Adapter	HW-059200CHQ	K68247F5H01734	1	HUAWEI
Mobilephone	honor 9	5JPDU17610004560	1	honor

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

## 5. Facilities and Accreditations

#### 5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

• FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

• IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

#### 5.2. Location

Shenzhen Tongce Testing Lab

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

#### 5.3. Measurement Uncertainty

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

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%



## 6. Test Results and Measurement Data

#### 6.1. Antenna requirement

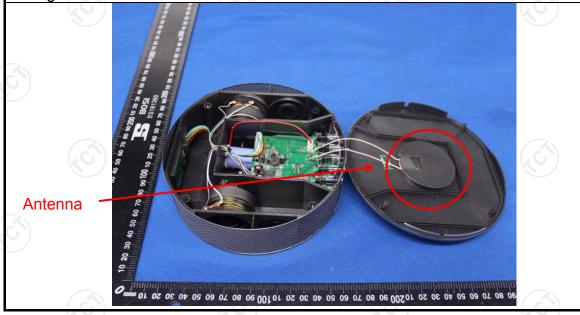
Standard requirement: FCC Part15 C Section 15.203

15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### E.U.T Antenna:

The antenna is inductive loop coil Antenna which permanently attached, and the best case gain of the antenna is 0dBi.



## 6.2. Conducted Emission

#### 6.2.1. Test Specification

Test Requirement:	FCC Part15 C Sectior	n 15.207 📎	No. Contraction of the second se	
Test Method:	ANSI C63.10:2013			
Frequency Range:	150 kHz to 30 MHz		$\left( \begin{array}{c} c \end{array} \right)$	
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto			
	Frequency range	Limit (	dBuV)	
	(MHz)	Quasi-peak	Average	
Limits:	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
		ence Plane	1.61	
Test Setup:	E.U.T Ada Test table/Insulation pla Remarkc E.U.T: Equipment Under Test LISN: Line Impedence Stabilizatio Test table height=0.8m	ane		
Test Mode:	Charging + Transmitti	ng Mode		
	provides a 50ohm/	zation network 50uH coupling im	(L.I.S.N.). This	
Test Procedure:	<ul> <li>measuring equipme</li> <li>2. The peripheral devi power through a L coupling impedance refer to the block photographs).</li> <li>3. Both sides of A.C conducted interfere emission, the relative the interface cable ANSL C63 10: 2013</li> </ul>	ces are also conne ISN that provides e with 50ohm tern diagram of the c. line are checke ence. In order to fin ve positions of eque es must be chang	a 50ohm/50ul nination. (Pleas test setup an ed for maximur nd the maximur ipment and all c led according to	
Test Procedure: Test Result:	<ol> <li>The peripheral devi power through a L coupling impedance refer to the block photographs).</li> <li>Both sides of A.C conducted interfere emission, the relative</li> </ol>	ces are also conne ISN that provides e with 50ohm tern diagram of the c. line are checke ence. In order to fin ve positions of eque es must be chang	a 50ohm/50ul nination. (Please test setup and ed for maximum nd the maximum ipment and all c led according to	

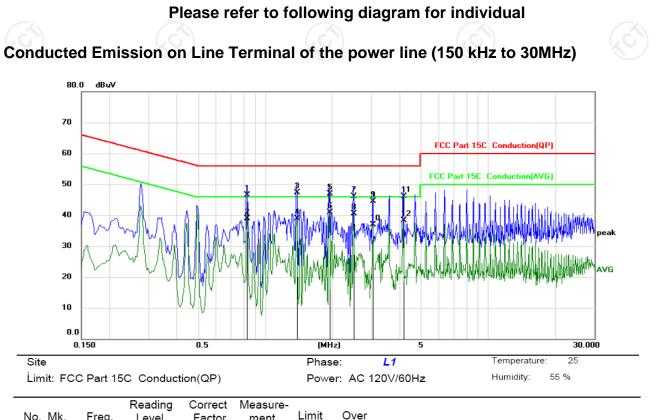
#### 6.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)							
Equipment	Manufacturer	Model	Serial Number	Calibration Due			
Test Receiver	R&S	ESPI	101401	Jun. 12, 2018			
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 27, 2018			
Coax cable (9KHz-30MHz)	тст	CE-05	N/A	Sep. 27, 2018			
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A			

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

Page 10 of 23

#### 6.2.3. Test data



Report No.: TCT171221E045

No. M	lk. I	Freq.	Level	Factor	ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.	8295	35.20	11.22	46.42	56.00	-9.58	QP	
2	0.	8295	27.71	11.22	38.93	46.00	-7.07	AVG	
3	1.	3875	35.87	11.39	47.26	56.00	-8.74	QP	
4	1.	3875	27.53	11.39	38.92	46.00	-7.08	AVG	
5	1.	9410	35.22	11.67	46.89	56.00	-9.11	QP	
6 *	1.	9410	29.22	11.67	40.89	46.00	-5.11	AVG	
7	2.	4990	34.63	11.52	46.15	56.00	-9.85	QP	
8	2.	4990	28.97	11.52	40.49	46.00	-5.51	AVG	
9	3.	0525	33.18	11.32	44.50	56.00	-11.50	QP	
10	3.	0525	25.57	11.32	36.89	46.00	-9.11	AVG	
11	4.	1640	35.20	10.92	46.12	56.00	-9.88	QP	
12	4.	1640	27.37	10.92	38.29	46.00	-7.71	AVG	

#### Note:

Freq. = Emission frequency in MHz Reading level  $(dB\mu V) = Receiver reading$ Corr. Factor (dB) = Antenna factor + Cable loss Measurement  $(dB\mu V) = Reading level (dB\mu V) + Corr. Factor (dB)$ Limit  $(dB\mu V) = Limit$  stated in standard Margin (dB) = Measurement (dB $\mu$ V) – Limits (dB $\mu$ V) Q.P. =Quasi-Peak AVG =average \* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz Page 11 of 23

#### Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)

			0.5					* 1.121 1.1111 1.11111 1.1111 1.1111 1.11111 1.11111 1.11111 1.11111 1.11111 1.11111 1.11111 1.111111		avg 30.000
Site					Phas	se:	N		Temperatur	e: 25
Limit: FC	CC Part 15	C Conduct	tion(QP)		Pow	er: AC	120V/60Hz	:	Humidity:	55 %
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over				
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment		
1	0.8295	33.09	11.22	44.31	56.00	-11.69	QP			
2	0.8295	24.36	11.22	35.58	46.00	-10.42	AVG			
3	1.3829	31.81	11.39	43.20	56.00	-12.80	QP			
4	1.3829	21.83	11.39	33.22	46.00	-12.78	AVG			
5	1 9410	33 65	11 67	45 32	56 00	-10 68	QP			

5

#### Note1:

Freq. = Emission frequency in MHz Reading level  $(dB\mu V) = Receiver reading$ Corr. Factor (dB) = Antenna factor + Cable loss Measurement  $(dB\mu V)$  = Reading level  $(dB\mu V)$  + Corr. Factor (dB)*Limit*  $(dB\mu V) = Limit$  stated in standard Margin (dB) = Measurement (dB $\mu$ V) – Limits (dB $\mu$ V)

Q.P. =Quasi-Peak AVG =average

\* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

3	1.3829	31.81	11.39	43.20	56.00 -12.80	QP
4	1.3829	21.83	11.39	33.22	46.00 -12.78	AVG
5	1.9410	33.65	11.67	45.32	56.00 -10.68	QP
6	1.9410	24.54	11.67	36.21	46.00 -9.79	AVG
7	2.4900	31.33	11.52	42.85	56.00 -13.15	QP
8 *	2.4900	24.92	11.52	36.44	46.00 -9.56	AVG
9	4.1550	30.73	10.92	41.65	56.00 -14.35	QP
10	4.1550	22.45	10.92	33.37	46.00 -12.63	AVG
11	6.3690	30.60	10.84	41.44	60.00 -18.56	QP
12	6.3690	22.37	10.84	33.21	50.00 -16.79	AVG



dBu¥ 80.0

70

60

50

Report No.: TCT171221E045

FCC Part 15C Conduction(QP)

FCC Part 15C Conduction(AVG)



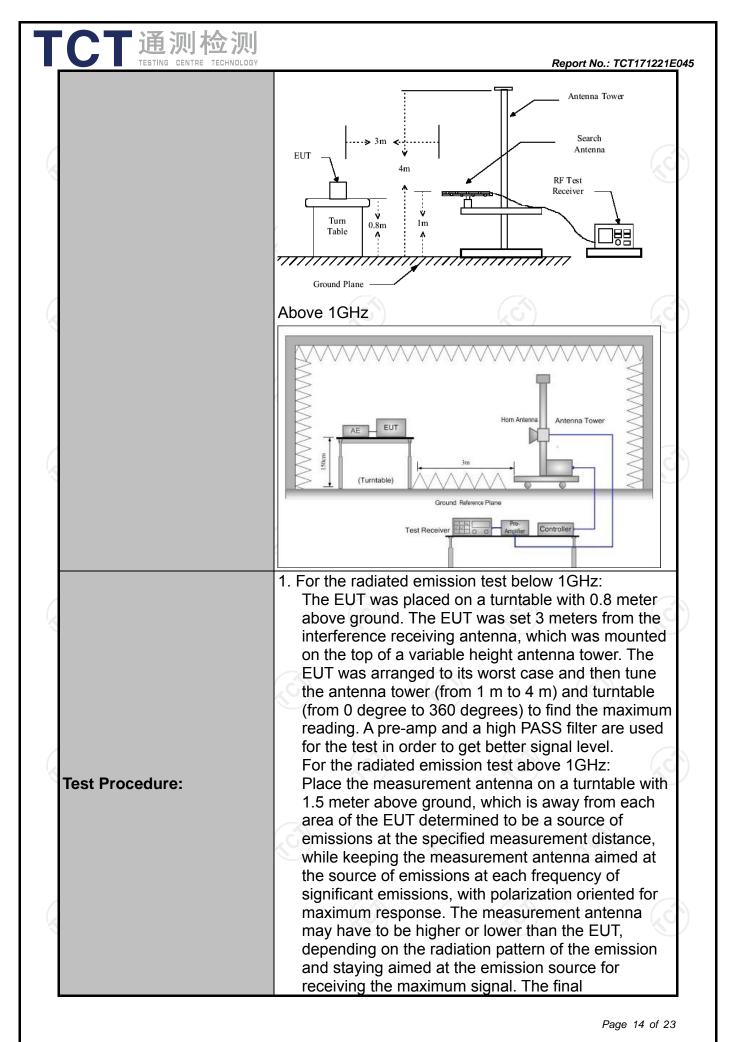
Page 12 of 23

## 6.3. Radiated Spurious Emission Measurement

#### 6.3.1. Test Specification

TCT通测检测 TESTING CENTRE TECHNOLOGY

Test Requirement:	FCC Part15 C Section 15.209								
Test Method:	ANSI C63.10	): 2013							
Frequency Range:	9 kHz to 25 (	GHz	3		C				
Measurement Distance:	3 m	X	9		K	)			
Antenna Polarization:	Horizontal &	Vertical							
Operation mode:	Refer to item	n 4.1		3					
	Frequency 9kHz- 150kHz 150kHz-	Detector Quasi-peal Quasi-peal		VBW 1kHz 30kHz		Remark si-peak Value si-peak Value			
Receiver Setup:	30MHz 30MHz-1GHz Above 1GHz	Quasi-peal Peak Peak	<pre>100KHz 100KHz 1MHz 1MHz</pre>	300KHz 3MHz 10Hz	P	si-peak Value 'eak Value erage Value			
	Frequen	icy	Field Stre (microvolts	ength /meter)	Me	easurement ance (meters)			
	0.009-0.4 0.490-1.7 1.705-3	705	2400/F(KHz) 24000/F(KHz) 30		300 30 30				
	30-88	1	<u> </u>		3				
Limit:	216-96	0	200			3			
	Above 9	60	500		3				
	Frequency		d Strength ovolts/meter)	Measure Distan (meter	се	Detector			
	Above 1GHz	2	500 5000			Average Peak			
Test setup:	For radiated	Distance = 3m	s below 30	)MHz		Computer Amplifier Receiver			



<b>一</b> 一通测检	2. 测了
TESTING CENTRE TEC	Report No.: TCT171221 measurement antenna elevation shall be that which maximizes the emissions. The measurement
	antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
	2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
	3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission
	measurement will be repeated using the quasi-peak detector and reported.
	<ul> <li>4. Use the following spectrum analyzer settings:</li> <li>(1) Span shall wide enough to fully capture the emission being measured;</li> </ul>
	<ul> <li>(2) Set RBW=100 kHz for f &lt; 1 GHz; VBW ≥RBW;</li> <li>Sweep = auto; Detector function = peak; Trace = max hold;</li> </ul>
	(3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement.
	For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW $\ge$ 1/T, when duty cycle is less than 98 percent where T is
	the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Test mode:	Refer to section 4.1 for details
Test results:	PASS

Page 15 of 23

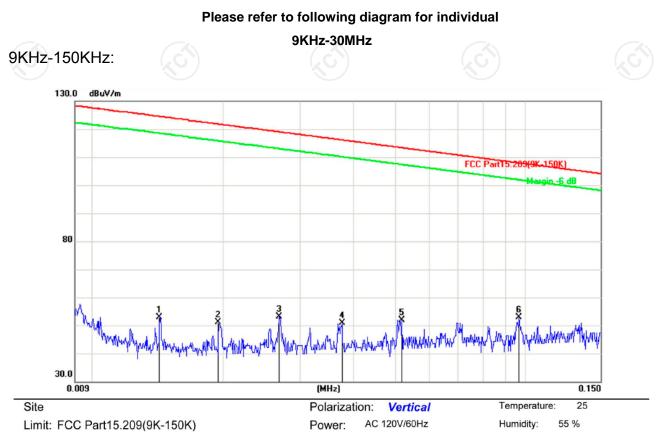


### 6.3.2. Test Instruments

	Radiated Em	ission Test Sit	te (966)			
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Test Receiver	ROHDE&SCHW ARZ	ESVD	100008	Sep. 27, 2018		
Spectrum Analyzer	ROHDE&SCHW ARZ	FSQ	200061	Sep. 27, 2018		
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 27, 2018		
Pre-amplifier	HP	8447D	2727A05017	Sep. 27, 2018		
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 27, 2018		
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018		
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018		
Horn Antenna	Schwarzbeck	BBH 9170	582	Jun. 07, 2018		
Antenna Mast	Keleto	CC-A-4M	N/A	N/A		
Coax cable (9KHz-1GHz)	тст	RE-low-01	N/A	Sep. 27, 2018		
Coax cable (9KHz-40GHz)	тст	RE-high-02	N/A	Sep. 27, 2018		
Coax cable (9KHz-1GHz)	тст	RE-low-03	N/A	Sep. 27, 2018		
Coax cable (9KHz-40GHz)	тст	RE-high-04	N/A	Sep. 27, 2018		
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A		

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

#### 6.3.3. Test Data



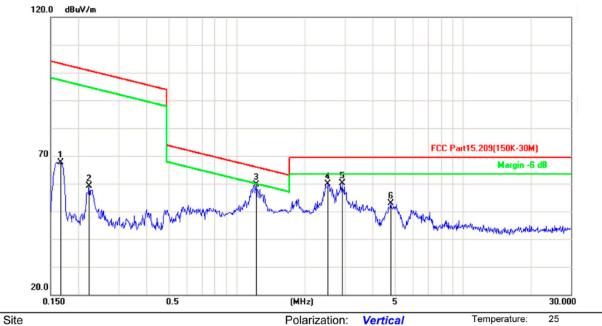
Report No.: TCT171221E045

lo. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	0.0142	31.48	21.47	52.95	124.5	-71.61	peak			
2	0.0194	32.51	18.72	51.23	121.8	-70.62	peak			
3	0.0269	34.26	18.86	53.12	119.0	-65.89	peak			
4	0.0376	31.23	19.57	50.80	116.1	-65.31	peak			
5	0.0517	31.41	20.51	51.92	113.3	-61.42	peak			
6 *	0.0970	29.36	23.60	52.96	107.8	-54.92	peak			

 Image: Second state of the second s

#### 150KHz-30MHz:

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Limit: FCC Part15.209(150K-30M)

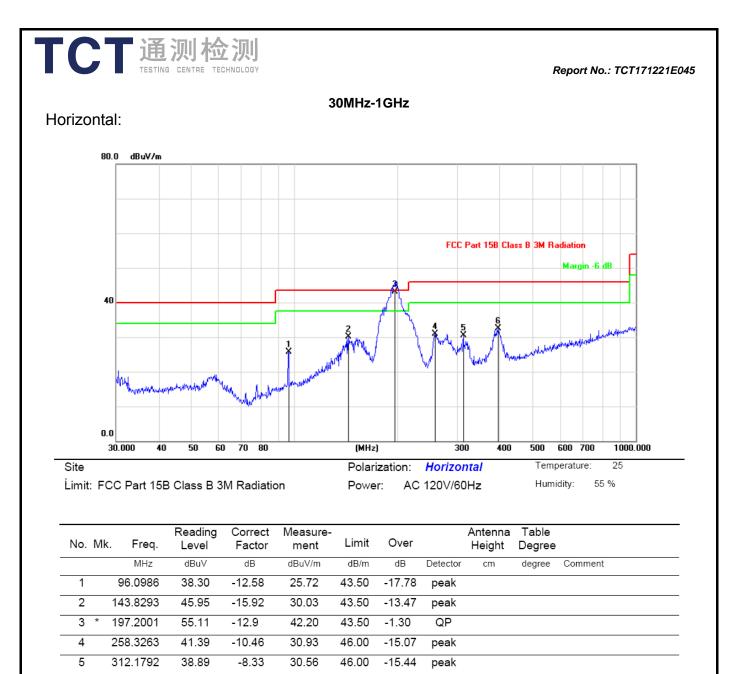
Polarization: Vertical Power: AC 120V/60Hz

Humidity: 55 %

Report No.: TCT171221E045

lo. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	0.1658	41.54	26.07	67.61	103.2	-35.62	peak			
2	0.2220	33.34	25.76	59.10	100.6	-41.59	peak			
3 *	1.2157	34.68	24.94	59.62	65.93	-6.31	peak			
4	2.5266	35.10	24.66	59.76	69.50	-9.74	peak			
5	2.9152	35.41	24.64	60.05	69.50	-9.45	peak			
6	4.7968	28.41	24.51	52.92	69.50	-16.58	peak			

Page 18 of 23



6

394.8543

38.38

-5.94

32.44

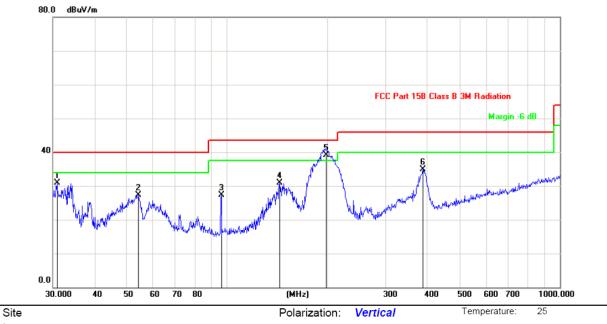
46.00

-13.56

peak

Page 19 of 23

#### Vertical:



Limit: FCC Part 15B Class B 3M Radiation

Power: AC 120V/60Hz

Humidity: 55 %

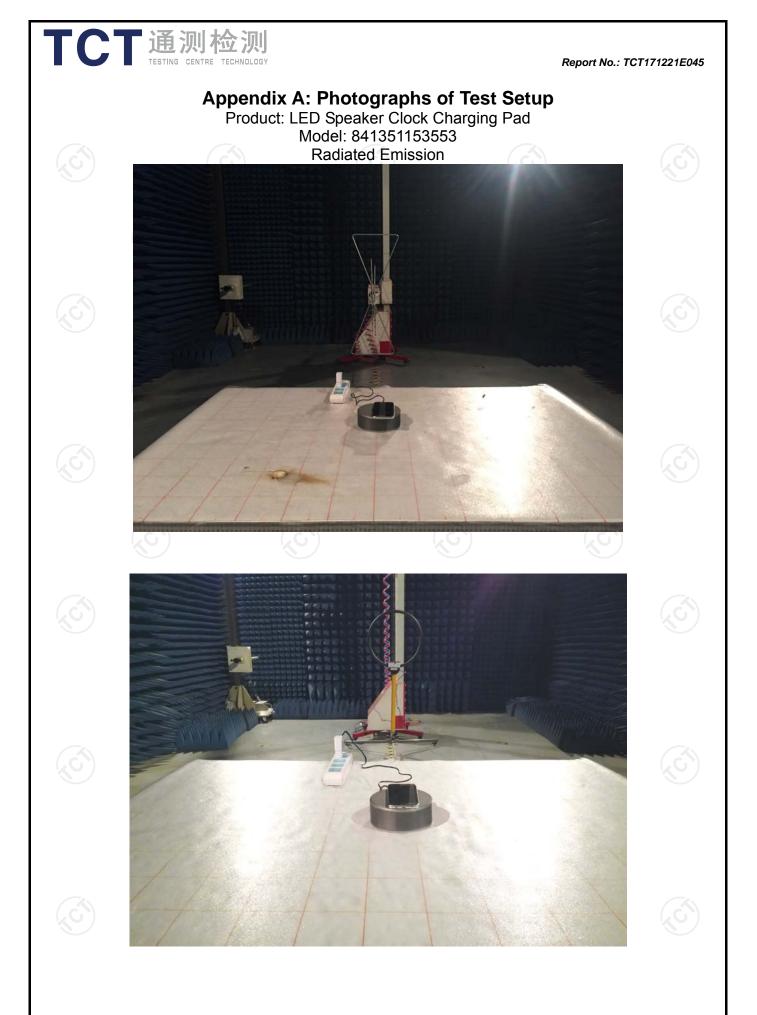
Report No.: TCT171221E045

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1		30.8535	44.63	-13.70	30.93	40.00	-9.07	peak			
2		54.2610	40.32	-12.98	27.34	40.00	-12.66	peak			
3		96.0986	39.79	-12.58	27.21	43.50	-16.29	peak			
4		143.8293	46.92	-15.92	31.00	43.50	-12.50	peak			
5	*	198.5880	52.03	-12.83	39.20	43.50	-4.30	QP			
6		387.9920	41.08	-6.14	34.94	46.00	-11.06	peak			

#### Note:

Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier





Page 21 of 23



