

# FCC TEST REPORT

S T

3

Report No: STS1901076W02

Issued for

Shenzhen Joway Power Supply Co., Ltd.

Floor 1-5 of Bldg 10th and Bldg 11th, Antuoshan High-Tech Industrial Park, Sha'er Community, Shajing Street, Bao'an District, Shenzhen, China

Product Name:	Wireless Charger	
Brand Name:	JOWAY	
Model Name:	WXC08	
Series Model:	N/A	
FCC ID:	2AEZ4WXC08	
Test Standard:	FCC Part 15 Subpart C	

Any reproduction of this document must be done in full. No single part of this document may be reproduced permission from STS, All Test Data Presented in this report is only applicable to presented Test sample.





Report No.: STS1901076W02

#### **TEST RESULT CERTIFICATION**

Applicant's name	Shenzhen Joway Power Supply Co., Ltd.
Address	Floor 1-5 of Bldg 10th and Bldg 11th, Antuoshan High-Tech Industrial Park, Sha'er Community, Shajing Street, Bao'an District,
Manufacture's Name:	Shenzhen Joway Power Supply Co., Ltd.
Address	Floor 1-5 of Bldg 10th and Bldg 11th, Antuoshan High-Tech Industrial Park, Sha'er Community, Shajing Street, Bao'an District, Shenzhen,China
Product description	

Product Name:	Wireless Charger
Brand Name:	JOWAY
Model Name	WXC08
Series Model	N/A
Test Standards	FCC Part 15 Subpart C
Test Procedure:	ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of STS, this document only be altered or revised by STS, personal only, and shall be noted in the revision of the document.

Date of performance of tests.....: 16 Jan. 2019 ~ 25 Jan. 2019

1

Date of Issue ..... 28 Jan. 2019

Test Result..... Pass

**Testing Engineer** 

(Chris chen)

**Technical Manager** 

μu

(Sunday Hu)

Authorized Signatory :

(Vita Li)

1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax: + 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com

Page 3 of 27

**Table of Contents** 

Report No.: STS1901076W02

Page



1. SUMMARY OF TEST RESULTS	5
1.1 TEST FACTORY	5
1.2 MEASUREMENT UNCERTAINTY	5
2. GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF THE EUT	6
2.2 DESCRIPTION OF THE TEST MODES	7
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	8
2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS	9
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	10
3.CONDUCTED EMISSION TEST RESULT(SECTION 15.207)	11
3.1 POWER LINE CONDUCTED EMISSION LIMITS	11
3.2 TEST PROCEDURE	12
3.3 TEST SETUP	12
3.4 EUT OPERATING CONDITIONS	12
3.5TEST RESULTS	13
4. RADIATED& FIELD EMISSION TEST RESULT(SECTIOU 15.209)	17
4.1 LIMIT	17
4.2 TEST PROCEDURE	17
4.3 TEST SETUP	18
4.4 TEST RESULTS	19
5. 20 DB BANDWIDTH TEST	25
5.1 LIMIT	25
5.2 TEST SETUP	25
5.3 TEST RESULTS	25
APPENDIX-PHOTOS OF TEST SETUP	27

1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



Page 4 of 27

Report No.: STS1901076W02

# **Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	28 Jan. 2019	STS1901076W02	ALL	Initial Issue



Shenzhen STS Test Services Co., Ltd.

-

1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



# 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 , Subpart C				
Standard Section	Test Item	Judgment	Remark	
15.207	Conducted Emission	PASS		
15.209 (a)	Radiated emission, Spurious Emission	PASS		
2.1049	20 dB Bandwidth	PASS		

#### 1.1 TEST FACTORY

Shenzhen STS Test Services Co., Ltd. Add. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China FCC Registration No.: 625569 IC Registration No.: 12108A; A2LA Certificate No.: 4338.01;

#### **1.2 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	Uncertainly
1	RF output power, conducted	±0.71dB
2	Unwanted Emissions, conducted	±0.63dB
3	All emissions, radiated 30-200MHz	±3.43dB
4	All emissions, radiated 200MHz-1GHz	±3.57dB
5	All emissions,radiated>1G	±4.13dB
6	Conducted Emission(9KHz-150KHz)	±3.18dB
7	Conducted Emission(150KHz-30MHz)	±2.70dB



Report No.: STS1901076W02



# 2. GENERAL INFORMATION

# 2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Wireless Charger
Trade Name	JOWAY
Model Name	WXC08
Series Model	N/A
Model Difference	N/A
Channel List	Please refer to the Note 2.
Equipemnt Category	Non-ISM frequency
Operating frequency	110.5-205KHZ
Modulation Type	ASK
Power Rating:	Input: DC 5V/2A ,9V/1.67A(QC) Output: 5W,7.5W,10W
Hardware version number	WXC08_V0.0
Software version number	WXC801-WXC08-1
Connecting I/O Port(s)	Please refer to the User's Manual

#### Note:

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

2.

		Test (	Channel		
Channel Frequency (KHz) Channel Frequency (KHz) Channel Frequency (KHz) Channel (KHz)					
00	141.5	01	132.8		
Table for Filed Antonno					

#### 3. Table for Filed Antenna

•						
	Ant.	Brand	Model Name	Antenna Type	Connector	NOTE
	1	JOWAY	WXC08	Coil	N/A	Antenna



#### 2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Charging+TX Mode

For Conducted Emission		
Final Test Mode	Description	
Mode 1	Charging+TX Mode	

	For Radiated Emission
Final Test Mode	Description
Mode 1	Charging+TX Mode



Shenzhen STS Test Services Co., Ltd.

1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755 3688 6288 Fax:+86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com

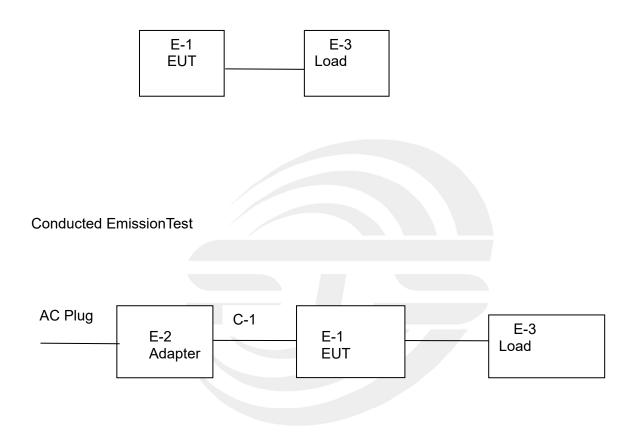


Page 8 of 27

#### 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

**Radiated Emission Test** 



Shenzhen STS Test Services Co., Ltd.

 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

 Tel: + 86-755 3688 6288
 Fax:+ 86-755 3688 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com





#### 2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-2	Adapter	LITEON	PA-1650-86	N/A	N/A
C-1	DC Cable	N/A	N/A	N/A	N/A

Necessary accessories

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-3	Load	N/A	N/A	N/A	N/A

Note:

- (1) FCC DOC approved.
- (2) FTP is Foiled Twisted Pair.



# 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

#### Radiation Test equipment

Kind of Equipment	ment Manufacturer Type No.		Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2018.10.13	2019.10.12
Signal Analyzer	Agilent	N9020A	MY51110105	2018.03.08	2019.03.07
Active loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Pre-mplifier (0.1M-3GHz)	EM	EM330	060665	2018.10.13	2019.10.12
Temperature & Humitidy	HH660	Mieo	N/A	2018.10.11	2019.10.10

# Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2018.10.13	2019.10.12
LISN	R&S	ENV216	101242	2018.10.11	2019.10.10
LISN	EMCO	3810/2NM	23625	2018.10.11	2019.10.10
Temperature & Humitidy	HH660	Mieo	N/A	2018.10.11	2019.10.10

Shenzhen STS Test Services Co., Ltd.



# 3.CONDUCTED EMISSION TEST RESULT(SECTION 15.207)

### 3.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.207 limit in the table below has to be followed.

	Class B	(dBuV)
FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver
--

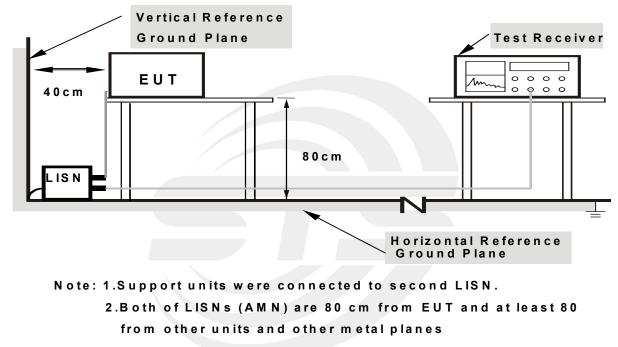
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz





#### 3.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.



#### 3.3 TEST SETUP

#### 3.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

1/F., Building B, Zhuoke Science Park, No.190. Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



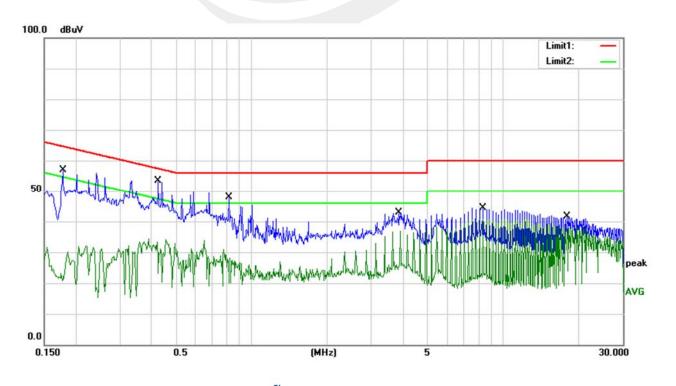
#### **3.5TEST RESULTS**

Temperature:	<b>25.8</b> ℃	Relative Humidity:	54%
Test Voltage:	120Vac 60Hz,DC 5V in	Phase:	L
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1780	36.66	20.23	56.89	64.58	-7.69	QP
2	0.1780	11.58	20.23	31.81	54.58	-22.77	AVG
3	0.4260	32.76	20.49	53.25	57.33	-4.08	QP
4	0.4260	13.95	20.49	34.44	47.33	-12.89	AVG
5	0.8140	27.62	20.22	47.84	56.00	-8.16	QP
6	0.8140	10.58	20.22	30.80	46.00	-15.20	AVG
7	3.8700	22.97	19.96	42.93	56.00	-13.07	QP
8	3.8700	16.89	19.96	36.85	46.00	-9.15	AVG
9	8.3380	24.36	20.01	44.37	60.00	-15.63	QP
10	8.3380	20.97	20.01	40.98	50.00	-9.02	AVG
11	17.9780	21.67	19.95	41.62	60.00	-18.38	QP
12	17.9780	19.18	19.95	39.13	50.00	-10.87	AVG

#### Remark:

All readings are Quasi-Peak and Average values.
 Margin = Result (Result =Reading + Factor )–Limit



Shenzhen STS Test Services Co., Ltd.

1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax: + 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



Page 14 of 27

Report No.: STS1901076W02

Temperature:	75 8 1	Relative Humidity:	54%
Test Voltage:	120Vac 60Hz , DC 5V in	Phase:	Ν
Test Mode:	Mode 1		

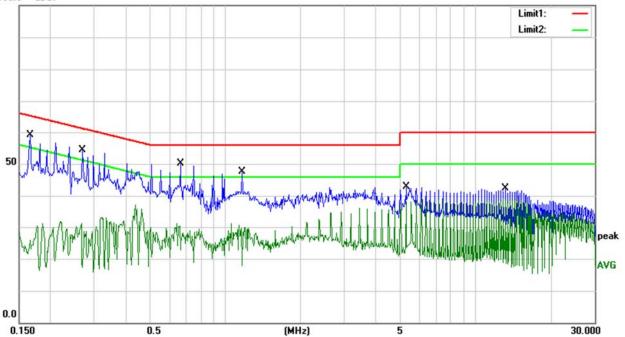
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1660	38.91	20.23	59.14	65.16	-6.02	QP
2	0.1660	10.87	20.23	31.10	55.16	-24.06	AVG
3	0.2700	33.73	20.57	54.30	61.12	-6.82	QP
4	0.2700	12.52	20.57	33.09	51.12	-18.03	AVG
5	0.6620	29.74	20.30	50.04	56.00	-5.96	QP
6	0.6620	10.80	20.30	31.10	46.00	-14.90	AVG
7	1.1660	27.38	20.15	47.53	56.00	-8.47	QP
8	1.1660	10.93	20.15	31.08	46.00	-14.92	AVG
9	5.2940	22.89	19.93	42.82	60.00	-17.18	QP
10	5.2940	19.77	19.93	39.70	50.00	-10.30	AVG
11	13.2380	22.26	20.03	42.29	60.00	-17.71	QP
12	13.2380	19.01	20.03	39.04	50.00	-10.96	AVG

#### Remark:

1. All readings are Quasi-Peak and Average values.

2. Margin = Result (Result = Reading + Factor )-Limit

100.0 dBu∀



Shenzhen STS Test Services Co., Ltd.

 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

 Tel: + 86-755 3688 6288
 Fax:+ 86-755 3688 6277

 Http://www.stsapp.com
 E-mail: sts@stsapp.com



Page 15 of 27

Report No.: STS1901076W02

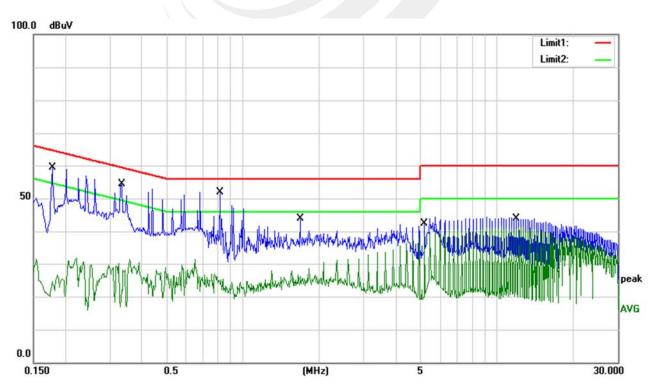
Temperature:		Relative Humidity:	54%
Test Voltage:	120Vac 60Hz ,DC 9V in	Phase:	L
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1780	39.16	20.23	59.39	64.58	-5.19	QP
2	0.1780	11.42	20.23	31.65	54.58	-22.93	AVG
3	0.3340	33.69	20.64	54.33	59.35	-5.02	QP
4	0.3340	10.75	20.64	31.39	49.35	-17.96	AVG
5	0.8140	31.62	20.22	51.84	56.00	-4.16	QP
6	0.8140	5.87	20.22	26.09	46.00	-19.91	AVG
7	1.6820	23.90	20.10	44.00	56.00	-12.00	QP
8	1.6820	8.58	20.10	28.68	46.00	-17.32	AVG
9	5.2100	22.51	19.94	42.45	60.00	-17.55	QP
10	5.2100	20.18	19.94	40.12	50.00	-9.88	AVG
11	11.9860	23.82	20.08	43.90	60.00	-16.10	QP
12	11.9860	21.17	20.08	41.25	50.00	-8.75	AVG

### Remark:

1. All readings are Quasi-Peak and Average values.

2. Margin = Result (Result = Reading + Factor )-Limit



1/F., Building B. Zhuoke Science Park, No.190. Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



Page 16 of 27

Report No.: STS1901076W02

Temperature:		Relative Humidity:	54%
Test Voltage:	120Vac 60Hz , DC 9V in	Phase:	Ν
Test Mode:	Mode 1		

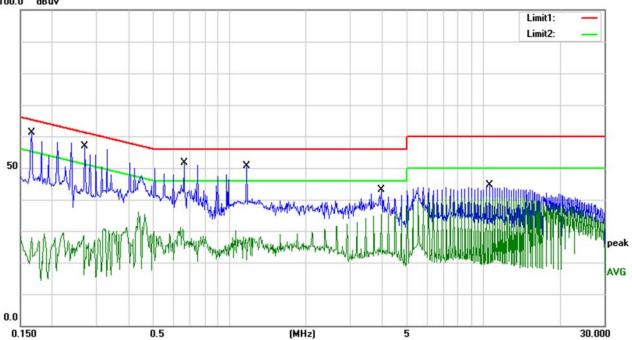
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2100	30.40	20.28	50.68	63.21	-12.53	QP
2	0.2100	14.41	20.28	34.69	53.21	-18.52	AVG
3	0.3180	28.85	20.68	49.53	59.76	-10.23	QP
4	0.3180	16.06	20.68	36.74	49.76	-13.02	AVG
5	0.3660	26.16	20.57	46.73	58.59	-11.86	QP
6	0.3660	12.34	20.57	32.91	48.59	-15.68	AVG
7	0.6140	17.88	20.35	38.23	56.00	-17.77	QP
8	0.6140	7.12	20.35	27.47	46.00	-18.53	AVG
9	1.1060	15.28	20.15	35.43	56.00	-20.57	QP
10	1.1060	6.64	20.15	26.79	46.00	-19.21	AVG
11	11.8620	11.42	20.08	31.50	60.00	-28.50	QP
12	11.8620	4.74	20.08	24.82	50.00	-25.18	AVG

#### Remark:

1. All readings are Quasi-Peak and Average values.

2. Margin = Result (Result = Reading + Factor )-Limit





Note: The charging of < 1% Battery, 50% Battery, >99% Battery all has been tested, the worst case is charging of < 1% Battery, only shown the worst case in this report.

 1/F.. Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

 Tel: + 86-755
 3688
 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com



# 4. RADIATED& FIELD EMISSION TEST RESULT(SECTIOU 15.209)

#### 4.1 Limit

Frequency	Field Strength	Measurement Distance
[MHz]	[uV/m]	[Meters]
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz /9kHz for PK AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

§ 15.209(d)The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

#### 4.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- d. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos. Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

Shenzhen STS Test Services Co., Ltd.

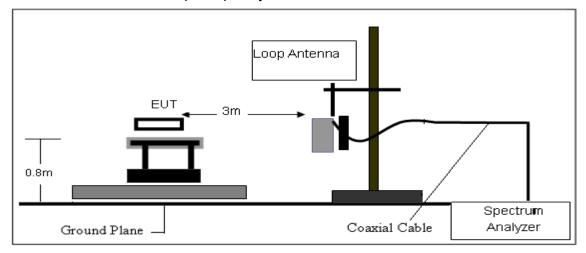
 1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

 Tel: + 86-755
 3688
 6288
 Fax:+ 86-755
 3688
 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com

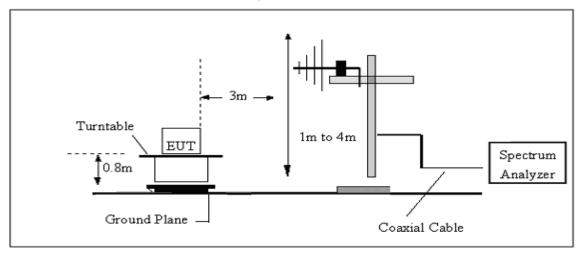


### 4.3 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz





#### 4.4 TEST RESULTS

Temperature :	<b>23.7</b> ℃	Relative Humidity :	52%
Test Voltage :	DC 5V/DC 9V	Test Mode :	TX Mode

4.4.1 Spurious Radiated Emission Below 30 MHz

	Test voltage: DC 5V												
Frequency	Reading	Detector	Ant. Factor	Cable	Emission	Limits	Margin						
(KHz)	(dBµV)	(PK/QP/AV)	(dB/m)	Loss	Level (dBµV/m)	(dBµV/m)	(dB)						
15	75	PK	26.27	0.1	101.37	144.08	-42.71						
15	59.32	AV	26.27	0.1	85.69	124.08	-38.39						
36	70.51	PK	22.03	0.1	92.64	136.48	-43.84						
36	55.14	AV	22.03	0.1	77.27	116.48	-39.21						
110	77.25	PK	10.04	0.1	87.39	126.78	-39.39						
110	62.8	AV	10.04	0.1	72.94	106.78	-33.84						
141.5	96.58	PK	9.43	0.1	106.11	124.59	-18.48						
141.5	80.45	AV	9.43	0.1	89.98	104.59	-14.61						
495	64.61	QP	1.15	0.1	65.86	73.71	-7.85						
21735	69.24	QP	-17.9	0.9	52.24	69.54	-17.30						

		Te	est voltage	: DC 9V			
Frequency	Reading	Detector	Ant. Factor	Cable	Emission	Limits	Margin
(KHz)	(dBµV)	(PK/QP/AV)	(dB/m)	Loss	Level (dBµV/m)	(dBµV/m)	(dB)
15	74.93	PK	26.27	0.1	101.30	144.08	-42.78
15	59.26	AV	26.27	0.1	85.63	124.08	-38.45
36	70.32	PK	22.03	0.1	92.45	136.48	-44.03
36	55.22	AV	22.03	0.1	77.35	116.48	-39.13
110	77.22	PK	10.04	0.1	87.36	126.78	-39.42
110	62.34	AV	10.04	0.1	72.48	106.78	-34.30
132.8	96.3	PK	9.43	0.1	105.83	125.14	-19.31
132.8	80.45	AV	9.43	0.1	89.98	105.14	-15.16
495	64.44	QP	1.15	0.1	65.69	73.71	-8.02
21735	69.36	QP	-17.9	0.9	52.36	69.54	-17.18

# Shenzhen STS Test Services Co., Ltd.

 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

 Tel: + 86-755
 3688
 6277
 Http://www.stsapp.com
 E-mail: sts@stsapp.com

Page 20 of 27



1. "\*" Means Fundamental frequency

2. Emission Level [dBµV/m] = Reading [dBµV] + Ant. Factor [dB/m] + Cable Loss [dB]

- 3.Margin [dB] = Emission Level [dBµV/m] Limit [dBµV/m]
- 4.Limit calculation: Limit at specified distance + 40log (300/3) = Limit + 80 dB for up to 0.49 MHz Limit at specified distance + 40log (30/3) = Limit + 40 dB for above 0.49 MHz, Below 30 MHz
- 5. During the radiated emission test, the measurement antenna was aligned along the site axis and orthogonal to the axis, only the worst-case data recorded.
- 6. The charging of < 1% Battery, 50% Battery, >99% Battery all has been tested, the worst case is charging of < 1% Battery, only shown the worst case in this report.



Shenzhen STS Test Services Co., Ltd.

1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com

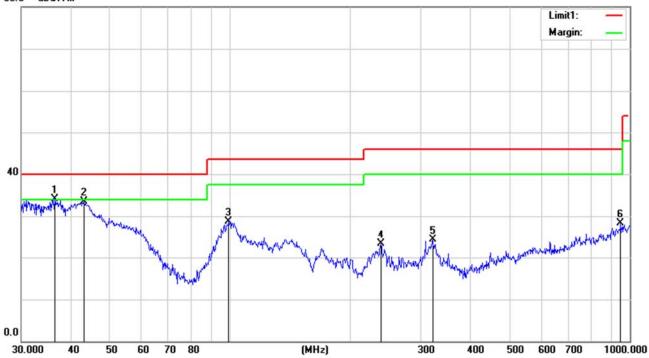
Temperature :	<b>23.7</b> ℃		Relative H	lumidity:	52%					
Test Voltage :	DC 5V		Test Mode	e : N	Mode 1					
The following table shows the highest levels of radiated emissions on polarizations of vertical										
Frequency	Reading	Correct	Result	Limit	Margin	Remark				
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m	n) (dB)					
36.3814	48.66	-14.47	34.19	40.00	-5.81	QP				
43.0505	51.44	-17.90	33.54	40.00	-6.46	QP				
99.1797	48.01	-19.26	28.75	43.50	-14.75	QP				
238.3102	41.27	-17.88	23.39	46.00	-22.61	QP				
321.0608	38.51	-14.15	24.36	46.00	-21.64	QP				
948.7610	28.73	-0.45	28.28	46.00	-17.72	QP				

# 4.4.2 Spurious Radiated Emission below 1 GHz

#### Remark:

1. Margin = Result (Result = Reading + Factor )-Limit

80.0 dBuV/m



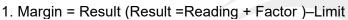
1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com Page 22 of 27

Report No.: STS1901076W02

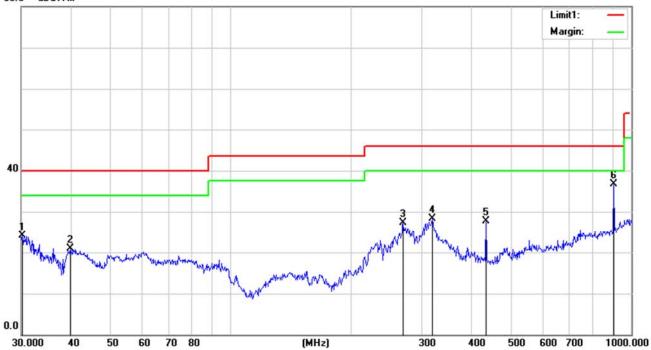


Temperature : 23.7 ℃			Relative Humidity:		52%	52%				
Test Voltage :	DC 5	V		Test Mode :			Mod	e 1		
The following table shows the highest levels of radiated emissions on polarizations of horizontal										
Frequency	Readii	ng	Correct		Result	Limit		Margin	Remark	
(MHz)	(dBu∖	′)	Factor(dB/m)	(d	lBuV/m) (dBuV/m)		/m)	(dB)		
30.2111	35.40	)	-11.30		24.10	40.0	0	-15.90	QP	
39.7146	37.01		-16.17		20.84	40.0	0	-19.16	QP	
269.4284	42.84	ŀ	-15.45		27.39	46.0	0	-18.61	QP	
318.8170	42.44	ŀ	-14.21	28.23		46.0	0	-17.77	QP	
434.0651	38.54	ŀ	-10.90	27.64		46.0	0	-18.36	QP	
903.3094	38.94	ŀ	-2.14		36.80	46.0	0	-9.20	QP	

#### Remark:



80.0 dBuV/m



 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

 Tel: + 86-755 3688 6288
 Fax:+ 86-755 3688 6277

 Http://www.stsapp.com
 E-mail: sts@stsapp.com

Page 23 of 27

Report No.: STS1901076W02

-18.98

-19.45

-21.91

QP

QP

QP



Temperature :	<b>23.7</b> ℃		Relative H	Relative Humidity : 52%					
Test Voltage : DC 9V			Test Mode	Test Mode : Mode 1					
The following	table shows	the highest levels	s of radiated em	issions on	polar	izations of	vertical		
Frequency	Reading	eading Correct I		Limit		Margin	Remark		
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/ı	n)	(dB)			
42.3022	54.01	-17.52	36.49 40.00		)	-3.51	QP		
56.7917	58.97	-23.42	35.55	35.55 40.00		-4.45	QP		
101.2885	51.02	-19.08	31.94	43.50	)	-11.56	QP		

24.52

26.55

24.09

43.50

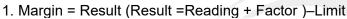
46.00

46.00

224.5193	45.38	-18.83		
319.9370	38.26	-14.17		

43.86

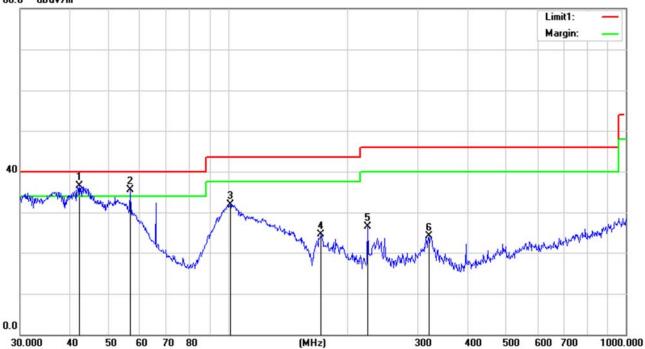
#### Remark:



-19.34

80.0 dBuV/m

171.3926



1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com Page 24 of 27

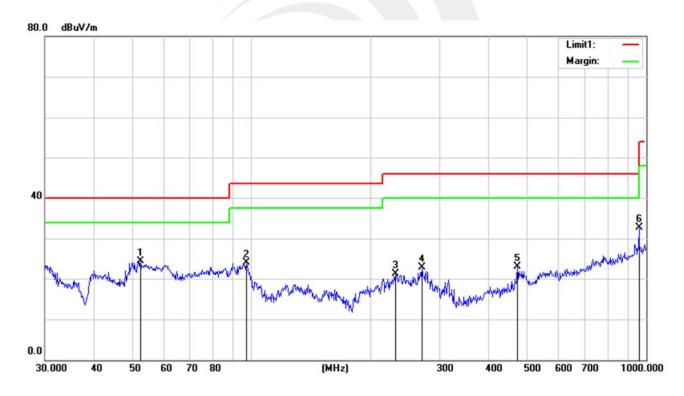
Report No.: STS1901076W02



Temperature :	<b>23.7</b> ℃		Relative H	Relative Humidity :		52%		
Test Voltage :	DC 9V		Test Mode	Test Mode :		Mode 1		
The following table shows the highest levels of radiated emissions on polarizations of horizontal								
Frequency	Reading	Correct	Result	Limit		Margin	Remark	
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)		(dB)		
52.3912	46.49	-22.16	24.33	40.00		-15.67	QP	
97.1148	43.41	-19.48	23.93	43.50		-19.57	QP	
231.7180	39.39	<sup>39</sup> -18.36 21.03 46.00		)	-24.97	QP		
270.3748	38.09	-15.48	22.61	46.00		-23.39	QP	
472.1760	32.87	-9.95	22.92	46.00		-23.08	QP	
958.7943	32.96	-0.16	32.80	46.00	)	-13.20	QP	

Remark:

1. Margin = Result (Result = Reading + Factor )-Limit



Note: The charging of < 1% Battery, 50% Battery, >99% Battery all has been tested, the worst case is charging of < 1% Battery, only shown the worst case in this report.



#### 5. 20 DB BANDWIDTH TEST

5.1 Limit

FCC Part 2.1049, Only applicable to report.

#### 5.2 TEST SETUP

Spectrum Parameter	Setting
Span Frequency	approximately 2 to 3 times the 20 dB bandwidth
RB	greater than 1 % of the 20 dB bandwidth,
VB	equal to the RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

The test program and configuration, Refer to 4.2 and 4.3

#### 5.3 TEST RESULTS

Test voltage: DC 5V

OperatingFrequency (kHz)	20 dB Bandwhidth(Hz)
141.5	262

#### CH00

RL	RF 50 Ω AC			SE:INT		ALIGNAUTO		M Jan 25, 2019	Ere	equency	
Center Freq 141.540 kHz #IFGain:Low			Center Freq: 141.540 kHz Trig: Free Run Avg Hold:>10/10 #Atten: 10 dB				Radio Std: None Radio Device: BTS			Frequency	
0 dB/div	Ref Offset 0.5 dB Ref 10.00 dBm										
.00										enter Fre 141.540 kH	
0.0			1							141.540 KH	
0.0			-	-							
0.0											
0.0				1							
.0			~				~~~~			29-37	
enter 141	1.5 kHz						Sr	oan 5 kHz		CF Ste 500 H	
Res BW		#VB	N 100 H	łz		Sw	eep FFT	Auto	Ma		
Occupi	ied Bandwidth			Total F	ower	-8.88	dBm		F	req Offse	
		221 Hz								0 H	
Transmit Freq Error 1				OBW F	Power	0.50	9.00 %				
x dB Ba	ndwidth	262 Hz		x dB		-20.	00 dB				
3						OTATU		pled: Accy ur	acnoc'd	< 10111-	

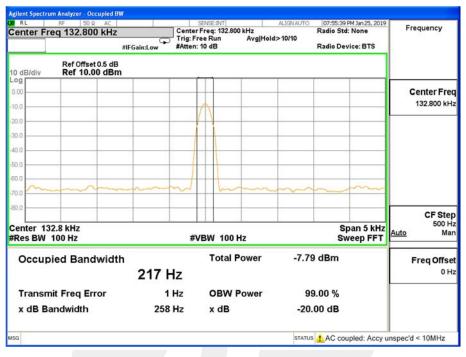
1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com



#### Test voltage: DC 9V

OperatingFrequency (kHz)	20 dB Bandwhidth(Hz)
132.8	258

CH00



Note: The charging of < 1% Battery, 50% Battery, > 99% Battery all has been tested, the worst case is charging of < 1% Battery, only shown the worst case in this report.

Shenzhen STS Test Services Co., Ltd.

 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

 Tel: + 86-755 3688 6288 Fax: + 86-755 3688 6277 Http://www.stsapp.com
 E-mail: sts@stsapp.com



## **APPENDIX-PHOTOS OF TEST SETUP**

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

\*



Shenzhen STS Test Services Co., Ltd.

1/F., Building B. Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China Tel: + 86-755 3688 6288 Fax:+ 86-755 3688 6277 Http://www.stsapp.com E-mail: sts@stsapp.com