

FCC REPORT

Applicant: Shenzhen Great Power Enterprise Co., Ltd

Address of Applicant: Building E,Xin Xulong Industrial Area, Kukeng Village, Guanlan Town,Baoan District,Shenzhen,China

Equipment Under Test (EUT)

Product Name: Atomic Wireless Weather Station

Model No.: SPC775, A02092

Trade mark: Sharp

FCC ID: ZY9-SPC775

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249:2010

Date of sample receipt: 30 Aug., 2011

Date of Test: 30 Aug to 02 Sep., 2011

Date of report issued: 05 Sep., 2011

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	05 Sep., 2011	Original

Prepared By:

Collin He

Date:

05 Sep., 2011

Project Engineer

Check By:

Hans. Hu

Date:

05 Sep., 2011

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

Remark:

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	Shenzhen Great Power Enterprise Co., Ltd
Address of Applicant:	Building E,Xin Xulong Industrial Area, Kukeng Village, Guanlan Town,Baoan District,Shenzhen,China
Manufacturer/ Factory:	Shenzhen Great Power Enterprise Co., Ltd
Address of Manufacturer/ Factory:	Building E,Xin Xulong Industrial Area, Kukeng Village, Guanlan Town,Baoan District,Shenzhen,China

5.2 General Description of E.U.T.

Product Name:	Atomic Wireless Weather Station
Model No.:	SPC775, A02092 (see remark)
Trade Mark:	Sharp
Operation Frequency:	917.19MHz
Modulation type:	GFSK
Antenna Type:	Integral
Antenna gain:	0dBi
Power supply :	DC 3.0V (2 x 1.5V "AA" Size Batteries)

Remarks:

Model No.:SPC775, A02092

Only the item SPC775 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above items. the only differences are the model name and appearance color for Commercial purpose.

5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting continuously mode.		
Pre-Test Mode:			
GTS has verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:			
Axis	X	Y	Z
Field Strength(dBuV/m)	89.52	93.22	82.76
Final Test Mode:			
According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup”: Y axis (see the test setup photo)			

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations: ● FCC —Registration No.: 600491 Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, July 20, 2010. ● Industry Canada (IC) The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-1.

5.5 Test Location

All tests were performed at: Global United Technology Services Co., Ltd. Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China Tel: 0755-27798480 Fax: 0755-27798960
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5.6 Other Information Requested by the Customer


None.

5.7 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 30 2011	Mar. 29 2012
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 04 2011	Jul. 03 2012
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 26 2011	Feb. 25 2012
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 30 2011	June 29 2012
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2011	Mar. 29 2012
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Apr. 01 2011	Mar. 31 2012
9	Coaxial Cable	GTS	N/A	GTS211	Apr. 01 2011	Mar. 31 2012
9	Coaxial cable	GTS	N/A	GTS210	Apr. 01 2011	Mar. 31 2012
11	Coaxial Cable	GTS	N/A	GTS212	Apr. 01 2011	Mar. 31 2012
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 04 2011	Jul. 03 2012
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 04 2011	Jul. 03 2012
14	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 30 2011	June 29 2012
15	Band filter	Amindeon	82346	GTS219	June 30 2011	June 29 2012

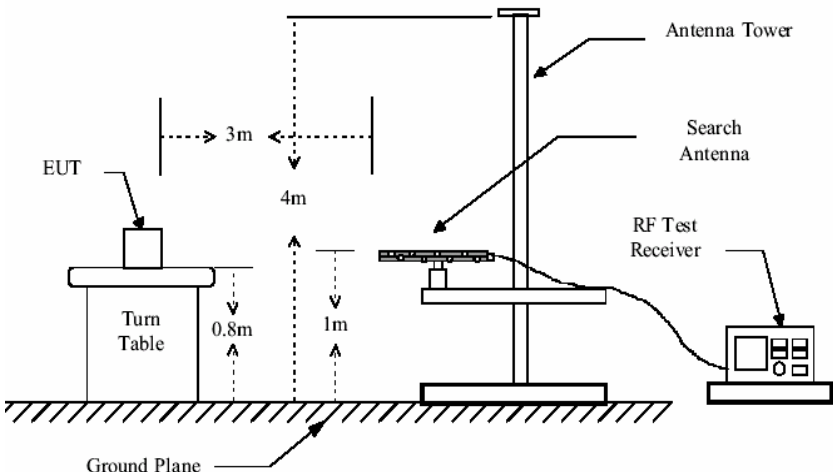
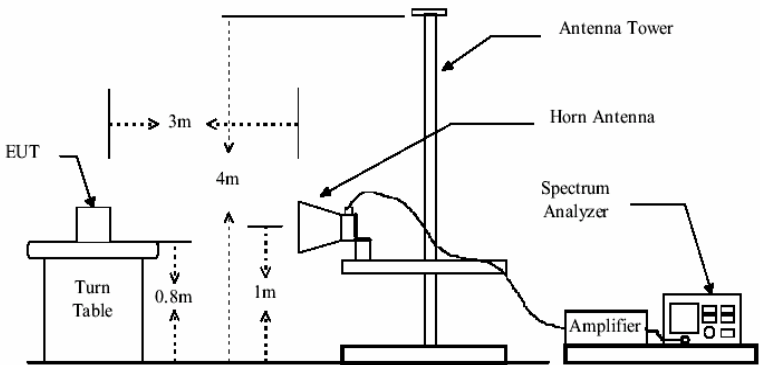
6 Test results and Measurement Data

6.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
<p>15.203 requirement: <i>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.</i></p>	
E.U.T Antenna:	
<p>The antenna is no consideration of replacement. The best case gain of the antenna is 0dBi.</p> 	

6.2 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.249 and 15.209				
Test Method:	ANSI C63.4:2003				
Test Frequency Range:	30MHz to 10000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:					
	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Average		1MHz	10Hz	Average Value	
Limit: (Field strength of the fundamental signal)					
	Frequency		Limit (dBuV/m @3m)		Remark
	902MHz-928MHz		94.0		Quasi-peak Value
Limit: (Spurious Emissions)					
	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz	54.0		Average Value	
74.0		Peak Value			
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.				
Test Procedure:	<p>a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-</p>				

	peak or average method as specified and then reported in a data sheet.
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p> 
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

Measurement Data

6.2.1 Field Strength Of The Fundamental Signal

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
917.19	91.35	19.52	3.36	31.47	82.76	94.00	-11.24	Horizontal
917.19	101.81	19.52	3.36	31.47	93.22	94.00	-0.78	Vertical

6.2.2 Spurious Emissions

30MHz~1GHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
35.005	36.60	13.16	0.62	32.20	18.18	40.00	-21.82	Vertical
57.796	36.20	14.54	0.69	31.97	19.46	40.00	-20.54	Vertical
102.360	38.13	11.80	1.18	31.71	19.40	43.50	-24.10	Vertical
146.374	37.60	6.77	1.49	31.96	13.90	43.50	-29.60	Vertical
337.216	36.68	11.89	2.14	32.31	18.40	46.00	-27.60	Vertical
515.437	36.95	14.87	2.46	31.55	22.73	46.00	-23.27	Vertical
46.016	36.42	12.03	0.66	32.08	17.03	40.00	-22.97	Horizontal
92.139	37.40	9.49	1.08	31.73	16.24	43.50	-27.26	Horizontal
148.441	37.88	10.62	1.51	31.96	18.05	43.50	-25.45	Horizontal
218.309	37.50	10.23	1.85	32.28	17.30	46.00	-28.70	Horizontal
360.448	42.47	13.34	2.19	32.31	25.69	46.00	-20.31	Horizontal
511.835	36.62	18.81	2.44	31.56	26.31	46.00	-19.69	Horizontal

Above 1GHz

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1834.40	50.81	25.42	2.66	29.57	49.32	74.00	-24.68	Vertical
2751.60	51.85	28.24	3.76	30.30	53.55	74.00	-20.45	Vertical
3668.80	43.59	29.20	4.19	27.57	49.41	74.00	-24.59	Vertical
4586.00	41.53	31.47	4.92	24.44	53.48	74.00	-20.52	Vertical
5503.20	39.86	31.98	5.79	23.80	53.83	74.00	-20.17	Vertical
6420.40	41.07	33.49	6.38	24.63	56.31	74.00	-17.69	Vertical
1834.40	54.23	25.42	2.66	29.57	52.74	74.00	-21.26	Horizontal
2751.60	50.60	28.24	3.76	30.30	52.30	74.00	-21.70	Horizontal
3668.80	44.41	29.20	4.19	27.57	50.23	74.00	-23.77	Horizontal
4586.00	40.93	31.47	4.92	24.44	52.88	74.00	-21.12	Horizontal
5503.20	39.51	31.98	5.79	23.80	53.48	74.00	-20.52	Horizontal
6420.40	41.16	33.49	6.38	24.63	56.40	74.00	-17.60	Horizontal

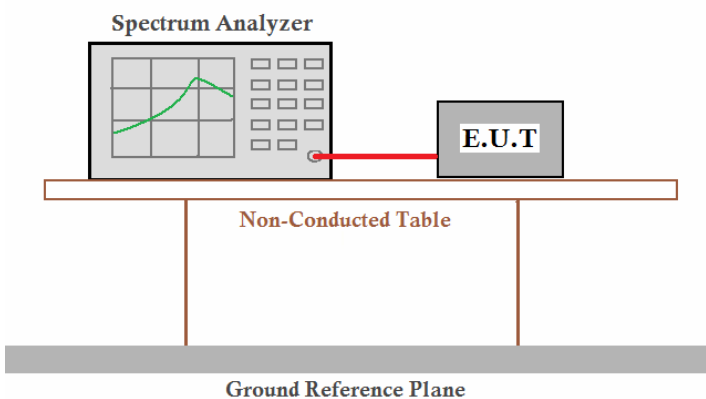
Test mode:	Transmitting	Test channel:	Lowest	Remark:	average
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1834.40	40.07	25.42	2.66	29.57	38.58	54.00	-15.42	Vertical
2751.60	41.08	28.24	3.76	30.30	42.78	54.00	-11.22	Vertical
3668.80	33.51	29.20	4.19	27.57	39.33	54.00	-14.67	Vertical
4586.00	31.32	31.47	4.92	24.44	43.27	54.00	-10.73	Vertical
5503.20	29.09	31.98	5.79	23.80	43.06	54.00	-10.94	Vertical
6420.40	30.60	33.49	6.38	24.63	45.84	54.00	-8.16	Vertical
1834.40	44.29	25.42	2.66	29.57	42.80	54.00	-11.20	Horizontal
2751.60	40.09	28.24	3.76	30.30	41.79	54.00	-12.21	Horizontal
3668.80	34.82	29.20	4.19	27.57	40.64	54.00	-13.36	Horizontal
4586.00	30.60	31.47	4.92	24.44	42.55	54.00	-11.45	Horizontal
5503.20	29.61	31.98	5.79	23.80	43.58	54.00	-10.42	Horizontal
6420.40	29.20	33.49	6.38	24.63	44.44	54.00	-9.56	Horizontal

Remark:

1. Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

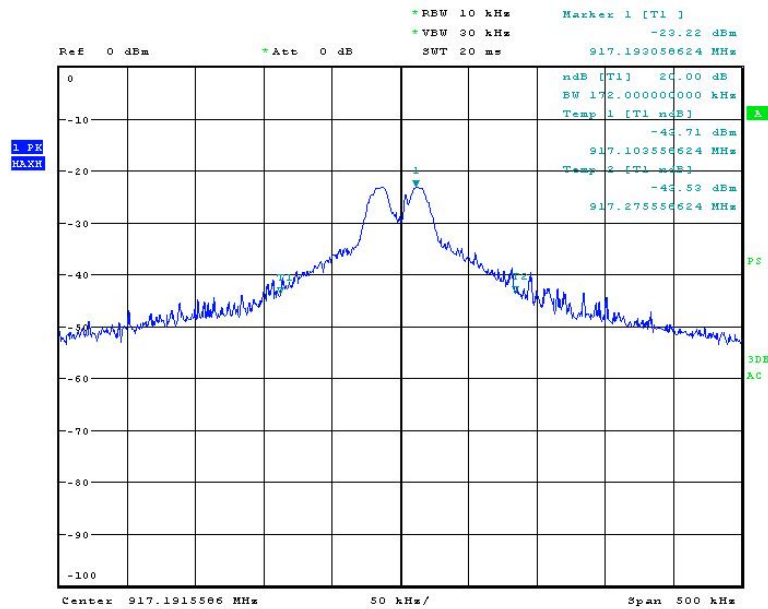
6.3 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.4:2003
Receiver setup:	RBW=10KHz, VBW=30KHz, detector: Peak
Limit:	Within operation frequency range 902MHz-928MHz
Test Procedure:	<ol style="list-style-type: none"> 1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set the EUT to proper test channel. 3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points. 4. Read 20dB bandwidth.
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

Test Frequency(MHz)	20dB bandwidth (kHz)	Results
917.19	172.00	Pass

Test plot as follows:



Date: 2.SEP.2011 10:45:05