

FCC TEST REPORT

For
Shenzhen Academy of Aerospace Technology

Active RFID Tag
Model No.: SAAT-T505

Test Report Number : ESTSZ110401215F



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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Shenzhen Academy of Aerospace Technology
Address of applicant: SZAAT Building, 10th Road Kejinan, Hi-Tech Park, Nanshan District, Shenzhen City, Guangdong Province of China
Manufacturer: Shenzhen Academy of Aerospace Technology
Address of manufacturer: SZAAT Building, 10th Road Kejinan, Hi-Tech Park, Nanshan District, Shenzhen City, Guangdong Province of China

General Description of E.U.T

EUT Description: Active RFID Tag
Trade Name: N/A
Model No.: SAAT-T505
Rating: DC 3V
Test Power Supply: DC 3V
Frequency: 2405~2480 MHz (16 channels, 5MHz step size)

Remark: *The models of EUT are identical except appearance of equipment. Unless otherwise specified, all tests were performed on model SAAT-T505 to represent the other similar models.*

1.2 Test Standards

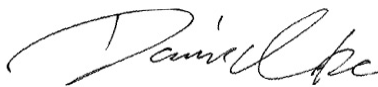
The following Declaration of Conformity report of EUT is prepared in accordance with
FCC Rules and Regulations Part 15 Subpart C 15.249: 2008

The objective of the manufacturer is to demonstrate compliance with the described above standards.
Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of EST COMPLIANCE LABORATORY LIMITED.

Date of Test :

Apr. 21~26 , 2011

Prepared by :



(Engineer)

Reviewer :



(Project Manager)

Approved & Authorized Signer :



(Manager)

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

The maximum emission levels emanating from the device are compared to the FCC Part 15 Subpart C limits for radiation emissions and the measurement results contained in this test report show that EUT is to be technically compliant with FCC requirements.

Global United Technology Service Co., Ltd at 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, China

1.4 Test Facility

All measurement required was performed at laboratory of Global United Technology Service Co., Ltd at 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, China

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

FCC – Registration No.: 600491

Global United Technology Service Co., Ltd 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 our files. Registration 600491.

The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

1.5 Test Equipment List and Details

Test equipments list of Global United Technology Service Co., Ltd

Equipment	Manufacturer	Model#	Serial #	Data of Cal.	Due Data
3m Semi-Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)*6.4(H)	GTS201	Mar. 30 2011	Mar. 30 2012
Control Room	ZhongYu Electron	6.2(L)*2.5(W)*2.4(H)	GTS202	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Sept. 10 2010	Sept. 10 2011
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Coaxial Cable	GTS	N/A	GTS400	Apr. 01 2011	Apr. 01 2012
Coaxial Cable	GTS	N/A	GTS401	Apr. 01 2011	Apr. 01 2012
Coaxial Cable	GTS	N/A	GTS402	Apr. 01 2011	Apr. 01 2012
Coaxial Cable	GTS	N/A	GTS407	Apr. 01 2011	Apr. 01 2012
Coaxial Cable	GTS	N/A	GTS408	Apr. 01 2011	Apr. 01 2012
BiConiLog Antenna (26-3000MHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS204	Feb. 26 2011	Feb. 26 2012
Pre-amplifier(0.1-3000MHz)	HP	8347A	GTS210	Aug. 03 2010	Aug. 03 2011
Double-ridged horn (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS205	Jun. 30 2010	Jun. 30 2011
Pre-amplifier(1-18GHz)	Rohde & Schwarz	8349B	GTS224	Aug. 03 2010	Aug. 03 2011
Humidity/Temperature Indicator	Shanghai	ZJ1-2B	GTS250	Oct. 28 2010	Oct. 28 2011
Barometer	ChangChun	DYM3	GTS251	Jul. 11 2010	Jul. 11 2011
Shielding Room	ZhongYu Electron	7.0(L)*3.0(W)*3.0(H)	GTS206	Apr. 10 2011	Apr. 10 2012
EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS208	Sept. 14 2010	Sept. 14 2011
10dB Pulse Limiter	Rohde & Schwarz	N/A	GTS209	Sept. 14 2010	Sept. 14 2011
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS207	Apr. 14 2011	Apr. 14 2012
Coaxial Cable	GTS	N/A	GTS406	Apr. 01 2011	Apr. 01 2012

2 - Test Procedure

GENERAL: This report shall NOT be reproduced except in full without the written approval of Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2003 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF = FS
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

3 - Radiation Interference

3.1 Requirements (15.249, 15.209 & 15.35(b)):

FIELD STRENGTH of Fundamental: 902-928 MHz 2.4-2.4835 GHz 94 dB μ V/m @3m	FIELD STRENGTH of Harmonics 54 dB μ V/m @3m	S15.209 30 - 88 MHz 88 - 216 MHz 216 - 960 MHz ABOVE 960 MHz	40 dB μ V/m @3M 43.5 46 54dB μ V/m
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3.2 Test Results

PASS.

Please refer the following pages.

Data (From 30MHz ~ 1GHz):

Frequency (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Remark	Direction (H/V)
33.65	43.82	10.15	1.49	32.30	23.16	40.00	-16.84	QP	H
638.80	38.64	19.54	2.47	31.56	29.09	46.00	-16.91	QP	H
910.03	40.31	19.71	2.92	31.14	31.80	46.00	-14.20	QP	H
32.94	42.80	11.54	1.34	32.56	23.12	40.00	-16.88	QP	V
624.18	39.90	18.75	2.46	31.60	29.51	46.00	-16.49	QP	V
880.46	38.79	19.66	2.81	31.18	30.08	46.00	-15.92	QP	V

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

FCC ID: ZJ9002

Data (Above 1GHz to the tenth Harmonic, Average):**CH Low(2405MHz)**

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)	Remark	Direction (H/V)
2405	82.06	27.57	3.37	30.06	82.94	94	-11.06	Average	H
4810	29.56	31.79	5.34	24.09	42.6	54	-11.4	Average	H
7215	29.46	36.19	6.88	26.41	46.12	54	-7.88	Average	H
9620	25.11	38.07	8.96	25.37	46.77	54	-7.23	Average	H
2405	85.09	27.57	3.37	30.06	85.97	94	-8.03	Average	V
4810	33.21	31.79	5.34	24.09	46.25	54	-7.75	Average	V
7215	30.58	36.19	6.88	26.41	47.24	54	-6.76	Average	V
9620	25.56	38.07	8.96	25.37	47.22	54	-6.78	Average	V

CH Middle(2440MHz)

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)	Remark	Direction (H/V)
2440	82.64	27.48	3.43	29.99	83.56	94	-10.44	Average	H
4880	30.99	31.85	5.4	24.01	44.23	54	-9.77	Average	H
7320	29.55	36.37	6.91	26.62	46.21	54	-7.79	Average	H
9760	24.11	38.35	9.01	25.3	46.17	54	-7.83	Average	H
2440	86.21	27.48	3.43	29.99	87.13	94	-6.87	Average	V
4880	32.16	31.85	5.4	24.01	45.4	54	-8.6	Average	V
7320	30.59	36.37	6.91	26.62	47.25	54	-6.75	Average	V
9760	25.15	38.35	9.01	25.3	47.21	54	-6.79	Average	V

CH High(2480MHz)

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)	Remark	Direction (H/V)
2480	81.94	27.49	3.46	29.96	82.93	94	-11.07	Average	H
4960	30.11	31.91	5.46	23.94	43.54	54	-10.46	Average	H
7440	28.19	36.49	6.93	26.79	44.82	54	-9.18	Average	H
9920	24.64	38.72	9.06	25.24	47.18	54	-6.82	Average	H
2480	84.46	27.49	3.46	29.96	85.45	94	-8.55	Average	V
4960	31.12	31.91	5.46	23.94	44.55	54	-9.45	Average	V
7440	30.22	36.49	6.93	26.79	46.85	54	-7.15	Average	V
9920	25.16	38.72	9.06	25.24	47.7	54	-6.3	Average	V

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

Data (Above 1GHz to the tenth Harmonic, Peak):**CH Low(2405MHz)**

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)	Remark	Direction (H/V)
2405	93.06	27.57	3.37	30.06	93.94	114	-20.06	Peak	H
4810	40.21	31.79	5.34	24.09	53.25	74	-20.75	Peak	H
7215	40.22	36.19	6.88	26.41	56.88	74	-17.12	Peak	H
9620	37.35	38.07	8.96	25.37	59.01	74	-14.99	Peak	H
2405	95.21	27.57	3.37	30.06	96.09	114	-17.91	Peak	V
4810	42.15	31.79	5.34	24.09	55.19	74	-18.81	Peak	V
7215	42.52	36.19	6.88	26.41	59.18	74	-14.82	Peak	V
9620	39.16	38.07	8.96	25.37	60.82	74	-13.18	Peak	V

CH Middle(2440MHz)

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)	Remark	Direction (H/V)
2440	93.94	27.48	3.43	29.99	94.86	114	-19.14	Peak	H
4880	39.74	31.85	5.4	24.01	52.98	74	-21.02	Peak	H
7320	40.41	36.37	6.91	26.62	57.07	74	-16.93	Peak	H
9760	37.82	38.35	9.01	25.3	59.88	74	-14.12	Peak	H
2440	96.09	27.48	3.43	29.99	97.01	114	-16.99	Peak	V
4880	42.04	31.85	5.4	24.01	55.28	74	-18.72	Peak	V
7320	42.62	36.37	6.91	26.62	59.28	74	-14.72	Peak	V
9760	39.9	38.35	9.01	25.3	61.96	74	-12.04	Peak	V

CH High(2480MHz)

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)	Remark	Direction (H/V)
2480	92.04	27.49	3.46	29.96	93.03	114	-20.97	Peak	H
4960	39.23	31.91	5.46	23.94	52.66	74	-21.34	Peak	H
7440	39.43	36.49	6.93	26.79	56.06	74	-17.94	Peak	H
9920	36.04	38.72	9.06	25.24	58.58	74	-15.42	Peak	H
2480	94.39	27.49	3.46	29.96	95.38	114	-18.62	Peak	V
4960	41.78	31.91	5.46	23.94	55.21	74	-18.79	Peak	V
7440	41.73	36.49	6.93	26.79	58.36	74	-15.64	Peak	V
9920	38.83	38.72	9.06	25.24	61.37	74	-12.63	Peak	V

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

4 - Occupied Bandwidth

4.1 Requirements (15.249):

The field strength of any emissions appearing outside the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

4.2 Test Results

Pass.
Please refer the following page.

CH Low(2405MHz)

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)	Remark	Direction (H/V)
2394.89	43.38	27.59	3.33	30.1	44.2	74	-29.8	Peak	H
2400.00	44.33	27.58	3.37	30.1	45.18	74	-28.82	Peak	H
2394.89	33.38	27.59	3.33	30.1	34.2	54	-19.8	Average	H
2400.00	34.33	27.58	3.37	30.1	35.18	54	-18.82	Average	H
2394.89	46.03	27.59	3.33	30.1	46.85	74	-27.15	Peak	V
2400.00	46.54	27.58	3.37	30.1	47.39	74	-26.61	Peak	V
2394.89	36.03	27.59	3.33	30.1	36.85	54	-17.15	Average	V
2400.00	37.54	27.58	3.37	30.1	38.39	54	-15.61	Average	V

CH High(2480MHz)

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)	Remark	Direction (H/V)
2483.5	44.61	27.53	3.49	29.93	45.7	74	-28.3	Peak	H
2486.58	44.49	27.53	3.49	29.93	45.58	74	-28.42	Peak	H
2483.5	35.21	27.53	3.49	29.93	36.3	54	-17.7	Average	H
2486.58	34.86	27.53	3.49	29.93	35.95	54	-18.05	Average	H
2483.5	47.12	27.53	3.49	29.93	48.21	74	-25.79	Peak	V
2486.58	47.43	27.53	3.49	29.93	48.52	74	-25.48	Peak	V
2483.5	37.15	27.53	3.49	29.93	38.24	54	-15.76	Average	V
2486.58	36.51	27.53	3.49	29.93	37.6	54	-16.4	Average	V