Lab Code: 200707-0

FCC PART 95

EMI MEASUREMENT AND TEST REPORT

For

Taizhou Best Team Technology Limited

Shenlong Industrial Park, Jiangyan City, Jiangsu 225500, China

FCC ID: XNS052720010

Report Type:	**Product Type:**
Original Report	Radio Control Transmitter

Test Engineer:	Jim Huang
Report Number:	RSZ10110405
Report Date:	2011-01-17
Reviewed By:	Merry Zhao EMC Engineer
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Taizhou Best Team Technology Limited*'s product, model number: *AT402 (FCC ID: XNS052720010)* or the "EUT" as referred to in this report is a *Radio Control Transmitter.* which is measured approximately: 15.9 cm (L) x 5.4 cm (W) x 21.8 cm (H), rated input voltage: DC 1.5 V×8 Battery.

** All measurement and test data in this report was gathered from production sample serial number: 1011015 (Assigned by BACL, Shenzhen). The EUT was received on 2010-11-04.*

Objective

This Type approval report is prepared on behalf of *Taizhou Best Team Technology Limited* in accordance with Part 2, Subpart J, and Part 95 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with Part 95 Subpart B and Subpart E of the Federal Communication Commissions rules.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Description of Test Configuration

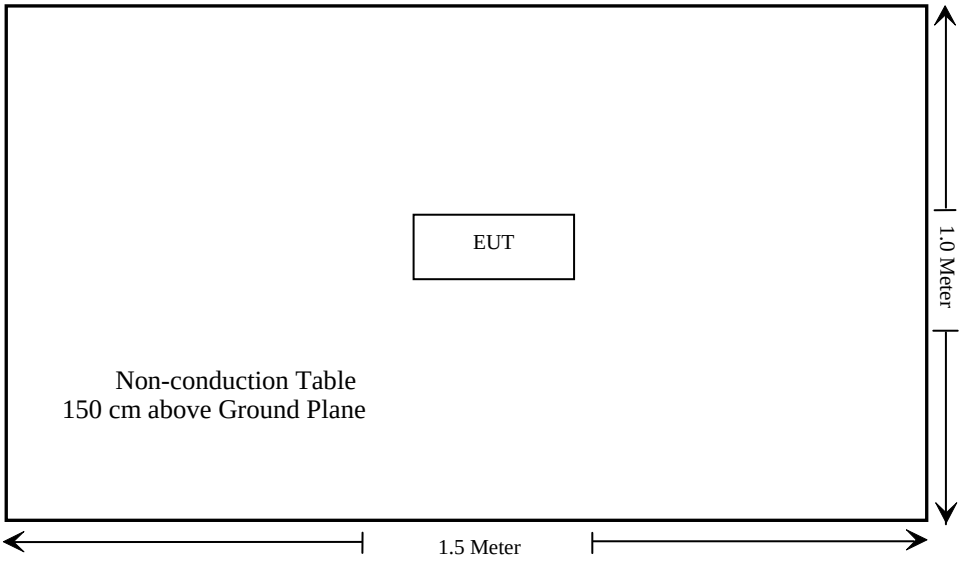
The system was configured for testing in a typical fashion (as normally used by a typical user).

Equipment Modifications

Bay Area Compliance Laboratories Corp. (Shenzhen) has not done any modification on the EUT.

Configuration of Test Setup

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Fcc Rules	Description of Test	Result
§95.207	Authorized Operation Channels	Compliance
§95.623	Frequency Stability	Compliance
§95.631	Emission Type	Compliance
§95.633	Emission Bandwidth	Compliance
§95.635	Unwanted Radiation	Compliance
§95.639	Maximum Transmitter Power	Compliance
§95.647	Transmitter Antennas	Compliance
§95.649	Power Capability	Compliance
§95.651	Crystal Control Required	Compliance

FCC §95.207- AUTHORIZED OPERATION CHANNELS

Applicable Standard

According to FCC §95.207, the authorized operation channels for model aircrafts are located on the frequencies from 72.01 to 72.99 MHz with the interval of 20 kHz.

Result: Compliant

The product has 4 channels operating at 72.51, 72.59, 72.63, 72.67 and 72.87 MHz; 72.63 MHz has been selected for testing.

FCC §95.623 & §2.1055 - FREQUENCY STABILITY

Applicable Standard

According to FCC §2.1055(a)(1), the frequency stability shall be measure with variation of ambient temperature from –30℃ to +50℃, and according to FCC 2.1055(d)(2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to FCC §95.623(c), All R/C transmitters capable of operation in the 72-76 MHz band that are manufactured in or imported into the United States, on or after March 1, 1992, or are marketed on or after March 1, 1993, must be maintained within a frequency tolerance of 0.002%. R/C transmitters operating in the 72–76 MHz band and marketed before March 1, 1993, may continue to be operated with a frequency tolerance of 0.005% until March 1, 1998.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Hewlett-Packard	Frequency Counter	5342A	2317A08289	2010-04-22	2011-04-22
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	2010-06-04	2011-06-03

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Frequency Counter.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	50%
ATM Pressure:	100.5kPa

The testing was performed by Jim Huang on 2010-12-08.

Test Mode: Transmitting

Reference Frequency: 72.630 MHz, Limit: 20 ppm			
Environment Temperature (^{O}C)	**Power Supplie (V_{DC})**	**Frequency Measure with Time Elapsed**	
		MCF (MHz)	**PPM Error**
Frequency Stability Vs Temperature			
55	12	72.630686	9.445
50	12	72.630712	9.803
40	12	72.630756	10.408
30	12	72.630794	10.932
20	12	72.630802	10.042
10	12	72.630825	11.359
0	12	72.630864	11.896
-5	12	72.630886	12.199
Frequency Stability Vs Voltage			
9.6	72.630785	10.808	9.6

FCC §95.631 - EMISSION TYPE

Applicable Standard

According to FCC §95.631(b), An R/C transmitter may transmit any appropriate non-voice emission which meets the emission limitations of §95.633.

Result:

The device does not have the modulation.

FCC §95.633 – EMISSION BANDWIDTH

Applicable Standard

According to FCC §95.633, the authorized bandwidth for any emission type transmitted by an R/C transmitter is 8 kHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde&Schwarz	EMI Test Receiver	ESCI	100035	2010-11-24	2011-11-24

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The antenna was disconnected from the transmitter and the short cable was connected to the transmitter RF output.

The RF output was connected to the input of the spectrum analyzer through sufficient attenuation. Set SPA Center Frequency to fundamental frequency, RBW, VBW=1 kHz, SPAN=50 kHz, Set SPA Max hold, Mark peak, -26 dB

Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	50%
ATM Pressure:	100.5kPa

The testing was performed by Jim Huang on 2011-01-07.

Test Result:

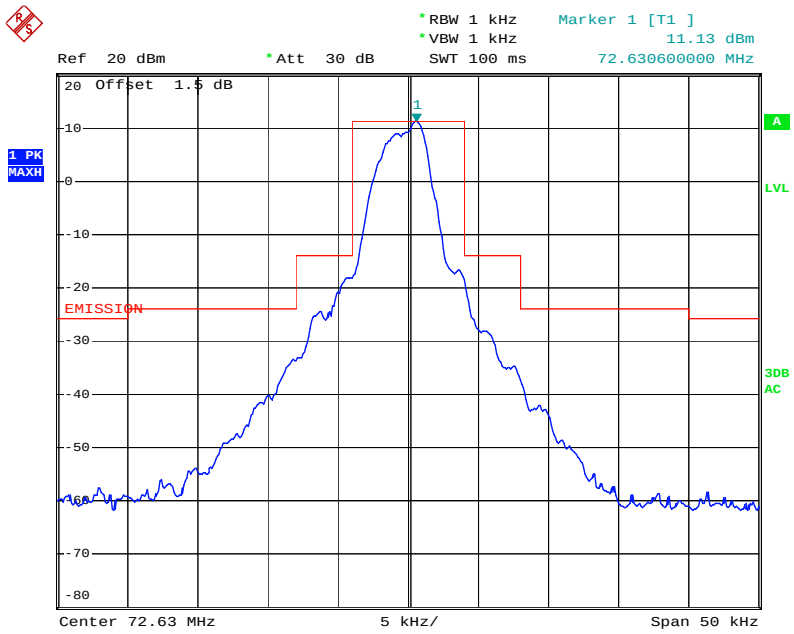
26 dB Occupied Bandwidth: 6.3 kHz

Emission designator: 6K30A1D

Please refer to the hereinafter plot.

Test Mode: Transmitting

Emission Mask



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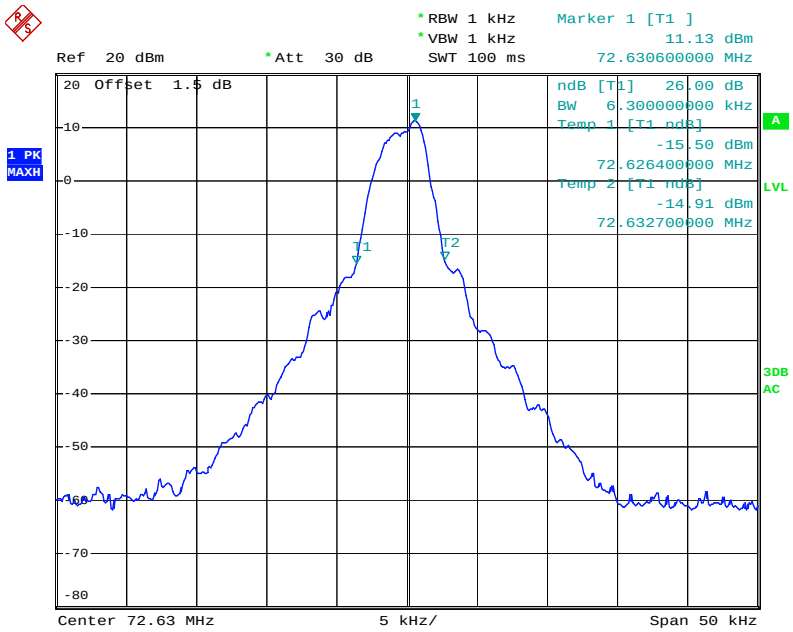
26 dB Occupied Bandwidth



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FCC §95.635 - UNWANTED RADIATION

Applicable Standard

FCC §95.635

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Signal Generator	HP8657A	2849U00982	2010-10-28	2011-10-27
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-07-05	2011-07-04
COM POWER	Dipole Antenna	AD-100	041000	2010-09-25	2011-09-25

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to teeth harmonic of the fundamental frequency was invstigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emission were measured by the substitution.

Spurious emissions in dB=10 lg(TXpwr in Watts/0.001) the absolute level

Spurious attenuation limit in dB=10 log10 (power out in Watts

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC §95.635, with the worst margin reading of:

9.99 dB at **217.84 MHz** in the **Vertical** polarization

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.5kPa

The testing was performed by Jim Huang on 2011-01-07.

Test Result:

Test Mode: Transmitting

Indicated		Table Angle Degree	Test Antenna		Substituted			Ant. Cord. (dB)	Cable Loss (dB)	Absolute Level (dBm)	FCC part 95	
Frequency (MHz)	Amp. (dBuV/m)		Height (m)	Polar (H/V)	Frequency (MHz)	Level (dBm)	Ant. Polar (H/V)				Limit (dBm)	Margin (dB)
217.84	63.85	325	1.4	V	217.84	-35.7	V	0	0.29	-35.99	-26	9.99
145.27	57.12	338	1.9	V	145.27	-40.0	V	0	0.26	-40.26	-26	14.26
745.01	47.10	0	1.5	V	745.01	-44.4	V	0	0.64	-45.04	-26	19.04
217.84	53.55	337	1.5	H	217.84	-45.1	H	0	0.29	-45.39	-26	19.39
745.01	45.69	170	1.7	H	745.01	-44.8	H	0	0.64	-45.44	-26	19.44
290.54	48.02	79	1.6	V	290.54	-45.7	V	0	0.36	-46.06	-26	20.06
290.54	46.40	47	1.8	H	290.54	-46.3	H	0	0.36	-46.66	-26	20.66
145.27	48.44	322	1.6	H	145.27	-48.0	H	0	0.26	-48.26	-26	22.26
58.12	49.85	263	1.0	V	58.12	-48.5	V	0	0.24	-48.74	-26	22.74
58.12	45.72	215	1.1	H	58.12	-51.8	H	0	0.24	-52.04	-26	26.04

FCC §95.639 - MAXIMUM TRANSMITTER POWER

Applicable Standard

Per FCC §95.639, No R/C transmitter, under any condition of modulation, shall exceed a carrier power or peak envelope TP (single-sideband only) of: 0.75 W in the 72-76 MHz frequency band.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Signal Generator	HP8657A	2849U00982	2010-10-28	2011-10-27
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-07
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-07-05	2011-07-04
COM POWER	Dipole Antenna	AD-100	041000	2010-09-25	2011-09-25

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

The maximum signal level detected by measureing receiver shal be noted.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of transmitter power were measured by the substitution.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.5kPa

The testing was performed by Jim Huang on 2010-12-06.

Test Result: Pass

Test Mode: Transmitting

Indicated		Table Angle Degree	Test Antenna		Substituted			Ant. Cord. (dBd)	Cable Loss (dB)	Absolute Level		Limit (mw)	Test Result
Frequency (MHz)	S.A. Reading (dBμV)		Height (m)	Polar (H/V)	Frequency (MHz)	S.G. Level (dBm)	Ant. Polar (H/V)			(dBm)	(mw)		
72.63	77.26	0	2.0	H	72.63	-13.2	H	0	0.24	-13.54	0.044	750	Pass
72.63	95.95	20	2.0	V	72.63	8.1	V	0	0.24	7.86	6.1	750	Pass

FCC §95.647 - TRANSMITTER ANTENNAS

Applicable Standard

According to FCC §95.647, the antenna of each FRS unit, and the antenna of each R/C station transmitting in the 72–76 MHz band, must be an integral part of the transmitter. The antenna must have no gain (as compared to a half-wave dipole) and must be vertically polarized.

Result: Compliance.

The manufacturer declared that the antenna of EUT is an integral of transmitter; it is vertically polarized and has no gain.

FCC §95.649 - POWER CAPABILITY

Applicable Standard

According to FCC §95.649, no R/C unit shall incorporate provisions for increasing its transmitter power to any level in excess of the limits specified in §95.639.

Result: Compliance.

FCC §95.651 - CRYSTAL CONTROL REQUIRED

Applicable Standard

According to FCC §95.651, all transmitters used in the Personal Radio Services must be crystal controlled, except an R/C station that transmits in the 26–27 MHz frequency band.

Result: Compliance

The EUT can be controlled by 72.51, 72.59, 72.63, 72.69 and 72.87 MHz crystal and built by the manufacrer; end-user is not allowed to change the crystal.

******* END OF REPORT *******