FCC PART 15.231

EMI MEASUREMENT AND TEST REPORT

For

TwinPro International Holdings Limited

Flat 2, Floor 15, Foo Tat Building, 50 Soy Street, Mongkok, Kowloon, Hong Kong

FCC ID: SLC288040918

October 25, 2004

This Report Concerns:	**Equipment Type:**
☒ Original Report	Low Power transmitter

Test Engineer:	William Chen
Report No.:	RSZ04092301a
Test Date:	October 18-20, 2004
Reviewed By:	Chris Zeng
Prepared By:	Bay Area Compliance Lab Corp. ShenZhen 6/F, the 3nd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China Tel: 86-755-33320018 Fax: 86-755-33320008

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *TwinPro International Holdings Limited*'s product, model number: T288 as referred to in this report is a Tot Rescue. The EUT is a low power transmitter, the transmitter frequency is 315 MHz, the modulation is ASK, and is measured approximately 7.5"L x 10.0"W x 3.0"H.

** The test data gathered are from an engineering sample, serial number: 0409015, provided by the manufacturer.*

Objectivei8

This document is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2001.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203,15.205,15.209 and 15.231 rules.

Related Submittal(s)/Grant(s)

No Related Submittals

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4 - 2001, 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. All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2001.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing according to ANSI C63.4-2001.

The final qualification test was performed with the EUT operating at normal mode

Equipment Modifications

No modifications were made to the EUT.

Configuration of Test System

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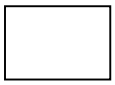
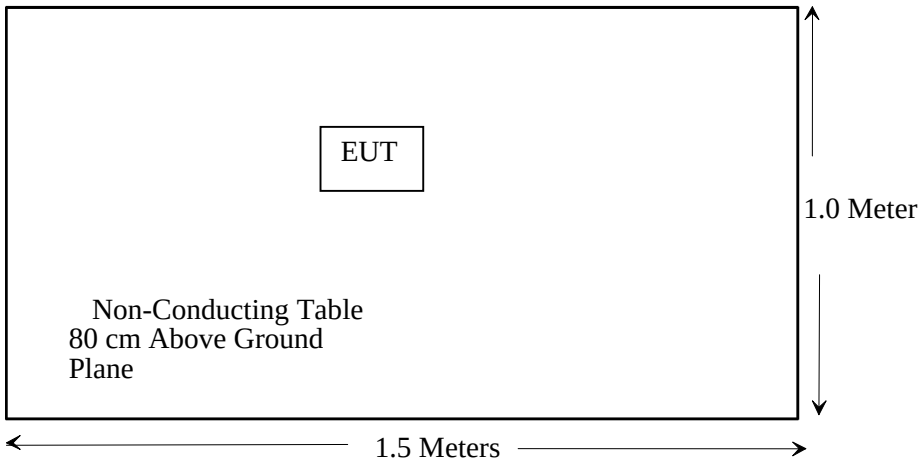


Test Setup Block Diagram



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.231 (a)	Radiated Emission	Passed
§15.231 (c)	-20dB Band Width Testing	Passed
§15.231 (a)(1)	Deactivation Testing	Passed
15.203	Antenna requirement	Passed
15.205	Restricted Band	Passed
15.207	AC Line Conducted Emission	N/A
15.209	General requirement	Passed

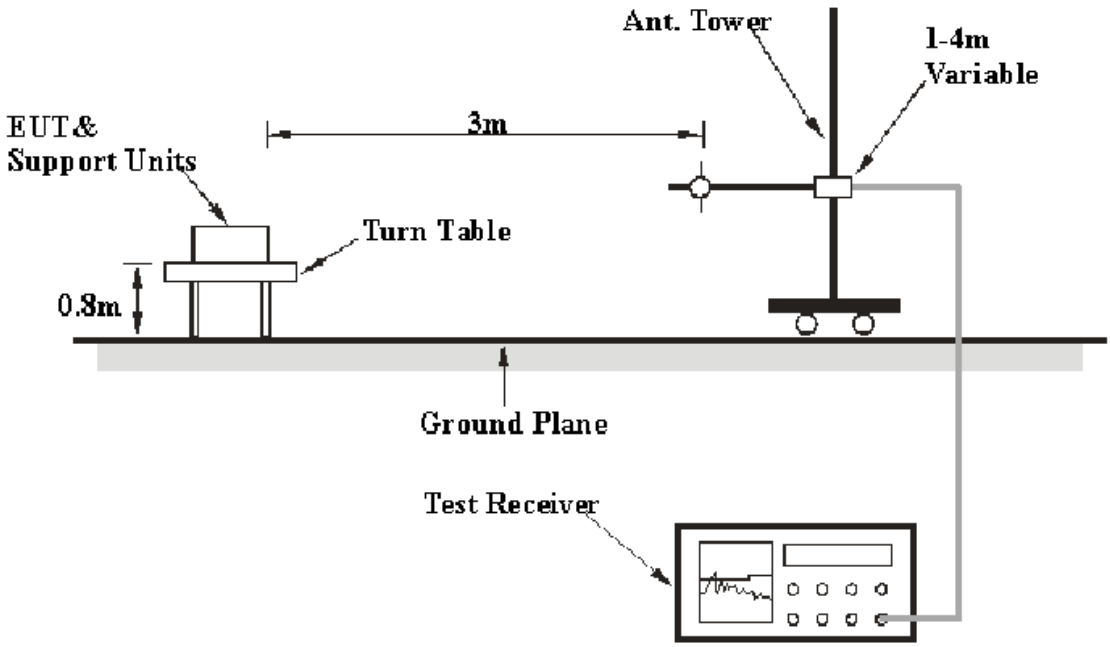
§15.231 (a)- RADIATED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber, using the setup accordance with the ANSI C63.4-2001. The specification used was the§15.231(a) limits.

Spectrum Analyzer Setup

The system was investigated from 30MHz to 3.5GHz.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Range	***RBW***	***VBW***
30 – 1000MHz	100KHz	100KHz
1000MHz –3.5GHz	1MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB1	A040904-1	2004-4-19	2005-4-18
HP	Spectrum Analyzer	8593A	29190A00242	2004-4-19	2005-4-18
THERMAX	Coaxial Cable	RGS-142	EC002	2003-11-20	2004-11-19
Fluke	True RMS Multimeter	187	78540402	2004-3-23	2005-3-22
HP	Preamplifier	8449B	3008A00277	2003-10-30	2004-10-29
Utiflex	Coaxial	N/A	EC004	2003-10-30	2004-10-29

*** Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Peak and Average detection mode.

Standard Applicable

In addition to the provisions of §15.231(a), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field Strength of Fundamental (Microvolts /meter)	Field Strength of spurious emissions ((Microvolts /meter)
40.66-40.70	2,250……..……..……	225
70-130…..……..……	1,250……..……..…	125
130-174……..……	1,250 to 3,370..……..……	125 to375
174-260……..……	3,750	375
260-470……..……..……	3,3750 to12, 500..……..……	375 to 1,250
Above 470	12,500……..……..……	1,250

Linear interpolations

The above field strength limits are specified at a distance of 3-meters the tighter limits apply at the band edges.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of –5.8dB means the emission is 5.8dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Class B Limit

Test Data at 3M

Date of Test	:	October 18-20, 2004	Temperature	:	25℃
EUT	:	Tot Rescue	Humidity	:	45%
M/N	:	T288	Operating Mode	:	Transmitting with fresh battery
S/N	:	0409015	Test Engineer:		William Chen

Indicated		Table	Antenna		Correction Factor			Corrected Amplitude	FCC Part 15.231	
Frequency MHz	Ampl. dBμV/m	Angle Degree	Height Meter	Polar H/ V	Antenna dB	Cable dB	Amp. dB	Corr. Ampl. dBμV/m	Limit dBμV/m	Margin dB
314.950	62(PK)	45	1.0	v	13.9	1.7	25.05	52.6	75.62	-23.1
314.950	54.5(AV)	45	1.0	v	13.9	1.7	25.05	45.1	65.62	-20.6
629.950	49.18	60	1.0	v	19.5	2.8	25.75	45.7	55.62	-9.9
945.050	45.46	45	1.2	v	23.5	3.6	24.58	48.0	55.62	-7.6
1259.150	41.28	180	1.2	v	24.2	3.7	24.23	45.0	55.62	-10.7
1575.120	40.39	45	1.0	v	24.2	3.7	24.23	44.1	55.62	-11.6
86.550	49.59	60	1.2	v	9.7	0.9	25.94	34.3	40	-5.8
126.350	49.78	270	1.0	v	12.3	1.1	25.79	37.4	43.5	-6.1
285.350	50.26	45	1.2	v	12.6	1.5	24.58	39.8	46	-6.2
314.950	65(PK)	45	1.0	h	13.9	1.7	25.05	55.6	75.62	-20.1
314.950	56.3(AV)	45	1.0	h	13.9	1.7	25.05	46.9	65.62	-18.8
629.350	51.22	60	1.0	h	19.5	2.8	25.75	47.8	55.62	-7.9
945.150	46.12	45	1.2	h	23.5	3.6	24.58	48.6	55.62	-7.0
1260.350	42.95	180	1.2	h	24.2	3.7	24.23	46.6	55.62	-9.0
1575.320	41.73	45	1.0	h	24.2	3.7	24.23	45.4	55.62	-10.2
85.920	49.33	60	1.2	h	9.7	0.9	25.94	34.0	40	-6.0
162.550	47.13	270	1.0	h	13.2	1.1	25.43	36.0	43.5	-7.5
265.750	50.29	45	1.2	h	11.7	1.4	24.06	39.3	46	-6.7

Test Result: Pass

* Note: The EUT was tested in all three orthogonal planes.

§15.231(c) –20dB BANDWIDTH TESTING

Requirement

Per 15.231(c) ,The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz.For devices operating above 900MHz, the emission shall be no sider than 0.5% of the center frequency band with is determined at the points 20dB down from the modulated carrier.

Test Procedure

With the EUT's antenna attached, the EUT's –20dB Bandwidth power was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

Test Equipment List and Details

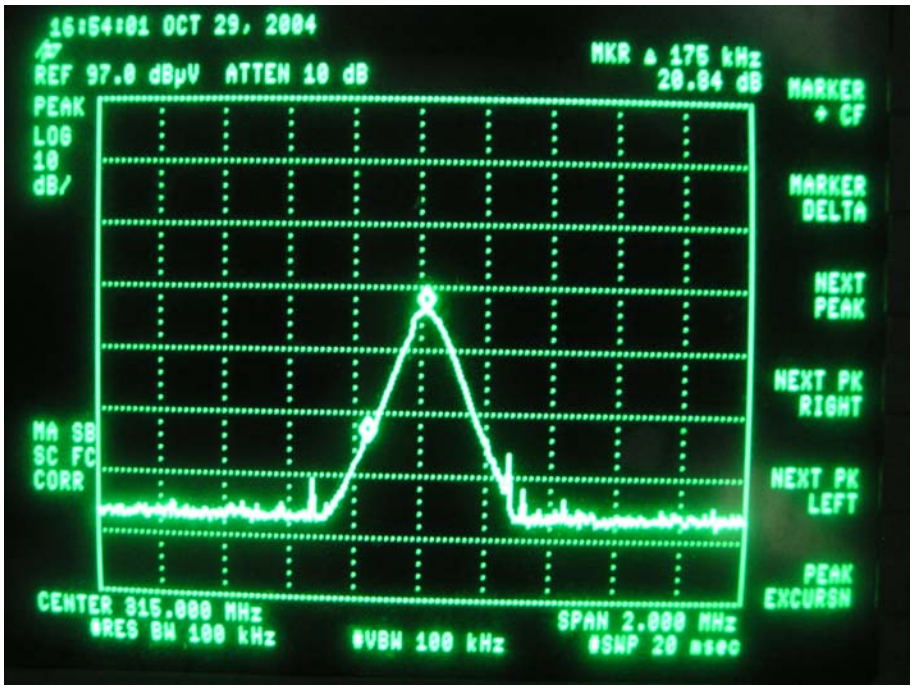
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JBI	A040904-1	2004-4-19	2005-4-18
THERMAX	Coaxial Cable	RGS-142	EC002	2003-11-20	2004-11-19
HP	Preamplifier	8449B	3008A00277	2003-10-30	2004-10-29
Utiflex	Coaxial	N/A	EC004	2003-10-30	2004-10-29
HP	Spectrum	8593A	N/A	2004-10-25	2005-10-24

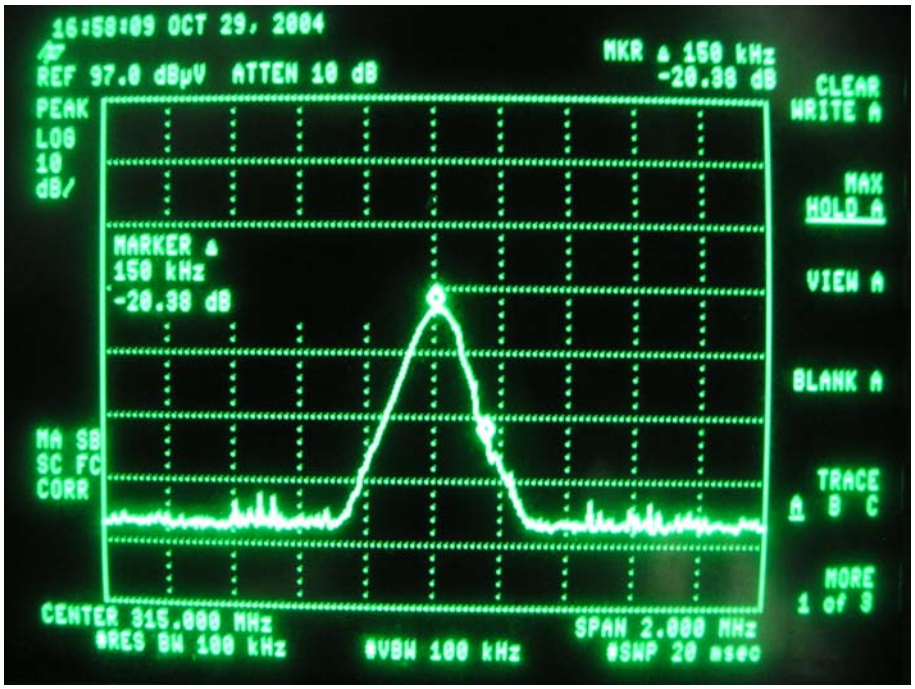
*** Statement of Traceability: BACL Corp.** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Data:

The 0.25% of 315MHz = 0.7875MHz
= 787.5KHz
-20dB Bandwidth was 325KHz< 787.5KHz

Test Result: Pass


16:54:01 OCT 29, 2004
REF 97.0 dBµV ATTEN 10 dB
MKR Δ 175 kHz
20.84 dB
PEAK
LOG
10
dB/
MARKER
→ CF
MARKER
DELTA
NEXT
PEAK
NEXT PK
RIGHT
NEXT PK
LEFT
PEAK
EXCURSN
MA SB
SC FC
CORR
CENTER 315.000 MHz
#RES BW 100 kHz
#VBW 100 kHz
SPAN 2.000 MHz
#SWP 20 msec

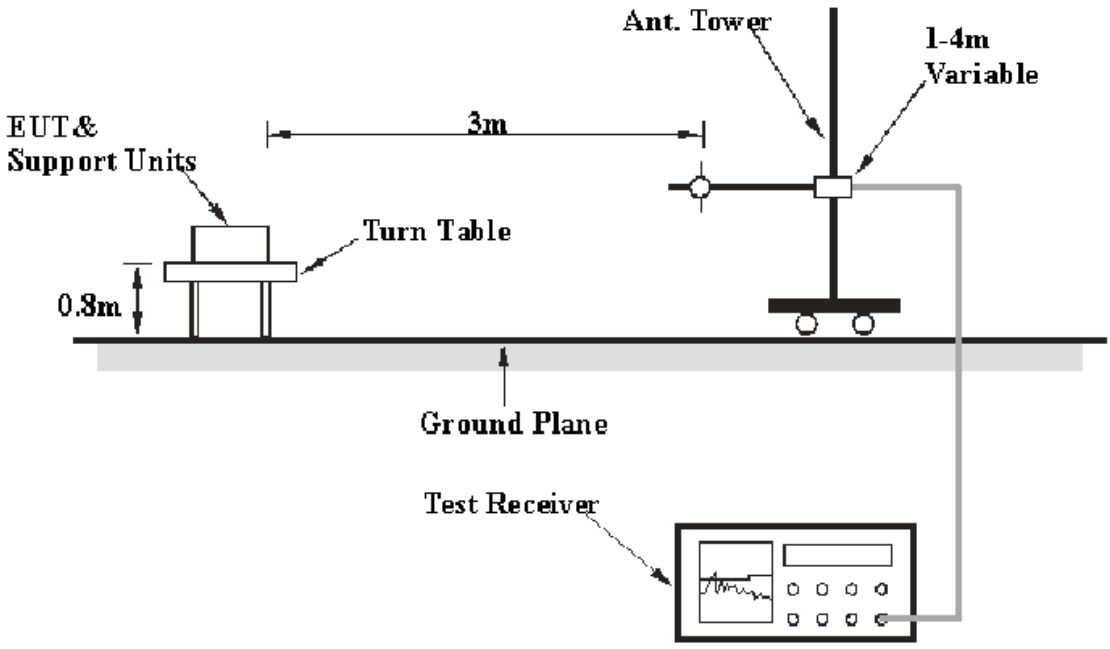

16:58:09 OCT 29, 2004
REF 97.0 dBµV ATTEN 10 dB
MKR Δ 150 kHz
-20.38 dB
PEAK
LOG
10
dB/
CLEAR
WRITE A
MAX
HOLD A
MARKER Δ
150 kHz
-20.38 dB
VIEW A
BLANK A
TRACE
A B C
MORE
1 of 3
MA SB
SC FC
CORR
CENTER 315.000 MHz
#RES BW 100 kHz
#VBW 100 kHz
SPAN 2.000 MHz
#SWP 20 msec

§15.231(a)-DEACTIVATION TESTING

Requirement

Per 15.231(a) (1),a manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

EUT Setup



The deactivation test was performed in the 3-meter Chamber, using the setup accordance with the ANSI C63.4-2001. The specification used was the FCC 15.231(a) limits.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB1	A040904-1	2004-4-19	2005-4-18
THERMAX	Coaxial Cable	RGS-142	EC002	2003-11-20	2004-11-19
HP	Preamplifier	8449B	3008A00277	2003-10-30	2004-10-29
Utiflex	Coaxial	N/A	EC004	2003-10-30	2004-10-29
HP	Spectrum	8593A	N/A	2004-10-25	2005-10-24

*** Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Test Data

Refer to the attached plots.

Test Result: Pass