SAFEMARK SYSTEMS LP

Transmitter

Model Number: TX

Prepared for : SYNAPSIS INDUSTRIAL CO., LTD.
2101 PARK CENTER DRIVE, SUITE 125 ORLANDO, FL 32835

Prepared By : Shenzhen Most Electronic Co., Ltd.
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Report Number : MT-E0511457
Date of Test : Jan. 17 ~ Mar. 23, 2006
Date of Report : Mar. 23, 2006

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TEST REPORT DECLARATION

Applicant	:	SAFEMARK SYSTEMS LP
Manufacturer	:	SAFEGUARD SECURITY INDUSTRIAL CO LTD.
EUT Description	:	Transmitter (A) MODEL NO. : TX (B) SERIAL NO. : E2006010036 (C) POWER SUPPLY : DC 12V

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Apr, 2004.

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits for radiated and conducted emissions. The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of tests. Also, this report shows that EUT is technically compliant with FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of SHENZHEN MOST ELECTRONIC CO., LTD.

This report must not be used by the applicant to claim product endorsement by NVLAP or any agency of the U.S. Government.

Date of Test : Jan. 17 ~ Mar. 23, 2006

Prepared by : Mike Wang

Mike Wang / Assistant

Reviewer :

Amy Zhu / Assistant Manager

Approved & Authorized Signer :

SHENZHEN MOST ELECTRONIC CO., LTD. APPROVED EMC & SAFETY

Ma

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Transmitter
Model No.	:	TX
Applicant	:	SYNAPSIS INDUSTRIAL CO., LTD. 2101 PARK CENTER DRIVE, SUITE 125 ORLANDO, FL 32835
Manufacturer	:	SAFEGUARD SECURITY INDUSTRIAL CO LTD. 7/F, KIN ON COMM. BLDG. 49-51 JERVOIS ST. SHEUNG WAN, HONG KONG
Date of Test	:	Jan. 17 ~ Mar. 23, 2006

1.2. Test Facility

Site Description

3m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 90454 Aug. 15, 2003
3m & 10m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 794232 Mar. 15, 2004
EMC Lab.	:	Certificated by DATech, German Registration Number: DAT-P-091/99-01 Feb. 02, 2004 Certificated by NVLAP, USA NVLAP Code: 200372-0 Mar. 31, 2004 Certificated by Nemko, Norway Aut. No.: ELA135 April. 22, 2004 Certificated by Industry Canada Registration Number: IC 5183 Jul. 28, 2004
Name of Firm	:	Audix Technology (Shenzhen) Co., Ltd.
Site Location	:	No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China

1.3. Test Uncertainty

No.	Item	Uncertainty	Remark
1.	Uncertainty for Conducted Emission Test	1.22dB	
2.	Uncertainty for Radiated Emission Test	3.14dB	3m Chamber
3.	Uncertainty for Radiated Emission Test	3.18dB	10m Chamber
4.	Uncertainty for Power Clamp Test	1.38dB	

2. POWER LINE CONDUCTED EMISSION TEST

According to Paragraph (f) of FCC Part 15 section 15.107, Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

3. RADIATED EMISSION TEST

3.1. Test Equipment

The following test equipments are used during the radiated emission test:

3.1.1. For Anechoic Chamber

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	HP	85422E	3625A00181	May 16, 05	1 Year
2.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	May 16, 05	1 Year
3.	Amplifier	HP	8447D	2944A07794	Mar.15, 05	1/2 Year
4.	Bilog Antenna	Schaffner	CBL6111C	2598	Jan. 12, 05	1 Year
5.	Computer	N/A	N/A	N/A	N/A	N/A
6.	Printer	HP	Laserjet6P	SGCF019673	N/A	N/A
7.	FR Cable	MIYAZAKI	5D-2W	3# Chamber No.1	Jul.29, 05	1/2 Year
8.	FR Cable	MIYAZAKI	5D-2W	3# Chamber No.2	Jul.29, 05	1/2 Year
9.	FR Cable	FUJIKURA	RG-55/U	3# Chamber No.3	Jul.29, 05	1/2 Year
10.	FR Cable	FUJIKURA	RG-55/U	3# Chamber No.4	Jul.29, 05	1/2 Year
11.	Coaxial Switch	Anritsu	MP59B	M74389	Jul.29, 05	1/2 Year

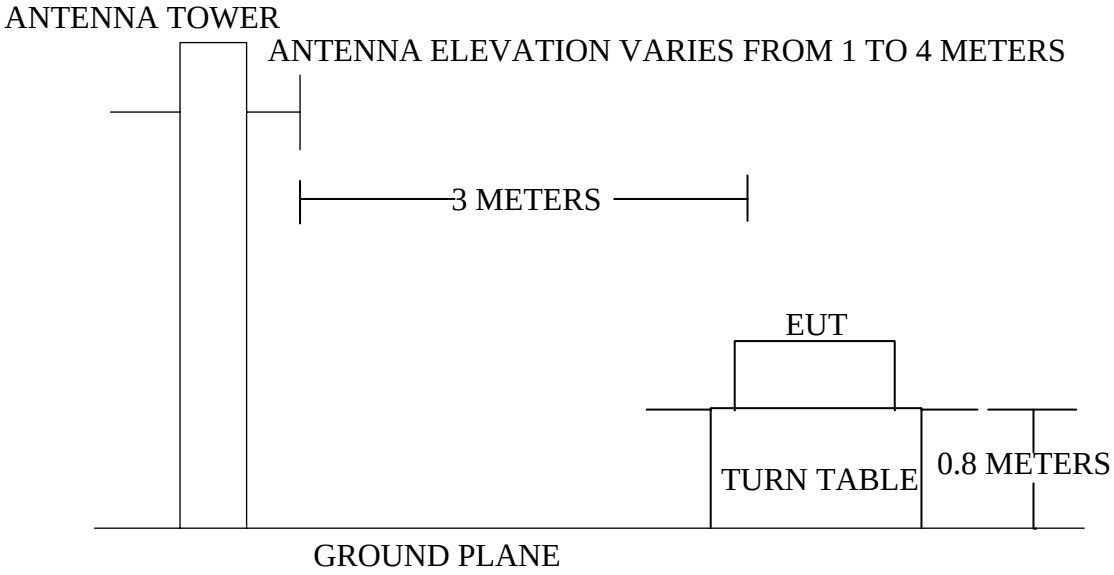
3.2. Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and simulators

EUT

(EUT: SAFE)

3.2.2. In Anechoic Chamber



3.3. Radiated Emission Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	
316.845 Fundamental	3	75.6 dB(μV)/m (Fundamental) 46 dB(μV)/m (Spurious)	

Remark： (1) Emission level (dB)μV = 20 log Emission level μV/m
(2) The smaller limit shall apply at the cross point between two frequency bands.
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.4.1. Transmitter (EUT)

Model Number : TX
Serial Number : E2006010036
Manufacturer : SAFEGUARD SECURITY INDUSTRIAL CO LTD.

3.4.2. Support Equipment : As Tested Supporting System Detail, in Section 1.2..

3.5. Operating Condition of EUT

1. Setup the EUT as shown in Section 3.2..
2. Let the EUT work in test mode (Running) and test it.

3.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the EMI test receiver (R&S ESVS20) is set at 120KHz.
The frequency range from 30MHz to 1000MHz is checked.

The test mode (Running) is tested in Anechoic Chamber, and all the scanning waveforms are attached in Appendix I.

3.7. Radiated Emission Test Result

PASS.

The frequency range from 30MHz to 1000MHz is investigated. Please see the following pages.

Date of Test :	Mar. 23, 2006	Temperature :	26℃
EUT :	Transmitter	Humidity :	58%
Model No. :	TX	Test Mode :	Running
Test Engineer:	MARIO		

Polarization	Frequency MHz	Emission Level dBμV/m	Over Limits dBμV/m	Limits dBμV/m
Horizontal	315.000	25.18	-50.42	75.60
Vertical	315.000	20.21	-55.39	75.60

Remark: 1. All readings are Quasi-Peak values.

2. Emission Level = Antenna Factor + Meter Reading+Cable Loss

3. The bandwidth of the RBW is set at 120KHz and VBW is set at 300KHz.

TEST PROCEDURE: ANSI Standard C63.4-2003 using a HP Model 85422E and an appropriate antenna. The resolution bandwidth of spectrum analyzer was 100 kHz below 1 GHz and 1 MHz above 1 GHz. An appropriate sweep speed was used. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

Reviewer :

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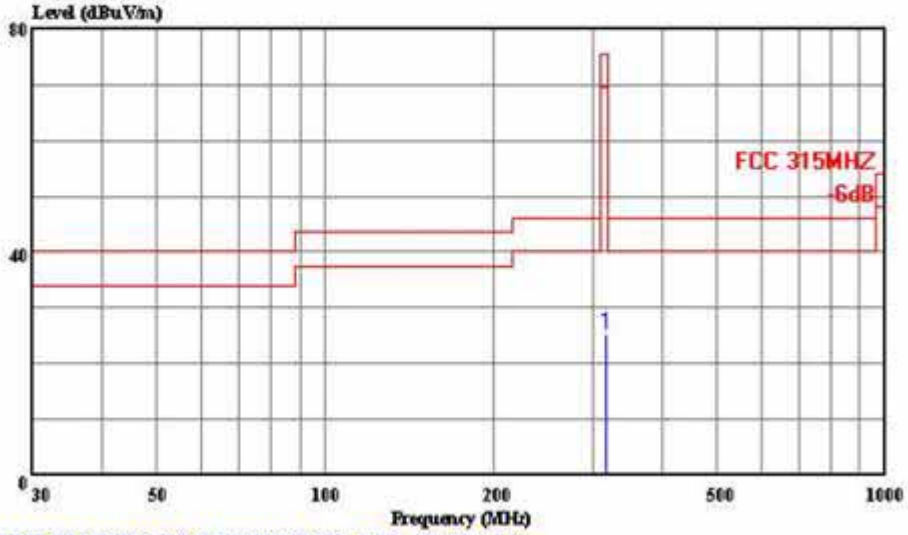

Trace: Ref Trace:

Condition: FCC 315MHZ 3m 2598FACTOR HORIZONTAL
EUT : Transmitter
M/N : TX
Test Spec : DC 12V Adaptor Input AC 120V/60Hz
Test Engineer: THOMAX
OP Condition : TX 315MHz
Comment : Temp:23' Humi:54%
Memo :

Page:

	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Probe Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB
1	315.000	25.18	-50.42	75.60	7.38	4.08	13.72

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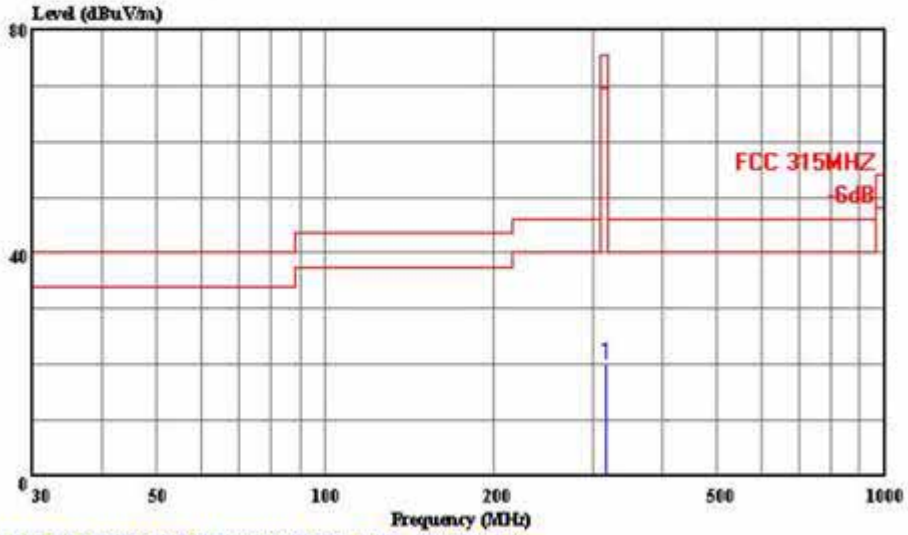

AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace: Ref Trace:

Condition: FCC 315MHZ 3m 2598FACTOR VERTICAL
EUT : Transmitter
M/N : TX
Test Spec : DC 12V Adaptor Input AC 120V/60Hz
Test Engineer: THOMAX
OP Condition : TX 315MHz
Comment : Temp:23' Humi:54%
Memo :

Page:

	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Probe Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB
1	315.000	20.21	-55.39	75.60	3.19	4.08	12.94

4. BANDWIDTH TEST

4.1. Test Equipment

The following test equipments are used during the bandwidth test:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4407B	MY41440292	May 16, 05	1 Year
2.	Antenna	EMCO	3115	9607-4877	May 16, 05	1 Year

4.2. Test Standard

The test completeness FCC 15C (231).

4.3. Bandwidth Limit:

(0.0025*315MHz=787KHz)

315.240-314.720=520KHz<787KHz

The minimum 26dB bandwidth shall be at least 10KHz.

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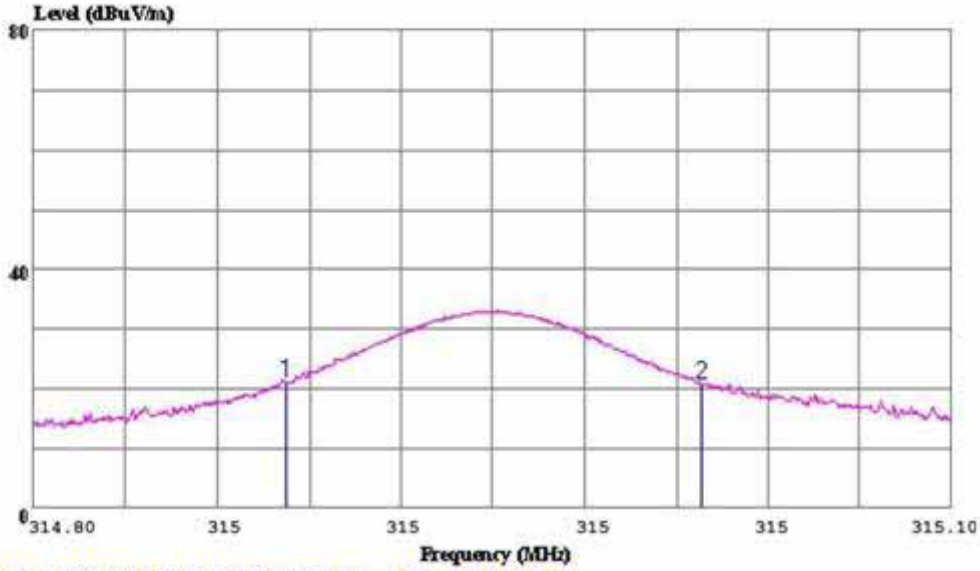

AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace: 9 Ref Trace:

Condition: 3m
EUT : Transmitter
M/N : TX
Test Spec : DC 12V
Test Engineer: THOMAX
OP Condition : RX 315MHz
Comment : Temp:23' Humi:54%
Memo :

Page: 1

	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Probe Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB
1	315.000	21.18	------	------	21.18	0.00	0.00
2	315.000	20.78	------	------	20.78	0.00	0.00

APPENDIX I

AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.
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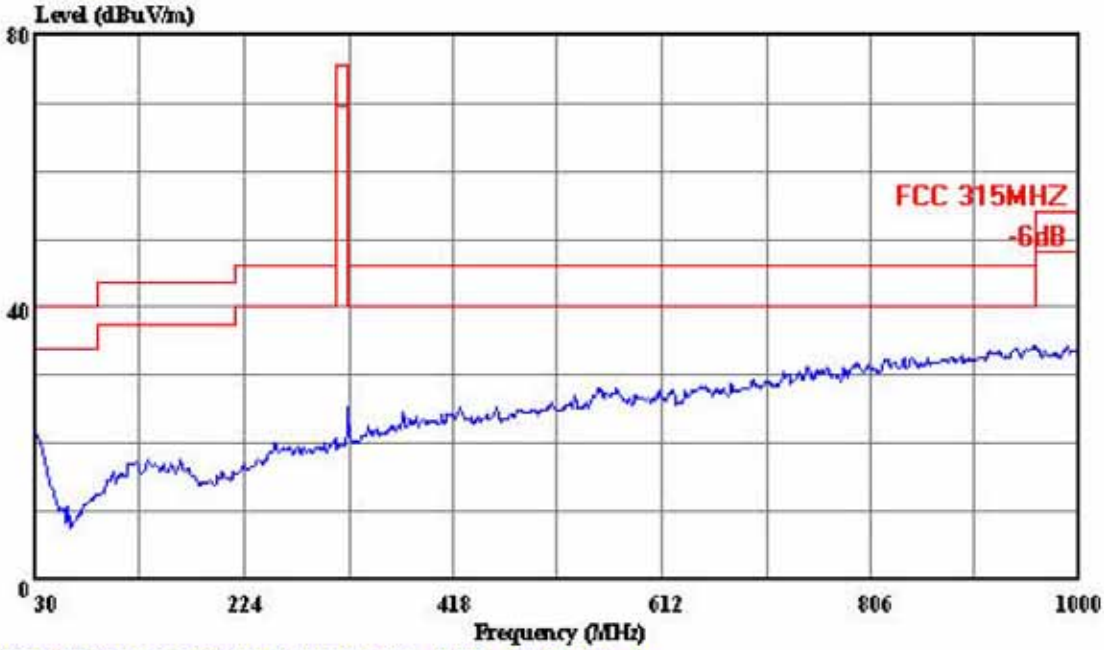

AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace: Ref Trace:

Condition: FCC 315MHZ 3m 2598FACTOR HORIZONTAL
EUT : Transmitter
M/N : TX
Test Spec : DC 12V
Test Engineer: THOMAX
OP Condition : TX 315MHz
Comment : Temp:23' Humi:54%
Memo :

AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.
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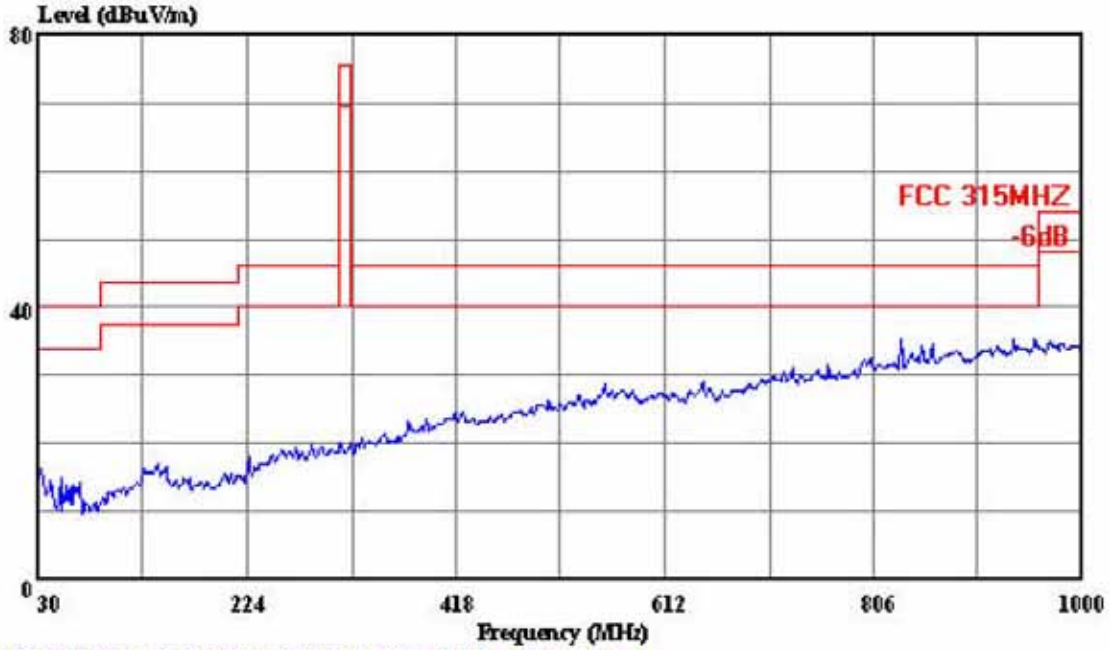

AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. (3# Chamber)

Trace: Ref Trace:

Condition: FCC 315MHZ 3m 2598FACTOR VERTICAL
EUT : Transmitter
M/N : TX
Test Spec : DC 12V
Test Engineer: THOMAX
OP Condition : TX 315MHz
Comment : Temp:23' Humi:54%
Memo :