SGS-CSTC Standards Technical Services Ltd.

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FEDERAL COMMUNICATIONS COMMISSION
Registration number: 282399

FCC TEST REPORT

Application No. :	GLEMO040801289RF
Applicant:	STL INTERNATIONAL LTD
FCC ID:	RF7SI670TX
Fundamental Carrier	**Frequency** : 2.432GHz
Equipment Under Test (EUT):	
Name:	TV Everywhere
Model:	SI670
Standards:	FCC PART 15, SUBPART C : 2002 Section 15.249.
Date of Receipt:	07 September 2004
Date of Test:	10 to 20 August 2004
Date of Issue:	19 October 2003

Test Result :	**PASS ***

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

Authorized Signature:

Kent Hsu
Laboratory Manager

2 Contents

3 General Information

3.1 Client Information

Applicant Name:	STL INTERNATIONAL LTD
Applicant Address:	TUNG KONG INDUSTRIAL ZONE.LIU MEI VILLAGE,YUEN ZHOU,BOLOU,PRC

3.2 General Description of E.U.T.

Product Name:	TV Everywhere
Model:	SI670
Power Supply:	120Vac/60Hz, AC/AC Adapter which supplied by the applicant. Adapter: Input: 120 Vac, 60Hz 14W. Output: AC 9V, 600mA. Romote control part: 3.0V (2 x 'AA' Size Batteries).
Power Cord:	1.8m, 2 wires unshielded cable.

3.3 Description of Support Units

The EUT was tested as an independent unit: a 433MHz radio transmitter.
The whole TV Everywhere including the with :
(1). Tuner/Transmitter. (2.4GHz)
(2). Receiver.(433MHz)
(3). Remote Control; AC Adapters for the tranmitter and the receiver;
Infrared Signal Device; Assorted Cables.

The report is shown the Tuner/Transmitter part, it's a 2.4G radio transmitting unit and a TV tuner inside.
Test connected a Playstation as the AV signal input source and a TV as display screen.

3.4 Standards Applicable for Testing

The standard used was FCC PART 15, SUBPART C (2003) section 15.249.

3.5 Test Location

All tests were performed at:-

SGS-CSTC Standards Technical Services Ltd., Guangzhou Safety & EMC Laboratory, 1/F, Building No. 1, Agriculture Machinery Materials Company Warehouse Ltd., Wushan Road Shipai, Tianhe District, Guangzhou, China. P.C. 510630.

Tel: +86 20 3848 1001

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3.6 Other Information Requested by the Customer

None.

3.7 Test Facility

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

- **NVLAP – Lab Code: 200611-0**
  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0. Effective through December 31, 2004.
- **ACA**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.
- **VCCI**
  The 3m Semi-anechoic chamber and Shielded Room (11.5m x 4m x 4m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1599 and C-1706 respectively.
  Date of Registration: February 28, 2003. Valid until May 30, 2005
- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**
  Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.
- **CNAL – LAB Code: L0141**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01: 2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **FCC – Registration No.: 282399**
  SGS-CSTC Standards Technical Services Co., Ltd., 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 our files. Registration 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorised test laboratory for the DoC process.
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01: 2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **Industry Canada (IC)**
  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5169.

4 Test Results

4.1 Test Instruments

Test Equipment	Manufacturer	Model	Asset No.	Cal. Due Date
3m Semi- Anechoic Chamber	Frankonia	3m method	EMC0501	15-02-2005
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	15-02-2005
Bilog Type Antenna	Schaffner Chase	CBL6143	EMC0519	17-01-2005
Coaxial cable	SGS-CSTC	10m	EMC0514	04-11-2004
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 30	EMC0521	01-04-2005
Horn Antenna	ROHDE & SCHWARZ	HF906	EMC0517	01-04-2005
Temperature, Humidity & Barometer	Oregon Scientific	BA-888	EMC0003	24-07-2004
Peramplifier	Agilent	8449B	EMC0520	30-06-2005
Coaxial cable	SGS	N/A	EMC0514	01-06-2005
Shielding Room	Frankonia	12 x 4 x 4 m^3	EMC0103	N/A
LISN	Schaffner Chase	MNZ050D11	1421	04-11-2004
EMI Test Receiver	Rohde& Schwarz	ESCS30	100086	09-12-2004
Coaxial Cable	SGS	2m	EMC0107	01-06-2005
TV Generator NTSC	ROHDE & SCHWARZ	SGMF	03-02-2004	02-02-2005

4.2 E.U.T. Operation

Input voltage: 120Vac/60Hz, AC/AC Adapter which supplied by the applicant. Adapter: Input: 120 Vac, 60Hz 14W. Output: AC 9V, 600mA. Romote control part: 3.0V (2 x 'AAA' Size Batteries).

Operating Environment:
Temperature: 24.0 °C
Humidity: 52 % RH
Atmospheric Pressure: 1012 mbar

EUT Operation:
1. Test in transmitting mode with AV signal input. Test with a whole system as the section 3.3 stated.
2. Test in transmitting mode with TV signal input. Test with a whole system as the section 3.3 stated.

4.3 Test Procedure & Measurement Data

4.3.1 Radiated Emissions

4.3.1.1 Test in transmitting mode

Test Requirement: FCC Part15 C

Test Method: Based on FCC Part15 C Section 15.249

Test Date: 14 October 2004

Measurement Distance: 3m (Semi-Anechoic Chamber)

Frequency range: 30 MHz – 25GHz for transmitting mode.

Test instrumentation resolution bandwidth
120 kHz (30 MHz - 1000 MHz), 1 MHz (1000 M – 25GHz)

Operation: Receive antenna scan height 1 - 4 m, polarization Vertical/ Horizontal

Requirements:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m @ 3m)	Field Strength of Harmonics and Spurious Emissions (dBuV/m @ 3m)
902 to 928	94.0	54.0
2400 to 2483.5	94.0	54.0
5725 to 5875	94.0	54.0
24000 to 24250	108.0	68.0

The fundamental frequency of the EUT is 2.432GHz

The limit for average field strength dBuv/m for the fundamental frequency= 94.0 dBμV/m.

No fundamental is allowed in the restricted bands.

The limit for average field strength dBμV/m for the harmonics and spurious frequencies = 54.0 dBμV/m. Spurious in the restricted bands must be less than 54.0 dBuv/m or 15.209.

Test Procedure: The procedure uesd was ANSI Standard C63.4-2000. The receive was scanned from 30MHz to 25GHz.When an emission was found,the table was roated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

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

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Peramlifer Factor

Pretest the TV Signal and AV Signal input, compliance test in AV signal input.

The following test results were performed on the EUT:

1. Fundamental emission

Peak Measurement

Test Frequency (GHz)	Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
2.432	99.8	91.7	114.0	14.2	22.3
Average Measurement					
2.432	88.3	84.8	94.0	5.7	9.2

2. Harmonics & Spurious Emissions

Peak Measurement

Test Frequency (GHz)		Measuring Level (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
		Vertical	Horizontal		Vertical	Horizontal
2)	4.864	60.8	59.6	74.0	13.2	14.4
3)	7.296	58.4	59.2	74.0	15.6	14.8
4)	9.728	64.4	62.1	74.0	9.6	11.9
5)	12.160	N/A	N/A	74.0	N/A	N/A
6)	14.592	N/A	N/A	74.0	N/A	N/A
7)	17.024	N/A	N/A	74.0	N/A	N/A
8)	19.456	N/A	N/A	74.0	N/A	N/A
9)	21.888	N/A	N/A	74.0	N/A	N/A
10)	24.320	N/A	N/A	74.0	N/A	N/A

Average Measurement						
2)	4.864	49.7	48.6	54.0	4.3	5.4
3)	7.296	47.9	47.0	54.0	6.1	7.0
4)	9.728	51.2	49.5	54.0	2.8	4.5
5)	12.160	N/A	N/A	54.0	N/A	N/A
6)	14.592	N/A	N/A	54.0	N/A	N/A
7)	17.024	N/A	N/A	54.0	N/A	N/A
8)	19.456	N/A	N/A	54.0	N/A	N/A
9)	21.888	N/A	N/A	54.0	N/A	N/A
10)	24.320	N/A	N/A	54.0	N/A	N/A

N/A: refer to remark 1).

Remark:

1). For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the fifth harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 4th harmonic.

2). For this intentional radiator operates below 10 GHz, the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the fifth harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 7^{th} harmonic.

3). According to 15.249 (e) As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

TEST RESULTS: The unit does meet the FCC requirements.

3. Other Spurious Emissions.

Test Requirement: FCC Part15 Section 15.209

Test Method: Based on FCC Part15 B

Measurement Distance: 3m

Limit: 40.0 dBμV/m between 30MHz & 88MHz

43.5 dBμV/m between 88MHz & 216MHz

46.0 dBμV/m between 216MHz & 960MHz

54.0 dBμV/m above 960MHz

Detector: Peak for pre-scan , 120kHz resolution bandwidth within 1GHz, 1MHz resolution bandwidth above 1GHz

Quasi-Peak if maximised peak within 6dB of limit

1. TV signal input mode. (Pre-test in channel 2, 10, 14, 60, compliance test in Channel 2 Since no worst case be found)

The following quasi-peak measurements were performed on the EUT:

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	Limit dBuV/m)	Margin (dB)
48.000	Vertical	27.6	40.0	12.4
57.270	Vertical	30.5	40.0	9.5
85.908	Vertical	28.6	40.0	11.4
90.625	Vertical	30.1	43.5	13.4
105.740	Vertical	29.6	43.5	13.9
114.550	Vertical	24.6	43.5	18.9
39.927	Horizontal	30.8	40.0	9.2
57.275	Horizontal	26.5	40.0	13.5
76.000	Horizontal	27.1	40.0	12.9
80.010	Horizontal	24.3	40.0	15.7
89.980	Horizontal	25.1	43.5	18.4
120.000	Horizontal	33.9	43.5	9.6

2. AV signal input mode

The following quasi-peak measurements were performed on the EUT:

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	Limit dBuV/m)	Margin (dB)
57.270	Horizontal	28.3	40.0	11.7
72.005	Horizontal	26.5	40.0	13.5
198.833	Horizontal	36.8	43.5	6.7
294.913	Horizontal	30.4	46.0	15.6
368.640	Horizontal	36.1	46.0	9.9
589.823	Horizontal	35.8	46.0	10.2
48.000	Vertical	30.4	40.0	9.6
57.270	Vertical	32.1	40.0	7.9
64.005	Vertical	30.8	40.0	9.2
120.833	Vertical	31.3	43.5	12.2
229.095	Vertical	36.4	46.0	9.6
589.813	Vertical	42.1	46.0	3.9

The field strength is calculated by adding the Antenna Factor, Cable Factor & Peramplifier .
The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Peramlifer Factor

TEST RESULTS: The unit does meet the FCC requirements

4.3.2 Conducted Emissions, 150KHz to 30MHz

Test Requirement: FCC Part15 Section 15.207
Test Method: ANSI C63.4
Test Date: 12 October 2004
Frequency Range: 150KHz to 30MHz
Class / Severity: Class B
Detector: Peak for pre-scan (9kHz Resolution Bandwidth)

4.3.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 52 % RH Atmospheric Pressure: 1012 mBar

EUT Operation: Test in charging mode.

Quasi-Peak if maximised peak within 6dB of limit

4.3.2.2 Measurement Data

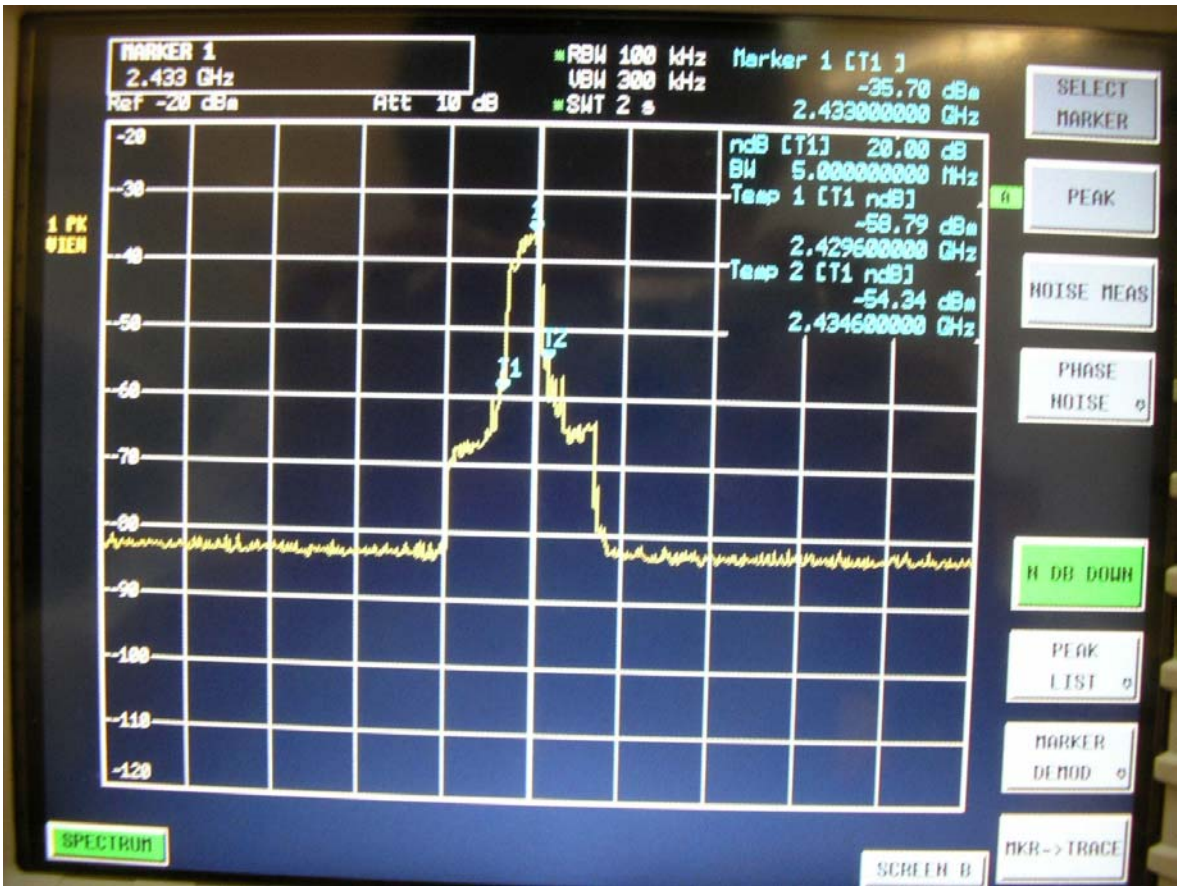
An initial pre-scan was performed on the live and neutral lines with peak detector.
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.
The following Quasi-Peak and Average measurements were performed on the EUT.

Freq. MHz	Line	QP Level dBuV	Limit dBuV	Margin dB	AV Level dBuV	Limit dBuV	Margin dB
0.159	Live	10.6	65.5	54.9	-8.5	55.5	64.0
0.169	Live	10.4	65.0	54.6	-8.1	55.0	63.1
0.439	Live	14.6	57.1	42.5	-7.8	47.1	54.9
25.882	Live	24.0	60.0	36.0	19.8	50.0	30.2
27.886	Live	24.8	60.0	35.2	22.6	50.0	25.4
29.870	Live	20.8	60.0	39.2	20.4	50.0	29.6
0.176	Neutral	10.4	64.7	54.3	-8.4	54.7	63.1
0.470	Neutral	15.5	56.5	41.0	-6.2	46.5	52.7
0.479	Neutral	13.4	56.4	43.0	-7.3	46.4	53.7
25.882	Neutral	22.3	60.0	37.7	20.8	50.0	29.2
27.886	Neutral	23.2	60.0	36.8	21.7	50.0	28.3
29.870	Neutral	21.8	60.0	38.2	20.3	50.0	29.7

4.3.3 Occupied Bandwidth

Test Requirement:	FCC Part 15 C
Test Method:	Based on FCC Part15 C Section 15.249: Operation within the band 2400 – 2483.5 MHz
Test Date:	12 October 2004
Requirements:	An alternative to 20dB bandwidth is the 99% emission bandwidth.
Method of measurement:	The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector. The vertical Scale is set to –10dB per division

The occupied bandwidth as below:



The results: The unit does meet the FCC requirements.

4.3.4 Band Edge

Test Requirement:	FCC Part 15 C
Test Method:	Based on FCC Part15 C Section 15.249: Operation within the band 2400 – 2483.5 MHz
Test Date:	12 October 2004
Requirements:	15.249 (d) 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.

The test result , please refer the section 4.3.1 of this report. The worst case is 51.2dBuV/m at frequency 9.728GHz, it's below the limits in Section 15.209.

For the field strength of Lower Edges:2400MHz is 36.0dBuV/m.

For the field strength of Upper Edges:2483.5MHz is 34.5dBuV/m.

The results: The unit does meet the FCC requirements.