



Testing Tomorrow's Technology

**Application for
Certification**

According to

**Title 47 US Code, Part 15, Subpart C, Sections 15.201, 15.207 and 15.209
for**

Y Soft Americas, Inc.

SafeQ Terminal Professional HID PROX Model: YSQ3P-001-0831

April 6, 2009

Number of Pages in this report: 41

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US Tech

Report Number:

Customer:

EUT:

FCC ID: W79SQ3P0010831

09-0049

Y Soft Americas, Inc.

SafeQ Terminal Professional HID PROX Model: YSQ3P-001-0831

MEASUREMENT/TECHNICAL REPORT

COMPANY NAME: **Y Soft Americas, Inc.**

MODEL: **SafeQ Terminal Professional HID PROX**

M/N: YSQ3P-001-0831

FCC ID: **W79SQ3P0010831**

DATE: **April 23, 2009**

This report concerns (check one): Original grant ☒
Class II permissive change_____

Equipment type: Low Powered Transceiver, Rx Verified

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes_____ No X

If yes, defer until:_____ date

N.A. agrees to notify the Commission by N.A. date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

US Tech
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1. General Information

The information contained in this report is presented for the FCC Equipment Authorization of Certification for the EUT.

1.1 Product Description

The Equipment under Test (EUT) is Y Soft Americas, Inc.'s, SafeQ Terminal Professional HID PROX Model: YSQ3P-001-0831. The EUT is an ID terminal for printers, copiers, and multifunction devices.

1.2 Related Submittal(s)/Grant(s)

The EUT will be used as part of a system to send/receive data. The transmitter presented in this report will be used with an ID tag which has been submitted under a separate authorization.

1.3 The EUT is subject to the following authorizations:

- a) Certification of the transmitter part of the transceiver
- b) Verification as a Digital Device.

2 Tests and Measurements

2.1 Configuration of Tested System

The Test sample was tested per ANSI C63.4, *Methods of Measurement from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz* (2003). Conducted and radiated emissions data were taken with the test receiver or spectrum analyzer's resolution bandwidth adjusted to 9 kHz and 120 kHz, respectively. All measurements are peak unless stated otherwise. The video filter associated with the spectrum analyzer was off throughout the evaluation process. Interconnecting cables were manipulated as necessary to maximize emissions. A block diagram of the tested system is shown in Figure 1. Test configuration photographs for fundamental and harmonic emissions are shown in Figure 2. Table 1 lists the peripherals and supporting devices used in the tests.

Table 1.EUT and Peripherals

PERIPHERAL AND ITS MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
YSoft SafeQ SmartCard (EUT)	Terminal Professional HID PROX YSQ3P-001- 0831	None	W79SQ3P00 10831	6' U
Netgear router	WGR614	—	—	6' U
Switching Adaptor #1 Netgear	DSA-12R- 12Aus	--	—	6' U Power Cord
Desktop P.C Compaq Presario	ED865AA- ABA	CNN5391 254	—	6' U Power Cord
AC Switching Power Adaptor #2 Y Soft	Sys-1357- 2412	G08 10030578 62	None	6' U Power Cord

P = Power D = data S = Shielded U = Unshielded

2.2 Characterization of Test Sample

The sample used for testing was received by US Tech on March 14, 2008 in good condition.

2.3 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA. This site has been fully described and registered with the FCC, under designation number US5117. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number 2982A-1.

2.4 Test Equipment

Table 2 describes test equipment used to evaluate this product.

Table 2 - Test Instruments

INSTRUMENT TYPE	MANUFACTURER	MODEL	SN.	Cal Date.
SPECTRUM ANALYZER	HEWLETT-PACKARD	8593E	3205A00124	9/9/08
RF PREAMP 10 to 1000 MHz	HEWLETT-PACKARD	8447D	1937A03355	9/12/08
Active Loop Antenna 10 kHz to 30 MHz	A. H. Systems	SAS-200/562	142	11/12/08
BICONICAL ANTENNA 25 MHz to 200 MHz	EMCO	3110	9307-1431	1/22/09
LOG-PERIODIC ANTENNA 100MHz to 1000 MHz	EMCO	3146	9110-3632	11/21/07 2 Yr.
LISN	SOLAR ELE.	8028	910495 & 910494	1/19/09

Note: Calibration interval is 1 year unless stated otherwise

2.5 Equipment Modifications

No modifications were necessary to bring the EUT into compliance with the FCC Part 15.207 conducted emissions limits for an intentional radiator, and general Radiated Emissions Limits of 15.209.

2.6 Test Procedure

The EUT was configured as shown in the following block diagram(s) and photograph(s). The sample was tested per ANSI C63.4, Methods of Measurement from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (1992) following US Tech's procedures 96-ENG-P15-107 for conducted emissions and 99-ENG-P15-109 for radiated emissions. Conducted and radiated emissions data were taken with the test receiver or spectrum analyzer's resolution bandwidth adjusted to 9 kHz and 120 kHz, respectively. All measurements are peak unless stated otherwise. The video filter on the spectrum analyzer was OFF throughout the evaluation process. Interconnecting cables were manipulated as necessary to maximize emissions.

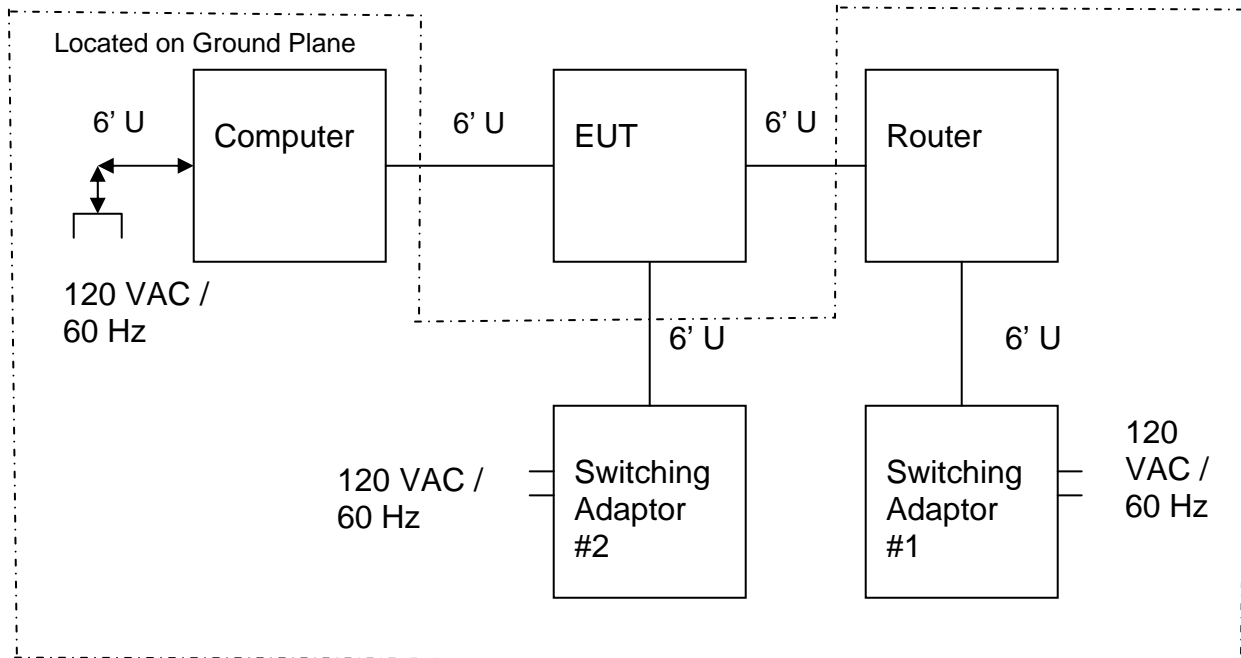


Figure 1. Test Configuration

2.7 EUT Antenna Description (FCC Sec. 15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

Y Soft America's SafeQ Terminal Professional HID PROX Model: YSQ3P-001-0831

Manufacturer: HID Corporation
9292 Jeronimo Road
Irvine, CA 92618-1905

Antenna Type: Coiled wire

Model Number: N/A

Gain: 0 dB_i

Connector: Permanently attached

2.8 Field Strength of Fundamental (47 CFR 15.209(a))

The results of the measurements for peak fundamental emissions are given in Table 3 and Figure 5. The EUT emissions were measured by setting up the Active Loop Antenna in the vertical and horizontal polarizations at a distance of 3 meters from the EUT and at a height of 1.0 meters above the ground. The EUT major axis was set to face the measuring antenna so that it intercepted the plane formed by the loop at right angles. When a signal was detected, the loop was slowly rotated about its axis in an attempt to maximize the emission. The antenna was left in the orientation where the emission was maximized and the signal was measured and recorded. The EUT was also rotated about its major axis by 360 degrees with the turntable in an attempt to maximize emissions. Due to not being a hand-held portable device the EUT was tested in the position that is most likely going to be used in the field, as shown in the photos.

2.9 Operation in the Frequency Band of 0.009 MHz to 0.490 MHz (47 CFR 15.209(a))

The Field Strength Limit is 26dBuV @ 300 meters distance for 0.126 MHz. For 3 meters distance an 80dB correction was added to the Field Strength Limit as follows: $26\text{dBuV} - (40 \log (3/300)) = 106\text{dBuV}$.

Table 3.
Field Strength of Fundamental Emission Peak

Peak Radiated Emissions of Fundamental							
Test By: D.A.	Test: FCC Part 15.209			Client: Y Soft Americas, Inc.			
	Project: 09-0049			15.209 Limits @ 3 meters	Model: SafeQ Terminal Professional HID PROX		
Frequency (MHz)	Measured Test Data (dBuV)	AF+ CA – AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
0.1260	23.67	55.21	78.88	106	3m/O	27.1	PK

SAMPLE CALCULATIONS:

RESULTS @ 0.126 MHz = (23.67 + 55.21) = 78.88 dBuV/m @ 3m

Conversion from 300 meter to 3 meters = $40 \log (300/3) = 80\text{dB}$

Limit for 3 meter = $20 \cdot \log(2400\text{uV/m}/126\text{KHz}) + 80 \text{ dB} = 106 \text{ dBuV/m}$

March 17, 2009

Test Results

Reviewed By:

Daniel Aparaschivei

Name: Daniel Aparaschivei

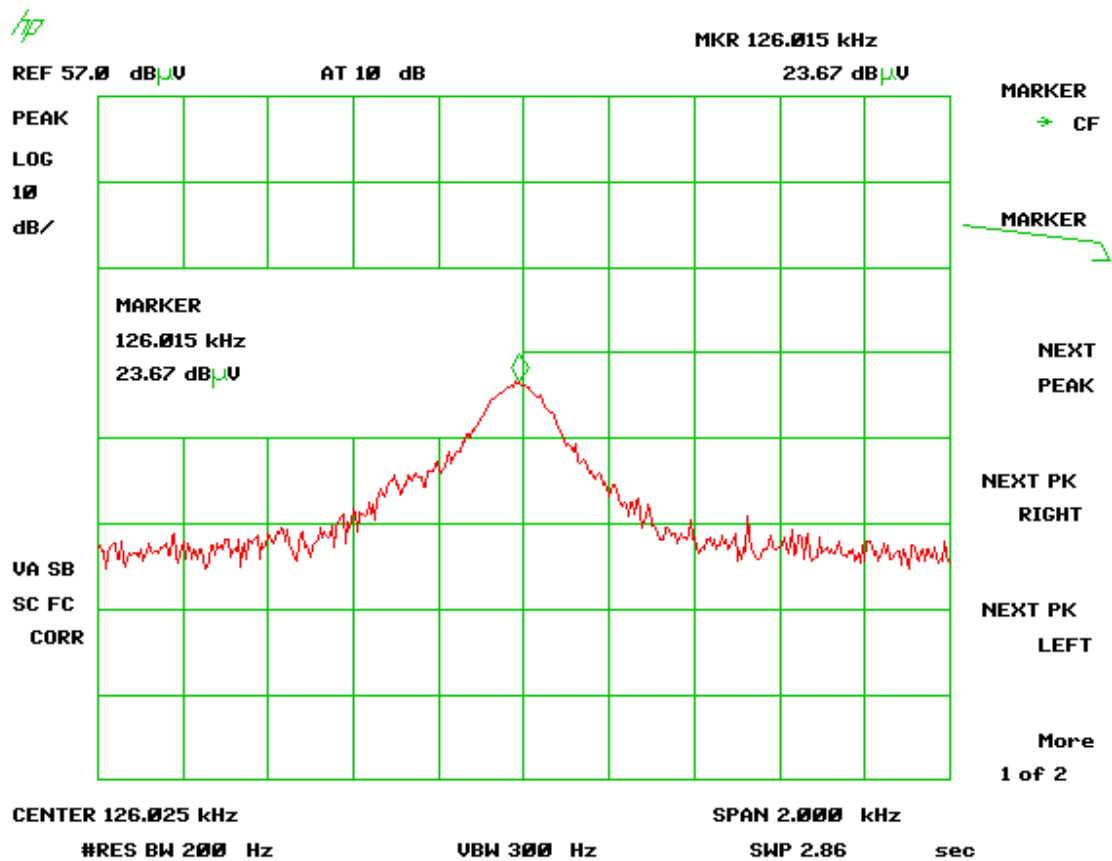


Figure 6 - Fundamental Frequency 0.126 MHz

2.10 Peak Radiated Spurious Emissions (FCC Section 15.209)

A preliminary scan was performed on the EUT to determine spurious frequencies that were caused by the transmitter portion of the product. Significant emissions that fell within restricted bands were then measured on an OATS site. Radiated measurements below 1 GHz were tested with a RBW = 120 kHz. The results of all peak radiated spurious emissions including those falling in the restricted bands are given in Table 4 and in Figure 7.

Table 4. Peak Radiated Spurious Emissions

Test By:	Test: FCC Part 15.209			Client: Y Soft Americas, Inc.			
D.A.	Project: 09-0049	Class: B		Model: SafeQ Terminal Professional HID PROX			
Frequency (MHz)	Test Data (dBuV)	AF+CL -PA (dB)	Results (uV/m)	Limits (uV/m) @3m	Distance / Polarization	Margin (dB)	Detector PK/QP /AVG
0.2515	5.39	48.92	54.31	99.6	3m/O	45.3	PK
No Other Spurious Emissions Found 6dB from Ground Noise Level							

SAMPLE CALCULATIONS:

RESULTS: 0.2515 MHz = 5.39 + 48.92 = 54.31 @ 3m distance

Conversion from 300 meter to 3 meters = $40 \log (300/3) = 80\text{dB}$

Limit for 3 meter = $20 \cdot \log(2400\text{uV/m}/251.5\text{KHz}) + 80 \text{ dB} = 99.6 \text{ dBuV/m}$

March 17, 2009

Test Results

Reviewed By: _____

Daniel Aparaschivei

Name: Daniel Aparaschivei

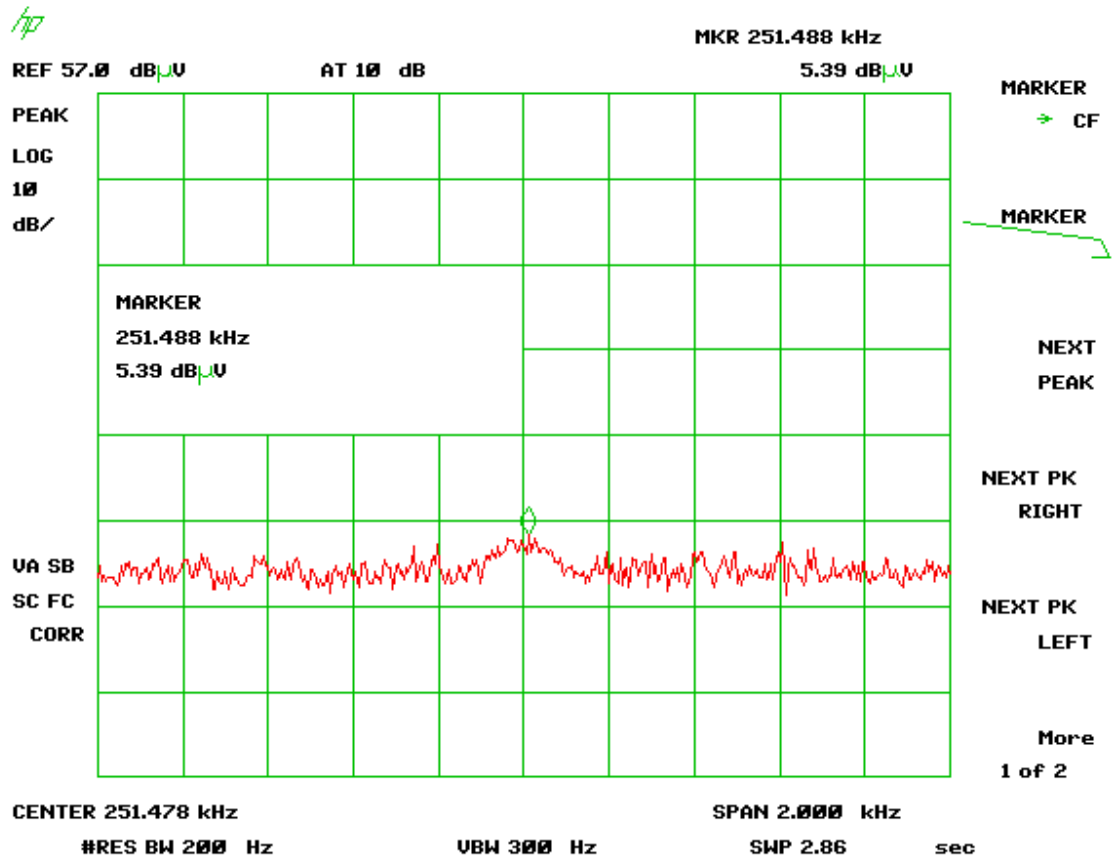


Figure 7 - Peak Radiated Spurious Emissions, 2nd harmonic.

2.10 Power Line Conducted Emissions for Transmitter and Receiver/Digital Apparatus (47 CFR 15.107&15.207)

The conducted voltage measurements have been carried out in accordance with FCC Sections 15.107 and 15.207 per the procedures of ANSI C63.4 paragraph 7, utilizing a spectrum analyzer connected to an LISN and with the EUT placed into a continuous mode of transmit for the transmitter portion of the test and the transmitter disabled for the Receiver/Digital part of the test. The results are given in Table 5.

Table 5. Conducted Emissions Test Data for Transmitter and Receiver/Digital Devices, Part 15.107 and 15.207 Limits

Conducted Emissions						
Test By: D.A.	Test: FCC Part 15.107 and 15.207 Class A			Client: Y Soft Americas, Inc.		
	Project: 09-0049 Peak vs. Average Limits			Model: YSoft SafeQ Terminal Professional HID PROX		
Frequency (MHz)	Test Data (dBuV)	IL+CA-AMP (dB)	Results (dBuV)	Limits (dBuV)	Margin (dB)	Detector
Phase						
0.1750	48.77	-1.20	47.57	66.0	18.4	PK
0.6460	38.25	-0.29	37.96	60.0	22.0	PK
1.1700	38.09	-0.13	37.96	60.0	22.0	PK
6.6000	32.89	0.12	33.01	60.0	27.0	PK
18.6800	34.87	0.37	35.24	60.0	24.8	PK
20.0800	33.46	0.35	33.81	60.0	26.2	PK
Neutral						
0.1820	47.67	-1.12	46.55	66.0	19.4	PK
0.6460	34.93	-0.30	34.63	60.0	25.4	PK
3.3600	37.14	-0.02	37.12	60.0	22.9	PK
7.6000	35.41	0.14	35.55	60.0	24.5	PK
12.4500	33.23	0.19	33.42	60.0	26.6	PK
20.0300	26.83	0.34	27.17	60.0	32.8	PK

No signals are harmonically related to EUT, therefore all are unintentional radiator signals. Worst case Limits are from 15.107(b).

SAMPLE CALCULATIONS: At 0.1750 MHz, level = 48.77dBuV + (- 1.20) dB = 47.57 dBuV.

March 16, 2009

Test Results

Reviewed By: _____

Daniel Aparaschivei

Name: Daniel Aparaschivei

2.12 Verification Radiated Emissions (47 CFR 15.109(b))

Radiated emissions were evaluated from 30 MHz to 1 GHz. Measurements were made with the analyzer's bandwidth set to 120 kHz for measurements made below 1 GHz and 1 MHz for measurements made at 1 GHz and higher. Results are shown in Table 6.

Table 6. Radiated Emissions Data for Digital Device

30 MHz – 1 GHz							
Test By:	Test: FCC Part 15.109			Client: Y Soft Americas, Inc.			
D.A.	Project: 09-0049	Class: A		Model: YSoft SafeQ Terminal Professional HID PROX			
Frequency (MHz)	Test Data (dBuV)	AF+CL -PA (dB)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP /AVG
43.8000	21.77	11.54	33.31	39.0	3m./VERT	5.7	PK
102.4900	21.48	12.07	33.55	43.5	3m./HORZ	10.0	PK
124.9800	20.24	13.73	33.97	43.5	3m./HORZ	9.5	PK
224.9700	16.90	14.38	31.28	46.4	3m./VERT	15.1	PK
249.9900	19.63	15.83	35.46	46.4	3m./HORZ	10.9	PK
398.9800	14.59	19.16	33.75	46.4	3m./VERT	12.6	PK
466.7500	11.33	21.31	32.64	46.4	3m./VERT	13.8	PK
499.9700	14.50	22.75	37.25	46.4	3m./HORZ	9.1	PK
599.9800	9.66	23.51	33.17	46.4	3m./VERT	13.2	PK
709.7500	7.32	26.07	33.39	46.4	3m./VERT	13.0	PK

SAMPLE CALCULATIONS:

RESULTS: At 43.80 MHz = 21.77+ 11.54= 33.31 (Test Data Extrapolated to 10m Distance by Subtracting 10dB)

March 17, 2009

Test Results

Reviewed By:

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Name: Daniel Aparaschivei