



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

Test Report

Product Name: Q-Safe
Model No.: V06-1WC-2, I06-1WC-2

FCC ID: UDGIAQ001

Applicant:

IAQ Laboratories International, L.L.C.
6685 Beta Drive Mayfield Village, OH 44143 USA

Date Received: 7/27/2006

Date Tested: 7/27/2006



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EMC Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	ROHDE&SCHWARZ	ESCS30	100307	Mar 20,2006	1 Year
LISN	ROHDE&SCHWARZ	ESH3-Z5	100305	Mar 20,2006	1 Year
Pulse Limiter	ROHDE&SCHWARZ	ESH3-Z2	100305	Mar 20,2006	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 20,2006	1 Year
Spectrum Analyzer	ANRITSU	MS2651B	6200238856	Mar 20,2006	1 Year
Bilog Antenna	SCHWARZBECK	VULB 9163	9163-194	Mar 20,2006	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 20,2006	1 Year
Cable	Resenberger	N/A	NO.1	Mar 20,2006	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 20,2006	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 20,2006	1 Year
DC Power Filter	DuoJi	DL2×30B	N/A	N/A	N/A
Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	N/A	N/A
3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	N/A	N/A
AC Power Source	California Instruments	5001iX-400	55689	Mar 20,2006	1 Year
Test analyzer	California Instruments	PACS-1	72254	Mar 20,2006	1 Year
ESD Tester	HAEFELY	PESD 1610	H4001552	Mar 20,2006	1 Year
Signal Generator	IFR	2032	203002/100	Mar 20,2006	1 Year
Amplifier	A&R	150W1000	301584	NCR	NCR
Dual Directional Coupler	A&R	DC6080	301508	Mar 20,2006	1 Year
Power Head	A&R	PH2000	301193	Mar 20,2006	1 Year
Power Meter	A&R	PM2002	302799	Mar 20,2006	1 Year
Field Monitor	A&R	FM5004	300329	Mar 20,2006	1 Year
Field Probe	A&R	FP5000	300221	Mar 20,2006	1 Year
EMCPRO System	Thermo	RO-BASE	0403271	Mar 20,2006	1 Year
Capacitive Clamp	Thermo	PRO-CCL	0403272	Mar 20,2006	1 Year
EMCPRO System	Thermo	PRO-BASE	0403271	Mar 20,2006	1 Year
Coupler decoupler for telecom lines	Thermo	CM-TEL-CD	0403273	Mar 20,2006	1 Year
Signal Generator	IFR	2032	203002/100	Mar 20,2006	1 Year
Amplifier	A&R	150W1000	301584	NCR	NCR
EMCPRO System	Thermo	PRO-BASE	0403271	Mar 20,2006	1 Year



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TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of SHENZHEN MOST ELECTRONICS CO., LTD. The EUT was transmitting a test signal during the testing.

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a 50uH LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25 with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. The ambient temperature of the EUT was 25 with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF = FS
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.

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NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.231

REQUIREMENTS:

Fundamental Frequency MHz	Field Strength of Fundamental dBuV	Field Strength of Harmonics and Spurious Emissions (dBuV/m @ 3m)
40.66 to 40.70	67.04	47.04
70 to 130	61.94	41.94
130 to 174	61.94 to 71.48	41.94 to 51.48
174 to 260	71.48	51.48
260 to 470	71.48 to 81.94	51.48 to 61.94
470 and above	81.94	61.94

THE LIMIT FOR AVERAGE FIELD STRENGTH dBuV/m FOR THE FUNDAMENTAL FREQUENCY= 80.795 dBuV/m. NO FUNDAMENTAL IS ALLOWED IN THE RESTRICTED BANDS.

THE LIMIT FOR AVERAGE FIELD STRENGTH dBuV/m FOR THE HARMONICS AND SPURIOUS FREQUENCIES = 60.795 dBuV/m. SPURIOUS IN THE RESTRICTED BANDS MUST BE LESS THAN 54dBuV/m OR 15.209

Fundamental Radiation Interference Data:

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)
433.00	Vertical	72.80	80.795
866.00	Vertical	51.15	60.795
1299.20	Vertical	43.70	60.795
1732.30	Horizontal	41.25	60.795
2165.30	Vertical	40.00	60.795
2598.20	Vertical	39.15	60.795
3031.00	Vertical	38.90	60.795
3464.00	Vertical	32.66	60.795
3897.00	Horizontal	32.25	60.795
4330.00	Vertical	34.67	60.795

SAMPLE CALCULATION OF LIMIT @ 303 MHz:

$$\begin{aligned}(470 - 260)\text{MHz} &= 210 \text{ MHz} \\ (12500 - 3750)\text{uV/m} &= 8750 \text{ uV/m} \\ 8750\text{uV/m}/210\text{MHz} &= 41.67 \text{ uV/m/MHz} \\ (303-260)\text{MHz} &= 43 \text{ MHz} \\ 43 \text{ MHz} * 41.67 \text{ uV/m/MHz} &= 1791.81 \text{ uV/m} \\ (1791.81 + 3750)\text{uV/m} &= 5541.81 \text{ uV/m limit @ 303 MHz}\end{aligned}$$

TEST RESULTS: The unit DOES meet the FCC requirements.

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NAME OF TEST: Occupied Bandwidth

RULES PART NUMBER: 15.231(C)

REQUIREMENTS: The bandwidth of the emission shall be nowider than .25% of the center frequency for devices operating between 70 and 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

$$433.00 \text{ MHz} * 0.0025 = 1.0825 \text{ MHz}$$
$$1.0825 \text{ MHz}/2 = +/- 541.25$$

METHOD OF MEASUREMENT: METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the plot in next page was generated. The vertical scale is set to 10 dB per division: the horizontal scale is set to 6 MHz per division.

TEST RESULTS: The unit DOES meet the FCC requirements.

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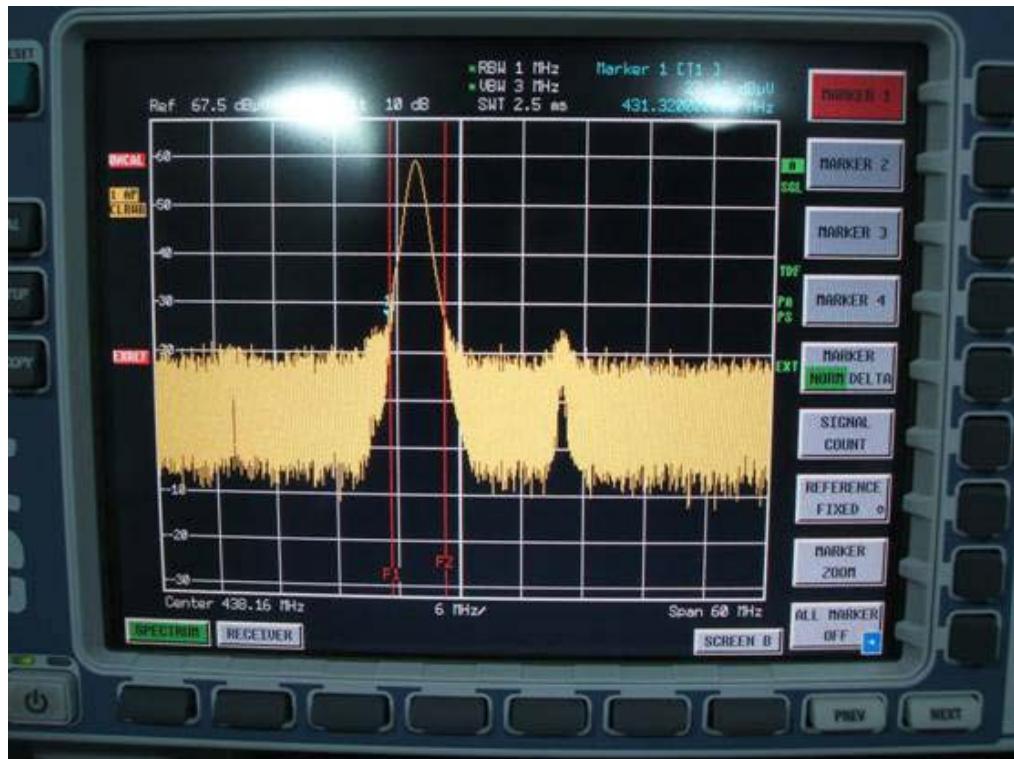


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NAME OF TEST: DUTY CYCLE

RULES PART NUMBER: 15.231

The period of the pulse train is determined by observing it on an oscilloscope or a spectrum analyzer with zero (0) frequency span. A plot is then made of the pulse train with a sweep time of 200 seconds. This sweep determines the duration of the pulse train, which in this case is second.

This device transmits signal periodically when operation. Time for each transmission of the device is 0.1 second and the silent time is 30 minutes between transmissions.

For testing, we only change the silent time from 30 minute to 1 minute.

The plot is in the following page.

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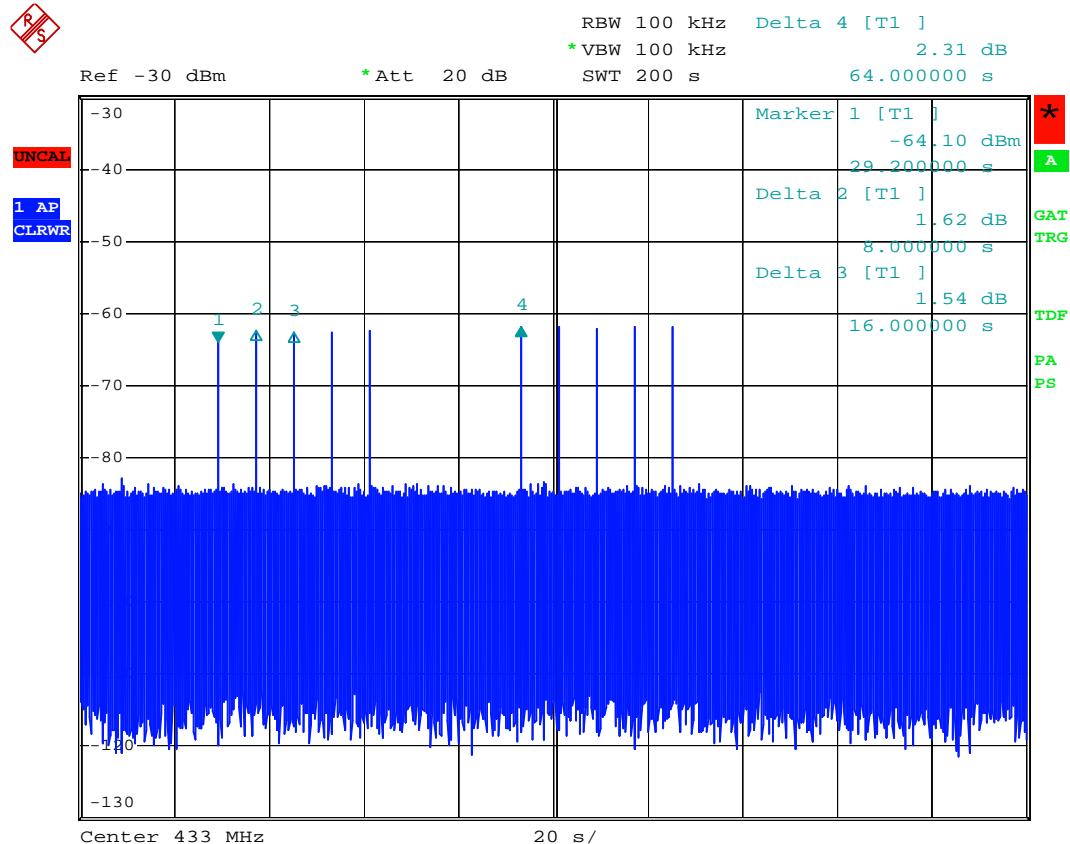


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