LS RESEARCH, LLC
Wireless Product Development

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ENGINEERING TEST REPORT # 313226
LSR Job #: C-1792

RF Exposure Compliance of:
Caretaker Sentry Emergency Wall Communicator

Test Date(s):
September 11, 12, 13, 16, 17, 27, and October 3, 4, 7 2013

Prepared For:
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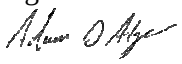
This Test Report is issued under the Authority of: Adam Alger, EMC Engineer

Signature: Date: 11-06-13



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LS Research, LLC in Review

As an EMC Testing Laboratory, our Accreditation and Assessments are recognized through the following:

TESTING CERT #1255.01

A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025: 2005 with Electrical (EMC) Scope of Accreditation
A2LA Certificate Number: 1255.01

Federal Communications Commission (FCC) – USA

Listing of 3 Meter Semi-Anechoic Chamber based on Title 47 CFR – Part 2.948
FCC Registration Number: 90756

Industrie Canada Industry Canada

Canada

Industry Canada

On file, 3 Meter Semi-Anechoic Chamber based on RSS-212 – Issue 1
File Number: IC 3088-A
On file, 3 and 10 Meter OATS based on RSS-212 – Issue 1
File Number: IC 3088

U. S. Conformity Assessment Body (CAB) Validation

Validated by the European Commission as a U. S. Competent Body operating under the U. S./EU, Mutual Recognition Agreement (MRA) operating under the European Union Electromagnetic Compatibility –Council Directive 2004/108/EC (formerly 89/336/EEC, Article 10.2).
Date of Validation: January 16, 2001

Validated by the European Commission as a U.S. Notified Body operating under the U.S. /EU, Mutual Recognition Agreement (MRA) operating under the European Union Telecommunication Equipment – Council Directive 99/5/EC, Annex V.
Date of Validation: November 20, 2002
Notified Body Identification Number: 1243

1.0 Conformance Summary

The EUT was found to MEET the 5mm minimum test separation distance threshold for SAR test exclusion per FCC §2.1091(mobile) and §2.1093(portable) using methods of FCC KDB 447498 D01 General RF Exposure Guidance v05r01 as a standalone device.

2.0 SAR Test Exclusion Threshold

SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm

1-g SAR test exclusion threshold equation:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [√f(GHz)] ≤ 3.0

10-g SAR test exclusion threshold equation:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [√f(GHz)] ≤ 7.5

3.0 Equipment Under Test (EUT) Information

The following information has been supplied by the applicant.

Product Name:	Caretaker Sentry Emergency Wall Communicator
Model Number:	41920
Serial Number:	N/A (Engineering Sample)
FCC ID	TYD-CS41920
IC Number	8471A-CS41920

3.1 Product Description

EUT uses an integral antenna with a maximum 1.2 dBi peak gain. EUT fitted with a temporary connection (U.FL) for RF Conducted measurements.
EUT utilizes 5 RF Channels (1921.536-1928.448 MHz) with 6 timeslots for 30 TDMA Duplex Channels

3.2 Additional Information

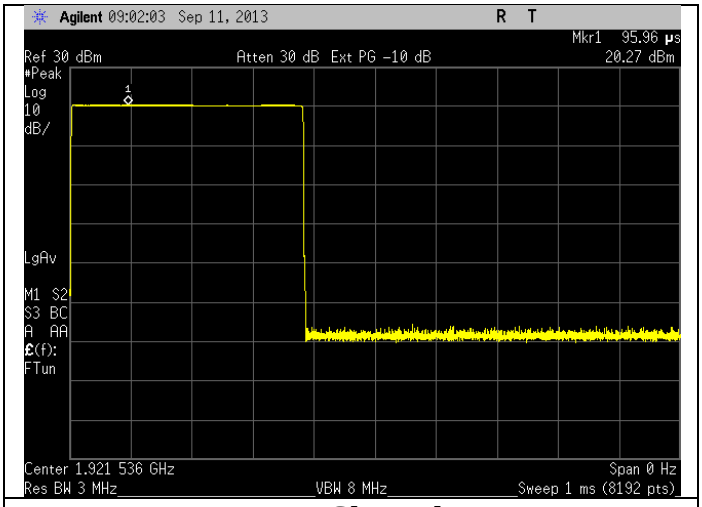
EUT was programmed into continuous transmit via hyper-terminal commands for RF tests. Normal mode of operation achieved with companion device for spectrum etiquette tests.

4.0 RF Conducted Measurement Data

Table

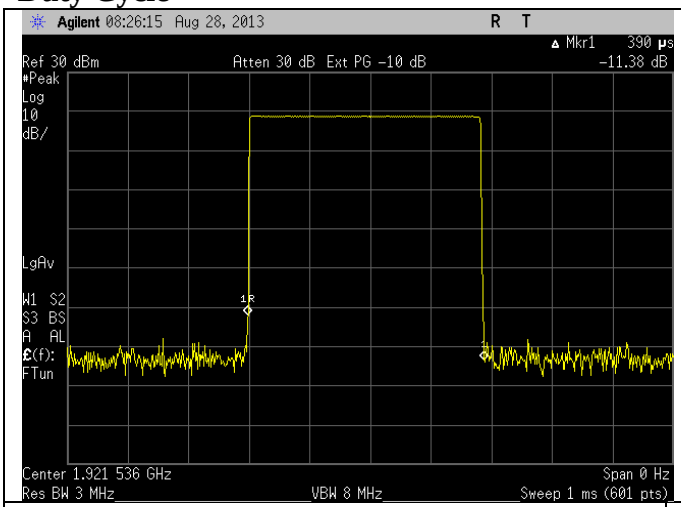
Frequency (MHz)	Power Antenna (dBm)
1921.536	20.27
1924.992	20.12
1928.448	19.95

Plots

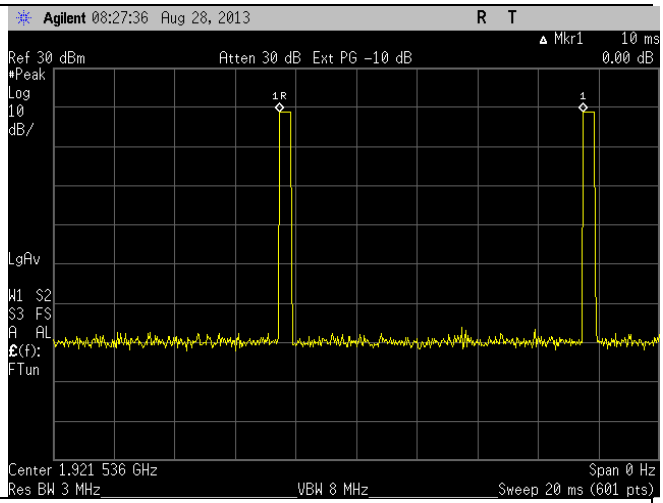


Low Channel

Duty Cycle



One pulse 390 µs



Pulse Period (10 ms)

5.0 SAR Test Exclusion Calculation

Description	Line #	Data	Unit	Additional Description
Transmit Packet on time:	1	0.39	(ms)	Worst case
Packet repetion time:	2	10	(ms)	Worst case
Duty factor:	3	0.039		Transmit Packet on time / Packet repetion time (1/2)
Maximum peak output power at antenna input terminal:	4	20.27	(dBm)	Measured worst case
Antenna gain:	5	1.2	(dBi)	Antenna gain (supplied by applicant)
Maximum peak radiated power:	6	21.470	(dBm)	Antenna terminal measured power + antenna gain (4+5)
Maximum peak radiated power:	7	140.281	(mW)	dBm to mW conversion
Prediction distance:	8	5	(mm)	Minimum test seperation distance
Prediction frequency:	9	1.921536	(GHz)	Measured frequency
Square root of frequency (GHz):	10	1.386195		Calculation
Duty factor applied to maximum peak radiated power (mW):	11	5.470973	(mW)	duty factor * maximum peak radiated power (11*7)
Source based power (mW) / min test seperation distance (mm):	12	1.094195		Calculation (11/8)
SAR exclusion calculation:	13	1.52		Calculation (12*10)
Threshold:	14	3		
Margin:	15	1.48		Calculation (14-13)

6.0 Industry Canada Low Power Exemption

RSS 102 Section 2.5 states that all transmitters that meet the output power requirements as stated in section 2.5.1 and 2.5.2 of RSS 102 are exempt from routine SAR and RF exposure evaluation.

Output Power Evaluation.

Evaluation Frequency = 1921.536 MHz

Device Operation separation distance: ***≤20cm***

Maximum Effective Isotropic Radiated Power (dBm) = 20.27 dBm + 1.2 dBi = 21.47 dBm

Maximum Effective Isotropic Radiated Power (mW) = $\log^{-1}$(EIRP(dBm)/10) = 140 mW

Duty cycle (source-based, time-averaged) = 390µs/10ms = 0.039 * 140 mW = 5.47 mW

Section 2.5.2 general public use limit at for devices operating less than 20cm:

Frequency	Limit
1 to 2.2 GHz	100 mW

Conclusion:
Since the maximum effective radiated power (ERP) is less than the applicable section limit, the Product is exempt from SAR/RF Evaluation

END OF REPORT

Date	Version	Comments	Person
11-6-13	V0	Final	Adam A