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ENGINEERING TEST REPORT # 315155 C

LSR Job #: C-2240

Compliance Testing of:

Quietyme Stone 16

Prepared For:

Attention: Robert Baddeley

Quietyme, Inc.

W2288 County Hwy E

Neshkoro, WI 54960

This Test Report is issued under the Authority of:

Khairul A. Zainal, Sr. EMC Engineer

Signature: 

Date: 9/23/15

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Prepared For: Quietyme, Inc.	Name: Quietyme Stone 16
Report: 315155 C	Model: Quietyme Stone 16
LSR: C-2240	Serial: REV6 Boards #1, #3 and #6

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LSR, LLC in Review

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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



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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

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1.0 Conformance Summary

The EUT was found to MEET the requirements for SAR test exclusion per FCC §2.1091 and RSS102 using methods of FCC KDB 447498 D01 General RF Exposure Guidance v05r02 as a standalone device.

2.0 SAR Test Exclusion Threshold

SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 20 cm

1-g SAR test exclusion threshold equation:

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] * [\sqrt{f(\text{GHz})}] \leq 3.0$$

10-g SAR test exclusion threshold equation:

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] * [\sqrt{f(\text{GHz})}] \leq 7.5$$

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3.0 Client Information

Manufacturer Name:	Quietyme, Inc.
Address:	W2288 County Hwy E. Neshkoro, WI 54960
Contact Name:	Robert Baddeley

3.1 Equipment Under Test (EUT) Information

Product Name:	Quietyme Stone 16
Model Number:	STONE16
Serial Number:	REV 6 Boards #3 and #6: Radiated measurements REV6 Board #1: Conducted measurements

3.2 Product Description

The Quietyme Stone 16 fulfills multiple needs for the Quietyme ecosystem. The primary two uses are as the coordinator and routers for a mesh network within an environment (home, hotel, apartment complex, industrial, etc.). In a typical installation, there will be a single device programmed as a coordinator, and 1 to 100 devices programmed as routers and installed throughout a site. Stone 16 is revision 1.6 of the Stone product.

3.3 Modifications Incorporated In the EUT for Compliance Purposes

None noted at time of test

3.4 Deviations & Exclusions from Test Specifications

None noted at time of test

3.5 Additional Information

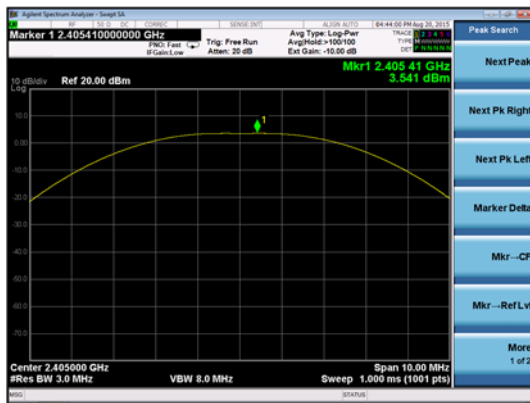
RF exposure investigation per RSS 102, were performed using Radiated measurements since it is the worst case.

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4.0 Output power data

Antenna port conducted Measurement

Channel (MHz)	Peak Conducted Power (dBm)	Power Limit (dBm)	Power margin (dB)
2405	3.5	30.0	26.5
2440	3.5	30.0	26.5
2475	3.3	30.0	26.7



Radiated Measurement

Frequency (MHz)	Ant	EUT	Height (cm)	Azimuth (°)	Field Strength (dBuV/m)
2405.0	H	S	172.2	190	100.8

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5.0 SAR Test Exclusion Calculation

RF Exposure Evaluation against FCC KDB 447498

Frequency = 2405 MHz

Output Power = 3.5 dBm

Output Power = 2.24mW

Minimum separation distance = 5mm

$$[2.24 \text{ mW}/5\text{mm}] * [\sqrt{2.405 \text{ GHz}}] = 0.448 * 1.55 = 0.7 < \mathbf{3.0}$$

Excluded from SAR testing at use case distance less than and equal to 5mm.

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RF Exposure against RSS 102 Issue 5

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency = 2.405GHz

Field strength = 100.8dBμV/m at 3m

EIRP (dBm) = 100.8-95.2 = 5.6dBm

EIRP (mW)= 3.63 milliwatt

SAR exclusion threshold at 2405MHz is 4.24mW therefore the EUT excluded from SAR testing at use case distance less than and equal to 5mm.