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Report On

FCC and Industry Canada Testing of the
Quake Global Inc QLOCATE
In accordance with FCC CFR 47 Part 15B and ICES-003

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FCC ID: PB5QLocate
IC: 4650A-QLocate

Document 75928153 Report 04 Issue 1

November 2014



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PREPARED FOR

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4933 Paramount Drive
92123
USA

PREPARED BY

Natalie Bennett
Senior Administrator, Project Support

APPROVED BY

Ryan Henley
Authorised Signatory

DATED

21 November 2014

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Lawler



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SECTION 1

REPORT SUMMARY

FCC and Industry Canada Testing of the
Quake Global Inc QLOCATE
In accordance with FCC CFR 47 Part 15B and ICES-003



1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC and Industry Canada Testing of the Quake Global Inc QLOCATE to the requirements of FCC CFR 47 Part 15B and ICES-003.

Objective	To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Quake Global Inc
Model Number(s)	QLocate
Serial Number(s)	142105180
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15B (2013) ICES-003 (2012)
Incoming Release Date	Application Form 05 October 2014
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	PO7195 01 October 2014
Start of Test	12 October 2014
Finish of Test	12 October 2014
Name of Engineer(s)	G Lawler
Related Document(s)	ANSI C63.4 (2009)



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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15B and ICES-003 is shown below.

Section	Spec Clause		Test Description	Result	Comments/Base Standard
	FCC	IC			
Idle					
2.1	15.109	6.2	Radiated Emissions	Pass	ANSI C63.4



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1.3 APPLICATION FORM

APPLICANT'S DETAILS	
COMPANY NAME :	QUAKE GLOBAL.....
ADDRESS :	4933 Paramount Dr, San Diego, CA, 92123
NAME FOR CONTACT PURPOSES : Enrique Valdez.....	
TELEPHONE NO: (858) 277-7290 EXT 253.....	FAX NO: (858) 277-7259
	E-MAIL: evaldez @quakeglobal.com...

EQUIPMENT INFORMATION			
Model name/number	QLOCATE.....	Identification/Part number	1158-1000.....
Hardware Version		Software Version	TA13001.....
Manufacturer	QUAKE GLOBAL.	Country of Origin	United States of America....
FCC ID	PB5QLocate.....	Industry Canada ID	4650A-QLocate.....
Technical description (a brief description of the intended use and operation)			
<u>Supply Voltage:</u>			
☐	AC mains	State AC voltage	and AC frequency
☒	DC (external)	State DC voltage ...5... V	and DC current1.5..... A
☐	DC (internal)	State DC voltage	and Battery type
<u>Frequency characteristics:</u>			
Transmitter Frequency range 1616.... MHz to 1626.5.... MHz		Channel spacing 41.667 kHz.....	
		(if channelized)	
Receiver Frequency range 1616.... MHz to 1626.5.... MHz		Channel spacing 41.667 kHz.....	
(if different)		(if channelized)	
Designated test frequencies:			
Bottom:1616..... MHz Middle: ...1621.0004..... MHz		Top:1626.500084... MHz	
Intermediate Frequencies : MHz			
Highest Internally Generated Frequency : 1626.500084 ... MHz			
<u>Power characteristics:</u>			
Maximum transmitter power1.6... W		Minimum transmitter power	
		(if variable)	
☒	Continuous transmission		
☐	Intermittent transmission	State duty cycle	
If intermittent, can transmitter be set to continuous transmit test mode? Y/N			
<u>Antenna characteristics:</u>			
☒	Antenna connector	State impedance50... ohm	
☐	Temporary antenna connector	State impedance ohm	
☐	Integral antenna Type	State gain dBi	
☐	External Antenna Type	State gain3..... dBi	
<u>Modulation characteristics:</u>			
☐	Amplitude	☒ Other	
☐	Frequency	Details: ...TDMA FDMA.....	
☐	Phase	(GMSK, QSPK etc)	
Can the transmitter operate un-modulated?		Y/N	
ITU Class of emission:			
<u>Battery/Power Supply</u>			
Model name/number		Identification/Part number	
Manufacturer		Country of Origin	
<u>Ancillaries (if applicable)</u>			
Model name/number		Identification/Part number	
Manufacturer		Country of Origin	
<u>Extreme conditions:</u>			
Maximum temperature	...85..... °C	Minimum temperature	...-40..... °C
Maximum supply voltage	...5.5..... V	Minimum supply voltage	...4.5 V



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I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature : 

Name : Darrin Calin

Position held : Vice President of Operations

Date : October 5, 2014



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1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Quake Global Inc QLOCATE. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 5 V DC supply.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

Industry Canada Company Address Code
IC2932B-1 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.7 MODIFICATION RECORD

Modification 0 - No modifications were made to the test sample during testing.



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SECTION 2

TEST DETAILS

FCC and Industry Canada Testing of the
Quake Global Inc QLOCATE
In accordance with FCC CFR 47 Part 15B and ICES-003



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2.1 RADIATED EMISSIONS

2.1.1 Specification Reference

FCC CFR 47 Part 15B, Clause 15.109
ICES-003, Clause 6.2

2.1.2 Equipment Under Test and Modification State

QLocate S/N: 142105180 - Modification State 0

2.1.3 Date of Test

12 October 2014

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

A test environment and testing arrangement meeting the specification of ANSI C63.4 was used during all testing. The Equipment Under Test (EUT) was set upon a non-conducting platform at an elevation of 80 cm above a horizontal reference ground plane.

Exploratory radiated emissions measurements were made by azimuth emissions searches over a range of 0° and 360°. These exploratory radiated emissions measurements were made using a peak detector over a frequency range of 30 MHz to 9 GHz, with the measuring antenna in both vertical and horizontal polarizations.

At least six of the greatest peak emissions, frequency positions were selected from the exploratory radiated emissions measurements for further evaluation as final measuring points.

To ascertain the azimuth and measuring antenna polarization that yields the highest peak emission level, each final measurement frequency was investigated by continuous azimuth emissions searching with the measuring antenna in both vertical and horizontal polarizations. For each final measurement frequency, the respective peak emission azimuth and measuring antenna polarization was used during a measuring antenna elevation search from 1 m to 4 m. Each final measurement frequency was then measured with the EUT azimuth, measuring antenna height and polarization that yielded the greatest peak emission level.

Final measurement points over the frequency range of 30 MHz to 1 GHz were measured using a quasi-peak detector. Final measurement points over the frequency range of 1 GHz and 9 GHz were measured using peak and average methods. Peak measurements were made using a peak detector with 1 MHz resolution and video bandwidths. Average measurements were made using a resolution bandwidth of 1 MHz and a video bandwidth of greater than 10 Hz.

All final measurements were assessed against the Class B emission limits in Clause 15.109 of FCC CFR 47 FCC Part 15 and ICES-003 Clause 6.2.



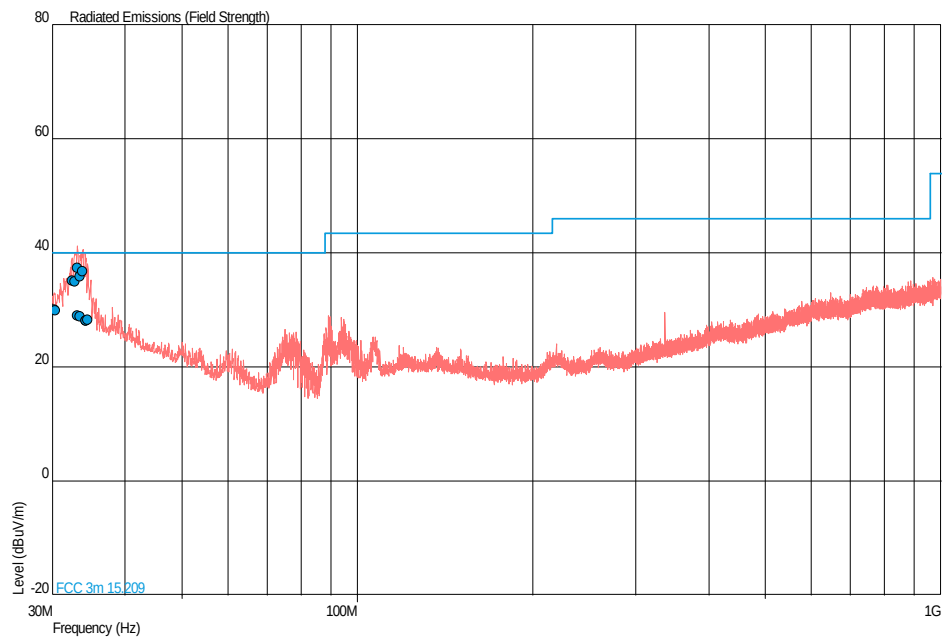
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2.1.6 Environmental Conditions

Ambient Temperature 18.8°C
Relative Humidity 43.0%

2.1.7 Test Results

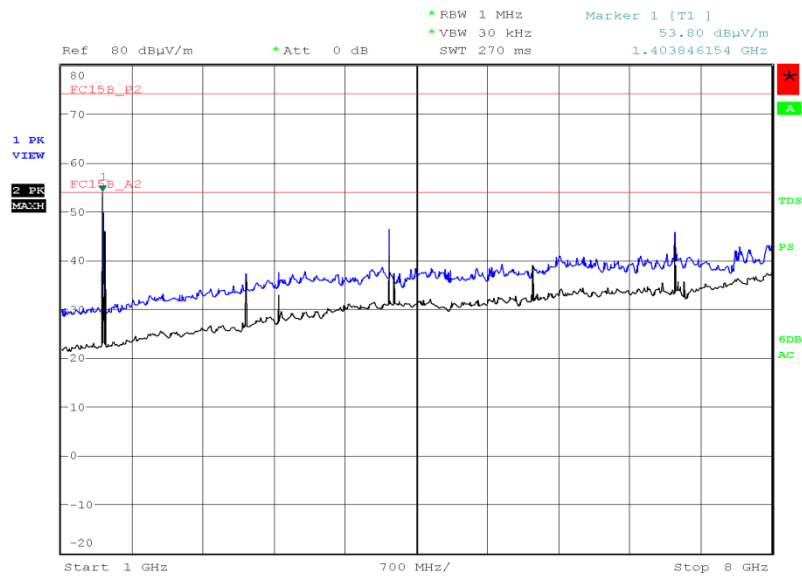
30 MHz to 1 GHz



Frequency (MHz)	QP Level (dBuV/m)	QP Level (uV/m)	QP Limit (dBuV/m)	QP Limit (uV/m)	QP Margin (dBuV/m)	QP Margin (uV/m)	Angle (Deg)	Height (m)	Polarity
30.292	30.0	31.6	40.0	100	-10.0	-68.4	152	2.03	Horizontal
30.394	29.9	31.3	40.0	100	-10.1	-68.7	53	3.85	Horizontal
32.435	35.1	56.9	40.0	100	-4.9	-43.1	360	1.00	Vertical
32.818	35.0	56.2	40.0	100	-5.0	-43.8	305	1.00	Vertical
33.137	37.3	73.3	40.0	100	-2.7	-26.7	282	1.00	Vertical
33.158	29.0	28.2	40.0	100	-11.0	-71.8	246	2.93	Horizontal
33.441	28.9	27.9	40.0	100	-11.1	-72.1	7	1.00	Horizontal
33.494	36.0	63.1	40.0	100	-4.0	-36.9	293	1.00	Vertical
33.846	36.8	69.2	40.0	100	-3.2	-30.8	328	1.00	Vertical
34.206	28.1	25.4	40.0	100	-11.9	-74.6	136	1.00	Horizontal
34.292	28.1	25.4	40.0	100	-11.9	-74.6	66	1.00	Horizontal
34.524	28.3	26.0	40.0	100	-11.7	-74.0	276	1.65	Horizontal

1 GHz to 13 GHz

Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBμV/m)	Final Average (dBμV/m)
1.409	Horizontal	100	41	56.59	46.64
4.228	Vertical	145	157	50.59	41.69
7.047	Horizontal	155	129	52.04	42.52

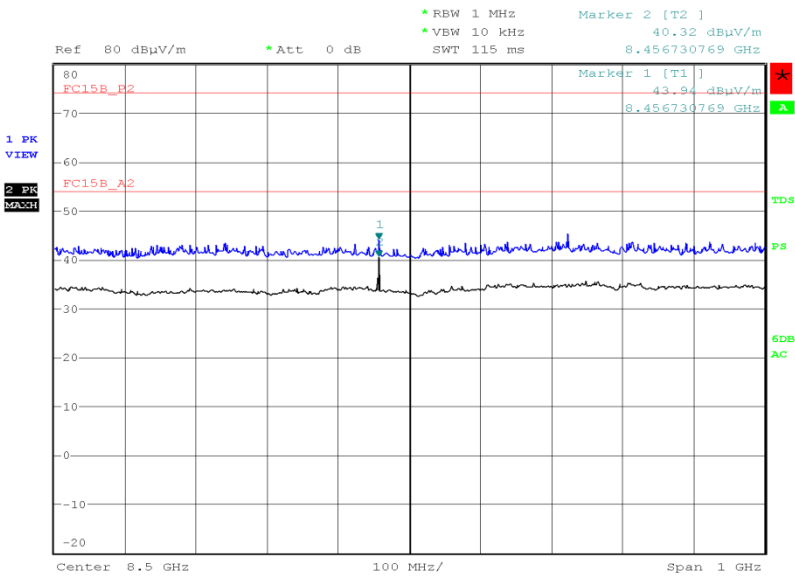
1 GHz to 8 GHz

Date: 12.OCT.2014 13:33:52



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8 GHz to 9 GHz



Date: 12.OCT.2014 14:57:24

No other emissions were detected within 6 dB of the limit.



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SECTION 3

TEST EQUIPMENT USED



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3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 - Radiated Emissions					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	2-May-2015
Pre-Amplifier	Phase One	PS04-0086	1533	12	19-Dec-2014
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
'3.5mm' - '3.5mm' RF Cable (1m)	Rhophase	3PS-1803-1000-3PS	3697	12	28-Feb-2015
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	O/P MON
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	1-Oct-2015

O/P MON – Output Monitored

TU – Traceability Unscheduled



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3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
Radiated Emissions	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB



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SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA
(Not UKAS Accredited).

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