

AquaCheck (Pty) LTD

TEST REPORT FOR

AC-ROVER

Tested To The Following Standards:

FCC Part 15 Subpart C, Section: 15.247

Report No.: 94327-10

Date of issue: April 16, 2014



This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

AquaCheck (Pty) LTD
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Bennet, NE 68317

Representative: Brad Rathje

REPORT PREPARED BY:

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CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 94327

DATE OF EQUIPMENT RECEIPT:

March 17, 2014

DATE(S) OF TESTING:

March 17-April 4, 2014

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information



Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Fremont	US0082	SL2-IN-E-1148R	3082B-1	958979	A-0149

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C

Test Procedure/Method	Description	Results
15.247(b)(3) / DA 00-705	RF Power Output	Pass
15.31(e) / DA 00-705	Voltage Variation	Pass
15.247(a)(2) / DA 00-705	Occupied Bandwidth	Pass
15.247(d) / DA 00-705	Antenna Conducted Emissions	Pass
15.247(d) / ITU-R 55/1 / DA 00-705	Field Strength of Spurious Emissions and Bandedge	Pass
15.247(e) / DA 00-705	Power Spectral Density	Pass

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

AC-ROVER

Manuf: AquaCheck (Pty) LTD
Model: AC-ROVER
Serial: None

900MHz Band Antenna

Manuf: SkyWave Antennas
Model: 16-1003-A
Serial: None

GSM Wide Band Antenna

Manuf: RF Design
Model: ANT-GSM-ST-SM-M5
Serial: None

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Batteries Lithium Pack

Manuf: QC
Model: SB6044
Serial: None

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) CFR 47 Section 15 Subpart C requirements for Intentional Radiators.

15.247(b)(3) RF Power Output

Test Conditions & Setup / Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(b) Power Output (902-928 MHz DTS)**
 Work Order #: **94327** Date: **3/20/2014**
 Test Type: **Conducted Power Measurement** Time: **09:13:24**
 Equipment: **AC-ROVER** Sequence#: **1**
 Manufacturer: **AquaCheck (Pty) LTD** Tested By: **Hieu Song Nguyenpham**
 Model: **AC-ROVER**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

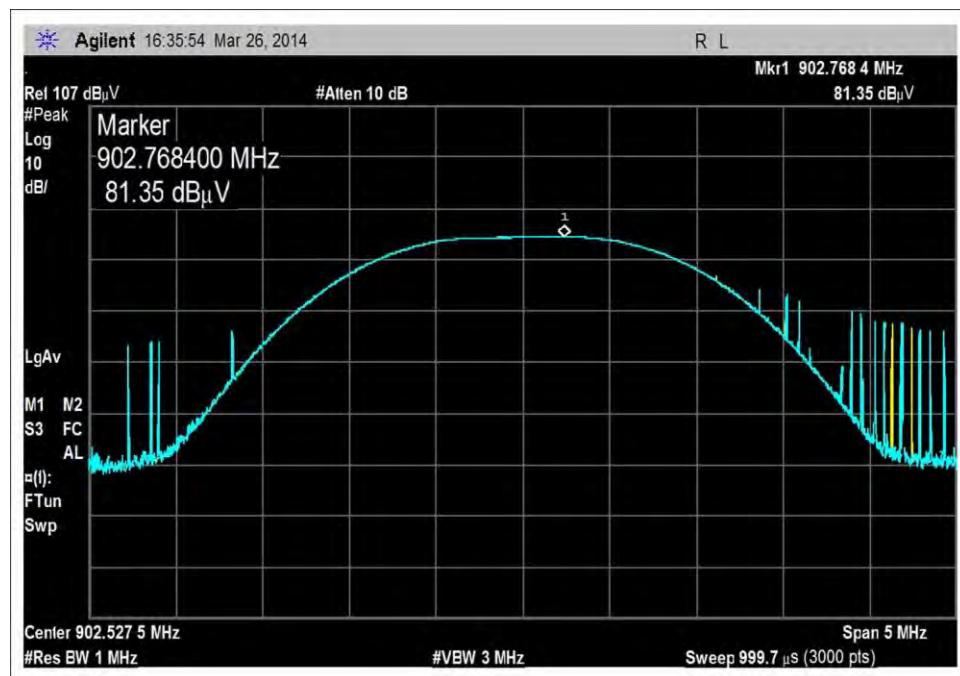
Fundamental of the EUT
 RF output power =10mW and attenuator " 0"
 RBW = 1MHz
 VBW= 3MHz
 Software Used: Hyper Terminal
 Firmware: AC NODE, Firmware V6, Boot V17
 Transmit Frequency Range =902 to 928MHz
 Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz
 The EUT is set continuously transmit
 Note: Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power.

Ext Attn: 0 dB

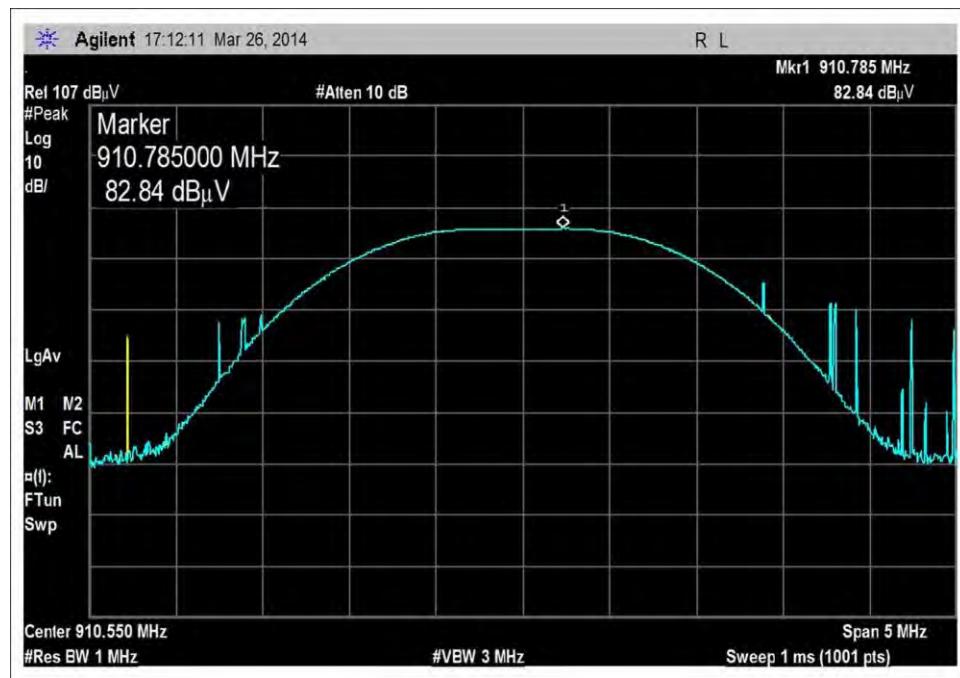
Measurement Data: Reading listed by margin.				Test Distance: None						
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	902.573M	106.5	+9.9	+0.7		+0.0	117.1	137.0	-19.9	None
									Low Channel	
2	910.547M	106.2	+9.9	+0.7		+0.0	116.8	137.0	-20.2	None
									Middle Channel	
3	918.754M	106.1	+9.9	+0.7		+0.0	116.7	137.0	-20.3	None
									High Channel	

Convert equivalent electric field strength to the resultant power level

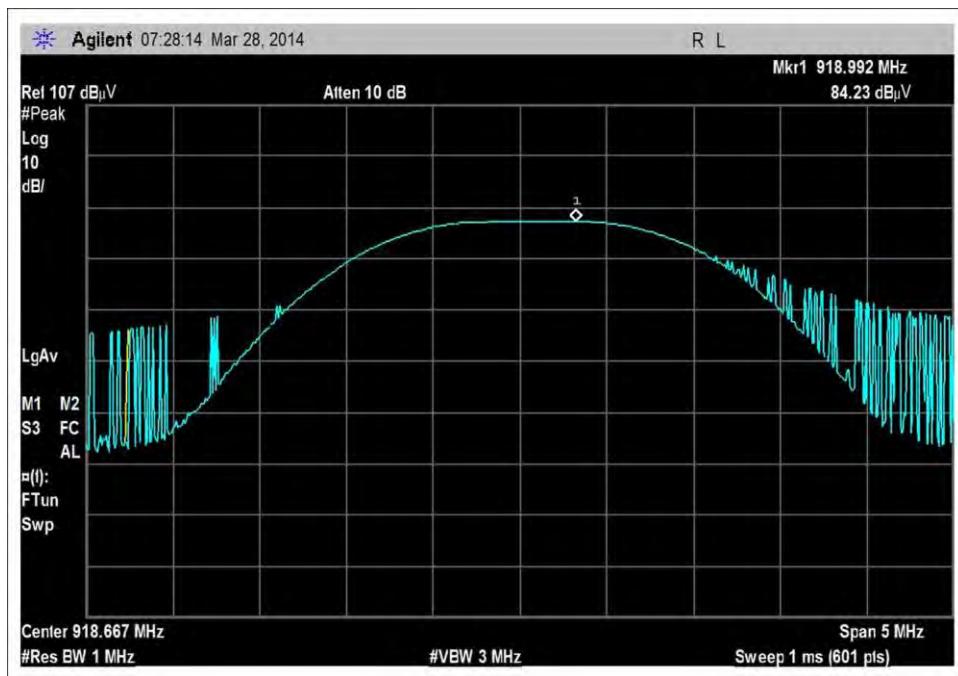
Frequency (MHz)	Measured Power in Watts	Power Limit in Watts	Results
Low Channel	0.0100	1.00	Pass
Middle Channel	0.0095	1.00	Pass
High Channel	0.0093	1.00	Pass



Low Channel

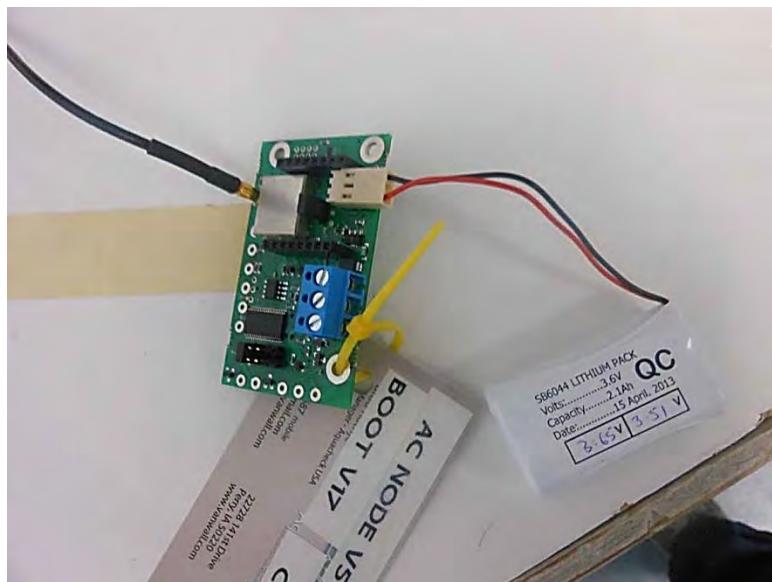
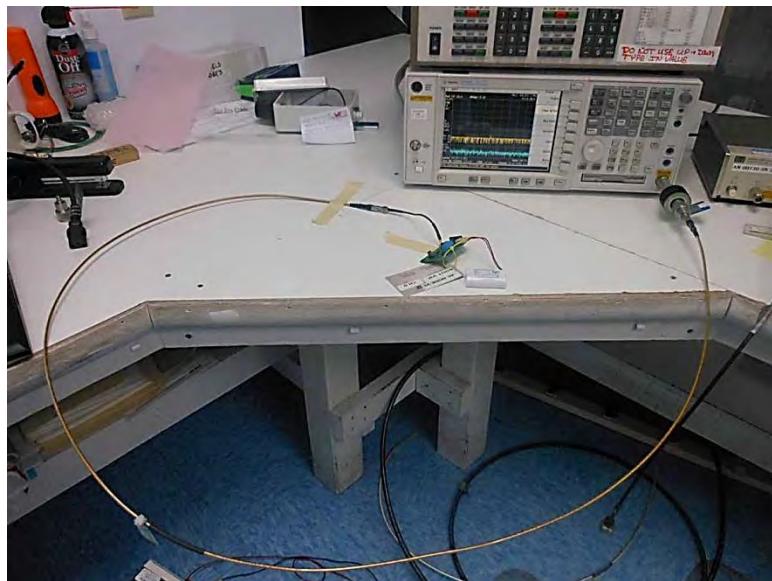


Middle Channel



High Channel

Test Setup Photo(s)



15.31(e) Voltage Variations

Test Conditions & Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.31e**
 Work Order #: **94327** Date: **3/20/2014**
 Test Type: **Conducted Power Measurement** Time: **09:13:24**
 Equipment: **AC-ROVER** Sequence#: **1**
 Manufacturer: **AquaCheck (Pty) LTD** Tested By: **Hieu Song Nguyenpham**
 Model: **AC-ROVER**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP06138	Cable	32022-29094K- 29094K-72TC	8/2/2013	8/2/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

RF output power =10mW and attenuator " 0"

Software Used: Hyper Terminal
 Firmware: AC NODE, Firmware V6, Boot V17
 Transmit Frequency Range =902 to 928MHz

Low channel: 902.5MHz
 Middle channel: 910.5MHz
 High Channel: 919MHz

The EUT is set continuously transmit

Note: Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power.

15.31e: Using the new batteries.

15.247(a)(2) -6dB Occupied Bandwidth

Test Conditions & Setup / Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **OBW**
 Work Order #: **94327** Date: 3/20/2014
 Test Type: **Conducted Power Measurement** Time: 09:13:24
 Equipment: **AC-ROVER** Sequence#: 1
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP06138	Cable	32022-29094K- 29094K-72TC	8/2/2013	8/2/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

OBW set up

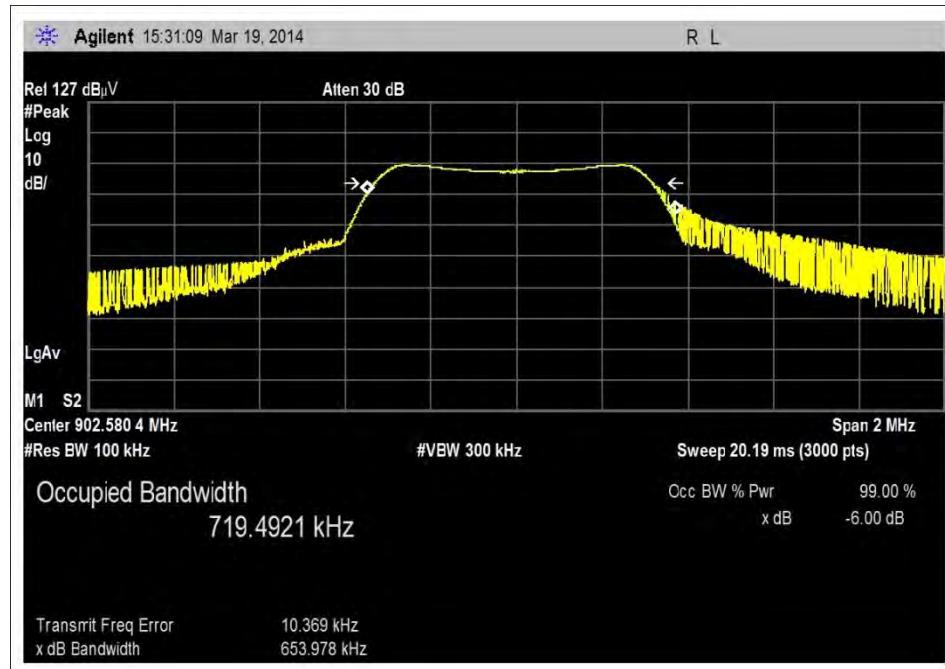
RF output power =10mW and attenuator " 0"

Software Used: Hyper Terminal
 Firmware: AC NODE, Firmware V6, Boot V17
 Transmit Frequency Range =902 to 928MHz

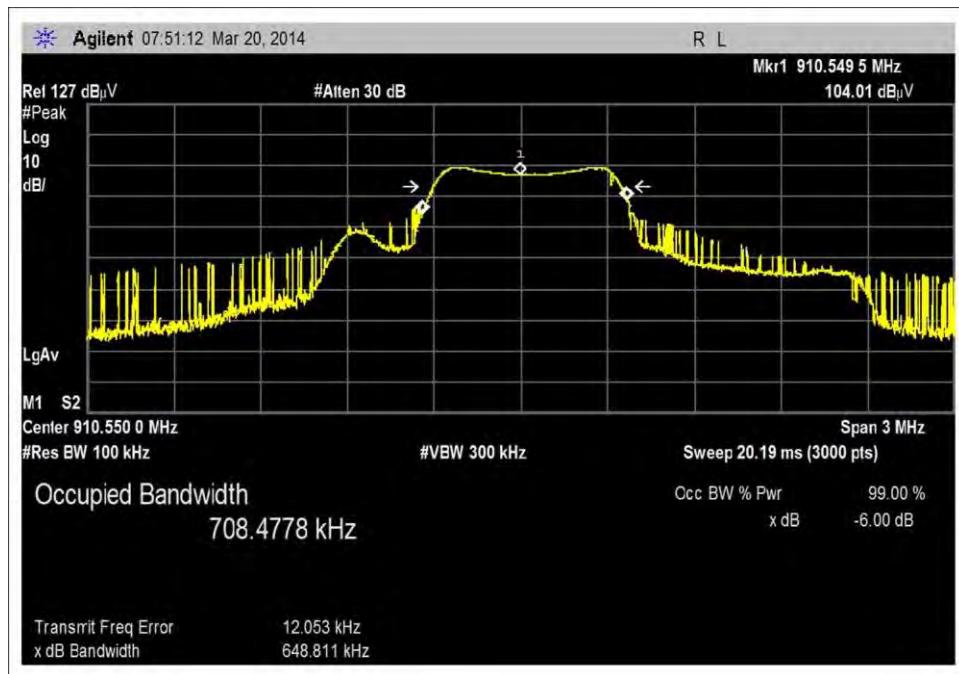
Low channel: 902.5MHz
 Middle channel: 910.5MHz
 High Channel: 919MHz

The EUT is set to continuously transmit.

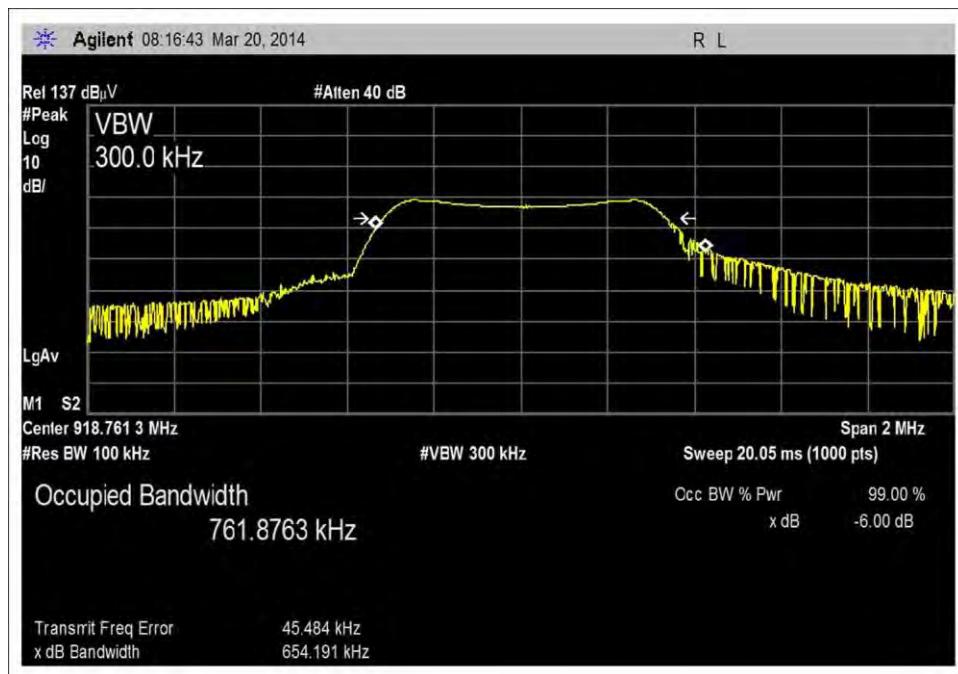
Note: Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power.



Low Channel, New Firmware

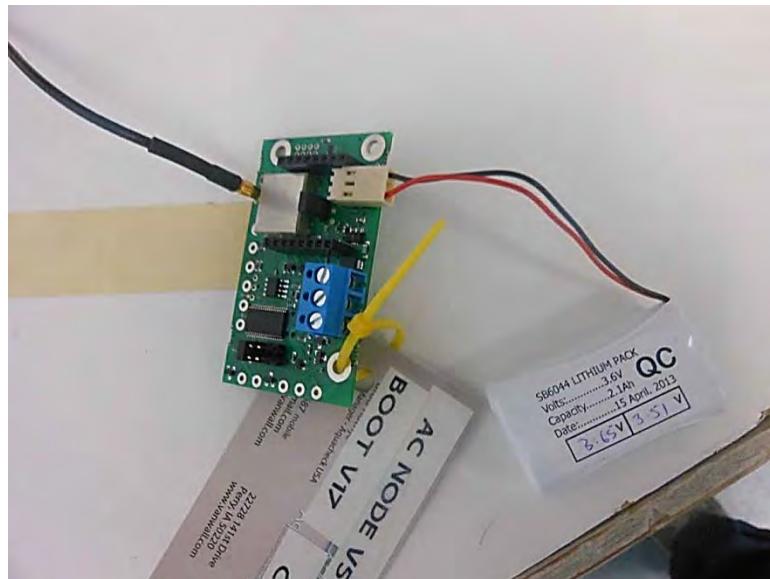
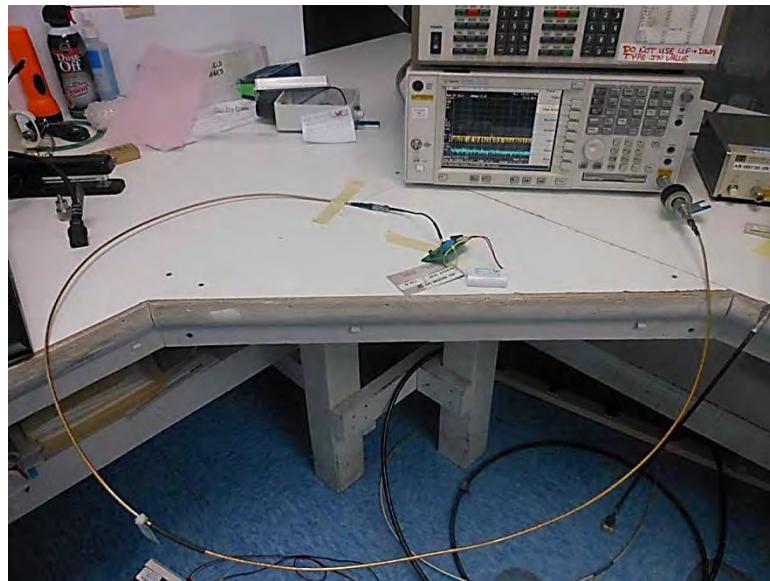


Middle Channel, New Firmware



High Channel, New Firmware

Test Setup Photo(s)



15.247(d) Antenna Conducted Emissions

Test Conditions & Setup / Test Data

The Reference level measurement for Emission is non restricted frequency bands were made using the methods set out in KDB "558704 D01 DTS Meas Guidance v03r01", Section 11 Emissions in non-restricted frequency band

NOTE: The Reference Level is the limit line for Conducted Spurious Emission. Choose the worst reference level for the limit line

Reference level measurement in 100kHz Table

Channel	Power Level (dBm)	Power Level (dBuV)	Reference level for Conducted (dBuV)	Power Level (dBuV/m)	Reference level for Radiated (dBuV/m)
LOW	10.0	117.00	97.00	105.25	85.25
MIDDLE	9.84	116.84	96.84	105.09	85.09
HIGH	9.55	116.55	96.55	104.80	84.80

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) Conducted Spurious Emissions**
 Work Order #: **94327** Date: 3/20/2014
 Test Type: **Conducted Spurious Emission** Time: 11:52:31 AM
 Equipment: **AC-ROVER** Sequence#: 7
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Conducted Spurious Emission
 Frequency Range: 9kHz to 10000MHz

RF output power =10mW and attenuator " 0"
 RBW = 100kHz
 VBW= 300kHz

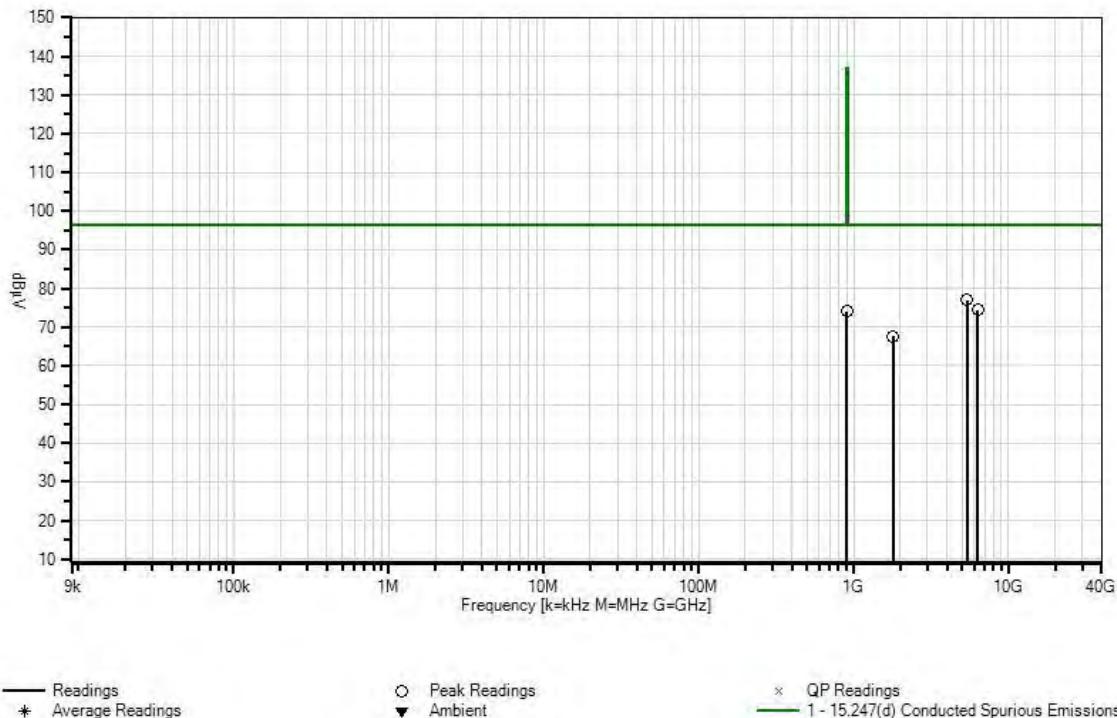
Software Used: Hyper Terminal
 Firmware: AC NODE, Firmware V6, Boot V17
 Transmit Frequency Range =902 to 928MHz

Low channel: 902.5MHz
 Middle channel: 910.5MHz
 High Channel: 919MHz

The EUT is set to continuously transmit.
 Note: Low Channel

Ext Attn: 0 dB

Measurement Data: Reading listed by margin.				Test Distance: None						
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	5416.781M	65.3	+10.1	+1.6		+0.0	77.0	96.6	-19.6	None
2	6316.180M	62.6	+10.0	+1.8		+0.0	74.4	96.6	-22.2	None
3	899.268M	63.4	+9.9	+0.7		+0.0	74.0	96.6	-22.6	None
4	1805.674M	56.7	+10.0	+0.9		+0.0	67.6	96.6	-29.0	None

 CKC Laboratories, Inc Date: 3/20/2014 Time: 11:52:31 AM AquaCheck (Pty) LTD WO#: 94327
 Test Distance: None Sequence#: 7


Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) Conducted Spurious Emissions**
 Work Order #: **94327** Date: 3/20/2014
 Test Type: **Conducted Spurious Emission** Time: 11:29:18 AM
 Equipment: **AC-ROVER** Sequence#: 6
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Conducted Spurious Emission
 Frequency Range: 9kHz to 10000MHz

RF output power =10mW and attenuator " 0"
 RBW = 100kHz
 VBW= 300kHz

Software Used: Hyper Terminal
 Firmware: AC NODE, Firmware V6, Boot V17
 Transmit Frequency Range =902 to 928MHz

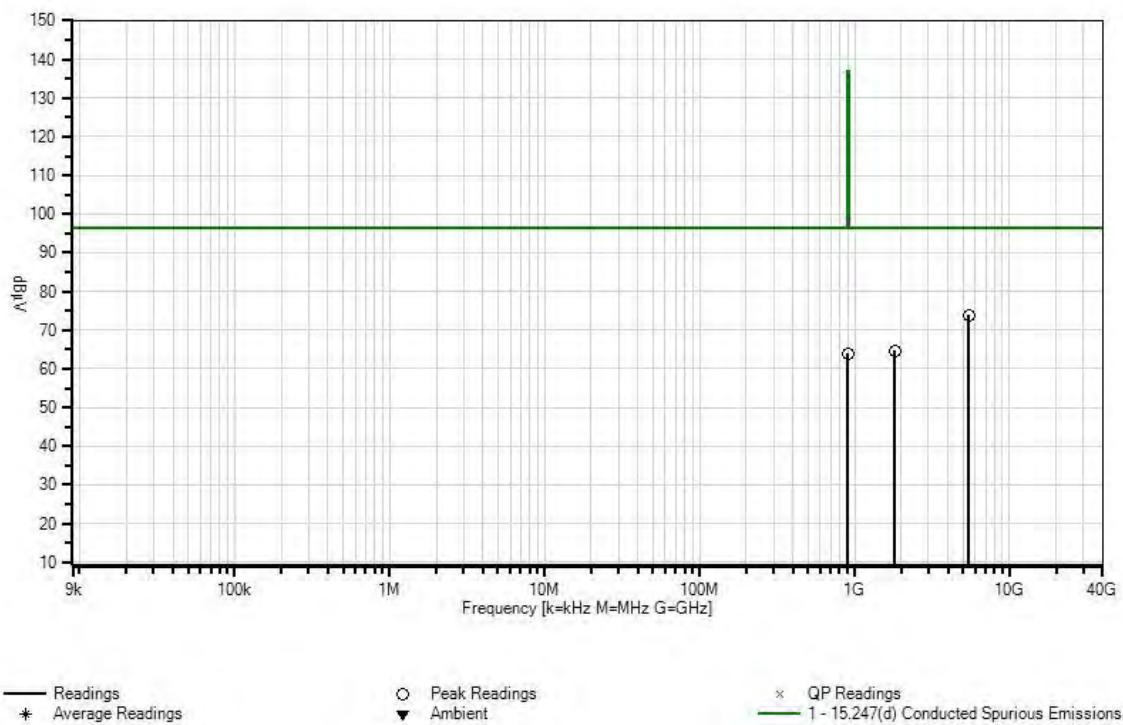
Low channel: 902.5MHz
 Middle channel: 910.5MHz
 High Channel: 919MHz

The EUT is set to continuously transmit.
 Note: Middle Channel

Ext Attn: 0 dB

Measurement Data: Reading listed by margin.				Test Distance: None						
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	5462.611M	62.2	+10.1	+1.6		+0.0	73.9	96.6	-22.7	None
2	1820.720M	53.7	+10.0	+0.9		+0.0	64.6	96.6	-32.0	None
3	900.479M	53.3	+9.9	+0.7		+0.0	63.9	96.6	-32.7	None

CKC Laboratories, Inc Date: 3/20/2014 Time: 11:29:18 AM AquaCheck (Pty) LTD WO#: 94327
Test Distance: None Sequence#: 6



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) Conducted Spurious Emissions**
 Work Order #: **94327** Date: **3/20/2014**
 Test Type: **Conducted Spurious Emission** Time: **10:43:21 AM**
 Equipment: **AC-ROVER** Sequence#: **5**
 Manufacturer: **AquaCheck (Pty) LTD** Tested By: **Hieu Song Nguyenpham**
 Model: **AC-ROVER**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Conducted Spurious Emission
 Frequency Range: 9kHz to 10000MHz

RF output power =10mW and attenuator " 0"
 RBW = 100kHz
 VBW= 300kHz

Software Used: Hyper Terminal
 Firmware: AC NODE, Firmware V6, Boot V17
 Transmit Frequency Range =902 to 928MHz

Low channel: 902.5MHz
 Middle channel: 910.5MHz
 High Channel: 919MHz

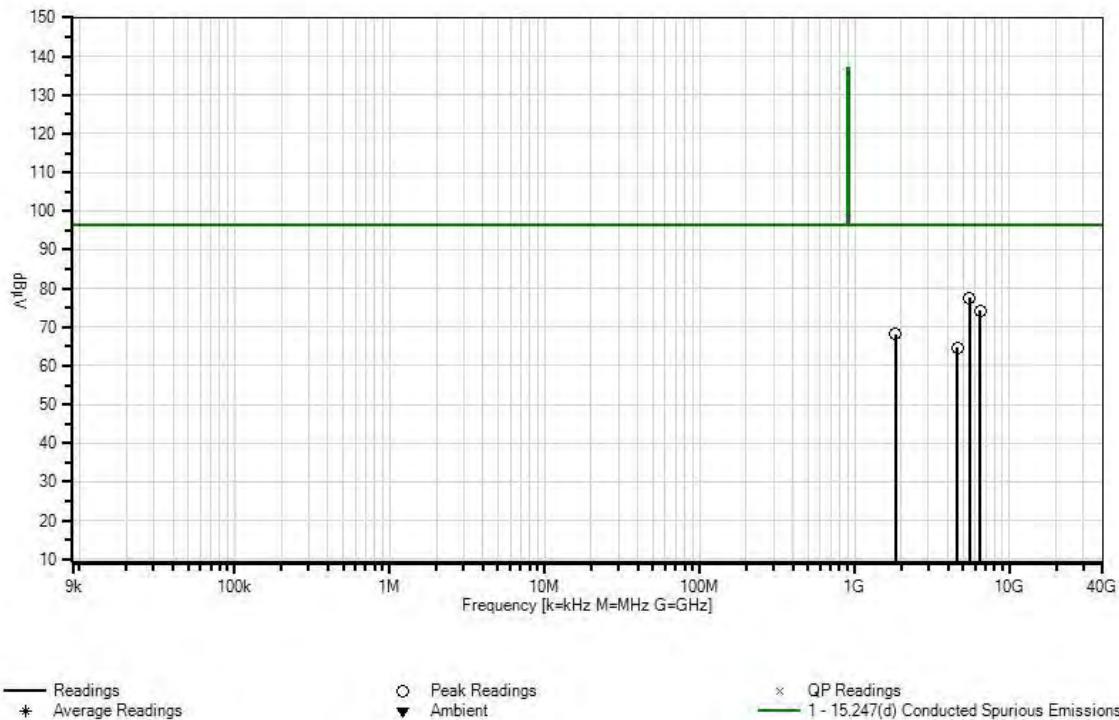
The EUT is set to continuously transmit

Note: High Channel

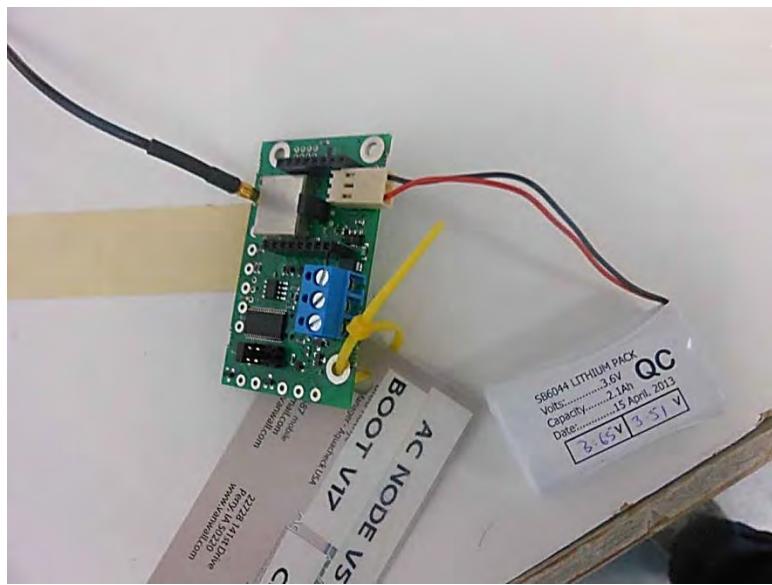
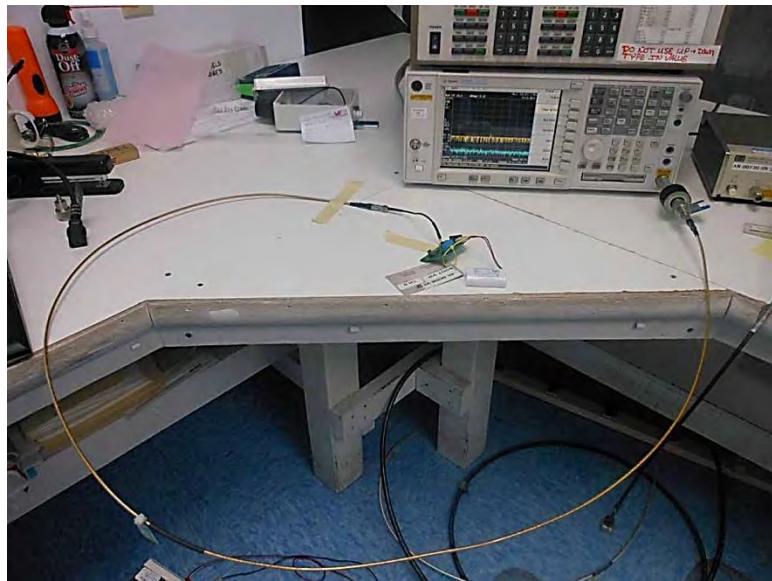
Ext Attn: 0 dB

Measurement Data:					Test Distance: None					
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	5513.979M	65.9	+10.0	+1.6		+0.0	77.5	96.6	-19.1	None
2	6429.693M	62.5	+10.0	+1.8		+0.0	74.3	96.6	-22.3	None

3	1837.005M	57.2	+10.0	+0.9	+0.0	68.1	96.6	-28.5	None
4	4592.558M	53.2	+10.0	+1.5	+0.0	64.7	96.6	-31.9	None

CKC Laboratories, Inc Date: 3/20/2014 Time: 10:43:21 AM AquaCheck (Pty) LTD WO#: 94327
Test Distance: None Sequence#: 5


Test Setup Photo(s)



15.247(d) Field Strength of Spurious Emissions and Bandedge

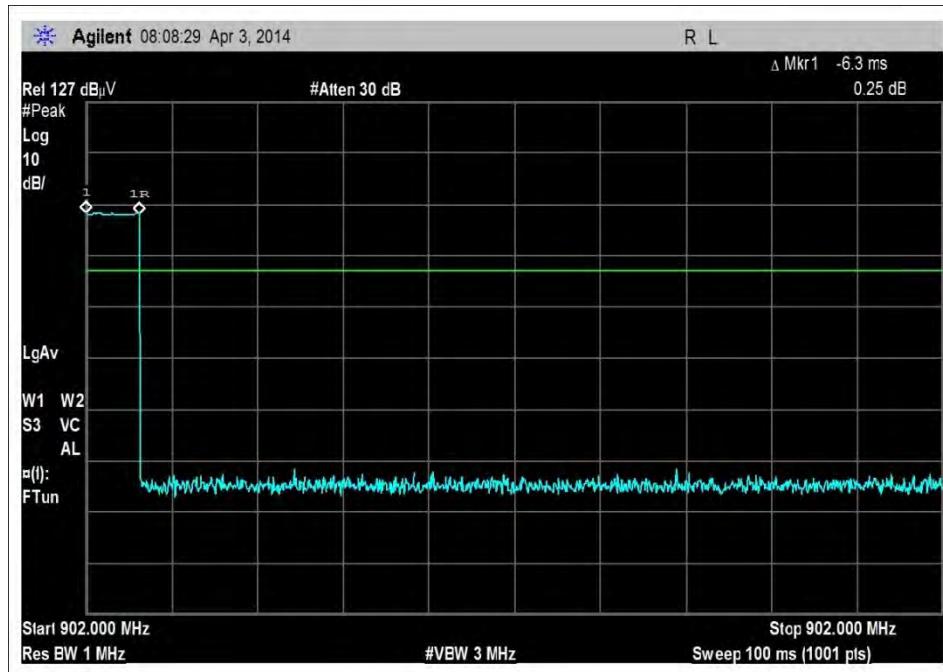
Test Conditions & Setup / Test Data

The Reference level measurement for Emission is non restricted frequency bands were made using the methods set out in KDB "558704 D01 DTS Meas Guidance v03r01", Section 11 Emissions in non-restricted frequency band

NOTE: The Reference Level is the limit line for Radiated Spurious Emission. Choose the worst reference level for the limit line.

Reference Level Measurement in 100kHz Table					
Channel	Power Level (dBm)	Power Level (dBuV)	Reference level for Conducted (dBuV)	Power Level (dBuV/m)	Reference level for Radiated (dBuV/m)
LOW	10.0	117.00	97.00	105.25	85.25
MIDDLE	9.84	116.84	96.84	105.09	85.09
HIGH	9.55	116.55	96.55	104.80	84.80

Duty Cycle



REAL TIME ANALYSIS, REFER TO ATTACHED SPECTRUM ANALYZER PRINT OUTS.

Description	Total Time	On Time
Total Transmission	100mSec.	6.30 mSec. in any 100 mSec. window.
FCC Rules 15.35(c) <u>6.3 E-3 (on time)</u> $= 20 \log (0.063) = -24.01 \text{dB}$ (per FCC rules) <u>100 E-3 (window)</u>		

NOTE: The total on time per RF burst above is presented for the worst case

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 11:49:01
 Equipment: **AC-ROVER** Sequence#: 46
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 9kHz to 30MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit 900MHz Band Antenna = 5.25 dBi gain Note: Low Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power.
NO EMISSIONS FOUND.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/20/2014
 Test Type: **Radiated Scan** Time: 15:04:01
 Equipment: **AC-ROVER** Sequence#: 10
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 30 to 1000MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit 900MHz Band Antenna = 5.25dBi gain Note: Low Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power.

Ext Attn: 0 dB

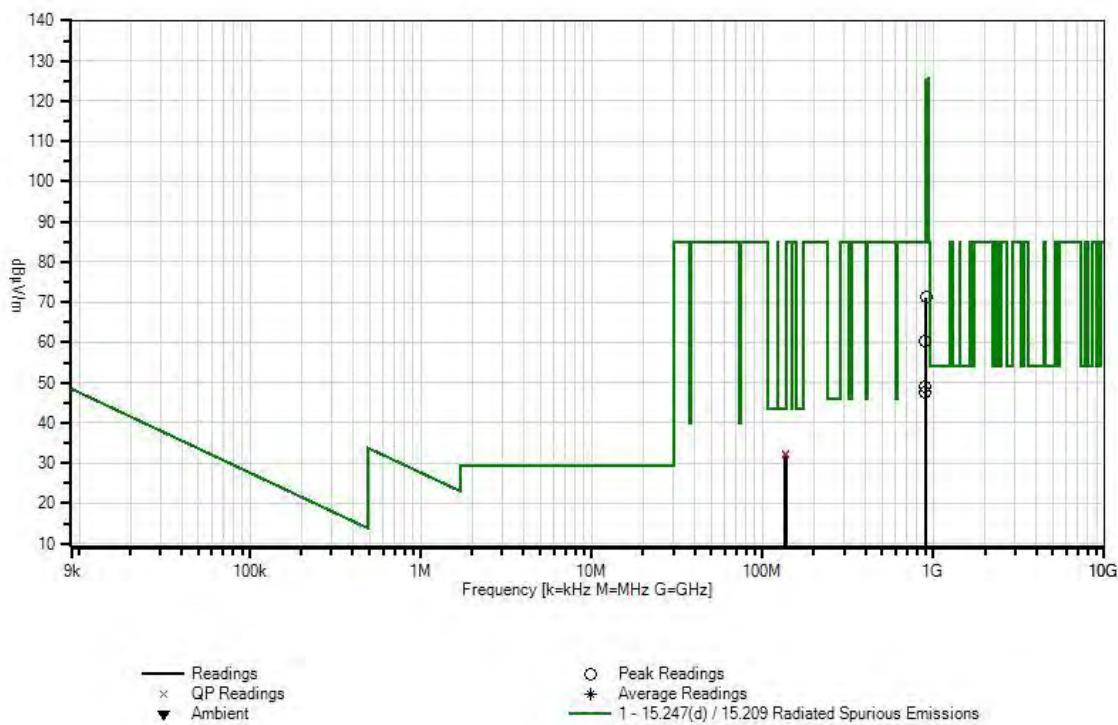
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5				Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			T2 dB	T3 dB	T4 dB						
1	136.840M	46.3	-26.9	+11.3	+1.1	+0.4	+0.0	32.5	43.5	-11.0	Vert
	QP		+0.3								
^	136.825M	58.5	-26.9	+11.3	+1.1	+0.4	+0.0	44.7	43.5	+1.2	Vert
^	+0.3										
^	136.825M	58.4	-26.9	+11.3	+1.1	+0.4	+0.0	44.6	43.5	+1.1	Vert
^	+0.3										
4	135.737M	45.7	-26.9	+11.4	+1.1	+0.4	+0.0	32.0	43.5	-11.5	Vert
	QP		+0.3								
^	135.708M	57.6	-26.9	+11.4	+1.1	+0.4	+0.0	43.9	43.5	+0.4	Vert
^	+0.3										
^	135.708M	57.4	-26.9	+11.4	+1.1	+0.4	+0.0	43.7	43.5	+0.2	Vert
^	+0.3										
7	901.593M	70.1	-27.1	+23.0	+3.4	+1.0	+0.0	71.3	84.8	-13.5	Vert
	+0.9										
8	900.872M	59.2	-27.1	+23.0	+3.4	+1.0	+0.0	60.4	84.8	-24.4	Horiz
	+0.9										
9	897.869M	48.0	-27.1	+22.9	+3.4	+1.0	+0.0	49.1	84.8	-35.7	Horiz
	+0.9										
10	895.347M	46.6	-27.1	+22.7	+3.4	+1.0	+0.0	47.5	84.8	-37.3	Horiz
	+0.9										

CKC Laboratories, Inc Date: 3/20/2014 Time: 15:04:01 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 10



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 11:23:51
 Equipment: **AC-ROVER** Sequence#: 43
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T1	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T2	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T3	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
T4	AN03172	High Pass Filter	HM1155-11SS	1/15/2014	1/15/2016
T5	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
T6	ANP06126	Cable	32022-29094K-29094K-168TC	7/12/2013	7/12/2015
T7	ANDuty Cycle Corrected Factor	<Select Sub Type->		5/29/2013	5/29/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 1000MHz to 10000MHz
RF output power =10mW and attenuator " 0"
Resolution bandwidth for restricted band
9 kHz-150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz;30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz,1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz.
Resolution bandwidth for non-restricted band
RBW=100kHz, VBW=300kHz
Software Used: Hyper Terminal
Firmware: AC NODE, Firmware V6, Boot V17
Transmit Frequency Range =902 to 928MHz
Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz
The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit
900MHz Band Antenna = 5.25 dBi gain
Note: Low Channel
Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power

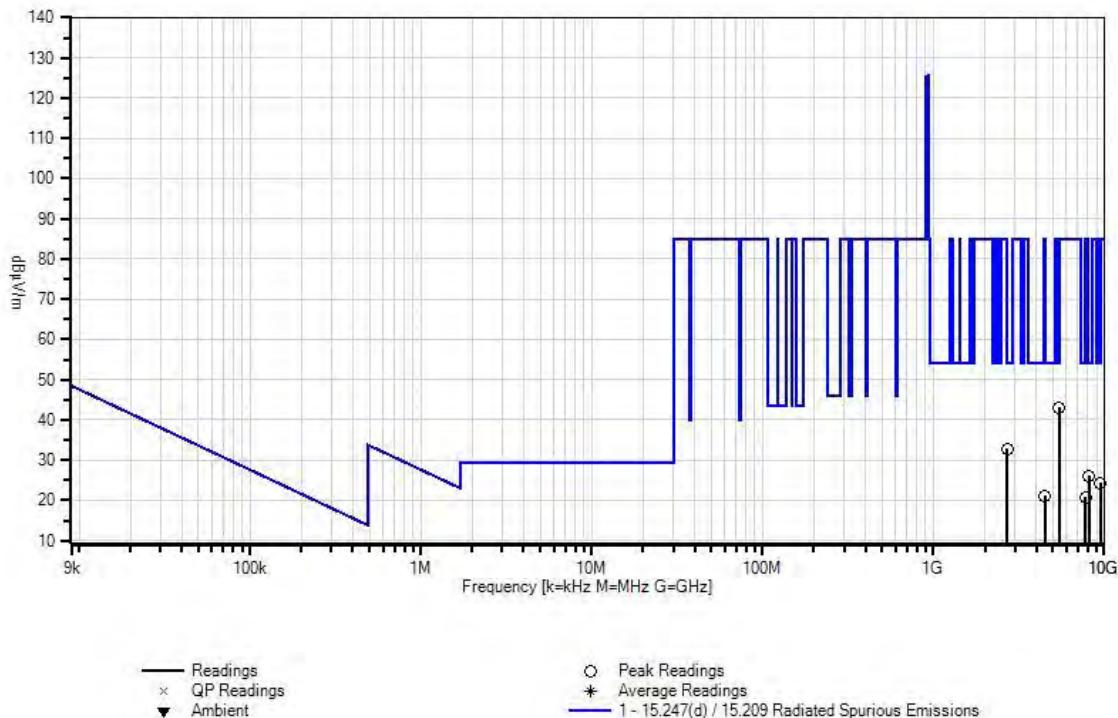
Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7		Table	dB μ V/m	dB μ V/m		
	MHz	dB μ V	dB	dB	dB	dB					Ant
1	5414.746M	79.4	-56.8	+34.7	+1.6	+0.1	+0.0	43.0	54.0	-11.0	Vert
			+4.0	+4.0	-24.0						
2	2707.481M	79.7	-59.0	+29.3	+1.1	+0.2	+0.0	32.8	54.0	-21.2	Vert
			+2.8	+2.7	-24.0						
3	8121.114M	58.1	-57.4	+37.0	+2.0	+0.1	+0.0	26.1	54.0	-27.9	Vert
			+5.5	+4.8	-24.0						
4	9472.256M	53.8	-57.6	+38.5	+2.2	+0.1	+0.0	24.4	54.0	-29.6	Horiz
			+6.3	+5.1	-24.0						
5	4511.508M	63.0	-59.2	+32.5	+1.5	+0.2	+0.0	21.2	54.0	-32.8	Horiz
			+3.7	+3.5	-24.0						
6	7736.730M	54.9	-59.0	+36.6	+2.0	+0.1	+0.0	20.8	54.0	-33.2	Horiz
			+5.5	+4.7	-24.0						

 CKC Laboratories, Inc Date: 3/24/2014 Time: 11:23:51 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 43


Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 13:21:23
 Equipment: **AC-ROVER** Sequence#: 49
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 9kHz to 30MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9kHz, VBW=9kHz; 30MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz,1000 MHz-10,000MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit 900MHz Band Antenna = 5.25 dBi gain Note: Middle Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
NO EMISSIONS FOUND.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/20/2014
 Test Type: **Radiated Scan** Time: 15:55:20
 Equipment: **AC-ROVER** Sequence#: 13
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

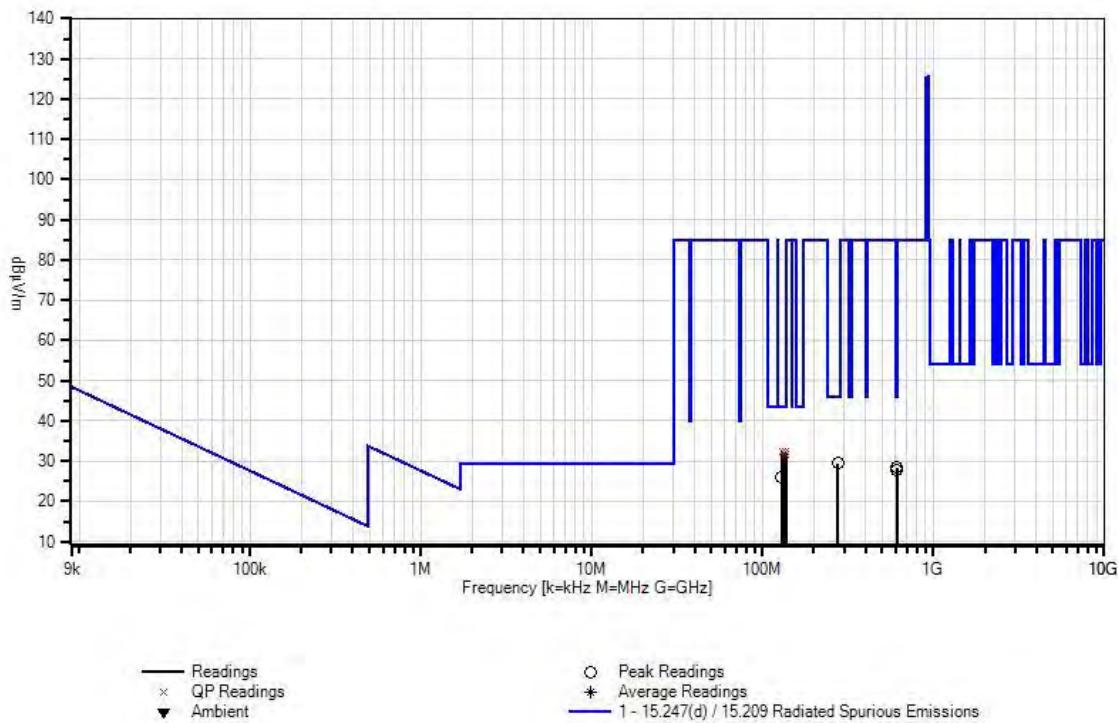
Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 30 to 1000MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz;30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz,1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for no- restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit 900MHz Band Antenna = 5.25dBi gain Note: Middle Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power

Ext Attn: 0 dB

Measurement Data:			Reading listed by margin.				Test Distance: 3 Meters				
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			MHz	dB μ V	dB	dB	dB	Table	dB μ V/m	dB μ V/m	
1	131.143M	46.3	-27.0 +0.3	+11.3	+1.1	+0.5	+0.0	32.5	43.5	-11.0	Vert
^	131.143M	56.0	-27.0 +0.3	+11.3	+1.1	+0.5	+0.0	42.2	43.5	-1.3	Vert
^	131.143M	55.8	-27.0 +0.3	+11.3	+1.1	+0.5	+0.0	42.0	43.5	-1.5	Vert
4	137.454M	46.0	-26.9 +0.3	+11.3	+1.1	+0.4	+0.0	32.2	43.5	-11.3	Vert
^	137.454M	59.3	-26.9 +0.3	+11.3	+1.1	+0.4	+0.0	45.5	43.5	+2.0	Vert
^	137.454M	58.4	-26.9 +0.3	+11.3	+1.1	+0.4	+0.0	44.6	43.5	+1.1	Vert
7	135.376M	45.5	-26.9 +0.3	+11.4	+1.1	+0.4	+0.0	31.8	43.5	-11.7	Vert
^	135.348M	57.8	-26.9 +0.3	+11.4	+1.1	+0.4	+0.0	44.1	43.5	+0.6	Vert
^	135.348M	57.6	-26.9 +0.3	+11.4	+1.1	+0.4	+0.0	43.9	43.5	+0.4	Vert
10	277.089M	40.6	-26.9 +0.4	+13.1	+1.7	+0.5	+0.0	29.4	46.0	-16.6	Horiz
11	129.342M	39.9	-27.0 +0.3	+11.3	+1.1	+0.4	+0.0	26.0	43.5	-17.5	Horiz
12	611.623M	31.3	-26.9 +0.7	+19.5	+2.7	+1.0	+0.0	28.3	46.0	-17.7	Horiz
13	611.263M	30.7	-26.9 +0.7	+19.4	+2.7	+1.0	+0.0	27.6	46.0	-18.4	Vert

CKC Laboratories, Inc Date: 3/20/2014 Time: 15:55:20 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 13



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 10:54:48
 Equipment: **AC-ROVER** Sequence#: 40
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T1	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T2	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T3	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
T4	AN03172	High Pass Filter	HM1155-11SS	1/15/2014	1/15/2016
T5	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
T6	ANP06126	Cable	32022-29094K-29094K-168TC	7/12/2013	7/12/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 1000MHz to 10000MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit 900MHz Band Antenna = 5.25 dBi gain Note: Middle Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
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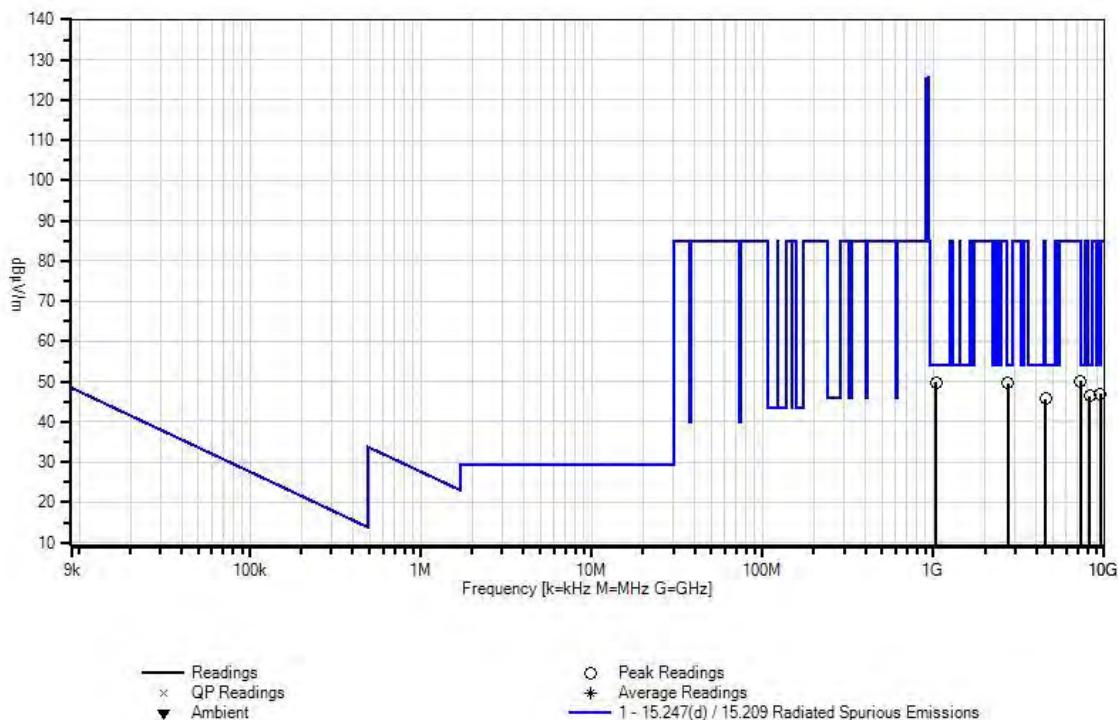
Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
			MHz	dB	dB	dB					Ant
1	7282.276M	61.0	-59.2 +5.4	+36.4 +4.5	+1.9	+0.2	+0.0	50.2	54.0	-3.8	Vert
2	1039.039M	62.7	-59.2 +1.4	+24.2 +1.7	+0.7	+18.3	+0.0	49.8	54.0	-4.2	Vert
3	2730.729M	72.4	-58.8 +2.8	+29.2 +2.7	+1.1	+0.2	+0.0	49.6	54.0	-4.4	Vert
4	9455.392M	52.3	-57.5 +6.3	+38.5 +5.1	+2.2	+0.1	+0.0	47.0	54.0	-7.0	Horiz
5	8195.188M	54.1	-57.2 +5.6	+37.0 +4.7	+2.1	+0.1	+0.0	46.4	54.0	-7.6	Horiz
6	4553.550M	63.3	-59.0 +3.7	+32.5 +3.5	+1.5	+0.2	+0.0	45.7	54.0	-8.3	Horiz

 CKC Laboratories, Inc Date: 3/24/2014 Time: 10:54:48 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 40


Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 13:40:22
 Equipment: **AC-ROVER** Sequence#: 52
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 9kHz to 30MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz;30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz,1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC Batteries Lithium Pack and set continuously transmit 900MHz Band Antenna = 5.25 dBi gain Note: High Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
NO EMISSIONS FOUND.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/20/2014
 Test Type: **Radiated Scan** Time: 17:03:53
 Equipment: **AC-ROVER** Sequence#: 16
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

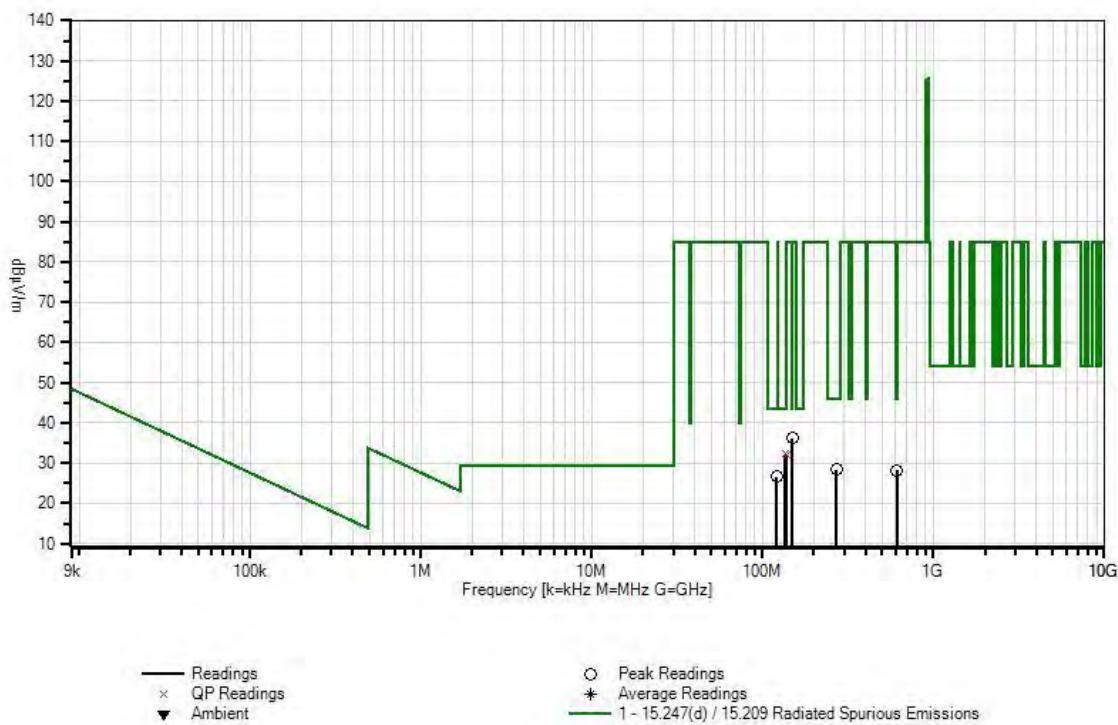
Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 30 to 1000MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200Hz, VBW=200 Hz;150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz;30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz,1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit 900MHz Band Antenna = 5.25dBi gain Note: High Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
--

Ext Attn: 0 dB

Measurement Data:			Reading listed by margin.				Test Distance: 3 Meters					
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar	
			MHz	dB μ V	dB	dB	dB	Table	dB μ V/m	dB μ V/m	dB	Ant
1	150.002M	50.0	-26.9 +0.4	+10.9	+1.2	+0.5	+0.0	36.1	43.5	-7.4	Vert	
2	135.303M	45.9	-26.9 +0.3	+11.4	+1.1	+0.4	+0.0	32.2	43.5	-11.3	Vert	
^	135.303M	57.8	-26.9 +0.3	+11.4	+1.1	+0.4	+0.0	44.1	43.5	+0.6	Vert	
^	135.303M	56.8	-26.9 +0.3	+11.4	+1.1	+0.4	+0.0	43.1	43.5	-0.4	Vert	
5	137.928M	45.8	-26.8 +0.3	+11.3	+1.1	+0.4	+0.0	32.1	43.5	-11.4	Vert	
^	137.928M	59.2	-26.8 +0.3	+11.3	+1.1	+0.4	+0.0	45.5	43.5	+2.0	Vert	
^	137.928M	58.4	-26.8 +0.3	+11.3	+1.1	+0.4	+0.0	44.7	43.5	+1.2	Vert	
8	121.053M	40.5	-27.0 +0.3	+11.4	+1.1	+0.3	+0.0	26.6	43.5	-16.9	Horiz	
9	270.122M	39.5	-27.0 +0.4	+13.2	+1.7	+0.5	+0.0	28.3	46.0	-17.7	Horiz	
10	611.503M	31.2	-26.9 +0.7	+19.5	+2.7	+1.0	+0.0	28.2	46.0	-17.8	Horiz	

CKC Laboratories, Inc Date: 3/20/2014 Time: 17:03:53 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 16



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 10:04:38
 Equipment: **AC-ROVER** Sequence#: 37
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T1	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T2	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T3	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
T4	AN03172	High Pass Filter	HM1155-11SS	1/15/2014	1/15/2016
T5	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
T6	ANP06126	Cable	32022-29094K-29094K-168TC	7/12/2013	7/12/2015
T7	ANDuty Cycle Corrected Factor	<Select Sub Type->		5/29/2013	5/29/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
900MHz Band Antenna	SkyWave Antennas	16-1003-A	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 1000MHz to 10000MHz
RF output power =10mW and attenuator " 0"
Resolution bandwidth for restricted band
9 kHz-150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz.
Resolution bandwidth for non-restricted band
RBW=100kHz, VBW=300kHz
Software Used: Hyper Terminal
Firmware: AC NODE, Firmware V6, Boot V17
Transmit Frequency Range =902 to 928MHz
Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz
The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit
900MHz Band Antenna = 5.25 dBi gain
Note: High Channel
Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power

Ext Attn: 0 dB

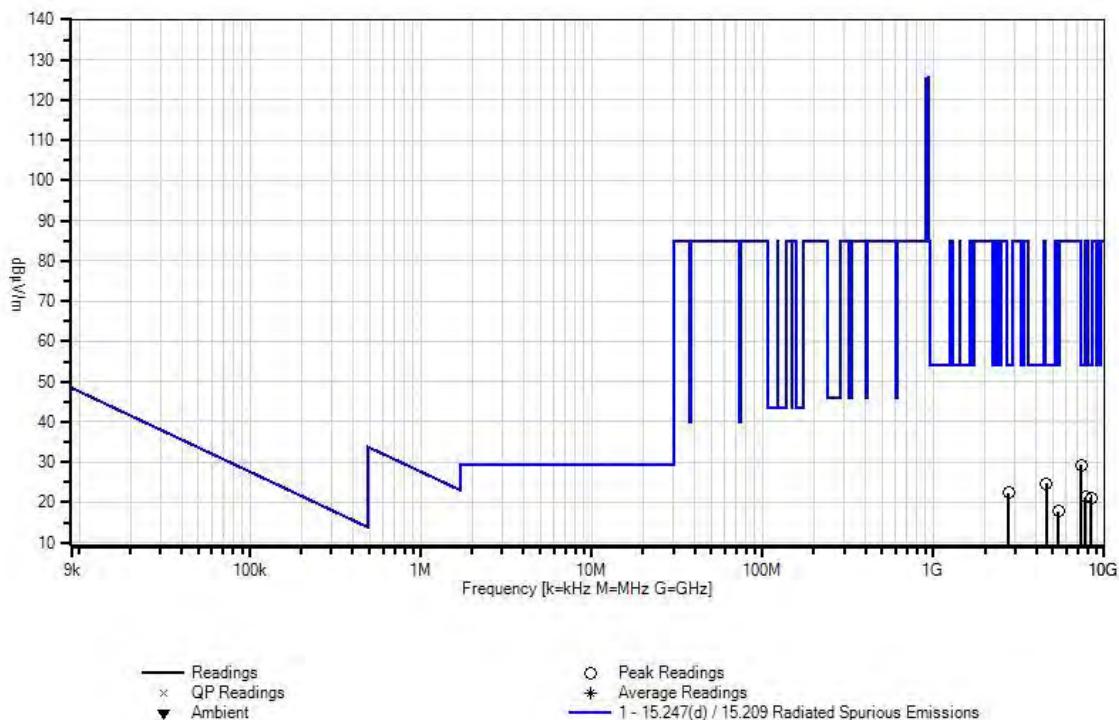
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7		Table	dB μ V/m	dB μ V/m		
	MHz	dB μ V	dB	dB	dB	dB					Ant
1	7348.398M	64.1	-59.4	+36.7	+1.9	+0.1	+0.0	29.3	54.0	-24.7	Vert
			+5.4	+4.5	-24.0						
2	4594.591M	66.1	-58.9	+32.6	+1.5	+0.2	+0.0	24.7	54.0	-29.3	Vert
			+3.7	+3.5	-24.0						
3	2755.754M	69.3	-58.9	+29.2	+1.1	+0.2	+0.0	22.4	54.0	-31.6	Vert
			+2.8	+2.7	-24.0						
4	7719.713M	55.4	-59.0	+36.6	+2.0	+0.1	+0.0	21.3	54.0	-32.7	Horiz
			+5.5	+4.7	-24.0						
5	8378.371M	52.3	-56.8	+37.2	+2.1	+0.1	+0.0	21.2	54.0	-32.8	Horiz
			+5.6	+4.7	-24.0						
6	5369.365M	54.2	-56.9	+34.6	+1.6	+0.2	+0.0	17.7	54.0	-36.3	Horiz
			+4.0	+4.0	-24.0						

CKC Laboratories, Inc Date: 3/24/2014 Time: 10:04:38 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 37



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 14:23:50
 Equipment: **AC-ROVER** Sequence#: 61
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 9kHz to 30MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC Batteries Lithium Pack and set continuously transmit GSM Wide Band Antenna = 2 dBi gain Note: Low Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
NO EMISSIONS FOUND.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/21/2014
 Test Type: **Radiated Scan** Time: 15:34:53
 Equipment: **AC-ROVER** Sequence#: 25
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

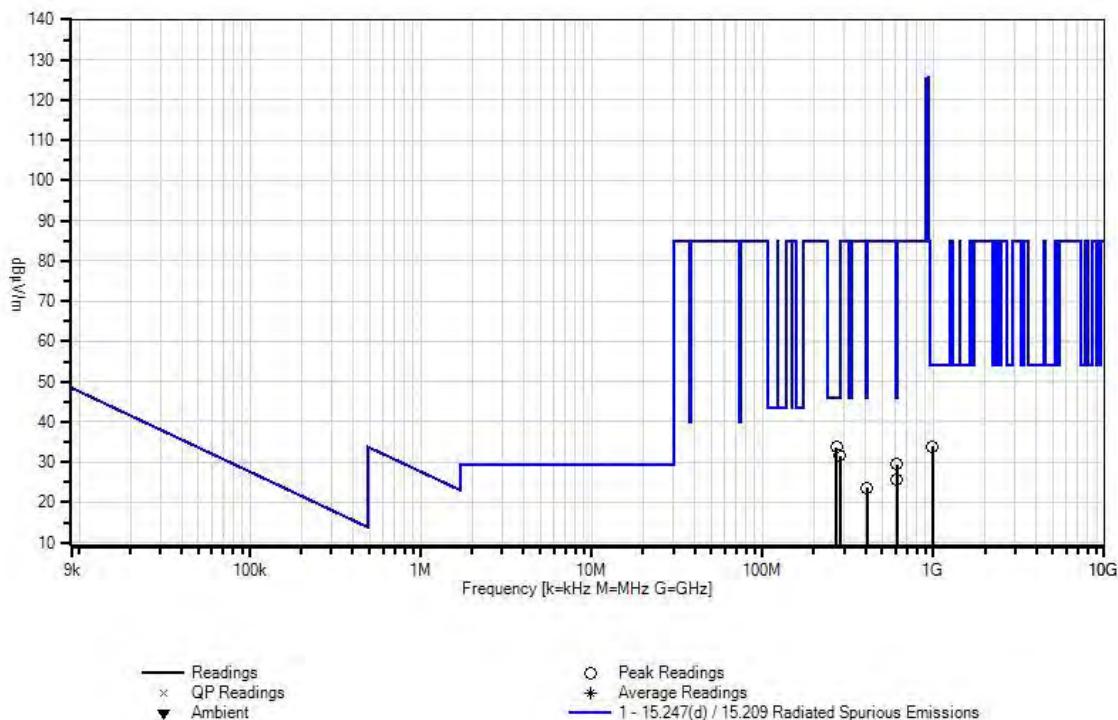
Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 30 to 1000MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz;150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz,1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit GSM Wide Band Antenna = 2 dBi gain Note: Low Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
--

Ext Attn: 0 dB

Measurement Data:
Reading listed by margin.
Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5								
	MHz	dB μ V	dB	dB	dB	dB	Table	dB μ V/m	dB μ V/m		
1	271.324M	44.9	-27.0 +0.4	+13.2	+1.7	+0.5	+0.0	33.7	46.0	-12.3	Horiz
2	284.657M	42.9	-27.0 +0.4	+13.0	+1.7	+0.5	+0.0	31.5	46.0	-14.5	Horiz
3	613.906M	32.3	-26.9 +0.7	+19.7	+2.7	+1.0	+0.0	29.5	46.0	-16.5	Horiz
4	990.358M	30.9	-27.3 +0.9	+24.5	+3.6	+1.3	+0.0	33.9	54.0	-20.1	Vert
5	611.984M	28.6	-26.9 +0.7	+19.5	+2.7	+1.0	+0.0	25.6	46.0	-20.4	Vert
6	409.942M	31.1	-27.0 +0.6	+16.0	+2.2	+0.7	+0.0	23.6	46.0	-22.4	Vert

CKC Laboratories, Inc Date: 3/21/2014 Time: 15:34:53 AquaCheck (Pty) LTD WO#: 94327
Test Distance: 3 Meters Sequence#: 25


Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/21/2014
 Test Type: **Radiated Scan** Time: 16:37:33
 Equipment: **AC-ROVER** Sequence#: 28
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T1	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T2	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T3	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T4	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
T5	AN03172	High Pass Filter	HM1155-11SS	1/15/2014	1/15/2016
T6	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
T7	ANDuty Cycle	<Select Sub Type->		5/29/2013	5/29/2015
		Corrected Factor			

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 1000MHz to 10000MHz
RF output power =10mW and attenuator " 0"
Resolution bandwidth for restricted band
9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz;30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz,1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz.
Resolution bandwidth for non-restricted band
RBW=100kHz, VBW=300kHz
Software Used: Hyper Terminal
Firmware: AC NODE, Firmware V6, Boot V17
Transmit Frequency Range =902 to 928MHz
Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz
The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit
GSM Wide Band Antenna = 2 dBi gain
Note: Low Channel
Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power

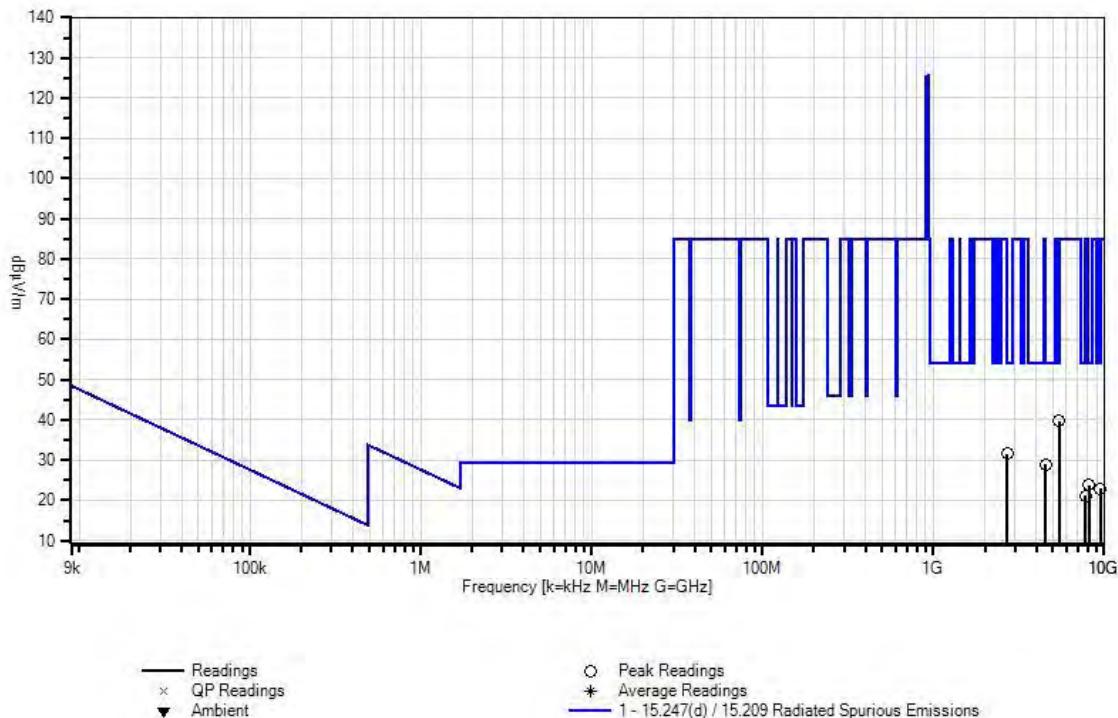
Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
			T5 dB	T6 dB	T7 dB						
1	5415.100M	78.5	-56.8 +0.1	+34.7 +4.0	+1.6 -24.0	+1.6	+0.0	39.7	54.0	-14.3	Vert
2	2707.450M	80.0	-59.0 +0.2	+29.3 +2.8	+1.1 -24.0	+1.1	+0.0	31.5	54.0	-22.5	Horiz
3	4513.510M	72.8	-59.2 +0.2	+32.5 +3.7	+1.5 -24.0	+1.5	+0.0	29.0	54.0	-25.0	Horiz
4	8125.118M	58.4	-57.3 +0.1	+37.0 +5.5	+2.0 -24.0	+2.0	+0.0	23.7	54.0	-30.3	Horiz
5	9484.160M	55.2	-57.6 +0.1	+38.5 +6.3	+2.2 -24.0	+2.2	+0.0	22.9	54.0	-31.1	Vert
6	7736.730M	58.0	-59.0 +0.1	+36.6 +5.5	+1.9 -24.0	+2.0	+0.0	21.1	54.0	-32.9	Vert

 CKC Laboratories, Inc Date: 3/21/2014 Time: 16:37:33 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 28


Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 14:08:49
 Equipment: **AC-ROVER** Sequence#: 58
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 9kHz to 30MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz;30 MHz-1000 MHz; RBW=120 kHz, BW=120 kHz,1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC Batteries Lithium Pack and set continuously transmit GSM Wide Band Antenna = 2 dBi gain Note: Middle Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
NO EMISSIONS FOUND.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/21/2014
 Test Type: **Radiated Scan** Time: 15:04:21
 Equipment: **AC-ROVER** Sequence#: 22
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 30 to 1000MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz;150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz;30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit GSM Wide Band Antenna = 2 dBi gain Note: Middle Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power

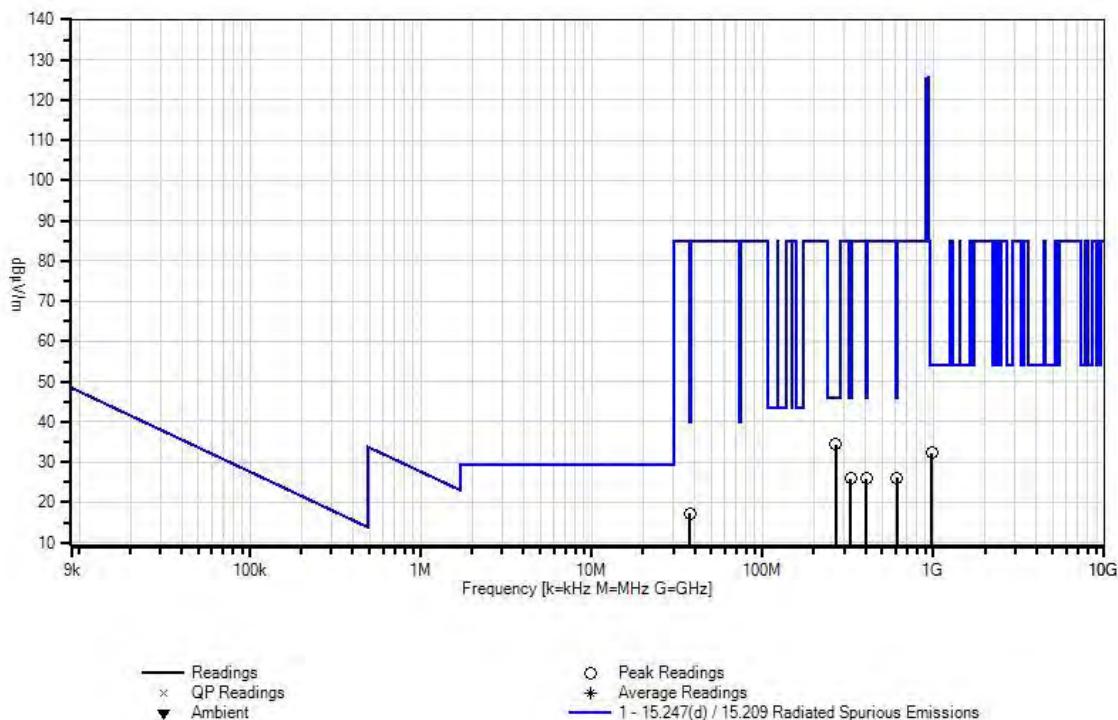
Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5				Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			T2 dB	T3 dB	T4 dB						
1	268.681M	45.4 +0.4	-27.0	+13.4	+1.7	+0.5	+0.0	34.4	46.0	-11.6	Horiz
2	613.786M	28.9 +0.7	-26.9	+19.7	+2.7	+1.0	+0.0	26.1	46.0	-19.9	Vert
3	406.218M	33.5 +0.6	-27.0	+15.9	+2.2	+0.7	+0.0	25.9	46.0	-20.1	Horiz
4	328.981M	36.2 +0.5	-26.9	+13.6	+1.9	+0.6	+0.0	25.9	46.0	-20.1	Horiz
5	980.465M	29.3 +0.9	-27.2	+24.4	+3.6	+1.3	+0.0	32.3	54.0	-21.7	Vert
6	37.653M	28.9 +0.2	-27.1	+14.5	+0.6	+0.2	+0.0	17.3	40.0	-22.7	Vert

 CKC Laboratories, Inc Date: 3/21/2014 Time: 15:04:21 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 22


Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/21/2014
 Test Type: **Radiated Scan** Time: 17:17:31
 Equipment: **AC-ROVER** Sequence#: 31
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T1	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T2	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T3	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T4	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
T5	AN03172	High Pass Filter	HM1155-11SS	1/15/2014	1/15/2016
T6	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
T7	ANDuty Cycle	<Select Sub Type->		5/29/2013	5/29/2015
		Corrected Factor			

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 1000MHz to 10000MHz
RF output power =10mW and attenuator " 0"
Resolution bandwidth for restricted band
9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz.
Resolution bandwidth for non-restricted band
RBW=100kHz, VBW=300kHz
Software Used: Hyper Terminal
Firmware: AC NODE, Firmware V6, Boot V17
Transmit Frequency Range =902 to 928MHz
Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz
The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit
GSM Wide Band Antenna = 2 dBi gain
Note: Middle Channel
Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power

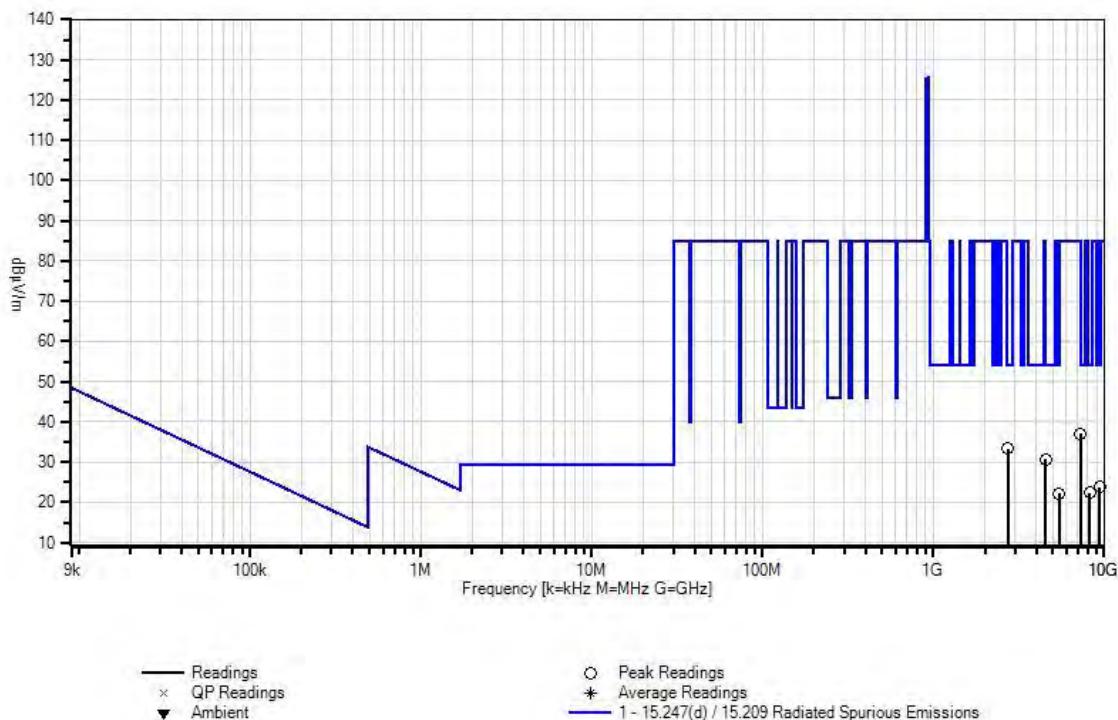
Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	7286.267M	74.3	-59.2 +0.2	+36.5 +5.4	+1.9 -24.0	+1.9	+0.0	37.0	54.0	-17.0	Vert
2	2731.369M	81.7	-58.8 +0.2	+29.2 +2.8	+1.1 -24.0	+1.1	+0.0	33.3	54.0	-20.7	Horiz
3	4553.650M	74.2	-59.0 +0.2	+32.5 +3.7	+1.5 -24.0	+1.5	+0.0	30.6	54.0	-23.4	Vert
4	9365.120M	55.9	-57.2 +0.1	+38.4 +6.2	+2.2 -24.0	+2.2	+0.0	23.8	54.0	-30.2	Horiz
5	8195.188M	56.7	-57.2 +0.1	+37.0 +5.6	+2.0 -24.0	+2.1	+0.0	22.3	54.0	-31.7	Vert
6	5448.444M	60.9	-56.8 +0.1	+34.7 +4.0	+1.6 -24.0	+1.6	+0.0	22.1	54.0	-31.9	Horiz

 CKC Laboratories, Inc Date: 3/21/2014 Time: 17:17:31 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 31


Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: **3/24/2014**
 Test Type: **Radiated Scan** Time: **13:57:48**
 Equipment: **AC-ROVER** Sequence#: **55**
 Manufacturer: **AquaCheck (Pty) LTD** Tested By: **Hieu Song Nguyenpham**
 Model: **AC-ROVER**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 9kHz to 30MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC Batteries Lithium Pack and set continuously transmit GSM Wide Band Antenna = 2 dBi gain Note: High Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
NO EMISSIONS FOUND.

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/21/2014
 Test Type: **Radiated Scan** Time: 14:27:05
 Equipment: **AC-ROVER** Sequence#: 19
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	9/3/2013	9/3/2015
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

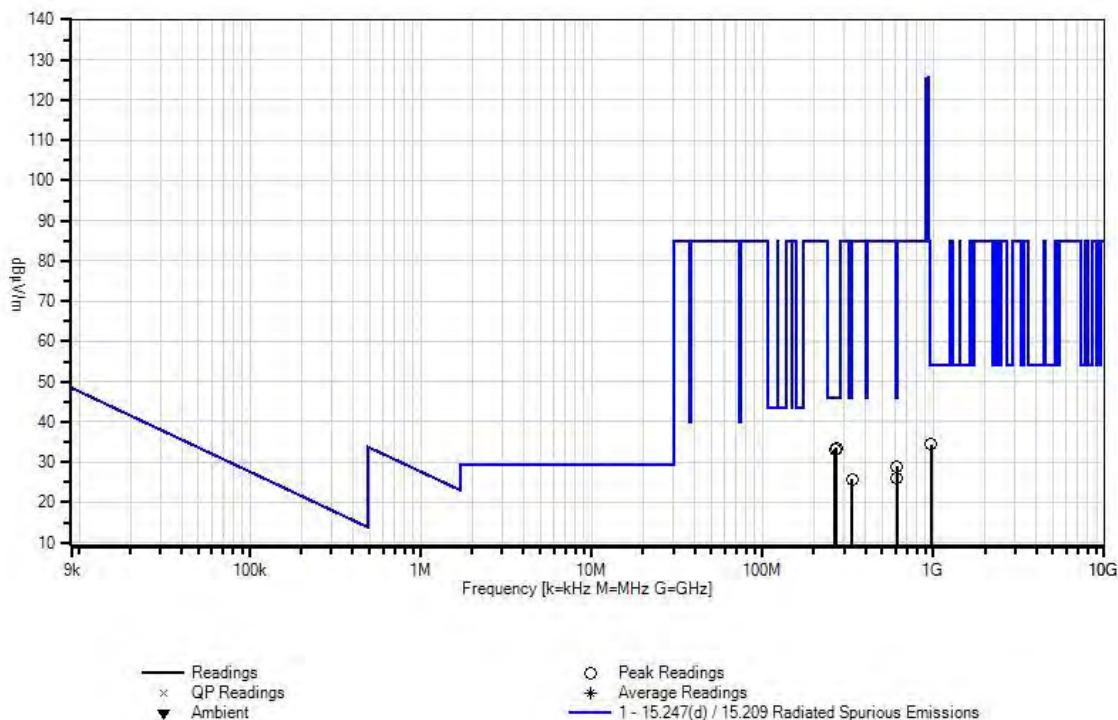
Test Conditions / Notes:

Radiated Spurious Emission Frequency Range: 30 to 1000MHz RF output power =10mW and attenuator " 0" Resolution bandwidth for restricted band 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz;150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz. Resolution bandwidth for non-restricted band RBW=100kHz, VBW=300kHz Software Used: Hyper Terminal Firmware: AC NODE, Firmware V6, Boot V17 Transmit Frequency Range =902 to 928MHz Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit GSM Wide Band Antenna = 2 dBi gain Note: High Channel Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power
--

Ext Attn: 0 dB

Measurement Data:
Reading listed by margin.
Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T2 T3 T4					Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			T5 dB	T5 dB	T5 dB	T5 dB	T5 dB					
1	270.122M	44.8 +0.4	-27.0	+13.2	+1.7	+0.5	+0.0	33.6	46.0	-12.4	Horiz	
2	265.558M	43.7 +0.4	-27.0	+13.9	+1.7	+0.5	+0.0	33.2	46.0	-12.8	Horiz	
3	613.786M	31.7 +0.7	-26.9	+19.7	+2.7	+1.0	+0.0	28.9	46.0	-17.1	Horiz	
4	969.696M	31.6 +0.9	-27.2	+24.3	+3.6	+1.2	+0.0	34.4	54.0	-19.6	Vert	
5	613.425M	28.9 +0.7	-26.9	+19.6	+2.7	+1.0	+0.0	26.0	46.0	-20.0	Vert	
6	333.305M	35.8 +0.5	-26.9	+13.7	+1.9	+0.7	+0.0	25.7	46.0	-20.3	Vert	

CKC Laboratories, Inc Date: 3/21/2014 Time: 14:27:05 AquaCheck (Pty) LTD WO#: 94327
Test Distance: 3 Meters Sequence#: 19


Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94327** Date: 3/24/2014
 Test Type: **Radiated Scan** Time: 09:21:18
 Equipment: **AC-ROVER** Sequence#: 34
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T1	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T2	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T3	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
T4	AN03172	High Pass Filter	HM1155-11SS	1/15/2014	1/15/2016
T5	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
T6	ANP06126	Cable	32022-29094K-29094K-168TC	7/12/2013	7/12/2015
T7	ANDuty Cycle Corrected Factor	<Select Sub Type->		5/29/2013	5/29/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None
GSM Wide Band Antenna	RF Design	ANT-GSM-ST-SM-M5	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Radiated Spurious Emission
Frequency Range: 1000MHz to 10000MHz
RF output power =10mW and attenuator " 0"
Resolution bandwidth for restricted band
9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz;150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz;30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz,1000 MHz-10,000 MHz; RBW=1 MHz, VBW=1 MHz.
Resolution bandwidth for no- restricted band
RBW=100kHz, VBW=300kHz
Software Used: Hyper Terminal
Firmware: AC NODE, Firmware V6, Boot V17
Transmit Frequency Range =902 to 928MHz
Low channel: 902.5MHz, Middle channel: 910.5MHz, High Channel: 919MHz
The EUT is placed on 80cm Styrofoam table. It is powered by 3.6VDC batteries Lithium Pack and set continuously transmit
GSM Wide Band Antenna = 3.5 dBi gain
Note: High Channel
Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power.

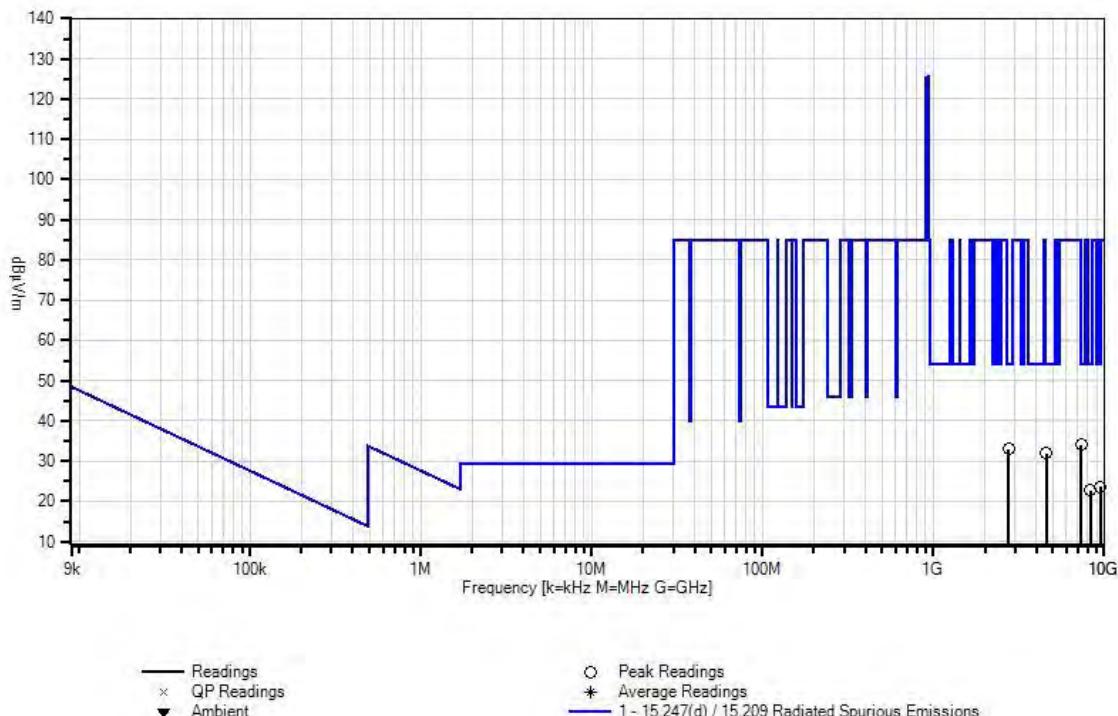
Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

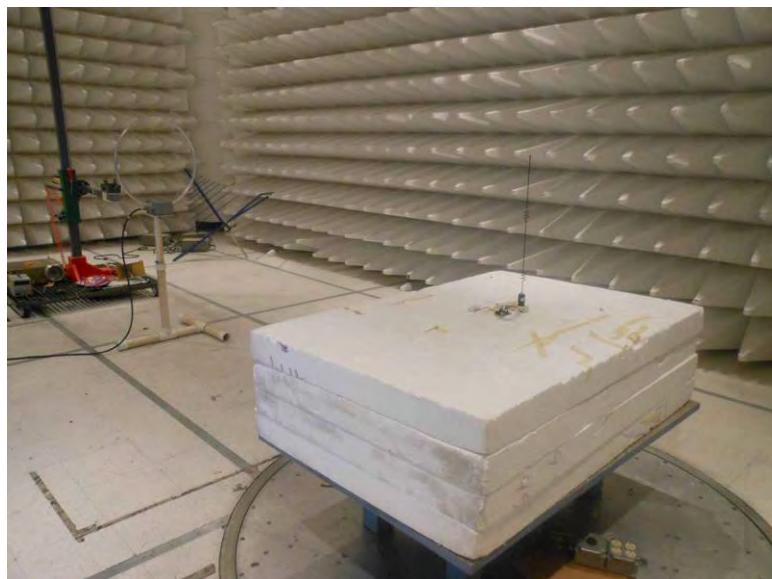
#	Freq MHz	Rdng dB μ V	Reading listed by margin.				Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 dB					
1	7348.468M	68.8	-59.4 +5.4	+36.7 +4.5	+1.9 -24.0	+0.1	+0.0	34.0	54.0	-20.0	Horiz
2	2756.063M	79.8	-58.9 +2.8	+29.2 +2.7	+1.1 -24.0	+0.2	+0.0	32.9	54.0	-21.1	Horiz
3	4592.668M	73.3	-58.9 +3.7	+32.6 +3.5	+1.5 -24.0	+0.2	+0.0	31.9	54.0	-22.1	Horiz
4	9481.184M	53.0	-57.6 +6.3	+38.5 +5.1	+2.2 -24.0	+0.1	+0.0	23.6	54.0	-30.4	Vert
5	8269.262M	54.3	-57.2 +5.6	+37.1 +4.7	+2.1 -24.0	+0.1	+0.0	22.7	54.0	-31.3	Vert

 CKC Laboratories, Inc Date: 3/24/2014 Time: 09:21:18 AquaCheck (Pty) LTD WO#: 94327
 Test Distance: 3 Meters Sequence#: 34


Test Setup Photo(s)



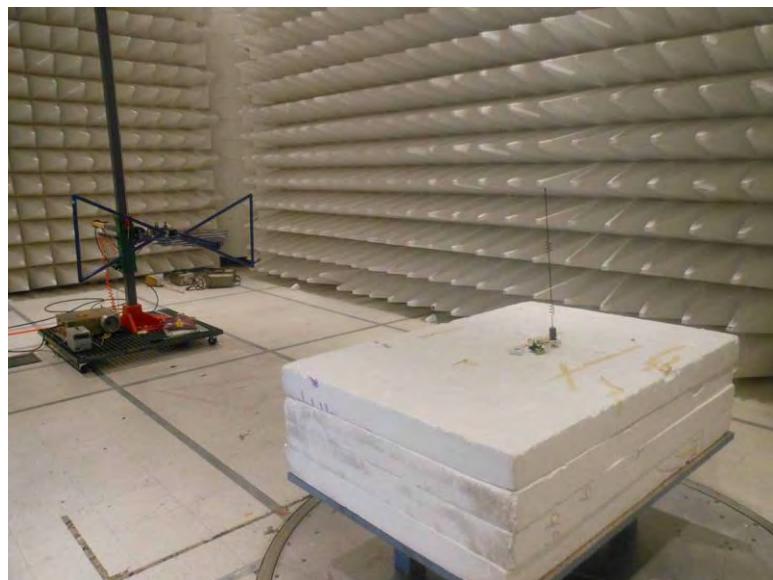
900MHz Band Antenna, 9kHz -30MHz



900MHz Band Antenna, 9kHz -30MHz



900MHz Band Antenna, 30MHz - 1GHz



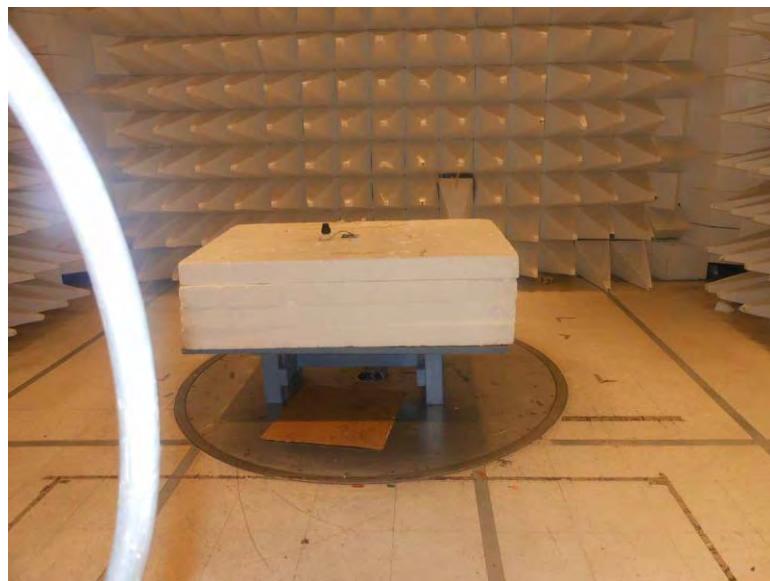
900MHz Band Antenna, 30MHz - 1GHz



900MHz Band Antenna, 1 - 10GHz



900MHz Band Antenna, 1 - 10GHz



GSM Wide Band Antenna, 9kHz - 30MHz



GSM Wide Band Antenna, 9kHz - 30MHz



GSM Wide Band Antenna, 30MHz-1GHz



GSM Wide Band Antenna, 30MHz-1GHz



GSM Wide Band Antenna, 1-10GHz



GSM Wide Band Antenna, 1-10GHz

Bandedge

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **Band edge**
 Work Order #: **94327** Date: **3/20/2014**
 Test Type: **Conducted Power Measurement** Time: **09:13:24**
 Equipment: **AC-ROVER** Sequence#: **1**
 Manufacturer: **AquaCheck (Pty) LTD** Tested By: **Hieu Song Nguyenpham**
 Model: **AC-ROVER**
 S/N: **None**

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP06138	Cable	32022-29094K-29094K-72TC	8/2/2013	8/2/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None

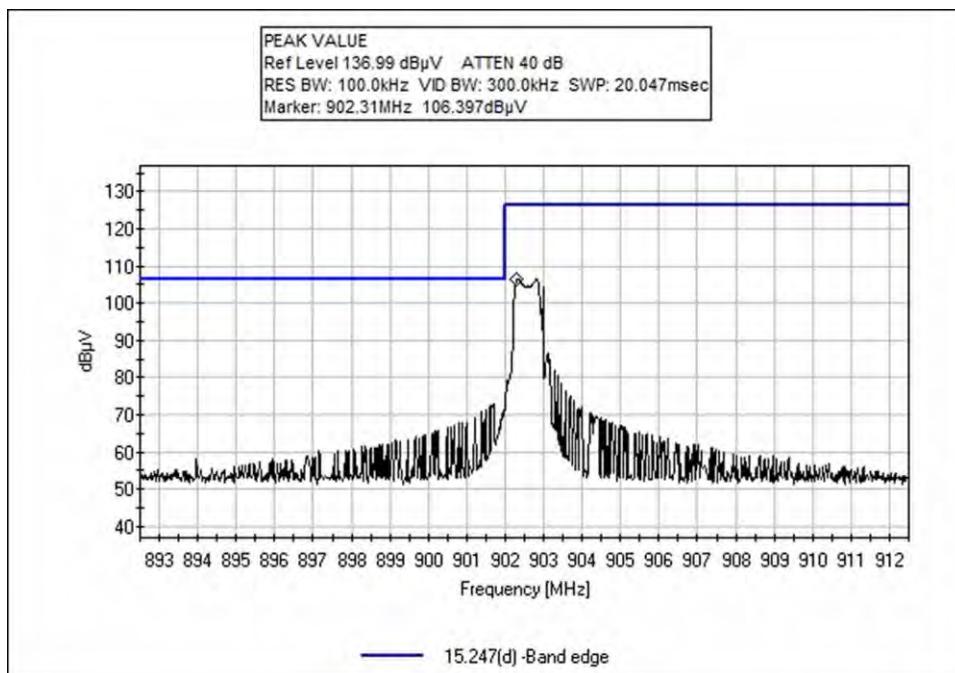
Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

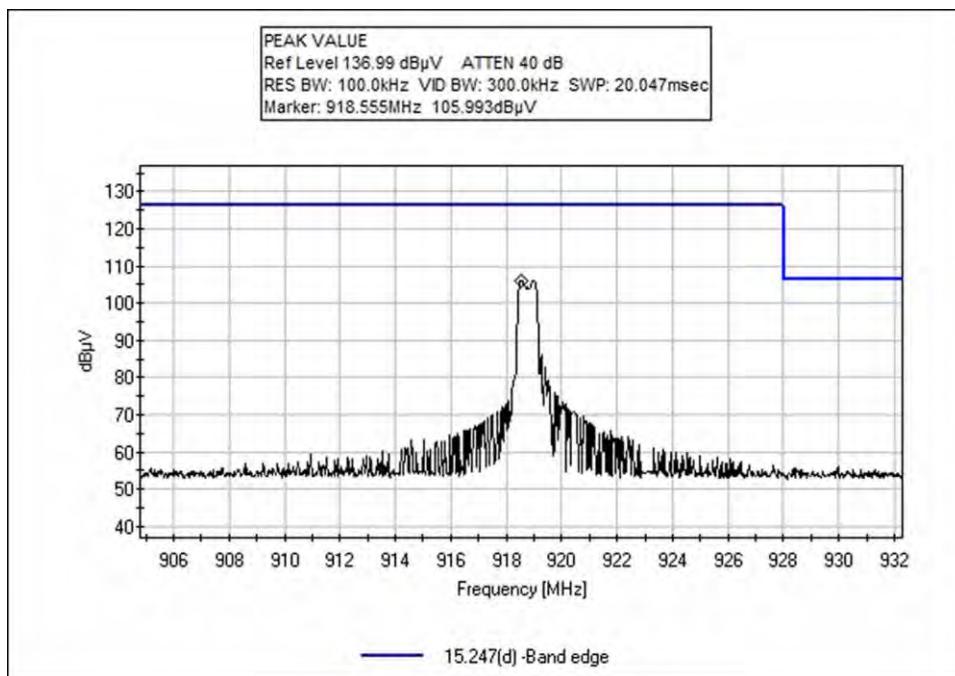
Test Conditions / Notes:

Band edge set up
RF output power =10mW and attenuator " 0"
Software Used: Hyper Terminal
Firmware: AC NODE, Firmware V6, Boot V17
Transmit Frequency Range =902 to 928MHz
Low channel: 902.5MHz
Middle channel: 910.5MHz
High Channel: 919MHz
The EUT is set continuously transmit
Note: Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power

Test Data

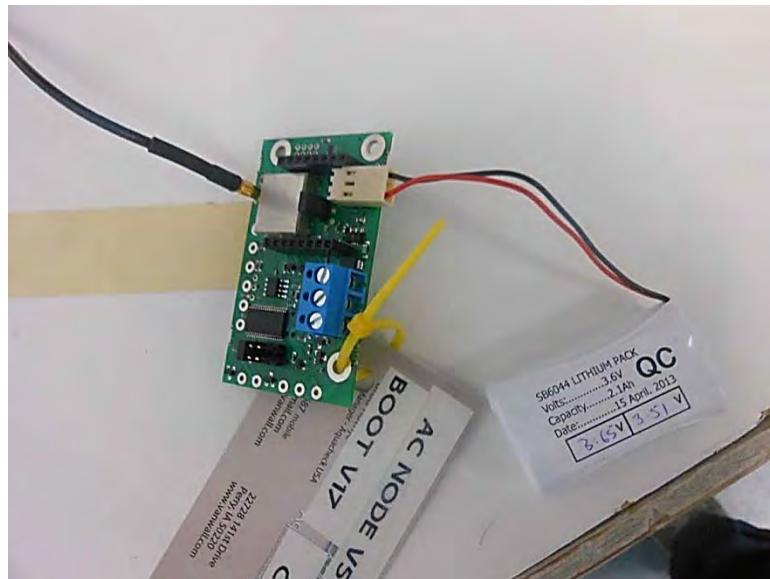
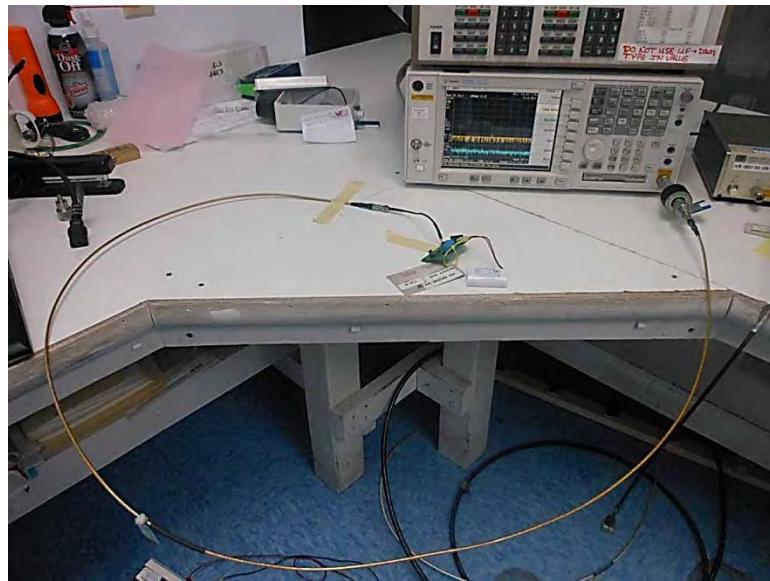


Low Channel



High Channel

Test Setup Photo(s)



15. 247(e) Power Spectral Density

Test Conditions / Setup

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • (510) 249-1170

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.247(e) Peak Power Spectral Density (902-928 MHz DTS)**
 Work Order #: **94327** Date: 3/20/2014
 Test Type: **Conducted Power Measurement** Time: 09:46:30
 Equipment: **AC-ROVER** Sequence#: 2
 Manufacturer: AquaCheck (Pty) LTD Tested By: Hieu Song Nguyenpham
 Model: AC-ROVER
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP01211	Attenuator	PE7002-10	4/2/2013	4/2/2015
T2	ANP06138	Cable	32022-29094K- 29094K-72TC	8/2/2013	8/2/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
AC-ROVER*	AquaCheck (Pty) LTD	AC-ROVER	None

Support Devices:

Function	Manufacturer	Model #	S/N
Batteries Lithium Pack	QC	SB6044	None

Test Conditions / Notes:

Power Spectral Density

RF output power = 10mW and attenuator " 0"
 RBW = 3kHz
 VBW= 10kHz

Transmit Frequency =902 to 928MHz

Software Used: Hyper Terminal
 Firmware: AC NODE, Firmware V6, Boot V17

Low channel: 902.5MHz
 Middle channel: 910.5MHz
 High Channel: 919MHz

The EUT is set continuously transmit

Note: Attenuator is from 0 to 27. For each step of the attenuator reduces 0.3dB for RF output power

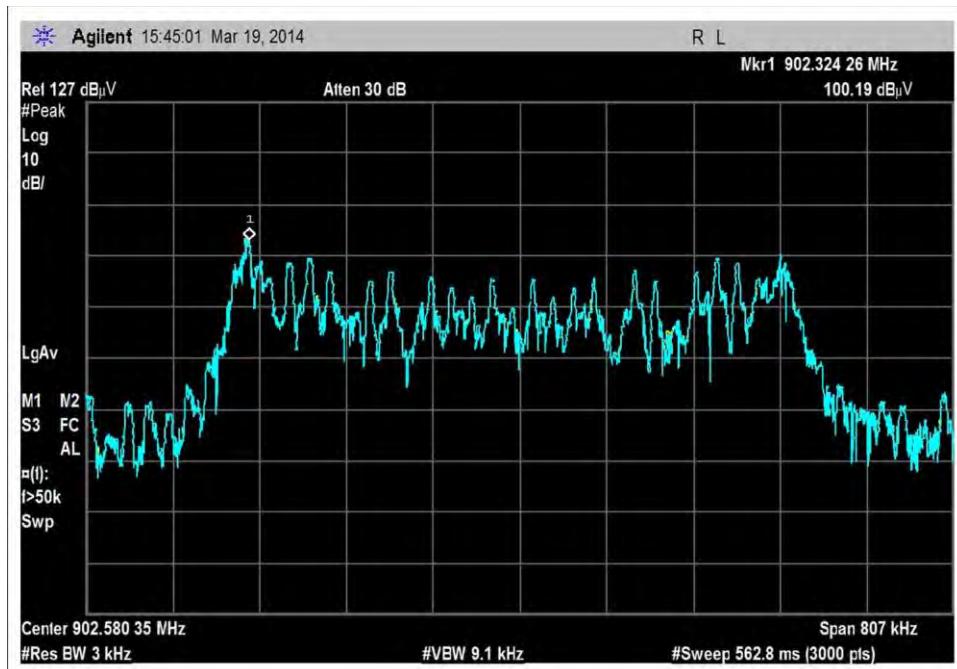
Ext Attn: 0 dB

Measurement Data: Reading listed by margin.					Test Distance: None					
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	910.321M	101.3	+9.9	+0.7		+0.0	111.9	115.0	-3.1	None Middle Channel
2	902.321M	100.5	+9.9	+0.7		+0.0	111.1	115.0	-3.9	None Low Channel
3	918.517M	100.1	+9.9	+0.7		+0.0	110.7	115.0	-4.3	None High Channel

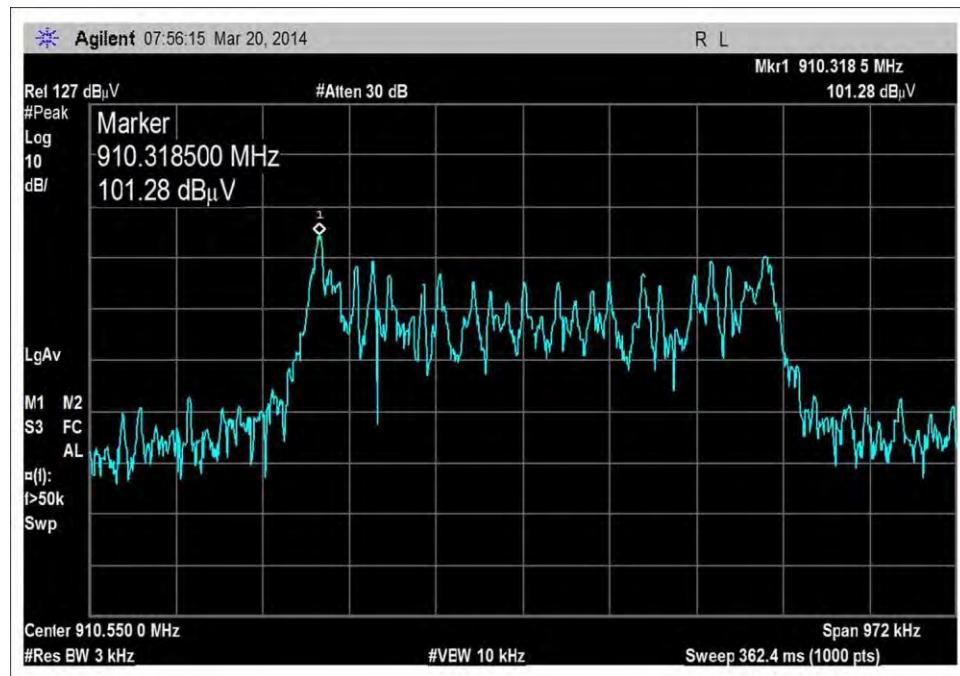
Convert equivalent electric field strength to the resultant power level

Frequency (MHz)	Measured Power in dBm	Power Limit in dBm	Pass/Fail
Low Channel	4.1	8.00	Pass
Middle Channel	4.9	8.00	Pass
High Channel	3.7	8.00	Pass

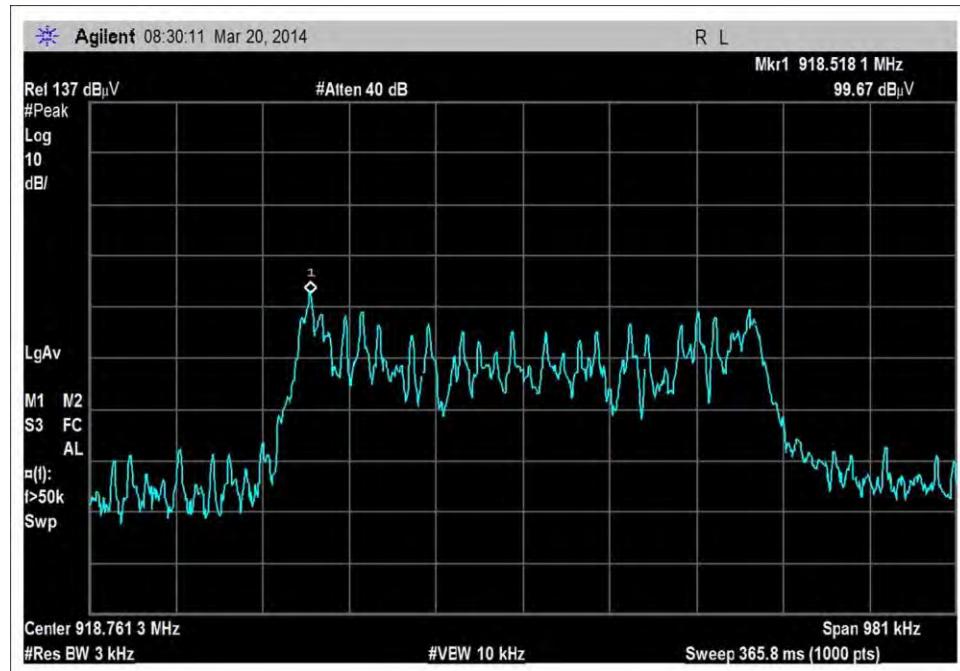
Test Data



Low Channel

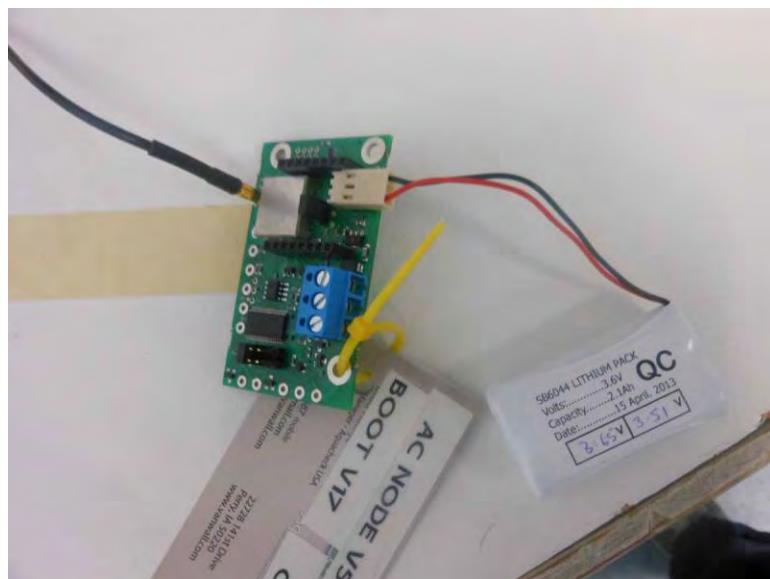
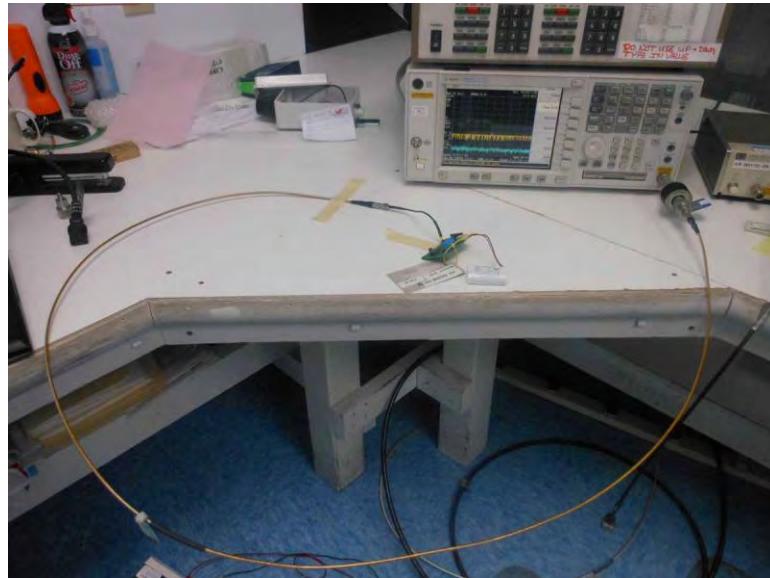


Middle Channel



High Channel

Test Setup Photo(s)



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k=2$. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in $\text{dB}\mu\text{V}/\text{m}$, the spectrum analyzer reading in $\text{dB}\mu\text{V}$ was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS	
Meter reading	(dB μ V)
+ Antenna Factor	(dB)
+ Cable Loss	(dB)
- Distance Correction	(dB)
- Preamplifier Gain	(dB)
= Corrected Reading	(dB μ V/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or carrot ("") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.