

AquaCheck (Pty) LTD

TEST REPORT FOR

Basic II Wireless Probe, ACPROBEII_xM

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.249

and

RSS-210 Version 7

Report No.: 90751-12

Date of issue: June 18, 2010



TESTING
CERT #803.01, 803.02,
803.05, 803.06

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:

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REPORT PREPARED BY:

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Mariposa, CA 95338

Project Number: 90751

DATE OF EQUIPMENT RECEIPT:

May 4, 2010

DATE(S) OF TESTING:

May 4 - 7, 2010

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.

A handwritten signature in black ink, reading "Steve Behm", is positioned above a horizontal line.

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.
5046 Sierra Pines Drive
Mariposa, CA 95338

Site Registration & Accreditation Information

Location	Japan	Canada	FCC
Mariposa D	R-1827, C-1960 & T-1561	3082A-1	784962

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C

Description	Test Procedure/Method	Results
Occupied Bandwidth	FCC Part 15 Subpart C Section 15.215	Pass
Carrier Field Strength	FCC Part 15 Subpart C Section 15.249	Pass
Spurious Emissions	FCC Part 15 Subpart C Section 15.249	Pass
99% Bandwidth	RSS-210 Version 7	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)

EUT DESCRIPTION

The EUT is a wireless logging soil moisture probe, Wireless LOGGER for soil moisture probe.

EQUIPMENT UNDER TEST

Basic II Wireless Probe

Manuf: AquaCheck

Model: ACPROBEII_xM

Serial: 7041

PERIPHERAL DEVICES

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

RF Utility Tool

Manuf: AquaCheck

Model: AquaCheck Basic II

Serial: Blankerbek-1037

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

Temperature And Humidity During Testing

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

15.31(e) Voltage Variations

Not applicable to this device because it is battery powered.

15.31(m) Number Of Channels

This device operates on a single channel.

15.33(a) Frequency Ranges Tested

15.249 Radiated Emissions: 9 kHz - 10.098GHz

15.203 Antenna Requirements

The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

EUT Operating Frequency

The EUT was operating at 917.923330MHz.

15.215 Occupied Bandwidth

Test Conditions:

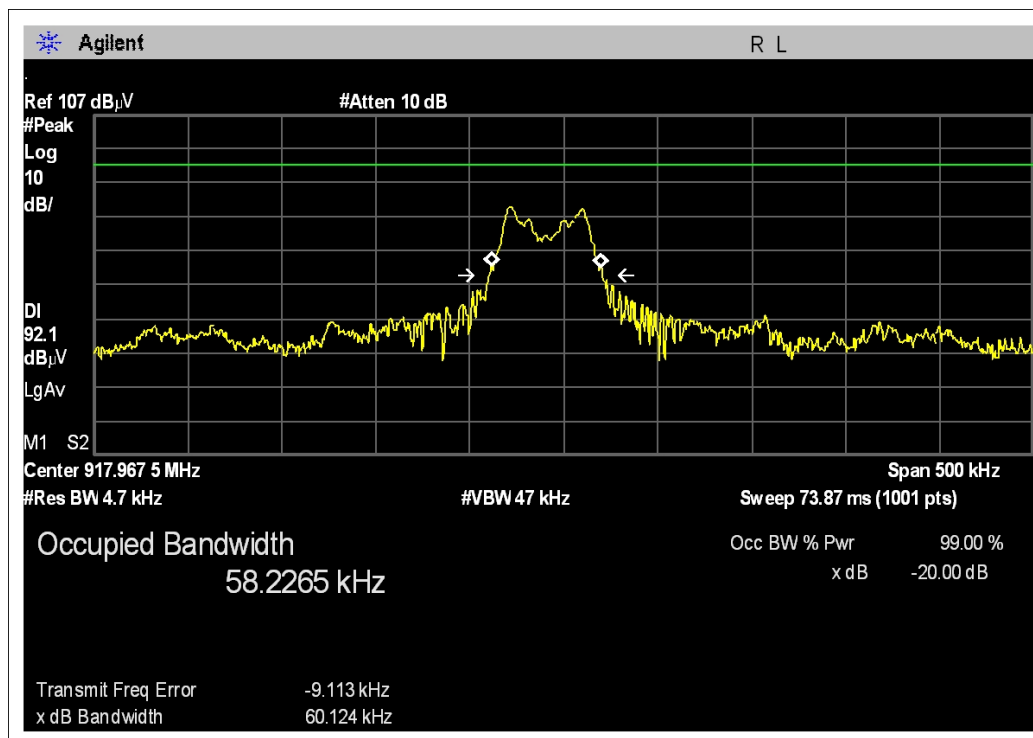
The Soil Sensor is communicating with the remote RF Utility Tool.

Engineer Name: G. Johnson

Test Equipment

Equipment	Serial	Cal Date	Cal Due	Asset
Preamp	1937A02604	3/13/2009	3/13/2011	AN00099
Biconilog Antenna	2456	10/9/2009	10/9/2011	AN01991
Cable	None	5/4/2010	5/4/2012	ANSITED 3M
Spectrum Analyzer	US44300407	8/7/2008	8/7/2010	AN02660
Cable	NA	1/26/2010	1/26/2012	AN03008

Test Plot



Test Setup Photo



15.249 Carrier Field Strength

Test Data Sheets

Test Location: CKC Laboratories • 5046 Sierra Pines Dr • Mariposa, CA 95338 • (209) 966-5240

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.249**
 Work Order #: **90751** Date: 5/6/2010
 Test Type: **Radiated Scan** Time: 08:48:04
 Equipment: **Basic II Wireless Probe** Sequence#: 2
 Manufacturer: AquaCheck Tested By: Greg Johnson
 Model: ACPROBEII_xM
 S/N: 7041

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00099	Preamp	8447D	3/13/2009	3/13/2011
T2	AN01991	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T3	ANSITED 3M	Cable	32	5/4/2010	5/4/2012
	AN02660	Spectrum Analyzer	E4446A	8/7/2008	8/7/2010
T4	AN03008	Cable	32022-2-2909K-24TC	1/26/2010	1/26/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Basic II Wireless Probe*	AquaCheck	ACPROBEII_xM	7041

Support Devices:

Function	Manufacturer	Model #	S/N
RF Utility Tool	AquaCheck	AquaCheck Basic II	Blankerbek-1037

Test Conditions / Notes:

Spec Limit: FCC Part 15.249
 The Soil Sensor is communicating with the remote RF Utility Tool.

Ext Attn: 0 dB

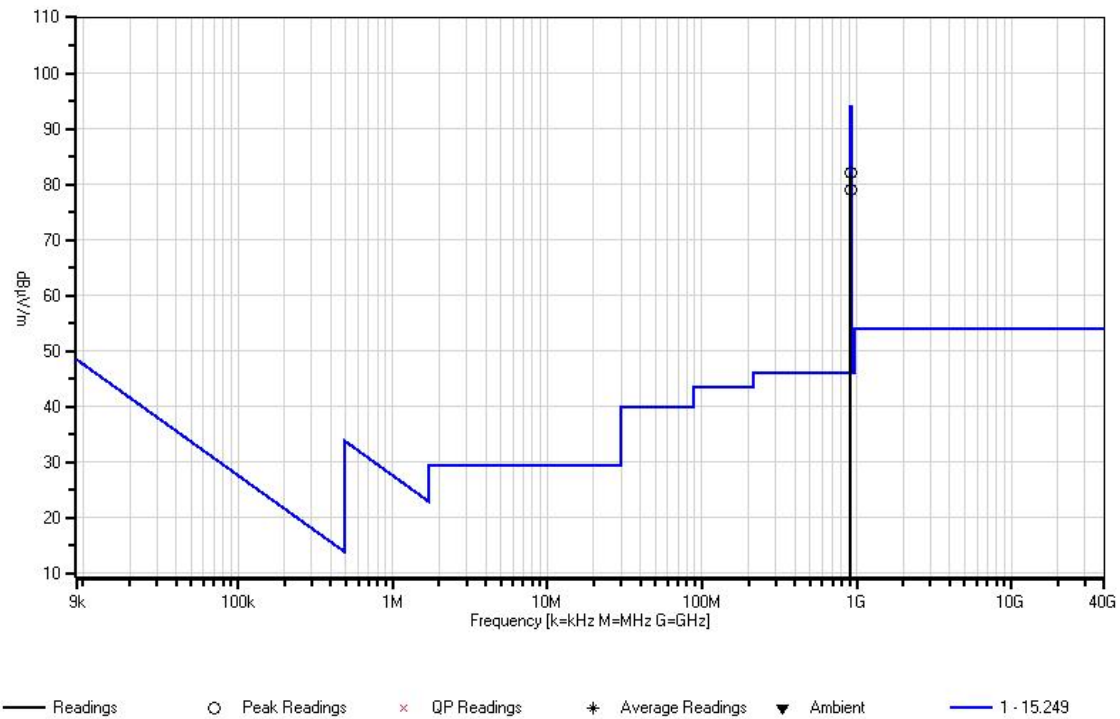
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	917.942M	80.2	-27.6	+23.3	+5.8	+0.4	+0.0	82.1	94.0	-11.9	Vert
2	917.942M	77.1	-27.6	+23.3	+5.8	+0.4	+0.0	79.0	94.0	-15.0	Horiz

CKC Laboratories Date: 5/6/2010 Time: 08:48:04 AquaCheck (Pty) LTD WO#: 90751
 15.249 Test Distance: 3 Meters Sequence#: 2 Ext ATTN: 0 dB



Test Setup Photo



15.249 Spurious Emissions

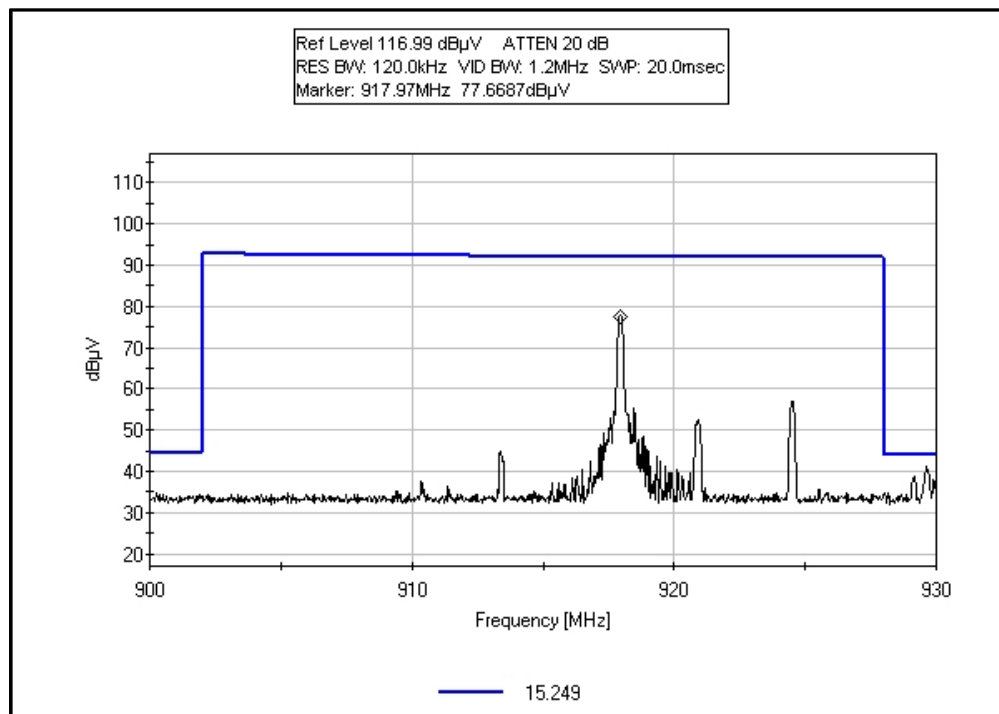
Bandedge Test Conditions

The Soil Sensor is communicating with the remote RF Utility Tool.

Engineer Name: G. Johnson

Test Equipment				
Equipment	Serial	Cal Date	Cal Due	Asset
Preamp	1937A02604	3/13/2009	3/13/2011	AN00099
Biconilog Antenna	2456	10/9/2009	10/9/2011	AN01991
Cable	None	5/4/2010	5/4/2012	ANSITED 3M
Spectrum Analyzer	US44300407	8/7/2008	8/7/2010	AN02660
Cable	NA	1/26/2010	1/26/2012	AN03008

Bandedge Plot



Test Data Sheets

Test Location: CKC Laboratories • 5046 Sierra Pines Dr • Mariposa, CA 95338 • (209) 966-5240

Customer: AquaCheck (Pty) LTD	
Specification: 15.249	
Work Order #: 90751	Date: 5/7/2010
Test Type: Maximized Emissions	Time: 4:02:46 PM
Equipment: Basic II Wireless Probe	Sequence#: 5
Manufacturer: AquaCheck	Tested By: Greg Johnson
Model: ACPROBEII_xM	
S/N: 7041	

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANSITED 3M	Cable	32	5/4/2010	5/4/2012
	AN02660	Spectrum Analyzer	E4446A	8/7/2008	8/7/2010
T2	AN00226	Loop Antenna	6502	4/10/2009	4/10/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Basic II Wireless Probe*	AquaCheck	ACPROBEII_xM	7041

Support Devices:

Function	Manufacturer	Model #	S/N
RF Utility Tool	AquaCheck	AquaCheck Basic II	Blankerbek-1037

Test Conditions / Notes:

Spec Limit: FCC Part 15.249
Frequency Range Tested: 9kHz-30MHz
The Soil Sensor is communicating with the remote RF Utility Tool.
Receive Mode

Ext Attn: 0 dB

Measurement Data:

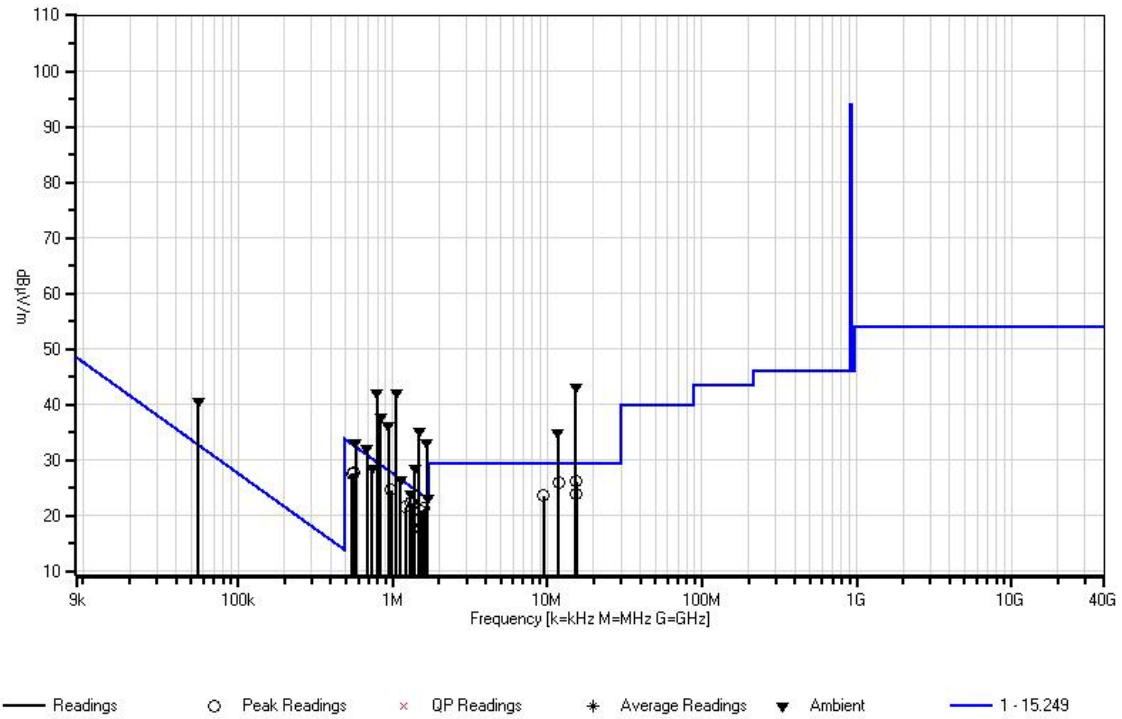
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB			Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1.059M	51.8	+0.1	+10.2			-20.0	42.1	27.1	+15.0	None
	Ambient										
2	15.250M	52.1	+0.6	+10.5			-20.0	43.2	29.5	+13.7	None
	Ambient										
3	791.846k	51.7	+0.1	+10.3			-20.0	42.1	29.6	+12.5	None
	Ambient										
4	1.482M	44.9	+0.2	+10.1			-20.0	35.2	24.1	+11.1	None
	Ambient										
5	1.659M	42.9	+0.2	+10.1			-20.0	33.2	23.1	+10.1	None
	Ambient										
6	839.932k	47.4	+0.1	+10.3			-20.0	37.8	29.1	+8.7	None
	Ambient										
7	940.285k	45.7	+0.1	+10.3			-20.0	36.1	28.1	+8.0	None
	Ambient										

8	55.539k Ambient	71.3	+0.0	+9.3	-40.0	40.6	32.7	+7.9	None
9	11.736M Ambient	44.8	+0.5	+9.7	-20.0	35.0	29.5	+5.5	None
10	1.390M Ambient	38.1	+0.2	+10.1	-20.0	28.4	24.7	+3.7	None
11	683.129k Ambient	41.7	+0.1	+10.3	-20.0	32.1	30.9	+1.2	None
12	578.594k Ambient	42.8	+0.1	+10.2	-20.0	33.1	32.3	+0.8	None
13	1.680M Ambient	32.9	+0.2	+10.1	-20.0	23.2	23.0	+0.2	None
14	1.128M Ambient	36.1	+0.1	+10.2	-20.0	26.4	26.5	-0.1	None
15	1.300M Ambient	33.6	+0.2	+10.1	-20.0	23.9	25.3	-1.4	None
16	739.578k Ambient	38.2	+0.1	+10.3	-20.0	28.6	30.2	-1.6	None
17	1.601M	30.9	+0.2	+10.1	-20.0	21.2	23.5	-2.3	None
18	1.325M	32.0	+0.2	+10.1	-20.0	22.3	25.1	-2.8	None
19	1.365M	31.7	+0.2	+10.1	-20.0	22.0	24.8	-2.8	None
20	1.530M	30.5	+0.2	+10.1	-20.0	20.8	23.8	-3.0	None
21	982.099k	34.3	+0.1	+10.2	-20.0	24.6	27.7	-3.1	None
22	15.376M	35.0	+0.6	+10.5	-20.0	26.1	29.5	-3.4	None
23	11.781M	35.6	+0.5	+9.7	-20.0	25.8	29.5	-3.7	None
24	1.210M	31.2	+0.2	+10.1	-20.0	21.5	25.9	-4.4	None
25	561.868k	37.3	+0.1	+10.2	-20.0	27.6	32.6	-5.0	None
26	549.324k	37.2	+0.1	+10.2	-20.0	27.5	32.8	-5.3	None
27	1.551M	28.0	+0.2	+10.1	-20.0	18.3	23.7	-5.4	None
28	15.439M	32.9	+0.6	+10.4	-20.0	23.9	29.5	-5.6	None
29	9.475M	34.0	+0.5	+9.1	-20.0	23.6	29.5	-5.9	None
30	1.507M	27.5	+0.2	+10.1	-20.0	17.8	24.0	-6.2	None

CKC Laboratories Date: 5/7/2010 Time: 4:02:46 PM AquaCheck (Pty) LTD WO#: 90751
 15.249 Test Distance: 3 Meters Sequence#: 5 Ext ATTN: 0 dB



Test Location: CKC Laboratories • 5046 Sierra Pines Dr • Mariposa, CA 95338 • (209) 966-5240

Customer: **AquaCheck (Pty) LTD**
 Specification: **15.249**
 Work Order #: **90751**
 Test Type: **Maximized Emissions**
 Equipment: **Basic II Wireless Probe**
 Manufacturer: AquaCheck
 Model: ACPROBEII_xM
 S/N: 7041

Date: 5/7/2010
 Time: 13:26:25
 Sequence#: 2
 Tested By: Greg Johnson

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00099	Preamp	8447D	3/13/2009	3/13/2011
T2	AN01991	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T3	ANSITED 3M	Cable	32	5/4/2010	5/4/2012
	AN02660	Spectrum Analyzer	E4446A	8/7/2008	8/7/2010
T4	AN03008	Cable	32022-2-2909K-24TC	1/26/2010	1/26/2012
T5	AN00656	Horn Antenna	3115	4/23/2010	4/23/2012
T6	AN02010	Preamp	8449B	11/13/2008	11/13/2010
T7	ANP01403	Cable	58758-23	6/10/2009	6/10/2011
T8	ANP05904	Cable	32022-2-29094K-144TC	6/9/2009	6/9/2011
	AN01440	Band Pass Filter	91H31-3000	6/17/2009	6/17/2011
T9	AN	Duty Cycle Correction Factor		5/7/2010	5/7/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Basic II Wireless Probe*	AquaCheck	ACPROBEII_xM	7041

Support Devices:

Function	Manufacturer	Model #	S/N
RF Utility Tool	AquaCheck	AquaCheck Basic II	Blankerbek-1037

Test Conditions / Notes:

Spec Limit: FCC Part 15.249
 Frequency Range Tested: 30MHz-10.098GHz
 The Soil Sensor is communicating with the remote RF Utility Tool.
 Transmit Mode
 Duty Cycle Correction Factor used in accordance with 15.35C Maximum on time in any one period is 24.78ms
 therefore $20\log(24.78\text{ms}) / 100\text{ms} = -12.1\text{dB}$

Ext Attn: 0 dB

Measurement Data:

Reading listed by margin.

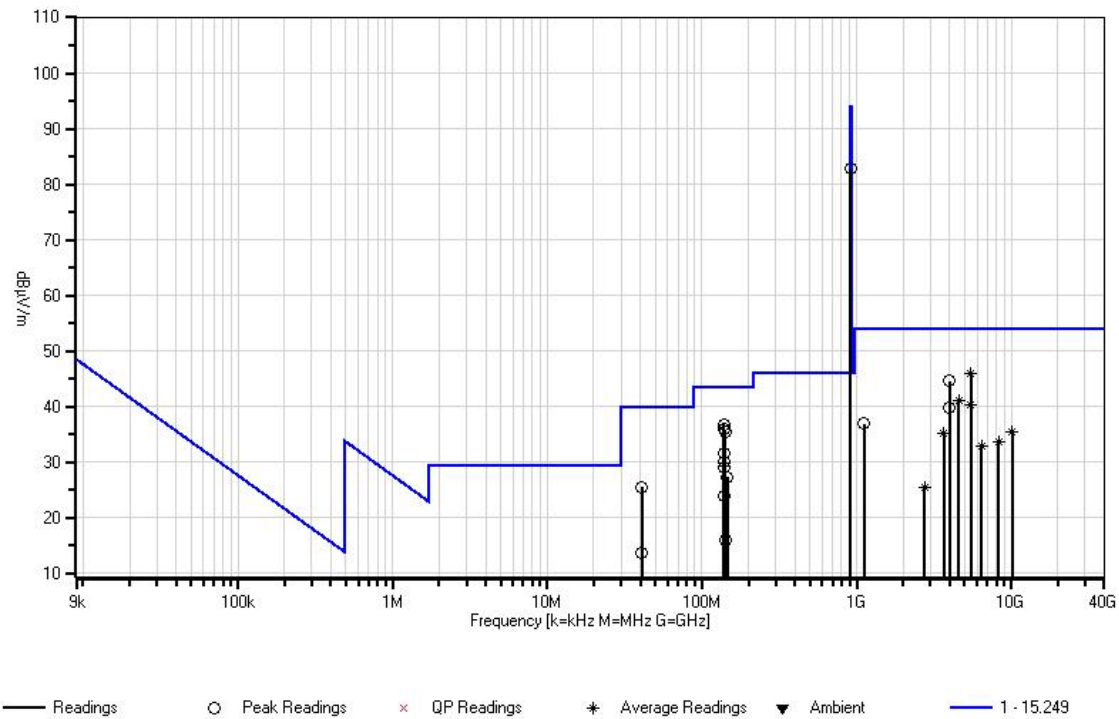
Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	138.000M	49.3	-26.9 +0.0 +0.0	+12.1 +0.0	+2.0 +0.0	+0.3 +0.0	+0.0	36.8	43.5	-6.7	Horiz
2	140.660M	48.5	-26.9 +0.0 +0.0	+12.0 +0.0	+2.0 +0.0	+0.3 +0.0	+0.0	35.9	43.5	-7.6	Vert

3	142.050M	47.9	-26.9 +0.0 +0.0	+12.0 +0.0 +0.0	+2.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	35.3	43.5	-8.2	Vert
4	5507.640M Ave	50.6	+0.0 +33.6 -12.1	+0.0 -33.6 +3.9	+0.0 +3.9 +3.4	+0.0 +0.0 +0.0	+0.0	45.8	54.0	-8.2	Horiz
^	5507.640M	64.7	+0.0 +33.6 +0.0	+0.0 -33.6 +3.9	+0.0 +3.9 +3.4	+0.0 +0.0 +0.0	+0.0	72.0	54.0	+18.0	Horiz
6	4003.000M	39.8	+0.0 +32.3 +0.0	+0.0 -33.4 +3.2	+0.0 +3.2 +2.7	+0.0 +0.0 +0.0	+0.0	44.6	54.0	-9.4	Horiz
7	917.942M	80.9	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	82.8	94.0	-11.2	Vert
8	140.576M	44.1	-26.9 +0.0 +0.0	+12.0 +0.0 +0.0	+2.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	31.5	43.5	-12.0	Horiz
9	4589.746M Ave	48.0	+0.0 +32.3 -12.1	+0.0 -33.6 +3.4	+0.0 +3.4 +3.1	+0.0 +0.0 +0.0	+0.0	41.1	54.0	-12.9	Horiz
^	4589.746M	61.5	+0.0 +32.3 +0.0	+0.0 -33.6 +3.4	+0.0 +3.4 +3.1	+0.0 +0.0 +0.0	+0.0	66.7	54.0	+12.7	Horiz
11	138.190M	42.5	-26.9 +0.0 +0.0	+12.0 +0.0 +0.0	+2.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	29.9	43.5	-13.6	Vert
12	5508.000M Ave	45.2	+0.0 +33.6 -12.1	+0.0 -33.6 +3.9	+0.0 +3.9 +3.4	+0.0 +0.0 +0.0	+0.0	40.4	54.0	-13.6	Vert
^	5508.000M	55.3	+0.0 +33.6 +0.0	+0.0 -33.6 +3.9	+0.0 +3.9 +3.4	+0.0 +0.0 +0.0	+0.0	62.6	54.0	+8.6	Vert
14	4000.000M	35.0	+0.0 +32.3 +0.0	+0.0 -33.4 +3.2	+0.0 +3.2 +2.7	+0.0 +0.0 +0.0	+0.0	39.8	54.0	-14.2	Vert
15	137.960M	41.6	-26.9 +0.0 +0.0	+12.1 +0.0 +0.0	+2.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	29.1	43.5	-14.4	Vert
16	41.014M	40.6	-27.3 +0.0 +0.0	+10.9 +0.0 +0.0	+1.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	25.5	40.0	-14.5	Vert
17	145.340M	39.7	-26.9 +0.0 +0.0	+12.1 +0.0 +0.0	+2.1 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	27.3	43.5	-16.2	Vert
18	1123.000M	42.6	+0.0 +25.0 +0.0	+0.0 -34.2 +1.6	+0.0 +1.6 +1.5	+0.4 +0.0 +0.0	+0.0	36.9	54.0	-17.1	Vert

19	10098.000 M Ave	34.4	+0.0 +37.5 -12.1	+0.0 -33.9	+0.0 +5.1	+0.0 +4.5	+0.0	35.5	54.0	-18.5	Vert
^	10098.000 M	42.2	+0.0 +37.5 +0.0	+0.0 -33.9	+0.0 +5.1	+0.0 +4.5	+0.0	55.4	54.0	+1.4	Vert
21	3671.970M Ave	44.1	+0.0 +31.3 -12.1	+0.0 -33.9	+0.0 +2.9	+0.0 +2.7	+0.0	35.0	54.0	-19.0	Horiz
^	3671.970M	56.1	+0.0 +31.3 +0.0	+0.0 -33.9	+0.0 +2.9	+0.0 +2.7	+0.0	59.1	54.0	+5.1	Horiz
23	137.883M	36.4	-26.9 +0.0 +0.0	+12.1 +0.0	+2.0 +0.0	+0.3 +0.0	+0.0	23.9	43.5	-19.6	Horiz
24	8261.830M Ave	34.7	+0.0 +36.5 -12.1	+0.0 -34.2	+0.0 +4.3	+0.0 +4.5	+0.0	33.7	54.0	-20.3	Horiz
^	8261.830M	47.2	+0.0 +36.5 +0.0	+0.0 -34.2	+0.0 +4.3	+0.0 +4.5	+0.0	58.3	54.0	+4.3	Horiz
26	6426.000M Ave	36.5	+0.0 +34.0 -12.1	+0.0 -33.4	+0.0 +4.2	+0.0 +3.6	+0.0	32.8	54.0	-21.2	Vert
^	6426.000M	45.5	+0.0 +34.0 +0.0	+0.0 -33.4	+0.0 +4.2	+0.0 +3.6	+0.0	53.9	54.0	-0.1	Vert
28	41.014M	28.8	-27.3 +0.0 +0.0	+10.9 +0.0	+1.0 +0.0	+0.3 +0.0	+0.0	13.7	40.0	-26.3	Horiz
29	141.985M	28.5	-26.9 +0.0 +0.0	+12.0 +0.0	+2.0 +0.0	+0.3 +0.0	+0.0	15.9	43.5	-27.6	Horiz
30	2753.834M Ave	37.2	+0.0 +29.2 -12.1	+0.0 -33.9	+0.0 +2.6	+0.0 +2.4	+0.0	25.4	54.0	-28.6	Horiz
^	2753.850M	50.3	+0.0 +29.2 +0.0	+0.0 -33.9	+0.0 +2.6	+0.0 +2.4	+0.0	50.6	54.0	-3.4	Horiz

CKC Laboratories Date: 5/7/2010 Time: 13:26:25 AquaCheck (Pty) LTD WO#: 90751
 15.249 Test Distance: 3 Meters Sequence#: 2 Ext ATTN: 0 dB



Test Setup Photo



RSS-210 99% Bandwidth

Test Conditions

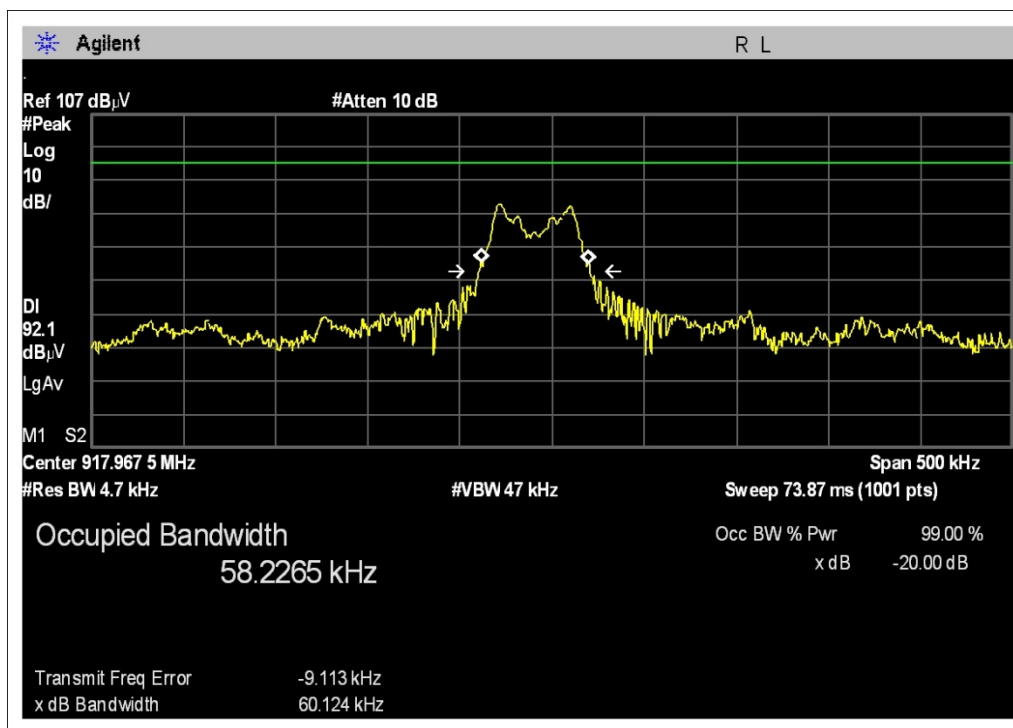
The Soil Sensor is communicating with the remote RF Utility Tool.

Engineer Name: G. Johnson

Test Equipment

Equipment	Serial	Cal Date	Cal Due	Asset
Preamp	1937A02604	3/13/2009	3/13/2011	AN00099
Biconilog Antenna	2456	10/9/2009	10/9/2011	AN01991
Cable	None	5/4/2010	5/4/2012	ANSITED 3M
Spectrum Analyzer	US44300407	8/7/2008	8/7/2010	AN02660
Cable	NA	1/26/2010	1/26/2012	AN03008

Test Plot



Test Setup Photo



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

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 dB μ V/m, the spectrum analyzer reading in dB μ 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. 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
RADIATED EMISSIONS	9kHz	150kHz	200Hz
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 "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. 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/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients 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

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. 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.