UL LLC
333 Pfingsten Rd.
Northbrook, IL 60062

www.ul.com/emc
(847) 272-8800

Order Number:	10321964B
Date:	June 30, 2014
Model:	SPM Flex
FCC ID	2ACSZSPMFLEX

Electromagnetic Compatibility Test Report

For

Honeywell Analytics

Test Report Details

Tests Performed By:	**UL LLC** **333 Pfingsten Rd.** **Northbrook, IL 60062**
Tests Performed For:	**Honeywell Analytics Inc** **405 Barclay Blvd** **Lincolnshire, IL 60069**
Applicant Contact: Phone: E-mail:	**Charlene Numrych** **847-955-8200** **Charlene.Numrych@Honeywell.com**
Test Report Date:	**June 23, 2014**
Product Type:	**Gas Detector**
Product standards	**FCC Part 15, RSS-210, RSS-GEN**
Model Number: FCC ID	**SPM FLEX** **2ACSZSPMFLEX**
Sample Serial Number:	**N/A**
EUT Category:	**Gas Detector**
Testing Start Date:	**May 6, 2014**
Date Testing Complete:	**June 30, 2014**
Overall Results:	**Compliant**

UL LLC reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. UL LLC shall have no liability for any deductions, inferences or generalizations drawn by the client or others from UL LLC issued reports. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

This report may contain test results that are not covered by the NVLAP or A2LA accreditation. The scope of accreditation is limited to the specific tests that are listed on the NVLAP and/or A2LA websites referenced at the end of this report.

Report Directory

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None			

1.0 G E N E R A L - Product Description

1.1 Equipment Description

Equipment Under Test (EUT) is a Gas Detector. It is both battery powered and AC via AC/DC external power supply. It contains a RFID operating at 13.56MHz.

1.2 Equipment Marking Plate

Not Available

1.3 Device Configuration During Test

1.3.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Gas Detector	Honeywell	SPM Flex	None
EUT	Power Supply	FSP Group Inc	FSP135-AAAN1	None
AE	Data Logger	Agilent	34970A	Converts A/D Gas info output
AE	Laptop	Dell	D630	Monitor Gas info output
AE	Laptop	Dell	D630	Monitor Ethernet traffic
AE	Switch	Cisco	RV042	None

Note: **EUT** - Equipment Under Test, **AE** - Auxiliary/Associated Equipment, or **SIM** - Simulator (Not Subjected to Test)

1.3.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	AC	Y	N	None
2	Gas	N/E	Y	N	Air Tubes
3	Data Port	I/O	Y	N	None
2	Ethernet	TP	Y	N	None

Note:
AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

1.3.3 EUT Internal Operating Frequencies:

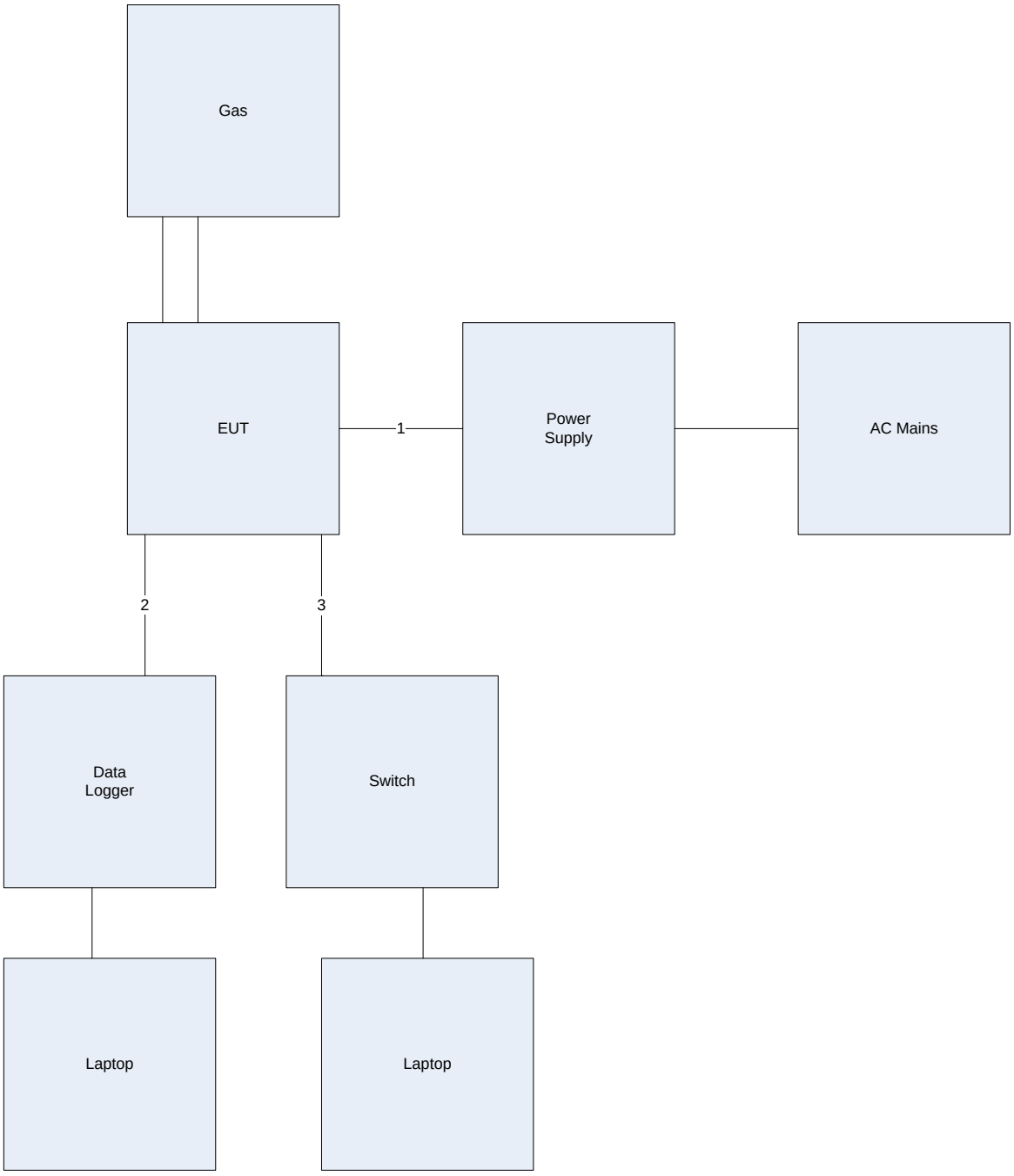
Frequency (MHz)	Description
<108	EUT

1.3.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	120	-	-	AC-60Hz	1	None
2	Battery	-	-	DC	1	None

1.4 Block Diagram:

The diagram below illustrates the configuration of the equipment above.



1.5 EUT Configurations

Mode #	Description
1	EUT connected with AE equipment for monitoring mode.

1.6 EUT Operation Modes

Mode #	Description
1	EUT in monitoring mode

1.7 Rational for EUT Configuration

Mode #	Description
1	The selected EUT configuration was chosen to maximize emissions

2.0 Summary

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by UL LLC in accordance with the procedures stated in each test requirement and specification. The applicant determined the list of tests performed were applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

2.1 Deviations from standard test methods

None

2.2 Device Modifications Necessary for Compliance

None

2.3 Reference Standards

Standard Number	Standard Name	Standard Date
47 CFR Part 15	Radio Frequency Devices	2013
RSS-210	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment	2010
RSS-Gen	General Requirements and Information for the Certification of Radio Apparatus	2010

2.4 Results Summary

This digital portion of the product is considered Class A
Radiated Emissions on the transmitter is only required up to 140MHz. All other emissions outside of 140MHz will be product of the digital portion of the EUT.

Requirement – Test	Result (Compliant / Non-Compliant)*
Conducted Emissions - Mains	**Compliant**
Frequency Stability	**Compliant**
20dB BW	**Compliant**
Radiated Emissions	**Compliant**

Test Engineer:

Michael Ferrer (Ext.41312)
WiSE Program Manager
Consumer Technology Division
Verification Services

Reviewer:

Bartlomiej Mucha(Ext.41216)
WiSE Staff Engineer
Consumer Technology Division
Verification Services

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

3.0 Calibration of Equipment Used for Measurement

All test equipment and test accessories are calibrated on a regular basis. The maximum time between calibrations is one year or the manufacturers' recommendation, whichever is less.

All test equipment calibrations are traceable to the National Institute of Standards and Technology (NIST); therefore, all test data recorded in this report is traceable to NIST.

4.0 EMISSIONS TEST RESULTS

The emissions tests were performed according to following regulations:

---------- North America ----------

47 CFR Part 15	Radio Frequency Devices
RSS-210	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment
RSS-Gen	General Requirements and Information for the Certification of Radio Apparatus

Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be verified at the time the test is conducted.

Ambient Temperature, °C	22.5 ± 2.5	Relative Humidity, %	45 ± 15	Barometric Pressure, mBar	950 ± 150

Measurement Uncertainty

Test	Range	Equipment	Uncertainty k=2
Conducted Emissions	150k-30MHz	LISN	2.29dB
Conducted Emissions	150k-30MHz	AAN ISN	2.73dB
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.27dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.28dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.33dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.39dB

Sample Calculations
Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:

Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)
Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)
Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

4.1 Test Conditions and Results – MAINS TERMINAL – CONDUCTED EMISSIONS

Test Description	Measurements were made on a ground plane. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.

Basic Standard	FCC Part 15	
UL LPG	80-EM-S0026	
	Frequency range on each side of line	Measurement Point
Fully configured sample scanned over the following frequency range	150kHz to 30MHz	Mains

Limits - Class B

Frequency (MHz)	Limit (dBµV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Supplementary information:

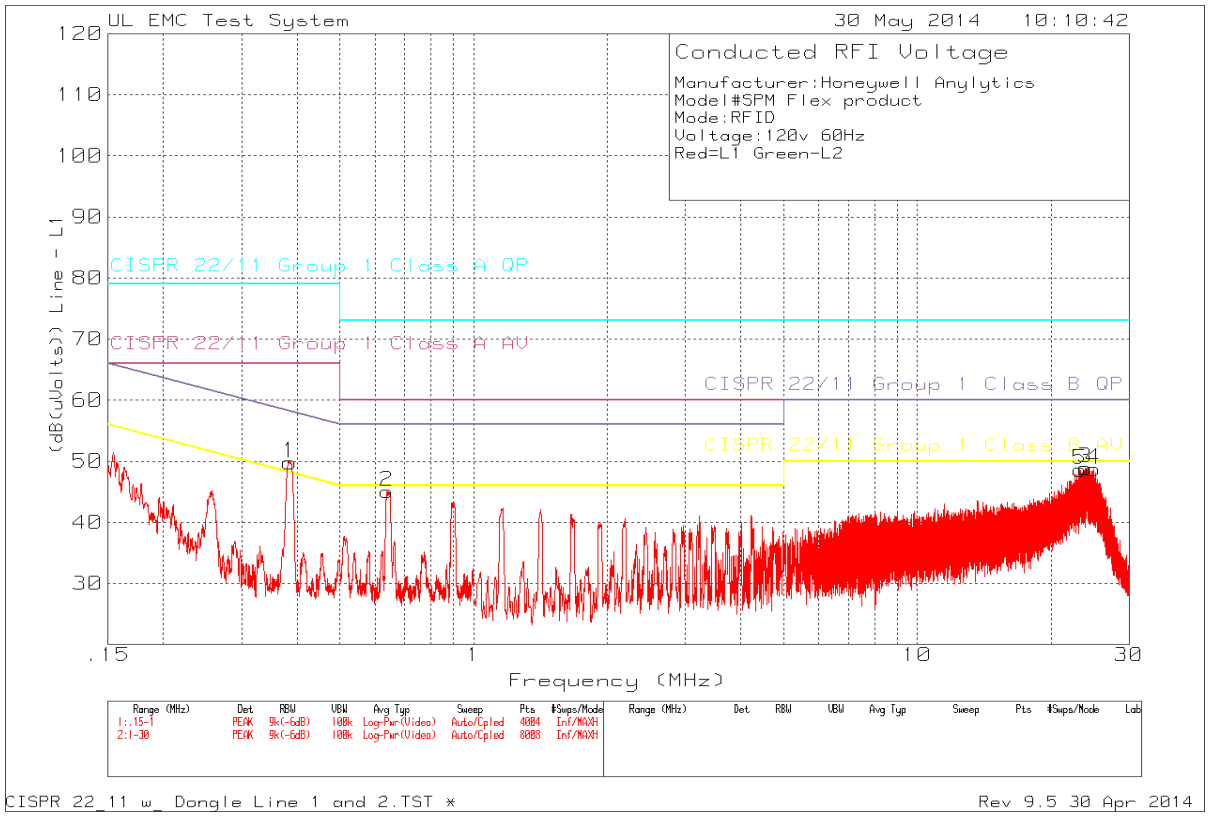
Table 1 Conducted Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
Supplementary information: Antenna was terminated, therefore not visible in scan		

Table 2 Conducted Emissions Test Equipment

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	12/15/13	12/31/14
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224	N/A	N/A
HighPass Filter	Solar Electronics	2803-150	885551	N/A	N/A
Attenuator	HP	8494B	2831A00838	N/A	N/A
LISN - L1	Solar	8602-50-TS-50-N	EMC4052	01/16/14	01/16/15
LISN - L2	Solar	8602-50-TS-50-N	EMC4064	01/16/14	01/16/15

Figure 1 Conducted Emissions Graph



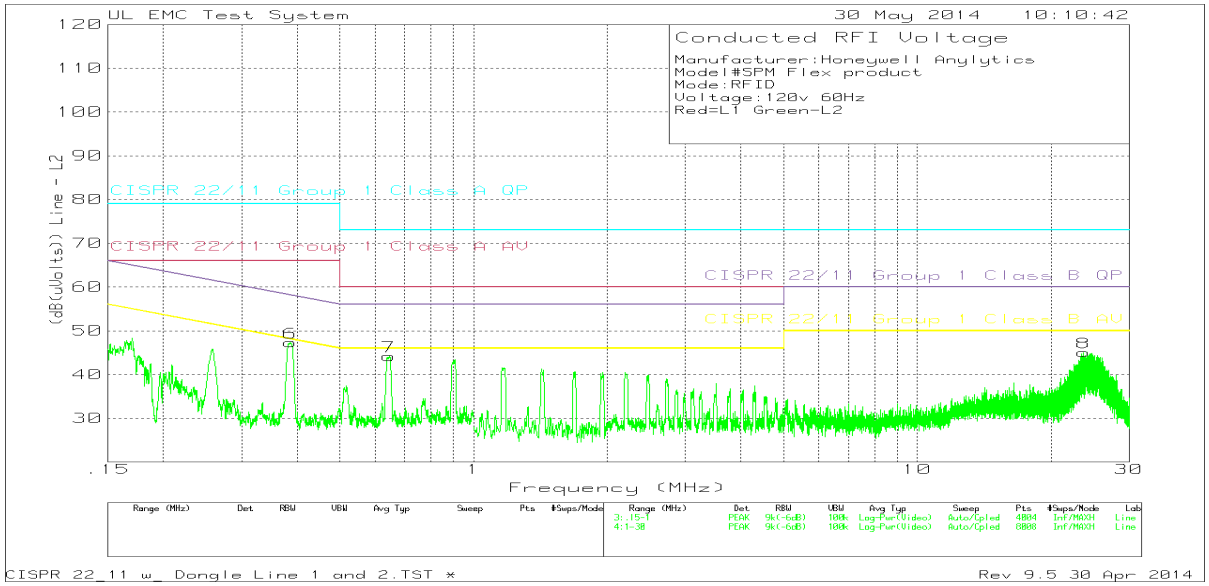


Table 3 Conducted Emissions Data Points

Trace Markers

Line - L1 .15 - 1MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 1 4052 Dongle	Line 1 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
1	.38511	38.87	PK	.1	10.8	49.77	79	-29.23	66	-16.23	58.17	-8.4	48.17	1.6
2	.63781	34.47	PK	0	10.6	45.07	73	-27.93	60	-14.93	56	-10.93	46	-.93

PK - Peak detector

Line - L1 1 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 1 4052 Dongle	Line 1 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
5	23.23908	36.72	PK	.3	11.6	48.62	73	-24.38	60	-11.38	60	-11.38	50	-1.38
3	23.90191	36.99	PK	.3	11.6	48.89	73	-24.11	60	-11.11	60	-11.11	50	-1.11
4	24.9378	36.6	PK	.4	11.7	48.7	73	-24.3	60	-11.3	60	-11.3	50	-1.3

PK - Peak detector

Line - L2 .15 - 1MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 2 EMC4064 Dongle	Line 2 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
6	.3867	36.43	PK	.1	10.8	47.33	79	-31.67	66	-18.67	58.13	-10.8	48.13	-.8
7	.64481	33.47	PK	.1	10.6	44.17	73	-28.83	60	-15.83	56	-11.83	46	-1.83

PK - Peak detector

Line - L2 1 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 2 EMC4064 Dongle	Line 2 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
8	23.69183	32.96	PK	.4	11.7	45.06	73	-27.94	60	-14.94	60	-14.94	50	-4.94

PK - Peak detector
Peak/Average/RMS Emissions

Line - L1 .15 - 1MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 1 4052 Dongle	Line 1 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
.38616	31.3	Av	.1	10.8	42.2	79	-36.8	66	-23.8	58.15	-15.95	48.15	-5.95
.63751	-9.27	Av	0	10.6	1.33	73	-71.67	60	-58.67	56	-54.67	46	-44.67

Av - average detection

Line - L1 1 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 1 4052 Dongle	Line 1 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
23.23583	21.03	Av	.3	11.6	32.93	73	-40.07	60	-27.07	60	-27.07	50	-17.07
23.8974	22.04	Av	.3	11.6	33.94	73	-39.06	60	-26.06	60	-26.06	50	-16.06
24.93243	21.25	Av	.4	11.7	33.35	73	-39.65	60	-26.65	60	-26.65	50	-16.65

Av - average detection

Line - L2 .15 - 1MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 2 EMC4064 Dongle	Line 2 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
.38761	29.98	Av	.1	10.8	40.88	79	-38.12	66	-25.12	58.11	-17.23	48.11	-7.23
.64577	19.03	Av	.1	10.6	29.73	73	-43.27	60	-30.27	56	-26.27	46	-16.27

Av - average detection

Line - L2 1 - 30MHz													
Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 2 EMC4064 Dongle	Line 2 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
23.69158	19.26	Av	.4	11.7	31.36	73	-41.64	60	-28.64	60	-28.64	50	-18.64

Av - average detection
Quasi-Peak Emissions

Line - L1 .15 - 1MHz													
Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 1 4052 Dongle	Line 1 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
.38616	34.82	QP	.1	10.8	45.72	79	-33.28	66	-20.28	58.15	-12.43	48.15	-2.43
.63751	.09	QP	0	10.6	10.69	73	-62.31	60	-49.31	56	-45.31	46	-35.31

QP - Quasi-Peak detector

Line - L1 1 - 30MHz													
Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 1 4052 Dongle	Line 1 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
23.23583	30.3	QP	.3	11.6	42.2	73	-30.8	60	-17.8	60	-17.8	50	-7.8
23.8974	31.32	QP	.3	11.6	43.22	73	-29.78	60	-16.78	60	-16.78	50	-6.78
24.93243	30.3	QP	.4	11.7	42.4	73	-30.6	60	-17.6	60	-17.6	50	-7.6

QP - Quasi-Peak detector

Line - L2 .15 - 1MHz													
Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 2 EMC4064 Dongle	Line 2 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
.38761	32.64	QP	.1	10.8	43.54	79	-35.46	66	-22.46	58.11	-14.57	48.11	-4.57
.64577	25.52	QP	.1	10.6	36.22	73	-36.78	60	-23.78	56	-19.78	46	-9.78

QP - Quasi-Peak detector

Line - L2 1 - 30MHz													
Frequency (MHz)	Meter Reading (dBuV)	Det	LISN 2 EMC4064 Dongle	Line 2 Filter	Corrected Reading (dB(uVolts))	CISPR 22/11 Group 1 Class A QP	Margin (dB)	CISPR 22/11 Group 1 Class A AV	Margin (dB)	CISPR 22/11 Group 1 Class B QP	Margin (dB)	CISPR 22/11 Group 1 Class B AV	Margin (dB)
23.69158	28.31	QP	.4	11.7	40.41	73	-32.59	60	-19.59	60	-19.59	50	-9.59

QP - Quasi-Peak detector
CISPR 22_11 w_ Dongle Line 1 and 2.TST *
Rev 9.5 30 Apr 2014

4.2 Test Conditions and Results – Frequency Stability

Test Description	For Temperature Frequency Stability, measurements were made with the product placed in an environmental chamber and the temperature varied from –20C to +50C at the normal supply voltage. The frequency drift of the fundamental frequency was measured with a spectrum analyzer. For Power Supply Frequency Stability, measurements were made in a laboratory environment and the supply voltage varied from 85% to 115%. The ambient temperature was 20C.
Basic Standard	15.225(e)
Frequency Stability Limits	
+/- 0.01% of the Operating Frequency (13.56MHz)	

Table 4 Frequency Stability Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
Supplementary information: None		

Table 5 Frequency Stability Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
Thermal Chamber	Thermotron	SM-32-7800	EMC4232	04/21/14	04/21/15
Frequency Counter	HP	5386A	EMC4087	12/19/13	12/31/14
Antenna	EMCO	7405-902	-	N/A	N/A

Table 6 Frequency Stability Data – Frequency vs. Temperature

Time (min)	Frequency (MHz)	Temperature (°C)	Voltage	Within 0.01% (range below)
0	13.560386	20	100%	NA
2	13.560386	20	100%	YES
5	13.560386	20	100%	YES
10	13.560386	20	100%	YES
0	13.560386	20	85%	YES
2	13.560386	20	85%	YES
5	13.560386	20	85%	YES
10	13.560386	20	85%	YES
0	13.560386	20	115%	YES
2	13.560386	20	115%	YES
5	13.560386	20	115%	YES
10	13.560386	20	115%	YES
0	13.560400	-30	100%	YES
2	13.560400	-30	100%	YES
5	13.560399	-30	100%	YES
10	13.560395	-30	100%	YES
0	13.560379	50	100%	YES
2	13.560378	50	100%	YES
5	13.560378	50	100%	YES
10	13.560377	50	100%	YES

13.560386* 0.0001=0.001356039
Range = 13.55902996 – 13.56174204

4.3 Test Conditions and Results – Occupied Bandwidth

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the spectrum analyzer resolution bandwidth set per the appropriate standard.
Basic Standard	15.215(c)
Occupied Bandwidth Limits	
-	

Table 7 20dB Bandwidth Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
Supplementary information: None		

Table 8 20dB Bandwidth Spectrum Analyzer Settings

Resolution Bandwidth (MHz)	Occupied Bandwidth Requirements	
	dBc	%
Insert RBW Here	-20	99
Supplementary information: None		

Table 9 20dB Bandwidth Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
Spectrum Analyzer	Agilent	N903A	EMC4360	12/21/13	12/21/14
Antenna	EMCO	7405-902	-	N/A	N/A

Figure 2 20dB Bandwidth Graph

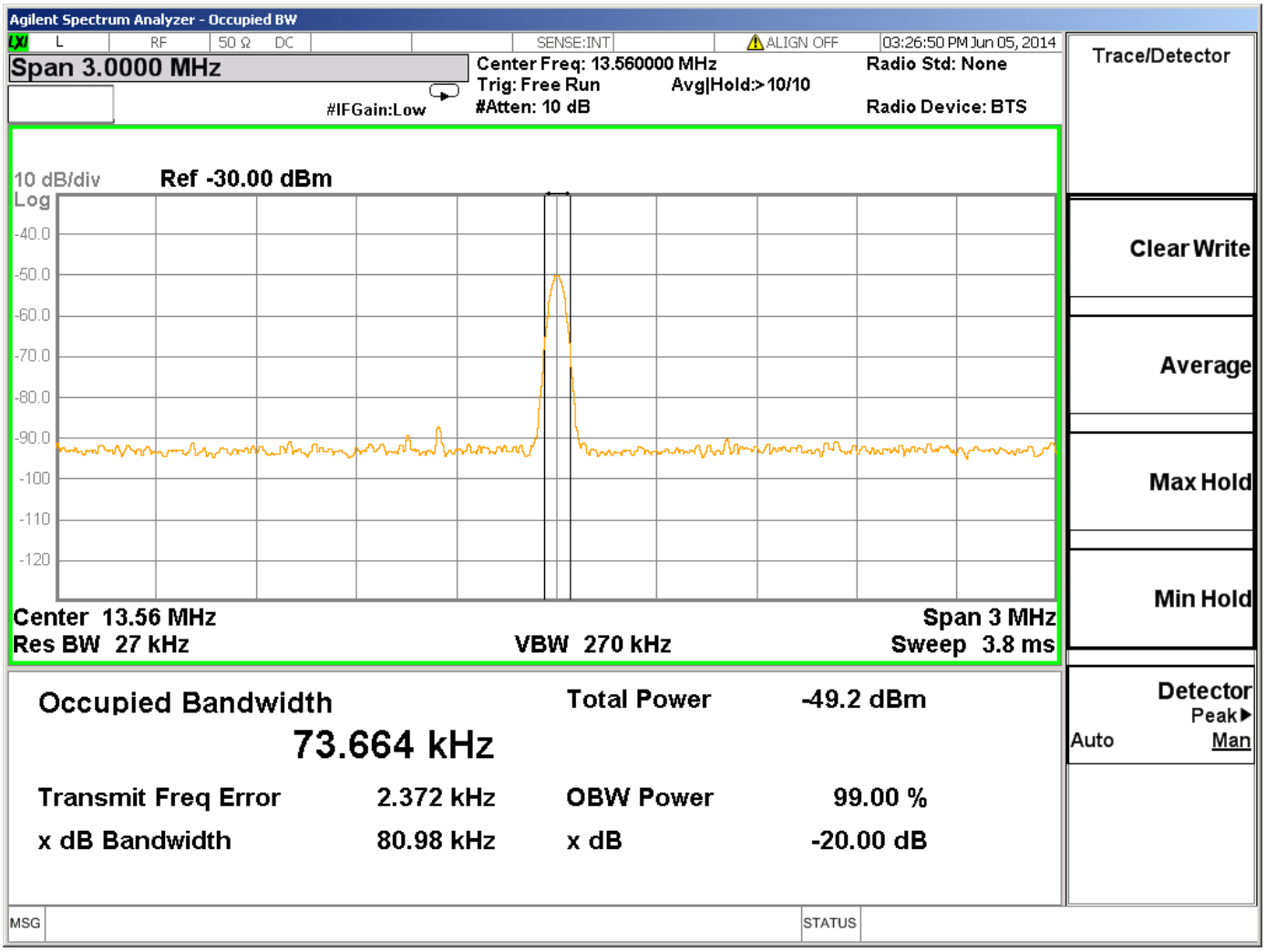
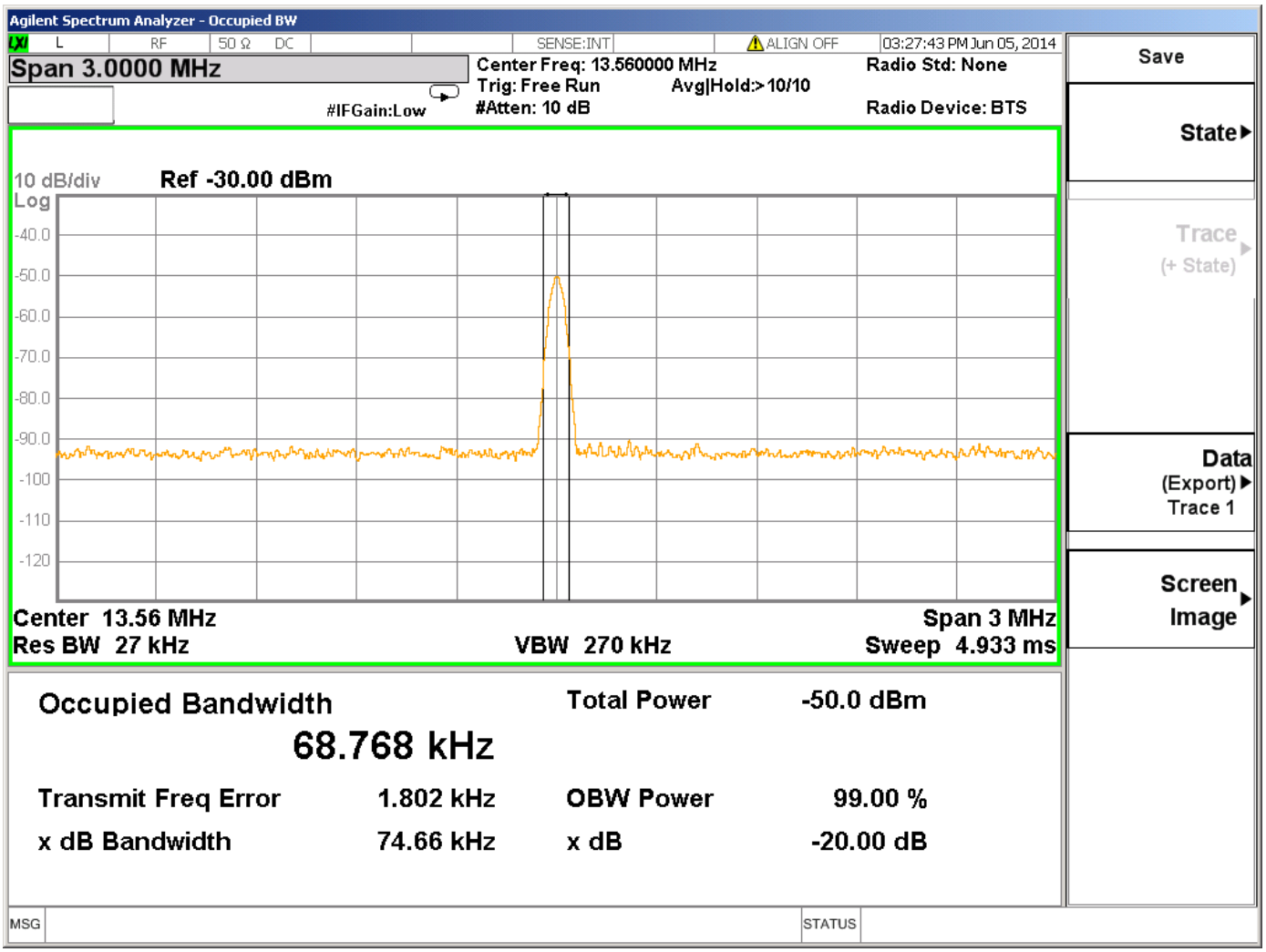


Figure 3 99% Bandwidth Graph



Sample Detector was used

4.4 Test Conditions and Results – RADIATED EMISSIONS

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 and 10-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.	
Basic Standard	FCC Part 15.225	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	9kHz – 30MHz	(3 meter measurement distance)
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	(10 meter measurement distance)

Limits

Frequency (MHz)	Limit (dBµV/m)
	General Emissions
0.009 – 0.490	128.5 – 93.8
0.490 – 1.705	73.8 – 63
1.705 – 30	69.5
30 – 88	29.6
88 – 216	33.1
216-960	35.6
960-1000	43.53
	Fundamental
13.553 – 13.567	124
13.110 – 13.410 13.710 – 14.010	80.506
13.410 – 13.553 13.567 – 13.710	90.47

Supplementary information: Use Avg. detector for frequencies 9-90kHz, 110-490kHz, all others use Quasi-peak detector

Table 10 Radiated Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
Supplementary information: None		

Table 11 Radiated Emissions Test Equipment

Description	Manufacturer	Model	Identifier	Cal Date	Cal Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	12/20/14	12/31/14
Bicon Antenna	Chase	VBA6106A	EMC4078	04/01/14	04/01/15
Log-P Antenna	Chase	UPA6109	EMC4258	12/11/13	12/31/14
Loop Antenna	EMCO	6502/1	EMC4026	03/18/14	03/18/15

Table 12 Radiated Emissions Data Points

Fundamental Measurements

Honeywell Analytics inc.
SPM Flex Base Unit

Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Cable Factor dB	Corrected Reading dB(uVolts/ meter)	FCC Part 15 3M	Margin (dB)	Azimuth [Degs]	Notes
13.560394	50.6	QP	11.2	1.5	63.3	124	-60.7	91	1
13.560394	61.68	QP	11.2	1.5	74.38	124	-49.62	334	2
13.560394	61.66	QP	11.2	1.5	74.36	124	-49.64	61	3
13.560394	50.1	QP	11.2	1.5	62.8	124	-61.2	66	4
13.560394	51.16	QP	11.2	1.5	63.86	124	-60.14	355	5
13.560394	50.04	QP	11.2	1.5	62.74	124	-61.26	63	6

Notes:
1 - X-axis flat, ant upright
2 - Y-axis side, ant upright
3 - Z axis upright, ant upright
4- X-axis flat, ant flat
5 - y axis upright, ant flat
6 - Z axis upright, ant flat

QP - Quasi-Peak detector

Figure 4 Radiated Emissions Graph

Table 13 Radiated Emissions Data Points

Honeywell Analytics inc.
SPM Flex Base Unit
Battery

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	Antenna Factor dB/m	Cable Factor dB	Corrected Reading dB(uVolts/meter)	FCC Part 15 3M	Margin (dB)	TX limit	Margin (dB)	Azimuth [Degs]
1	13.05	9.49	PK	11.2	1.3	21.99	69.54	-47.55	69.5	-50.11	0-360
2	13.35	30.02	PK	11.2	1.4	42.62	69.54	-26.92	80.5	-40.68	0-360
3	13.431	26.22	PK	11.2	1.5	38.92	69.54	-30.62	90.5	-54.58	0-360
4	13.56	59.44	PK	11.2	1.5	72.14	69.54	2.6	124	-54.86	0-360
5	13.659	21.09	PK	11.2	1.5	33.79	69.54	-35.75	90.5	-59.71	0-360
6	13.98	27.57	PK	11.1	1.5	40.17	69.54	-29.37	80.5	-43.33	0-360
7	14.094	28.12	PK	11.1	1.5	40.72	69.54	-28.82	69.5	-31.78	0-360

PK - Peak detector

Figure 5 Radiated Emissions Graph

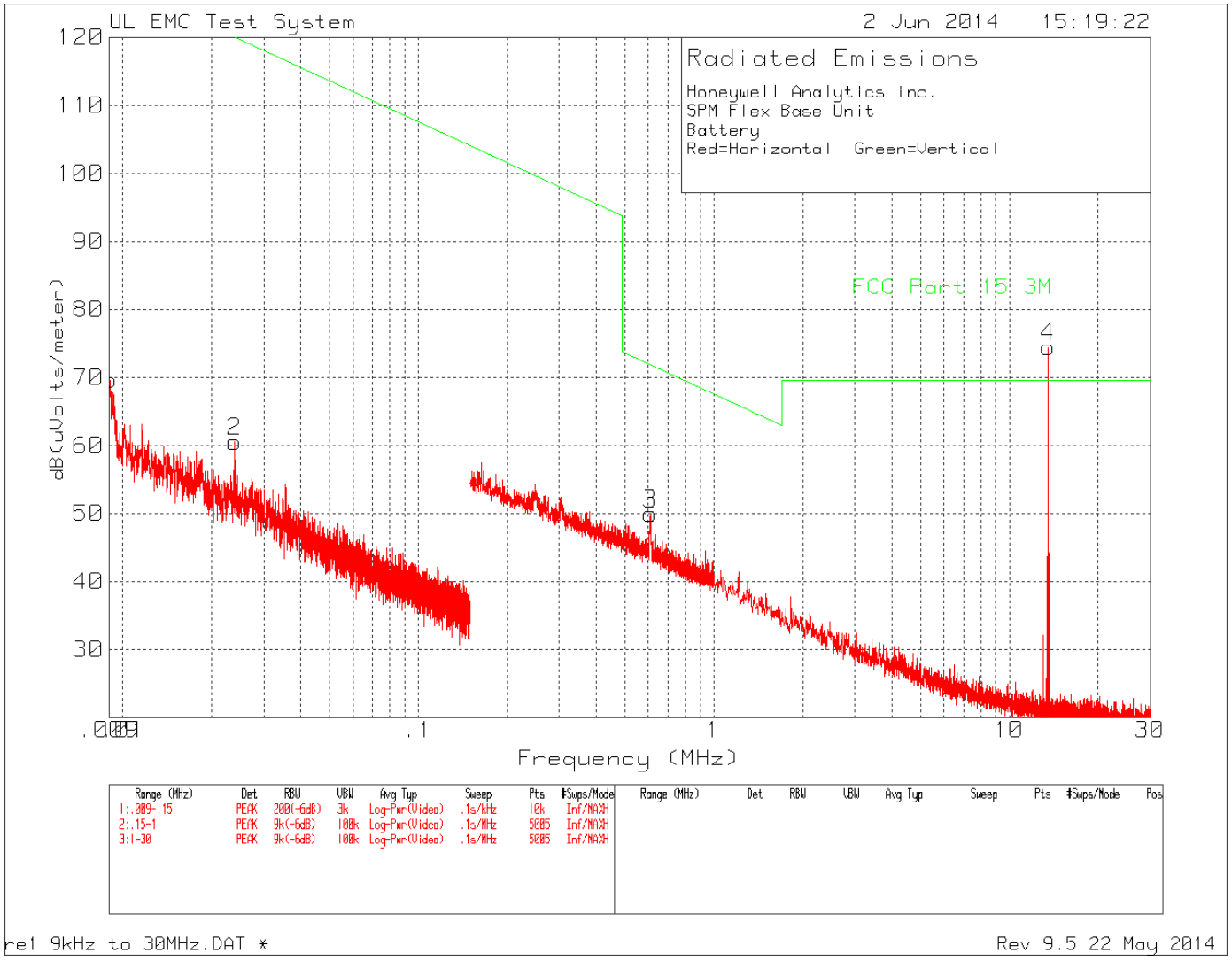


Table 14 Radiated Emissions Data Points

Honeywell Analytics inc.
SPM Flex Base Unit

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	Antenna Factor dB/m	Cable Factor dB	Corrected Reading dB(uVolts/meter)	FCC Part 15 3M	Margin (dB)	Azimuth [Degs]
1	0.009056	47.27	PK	22.3	0.1	69.67	128.45	-58.78	0-360
2	0.02391	44.05	PK	16.4	0.1	60.55	120.02	-59.47	0-360
3	0.61019	36.55	PK	12	1.4	49.95	71.89	-21.94	0-360
4	13.55777	61.74	PK	11.2	1.5	74.44	124	-49.56	0-360

PK - Peak detector

Figure 6 Radiated Emissions Graph

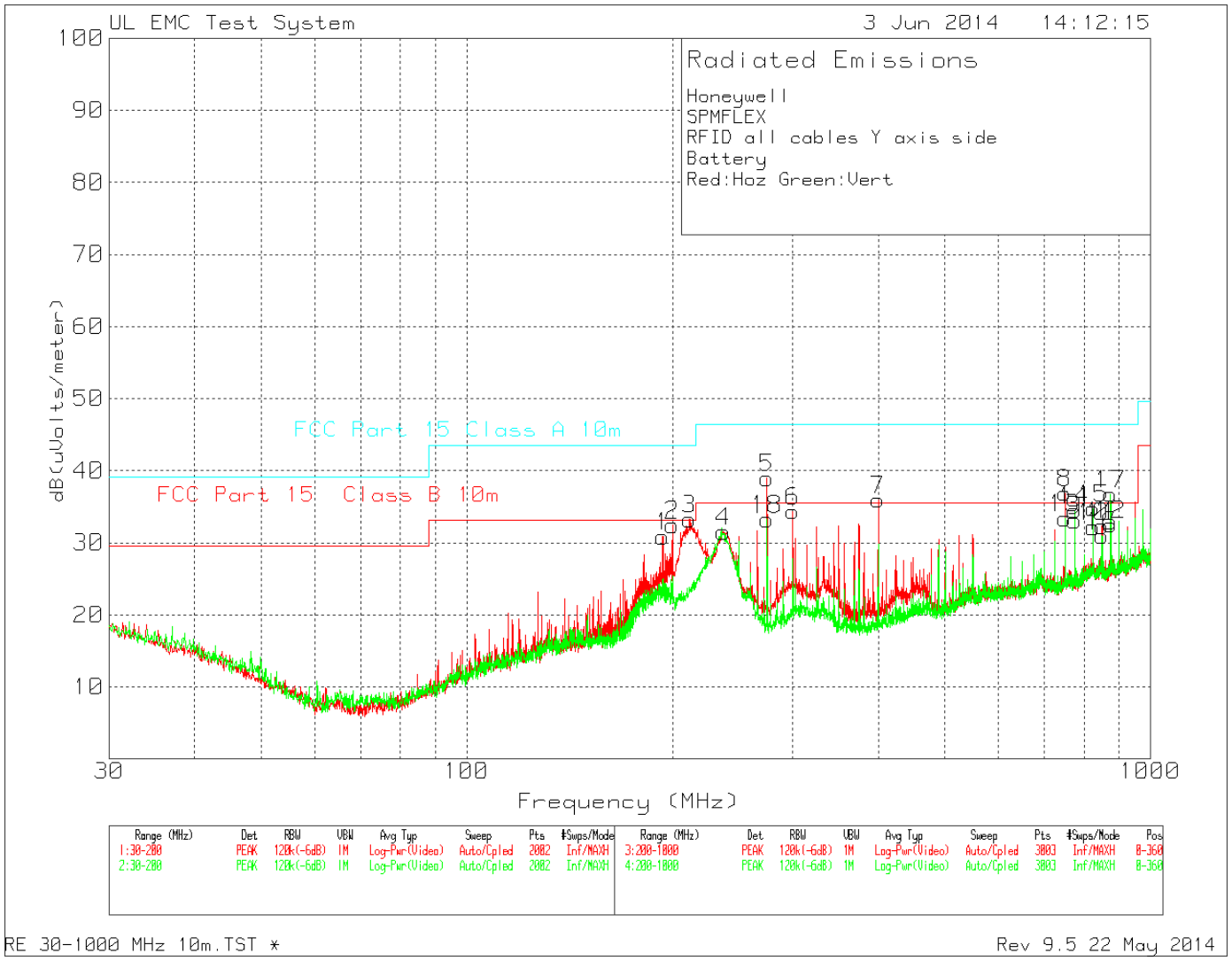


Table 15 Radiated Emissions Data Points

Honeywell
SPMFLEX
RFID all cables Y axis side
Battery
Red:Hoz Green:Vert

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	Antenna Factor dB/m	Cable factor dB	Corrected Reading dB(uVolts/meter)	FCC Part 15 Class A 10m	Margin (dB)	FCC Part 15 Class B 10m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	193.5442	43.69	PK	16.1	-28.9	30.89	43.52	-12.63	33.07	-2.18	0-360	400	H
2	200	44.93	PK	16.1	-28.6	32.43	43.52	-11.09	33.07	-0.64	0-360	400	H
3	211.7255	49.04	PK	11	-26.8	33.24	43.52	-10.28	33.07	0.17	0-360	399	H
4	237.3085	47.04	PK	11.1	-26.6	31.54	46.44	-14.9	35.57	-4.03	0-360	299	H
5	274.8834	52.69	PK	12.7	-26.4	38.99	46.44	-7.45	35.57	3.42	0-360	299	H
6	299.9334	47.39	PK	13.1	-26.1	34.39	46.44	-12.05	35.57	-1.18	0-360	299	H
7	399.8668	45.88	PK	15.6	-25.5	35.98	46.44	-10.46	35.57	0.41	0-360	200	H
8	750.0333	40.1	PK	21	-24.2	36.9	46.44	-9.54	35.57	1.33	0-360	99	H
9	775.0833	36.78	PK	21.1	-24.8	33.08	46.44	-13.36	35.57	-2.49	0-360	99	H
10	825.1832	34.32	PK	22.5	-24.6	32.22	46.44	-14.22	35.57	-3.35	0-360	99	H
11	849.9667	34.52	PK	22.6	-24.8	32.32	46.44	-14.12	35.57	-3.25	0-360	99	H
12	875.0166	34.91	PK	22.5	-24.9	32.51	46.44	-13.93	35.57	-3.06	0-360	99	H
13	750.0333	36.6	PK	21	-24.2	33.4	46.44	-13.04	35.57	-2.17	0-360	200	V
14	775.0833	38.2	PK	21.1	-24.8	34.5	46.44	-11.94	35.57	-1.07	0-360	200	V
15	825.1832	36.86	PK	22.5	-24.6	34.76	46.44	-11.68	35.57	-0.81	0-360	200	V
16	849.9667	33.16	PK	22.6	-24.8	30.96	46.44	-15.48	35.57	-4.61	0-360	200	V
17	875.0166	39.15	PK	22.5	-24.9	36.75	46.44	-9.69	35.57	1.18	0-360	200	V
18	274.8834	46.91	PK	12.7	-26.4	33.21	46.44	-13.23	35.57	-2.36	0-360	99	V

Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Cable factor dB	Corrected Reading dB(uVolts/meter)	FCC Part 15 Class A 10m	Margin (dB)	FCC Part 15 Class B 10m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
275.001603	51.6	QP	12.7	-26.4	37.9	46.44	-8.54	35.57	2.33	111	308	H

QP - Quasi-Peak detector

Appendix A

Accreditations and Authorizations

NVLAP Lab code: 100414-0

NVLAP: The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is comprised of laboratory accreditation programs (LAPs) which are established on the basis of requests and demonstrated need. Each LAP includes specific calibration and/or test standards and related methods and protocols assembled to satisfy the unique needs for accreditation in a field of testing or calibration. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests. Accreditation criteria are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), NVLAP Procedures and General Requirements, and encompass the requirements of ISO/IEC 17025. For a full scope listing see http://ts.nist.gov/standards/scopes/1004140.htm

FCC: Details of the measurement facilities used for these tests have been filed with the Federal Communications Commission's Laboratory in Columbia, Maryland (Ref. No. 91044).

Industry Canada Industrie Canada

Industry of Canada: Accredited by Industry Canada for performance of radiated measurements. Our test site complies with RSP 100, Issue 7, Section 3.3. File #: IC 2180A

VCCI: Accepted as an Associate Member to the VCCI. The measurement facilities detailed in this test report have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration Nos.: A0140.

ICASA: ICASA (Independent Communications Authority of South Africa) has appointed UL as a Designated Test Laboratory to test Telecommunications equipment for type approval in compliance with CISPR 22 to assist in fulfilling its mandate under section 54(1) of the Telecommunications Act, 1996 (Act 103 of 1996).

NIST/CAB: Validated by the European Commission as a U.S. Conformity Assessment Body (CAB) of the U.S.-EU Mutual Recognition Agreement (MRA) for the Electromagnetic Compatibility - Council Directive 2004/108/EC, Annex III (2-3). Also validated for the Telecommunication Equipment-Council Directive 99/5/EC, Annex III and IV, Identification Number: 0983.
NIST/CAB: Provisioned to act as a U.S. Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the Asia Pacific Economic Cooperation (APEC) MRA between the American Institute in Taiwan (AIT) and the United States. Our laboratory is considered qualified to test equipment subject to the applicable EMC regulations of the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) which require testing to CNS 13438 (CISPR 22).
NIST/CAB: Recognized by the Infocomm Development Authority of Singapore (IDA) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Our laboratory is provisionally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA. Our scope of designation includes IDA TS EMC (CISPR 22), IEC 61000-4-2, -4-3, -4-4, -4-5, and -4-6