



Engineering Solutions & Electromagnetic Compatibility Services

**FCC Part 15.249 / RSS-210 Radiated Test Data**

**EUT: HELIPAD**

**for**

**Resolution Engineering, Inc.  
1402 Heggen Street  
Hudson, WI 54016  
Contact: Jake Peterson**

**Testing Conducted By  
Rhein Tech Laboratories, Inc.  
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**RTL Test Engineer: Dan Baltzell**

**RTL Project/Report Number: 2014208**

**December 3, 2014**

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These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANSI-ASQ National Accreditation Board/ACLASS. Refer to certificate and scope of accreditation AT-1445.

**Testing Represented in Report**

**15.249**

The data and limits presented in this report are for radiated emissions per 15.249 which references 15.35(b), and peak limiting for restricted bands per 15.209(e), which again references 15.35(b)(2), as procured by Resolution Engineering. No average data is presented in this report. Data is also presented for spurious, non-harmonic radiated emissions per 15.209.

The Equipment Under Test (EUT) was the **HELIPAD (RTL Bar Code 21185)**.

**15.249 Radiated Emissions Test Data – FCC Limits/ 3m Distance**

**2.402 GHz**

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
2402.0	Peak	H	122.6	-9.0	113.6	114.0	-0.4	Pass
4804.0	Peak	H	57.3	-1.1	56.2	74.0	-17.8	Pass
7206.0	Peak	H	63.4	0.8	64.2	74.0	-9.8	Pass
9608.0	Peak	H	66.5	6.7	73.2	74.0	-0.8	Pass
12010.0	Peak	H	54.5	9.8	64.3	74.0	-9.7	Pass
14412.0	Peak	H	51.2	14.8	66.0	74.0	-8.0	Pass
16814.0	Peak	H	48.8	16.2	65.0	74.0	-9.0	Pass
19216.0	Peak	H	49.4	20.6	70.0	74.0	-4.0	Pass
21618.0	Peak	H	49.8	21.8	71.6	74.0	-2.4	Pass
24020.0	Peak	V	47.6	20.5	68.1	74.0	-5.9	Pass

**2.442 GHz**

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
2442.0	Peak	H	121.2	-9.1	112.1	114.0	-1.9	Pass
4884.0	Peak	H	55.8	-1.0	54.8	74.0	-19.2	Pass
7326.0	Peak	V	62.0	0.9	62.9	74.0	-11.1	Pass
9768.0	Peak	V	62.8	6.9	69.7	74.0	-4.3	Pass
12210.0	Peak	H	56.0	11.2	67.2	74.0	-6.8	Pass
14652.0	Peak	H	48.7	14.8	63.5	74.0	-10.5	Pass
17094.0	Peak	H	48.4	16.7	65.1	74.0	-8.9	Pass
19536.0	Peak	H	49.5	20.2	69.7	74.0	-4.3	Pass
21978.0	Peak	H	47.4	22.0	69.4	74.0	-4.6	Pass
24420.0	Peak	V	46.9	21.2	68.1	74.0	-5.9	Pass

**2.480 GHz**

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
2480.0	Peak	H	120.7	-9.1	111.6	114.0	-2.4	Pass
4960.0	Peak	H	61.0	-1.0	60.0	74.0	-14.0	Pass
7440.0	Peak	V	60.5	1.1	61.6	74.0	-12.4	Pass
9920.0	Peak	H	59.3	7.0	66.3	74.0	-7.7	Pass
12400.0	Peak	H	55.2	12.6	67.8	74.0	-6.2	Pass
14880.0	Peak	H	48.2	15.1	63.3	74.0	-10.7	Pass
17360.0	Peak	H	47.8	16.5	64.3	74.0	-9.7	Pass
19840.0	Peak	V	48.7	20.6	69.3	74.0	-4.7	Pass
22320.0	Peak	H	45.2	21.8	67.0	74.0	-7.0	Pass
24800.0	Peak	H	45.5	22.4	67.9	74.0	-6.1	Pass

*Note: all spurious emissions in the applicable frequency range were investigated, only harmonic emissions were present as noted above*

**FCC/IC Cross Reference**

FCC 15.249	RSS-210 Issue 8 A2.9
FCC 15.35(b)	RSS-Gen Issue 4 8.1
FCC 15.205	RSS-Gen Issue 4 8.10
FCC 15.209	RSS-Gen Issue 4 8.9

**Test Procedure**

Radiated fundamental and spurious emissions were tested at three meters. The EUT was tested in the three orthogonal planes with the receive antenna in both polarities. The emissions were maximized per ANSI C63.4:2003 8.3.1.2; that is, the measurement antenna height was varied between 1 and 4 m, and the EUT was rotated through 360° on a rotating turntable until the maximum emissions were found. Both horizontal and vertical measurement antenna polarizations were used. A resolution bandwidth of 100 kHz was used for frequencies less than 1000 MHz, and a resolution bandwidth of 1 MHz was used for frequencies greater than or equal to 1000 MHz. The video bandwidth was set to a value at least three times greater than the resolution bandwidth.

**EUT Disposition**

The EUT was adapted to continuously transmit for testing purposes.

**Radiated Emissions Test Equipment**

RTL Bar Code	Manufacturer	Model	Part	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15
900724	ARA	LPB-2520	Bilog Periodic Antenna (25 MHz-2000 MHz)	1037	4/19/15
900932	Hewlett Packard	8449B OPT H02	Preamplifier 1-26.5 GHz	3008A00505	9/5/15
900772	EMCO	3161-02	Horn Antenna (2.0-4.0 GHz)	9804-1044	4/20/15
900321	EMCO	3161-03	Horn Antenna (4.0-8.0 GHz)	9508-1020	4/20/17
900323	EMCO	3160-07	Horn Antenna (8.0-12.4 GHz)	9605-1054	4/20/17
900356	EMCO	3160-08	Horn Antenna (12.4-18.0 GHz)	9607-1044	4/20/17
901218	EMCO	RA42-K-F-43_C	Horn Antenna (18.0-26.5 GHz)	960281-003	4/20/17
N/A	Rhein Tech Laboratories, Inc.	Automated Emission Tester	Emissions Testing Software	Rev. 14.0.2	N/A
901592	Insulated Wire Inc.	KPS-1503-3600-KPR	SMK RF Cables 20'	NA	9/3/15
901593	Insulated Wire Inc.	KPS-1503-360-KPR	SMK RF Cables 36"	NA	9/3/15

**Test Personnel:**

Dan Baltzell		December 3, 2014
Test Engineer	Signature	Date of Test

**Test Configuration Photographs**

**Radiated Emissions**

