

REGULATORY COMPLIANCE REPORT

TITLE: FCC Part 15.231(e) / RSS-210 A1

HHSR3

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REV	CCO	DESCRIPTION OF CHANGE	DATE	APPROVALS	
001		INITIAL RELEASE		Engineering	
				Regulatory	

REVISION HISTORY

				Engineering	
				Regulatory	
				Engineering	
				Regulatory	
				Engineering	
				Regulatory	

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Test Data Summary

FCC Part 15.231(e) / RSS-210 A1

Device Model: HHSR3

FCC ID: EO9HHSR3

IC ID: 864A-HHSR3

Device Description: Handheld Super Raptor Module

Rule	Description	Max. Reading	Pass/Fail
FCC 15.203	Antenna Requirement	NA	Pass
15.207/ RSS-Gen 7.2.2	Powerline Conducted Emissions	NA	Pass
15.231(e) / RSS-210 A1.1.5	Transmitter Field Strength Limits	73.9 dB μ V/m	Pass
15.231(c)	20dB Bandwidth	4.626 kHz	Pass
RSS-210 A1.1.3	99% Bandwidth	4.699 kHz	Pass
15.231(e) (with waiver) / RSS-210 A1.1.1.5(2)	Periodic Operation	1.5 seconds	Pass

Cognizant Personnel	
<u>Name</u> W. Raymond Stoner	<u>Title</u> Engineer
<u>Name</u> Jay Holcomb	<u>Title</u> Regulatory Manager
<u>Name</u> Drew Rosenberg	<u>Title</u> Project Lead

CONDITIONS DURING TESTING

No Modifications to the EUT were necessary during the testing.

FCC 15.31(m) Number of Channels

This device was tested on three channels.

FCC 15.33(a) Frequency Ranges Tested

15.231 Radiated Emissions: 9 kHz – 9.3 GHz

FCC 15.203 Antenna Requirements

The antenna is removable and has a unique Reverse SMA connector; therefore the EUT complies with Section 15.203 of the FCC rules.

EUT Operating Frequency

The EUT was operating at 952 Mhz – 960 Mhz

Temperature and Humidity During Testing

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

The Relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

Ittron declares that the EUT tested was representative of a production unit.

EQUIPMENT UNDER TEST

Transmitter Module

Manuf: Ittron, Inc.
Model: HHSR
Serial: 7510800
FCC ID: EO9HHSR3

Peripheral Devices

The EUT was tested with the following peripheral devices:

5VDC Power Supply

Manuf: C&C Jetronic, Inc
Model: GPSU15U-1
Serial: NA

Laptop PC

Manuf: General Dynamics
Model: IX270
Serial: ZZGEG7201ZZ7266

AC Adapter for PC

Manuf: Delta Electronics
Model: ADP-90SB BB
Serial: VCW0717010678

Interface Board

Manuf: Ittron, Inc
Model: KIT-0019-001
Serial: NA

FCC Part 15.207/RSS-Gen 7.2.2*Powerline Conducted Emissions*

Measure the AC powerline conducted emissions from 150kHz to 30 MHz using a 50 μ H/50 Ω line impedance stabilization network (LISN). Verify that no emissions exceed the following limits:

Frequency (MHz)	Quasi- Peak (dBuV)	Average (dBuV)
0.15-0.5	66 to 56 [*]	56 to 46 [*]
0.5-5	56	46
5-30	60	50

^{*}Decreases with the logarithm of frequency

DEVICE MODULE IS NOT CONNECTED TO THE POWER LINE, THEREFORE THIS TEST IS N/A.

FCC Part 15.231(e) / RSS-210 2.6, Table 2*Transmitter Field Strength Limits*

Measure the field strength of all transmitter emissions according to the procedure in appendix A. The maximum field strength of emissions may not exceed:

Field Strength of Fundamental ($\mu\text{V/m}$)	Field Strength of Spurious emissions ($\mu\text{V/m}$)
5,000	500

Equipment Used	Serial Number	Cal Date	Due
Add reamp		Calibrated on site	N/A
H/S Sucoflex 40ft cable	220297001	12/3/07	12/3/09
Agilent E7405A Spectrum Analyzer	MY45113415	8/7/07	8/7/09
Emco 6502 Loop (9kHz to 30Mhz)	9509-2970	10/15/08	10/15/10
Emco 3110B Biconical (30MHz-to 300MHz)	9807-3129	04oct07	04oct09
Emco 3146 Log Periodic (200Mhz to 1GHz)	9203-3358	03oct07	03oct09
Emco 3115 wave guide (1GHz to 18GHz)	9205-3878	3/17/08	3/17/09
Hewlett Packard Power Meter 437B	3125U16900	6/08	6/10
Hewlett Packard Power Sensor 8481D	3318A11513	6/08	6/10
Hewlett Packard Signal Generator 8673D	3123A01161	For reference only	

Date	Tested by
1/28/09	Ray Stoner

Amplifier gain measurements were taken at the time of EUT emissions measurement.

Frequency Mhz	Ant. Position	antenna height	table positon	P QP AVE	power level dB μ V	amp gain	ant factor	cable loss	peak level	Limit dB μ V	Margin
952	V	139	103	P	47.5	0	23.7	2.7	73.9	74	-0.1
956	V	137	342	P	46.9	0	23.6	2.7	73.2	74	-0.8
960	V	133	321	P	46.7	0	23.6	2.7	73.0	74	-1.0
1904	H	101	0	P	54.3	-48	26.9	4.5	37.7	54	-16.3
1904	V	153	131	P	59.8	-48	26.9	4.5	43.2	54	-10.8
1912	H	249	3	P	54.3	-48	27.0	4.5	37.8	54	-16.2
1912	V	139	35	P	60.1	-48	27.0	4.5	43.6	54	-10.4
1920	H	180	56	P	54.6	-48	27.0	4.5	38.1	54	-15.9
1920	V	142	3	P	60.4	-48	27.0	4.5	43.9	54	-10.1
2856	H	108	3	P	54.6	-44.4	29.8	5.4	45.4	54	-8.6
2856	V	102	140	P	56.6	-44.4	29.8	5.4	47.4	54	-6.6
2880	H	208	74	P	54.6	-44.3	29.9	5.4	45.6	54	-8.4
2880	V	126	322	P	57.4	-44.3	29.9	5.4	48.4	54	-5.6
4760	H	101	39	P	53.4	-45.1	32.7	7.2	48.1	54	-5.9
4760	V	149	334	P	58.8	-45.1	32.7	7.2	53.5	54	-0.5
4780	H	196	103	P	52.5	-45.1	32.7	7.2	47.3	54	-6.7
4780	V	101	220	P	55.4	-45.1	32.7	7.2	50.2	54	-3.8
4800	H	102	83	P	52.1	-45.1	32.7	6.9	46.7	54	-7.3
4800	V	109	247	P	53.5	-45.1	32.7	6.9	48.1	54	-5.9

*AVE=Average, QP=Quasi Peak, P=Peak

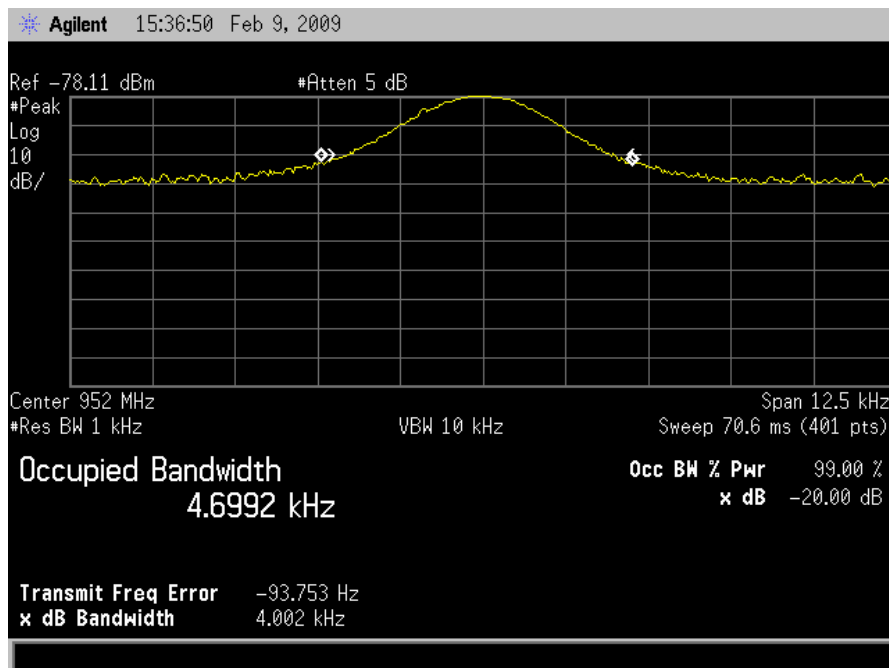
FCC Part 15.231(c) / RSS-210 A1.3*20dB Bandwidth*

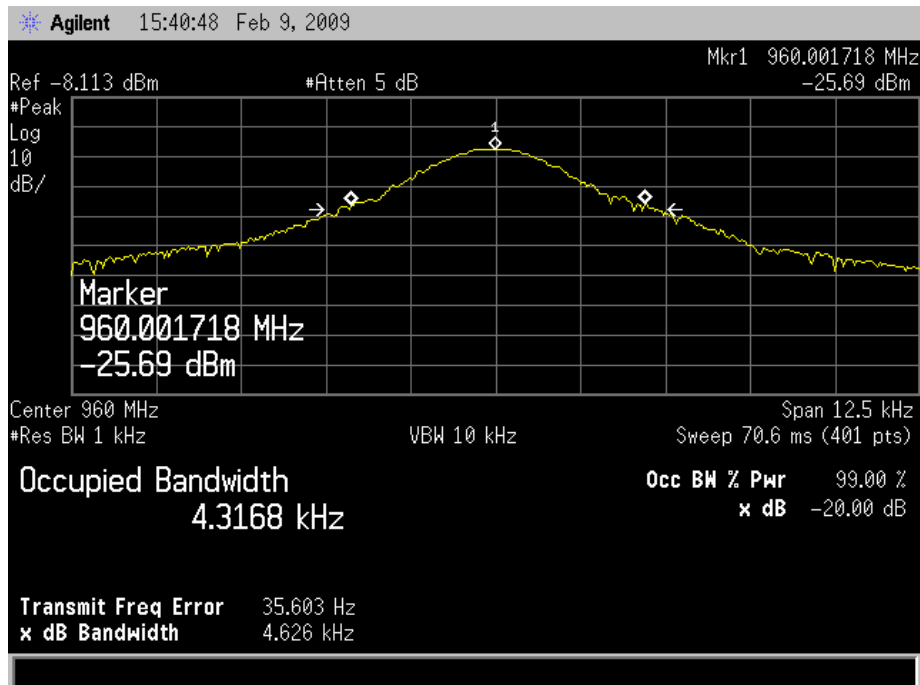
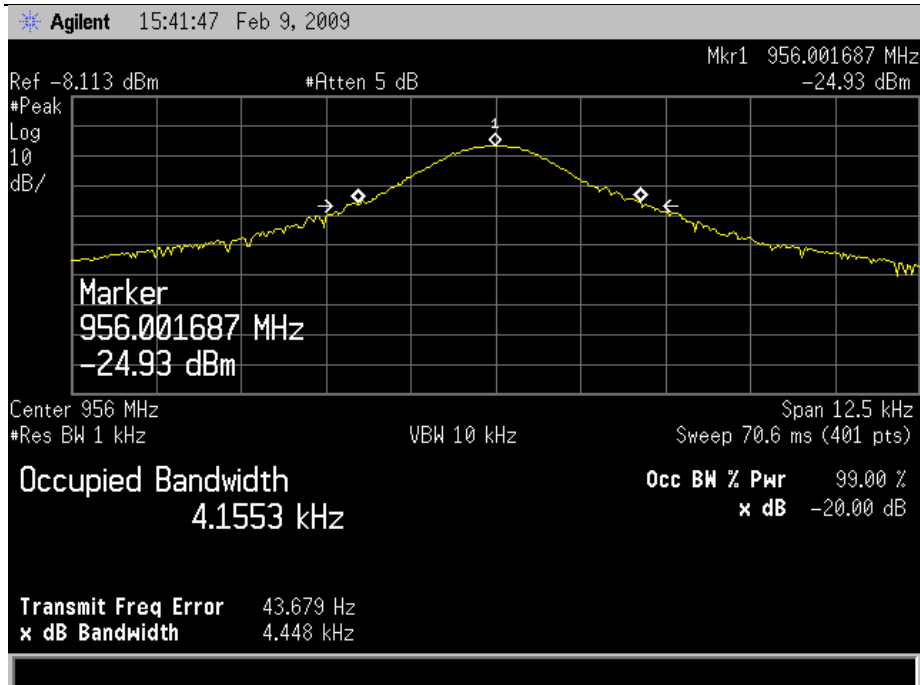
Measure the 20dB bandwidth. The 20dB bandwidth may not exceed 0.5% of the center frequency.

Equipment Used	Serial Number	Cal Date	Due
HP4407B	MY45107856	3/07	3/09
Date	Tested by		
2/9/09	Ray Stoner		

Date	Tested by
2/9/09	Ray Stoner

20 dB bandwidth is 4.626 kHz worst case.





**FCC Part 15.231(e) /
RSS-210 A1.1.5(3)***Periodic Operation***FCC:**

Transmission must be less than 1 second with
30 seconds of silence between transmissions

IC:

Transmission must be less than 5 seconds

Maximum message length has been extended to 1.5 seconds for this product family per FCC waivers dated September 23, 2002 and November 5, 1990. The 2002 waiver was specifically for the raptor radio, which is the same radio that is used in this device. The message length has not changed since the waiver was written.

On October 8th, 2004, an email was provided by the FCC clarifying that the 2002 waiver and its conditions also applied to future utility meter programmers. The original two waivers and referenced email are attached to this submittal.

The Industry Canada requirement of 5 seconds is well beyond the 1.5 second limitation that is placed by the FCC waiver. Therefore, compliance to the waiver demonstrates compliance to the Canadian regulation.

Appendix A – Field Strength Measurement Procedure

This test measures the field strength of radiated emissions using a spectrum analyzer and a receiving antenna in accordance with ANSI C63.4-2003. During the test, the EUT is to be placed on a non-conducting support at 80 cm above the horizontal ground plane of the OATS. The horizontal distance between the antenna and the DUT is to be exactly 3 meters. Levels below 1 GHz are to be measured with the spectrum analyzer resolution bandwidth at 120 kHz and levels at or above 1 GHz are to be measured with the spectrum analyzer resolution bandwidth at 1 MHz.

- 1) Monitor the frequency range of interest at a fixed antenna height and EUT azimuth.
- 2) If appropriate, manipulate the system cables to produce the highest amplitude signal relative to the limit. Note the amplitude and frequency of the suspect signal.
- 3) Rotate the EUT 360° to maximize the suspected highest amplitude signal. If the signal or another at a different frequency is observed to exceed the previously noted highest amplitude signal by 1 dB or more, go back to the azimuth and repeat step b). Otherwise, orient the EUT azimuth to repeat the highest amplitude observation and proceed.
- 4) Move the antenna over its fully allowed range of travel to maximize the suspected highest amplitude signal. If the signal or another at a different frequency is observed to exceed the previously noted highest amplitude signal by 1 dB or more, return to step b) with the antenna fixed at this height. Otherwise, move the antenna to the height that repeats the highest amplitude observation and proceed.
- 5) Change the polarity of the antenna and repeat step b), step c), and step d). Compare the resulting suspected highest amplitude signal with that found for the other polarity. Select and note the higher of the two signals. This signal is termed the highest observed signal with respect to the limit for this EUT operational mode.

