

REGULATORY COMPLIANCE REPORT

TITLE: FCC & IC Test Report for 15.247 & RSS-210 Frequency Hopping Device

Itron 100WPhase3_5 update

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REV	CCO	DESCRIPTION OF CHANGE	DATE	APPROVALS	
001	W2103362	INITIAL RELEASE		Engineering	
				Regulatory	

REVISION HISTORY

				Engineering	
				Regulatory	
				Engineering	
				Regulatory	
				Engineering	
				Regulatory	

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Test Data Summary**FCC 15.247 / IC RSS-210; Frequency Hopping Transmitter;**

100W – Residential, 902.3 Mhz – 926.9 MHz for EUT

FCC ID:EWQ100WC IC:864D-100WC IC Device Models (for IC): 100WC and 100WRC

Part Numbers: ERW-1300-201 through 220 Serial Numbers 46550128,46550592, 200063

OATS Registration Number: FCC 90716, IC 864D-1

Rule	Description	Previous Reading	Update Reading	Variance	Pass /Fail
Part 15.247(b) (2) / RSS-210 A8.4(1)	Power Output – conducted	27.13dBm	27.26dBm (468mW)	0.13dBm	Pass
15.247 (d)	Band-edge compliance of RF Conducted Emissions	Band edge @ 902Mhz is -32.22 dbc	Band edge @ 902Mhz is 32.03dbc	- 0.19dbc	Pass

Rule versions: FCC Part 1; FCC Part 2; FCC Part 15, RSS-102 Issue 4 (03-2010); RSS-210 Issue 8 (12-2010); RSS-Gen Issue 3 (12-2010).

Reference docs: ANSI C63.4-2003; DA 00-705 (03-30-2000); OET65 (08-1997); OET65C (06-2001); IEEE C95.3-2002.

Cognizant Personnel	
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CONDITIONS DURING TESTING

No Modifications to the EUT were necessary during the testing.

FCC 15.31(m) – IC _n/a_; **Number of Channels**

This device was tested on three channels.

ANSI C63.4 - Temperature and Humidity During Testing

The temperature during testing was within +10° C and +40° C.

The Relative humidity was between 10% and 90%.

RSS-Gen 4.3: Tests shall be performed at ambient temperature

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

EQUIPMENT UNDER TEST**EUT Module**

Manuf: Itron, Inc.
Itron Model: Itron 100W and 100WP Endpoint
Power source Fresh Batteries

Plot Information

In the zero span measurements, the line in the display is the trigger level.

Peripheral Devices

None

15.247(a)(1)

System receivers

.... The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals

THIS DEVICE IS OPERATED IN SYSTEMS THAT THE READING DEVICES, HAVE INPUT BANDWIDTHS THAT MATCH THIS DEVICE AND THAT STAY IN SYNCHRONIZATION.

15.31(e)

Variation of Supply Voltage

Vary the supply voltage from 85% to 115% of the nominal voltage. If the power level of the fundamental signal varies with supply voltage, record the voltage level at which the fundamental signal is at its highest and use that voltage level for all further testing.

DEVICE IS BATTERY OPERATED NOT CONNECTED TO THE POWER LINE. BATTERY IS NOT RECHARGEABLE. THEREFORE THIS TEST IS N/A.

15.207 / RSS-GEN 7.2.2

Power line Conducted Emissions

Measure the AC power line conducted emissions from 150kHz to 30 MHz using a 50 mH/50 ohm line impedance stabilization network (LISN) according to the procedure specified in ANSI C63.4. 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 IS BATTERY OPERATED NOT CONNECTED TO THE POWER LINE. BATTERY IS NOT RECHARGEABLE. THEREFORE THIS TEST IS N/A.

15.247(b) (2) / RSS-210 A8.4 (1)

Power Output - Conducted

The maximum peak conducted output power of the intentional radiator shall not exceed the following: For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel.

RBW > the 20 dB bandwidth of the emission being measured.

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

Set RF level offset=cable loss

Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power. The limit is specified in one of the subparagraphs of this Section. Submit this plot. A peak responding power meter may be used instead of a spectrum analyzer.

Note: The purpose of this test is to validate the report from 2011, since over a year has passed. No changes are being made to this product.

Equipment Used	Serial Number	Cal Date	Due
Agilant E4440A	MY45305142	24-Apr-12	24-Apr-13
Date	Tested by		
3/04/2013	Roger Mulcahy		

Unit tested with a fresh Battery: 46580372 New data

system channel (²)	Channel Frequency (Mhz)	message modulation type ⁽¹⁾	Taken 10/29/2011 conducted power (dbm) @ power level E	Taken 3/04/2013 conducted power (dbm) @ power level E	Variance (dB)
5	903	Itron AM	26.66	27.23	-0.57
66	915.2	Itron AM	26.68	27.15	-0.47
124	926.8	Itron AM	26.6	27.02	-0.42
5	903	itron FM	27.13	27.26	-0.13
66	915.2	itron FM	27.04	27.19	-0.15
124	926.8	itron FM	27.06	27.07	-0.01
0	902.3	SSN FM	27.06	27.24	-0.18
43	915.2	SSN FM	27.11	27.18	-0.07
82	926.9	SSN FM	27.1	27.06	0.04

system channel (²)	Channel Frequency (Mhz)	message modulation type ⁽¹⁾	Taken 10/29/2011 conducted power (dbm) @ power level 8	Taken 3/04/2013 conducted power (dbm) @ power level 8	Variance (dB)
5	903	Itron AM	8.46	8.64	-0.18
66	915.2	Itron AM	8.18	8.55	-0.37
124	926.8	Itron AM	8.01	8.46	-0.45
5	903	itron FM	8.75	8.76	-0.01
66	915.2	itron FM	8.51	8.66	-0.15
124	926.8	itron FM	8.39	8.54	-0.15
0	902.3	SSN FM	8.85	8.77	0.08
43	915.2	SSN FM	8.53	8.68	-0.15
82	926.9	SSN FM	8.34	8.59	-0.25

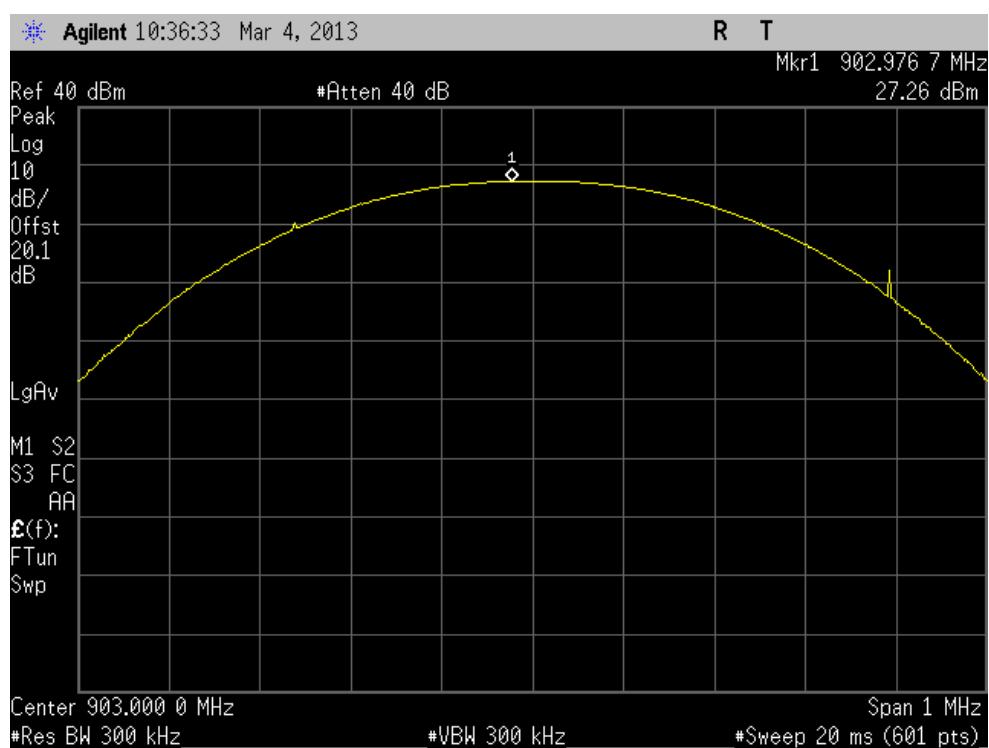
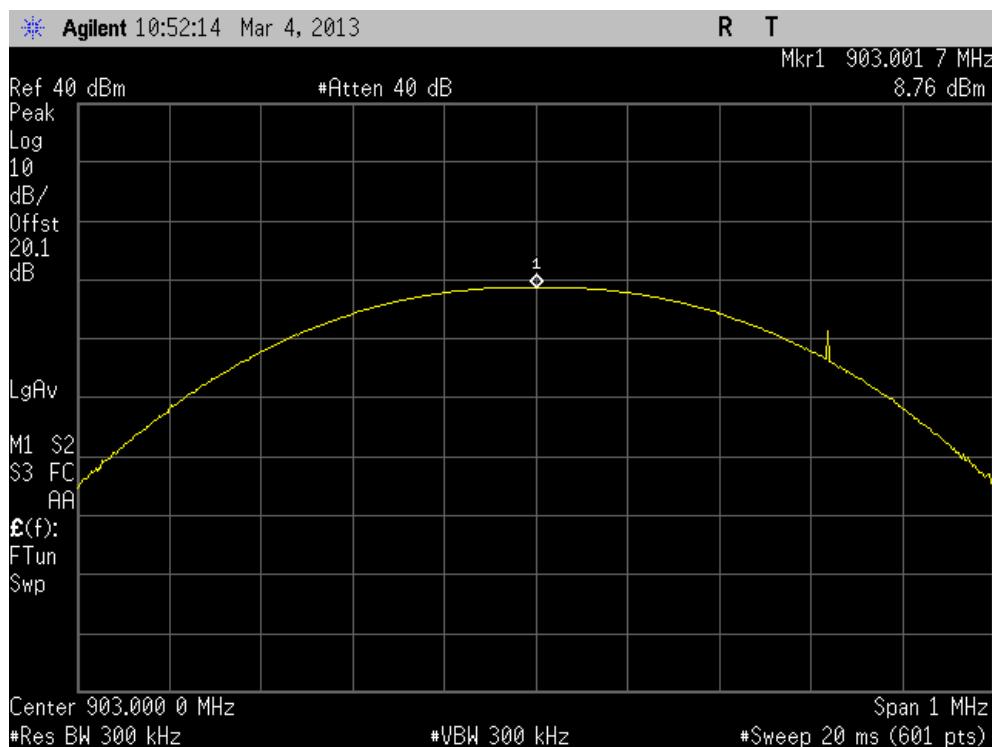
⁽¹⁾Channel spacing is 200Khz for Itron AM and FM

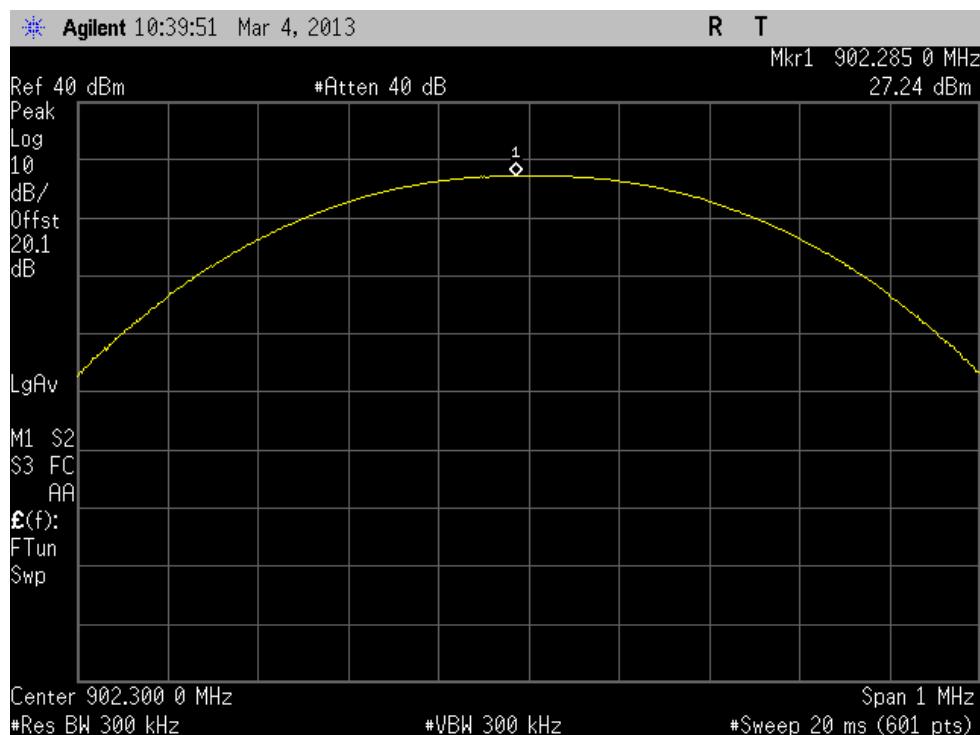
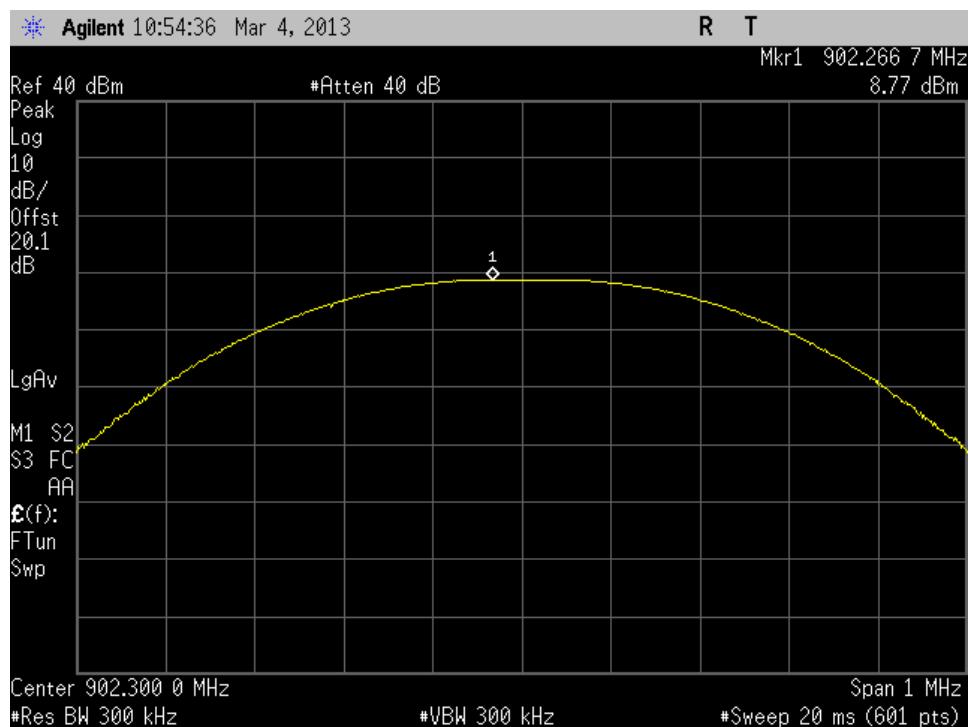
⁽¹⁾Channel spacing is 300Khz for SSN FM

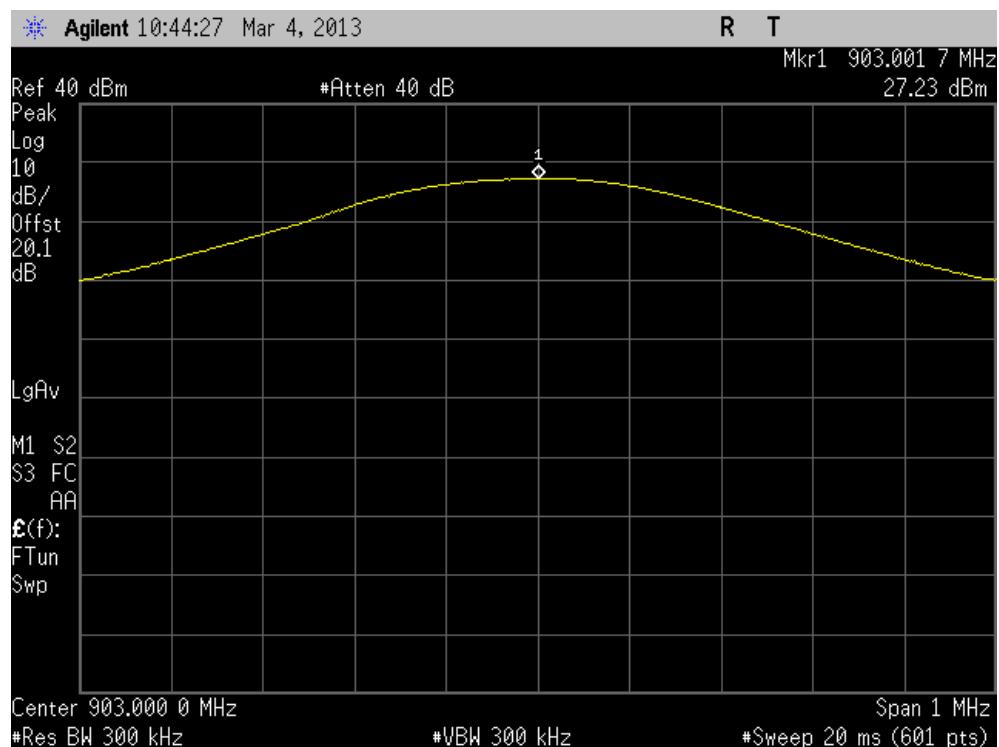
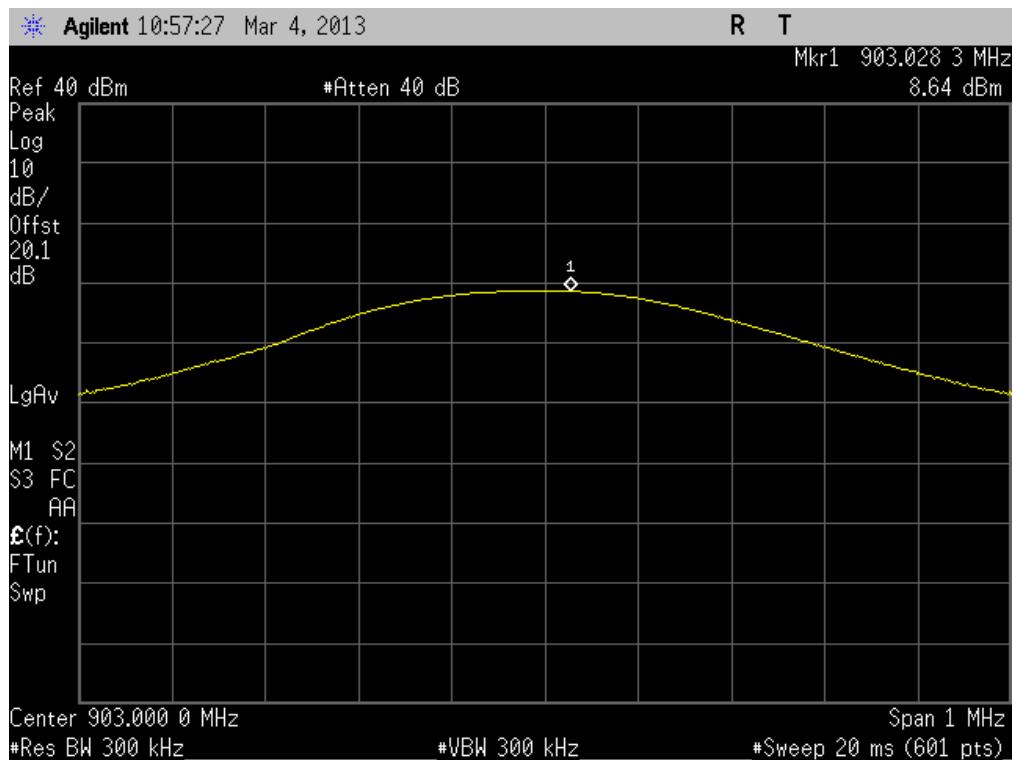
⁽²⁾Itron AM uses 50 channels between channel 5(903 Mhz) and channel 124(926.8 Mhz)

⁽²⁾Itron FM uses all 120 channels between channel 5(903 Mhz) and channel 124(926.8 Mhz)

⁽²⁾ SSN FM uses all 83 channels between channel 0(902.3 Mhz) and channel 82 (926.9 Mhz)

Channel 5(903 Mhz) Itron FM Power level E**Channel 5(903 Mhz) Itron FM Power level 8**

Channel 0(902.3 Mhz) Itron SSN Power level E**Channel 0(902.3 Mhz) Itron SSN Power level 8**

Channel 5(903Mhz) Itron AM Power level E**Channel 5(903 Mhz) Itron AM Power level 8**

15.247 (d)**Band-edge compliance of RF Conducted Emissions**

see spurious emissions section above for rules.

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation

RBW \geq 1% of the span

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.

Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

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Unit tested with a fresh Battery: 46580372 New data

power level	system channel ⁽²⁾	frequency (Mhz)	message modulation type ⁽¹⁾	Taken 10/31/2011 Band edge Conducted (Dbc)	Taken 3/04/2013 Band edge Conducted (Dbc)	Variance (dB)
8	5	903	Itron AM	33.24	32.03	1.21
8	5	903	Itron FM	43.67	41.07	2.60
8	0	902.3	SSN FM	33.60	35.22	-1.62
E	5	903	Itron AM	33.10	31.31	1.79
E	5	903	itron FM	55.80	53.80	2.00
E	0	902.3	SSN FM	32.22	35.91	-3.69
8	124	926.8	Itron AM	34.83	32.09	2.74
8	124	926.8	itron FM	43.54	42.72	0.82
8	82	926.9	SSN FM	43.87	43.18	0.69
8	124	926.85	itron FM (50kHz offset)	N/A	41.70	N/A
E	124	926.8	Itron AM	35.06	32.91	2.15
E	124	926.8	itron FM	60.43	61.11	-0.68
E	82	926.9	SSN FM	58.96	59.29	-0.33
E	124	926.85	itron FM (50kHz offset)	N/A	59.6	N/A

⁽¹⁾Channel spacing is 200Khz for Itron AM and FM

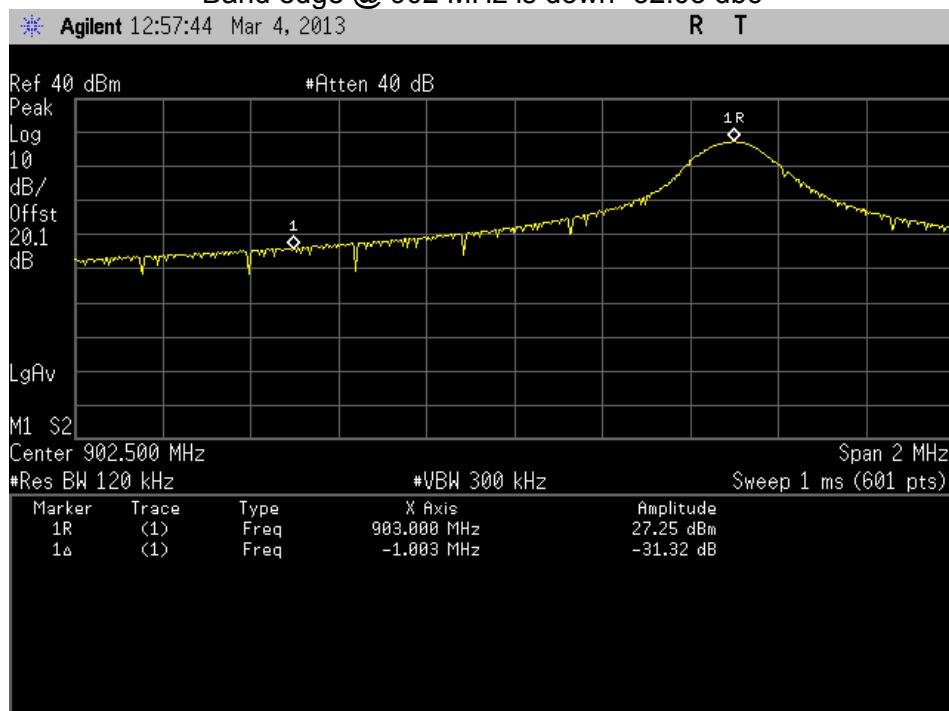
⁽¹⁾Channel spacing is 300Khz for SSN FM

⁽²⁾Itron AM uses 50 channels between channel 5(903 Mhz) and channel 124(926.8 Mhz)

⁽²⁾Itron FM uses all 120 channels between channel 5(903 Mhz) and channel 124(926.8 Mhz)

⁽²⁾SSN FM uses all 83 channels between channel 0(902.3 Mhz) and channel 82(926.9 Mhz)

Band edge @ 902 MHz is down -32.03 dbc



Band edge @ 928 MHz is down -32.09dbc

