Badger Meter

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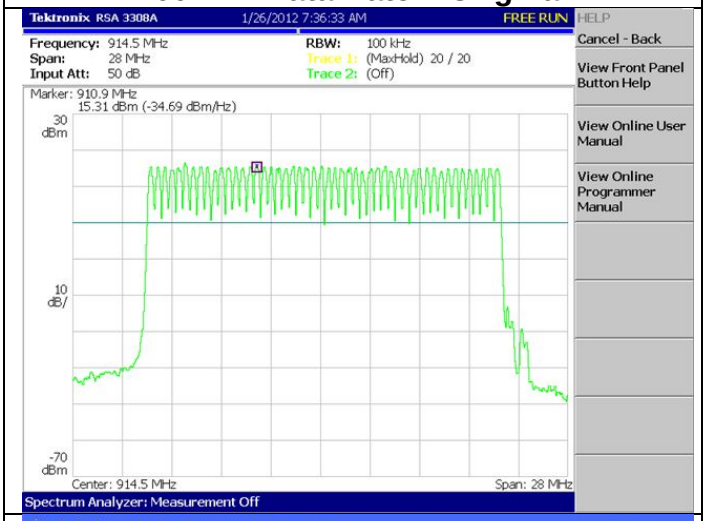
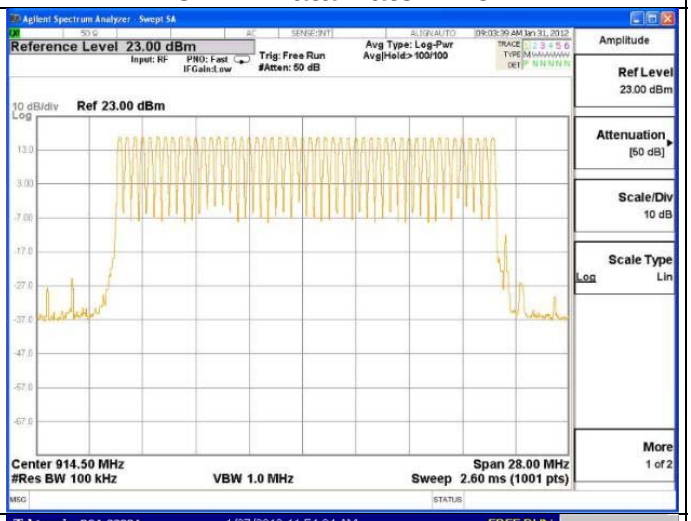
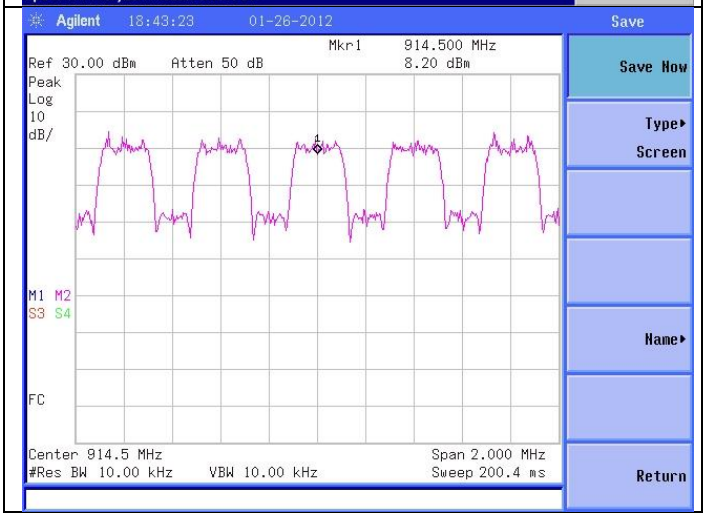
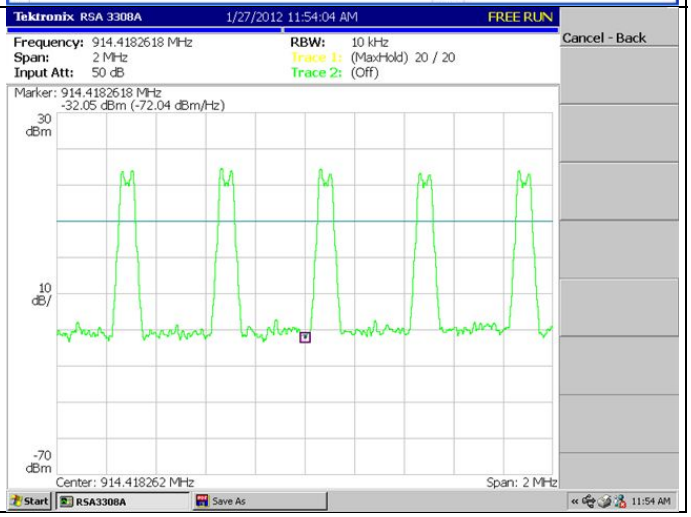
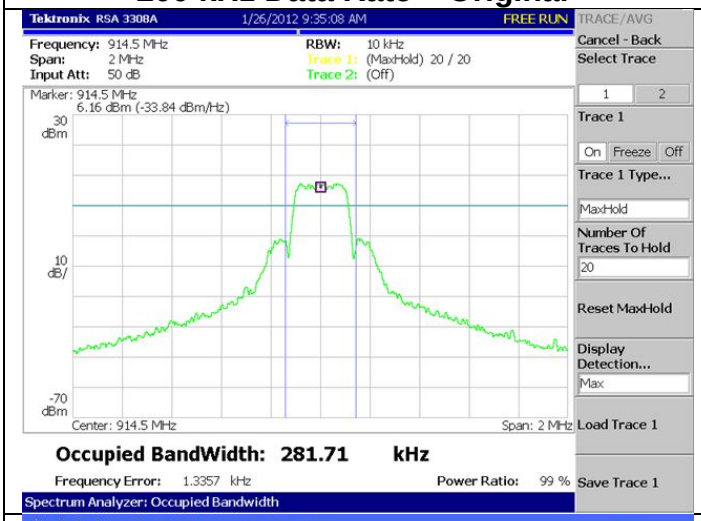
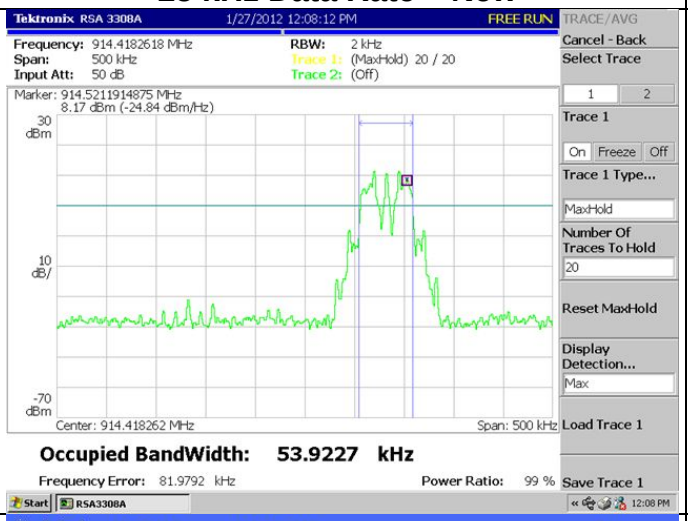
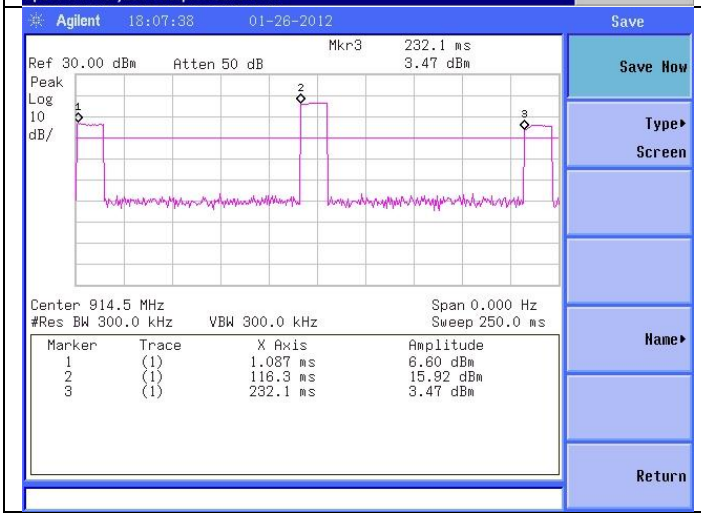
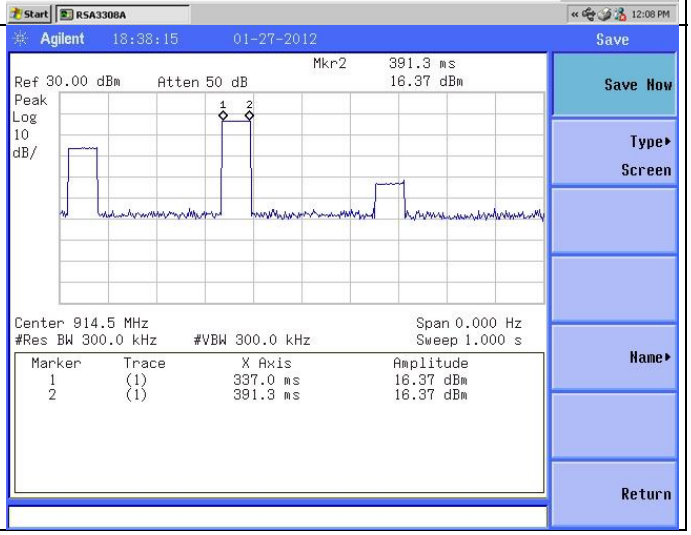
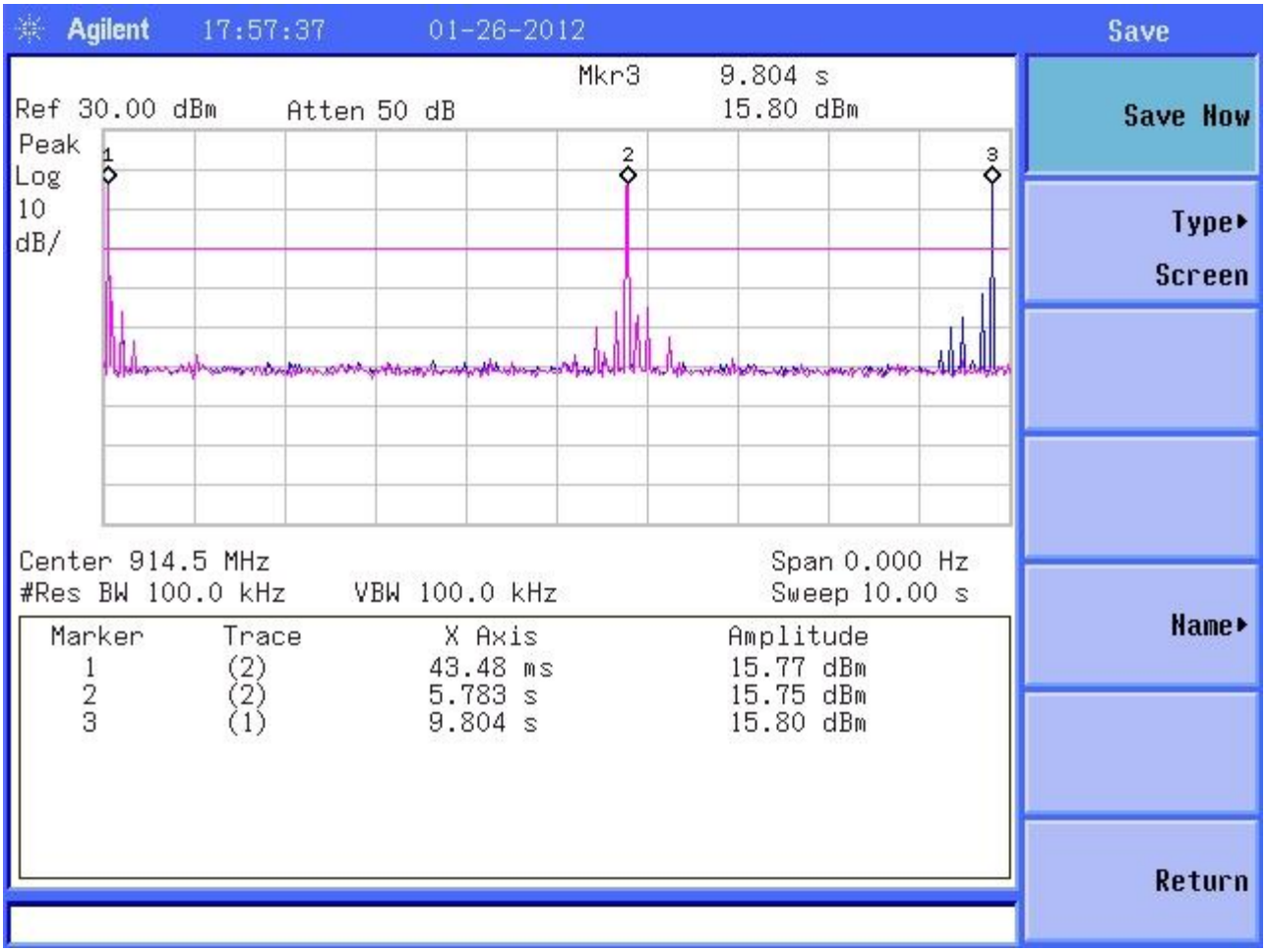
This document will show the bandwidth affects of changing the data rate on the Orion SE Fixed system from 200 kHz to 25 kHz. All testing was done on one SE Gas endpoint (FCC ID: GIF2010G, original grant date 02/03/2011; IC ID: 1046A-2010G, original grant date 02/11/2011) with two different sets of firmware. In the original firmware the fixed mode data rate is 200 kHz. The proposed new firmware decreases the fixed mode data rate to 25 kHz. The mobile mode data rate for these endpoints will remain at 200 kHz. Modulation scheme, channel spacing, channel location, channel hopping algorithm, and transmit power remain the same with the new data rate.

200 kHz Data Rate – Original	25 kHz Data Rate – New
	
	

200 kHz Data Rate – Original	25 kHz Data Rate – New
	
	

Notes:

1. In the 200 kHz Time of Occupancy measurement, the runt pulses are transmissions on adjacent channels.
2. In both the 200 kHz and 25 kHz Time of Occupancy measurements, multiple transmissions are shown; this was to make collecting transmission widths easier.
3. For both data rates, channel repetition is based on a pseudo random channel hopping algorithm. A screen shot of a couple of transmissions is shown below:


Agilent 17:57:37 01-26-2012
Save
Mkr3 9.804 s
Ref 30.00 dBm Atten 50 dB 15.80 dBm
Peak
Log
10
dB/
1
2
3
Center 914.5 MHz
#Res BW 100.0 kHz VBW 100.0 kHz
Span 0.000 Hz
Sweep 10.00 s
Marker Trace X Axis Amplitude
1 (2) 43.48 ms 15.77 dBm
2 (2) 5.783 s 15.75 dBm
3 (1) 9.804 s 15.80 dBm
Save Now
Type▸
Screen
Name▸
Return