Date: October 14, 2003

Subject: Response to Correspondence # 25822

From: David Masucci

To: Joe Dichoso

FCC ID: Q5ZQUPID2003

This memorandum is in response to FCC Correspondence Letter, Reference # 25822.

We have retaken the RMS average data using a new rented Agilent PSA E4446A. The Serial Number is: US42510271. The unit was calibrated on 7/25/03. This analyzer has the capability to measure directly in RMS AVERAGE mode. The process for setting up the analyzer to measure as per the PART 15 guidelines is as follows:

Detector mode = average
Avg/VBW Type = Pwr Avg (RMS)

According to the documentation that comes with the E446A: "The combination of the average detector and the power method is equivalent to what is sometimes referred to as "RMS detection"". According to section 2.2.5.3 Pwr Avg (RMS), this mode provides *RMS averaging* because "the resulting voltage is proportional to the square root of the mean of the square of the voltage". "PAvg appears on the left side of the display." N = the number of averages.

To average the very low PRF of the QUPID transmitter, N was set to equal 1000 for the 1 MHz bandwidth. For the narrowband sweeps (1 KHz), in the two GPS bands, (15.511e) it was found that the sweep time was slow enough that one sweep was sufficient to capture the correct value. All measurements were taken in a semi-anechoic environment (outdoors), at a distance of 3 meters. The measurement antenna is an EMCO 3115 double-ridged waveguide horn with a frequency range from 1 GHz to 18 GHz. The Antenna gain, cable loss, and 3 meter path loss were all entered into a correction field in the E4446A called "external preamp gain". The correction is for antenna gain, +2.2 dB for cable loss, and +49.2 dB for 3 meter path loss. The total correction entered into the analyzer is -42.8 dB. Therefore the spectral plots are reading directly in EIRP.

Note as shown in Figure 3, the noise floor of the system is -34.3 dBm EIRP. Note that this is above the -41.3 dBm limit as defined in Part 15. Due to the very low PRF and very low duty cycle, it was necessary to have the 10 dB of attenuation in to keep the analyzer out of compression.

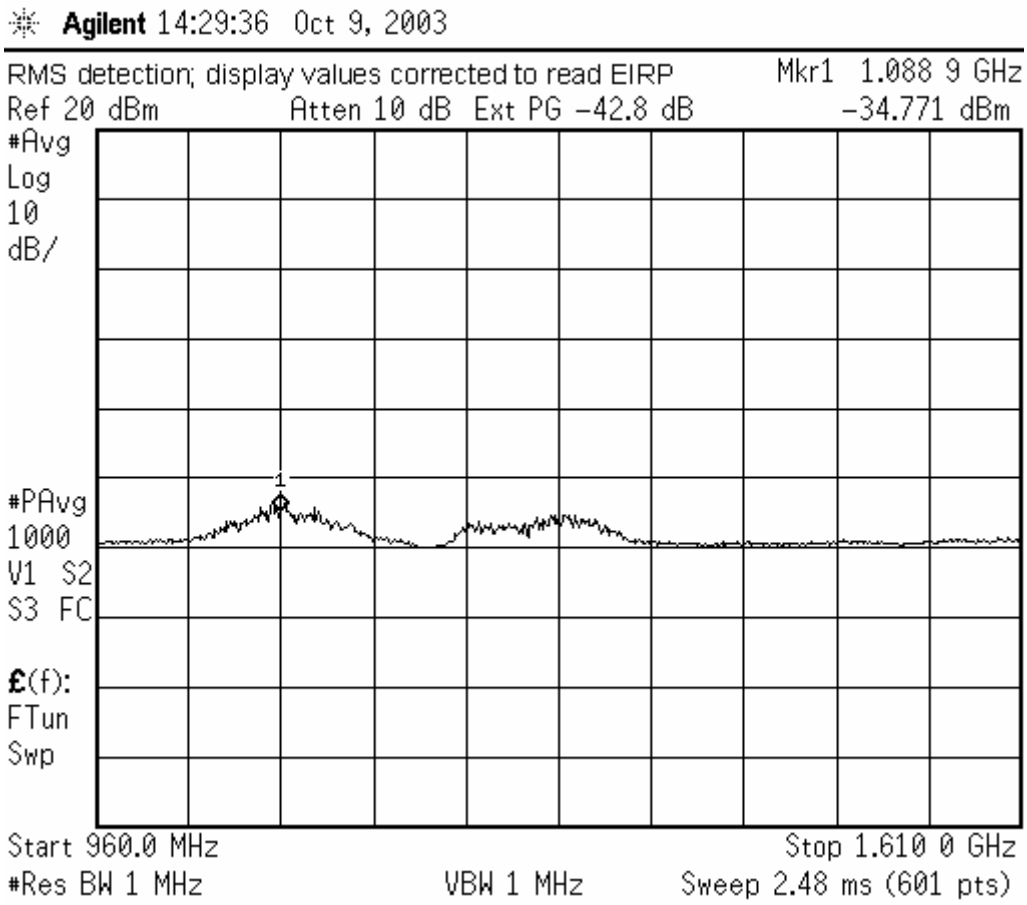

FIGURE 1. 960 MHz to 1610 MHz – 1 MHz RBW – RMS AVERAGE

FCC Limit = -53.3 dBm
Actual = -34.7 dBm

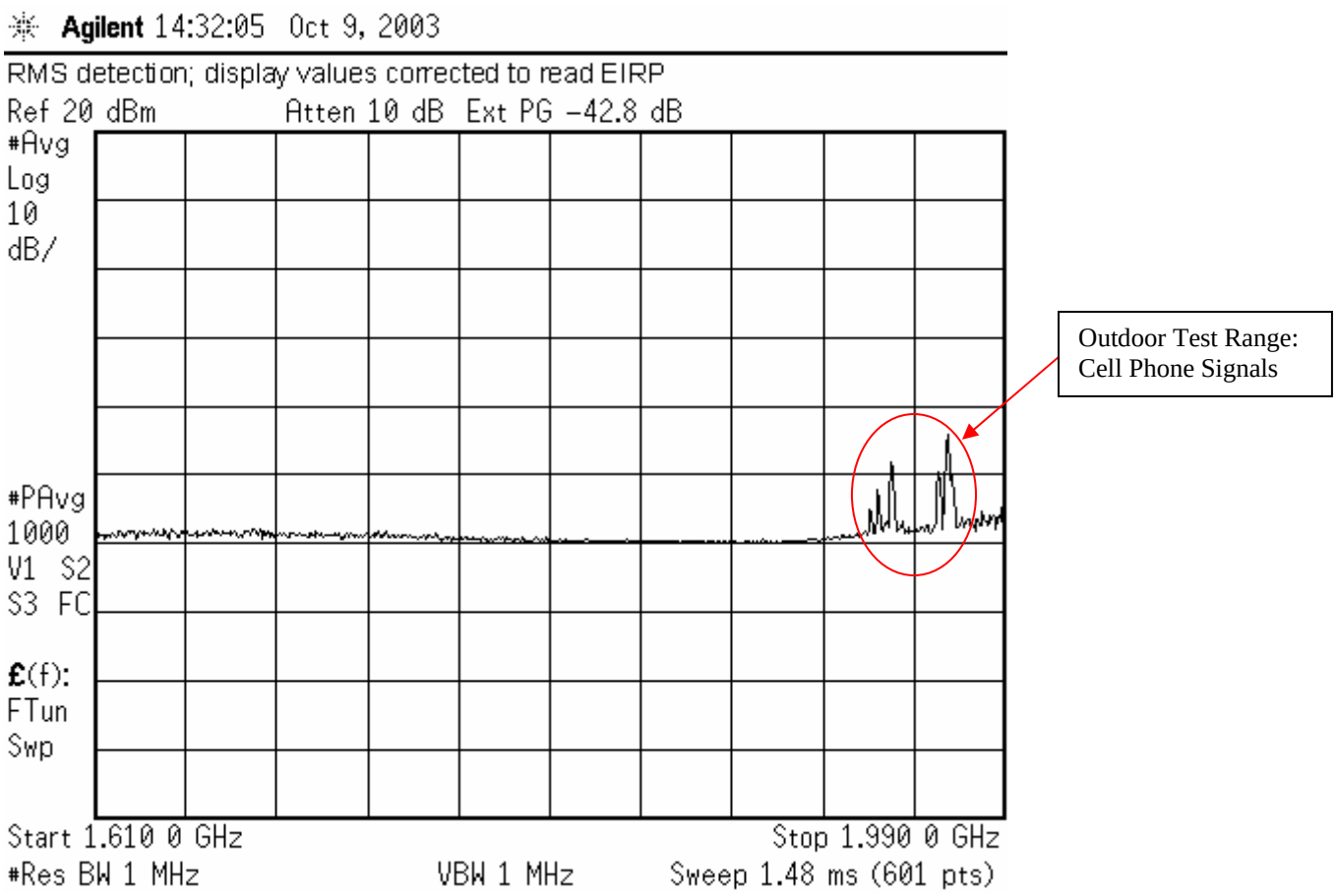

FIGURE 2. 1610 MHz to 1990 MHz – 1 MHz RBW – RMS AVERAGE

FCC Limit = -51.3 dBm
Actual = -35 dBm

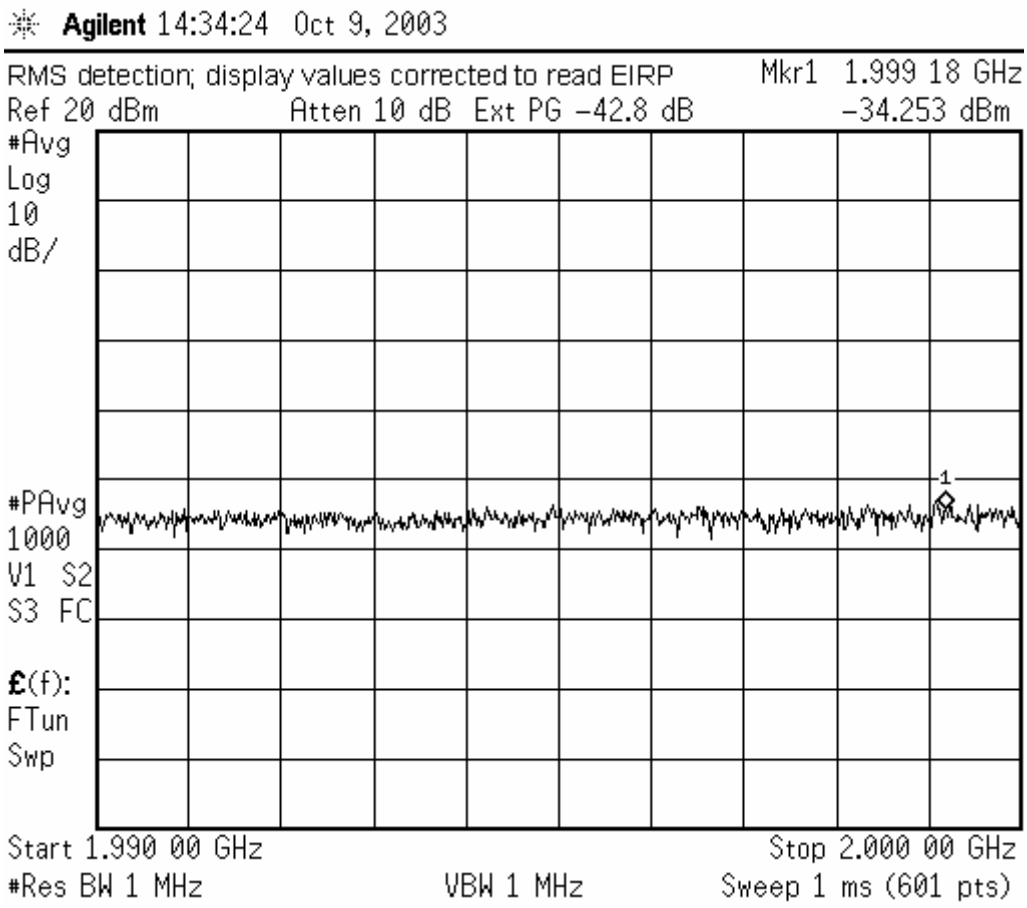

FIGURE 3. 1990 MHz to 2000 MHz – 1 MHz RBW – RMS AVERAGE

FCC Limit = -41.3 dBm
Actual = -34.3 dBm
Note: Noise floor only. No QUPID signal detected at these levels.

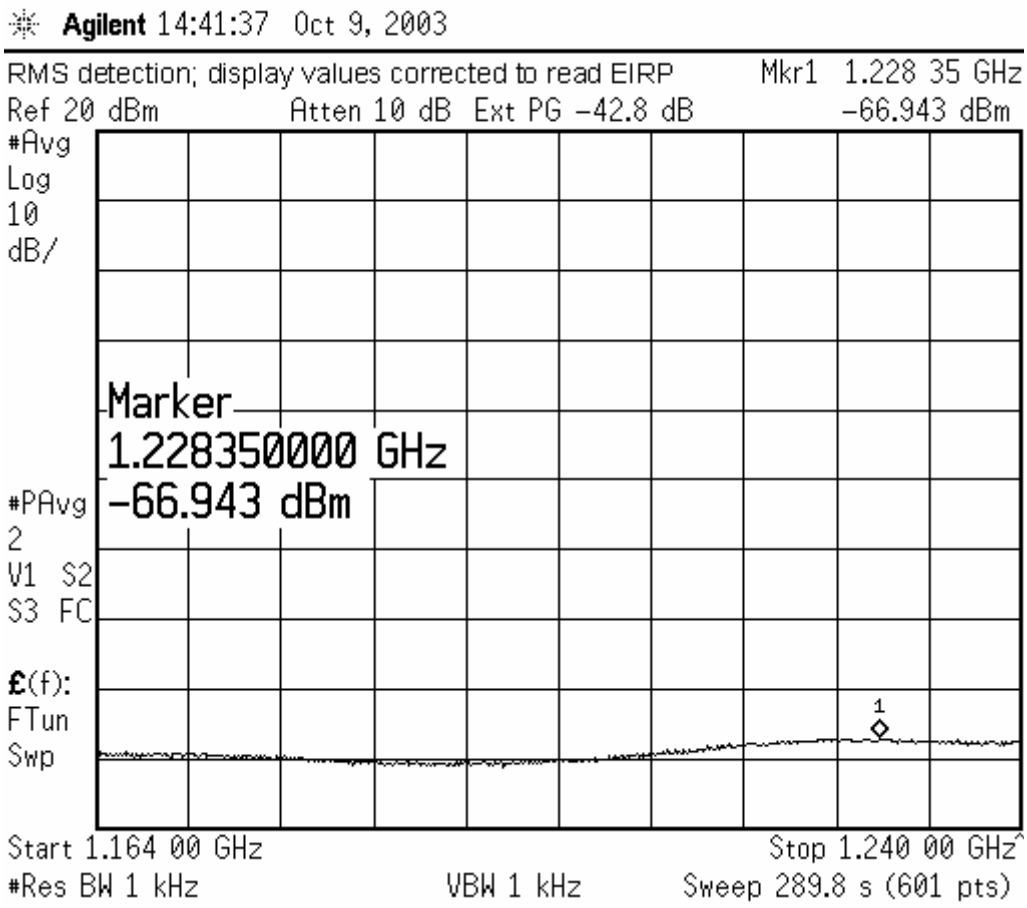

FIGURE 4. 1164 MHz to 1240 MHz – 1 KHz RBW – RMS AVERAGE

FCC Limit = -63.3 dBm
Actual = -66.9 dBm

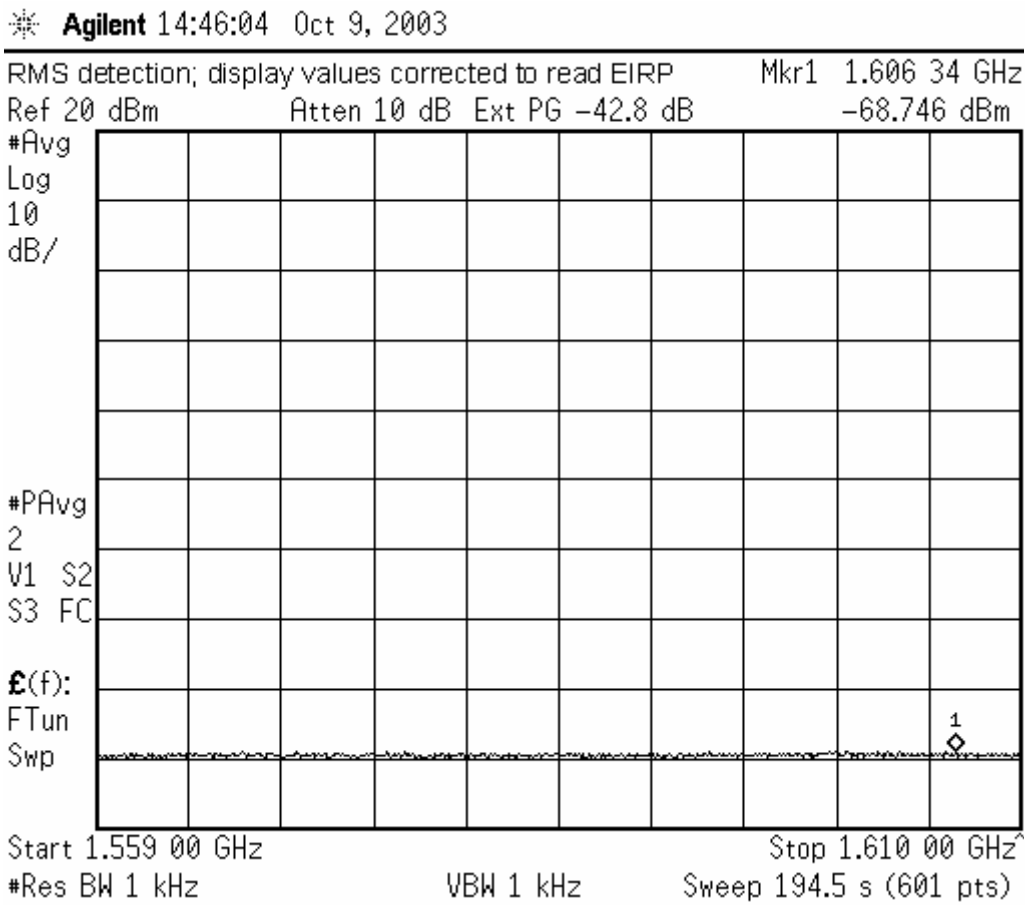

FIGURE 5. 1559 MHz to 1610 MHz – 1 KHz RBW – RMS AVERAGE

FCC Limit = -63.3 dBm
Actual = -68.7 dBm

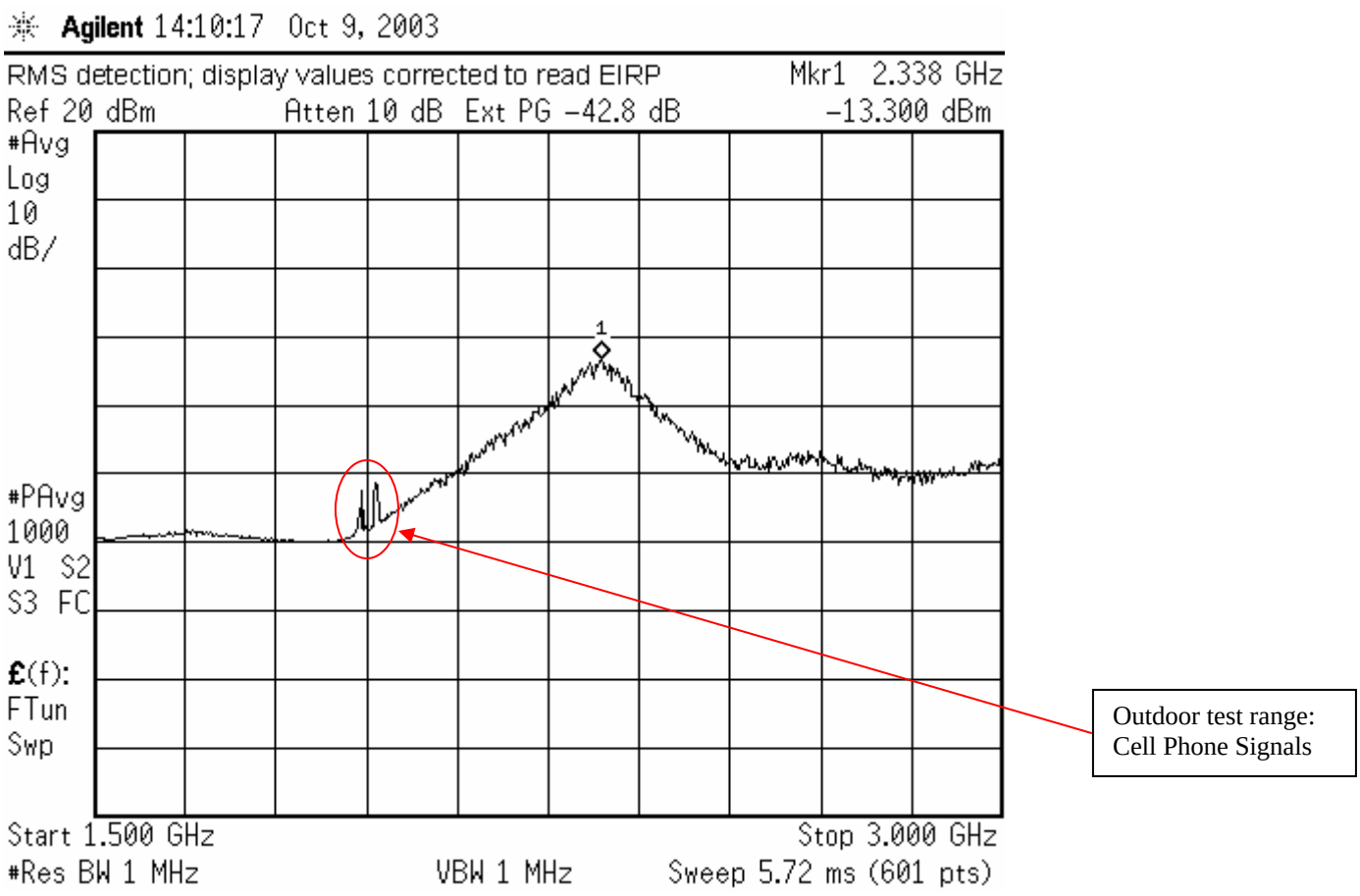

FIGURE 6. 1500 MHz to 3000 MHz – 1 MHz RBW – RMS AVERAGE

FCC Limit = -41.3 dBm
Actual = -13.3 dBm

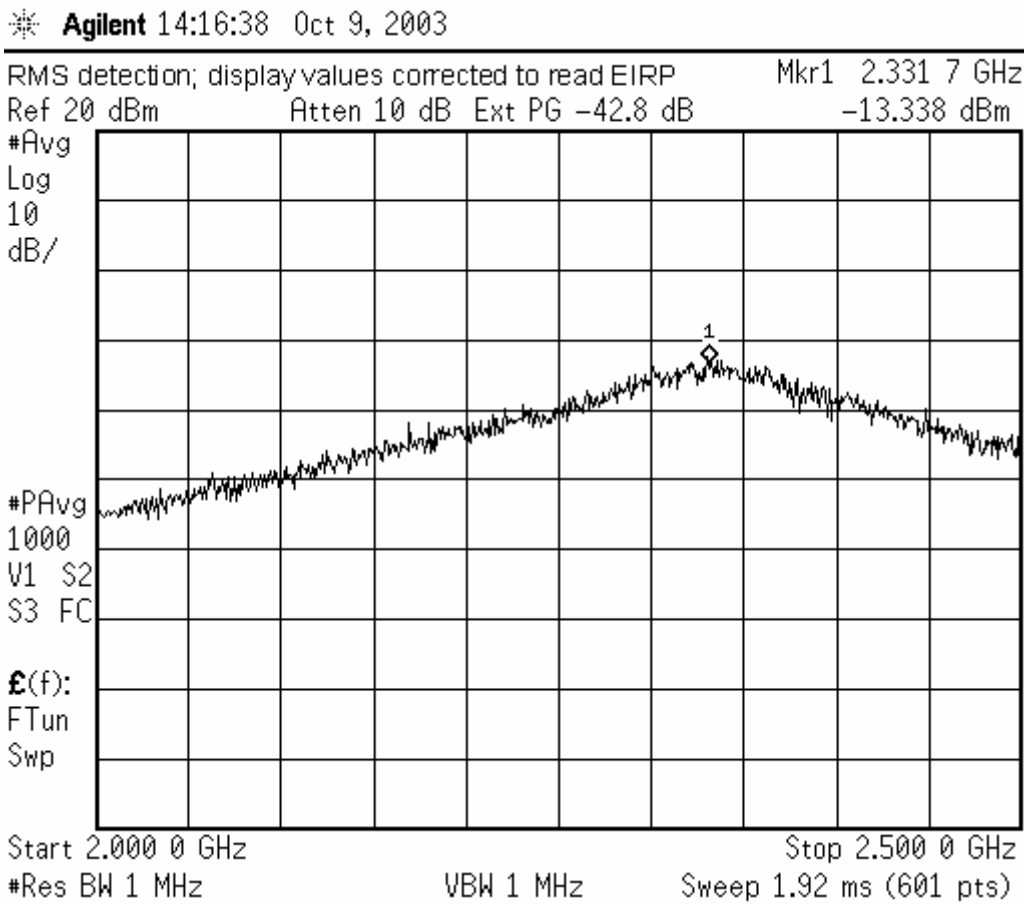

FIGURE 7. 2000 MHz to 2500 MHz – 1 MHz RBW – RMS AVERAGE

FCC Limit = -41.3 dBm
Actual = -13.3 dBm

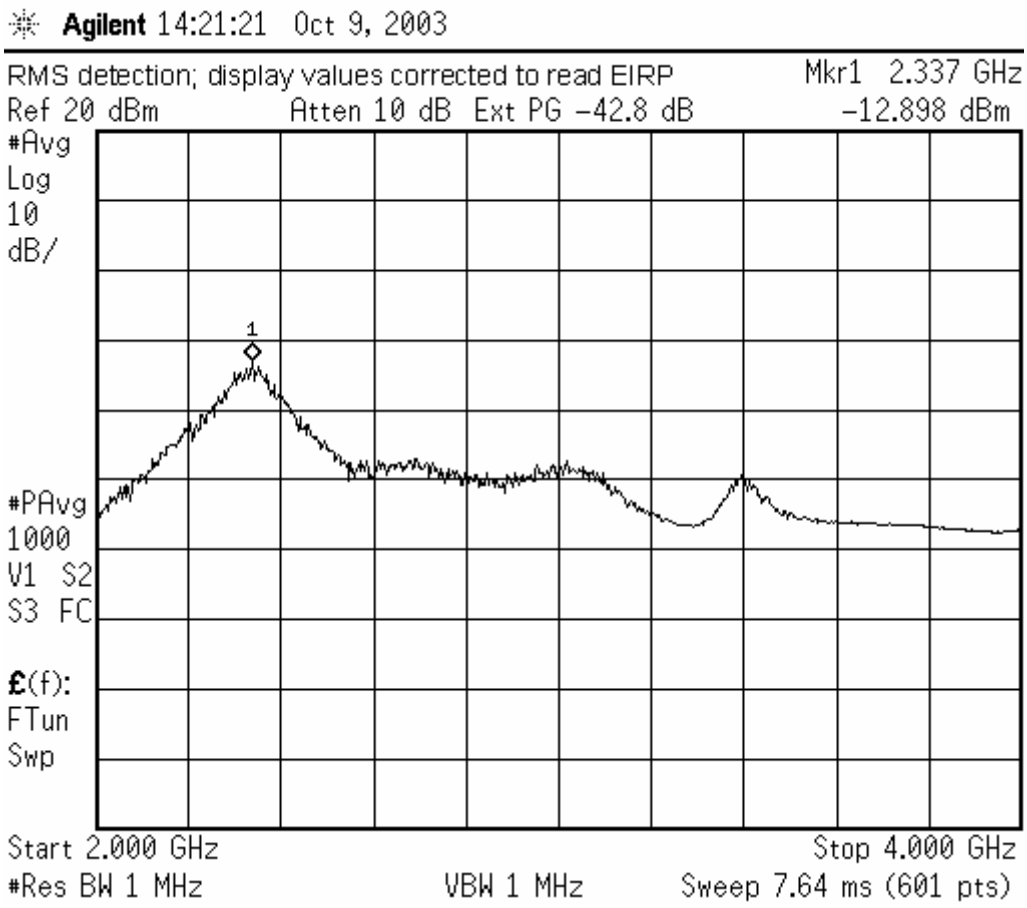

FIGURE 8. 2000 MHz to 4000 MHz – 1 MHz RBW – RMS AVERAGE

FCC Limit = -41.3 dBm
Actual = -12.9 dBm

Note: No signals of any kind or level detected beyond 4 GHz.