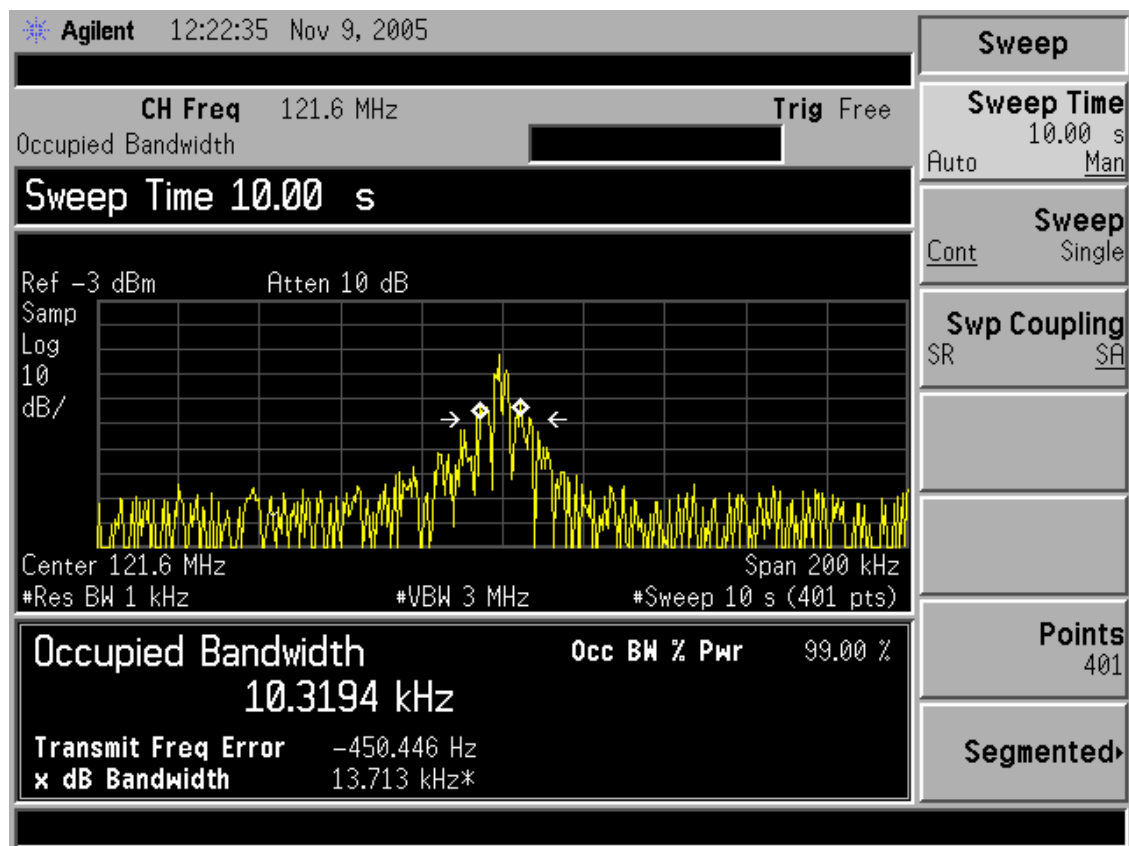


121.5MHz FCC TESTING
TO 47 CFR CH.1 (10-1-00 EDITION) PART 80.1053

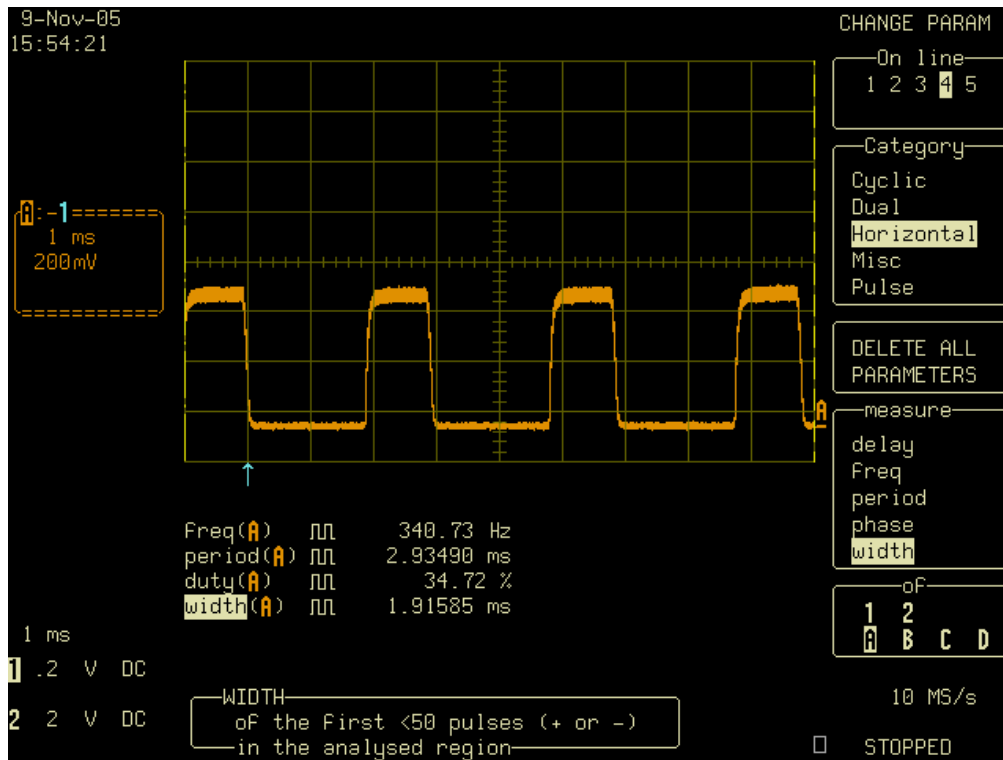
1. Occupied Bandwidth test. (Limits <25KHz)

Plot 1 shows the occupied bandwidth for SMARTFIND EPIRB. The carrier is Amplitude Modulated in the form of a square wave, being swept up from 300Hz to 1300Hz.

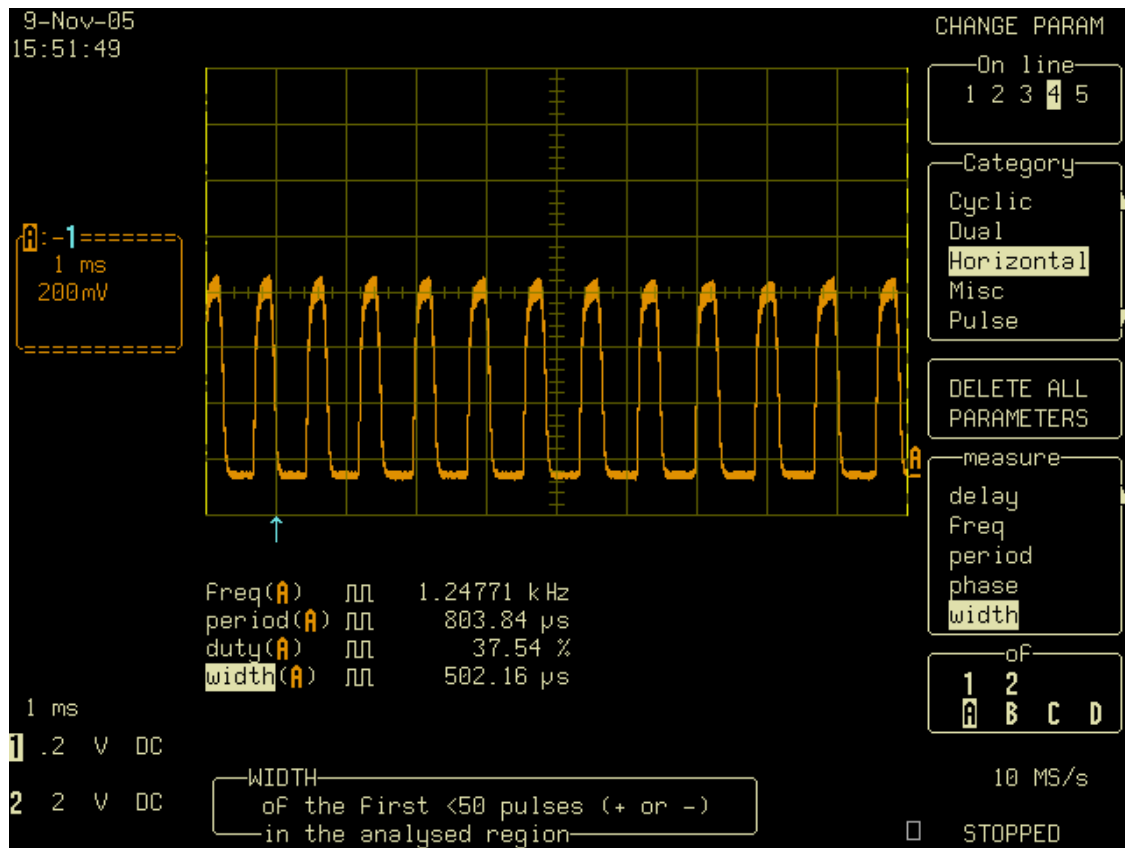
Plot 1



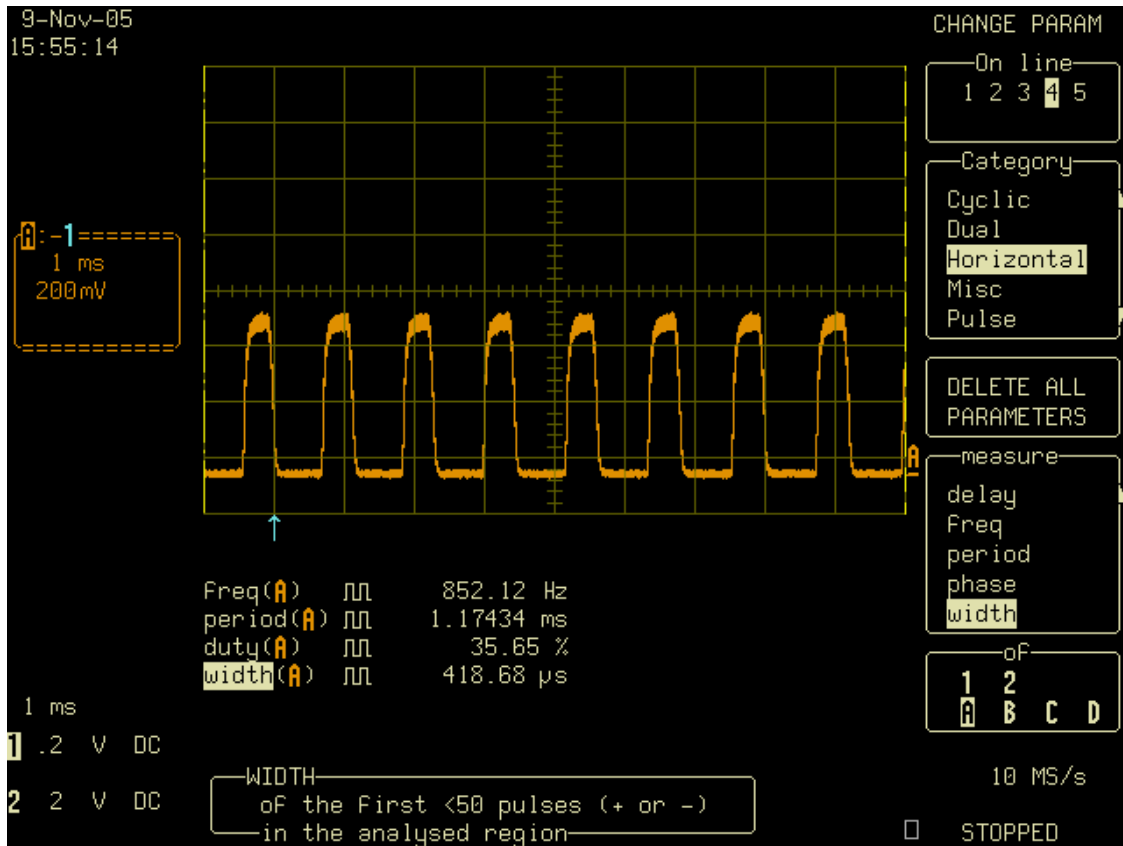
2. **Modulation Duty Cycle (Limits 33%-55%)**
Plot 3



Plot 4



Plot 5



Plots 3 to 5 show the Modulation duty-cycles for the upper, lower and centre swept limits for the Smartfind+.

Lower 340Hz = **34.7%**

Centre 852Hz = **35.65%**

Upper 1.25KHz = **37.5%**

Measurement of Audio frequencies

$F_{low} = 340\text{Hz}$

$F_{high} = 1250\text{Hz}$

$F_{range} = 1250\text{Hz} - 340\text{Hz} = 910\text{Hz}$

3. Modulation Factor (Limits <1)

The modulation factor for the Smartfind+

$$M = \frac{V_{\max} - V_{\min}}{V_{\max} + V_{\min}}$$

$$M = \frac{554mV - 19mV}{554mV + 19mV} = \mathbf{0.933}$$

Sweep Repetition rate = **3Hz**

4. Signal Enhancement Test (Limits >30% Power in 30Hz)

$$\frac{\text{carrier power}}{\text{total power}} \approx \log_{10} \left(1 + \frac{dBc - dBt}{10} \right)$$

Smartfind+

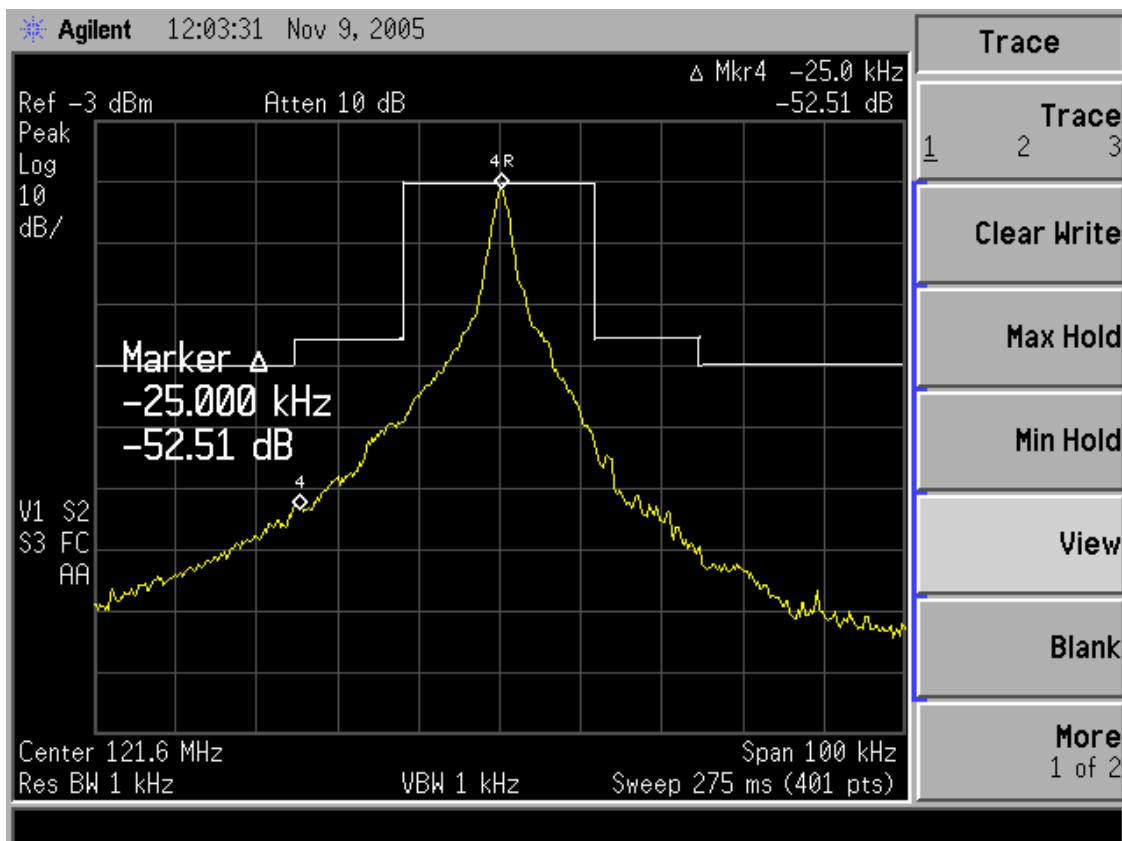
$$dBt = -6.00dB + 10\log 0.36 = -10.44dB$$

$$dBc = -13.38dB$$

$$\%Power = \log_{10}^{-1} \times \frac{13.38 - (-10.44)}{10} = \mathbf{50.78\%}$$

5. Emission limitation (Limits : $\pm 12.5\text{KHz} > 25\text{dBc}$ & $\pm 25\text{KHz} > 30\text{dBc}$)

Plot 7



Plot 7 shows the emission mask for the SMARTFIND EPIRB.

-25Khz	-12.5KHz	+12.5KHz	+25KHz
-52.5dBc	-37.46dBc	42.57dBc	59.52dBc

