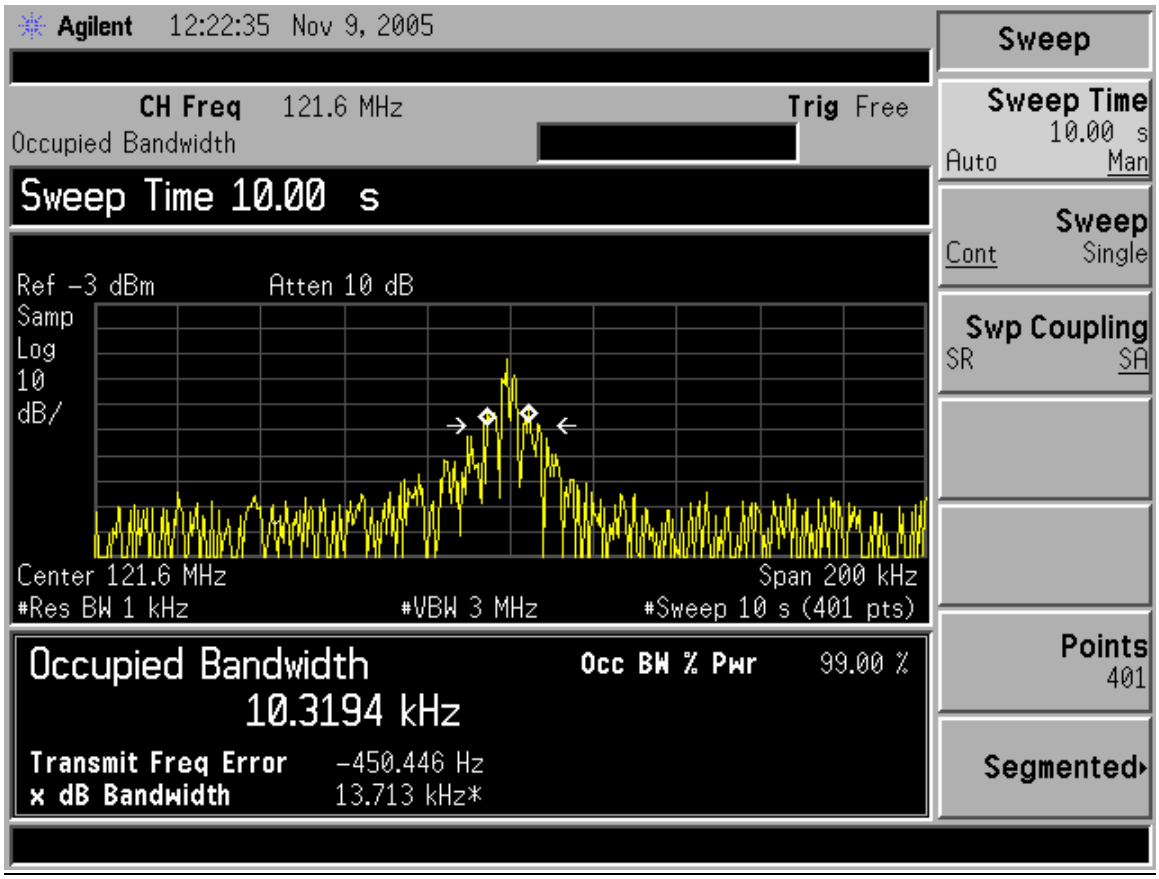
121.5MHz FCC TESTING
TO 47 CFR CH.1 (10-1-00 EDITION) PART 80.1053

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

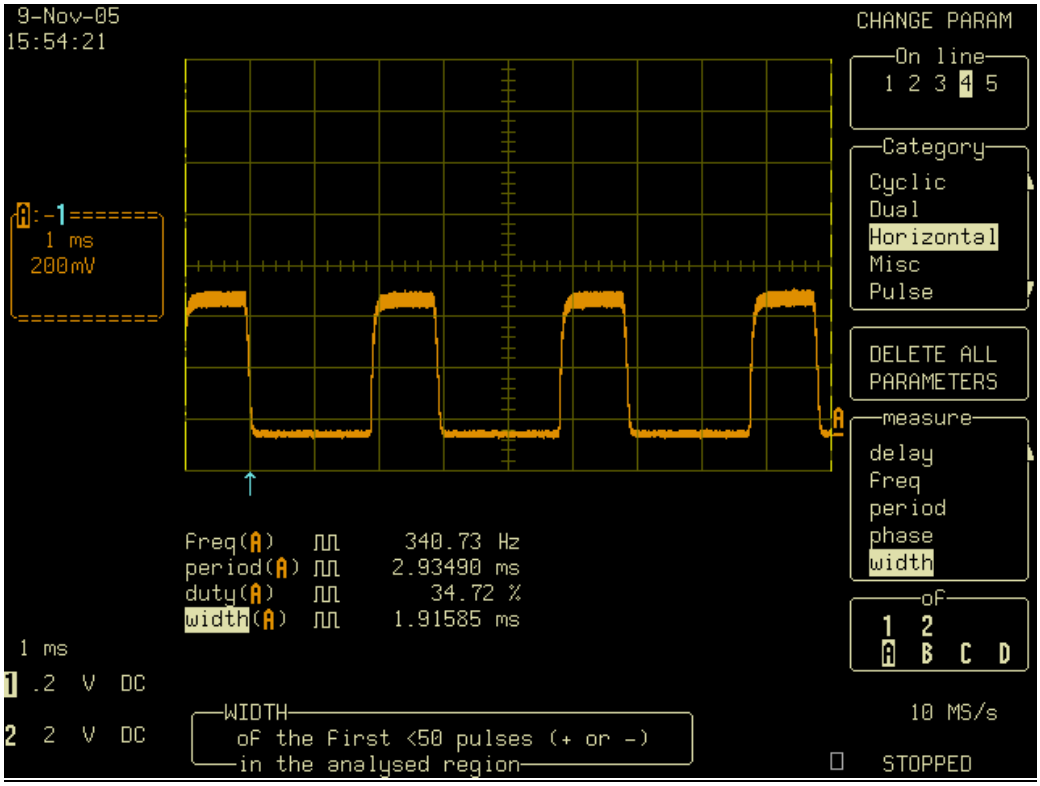
Plot 1 shows the occupied bandwidth for SMARTFIND EPIRB. The carrier is Amplitude Modulated in the form of a square wave, being swept up from 300Hz to 1300Hz.

Plot 1

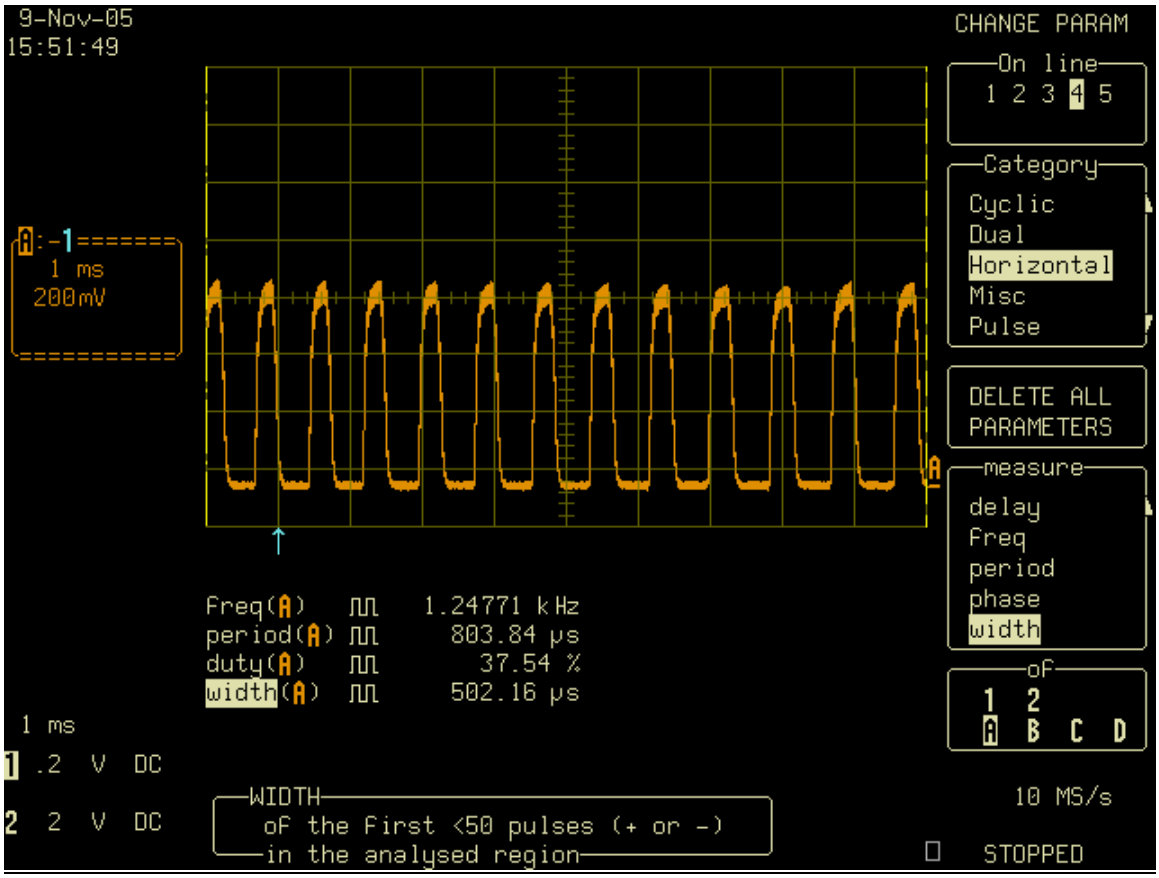


## 2. Modulation Duty Cycle (Limits 33%-55%)

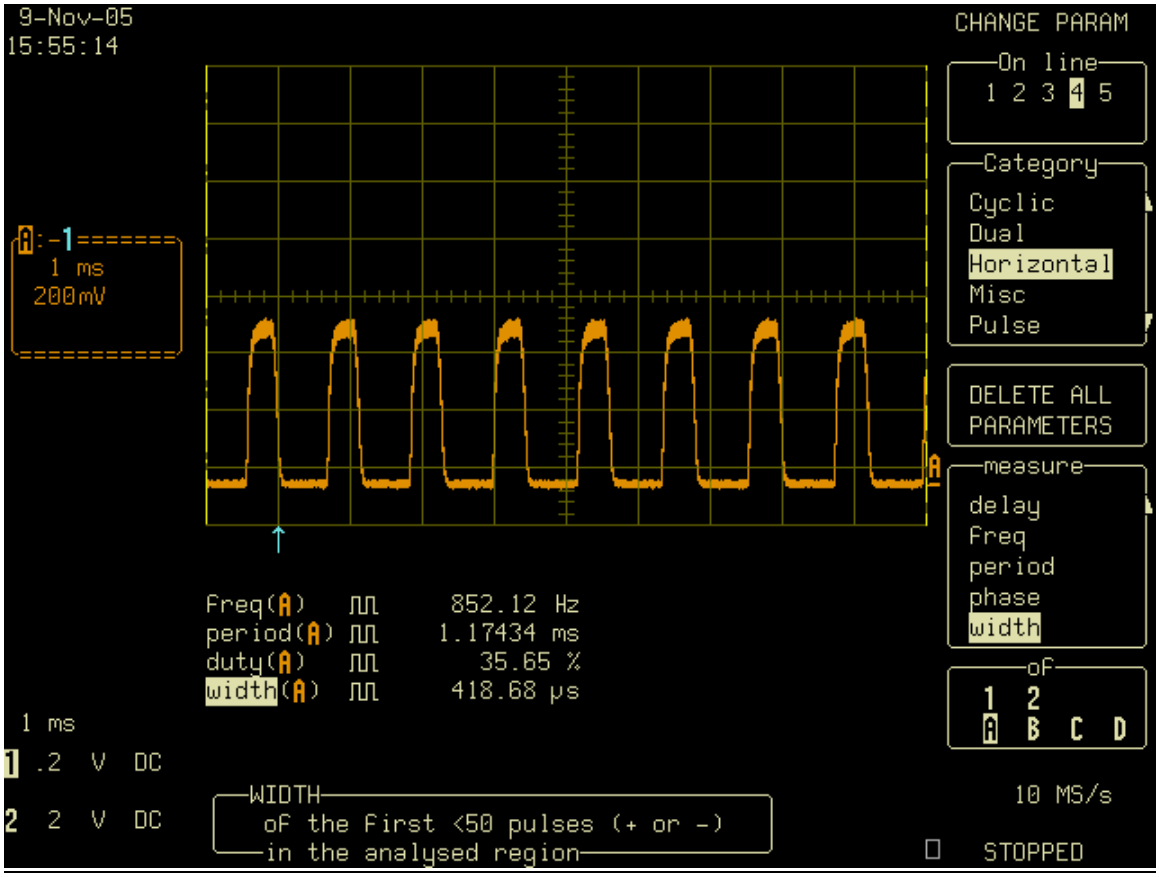
Plot 3



Plot 4


9-Nov-05
15:51:49
CHANGE PARAM
On line
1 2 3 4 5
Category
Cyclic
Dual
Horizontal
Misc
Pulse
DELETE ALL PARAMETERS
measure
delay
Freq
period
phase
width
of
1 2
A B C D
A:-1
1 ms
200mV
Freq(A) 1.24771 kHz
period(A) 803.84 µs
duty(A) 37.54 %
width(A) 502.16 µs
1 ms
1 .2 V DC
2 2 V DC
WIDTH
of the First <50 pulses (+ or -)
in the analysed region
10 MS/s
STOPPED

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

$F_{low}$ = **340Hz**
$F_{high}$ = **1250Hz**

$F_{range}$ = 1250Hz - 340Hz = **910Hz**

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)**

$$\frac{carrierpower}{totalpower} = \log 10 - 1 \quad \left[ \frac{dBc - dBt}{10} \right]$$

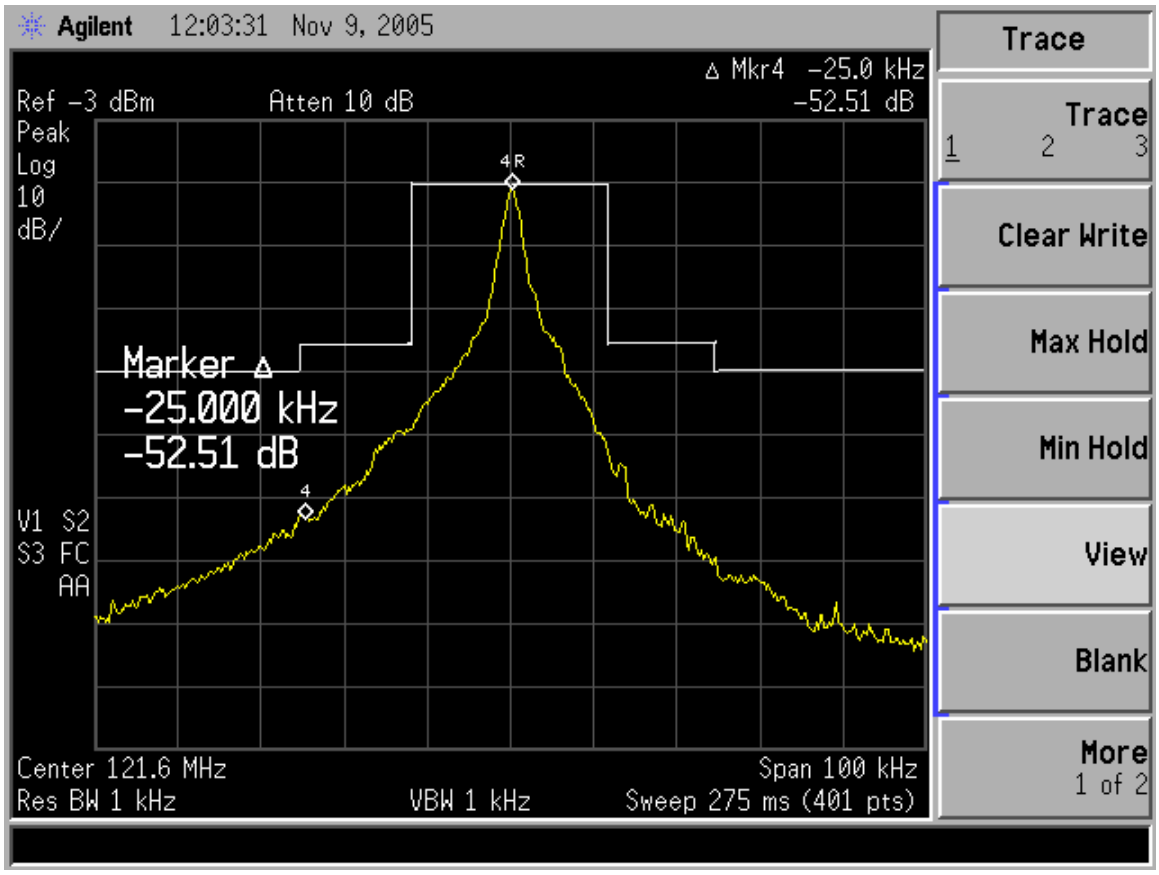
Smartfind+

dBt = -6.00dB + 10Log 0.36 = -10.44dB
dBc = -13.38dB

$$\%Power = Log10\text{-}1 \times \frac{-13.38 - (-10.44)}{10} = \mathbf{50.78\%}$$

## 5. Emission limitation (Limits : ±12.5KHz >25dBc & ±25KHz >30dBc)

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** |