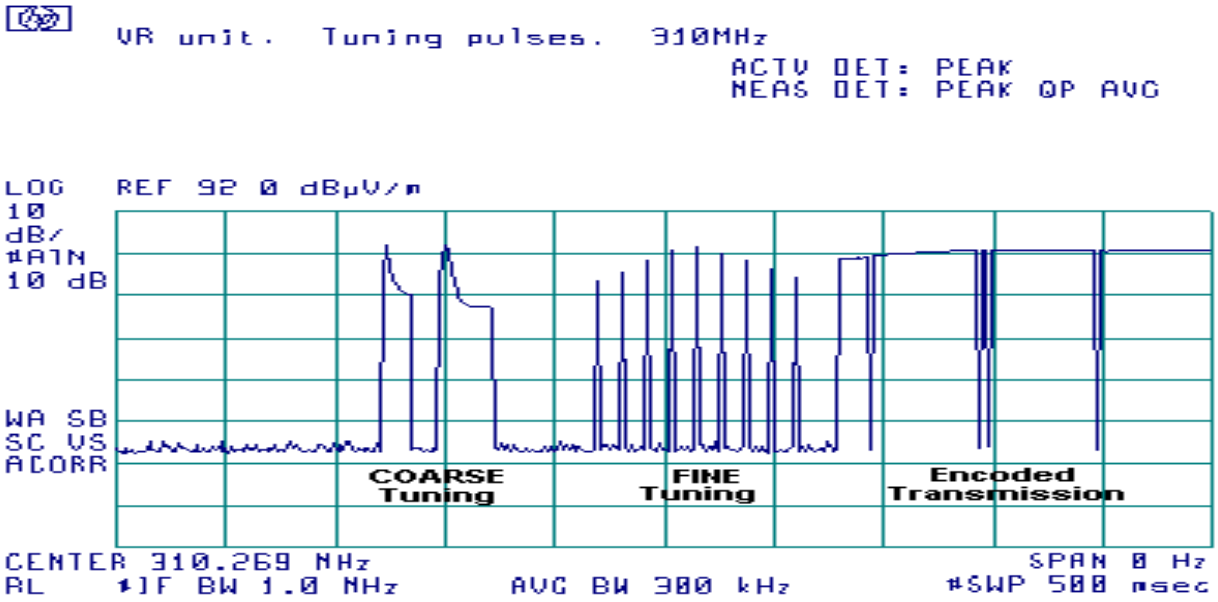
Calculation of Field Strength of Tuning Pulses: [15.231(b)], 15.31(c)]

The tuning pulses are generated each time the VC4968 is activated.

The tuning pulse sequence is: During the first 100mSec of activation two pulses of a 'coarse' tune. During the second 100mSec of activation are nine pulses of a 'fine' tune. At approximately 200mSec after activation the encoded transmission begins.

The signal levels of the tuning pulses were maximized by maximizing the signal levels of the pulse modulated transmission. The antenna height and turntable azimuth for maximum emission levels were adjusted while measuring the field strength of the pulse modulated transmissions.

A typical tuning pulse sequence is presented in this figure below.



To determine level of the tuning pulses for comparison to the limits, the following procedure was used.

MEASUREMENT PROCEDURE:

1. The EUT was trained to each of the three test frequencies at 30% duty cycle of the 500Hz modulating pulse.
2. The HP8456A EMI Receiver was adjusted to a fundamental frequency and set at 0Hz span, with 1MHz IF Bandwidth.
3. The trigger level was adjusted to capture the pulses of interest.
4. The EUT was activated and a single trace recorded on the Receiver in order to capture the tuning pulses.
5. The captured trace was digitally stored. The stored data points (400 data points for a full screen trace) were then used in calculations to determine the levels of the pulses.

CALCULATION OF THE FIELD STRENGTH OF THE TUNING PULSES.[15.35(c)]

Pursuant to 47 CFR 15.35(c), the field strength is determined by averaging over ONE complete pulse train up to 100mSec, including blanking intervals.

1. First was determined the number of data points captured which represented 100mSec span of time. There are 400 data points stored for one complete trace. The scan rate of the HP8546A receiver was set to capture the tuning pulses. This rate was either 200mSec or 250mSec sweep speed.

   Therefore: Number of data points per 100mSec = 400 / 2 = 200 data points.
   or = 400 / 2.5 = 160 data points.

2. The AVERAGE field strength level within the 100mSec is then determined by dividing SUM of the levels (uV/m) of all data points by the number of data points.

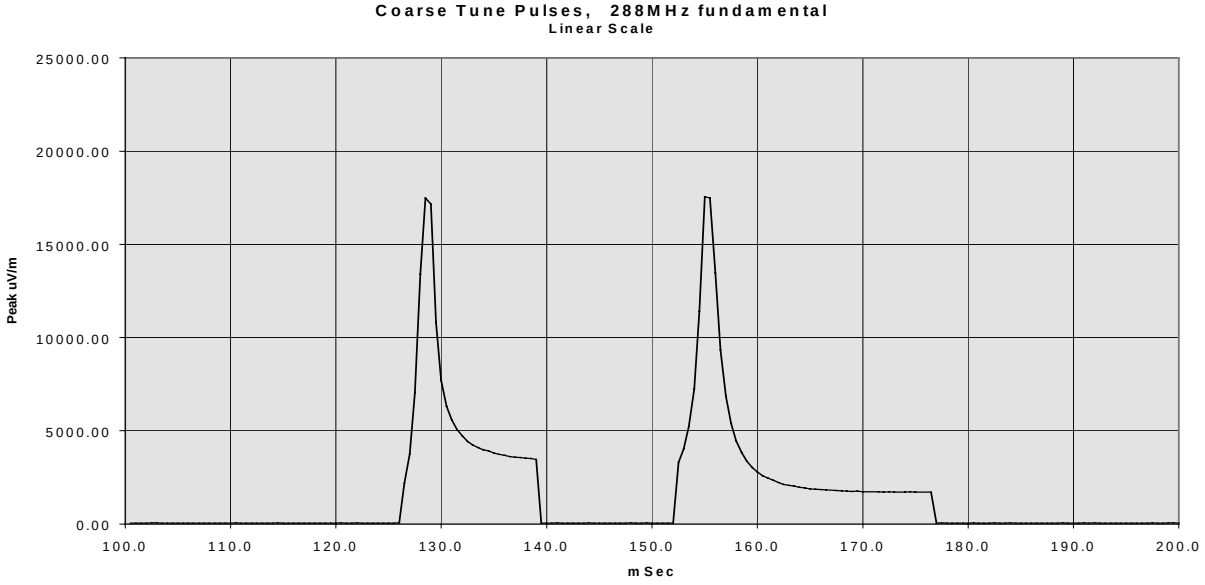
   Formula 3: Average Field Intensity

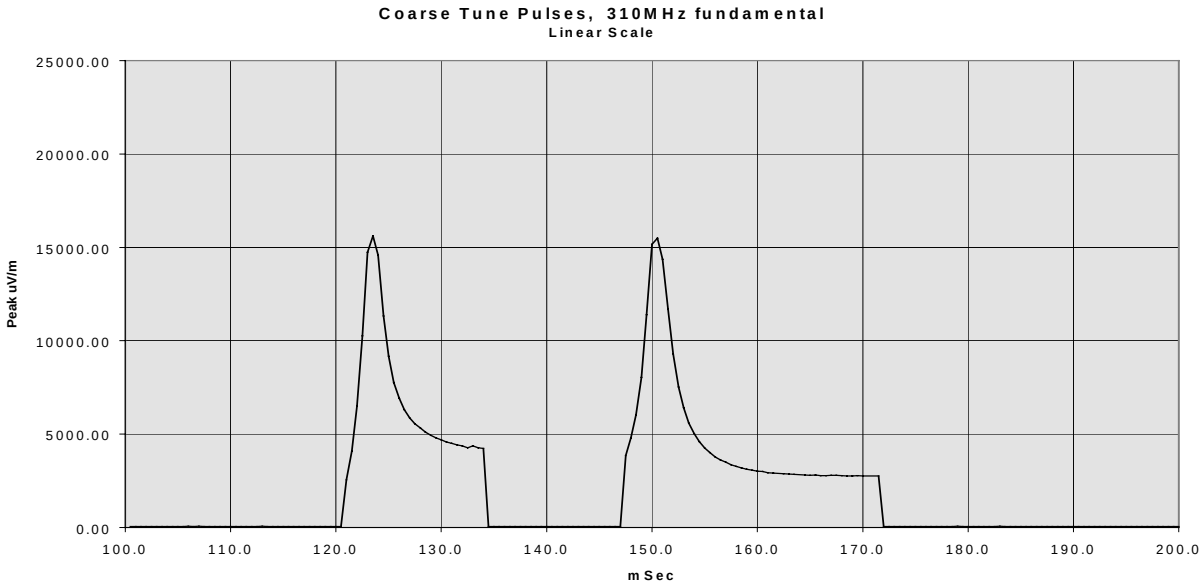
$$\text{Avg. F.I.} = (1/200) * \sum_{n=1}^{200} (\text{Level}_n)\text{uV/m}$$

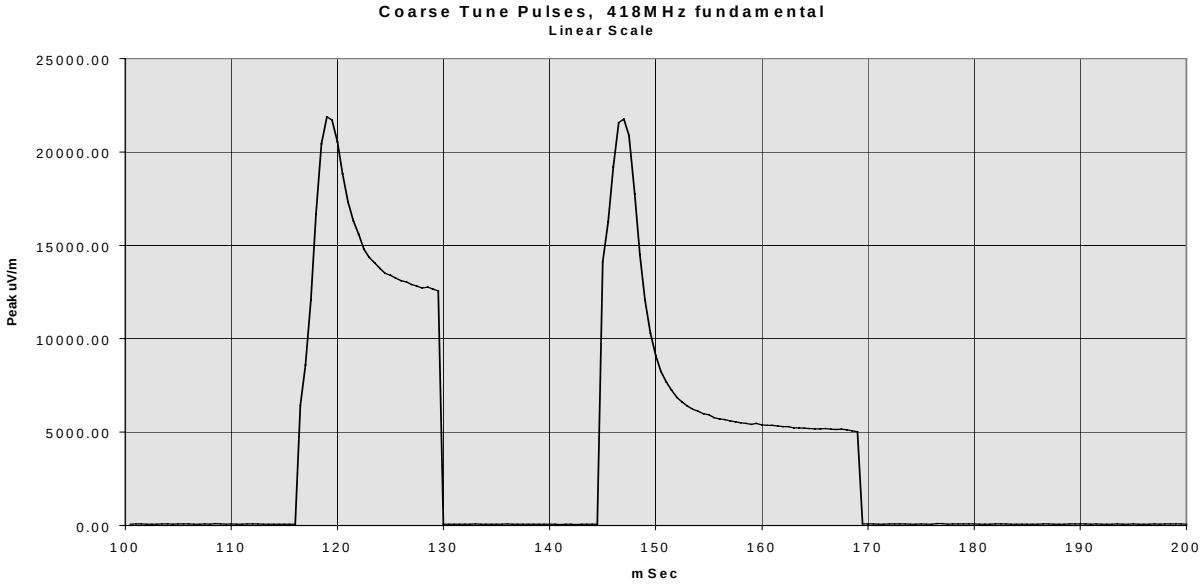
or

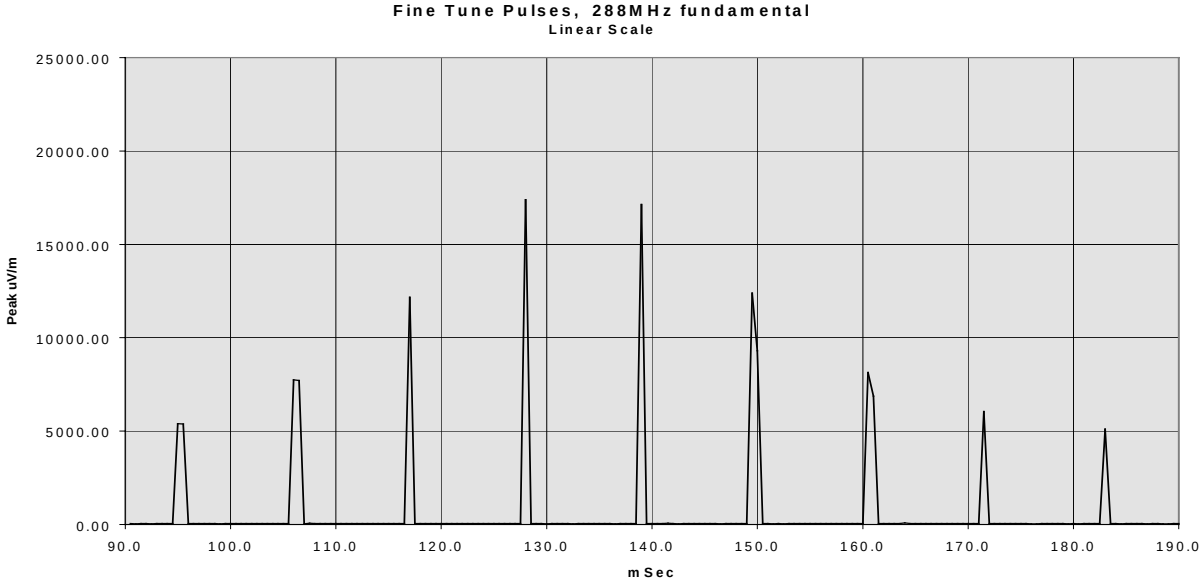
$$\text{Avg. F.I.} = (1/160) * \sum_{n=1}^{160} (\text{Level}_n)\text{uV/m}$$

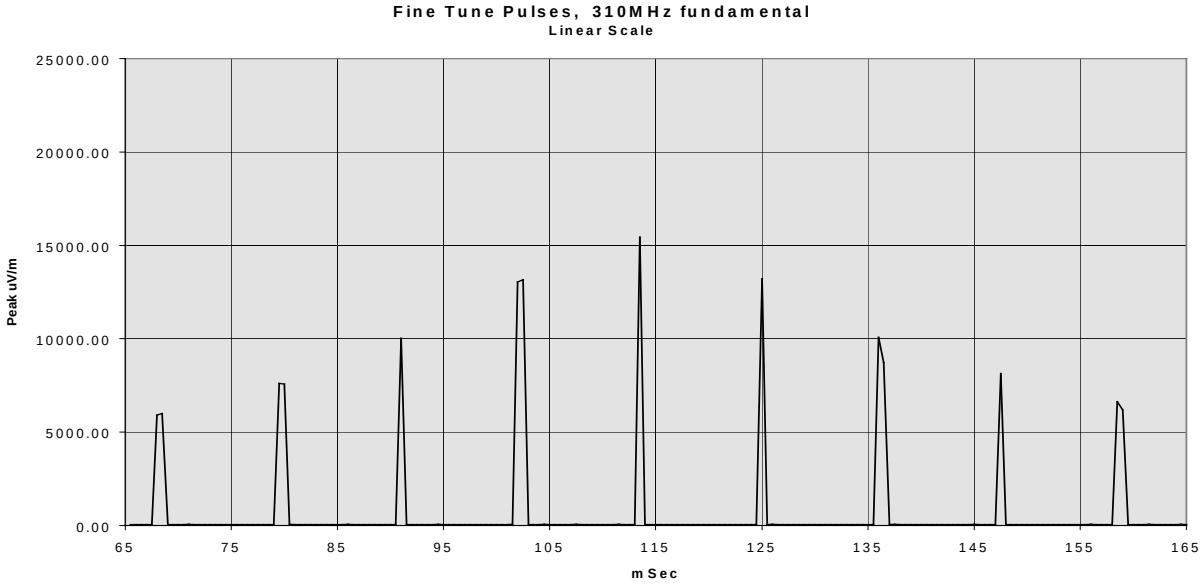
The charts that follow are the reproduction of the coarse tune pulse traces using number of data points representing 100mSec sweep time from the screen display of the HP8546A EMI receiver.

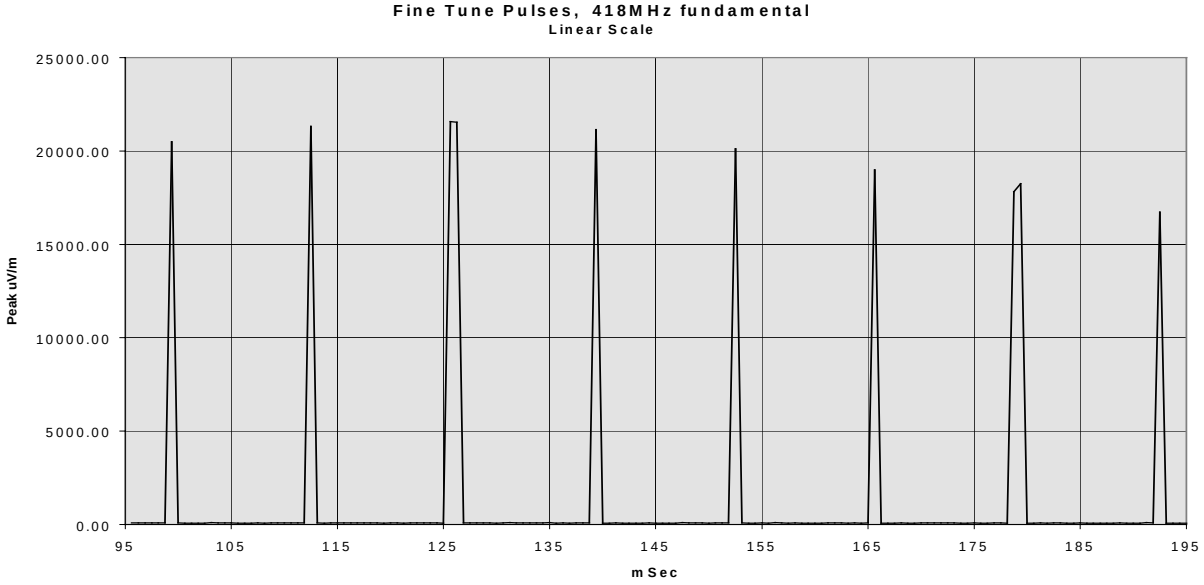



Coarse Tune Pulses, 310MHz fundamental
Linear Scale
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
Peak uV/m
100.0
110.0
120.0
130.0
140.0
150.0
160.0
170.0
180.0
190.0
200.0
mSec


Coarse Tune Pulses, 418MHz fundamental
Linear Scale
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
Peak uV/m
100
110
120
130
140
150
160
170
180
190
200
mSec


Fine Tune Pulses, 288MHz fundamental
Linear Scale
Peak uV/m
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
90.0
100.0
110.0
120.0
130.0
140.0
150.0
160.0
170.0
180.0
190.0
mSec


Fine Tune Pulses, 310MHz fundamental
Linear Scale
Peak uV/m
25000.00
20000.00
15000.00
10000.00
5000.00
0.00
65
75
85
95
105
115
125
135
145
155
165
mSec



The raw data used in calculating the average field intensity of the tuning pulses are presented in the Appendix of this test report.

COARSE TUNE PULSES, Calculated average over 100mSec

TX Freq. (MHz)	SUM of the levels of all data points in 100mSec span (uV/m)	Number of Data points in 100mSec span N	Average SUM/N (uV/m)	LIMIT (uV/m)	MARGIN (dB)
288	341,708	200	1708	4917	**9.2**
310	420,0414	200	2102	5833	**8.9**
418	800,078	200	4000	10333	**8.2**

FINE TUNE PULSES, Calculated average over 100mSec

TX Freq. (MHz)	SUM of the levels of all data points in 100mSec span (uV/m)	Number of Data points in 100mSec span N	Average SUM/N (uV/m)	LIMIT (uV/m)	MARGIN (dB)
288	130,604	200	653	4917	**17.5**
310	142,252	200	711	5833	**18.3**
418	210,380	160	1315	10333	**17.9**