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Federal Communications Commission
Authorization and Evaluation Division
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

June 23, 1998

RE: Reference # 1369 for FCC ID HDCTRACER2T1M

Dear Mr. Dichoso:

This correspondence is in response to the above referenced request for additional information.

1) Photo's of the device can not be held confidential.

    A) A revised request for confidentiality has been submitted electronically to the above referenced application.

2) Bandwidth Plots at 2462 MHz.

    A) See Attached Figure 2, BW Plot for 2462 MHz.

3) Power Density Tests for 2422 MHz

    A) Power Density Plots for 2422 MHz are provided in the attachments as Figure 3a and 3b. Figure 3a indicates the direct measurement from the antenna port of the EUT. The resolution BW is set to 3 kHz, the span is set to 300 kHz, and the sweep time is stet to 100 seconds. Figure 3 b shows the spectral density at a reduced resolution BW (10 Hz) with the span adjusted to 1 kHz. Figures 3c and 3d are corresponding plots for the Power Density tests for 2462 MHz.

4) Restricted Band Compliance will be reviewed once bandwidth plot is submitted. Since the fundamental field strength is 122.4 dBuV/m. The Bandwidth plot must show that the restricted band emission is 122.4-54=68.4 dB down from the peak.

    A) In response to your request for plots to we wish to provide the additional plots and information to indicate compliance to the required field strength measurements. Table 1 indicates expected field strengths from a typical transmitter based on the calculations using the standard field equation. Also indicated in the table is the expected delta required to meet the FCC limits for restricted bands.

$$E = \sqrt{(30 \times P \times G)/D}$$

where
E = Field Strength (Volts/meter)
P = Transmit Power (Watts)
G = Antenna Gain (numeric)
D = Measurement Distance (meters)

Table 1

Power (watts)	Field Strength (V/m) Gain=1	Field Strength (dBuV/m)	Field Strength with 23 DBi Gain (dBuV/m)	Required Delta to meet the FCC Restricted Band Requirements (54 dBuV/m).
0.08	0.516	101.3	124.31	70.3
0.10	0.577	102.2	125.2	71.2
0.8	1.291	109.2	132.2	78.2
1.0	1.826	112.2	132.2	78.2

As indicated in your fax our measured field strength was 122.4 dBuV/m which was within 2.8 dB of the calculated value.

Plots 4a and 4b attached provide the indication of the delta conducted measurement. Plot 4a provides a plot indicating the peak level of 10.17 dBm. Plot 4b provides data using a band pass filter to indicate the level at 2483.5 MHz of -73.67 dBm. (Please note the apparent distorted transmit signal of plot 4b, this is due to the losses associated with the band pass filter). The resultant delta in the restricted band is 83.8 dB down from the maximum carrier level. For additional information Plot 4c is the network analyzer sweep of the filter used during this measurement to provide for losses.

If the delta of 83.8 is applied to the transmitter level of 122.4 dBuV/m the expected radiated level at 2483.5 MHz would be 38.56 dBuV/m. With the loss 4.1 dB of the band pass filter included the level would be 122.4 - 83.8 + 4.1 = 42.7 dBuV/m.

Please note that the 3 meter radiated emission data plot provided in the original application on page 22 (Figure 3.5 - 5) using the 23 dBi antenna indicates a corrected measured level of 42.3 dBuV/m. This is within 0.4 dB of the calculated value shown above.

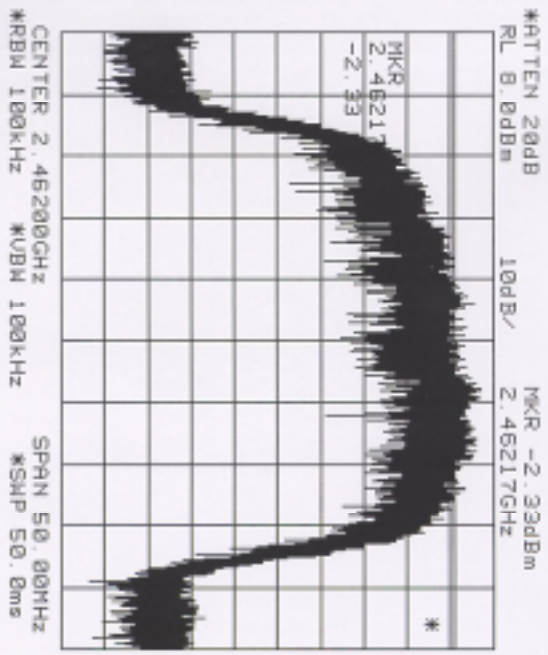

Figure 2: Bandwith Plot for 2462 MHz.

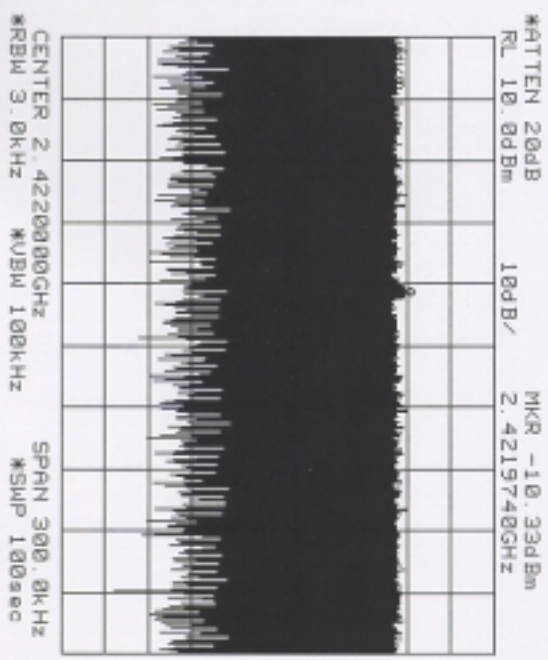

Figure 3a
Power Density Measurements (2422 MHz)

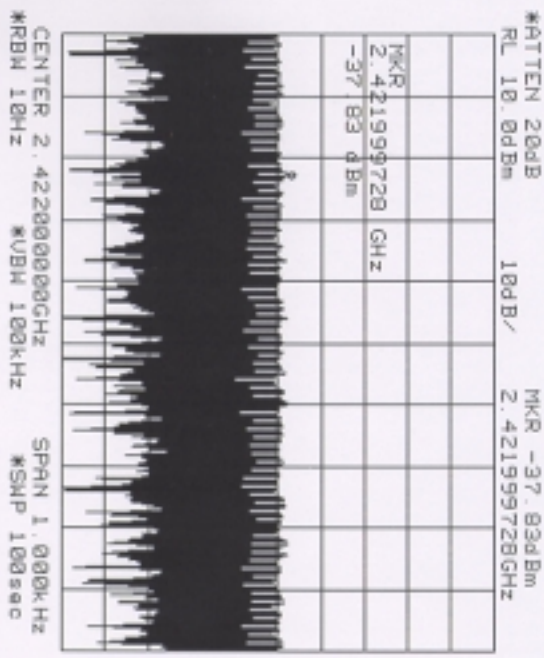

Figure 3b
Powere Density Measurements, Reduced BW (2422 MHz)

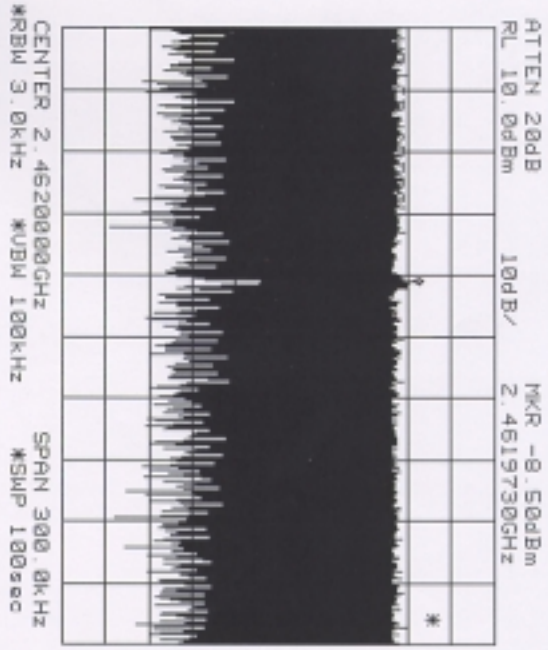

Figure 3c
Power Density Measurements (2462 MHz)

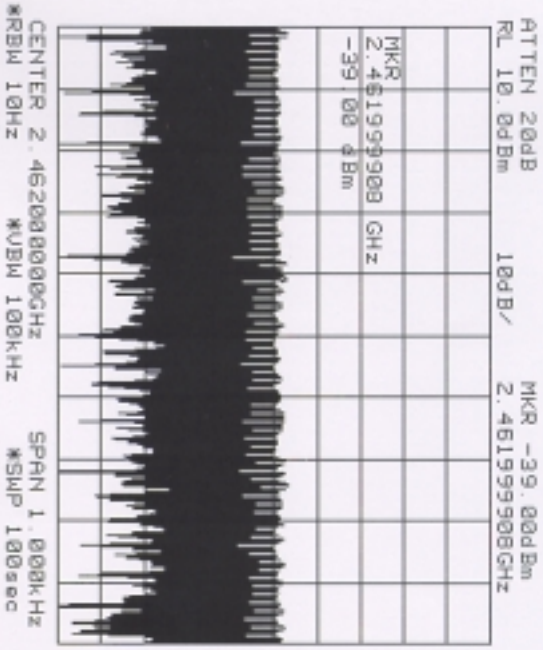

Figure 3d
Power Density Measurement at Reduced BW (2462 MHz)

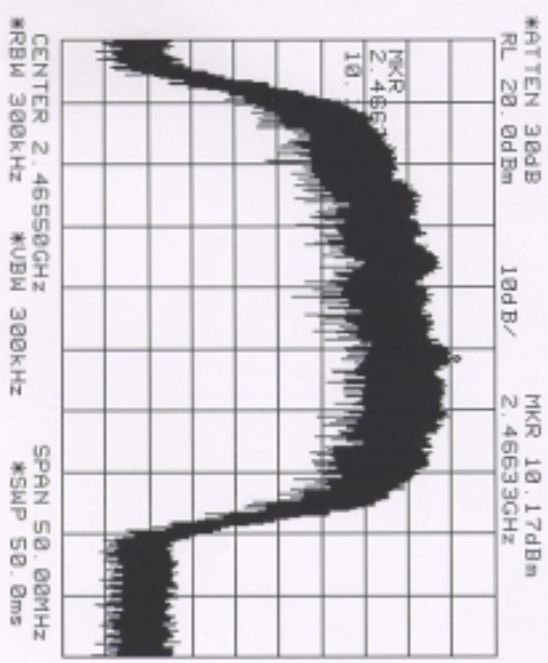

Figure 4a
Conducted Peak level Plot

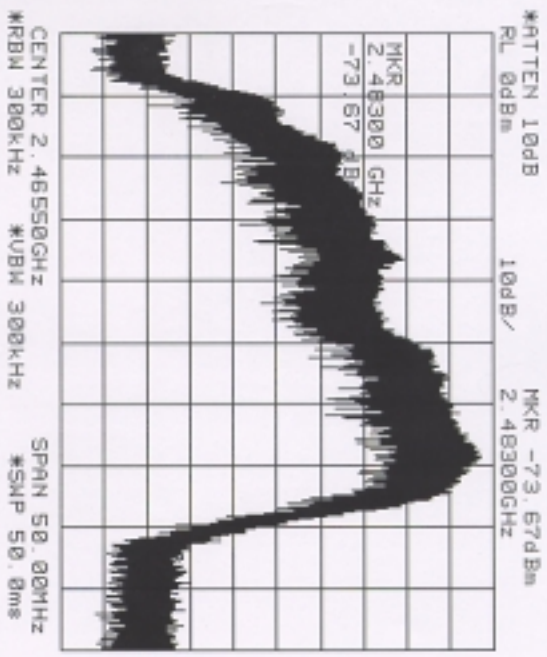

Figure 4b
Restricted Band Level
Using Band pass filter for increased sensitivity.

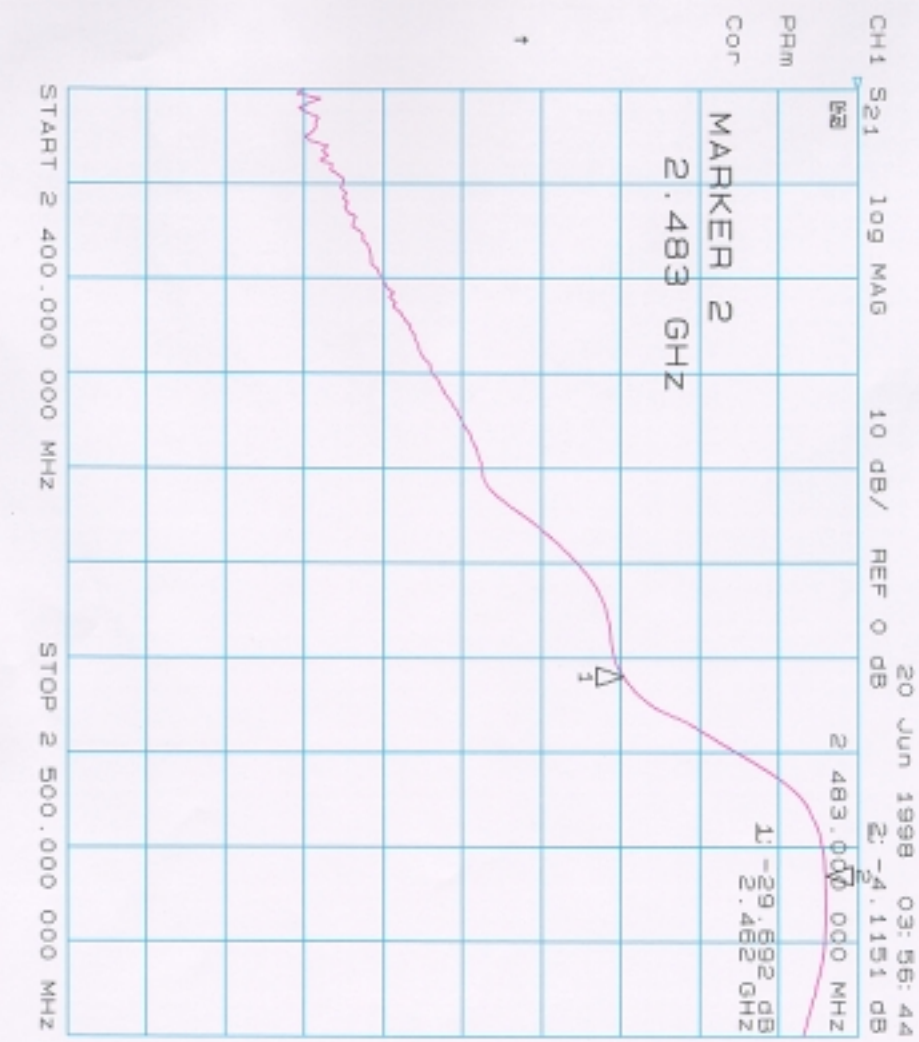

Figure 4c
Bandpass Filter Losses