Transmitter Duty Cycle Measurements

Test Condition and Setup

The duty cycle measurements were performed in a shielded enclosure. The EUT was placed on a wooded table which is 0.8 meters height and a bi-log periodic antenna was used distance about 3 meters for receiving. While testing EUT was set to transmit continuously. Various key configurations were also investigated to find the maximum duty cycle.

The resolution bandwidth and video bandwidth of the spectrum analyzer was set to 1MHz to encompass all significant spectral components during the test. The analyzer operated in linear scale and zero span mode after tuning to the transmitter carrier frequency. The spectrum analyzer measured pulse width. The pulse width was determined by the difference between the two half voltage points on a pulse.

The duty cycle was determined by the following equation:

$$\text{Duty Cycle (\%)} = \frac{\text{Total on interval in a complete pulse train}}{\text{Length of a complete pulse train}} \text{ X } 100\%$$

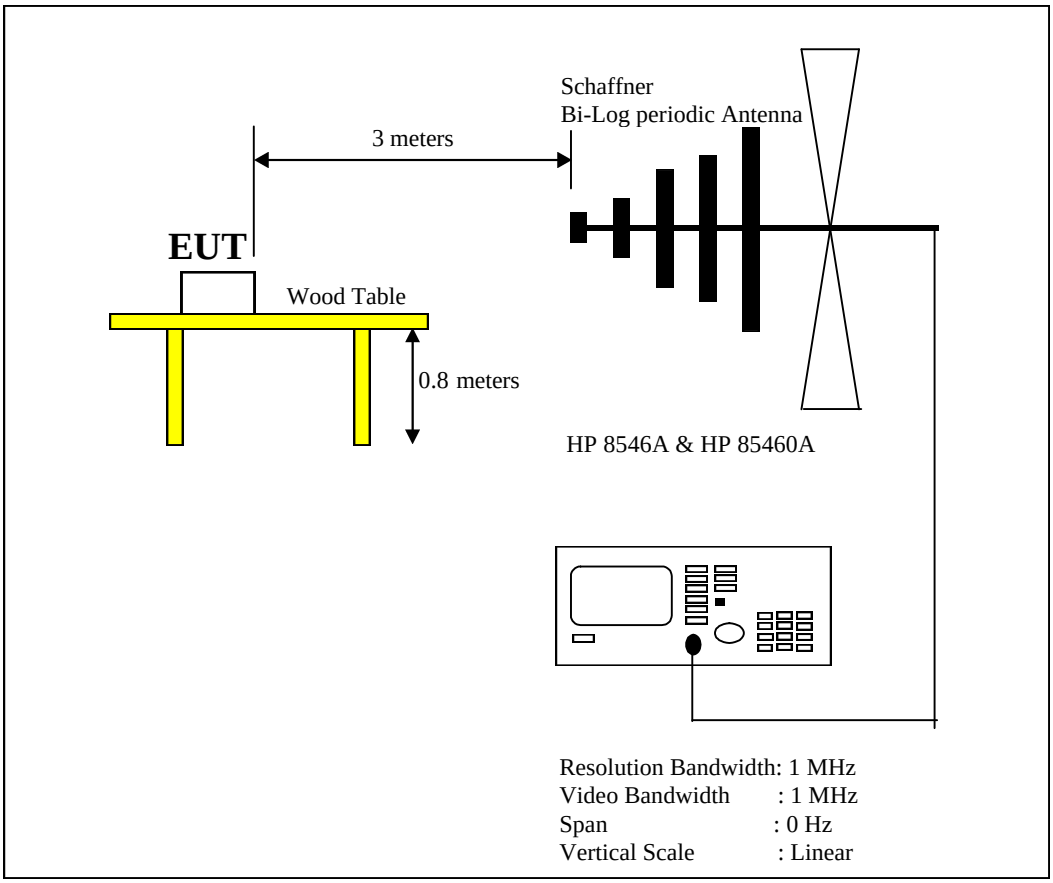
To calculate the actual field intensity, the duty cycle correction factor in decibel is needed for later use and be obtained from following conversion:

Duty Cycle Correction Factor (dB) = 20 X Log_{10} Duty Cycle

List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
EMI Receiver	8546A	H P	3520A00242	06/29/02	06/29/03
RF Filter Section	85460A	H P	3448A00217	06/29/02	06/29/03
Bi-log Antenna	CBL6141A	Schaffner	4206	03/09/02	03/09/03

Test Instruments Configuration



2.4 Test Result

Following is the test result, which produce maximum duty cycle:

Total on interval in a complete pulse train = 0.825 ms

Length of a complete pulse train = 6.750 ms

Duty Cycle (%) = 0.825 ms / 6.750 ms * 100% = 0.12222

Duty Cycle Correction Factor (dB) = 20 * Log 0.12222 = -18.257

A plot is attached on the following page.

Hardcopy of the Spectrum Analyzer