

5.6 Measurement Procedures

5.6.1 List of Test Equipment

1. Computer with Netscape to interact with test software.
2. Spectrum Analyzers

HP8593EM, S/N 3643A0680

HP8594E with CDMA spectrum analyzer option, S/N 3733U03464

5.6.2 Measurement Procedures

5.6.2.1 Conducted RF Power Output

Definition - The output power rating of the transmitter is the power available at the output terminal of the transmitter when the terminal is connected to the normal load.

Method of Measurement - The transmitter output carrier power with CDMA modulation was measured using an HP 8594E spectrum analyzer with the CDMA feature option. The measurement setup diagram is shown in Fig. 4-1.

Minimum Standard - The transmitter output power shall be maintained within range of -4dB to 2dB.

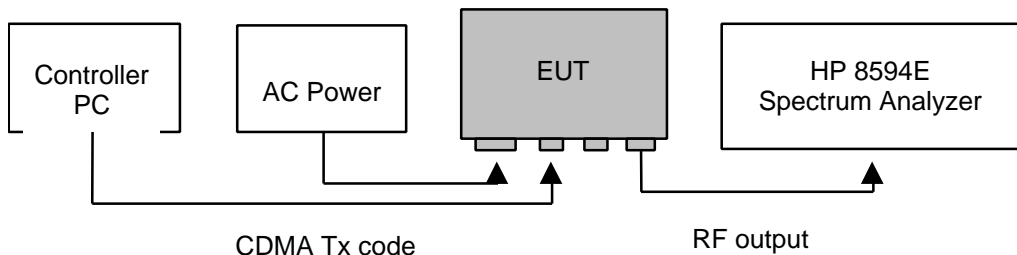


Figure 5-13. Measurement setup for conducted RF power

5.6.2.2 Radiated RF Power Output

Refer to TUV Product Service Test Report.

5.6.2.3 Occupied Bandwidth

Definition - The occupied bandwidth is defined as the spectrum noise produced at discrete frequency separations from the carrier due to all sources of unwanted noise within the transmitter in a modulated condition.

Method of Measurement - Use the spectrum analyzer and measure the CDMA spectrum, modulate with full rate. The measurement setup diagram is shown in Fig. 4-2.

Minimum Standard - The mean power of emissions from the transmitter with modulated carrier shall be attenuated below the mean power of the modulated carrier in accordance with the following.

At any frequency outside the licensed PCS frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, in which, P is mean output power in Watts. As the mean power of the terminal modem is approximately 24 dBm, the spurious emission would be 35 dB below the transmission power, equivalent to a absolute limit of -13dBm .

- For the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

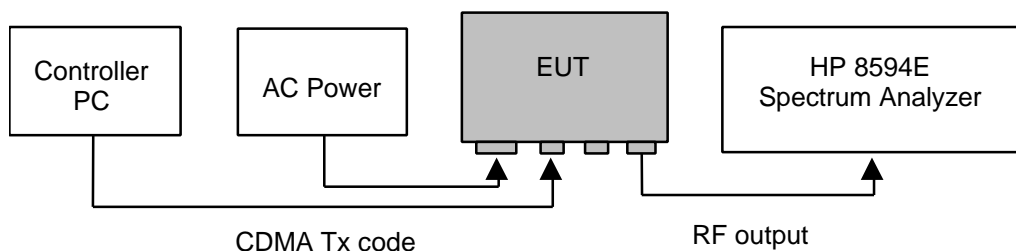


Figure 5-14. Measurement setup for Occupied Bandwidth

5.6.2.4 Conducted Spurious Emissions

Definition - The conducted harmonic and spurious emissions are emissions at the antenna terminals at a frequency or frequencies that are outside the authorized bandwidth of the transmitter.

Method of Measurement - The transmitter shall be modulated with CDMA at full rate. The measurement shall be made with a spectrum analyzer from the lowest radio frequency generated in the equipment to the 10th harmonic of the carrier. The measurement setup diagram is shown in Fig. 4-3.

Minimum Standard - Conducted harmonic and spurious emissions shall be attenuated below the level of emissions of the carrier frequency by at least $43 + 10 \log(P)$ dB, in which, P is mean output power in Watts.

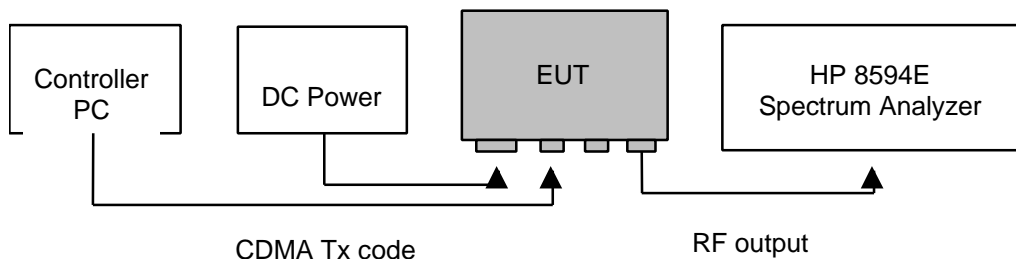


Figure 5-15. Measurement setup for conducted spurious emissions

5.6.2.5 Radiated Spurious emissions

Definition - The radiated spurious emissions are emissions from the terminal modem with the attached antenna fully extended. The radiated spurious emissions include those emissions radiated from the attached antenna as well as the equipment cabinet and attached cables.

Method of Measurement - The measurement shall be conducted at standard radiation test site with a search antenna, which is movable vertically and is rotatable 90 degrees for vertically and horizontally polarized signals. Refer to TUV Product Service Test Report for measurement setup

Minimum Standard - Radiated spurious emissions shall be attenuated below the maximum level of emission of the carrier frequency by at least $43 + 10 \log(P)$ dB, in which, P is mean output power in Watts.

5.6.2.6 Frequency Stability

Definition - The frequency stability is the ability of the transmitter to maintain an assigned carrier frequency against variation in ambient temperature and power supply.

Method of Measurement - Use the spectrum analyzer to sample the transmitter RF output signal and measure its frequency under each specific temperature and power supply condition. Vary the ambient temperature from -30 to +60 °C, and also vary the DC supply voltage to the equipment from 11.2 to 16.8 V at each temperature. The measurement setup diagram is shown in Fig. 4-4.

Minimum Standard - The transmitter carrier frequency shall be maintained within ± 2.5 ppm.

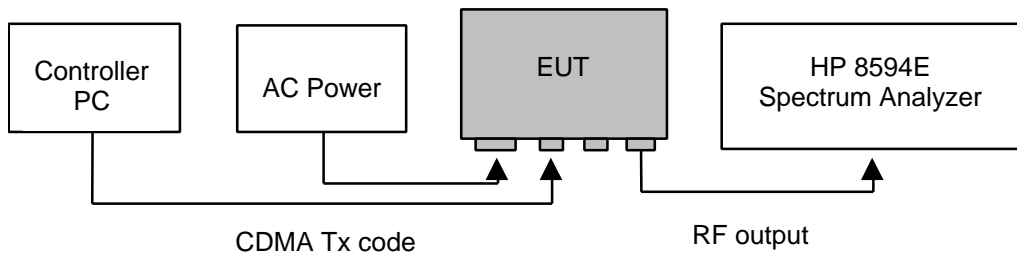


Figure 5–16. Measurement setup for frequency stability

Photograph of Test Setup



Photograph of Test Setup

