In the frequency range 40 GHz to 325 GHz, spurious frequencies are measured as power densities. For further remarks see section 1.). The RBW and VBW are set to such a value that spurious power levels are clearly readable above the fundamental noise level of spectrum analyzer.

4. Measurements of maximum safe level for radiated power density

According to FCC § 1.1307, 1.1310, 2.1091, and 2.1093 and also according to ETSI/EN 301 091 measurements are carried out in order to evaluate the impact of human exposure to RF radiation. For this test the EUT is in normal operation mode.

The measurements are applicable only for far field conditions. The near field area extends to a distance of R (meters) and can be calculated from the following equation:
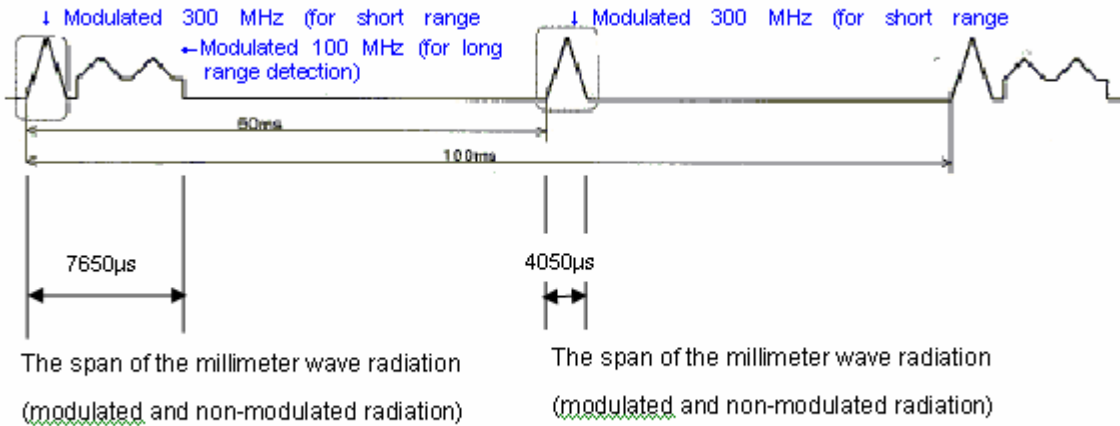
$$R < 2 * L^2 / \lambda$$

with R = distance in meters, L = largest dimension of either receiving or transmitting horn antenna (L = 0.02 m), and λ = wavelength in meters. In case of 76 GHz (λ = 0.0039 m), the far field starts at R > 0.205 m.

The peak power density is measured in 3 m distance as 2.77 μW/cm^2 (-25.57 dBmW/cm^2).

Peak Power (EIRP) $EIRP = PD * 4\pi * R^2$
                           EIRP = 3.13 W

As the sample works with pulsed CWFM-modulation there is a difference between peak and average value of the output power.

This difference is calculated by the duty cycle of the sample.

The correction factor is calculated with 10 log (TX on / 100 ms) here -9.3 dB

Recalculated average power is (34.96 dBm -9.3 dB) = 25.66 dBm = 368 mW

Limit of maximum ERP for frequencies above 1.5 GHz is 3 W. See FCC § 2.1091 (EIRP = 4.91 Watt)

RF Exposure for mobile conditions at R = 20 cm distance from EUT

$$PD = EIRP / (4\pi * R^2)$$
$$PD = 0.07 \text{ mW/cm}^2$$

Limit of maximum permissible exposure (MPE) for uncontrolled environment:1.0 mW/cm². See FCC § 1.1310.