3.10 Compliance with the restricted band edge 2.4850 to 2.5000 GHz

Compliance with the restricted band edge 2.4850 to 2.5000 GHz.

The conducted carrier power was measured at –13.1dBm for channel 11, at 2.4618 GHz by setting the resolution/video bandwidth to 100kHz/300kHz. The highest spurious emission within 2.4835 GHz and 2.5000 GHz was measured –48.2dBm at 2.4882 GHz. The difference between the two measurements was subtracted from the radiated 3 meter field strength of the carrier at channel 11. The emission was in the restricted band at 2.4882 GHz = 88.5dBuV/m – 35.1dB=53.4dBuV/m.

3.11 RF EXPOSURE CALCULATIONS FOR SAMSUNG'S HIGH GAIN ANTENNAS

From FCC 1.1310 table 1A, the maximum permissible RF exposure for an uncontrolled environment is $1mW/cm^{2.}$ The Electric field generated for a $1mW/cm^2$ exposure (S) is calculated as follows:

$S = E^2/Z$

where:
S = Power density
E = Electric field
Z = Impedance.

$1mW/cm^2 = 10\ W/m^2$

The impedance of free space is 337 ohms, where E and H fields are perpendicular.

Thus:

$E = \sqrt{10 \times 377} = 61.4$ V/m which is equivalent to $1mW/cm^2$

Using the relationship between Electric field E, Power in watts P, and distance in meters d, the corresponding Antenna numeric gain G and the transmitter output power and solving for d,

$$d = \sqrt{\frac{P_{eak} \times 30 \times G}{E}}$$

Example using the Stub Omni-directional antenna

1. The Numeric gain G of antenna with a gain specified in dB is determined by:

   $G = \text{Log}^{-1}(\text{dB gain}/10)$

   $G = \text{Log}^{-1}\ 2.15 = 1.64$

2. Stub antenna-gain with a gain of 2.15dB, the $1mW/cm^2$: distance is:

   P = 0.8mW worst case channel 11 power output
   d = 0.3 cm

Notice in Installation Manual:

While installing and operating this transmitter and antenna combination the radio frequency exposure limit of 1mW/cm^2 may be exceeded at distances close to the antennas installed. Therefore, the user must maintain a minimum distance of 20 cm from the antenna.

The table below identifies the distances where the 1mW/cm^2 exposure limits may be exceeded during continuous transmission using the external stub or internal antenna

Antenna Type	Gain (dBi)	Gain Numeric	Peak output Power (mW)	Minimum RF Exposure Separation Distance (cm)
Stub	2.15	1.64	0.8	20
Internal	2.15	1.64	0.8	20

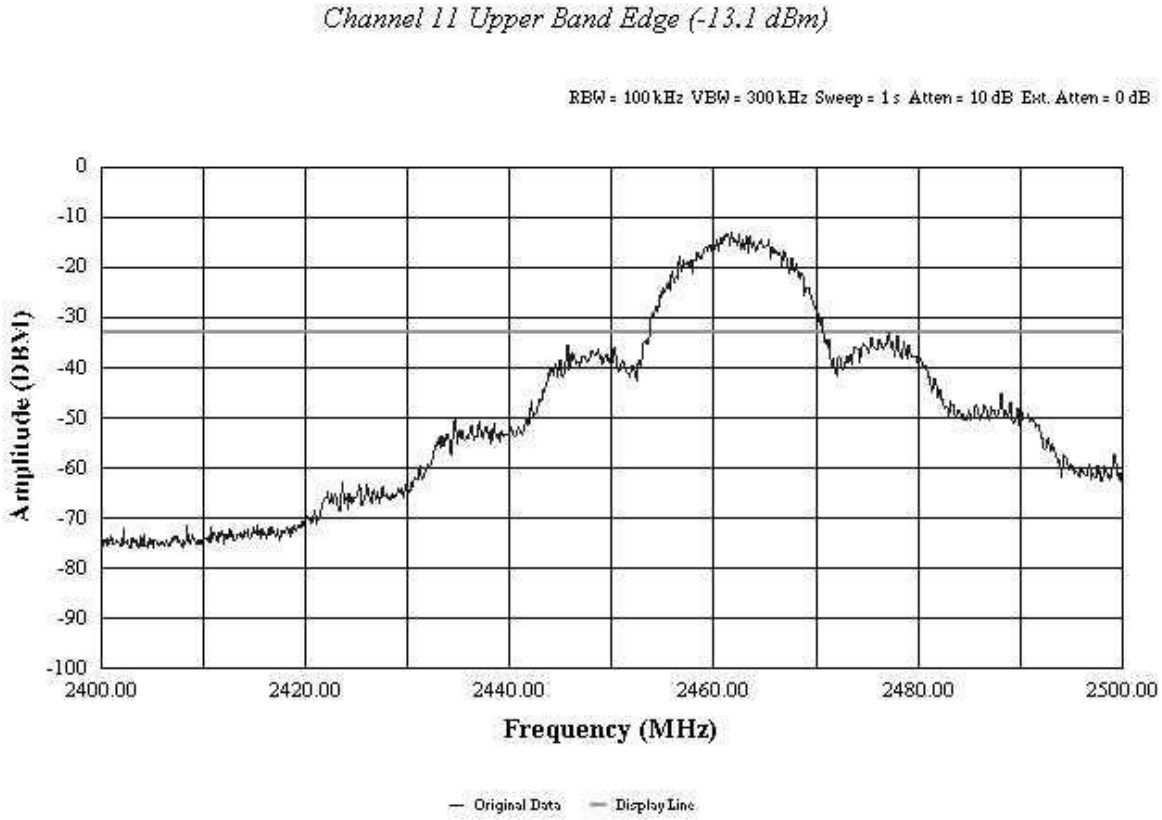

FIGURE 16: Channel 11 Bandwidth –13.1 MHz