Cabinet Radiation

Equipment was set up as shown in Figure below. The radiation was measured using a pyramidal Log-Periodic Antenna with a gain of 8dBi, at a distance of 4 m from the transmitter, which operated into a test load. There was a metal structure located 2m behind the measuring position (ie: an open field test was not possible in this case).

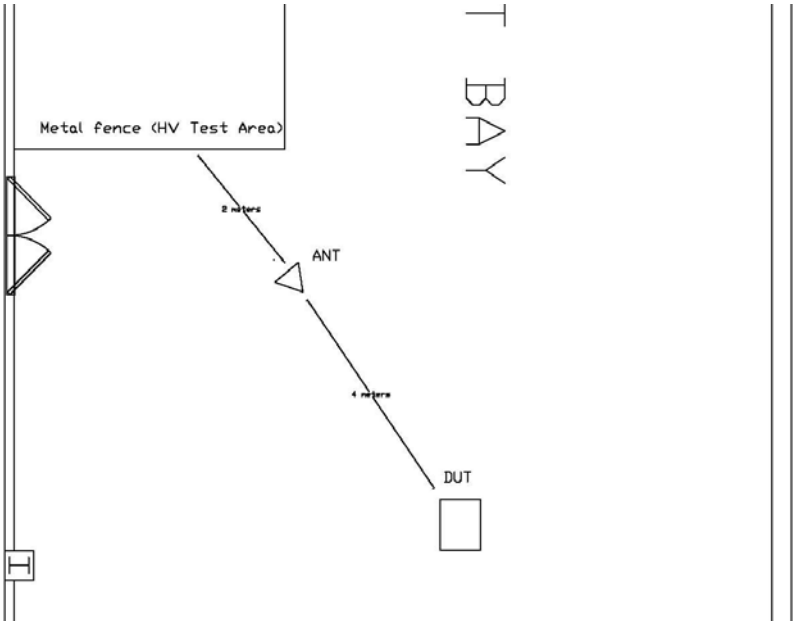

Figure 1: Equipment setup

The measurement data is as follows:

Transmitter Power:	1000 W
Distance from TX:	4 meters
Frequency:	545 MHz
Gain of half-wave dipole:	2.15 dBi
Theoretical radiated power:	1641 W
Gain of measuring Antenna:	8 dB (log periodic)

Field strength is calculated as follows:

$$E = \frac{9.92\sqrt{P}}{R}$$

where: E = Field Intensity
P = transmit power
R = distance from transmitter

Above equation yields the following results:
E = 78.42 V/m = 157.89 dBuV/m

The requirement is for spurious radiated emissions beyond 6 MHz from the channel edge to be 60dB below this value, or no greater than: 97.89 dBuV/m
Subtract a constant given by:

K= 20 log(f) – Antenna gain – 29.8
K = 16.93

The worst case reading should be:

Vr = 80.96 dBuV

Subtract 107dB to convert to dBm: Vr = -26.04 dBm

The worst case reading was at the second harmonic of the fundamental:

Vmeas = -75dBm

Which is 48.96 dB below the maximum allowable level.
All other readings were below -80dBm from 9kHz to 6GHz.

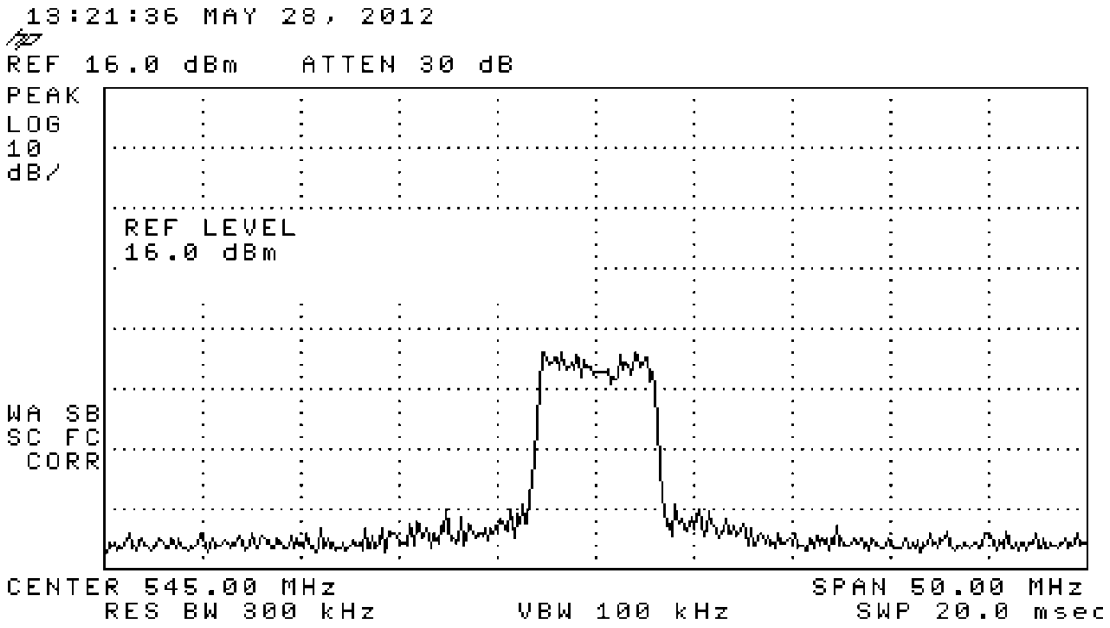

Figure 2: Fundamental (dBm)

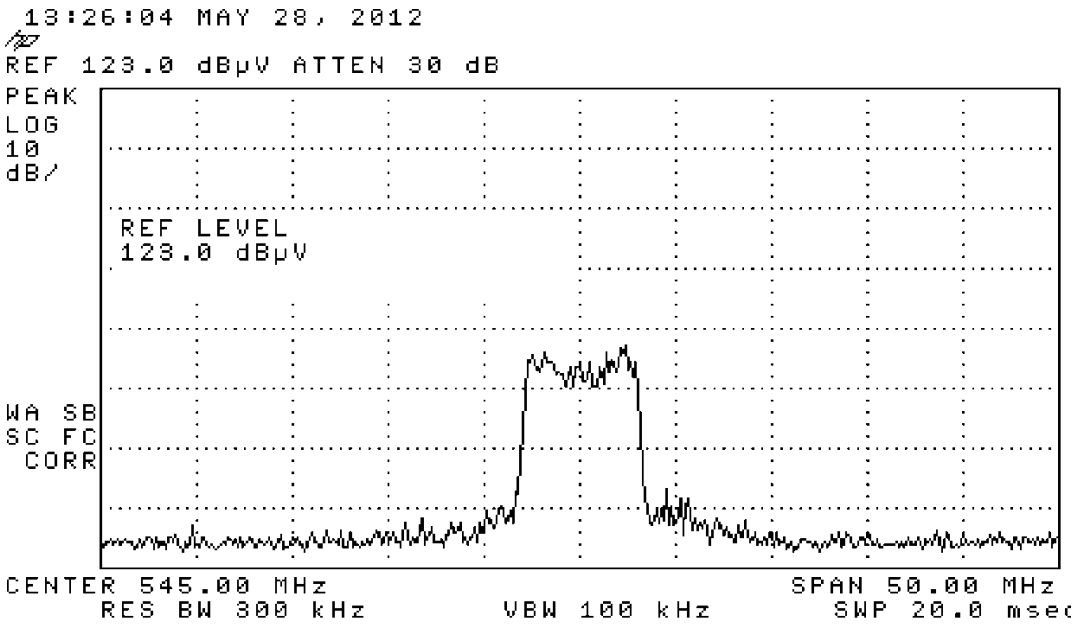

Figure 3: Fundamental (dBuV)

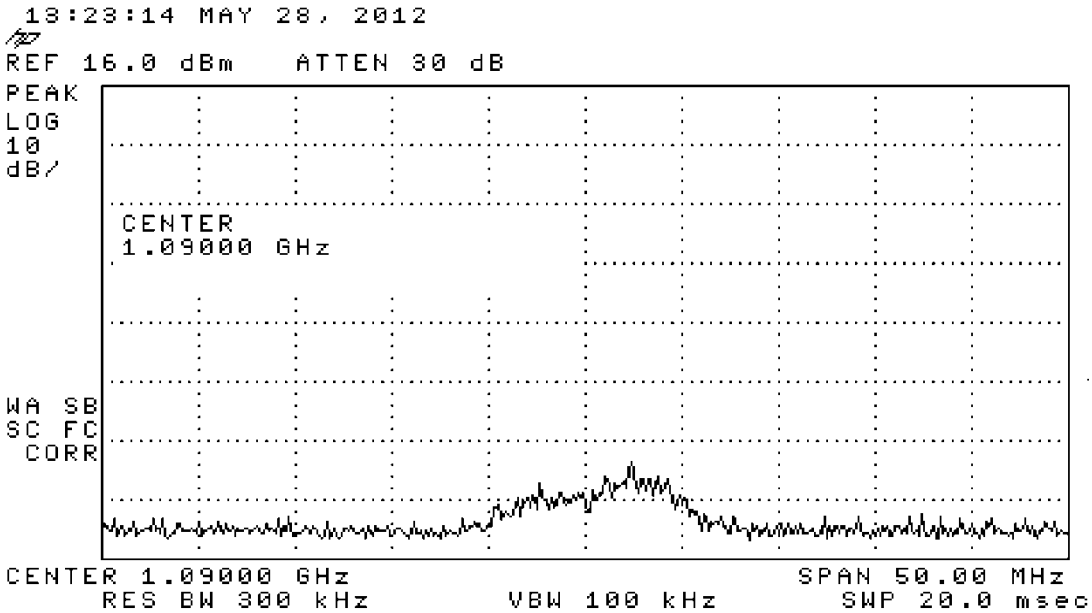

Figure 4: Second Harmonic (dBm)

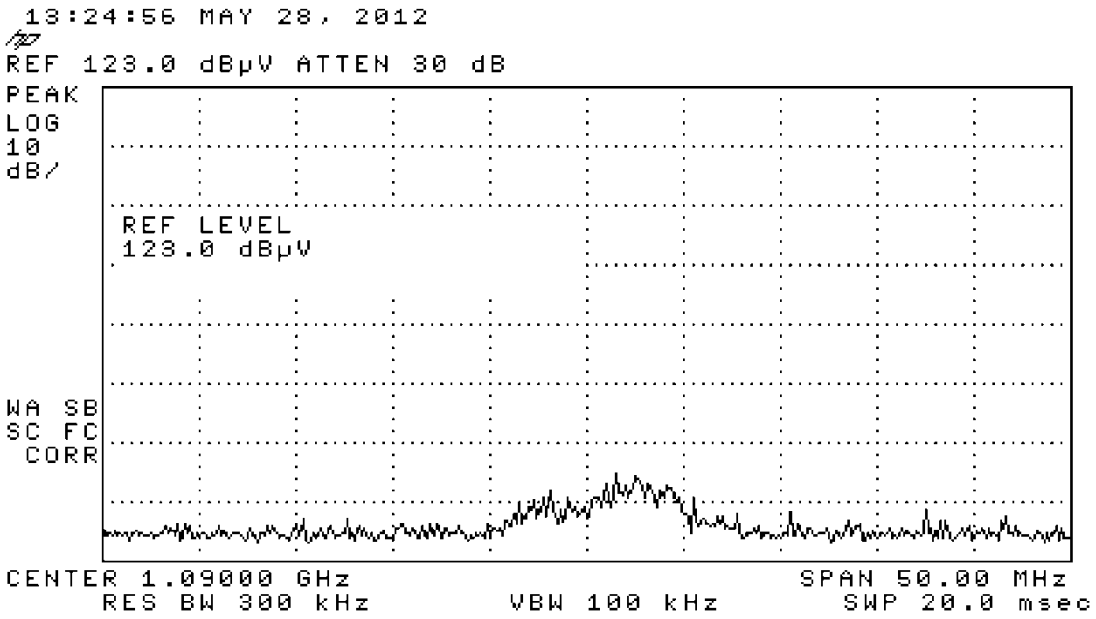

Figure 5: Second Harmonic (dBuV)