

8.2 Protection of Mobile Services/IMT services using the band 450-470 MHz

It is expected that an approach similar to the one developed in section **Errore. L'origine riferimento non è stata trovata.** can be used to assess the protection of mobile services using the band 450-470 MHz. Further studies would be required to gather the appropriate characteristics related to the mobile service in this band and to perform the corresponding adjacent band compatibility studies.

A preliminary compatibility study to identify possible critical situations between Private Mobile Radio (PMR) / Public Access Mobile Radio (PAMR) systems operating in the 450-470MHz and WSD systems operating in the band 470 – 790 MHz can be performed according to a simplified methodology based on the Minimum Coupling Loss (MCL) approach similar to the one provided in **Errore. L'origine riferimento non è stata trovata.**

The considered scenario is referred to a WSD transmitter operating in UHF Channel 21, which causes potentially harmful interference towards a 20-25 kHz PMR/PAMR Base Station (BS). For the 20-25 kHz PMR/PAMR BS, the victim receiver parameters listed in Table 18 have been assumed. This implies that the power at the victim should not exceed:

$$-110 \text{ dBm} - 9 + 97 = -22 \text{ dBm} = -52 \text{ dBW}$$

which is equivalent to a field strength of (see Recommendation ITU-R P.525):

$$E = Pr + 20 \log f + 167.2 = 108 \text{ dB } \mu \text{ V/m}$$

where

P_r : isotropically received power (dBW)

E : electric field strength (dB μ V/m)

f : frequency (GHz)

Sensitivity	-110 dBm
Protection ratio (12 MHz offset)	-97 dB
Antenna gain	9 dBi

Table 1: 20-25 kHz PMR/PAMR BS victim receiver characteristics

Using the free space propagation model in ITU-R P.525 **Errore. L'origine riferimento non è stata trovata.**, it can be obtained:

$$E = P_t - 20 \log d + 74.8$$

where:

d : distance (km).

P_t : isotropically transmitted power (dBW)

E : electric field strength (dB μ V/m)

In order to identify the most critical situations, WSD transmitted power has been varied to derive the distance corresponding to an interfering field strength level (E) equal to 108 dB μ V/m. Shorter distances would give rise to unbearable interference at the victim 20-25 kHz PMR/PAMR BS. The obtained results are shown in Table 19.

Maximum TX Power [dBW]		Distance [km]
-20		0.002187762
-18		0.002754229
-16		0.003467369
-14		0.004365158
-12		0.005495409
-10		0.00691831
-8		0.008709636
-6		0.010964782
-4		0.013803843
-2		0.017378008
0		0.021877616
2		0.027542287
4		0.034673685
6		0.043651583
8		0.054954087
10		0.069183097
12		0.087096359
14		0.10964782
16		0.138038426
18		0.173780083
20		0.218776162
22		0.27542287
24		0.34673685
26		0.436515832
28		0.549540874
30		0.691830971

Table 2: Distance corresponding to an interfering field strength level (E) equal to 108 dB μ V/m, as a function of WSD transmitted power