

RECOMMENDATION ITU-R F.1094-2

**Maximum allowable error performance and availability degradations
to digital fixed wireless systems arising from radio interference
from emissions and radiations from other sources**

(Question ITU-R 127/9)

(1994-1995-2007)

Scope

This Recommendation defines maximum allowable error performance and availability degradations to digital fixed wireless systems (FWSs) arising from radio interference from emissions and radiations from other sources.

The ITU Radiocommunication Assembly,

considering

- a) that emissions/radiations of radio services may cause interferences to victim receivers of the fixed service;
- b) that increasing use of the radio spectrum requires definition of the maximum allowable error performance and availability degradations to fixed wireless systems (FWSs) due to various sources of interference;
- c) that for digital FWSs the error performance and availability objectives are given in Recommendations ITU-R F.1668 and ITU-R F.1703, respectively;
- d) that the maximum performance degradations due to interference from other services sharing the same frequency bands on a co-primary basis are given in Recommendation ITU-R F.1565;
- e) that the basic considerations on the development of criteria for sharing between the fixed service and other services are given in Recommendation ITU-R F.758,

recommends

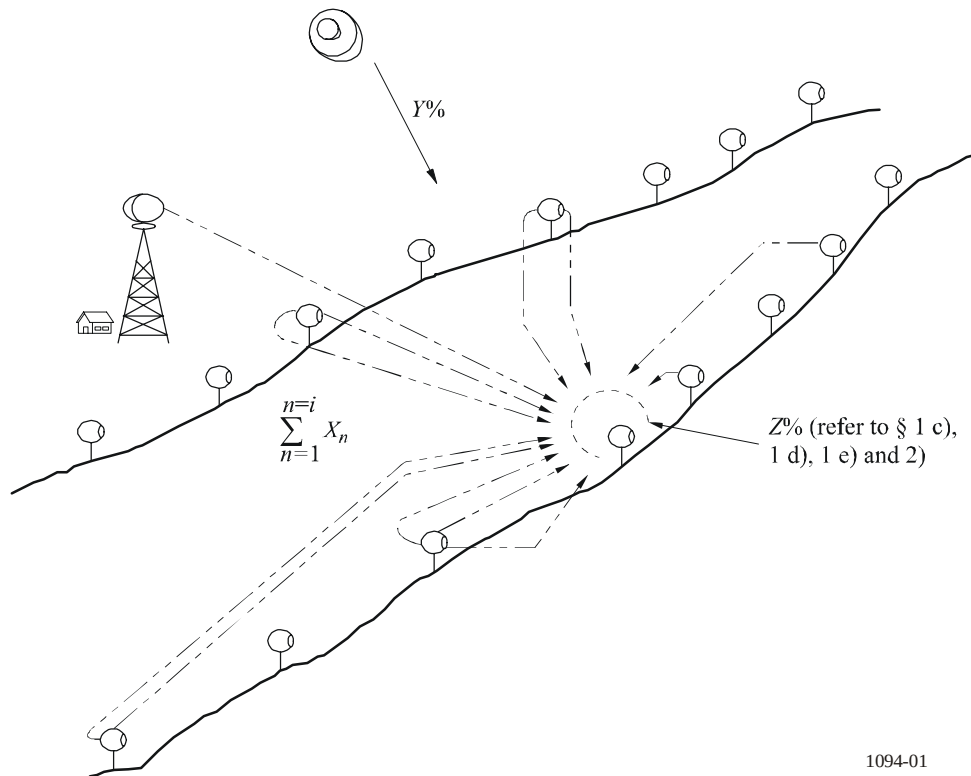
1 that all necessary precautions should be taken in establishing digital fixed wireless links and networks so that degradations caused by interferers (see subclauses a) to e)) should not exceed the error performance and availability objectives (network performance objective (NPO)) defined by the ITU-R (see Recommendations ITU-R F.1668 and ITU-R F.1703):

- a) Emissions¹ from FWSs operating in the same band (see Fig. 1);
- b) Emissions¹ from other radio services which share frequency allocations on a primary basis (see Fig. 1);
- c) Emissions¹ from radio services which use frequency¹ allocations on a non-primary basis;

¹ The term *emission* is defined in the Radio Regulations (RR) as *radiation* produced, or the production of *radiation*, by a radio transmitting *station*.

- d) Unwanted emissions¹ (i.e. out-of-band and spurious emission domains such as energy spread from radio systems, etc.) in non-shared bands²;
- e) Unwanted radiations (e.g. among others, UWB applications),

FIGURE 1
RF interference sources



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2 that, when required by the sharing conditions, the maximum allowable value of error performance and availability degradation defined by the NPO should be divided into an element $X\%$ for the fixed service portion (intraservice sharing) (see *recommends* § 1 a)) ($X\%$ includes degradations due to equipment imperfections), $Y\%$ for frequency sharing on a primary basis (interservice sharing) (see *recommends* § 1 b)) and $Z\%$ for all other sources of interference (see *recommends* § 1 c), 1 d) and 1 e)) causing error performance and availability degradation taking into account the effect of fading;

3 that the sum of $X\% + Y\% + Z\%$ should not exceed error performance objectives given in Recommendation ITU-R F.1668.

Values of X, Y, Z are $X = 89, Y = 10$ and $Z = 1$ (see Note 1);

4 that the sum of $X\% + Y\% + Z\%$ should not exceed the unavailability objectives defined in Recommendation ITU-R F.1703. The value of $X\%$ includes all non-interference causes mentioned in these Recommendations.

Values of X, Y, Z are $X = 89, Y = 10$ and $Z = 1$ (see Notes 1 and 2);

² Spurious emissions of FWSs are dealt with in Recommendation ITU-R F.1191 and Recommendation ITU-R SM.329.