Summary of the modification

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| **Radiocommunication Study Groups** |  |
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| Working Party 1A |
| Draft Modification of Report ITU-R SM.2212 |
| Impact of power line telecommunication systems on radiocommunication systems operating in the VHF and UHF bands above 80 MHz |

The purpose of this draft modification of Section 3.12 to Report ITU-R SM.2212 is to clarify the meaning of Recommendation ITU‑R BS/BT.1895, ”Protection criteria for terrestrial broadcasting systems”.

It is also proposed to add a new section to the Report on Meteorological Aids service (see new Section 3.9bis).

Draft Modification of REPORT ITU-R SM.2212

Impact of power line telecommunication systems on radiocommunication
systems operating in the VHF and UHF bands above 80 MHz

(Question ITU-R 221-1/1)

(2011)

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### 3.1.2 Maximum interference field-strength densities at the broadcast receiving system

When an external antenna is used, external noise is the major receiver noise. With a built-in-antenna, external noise is the major factor in business and residential areas. Even in rural areas the external noise is significant. The minimum level of external noise is determined by the man-made noise as this is the dominant factor when the atmospheric noise fades. Since the minimum value of external noise is determined by the man-made noise, the protection requirement for field strength is also determined by man‑made noise.

The sources of noise that need to be considered when planning broadcasting stations include the unwanted emissions from other broadcasting stations as well as other sources of interference. The protection requirement applied in respect of the power sum of interference from the unwanted emissions of other broadcasting stations is to set a maximum deterioration in receiver sensitivity of 0.5 dB (“the half dB rule”). This is equivalent to an increase in noise level of around 11%, though this is often rounded down to 10% when explaining the situation. This is an acceptable level of excess interference for intra-service or co-primary inter-service sharing.

Interference from other sources of radio frequency emissions which do not have a corresponding frequency allocation in the Radio Regulations should not invalidate the application of the strict 0.5 dB criterion used in planning networks of broadcasting stations. The situation can be managed by requiring that the deterioration in receiver sensitivity from such other sources of interference should not exceed 1% or 0.05 dB.

These principles are embodied in Recommendation ITU‑R BS/BT.1895, titled “Protection criteria for terrestrial broadcasting systems”, which *recommends*:

“**1** that the values in *recommends* 2 and 3 be used as guidelines, above which compatibility studies on the effect of radiations and emissions from other applications and services into the broadcasting service should be undertaken;

**2** that the total interference at the receiver from all radiations and emissions without a corresponding frequency allocation in the Radio Regulations should not exceed 1% of the total receiving system noise power[[1]](#footnote-1);

**3** that the total interference at the receiver arising from all sources of radio-frequency emissions from radiocommunication services with a corresponding co-primary frequency allocation should not exceed 10% of the total receiving system noise power.”

If interference is below the reference levels quoted it is deemed to be acceptable. If the level of interference is above the level quoted it is a ‘trigger’ for further work to be done to establish compatibility, when appropriate.

In order to limit receiver sensitivity deterioration from devices not having a corresponding allocation in the Radio Regulations to within 1% or 0.05 dB, the requirement for protecting the broadcasting service should be 20 dB lower than *En*, where *En* is the equivalent field strength of the man-made noise in bandwidth b. Furthermore, the protection requirement can be expressed in terms of a maximum field strength density of dB(µV/m/MHz) with *b* = 1 MHz.

The protection requirement is expressed by:

 Maximum field strength density = *g* + *h* log *f*                dB(µV/m/MHz) (1)

where:

 *g* = *c* – 55.5

 *h* = 20 – *d*

and where constants *c* and *d* are given in Table 1 of Recommendation ITU‑R P.372, therefore *g* and *h* take the values given in Table 6.

TABLE 6

Values of the constants *g* and *h*

|  |  |  |
| --- | --- | --- |
| Environmental category | *G* | *H* |
| City | 21.3 | –7.7 |
| Residential | 17.0 | –7.7 |
| Rural | 11.7 | –7.7 |
| Quiet rural | –1.9 | –8.6 |

The protection requirement for the terrestrial broadcasting service in terms of maximum field strength density at the broadcast receiver antenna is tabulated in Table 7. Since the external noise for quiet rural above 30 MHz is exceeded by the receiver noise floor, the values for quiet rural above 30 MHz are derived from equation (3-4) in Report ITU‑R SM.2158 and a –20 dB protection criterion. Similarly, the receiver noise floor exceeds the man-made noise above 470 MHz. Therefore, all values above 470 MHz are derived from equation (3-4) in Report ITU‑R SM.2158 and a –20 dB protection criterion.

TABLE 7

Maximum interference field-strength densities at the broadcast receiving system

| Broadcast frequency band(1) | Maximum interference field-strength density dB(µV/m/MHz)(2) |
| --- | --- |
| City | Residential | Rural | Quiet rural |
| 47-72 MHz | 8.4 | 4.1 | –1.2 | –22.1 |
| 76-88 MHz | 6.8 | 2.5 | –2.8 | –17.9 |
| 88-108 MHz | 6.3 | 2.0 | –3.3 | –16.6 |
| 174-230 MHz | 4.0 | –0.3 | –5.6 | –10.7 |
| 470-960 MHz | –2.1 | –2.1 | –2.1 | –2.1 |
| 1 452- 1492 MHz | 7.7 | 7.7 | 7.7 | 7.7 |
| (1) Broadcast frequency bands do not include regional variations given in Article 5 of the Radio Regulations.(2) Values derived from Recommendation ITU‑R P.372 and a – 20 dB protection guideline contained in Recommendation ITU‑R BS/BT.1895 except for quiet rural above 30 MHz and all cases above 470 MHz whose values are derived from the receiver internal noise floor. |

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## 3.9bis Meteorological aids

The band 401.15 to 406 MHz is allocated on a primary basis to meteorological aids service. Recommendation ITU-R RS.1262 “Sharing and coordination criteria for meteorological aids in the 400.15-406 MHz and 1 668.4-1 700 MHz bands” gives details. For the purposes of protection against potential interference from PLT systems relevant criteria would be a noise level of less than -188 dBm/Hz at the receiver.

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1. Except radiation from PLT devices below 30 MHz. [↑](#footnote-ref-1)