

Recommendation T/R 25-06 (Odense 1986)**PLANNING PARAMETERS TO ASSIST THE EFFICIENT AND EFFECTIVE UTILISATION OF SHARED FREQUENCY BANDS WHICH ARE ALLOCATED TO THE BROADCASTING SERVICE (TELEVISION) AND THE LAND MOBILE SERVICE, USING ASSIGNMENTS WHICH OVERLAP A TELEVISION CHANNEL (TELEVISION BANDS I AND III ONLY)**

Recommendation proposed by "Radiocommunications" Working Group T/WG 3 (R)

Text of the revised Recommendation adopted by the "Telecommunications" Commission:

"The European Conference of Postal and Telecommunications Administrations,

considering

- (a) that the WARC (Geneva 1979) in the table of frequency allocations (Article 8) allocated the band 47 to 68 MHz (Band I) on a primary basis to the broadcasting service,
- (b) that the WARC (Geneva 1979) in the table of frequency allocations (Article 8) allocated the band 174 to 230 MHz (Band III) on a primary basis to the broadcasting service,
- (c) that the WARC (Geneva 1979) allocated the band 47 to 68 MHz on a permitted basis under certain conditions to the land mobile service in those countries listed in Radio Regulation 554,
- (d) that the WARC (Geneva 1979) allocated the band 174 to 230 MHz on a permitted basis under certain conditions to the land mobile service in those countries listed in Radio Regulation 621 and 622,
- (e) that the Regional Agreement (Stockholm 1961) contains procedures for the introduction of stations of services other than broadcasting,
- (f) that Bands I and III are extensively used by a number of CEPT countries for television broadcasting,
- (g) that in some countries Band I and/or Band III will continue to be used exclusively for television broadcasting for the foreseeable future; whilst in other countries sharing between the land mobile and broadcasting services in Band I and/or Band III has existed for some considerable time,
- (h) that CEPT Recommendation T/R 72-01 E confirms that frequencies below 960 MHz are particularly suitable for the land mobile service and recommends the consideration of a reduction in spectrum available for the broadcasting service,
- (i) that although some Administrations have already introduced land mobile services into these bands, there is a requirement for coordination procedures to facilitate the development of frequency assignment plans and equipment specifications,
- (j) that some CEPT Administrations have already concluded bilateral special agreements in accordance with Article 7 of the Radio Regulations based on the parameters detailed in the Annexes to this Recommendation,
- (k) that the future enhancement of television broadcasting systems and the development of land mobile systems with different modes of transmission does not today permit the establishment of appropriate protection criteria,

recommends

1. that CEPT Administrations intending to use parts or all of Bands I and III for the land mobile service shall seek to enter into agreements with each Administration concerned,
2. that in developing such an agreement the provisions of the Radio Regulations shall apply, taking into account the categories of services and allocations specified in Article 8 of the Radio Regulations (Geneva 1982). Such an agreement shall take into account broadcasting stations agreed in accordance with the procedures contained in the Regional Agreement (Stockholm 1961),
3. that in developing an agreement to protect the broadcasting service CEPT Administrations shall, where possible, use the parameters detailed in Annex 1, taking account of the television channel arrangements, the television system and whether the television network is existing or planned,

4. that in developing an agreement to protect the land mobile service CEPT Administrations shall, where possible, use the parameters detailed in Annex 2.
5. that such methods as described in paragraph 3 and 4 above shall take into account the terrain features to calculate the required separation distances between the stations of the two services.
6. that to ease interservice compatibility problems and to facilitate the future co-ordination of land mobile services, consideration should be given to harmonize frequency assignment plans to the greatest extent possible, taking account of the situation that a number of Administrations will continue to utilise Bands I and/or III for television broadcasting for the foreseeable future.
7. that urgent consideration shall be given to a study of the subjective effect of interference to television reception from multiple interference sources.
8. that CEPT Administrations should establish coordination procedures, if necessary, as part of the bilateral or multilateral agreements.
9. that the present and future sharing criteria shall not preclude either the introduction of enhancements to broadcasting systems, or the introduction of new types of land mobile systems."

Annex I

PARAMETERS RELATING TO THE PLANNING OF THE BROADCASTING SERVICE (TELEVISION) IN SHARED FREQUENCY BANDS (BANDS I AND III) IN RESPECT OF INTERFERENCE FROM THE LAND MOBILE SERVICE

1. The median field strength for which protection against interference is provided in planning should never be lower than 48 dB ($\mu\text{V}/\text{m}$) for Band I and 55 dB ($\mu\text{V}/\text{m}$) for Band III.
Different values of protected field strength may be agreed between Administrations.
2. The television service's protection ratio shall be as detailed in CCIR Report 306-4 (Geneva 1982) and Recommendation 418-3 (Geneva 1982) or any modification thereto, for the case of a CW signal interference and non-controlled conditions.
3. The value of the protected field strength shall not exceed the value mentioned in paragraph 1. above as a consequence of the utilisation by the land mobile service. The value of the protected field strength shall be calculated as follows:

- a) The interference potential of a land mobile base station shall be determined by the concept of a "nuisance field". The nuisance field is calculated from:

$$F = E(50,T) + A + B$$

where

$E(50,T)$ is the field strength ($\text{dB}\mu\text{V}/\text{m}$) of the interfering transmitter exceeded at 50% of the locations for T% (between 1 and 10% (*)) of the time with a receiving antenna height of 10 m, determined from CCIR Recommendation 370-4 (Geneva 1982) and Report 239 (Geneva 1982) or any modification thereto.

Effective transmitting antenna heights of less than 0 metre are to be disregarded. For effective antenna heights of less than 37.5 metres, the corrections given in the Final Acts of the Regional Administrative Radio Conference for the Planning of VHF Sound Broadcasting (Region 1 and Part of Region 3 (Geneva 1984)) shall be used.

A is the protection ratio (in dB) determined in accordance with paragraph 2. above. B is the antenna discrimination factor. This shall be 15 dB in the case where the broadcasting emission is horizontally polarised, and for the case where the broadcasting emission is vertically polarised, the curves given in CCIR Recommendation 419 (Geneva 1982) shall apply.

- b) The effect of multiple interference arising from base stations operating at the same site shall be calculated by means of the power sum method:

$$E_0 = \sqrt{\sum_{i=1}^n (F_i)^2}$$

where F is the nuisance field arising from the i-th interfering transmitter expressed in $\mu\text{V}/\text{m}$.

- c) The nuisance field arising from base stations operating at different sites together with the multiple interference from base stations operating at the same site shall be multiplied by means of the simplified multiplication method (see CCIR Report 945, Geneva 1982). Calculations shall include all land mobile base stations within an appropriate coordination distance to be agreed between Administrations. Typically this would be of the order of 300 km.
- d) Depending on the actual circumstances, other methods of multiple interference calculations currently under study may be more appropriate.
- e) The nuisance field from mobile stations could be assumed to be around 20 dB less than the nuisance field arising from the corresponding base stations.

(*) The precise figures for T within this range shall be agreed between Administrations.

Annex 2

PARAMETERS RELATING TO THE PLANNING OF THE LAND MOBILE SERVICE
IN SHARED FREQUENCY BANDS (BANDS I AND III)
IN RESPECT OF INTERFERENCE FROM THE BROADCASTING SERVICE

1. The minimum protected median field strength (dB μ V/m) for the land mobile service is:
Band I 13 dB
Band III 22 dB
Different values of protected field strength may be agreed between Administrations.
2. Calculations shall be carried out using Recommendation 370-4 (Geneva 1982) or any modification thereto. Appropriate figures for 10% time and 50% of locations shall be used.
3. The protection ratio shall be 10 dB.
4. The power of L-SECAM, B-PAL and I-PAL television signals, measured in a reference bandwidth of 7 kHz shall be assumed to be contained within the masks detailed in Figures 1 (T/R 25-06), 2 (T/R 25-06) and 3 (T/R 25-06) of this Annex.
These masks shall not constitute a restriction on the spectral content of the signal of the television service operating within its authorized characteristics, which shall be agreed between the concerned Administrations.
5. The values of antenna discrimination for horizontally polarised broadcasting emissions shall be:
18 dB for base stations
5 to 8 dB for mobile stations

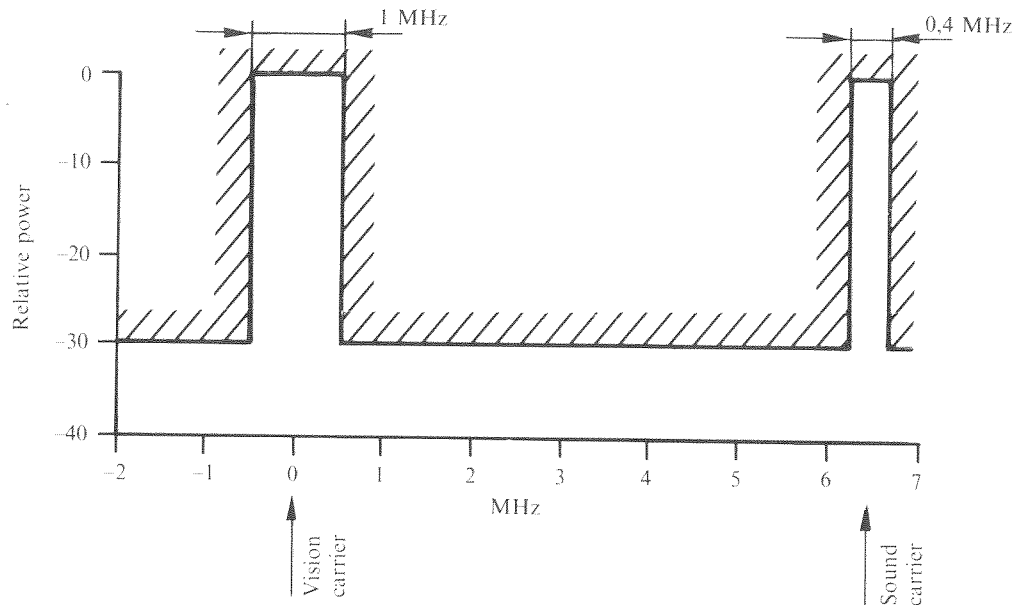


Figure 1 (T/R 25-06). Mask for an L/SECAM television signal.

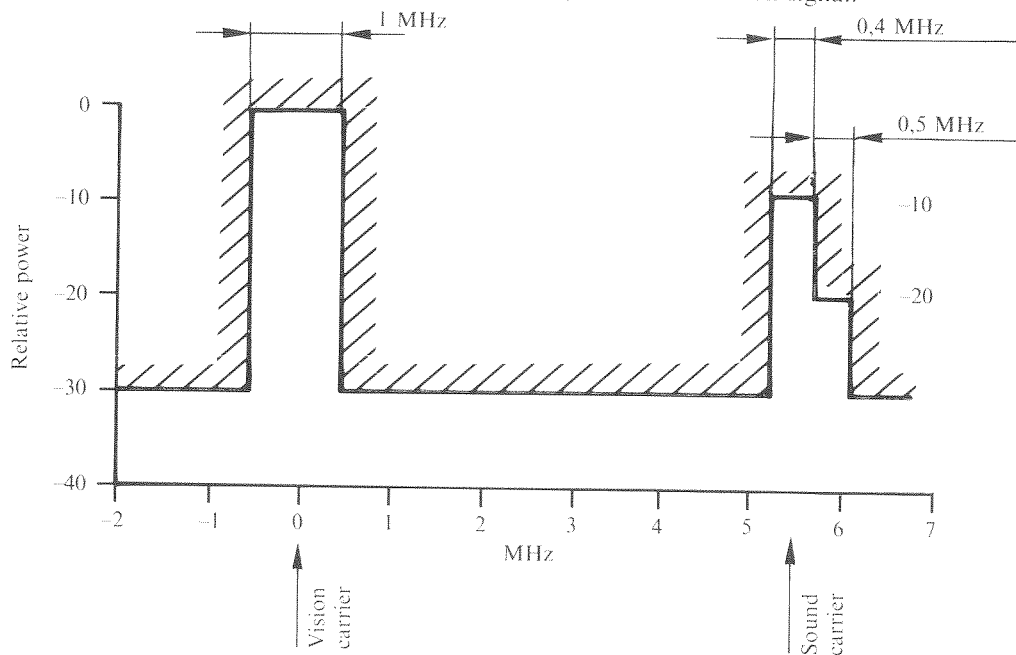


Figure 2 (T/R 25-06). Mask for a B/PAL television signal.

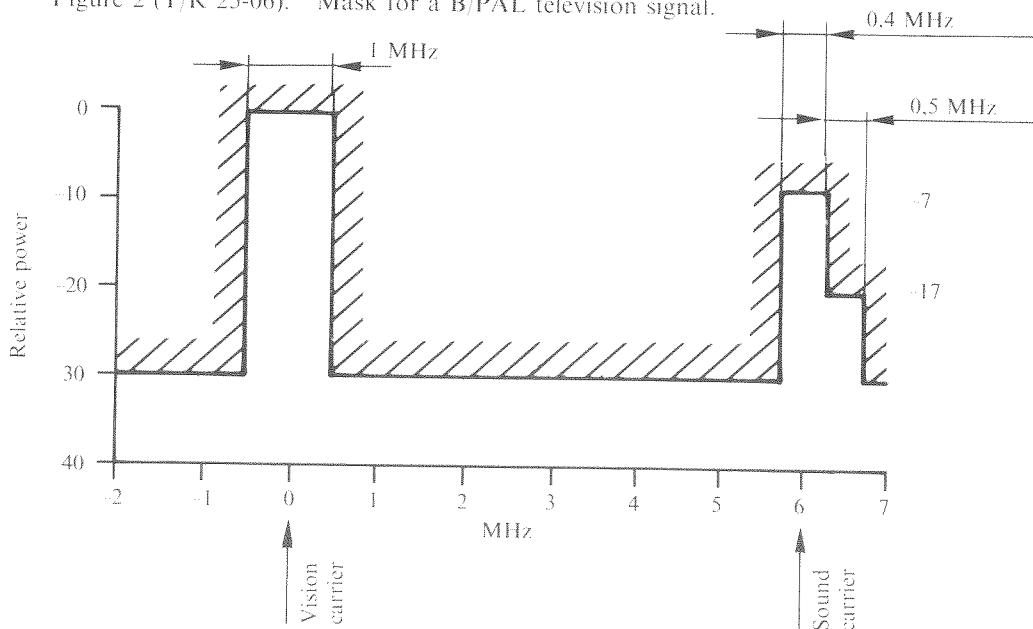


Figure 3 (T/R 25-06). Mask for an I/PAL television signal.