

PART 5D: TECHNICAL AND OPERATING CHARACTERISTICS OF MOBILE SATELLITE SERVICES

RECOMMENDATION 548

OVERALL TRANSMISSION CHARACTERISTICS OF TELEPHONE CIRCUITS
IN THE MARITIME MOBILE-SATELLITE SERVICE

(Study Programme 17A/8)

(1978)

The CCIR,

CONSIDERING

- (a) that, when studying the interworking of a maritime satellite system with the automatic telephone network, a maritime satellite system can, from the technical point, be regarded as somewhat analogous with a national network and the ship terminals regarded as somewhat analogous to subscribers' locations within that network, implying the network configuration of Fig. 1 (Note 1);
- (b) that, although several CCITT Recommendations of the G Series should apply to the maritime systems, these could involve requirements which would be too stringent for the maintenance of performance of ship terminal equipment;
- (c) that relaxed requirements could be permitted where they will not cause a significant deterioration in the performance of the international network as experienced by subscribers in the existing terrestrial networks;
- (d) CCITT Recommendation G.473,

UNANIMOUSLY RECOMMENDS

that the design of the various items comprising a maritime system should permit the following transmission characteristics to be met:

1. the nominal frequency-band of a maritime satellite circuit should be either 300 to 3000 Hz or 300 to 3400 Hz.
From a transmission performance point of view the latter is desirable but economic and/or technical considerations may favour the former;
2. the attenuation/frequency characteristics of any pair of ship terminal and shore station equipment should be within the limits shown in Fig. 2, referring to 800 Hz;
3. at 800 Hz the difference between the mean value (over time and over circuits) and the nominal value of the transmission loss of a maritime satellite circuit should not exceed 1 dB, and the standard deviation of the variation in transmission loss should not exceed 2 dB;
4. the linear crosstalk ratio (for potentially intelligible crosstalk only) between any two maritime satellite circuits should not be less than 58 dB, and between the go and return channels of any circuit not less than 55 dB;
5. if a maritime circuit is to be interconnected to a special quality leased international telephone circuit, then the group-delay distortion of the maritime circuit should not exceed the following limits:
500 Hz to 2800 Hz: 3 ms
600 Hz to 2600 Hz: 1.5 ms
1000 Hz to 2600 Hz: 0.5 ms

Note 1. – Figure 1 illustrates three possible configurations for the shipboard installations and defines the nomenclature used for transmission study purposes in this Recommendation. This nomenclature is in accordance with the conventions of Recommendation 546.

Note 2. – According to the conventions of CCITT Study Group IV, 800 Hz is the recommended frequency for single-frequency maintenance measurements on international circuits. However, by agreement between the administrations concerned, 1000 Hz may be used for such measurements. Multifrequency measurements made to determine the loss/frequency characteristic will include a measurement at 800 Hz, and therefore the reference for such characteristics can still be 800 Hz.

Note 3. – Experience has shown that, in the case of equipments and apparatus complying with CCITT Recommendations, the level of non-linear distortion encountered in the general telephone network has no unacceptable effects on speech transmission, or on the various non-speech signals conveyed by the network (e.g.: signalling, voice-band data, etc.).

Note 4. – The attenuation/frequency characteristics given in § 2 of this Recommendation could be apportioned equally between the shore station equipment and the ship terminal equipment or, if advantageous, be apportioned unequally to the various elements comprising a maritime system.

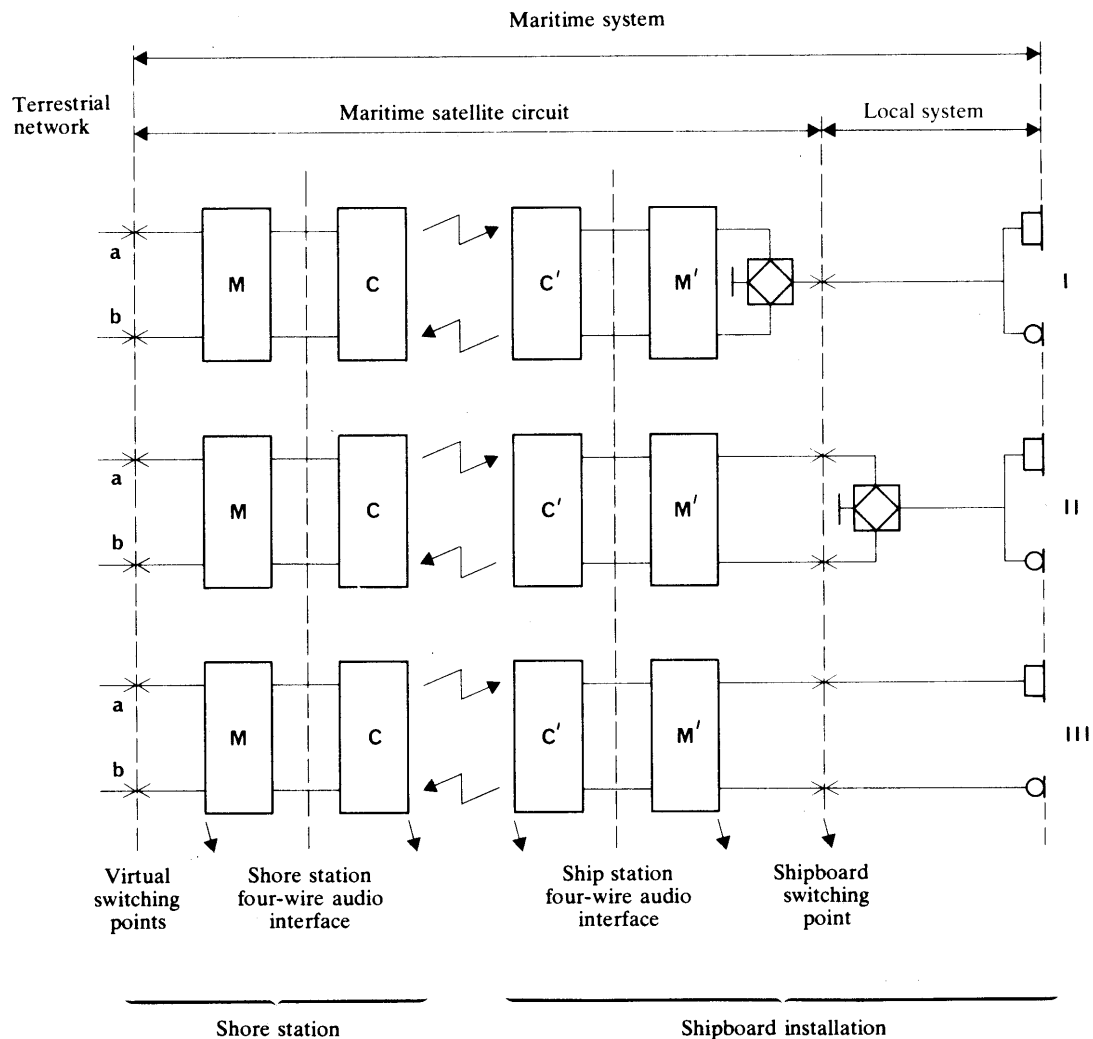


FIGURE 1 – Interconnection of circuits in the Maritime Mobile Satellite Service to the terrestrial network and corresponding nomenclature

Notes:

- (1) From the point of view signalling and switching the shore station performs some of the functioning of an international transit centre (CT).
- (2) *a* and *b* are the virtual switching points of the most-directly connected international circuit in the terrestrial network.
- (3) *M* and *M'* are the miscellaneous telephone equipment needed for the maritime satellite circuit, eg: signalling terminations, echo suppressors.
- (4) *C* and *C'* are the channel units (i.e.: the channel transmitting and receiving equipments) which include voice-processing apparatus, eg: voice activated switches, companders, etc.
- (5) The attenuation-distortion of the two-wire/four-wire terminating unit is taken to be negligible over the band 300 to 3400 Hz.

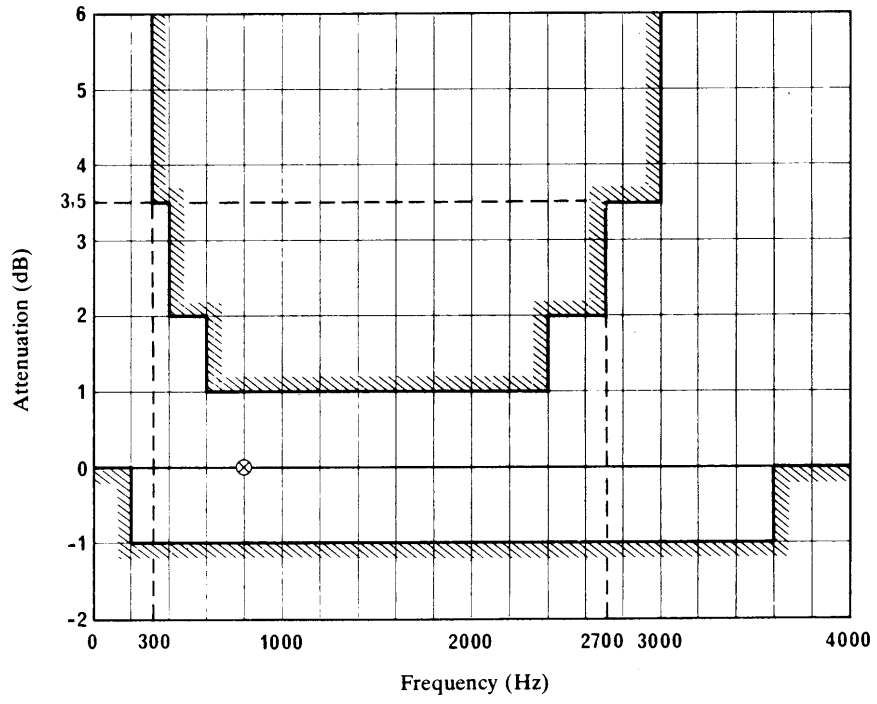


FIGURE 2 – Attenuation / frequency characteristics

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