MOBILE RADIO

DATAFILE SERVICE BULLETIN

FILE UNDER: Servicing

DUPLEX OPERATION

BULLETIN NO: 10007-7

DATE. APRIL, 1976

DUPLEX OPERATION CURVES

132–174 MHz MASTR Progress Line Professional (Narrow Band)

ABSTRACT

The curves included in this Bulletin present data for planning duplex systems using 132-174 MHz MASTR Progress Line Professional equipment. They are also useful in solving interference problems where MASTR Progress Line base stations, operating on nearby channels, share an antenna site. The following equipment is covered:

Receiver Type ER-41-A and ER-41-C
Transmitter Type ET-58-A and ET-58-F

DATAFILE Bulletin 10007-4 is a guide to the use of these curves. Use Form 10007-5 for making duplex operation calculations.

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DUPLEX OPERATION CURVES

for

132 - 174 MHz MASTR PROGRESS LINE PROFESSIONAL

The use of these duplex operation curves is described in DATAFILE Bulletin 10007-4, which also provides curves showing the attenuation obtained by antenna spacing. Use Form 10007-5 for making duplex operation calculations. Receiver desensitization and transmitter noise are discussed in detail in DATAFILE Bulletin 10002-2.

NOTE

These curves are corrected to prevent greater than 1 dB reduction in 12 dB SINAD Ratio - Do not apply Step 8 of DATAFILE Bulletin 10007-5.

EXPLANATION OF DUPLEX OPERATION CURVES

The curves in Figure 1 indicate the amount of attenuation (isolation) required between narrow-band Transmitter Types ET-58-A and ET-58-F and narrow-band Receiver Types ER-41-A and ER-41-C to prevent more than a 1 dB degradation in the receiver's 12-dB SINAD sensitivity. The curves may be considered as typical for these units. For reduced-power operation of 80-Watt Transmitter ET-58-A, refer to DATAFILE Bulletin 3125-2.

CURVE 1: RECEIVER DESENSITIZATION - ER-41-A

Curve 1 indicates the attenuation required between Transmitters ET-58-A/F (assuming no transmitter noise interference) and Receiver ER-41-A, so that receiver desensitization will not reduce the 12-dB SINAD sensitivity of the receiver more than 1 dB. Add the correction factor from scale "4" if the transmitter power output is not 80 Watts. If the receiver's sensitivity is not 0.35 μv, add the correction from scale "5".

CURVE 2: RECEIVER DESENSITIZATION - ER-41-C

Curve 2 indicates the attenuation required between transmitters ET-58-A/F (assuming no transmitter noise interference) and Receiver ER-41-C, so that receiver desensitization will not reduce the 12 dB SINAD sensitivity of the receiver more than 1 dB. Add the correction factor from scale "4" if the transmitter output is not 80 Watts. If the receiver's sensitivity is not 0.35 μv, add the correction from scale "5".

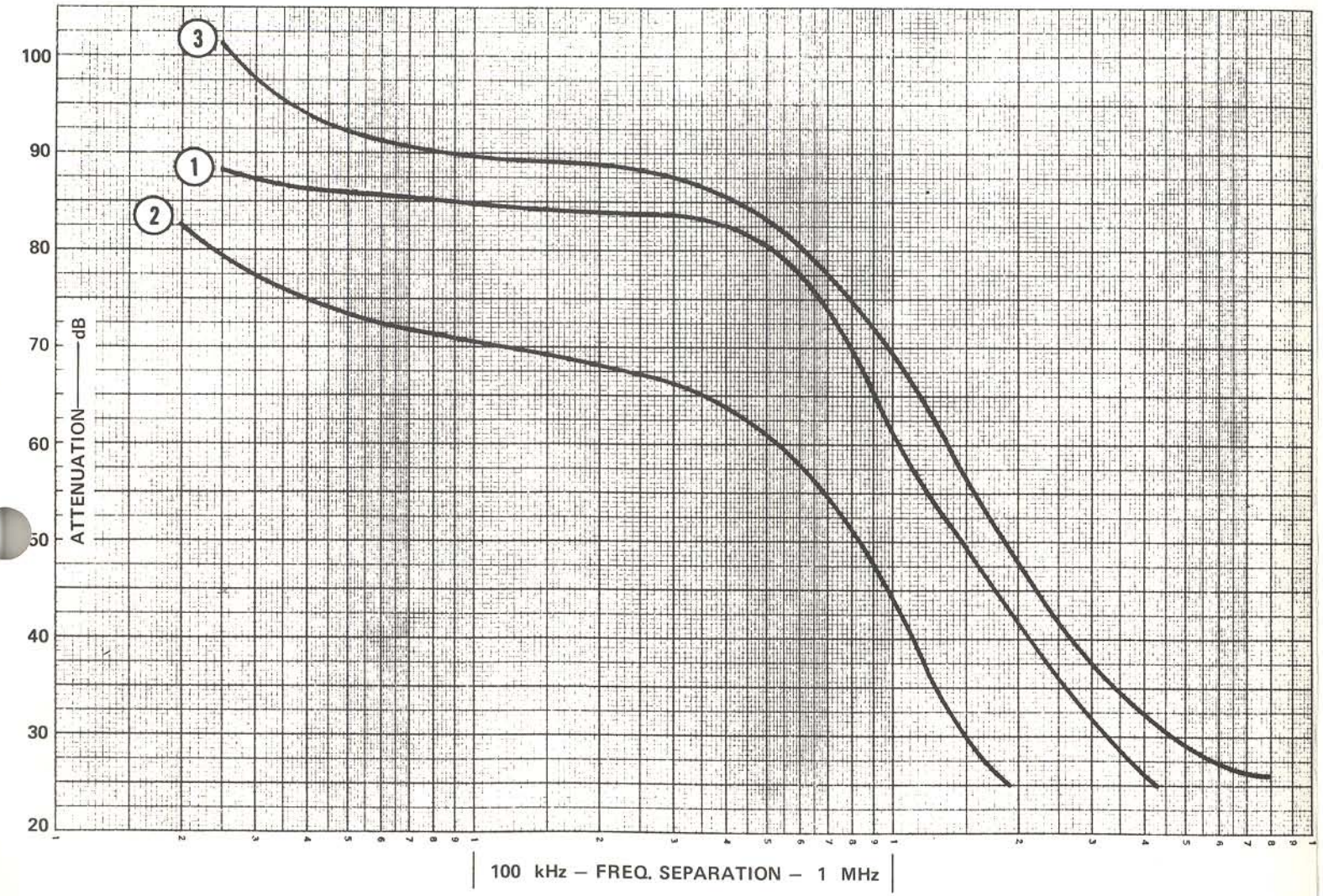
NOTE

Both curves (1) and (2) are applicable to non-UHS (no preamp) receivers. The high sensitivity receivers of the UHS models cannot be fully used due to their higher vulnerability to interferring effects encountered in duplex operation and their use should be avoided in a duplex situation.

CURVE 3: TRANSMITTER NOISE

Curve 3 shows the attenuation required, because of transmitter noise, between Transmitters ET-58-A/F and Receivers ER-41-A/C so as not to reduce the 12-dB SINAD sensitivity of the receiver more than 1 dB. If the transmitter power output is not 80 Watts, add the correction factor from scale "4". The power-correction curve should not be used for any transmitter (or power amplifier) other than the Type ET-58-A/F. Add the correction factor from scale "5" if the receiver's sensitivity is not 0.35 μv.

DUPLEX OPERATION CURVES FOR 132-172 MHz MASTR PROGRESS LINE PROFESSIONAL [160 MHz]

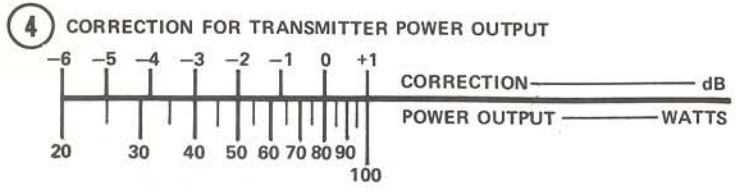


THESE CURVES SHOW THE ATTENUATION REQUIRED TO PREVENT GREATER THAN 1 dB REDUCTION IN A 12 dB SINAD RATIO, DUE TO:

(1) DESENSITIZATION OF RECEIVER ER-41-A. ADD CORRECTION FROM SCALES (4) AND (5).

(2) DESENSITIZATION OF RECEIVER ER-41-C. ADD CORRECTION FROM SCALES (4) AND (5).

(3) TRANSMITTER NOISE WITH NB MODULATION, FROM 80-WATT TRANSMITTER ET-58-A, OR ET-58-F ADD CORRECTION FROM SCALES (4) AND (5).



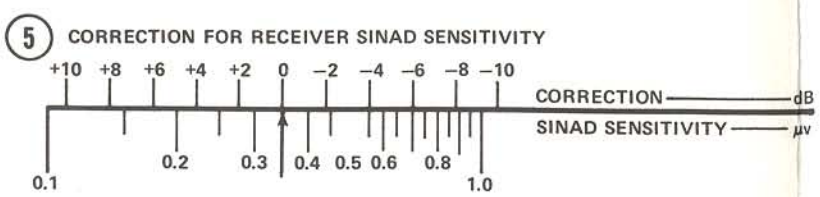


Figure 1