MOBILE RADIO
DATAFILE SERVICE BULLETIN

FILE UNDER: Servicing
DUPLEX OPERATION

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DUPLEX OPERATION CURVES

450–470 MHz MASTR Progress Line Professional

ABSTRACT

The curves included in this Bulletin present data for planning duplex systems using 450-470 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:

Transmitter Types ET-60-C/D
Receiver Types ER-42-B10-B21, ER-42-B34-B39, ER-42-E10-E21, ER-42-G10-G21

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

450 - 470 MHz MASTR PROGRESS LINE PROFESSIONAL

The use of these duplex operation curves is described in DATAFILE Bulletin 10007-4, which also includes curves showing the attenuation provided 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.

EXPLANATION OF DUPLEX OPERATION CURVES

The curves in Figure 1 indicate the amount of attenuation (isolation) required between Transmitter Type ET-60-C/D and Receiver Type ER-42 (non-UHS models only) 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.

CURVE 1: RECEIVER DESENSITIZATION: ER-42-B10-B21 and ER-42-B34-B39

Curve 1 indicates the attenuation required between Receivers ER-42-B10-B21 and ER-42-B34-B39 (assuming no transmitter noise interference) and a nearby transmitter 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 60 Watts. If the receiver's sensitivity is not 0.5 microvolt, add the correction from scale "5".

CURVE 2: RECEIVER DESENSITIZATION: ER-42-E10-E21 and ER-42-G10-G21

Curve 2 indicates the attenuation required between Receivers ER-42-E10-E21 and ER-42-G10-G21 (assuming no transmitter noise interference) and a nearby transmitter 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 60 Watts. If the receiver's sensitivity is not 0.5 microvolt, add the correction from scale "5".

NOTE

The Curves show the desensitization characteristics of the standard (non-UHS) receivers. Since the receiver models with UHS (ultra-high sensitivity) are somewhat more vulnerable to the interfering effects found in duplex operation, the high sensitivity of these models cannot be used to full advantage. Therefore, no curve has been provided for the UHS models and scale "5" cannot be used to correct for their sensitivity.

CURVE 3: TRANSMITTER NOISE

Curve 3 shows the attenuation required, because of transmitter noise, between Transmitters ET-60-C/D and a nearby receiver so as not to reduce the 12-dB SINAD sensitivity of the receiver more than 1 dB. If the transmitter power output is not 60 Watts, add the correction factor from scale "4". The power-correction scale should not be used for any transmitter (or power amplifier) other than the Type ET-60-C/D. Add the correction factor from scale "5" if the receiver's sensitivity is not 0.5 microvolt.

NOTE

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

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

① DESENSITIZATION OF NON-UHS RECEIVER ER42B10-B21 AND ER42B34-B39. ADD CORRECTION FROM SCALES ④ AND ⑤ .

② DESENSITIZATION OF NON-UHS RECEIVER ER42E10–E21 AND ER42G10-G21. ADD CORRECTION FROM SCALES ④ AND ⑤ .

③ TRANSMITTER NOISE, WITH NB MODULATION FROM 60 WATT ET60C/D. ADD CORRECTION FROM SCALES ④ AND ⑤ .

DUPLEX OPERATION CURVES FOR 450 - 470 MHz MASTR PROGRESS LINE PROFESSIONAL (460 MHz)

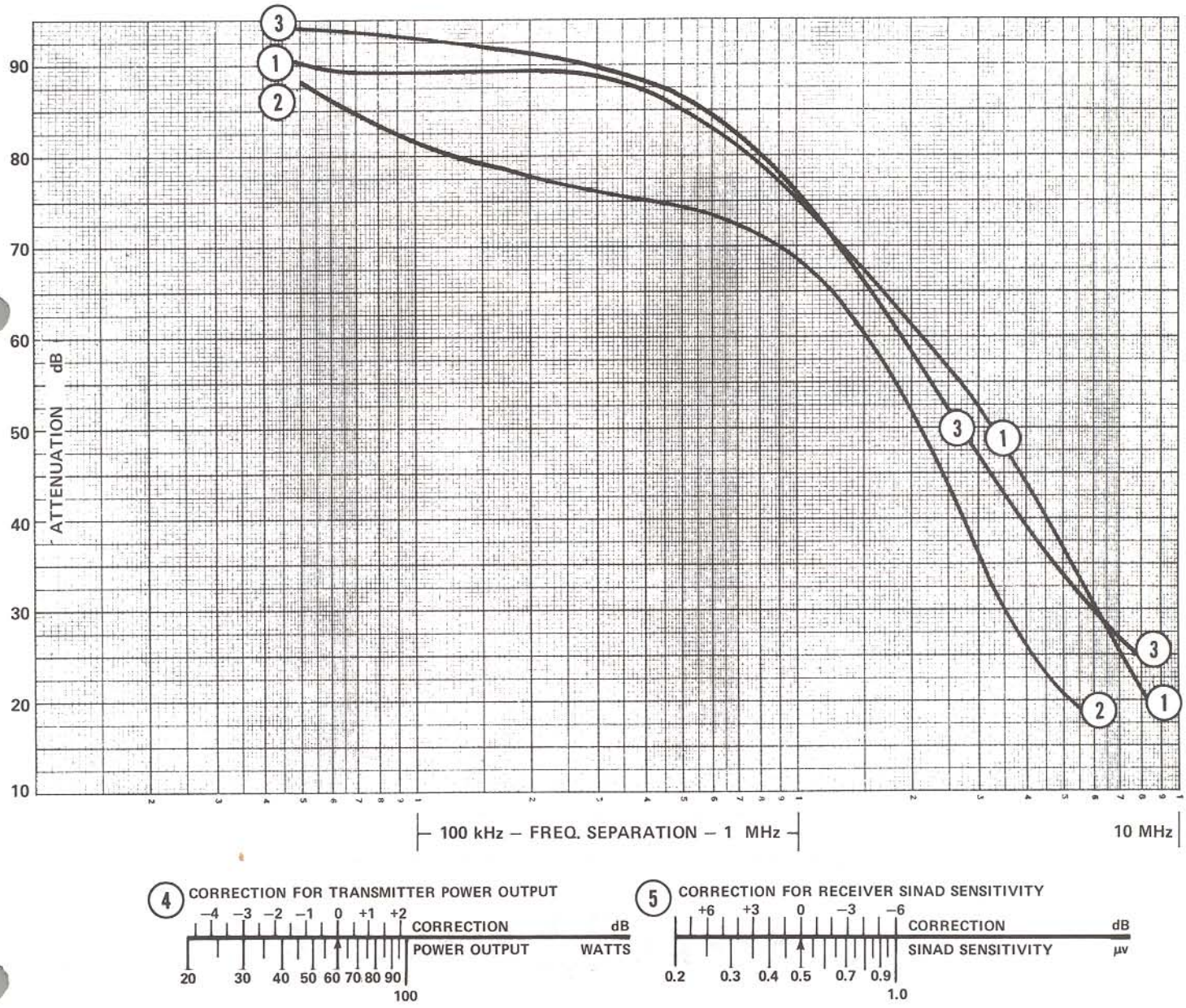

Figure 1