Moody Bible
Anderson, IN

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Earth Station (ES) RF Power (wattage) required to produce a nominal downlink 23 dBw digital carrier as measured Washington, DC. Uplink to be in Anderson, IN and will be utilizing a Prodelin 1385 antenna. Carrier is a digital variety utilizing 400 KHz of allocated space segment.

Earth Station (ES) RF Power in Watts Required per Carrier = *3.0 watts*

Log of wattage, times 10, equalls dBw figure } log 3 watts (x) 10 = 4.77 dBw

For a maximum carrier power in a 4 KHz bandwidth (Max carrier transmit EIRP density in 4 KHz bandwidth):

Occupied BW = 400 Khz

divide by 4 K, ... 400 / 4 = 100

log of that, times 10, equalls....

correction factor expressed in dBw in a 4 Khz BW } log 100 (x) 10 = 20.00 dBw/4Khz

4.77 dBw (-) 20.00 dBw = -15.23 dBw max RF power density into antenna in 4 Khz BW

-15.23 (+) 45.9 (antenna gain) = **30.67 dBw;** max EIRP density per carrier in 4 Khz BW **[FCC Q:E49]**

For a maximum transmit EIRP power per Carrier **[FCC Q:E48]**:

Carrier power (in dBw) + Antenna gain (in dBi) = Maximum transmit EIRP power (in dBw)

4.77 dBw (+) 45.9 dBi = **50.67 dBw**

Total Input Power at antenna flange (and) **Total** EIRP for **all** carriers in dBW **[FCC Q: E38 and E40]**:

Total (SSPA) power in watts at antenna input flange = ***20 watts*** **[FCC Q:E38]:**

Log of wattage, times 10, equalls dBw figure } log 20 watts (x) 10 = 13.01 dBw

Total input power at antenna flange (in dBw) + Antenna gain (in dBi) = Total transmit EIRP power (in dBw)

13.01 dBw (+) 45.9 dBi = **58.91 dBw [FCC Q:E40]**

Example: (nominal 6 carriers @ 3 watts each) + (1 reduced power carrier @ 2 watts) = 20 watts (all carriers same emission designation type).