

RF MPE EXPOSURE

May 13, 2020
FCC ID: PWO460064

The MPE calculations for **EUT model 460064 (600 MHz Part 20 Industrial 5GNR)** signal booster were done for frequency band:

- 600 MHz (Band 71)

Antennas recommended for the EUT:

Port	Frequency Range (MHz)	Antenna Model	Gain (dBi)	Gain (unitless)
Uplink	663-698	DBDS-617-2700-9	6.5	4.5
Downlink	617-652	DB-617-2700-6/8-65	6	4

EUT Operating Limits

Limits for Uncontrolled Exposure
47 CFR 1.1310 Table 1(B)

Frequency Range (MHz)	Limit (mw/cm ²)
0.3-1.234	100
1.24-30	$180/f^2$
30-300	0.2
300-1500	$f/1500$
1500-100,000	1

EUT Operating Limits Evaluation

	EUT maximum transmit power dBm (mw)	Operating Limit (mw/cm ²)	Power density evaluation (mw/cm ²)	Minimum safe distance (cm)
UL (663 MHz)	24.2 (263)	0.442	0.235	20
DL (617 MHz)	24.5 (282)	0.411	0.224	20

The lowest frequency in each band was used to compute the “worst case” limit.

EUT Power Density Evaluation

Calculated power density - Uplink:

Power density is calculated using maximum uplink transmitted power of 263 mw and unitless antenna gain of 4.5

$$S = \frac{P_t G}{4\pi r^2} = \frac{(263)(4.5)}{4\pi 20^2} = 0.235 \text{ (mw/cm}^2\text{)}$$

S = Power Density (mw/cm²)

P_t = Transmitter Power (mw)

*G = Antenna Gain (nonlog) * Coax Loss (nonlog) * duty cycle (%)*

r = Distance to center of radiation of antenna (cm)

At the minimum safe distance of 20 cm, the power density of the EUT is 0.235 (mw/cm²), which is less than the operational limit of 0.442 (mw/cm²). Therefore, no minimum safe distance calculation is required.

Calculated power density - Downlink:

Power density is calculated using maximum downlink transmitted power of 282 mw and unitless antenna gain of 4

$$S = \frac{P_t G}{4\pi r^2} = \frac{(282)(4)}{4\pi 20^2} = 0.224 \text{ (mw/cm}^2\text{)}$$

S = Power Density (mw/cm²)

P_t = Transmitter Power (mw)

*G = Antenna Gain (nonlog) * Coax Loss (nonlog) * duty cycle (%)*

r = Distance to center of radiation of antenna (cm)

At the minimum safe distance of 20 cm, the power density of the EUT is 0.224 (mw/cm²), which is less than the operational limit of 0.411 (mw/cm²). Therefore, no minimum safe distance calculation is required.

END OF REPORT