

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	Operating	Power density	Minimum
	transmit power	Limit	evaluation	safe distance
	dBm (mw)	(mw/cm^2)	(mw/cm^2)	(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.

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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

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

 $S = Power\ Density\ (mw/cm^2)$

 $P_t = Transmitter Power (mw)$

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

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

At the minimum safe distance of 20 cm, the power density of the EUT is $0.235~(mw/cm^2)$, which is less than the operational limit of $0.442~(mw/cm^2)$. 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

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

 $S = Power Density (mw/cm^2)$

 $P_t = Transmitter Power (mw)$

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

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

At the minimum safe distance of 20 cm, the power density of the EUT is $0.224~(mw/cm^2)$, which is less than the operational limit of $0.411~(mw/cm^2)$. Therefore, no minimum safe distance calculation is required.

END OF REPORT