

MPE Calculations

The exposure condition of this device is compliant with FCC Rule.

Specification: Part 2.1091, Part 1.1310, KDB 447498 D01

Table 1—Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure				
Frequency range (MHz)	Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm²)	Averageing time (minutes)
0.3 ~ 3.0	614	1.63	*100	6
3.0 ~ 30	1842/f	4.89/ f	*900/f ²	6
30 ~ 300	61.4	0.163	1.0	6
300 ~ 1,500	-	-	f/300	6
1,500 ~ 100,000	-	-	5.0	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3 ~ 1.34	614	1.63	*100	30
1.34 ~ 30	824/f	2.19/f	*180/f ²	30
30 ~ 300	27.5	0.073	0.2	30
300 ~ 1,500	-	-	f/1500	30
1,500 ~ 100,000	-	-	1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

● EUT Description

FCC ID : BEJTF24SENI2
Model : TF24SENI

● EUT Capabilities

This device supports the following capabilities:

Multi-Band LTE, LTE up-link carrier aggregation(UL CA_2A-12A, 4A-12A, 12A-66A, 2A-5A, 5A-66A), 5G NR(FR1) and ENDC

5G NR supports SCS 15 kHz for FDD Band and SCS 30 kHz for TDD Band.

● MPE Calculation

The MPE calculation for this exposure is shown below.

$$S = \text{EIRP} / (4\pi R^2)$$

Where,

S= Maximum power density(mW/cm²)

EIRP= Equivalent Isotropic Radiated Power(mW)

R= Distance to the center of the radiation of the antenna

RF feature (Worst Mode)	Frequency range (MHz)	Nominal Target Power(dBm) Note1	Tolerance (dB)	ANT Gain (dBi) ^{Note2}	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm ²)	Requirement (mW/cm ²)
NR Band n2 or LTE B2 (Internal ANT1)	1850.0 ~ 1910.0	23.0	2.7	1.9	27.60	575.440	0.114 5	1.000 0
NR Band n5 or LTE B5 (Internal ANT1)	824.0 ~ 849.0	23.0	2.7	0.4	26.10	407.381	0.081 1	0.549 0
NR Band n12 or LTE B12 (Internal ANT1)	699.0 ~ 716.0	23.0	2.7	-0.9	24.80	301.996	0.060 1	0.466 0
NR Band n66 or LTE B66, 4 (External ANT2)	1710.0 ~ 1780.0	23.0	2.7	0.2	25.90	389.046	0.077 4	1.000 0
NR Band n77 (External ANT2)	3450.0 ~ 3550.0	22.5	2.5	0.6	25.60	363.079	0.072 3	1.000 0
NR Band n77 (External ANT2)	3700.0 ~ 3980.0	22.5	2.5	-0.2	24.80	301.996	0.060 1	1.000 0
LTE Band14 (External ANT1)	788.0 ~ 798.0	23.0	2.7	-0.3	25.40	346.737	0.069 0	0.525 0

Note1: Please refer to the operation description for Max tune-up power.

Note2: The antenna gain was corrected for path loss from the conducted feed point to the antenna terminal.

Note3: The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the user.

● RF Exposure Compliance for simultaneous operations

This device supports LTE inter-band CA.

Max tune-up power for CA is the same as LTE single carrier.

And the power of LTE single carrier covers the power of one component carrier for CA.

The following Σ of MPE ratios for CA was calculated Based on LTE single carrier target power.

$$\Sigma \text{ of MPE ratios} = 0.115(\text{LTE B2}) + 0.148(\text{LTE B5}) = 0.263$$