

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with § 2.1091
Radiofrequency radiation exposure evaluation: mobile devices of the FCC CFR
47 Rules, CFR 1.1310 (b) Radio frequency Radiation Exposure Requirement.

1.2. Special Accessories

Not available for this EUT intended for grant

1.3. Equipment Modifications

Not available for this EUT intended for grant.

1.4. Limitation

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

1.5. Exposure (MPE) Evaluation

The evaluation and calculation as deduces below presents only worst-case that produces highest value of the result:

$$S = PG/4\pi R^2$$

Where: *S* = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Worst case Max Power of each band

Technology	Frequency (MHz)	Max Conducted Power (dBm)	Max Gain (dBi)	Duty Cycle	FCC Power Density @20cm (mW/cm ²)	FCC MPE Limit (mW/cm ²)
BT	2442	5.01	1.53	100	0.00090	1.000
WLAN	2437	24.10	1.66	100	0.07498	1.000
WCDMA Band IV (Worst case at Freq. Above 1500MHz)	1752.6	20.89	2.53	100	0.04375	1.000
WCDMA Band V (Worst case at Freq. Below 1500MHz)	826.4	18.19	-0.80	100	0.01091	0.551
LTE B4 (Worst case at Freq. Above 1500MHz)	1750	23.70	1.60	100	0.06745	1.000
LTE B17 (Worst case at Freq. Below 1500MHz)	709	23.00	-0.20	100	0.03793	0.473

Evaluation is based on below combination that the device capable of transmitting simultaneously.

Scenario	1	2	3	4
BT	V	V	V	V
WLAN	V	V	V	V
WCDMA Band IV (Worst case at Freq. Above 1500MHz)	V			
WCDMA Band V (Worst case at Freq. Below 1500MHz)		V		
LTE B4 (Worst case at Freq. Above 1500MHz)			V	
LTE B17 (Worst case at Freq. Below 1500MHz)				V

Scenario 1:

BT + WLAN + WCDMA Band IV (Worst case at Freq. Above 1500MHz)

BT	FCC MPE limit	BT	WLAN	FCC MPE limit	WLAN	WCDMA Band IV (Worst case at Freq. Above 1500MHz)	FCC MPE limit	WCDMA Band IV (Worst case at Freq. Above 1500MHz)	BT+ WLAN+ WCDMA Band IV (Worst case at Freq. Above 1500MHz)	FCCLimit
(mW/cm ²)	(mW/cm ²)	/MPE limit	(mW/cm ²)	(mW/cm ²)	/MPE limit	(mW/cm ²)	(mW/cm ²)	/MPE limit		(mW/cm ²)
0.0009	1.0000	0.0009	0.0750	1.0000	0.0750	0.0437	1.0000	0.0437	0.1196	1

Scenario 2:

BT + WLAN + WCDMA Band V (Worst case at Freq. Below 1500MHz)

BT	FCC MPE limit	BT	WLAN	FCC MPE limit	WLAN	WCDMA Band V (Worst case at Freq. Below 1500MHz)	FCC MPE limit	WCDMA Band V (Worst case at Freq. Below 1500MHz)	BT+ WLAN+ WCDMA Band V (Worst case at Freq. Below 1500MHz)	FCCLimit
(mW/cm ²)	(mW/cm ²)	/MPE limit	(mW/cm ²)	(mW/cm ²)	/MPE limit	(mW/cm ²)	(mW/cm ²)	/MPE limit		(mW/cm ²)
0.0009	1.0000	0.0009	0.0750	1.0000	0.0750	0.0109	1.0000	0.0109	0.0868	1

Scenario 3:

BT + WLAN + LTE B4 (Worst case at Freq. Above 1500MHz)

BT	FCC MPE limit	BT	WLAN	FCC MPE limit	WLAN	LTE B4 (Worst case at Freq. Above 1500MHz)	FCC MPE limit	LTE B4 (Worst case at Freq. Above 1500MHz)	BT+ WLAN+ LTE B4 (Worst case at Freq. Above 1500MHz)	FCCLimit
(mW/cm ²)	(mW/cm ²)	/MPE limit	(mW/cm ²)	(mW/cm ²)	/MPE limit	(mW/cm ²)	(mW/cm ²)	/MPE limit		(mW/cm ²)
0.0009	1.0000	0.0009	0.0750	1.0000	0.0750	0.0674	1.0000	0.0674	0.1433	1

Scenario 4:

BT + WLAN + LTE B17 (Worst case at Freq. Below 1500MHz)

BT	FCC MPE limit	BT	WLAN	FCC MPE limit	WLAN	LTE B17 (Worst case at Freq. Below 1500MHz)	FCC MPE limit	LTE B17 (Worst case at Freq. Below 1500MHz)	BT+ WLAN+ LTE B17 (Worst case at Freq. Below 1500MHz)	FCCLimit
(mW/cm ²)	(mW/cm ²)	/MPE limit	(mW/cm ²)	(mW/cm ²)	/MPE limit	(mW/cm ²)	(mW/cm ²)	/MPE limit		(mW/cm ²)
0.0009	1.0000	0.0009	0.0750	1.0000	0.0750	0.0437	1.0000	0.0437	0.1196	1