MPE Calculation : LTE Band 13

Frequency range :	**779.50**	**MHz**	**~**	**784.50**	**MHz**	
Target power :	**23.00**	**dBm**				
Tolerance :	**+ 2.70**	**dB**	**~**	**- 2.70**	dB	
Max Target power :	**25.70**	**dBm**				
Measured Conducted power :	**23.28**	**dBm**				
Maximum antenna gain(PK) :	**5.31**	**dBi**				
Maximum EIRP :	**31.01**	**dBm(1261.664)mW**				

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

The MPE calculation for this exposure is shown below.

▪ **Calculation of power density at the specific separation**

▪ **S** = EIRP / (4 R^2 π)	**- Note**
= **1261.664** / (4 X 20^2 X π)	S = Maximum power density(mW/cm^2)
= **0.251** mW/cm^2	EIRP = Equivalent Isotropic Radiated Power(mW)
	R = Distance to the center of the radiation of the antenna(20cm)

▪ **Requirment = 0.519 mW/cm²**

(FCC Part 1.1310 Table 1 Limits for maximum permissible exposure(MPE)

Conclusion : The exposure condition of this device is compliant with FCC rules.

MPE Calculation : LTE Band 4

Frequency range :	**1710.70**	**MHz**	**~**	**1754.30**	**MHz**	
Target power :	**23.00**	**dBm**				
Tolerance :	**+ 2.70**	**dB**	**~**	**- 2.70**	dB	
Max Target power :	**25.70**	**dBm**				
Measured Conducted power :	**23.90**	**dBm**				
Maximum antenna gain(PK) :	**4.29**	**dBi**				
Maximum EIRP :	**29.99**	**dBm(**	**997.700**	**)mW**		

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

The MPE calculation for this exposure is shown below.

▪ **Calculation of power density at the specific separation**

▪ **S** = EIRP / (4 R^2 π)	**- Note**
= **997.700** / (4 X 20^2 X π)	S = Maximum power density(mW/cm^2)
= **0.199** mW/cm^2	EIRP = Equivalent Isotropic Radiated Power(mW)
	R = Distance to the center of the radiation of the antenna(20cm)

▪ **Requirment = 1 mW/cm²**

(FCC Part 1.1310 Table 1 Limits for maximum permissible exposure(MPE)

Conclusion : The exposure condition of this device is compliant with FCC rules.

MPE Calculation : CDMA 1X (Cellular)

Frequency range :	**824.70**	**MHz**	**~**	**848.31**	**MHz**	
Target power :	**24.00**	**dBm**				
Tolerance :	+ **2.00**	**dB**	**~**	- **0.99**	dB	
Max Target power :	**26.00**	**dBm**				
Measured Conducted power :	**24.38**	**dBm**				
Maximum antenna gain(PK) :	**5.50**	**dBi**				
Maximum EIRP :	**31.50**	**dBm(1412.460)mW**				

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

The MPE calculation for this exposure is shown below.

▪ **Calculation of power density at the specific separation**

▪ **S** = EIRP / (4 R^2 π)	- **Note**
= **1412.460** / (4 X 20^2 X π)	S = Maximum power density(mW/cm^2)
= **0.281** mW/cm^2	EIRP = Equivalent Isotropic Radiated Power(mW)
	R = Distance to the center of the radiation of the antenna(20cm)

▪ **Requirment = 0.549 mW/cm²**

(FCC Part 1.1310 Table 1 Limits for maximum permissible exposure(MPE)

Conclusion : The exposure condition of this device is compliant with FCC rules.

MPE Calculation : CDMA 1X (PCS)

Frequency range :	**1851.25**	**MHz**	**~**	**1908.75**	**MHz**	
Target power :	**24.00**	**dBm**				
Tolerance :	**+ 2.00**	**dB**	**~**	**- 0.99**	dB	
Max Target power :	**26.00**	**dBm**				
Measured Conducted power :	**24.44**	**dBm**				
Maximum antenna gain(PK) :	**7.00**	**dBi**				
Maximum EIRP :	**33.00**	**dBm(1995.262)mW**				

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

The MPE calculation for this exposure is shown below.

▪ **Calculation of power density at the specific separation**

▪ **S** = EIRP / (4 R^2 π)	**- Note**
= **1995.262** / (4 X 20^2 X π)	S = Maximum power density(mW/cm^2)
= **0.397** mW/cm^2	EIRP = Equivalent Isotropic Radiated Power(mW)
	R = Distance to the center of the radiation of the antenna(20cm)

▪ **Requirment = 1 mW/cm²**

(FCC Part 1.1310 Table 1 Limits for maximum permissible exposure(MPE)

Conclusion : The exposure condition of this device is compliant with FCC rules.

MPE Calculation : CDMA 1X EVDO (Cellular)

Frequency range :	**824.70**	**MHz**	**~**	**848.31**	**MHz**	
Target power :	**24.00**	**dBm**				
Tolerance :	+ **2.00**	**dB**	**~**	- **0.99**	dB	
Max Target power :	**26.00**	**dBm**				
Measured Conducted power :	**24.36**	**dBm**				
Maximum antenna gain(PK) :	**5.50**	**dBi**				
Maximum EIRP :	**31.50**	**dBm(1412.460)mW**				

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

The MPE calculation for this exposure is shown below.

▪ **Calculation of power density at the specific separation**

▪ **S** = EIRP / (4 R^2 π)	- **Note**
= **1412.460** / (4 X 20^2 X π)	S = Maximum power density(mW/cm^2)
= **0.281** mW/cm^2	EIRP = Equivalent Isotropic Radiated Power(mW)
	R = Distance to the center of the radiation of the antenna(20cm)

▪ **Requirment = 0.549 mW/cm²**

(FCC Part 1.1310 Table 1 Limits for maximum permissible exposure(MPE)

Conclusion : The exposure condition of this device is compliant with FCC rules.

MPE Calculation : CDMA 1X EVDO (PCS)

Frequency range :	**1851.25**	**MHz**	**~**	**1908.75**	**MHz**	
Target power :	**24.00**	**dBm**				
Tolerance :	**+ 2.00**	**dB**	**~**	**- 0.99**	dB	
Max Target power :	**26.00**	**dBm**				
Measured Conducted power :	**24.38**	**dBm**				
Maximum antenna gain(PK) :	**7.00**	**dBi**				
Maximum EIRP :	**33.00**	**dBm(1995.262)mW**				

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

The MPE calculation for this exposure is shown below.

▪ **Calculation of power density at the specific separation**

▪ **S** = EIRP / (4 R^2 π)	**- Note**
= **1995.262** / (4 X 20^2 X π)	S = Maximum power density(mW/cm^2)
= **0.397** mW/cm^2	EIRP = Equivalent Isotropic Radiated Power(mW)
	R = Distance to the center of the radiation of the antenna(20cm)

▪ **Requirment = 1 mW/cm²**

(FCC Part 1.1310 Table 1 Limits for maximum permissible exposure(MPE)

Conclusion : The exposure condition of this device is compliant with FCC rules.

RF Exposure Compliance for simultaneous operations

▪ Configurations for simultaneous operations

- **Configuration 1:** CDMA Cellular or PCS(Voice) + LTE B4 or B13(Data)
- **Configuration 2:** CDMA Cellular(Voice) + EVDO PCS(Data)
- **Configuration 3:** CDMA PCS(Voice) + EVDO Cellular(Data)

Note: Above configuration was declared from applicant.

▪ Configurations for simultaneous operations

RF function	LTE		CDMA 1x		CDMA 1x EVDO		Σ of MPE ratios
Band	Band 13	Band 4	Cellular	PCS	Cellular	PCS	
Power Density (mW/cm2)	0.251	0.199	0.281	0.397	0.281	0.397	
Requirement (mW/cm2)	0.519	1.000	0.549	1.000	0.549	1.000	
MPE ratio (Power Density/Requirement)	0.484	0.199	0.512	0.397	0.512	0.397	
Configuration 1 (MPE ratio)	0.484		0.512				**0.996**
	0.484			0.397			0.881
		0.199	0.512				0.711
		0.199		0.397			0.596
Configuration 2 (MPE ratio)			0.512			0.397	0.909
Configuration 3 (MPE ratio)				0.397	0.512		0.909

Note: The maximum power density in each RF function was used for above table.

▪ **Requirment =** **Σ of MPE ratios ≤ 1**

Conclusion : The exposure condition of this device is compliant with FCC rules.