FCC ID: TQ8-ATC41F2AN

MPE Calculation : BT

RF function or Mode	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requriment (mW/cm^2)
BT	2402.00	~	2480.00	4.00	0.77	4.77	3.000	0.001	1.000
		~							
		~							
		~							
		~							
		~							
		~							

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 sample calculation for this exposure is shown below.

▪ **S** = EIRP / (4 R^2 π)

= 3 / (4 X 20^2 X π)

= 0.001 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

EIRP= Equivalent Isotropic Radiated Power(mW)

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

▪ Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averageing time (minutes)
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

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

FCC ID: TQ8-ATC41F2AN

MPE Calculation : WLAN

RF function or Mode	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requriment (mW/cm^2)
802.11b	2412.00	~	2462.00	18.50	2.64	21.14	130.017	0.026	1.000
802.11g	2412.00	~	2462.00	21.50	2.64	24.14	259.418	0.052	1.000
802.11n	2412.00	~	2462.00	21.50	2.64	24.14	259.418	0.052	1.000
		~							
		~							
		~							
		~							

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 sample calculation for this exposure is shown below.

▪ **S** = EIRP / (4 R^2 π)

= 130.017 / (4 X 20^2 X π)

= 0.026 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

EIRP= Equivalent Isotropic Radiated Power(mW)

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

▪ **Limits for Maximum Permissible Exposure (MPE)**

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averageing time (minutes)
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

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

MPE Calculation : LTE, CDMA

RF function or Mode	Frequency range (MHz)			Max Target Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP (mW)	Maximum power density (mW/cm^2)	Requriment (mW/cm^2)
LTE	779.50	~	784.50	24.30	0.89	25.19	330.370	0.066	0.519
LTE	1710.70	~	1754.30	24.30	4.85	29.15	822.243	0.164	1.000
CDMA 1x	824.70	~	848.31	24.80	4.24	29.04	801.679	0.160	0.549
CDMA 1x EVDO(Rev. A)	824.70	~	848.31	24.80	4.24	29.04	801.679	0.160	0.549
CDMA 1x	1851.25	~	1908.75	24.80	3.47	28.27	671.429	0.134	1.000
CDMA 1 x EVDO(Rev. A)	1851.25	~	1908.75	24.80	3.47	28.27	671.429	0.134	1.000
		~							
		~							

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 sample calculation for this exposure is shown below.

▪ **S =** EIRP / (4 R^2 π)

= 330.37 / (4 X 20^2 X π)

= 0.066 mW/cm^2

- Note

S= Maximum power density(mW/cm^2)

EIRP= Equivalent Isotropic Radiated Power(mW)

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

▪ **Limits for Maximum Permissible Exposure (MPE)**

Frequency range (MHz)			Electric Field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm^2)	Averageing time (minutes)
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

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

RF Exposure Compliance for simultaneous operations

▪ **Configurations for simultaneous operations**

- **Configuration 1:** BT + LTE, CDMA Module
- **Configuration 2:** WLAN + LTE, CDMA Module
- **Configuration 3:** BT+ WLAN
- **Configuration 3:** BT + WLAN + LTE, CDMA Module

Note: Above configuration was declared from applicant.

▪ **Configurations for simultaneous operations(LTE, CDMA Module)**

- CDMA Cellular or PCS(Voice) + LTE B4 or B13(Data)
- CDMA Cellular(Voice) + EVDO PCS(Data)
- CDMA PCS(Voice) + EVDO Cellular(Data)

▪ **Configurations for simultaneous operations**

RF function or mode	BT	WLAN	LTE		CDMA 1x		CDMA 1x EVDO		Σ of MPE ratios
Band	2.4GHz	2.4GHz	Band 13	Band 4	Cellular	PCS	Cellular	PCS	
Power Density (mW/cm2)	0.001	0.052	0.066	0.164	0.160	0.134	0.160	0.134	
Requirement (mW/cm2)	1.000	1.000	0.519	1.000	0.549	1.000	0.549	1.000	
MPE ratio (Power Density/Requirement)	0.001	0.052	0.127	0.164	0.291	0.134	0.291	0.134	
Configuration 1 (MPE ratio)	0.001		0.127		0.291				**0.420**
	0.001		0.127			0.134			**0.262**
	0.001			0.164	0.291				**0.456**
	0.001			0.164		0.134			**0.299**
	0.001				0.291			0.134	**0.426**
	0.001					0.134	0.291		**0.426**
Configuration 2 (MPE ratio)		0.052	0.127		0.291				**0.471**
		0.052	0.127			0.134			**0.313**
		0.052		0.164	0.291				**0.507**
		0.052		0.164		0.134			**0.350**
		0.052			0.291			0.134	**0.477**
		0.052				0.134	0.291		**0.477**
Configuration 3 (MPE ratio)	0.001	0.052							**0.053**
	0.001	0.052							**0.053**
Configuration 4 (MPE ratio)	0.001	0.052	0.127		0.291				**0.472**
	0.001	0.052	0.127			0.134			**0.314**
	0.001	0.052		0.164	0.291				**0.508**
	0.001	0.052		0.164		0.134			**0.351**
	0.001	0.052			0.291			0.134	**0.478**
	0.001	0.052				0.134	0.291		**0.478**

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.