

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: Global Telecom Corp
Address of applicant: 17901 Von Karman Ave, Suite 600, Irvine, California 92614
United States of America

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General Description of EUT:

Product Name: LTE Outdoor CPE
Trade Name: Global Telecom, TITAN
Model No.: TITAN4000
Adding Model(s): /
Rated Voltage: AC120V; POE DC48V
FCC ID: S3KTO41XX
Equipment Type: Fixed

Technical Characteristics of EUT:	
Wi-Fi	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	Antenna 1: 16.66dBm (Conducted) Antenna 2: 16.36dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	3dBi
4G	
Support Networks:	TDD-LTE
Support Band:	TDD-LTE Band 41
Uplink Frequency:	TDD-LTE Band 41: Tx: 2496-2690MHz
Downlink Frequency:	TDD-LTE Band 41: Rx: 2496-2690MHz,
RF Output Power:	TDD-LTE Band 41: 24.20dBm,
Type of Emission:	TDD-LTE Band 41: 17M9G7D, 17M9W7D
Type of Modulation:	QPSK, 16QAM

Antenna Type:	Integral Antenna
Antenna Gain:	TDD-LTE Band 41: 12dBi

1.2 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

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

1.3 MPE Calculation Method

$$S = (30 * P * G) / (377 * R^2)$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

Wi-Fi

Maximum Tune-Up output power: 17(dBm)

Maximum peak output power at antenna input terminal: 50.12 (mW)

Prediction distance: >20(cm)

Prediction frequency: 2412 (MHz)

Antenna gain: 3(dBi)

Directional gain (numeric gain): 2.00

The worst case is power density at prediction frequency at 20cm: 0.0199 (mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

4G

Maximum Tune-Up output power: 24.5(dBm)

Maximum peak output power at antenna input terminal: 281.84 (mW)

Prediction distance: >20(cm)

Prediction frequency: 2593.0 (MHz)

Antenna gain: 12 (dBi)

Directional gain (numeric gain): 15.85

The worst case is power density at prediction frequency at 20cm: 0.8886 (mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

Mode for Simultaneous Multi-band Transmission

Wi-Fi+ 4G

The worst case is power density at prediction frequency at 20cm: 0.0199+0.8886=0.9085(mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

Result: Pass