



1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: Anker Innovations Limited
Address of applicant: Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hong Kong
Manufacturer: The same as Applicant
Address of manufacturer: The same as Applicant

General Description of EUT:

Product Name: 4G LTE Cam S330
Trade Name: eufy SECURITY
Model No.: T86P2
Adding Model(s): /
Rated Voltage: Battery 3.69V
Battery Change Limit: 4.2V
FCC ID: 2AOKB-T86P2

Technical Characteristics of EUT:	
WLAN 2.4GHz	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20)
RF Output Power:	20.44dBm (Peak Conducted) 24.59dBm (Average Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20)
Channel Separation:	5MHz
Type of Antenna:	FPC Antenna
Antenna Gain:	3.35dBi
4G	
Support Networks:	FDD-LTE
Support Band:	FDD-LTE Band 2, 4, 5, 12, 13, 14, 66, 71
Uplink Frequency:	FDD-LTE Band 2 Tx: 1850-1910MHz, FDD-LTE Band 4 Tx: 1710-1755MHz, FDD-LTE Band 5 Tx: 824-849MHz, FDD-LTE Band 12 Tx: 699-716MHz, FDD-LTE Band 13 Tx: 777-787MHz, FDD-LTE Band 14 Tx: 788-798MHz, FDD-LTE Band 66 Tx: 1710-1780MHz FDD-LTE Band 71 Tx: 663-698MHz
Downlink Frequency:	FDD-LTE Band 2 Rx: 1930-1990MHz,



	FDD-LTE Band 4 Rx: 2110-2155MHz, FDD-LTE Band 5 Rx: 869-894MHz, FDD-LTE Band 12 Rx: 729-746MHz, FDD-LTE Band 13 Rx: 746-756MHz, FDD-LTE Band 14 Rx: 758-768MHz, FDD-LTE Band 66 Rx: 2110-2200MHz FDD-LTE Band 71 Rx: 617-652MHz
Type of Modulation:	QPSK, 16QAM
Antenna Type:	FCB Antenna
Antenna Gain:	FDD-LTE Band 2: 2.99dBi, FDD-LTE Band 4: 1.27dBi, FDD-LTE Band 5: 0.74dBi, FDD-LTE Band 12: 2.19dBi, FDD-LTE Band 13: -0.9dBi, FDD-LTE Band 14: -0.9dBi, FDD-LTE Band 66: 2.64dBi FDD-LTE Band 71: 1.84dBi

Note:

The Maximum Tune-up Power of WWAN results refer to the module FCC report (Report No. :R2007A0434-M1), which issued on July 28, 2020 by TA Technology (Shanghai) Co, Ltd. We only evaluate MPE in this report.

1.2 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A and the CAB identifier is CN0057.



1.3 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 equivalents power density

1.4 MPE Calculation Method

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

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)



1.5 MPE Calculation Result

For FDD-LTE Band 2:

Maximum Tune-Up output power: 25.0 (dBm)

Maximum peak output power at antenna input terminal: 316.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 1910 (MHz)

Antenna gain: 2.99 (dBi)

Directional gain (numeric gain): 1.99

The worst case is power density at prediction frequency at 20cm: 0.1252 (mW/cm²)

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

For FDD-LTE Band 4:

Maximum Tune-Up output power: 25.0 (dBm)

Maximum peak output power at antenna input terminal: 316.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 1755 (MHz)

Antenna gain: 1.27 (dBi)

Directional gain (numeric gain): 1.34

The worst case is power density at prediction frequency at 20cm: 0.0843 (mW/cm²)

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

For FDD-LTE Band 5:

Maximum Tune-Up output power: 25.0 (dBm)

Maximum peak output power at antenna input terminal: 316.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 849 (MHz)

Antenna gain: 0.74 (dBi)

Directional gain (numeric gain): 1.19

The worst case is power density at prediction frequency at 20cm: 0.0746 (mW/cm²)

MPE limit for general population exposure at prediction frequency: 0.566 (mW/cm²)

For FDD-LTE Band 12:

Maximum Tune-Up output power: 25.0 (dBm)

Maximum peak output power at antenna input terminal: 316.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 716 (MHz)

Antenna gain: 2.19 (dBi)

Directional gain (numeric gain): 1.66

The worst case is power density at prediction frequency at 20cm: 0.1042 (mW/cm²)

MPE limit for general population exposure at prediction frequency: 0.4773 (mW/cm²)



For FDD-LTE Band 13:

Maximum Tune-Up output power: 25.0 (dBm)

Maximum peak output power at antenna input terminal: 316.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 787 (MHz)

Antenna gain: -0.9 (dBi)

Directional gain (numeric gain): 0.81

The worst case is power density at prediction frequency at 20cm: 0.0511 (mW/cm²)

MPE limit for general population exposure at prediction frequency: 0.5247 (mW/cm²)

For FDD-LTE Band 14:

Maximum Tune-Up output power: 25.0 (dBm)

Maximum peak output power at antenna input terminal: 316.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 798 (MHz)

Antenna gain: -0.9 (dBi)

Directional gain (numeric gain): 0.81

The worst case is power density at prediction frequency at 20cm: 0.0511 (mW/cm²)

MPE limit for general population exposure at prediction frequency: 0.532 (mW/cm²)

For FDD-LTE Band 66:

Maximum Tune-Up output power: 25.0 (dBm)

Maximum peak output power at antenna input terminal: 316.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 1755 (MHz)

Antenna gain: 2.64 (dBi)

Directional gain (numeric gain): 1.84

The worst case is power density at prediction frequency at 20cm: 0.1155 (mW/cm²)

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

For FDD-LTE Band 71:

Maximum Tune-Up output power: 25.0 (dBm)

Maximum peak output power at antenna input terminal: 316.23(mW)

Prediction distance: >20(cm)

Prediction frequency: 698 (MHz)

Antenna gain: 1.84 (dBi)

Directional gain (numeric gain): 1.53

The worst case is power density at prediction frequency at 20cm: 0.0961 (mW/cm²)

MPE limit for general population exposure at prediction frequency: 0.4653 (mW/cm²)



For WLAN 2.4GHz:

Maximum Tune-Up output power: 20.5 (dBm)

Maximum peak output power at antenna input terminal: 112.2(mW)

Prediction distance: >20(cm)

Prediction frequency: 2437 (MHz)

Antenna gain: 3.35 (dBi)

Directional gain (numeric gain): 2.16

The worst case is power density at prediction frequency at 20cm: 0.0483 (mW/cm²)

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

Mode for Simultaneous Multi-band Transmission

FDD-LTE Band 2+WLAN 2.4GHz

The worst case: $0.1252/1+0.0483/1 = 0.1735$

Limit: 1

FDD-LTE Band 4+WLAN 2.4GHz

The worst case: $0.0843/1+0.0483/1 = 0.1326$

Limit: 1

FDD-LTE Band 5+WLAN 2.4GHz

The worst case: $0.0746/0.566+0.0483/1 = 0.1801$

Limit: 1

FDD-LTE Band 12+WLAN 2.4GHz

The worst case: $0.1042/0.4773+0.0483/1 = 0.2666$

Limit: 1

FDD-LTE Band 13+WLAN 2.4GHz

The worst case: $0.0511/0.5247+0.0483/1 = 0.1457$

Limit: 1

FDD-LTE Band 14+WLAN 2.4GHz

The worst case: $0.0511/0.532+0.0483/1 = 0.1444$

Limit: 1

FDD-LTE Band 66+WLAN 2.4GHz

The worst case: $0.1155/1+0.0483/1 = 0.1638$

Limit: 1

FDD-LTE Band 71+WLAN 2.4GHz

The worst case: $0.0961/0.4653+0.0483/1 = 0.2548$

Limit: 1

Result: Pass