

MPE REPORT

FCC ID:2ATNV-CCN3

Date of issue: June 28, 2019

Report Number:	MTi190627E163
Sample Description:	IP CAMERA
Model(s):	CCN3
Applicant:	Wearless Tech, Inc
Address:	100 N Whisman Rd #4711, Mountain View CA 94043
Date of Test:	June 06, 2019 to June 28, 2019

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

TEST RESULT CERTIFICATION	
Applicant's name:	Wearless Tech, Inc
Address:	100 N Whisman Rd #4711, Mountain View CA 94043
Manufacture's Name:	Wearless Tech, Inc
Address:	100 N Whisman Rd #4711, Mountain View CA 94043
Product name:	IP CAMERA
Trademark:	N/A
Model and/or type reference .:	CCN3
Serial Model.....:	N/A
RF Exposure Procedures.....:	KDB 447498 D01 v06

This device described above has been tested by Shenzhen Microtest Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:



Demi Mu

June 28, 2019

Reviewed by:



Blue Zheng

June 28, 2019

Approved by:



Smith Chen

June 28, 2019

RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) 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
300-1,500			f/1500	30
1,500-100,000			1.0	30

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

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm (20cm)

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

BT:Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm²

Antenna Type: FPCB Antenna;

antenna gain: 3dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)} = 10^{(3/10)}=2$

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	6.064	6±1	7	5.012	3.00	2.00	0.0020	1
2441		5.708	6±1	7	5.012	3.00	2.00	0.0020	1
2480		5.265	6±1	7	5.012	3.00	2.00	0.0020	1
2402	π/4-DQPSK	5.350	5±1	6	3.981	3.00	2.00	0.0016	1
2441		5.272	5±1	6	3.981	3.00	2.00	0.0016	1
2480		4.873	5±1	6	3.981	3.00	2.00	0.0016	1
2402	8DPSK	5.380	5±1	6	3.981	3.00	2.00	0.0016	1
2441		5.270	5±1	6	3.981	3.00	2.00	0.0016	1
2480		4.901	5±1	6	3.981	3.00	2.00	0.0016	1

Conclusion:

For the max result: $0.0020 \leq 1.0$ for 1g SAR, No SAR is required.

2.4G WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,

802.11n40:2422~2452 MHz

Power density limited: 1mW/ cm²

Antenna Type: FPCB Antenna;

WIFI antenna gain: 3dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(3/10)}=2$

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna Gain Numeric	Evaluation result at 20cm Power density(mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power				
				(dBm)	(mW)			
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
2412	802.11b	13.47	13±1	14	25.118864	2	0.00999	1
2437		13.02	13±1	14	25.118864	2	0.00999	1
2462		12.71	13±1	14	25.118864	2	0.00999	1
2412	802.11g	8.74	9±1	10	10	2	0.00398	1
2437		9.83	9±1	10	10	2	0.00398	1
2462		9.69	9±1	10	10	2	0.00398	1
2412	802.11n H20	9.05	9±1	10	10	2	0.00398	1
2437		9.25	9±1	10	10	2	0.00398	1
2462		9.11	9±1	10	10	2	0.00398	1
2412	802.11n H40	6.41	7±1	8	6.3095734	2	0.00251	1
2437		7.21	7±1	8	6.3095734	2	0.00251	1
2462		7.41	7±1	8	6.3095734	2	0.00251	1

Conclusion:

For the max result: 0.00999 ≤ 1.0 for 1g SAR, No SAR is required.

----END OF REPORT----