HFCL Limited

8, Commercial Complex, Masjid Moth, Greater Kailash - 2,
New Delhi-110048, India

Federal Communications Commission
Authorization and Evaluation Division
Equipment Authorization Branch
7435 Oakland Mills Road
Columbia, MD 21046

Applicant's declaration concerning RF Radiation Exposure

We hereby indicate that the product
Product description: Dual band 4X4:4 0utdoor Access Point (AP) with integrated/external antenna
Model No: ion8/ion8e

The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The integral antennas used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter within the host device.

A safety statement concerning minimum separation distances from enclosure of the Product: Dual band 4X4:4 0utdoor Access Point (AP) with integrated/external antenna will be integrated in the user's manual to provide end-users with transmitter operating conditions for satisfying RF exposure compliance.

The appropriate information can be drawn from the test report no: W6M21903-18922-C-1 W6M21903-18922-C- 54 and the accompanying calculations.

Company: HFCL Limited
Address: 8, Commercial Complex, Masjid Moth, Greater Kailash - 2, New Delhi-110048, India

Date: 2019-09-09

Signature

3.2 Equivalent Isotropic Radiated Power (EIRP)

FCC Rule: 15.247(b)(3)

WLAN
EIRP = max. conducted output power + antenna gain
EIRP = 21.06 dBm + (12.02 dBi [antenna gain claimed by manufacturer] = 33.08 dBm = 2032.3570 mW

BLE
EIRP = max. conducted output power + antenna gain
EIRP = 2.44 dBm + (4 dBi [antenna gain claimed by manufacturer] = 6.44 dBm = 4.4055 mW

3.3 Exemption Limits for Routine Evaluation according to 47 CFR FCC Part 2 Subpart J, section 2.1091

FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits.
The prediction for power density in the far-field but will over-predict power density in the near field, where it could be used for walking a “worst case” or conservative prediction.

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20 cm normally can be maintained between the user and the device.

Registration number: W6M21903-18922-C-1
FCC ID: 2AUISION8ION8E

MPE Calculation Method

(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 Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	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 Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

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

E = Electric field (V/m) P = output power (W) G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to mW/cm^2.

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

WLAN
Established separation distance is 20 cm.

Operating frequency band: 802.11b, g, n 20MHz: 2412-2462 MHz, 802.11n 40MHz: 2422-2452 MHz,

The product meets RF exposure requirement.
Because the power density of 0.4042 mW/cm^2 at 2452 MHz is below the power density limit of 1 mW/cm^2.

BLE
Established separation distance is 20 cm.

Operating frequency band: 2402-2480 MHz

The product meets RF exposure requirement.
Because the power density of 0.0009 mW/cm^2 at 2440 MHz is below the power density limit of 1 mW/cm^2.

Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm^2)
1500 – 100.000	1.0

3.6 Automatic Discontinuation of transmission, FCC 15.407 (c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure.
This function will be declared by manufacturer.

3.7 Reserved, FCC 15.407 (d)

3.8 Indoor Operation Restriction, FCC 15.407 (e)

Within the 5.15–5.25 GHz band, U- NII devices will be restricted to indoor operations to reduce any potential for harmful interference to co-channel MSS operations. This equipment has to be declared by manufacturer of the final product as content of the user manual.

3.9 Equivalent Isotropic Radiated Power (EIRP), FCC 15.407 (f)

Band 1
EIRP = max. conducted output power + antenna gain
EIRP = 21.82 dBm + (12.02 dBi [antenna gain claimed by manufacturer] = 33.84 dBm = 2421.0290 mW

Band 4
EIRP = max. conducted output power + antenna gain
EIRP = 20.74 dBm + (12.02 dBi [antenna gain claimed by manufacturer] = 32.76 dBm = 1887.9913 mW

Test equipment used: ETSTW-RE 055

3.10 Exemption Limits for Routine Evaluation according to 47 CFR FCC Part 2 Subpart J, section 2.1091

FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits.
The prediction for power density in the far-field but will over-predict power density in the near field, where it could be used for walking a "worst case" or conservative prediction.

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20 cm normally can be maintained between the user and the device.

(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 Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f^2)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	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 Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f^2)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

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

E = Electric field (V/m) P = output power (W) G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to mW/cm^2.

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

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Band 1
Established separation distance is 20 cm.

Operating frequency band: 5180-5240 MHz

The product meets RF exposure requirement.
Because the power density of 0.4818 mW/cm^2 at 5190 MHz is below the power density limit of 1 mW/cm^2.

Band 4
Established separation distance is 20 cm.

Operating frequency band: 5745-5825 MHz

The product meets RF exposure requirement.
Because the power density of 0.3757 mW/cm^2 at 5745 MHz is below the power density limit of 1 mW/cm^2.

Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm^2)
1500 – 100.000	1.0