

FCC RF Exposure

EUT Description: WIRELESS CONVERSION ADAPTER

FCC ID: 2BWBC-HD-CA

ModelNo.: HD-CA

Series Model: HD-01, HD-02, HD-03, HD-04, HD-05, HD-06

Equipment type: mobile device

RF Exposure Evaluation

Limits

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 Exposures				
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				
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

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

Where

Pd = power density in mW/cm², **Pout** = output power to antenna in mW; **G** = gain of antenna in linear scale, **Pi** = 3.1416;

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

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

Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

Test Result of RF Exposure Evaluation

$$EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7$$

EIRP is the equivalent isotropically radiated power,

E_{Meas} in dBm is the field strength of the emission at the measurement distance, in dB u V/m

d_{Meas} is the measurement distance, in m

WIFI

test mode	Output power (dBm)	Output power (mW)	Min. Distance (cm)	Limit	Calc. thresholds	Result
U-NII 3 802.11a	3.92	2.4660	20	1.0	0.0009	Pass
U-NII 3 802.11n(HT20)	3.83	2.4155	20	1.0	0.0009	Pass
U-NII 3 802.11n(HT40)	3.67	2.3281	20	1.0	0.0008	Pass
U-NII 3 802.11ac(HT20)	3.88	2.4434	20	1.0	0.0009	Pass
U-NII 3 802.11ac(HT40)	3.35	2.1627	20	1.0	0.0008	Pass
U-NII 3 802.11ac(HT80)	3.23	2.1038	20	1.0	0.0007	Pass

BLE

Field strength(dBuV/m)	EIRP (dBm)	Max tune-up(mW)	Frequency (MHz)	Min. Distance (cm)	Calc. thresholds	limit
94.41	-0.82	0.8279	2402	20	0.00029	1.0
94.47	-0.76	0.8395	2440	20	0.00030	1.0
94.6	-0.63	0.8652	2480	20	0.00031	1.0

WiFi+BLE: Conclusion: the max result $0.0009 + 0.00031 = 0.00121 \leq 1.0$ compliance with FCC's RF Exposure.