



CTC Laboratories, Inc.

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Maximum Permissible Exposure Evaluation

FCC ID: 2AC88-GLMR21A02

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)

EUT Specification

Product Name:	4G LTE Wireless Router
Trade Mark:	GlocalMe
Model/Type reference:	GLMR21A02
Listed Model(s):	N/A
Frequency band (Operating)	WLAN: 2.412GHz ~ 2.462GHz RLAN: 5.150GHz ~ 5.250GHz RLAN: 5.725GHz ~ 5.850GHz GPRS/EGPRS 850: UL: 824MHz~849MHz, DL: 869MHz~894MHz GPRS/EGPRS 1900: UL: 1850MHz~1910, DL: 1930MHz~1990MHz WCDMA Band II: UL: 1852.4MHz~1907.6MHz, DL: 1932.6MHz~1987.4MHz WCDMA Band IV: UL: 1712.4MHz~1752.6MHz, DL: 2112.6MHz~2152.4MHz WCDMA Band V: UL: 826.4MHz~846.6MHz, DL: 871.6MHz~1891.4MHz LTE FDD Band 2: UL: 1850.7MHz~1909.3MHz, DL: 1930.7MHz~1989.3MHz LTE FDD Band 4: UL: 1710.7MHz~1754.3MHz, DL: 2110.7MHz~2154.3MHz LTE FDD Band 5: UL: 824.7MHz~848.3MHz, DL: 869.7MHz~893.3MHz LTE FDD Band 7: UL: 2502.5MHz~2567.5MHz, DL: 2622.5MHz~2687.5MHz LTE FDD Band 12: UL: 699.7MHz~715.3MHz, DL: 729.7MHz~745.3MHz LTE FDD Band 13: UL: 779.5MHz~784.5MHz, DL: 748.5MHz~751.0MHz LTE FDD Band 17: UL: 706.5MHz~713.5MHz, DL: 736.5MHz~743.5MHz LTE FDD Band 18: UL: 817.5MHz, 827.5MHz, DL: 862.5MHz, 872.5MHz LTE FDD Band 19: UL: 832.5MHz~842.5MHz, DL: 877.5MHz~887.5MHz LTE FDD Band 25: UL: 1850.7MHz~1914.3MHz, DL: 1930.7MHz~1994.3MHz LTE FDD Band 26 (814~824MHz): UL: 814MHz~824MHz, DL: 859MHz~869MHz LTE FDD Band 26 (824~849MHz): UL: 824MHz~849MHz, DL: 869MHz~894MHz LTE TDD Band 41: UL: 2498.5MHz~2687.5MHz, DL: 2498.5MHz~2687.5MHz LTE FDD Band 66: UL: 1710.7MHz~1779.3MHz, DL: 2110.7MHz~2179.3MHz
Device category	<input type="checkbox"/> Portable (<5mm separation) <input type="checkbox"/> Mobile (>20cm separation) <input checked="" type="checkbox"/> Fixed (>20cm separation) <input type="checkbox"/> Others _____
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S=5mW/cm2) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm2)
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Antenna gain (Max)	2.4GHz WIFI: 0.31dBi 5GHz WIFI U-NII-1: 2.12dBi 5GHz WIFI U-NII-3: 3.80dBi GPRS/EDGE850:1.75dBi GPRS/EDGE1900: 2.23dBi WCDMA II: 2.23dBi WCDMA IV: 2.90dBi

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	WCDMA V: -1.75dBi FDD Band 2: 2.23dBi FDD Band 4: 2.90dBi FDD Band 5: 1.75dBi FDD Band 7: 2.44dBi FDD Band 12: -1.71dBi FDD Band 13: 0.12dBi FDD Band 17: -1.71dBi FDD Band 18: 1.75dBi FDD Band 19: 1.66dBi FDD Band 25: 2.23dBi FDD Band 26: 1.75dBi TDD Band 41: 2.44dBi FDD Band 66: 3.20dBi
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

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 = gain of antenna in linear scale

π = 3.1416

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

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

Only show the value of the worst antenna.

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Average Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
WLAN 802.11b	2412	0.31	18.98	/	19±1	20	0.0214	1.000
WLAN 802.11g	2412	0.31	23.14	/	23±1	24	0.0537	1.000
WLAN 802.11n(HT20)	2412	0.31	22.50	/	22±1	23	0.0426	1.000
WLAN 802.11n(HT40)	2422	0.31	21.96	/	22±1	23	0.0426	1.000
RLAN U-NII-1 802.11a	5180	2.12	/	18.03	18±1	19	0.0257	1.000
RLAN U-NII-1 802.11n(HT20)	5180	2.12	/	19.10	19±1	20	0.0324	1.000
RLAN U-NII-1 802.11n(HT40)	5190	2.12	/	18.25	18±1	19	0.0257	1.000
RLAN U-NII-1 802.11ac(VHT20)	5180	2.12	/	17.54	18±1	19	0.0257	1.000
RLAN U-NII-1 802.11ac(VHT40)	5190	2.12	/	17.17	17±1	18	0.0205	1.000

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RLAN U-NII-1 802.11ac(VHT80)	5210	2.12	/	18.63	18±1	19	0.0257	1.000
RLAN U-NII-3 802.11a	5745	3.80	/	17.01	17±1	18	0.0301	1.000
RLAN U-NII-3 802.11n(HT20)	5825	3.80	/	18.47	18±1	19	0.0379	1.000
RLAN U-NII-3 802.11n(HT40)	5755	3.80	/	19.51	19±1	20	0.0477	1.000
RLAN U-NII-3 802.11ac(VHT20)	5825	3.80	/	17.29	17±1	18	0.0301	1.000
RLAN U-NII-3 802.11ac(VHT40)	5755	3.80	/	18.45	18±1	19	0.0379	1.000
RLAN U-NII-3 802.11ac(VHT80)	5775	3.80	/	17.91	18±1	19	0.0379	1.000
GPRS 850 (1 Tx slot)	824.2	1.75	36.72	29.22	29±1	30	0.2977	0.549
EGPRS 850 (1 Tx slot)	824.2	1.75	30.64	25.34	25±1	26	0.1185	0.549
GPRS 1900 (1 Tx slot)	1850.2	2.23	32.73	26.48	26±1	27	0.1666	1.000
EGPRS 1900 (1 Tx slot)	1850.2	2.23	29.45	28.86	28±1	29	0.2641	1.000
WCDMA Band II	1880.0	2.23	24.71	/	25±1	26	0.1324	1.000
WCDMA Band IV	1752.6	2.90	24.27	/	24±1	25	0.1227	1.000
WCDMA Band V	826.4	-1.75	24.25	/	24±1	25	0.0420	0.551
LTE Band 2	1909.3	2.23	25.37	/	25±1	26	0.1324	1.000
LTE Band 4	1745.0	2.90	25.13	/	25±1	26	0.1544	1.000
LTE Band 5	836.5	1.75	24.98	/	25±1	26	0.1185	0.558
LTE Band 7	2505.0	2.44	25.53	/	25±1	26	0.1389	1.000
LTE Band 12	707.5	-1.71	25.46	/	25±1	26	0.0534	0.472
LTE Band 13	782.0	-0.12	25.42	/	25±1	26	0.0770	0.521
LTE Band 17	706.5	-1.71	25.56	/	25±1	26	0.0534	0.471
LTE Band 18	827.5	1.75	25.68	/	25±1	26	0.1185	0.552
LTE Band 19	832.5	1.66	25.61	/	25±1	26	0.1161	0.555
LTE Band 25	1905.0	2.23	25.65	/	25±1	26	0.1324	1.000
LTE Band 26	824.7	1.75	24.97	/	25±1	26	0.1185	0.550
LTE Band 41	2682.5	2.44	25.51	/	25±1	26	0.1389	1.000
LTE Band 66	1745.0	3.20	25.13	/	25±1	26	0.1655	1.000

The GPRS 850, WLAN and RLAN can transmit simultaneously

GPRS 850 Power density at 20cm (mW/cm ²)	WLAN Power density at 20cm (mW/cm ²)	RLAN Power density at 20cm (mW/cm ²)	Total Power density at 20cm	Power density Limits
0.2977	0.0537	0.0477	0.6437	1

Note:

For a more detailed features description, Please refer to the RF Test Report.

*****THE END*****

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