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Maximum Permissible Exposure Evaluation

FCC ID: 2AC88-GLMM20A01

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:	LTE Module
Trade Mark:	GlocalMe
Model/Type reference:	GLMM20A01
Listed Model(s):	/
Frequency band (Operating)	GSM 850: UL: 824MHz~849MHz, DL: 869MHz~894MHz PCS 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 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	☐ Portable (<5mm separation) ☐ Mobile (>20cm separation) ☒ Fixed (>20cm separation) ☐ Others ____
Exposure classification	☐ Occupational/Controlled exposure (S=5mW/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Antenna 1 gain	GSM 850: 0.49dBi PCS 1900: -0.67dBi WCDMA II: -0.67dBi WCDMA IV: -0.67dBi WCDMA V: 0.49dBi FDD Band 2: -0.67dBi

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	FDD Band 4: -0.67dBi FDD Band 5: 0.49dBi FDD Band 7: 0.91dBi FDD Band 12: 0.49dBi FDD Band 13: 0.49dBi FDD Band 17: 0.49dBi FDD Band 25: -0.67dBi FDD Band 26: 0.49dBi TDD Band 41: 1.21dBi FDD Band 66: -0.67dBi
Antenna 2 gain	GSM 850:1.25dBi PCS 1900: 4.42dBi WCDMA II: 4.42dBi WCDMA IV: 4.42dBi WCDMA V: 1.25dBi FDD Band 2: 4.42dBi FDD Band 4: 4.42dBi FDD Band 5: 1.25dBi FDD Band 7: 2.50dBi FDD Band 12: 0.38dBi FDD Band 13: 0.38dBi FDD Band 17: 0.38dBi FDD Band 25: 4.42dBi FDD Band 26: 1.25dBi TDD Band 41: 2.50dBi FDD Band 66: 4.42dBi
Evaluation applied	☒ MPE Evaluation ☐ 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

F = frequency in MHz

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 test data for worse case antenna on the test report.

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)
GSM 850	836.6	1.25	34.14	30.16	30±1	31	0.33400	0.558
GPRS 850 (1 Tx slot)	824.2	1.25	24.61	20.36	20±1	21	0.03340	0.549
EGPRS 850 (1 Tx slot)	824.2	1.25	20.73	18.51	18±1	19	0.02107	0.549
GSM 1900	1909.8	4.42	30.53	27.41	27±1	28	0.34733	1.000
GPRS 1900 (1 Tx slot)	1850.2	4.42	30.46	27.33	27±1	28	0.34733	1.000
EGPRS 1900 (1 Tx slot)	1850.2	4.42	27.27	24.23	24±1	25	0.17408	1.000
WCDMA Band II	1907.6	4.42	23.13	/	23±1	24	0.13827	1.000
WCDMA Band IV	1712.4	4.42	23.21	/	23±1	24	0.13827	1.000
WCDMA Band V	826.4	1.25	23.27	/	23±1	24	0.06664	0.551
LTE Band 2	1880.0	4.42	23.69	/	24±1	25	0.17408	1.000
LTE Band 4	1720.0	4.42	24.34	/	24±1	25	0.17408	1.000
LTE Band 5	829.0	1.25	24.08	/	24±1	25	0.08390	0.553
LTE Band 7	2505.0	2.50	24.16	/	24±1	25	0.11188	1.000
LTE Band 12	704.0	0.49	23.92	/	24±1	25	0.07043	0.469
LTE Band 13	779.5	0.49	24.26	/	24±1	25	0.07043	0.520
LTE Band 17	710.0	0.49	24.48	/	24±1	25	0.07043	0.473
LTE Band 25	1914.3	4.42	24.55	/	24±1	25	0.17408	1.000
LTE Band 26	836.5	1.25	24.73	/	25±1	26	0.10562	0.558
LTE Band 41	2680.0	2.50	24.06	/	24±1	25	0.11188	1.000
LTE Band 66	1720.0	4.42	24.49	/	24±1	25	0.17408	1.000

Note:

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

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