

RF EXPOSURE EVALUATION

1. PRODUCT INFORMATION

Product Description	Mini-pcie card R11e-4G
Model Name	R11e-4G
FCC ID	TV7R11E4G

2. EVALUATION METHOD AND LIMIT

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluated based on the MPE limits adopted by the FCC for electric and magnetic field strength and/or power density, as appropriate, since exposures are assumed to occur at distances of 20 cm or more from persons.

LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE

Frequency Range (MHz)	E-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

*Note:

1. f= Frequency in MHz * Plane-wave Equivalent Power Density
2. The averaging time for General Population/Uncontrolled exposure to fixed transmitters is not applicable for mobile and portable transmitters. See 47 CFR §§2.1091 and 2.1093 on source-based time-averaging requirement for mobile and portable transmitters.

$$S = PG / 4\pi R^2$$

Where:

S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

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A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits. The distance must be at least 20 cm and fully supported by the operating and installation configurations of the transmitter and its antenna(s), according to the source-based time-averaged maximum power requirements of § 2.1091(d)(2). In cases where cable losses or other attenuations are applied to determine compliance, the most conservative operating configurations and exposure conditions must be evaluated.

Test Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (Linear)	Power Density (mW/cm ²)
LTE BAND 7 (20MHz)	2510	22.60	181.97	0.79	1.20	0.0278
	2535	22.49	177.42	0.79	1.20	0.0271
	2560	21.55	142.89	0.79	1.20	0.0218
LTE BAND 7 (15MHz)	2507.5	22.52	178.65	0.79	1.20	0.0273
	2535	22.38	172.98	0.79	1.20	0.0264
	2562.5	21.87	153.82	0.79	1.20	0.0235
LTE BAND 7 (10MHz)	2505	22.58	181.13	0.79	1.20	0.0277
	2535	22.19	165.58	0.79	1.20	0.0253
	2565	21.88	154.17	0.79	1.20	0.0236
LTE BAND 7 (5MHz)	2502.5	22.42	174.58	0.79	1.20	0.0267
	2535	22.14	163.68	0.79	1.20	0.0250
	2567.5	21.52	141.91	0.79	1.20	0.0217

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Test Mode	Frequency (MHz)	Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (Linear)	Power Density (mW/cm ²)
LTE BAND 41 (20MHz)	2506	24.26	266.69	0.64	1.16	0.0394
	2593	23.14	206.06	0.64	1.16	0.0304
	2680	22.94	196.79	0.64	1.16	0.0290
LTE BAND 41 (15MHz)	2503.5	23.11	204.64	0.64	1.16	0.0302
	2593	22.52	178.65	0.64	1.16	0.0264
	2682.5	22.45	175.79	0.64	1.16	0.0259
LTE BAND 41 (10MHz)	2501	23.74	236.59	0.64	1.16	0.0349
	2593	23.12	205.12	0.64	1.16	0.0303
	2685	23.30	213.80	0.64	1.16	0.0316
LTE BAND 41 (5MHz)	2498.5	23.66	232.27	0.64	1.16	0.0343
	2593	22.89	194.54	0.64	1.16	0.0287
	2687.5	22.33	171.00	0.64	1.16	0.0252

Note:

1. Only the worst case recorded.

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