



APPENDIX I RADIO FREQUENCY EXPOSURE

LIMIT

According to §15.247(i), 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 of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

EUT Specification

EUT	LE920-NAG
Model	LE920-NAG
Frequency band (Operating)	☒ GSM/GPRS/EDGE 850MHz: 824.2MHz ~ 848.8MHz ☒ GSM/GPRS/EDGE 1900MHz: 1850.2MHz ~ 1909.8MHz ☒ WCDMA/HSDPA/HSUPA Band II: 1852.4MHz ~ 1907.6MHz ☒ WCDMA/HSDPA/HSUPA Band IV: 1712.4MHz ~ 1752.6MHz ☒ WCDMA/HSDPA/HSUPA Band V: 826.4MHz ~ 846.6MHz ☒ LTE Band I: 1920.0MHz ~ 1980.0MHz ☒ LTE Band II: 1850.0MHz ~ 1910.0MHz ☒ LTE Band IV: 1710.0MHz ~ 1755.0MHz ☒ LTE Band V: 824.0MHz ~ 849.0MHz ☒ LTE Band XVII: 704.0MHz ~ 716.0MHz ☐ Others
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others
Exposure classification	☐ Occupational/Controlled exposure ($S = 5\text{mW/cm}^2$) ☒ General Population/Uncontrolled exposure ($S=1\text{mW/cm}^2$)
Antenna Specification	1. Laird DBA6927C1 / Dipole Blade Omnidirectional Antenna Gain: 0.5 dBi (698~960MHz), Gain: 2.2 dBi (1710~2700MHz) 2. Laird DBA6927 / LTE Dipole Antenna Gain: 0.99 dBi (698~960MHz), Gain: 2.81 dBi (1710~2700MHz)



Average output power	GSM850 : 32.20 dBm (1659.587mW) GPRS850 : 28.49 dBm (706.318mW) for 4Up EDGE850 : 23.89 dBm (244.906mW) for 4Up GSM1900 : 29.30 dBm (851.138mW) GPRS1900 : 25.39 dBm (345.940mW) for 4Up EDGE1900 : 23.09 dBm (203.704mW) for 4Up WCDMA Band II : 24.96 dBm (313.329mW) HSDPA Band II : 24.93 dBm (311.172mW) HSUPA Band II : 24.92 dBm (310.456mW) WCDMA Band IV : 24.93 dBm (311.172mW) HSDPA Band IV : 24.83 dBm (304.089mW) HSUPA Band IV : 24.82 dBm (303.389mW) WCDMA Band V : 24.93 dBm (311.172mW) HSDPA Band V : 24.91 dBm (309.742mW) HSUPA Band V : 24.86 dBm (306.196mW) LTE Band I : 23.59 dBm (228.560mW) LTE Band II : 24.64 dBm (291.072mW) LTE Band IV : 24.02 dBm (252.348mW) LTE Band V : 24.06 dBm (254.683mW) LTE Band XVII : 24.57 dBm (286.418mW)
Tune up limit (Frame Average Power)	GSM850 : 24 dBm $\pm$ 2 dB GPRS850 : 30 dBm $\pm$ 2 dB EDGE850 : 24 dBm $\pm$ 2 dB GSM1900 : 21 dBm $\pm$ 2 dB GPRS1900 : 27 dBm $\pm$ 2 dB EDGE1900 : 23 dBm $\pm$ 2 dB WCDMA Band II : 24 dBm +1/-3 dB WCDMA Band IV : 24 dBm +1/-3 dB WCDMA Band V : 24 dBm +1/-3 dB LTE Band I : 23 dBm $\pm$ 2 dB LTE Band II : 23 dBm $\pm$ 2 dB LTE Band IV : 23 dBm $\pm$ 2 dB LTE Band V : 23 dBm $\pm$ 2 dB LTE Band XVII : 23 dBm $\pm$ 2 dB
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A
Remark: <i>The maximum output power is <u>32.20dBm (1659.587mW) at 824.2MHz (without 1.12 numeric antenna gain.)</u></i>	



TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

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

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P / 1000) \times G}{377 \times (d / 100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \textbf{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

**Maximum Permissible Exposure**

Substituting the MPE safe distance using $d = 20$ cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

GSM850 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
128	824.4	398.107	1.12	20	0.0887	0.55

GPRS850 mode(4Up):

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
190	836.6	1584.893	1.12	20	0.3532	0.55

EGPRS850 mode(4Up):

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
190	836.6	398.107	1.12	20	0.0887	0.55

GSM1900 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
810	1909.8	199.526	1.66	20	0.0659	1

GPRS1900 mode(4Up):

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
810	1909.8	794.328	1.66	20	0.2624	1

EGPRS1900 mode(4Up):

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
810	1909.8	316.228	1.66	20	0.1045	1

WCDMA Band II mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
9262	1852.4	316.228	1.66	20	0.1045	1

HSDPA Band II mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
9400	1880.0	316.228	1.66	20	0.1045	1

HSUPA Band II mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
9262	1852.4	316.228	1.66	20	0.1045	1

**WCDMA Band IV mode:**

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
1312	1712.4	316.228	1.66	20	0.1045	1

HSDPA Band IV mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
1312	1712.4	316.228	1.66	20	0.1045	1

HSUPA Band IV mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
1312	1712.4	316.228	1.66	20	0.1045	1

WCDMA Band V mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
4132	826.4	316.228	1.12	20	0.0705	0.55

HSDPA Band V mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
4233	846.6	316.228	1.12	20	0.0705	0.56

HSUPA Band V mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
4233	846.6	316.228	1.12	20	0.0705	0.56

LTE Band I mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
18300	1950.0	316.228	1.91	20	0.1202	1

LTE Band II mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
18900	1880.0	316.228	1.91	20	0.1202	1

LTE Band IV mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
19950	1710.0	316.228	1.91	20	0.1202	1

LTE Band V mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
20649	849.0	316.228	1.26	20	0.0793	0.57

LTE Band XVII mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
23849	716.0	316.228	1.26	20	0.0793	0.48