

Additional MPE Calculation (for Mobile Device)

FCC ID: NKR-DNXAG1

Company: Wistron Corporation

Model: DNXA-G1-P1

The WiFi module in this filing is applied in LANCOM host, model L-322 with equal or lower gain antennas than originally filed under this respective FCC ID. The following Antenna/gain and cable/loss is applied:

Antenna type: Joymax, model TWX-614XRS, max. gain of 3 dBi in the 2.4 GHz band and max. 5 dBi in the 5GHz band.

Cable loss: min. 0.64 dB in the 2.4 GHz band and min. 1 dB in the 5 GHz band.

Typical use distance: $d \geq 20$ cm

Power density limit for mobile devices at 2.4 and 5 GHz: $S \leq 1$ mW/cm²

The Average aggregate power is taken to calculate with.

The worst case operation mode generating the highest power in each frequency range is taken for calculation.

POWER DENSITY $S = (P_{\text{radiated}}) / (4\pi \times d^2) = \dots\dots\dots$ mW/cm²

MODULATION MODE	FREQUENCY BAND (MHz)	MAX POWER (dBm) Average	MAX ANTENNA GAIN (dBi)	CABLE LOSS (dB)	Additional Power reduction L-322 (dB)	Total EIRP (dBm)	DISTANCE d (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
802.11b	2412-2462	20.78	3	0.64	0	23.14	20	0.041	1
802.11g	2412-2462	23.51	3	0.64	0	25.87	20	0.077	1
802.11n(20)	2412-2462	23.49	3	0.64	0	25.85	20	0.077	1
802.11n(40)	2422-2452	17.43	3	0.64	0	19.79	20	0.019	1
802.11a	5180-5240	22.95	5	1	0	26.95	20	0.099	1
802.11n(20)	5180-5240	22.91	5	1	0	26.91	20	0.098	1
802.11n(40)	5190-5230	20.45	5	1	0	24.45	20	0.055	1

Evaluation for L-322 host:

L-322 is equipped with two WLAN cards as certified under this FCC ID, they can not (never) use the same channel number. This is fixed in the software by the manufacturer, end users cannot change this, see separate statement about this filed within this class 2 change application for certification.

The worst case power density is $2 \times 0.099 = \text{approx. } 0.2$ mW/cm² and remains within the limit of 1 mW/cm², whereas the sum of worst case conducted power emitted by any combination of output power remains below 1 W as specified in 15.247(3), because any of the power does not exceed 500 mW (26.99 dBm). Additional power reduction is not required therefore.

Conclusion: Both power density and power remain below the limit, when the device is used in Mobile scenario at minimum 20 cm away from any human body.