Telit
Communications S.p.A.

TUV SUD BABT TCB
Octagon House,
Segensworth Road,
Fareham,
Hampshire,
PO15 5RL

Date: **07/27/2015**

REF: **RF exposure analysis**

Model: **LE910-NA V2** FCC ID: **RI7LE910NAV2** IC: **5131A-LE910NAV2**

The device is a module designed to be installed in other devices. This device is to be used only for fixed and mobile applications. If the final product after integration is intended for portable use, new applications and FCC and IC are required.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter except as under the conditions described KDB 447498 D01 General RF Exposure Guidance.

MPE exposure limits

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power density (mW/cm^2)	Averaging time (minutes)
300 – 1500	f (MHz) /1500	30
1500 – 100.000	1,0	30

The table below is excerpted from RSS-102, Issue 5, 4, titled "Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)":

Frequency Range (MHz)	Power density (W/m^2)	Averaging time (minutes)
300-6000	$0.02619\ f^{0.6834}$	6

EIRP/ERP limits

Frequency Band	FCC EIRP limit (W)	IC EIRP limit (W)"
700 MHz	4,92	5,00
850 MHz	11,48	11,50
1700 MHz	1,00	1,00
1900 MHz	2,00	2,00

Using the equation $S = \frac{PG}{4\pi R^2}$ to calculate the exposure to electromagnetic fields

where: S = power density (in appropriate units, e.g. mW/cm^2)
P = power input to the antenna (in appropriate units, e.g., mW)
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 (appropriate units, e.g., cm)

compliance with FCC/IC MPE and EIRP limits is demonstrated following the calculations shown in the following page.

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Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (Lowest freq.) (MHz)	Maximum conducted output power (per tune-up) (dBm)	Multi-slot Class	Maximum number of TX slots	Duty cicle (%)	FCC MPE limit (mW/cm^2)	IC MPE limit (mW/cm^2)	FCC EIRP limit per §22.913, §24.232 and §27.50 (W)	IC EIRP limit per SRSP-603, SRSP-510, SRSP-513 and SRSP-518 (W)	Evaluation distance for compliance with MPE limits (cm)	Antenna gain to meet FCC MPE limit (dBi)	Antenna gain to meet IC MPE limit (dBi)	Antenna gain to meet FCC EIRP limit (dBi)	Antenna gain to meet IC EIRP limit (dBi)	Maximun antenna gain to meet all the limits (dBi)	Maximun antenna gain to meet all the limits per frequency band (dBi)
FDD 12	LTE FDD	699 - 716	699,0	24,00	N/A	N/A	100%	0,466	0,230	4,92	5,00	20	9,69	6,63	12,91	12,98	6,63	Maximun antenna gain for **700 MHz** frequency band: **6,63 dBi**
FDD 17	LTE FDD	704 - 715,9	704,0	24,00	N/A	N/A	100%	0,469	0,231	4,92	5,00	20	9,72	6,65	12,91	12,98	6,65	
FDD 13	LTE FDD	777 - 787	777,0	24,00	N/A	N/A	100%	0,518	0,247	4,92	5,00	20	10,15	6,94	12,91	12,98	6,94	
FDD 5	LTE FDD	824,7 - 848,3	824,7	24,00	N/A	N/A	100%	0,550	0,258	11,48	11,50	20	10,41	7,12	16,59	16,60	7,12	Maximun antenna gain for **850 MHz** frequency band: **6,63 dBi**
FDD V	WCDMA/HSPA	826,4 - 846,6	826,4	24,50	N/A	N/A	100%	0,551	0,258	11,48	11,50	20	9,92	6,63	16,09	16,10	6,63	
FDD 4	LTE FDD	1710,7 - 1754,3	1710,7	24,00	N/A	N/A	100%	1,000	0,424	1,00	1,00	20	13,01	9,28	6,00	6,00	6,00	Maximun antenna gain for **1700 MHz** frequency band: **6,00 dBi**
FDD 2	LTE FDD	1850,7 - 1909,3	1850,7	24,00	N/A	N/A	100%	1,000	0,448	2,00	2,00	20	13,01	9,52	9,01	9,01	9,01	Maximun antenna gain for **1900 MHz** frequency band: **8,51 dBi**
FDD II	WCDMA/HSPA	1852,4 - 1907,6	1852,4	24,50	N/A	N/A	100%	1,000	0,448	2,00	2,00	20	12,51	9,02	8,51	8,51	8,51	

With this antenna gains the maximum RF exposure can be calculated as follows:

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (Lowest freq.) (MHz)	Maximum conducted output power (per tune-up) (dBm)	Multi-slot Class	Maximum number of TX slots	Duty cicle (%)	Antenna gain (dBi)	Evaluation distance for compliance with MPE limits (cm)	$S = \frac{PG}{4\pi R^2}$ (mW/cm2)
FDD 12	LTE FDD	699 - 716	699,0	24,00	N/A	N/A	100%	6,63	20	0,230
FDD 17	LTE FDD	704 - 715,9	704,0	24,00	N/A	N/A	100%	6,63	20	0,230
FDD 13	LTE FDD	777 - 787	777,0	24,00	N/A	N/A	100%	6,63	20	0,230
FDD 5	LTE FDD	824,7 - 848,3	824,7	24,00	N/A	N/A	100%	6,63	20	0,230
FDD V	WCDMA/HSPA	826,4 - 846,6	826,4	24,50	N/A	N/A	100%	6,63	20	0,258
FDD 4	LTE FDD	1710,7 - 1754,3	1710,7	24,00	N/A	N/A	100%	6,00	20	0,199
FDD 2	LTE FDD	1850,7 - 1909,3	1850,7	24,00	N/A	N/A	100%	8,51	20	0,355
FDD II	WCDMA/HSPA	1852,4 - 1907,6	1852,4	24,50	N/A	N/A	100%	8,51	20	0,398

If you have any doubt please do not hesitate to contact us.

Yours sincerely,

Antonino Sgroi
EMEA R&D Manager