

**AT4 wireless S.A.U.TCB**

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**Subject:** RF exposure analysis for the equipment with FCC ID: **VBO-LLC7280**; IC: **135Y-LLC7280**

The device model: **LLC 7280** (FCC ID: **VBO-LLC7280**; IC: **135Y-LLC7280**) is designed to be installed in and used in mobile exposure conditions.

The antennas used for this device must be installed to provide a separation distance of at least 20 cm from all the persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

**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 <sup>2</sup> )	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”:

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

**EIRP/ERP limits**

Band	FCC EIRP limit per §22,913 & §24,232 (W)	ISED EIRP limit per RSS-132 & RSS-139 (W)
<b>GSM850</b>	11,48	11,50
<b>GPRS850</b>	11,48	11,50
<b>EGPRS850</b>	11,48	11,50
<b>GSM1900</b>	2,00	1,00
<b>GPRS1900</b>	2,00	1,00
<b>EGPRS1900</b>	2,00	1,00
<b>WCDMA Band II</b>	2,00	1,00
<b>WCDMA Band V</b>	11,48	11,50

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<sup>2</sup>)  
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/ISED MPE and EIRP limits is demonstrated following the calculations shown in the following table:

Band	Frequency (MHz) (Lowest Frequency)	Maximum conducted output power (per tune-up) (dBm)	Duty cycle (%)	Antenna gain (dBi)	FCC MPE limit (mW/cm <sup>2</sup> )	ISED MPE limit (mW/cm <sup>2</sup> )	FCC/ISED MPE limit (mW/cm <sup>2</sup> )	FCC EIRP limit per §22.913 & §24.232 (W)	ISED EIRP limit per RSS 132 & RSS 139 (W)	FCC/ISED EIRP limit (W)	Evaluation distance for compliance with MPE limits (cm)	$S = \frac{PG}{4\pi R^2}$ (mW/cm <sup>2</sup> )	MPE Ratio (S/MPE limit) (mW/cm <sup>2</sup> )	COMPLIANT?
GSM850	836.4	33.00	50.0%	-3.76	0.558	0.260	0.26020	11.48	11.50	11.48	20	0.08350	0.32091	COMPLIANT
GPRS850	848.8	33.00	50.0%	-3.76	0.566	0.263	0.26283	11.48	11.50	11.48	20	0.08350	0.31770	COMPLIANT
EGPRS850	848.8	28.00	50.0%	-3.76	0.566	0.263	0.26283	11.48	11.50	11.48	20	0.02641	0.10047	COMPLIANT
GSM1900	1880.0	30.00	50.0%	-1.70	1.000	0.453	0.45258	2.00	1.00	1.00	20	0.06725	0.14860	COMPLIANT
GPRS1900	1850.2	30.00	50.0%	-1.70	1.000	0.448	0.44766	2.00	1.00	1.00	20	0.06725	0.15023	COMPLIANT
EGPRS1900	1850.2	27.00	50.0%	-1.70	1.000	0.448	0.44766	2.00	1.00	1.00	20	0.03371	0.07529	COMPLIANT
WCDMA Band II	1852.4	24.00	100.0%	-1.70	1.000	0.448	0.44803	2.00	1.00	1.00	20	0.03379	0.07541	COMPLIANT
WCDMA Band V	836.4	24.00	100.0%	-3.76	0.558	0.260	0.26020	11.48	11.50	11.48	20	0.02102	0.08080	COMPLIANT

Yours sincerely,  
P.A.



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