

Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-2859/16-01-14

Certification numbers and labeling requirements	
FCC ID	AL8-W8200B
IC number	457A-W8200B
HVIN (Hardware Version Identification Number)	W8200B
PMN (Product Marketing Name)	Savi W8210 / W8220
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

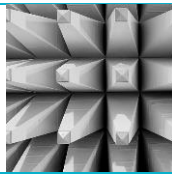
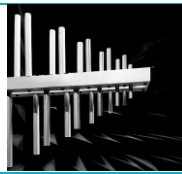
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EUT technologies:

Technologies:	Max. power: (AVG)	Timebased AVG-Power:	Max. gain:	Min. pathloss:
DECT UPCS	18.3 dBm = 67.6 mW	4.5 dBm = 2.82 mW (1 of 24 time slots)	1.4 dBi	-/-
Bluetooth	3.3 dBm = 2.1 mW	100% Duty Cycle	4.7 dBi	-/-

Prediction of MPE limit at given distance - FCC

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where: S = Power density

P = Power input to the antenna

G = Antenna gain (declared by provider)

R = Distance to the center of radiation of the antenna

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/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

		> 1500 MHz		> 1500 MHz
	Technology	DECT UPCS 1920 – 1930 MHz		Bluetooth 2402 – 2482 MHz
P	Maximum power	4.5 dBm		3.3 dBm
R	Distance	20 cm		20 cm
G	Antenna gain	1.4 dBi		4.7 dBi
S	MPE limit for uncontrolled exposure	1 mW/cm ²		1 mW/cm ²
	Calculated Power density:	0.00077 mW/cm²		0.0013 mW/cm²
	Colocation:	0.08 %		0.13 %
	Sum (worst case/all transmitters active):	0.21 %		

This prediction demonstrates the following:

The power density levels for FCC at a distance of 20 cm are below the maximum levels allowed by regulations.

Prediction of MPE limit at given distance - IC

RSS-102, Issue 5, 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

Case 1 GSM850 and ISM 915 MHz active simultaneously

	Technology	DECT UPCS 1920-1930 MHz		Bluetooth 2402 – 2482 MHz	-/-
P	Max power	4.5 dBm		3.3 dBm	
G	Antenna gain	1.4 dBi		4.7 dBi	
S	MPE limit for uncontrolled exposure	1300 mW		1400 mW	
	Calculated output power:	3.89 mW		6.31 mW	
	Collocation DECT UPCS	0.3 %		---	Sum
	Collocation BT	---		0.45 %	
					<u>0.75 %</u>

Conclusion: for applications where minimum distance to radiating element is 20cm Annex C of RSS-102 should be filled out.