

16. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

16.1 Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-15000	/	/	1.0	30

F = frequency in MHz

* = Plane-wave equipment power density

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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SGS Taiwan Ltd.

台灣檢驗科技股份有限公司

No.134, WuKungRoad, NewTaipeiIndustrialPark, WukuDistrict, NewTaipeiCity, Taiwan24803/新北市五股區新北產業園區五工路 134 號

t (886-2) 2299-3279

f (886-2) 2298-0488

www.tw.sgs.com

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16.2 Maximum Permissible Exposure (MPE) Evaluation

802.11j, 4940~4990 MHz (10MHz)

Frequency (MHz)	Peak Output Power(dBm) (MAIN)	Peak Output Power(dBm) (AUX)	Total Output Power(dBm)	Limit (dBm)
4945	14.03	10.88	15.74	15.99
4965	13.86	10.38	15.47	15.99
4985	14.08	11.07	15.84	15.99

MPE Prediction (802.11j, 4940~4990 MHz (10MHz))

Prediction of MPE limit at a given distance

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

$$S = \frac{P}{4\pi R^2}$$

Where: S = Power density

P = Power input to antenna

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

Maximum peak output power at antenna input terminal:	15.84	(dBm)
Maximum peak output power at antenna input terminal:	38.37072455	(mW)
Duty cycle:	100	(%)
Maximum Pav :	38.37072455	(mW)
Antenna gain (typical):	7	(dBi)
Maximum antenna gain:	5.011872336	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	4985	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0382781	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.038 mW/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 4985MHz.

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f (886-2) 2298-0488

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802.11j, 4940~4990 MHz (20MHz)

Frequency (MHz)	Peak Output Power(dBm) (MAIN)	Peak Output Power(dBm) (AUX)	Total Output Power(dBm)	Limit (dBm)
4950	15.96	12.11	17.46	18.99
4965	16.08	12.92	17.79	18.99
4980	16.19	13.29	17.99	18.99

MPE Prediction (802.11j, 4940~4990 MHz (10MHz))

Prediction of MPE limit at a given distance

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 antenna

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

Maximum peak output power at antenna input terminal:	17.99	(dBm)
Maximum peak output power at antenna input terminal:	62.95061829	(mW)
Duty cycle:	100	(%)
Maximum Pav :	62.95061829	(mW)
Antenna gain (typical):	7	(dBi)
Maximum antenna gain:	5.011872336	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	4980	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm ²)
Power density at predication frequency at 20 (cm)	0.0627987	(mW/cm ²)

Measurement Result

The predicted power density level at 20 cm is 0.063 mW/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 4980MHz.

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