* RF Exposure

1. Regulation

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this Chapter.

Limits for Maximum Permissive Exposure: RF exposure is calculated.

Frequency Range	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density [㎽/㎠]	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 ~ 1 500	/	/	f/1 500	30
1 500 ~ 15 000	/	/	1.0	30

*f=frequency in ㎒, *= plane-wave equivalent power density*

MPE (Maximum Permissive Exposure) Prediction
Predication of MPE limit at a given distance: Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2 \quad \left(\Rightarrow R = \sqrt{PG/4\pi S}\right)$$

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 [㎝]

EUT: Maximum peak output power = 147.23 [㎽] (21.68 dBm) Antenna gain = 1.94 (2.882 dBi)	
100 ㎽, at 20 cm from an antenna 6 [dBi]	S = PG/4πR² = 100 × 3.98 / (4 × π × 400) = 0.079 18 [㎽/㎠] < 1.0 [㎽/㎠]
147.23 ㎽, at 20 cm from an antenna 2.882 [dBi]	S = PG/4πR² = 0.056 88 [㎽/㎠] < 1.0 [㎽/㎠]

1) Target power :5dB

2) Tune up tolerance : ±1dB

3) Max tune up power : 6 dB

2. RF Exposure Compliance Issue

The information should be included in the user's manual:
This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter. A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

EMC compliance Ltd.   Page: 1 of 2
65, Sinwon-ro, Yeongtong-gu, Suwon- si, Gyeonggi-do, 443-390, Korea
82-31-336-9919 (Main) 82-505-299-8311 (Fax)
This test report shall not be reproduced except in full, Without the written approval.

3. Calculation Result of RF Exposure

* 802.11b

Channel	Frequency [MHz]	Ant Gain	power [dBm]	power [mW]	Power Density at 20 cm [mW/cm²]	Power Density at 2.5 cm [mW/cm²]
Lowest	2 412	1.94	17.87	61.24	0.023 66	1.513 95
Middle	2 437	1.94	18.18	65.77	0.025 41	1.625 96
Highest	2 462	1.94	18.28	67.30	0.026 00	1.663 83

* 802.11g

Channel	Frequency [MHz]	Ant Gain	power [dBm]	power [mW]	Power Density at 20 cm [mW/cm²]	Power Density at 2.5 cm [mW/cm²]
Lowest	2 412	1.94	21.68	147.23	0.056 88	3.640 07
Middle	2 437	1.94	21.58	143.88	0.055 58	3.557 22
Highest	2 462	1.94	21.68	147.23	0.056 88	3.640 07

* 802.11n HT20

Channel	Frequency [MHz]	Ant Gain	power [dBm]	power [mW]	Power Density at 20 cm [mW/cm²]	Power Density at 2.5 cm [mW/cm²]
Lowest	2 412	1.94	20.38	109.14	0.042 16	2.698 42
Middle	2 437	1.94	20.58	114.29	0.044 15	2.825 60
Highest	2 462	1.94	20.78	119.67	0.046 23	2.958 76

* 802.11n HT40

Channel	Frequency [MHz]	Ant Gain	power [dBm]	power [mW]	Power Density at 20 cm [mW/cm²]	Power Density at 2.5 cm [mW/cm²]
Lowest	2 412	1.94	20.48	111.69	0.043 14	2.761 28
Middle	2 437	1.94	20.68	116.95	0.045 18	2.891 41
Highest	2 462	1.94	20.78	119.67	0.046 23	2.958 76

EMC compliance Ltd.   Page: 2 of 2
65, Sinwon-ro, Yeongtong-gu, Suwon- si, Gyeonggi-do, 443-390, Korea
82-31-336-9919 (Main) 82-505-299-8311 (Fax)
This test report shall not be reproduced except in full, Without the written approval.

* RF Exposure

1. Regulation

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this Chapter.

Limits for Maximum Permissive Exposure: RF exposure is calculated.

Frequency Range	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density [㎽/㎠]	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 ㎒, *= plane-wave equivalent power density*

MPE (Maximum Permissive Exposure) Prediction
Predication of MPE limit at a given distance: Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2 \quad \left(\Rightarrow R = \sqrt{PG/4\pi S} \right)$$

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 [㎝]

EUT: Maximum peak output power = 5.94 [㎽](= 7.74 dBm) Antenna gain= 1.94 (= 2.882 [dBi])	
100 ㎽, at 20 cm from an antenna 6 [dBi]	S = PG/4πR² = 100 × 3.98 / (4 × π × 400) = 0.079 18 [㎽/㎠] < 1.0 [㎽/㎠]
5.94 ㎽, at 20 cm from an antenna 2.882 [dBi]	S = PG/4πR²= 0.002 30 [㎽/㎠] < 1.0 [㎽/㎠]
5.94 ㎽, at 2.5 cm from an antenna 2.882 [dBi]	S = PG/4πR²= 0.146 93 [㎽/㎠] < 1.0 [㎽/㎠]

1) Target power :5dB

2) Tune up tolerance : ±1dB

3) Max tune up power : 6 dB

2. RF Exposure Compliance Issue

The information should be included in the user's manual:
This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter. A minimum separation distance of 20 ㎝ must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

EMC compliance Ltd.   Page: 1 of 2
65, Sinwon-ro, Yeongtong-gu, Suwon- si, Gyeonggi-do, 443-390, Korea
82-31-336-9919 (Main) 82-505-299-8311 (Fax)
This test report shall not be reproduced except in full, Without the written approval.

3. Calculation Result of RF Exposure

* GFSK

Channel	Frequency [㎒]	Ant Gain	power [dBm]	power [㎽]	Power Density at 20 ㎝ [㎽/㎠]	Power Density at 2.5 ㎝ [㎽/㎠]
Lowest	2 402	1.94	7.44	5.55	0.002 14	0.137 12
Middle	2 441	1.94	7.74	5.94	0.002 30	0.146 93
Highest	2 480	1.94	7.54	5.68	0.002 19	0.140 32

* 8DPSK

Channel	Frequency [㎒]	Ant Gain	power [dBm]	power [㎽]	Power Density at 20 ㎝ [㎽/㎠]	Power Density at 2.5 ㎝ [㎽/㎠]
Lowest	2 402	1.94	6.10	4.07	0.001 57	0.100 72
Middle	2 441	1.94	6.44	4.41	0.001 70	0.108 92
Highest	2 480	1.94	6.05	4.03	0.001 56	0.099 57

65, Sinwon-ro, Yeongtong-gu, Suwon- si, Gyeonggi-do, 443-390, Korea
82-31-336-9919 (Main) 82-505-299-8311 (Fax)