

Maximum Permissible Exposure

Equipment : Industrial 2.4G 802.11n/ 5G 802.11ac
Wave1 mPCIe module

Brand Name : Korenix

Model No. : Industrial 2.4G 802.11n/ 5G 802.11ac
Wave1 mPCIe module

FCC ID : SSA-JW1223

Standard : IEEE C95.1

**Applicant
Manufacturer** : Korenix Technology Co., Ltd.
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New Taipei City 23143, | Taiwan (R.O.C)

The product sample received on Apr. 18, 2016 and completely tested on Jun. 16, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in IEEE C95.1 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.


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1 Human Exposure Assessment

1.1 Maximum Permissible Exposure

1.1.1 Limit of Maximum Permissible Exposure

Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	F/300	6
1500-100,000	-	-	5	6
Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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
1500-100,000	-	-	1.0	30
Note 1: f = frequency in MHz ; *Plane-wave equivalent power density				
Note 2: For the applicable limit, see FCC 1.1310				

1.1.2 MPE Calculation Method

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

S = power density (in appropriate units, e.g. mW/cm²)

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)



1.1.3 Result of Maximum Permissible Exposure (2.4G)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N _{TX})	RF Output Power (dBm)
2400-2483.5	b	2412-2462	1-11 [11]	3	20.258
2400-2483.5	g	2412-2462	1-11 [11]	3	23.711
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	3	22.597
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	3	15.559

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.

Worst Maximum RF Output Power Result								
Exposure Environment		General Population / Uncontrolled Exposure						
Separation Distance (cm)		20						
Condition		RF Output Power (dBm)						
Modulation Mode	N _{TX}	Chain-Port 1	Chain-Port 2	Chain-Port 3	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm ²)
11g	3	18.53	19.16	19.10	23.71	6.77	30.48	0.22231
Maximum Permissible Exposure Limit (mW/cm ²)								1

Note 1: N_{TX} = Number of Transmit Chains



1.1.4 Result of Maximum Permissible Exposure (5.2G)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N _{TX})	RF Output Power (dBm)
5150-5250	a	5180-5240	36-48 [4]	3	20.388
5150-5250	n (HT20)	5180-5240	36-48 [4]	3	20.672
5150-5250	n (HT40)	5190-5230	38-46 [2]	3	21.663
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	3	20.692
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	3	21.677
5150-5250	ac (VHT80)	5210	48 [1]	3	16.354

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.

Worst Maximum RF Output Power Result								
Exposure Environment		General Population / Uncontrolled Exposure						
Separation Distance (cm)		20						
Condition		RF Output Power (dBm)						
Modulation Mode	N _{TX}	Chain-Port 1	Chain-Port 2	Chain-Port 3	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm ²)
HT40	3	17.03	16.91	16.78	21.68	7.77	29.45	0.17515
Maximum Permissible Exposure Limit (mW/cm²)								1

Note 1: N_{TX} = Number of Transmit Chains



1.1.5 Result of Maximum Permissible Exposure (5.8G)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N _{TX})	RF Output Power (dBm)
5725-5850	a	5745-5825	149-165 [5]	3	24.899
5725-5850	n (HT20)	5745-5825	149-165 [5]	3	24.791
5725-5850	n (HT40)	5755-5795	151-159 [2]	3	24.360
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	3	25.029
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	3	24.716
5725-5850	ac (VHT80)	5775	155 [1]	3	22.238

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.

Worst Maximum RF Output Power Result								
Exposure Environment		General Population / Uncontrolled Exposure						
Separation Distance (cm)		20						
Condition		RF Output Power (dBm)						
Modulation Mode	N _{TX}	Chain-Port 1	Chain-Port 2	Chain-Port 3	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm ²)
VHT20	3	20.59	20.04	20.11	25.03	7.77	32.80	0.37901
Maximum Permissible Exposure Limit (mW/cm ²)								1

Note 1: N_{TX} = Number of Transmit Chains