

FCC ID : 2AOKI-AL7651B

RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

Transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1416

R = distance between observation point and center of the radiator in 20cm

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

1.1 EUT TECHNICAL DESCRIPTION

Characteristics	Description
Product	WIFI Module
Model Number	AL-7651B-WG-A, WF-M651-UWD1, WF-M651-UWD2 (Note: All models are different for connectors and radium carving, the others are the same.)
IEEE 802.11 WLAN Mode Supported	<input checked="" type="checkbox"/> 802.11b <input checked="" type="checkbox"/> 802.11g <input checked="" type="checkbox"/> 802.11n(20MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11n(40MHz channel bandwidth)
Modulation	DSSS with DBPSK/DQPSK/CCK for 802.11b OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n
Operating Frequency Range	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11b/g/n(HT40)
Number of Channels	11 channels for 802.11b/g/n(HT20) 7 Channels for 802.11n(HT40)
Antenna Type	Integrated Antenna
Antenna Gain	ANT1: 3.79dBi ANT2: 2.32dBi ANT3: 3.93dBi (ANT3 is another antenna of antenna2 port using by the clients.)

Wifi Type	<input checked="" type="checkbox"/> UNII-1: 5150MHz-5250MHz Band <input checked="" type="checkbox"/> UNII-2A: with 5250MHz-5350MHz Band <input checked="" type="checkbox"/> UNII-2C: with 5470MHz-5725MHz Band <input checked="" type="checkbox"/> UNII-3 with 5725MHz-5850MHz Band	
WLAN Supported	<input checked="" type="checkbox"/> 802.11a <input checked="" type="checkbox"/> 802.11n(20MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11n(40MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11ac(20MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11ac(40MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11ac(80MHz channel bandwidth)	
Data Rate	802.11a:54/48/36/24/18/12/9/6Mbps 802.11n:up to 600 Mbps 802.11ac:up to 1.733Gbps	
Modulation	<input checked="" type="checkbox"/> OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n <input checked="" type="checkbox"/> OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac	
Frequency Range	<input checked="" type="checkbox"/> UNII-1: 5150MHz-5250MHz Band	
	<input checked="" type="checkbox"/> 5180-5240MHz for 802.11a <input checked="" type="checkbox"/> 5180-5240MHz for 802.11n(HT20) <input checked="" type="checkbox"/> 5180-5240MHz for 802.11ac(HT20)	<input checked="" type="checkbox"/> 5190-5230MHz for 802.11n(HT40) <input checked="" type="checkbox"/> 5190-5230MHz for 802.11ac(HT40) <input checked="" type="checkbox"/> 5210MHz for 802.11ac(HT80)
	<input checked="" type="checkbox"/> UNII-2A: with 5250MHz-5350MHz Band	
	<input checked="" type="checkbox"/> 5260-5320MHz for 802.11a <input checked="" type="checkbox"/> 5260-5320MHz for 802.11n(HT20) <input checked="" type="checkbox"/> 5260-5320MHz for 802.11ac(HT20)	<input checked="" type="checkbox"/> 5270-5310MHz for 802.11n(HT40) <input checked="" type="checkbox"/> 5270-5310MHz for 802.11ac(HT40) <input checked="" type="checkbox"/> 5290MHz for 802.11ac(HT80)
	<input checked="" type="checkbox"/> UNII-2C: with 5470MHz-5725MHz Band	

	<input checked="" type="checkbox"/> 5500-5700MHz for 802.11a <input checked="" type="checkbox"/> 5500-5700MHz for 802.11n(HT20) <input checked="" type="checkbox"/> 5500-5700MHz for 802.11ac(HT20)	<input checked="" type="checkbox"/> 5510-5670MHz for 802.11n(HT40) <input checked="" type="checkbox"/> 5510-5670MHz for 802.11ac(HT40) <input checked="" type="checkbox"/> 5530-5610MHz for 802.11ac(HT80)
	<input checked="" type="checkbox"/> UNII-3 with 5725MHz-5850MHz Band	
	<input checked="" type="checkbox"/> 5745-5825MHz for 802.11a <input checked="" type="checkbox"/> 5745-5825MHz for 802.11n(HT20) <input checked="" type="checkbox"/> 5745-5825MHz for 802.11ac(HT20)	<input checked="" type="checkbox"/> 5755-5795MHz for 802.11n(HT40) <input checked="" type="checkbox"/> 5755-5795MHz for 802.11ac(HT40) <input checked="" type="checkbox"/> 5775MHz for 802.11ac(HT80)
TPC Function	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> Not Applicable
Antenna Type	Integrated Antenna	
Antenna Gain	ANT1: 3.68dBi ANT2: 4.13dBi ANT3: 5.19dBi (ANT3 is another antenna of antenna2 port using by the clients.)	

1.2 Measurement Result

Mode	Max Measured power (dBm)	Antenna gain (dBi)	Antenna Gain Numeric	R (cm)	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
2.4G WIFI	25.29	3.93	2.47	20	0.166	1
5G WIFI	22.98	5.19	3.30	20	0.131	1

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