



CTC Laboratories, Inc.

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Maximum Permissible Exposure Evaluation

FCC ID: 2AR24-AIBOX500

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).

EUT Specification

Product Name:	LED Multimedia Processor
Trade Mark:	Abjen
Model/Type Reference:	AiBox 500
Listed Model(s):	/
Model Differences:	/
Frequency Band (Operating)	BT: 2402MHz ~ 2480MHz BLE: 2402MHz ~ 2480MHz WLAN: 2412MHz ~ 2462MHz U-NII-1: 5180MHz ~ 5240MHz U-NII-3: 5745MHz ~ 5825MHz
Device Category	<input type="checkbox"/> Portable (<5mm separation) <input type="checkbox"/> Mobile (>20cm separation) <input checked="" type="checkbox"/> Fixed (>20cm separation) <input type="checkbox"/> Others ____
Exposure Classification	<input type="checkbox"/> Occupational/Controlled exposure (S=5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna Diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Antenna Gain (Max)	BT/ WLAN: 3.55dBi U-NII-1: 5.52dBi U-NII-3: 5.52dBi
Evaluation Applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

BL-M8811CU2 WIFI ANT:

WLAN: 2412MHz ~ 2462MHz; U-NII-1: 5180MHz ~ 5240MHz; U-NII-3: 5745MHz ~ 5825MHz

AP6275S WIFI ANT0&BT ANT:

BT: 2402MHz ~ 2480MHz; BLE: 2402MHz ~ 2480MHz; WLAN: 2412MHz ~ 2462MHz

U-NII-1: 5180MHz ~ 5240MHz; U-NII-3: 5745MHz ~ 5825MHz

AP6275S WIFI ANT1:

WLAN: 2412MHz ~ 2462MHz; U-NII-1: 5180MHz ~ 5240MHz; U-NII-3: 5745MHz ~ 5825MHz

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**Limits for Maximum Permissible Exposure (MPE)**

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposure				
300-1500	--	--	F/300	<6
1500-100000	--	--	5	<6
(B) Limits for General Population/Uncontrolled Exposure				
300-1500	--	--	F/1500	<30
1500-100000	--	--	1	<30

Calculation Method

Friis 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 = gain of antenna in linear scale

π = 3.1416

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

P_d limit of MPE is 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.

Measurement Result**RF Module: AP6275S**

Mode	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Tune Up Tolerance (dB)	Max. Tune Up Power (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Result
BT/EDR	2480	3.55	7.610	±1	8	0.00284	1	PASS
BLE	2402	3.55	6.472	±1	7	0.00226	1	PASS
WLAN 802.11b Ant 0	2437	3.55	21.854	±1	22	0.07141	1	PASS
RLAN U-NII-1 802.11a Ant 1	5240	5.52	13.608	±1	14	0.01781	1	PASS
RLAN U-NII-3 802.11ac40 MIMO	5795	5.52	13.78	±1	14	0.01781	1	PASS

RF Module: BL-M8811CU2

Mode	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Tune Up Tolerance (dB)	Max. Tune Up Power (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Result
WLAN 802.11b Ant 0	2437	3.55	17.598	±1	18	0.02843	1	PASS
RLAN U-NII-1 802.11a Ant 0	5240	5.52	16.278	±1	17	0.03554	1	PASS
RLAN U-NII-3 802.11n40 5755	5795	5.52	15.910	±1	16	0.02823	1	PASS

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Note:

1. Calculate in the worst-case mode.
2. Max. Tune Up Power is declared by manufacturer, and used to calculate.
3. For a more detailed features description, please refer to the RF Test Report.
4. AP6275S WIFI ANT0 and AP6275S WIFI ANT1 can transmit simultaneously.
5. AP6275S WIFI and BT can't transmit simultaneously.
6. BL-M8811CU2 WIFI ANT and AP6275S WIFI ANT (0&1) can't transmit simultaneously.

*****THE END*****