

MRT Technology (Taiwan) Co., Ltd

Phone: +886-3-3288388 Fax: +886-3-3288918 Web: www.mrt-cert.com Report No.: 1909TW3101-U3 Report Version: 1.0 Issue Date: 2020-03-19

# **Maximum Permissible Exposure**

FCC ID: XBG-UBA100

APPLICANT: AVALUE TECHNOLOGY INCORPORATION

**Application Type:** Certification

**Product:** UWB Anchor

Model No.: UB-A100

Trademark: @value

FCC Rule Part(s): Part 2.1091 (Mobile)

Received Date: September 5, 2019

**Test Date:** February 6 ~ 11, 2020

Tested By : Fran Chen

(Fran Chen)

Reviewed By : Paddy Chen

( Paddy Chen )

Approved By : any her

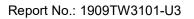
(Chenz Ker)



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report. Test results reported herein relate only to the item(s) tested. The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

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## **Revision History**

Report No.	Version	Description	Issue Date	
1909TW3101-U3	1.0	Original Report	2020-03-19	

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### 1. PRODUCT INFORMATION

### 1.1. Equipment Description

Product Name	UWB Anchor			
Model No.	UB-A100			
Trademark	<b>©</b> value			
	WLAN:			
Commanda Dadica Cosa	2.4G: 802.11b/g/HT-20/HT-40			
Supports Radios Spec.	UWB:			
	4.5GHz			
	WiFi 2.4G:			
	For 802.11b/g/n-HT20: 2412 ~ 2462 MHz			
Operating Frequency	For 802.11n-HT40: 2422 ~ 2452 MHz			
	UWB:			
	4.5GHz			
	WiFi 2.4GHz:			
Madulatian	802.11b: DSSS, DBPSK, DQPSK, CCK			
Modulation	802.11g/n-20M/n-40M: OFDM (BPSK, QPSK, 16QAM, 64QAM)			
	UWB: BPM-BPSK			

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### 1.2. Antenna Description

WiFi 2.4GHz			
Antenna Type	Dipole		
Antenna M/N	AFMQ1B-C0003		
Antenna Gain	3dBi		
UWB 4.5GHz			
Antenna Type	Dipole		
Antenna M/N	AEQQ2S-B0003		
Antenna Gain	4.2dBi		

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#### 2. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

#### 2.1. Limits

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	Electric Field	Magnetic Field	Power Density	Average Time			
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm <sup>2</sup> )	(Minutes)			
(A) Limits for Occupational/ Control Exposures							
0.3-3.0	614	1.63	*100	6			
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6			
30-300	61.4	0.163	1.0	6			
300-1500			f/300	6			
1500-100,000			5	6			
(B) Limits for General Population/ Uncontrolled Exposures							
0.3-1.4	614	1.63	*100	30			
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	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, (2) \* = Plane-wave equivalent power density

Calculation Formula: Pd = (Pout\*G)/(4\*pi\*r2)

Where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

Under normal use condition, is at least 20cm away from the body of the user.

So, this device is classified as Mobile Device.

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#### 2.2. Test Result

Mode	Frequency (MHz)	Output Power to Antenna (dBm)	Output Power to Antenna (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm²)	Limit (mW/cm²)
802.11b	2412-2462	18.16	65.46	3	20	0.0260	1
802.11g	2412-2462	21.61	144.88	3	20	0.0575	1
802.11n-HT20	2412-2462	21.20	131.83	3	20	0.0523	1
802.11n-HT40	2422-2452	19.84	96.38	3	20	0.0383	1
UWB	4500	-5.00	0.32	4.2	20	0.0002	1

#### **Conclusion:**

 $CPD1/LPD1 + CPD2/LPD2 + ... + CPDN/LPDN \le 1$ 

**CPD : Calculation Power Density LPD : Limit of Power Density** 

Mode	Power Density	Limit	Conclusion	Result (≦ 1)	
WiFi	0.0575	1	0.0577	Pass	
UWB	0.0002	1	0.0577		

So, the device can comply with FCC radiation exposure requirement specified in the FCC Rule 2.1091.

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