RF Exposure Evaluation Declaration

FCC ID: 2AI9TOAW-AP1301H

APPLICANT: ALE USA Inc.

Application Type: Certification

Product: OmniAccess Stellar

Model No.: OAW-AP1301H

Brand Name: Alcatel-Lucent Enterprise

FCC Classification: Digital Transmission System (DTS)
Unlicensed National Information Infrastructure (NII)

Test Procedure(s): KDB 447498 D01v06

Reviewed By: (Paddy Chen)

Approved By: (Chenz Ker)

Testing Laboratory
3261

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.
The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2108TW0001-U5	V1.0	Initial Report	11-12-2021	Valid

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General Information

Applicant	ALE USA Inc.
Applicant Address	26801 West Agoura Road, Calabasas, CA 91301, United States
Manufacturer	ALE USA Inc.
Manufacturer Address	26801 West Agoura Road, Calabasas, CA 91301, United States
Test Site	MRT Technology (Taiwan) Co., Ltd
Test Site Address	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
MRT FCC Registration No.	291082

Test Facility / Accreditations

1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Taiwan, EU and TELEC Rules.

1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada and Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).

2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	OmniAccess Stellar
Model No.	OAW-AP1301H
Wi-Fi Specification	802.11a/b/g/n/ac/ax
Bluetooth Specification	v5.0 single mode, BLE only
Operating Temperature	0 ~ 50 °C
Power Type	AC Power Adapter or PoE Injector Input
Operating Environment	Indoor Use
Antenna Information	Refer to Section 2.2

Note: The information shown above was provided by manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.

2.2. Description of Available Antennas

Antenna Type	Frequency Band (GHz)	Max Peak Gain (dBi)	CDD Directional Gain (dBi)		BF Directional Gain (dBi)
			For Power	For PSD	
Wi-Fi Antenna (2*2 MIMO)					
PIFA	2.4 ~ 2.5	3.92	3.92	6.93	6.93
	5.15 ~ 5.25	4.41	4.41	7.42	7.42
	5.25 ~ 5.35	4.41	4.41	7.42	7.42
	5.47 ~ 5.725	3.89	3.89	6.90	6.90
	5.725 ~ 5.85	4.25	4.25	7.26	7.26
Bluetooth Antenna					
PIFA	2.4 ~ 2.5	3.85			

Note:

1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

For CDD transmissions, directional gain is calculated as follows, N_{ANT} = 2, N_{SS} = 1.

If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,

  Array Gain = 10 log (N_{ANT}/ N_{SS}) dB = 3.01;

- For power measurements on IEEE 802.11 devices,

  Array Gain = 0 dB for $N_{ANT} \leq 4$;

2. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax, not include 802.11a/b/g. Directional gain = G_{ANT} + BF Gain. BF mode power setting will be less than or equal to CDD power setting.

3. RF Exposure Evaluation

3.1. 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 (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

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

Pd is the limit of MPE, $1mW/cm^2$. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

3.2. Test Result

Product	OmniAccess Stellar
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to clause 2.2.

Test Mode	Frequency Band (MHz)	Max Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)
Bluetooth-LE	2402 ~ 2480	18.17	3.85	22.02
802.11b/g/n/ax	2412 ~ 2462	21.66	6.93	28.59
802.11a/n/ac/ax	5180 ~ 5320, 5500 ~ 5720, 5745 ~ 5825	22.90	7.42	30.32

Note: Turn-up power from operation description was taken into account for above max conducted power.

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)
Bluetooth-LE	2402 ~ 2480	22.02	0.0317	1
802.11b/g/n/ax	2412 ~ 2462	28.59	0.1438	1
802.11a/n/ac/ax	5180 ~ 5240, 5745 ~ 5825	30.32	0.2142	1

CONCULISON:

WLAN 2.4GHz, WLAN 5GHz and Bluetooth-LE can transmit simultaneously.

The max Power Density at R (20 cm) = $0.0317mW/cm^2 + 0.1438mW/cm^2 + 0.2142mW/cm^2 = 0.3896mW/cm^2 < 1mW/cm^2$.

Therefore, the compliance distance is 20cm.

The End

Appendix - EUT Photograph

Refer to “OAW-AP1301H Photo” file.