

RF Exposure Evaluation Declaration

FCC ID: 2AI9TOAW-AP136X

APPLICANT: ALE USA INC.

Application Type: Certification

Product: OmniAccess Stellar

Model No.: OAW-AP1361, OAW-AP1361D, OAW-AP1362

Brand Name: Alcatel-Lucent 
Enterprise

FCC Classification: Digital Transmission System (DTS)

Unlicensed National Information Infrastructure (NII)

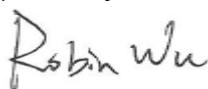
Test Procedure(s): KDB 447498 D01v06

Test Date: November 05, 2019 ~ March 07, 2020

Reviewed By:


(Sunny Sun)

Approved By:


(Robin Wu)



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 (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
1912RSU073-U6	Rev. 01	Initial Report	03-18-2020	Valid

General Information

Applicant:	ALE USA INC.
Applicant Address:	26801 WEST AGOURA ROAD, CALABASAS, CA 91301, USA
Manufacturer:	ALE USA INC.
Manufacturer Address:	26801 WEST AGOURA ROAD, CALABASAS, CA 91301, USA
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
Test Device Serial No.:	N/A <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC accredited (MRT Designation No. CN1166) test facility with the site description report on file and has met all the requirements specified in ANSI C63.4-2014.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications, Radio and SAR testing.



1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	OmniAccess Stellar
Model No.:	OAW-AP1361, OAW-AP1361D, OAW-AP1362
Brand Name:	Alcatel-Lucent  Enterprise
Wi-Fi Specification:	802.11a/b/g/n/ac/ax
Bluetooth Specification:	v5.1
Operating Temperature:	-40 ~ 65 °C
Power Type:	PoE input
Operating Environment:	Outdoor Use
Accessories	
Adapter:	Model No.: PD-9501GC/AC Input Power: 100 - 240V ~ 50/60Hz, 1.5A Output Power: 55VDC/1.1A

Note 1: The difference between models is that EUT use different Wi-Fi antenna and appearance, other hardware and software are the same.

Note 2: The adapter not market with AP.

1.2. Description of Available Antennas

Model No.: OAW-AP1361

Antenna Type	Frequency Band (GHz)	Tx Paths	Bandwidth (MHz)	Max Peak Gain (dBi)				Directional Gain (dBi)			
				Ant 0	Ant 1	Ant 2	Ant 3	CDD	Beamforming		
Wi-Fi Internal Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)											
Omni Antenna	2400 ~ 2483.5	2	20, 40	4.72	4.85	--	--	4.85	7.86		
	5150 ~ 5850	4	20, 40, 80	6.48	6.31	6.26	6.12	6.48	12.50		
	5150 ~ 5250 30° elevation angle	4	20, 40, 80	-5.46	-4.22	-2.90	-3.84	--			
Bluetooth Internal Antenna											
Antenna Type		Frequency Band (GHz)				Max Peak Gain (dBi)					
Omni Antenna		2400 ~ 2483.5				4.64					
Scan Antenna											
Antenna Type		Frequency Band (GHz)				Max Peak Gain (dBi)					
Omni Antenna		2400 ~ 2483.5				4.58					
		5150 ~ 5850				6.00					
		5150 ~ 5250 30° elevation angle				-5.83					

Model No.: OAW-AP1361D

Antenna Type	Frequency Band (GHz)	Tx Paths	Bandwidth (MHz)	Max Peak Gain (dBi)				Directional Gain (dBi)			
				Ant 0	Ant 1	Ant 2	Ant 3	CDD	Beamforming		
Wi-Fi Internal Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)											
Directional Antenna	2400 ~ 2483.5	2	20, 40	7.5	7.0	--	--	7.5	10.51		
	5150 ~ 5850	4	20, 40, 80	7.4	7.0	6.9	7.2	7.4	13.42		
	5150 ~ 5250 30° elevation angle	4	20, 40, 80	3.12	2.98	3.24	3.65	--			
Bluetooth Internal Antenna											
Antenna Type		Frequency Band (GHz)				Max Peak Gain (dBi)					
Omni Antenna		2400 ~ 2483.5				3.30					
Scan Antenna											
Antenna Type		Frequency Band (GHz)				Max Peak Gain (dBi)					
Omni Antenna		2400 ~ 2483.5				7.20					
		5150 ~ 5850				9.40					
		5150 ~ 5250 30° elevation angle				2.88					

Model No.: OAW-AP1362

Antenna Type	Frequency Band (GHz)	Tx Paths	Bandwidth (MHz)	Max Peak Gain (dBi)	Directional Gain (dBi)	
					CDD	Beamforming
Wi-Fi Internal Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)						
Omni Antenna	2400 ~ 2483.5	2	20, 40	5	5	8.01
	5150 ~ 5850	4	20, 40, 80	7	7	13.02
	5150 ~ 5250 30° elevation angle	4	20, 40, 80	-0.3	--	--
Bluetooth Internal Antenna						
Antenna Type		Frequency Band (GHz)			Max Peak Gain (dBi)	
Omni Antenna		2400 ~ 2483.5			4.06	
Scan Antenna						
Antenna Type		Frequency Band (GHz)			Max Peak Gain (dBi)	
Omni Antenna		2400 ~ 2483.5			4.58	
		5150 ~ 5850			6.00	
		5150 ~ 5250 30° elevation angle			2.88	

Note 1: The EUT supports Cyclic Delay Diversity (CDD) technology for 802.11a/b/g/n/ac/ax and Beam Forming technology for 802.11n/ac/ax.

Note 2: When the EUT supports Cyclic Delay Diversity (CDD) and it is correlated.

If all antennas have the same gain, G_{ANT} , Directional gain = $G_{ANT} + \text{Array Gain}$, 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 $N_{ANT} \leq 4$;

If antenna gains are not equal, Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Note 3: The EUT also supports Beam Forming mode, Directional gain = $G_{ANT} + 10 \log(N_{ANT}/N_{SS})$ dB, Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain

2. RF Exposure Evaluation

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 (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: $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

Pd = power density in mW/cm²

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/cm². 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.

2.2. Test Result of RF Exposure Evaluation

Product	OmniAccess Stellar				
Test Item	RF Exposure Evaluation				

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Safety Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	
OAW-AP1361						
Bluetooth	2402 ~ 2480	24.11	30	0.0228	1	
Wi-Fi	2412 ~ 2462	32.75		0.1666		
	5150 ~ 5850	35.89		0.3432		
Scan Wi-Fi	2412 ~ 2462	16.50		0.0039		
	5180 ~ 5240	16.87		0.0043		
	5745 ~ 5825					
OAW-AP1361D						
Bluetooth	2402 ~ 2480	22.77	30	0.0167	1	
Wi-Fi	2412 ~ 2462	35.92		0.3456		
	5150 ~ 5850	35.68		0.3270		
Scan Wi-Fi	2412 ~ 2462	19.12		0.0072		
	5180 ~ 5240	20.27		0.0094		
	5745 ~ 5825					
OAW-AP1362						
Bluetooth	2402 ~ 2480	23.53	30	0.0199	1	
Wi-Fi	2412 ~ 2462	32.90		0.1724		
	5150 ~ 5850	35.79		0.3354		
Scan Wi-Fi	2412 ~ 2462	16.50		0.0039		
	5180 ~ 5240	16.87		0.0043		
	5745 ~ 5825					

Note 1: The 2.4G & 5G can't work simultaneously of Scan Wi-Fi.

Note 2: The OAW-AP1361 max Power Density at R (20 cm) = 0.0228 + 0.1666 + 0.3432 + 0.0043 mW/cm² = 0.5369 mW/cm² < 1 mW/cm².

Note 3: The OAW-AP1361D max Power Density at R (20 cm) = 0.0167 + 0.3456 + 0.3270 + 0.0094 mW/cm² = 0.6987 mW/cm² < 1 mW/cm².

Note 3: The OAW-AP1362 max Power Density at R (20 cm) = 0.0199 + 0.1724 + 0.3354 + 0.0043 mW/cm² = 0.5320 mW/cm² < 1 mW/cm².

Therefore, the Min Safety Distance is 30cm.

The End

Appendix A – EUT Photograph

Refer to “1912RSU073-UE” file.