	BUREAU VERITAS
	CBSD-EUD Test Report
Report No.:	RF181220E07-2
FCC ID:	I88LTE7480-S905
Test Model:	LTE7480-S905
Received Date:	Dec. 20, 2018
Test Date:	Apr. 19, 2019
Issued Date:	Apr. 19, 2019
Applicant: Address:	Zyxel Communications Corporation No.2 Industry East RD. IX, Hsinchu Science Park, Hsinchu 30075, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
FCC Registration / Designation Number:	723255 / TW2022



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# **Release Control Record**

Issue No.	Description	Date Issued
RF181220E07-2	Original release.	Apr. 19, 2019



### 1 Certificate of Conformity

Product:LTE-A Pro Outdoor RouterBrand:ZYXELTest Model:LTE7480-S905Sample Status:ENGINEERING SAMPLEApplicant:Zyxel Communications CorporationTest Date:Apr. 19, 2019Standards:FCC Part 96.47

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :	<u> </u>	, Date:	Apr. 19, 2019	
	Claire Kuan / Specialist			
Approved by :	May Chen / Manager	_, Date:_	Apr. 19, 2019	



# 2 Summary of Test Results

Applied Standard : FCC Part 96.47					
FCC Clause Test Item Result Remarks					
96.47(a)(1)	End User Device additional requirements	Pass	Meet the requirement		

Note:

Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

#### 2.1 Modification Record

There were no modifications required for compliance.



# 3 General Information

# 3.1 General Description of EUT

Product	LTE-A Pro Outdoor Router				
Brand	ZYXEL				
Test Model	LTE7480-S905				
RF CPU Model No.	MT7621AT				
WiFi Chip Model No.	MT7603E				
LTE chip Model No.	SDX20				
FW version	LTE7480-S905 V2.00(ABQT.0)C0				
Status of EUT	ENGINEERING SAMPLE				
Power Supply Rating	DC 48V from adapter (POE)				
Modulation Type	QPSK, 16QAM, 64QAM				
	Channel Bandwidth EMHz	TX: 3552.5 ~ 3697.5 MHz			
		RX: 3552.5 ~ 3697.5 MHz			
	Channel Bandwidth 10MHz	TX: 3555 ~ 3695 MHz			
		RX: 3555 ~ 3695 MHz			
Operating r requeries	Channel Bandwidth 15MHz	TX: 3557.5 ~ 3692.5 MHz			
		RX: 3557.5 ~ 3692.5 MHz			
	Channel Bandwidth 20MHz	TX: 3560 ~ 3690 MHz			
		RX: 3560 ~ 3690 MHz			
Channel Bandwidth	5MHz, 10MHz, 15MHz & 20MHz				
	Channel Bandwidth 5MHz	22.77 dBm			
Max. EIRP Power	Channel Bandwidth 10MHz	22.66 dBm			
	Channel Bandwidth 15MHz	22.75 dBm			
	Channel Bandwidth 20MHz	22.69 dBm			
		QPSK: 4M47G7D			
	Channel Bandwidth 5MHz	16QAM: 4M47D7W			
		64QAM: 4M47D7W			
		QPSK: 8M92G7D			
	Channel Bandwidth 10MHz	16QAM: 8M94D7W			
Emission Designator		64QAM: 8M92D7W			
		QPSK: 13M5G7D			
	Channel Bandwidth 15MHz	16QAM: 13M4D7W			
		64QAM: 13M4D7W			
	Channel Bandwidth 2010Hz				
	Defer to note as helps:				
Antenna Type	Refer to note as below				
Dete Coble Supelied					
Data Cable Supplied	RJ45 cable (Unshielded, 1.8m)				



Note:

1. There are WLAN and WWAN technology used for the EUT. The EUT has below radios as following table:						
Radio 1				Radio 2		
WLAN (2.4GHz)				WWAN (LTE) / 3G		
2. Simultaneously t	ransmission co	ndition.				
Condition			Techr	nology		
1	WL	AN (2.4GHz)			WWAN (LTE)	/ 3G
Note: The emissio	n of the simulta	neous operation h	ias been e	valuate	d and no non-complia	ance was found.
3. The EUT must b	e supplied with	a adapter (POE) a	as followin	g table:		
Brand	Model No.		Spec.			
SHENZHEN TPT24S48A-MC Input: 100-240Vac, 0.5A, 50/60Hz   AC input cable: Unshielded 1.8m Output: 48Vdc						
4. The antennas pr	ovided to the E	UT, please refer to	the follov	ving tab	le:	
Chain No.	Antenna Net Gain(dBi)	Frequency range		Antenna Type	Connector Type	
WLAN-ANT0	6	2.4 ~ 2.4835GHz		PIFA	iPEX	
WLAN-ANT1	5	2.4 ~ 2.4	835GHz		PIFA	iPEX
WWAN_0 (TX & RX)	9.85	3550 ~ 3700 Mł			Dipole	iPEX
WWAN_1 (RX only)	9.85	3550 ~ 3	700 MHz		Dipole	iPEX
WWAN_2 (RX only)	9.85	3550 ~ 3	700 MHz		Dipole	iPEX
WWAN_3 (RX only)	9.85	3550 ~ 3	700 MHz		Dipole	iPEX

5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.



### 4 Measurement

### 4.1 End User Device additional requirements

#### FCC Part 96.47

(a) End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.

(1) An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

### 4.2 Test Procedure

Following test procedure can be done by WINNF-TS-0122 CBRS CBSD Test Specification, use the certifited CBSD(FCC ID: P27P208) as CBSD device to show compliance with FCC Part 96.47 requirements for End User Device(EUD):

- a. Setup WINNF.PT.C.HBT.1 with 3615 ~ 3635 MHz and MaxEIRP at 20 dBm/MHz.
- b. Enable CBSD service from EPC management.
- c. Check EUD Tx Frequency and connection successful.
- d. Change CBSD frequencies with 3595 ~ 3615 MHz.
  - (1) Check EUD must discontinue operations, change frequencies within 10 seconds of receiving instructions from its associated CBSD.
- e. Setup WINNF.PT.C.HBT.1 with 3595 ~ 3615 MHz and MaxEIRP at 10 dBm/MHz.
- f. Enable CBSD service from EPC management.
- g. Check EUD Tx Frequency and connection successful.
- h. Change its MaxEIRP at 20 dBm/MHz from its associated CBSD.
- i. Disable the CBSD service.
  - (1) Check EUD must discontinue operations, change its operational power level within 10 seconds of receiving instructions from its associated CBSD.

#### 4.3 Test Environment

#### **Test Condition:**

Test Item	Environmental Conditions	Input Power	Tested By
End User Device additional requirements	24deg. C, 71%RH	120Vac, 60Hz	Matthew Yang



# 4.4 Test Equipment

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
CBSD	P208-TP	1801B\/\/000034	NΔ	NΔ
Sercomm	(FCCID:P27P208)	1001010000004	INA	IN/A
Laptop	Incoiron 15 2000		NIA	ΝΑ
DELL		DOTIVITINZ	INA	INA
Spectrum Analyzer		MV57140052	lup 1 2019	May 21 2010
Keysight	N9030D	101137140933	Juli 1, 2010	Way. 51, 2019

NOTE: 1. The test was performed in OVEN 4 Test Room

- 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- 3. Tested Date: April 19, 2019

#### 4.5 Test Setup



NOTE : The CBSD device is certified CBSD(FCC ID: P27P208). Where the CBSD device connection with EUD is by radiated method. The EUD device connection with Spectrum Analyzer is by conducted method.







### Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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