

## RF Exposure Report

**Report No.:** SA200505E03

**FCC ID:** I88LTE7485-S905

**Test Model:** LTE7485-S905

**Received Date:** May 11, 2020

**Test Date:** June 09, 2020

**Issued Date:** July 09, 2020

**Applicant:** Zyxel Communications Corporation

**Address:** 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

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**FCC Registration /  
Designation Number:** 723255 / TW2022

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### Release Control Record

Issue No.	Description	Date Issued
SA200505E03	Original release.	July 09, 2020

## 1 Certificate of Conformity

**Product:** 4G LTE-A Outdoor Router  
**Brand:** ZYXEL  
**Test Model:** LTE7485-S905  
**Sample Status:** ENGINEERING SAMPLE  
**Applicant:** Zyxel Communications Corporation  
**Test Date:** June 09, 2020  
**Standards:** FCC Part 2 (Section 2.1091)  
IEEE C95.3 -2002  
**References Test Guidance:** KDB 447498 D01 General RF Exposure Guidance v06

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 :**  \_\_\_\_\_, **Date:** \_\_\_\_\_ July 09, 2020  
Joyce Kuo / Specialist

**Approved by :**  \_\_\_\_\_, **Date:** \_\_\_\_\_ July 09, 2020  
Clark Lin / Technical Manager

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	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

f = Frequency in MHz ; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Formula

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

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

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 23 cm away from the body of the user. So, this device is classified as **Mobile Device**.

### 2.4 Antenna Gain

RF Chain NO	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
WLAN-ANT0	6	2.4~2.4835GHz	PIFA	iPEX
WLAN-ANT1	5	2.4~2.4835GHz	PIFA	iPEX
WWAN_0(TX&RX)	13	3550 MHz to 3700 MHz	Dipole	iPEX
WWAN_1(RX only)	13	3550 MHz to 3700 MHz	Dipole	iPEX
WWAN_2(RX only)	13	3550 MHz to 3700 MHz	Dipole	iPEX
WWAN_3(RX only)	13	3550 MHz to 3700 MHz	Dipole	iPEX

\*The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

## 2.5 Calculation Result

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
WLAN (2.4GHz-1TX)	2412~2462	82.224	6	23	0.04924	1
WLAN (2.4GHz-2TX)	2412~2462	80.823	8.52	23	0.08647	1
LTE (B48)	3552.5 ~ 3697.5	268.534	13.00	23	0.80600	1

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. WLAN (2.4GHz-2TX): Directional gain =  $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 8.52 \text{ dBi}$

### Conclusion:

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4GHz} + \text{WWAN} = 0.08647 / 1 + 0.80600 / 1 = 0.89247$$

Therefore the maximum calculations of above situations are less than the "1" limit.

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