MPE TEST REPORT

Applicant	Alcatel-Lucent Shanghai Bell Co.,Ltd.
FCC ID	2ADZRXS250WXAB
Product	XGSPON ONU
Brand	NOKIA
Model	XS-250WX-A/XS-240W-A
Report No.	R1801B0002-M1
Issue Date	April 18, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Jiangpeng Lan *Approved by: Kai Xu*

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1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.**The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.

1.2 Test facility

CNAS (accreditation number:L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
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1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

2 Description of Equipment under Test

Client Information

Applicant	Alcatel-Lucent Shanghai Bell CO. Ltd.
Applicant address	388-389#,Ningqiao Road,Pudong Jinqiao, Shanghai, P.R. China
Manufacturer	Alcatel-Lucent Shanghai Bell CO. Ltd.
Manufacturer address	388-389#,Ningqiao Road,Pudong Jinqiao, Shanghai, P.R. China

General Technologies

Model	XS-250WX-A/XS-240W-A
SN	/
Hardware Version	3FE 48307 AA /3FE 48631 AA
Software Version	3FE47059
Date of Testing:	December 20, 2016 ~ February 4, 2017 and September 18, 2017~ October 17, 2017 and January 24, 2018~ April 10, 2018

XS-250WX-A	XS-240W-A
With 10GE port	Without 10GE port
Note: Customer declaration, two models is the same except 10GE port. During the test, both of two models are evaluated, XS-250WX-A selected as the worst condition, but only the worst case is recorded in this report.	

	Model	ONU Part number	Kit Part number
US ONU	XS-250WX-A	3FE 48307 AA	-
US Kit	XS-250WX-A	3FE 48307 AA	3FE 48439 AA
US ONU	XS-240W-A	3FE 48631 AA	-
US Kit	XS-240W-A	3FE 48631 AA	3FE 48626 AA

XS-250WX-A/XS-240W-A (R1801B0002-M1) is a variant model of XS-250WX-A/XS-240W-A (RBA1709-0095MPE01R1).

Tested band refer to the following table.

The detailed product change description please refers to the ANNEX A.

Band		Original (RBA1709-0095MPE01R1)	Variant (R1801B0002-M1)
Wi-Fi 2.4G		Pass	Refer to the Original
Wi-Fi 5G	U-NII-1	Pass	Refer to the Original
	U-NII-2A	Not support	Pass
	U-NII-2C	Not support	Pass
	U-NII-3	Pass	Refer to the Original

3 Maximum conducted output power (measured) and antenna Gain

the numeric gain (G) of the antenna with a gain specified in dB is determined by
Numeric gain (G)=10^(antenna gain/10)

Band		Maximum Conducted Output Power (dBm)		Antenna Gain (dBi)	Numeric gain (dB)
		(dBm)	(mW)		
2.4G	SISO Antenna 1	26	398.107	3	1.995
	SISO Antenna 2	25	316.228	3	1.995
	SISO Antenna 3	26	398.107	3	1.995
5G	SISO Antenna 1	24	251.189	3	1.995
	SISO Antenna 2	24	251.189	3	1.995
	SISO Antenna 3	27	501.187	3	1.995
	SISO Antenna 4	25	316.228	3	1.995

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following

TABLE 1 – LIMITS FOR MAXIMUN PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3-30	1842/f	4.89/f	*(900/f2)	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 Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	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

Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

The maximum permissible exposure for 1500~100,000MHz is 1.0.So

Band	The maximum permissible exposure
Wi-Fi 2.4G	1.0mW/cm^2
Wi-Fi 5G	1.0mW/cm^2

IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. No change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the conducted power, considering maximum power and antenna gain. The formula shown in KDB 447498 D01 is used in the calculation.

Equation from KDB 447498 D01 General RF Exposure Guidance v06 (10/23/2015) is:

$$S = PG / 4\Pi R^2$$

Where: S = power density (in appropriate units, e.g. mW/cm^2)

P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = the numeric gain of the antenna

R = distance to the center of radiation of the antenna (20 cm = limit for MPE)

Band		PG (mW)	Test Result (mW/cm^2)	Limit Value (mW/cm^2)	The MPE ratio
WiFi 2.4G	SISO Antenna 1	794.328	0.158	1.0	0.158
	SISO Antenna 2	630.957	0.126	1.0	0.126
	SISO Antenna 3	794.328	0.158	1.0	0.158
	MIMO	2219.614	0.442	1.0	0.442
WiFi 5G	SISO Antenna 1	501.187	0.100	1.0	0.100
	SISO Antenna 2	501.187	0.100	1.0	0.100
	SISO Antenna 3	1000.000	0.199	1.0	0.199
	SISO Antenna 4	630.957	0.126	1.0	0.126
	MIMO	2633.332	0.524	1.0	0.524
Note: **R** = 20cm ∏= 3.1416 The MPE ratio = Mac Test Result÷Limit Value					

So the simultaneous transmitting antenna pairs as below:

∑of MPE ratios=WiFi 2.4G + WiFi 5G =0.442+0.524=0.965 <1

Note: For transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.

ANNEX A：Product Change Description

We, **Nokia Shanghai Bell Co. Ltd.** declare on our sole responsibility that the product, XS-250WX-A/XS-240W-A is the variant of the initial certified product, XS-250WX-A/XS-240W-A
Except the following changes on the latest MODEL: XS-250WX-A/XS-240W-A

SOFTWARE MODIFICATIONS:
Protocol Stack changes: NO
MMS/STK changes: NO
JAVA changes: NO
Other changes detailed: Yes, Enabled DFS feature in software configuration.

HARDWARE MODIFICATION:
Band changes: NO
Power Amplifier changes: NO
Antenna changes: NO
PCB Layout changes: NO
Components on PCB changes: NO
LCD changes: No
Speaker changes: NO
Camera changes: NO
Vibrator changes: NO
Bluetooth changes: NO
FM changes: NO
Other changes: NO

MECHANICAL MODIFICATIONS:
Use new metal front/back cover or keypad: NO
Mechanical shell changes: NO
Other changes detailed: NO

ACCESSORY MODIFICATIONS:
Battery changes: NO
AC Adaptor changes: NO

Earphone changes: NO

Signature: 

Print name: Liguo Leng

Date: April 16, 2018

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