



REPORT No. : SZ22040322W01

TEST REPORT

APPLICANT : Bunka Shutter Co., Ltd.

PRODUCT NAME : Wireless Push Button Switch

MODEL NAME : STX1531K

BRAND NAME : Wireless Switch

STANDARD(S) : Article 2 Paragraph 1 of Item 8

RECEIPT DATE : 2022-04-28

TEST DATE : 2022-05-05 to 2022-05-09

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Change History		
Version	Date	Reason for change
1.0	2022-05-18	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Bunka Shutter Co., Ltd.
Applicant Address:	1-17-3, Nishikata, Bunkyo-ku, Tokyo 113-8535, Japan
Manufacturer:	Aoyagi Nekken Denshi (Shenzhen) Limited
Manufacturer Address:	No.401, 4/F of Attachment Building & 3/F of Main building, N0.514 Si Li Road, Po Tou Xia Community, Guanlan, Longhua New District, Shenzhen City, Guangdong Province, China

1.2. Equipment Under Test (EUT) Description

Product Name:	Wireless Push Button Switch		
Sample No.	2#		
Hardware Version:	STX1531K-SSR V1.0		
Software Version:	STX1531K-SSR (MA82G5B32_ML7345D)(Press once mode) Ver0.01.hex		
Modulation Type:	FSK		
Frequency Range:	426.075MHz		
Channel Number:	1		
Power Supply:	Type	External Power Supply	
	Voltage (V)	Low(LV)	2.7V
		Rated(NV)	3.0V
		High(HV)	3.3V



Note 1: The materials are reported as follows, the main test is bolded, and the test results of other assessed differences are basically the same:

Reverser/Brand	Reverser/Part No	TCXO	TCXO/Part No	TCXO Package
I-CORE	AIP74HC04SA.TR	Dapu Telecom	T21-S569-24.00MHz	2016
HGSEMI	74HC04M/TR	EPSON	X1G004131006500	2016
TI	SN74LVC1G04DBVR	EPSON	X1G004201004011	3225

Note 2: The EUT operates in 426.075MHz, it transmits in manual.

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. Table for Filed Antenna

Antenna Manufacturer:	N/A
Brand Name:	N/A
Model Name:	N/A
Antenna Type:	Helical Antenna
Antenna Gain:	-7.55dBi

1.4. Summary of the Test Result

Applied Standard: Article 2 Paragraph 1 of Item 8			
Description of Test	Test Engineer	Result	Method determination /Remark
Antenna Power and Tolerance and E.I.R.P.	Meng Shurui	PASS	No deviation
Frequency Tolerance	Meng Shurui	PASS	No deviation
Adjacent-channel Leakage Power	Meng Shurui	PASS	No deviation
Permissible value for Occupied Bandwidth	Meng Shurui	PASS	No deviation
Unwanted Emission Strength	Meng Shurui	PASS	No deviation
Transmission Time Restriction	Meng Shurui	PASS	No deviation
Secondary Radiated Emissions	Meng Shurui	PASS	No deviation
Note 1: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.			
Note 2: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.			

1.5. Environmental Conditions

Temperature (°C):	5-35
Relative Humidity (%):	45-85
Atmospheric Pressure (kPa):	86-106



2. Test Results

2.1. Frequency Tolerance

2.1.1. Limit

Item	Limits
Frequency tolerance	$\pm 4 \times 10^{-6}$

2.1.2. Measuring Instruments and Setting

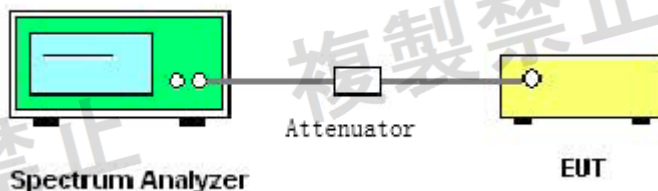
The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Test Mode	Spectrum Analyzer
Span	300kHz
RBW	10kHz
VBW	30kHz
Y scale	10 dB/Div
Sweep time	Auto
Data points	Auto
Sweep mode	Continuous
Detection mode	Positive peak
Display mode	Max hold

2.1.3. Test Procedures

- Set spectrum analyzer as in 2.1.2.
- Setting the EUT in continuously transmitting mode.
- Waiting for the signal envelop stability.
- Use the Peak search function of the spectrum analyzer to mark the frequency(f) that the maximum level located.

2.1.4. Test Setup Layout



2.1.5. Test Deviation

There is no deviation with the original standard.

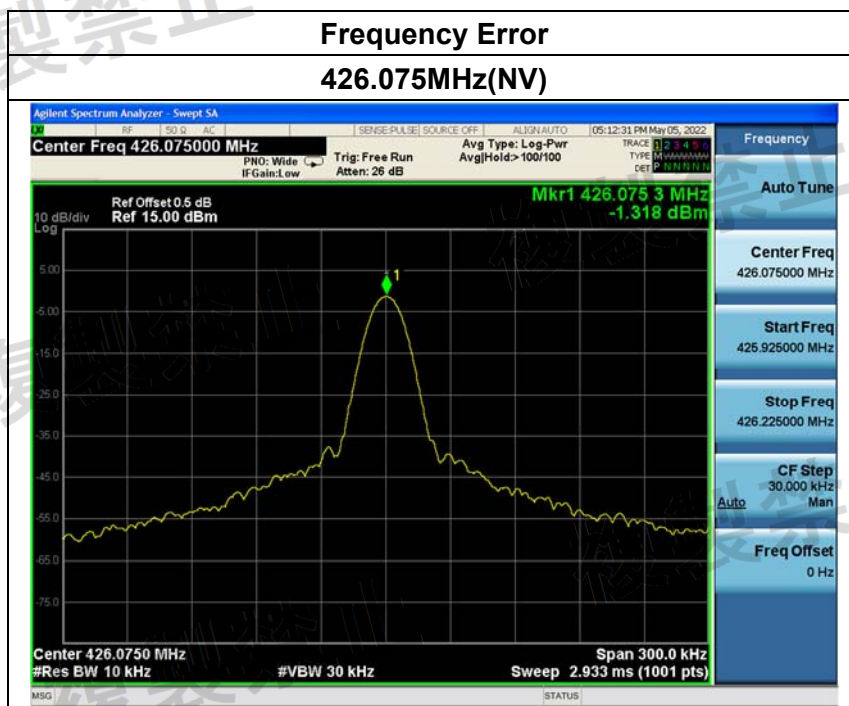
2.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



2.1.7. Test Result

Test Voltage	Frequency fc (MHz)	Test Frequency f (MHz)	Frequency Error (ppm)	Verdict
NV	426.075	426.0753	0.70	PASS



2.2. Permissible Value for Occupied Bandwidth

2.2.1. Limit

Channel Interval	Limits
6.25kHz	$\leq 5.8\text{kHz}$
12.5kHz	$\leq 8.5\text{kHz}$
25kHz	$\leq 16\text{kHz}$

2.2.2. Measuring Instruments and Setting

The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Test Mode	Occupied BW
Span	The value which can display entire signal
RBW	1%~3% of the OBW, but not below 1kHz
VBW	$\geq 3\text{RBW}$
Y scale	10 dB/Div
Sweep time	Auto
Data points	Auto
Sweep mode	Continuous
Detection mode	Positive peak
Display mode	Max hold

2.2.3. Test Procedures

- Set spectrum analyzer as in 2.1.2.
- Setting the EUT in continuously transmitting mode.
- Waiting for the signal envelop stability.
- Get the test results from the instrument.

2.2.4. Test Setup Layout

Test Refer to section 2.1.4

2.2.5. Deviation

There is no deviation with the original standard.

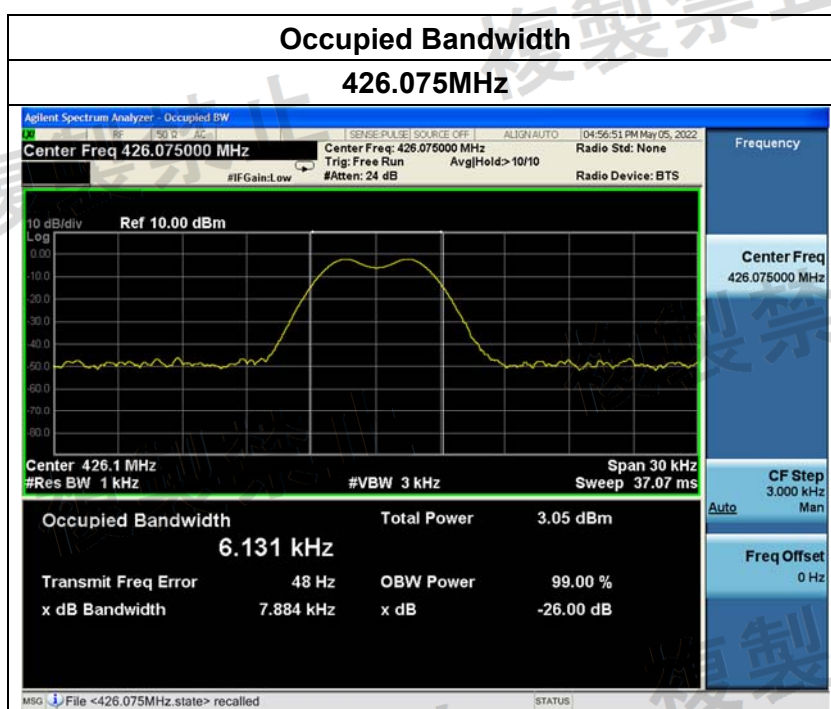


2.2.6.EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.2.7.Test Result

Frequency fc (MHz)	Result (kHz)	Limits	Verdict
426.075	6.131	<8.5kHz	PASS





2.3. Adjacent-channel Leakage Power

2.3.1. Limit

Channel Interval	Limits
6.25kHz	$\leq -40\text{dBc}(\pm 2\text{kHz band of the frequency which separated 6.25kHz from Cf})$
12.5kHz	$\leq -40\text{dBc}(\pm 4.25\text{kHz band of the frequency which separated 12.5kHz from Cf})$
25kHz	$\leq -40\text{dBc}(\pm 8\text{kHz band of the frequency which separated 25kHz from Cf})$

2.3.2. Measuring Instruments and Setting

The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Test Mode	ACP
Span	The value which can display entire signal
RBW	1%~3% of the OBW, but not below 1kHz
VBW	$\geq 3\text{RBW}$
Sweep Time	Auto
Sweep Points	Auto
Sweep Mode	Continuous
Detection Type	Average
Trace Mode	Average

2.3.3. Test Setup Layout

Refer to section 2.1.4

2.3.4. Test Deviation

There is no deviation with the original standard.

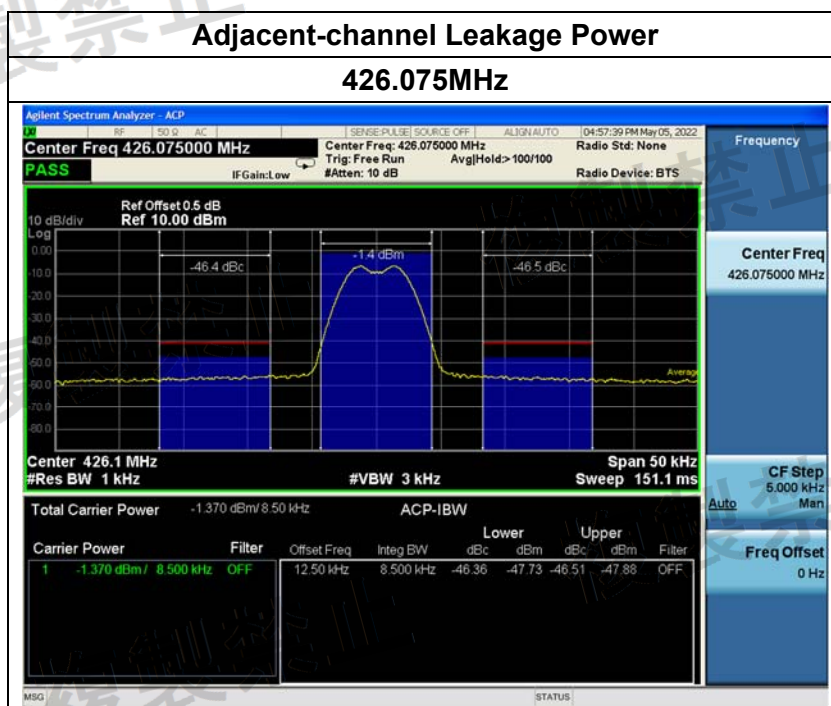
2.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



2.3.6. Test Result

Frequency (MHz)	Test Result	Limit	Verdict
426.075	Refer to Test Plot	< -40dBc	PASS



2.4. Unwanted Emission Strength

2.4.1. Limit

Item	Limits
Unwanted emission intensity	$\leq 2.5 \mu\text{W/MHz}$

2.4.2. Measuring Instruments and Setting

The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Test Mode	Spectrum Analyzer
Start Frequency	30MHz
Stop Frequency	6GHz
RBW	1MHz
VBW	The same with RBW
Sweep Time	Auto
Sweep Points	40001
Sweep Mode	Continuous
Detection Type	Peak
Trace Mode	Max Hold

2.4.3. Test Procedures

- Set spectrum analyzer as in 2.4.2.
- Setting the EUT in continuously transmitting mode.
- Waiting for the signal envelop stability.
- Use the peak search function of the spectrum analyzer to mark the emissions.

2.4.4. Test Setup Layout

Refer to section 2.1.4

2.4.5. Test Deviation

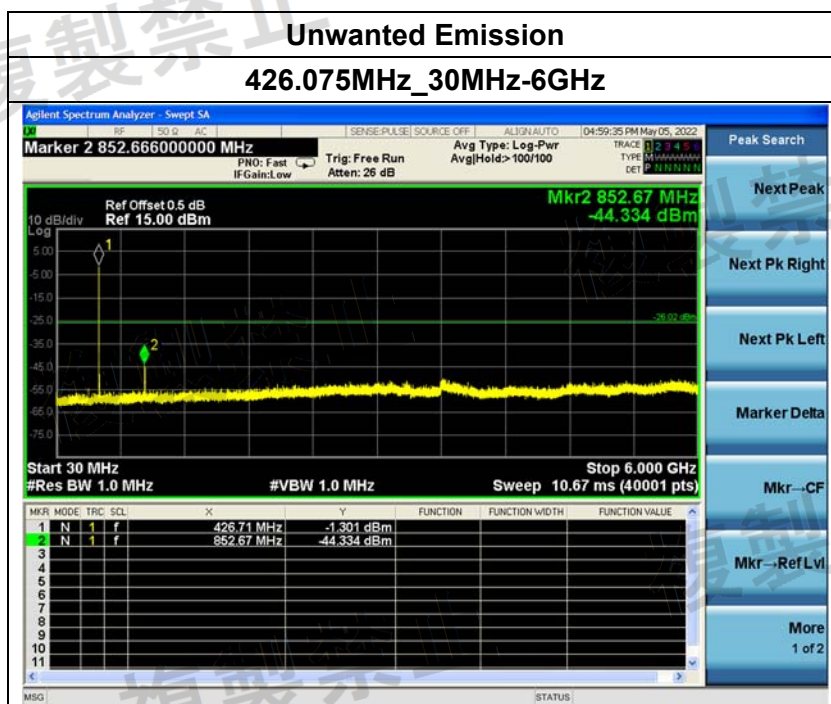
There is no deviation with the original standard.

2.4.6.EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4.7.Test Result

Frequency (MHz)	Test Frequency (MHz)	Test Result Value	Limit	Verdict
426.075	30~1000	Refer to test plots	$\leq 2.5\mu\text{W/MHz}$	PASS
	1000~6000		$\leq 2.5\mu\text{W/MHz}$	PASS



2.5. Antenna Power and Tolerance and E.I.R.P.

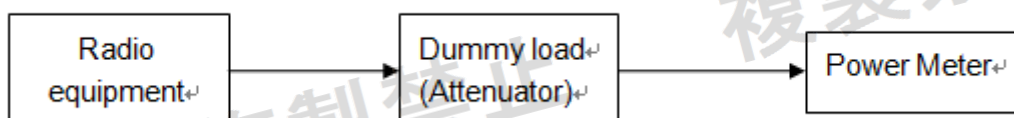
2.5.1. Limit

Item	Limits
Antenna Power	$\leq 100\text{mW}$
Antenna Power Tolerance	-50% ~+20%
E.I.R.P.	$\leq 2.93\text{dBm}$

2.5.2. Test Procedures

The EUT sent typical signal as working normally, and the Power Meter was set as Average power meter.

2.5.3. Test Setup Layout



2.5.4. Test Deviation

There is no deviation with the original standard.

2.5.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.5.6. Test Results

Antenna Gain =-7.55dBi, Manufacturer declare the conducted power =1mW

Frequency (MHz)	Test Value		E.I.R.P.		Antenna Power Error	Verdict
	(dBm)	(mW)	(dBm)	(mW)		
426.075	-1.343	0.734	-8.893	0.129	-26.60%	PASS

2.6. Transmission Time Restriction

2.6.1. Limit

Usage	Limit	
	Transmission ON	Transmission OFF
Tele-meter & Data Transmission	$\leq 40s$	$\geq 2s$
Tele-control(Accompanying Data Transmission)	$\leq 5s$	$\geq 2s$

2.6.2. Measuring Instruments and Setting

The spectrum analyzer is set as follows.

Spectrum Parameter	Setting
Test Mode	Spectrum Analyzer
Span	0Hz
RBW	1MHz
VBW	The same with RBW
Sweep Time	10s
Sweep Points	Auto
Sweep Mode	Single
Detection Type	Peak
Trace Mode	Clear write

2.6.3. Test Procedures

- Set spectrum analyzer as in 2.6.2.
- Push the button once to activate the device.
- Waiting for the single sweep completed.
- Use the marker delta function of the spectrum analyzer to mark the transmission ON time.

2.6.4. Test Setup Layout

Refer to section 2.1.4



2.6.5. Test Deviation

There is no deviation with the original standard.

2.6.6. EUT Operation during Test

The EUT was configured in normal use mode.

2.6.7. Test Result

Usage	Test Value		Verdict
	Transmission ON	Transmission OFF	
Tele-control	560ms	N/A	PASS



(426.075MHz)



2.7. Secondary Radiated Emissions

2.7.1. Limit

Item	Limits
Secondary Radiated Emissions	$\leq 4\text{nW}$

2.7.2. Measuring Instruments and Setting

The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Test Mode	Spectrum Analyzer
Start Frequency	30MHz
Stop Frequency	6GHz
RBW	1MHz
VBW	The same with RBW
Sweep Time	Auto
Sweep Points	40001
Sweep Mode	Continuous
Detection Type	Peak
Trace Mode	Max Hold

2.7.3. Test Procedures

- Set spectrum analyzer as in 2.7.2.
- Setting the EUT in receiving mode.
- Waiting for the signal envelop stability.
- Use the peak search function of the spectrum analyzer to mark the emissions.

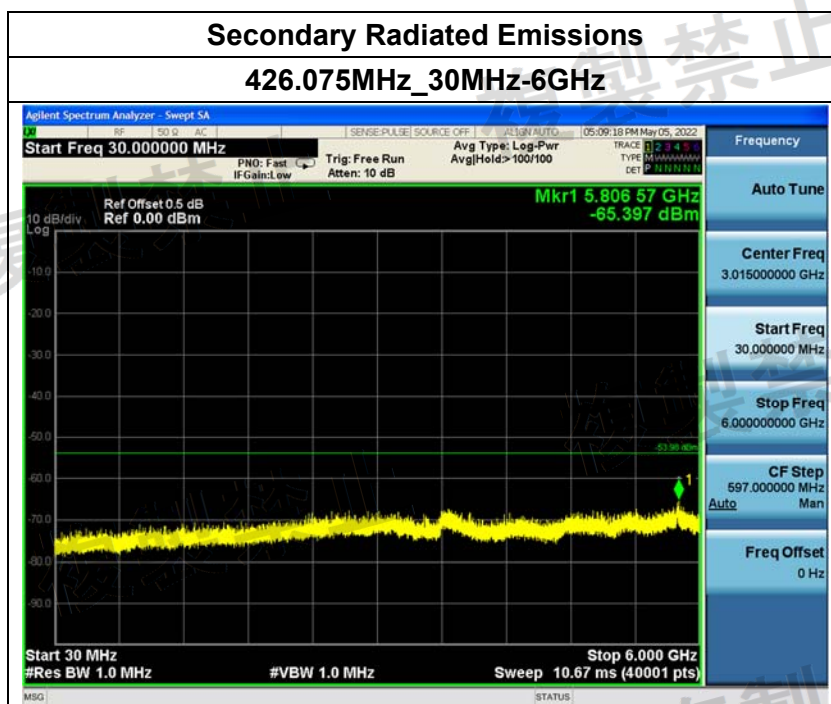
2.7.4. Test Deviation

There is no deviation with the original standard.



2.7.5. Test Result

Frequency (MHz)	Test Frequency (MHz)	Test Result Value	Limit	Verdict
426.075	30~1000	Refer to test plots	≤4nW	PASS
	1000~6000		≤4nW	PASS



2.8. Construction Protection Confirmation Method Limit

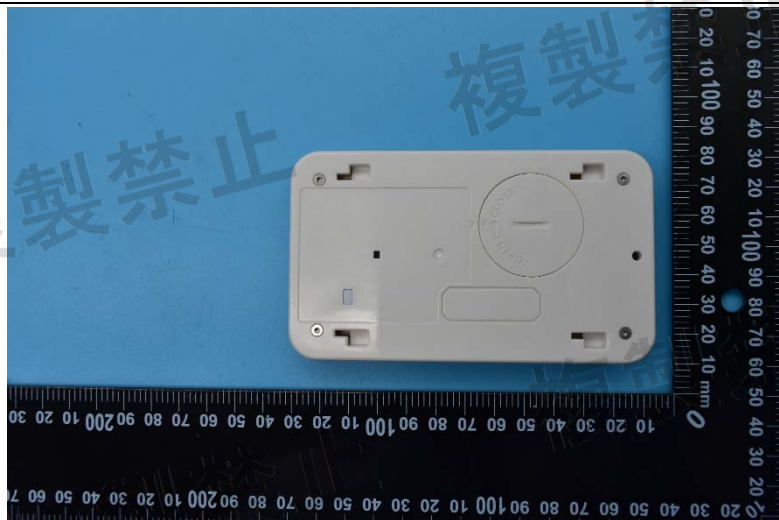
The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

2.8.1. Confirmation Method

The RF and modulation portions are protected against illegal modification as following method:

Protected Method	Description
Special screw	The radio frequency and modulation components are locked in the housing by special screws and cannot be easily opened.

2.8.2. Reference Documents

Reference Documents	Item
Photo	



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Annex A Test Uncertainty

Test Items	Uncertainty	Remark
Frequency Tolerance / Occupied Bandwidth	$\pm 0.5 \times 10^{-6}$	Confidence levels of 95%
Antenna Power	$\pm 0.849\text{dB}$	Confidence levels of 95%
TX-RX Spurious Emissions	$\pm 0.614\text{dB}$	Confidence levels of 95%
Adjacent-channel Leakage Power	$\pm 1.5\text{dB}$	Confidence levels of 95%



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Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China



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3. Test Equipments Utilized

Description	Manufacturer	Model	Serial No.	Cal. Date	Due Date
EXA Signal analyzer	Agilent	N9010A	MY53470836	2022.03.01	2023.02.28
DC Power Supply	IVYTECH	IV3610	1709D361010	2021.10.20	2022.10.19
Power Sensor	Agilent	U2021XA	MY54210011	2021.10.21	2022.10.20
Note 1: The equipments were calibrated by CCIC (Shenzhen) Metrology&Testing Service Co.,Ltd and Shenzhen Academy of Metrology and Quality Inspection.					

List of Software Used

Description	Manufacturer	Software Version
Test system	Tonscend	V2.5.77.0418

____ END OF REPORT ____