



FCC

RF Test Report

Product Name: Smart Phone

Model Number: KIW-L22

Report No: SYBH(Z-RF)006092015-2003

FCC ID: QISKIW-L22

Reliability Laboratory of Huawei Technologies Co., Ltd.

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Notice

1. The laboratory has Passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.
2. The laboratory has Passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
3. The laboratory has been listed by the US Federal Communications Commission to perform electromagnetic emission measurements. The site recognition number is 97456.
4. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 6369A-2.
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7. The test report is only valid for the test samples.
8. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.



Applicant: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129, P.R.C

Date of Receipt Sample: 2015-10-08
Start Date of Test: 2015-10-08
End Date of Test: 2015-10-15

Test Result: Pass

Approved by Senior Engineer:	2015-10-22	Liu Chunlin	
	Date	Name	Signature

Prepared by:	2015-10-22	Wu Tingsi	
	Date	Name	Signature



Modification Record

No.	Last Report No.	Modification Description
1		First report.



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1 General Information

1.1 **Applied Standard**

Applied Rules: 47 CFR FCC Part 2, Subpart J 2014
47 CFR FCC Part 15, Subpart C 2014

Test Method: FCC KDB 558074 D01 DTS Meas Guidance v03r02
ANSI C63.10-2013, American National Standard for Testing Unlicensed
Wireless Devices.

1.2 **Test Location**

Test Location 1: Reliability Laboratory of Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.3 **Test Environment Condition**

Ambient Temperature: 19.5to 25 °C
Ambient Relative Humidity: 40 to 55 %
Atmospheric Pressure: Not applicable



2 Test Summary

Test Item	FCC Part No.	Requirements	Test Result	Verdict
DTS (6 dB) Bandwidth	15.247(a)(2)	≥ 500 kHz.	Appendix A	SYBH(Z-RF)008 092015-2003
Occupied Bandwidth	---	No limit.	Appendix B	SYBH(Z-RF)008 092015-2003
Maximum Conducted Average Output Power	15.247(b)(3)	For directional gain: < 30 dBm – (G[dBi] – 6 [dB]), Average; Otherwise: < 30 dBm, Average;	Appendix C	SYBH(Z-RF)008 092015-2003
Maximum Power Spectral Density Level	15.247(e)	For directional gain: < 8 dBm/3 kHz – (G[dBi] – 6 [dB]), Average. Otherwise: < 8 dBm/3 kHz, Average.	Appendix D	SYBH(Z-RF)008 092015-2003
Band Edges Compliance	15.247(d)	< -30 dBm/100 kHz if total peak power \leq power limit.	Appendix E	SYBH(Z-RF)008 092015-2003
Unwanted Emissions into Non-Restricted Frequency Bands			Appendix F	SYBH(Z-RF)008 092015-2003
Unwanted Emissions into Restricted Frequency Bands (Radiated)	15.247(d) 15.209 (NOTE 1)	FCC Part 15.209 field strength limit;	Appendix G	SYBH(Z-RF)008 092015-2003
AC Power Line Conducted Emissions	15.207	FCC Part 15.207 conducted limit;	Appendix H	SYBH(Z-RF)008 092015-2003
NOTE 1: According to KDB 558074, antenna-port conducted measurements are acceptable as an alternative to radiated measurements for demonstrating compliance to the limits in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case emissions will also be required.				

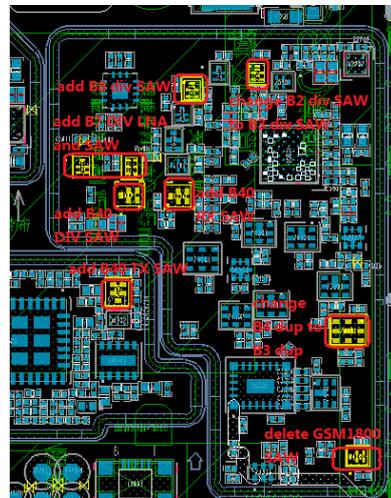
3 Description of the Equipment under Test (EUT)

3.1 General Description

KIW-L22 is subscriber equipment in the GSM/UMTS/LTE system. The GSM frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The UMTS frequency band is band I and band V and band VIII. The LTE frequency band is band I/III/V/VII/VIII/XXVIII/XL. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other bluetooth devices.

The mobile phone KIW-L22 and KIW-L23 are GSM/UMTS/LTE mobile phone with Bluetooth. The differences between KIW-L22 and KIW-L23 are as below:

Model	KIW-L23	KIW-L22
Trade mark	HONOR	HONOR
FCC ID	QISKIW-L23	QISKIW-L22
Frequency	GSM B2/B3/B5/B8 WCDMA B1/B2/B4/B5 LTE B2/B4/B5/B7/B28	GSM B2/B3/B5/B8 WCDMA B1/B5/B8 LTE B1/B3/B5/B7/B8/B28/B40 Frequency disabled by hardware, Changes are followed: <ol style="list-style-type: none"> 1. change B4 duplexer to B3 duplexer. 2. delete GSM1800 SAW. 3. change B2 div SAW to B3 div SAW. 4. add B8 div SAW. 5. add B40 primary TX/RX and div SAW. 6. add B7 div LNA and SAW.





SIM Card	double	double
Hardware Version	the same	the same
Software Version	different	different
Dimensions	the same	the same
Appearance	the same	the same
main antenna	antenna shape are same, antenna matching are different	antenna shape are same, antenna matching are different
BT/Wi-Fi antenna	the same	the same
DIV antenna	the same	the same
Others	the same	the same

NOTE: So we do not test the mobile phone KIW-L22. All of the Bluetooth BLE data refer to SYBH(Z-RF)008092015-2003 of KIW-L23 report.

3.2 EUT Identity

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

3.2.1 Board

Board		
Description	Hardware Version	Software Version
Main Board	HL3KIWM	KIW-L22C900B032

3.2.2 Sub- Assembly

Name	Manufacture	Description
Adapter	Huawei Technologies Co., Ltd.	Model: HW-050100U01(02220666) Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A
Adapter	Huawei Technologies Co., Ltd.	Model: HW-050100E01(02220667) Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A
Adapter	Huawei Technologies Co., Ltd.	Model: HW-050100B01(02220668) Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A
Adapter	Huawei Technologies Co., Ltd.	Model: HW-050100A01(02220669) Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A
Li-ion Battery	Huawei Technologies Co., Ltd.	Battery Model: HB396481EBC Rated capacity: 3000mAh Nominal Voltage:  +3.8V

3.3 Technical Description

Characteristics	Description	
TX/RX Operating Range	2400-2483.5 MHz band	$f_c = 2402 \text{ MHz} + N * 2 \text{ MHz}$, where: - f_c = "Operating Frequency" in MHz, - N = "Channel Number" with the range from 0 to 39.
Modulation Type	Digital	GFSK,
Emission Designator	GFSK for BT 4.1: 730KGXD	
Bluetooth Power Class	Class 1	



4 General Test Conditions / Configurations

4.1 EUT Configurations

4.1.1 General Configurations

Configuration	Description
Test Antenna Ports	Until otherwise specified, - All TX tests are performed at all TX antenna ports of the EUT, and - All RX tests are performed at all RX antenna ports of the EUT.
Multiple RF Sources	Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements.

4.1.2 Customized Configurations

# EUT Conf.	Signal Description	Operating Frequency	Duty cycle
TM1_Ch0	GFSK for BT 4.1 modulation, package type DH5, hopping off.	Ch No. 0 / 2402 MHz	62.3%
TM1_Ch19	GFSK for BT 4.1 modulation, package type DH5, hopping off.	Ch No. 19 / 2440 MHz	62.3%
TM1_Ch39	GFSK for BT 4.1 modulation, package type DH5, hopping off.	Ch No. 39 / 2480 MHz	62.3%

4.2 Test Environments

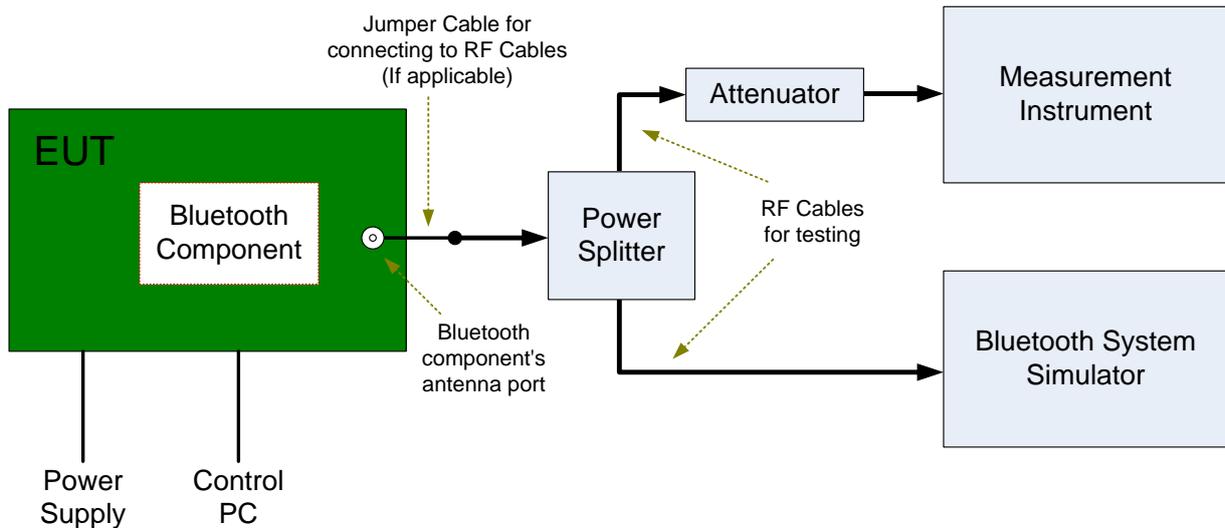
NOTE: The values used in the test report may be stringent than the declared.

Environment Parameter	Selected Values During Tests		
	Temperature	Voltage	Relative Humidity
NTNV	Ambient	3.8 VDC	Ambient

4.3 Test Setups

4.3.1 Test Setup 1

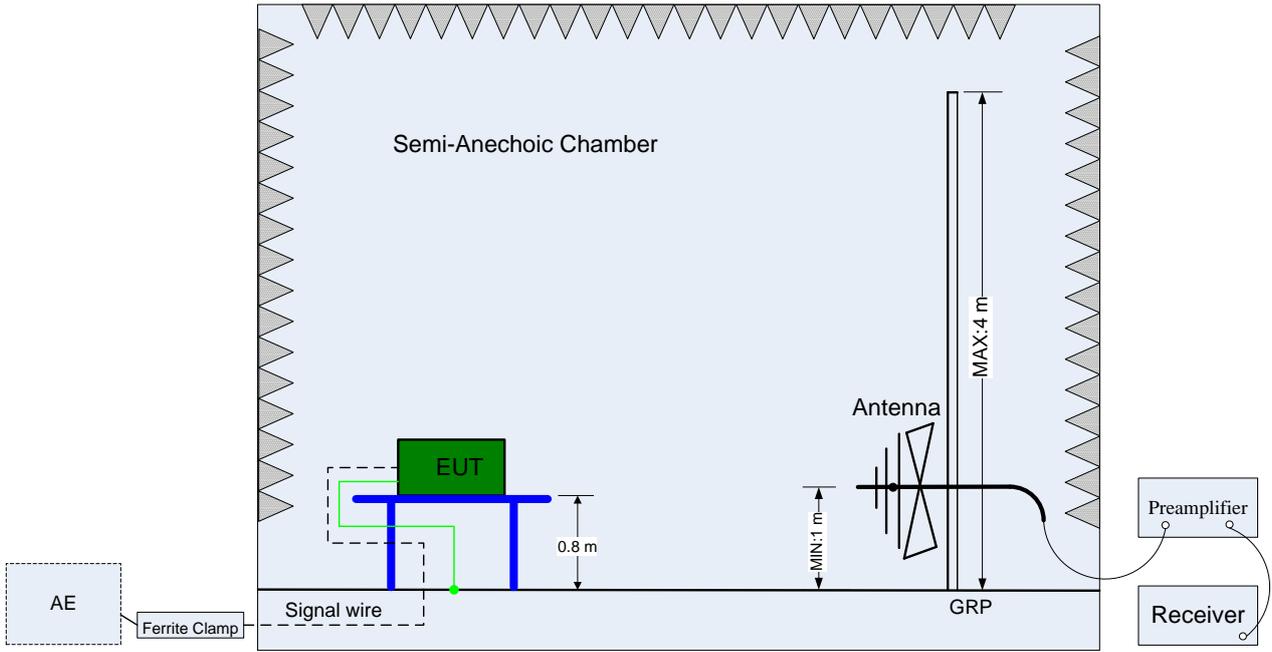
The Bluetooth component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by Bluetooth System Simulator and/or PC/software to emit the specified signals for the purpose of measurements.



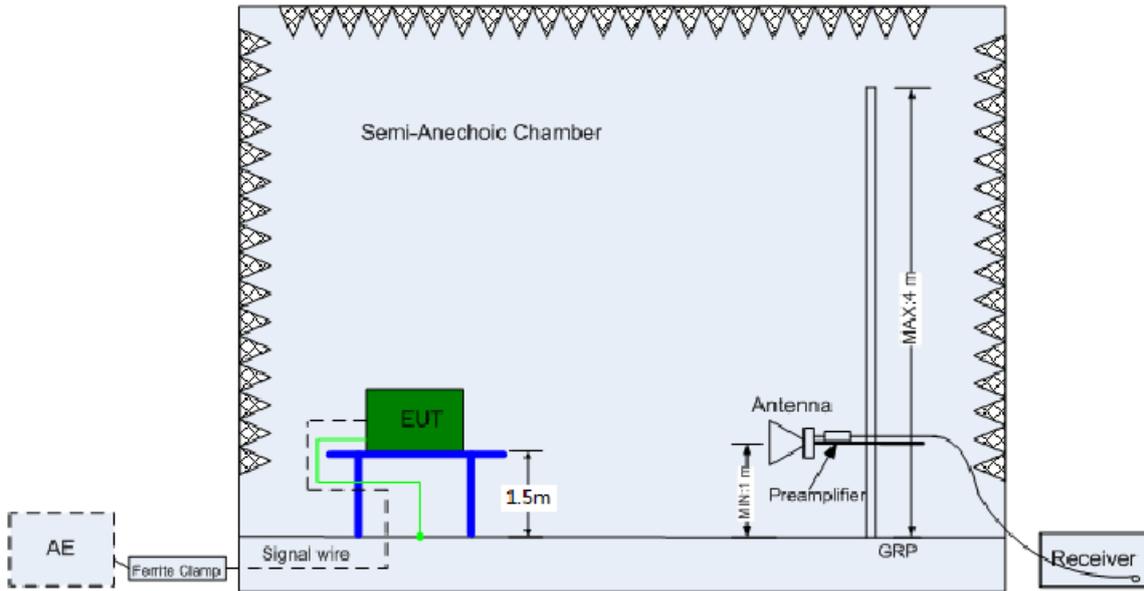
4.3.2 Test Setup 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4. The test distance is 3m. The setup is according to ANSI C63.4 and CAN/CSA-CEI/IEC CISPR 22.

The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).



(Below 1 GHz)

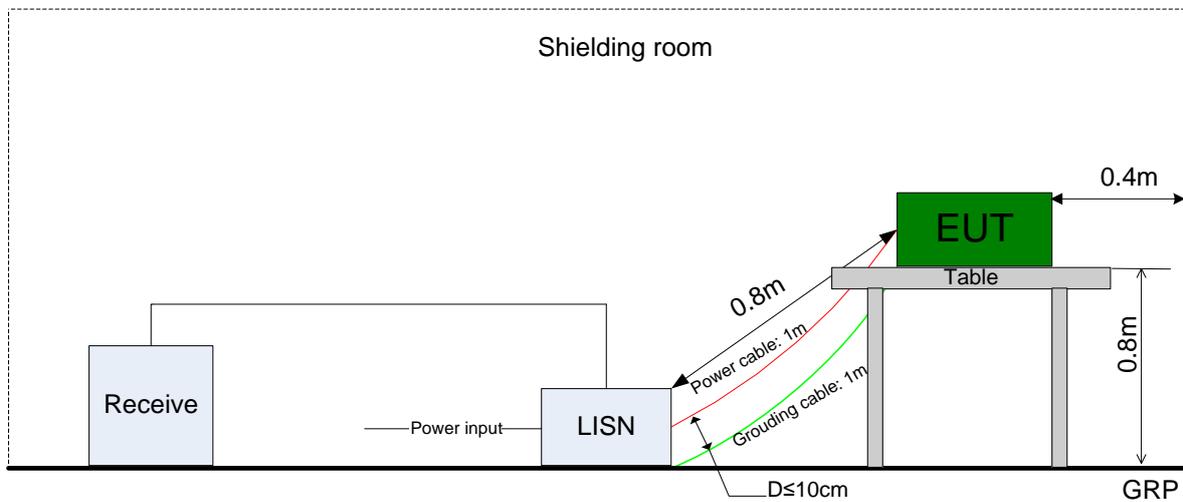


(Above 1 GHz)

4.3.3 Test Setup 3

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.



4.4 Test Conditions

Test Case	Test Conditions			
	Configuration	Description		
6dB Emission Bandwidth (EBW)	Meas. Method	FCC KDB 558074 §8.2 Option 2.		
	Test Env.	NTNV		
	Test Setup	Test Setup 1		
	EUT Conf.	TM1_Ch0, TM1_Ch19, TM1_Ch39.		
Maximum Conducted Average Output Power	Meas. Method	FCC KDB 558074 §9.2 .2. 4		
	Test Env.	NTNV		
	Test Setup	Test Setup 1		
	EUT Conf.	TM1_Ch0, TM1_Ch19, TM1_Ch39.		
Maximum Power Spectral Density Level	Meas. Method	FCC KDB 558074 §10.5		
	Test Env.	NTNV		
	Test Setup	Test Setup 1		
	EUT Conf.	TM1_Ch0, TM1_Ch19, TM1_Ch39.		
Band edge spurious emission	Meas. Method	FCC KDB 558074 §13.0.		
	Test Env.	NTNV		
	Test Setup	Test Setup 1		
	EUT Conf.	TM1_Ch0, TM1_Ch39.		
Unwanted Emissions into Non-Restricted Frequency Bands	Meas. Method	FCC KDB 558074 §11.0		
	Test Env.	NTNV		
	Test Setup	Test Setup 1		
	EUT Conf.	TM1_Ch0, TM1_Ch19, TM1_Ch39.		
Unwanted Emissions into Restricted Frequency Bands (Radiated)	Meas. Method	ANSI C63.10; FCC KDB 558074 §12.1, Radiated		
	Test Env.	NTNV		
	Test Setup	Test Setup 2		
	EUT Conf.	30 MHz -1 GHz	TM1_Ch0 (Worst Conf.).	
		1-3 GHz	TM1_Ch0, TM1_Ch19, TM1_Ch39.	
3-18 GHz		TM1_Ch19 (Worse Conf.),		
18-26.5 GHz		TM1_Ch0 (Worst Conf.).		
AC Power Line Conducted Emissions	Meas. Method	AC mains conducted. Pre: RBW = 10 kHz; Det. = Peak. Final: RBW = 9 kHz; Det. = CISPR Quasi-Peak & Average.		
	Test Env.	NTNV		
	Test Setup	Test Setup 3		
	EUT Conf.	TM1_Ch39.		

**5 Main Test Instruments**

Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal- Due
Power supply	KEITHLEY	2303	A120714713	2014-08-07	2016-08-06
Wireless Communication Test set	Agilent	N4010A	MY49081592	2014-11-04	2015-11-03
Universal Radio Communication Tester	R&S	CMU200	123299	2014-11-04	2015-11-03
Spectrum Analyzer	Agilent	N9020A	MY52090652	2015-07-08	2016-07-07
Universal Radio Communication Tester	R & S	CMW500	126854	2015-02-13	2016-02-12
Spectrum Analyzer	Agilent	E4440A	MY48250119	2015-07-08	2016-07-07
Signal Analyzer	R&S	FSQ31	200021	2014-11-04	2015-11-03
Spectrum Analyzer	Agilent	N9030A	MY49431698	2014-11-04	2015-11-03
Temperature Chamber	WEISS	WKL64	56246002940010	2015-02-13	2016-02-12
Signal generator	Agilent	E8257D	MY49281095	2014-11-04	2015-11-03
Vector Signal Generator	R&S	SMU200A	104162	2014-11-04	2015-11-03
Power Detecting & Sampling Unit	R&S	OSP-B157	100881	2015-10-15	2016-10-14
Signal Generator	Agilent	E4438C	MY47271904	2014-10-28	2015-10-27
Test receiver	R&S	ESU26	100387	2015-6-24	2016-06-23
Test receiver	R&S	ESCI	101163	2015-6-24	2016-06-23
Spectrum analyzer	R&S	FSU3	200474	2015-06-15	2016-06-14
Spectrum analyzer	R&S	FSU43	100144	2015-06-15	2016-06-14
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100262	2015-4-30	2017-4-29
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100263	2015-4-30	2017-4-29
Trilog Broadband Antenna (30M~3GHz)	SCHWARZB ECK	VULB 9163	9163-490	2015-4-30	2017-4-29
Trilog Broadband Antenna (30M~3GHz)	SCHWARZB ECK	VULB 9163	9163-520	2015-4-30	2017-4-29
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2015-4-30	2017-4-29
double ridged horn antenna (0.8G-18GHz)	R&S	HF907	100305	2015-4-30	2017-4-29
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	5140299	2015-7-15	2017-7-14
Artificial Main Network	R&S	ENV4200	100134	2015-6-24	2016-6-23
Line Impedance Stabilization Network	R&S	ENV216	100382	2015-6-24	2016-6-23

END