FCC
RF Test Report

Product Name: Smart Phone

Model Number: HUAWEI MLA-L11, MLA-L11, HUAWEI MLA-L01, MLA-L01

Report No: SYBH(Z-RF)027052016-2003

FCC ID：QISMLA-LX1

Reliability Laboratory of Huawei Technologies Co., Ltd.

(Global Compliance and Testing Center 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 & 2174.02 & 2174.03.
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-1.
5. The laboratory (Reliability Lab of Huawei Technologies Co., Ltd) is also named “Global Compliance and Testing Center of Huawei Technologies Co., Ltd”, the both names have coexisted since 2009.
6. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
7. The test report is invalid if there is any evidence of erasure and/or falsification.
8. The test report is only valid for the test samples.
9. 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:	2016-05-28
Start Date of Test:	2016-05-28
End Date of Test:	2016-06-21

Test Result: Pass

Approved by Senior Engineer:	2016-06-28	Roger Zhang	Roger Zhang
	Date	Name	Signature

Prepared by:	2016-06-28	Feng Nianwei	Feng Nianwei
	Date	Name	Signature

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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 v03r04 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	Pass
Occupied Bandwidth	---	No limit.	Appendix B	Pass
Duty Cycle	KDB 558074（6.0）	No limit.	Appendix C	Pass
Maximum Conducted Average Output Power	15.247(b)(3)	For directional gain: < 30 dBm – (G[dBi] – 6 [dB]), Average; Otherwise: < 30 dBm, Average;	Appendix D	Pass
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 E	Pass
Band Edges Compliance	15.247(d)	< -30 dBr/100 kHz if total average power ≤ power limit.	Appendix F	Pass
Unwanted Emissions into Non-Restricted Frequency Bands			Appendix G	Pass
Unwanted Emissions into Restricted Frequency Bands (Radiated)	15.247(d) 15.209 (NOTE 1)	FCC Part 15.209 field strength limit;	Appendix H	Pass
AC Power Line Conducted Emissions	15.207	FCC Part 15.207 conducted limit;	Appendix I	Pass

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.

NOTE 2: The Appendixes please see **No.: No.: SYBH(Z-RF)027052016-2003-A** of Appendix for Bluetooth BLE

3 Description of the Equipment under Test (EUT)

3.1 General Description

HUAWEI MLA-L11, MLA-L11, HUAWEI MLA-L01, MLA-L01 are subscriber equipment in the GSM/WCDMA/LTE system. The GSM frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The UMTS frequency band is B1 and B8. The LTE frequency band is B1 and B3 and B7 and B8 and B20 and B38. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/HSPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, AGPS, NFC and WIFI etc. Externally it provides one micro SD card interface (it can also used as SIM card interface), earphone port (to provide voice service) and one SIM card interface. HUAWEI MLA-L11, MLA-L11 is dual SIM smart phone. HUAWEI MLA-L01, MLA-L01 is single SIM smart phone. 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.

NOTE: But only Bluetooth BLE test data included in this report.

NOTE: The mobile phone MLA-L01 and MLA-L11 are LTE/UMTS mobile phone with Bluetooth

The differences between MLA-L01 and MLA-L11 are showed in the following table. MLA-L01 delete one SIM by software. Other parts of the mobile phone are the same, including the appearance, the antenna, Chipset, Bluetooth mode, Wifi mode, Adapter, Battery, Main board and so on.

	MLA-L01	MLA-L11
GSM four bands	B2/B3/B5/B8	B2/B3/B5/B8
WCDMA bands	B1/B8	B1/B8
LTE bands	B1/B3/B7/ B8/B20/B38	B1/B3/B7/ B8/B20/B38
FCC bands	GSM850/1900 LTE B7 /B38	GSM850/1900 LTE B7 /B38
SIM card	One	Two
NFC	the same	the same
External camera	the same	the same
internal camera	the same	the same
FLASH	the same	the same
Mainboard	the same	the same
PCB layout	the same	the same
Appearance	the same	the same

Bluetooth mode	the same	the same
WLAN mode	the same	the same
BT/ WLAN antenna	the same	the same
GSM/ WCDMA /LTE antenna	the same	the same
Adapter	the same	the same
Battery	the same	the same
Chipset	the same	the same
Memory	the same	the same
RF Parameter	The same RF Parameter in the same band	The same RF Parameter in the same band
Dimension	the same	the same
Main Frequency NV	The same NV in the same band	The same NV in the same band except LTE B1 antenna 2

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	HL1MLAL01M	MLA-L11C900B055 MLA-L01C900B055

3.2.2 Sub- Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
Adapter	HW-050200U01	Huawei Technologies Co., Ltd.	Input Voltage: ~100-240V 50/60Hz 0.5A Output Voltage: 5V ⎓ 2A Rated Power: 5W
Adapter	HW-050200E01	Huawei Technologies	Input Voltage: ~100-240V 50/60Hz 0.5A

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
		Co., Ltd.	Output Voltage: 5V ⎓ 2A Rated Power: 5W
Adapter	HW-050200B01	Huawei Technologies Co., Ltd.	Input Voltage: ~100-240V 50/60Hz 0.5A Output Voltage: 5V ⎓ 2A Rated Power: 5W
Adapter	HW-050200A01	Huawei Technologies Co., Ltd.	Input Voltage: ~100-240V 50/60Hz 0.5A Output Voltage: 5V ⎓ 2A Rated Power: 5W
Battery	HB386483ECW	Huawei Technologies Co., Ltd.	Rated capacity: 3340mAh Nominal Voltage: ⎓ +3.82V Charging Voltage: ⎓ +4.4V

3.3 Technical Description

Characteristics	Description	
TX/RX Operating Range	2400-2483.5 MHz band	fc = 2402 MHz + N * 2 MHz, where: - fc = “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: 790KFXD	
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%
TM1_Ch19	GFSK for BT 4.1 modulation, package type DH5, hopping off.	Ch No. 19 / 2440 MHz	62%
TM1_Ch39	GFSK for BT 4.1 modulation, package type DH5, hopping off.	Ch No. 39 / 2480 MHz	62%

4.2 Test Environments

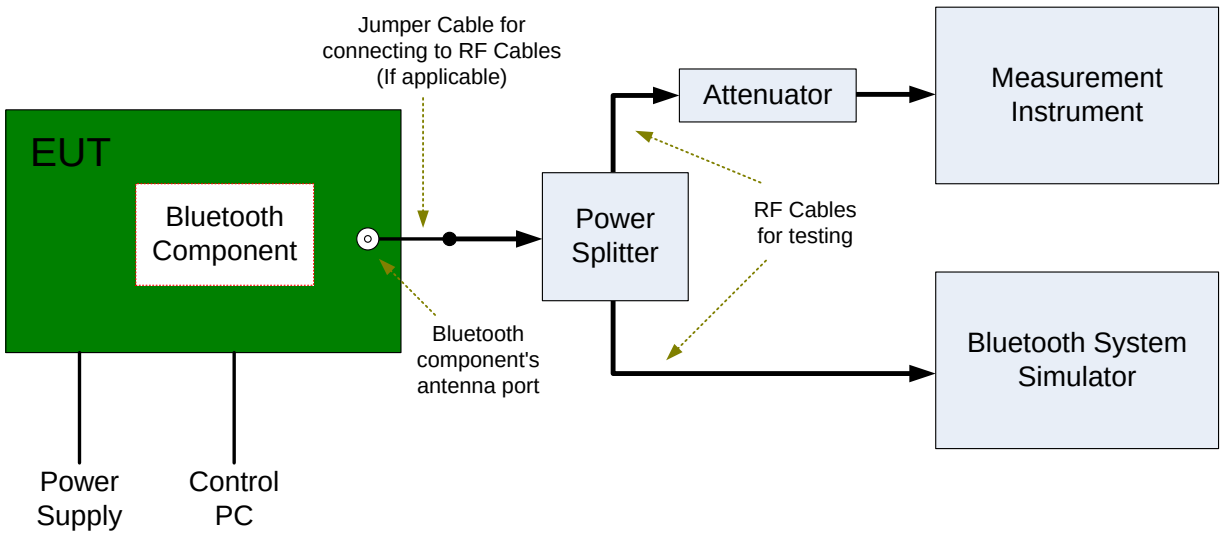
NOTE: The values used in the test report may be stringent than the declared.

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

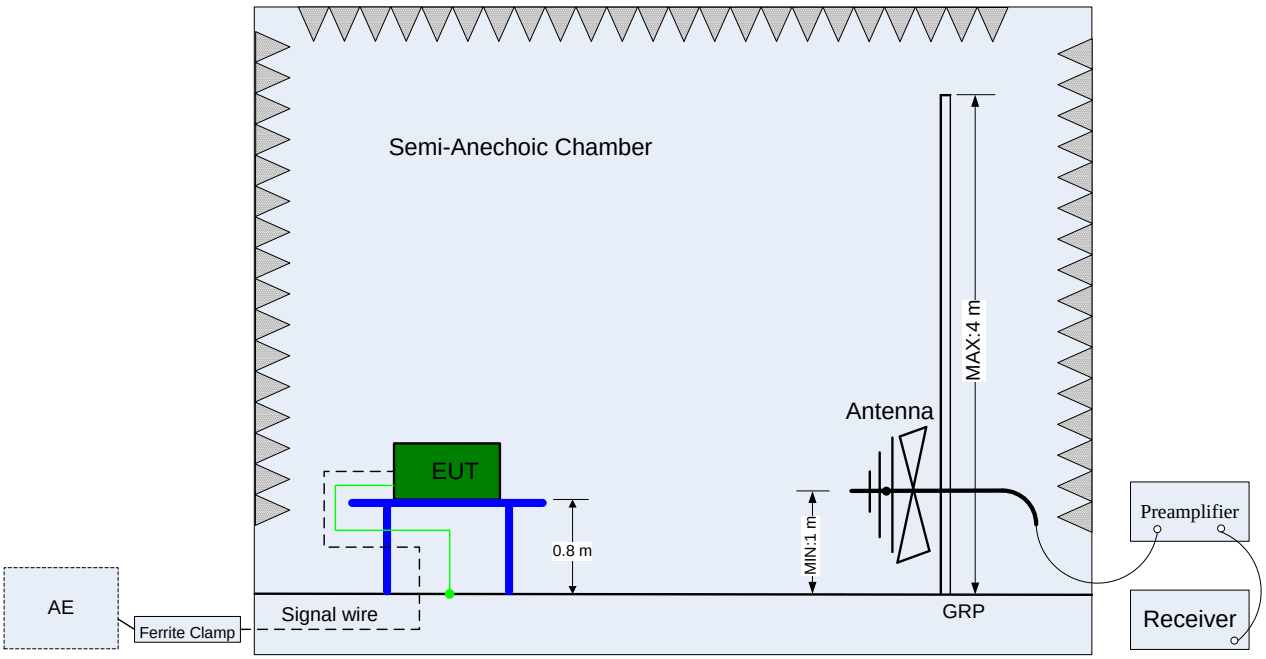
The Bluetooth component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by Bluetooth System Simulator and/or PC/software to emit the specified signals for the purpose of measurements.



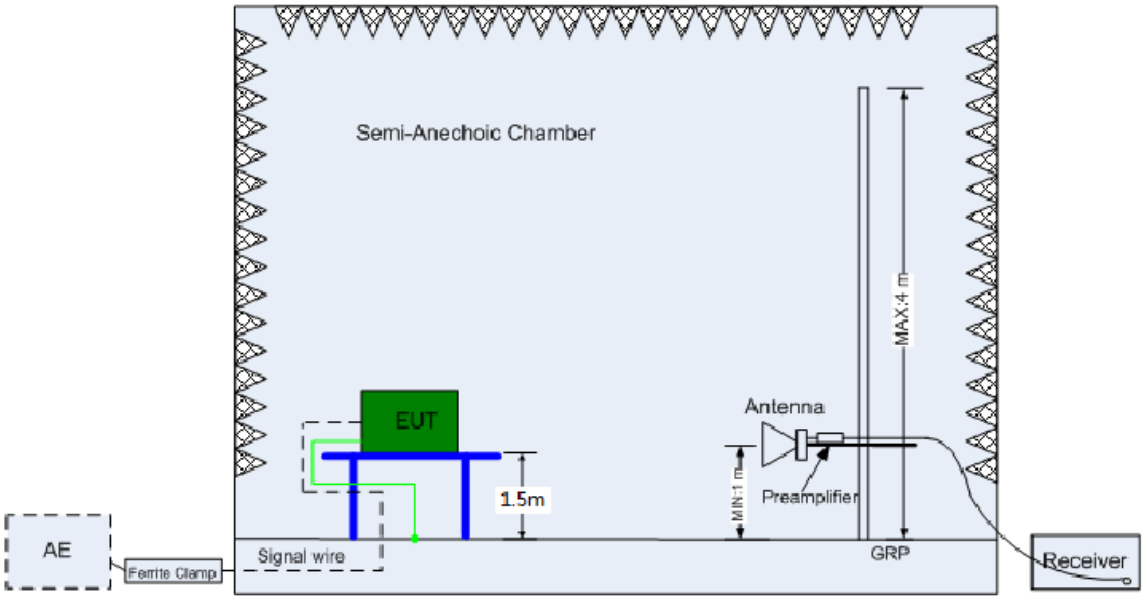
4.3.2 Test Setup 2

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)

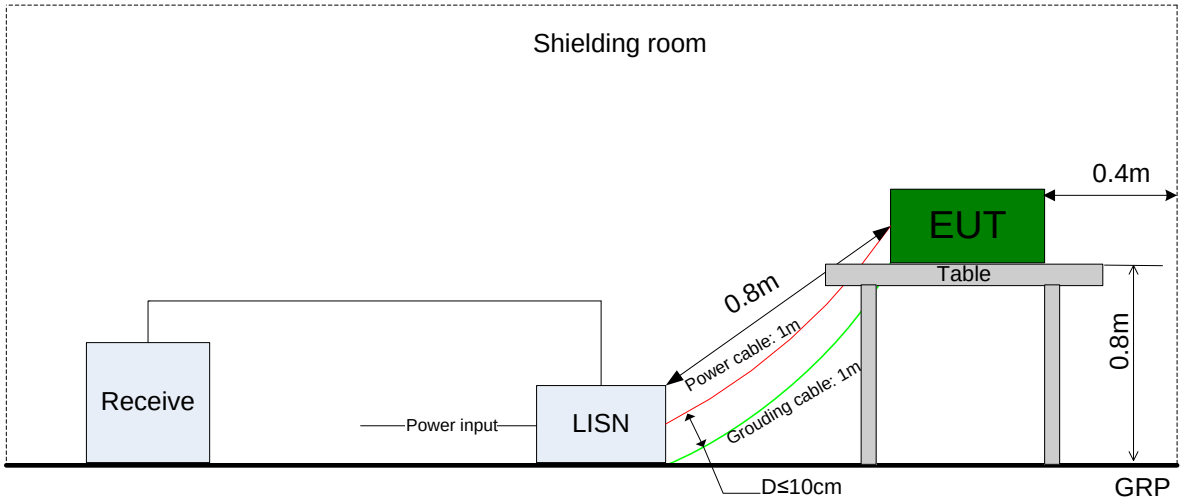


(Above 1 GHz)

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 0.8m 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 §8.1 Option 2.	
	Test Env.	NTNV	
	Test Setup	Test Setup 1	
	EUT Conf.	TM1_Ch0, TM1_Ch19, TM1_Ch39.	
Occupied Bandwidth	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 §10.1	
	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

Main Test Equipments					
Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal- Due
Spectrum Analyzer	Agilent	N9020A	MY52090652	2015-07-08	2016-07-07
Test receiver	R&S	ESU26	100387	2016-06-21	2017-06-20
Test receiver	R&S	ESCI	101163	2015-11-11	2016-11-10
Spectrum analyzer	R&S	FSU3	200474	2016-05-24	2017-05-23
Spectrum analyzer	R&S	FSU43	100144	2015-06-02	2017-06-02
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100262	2015-04-30	2017-04-29
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100263	2015-04-30	2017-04-29
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-490	2015-04-30	2017-04-29
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-520	2015-04-30	2017-04-29
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2015-04-30	2017-04-29
double ridged horn antenna（0.8G-18GHz)	R&S	HF907	100305	2015-04-30	2017-04-29
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	5140299	2015-07-15	2017-07-14
Artificial Main Network	R&S	ENV4200	100134	2016-06-02	2017-06-01
Line Impedance Stabilization Network	R&S	ENV216	100382	2016-06-02	2017-06-01
Signal Generator	Agilent	E4438C	MY49071538	2016-03-01	2017-03-01
Power Detecting & Sampling Unit	R&S	OSP-B157	100914	2015-07-27	2016-07-26
Software Information					
Test Item	Software Name		Manufacturer		Version
RE	EMC32		R&S		V9.25.0
CE	EMC32		R&S		V9.25.0

6 Appendixes

Appendix No.	Description
SYBH(Z-RF)027052016-2003-A	Appendix for Bluetooth BLE

END