
TEST REPORT

Report No.: SRTC2015-9003(F)-0005
Product Name: GSM/GPRS/EDGE/UMTS Digital Mobile Phone
with Bluetooth and WiFi
Model Name: Philips S309
Applicant: Shenzhen Sang Fei Consumer Communications
Co.,Ltd.
Manufacturer: Shenzhen Sang Fei Consumer Communications
Co.,Ltd.
Specification: FCC Part15B (Certification)
(October 1, 2009 edition)
FCC ID: VQRCTS309

The State Radio_monitoring_center Testing Center (SRTC)

No.80 Beilishi Road Xicheng District Beijing, China

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1. General information

1.1 Notes of the test report

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The test results relate only to individual items of the samples which have been tested.

1.2 Information about the testing laboratory

Company: The State Radio_monitoring_center Testing Center (SRTC)
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Country or Region: China
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Email: wangjf@srrc.org.cn / wangjunfeng@srtc.org.cn

1.3 Applicant's details

Company: Shenzhen Sang Fei Consumer Communications Co.,Ltd.
Address: 11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park,
Nanshan District, Shenzhen
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Email: Helen.Lin@sangfei.com

1.4 Manufacturer's details

Company: Shenzhen Sang Fei Consumer Communications Co.,Ltd.
Address: 11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park,
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City: Shenzhen
Country or Region: P.R.China
Contacted person: Helen.Lin
Tel: 0755-33308888
Fax: 0755-26614979
Email: Helen.Lin@sangfei.com

1.5 Application details

Date of reception of test sample: 8th May 2015

Date of test: 8th May 2015 to 18th May 2015

1.6 Reference specification

FCC Part 15B October 1, 2009 (Certification)

1.7 Information of EUT

1.7.1 General information

Name of EUT	GSM/GPRS/EDGE/UMTS Digital Mobile Phone with Bluetooth and WiFi
FCC ID	VQRCTS309
Frequency Range	GSM850/WCDMA Band V: Tx:824~849MHz Rx:869~894MHz PCS1900/WCDMA Band II: Tx:1850~1910MHz Rx:1930~1990MHz
Rated Output Power	GSM850:33.0dBm PCS1900:30.0dBm WCDMA:24.0dBm
Modulation Type	GSM/GPRS:GMSK EDGE:GMSK WCDMA:QPSK
Emission Designator	GSM/GPRS EDGE WCDMA
Duplex Mode	FDD
Equipment Class	Class B
Duplex Spacing	GSM850/WCDMA Band V:45MHz PCS1900/WCDMA Band II:80MHz
Antenna Type	Fixed Internal
Power Supply	Battery or Charger
Rated Power Supply Voltage	3.8V
Extreme Temperature	Lowest: -30°C Highest: +50°C
Extreme Voltage	Minimum: 3.55V Maximum: 4.2V
HW Version	WMCSa
SW Version	Philips_S309_1516_V01T03_AG

1.7.2 EUT details

Product Name	Model Name	IMEI
GSM/GPRS/EDGE/UMTS Digital Mobile Phone with Bluetooth and WiFi	Philips S309	866636020005470 866636020005488

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Charger

Equipment	Charger
Manufacturer	Salcomp (Shenzhen) Co., Ltd
Model Number	RA 2982147 E(R4)
S/N	51100872836
Input Voltage	100V-240V a.c.
Output Voltage	5.0V d.c.
Frequency	50/60Hz

AE (Auxiliary Equipment) 2#: Battery

Equipment	Battery
Manufacturer	SHENZHEN CYCLELONG POWER-TECH CO.,Ltd.
Model Number	AB1600DWML
Capacity	1600mAh
Rated Voltage	4.35V d.c.

AE (Auxiliary Equipment) 3#: Headset

Equipment	Headset
Manufacturer	Dong Guan Tenji Technology Industrial Co Ltd
Model Number	TJ-101179

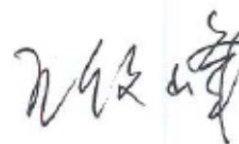
AE (Auxiliary Equipment) 4#: USB Cable

Equipment	USB Cable
Manufacturer	Xiamen Li Qi Electronics Co., Ltd
Model Number	LQ046002

2. Test information

2.1 Summary of the test results

No.	Test case	FCC reference	Verdict
1	Conducted emissions	15.107	Pass
2	Radiated emissions	15.109	Pass

This Test Report Is Issued by: Mr. Song Qizhu Director of the test lab 	Checked by: Mr. Wang Junfeng Deputy director of the test lab 
Tested by: Mr. Gong Jian Test engineer 	Issued date: 2015.05.18

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
21.4	37.3%	101.1kPa

Test Setup:

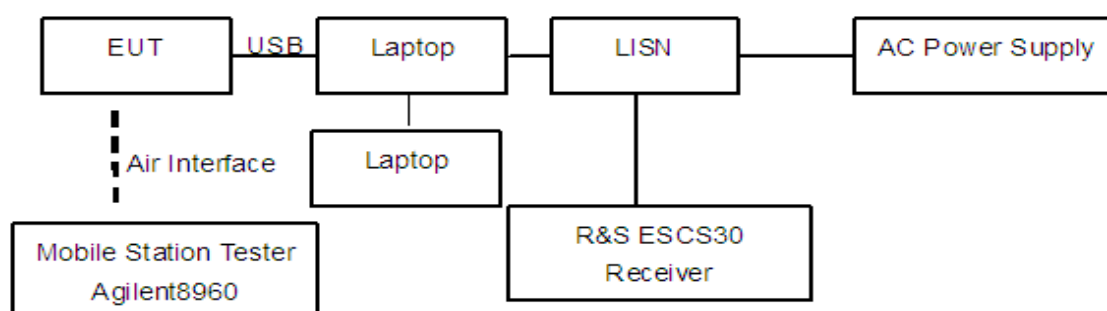


Figure 1

Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The accessories of the EUT are connected with the EUT such as headset etc. The EUT was exercised during the testing by data read and write cycles repeated with internal storages connecting with a laptop via the USB cable. The laptop's LAN port is connected with another laptop via cable. And the data transferring between two laptops is maintained.

The AC main power supply of the laptop is connected to LISN and LISN is connected to the reference ground. The test set-up and the test methods are performed according to ANSI C63.4:2009.

Then start the test software ES-K1. Sweep the whole frequency band through the range from 150 KHz to 30 MHz. The measurement should be done for both L line and N line. During pre-test, the receiver uses both peak detector and average detector. And the final test, the receiver uses both average detector and Quasi-peak detector.

The data of cable loss has been calibrated in full testing frequency range before the testing.

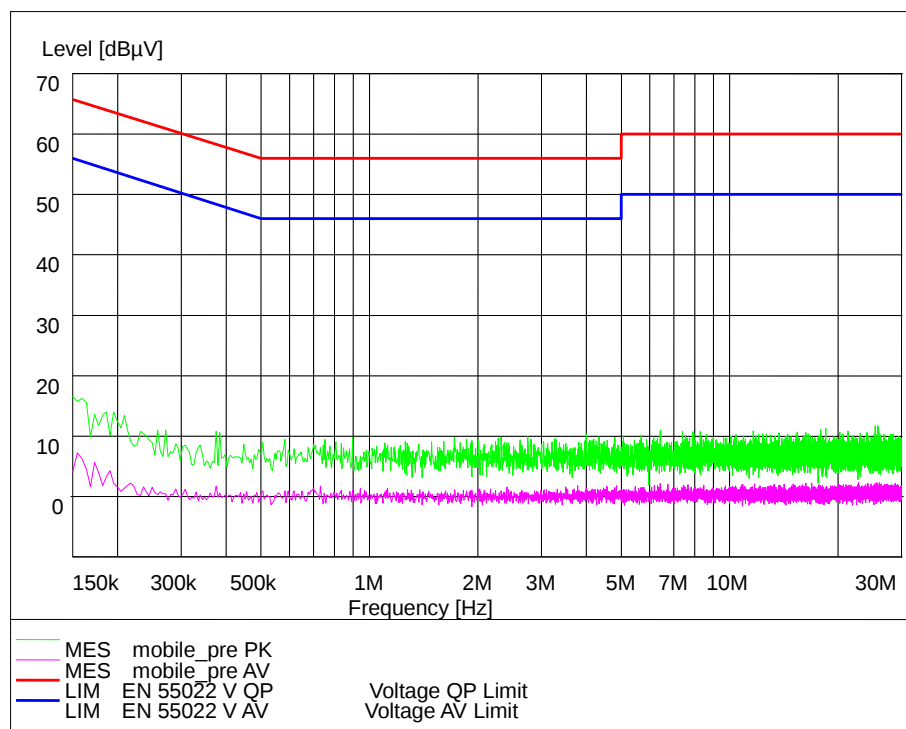
Limit:

Frequency of Emission(MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15~0.5	66 to 56*	56 to 46*
0.5~5	56	46
5~30	60	50

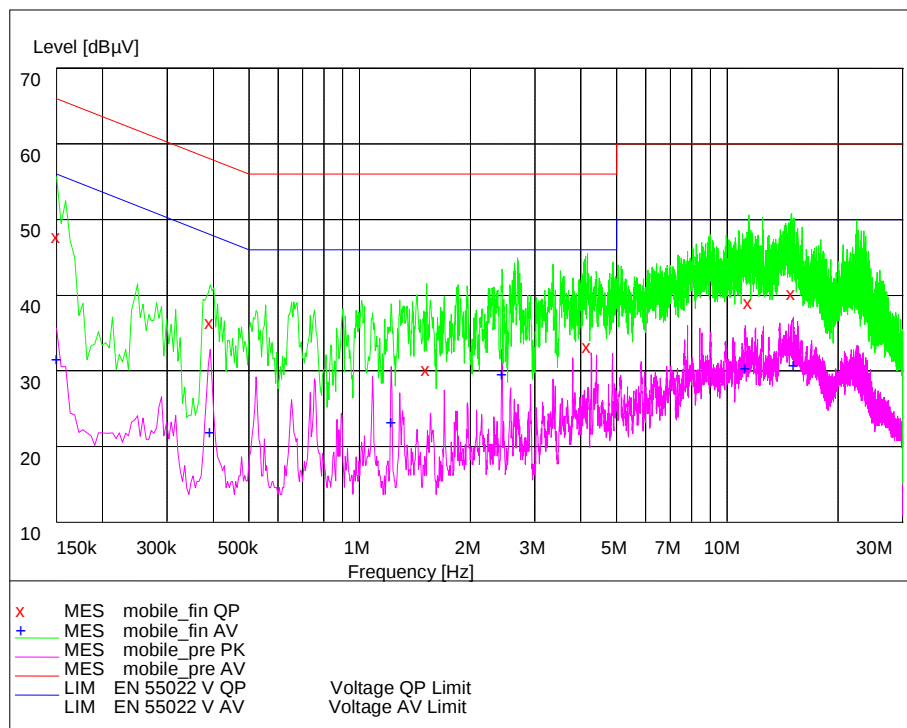
Note: * Decreases with the logarithm of the frequency

Test result:

Noise Level of the Measuring Instrument



L and N Line



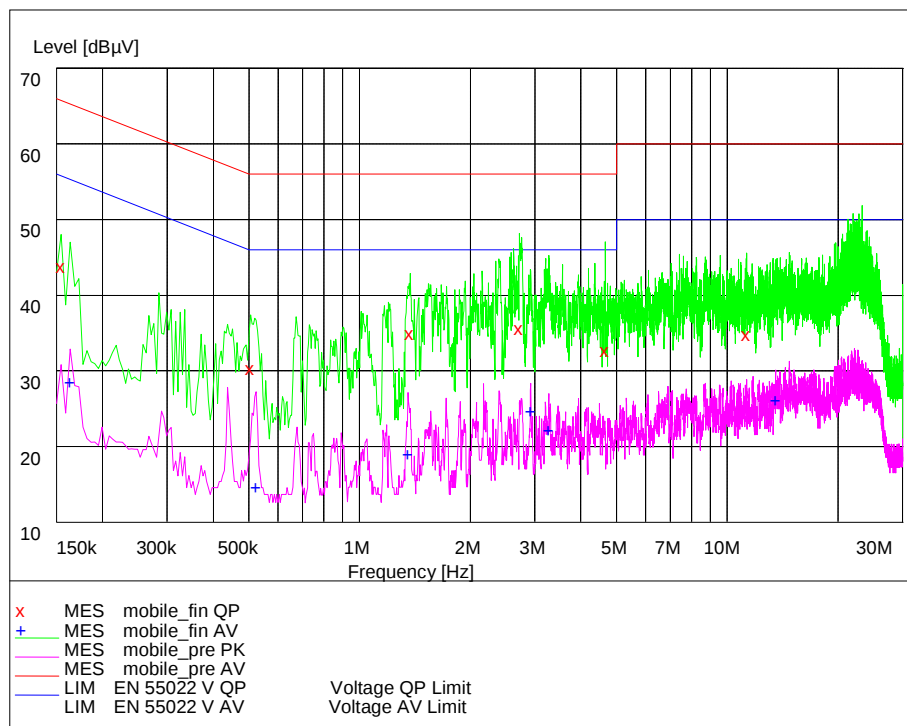
L Line

MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.150000	49.30	20.1	66	16.7	---	---
0.393000	37.90	20.1	58	20.1	---	---
1.522500	31.70	20.2	56	24.3	---	---
4.168500	34.70	20.3	56	21.3	---	---
11.467500	40.50	20.6	60	19.5	---	---
14.968500	41.80	20.7	60	18.2	---	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.150000	33.00	20.1	56	23.0	---	---
0.393000	23.40	20.1	48	24.6	---	---
1.221000	24.70	20.1	46	21.3	---	---
2.440500	31.00	20.2	46	15.0	---	---
11.211000	31.80	20.6	50	18.2	---	---
15.130500	32.20	20.7	50	17.8	---	---



N Line

MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.154500	45.30	20.1	66	20.4	---	---
0.505500	31.80	20.2	56	24.2	---	---
1.374000	36.50	20.2	56	19.5	---	---
2.724000	37.00	20.3	56	19.0	---	---
4.663500	34.20	20.3	56	21.8	---	---
11.310000	36.30	20.6	60	23.7	---	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.163500	30.00	20.2	55	25.3	---	---
0.523500	16.10	20.1	46	29.9	---	---
1.356000	20.40	20.2	46	25.6	---	---
2.922000	26.10	20.3	46	19.9	---	---
3.273000	23.60	20.3	46	22.4	---	---
13.537500	27.60	20.7	50	22.4	---	---

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
20.8°C	35.1%	100.9kPa

Test Setup:

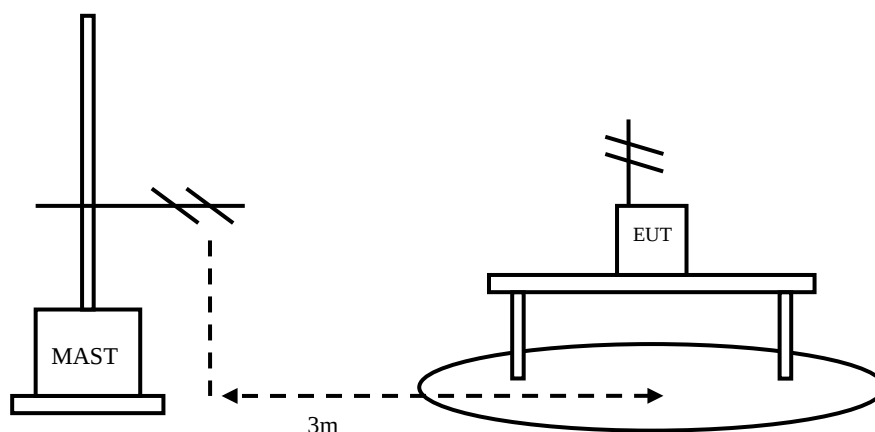


Figure 2

Test Procedure:

The EUT should be placed on a non-metallic table 80cm above the ground plane. The receive antennas shall be moved from 1 to 4 meters. The distance between EUT and receive antenna should be 3 meters.

The accessories of the EUT are connected with the EUT such as headset etc. The EUT was exercised during the testing by data read and write cycles repeated with internal storages connecting with a laptop via the USB cable. The laptop's LAN port is connected with another laptop via cable. And the data transferring between two laptops is maintained. The test set-up and the test methods are performed according to ANSI C63.4:2009.

Then start the test software ES-K1. Sweep the whole frequency band through the range from 30MHz to 1GHz, using receive log period antenna HL562.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The EUT is laid in two modes as follow:

1. put the EUT in horizontal direction; 2. put the EUT in vertical direction.

The data of cable loss and antenna factor have been calibrated in full testing frequency range before the testing.

A “reference path loss” is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

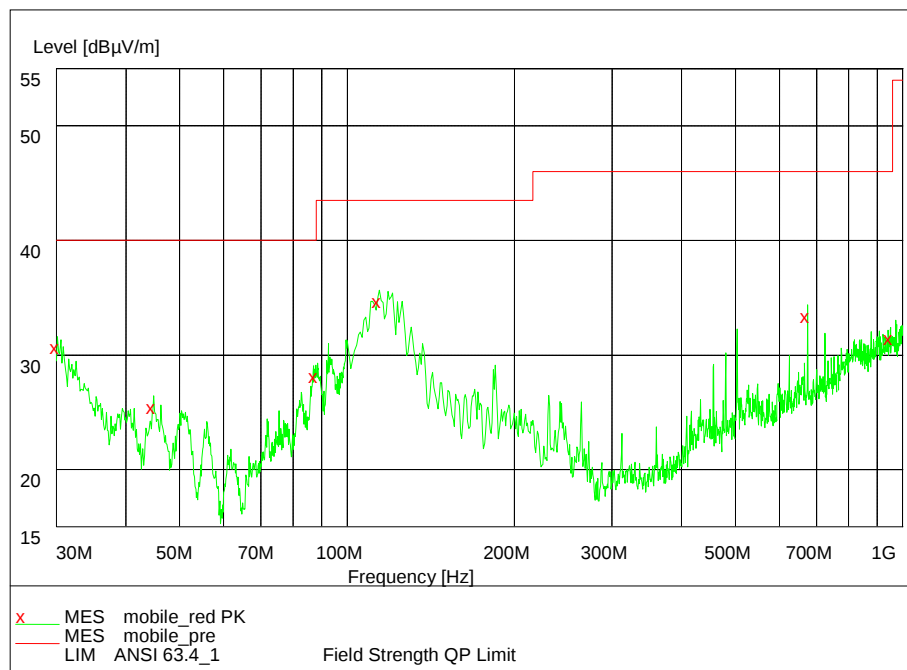
$$\text{Result} = P_{\text{mea}} + A_{Rpl}$$

Limit:

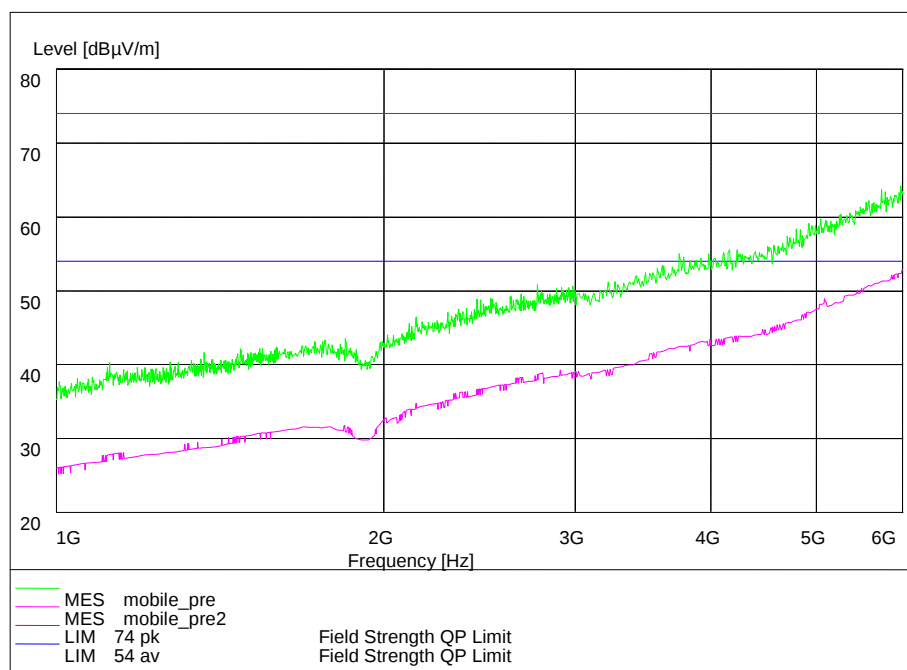
Frequency of Emission(MHz)	Limits	
	Detector	Unit (dBμV/m)
30~88	Quasi-peak	40
88~216	Quasi-peak	43.5
216~960	Quasi-peak	46
960~1000	Quasi-peak	54
1000~5th harmonic of the highest frequency or 40GHz, whichever is lower	Average	54
	Peak	74

Test result:

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{mea} (dBuV/m)	Polarity
30.14	31.60	21.0	10.60	Vertical
44.87	26.43	13.3	13.13	Vertical
87.80	29.12	10.8	18.32	Vertical
114.43	35.66	12.7	22.96	Vertical
675.35	34.39	24.4	9.99	Vertical
951.90	32.41	28.2	4.21	Horizontal



Radiated emission (30MHz – 1GHz)



Radiated emission (1GHz – 6GHz)

2.3. List of test equipments

No.	Name/Model	Manufacturer	S/N	Calibration Due Date
1	23.18m×16.88m×9.60m Semi-Anechoic Chamber	FRANKONIA	-----	20 th Aug. 2015
2	ESI 40 EMI test receiver	R&S	100015	20 th Aug. 2015
3	E5515C(8960) Mobile Station Tester	Agilent	GB44050904	20 th Aug. 2015
4	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	20 th Aug. 2015
5	ESCS30 EMI test receiver	R&S	100029	20 th Aug. 2015
6	HL562 Ultra log test antenna	R&S	100016	20 th Aug. 2015
7	ESH3-Z2 Pulse limiter	R&S	10002	20 th Aug. 2015
8	LS16C AMN	AFJ	16011306281	20 th Aug. 2015
9	ESH2Z11 LISN	R&S	50FH-020-10	20 th Aug. 2015
10	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100030	20 th Aug. 2015
11	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100029	20 th Aug. 2015
12	PS2000 Turn Table	FRANKONIA	-----	20 th Aug. 2015
13	MA260 Antenna Master	FRANKONIA	-----	20 th Aug. 2015
14	ES-K1EMI test software	R&S	-----	20 th Aug. 2015
15	HL562 Receive antenna	R&S	100167	20 th Aug. 2015

Appendix

Appendix1 Test Setup