



TEST REPORT

Report No.: SRTC2014-H024-E0019

Product Name: GSM/GPRS/EDGE/UMTS

Digital Mobile Phone with Bluetooth and WiFi

Product Model: 6037B

Applicant: TCT Mobile Limited

Manufacturer: TCT Mobile Limited

Specification: FCC Part15B (Certification)

(October 1, 2009 edition)

FCC ID: RAD457

The State Radio_monitoring_center Testing Center (SRTC)

No.80 Beilishi Road Xicheng District Beijing, China

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CONTENTS

1. General information	3
1.1 Notes of the test report	3
1.2 Information about the testing laboratory	3
1.3 Applicant's details	3
1.4 Manufacturer's details	3
1.5 Application details	4
1.6 Reference specification	4
1.7 Information of EUT	4
1.7.1 General information	4
1.7.2 EUT details	5
1.7.3 Auxiliary equipment details	5
2. Test information	7
2.1 Summary of the test results	7
2.2 Test result	8
2.2.1 Conducted Emissions-FCC Part15.107	8
2.2.2 Radiated Emissions-FCC Part15.109	17
2.3. List of test equipments	28
Appendix	29

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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City: Beijing
Country or Region: China
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Tel: +86 10 68009181 +86 10 68009202
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1.3 Applicant's details

Company: TCT Mobile Limited
Address: 5F, C building, No. 232, Liang Jing Road ZhangJiang
High-Tech Park, Pudong Area
City: Shanghai
Country or Region: P.R.China
Grantee Code: RAD
Contacted person: Gong Zhizhou
Tel: +86-21-61460890
Fax: +86-21-61460602
Email: zhizhou.gong@tcl.com

1.4 Manufacturer's details

Company: TCT Mobile Limited
Address: 5F, C building, No. 232, Liang Jing Road ZhangJiang
High-Tech Park, Pudong Area
City: Shanghai
Country or Region: P.R.China
Contacted person: Gong Zhizhou
Tel: +86-21-61460890
Fax: +86-21-61460602
Email: zhizhou.gong@tcl.com

1.5 Application details

Date of reception of test sample: 3rd March 2014

Date of test: 5th March 2014 to 24th March 2014

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	RAD457
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 PCS1900:33.0dBm WCDMA:23.0dBm
E.R.P. & E.I.R.P.	E.R.P.:31.2dBm E.I.R.P.:30.8dBm
Modulation Type	GSM/GPRS:GMSK EDGE:GMSK/8PSK WCDMA:QPSK/16QAM (RX only)
Emission Designator	GSM/GPRS:300KGXW EDGE:300KG7W WCDMA:4M50F9W
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: 3.5V Maximum: 4.35V
HW Version	PIO
SW Version	v3EH9-US

1.7.2 EUT details

Product Name	Product Model	IMEI
GSM/GPRS/EDGE/UMTS Digital Mobile Phone with Bluetooth and WiFi	6037B	014017009000116

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Charger

Equipment	Charger
Manufacturer	HUIZHOU BYD ELECTRONIC CO., LTD.
Model Number	one touch UC12US
Input Voltage	100V-240V a.c.
Output Voltage	5.0V d.c.
Frequency	50/60Hz

AE (Auxiliary Equipment) 2#: Charger

Equipment	Charger
Manufacturer	HUIZHOU BYD ELECTRONIC CO., LTD.
Model Number	one touch UC12EU
Input Voltage	100V-240V a.c.
Output Voltage	5.0V d.c.
Frequency	50/60Hz

AE (Auxiliary Equipment) 3#: Charger

Equipment	Charger
Manufacturer	HUIZHOU BYD ELECTRONIC CO., LTD.
Model Number	one touch UC12UK
Input Voltage	100V-240V a.c.
Output Voltage	5.0V d.c.
Frequency	50/60Hz

AE (Auxiliary Equipment) 4#: Battery

Equipment	Battery
Manufacturer	SCUD (FUJIAN) Electronics Co., Ltd.
Model Number	TLp020C2
Capacity	2000mAh
Rated Voltage	4.35V d.c.

AE (Auxiliary Equipment) 5#: Headset

Equipment	Headset
Manufacturer	Shenzhen Juwei Electronics Co., Ltd
Model Number	CCB3001A15C2

AE (Auxiliary Equipment) 6#: Headset

Equipment	Headset
Manufacturer	Shenzhen Juwei Electronics Co., Ltd
Model Number	CCB3001A14C2

AE (Auxiliary Equipment) 7#: Headset

Equipment	Headset
Manufacturer	Dongguan Superfine Electronic CO., Ltd
Model Number	CCB3001A15C4

AE (Auxiliary Equipment) 8#: Headset

Equipment	Headset
Manufacturer	Dongguan Superfine Electronic CO., Ltd
Model Number	CCB3001A14C4

AE (Auxiliary Equipment) 9#: Data Cable

Equipment	Data Cable
Manufacturer	Huizhou Shenghua Industry Co., Ltd.
Model Number	CDA0000025C1

AE (Auxiliary Equipment) 10#: Data Cable

Equipment	Data Cable
Manufacturer	Shenzhen Juwei Electronics Co., Ltd.
Model Number	CDA0000025C2

Note:

All the auxiliary equipments have been labeled with number in order to identify the test sample.


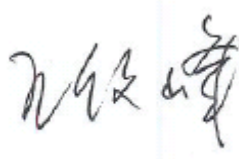

As the information described above, there are three different models of charger manufactured by the same company, four different models of headset manufactured by two different companies and two different models of data cable manufactured by two different companies.

The relevant tests have been performed in order to verify in which combination case (EUT exercised by only one model of charger, one model of headset and one model of data cable) the EUT would have the worst features. So all the tests shown in this test report are performed when the EUT exercised by the charger one touch UC12US, the headset CCB3001A15C2 and the data cable CDA0000025C1.

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: <p style="text-align: center;">2014.04.04</p>

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
23.2°C	37.1%	100.2kPa

Test Setup:

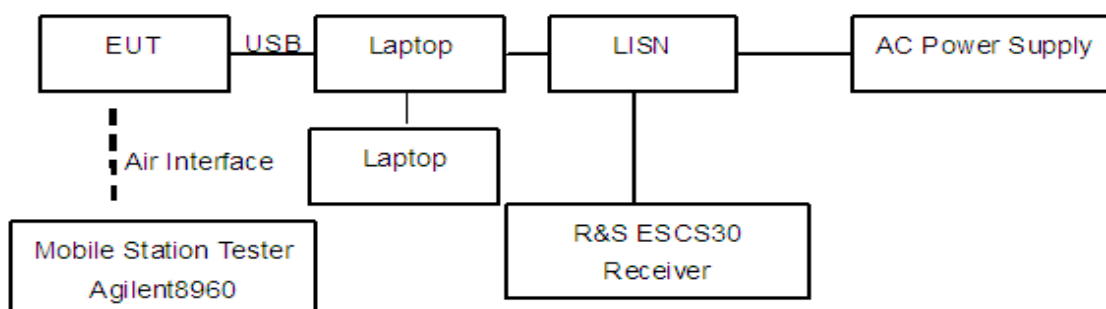


Figure 1

Test Procedure:

The EUT is placed on a non-metallic table 0.4m above the horizontal metal reference ground plane. The EUT connect with a laptop via the USB cable. The accessories of the EUT are connected with the EUT such as headset etc. During the test the data transferring via USB cable between EUT and laptop is maintained. 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.

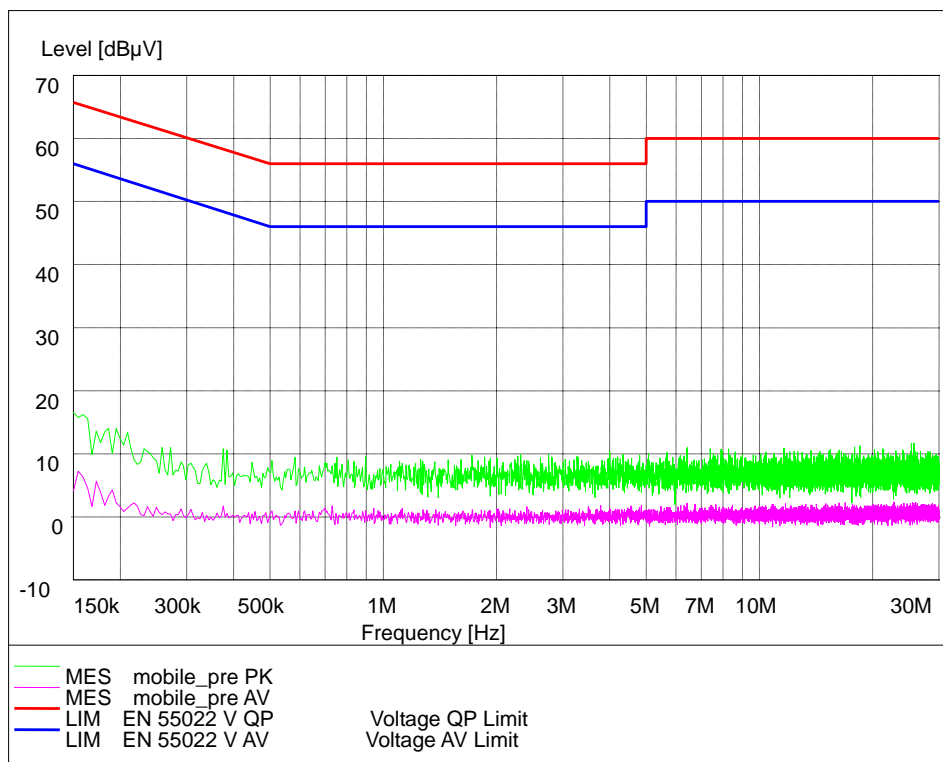
Limit:

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

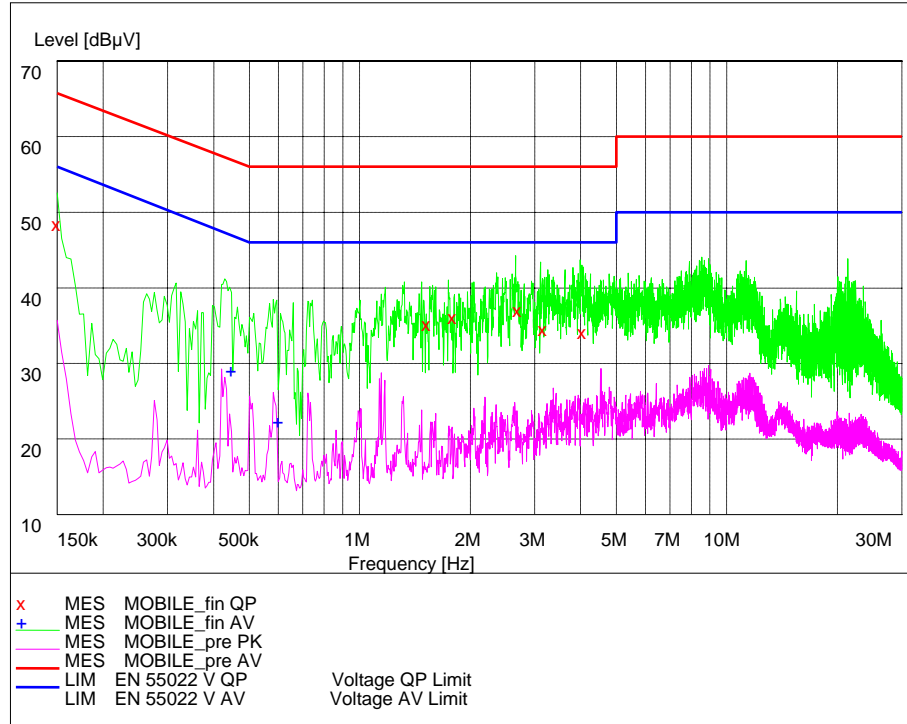
Test result:

Noise Level of The Measuring Instrument



L and N Line

GSM850 Laptop+ AE4#+AE5#+AE9#



L and N Line

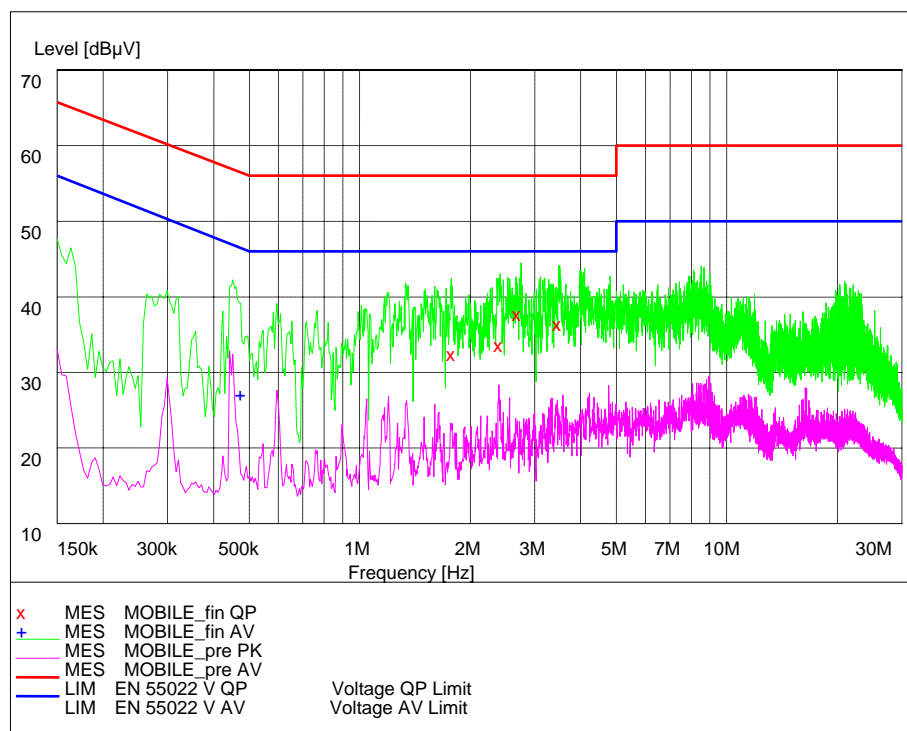
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dB	dBμV	dB	dB
0.150000	49.80	20.1	66	15.9	L	---
1.527000	36.60	20.2	56	19.4	N	---
1.797000	37.50	20.2	56	18.5	L	---
2.697000	38.50	20.3	56	17.5	L	---
3.165000	35.90	20.3	56	20.1	L	---
4.056000	35.60	20.3	56	20.4	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dB	dBμV	dB	dB
0.447000	30.60	20.3	47	16.4	L	---
0.600000	23.80	20.3	46	22.2	L	---

PCS1900 Laptop+ AE4#+AE5#+AE9#



L and N Line

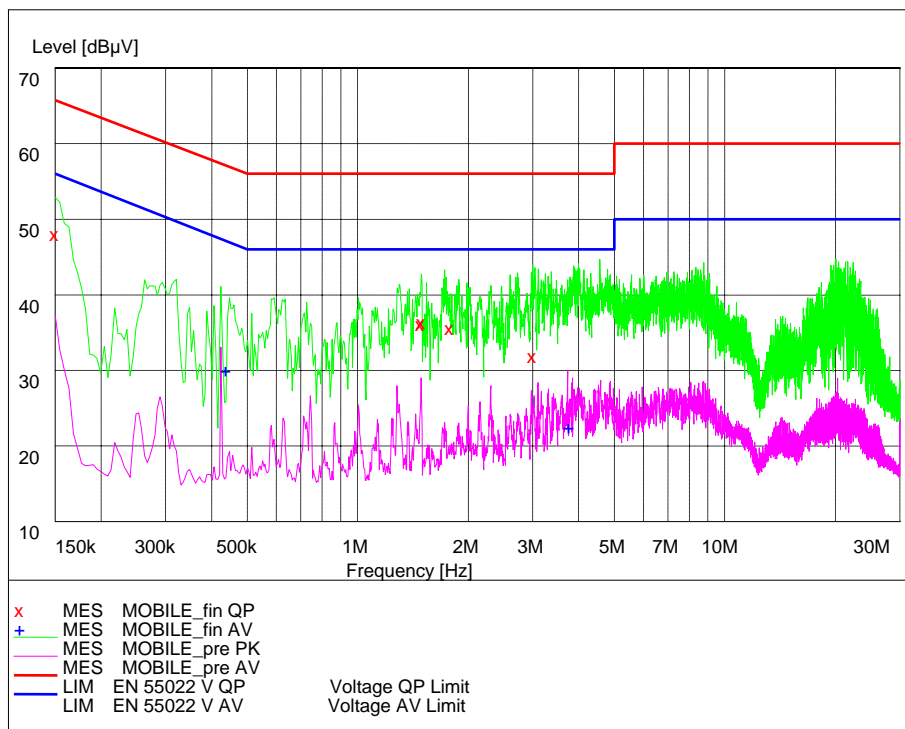
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
1.779000	33.90	20.2	56	22.1	L	---
2.391000	35.10	20.3	56	20.9	L	---
2.688000	39.10	20.3	56	16.9	L	---
3.471000	37.80	20.3	56	18.2	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.474000	28.60	20.3	46	17.8	L	---

WCDMA BAND II Laptop+ AE4#+AE5#+AE9#



L and N Line

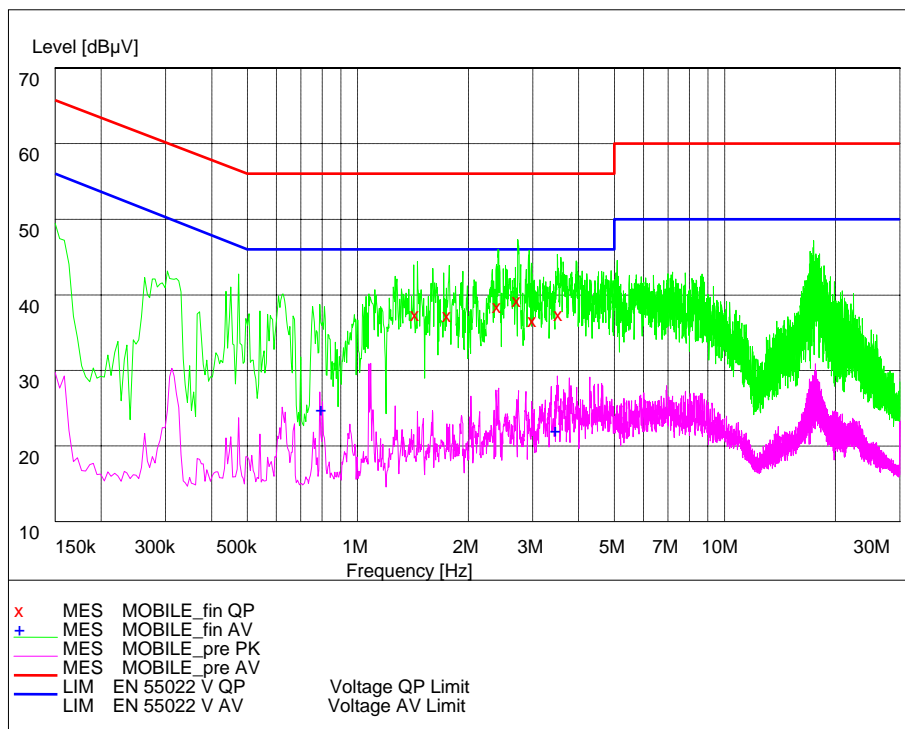
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dBμV	dB	dBμV		dB
0.150000	49.50	20.1	66	16.3	L	---
1.482000	37.60	20.2	56	18.4	L	---
1.491000	37.80	20.2	56	18.2	L	---
1.788000	37.00	20.2	56	19.0	N	---
2.994000	33.40	20.3	56	22.6	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dBμV	dB	dBμV		dB
0.438000	31.40	20.3	47	15.7	L	---
3.768000	23.90	20.3	46	22.1	L	---

WCDMA BAND V Laptop+ AE4#+AE5#+AE9#



L and N Line

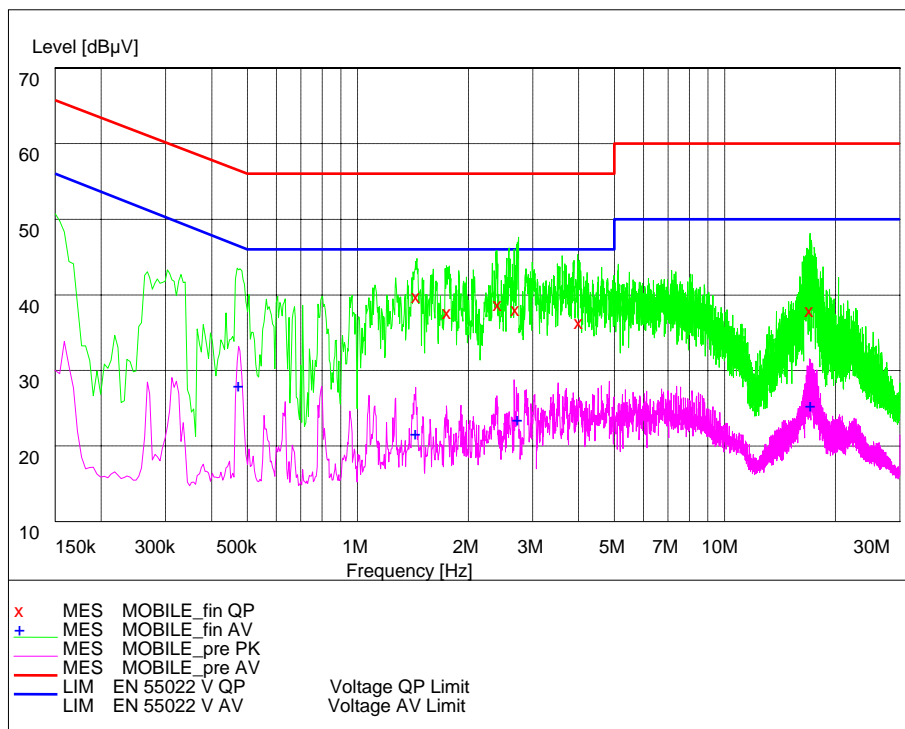
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dBμV	dB	dBμV		dB
1.437000	38.80	20.2	56	17.2	L	---
1.761000	38.70	20.2	56	17.3	L	---
2.409000	40.00	20.3	56	16.0	L	---
2.724000	40.80	20.3	56	15.2	N	---
3.003000	38.00	20.3	56	18.0	L	---
3.534000	38.90	20.3	56	17.1	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dBμV	dB	dBμV		dB
0.798000	26.30	20.3	46	19.7	L	---
3.471000	23.50	20.3	46	22.5	L	---

FM Radio Laptop+ AE4#+AE5#+AE9#



L and N Line

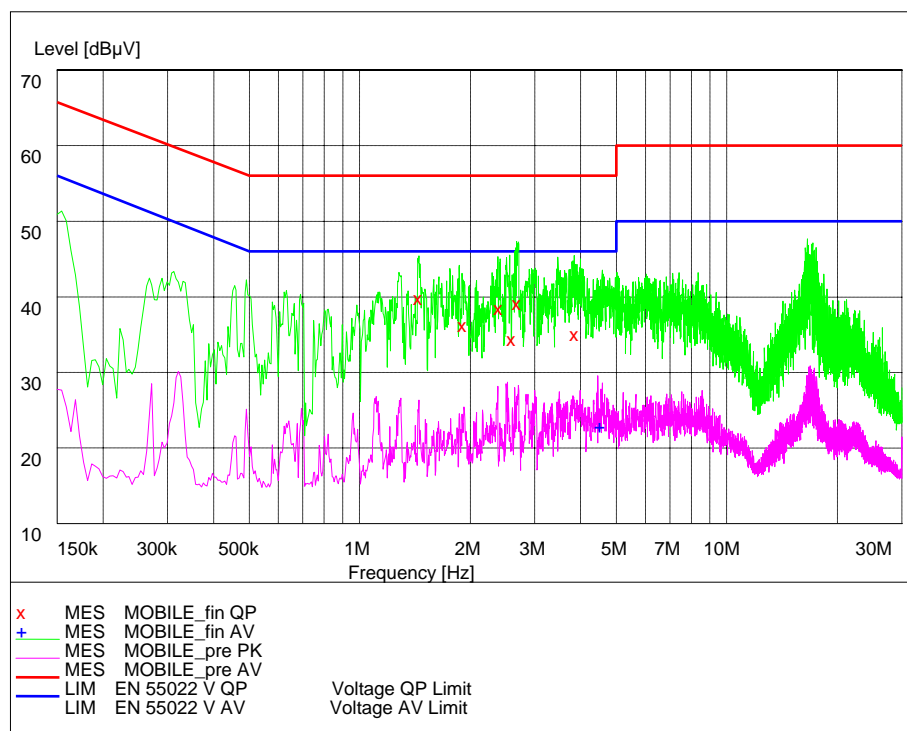
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
1.446000	41.30	20.2	56	14.7	L	---
1.761000	39.20	20.2	56	16.8	L	---
2.418000	40.30	20.3	56	15.7	N	---
2.697000	39.50	20.3	56	16.5	L	---
4.020000	37.80	20.3	56	18.2	L	---
17.079000	39.40	20.8	60	20.6	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.474000	29.40	20.3	46	17.0	L	---
1.437000	23.20	20.2	46	22.8	L	---
2.733000	25.00	20.3	46	21.0	N	---
17.187000	26.90	20.8	50	23.1	L	---

MP3/MP4 Laptop+ AE4#+AE5#+AE9#



L and N Line

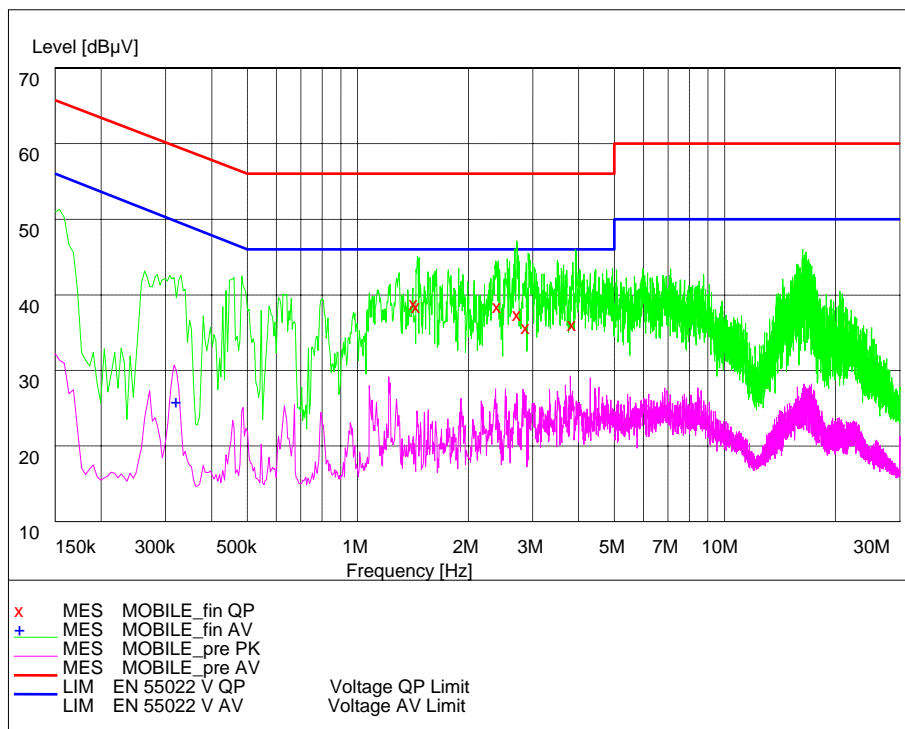
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
1.446000	41.20	20.2	56	14.8	L	---
1.914000	37.70	20.2	56	18.3	L	---
2.391000	40.00	20.3	56	16.0	L	---
2.598000	35.80	20.3	56	20.2	L	---
2.688000	40.70	20.3	56	15.3	N	---
3.867000	36.50	20.3	56	19.5	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
4.515000	24.30	20.4	46	21.7	L	---

Camera Laptop+ AE4#+AE5#+AE9#



L and N Line

MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
1.428000	40.40	20.2	56	15.6	L	---
1.446000	40.00	20.2	56	16.0	L	---
2.409000	40.00	20.3	56	16.0	L	---
2.733000	38.80	20.3	56	17.2	L	---
2.877000	37.20	20.3	56	18.8	L	---
3.849000	37.60	20.3	56	18.4	N	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.321000	27.40	20.2	50	22.2	L	---

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
23.2°C	37.1%	100.2kPa

Test Setup:

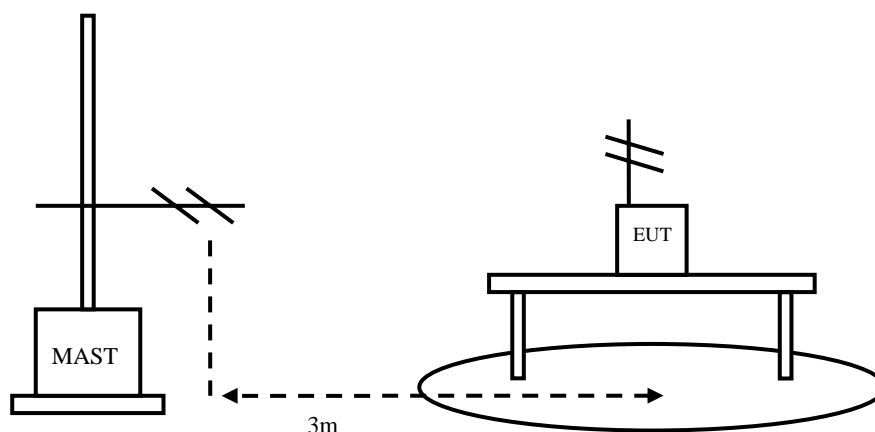


Figure 2

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 EUT should work in idle mode. The accessories of the EUT are connected with the EUT such as headset etc. 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 (dB μ V/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:

GSM850 Mode

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{mea} (dBuV/m)	Polarity
41.78	25.80	14.50	11.30	Vertical
330.06	26.60	12.50	14.10	Vertical
625.25	18.50	19.60	-1.1	Vertical
836.67	70.80	22.90	47.90	Horizontal
875.75	45.20	23.50	21.70	Vertical
881.76	22.80	23.70	-0.90	Vertical

PCS1900 Mode

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{mea} (dBuV/m)	Polarity
30.00	30.10	15.40	14.70	Vertical
45.01	25.20	12.60	12.60	Vertical
330.06	30.40	13.20	17.20	Vertical
625.25	20.10	20.50	-0.40	Vertical
675.35	21.30	21.50	-0.20	Vertical
725.45	21.80	22.70	-0.90	Vertical

WCDMA BAND II Mode

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
30.00	30.60	15.40	15.20	Vertical
45.01	26.60	12.60	14.00	Vertical
330.06	30.60	13.20	17.40	Vertical
625.25	20.20	20.50	-0.30	Vertical
675.35	21.10	21.50	-0.40	Vertical
725.45	21.80	22.70	-0.90	Horizontal

WCDMA BAND V Mode

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
30.00	23.44	15.20	8.24	Vertical
42.06	25.25	14.30	10.95	Horizontal
330.06	26.19	12.50	13.69	Vertical
624.25	26.32	19.60	6.72	Vertical
869.74	50.86	23.40	27.46	Vertical
946.89	26.25	24.40	1.85	Vertical

FM Radio Mode

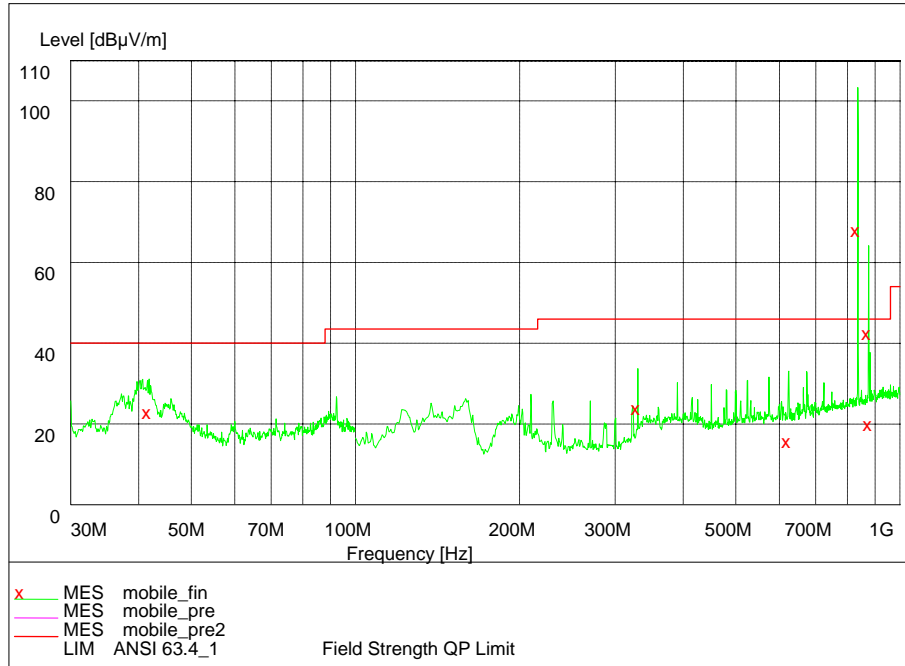
Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
30.00	29.90	15.40	14.50	Vertical
330.06	30.40	13.20	17.20	Vertical
625.25	20.00	20.50	-0.50	Vertical
675.35	21.10	21.50	-0.40	Vertical
725.45	21.70	22.70	-1.0	Vertical
887.77	25.70	24.90	0.80	Horizontal

MP3/MP4 Mode

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
30.00	30.20	15.40	14.80	Vertical
330.06	30.30	13.20	17.10	Vertical
450.30	19.10	17.20	1.90	Vertical
625.25	20.40	20.50	-0.10	Vertical
675.35	20.90	21.50	-0.60	Vertical
723.45	21.70	22.70	-1.0	Vertical

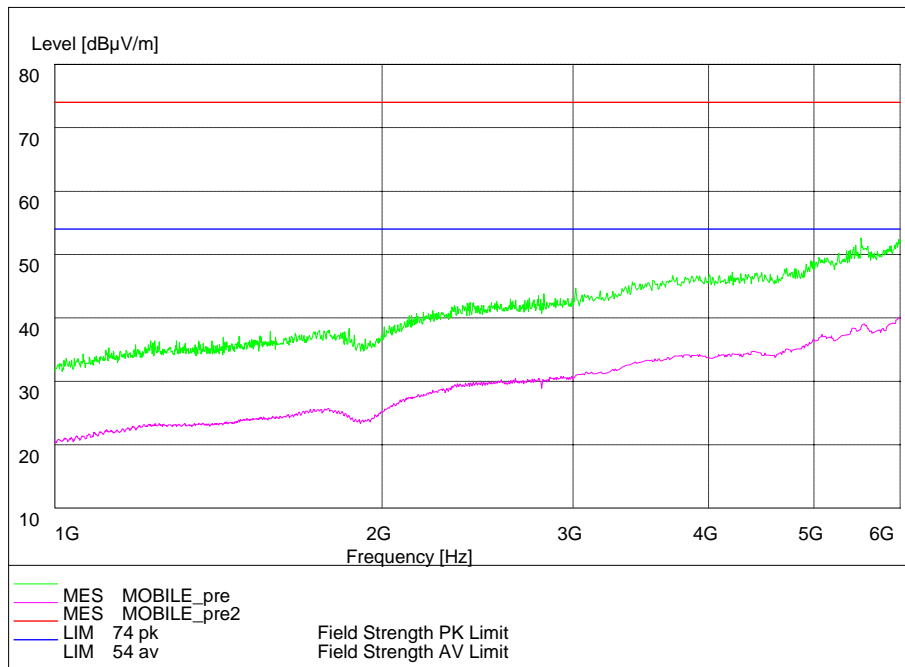
Camera Mode

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
30.00	30.20	15.40	14.80	Vertical
330.06	30.50	13.20	17.30	Vertical
443.89	28.60	16.80	11.80	Vertical
625.25	20.20	20.50	-0.30	Vertical
675.35	21.20	21.50	-0.30	Vertical
725.45	21.90	22.7	-0.80	Vertical

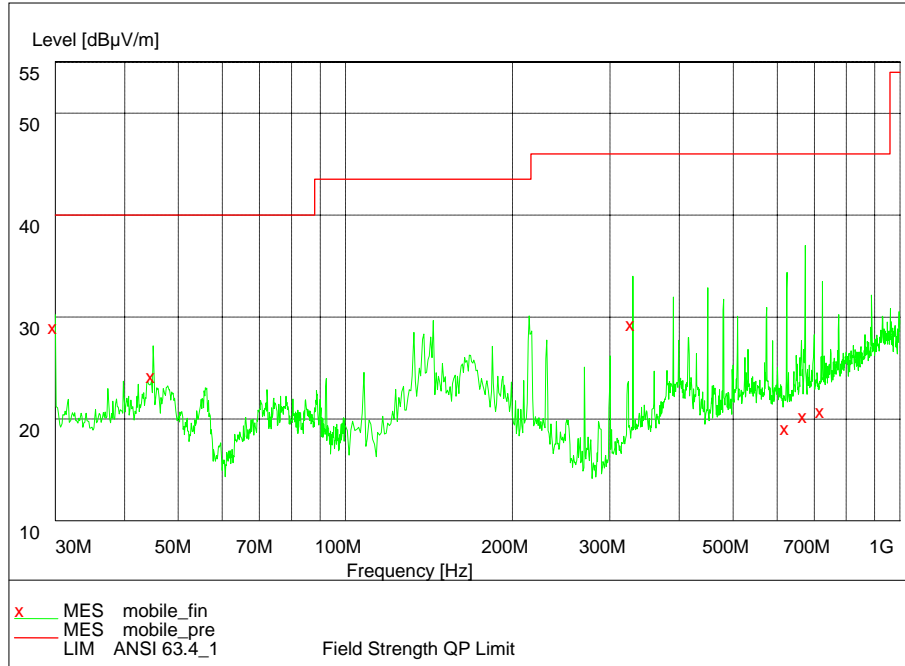


GSM850 (30MHz – 1GHz)

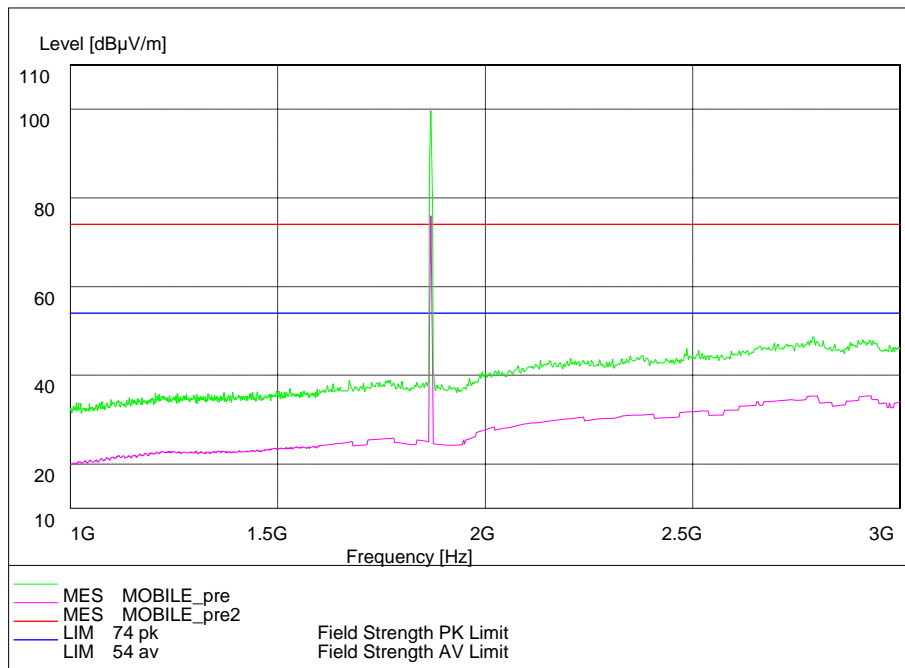
Note: The signal beyond the limit is the base station simulator carrier.



GSM850 (1GHz – 6GHz)

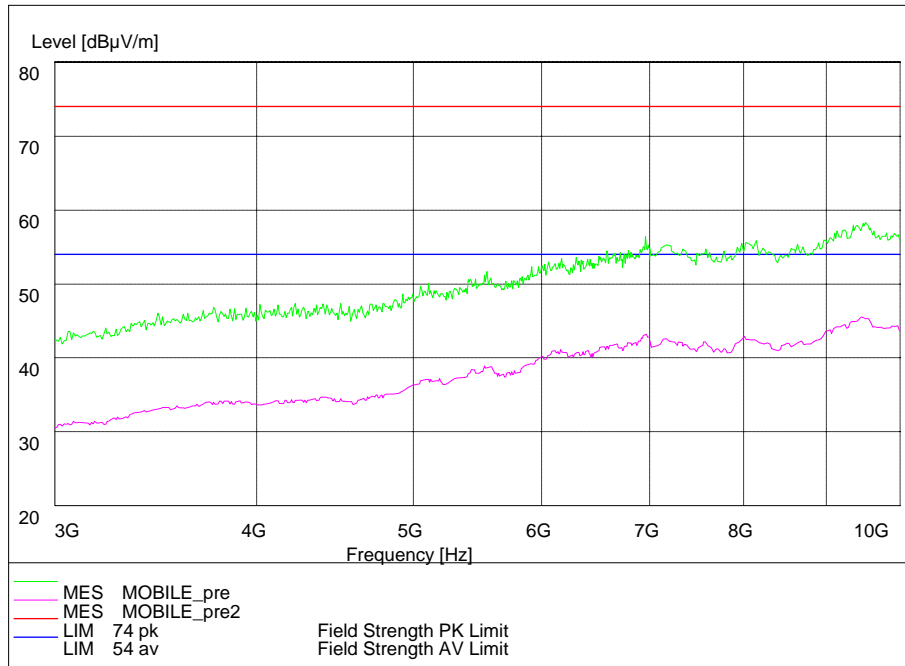


PCS1900 (30MHz – 1GHz)

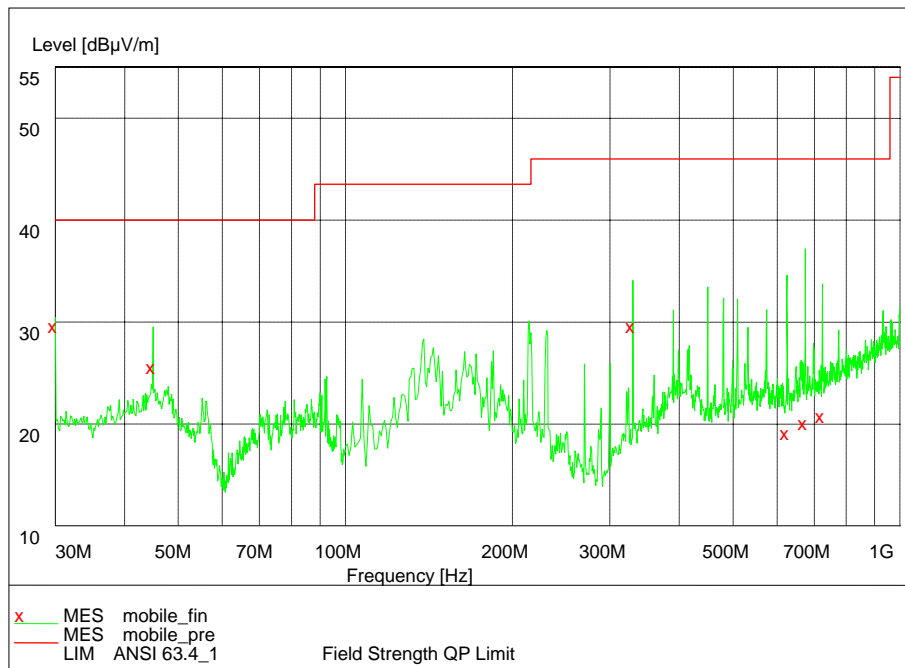


PCS1900 (1GHz – 3GHz)

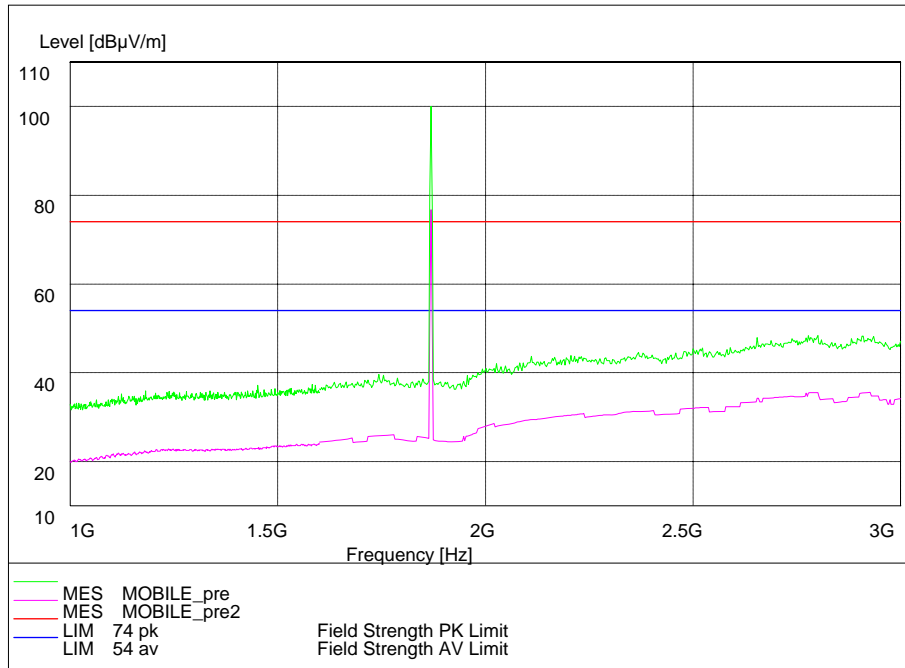
Note: The signals beyond the limit are the base station and simulator carrier.



PCS1900 (3GHz – 10GHz)

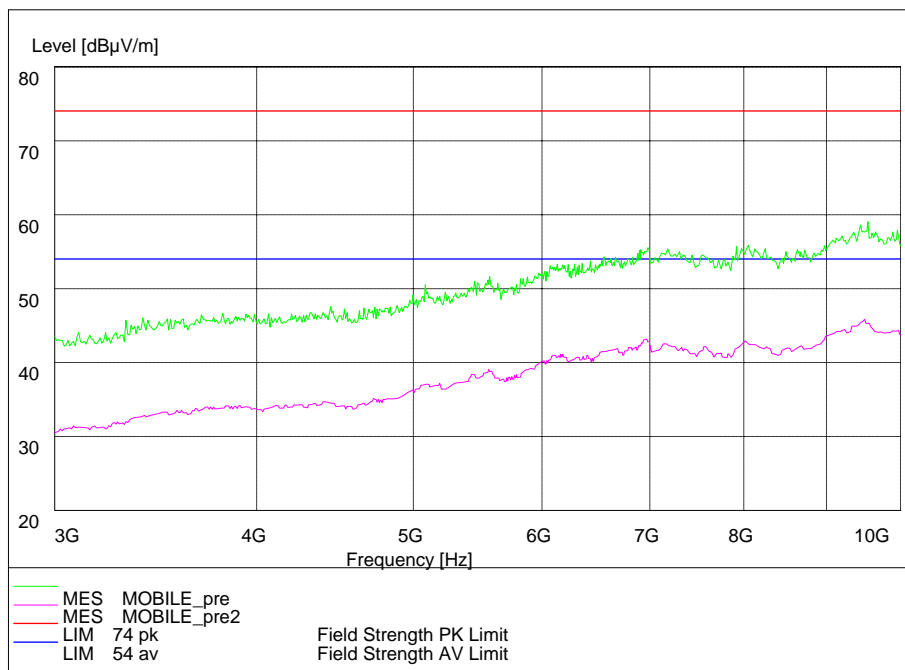


WCDMA BAND II (30MHz – 1GHz)

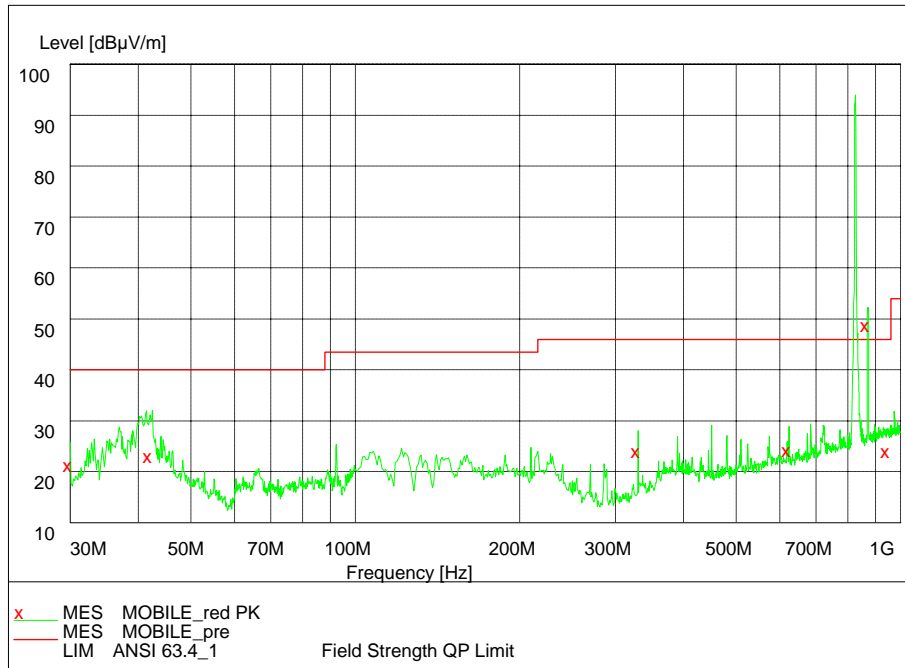


WCDMA BAND II (1GHz – 3GHz)

Note: The signal beyond the limit is the base station simulator carrier.

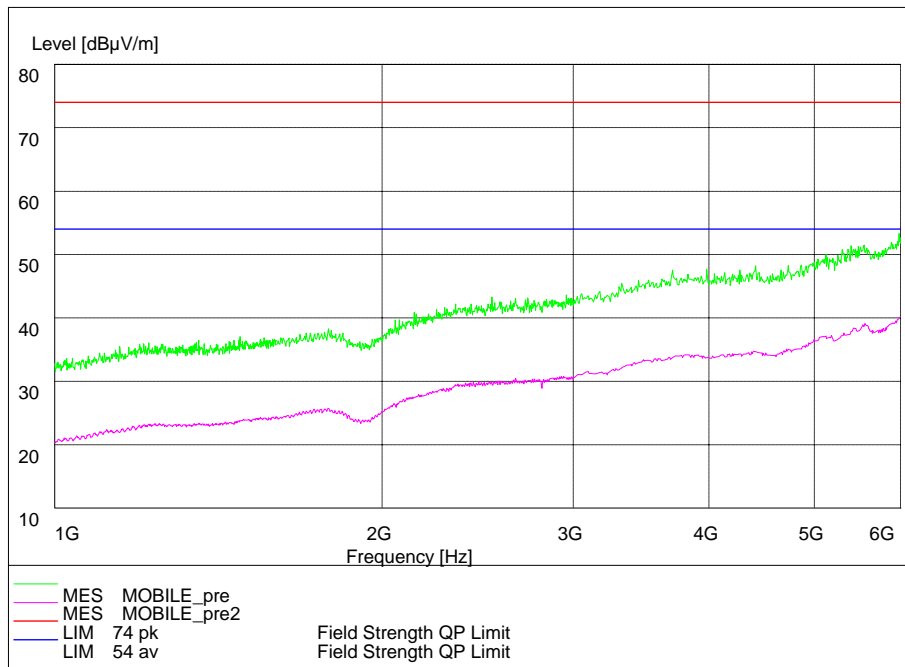


WCDMA BAND II (3GHz – 10GHz)

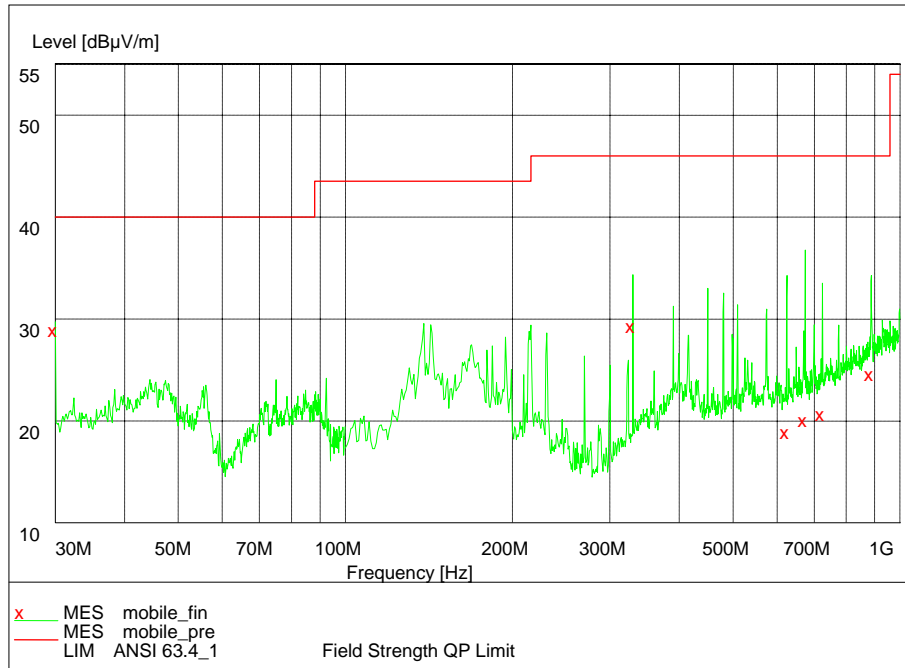


WCDMA BAND V (30MHz – 1GHz)

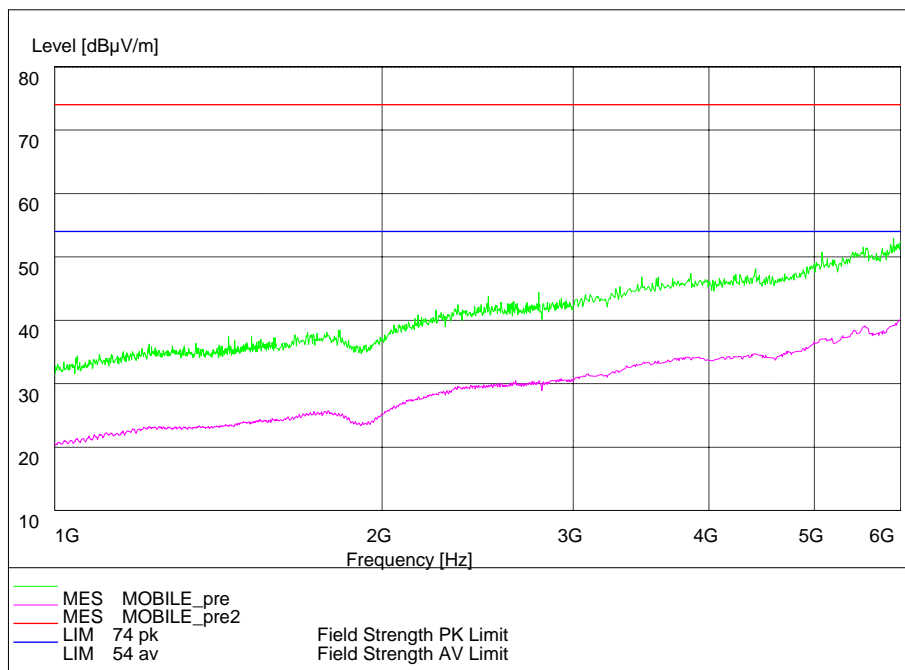
Note: The signal beyond the limit is the base station simulator carrier.



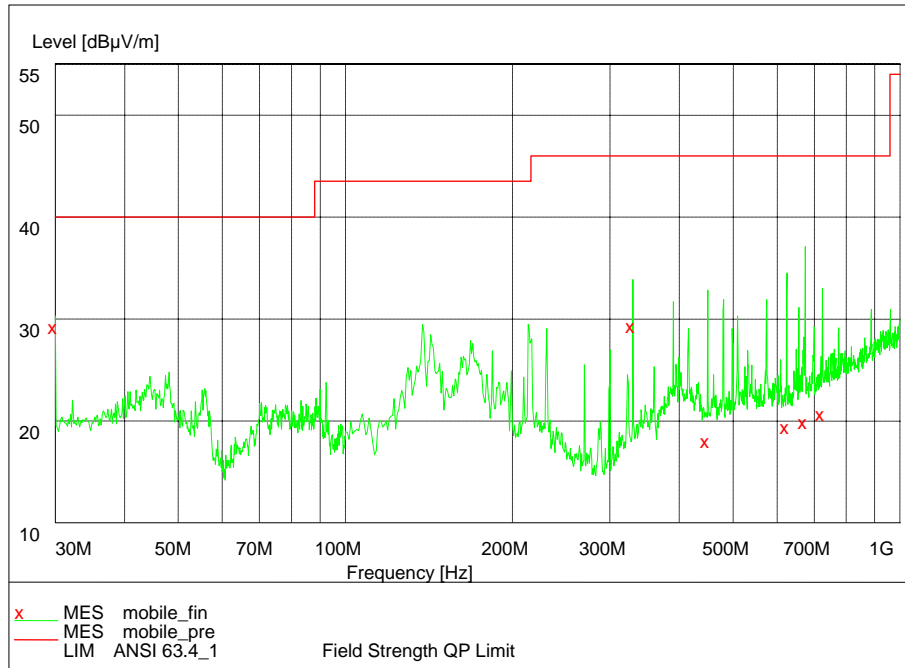
WCDMA BAND V (1GHz – 6GHz)



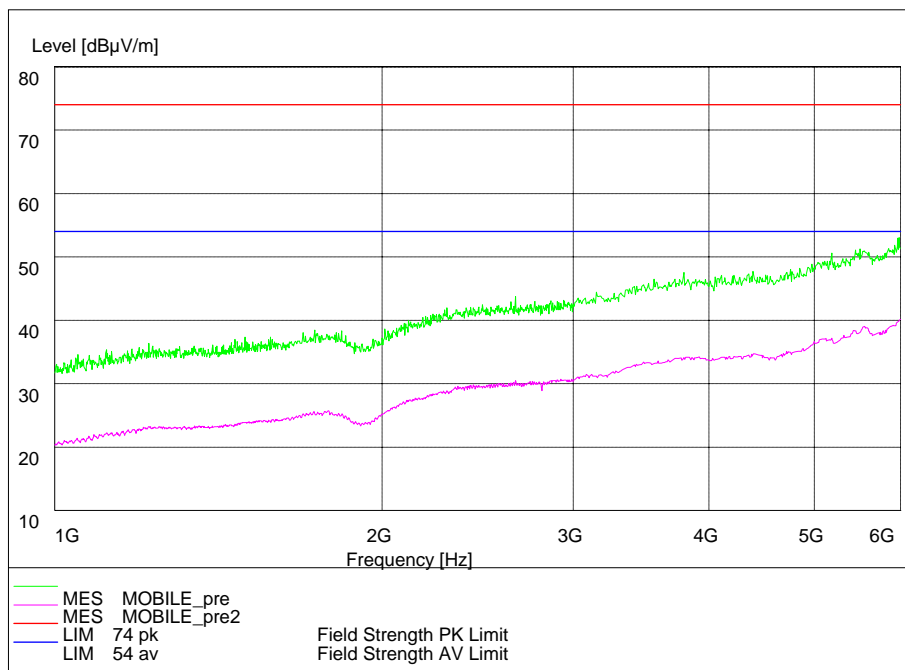
FM Radio (30MHz – 1GHz)



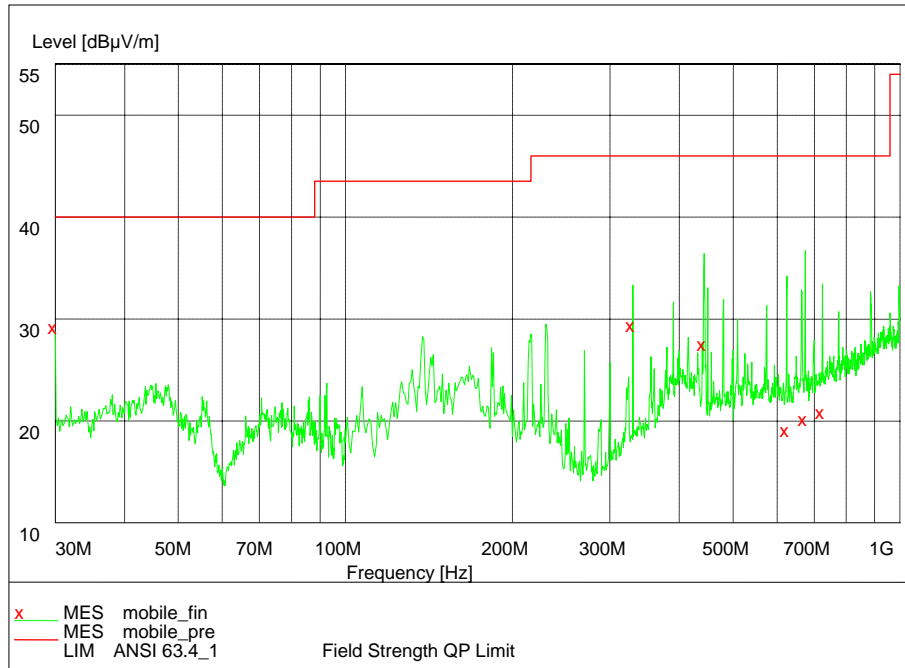
FM Radio (1GHz – 6GHz)



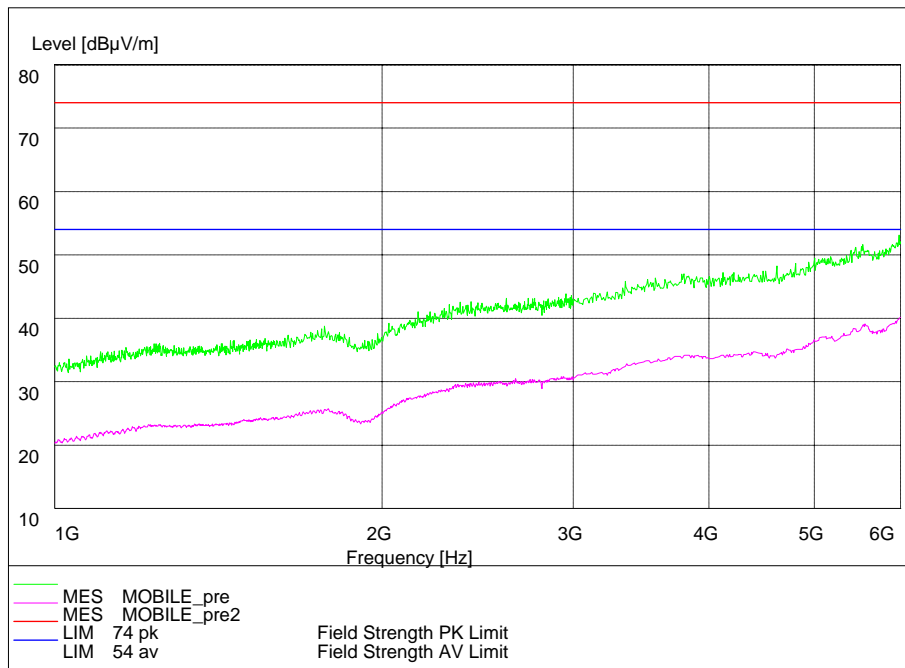
MP3/MP4 (30MHz – 1GHz)



MP3/MP4 (1GHz – 6GHz)



Camera (30MHz – 1GHz)



Camera (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	-----	19 th Aug. 2014
2	ESI 40 EMI test receiver	R&S	100015	19 th Aug. 2014
3	E5515C(8960) Mobile Station Tester	Agilent	GB44050904	19 th Aug. 2014
4	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	19 th Aug. 2014
5	ESCS30 EMI test receiver	R&S	100029	19 th Aug. 2014
6	HL562 Ultra log test antenna	R&S	100016	19 th Aug. 2014
7	ESH3-Z2 Pulse limiter	R&S	10002	19 th Aug. 2014
8	ESH3-Z5 Attenuator	R&S	100020	19 th Aug. 2014
9	ESH2Z11 LISN	R&S	50FH-020-10	19 th Aug. 2014
10	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100030	19 th Aug. 2014
11	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100029	19 th Aug. 2014
12	PS2000 Turn Table	FRANKONIA	-----	19 th Aug. 2014
13	MA260 Antenna Master	FRANKONIA	-----	19 th Aug. 2014
14	ES-K1EMI test software	R&S	-----	19 th Aug. 2014
15	HL562 Receive antenna	R&S	100167	19 th Aug. 2014

Appendix

Appendix1 Test Setup