
TEST REPORT

Report No.: SRTC2014-H024-E0043

Product Name: GSM/GPRS/EDGE/UMTS

Digital Mobile Phone with Bluetooth and WiFi

Product Model: Philips S388

Applicant: Shenzhen Sang Fei Consumer Communications
Co., Ltd.

Manufacturer: Shenzhen Sang Fei Consumer Communications
Co., Ltd.

Specification: FCC Part15B (Verification)
(October 1, 2013 edition)

FCC ID: VQRCTS388

The State Radio_monitoring_center Testing Center (SRTC)

No.80 Beilishi Road Xicheng District Beijing, China

Tel: 86-10-68009202 Fax: 86-10-68009205

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1. General information

1.1 Notes of the test report

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1.2 Information about the testing laboratory

Company: The State Radio_monitoring_center Testing Center (SRTC)
Address: No.80 Beilishi Road, Xicheng District, Beijing China
City: Beijing
Country or Region: China
Contacted person: Wang Junfeng
Tel: +86 10 68009181 +86 10 68009202
Fax: +86 10 68009195 +86 10 68009205
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
City: Shenzhen
Country or Region: China
Grantee Code: VQR
Contacted person: Helen.Lin
Tel: 86-755-33308888
Fax: 86-755-26614979
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,
Nanshan District
City: Shenzhen
Country or Region: China
Contacted person: Helen.Lin
Tel: 86-755-33308888
Fax: 86-755-26614979
Email: Helen.Lin@sangfei.com

1.5 Application details

Date of reception of test sample: 1st July 2014

Date of test: 1th July 2014 to 25th July 2014

1.6 Reference specification

FCC Part 15B October 1, 2013 (Verification)

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	VQRCTS388
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
E.R.P. & E.I.R.P.	E.R.P.:33.1dBm E.I.R.P.:30.6dBm
Modulation Type	GSM/GPRS:GMSK EDGE: GMSK(Uplink direction) 8PSK(Downlink direction) WCDMA:QPSK
Emission Designator	GSM/GPRS/EDGE:300KGXW 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	3.7V
Extreme Temperature	Lowest: -30°C Highest: +50°C
Extreme Voltage	Minimum: 3.5V Maximum: 4.2V
HW Version	TMBKa
SW Version	S388_M6582M_1425_V01A_AM

1.7.2 EUT details

Product Name	Product Model	IMEI
GSM/GPRS/EDGE/UMTS Digital Mobile Phone with Bluetooth and WiFi	Philips S388	864359021775320

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Charger

Equipment	Charger
Manufacturer	Salcomp (Shenzhen) Co., Ltd
Model Number	3208SF
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	AB1700AWML
Capacity	1700mAh
Rated Voltage	3.7V d.c.

AE (Auxiliary Equipment) 3#: Headset

Equipment	Headset
Manufacturer	Dongguan Tenji Industrial CO.,LTD
Model Number	TJ-101158

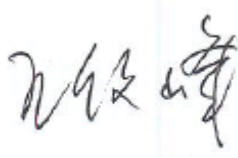
Note:

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

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. Dong Qifeng Test engineer 	Issued date: 2014.07.28

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
25.5°C	41.9%	100.3kPa

Test Setup:

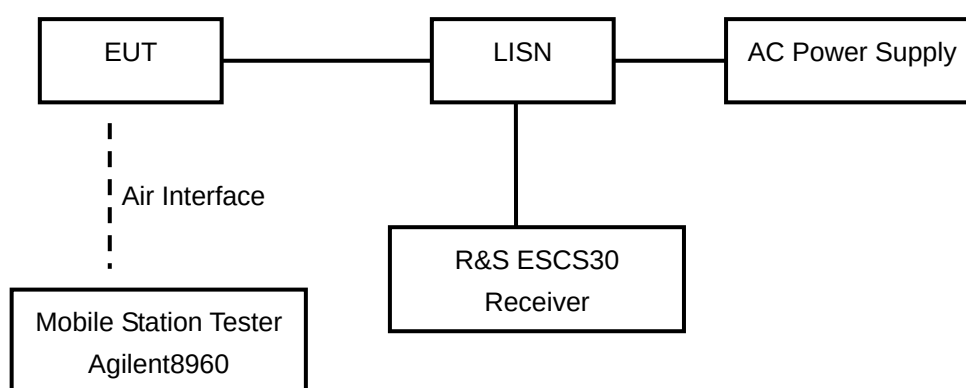


Figure 1

Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The EUT is connected with LISN via the charger. The LISN is connected to the reference ground. 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 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.

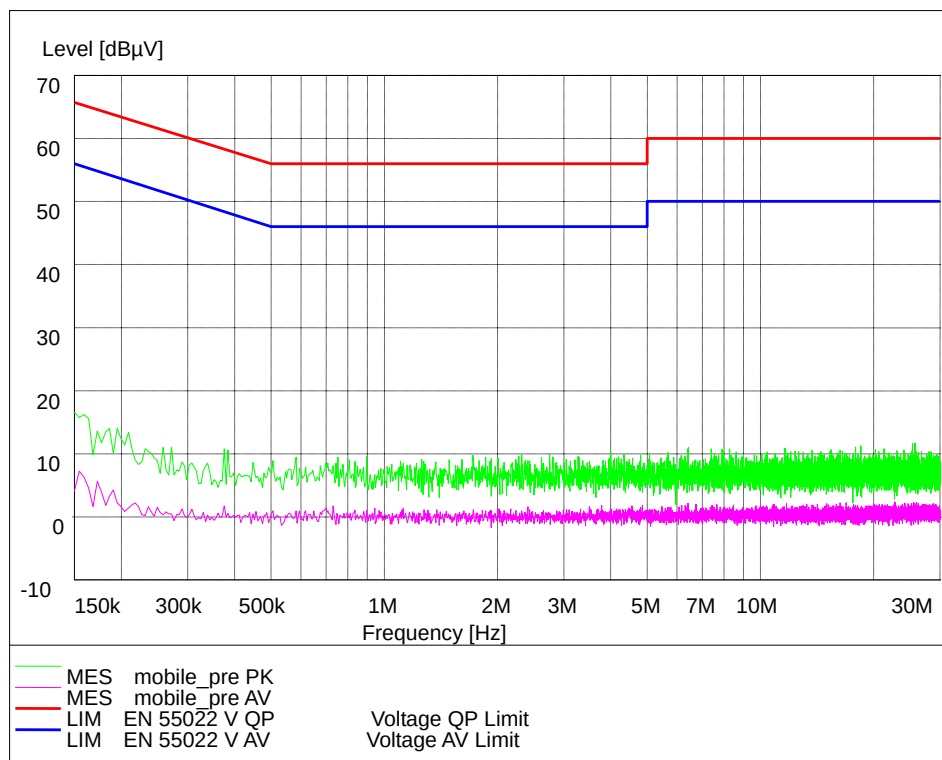
Limit:

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

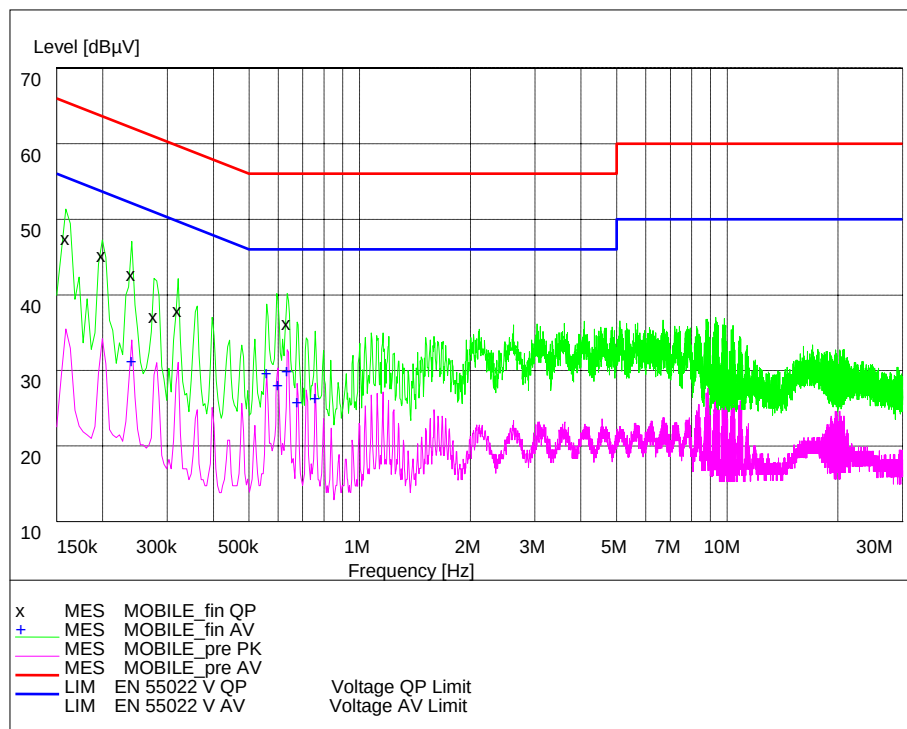
Test result:

Noise Level of The Measuring Instrument



L and N Line

GSM850 AE1#+AE2#+AE3#



L and N Line

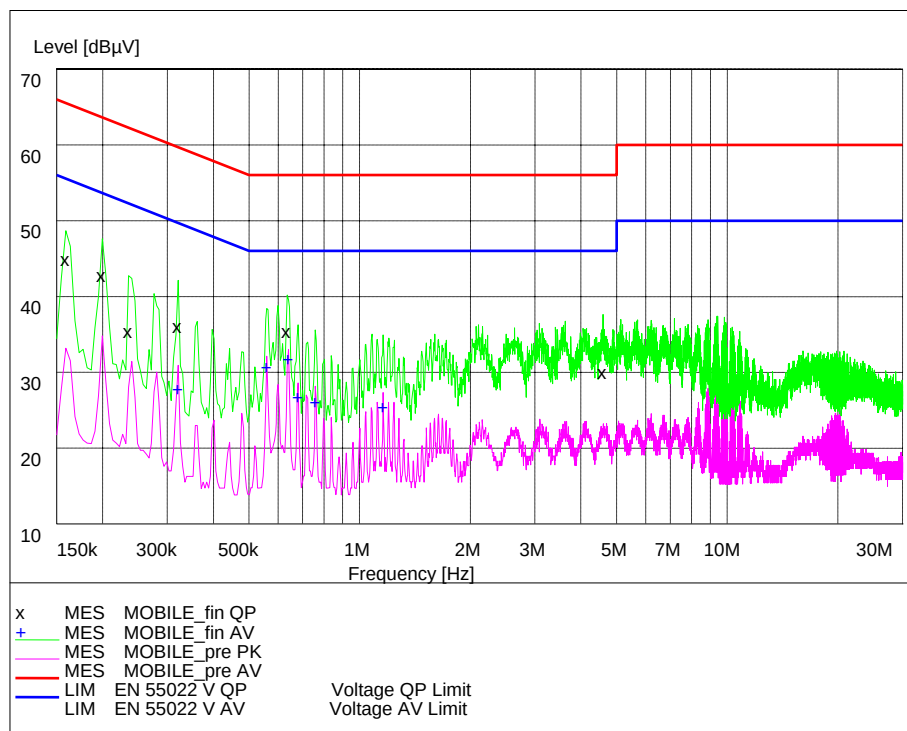
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.159000	49.00	20.2	66	16.6	L	---
0.199500	46.70	20.2	64	16.9	L	---
0.240000	44.20	20.2	62	17.9	L	---
0.276000	38.60	20.2	61	22.4	L	---
0.321000	39.40	20.2	60	20.2	L	---
0.636000	37.70	20.4	56	18.3	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.240000	32.70	20.2	52	19.4	L	---
0.559500	31.10	20.3	46	14.9	L	---
0.600000	29.50	20.3	46	16.5	L	---
0.636000	31.30	20.4	46	14.7	L	---
0.676500	27.20	20.4	46	18.8	N	---
0.757500	27.70	20.3	46	18.3	L	---

PCS1900 AE1#+AE2#+AE3#



L and N Line

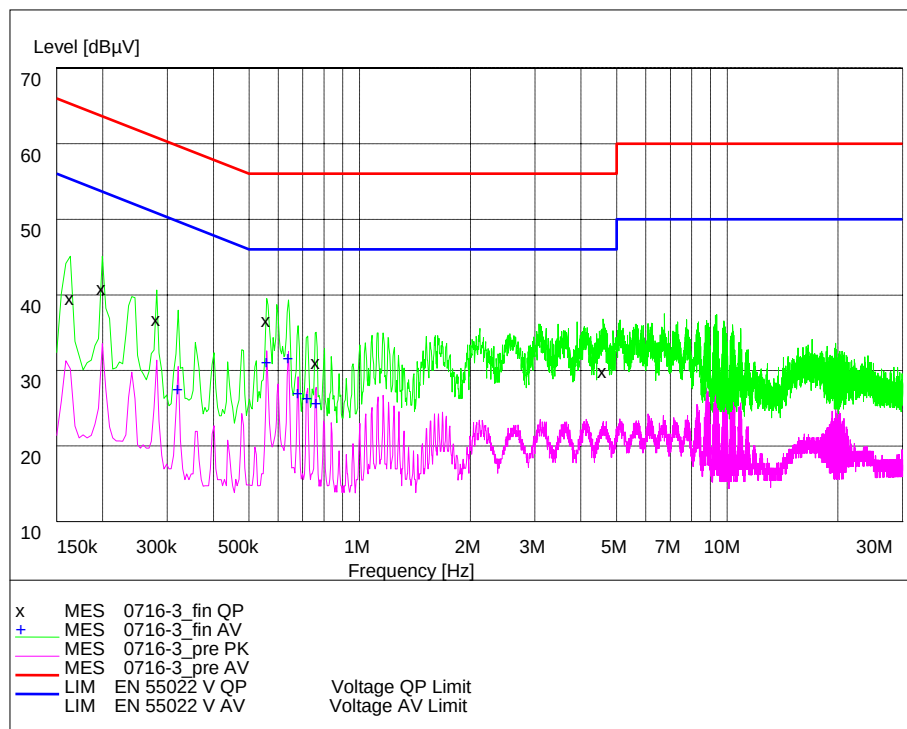
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.159000	46.30	20.2	66	19.2	L	---
0.199500	44.20	20.2	64	19.4	N	---
0.235500	36.80	20.2	62	25.5	L	---
0.321000	37.50	20.2	60	22.1	L	---
0.636000	36.90	20.4	56	19.1	L	---
4.596000	31.40	20.5	56	24.6	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.321000	29.20	20.2	50	20.4	L	---
0.559500	32.10	20.3	46	13.9	L	---
0.640500	33.20	20.4	46	12.8	L	---
0.681000	28.10	20.4	46	17.9	L	---
0.757500	27.50	20.3	46	18.5	L	---
1.158000	26.80	20.2	46	19.2	L	---

WCDMA BAND II AE1#+AE2#+AE3#



L and N Line

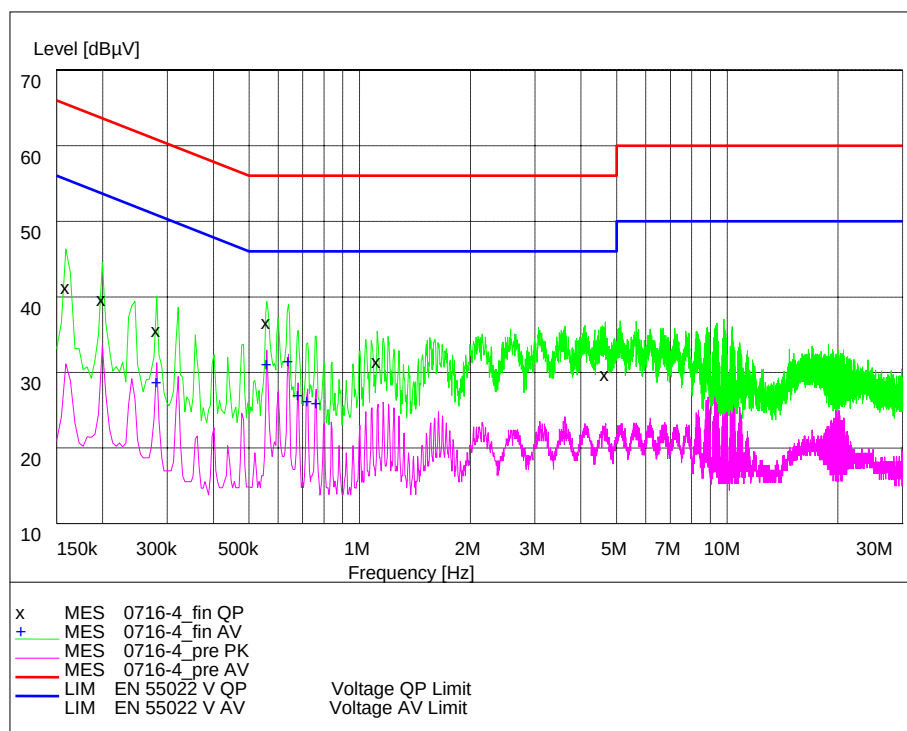
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.163500	41.00	20.2	65	24.2	L	---
0.199500	42.30	20.2	64	21.4	L	---
0.280500	38.20	20.2	61	22.6	L	---
0.559500	38.00	20.3	56	18.0	L	---
0.762000	32.50	20.3	56	23.5	L	---
4.600500	31.30	20.5	56	24.7	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.321000	28.90	20.2	50	20.8	L	---
0.559500	32.50	20.3	46	13.5	N	---
0.640500	33.10	20.4	46	12.9	L	---
0.681000	28.40	20.4	46	17.6	L	---
0.721500	27.70	20.3	46	18.3	L	---
0.762000	27.10	20.3	46	18.9	L	---

WCDMA BAND V AE1#+AE2#+AE3#



L and N Line

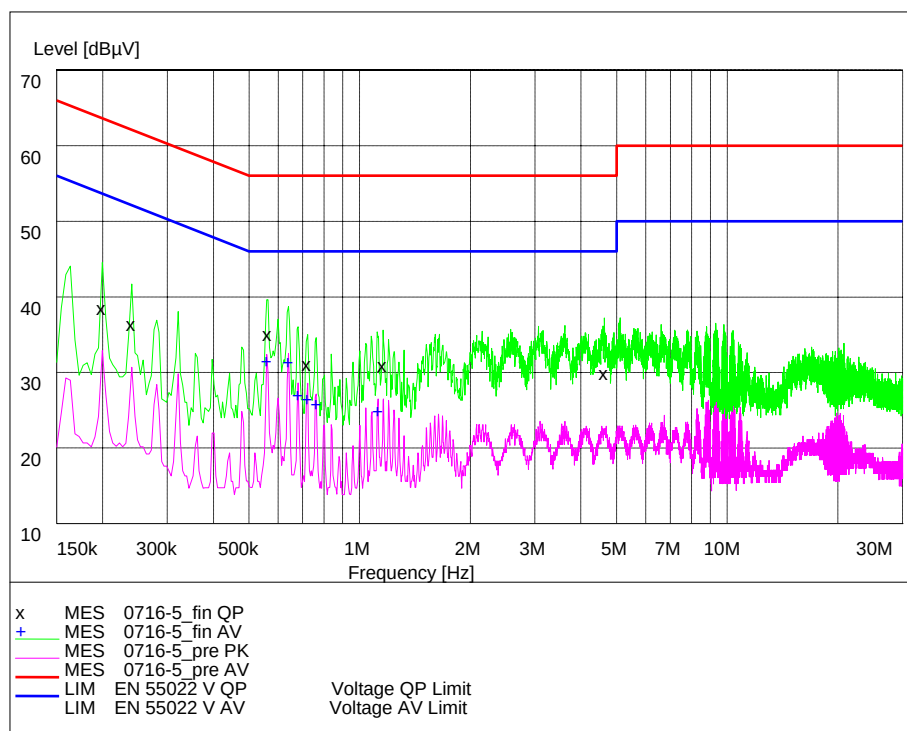
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.159000	42.70	20.2	66	22.9	L	---
0.199500	41.20	20.2	64	22.4	L	---
0.280500	37.00	20.2	61	23.8	L	---
0.559500	38.00	20.3	56	18.0	L	---
1.117500	32.90	20.3	56	23.1	L	---
4.659000	31.20	20.5	56	24.8	N	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.280500	30.10	20.2	51	20.7	L	---
0.559500	32.60	20.3	46	13.4	L	---
0.640500	32.90	20.4	46	13.1	L	---
0.681000	28.50	20.4	46	17.5	L	---
0.721500	27.60	20.3	46	18.4	L	---
0.762000	27.30	20.3	46	18.7	L	---

FM Radio AE1#+AE2#+AE3#



L and N Line

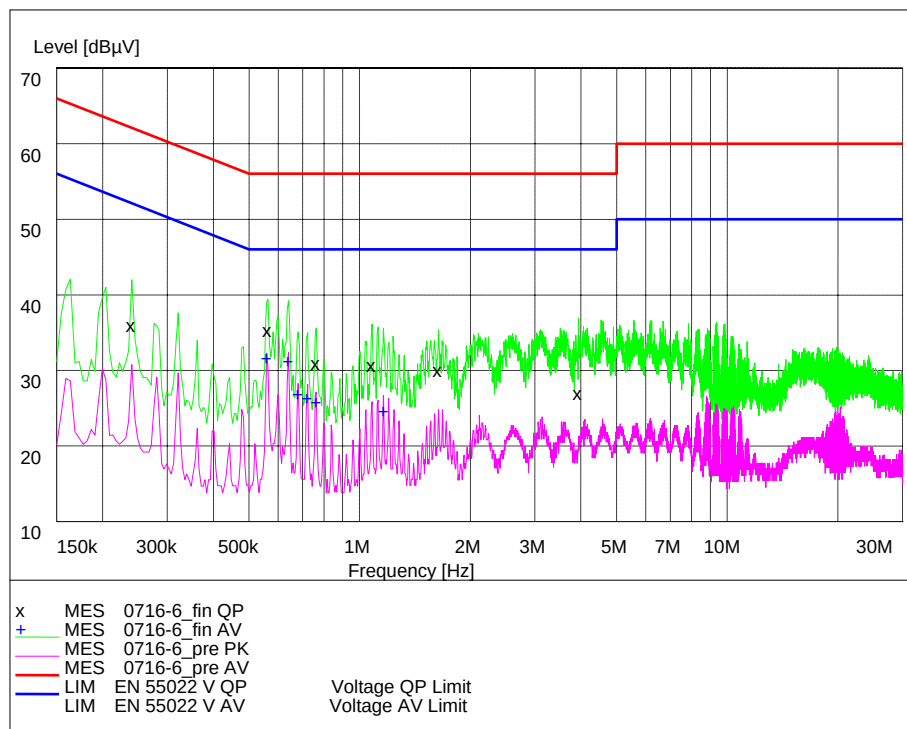
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.199500	39.90	20.2	64	23.8	L	---
0.240000	37.80	20.2	62	24.3	L	---
0.564000	36.50	20.3	56	19.5	N	---
0.721500	32.50	20.3	56	23.5	L	---
1.158000	32.40	20.2	56	23.6	L	---
4.641000	31.30	20.5	56	24.7	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.559500	32.90	20.3	46	13.1	L	---
0.640500	32.80	20.4	46	13.2	L	---
0.681000	28.40	20.4	46	17.6	L	---
0.721500	27.90	20.3	46	18.1	N	---
0.762000	27.20	20.3	46	18.8	L	---
1.122000	26.30	20.3	46	19.7	L	---

MP3/MP4 AE1#+AE2#+AE3#



L and N Line

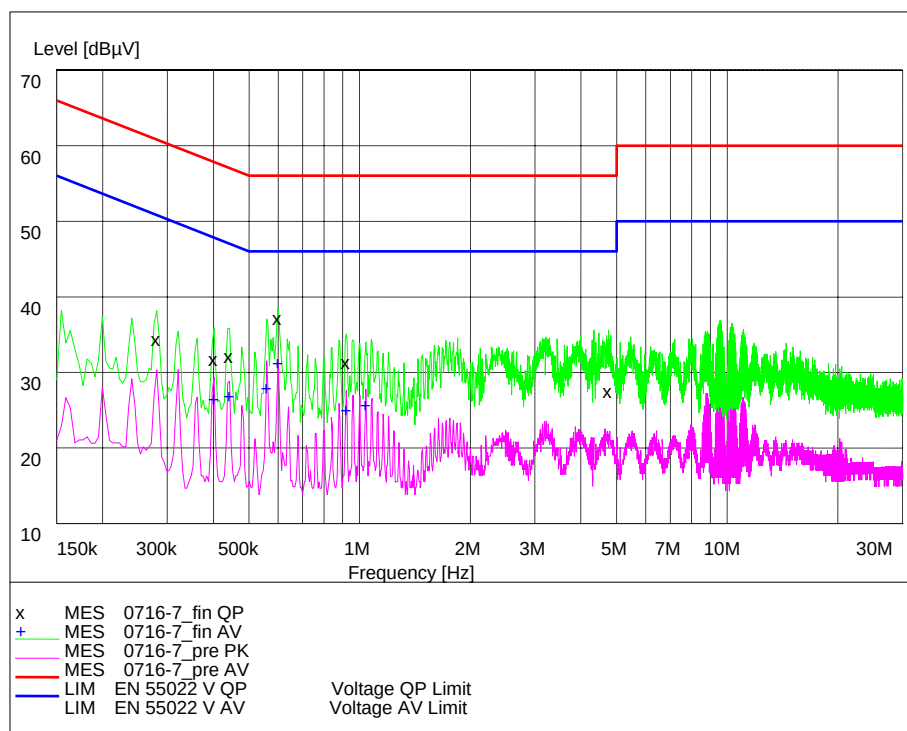
MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.240000	37.40	20.2	62	24.7	L	---
0.564000	36.80	20.3	56	19.2	L	---
0.762000	32.40	20.3	56	23.6	L	---
1.081500	32.20	20.3	56	23.8	L	---
1.639500	31.50	20.2	56	24.5	L	---
3.939000	28.50	20.4	56	27.5	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.559500	33.10	20.3	46	12.9	L	---
0.640500	32.70	20.4	46	13.3	N	---
0.681000	28.30	20.4	46	17.7	L	---
0.721500	27.80	20.3	46	18.2	L	---
0.762000	27.20	20.3	46	18.8	L	---
1.162500	26.00	20.2	46	20.0	L	---

Camera AE1#+AE2#+AE3#



L and N Line

MEASUREMENT RESULT: "MOBILE_fin QP"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.280500	35.80	20.2	61	25.0	L	---
0.402000	33.20	20.3	58	24.6	L	---
0.442500	33.60	20.3	57	23.4	L	---
0.600000	38.60	20.3	56	17.4	L	---
0.919500	32.80	20.3	56	23.2	L	---
4.758000	28.90	20.5	56	27.1	L	---

MEASUREMENT RESULT: "MOBILE_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.402000	27.90	20.3	48	19.9	L	---
0.442500	28.30	20.3	47	18.7	L	---
0.559500	29.30	20.3	46	16.7	L	---
0.600000	32.70	20.3	46	13.3	L	---
0.919500	26.50	20.3	46	19.5	L	---
1.041000	27.10	20.2	46	18.9	L	---

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
25.5°C	41.9%	100.3kPa

Test Setup:

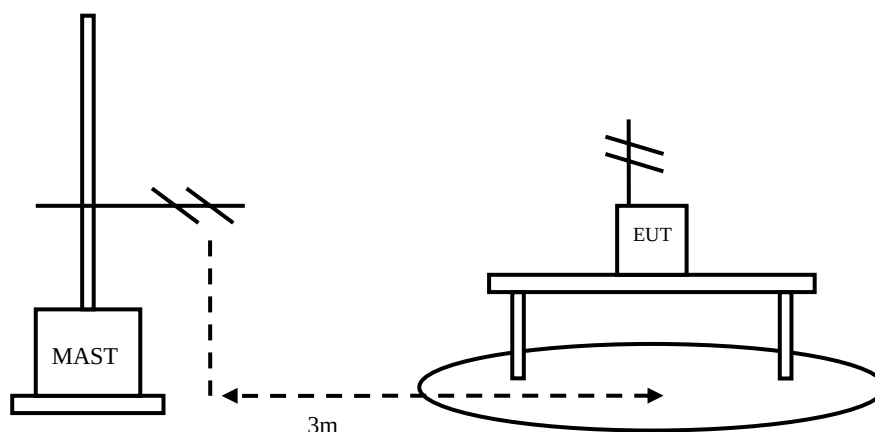


Figure 2

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 (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:

GSM850 Mode

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{mea} (dBuV/m)	Polarity
42.44	32.5	14.2	18.3	Vertical
77.62	11.0	7.6	3.4	Vertical
202.60	21.5	8.3	13.2	Vertical
755.91	21.9	22.6	-0.7	Vertical
837.27	62.4	23.8	38.6	Vertical
876.55	27.0	24.5	2.5	Vertical

PCS1900 Mode

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{mea} (dBuV/m)	Polarity
40.92	26.0	15.3	10.7	Vertical
78.00	21.3	7.7	13.6	Vertical
96.30	28.8	9.0	19.8	Vertical
96.72	28.7	9.1	19.6	Vertical
519.98	23.0	18.7	4.3	Horizontal
940.64	25.8	25.4	0.4	Vertical

WCDMA BAND II Mode

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
40.92	25.9	15.3	10.6	Vertical
78.00	21.3	7.7	13.6	Vertical
96.24	28.5	9.0	19.5	Vertical
96.78	28.5	9.1	19.4	Vertical
557.84	18.2	19.4	-1.2	Vertical
940.58	25.6	25.4	0.2	Vertical

WCDMA BAND V Mode

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
42.44	30.9	14.2	16.7	Vertical
208.55	25.3	8.5	16.8	Horizontal
760.12	22.0	22.7	-0.7	Vertical
826.05	51.4	23.9	27.5	Vertical
870.94	40.2	24.3	15.9	Vertical
941.08	25.1	25.4	0.1	Vertical

FM Radio Mode

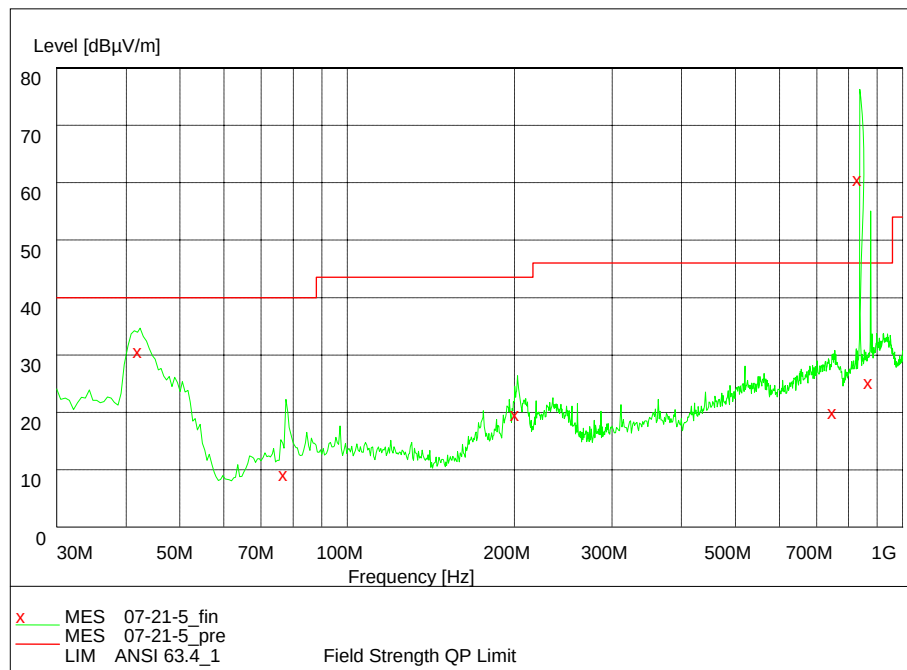
Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
40.86	26.1	15.4	10.7	Vertical
78.00	21.3	7.7	13.6	Vertical
95.88	28.4	8.9	19.5	Vertical
96.24	28.5	9.0	19.5	Vertical
519.98	22.9	18.7	4.2	Vertical
928.88	25.2	25.4	-0.2	Vertical

MP3/MP4 Mode

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
40.92	25.9	15.3	10.6	Vertical
78.00	21.3	7.7	13.6	Vertical
95.94	28.3	9.0	19.3	Vertical
97.20	27.9	9.1	18.8	Horizontal
519.98	23.1	18.7	4.4	Vertical
940.58	25.5	25.4	0.1	Vertical

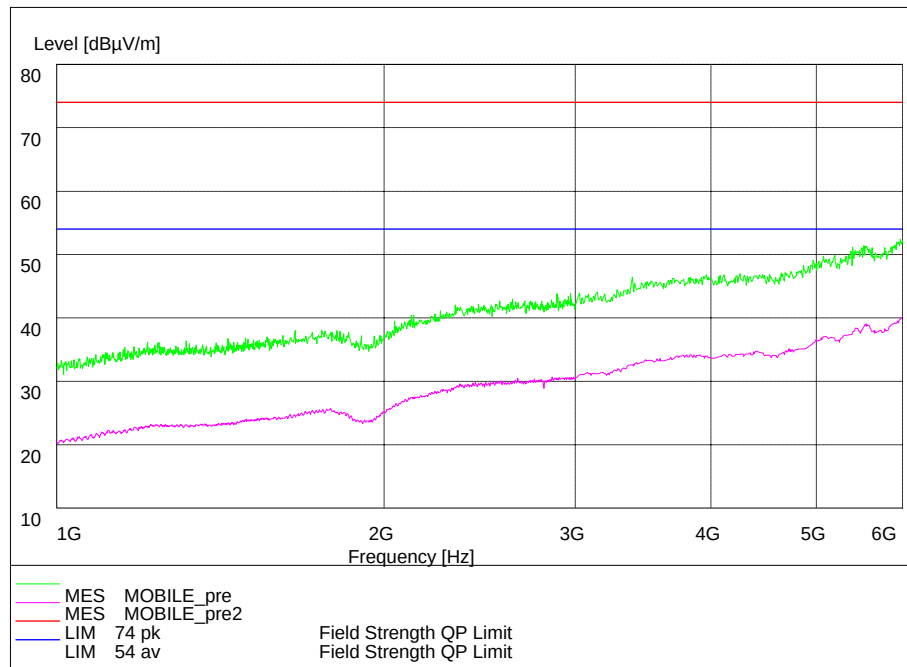
Camera Mode

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB)	P _{mea} (dBuV/m)	Polarity
40.74	25.7	15.3	10.4	Vertical
78.00	21.3	7.7	13.6	Vertical
96.24	28.3	9.0	19.3	Vertical
96.72	28.3	9.1	19.2	Vertical
519.98	23.2	18.7	4.5	Vertical
940.58	25.5	25.4	0.1	Horizontal

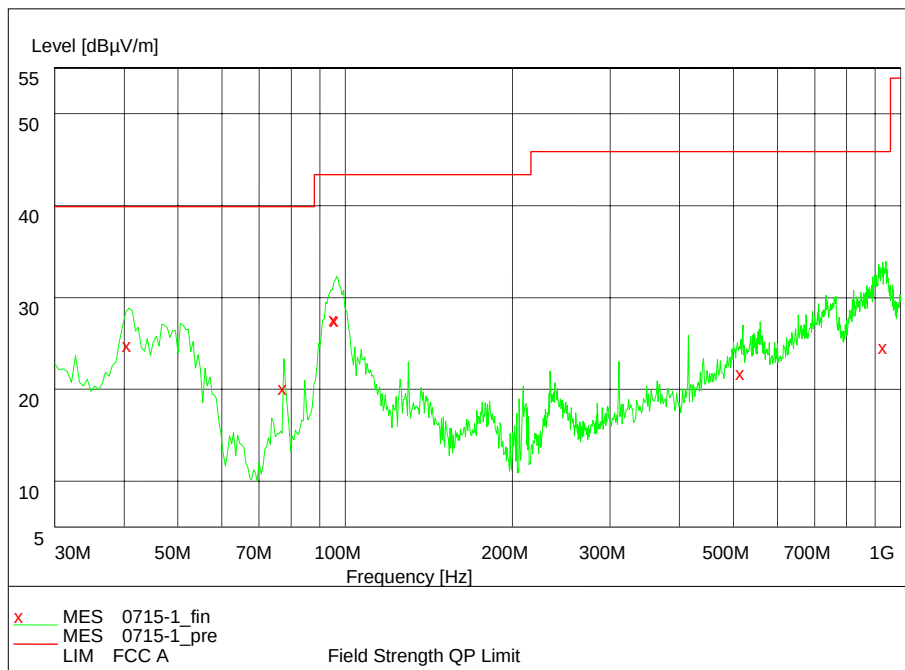


GSM850 (30MHz – 1GHz)

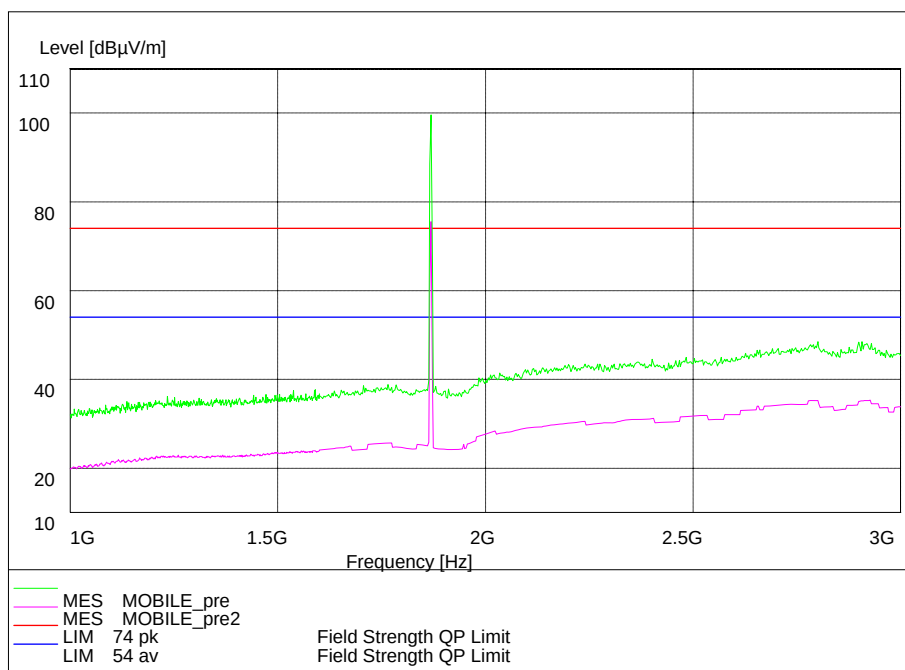
Note: The signal beyond the limit is the base station simulator carrier.



GSM850 (1GHz – 6GHz)

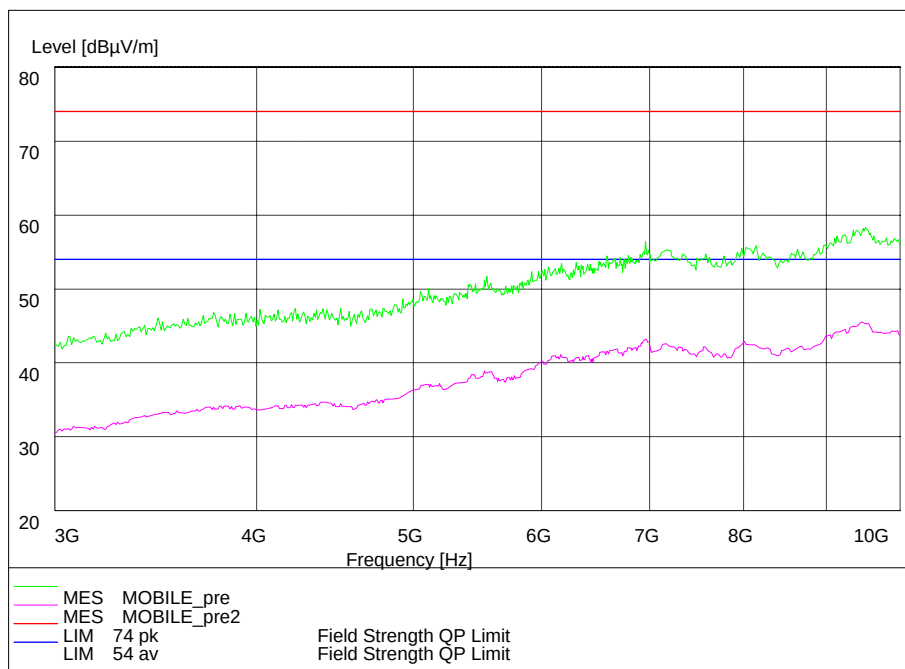


PCS1900 (30MHz – 1GHz)

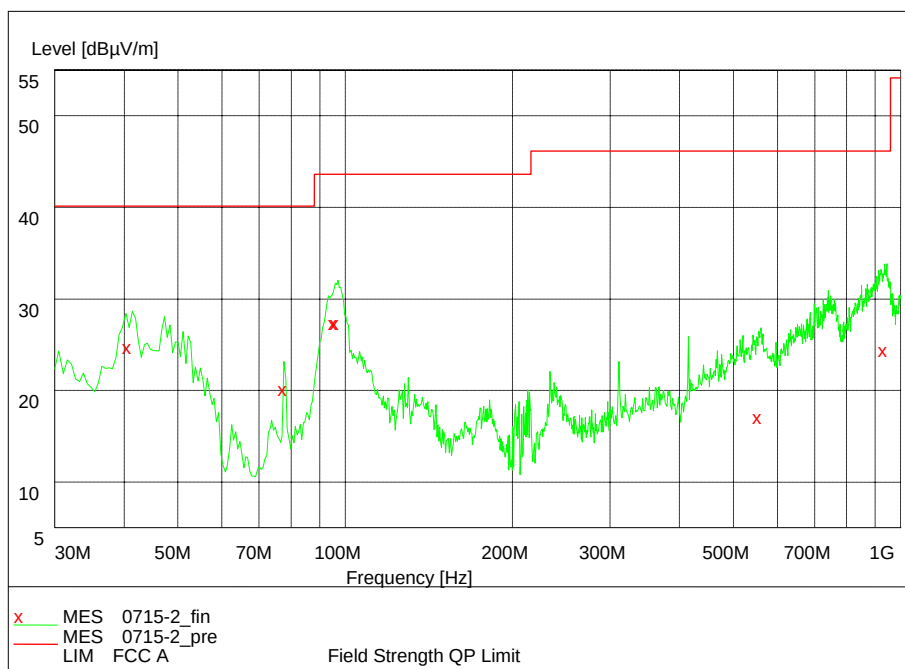


PCS1900 (1GHz – 3GHz)

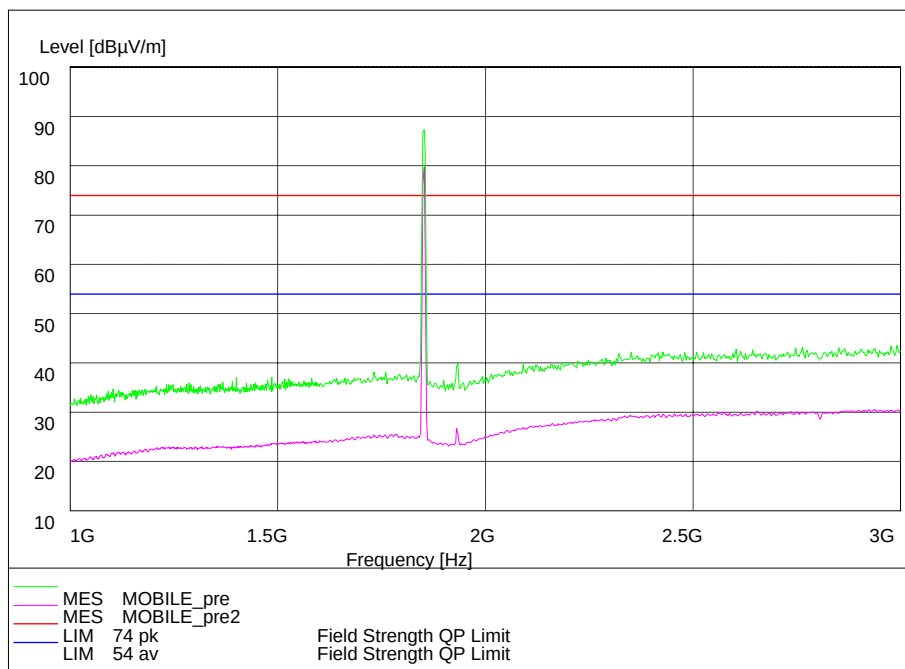
Note: The signals beyond the limit are the base station and simulator carrier.



PCS1900 (3GHz – 10GHz)

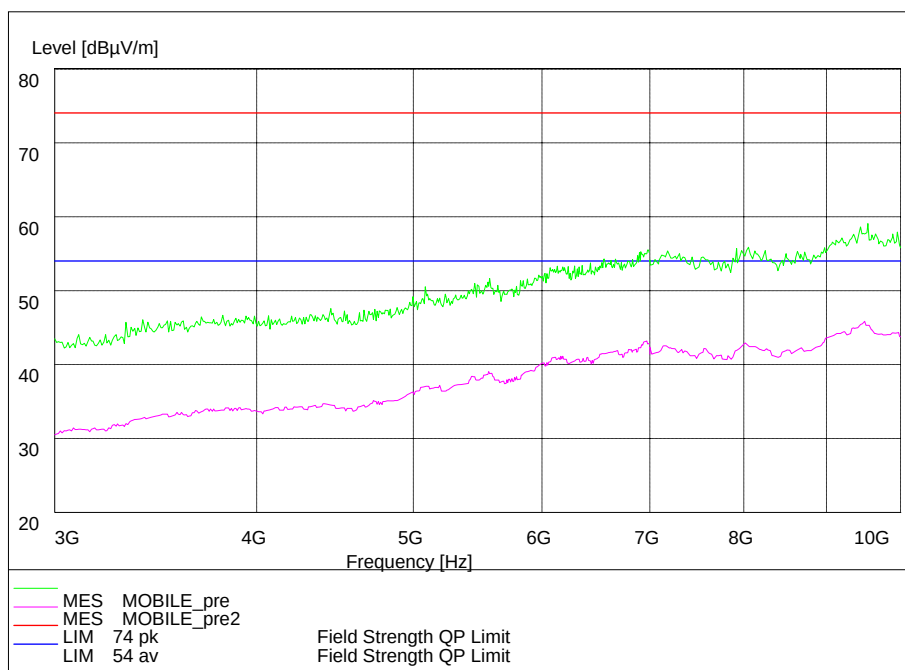


WCDMA BAND II (30MHz – 1GHz)

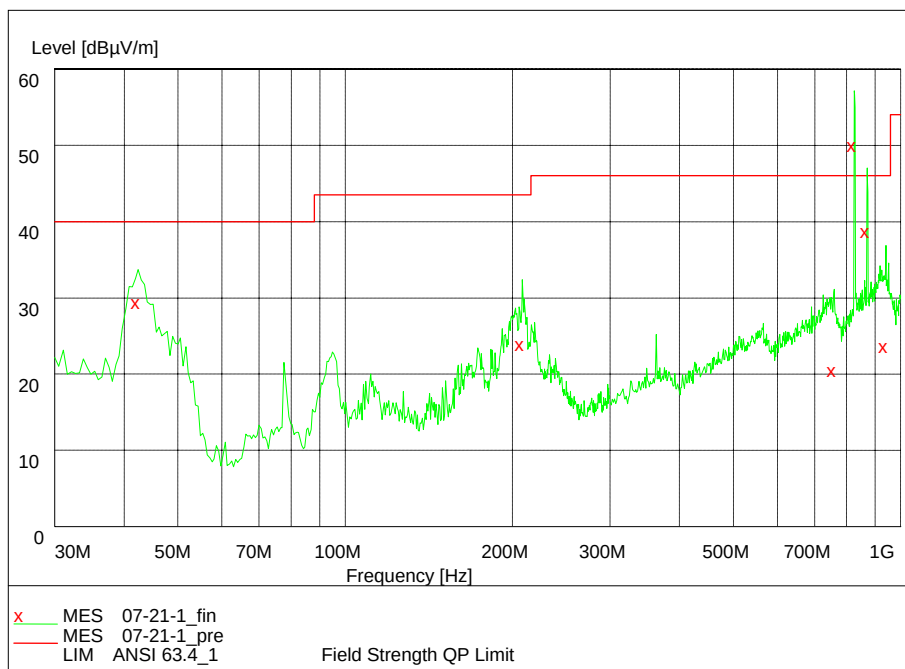


WCDMA BAND II (1GHz – 3GHz)

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

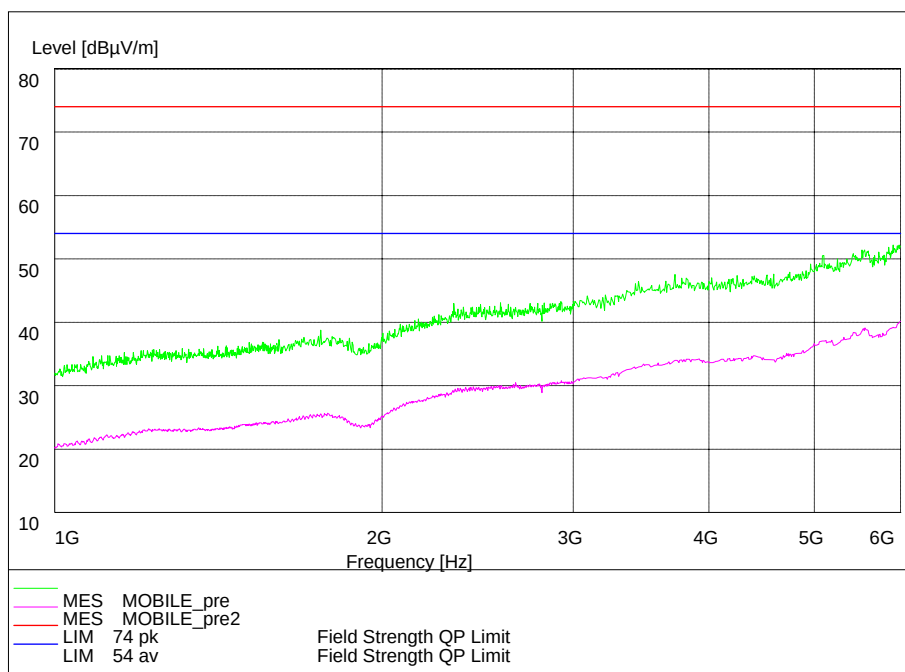


WCDMA BAND II (3GHz – 10GHz)

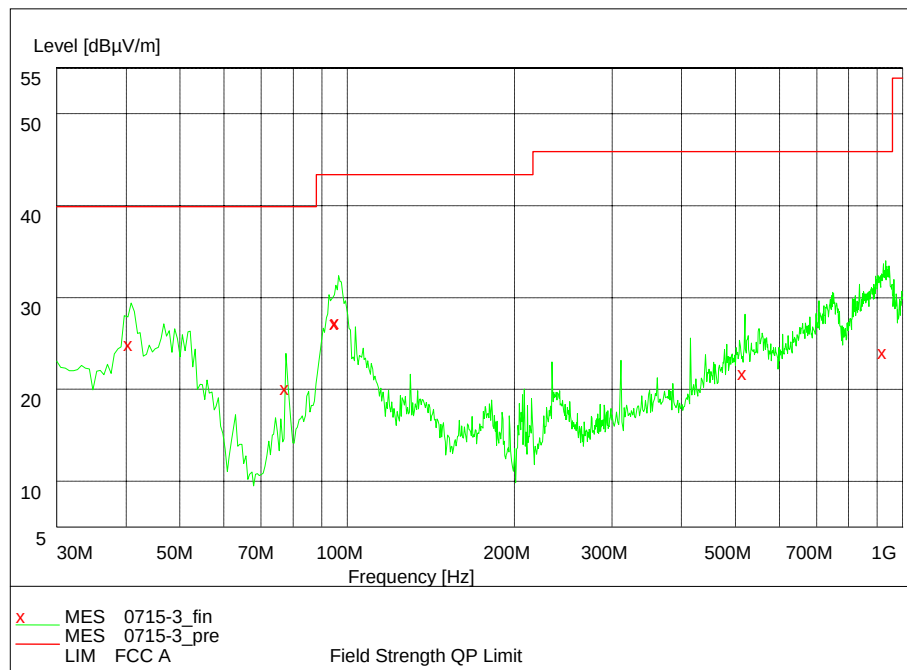


WCDMA BAND V (30MHz – 1GHz)

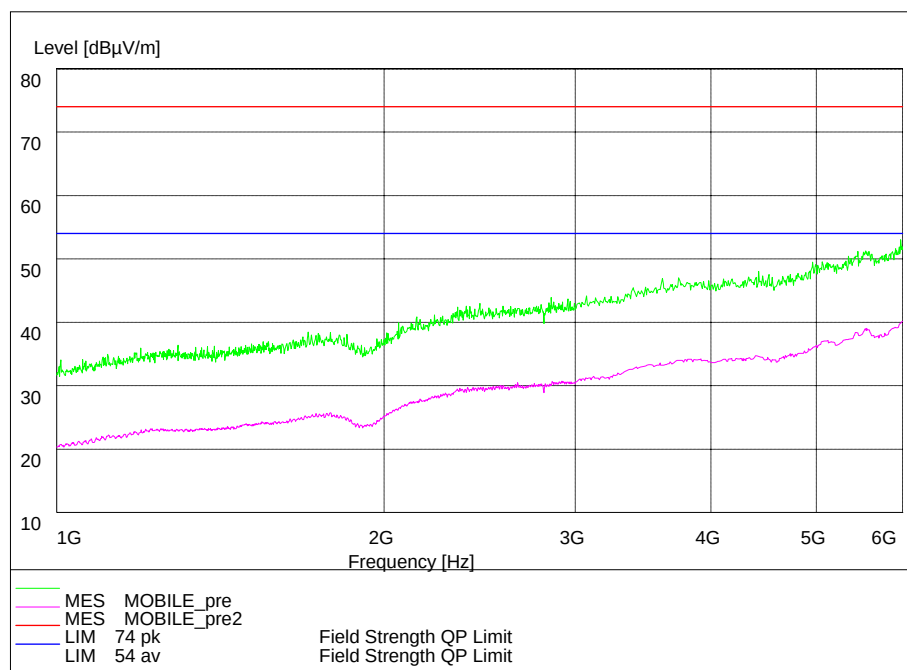
Note: The signals beyond the limit are the base station and simulator carrier.



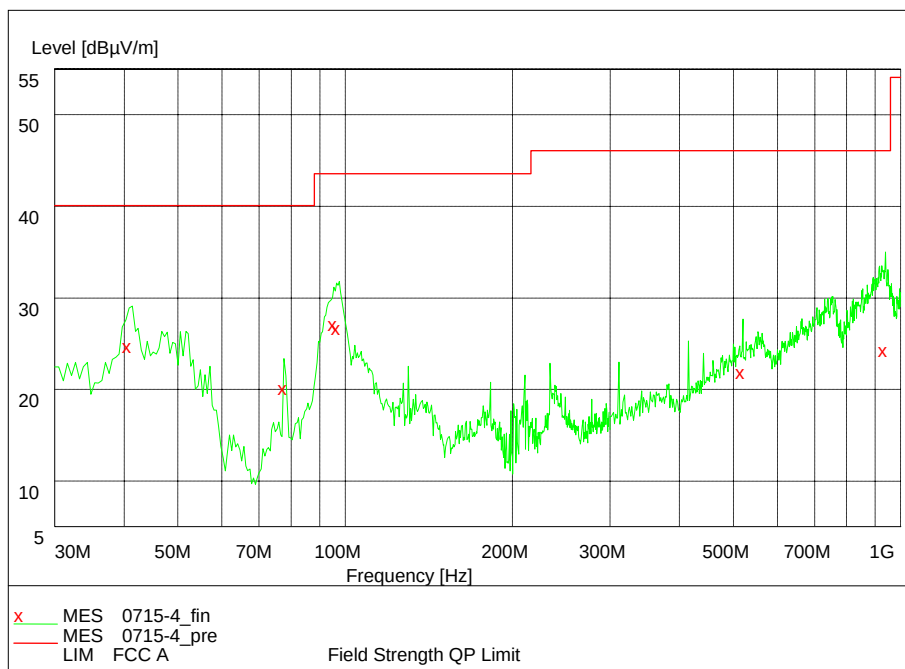
WCDMA BAND V (1GHz – 6GHz)



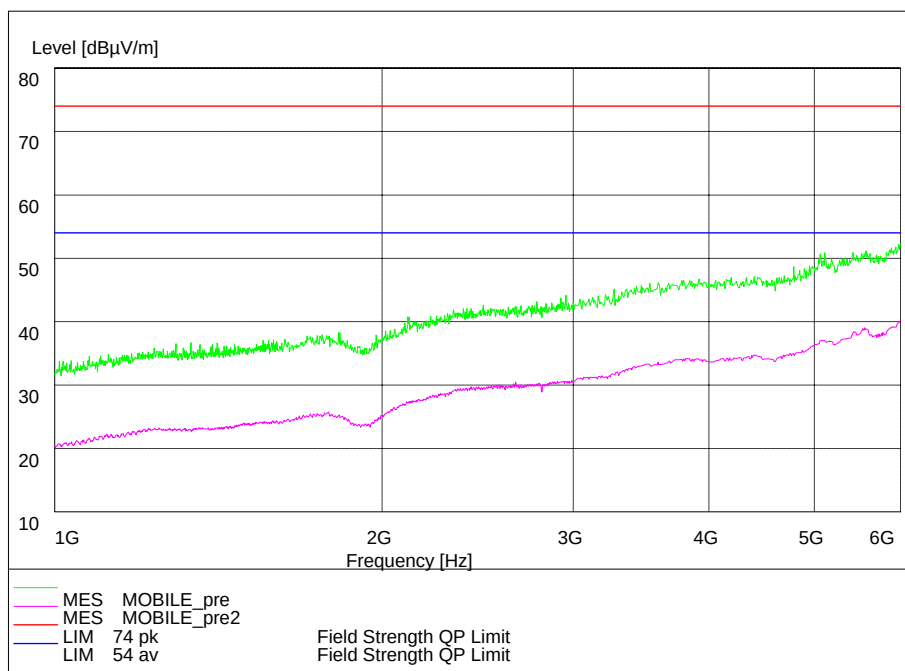
FM Radio (30MHz – 1GHz)



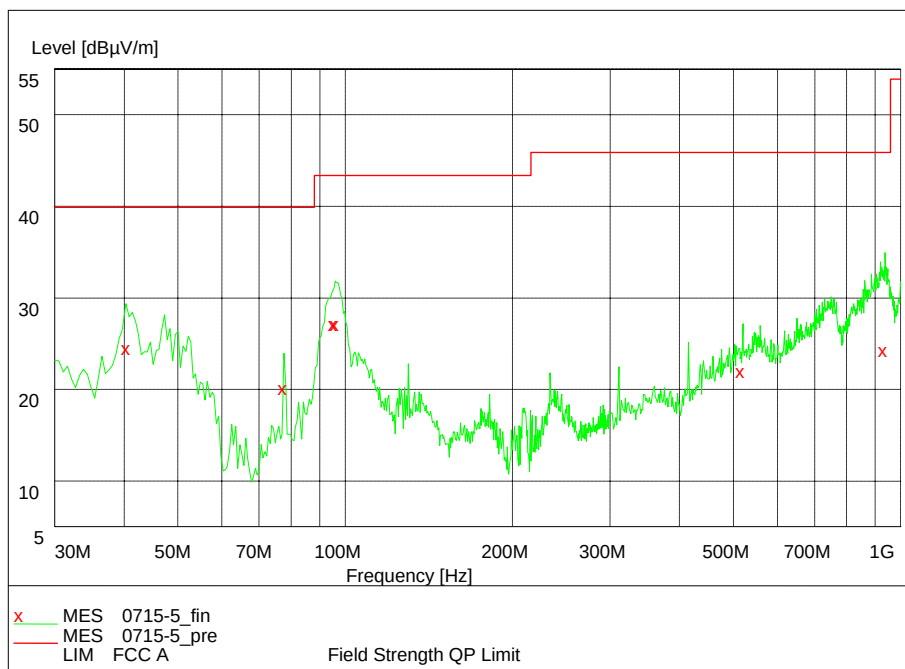
FM Radio (1GHz – 6GHz)



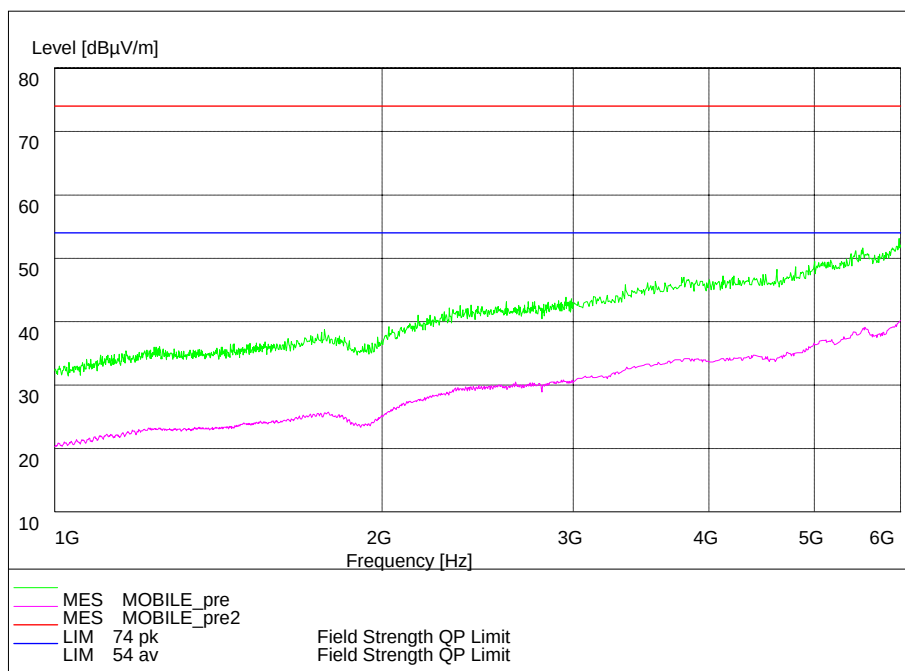
MP3/MP4 (30MHz – 1GHz)



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