



TEST REPORT

No. 2009TAR155

for

Nokia (China) investment CO.LTD.

GSM/TD mobile phone

Model Name: 6788

FCC ID : QTLRM-567

with

Hardware Version: 3012

Software Version: R4.9b

Issued Date: Nov 20th, 2009

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. DAT-P-114/01-01

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

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1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan beilu, Haidian District, Beijing,P.R.China
Postal Code: 100083
Telephone: 00861062303288
Fax: 00861062304793

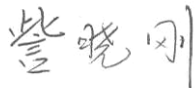
1.2. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

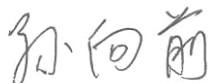
1.3. Project data

Testing Start Date: Oct 26th,2009
Testing End Date: Oct 30th,2009

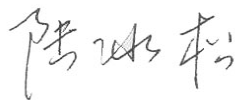
1.4. Signature



Zi Xiaogang
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Nokia (China) investment CO.LTD.
Address /Post: Building 2, No.5 Donghuan Zhonglu, Beijing Economic and Technological Development Area. Beijing, 100176, P.R.China
City: Beijing
Postal Code: 100176
Country: China
Telephone: 0086 10 87111332
Fax: 0086 10-87114664

2.2. Manufacturer Information

Company Name: BYD Precision Manufacturer Co., Ltd. Beijing Branch
Address /Post: No.1, Kechuang Dong 5 Jie, Tongzhou District Beijing, 101111, P.R. China
City: Beijing
Postal Code: 101111
Country: China
Telephone: 0086-10-58018888-71158
Fax: 0086-10-58018888-73000

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/TD mobile phone
Model Name	6788
FCC ID	QTLRM-567
Frequency	PCS 1900MHz
Antenna	Internal
Power supply	Battery or Charger (AC Adaptor)
Extreme vol. Limits	3.4VDC to 4.2VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-30°C to +50°C

Note: Photographs of EUT are shown in ANNEX A of this test report. Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MII of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
N01	860113000032672	3012	R4.9b

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	Battery	/
AE2	Travel Adapter	/
AE3	Headset	/

AE1

Model	BL-6F
Manufacturer	Nokia
Capacitance	1200mAh
Nominal Voltage	3.7V

AE2

Model	AC-8C
Manufacturer	Nokia
Length of DC line	120cm

AE3

Model	WH-102
Manufacturer	Nokia

*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices	V 10.1.07
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Clause	List	Clause in FCC rules	Verdict
1	Radiated Emission	15.109(a)	P
2	Conducted Emission	15.107(a)	P

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTUR E	CAL DUE DATE
1	Test Receiver	ESS	847151/015	R&S	2010-10-30
2	Test Receiver	ESI40	831564/002	R&S	2010-2-11
3	BiLog Antenna	3142B	9908-1403	EMCO	2010-1-16
4	BiLog Antenna	VUL9163	9163 175	Schwarzbeck	2010-9-19
5	Signal Generator	SMT06	831285/005	R&S	2009-12-26
6	Signal Generator	SMP04	100070	R&S	2010-4-20
7	LISN	ESH2-Z5	829991/012	R&S	2010-9-13
8	Spectrum Analyzer	FSU26	200030	R&S	2010-6-17
9	Universal Radio Communication Tester	CMU200	100680	R&S	2010-8-22
10	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2010-3
11	Dual-Ridge Waveguide Horn Antenna	3116	2663	EMCO	2010-3
12	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2010-3
13	Climatic chamber	SH-241	92003546	ESPEC	2010-5-15
14	PC	OPTIPLEX 755	3908243625	DELL	N/A
15	Monitor	E178FPc	CN-OWR979-641 80-7AJ-D2MS	DELL	N/A
16	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
17	Keyboard	L100	CN0RH65965890 7ATOI40	DELL	N/A
18	Mouse	VR-301	6927225500198	XINGYU	N/A

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a))

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at a distance of 3 meters is tested. The measurement is performed in the Semi-Anechoic Chamber with conducting metal floor. The EUT is placed on a nonconductive plate at 80 cm height. The turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations. Tested in accordance with the procedures of ANSI C63.4 – 2003, section 8.3.

A.1.2 EUT Operating Mode:

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.1.3 Measurement Limit

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

A.1.3 Measurement Setting:

Frequency of emission (MHz)	RBW(Peak/Quasi-Peak)
30-1000	100KHz/120KHz
Above 1000	1MHz/120KHz

A.1.4 Measurement Calculation

The measurement results are obtained as described below:

$$E \text{ [dB}\mu\text{V/m]} = U_{RX} \text{ [dB}\mu\text{V/m]} + A_{TOT} \text{ [dB]}$$

U_{RX} : Receiver reading

A_{TOT} : Total correction factor including cable loss, antenna factor and preamplifier gain

$$A_{TOT} = L_{CABLES} + AF - G_{PREAMP}$$

For example:

Frequency[MHz]	E [dB μ V/m]	U_{RX} [dB μ V/m]	A_{TOT} [dB]
3500	49.00	34.50	14.50

A.1.5 Measurement Results

Charging Mode (Peak Value)

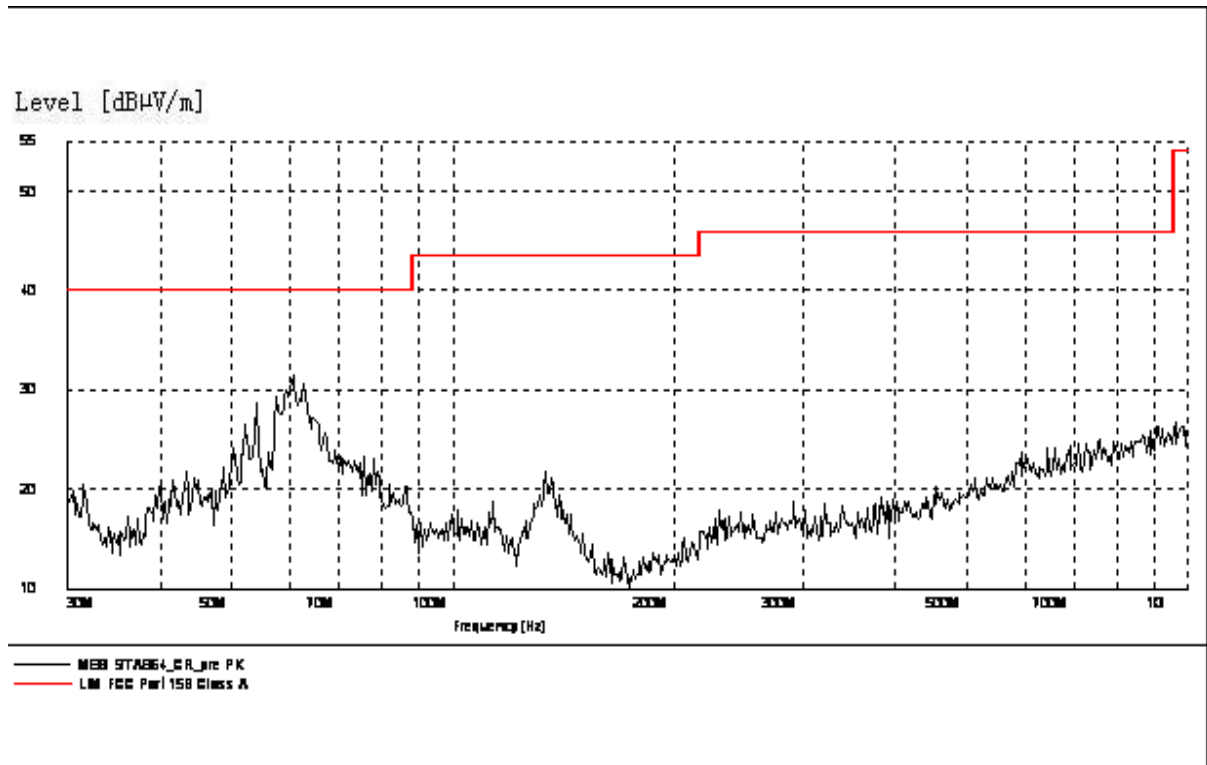


Figure A.1 Radiated Emission from 30MHz to 1GHz

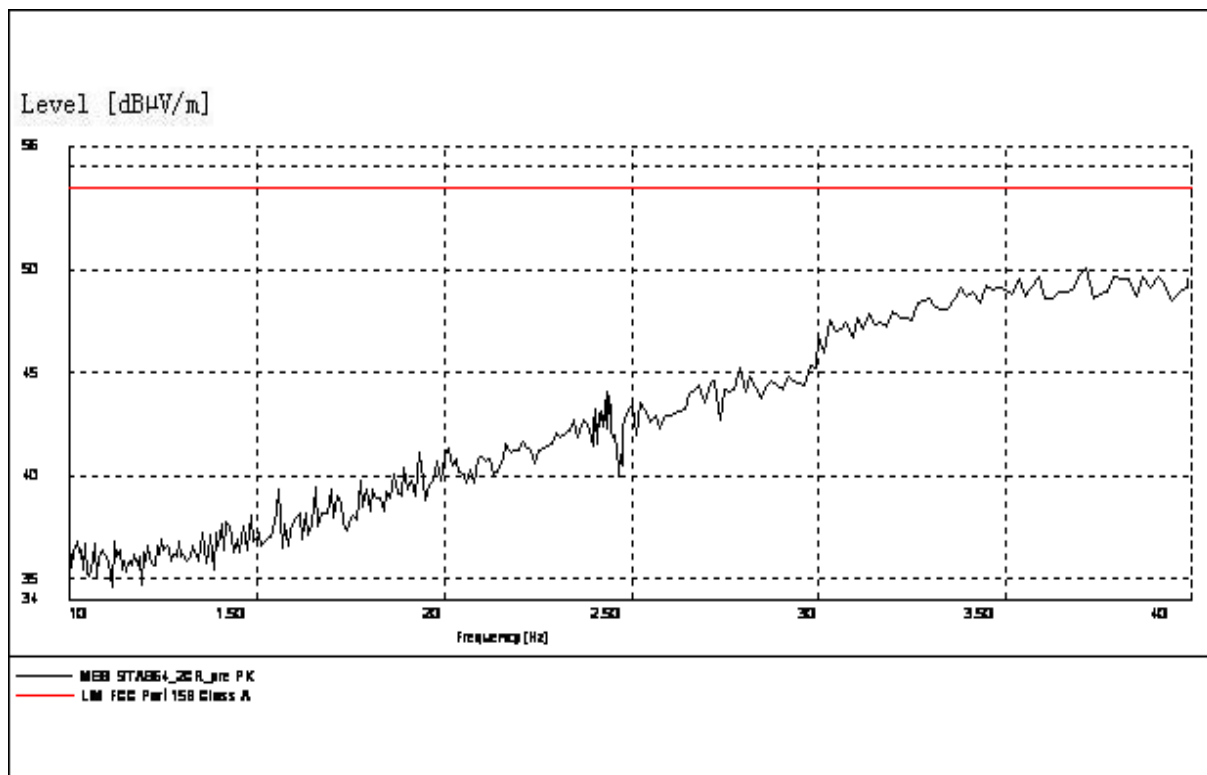


Figure A.2 Radiated Emission from 1GHz to 4GHz

USB Mode(Peak Value)

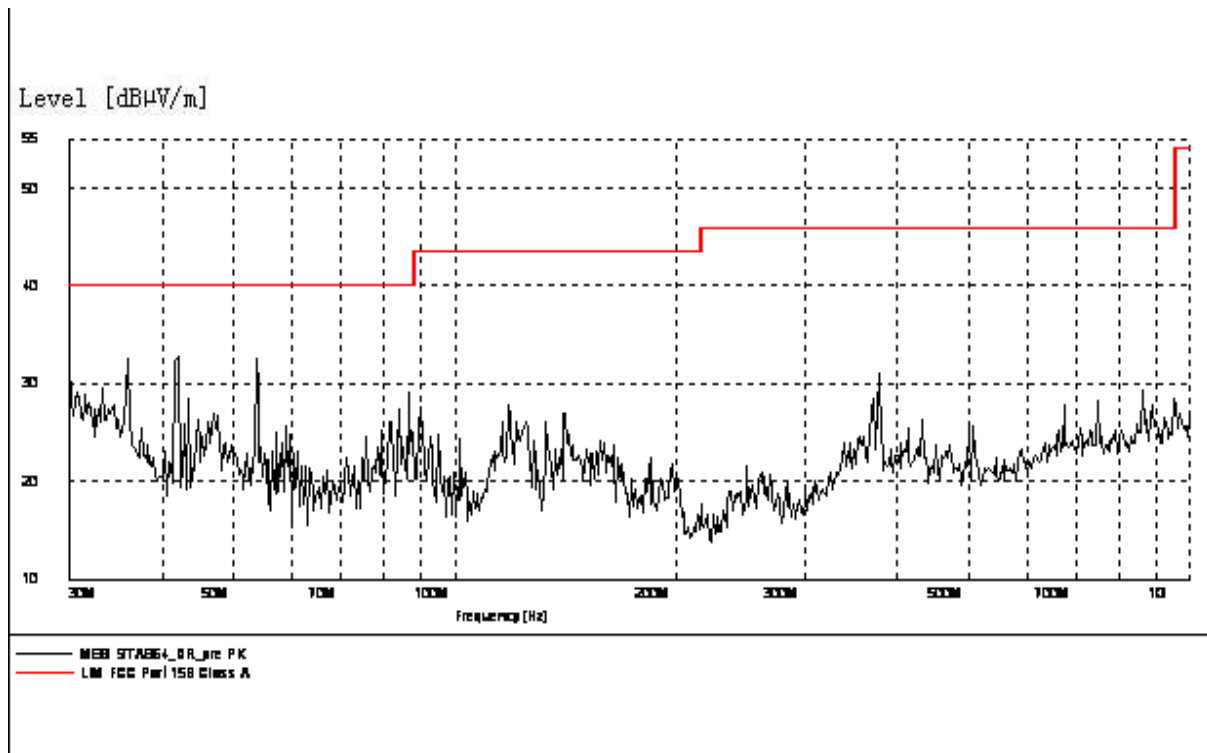


Figure A.3 Radiated Emission from 30MHz to 1GHz

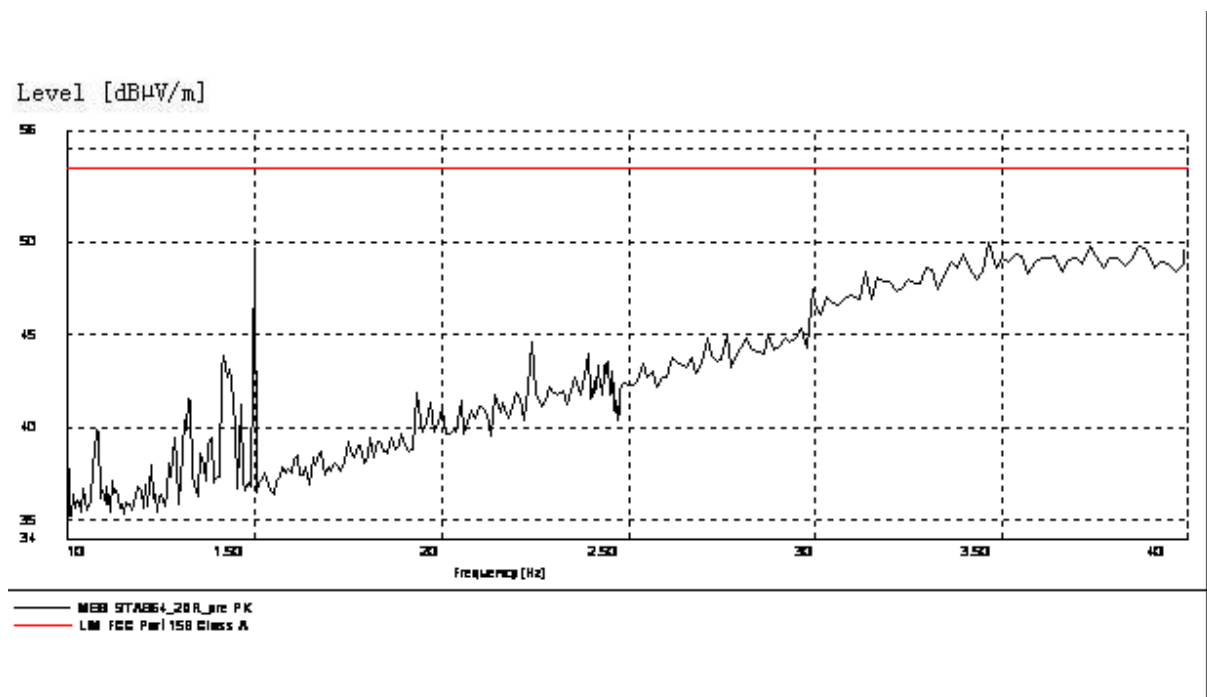


Figure A.4 Radiated Emission from 1GHz to 4GHz

A.2 Conducted Emission (§15.107(a))

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 – 2003, section 7.2.

A.2.2 EUT Operating Mode:

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.2.3 Measurement Limit

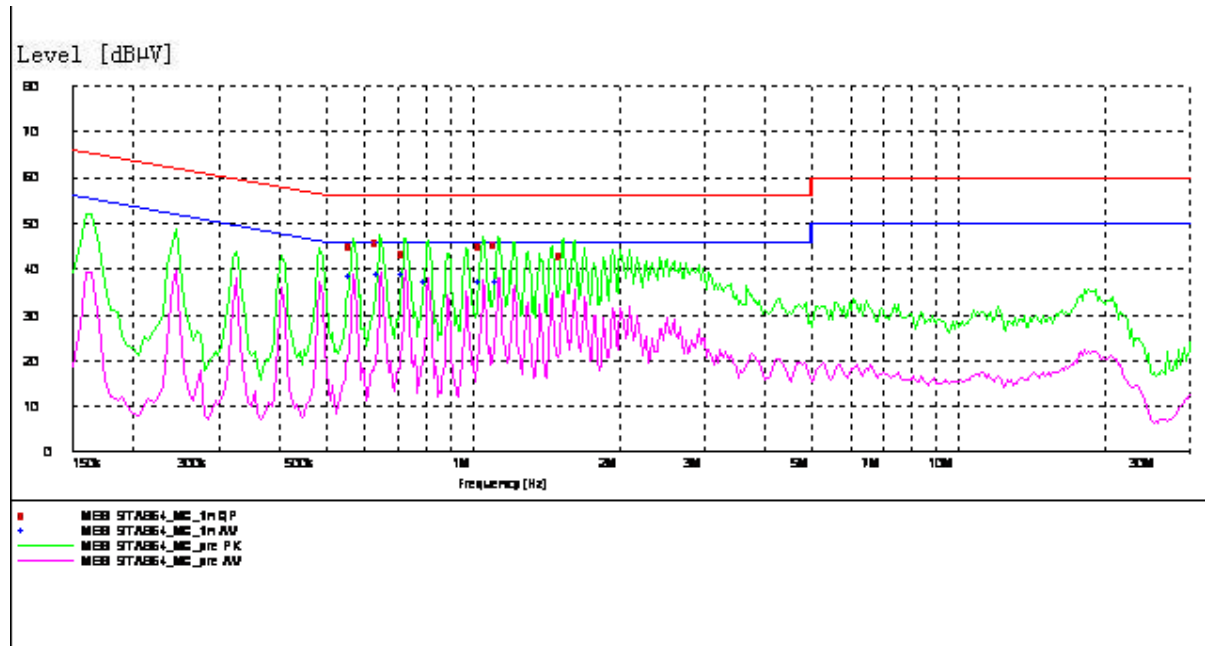
Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
110	60

A.2.4 Measurement Results

Charging Mode



MEASUREMENT RESULT: "9TA864_MC_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.565000	45.20	10.1	56	10.8	L1	GND
0.645000	45.70	10.1	56	10.3	L1	GND
0.730000	43.40	10.1	56	12.6	L1	FLO
1.050000	45.20	10.1	56	10.8	L1	GND
1.130000	45.50	10.1	56	10.5	L1	GND
1.535000	43.10	10.1	56	12.9	L1	FLO

MEASUREMENT RESULT: "9TA864_MC_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.565000	38.40	10.1	46	7.6	L1	GND
0.650000	38.60	10.1	46	7.4	L1	GND
0.730000	38.90	10.1	46	7.1	L1	GND
0.810000	37.00	10.1	46	9.0	L1	GND
1.050000	37.00	10.1	46	9.0	L1	GND
1.135000	37.10	10.1	46	8.9	L1	GND

USB Mode

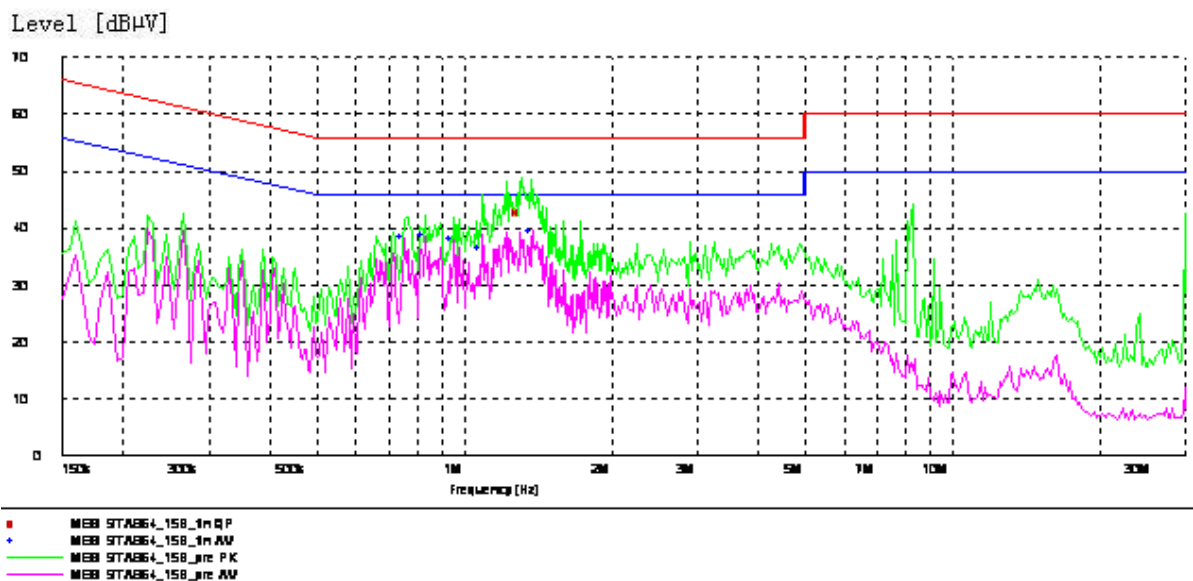


Figure A.6 Conducted Emission

MEASUREMENT RESULT: "9TA864_15B_fin QP"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
1.305000	42.70	10.1	56	13.3	L1	FLO

MEASUREMENT RESULT: "9TA864_15B_fin AV"

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.755000	38.30	10.1	46	7.7	N	FLO
0.830000	38.80	10.1	46	7.2	N	FLO
0.955000	38.00	10.1	46	8.0	N	FLO
1.090000	36.50	10.1	46	9.5	L1	FLO
1.380000	39.40	10.1	46	6.6	L1	FLO

END OF REPORT