

REPORT
TEST REPORT
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FROM
RFI GLOBAL SERVICES LTD

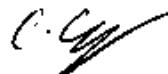
Test of: Lok8U Ltd, Num8+

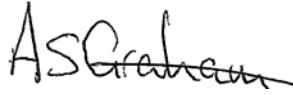
To: 47CFR15.107 and 47CFR15.109

Test Report Serial No: RFI-EMC-RP79720JD01A V2.0

Version 2.0 supersedes all previous versions

This test report is issued under the authority
of Chris Guy, Head of Global Approvals:



Checked By:	Gareth Bragg
Signature:	pp 
Date of Issue:	05 January 2011

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1. CUSTOMER DETAILS

Company Name:	Lok8U Ltd
Address:	Unit 2 Colemeadow Road North Moons Moat Redditch Worcestershire B98 9PB United Kingdom

2. SUMMARY OF TESTING

2.1. Test Specification

Reference:	47CFR15.107 and 47CFR15.109
Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 15 Subpart B (Radio Frequency Devices) – Sections 15.107 and 15.109.
Site Reference:	209735

2.2. Summary of Test Results

Clause	Measurement Type	Applicability	Result
15.109	Radiated Emissions (Enclosure)	Y	
15.107	Conducted Emissions (AC Mains Input/Output Ports)	Y	

KEY: = Complied = Did not comply

2.3. Location of Testing

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire RG24 8AH.

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above, nor from the requirements defined in the basic standards called up within it.

3. EQUIPMENT UNDER TEST (EUT)

3.1. Description of EUT

The EUT was a wrist worn child location device that incorporated GPS, GSM and GPRS communications capability.

3.2. Identification of Equipment under Test (EUT)

ID#	Description	Brand Name	Model No	Serial No	IMEI
E1	Child Location Device	Lok8U Ltd	Num8+	60000001	356021011861280

3.3. Port Identification

Port	Description	Type
P1	Enclosure	-

3.4. Operating Modes

Mode Reference	Definition
Idle	The EUT was powered and searching for available networks.

Radio characteristics

GSM Bands supported:	Rated Output Power (dBm)	Transmit Frequency range (MHz)	ARFCN	Transmit Frequency (MHz)	Receive Frequency range (MHz)	ARFCN	Receive Frequency (MHz)
GSM 850	33	824 – 849	190	836.6	869 – 894	190	881.6
PCS 1900	30	1850 – 1910	660	1879.8	1930 – 1990	660	1959.8

Supported Technologies e.g. Circuit Switched Voice/Data, Packet Switched Data GPRS/EDGE	Circuit Switched Data and GPRS/EDGE
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3.5. Configuration and Peripherals

Description:	The EUT was tested whilst being charged (in charging cradle). This was deemed to be the worst case.
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3.6. Modifications

Note: No modifications were made to the EUT during the course of testing.

3.7. Additional Information Related to Testing

Equipment Category:	GSM / GPRS / GPS Tracker
Intended Operating Environment:	Consumer Electronics
Cycle Time:	< 1 s
Power Supply Requirement(s):	4.2 VDC (internal battery - charged via AC/DC adaptor)
Weight:	50 g
Dimensions:	40 x 40 x 40 mm
Antenna Type	Integral
Hardware Version Number:	2
Software Version Number:	2

4. SUPPORT EQUIPMENT

4.1. Identification of Support Equipment

Description	Manufacturer	Model Name/No	Serial No
AC Adapter	None Stated	ASUC1-050020	None Stated
Charging cradle	Lok8U Ltd	Num8 LiPoCharger	None Stated

4.2. Interconnecting Cables

NOTE: No interconnecting cables were used during the course of testing

5. MONITORING PERFORMANCE

5.1. Overview

Only emissions tests were performed; therefore performance criteria were not applicable.

5.2. Monitoring EUT Performance during Testing

For the purposes of testing, the term “<i>operate as intended</i>” was defined as:	The EUT was plugged into the charging cradle and powered from a 110V AC mains power supply. The EUT was searching for a GSM network.
For the purposes of testing, an “<i>unintentional response</i>” was defined as:	Not Applicable
Method used to determine whether user control functions and stored data were lost after the EMC exposure:	Not Applicable
Method used to verify that a communications link was established and maintained (if appropriate):	Not Applicable
Method of assessment of level of performance or degradation of performance during and/or after EMC exposure:	Not Applicable

6. MEASUREMENT UNCERTAINTY

6.1. Overview

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement regarding the uncertainty of approximation.

The measurement uncertainty may need to be taken into account when interpreting the test results included within this test report.

6.2. Method of calculation

The methods used to calculate the uncertainties included within this test report are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the United Kingdom Accreditation Service (UKAS) is followed.

7. MEASUREMENTS, EXAMINATIONS AND DERIVED RESULTS

7.1. General Comments

7.1.1. This section contains the test result sheets for the measurements listed in Section 2.2. *Summary of Test Results* (above).

7.1.2. The measurement uncertainties stated in the test result sheets were calculated in accordance with documented best practice and represent a confidence level of 95%. Where only confidence level is given, it has been demonstrated that the relevant items of test equipment used meet the specified requirements in the standard with at least this level of confidence.

7.1.3. Please refer to Section 6. *Measurement Uncertainty* on page 10 for details of our treatment of measurement uncertainty.

RADIATED EMISSIONS - TEST RESULTS

This test is covered by the scope of RFI's UKAS Accreditation under ISO/IEC 17025: 2005.

GENERAL INFORMATION

RFI JOB NUMBER:	79720JD01	TEST SITE ID:	Site 1
EUT:	Num8+	TEMPERATURE:	25 °C to 25 °C
TEST ENGINEER:	Eric Phiri	RELATIVE HUMIDITY:	24 % to 24 %
DATE OF TEST:	22 Nov 2010	ATMOSPHERIC PRESSURE:	1000 mb to 1000 mb
FIELD TYPE:	Electric Field	MEASUREMENT DISTANCE:	3 Meters
UNCERTAINTY (±):	±3.99 dB	EQUIPMENT CLASS:	Class B
MEASUREMENT UNITS:	dB μ V/m	TEST ENVIRONMENT:	Test Site

TEST SPECIFICATION DETAILS

The EUT has been configured and tested in accordance with the methods and procedures detailed within the following basic standard:

REFERENCE:	ANSI C63.4-2003
TITLE:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

COMMENTS

Measurements below 1 GHz were performed in a semi-anechoic chamber at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Pre-scans and final measurements above 1 GHz were performed in a semi-anechoic chamber at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

DEVIATIONS FROM TEST SPECIFICATION

There were no deviations from the test configuration and measurement arrangements defined in the test specification (identified above).

EUT RELATED

OPERATING MODE:	Idle
FUNCTION(S) MONITORED:	Not Applicable

MEASUREMENT RESULTS

No.	Frequency (MHz)	Polarity	Detector	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Graph No.	Result
1	30.104	Vertical	Quasi-Peak	18.7	40.0	21.3	001	Complied
2	31.126	Vertical	Quasi-Peak	13.4	40.0	26.6	001	Complied
3	47.042	Vertical	Quasi-Peak	18.2	40.0	21.8	001	Complied
4	53.807	Vertical	Quasi-Peak	13.1	40.0	26.9	001	Complied
5	72.403	Vertical	Quasi-Peak	10.8	40.0	29.2	001	Complied
6	152.592	Horizontal	Quasi-Peak	6.7	43.5	36.8	001	Complied
7	363.987	Vertical	Quasi-Peak	27.6	46.0	18.4	001	Complied
8	1760.800	Vertical	Average	36.7	54.0	17.3	002	Complied
9	4000 to 12750			Refer to Note 1			003 to 005	Complied

NOTES

1 No emissions were noted above the noise floor of the measurement system; therefore no further measurements were made

TEST EQUIPMENT USED

RFI ID	INSTRUMENT DESCRIPTION	MODEL NUMBER	CALIBRATION DUE	INTERVAL
K0001	5m Semi-Anechoic Chamber	N/A	25 Apr 2011	12
L1001	26.5 GHz Test Receiver	ESU26	28 Jan 2011	12
M172	Electronic Environmental Monitor	BA-116	05 Jul 2011	12
A1817	1-18GHz Horn Antenna	3115	27 Nov 2010	12
A553	Bi-log Antenna	CBL6111A	16 Mar 2011	12
C1302	3m Rosenberger Cable	FA210A1030005050	30 Jun 2011	12
C1303	8m Rosenberger Cable	FA210A1080005050	23 Feb 2011	12
C1306	15m Rosenberger Cable	FA210A0015005050	23 Feb 2011	12
C571	50 ohm co-ax	UFA210A-1-788-50x50	17 Feb 2011	12
G0543	Amplifier 9KHz - 1GHZ	310N	30 Jun 2011	12
A1834	3dB N-Type Attenuator	8491B	30 Jun 2011	12
C1079	UFA210A Rosenberger Cable	FA210A1010M5050	17 Feb 2011	12
C1304	3m Rosenberger Cable	FA210A1030005050	22 Feb 2011	12

CONDUCTED EMISSIONS - TEST RESULTS

This test is covered by the scope of RFI's UKAS Accreditation under ISO/IEC 17025: 2005.

GENERAL INFORMATION

RFI JOB NUMBER:	79720JD01	TEST SITE ID:	Site 1
EUT:	Num8+	TEMPERATURE:	25 °C to 25 °C
TEST ENGINEER:	Eric Phiri	RELATIVE HUMIDITY:	30 % to 30 %
DATE OF TEST:	22 Nov 2010	ATMOSPHERIC PRESSURE:	1000 mb to 1000 mb
UNCERTAINTY (±):	±3.99 dB	EQUIPMENT CLASS:	Class B
CATEGORY:	Not applicable	MEASUREMENT METHOD:	LISN (AC)

TEST SPECIFICATION DETAILS

The EUT has been configured and tested in accordance with the methods and procedures detailed within the following basic standard:

REFERENCE:	ANSI C63.4-2003
TITLE:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

COMMENTS

None

DEVIATIONS FROM TEST SPECIFICATION

There were no deviations from the test configuration and measurement arrangements defined in the test specification (identified above).

EUT RELATED

OPERATING MODE:	Idle
FUNCTION(S) MONITORED:	Not Applicable

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Graph No.	Result
1	0.249	Live 1	Quasi-Peak	46.3	61.8	15.5	006	Complied
2	0.497	Neutral	Quasi-Peak	43.2	56.1	12.8	006	Complied
3	0.749	Neutral	Quasi-Peak	43.1	56.0	12.9	006	Complied
4	0.996	Neutral	Quasi-Peak	44.9	56.0	11.1	006	Complied
5	1.248	Neutral	Quasi-Peak	44.0	56.0	12.0	006	Complied
6	1.748	Neutral	Quasi-Peak	43.2	56.0	12.8	006	Complied
7	1.995	Neutral	Quasi-Peak	46.1	56.0	9.9	006	Complied
8	2.247	Neutral	Quasi-Peak	39.7	56.0	16.3	006	Complied
9	3.242	Neutral	Quasi-Peak	40.0	56.0	16.0	006	Complied
10	3.489	Neutral	Quasi-Peak	38.4	56.0	17.6	006	Complied
11	0.249	Live 1	Average (CISPR)	32.8	51.8	19.0	006	Complied
12	0.501	Neutral	Average (CISPR)	35.1	46.0	10.9	006	Complied
13	0.749	Neutral	Average (CISPR)	34.6	46.0	11.4	006	Complied
14	0.996	Neutral	Average (CISPR)	34.7	46.0	11.3	006	Complied
15	1.248	Neutral	Average (CISPR)	34.4	46.0	11.6	006	Complied
16	1.748	Neutral	Average (CISPR)	32.7	46.0	13.3	006	Complied

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Graph No.	Result
17	1.991	Neutral	Average (CISPR)	36.0	46.0	10.0	006	Complied
18	2.247	Neutral	Average (CISPR)	29.7	46.0	16.3	006	Complied
19	3.237	Neutral	Average (CISPR)	30.1	46.0	15.9	006	Complied
20	3.489	Neutral	Average (CISPR)	25.7	46.0	20.3	006	Complied

NOTES

N/A During measurement the engineer did not record any specific notes relevant to report.

TEST EQUIPMENT USED

RFI ID	INSTRUMENT DESCRIPTION	MODEL NUMBER	CALIBRATION DUE	INTERVAL
K0001	5m Semi-Anechoic Chamber	N/A	25 Apr 2011	12
L1001	26.5 GHz Test Receiver	ESU26	28 Jan 2011	12
C1302	3m Rosenberger Cable	FA210A1030005050	30 Jun 2011	12
C1304	3m Rosenberger Cable	FA210A1030005050	22 Feb 2011	12
A649	Single Phase LISN	ESH3-Z5	16 Mar 2011	12
A1830	N-Type Pulse Limiter	ESH3-Z2	01 Mar 2011	12
M172	Electronic Environmental Monitor	BA-116	05 Jul 2011	12

8. PHOTOGRAPHS OF EUT

This section contains the following photographs:

Photo Reference Number	Title
PHT\79720JD01\001	Test Configuration Photograph - Conducted Emissions
PHT\79720JD01\002	Test Configuration Photograph - Radiated Emissions

PHT\79720JD01\001 - Test Configuration Photograph - Conducted Emissions



PHT\79720JD01\002 - Test Configuration Photograph - Radiated Emissions



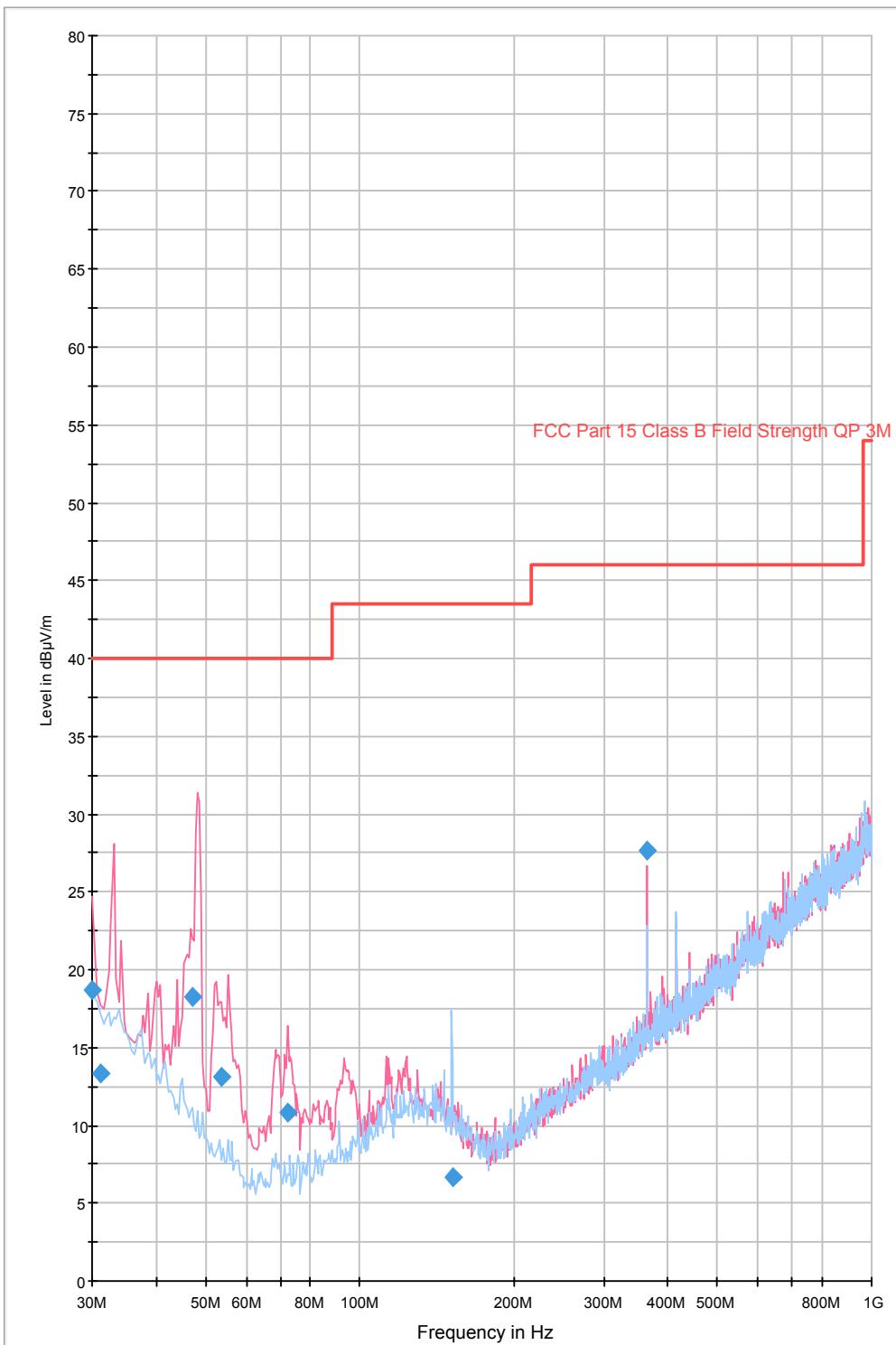
9. GRAPHICAL TEST RESULTS

9.1. This section contains the graphical results for the measurements listed in Section 2.2. *Summary of Test Results* (above).

Graph Number	Title
GPH\79720JD01\001 to 005	Test Configuration Photograph – Radiated Emissions Pre-Scans (30 MHz to 12.75 GHz)
GPH\79720JD01\006	Test Configuration Photograph - Conducted Emissions Pre-Scan (150 kHz to 30 MHz)

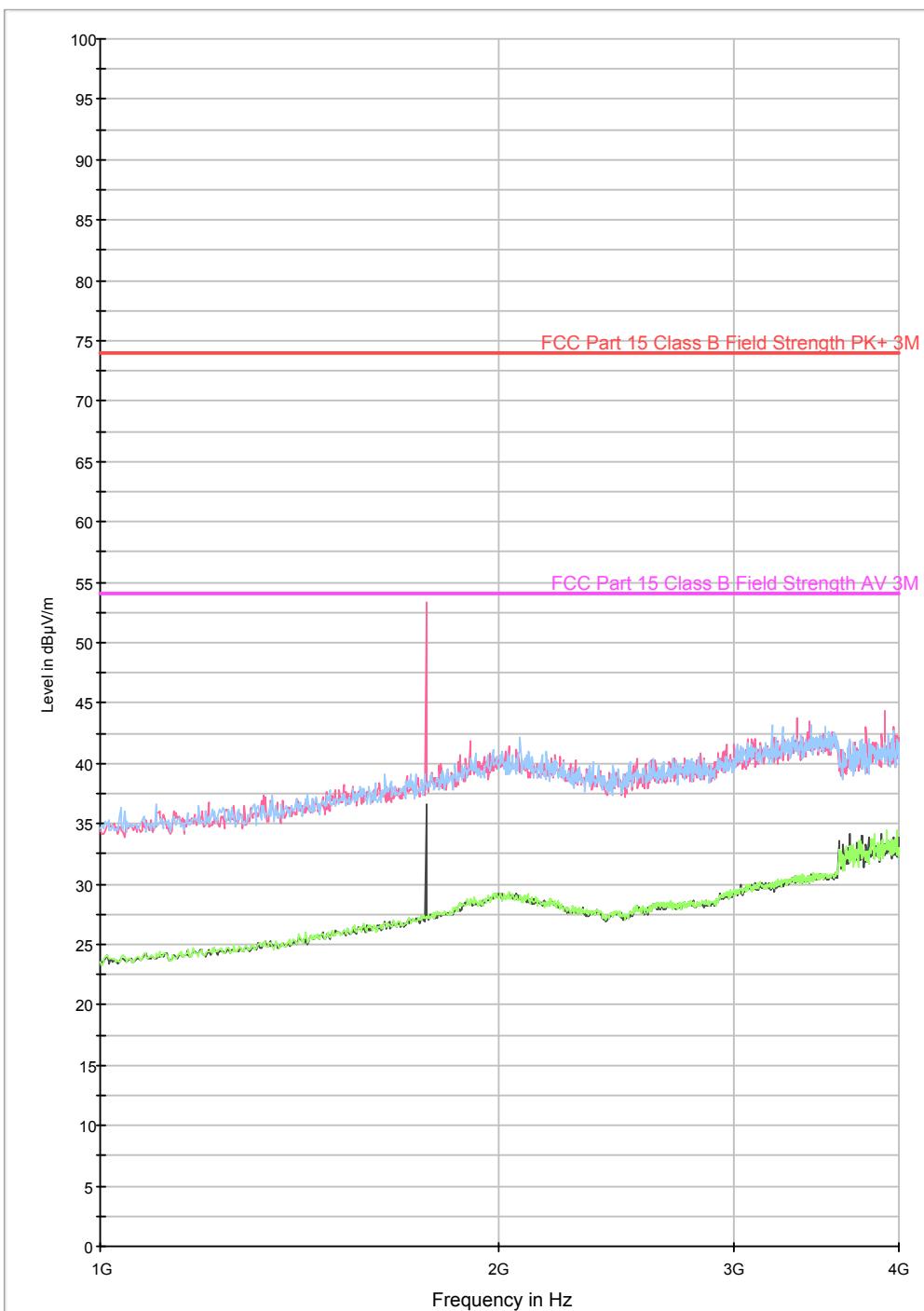
GPH\79720JD01\001

FCC Part 15.109 Radiated Emissions Class B 30MHz-1GHz 3m



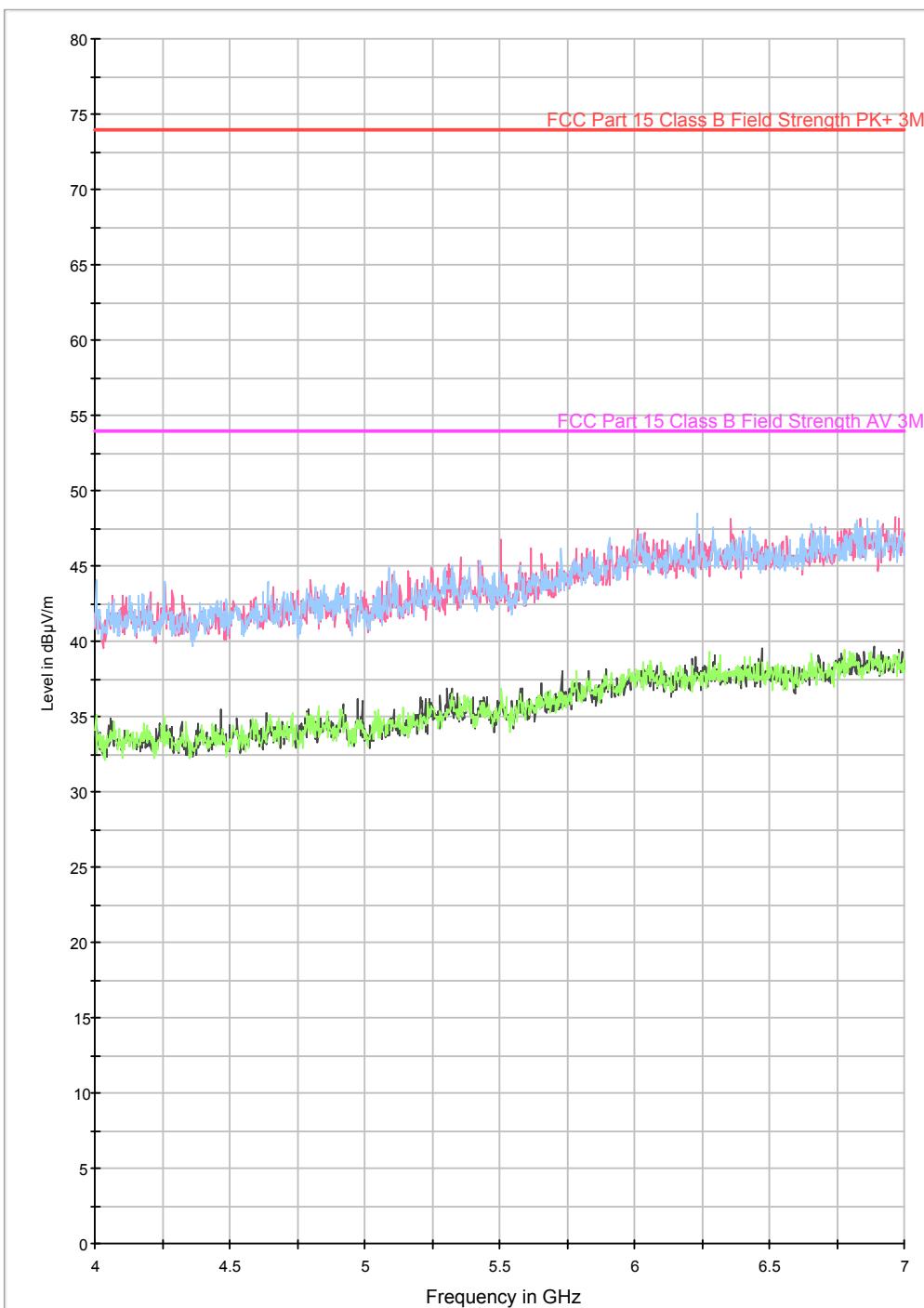
GPH\79720JD01\002

FCC Part 15.109 Radiated Emissions Class B 1-4GHz



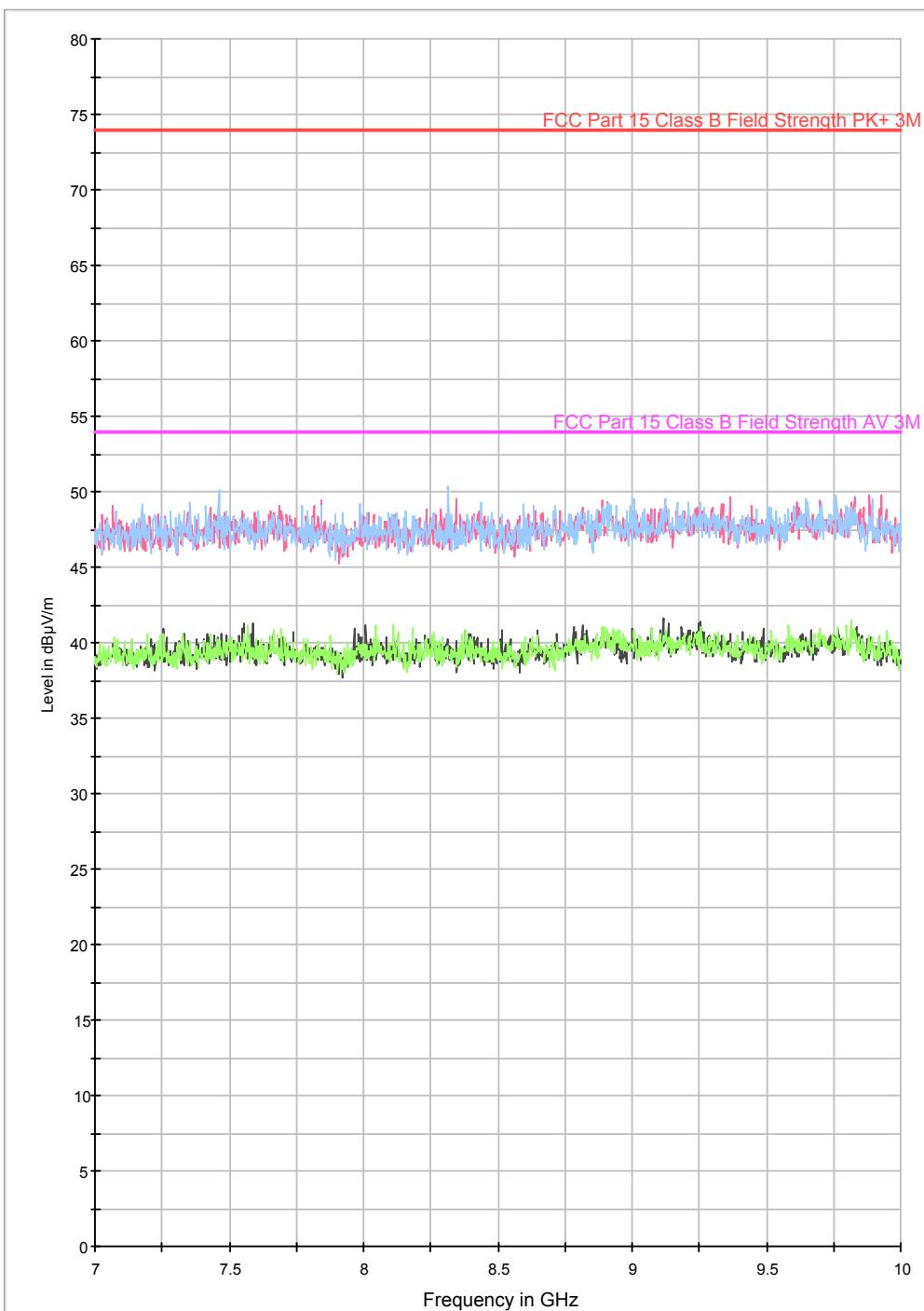
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FCC Part 15.109 Radiated Emissions Class B 4-7GHz



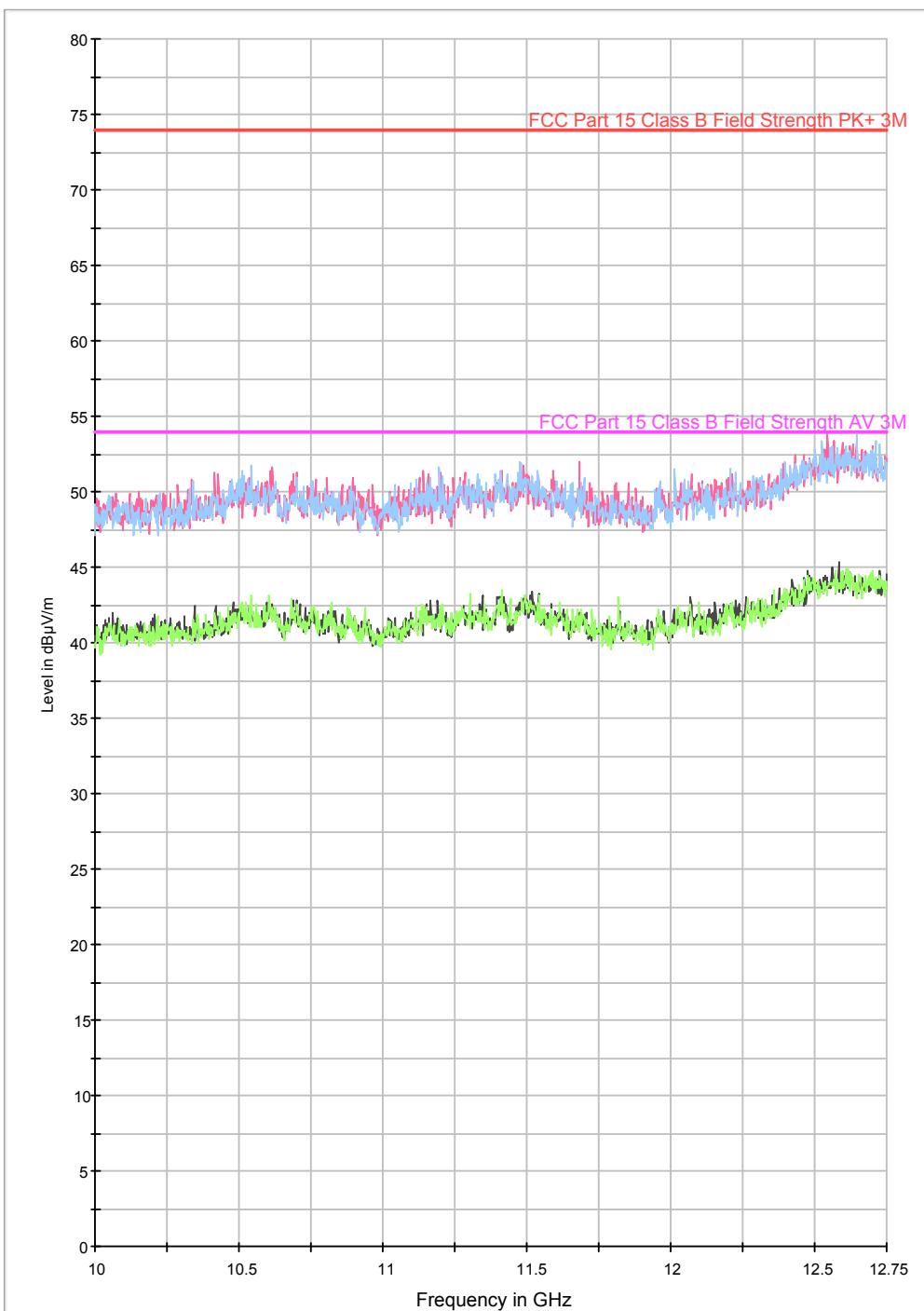
GPH\79720JD01\004

FCC Part 15.109 Radiated Emissions Class B 7-10GHz



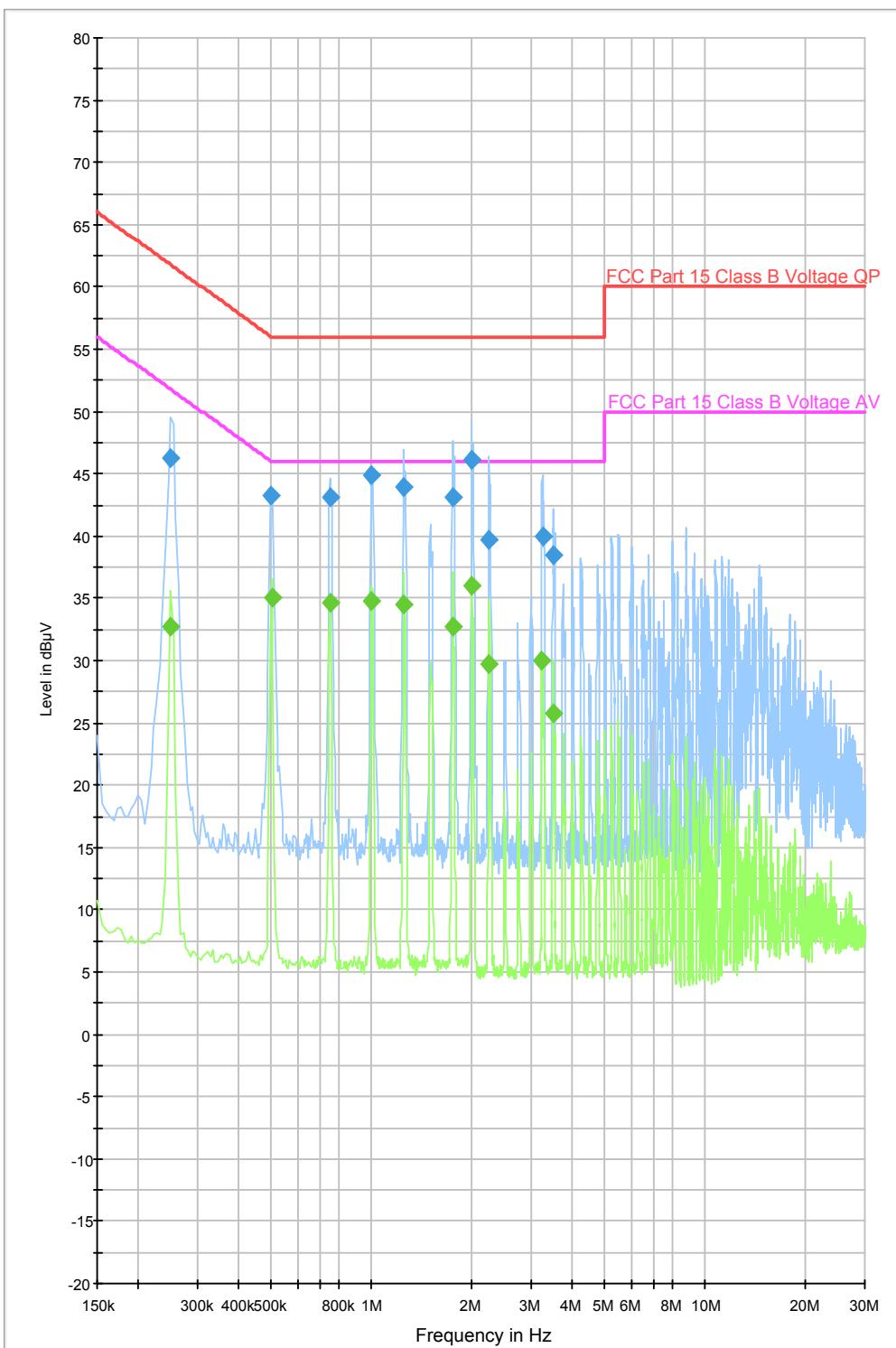
GPH\79720JD01\005

FCC Part 15.109 Radiated Emissions Class B 10-12.75GHz



GPH\79720JD01\006

FCC Part 15.107 Conducted Emissions Class B



10. TEST CONFIGURATION DRAWING

10.1. This section contains the Test Configuration Drawings for the measurements listed in Section 7: Measurements, Examinations and Derived Results.

Test Configuration Reference Number	Title
DRG\79720JD01\001	Test Schematic Diagram

DRG\79720JD01\001 – Schematic diagram of the EUT, support equipment and interconnecting cables used for the test