TEST REPORT

TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

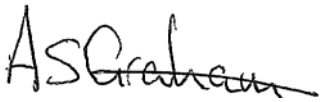
Test of: Comfort Audio AB, Receiver DH10-US

To: 47CFR15.107, 47CFR15.109 and RSS-GEN Issue 3 December 2010

Test Report Serial No: RFI-EMC-RP79704JD01A V3.0

Version 3.0 supersedes all previous versions

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

Checked By:	**Steven White**
Signature:	**pp** 
Date of Issue:	**29 March 2011**

THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2006

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1. CUSTOMER DETAILS

Company Name:	Comfort Audio AB
Address:	Slottsmollan Halmstad 302 31 Sweden

2. SUMMARY OF TESTING

2.1. Test Specification

Reference:	47CFR15.107 and 47CFR15.109
Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart B (Radio Frequency Devices) – Section 15.107 and 15.109.
Reference:	RSS-GEN Issue 3 December 2010
Title:	General Requirements and Information for the Certification of Radio Apparatus
Site Registration:	FCC: 209735 Industry Canada: 3245B-2

2.2. Summary of Test Results

FCC Reference	IC Reference	Measurement Type	Applicability	Result
EMISSIONS				
15.109	RSS-Gen 4.10 RSS-Gen 6.1	Radiated Emissions (Enclosure)	Y	✓
15.107	RSS-GEN 7.2.4	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 receiver with an integrated neck loop to wirelessly transmit to hearing aids

3.2. Identification of Equipment under Test (EUT)

ID#	Description	Brand Name	Model No	Serial No
E1	Receiver	Comfort Audio AB	Receiver DH10-US	DH0930234
E2	AC/DC adapter	I.T.E Power Supply	FW7600/05	T40/E IP40

3.3. Port Identification

Port	Description	Type
P1	Enclosure	-
P2	DC input	2-core
P3	Audio Output	Audio Jack

3.4. Operating Modes

Mode Reference	Definition
Active	The EUT was in an initial power up mode whilst being charged from the AC mains supply (110 VAC)

3.5.Radio characteristics

Receive Frequency Range (MHz):	904.65 MHz
Receive Channel Tested (MHz):	926.85 MHz

3.6. Configuration and Peripherals

Description:	Please refer to the Test Configuration and Photograph section for schematic drawing(s) and/or photograph(s) of the test configuration(s) employed in the course of testing.

3.7. Modifications

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

3.8. Additional Information Related to Testing

Equipment Category:	Receiver
Intended Operating Environment:	Residential / Commercial
Cycle Time:	< 1 s
Power Supply Requirement(s):	5 VDC (AC/DC adaptor)
Weight:	3.5 g
Dimensions:	74 x 39 x 13 mm
Class	Class 2
Type:	Type II
Highest Internal Oscillating Frequency:	26 MHz
FCC ID:	UOJ-DG01R
Industry Canada ID:	6769A-DG01R

4. SUPPORT EQUIPMENT

4.1. Identification of Support Equipment

NOTE: No support equipment was used during the course of testing

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 "*operate as intended*" was defined as:	The EUT was in an initial power up state whilst being charged from the AC mains supply (110 VAC)
For the purposes of testing, an "*unintentional response*" 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:	79704JD01	**TEST SITE ID:**	Site 1
EUT:	Receiver DH10-US	**TEMPERATURE:**	20 °C to 20 °C
TEST ENGINEER:	Jack Suter	**RELATIVE HUMIDITY:**	32 % to 32 %
DATE OF TEST:	20 Dec 2010	**ATMOSPHERIC PRESSURE:**	998 mb to 998 mb
FIELD TYPE:	Electric Field	**MEASUREMENT DISTANCE:**	3 Meters
UNCERTAINTY (±):	±3.99 dB	**EQUIPMENT CLASS:**	Class B
MEASUREMENT UNITS:	dBµV/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 C63.4-2009
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:	Active
FUNCTION(S) MONITORED:	Not Applicable

MEASUREMENT RESULTS

No.	Frequency (MHz)	Polarity	Detector	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Graph No.	Result
1	38.152	Vertical	Quasi-Peak	32.7	40.0	7.3	GPH\79704JD01\001	Complied
2	38.160	Vertical	Quasi-Peak	32.8	40.0	7.2	GPH\79704JD01\001	Complied
3	45.543	Vertical	Quasi-Peak	28.0	40.0	12.0	GPH\79704JD01\001	Complied
4	60.252	Vertical	Quasi-Peak	21.4	40.0	18.6	GPH\79704JD01\001	Complied
5	64.670	Vertical	Quasi-Peak	17.8	40.0	22.2	GPH\79704JD01\001	Complied
6	67.505	Vertical	Quasi-Peak	22.3	40.0	17.7	GPH\79704JD01\001	Complied
7	79.138	Vertical	Quasi-Peak	19.0	40.0	21.0	GPH\79704JD01\001	Complied
8	122.190	Vertical	Quasi-Peak	11.8	43.5	31.7	GPH\79704JD01\001	Complied
9	1000 to 4000	Refer to Note 1					GPH\79704JD01\002	Complied
10	4000 to 7000	Refer to note 1					GPH\79704JD01\003	Complied

NOTES

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

2 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.

TEST EQUIPMENT USED

RFI ID	INSTRUMENT DESCRIPTION	MODEL NUMBER	CALIBRATION DUE	INTERVAL
K0001	5 m Semi-Anechoic Chamber	None Stated	25 Apr 2011	12
L1001	26.5 GHz Test Receiver	ESU26	28 Jan 2011	12
A553	Bi-log Antenna	CBL6111A	16 Mar 2011	12
G0543	Amplifier 9 kHz to 1 GHz	310N	30 Jun 2011	12
C1306	15 m Rosenberger Cable	FA210A0015005050	23 Feb 2011	12
C1302	3 m Rosenberger Cable	FA210A1030005050	30 Jun 2011	12
C1305	3 m Rosenberger Cable	FA210A1030005050	Calibration not required	
C1303	8 m Rosenberger Cable	FA210A1080005050	23 Feb 2011	12
A1834	3 dB N-Type Attenuator	8491B	30 Jun 2011	12
M172	Electronic Environmental Monitor	BA-116	05 Jul 2011	12
C1077	UFA210A Cable	FA210A1010M5050	17 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:	79704JD01	**TEST SITE ID:**	Site 8
EUT:	Receiver DH10-US	**TEMPERATURE:**	22 °C to 22 °C
TEST ENGINEER:	Jack Suter	**RELATIVE HUMIDITY:**	32 % to 32 %
DATE OF TEST:	20 Dec 2010	**ATMOSPHERIC PRESSURE:**	998 mb to 998 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 C63.4-2009
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:	Active
FUNCTION(S) MONITORED:	Not Applicable

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dBµV)	Limit (dBµV)	Margin (dB)	Graph No.	Result
1	0.164	Live 1	Quasi-Peak	43.8	65.3	21.5	GPH\79704JD01\004	Complied
2	0.177	Live 1	Quasi-Peak	44.2	64.6	20.4	GPH\79704JD01\004	Complied
3	0.213	Neutral	Quasi-Peak	42.1	63.1	21.0	GPH\79704JD01\004	Complied
4	0.258	Live 1	Quasi-Peak	39.7	61.5	21.8	GPH\79704JD01\004	Complied
5	0.308	Neutral	Quasi-Peak	40.2	60.0	19.8	GPH\79704JD01\004	Complied
6	0.312	Neutral	Quasi-Peak	38.7	59.9	21.2	GPH\79704JD01\004	Complied
7	0.326	Neutral	Quasi-Peak	39.8	59.6	19.8	GPH\79704JD01\004	Complied
8	0.348	Neutral	Quasi-Peak	39.5	59.0	19.5	GPH\79704JD01\004	Complied
9	0.483	Live 1	Quasi-Peak	33.9	56.3	22.4	GPH\79704JD01\004	Complied
10	0.497	Neutral	Quasi-Peak	35.0	56.1	21.1	GPH\79704JD01\004	Complied
11	0.542	Live 1	Quasi-Peak	26.4	56.0	29.6	GPH\79704JD01\004	Complied
12	0.573	Neutral	Quasi-Peak	32.2	56.0	23.8	GPH\79704JD01\004	Complied
13	0.614	Live 1	Quasi-Peak	32.3	56.0	23.7	GPH\79704JD01\004	Complied
14	0.623	Live 1	Quasi-Peak	28.8	56.0	27.2	GPH\79704JD01\004	Complied
15	0.888	Live 1	Quasi-Peak	26.1	56.0	29.9	GPH\79704JD01\004	Complied
16	1.001	Neutral	Quasi-Peak	29.2	56.0	26.8	GPH\79704JD01\004	Complied
17	1.127	Live 1	Quasi-Peak	23.4	56.0	32.6	GPH\79704JD01\004	Complied
18	1.329	Live 1	Quasi-Peak	24.6	56.0	31.4	GPH\79704JD01\004	Complied

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dBµV)	Limit (dBµV)	Margin (dB)	Graph No.	Result
19	1.356	Neutral	Quasi-Peak	25.7	56.0	30.3	GPH\79704JD01\004	Complied
20	1.568	Neutral	Quasi-Peak	26.7	56.0	29.3	GPH\79704JD01\004	Complied
21	1.590	Neutral	Quasi-Peak	26.6	56.0	29.4	GPH\79704JD01\004	Complied
22	1.770	Neutral	Quasi-Peak	26.7	56.0	29.3	GPH\79704JD01\004	Complied
23	2.391	Neutral	Quasi-Peak	26.5	56.0	29.5	GPH\79704JD01\004	Complied
24	0.164	Live 1	Average (CISPR)	20.3	55.3	35.0	GPH\79704JD01\004	Complied
25	0.213	Neutral	Average (CISPR)	19.1	53.1	34.0	GPH\79704JD01\004	Complied
26	0.312	Neutral	Average (CISPR)	16.8	49.9	33.1	GPH\79704JD01\004	Complied
27	0.348	Neutral	Average (CISPR)	14.5	49.0	34.5	GPH\79704JD01\004	Complied
28	0.483	Live 1	Average (CISPR)	7.1	46.3	39.2	GPH\79704JD01\004	Complied
29	0.767	Live 1	Average (CISPR)	5.9	46.0	40.1	GPH\79704JD01\004	Complied
30	1.568	Neutral	Average (CISPR)	14.1	46.0	31.9	GPH\79704JD01\004	Complied
31	5.321	Neutral	Average (CISPR)	21.0	50.0	29.0	GPH\79704JD01\004	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
K0008	Conducted AC Emissions / Conducted RF immunity Laboratory	None Stated	Calibration not required	
M1379	ESIB 7 Test Receiver	ESIB7	26 Aug 2011	12
C363	3 m cable	RG142	23 Feb 2011	12
A1069	Single Phase LISN	ESH3-Z5	13 Apr 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\79704JD01\001	Test Configuration Photograph - Conducted Emissions
PHT\79704JD01\002	Test Configuration Photograph - Radiated Emissions

PHT\79704JD01\001 - Test Configuration Photograph - Conducted Emissions

PHT\79704JD01\002 - Test Configuration Photograph - Radiated Emissions

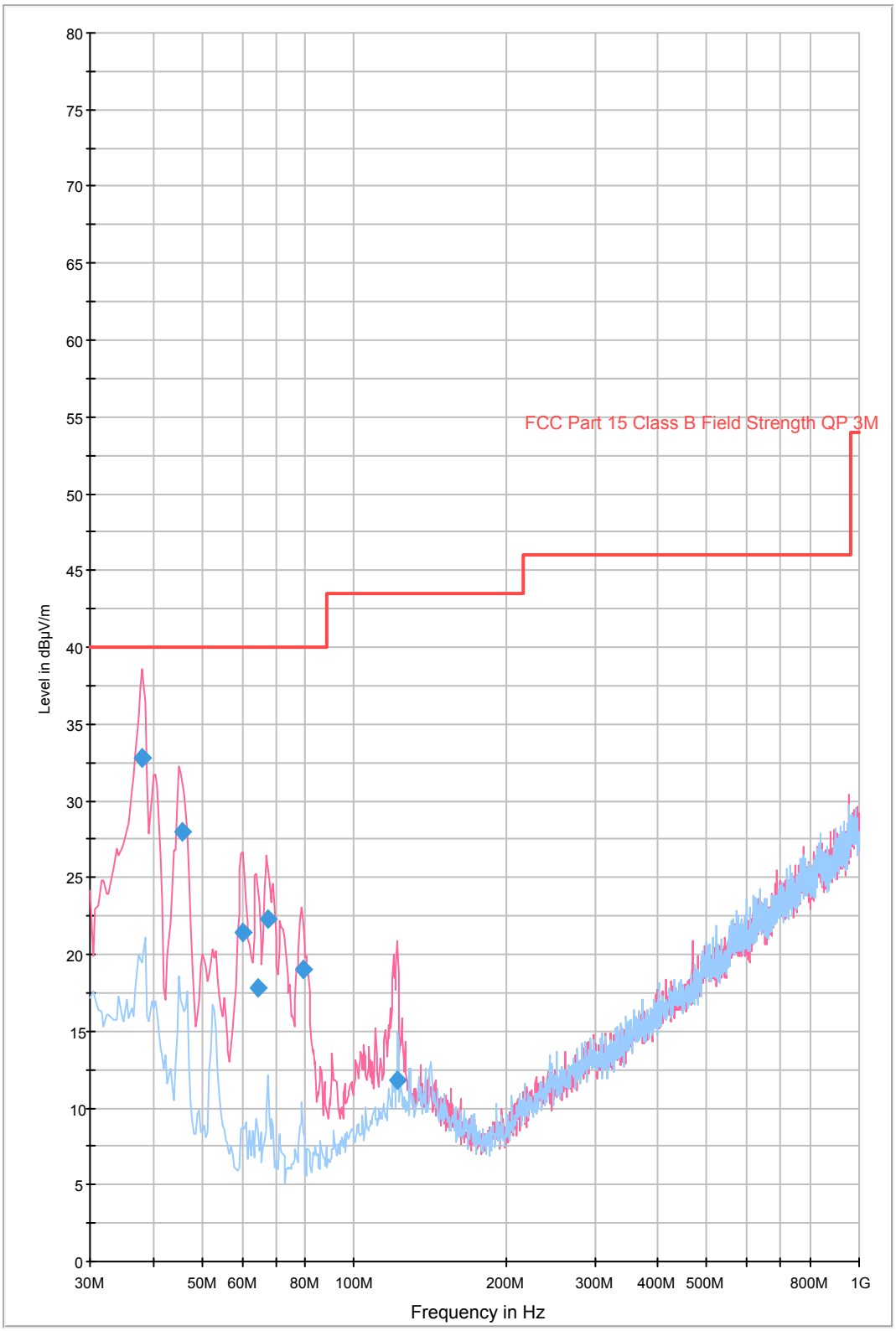
9. GRAPHICAL TEST RESULTS

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\79704JD01\001	Radiated Emissions Pre-Scan (30 MHz to 1000 MHz)
GPH\79704JD01\002	Radiated Emissions Pre-Scan (1000 MHz to 4000 MHz)
GPH\79704JD01\003	Radiated Emissions Pre-Scan (4000 MHz to 7000 MHz)
GPH\79704JD01\004	Conducted Emissions Pre-Scan (0.15 MHz to 30 MHz)

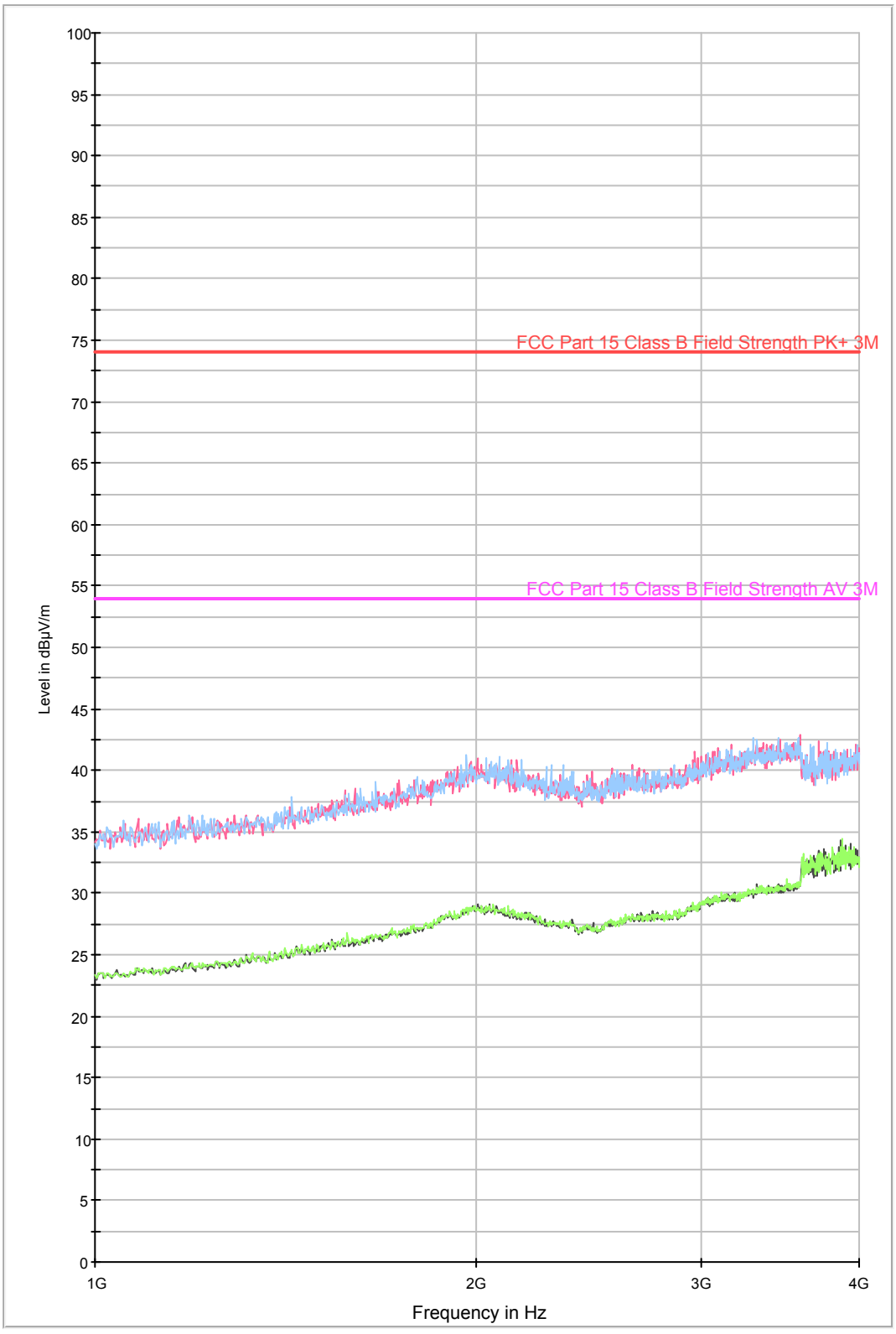
GPH\79704JD01\001

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



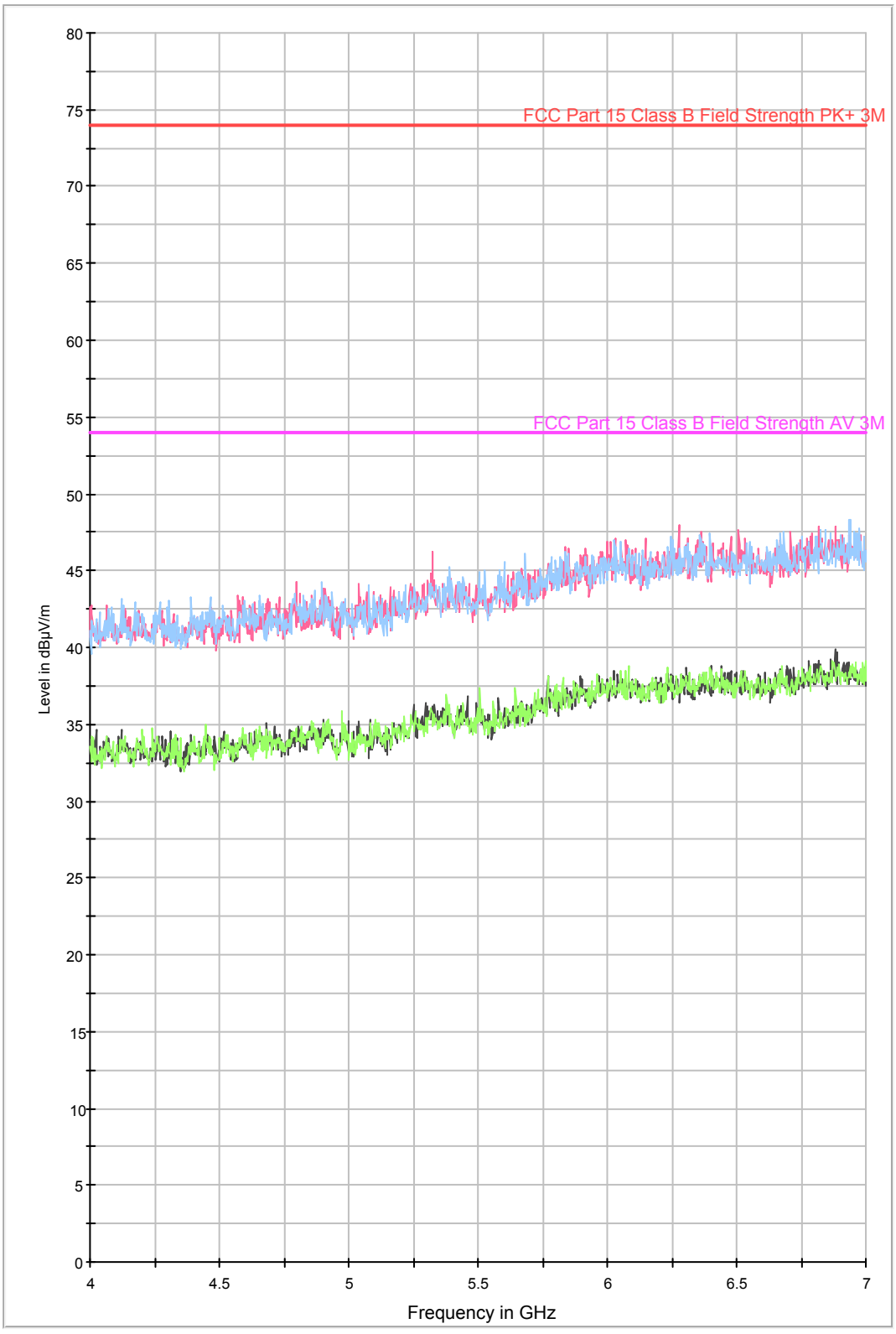
GPH\79704JD01\002

FCC Part 15.109 Radiated Emissions Class B 1-4GHz



GPH\79704JD01\003

FCC Part 15.109 Radiated Emissions Class B 4-7GHz



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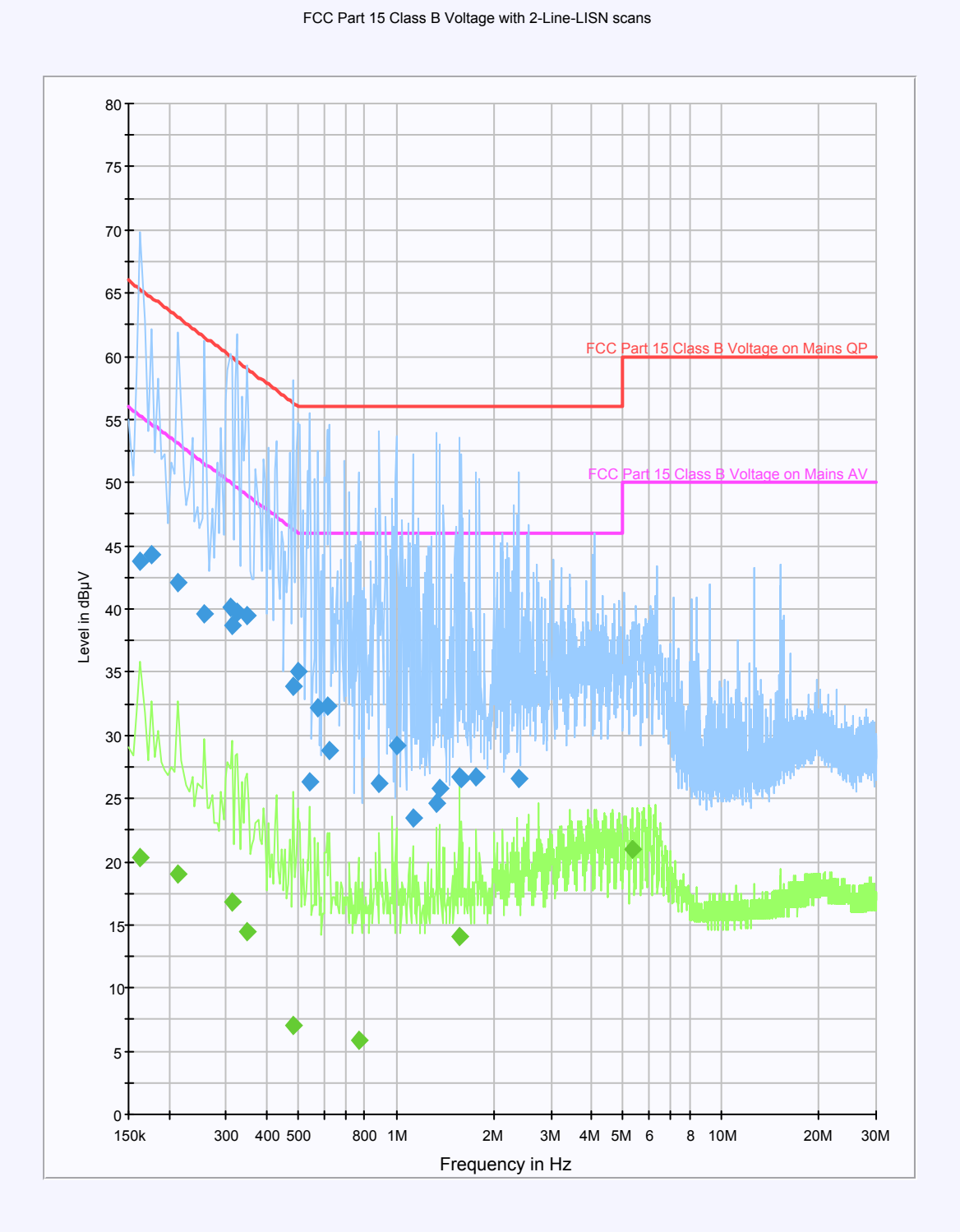

10. TEST CONFIGURATION DRAWING

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\79704JD01\001	Schematic diagram of the EUT, support equipment and interconnecting cables used for the test

DRG\79704JD01\001 - Schematic diagram of the EUT, support equipment and interconnecting cables used for the test