

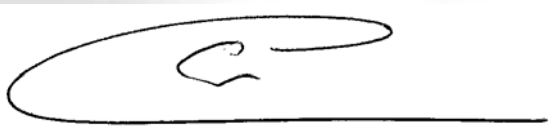
**TEST REPORT
FROM
RFI GLOBAL SERVICES LTD**

Test of: Ingenico France, IWL252-01T1535A

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

Test Report Serial No: RFI-EMC-RP82173JD02A V2.0

Version 2.0 supersedes all previous versions

<p>This test report is issued under the authority of Chris Guy, Head of Global Approvals:</p> 	
<p>Checked By:</p>	<p>G.Bragg</p>
<p>Signature:</p>	
<p>Date of Issue:</p>	<p>16 September 2011</p>

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1. CUSTOMER DETAILS



Company Name:	Ingenico France
Address:	1, rue Claude Chappe - BP 346 Guilherand-Granges 7503 France



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 Bluetooth / RFID supported wireless payment terminal

3.2. Identification of Equipment under Test (EUT)

ID#	Description	Brand Name	Model No	Serial No
E1	Handset	Ingenico	IWL252-01T1535A	11075WL40001198

3.3. Port Identification

Port	Description	Type
P1	Enclosure	-
P2	Charge	4-pin

3.4. Operating Modes

Mode Reference	Definition
Standby	The EUT was charging in the support cradle. The support charging cradle was terminated into a PSTN exchange simulator and notebook PC.

3.5. 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.
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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:	Payment Terminal
Intended Operating Environment:	Commercial
Intended installation:	Table Top
Cycle Time:	< 1 s
Power Supply Requirement(s):	3.6 VDC (Internal battery), 110 VAC (Charging cradle)
Weight:	300 g
Dimensions:	165 x 76 x 54 mm
Equipment Class:	B
Hardware Version Number:	IWL252
Software Version Number:	Y001
FCC ID Number:	XKB-IWL2XXBCL
Industry Canada Certification Number:	2586D-IWL2BCL

4. SUPPORT EQUIPMENT

4.1. Identification of Support Equipment

Description	Manufacturer	Model No	Serial No
PSTN Exchange Simulator	Testel	200e	T2E95036
Notebook PC	Dell Inc	Latitude D610	None Stated
Charging Cradle	Ingenico	IWL200-01B1328A	11055WL4001155
AC/DC Adapter	Sagem	Monetal	25 139 24 54

4.2. Interconnecting Cables

NOTE: No interconnecting cables 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 charging in the support cradle. The support charging cradle was terminated into a PSTN exchange simulator and notebook PC.
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:	82173JD02	TEST SITE ID:	Site 1
EUT:	IWL252-01T1535A	TEMPERATURE:	31 °C to 31°C
TEST ENGINEER:	Allen Hefford	RELATIVE HUMIDITY:	28 % to 26 %
DATE OF TEST:	20 Jul 2011	ATMOSPHERIC PRESSURE:	1001 mb to 1001 mb
FIELD TYPE:	Electric Field	MEASUREMENT DISTANCE:	3 Metres
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:	Standby
FUNCTION(S) MONITORED:	Not Applicable

MEASUREMENT RESULTS

No.	Frequency (MHz)	Polarity	Detector	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Graph No.	Result
1	56.072	Vertical	Quasi-Peak	26.8	40.0	13.2	001	Complied
2	65.369	Vertical	Quasi-Peak	27.6	40.0	12.4	001	Complied
3	125.002	Vertical	Quasi-Peak	40.3	43.5	3.2	001	Complied
4	174.997	Horizontal	Quasi-Peak	33.8	43.5	9.7	001	Complied
5	206.713	Vertical	Quasi-Peak	33.7	43.5	9.8	001	Complied
6	224.999	Vertical	Quasi-Peak	45.6	46.0	0.4	001	Complied
7	290.310	Horizontal	Quasi-Peak	39.4	46.0	6.6	001	Complied
8	499.995	Horizontal	Quasi-Peak	37.2	46.0	8.8	001	Complied
9	1000 to 12750	Refer to Note 1					002 to 005	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.
- 3 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	5m Semi-Anechoic Chamber	N/A	29 May 2012	12
M1590	26.5GHz Test Receiver	ESU26	15 Jun 2012	12
C1302	3m Rosenberger Cable	FA210A1030005050	31 Mar 2012	12
A1817	1-18GHz Horn Antenna	3115	03 Feb 2012	12
A553	Bi-log Antenna	CBL6111A	26 Mar 2012	12
A607	Exchange simulator	Testel 200	Calibration not required	N/A

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:	82173JD02	TEST SITE ID:	Site 1
EUT:	IWL252-01T1535A	TEMPERATURE:	30 °C to 20 °C
TEST ENGINEER:	Allen Hefford	RELATIVE HUMIDITY:	28 % to 29 %
DATE OF TEST:	20 Jul 2011	ATMOSPHERIC PRESSURE:	998 mb to 999 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:	Standby
FUNCTION(S) MONITORED:	Not Applicable

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dBµV)	Limit (dBµV)	Margin (dB)	Graph No.	Result
1	1.725	Live 1	Quasi-Peak	45.1	56.0	10.9	006	Complied
2	2.180	Live 1	Quasi-Peak	44.2	56.0	11.8	006	Complied
3	2.589	Live 1	Quasi-Peak	44.0	56.0	12.0	006	Complied
4	2.679	Live 1	Quasi-Peak	44.2	56.0	11.8	006	Complied
5	2.720	Live 1	Quasi-Peak	43.1	56.0	12.9	006	Complied
6	3.129	Live 1	Quasi-Peak	44.4	56.0	11.6	006	Complied
7	3.174	Live 1	Quasi-Peak	43.6	56.0	12.4	006	Complied
8	3.219	Live 1	Quasi-Peak	42.2	56.0	13.8	006	Complied
9	3.543	Live 1	Quasi-Peak	44.0	56.0	12.0	006	Complied
10	3.584	Live 1	Quasi-Peak	44.1	56.0	11.9	006	Complied
11	24.999	Live 1	Quasi-Peak	32.3	60.0	27.7	006	Complied
12	0.362	Neutral	Quasi-Peak	43.9	58.7	14.8	007	Complied
13	0.591	Neutral	Quasi-Peak	40.9	56.0	15.1	007	Complied
14	0.726	Neutral	Quasi-Peak	44.1	56.0	11.9	007	Complied
15	3.255	Neutral	Quasi-Peak	43.7	56.0	12.3	007	Complied
16	17.156	Neutral	Quasi-Peak	17.5	60.0	42.5	007	Complied

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Graph No.	Result
17	24.999	Neutral	Quasi-Peak	34.9	60.0	25.1	007	Complied
18	0.726	Live 1	Average (CISPR)	31.9	46.0	14.1	006	Complied
19	0.771	Live 1	Average (CISPR)	32.1	46.0	13.9	006	Complied
20	0.816	Live 1	Average (CISPR)	31.5	46.0	14.5	006	Complied
21	1.271	Live 1	Average (CISPR)	32.0	46.0	14.0	006	Complied
22	2.180	Live 1	Average (CISPR)	32.3	46.0	13.7	006	Complied
23	2.270	Live 1	Average (CISPR)	31.8	46.0	14.2	006	Complied
24	2.679	Live 1	Average (CISPR)	32.9	46.0	13.1	006	Complied
25	2.720	Live 1	Average (CISPR)	32.3	46.0	13.7	006	Complied
26	3.134	Live 1	Average (CISPR)	32.9	46.0	13.1	006	Complied
27	3.219	Live 1	Average (CISPR)	32.0	46.0	14.0	006	Complied
28	24.995	Live 1	Average (CISPR)	19.3	50.0	30.7	006	Complied
29	0.362	Neutral	Average (CISPR)	35.9	48.7	12.8	007	Complied
30	0.636	Neutral	Average (CISPR)	32.5	46.0	13.5	007	Complied
31	1.311	Neutral	Average (CISPR)	35.8	46.0	10.2	007	Complied
32	2.171	Neutral	Average (CISPR)	35.8	46.0	10.2	007	Complied
33	3.210	Neutral	Average (CISPR)	34.5	46.0	11.5	007	Complied
34	15.144	Neutral	Average (CISPR)	11.5	50.0	38.5	007	Complied
35	25.017	Neutral	Average (CISPR)	10.7	50.0	39.3	007	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	29 May 2012	12
M1590	26.5GHz Test Receiver	ESU26	15 Jun 2012	12
C1305	3m Rosenberger Cable	FA210A1030005050	Calibration not required	N/A
A1829	N-Type Pulse Limiter	ESH3-Z2	05 Mar 2012	12
A649	Single Phase LISN	ESH3-Z5	05 Apr 2012	12
A607	Exchange simulator	Testel 200	Calibration not required	N/A

8. PHOTOGRAPHS OF EUT

This section contains the following photographs:

Photo Reference Number	Title
PHT\82173JD02\001	Test Configuration Photograph - Radiated Emissions
PHT\82173JD02\002	Test Configuration Photograph - Conducted Emissions

PHT182173JD02\001 - Test Configuration Photograph - Radiated Emissions



PHT82173JD02\001 - Test Configuration Photograph - Conducted Emissions



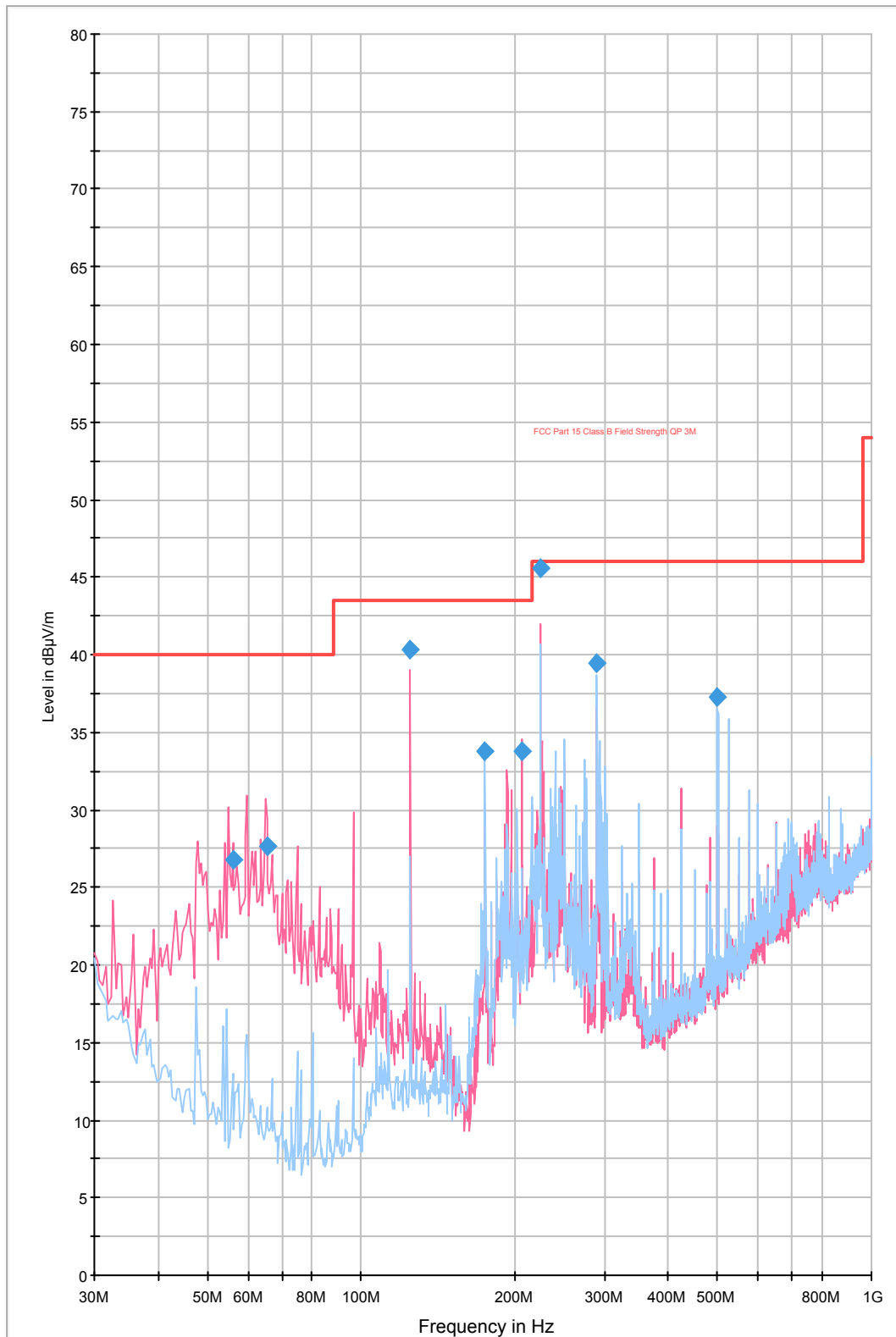
9. GRAPHICAL TEST RESULTS

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

Photo Reference Number	Title
GPH\82173JD02\001 to 005	Radiated Emissions Pre-Scans (30 MHz to 12.75 GHz)
GPH\82173JD02\006	Conducted Emissions – Live Line Pre- Scan
GPH\82173JD02\007	Conducted Emissions – Neutral Line Pre- Scan

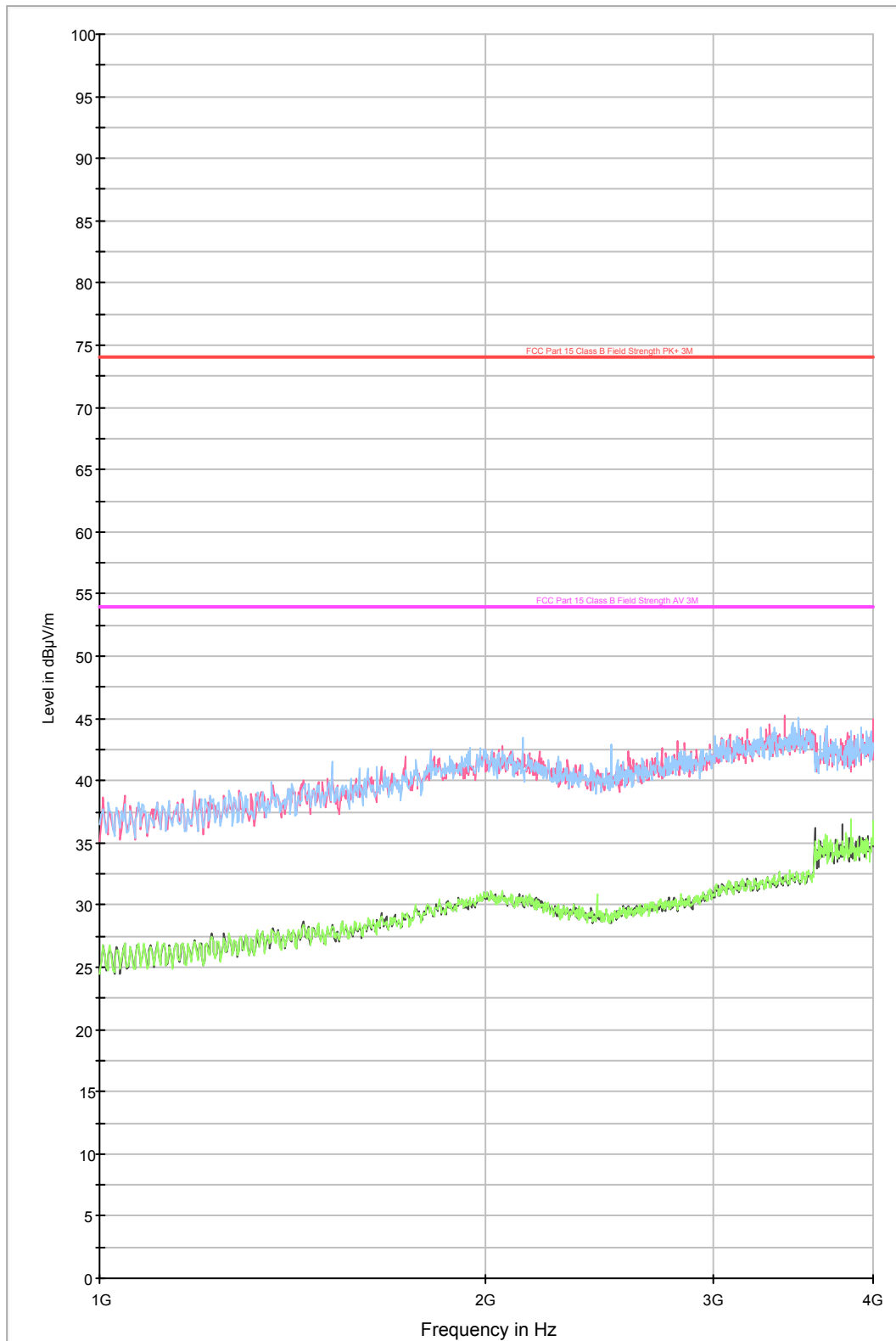
GPH82173JD02\001

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



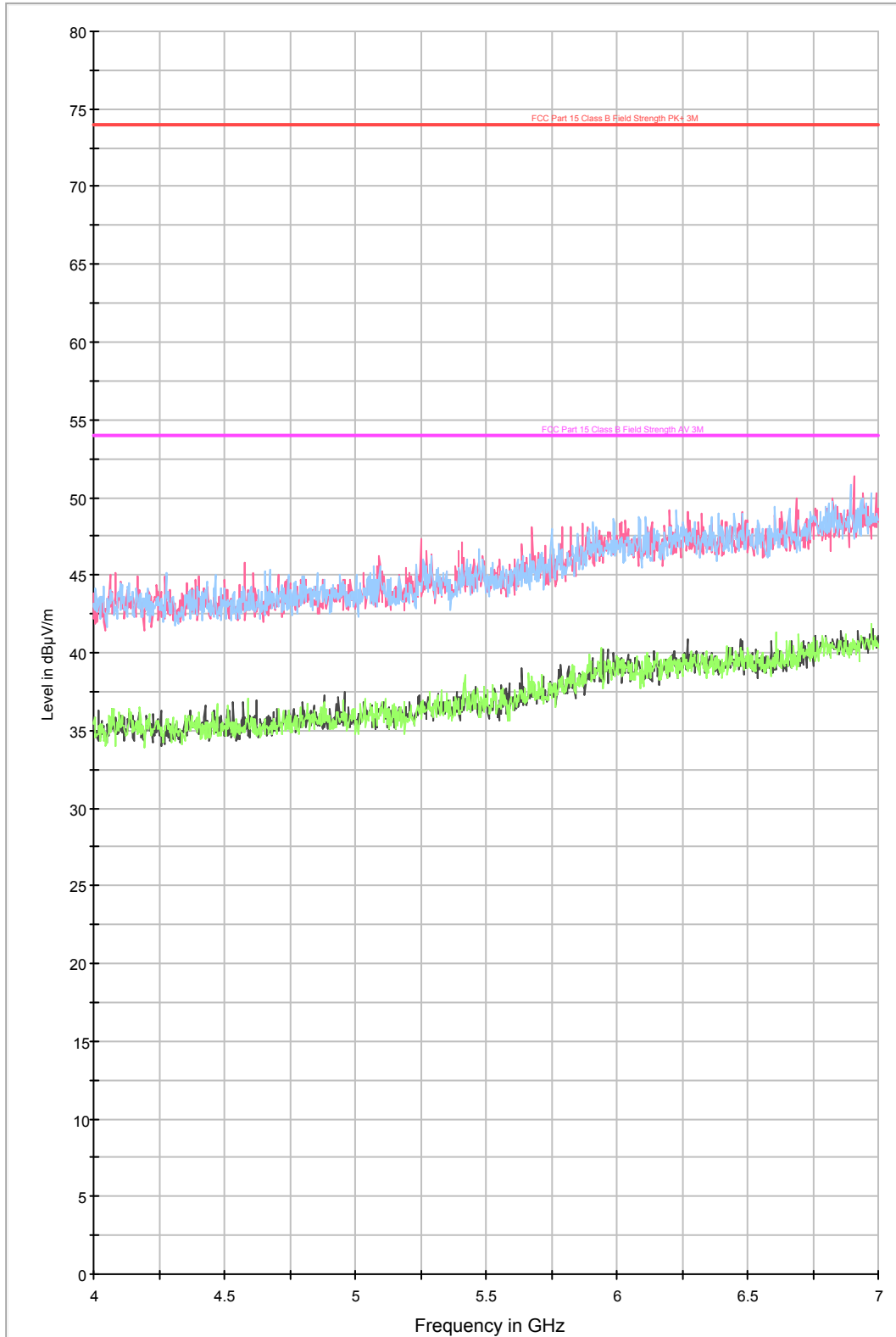
GPH82173JD02\002

FCC Part 15.109 Radiated Emissions Class B 1-4GHz



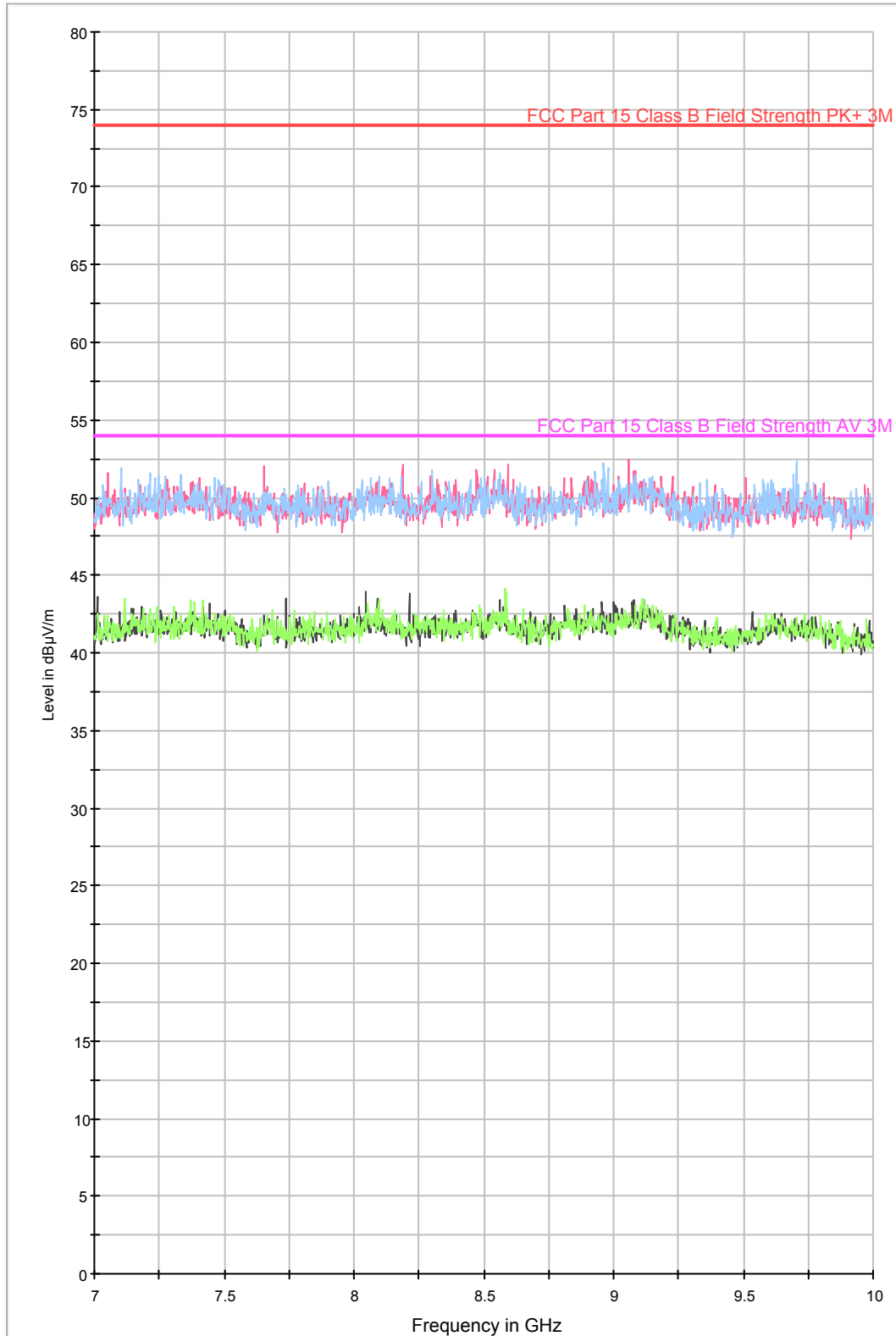
GPH82173JD02\003

FCC Part 15.109 Radiated Emissions Class B 4-7GHz



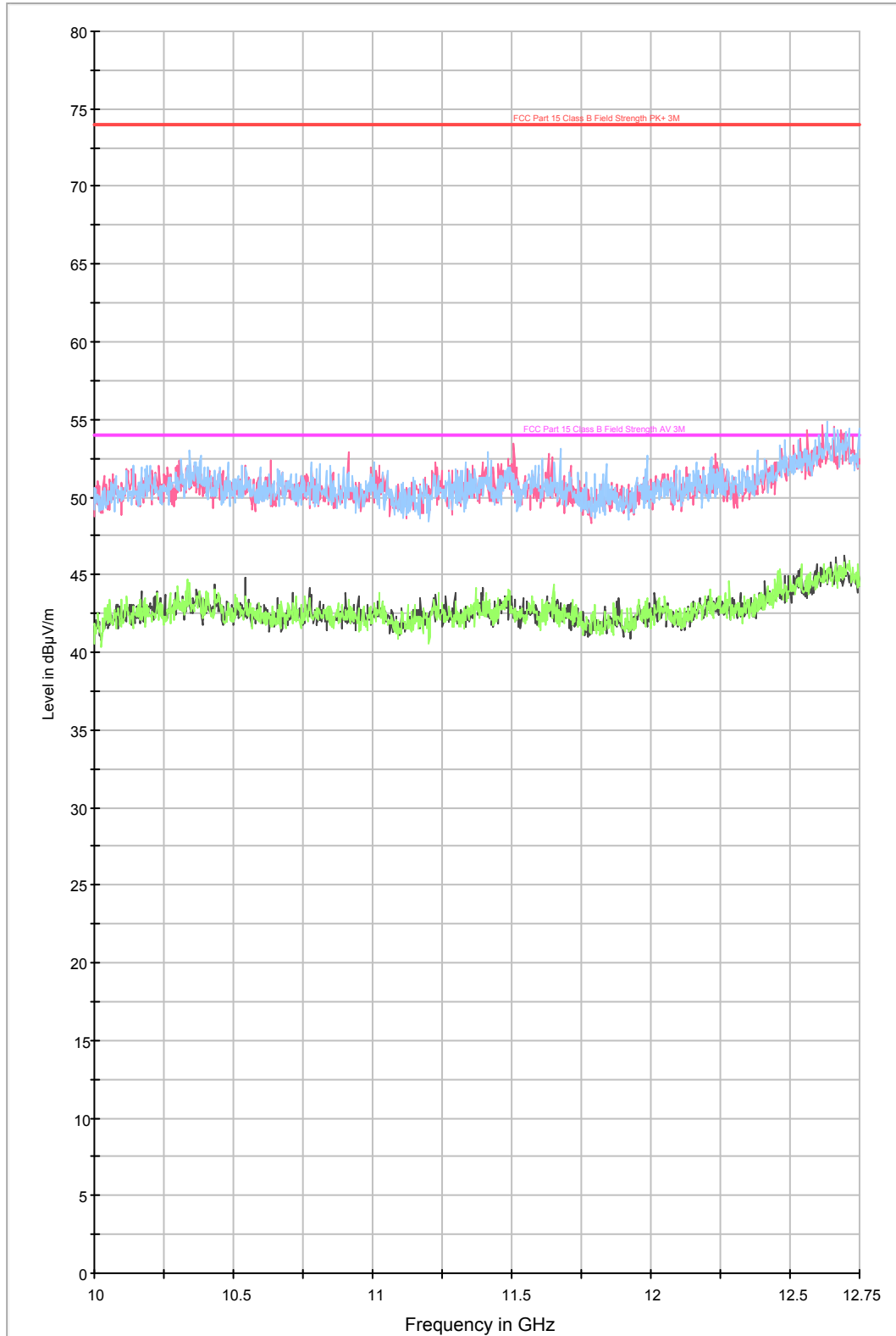
GPH\82173JD02\004

FCC Part 15.109 Radiated Emissions Class B 7-10GHz



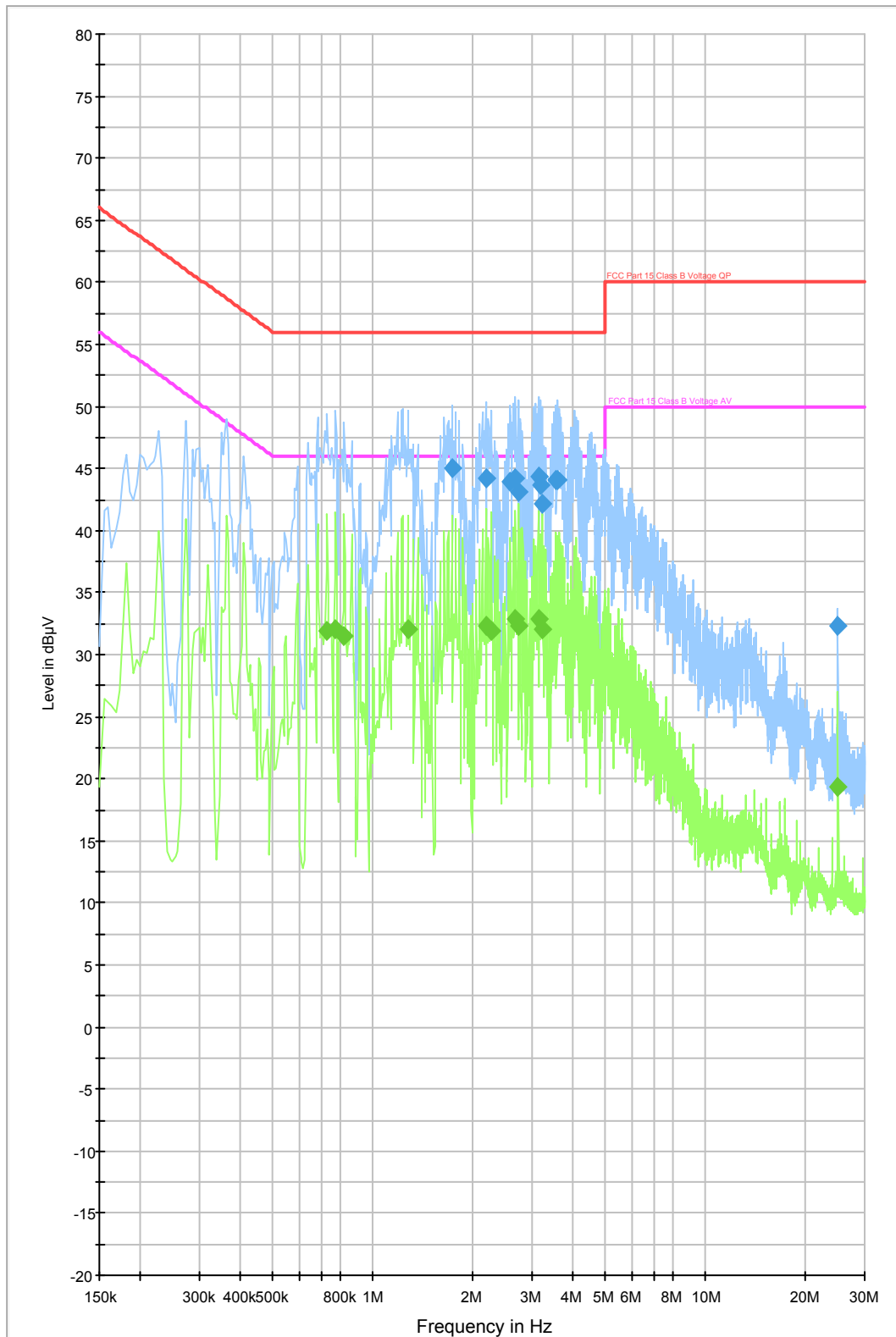
GPH\82173JD02\005

FCC Part 15.109 Radiated Emissions Class B 10-12.75GHz



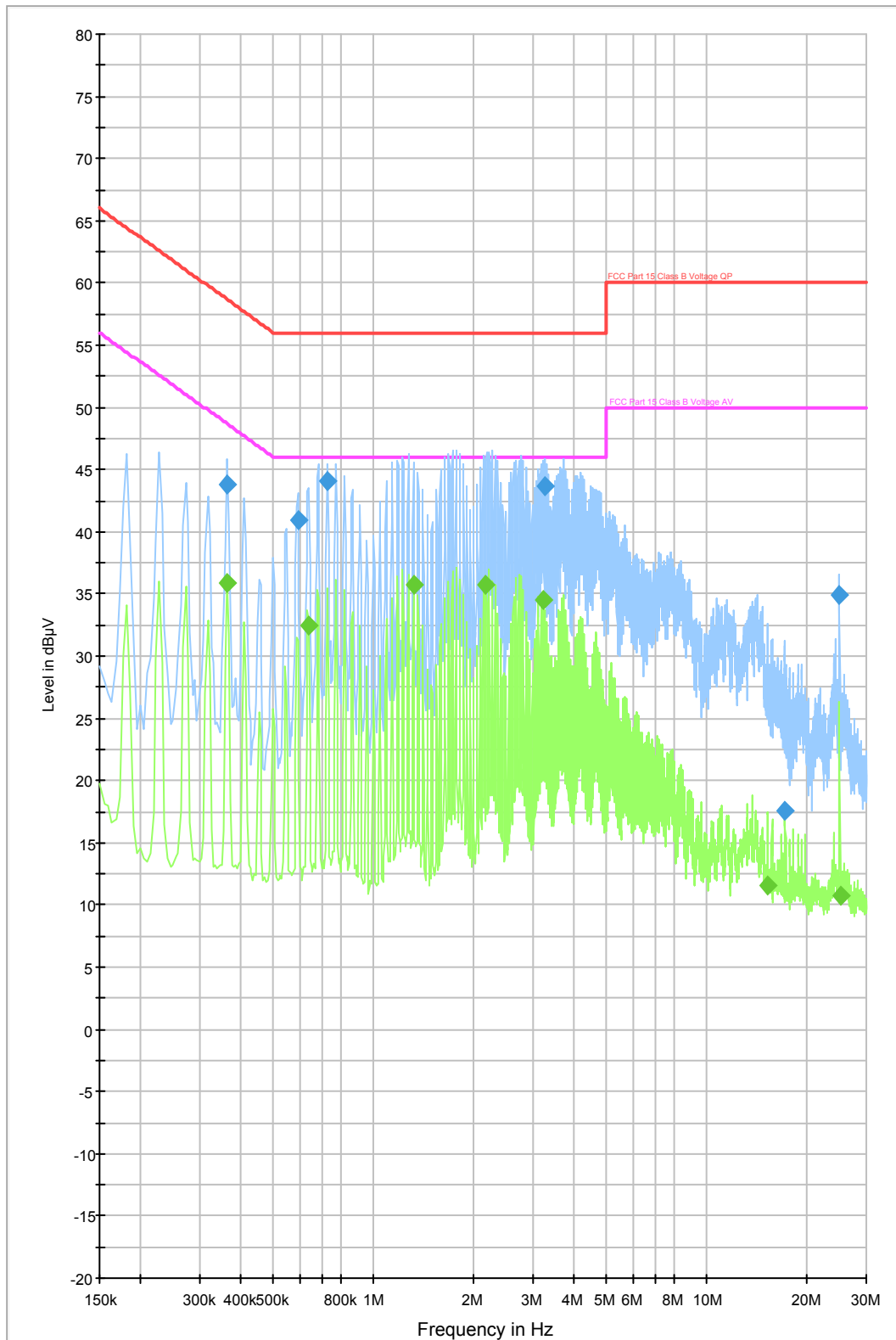
GPH182173JD02\006

FCC Part 15.107 Conducted Emissions Class B Live



GPH182173JD02\007

FCC Part 15.107 Conducted Emissions Class B Neutral



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\82173JD02\001	Schematic diagram of the EUT, support equipment and interconnecting cables used for the test

DRG\82173JD02\001 - Schematic diagram of the EUT, support equipment and interconnecting cables used for the test

