TEST REPORT

TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Satellite Tracking of People LLC, Blutag Victim Unit

To: CFR47 Parts 15.107 and 15.109

Test Report Serial No: RFI-EMC-RP76131JD02B

This test report is issued under the authority of Scott D'Adamo, Operations Manager:  **pp**	
Checked By:	**Steve White**
Signature:	
Date of Issue:	**13 May 2010**

THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2006

RFI Global Services Ltd,
Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire, RG23 8BG, UK
Tel. +44 (0) 1256 312000 Fax +44 (0) 1256 312001
web: www.rfi-global.com email: contactus@rfi-global.com

UKAS TESTING
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1. CUSTOMER DETAILS

Company Name:	Satellite Tracking of People LLC
Address:	1212 North Post Oak Road Suite 100 Houston Texas 77055

2. SUMMARY OF TESTING

2.1. Test Specification

Reference:	CFR47 Parts 15.107 and 15.109
Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 Subgroup B (Radio Frequency Devices) – Section 15.107 and 15. 109
Company Registration No.	209735

2.2. Summary of Test Results

Clause	Measurement Type	Applicability	Result
	EMISSIONS		
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.

3. EQUIPMENT UNDER TEST (EUT)

3.1. Description of EUT

The EUT is a belt-worn tracking device incorporating ISM (915MHz) and GPRS communication capabilities.

3.2. Identification of Equipment Under Test (EUT)

ID#	Description	Brand Name	Model No	Serial No	IMEI
E1	Tracking Device	Stalker Alert	08	000014	352023007715879
E2	Power Supply Unit	Spry Power Products	PA1015-2HU	091201540	Not Applicable

3.3. Port Identification

Port	Description	Type
P1	Enclosure (Tracking Device)	-
P2	12V DC Power input (Tracking Device)	DC Barrel Socket
P3	AC Input (Power Supply Unit)	2 Pin

3.4. Operating Modes

Mode Reference	Definition
Receive Mode	The EUT was configured for receive mode whilst powered via 110 V, 60 Hz.

NOTE: The reason for choosing these operating modes was that they have been defined by the customer as being typical of normal use and likely to be a worst case with regards to EMC.

GSM Radio characteristics

GSM Bands supported (Tick as appropriate):		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	Packet Switched Data

ISM Radio characteristics

Transmit Frequency Range (MHz):	902 – 928
Receive Frequency Range (MHz):	902 – 928

NOTE: The reason for choosing these operating modes was that they have been defined by the customer as being typical of normal use and likely to be a worst case with regards to EMC.

3.5. Configuration and Peripherals

Description:	The EUT was configured for receive mode whilst powered via 110 V, 60 Hz. 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.

3.6. Modifications

Modification Date	Customer Reference	Details of Modification	Measurements Effected
NOTE: No modifications were made to the EUT during the course of testing.			

3.7. Additional Information Related to Testing

Equipment Category:	Short Range Device / GPRS Mobile Station
Cycle Time:	<1s
Power Supply Requirement(s):	110V AC to charger; 12V DC from Charger to Tracker; 3.7V Li Ion in Tracker
Weight:	~170g
Dimensions:	117mm x 75mm x 27mm
Antenna Type	Integral
FCC ID:	S5EBTV0909

4. SUPPORT EQUIPMENT

4.1. Identification of Support Equipment

Description	Manufacturer	Model No	Serial No
Wireless Test Set	Rhode & Schwarz	CMU200	835687/011

5. MONITORING PERFORMANCE

5.1. Overview

No immunity testing was performed; therefore performance criteria were not used to asses the EUT during testing.

5.2. Monitoring EUT Performance During Testing

For the purposes of testing, the term "*operate as intended*" was defined as:	The EUT either remained synchronised with the Wireless Test Set
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 11 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:	76131JD02	**TEST SITE ID:**	Site 1
EUT:	Victim Unit	**TEMPERATURE:**	27 °C to 27 °C
TEST ENGINEER:	Eric Phiri/Jack Suter	**RELATIVE HUMIDITY:**	33 % to 33 %
DATE OF TEST:	30 Oct 2009	**ATMOSPHERIC PRESSURE:**	1009mb to 1009 mb
FIELD TYPE:	Electric Field	**MEASUREMENT DISTANCE:**	3 Metres
UNCERTAINTY (±):	±4.68 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:	CFR47 Parts 15.109
TITLE:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 (Radio Frequency Devices) – Section 15. 109

COMMENTS

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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:	Receive Mode
FUNCTION(S) MONITORED:	None

MEASUREMENT RESULTS

No.	Frequency (MHz)	Polarity	Detector	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Graph No.	Result
1	31.986	Vertical	Quasi-Peak	37.5	40.0	2.5	GPH\76131JD02\001	Complied
2	38.966	Vertical	Quasi-Peak	36.1	40.0	3.9	GPH\76131JD02\001	Complied
3	57.656	Vertical	Quasi-Peak	8.9	40.0	31.1	GPH\76131JD02\001	Complied
4	70.655	Vertical	Quasi-Peak	16.2	40.0	23.8	GPH\76131JD02\001	Complied
5	100.769	Vertical	Quasi-Peak	25.3	43.5	18.2	GPH\76131JD02\001	Complied
6	124.176	Vertical	Quasi-Peak	28.9	43.5	14.6	GPH\76131JD02\001	Complied
7	188.565	Horizontal	Quasi-Peak	17.0	43.5	26.5	GPH\76131JD02\001	Complied
8	1000 to 10000	Refer to Note 1					GPH\76131JD02\002 to GPH\76131JD02\004	Complied

NOTES

1 Within this frequency range, 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
A553	Bi-log Antenna	CBL6111A	16 Mar 2011	12
A1817	1-18GHz Horn Antenna	3115	27 Nov 2010	12
C1306	15m Rosenberger Cable	FA210A0015005050	23 Feb 2011	12
C1303	8m Rosenberger Cable	FA210A1080005050	23 Feb 2011	12
A1834	3dB N-Type Attenuator	8491B	24 Oct 2010	12
L1005	CMU200 Radio Communication Tester	CMU200	Calibration not required	N/A
C1339	N-male to N-male cable	0	23 Feb 2011	12
M172	Electronic Environmental Monitor	BA-116	21 Jul 2010	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:	76131JD02	**TEST SITE ID:**	Site 8
EUT:	Victim Unit	**TEMPERATURE:**	30 °C to 30 °C
TEST ENGINEER:	Jack Suter	**RELATIVE HUMIDITY:**	31 % to 31 %
DATE OF TEST:	13 May 2010	**ATMOSPHERIC PRESSURE:**	1011 mb to 1011 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:	CFR47 Parts 15.107
TITLE:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 (Radio Frequency Devices) – Section 15. 107

COMMENTS

No comments were noted by the engineer at the time of the test.

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:	Receive Mode
FUNCTION(S) MONITORED:	None

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dBµV)	Limit (dBµV)	Margin (dB)	Graph No.	Result
1	0.195	Neutral	Quasi-Peak	43.6	63.8	20.2	GPH\76131JD02\005	Complied
2	0.281	Live 1	Quasi-Peak	47.3	60.8	13.5	GPH\76131JD02\005	Complied
3	0.290	Neutral	Quasi-Peak	45.3	60.5	15.2	GPH\76131JD02\005	Complied
4	0.371	Live 1	Quasi-Peak	49.4	58.5	9.1	GPH\76131JD02\005	Complied
5	0.375	Live 1	Quasi-Peak	51.3	58.4	7.1	GPH\76131JD02\005	Complied
6	0.704	Neutral	Quasi-Peak	43.6	56.0	12.4	GPH\76131JD02\005	Complied
7	0.731	Live 1	Quasi-Peak	47.2	56.0	8.8	GPH\76131JD02\005	Complied
8	0.816	Neutral	Quasi-Peak	43.5	56.0	12.5	GPH\76131JD02\005	Complied
9	0.825	Neutral	Quasi-Peak	43.6	56.0	13.4	GPH\76131JD02\005	Complied
10	1.221	Neutral	Quasi-Peak	43.0	56.0	13.0	GPH\76131JD02\005	Complied
11	1.311	Neutral	Quasi-Peak	43.7	56.0	12.3	GPH\76131JD02\005	Complied
12	1.806	Neutral	Quasi-Peak	42.4	56.0	13.6	GPH\76131JD02\005	Complied
13	1.833	Neutral	Quasi-Peak	41.8	56.0	14.2	GPH\76131JD02\005	Complied
14	2.288	Neutral	Quasi-Peak	40.7	56.0	15.3	GPH\76131JD02\005	Complied

MEASUREMENT RESULTS

No.	Frequency (MHz)	Line	Detector	Level (dBµV)	Limit (dBµV)	Margin (dB)	Graph No.	Result
15	2.382	Live 1	Quasi-Peak	43.5	56.0	12.5	GPH\76131JD02\005	Complied
16	2.747	Neutral	Quasi-Peak	39.5	56.0	16.5	GPH\76131JD02\005	Complied
17	2.904	Neutral	Quasi-Peak	40.4	56.0	15.6	GPH\76131JD02\005	Complied
18	3.300	Neutral	Quasi-Peak	39.3	56.0	16.7	GPH\76131JD02\005	Complied
19	3.422	Neutral	Quasi-Peak	39.0	56.0	17.0	GPH\76131JD02\005	Complied
20	0.191	Live 1	Average (CISPR)	37.3	54.0	16.7	GPH\76131JD02\005	Complied
21	0.285	Live 1	Average (CISPR)	37.3	50.7	13.4	GPH\76131JD02\005	Complied
22	0.375	Live 1	Average (CISPR)	38.1	48.4	10.3	GPH\76131JD02\005	Complied
23	0.380	Live 1	Average (CISPR)	39.6	48.3	8.7	GPH\76131JD02\005	Complied
24	0.659	Live 1	Average (CISPR)	31.6	46.0	14.4	GPH\76131JD02\005	Complied
25	0.753	Live 1	Average (CISPR)	32.5	46.0	13.5	GPH\76131JD02\005	Complied
26	0.758	Live 1	Average (CISPR)	32.6	46.0	13.4	GPH\76131JD02\005	Complied
27	1.217	Live 1	Average (CISPR)	32.9	46.0	14.1	GPH\76131JD02\005	Complied
28	1.266	Live 1	Average (CISPR)	33.6	46.0	12.4	GPH\76131JD02\005	Complied
29	1.311	Live 1	Average (CISPR)	33.4	46.0	12.6	GPH\76131JD02\005	Complied
30	1.748	Live 1	Average (CISPR)	32.9	46.0	13.1	GPH\76131JD02\005	Complied
31	2.337	Live 1	Average (CISPR)	31.1	46.0	14.9	GPH\76131JD02\005	Complied
32	2.832	Live 1	Average (CISPR)	30.8	46.0	15.2	GPH\76131JD02\005	Complied
33	3.309	Live 1	Average (CISPR)	30.5	46.0	15.5	GPH\76131JD02\005	Complied
34	3.890	Live 1	Average (CISPR)	30.0	46.0	16.0	GPH\76131JD02\005	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	N/A	Calibration not required	N/A
M1273	20 Hz - 26.6 GHz EMI Test Receiver, Rhode & Schwarz	ESIB 26	08 Apr 2011	12
C1304	3m Rosenberger Cable	FA210A1030005050	22 Feb 2011	12
A1829	N-Type Pulse Limiter	ESH3-Z2	25 Oct 2010	12
C1262	7m BNC Coaxial	FA210A0075008080	03 Apr 2010	12
M172	Electronic Environmental Monitor	BA-116	21 Jul 2010	12
A067	Line Impedance Stabilization Network	ESH3-Z5	03 Jun 2010	12

8. PHOTOGRAPHS OF EUT

This section contains the following photographs:

Photo Reference Number	Title
PHT\76131JD02\001	Conducted Emissions
PHT\76131JD02\002	Radiated Emissions

PHT\76131JD02\001 - Conducted Emissions

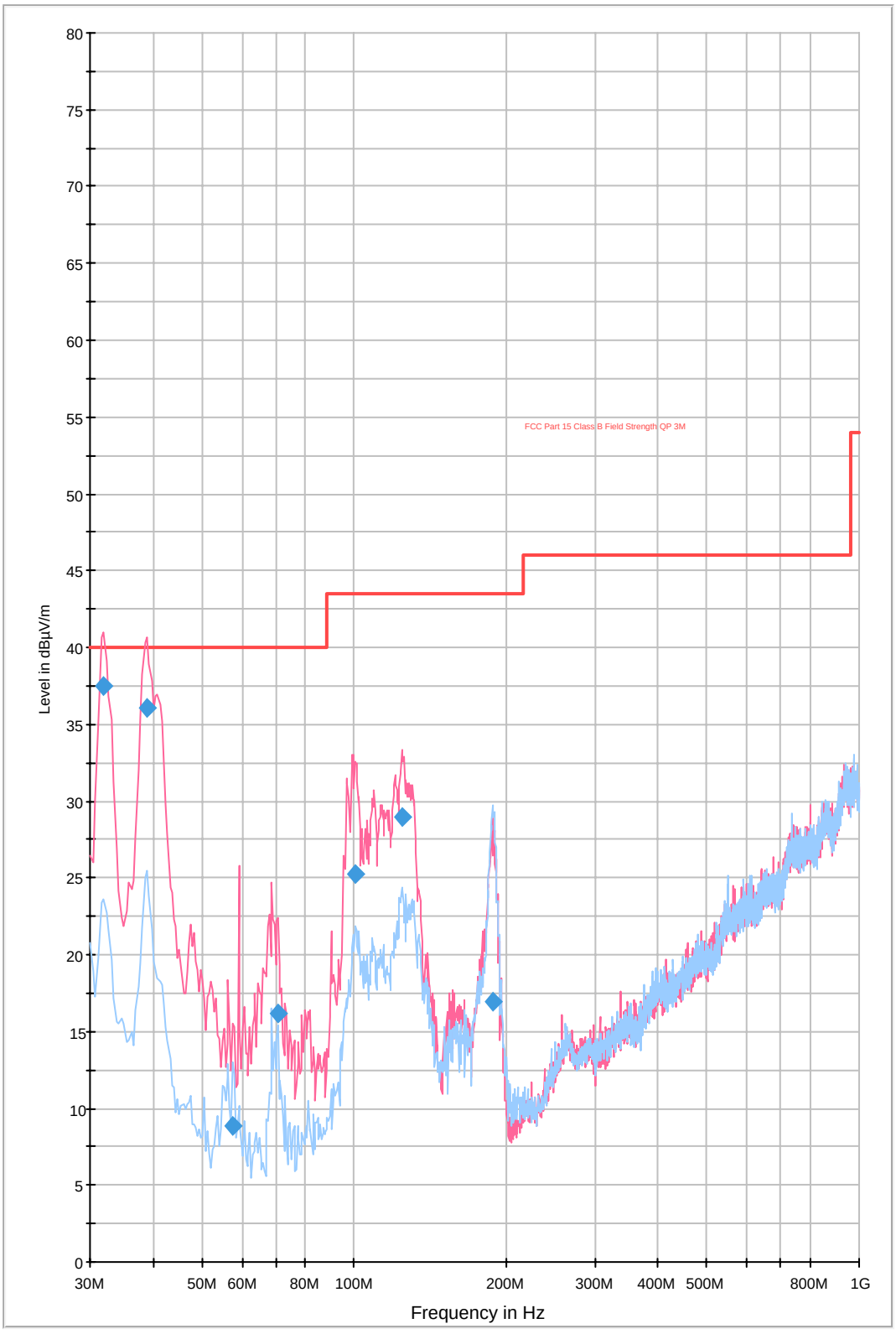
PHT\76131JD02\002 - Radiated Emissions

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).

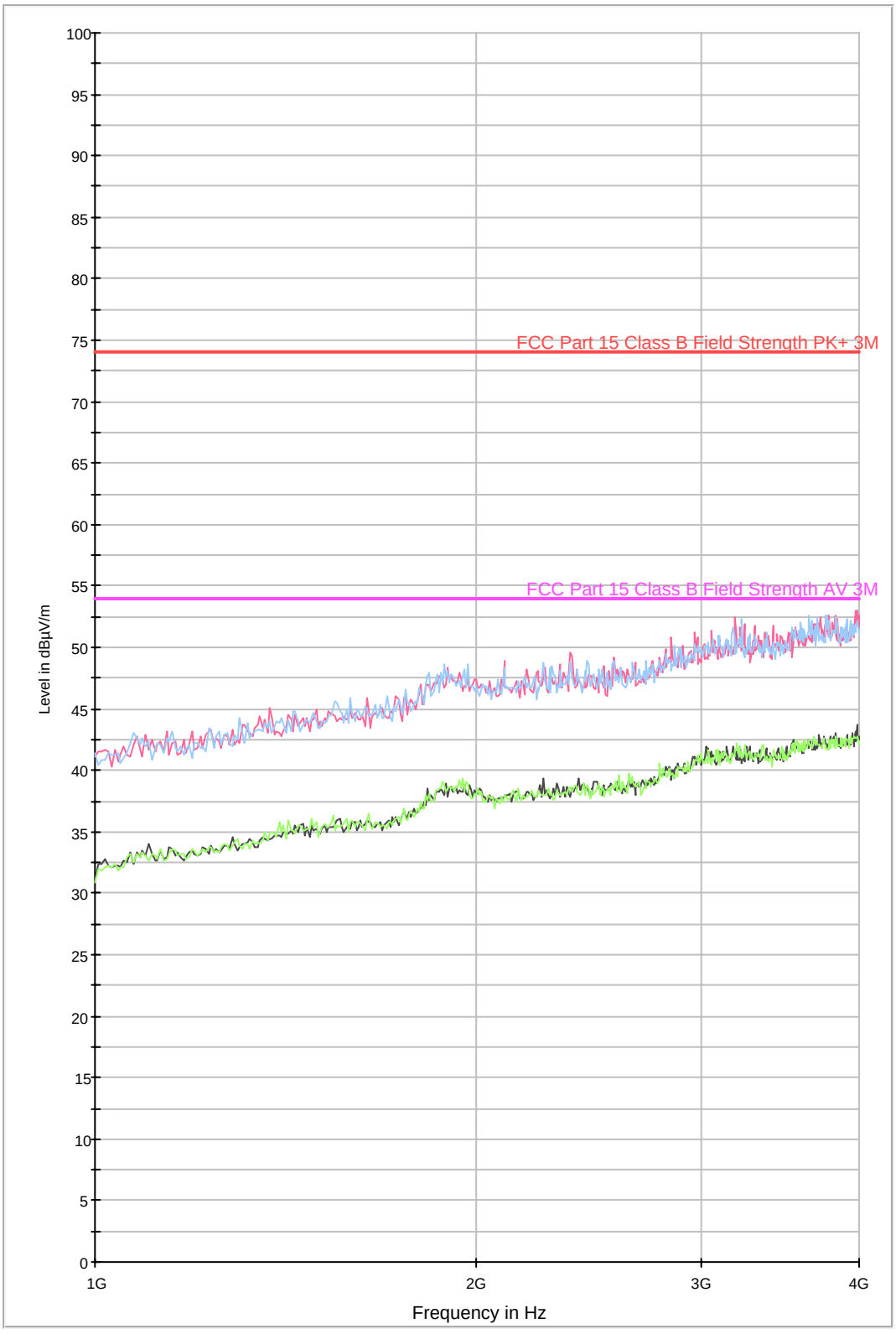
GPH\76131JD02\001

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



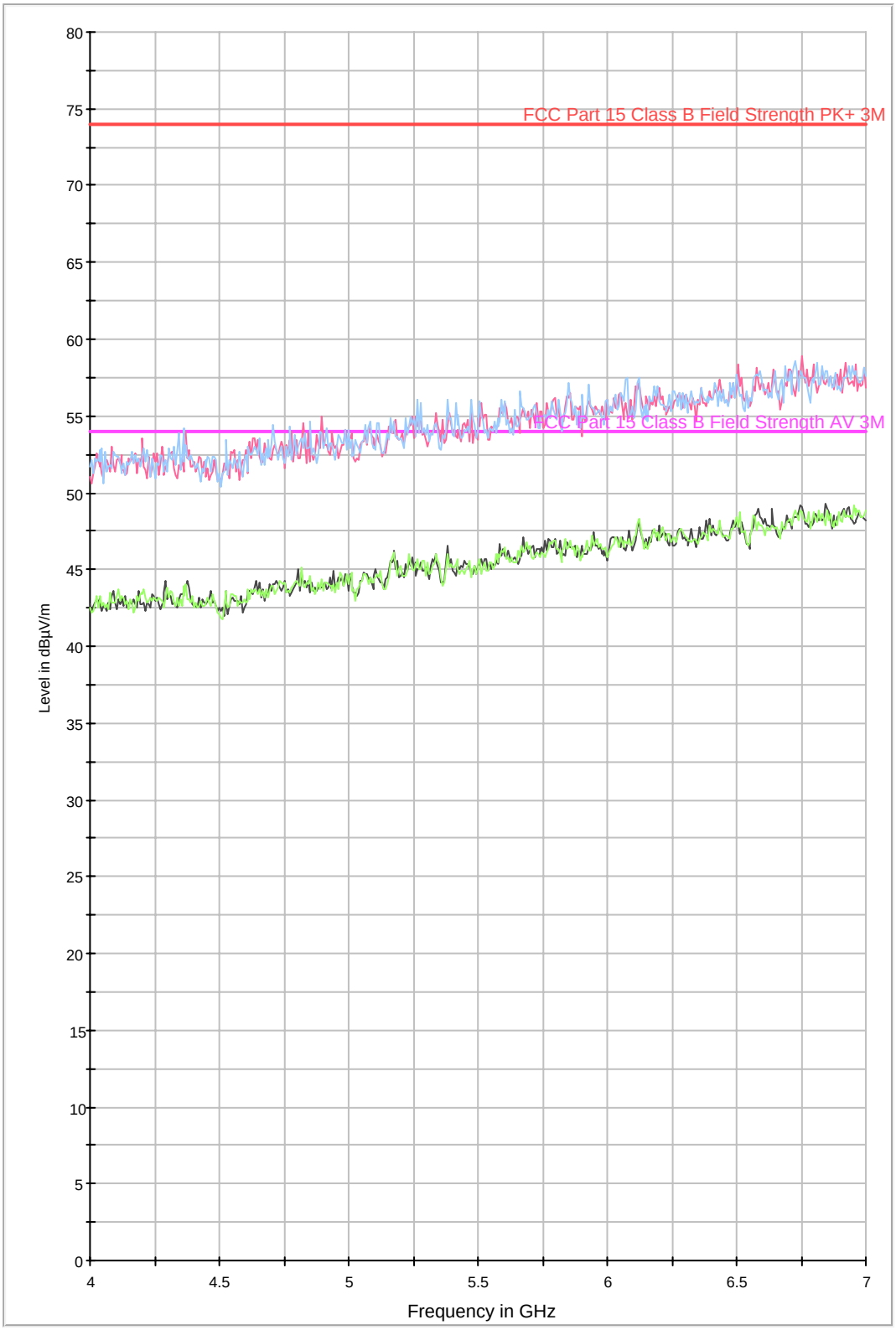
GPH\76131JD02\002

FCC Part 15.109 Radiated Emissions Class B 1-4GHz



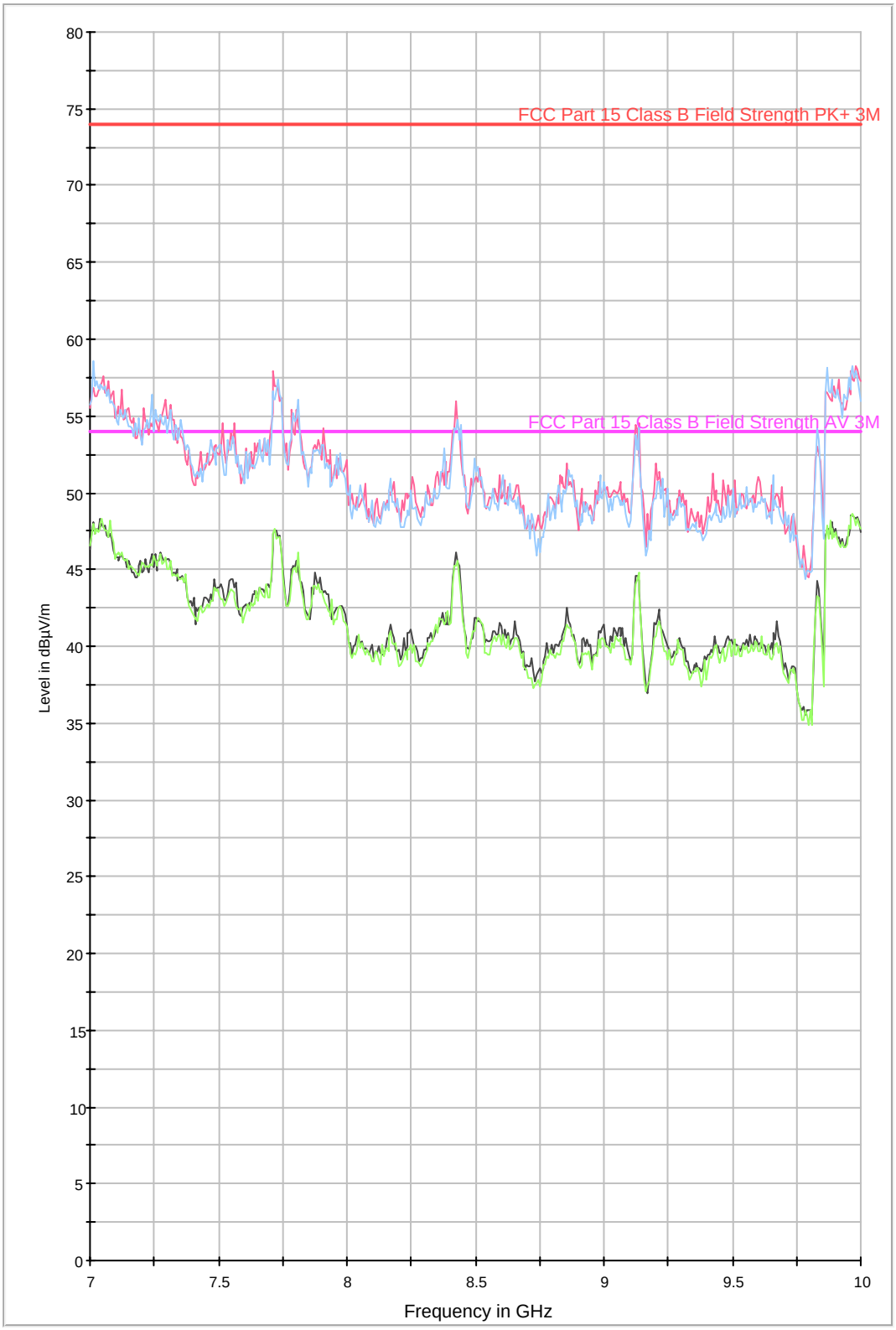
GPH\76131JD02\003

FCC Part 15.109 Radiated Emissions Class B 4-7GHz

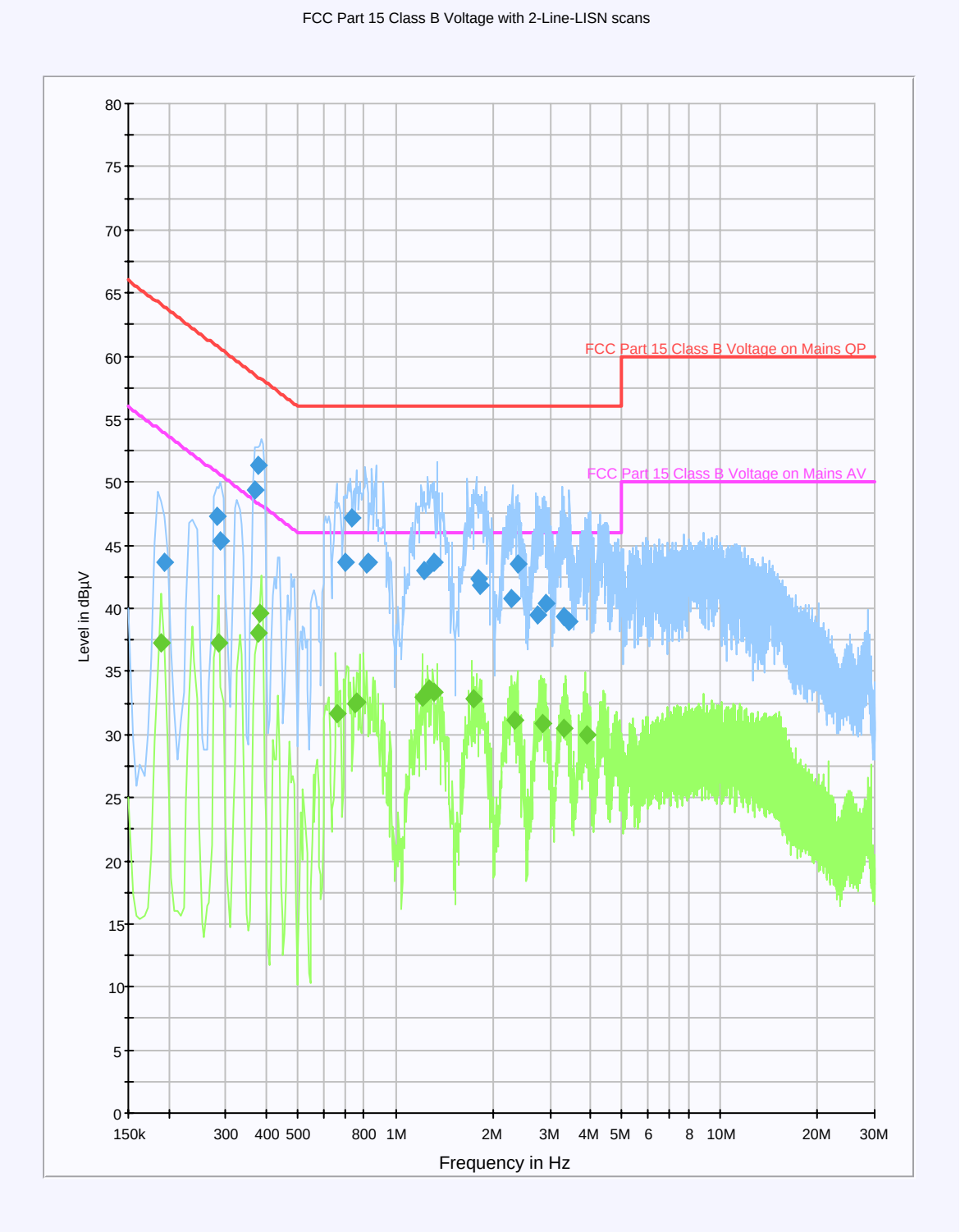


GPH\76131JD02\004

FCC Part 15.109 Radiated Emissions Class B 7-10GHz



GPH\76131JD02\005



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\76131JD02\001	Test Schematic Diagram

DRG\76131JD02\001 - Test Schematic Diagram