

# Test Report

<b>Product</b>	Nest Rack
<b>Name and address of the applicant</b>	Stryde limited Chertsey Road, Sunbury upon Thames, Middlesex TW16 7BP - UK
<b>Name and address of the manufacturer</b>	Stryde limited Chertsey Road, Sunbury upon Thames, Middlesex TW16 7BP - UK
<b>Model</b>	Nest Rack
<b>Rating</b>	230V 30A 50/60 Hz
<b>Trademark</b>	Stryde
<b>Serial number</b>	-
<b>Additional information</b>	-
<b>Tested according to</b>	<b>FCC Part 15B</b> Other Class B Digital Device <b>ISED Canada ICES-001, Issue 6</b> ISM Devices, Wireless Power Transfer
<b>Order number</b>	399723
<b>Tested in period</b>	2019-02-01 – 2019-04-30
<b>Issue date</b>	2021.02.08
<b>Name and address of the testing laboratory</b>	<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">   Instituttveien 6 Kjeller, Norway </div> <div style="text-align: center;"> CAB Number: FCC: NO0001 ISED: NO0470   TEL: +47 22 96 03 30 FAX: +47 22 96 05 50 </div> <div style="text-align: center;">    </div> </div> <p style="text-align: center; color: red; font-weight: bold;">An accredited technical test executed under the Norwegian accreditation scheme</p>
<div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">   Prepared by [Jan G Eriksen] </div> <div style="text-align: center;">   Approved by [Frode Sveinsen] </div> </div>	
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## REPORT Revisions

Revision #	Date	Order #	Description
00	2019-06-12	361696	First issued
01	2020-04-20	361696	Updating of Test Instruments Table
02	2020-11-12	399723	Changed applicant from Western Geco to Stryde
03	2020-11-30	400 174	Updated measurements as power supply and PC has been changed
04	2021-02-08	400 174	Corrected FCC ID

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# 1 INFORMATION

## 1.1 Test Item

Name	Nest Rack
FCC ID	2AV78-NRACK
Model/version	Nest Rack V3
Serial number	-
Hardware identity and/or version	-
Software identity and/or version	-
Frequency Range	Wireless Power Transfer: 110 – 205 kHz RFID: 13.56 MHz
Tunable Bands	None
Number of Channels	WPT: NA
Operating Modes	WPT: Charging/Non-charging
Type of Modulation	WPT – none (load modulation is performed from Receiver part to transmit data to Transmitting part)
User Frequency Adjustment	None
Rated Output Power	NA
Type of Power Supply	Input Voltage: 230V 50/60 Hz 30A
Antenna Connector	NA
Desktop Charger	NA

### Description of Test Item

The EUT is an inductive charger for Seismic Loggers. The EUT is a 6½ feet high rack which consists of a power supply, an industrial computer, one switch, and 6 shelves where in each 90 loggers can be charged simultaneously, i.e. a total of 540 loggers can be charged simultaneously in the rack. The rack also has a monitor for local operation and status reading.

The power to each shelf can be switched on/off either locally with manual switches (fuses) or remotely from an operator PC. Communication with the rack from the PC is done over an optical link. It is believed that in almost all cases operation of the rack will be done remotely.

This is an industrial device that will **not** be deployed in household or resident areas. It will only be deployed in industrial areas, and in addition it will be installed inside a commercial container together with several (up to 6) other devices.

## 1.2 Test Environment

### 1.2.1 Normal test condition

Temperature:	21.1 – 22.7 °C
Relative humidity:	35 - 45 %
Normal test voltage:	230 V 60Hz

The values are the limit registered during the test period.

## 1.3 Test Engineer(s)

Tore Løvlien

## 1.4 Test Equipment

See list of test equipment in clause 4.

## 2 TEST REPORT SUMMARY

### 2.1 General

All measurements are traceable to national standards.

The tests were conducted for the purpose of demonstrating compliance with FCC CFR 47 Part 15B.

Tests were performed in accordance with ANSI C63.4-2014.

Radiated tests were made in a semi-anechoic chamber at measuring distances of 3m and 10m.

A description of the test facility is on file with the FCC.

☒ New Submission

☒ Production Unit

☐ Class II Permissive Change

☐ Pre-production Unit

**JAB** Equipment Code

☐ Family Listing



#### THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

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## 2.2 Test Summary

Name of test	FCC Part 15 reference	Result
Supply Voltage Variations	15.31(e)	Pass
Power Line Conducted Emission	15.107(a)	Pass
The field strength of emission	15.109	Pass

## 2.3 Description of modification for Modification Filing

Not applicable.

## 2.4 Comments

All ports were populated during spurious emission measurements.

Power supply variation within 85% to 115% of nominal value has no influence on measured values.

## 2.5 Family List Rational

Not Applicable.

### 3 TEST RESULTS

#### 3.1 Power Line Conducted Emissions

Para. No.: 15.107 (a)

Test Performed By: Jan G Eriksen

Date of Test: 2018.12.07

Measurement procedure: ANSI C63.4-2014 using 50  $\mu$ H/50 ohms LISN.

Test Results: Complies.

Test Equipment: 7, 8, 9, 10 (see Clause 4)

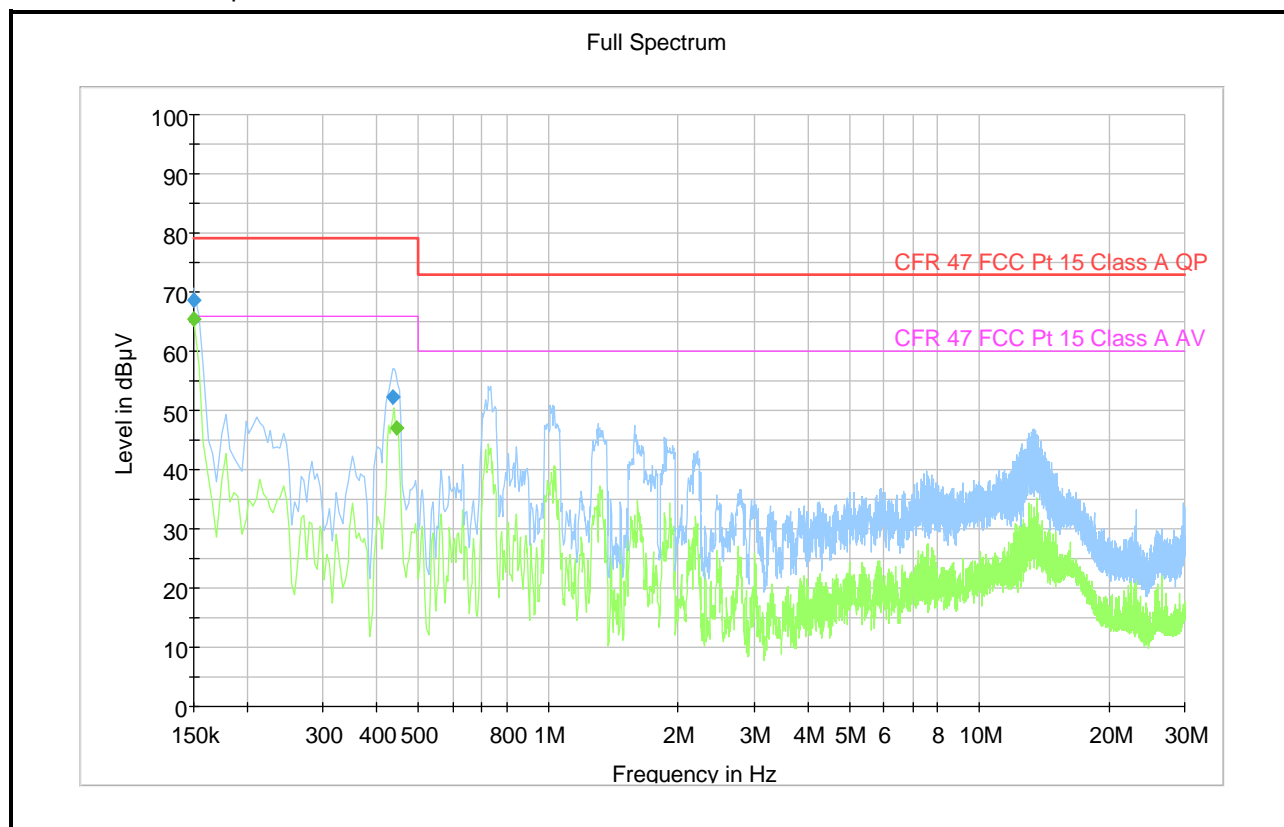
Measurement Data: See table below and attached graph (Peak detector).

Measurement Data:

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Average (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter
0.150	68.7	---	79.0	10.3	1000	9	N	OFF
0.150	---	65.5	66.0	0.5	1000	9	N	OFF
0.436	52.4	---	79.0	26.6	1000	9	N	OFF
0.444	---	47.1	66.0	18.9	1000	9	N	OFF



# Mains conducted spurious emissions



### 3.2 Field strength of emissions

#### FCC Part 15.109

Test Results: **Complies**

Test Equipment: **1, 6, 9, 10 (see Clause 4)**

Measurement Data:

#### Charging mode - Radiated emission 30 – 1000 MHz

Detector: Quasi-Peak

Measuring distance 10 meters.

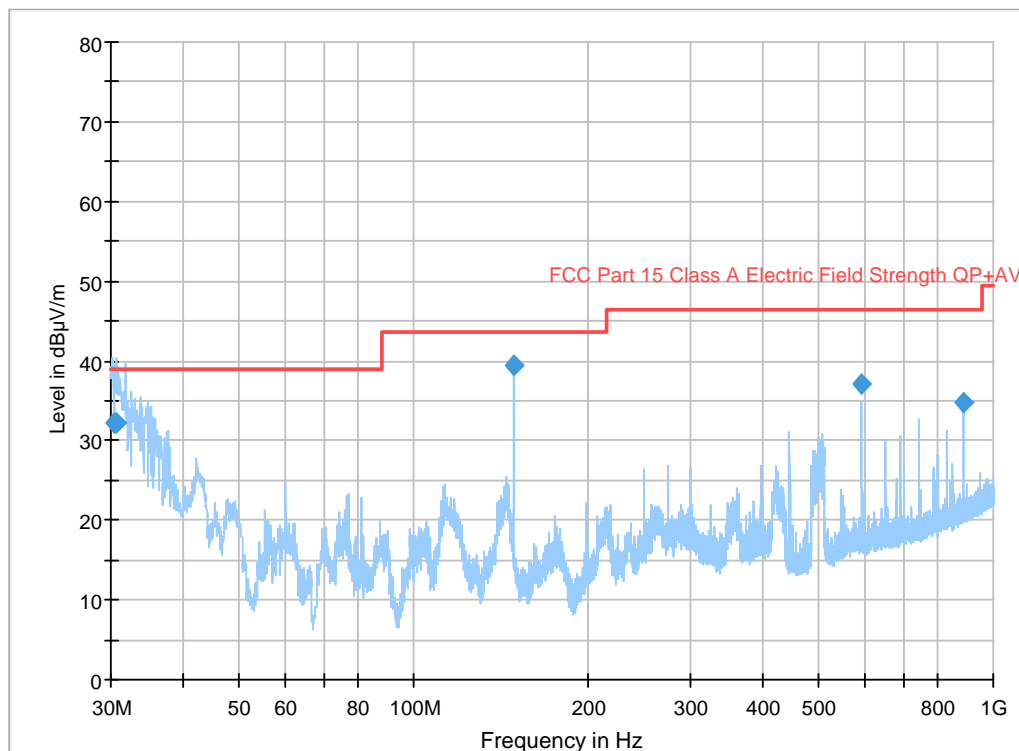
Measured according to FCC setup, method, and Class A limits.

#### Measurement Data:

Frequency	Operational condition	Field strength	Measuring distance	Limit CISPR Cl. A	Margin
MHz		dB $\mu$ V/m	metres	dB $\mu$ V/m	dB
30.361970	Charging	32.2	10	39.0	6.8
30.637894	Charging	32.2	10	39.0	6.8
148.499778	Charging	39.4	10	43.5	4.1
593.999911	Charging	37.0	10	46.4	9.6
891.000167	Charging	34.8	10	46.4	11.6

See attached graphs.

Full Spectrum



Charging mode: 30-1000 MHz

## Charging mode - Radiated emission 1000 – 12000 MHz.

Detector: Peak/Average

Measuring distance 3 meters.

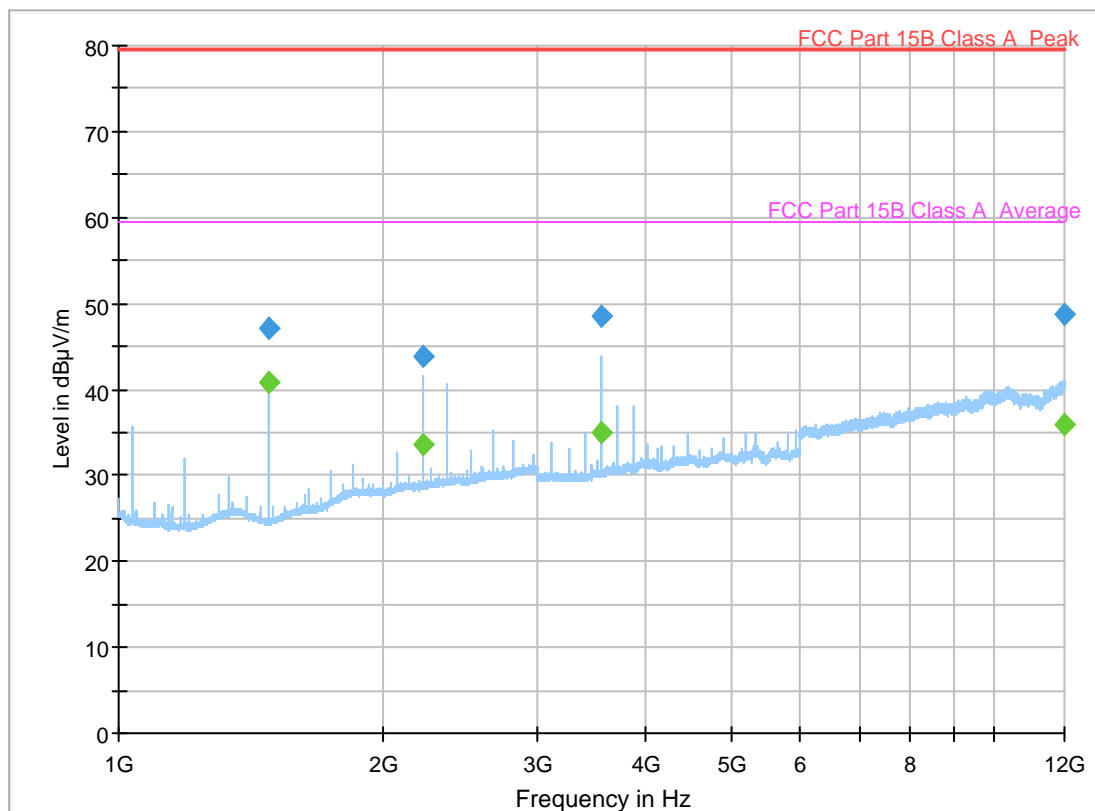
Measured according to CISPR setup, method, and Class B limits.

### Measurement Data Horizontal Polarisation:

Frequency	Operational condition	Field strength Peak	Field strength Average	Limit Peak FCC cl. A	Limit Avg. FCC cl. A	Margin Peak	Margin Average
MHz		dB $\mu$ V/m	dB $\mu$ V/m	dB $\mu$ V/m	dB $\mu$ V/m	dB	dB
1485.003000	Charging	47.20	---	79.5	---	32.3	---
1485.003000	Charging	---	40.89	---	59.5	---	18.6
2227.497000	Charging	---	33.68	---	59.5	---	25.8
2227.497000	Charging	43.86	---	79.5	---	35.6	---
3564.001500	Charging	48.60	---	79.5	---	30.9	---
3564.001500	Charging	---	34.91	---	59.5	---	24.6
11993.632273	Charging	---	35.84	---	59.5	---	23.7
11993.632273	Charging	48.78	---	79.5	---	30.7	---

See attached graphs.

Full Spectrum



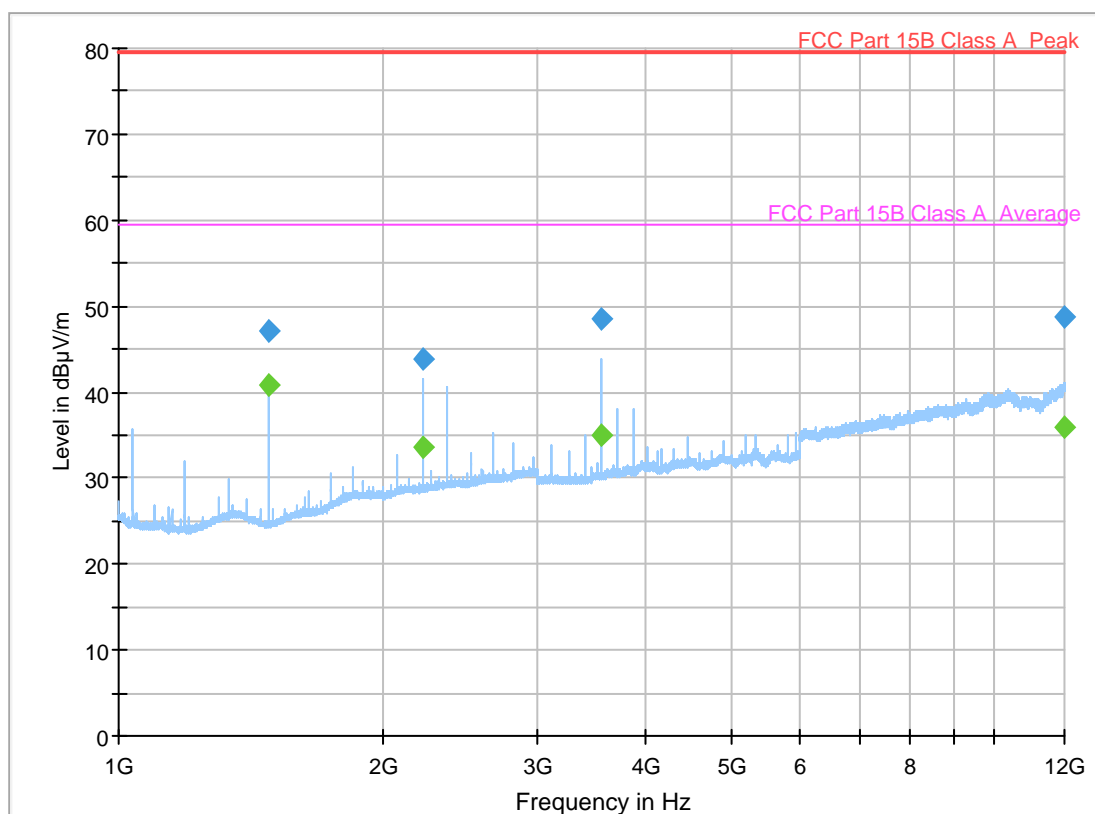
### 1000-12000 MHz, Horizontal polarization

# Measurement Data Vertical Polarisation:

Frequency	Operational condition	Field strength Peak	Field strength Average	Limit Peak FCC15.109	Limit Avg. FCC15.109	Margin Peak	Margin Average
MHz		dBµV/m	dBµV/m	dBµV/m	dBµV/m	dB	dB
1485.003000	Charging	47.2	---	79.5	---	32.3	---
1485.003000	Charging	---	40.9	---	59.5	---	18.6
2227.497000	Charging	---	33.7	---	59.5	---	25.8
2227.497000	Charging	43.9	---	79.5	---	35.6	---
3564.001500	Charging	48.6	---	79.5	---	30.90	---
3564.001500	Charging	---	34.9	---	59.5	---	24.6
11993.632273	Charging	---	35.8	---	59.5	---	23.7
11993.632273	Charging	48.8	---	79.5	---	30.7	---

See attached graphs.

Full Spectrum



## 1000-12000 MHz, Vertical polarization

## 4 LIST OF TEST EQUIPMENT

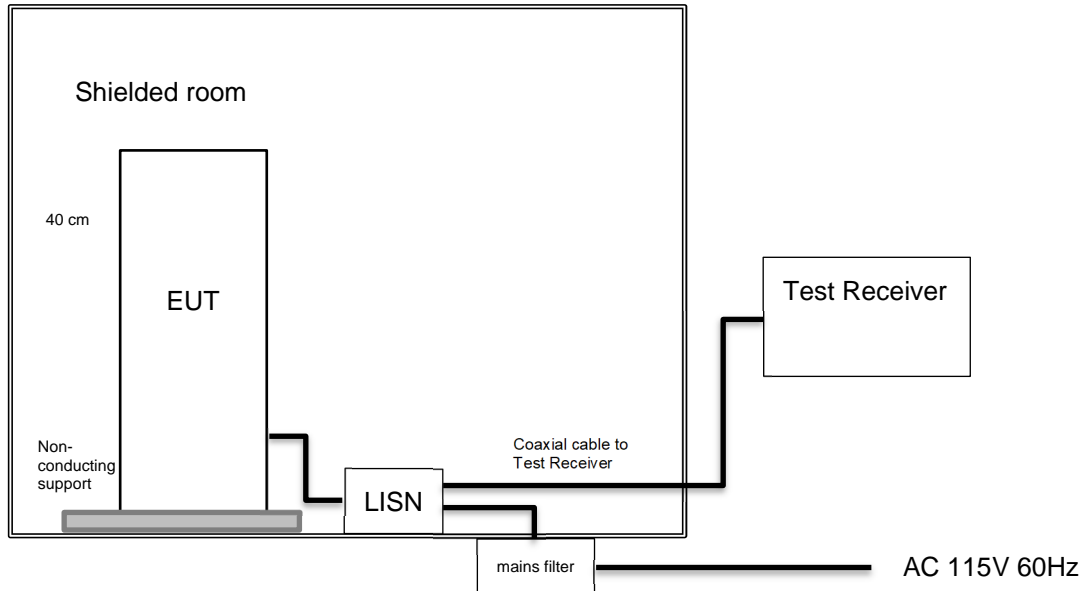
To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	ESU40	Measuring Receiver	Rohde & Schwarz	LR-1639	2019.01 & 2020.02	2020.01 & 2021.02
2	JB3	BiLog Antenna	Sunol Sciences	N-4525	2017.09 & 2020.03	2020.09 & 2023.03
3	SI 310	Preamplifier 9kHz – 1000 MHz	Sonoma Instruments	LR-1680	2018.07 & 2019.07	2019.07 & 2020.07
4	3117-PA	Double Ridged Horn Antenna	EMCO	LR-1717	2017.05	2020.05
5	3117-Preamp	Preamplifier 3117 PA	EMCO	LR-1757	2020.02	2021.02
6	HFH2-Z2	Loop Antenna	Rohde & Schwarz	LR-1660	2016.11 & 2019.06	2019.11 & 2022.06
7	ESCI	Measuring Receiver	Rohde & Schwarz	N-4259	2017.10 & 2019.10	2019.10 & 2021.10
8	ESH2-Z5	AMN	Rohde & Schwarz	N-4097	2018.03	2020.03
9 *)	10001 iX Series II	AC Power Source / Analyzer	California Instruments	LR-1549	2015.05	2020.05
10 *)	Fluke 87 V	Multimeter	Fluke	N-4672	2018.11	2020.11

\*) Instruments 9 and 10 were used to generate the AC Input voltage to the EUT and performing control measurement of level and frequency, respectively.

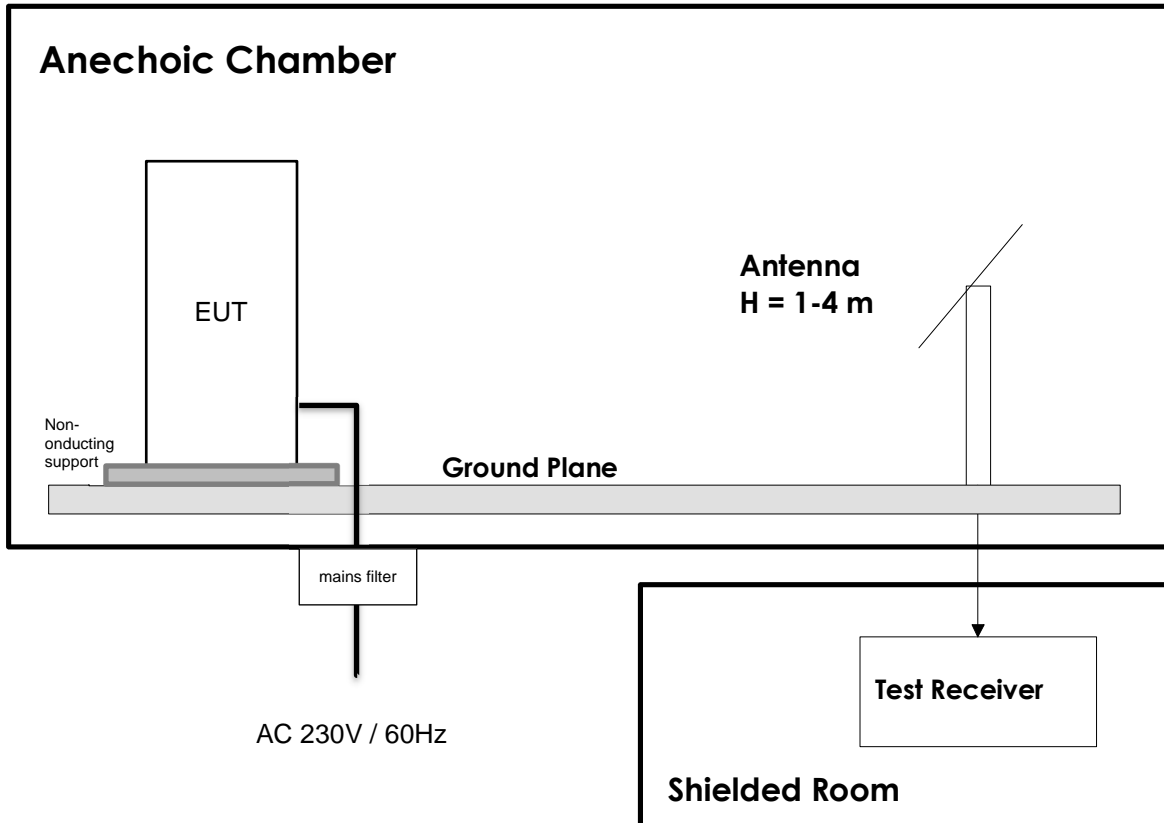
## 5 BLOCK DIAGRAM

### 5.1 Power Line Conducted Emission



The test was performed with the EUT placed on a pallet inside the EMC chamber.  
The test receiver was located outside the EMC chamber.

## 5.2 Test Site Radiated Emission



All tests were performed with the EUT placed on a pallet (approx. 10 cm) at the ground plane. This test setup is used for all radiated emissions tests. For all frequencies, the measuring distance is 3m. Emissions above 1 GHz are measured with a Spectrum Analyzer and Horn Antenna and with the preamplifier after the antenna. Tests above 1GHz were performed with the floor between the EUT and the measuring antenna covered by floor absorbers.