REP070780B

Test Report

Product	Electronic touchless soap dispenser with BLE and NFC
Name and address of the applicant	Essity Hygiene and Health AB Mölndals Bro 9, Mölndal SE 405 03 Gothenburg, Sweden
Name and address of the manufacturer	Essity Hygiene and Health AB Mölndals Bro 9, Mölndal SE 405 03 Gothenburg, Sweden
Model	652929
Rating	6.0 V DC (Primary batteries, 4x C-size cells)
Trademark	TORK Think ahead.
Additional information	BLE, NFC
Tested according to	**FCC Part 15.225** Low Power Unlicensed Device **Industry Canada RSS-210, Issue 11** Low Power Licence-Exempt Radio Apparatus, Category I Equipment
Order number	PRJ0070407
Tested in period	2025-02-03 and 2026-02-13
Issue date	2026-02-13
Name and address of the testing laboratory	Nemko Instituttveien 6 Kjeller, Norway www.nemko.com CAB Number: FCC: NO0001 ISED: NO0470 ilac-MRA NORWEGIAN ACCREDITATION TEST 033 **An accredited technical test executed under the Norwegian accreditation scheme**

Prepared by [Frode Sveinsen]	Approved by [Jan G. Eriksen]
Digitally signed by Frode Sveinsen DN: cn=Frode Sveinsen, c=NO, o=Nemko Scandinavia AS, ou=ETM, email=frode.sveinsen@nemko.com Location: Kjeller Date: 2026.02.13 14:38:21 +01'00'	Jan G Eriksen C=NO, CN=Jan G Eriksen, OU=Senior Engineer, O=Nemko Scandinavia AS, E=jangunnar.eriksen@nemko.com 2026.02.16 13:03:38 +01'00'

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Template version: C

Revision history

Revision	Date	Comment	Sign
A	2025-04-24	First edition	FS
B	2026-02-13	Added results for Frequency Mask and Frequency Stability	FS

GENERAL REMARKS

This report applies only to the sample(s) tested. It is the manufacturer's responsibility to ensure the additional production units of this product are manufactured with identical electrical and mechanical components. The manufacturer is solely responsible for any modifications to the product that could result in non-compliance with the relevant regulations.

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Opinions expressed within this report regarding general assessments and qualifications for PASS or FAIL to the standards limits and requirements are not part of the current accreditation. Neither are opinions expressed regarding model variants covered by the testing of this report.

CALIBRATION

All instruments used in the tests given in this test report are calibrated and traceable to national or international standards. Between calibrations all test set-ups are controlled and verified on a regular basis by periodic checks to ensure, with 95% confidence, that the instruments remain within the calibrated levels.

MEASUREMENT UNCERTAINTY

Measurement uncertainties are calculated or considered for all instruments and instrument set-ups used during these tests. Uncertainty figures are found in a separate clause in this report.

1 INFORMATION

1.1 Test Item

Product	**S4 TVC 3.0 dispenser**
Manufacturer	**Essity Hygiene and Health AB**
Model	**652929**
FCC ID	**2ABK3-652929**
ISED Canada ID	**10866A-652929**
Serial number	**/**
Hardware identity and/or version	**AP07**
Software identity and/or version	**/**
Frequency Range	**13.56 MHz**
Operating frequency	**13.56 MHz**
Type of Modulation	**FSK**
User Frequency Adjustment	**None**
Type of Power Supply	**Primary Batteries (4x C-size cells)**
Antenna Type	**Internal**

1.2 Description of Tested Device

The EUT is a wireless touchless soap dispenser with Bluetooth Low Energy (BLE) and NFC transmitters.

1.3 Test Environment

Temperature:	**20 - 24 °C**
Relative humidity:	**20 - 50 %**
Normal test voltage:	**6.0 V DC (Nominal battery voltage)**

The values are the limit registered during the test period.

1.4 Test Engineers

Frode Sveinsen

1.5 EUT Operating Modes

Description of operating modes	All tests were performed with the EUT set to transmit contineously in test-mode.

1.6 Comments

All measurements were performed with the EUT powered by new batteries.

2 TEST REPORT SUMMARY

2.1 General

The tests were conducted on a sample of the equipment for demonstrating compliance with one or more of the following standards:

Standard	Description
FCC CFR 47 Part 15C	Unlicensed transmitters
ISED RSS-210, Issue 11	Licence-Exempt Radio Apparatus: Category I Equipment
ISED RSS-GEN Issue 5	General Requirements for Compliance of Radio Apparatus

The following standards and documents were used for one or more measurements:

Standard	Description
ANSI C63.4-2014	Unintentional Radiators
ANSI C63.10-2020 (FCC)	Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI C63.10-2020 (ISED Canada) **+cor.1-2023** **+ANSI C63.10a-2024** **+Errata to C63.10a-2024**	Procedures for Compliance Testing of Unlicensed Wireless Devices +Corrigendum 1 +Amendment 1 +Errata to Amendment 1

All measurements are traceable to national standards.

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

☒ **New Submission**	☐ **Production Unit**
☐ **Class II Permissive Change**	☒ **Pre-production Unit**
DXX Equipment Class	☐ **Family Listing**

2.2 Test Summary

Name of test	FCC Part 15 reference	RSS-210 Issue 11 RSS-GEN Issue 5 reference	ANSI C63.10-2020 reference	Verdict
Supply Voltage Variations	**15.31(e)**	**6.11 (RSS-GEN)**	**5.13**	**N/A**
Number of Frequencies	**15.31(m)**	**6.9 (RSS-GEN)**	**5.6**	**N/A**
Antenna Requirement	**15.203**	**6.8 (RSS-GEN)**	**5.8**	**N/A**
Power Line Conducted Emission	**15.207(a)**	**7.2 / 8.8 (RSS-GEN)**	**6.2**	**N/A**
Field Strength of Fundamental	**15.225**	**B.6 (RSS-210)**	**6.3, 6.4**	**Complies**
Frequency Mask	**15.225(a)(b)(c)(d)**	**B.6 (RSS-210)**	**6.3, 6.4**	**Complies**
Frequency Tolerance	**15.225(e)**	**B.6 (RSS-210)** **6.11 (RSS-GEN)**	**6.8**	**Complies**
Occupied Bandwidth (99% BW)	**N/A**	**6.7 (RSS-GEN)**	**6.9**	**Complies**
Spurious Emissions (Radiated)	**15.209(a)**	**7.3 (RSS-GEN)** **8.9 (RSS-GEN)**	**6.3, 6.4, 6.5**	**Complies**

3 TEST RESULTS

3.1 Field Strength of Fundamental

FCC Part 15.225 (a)

ISED Canada RSS-210 Issue 11, Clause B.6.a

Measurement procedure: ANSI C63.10-2020 Clause 6.4

Test Results: Complies

Measurement Data:

Frequency (MHz)	Measuring Distance	Measured Field Strength @3m	Extrapolated Value @30m	Detector	Limit	Margin
13.56	3m	53.4 dBµV/m	13.4 dBµV/m	Peak	84.0 dBµV/m	70.6 dB

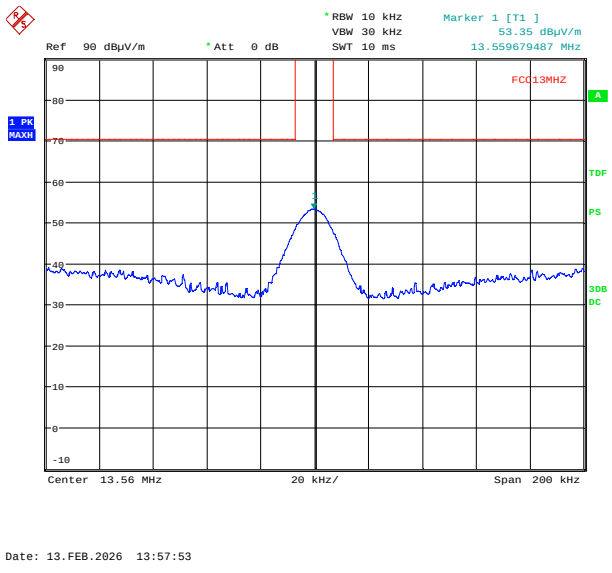
Field Strength was measured at 3m, and the value was extrapolated to 30m using an extrapolation factor of 40dB/decade, as specified in RSS-GEN Clause 6.5 and FCC Part 15.31(f)(2).

Antenna factor, amplifier-gain and cable loss are included in Spectrum Analyzer “Transducer factor”.

See attached graphs.

Limit

FCC	Part 15.225	
ISED	RSS-210 Issue 11, Clause B.6	
Frequency	Radiated emission limit @30 meters	
13.56 MHz	15848 µV/m	84.0 dBµV/m
	Limits above are with Quasi Peak Detector	



Field Strength 13.56 MHz, Peak, Max: TP @3m

3.2 Frequency Mask

FCC Part 15.225 (a)(b)(c)(d)

ISED Canada RSS-210 Issue 11, Clause B.6.a

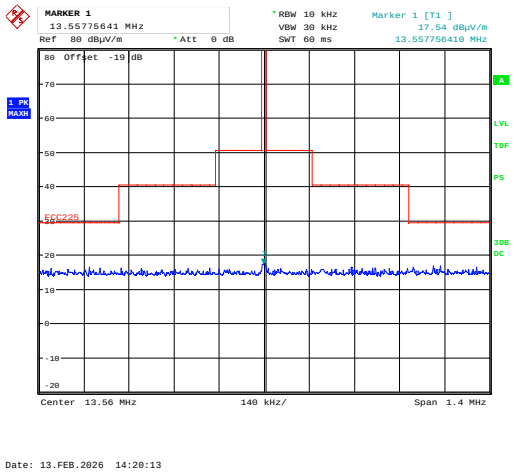
Measurement procedure: ANSI C63.10-2020 Clause 6.4

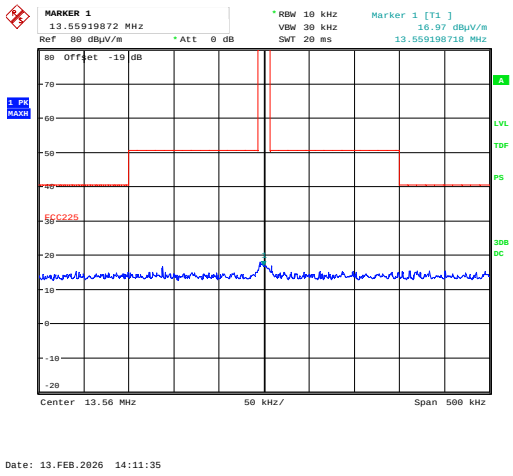
Test Results: Complies

Measurement Data:

Frequency (MHz)	Measured Value @30m	Limit @30m
13.553 – 13.567	< 30 dBµV/m	84.0 dBµV/m
13.410-13.553 and 13.567-13.710	< 30 dBµV/m	50.5 dBµV/m
13.110-13.410 and 13.710-14.010	< 30 dBµV/m	40.5 dBµV/m
Outside the band 13.110-14.010	< 25 dBµV/m	29.5 dBµV/m

Field Strength was measured at 10m, and the value was extrapolated to 30m using an extrapolation factor of 20dB/decade, as specified in ANSI C63.10-2020.





Mask 13.56MHz, E-Field, Peak, Max: TP @10m

3.3 Frequency Stability

FCC Part 15.225(e)

ISED Canada RSS-210 Issue 11, B.6.b

ISED Canada RSS-GEN Issue 5, Clause 6.11

ANSI C63.10-2020 Clause 6.8

Test Results: Complies

Measurement Data:

Temperature	Measured Frequency (MHz)	Deviation (kHz)	Deviation (ppm)
+50 °C	13.559639	-0.064	-4.72
+20 °C	13.559703	Reference	Reference
-20 °C	13.559743	+0.040	+2.95

The test was performed with fresh batteries. Voltage variation is not applicable for battery-operated equipment.

Frequency Stability was measured using the counter function on the spectrum analyzer.

Limit:

FCC 15.225(e):	**±0.01 % of operating frequency**
ISED Canada RSS-210 B6.e:	**±100 ppm**

0.01% is identical to 100ppm

3.4 99% Occupied Bandwidth

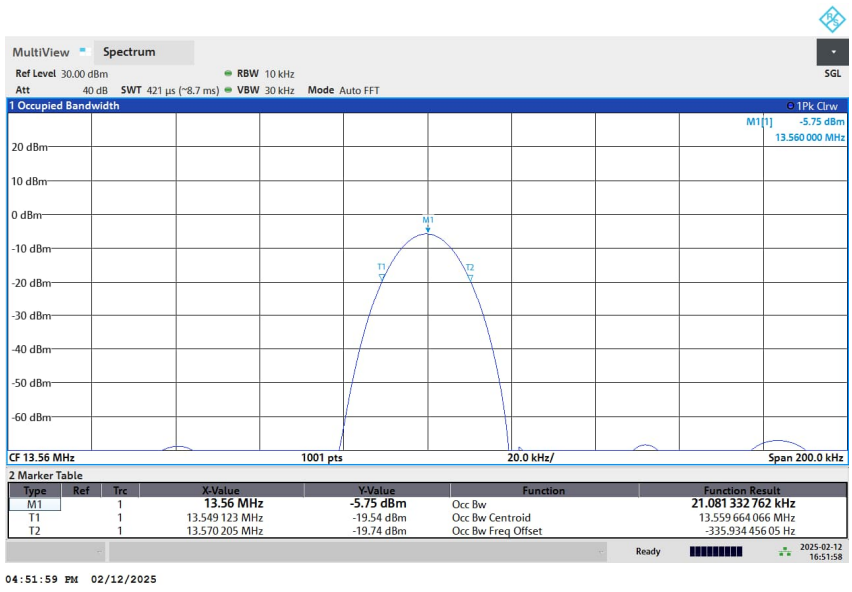
ISED Canada RSS-GEN Issue 5, Clause 6.7

Measurement procedure: ANSI C63.10-2013 Clause 6.9.3 / 7.8.3

Measurement Data:

Occupied Bandwidth (99%)	
Operating Frequency	**13.56 MHz**
Measured OBW (99%)	**21.1 kHz**

Requirements: No requirement for 99% BW, reported for information only.



99% OBW

3.5 Spurious Emissions (Radiated)

FCC Part 15.209(a)

ISED Canada RSS-210 Issue 11, Clause B.6

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2013 Clause 6.4, 6.5

Test Results: Complies

Measuring Distance: 3m (9 kHz- 1000 MHz)

No spurious emissions were detected.

Spurious Emissions were measured from 9 kHz to 1000 MHz.

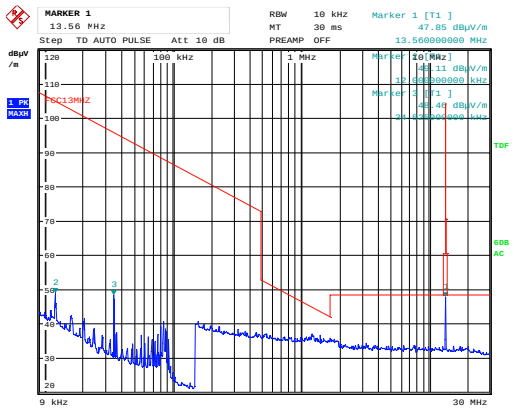
Antenna factor, amplifier gain and cable loss are included in Spectrum Analyzer “Transducer factor”.

See attached graphs.

Requirements/Limit

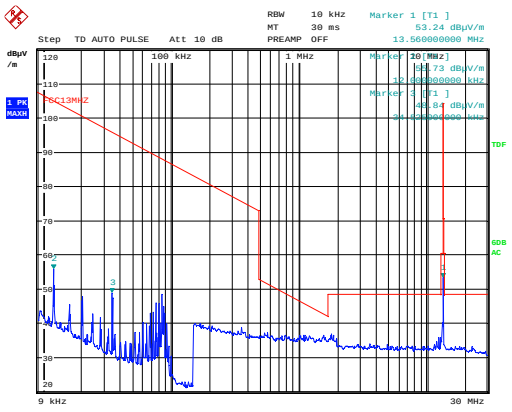
FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10	
Frequency	Radiated emission limit @3 meters	
30 – 88 MHz	100 µV/m	40.0 dBµV/m
88 – 216 MHz	150 µV/m	43.5 dBµV/m
216 – 960 MHz	200 µV/m	46.0 dBµV/m
960 – 1000 MHz	500 µV/m	54.0 dBµV/m
	Limits above are with Quasi Peak Detector	

See plot for limits below 30 MHz. Limits below 30 MHz are specified with RMS Detector



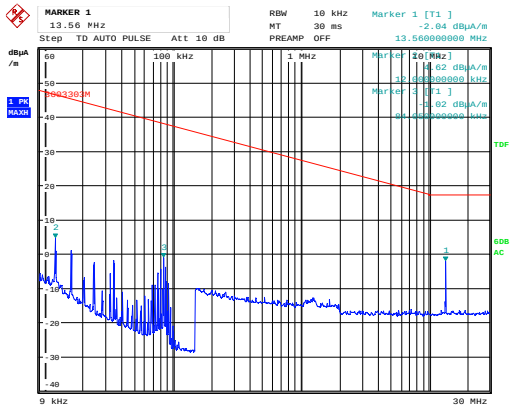
E-Field Emisisons, 0.09 - 30MHz, Peak, LP @3m

Note: Limit Line above is 10m limit. Limit at 3m is 21dB higher. (The signal at 34.5 kHz is inherent noise)



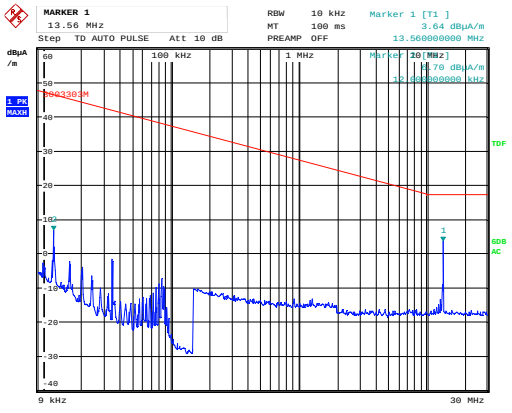
TP @3m

Note: Limit Line above is 10m limit. Limit at 3m is 21dB higher.

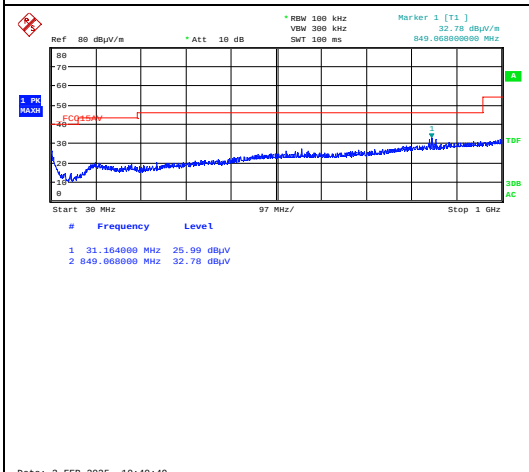


H-Field Emissions, 0.09 - 30MHz, Peak, LP @3m

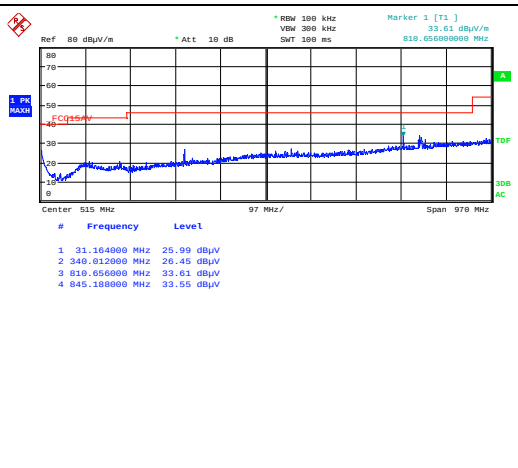
(The signal at 34.5 kHz is inherent noise)



TP @3m



Emissions, 30 – 1000 MHz, VP, @3m



HP, @3m

4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		**Uncertainty**
Output Power		±0.5 dB
Spurious Emissions, Radiated	**< 1 GHz**	±2.5 dB
	> 1 GHz	±2.2 dB
Emission Bandwidth		±4 %
Power Line Conducted Emissions		+2.9 / -4.1 dB
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

5 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.

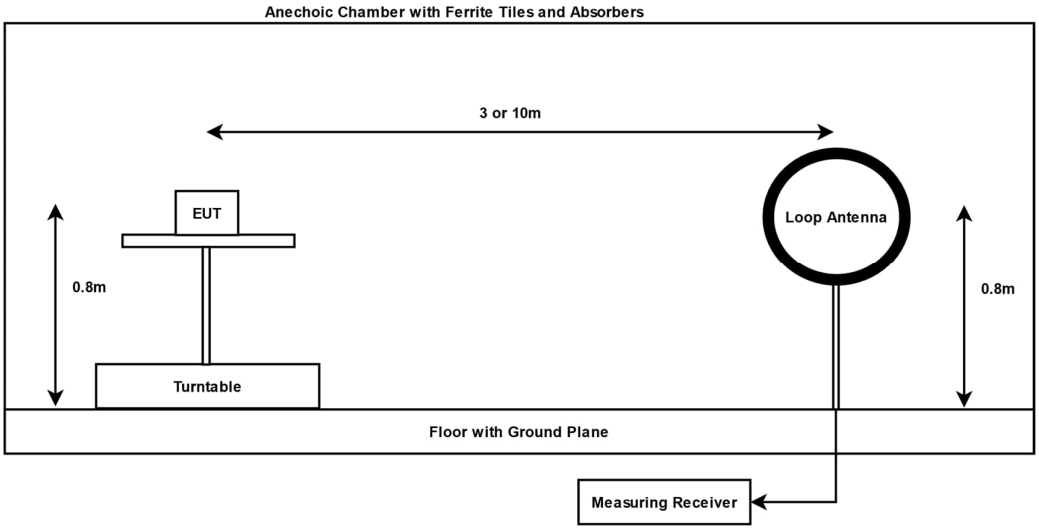
No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2025-01 2026-01	2026-01 2027-01
2	FSW43	Spectrum Analyzer	Rohde & Schwarz	LR 1690	2026-01	2027-01
3	HFH2-Z2	Loop Antenna	Rohde & Schwarz	LR 1660	2022-01	2025-01
4	JB3	BiLog Antenna	Sunol	N-4525	2023-04	2026-04
	310	Preamplifier	Sonoma Inst.	LR 1686	2024-09 2025-08	2025-09 2026-08
5	VT 4034	Climatic Chamber	Vötch	N-5048	2025-04	2026-04

The software listed below has been used for one or more tests in this report.

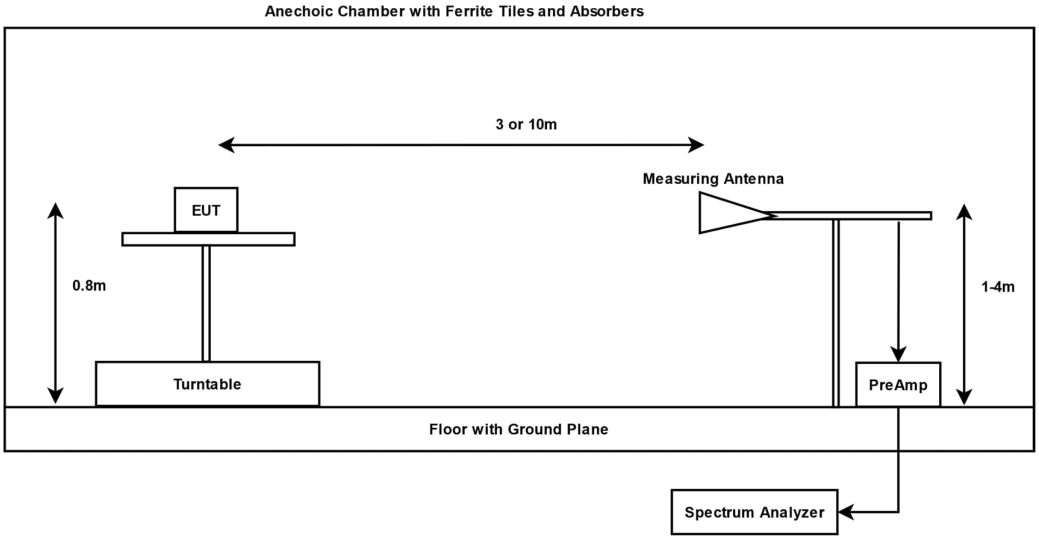
No.	Manufacturer	Name	Version	Comment
1	Rohde & Schwarz	EMC32	10.60.20	Power Line Conducted test software
3	Nemko	RSPlot	1.0.8.0	Screenshots from R&S Spectrum Analyzers

6 BLOCK DIAGRAM

6.1 Radiated Emissions Test

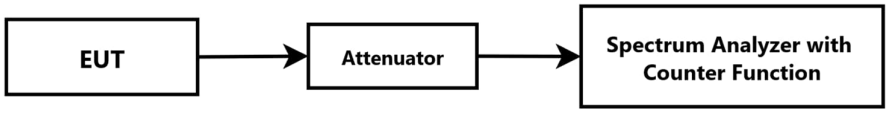


10m Chamber, below 30 MHz



10m Chamber, 30-500 MHz

6.2 Frequency Stability



Frequency Stability

The EUT was placed inside the Climatic Chamber, and the measurement was performed radiated with a loop antenna inside the chamber. The attenuator was not used for this test.