Test Report for

EN 301 908-1 v15.2.1 clause 4.2.2

The RvA is signatory to ILAC - MRA

Product name : Apollo with 4G modem

Applicant : Payter B.V.

Test report No. : P000396849 Ver 2.00

Laboratory information

Accreditation

Kiwa Nederland B.V. complies with the accreditation criteria for test laboratories as laid down in ISO/IEC 17025:2017. The accreditation covers the quality system of the laboratory as well as the specific activities as described in the authorized annex bearing the accreditation number L248 and is granted by the Dutch Council For Accreditation (RvA: Raad voor Accreditatie).

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The Industry Canada company number for Kiwa Nederland B.V. is: 4173A. The CABID is NL0001.

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Documentation

The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 10 years at Kiwa Nederland B.V.

Testing Location

Test Site	Kiwa Nederland B.V.
Test Site location	Wilmersdorf 50 7327 AC Apeldoorn The Netherlands Tel. +31 88998 3393
Test Site FCC	NL0001
CABID	NL0001

Revision History

Version	Date	Remarks	By
v0.5	12-08-2024	First draft	PS
v1.0	21-08-2024	Initial release	PS
V2.0	21-10-2024	Added Variant	AWM

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Summary of Test results

EN 301 908-1 v15.2.1	Description	Section in report	Verdict
4.2.2	Radiated spurious emissions - UE in allocated mode	3.1	Pass
4.2.2	Radiated spurious emissions - UE in idle mode	3.2	Pass
--	Radiated RF power*	3.3	--

*Note: results added for EMF assessment reference only

1 General Description

1.1 Applicant

Client name:	Payter B.V.
Address:	Rozenlaan 115
Zip code:	3051LP
City:	Rotterdam
Country:	Nederland
Telephone:	+31854012380
E-mail:	l.degelder@payter.nl
Contact name:	Luuk de Gelder

1.2 Manufacturer

Manufacturer name:	Payter B.V.
Address:	Rozenlaan 115
Zip code:	3051LP
City:	Rotterdam
Country:	Nederland
Telephone:	+31854012380
E-mail:	l.degelder@payter.nl
Contact name:	Luuk de Gelder

1.3 Tested Equipment Under Test (EUT)

Product name:	Apollo with 4G modem
Brand name:	Payter
Product description:	Payment terminal with PIN entry
Model:	APO.BL.ENG V1-1
Variant model(s):	APM.BL.ENG V1-0
Batch and/or serial No.	APO20233800980
Software version:	--
Hardware version:	--
Date of receipt:	06-05-2024
Tests started:	08-05-2024
Testing ended:	12-08-2024

1.4 Product specifications of Equipment under test

TX Frequency bands:	LTE: 900, 2100 MHz
RX frequency bands:	LTE: 900, 2100 MHz
Antenna type:	External

1.5 Modification of the Equipment Under Test (EUT)

None.

1.6 Observations and remarks

None

1.7 Environmental conditions

Test date	08-05-2024	12-08-2024
Temperature	20.2°C	26.4°C
Humidity	44.4%	56.2%

1.8 Measurement standards

- EN 301 908-1 v15.2.1 (2023-01) Clause 5.3.1

1.9 Applicable standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- EN 301 908-1 v15.2.1 (2023-01) Clause 4.2.2

1.10 Conclusions

The sample of the product showed **NO NON-COMPLIANCES** to the specifications stated in paragraph 1.9 of this report.

The results of the test as stated in this report, are exclusively applicable to the product items as identified in this report. Kiwa Netherland B.V. on accepts no responsibility for any properties of product items in this test report, which are not supported by the tests as specified in paragraph 1.9 *"Applicable standards".*

All tests are performed by:

Name : ing R. van Barneveld/ing P.A. Suringa

Review of test methods and report by:

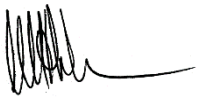
Name : ing. Maaz. H. Khan

The above conclusions have been verified by the following signatory:

Date : 21-10-2024

Name : ing. M.H. Khan

Function : Test Engineer

Signature : 

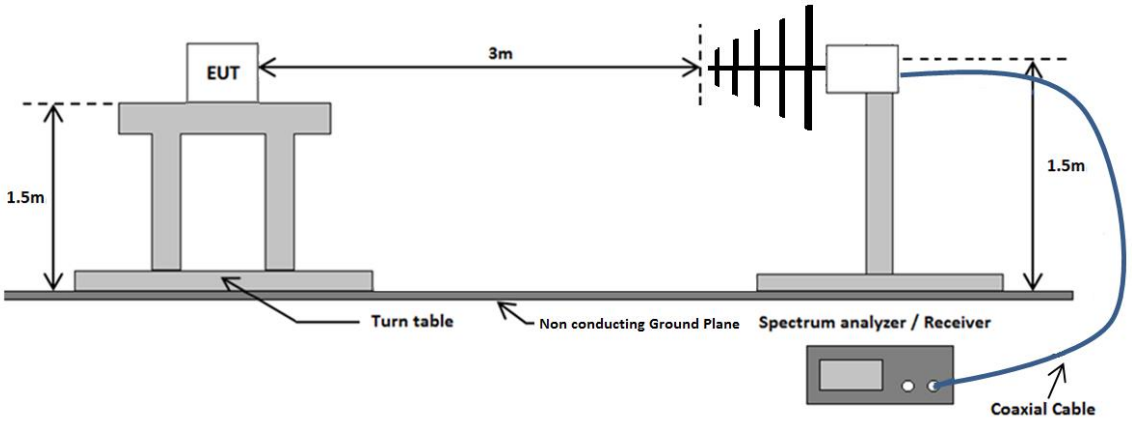
2 Test configuration of the Equipment Under Test

2.1 Test mode

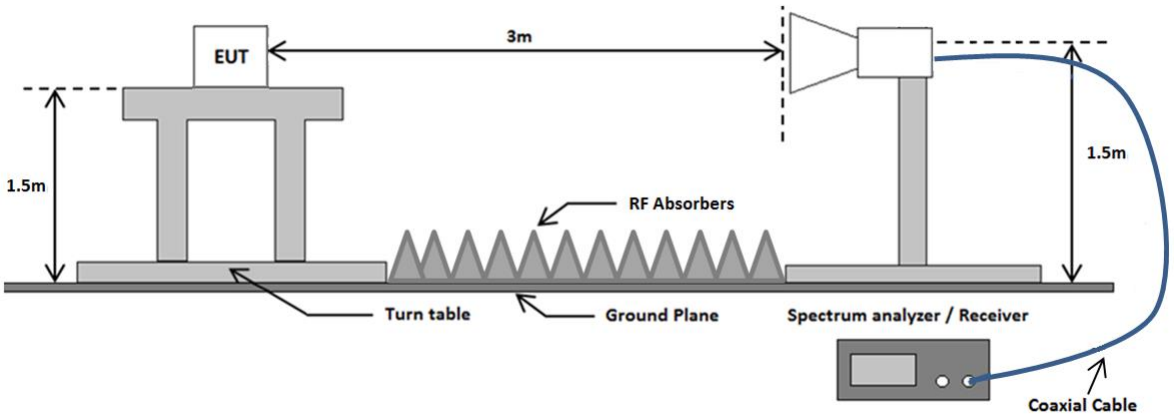
The EUT was put in test mode by applying AT commands.

2.2 Radiated Test setup

Radiated emissions test setup 30 MHz - 1 GHz



Radiated emissions test setup above 1 GHz



2.3 Equipment used in the test configuration

Description	Manufacturer	Model	ID	Used at Par.
Anechoic room	EUROSHIELD	CFAC-100-004	114625	**All**
Spectrum Analyzer	Rohde & Schwarz	FSV40	114429	All
Preamplifier25 - 1000 MHz	Rohde & Schwarz	ESV-Z3	114431	All
Preamplifier 1 - 26.5 GHz	HP	8449B	114431	All
Antenna 25 - 1000 MHz	EMCO	3147	114519	All
Antenna 1 - 18 GHz	EMCO	3115	114434	All
N-type cable (black)	--	--	--	All
Blue cable 2m 25 - 1000 MHz	Huber & Suhner	HUB-CO-SF104/3M/01	114770	All
Green cable 5m 1 - 40 GHz	--	--	--	All
Green cable 2m 1 - 40 GHz (outside chamber)	--	FB142A1-001-TELE	--	All
Green cable 2m 1 - 40 GHz (inside chamber)	--	FB142A1-001-TELE	--	All

Description	Manufacturer	Model	ID	Used at Par.
Anechoic room	ETS Lindgren	FRIIS	114621	All
Spectrum analyzer	Rohde & Schwarz	FSV3044	114871	All
Preamplifier 1 - 18 GHz	Schwarzbeck	BBV 9718D	114874	All
Antenna 1 - 18 GHz	EMCO	3117	114873	All
Armored blue cable inside room	Huber+Suhner	Sucoflex 118	--	All
Blue cable outside room	Huber+Suhner	Sucoflex 101	--	All
LTE Band 1 reject filter	Wainwright Instruments	WRCG1920/1980-1900/2000-50/12SS	--	3.1

3 Test results

3.1 Radiated spurious emissions – UE in allocated mode

3.1.1 Limit

According to table 4.2.2.2-1 of EN 301 908-1 v15.2.1

3.1.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.1.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.1.4 Test procedure

See EN 301 908-1 v15.2.1, clause 5.3.1.
IRN 415 Spurious emissions – Method 1: (0.03-18 GHz).

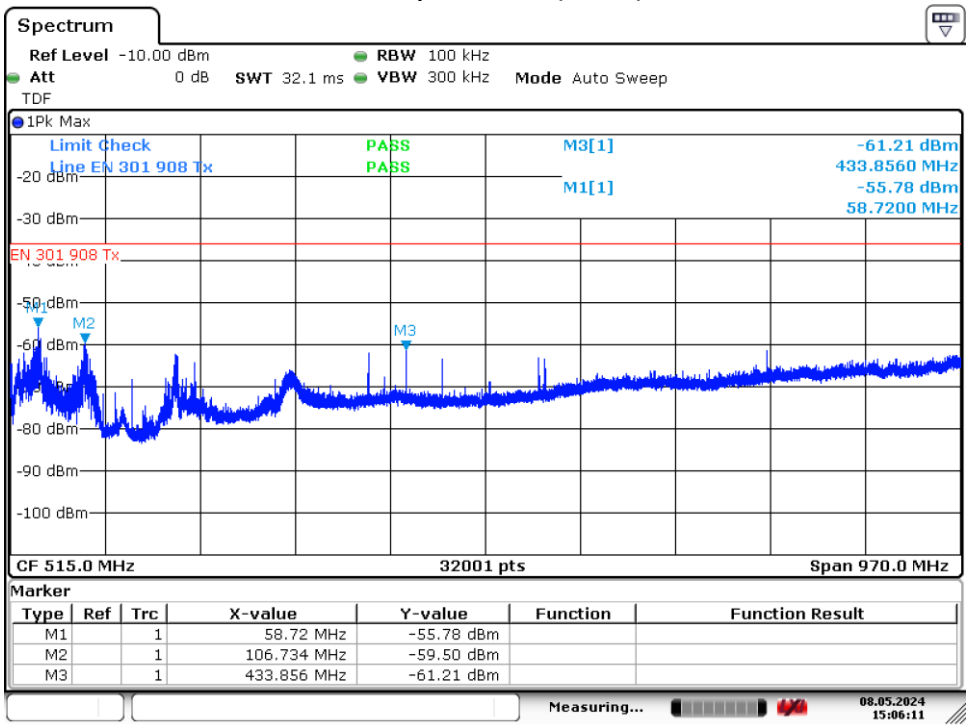
3.1.5 Uncertainty

Frequency range	Uncertainty
30 – 1000 MHz	±3.6 dB
1 – 18 GHz	±3.8 dB

3.1.6 Plots of the Radiated Spurious Emission measurement - UE in allocated mode (LTE)

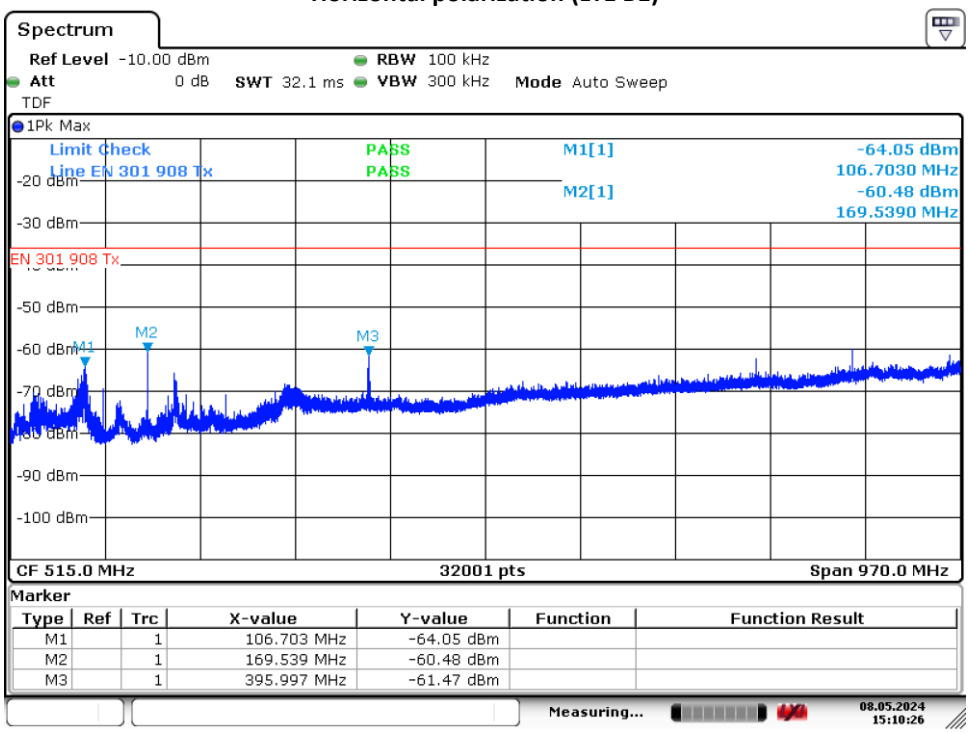
30 – 1000 MHz

Vertical polarization (LTE B1)



Date: 8.MAY.2024 15:06:11

Horizontal polarization (LTE B1)



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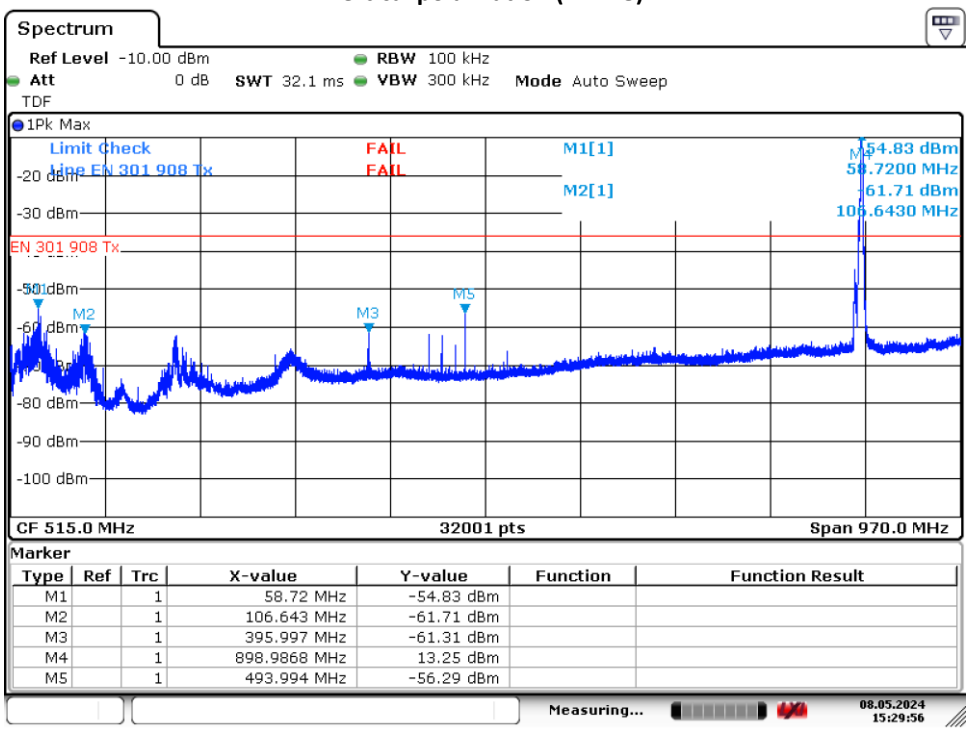
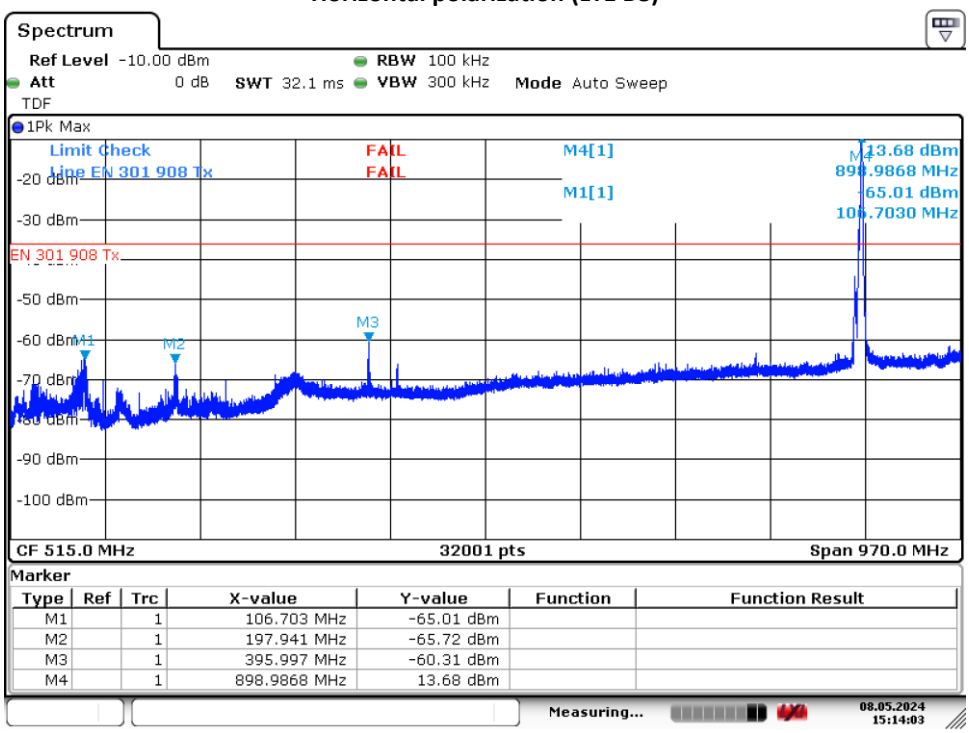
Vertical polarization (LTE B8)



Date: 8.MAY.2024 15:29:56

Horizontal polarization (LTE B8)

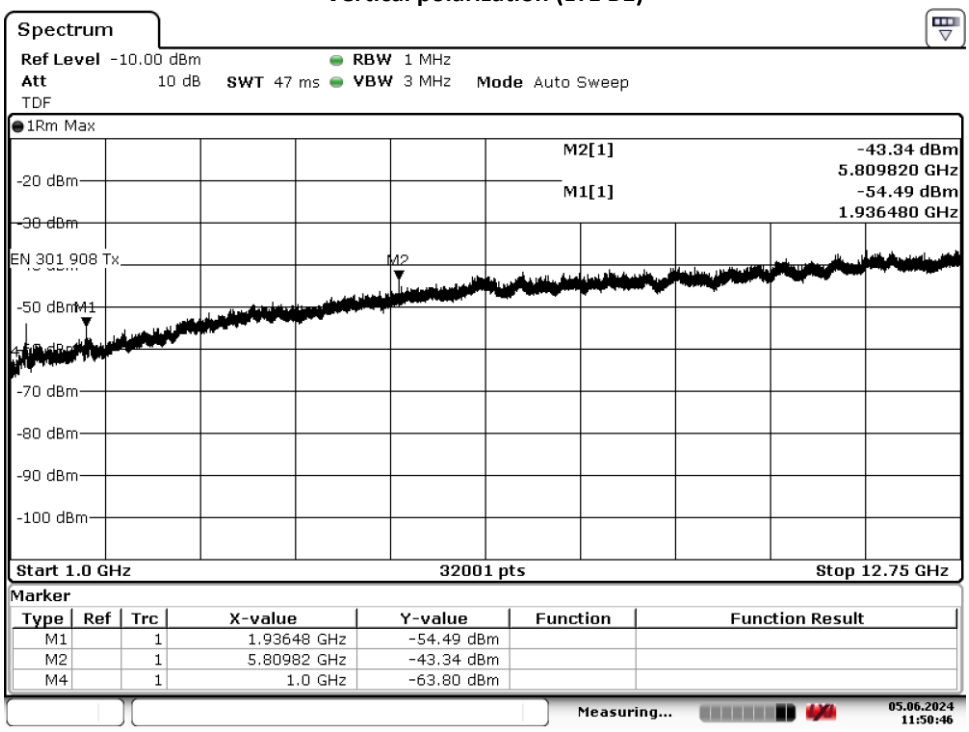


Date: 8.MAY.2024 15:14:03

Note: the emission peak at 898.99 MHz in the plots above is the fundamental LTE B8 frequency and is therefore not subject to the limit.

1 – 12.75 GHz

Vertical polarization (LTE B1)



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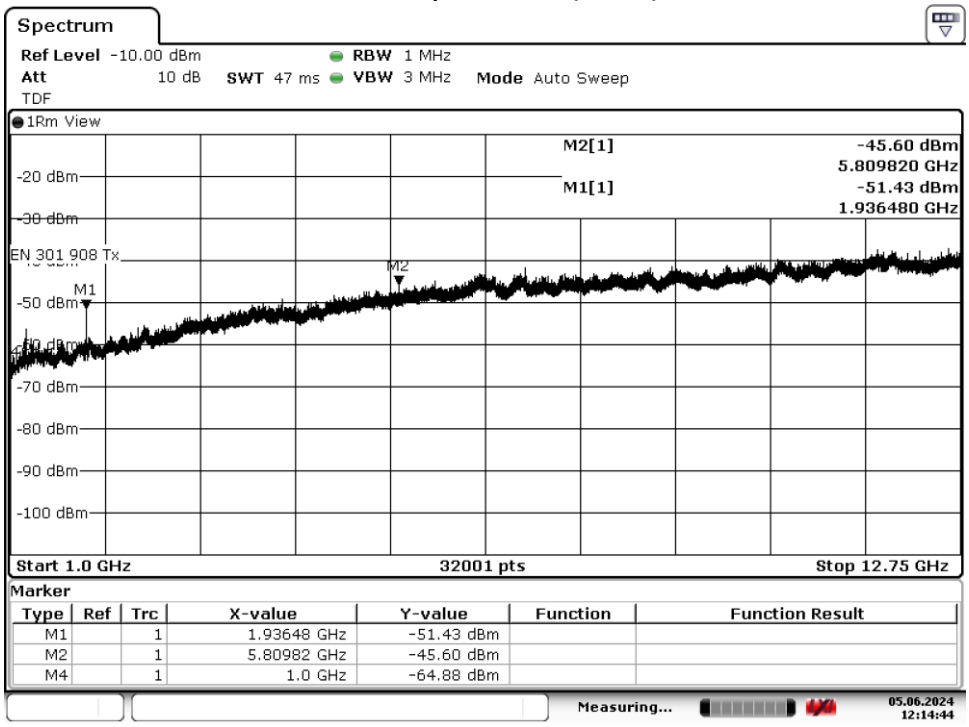
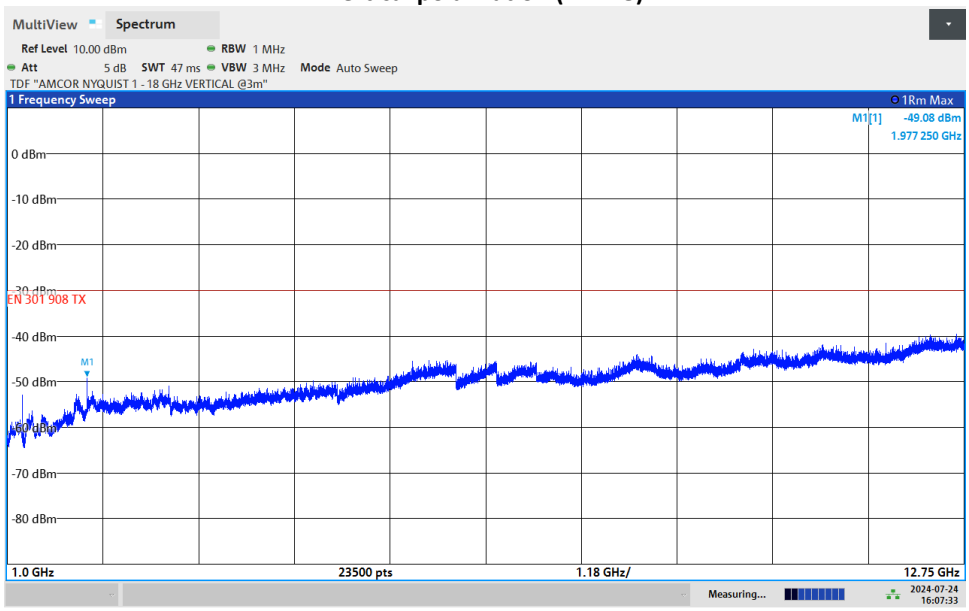
Horizontal polarization (LTE B1)



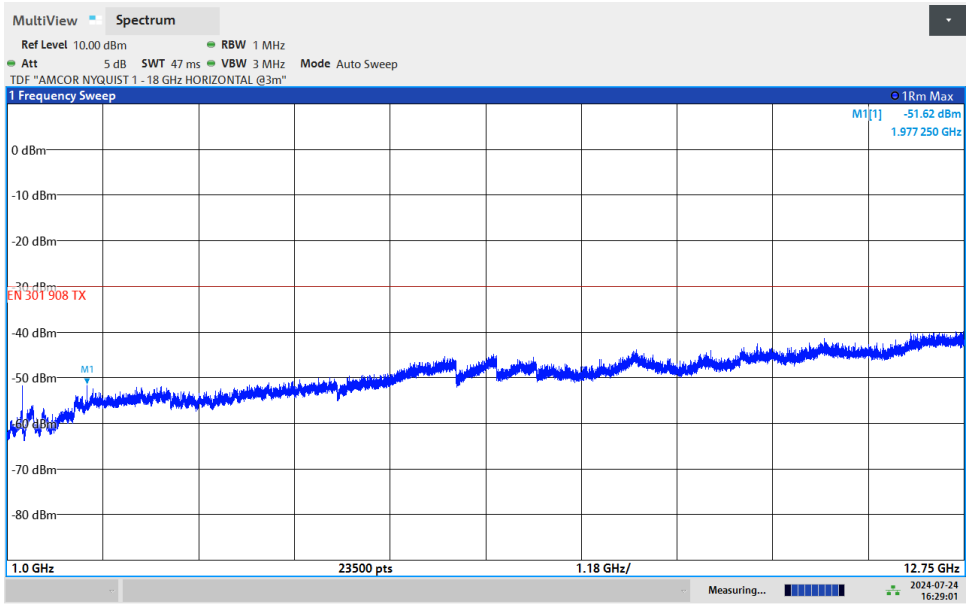
Date: 5.JUN.2024 12:14:45

Vertical polarization (LTE B8)



04:07:33 PM 07/24/2024

Horizontal polarization (LTE B8)



04:29:01 PM 07/24/2024

3.2 Radiated spurious emissions – UE in idle mode

3.2.1 Limit

According to table 4.2.2.2-1 of EN 301 908-1 v15.2.1

3.2.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.2.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.2.4 Test procedure

See EN 301 908-1 v15.2.1 , clause 5.3.1.
IRN 415 Spurious emissions – Method 4

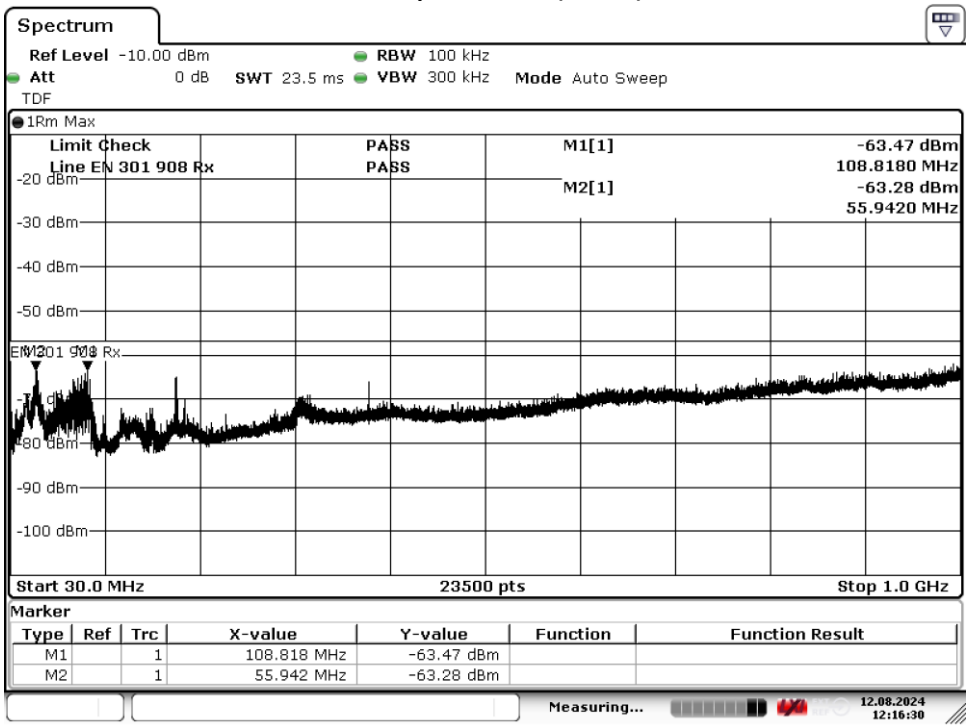
3.2.5 Uncertainty

Frequency range	Uncertainty
30 – 1000 MHz	±3.6 dB
1 – 18 GHz	±3.8 dB

3.2.6 Plots of the Radiated Spurious Emission measurement - MS in idle mode (LTE)

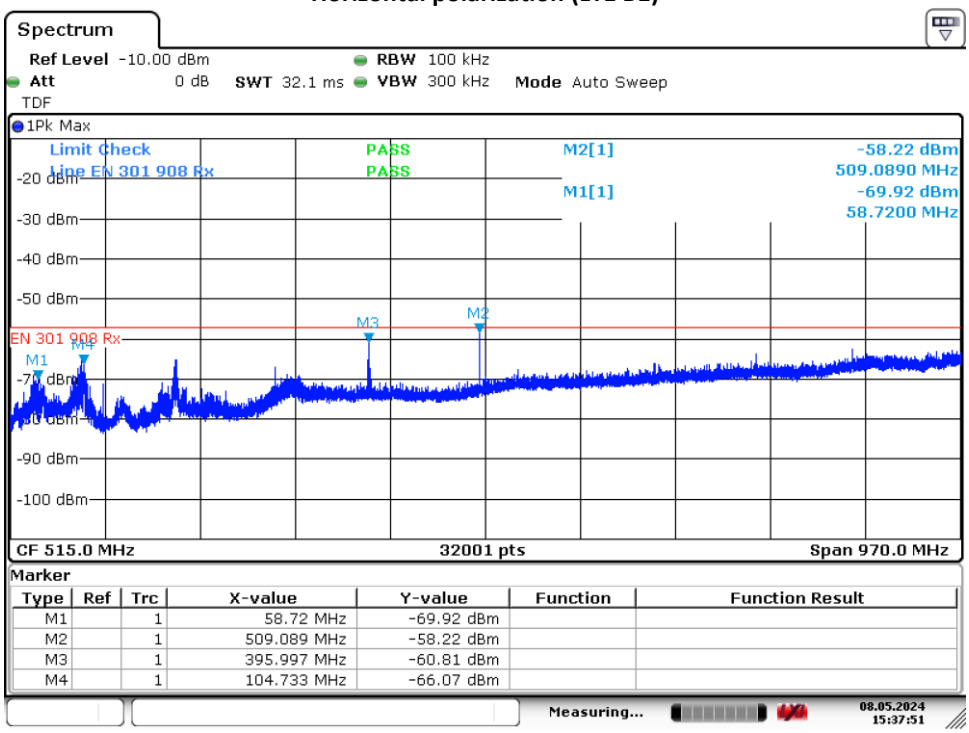
30 – 1000 MHz

Vertical polarization (LTE B1)



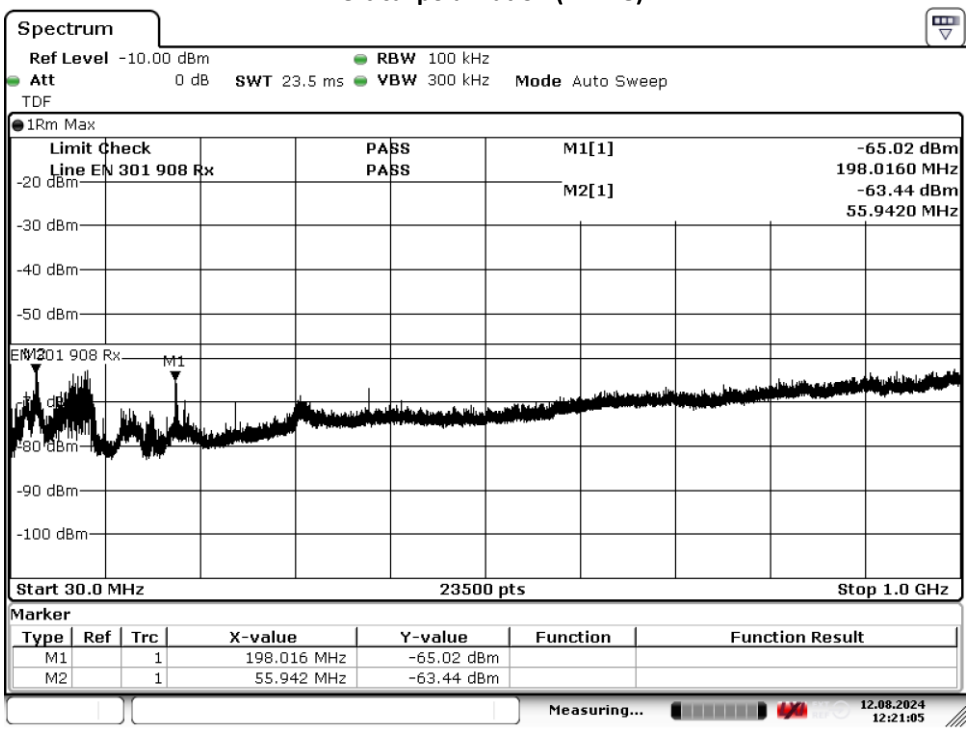
Date: 12.AUG.2024 12:16:31

Horizontal polarization (LTE B1)



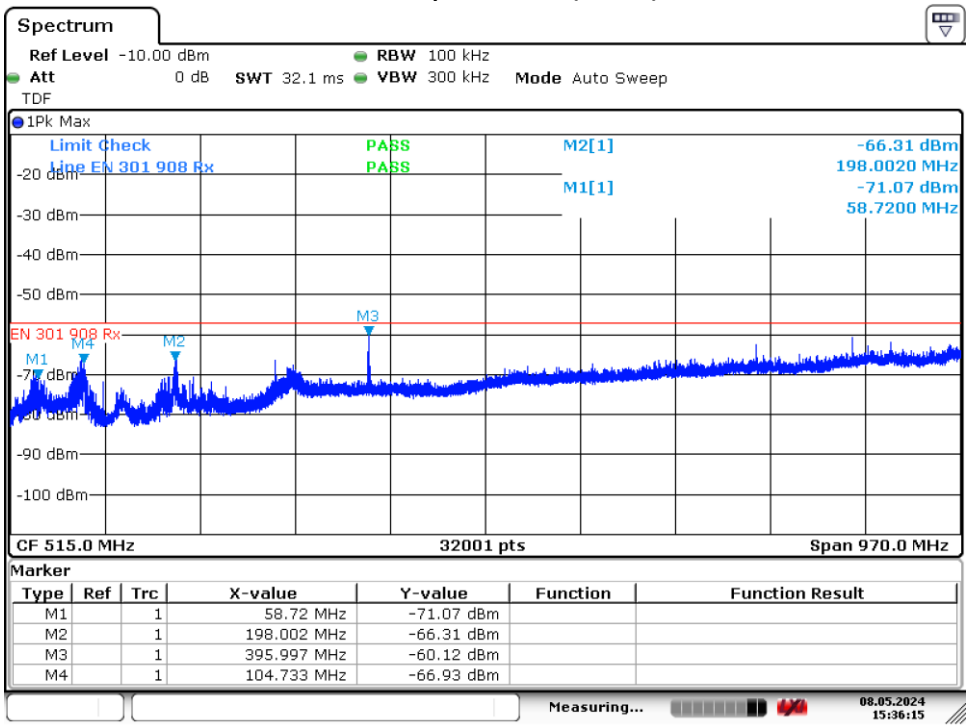
Date: 8.MAY.2024 15:37:51

Vertical polarization (LTE B8)



Date: 12.AUG.2024 12:21:06

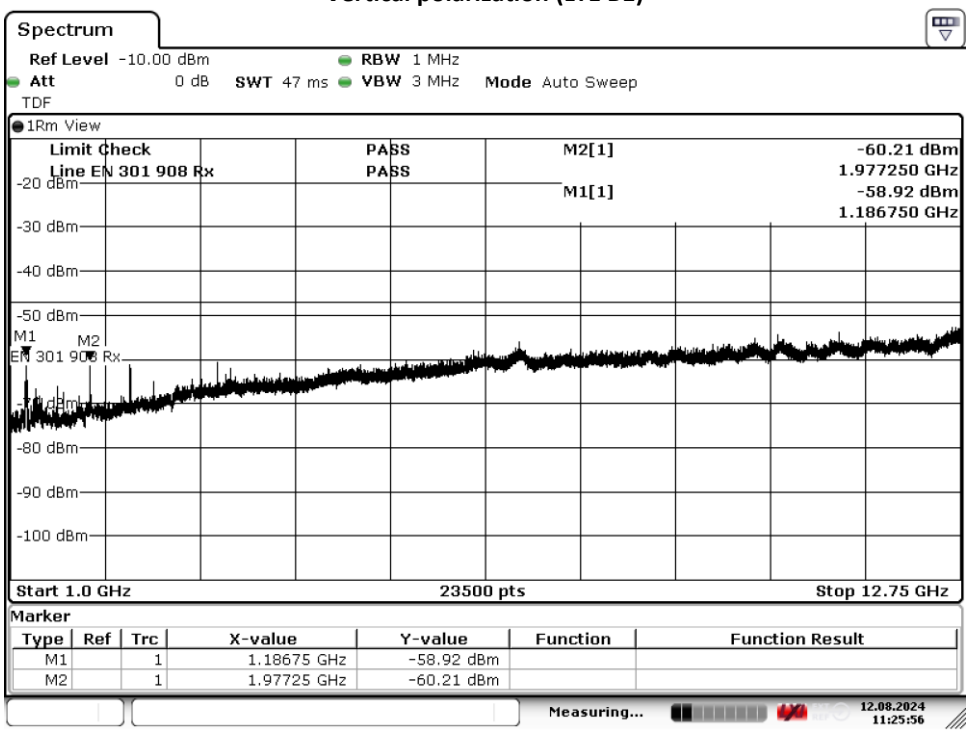
Horizontal polarization (LTE B8)



Date: 8.MAY.2024 15:36:16

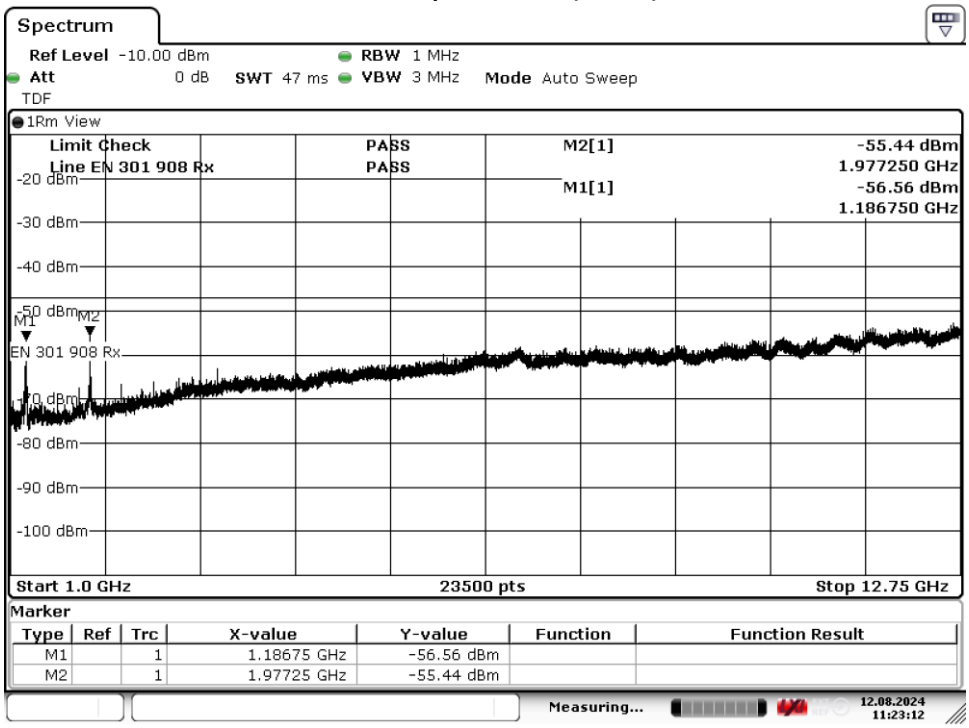
1 – 12.75 GHz

Vertical polarization (LTE B1)



Date: 12.AUG.2024 11:25:56

Horizontal polarization (LTE B1)



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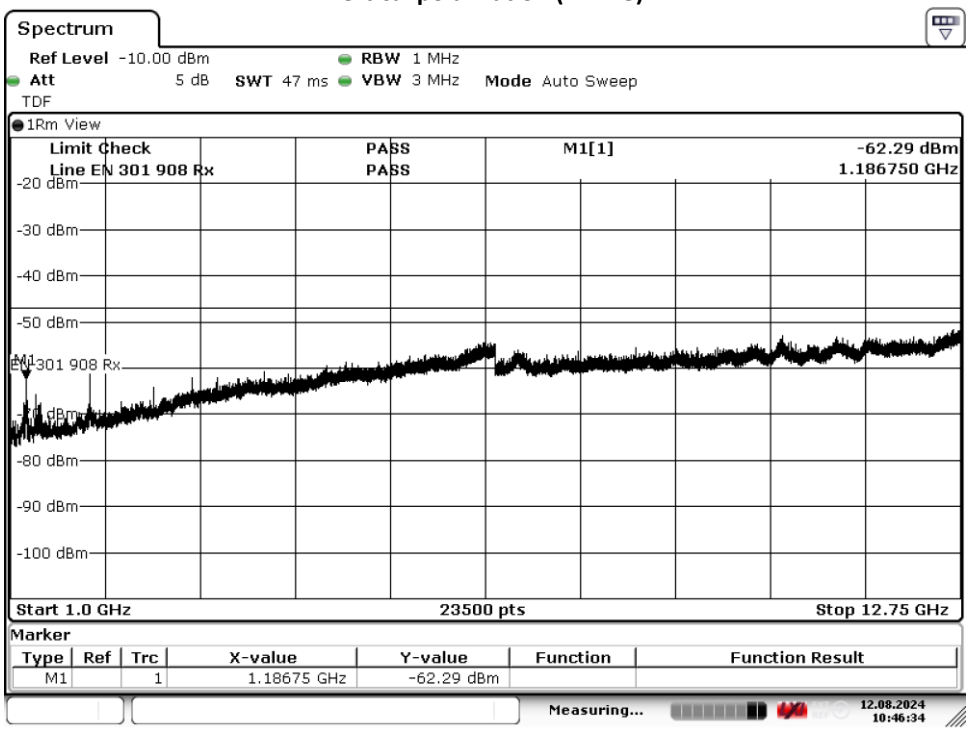
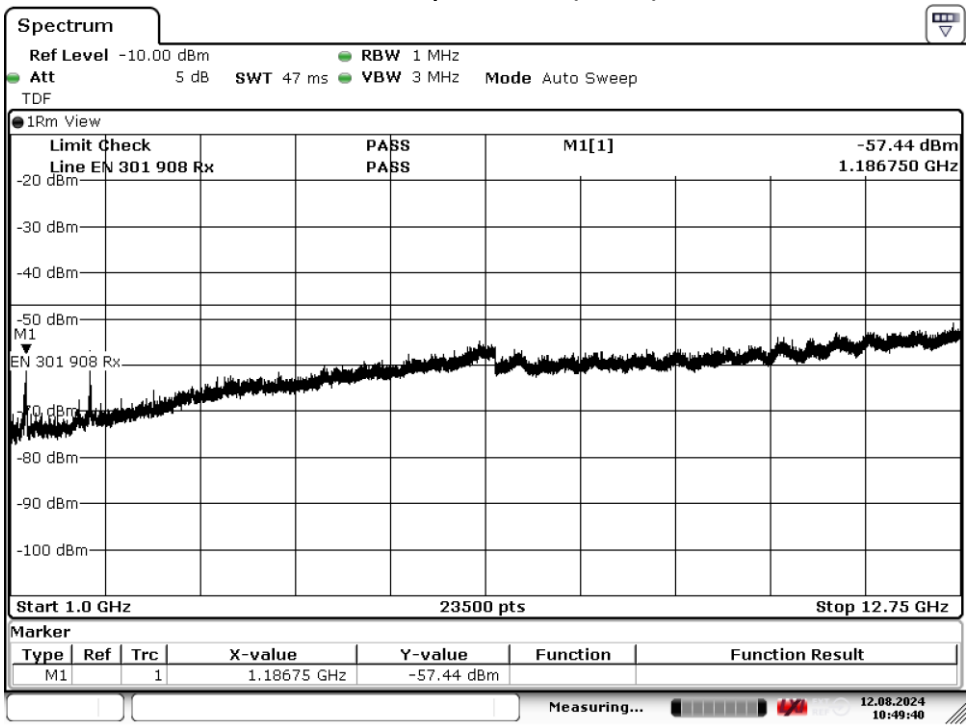
Vertical polarization (LTE B8)



Date: 12.AUG.2024 10:46:35

Horizontal polarization (LTE B8)



Date: 12.AUG.2024 10:49:41

3.3 Radiated RF power

3.3.1 Limit

No limit, results for reporting purposes only

3.3.2 Measurement instruments

The measurement instruments are listed in chapter 2.3 of this report.

3.3.3 Test setup

The test setup is as shown in chapter 2.2 of this report.

3.3.4 Test procedure

IRN 402 – Method 12

3.3.5 Measurement results

Technology	Band	Output power (dBm) EIRP
LTE	1	23.6
LTE	8	--

3.3.6 Uncertainty

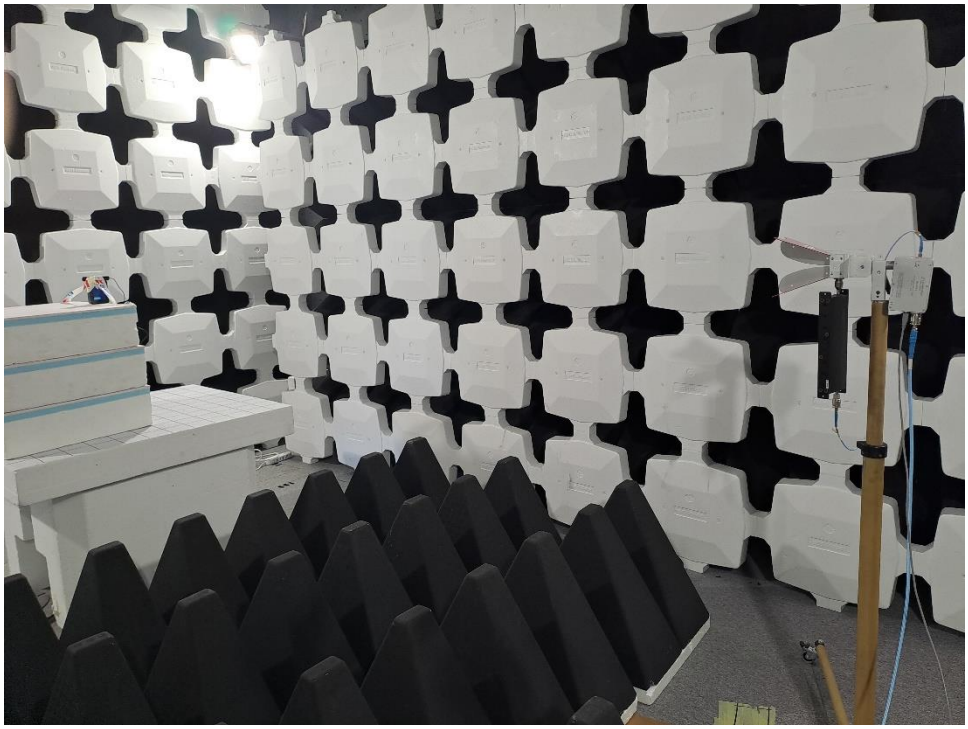
Frequency range	Uncertainty
30 – 1000 MHz	±3.6 dB
1 – 18 GHz	±3.8 dB

4 Photo module

4.1 Test setup photos

Radiated emissions 30-1000 MHz

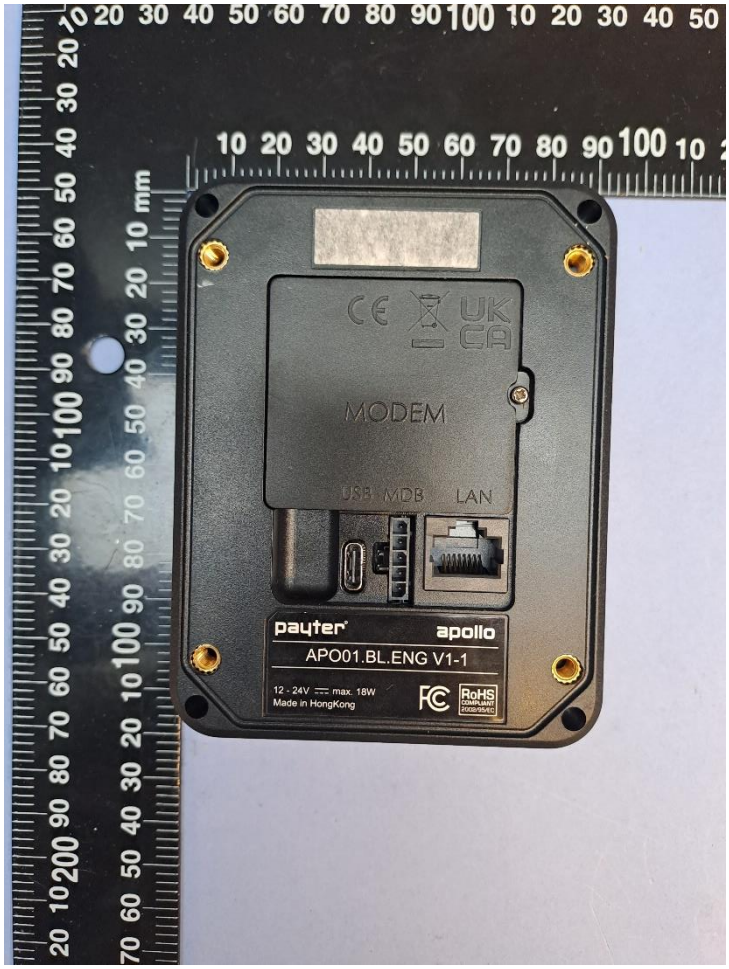
Radiated emissions > 1 GHz



4.2 EUT Photos

Overview

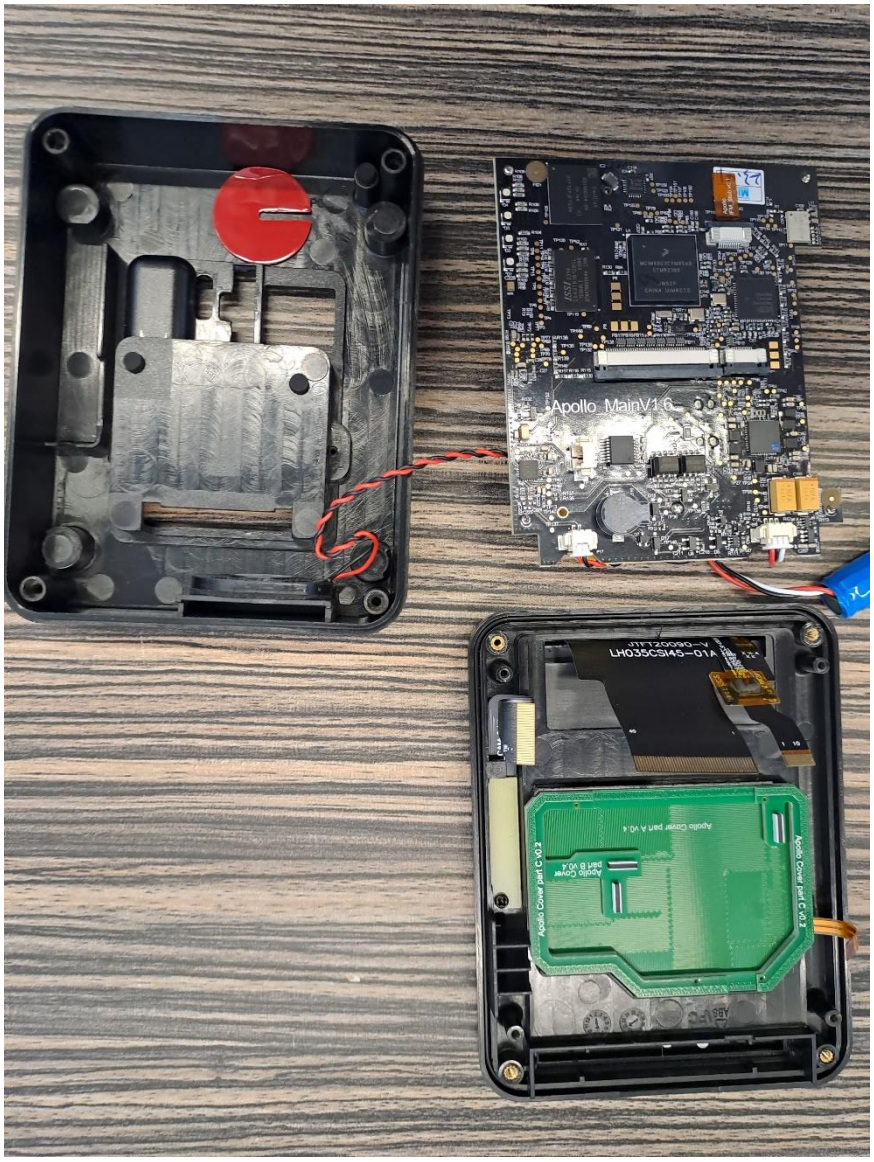
Bottom view


MODEM
USB MDB LAN
payter
apollo
APO01.BL.ENG V1-1
12 - 24V max. 18W
Made in HongKong

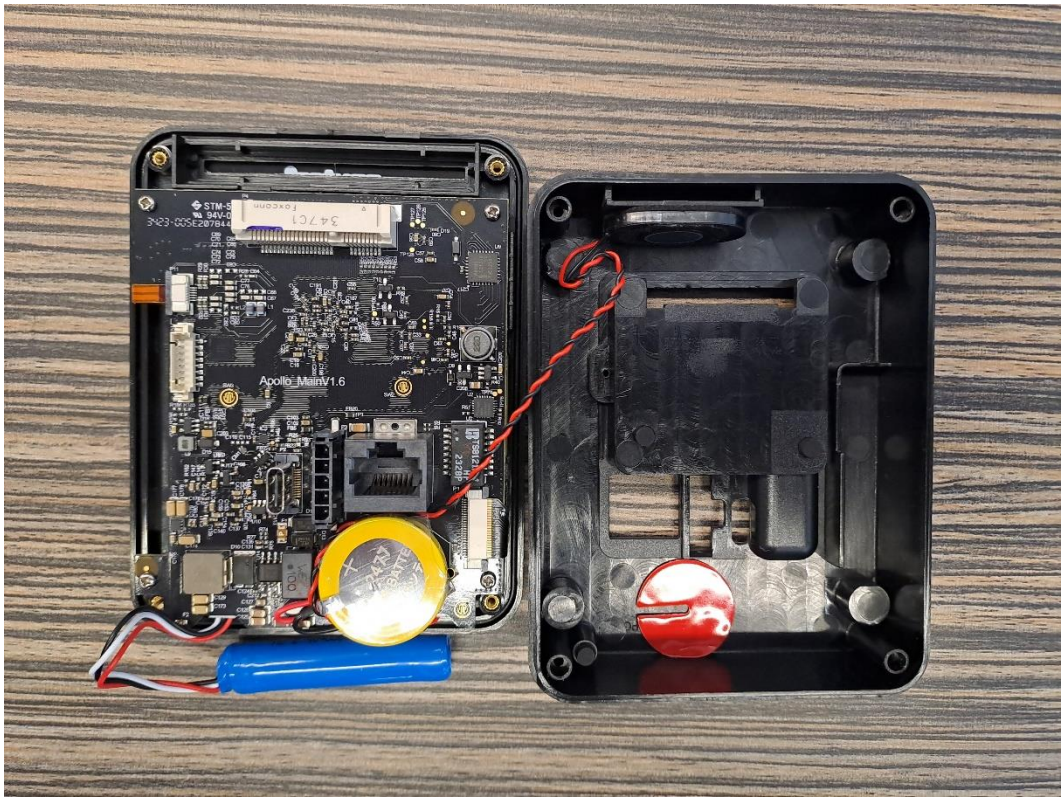
Bottom view with SIMcard cover open

Front view

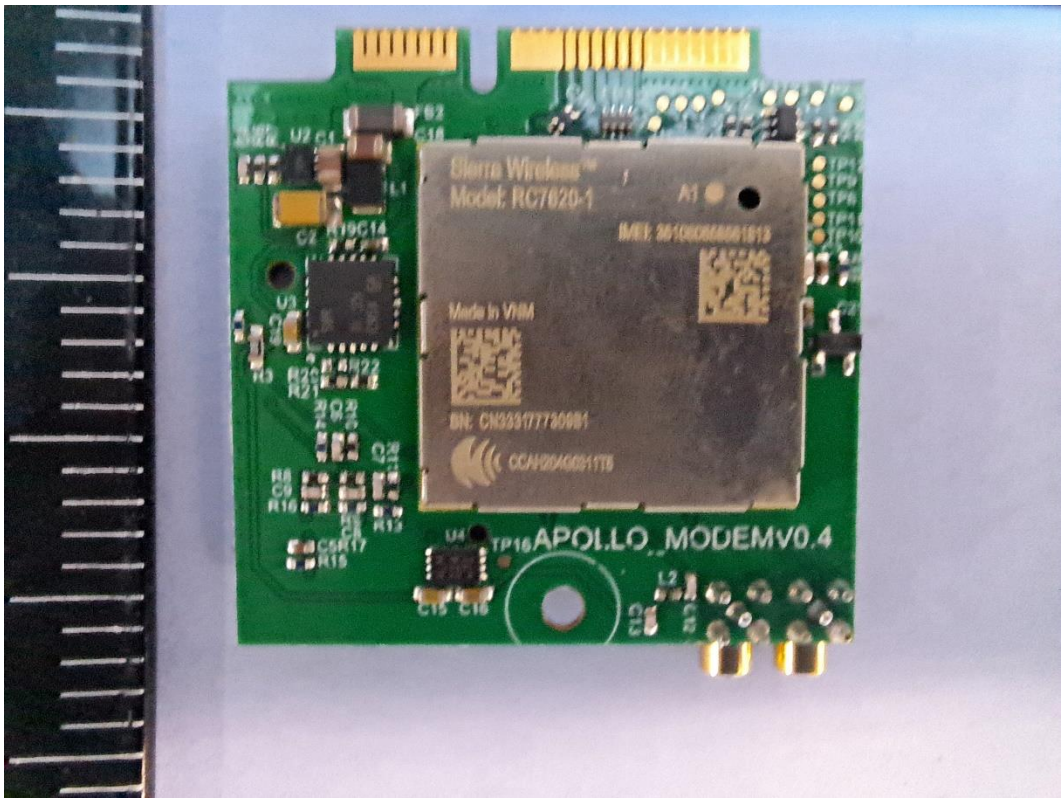
Housing opened with top view on PCBA



Rear view on PCBA



PCB with RF module, top view



PCB with RF module, bottom view