

Antenna Report

Report Number:

F241578E4

Equipment under Test (EUT):

Antenna of USB-Stick for Barryvox 2/S2

Applicant:

Mammut Sports Group AG

Manufacturer:

Mammut Sports Group AG

References

[1] None (According customer requirements)

Tested and
written by



Bernward ROHDE
28.11.2025

Signature

Reviewed and
approved by:



Paul Neufeld
28.11.2025

Signature

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1 Identification

1.1 Applicant

Name:	Mammut Sports Group AG
Address:	Birren 5, 5703 Seon
Country:	Switzerland
Name for contact purposes:	Fabian Moritz
Phone:	+41 62 769 64 66
eMail address:	fabian.moritz@mammut.com
Applicant represented during the test by the following person:	-

1.2 Manufacturer

Name:	Mammut Sports Group AG
Address:	Birren 5, 5703 Seon
Country:	Switzerland
Name for contact purposes:	Fabian Moritz
Phone:	+41 62 769 64 66
eMail address:	fabian.moritz@mammut.com
Manufacturer represented during the test by the following person:	-

1.3 Test Laboratory

The tests were carried out by: **PHOENIX TESTLAB GmbH**
Königswinkel 10
32825 Blomberg
Germany

1.4 AUT (Antenna under test)

Test object: *	USB-Stick
Model name: *	Accessory for Barryvox 2/S2 devices

	AUT number		
	1 (radiated)	2 (conducted)	3
Serial number: *	2446800095	2446800090	-
PCB identifier: *	BLE-Stick	BLE-Stick	-
Hardware version: *	Rev. C01	Rev. C01	-
Software version: *	V1.002 (SVN: 971)	V1.002 (SVN: 971)	-

* Declared by the applicant

2 EUTs were used for all tests.

Note: PHOENIX TESTLAB GmbH does not take samples. The samples used for tests are provided exclusively by the applicant.

1.5 Technical Data of Equipment

General	
Frequency Range *	2402 MHz to 2480 MHz

* Declared by the applicant

Ports / Connectors				
Identification	Connector		Length during test	Shielding (Yes / No)
	EUT	Ancillary		
USB	USB-A	USB-A	-	-

Equipment used for testing	
Computer* ¹	Raspberry Pi 400; Mode No.: RPI-400
AC power adaptor for Raspberry Pi* ¹	Model: KSA-15E-051300HE
Custom USB to UART cable* ¹	Adafruit USB to TTL Serial Cable

*¹ Provided by the applicant

1.6 Dates

Date of receipt of test sample:	23.12.2024
Start of test:	12.03.2024
End of test:	12.03.2024

2 Operational States

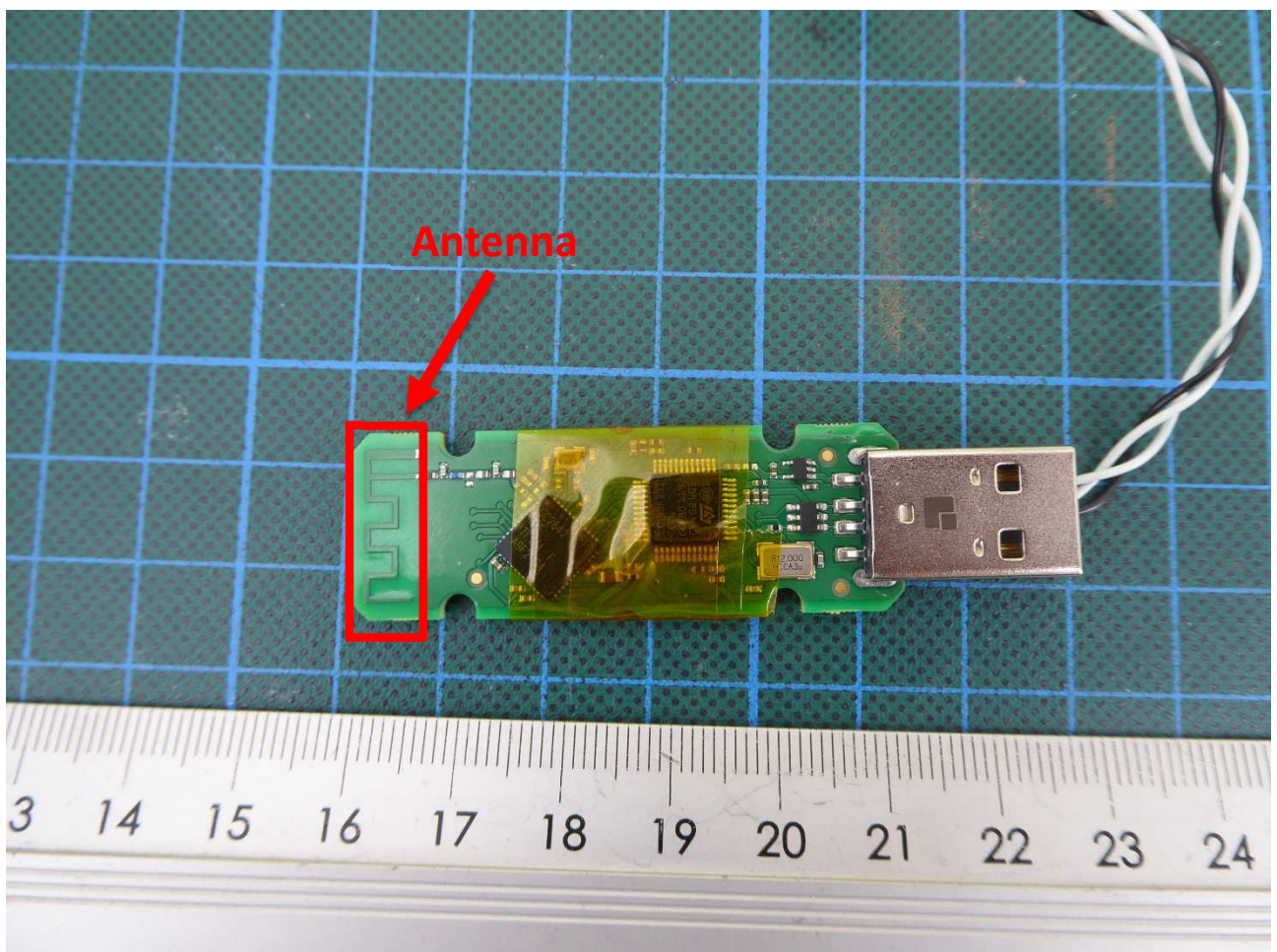
The EUT (EUT1) was set to CW-test mode (no modulation applied) at channel low/mid/high, the radiated power (E.i.r.p) was measured and compared with an EUTs (EUT2) power measured at the antenna port as supplied by the applicant.

3 Additional Information

Conducted measurements were done with a modified sample provided by the applicant.

4 Antenna photographs

4.1 Internal photographs



AUT on radio PCB (casing removed)

5 Antenna Charts

5.1 Results (Max. Gain)

Antenna gain calculation				
	f_{low}	f_{mid}	f_{high}	
Conducted output power [dBm]	2.9	2.8	2.4	
Radiated EIRP [dBm EIRP]	2.2	3.1	4.9	
Antenna Gain [dBi]	-0.7	0.3	2.5	
Position	Position 1	Position 1	Position 1	
Position of maximum gain	Azimuth	132	135	143
	Polarisation	Horizontal	Horizontal	Horizontal

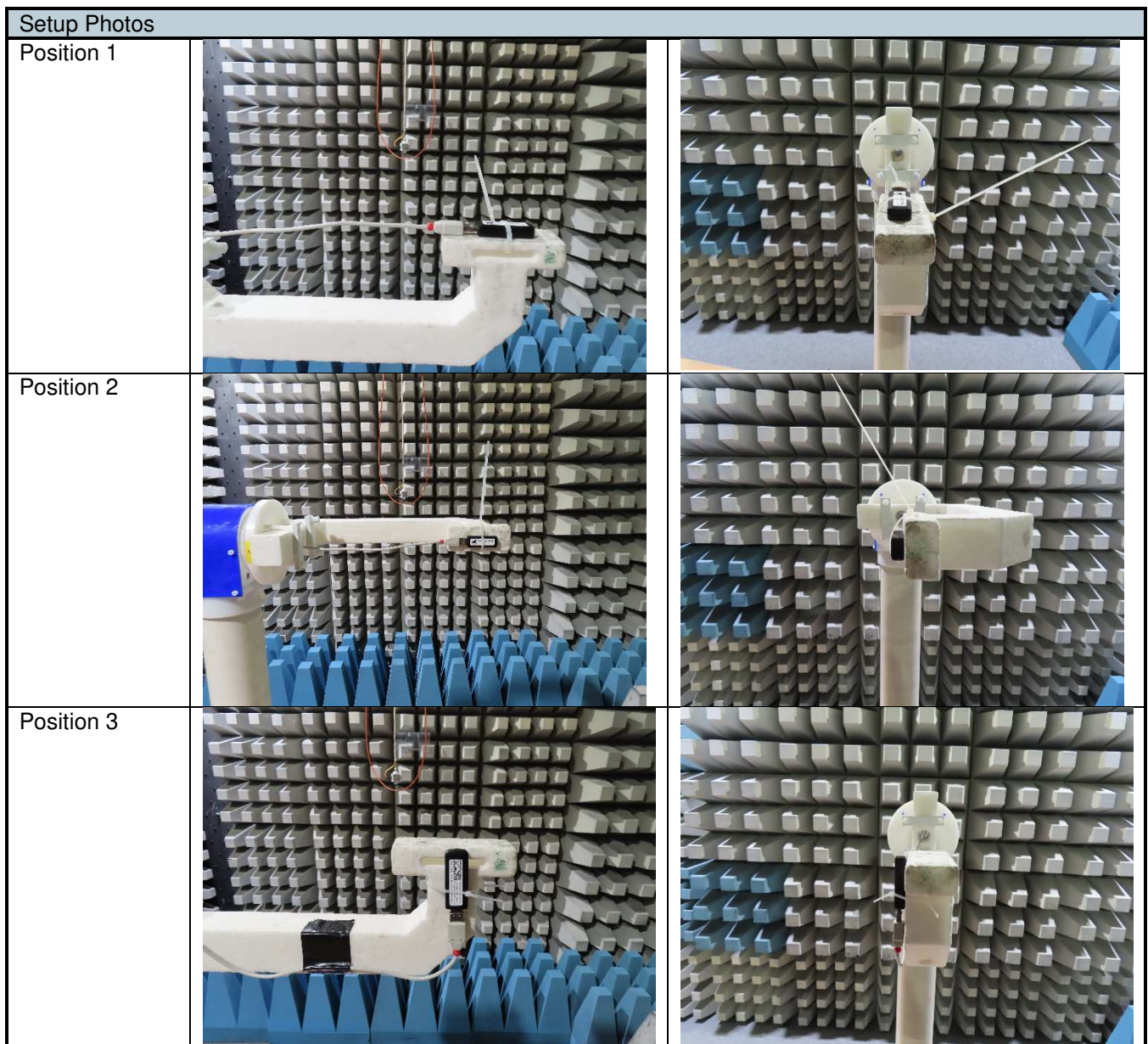
Conducted f_{low}	Meas BW (6dB) 1 MHz Att Input 25 dB 1 AC	Meas Time 50 ms Notch PS	Step TD Scan Automatic Preamp Off	Frequency 2.4020000 GHz
	1 Bargraph			
	Max Peak 3.08 dBm	-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10		
Conducted f_{mid}	Meas BW (6dB) 1 MHz Att Input 25 dB 1 AC	Meas Time 50 ms Notch PS	Step TD Scan Automatic Preamp Off	Frequency 2.4400000 GHz
	1 Bargraph			
	Max Peak 2.89 dBm	-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10		
Conducted f_{high}	Meas BW (6dB) 1 MHz Att Input 25 dB 1 AC	Meas Time 50 ms Notch PS	Step TD Scan Automatic Preamp Off	Frequency 2.4800000 GHz
	1 Bargraph			
	Max Peak 2.52 dBm	-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10		

Test equipment (please refer to chapter 7 for details)

1 - 11

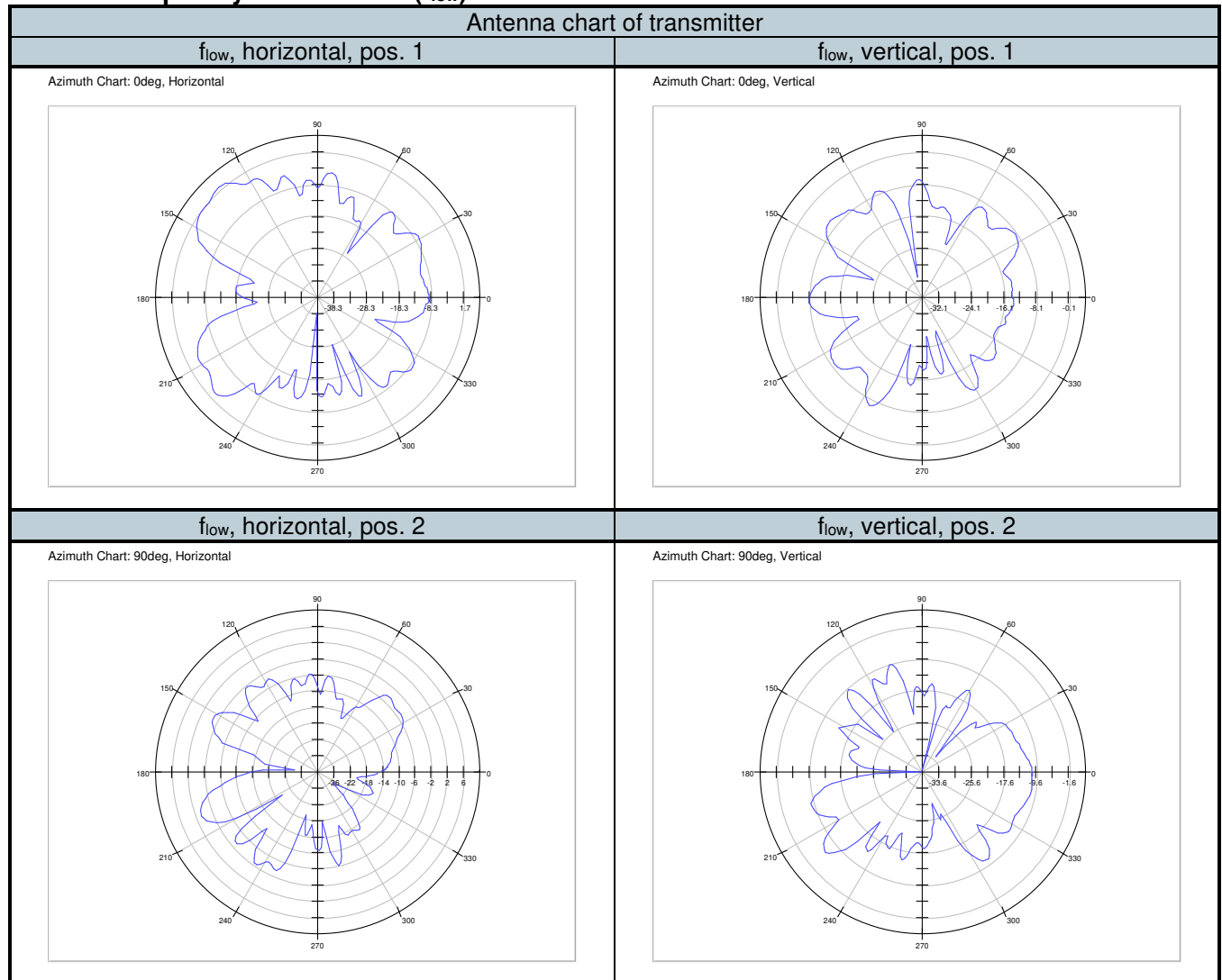
5.2 Antenna Diagrams EUT Position

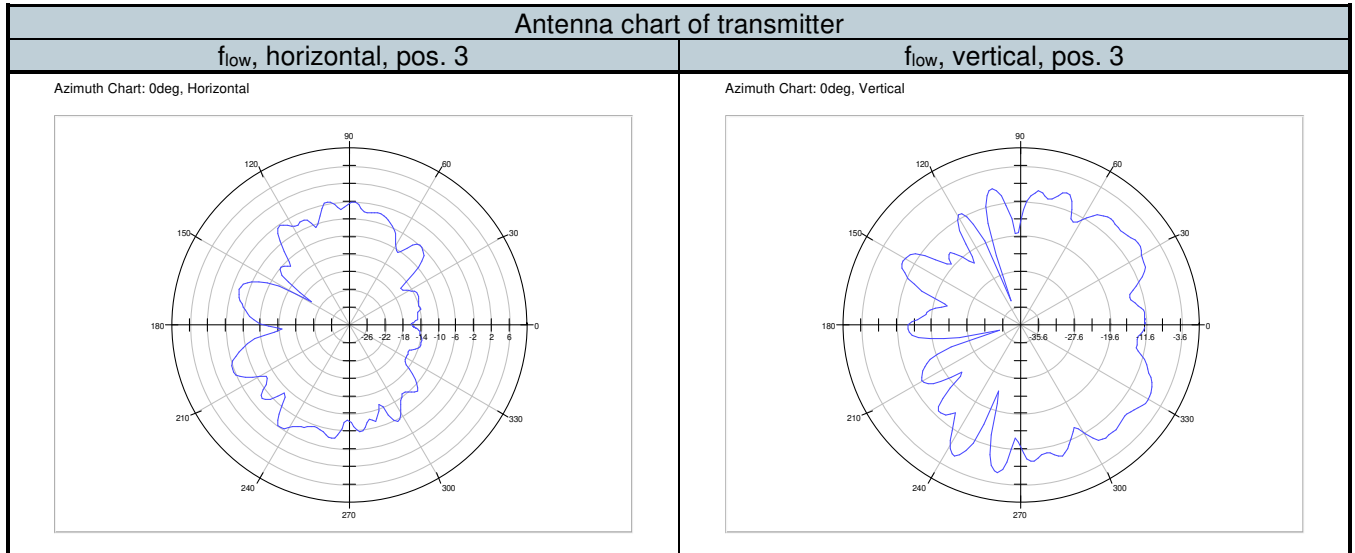
5.2.1 Test Setup Photos



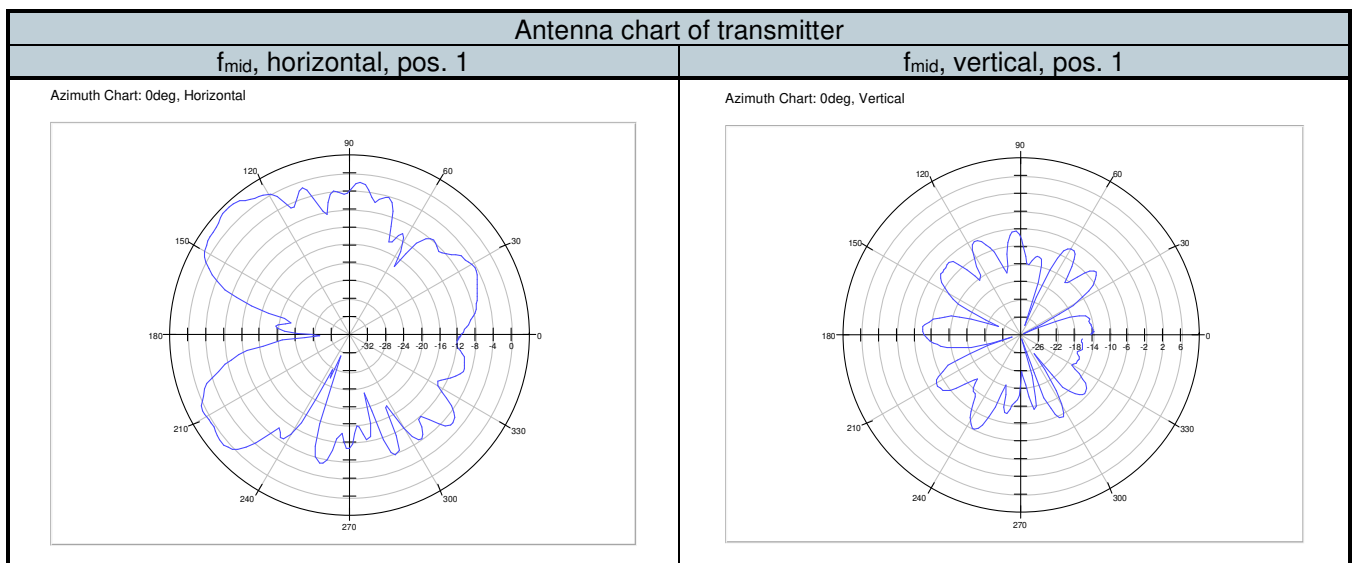
5.2.2 Azimuth charts of transmitter

5.2.2.1 Frequency near bottom (f_{low})





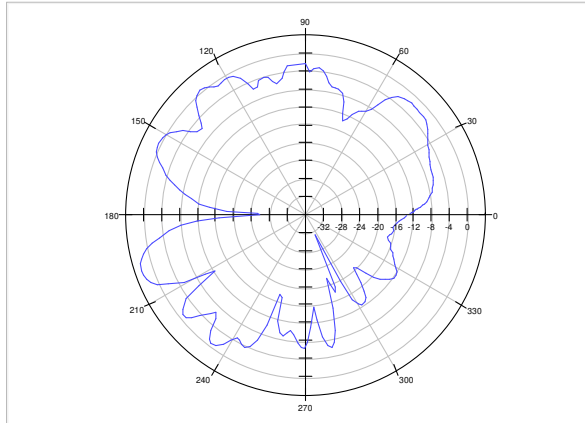
5.2.2.2 Frequency near middle (f_{mid})



Antenna chart of transmitter

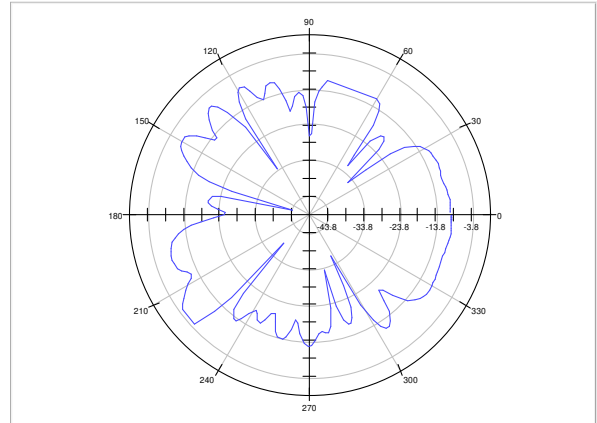
f_{mid} , horizontal, pos. 2

Azimuth Chart: 90deg, Horizontal

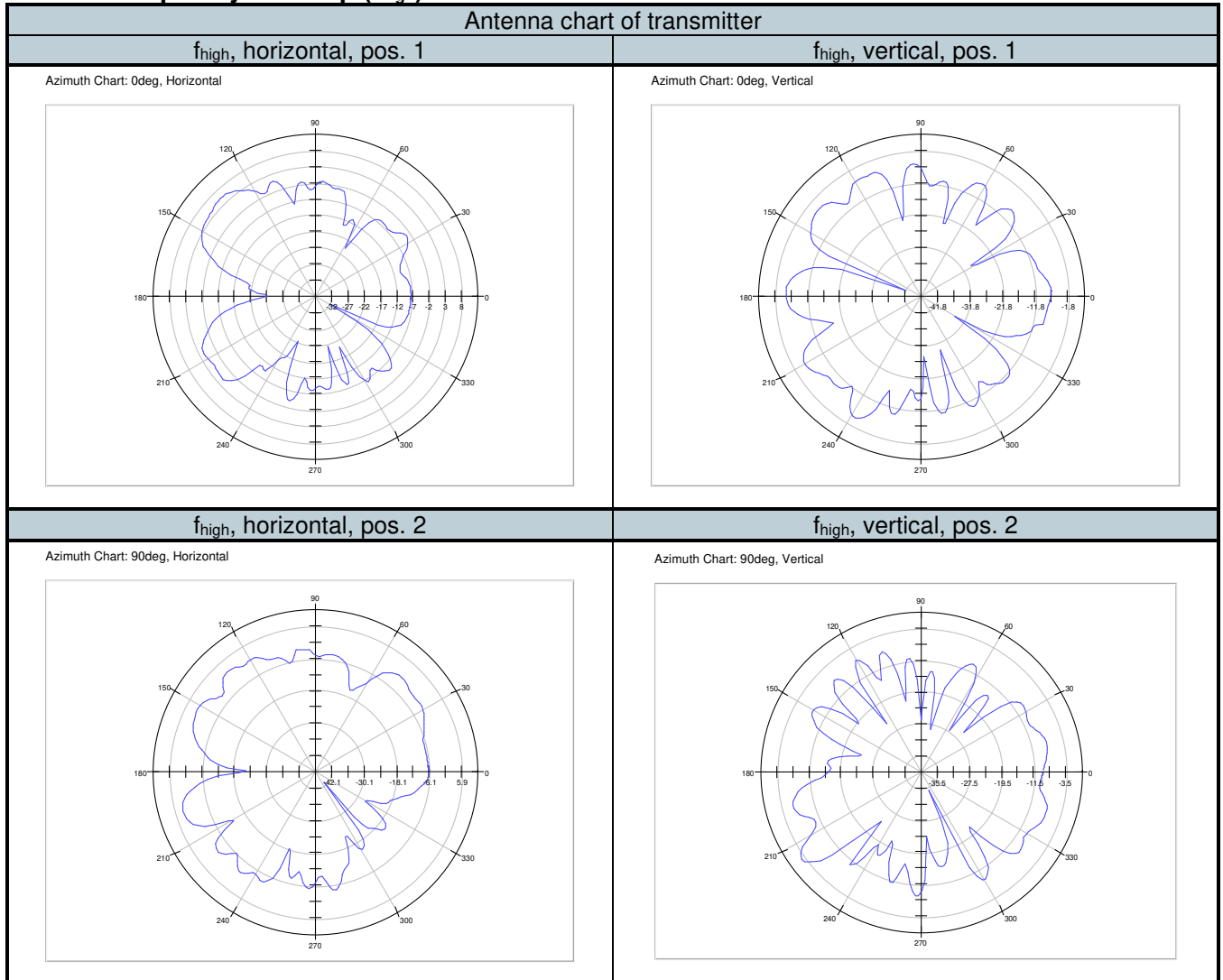


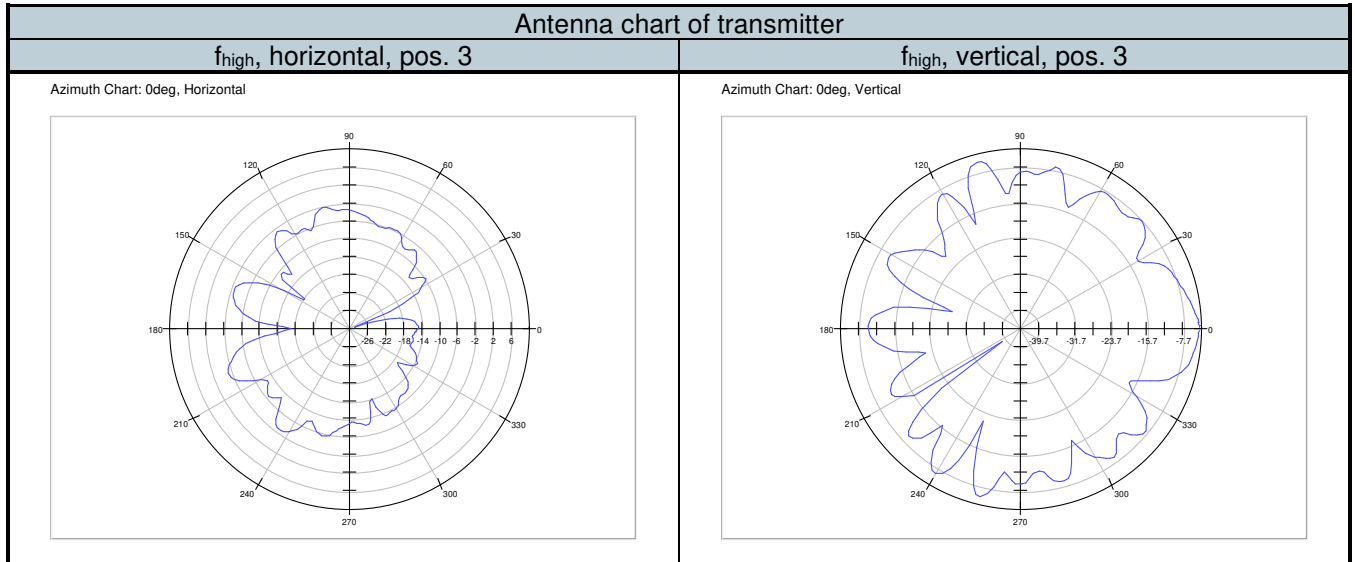
f_{mid} , vertical, pos. 2

Azimuth Chart: 90deg, Vertical



5.2.2.3 Frequency near top (f_{high})





6 Test Equipment used for Tests

No.	Test equipment	Type	Manufacturer	Serial No.	PM. No.	Cal. Date	Cal Due
1	Antenna (Horn)	3115	EMCO Elektronik GmbH	9609-4918	480183	Calibration not necessary	
2	RF cable	SF102/11SK/11S K 500.0	Huber+Suhner	521885/2	483401	Calibration not necessary	
3	Antenna support	AS620P	Deisel	620/375	480325	Calibration not necessary	
4	Fully anechoic chamber M20	B83117-E2439-T232	Albatross Projects	103	480303	Calibration not necessary	
5	Turntable	DS420 HE	Deisel	420/620/00	480315	Calibration not necessary	
6	Multiple Control Unit	MCU	Maturo GmbH	MCU/043/97110 7	480832	Calibration not necessary	
7	Positioners	TDF 1.5- 10Kg	Maturo	15920215	482034	Calibration not necessary	
8	Antenna (Horn)	3115	EMCO Elektronik GmbH	9609-4922	480184	14.11.2022	11.2025
9	CW Generator Microwave	83650L	Agilent	3844A00554	480333	27.02.2024	02.2026
10	Software	EMC32 V10.60.20	Rohde & Schwarz	---	483261	Calibration not necessary	
11	EMI Receiver / Spectrum Analyser	ESW44	Rohde & Schwarz	101635	482467	27.02.2024	02.2026

7 Report History

Report Number	Date	Comment
F241578E4	28.11.2025	Initial Test Report
-	-	-
-	-	-