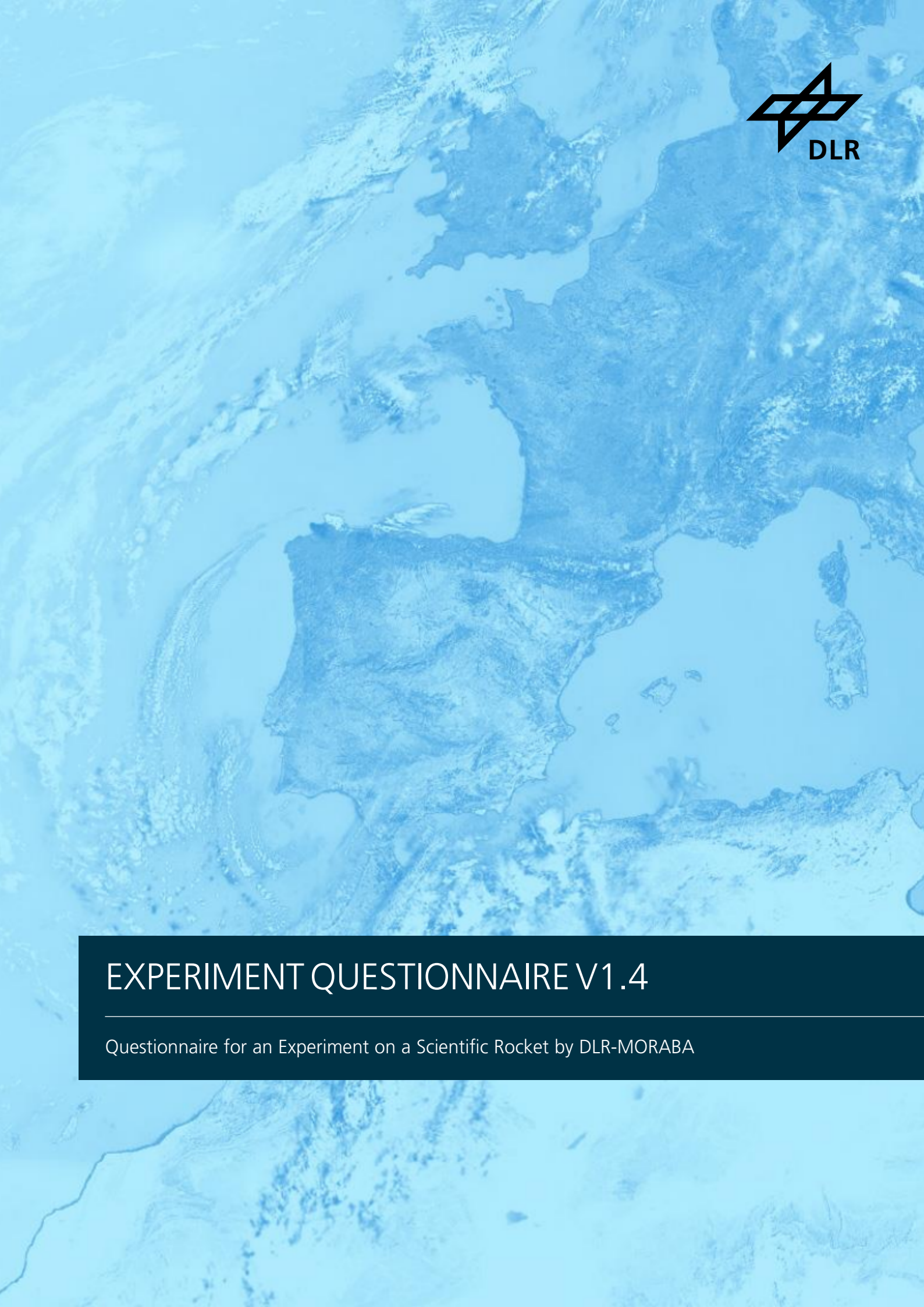

EXPERIMENT QUESTIONNAIRE V1.4

Questionnaire for an Experiment on a Scientific Rocket by DLR-MORABA

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Document Identification:

Title	Experiment Questionnaire V1.4
Subject	Experiment Questionnaire V1.4
Author(s)	DLR-MORABA
Filename	Questionnaire.tex
Last saved on	6th February 2024

Contents

Instructions

- The answers to this form are computer readable. Any changes to the PDF other than filling in the fields will degrade the readability. Please fill in this form electronically, save it and send it back to us. Please do not print this form, not even with the virtual PDF printer method. Please do not convert the PDF to other formats e.g. MS Word. Please do not add extra text fields.

- For us it is more important to have partial information early on compared to having a complete set of information very late. If certain information is not available yet, leave it out, fill in the rest and send it anyway. As soon as more information is available fill in the blanks of the same form and send it again. If there are updates later on to already sent information, please edit this form and also resend it.

- Please do not use thousands separator when typing numbers. Please use points (.) as decimal separators not commas (,). In fields that ask for a number, please only fill in numbers, no letters.

- Please fill in only the **minimum** requirements for your experiment to function. Desired parameters may be addressed in the free text areas.

- If you do not have a requirement for a certain parameter, please leave the corresponding field empty.

- Please let us know

  - if there are technical problems.

  - if it is not clear what to fill in.

  - if you are missing options.

- If "NaN" appears in a text field after you typed in your input it means you entered invalid characters. In most cases this will mean, you entered text where only numbers are to be filled in.

- If you have something you

1 Introduction

Please enter the date of the last edit in the format DD.MM.YYYY and update it whenever you edit the file:

Date: ____.____.____

1.1 Experiment Description

Short Experiment Name (Acronym):

Full Experiment Title:

Organisation:

Mission: **Nr[1]:**

Abstract:

[1] if applicable, applies for recurring programmes

Experiment Objectives:

→ Please also provide a picture or CAD drawing of your experiment.

1.2 Contacts

Nr.	Title	First Name	Last Name	Email	Phone
1					
2					
3					
4					
5					
6					

Nr.	Nationality	Organization	Responsibility	BT	ET	CP
1				☐	☐	☐
2				☐	☐	☐
3				☐	☐	☐
4				☐	☐	☐
5				☐	☐	☐
6				☐	☐	☐

BT: Bench Test participation
ET: Environmental Test participation
CP: Campaign participation

↗ Please also provide portrait pictures of each member participating at the campaign. They are required for the badge at the Launch Site and can be added to the Flight Requirements Document.

1.3 Rental Cars

Book rental car for this team: ☐
Beneficiary (Name):
Special requirements:

1.4 Shipping Address

In order to send you test equipment or parts of your equipment after campaign we require the shipping address of your organization.

2 Electrical

2.1 Requirements

2.1.1 Power

In this section please state power requirements towards the service module. If you do not require power or charging from the Service Module e.g. because you use your own batteries or you have a separate umbillical please leave the corresponding fields empty:

Power Supply Required:	☐	
Switch Times [s]:	Power On: T-	s Power Off: T+ s
Inrush Current [A]:		A
Average Power Consumption [W]:		W
Peak Power Consumption [W]:		W
Total Energy Consumption [Wh]:		Wh
Extra Batteries:	☐	
Charging Required:	☐	
Charging Current [A]:		A
Inrush Current [A]:		A
How is Dead-Payload[1] during Radio Silence[2] guaranteed?[3]		

2.1.2 Umbilical

Do you use at least one separate umbilical directly connected to your experiment module?
Separate Umbillical(s): ☐
If yes, please state the position:

[1] Dead-Payload means no switching operation in Payload or GSE. Best case scenario: no device has power
[2] Radio Silence is alway required when humans access the launcher with loaded motors
[3] Alternatively attach Waver

Position[4] [°]		Width [°]		Content
	°		°	
	°		°	
	°		°	
	°		°	
	°		°	
	°		°	

[4] Angular position of the center of the umbilical according to right hand rule with thumb pointing towards nosecone

2.1.3 Radio Frequency

Do you use a separate TM transmitter system: ☐
If yes, please specify:

Carrier Frequency [MHz]	Modulation	Deviation [V]	Bitrate [MBit/s]	Encoding	Power [W]	Bandwidth [MHz]

Do you require separate transmitters from MORABA: ☐
Do you require a separate antenna system from MORABA: ☐
Do you require direct access to GPS antennas: ☐

2.1.4 Data

On-Board

Do you use the RS422 Serial Interface for Telemetry and Telecommand: ☐ If so please specify:

	On Ground	In Flight	Interface Speed [kBit/s]	Block Size [Bytes]	Block Frequency [Hz]	Average Datarate [Bytes/s]	Peak Datarate [Bytes/s]
Downlink	☐	☐					
Uplink	☐	☐					

Do you use the Onboard Ethernet Network for Telemetry and Telecommand: ☐ If so please specify:

	On Ground	In Flight	Block Size [Bytes]	Block Frequency [Hz]	Average Datarate [Bytes/s]	Peak Datarate [Bytes/s]
Downlink	☐	☐				
Uplink	☐	☐				

On-Ground

Direct isolated LAN connection to Launcher Equipment required: ☐

Groundstation Computers:

Name	MAC Address
	: : : : :
	: : : : :
	: : : : :
	: : : : :
	: : : : :

2.1.5 Signals

Here you can choose when the optocoupler signals should be given. You can either choose exact timestamps like "T+56s" or "T-332s". But be aware that events with negative timestamps (before Lift-Off) are given manually and will never be exact. You can also choose timestamps relative to other events like "at µG detection" or "1m after nominal touchdown". If you choose relative timestamps and the event it relates to is dynamically determined in flight (like µG detection) you can also set a timeout which means switch the signal at this time no matter what.

Signal	Required	On	On Timeout	Off	Off Timeout
SOE	☐				
SODS	☐				
LO	☐	at Umbillical release		at power off	

2.1.6 Pyro

Pyro Events Required: ☐

What is triggered by the pyro event?

2.1.7 Time Synchronisation

Do you require time synchronisation onboard with the Service Module?

Time Synchronisation Required: ☐

2.1.8 Flight Event Information

Flight event information during flight required: ☐
What:

2.1.9 Analog TV Channel

Analog TV Channel Required ☐
How many channels:
Time:

2.1.10 Other

2.2 Electromagnetic Compatibility

2.2.1 Emitting

Do you use USB? ☐
Do you use SATA? ☐
Do you use video cameras? ☐

Please list devices in your experiment that emit or might emit high frequency electromagnetic waves in considerable power and specify the estimated Frequency. If you are uncertain if the device needs to be considered or what frequency is emitted, enter the device and check the box "Require Measurement". :

Device	Require Measurement	∼Frequency [MHz]
	☐	
	☐	
	☐	
	☐	
	☐	

2.2.2 Sensitive

Do you use a GPS receiver? ☐
Do you use any other kind of receiver? ☐

Do you use any kind of electromagnetic sensitive device like sensors or measurement instrument. Pease also specify the sensitive area.

Device	∼Frequency [MHz]

2.3 Remarks

3 Mechanical

3.1 Experiment Properties

		Uncertainty:	Determination Method[1]:
Lift-Off mass [kg]:			
Reentry mass [kg]:			
Recovery mass [kg]:			
Length [mm]:			
Diameter [mm]:			
Center of Gravity[2] [mm]:			
Position of Cable Duct [°]:			
Position of SM Interface Connector[3] [mm]:			
Preferred Position:			
Creates Vibrations:	☐		
Changes mass or mass distribution:	☐		
Ejections:	☐		
Moving Parts:	☐		
Gas Release:	☐		
Lasers:	☐ Class[4]:		
Explosives:	☐		
Hatch(es):	☐		

Hatches:

Nr.	Position[5] [°]	Clear Width [°]	Access at Launcher
1			☐
2			☐
3			☐

[1] Examples: weighing, CAD estimation, calculation
[2] as distance from lower flange
[3] as distance from lower flange
[4] highest class if multiple lasers
[5] angular position of the center of the hatch according to right hand rule with thumb pointing towards nosecone

3.2 Requirements

It is possible to transport in a temperature controlled environment but it is to be avoided if possible. Be aware that the temperature in northern Sweden can be down to -45°C. Storage usually means completely integrated but switched off payload in the launch tower. Operational usually means during countdown fully integrated and switched on.

Transport environment temperatures:	min:		°C	max:	°C
Storage environment temperatures:	min:		°C	max:	°C
Operational environment temperatures:	min:		°C	max:	°C

3.3 Remarks

4 Flight Dynamics

4.1 Requirements

min μG Time [s]:		s
max μG Time [s]:		s
min Apogee Altitude [km]:		km
max Apogee Altitude [km]:		km

Attitude:

Other:

4.2 Remarks

5 Range Infrastructure

5.1 Launcher Equipment

Equipment	Size	Mount On Launcher Beam[1]
		☐
		☐
		☐
		☐
		☐

Number of required switchable power Sockets:

Rated current for fuse of each socket: A

5.2 Requirements

Laboratory[2]:

Consumables[3]:

[1] This might not be possible depending on the used launcher
[2] e.g. Bio-Lab or Dark Room
[3] e.g. Nitrogen or Distilled Water

Other Requirements[4]:

5.3 Remarks

[4] e.g. Incubator or Fume Hood

6 Operational

6.1 Requirements

6.1.1 Special Test Configurations in Bench Test or Flight Sim

6.1.2 Countdown

Operating Temperature[1]:	min: ° max: °
Hold and Restart Restrictions:	
Launch Window Restrictions:	

Remove Before Flight Parts:

Early Access

Early Access Required: ☐ Duration [Minutes] Min

[1] temperature of environmental atmosphere at close vicinity to outer module ring during countdown

Procedure:

Late Access

Late Access Required: ☐ Duration [Min] ____ Min

Procedure:

Other Requirements:

6.2 Remarks

6.3 Timetable

Time [T +/− sec]			Event
T		s	
T		s	
T		s	
T		s	
T		s	
T		s	
T		s	
T		s	
T		s	
T		s	

7 Recovery

7.1 Requirements

Max Recovery Time [h]:
Number of items to be recovered:
Recovery procedure Required: ☐ Please attach corresponding document.

Description of items to be recovered:

Other:

7.2 Remarks

8 Post Flight Analysis

8.1 Required Information

Here you can specify information you require for post-flight analysis (e.g. GPS position measurements, data from gyroscope etc.).

8.2 Offered Information

Here you can specify information you measured during flight and are willing to share.

9 Hazards

9.1 Electrical

9.1.1 High Voltage

High Voltage ☐ Voltage [V]: _____ V

9.1.2 Laser

9.1.3 Other

9.2 Explosives

Do you use explosives: ☐
If yes:

1. Please attach the Material Safety Data Sheets.
   Attached ☐
   Document Number: ☐

2. Are there electro-explosive devices? ☐
   If yes:

   a) Please provide schematic and wiring diagrams.
      Attached: ☐
      Document Number: ☐

   b) Do all electro-explosive devices meet a 1 amp/1 watt NO FIRE requirement?
      ☐
      If no, provide a waiver request.

   c) Is it 100% qualified with a 500 VDC megohmmeter test for 5 seconds from bridge wire to case, and bridge wire to bridge wire if dual bridge wires are used?
      ☐
      If no, provide a waiver request.

d) Is the electrical wiring and power source completely independent and isolated from all other systems? (They must not share common cables, terminals, power sources, tie points, or connectors with any other system)

☐

If no, provide a waiver request.

e) Have all circuits been designed with a minimum of two independent safety devices?

☐

If no, provide a waiver request.

Remarks:

9.3 Flammables

Do you use flammables: ☐

If yes, for each flammable please attach the Material Safety Data Sheet (MSDS) and fill one line:

Flammable	MSDS Doc#	Amount	Purpose	flying
				☐
				☐
				☐
				☐
				☐

9.4 Recovery

9.5 Range

9.6 Chemicals

9.6.1 Batteries

9.6.2 Other

9.7 Biological

9.8 Mechanical

9.8.1 Pressure Vessel

9.8.2 other

10 Additional Comments