

## Communication concept

Ziel	<b>Optimal communication between different actors, Annex 5 Usage contract FKVV</b>
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The testing/presentation of vehicle technology in border areas in difficult terrain is associated with objective dangers. The test modules and sections of the FKVV extend over about 550 ha and embedded in the Test Site for Technical Safety (TTS) of the Federal Institute for Materials Research and Testing (BAM). BAM's tasks also include the testing of explosive substances and gases in free tests, so that explosions combined with loud bangs, fire and smoke can be part of everyday life at the TTS. In addition, large parts of the FKVV are located directly in the effective area of BAM's blasting site and BAM's fire testing site, i.e. during tests with possible fragments and parts of debris, the necessary protection and safety radii must be observed. Equipment/vehicles must be removed from the endangered area. Persons must seek protection in fixed buildings or also stay outside the protection and safety radius.

The FKVV communication concept (= Annex 5 contract of use) is intended to define internal communication within the FKVV on occupational health and safety/organization and the communicative interface for information relevant to the FKVV from BAM's day-to-day testing.

The area of the FKVV is not or very badly supplied with public mobile radio. Also simultaneous announcements to a whole group of users would not be possible with a mobile phone. As a result, private mobile radio is one secure option for internal communication for the FKVV. The structure of private mobile radio is as follows:

### 1. Participation in the BAM private mobile radio service

BAM operates a powerful relay radio station in the VHF range (2 m band). The FKVV staff **listens to the "BAM broadcast" on channel 1** in hearing watch with at least one radio for the duration of their presence on the TTS. If **active feedback to the BAM radio** network is required, then **use channel 7** with call ID "FKVV". The staff of the FKVV in turn informs employees and customers with relevant content from the BAM announcements for the FKVV.

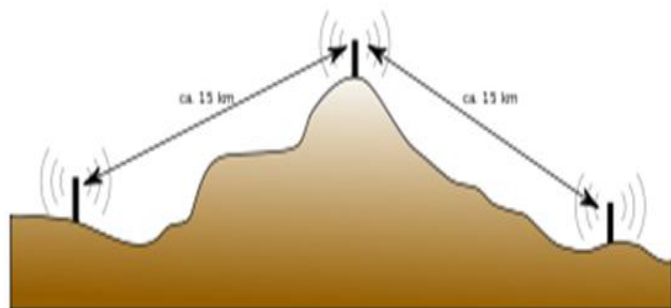
The simple hearing watch is stopped when BAM carries out tests with a blocking circuit on the blasting site/the fire test sites. In these cases, active cooperation in the BAM radio network via channel 7 is required, e.g. because feedback on the safe accommodation of FKVV personnel and/or customers is expected. The necessary short-term evacuation from the restricted area is usually announced 20 minutes before the start of the test by the BAM test manager. During the remaining time, safety is established in the area of the FKVV and enforcement is reported back to >test manager at the blasting site< or >test manager at the fire test site<. Once the test has been completed and the restricted area removed, this is announced again by radio announcement and work in the FKVV area can be continued. Another case of active involvement in BAM radio traffic is, for example, coping with the consequences of a life-threatening event, a serious accident, forest fire announced by radio with >Mayday Mayday Mayday<.

**Note:** In the event of a life-threatening event or serious accident in the area of the FKVV, the team of specially trained BAM first aiders and emergency coordinators should be called upon on weekdays. The **radio emergency** call is made via **channel 7** and can be activated directly via the **orange-red emergency call button on hand-held radios**. The Reformation Day is a holiday in the state of Brandenburg, the BAM TTS is closed on this day, first aiders and emergency coordination of the BAM are not available. Outside the BAM Test Site Technical Safety (e.g. on the "Schlechtwegstrecke Gottow") this special **BAM service is not available**.

## 2. FKVV internal private radio network

The local communication of the FKVV takes place via two relay radio stations (VHF/UHF) on the tower of the climbing lanes.

Graphic:  
<https://de.wikipedia.org/wiki/Relay-station>



The locally available private mobile radio service takes place on frequencies specifically provided by the Federal Network Agency (BNetzA) at 160 MHz (VHF) and 460 MHz (UHF). The dune landscape and the large area of the facilities do not allow safe direct communication from radio to radio due to physical reasons. The use of CB radio (27 MHz) is not a good alternative due to the comparatively large antennas, the ease with which conversations can be intercepted and the frequent interference from external radio stations. An external antenna would also have to be installed for radio communication with persons inside the FKVV building.

## **Customers of the FKVV have the choice for internal communication:**

1. The customers are constantly on the road as a team in the field, have visual and call contact each other and carry a radio to connect with the FKVV stuff/office. No additional radio communication is required for internal team communication.
2. The customer team splits up into various vehicles/locations, has no permanent visual and call contact and requires internal company radio. The following scenarios are possible:
  1. The customer brings his own suitable (relay) radio technology with him.
  2. The customer borrows suitable (relay) radio technology from an external service provider (e.g. supplier of movie and television productions)
  3. The customer borrows mobile communications technology and accessories from the local service provider. The office of the FKVV is only a contact broker, the contract is negotiated directly between the FKVV customer and the local service provider. The will be integrated into the FKVV offer/invoice.

**Note to 2.1. and 2.2.:** On the BAM Test Site for Technical Safety (TTS) **five** so-called "**hiking frequencies**" of the BNetzA are used. These frequencies are often allocated in Germany. In order to **avoid mutual radio interference**, the frequencies intended by the customer must be checked for usability in advance by the local service provider (e-mail: kurban@fkvv.de).

The stationary radio technology for FKVV test facility has a modular design and has been optimized in particular for the radio covering of the dune valleys in the Horstwalde area. The local UHF relay radio station allows optimum accessibility of handheld radios in vehicles without an external antenna, with the exception of vehicles with special protection.

For physical reasons, only the FKVV test facility north of Horstwalde is supplied with UHF radio technology. The remote "Schlechtwegstrecke Gottow" and the former military airport Sperenberg can only be supplied by a second VHF relay station. To this end, the planned use and provision of frequencies and technology must be coordinated with the respective radio service provider in good time before the start of factory trials or customer events.

### 3. Rules on radio communication

The basic rules of radio discipline form the basis for good radiotelephony:

- No user leaves the control centre (base) without having made a sample speech.
- The start of the call is established with >Target person< from >Sender< and acknowledged with >Come<. Example: >Max< come from >Moritz<! If Max has heard, then >here Max - come<.
- At the end of the dialog the channel is released for other calls with >End<.
- Do not place a call in an ongoing conversation, concentrate the contents of the conversation on key points, remain polite, avoid filler words.
- If the target person is prevented at the moment, >wait< is set down. This signals to the caller that he or she has been heard but a dialog follows at a later time. Third parties keep the channel free until the end of the requested call.
- Calls in life-threatening conditions/accidents are initiated with "Mayday Mayday Mayday". The follow-up communication for the regulation of the situation has priority, other radio traffic has to hold radio silence.
- The radio communication is not encrypted. With suitable technology, the radio traffic of BAM and FKVV could be intercepted. For this reason, very confidential contents should not be transmitted via private radio if possible. In accordance with telecommunications secrecy Sections 88-90 TKG, content from BAM's and FKVV's radio communications must always be kept confidential from third parties.

Copies of the BNetzA's frequency allocation certificates must be presented at police and BNetzA inspections. For local radio technology, these documents can be found in the "Radio Folder" in building 501.

#### **4. Determination of position in the field**

For internal communication of the location in radio communication, the use of landmarks is useful. Thus, the location of the respective customer vehicle can be transmitted to the supervisory personnel FKVV without any doubt. As landmarks can be used:

- The indication from the test module located in sight (all entered in red letters), see overview map Appendix 1.
- The indication of the numbers on the colored directional signs in the field. The directional signs come in white (Appendix 2), green (Appendix 3), and red (Appendix 4).

**Example: I have a puncture and I am stuck at direction sign "white number 14", need help on the spot!**

#### **5. Labeling of all vehicles**

The company premises are driven on by BAM service vehicles, vehicles of service providers and suppliers as well as by vehicles of the FKVV and its customers. For clear identification, the FKVV uses signs that are placed/stuck behind the windshield. The vehicle labels are issued by the FKVV office.