Jammertest 2025
Transmission Plan

Jammertest Consortium

2025-05-06
07:48:54

Contents

Monday

Location 1 Bleik
Monday morning before lunch will be used for setting up equipment and checking that all systems are operational. After lunch the testing will start with high power jamming.

Location 2 Grunnvatn
No activity before lunch. Testing of low-power handheld jammers after lunch.

Location 3 Motorcade
No activity before lunch. Testing of low-power handheld jammers inside and outside vehicles after lunch.

Table 1.1: Monday

Monday 2024-09-09	Bleik(1)	Grunnvatn(2)	Motorcade(3)
Start time:	11:00	11:00	11:00
08:00			
09:00			
10:00			
11:00	**11:00-13:00 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY Contact: Christian Skjetne (NPRA)	**11:00-13:00 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**11:00-13:00 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)
12:00			
13:00	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch Contact: Christian Skjetne (NPRA)	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch @ Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch @ Bleik (Site 1) Contact: Christian Skjetne (NPRA)
14:00	**14:00-14:10 - 1.2.1** **Jammer F8.1 "Porcus Major": 50 W CW: L1** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **14:20-14:30 - 1.2.4** **Jammer F8.1 "Porcus Major": 50 W CW: L1, G1, L2, L5** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **14:40-14:50 - 1.3.5** **Jammer F8.1 "Porcus Major": 50 W sweep: L1, sweep rate: 1 kHz, BW: 6 MHz** Power: 50W Contact: Nicolai Gerrard (NKOM)	**14:00-14:12 - 1.1.1** **Jammer S1.1** Power: 0.0316W Contact: Øystein Karlsen (NKOM) --- **14:16-14:28 - 1.1.4** **Jammer S2.1** Power: 0.1W Contact: Øystein Karlsen (NKOM) --- **14:32-14:44 - 1.1.8** **Jammer U1.1** Contact: Øystein Karlsen (NKOM) --- **14:48-15:00 - 1.1.12** **Jammer H1.1** Power: 0.1W Contact: Øystein Karlsen (NKOM)	

Continued on next page

Table 1.1: Monday (Continued)

Monday 2024-09-09	Bleik(1)	Grunnvatn(2)	Motorcade(3)
15:00	**15:00-15:10 - 1.3.8** **Jammer F8.1 "Porcus Major": 50 W sweep: L1, G1, L2, L5, sweep rate: 1 kHz, BW: 6 MHz** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **15:20-15:30 - 1.4.1** **Jammer F8.1 "Porcus Major": 50 W PRN: L1, Chiprate: 3 MHz** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **15:40-15:50 - 1.4.4** **Jammer F8.1 "Porcus Major": 50 W PRN: L1, G1, L2, L5, Chiprate: 3 MHz** Power: 50W Contact: Nicolai Gerrard (NKOM)	**15:04-15:16 - 1.1.13** **Jammer H1.2** Power: 0.0631W Contact: Øystein Karlsen (NKOM) --- **15:20-15:32 - 1.1.16** **Jammer H3.1** Power: 0.1W Contact: Øystein Karlsen (NKOM) --- **15:36-15:48 - 1.1.18** **Jammer H3.3** Power: 1W Contact: Øystein Karlsen (NKOM) --- **15:52-16:04 - 1.1.19** **Jammer H4.1** Power: 0.631W Contact: Øystein Karlsen (NKOM)	**15:00-16:15 - 1.11.7** **Driving with multi-band jammer in vehicle in front of the test vehicle** Power: 1.58W Contact: Jahn Erik Røhme (NPRA)

Continued on next page

Table 1.1: Monday (Continued)

Monday 2024-09-09	Bleik(1)	Grunnvatn(2)	Motorcade(3)
16:00	**16:00-16:14 - 1.6.1** **Power ramping with Jammer F8.1 "Porcus Major": 0.2 µW (-37dBm) to 50 W (47dBm) with 2 dB increments** **PRN: L1** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **16:25-16:39 - 1.6.4** **Power ramping with Jammer F8.1 "Porcus Major": 0.2 µW (-37dBm) to 50 W (47dBm) with 2 dB increments** **PRN: L1, G1, L2, L5** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **16:50-18:05 - 1.8.1** **Jammer F8.1 "Porcus Major": 50 W** **PRN pyramid: E6, E5b, L5, G2, L2, B1I, G1, L1** Power: 50W Contact: Nicolai Gerrard (NKOM)	**16:08-16:20 - 1.1.20** **Jammer H6.1** Power: 0.631W Contact: Øystein Karlsen (NKOM) --- **16:24-16:36 - 1.1.21** **Jammer H6.2** Power: 1W Contact: Øystein Karlsen (NKOM) --- **16:40-16:52 - 1.1.22** **Jammer H6.3** Power: 1W Contact: Øystein Karlsen (NKOM) --- **16:56-17:08 - 1.1.23** **Jammer H6.4** Power: 1W Contact: Øystein Karlsen (NKOM)	**16:30-17:45 - 1.11.8** **Driving with multi-band jammer in vehicle behind the test vehicle** Power: 1.58W Contact: Jahn Erik Røhme (NPRA)
17:00		**17:12-17:24 - 1.1.26** **Jammer H8.1** Power: 0.631W Contact: Øystein Karlsen (NKOM) --- **17:28-17:40 - 1.1.27** **Jammer F6.1** Power: 6.31W Contact: Øystein Karlsen (NKOM) --- **17:44-17:56 - 1.1.29** **Jammer H2.1** Contact: Øystein Karlsen (NKOM)	

Continued on next page

Table 1.1: Monday (Continued)

Monday 2024-09-09	Bleik(1)	Grunnvatn(2)	Motorcade(3)
18:00	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Contact: Christian Skjetne (NPRA)	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)
19:00			
20:00			
21:00			
22:00			

Tuesday

Location 1 Bleik
Tuesday will be used for meaconing and unintentional RFI test. During the evening there will be very high power jamming running untill 22:00.

Location 2 Grunnvatn
Test of multiple low-power handheld jammers in circular configuration. Relevant for mobile testing in car, drones and CRPA antennas.

Location 3 Motorcade
Testing of low-power handheld jammers inside and outside vehicles.

Table 2.1: Tuesday

Tuesday 2024-09-10	Bleik(1)	Grunnvatn(2)	Motorcade(3)
Start time:	08:00	08:00	08:00
08:00	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY Contact: Christian Skjetne (NPRA)	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)
09:00	**09:00-09:05 - 3.1.1** **Meacon F1.1 "Porcellus": RX1 at 1 W** Power: 1W Contact: Nicolai Gerrard (NKOM) --- **09:15-09:25 - 3.1.2** **Meacon F1.1 "Porcellus": RX1 at 1 W with initial jamming** Power: 1W Contact: Nicolai Gerrard (NKOM) --- **09:35-09:40 - 3.1.3** **Meacon F1.1 "Porcellus": RX1 at 10 W** Power: 10W Contact: Nicolai Gerrard (NKOM) --- **09:50-10:00 - 3.1.4** **Meacon F1.1 "Porcellus": RX1 at 10 W with initial jamming** Power: 10W Contact: Nicolai Gerrard (NKOM)	**09:00-09:10 - 1.19.1** **3 jammers at 50 meters from center S1.1, S1.2 and S1.3** Power: 0.171W Contact: Øystein Karlsen (NKOM) --- **09:16-09:26 - 1.19.2** **3 jammers at 100 meters from center S1.1, S1.2 and S1.3** Power: 0.171W Contact: Øystein Karlsen (NKOM) --- **09:32-09:42 - 1.19.3** **3 jammers at 150 meters from center S1.1, S1.2 and S1.3** Power: 0.171W Contact: Øystein Karlsen (NKOM) --- **09:48-09:58 - 1.19.4** **3 jammers at 50 meters from center S2.1, S2.2 and S2.3** Power: 1.26W Contact: Øystein Karlsen (NKOM)	

Continued on next page

Table 2.1: Tuesday (Continued)

Tuesday 2024-09-10	Bleik(1)	Grunnvatn(2)	Motorcade(3)
10:00	**10:10-10:15 - 3.1.5** **Meacon F1.1 "Porcellus": RX2 at 10 W** Power: 10W Contact: Nicolai Gerrard (NKOM) --- **10:25-10:45 - 3.2.3** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W turned on and off at different times** Power: 10W Contact: Nicolai Gerrard (NKOM) --- **10:55-11:05 - 3.2.4** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W alternating** Power: 10W Contact: Nicolai Gerrard (NKOM)	**10:04-10:14 - 1.19.5** **3 jammers at 100 meters from center S2.1, S2.2 and S2.3** Power: 1.26W Contact: Øystein Karlsen (NKOM) --- **10:20-10:30 - 1.19.6** **3 jammers at 150 meters from center S2.1, S2.2 and S2.3** Power: 1.26W Contact: Øystein Karlsen (NKOM) --- **10:36-10:46 - 1.19.7** **3 jammers at 50 meters from center U1.1, U1.2 and U1.3** Contact: Øystein Karlsen (NKOM) --- **10:52-11:02 - 1.19.8** **3 jammers at 100 meters from center U1.1, U1.2 and U1.3** Contact: Øystein Karlsen (NKOM)	**10:00-11:00 - 1.10.6** **Driving while passing three consecutive parked cars with multi-band jammer** Power: 1W Contact: Jahn Erik Røhme (NPRA)

Continued on next page

Table 2.1: Tuesday (Continued)

Tuesday 2024-09-10	Bleik(1)	Grunnvatn(2)	Motorcade(3)
11:00	**11:15-11:35 - 3.2.5** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W alternating with breaks** Power: 10W Contact: Nicolai Gerrard (NKOM) **11:45-12:01 - 3.2.6** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W alternating with decreasing durations without breaks** Power: 10W Contact: Nicolai Gerrard (NKOM)	**11:08-11:18 - 1.19.9** **3 jammers at 150 meters from center U1.1, U1.2 and U1.3** Contact: Øystein Karlsen (NKOM) **11:24-11:34 - 1.19.10** **3 jammers at 50 meters from center H6.4, H6.5 and H6.6** Power: 1.58W Contact: Øystein Karlsen (NKOM) **11:40-11:50 - 1.19.11** **3 jammers at 100 meters from center H6.4, H6.5 and H6.6** Power: 1.58W Contact: Øystein Karlsen (NKOM) **11:56-12:06 - 1.19.12** **3 jammers at 150 meters from center H6.4, H6.5 and H6.6** Power: 1.58W Contact: Øystein Karlsen (NKOM)	**11:00-12:00 - 1.10.6** **Driving while passing three consecutive parked cars with multi-band jammer** Power: 1W Contact: Jahn Erik Røhme (NPRA)
12:00	**12:25-12:59 - 3.3.1** **Meacon F1.1 "Porcellus": RX1 with ramping power** Power: 10W Contact: Nicolai Gerrard (NKOM)	**12:12-12:22 - 1.19.13** **3 jammers at 50 meters from center H1.1, H1.4 and H1.5** Power: 0.1W Contact: Øystein Karlsen (NKOM) **12:28-12:38 - 1.19.14** **3 jammers at 100 meters from center H1.1, H1.4 and H1.5** Power: 0.1W Contact: Øystein Karlsen (NKOM) **12:44-12:54 - 1.19.15** **3 jammers at 150 meters from center H1.1, H1.4 and H1.5** Power: 0.1W Contact: Øystein Karlsen (NKOM)	**12:00-13:00 - 1.11.6** **(Deprecated - Not available) Driving with multi-band jammer in test vehicle** Power: 1W Contact: Jahn Erik Røhme (NPRA)

Continued on next page

Table 2.1: Tuesday (Continued)

Tuesday 2024-09-10	Bleik(1)	Grunnvatn(2)	Motorcade(3)
13:00	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch Contact: Christian Skjetne (NPRA)	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch @ Stave (Site 3) Contact: Christian Skjetne (NPRA)	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch @ Stave (Site 3) Contact: Christian Skjetne (NPRA)
14:00	**14:00-14:14 - 3.2.7** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W alternating with different switching frequencies.** Power: 10W Contact: Nicolai Gerrard (NKOM) --- **14:25-14:45 - 3.2.5** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W alternating with breaks** Power: 10W Contact: Nicolai Gerrard (NKOM) --- **14:55-15:11 - 3.2.6** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W alternating with decreasing durations without breaks** Power: 10W Contact: Nicolai Gerrard (NKOM)		**14:00-14:30 - 1.10.3** **Vehicle starting in dual-band denied environment** Power: 0.1W Contact: Jahn Erik Røhme (NPRA) --- **14:30-15:00 - 1.10.4** **Vehicle starting in multi-band denied environment** Power: 1.58W Contact: Jahn Erik Røhme (NPRA)

Continued on next page

Table 2.1: Tuesday (Continued)

Tuesday 2024-09-10	Bleik(1)	Grunnvatn(2)	Motorcade(3)
15:00	**15:25-15:39 - 3.2.7** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W alternating with different switching frequencies.** Power: 10W Contact: Nicolai Gerrard (NKOM)	**15:00-15:12 - 1.20.1** **3 jammers at 50 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **15:18-15:30 - 1.20.2** **3 jammers at 100 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **15:36-15:48 - 1.20.3** **3 jammers at 150 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **15:54-16:06 - 1.20.4** **3 jammers at 50 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM)	**15:00-15:30 - 1.10.3** **Vehicle starting in dual-band denied environment** Power: 0.1W Contact: Jahn Erik Røhme (NPRA) --- **15:30-16:00 - 1.10.4** **Vehicle starting in multi-band denied environment** Power: 1.58W Contact: Jahn Erik Røhme (NPRA)

Continued on next page

Table 2.1: Tuesday (Continued)

Tuesday 2024-09-10	Bleik(1)	Grunnvatn(2)	Motorcade(3)
16:00	**16:00-16:01 - 1.18.4** **Jammer F8.1 "Porcus Major": 50 W drift: 1545 to 1620 MHz, with CW and sweep time of 1 minute** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **16:10-16:25 - 1.18.5** **Jammer F8.1 "Porcus Major": 50 W drift: 1545 to 1620 MHz, with CW and sweep time of 15 minutes** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **16:35-16:50 - 1.18.7** **Jammer F8.1 "Porcus Major": 50 W drift: 1620 to 1545 MHz, with CW and sweep time of 15 minutes** Power: 50W Contact: Nicolai Gerrard (NKOM)	**16:12-16:24 - 1.20.5** **3 jammers at 100 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **16:30-16:42 - 1.20.6** **3 jammers at 150 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **16:48-17:00 - 1.20.7** **3 jammers at 50 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM)	**16:00-16:30 - 1.10.3** **Vehicle starting in dual-band denied environment** Power: 0.1W Contact: Jahn Erik Røhme (NPRA) --- **16:30-17:00 - 1.10.4** **Vehicle starting in multi-band denied environment** Power: 1.58W Contact: Jahn Erik Røhme (NPRA)

Continued on next page

Table 2.1: Tuesday (Continued)

Tuesday 2024-09-10	Bleik(1)	Grunnvatn(2)	Motorcade(3)
17:00	**17:00-17:01 - 1.18.8** **Jammer F8.1 "Porcus Major": 50 W drift: 1545 to 1620 MHz, gaussian noise with BW of 500 kHz and sweep time of 1 minute** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **17:10-17:25 - 1.18.13** **Jammer F8.1 "Porcus Major": 50 W drift: 1150 to 1300 MHz, with CW and sweep time of 15 minutes** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **17:35-17:50 - 1.18.15** **Jammer F8.1 "Porcus Major": 50 W drift: 1300 to 1150 MHz, with CW and sweep time of 15 minutes** Power: 50W Contact: Nicolai Gerrard (NKOM) --- **17:59-18:00 - 1.18.16** **Jammer F8.1 "Porcus Major": 50 W drift: 1150 to 1300 MHz, gaussian noise with BW of 500 kHz and sweep time of 1 minute** Power: 50W Contact: Nicolai Gerrard (NKOM)	**17:06-17:18 - 1.20.8** **3 jammers at 100 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **17:24-17:36 - 1.20.9** **3 jammers at 150 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **17:42-17:54 - 1.20.10** **3 jammers at 50 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM)	

Continued on next page

Table 2.1: Tuesday (Continued)

Tuesday 2024-09-10	Bleik(1)	Grunnvatn(2)	Motorcade(3)
18:00	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Contact: Christian Skjetne (NPRA)	**18:00-18:12 - 1.20.11** **3 jammers at 100 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **18:18-18:30 - 1.20.12** **3 jammers at 150 meters from center H1.1, H1.4 and H1.5** Power: 1W Comment: +30dBm from each direction (ca: +10dB antenna gain and +20dBm output) Contact: Øystein Karlsen (NKOM) --- **18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)
19:00	**19:15-22:00 - 1.16.4** **High Power PRN jamming: L1, G1, L2, L5** Power: 100W Contact: Nicolai Gerrard (NKOM)		
20:00			
21:00			
22:00			

Wednesday

Location 1 Bleik
Wednesday will be used for position and SBAS spoofing.

Location 2 Grunnvatn
Test of stationary coherent spoofing with circle of jammers. Relevant for mobile testing in car, drones and CRPA antennas.

Location 3 Motorcade
Booking of timeslots available for custom testing.

Table 3.1: Wednesday

Wednesday 2024-09-11	Bleik(1)	Grunnvatn(2)	Motorcade(3)
Start time:	08:00	08:00	08:00
08:00	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY Contact: Christian Skjetne (NPRA)	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)
09:00	**09:00-09:40 - 2.1.1** **Large position and time jump, with power ramp** Power: 0.316W Contact: Nicolai Gerrard (NKOM)	**09:00-09:40 - 2.10.1** **Spoofing route GPS L1 and Galileo E1 only** Power: 0.001W Comment: Spoofing route that start at LOK2-ORIG, and goes out forming a spoofing cirle above position A150, B150 and C150. Spoofing signal will perfom power ramp from uW to mW during the first 30 minutes of the test. Signals: GPS L1 C/A. Galileo E1. No initial jamming. Spoofing route duration is 40 minutes. Contact: Øystein Karlsen (NKOM) --- **09:50-10:55 - 2.10.2** **Circle of 3 stationary jammers, L1, L2 and spoofing route GPS L1 and Galileo E1 only** Power: 3W Comment: Jamming from A50, B50 and C50, with jammer H1.1, H1.4 and H1.5, L1, L2, CHIRP. HIGH PWR. The Jammers are connected to RHCP antennas to boost the power. 15 minutes of initial jamming first. Then spoofing starts. Spoofing route will start at LOK2-ORIG, and goes out forming a spoofing cirle above position A150, B150 and C150. Spoofing signal will perfom power ramp from uW to mW during the first 30 minutes of the test. Spoofing signals: GPS L1 C/A. Galileo E1. Spoofing route duration is 40 minutes. Contact: Øystein Karlsen (NKOM)	

Continued on next page

Table 3.1: Wednesday (Continued)

Wednesday 2024-09-11	Bleik(1)	Grunnvatn(2)	Motorcade(3)
10:00	**10:00-10:15 - 2.1.3** **Large position and time jump. Galileo E1 only** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **10:20-10:35 - 2.1.2** **Large position and time jump. GPS L1 C/A only** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **10:40-10:55 - 2.1.4** **Large position and time jump. GPS L1 and Galileo E1 only** Power: 0.316W Contact: Nicolai Gerrard (NKOM)		**10:00-11:00 - 0.2.1** **Jamming booking slot** Comment: Pre-booking required. Inform staff of required jammer equipment (see Appendix G of test catalog) Contact: Jahn Erik Røhme (NPRA)
11:00	**11:25-11:40 - 2.1.9** **Simulated driving (route 1). GPS L1 C/A and Galileo E1, with initial jamming** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **11:45-12:00 - 2.1.10** **Simulated driving (route 1), with initial jamming** Power: 0.316W Contact: Nicolai Gerrard (NKOM)	**11:05-12:00 - 2.10.3** **Circle of 3 stationary jammers, 2 moving jammers L1, L2 and spoofing route GPS L1 and Galileo E1 only** Power: 4W Comment: Jamming from A50, B50 and C50, with jammer H1.1, H1.4 and H1.5, L1, L2, CHIRP. HIGH PWR. The Jammers are connected to RHCP antennas to boost the power. Two additional mobile jammers will be added H1.6 and H1.7 with L1, L2 NB, HIGH PWR. 15 minutes of initial jamming first. Then spoofing starts. Spoofing route will start at LOK2-ORIG, and goes out forming a spoofing cirle above position A150, B150 and C150. Spoofing signal will perfom power ramp from uW to mW during the first 30 minutes of the test. Spoofing signals: GPS L1 C/A. Galileo E1. Spoofing route duration is 40 minutes. Contact: Øystein Karlsen (NKOM)	**11:00-12:00 - 0.2.1** **Jamming booking slot** Comment: Pre-booking required. Inform staff of required jammer equipment (see Appendix G of test catalog) Contact: Jahn Erik Røhme (NPRA)

Continued on next page

Table 3.1: Wednesday (Continued)

Wednesday 2024-09-11	Bleik(1)	Grunnvatn(2)	Motorcade(3)
12:00	**12:30-12:40 - 2.8.1** **EGNOS with "Do Not Use GPS" commands** Power: 1W Contact: Nicolai Gerrard (NKOM) **12:45-13:00 - 2.8.1** **EGNOS with "Do Not Use GPS" commands** Power: 1W Contact: Nicolai Gerrard (NKOM)	**12:10-13:05 - 2.10.4** **Circle of 3 stationary jammers, 5 moving jammers and spoofing route GPS L1 and Galileo E1 only** Power: 5W Comment: Jamming from A50, B50 and C50, with jammer H1.1, H1.4 and H1.5, L1, L2, CHIRP. HIGH PWR. The Jammers are connected to RHCP antennas to boost the power. Five additional mobile jammers will be added H1.6 and H1.7 with L1, L2 NB, HIGH PWR, and H6.3, H6.4 and H6.5, L1, L2. 15 minutes of initial jamming first. Then spoofing starts. Spoofing route will start at LOK2-ORIG, and goes out forming a spoofing cirle above position A150, B150 and C150. Spoofing signal will perfom power ramp from uW to mW during the first 30 minutes of the test. Spoofing signals: GPS L1 C/A. Galileo E1. Spoofing route duration is 40 minutes. Contact: Øystein Karlsen (NKOM)	**12:00-13:00 - 0.2.1** **Jamming booking slot** Comment: Pre-booking required. Inform staff of required jammer equipment (see Appendix G of test catalog) Contact: Jahn Erik Røhme (NPRA)
13:00	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch Contact: Christian Skjetne (NPRA)	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch @ Stave (Site 3) Contact: Christian Skjetne (NPRA) **13:10-13:50 - 2.10.1** **Spoofing route GPS L1 and Galileo E1 only** Power: 0.001W Comment: Spoofing route that start at LOK2-ORIG, and goes out forming a spoofing cirle above position A150, B150 and C150. Spoofing signal will perfom power ramp from uW to mW during the first 30 minutes of the test. Signals: GPS L1 C/A. Galileo E1. No initial jamming. Spoofing route duration is 40 minutes. Contact: Øystein Karlsen (NKOM)	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch @ Stave (Site 3) Contact: Christian Skjetne (NPRA)

Continued on next page

Table 3.1: Wednesday (Continued)

Wednesday 2024-09-11	Bleik(1)	Grunnvatn(2)	Motorcade(3)
14:00	**14:00-14:15 - 2.2.3** **Position jump** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **14:20-14:35 - 2.3.3** **Small position jump** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **14:40-14:55 - 2.3.2** **Small position jump with initial and continuous jamming** Power: 0.316W Contact: Nicolai Gerrard (NKOM)	**14:00-14:55 - 2.10.2** **Circle of 3 stationary jammers, L1, L2 and spoofing route GPS L1 and Galileo E1 only** Power: 3W Comment: Jamming from A50, B50 and C50, with jammer H1.1, H1.4 and H1.5, L1, L2, CHIRP. HIGH PWR. The Jammers are connected to RHCP antennas to boost the power. 15 minutes of initial jamming first. Then spoofing starts. Spoofing route will start at LOK2-ORIG, and goes out forming a spoofing cirle above position A150, B150 and C150. Spoofing signal will perfom power ramp from uW to mW during the first 30 minutes of the test. Spoofing signals: GPS L1 C/A. Galileo E1. Spoofing route duration is 40 minutes. Contact: Øystein Karlsen (NKOM)	**14:00-15:00 - 0.2.1** **Jamming booking slot** Comment: Pre-booking required. Inform staff of required jammer equipment (see Appendix G of test catalog) Contact: Jahn Erik Røhme (NPRA)
15:00	**15:25-15:35 - 2.3.8** **Simulated driving (route 1). Galileo only** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **15:40-15:50 - 2.3.5** **Simulated driving (route 1). GPS only** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **15:55-16:05 - 2.3.10** **Simulated driving (route 1)** Power: 0.316W Contact: Nicolai Gerrard (NKOM)	**15:05-16:00 - 2.10.3** **Circle of 3 stationary jammers, 2 moving jammers L1, L2 and spoofing route GPS L1 and Galileo E1 only** Power: 4W Comment: Jamming from A50, B50 and C50, with jammer H1.1, H1.4 and H1.5, L1, L2, CHIRP. HIGH PWR. The Jammers are connected to RHCP antennas to boost the power. Two additional mobile jammers will be added H1.6 and H1.7 with L1, L2 NB, HIGH PWR. 15 minutes of initial jamming first. Then spoofing starts. Spoofing route will start at LOK2-ORIG, and goes out forming a spoofing cirle above position A150, B150 and C150. Spoofing signal will perfom power ramp from uW to mW during the first 30 minutes of the test. Spoofing signals: GPS L1 C/A. Galileo E1. Spoofing route duration is 40 minutes. Contact: Øystein Karlsen (NKOM)	**15:00-16:00 - 0.2.1** **Jamming booking slot** Comment: Pre-booking required. Inform staff of required jammer equipment (see Appendix G of test catalog) Contact: Jahn Erik Røhme (NPRA)

Continued on next page

Table 3.1: Wednesday (Continued)

Wednesday 2024-09-11	Bleik(1)	Grunnvatn(2)	Motorcade(3)
16:00	**16:10-16:25 - 2.3.11** **Simulated driving (route 1) with initial and continuous jamming.** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **16:55-17:05 - 2.3.15** **Flying (route 2) - "helicopter scenario"** Power: 0.316W Contact: Nicolai Gerrard (NKOM)	**16:10-17:05 - 2.10.4** **Circle of 3 stationary jammers, 5 moving jammers and spoofing route GPS L1 and Galileo E1 only** Power: 5W Comment: Jamming from A50, B50 and C50, with jammer H1.1, H1.4 and H1.5, L1, L2, CHIRP. HIGH PWR. The Jammers are connected to RHCP antennas to boost the power. Five additional mobile jammers will be added H1.6 and H1.7 with L1, L2 NB, HIGH PWR, and H6.3, H6.4 and H6.5, L1, L2. 15 minutes of initial jamming first. Then spoofing starts. Spoofing route will start at LOK2-ORIG, and goes out forming a spoofing cirle above position A150, B150 and C150. Spoofing signal will perfom power ramp from uW to mW during the first 30 minutes of the test. Spoofing signals: GPS L1 C/A. Galileo E1. Spoofing route duration is 40 minutes. Contact: Øystein Karlsen (NKOM)	**16:00-17:00 - 0.2.1** **Jamming booking slot** Comment: Pre-booking required. Inform staff of required jammer equipment (see Appendix G of test catalog) Contact: Jahn Erik Røhme (NPRA)
17:00	**17:10-17:20 - 2.3.12** **Flying (route 4) - "drone scenario"** **GPS L1 C/A only** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **17:30-17:40 - 2.3.13** **Flying (route 4) - "drone scenario"** Power: 0.316W Contact: Nicolai Gerrard (NKOM) --- **17:45-18:00 - 2.3.15** **Flying (route 2) - "helicopter scenario"** Power: 0.316W Contact: Nicolai Gerrard (NKOM)		
18:00	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY Contact: Christian Skjetne (NPRA)	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)

Continued on next page

Table 3.1: Wednesday (Continued)

Wednesday 2024-09-11	Bleik(1)	Grunnvatn(2)	Motorcade(3)
19:00			
20:00			
21:00			
22:00			

Thursday

Location 1 Bleik
Thursday will be used for time spoofing. During the evening there will be long time meaconing running untill 22:00.

Location 2 Grunnvatn
Test of multiple low-power handheld jammers in circular configuration. Relevant for mobile testing in car, drones and CRPA antennas.

Location 3 Motorcade
Mobile SDR spoofing. Timeslot after lunch is still not decided.

Table 4.1: Thursday

Thursday 2024-09-12	Bleik(1)	Grunnvatn(2)	Motorcade(3)
Start time:	08:00	08:00	08:00
08:00	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY Contact: Christian Skjetne (NPRA)	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)
09:00	**09:00-09:25 - 2.4.2** **Time offset 15 minutes from real time, with power ramp** Power: 0.0316W Contact: Nicolai Gerrard (NKOM) --- **09:40-09:55 - 2.4.3** **Time offset -3 minutes from real time, with power jump** Power: 0.0316W Contact: Nicolai Gerrard (NKOM)	test 0.0.0 not found in catalog	
10:00	**10:10-10:25 - 2.4.12** **Static + Pseudorange error** Power: 0.0316W Contact: Nicolai Gerrard (NKOM) --- **10:40-10:55 - 2.4.13** **Static + Pseudorange error, with initial and continous jamming** Power: 0.001W Contact: Nicolai Gerrard (NKOM)		**10:00-10:20 - 2.6.1** **Spoofer (in vehicle with roof mounted antenna) stationary with dynamic spoofed position.** Power: 0.01W Contact: Anders Rødningsby (FFI) --- **10:45-11:05 - 2.6.2** **Spoofer (in vehicle with roof mounted antenna) stationary and then moving with fixed spoofed position.** Power: 0.01W Contact: Anders Rødningsby (FFI)

Continued on next page

Table 4.1: Thursday (Continued)

Thursday 2024-09-12	Bleik(1)	Grunnvatn(2)	Motorcade(3)
11:00	**11:25-11:40 - 2.5.6** **Time offset 15 minutes from real time** Power: 0.001W Contact: Nicolai Gerrard (NKOM) --- **11:55-12:10 - 2.5.3** **Time offset -3 minutes from real time, with power jump** Power: 0.001W Contact: Nicolai Gerrard (NKOM)		**11:30-11:50 - 2.6.3** **Spoofer (in vehicle with roof mounted antenna) moving with fixed spoofed position.** Power: 0.01W Contact: Anders Rødningsby (FFI)
12:00	**12:25-13:00 - 2.5.25** **Static + UTC-parameter nav. data manipulation (adding leap seconds), with initial and continuous jamming** Power: 0.001W Contact: Nicolai Gerrard (NKOM)		**12:15-12:35 - 2.6.4** **Spoofer (in vehicle with roof mounted antenna) stationary and then moving with first fixed and then dynamic spoofed position.** Power: 0.01W Contact: Anders Rødningsby (FFI)
13:00	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch Contact: Christian Skjetne (NPRA)	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch @ Stave (Site 3) Contact: Christian Skjetne (NPRA)	**13:05-14:00 - 0.1.1** **Grace period** Comment: Lunch @ Stave (Site 3) Contact: Christian Skjetne (NPRA)
14:00	**14:00-14:15 - 2.5.5** **Time offset 15 minutes from real time. Galileo E1** Power: 0.0316W Contact: Nicolai Gerrard (NKOM) --- **14:20-14:35 - 2.5.4** **Time offset 15 minutes from real time. GPS L1 C/A** Power: 0.0316W Contact: Nicolai Gerrard (NKOM) --- **14:40-14:55 - 2.5.6** **Time offset 15 minutes from real time** Power: 1e-05W Contact: Nicolai Gerrard (NKOM)		**14:00-14:20 - 2.6.1** **Spoofer (in vehicle with roof mounted antenna) stationary with dynamic spoofed position.** Power: 0.01W Contact: Anders Rødningsby (FFI) --- **14:45-15:05 - 2.6.2** **Spoofer (in vehicle with roof mounted antenna) stationary and then moving with fixed spoofed position.** Power: 0.01W Contact: Anders Rødningsby (FFI)

Continued on next page

Table 4.1: Thursday (Continued)

Thursday 2024-09-12	Bleik(1)	Grunnvatn(2)	Motorcade(3)
15:00	**15:25-15:40 - 2.5.13** **Static + Pseudorange error. GPS L1 and Galileo E1 only** Power: 0.001W Contact: Nicolai Gerrard (NKOM) --- **15:45-16:00 - 2.5.15** **Static + Pseudorange error** Power: 1e-05W Contact: Nicolai Gerrard (NKOM)		**15:30-15:50 - 2.6.3** **Spoofer (in vehicle with roof mounted antenna) moving with fixed spoofed position.** Power: 0.01W Contact: Anders Rødningsby (FFI)
16:00	**16:15-16:40 - 2.5.16** **Static + Pseudorange error, with initial and continuous jamming** Power: 1e-05W Contact: Nicolai Gerrard (NKOM) --- **16:55-17:20 - 2.5.26** **Static + UTC-parameter nav. data manipulation (removing leap seconds). GPS L1 C/A** Power: 1e-05W Contact: Nicolai Gerrard (NKOM)		**16:15-16:35 - 2.6.4** **Spoofer (in vehicle with roof mounted antenna) stationary and then moving with first fixed and then dynamic spoofed position.** Power: 0.01W Contact: Anders Rødningsby (FFI)
17:00	**17:30-18:00 - 2.5.27** **Static + UTC-parameter nav. data manipulation (removing leap seconds)** Power: 1e-05W Contact: Nicolai Gerrard (NKOM)		
18:00	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY Contact: Christian Skjetne (NPRA)	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)	**18:30-19:00 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: MANDATORY attendence at Bleik (Site 1) Contact: Christian Skjetne (NPRA)
19:00	**19:30-22:00 - 3.1.3** **Meacon F1.1 "Porcellus": RX1 at 10 W** Power: 10W Contact: Nicolai Gerrard (NKOM)		

Continued on next page

Table 4.1: Thursday (Continued)

Thursday 2024-09-12	Bleik(1)	Grunnvatn(2)	Motorcade(3)
20:00			
21:00			
22:00			

Friday

Location 1 Bleik
Friday will be used for time spoofing and repitions of previous tests. Time after lunch will be used for tearing down and packing up equipment.

Location 2 Grunnvatn
There will be no testing on this site on Friday.

Location 3 Motorcade
There will be no testing on this site on Friday.

Table 5.1: Friday

Friday 2024-09-13	Bleik(1)	Grunnvatn(2)	Motorcade(3)
Start time:	08:00	09:00	09:00
08:00	**08:00-08:30 - 0.0.1** **Mandatory morning briefing** Comment: MANDATORY Contact: Christian Skjetne (NPRA)		
09:00	**09:00-09:10 - 0.3.1** **Ad hoc test** Power: 0.316W Comment: L2 only spoofing Contact: Nicolai Gerrard (NKOM) --- **09:20-09:40 - 0.3.1** **Ad hoc test** Power: 10W Comment: 3.1.3 + 2.1.2, meaconing (10 W) + spoofing (20 dBm) Contact: Nicolai Gerrard (NKOM) --- **09:50-10:00 - 3.2.5** **Meacon F1.1 "Porcellus": RX1 and RX2 at 10 W alternating with breaks** Power: 10W Comment: Only using RX1 Contact: Nicolai Gerrard (NKOM)	**09:00-16:00 - 0.1.1** **Grace period** Comment: SITE IS CLOSED! Contact: Øystein Karlsen (NKOM)	**09:00-16:00 - 0.0.1** **Mandatory morning briefing** Comment: SITE IS CLOSED! Contact: Christian Skjetne (NPRA)
10:00	**10:10-10:33 - 1.6.4** **Power ramping with Jammer F8.1 "Porcus Major": 0.2 µW (-37dBm) to 50 W (47dBm) with 2 dB increments PRN: L1, G1, L2, L5** Power: 50W Comment: 20 seconds per step, power ramp (up and down) from -21 (to 47) dBm Contact: Nicolai Gerrard (NKOM) --- **10:50-11:10 - 2.7.12** **Static + Time manipulation (2 years forwards), with power ramp** Power: 0.0316W Contact: Nicolai Gerrard (NKOM)		

Continued on next page

Table 5.1: Friday (Continued)

Friday 2024-09-13	Bleik(1)	Grunnvatn(2)	Motorcade(3)
11:00	**11:30-11:50 - 2.7.16** **Static + Time manipulation (April 2019), with initial and continuous jamming** Power: 0.0316W Contact: Nicolai Gerrard (NKOM)		
12:00	**12:00-12:22 - 2.4.2** **Time offset 15 minutes from real time, with power ramp** Power: 0.0316W Contact: Nicolai Gerrard (NKOM) --- **12:30-12:40 - 2.5.5** **Time offset 15 minutes from real time. Galileo E1** Power: 0.0316W Contact: Nicolai Gerrard (NKOM) --- **12:50-13:00 - 0.3.1** **Ad hoc test** Power: 0.316W Comment: Jamming of L1, G1, B1I from S (the spoofing system) Contact: Nicolai Gerrard (NKOM)		
13:00	**13:00-14:00 - 0.1.1** **Grace period** Comment: Lunch Contact: Christian Skjetne (NPRA)		
14:00	**14:00-14:30 - 0.0.2** **Mandatory afternoon (de)briefing** Comment: Summary briefing and closing of event Contact: Christian Skjetne (NPRA)		
15:00			
16:00			
17:00			

Continued on next page

Table 5.1: Friday (Continued)

Friday 2024-09-13	Bleik(1)	Grunnvatn(2)	Motorcade(3)
18:00			
19:00			
20:00			
21:00			
22:00			