

Briefing Sheet

UNITED KINGDOM



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(Content - CAA Spectrum & Surveillance)

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NOTIFICATION OF GNSS JAMMING TRIALS: NAVWAR TRIAL, PORTON DOWN, 21 NOVEMBER 2022 - 28 FEBRUARY 2023

1 Introduction

- 1.1 In accordance with UK procedures for the control of non-operational jamming, this note gives notification of radio jamming and signal interference activity, to intentionally provide interference to Global Navigation Satellite System (GNSS) signals, including the Global Positioning System (GPS).
- 1.2 This Briefing Note includes the details and locations of the GNSS jamming, description of the predicted effects and a point of contact for further information or in case of emergency.

2 Dates, Times and Location

- 2.1 **Date:** Select dates **between 21 November 2022 - 28 February 2023**. The exact dates of each event will be confirmed one week in advance and notified via NOTAM.
- 2.2 **Location:** Jammers will be located within 1 KM of 510645N 0014215W.
- 2.3 **Time:** The jamming will be limited to the daily hours of 2300 - 0530 UTC.
- 2.4 **Duration and Pattern:** Each activity will last five days, Monday to Friday, with one week's prior notice being given and notified via NOTAM. Jamming and/or spoofing testing will take place between the defined times each day. There will be a maximum total of 240 minutes of interference radiated within these times and no single period of interference will exceed 30 minutes duration.

3 GPS Jamming

- 3.1 The areas within which a GNSS receiver is potentially likely to encounter jamming and/or interference with potential for incorrect readings is outlined below. The following scenarios are outlined:
 - a) **Below 10,000 FT AMSL** - No allowance is made for airframe masking or the reduction of antenna gain towards the horizon seen in all receiver systems. Therefore, the worst possible case for receiver vulnerability is considered.
 - b) **Above 10,000 FT AMSL** - Two scenarios of interference are presented:
 - i. Interference, Jamming and Spoofing effect is **probable** (considers a reasonable interference scenario and receiver vulnerability);
 - ii. Interference, Jamming and Spoofing effect is **possible**.

The two scenarios presented above are based upon a range of assumptions and variables. These include the removal of assumptions regarding lack of airframe masking and antenna gain towards the horizon. The interference scenarios presented are supported by recent investigations into the actual interference caused to aircraft through review of ADS-B data. The CAA would welcome observations and feedback regarding this approach and any reports of interference experienced within the areas specified.

- 3.2 Text describing the predicted GNSS interference areas is supplemented with coverage graphics, representing the interference effect on GNSS receivers at 70 M AGL (and below), 1000 FT AMSL, 5000 FT AMSL, 10,000 FT AMSL, 20,000 FT AMSL, 30,000 FT AMSL, and 40,000 FT AMSL.
- 3.3 The impact estimated at each level identified should be assumed to extend as illustrated to the level below it. E.g estimated coverage for 10,000 FT should be assumed down to 5000 FT. If further information is required on the interpretation of this data

please contact the CAA using the contact information in section 5.1.

3.4 Predictions show that the coverage area where GNSS signals are likely to be affected is as follows:

3.4.1 **GNSS Jamming coverage area**

2 M AGL

Areas with clear line of sight to the transmitter site up to 27 NM.

25 M AGL

Areas with clear line of sight to the transmitter site up to 27 NM.

70 M AGL

Areas with clear line of sight to the transmitter site up to 30 NM.

1000 FT AMSL

In an arc clockwise from 335°T to 125°T to 40 NM.

To 8 NM in all other directions.

5000 FT AMSL

In an arc clockwise from 335°T to 125°T to 45 NM.

To 8 NM in all other directions.

10,000 FT AMSL

In an arc clockwise from 335°T to 125°T to 45 NM.

To 8 NM in all other directions.

20,000 FT AMSL

Possible interference in an arc clockwise from 340°T to 120°T to 45 NM. To 5 NM in all other directions.

Probable interference in an arc clockwise from 350°T and 110°T to 20 NM. To 5 NM in all other directions.

30,000 FT AMSL

Possible interference in an arc clockwise from 340°T to 120°T to 40 NM. To 5 NM in all other directions.

Probable interference in an arc clockwise from 000°T and 100°T to 20 NM. To 5 NM in all other directions.

40,000 FT AMSL

Possible interference in an arc clockwise from 350°T to 110°T to 40 NM. To 5 NM in all other directions.

Probable interference to 5 NM in all other directions

3.5 Impact area may exceed the maximum height represented and should be assumed to continue beyond the altitude specified as described for the maximum altitude listed.

3.6 The following frequencies will be affected:
1559 MHz - 1612 MHz (GNSS L1/E1 band);
1215 MHz - 1256 MHz (GNSS L2 band);
1160 MHz - 1214 MHz (GNSS L5/E5 band).

4 Use of GNSS

4.1 Although GNSS equipment is an accepted means of compliance with B-RNAV and P-RNAV requirements, one of the conditions of its use is that the aircraft must carry serviceable radio navigation equipment in order to allow reversionary means of navigation. Operators of aircraft should not rely on GNSS for B-RNAV and P-RNAV operations in the areas predicted to be affected by the jamming trials and should be prepared to revert to the alternative means of navigation.

4.2 For IFR en-route and terminal area operations, only radio navigation equipment required by the rules for IFR operations should be used.

4.3 For VFR operations, conventional means of navigation including dead reckoning should always be used.

4.4 Operators of aircraft should be prepared for erroneous readings if cross checking with GNSS in the area predicted to be affected by the jamming trials.

4.5 Air Traffic Controllers should be alerted to the potential for aircraft to require navigation assistance during the period of the trial.

5 Points of Contact

5.1 General and non-urgent queries regarding these trials should be made in the first instance to:

Email: spectrum@caa.co.uk.

5.2 During the period of the exercise, the formal cease jamming contact number is:

Porton Down Operations: 01980-950040

Trial Manager: 01980-951065

Note: This number is only to be used in case of emergency in order to ask for jamming to cease. As with previous exercises, safety of life operations will at all times take precedence over exercise activities.

GNSS JAMMING & INTERFERENCE TRIAL PORTON DOWN

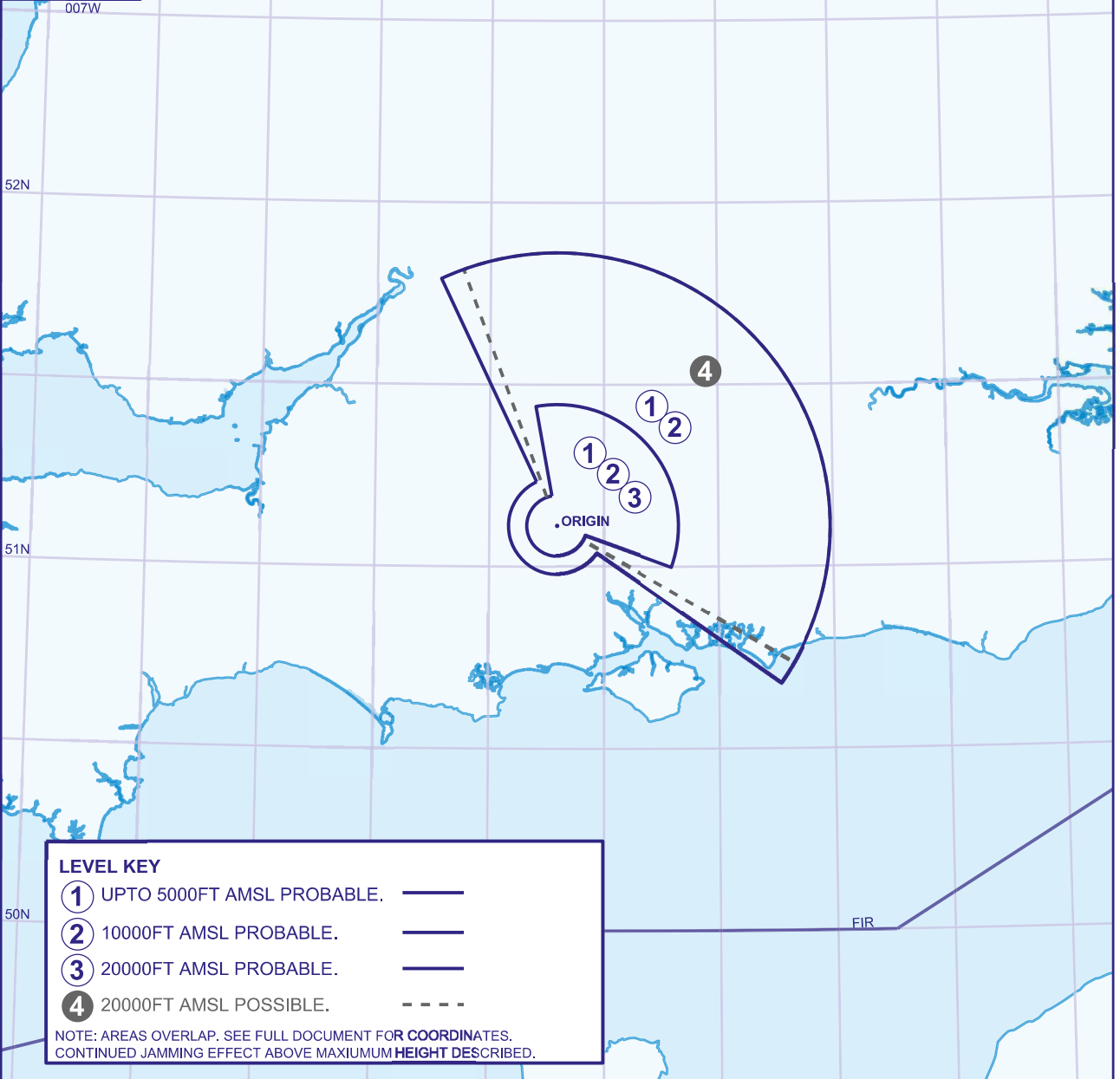
5,000FT, 10,000FT & 20,000FT AMSL

40 0 40NM
NOTE: Only relevant aeronautical/topographical background detail shown for illustrative context.
NOT FOR OPERATIONAL USE - PLANNING PURPOSES ONLY

SEE FULL DOCUMENT FOR DETAILS,
DATES & ACTIVE TIMES

CHART 1 OF 2

003W 002W 001W 000



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GNSS JAMMING & INTERFERENCE TRIAL PORTON DOWN 30,000FT & 40,000FT AMSL

40 0 40NM

NOTE: Only relevant aeronautical/topographical background detail shown for illustrative context.
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CHART 2 OF 2

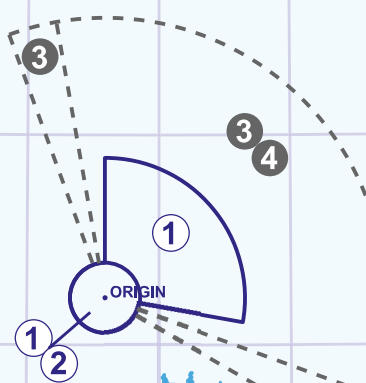
003W 002W 001W 000

007W

52N

51N

50N



LEVEL KEY

- ① 30000FT AMSL PROBABLE. ———
- ② 40000FT AMSL PROBABLE. ———
- ③ 30000FT AMSL POSSIBLE. - - - -
- ④ 40000FT AMSL POSSIBLE. - - - -

NOTE: AREAS OVERLAP. SEE FULL DOCUMENT FOR COORDINATES.
CONTINUED JAMMING EFFECT ABOVE MAXIMUM HEIGHT DESCRIBED.

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