**Annex 1 – Software specification**

# Localizer

## Simulation of transmitter

### LOC Simulation capability for:

1. NM7000B with 12 el. antenna, dual frequency
2. Thales 420 with 13 and 21 el. antenna, dual frequency

## Antenna array edition panel

### The software shall be capable of: setting mechanical settings, antenna feedings, fault simulation in antennas or ADU with information about DDM and SDM for each antenna.

### It shall at least be able to simulate:

1. Normarc 12 el. LPD antenna 2F,
2. Thales 13 and 21 el. dipole antenna 2F.
3. General 1F.

## Runway settings

The software shall allow:

### Set runway features. It shall automatically calculate the sector width and adjust the corresponding SBO level in the transmitter. It shall also allow a complete runway layout including the antenna array type and station frequency, to be saved for future use.

### Import an image from Google Earth or a drawing software as a background for the plots.

## Importing Scattering objects

The software shall allow to:

### Add some scattering objects to simulate the impact of buildings or taxiing planes on LOC performance;

### Create complex shapes consisting of polygons instead of rectangles.

## Sensitive area calculations

### The software shall be capable of displaying the sensitive area for scattering objects (i.e. Planes Tail, car, …)

## Moving object calculation

### The software shall be capable of simulating the reflections from a moving object on a static or moving receiver.

## Vector diagram

### The software shall be capable of displaying the vectors of the signal received by the receiver from each antenna.

## Import of ground and flight inspection measurements

### The software shall be capable of importing data from a flight inspection measurement or a ground measurement for comparison between simulation and real measurement.

## Receiver features

### The software shall be capable of adjusting the time constant and speed of the receiver.

# Glide path

## Glide path layout

### The software shall be capable of setting all mechanical and geographical settings for the GP.

### The software shall be capable of calculating the average reflection plane from a site survey for set up mast and antenna positions.

## ADU and MCU unit

### The software shall be capable of setting and displaying all ADU and MCU parameters.

### It shall at least be able to simulate:

1. Normarc M Array
2. Thales M Array Active
3. General Null ref.

## Import Scattering objects

### The software shall be capable of adding some scattering objects to simulate the impact of buildings or taxiing planes on GP performance.

### The software shall be capable of adding some terrain unevenness to simulate the impact on GP performance.

## Sensitive area calculations

### The software shall be capable of displaying sensitive area for scattering objects (i.e. Planes Tail, car, …)

## Vector diagram

### The software shall be capable of displaying vectors of the signal received by the receiver from each antenna.

## Import of ground and flight inspection measurements

### The software shall be capable of importing data from a flight inspection measurement or a ground measurement for comparison between simulation and real measurement.

# Installation

### Support shall be provided for installation on the customer´s dedicated PCs.

The installed SW must be compatible with Win10 and Win11.