LOFAR-UK STATION

The LOFAR-UK station (UK608) is located at Chilbolton Observatory, Hampshire, and consists of two antenna arrays: the low band array (LBA) and the high band array (HBA). It is part of the international LOFAR telescope (www.lofar.org) co-ordinated by ASTRON. It may also be used as a stand-alone array.

HBA (120-240MHz)
96 tiles of 16 dual-polarised bowtie antennas

Max baseline: 55.4m
Lat: 51° 8’ 37.80” N
Long: 1° 26’ 0.60” W

LBA (30-80MHz)
96 dual-polarised antennas

Max baseline: 63.3m
Lat: 51° 8’ 36.77” N
Long: 1° 26’ 4.04” W

SPECIFICATIONS

Elevation Range	30° - 90°
No. of Usable Sub-bands	244
Max No. of Sub-bands	244 (1 per sub-band)
Sampling Rate	200 or 160 MHz
Sub-band Time Resolution	512 or 6.4 μs
Sub-band Frequency Resolution	195.3 or 156.2 kHz
Maximum Sky Bandwidth	47.6 MHz

STATION BEAM FWHM

Size (°)	9.9	4	2.5	1.2
Frequency (MHz)	30	75	120	240

SENSITIVITY

Freq (MHz)	15	30	45	60	75	120	150	180	210	240
λ (m)	20	10	6.67	5	4	2.5	2	1.67	1.43	1.25
Sensitivity (mJy)	1266	234	101	78	130	4.5	3.5	4	4.6	5.1

Theoretical LOFAR sensitivity (rms noise level) for 1 hour integration time, an effective bandwidth of 6 MHz and dual polarisation. A weighting factor of 1.3 is applied.

TYPICAL USE CASES AS A STAND-ALONE ARRAY

1. **Intoferometric Imaging** - *correlating antenna signals to produce a large sky area image.*
2. **Tied-array Monitoring of Variable Sources** - *e.g. Pulsars*
3. **Fast Transients** - *using transient buffer boards for very high freqency events e.g. cosmic rays, lightning*
4. **Solar Spectrographic Monitoring**
5. **Ionospheric Riometry**
6. **Interplanetary Scintillation Measurements**

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