Table 16: MIDI limiting uncorrelated flux (LUF).

Telescopes	Beam combiner	Spectrograph	Limit (N mag)	Limit (Jy@12μm)
UTs	HIGH_SENS	PRISM	4	1
UTs	HIGH_SENS	GRISM	2.8	3
UTs	SCI_PHOT	PRISM	3.2	2
UTs	SCI_PHOT	GRISM	2	6
ATs	HIGH_SENS	PRISM	0.74	20
ATs	HIGH_SENS	GRISM	0.31	30
ATs	SCI_PHOT	PRISM	0.0	40
ATs	SCI_PHOT	GRISM	-0.44	60

time for an observing run. Typically, 50% (or 33%) of the observing time is spent on sky if $\mathrm{NDIT_{Sky}}$ = $\mathrm{NDIT_{Target}}$ (or $\mathrm{NDIT_{Sky}}$ = 1/2 $\mathrm{NDIT_{Target}}$).

6.11.4 Calibrations

Observations of telluric standard stars at an airmass within ±0.1 of the science observation will be offered as part of the SINFONI calibration plan for all modes available (*i.e.*, for all combinations of image scales and gratings). Darks, internal flat-fields, and wavelength calibrations are also part of the SINFONI calibration plan and are taken during daytime. Time to obtain special calibrations, such as observations of PSF reference stars, must be requested in the proposal.

6.11.5 Modes that are not offered

Observations with the sky spider and spectral dithering are not offered in Period 87.

6.12 MIDI, MID-infrared Interferometric instrument

MIDI is the VLTI instrument for N-band ($8 - 13\,\mu$m) interferometry. It is a two-beam recombiner giving values of moduli of fringe visibility (samples in the (u,v) plane) depending on the wavelength (spectral resolution: $R = 30$ or $R = 230$). MIDI has been offered in both Service and Visitor Modes since Period 73 and can be used with either the UTs or the ATs. For a list of the offered telescope configurations, please refer to
the VLTI baseline page.

The main features of MIDI for Period 87 are:

- Interference fringes recorded in "dispersed-Fourier" mode (long slow scan with coherencing at 1-Hz rate).
- Spectrograph optics: either NaCl PRISM mode ($R = 30$), or KRS5 GRISM mode ($R = 230$).
- Beam combiner optics: either "HIGH_SENS" (no simultaneous photometric measurement of beams before combination), or "SCI_PHOT" (simultaneous photometric measurement).
- Limiting uncorrelated magnitudes are given in Table 16.
- For MIDI, the correlated flux is defined by the uncorrelated flux (in Jy@12μm) multiplied by the estimated visibility. The MIDI limiting correlated flux (LCF) can be obtained for each mode from the MIDI limiting uncorrelated flux (LUF) of this mode (see Table 16), using the formulae : LCF= 0.5 × LUF
- Various spectral filters for acquisition images.

Details on MIDI and its instrumental modes can be found on the **MIDI web page**.

The raw accuracy of the visibility measurements is typically better than 20%. The highest accuracy for calibrated visibilities can be obtained in SCI_PHOT mode, provided target and calibrator are both brighter than 15Jy for UTs and 200Jy for ATs. The visibility of the Science source is absolutely calibrated by observing a Calibration Source. We offer two calibration modes, either Science-Calibration (SCI-CAL) for normal accuracy requirements, or Calibration-Science-Calibration (CAL-SCI-CAL) for high accuracy requirements.

A proposal can consist of different observations of the same target with different baselines and/or hour angles in which case the observing time to be requested is simply computed as the number of required time-slots multiplied by the duration of one slot as given in Table 19. Time constrained observations (*e.g.* variable objects) can further be requested in the appropriate section of the proposal.

6.13 AMBER, Astronomical Multi-BEam combineR

AMBER is a near-infrared, multi-beam interferometric instrument, combining up to 3 telescopes simultaneously. In Period 87, AMBER can be used with UTs or ATs. For specifications of the UT and AT performances see Sect. 4.2.2 and Sect. 4.2.5. All possible triplets of UTs are available, and a number of selected AT combinations. For the telescope positions and baseline lengths of the different AT and UT baselines, please refer to **the VLTI baseline page**.

Because of the limited availability of UTs for AMBER, any scientific programme on the UTs should be designed so that scientifically meaningful results can be achieved in a single night.

6.13.1 Spectral Modes and Coverage

The following spectral modes are offered: the Low Resolution H+K bands (LR-HK), Medium Resolution K band (MR-K), High Resolution K band (HR-K) and Medium Resolution H Band (MR-H). For central wavelengths and wavelength coverages for LR-HK, MR-K, MR-H and HR-K see **the AMBER web page.**

The high readout speed required to record fringes implies that individual exposure time must be short (<180 ms, in medium or high resolution, and <25ms in low resolution), which can only be done if the detector is windowed therefore limiting the spectral range recorded in a single observation. Users interested in obtaining visibility measurements at several spectral positions inside the range allowed by each configuration can add up to two additional spectral bands.

6.13.2 Integration times, DIT

External fringe tracking with FINITO is available on both the UTs and the ATs. The use of FINITO allows the entire AMBER detector to be read, maximizing simultaneous spectral coverage. It also allows the AMBER DITs to be adjusted to yield sufficient signal-to-noise ratio per frame in the fringes. However, the DIT has to remain small since, even with the help of the fringe tracker, interferometric fringes get significantly blurred after integrations lasting seconds. Note that medium and high resolution are only offered with external fringe-tracking as standard setup.

If no fringe tracker is used (*i.e.*, faint and/or extended objects, or airmass too high) the integration times with AMBER will have to be short to minimise the blurring caused by the atmospheric turbulence. In Low Resolution, without external fringe tracking, the maximum authorized DITs are set to 100ms on the ATs and 50ms on the UTs. If *absolute visibility* measurements is the goal, the shortest authorized DITs are recommended (see table 2. in the Template manual); if *closure-phase* and *wavelength differential-mode* are the quantities of interest, the maximum recommended DIT should be used.

Special Modes: Special programs may require a different combination of modes and DITs. This is the case when using MR or HR without external fringe-tracking. A shorter DIT strongly reduces the