7.2 FTIR Verification

7.2.1 Standards and Controls

Each day the instrument is used, the following are required:

1. A system function verification including polystyrene (or other known standard)
2. Energy monitoring

7.2.1.1 Verification Procedure

Verification shall be performed on any day that the instrument is used.

Use of the FTIR microscope system requires that verification be performed on both the bench and the microscope in the mode in which samples are to be run (reflectance or transmittance).

Verification involves running a polystyrene known (or other known standard) through the portion of the instrument used (microscope, bench or ATR) and compared to a library standard, comparing wavenumbers for correspondence.

The bench can be verified by running the instrument system check software which uses an internal polystyrene standard.

The microscope and ATR can be verified by running the system check software and also placing a polystyrene film on that accessory and running.

Instrument verification should include evaluation of such conditions as wave number accuracy, apparent signal-to-noise ratio, and signal strength.

Record successful verification in a logbook or maintain hard or electronic copies of the runs.

7.2.1.2 Energy Monitoring

7.2.1.2.1 Bench Energy

- Monitor bench energy each day of use
- Remove any samples from beam path
- Open instrument monitor software (Instrument)(Monitor)(Energy)(OK)
- Record Energy in logbook

A day to day drop of 30% or greater or a steady decline in energy values over time indicate that maintenance and/or repair is needed. Remove the instrument from service and contact the Forensic

Science Division equipment technician for maintenance and/or repair. Function verification shall be performed before the instrument is returned to service.

7.2.1.2.2 Microscope - Energy

- Monitor energy if used for analysis
- Transmittance
- Remove any samples from stage
- Set aperture to 100um x 100um
- Open instrument monitor software (speedometer icon)
- AutoCorrect to maximize energy if desired (Auto)(correct)
- Record energy value in logbook

A day to day drop of 30% or greater or a steady decline in energy values over time indicate that maintenance and/or repair is needed. Remove the instrument from service and contact the Forensic Science Division equipment technician for maintenance and/or repair. Function verification shall be performed before the instrument is returned to service.

7.2.1.2.3 Reflectance – Energy

- Monitor energy if used for analysis
- Reflectance path selected
- Place slide (low-e glass or gold mirror) on stage - Note which slide used, and monitor the energy performance specific to which type used
- Set aperture to 100um x 100um
- Focus on the surface of the reflective sample or Lower ATR objective onto mirror
- Open instrument monitor software (speedometer icon)
- Record energy value in logbook

A day to day drop of 30% or greater or a steady decline in energy values over time indicate that maintenance and/or repair is needed. Remove the instrument from service and contact the Forensic Science Division equipment technician for maintenance and/or repair. Function verification shall be performed before the instrument is returned to service.

7.2.1.5 Detecting Trends

Energy is monitored on each day of use through the accessories used (bench, ATR, microscope) and recorded in a log. This allows for trends in the energy changes over time to be observed and to determine if an alignment (or some other service) by an equipment technician is necessary. The system check performed also checks for noise, contamination, and throughput in the system. These system checks are saved on the instrument's computer and can also be examined to detect trends. Instrument issues, servicing instances and/or repairs are recorded in a logbook kept with the instrument.