

Time and Frequency, Panama, CENAMEP (Centro Nacional de Metrología de Panamá)



| Calibration or Measurement Service | | | Measurand Level or Range | | | Measurement Conditions/Independent Variable | | Expanded Uncertainty | | | | | NMI Service Identifier | Comments |
|------------------------------------|--------------------------|--|--------------------------|---------------|-------|---|-----------------|----------------------|-------|-----------------|---------------------|---|------------------------|--|
| Quantity | Instrument or Artifact | Instrument Type or Method | Minimum value | Maximum value | Units | Parameter | Specifications | Value | Units | Coverage factor | Level of Confidence | Is the expanded uncertainty a relative one? | | |
| Frequency | Frequency meter | Direct measurement comparison with reference to local standard | 0.5 | 250000 | Hz | Averaging time | 10 s | 1.4E-08 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S001 | This service refers to the calibration of frequency meters that use optical transducers such as optical tachometers for example. Approved on 25 October 2011 |
| Time interval | Time difference meter | Direct measurement comparison with reference to local standard | 10 | 86400 | s | Averaging time | 10 s to 86400 s | 0.05 | s | 2 | 95% | No | CMP-F0-S002 | The service refers to the calibration of time interval measurement devices such as stopwatches, timers, digital and analog clocks for example. Approved on 25 October 2011 |
| Frequency | Local frequency standard | Direct frequency measurement with a signal mixer | 100 | 100 | kHz | Averaging time | 1 d | 6E-13 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S005 | Approved on 25 October 2011 |
| | | | | | | Amplitude | 0.5 V to 5 V | | | | | | | |
| Frequency | Local frequency standard | Direct frequency measurement with a signal mixer | 1 | 1 | MHz | Averaging time | 1 d | 6E-13 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S005 | Approved on 25 October 2011 |
| | | | | | | Amplitude | 0.5 V to 5 V | | | | | | | |
| Frequency | Local frequency standard | Direct frequency measurement with a signal mixer | 5 | 5 | MHz | Averaging time | 1 d | 6E-13 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S005 | Approved on 25 October 2011 |
| | | | | | | Amplitude | 0.5 V to 5 V | | | | | | | |
| Frequency | Local frequency standard | Direct frequency measurement with a signal mixer | 10 | 10 | MHz | Averaging time | 1 d | 6E-13 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S005 | Approved on 25 October 2011 |
| | | | | | | Amplitude | 0.5 V to 5 V | | | | | | | |

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| Calibration or Measurement Service | | | Measurand Level or Range | | | Measurement Conditions/Independent Variable | | Expanded Uncertainty | | | | | NMI Service Identifier | Comments | |
|------------------------------------|--------------------------|---|--------------------------|---------------|-------|---|----------------|----------------------|-------|-----------------|---------------------|---|------------------------|-----------------------------|--|
| Quantity | Instrument or Artifact | Instrument Type or Method | Minimum value | Maximum value | Units | Parameter | Specifications | Value | Units | Coverage factor | Level of Confidence | Is the expanded uncertainty a relative one? | | | |
| Frequency | General frequency source | Direct frequency measurement with a signal mixer | 1 | 225E+06 | Hz | Averaging time | 100 s | 2E-11 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S006 | Approved on 25 October 2011 | |
| | | | | | | Amplitude | 0.5 V to 5 V | | | | | | | | |
| | | | | | | Number of measurements | 360 | | | | | | | | |
| Frequency | Frequency counter | Using frequency synthesizers with an external timebase from atomic standard | 1 | 1E+04 | Hz | Averaging time | 10 s | 5E-06 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S007 | Approved on 25 October 2011 | |
| Frequency | Frequency counter | Using frequency synthesizers with an external timebase from atomic standard | 1E+04 | 1E+06 | Hz | Averaging time | 10 s | 5E-10 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S007 | Approved on 25 October 2011 | |
| Frequency | Frequency counter | Using frequency synthesizers with an external timebase from atomic standard | 1E+06 | 3E+09 | Hz | Averaging time | 10 s | 5E-11 | Hz/Hz | 2 | 95% | Yes | CMP-F0-S007 | Approved on 25 October 2011 | |