Decision Rules for Declaring Tolerance Conformity

Models 1314, 1315 and 1316

- Linear Magnitude shall be verified to conform to published specifications. The measurement uncertainty will not be taken into consideration when determining whether a measurement is within specification.
- Calibrated RF Power is reported as Pass/Fail based on a guard-banded test limit. The guard-banded test limit will provide a probability of false pass of less than 2.0%.

Models 1505, 1510, 1807, 2505, 2510, 2601, 2602, 2604, F1109, F1116, F1117, F1119, F1125, F1130, F1135, M1110, M1111, M1118, M1120, M1125, M1130 and M1135 (the base model # is listed; however, the decision rules also apply to model #s with the suffixes A, AC, B, C, H and N)

- Incoming calibration factors are reported as in-tolerance or out-of-tolerance based on the difference in reported calibration factor between the test being reported and the most recent test for which TEGAM has records. This comparison is intended to catch large changes in calibration factor that could be caused by excessive drift or damage. The magnitude of the difference between the current and the previous measurement is compared with the RSS combination of the k=2 uncertainty of the two tests, plus a 0.5%/year calibration factor change allowance. In-tolerance is reported if the magnitude difference is less than the combined uncertainty plus the change allowance; otherwise out-of-tolerance is reported. Additionally, out-of-tolerance is reported if the calibration factor is below the minimum allowed calibration factor, if such a specification exists for this model. Calibration factor uncertainty is not considered when determining if the minimum calibration factor is met.
- Outgoing calibration factors are reported as in-tolerance when the minimum calibration factor is met. Calibration factor uncertainty is not considered when determining if the minimum calibration factor is met.
- Tests are conducted to measure rho magnitude and angle to perform Gamma correction and to verify that the mount meets manufacturer's specifications for maximum reflection. Magnitude and angle are reported with uncertainty. The in-tolerance/out-of-tolerance conclusion compares the magnitude of the reported reflection coefficient with the maximum allowable reflection from the most recent TEGAM specification for the product. No uncertainty or guard-banding is used in

this conclusion. If the measured magnitude is less than the specified maximum, a PASS is reported; otherwise a FAIL is reported.

Models 1804, 1805 and 1806 (the base model # is listed; however, the decision rules also apply to model #s with the suffixes A and B)

- The parameters measured in the test report, containing specific tolerance limits are reported as pass/fail or in-tolerance/out-of-tolerance without taking measurement uncertainty into account, unless stated otherwise.
- The power sensor calibration factors derived with this device installed as part of a TEGAM, Inc Power Sensor Calibration System are reported as in-tolerance or out-of-tolerance based on the difference in calibration factor between the test being reported and the current calibration for that sensor. The difference between the current and the previous measurement is compared with the RSS combination of the k=2 uncertainties of the two tests. In-tolerance is reported if the calibration factor difference is less than the combined uncertainty; otherwise out-of-tolerance is reported.

Models 1825 and 1827

- The parameters measured in the test report, containing specific tolerance limits are reported as pass/fail or in-tolerance/out-of-tolerance without taking measurement uncertainty into account, unless stated otherwise.
- Incoming calibration factors are reported as in-tolerance or out-of-tolerance based on the difference in reported calibration factor between the test being reported and the most recent test for which TEGAM has records. This comparison is intended to catch large changes in calibration factor that could be caused by excessive drift or damage. The magnitude of the difference between the current and the previous measurement is compared with the RSS combination of the k=2 uncertainty of the two tests, plus a 0.5%/year calibration factor change allowance. In-tolerance is reported if the magnitude difference is less than the combined uncertainty plus the change allowance; otherwise out-of-tolerance is reported. Additionally, out-of-tolerance is reported if the calibration factor is below the minimum allowed calibration factor if such a specification exists for this model. Calibration factor uncertainty is not considered when determining if the minimum calibration factor is met.
- Outgoing calibration factors are reported as in-tolerance when the minimum calibration factor is met. Calibration factor uncertainty is not considered when determining if the minimum calibration factor is met.
- Tests are conducted to measure rho magnitude and angle to perform Gamma correction and to verify that the mount meets manufacturer's specifications for

maximum reflection. Magnitude and angle are reported with uncertainty. The in-tolerance/out-of-tolerance conclusion compares the magnitude of the reported reflection coefficient with the maximum allowable reflection from the most recent TEGAM specification for the product. No uncertainty or guard-banding is used in this conclusion. If the measured magnitude is less than the specified maximum, a PASS is reported; otherwise a FAIL is reported.

Model 1830A

- Calibration factors for the 1830A RF Power meter are measured with the uncertainties reported. These factors are subject to two comparisons:
  o They are compared to intended "nominal" values as a gross check of the function of the circuit. TEGAM engineering has determined conservative limits that indicate that the circuit is functioning as intended. If the factor is found to within the limits (listed on the test report), with NO UNCERTAINTY considered, a PASS is issued; otherwise a FAIL is reported.
- The factors are compared to the most recent set of factors stored within the unit being calibrated, and a difference, "delta" computed for each factor. The delta indicates how much each calibration factor has changed since the last test. TEGAM engineering has assigned acceptable limits for change to each factor, based on the change in factor's impact upon the error budget of 1830A power measurements. The limits only consider the impact on 1830A results of the change. The error budget for the 1830A considers both the reported uncertainty of the measurement of the factor, AND the allowed change. If the "delta" is less than 75% of the limit, a PASS is reported; if between 75% and 100% of the limit, a pass is reported, but the data point is highlighted to WARN of the condition; and if the delta is larger than the limit, a FAIL is reported.

Model 8852

- Measurement accuracy test: If the system measures the 30dB attenuator to within the combined uncertainty of the system and the attenuator, the test is reported as in-tolerance. If the measurement is outside of the combined uncertainty, the test is reported as out-of-tolerance.
- 30MHz attenuation verification test: If the system measures the 30MHz attenuator to within the combined measurement uncertainty of the system and the attenuator, the test is reported as in-tolerance. If the measurement is outside of the combined measurement uncertainty, the test is reported as out-of-tolerance.
- Other parameters measured in the test report, containing specific tolerance limits are reported as pass/fail or in-tolerance/out-of-tolerance without taking measurement uncertainty into account, unless stated otherwise.

Models 911, 912, 921, 922, 931, 932, 940, 945, 947 (the base model # is listed; however, the decision rules also apply to model #s with the suffixes A and B)

- Test Results are reported as Pass/Fail based on compliance with a guard-banded test limit. The test limit is guard-banded to provide a probability of a false pass of less than 2.0%.

N Type, 3.5mm and 2.4mm attenuators from 0dB through 30dB and power splitters in the frequency range of 100kHz to 50 GHz. This includes but is not limited to the following attenuators: 1130-913-02, 1135-913-02, 138-645-1, 138-645-2, 2_XX, 44-XX and the attenuators only in the 187-4001 kit. This includes but is not limited to the following power splitters: 102-475-1, 102-688 and RG-100.

- Attenuation, rho magnitude, and reflection coefficient are reported as in tolerance if the value measured is within the attenuation and reflection limits specified for the attenuator without consideration for the uncertainty. If these limits are not specified, the limits that are available (attenuation limits only for example) or limits agreed to with the customer will be used as the pass/fail criteria, without consideration for the uncertainty.

Model VM-7

- Absolute incremental accuracy test: If the VM-7 measures the 30MHz attenuator to within the combined measurement uncertainty of the VM-7 and attenuator, the test is reported as in-tolerance. If the measurement is outside of the combined measurement uncertainty, the test is reported at out-of-tolerance.
- Other parameters measured in the test report, containing specific tolerance limits are reported as pass/fail or in-tolerance/out-of-tolerance without taking measurement uncertainty into account, unless stated otherwise.