

Reference	xDevs.com	Calibration date	December 11 2020
Ref P/N	Volt	Ambient Temperature	23.64 °C
Serial	USAC	Relative Humidity	22.12 %
ID Number	Final retest	Pressure	1017.22 hPa
Notes	Power from PSU	Test type	Front 5440A-7003 cable terminals, nulled DMM

Reference standard	Mfg	Model	Options	Serial / Unc	CEID	Calibration date	Due date
DC STD	xDevs.com	792X	9.9999698 ±0.3 ppm	X102	XVR1	11/26/2020	05/26/2021
DC STD	Datron	4910	REDACTED ±0.1 ppm	REDACTED	NVR1	12/03/2020	12/03/2021
DMM	Keysight	3458A/001/002	03	Process unit	XDM5	11/28/2020	12/28/2020
Thermometer	Fluke	1529	Omega RTD100CAP Class A	Process unit	XTM2	12/04/2020	12/04/2021

xDevs.com certifies that this calibration used measurement standards traceable to the SI, through ISO 17025 Accredited Measurement Laboratory. Actual measurement uncertainty available upon request was calculated using the expanded method and is expressed in values at approximately the 95% confidence level using a coverage factor of K= 2.

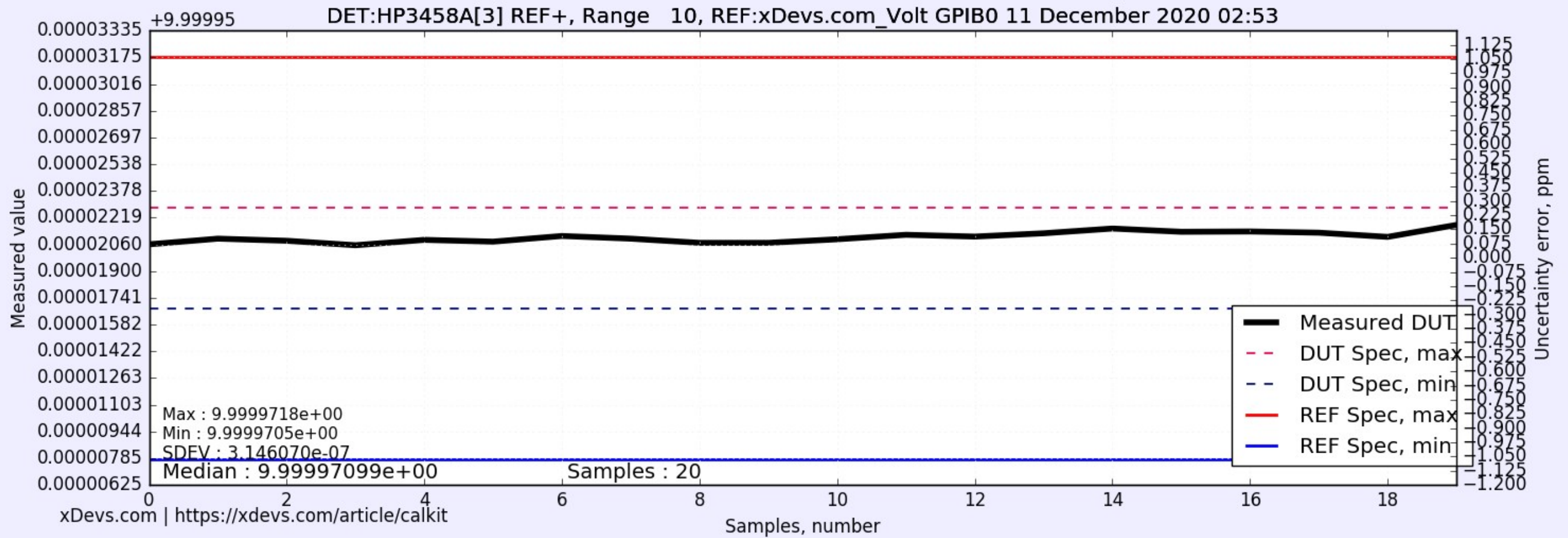
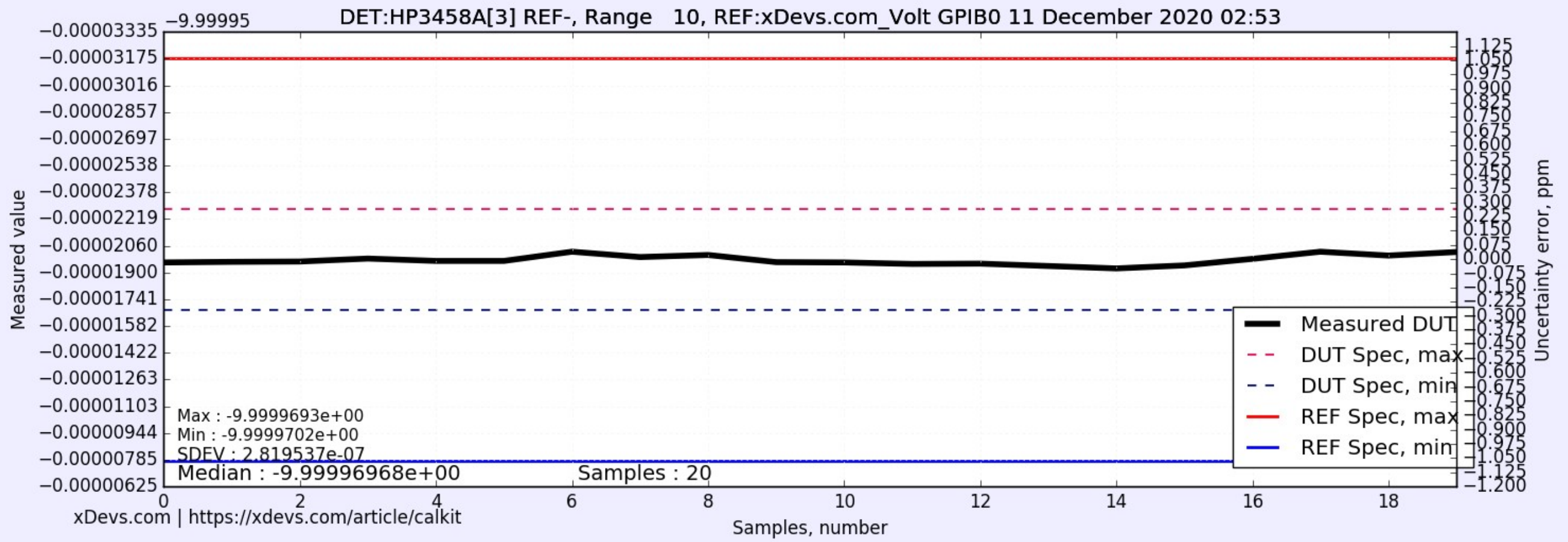
Certificate statements are based on test results within specified limits without reduction of the uncertainty of the test and/or measurement. The test and measurement data here relate only to the item tested and/or measured. Unit acceptance of failure includes uncertainty data compilation. Calibration due date that appears on the Certificate of Calibration and labels are determined by the customer and does not imply conformance to a standard.

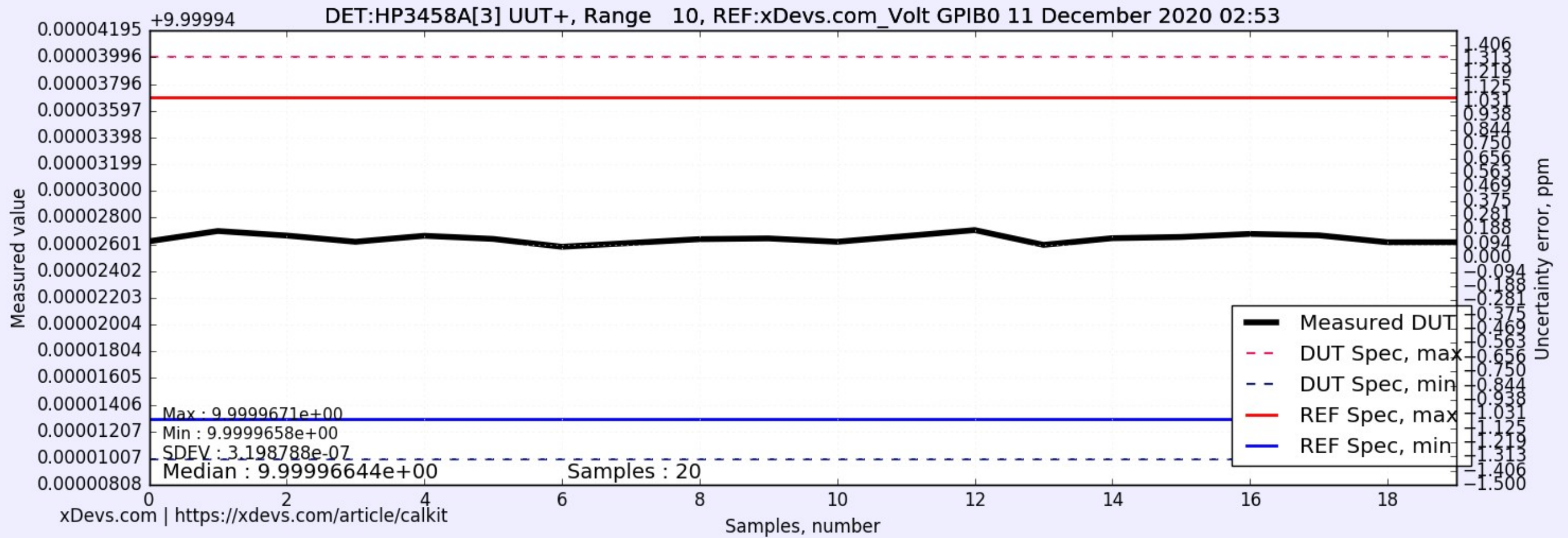
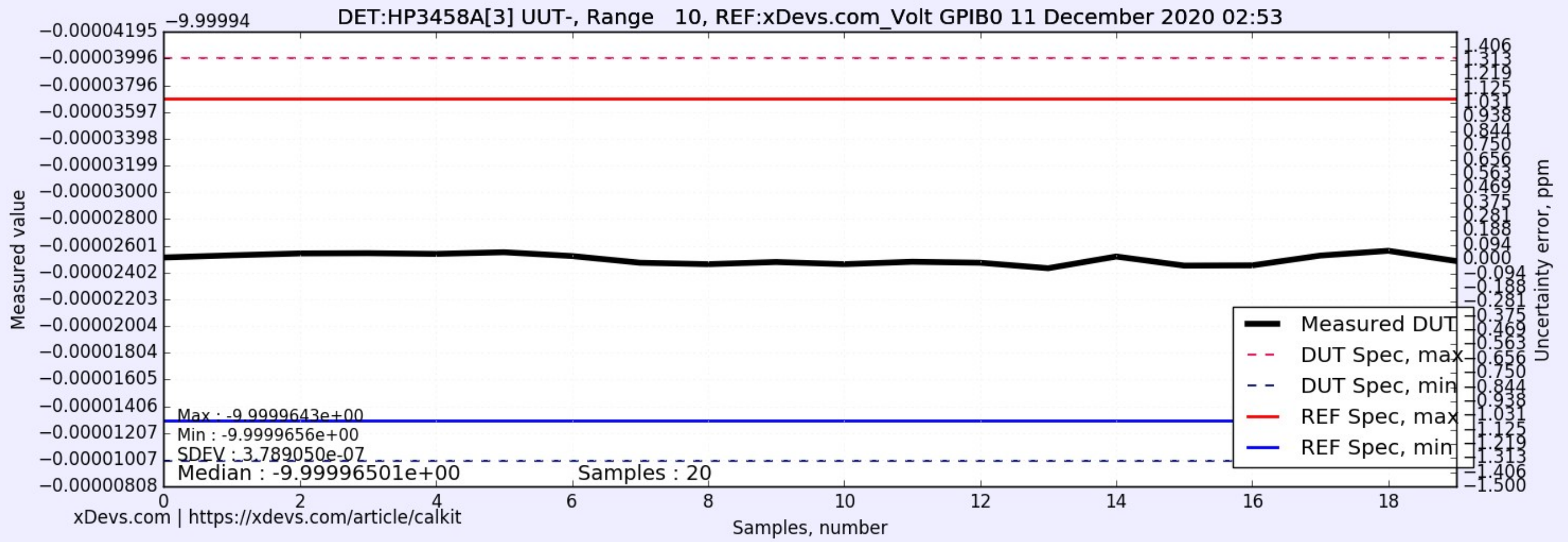
UUT output transferred by manual ratiometric measurement with reference standard.

Fixed 1.000e+01 range is used on the Keysight 3458A/X02 detector. The following test use 10 minute transfer specification with xDevs.com Volt output source as reference. Gain verified for stability ±0.10 ppm over the test period. Detector zero offset is DUT is nulled prior to the measurement.

Configuration : Battery power STD, NPLC100, NDIG8, Guard is open. DUT Reference powered by Keysight E36312A +/-12 VDC.

	Measurement	Unit	Uncertainty	Standard Deviation	DUT Spec / Δ	Degree of freedom / Notes
Transfer reference output	9.9999698	VDC	±0.300 ppm			
Reference measured output (+)	9.9999711	VDC	±0.100 ppm	σ = 2.984477e-07 VDC	Δ = 0.130 ppm	20
Reference measured output (-)	-9.9999697	VDC	±0.100 ppm	σ = 3.195151e-07 VDC	Δ = -0.010 ppm	20
Reference calculated +/-	9.9999704	VDC	±0.100 ppm		Δ = 0.060 ppm	
Detector zero offset	0.0000006	VDC		σ = 8.214631e-08 VDC		
UUT measured output (+)	9.9999664	VDC	±0.100 ppm	σ = 3.172180e-07 VDC		20
UUT measured output (-)	-9.9999648	VDC	±0.100 ppm	σ = 3.712761e-07 VDC		20
Ratio positive polarity	0.99999953		±0.200 ppm			Inf
Ratio negative polarity	0.99999951		±0.200 ppm			Inf
UUT calculated output (+)	9.9999651	VDC	±0.500 ppm		Δ = 0.011 ppm	
UUT calculated output (-)	-9.9999649	VDC	±0.500 ppm		Δ = -0.011 ppm	
Temperature Δ	0.124	°C	±0.60 °C		±1.0 °C	
UUT previous data	9.9999590	VDC	±0.410 ppm			Report
Deviation from previous measurement	0.602 ppm	VDC				
UUT Expanded measurement (Linear) k=2	9.9999650	VDC	±0.500 ppm		0.1%	In spec
UUT Expanded measurement (RSS) k=2	9.9999650	VDC	±0.361 ppm		0.1%	In spec





Test procedure : \$Id: xfer_dcv.py | Rev 1989 | 2020/11/04 00:28:02 tin_fpga \$

Lab temperature maintained +23°C ±1°C

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RAW data	Result
Array Ref P	[9.999970603, 9.999970941, 9.999970816, 9.999970549, 9.99997087, 9.999970763, 9.999971101, 9.999970941, 9.999970692, 9.999970692, 9.999970905, 9.999971172, 9.999971065, 9.999971261, 9.999971545, 9.99997135, 9.999971368, 9.999971296, 9.999971047, 9.999971759]
Array Ref N	[-9.999969607, -9.999969642, -9.99996966, -9.999969838, -9.999969696, -9.999969696, -9.999970247, -9.999969927, -9.999970051, -9.999969625, -9.999969607, -9.999969518, -9.999969536, -9.999969393, -9.999969251, -9.999969429, -9.99996982, -9.999970247, -9.999970016, -9.999970229]
Array UUT P	[9.999966246, 9.99996701, 9.999966672, 9.99996621, 9.999966655, 9.999966423, 9.999965837, 9.999966121, 9.999966406, 9.999966459, 9.99996621, 9.999966637, 9.999967081, 9.999965979, 9.999966477, 9.999966566, 9.999966797, 9.99996669, 9.999966174, 9.999966174]
Array UUT N	[-9.999965143, -9.999965303, -9.999965445, -9.999965463, -9.99996541, -9.999965534, -9.99996525, -9.999964752, -9.999964645, -9.999964805, -9.999964645, -9.999964823, -9.999964752, -9.999964343, -9.999965214, -9.999964538, -9.999964556, -9.999965285, -9.999965641, -9.999964876]

Histogramm

