

Reference	FFLab	Calibration date	October 04 2020
Ref P/N	A9	Ambient Temperature	24.68 °C
Serial	XFER	Relative Humidity	50.85 %
ID Number	Calibration test, as received;	Pressure	1020.86 hPa
Notes	----	Test type	----

Reference standard	Mfg	Model	Options	Serial / Unc	CEID	Calibration date	Due date
DC REFERENCE	FF Lab	A9	7.0756675	1	None	10/4/2020	10/4/2020
DMM	HP	3458A		FF-4		None	None

REDACTED. 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.

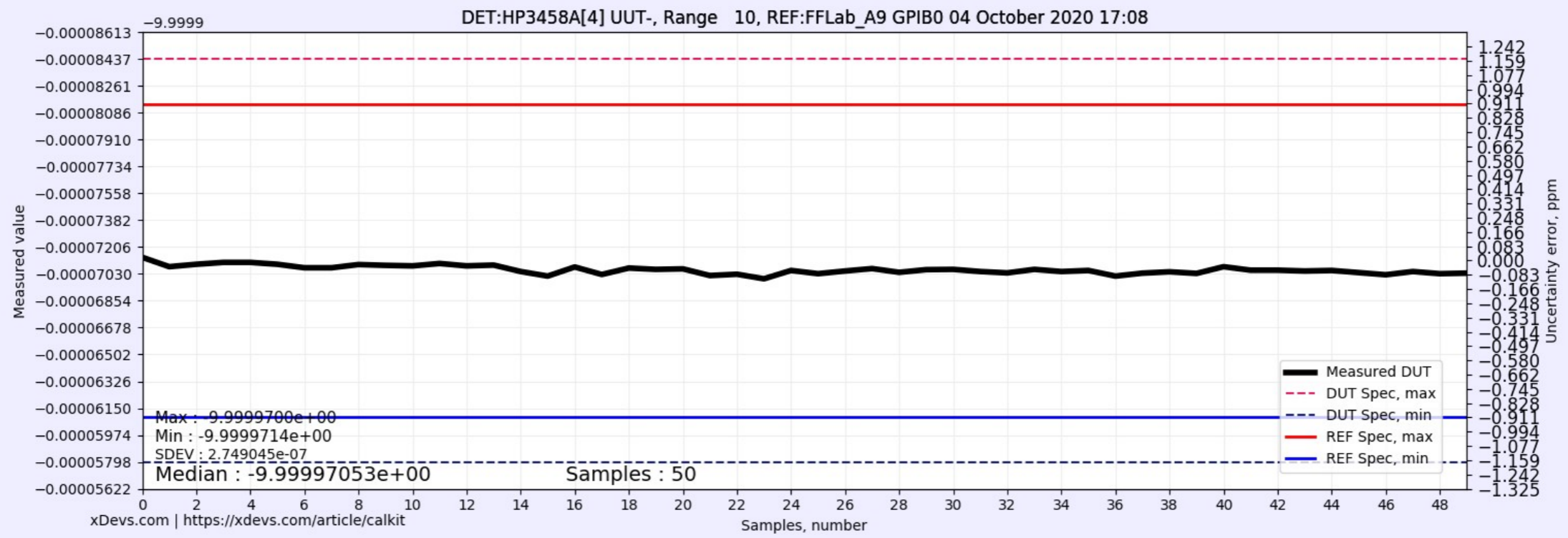
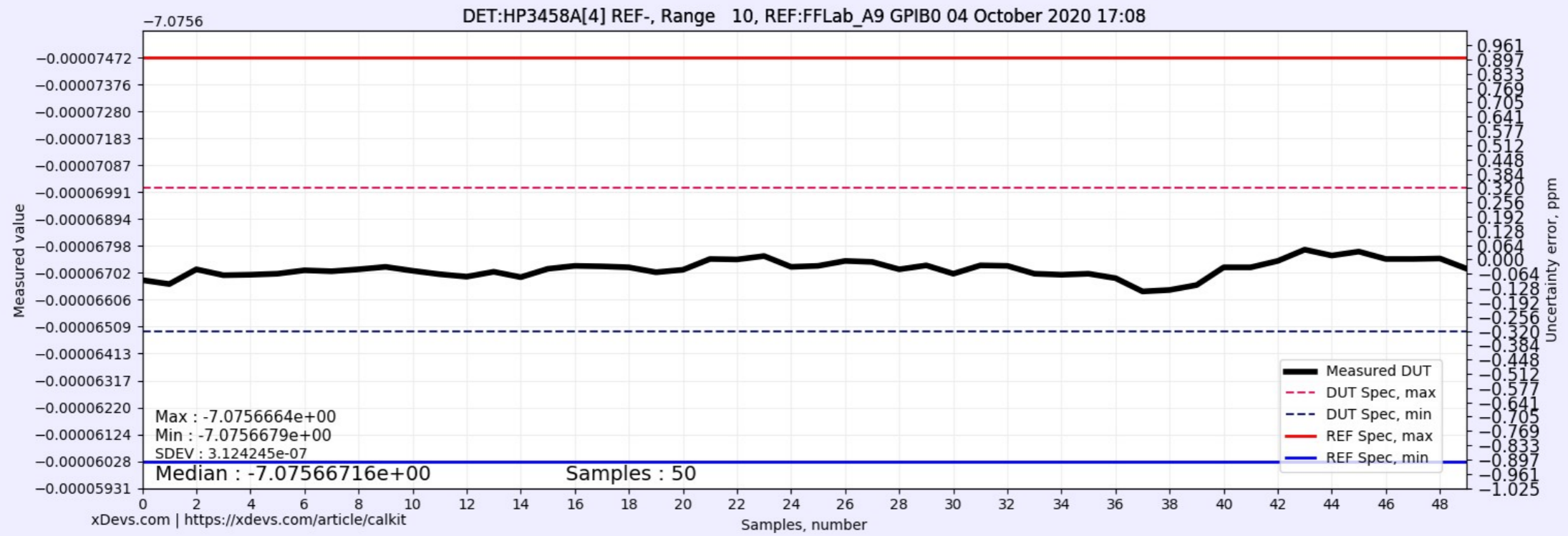
UUT output transferred by manual ratiometric measurement with reference standard.

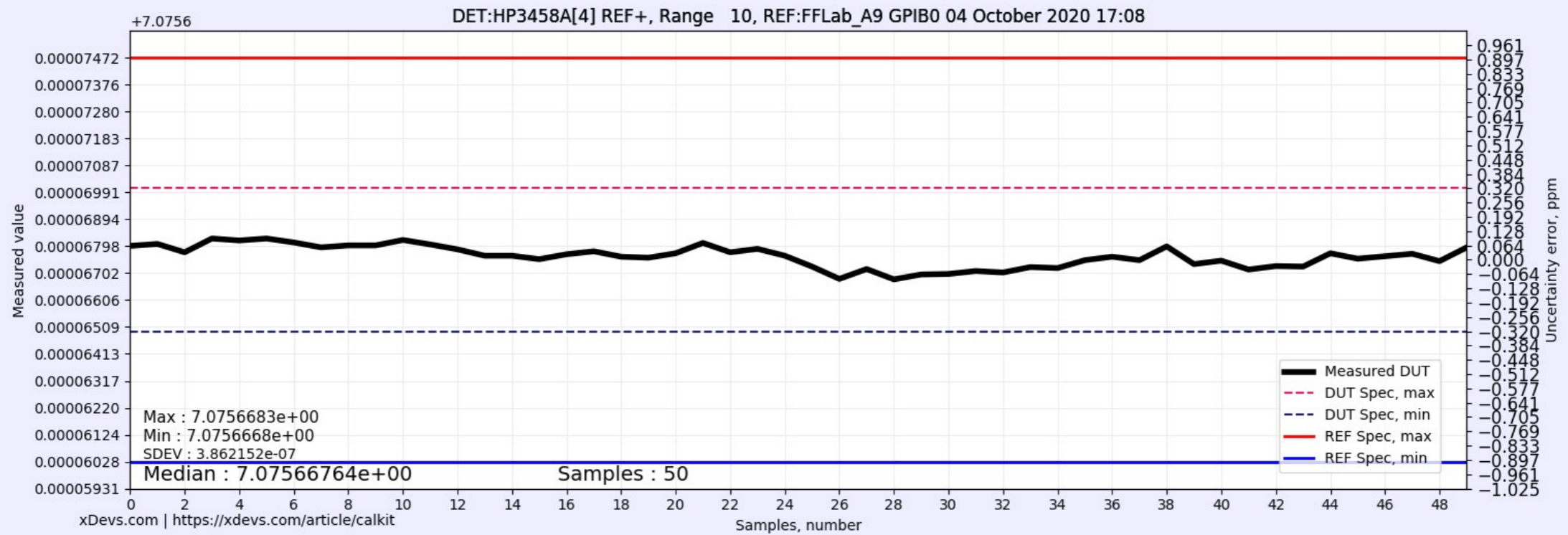
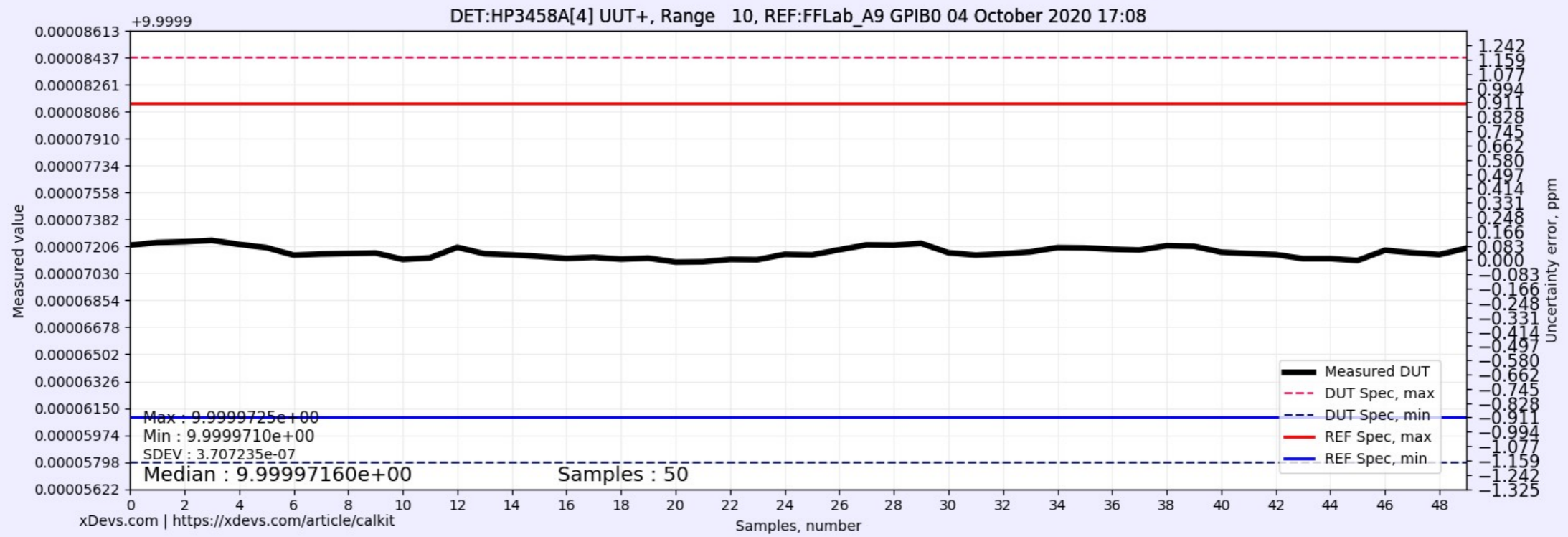
Fixed 1.000e+01 range is used on the Keysight 3458A/X02 detector. The following test use 10 minute transfer specification with FFLab A9 output source as reference. Gain verified for stability ±0.10 ppm over the test period. Detector zero offset is DUT is nulled prior to the measurement.

Configuration : Battery power STD, NPLC100, NDIG8, Guard is open.

	Measurement	Unit	Uncertainty	Standard Deviation	DUT Spec / Δ	Degree of freedom / Notes
<b>Transfer reference output</b>	<b>7.0756675</b>	<b>VDC</b>	<b>±0.221 ppm</b>			
Reference measured output (+)	7.0756676	VDC	±0.121 ppm	$\sigma = 3.728787e-07$ VDC	$\Delta = 0.015$ ppm	50
Reference measured output (-)	-7.0756672	VDC	±0.121 ppm	$\sigma = 3.090276e-07$ VDC	$\Delta = -0.040$ ppm	50
Reference calculated +/-	7.0756674	VDC	±0.121 ppm		$\Delta = -0.012$ ppm	
Detector zero offset	0.0000001	VDC		$\sigma = 0.000000e+00$ VDC		
UUT measured output (+)	9.9999716	VDC	±0.100 ppm	$\sigma = 3.203114e-07$ VDC		50
UUT measured output (-)	-9.9999705	VDC	±0.100 ppm	$\sigma = 2.290165e-07$ VDC		50
Ratio positive polarity	1.41329019		±0.221 ppm			Inf
Ratio negative polarity	1.41329011		±0.221 ppm			Inf
UUT calculated output (+)	9.9999714	VDC	±0.442 ppm		$\Delta = 0.025$ ppm	
UUT calculated output (-)	-9.9999709	VDC	±0.442 ppm		$\Delta = -0.025$ ppm	
Temperature Δ	0.059	°C	±1.00 %		±1.0 °C	
UUT previous data	10.0000000	VDC	±0.000 ppm			Report
Deviation from previous	-2.882 ppm	VDC	±0.312 ppm			
<b>UUT transfer result (Linear)</b>	<b>9.9999712</b>	<b>VDC</b>	<b>±0.442 ppm</b>		0.1%	In spec
<b>UUT transfer result (RSS)</b>	<b>9.9999712</b>	<b>VDC</b>	<b>±0.312 ppm</b>		0.1%	In spec

[Statistics image data](#)





Test procedure : \$Id\$

Lab temperature maintained +23°C ±1°C

xDevs.com Confidential

RAW data	Result
Array Ref P	[7.075667995, 7.075668066, 7.075667766, 7.07566826, 7.075668189, 7.07566826, 7.075668119, 7.075667943, 7.075668013, 7.075668013, 7.075668207, 7.075668048, 7.075667872, 7.075667643, 7.075667643, 7.075667519, 7.075667696, 7.075667802, 7.075667608, 7.075667572, 7.075667731, 7.075668101, 7.075667766, 7.07566789, 7.075667643, 7.075667255, 7.075666814, 7.075667167, 7.075666797, 7.075666973, 7.075666991, 7.075667096, 7.075667044, 7.075667237, 7.075667202, 7.075667484, 7.075667608, 7.075667484, 7.075667978, 7.075667343, 7.075667467, 7.075667149, 7.075667273, 7.075667255, 7.075667731, 7.075667537, 7.075667625, 7.075667713, 7.075667449, 7.075667943]
Array Ref N	[-7.075666762, -7.075666621, -7.075667149, -7.075666938, -7.075666955, -7.075666991, -7.075667114, -7.075667079, -7.075667149, -7.075667237, -7.075667096, -7.075666973, -7.075666885, -7.075667061, -7.075666867, -7.075667167, -7.075667273, -7.075667255, -7.07566722, -7.075667044, -7.075667132, -7.075667519, -7.075667502, -7.075667625, -7.075667237, -7.075667273, -7.075667449, -7.075667414, -7.075667149, -7.07566729, -7.075666991, -7.07566729, -7.075667273, -7.075666991, -7.075666955, -7.075666991, -7.075666832, -7.075666356, -7.075666409, -7.075666585, -7.07566722, -7.07566722, -7.07566722, -7.07566722, -7.075667449, -7.075667854, -7.075667643, -7.075667784, -7.075667519, -7.075667519, -7.075667537, -7.075667167]
Array UUT P	[9.999972148, 9.999972324, 9.999972377, 9.999972465, 9.999972201, 9.999971989, 9.999971496, 9.999971566, 9.999971601, 9.999971637, 9.999971214, 9.999971319, 9.999972007, 9.999971584, 9.999971513, 9.999971407, 9.999971284, 9.999971355, 9.999971231, 9.999971302, 9.999971037, 9.999971055, 9.999971214, 9.999971196, 9.999971548, 9.999971513, 9.999971848, 9.999972165, 9.999972148, 9.999972271, 9.999971654, 9.999971496, 9.999971584, 9.999971707, 9.999971989, 9.999971972, 9.999971883, 9.999971831, 9.999972113, 9.999972077, 9.99997169, 9.999971601, 9.999971531, 9.999971266, 9.999971266, 9.999971143, 9.999971813, 9.999971654, 9.999971531, 9.999971954]
Array UUT N	[-9.99997139, -9.999970773, -9.999970932, -9.999971055, -9.999971055, -9.999970932, -9.999970702, -9.999970702, -9.999970914, -9.999970861, -9.999970826, -9.999970984, -9.999970826, -9.999970879, -9.999970456, -9.999970156, -9.999970755, -9.999970262, -9.999970685, -9.999970597, -9.999970632, -9.999970191, -9.999970279, -9.99996998, -9.999970526, -9.999970315, -9.999970491, -9.99997065, -9.999970403, -9.999970579, -9.999970597, -9.999970456, -9.999970367, -9.999970597, -9.999970456, -9.999970526, -9.999970156, -9.99997035, -9.999970438, -9.999970332, -9.999970773, -9.999970544, -9.999970544, -9.999970491, -9.999970526, -9.999970385, -9.999970244, -9.999970456, -9.999970315, -9.99997035]

Histogramm

