



## Report Overview

ILC/PT Kit	EXAMPLE CALIPER
Enrollment ID	37451
Participant	ABC Calibrations
Lab Number	B37451
Date Performed	7/9/2024
Performed By	Participant Thirteen
Total Measurements	2

## Measurement 1: MV 1) 30.00 mm

### Measurement Details

Measurement	Reference Value	Unit	Category
MV 1) 30.00 mm	30.26	mm	Dimensional - Calipers

### Statistical Summary

Nominal Value	Established Ref Value	Mean (All)	Mean (Satisfactory)	Ref Uncertainty
30.00	30.26	30.26	30.24	0.036

### Detailed Participant Results

Lab ID	Reported Uncertainty	Error	En	S/U	Z-Score
B37424	0.020 mm	0.000000 mm	-0.01	S	-0.00
B37425	0.021 mm	0.090000 mm	2.18	U	0.99
B37427	0.030 mm	0.040000 mm	0.85	S	0.44
B37428	0.020 mm	-0.020000 mm	-0.50	S	-0.22
B37429	0.030 mm	0.010000 mm	0.21	S	0.11
B37444	0.020 mm	-0.040000 mm	-0.99	S	-0.44

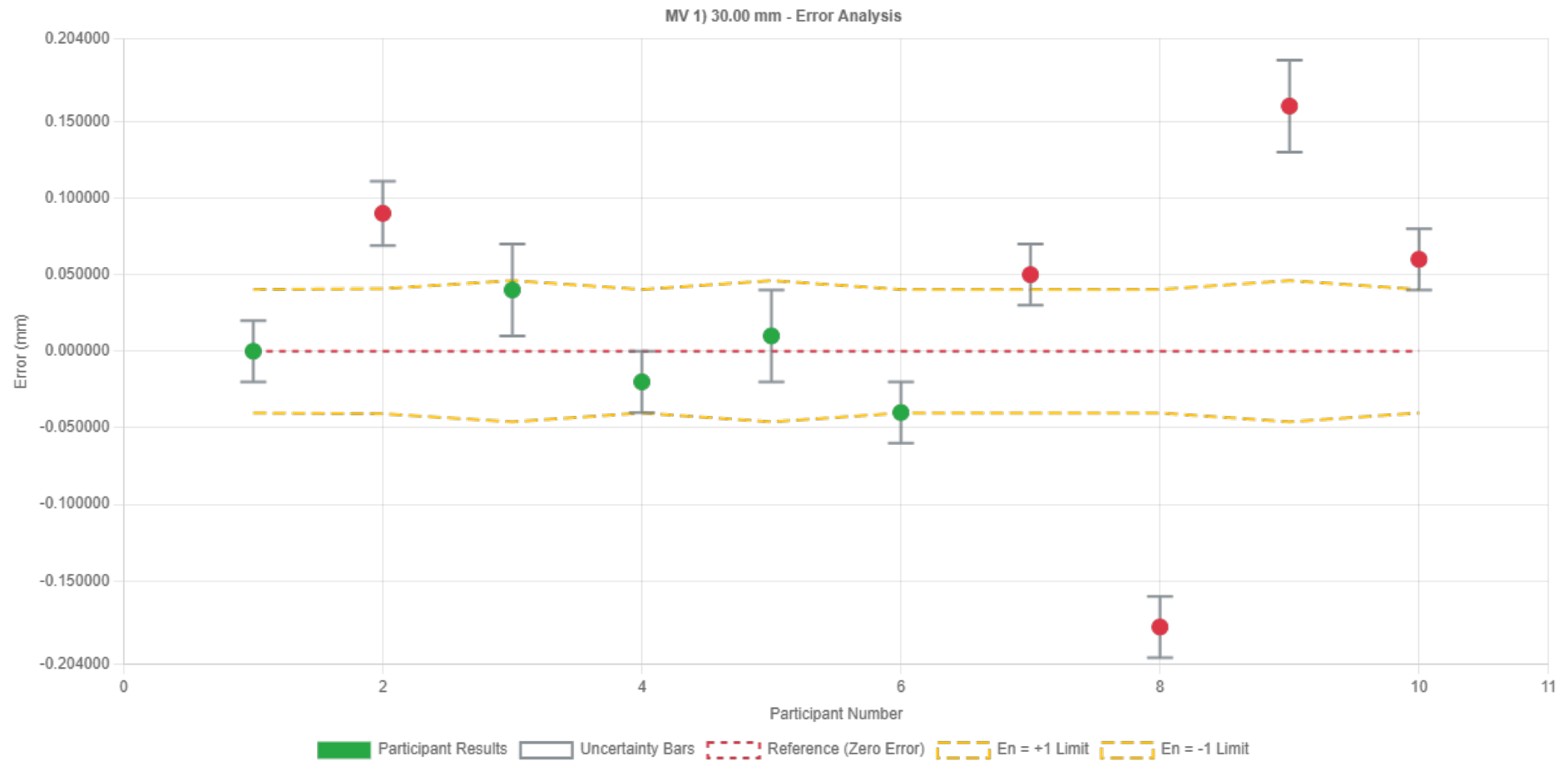


# Comparison Report

ABC Calibrations

Lab ID	Reported Uncertainty	Error	En	S/U	Z-Score
B37445	0.020 mm	0.050000 mm	1.22	U	0.55
B37447	0.020 mm	-0.180000 mm	-4.44	U	-1.98
B37448	0.030 mm	0.160000 mm	3.55	U	1.81
B37449	0.020 mm	0.060000 mm	1.47	U	0.66

## Deviation from Reference Value Chart





## Measurement 2: MV 2) 4.000 in

### Measurement Details

Measurement	Reference Value	Unit	Category
MV 2) 4.000 in	4.001 0	in	Dimensional - Calipers

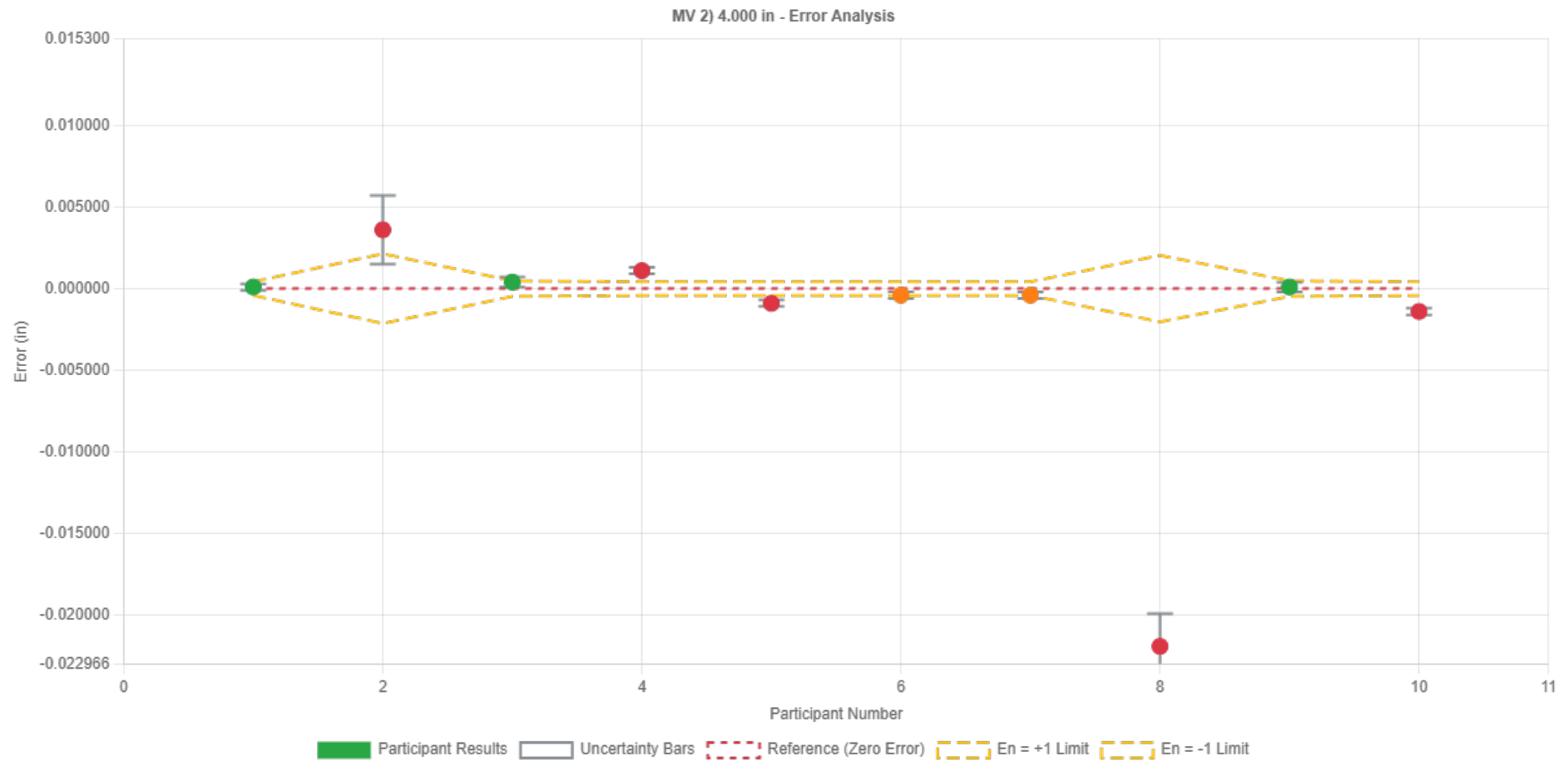
### Statistical Summary

Nominal Value	Established Ref Value	Mean (All)	Mean (Satisfactory)	Ref Uncertainty
4.000 0	4.001 0	3.998 9	4.001 1	0.000 22

### Detailed Participant Results

Lab ID	Reported Uncertainty	Error	En	S/U	Z-Score
B37424	0.000 20 in	0.000100 in	0.20	S	0.00
B37425	0.002 10 in	0.003600 in	1.68	U	0.06
B37427	0.000 30 in	0.000400 in	0.81	S	0.01
B37428	0.000 20 in	0.001100 in	2.60	U	0.02
B37429	0.000 20 in	-0.000900 in	-2.20	U	-0.02
B37444	0.000 20 in	-0.000400 in	-1.00	U	-0.01
B37445	0.000 20 in	-0.000400 in	-1.00	U	-0.01
B37447	0.002 00 in	-0.021900 in	-10.78	U	-0.39
B37448	0.000 30 in	0.000100 in	0.17	S	0.00
B37449	0.000 20 in	-0.001400 in	-3.40	U	-0.03

## Deviation from Reference Value Chart



## Chart Interpretation Guide

### Understanding Error Analysis

#### What is Error?

$$\text{Error} = \text{Test Value} - \text{Reference Value}$$

- Positive error: You measured higher than the reference value
- Negative error: You measured lower than the reference value
- Zero error: Perfect match with the reference value
- The closer to zero, the better your measurement accuracy

#### Uncertainty Bars (Gray Lines)

$$\text{Participant Uncertainty (u}_{\text{lab}})$$

- Shows YOUR laboratory's measurement uncertainty
- Larger bars = more uncertainty in your measurement
- Represents the confidence in your reported value
- Does not include reference uncertainty - just your measurement uncertainty

#### En Limits (Yellow Dashed Lines)

$$\text{En} = \text{Error} \div \text{Combined Uncertainty}$$

- Yellow lines show where  $\text{En} = \pm 1$  for each participant
- Points outside yellow lines  $\Rightarrow \text{En} > 1$  (concerning performance)
- Points within yellow lines  $\Rightarrow \text{En} \leq 1$  (acceptable performance)
- Note: Yellow lines use combined uncertainty ( $\sqrt{(\text{u}_{\text{lab}}^2 + \text{u}_{\text{ref}}^2)}$ ) for proper En calculation

### Performance Interpretation

Performance Level	Interpretation
Excellent	Error close to zero with small uncertainty bars
Acceptable	Points within yellow En limits ( $\text{En} \leq 1$ )
Concerning	Points outside yellow limits ( $\text{En} > 1$ ) - investigate measurement process
Statistically Insignificant	Uncertainty bars cross the zero error line - error is not statistically significant

## Status Indicators

Symbol	Meaning
S	Satisfactory - Performance meets proficiency testing criteria
U	Unsatisfactory - Performance does not meet proficiency testing criteria
*	Outside $2\sigma$ - Result is outside two standard deviations from the mean
**	Excluded from calculation - Result was excluded from statistical calculations

## Understanding Statistical Terms

### Mean (All Participants)

*Average of ALL participant results*

- Includes every laboratory's reported value
- Contains both satisfactory (S) and unsatisfactory (U) results
- May include outliers and poor performers
- Provides overall population perspective

### Mean (Satisfactory Only)

*Average of ONLY satisfactory performers*

- Includes only results with "S" (Satisfactory) status
- Excludes unsatisfactory (U) and outlier results
- Represents the "satisfactory laboratory" consensus
- Often closer to the reference value