

## UDT Illumina Tramp<sup>™</sup> - Headlight Test System



Advancements in headlight technology, including HID, LED and even laser-based sources, combined with curve-adaptive and high-beam assist technology require precise and repeatable measurement systems to ensure regulatory and safety compliance.

Measurement and comparison of glare and illuminance parameters requires a controlled test environment that considers illuminance as a function of distance, but also accounts for vehicle pitch angle, headlight height and road curvature.

The Illumina Tramp<sup>™</sup> system from Gamma Scientific combines multiple sensors with data acquisition and GPS information to provide highly accurate and repeatable information which feeds directly into IIHS analytical applications to ensure accurate, repeatable and highly reliable lighting information.

## IIHS Compatible Test Solutions Full Feature Set for Direct Download to IIHS Software

- Illuminance and Glare Versus Distance
- Accurately Measures Pulse Width Modulated LED Sources
- Exceeds Flicker Fusion Threshold
- Real-time Data Collection via Wi-Fi or Ethernet
- Matched Cosine Response up to 25 Degrees
- GPS Time Synchronization at 200 Hz
- cRIO Data Acquisition System Software
- 16-bit A/D Conversion Modules



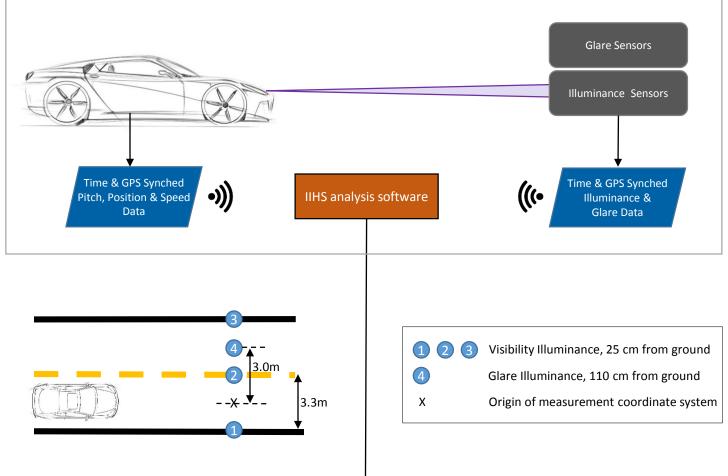


For over 50 years, Gamma Scientific has delivered highly unique, state-of-the-art measurement solutions for manufacturers and users of light sources, sensors and displays. Products include high precision spectroradiometers, calibration light sources, goniophotometers, integrating spheres, thin film measurement systems, and LED testers and sorters. In addition to our exceptional technical and functional capabilities, Gamma Scientific is ISO/IEC 17025 accredited by NVLAP (NAVLAP lab code 20083-0).

+1.858.279.8034



## **Typical System Configuration**



## **Analytical Data Example**

	ogen											
	5 lux di											
	Left edge			Right Edge							Demerits with	
Curve Type	Avg	Min	Max	Avg	Min	Max	Glare OK?	Glare Average ok?	Demerits		HBA (if equipped)	
150L	36.3	36.2	36.4	44.1	43.9	44.3	No, No, No	No	1.685		N/	A
250L	44.5	44.1	45.1	57.0	56.1	57.6	No, No, No	No	1.773		N/A	
150R	49.7	49.3	50.0	41.7	40.7	42.3	No, No, No	No	1.417		N/	A
250R	63.3	62.5	64.6	50.6	50.4	50.7	No, No, No	No	1.469		N/A	
Straight	73.7	66.9	79.3	125.2	123.5	126.9	No, No, No	No	7.631	2.481	N/	A
150L	32.6	32.4	32.8	39.8	39.6	40.1	Yes, Yes, Yes	Yes	4.113		3.927	
250L	37.6	37.4	37.8	48.1	47.6	48.3	Yes, Yes, Yes	Yes	4.855		4.510	
150R	47.9	47.6	48.3	39.9	39.8	40.1	Yes, Yes, Yes	Yes	3.012		2.925	
250R	59.4	58.4	60.7	48.7	47.7	49.4	Yes, Yes, Yes	Yes	3.196		3.100	
Straight	30.5	29.1	31.3	93.5	92.7	94.5	Yes, Yes, Yes	Yes	13.255	1.937	8.837	1.292
									46.825		41.047	
	150L 250L 150R 250R Straight 150L 250L 150R 250R	Curve Type Avg   150L 36.3   250L 44.5   150R 49.7   250R 63.3   Straight 73.7   150L 32.6   250L 37.6   150R 47.9   250R 59.4	Curve Type Avg Min   150L 36.3 36.2   250L 44.5 44.1   150R 49.7 49.3   250R 63.3 62.5   Straight 73.7 66.9   150L 32.6 32.4   250L 37.6 37.4   150R 47.9 47.6   250R 59.4 58.4	Left edge   Curve Type Avg Min Max   150L 36.3 36.2 36.4   250L 44.5 44.1 45.1   150R 49.7 49.3 50.0   250R 63.3 62.5 64.6   Straight 73.7 66.9 79.3   150L 32.6 32.4 32.8   250L 37.6 37.4 37.8   150R 47.9 47.6 48.3   250R 59.4 58.4 60.7	Curve Type Avg Min Max Avg   150L 36.3 36.2 36.4 44.1   250L 44.5 44.1 45.1 57.0   150R 49.7 49.3 50.0 41.7   250R 63.3 62.5 64.6 50.6   Straight 73.7 66.9 79.3 125.2   150L 32.6 32.4 32.8 39.8   250L 37.6 37.4 37.8 48.1   150R 47.9 47.6 48.3 39.9   250R 59.4 58.4 60.7 48.7	Left edge Right Edg   Curve Type Avg Min Max Avg Min   150L 36.3 36.2 36.4 44.1 43.9   250L 44.5 44.1 45.1 57.0 56.1   150R 49.7 49.3 50.0 41.7 40.7   250R 63.3 62.5 64.6 50.6 50.4   Straight 73.7 66.9 79.3 125.2 123.5   150L 32.6 32.4 32.8 39.8 39.6   250L 37.6 37.4 37.8 48.1 47.6   150R 47.9 47.6 48.3 39.9 39.8   250L 59.4 58.4 60.7 48.7 47.7	Left edge Right Edge   Curve Type Avg Min Max Avg Min Max   150L 36.3 36.2 36.4 44.1 43.9 44.3   250L 44.5 44.1 45.1 57.0 56.1 57.6   150R 49.7 49.3 50.0 41.7 40.7 42.3   250R 63.3 62.5 64.6 50.6 50.4 50.7   Straight 73.7 66.9 79.3 125.2 123.5 126.9   150L 32.6 32.4 32.8 39.8 39.6 40.1   250L 37.6 37.4 37.8 48.1 47.6 48.3   150R 47.9 47.6 48.3 39.9 39.8 40.1   250L 37.6 58.4 60.7 48.7 47.7 49.4	Left edge Right Edge   Curve Type Avg Min Max Avg Min Max Glare OK?   150L 36.3 36.2 36.4 44.1 43.9 44.3 No, No, No   250L 44.5 44.1 45.1 57.0 56.1 57.6 No, No, No   150R 49.7 49.3 50.0 41.7 40.7 42.3 No, No, No   250R 63.3 62.5 64.6 50.6 50.4 50.7 No, No, No   250R 63.3 62.5 64.6 50.6 50.4 50.7 No, No, No, No   Straight 73.7 66.9 79.3 125.2 123.5 126.9 No, No, No, No   150L 32.6 32.4 32.8 39.8 39.6 40.1 Yes, Yes,   250L 37.6 37.4 37.8 48.1 47.6 48.3 Yes, Yes,   150R 47.9 47.6 48.3 39.9 39.8	Left edge Right Edge Glare OK?   Curve Type Avg Min Max Avg Min Max Glare OK? Average ok?   150L 36.3 36.2 36.4 44.1 43.9 44.3 No, No, No No   250L 44.5 44.1 45.1 57.0 56.1 57.6 No, No, No No   150R 49.7 49.3 50.0 41.7 40.7 42.3 No, No, No No   250R 63.3 62.5 64.6 50.6 50.4 50.7 No, No, No, No No   Straight 73.7 66.9 79.3 125.2 123.5 126.9 No, No, No, No No   150L 32.6 32.4 32.8 39.8 39.6 40.1 Yes, Yes,   250L 37.6 37.4 37.8 48.1 47.6 48.3 Yes, Yes,   150R 47.9 47.6 48.3 39.9 39.8 40.1 Yes, Yes,	Left edge Right Edge Glare OK? Glare Average oK? Dem   Curve Type Avg Min Max Avg Min Max Glare OK? Average oK? Dem   150L 36.3 36.2 36.4 44.1 43.9 44.3 No, No, No No 1.6   250L 44.5 44.1 45.1 57.0 56.1 57.6 No, No, No No 1.7   150R 49.7 49.3 50.0 41.7 40.7 42.3 No, No, No No 1.4   250R 63.3 62.5 64.6 50.6 50.4 50.7 No, No, No No 1.4   Straight 73.7 66.9 79.3 125.2 123.5 126.9 No, No, No No 7.631   150L 32.6 32.4 32.8 39.8 39.6 40.1 Yes Yes Yes Yes 4.1   150R 47.9 47.6 48.3 39.9 39.8	Left edge Right Edge Glare OK? Glare Average ok? Demerits   150L 36.3 36.2 36.4 44.1 43.9 44.3 No, No, No No 1.685   250L 44.5 44.1 45.1 57.0 56.1 57.6 No, No, No No 1.773   150R 49.7 49.3 50.0 41.7 40.7 42.3 No, No, No No 1.417   250R 63.3 62.5 64.6 50.6 50.4 50.7 No, No, No No 1.469   Straight 73.7 66.9 79.3 125.2 123.5 126.9 No, No, No No 7.631 2.481   150L 32.6 32.4 32.8 39.8 39.6 40.1 Yes Yes Yes Yes Yes 1.31   250L 37.6 37.4 37.8 48.1 47.6 48.3 Yes Yes Yes Yes Yes Yes Yes 3.012 <td>Left edge Right Edge Image: Curve Type Avg Min Max Glare OK? Average oK? Demerits equip   150L 36.3 36.2 36.4 44.1 43.9 44.3 No, No, No No <math>1.685</math> N/   250L 44.5 44.1 45.1 57.0 56.1 57.6 No, No, No No <math>1.773</math> N/   150R 49.7 49.3 50.0 41.7 40.7 42.3 No, No, No No <math>1.417</math> N/   250R 63.3 62.5 64.6 50.6 50.4 50.7 No, No, No No <math>1.469</math> N/   Straight 73.7 66.9 79.3 125.2 123.5 126.9 No, No, No No 7.631 2.481 N/   150L 32.6 32.4 32.8 39.8 39.6 40.1 Yes, Yes, Yes, Yes, Yes, Yes, Yes, Yes, Yes, 3.012 2.481 N/   150R 47.9 47.6</td>	Left edge Right Edge Image: Curve Type Avg Min Max Glare OK? Average oK? Demerits equip   150L 36.3 36.2 36.4 44.1 43.9 44.3 No, No, No No $1.685$ N/   250L 44.5 44.1 45.1 57.0 56.1 57.6 No, No, No No $1.773$ N/   150R 49.7 49.3 50.0 41.7 40.7 42.3 No, No, No No $1.417$ N/   250R 63.3 62.5 64.6 50.6 50.4 50.7 No, No, No No $1.469$ N/   Straight 73.7 66.9 79.3 125.2 123.5 126.9 No, No, No No 7.631 2.481 N/   150L 32.6 32.4 32.8 39.8 39.6 40.1 Yes, Yes, Yes, Yes, Yes, Yes, Yes, Yes, Yes, 3.012 2.481 N/   150R 47.9 47.6

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Rev 7.18.1

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