



*Los Angeles County*  
**Sheriff's Department**

**47TH ANNUAL  
LAW ENFORCEMENT MOTORCYCLE TEST  
AND  
EVALUATION PROGRAM  
MOTORCYCLE MODEL YEAR 2022**

**Alex Villanueva, SHERIFF**



# **TABLE OF CONTENTS**

Introduction.....	4
Acknowledgements.....	5
Motorcycle Specifications.....	6
Basic Motorcycle Patterns.....	11
32 Lap High Speed Vehicle Evaluation.....	14
Heat Evaluation.....	20
City Course Motorcycle Dynamics Evaluation.....	25
Brake Evaluation.....	30
Ergonomics Evaluation.....	32
Acceleration Evaluation.....	45
Fuel Efficiency Evaluation.....	47
Communication Evaluation.....	48

# **INTRODUCTION**

The Los Angeles County Sheriff's Department first implemented its police vehicle testing program in 1974, and motorcycle testing in 2008. Since that time, our Department has become nationally recognized as a major source of information relative to police vehicles and their use.

This year's motorcycle evaluation was conducted April 12 – 14th, 2022 by the Los Angeles County Sheriff's Department.

All major manufacturers of police motorcycles were invited to participate. BMW, Harley Davidson, and Yamaha, each submitted motorcycles for evaluation. The motorcycles submitted were:

- \*2022 BMW R 1250 RT-P
- \*2022 Harley - Davidson FLHTP ( Electra Glide)
- \*2022 Harley - Davidson FLHTP ( Road King)
- \*2020 Yamaha FJR 1300P

All of the motorcycles submitted completed the test satisfactorily.

The testing process is designed to address the law enforcement officer's operational requirements in terms of motorcycle performance, safety, and comfort. The fleet maintenance interest is addressed by performing an extensive mechanical evaluation on each motorcycle submitted.

Each test is designed and executed to simulate actual field use conditions as closely as possible. Law enforcement motorcycle personnel conduct the evaluations on city streets, freeways, and the performance track.

This book is not intended as a recommendation for any specific motorcycle contained within, nor is it designed to rank the motorcycles in any order. Our motorcycle testing program is conducted in order to accomplish two primary goals; provide law enforcement agencies with the data necessary to assist those in the motorcycle selection process and provide the various motorcycle manufacturers with the input necessary to better meet the needs of law enforcement.

We recognize the fact that individual agency needs can be influenced by cost, operational considerations and other factors. As such, interpretation of test results is the responsibility of each agency and should be made based upon the agency's needs.

It is our goal to provide law enforcement agencies with the information they require to successfully evaluate and select the right motorcycle for their needs. We believe that we have accomplished that goal.

# **ACKNOWLEDGEMENTS**

The Los Angeles County Sheriff's Department, Fleet Management Bureau would like to thank all those who contributed their time and efforts in making this year's test a success.

## **Vehicle Test Track Riders**

Deputy Jeff Houle – LASD

Officer James York – LAPD

Deputy Hector Renteria – LASD

Officer John Poland – LAPD

Deputy John Young – LASD

Deputy Todd Cash – LASD

Deputy Brett Nolin – LASD

## **Motorcycle Manufactures**

BMW Police Motorcycles

Harley Davidson Police Motorcycles

Yamaha Police Motorcycles

## **Support Personnel**

Lieutenant Robert Furman (CFMB)

Sergeant David Davis (CFMB)

Jason Hausken (CFMB)

Hugo Cisneros (CFMB)

George Ramirez (CFMB)

Stephen Adebajo (CFMB)

Juan Amaya (FSB)

Deputy Miguel Aguilar (EOB)

Deputy Jaime Huerta (EOB)

Larry Rottweiler (CFMB)

## **Lap Timers / Flag Personnel**

Dennis Brown (Centerra)

Nick Saykhamphone (Centerra)

Adan Palacios (Centerra)

Jazzmine Gonzalez (Centerra)

## **Photography**

Deputy Sam Paul

## **Vehicle Evaluation Team**

### **Ergonomic Drivers**

Deputy Todd Cash, LASD

Deputy Lee Clark, LASD

Sergeant Michael Foster, LASD

Deputy John Young, LASD

# **MOTORCYCLE SPECIFICATIONS**



# **MOTORCYCLE SPECIFICATIONS**

## **2022 BMW POLICE MOTORCYCLE R1250 RT-P**

<b>Vehicle Description:</b> Factory developed authority motorcycle
<b>Engine Type:</b> Air/water cooled flat twin 4-stroke engine, central balancer shaft
<b>Bore and Stroke:</b> 102.5 mm x 76 mm
<b>Compression Ratio:</b> 12.5:1
<b>Valve Train:</b> Two camshafts / four radially aligned valves /cylinder – BMW Shift Cam VVT
<b>Carburetor / Fuel Injection:</b> Electronic intake pipe injection / BMS-X+ electronic engine management with E-Gas electronic throttle actuator, ride mode control (rain / road)
<b>Ignition:</b> BMS-X+ EU4 Standard / pursuit approved with 87 octane fuel
<b>Horsepower:</b> 136 hp (100 kW) at 7,750 rpm
<b>Torque:</b> 105 ft-lb (143 Nm) at 6,250 rpm
<b>Final Drive:</b> Shaft drive with integral torsion damper, std. ABS and traction control
<b>Dry Weight:</b> Wet Weight 650 lbs.
<b>Alternator Output:</b> Three-phase alternator 504W w/auxiliary battery and GMSF power management for all circuits from parasitic loads / low voltage battery protection
<b>Battery:</b> 12V / 16 Ah, AGM maintenance free (two total - one main and one auxiliary battery)
<b>Transmission:</b> Constant mesh 6-speed gearbox with helical gear teeth
<b>Clutch Dry/Wet:</b> Self-energizing wet clutch, 8-plates, hydraulic self-adjusting
<b>Suspension:</b> BMW Motorrad Telelever front / BMW Motorrad EVO Paralever rear
<b>Front:</b> Central spring strut 4.7 inches of travel, hydraulic steering damper
<b>Rear:</b> WAD (travel related damping) spring strut 5.4 inches of travel, hydraulically adjustable spring preload and adjustable rebound damping
<b>Brakes:</b> BMW partial-integral ABS with traction control, independent rear brake control
<b>Front:</b> Dual disc brake, floating brake discs, diameter 320 mm, four-piston radial caliper
<b>Rear:</b> Single disc brake, diameter 275 mm, double piston floating caliper
<b>Tires:</b> Fr-120/70 ZR 17 Michelin Pilot Road 4 Rr-180/55 ZR 17 Michelin Pilot Road 4
<b>Wheels:</b> Cast aluminum wheels, MTH2 rim profile
<b>Wheelbase:</b> 58.5 inches <b>Rake:</b> 64.1 degrees <b>Trail:</b> 3.92 inches
<b>Fuel Tank Capacity:</b> 6.6 gallons with approximately 1 gallon reserve
<b>EPA Fuel Mileage:</b> 47 MPG (WMTC)
<b>Seat Height:</b> 31.7 / 32.5 inches Std (high seat 32.7 / 33.5 inches; low seat 29.9 / 30.7 inches)
<b>Adjustments Yes/No:</b> Yes, low, standard or high seat each have two height adjustments
<b>Windscreen:</b> Polycarbonate, continuously adjustable (electronically) windshield
<b>Adjustable / Fixed:</b> Electronically adjustable / fully adjustable while riding
<b>Foot Peg / Floorboard:</b> Foot pegs with replaceable ground clearance pegs
<b>Saddlebag Storage Capacity:</b> 23 liters each, top-opening, glove friendly latches, lockable
<b>Warranty:</b> 36 months / 60,000 miles including all supplied authority equipment
<b>Maintenance Interval:</b> 600 mile initial, then 6,000 miles thereafter including oil changes

# MOTORCYCLE SPECIFICATIONS

## 2022 HARLEY-DAVIDSON ELECTRA GLIDE

<b>Vehicle Description:</b> 2022 FLHP Police Electra Glide Motorcycle
<b>Engine Type:</b> 4 stroke, 2 cylinder, 1868cc/114cid - - - Milwaukee Eight
<b>Bore and Stroke:</b> 4.016 in. x 4.5 in.
<b>Compression Ratio:</b> 10.5: 1
<b>Valve Train:</b> Pushrod operated, overhead valves with hydraulic self-adjusting lifters, 4 valves per cylinder.
<b>Carburetor / Fuel Injection:</b> Electronic Sequential Port Fuel Injection
<b>Ignition:</b> Electronic
<b>Horsepower:</b> N/A <b>Torque :</b> 123 ft-lb @ 3000 rpm
<b>Final Drive (shaft, chain, belt):</b> Drive belt
<b>Dry Weight:</b> 809 lbs.
<b>Alternator Output:</b> 48 amps. Producing 28 amps at idle
<b>Battery:</b> 12V / 28 Ahr, 405 CCA
<b>Transmission:</b> 6 speed Cruise Drive Constant mesh
<b>Clutch: Dry/Wet:</b> Hydraulically Actuated, 10 plate wet assist with slip clutch
<b>Suspension:</b> N/A
<b>Front:</b> 49 mm telescopic with Showa® Dual bending Valve technology
<b>Rear:</b> Swing arm with hand adjustable with emulsion shocks
<b>Brakes:</b> Reflex™ Electronically linked brakes with ABS
<b>Front:</b> Hydraulic dual disc with floating rotors and 32mm 4 piston calipers
<b>Rear:</b> Hydraulic single disc with fixed rotor and 32mm 4 piston caliper
<b>Tires:</b> Fr – BW130/80B17 65H                      Rr – BW180/65B16 81H
<b>Wheels:</b> Impeller™ Cast aluminum
<b>Wheelbase:</b> 64 inches
<b>Rake:</b> 26 degrees
<b>Trail:</b> 6.7 inches
<b>Fuel Tank Capacity:</b> 6 gallons
<b>EPA Fuel Mileage:</b> Combined City/HWY 43 mpg
<b>Seat Height:</b> 27.3 in. laden, 31.7” Unladen
<b>Adjustments:</b> Yes/ See dealer
<b>Windscreen:</b> Fixed detachable Polycarbonate
<b>Foot peg / Floorboard Position:</b> Pivoting Floorboard
<b>Saddlebag Storage Capacity:</b> Approx. 2000 cubic inches



# MOTORCYCLE SPECIFICATIONS

## 2022 HARLEY-DAVIDSON ROAD KING

<b>Vehicle Description:</b> 2022 FLHTP Police Road King
<b>Engine Type:</b> 4 stroke, 2 cylinder, 1,868 cc - - - Milwaukee Eight™
<b>Bore and Stroke:</b> 4.016 in. x 4.5 in.
<b>Compression Ratio:</b> 10.5: 1
<b>Valve Train:</b> Pushrod operated, overhead valves with hydraulic self-adjusting lifters, 4 valves per cylinder
<b>Carburetor / Fuel Injection:</b> Electronic Sequential Port Fuel Injection
<b>Ignition:</b> Electronic
<b>Horsepower:</b> N/A <b>Torque :</b> 123 ft-lb @ 3000 rpm RWTQ
<b>Final Drive (shaft, chain, belt):</b> Drive belt
<b>Dry Weight:</b> 805 lbs.
<b>Alternator Output:</b> 48amps. Producing 28 amps at idle
<b>Battery:</b> 12V / 28Ah, 405 CCA
<b>Transmission:</b> 6-speed Cruise Drive Constant mesh
<b>Clutch:</b> Hydraulically actuated, 10-plate wet Assist and Slip clutch
<b>Suspension:</b> N/A
<b>Front:</b> 49mm telescopic with Showa® Dual bending Valve Technology
<b>Rear:</b> Swing arm with hand adjustable emulsion rear shocks
<b>Brakes:</b> Reflex™ Electronically linked brakes with ABS
<b>Front:</b> Hydraulic dual disc with floating rotors and 32mm 4 piston calipers
<b>Rear:</b> Hydraulic single disc with fixed rotor and 32mm 4 piston caliper
<b>Tires:</b> Fr – BW130/80B17 65H            Rr – BW180/65B16 81H
<b>Wheels:</b> Impeller™ Cast aluminum
<b>Wheelbase:</b> 64 inches
<b>Rake:</b> 26 degrees
<b>Trail:</b> 6.7 inches
<b>Fuel Tank Capacity:</b> 6 gallons
<b>EPA Fuel Mileage:</b> Combined City/HWY 43 mpg
<b>Seat Height:</b> 27.3 in. laden, 31.1 in Unladen
<b>Adjustments:</b> Yes/ See dealer for adjustment
<b>Windscreen:</b> Fixed detachable polycarbonate
<b>Foot peg / Floorboard Position:</b> Pivoting Floorboard
<b>Saddlebag Storage Capacity:</b> Approx. 2000 cubic inches

# MOTORCYCLE SPECIFICATIONS

## 2020 YAMAHA FJR-1300P

<b>Vehicle Description:</b> 2020 Factory production police motorcycle
<b>Engine Type:</b> 1298cc liquid cooled DOHC inline 4-cylinder; 16 valves
<b>Bore and Stroke:</b> 79.0mm x 66.2mm
<b>Compression Ratio:</b> 10.8:1
<b>Valve Train:</b> DOHC
<b>Carburetor / Fuel Injection:</b> Fuel injection
<b>Ignition:</b> TCI: Transistor Controlled ignition
<b>Horsepower:</b> 144.2 HP @ 8,000 rpm
<b>Torque:</b> 138 ft-lb @ 7,000 rpm
<b>Final Drive (shaft, chain, belt):</b> Shaft
<b>Dry Weight:</b> 645 lbs.
<b>Alternator Output:</b> 590 W
<b>Battery:</b> 12 volt
<b>Transmission:</b> 6 Speed Manual
<b>Clutch:</b> Wet, Multiple disc clutch
<b>Suspension</b>
<b>Front:</b> 48mm fork fully adjustable
<b>Rear:</b> Single shock– adjustable spring preload and rebound damping
<b>Brakes:</b>
<b>Front:</b> Dual 12.6 inches discs; Unified Brake system and ABS
<b>Rear:</b> 11.1 inches disc; Unified Brake System and ABS
<b>Tires:</b> Fr – 120/70/ZR17 Rr – 180/55/ZR17
<b>Wheels:</b> FR Cast Wheel, 17M/C x MT3.50 RR– Cast Wheel, 17M/C x MT5.50
<b>Wheelbase:</b> 60.8 inches
<b>Rake:</b> 26.0 degrees
<b>Trail:</b> 4.29 inches
<b>Fuel Tank Capacity:</b> 6.6 gallons
<b>EPA Fuel Mileage:</b> 36 MPG
<b>Seat Height:</b> 31.7 “ Low or 32.5” High
<b>Adjustments:</b> Yes / Seat
<b>Windscreen:</b> Yes
<b>Adjustable / Fixed:</b> Adjustable
<b>Foot Peg / Floorboard Position:</b> Foot pegs
<b>Saddlebag Storage Capacity:</b> 22L per bag (R,L)

# **BASIC MOTORCYCLE**

## **PATTERNS**

Five circle patterns will be used to determine each motorcycle's minimum turning radius. The diameters of the circles will be 20, 19, and 18 feet. The circle pattern will be entered at a speed of 2-3 mph. Once inside the circle, the rider will make three revolutions in one direction, exit the circle and make three more revolutions in the opposite direction. The circle pattern will be ridden in first gear.

Each motorcycle will be ridden in five different 180 degree U-Turn patterns. The diameters of the U-Turns will be 20, 19, 18, 17, and 16 feet. The U-Turn will be entered at a speed of 2-3 mph in first gear. The rider will fully turn the handlebars and lean the motorcycle as necessary to complete the turn. This is done in both directions.

The 30 mph cone weave consists of seven sets of three cones each, alternately offset from a center line at 36 foot intervals. The rider will approach the pattern from a sufficient distance to establish and maintain a speed of 30 mph. Using counter steering, the rider will weave the motorcycle around the seven sets of cones maintaining 30 mph, plus or minus 2 mph. The 30 mph cone weave represents steering or negotiating around debris or other hazards on the roadway.

The Short Cone Weave pattern utilizes eight single cones placed in a straight line at various distances. The cones will be placed at 11, 10 ½, and 10 foot intervals measured from cone center to cone center. The rider will negotiate the cone weave at about 1-2 mph in first gear, utilizing the rear brake as needed. Lock-to-lock turns will be used to successfully ride the course. This exercise represents typical motorcycle maneuverability used in slow-speed enforcement riding.

# **BASIC MOTORCYCLE PATTERNS**

2022 BMW R1250RT-P					
PATTERN	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	Pass	Pass	Pass	N/A	N/A
U-Turn	Pass	Pass	Pass	N/A	N/A
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	Pass	Pass	Pass	Pass	Pass
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			Pass

2022 HARLEY-DAVIDSON ELECTRAGLIDE					
PATTERN	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	Pass	Pass	Pass	N/A	N/A
U-Turn	Pass	Pass	Pass	N/A	N/A
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	Pass	Pass	Pass	Pass	Pass
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			Pass

\*\* Rating Scale – Pass or Fail

# **BASIC MOTORCYCLE PATTERNS**

2022 HARLEY-DAVIDSON ROAD KING					
PATTERN	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	Pass	Pass	Pass	N/A	N/A
U-Turn	Pass	Pass	Pass	N/A	N/A
PATTERN		11 FT.	10 ½ FT.	10 FT.	9 ½ FT.
Short Cone Weave		Pass	Pass	Pass	Pass
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			Pass

2020 YAMAHA FJR 1300					
PATTERN	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	Pass	Pass	Pass	N/A	N/A
U-Turn	Pass	Pass	Pass	N/A	N/A
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	Pass	Pass	Pass	Pass	N/A
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			Pass

\*\* Rating Scale – Pass or Fail

# **32 LAP HIGH-SPEED COURSE MOTORCYCLE DYNAMICS EVALUATION**

**\* Due to rider safety, speeds were limited to 80 mph. There will be no lap times posted.**

# **32 LAP HIGH-SPEED COURSE TEST RIDER'S SUBJECTIVE EVALUATION**

This evaluation is conducted on a high-speed riding course. It is designed to evaluate, identify and eliminate the obvious unacceptable motorcycles (i.e., those motorcycles that are demonstrably unstable or otherwise exhibit unsafe characteristics).

For this evaluation, four riders are utilized for each motorcycle. Each rider completes eight laps around our 1.46 mile test track at the Auto Club Speedway in Fontana, for a total of 32 laps. The motorcycles are limited to 80 mph for rider safety.

Four Emergency Vehicle Operations Center motorcycle training instructors, two each from the Los Angeles County Sheriff's Department and Los Angeles Police Department, share the riding and evaluation of these motorcycles.

At the conclusion of the preliminary handling portion of the evaluation, each rider completes a "Rider's Subjective Evaluation" form. If the test motorcycle is judged unacceptable in this preliminary review, it is rejected and not subject to further testing and evaluation.



# **32 LAP HIGH-SPEED COURSE**

## **MOTORCYCLE DYNAMICS EVALUATION**

### **2022 BMW R1250 RT-P**

<b>RIDER</b>	<b>LAPS</b>
Jeffery Houle - LASD	1 thru 8
James York - LAPD	9 thru 16
Hector Renteria - LASD	17 thru 24
John Poland - LAPD	25 thru 32

<b>ITEM</b>	<b>RATING**</b>
STEERING	10
LEAN ANGLE	10
SUSPENSION	10
BRAKE FADE	10
BRAKE PULL	10
ABS OPERATION	10

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**



**32 LAP HIGH-SPEED COURSE**  
**MOTORCYCLE DYNAMICS EVALUATION**

**2022 HARLEY-DAVIDSON ELECTRA GLIDE**

RIDER	LAPS
Brett Nolin- LASD	1 thru 8
James York - LAPD	9 thru 16
John Poland - LASD	17 thru 24
Todd Cash - LASD	25 thru 32

ITEM	RATING**
STEERING	10
LEAN ANGLE	6.7
SUSPENSION	8
BRAKE FADE	10
BRAKE PULL	10
ABS OPERATION	10

\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding





# **32 LAP HIGH-SPEED COURSE**

## **MOTORCYCLE DYNAMICS EVALUATION**

### **2022 HARLEY-DAVIDSON ROAD KING**

<b>RIDER</b>	<b>LAPS</b>
Brett Nolin- LASD	1 thru 8
Todd Cash - LASD	9 thru 16
John Young - LASD	17 thru 24
John Poland - LAPD	25 thru 32

<b>ITEM</b>	<b>RATING**</b>
STEERING	6.7
LEAN ANGLE	4.7
SUSPENSION	6.3
BRAKE FADE	9.3
BRAKE PULL	7
ABS OPERATION	9.7

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**



**32 LAP HIGH-SPEED COURSE**  
**MOTORCYCLE DYNAMICS EVALUATION**

**2020 YAMAHA FJR 1300**

RIDER	LAPS
James York - LAPD	1 thru 8
Jeff Houle - LASD	9 thru 16
John Poland - LAPD	17 thru 24
Hector Renteria - LASD	25 thru 32

ITEM	RATING**
STEERING	9.5
LEAN ANGLE	9.8
SUSPENSION	8.5
BRAKE FADE	9.3
BRAKE PULL	9.8
ABS OPERATION	9.7

\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding



# **HEAT EVALUATION**

The heat evaluation is a "PASS-FAIL" scenario and is based on manufacturer's allowable operating temperatures.

Heat from each engine component is measured by means of a digital thermometer with a bi-metallic probe and infrared heat gun at the conclusion of the 32 high-speed laps. This process is accomplished in the following manner:

- |                       |  |
|-----------------------|--|
| 1. Transmission Fluid | The probe is inserted into the transmission via the oil fill hole.                   |
| 2. Engine Oil         | The probe is inserted into the engine case via the oil fill hole, if accessible.     |
| 3. Radiator Coolant   | Temperature is measured via the infrared heat gun aimed below the top radiator tank. |

# **HEAT EVALUATION**

## **IMMEDIATELY FOLLOWING 32 LAP COURSE**

<b>2022 BMW R1250RT-P</b>		
<b>ITEM</b>	<b>MANUFACTURERS RECOMMENDATION</b>	<b>TEST RESULT</b>
Radiator Water	208° to 216° Max.	Pass
Engine Oil	176° to 248° Max.	Pass
Transmission Oil	Part of the engine case	N/A
<b>RADIANT HEAT</b>		
Oil Coolers	N/A	
Brake Rotors	Front - 104° F      Rear - 107° F	
Engine	126.1° F	
Transmission	N/A	
Exhaust	166° F	

# **HEAT EVALUATION**

## **IMMEDIATELY FOLLOWING 32 LAP COURSE**

<b>2022 HARLEY DAVIDSON ELECTRA GLIDE</b>		
<b>ITEM</b>	<b>MANUFACTURERS RECOMMENDATION</b>	<b>TEST RESULT</b>
Radiator Water	Air cooled	N/A
Engine Oil	280° F to 410° F	Pass
Transmission Oil	Part of the engine case	N/A
<b>RADIANT HEAT</b>		
Oil Coolers		
Brake Rotors	Front - 134° F      Rear - 134° F	
Engine	109° F	
Transmission	N/A	
Exhaust	95° F	



# **HEAT EVALUATION**

## **IMMEDIATELY FOLLOWING 32 LAP COURSE**

<b>2022 HARLEY DAVIDSON ROAD KING</b>		
<b>ITEM</b>	<b>MANUFACTURERS RECOMMENDATION</b>	<b>TEST RESULT</b>
Radiator Water	Air cooled	N/A
Engine Oil	280° to 410°	Pass
Transmission Oil	N/A	N/A
<b>RADIANT HEAT</b>		
Oil Cooler	N/A	
Brake Rotors	Front - 132° F      Rear - 134° F	
Engine	109° F	
Transmission	N/A	
Exhaust	95.7° F	

# **HEAT EVALUATION**

## **IMMEDIATELY FOLLOWING 32 LAP COURSE**

<b>2020 YAMAHA FJR-1300P</b>		
<b>ITEM</b>	<b>MANUFACTURERS RECOMMENDATION</b>	<b>TEST RESULT</b>
Radiator Water	Not tested	N/A
Engine Oil	280° to 410°	Pass
Transmission Oil	N/A	N/A
<b>RADIANT HEAT</b>		
Oil Cooler	N/A	
Brake Rotors	Front - 106.3° F    Rear - 126.3° F	
Engine	132.1° F	
Transmission	N/A	
Exhaust	113° F	

# **CITY COURSE**

## **MOTORCYCLE DYNAMICS**

### **EVALUATION**

This evaluation is for motorcycles identified by the manufacturer as intended for law enforcement use and is conducted on a closed 2.6 mile city street course . This course closely represents the environment most urban law enforcement agencies must contend with. The course has several straight-a-ways, multiple right and left turns and obstacles in the roadway.

This is the final track evaluation and the manufacturers, if they so choose, are allowed to rebuild the motorcycles brake system prior to this portion of the evaluation process.

For this evaluation, two riders are utilized for each motorcycle. Each rider completes two laps around the city course. Lap timing is via a GPS based “VBOX Datalogger” timing device, mounted on the motorcycle. The combined times of the two laps are recorded next to the rider's name.

If the test vehicle is determined to be unacceptable in this preliminary review by not completing the course in less than 5 minutes, it is rejected and not subject to further testing and evaluation.

**CITY COURSE**  
**MOTORCYCLE DYNAMICS**  
**EVALUATION**

**2022 BMW R1250RT-P**

<b>RIDERS</b>	<b>TOTAL TIME</b>	<b>AIR /TRACK</b>	<b>SPEED</b>
Todd Cash- LASD	4:22.70	65° F / 96° F	31.90
John Young– LASD	4:17.66	65° F / 100° F	32.44
Average Time	4:20.18	Average Speed	32.17

<b>ITEM</b>	<b>RATING**</b>
STEERING	9
LEAN ANGLE	9
SUSPENSION	8
BRAKE FADE	5
BRAKE PULL	7.5
ABS OPERATION	10

\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding

**CITY COURSE**  
**MOTORCYCLE DYNAMICS**  
**EVALUATION**

**2022 HARLEY-DAVIDSON ELECTRA GLIDE**

RIDERS	TOTAL TIME	AIR /TRACK	SPEED
James York - LAPD	4:34.44	87° F / 97° F	30.5
John Poland - LAPD	5:02.95	86° F / 99° F	24.5
Average Time	4:68.70	Average Speed	27.5

ITEM	RATING**
STEERING	7.5
LEAN ANGLE	5.5
SUSPENSION	5
BRAKE FADE	9
BRAKE PULL	8
ABS OPERATION	10

\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding

**CITY COURSE**  
**MOTORCYCLE DYNAMICS**  
**EVALUATION**

**2022 HARLEY DAVIDSON ROAD KING**

<b>RIDERS</b>	<b>TOTAL TIME</b>	<b>AIR /TRACK</b>	<b>SPEED</b>
John Young - LASD	4:38.89	83° F / 97° F	30.1
James York - LAPD	4:39.09	84° F / 99° F	29.9
Average Time	4:38.99	Average Speed	30

<b>ITEM</b>	<b>RATING**</b>
STEERING	7.5
LEAN ANGLE	5.5
SUSPENSION	5.5
BRAKE FADE	9
BRAKE PULL	9
ABS OPERATION	10

\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding

**CITY COURSE**  
**MOTORCYCLE DYNAMICS**  
**EVALUATION**

**2020 YAMAHA FJR-1300P-AB**

<b>RIDERS</b>	<b>TOTAL TIME</b>	<b>AIR /TRACK</b>	<b>SPEED</b>
John Young - LASD	5:16.93	63° F / 96° F	23.51
Todd Cash - LASD	4:09.61	69° F / 102° F	33.47
Average Time	4:63.27	Average Speed	28.50

<b>ITEM</b>	<b>RATING**</b>
STEERING	8.5
LEAN ANGLE	9
SUSPENSION	9
BRAKE FADE	8
BRAKE PULL	9
ABS OPERATION	10

\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding



# **BRAKE EVALUATION**

This evaluation procedure measures the braking response and efficiency of the motorcycle. There are three different brake evaluations: A hard braking evaluation, a transitional braking evaluation from a dry to a wet surface, and a transitional braking evaluation from a smooth surface to a sandy surface. Stopping distance is recorded electronically via a GPS based VBOX Datalogger.

The hard brake evaluation is conducted by first accelerating the motorcycle to 80 MPH, then decelerating to a stop, maintaining an average deceleration rate of 22 feet per second. This procedure is repeated three additional times. The motorcycle is then immediately accelerated to 40 mph and then stopped as quickly as possible, simulating a panic stop. That stopping distance is measured and recorded.

During the dry/wet braking evaluation, the motorcycle will be accelerated to 40 mph, and at a predetermined position, the brakes will be applied. The entire brake application will begin on a dry roadway surface, immediately transitioning onto a wet roadway surface while bringing the motorcycle to a full stop. Controllability of the motorcycle and its Anti-lock braking system (ABS) operation will be evaluated.

During the debris field braking evaluation, the motorcycle will be accelerated to 40 mph, and at a predetermined position, the brakes will be applied. The entire brake application will take place on a smooth roadway surface, immediately transitioning to a roadway strewn with sand and gravel while bringing the motorcycle to a full stop. Controllability of the motorcycle and its Anti-lock braking system

(ABS) operation will be evaluated.

If a brake malfunction is experienced (i.e., severe brake fading), an effort is made to detect the cause of the brake failure. If it is decided that the failure is inherent in the engineering of the brake system of the motorcycle, the evaluation is discontinued and the motorcycle is disqualified from further evaluation. If the failure is associated with a correctable situation, it is corrected and the evaluation is run again. The defect and any remedial action taken are noted in the evaluation results.

# **HARD BRAKING**

## **PANIC STOP**

<b>MOTORCYCLE</b>	<b>DRY</b>	<b>SAND</b>	<b>WET</b>
	<b>STOPPING DISTANCE</b>	<b>STOPPING DISTANCE</b>	<b>STOPPING DISTANCE</b>
2022 BMW R1250 RT-P	127.0 ft..@ 60 MPH	56.0 ft.@ 40 MPH	81.0 ft.@ 40 MPH
2022 HD ELECTRA GLIDE	140.9 ft. @ 60 MPH	75.0 ft.@ 40 MPH	74.1 ft.@ 40 MPH
2022 HD ROAD KING	133.8 ft. @ 60 MPH	61.3 ft.@ 40 MPH	75.5 ft.@ 40 MPH
2020 YAMAHA FJR-1300P-AB	138.7 ft. @ 60 MPH	64.5 ft.@ 40 MPH	73.8 ft.@ 40 MPH

# **ERGONOMICS EVALUATION**

## **110 MILE RIDE**

This portion evaluates the fuel efficiency and ergonomics of the motorcycle during extended field operations. It is designed to simulate the types of situations that an officer may encounter during an eight hour shift. Each motorcycle is driven two times through a 110 mile loop, one loop completed by each of the two EVOC riders. The loop covers 33 miles of city streets, 57 miles of California freeways, 20 miles of coastal highway, and 29 miles of mountain canyons. No attempt is made to coddle the motorcycle through the loop, and hard acceleration starts are avoided.

During the ride-ability evaluation, a minimum of ten simulated traffic stops will be performed while on city streets. The rider will be required to properly position the motorcycle in a safe traffic enforcement position, dismount the motorcycle, pause for a minimum of two minutes per stop, remount the motorcycle, and accelerate into traffic.

The numerical results of the evaluation are recorded and then averaged between the two riders. This average is then recorded as the final result of this portion of the evaluation. Each rider will also submit a subjective evaluation of each motorcycle at the end of the ride.

The fuel efficiency evaluation is an attempt to estimate MPG (miles per gallon) based on actual riding conditions. It is the average gas usage of all two riders, for all two loops.

This subjective evaluation is a rating of human factors done individually and independently by all two riders. The ratings are averaged to minimize personal prejudices that individuals may have for or against any given motorcycle. This evaluation rates each motorcycle comparatively for its general suitability and efficiency for patrol operations.

# **ERGONOMICS EVALUATION**

## **SUBJECTIVE EVALUATION – 110 MILE RIDE**

<b>MOTORCYCLE</b>	<b>2022 BMW R1250RT-P</b>
-------------------	---------------------------

<b>RIDING POSITION</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Seat Comfort	Padding, Springs, Width	9
Seat Position	Range of Adjustment	10
Riding Position	Lean Angle, Comfort	10
Floorboards / Pegs	Access to Foot Controls	10

<b>INSTRUMENT PANEL</b>	<b>CONSIDERATIONS</b>	
Controls	Position, Usability	10
Visibility	Instruments	10
Reflection / Glare	Windshield, Instruments	10
Instruments	Adequate, Legibility	10

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

<b>MIRRORS</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Road Visibility	Distortion, Obstruction	10
Reflections	Instruments, Controls	10
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	10
Mirror Location	Accessibility, Visibility, Obstruction	10

<b>WIND SCREEN</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Height / Width	Wind / Debris Protection	10
Adjustability	Electric or Manual, Ease of Use	10
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	10

<b>CONTROLS</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Handlebars	Angle, Size, Position	10
Shift Levers	Usability, Shift Pad Position	10
Switches	Reach, Markings, Visibility, Accessibility	10
Rear Brake Pedal	Location, Feedback, Ease of Use	10
Front Brake Lever	Location, Feedback, Adjustability	10
Clutch Lever	Lever Resistance, Adjustability	10

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

<b>MOUNT / DISMOUNT</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Trunk Height	Ample Leg Swing Room	10
Foot Peg / Floorboard	Interferes with Mounting / Dismounting	10
Lean Angle	Side Stand—of Adequate Length	10

<b>SUSPENSION</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Quality of Ride	Dampening, Rebound	10
Rider Size	Adjustability	10

<b>STORAGE</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Saddlebags	Angle, Size and Position of Opening	10
Compartment Dividers	Holds Gear Upright When Open	10
Locks	Same Key, Security, Sturdiness	10

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

# **ERGONOMICS EVALUATION**

## **SUBJECTIVE EVALUATION – 110 MILE RIDE**

<b>MOTORCYCLE</b>	<b>2022 HARLEY DAVIDSON ELECTRA GLIDE</b>
-------------------	---

<b>RIDING POSITION</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Seat Comfort	Padding, Springs, Width	8.5
Seat Position	Range of Adjustment	6.5
Riding Position	Lean Angle, Comfort	6
Floorboards / Pegs	Access to Foot Controls	4.5

<b>INSTRUMENT PANEL</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Controls	Position, Usability	7.5
Visibility	Instruments	6
Reflection / Glare	Windshield, Instruments	6.5
Instruments	Adequate, Legibility	5.5

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**



<b>MIRRORS</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Road Visibility	Distortion, Obstruction	8.5
Reflections	Instruments, Controls	8.5
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	6.5
Mirror Location	Accessibility, Visibility, Obstruction	7

<b>WIND SCREEN</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Height / Width	Wind / Debris Protection	6
Adjustability	Electric or Manual, Ease of Use	N/A
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	4

<b>CONTROLS</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Handlebars	Angle, Size, Position	7
Shift Levers	Usability, Shift Pad Position	6
Switches	Reach, Markings, Visibility, Accessibility	6
Rear Brake Pedal	Location, Feedback, Ease of Use	6
Front Brake Lever	Location, Feedback, Adjustability	6.5
Clutch Lever	Lever Resistance, Adjustability	6.5

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

<b>MOUNT / DISMOUNT</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Trunk Height	Ample Leg Swing Room	8.5
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	7.5
Lean Angle	Side Stand of Adequate Length	5.5

<b>SUSPENSION</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Quality of Ride	Dampening, Rebound	7
Rider Size	Adjustability	6

<b>STORAGE</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Saddlebags	Angle, Size and Position of Opening	8.5
Compartment Dividers	Holds Gear Upright When Open	8
Locks	Same Key, Security, Sturdiness	8.5

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

# **ERGONOMICS EVALUATION**

## **SUBJECTIVE EVALUATION – 110 MILE RIDE**

<b>MOTORCYCLE</b>	<b>2022 HARLEY DAVIDSON ROAD KING</b>
-------------------	---------------------------------------

<b>RIDING POSITION</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Seat Comfort	Padding, Springs, Width	6
Seat Position	Range of Adjustment	3
Riding Position	Lean Angle, Comfort	5.5
Floorboards / Pegs	Access to Foot Controls	5.5

<b>INSTRUMENT PANEL</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Controls	Position, Usability	5
Visibility	Instruments	3.5
Reflection / Glare	Windshield, Instruments	5
Instruments	Adequate, Legibility	3

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

<b>MIRRORS</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Road Visibility	Distortion, Obstruction	5
Reflections	Instruments, Controls	5
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	3
Mirror Location	Accessibility, Visibility, Obstruction	3

<b>WIND SCREEN</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Height / Width	Wind / Debris Protection	4
Adjustability	Electric or Manual, Ease of Use	N/A
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	6

<b>CONTROLS</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Handlebars	Angle, Size, Position	6.5
Shift Levers	Usability, Shift Pad Position	5.5
Switches	Reach, Markings, Visibility, Accessibility	4.5
Rear Brake Pedal	Location, Feedback, Ease of Use	5.5
Front Brake Lever	Location, Feedback, Adjustability	5.5
Clutch Lever	Lever Resistance, Adjustability	4.5

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

<b>MOUNT / DISMOUNT</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Trunk Height	Ample Leg Swing Room	8
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	8
Lean Angle	Side Stand of Adequate Length	8

<b>SUSPENSION</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Quality of Ride	Dampening, Rebound	5
Rider Size	Adjustability	3

<b>STORAGE</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Saddlebags	Angle, Size and Position of Opening	7
Compartment Dividers	Holds Gear Upright When Open	5
Locks	Same Key, Security, Sturdiness	7.5

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

# **ERGONOMICS EVALUATION**

## **SUBJECTIVE EVALUATION – 110 MILE RIDE**

<b>MOTORCYCLE</b>	<b>2020 YAMAHA FJR-1300P-AB</b>
-------------------	---------------------------------

<b>RIDING POSITION</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Seat Comfort	Padding, Springs, Width	8.5
Seat Position	Range of Adjustment	9.5
Riding Position	Lean Angle, Comfort	9
Floorboards / Pegs	Access to Foot Controls	9

<b>INSTRUMENT PANEL</b>	<b>CONSIDERATIONS</b>	
Controls	Position, Usability	8
Visibility	Instruments	9
Reflection / Glare	Windshield, Instruments	10
Instruments	Adequate, Legibility	8

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

<b>MIRRORS</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Road Visibility	Distortion, Obstruction	9
Reflections	Instruments, Controls	9
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	9.5
Mirror Location	Accessibility, Visibility, Obstruction	9

<b>WIND SCREEN</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Height / Width	Wind / Debris Protection	8.5
Adjustability	Electric or Manual, Ease of Use	9
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	9.5

<b>CONTROLS</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Handlebars	Angle, Size, Position	9
Shift Levers	Usability, Shift Pad Position	9
Switches	Reach, Markings, Visibility, Accessibility	8
Rear Brake Pedal	Location, Feedback, Ease of Use	9.5
Front Brake Lever	Location, Feedback, Adjustability	9.5
Clutch Lever	Lever Resistance, Adjustability	9.5

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**

<b>MOUNT / DISMOUNT</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Trunk Height	Ample Leg Swing Room	9.5
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	9.5
Lean Angle	Side Stand of Adequate Length	9.5

<b>SUSPENSION</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Quality of Ride	Dampening, Rebound	8.5
Rider Size	Adjustability	9.5

<b>STORAGE</b>	<b>CONSIDERATIONS</b>	<b>RATING</b>
Saddlebags	Angle, Size and Position of Opening	3.5
Compartment Dividers	Holds Gear Upright When Open	7.5
Locks	Same Key, Security, Sturdiness	9.5

**\*\*Rating Scale 1 – 10 / 1 -Poor / 5 – Average / 10 - Outstanding**



# **ACCELERATION PERFORMANCE**

## **EVALUATION**

This test is designed to measure vehicle performance in terms of acceleration, including speed and time at the quarter mile. Although the top speed is not recorded, a minimum of 100 MPH is generally obtained to satisfy the requirements for high speed law enforcement patrol.

To get the information on the 30 – 60 MPH and 60 – 100 MPH two separate runs were driven. In each run, the vehicle was accelerated to just under the target speed. The vehicle's speed was allowed to level off, and then the vehicle was accelerated through the target speed. This allowed for an actual time between the targeted speed.

All of the information gathered during the acceleration and subsequent brake test is gathered using a Race Logic "Drift Box 02". The data logger is a GPS based measuring device.

## **ACCELERATION EVALUATION**

<b>SPEED</b>	<b>BMW R1250RT-P</b>	<b>HD- ELECTRAGLIDE</b>	<b>HD- ROAD KING</b>
0-60 MPH	4.1 sec.	5.3 sec.	5.4 sec.
0-100 MPH	9.5 sec.	15.0 sec.	16.4 sec.
¼ MILE	12.50 @ 112.0 mph	14.24 @ 94.4 MPH	14.31 @ 95.1 MPH

<b>SPEED</b>	<b>YAMAHA FJR 1300</b>		
0-60 MPH	4.3 sec.		
0-100 MPH	9.9 sec.		
¼ MILE	12.64 @ 114.5 mph		

# **FUEL EFFICIENCY**

## **EVALUATION**

<b>MOTORCYCLE</b>	<b>AVERAGE</b>
<b>2022 BMW R1250 RT-P</b>	43.1 MPG
<b>2022 HARLEY DAVIDSON ELECTRA GLIDE</b>	34.1 MPG
<b>2022 HARLEY DAVIDSON ROAD KING</b>	37.8 MPG
<b>2020 YAMAHA FJR-1300-AB</b>	40.7 MPG

# COMMUNICATION

## EVALUATION

The communications evaluation of each vehicle is conducted by technicians assigned to the Los Angeles County Sheriff's Department's Communications and Fleet Management Bureau. This evaluation concerns itself with the radio installation, the effect of radio operation on motorcycle performance and the effect of the motorcycle on radio performance.

The Electromagnetic Interference Susceptibility test is intended for use in the presence of electromagnetic fields resulting from use of public safety two-way radios.

Motorcycle performance must not be affected in any way by transmissions from a radio and antenna installed on the motorcycle and operating in any of the frequency ranges of 450 to 512 MHz, and having a radio frequency output no more than 50 watts. Motorcycle performance shall not be affected by the presence of another motorcycle equipped with the above described radio and operated next to the subject motorcycle.

Radiated and conducted electromagnetic interference motorcycle systems and accessories shall be designed to reduce interference with the use of public safety radio receivers or electronic sirens or sound amplifiers. The effective sensitivity of a receiver installed on the motorcycle shall not be reduced by more than the amount tabulated below for each frequency band:

FREQUENCY BAND	ALLOWABLE DEGRADATION
450 to 512 MHz	3 dB

Degradation is the difference in effective receiver sensitivity measured with the vehicle engine and accessories turned off as compared to that measured with the engine and accessories turned on.

Sensitivity is measured in terms of the 12 dB Sinad signal as defined in EIA Standard RS-204. To determine effective sensitivity, the receiver is connected to the antenna through an isolating tee connector which allows introduction of the signal generator through the isolated port. Comparative signal strength readings are then taken with and without the interference present.

**\*\* Due to no changes to the bikes from previous test there was no communication evaluation performed. Last years results are provided.**

# COMMUNICATION NOISE EVALUATION

## 2021 BMW R1250RT-P

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	MWU40025	2dB Gain Whip	Top of Tail box

\*\* Rating Scale: 1-10 (1-Poor / 5 –Average / 10-Outstanding)

FREQUENCY: 483.1625 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-85dB	-80dB	+5dB
Engine Idle (No Acc)	-85dB	-80dB	+5dB
Engine High RPM (No Acc)	-85dB	-80dB	+5dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-85dB	-80dB	+5dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-85dB	-80dB	+5dB
Engine High RPM W/All Acc	-85dB	-80dB	+5dB

Glove Compartment Accessibility	Rating **
Control Head	N/A
Microphone	N/A
Electronic Siren	N/A
Dash-board (Handlebar) Accessibility	
Radio Control Head	10
Siren Console	10
Mobile Digital Terminal/Computer	9
Speakers	10
Microphones	7
Equipment Box Accessibility	
Factory Power Terminal in Trunk	10
One Radio Installation	10
Two Radio Installation	N/A
Antenna Installation	6
Computer Installation	8
Engine Compartment Accessibility	
Battery Terminal Connection	10
Accommodation for Cables	7
Hidden Siren Installation	N/A
Ignition Fuse Terminal Block	
Clip – on Connections for Accessories	9

# **COMMUNICATION NOISE EVALUATION**

## **2021 HARLEY DAVIDSON ELECTRA GLIDE**

<b>RADIO MAKE</b>	<b>MODEL NO.</b>	<b>ANTENNA TYPE</b>	<b>LOCATION</b>
Motorola XTL-5000	MWU40025	2dB Gain Whip	Top of Tail box

\*\* Rating Scale: 1-10 (1-Poor / 5 –Average / 10-Outstanding)

FREQUENCY: 483.0875 MHz

<b>WITH ANTENNA</b>	<b>12 dB SINAD</b>	<b>20 dB QUIETING</b>	<b>DESENS dB</b>
Engine Off	-88dB	-85dB	0dB
Engine Idle (No Acc)	-84dB	-78dB	+4dB
Engine High RPM (No Acc)	-84dB	Noisy- could not measure	Noisy
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-84dB	-78dB	+6dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-84dB	-78dB	+6dB
Engine High RPM W/All Acc	-84dB	Noisy- could not measure	Noisy

<b>Glove Compartment Accessibility</b>	<b>Rating **</b>
Control Head	N/A
Microphone	N/A
Electronic Siren	N/A
<b>Dashboard (Handlebar) Accessibility</b>	
Radio Control Head	7
Siren Console	6
Mobile Digital Terminal/Computer	10
Speakers	10
Microphones	9
<b>Equipment Box Accessibility</b>	
Factory Power Terminal in Trunk	0, 6 volt
One Radio Installation	10
Two Radio Installation	0
Antenna Installation	2
Computer Installation	7
<b>Engine Compartment Accessibility</b>	
Battery Terminal Connection	7
Accommodation for Cables	6
Hidden Siren Installation	N/A
<b>Ignition Fuse Terminal Block</b>	
Clip – on Connections for Accessories	5

# **COMMUNICATION NOISE EVALUATION**

## **2021 HARLEY DAVIDSON Road King**

<b>RADIO MAKE</b>	<b>MODEL NO.</b>	<b>ANTENNA TYPE</b>	<b>LOCATION</b>
Motorola XTL-5000	MWU40025	2dB Gain Whip	Top of Tail box

\*\* Rating Scale: 1-10 (1-Poor / 5 –Average / 10-Outstanding)

FREQUENCY: 483.1625 MHz

<b>WITH ANTENNA</b>	<b>12 dB SINAD</b>	<b>20 dB QUIETING</b>	<b>DESENS dB</b>
Engine Off	-88dB	-92dB	+4dB
Engine Idle (No Acc)	-88dB	-92dB	+4dB
Engine High RPM (No Acc)	-88dB	-92dB	+4dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-88dB	-92dB	+4dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-84dB	-90dB	+4dB
Engine High RPM W/All Acc	-84dB	-90dB	+4dB

<b>Glove Compartment Accessibility</b>	<b>Rating **</b>
Control Head	N/A
Microphone	N/A
Electronic Siren	N/A
<b>Dashboard (Handlebar) Accessibility</b>	
Radio Control Head	5
Siren Console	6
Mobile Digital Terminal/Computer	4
Speakers	5
Microphones	7
<b>Equipment Box) Accessibility</b>	
Factory Power Terminal in Trunk	8
One Radio Installation	10
Two Radio Installation	0
Antenna Installation	2
Computer Installation	7
<b>Engine Compartment Accessibility</b>	
Battery Terminal Connection	7
Accommodation for Cables	6
Hidden Siren Installation	N/A
<b>Ignition Fuse Terminal Block</b>	
Clip – on Connections for Accessories	6

# **COMMUNICATION NOISE EVALUATION**

## **2020 YAMAHA FJR-1300P-AB**

<b>RADIO MAKE</b>	<b>MODEL NO.</b>	<b>ANTENNA TYPE</b>	<b>LOCATION</b>
Motorola XTL-5000	MWU40025	2dB Gain Whip	Top of Tail box

\*\* Rating Scale: 1-10 (1-Poor / 5 –Average / 10-Outstanding)

FREQUENCY: 483.0875 MHz

<b>WITH ANTENNA</b>	<b>12 dB SINAD</b>	<b>20 dB QUIETING</b>	<b>DESENS dB</b>
Engine Off	-88dB	-86dB	+2dB
Engine Idle (No Acc)	-88dB	Max RF, Best -18db	+3dB
Engine High RPM (No Acc)	-88dB	Max RF, Best -18db	+3dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-86dB	-86dB	+5dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-86dB	Max RF, Best -18db	+3dB
Engine High RPM W/All Acc	-86dB	Max RF, Best -18db	+3dB

<b>Glove Compartment Accessibility</b>	<b>Rating **</b>
Control Head	N/A
Microphone	N/A
Electronic Siren	N/A
<b>Dashboard (Handlebar) Accessibility</b>	
Radio Control Head	7
Siren Console	3
Mobile Digital Terminal/Computer	9
Speakers	3
Microphones	4
<b>Equipment Box Accessibility</b>	
Factory Power Terminal in Trunk	0
One Radio Installation	10
Two Radio Installation	0
Antenna Installation	8
Computer Installation	7
<b>Engine Compartment Accessibility</b>	
Battery Terminal Connection	9
Accommodation for Cables	7
Hidden Siren Installation	N/A
<b>Ignition Fuse Terminal Block</b>	
Clip – on Connections for Accessories	6





*Los Angeles County*  
**Sheriff's Department**  
*Communications and Fleet Management Bureau*  
1104 N. Eastern Ave. Los Angeles CA 90063  
[www.lasd.org](http://www.lasd.org)