

**LOS ANGELES COUNTY SHERIFF'S
DEPARTMENT**



**LAW ENFORCEMENT
MOTORCYCLE TEST
AND
EVALUATION PROGRAM**

**2014 MODEL
YEAR**

JOHN L. SCOTT, SHERIFF

TABLE OF CONTENTS

Introduction.....	3
Acknowledgements.....	4
Evaluation Protocol.....	6
Motorcycle Specifications.....	12
Basic Motorcycle Patterns.....	22
32 Lap High Speed Vehicle Evaluation.....	26
Pursuit Course Evaluation.....	36
(Note: Pursuit Course Evaluation was not conducted this year due to inclement weather)	
Brake Evaluation.....	37
Ergonomics Evaluation.....	41
Acceleration Evaluation.....	67
Fuel Efficiency Evaluation.....	68
Heat Evaluation.....	79
Sound Level Evaluation (db meter test).....	73
Communication Evaluation.....	76

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 on November 7, 2013 and concluded on November 18, 2013, by the Los Angeles County Sheriff's Department.

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

- *2014 Honda ST 1300-PA
- *2014 BMW R 1200 RT-P
- *2014 BMW F 800 GT-P
- *2014 Harley-Davidson Electra Glide
- *2014 Harley-Davidson Road King
- *2014 Victory Commander
- *2014 Victory Commander 1
- *2014 Moto-Guzzi California 1400
- *2014 Moto-Guzzi Norge

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. To provide law enforcement agencies with the data necessary to assist those in the motorcycle selection process, and to 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 that 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 have contributed their time and effort in making this year's test a success.

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Communications and Fleet Management Bureau staff - LASD

Harley Davidson Police Motorcycles

BMW Police Motorcycles

Huntington Beach Honda Police Motorcycles

Victory Police Motorcycles

Piaggio Group Americas (Moto Guzzi)

Training Bureau / Emergency Vehicle Operation Center – LASD

Emergency Operations Bureau – LASD

Reserve Forces Bureau – LASD

Video Production Unit – LASD

Aero Bureau - LASD

LASD Motorsports

Los Angeles Police Department - Training/EVOC-Motorcycle Training Unit.

Deputy Shawn Bryant, test rider and evaluator – LASD/EVOC-Motorcycle Training Unit

Deputy Jeffrey Houle, test rider and evaluator – LASD/EVOC-Motorcycle Training Unit

Officer Mitch Nowlen, test rider and evaluator – LAPD/EVOC-Motorcycle Training Unit

Officer Roger Stewart, test rider and evaluator – LAPD/EVOC-Motorcycle Training Unit

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Havis-Shield Equipment Corporation
Harley Davidson Police Motorcycles
Huntington Beach Honda Police Motorcycles
Industrial Van & Truck
Link Engineering
Long Beach BMW Motorcycles
Moto Guzzi Police Motorcycles (Piaggio Group)
Napa Brakes
O'Reilly Auto Parts
Power Flare Corporation
Raybestos Brakes
South Coast AQMD
Stalker Radar
Stop Rubber Necking
Supersprings International
Troy Products
RaceLogic USA
Victory Police Motorcycles
Wattco-Whelen Products
West Coast Lights and Siren
Westin Products – Law Enforcement Division
Zero Electric Motorcycles

MOTORCYCLE EVALUATION PROTOCOL

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 timed laps. Lap timing is via a GPS based Race Logic "DriftBox 02" with a "Video VBOX" Data logger" utilized for secondary lap timing. Both Data logger units are mounted on the motorcycle. The fastest and the slowest lap times are eliminated, the remaining six lap times are averaged. The average time and speed are recorded next to the rider's name.

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 motorcycle is judged unacceptable in this preliminary review, it is rejected and not subjected to further evaluation.

PURSUIT COURSE

Note: Due to inclement weather (rain) the pursuit course evaluation was not conducted this year.

This evaluation is for motorcycles identified by the manufacturer as intended for law enforcement use. This evaluation is conducted on a closed 2.45 mile city street course which closely represents the environment most urban law enforcement agencies must contend with. The course has virtually no straight-a-ways and consists of 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 or "pursuit" 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.

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, 18, 17 and 16 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, 10 and 9 ½ 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.

All of the Basic Motorcycle Pattern Evaluation protocols will be conducted by all four riders.

ACCELERATION PERFORMANCE EVALUATION

This evaluation is designed to measure motorcycle performance and control in terms of acceleration, including speed and time elapsed at the quarter mile. Although the top speed is not recorded, a minimum speed of 100 mph is generally obtained to satisfy the requirements for high-speed law enforcement patrol. Special attention will be paid to overall acceleration, stability, loss of rear wheel traction, and whether or not the front wheel lifts off the ground uncontrollably. Three runs will be made with each motorcycle. The results will be averaged.

All of the information gathered during the acceleration evaluation is gathered using a RaceLogic Drifbox 02 Datalogger". The "Datalogger" is a GPS based measuring device. This electronic device measures distance, time and speed.

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 60 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 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 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.

ERGONOMICS & RIDEABILITY EVALUATION

157 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 four times through a 157 mile loop, one loop completed by each of the four EVOC riders. The loop covers 33 miles of city streets, 75 miles of California freeways, 20 miles of coastal highway, and 29 miles of mountain canyons. No attempt is made to "baby" the motorcycle through the loop, and hard acceleration starts are avoided.

During the rideability 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 four 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 four riders, for all four loops.

This subjective evaluation is a rating of human factors done individually and independently by all four 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.

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.

SOUND LEVEL EVALUATION

The sound level evaluation measures the sound levels of the motorcycle at different speeds. This evaluation is conducted at 40 mph, 60 mph, 80 mph, and while accelerating from 0 to 80 mph. The dB ratings are recorded with an EXTECH digital sound level meter. The sound level meter's microphone is mounted at the riders shoulder level, approximately 6 inches from his ear. During the fixed speed portion of the evaluation, the rider will accelerate to the identified speed, and after attaining that speed, will turn on the EXTECH meter and record the result. During the acceleration portion of the evaluation, the meter will be turned on, and the motorcycle will be accelerated to 80 mph. The meter will record the highest dB rating achieved during the entire acceleration of the motorcycle.

MOTORCYCLE SPECIFICATIONS

MOTORCYCLE SPECIFICATIONS

2014 HONDA POLICE MOTORCYCLE ST 1300-PA

Vehicle Description: Full size, Sport Touring, Police Package motorcycle
Engine Type: 1261 cc liquid cooled 90 degree V-4
Bore and Stroke: 78mm x 66mm
Compression Ratio: 10.8:1
Valve Train: DOHC, 4 valves per cylinder
Carburetor / Fuel Injection: PGM-FI with automatic enricher circuit
Ignition: Computer Controlled digital with three dimensional mapping and electronic advance
Horsepower: 125 bhp @ 8000 rpm Torque: 85 ft-lb @ 6000 rpm
Final Drive (shaft, chain, belt): Shaft
Dry Weight: 679 lbs
Alternator Output: 660 watt, high output
Battery: Odyssey P.C. 545 Gel Battery with 6 Amp Battery Charger
Transmission: Five speed
Clutch: 8 plate wet, hydraulic
Suspension:
Front: 45mm HMAS cartridge fork, 4.6 inches of travel
Rear: HMAS gas-charged single shock, 4.8 inches of travel
Brakes:
Front: Dual full floating 310mm floating front discs w/ABS
Rear: Single 316mm rear disc w/ABS
Tires: Fr - 120/70ZR-18 Rr - 170/60ZR-17
Wheels: 3 spoke U-section cast aluminum
Wheelbase: 58.7 inches
Rake: 26.0 degree
Trail: 98mm / 3.9 inches
Fuel Tank Capacity: 7.7 gallons
EPA Fuel Mileage:
Seat Height: 31.1 inches (+/- 0.6 inches)
Adjustments: 3 positions
Windscreen:
Adjustable / Fixed: Adjustable, electric, 7.4 inches & 13 degrees adjustability
Foot peg / Floorboard Position: Foot Peg
Saddlebag Storage Capacity: 35 liters each, side opening, detachable

MOTORCYCLE SPECIFICATIONS

2014 BMW POLICE MOTORCYCLE R1200 RT-P

Vehicle Description: Full size, Sport Touring, Police Package motorcycle
Engine Type: 1170cc air/oil cooled, 2 cylinders
Bore and Stroke: 101mm x 73mm
Compression Ratio: 12.0:1
Valve Train: 4 valves per cylinder
Carburetor / Fuel Injection: Electronic intake pipe injection
Ignition: Digital engine management BMS-K with dual ignition and overrun fuel cut-off
Horsepower: 110 bhp @ 7,750 rpm Torque: 89 ft-lb @ 6,000 rpm
Final Drive (shaft, chain, belt): Shaft 1:1.882 ratio
Wet Weight: Approximately 650 lbs
Alternator Output: 720 watt, 27 amps @ idle
Battery: 19 amp/hour maintenance free (2)
Transmission: Constant Mesh 6 speed
Clutch: Self-adjusting hydraulic actuating single plate dry clutch
Suspension:
Front: Special front shock strut police application, 4.7 inches of travel
Rear: Special travel-dependent damping system, 5.3 inches of travel
Brakes:
Front: Dual front disc ABS II partial integral system
Rear: Single rear disc, independent rear brake control
Tires: Fr - 120/70ZR-17 Rr - 180/55ZR-17
Wheels: Cast aluminum
Wheelbase: 58.4 inches Fork
Fork Angle: 63.4 degrees
Trail: 4.3 inches (castor in normal position)
Fuel Tank Capacity: 6.6 gallons with one gallon reserve
EPA Fuel Mileage: 65 hwy / 43 city
Seat Height: 32.2 inches, Solo Seat
Adjustments: Yes
Windscreen: Yes
Adjustable / Fixed: Adjustable, electric
Foot peg / Floorboard Position: Foot Peg
Saddlebag Storage Capacity: 23 liters each, top opening

MOTORCYCLE SPECIFICATIONS

2014 BMW POLICE MOTORCYCLE F800 GT-P

Vehicle Description: Full size, Sport Touring, Police Package motorcycle
Engine Type: 798cc air/oil cooled, 2 cylinders
Bore and Stroke: 82mm x 75.6mm
Compression Ratio: 12.0:1
Valve Train: 4 valves per cylinder
Carburetor / Fuel Injection: Electronic intake pipe injection
Ignition: Digital engine management BMS-K with dual ignition and overrun fuel cut-off
Horsepower: 90bhp @ 7,000 rpm Torque: 64ft-lb @ 3,500 rpm
Final Drive (shaft, chain, belt): Belt with shock damper
Wet Weight: Approximately 469lbs
Alternator Output: 400 watt
Battery: 12V / 12Ah, maintenance free
Transmission: Constant Mesh 6 speed
Clutch: Multi-disc clutch in oil bath (wet), mechanically operated
Suspension:
Front: Telescopic fork, 43mm, 125mm travel
Rear: Cast aluminum single sided swing arm with eccentric adjustment, central spring strut.
Brakes: BMW Motorrad ABS
Front: Dual front disc, 4-piston fixed caliper
Rear: Single rear disc, single piston floating caliper
Tires: Fr - 120/70ZR-17 Rr - 180/55ZR-17
Wheels: Cast aluminum
Wheelbase: 1,514mm
Fork Angle:
Trail:
Fuel Tank Capacity: 4 gallons with .79 gallon reserve
EPA Fuel Mileage: N/A
Seat Height: 765mm-820mm
Adjustments: Yes
Windscreen: Yes
Adjustable / Fixed: Adjustable, electric
Foot peg / Floorboard Position: Foot Peg
Saddlebag Storage Capacity:

MOTORCYCLE SPECIFICATIONS

2014 HARLEY-DAVIDSON ELECTRA GLIDE
Vehicle Description: Full size, Touring, Police Package motorcycle
Engine Type: 103 cu in, air/oil cooled, 2 cylinders Twin Cam
Bore and Stroke: 3.875 in. (98.4mm) x 4.375 in. (111.1mm)
Compression Ratio: 9.7: 1
Valve Train: Pushrod operated, overhead hydraulic self-adjusting lifters; 2 valves per cylinder
Carburetor / Fuel Injection: Electronic Sequential Port Fuel Injection (ESPFI)
Ignition: Electronic
Horsepower: N/A Torque : 102 ft-lb @ 3500 rpm
Final Drive (shaft, chain, belt): Drive belt, 32/68 ratio
Wet Weight: 831 lbs (376kg)
Alternator Output: Three-phase 50-Amp system, 585w @ 13V, 2000 rpm, 650 watt max @13V
Battery: Sealed, maintenance-free; 12 volt, 28 amp/hour, 270cca
Transmission: 6 speed Cruise Drive
Clutch: multi-plate, wet
Suspension,
Front: 41.3mm telescopic cartridge, 4.6 inches of travel
Rear: Air adjustable shocks, 3.0 inches of travel
Brakes:
Front: Dual front disc w/ABS 11.81 in. x .28 in.
Rear: Single disc w/ABS 11.81 in. x .28 in
Tires: Dunlop® Harley-Davidson Series, bias blackwall
Front – D408F 130/80B17 65H
Rear – D407 180/65B16 81H
Wheels: Black, Slotted disc cast aluminum
Wheelbase: 63.5 inches
Rake: 26 degrees
Fork Angle 29.25 degrees
Trail: 6.7 inches
Fuel Tank Capacity: 6.0 gallons with one gallon reserve
EPA Fuel Mileage: Combined City/HWY 42mpg
Seat Height: 27.3 in. (laden) 30.7 in. (un-laden)
Adjustments: Air spring damping
Windscreen: Fairing mounted; clear, breakaway Lexan® windshield
Foot peg / Floorboard Position: Floorboard
Saddlebag Storage Capacity: Approx. 2000 cubic inches each, top opening

MOTORCYCLE SPECIFICATIONS

2014 HARLEY-DAVIDSON ROAD KING

Vehicle Description: Full size, Touring, Police Package motorcycle
Engine Type: 103 cu in, air/oil cooled, 2 cylinders Twin Cam
Bore and Stroke: 3.875 in. (98.4mm) x 4.375 in. (111.1mm)
Compression Ratio: 9.7: 1
Valve Train: Pushrod operated, overhead hydraulic self-adjusting lifters; 2 valves per cylinder
Carburetor / Fuel Injection: Electronic Sequential Port Fuel Injection (ESPFI)
Ignition: Electronic
Horsepower: N/A Torque : 102 ft-lb @ 3500 rpm
Final Drive (shaft, chain, belt): Drive belt, 32/68 ratio
Wet Weight: 831 lbs (376kg)
Alternator Output: Three-phase 50-Amp system, 585w @ 13V, 2000 rpm, 650 watt max @13V
Battery: Sealed, maintenance-free; 12 volt, 28 amp/hour, 270cca
Transmission: 6 speed Cruise Drive
Clutch: multi-plate, wet
Suspension,
Front: 41.3mm telescopic cartridge, 4.6 inches of travel
Rear: Air adjustable shocks, 3.0 inches of travel
Brakes:
Front: Dual front disc w/ABS 11.81 in. x .28 in.
Rear: Single disc w/ABS 11.81 in. x .28 in
Tires: Dunlop® Harley-Davidson Series, bias blackwall
Front – D408F 130/80B17 65H
Rear – D407 180/65B16 81H
Wheels: Black, Slotted disc cast aluminum
Wheelbase: 63.5 inches
Rake: 26 degrees
Fork Angle 29.25 degrees
Trail: 6.7 inches
Fuel Tank Capacity: 6.0 gallons with one gallon reserve
EPA Fuel Mileage: Combined City/HWY 42mpg
Seat Height: 27.3 in. (laden) 30.7 in. (un-laden)
Adjustments: Air spring damping
Windscreen: Fork-mounted; clear, breakaway Lexan® windshield
Foot peg / Floorboard Position: Floorboard
Saddlebag Storage Capacity: Approx. 2000 cubic inches each, top opening

MOTORCYCLE SPECIFICATIONS

2014 VICTORY COMMANDER

Vehicle Description: Full size, Touring, Police Package motorcycle
Engine Type: 1731cc air/oil cooled, 2 cylinders V-Twin Overhead Cam
Bore and Stroke: 101mm x 108mm
Compression Ratio: 9.4:1
Valve Train: Overhead Cams
Carburetor / Fuel Injection: Electronic fuel injection /dual 45mm throttle body
Ignition: Electronic
Horsepower: 97
Torque: 113 ft-lb @ 2,700 rpm
Final Drive (shaft, chain, belt): Carbon fiber reinforced belt
Wet Weight: 785lbs
Alternator Output: 50 amp
Battery: 18 amp/hour, 12 volt, 240cca
Transmission: 6speed
Clutch: Multi-plate
Suspension,
Front: 46mm male-slider fork, adjustable preload and rebound damping, 5.1 inches trav
Rear: Link mono air adjustable shock. Travel-4.7 inch
Brakes: Hydraulic linked ABS
Front: Dual 300 x 5 mm floating rotors w/4-piston calipers
Rear: Single 300 x 7 mm floating rotor w/2-piston calipers
Tires: Fr – Dunlop Elite 3 130/70R18 Rr – Dunlop Elite 3 180/60R16
Wheels: Cast aluminum rims
Wheelbase: 65.7 inches
Rake: 29.0 degrees
Trail: 5.4 inches
Fuel Tank Capacity: 5.8 gallons
EPA Fuel Mileage: Combined 44.5 mpg
Seat Height: 26.25 inches
Adjustments: no
Windscreen: Yes
Adjustable / Fixed: Electric Adjustable
Foot Peg / Floorboard Position: Foot peg
Saddlebag Storage Capacity: 35 liters (does not include radio box volume)

MOTORCYCLE SPECIFICATIONS

2014 VICTORY COMMANDER 1

Vehicle Description: Full size, Touring, Police Package motorcycle
Engine Type: 1731cc air/oil cooled, 2 cylinders V-Twin Overhead Cam
Bore and Stroke: 101mm x 108mm
Compression Ratio: 9.4:1
Valve Train: Overhead Cams
Carburetor / Fuel Injection: Electronic fuel injection /dual 45mm throttle body
Ignition: Electronic
Horsepower: 97
Torque: 113 ft-lb @ 2,700 rpm
Final Drive (shaft, chain, belt): Carbon fiber reinforced belt
Wet Weight: 896lbs
Alternator Output: 50 amp
Battery: 18 amp/hour, 12 volt, 240cca
Transmission: 6speed
Clutch: Multi-plate
Suspension,
Front: 46mm male-slider fork, adjustable preload and rebound damping, 5.1 inches travel
Rear: Link mono air adjustable shock. Travel-4.7 inch
Brakes: Hydraulic linked ABS
Front: Dual 300 x 5 mm floating rotors w/4-piston calipers
Rear: Single 300 x 7 mm floating rotor w/2-piston calipers
Tires: Fr – Dunlop Elite 3 130/70R18 Rr – Dunlop Elite 3 180/60R16
Wheels: Cast aluminum rims
Wheelbase: 65.7 inches
Rake: 29.0 degrees
Trail: 5.4 inches
Fuel Tank Capacity: 5.8 gallons
EPA Fuel Mileage: Combined 44.5 mpg
Seat Height: 26.25 inches
Adjustments: no
Windscreen: Yes
Adjustable / Fixed: Electric Adjustable
Foot Peg / Floorboard Position: Foot peg
Saddlebag Storage Capacity: 35 liters (does not include radio box volume)

MOTORCYCLE SPECIFICATIONS

2014 MOTO GUZZI NORGE

Vehicle Description: Full size, Touring, Police Package motorcycle
Engine Type: 90 degree V-twin 1.151cc, 4-stroke, air cooled
Bore and Stroke: 95 x 81.2 mm (3.74 x 3.20 inches)
Compression Ratio: 10.8:1
Valve Train: Single overhead camshaft with roller tappets and valve rockers, 4 valves per cylinder.
Carburetor / Fuel Injection: Electronic injection (Weber Marelli) with stepper motor.
Ignition: Electronic
Horsepower: 102
Torque: 76.7 ft-lb @5500 rpm
Final Drive (shaft, chain, belt): shaft
Dry Weight: 566 lbs
Alternator Output: 12v – 550w
Battery: 12v – 18ah
Transmission: 6-speed
Clutch: Hydraulically controlled single plate dry clutch with incorporated flex coupling.
Suspension,
Front: Telescopic hydraulic fork with 45mm stanchions and adjustable spring preload.
Rear: Single arm with progressive linkage and mono-shock with adjustable rebound.
Brakes: Hydraulic w/ABS
Front: Dual 320mm stainless steel floating discs, Brembo calipers with 4 pistons.
Rear: 282mm stainless steel fixed disc, Brembo floating caliper with 2 pistons.
Tires: Fr- 120/70 ZR17 Rr- 180/55 ZR17
Wheels: Hollow 3-spoke rim in chilled cast aluminum alloy.
Wheelbase: 1.495m Rake: 25.0 degrees Trail: 4.72 in (120mm)
Fuel Tank Capacity: 6 gallons
EPA Fuel Mileage: Not yet rated
Seat Height: 31.8”
Adjustments: No
Windscreen: Yes
Adjustable / Fixed: Adjustable
Foot Peg / Floorboard Position: Foot peg.
Saddlebag Storage Capacity: 36L

MOTORCYCLE SPECIFICATIONS

MOTO GUZZI CALIFORNIA 1400

Vehicle Description: Full size, Touring, Police Package motorcycle
Engine Type: 90 degree V-twin, 4-stroke, 4 valve, twin spark.
Bore and Stroke: 4.09 x 3.20 in (104 x 81.2mm)
Compression Ratio: 10.5:1
Valve Train: Single overhead camshaft with roller tappets and valve control rockers, 4 valves per cylinder
Carburetor / Fuel Injection: Electronic injection (Weber Mirelli)
Ignition: Electronic
Horsepower: 96
Torque: 87 ft-lb @2750 rpm
Final Drive (shaft, chain, belt): Shaft
Dry Weight: 709.8 lbs
Alternator Output: 12v – 550w
Battery: 12v – 18ah
Transmission: 6-speed
Clutch: Hydraulically controlled single plate dry clutch with incorporated flex coupling.
Suspension,
Front: 46mm traditional fork
Rear: Swing arm with 2 shock absorbers with adjustable spring pre-load.
Brakes: Hydraulic w/ABS
Front: Dual 320mm stainless steel floating discs, Brembo radial calipers with 4 pistons.
Rear: 282mm stainless steel fixed disc, Brembo floating caliper with 2 pistons.
Tires: Fr- 130/70R18 Rr- 200/60R16
Wheels: Alloy
Wheelbase: 66.34 in (1685mm) Rake: 32 deg. Trail: 6.10 in (155mm)
Fuel Tank Capacity: 5.4 gallons
EPA Fuel Mileage: Not yet rated
Seat Height: 29.1” (28.3” optional)
Adjustments: No
Windscreen: Yes
Adjustable / Fixed:
Foot Peg / Floorboard Position:
Saddlebag Storage Capacity: 35L

BASIC MOTORCYCLE PATTERNS

BASIC MOTORCYCLE PATTERNS

2014 HONDA ST1300					
PATTERN	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	YES	YES	NO
U-Turn	YES	YES	YES	YES	YES
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	YES	NO	
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			5

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

2014 HARLEY-DAVIDSON ELECTRA GLIDE					
PATTERN	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	YES	NO	NO
U-Turn	YES	YES	YES	YES	YES
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	YES	NO	
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			3

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

2014 HARLEY-DAVIDSON ROAD KING					
PATTER	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	YES	NO	NO
U-Turn	YES	YES	YES	YES	YES
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	YES	NO	
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			3

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

2014 BMW F800GT-P					
PATTER	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	YES	YES	NO
U-Turn	YES	YES	YES	YES	YES
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	YES	NO	
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			4

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

2014 BMW R1200RT-P					
PATTER	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	YES	YES	NO
U-Turn	YES	YES	YES	YES	YES
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	YES	YES	
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			5

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

2014 VICTORY COMMANDER					
PATTER	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	YES	NO	NO
U-Turn	YES	YES	YES	YES	NO
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	NO	NO	
PATTERN		CONSIDERATION			RATING**
30 MPH Cone Weave		Counter steering effort / Bike Drag			3

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

2014 VICTORY COMMANDER 1					
PATTER	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	YES	NO	NO
U-Turn	YES	YES	YES	YES	NO
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	NO	NO	
PATTERN	CONSIDERATION			RATING**	
30 MPH Cone Weave	Counter steering effort / Bike Drag			3	

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

2014 MOTO GUZZI NORGE					
PATTER	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	NO	NO	NO
U-Turn	YES	YES	YES	YES	YES
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	NO	NO	
PATTERN	CONSIDERATION			RATING**	
30 MPH Cone Weave	Counter steering effort / Bike Drag			4	

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

2014 MOTO GUZZI CALIFORNIA 1400					
PATTER	20 FT.	19 FT.	18 FT.	17 FT.	16 FT.
Circle	YES	YES	YES	NO	NO
U-Turn	YES	YES	YES	YES	YES
PATTERN	11 FT.	10 ½ FT.	10 FT.	9 ½ FT.	
Short Cone Weave	YES	YES	NO	NO	
PATTERN	CONSIDERATION			RATING**	
30 MPH Cone Weave	Counter steering effort / Bike Drag			3	

** Rating Scale – 1 – Poor 3 – Average 5 – Outstanding

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

32 LAP HIGH-SPEED COURSE MOTORCYCLE DYNAMICS EVALUATION

2014 HONDA ST1300

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:26:16	60.8
Officer R. Stewart	9 thru 16	1:31:48	57.3
Deputy J. Houle	17 thru 23	1:26:85	60.3
Officer M. Nowlen	24 thru 32	1:25:35	61.3

ITEM	RATING**
STEERING	9
LEAN ANGLE	8
SUSPENSION	9
BRAKE FADE	9
BRAKE PULL	9
ABS OPERATION	8

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

RIDER COMMENTS
<p>Brakes: Brakes performed well and had good reaction to applied pressure. Feedback was noticeable, but light. ABS was predictable and consistent. Some slight brake fade was experienced laps 17-24.</p> <p>Cornering/Handling: Lean angle is good. Rolls nice at entry of turn but feels a bit unstable. Under medium to hard acceleration out of turns, the rear tire breaks loose.</p> <p>Transmission (Shift Points): Transmission shift well with little effort. Shifting in left turns was limited due to the shift lever and foot peg dragging.</p> <p>Engine: The engine is very smooth and powerful.</p> <p>Other: Traction control is needed due to the power and torque of this motorcycle.</p>

32 LAP HIGH-SPEED COURSE
MOTORCYCLE DYNAMICS EVALUATION

2014 HARLEY-DAVIDSON ELECTRA GLIDE

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:34:28	55.7
Officer R. Stewart	9 thru 16	1:37:77	53.6
Deputy J. Houle	17 thru 23	1:35:29	55.0
Officer M. Nowlen	24 thru 32	1:31:79	57.0

ITEM	RATING**
STEERING	8
LEAN ANGLE	4
SUSPENSION	6
BRAKE FADE	10
BRAKE PULL	10
ABS OPERATION	10

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

RIDER COMMENTS
<p>Brakes: Brakes performed well with no fade. Brakes are predictable and quick to respond. Brakes had very good feedback through the front and rear brake lever and pedal. ABS operation was smooth and predictable.</p> <p>Cornering/Handling: Lean angle is limited due to the floor boards hitting the road surface. Steering is smooth into the apex of the turn but is upset with any slight bumps.</p> <p>Transmission (Shift Points): Transmission shifts smooth and solid. Shift points are well spaced.</p> <p>Engine: Engine makes good power and torque above 2000RPM.</p> <p>Other:</p>

32 LAP HIGH-SPEED COURSE MOTORCYCLE DYNAMICS EVALUATION

2013 HARLEY-DAVIDSON ROAD KING

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:34:73	54.1
Officer R. Stewart	9 thru 16	1:39:53	52.5
Deputy J. Houle	17 thru 23	1:36:86	54.3
Officer M. Nowlen	24 thru 32	1:31:80	57.2

ITEM	RATING**
STEERING	8
LEAN ANGLE	4
SUSPENSION	6
BRAKE FADE	10
BRAKE PULL	10
ABS OPERATION	10

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

RIDER COMMENTS
<p>Brakes: Brakes performed well with no fade. Brakes are predictable and quick to respond. Brakes had very good feedback through the front and rear brake lever and pedal. ABS operation was smooth and predictable.</p> <p>Cornering/Handling: Lean angle is limited due to the floor boards hitting the road surface. Steering is smooth into the apex of the turn but is upset with any slight bumps.</p> <p>Transmission (Shift Points): Transmission shifts smooth and solid. Shift points are well spaced.</p> <p>Engine: Engine makes good power and torque above 2000RPM.</p> <p>Other:</p>

32 LAP HIGH-SPEED COURSE
MOTORCYCLE DYNAMICS EVALUATION

2014 BMW F800 GT-P

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:25:87	61.2
Officer R. Stewart	9 thru 16	1:34:25	55.4
Deputy J. Houle	17 thru 23	1:28:55	59.1
Officer M. Nowlen	24 thru 32	1:25:48	61.1

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

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

RIDER COMMENTS

Brakes:
Brakes were very responsive and apply hard with solid feedback to the rider. Front brake is a little too aggressive causing the rear of the motorcycle to feel very light. Once adjusted to the feel of the brakes, they performed extremely well.

Cornering/Handling:
Excellent lean angle and counter steers quickly. Motorcycle holds a line very well and is very stable.

Transmission (Shift Points):
Transmission shifts smooth and quick. Very good gear ratio match.

Engine:
Engine builds good power in higher RPM's but lacks low end torque.

Other:

32 LAP HIGH-SPEED COURSE
MOTORCYCLE DYNAMICS EVALUATION

2014 BMW R1200RT-P

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:24:16	62.3
Officer R. Stewart	9 thru 16	1:28:53	59.0
Deputy J. Houle	17 thru 23	1:25:50	61.2
Officer M. Nowlen	24 thru 32	1:23:76	62.3

ITEM	RATING**
STEERING	10
LEAN ANGLE	9
SUSPENSION	10
BRAKE FADE	10
BRAKE PULL	10
ABS OPERATION	10

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

RIDER COMMENTS

Brakes:

Brakes work excellent. Brakes apply hard with extreme consistency every application. No fade was experienced and ABS operation was smooth and controllable.

Cornering/Handling:

Motorcycle rolls into corners very smoothly and with ease. Motorcycle has a very good amount of lean angle.

Transmission (Shift Points):

Transmission shifts smooth and quick, even under hard acceleration. Shift points are very good.

Engine:

Engine produces excellent power and is very smooth. Engine pulls hard through the entire RPM range.

Other:

Motorcycle feels very well balanced.

32 LAP HIGH-SPEED COURSE MOTORCYCLE DYNAMICS EVALUATION

2014 VICTORY COMMANDER

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:37:09	54.1
Officer R. Stewart	9 thru 16	1:40:14	52.0
Deputy J. Houle	17 thru 23	1:39:32	52.6
Officer M. Nowlen	24 thru 32	1:35:03	54.9

ITEM	RATING**
STEERING	7
LEAN ANGLE	4
SUSPENSION	7
BRAKE FADE	6
BRAKE PULL	6
ABS OPERATION	8

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

RIDER COMMENTS
<p>Brakes: Application comes on quick but brakes are slow to react and there was noticeable fading. Brakes feel insufficient for the weight of this motorcycle.</p> <p>Cornering/Handling: Motorcycle is smooth transitioning into turns, but then quickly runs out of lean angle, limiting speed. Lack of lean angle limited the rider's ability.</p> <p>Transmission (Shift Points): Transmission shifts very well with a good match of gear ratios.</p> <p>Engine: Engine pulled strong and has a good amount of torque, even at lower RPM's.</p> <p>Other</p>

32 LAP HIGH-SPEED COURSE MOTORCYCLE DYNAMICS EVALUATION

2014 VICTORY COMMANDER 1

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:35:51	53.4
Officer R. Stewart	9 thru 16	1:37:59	52.0
Deputy J. Houle	17 thru 23	1:34:70	53.6
Officer M. Nowlen	24 thru 32	1:32:99	54.5

ITEM	RATING**
STEERING	7
LEAN ANGLE	4
SUSPENSION	7
BRAKE FADE	6
BRAKE PULL	6
ABS OPERATION	8

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

RIDER COMMENTS
<p>Brakes: Application comes on quick but brakes are slow to react and there was noticeable fading. Brakes feel insufficient for the weight of this motorcycle. Brake fade continued to increase from lap 3 on. Brakes had a noticeable burning odor observed by each rider.</p> <p>Cornering/Handling: Motorcycle is smooth transitioning into turns, but then quickly runs out of lean angle, limiting speed. Lack of lean angle limited the rider's ability. Running board dragged through all of the turns.</p> <p>Transmission (Shift Points): Transmission shifts smoothly.</p> <p>Engine: Engine pulled strong and has a good amount of torque, even at lower RPM's.</p> <p>Other:</p>

32 LAP HIGH-SPEED COURSE MOTORCYCLE DYNAMICS EVALUATION

2014 MOTO GUZZI NORGE

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:24:74	61.9
Officer R. Stewart	9 thru 16	1:30:10	57.8
Deputy J. Houle	17 thru 23	1:26:94	59.8
Officer M. Nowlen	24 thru 32	1:26:24	60.7

ITEM	RATING**
STEERING	9
LEAN ANGLE	9
SUSPENSION	9
BRAKE FADE	9
BRAKE PULL	9
ABS OPERATION	9

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

RIDERS COMMENTS

Brakes:

Brakes worked very well and were predictable and responsive. Great brake feedback to the rider.

As the brake temperature increased, the braking performance increased as well. Good transition between threshold and ABS braking.

Cornering/Handling:

Motorcycle has lots of lean angle, enters corners well and holds a line.

Transmission (Shift Points):

Transmission shifts effortlessly and consistent. Very good shift point and gear ratio's.

Engine:

Engine produces excellent power and is smooth all the way through red line.

Other:

Front end of motorcycle feels lite and floats as high speeds over the slightest dip or bump in the road surface.

32 LAP HIGH-SPEED COURSE MOTORCYCLE DYNAMICS EVALUATION

2014 MOTO GUZZI CALIFORNIA 1400

RIDER	LAPS	AVG. TIME	AVG. SPEED
Deputy S. Bryant	1 thru 8	1:33:48	56.1
Officer R. Stewart	9 thru 16	1:35:25	55.0
Deputy J. Houle	17 thru 23	1:34:75	55.3
Officer M. Nowlen	24 thru 32	1:32:77	56.4

ITEM	RATING**
STEERING	7
LEAN ANGLE	6
SUSPENSION	6
BRAKE FADE	10
BRAKE PULL	8
ABS OPERATION	9

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

RIDER COMMENTS
<p>Brakes: Brakes worked well and were very responsive to rider input. Very good rate of deceleration. ABS system was smooth and predictable.</p> <p>Cornering/Handling: Slow to enter on counter-steer. Steering is stable, but slow to react to input. Lean angle is limited and suspension bottomed out on high points on the road surface at high speeds.</p> <p>Transmission (Shift Points): Transmission is geared lower and required more upshifts than preferred.</p> <p>Engine: Great power and torque, pulls strong out of the corners.</p> <p>Other: Throttle actuation was not smooth and was inconsistent.</p>

**PURSUIT COURSE
MOTORCYCLE DYNAMICS
EVALUATION**

Note: Pursuit course test was not conducted this year due to rain.

BRAKING

HARD BRAKING
PANIC STOP – 60 MPH TO ZERO

2014 HONDA ST1300P	
RIDER	STOPPING DISTANCE
Deputy J. Houle	142.6 feet @ 60.0 MPH

2014 HARLEY DAVIDSON ELECTRA GLIDE	
RIDER	STOPPING DISTANCE
Deputy J. Houle	139.9 feet @ 60.0 MPH

2014 HARLEY DAVIDSON ROAD KING	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	143.2 feet @ 60.0 MPH

2014 BMW R1200RT-P	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	142.1 feet @ 60.0 MPH

2014 BMW F800 GT-P	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	144.6 feet @ 60.0 MPH

2014 VICTORY COMMANDER	
RIDER	STOPPING DISTANCE
Deputy J. Houle	150.3 feet @ 60.0 MPH

2014 VICTORY COMMANDER 1	
RIDER	STOPPING DISTANCE
Deputy J. Houle	151.4 feet @ 60.0 MPH

2014 MOTO GUZZI NORGE	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	146.8 feet @ 60.0 MPH

2014 MOTO GUZZI CALIFORNIA 1400	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	151.1 feet @ 60.0 MPH

DEBRIS FIELD BRAKING
SANDY SURFACE – 40 MPH TO ZERO

2014 HONDA ST1300P	
RIDER	STOPPING DISTANCE
Deputy J. Houle	105.6 feet

2014 HARLEY-DAVIDSON ELECTRA GLIDE	
RIDER	STOPPING DISTANCE
Deputy J. Houle	108.5 feet

2014 HARLEY-DAVIDSON ROAD KING	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	106.6 feet

2014 BMW R1200RT-P	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	99.1 feet

2014 BMW F800 GT-P	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	101.4 feet

2014 VICTORY COMMANDER	
RIDER	STOPPING DISTANCE
Deputy J. Houle	113.3 feet

2014 VICTORY COMMANDER 1	
RIDER	STOPPING DISTANCE
Deputy J. Houle	114.1 feet

2014 MOTO GUZZI NORGE	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	105.9 feet

2014 MOTO GUZZI CALIFORNIA 1400	
RIDER	STOPPING DISTANCE
Officer M. Nowlen	115.0 feet

TRANSITORY BRAKING
DRY TO WET - 40 MPH TO ZERO

2014 HONDA ST1300P	
RIDER	DRY TO WET STOP
Deputy J. Houle	63.3 feet

2014 HARLEY DAVIDSON ELECTRA GLIDE	
RIDER	DRY TO WET STOP
Deputy J. Houle	62.1 feet

2014 HARLEY DAVIDSON ROAD KING	
RIDER	DRY TO WET STOP
Officer M. Nowlen	68.2 feet

2014 BMW R1200RT-P	
RIDER	DRY TO WET STOP
Deputy J. Houle	64.9 feet

2014 BMW F800 GT-P	
RIDER	DRY TO WET STOP
Deputy J. Houle	70.8 feet

2014 VICTORY COMMANDER	
RIDER	DRY TO WET STOP
Officer M. Nowlen	75.5 feet

2014 VICTORY COMMANDER 1	
RIDER	DRY TO WET STOP
Officer M. Nowlen	76.3 feet

2014 MOTO GUZZI NORGE	
RIDER	DRY TO WET STOP
Officer M. Nowlen	71.3 feet

2014 MOTO GUZZI CALIFORNIA 1400	
RIDER	DRY TO WET STOP
Deputy J. Houle	74.2 feet

ERGONOMICS EVALUATION RIDES

ERGONOMICS EVALUATION SUBJECTIVE EVALUATION – 157 MILE RIDE

2014 HONDA ST1300P

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

RIDING POSITION	CONSIDERATIONS	RATING
Seat Comfort	Padding, Springs, Width	7
Seat Position	Range of Adjustment	7
Riding Position	Lean Angle, Comfort	7
Floorboards / Pegs	Access to Foot Controls	7
RIDER COMMENTS		
<p>The seat is large and well-padded with three settings for height adjustment. Riding position lean angle was slightly forward putting the handlebars within easy reach. The application of the foot gear shifter and brake pedal function with ease in all conditions.</p>		

INSTRUMENT PANEL	CONSIDERATIONS	RATING
Controls	Position, Usability	7
Visibility	Instruments	7
Reflection / Glare	Windshield, Instruments	7
Instruments	Adequacy, Legibility	7
RIDER COMMENTS		
<p>The instrument cluster is configured with analog dials for speedometer and tachometer, coupled with an LED display window for a wide variety of functions. All are positioned for ease of viewing and function very well, but dimly lit making it difficult to read in bright sun.</p>		

MIRRORS	CONSIDERATIONS	RATING
Road Visibility	Distortion, Obstruction	7
Reflections	Instruments, Controls	7
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	7
Mirror Location	Accessibility, Visibility, Obstruction	7
RIDER COMMENTS		
<p>The mirrors are positioned in a way for good reference to the rear with absolutely zero vibration during dynamic or static mode and were easily adjustable.</p>		

WIND SCREEN	CONSIDERATIONS	RATING
Height / Width	Wind / Debris Protection	8
Adjustability	Electric or Manual, Ease of Use	8
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	8
RIDER COMMENTS		
<p>The windscreen is electrically operated via a rocker switch on the left handlebar. It provided good wind and debris protection. Wind protection is excellent, zero buffeting at high speeds.</p>		

CONTROLS	CONSIDERATIONS	RATING
Handlebars	Angle, Size, Position	8
Shift Levers	Usability, Shift Pad Position	8
Switches	Reach, Markings, Visibility, Accessibility	8
Rear Brake Pedal	Location, Feedback, Ease of Use	8
Front Brake Lever	Location, Feedback, Adjustability	8
Clutch Lever	Lever Resistance, Adjustability	8
RIDER COMMENTS		
<p>The handlebars had a “pull back” design, allowing the rider to sit back slightly, while still maintaining that aggressive seated position. The switches were small and numbered but easily reachable and provided good functionality. The foot shifter was well placed, allowing for solid up and down shifts with ease. The rear brake pedal positioning and configuration is consistent with the style of motorcycle allowing for ease of application. Controls provided good feedback from roadway surface.</p>		

MOUNT / DISMOUNT	CONSIDERATIONS	RATING
Trunk Height	Ample Leg Swing Room	8
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	8
Lean Angle	Side Stand of Adequate Length	8
RIDER COMMENTS		
<p>Trunk height on the Honda was not objectionable. There was ample leg swing room while mounting and dismounting from either side of the bike. The foot pegs did not interfere at all. Side stand length was adequate to safely support the motorcycle at a proper lean angle.</p>		

SUSPENSION	CONSIDERATIONS	RATING
Quality of Ride	Dampening, Rebound	7
Rider Size	Adjustability	8
RIDER COMMENTS		
The ride was very comfortable and smooth at all speeds. The suspension was solid and predictable in corners.		

STORAGE	CONSIDERATIONS	RATING
Saddlebags	Angle, Size and Position of Opening	8
Locks	Same Key, Security, Sturdiness	9
RIDER COMMENTS		
The saddlebags are of adequate size having ample room for storage. There were no compartment dividers to hold patrol gear upright, if bag were to open while riding it would be easy to lose the contents. Locks were operated by the ignition key and were sturdy.		

ADDITIONAL RIDER COMMENTS
The motorcycle has more than enough power which is solidly dispersed through a wide torque Range. It was very agile on twisty roads; the engine was very responsive in any gear.

ERGONOMICS EVALUATION SUBJECTIVE EVALUATION – 157 MILE RIDE

2014 BMW R1200RT-P

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

RIDING POSITION	CONSIDERATIONS	RATING
Seat Comfort	Padding, Springs, Width	8
Seat Position	Range of Adjustment	8
Riding Position	Lean Angle, Comfort	8
Floorboards / Pegs	Access to Foot Controls	8
RIDER COMMENTS		
<p>The seat's padding and width was sufficient to provide all day comfort. Seat is adjustable by a small hinged bracket under seat. Foot pegs, toe shifter and brake lever are well positioned, felt natural and were easy to use. The lean angle is high and supports turning the motorcycle in slow tight maneuvers.</p>		

INSTRUMENT PANEL	CONSIDERATIONS	RATING
Controls	Position, Usability	8
Visibility	Instruments	8
Reflection / Glare	Windshield, Instruments	9
Instruments	Adequacy, Legibility	8
RIDER COMMENTS		
<p>The controls/instruments are positioned well and are easy to use. The dials are recessed slightly and shadowed from the direct sun light, allowing the rider to easily refer to them at a glance.</p>		

MIRRORS	CONSIDERATIONS	RATING
Road Visibility	Distortion, Obstruction	8
Reflections	Instruments, Controls	8
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	9
Mirror Location	Accessibility, Visibility, Obstruction	8
RIDER COMMENTS		
<p>Mirrors are mounted on the outer lower edge of the fairing and provide adequate visibility with no distortion. Adjusting is easy with a light touch to the corners and once adjusted holds position.</p>		

WIND SCREEN	CONSIDERATIONS	RATING
Height / Width	Wind / Debris Protection	9
Adjustability	Electric or Manual, Ease of Use	9
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	9
RIDER COMMENTS		
The wind screen provided excellent protection from debris/wind. The controls are easy to use and the option provides comfort when you need air. Clarity was good with a slight bit of distortion. No helmet buffeting or turbulence.		

CONTROLS	CONSIDERATIONS	RATING
Handlebars	Angle, Size, Position	8
Shift Levers	Usability, Shift Pad Position	9
Switches	Reach, Markings, Visibility, Accessibility	8
Rear Brake Pedal	Location, Feedback, Ease of Use	9
Front Brake Lever	Location, Feedback, Adjustability	9
Clutch Lever	Lever Resistance, Adjustability	8
RIDER COMMENTS		
The handlebars provide a natural riding position. Nicely spaced apart, switches are easy to use and identify. The pedals/levers are positioned well and provide the rider with ease of use and confidence in their feel.		

MOUNT / DISMOUNT	CONSIDERATIONS	RATING
Trunk Height	Ample Leg Swing Room	7
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	8
Lean Angle	Side Stand of Adequate Length	8
RIDER COMMENTS		
The trunk is noticeably high in relation to rider, requiring a high leg swing to mount/dismount bike. The foot pegs are in a comfortable position and do not interfere with the rider mount/dismount. The side stand is easy to find and provides a quick, stable platform.		

SUSPENSION	CONSIDERATIONS	RATING
Quality of Ride	Dampening, Rebound	9
Rider Size	Adjustability	9
RIDER COMMENTS		
<p>The suspension provides a smooth comfortable ride. The dampening is adjustable by removing the seat and dialing in the desired setting. The suspension minimizes lift and dive, under hard acceleration and braking, maintaining a firm predictable line through the corners.</p>		

STORAGE	CONSIDERATIONS	RATING
Saddlebags	Angle, Size and Position of Opening	8
Locks	Same Key, Security, Sturdiness	8
RIDER COMMENTS		
<p>The saddlebags are mounted close to the frame, provide adequate storage space and are water tight. The lids stand up slightly and can interfere with a long drop style gun holster.</p>		

ADDITIONAL RIDER COMMENTS
<p>This motorcycle provides the rider with confidence and surprisingly agile in all aspects of enforcement riding. Great acceleration and torque through the entire RPM range. This motorcycle is inspiring to ride and definitely takes care of the rider.</p>

ERGONOMICS EVALUATION SUBJECTIVE **EVALUATION – 157 MILE RIDE**

2014 BMW F800 GT-P

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

RIDING POSITION	CONSIDERATIONS	RATING
Seat Comfort	Padding, Springs, Width	3
Seat Position	Range of Adjustment	5
Riding Position	Lean Angle, Comfort	5
Floorboards / Pegs	Access to Foot Controls	8
RIDER COMMENTS		
<p>The seat was very uncomfortable half way through the ride. The seat is very firm and not very ergonomically shaped. Riding position was a slight lean forward causing fatigue after a while.</p>		

INSTRUMENT PANEL	CONSIDERATIONS	RATING
Controls	Position, Usability	5
Visibility	Instruments	9
Reflection / Glare	Windshield, Instruments	8
Instruments	Adequacy, Legibility	8
RIDER COMMENTS		
<p>The control switches are not user friendly until after getting used to operating the motorcycle. The fuel gauge did not read accurately. The fuel gauge reads only half a tank when the tank is full.</p>		

MIRRORS	CONSIDERATIONS	RATING
Road Visibility	Distortion, Obstruction	8
Reflections	Instruments, Controls	8
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	7
Mirror Location	Accessibility, Visibility, Obstruction	7
RIDER COMMENTS		
<p>The mirrors were adequate and provided good rear view visibility and coverage. The road visibility is very good due to the lack of a full size wind screen.</p>		

WIND SCREEN	CONSIDERATIONS	RATING
Height / Width	Wind / Debris Protection	3
Adjustability	Electric or Manual, Ease of Use	N/A
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	N/A
RIDER COMMENTS		
The wind screen is very small in size and does not provide wind protection for the riders face.		

CONTROLS	CONSIDERATIONS	RATING
Handlebars	Angle, Size, Position	8
Shift Levers	Usability, Shift Pad Position	8
Switches	Reach, Markings, Visibility, Accessibility	8
Rear Brake Pedal	Location, Feedback, Ease of Use	8
Front Brake Lever	Location, Feedback, Adjustability	8
Clutch Lever	Lever Resistance, Adjustability	8
RIDER COMMENTS		
The handle bars are in a good position with slight forward lean. The shift levers, switches, brake pedal/levers, and clutch are all positioned very well.		

MOUNT / DISMOUNT	CONSIDERATIONS	RATING
Trunk Height	Ample Leg Swing Room	8
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	9
Lean Angle	Side Stand of Adequate Length	5
RIDER COMMENTS		
The motorcycle is easy to mount/dismount. The side stand is extremely small and hard to find blindly.		

SUSPENSION	CONSIDERATIONS	RATING
Quality of Ride	Dampening, Rebound	8
Rider Size	Adjustability	8
RIDER COMMENTS		
The motorcycle handled the roadway surfaces well. Suspension is slightly stiff being a sport bike. Due to this motorcycles relatively smaller/narrow size, it makes it easy to split lanes and negotiate roadway obstacles.		

STORAGE	CONSIDERATIONS	RATING
Saddlebags	Angle, Size and Position of Opening	8
Compartment Dividers	Holds Gear Upright When Open	8
Locks	Same Key, Security, Sturdiness	8
RIDER COMMENTS		
The saddle bags provide adequate storage space, however there are no dividers to keep duty gear in place.		

ADDITIONAL RIDER COMMENTS

ERGONOMICS EVALUATION SUBJECTIVE
EVALUATION – 157 MILE RIDE

2014 HD – ROAD KING

RIDING POSITION	CONSIDERATIONS	RATING
Seat Comfort	Padding, Springs, Width	7
Seat Position	Range of Adjustment	7
Riding Position	Lean Angle, Comfort	7
Floorboards / Pegs	Access to Foot Controls	7
RIDER COMMENTS		
<p>The seat is firm and comfortable. The seat is supported by a spring and shock absorber which provides good support. The seat is positioned slightly forward of the center of the bike positioning the rider up on the lower end of the tank, making the rider constantly adjust seating position. The foot controls are well placed to allow for good manipulation. Floorboards are close to the ground with minimal road clearance when lean angles are input in the handlebars.</p>		

INSTRUMENT PANEL	CONSIDERATIONS	RATING
Controls	Position, Usability	7
Visibility	Instruments	5
Reflection / Glare	Windshield, Instruments	7
Instruments	Adequacy, Legibility	5
RIDER COMMENTS		
<p>The controls are easy to use and easily identified. The lighted display was dim and hard to read in the bright sun.</p>		

MIRRORS	CONSIDERATIONS	RATING
Road Visibility	Distortion, Obstruction	6
Reflections	Instruments, Controls	7
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	6
Mirror Location	Accessibility, Visibility, Obstruction	7
RIDER COMMENTS		
<p>The mirrors are attached to the handlebars and provide good field of view to the rear of the rider. Mirrors do not hold adjustment and are almost not usable when at an idle due to the vibrations.</p>		

WIND SCREEN	CONSIDERATIONS	RATING
Height / Width	Wind / Debris Protection	5
Adjustability	Electric or Manual, Ease of Use	NA
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	7
RIDER COMMENTS		
. The wind screen is rounded at the top and is hard mounted to the handle bar fairing, it provides good protection from debris and wind at low speed, however rider experienced helmet buffeting at higher speeds.		

CONTROLS	CONSIDERATIONS	RATING
Handlebars	Angle, Size, Position	8
Shift Levers	Usability, Shift Pad Position	7
Switches	Reach, Markings, Visibility, Accessibility	8
Rear Brake Pedal	Location, Feedback, Ease of Use	8
Front Brake Lever	Location, Feedback, Adjustability	7
Clutch Lever	Lever Resistance, Adjustability	7
RIDER COMMENTS		
The position of the handlebars felt comfortable and gave good rider feedback. The heel/toe shifter was well placed in relation to the foot board and was useable in the normal heel/toe method, as well as toe shifting only.		

MOUNT / DISMOUNT	CONSIDERATIONS	RATING
Trunk Height	Ample Leg Swing Room	NA
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	8
Lean Angle	Side Stand of Adequate Length	8
RIDER COMMENTS		
For the test ride this bike was not equipped with a trunk. Mount and dismount was effortless on either side. The foot boards were comfortable and provided the rider with plenty of room to adjust their foot position. The side stand positions the bike in an adequate lean angle and provides a solid hold.		

SUSPENSION	CONSIDERATIONS	RATING
Quality of Ride	Dampening, Rebound	7
Rider Size	Adjustability	6
RIDER COMMENTS		
While traversing smooth roadways the bike provides a smooth comfortable ride but when encountering rough/uneven roadways and faster speeds the ride becomes bouncy.		

STORAGE	CONSIDERATIONS	RATING
Saddlebags	Angle, Size and Position of Opening	8
Locks	Same Key, Security, Sturdiness	8
RIDER COMMENTS		
The saddlebags provide plenty of storage room. The locks took a little effort to properly secure and are improved over previous year models.		

ADDITIONAL RIDER COMMENTS

ERGONOMICS EVALUATION SUBJECTIVE EVALUATION – 157 MILE RIDE

2014 HD – ELECTRA GLIDE

RIDING POSITION	CONSIDERATIONS	RATING
Seat Comfort	Padding, Springs, Width	8
Seat Position	Range of Adjustment	5
Riding Position	Lean Angle, Comfort	7
Floorboards / Pegs	Access to Foot Controls	7
RIDER COMMENTS		
<p>The seat was very wide and the padding was firm. The seating position is up right in a comfortable riding position. The placement of the footboards allows plenty of room for foot movement while dynamic. The foot controls are positioned in a standard configuration for this style of motorcycle and are easily accessed with either foot.</p>		

INSTRUMENT PANEL	CONSIDERATIONS	RATING
Controls	Position, Usability	7
Visibility	Instruments	6
Reflection / Glare	Windshield, Instruments	6
Instruments	Adequacy, Legibility	6
RIDER COMMENTS		
<p>The instrument cluster was mounted above the handlebars within the handlebar mounted fairing. All instruments are positioned for ease of viewing and do not fall short of that purpose. Various status changes were indicated by the illumination of very tiny warning lights that were very</p>		

MIRRORS	CONSIDERATIONS	RATING
Road Visibility	Distortion, Obstruction	6
Reflections	Instruments, Controls	6
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	5
Mirror Location	Accessibility, Visibility, Obstruction	6
RIDER COMMENTS		
<p>The mirrors are positioned in a way for good reference to the rear. Visibility was nonexistent while sitting stopped in traffic due engine vibration. The mirrors remained adjusted throughout the evaluation ride.</p>		

WIND SCREEN	CONSIDERATIONS	RATING
Height / Width	Wind / Debris Protection	6
Adjustability	Electric or Manual, Ease of Use	NA
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	8
RIDER COMMENTS		
The top of the fairing mounted windscreen is positioned well below eye level and offers more than adequate wind protection.		

CONTROLS	CONSIDERATIONS	RATING
Handlebars	Angle, Size, Position	8
Shift Levers	Usability, Shift Pad Position	6
Switches	Reach, Markings, Visibility, Accessibility	8
Rear Brake Pedal	Location, Feedback, Ease of Use	8
Front Brake Lever	Location, Feedback, Adjustability	8
Clutch Lever	Lever Resistance, Adjustability	7
RIDER COMMENTS		
The large handle bars allow for a natural bend of the elbows allowing for an upright seating position. The handlebars provided good feedback of roadway surface and transition from side to side with ease. The rear brake pedal was positioned above the floor board and was easy to use while drivers rested their heel on the floorboard. The front brake lever and the clutch lever were within easy reach providing good rider feedback. The heel/toe shifter is well placed with large rubberized controls on both.		

MOUNT / DISMOUNT	CONSIDERATIONS	RATING
Trunk Height	Ample Leg Swing Room	6
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	8
Lean Angle	Side Stand of Adequate Length	8
RIDER COMMENTS		
Very easy to mount and dismount on either side. The lean angle is diminished slightly, resulting in the foot boards making contact with the roadway surface during higher speed cornering. Side stand length provided a good lean angle to securely park the motorcycle.		

SUSPENSION	CONSIDERATIONS	RATING
Quality of Ride	Dampening, Rebound	6
Rider Size	Adjustability	6
RIDER COMMENTS		
The suspension offered a very firm quality ride. The motorcycle had a generally rough ride and tended to bounce harshly when riding over more severe road conditions. The suspension was predictable in the corners.		

STORAGE	CONSIDERATIONS	RATING
Saddlebags	Angle, Size and Position of Opening	8
Locks	Same Key, Security, Sturdiness	8
RIDER COMMENTS		
The saddlebags provide plenty of storage room. The locks took a little effort to properly secure and are improved over previous year models.		

ADDITIONAL RIDER COMMENTS

ERGONOMICS EVALUATION SUBJECTIVE EVALUATION – 157 MILE RIDE

2014 VICTORY COMMANDER

RIDING POSITION	CONSIDERATIONS	RATING
Seat Comfort	Padding, Springs, Width	8
Seat Position	Range of Adjustment	4
Riding Position	Lean Angle, Comfort	8
Floorboards / Pegs	Access to Foot Controls	5
RIDER COMMENTS		
<p>The seat is large and well padded, with nonadjustable rigid frame mount. The seating position is up-right, with a slight lean towards the rear resulting in a comfortable but nonaggressive riding position. The foot controls are positioned in a standard configuration for this type of motorcycle, although their design makes it difficult for consistent ease of application.</p>		

INSTRUMENT PANEL	CONSIDERATIONS	RATING
Controls	Position, Usability	7
Visibility	Instruments	7
Reflection / Glare	Windshield, Instruments	7
Instruments	Adequacy, Legibility	9
RIDER COMMENTS		
<p>The instrument cluster is configured with analog dials for speedometer and tachometer coupled with an LED display window for a wide variety of functions. All are positioned for ease of viewing and function well.</p>		

MIRRORS	CONSIDERATIONS	RATING
Road Visibility	Distortion, Obstruction	8
Reflections	Instruments, Controls	8
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	8
Mirror Location	Accessibility, Visibility, Obstruction	7
RIDER COMMENTS		
<p>The mirrors are positioned in a way for good reference and have very little vibration, but will required extensions for larger riders.</p>		

WIND SCREEN	CONSIDERATIONS	RATING
Height / Width	Wind / Debris Protection	5
Adjustability	Electric or Manual, Ease of Use	NA
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	4
RIDER COMMENTS		
Wind protection was adequate, no wind buffeting at higher speeds.		

CONTROLS	CONSIDERATIONS	RATING
Handlebars	Angle, Size, Position	6
Shift Levers	Usability, Shift Pad Position	4
Switches	Reach, Markings, Visibility, Accessibility	7
Rear Brake Pedal	Location, Feedback, Ease of Use	4
Front Brake Lever	Location, Feedback, Adjustability	8
Clutch Lever	Lever Resistance, Adjustability	8
RIDER COMMENTS		
The large pull back design of the handlebars compliments the large seat and completes the “cruiser” up right seating position. The handlebars provide good feedback of roadway surface and transition from side to side with ease. The heel/toe shifter was well placed. The rear brake pedal positioning and configuration is consistent with this style of motorcycle. The large foot board makes for ease of operation allowing right foot to rotate unto the pedal. The front brake lever and clutch lever operated with ease. The controls provide good feedback from roadway surface.		

MOUNT / DISMOUNT	CONSIDERATIONS	RATING
Trunk Height	Ample Leg Swing Room	8
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	8
Lean Angle	Side Stand of Adequate Length	9
RIDER COMMENTS		
The foot boards were comfortable and provided the rider with plenty of room to adjust foot position. The side stand was easy to deploy. The lean angle is low with the floorboard and crash bars contacting the road quickly when negotiating higher speed corners.		

SUSPENSION	CONSIDERATIONS	RATING
Quality of Ride	Dampening, Rebound	8
Rider Size	Adjustability	8
RIDER COMMENTS		
The ride was comfortable and smooth at all speeds. The suspension was solid and predictable in the corners.		

STORAGE	CONSIDERATIONS	RATING
Saddlebags	Angle, Size and Position of Opening	8
Locks	Same Key, Security, Sturdiness	8
RIDER COMMENTS		
The saddle bags are large and provide ample space for storage.		

ADDITIONAL RIDER COMMENTS
The motorcycle has plenty of power through a wide range of torque. For a very large motorcycle it handles quite well in all areas, slow riding, high speed, and canyons.

ERGONOMICS EVALUATION SUBJECTIVE
EVALUATION – 157 MILE RIDE

2014 VICTORY COMMANDER 1

See Victory Commander Evaluation

ERGONOMICS EVALUATION
SUBJECTIVE EVALUATION – 157 MILE RIDE

2014 MOTO GUZZI NORGE

RIDING POSITION	CONSIDERATIONS	RATING
Seat Comfort	Padding, Springs, Width	8
Seat Position	Range of Adjustment	7
Riding Position	Lean Angle, Comfort	8
Floorboards / Pegs	Access to Foot Controls	6
RIDER COMMENTS		
The seat provided adequate cushion to be comfortable throughout the evaluation ride. The seat position places the rider in an upright position. Seat height relative to the foot pegs was a little cramped, may be uncomfortable for taller riders.		

INSTRUMENT PANEL	CONSIDERATIONS	RATING
Controls	Position, Usability	7
Visibility	Instruments	8
Reflection / Glare	Windshield, Instruments	9
Instruments	Adequacy, Legibility	9
RIDER COMMENTS		
The controls for police use need improvement. To operate the controls, requires removal of the riders hand from the handle bar. The standard controls functioned well with the exception of non-canceling turn signals. The instruments were easy to read.		

MIRRORS	CONSIDERATIONS	RATING
Road Visibility	Distortion, Obstruction	8
Reflections	Instruments, Controls	9
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	7
Mirror Location	Accessibility, Visibility, Obstruction	8
RIDER COMMENTS		
The mirrors were slightly undersize. Larger mirrors would improve rear visibility.		

WIND SCREEN	CONSIDERATIONS	RATING
Height / Width	Wind / Debris Protection	5
Adjustability	Electric or Manual, Ease of Use	5
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	7
RIDER COMMENTS		
<p>The wind screen is slightly too small, although visibility is good through the wind screen without distortion. The adjustable wind screen has separate up/down function switches. A single rocker type switch would be more ergonomically friendly. Wind screen placement created excessive wind noise at freeway speeds.</p>		

CONTROLS	CONSIDERATIONS	RATING
Handlebars	Angle, Size, Position	8
Shift Levers	Usability, Shift Pad Position	8
Switches	Reach, Markings, Visibility, Accessibility	5
Rear Brake Pedal	Location, Feedback, Ease of Use	8
Front Brake Lever	Location, Feedback, Adjustability	8
Clutch Lever	Lever Resistance, Adjustability	8
RIDER COMMENTS		
<p>The handle bars are positioned well and provide positive feedback to the rider. The levers maintained firm pressure and positive feedback throughout the ride. Police equipment control switches need to be relocated so they may be operated without removing hands from the handle bars.</p>		

MOUNT / DISMOUNT	CONSIDERATIONS	RATING
Trunk Height	Ample Leg Swing Room	5
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	8
Lean Angle	Side Stand of Adequate Length	8
RIDER COMMENTS		
<p>The rear trunk is large and placed very high causing difficulty mounting and dismounting the motorcycle. Lean angle of the motorcycle when on the side stand is good.</p>		

SUSPENSION	CONSIDERATIONS	RATING
Quality of Ride	Dampening, Rebound	7
Rider Size	Adjustability	NA
RIDER COMMENTS		
The ride on the freeway was very stiff being a sport bike. The suspension stiffness is especially noticeable riding over freeway expansion joints. The suspension handles very well on canyon roads.		

STORAGE	CONSIDERATIONS	RATING
Saddlebags	Angle, Size and Position of Opening	4
Locks	Same Key, Security, Sturdiness	3
RIDER COMMENTS		
The clamshell style saddle bags are very large and have plenty of storage, although need compartment dividers to keep patrol gear organized and in place.		

ADDITIONAL RIDER COMMENTS
This motorcycle is a good platform police use, however still requires additional development and changes to be suitable for day to day police use. The rear brake light is not very visible to other vehicles following due to its recessed placement.

ERGONOMICS EVALUATION SUBJECTIVE
EVALUATION – 157 MILE RIDE

2014 MOTO GUZZI CALIFORNIA 1400		
RIDING POSITION	CONSIDERATIONS	RATING
Seat Comfort	Padding, Springs, Width	8
Seat Position	Range of Adjustment	NA
Riding Position	Lean Angle, Comfort	8
Floorboards / Pegs	Access to Foot Controls	8
RIDER COMMENTS		
<p>The seat was comfortable for the duration of the evaluation ride. The riding position is upright which is comfortable and allowed for easy reach to the handle bars and controls. The floor boards and foot controls worked well.</p>		

INSTRUMENT PANEL	CONSIDERATIONS	RATING
Controls	Position, Usability	5
Visibility	Instruments	7
Reflection / Glare	Windshield, Instruments	7
Instruments	Adequacy, Legibility	8
RIDER COMMENTS		
<p>The controls were easy to reach and worked fine. The controls for police equipment need to be redesigned. The controls are difficult to reach and require the rider to remove their hands from the handle bar to operate. The instruments are easy to read.</p>		

MIRRORS	CONSIDERATIONS	RATING
Road Visibility	Distortion, Obstruction	8
Reflections	Instruments, Controls	8
Mirror Coverage	Adjustment, Rear Visibility, Flat or Convex	8
Mirror Location	Accessibility, Visibility, Obstruction	8
RIDER COMMENTS		
<p>Road visibility is good with no distortion. The mirrors are adequate and provide good rear visibility.</p>		

WIND SCREEN	CONSIDERATIONS	RATING
Height / Width	Wind / Debris Protection	5
Adjustability	Electric or Manual, Ease of Use	NA
Top Edge	Clear View Over Top of Windshield, (Bifocal Effect)	8
RIDER COMMENTS		
<p>The wind screen is small and causes the wind to blow around directly onto the riders hands. This is very uncomfortable on cold days. For the average height rider, the wind over the top of the wind screen hits the top of the riders helmet. Visibility is clear over the top of the wind screen.</p>		

CONTROLS	CONSIDERATIONS	RATING
Handlebars	Angle, Size, Position	
Shift Levers	Usability, Shift Pad Position	
Switches	Reach, Markings, Visibility, Accessibility	
Rear Brake Pedal	Location, Feedback, Ease of Use	
Front Brake Lever	Location, Feedback, Adjustability	
Clutch Lever	Lever Resistance, Adjustability	
RIDER COMMENTS		
<p>The handle bars are placed at a very comfortable reach and provide positive feedback to the rider. The standard controls were easy to reach. The lack of self-canceling turn signals is frustrating. Police equipment controls are difficult to reach, requiring the rider to remove their hands from the handle bars to operate. The brake and clutch levers are adjustable, however riders with smaller hands may find them uncomfortable.</p>		

MOUNT / DISMOUNT	CONSIDERATIONS	RATING
Trunk Height	Ample Leg Swing Room	6
Foot Peg / Floorboard	Interferes With Mounting / Dismounting	9
Lean Angle	Side Stand of Adequate Length	8
RIDER COMMENTS		
<p>The rear trunk is high causing difficulty mounting/dismounting the motorcycle. The side stand is too small and difficult to locate blindly.</p>		

SUSPENSION	CONSIDERATIONS	RATING
Quality of Ride	Dampening, Rebound	7
Rider Size	Adjustability	8
RIDER COMMENTS		
The motorcycle rides fairly smoothly on city streets. With any major whoops or pot holes, the suspension rebound is stiff. The ride through canyons and freeway was smooth and comfortable.		

STORAGE	CONSIDERATIONS	RATING
Saddlebags	Angle, Size and Position of Opening	9
Locks	Same Key, Security, Sturdiness	9
RIDER COMMENTS		
The saddle bags are large and provide plenty of space for patrol gear. The upright opening provides a solid lid and sturdy lock.		

ADDITIONAL RIDER COMMENTS
The transmission is very smooth. The throttle felt very jerky and inconsistent at times. First gear feels geared too high for stop and go city traffic.

ACCELERATION & FUEL EFFICIENCY

ACCELERATION EVALUATION

SPEED	HONDA ST1300P	BMW R1200RT-P	BMW F800 GT-P
0-30 MPH	2.2 sec	2.0 sec	2.6 sec
0-60 MPH	4.6 sec	4.3 sec	5.3 sec
0-100 MPH	11.1 sec	11.1sec	12.4 sec
30-60 MPH	2.5 sec	2.7 sec	2.6 sec
60-100 MPH	6.0 sec	7.0 sec	6.9 sec
¼ MILE	13.2 sec @107.5mph	13.1 sec @104.1mph	13.8 sec @105.0mph

SPEED	HD-ROAD KING	HD-ELECTRA GLIDE	VICTORY COMMANDER
0-30 MPH	2.0 sec	1.8 sec	2.2 sec
0-60 MPH	5.1 sec	5.2 sec	5.6 sec
0-100 MPH	17.6 sec	19.7	16.9 sec
30-60 MPH	3.8 sec	3.3 sec	3.3 sec
60-100 MPH	12.1 sec	12.7 sec	9.6 sec
¼ MILE	14.2 sec @94.3mph	14.2 sec @92.9mph	14.3 sec @94.3mph

SPEED	VICTORY COMMANDER 1	MOTO GUZZI NORGE	MOTO GUZZI CALIFORNIA 1400
0-30 MPH	2.5 sec	2.0 sec	2.7 sec
0-60 MPH	6.3 sec	4.5 sec	5.7 sec
0-100 MPH	18.3 sec	11.5 sec	16.0 sec
30-60 MPH	3.4 sec	2.7 sec	3.7 sec
60-100 MPH	11.6 sec	6.5 sec	9.8 sec
¼ MILE	14.9 sec @94.0mph	13.2 sec @106.3mph	14.5 sec @96.6mph

FUEL EFFICIENCY EVALUATION

MOTORCYCLE	COMBINED AVERAGE Three 157 Mile Loops
2014 HONDA ST1300P	42
2014 BMW R1200 RT-P	41.9
2014 BMW F800 GT-P	40.5
2014 HARLEY DAVIDSON ROAD KING	40.1
2014 HARLEY DAVIDSON ELECTRA GLIDE	36.2
2014 VICTORY COMMANDER	33.1
2014 VICTORY COMMANDER 1	33.9
2014 MOTO GUZZI NORGE	
2014 MOTO GUZZI CALIFORNIA 1400	39.4

HEAT EVALUATION

HEAT EVALUATION
IMMEDIATELY FOLLOWING 32 LAP COURSE

2014 HONDA ST1300P		
ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water		
Engine Oil		
Transmission Oil		
RADIANT HEAT		
Radiator	N/A	
Brake Rotors	Front- 216° F Rear- 240° F	
Engine	211° F	
Transmission	222° F	
Exhaust	301° F	

2014 BMW R1200RT-P		
ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water		
Engine Oil		
Transmission Oil		
RADIANT HEAT		
Radiator	N/A	
Brake Rotors	Front- 265° F Rear- 371° F	
Engine	207° F	
Transmission	235° F	
Exhaust	201° F	

2014 BMW F800 GT-P		
ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water		
Engine Oil		
Transmission Oil		
RADIANT HEAT		
Oil Cooler	N/A	
Brake Rotors	Front- 147° F Rear- 181° F	
Engine	211° F	
Transmission	179° F	
Exhaust	179° F	

2014 HARLEY-DAVIDSON ROAD KING

ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water	N/A	N/A
Engine Oil	280° to 410°	
Transmission Oil	N/A	N/A
RADIANT HEAT		
Oil Cooler	N/A	
Brake Rotors	Front- 155° F Rear- 261° F	
Engine	260° F	
Transmission	223° F	
Exhaust	410° F	

2014 HARLEY DAVIDSON ELECTRA GLIDE

ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water	N/A	
Engine Oil	280° F - 410° F	
Transmission Oil	N/A	
RADIANT HEAT		
Radiator	N/A	
Brake Rotors	Front- 220° F Rear- 325° F	
Engine	298° F	
Transmission	266° F	
Exhaust	493° F	

2014 VICTORY COMMANDER

ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water	N/A	
Engine Oil	180° F - 290°F	
Transmission Oil	N/A	
RADIANT HEAT		
Oil Cooler	N/A	
Brake Rotors	Front- 115° F Rear- 294° F	
Engine	230° F	
Transmission	211° F	
Exhaust	307° F	

2014 VICTORY COMMANDER 1		
ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water	N/A	
Engine Oil	180° F - 290°F	
Transmission Oil	N/A	
RADIANT HEAT		
Oil Cooler	N/A	
Brake Rotors	Front- 206° F Rear- 543° F	
Engine	273° F	
Transmission	267° F	
Exhaust	560° F	

2014 MOTO GUZZI NORGE		
ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water	N/A	
Engine Oil	320° MAX	
Transmission Oil	248° MAX	
RADIANT HEAT		
Oil Cooler	N/A	
Brake Rotors	Front- 198° F Rear- 201° F	
Engine	205° F	
Transmission	222° F	
Exhaust	259° F	

2014 MOTO GUZZI CALIFORNIA 1400		
ITEM	MANUFACTURERS RECOMMENDATION	TEST RESULT
Radiator Water	N/A	
Engine Oil	320° MAX	
Transmission Oil	248° MAX	
RADIANT HEAT		
Oil Cooler	N/A	
Brake Rotors	Front- 184° F Rear- 409° F	
Engine	249° F	
Transmission	152° F	
Exhaust	306° F	

SOUND LEVEL EVALUATION

SOUND LEVEL EVALUATION

2014 HONDA ST1300P	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	81.8
60 MPH (Sustained Speed)	86.3
80 MPH (Sustained Speed)	92.3
Accelerate zero to 80 mph	100.1

2014 BMW R1200RT-P	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	81.4
60 MPH (Sustained Speed)	87.6
80 MPH (Sustained Speed)	96.4
Accelerate zero to 80 mph	109.1

2014 BMW F800 GT-P	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	93.7
60 MPH (Sustained Speed)	93.8
80 MPH (Sustained Speed)	101.0
Accelerate zero to 80 mph	109.1

2014 HARLEY DAVIDSON ROAD KING	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	97.8
60 MPH (Sustained Speed)	104.1
80 MPH (Sustained Speed)	110.0
Accelerate zero to 80 mph	109.5

2014 HARLEY DAVIDSON ELECTRA GLIDE	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	97.1
60 MPH (Sustained Speed)	103.5
80 MPH (Sustained Speed)	109.2
Accelerate zero to 80 mph	109.3

SOUND LEVEL EVALUATION

2014 VICTORY COMMANDER	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	85.7
60 MPH (Sustained Speed)	89.0
80 MPH (Sustained Speed)	97.3
Accelerate zero to 80 mph	104.8

2014 VICTORY COMMANDER 1	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	85.4
60 MPH (Sustained Speed)	89.3
80 MPH (Sustained Speed)	97.8
Accelerate zero to 80 mph	104.0

2014 MOTO GUZZI NORGE	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	83.3
60 MPH (Sustained Speed)	88.1
80 MPH (Sustained Speed)	93.9
Accelerate zero to 80 mph	111.8

2014 MOTO GUZZI CALIFORNIA 1400	
SPEED	MEASURED dB
40 MPH (Sustained Speed)	85.6
60 MPH (Sustained Speed)	91.5
80 MPH (Sustained Speed)	94.2
Accelerate zero to 80 mph	103.2

COMMUNICATIONS EVALUATION RESULTS

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.

COMMUNICATION NOISE EVALUATION

2014 HONDA ST 1300P

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-88dB	-92dB	2dB
Engine Idle (No Acc)	-88dB	-92dB	2dB
Engine High RPM (No Acc)	-88dB	-92dB	2dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-88dB	-92dB	2dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-88dB	-92dB	2dB
Engine High RPM W/All Acc	-88dB	-92dB	2dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	5
Microphones	5
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	5
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding

COMMUNICATION NOISE EVALUATION

2014 BMW R1200 RT-P

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-88dB	-90dB	0dB
Engine Idle (No Acc)	-88dB	-90dB	0dB
Engine High RPM (No Acc)	-88dB	-90dB	0dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-88dB	-90dB	0dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-88dB	-90dB	0dB
Engine High RPM W/All Acc	-88dB	-90dB	0dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	10
Microphones	4
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	6
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding

COMMUNICATION NOISE EVALUATION

2014 BMW F800 GT-P

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-88dB	-90dB	0dB
Engine Idle (No Acc)	-88dB	-90dB	0dB
Engine High RPM (No Acc)	-88dB	-90dB	0dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-88dB	-90dB	0dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-88dB	-90dB	0dB
Engine High RPM W/All Acc	-88dB	-90dB	0dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	10
Microphones	4
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	6
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding

COMMUNICATION NOISE EVALUATION

2014 HARLEY- DAVIDSON ROAD KING

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-81dB	-93dB	1dB
Engine Idle (No Acc)	-81dB	-93dB	1dB
Engine High RPM (No Acc)	-88dB	-93dB	1dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-81dB	-93dB	1dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-89dB	-93dB	1dB
Engine High RPM W/All Acc	-88dB	-93dB	2dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	5
Microphones	5
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	5
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding

COMMUNICATION NOISE EVALUATION

2014 HARLEY- DAVIDSON ELECTRA GLIDE

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-89dB	-92dB	1dB
Engine Idle (No Acc)	-89dB	-92dB	1dB
Engine High RPM (No Acc)	-88dB	-92dB	1dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-89dB	-92dB	1dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-89dB	-92dB	1dB
Engine High RPM W/All Acc	-88dB	-92dB	1dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	5
Microphones	5
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	5
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding

COMMUNICATION NOISE EVALUATION

2014 VICTORY COMMANDER

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-88dB	-92dB	2dB
Engine Idle (No Acc)	-88dB	-92dB	2dB
Engine High RPM (No Acc)	-88dB	-92dB	2dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-88dB	-92dB	2dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-88dB	-92dB	2dB
Engine High RPM W/All Acc	-88dB	-92dB	2dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	5
Microphones	5
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	5
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding

COMMUNICATION NOISE EVALUATION

2014 VICTORY COMMANDER 1

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-88dB	-92dB	2dB
Engine Idle (No Acc)	-88dB	-92dB	2dB
Engine High RPM (No Acc)	-88dB	-92dB	2dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-88dB	-92dB	2dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-88dB	-92dB	2dB
Engine High RPM W/All Acc	-88dB	-92dB	2dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	5
Microphones	5
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	5
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding

COMMUNICATION NOISE EVALUATION

2014 MOTO GUZZI NORGE

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-88dB	-98dB	2dB
Engine Idle (No Acc)	-88dB	-98dB	2dB
Engine High RPM (No Acc)	-88dB	-98dB	2dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-88dB	-98dB	2dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-88dB	-98dB	2dB
Engine High RPM W/All Acc	-88dB	-98dB	2dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	10
Microphones	4
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	6
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding

COMMUNICATION NOISE EVALUATION

2014 MOTO GUZZI CALIFORNIA 1400

RADIO MAKE	MODEL NO.	ANTENNA TYPE	LOCATION
Motorola XTL-5000	M20SSS9PW1AN	5dB Gain Whip	Rear

FREQUENCY: 483.0875 MHz

WITH ANTENNA	12 dB SINAD	20 dB QUIETING	DESENS dB
Engine Off	-87dB	-90dB	3dB
Engine Idle (No Acc)	-87dB	-89dB	3dB
Engine High RPM (No Acc)	-87dB	-89dB	3dB
Engine Idle W/Air	N/A	N/A	N/A
Engine Idle W/ Lights	-87dB	-89dB	3dB
Engine Idle W/Heater	N/A	N/A	N/A
Engine Idle W/All Acc	-87dB	-89dB	3dB
Engine High RPM W/All Acc	-87dB	-89dB	3dB

Also Tested: Monitored approx. 200 frequencies between. No spurious signal detected. Radios used XTS-5000 portable.

Glove Compartment Accessibility – (Undercover Use)	Rating **
Radio Control Head	5
Speakers	10
Microphones	4
One Radio Installation	5
Antenna Installation	5
Battery Terminal Connection	6
Accommodation for Cables	5
Hidden Siren Installation	N/A
Clip – on Connections for Accessories	5

** 1 – Poor 5 – Average 10 – Outstanding