govcomm

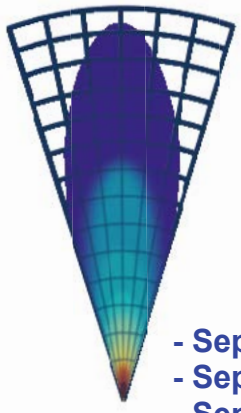
Intelligent Transportation Systems

Microwave Vehicle Detection System

Three-Dimensional High Definition Microwave Sensor
Technical Specifications - Model GC-R90

Key Attributes

- Traffic Data Statistics
- Intersection Management
- Simultaneously Tracks up to 126 Objects
- Presence Detection
- Classification
- Precise Individual Vehicle Speed
- Incident Detection
- Wrong Way Detection
- Auto Configuration Tool
- All Weather Operation
- Maintenance Free
- Field Proven



- Seperation in Speed
- Seperation in Range
- Seperation in Angle

Version 2.4

Linux ISO 9001 NEMA

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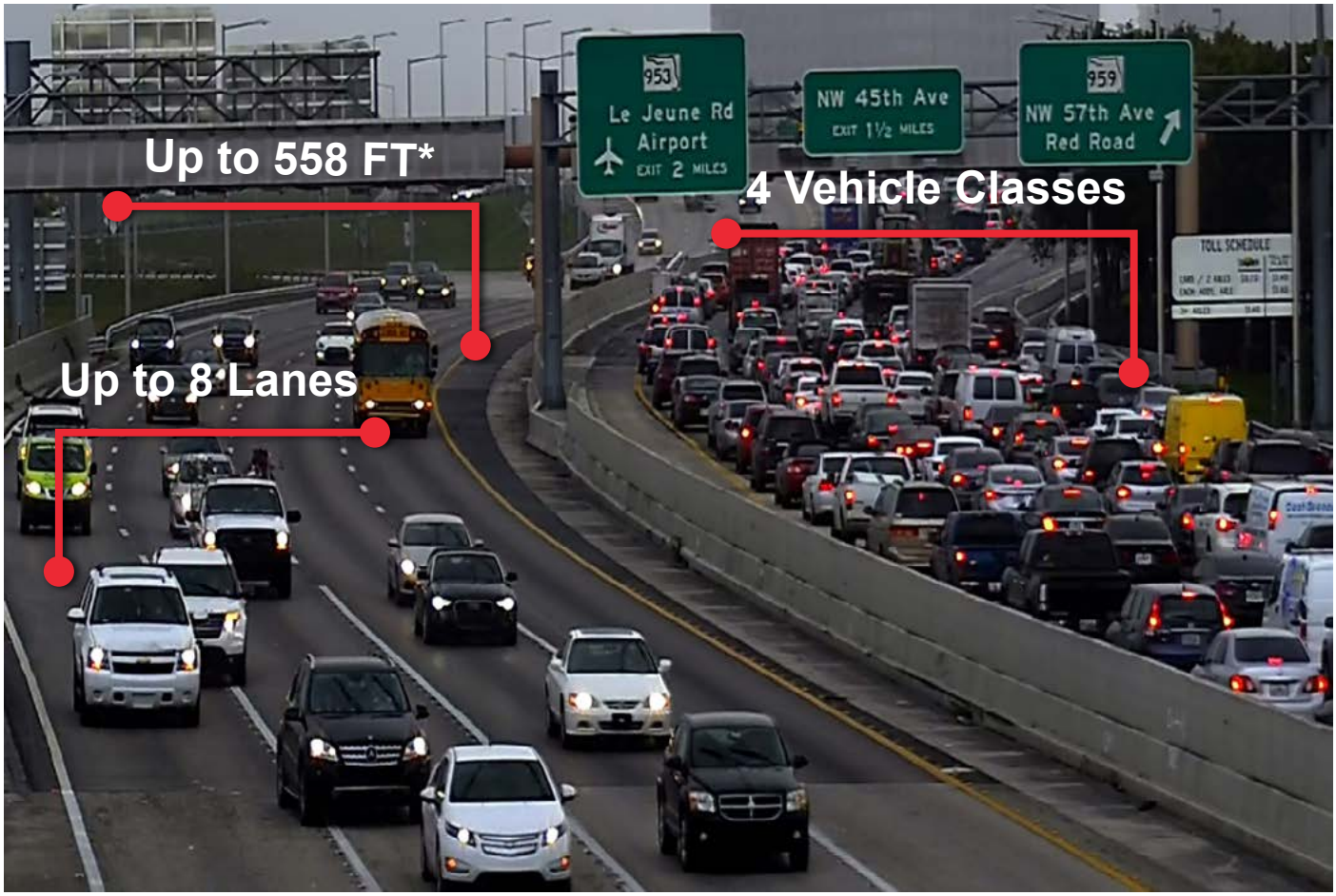
Overview

GovComm's three-dimensional high-definition microwave sensor employs a new Doppler technology specifically designed to optimize vehicle separation for unmatched detection rates and the best position, speed vector, lane position, angle separation and measurement accuracy…even in dense and congested traffic situations. With the ability to track 126 objects in its field of view simultaneously and a passenger car detection range of up to 558 feet (over 1,400 feet for trucks), this microwave sensor is a perfect fit for most intelligent transportation systems. The GC-R90 features Ethernet and full-duplex RS485 interfaces, a real-time clock and on-board storage. GovComm microwave vehicle detection systems are equipped with a stainless steel three-dimensional mounting bracket, junction box mounting adapter, hardened media converter and cables.

GovComm microwave vehicle detection systems are offered as stand-alone solutions or for integration into intersection management, advance detection, presence detection, traffic data statistics, wrong-way and other intelligent transportation system applications.



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Technical Specifications for GovComm Microwave Vehicle Detection System Three-Dimensional High Definition - Model GC-R90

Table 1: General Performance Data

Parameter	Value
Sensor Performance	
Max. Range on Passenger Car	820 feet (@20dBm) /558 feet [I](@12.7dBm)
Max. Range on Truck	1,115 feet [I] (@20dBm) / 919ft[I] (@12.7dBm)
Instrumented Range	1,115 feet
Minimum Range	49 feet
Range accuracy	> 97.5%
Minimum Absolute Radial Speed	0.3 Feet per Second
Speed accuracy	99%[II]
Angle Interval (field of view)	-8 to +8 (Elevation); -50 to+50 (Azimuth) degree[III]
Update time	53ms
Environmental	
Ambient Temperature	-40°F to +155°F
Shock	100g[rms]
Vibration	14g[rms]
Ingress Protection	IP67[IV]
Pressure / Transport Altitude	0 to 33,000 Feet
Mechanical	
Weight	45.50 oz
Dimensions	8.37 inches x 6.08 inches x 1.57 inches
General	
Power Supply	13 to 32 VDC[V] / 12W
Frequency Band	24.0 to 24.25 GHz
Bandwidth	< 250 MHz
Max. Transmit Power (EIRP)	< 20 dBm (<20 possible)
Interfaces	CAN V2.0b (passive)[VI] / RS485 half-duplex / 10/100 Ethernet

[I] Typical values; may vary to higher or lower values depending on clutter environment. All values given for bore sight. Please note that the MVDS – like any other sensor system – although well optimized, will not achieve a 100% detection probability and will not achieve a false alarm rate equal to zero.
[II] Measured on object having constant radial speed, at bore sight.
[III] Total field of view is angle interval where reflectors can be detected; 3dB field of view is narrower.
[IV] IP 67 only when connector or cap attached.
[V] Measured at connector; minimum. voltage slew rate 500V/s or maximum voltage rise time 15ms; supply source impedance 0.5Ohms.
[VI] It is recommended to use an external surge protector for power, CAN, RS485 and other interface ports

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Table 2: Standard Configuration for Counting and Statistics

Parameter	Value
Traffic Direction	Approaching & Receding
Mounting Height	Recommend 20 feet (Range 13 to 33 feet)[I]
Sensor Azimuth angle	Recommend -10 degrees (Range -25 to +25 degrees)[II]
Sensor Elevation angle	Recommend -2 degrees (Range -6 to 0 degrees) [II], [III]
Counting Line Distance (Approaching)	Recommend 98 feet (66 feet to 295 feet)[IV]
Counting Line Distance (Receding)	Recommend 394 feet (230 feet to 427 feet)[IV]
Setback	Recommend 3 feet (Range 0 to 33 feet)
Counting Accuracy	> 95%[V]
Classification Accuracy	Recommend > 80%[V]
Common Classes	Motorcycles, Passenger Cars, Trucks

[I] May affect maximum detection range. Occlusion needs to be considered.
[II] Smaller absolute angles allow longer detection range along a road.
[III] Application specific. Gantry mount: steeper elevation. angle possible, with limitations of maximum range. Negative elevation angle means sensor pointing towards road.
[IV] Typical value for counting applications; may be different for other applications.
[V] Typical value when properly installed at suitable location. The counting and classification accuracy typically depends on the following main (and other) factors: mounting height, traffic density

Table 3: Standard Configuration for Stop Bar Detection

Parameter	Value
Traffic Direction	Approaching
Mounting Height	Recommend 20 feet (Range 3 to 33 feet)[I]
Sensor Azimuth angle	Recommend -10 degrees (Range-25 to +25 degrees)[II]
Sensor Elevation angle	Recommend -2 degrees (Range-6 to 0 degrees)[II], [III]
Stop Bar Distance	Recommend 82 feet (Range 66 feet to 164 feet)[IV]
Advance Detection Distance	Recommend 295 feet (Range 164 feet to 492 feet)[IV]

[I] May affect maximum detection range. The best performance is typically achieved for mounting heights between 7 to 26 feet. Occlusion needs to be considered.
[II] Smaller absolute angles allow longer detection range along a road.
[III] Application specific. Gantry mount: steeper elevation angle possible, with limitations of maximum range. Negative elevation angle means sensor pointing towards road.
[IV] Typical value for stop bar applications; may be different for other applications.

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