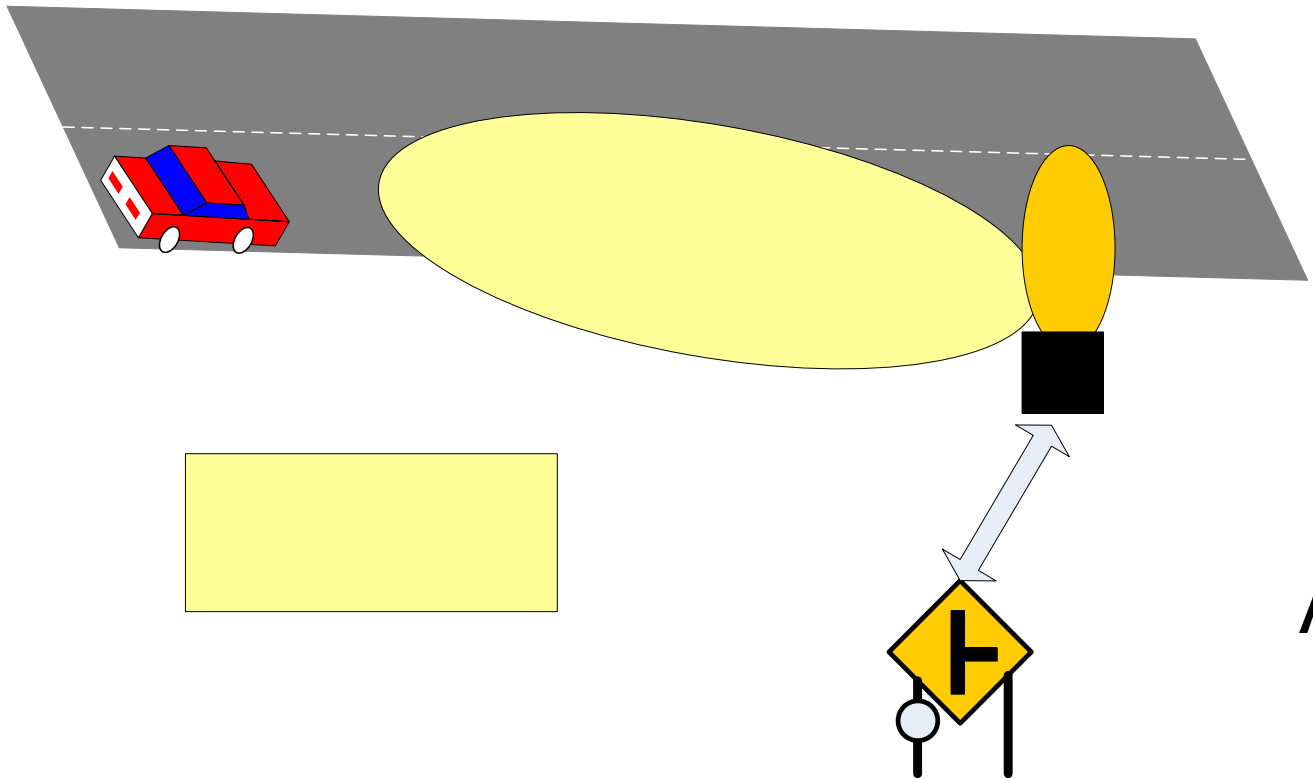
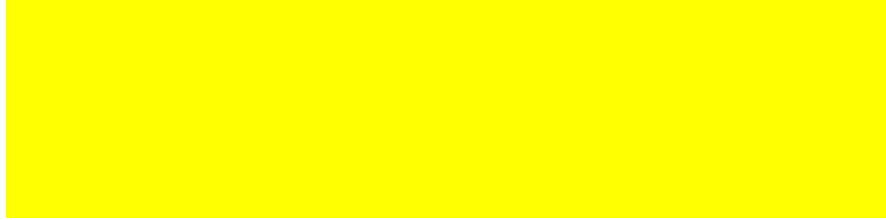
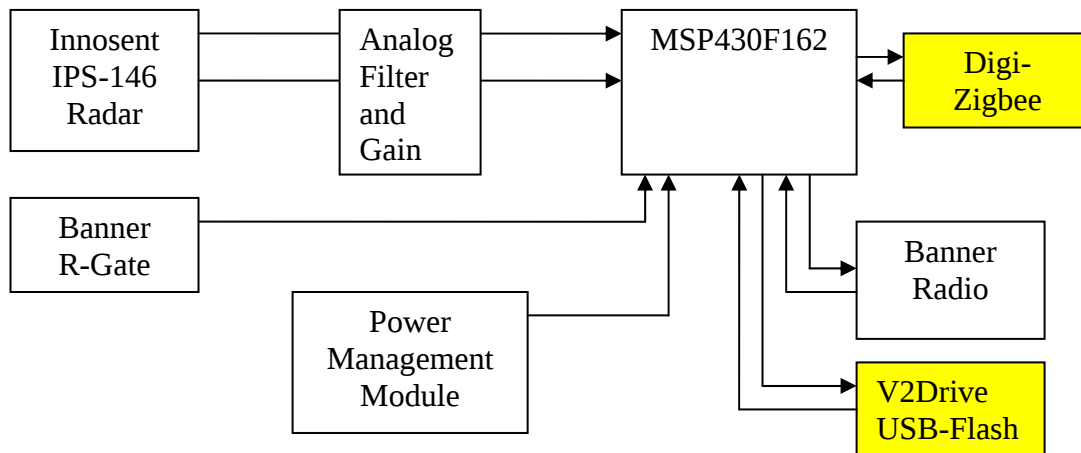


NTT Sensor Node/ Detection Station

Preliminary Specifications



AN



Dual Radar Detection System

Doppler Section

Use: Approaching Vehicle Speed Measurement

Methodology Stereo (Dual Channel)
 Pulse Operation (<20ms per sample)
 Speed Range1-100 Mph +/- 1 Mph
 Sample Rate 8 per second
 Speed Detection FFT
 Direction Detection... Phase Detection
 Freq.24.125 Ghz
 EIRP18dBm
 Antenna Pattern
 Horiz.30 Degrees
 Vertical32 Degrees
 Power Requirements...< 400 mw
 Operating Temp-20 to +60C (TBD)
 FCC Part 15 ISM Band

FMCW Section

Use: Presence Detection at Detector Station

Methodology Frequency Modulation Continuous Wave Microwave
Side Fire

Detection Range ...3-15 Meters

Sample Rate 8 per second

Output Binary On/Off

Freq.24.125 Ghz

Antenna Pattern

Horiz.45 Degrees

Vertical30 Degrees

Power Requirements.. < 1.2 watts

Operating Temp-20 to +55C (TBD)

FCC Part 15 ISM Band

Processor Section

Use: Measure speed from Doppler/manage communications with Gateway/Sign

TI MSP430F2616 Low Power 16 bit RISC CPU with 92K Flash Program Memory/4K
Ram Data Memory Operating at 16 MHz.

Functions:

Process Radar Doppler channels using FFT to extract speed data

Interface to FMCW Radar

Provide Serial Interface to DX-80 Radio

Monitor Detection System Status

Communications Section

Use: Provide deterministic periodic communications with Gateway/Sign

Type 900 MHz FHSS

EIRP 100mw/1 watt

Protocol ... Deterministic 8-32 bit bi-directional packets per second error corrected.

MODBUS Architecture

Interface- RS-232 19,200 BPS

Operating Temp-40 to +80C

FCC ISM Band no-license required FCC ID #TGUDX80

Power Section

Use: Provide power to Detection Station

12 Volt DC Solar/Battery System

Solar Panel TBD

Battery AGM Lead Acid Spill Proof TBD