Annex acc. to FCC Title 47 CFR Part 15
relating to
ADEC Technologies AG
TDC3-X

Annex no. 7
Block Diagram

Title 47 - Telecommunication
Part 15 - Radio Frequency Devices
Subpart C – Intentional Radiators
ANSI C63.4-2014
ANSI C63.10-2013

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Block Diagramm Description

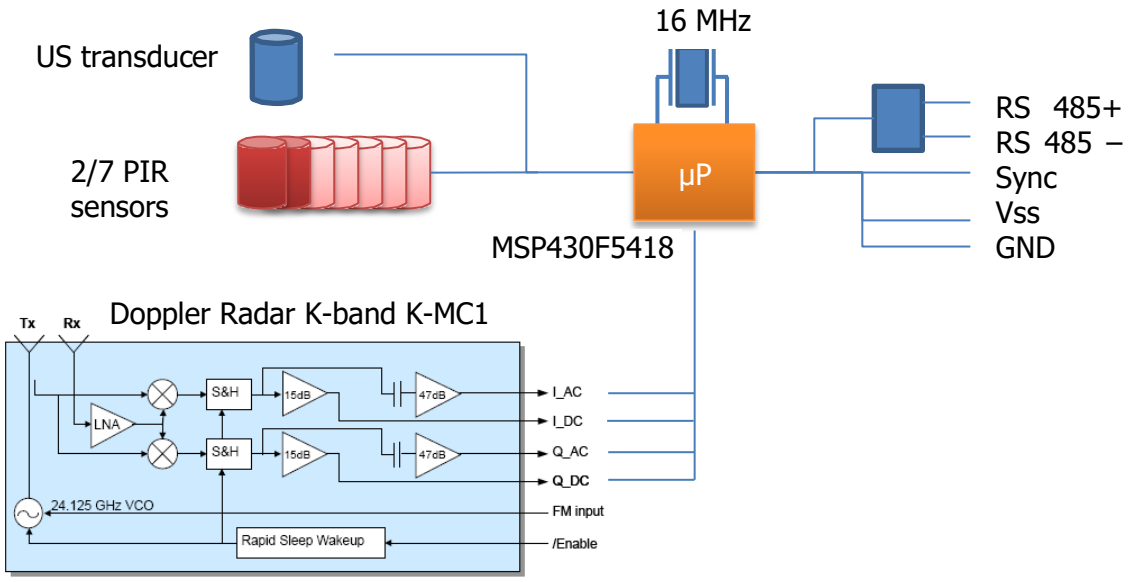

Figure 2: Schematic Overview

The µP, a MSP430F5418 by Texas Instruments, measures the sensor's values and using the algorithms in the firmware determines the speed and other per-vehicle information. The radar operates at constant frequency (Doppler radar), whereby the frequency shift provides information about the speed of the vehicle. The ultrasonic transducer sends 20-25 40KHz pulses per second to determine the distance between the detector and any object below (in front) of the detector. The PIR sensors are aligned such that signals generated by these sensors can be interpreted as position and/or width of the vehicle in the lane.
The processor's firmware further implements supporting functionality, such as the TLS (Technische Lieferbedingungen für Streckenstationen, a German bus-standard for road-side equipment) protocol stack. The protocol is implemented on half-duplex RS 485 in a request-response manner, that means that the detector waits for a request for traffic data before responding with the requested information. Up to 16 detectors can share a bus segment.
The synchronization (Sync line) is to allow the detectors to cooperate on a bus-segment while not causing ultrasonic interference, it works such that all detectors in close proximity send out the 40KHz ultrasonic pulse at the same time.