FMCW Radar Sensors

Licensing and regulation

Sivers IMA FMCW radar modules are designed to be used in high-performance, high bandwidth sensor systems. One consequence of this large available bandwidth is that the spectrum used in a frequency sweep may overlap with an existing licensed band. These other bands may be used in applications including military radar, satellite and terrestrial communications, and radio-astronomy. Licensing of the frequencies usable by RS3400 series radar modules varies widely around the world. Primary subjects to investigate in regard to local licensing and regulation when designing a system using these modules include the frequency band to be used, the intended power output, the application, and the location of use.

5 GHz

The RS3400S/00 sensor module cover frequencies from 4625 MHz to 5375 MHz, for a total bandwidth of 750 MHz. It is important to check local regulations as to the availability of usable frequencies, especially for outdoor applications. Indoor or enclosed applications generally have lower requirements, and may allow for more flexible usage. In the United States and Europe, this spectrum is set aside mainly for fixed wireless and radio-location and navigation services. This spectrum falls outside of the ISM license free band, but is sometimes used for unlicensed WiFi applications.

10 GHz

The RS3400X/00 sensor module can operate at frequencies from 9250 MHz to 10750 MHz, providing 1500 MHz of bandwidth. This spectrum is generally used for radio-location, fixed radio, and satellite communications systems in Europe and the Unites States.

24 GHz

The RS3400K/00 operates in the frequency band from 24000 MHz to 25500 MHz which is primarily used for telecommunication and industrial, scientific and medical (ISM) applications. One important use of this ISM band (which ranges from 24.00 to 24.25 GHz) is in automotive radar for collision avoidance. This application will however be phased out in 2013, in order to free up this spectrum for radio-astronomy usage. This change in frequency allocation should be considered if a system for outdoor usage is being developed.

Data subject to change without notice. Rev. A 2011 – 06 - 2011

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Relevant regulations (list not exhaustive)

Europe

EN 55011 – European emissions standards for ISM devices
EN 55022 – European emissions standards for ITE devices
EN 61326 – European standards on laboratory, testing and measurement equipment
CISPR 11 and 25

United States

FCC Part 15 - General regulations, cover communications device, radio emissions sources, etc..
FCC Part 18 – Covers industrial scientific and medical applications
FCC Part 90 – Covers commercial applications including radio-location systems

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