

§ 2.106 Table of Frequency Allocations

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International table			United States table		FCC use designators	
Region 1 -- allocation MHz	Region 2 -- allocation MHz	Region 3 -- allocation MHz	Government	Non-Government	Rule part(s)	Special-use frequencies
(1)	(2)	(3)	Allocation MHz (4)	Allocation MHz (5)	(6)	(7)
*	*	*	*	*	*	*
5850 – 5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	5850 – 5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation	5850 – 5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation	5850 – 5925 RADIOLOCATION	5850 – 5925 FIXED-SATELLITE (Earth-to-space) MOBILE Amateur	Amateur (97) PRIVATE LAND MOBILE (90)	
S5.150	S5.150	S5.150	S5.150 US245 G2	S5.150 US245		
*	*	*	*	*	*	*

PART 90 - PRIVATE LAND MOBILE RADIO SERVICES

1. The authority citation for Part 90 is amended to read as follows:

Authority: Sections 4, 302, 303, and 332, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 302, 303, and 332, unless otherwise noted.

2. Section 90.7 is amended by adding a new definition for Dedicated Short Range Communications Service to read as follows:

§ 90.7 Definitions.

* * *

Dedicated Short Range Communications Services (DSRCS) The use of non-voice radio techniques to transfer data over short distances between roadside and mobile radio units, between mobile units, and between portable and mobile units to perform operations related to the improvement of traffic flow, traffic safety and other intelligent transportation service applications in a variety of public and commercial environments. DSRC systems may also transmit status and instructional messages related to the units involved.

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3. Section 90.210(k) is amended to read as follows:

§ 90.210 Emission masks.

(a) * * *

(k) **Emission Mask K.** For transmitters authorized under subpart M that operate in the 902-928 MHz band or the 5.850-5.925 GHz band, the peak power of any emission shall be attenuated below the power of the highest emission contained within the licensee's sub-band in accordance with the following schedule:

(1) On any frequency within the authorized bandwidth: **Zero dB.**

(2) On any frequency outside the licensee's sub-band edges (as identified in paragraph (k)(6) of this section): **$55 + 10 \log(P)$ dB**, where (P) is the highest emission (watts) of the transmitter inside the licensee's sub-band.

(3) The resolution bandwidth of the instrumentation used to measure the emission power of LMS operations in the 902-928 MHz band and DSRC operations in the 5.850-5.925 GHz band

shall be 100 kHz. If a video filter is used, its bandwidth shall not be less than the resolution bandwidth.

(4) Emission power (P) shall be measured in peak values.

(5) The LMS sub-band edges for multilateration systems for which emissions must be attenuated are 904.00, 909.75, 919.75, 921.75, 927.50, 927.75 and 928.00 MHz. If the 919.75-921.75 and 921.75-927.25 MHz sub-bands are aggregated by a single licensee, the emission mask limitations at the band edges at 921.75 and 927.50 MHz may be ignored. The LMS sub-band edges for non-multilateration systems for which emissions must be attenuated are 902.00, 904.00, 909.75 and 921.75 MHz.

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4. Section 90.350 is amended to read as follows:

§ 90.350 Scope.

The Transportation Infrastructure Radio Service is for the purpose of integrating radio-based technologies into the nation's transportation infrastructure and to develop and implement the nation's intelligent transportation systems. It includes the Location and Monitoring Service (LMS) and the Dedicated Short Range Communications Service (DSRCS). Rules as to eligibility for licensing, frequencies available, and any special requirements for services in the Transportation Infrastructure Radio Service are set forth in this subpart.

5. A new Section 90.371 is added to subpart M to read as follows:

§ 90.371 Dedicated Short Range Communications Service

These provisions authorize the licensing of systems in the dedicated short range communications services (DSRCS). DSRCS systems utilize non-voice radio techniques to transfer data over short distances between roadside and mobile radio units, between mobile units, and between portable and mobile units to perform operations related to the improvement of traffic flow, traffic safety and other intelligent transportation service applications in a variety of public and commercial environments. DSRCS licensees authorized to operate a system in the 5850-5925 MHz band may serve individuals, federal government agencies and entities eligible for licensing in this Part 90, and must comply with the following requirements.

(a) The peak transmit output power over the frequency band of operations shall not exceed 750 mW or 28.8 dBm with up to 16 dBi in antenna gain. If transmitting antennas of directional gain greater than 16 dBi are used, the peak transmit output power shall be reduced by the amount in

dB that the directional gain of the antenna exceeds 16 dBi, *i.e.*, the device's maximum EIRP shall not exceed 30 W EIRP.

(b) The frequency stability of DSRC equipment should be sufficient to ensure that the emission stays within whatever band it is authorized/licensed (over the specified temperature, -30 to +50 C, and voltage, 85-115%, variations, as specified in § 2.995).

(c) These standards will be incorporated into the certification process by having equipment manufacturers certify as part of their application for certification that their equipment meets these technical requirements.

Appendix B: DSRC Applications

o Current DSRC applications include:

- Electronic payment services - Allows cars to pay tolls automatically without stopping. Could be expanded in the future to be used at parking garages, drive through restaurants and other business applications.

- Commercial Vehicle Electronic Clearance - Installed by highway departments to allow commercial vehicle operators pass over weigh-in-motion sensors at inspection stations without stopping while the vehicle transmits relevant information such as: credentials, size, weight, cargo, and safety information.

o Emerging DSRC-based services include:

- Traffic Control - This service gathers traffic data from stationary traffic surveillance monitors and DSRC-equipped vehicles and uses the data to assign rights-of-way to certain vehicle types. Rights-of-way are assigned through control of traffic signals, freeway ramps, reversible lanes, and information signs.

- Transit Vehicle Signal Priority - A DSRC-equipped transit vehicle (city bus), when identified by a DSRC-equipped intersection, can give priority to proceed ahead of other traffic at a traffic signal.

- Emergency Vehicle Signal Preemption - Emergency vehicles are given priority at traffic signals.

- Incident Management - (Incidents include accidents, sporting events, parades, construction, etc.) - Roadway sensors and DSRC-equipped vehicles will allow incident management users to reduce congestion by accelerating incident detection and response time. The system can track cars as they travel to their destination and use the information to estimate traffic flow and detect incidents.

- En-route Driver Information - Provides drivers with real-time advisories about traffic conditions, accidents, construction and transit schedules.

- *In-vehicle Signing - Displays information from roadside transmitters on video monitors or "heads-up" displays within the vehicle to provide the driver information pertinent to their specific circumstances based on their destination, surroundings and current activities. Information could include roadway conditions, alert drivers to railroad crossings, construction zones, fallen rocks, chemical spills, winding curves and other hazards. In-vehicle signing also serves as the driver interface for many other DSRC-based applications.

- *Driver Advisory - Allows traffic managers to control the content of real-time and location-specific traffic advisory information.(22)

- Automated Roadside Safety Inspection - DSRC would download information from a commercial vehicle's transponder memory about the driver, the vehicle (braking system and load distribution), the carrier and previous safety inspection, and upload inspection results to

the transponder's memory. This function can increase the number of inspections while not increasing the number of inspectors or delaying commercial vehicle travel.(24)

- Public Transportation Management - DSRC-equipped transit vehicles can realize increased use and efficiency by improving service reliability, on-time performance, schedule information accuracy and reduced costs of public transit.

- Freight Mobility - Allows dispatchers to locate and track commercial fleet vehicles, transit vehicles and their cargo, and re-route vehicles based on real-time traffic information. Allows fleet operators to optimize performance by enabling just-in-time pick-up and delivery, reducing driver hours sitting in congestion and waiting to deliver or receive goods, and automating cargo inventory and tracking systems.

- *Automatic Equipment Monitoring - Transponders on vehicles, trailers, rail cars, cargo containers may be tracked, information such as type and temperature of cargo, delivery schedule, hazardous materials, etc. can be checked.

- *Fleet Management -

- Access control - regulate and restrict access to freight yards, maintenance bays, and other restricted areas

- Trip log - downloads all DSRC events made during a trip into a log while the vehicle is stopped at a freight yard enabling fleet managers to determine the vehicle's route, time on the route and safety information.(27)

- Highway-Rail Intersection - DSRC equipment used to trigger warning systems at railroad intersections when a train is approaching.

o Future DSRC-based services:

- Intersection Collision Warning Systems - Roadside speed and location sensing equipment, DSRC equipment, in-vehicle signing and trajectory computing and control electronics will be used to help drivers avoid intersection collisions.

- Automated Highway System - System that will transfer full control of equipped vehicles to automated system operating on designated AHS lanes.

APPENDIX C

Initial Regulatory Flexibility Certification, and Voluntary Initial Regulatory Flexibility Analysis (Voluntary IRFA)

The Regulatory Flexibility Act ("RFA"),⁸³ requires that an initial regulatory flexibility analysis be prepared for notice-and-comment rulemaking proceedings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."⁸⁴ The RFA generally defines "small entity" as having the same meaning as the terms "small business," "small organization," and "small government jurisdiction." In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act. A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration ("SBA").

This *Notice of Proposed Rule Making ("Notice")* proposes to allocate the 5.850-5.925 GHz band to the Private Land Mobile Service ("PLMS") for use by Dedicated Short Range Communications Services ("DSRCS") in the provision of Intelligent Transportation Services ("ITS"). DSRCS communications are used for non-voice wireless transfer of data over short distances between roadside and mobile radio units, between mobile units, and between portable and mobile units to perform operations related to the improvement of traffic flow, traffic safety and other intelligent transportation service applications in a variety of public and commercial environments. This action is taken in response to a Petition for Rulemaking filed by the Intelligent Transportation Society of America ("ITS America"). While this *Notice* does propose an allocation and some basic technical parameters, the issues of licensing, channelization, and other complex technical matters are being deferred to a later proceeding. Therefore, because this present action will not result in the provision of these operations, we certify that this action will not have a significant economic impact on a substantial number of small entities.

Despite the certification, we have performed a voluntary Initial Regulatory Flexibility Analysis (IRFA), below, to create a fuller record in this proceeding and to give more information to entities, small and not, that might be affected by our action. Written public comments are requested on the IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Notice* provided in paragraph 50,

⁸³ See 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 *et. seq.*, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). 5 U.S.C. § 603.

⁸⁴ 5 U.S.C. § 605(b).

infra. The Commission's Office of Public Affairs, Reference Operations Division, will send a copy of the *Notice*, including this certification and voluntary analysis, to the Chief Counsel for Advocacy of the Small Business Administration. A copy will also be published in the Federal Register.⁸⁵

A. Need for, and Objectives of, the Proposed Rules

The objective of this action is to provide sufficient spectrum to permit the development of DSRCS technologies to improve the Nation's transportation infrastructure and bolster the involvement of United States companies in this emerging industry.

B. Legal Basis

This action is taken pursuant to Sections 4(i), 7(a), 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157(a), 303(c), 303(f), 303(g), and 303(r).

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

The 5.85-5.925 GHz band is currently available to the U.S. Federal Government for Radiolocation purposes, Fixed Satellite Service licensees for international intercontinental links, amateur radio operators and by various entities using Part 18 Industrial, Scientific and Medical ("ISM") equipment and Part 15 unlicensed device equipment. We note that there are only 45 FSS licenses issued for operation in 5.85-5.925 GHz band and most if not all are held by large corporations. Further, amateur radio operators and the Federal Government do not qualify as small entities. We also note that Part 18 ISM devices are protected in this band, which only generate electromagnetic energy, are not used for communication purposes and therefore cannot receive interference or be impacted by this action. Finally, while Part 15 unlicensed devices are permitted to operate in the 5.85-5.875 GHz portion, they do so on an unlicensed, unprotected basis. Further, the Commission has no means to determine the number of small entities that might use unlicensed Part 15 equipment that operates in the band at issue. The *Notice* discusses means by which the potential DSRCS would be able to share the spectrum with incumbent operations and requests comment on ways to ensure such spectrum sharing. Accordingly, we do not believe this action would have a negative impact on small entities that operate in the 5.85-5.925 GHz band, but nevertheless request comment on this assessment.

⁸⁵ See *id.* § 603(a).

Regarding the Fixed Satellite Service licensees for international intercontinental links, the Commission has not developed a definition of small entities applicable to licensees in the international services. Therefore, the applicable definition of small entity is generally the definition under the SBA rules applicable to Communications Services, Not Elsewhere Classified (NEC).⁸⁶ This definition provides that a small entity is expressed as one with \$11.0 million or less in annual receipts.⁸⁷ According to the Census Bureau, there were a total of 848 communications services providers, NEC, in operation in 1992, and a total of 775 had annual receipts of less than \$9,999 million.⁸⁸ The Census report does not provide more precise data.

Regarding the future use of the 5.85-5.925 GHz band by DSRCS equipment, we believe it is too early to make an determination on such operations. A future rulemaking proceeding will propose further technical standards, licensing and service rules and a separate regulatory flexibility analysis will address all issues relevant to that proceeding.

D. Description of Projected Reporting, Recordkeeping and Other Compliance Requirements

In this proceeding, we are proposing to allocate this spectrum for a new service. The licensing and technical regulations governing these operations will be addressed in a separate proceeding. Therefore, this proposed action does not create any reporting or compliance requirements.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The attached *Notice* proposes basic technical rules such as power limits, unwanted emission limits and a frequency stability requirement. It also requests comment on whether operational standards should be adopted to facilitate nation-wide interoperability of DSRCS. The development of DSRCS operational standards could delay the initial deployment of such equipment, but could ultimately result in equal footing for all manufacturers, including small entities, in producing equipment that meets uniform standards. We request comment on further alternatives that might minimize the amount of economic impact on small entities.

⁸⁶ An exception is the Direct Broadcast Satellite (DBS) Service, *infra*.

⁸⁷ 13 C.F.R. § 120.121, SIC code 4899.

⁸⁸ 1992 Economic Census Industry and Enterprise Receipts Size Report, Table 2D, SIC code 4899 (U.S. Bureau of the Census data under contract to the Office of Advocacy of the U.S. Small Business Administration).

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

None.