Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules Governing Certain Aviation Ground Station Equipment	)	WT Docket No. 10-61
	)	
Petition of the National Telecommunications and Information Administration to Allow Aeronautical Utility Mobile Stations to Use 1090 MHz for Runway Vehicle Identification and Collision Avoidance	)	RM-11503
	)	
Potomac Aviation Technology Corporation Request for Interpretation or Waiver of Sections 87.71 and 87.73 of the Commission's Rules	)	WT Docket No. 09-42
	)	
Establishment of Audio Visual Warning System as New Subpart T to Part 87 of the Commission's Rules and Regulations to Authorize Advanced Audio Visual Warning Systems for Antenna Structures and other Air Navigation Obstacles	)	RM-11596

REPORT AND ORDER

Adopted: February 28, 2013 **Released: March 1, 2013**

By the Commission:

I. INTRODUCTION

1. In this *Report and Order*, we take action to authorize new ground station technologies that will promote aviation safety. These rule changes are based on proposals in the *Notice of Proposed Rule Making* (*NPRM*) and *Further Notice of Proposed Rule Making* (*FNPRM*) in this proceeding.[1] Specifically, we amend Part 87 of the Commission's Rules to allow use of frequency 1090 MHz by aeronautical utility mobile stations for airport surface detection equipment, commonly referred to as vehicle "squitters,"[2] to help reduce collisions between aircraft and airport ground vehicles. In addition, we establish service rules for audio visual warning systems to help aircraft in flight avoid antenna

[1] Amendment of the Commission's Rules Governing Certain Aviation Ground Station Equipment, *Notice of Proposed Rule Making*, WT Docket No. 10-61, 25 FCC Rcd 3355 (2010) (*NPRM*); Amendment of the Commission's Rules Governing Certain Aviation Ground Station Equipment, *Further Notice of Proposed Rule Making*, WT Docket No. 10-61, 26 FCC Rcd 2497 (2011) (*FNPRM*).

2 "Squitter" refers to random output pulses from a transponder caused by ambient noise or by an intentional random triggering system, but not by the interrogation pulses.

structures and other obstacles. We also adopt rules to permit ground testing of aviation data link systems, but we decline to authorize remote monitoring of certain automated ground stations.

II. DISCUSSION

A. Vehicle Squitters

1. Background

2. Air traffic controllers utilize airport surface detection equipment (ASDE-X) to manage the movement of aircraft on airport surfaces, but the current system does not allow the positive identification of ground vehicles such as snowplows and maintenance vehicles that routinely operate on the runway movement area.[3] Unless the vehicle is visible from the control tower, air traffic controllers can determine only its location, but not the vehicle type or the operator.[4] In response to growing concerns about airplanes colliding with or having to take evasive maneuvers to avoid vehicles on the airport surface, the Federal Aviation Administration (FAA) seeks to expand the use of ASDE-X to manage the movement of service vehicles as well as aircraft in the runway movement area.[5]

3. The National Telecommunications and Information Administration (NTIA), supported by the FAA, filed a petition for rulemaking requesting that the Commission amend Part 87 of the Commission's Rules to allow use of frequency 1090 MHz for tracking of ground vehicle movements on the airport surface.[6] In the *NPRM*, the Commission noted that the frequency 1090 MHz is currently used for ASDE-X to manage the movement of aircraft on airport surfaces and for other things, such as the Traffic Alert and Collision Avoidance System (TCAS),[7] but tentatively concluded that permitting use of the frequency by vehicle squitters would further the public interest.[8]

4. Accordingly, the Commission sought comment on proposed technical and service rules for vehicle squitters on frequency 1090 MHz.[9] The *NPRM* sought comment on whether the Commission should limit operation of vehicle squitters to the runway movement area to prevent use of the system for purposes other than vehicle and aircraft safety (such as tracking baggage carts).[10] The *NPRM* also

[3] *NPRM*, 25 FCC Rcd at 3356 ¶ 3. The runway movement area consists of the runways, taxiways, and other areas utilized for taxiing, takeoff, and landing, exclusive of loading ramp and parking areas. 47 C.F.R. § 87.345.

[4] *NPRM*, 25 FCC Rcd at 3356 ¶ 3.

[5] *Id.*

[6] Petition for Rulemaking of the National Telecommunications and Information Administration (filed July 29, 2008).

[7] TCAS is an airborne warning system designed to avert mid-air collisions. *See* Review of Part 87 of the Commission's Rules Concerning the Aviation Radio Service, *Report and Order and Further Notice of Proposed Rule Making*, WT Docket No. 01-289, 18 FCC Rcd 21432, 21467 n.265 (2003) (*Part 87 Report and Order*). In the *Part 87 Report and Order*, the Commission adopted a proposal to permit ground testing of TCAS on frequency 1090 MHz, and amended Section 87.475(c)(2) of the Rules, 47 C.F.R. § 87.475(c)(2), accordingly. *See Part 87 Report and Order*, 18 FCC Rcd at 21467 ¶ 74. When it amended Section 87.475(c)(2) later in that proceeding, however, the Commission inadvertently removed the language authorizing ground testing of TCAS on 1090 MHz. *See* Review of Part 87 of the Commission's Rules Concerning the Aviation Radio Service, *Second Report and Order and Second Further Notice of Proposed Rule Making*, WT Docket No. 01-289, 21 FCC Rcd 11582, 11587-88 ¶ 6 (2006) (*Part 87 Second Report and Order*). In the *NPRM* in this proceeding, the Commission proposed to correct that error by amending Section 87.475(c)(2) to restore the deleted language. *See NPRM*, 25 FCC Rcd at 3357 n.13. We now adopt the proposed correction.

[8] *See NPRM*, 25 FCC Rcd at 3357-58 ¶¶ 6-7.

[9] *See id.* at 3358-60 ¶¶ 9-14.

[10] *See id.* at 3359 ¶ 12.

tentatively agreed with NTIA's proposal that the Commission coordinate applications with the FAA through the Interdepartment Radio Advisory Committee (IRAC), and it sought comment on whether the Commission should require applicants to pre-coordinate with the relevant FAA Regional Office before filing an application with the Commission.[11]

2. Discussion

5. Commenters generally support use of frequency 1090 MHz for vehicle squitters, and we received no comments regarding most of the proposed technical and service rules. We adopt those rules as proposed, for the reasons set forth in the *NPRM*. We conclude that permitting use of frequency 1090 MHz by vehicle squitters to facilitate tracking of ground vehicle movements on the airport surface will further the public interest. It will enhance the safety of airline passengers and airport workers and reduce the costs associated with runway incursions (including direct costs due to collision damage and indirect costs such as delay, plane changes, and fuel inefficiencies) without causing harmful interference to other uses of the frequency. The Commission will coordinate applications with the FAA through the IRAC, and we will require applicants to pre-coordinate with the relevant FAA Regional Office before filing an application with the Commission. We believe that pre-coordination will expedite the licensing process.[12]

6. Two commenters (Denver International Airport and Airports Council International – North America) oppose the proposal to limit vehicle squitter operations to the runway movement area. They argue that vehicles engaged in safety-critical activities, such as snow removal, police, and firefighting, should be permitted to utilize vehicle squitters so they can be tracked for collision avoidance and enhanced situational awareness wherever on the airfield these activities occur.[13] Both believe that while use of these systems should be limited to safety-related and airport operations vehicles, questions related to vehicle squitter deployment should be left to airport representatives and the FAA.[14] We agree that the FAA is better positioned to determine the appropriate vehicle squitter deployment at each airport. We note that the FAA has an Advisory Circular that provides, *inter alia*, approval and operational

[11] *See NPRM*, 25 FCC Rcd at 3359-60 ¶ 13. The IRAC is a committee of federal departments, agencies, and administrations that advises NTIA in assigning frequencies to federal radio stations and in developing and executing policies, programs, procedures, and technical criteria pertaining to the allocation, management, and use of the spectrum. *See* 47 C.F.R. § 2.1.

[12] The Boeing Company (Boeing) generally supports the Commission's proposals but is concerned about the length of the process for review and approval of radionavigation land test and experimental licenses on frequency 1090 MHz, which it fears may be exacerbated if the channel is also used for vehicle squitters. Boeing requests that action to authorize vehicle squitter use coincide with efforts by the NTIA and the FAA to improve the review and approval process for experimental license applications to use frequency 1090 MHz to support TCAS and identification friend or foe (IFF) test operations. *See* Boeing *NPRM* comments at 2-3. While we encourage Boeing to continue to engage with NTIA and FAA regarding its concerns, we note that it would be inappropriate for us to mandate that those agencies adopt any particular process. *See* Amendment of the Commission's Rules Regarding Maritime Automatic Identification Systems, *Second Report and Order*, WT Docket No. 04-344, 23 FCC Rcd 13711, 13727 n.108 (2008) (declining to impose coordination procedures on the U.S. Coast Guard); Amendment of the Commission's Rules Regarding Maritime Automatic Identification Systems, *Report and Order and Further Notice of Proposed Rule Making and Fourth Memorandum Opinion and Order*, WT Docket No. 04-344, 21 FCC Rcd 8892, 8932 n.282 (2006) (declining to require NTIA or the Coast Guard to negotiate with FCC licensees).

[13] *See* Denver International Airport (DIA) comments at 7; Airports Council International – North America (ACI-NA) comments at 3.

[14] *See* DIA comments at 7-9; ACI-NA comments at 3. DIA notes that it is in discussions with the FAA to determine and designate non-movement areas where vehicle squitters may be used. *See* DIA comments at 4.

guidance for airport ground vehicle squitter units.[15] Included in the operational guidance of the Advisory Circular is the requirement that the operation of aircraft ground vehicle squitter units be confined to the airport movement area.[16] We also note that vehicle squitters will be licensed as aeronautical mobility stations (station class of MOU), which by our rules are limited to operation in an airport movement area.[17]

B. Audio Visual Warning Systems (AVWS)

1. Background

7. An aviation accident attributable to an air obstacle occurs every twelve days, on average.[18] More than ninety-five percent of those accidents are related to wires, utility poles, or static lines, and eighty-five percent of them occur during the day.[19] Other countries have implemented audio visual warning systems (AVWS) to address this problem. An AVWS is an integrated air hazard notification system that activates obstruction lighting and transmits audible warnings to aircraft on a potential collision course with an obstacle such as a power line, wind turbine, or tower. An AVWS includes a radar and a radio capable of transmitting in the VHF aeronautical band (118-136 MHz).[20] When the radar detects an aircraft in a predefined horizontal and vertical perimeter (warning zone), the system activates the obstruction lighting.[21] If, despite this visual warning, the aircraft continues toward the structure into a second warning zone, the VHF radio transmits an audible warning describing the hazard (*e.g.*, "power line . . . power line").[22]

8. OCAS, Inc. (OCAS), which develops and deploys AVWS installations internationally, filed a petition for rulemaking requesting that the Commission amend Part 87 to permit AVWS stations to operate radar units and transmit audible warnings in the United States.[23] In the *FNPRM*, the Commission concluded that the public interest would be served by amending the rules to authorize AVWS stations to help aircraft avoid potential collisions with antenna structures and other obstacles.[24]

9. Accordingly, the Commission sought comment on operational and licensing issues regarding AVWS stations.[25] An AVWS station requires authorization for three components: the radar unit, the communications link to activate the lights when the radar detects an aircraft, and the VHF transmitter. The Commission proposed to license the radar unit and the VHF transmitter under a single Part 87 authorization, as a form of radiodetermination station.[26] It proposed to make the 1300-1350 MHz

[15] *See* Advisory Circular No. 150/5220-26, Airport Ground Vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Out Squitter Equipment, Federal Aviation Administration, U.S. Department of Transportation, November 14, 2011.

[16] *Id* at 11.

[17] *See* 47 C.F.R. § 87.345 ("Aeronautical utility mobile stations provide communications for vehicles operating on an airport movement area. An airport movement area is defined as the runways, taxiways and other areas utilized for taxiing, takeoff and landing of aircraft, exclusive of loading ramp and parking areas.").

[18] *FNPRM*, 26 FCC Rcd at 2497-98 ¶ 3.

[19] *Id.* at 2498 ¶ 3.

[20] *Id.* at 2498 ¶ 4.

[21] *Id.*

[22] *Id.*

[23] Petition for Rulemaking of OCAS, Inc. (filed March 4, 2010) (OCAS Petition).

[24] *See FNPRM*, 26 FCC Rcd at 2502 ¶ 19.

[25] *Id.* at 2499-2502 ¶¶ 8-18.

[26] *Id.* at 2499 ¶ 8.

radar band available for AVWS use and tentatively concluded that it did not need to propose a power limit for each installation, noting that Part 87 does not contain power limits for these frequencies; instead, the frequency, emission, and maximum power of the radar are determined after coordination with the FAA.[27] The Commission did not propose to authorize the communications link from the radar to the lights under Part 87, tentatively concluding that those frequencies should be authorized under the appropriate provision of our rules (such as Part 90).[28] With respect to the VHF transmitter, the Commission proposed to permit AVWS operation only on aeronautical advisory (unicom) frequencies, multicom frequencies, certain aviation support frequencies (specifically, 123.300 MHz and 123.500 MHz), and certain air-to-air frequencies (specifically, 122.75 MHz and 123.025 MHz).[29] Finally, it sought comment on whether automatic monitoring of the lighting component should be required when an AVWS is operated at a Commission-registered antenna structure.[30]

2. Discussion

10. All of the comments indicate support for the implementation of AVWS, and commenters generally agree with the proposals in the *FNPRM*.[31] We adopt those rules as proposed, for the reasons set forth in the *FNPRM*. We conclude that allowing the owners of antenna structures and other aviation obstacles to use AVWS stations to help aircraft avoid potential collisions will benefit the public by enhancing aviation safety, without causing harmful interference to other communications.[32] Other potential benefits of AVWS include lower energy consumption, reduced light pollution, and increased protection of migratory bird populations.[33]

11. The radar unit[34] and the VHF transmitter will be licensed under a single Part 87 authorization, as a form of radiodetermination station.[35] With respect to the VHF transmitter, we will permit AVWS operation only on aeronautical advisory (unicom) frequencies, multicom frequencies,[36]

[27] *Id.* at 2499 ¶¶ 9-10.

[28] *Id.* at 2499-2500 ¶ 11.

[29] *Id.* at 2500 ¶ 13.

[30] *Id.* at 2502 ¶ 18.

[31] *See* Boeing *FNPRM* comments at 1; Helicopter Association International comments at 1; the National EMS Pilots Association comments at 1; Utilities Telecom Council comments at 4.

[32] We note that the Civil Aviation Authority of New Zealand conducted a cost-benefit study regarding AVWS implementation and concluded that the benefits greatly exceed the costs. *See* Civil Aviation Authority of New Zealand, Wire Marking Review (Stage 2) Cost Benefit Analysis: Obstacle Collision Avoidance System (2007) (available at http://www.caa.govt.nz/Policy/Wire_Marking/Wire_Mark_Rev_CBA.pdf).

[33] *See FNPRM*, 26 FCC Rcd at 2498-99 ¶ 6.

[34] We note that Section 87.5 currently defines "surveillance radar station" as a station "employing radar to display the presence of aircraft within its range." *See* 47 C.F.R. § 87.5. Given that the radar unit in a AVWS does not need to contain a display screen, we revise the rule to define "surveillance radar station" as a station "employing radar to *detect* the presence of aircraft within its range" in order to accommodate radar units in AVWS installations. *See* Appendix A, *infra*.

[35] We clarify that if Part 90 frequencies are used for the communications link from the radar to the lights, appropriate Part 90 licensing and frequency coordination, *see* 47 C.F.R. § 90.175, is required. *See* PCIA—The Wireless Infrastructure Association (PCIA) comments at 3.

[36] Multicom frequency 122.925 MHz was excluded from the rules proposed in the *FNPRM*, *see FNPRM*, 26 FCC Rcd at 2507, and is excluded from the final rules because use of the frequency is limited to communications with or between aircraft when coordinating natural resources programs, including forestry management and fire suppression, fish and game management and protection, and environmental monitoring and protection. *See* 47 C.F.R. § 87.241(c); *see also* 47 C.F.R. § 2.106 n.US213.

aviation support frequencies 123.300 MHz and 123.500 MHz, and air-to-air frequencies 122.75 MHz and 123.025 MHz.

12. With respect to the radar component, OCAS recommends a maximum output power limit of two watts and a maximum effective isotropic radiated power limit of twenty dBW.[37] It argues that its proposed limits will allow AVWS stations to perform as intended while avoiding interference to other radar systems.[38] OCAS is also concerned that determining output levels on a case-by-case basis might encourage the use of radar units that were not designed for AVWS, which could result in interference.[39] We disagree, and now affirm the *FNPRM*'s tentative conclusion that we do not need to impose a power limit.[40] While we appreciate that OCAS's proposed limits are based on its experience in deploying its AVWS stations, we do not want to preclude use of other radar equipment with different technical specifications. Moreover, use of the 1300-1350 MHz band requires coordination with the FAA through the IRAC,[41] and we believe that the FAA is best suited to determine the appropriate power level for surveillance radars in this band. Consequently, we will not adopt a specific power limit for AVWS radar.

13. Regarding the VHF transmitter, the Commission proposed specific output power, antenna gain, and duty cycle limitations suggested by OCAS.[42] OCAS continues to support the proposed limitations but cautions that these parameters should not be utilized as standards or limitations for equipment certification purposes.[43] We agree. While we believe that these limitations are important to minimize the interference potential to other users in the band, we also understand that requiring the VHF radio to be designed specifically for AVWS use could unnecessarily increase the cost of the equipment. We therefore clarify that off-the-shelf Part 87 VHF radios will be permissible for AVWS use, provided that the system is operated in compliance with the AVWS technical rules.

14. Section 17.47(a) of the Commission's Rules requires daily "observation" of the lighting of Commission-registered antenna structures, visually or by either "observing an automatic properly maintained indicator designed to register any failure of such lights" or maintaining "an automatic alarm system designed to detect any failure of such lights and to provide indication of such failure."[44] The *FNPRM* sought comment on whether the rules should require automatic monitoring of the lighting component of an AVWS station, given the difficulty of visually monitoring lights that are illuminated

[37] *See* OCAS comments at 3; *see also* OCAS Petition at Appendix at 2.

[38] *See* OCAS comments at 3.

[39] *Id*.

[40] *FNPRM*, 26 FCC Rcd at 2499 ¶ 10.

[41] 47 C.F.R. § 87.475(a). The applicant must also notify the appropriate FAA Regional Office prior to submitting an application to the Commission.

[42] Specifically, the Commission proposed to limit the VHF transmitter to a maximum transmitter power of approximately 0.5 milliwatts, and an omnidirectional antenna with a maximum gain of +5 dBi. It also proposed that the audible warning not exceed two seconds in length, with no more than six warnings transmitted in a single transmit cycle. In addition, the transmit cycle would be limited to twelve seconds, with at least a twenty-second interval between cycles. *See FNPRM*, 26 FCC Rcd at 2501 ¶ 14.

[43] *See* OCAS comments at 5.

[44] *See* 47 C.F.R. § 17.47(a)(1), (2). The rules also require notification to the nearest FAA office or Flight Service Station of the extinguishment or improper functioning of obstruction lights. *See* 47 C.F.R. § 17.48. Upon such notification, the FAA issues a Notice to Airmen (NOTAM) to alert aircraft of the outage. 2004 and 2006 Biennial Regulatory Reviews - - Streamlining and Other Revisions of Parts 1 and 17 of the Commission's Rules Governing Construction, Marking and Lighting of Antenna Structures, *Notice of Proposed Rulemaking*, WT Docket No. 10-88, 25 FCC Rcd 3982, 3992 ¶ 22 (2010) (*Part 17 NPRM*).

only intermittently.[45] Commenters disagreed regarding this issue. OCAS recommends that the rules require electronic monitoring of the major components and that, in the event of a failure of the radar or communications link, the lighting be turned on continuously and the VHF transmitter be deactivated.[46] PCIA—The Wireless Infrastructure Association, on the other hand, asserts that the Commission should not require automatic monitoring.[47]

15. We interpret Section 17.47(a) to require monitoring that ensures the lights will function as set forth under the FAA's Determination of No Hazard. We therefore agree with OCAS that monitoring of an AVWS requires monitoring of the components that activate the obstacle lights – the radar and the communications link from the radar to the lights – as well as monitoring the lighting system itself.[48] We will not, however, mandate automatic monitoring beyond the requirements of Part 17. We conclude that requiring automatic monitoring could impose unnecessary costs with no commensurate benefit. An owner that believes that it can visually monitor an AVWS-equipped antenna structure's lighting without automatic monitoring (such as by flying an aircraft into the warning zone every day) may do so to comply with Section 17.47. We emphasize, however, that regardless of how an antenna structure owner carries out its inspections, the owner is responsible if the lights fail to function.[49]

C. Remote Monitoring of Automated Ground Station Equipment

16. Aviation land stations are stations in the Aviation Radio Service that are not intended to be used while in motion, *i.e.*, stations located on the ground rather than in aircraft.[50] Sections 87.71 and 87.73 of the Commission's Rules require that a holder of a General Radiotelephone Operator License (GROL) supervise and be responsible for all transmitter adjustments or tests, and measure the operating frequencies, of all land-based Aviation Service stations when the station is installed, maintained, or serviced.[51] Potomac Aviation Technology Corporation (PATC) requested a declaratory ruling or, in the alternative, rule waiver holding that, with respect to PATC's product VHF Radio Transceiver FCC ID TDOAVIACOM1 (AVIACOM1), the requirements of Sections 87.71 and 87.73 can be met by remote monitoring by GROL holders who are not on-site.[52] PATC argued that requiring a GROL holder to install and maintain equipment that is factory-sealed and has no user-serviceable or -adjustable components imposes an unnecessary burden on small airports lacking their own licensed technicians. The Wireless Telecommunications Bureau's Mobility Division (Division) granted the waiver request in part,

[45] *See FNPRM*, 26 FCC Rcd at 2502 ¶ 18.

[46] *See* OCAS comments at 5. OCAS also proposes that the rules require the issuance of a NOTAM in the event of a failure of the radar or communications link. *Id.* We note that the issuance of NOTAMs is within the exclusive jurisdiction of the FAA.

[47] *See* PCIA comments at 4. PCIA makes additional comments regarding Section 17.47, which we believe are more appropriately addressed in our pending Part 17 proceeding, *see Part 17 NPRM*.

[48] Similarly, Section 17.48 requires notification to the FAA in the event of a failure of the radar or the communications link.

[49] *See Part 17 NPRM*, 25 FCC Rcd at 3993 ¶ 24. We note that in the *Part 17 NPRM*, the Commission sought comment on whether to eliminate the inspection requirement of Section 17.47 and simply rely on the requirement to maintain the required lighting. *Id.*

[50] *See* 47 C.F.R. § 87.5.

[51] *See* 47 C.F.R. §§ 87.71, 87.73.

[52] Request for Interpretation or Waiver of Sections 87.71 and 87.73 of the Commission's Rules (filed July 25, 2008). The AVIACOM1 incorporates internal diagnostics to automatically measure frequency, power, modulation, and other technical parameters, and transmits the results to PATC.

to permit remote monitoring of the AVIACOM1 during routine maintenance testing but not during installation or servicing.[53]

17. The Commission sought comment on whether and how it should amend Sections 87.71 and 87.73 to allow for remote monitoring, in lieu of attendance by a GROL holder, during installation and maintenance of land-based Aviation Service stations.[54] PATC was the only commenter on this issue, and its comments are largely beyond the scope of the question presented in the *NPRM*.[55] The record does not demonstrate that the GROL requirement is burdensome. Nor does it provide a sufficient basis for setting the requirements and conditions under which remote monitoring would be sufficient. Consequently, we decline to amend Sections 87.71 and 87.73 to allow for remote monitoring in lieu of attendance by a GROL holder during installation, servicing, and maintenance of land-based Aviation Service stations.[56]

D. Aircraft Data Link Test Equipment

1. Background

18. Aircraft data link systems, like the Aircraft Communications Addressing and Reporting System (ACARS) and Very High Frequency Digital Link (VDL2), transmit data automatically between ground personnel and aircraft[57] using G1D emission.[58] Equipment that is used to test aircraft data link systems therefore need to use G1D emission. Section 87.131 of the Commission's Rules, however, does not authorize G1D emission for radionavigation land test (station class code RLT) equipment.[59] Aviation Data Systems (Aust) Pty Ltd. (ADS) filed a request for waiver of Section 87.131 to permit equipment certification of a system that transmits using G1D emission to test aircraft data link systems.[60] The Division granted the waiver request, subject to certain conditions.[61] Use is permitted only on a licensed

[53] *See* Potomac Aviation Technology Corp., *Order*, WT Docket No. 09-42, 25 FCC Rcd 1876, 1877-78 ¶¶ 8-9 (WTB MD 2010). The Division denied the request for a declaratory ruling that that Sections 87.71 and 87.73 permit installation, maintenance, and measurement to be performed without an on-site GROL holder. *See id.* at 1877 ¶ 5.

[54] *See NPRM*, 25 FCC Rcd at 3361 ¶ 16.

[55] For example, PATC proposes that we amend our rules to allow the required measurements to be made by the station licensee or any person designated by the station licensee. *See* PATC comments at 1. The Commission sought comment only on whether to permit remote monitoring by a GROL holder.

[56] Remote monitoring of the AVIACOM1 may continue under the terms of the waiver grant.

[57] *See* Amendment of Parts 2 and 87 of the Commission's Rules to permit the Aviation Services to use frequencies in the 136-137 MHz band, *Notice of Proposed Rule Making*, GEN Docket No. 89-295, 4 FCC Rcd 5224, 5224 n.7 (1989). Data transmitted includes reports on departure and destination, location and time, engine monitoring, aircraft flight position, maintenance discrepancy reports, and winds aloft observations from suitably equipped aircraft.

[58] *See* Amendment of Parts 2 and 87 of the Commission's Rules to Accommodate Advanced Digital Communications in the 117.975-137 MHz Band and to Implement Flight Information Services in the 136-137 MHz Band, *Report and Order*, WT Docket No. 00-77, 16 FCC Rcd 8226, 8232 ¶ 14 (2001). The emission designator is a series of alphanumeric characters that denotes the necessary bandwidth, type of modulation, nature of the signal modulating the main carrier, and type of information to be transmitted. *See* 47 C.F.R. §§ 2.201(b), 2.202(b). G1D is a type of phase-modulated digital emission. *See* 47 C.F.R. § 2.201(e).

[59] *See* 47 C.F.R. § 87.131.

[60] Request for Waiver (filed Oct. 15, 2007).

[61] *See* Aviation Data Systems (Aust) Pty Ltd., *Order*, WT Docket No. 08-9, 24 FCC Rcd 7749 (WTB MD 2009). Specifically, operation is limited to the 129.125-136.975 MHz segment of the 118-137 MHz band (with only the 136.900-136.975 MHz segment used for VDL2 with emission designator 14K0G1D); output power is limited to one hundred microwatts; and the device must comply with all applicable emission requirements in the International Civil (continued….)

basis, and the applicant must notify the appropriate FAA Regional Office prior to filing an application for a new or modified station license.[62] The Division required such notification because this requirement already applies to RLT Maintenance Test Facilities, which the ADS device most closely resembles.[63]

19. In the *NPRM*, the Commission proposed to codify the terms of ADS's waiver to permit ground testing of aviation data link test systems using G1D emission.[64] Specifically, it proposed to expand the definition of "radionavigation land test stations" to include aircraft data link land test systems and to add the aircraft data link channels to the list of frequencies on which RLT stations may be authorized.[65]

2. Discussion

20. We conclude that permitting ground testing of aviation data link test systems will benefit the public by ensuring the reliability of aviation data link test systems and thus will enhance aviation safety. Aviation Spectrum Resources, Inc. (ASRI), which represents the civil aviation industry and is the sole United States licensee in the aeronautical enroute service,[66] supports the codification of the ADS waiver, but proposes a few modifications.[67]

21. First, ASRI argues that classifying data link test equipment as RLT stations is inaccurate because aviation data link systems are not radionavigation equipment, and classifying the equipment in this manner may lead to increased interference and congestion in the aeronautical bands.[68] Instead, it proposes a new station class code (DLT) for data link test systems. It also proposes that DLT stations be administered under Subpart I of Part 87 ("Aeronautical Enroute and Aeronautical Fixed Stations," which ASRI suggests renaming "Aeronautical Enroute, Aeronautical Fixed, and Aircraft Data Link Land Test Stations"), given that they operate solely on aeronautical enroute frequencies. We agree and will amend Part 87 accordingly.

(Continued from previous page)
Aviation Organization Manual on VHF Digital Link (VDL) Mode 2 and the ACARS specifications set forth in RTCA DO-281A, and be designed so that it will engage in data link exchange only with the aircraft the identification of which has been programmed into the device. Operation of the device is secondary to that of other licensed stations. *See id.* at 7750 ¶ 4, 7753 ¶¶ 10, 12.

[62] *See id.* at 7752 ¶ 10.

[63] *See id.* at 7750 ¶ 3, 7752 ¶ 10 (citing 47 C.F.R. § 87.475(a)).

[64] *See NPRM*, 25 FCC Rcd at 3362 ¶ 19.

[65] *See id.* at 3365-67.

[66] *See* Review of Part 87 of the Commission's Rules Concerning the Aviation Radio Service, *Third Report and Order*, WT Docket No. 01-289, 25 FCC Rcd 7610, 7614 ¶ 8 (2010) (*Part 87 Third Report and Order*).

[67] ASRI filed comments and, jointly with ADS, reply comments. In its initial comments, ASRI proposed that the Commission specify the particular frequencies assignable to aircraft data link land test stations, in order to avoid confusion. *See* ASRI comments at 7-10. In its reply comments, however, it proposes that the rules state that aircraft data link land test stations "will only be assigned frequencies that are actually used for aircraft data link systems," in case the frequencies change in the future. *See* ASRI reply comments at 4, A-3. We believe that clarity requires that the available frequencies be listed. In light, however, of the Commission's action permitting aeronautical enroute stations to use 8.33 kilohertz channel spacing, *see Part 87 Third Report and Order*, 25 FCC Rcd at 7614-15 ¶¶ 7-8, the rule also will permit assignment of frequencies with 8.33 kilohertz spacing, to accommodate any narrowbanding transition by ASRI.

[68] *See* ASRI comments at 5-7. Radionavigation is the determination of the position, velocity, and/or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation of radio waves for the purpose of navigation. *See* 47 C.F.R. § 87.5.

22. ASRI also proposes that applications for DLT stations be coordinated with it, the exclusive aeronautical enroute service licensee, rather than with the FAA.[69] It states that it is in the best position to know what frequencies are available at a location, and that FAA coordination is unnecessary because interference is likely to occur only to ASRI's aeronautical enroute stations.[70] We agree. Our rules do not require FAA coordination of aeronautical enroute station applications, and thus we do not believe that such coordination is needed for applications to operate DLT stations on those frequencies. Instead, applicants will be required to coordinate DLT applications with ASRI prior to filing.

23. Finally, ASRI proposes that it be able to obtain a blanket license to operate DLT equipment on all enroute frequencies at all locations in the United States, under which ASRI could authorize users to operate DLT stations under ASRI's direction and control as an alternative to obtaining their own licenses.[71] It cites as precedent the Commission's decision to license only one entity (ASRI's predecessor) for stations in the aeronautical enroute network.[72] The Commission concluded there that authorizing multiple licensees could have negative effects, including reduced spectral efficiency, reduced usefulness of the industry database, greater difficulty in coordinating frequency assignments, increased congestion and interference, and greater difficulty in the planning and implementation of new techniques and configurations.[73] Requiring that DLT applications be coordinated with ASRI will address these concerns. We find it neither necessary nor appropriate to delegate DLT licensing authority in this band to ASRI, and we therefore decline to grant ASRI a blanket license for it to manage others' DLT operations.

E. Other Issues

24. The *NPRM* also proposed to correct the inadvertent deletion of former paragraphs (b)(9) through (b)(14) of Section 87.475, which occurred when the Commission adopted non-substantive changes to the rule in 1989.[74] We generally adopt the edits proposed to correct that error,[75] with certain modifications to reflect intervening developments. We reinsert former paragraph (b)(11) but delete the second sentence ("Stations operating in this band may receive interference from stations operating in the radiolocation service.") in light of the fact that the note to the Table of Allocations on which it was based[76] was deleted in 2003 because the Federal radiolocation systems that could cause interference had

[69] *See* ASRI comments at 10-12.

[70] *Id*. at 11-12.

[71] *Id*. at 10-11; ASRI reply comments at 5. ASRI would charge those DLT users a fee for its management and coordination services. ASRI reply comments at 5.

[72] *See* ASRI comments at 11 (citing *Part 87 Report and Order*, 18 FCC Rcd at 21442-43 ¶¶ 22-23).

[73] *See Part 87 Report and Order*, 18 FCC Rcd at 21441-42 ¶¶ 19-22.

[74] *See NPRM*, 25 FCC Rcd at 3357 n.13 (citing Reorganization and Revision of Part 87 Governing the Aviation Services, *Memorandum Opinion and Order*, PR Docket No. 87-214, 4 FCC Rcd 2271, 2271 ¶ 8, 2274-75 (1989)).

[75] We note, however, that the Commission has proposed changes to some of the frequency allocations contained in this section in a rulemaking proceeding addressing the decisions of the World Radiocommunication Conference (WRC-07). *See* Amendment of Parts 1, 2, 15, 74, 78, 87, 90, and 97 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2007) (WRC-07) and Other Allocation Issues, and Related Rule Updates, *Notice of Proposed Rulemaking and Order*, ET Docket No. 12-338, 27 FCC Rcd 14598, 14621 ¶ 76 (2012). The reinsertion of the inadvertently deleted paragraphs should not be read to signify that we are deviating from the proposals in the WRC-07 proceeding.

[76] *See* 47 C.F.R. § 2.106 note US54 (2005) ("Temporarily and until certain operations of the radiolocation service in the band 9000-9200 Mc/s can be transferred to other appropriate frequency bands, the aeronautical radionavigation service may, in certain geographical areas, be subject to receiving some degree of interference from the radiolocation service.").

moved to other bands.[77] We do not reinsert former paragraph (b)(12) because the Commission deleted that allocation for radionavigation in 2006 after concluding that there was no existing or anticipated need for it.[78] Finally, we reinsert former paragraph (b)(14), but refer to the 32,300-33,400 MHz band instead of the 31,800-33,400 MHz band because the Commission deleted the non-Federal radiolocation allocation for the 31,800-32,300 MHz subband in 2000 in order to protect Federal deep space operations.[79]

III. CONCLUSION

25. We believe that the benefits of the rule changes adopted herein outweigh any potential costs. The rules will promote aviation safety by allowing use of frequency 1090 MHz by aeronautical utility mobile stations for airport surface detection equipment. The rules will also help aircraft in flight avoid antenna structures and other obstacles. In addition, the rules will benefit the public by ensuring the reliability of aviation data link test systems and thus will enhance aviation safety. These rules do not impose new obligations on any licensee or prospective licensee. Rather, they give licensees new options to enhance the safety and reliability of their aviation-related operations. In light of the substantial public safety benefits associated with these rules and the costs and burdens they impose, such as costs that may be incurred in coordinating with the FAA or the aeronautical enroute licensee, we find that the benefits outweigh the potential costs.

IV. PROCEDURAL MATTERS

26. *Regulatory Flexibility Act*. As required by the Regulatory Flexibility Act,[80] the Commission has prepared a Final Regulatory Flexibility Analysis relating to the *Report and Order* set forth in Appendix B.

27. *Congressional Review Act*. The Commission will send a copy of this *Report and Order* in a report to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

28. *Paperwork Reduction Act of 1995*. This document contains new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. Specifically, it requires prospective DLT station licensees to coordinate their applications with ASRI, the aeronautical enroute station licensee. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the new or modified information collection requirements contained in this proceeding. In the present document, we have assessed the effects of requiring coordination of DLT applications with ASRI and find that this will avoid interference to safety-related aeronautical enroute communications without having a significant impact on small business concerns with fewer than 25 employees. Coordination with ASRI should not be more burdensome than coordination with the FAA, which is required for analogous RLT applications.

29. *Alternative formats*. To request materials in alternative formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to <FCC504@fcc.gov> or call the Consumer and Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (TTY).

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[77] *See* Amendment of Parts 2, 25, and 87 of the Commission's Rules to Implement Decisions from World Radiocommunication Conferences Concerning Frequency Bands Between 28 MHz and 36 GHz and to Otherwise Update the Rules in this Frequency Range, *Report and Order*, ET Docket No. 02-305, 18 FCC Rcd 23426, 23458 ¶ 90 (2003).

[78] *See Part 87 Second Report and Order*, 21 FCC Rcd at 11595-96 ¶ 19.

[79] *See* Amendment of Parts 2 and 87 of the Commission's Rules Regarding the Radionavigation Service at 31.8-32.3 GHz, *Report and Order*, ET Docket No. 98-197, 15 FCC Rcd 18587, 18591-92 ¶ 12 (2000).

[80] *See* 5 U.S.C. § 604.

This *Report and Order* also may be downloaded from the Commission's web site at <http://www.fcc.gov/>.

V. ORDERING CLAUSES

30. Accordingly, IT IS ORDERED that, pursuant to Sections 4(i), 4(j), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 303(r), this *Report and Order* IS HEREBY ADOPTED.

31. IT IS FURTHER ORDERED that Part 87 of the Commission's Rules IS AMENDED as set forth in Appendix A, effective 30 days after publication in the Federal Register, except for Section 87.287, which contains a new information collection requirement that requires approval by the Office of Management and Budget under the Paperwork Reduction Act. The Federal Communications Commission will publish a document in the Federal Register announcing such approval and the relevant effective date.

32. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of the *Report and Order* in a report to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

33. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of the *Report and Order*, including the Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

Chapter 1 of Title 47 of the Code of Federal Regulations is amended as follows:

Part 87 – Aviation Services

1. The authority citation for Part 87 continues to read as follows:

AUTHORITY: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, 307(e) unless otherwise noted. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-156, 301-609.

2. The table of contents for part 87 is amended by adding a heading and Sections 87.285 and 87.287 at the end of subpart I, revising the title of subpart I, and adding Section 87.483 at the end of subpart Q as follows:

PART 87 – AVIATION SERVICES

* * * * *

Subpart I – Aeronautical Enroute, Aeronautical Fixed, and Aircraft Data Link Land Test Stations

AERONAUTICAL ENROUTE STATIONS

* * * * *

AERONAUTICAL FIXED STATIONS

* * * * *

AIRCRAFT DATA LINK LAND TEST STATIONS

87.285 Scope of service.
87.287 Frequencies.

* * * * *

Subpart Q – Stations in the Radiodetermination Service

* * * * *

87.483 Audio visual warning systems.

* * * * *

3. Section 87.5 is amended by adding definitions of "Aircraft data link system" and "Aircraft data link land test station" in alphabetical order and amending the definition of "Surveillance radar station" to read as follows:

§ 87.5 Definitions.

* * * * *

Aircraft data link system. A system used to provide data communications between the aircraft and ground personnel necessary for the safe, efficient and economic operation of the aircraft.

* * * * *

Aircraft data link land test station. A station which is used to test and calibrate aircraft data link system communications equipment.

* * * * *

Surveillance radar station. A radionavigation land station in the aeronautical radionavigation service employing radar to detect the presence of aircraft within its range.

* * * * *

4. Section 87.131 is amended by adding, at the beginning of the table, entries for "Aeronautical utility mobile" and "Aircraft data link land test" to read as follows:

§ 87.131 Power and emissions.

* * *

* * *	* * *	* * *	* * *
Aeronautical utility mobile	VHF 1090 MHz	A3E M1D	10 watts. 20 watts.
Aircraft data link land test	131.450 MHz, 131.550 MHz, 131.725 MHz, 131.825 MHz, 136.850 MHz	A2D	100 microwatts.
	136.900 MHz, 136.925 MHz, 136.950 MHz, 136.975 MHz	G1D	100 microwatts.
* * * * *	* * * * *	* * * * *	* * * * *

5. Section 87.133 is amended by revising the table in paragraph (a) to add an entry under Band-470 to 2450 MHz between "Aircraft earth station" and Radionavigation stations" read as follows:

§ 87.133 Frequency stability.

(a) * * *

* * *	* * *	* * *
Aeronautical utility mobile stations on 1090 MHz	1000	1000
* * * * *	* * * * *	* * * * *

6. Section 87.137 is amended by revising the table in paragraph (a) to add an entry between M1A and N0N to read as follows:

§ 87.137 Types of emission.

(a) * * *

* * *	* * *	* * *	* * *	* * *
M1D	14M0M1D	14.0	……	……
* * * * *	* * * * *	* * * * *	* * * * *	* * * * *

7. Section 87.171 is amended by adding an entry for AVW at the beginning of the list of *Symbol and class of station*, adding an entry for DLT between DGP and FA, and moving the entry for FAU to between FAT and FAW, to read as follows:

§ 87.171 Class of station symbols.

* * *

AVW—Audio visual warning systems

* * *

DLT—Aircraft data link land test

* * * * *

8. Section 87.173 is amended by revising the table in paragraph (b) to read as follows:

§ 87.173 Frequencies.

* * * * *

(b) * * *

Frequency or frequency band	Subpart	Class of station	Remarks
* * *	* * *	* * *	* * *
122.700 MHz	G,L,Q	MA, FAU, MOU, AVW	Unicom at airports with no control tower; Aeronautical utility stations.
122.725 MHz	G, L, Q	MA, FAU, MOU, AVW	Unicom at airports with no control tower; Aeronautical utility stations.
122.750 MHz	F, Q	MA2, AVW	Private fixed wing aircraft air-to-air communications.
* * *	* * *	* * *	* * *

122.800 MHz	G, L, Q	MA, FAU, MOU, AVW	Unicom at airports with no control tower; Aeronautical utility stations.
* * *	* * *	* * *	* * *
122.850 MHz	H, K, Q	MA, FAM, FAS, AVW	
* * *	* * *	* * *	* * *
122.900 MHz	F, H, L, M, Q	MA, FAR, FAM, MOU, AVW	
* * *	* * *	* * *	* * *
122.950 MHz	G, L, Q	MA, FAU, MOU, AVW	Unicom at airports with control tower; Aeronautical utility stations.
122.975 MHz	G, L, Q	MA, FAU, MOU, AVW	Unicom at airports with no control tower; Aeronautical utility stations.
123.000 MHz	G, L, Q	MA, FAU, MOU, AVW	Unicom at airports with no control tower; Aeronautical utility stations.
123.025 MHz	F, Q	MA2, AVW	Helicopter air-to-air communications; Air traffic control operations.
123.050 MHz	G, L, Q	MA, FAU, MOU, AVW	Unicom at airports with no control tower; Aeronautical utility stations.
123.075 MHz	G, L, Q	MA, FAU, MOU, AVW	Unicom at airports with no control tower; Aeronautical utility stations.
* * *	* * *	* * *	* * *
123.300 MHz	K, Q	MA, FAS, AVW	
* * *	* * *	* * *	* * *
123.500 MHz	K, Q	MA, FAS, AVW	
* * *	* * *	* * *	* * *
128.825–132.000 MHz	I	MA, FAE	Domestic VHF.
131.450 MHz	I	DLT	
131.550 MHz	I	DLT	
131.725 MHz	I	DLT	
131.825 MHz	I	DLT	
* * *	* * *	* * *	* * *
136.500–136.875 MHz	I	MA, FAE	Domestic VHF; 25 kHz channel spacing.
136.850 MHz	I	DLT	
136.900 MHz	I	MA, FAE, DLT	International and Domestic VHF.
136.925 MHz	I	MA, FAE, DLT	International and Domestic VHF.
136.950 MHz	I	MA, FAE, DLT	International and Domestic VHF.
136.975 MHz	I	MA, FAE, DLT	International and Domestic VHF.
* * *	* * *	* * *	* * *
1030.000 MHz	Q	RLT	

1090.000 MHz	L	MOU, RLT	Vehicle Squitter.
* * * * *	* * * * *	* * * * *	* * * * *

9. A heading and new Sections 87.285 and 87.287 are added at the end of subpart I to read as follows:

AIRCRAFT DATA LINK LAND TEST STATIONS

§ 87.285 Scope of service.

The frequencies indicated in section 87.287 of this chapter may be used to test aircraft data link systems on a secondary basis to other licensed stations. Equipment must be designed so that it will engage in data link exchange only with the aircraft whose identification has been programmed into the device, and must comply with the applicable specifications for VDL Mode 2 operation set forth in the ICAO Manual on VHF Digital Link (VDL) Mode 2 and RTCA DO-281A, Minimum Operational Performance Standards for Aircraft VDL Mode 2 Physical, Link and Network Layer**,** November 8, 2005. These documents are incorporated by reference in accordance with 5 U.S.C. 552(a), and 1 CFR part 51. The RTCA document is available and may be obtained from RTCA, Inc., 1828 L Street, NW, Suite 805, Washington, DC 20036. The ICAO document is available and may be obtained from the ICAO, Customer Services Unit, 999 University Street, Montréal, Quebec H3C 5H7, Canada. The documents are available for inspection at Commission headquarters at 445 12th Street, SW, Washington, DC 20554. Copies may also be inspected at the Office of the Federal Register, 800 North Capitol Street NW, Suite 700, Washington, DC.

§ 87.287 Frequencies.

(a) The frequencies assignable to aircraft data link land test stations are 131.450 MHz, 131.550 MHz , 131.725 MHz , 131.825 MHz, 136.850 MHz, 136.900 MHz, 136.925 MHz, 136.950 MHz, and 136.975 MHz. Interstitial frequencies separated by 8.33 kilohertz from these frequencies may also be assigned.

(b) Before submitting an application for an aircraft data link land test station, an applicant must obtain written permission from the licensee of the aeronautical enroute stations serving the areas in which the aircraft data link land test station will operate on a co-channel basis. The Commission may request an applicant to provide documentation as to this fact.

10. Section 87.349 is amended by adding paragraphs (f) through (f)(5) to read as follows:

§ 87.349 Frequencies.

* * * * *

(f) The Commission will assign frequency 1090 MHz for use by aeronautical utility mobile stations for ground vehicle identification and collision avoidance after coordination with the FAA, subject to the following conditions:

(1) The applicant must notify the appropriate Regional Office of the FAA prior to submission to the Commission of an application for a new station or for modification of an existing station. Each

application must include the FAA Regional Office notified and date of notification.

(2) Eligibility is restricted to airport operators holding an FAA Airport Operating Certificate, and other entities approved by the FAA on a case-by-case basis to use frequency 1090 MHz for use by aeronautical utility mobile stations for ground vehicle identification and collision avoidance;

(3) No more than two hundred 1090 MHz aeronautical utility mobile stations will be authorized at one airport;

(4) Licenses are limited to only those locations that are within the vicinity of an FAA ASDE-X multilateration system or ADS-B equipment, and/or where the primary purpose for seeking transmit authorization is to provide surface data to aircraft and air traffic control authorities.

(5) Message transmission rates are limited as indicated in the table below:

ADS-B Message	Rate When Moving	Rate When Stationary
Surface Position Message (Types 5, 6, 7, 8)	Every 0.4 to 0.6 seconds	Every 4.8 to 5.2 seconds
Aircraft Operational Status (Type 31)	Every 4.8 to 5.2 seconds	Every 4.8 to 5.2 seconds
Aircraft Identification and Type (Type 2)	Every 4.8 to 5.2 seconds	Every 9.8 to 10.2 seconds

11. Section 87.475 is amended by redesignating paragraph (b)(9) as (b)(7) and paragraphs (b)(7) and (8) as (b)(8) and (9), adding new paragraphs (b)(10) through (b)(14), and revising paragraphs (c)(1) and (c)(2) to read as follows:

§ 87.475 Frequencies.

* * * * *

(b) * * *

(10) 2700-2900 MHz: Non-Government land-based radars may be licensed. U.S. Government coordination is required. Applicants must demonstrate a need for the service which the Government is not prepared to render.

(11) 5000-5250 MHz: This band is to be used for the operation of the international standard system (microwave landing system).

(12) 9000-9200 MHz: This band is available to land-based radars. Stations operating in this band may receive interference from stations operating in the radiolocation service.

(13) 15,400-15,700 MHz: This band is available for use of land stations associated with airborne electronic aids to air navigation.

(14) 24,250-25,250, 32,300-33,400 MHz: In these bands, land-based radionavigation aids are permitted where they operate with airborne radionavigation devices.

(c) *Frequencies available for radionavigation land test stations.* (1) The frequencies set forth in §§ 87.187(c), (e) through (j), (r), (t), and (ff); and 87.475(b)(6) through (b)(11) may be assigned to radionavigation land test stations for the testing of aircraft transmitting equipment that normally operate on these frequencies and for the testing of land-based receiving equipment that operate with airborne radionavigation equipment.

(2) The frequencies available for assignment to radionavigation land test stations for the testing of airborne receiving equipment are 108.000 and 108.050 MHz for VHF omni-range; 108.100 and 108.150 MHz for localizer; 334.550 and 334.700 MHz for glide slope; 978 and 979 MHz (X channel)/1104 MHz (Y channel) for DME; 978 MHz for Universal Access Transceiver; 1030 MHz for air

traffic control radar beacon transponders; 1090 MHz for Traffic Alert and Collision Avoidance Systems (TCAS); and 5031.0 MHz for microwave landing systems. Additionally, the frequencies in paragraph (b) of this section may be assigned to radionavigation land test stations after coordination with the FAA. The following conditions apply:

* * * * *

12. Section 87.483 is added under subpart Q to read as follows:

§ 87.483 Audio visual warning systems.

An audio visual warning system (AVWS) is a radar-based obstacle avoidance system. AVWS activates obstruction lighting and transmits VHF audible warnings to alert pilots of potential collisions with land-based obstructions. The AVWS operations are limited to locations where natural and man-made obstructions exist. The continuously operating radar calculates the location, direction and groundspeed of nearby aircraft that enter one of two warning zones reasonably established by the licensee. As aircraft enter the first warning zone, the AVWS activates obstruction lighting. If the aircraft continues toward the obstacle and enters the second warning zone, the VHF radio transmits an audible warning describing the obstacle.

(a) Radiodetermination (radar) frequencies. Frequencies authorized under § 87.475(b)(8) of this chapter are available for use by an AVWS. The frequency coordination requirements in § 87.475(a) of this chapter apply.

(b) VHF audible warning frequencies. Frequencies authorized under § 87.187(j), § 87.217(a), § 87.241(b), and § 87.323(b) (excluding 121.950 MHz) of this chapter are available for use by an AVWS. Multiple frequencies may be authorized for an individual station, depending on need and the use of frequencies assigned in the vicinity of a proposed AVWS facility. Use of these frequencies is subject to the following limitations:

(1) The output power shall not exceed -3 dBm watts for each frequency authorized.

(2) The antenna used in transmitting the audible warnings must be omnidirectional with a maximum gain equal to or lower than a half-wave centerfed dipole above 30 degrees elevation, and a maximum gain of +5 dBi from horizontal up to 30 degrees elevation.

(3) The audible warning shall not exceed two seconds in duration. No more than six audible warnings may be transmitted in a single transmit cycle, which shall not exceed 12 seconds in duration. An interval of at least twenty seconds must occur between transmit cycles.

APPENDIX B

Final Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] Initial Regulatory Flexibility Analyses (IRFAs) were incorporated in the *Notice of Proposed Rule Making* (*NPRM*) and *Further Notice of Proposed Rule Making* in this proceeding.[2] The Commission sought written public comment on the proposals in both proceedings, including comment on the IRFAs. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

A. Need for, and Objectives of, the Report and Order

The rules adopted in the *Report and Order* are intended to ensure that the Commission's Part 87 rules governing the Aviation Radio Service remain up to date and continue to further the Commission's goals of accommodating new technologies, facilitating the efficient and effective use of the aeronautical spectrum, avoiding unnecessary regulation, and, above all, enhancing the safety of flight. Specifically, we amend Part 87 of the Commission's Rules to allow use of the frequency 1090 MHz by aeronautical utility mobile stations for airport surface detection equipment, commonly referred to as vehicle "squitters," to help reduce collisions between aircraft and airport ground vehicles. In addition, we establish service rules for audio visual warning systems to help aircraft in flight avoid antenna structures and other obstacles. We also adopt rules to permit ground testing of aviation data link test systems.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

No comments were submitted specifically in response to the IRFAs. Nonetheless, we have considered the potential economic impact on small entities of the rules discussed in the IRFAs, and we have considered alternatives that would reduce the potential economic impact on small entities of the rules enacted herein.

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

The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities that may be affected by the rules adopted herein.[4] The RFA defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[5] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[6] A small business concern is one which:

---

[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601–612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] Amendment of the Commission's Rules Governing Certain Aviation Ground Station Equipment, *Notice of Proposed Rule Making*, WT Docket No. 10-61, 25 FCC Rcd 3355 (2010); Amendment of the Commission's Rules Governing Certain Aviation Ground Station Equipment, *Further Notice of Proposed Rule Making*, WT Docket No. 10-61, 26 FCC Rcd 2497 (2011).

[3] *See* 5 U.S.C. § 604.

[4] 5 U.S.C. § 604(a)(4).

[5] *Id.* § 601(6).

[6] *Id.* § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more (continued….)

(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).[7]

Small businesses in the aviation and marine radio services use a marine very high frequency (VHF), medium frequency (MF), or high frequency (HF) radio, any type of emergency position indicating radio beacon (EPIRB) and/or radar, an aircraft radio, and/or any type of emergency locator transmitter (ELT). The Commission has not developed a definition of small entities specifically applicable to these small businesses. For purposes of this analysis, the Commission uses the SBA small business size standard for the category Wireless Telecommunications Carriers (except satellite)," which is 1,500 or fewer employees.[8] Census data for 2007 shows that there were 1,383 firms in that category that operated for the entire year.[9] Of those 1,383, 1,368 had fewer than 1,000 employees, and 15 firms had 1,000 or more employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small.

Some of the rules adopted herein may also affect small businesses that manufacture aviation radio equipment. The Census Bureau does not have a category specific to aviation radio equipment manufacturers. The appropriate category is that for wireless communications equipment manufacturers. The Census Bureau defines this category as follows: "This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment."[10] The SBA has developed a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing, which is: all such firms having 750 or fewer employees.[11] According to Census bureau data for 2007, there were a total of 939 firms in this category that operated that year. Of this total, 912 had fewer than 500 employees and 27 had 500 or more employees.[12] Thus, under this size standard, the majority of firms can be considered small.

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

The rule changes adopted in the *Report and Order* require manufacturers to meet certain criteria and potential licensees to operate the equipment as prescribed in the Rules, including prior coordination with the FAA and ASRI. We believe the other final rules will have no significant effect on the compliance burdens of regulatees. The *Report and Order* requires data link test (DLT) system applicants to coordinate with the aeronautical enroute licensee for the frequencies on which the DLT applicant proposes to operate. This requirement affects small and large companies equally. The compliance requirement is no greater than the requirement to coordinate with the Federal Aviation Administration applications to operate analogous radionavigation land test system equipment, which the *NPRM* proposed

(Continued from previous page)
definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

[7] Small Business Act, 15 U.S.C. § 632 (1996).

[8] 13 C.F.R. § 121.201, NAICS code 517210.

[9] U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ5&prodType=table.

[10] http://www.census.gov/econ/industry/def/d33422.htm.

[11] 13 C.F.R. § 121.201 NAICS code 334220.

[12] *See* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk.

to extend to DLT applicants.

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

The RFA requires an agency to describe the steps it has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.[13]

We believe that the *Report and Order* does not impose any significant additional reporting, recordkeeping, or other compliance requirements on small entities. The rules adopted in the *Report and Order* authorize new ground station technologies that will promote the overriding issue of aviation safety. No commenter identified any less burdensome alternatives that would be consistent with the item's objectives and the Commission's goals and responsibilities.

F. Report to Congress

The Commission will send a copy of the *Report and Order* in WT Docket No. 10-61 and WT Docket 09-42, including the Final Regulatory Flexibility Analysis, to Congress pursuant to the Congressional Review Act.[14] In addition, the Commission will send a copy of the *Report and Order* in WT Docket No. 10-61 and 09-42, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the SBA. A copy of the *Report and Order* in WT Docket No. 10-61 and 09-42 and the Final Regulatory Flexibility Analysis (or summaries thereof) will also be published in the Federal Register.[15]

[13] 5 U.S.C. § 604(a)(6).

[14] *See* 5 U.S.C. § 801(a)(1)(A).

[15] *See id*. § 604(b).