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Defense Spectrum Organization

Joint Spectrum Center
Annapolis, Maryland 21402

Consulting Report

Coordination Distances for Low Observable Diagnostic Measurement Systems

DSO-CR-13-114

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Prepared for:

Air Force Life Cycle Management Center
Low Observable Supportability Office
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Wright-Patterson AFB, OH 45433-7148

Prime Contractor

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14. ABSTRACT

The Air Force Life Cycle Management Center Low Observable Supportability Office requested that the Joint Spectrum Center (JSC) support its effort to develop a process to obtain spectrum-certification support for Low Observable Diagnostic Measurement Systems (LODMS) operating within the 100 MHz to 18 GHz frequency range. Specifically, the JSC has been requested to calculate coordination trigger distances between LODMS and incumbent systems operating in the 50 MHz to 18.5 GHz frequency range. These coordination trigger distances will be included in a proposed coordination procedure for LODMS operations to be incorporated into the National Telecommunications and Information Administration's *Manual of Regulations and Procedures for Federal Radio Frequency Management*.

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EXECUTIVE SUMMARY

Historically, the Air Force (AF) has used visual inspections and point inspection tools to identify and to test for surface defects on Low Observable (LO) aircraft. To improve LO maintenance capabilities, the AF Life Cycle Management Center LO Supportability Office (LOSO) at Wright-Patterson Air Force Base (AFB), OH, has supported the development of LO Diagnostic Measurement Systems (LODMS) for the evaluation and maintenance of the LO properties of the Air Force aircraft. LODMS are designed for short-range diagnostic imaging while operating over a wide frequency range between 100 MHz and 18 GHz. The data for the Radio Frequency (RF) images are acquired by moving the LODMS around the target aircraft, while triggering RF sweeps and recording reflected RF signal levels for analysis.

To obtain certifications of spectrum support and frequency authorizations for LODMS, the National Telecommunications and Information Administration (NTIA) required an evaluation of the potential of the LODMS to interfere with incumbent spectrum users operating within the 50 MHz to 18.5 GHz frequency range. In response to this NTIA requirement, the AF LO Program Offices have performed various modeling and analysis tasks, including hangar attenuation measurements, emission measurements, and site analyses at a multitude of AFBs and hangars. These site analyses included an evaluation of electromagnetic compatibility between LODMS and specified communications-electronics equipment at fixed locations.

The LOSO and the Air Force Spectrum Management Office intend to leverage these previous measurements and analyses to develop a standard national coordination procedure to be used in the frequency authorization process for LODMS. To support this effort, the LOSO requested that the Joint Spectrum Center (JSC) determine a set of coordination trigger distances between LODMS and selected incumbent systems operating in the 50 MHz to 18.5 GHz frequency range.

The JSC calculated the LO coordination trigger distances and developed a proposed coordination procedure to be used in a national frequency authorization process for LODMS.

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Table of Contents

List of Tables

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1. INTRODUCTION

This publication provides a standardized procedure to obtain frequency authorizations to operate Low Observable Diagnostic Measurement Systems (LODMS).

1.1 BACKGROUND

The Air Force Life Cycle Management Center Low Observable Supportability Office has supported the development of LODMS to identify surface defects on Low Observable (LO) aircraft and to verify LO surface repairs. LODMS are designed for short- range diagnostic imaging operating over a wide frequency range between 100 MHz and 18 GHz. The data for the Radio Frequency (RF) images are acquired by moving the LODMS around the target of interest while triggering RF data sweeps across the operating frequency range and recording reflected RF signal levels for analysis.

To obtain certification of spectrum support, the National Telecommunications and Information Administration (NTIA) has required each LODMS be evaluated for its potential to interfere with incumbent spectrum users operating within the 50 MHz to 18.5 GHz frequency range.

In response to the NTIA requirement, the DoD performed various modeling and analysis tasks including hangar attenuation measurements, emission measurements, and Electromagnetic Compatibility (EMC) site analyses at a multitude of Air Force bases and aircraft maintenance hangars. The EMC between LODMS and specified communications electronics equipment operating in the Electromagnetic Environment (EME) was evaluated. Leveraging the results of these analyses, a spectrum coordination procedure was developed for LODMS.

1.2 OBJECTIVE

The objective was to calculate coordination trigger distances between LODMS and incumbent communication systems operating in the 50 MHz to 18.5 GHz frequency range. These trigger distances are contained in a proposed coordination procedure to be used in the national frequency authorization processes to operate LODMS.

1.3 SPECTRUM COORDINATION PROCEDURE

This procedure consists of three steps.

1. LODMS Qualification

The federal agency requesting LODMS frequency authorization at a proposed location must ensure that the LODMS is authorized to utilize this procedure by showing compliance with the following conditions:

- The LODMS transmitter must emit a narrowband RF signal that sweeps through a wide frequency range within 100 MHz – 18 GHz.
- The LODMS must be a terrestrial system and the target of interest must be on the ground during LODMS operations.

- When operating, the LODMS transmit antenna height must be equal to or less than 6.1 meters (20 feet) above ground level.
- The Equivalent Isotropic Radiated Power (EIRP) including the duty-cycle factor of the LODMS ($EIRP_{AVG}$) must be equal to or less than the maximum $EIRP_{AVG}$ values listed in Table 1-1 for the frequency ranges shown.

Table 1-1. LODMS Maximum $EIRP_{AVG}$

Frequency (GHz)	LODMS Maximum $EIRP_{AVG}$ (dBm)	Frequency (GHz)	LODMS Maximum $EIRP_{AVG}$ (dBm)
0.05 – 0.2	2.8	4.5 – 6.0	15.4
0.2 – 0.5	4.3	6.0 – 8.0	17.4
0.5 – 1.0	7.3	8.0 – 10.0	18.4
1.0 – 1.5	9.3	10.0 – 12.0	17.4
1.5 – 2.0	6.3	12.0 – 14.0	21.4
2.0 – 2.5	13.4	14.0 – 16.0	18.4
2.5 – 3.0	14.4	16.0 – 18.0	21.4
3.0 – 4.5	14.4	18.0 – 18.5	17.4

If a LODMS does not comply with these conditions, then the requesting agency should contact its local spectrum management office.

2. Identify Incumbent Systems Potentially Affected by the LODMS

   The federal agency requesting LODMS frequency authorization performs an EME database query of incumbent receiver systems operating in the LODMS operational frequency range within 58 km (the largest calculated LO coordination trigger distance) of the proposed LODMS operating location. At a minimum, and for each incumbent system receiver, the EME database query results must include the geographic coordinates, operating frequencies, and station classes.

3. Compare the Calculated Distance

   The federal agency requesting LODMS frequency authorization compares the calculated distance between the LODMS proposed location and each incumbent receiver to the applicable LO coordination trigger distance. The distance is calculated between the proposed location of the LODMS and each incumbent system receiver included in the EME database query.

   For each incumbent system included in the EME database query results, the calculated distance is compared to the applicable LO coordination trigger distance listed in

Table 1-2. The station classes listed in Table 1-2 are defined in the NTIA *Manual of Regulations and Procedures for Federal Radio Frequency Management* [1].

The applicable LO coordination trigger distance is determined by the incumbent system device, station class, frequency of operation, and LODMS operational parameters or usage conditions. LODMS operational parameters or usage conditions may warrant the use of a trigger distance for an environmental attenuation greater than zero.

LODMS operational parameters or usage conditions warranting the use of an attenuation value greater than zero include, but are not limited to, operating inside a hangar, operating inside a hangar with an RF attenuation curtain surrounding the LODMS or using a LODMS with an $EIRP_{AVG}$ that is less than the maximum $EIRP_{AVG}$ used in the calculations. If the requesting agency utilizes LO coordination trigger distances calculated with an attenuated $EIRP_{AVG}$, then the requesting agency shall provide an explanation of the operational parameters or usage conditions warranting the applied attenuation.

3a. If the calculated distance is greater than the applicable LO coordination trigger distance, then the LODMS will be deemed compatible with the incumbent system(s) and no further coordination is required.

3b. If the calculated distance is less than the applicable LO coordination trigger distance, then the federal agency requesting spectrum authorization shall pursue one or more of the following Radio Frequency Interference (RFI) mitigation or coordination tasks:

- Perform a detailed RFI analysis to quantify the potential RFI to the incumbent receiver and identify actions that are proposed to mitigate the potential RFI.
- Perform RFI measurements to quantify the potential RFI to the incumbent receiver and identify actions that are proposed to mitigate the potential RFI.
- Coordinate proposed LODMS usage with the affected agencies or parties.

For each incumbent system operating within the applicable LO coordination trigger distance, the federal agency's request for frequency authorization shall include supporting documentation describing the coordination efforts and RFI mitigation techniques.

Table 1-2. LO Coordination Trigger Distances

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		0 dB		6 dB		12 dB		18 dB		24 dB	
				(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
AL	960	1215	9.3	9.94	5.37	6.60	3.56	4.42	2.39	2.98	1.61	1.54	0.83
AL	2700	3700	14.4	18.46	9.97	9.26	5.00	4.64	2.51	2.34	1.26	1.18	0.64
AL	8500	10550	17.4	3.58	1.93	1.80	0.97	0.90	0.48	0.45	0.24	0.23	0.12
ALA	75	75	2.8	17.34	9.36	12.67	6.84	9.26	5.00	6.76	3.65	4.94	2.67
ALB	225	400	4.3	17.34	9.36	12.02	6.49	7.76	4.19	5.02	2.71	3.28	1.77
ALB	8500	10550	17.4	6.62	3.57	3.32	1.79	1.68	0.91	0.83	0.45	0.42	0.23

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
ALG	225	400	4.3	3.52	1.90	2.32	1.25	1.54	0.83	1.02	0.55	0.68	0.37
ALG	960	1215	9.3	8.66	4.68	5.76	3.11	3.84	2.07	2.58	1.39	1.42	0.77
ALG	5000	5250	15.4	19.42	10.49	12.94	6.99	6.50	3.51	3.26	1.76	1.64	0.89
ALG	15400	17300	21.4	14.44	7.80	7.24	3.91	3.64	1.97	1.82	0.98	0.91	0.49
ALL	108	137	2.8	19.28	10.41	15.40	8.31	12.29	6.64	9.82	5.30	7.84	4.23
ALL	5000	5250	15.4	19.42	10.49	12.76	6.89	8.38	4.53	5.51	2.97	3.62	1.95
ALO	108	137	2.8	13.56	7.32	8.68	4.69	5.56	3.00	3.58	1.93	2.32	1.25
ALO	960	1215	9.3	13.06	7.05	8.68	4.69	5.82	3.14	3.86	2.08	1.94	1.05
ALS	1215	1400	9.3	13.60	7.34	9.08	4.90	6.10	3.29	3.42	1.85	1.72	0.93
ALS	2700	3700	14.4	23.64	12.76	11.86	6.40	5.94	3.21	2.98	1.61	1.50	0.81
ALS	8500	10550	17.4	3.18	1.72	1.59	0.86	0.80	0.43	0.40	0.22	0.20	0.11
ALTM	75	75	2.8	17.34	9.36	12.72	6.87	9.33	5.04	6.84	3.70	5.02	2.71
ALTM	108	137	2.8	11.72	6.33	7.50	4.05	4.82	2.60	3.10	1.67	2.02	1.09
ALTM	225	400	4.3	20.42	11.03	16.80	9.07	13.83	7.46	11.38	6.14	9.36	5.05
ALTM	960	1215	9.3	5.00	2.70	3.34	1.80	2.24	1.21	1.38	0.75	0.69	0.37
ALTM	2700	3700	14.4	28.58	15.43	26.41	14.26	24.41	13.18	22.55	12.18	20.84	11.25
ALTM	4200	4400	14.4	27.02	14.59	21.61	11.67	17.29	9.33	13.83	7.47	11.06	5.97
ALTM	5250	5925	15.4	27.20	14.69	22.04	11.90	17.85	9.64	14.47	7.81	11.72	6.33
ALTM	8500	10550	17.4	2.08	1.12	1.04	0.56	0.52	0.28	0.26	0.14	0.13	0.07
ALTM	15400	17300	21.4	8.34	4.50	4.18	2.26	2.10	1.13	1.06	0.57	0.53	0.28
ALTO	108	137	2.8	10.90	5.89	6.98	3.77	4.48	2.42	2.90	1.57	1.88	1.02
ALTO	960	1215	9.3	13.46	7.27	8.96	4.84	6.02	3.25	3.56	1.92	1.78	0.96
ALTO	13250	14000	21.4	3.72	2.01	1.86	1.00	0.93	0.50	0.47	0.25	0.24	0.13
AM	908	928	7.3	11.36	6.13	7.44	4.02	4.90	2.65	3.24	1.75	2.16	1.17
AM	960	1215	9.3	12.72	6.87	8.34	4.50	5.52	2.98	3.66	1.98	2.44	1.32
AM	8500	10550	17.4	9.84	5.31	4.94	2.67	2.48	1.34	1.24	0.67	0.62	0.33
AMA	1610	1661	6.3	12.20	6.59	8.16	4.41	5.28	2.85	2.64	1.43	1.34	0.72
AMA	4200	4400	14.4	3.98	2.15	2.00	1.08	1.00	0.54	0.50	0.27	0.25	0.14
AMA	4400	4990	15.4	2.22	1.20	1.11	0.60	0.56	0.30	0.28	0.15	0.14	0.08
BC	75	108	2.8	13.48	7.28	8.60	4.64	5.52	2.98	3.54	1.91	2.28	1.23
BC	108	137	2.8	14.08	7.60	9.00	4.86	5.78	3.12	3.72	2.01	2.40	1.30
BC	174	216	4.3	13.32	7.19	8.54	4.61	5.50	2.97	3.56	1.92	2.32	1.25
BC	470	908	7.3	17.44	9.42	11.36	6.13	7.44	4.02	4.90	2.65	3.24	1.75
BT	50	75	2.8	5.48	2.96	3.52	1.90	2.26	1.22	1.46	0.79	0.94	0.51
BT	75	108	2.8	6.54	3.53	4.20	2.27	2.70	1.46	1.76	0.95	1.14	0.62
BT	156	174	2.8	8.02	4.33	5.16	2.79	3.32	1.79	2.16	1.17	1.40	0.76
BT	174	216	4.3	7.00	3.78	4.52	2.44	2.92	1.58	1.90	1.03	1.24	0.67
BT	470	908	7.3	9.80	5.29	6.42	3.47	4.24	2.29	2.82	1.52	1.88	1.02
DGP	108	137	2.8	6.84	3.69	4.40	2.38	2.84	1.53	1.84	0.99	1.20	0.65
DGP	156	174	2.8	17.34	9.36	11.76	6.35	7.54	4.07	4.86	2.62	3.14	1.70
EH	150	156	2.8	4.16	2.25	2.68	1.45	1.74	0.94	1.14	0.62	0.74	0.40
EH	225	400	4.3	4.04	2.18	2.66	1.44	1.78	0.96	1.20	0.65	0.79	0.43

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
EH	2200	2300	13.4	6.52	3.52	3.26	1.76	1.64	0.89	0.82	0.44	0.41	0.22
EH	13250	14000	21.4	1.90	1.03	0.95	0.51	0.48	0.26	0.24	0.13	0.12	0.06
EI	15400	17300	21.4	20.08	10.84	10.08	5.44	5.06	2.73	2.54	1.37	1.28	0.69
EJ	225	400	4.3	37.06	20.01	30.76	16.61	25.52	13.78	21.18	11.44	17.58	9.49
EM	137	138	2.8	57.58	31.09	46.72	25.23	37.08	20.02	34.82	18.80	22.54	12.17
EM	225	400	4.3	7.24	3.91	4.80	2.59	3.20	1.73	2.14	1.16	1.34	0.72
EM	450	470	4.3	19.36	10.45	12.74	6.88	8.44	4.56	5.62	3.03	3.76	2.03
EM	600	700	7.3	12.96	7.00	8.58	4.63	5.72	3.09	3.84	2.07	2.44	1.32
EM	1400	1427	9.3	11.34	6.12	7.60	4.10	4.74	2.56	2.38	1.29	1.20	0.65
EM	1661	1710	6.3	3.18	1.72	2.12	1.14	1.42	0.77	0.81	0.43	0.40	0.22
EM	2200	2300	13.4	17.48	9.44	8.76	4.73	4.40	2.38	2.20	1.19	1.12	0.60
EM	2500	2700	14.4	11.72	6.33	5.88	3.17	2.96	1.60	1.48	0.80	0.74	0.40
EM	4400	4990	15.4	2.60	1.40	1.30	0.70	0.65	0.35	0.33	0.18	0.16	0.09
EM	8500	10550	17.4	1.42	0.77	0.71	0.38	0.36	0.19	0.18	0.10	0.09	0.05
EM	15400	17300	21.4	2.90	1.57	1.45	0.78	0.73	0.39	0.37	0.20	0.18	0.10
ET	225	400	4.3	18.44	9.96	11.90	6.43	7.72	4.17	5.02	2.71	3.30	1.78
ET	400	406	4.3	31.64	17.08	30.40	16.41	26.72	14.43	17.48	9.44	11.48	6.20
ET	2200	2300	13.4	19.90	10.75	9.98	5.39	5.00	2.70	2.52	1.36	1.26	0.68
EU	225	400	4.3	16.02	8.65	11.18	6.04	7.20	3.89	4.64	2.51	3.02	1.63
EU	7125	8500	18.4	2.62	1.41	1.31	0.71	0.66	0.36	0.33	0.18	0.17	0.09
FA	108	137	2.8	34.94	18.87	27.06	14.61	17.56	9.48	11.46	6.19	7.50	4.05
FA	138	150	2.8	17.26	9.32	11.04	5.96	7.08	3.82	4.54	2.45	2.94	1.59
FA	150	156	2.8	16.94	9.15	10.84	5.85	6.94	3.75	4.46	2.41	2.88	1.56
FA	156	174	2.8	16.78	9.06	11.04	5.96	7.32	3.95	4.88	2.64	3.26	1.76
FA	225	400	4.3	24.18	13.06	15.78	8.52	10.36	5.59	6.84	3.69	4.54	2.45
FA	406	420	4.3	34.24	18.49	28.30	15.28	18.58	10.03	12.28	6.63	8.16	4.41
FA	908	928	7.3	5.00	2.70	3.24	1.75	2.12	1.14	1.40	0.76	0.91	0.49
FA	960	1215	9.3	12.52	6.76	7.02	3.79	3.52	1.90	1.78	0.96	0.88	0.48
FA	1215	1400	9.3	2.80	1.51	1.88	1.02	1.04	0.56	0.52	0.28	0.26	0.14
FA	1427	1435	9.3	3.54	1.91	2.38	1.29	1.54	0.83	0.77	0.41	0.38	0.21
FA	1435	1525	6.3	1.90	1.03	0.95	0.51	0.48	0.26	0.24	0.13	0.12	0.06
FA	1710	1850	6.3	2.42	1.31	1.21	0.65	0.61	0.33	0.30	0.16	0.15	0.08
FA	2200	2300	13.4	3.42	1.85	1.72	0.93	0.86	0.46	0.43	0.23	0.22	0.12
FA	2400	2500	13.4	7.34	3.96	3.68	1.99	1.86	1.00	0.92	0.50	0.46	0.25
FA	4400	4990	15.4	2.12	1.14	1.06	0.57	0.53	0.29	0.27	0.14	0.13	0.07
FA	8500	10550	17.4	2.72	1.47	1.36	0.74	0.68	0.37	0.34	0.19	0.17	0.09
FA	14400	15350	18.4	0.86	0.46	0.43	0.23	0.22	0.12	0.11	0.06	0.06	0.03
FAB	108	137	2.8	17.32	9.35	11.06	5.97	7.08	3.82	4.56	2.46	2.94	1.59
FAB	137	138	2.8	17.34	9.36	16.02	8.65	10.24	5.53	6.56	3.54	4.22	2.28
FAB	138	150	2.8	16.84	9.09	10.76	5.81	6.90	3.73	4.44	2.40	2.86	1.54
FAB	225	400	4.3	18.34	9.90	11.84	6.39	7.68	4.15	5.00	2.70	3.28	1.77
FAB	406	420	4.3	17.94	9.69	11.68	6.31	7.64	4.13	5.02	2.71	3.32	1.79

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
FAB	1215	1400	9.3	19.42	10.49	16.22	8.76	13.54	7.31	11.31	6.10	9.44	5.10
FAC	108	137	2.8	17.34	9.36	11.92	6.44	7.62	4.11	4.90	2.65	3.16	1.71
FAC	138	150	2.8	17.34	9.36	11.60	6.26	7.44	4.02	4.78	2.58	3.08	1.66
FAC	225	400	4.3	29.08	15.70	20.30	10.96	13.30	7.18	8.76	4.73	5.80	3.13
FAD	138	150	2.8	16.84	9.09	10.76	5.81	6.90	3.73	4.44	2.40	2.86	1.54
FAD	225	400	4.3	15.10	8.15	9.76	5.27	6.34	3.42	4.14	2.24	2.72	1.47
FAD	406	420	4.3	9.78	5.28	6.36	3.43	4.16	2.25	2.74	1.48	1.80	0.97
FAD	420	450	4.3	6.88	3.71	4.50	2.43	2.96	1.60	1.96	1.06	1.30	0.70
FAD	908	928	7.3	10.08	5.44	6.26	3.38	3.14	1.70	1.58	0.85	0.79	0.42
FAD	1215	1400	9.3	3.96	2.14	2.64	1.43	1.78	0.96	0.95	0.51	0.47	0.26
FAD	2200	2300	13.4	17.34	9.36	12.72	6.87	6.38	3.44	3.20	1.73	1.60	0.86
FAD	2400	2500	13.4	26.16	14.13	13.16	7.11	6.60	3.56	3.32	1.79	1.66	0.90
FAD	5250	5925	15.4	26.16	14.13	20.28	10.95	10.16	5.49	5.10	2.75	2.56	1.38
FAD	8500	10550	17.4	3.26	1.76	1.64	0.89	0.82	0.44	0.41	0.22	0.21	0.11
FAD	14400	15350	18.4	2.24	1.21	1.12	0.61	0.56	0.30	0.28	0.15	0.14	0.08
FAT	108	137	2.8	17.34	9.36	12.22	6.60	7.82	4.22	5.02	2.71	3.24	1.75
FAT	138	150	2.8	16.84	9.09	10.76	5.81	6.90	3.73	4.44	2.40	2.86	1.54
FAT	225	400	4.3	16.12	8.70	10.42	5.63	6.76	3.65	4.42	2.39	2.90	1.57
FAT	420	450	4.3	16.24	8.77	10.50	5.67	6.84	3.69	4.46	2.41	2.94	1.59
FAT	2300	2400	13.4	30.26	16.34	29.18	15.76	28.14	15.19	27.13	14.65	26.16	14.13
FB	30	50	2.8	33.32	17.99	21.38	11.54	13.76	7.43	8.90	4.81	5.78	3.12
FB	75	75	2.8	17.34	9.36	14.70	7.94	9.36	5.05	5.98	3.23	3.84	2.07
FB	108	137	2.8	16.06	8.67	10.26	5.54	6.58	3.55	4.22	2.28	2.74	1.48
FB	138	150	2.8	26.46	14.29	17.06	9.21	11.04	5.96	7.18	3.88	4.70	2.54
FB	150	156	2.8	26.68	14.41	17.24	9.31	11.20	6.05	7.30	3.94	4.78	2.58
FB	156	174	2.8	8.38	4.52	5.60	3.02	3.76	2.03	2.04	1.10	1.04	0.56
FB	216	222	4.3	54.52	29.44	44.00	23.76	36.60	19.76	34.92	18.86	22.74	12.28
FB	225	400	4.3	16.64	8.98	10.86	5.86	7.14	3.86	4.70	2.54	3.12	1.68
FB	406	420	4.3	4.12	2.22	2.78	1.50	1.40	0.76	0.70	0.38	0.35	0.19
FB	420	450	4.3	1.84	0.99	1.22	0.66	0.81	0.44	0.55	0.30	0.28	0.15
FB	450	470	4.3	29.10	15.71	19.10	10.31	12.62	6.81	8.38	4.52	5.60	3.02
FB	470	908	7.3	19.42	10.49	14.18	7.66	10.35	5.59	7.56	4.08	5.52	2.98
FB	908	928	7.3	6.44	3.48	4.32	2.33	2.80	1.51	1.42	0.77	0.70	0.38
FB	928	960	7.3	19.42	10.49	19.10	10.31	12.44	6.72	8.14	4.40	5.36	2.89
FB	960	1215	9.3	7.62	4.11	4.28	2.31	2.16	1.17	1.08	0.58	0.54	0.29
FB	1610	1661	6.3	40.90	22.08	36.58	19.75	32.71	17.66	29.25	15.80	26.16	14.13
FB	1710	1850	6.3	9.18	4.96	5.96	3.22	3.00	1.62	1.50	0.81	0.75	0.40
FB	1850	2025	13.4	29.74	16.06	28.80	15.55	27.89	15.06	27.01	14.59	26.16	14.13
FB	2400	2500	13.4	5.78	3.12	2.90	1.57	1.46	0.79	0.73	0.39	0.36	0.20
FB	2700	3700	14.4	28.30	15.28	25.62	13.84	23.20	12.53	21.01	11.34	19.02	10.27
FB	5000	5250	15.4	1.80	0.97	0.90	0.49	0.45	0.24	0.23	0.12	0.11	0.06
FB	5250	5925	15.4	18.56	10.02	9.30	5.02	4.66	2.52	2.34	1.26	1.18	0.64

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
FBD	75	75	2.8	28.28	15.27	24.48	13.22	16.94	9.15	10.88	5.87	7.00	3.78
FBD	150	156	2.8	40.78	22.02	26.58	14.35	17.34	9.36	11.40	6.16	7.52	4.06
FBD	156	174	2.8	10.60	5.72	6.80	3.67	4.38	2.37	2.84	1.53	1.84	0.99
FBD	406	420	4.3	17.40	9.40	11.24	6.07	7.30	3.94	4.76	2.57	3.12	1.68
FC	138	150	2.8	47.76	25.79	44.44	24.00	30.86	16.66	20.16	10.89	13.24	7.15
FC	150	156	2.8	16.68	9.01	10.66	5.76	6.84	3.69	4.40	2.38	2.84	1.53
FC	156	174	2.8	37.54	20.27	25.52	13.78	16.66	9.00	10.92	5.90	7.20	3.89
FC	216	222	4.3	9.14	4.94	5.88	3.17	3.80	2.05	2.46	1.33	1.62	0.87
FC	225	400	4.3	26.16	14.13	17.84	9.63	11.66	6.30	7.66	4.14	5.06	2.73
FC	406	420	4.3	19.42	10.49	15.38	8.30	9.96	5.38	6.48	3.50	4.22	2.28
FC	2400	2500	13.4	5.36	2.89	2.68	1.45	1.36	0.73	0.67	0.36	0.34	0.18
FC	8500	10550	17.4	32.54	17.57	29.80	16.09	27.66	14.94	26.40	14.25	26.16	14.13
FC	14400	15350	18.4	2.34	1.26	1.17	0.63	0.59	0.32	0.29	0.16	0.15	0.08
FC	15400	17300	21.4	32.02	17.29	29.58	15.97	27.62	14.91	26.40	14.25	26.16	14.13
FCB	156	174	2.8	17.34	9.36	14.66	7.92	9.40	5.08	6.04	3.26	3.88	2.10
FD	225	400	4.3	19.42	10.49	14.08	7.60	10.20	5.51	7.39	3.99	5.36	2.89
FL	30	50	2.8	24.24	13.09	18.08	9.76	17.34	9.36	12.00	6.48	7.64	4.13
FL	50	75	2.8	11.24	6.07	7.18	3.88	4.60	2.48	2.94	1.59	1.90	1.03
FL	138	150	2.8	37.12	20.04	24.20	13.07	15.86	8.56	10.44	5.64	6.92	3.74
FL	150	156	2.8	17.34	9.36	12.70	6.86	8.12	4.38	5.22	2.82	3.36	1.81
FL	156	174	2.8	30.40	16.41	20.34	10.98	13.22	7.14	8.62	4.65	5.66	3.06
FL	225	400	4.3	14.00	7.56	9.06	4.89	5.90	3.19	3.86	2.08	2.54	1.37
FL	406	420	4.3	37.46	20.23	24.62	13.29	16.30	8.80	10.84	5.85	7.26	3.92
FL	410	450	4.3	10.58	5.71	6.88	3.71	4.50	2.43	2.96	1.60	1.96	1.06
FL	450	470	4.3	48.42	26.14	37.04	20.00	28.33	15.30	21.67	11.70	16.58	8.95
FL	908	928	7.3	5.86	3.16	3.88	2.10	2.58	1.39	1.72	0.93	1.16	0.63
FL	960	1215	9.3	9.94	5.37	6.06	3.27	3.04	1.64	1.52	0.82	0.76	0.41
FL	1710	1850	6.3	4.62	2.49	3.10	1.67	2.04	1.10	1.02	0.55	0.51	0.27
FL	2200	2300	13.4	24.72	13.35	12.40	6.70	6.22	3.36	3.12	1.68	1.56	0.84
FL	2400	2500	13.4	4.10	2.21	2.06	1.11	1.04	0.56	0.52	0.28	0.26	0.14
FL	5250	5925	15.4	8.94	4.83	4.48	2.42	2.26	1.22	1.14	0.62	0.56	0.30
FL	7125	8500	18.4	2.64	1.43	1.32	0.71	0.66	0.36	0.33	0.18	0.17	0.09
FL	14400	15350	18.4	5.80	3.13	2.90	1.57	1.46	0.79	0.73	0.39	0.37	0.20
FLD	138	150	2.8	17.34	9.36	13.84	7.47	8.86	4.78	5.68	3.07	3.66	1.98
FLD	150	156	2.8	17.34	9.36	12.34	6.66	7.90	4.27	5.08	2.74	3.28	1.77
FLD	225	400	4.3	14.98	8.09	9.68	5.23	6.30	3.40	4.12	2.22	2.70	1.46
FLD	406	420	4.3	15.22	8.22	9.84	5.31	6.40	3.46	4.18	2.26	2.74	1.48
FLD	420	450	4.3	6.64	3.59	4.34	2.34	2.86	1.54	1.88	1.02	1.26	0.68
FLD	1215	1400	9.3	7.24	3.91	4.80	2.59	3.20	1.73	2.14	1.16	1.32	0.71
FLD	1710	1850	6.3	5.22	2.82	2.62	1.41	1.32	0.71	0.66	0.35	0.33	0.18
FLD	2200	2300	13.4	24.98	13.49	12.52	6.76	6.28	3.39	3.16	1.71	1.58	0.85
FLD	2400	2500	13.4	2.70	1.46	1.35	0.73	0.68	0.37	0.34	0.18	0.17	0.09

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
FLD	4400	4990	15.4	6.32	3.41	3.18	1.72	1.60	0.86	0.79	0.43	0.40	0.21
FLD	5250	5925	15.4	3.78	2.04	1.90	1.03	0.95	0.51	0.47	0.26	0.24	0.13
FLD	8500	10550	17.4	3.00	1.62	1.50	0.81	0.75	0.41	0.38	0.20	0.19	0.10
FLE	150	156	2.8	10.66	5.76	6.84	3.69	4.40	2.38	2.84	1.53	1.84	0.99
FLE	156	174	2.8	17.34	9.36	16.56	8.94	10.60	5.72	6.80	3.67	4.38	2.37
FLE	406	420	4.3	23.24	12.55	16.64	8.98	10.84	5.85	7.10	3.83	4.68	2.53
FLE	420	450	4.3	9.68	5.23	6.44	3.48	4.32	2.33	2.74	1.48	1.38	0.75
FLEA	225	400	4.3	11.66	6.30	7.56	4.08	4.92	2.66	3.22	1.74	2.12	1.14
FLEA	2200	2300	13.4	9.48	5.12	4.76	2.57	2.38	1.29	1.20	0.65	0.60	0.32
FLEA	2300	2400	13.4	3.38	1.83	1.70	0.92	0.85	0.46	0.43	0.23	0.21	0.12
FLEA	5250	5925	15.4	26.16	14.13	15.42	8.33	7.74	4.18	3.88	2.10	1.96	1.06
FLEB	225	400	4.3	10.14	5.48	6.58	3.55	4.30	2.32	2.82	1.52	1.86	1.00
FLEB	1710	1850	6.3	3.26	1.76	1.64	0.89	0.82	0.44	0.41	0.22	0.21	0.11
FLEB	2200	2300	13.4	11.10	5.99	5.56	3.00	2.80	1.51	1.40	0.76	0.70	0.38
FLEB	2300	2400	13.4	3.38	1.83	1.70	0.92	0.85	0.46	0.43	0.23	0.21	0.12
FLEB	4400	4990	15.4	1.80	0.97	0.90	0.49	0.45	0.24	0.23	0.12	0.11	0.06
FLEB	14400	15350	18.4	0.46	0.25	0.23	0.12	0.12	0.06	0.06	0.03	0.03	0.02
FLEC	156	174	2.8	17.34	9.36	15.80	8.53	10.12	5.46	6.50	3.51	4.18	2.26
FLEC	216	222	4.3	11.18	6.04	7.18	3.88	4.64	2.51	3.00	1.62	1.96	1.06
FLEC	1427	1435	9.3	12.24	6.61	8.06	4.35	5.34	2.88	3.54	1.91	2.38	1.29
FLEC	1710	1850	6.3	9.48	5.12	4.76	2.57	2.38	1.29	1.20	0.65	0.60	0.32
FLEC	2200	2300	13.4	7.72	4.17	3.88	2.10	1.94	1.05	0.97	0.52	0.49	0.26
FLEC	7125	8500	18.4	1.60	0.86	0.80	0.43	0.40	0.22	0.20	0.11	0.10	0.05
FLEC	14400	15350	18.4	0.86	0.47	0.43	0.23	0.22	0.12	0.11	0.06	0.06	0.03
FLH	156	174	2.8	17.34	9.36	16.56	8.94	10.60	5.72	6.80	3.67	4.38	2.37
FLU	108	137	2.8	12.74	6.88	8.36	4.51	5.52	2.98	3.66	1.98	2.44	1.32
FLU	225	400	4.3	7.12	3.84	4.74	2.56	3.16	1.71	2.14	1.16	1.14	0.62
FX	30	50	2.8	7.08	3.82	4.52	2.44	2.90	1.57	1.86	1.00	1.20	0.65
FX	50	75	2.8	6.46	3.49	4.20	2.27	2.74	1.48	1.80	0.97	1.18	0.64
FX	75	75	2.8	42.26	22.82	34.94	18.87	23.30	12.58	15.04	8.12	9.76	5.27
FX	138	150	2.8	27.30	14.74	17.66	9.54	11.48	6.20	7.50	4.05	4.94	2.67
FX	150	156	2.8	15.64	8.44	10.22	5.52	6.70	3.62	4.42	2.39	2.94	1.59
FX	156	174	2.8	37.02	19.99	24.04	12.98	15.70	8.48	10.30	5.56	6.80	3.67
FX	216	222	4.3	51.22	27.66	42.14	22.75	41.88	22.61	27.34	14.76	17.94	9.69
FX	225	400	4.3	25.16	13.59	16.58	8.95	10.98	5.93	7.32	3.95	4.92	2.66
FX	406	420	4.3	34.94	18.87	26.03	14.05	19.39	10.47	14.44	7.80	10.76	5.81
FX	420	450	4.3	16.30	8.80	10.70	5.78	7.08	3.82	4.70	2.54	3.14	1.70
FX	450	470	4.3	30.40	16.41	21.70	11.72	14.26	7.70	9.42	5.09	6.26	3.38
FX	470	908	7.3	4.80	2.59	3.18	1.72	2.12	1.14	1.42	0.77	0.88	0.48
FX	908	928	7.3	16.62	8.97	11.02	5.95	7.36	3.97	4.94	2.67	2.84	1.53
FX	928	960	7.3	27.46	14.83	22.42	12.11	18.30	9.88	14.94	8.07	12.20	6.59
FX	960	1215	9.3	10.48	5.66	7.02	3.79	4.28	2.31	2.16	1.17	1.08	0.58

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
FX	1215	1400	9.3	21.04	11.36	14.00	7.56	9.38	5.06	5.94	3.21	2.98	1.61
FX	1427	1435	9.3	12.08	6.52	7.96	4.30	5.26	2.84	3.50	1.89	2.36	1.27
FX	1435	1525	6.3	16.24	8.77	10.92	5.90	5.58	3.01	2.80	1.51	1.40	0.76
FX	1661	1710	6.3	22.88	12.35	15.34	8.28	9.24	4.99	4.64	2.51	2.32	1.25
FX	1710	1850	6.3	17.80	9.61	11.30	6.10	5.66	3.06	2.84	1.53	1.44	0.78
FX	2025	2110	13.4	12.20	6.59	6.12	3.30	3.08	1.66	1.54	0.83	0.77	0.42
FX	2110	2200	13.4	50.52	27.28	36.81	19.88	26.82	14.48	19.54	10.55	14.24	7.69
FX	2200	2300	13.4	31.62	17.07	16.50	8.91	8.28	4.47	4.16	2.25	2.08	1.12
FX	2300	2400	13.4	16.44	8.88	8.24	4.45	4.14	2.24	2.08	1.12	1.04	0.56
FX	2400	2500	13.4	13.30	7.18	6.68	3.61	3.34	1.80	1.68	0.91	0.84	0.45
FX	4400	4990	15.4	10.36	5.59	5.20	2.81	2.62	1.41	1.32	0.71	0.65	0.35
FX	5000	5250	15.4	5.06	2.73	2.54	1.37	1.28	0.69	0.64	0.34	0.32	0.17
FX	5250	5925	15.4	8.44	4.56	4.24	2.29	2.12	1.14	1.08	0.58	0.53	0.29
FX	5925	7125	17.4	31.22	16.86	26.07	14.08	21.77	11.75	18.18	9.82	15.18	8.20
FX	7125	8500	18.4	3.88	2.10	1.94	1.05	0.97	0.52	0.49	0.26	0.25	0.13
FX	8500	10550	17.4	7.96	4.30	4.00	2.16	2.00	1.08	1.02	0.55	0.50	0.27
FX	10550	13250	21.4	36.56	19.74	36.28	19.59	27.78	15.00	13.94	7.53	6.98	3.77
FX	13250	14000	21.4	18.90	10.21	9.48	5.12	4.76	2.57	2.38	1.29	1.20	0.65
FX	14400	15350	18.4	1.76	0.95	0.88	0.48	0.44	0.24	0.22	0.12	0.11	0.06
FX	15400	17300	21.4	1.72	0.93	0.86	0.47	0.43	0.23	0.22	0.12	0.11	0.06
FXD	138	150	2.8	20.30	10.96	16.40	8.86	10.54	5.69	6.78	3.66	4.40	2.38
FXD	150	156	2.8	21.10	11.39	15.92	8.60	10.24	5.53	6.62	3.57	4.28	2.31
FXD	156	174	2.8	19.42	10.49	18.98	10.25	12.18	6.58	7.84	4.23	5.06	2.73
FXD	216	222	4.3	29.10	15.71	26.16	14.13	23.56	12.72	15.24	8.23	9.92	5.36
FXD	225	400	4.3	19.42	10.49	16.74	9.04	10.82	5.84	7.02	3.79	4.58	2.47
FXD	406	420	4.3	22.56	12.18	20.54	11.09	13.32	7.19	8.70	4.70	5.70	3.08
FXD	420	450	4.3	17.36	9.37	11.36	6.13	7.48	4.04	4.96	2.68	3.30	1.78
FXD	450	470	4.3	19.42	10.49	14.38	7.77	10.65	5.75	7.89	4.26	5.84	3.15
FXD	908	928	7.3	7.60	4.10	5.00	2.70	3.32	1.79	2.22	1.20	1.48	0.80
FXD	1710	1850	6.3	6.48	3.50	4.32	2.33	2.90	1.57	1.58	0.85	0.79	0.43
FXD	2200	2300	13.4	12.92	6.98	6.48	3.50	3.26	1.76	1.64	0.89	0.82	0.44
FXD	2400	2500	13.4	3.02	1.63	1.51	0.82	0.76	0.41	0.38	0.21	0.19	0.10
FXD	4400	4990	15.4	9.80	5.29	4.92	2.66	2.46	1.33	1.24	0.67	0.62	0.33
FXD	5250	5925	15.4	2.04	1.10	1.02	0.55	0.51	0.28	0.26	0.14	0.13	0.07
FXD	7125	8500	18.4	4.82	2.60	2.42	1.31	1.22	0.66	0.61	0.33	0.30	0.16
FXD	14400	15350	18.4	2.66	1.44	1.33	0.72	0.67	0.36	0.34	0.18	0.17	0.09
FXE	50	75	2.8	20.30	10.96	19.08	10.30	12.18	6.58	7.80	4.21	5.02	2.71
FXE	75	108	2.8	17.34	9.36	12.39	6.69	8.85	4.78	6.33	3.42	4.52	2.44
FXE	138	150	2.8	39.64	21.40	34.22	18.48	22.24	12.01	14.54	7.85	9.56	5.16
FXE	156	174	2.8	19.26	10.40	12.48	6.74	8.14	4.40	5.32	2.87	3.52	1.90
FXE	216	222	4.3	43.78	23.64	33.67	18.18	25.90	13.98	19.92	10.76	15.32	8.27
FXE	225	400	4.3	14.26	7.70	9.24	4.99	6.00	3.24	3.92	2.12	2.58	1.39

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
FXE	406	420	4.3	25.06	13.53	19.06	10.29	14.49	7.82	11.02	5.95	8.38	4.52
FXE	450	470	4.3	14.92	8.06	9.66	5.22	6.30	3.40	4.12	2.22	2.72	1.47
FXE	908	928	7.3	19.42	10.49	14.36	7.75	10.61	5.73	7.85	4.24	5.80	3.13
FXE	1710	1850	6.3	34.42	18.59	17.26	9.32	8.66	4.68	4.34	2.34	2.18	1.18
FXE	2200	2300	13.4	13.78	7.44	6.92	3.74	3.46	1.87	1.74	0.94	0.87	0.47
FXE	4400	4900	15.4	4.36	2.35	2.20	1.19	1.10	0.59	0.55	0.30	0.28	0.15
FXE	7125	8500	18.4	1.98	1.07	0.99	0.54	0.50	0.27	0.25	0.13	0.13	0.07
FXE	14400	15350	18.4	1.12	0.60	0.56	0.30	0.28	0.15	0.14	0.08	0.07	0.04
FXH	138	150	2.8	17.34	9.36	11.92	6.44	7.64	4.13	4.90	2.65	3.16	1.71
FXH	156	174	2.8	33.68	18.19	32.40	17.49	22.44	12.12	14.60	7.88	9.54	5.15
FXH	225	400	4.3	19.42	10.49	17.34	9.36	11.20	6.05	7.26	3.92	4.74	2.56
FXH	406	420	4.3	28.16	15.21	27.62	14.91	18.02	9.73	11.80	6.37	7.78	4.20
FXH	908	928	7.3	27.68	14.95	20.68	11.17	15.45	8.34	11.54	6.23	8.62	4.65
FXH	1710	1850	6.3	44.68	24.13	33.04	17.84	24.43	13.19	18.07	9.76	13.36	7.21
LR	75	108	2.8	17.34	9.36	12.79	6.91	9.44	5.10	6.97	3.76	5.14	2.78
LR	138	150	2.8	17.34	9.36	11.42	6.17	7.32	3.95	4.70	2.54	3.04	1.64
LR	150	156	2.8	17.34	9.36	11.30	6.10	7.24	3.91	4.66	2.52	3.00	1.62
LR	156	174	2.8	8.60	4.64	5.60	3.02	3.66	1.98	2.40	1.30	1.60	0.86
LR	216	222	4.3	13.02	7.03	8.34	4.50	5.36	2.89	3.44	1.86	2.24	1.21
LR	225	400	4.3	1.72	0.93	1.16	0.63	0.76	0.41	0.51	0.28	0.28	0.15
LR	406	420	4.3	11.10	5.99	7.26	3.92	4.78	2.58	3.16	1.71	2.10	1.13
LR	420	450	4.3	11.22	6.06	7.34	3.96	4.82	2.60	3.20	1.73	2.12	1.14
LR	470	908	7.3	43.18	23.32	34.54	18.65	27.63	14.92	22.10	11.93	17.68	9.55
LR	908	928	7.3	7.52	4.06	5.04	2.72	3.06	1.65	1.54	0.83	0.77	0.41
LR	960	1215	9.3	3.40	1.84	1.70	0.92	0.85	0.46	0.43	0.23	0.21	0.12
LR	1215	1400	9.3	57.36	30.97	28.74	15.52	14.42	7.79	7.22	3.90	3.62	1.95
LR	1710	1850	6.3	2.68	1.45	1.34	0.73	0.67	0.36	0.34	0.18	0.17	0.09
LR	2700	3700	14.4	8.70	4.70	4.38	2.37	2.20	1.19	1.10	0.59	0.55	0.30
LR	5250	5925	15.4	10.94	5.91	5.48	2.96	2.76	1.49	1.38	0.75	0.69	0.37
LR	8500	10550	17.4	1.46	0.79	0.73	0.39	0.37	0.20	0.18	0.10	0.09	0.05
LR	10550	13250	21.4	27.90	15.06	23.86	12.88	20.40	11.02	17.45	9.42	14.92	8.06
LR	13250	14000	21.4	4.84	2.61	2.44	1.32	1.22	0.66	0.61	0.33	0.31	0.17
LR	14400	15350	18.4	4.20	2.27	2.10	1.13	1.06	0.57	0.53	0.28	0.27	0.14
LR	15400	17300	21.4	1.48	0.80	0.74	0.40	0.37	0.20	0.19	0.10	0.09	0.05
MA	108	137	2.8	21.86	11.80	16.04	8.66	10.32	5.57	6.66	3.60	4.32	2.33
MA	138	150	2.8	29.54	15.95	22.58	12.19	14.62	7.89	9.50	5.13	6.22	3.36
MA	150	156	2.8	27.68	14.95	20.62	11.13	13.34	7.20	8.68	4.69	5.66	3.06
MA	156	174	2.8	33.76	18.23	33.14	17.89	22.06	11.91	14.36	7.75	9.40	5.08
MA	225	400	4.3	25.52	13.78	16.60	8.96	10.88	5.87	7.16	3.87	4.74	2.56
MA	406	420	4.3	18.08	9.76	11.68	6.31	7.58	4.09	4.94	2.67	3.24	1.75
MA	450	470	4.3	16.02	8.65	10.36	5.59	6.74	3.64	4.42	2.39	2.90	1.57
MA	908	928	7.3	12.04	6.50	7.88	4.25	5.18	2.80	3.44	1.86	2.28	1.23

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
MA	960	1215	9.3	9.96	5.38	6.62	3.57	4.44	2.40	2.88	1.56	1.46	0.79
MA	1215	1400	9.3	4.52	2.44	2.28	1.23	1.14	0.62	0.57	0.31	0.29	0.15
MA	1427	1435	9.3	5.92	3.20	3.06	1.65	1.54	0.83	0.77	0.41	0.38	0.21
MA	1435	1525	6.3	7.78	4.20	4.70	2.54	2.36	1.27	1.18	0.64	0.59	0.32
MA	1710	1850	6.3	2.54	1.37	1.27	0.69	0.64	0.34	0.32	0.17	0.16	0.09
MA	2200	2300	13.4	34.94	18.87	21.22	11.46	10.64	5.75	5.34	2.88	2.68	1.45
MA	2300	2400	13.4	10.98	5.93	5.50	2.97	2.76	1.49	1.40	0.76	0.69	0.37
MA	2400	2500	13.4	11.94	6.45	5.98	3.23	3.00	1.62	1.52	0.82	0.75	0.41
MA	4400	4990	15.4	8.32	4.49	4.18	2.26	2.10	1.13	1.06	0.57	0.53	0.28
MA	5250	5925	15.4	4.42	2.39	2.22	1.20	1.12	0.60	0.56	0.30	0.28	0.15
MA	8500	10550	17.4	0.65	0.35	0.32	0.18	0.16	0.09	0.08	0.04	0.04	0.02
MA	14400	15350	18.4	1.22	0.66	0.61	0.33	0.31	0.17	0.15	0.08	0.08	0.04
MAD	108	137	2.8	17.34	9.36	11.26	6.08	7.20	3.89	4.64	2.51	2.98	1.61
MAD	225	400	4.3	13.02	7.03	8.44	4.56	5.50	2.97	3.60	1.94	2.36	1.27
MAD	420	450	4.3	17.30	9.34	11.30	6.10	7.42	4.01	4.90	2.65	3.26	1.76
MAD	1710	1850	6.3	18.46	9.97	12.30	6.64	8.26	4.46	4.96	2.68	2.48	1.34
MAD	2200	2300	13.4	13.86	7.48	6.94	3.75	3.48	1.88	1.76	0.95	0.87	0.47
MAD	8500	10550	17.4	1.74	0.94	0.87	0.47	0.44	0.24	0.22	0.12	0.11	0.06
MAD	14400	15350	18.4	0.43	0.23	0.22	0.12	0.11	0.06	0.06	0.03	0.03	0.02
MAP	108	137	2.8	4.10	2.21	2.64	1.43	1.72	0.93	1.12	0.60	0.73	0.39
MAP	138	150	2.8	17.16	9.27	10.96	5.92	7.02	3.79	4.52	2.44	2.92	1.58
MAP	156	174	2.8	20.30	10.96	15.01	8.10	11.09	5.99	8.20	4.43	6.06	3.27
MAP	225	400	4.3	19.42	10.49	16.76	9.05	10.82	5.84	7.02	3.79	4.58	2.47
ML	50	75	2.8	45.68	24.67	38.08	20.56	24.56	13.26	15.90	8.59	10.34	5.58
ML	75	108	2.8	50.60	27.32	41.60	22.46	32.70	17.66	21.22	11.46	13.84	7.47
ML	75	75	2.8	17.34	9.36	13.48	7.28	8.60	4.64	5.50	2.97	3.52	1.90
ML	108	137	2.8	17.04	9.20	10.88	5.87	6.98	3.77	4.48	2.42	2.90	1.57
ML	138	150	2.8	36.92	19.94	29.64	16.00	19.26	10.40	12.58	6.79	8.26	4.46
ML	150	156	2.8	34.58	18.67	23.48	12.68	15.28	8.25	10.00	5.40	6.56	3.54
ML	156	174	2.8	36.60	19.76	23.78	12.84	15.52	8.38	10.18	5.50	6.72	3.63
ML	174	216	4.3	11.20	6.05	7.20	3.89	4.64	2.51	3.00	1.62	1.96	1.06
ML	216	222	4.3	19.42	10.49	12.92	6.98	8.32	4.49	5.38	2.90	3.50	1.89
ML	225	400	4.3	36.28	19.59	23.90	12.91	15.76	8.51	10.44	5.64	6.96	3.76
ML	406	420	4.3	38.46	20.77	28.16	15.21	18.56	10.02	12.32	6.65	8.22	4.44
ML	420	450	4.3	1.98	1.07	1.32	0.71	0.87	0.47	0.58	0.32	0.32	0.17
ML	450	470	4.3	29.24	15.79	19.16	10.35	12.64	6.83	8.38	4.52	5.58	3.01
ML	470	908	7.3	24.88	13.43	16.54	8.93	11.06	5.97	7.44	4.02	3.82	2.06
ML	908	928	7.3	6.90	3.73	4.60	2.48	3.08	1.66	1.88	1.02	0.94	0.51
ML	928	960	7.3	22.56	12.18	17.18	9.27	13.08	7.06	9.96	5.38	7.58	4.09
ML	960	1215	9.3	7.62	4.11	4.28	2.31	2.16	1.17	1.08	0.58	0.54	0.29
ML	1215	1400	9.3	4.02	2.17	2.68	1.45	1.80	0.97	0.97	0.52	0.49	0.26
ML	1710	1850	6.3	3.32	1.79	1.78	0.96	0.89	0.48	0.45	0.24	0.22	0.12

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
ML	1850	2025	13.4	20.30	10.96	14.14	7.64	7.08	3.82	3.56	1.92	1.78	0.96
ML	2200	2300	13.4	7.22	3.90	3.62	1.95	1.82	0.98	0.91	0.49	0.46	0.25
ML	2300	2400	13.4	2.82	1.52	1.41	0.76	0.71	0.38	0.35	0.19	0.18	0.10
ML	2400	2500	13.4	4.86	2.62	2.44	1.32	1.24	0.67	0.61	0.33	0.31	0.17
ML	4400	4990	15.4	11.02	5.95	5.52	2.98	2.78	1.50	1.40	0.76	0.70	0.38
ML	5250	5925	15.4	1.12	0.60	0.56	0.30	0.28	0.15	0.14	0.08	0.07	0.04
ML	10550	13250	21.4	28.42	15.35	25.35	13.69	22.62	12.21	20.18	10.89	18.00	9.72
ML	14400	15350	18.4	3.40	1.84	1.72	0.93	0.85	0.46	0.43	0.23	0.22	0.12
MLD	50	75	2.8	17.34	9.36	16.90	9.13	10.76	5.81	6.88	3.71	4.40	2.38
MLD	138	150	2.8	12.80	6.91	8.20	4.43	5.26	2.84	3.40	1.84	2.20	1.19
MLD	150	156	2.8	15.44	8.34	9.88	5.33	6.34	3.42	4.08	2.20	2.64	1.43
MLD	156	174	2.8	21.82	11.78	14.10	7.61	9.14	4.94	5.96	3.22	3.92	2.12
MLD	225	400	4.3	6.08	3.28	3.98	2.15	2.62	1.41	1.72	0.93	1.16	0.63
MLD	406	420	4.3	15.56	8.40	10.10	5.45	6.60	3.56	4.32	2.33	2.86	1.54
MLD	420	450	4.3	5.24	2.83	3.38	1.83	2.18	1.18	1.42	0.77	0.92	0.50
MLD	2200	2300	13.4	26.16	14.13	13.62	7.35	6.82	3.68	3.42	1.85	1.72	0.93
MLD	2400	2500	13.4	9.54	5.15	4.78	2.58	2.40	1.30	1.20	0.65	0.60	0.32
MLP	138	150	2.8	38.46	20.77	30.00	16.20	19.52	10.54	12.76	6.89	8.38	4.52
MLP	150	156	2.8	32.26	17.42	20.88	11.27	13.58	7.33	8.88	4.79	5.84	3.15
MLP	156	174	2.8	12.28	6.63	8.06	4.35	5.32	2.87	3.54	1.91	2.36	1.27
MLP	174	216	4.3	19.42	10.49	13.94	7.53	10.01	5.41	7.19	3.88	5.16	2.79
MLP	216	222	4.3	21.32	11.51	13.78	7.44	8.96	4.84	5.84	3.15	3.84	2.07
MLP	225	400	4.3	36.60	19.76	35.66	19.25	23.40	12.64	15.42	8.33	10.24	5.53
MLP	406	420	4.3	5.48	2.96	3.68	1.99	2.12	1.14	1.08	0.58	0.53	0.29
MLP	450	470	4.3	27.58	14.89	18.12	9.78	11.98	6.47	7.96	4.30	5.32	2.87
MLP	470	908	7.3	7.96	4.30	5.30	2.86	3.54	1.91	2.38	1.29	1.22	0.66
MLP	908	928	7.3	7.18	3.88	4.74	2.56	3.14	1.70	2.10	1.13	1.40	0.76
MLP	1710	1850	6.3	2.02	1.09	1.01	0.55	0.51	0.27	0.25	0.14	0.13	0.07
MLP	1850	2025	13.4	7.82	4.22	3.92	2.12	1.98	1.07	0.99	0.53	0.49	0.27
MLP	2200	2300	13.4	26.16	14.13	25.18	13.60	12.62	6.81	6.34	3.42	3.18	1.72
MLP	2400	2500	13.4	3.56	1.92	1.80	0.97	0.89	0.48	0.45	0.24	0.23	0.12
MO	30	50	2.8	24.24	13.09	18.08	9.76	17.34	9.36	12.00	6.48	7.64	4.13
MO	50	75	2.8	5.96	3.22	3.82	2.06	2.46	1.33	1.58	0.85	1.02	0.55
MO	138	150	2.8	5.90	3.19	3.86	2.08	2.54	1.37	1.68	0.91	1.12	0.60
MO	150	156	2.8	33.36	18.01	31.62	17.07	21.86	11.80	14.20	7.67	9.26	5.00
MO	156	174	2.8	7.44	4.02	4.96	2.68	3.32	1.79	2.20	1.19	1.10	0.59
MO	225	400	4.3	5.90	3.19	3.80	2.05	2.44	1.32	1.60	0.86	1.04	0.56
MO	406	420	4.3	11.00	5.94	7.32	3.95	4.90	2.65	3.20	1.73	1.62	0.87
MO	420	450	4.3	6.90	3.73	3.46	1.87	1.74	0.94	0.87	0.47	0.44	0.24
MO	450	470	4.3	12.42	6.71	8.36	4.51	4.32	2.33	2.18	1.18	1.10	0.59
MO	470	908	7.3	8.22	4.44	4.12	2.22	2.08	1.12	1.04	0.56	0.52	0.28
MO	908	928	7.3	11.94	6.45	7.82	4.22	5.14	2.78	3.40	1.84	2.26	1.22

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
MO	960	1215	9.3	12.96	7.00	7.60	4.10	3.82	2.06	1.92	1.04	0.96	0.52
MO	1710	1850	6.3	1.86	1.00	0.93	0.50	0.47	0.25	0.23	0.13	0.12	0.06
MO	2400	2500	13.4	5.24	2.83	2.64	1.43	1.32	0.71	0.66	0.36	0.33	0.18
MO	2700	3700	14.4	9.22	4.98	4.62	2.49	2.32	1.25	1.18	0.64	0.58	0.31
MO	4400	4990	15.4	4.72	2.55	2.38	1.29	1.20	0.65	0.59	0.32	0.30	0.16
MO	5250	5925	15.4	3.30	1.78	1.66	0.90	0.83	0.45	0.42	0.22	0.21	0.11
MO	8500	10550	17.4	29.30	15.82	27.76	14.99	26.31	14.20	24.93	13.46	23.62	12.75
MO	14400	15350	18.4	2.34	1.26	1.17	0.63	0.59	0.32	0.30	0.16	0.15	0.08
MOB	156	174	2.8	8.08	4.36	5.36	2.89	3.58	1.93	2.40	1.30	1.36	0.73
MOB	225	400	4.3	19.42	10.49	12.54	6.77	8.12	4.38	5.30	2.86	3.46	1.87
MOB	2700	3700	14.4	4.92	2.66	2.48	1.34	1.24	0.67	0.62	0.33	0.31	0.17
MOB	5250	5925	15.4	3.44	1.86	1.74	0.94	0.86	0.47	0.43	0.23	0.22	0.12
MOD	50	75	2.8	18.40	9.94	17.34	9.36	14.54	7.85	9.26	5.00	5.92	3.20
MOD	138	150	2.8	17.34	9.36	15.64	8.44	10.00	5.40	6.40	3.46	4.12	2.22
MOD	156	174	2.8	17.34	9.36	15.86	8.56	10.14	5.48	6.52	3.52	4.20	2.27
MOD	225	400	4.3	11.52	6.22	7.40	4.00	4.78	2.58	3.10	1.67	2.02	1.09
MOD	406	420	4.3	5.62	3.03	3.12	1.68	1.58	0.85	0.78	0.42	0.39	0.21
MOD	406	420	4.3	43.68	23.59	32.96	17.80	24.87	13.43	18.77	10.13	14.16	7.65
MOD	420	450	4.3	13.58	7.33	9.02	4.87	6.02	3.25	4.04	2.18	2.28	1.23
MOD	450	470	4.3	19.42	10.49	14.64	7.91	11.04	5.96	8.33	4.50	6.28	3.39
MOD	1215	1400	9.3	7.24	3.91	4.80	2.59	3.20	1.73	2.14	1.16	1.32	0.71
MOD	1710	1850	6.3	5.22	2.82	2.62	1.41	1.32	0.71	0.66	0.35	0.33	0.18
MOD	4400	4990	15.4	7.94	4.29	3.98	2.15	2.00	1.08	1.00	0.54	0.50	0.27
MOE	156	174	2.8	14.12	7.62	9.26	5.00	6.12	3.30	4.06	2.19	2.72	1.47
MOE	225	400	4.3	19.42	10.49	16.72	9.03	10.80	5.83	7.02	3.79	4.58	2.47
MOE	406	420	4.3	18.44	9.96	12.44	6.72	8.06	4.35	5.24	2.83	3.42	1.85
MOE	420	450	4.3	6.90	3.73	4.62	2.49	3.08	1.66	1.54	0.83	0.77	0.42
MOE	928	960	7.3	19.42	10.49	15.30	8.26	9.98	5.39	6.56	3.54	4.32	2.33
MOE	1215	1400	9.3	12.62	6.81	8.30	4.48	5.48	2.96	3.66	1.98	2.44	1.32
MOE	2200	2300	13.4	10.04	5.42	5.04	2.72	2.52	1.36	1.28	0.69	0.63	0.34
MOE	2400	2500	13.4	26.16	14.13	18.24	9.85	9.14	4.94	4.60	2.48	2.30	1.24
MOEA	50	75	2.8	5.40	2.92	3.46	1.87	2.24	1.21	1.44	0.78	0.93	0.50
MOEA	75	108	2.8	4.86	2.62	3.14	1.70	2.02	1.09	1.32	0.71	0.85	0.46
MOEA	216	222	4.3	4.46	2.41	2.88	1.56	1.88	1.02	1.24	0.67	0.80	0.43
MOEA	225	400	4.3	4.00	2.16	2.64	1.43	1.74	0.94	1.16	0.63	0.77	0.42
MOEA	908	928	7.3	19.42	10.49	15.29	8.26	12.04	6.50	9.48	5.12	7.46	4.03
MOEA	1427	1435	9.3	13.06	7.05	8.72	4.71	5.86	3.16	3.30	1.78	1.66	0.90
MOEA	1435	1525	6.3	5.48	2.96	2.94	1.59	1.48	0.80	0.74	0.40	0.37	0.20
MOEA	1710	1850	6.3	7.52	4.06	4.20	2.27	2.12	1.14	1.06	0.57	0.53	0.29
MOEA	2200	2300	13.4	26.16	14.13	14.14	7.64	7.08	3.82	3.56	1.92	1.78	0.96
MOEA	2300	2400	13.4	29.96	16.18	16.82	9.08	8.44	4.56	4.24	2.29	2.12	1.14
MOEA	5250	5925	15.4	8.04	4.34	4.04	2.18	2.02	1.09	1.02	0.55	0.51	0.27

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
MOEB	216	222	4.3	17.34	9.36	13.01	7.03	9.77	5.27	7.33	3.96	5.50	2.97
MOEB	225	400	4.3	9.38	5.06	6.14	3.32	4.04	2.18	2.68	1.45	1.80	0.97
MOEB	406	420	4.3	19.42	10.49	18.94	10.23	12.24	6.61	7.94	4.29	5.18	2.80
MOEB	420	450	4.3	6.10	3.29	4.00	2.16	2.62	1.41	1.74	0.94	1.16	0.63
MOEB	470	908	7.3	4.92	2.66	3.26	1.76	2.18	1.18	1.46	0.79	0.92	0.50
MOEB	1435	1525	6.3	14.00	7.56	9.34	5.04	6.28	3.39	3.54	1.91	1.78	0.96
MOEB	1710	1850	6.3	3.96	2.14	2.20	1.19	1.10	0.59	0.55	0.30	0.28	0.15
MOEB	2200	2300	13.4	19.04	10.28	9.54	5.15	4.78	2.58	2.40	1.30	1.22	0.66
MOEB	2300	2400	13.4	12.54	6.77	6.28	3.39	3.16	1.71	1.58	0.85	0.79	0.43
MOEB	4400	4990	15.4	4.26	2.30	2.14	1.16	1.08	0.58	0.54	0.29	0.27	0.15
MOEC	50	75	2.8	12.28	6.63	8.00	4.32	5.26	2.84	3.46	1.87	2.30	1.24
MOEC	75	108	2.8	19.06	10.29	12.60	6.80	8.38	4.52	5.60	3.02	3.78	2.04
MOEC	156	174	2.8	4.08	2.20	2.64	1.43	1.72	0.93	1.12	0.60	0.73	0.39
MOEC	174	216	4.3	17.34	9.36	16.64	8.98	10.66	5.76	6.84	3.69	4.42	2.39
MOEC	216	222	4.3	17.34	9.36	12.52	6.76	9.05	4.88	6.53	3.53	4.72	2.55
MOEC	225	400	4.3	11.08	5.98	7.20	3.89	4.70	2.54	3.08	1.66	2.04	1.10
MOEC	406	420	4.3	19.42	10.49	15.56	8.40	12.46	6.73	9.99	5.39	8.00	4.32
MOEC	450	470	4.3	18.58	10.03	12.02	6.49	7.80	4.21	5.10	2.75	3.34	1.80
MOEC	908	928	7.3	19.42	10.49	14.36	7.75	10.61	5.73	7.85	4.24	5.80	3.13
MOEC	1427	1435	9.3	19.42	10.49	15.84	8.55	12.92	6.98	10.54	5.69	8.60	4.64
MOEC	1435	1525	6.3	14.00	7.56	9.34	5.04	6.28	3.39	3.54	1.91	1.78	0.96
MOEC	1710	1850	6.3	6.48	3.50	3.24	1.75	1.64	0.89	0.81	0.44	0.41	0.22
MOEC	2200	2300	13.4	17.34	9.36	16.68	9.01	8.36	4.51	4.20	2.27	2.10	1.13
MOEC	2300	2400	13.4	26.16	14.13	18.32	9.89	9.18	4.96	4.60	2.48	2.32	1.25
MOEC	14400	15350	18.4	0.95	0.51	0.47	0.26	0.24	0.13	0.12	0.06	0.06	0.03
MOH	156	174	2.8	30.82	16.64	22.41	12.10	16.30	8.80	11.85	6.40	8.62	4.65
MOP	138	150	2.8	44.20	23.87	39.78	21.48	25.90	13.98	16.96	9.16	11.16	6.03
MOP	150	156	2.8	25.06	13.53	19.06	10.29	12.30	6.64	7.98	4.31	5.20	2.81
MOP	156	174	2.8	50.86	27.46	40.80	22.03	39.06	21.09	26.62	14.37	17.38	9.38
MOP	225	400	4.3	16.26	8.78	10.52	5.68	6.82	3.68	4.46	2.41	2.92	1.58
MOP	406	420	4.3	24.48	13.22	22.44	12.12	14.60	7.88	9.54	5.15	6.28	3.39
MOU	108	137	2.8	2.98	1.61	1.94	1.05	1.26	0.68	0.82	0.44	0.54	0.29
MR	216	222	4.3	17.34	9.36	12.76	6.89	8.20	4.43	5.28	2.85	3.42	1.85
MR	420	450	4.3	9.34	5.04	6.20	3.35	4.16	2.25	2.80	1.51	1.46	0.79
MR	470	908	7.3	5.42	2.93	3.58	1.93	2.38	1.29	1.60	0.86	1.08	0.58
MR	908	928	7.3	3.72	2.01	2.48	1.34	1.66	0.90	1.12	0.60	0.57	0.31
MR	960	1215	9.3	10.18	5.50	6.70	3.62	4.44	2.40	2.96	1.60	1.98	1.07
MR	1215	1400	9.3	5.70	3.08	3.80	2.05	2.54	1.37	1.72	0.93	0.88	0.48
MR	1710	1850	6.3	2.68	1.45	1.34	0.73	0.67	0.36	0.34	0.18	0.17	0.09
MR	2400	2500	13.4	2.80	1.51	1.40	0.76	0.70	0.38	0.35	0.19	0.18	0.10
MR	2700	3700	14.4	13.00	7.02	6.52	3.52	3.28	1.77	1.64	0.89	0.82	0.44
MR	5250	5925	15.4	19.42	10.49	9.78	5.28	4.90	2.65	2.46	1.33	1.24	0.67

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
MR	8500	10550	17.4	9.42	5.09	4.72	2.55	2.38	1.29	1.20	0.65	0.59	0.32
MR	10550	13250	21.4	27.36	14.77	22.23	12.00	18.06	9.75	14.67	7.92	11.92	6.44
MR	14400	15350	18.4	4.88	2.64	2.44	1.32	1.24	0.67	0.61	0.33	0.31	0.17
MR	15400	17300	21.4	1.84	0.99	0.92	0.50	0.46	0.25	0.23	0.13	0.12	0.06
MRP	908	928	7.3	2.38	1.29	1.60	0.86	1.06	0.57	0.53	0.29	0.27	0.14
MRP	8500	10550	17.4	8.92	4.82	4.48	2.42	2.24	1.21	1.14	0.62	0.56	0.30
MS	108	137	2.8	17.34	9.36	16.06	8.67	10.26	5.54	6.58	3.55	4.22	2.28
MS	138	150	2.8	24.48	13.22	17.75	9.58	12.86	6.95	9.33	5.04	6.76	3.65
MS	150	156	2.8	17.34	9.36	13.30	7.18	8.52	4.60	5.46	2.95	3.52	1.90
MS	156	174	2.8	19.36	10.45	12.78	6.90	8.50	4.59	5.68	3.07	3.82	2.06
MS	225	400	4.3	25.32	13.67	16.54	8.93	10.86	5.86	7.16	3.87	4.76	2.57
MS	406	420	4.3	27.20	14.69	24.24	13.09	15.82	8.54	10.36	5.59	6.84	3.69
MS	908	928	7.3	7.88	4.25	5.20	2.81	3.44	1.86	2.30	1.24	1.54	0.83
MS	2400	2500	13.4	5.36	2.89	2.68	1.45	1.36	0.73	0.67	0.36	0.34	0.18
MSP	138	150	2.8	26.68	14.41	23.12	12.48	14.92	8.06	9.66	5.22	6.30	3.40
MSP	150	156	2.8	23.24	12.55	17.92	9.68	11.56	6.24	7.48	4.04	4.86	2.62
MSP	156	174	2.8	33.58	18.13	33.14	17.89	21.84	11.79	14.22	7.68	9.30	5.02
MSP	225	400	4.3	19.42	10.49	14.27	7.70	10.48	5.66	7.70	4.16	5.66	3.06
MSP	406	420	4.3	19.42	10.49	15.29	8.26	12.04	6.50	9.48	5.12	7.46	4.03
MSP	450	470	4.3	19.42	10.49	18.50	9.99	11.96	6.46	7.78	4.20	5.08	2.74
MSP	5250	5925	15.4	0.72	0.39	0.36	0.20	0.18	0.10	0.09	0.05	0.05	0.02
NLC	2700	3700	14.4	6.82	3.68	3.42	1.85	1.72	0.93	0.86	0.46	0.43	0.23
NLC	8500	10550	17.4	6.34	3.42	3.18	1.72	1.60	0.86	0.80	0.43	0.40	0.22
NR	960	1215	9.3	4.14	2.24	2.70	1.46	1.78	0.96	1.18	0.64	0.77	0.42
NR	2700	3700	14.4	20.48	11.06	10.26	5.54	5.14	2.78	2.58	1.39	1.30	0.70
NR	5250	5925	15.4	19.80	10.69	9.92	5.36	4.98	2.69	2.50	1.35	1.26	0.68
NR	8500	10550	17.4	8.06	4.35	4.04	2.18	2.04	1.10	1.02	0.55	0.51	0.27
NR	13250	14000	21.4	26.16	14.13	24.86	13.42	12.46	6.73	6.26	3.38	3.14	1.70
OD	156	174	2.8	52.84	28.53	44.68	24.13	39.68	21.43	25.88	13.97	16.98	9.17
OD	406	420	4.3	25.32	13.67	25.06	13.53	22.90	12.37	14.90	8.05	9.74	5.26
OD	450	470	4.3	20.30	10.96	19.88	10.73	12.86	6.94	8.36	4.51	5.46	2.95
OE	908	928	7.3	12.04	6.50	7.88	4.25	5.18	2.80	3.44	1.86	2.28	1.23
RN	960	1215	9.3	16.60	8.96	11.16	6.03	5.86	3.16	2.94	1.59	1.48	0.80
RN	2700	3700	14.4	17.34	9.36	14.60	7.88	7.32	3.95	3.68	1.99	1.84	0.99
RN	5000	5250	15.4	26.56	14.34	19.77	10.68	14.72	7.95	10.96	5.92	8.16	4.41
RN	5250	5925	15.4	4.22	2.28	2.12	1.14	1.06	0.57	0.53	0.29	0.27	0.14
RN	8500	10550	17.4	5.16	2.79	2.60	1.40	1.30	0.70	0.65	0.35	0.33	0.18
RN	14400	15350	18.4	4.58	2.47	2.30	1.24	1.16	0.63	0.58	0.31	0.29	0.16
RN	15400	17300	21.4	7.16	3.87	3.60	1.94	1.80	0.97	0.90	0.49	0.45	0.24
SA	908	925	7.3	8.36	4.51	5.44	2.94	3.56	1.92	2.34	1.26	1.54	0.83
SA	8500	10550	17.4	26.16	14.13	18.62	10.05	9.34	5.04	4.68	2.53	2.36	1.27
SMB	400	406	4.3	14.42	7.79	9.34	5.04	6.08	3.28	3.96	2.14	2.60	1.40

Table 1-2. LO Coordination Trigger Distances (Continued)

Station Class[a]	Frequency Range		LODMS $EIRP_{AVG}$ (dBm)	LO Coordination Trigger Distances									
				Environmental Attenuation									
				0 dB		6 dB		12 dB		18 dB		24 dB	
	Minimum Frequency (MHz)	Maximum Frequency (MHz)		(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)	(km)	(nmi)
SMB	5250	5925	15.4	27.48	14.84	22.95	12.39	19.16	10.35	16.00	8.64	13.36	7.21
SMD	2700	3700	14.4	7.82	4.22	3.92	2.12	1.98	1.07	0.98	0.53	0.49	0.27
SMD	5250	5925	15.4	8.90	4.81	4.46	2.41	2.24	1.21	1.12	0.60	0.56	0.30
SMD	7125	8500	18.4	10.42	5.63	5.22	2.82	2.62	1.41	1.32	0.71	0.66	0.35
SMD	8500	10550	17.4	5.02	2.71	2.52	1.36	1.26	0.68	0.63	0.34	0.32	0.17
SMRG	225	400	4.3	8.54	4.61	5.56	3.00	3.64	1.97	2.40	1.30	1.58	0.85
SMRG	400	406	4.3	11.08	5.98	7.20	3.89	4.70	2.54	3.08	1.66	2.04	1.10
SS	138	150	2.8	21.94	11.85	17.95	9.69	14.68	7.93	12.01	6.48	9.82	5.30
TC	7125	8500	18.4	12.28	6.63	6.16	3.33	3.10	1.67	1.56	0.84	0.78	0.42
TC	8500	10550	17.4	16.52	8.92	8.28	4.47	4.16	2.25	2.08	1.12	1.06	0.57
TE	225	400	4.3	19.42	10.49	16.78	9.06	10.84	5.85	7.04	3.80	4.60	2.48
TF	2025	2110	13.4	26.16	14.13	17.67	9.54	11.93	6.44	8.06	4.35	5.44	2.94
TG	1610	1661	6.3	26.16	14.13	21.71	11.72	18.01	9.73	14.94	8.07	12.40	6.70
TH	2025	2110	13.4	21.62	11.67	10.84	5.85	5.44	2.94	2.74	1.48	1.38	0.75
TM	400	406	4.3	15.04	8.12	9.74	5.26	6.32	3.41	4.14	2.24	2.72	1.47
TM	2025	2110	13.4	26.16	14.13	14.06	7.59	7.06	3.81	3.54	1.91	1.78	0.96
TT	1525	1610	6.3	14.08	7.60	9.40	5.08	6.32	3.41	3.46	1.87	1.74	0.94
TT	1610	1661	6.3	14.00	7.56	9.36	5.05	6.30	3.40	3.34	1.80	1.68	0.91
TT	2025	2110	13.4	27.72	14.97	24.41	13.18	21.50	11.61	18.94	10.23	16.68	9.01
TW	2025	2110	13.4	26.16	14.13	16.42	8.87	10.31	5.56	6.47	3.49	4.06	2.19
TW	7125	8500	18.4	4.68	2.53	2.34	1.26	1.18	0.64	0.59	0.32	0.30	0.16
VA	138	150	2.8	17.34	9.36	13.47	7.27	10.47	5.65	8.13	4.39	6.32	3.41
VA	1610	1661	6.3	32.00	17.28	27.86	15.04	24.25	13.10	21.11	11.40	18.38	9.92
Satellite Navigation Receiver Systems[a]	1575	1575	6.3	8.78	4.74	5.86	3.16	3.94	2.13	2.08	1.12	1.06	0.57
	1227	1227	9.3	11.28	6.09	7.48	4.04	5.00	2.70	3.36	1.81	1.90	1.03
	1176	1176	9.3	3.72	2.01	2.34	1.26	1.18	0.64	0.59	0.32	0.29	0.16

[a]- Satellite Navigation Receiver System operations are not typically assigned a station class. Three sets of protection criteria that correspond to L1, L2, and L5 GPS receiver operations have been defined in this report due to their relevant operational importance.

2. LODMS AND INCUMBENT SYSTEM TECHNICAL DATA

The technical data of the Sensor Concepts Incorporated (SCI)-2k, the calculated EIRPs of the three current LODMS, and the technical data of the incumbent system receivers used in the LO coordination trigger distance calculations are listed in Tables 2-1, 2-2, and 2-3.

Table 2-1. SCI-2k Emission Characteristics

Parameter	Characteristics		
	Transmitter		
Pulsewidth, μs	0.01 – 0.02		
Pulse Repetition Frequency, kHz	3000		
Chirp Rate, MHz/ms	250		
	Band 1	**Band 2**	**Band 3**
Emission Designator	310MW3N	310MW3N	208MW3N
Tuned Center Frequency Range, MHz	100 – 1100	200 – 2000	2000 – 18000
Emission Frequency Range (includes ramp up/down), MHz	50 – 1220	80 – 2120	1880 – 18120
Frequency Occupancy (includes approximately 1/2 of the -20 dB emission BW), MHz	50 – 1375	50 – 2275	1776 – 18224
Emission BW, MHz	10 ns pulsewidth	10 ns pulsewidth	20 ns pulsewidth
-3 dB	54	54	36
-20 dB	310	310	208
-40 dB	1980	1980	1770
Maximum Power (peak), mW	40*****	40*****	100*****
	Antennas		
	Band 1	**Band 2**	**Band 3**
Frequencies, MHz	50 – 1220	80 – 2120	1880 – 18120
Type	Horn	Dual Horn (1 Tx, 1 Rx)	Dual Quad-Ridge Horns (1 Tx, 1 Rx)
Antenna Height, m	1 – 5	1 – 5	0.5 – 5
Polarization	Horizontal & Vertical	Horizontal & Vertical	Horizontal & Vertical
Maximum Mainbeam Gain, dBi	12.8*****	14*****	21.6*****
Azimuth Beamwidth (Maximum), deg	70 @ 100-MHz	78	68
Elevation Beamwidth (Maximum), deg	92 @ 100-MHz	90	68

***** values reflect data collected in 2010
BW – Bandwidth
Rx – Receive
Tx - Transmit

Table 2-2. LODMS EIRP

Frequency (GHz)	$EIRP_{AVG}$ (dBm)			Worst-Case $EIRP_{AVG}$ (dBm)
	SCI-Xe-AC	SCI-2k	MDL	
0.05 – 0.2	NA	2.8	-4.8	2.8
0.2 – 0.5	NA	4.3	-2.5	4.3
0.5 – 1.0	NA	7.3	-1.1	7.3
1.0 – 1.5	NA	9.3	-0.3	9.3
1.5 – 2.0	NA	6.3	-0.3	6.3
2.0 – 2.5	NA	13.4	-0.3	13.4
2.5 – 3.0	NA	14.4	-0.3	14.4
3.0 – 4.0	NA	14.4	0.7	14.4
4.0 – 4.5	NA	14.4	0.5	14.4
4.5 – 6.0	-4.8	15.4	2.5	15.4
6.0 – 8.0	-1.0	17.4	3.5	17.4
8.0 – 10.0	3.6	18.4	4.2	18.4
10.0 – 12.0	3.7	17.4	5.0	17.4
12.0 – 14.0	5.0	21.4	7.0	21.4
14.0 – 16.0	5.0	18.4	8.0	18.4
16.0 – 18.0	4.7	21.4	9.0	21.4
18.0 – 18.5	NA	17.4	NA	17.4

MDL – Mobile Diagnostic Laboratory
NA – Not Available

The incumbent systems technical parameters used in the analysis including the Interference to Noise Threshold ($(I/N)_{TH}$) criteria are listed in Table 2-3.

Table 2-3. Incumbent System Receiver Data by Station Class

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
AL	960	1215	3.19	10	10	10	-6
AL	2700	3700	9.50	35	10	8	-10
AL	8500	10550	22.12	36	4	8	-6
ALA	75	75	0.002	0	3	15	-6
ALB	225	400	0.004	2	3	15	-6
ALB	8500	10550	9.10	33	4	8	-6
ALG	225	400	1.20	1	5	15	-6
ALG	960	1215	0.65	3	8	11	-6
ALG	5000	5250	1.69	21	5	12	-6
ALG	15400	17300	2.00	32	12	8	-6
ALL	108	137	0.004	10	3	13	-6
ALL	5000	5250	0.15	25	5	12	-6
ALO	108	137	0.02	1	3	15	-6
ALO	960	1215	4.85	16	14	11	-6
ALS	1215	1400	3.36	36	16	8	-6
ALS	2700	3700	4.60	33	21	10	-10
ALS	8500	10550	22.35	34	22	10	-6
ALTM	75	75	0.01	5	3	15	-6
ALTM	108	137	0.99	21	3	14	-6
ALTM	225	400	0.001	8	5	15	-6
ALTM	960	1215	7.00	7	6	11	-6
FA	8500	10550	48.20	23	15	12	-6
FA	14400	15350	144.13	32	33	12	-6
FAB	108	137	0.01	0	3	15	-6
FAB	137	138	0.01	5	3	15	-6
FAB	138	150	0.01	0	3	15	-6
FAB	225	400	0.01	1	5	15	-6
FAB	406	420	0.01	0	10	15	-6
FAB	1215	1400	0.01	17	5	15	-6
FAC	108	137	0.01	1	3	15	-6
FAC	138	150	0.01	1	3	15	-6
FAC	225	400	0.01	1	21	15	-6
FAD	138	150	0.01	0	3	15	-6
FAD	225	400	0.04	4	5	12	-6
FAD	406	420	0.34	6	5	11	-6
FAD	420	450	0.39	3	5	12	-6
FAD	908	928	20.00	16	35	13	-6
FAD	1215	1400	22.00	7	5	8	-6
FAD	2200	2300	4.43	19	3	13	-6
FAD	2400	2500	0.23	3	15	12	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
FAD	5250	5925	0.32	15	15	12	-6
FAD	8500	10550	42.25	20	15	12	-6
FAD	14400	15350	26.90	14	15	12	-6
FAT	108	137	0.01	2	3	15	-6
FAT	138	150	0.01	0	3	15	-6
FAT	225	400	0.01	1	5	15	-6
FAT	420	450	0.02	2	5	12	-6
FAT	2300	2400	0.01	20	15	15	-6
FB	30	50	0.07	0	34	11	-6
FB	75	75	0.01	2	3	13	-6
FB	108	137	0.01	5	3	15	0
FB	138	150	0.01	3	17	12	0
FB	150	156	0.01	3	21	12	0
FB	156	174	1.37	2	83	14	0
FB	216	222	0.00	5	41	6	-6
FB	225	400	0.01	1	13	13	0
FB	406	420	4.45	1	28	11	0
FB	420	450	6.00	2	5	12	0
FB	450	470	0.01	4	32	11	0
FB	470	908	0.02	8	5	11	-6
FB	908	928	1.44	1	14	12	-6
FB	928	960	0.02	8	5	11	-6
FB	960	1215	9.00	3	23	8	-6
FB	1610	1661	0.004	20	15	5	-6
FB	1710	1850	1.25	9	15	13	-6
FB	1850	2025	0.02	20	15	12	-6
FB	2400	2500	7.57	2	23	9	-6
FB	2700	3700	0.02	20	15	12	-6
FB	5000	5250	17.76	0	8	9	-6
FB	5250	5925	5.17	20	15	9	-6
FBD	75	75	0.01	2	12	12	-6
FBD	150	156	0.01	0	55	8	0
FBD	156	174	0.01	0	3	12	0
FBD	406	420	0.02	8	5	12	0
FC	138	150	0.01	2	69	11	-6
FC	150	156	0.02	0	3	11	-6
FC	156	174	0.02	2	44	12	-6
FC	216	222	0.25	5	3	12	-6
FC	225	400	0.01	4	15	15	-6
FC	406	420	0.01	3	5	11	-6
FC	2400	2500	22.00	8	15	11	-6
FC	8500	10550	0.003	20	15	5	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
FC	14400	15350	22.00	31	15	12	-6
FC	15400	17300	0.003	20	15	5	-6
FCB	156	174	0.02	5	3	11	-6
FD	225	400	0.01	8	5	15	-6
FL	30	50	0.003	5	3	14	-6
FL	50	75	0.25	5	3	12	-6
FL	138	150	0.07	3	69	12	-6
FL	150	156	0.01	2	3	12	-6
FL	156	174	0.02	2	24	12	-6
FL	225	400	0.03	2	5	13	-6
FL	406	420	0.02	2	51	12	-6
FL	420	450	0.10	2	5	11	-6
FL	450	470	0.01	8	86	12	-6
FL	908	928	2.42	8	5	12	-6
FL	960	1215	9.00	6	27	8	-6
FL	1710	1850	8.70	14	5	12	-6
FL	2200	2300	1.22	2	15	5	-6
FL	2400	2500	14.99	6	12	13	-6
FL	5250	5925	30.86	16	15	6	-6
FL	7125	8500	25.00	36	30	13	-6
FL	14400	15350	5.00	42	15	5	-6
FLD	138	150	0.01	1	3	10	-6
FLD	150	156	0.01	1	3	11	-6
FLD	225	400	0.02	2	5	14	-6
FLD	406	420	0.13	9	5	12	-6
FLD	420	450	0.35	1	5	11	-6
FLD	1215	1400	0.23	0	5	12	-6
FLD	1710	1850	16.50	14	15	13	-6
FLD	2200	2300	2.50	13	15	12	-6
FLD	2400	2500	22.00	5	15	14	-6
FLD	4400	4990	1.00	1	15	12	-6
FLD	5250	5925	100.00	20	15	10	-6
FLD	8500	10550	50.00	20	15	12	-6
FLE	150	156	0.08	2	3	12	-6
FLE	156	174	0.01	5	3	11	-6
FLE	406	420	0.01	3	10	12	-6
FLE	420	450	5.10	8	30	11	-6
FLEA	225	400	0.25	8	5	12	-6
FLEA	2200	2300	13.80	13	15	13	-6
FLEA	2300	2400	6.00	0	15	13	-6
FLEA	5250	5925	0.56	15	15	12	-6
FLEB	225	400	0.10	3	5	13	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
FLEB	1710	1850	1.68	0	24	14	-6
FLEB	2200	2300	12.09	14	15	13	-6
FLEB	2300	2400	6.00	0	15	13	-6
FLEB	4400	4990	12.50	0	15	11	-6
FLEB	14400	15350	225.00	39	15	12	-6
FLEC	156	174	0.02	7	3	12	-6
FLEC	216	222	0.13	5	3	12	-6
FLEC	1427	1435	0.25	8	5	12	-6
FLEC	1710	1850	5.00	28	84	14	-6
FLEC	2200	2300	5.00	42	11	14	-6
FLEC	7125	8500	185.00	12	15	10	-6
FLEC	14400	15350	20.00	47	8	13	-6
FLH	156	174	0.01	5	3	11	-6
FLU	108	137	0.51	1	42	14	-6
FLU	225	400	8.46	11	21	14	-6
FX	30	50	1.20	5	3	13	-6
FL	5250	5925	30.86	16	15	6	-6
FX	50	75	2.45	0	14	12	-6
FX	75	75	0.02	2	36	11	-6
FX	138	150	0.29	9	26	11	-6
FX	150	156	0.83	5	31	11	-6
FX	156	174	0.06	5	44	12	-6
FX	216	222	0.01	9	60	11	-6
FX	225	400	0.28	7	41	11	-6
FX	406	420	0.01	7	36	12	-6
FX	420	450	0.42	10	18	13	-6
FX	450	470	0.02	3	24	12	-6
FX	470	908	3.01	8	5	14	-6
FX	908	928	1.17	13	19	12	-6
FX	928	960	0.03	18	15	11	-6
FX	960	1215	12.00	27	19	11	-6
FX	1215	1400	1.64	22	21	12	-6
FX	1427	1435	1.21	22	5	13	-6
FX	1435	1525	2.68	20	30	13	-6
FX	1661	1710	0.98	20	30	12	-6
FX	1710	1850	2.05	22	30	12	-6
FX	2025	2110	7.50	32	84	14	-6
FX	2110	2200	0.02	38	91	12	-6
FX	2200	2300	3.06	18	27	12	-6
FX	2300	2400	4.37	12	16	12	-6
FX	2400	2500	6.35	11	16	11	-6
FX	4400	4990	6.60	29	23	12	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
FX	5000	5250	8.88	7	10	10	-6
FX	5250	5925	15.80	20	13	11	-6
FX	5925	7125	0.01	25	26	12	-6
FX	7125	8500	16.30	37	44	11	-6
FX	8500	10550	8.88	28	14	9	-6
FX	10550	13250	0.01	37	40	12	-6
FX	13250	14000	0.20	43	15	12	-6
FX	14400	15350	21.67	38	33	11	-6
FX	15400	17300	25.20	41	12	11	-6
FXD	138	150	0.01	1	6	11	-6
FXD	150	156	0.01	1	7	12	-6
FXD	156	174	0.01	5	5	12	-6
FXD	216	222	0.01	8	15	12	-6
FXD	225	400	0.01	3	5	11	-6
FXD	406	420	0.01	5	9	12	-6
FXD	420	450	0.10	4	15	12	-6
FXD	450	470	0.01	8	5	12	-6
FXD	908	928	0.26	2	5	12	-6
FXD	1710	1850	4.17	22	6	14	-6
FXD	2200	2300	10.00	33	6	11	-6
FXD	2400	2500	17.47	5	3	14	-6
FXD	4400	4990	16.61	23	11	10	-6
FXD	5250	5925	17.20	5	3	12	-6
FXD	7125	8500	11.83	40	21	9	-6
FXD	14400	15350	21.11	43	15	5	-6
FXE	50	75	0.01	2	6	12	-6
FXE	75	108	0.01	5	3	12	-6
FXE	138	150	0.02	3	51	11	-6
FXE	156	174	0.34	8	19	12	-6
FXE	216	222	0.01	9	36	12	-6
FXE	225	400	0.11	7	5	12	-6
FXE	406	420	0.01	8	13	12	-6
FXE	450	470	0.02	0	5	11	-6
FXE	908	928	0.01	8	5	12	-6
FXE	1710	1850	0.60	20	91	14	-6
FXE	2200	2300	8.80	31	10	12	-6
FXE	4400	4900	8.67	40	5	13	-6
FXE	7125	8500	25.00	41	15	13	-6
FXE	14400	15350	30.00	43	15	11	-6
FXH	138	150	0.01	0	3	11	-6
FXH	156	174	0.01	5	29	12	-6
FXH	225	400	0.01	5	5	12	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
FXH	406	420	0.02	7	19	12	-6
FXH	908	928	0.02	6	18	9	-6
FXH	1710	1850	0.01	30	70	13	-6
LR	75	108	0.01	5	3	12	-6
LR	138	150	0.03	0	3	8	-6
LR	150	156	0.03	0	3	8	-6
LR	156	174	10.50	35	11	8	-6
LR	216	222	1.50	26	2	5	-6
LR	225	400	80.00	2	5	8	-6
LR	406	420	7.28	29	10	7	-6
LR	420	450	3.29	17	9	11	-6
LR	470	908	0.01	8	64	12	-6
LR	908	928	4.81	64	18	9	-6
LR	960	1215	72.00	48	30	8	-6
LR	1215	1400	1.69	29	470	8	-6
LR	1710	1850	10.00	0	15	8	-6
LR	2700	3700	30.23	30	31	8	-6
LR	5250	5925	18.75	20	6	8	-6
LR	8500	10550	150.17	33	30	9	-6
LR	10550	13250	0.02	20	15	11	-6
LR	13250	14000	9.65	39	10	9	-6
LR	14400	15350	10.72	35	25	8	-6
LR	15400	17300	77.35	40	27	8	-6
MA	108	137	0.01	0	8	14	-6
MA	138	150	0.01	0	22	14	-6
MA	150	156	0.01	0	18	13	-6
MA	156	174	0.01	4	31	12	-6
MA	225	400	0.01	2	16	14	-6
MA	406	420	0.01	0	5	11	-6
MA	450	470	0.02	0	5	11	-6
MA	908	928	0.23	8	5	12	-6
MA	960	1215	4.32	12	11	11	-6
MA	1215	1400	4.84	0	17	12	-6
MA	1427	1435	1.60	0	17	14	-6
MA	1435	1525	0.95	3	17	12	-6
MA	1710	1850	8.85	3	13	12	-6
MA	2200	2300	2.00	19	36	12	-6
MA	2300	2400	18.00	28	15	12	-6
MA	2400	2500	2.22	7	17	13	-6
MA	4400	4990	14.46	17	38	12	-6
MA	5250	5925	16.30	11	15	11	-6
MA	8500	10550	190.53	41	15	11	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
MA	14400	15350	40.69	37	12	12	-6
MAD	108	137	0.01	0	3	13	-6
MAD	225	400	0.18	8	5	12	-6
MAD	420	450	0.09	5	12	12	-6
MAD	1710	1850	0.73	20	15	12	-6
MAD	2200	2300	19.50	20	15	12	-6
MAD	8500	10550	83.32	29	30	12	-6
MAD	14400	15350	144.00	44	30	12	-6
MAP	108	137	1.67	5	3	15	-6
MAP	138	150	0.01	0	3	13	-6
MAP	156	174	0.01	6	6	11	-6
MAP	225	400	0.01	8	5	15	-6
ML	50	75	0.02	1	48	11	-6
ML	75	75	0.02	1	3	11	-6
ML	75	108	0.01	5	58	11	-6
ML	108	137	0.01	5	3	15	0
ML	138	150	0.01	5	42	11	0
ML	150	156	0.01	4	35	11	0
ML	156	174	0.01	3	41	11	0
ML	174	216	0.05	0	3	11	-6
ML	216	222	0.02	0	5	11	-6
ML	225	400	0.01	5	40	12	0
ML	406	420	0.01	6	47	11	0
ML	420	450	6.00	3	5	12	0
ML	450	470	0.01	5	27	11	0
ML	470	908	0.10	3	34	11	-6
ML	908	928	1.02	2	11	12	-6
ML	928	960	0.01	8	9	11	-6
ML	960	1215	9.00	3	23	8	-6
ML	1215	1400	4.18	4	5	12	-6
ML	1710	1850	14.19	8	7	12	-6
ML	1850	2025	3.01	9	6	8	-6
ML	2200	2300	11.41	5	15	9	-6
ML	2300	2400	17.40	3	3	13	-6
ML	2400	2500	8.46	3	16	11	-6
ML	4400	4990	13.06	17	5	10	-6
ML	5250	5925	18.33	0	15	12	-6
ML	10550	13250	0.01	20	15	11	-6
ML	14400	15350	23.00	20	15	12	-6
MLD	50	75	0.02	5	3	12	-6
MLD	138	150	0.01	3	3	12	0
MLD	150	156	0.01	2	3	9	0

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
MLD	156	174	0.01	2	15	11	0
MLD	225	400	0.10	1	5	12	0
MLD	406	420	0.01	1	7	11	0
MLD	420	450	0.03	1	1	11	0
MLD	2200	2300	1.27	3	15	5	-6
MLD	2400	2500	22.00	20	15	14	-6
MLP	138	150	0.01	5	47	11	0
MLP	150	156	0.01	3	31	11	0
MLP	156	174	0.30	3	34	11	0
MLP	174	216	0.01	3	5	9	-6
MLP	216	222	0.11	5	12	11	-6
MLP	225	400	0.01	5	41	8	0
MLP	406	420	6.13	6	31	11	0
MLP	450	470	0.02	4	31	11	0
MLP	470	908	0.64	0	11	10	-6
MLP	908	928	0.79	5	5	11	-6
MLP	1710	1850	14.00	3	15	12	-6
MLP	1850	2025	1.25	0	15	14	-6
MLP	2200	2300	1.70	10	15	5	-6
MLP	2400	2500	15.80	2	15	10	-6
MO	30	50	0.00	5	3	14	-6
MO	50	75	4.45	5	3	8	-6
MO	138	150	5.46	4	13	11	-6
MO	150	156	0.01	4	27	11	-6
MO	156	174	9.43	2	56	11	-6
MO	225	400	0.04	2	1	15	-6
MO	406	420	1.35	3	35	11	-6
MO	420	450	10.05	3	130	13	-6
MO	450	470	9.25	9	73	11	-6
MO	470	908	11.00	6	72	11	-6
MO	908	928	0.19	8	5	13	-6
MO	960	1215	9.00	8	37	8	-6
MO	1710	1850	16.42	4	49	13	-6
MO	2400	2500	4.59	3	1	13	-6
MO	2700	3700	17.00	20	18	13	-6
MO	4400	4990	16.34	10	4	11	-6
MO	5250	5925	16.30	8	15	11	-6
MO	8500	10550	0.01	20	15	8	-6
MO	14400	15350	21.80	31	15	12	-6
MOB	156	174	10.00	5	51	12	-6
MOB	225	400	0.01	1	5	15	-6
MOB	2700	3700	3.00	1	15	11	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
MOB	5250	5925	12.00	51	15	8	-6
MOD	50	75	0.02	5	3	8	-6
MOD	138	150	0.01	5	3	15	-6
MOD	156	174	0.01	5	3	12	-6
MOD	225	400	0.02	2	2	12	-6
MOD	406	420	0.01	8	66	13	-6
MOD	420	450	0.59	3	33	11	-6
MOD	450	470	0.01	8	5	11	-6
MOD	1215	1400	0.23	0	5	12	-6
MOD	1710	1850	16.50	14	15	13	-6
MOD	4400	4990	1.00	2	9	11	-6
MOE	156	174	1.83	6	40	11	-6
MOE	225	400	0.02	0	5	5	-6
MOE	406	420	0.01	3	4	12	-6
MOE	420	450	2.56	0	30	11	-6
MOE	928	960	0.01	8	5	15	-6
MOE	1215	1400	0.23	8	5	12	-6
MOE	2200	2300	7.33	9	1247	12	-6
MOE	2400	2500	6.00	20	15	8	-6
MOEA	50	75	6.00	5	3	8	-6
MOEA	75	108	6.00	5	3	8	-6
MOEA	216	222	6.00	5	3	8	-6
MOEA	225	400	3.10	3	5	11	-6
MOEA	908	928	0.01	8	5	8	-6
MOEA	1427	1435	2.75	30	15	12	-6
MOEA	1435	1525	38.41	30	14	10	-6
MOEA	1710	1850	10.14	30	15	11	-6
MOEA	2200	2300	4.71	20	15	12	-6
MOEA	2300	2400	6.08	20	23	9	-6
MOEA	5250	5925	10.88	21	14	13	-6
MOEB	216	222	0.02	5	3	5	-6
MOEB	225	400	0.29	2	10	12	-6
MOEB	406	420	0.01	8	5	12	-6
MOEB	420	450	9.10	8	5	5	-6
MOEB	470	908	3.50	8	5	13	-6
MOEB	1435	1525	1.67	20	15	13	-6
MOEB	1710	1850	11.73	9	8	12	-6
MOEB	2200	2300	4.45	25	7	12	-6
MOEB	2300	2400	10.96	30	29	12	-6
MOEB	4400	4990	31.00	26	3	12	-6
MOEC	50	75	21.10	5	47	5	-6
MOEC	75	108	16.00	5	146	5	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
MOEC	156	174	5.50	7	3	11	-6
MOEC	174	216	0.01	5	3	12	-6
MOEC	216	222	0.02	5	3	8	-6
MOEC	225	400	0.23	8	5	13	-6
MOEC	406	420	0.01	8	5	8	-6
MOEC	450	470	0.01	0	5	11	-6
MOEC	908	928	0.01	8	5	12	-6
MOEC	1427	1435	0.02	8	5	5	-6
MOEC	1435	1525	1.67	20	15	13	-6
MOEC	1710	1850	17.00	30	15	11	-6
MOEC	2200	2300	3.25	19	3	12	-6
MOEC	2300	2400	2.04	20	15	13	-6
MOEC	14400	15350	16.67	47	8	13	-6
MOH	156	174	0.01	3	25	12	-6
MOP	138	150	0.01	1	68	11	-6
MOP	150	156	0.01	0	13	12	-6
MOP	156	174	0.01	5	49	9	-6
MOP	225	400	0.01	0	5	13	-6
MOP	406	420	0.06	10	12	9	-6
MOU	108	137	4.50	0	3	10	-6
MR	216	222	0.07	5	3	7	-6
MR	420	450	10.29	10	25	9	-6
MR	470	908	16.00	8	5	5	-6
MR	908	928	13.92	5	5	8	-6
MR	960	1215	0.65	5	5	8	-6
MR	1215	1400	16.00	8	5	5	-6
MR	1710	1850	10.00	0	15	8	-6
MR	2400	2500	51.43	3	15	8	-6
MR	2700	3700	17.03	17	15	9	-6
MR	5250	5925	7.37	21	5	7	-6
MR	8500	10550	12.66	20	20	8	-6
MR	10550	13250	0.10	20	15	5	-6
MR	14400	15350	11.20	32	15	8	-6
MR	15400	17300	312.00	20	15	8	-6
MRP	908	928	20.00	3	5	11	-6
MRP	8500	10550	8.92	30	1	7	-6
MS	108	137	0.01	5	3	15	-6
MS	138	150	0.01	3	12	12	-6
MS	150	156	0.01	2	3	11	-6
MS	156	174	1.12	3	88	10	-6
MS	225	400	0.01	1	20	15	-6
MS	406	420	0.01	3	17	11	-6

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
MS	908	928	0.23	2	5	12	-6
MS	2400	2500	22.00	8	15	11	-6
MSP	138	150	0.01	1	16	12	-6
MSP	150	156	0.01	0	10	12	-6
MSP	156	174	0.01	4	31	11	-6
MSP	225	400	0.01	3	5	8	-6
MSP	406	420	0.01	8	5	8	-6
MSP	450	470	0.02	8	5	11	-6
MSP	5250	5925	271.61	49	15	8	-6
NLC	2700	3700	9.81	5	12	7	-6
NLC	8500	10550	9.91	11	12	7	-6
NR	960	1215	16.39	17	1	8	-6
NR	2700	3700	2.74	34	15	9	-6
NR	5250	5925	3.40	15	15	8	-6
NR	8500	10550	15.96	22	30	8	-6
NR	13250	14000	0.65	20	15	8	-6
OD	156	174	0.02	9	70	11	-6
OD	406	420	0.02	12	13	11	-6
OD	450	470	0.01	3	6	11	-6
OE	908	928	0.23	8	5	12	-6
RN	960	1215	8.29	12	37	8	-6
RN	2700	3700	2.40	31	3	8	-6
RN	5000	5250	0.06	22	15	12	-6
RN	5250	5925	8.00	4	15	8	-6
RN	8500	10550	23.72	31	22	7	-6
RN	14400	15350	8.00	36	9	8	-6
RN	15400	17300	15.60	19	3	9	-6
SA	908	925	2.20	29	2	8	-6
SA	8500	10550	0.81	21	15	8	-6
SMB	400	406	0.02	1	5	13	-6
SMB	5250	5925	0.10	20	15	5	-6
SMD	2700	3700	7.48	44	24	8	-6
SMD	5250	5925	4.01	43	20	7	-6
SMD	7125	8500	4.00	38	5	8	-6
SMD	8500	10550	11.25	38	5	7	-6
SMRG	225	400	0.14	3	5	14	-6
SMRG	400	406	0.06	3	5	14	-6
SS	138	150	0.02	15	3	12	-10
TC	7125	8500	13.33	22	16	12	-10
TC	8500	10550	5.13	21	15	11	-10
TE	225	400	0.01	0	5	14	-10
TF	2025	2110	0.10	6	15	14	-10

Table 2-3. Incumbent System Receiver Data by Station Class (Continued)

Station Class[a]	Frequency Range		Average 3 dB BW (MHz)	Antenna Gain (dBi)	Average Height (m)	Average Noise Figure (dB)	$(I/N)_{TH}$ (dB)
	Minimum Frequency (MHz)	Maximum Frequency (MHz)					
TG	1610	1661	0.02	19	15	13	-10
TH	2025	2110	0.10	6	15	14	2
TM	400	406	0.35	6	5	9	-10
TM	2025	2110	9.99	18	15	13	-10
TT	1525	1610	0.16	3	15	14	-10
TT	1610	1661	0.16	3	15	14	-10
TT	2025	2110	0.01	5	15	14	-10
TW	2025	2110	0.93	12	15	12	-10
TW	7125	8500	10.00	6	15	12	-10
VA	138	150	0.01	5	3	14	-10
VA	1610	1661	0.01	20	15	14	-10
Satellite Navigation Receiver Systems	1575	1575	21.83	19	10	10	-10
	1227	1227	21.83	19	10	10	-10
	1176	1176	20.47	0	10	11	-10

[a.] Satellite Navigation Receiver System operations are not typically assigned a station class. Three sets of protection criteria that correspond to L1, L2, and L5 GPS receiver operations have been defined in this report due to their relevant operational importance.

3. REFERENCES

1. *Manual of Regulations and Procedures for Radio Frequency Management*. National Telecommunications and Information Administration. Washington, DC: January 2008 (revision May 2013).

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4. ACRONYM LIST

BW	Bandwidth
EIRP	Equivalent Isotropic Radiated Power
EMC	Electromagnetic Compatibility
EME	Electromagnetic Environment
$(I/N)_{TH}$	Interference-to-Noise Threshold
LO	Low Observable
LODMS	Low Observable Diagnostic Measurement Systems
MDL	Mobile Diagnostic Laboratory
NA	Not Available
NTIA	National Telecommunications and Information Administration
RF	Radio Frequency
RFI	Radio Frequency Interference
Rx	Receive
SCI	Sensor Concepts Incorporated
Tx	Transmit

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