



September 30, 2016

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Attention: Mindel De La Torre, Chief, International Bureau

Re: Fixed Wireless Communications Coalition, Request for an Audit of Licensed Satellite Earth Stations in Bands Shared with the Terrestrial Fixed Service

Dear Ms. Dortch:

On behalf of the Fixed Wireless Communications Coalition, Inc. (FWCC),¹ I am writing to request an audit of Fixed Satellite Service (FSS) earth stations in bands that are shared on a co-primary basis with Fixed Service (FS) stations. The audit is needed because, according to our sample, a substantial majority of licensed FSS earth stations in shared bands have been decommissioned, never existed, or are mislocated from their licensed coordinates. The erroneous entries in the Commission's database block the coordination of needed FS links.

¹ The FWCC is a coalition of companies, associations, and individuals actively involved in the fixed services—i.e., terrestrial fixed microwave communications. Our membership includes manufacturers of microwave equipment, fixed microwave engineering firms, licensees of terrestrial fixed microwave systems and their associations, and communications service providers and their associations. The membership also includes railroads, public utilities, petroleum and pipeline entities, public safety agencies, cable TV providers, backhaul providers, and/or their respective associations, communications carriers, and telecommunications attorneys and engineers. Our members build, install, and use both licensed and unlicensed point-to-point, point-to-multipoint, and other fixed wireless systems, in frequency bands from 900 MHz to 95 GHz. For more information, see www.fwcc.us.

The FWCC has corresponded on this issue with some of Ms. De La Torre's predecessors,² each of whom led us to understand that the data we presented at the time was insufficient to justify the relief we seek. We now respond to those objections with the data below.

INTRODUCTION

The bands that are shared between FS and FSS cover part or all of every fixed service band essential for long-range and/or high-capacity communications. Because the bands above 24 GHz are the topic of an ongoing proceeding that addresses the relationships between wireless and satellite services,³ among other issues, we exclude those bands from this request. We seek relief as to 3.7-4.2, 5.925-6.425, 10.7-11.7, and 12.75-13.25 GHz.

A would-be FS license applicant is required to undertake prior frequency coordination with both FS and FSS licensees and prior applicants, while an FSS applicant coordinates only with the FS.⁴ Specifically, the coordinator for a proposed FS link evaluates the interference it would both cause to, and receive from, earlier-coordinated links and earth stations. The coordinator for a proposed FSS earth station evaluates the interference it would cause to, or receive from, earlier-coordinated FS links. In all cases, coordinators rely on the Commission's licensing databases to ascertain the locations and frequencies of both FS stations and earth stations. The accuracy of those databases is key to successful coordination.

The databases, which rely on information provided by the licensees, are not always correct. Some FS coordinations fail because an FSS earth station in the database is predicted to cause or receive interference, even though a first-hand look at the earth station site may show the earth station was abandoned, or was never constructed, or is located somewhere else. The presence of non-existent earth stations in the database causes the frequency coordinator to rule out proposed FS stations that, if built, would neither cause nor receive interference. This unnecessarily limits FS service and/or adds to its cost, and wastes scarce spectrum.

For earth stations in frequency bands that are shared with terrestrial systems, the Commission requires construction within one second of the latitude and longitude specified in the license.⁵

² See Letter from Andrew Kreig, FWCC, to Helen Domenici, Chief, International Bureau (Nov. 26, 2008); Letter from Dennis Guill, FWCC, to Donald Abelson, Chief, International Bureau (Feb. 2, 2004); Letter from Ronald D. Coles, FWCC, to Donald Abelson, Chief, International Bureau (June 20, 2002).

³ *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14-177 *et al.*, Report and Order and Further Notice of Proposed Rulemaking, FCC 16-89 (released July 14, 2016).

⁴ 47 C.F.R. §§ 25.203(c), 101.103. Earth stations send and receive in different bands, and so cannot cause interference to one another. FS stations send and receive in the same band.

⁵ 47 C.F.R. §§25.118(a)(1)(iii).

The application form requires the site elevation to the nearest meter.⁶ The earth station must be brought into operation within 12 months of licensing.⁷ The license cancels automatically 90 days after a station is dismantled.⁸ As we show below, however, almost two-thirds of the earth stations in our sample that were licensed more than 12 months earlier in fact are nonoperational, nonexistent, or mislocated. Their continued listings in the database block urgently needed FS coordinations.

DATA SUPPORTING THE REQUEST

Exhibit A is a listing of 300 C-band earth stations, sorted by call sign, all of them actively licensed in the IBFS database. We started with a list of 5407 licenses in no particular order, and after winnowing surrendered or expired licenses, evaluated the first 300 on the list. The result is a fair sample of the overall license population.

Our evaluation included an inspection of each licensed site on Google Earth, in many cases comparing multiple images over a span of several years. This is a summary of the results:

Finding	Count
Earth station exists w/in 100 ft of licensed coordinates	106 (35.3%)
Earth station more than 100 ft away from licensed coordinates	113 (37.7%)
Earth station once operational but since decommissioned	35 (11.7%)
Earth station not found	46 (15.3%)
TOTALS	300 (100.0%)

Barely a third of the sampled earth stations are operational within 100 feet of their licensed coordinates. Over a quarter do not exist.

Our 100-foot cutoff for coordinates is comparable to, or exceeds, the one-second margin of error the Commission allows in license coordinates.⁹

As examples of the findings in Exhibit A: Figure 1 shows before-and-after site photos (2006 and 2008) of an earth station that was decommissioned and the building demolished in 2008. The license nonetheless is currently active and valid through 2020.

⁶ FCC Form 312, schedule B, section B1, item B11.

⁷ 47 C.F.R. § 25.133(a)(1).

⁸ 47 C.F.R. § 25.161(c).

⁹ 47 C.F.R. §§25.118(a)(1)(iii).



Figure 1
Location of Call Sign E050101
Photos from 2006 (left) and 2008 (right)

Similarly, Figures 2 and 3 show the locations of two other earth stations that currently have licenses in force, but the earth stations do not exist. (The visible objects in these pictures are Google Earth “pins.”)



Figure 2
Location of Call Sign E6971



Figure 3
Location of Call Sign E990005

These photos are not in any way exceptional, but are representative of the entries in Exhibit A marked “decommissioned” or “no earth station.” To obtain comparable images for any other license location, simply load the free version of Google Earth and enter the license coordinates in the search box. Click on the date at lower left to bring up a slider control that displays the site over a span of years.

DETAILS OF THE REQUEST

We ask the International Bureau to conduct an audit of licensed FSS earth stations, in bands shared with the FS below 24 GHz, to correct the database as to earth stations that are beyond the construction period but were never built, have been dismantled, or are distant from their licensed coordinates.

The audit could be similar to two conducted by the Wireless Telecommunications Bureau covering Private Land Mobile Radio licenses below 512 MHz and, separately, in the 220-222 MHz band.¹⁰ In each, the Bureau mailed a printed form to all listed licensees, requesting confirmation that the licensed stations in fact were constructed and operating. The Bureau subsequently cancelled a great many licenses over dozens of public notices, citing the audit. The 220-222 MHz band audit resulted in the cancellation of 32% of 956 licenses.¹¹

We urge the Commission to initiate an audit that requires each earth station licensee of record to certify that the station described in the license is actually in operation (unless within the initial year of the license), within one second of latitude and longitude of the location specified in the license, and at the site elevation in the license.¹² Respondents should be required to verify or correct coordinates and elevation. After allowing a reasonable time for response and follow-up, where necessary, we ask that the Commission cancel any license that lacks an associated certification and remove it from the database, under the authority of Section 25.161. We also ask the Commission to repeat the audit process periodically, perhaps every three years.

The audit would be far less burdensome to licensees than the procedure for registering 3600-3650 and 3700-4200 MHz earth stations against Citizens Broadband Radio Service interference. That registration requires *annual* submission not only of the earth station's location, but also of its antenna gain, azimuth and elevation antenna gain patterns, antenna azimuth, and antenna elevation angle.¹³ We request an audit only of location and elevation, and only every three years.

Because of different coordination procedures, an FSS earth station ties up far more spectrum than an FS link.¹⁴ In consequence, an incorrectly licensed earth station is much more likely to

¹⁰ *Wireless Telecommunications Bureau Announces Commencement of an Audit of the Construction and Operational Status of Private Land Mobile Radio Stations*, DA 01-1575 (released Aug. 1, 2001) (below 512 MHz); *Wireless Telecommunications Bureau Announces an Audit of the Operational Status of Certain 220-222 MHz Band Licenses*, DA 03-1089 (released April 9, 2003) (220-222 MHz).

¹¹ *Wireless Telecommunications Bureau Announces Conclusion of 220 MHz Spectrum Audit*, DA 03-3666 (released Nov. 18, 2003).

¹² An earth station operating in a frequency band that is shared with terrestrial systems may not relocate by more than one second of latitude or longitude without prior Commission authorization. 47 C.F.R. § 25.118(a)(1)(iii).

¹³ 47 C.F.R. § 96.17(d).

¹⁴ An FS link is not allowed a license for more radio bandwidth than it will actually use, and is licensed only along a specified azimuth between two fixed points. 47 C.F.R. § 101.141(a). An FSS earth station, in contrast, is routinely licensed for the entire uplink or downlink band (or both), even if it uses only a small fraction of the band, and for the entire geostationary arc, even if it communicates with only one satellite. An earth station accordingly blocks out far more spectrum, and far more real estate, than does an FS link. *See Communications Satellite Corp.*,

block coordination of an FS link than the reverse. This makes a comparable audit of FS links a relatively inefficient use of resources. Even so, the FWCC would not object to such an audit, if conducted in conjunction with the requested earth station audit.

PUBLIC INTEREST

A frequency-coordinated but non-operational or incorrectly located earth station takes spectrum out of use, preventing an FS station that might otherwise derive value from the spectrum from doing so. The audit we request is a relatively easy and inexpensive way of returning spectrum in critical bands to productive use.

An important benefit of the audit will be to confirm that database locations and elevations of coordinated earth stations are correct and to update them where necessary. A wrongly located site not only denies access to proposed systems, but may produce unanticipated interference to both new and incumbent FS stations. With the availability of accurate, inexpensive, GPS-based equipment, there is no longer any excuse for wrongly locating an earth station or not correcting inaccurate coordinate or elevation data.

To promote corrections where needed, we urge the Commission not to use either Exhibit A or the audit results as a trigger for enforcement, but rather to offer an amnesty both for location errors and for missing or inoperative earth stations to licensees who make a timely response to the audit. We further suggest that earth stations filing to update coordinates or elevation not be charged a filing fee.

Ms. Marlene H. Dortch, Secretary

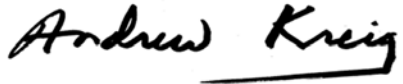
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CONCLUSION

We appreciate your attention to this matter. If you have any questions, please contact me directly.

Respectfully submitted,

A handwritten signature in black ink that reads "Andrew Kreig". The signature is written in a cursive style with a horizontal line underneath the name.

Andrew Kreig
Co-Chair, Fixed Wireless Communications Coalition, Inc.
Eagle View Capital Strategies
701 Pennsylvania Ave. NW, PH 8
Washington, DC 20004
(202) 638-0070

cc: Chairman Tom Wheeler
Commissioner Mignon Clyburn
Commissioner Jessica Rosenworcel
Commissioner Ajit Pai
Commissioner Michael O'Rielly
Jon Wilkins, Chief, Wireless Telecommunications Bureau
Office of the Secretary (4 copies)

Call Sign	Status Date	Expire Date	Licensed		Actual		State	Outcome	Remarks
			Lat	Long	Lat	Long			
E000002	11/17/2010	11/22/2025	32 54 3	117 14 29			CA	decommissioned	previously operational
E000210	5/19/2010	6/15/2025	36 56 45	106 59 21	36 57 09.9	106 59 06.7	NM	location off by 2,780 ft	
E000290	7/28/2010	8/24/2025	18 22 48.8	66 3 16.6	18 22 50.5	66 03 17.5	PR	location off by 200 ft	
E000293	7/28/2010	8/24/2025	18 22 47.8	66 4 7.6			PR	no earth station	industrial area
E000347	12/15/2010	9/29/2025	18 25 50.8	65 59 29.6	18 25 52.9	65 59 33	PR	location off by 380 ft	
E000348	12/15/2010	9/29/2025	41 57 17.9	71 8 1.3			MA	no earth station	industrial area
E000355	7/28/2010	9/25/2025	39 13 1.2	77 16 31	39 12 57.8	77 16 27.5	MD	location off by 430 ft	
E000372	7/28/2010	7/28/2025	43 10 50	87 57 49.3	43 10 48.3	87 57 49.9	WI	location off by 180 ft	
E000373	7/28/2010	7/28/2025	43 3 32	89 31 15.4	43 03 30.9	89 31 14.7	WI	location off by 120 ft	
E000374	7/28/2010	7/28/2025	42 5 38.8	75 57 26.3			NY	OK	
E000375	7/28/2010	7/28/2025	43 51 42.4	91 14 16.5			WI	OK	
E000377	7/21/2010	7/28/2025	45 45 41.8	108 34 31.5			MT	OK	
E000378	7/28/2010	7/28/2025	44 29 59	88 3 13			WI	OK	
E000381	7/28/2010	7/28/2025	31 29 58.6	97 13 6.3	31 29 57	97 13 06.4	TX	location off by 160 ft	
E000382	7/21/2010	7/28/2025	40 29 35	99 4 58.3			NE	OK	
E000383	7/21/2010	7/28/2025	41 12 16	100 44 4.5			NE	OK	
E000385	7/21/2010	7/28/2025	42 27 31	96 25 40.1			NE	no earth station	residential area
E000386	7/21/2010	7/28/2025	39 30 15.7	119 45 47.7	39 30 14	119 45 46	NV	location off by 210 ft	
E000388	7/28/2010	7/28/2025	36 49 15.5	76 30 39.2	36 49 16.2	76 30 37.4	VA	location off by 160 ft	
E000389	7/28/2010	7/28/2025	37 15 5	79 57 39.6			VA	OK	
E000390	7/28/2010	7/28/2025	47 36 39.6	117 22 3.7			WA	OK	
E000391	7/28/2010	7/28/2025	37 34 47.1	77 29 10			VA	OK	
E000393	7/21/2010	7/28/2025	43 3 35.6	83 45 2.4			MI	OK	
E000394	7/21/2010	7/28/2025	35 5 52.5	106 37 38.9			NM	decommissioned	previously operational (see photos in text)
E000396	7/21/2010	7/28/2025	42 42 16.3	73 52 25.4			NY	decommissioned	previously operational
E000397	7/28/2010	7/28/2025	35 12 8.7	101 50 8.9	35 12 08.5	101 50 04.7	TX	location off by 340 ft	
E000399	7/21/2010	7/28/2025	44 5 30.8	92 30 36.6			MN	OK	
E000401	7/21/2010	7/28/2025	37 17 14	89 33 30			MO	OK	
E000402	7/28/2010	7/28/2025	35 55 17.8	84 4 43.7			TN	OK	
E000403	7/21/2010	7/28/2025	38 57 54.2	92 19 52.7			MO	OK	
E000405	7/21/2010	7/28/2025	39 4 19	94 35 51			MO	OK	
E000408	7/28/2010	7/28/2025	35 1 51.3	85 17 31.3			TN	OK	
E000410	7/28/2010	7/28/2025	44 5 14.4	123 3 43.3	44 05 12.7	123 03 39.3	OR	location off by 350 ft	
E000411	7/28/2010	7/28/2025	44 5 30.4	121 18 24.1			OR	decommissioned	previously operational
E000412	7/28/2010	7/28/2025	35 32 58.2	97 29 25.1			OK	OK	
E000413	7/28/2010	7/28/2025	41 3 24	80 37 43.1			OH	no earth station	residential area (see photo in text)
E000414	7/28/2010	7/28/2025	41 39 10.2	83 31 56.8			OH	OK	
E000418	7/28/2010	7/28/2025	43 11 44.3	75 26 38.1			NY	decommissioned	previously operational
E000419	7/28/2010	7/28/2025	43 3 31.7	76 8 0.2			NY	OK	
E000420	7/28/2010	7/28/2025	43 58 55.8	75 56 39.9			NY	OK	
E000421	7/21/2010	7/28/2025	35 59 34	78 54 13			NC	decommissioned	previously operational
E000422	7/21/2010	7/28/2025	35 56 13.4	79 58 46.3			NC	OK	
E000424	7/21/2010	7/28/2025	46 48 23.5	100 44 39.5			ND	OK	
E000425	7/28/2010	7/28/2025	39 6 7.2	84 31 27.8			OH	OK	
E000426	7/28/2010	7/28/2025	29 29 25.8	98 34 10.8			TX	OK	
E000427	7/28/2010	7/28/2025	31 27 25.6	100 26 9.8			TX	OK	
E000428	7/28/2010	7/28/2025	33 30 16.2	101 52 18.2			TX	OK	
E000429	7/28/2010	7/28/2025	32 26 56.8	94 42 52.5			TX	OK	
E000430	7/28/2010	7/28/2025	42 20 12.5	122 51 39.1			OR	OK	
E000432	7/28/2010	7/28/2025	42 2 26.2	80 4 10.2			PA	OK	
E000433	7/28/2010	7/28/2025	40 16 12.3	78 51 34			PA	OK	
E000435	7/28/2010	7/28/2025	39 56 59.4	75 8 49.1			PA	OK	
E000436	7/28/2010	7/28/2025	40 29 41.2	80 0 16.2			PA	OK	
E000437	7/28/2010	7/28/2025	39 56 25.9	76 41 47	39 56 26.3	76 41 51.5	PA	location off by 350 ft	
E000438	7/28/2010	7/28/2025	39 43 28.2	84 15 16.8			OH	OK	
E000439	7/28/2010	7/28/2025	41 48 13.7	71 21 37.2			RI	no earth station	residential area
E000441	7/28/2010	7/28/2025	34 51 29.4	82 15 44.4	34 51 29.4	82 15 47.6	SC	location off by 260 ft	
E000442	7/28/2010	7/28/2025	39 58 33.7	83 3 32.7	39 58 32.5	83 03 33.2	OH	location off by 130 ft	
E000443	7/28/2010	7/28/2025	41 31 48.2	81 38 58.5	41 31 47.6	81 38 56.1	OH	location off by 190 ft	
E000444	7/28/2010	7/28/2025	44 3 59.9	103 15 1			SD	OK	
E000445	7/28/2010	7/28/2025	43 32 40.9	96 45 45.2	43 32 41.1	96 45 48.2	SD	location off by 220 ft	
E000449	7/21/2010	7/28/2025	37 41 20	97 23 17.2			KS	OK	
E000453	7/21/2010	7/28/2025	39 20 1	76 38 49.9			MD	OK	
E000476	7/21/2010	7/28/2025	42 13 47.4	71 10 48.9	42 13 49.5	71 10 49.2	MA	location off by 210 ft	
E000477	7/28/2010	7/28/2025	44 13 37.1	85 22 30.2	44 13 37.1	85 22 28.6	MI	location off by 120 ft	
E000479	7/21/2010	7/28/2025	41 53 15.1	87 37 26.7	41 53 13.2	87 37 24.6	IL	location off by 250 ft	
E000480	7/21/2010	7/28/2025	42 17 25.1	89 9 49.4			IL	decommissioned	previously operational
E000481	7/21/2010	7/28/2025	39 47 3.2	89 36 26.4	39 47 04	89 36 28.8	IL	location off by 200 ft	
E000482	7/21/2010	7/28/2025	41 39 4.2	85 59 0			IN	OK	
E000483	7/21/2010	7/28/2025	37 58 30.6	87 34 34.1	37 58 29.5	87 34 33.3	IN	location off by 120 ft	
E000485	7/21/2010	7/28/2025	39 47 12.9	86 9 30			IN	decommissioned	previously operational
E000488	7/28/2010	9/27/2025	33 39 51	84 16 18			GA	OK	
E000528	7/28/2010	8/21/2025	33 26 55.1	112 4 49.5			AZ	OK	
E000529	7/28/2010	8/21/2025	33 31 4.8	112 4 47.5			AZ	location off by 380 ft	
E000532	7/28/2010	8/21/2025	38 31 30	121 27 5.9	38 31 31	121 27 06.9	CA	location off by 130 ft	
E000533	7/28/2010	8/21/2025	36 39 37.6	121 36 53.6	36 39 36.5	121 36 59.5	CA	location off by 500 ft	
E000534	7/28/2010	8/21/2025	26 38 50.6	81 59 17.6	26 38 50	81 59 18.5	FL	location off by 110 ft	
E000535	7/28/2010	8/21/2025	30 16 51.4	81 30 50.1	30 16 53.1	81 30 52.9	FL	location off by 300 ft	
E000536	7/28/2010	8/21/2025	25 51 0.8	80 9 19.2			FL	OK	
E000537	7/28/2010	8/21/2025	28 44 18	81 22 6.7	28 44 15.6	81 22 09.7	FL	location off by 350 ft	
E000538	7/28/2010	8/21/2025	27 56 42.5	82 27 49.3			FL	no earth station	university campus

Call Sign	Status Date	Expire Date	Licensed		Actual		State	Outcome	Remarks
			Lat	Long	Lat	Long			
E000541	7/28/2010	8/21/2025	37 13 24.7	93 14 29.7			NH	OK	
E000543	7/28/2010	8/21/2025	30 13 20.7	92 3 50.9	30 13 18.9	92 03 49.4	LA	location off by 230 ft	
E000546	7/28/2010	8/21/2025	31 59 32.2	81 7 51.4			GA	OK	
E000547	7/28/2010	8/21/2025	32 49 57.8	83 37 42.6			KY	OK	
E000548	7/28/2010	8/21/2025	33 30 39.5	82 6 0.9			GA	OK	
E000549	7/28/2010	8/21/2025	26 46 57.2	80 6 5.7	26 46 57.2	80 06 03	FL	location off by 250 ft	
E000551	7/28/2010	8/21/2025	35 12 14	80 47 54.8			NC	OK	
E000555	7/28/2010	8/21/2025	41 15 37.5	75 49 4.5			PA	OK	
E000556	7/28/2010	8/21/2025	32 51 59.6	80 0 16.6			NC	OK	
E000558	7/28/2010	8/21/2025	33 40 26.1	78 56 13.6			SC	OK	
E000559	7/28/2010	8/21/2025	31 49 14.5	102 22 44.5			TX	OK	
E000560	7/28/2010	8/21/2025	33 53 22.6	98 33 32.4	33 52 21	98 33 31	TX	location off by 200 ft	
E000585	8/11/2010	10/23/2025	37 54 16.7	122 19 0.9			CA	OK	
E000586	9/8/2010	11/6/2025	37 54 17.8	122 18 57	37 54 17.1	122 18 59.7	CA	location off by 230 ft	
E000590	12/15/2010	11/16/2025	33 58 54	118 25 32.3			CA	OK	
E000596	9/8/2010	11/6/2025	37 54 18	122 18 56.6	37 54 17.3	122 18 59.7	CA	location off by 260 ft	
E000601	8/18/2010	9/19/2025	34 1 59	118 27 27.3	34 02 00.3	118 27 23.9	CA	location off by 320 ft	
E000603	8/18/2010	9/19/2025	30 22 37.3	91 5 49.4			LA	OK	
E000605	8/18/2010	9/19/2025	29 57 35.6	90 6 12.6	29 57 38	90 06 13.1	LA	location off by 240 ft	
E000607	8/18/2010	9/19/2025	32 30 20.7	92 10 37	32 30 18.8	92 10 35.4	LA	location off by 230 ft	
E000612	8/18/2010	9/19/2025	34 19 25.3	88 41 31.9			MS	OK	
E000613	8/18/2010	9/19/2025	32 16 36.5	88 42 45.6			MS	OK	
E000616	8/18/2010	9/19/2025	36 3 52.5	89 56 45.6			TN	OK	
E000617	8/18/2010	9/19/2025	30 16 15.8	97 44 26			TX	OK	
E000618	8/18/2010	9/19/2025	32 46 58.5	96 48 12	32 46 56.1	96 48 11.1	TX	location off by 250 ft	
E000619	8/18/2010	9/19/2025	47 38 8.6	122 20 27.5			WA	OK	
E000626	10/6/2010	9/28/2025	36 7 24.2	96 21 29	36 07 24.6	96 21 27.5	OK	location off by 130 ft	
E000647	10/6/2010	10/16/2025	47 52 45	122 14 45	47 52 40.8	122 14 45.7	WA	location off by 430 ft	
E030139	8/6/2003	6/5/2018	37 46 31.5	79 56 28.2			VA	decommissioned	previously operational
E030165	9/24/2003	7/23/2018	41 34 52.3	75 25 54.7	41 34 55.8	75 25 54	PA	location off by 360 ft	
E030296	1/7/2004	10/29/2018	41 40 14	71 30 23	41 40 16.3	71 30 24.3	RI	location off by 240 ft	
E030354	2/4/2004	12/18/2018	41 13 24.5	73 14 36.8			CT	OK	
E040083	4/7/2004	2/13/2019	42 16 40	83 45 16	42 16 38.4	83 45 15.4	MI	location off by 180 ft	
E040087	4/7/2004	2/13/2019	32 3 32	81 17 57			GA	decommissioned	previously operational
E040235	7/7/2004	5/20/2019	37 30 45	77 36 4			VA	OK	
E040327	9/15/2004	8/5/2019	41 21 9.8	72 4 17.3	41 21 09.4	72 04 15.4	CT	location off by 150 ft	
E040332	10/27/2004	8/13/2019	44 26 4	68 35 25	44 26 00.2	68 35 22.3	ME	location off by 460 ft	
E040380	11/24/2004	11/17/2019	38 39 44	90 15 41	38 39 41.9	90 15 41.2	MO	location off by 210 ft	
E050089	5/18/2005	4/5/2020	42 38 15.2	78 37 11.1			NY	OK	
E050101	5/25/2005	5/23/2020	29 11 40.7	81 4 25.8			FL	decommissioned	previously operational; buildings
E050128	6/15/2005	4/29/2020	43 10 49.8	95 38 36			IA	OK	
E050324	12/14/2005	11/5/2020	30 17 25	97 44 22			TX	OK	
E050357	12/14/2005	11/30/2020	38 20 45.4	75 36 18.5			MD	OK	
E060048	4/5/2006	2/20/2021	41 35 48	71 11 22	41 35 48.9	71 11 18.8	RI	location off by 260 ft	
E060079	4/19/2006	3/3/2021	44 30 30	73 10 59			VT	OK	
E060266	8/30/2006	7/17/2021	35 46 16.2	78 38 16			NC	OK	
E060341	1/17/2007	8/29/2021	33 22 25	90 32 30			MS	location off by 300 or 870 ft	two possible sites
E070125	8/22/2007	6/26/2022	35 9 41.3	85 19 2.9	35 09 39.5	85 19 05.7	TN	location off by 290 ft	
E070159	9/12/2007	7/27/2022	35 29 15.5	82 33 28.8			NC	OK	
E070212	10/17/2007	8/30/2022	43 39 34.3	70 15 42.8			ME	OK	
E070213	10/17/2007	8/30/2022	46 43 43.6	68 0 2.3			ME	OK	
E080023	3/19/2008	2/4/2023	40 47 7	77 53 51	40 47 2.5	77 53 57	PA	location off by 660 ft	
E080072	4/1/2008	4/1/2023	34 26 52	85 54 18			AL	OK	
E080212	11/12/2008	11/10/2023	41 52 57.7	87 38 51.5			IL	OK	
E080237	1/7/2009	11/24/2023	47 44 56.8	90 21 26.8			MN	OK	
E080250	2/4/2009	1/29/2024	43 2 57	87 56 51.3	43 02 56.2	87 56 54.3	WI	location off by 230 ft	
E090182	12/9/2009	10/26/2024	39 20 5.4	76 36 1.9			MD	no earth station	residential area
E2170	7/21/2010	8/4/2025	40 43 49	88 0 41			IL	no earth station	farm
E2172	7/21/2010	8/4/2025	42 34 21	83 49 22			MI	no earth station	residential area parkland
E2346	7/21/2010	8/18/2025	38 48 25	77 7 31			VA	no earth station	commercial area
E2353	8/11/2010	9/2/2025	40 54 10	85 31 11			IN	decommissioned	previously operational
E2391	8/11/2010	9/15/2025	27 1 39	80 30 15			FL	decommissioned	previously operational
E2481	9/29/2010	10/14/2025	35 3 3	89 52 55			MS	OK	previously operational
E2516	9/15/2010	10/29/2025	38 39 27	94 20 27			MO	no earth station	residential area
E2524	10/6/2010	10/20/2025	32 22 59	106 28 52			NM	decommissioned	previously operational
E2578	6/13/2007	11/12/2010	44 46 18	117 51 47			OR	no earth station	residential area
E2613	1/12/2011	2/25/2026	42 46 28	86 4 15	42 46 27.8	86 04 18.4	MI	location off by 250 ft	
E2628	1/23/2014	12/3/2025	46 24 15	112 43 48	46 24 14.7	112 43 50.2	MT	location off by 160 ft	
E2629	11/10/2010	12/3/2025	41 45 44	76 27 54	41 45 44.9	76 27 51.3	NY	location off by 230 ft	
E2632	10/20/2010	12/10/2025	42 58 5	78 6 33	42 58 04.5	78 06 30.9	NY	location off by 160 ft	
E2656	11/10/2010	12/17/2025	26 11 59	80 15 12			FL	no earth station	cell site
E2675	11/10/2010	12/24/2025	36 22 50	121 25 45	36 22 58.4	121 25 44.4	CA	location off by 850 ft	
E2718	2/23/2011	1/19/2026	33 31 57	86 40 27			AL	OK	
E2734	1/12/2011	2/11/2026	27 37 31	80 23 35			FL	OK	
E2823	1/12/2011	3/4/2026	40 27 6	80 2 48			PA	OK	
E2964	4/6/2011	4/8/2026	33 6 54	89 2 32			MS	no earth station	cell site
E3027	4/6/2011	5/6/2026	39 41 30	86 23 21	39 41 31	86 23 22.9	IN	location off by 170 ft	
E3714	10/26/2011	11/30/2026	38 57 19	75 25 5			DE	decommissioned	previously operational
E3722	12/7/2011	12/31/2026	38 35 48	75 36 45			DE	no earth station	farm / cornfield
E4050	12/7/2011	12/19/2027	31 27 54	90 50 0	31 27 56.1	90 50 4.5	MS	location off by 450 ft	
E4250	3/24/2004	5/7/2017	35 59 49	84 53 11			TN	OK	

Call Sign	Status Date	Expire Date	Licensed		Actual		State	Outcome	Remarks
			Lat	Long	Lat	Long			
E4317	4/24/2002	6/4/2017	40 19 42	79 47 11			PA	decommissioned	previously operational
E4384	6/5/2002	6/11/2017	44 38 54	75 1 7	44 38 54.7	75 1 9.25	NY	location off by 170 ft	
E4422	6/5/2002	6/25/2017	40 9 48	89 23 23			IL	OK	
E4634	9/4/2002	8/27/2017	43 35 30	71 13 15	43 35 30.6	71 13 11.9	NH	location off by 230 ft	
E4648	9/4/2002	8/27/2017	41 49 28	71 24 55			RI	OK	
E4658	9/4/2002	8/27/2017	36 14 32	93 6 39	36 14 33.6	93 06 39.8	AR	location off by 160 ft	
E4677	9/4/2002	8/27/2017	42 0 4	71 30 57			RI	decommissioned	previously operational
E4811	9/18/2002	9/24/2017	42 35 14	72 35 58			MA	no earth station	commercial area
E5120	12/26/2002	12/31/2017	43 2 57	74 20 52			NY	no earth station	residential area
E5137	12/26/2002	12/31/2017	39 3 8	79 0 23			WV	OK	
E5236	2/5/2003	2/11/2018	35 50 16	90 42 2			AR	no earth station	hospital and cemetery
E5242	2/26/2003	2/18/2018	37 47 12	81 11 14			WV	decommissioned	previously operational
E5253	3/12/2003	2/18/2018	32 26 2	80 42 30			SC	decommissioned	previously operational
E5800	6/18/2003	6/10/2018	41 56 35	71 17 5			MA	decommissioned	previously operational
E5828	6/4/2003	6/17/2018	37 24 7	87 44 52	37 24 07.4	87 44 50.4	KY	location off by 150 ft	
E6132	9/3/2003	8/26/2018	39 55 49	85 22 11			IN	OK	
E6201	10/1/2003	9/9/2018	41 34 25	75 15 19			PA	no earth station	commercial area
E6204	10/1/2003	9/9/2018	43 4 44	70 45 47			NH	decommissioned	previously operational
E6368	11/12/2003	10/28/2018	41 22 35	71 49 54			RI	decommissioned	previously operational
E6414	10/29/2003	11/25/2018	34 37 25	92 23 39	34 37 23.0	92 23 42.3	AR	location off by 360 ft	
E6566	1/14/2004	12/16/2018	39 7 23	88 32 37			IL	no earth station	commercial area
E6719	2/11/2004	1/13/2019	40 50 0	77 47 46			PA	decommissioned	previously operational
E6748	3/24/2004	1/27/2019	38 36 44	76 54 18	38 36 44.7	76 54 16.5	MD	location off by 140 ft	
E6900	2/25/2004	3/9/2019	31 18 22	85 50 14			AL	OK	
E6948	2/25/2004	3/23/2019	40 1 13	81 2 10			OH	no earth station	rural area
E6971	3/31/2004	3/23/2019	43 31 45	71 28 35			NH	no earth station	residential area
E7070	3/17/2004	4/27/2019	31 20 45	109 33 7	31 20 46.4	109 33 08.9	AZ	location off by 210 ft	
E7275	6/9/2004	6/22/2019	38 31 51	75 10 56	38 31 52.7	75 10 58.8	DE	location off by 270 ft	
E7504	6/16/2004	8/17/2019	42 8 50	72 42 10	42 08 47.4	72 42 09.9	MA	location off by 270 ft	
E7525	8/4/2004	8/24/2019	39 38 29	77 43 26			MD	no earth station	commercial area
E7772	10/6/2004	10/12/2019	29 37 40	82 20 25			FL	decommissioned	previously operational
E7798	10/6/2004	10/12/2019	41 37 34	79 40 34			PA	no earth station	commercial area
E7937	11/3/2004	11/9/2019	34 14 22	88 42 31			MS	no earth station	newspaper plant
E7992	9/22/2004	11/16/2019	36 43 45	76 34 30	36 43 45.3	76 34 26	VA	location off by 330 ft	
E8190	9/28/2005	1/4/2020	41 18 43	90 22 43	41 18 44.3	90 22 40.7	IL	location off by 230 ft	
E8232	12/29/2004	1/18/2020	36 50 21	83 19 32			KY	no earth station	commercial area
E8252	12/29/2004	1/18/2020	34 45 8	77 23 25			NC	decommissioned	previously operational
E860204	2/1/2006	3/21/2021	40 14 47	75 39 3			PA	no earth station	commercial area
E860238	2/1/2006	3/28/2021	42 52 51	72 33 39	42 52 47.8	72 33 40.5	VT	location off by 340 ft	
E860260	2/1/2006	3/28/2021	35 47 8	80 52 57			NC	decommissioned	previously operational
E860311	2/1/2006	4/4/2021	41 26 32	74 25 24			NY	no earth station	commercial area
E860987	7/26/2006	8/22/2021	38 58 32.2	83 3 33.7			OH	no earth station	rural area
E871088	3/7/2007	5/8/2022	39 42 12	75 34 20			DE	OK	
E880593	10/8/2008	12/9/2023	40 47 46	74 4 10			NJ	OK	
E881191	3/11/2009	4/14/2024	43 55 55	72 17 5			VT	no earth station	forest
E881400	3/11/2009	4/14/2024	35 8 21	90 2 32	35 08 19.6	90 02 30.7	TN	location off by 180 ft	
E890085	3/4/2009	4/21/2024	39 44 4	75 1 34	39 44 00.9	75 01 31.4	NJ	location off by 380 ft	
E890809	8/12/2009	8/25/2024	37 3 17	94 30 49	37 03 16	94 30 50	MO	location off by 130 ft	
E890810	7/15/2009	8/25/2024	43 5 9	71 51 16	43 05 09.3	71 51 12.5	NH	location off by 260 ft	
E900051	1/6/2010	2/2/2025	47 58 38	96 36 32	47 58 36.1	96 36 31	MN	location off by 210 ft	
E900261	8/11/2010	8/24/2025	53 53 55	166 32 13	53 53 51.5	166 32 20	AK	location off by 550 ft	
E900314	8/25/2010	10/5/2025	40 44 22	73 59 9			NY	OK	
E900329	7/21/2010	7/6/2025	26 38 6	80 13 45	26 38 07.7	80 13 44.35	FL	location off by 180 ft	
E900419	11/10/2010	12/14/2025	33 58 30	81 0 58	33 58 31.7	81 00 56.9	SC	location off by 200 ft	
E900478	8/11/2010	8/24/2025	70 14 6	148 22 23	70 14 04.1	148 22 34.7	AK	location off by 440 ft	
E900488	10/6/2010	9/14/2025	46 14 8	112 6 39	46 14 6.9	112 06 39.6	MT	location off by 120 ft	
E900489	10/6/2010	9/14/2025	47 40 40	114 8 29	47 40 40.8	114 08 33.2	MT	location off by 300 ft	
E900491	10/6/2010	9/14/2025	46 19 52	111 31 20	46 19 39.6	111 31 22.4	MT	location off by 1,270 ft	
E900553	8/25/2010	9/28/2025	33 25 30	83 12 51	33 25 30.5	83 12 48.2	GA	location off by 240 ft	
E900563	9/15/2010	9/14/2025	29 56 22	95 24 15			TX	decommissioned	previously operational
E900578	10/6/2010	12/7/2025	44 42 20	73 28 58	44 42 19.5	73 28 54.7	NY	location off by 240 ft	
E900584	8/11/2010	9/28/2025	40 29 41	106 50 46	40 29 43.3	106 50 51.2	CO	location off by 460 ft	
E900585	1/5/2011	1/4/2026	41 7 4	104 47 8			WY	OK	
E910006	10/27/2010	12/14/2025	40 32 2	79 45 16			PA	OK	
E910021	10/6/2010	12/7/2025	65 3 8	146 3 8			AK	no earth station	mountainous
E910066	11/10/2010	12/28/2025	40 32 4	85 40 20	40 32 04	85 40 21.8	IN	location off by 140 ft	
E910067	10/27/2010	12/28/2025	40 32 1	79 45 15			PA	OK	
E910122	1/5/2011	1/25/2026	39 9 52	123 12 34			CA	no earth station	racetrack
E910199	1/12/2011	3/1/2026	40 12 31	85 24 47			IN	OK	
E910352	8/10/2011	8/2/2026	42 21 50	71 7 30			MA	no earth station	commercial area
E920184	4/9/2003	4/4/2018	40 23 27.2	79 46 55.2	40 23 28.7	79 46 54.1	PA	location off by 160 ft	
E920482	6/19/2002	6/24/2017	34 11 33	79 45 53			SC	decommissioned	previously operational
E9269	8/31/2005	7/30/2020	39 0 0	77 3 29	38 59 58.8	77 03 25.4	MD	location off by 320 ft	
E930128	12/26/2002	12/31/2017	41 1 4	92 24 35			IA	no earth station	commercial area
E960031	4/16/2008	2/9/2021	40 3 16.6	75 30 41.4			PA	OK	
E960300	4/19/2006	5/6/2021	39 2 40	80 33 47			WV	no earth station	forest
E960509	7/26/2006	8/19/2021	43 9 18	93 12 11			IA	OK	
E960533	8/30/2006	9/3/2021	26 23 59	80 6 8			FL	decommissioned	previously operational
E960557	8/30/2006	9/3/2021	40 40 51	73 41 6	40 40 51.9	73 41 9.7	NY	location off by 310 ft	
E970465	9/12/2007	9/23/2022	44 27 0	95 47 33			MN	no earth station	residential area
E970503	9/5/2007	9/23/2022	45 44 45	87 3 20	45 44 46.3	87 03 20.4	MI	location off by 140 ft	

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			Lat	Long	Lat	Long			
E980031	10/10/2007	10/23/2022	31 12 41	82 21 28	31 12 50.8	82 21 34.2	GA	location off by 1,140 ft	
E980065	10/10/2007	10/30/2022	40 52 50	85 29 36			IN	no earth station	commercial area
E980267	4/16/2008	5/28/2023	36 22 57	82 24 41	36 22 54.6	82 24 40	TN	location off by 270 ft	
E980437	9/10/2008	9/11/2023	47 7 24	88 34 18			MI	no earth station	commercial area
E990005	12/3/2008	12/15/2023	33 12 43	92 8 34			AR	no earth station	forest (see photo in text)
KA34	9/29/2010	10/15/2025	15 9 31	-145 42 30'			MP	OK	
KA349	5/17/2006	6/3/2021	44 37 58	70 41 54			ME	OK	
KB54	2/13/2012	2/13/2027	41 39 20	93 35 52			IA	OK	
KB56	12/28/2011	2/13/2027	44 3 22	92 24 39	44 03 21.6	92 24 42.5	MN	location off by 260 ft	
KD54	10/13/2010	11/21/2025	46 58 35	123 48 23			WA	no earth station	commercial area
KD74	8/11/2010	9/12/2025	58 19 47	134 28 17	58 19 45.6	134 28 25.2	AK	location off by 460 ft	
KE77	8/11/2010	9/14/2025	36 44 53	108 11 51	36 44 51.9	108 11 53.9	NM	location off by 250 ft	
KE90	8/11/2010	9/14/2025	31 46 55	95 38 26			TX	OK	
KE92	1/12/2011	2/17/2026	61 10 49	149 53 6			AK	no earth station	commercial area
KF37	8/25/2010	10/26/2025	44 13 32	88 22 43			WI	OK	
KF52	8/25/2010	11/14/2025	32 6 56	96 28 58			TX	no earth station	residential area
KF76	11/10/2010	12/16/2025	37 1 26	121 29 7	37 01 27.9	121 29 07.7	CA	location off by 190 ft	
KF77	12/8/2010	1/10/2026	37 2 52	100 54 35			KS	no earth station	cell site
KG26	1/12/2011	2/21/2026	40 43 25	111 51 17	40 43 25.77	111 51 19.2	UT	location off by 180 ft	
KG40	1/12/2011	2/28/2026	32 46 20	108 16 19			NV	no earth station	residential area
KG42	2/9/2011	2/28/2026	41 47 23	107 14 29	41 47 22.3	107 14 31.2	WY	location off by 180 ft	
KG43	1/12/2011	2/28/2026	32 57 32	103 21 15	32 57 33.4	103 21 14.9	NM	location off by 130 ft	
KG55	2/9/2011	3/7/2026	45 59 58	112 31 55	45 59 57	112 31 57.6	MT	location off by 210 ft	
KG56	1/12/2011	3/7/2026	41 13 46	111 56 41	41 13 46.2	111 56 44.3	UT	location off by 260 ft	
KJ78	8/11/2010	10/1/2025	41 44 41	111 48 17	41 44 42.5	111 48 17.7	UT	location off by 150 ft	
KK29	8/25/2010	10/1/2025	41 18 45	105 34 54	41 18 43.8	105 34 52.8	WY	location off by 150 ft	university campus
WB49	2/15/2012	2/13/2027	33 11 55	87 29 7	33 11 56.3	87 29 04.5	AL	location off by 260 ft	
WB50	8/25/2010	10/5/2025	37 46 31	87 9 41			KY	OK	
WB63	4/4/2012	4/1/2027	34 48 52	87 39 3			AL	OK	
WB71	12/22/2010	1/19/2026	28 36 33	81 19 28			FL	OK	
WD39	11/27/2002	10/1/2017	41 25 12	81 42 54			OH	decommissioned	previously operational
WD42	1/12/2011	3/4/2026	41 8 16	87 53 42			IL	decommissioned	previously operational
WD55	3/31/2010	6/16/2025	34 7 10	80 56 16			SC	OK	
WE24	10/27/2010	12/1/2025	35 12 24	80 47 29			NC	OK	
WE61	8/11/2010	9/9/2025	41 56 22	83 59 0			MI	decommissioned	previously operational
WE64	8/11/2010	9/20/2025	37 3 52	86 37 40			KY	no earth station	rural area
WE71	8/11/2010	9/23/2025	30 13 50	85 38 47			FL	OK	
WE72	8/11/2010	9/23/2025	30 30 34	84 16 5			FL	OK	
WE77	9/29/2010	10/5/2025	42 40 50	84 27 36			MI	decommissioned	previously operational
WE80	9/15/2010	10/26/2025	35 43 43	81 19 17	35 43 44.3	81 19 15.9	NC	location off by 170 ft	
WE97	8/25/2010	10/28/2025	34 48 42	77 26 48	34 48 43.9	77 26 46.8	NC	location off by 220 ft	
WE98	9/1/2010	10/28/2025	45 49 10	88 3 5			MI	OK	
WF44	10/13/2010	11/29/2025	38 24 13	75 37 28	38 24 16.49	75 37 22.45	DE	location off by 560 ft	
WF58	11/10/2010	12/7/2025	27 55 39	82 18 5			FL	OK	
WF88	1/5/2011	1/30/2026	39 26 36	87 23 42	39 26 31.6	87 23 41.1	IN	location off by 470 ft	
WG38	1/12/2011	2/13/2026	39 59 49	74 10 21	39 59 51.7	74 10 18.2	NJ	location off by 350 ft	
WG41	3/2/2011	2/14/2026	31 37 9	84 11 15			GA	OK	
WK72	3/24/2004	7/8/2018	38 57 17	77 20 8	38 57 20	77 20 07	VA	location off by 300 ft	
WL84	11/10/2010	12/10/2025	32 20 34	90 17 49	32 20 31.7	90 17 44.5	MS	location off by 440 ft	
WM99	3/24/2004	8/13/2017	39 12 3	75 33 50			DE	OK	
WN29	6/18/2003	7/9/2018	44 30 22	71 11 24	44 30 20.6	71 11 23.8	NH	location off by 140 ft	
WN91	2/15/2012	3/19/2027	39 7 44	74 47 20	39 07 47.8	74 47 16.7	NJ	location off by 460 ft	
WP39	10/9/2002	10/1/2017	36 51 15	81 31 53			VA	decommissioned	previously operational
WR67	9/4/2002	9/17/2017	30 25 21	88 44 58			MS	decommissioned	previously operational
WR88	4/23/2003	1/28/2018	45 38 46	68 45 6	45 38 44.7	68 45 04.2	ME	location off by 180 ft	
WY78	2/24/2010	3/9/2025	42 43 25	90 28 15	42 43 22.9	90 28 11.8	WI	location off by 320 ft	
WZ62	1/27/2010	3/17/2025	43 28 16	85 55 30			MI	no earth station	residential area