



UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION
RADIO STATION AUTHORIZATION

Name: Panasonic Avionics Corporation

Call Sign: E100089

Authorization Type: Modification of License

File Number: SES-MFS-20181128-03302

Non Common Carrier

Grant date: 01/14/2020

Expiration Date: 08/31/2026

Nature of Service: Earth Station Aboard Aircraft

Nature of Service: Fixed Satellite Service

Class of Station: Other

A) Site Location(s)

#	Site ID	Address	Latitude	Longitude	Elevation (Meters)	Special Provisions NAD (Refer to Section H)
1)	MELCO Remotes	US&P, International waters US&P, International, Licensee certifies antenna(s) do not comply with Section 25.209. Please refer to Section E for special conditions placed upon antennas at this site.				NA
2)	PPA Remotes	US&P, International waters US&P, International, Licensee certifies antenna(s) do not comply with Section 25.209. Please refer to Section E for special conditions placed upon antennas at this site.				NA
3)	SPA Remotes	U.S. AND INTERNATIONAL AIRSPACE US & International A, Licensee certifies antenna(s) do not comply with Section 25.209. Please refer to Section E for special conditions placed upon antennas at this site.				NA
4)	TECOM Remotes	US&P, International waters US&P, International, Licensee certifies antenna(s) do not comply with Section 25.209. Please refer to Section E for special conditions placed upon antennas at this site.				NA

Subject to the provisions of the Communications Act of 1934, The Communications Satellite Act of 1962, subsequent acts and treaties, and all present and future regulations made by this Commission, and further subject to the conditions and requirements set forth in this license, the grantee is authorized to construct, use and operate the radio facilities described below for radio communications for the term beginning August 31, 2011 (3 AM Eastern Standard Time) and ending August 31, 2026 (3 AM Eastern Standard Time) . The required date of completion of construction and commencement of operation is January 14, 2021 (3 AM Eastern Standard Time) . Grantee must file with the Commission a certification upon completion of construction and commencement of operation.



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B) Particulars of Operations

The General Provision 1010 applies to all receiving frequency bands.

The General Provision 1900 applies to all transmitting frequency bands.

For the text of these provisions, refer to Section H.

#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
1)	14000.0000-14400.0000	H, V	500KG7D	Tx	27.30	7.12	MELCO		BPSK, QPSK
2)	14000.0000-14400.0000	H, V	9M00G7D	Tx	39.85	7.12	MELCO		BPSK, QPSK
3)	14000.0000-14400.0000	H, V	9M00G7D	Tx	42.15	8.63	MELCO		BPSK, QPSK DIGITAL DATA
4)	14000.0000-14400.0000	H, V	500KG7D	Tx	32.70	11.73	MELCO		BPSK, QPSK DIGITAL DATA
5)	11700.0000-12200.0000	H, V	1M20G7D	Rx			MELCO		BPSK, QPSK DIGITAL DATA
6)	11700.0000-12200.0000	H, V	54M0G7D	Rx			MELCO		BPSK, QPSK DIGITAL DATA
7)	11450.0000-12200.0000	H, V	1M20G7D	Rx			MELCO		BPSK, QPSK DIGITAL DATA
8)	11450.0000-12200.0000	H, V	27M0G7D	Rx			MELCO		BPSK, QPSK DIGITAL DATA
9)	11450.0000-12200.0000	H, V	54M0G7D	Rx			MELCO		BPSK, QPSK DIGITAL DATA
10)	10950.0000-11200.0000	H, V	1M20G7D	Rx			MELCO		BPSK, QPSK DIGITAL DATA
11)	10950.0000-11200.0000	H, V	27M0G7D	Rx			MELCO		BPSK, QPSK DIGITAL DATA
12)	10950.0000-11200.0000	H, V	54M0G7D	Rx		0.00	MELCO		BPSK, QPSK DIGITAL DATA
13)	12500.0000-12750.0000	H, V	1M20G7D	Rx			PPA		PSK
14)	12500.0000-12750.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
15)	12500.0000-12750.0000	H, V	54M0G7D	Rx			PPA		QPSK, 16APSK
16)	12500.0000-12750.0000	H, V	72M0G7D	Rx			PPA		QPSK, 16APSK
17)	12500.0000-12600.0000	H, V	1M20G7D	Rx			PPA		PSK
18)	12500.0000-12600.0000	H, V	48M6G7D	Rx			PPA		PSK
19)	12500.0000-12600.0000	H, V	54M0G7D	Rx			PPA		PSK
20)	12500.0000-12600.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
21)	12500.0000-12600.0000	H, V	97M2G7D	Rx			PPA		QPSK, 16APSK
22)	12250.0000-12750.0000	H, V	1M20G7D	Rx			PPA		PSK
23)	12250.0000-12750.0000	H, V	54M0G7D	Rx			PPA		PSK
24)	12250.0000-12750.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK



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#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
25)	12250.0000-12750.0000	H, V	1M50G7D	Rx			PPA		QPSK, 16APSK
26)	12250.0000-12750.0000	H, V	72M0G7D	Rx			PPA		QPSK, 16APSK
27)	12200.0000-12750.0000	H, V	139MG7D	Rx			PPA		QPSK, 16APSK
28)	12200.0000-12750.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
29)	12200.0000-12750.0000	H, V	36M0G7D	Rx			PPA		QPSK, 16APSK
30)	12200.0000-12750.0000	H, V	54M0G7D	Rx			PPA		QPSK, 16APSK
31)	11700.0000-12200.0000	H, V	1M20G7D	Rx			PPA		PSK
32)	11700.0000-12200.0000	H, V	36M0G7D	Rx			PPA		PSK
33)	11700.0000-12200.0000	H, V	54M0G7D	Rx			PPA		PSK
34)	11700.0000-12200.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
35)	11450.0000-12750.0000	H, V	1M20G7D	Rx			PPA		PSK
36)	11450.0000-12750.0000	H, V	27M0G7D	Rx			PPA		PSK
37)	11450.0000-12750.0000	H, V	36M0G7D	Rx			PPA		PSK
38)	11450.0000-12750.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
39)	11450.0000-12750.0000	H, V	72M0G7D	Rx			PPA		QPSK, 16APSK
40)	11450.0000-12450.0000	H, V	139MG7D	Rx			PPA		QPSK, 16APSK
41)	11450.0000-12450.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
42)	11450.0000-12200.0000	H, V	1M20G7D	Rx			PPA		PSK
43)	11450.0000-12200.0000	H, V	48M6G7D	Rx			PPA		PSK
44)	11450.0000-12200.0000	H, V	54M0G7D	Rx			PPA		PSK
45)	11450.0000-12200.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
46)	11450.0000-12200.0000	H, V	27M0G7D	Rx			PPA		QPSK, 16APSK
47)	11450.0000-12200.0000	H, V	36M0G7D	Rx			PPA		QPSK, 16APSK
48)	11450.0000-12200.0000	H, V	97M2G7D	Rx			PPA		QPSK, 16APSK



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For the text of these provisions, refer to Section H.

#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
49)	11450.0000-11700.0000	H, V	139MG7D	Rx			PPA		QPSK, 16APSK
50)	11450.0000-11700.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
51)	11450.0000-11700.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
52)	11450.0000-11700.0000	H, V	54M0G7D	Rx			PPA		QPSK, 16APSK
53)	11200.0000-11450.0000	H, V	139MG7D	Rx			PPA		QPSK, 16APSK
54)	11200.0000-11450.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
55)	11200.0000-11450.0000	H, V	54M0G7D	Rx			PPA		QPSK, 16APSK
56)	10950.0000-12500.0000	H, V	1M20G7D	Rx			PPA		PSK
57)	10950.0000-12500.0000	H, V	36M0G7D	Rx			PPA		PSK
58)	10950.0000-12500.0000	H, V	54M0G7D	Rx			PPA		PSK
59)	10950.0000-12200.0000	H, V	1M20G7D	Rx			PPA		PSK
60)	10950.0000-12200.0000	H, V	54M0G7D	Rx			PPA		PSK
61)	10950.0000-12200.0000	H, V	125MG7D	Rx			PPA		QPSK, 16APSK
62)	10950.0000-12200.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
63)	10950.0000-12200.0000	H, V	36M0G7W	Rx			PPA		QPSK, 16APSK
64)	10950.0000-12200.0000	H, V	112MG7D	Rx		0.00	PPA		QPSK, 16APSK
65)	10950.0000-11700.0000	H, V	1M20G7D	Rx			PPA		PSK
66)	10950.0000-11700.0000	H, V	54M0G7D	Rx			PPA		PSK
67)	10950.0000-11700.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
68)	10950.0000-11700.0000	H, V	72M0G7D	Rx			PPA		QPSK, 16APSK
69)	10950.0000-11200.0000	H, V	1M20G7D	Rx			PPA		PSK
70)	10950.0000-11200.0000	H, V	27M0G7D	Rx			PPA		PSK
71)	10950.0000-11200.0000	H, V	48M6G7D	Rx			PPA		PSK
72)	10950.0000-11200.0000	H, V	139MG7D	Rx			PPA		QPSK, 16APSK



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#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
73)	10950.0000-11200.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
74)	10950.0000-11200.0000	H, V	54M0G7D	Rx			PPA		QPSK, 16APSK
75)	10950.0000-11200.0000	H, V	72M0G7D	Rx			PPA		QPSK, 16APSK
76)	10950.0000-11200.0000	H, V	97M2G7D	Rx			PPA		QPSK, 16APSK
77)	10700.0000-12750.0000	H, V	1M20G7D	Rx			PPA		PSK
78)	10700.0000-12750.0000	H, V	36M0G7D	Rx			PPA		PSK
79)	10700.0000-12750.0000	H, V	54M0G7D	Rx			PPA		PSK
80)	10700.0000-12750.0000	H, V	139MG7D	Rx			PPA		QPSK, 16APSK
81)	10700.0000-12750.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
82)	10700.0000-12200.0000	H, V	139MG7D	Rx			PPA		QPSK, 16APSK
83)	10700.0000-12200.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
84)	10700.0000-11450.0000	H, V	139MG7D	Rx			PPA		QPSK, 16APSK
85)	10700.0000-11450.0000	H, V	1M05G7D	Rx			PPA		QPSK, 16APSK
86)	12500.0000-12750.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
87)	12500.0000-12750.0000	H, V	54M0G7D	Rx			SPA		QPSK, 16APSK
88)	12500.0000-12750.0000	H, V	72M0G7D	Rx			SPA		QPSK, 16APSK
89)	12500.0000-12750.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
90)	12500.0000-12750.0000	H, V	36M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
91)	12500.0000-12600.0000	H, V	1M50G7D	Rx			SPA		QPSK, 16APSK
92)	12500.0000-12600.0000	H, V	97M2G7D	Rx			SPA		QPSK, 16APSK
93)	12500.0000-12600.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
94)	12500.0000-12600.0000	H, V	48M6G7D	Rx			SPA		QPSK, 8PSK, 16APSK
95)	12500.0000-12600.0000	H, V	54M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
96)	12250.0000-12750.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK



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#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
97)	12250.0000-12750.0000	H, V	72M0G7D	Rx			SPA		QPSK, 16APSK
98)	12250.0000-12750.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
99)	12250.0000-12750.0000	H, V	54M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
100)	12200.0000-12750.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
101)	12200.0000-12750.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
102)	12200.0000-12750.0000	H, V	54M0G7D	Rx			SPA		QPSK, 16APSK
103)	12200.0000-12750.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
104)	12200.0000-12750.0000	H, V	36M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
105)	11700.0000-12200.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
106)	11700.0000-12200.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
107)	11700.0000-12200.0000	H, V	36M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
108)	11700.0000-12200.0000	H, V	54M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
109)	11450.0000-12750.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
110)	11450.0000-12750.0000	H, V	36M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
111)	11450.0000-12750.0000	H, V	54M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
112)	11450.0000-12450.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
113)	11450.0000-12450.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
114)	11450.0000-12200.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
115)	11450.0000-12200.0000	H, V	27M0G7D	Rx			SPA		QPSK, 16APSK
116)	11450.0000-12200.0000	H, V	97M2G7D	Rx			SPA		QPSK, 16APSK
117)	11450.0000-12200.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
118)	11450.0000-12200.0000	H, V	54M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
119)	11450.0000-12200.0000	H, V	48M6G7D	Rx		0.00	SPA		QPSK, 8PSK, 16APSK
120)	11450.0000-11950.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK



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#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
121)	11450.0000-11950.0000	H, V	72M0G7D	Rx			SPA		QPSK, 16APSK
122)	11450.0000-11950.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
123)	11450.0000-11950.0000	H, V	54M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
124)	11450.0000-11700.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
125)	11450.0000-11700.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
126)	11450.0000-11700.0000	H, V	54M0G7D	Rx			SPA		QPSK, 16APSK
127)	11450.0000-11700.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
128)	11200.0000-11450.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
129)	11200.0000-11450.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
130)	11200.0000-11450.0000	H, V	54M0G7D	Rx			SPA		QPSK, 16APSK
131)	10950.0000-12500.0000	H, V	54M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
132)	10950.0000-12500.0000	H, V	1M20G7D	Rx		0.00	SPA		QPSK, 8PSK, 16APSK
133)	10950.0000-12200.0000	H, V	112MG7D	Rx			SPA		QPSK, 16APSK
134)	10950.0000-12200.0000	H, V	125MG7D	Rx			SPA		QPSK, 16APSK
135)	10950.0000-12200.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
136)	10950.0000-12200.0000	H, V	27M0G7W	Rx			SPA		QPSK, 16APSK
137)	10950.0000-11700.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
138)	10950.0000-11700.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
139)	10950.0000-11700.0000	H, V	72M0G7D	Rx			SPA		QPSK, 16APSK
140)	10950.0000-11700.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
141)	10950.0000-11700.0000	H, V	54M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
142)	10950.0000-11200.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
143)	10950.0000-11200.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
144)	10950.0000-11200.0000	H, V	54M0G7D	Rx			SPA		QPSK, 16APSK



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145)	10950.0000-11200.0000	H, V	72M0G7D	Rx			SPA		QPSK, 16APSK
146)	10950.0000-11200.0000	H, V	97M2G7D	Rx			SPA		QPSK, 16APSK
147)	10950.0000-11200.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
148)	10950.0000-11200.0000	H, V	48M6G7D	Rx			SPA		QPSK, 8PSK, 16APSK
149)	10700.0000-12750.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
150)	10700.0000-12750.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
151)	10700.0000-12750.0000	H, V	1M20G7D	Rx			SPA		QPSK, 8PSK, 16APSK
152)	10700.0000-12750.0000	H, V	36M0G7D	Rx			SPA		QPSK, 8PSK, 16APSK
153)	10700.0000-12200.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
154)	10700.0000-12200.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
155)	10700.0000-11450.0000	H, V	139MG7D	Rx			SPA		QPSK, 16APSK
156)	10700.0000-11450.0000	H, V	1M05G7D	Rx			SPA		QPSK, 16APSK
157)	14000.0000-14500.0000	H, V	21M0G7D	Tx	43.80	6.81	TECOM		QPSK
158)	14000.0000-14500.0000	H, V	32K0G7D	Tx	40.39	31.57	TECOM		QPSK
159)	14000.0000-14500.0000	H, V	500KG7D	Tx	43.80	22.83	TECOM		BPSK, QPSK DIGITAL DATA
160)	14000.0000-14500.0000	H, V	9M00G7D	Tx	43.80	10.28	TECOM		BPSK, QPSK DIGITAL DATA
161)	12200.0000-12750.0000	H, V	139MG7D	Rx			TECOM		QPSK, 16APSK
162)	12200.0000-12750.0000	H, V	1M50G7D	Rx			TECOM		QPSK, 16APSK
163)	12200.0000-12750.0000	H, V	54M0G7D	Rx			TECOM		QPSK, 16APSK
164)	11700.0000-12200.0000	H, V	1M50G7D	Rx			TECOM		QPSK, 16APSK
165)	11700.0000-12200.0000	H, V	54M0G7D	Rx			TECOM		QPSK, 16APSK
166)	11700.0000-12200.0000	H, V	1M20G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
167)	11700.0000-12200.0000	H, V	36M0G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
168)	11450.0000-12200.0000	H, V	1M05G7D	Rx			TECOM		QPSK, 16APSK



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Non Common Carrier

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Expiration Date: 08/31/2026

B) Particulars of Operations

The General Provision 1010 applies to all receiving frequency bands.

The General Provision 1900 applies to all transmitting frequency bands.

For the text of these provisions, refer to Section H.

#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
169)	11450.0000-12200.0000	H, V	27M0G7D	Rx			TECOM		QPSK, 16APSK
170)	11450.0000-12200.0000	H, V	36M0G7D	Rx			TECOM		QPSK, 16APSK
171)	11450.0000-12200.0000	H, V	1M20G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
172)	11450.0000-12200.0000	H, V	54M0G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
173)	11450.0000-11700.0000	H, V	139MG7D	Rx			TECOM		QPSK, 16APSK
174)	11450.0000-11700.0000	H, V	1M05G7D	Rx			TECOM		QPSK, 16APSK
175)	11450.0000-11700.0000	H, V	1M20G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
176)	11450.0000-11700.0000	H, V	54M0G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
177)	11200.0000-11450.0000	H, V	139MG7D	Rx			TECOM		QPSK, 16APSK
178)	11200.0000-11450.0000	H, V	1M05G7D	Rx			TECOM		QPSK, 16APSK
179)	11200.0000-11450.0000	H, V	54M0G7D	Rx			TECOM		QPSK, 16APSK
180)	10950.0000-12200.0000	H, V	1M05G7D	Rx			TECOM		QPSK, 16APSK
181)	10950.0000-12200.0000	H, V	27M0G7W	Rx			TECOM		QPSK, 16APSK
182)	10950.0000-12200.0000	H, V	1M20G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
183)	10950.0000-12200.0000	H, V	54M0G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
184)	10950.0000-11700.0000	H, V	1M05G7D	Rx			TECOM		QPSK, 16APSK
185)	10950.0000-11700.0000	H, V	1M20G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
186)	10950.0000-11700.0000	H, V	54M0G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
187)	10950.0000-11200.0000	H, V	139MG7D	Rx			TECOM		QPSK, 16APSK
188)	10950.0000-11200.0000	H, V	1M05G7D	Rx			TECOM		QPSK, 16APSK
189)	10950.0000-11200.0000	H, V	1M20G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
190)	10950.0000-11200.0000	H, V	54M0G7D	Rx			TECOM		QPSK, 8PSK, 16APSK
191)	10700.0000-12200.0000	H, V	1M05G7D	Rx			TECOM		QPSK, 16APSK
192)	10700.0000-12200.0000	H, V	139MG7D	Rx		0.00	TECOM		QPSK, 16APSK



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C) Frequency Coordination Limits

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
1)	14000.0000-14400.0000	37.5W	37.5W	05.0	05.0	000.0	360.0	-8.62	MELCO
2)	14000.0000-14400.0000	63.0W	63.0W	05.0	05.0	000.0	360.0	-5.8	MELCO
3)	10950.0000-11200.0000	37.5W	37.5W	05.0	05.0	000.0	360.0		MELCO
4)	11450.0000-12200.0000	63.0W	63.0W	05.0	05.0	000.0	360.0		MELCO
5)	11700.0000-12200.0000	63.0W	63.0W	05.0	05.0	000.0	360.0		MELCO
6)	14000.0000-14500.0000	116.8W	116.8W	05.0	05.0	-360.0		-13.23	MELCO
7)	11700.0000-12200.0000	116.8W	116.8W	05.0	05.0	-360.0			MELCO
8)	10700.0000-12750.0000	76.5E	76.5E	05.0	05.0	000.0	360.0	0	PPA
9)	10700.0000-12750.0000	134.0W	134.0W	05.0	05.0	000.0	360.0		PPA
10)	10950.0000-11200.0000	8.0W	177.0W	05.0	05.0	000.0	360.0		PPA
11)	10950.0000-11200.0000	60.0E	60.0E	05.0	05.0	000.0	360.0		PPA
12)	10950.0000-11200.0000	90.0E	90.0E	05.0	05.0	000.0	360.0		PPA
13)	10950.0000-11200.0000	172.0E	172.0E	05.0	05.0	000.0	360.0		PPA
14)	10950.0000-11700.0000	10.0E	10.0E	05.0	05.0	000.0	360.0		PPA
15)	10950.0000-11700.0000	70.5E	70.5E	05.0	05.0	000.0	360.0		PPA
16)	10950.0000-11700.0000	183.0E	183.0E	05.0	05.0	000.0	360.0		PPA
17)	10950.0000-12200.0000	15.0W	15.0W	05.0	05.0	000.0	360.0		PPA
18)	10950.0000-12200.0000	50.0W	50.0W	05.0	05.0	000.0	360.0		PPA
19)	11450.0000-11700.0000	8.0W	177.0W	05.0	05.0	000.0	360.0		PPA
20)	11450.0000-11700.0000	95.0E	95.0E	05.0	05.0	000.0	360.0		PPA
21)	11450.0000-11700.0000	154.0E	154.0E	05.0	05.0	000.0	360.0		PPA
22)	11450.0000-11700.0000	172.0E	172.0E	05.0	05.0	000.0	360.0		PPA
23)	11450.0000-12200.0000	63.0W	63.0W	05.0	05.0	000.0	360.0		PPA
24)	11450.0000-12200.0000	100.5E	100.5E	05.0	05.0	000.0	360.0		PPA
25)	14000.0000-14500.0000	95.0E	95.0E	05.0	05.0	000.0	360.0	-3.4	PPA
26)	14000.0000-14500.0000	99.0W	99.0W	05.0	05.0	000.0	360.0	-5.59	PPA
27)	14000.0000-14500.0000	100.5E	100.5E	05.0	05.0	000.0	360.0	-3.39	PPA
28)	14000.0000-14500.0000	105.5E	105.5E	05.0	05.0	000.0	360.0	1.37	PPA
29)	14000.0000-14500.0000	107.3W	107.3W	05.0	05.0	000.0	360.0	13.31	PPA
30)	14000.0000-14500.0000	114.9E	114.9E	05.0	05.0	000.0	360.0	1.08	PPA
31)	14000.0000-14500.0000	116.8W	116.8W	05.0	05.0	000.0	360.0	-6.38	PPA
32)	14000.0000-14500.0000	132.0E	132.0E	05.0	05.0	000.0	360.0	-3.78	PPA
33)	14000.0000-14500.0000	134.0E	134.0E	05.0	05.0	000.0	360.0	3.89	PPA
34)	14000.0000-14500.0000	144.0E	144.0E	05.0	05.0	000.0	360.0	6.42	PPA
35)	14000.0000-14500.0000	154.0E	154.0E	05.0	05.0	000.0	360.0	-8.33	PPA



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C) Frequency Coordination Limits

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
36)	14000.0000-14500.0000	172.0E	172.0E	05.0	05.0	000.0	360.0	7.97	PPA
37)	14000.0000-14500.0000	183.0E	183.0E	05.0	05.0	000.0	360.0	2.41	PPA
38)	12250.0000-12750.0000	132.0E	132.0E	05.0	05.0	000.0	360.0		PPA
39)	12500.0000-12600.0000	60.0E	60.0E	05.0	05.0	000.0	360.0		PPA
40)	12500.0000-12750.0000	10.0E	10.0E	05.0	05.0	000.0	360.0		PPA
41)	12500.0000-12750.0000	70.5E	70.5E	05.0	05.0	000.0	360.0		PPA
42)	12500.0000-12750.0000	85.0E	85.0E	05.0	05.0	000.0	360.0		PPA
43)	12500.0000-12750.0000	95.0E	95.0E	05.0	05.0	000.0	360.0		PPA
44)	14000.0000-14500.0000	8.0W	177.0W	05.0	05.0	000.0	360.0	0.44	PPA
45)	14000.0000-14500.0000	10.0E	10.0E	05.0	05.0	000.0	360.0	0.43	PPA
46)	14000.0000-14500.0000	15.0W	15.0W	05.0	05.0	000.0	360.0	2.59	PPA
47)	14000.0000-14500.0000	90.0E	90.0E	05.0	05.0	000.0	360.0	6.89	PPA
48)	14000.0000-14500.0000	37.5W	37.5W	05.0	05.0	000.0	360.0	3.23	PPA
49)	14000.0000-14500.0000	45.0W	45.0W	05.0	05.0	000.0	360.0	7.44	PPA
50)	14000.0000-14500.0000	50.0W	50.0W	05.0	05.0	000.0	360.0	5	PPA
51)	14000.0000-14500.0000	60.0E	60.0E	05.0	05.0	000.0	360.0	4.89	PPA
52)	14000.0000-14500.0000	63.0W	63.0W	05.0	05.0	000.0	360.0	5.97	PPA
53)	14000.0000-14500.0000	70.5E	70.5E	05.0	05.0	000.0	360.0	3.9	PPA
54)	14000.0000-14500.0000	76.5E	76.5E	05.0	05.0	000.0	360.0	6.26	PPA
55)	14000.0000-14500.0000	85.0E	85.0E	05.0	05.0	000.0	360.0	7.34	PPA
56)	11450.0000-12750.0000	90.0E	90.0E	05.0	05.0	000.0	360.0		PPA
57)	11700.0000-12200.0000	99.0W	99.0W	05.0	05.0	000.0	360.0		PPA
58)	11700.0000-12200.0000	107.3W	107.3W	05.0	05.0	000.0	360.0		PPA
59)	11700.0000-12200.0000	114.9E	114.9E	05.0	05.0	000.0	360.0		PPA
60)	11700.0000-12200.0000	116.8W	116.8W	05.0	05.0	000.0	360.0		PPA
61)	12200.0000-12750.0000	144.0E	144.0E	05.0	05.0	000.0	360.0		PPA
62)	12200.0000-12750.0000	172.0E	172.0E	05.0	05.0	000.0	360.0		PPA
63)	12250.0000-12750.0000	45.0W	45.0W	05.0	05.0	000.0	360.0		PPA
64)	12250.0000-12750.0000	105.5E	105.5E	05.0	05.0	000.0	360.0		PPA
65)	11450.0000-12200.0000	37.5W	37.5W	05.0	05.0	000.0	360.0		PPA
66)	11450.0000-12200.0000	60.0E	60.0E	05.0	05.0	000.0	360.0		PPA
67)	14000.0000-14500.0000	53.0E	53.0E	05.0	05.0	-360.0		1.02	PPA
68)	14000.0000-14500.0000	58.0W	58.0W	05.0	05.0	-360.0		7.38	PPA
69)	14000.0000-14500.0000	129.2W	129.2W	05.0	05.0	-360.0		-5.39	PPA
70)	14000.0000-14500.0000	140.0E	140.0E	05.0	05.0	-360.0		4.19	PPA



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C) Frequency Coordination Limits

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
71)	10700.0000-12200.0000	129.2W	129.2W	05.0	05.0	-360.0			PPA
72)	10950.0000-11200.0000	53.0E	53.0E	05.0	05.0	-360.0			PPA
73)	10950.0000-10950.0000	140.0E	140.0E	05.0	05.0	-360.0			PPA
74)	11200.0000-11450.0000	172.0E	172.0E	05.0	05.0	-360.0			PPA
75)	11450.0000-11700.0000	53.0E	53.0E	05.0	05.0	-360.0			PPA
76)	11450.0000-12200.0000	58.0W	58.0W	05.0	05.0	-360.0			PPA
77)	12500.0000-12750.0000	53.0E	53.0E	05.0	05.0	-360.0			PPA
78)	12500.0000-12750.0000	140.0E	140.0E	05.0	05.0	-360.0			PPA
79)	14000.0000-14500.0000	60.0W							PPA
80)	12250.0000-12750.0000	134.0W	134.0W	05.0	05.0	000.0	360.0		PPA
81)	12250.0000-12750.0000	122.0W	122.0W	05.0	05.0	000.0	360.0		PPA
82)	12250.0000-12250.0000	110.5W	110.5W	05.0	05.0	000.0	360.0		PPA
83)	11450.0000-12450.0000	47.5W	47.5W	05.0	05.0	000.0	360.0		PPA
84)	11450.0000-11700.0000	122.0W	122.0W	05.0	05.0	000.0	360.0		PPA
85)	10950.0000-11200.0000	122.0W	122.0W	05.0	05.0	000.0	360.0		PPA
86)	10950.0000-11200.0000	47.5W	47.5W	05.0	05.0	000.0	360.0		PPA
87)	10700.0000-12750.0000	134.0W	134.0W	05.0	05.0	000.0	360.0		PPA
88)	10700.0000-11450.0000	95.0W	95.0W	05.0	05.0	000.0	360.0		PPA
89)	10950.0000-12200.0000	15.0W	15.0W	05.0	05.0	000.0	360.0		SPA
90)	10950.0000-12200.0000	50.0W	50.0W	05.0	05.0	000.0	360.0		SPA
91)	11450.0000-11700.0000	172.0E	172.0E	05.0	05.0	000.0	360.0		SPA
92)	11450.0000-11950.0000	45.0W	45.0W	05.0	05.0	000.0	360.0		SPA
93)	11450.0000-12200.0000	37.5W	37.5W	05.0	05.0	000.0	360.0		SPA
94)	11450.0000-12200.0000	60.0E	60.0E	05.0	05.0	000.0	360.0		SPA
95)	11450.0000-12750.0000	95.0E	95.0E	05.0	05.0	000.0	360.0		SPA
96)	11700.0000-12200.0000	10.0E	10.0E	05.0	05.0	000.0	360.0		SPA
97)	11700.0000-12200.0000	63.0W	63.0W	05.0	05.0	000.0	360.0		SPA
98)	11700.0000-12200.0000	99.0W	99.0W	05.0	05.0	000.0	360.0		SPA
99)	11700.0000-12200.0000	107.3W	107.3W	05.0	05.0	000.0	360.0		SPA
100)	11700.0000-12200.0000	114.9E	114.9E	05.0	05.0	000.0	360.0		SPA
101)	11700.0000-12200.0000	116.8W	116.8W	05.0	05.0	000.0	360.0		SPA
102)	12200.0000-12750.0000	144.0E	144.0E	05.0	05.0	000.0	360.0		SPA
103)	12250.0000-12750.0000	85.0E	85.0E	05.0	05.0	000.0	360.0		SPA
104)	12250.0000-12750.0000	105.5E	105.5E	05.0	05.0	000.0	360.0		SPA
105)	14000.0000-14500.0000	134.0W	134.0W	05.0	05.0	000.0	360.0	-3.59	SPA



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C) Frequency Coordination Limits

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
106)	14000.0000-14500.0000	144.0E	144.0E	05.0	05.0	000.0	360.0	2.12	SPA
107)	14000.0000-14500.0000	172.0E	172.0E	05.0	05.0	000.0	360.0	3.29	SPA
108)	14000.0000-14500.0000	183.0E	183.0E	05.0	05.0	000.0	360.0	-0.28	SPA
109)	14000.0000-14500.0000	37.5W	37.5W	05.0	05.0	000.0	360.0	-1.39	SPA
110)	14000.0000-14500.0000	63.0W	63.0W	05.0	05.0	000.0	360.0	1.29	SPA
111)	14000.0000-14500.0000	8.0W	177.0W	05.0	05.0	000.0	360.0	-1.99	SPA
112)	14000.0000-14500.0000	154.0E	154.0E	05.0	05.0	000.0	360.0	-12.48	SPA
113)	11450.0000-12200.0000	100.5E	100.5E	05.0	05.0	000.0	360.0		SPA
114)	11450.0000-12750.0000	90.0E	90.0E	05.0	05.0	000.0	360.0		SPA
115)	14000.0000-14500.0000	15.0W	15.0W	05.0	05.0	000.0	360.0	-1.99	SPA
116)	14000.0000-14500.0000	45.0W	45.0W	05.0	05.0	000.0	360.0	2.73	SPA
117)	14000.0000-14500.0000	50.0W	50.0W	05.0	05.0	000.0	360.0	0.29	SPA
118)	14000.0000-14500.0000	60.0E	60.0E	05.0	05.0	000.0	360.0	0.29	SPA
119)	14000.0000-14500.0000	63.0E	63.0E	05.0	05.0	000.0	360.0	-5.34	SPA
120)	14000.0000-14500.0000	70.5E	70.5E	05.0	05.0	000.0	360.0	0.71	SPA
121)	14000.0000-14500.0000	76.5E	76.5E	05.0	05.0	000.0	360.0	1.83	SPA
122)	14000.0000-14500.0000	85.0E	85.0E	05.0	05.0	000.0	360.0	2.98	SPA
123)	11450.0000-12200.0000	8.0W	177.0W	05.0	05.0	000.0	360.0		SPA
124)	12250.0000-12750.0000	132.0E	132.0E	05.0	05.0	000.0	360.0		SPA
125)	12500.0000-12600.0000	60.0E	60.0E	05.0	05.0	000.0	360.0		SPA
126)	12500.0000-12750.0000	70.5E	70.5E	05.0	05.0	000.0	360.0		SPA
127)	12500.0000-12750.0000	95.0E	95.0E	05.0	05.0	000.0	360.0		SPA
128)	11450.0000-12200.0000	37.5W	37.5W	05.0	05.0	000.0	360.0		SPA
129)	11700.0000-12200.0000	63.0W	63.0W	05.0	05.0	000.0	360.0		SPA
130)	10950.0000-11200.0000	8.0W	177.0W	05.0	05.0	000.0	360.0		SPA
131)	11450.0000-11700.0000	154.0E	154.0E	05.0	05.0	000.0	360.0		SPA
132)	14000.0000-14500.0000	10.0E	10.0E	05.0	05.0	000.0	360.0	-1.65	SPA
133)	14000.0000-14500.0000	107.3W	107.3W	05.0	05.0	000.0	360.0	6.46	SPA
134)	14000.0000-14500.0000	90.0E	90.0E	05.0	05.0	000.0	360.0	2.29	SPA
135)	14000.0000-14500.0000	95.0E	95.0E	05.0	05.0	000.0	360.0	-7.33	SPA
136)	14000.0000-14500.0000	99.0W	99.0W	05.0	05.0	000.0	360.0	-5.85	SPA
137)	14000.0000-14500.0000	100.5E	100.5E	05.0	05.0	000.0	360.0	-7.76	SPA
138)	14000.0000-14500.0000	105.5E	105.5E	05.0	05.0	000.0	360.0	-0.28	SPA
139)	14000.0000-14500.0000	114.9E	114.9E	05.0	05.0	000.0	360.0	-2.71	SPA
140)	14000.0000-14500.0000	116.8W	116.8W	05.0	05.0	000.0	360.0	-9.16	SPA



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Non Common Carrier

Grant date: 01/14/2020

Expiration Date: 08/31/2026

C) Frequency Coordination Limits

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
141)	14000.0000-14500.0000	132.0E	132.0E	05.0	05.0	000.0	360.0	-4.62	SPA
142)	10950.0000-11200.0000	172.0E	172.0E	05.0	05.0	000.0	360.0		SPA
143)	10700.0000-12750.0000	76.5E	76.5E	05.0	05.0	000.0	360.0		SPA
144)	10700.0000-12750.0000	134.0W	134.0W	05.0	05.0	000.0	360.0		SPA
145)	10950.0000-11200.0000	60.0E	60.0E	05.0	05.0	000.0	360.0		SPA
146)	10950.0000-11200.0000	90.0E	90.0E	05.0	05.0	000.0	360.0		SPA
147)	10950.0000-11700.0000	70.5E	70.5E	05.0	05.0	000.0	360.0		SPA
148)	10950.0000-11700.0000	183.0E	183.0E	05.0	05.0	000.0	360.0		SPA
149)	14000.0000-14500.0000	53.0E	53.0E	05.0	05.0	-360.0		0.29	SPA
150)	14000.0000-14500.0000	58.0W	58.0W	05.0	05.0	-360.0		2.5	SPA
151)	14000.0000-14500.0000	129.2W	129.2W	05.0	05.0	-360.0		-7.95	SPA
152)	14000.0000-14500.0000	140.0E	140.0E	05.0	05.0	-360.0		0.29	SPA
153)	10700.0000-12200.0000	129.2W	129.2W	05.0	05.0	-360.0			SPA
154)	10950.0000-11200.0000	53.0E	53.0E	05.0	05.0	-360.0			SPA
155)	10950.0000-11200.0000	140.0E	140.0E	05.0	05.0	-360.0			SPA
156)	11200.0000-11450.0000	172.0E	172.0E	05.0	05.0	-360.0			SPA
157)	11450.0000-11700.0000	53.0E	53.0E	05.0	05.0	-360.0			SPA
158)	11450.0000-11700.0000	172.0E	172.0E	05.0	05.0	-360.0			SPA
159)	11450.0000-12200.0000	58.0W	58.0W	05.0	05.0	-360.0			SPA
160)	11450.0000-12200.0000	63.0E	63.0E	05.0	05.0	-360.0			SPA
161)	12200.0000-12750.0000	172.0E	172.0E	05.0	05.0	-360.0			SPA
162)	12500.0000-12750.0000	53.0E	53.0E	05.0	05.0	-360.0			SPA
163)	12500.0000-12750.0000	140.0E	140.0E	05.0	05.0	-360.0			SPA
164)	12250.0000-12750.0000	134.0W	134.0W	05.0	05.0	000.0	360.0		SPA
165)	12250.0000-12750.0000	122.0W	122.0W	05.0	05.0	000.0	360.0		SPA
166)	12250.0000-12750.0000	110.5W	110.5W	05.0	05.0	000.0	360.0		SPA
167)	11450.0000-12450.0000	47.5W	47.5W	05.0	05.0	000.0	360.0		SPA
168)	11450.0000-11700.0000	122.0W	122.0W	05.0	05.0	000.0	360.0		SPA
169)	10950.0000-11200.0000	122.0W	122.0W	05.0	05.0	000.0	360.0		SPA
170)	10950.0000-11200.0000	47.5W	47.5W	05.0	05.0	000.0	360.0		SPA
171)	10700.0000-12750.0000	134.0W	134.0W	05.0	05.0	000.0	360.0		SPA
172)	10700.0000-11450.0000	95.0W	95.0W	05.0	05.0	000.0	360.0		SPA
173)	14000.0000-14500.0000	8.0W	177.0W	05.0	05.0	000.0	360.0	-10.07	TECOM
174)	14000.0000-14500.0000	37.5W	37.5W	05.0	05.0	000.0	360.0	-7.66	TECOM
175)	14000.0000-14500.0000	50.0W	50.0W	05.0	05.0	000.0	360.0	-3.7	TECOM



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C) Frequency Coordination Limits

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
176)	14000.0000-14500.0000	99.0W	99.0W	05.0	05.0	000.0	360.0	-12.28	TECOM
177)	14000.0000-14500.0000	107.3W	107.3W	05.0	05.0	000.0	360.0	4.43	TECOM
178)	14000.0000-14500.0000	172.0E	172.0E	05.0	05.0	000.0	360.0	-0.7	TECOM
179)	14000.0000-14500.0000	183.0E	183.0E	05.0	05.0	000.0	360.0	-5.82	TECOM
180)	10950.0000-11200.0000	8.0W	177.0W	05.0	05.0	000.0	360.0		TECOM
181)	10950.0000-11200.0000	172.0E	172.0E	05.0	05.0	000.0	360.0		TECOM
182)	10950.0000-11700.0000	183.0E	183.0E	05.0	05.0	000.0	360.0		TECOM
183)	10950.0000-12200.0000	50.0W	50.0W	05.0	05.0	000.0	360.0		TECOM
184)	11450.0000-11700.0000	172.0E	172.0E	05.0	05.0	000.0	360.0		TECOM
185)	11450.0000-12200.0000	8.0W	177.0W	05.0	05.0	000.0	360.0		TECOM
186)	11450.0000-12200.0000	37.5W	37.5W	05.0	05.0	000.0	360.0		TECOM
187)	11700.0000-12200.0000	37.5W	37.5W	05.0	05.0	000.0	360.0		TECOM
188)	11700.0000-12200.0000	50.0W	50.0W	05.0	05.0	000.0	360.0		TECOM
189)	11700.0000-12200.0000	99.0W	99.0W	05.0	05.0	000.0	360.0		TECOM
190)	11700.0000-12200.0000	99.0W	99.0W	05.0	05.0	000.0	360.0		TECOM
191)	11700.0000-12200.0000	107.3W	107.3W	05.0	05.0	000.0	360.0		TECOM
192)	14000.0000-14500.0000	63.0W	63.0W	05.0	05.0	-360.0		-2.7	TECOM
193)	10700.0000-12200.0000	129.2W	129.2W	05.0	05.0	-360.0			TECOM
194)	11200.0000-11450.0000	172.0W	172.0W	05.0	05.0	-360.0			TECOM
195)	11450.0000-12200.0000	58.0W	58.0W	05.0	05.0	-360.0			TECOM
196)	11450.0000-12200.0000	63.0W	63.0W	05.0	05.0	-360.0			TECOM
197)	11700.0000-12200.0000	114.9W	114.9W	05.0	05.0	-360.0			TECOM
198)	12200.0000-12750.0000	172.0E	172.0E	05.0	05.0	-360.0			TECOM
199)	14000.0000-14500.0000	58.0W	58.0W	05.0	05.0	000.0	360.0	-3.17	TECOM
200)	14000.0000-14500.0000	114.9W	114.9W	05.0	05.0	-360.0		-6.7	TECOM
201)	14000.0000-14500.0000	129.2W	129.2W	05.0	05.0	-360.0		-14.56	TECOM

D) Points of Communications

The following stations located in the Satellite orbits consistent with Sections B and C of this Entry:

- 1) MELCO Remotes to Estrela do Sul 2 (S2821) @ 63 degrees W.L. (Brazil-licensed)
- 2) MELCO Remotes to TELSTAR 11N (S2357) @ 37.55 degrees W.L. (U.S.-licensed)
- 3) MELCO Remotes to EUTELSAT 117WA (S2873) @ 116.8 degrees W.L. (formerly SATMEX 8) (Mexico-licensed)
- 4) PPA Remotes to Estrela do Sul 2 (S2821) @ 63 degrees W.L. (Brazil-licensed)
- 5) PPA Remotes to Eutelsat 10A (W2A) (M0311) @ 10 degrees E.L. (France-licensed)



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D) Points of Communications

The following stations located in the Satellite orbits consistent with Sections B and C of this Entry:

- 6) PPA Remotes to TELSTAR 11N (S2357) @ 37.55 degrees W.L. (U.S.-licensed)
- 7) PPA Remotes to INTELSAT 14 (S2785) @ 45 degrees W.L. (U.S.-licensed)
- 8) PPA Remotes to APSTAR 6 (M292090) @ 226 degrees W.L. (China-licensed Operations Outside Region 2 only)
- 9) PPA Remotes to ASIASAT 5 (M090163) @ 100.5 degrees E.L. (China-licensed)
- 10) PPA Remotes to INTELSAT 15 (S2789) @ 85.15 degrees E.L. (U.S.-licensed)
- 11) PPA Remotes to Yamal 300K (M174162) @ 177 degrees W.L. (Russia-licensed)
- 12) PPA Remotes to ANIK G1 @ 107.3 degrees W.L. (Canada-licensed)
- 13) PPA Remotes to EUTELSAT 117WA (S2873) @ 116.8 degrees W.L. (formerly SATMEX 8) (Mexico-licensed)
- 14) PPA Remotes to Superbird C2 (M334100) @ 144 degrees E.L. (Japan-licensed)
- 15) PPA Remotes to Apstar 7 (M090165) @ 76.5 degrees E.L. (China-licensed)
- 16) PPA Remotes to GALAXY 16 (S2687) @ 99 degrees W.L. (U.S.-licensed)
- 17) PPA Remotes to JCSAT 5A (M063130) @ 132 degrees E.L. (Japan-licensed)
- 18) PPA Remotes to EUTELSAT 115WB (S2938) @ 114.9 degrees W.L. (formerly SATMEX 7) (Mexico-licensed)
- 19) PPA Remotes to INTELSAT 29e (S2913) @ 50.0 degrees W.L. (U.S.-licensed)
- 20) PPA Remotes to Eutelsat 70B (M090167) @ 70.5 degrees E.L. (France Licensed)
- 21) PPA Remotes to Yamal 401 @ 90 degrees E.L. (Russia-licensed)
- 22) PPA Remotes to TELSTAR 12V (S2933) @ 15 degrees W.L. (U.S.-licensed)
- 23) PPA Remotes to INTELSAT 33e (S2939) @ 60.0 degrees E.L. (U.S.-licensed)
- 24) PPA Remotes to ASIASAT 7 (M174161) @ 105.5 degrees E.L. (China-licensed)
- 25) PPA Remotes to JCSAT-2B (M174163) @ 154 degrees E.L. (Japan-licensed)
- 26) PPA Remotes to Permitted Space Station List
- 27) PPA Remotes to EUTELSAT 172B (S3021) @ 172degrees E.L. (US & France licensed)
- 28) PPA Remotes to INTELSAT 21 (S2863) @ 58.0 degrees W.L. (U.S.-licensed)
- 29) PPA Remotes to SES-15 (S2951) @ 129.15 degrees W.L. (United Kingdom-licensed)
- 30) PPA Remotes to EXPRESS AM5 @ 140.0 degrees E.L. (Russia-licensed)
- 31) PPA Remotes to EXPRESS AM6 @ 53.0 degrees E.L. (Russia-licensed)
- 32) PPA Remotes to SES-12 (M192103) @ 95.3 degrees E.L. (Netherlands-licensed)
- 33) PPA Remotes to SES-14 (S2974)@47.5 degrees W.L. (Brazil & Netherlands - licensed)
- 34) PPA Remotes to Chinasat10 @ 110.5 W.L. (M246191) (China-licensed Operations Outside Region 2 only)
- 35) PPA Remotes to APSTAR 6D (M246190) @ 134 degrees E.L. (China-licensed Operations Outside Region 2 only)
- 36) PPA Remotes to APSTAR 6C (M161190) @ 134 degrees E.L. (China-licensed Operations Outside Region 2 only)
- 37) PPA Remotes to ASIASAT 9 @ 122° E.L. (Non-US-Licensed) Operations Outside Region 2 only
- 38) SPA Remotes to SUPERBIRD C2 (S2639) @ 144 degrees E.L. (Japan-licensed)
- 39) SPA Remotes to Yamal 300K (M174162) @ 177 degrees W.L. (Russia-licensed)
- 40) SPA Remotes to APSTAR 6 (M292090) @ 226 degrees W.L. (China-licensed Operations Outside Region 2 only)
- 41) SPA Remotes to INTELSAT 15 (S2789) @ 85.15 degrees E.L. (U.S.-licensed)



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D) Points of Communications

The following stations located in the Satellite orbits consistent with Sections B and C of this Entry:

-
- 42) SPA Remotes to TELSTAR 12V (S2933) @ 15 degrees W.L. (U.S.-licensed)
 - 43) SPA Remotes to EUTELSAT 174A (S2610) @ 174 degrees E.L. (formerly GE-23) (U.S.-licensed)
 - 44) SPA Remotes to INTELSAT 29e (S2913) @ 50.0 degrees W.L. (U.S.-licensed)
 - 45) SPA Remotes to EUTELSAT 115WB (S2938) @ 114.9 degrees W.L. (formerly SATMEX 7) (Mexico-licensed)
 - 46) SPA Remotes to Eutelsat 70B (M090167) @ 70.5 degrees E.L. (France Licensed)
 - 47) SPA Remotes to TELSTAR 11N (S2357) @ 37.55 degrees W.L. (U.S.-licensed)
 - 48) SPA Remotes to Eutelsat 10A (W2A) (M0311) @ 10 degrees E.L. (France-licensed)
 - 49) SPA Remotes to Apstar 7 (M090165) @ 76.5 degrees E.L. (China-licensed)
 - 50) SPA Remotes to ANIK G1 @ 107.3 degrees W.L. (Canada-licensed)
 - 51) SPA Remotes to EUTELSAT 117WA (S2873) @ 116.8 degrees W.L. (formerly SATMEX 8) (Mexico-licensed)
 - 52) SPA Remotes to ASIASAT 5 (M090163) @ 100.5 degrees E.L. (China-licensed)
 - 53) SPA Remotes to Estrela do Sul 2 (S2821) @ 63 degrees W.L. (Brazil-licensed)
 - 54) SPA Remotes to Yamal 401 @ 90 degrees E.L. (Russia-licensed)
 - 55) SPA Remotes to JCSAT 5A (M063130) @ 132 degrees E.L. (Japan-licensed)
 - 56) SPA Remotes to INTELSAT 14 (S2785) @ 45 degrees W.L. (U.S.-licensed)
 - 57) SPA Remotes to INTELSAT 33e (S2939) @ 60.0 degrees E.L. (U.S.-licensed)
 - 58) SPA Remotes to ASIASAT 7 (M174161) @ 105.5 degrees E.L. (China-licensed)
 - 59) SPA Remotes to JCSAT-2B (M174163) @ 154 degrees E.L. (Japan-licensed)
 - 60) SPA Remotes to GALAXY 16 (S2687) @ 99 degrees W.L. (U.S.-licensed)
 - 61) SPA Remotes to Permitted Space Station List
 - 62) SPA Remotes to SES-15 (S2951) @ 129.15 degrees W.L. (United Kingdom-licensed)
 - 63) SPA Remotes to EUTELSAT 172B (S3021) @ 172degrees E.L. (US & France licensed)
 - 64) SPA Remotes to INTELSAT 21 (S2863) @ 58.0 degrees W.L. (U.S.-licensed)
 - 65) SPA Remotes to EXPRESS AM5 @ 140.0 degrees E.L. (Russia-licensed)
 - 66) SPA Remotes to EXPRESS AM6 @ 53.0 degrees E.L. (Russia-licensed)
 - 67) SPA Remotes to SES-12 (M192103) @ 95.3 degrees E.L. (Netherlands-licensed)
 - 68) SPA Remotes to SES-14 (S2974)@47.5 degrees W.L. (Brazil & Netherlands - licensed)
 - 69) SPA Remotes to APSTAR 6C (M161190) @ 134 degrees E.L. (China-licensed Operations Outside Region 2 only)
 - 70) SPA Remotes to ASIASAT 9 @ 122° E.L. (Non-US-Licensed) Operations Outside Region 2 only
 - 71) SPA Remotes to Chinasat10 @110.5 W.L. (M246191) (China-licensed Operations Outside Region 2 only)
 - 72) SPA Remotes to APSTAR 6 (M292090) @ 226 degrees W.L. (China-licensed Operations Outside Region 2 only)
 - 73) TECOM Remotes to Permitted Space Station List
 - 74) TECOM Remotes to ANIK G1 @ 107.3 degrees W.L. (Canada-licensed)
 - 75) TECOM Remotes to GE-23 satellite @188 degrees W.L. (U.S.-licensed satellite)
 - 76) TECOM Remotes to TELSTAR 11N (S2357) @ 37.55 degrees W.L. (U.S.-licensed)
 - 77) TECOM Remotes to GALAXY 16 (S2687) @ 99 degrees W.L. (U.S.-licensed)



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D) Points of Communications

The following stations located in the Satellite orbits consistent with Sections B and C of this Entry:

- 78) TECOM Remotes to INTELSAT 29e (S2913) @ 50.0 degrees W.L. (U.S.-licensed)
- 79) TECOM Remotes to Yamal 300K (M174162) @ 177 degrees W.L. (Russia-licensed)
- 80) TECOM Remotes to SES-15 (S2951) @ 129.15 degrees W.L. (United Kingdom-licensed)
- 81) TECOM Remotes to INTELSAT 21 (S2863) @ 58.0 degrees W.L. (U.S.-licensed)
- 82) TECOM Remotes to EUTELSAT 172B (S3021) @ 172degrees E.L. (US & France licensed)
- 83) TECOM Remotes to Estrela do Sul 2 (S2821) @ 63 degrees W.L. (Brazil-licensed)
- 84) TECOM Remotes to EUTELSAT 115WB (S2938) @ 114.9 degrees W.L. (formerly SATMEX 7) (Mexico-licensed)

E) Antenna Facilities

Site ID	Antenna ID	Units	Diameter (meters)	Manufacturer	Model number	Site Elevation (Meters)	Max Antenna Height (Meters)	Special Provisions (Refer to Section H)
MELCO Remote	MELCO	50	0.68	Mitsubishi Electronics	726-20176-101		0 AGL/ 0 AMSL	
Max Gains(s):		32.2 dBi @	14.2500 GHz	31.6 dBi @	11.9500 GHz			
Maximum total input power at antenna flange (Watts) =					31.62			
Maximum aggregate output EIRP for all carriers (dBW) =					42.15			
PPA Remotes	PPA	2000	0.89	PANASONIC	AURA LE			
Max Gains(s):		37.3 dBi @	14.0500 GHz	37.0 dBi @	14.2500 GHz	36.5 dBi @		
		14.4500 GHz	36.7 dBi @	12.7500 GHz	35.7 dBi @	11.2500 GHz	36.2	
		dBi @	12.0000 GHz					
Maximum total input power at antenna flange (Watts) =					10.00			
Maximum aggregate output EIRP for all carriers (dBW) =					48.00			
SPA Remotes	SPA	1000	0.949	PANASONIC	SPA			
Max Gains(s):		35.0 dBi @	14.2500 GHz					
Maximum total input power at antenna flange (Watts) =					10.00			
Maximum aggregate output EIRP for all carriers (dBW) =					45.00			
TECOM Remote	TECOM	1000	0.62	TECOM	KU-STREAM 1000			
Max Gains(s):		28.8 dBi @	14.2500 GHz	31.1 dBi @	11.7500 GHz			
Maximum total input power at antenna flange (Watts) =					31.60			
Maximum aggregate output EIRP for all carriers (dBW) =					43.80			



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F) Remote Control Point:

MELCO 26200 Enterprise Way, (0.68 m antennas)
Remotes

Call Sign: E100089

Lake Forest, Orange, CA 92630
1-425-415-9800

PPA Remotes 26200 Enterprise Way, (0.89 m antennas)

Call Sign: E100089

Lake Forest, Orange, CA 92630
949-462-1395

SPA Remotes 26200 Enterprise Way, (0.949 m antennas)

Call Sign: E100089

Lake Forest, Orange, CA 92630
949-462-1395

TECOM 26200 Enterprise Way, (0.62 m antennas)
Remotes

Call Sign: E100089

Lake Forest, Orange, CA 92630
1-425-415-9800

G) Antenna Structure marking and lighting requirements:

None unless otherwise specified under Special and General Provisions

H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

4 --- Licensee must ensure that a current listing of the name, title, mailing address, email address, and telephone number of the responsible point of contact are on file at the FCC. Any changes must be filed electronically in the International Bureau Filing System (MyIBFS) using the "Pleadings and Comments" link on the MyIBFS homepage within 10 days of the change.

8 --- Licensee must notify the Commission when all earth stations operating under this authorization are no longer operational or when they have not been used to provide any service during any 6-month operation.

90062 --- Operation pursuant to this authorization outside the United States in the 14.0-14.5 GHz band must be in compliance with the provisions of Annex 1, Part C of Recommendation ITU-R M.1643, with respect to any radio astronomy station performing observations in the 14.47-14.5 GHz band.

90067 --- Operation in the territory or airspace of any country other than the United States must be in compliance with the applicable laws, regulations, and licensing procedures of that country, as well as with the conditions of this authorization.



UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

RADIO STATION AUTHORIZATION

Name: Panasonic Avionics Corporation

Call Sign: E100089

Authorization Type: Modification of License

File Number: SES-MFS-20181128-03302

Non Common Carrier

Grant date: 01/14/2020

Expiration Date: 08/31/2026

H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

90075 --- Licensee is afforded 30 days from the date of release of this grant and authorization to decline this authorization as conditioned. Failure to respond within this period will constitute formal acceptance of the authorization as conditioned.

90079 --- ESAAs in aircraft on the ground must not transmit at elevation angles less than three degrees. There is no minimum angle of antenna elevation for ESAAs while airborne.

90081 --- All operations shall be on a non-common carrier basis.

90095 --- The licensee shall comply with any pertinent limits established by the International Telecommunication Union to protect other services allocated internationally.

90104 --- For any new antenna authorized by this grant, the licensee must file with the Commission a certification including the following information: name of the licensee, file number of the application, call sign of the antenna, Site ID, date of the license and certification that the antenna model was put into operation.

90105 --- Authority is granted to operate this station by remote control provided that the operator is responsible for ensuring the operations are in accordance with the terms and conditions of the license and pursuant to Section 25.271 of the Commission's rules. 47 C.F.R 25.271.

90116 --- The licensee must maintain a U.S. point of contact available 24 hours per day, seven days per week, with the authority and ability to terminate operations authorized herein. The licensee shall have available, at all times, the technical personnel necessary to perform supervision of remote station operations.

90118 --- The licensee shall comply with any pertinent limits established by the International Telecommunication Union to protect other services allocated internationally.

90122 --- The earth stations in this blanket license are operated by remote control. The remote control point is a material term of the license and may not be changed without prior authorization under Section 25.117 of the Commission's rules. Public Notice "The International Bureau Provides Guidance Concerning the Relocation of Earth Station Remote Control Points," DA 06-978 (rel. May 4, 2006).

90123 --- Operations authorized pursuant to this license are operations by U.S.-registered aircraft anywhere within the coverage area/frequency bands identified in the application for the satellites listed as points of communication. Operations authorized pursuant to this license also include operations by non-U.S.-registered aircraft within U.S. territory, including territorial waters. Authorization for operations by U.S.-registered aircraft outside U.S. territory, pursuant to this license, does not constitute a grant of access to the market in the United States under the Commission's DISCO II policies.

90246 --- ESAAs authorized herein must employ a tracking algorithm that is resistant to capturing and tracking adjacent satellite signals, and each station must be capable of inhibiting its own transmission in the event it detects unintended satellite tracking.



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H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

90247 --- ESAs authorized herein must be monitored and controlled by a ground-based network control and monitoring center. Such stations must be able to receive "enable transmission" and "disable transmission" commands from the network control center and must cease transmission immediately after receiving a "parameter change" command until receiving an "enable transmission" command from the network control center. The network control center must monitor operation of each ESAA to determine if it is malfunctioning, and each ESAA must self-monitor and automatically cease transmission on detecting an operational fault that could cause harmful interference to a fixed-satellite service network.

90248 --- Stations authorized herein must not be used to provide air traffic control communications.

90398 --- Changes to previously authorized transmitting facilities, operations and devices regulated by the Commission that may have significant environmental impact, and are not excluded by §1.1306, require the preparation of an Environmental Assessment (EA) by the licensee. (See 47 C.F.R. §§1.1307, 1.1308 and 1.1311)

90399 --- The licensee shall, at all times, take all necessary measures to ensure that operation of this (these) authorized earth station(s) does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR §§ 1.1307(b) and 1.1310. Physical measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Compliance can be accomplished in most cases by appropriate restrictions, such as fencing. Requirements for restrictions can be determined by predictions based on calculations, modeling, or by field measurements. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers.

90432 --- Communications between Panasonic Avionics Corporation's ESAs and the Apstar 6, Apstar 7, Asiasat 5, and AsiaSat 7 space stations must be in compliance with all existing and future space station coordination agreements reached between China and other Administrations.

90535 --- Communications between licensee aircraft earth stations and the relevant space station must be in compliance with all existing and future space station coordination agreements reached between the space station Administration and other Administrations.

90536 --- Operations pursuant to this license modification must comply with the conditions set forth in the initial earth station blanket license and all subsequent modifications or amendments to the license: IBFS File No. SES-LIC-20100805-00992, Call Sign E100089.

90537 --- Operations pursuant to this license must comply with the conditions set forth in the associated space station authorizations for the additional points of communication: SES-14 satellite (Call Sign S2974) (IBFS File No. SAT-PPL-20160918-00093).

90540 --- Operation pursuant to this authorization must be in compliance with the terms of coordination agreements between the relevant space station operators and operators of other Ku-band geostationary space stations within six angular degrees of those space stations. In the event that another GSO fixed-satellite service space station commences operation in the 14.0-14.5 GHz band at a location within six degrees of any of these space stations, ESAs operating pursuant to this authorization must cease transmitting to that space station unless and until such operation has been coordinated with the new space station's operator or the licensee demonstrates that such operation will not cause harmful interference to the new co-frequency space station.



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H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

- 90549 --- The ESAAs authorized herein must comply with the terms of the applicable space station authorization(s) as well as the Commission's rules on frequency use, including 47 CFR § 25.202, 47 CFR § 25.228, and applicable footnotes to the Table of Frequency Allocations, 47 CFR § 2.106, including NG52, NG457A, and NG527A.
- 900407 --- The Permitted Space Station List (Permitted List) is a list of all geostationary space stations providing fixed-satellite service pursuant to a Commission license or grant of U.S. market access. The Permitted List currently includes the following frequency bands per §25.103 and §25.115(k)(1):

3600-4200 MHz (space-to-Earth)
5850-6725 MHz (Earth-to-space)
10.95-11.2 GHz (space-to-Earth)
11.45-12.2 GHz (space-to-Earth)
13.75-14.5 GHz (Earth-to-space)
18.3-18.8 GHz (space-to-Earth)
19.7-20.2 GHz (space-to-Earth)
24.75-25.25 GHz (Earth-to-space)
28.35-28.6 GHz (Earth-to-space)
29.25-30.0 GHz (Earth-to-space).

Earth stations with "Permitted List" designated as a point of communication may access any space station on the Permitted List, provided the operations comply with the applicable "routine" uplink and downlink limits, are within the specific frequency bands authorized in the earth station license, have completed coordination with terrestrial stations pursuant to §25.203, and otherwise comply with all terms and conditions of both the earth station license and the space station grant.



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B) This RADIO STATION AUTHORIZATION is granted subject to the additional conditions specified below:

This authorization is issued on the grantee's representation that the statements contained in the application are true and that the undertakings described will be carried out in good faith.

This authorization shall not be construed in any manner as a finding by the Commission on the question of marking or lighting of the antenna system should future conditions require. The grantee expressly agrees to install such marking or lighting as the Commission may require under the provisions of Section 303(q) of the Communications Act. 47 U.S.C. § 303(q).

Neither this authorization nor the right granted by this authorization shall be assigned or otherwise transferred to any person, firm, company or corporation without the written consent of the Commission. This authorization is subject to the right of use or control by the government of the United States conferred by Section 706 of the Communications Act. 47 U.S.C. § 706. Operation of this station is governed by Part 25 of the Commission's Rules. 47 C.F.R. Part 25.

This authorization shall not vest in the licensee any right to operate this station nor any right in the use of the designated frequencies beyond the term of this license, nor in any other manner than authorized herein.

This authorization is issued on the grantee's representation that the station is in compliance with environmental requirements set forth in Section 1.1307 of the Commission's Rules. 47 C.F.R. § 1.1307.

This authorization is issued on the grantee's representation that the station is in compliance with the Federal Aviation Administration (FAA) requirements as set forth in Section 17.4 of the Commission's Rules. 47 C.F.R. § 17.4.

The following condition applies when this authorization permits construction of or modifies the construction permit of a radio station.

This authorization shall be automatically forfeited if the station is not ready for operation by the required date of completion of construction unless an application for modification of authorization to request additional time to complete construction is filed by that date, together with a showing that failure to complete construction by the required date was due to factors not under control of the grantee.

Licensees are required to pay annual regulatory fees related to this authorization. The requirement to collect annual regulatory fees from regulatees is contained in Public Law 103-66, "The Omnibus Budget Reconciliation Act of 1993." These regulatory fees, which are likely to change each fiscal year, are used to offset costs associated with the Commission's enforcement, public service, international and policy and rulemaking activities. The Commission issues a Report and Order each year, setting the new regulatory fee rates. Receive only earth stations are exempt from payment of regulatory fees.