



UNITED STATES OF AMERICA  
FEDERAL COMMUNICATIONS COMMISSION  
**RADIO STATION AUTHORIZATION**

Name: Panasonic Avionics Corporation

Authorization Type: Modification of License

Non Common Carrier

Call Sign: E100089

File Number: SES-MFS-20181128-03302

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<br>(Meters) | Special Provisions<br>NAD (Refer to Section H) |
|----|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|-----------------------|------------------------------------------------|
| 1) | MELCO<br>Remotes | US&P, International waters<br><br>US&P, International,<br><br>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<br><br>US&P, International,<br><br>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<br>AIRSPACE<br>US & International A,<br><br>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<br>Remotes | US&P, International waters<br><br>US&P, International,<br><br>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<br>(MHz)    | Polarization<br>Code | Emission | Tx/Rx<br>Mode | Max<br>EIRP<br>/Carrier<br>(dBW) | Max EIRP<br>Density<br>/Carrier<br>(dBW/4kHz) | Associated<br>Antenna | Special<br>Provisions<br>(Refer to<br>Section H) | Modulation/<br>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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**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<br>(MHz)    | Polarization<br>Code | Emission | Tx/Rx<br>Mode | Max<br>EIRP<br>/Carrier<br>(dBW) | Max EIRP<br>Density<br>/Carrier<br>(dBW/4kHz) | Associated<br>Antenna | Special<br>Provisions<br>(Refer to<br>Section H) | Modulation/<br>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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**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<br>(MHz)    | Polarization<br>Code | Emission | Tx/Rx<br>Mode | Max<br>EIRP<br>/Carrier<br>(dBW) | Max EIRP<br>Density<br>/Carrier<br>(dBW/4kHz) | Associated<br>Antenna | Special<br>Provisions<br>(Refer to<br>Section H) | Modulation/<br>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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**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<br>(MHz)    | Polarization<br>Code | Emission | Tx/Rx<br>Mode | Max<br>EIRP<br>/Carrier<br>(dBW) | Max EIRP<br>Density<br>/Carrier<br>(dBW/4kHz) | Associated<br>Antenna | Special<br>Provisions<br>(Refer to<br>Section H) | Modulation/<br>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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For the text of these provisions, refer to Section H.

| #    | Frequency<br>(MHz)    | Polarization<br>Code | Emission | Tx/Rx<br>Mode | Max<br>EIRP<br>/Carrier<br>(dBW) | Max EIRP<br>Density<br>/Carrier<br>(dBW/4kHz) | Associated<br>Antenna | Special<br>Provisions<br>(Refer to<br>Section H) | Modulation/<br>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            |



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

**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<br>(MHz)    | Polarization<br>Code | Emission | Tx/Rx<br>Mode | Max<br>EIRP<br>/Carrier<br>(dBW) | Max EIRP<br>Density<br>/Carrier<br>(dBW/4kHz) | Associated<br>Antenna | Special<br>Provisions<br>(Refer to<br>Section H) | Modulation/<br>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            |



UNITED STATES OF AMERICA  
FEDERAL COMMUNICATIONS COMMISSION  
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File Number: SES-MFS-20181128-03302

Non Common Carrier

Grant date: 01/14/2020

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<br>(MHz)    | Polarization<br>Code | Emission | Tx/Rx<br>Mode | Max<br>EIRP<br>/Carrier<br>(dBW) | Max EIRP<br>Density<br>/Carrier<br>(dBW/4kHz) | Associated<br>Antenna | Special<br>Provisions<br>(Refer to<br>Section H) | Modulation/<br>Services |
|------|-----------------------|----------------------|----------|---------------|----------------------------------|-----------------------------------------------|-----------------------|--------------------------------------------------|-------------------------|
| 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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**File Number:** SES-MFS-20181128-03302

**Non Common Carrier**

**Grant date:** 01/14/2020

**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<br>(MHz)    | Polarization<br>Code | Emission | Tx/Rx<br>Mode | Max<br>EIRP<br>/Carrier<br>(dBW) | Max EIRP<br>Density<br>/Carrier<br>(dBW/4kHz) | Associated<br>Antenna | Special<br>Provisions<br>(Refer to<br>Section H) | Modulation/<br>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<br>(MHz) | Satellite Arc<br>(Deg. Long.) |               | Elevation<br>(Degrees) |               | Azimuth<br>(Degrees) |               | Max EIRP<br>Density toward<br>Horizon<br>(dBW/4kHz) | Associated<br>Antenna(s) |
|-----|---------------------------|-------------------------------|---------------|------------------------|---------------|----------------------|---------------|-----------------------------------------------------|--------------------------|
|     |                           | East<br>Limit                 | West<br>Limit | East<br>Limit          | West<br>Limit | East<br>Limit        | West<br>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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Expiration Date: 08/31/2026

**C) Frequency Coordination Limits**

| #   | Frequency Limits<br>(MHz) | Satellite Arc<br>(Deg. Long.) |               | Elevation<br>(Degrees) |               | Azimuth<br>(Degrees) |               | Max EIRP<br>Density toward<br>Horizon<br>(dBW/4kHz) | Associated<br>Antenna(s) |
|-----|---------------------------|-------------------------------|---------------|------------------------|---------------|----------------------|---------------|-----------------------------------------------------|--------------------------|
|     |                           | East<br>Limit                 | West<br>Limit | East<br>Limit          | West<br>Limit | East<br>Limit        | West<br>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                      |



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

**C) Frequency Coordination Limits**

| #    | Frequency Limits<br>(MHz) | Satellite Arc<br>(Deg. Long.) |               | Elevation<br>(Degrees) |               | Azimuth<br>(Degrees) |               | Max EIRP<br>Density toward<br>Horizon<br>(dBW/4kHz) | Associated<br>Antenna(s) |
|------|---------------------------|-------------------------------|---------------|------------------------|---------------|----------------------|---------------|-----------------------------------------------------|--------------------------|
|      |                           | East<br>Limit                 | West<br>Limit | East<br>Limit          | West<br>Limit | East<br>Limit        | West<br>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<br>(MHz) | Satellite Arc<br>(Deg. Long.) |               | Elevation<br>(Degrees) |               | Azimuth<br>(Degrees) |               | Max EIRP<br>Density toward<br>Horizon<br>(dBW/4kHz) | Associated<br>Antenna(s) |
|------|---------------------------|-------------------------------|---------------|------------------------|---------------|----------------------|---------------|-----------------------------------------------------|--------------------------|
|      |                           | East<br>Limit                 | West<br>Limit | East<br>Limit          | West<br>Limit | East<br>Limit        | West<br>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                      |



**UNITED STATES OF AMERICA**  
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**RADIO STATION AUTHORIZATION**

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**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

**C) Frequency Coordination Limits**

| #    | Frequency Limits<br>(MHz) | Satellite Arc<br>(Deg. Long.) |               | Elevation<br>(Degrees) |               | Azimuth<br>(Degrees) |               | Max EIRP<br>Density toward<br>Horizon<br>(dBW/4kHz) | Associated<br>Antenna(s) |
|------|---------------------------|-------------------------------|---------------|------------------------|---------------|----------------------|---------------|-----------------------------------------------------|--------------------------|
|      |                           | East<br>Limit                 | West<br>Limit | East<br>Limit          | West<br>Limit | East<br>Limit        | West<br>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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Authorization Type: Modification of License

File Number: SES-MFS-20181128-03302

Non Common Carrier

Grant date: 01/14/2020

Expiration Date: 08/31/2026

**C) Frequency Coordination Limits**

| #    | Frequency Limits<br>(MHz) | Satellite Arc<br>(Deg. Long.) |               | Elevation<br>(Degrees) |               | Azimuth<br>(Degrees) |               | Max EIRP<br>Density toward<br>Horizon<br>(dBW/4kHz) | Associated<br>Antenna(s) |
|------|---------------------------|-------------------------------|---------------|------------------------|---------------|----------------------|---------------|-----------------------------------------------------|--------------------------|
|      |                           | East<br>Limit                 | West<br>Limit | East<br>Limit          | West<br>Limit | East<br>Limit        | West<br>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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**Authorization Type:** Modification of License

**File Number:** SES-MFS-20181128-03302

**Non Common Carrier**

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**Expiration Date:** 08/31/2026

**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)





**UNITED STATES OF AMERICA**  
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**File Number:** SES-MFS-20181128-03302

**Non Common Carrier**

**Grant date:** 01/14/2020

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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 172A (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) TECOM Remotes to Permitted Space Station List
- 73) TECOM Remotes to ANIK G1 @ 107.3 degrees W.L. (Canada-licensed)
- 74) TECOM Remotes to GE-23 satellite @188 degrees W.L. (U.S.-licensed satellite)
- 75) TECOM Remotes to TELSTAR 11N (S2357) @ 37.55 degrees W.L. (U.S.-licensed)
- 76) TECOM Remotes to GALAXY 16 (S2687) @ 99 degrees W.L. (U.S.-licensed)
- 77) TECOM Remotes to INTELSAT 29e (S2913) @ 50.0 degrees W.L. (U.S.-licensed)



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Non Common Carrier

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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 Yamal 300K (M174162) @ 177 degrees W.L. (Russia-licensed)
- 79) TECOM Remotes to SES-15 (S2951) @ 129.15 degrees W.L. (United Kingdom-licensed)
- 80) TECOM Remotes to INTELSAT 21 (S2863) @ 58.0 degrees W.L. (U.S.-licensed)
- 81) TECOM Remotes to EUTELSAT 172B (S3021) @ 172degrees E.L. (US & France licensed)
- 82) TECOM Remotes to Estrela do Sul 2 (S2821) @ 63 degrees W.L. (Brazil-licensed)
- 83) 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.



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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:

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



**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:

- 90247 --- ESAA's 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](http://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 ESAA's 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, ESAA's 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.**

