

S1. GENERAL INFORMATION Complete for all satellite applications.

| | | | | | |
|--|--|---|--|--|--|
| a. Space Station or Satellite Network Name: CANSAT-24 | | e. Estimated Date of Placement into Service: 11/30/2008 | | i. Will the space station(s) operate on a Common Carrier Basis: N | |
| b. Construction Commencement Date: 3/31/2005 | | f. Estimated Lifetime of Satellite(s): 15 Years | | j. Number of transponders offered on a common carrier basis: | |
| c. Construction Completion Date: 8/31/2007 | | g. Total Number of Transponders: 448 | | k. Total Common Carrier Transponder Bandwidth: MHz | |
| d1. Est Launch Date Begin: 11/1/2007 | d2. Est Launch Date End: 11/30/2007 | h. Total Transponder Bandwidth (no. transponders x Bandwidth) 2240 MHz | | i. Orbit Type: Mark all boxes that apply: <input checked="" type="checkbox"/> GSO <input type="checkbox"/> NGSO | |

S2. OPERATING FREQUENCY BANDS Identify the frequency range and transmit/receive mode for all frequency bands in which this station will oper
Also indicate the nature of service(s) for each frequency band.

| Frequency Band Limits | | | | e. T/R Mode | f. Nature of Service(s): List all that apply to this band |
|-----------------------|-----------------|-----------------------|-----------------|-------------|---|
| Lower Frequency (.Hz) | | Upper Frequency (.Hz) | | | |
| a. Numeric | b. Unit (K/M/G) | c. Numeric | d. Unit (K/M/G) | | |
| 2180 | M | 2200 | M | T | Mobile Satellite Service |
| 10.7 | M | 10.95 | G | T | Feeder Link for Mobile Satellite Service in FSS |
| 11.2 | M | 11.45 | G | T | Feeder Link for Mobile Satellite Service in FSS |
| 13.75 | G | 13.753 | G | R | Fixed Satellite Service - Transfer Orbit and Emergency Operations |
| 2000 | M | 2020 | M | R | Mobile-Satellite Service |
| 12.75 | G | 13.25 | G | R | Fixed Satellite Service |

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

| | | | | | |
|--|---|---|---|---|--|
| a. Nominal Orbital Longitude (Degrees E/W): 111.1 W | | b. Alternate Orbital Longitude (Degrees E/W): | | c. Reason for orbital location selection: TerreStar (ITU designator CANSAT-24) will operate at - 111.1WL that is an available Canadian ITU Appendix 30B Ku-Band orbital location and TerreStar will use that band for feeder link and TTC.operation. | |
| Longitudinal Tolerance or E/W Station-Keeping: | | f. Inclination Excursion or N/S Station-Keeping Tolerance: 6 Degrees | Range of orbital are in which adequate service can be provided (Optional): <u>Degrees</u> <u>E/W</u> | | |
| d. Toward West: 0.05 Degrees | e. Toward East: 0.05 Degrees | | g. Westernmost: h. Easternmost: | | |
| i. Reason for service are selection (Optional): | | | | | |

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SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY

S4a. Total Number of Satellites in Network or System:

S4c. Celestial Reference Body (Earth, Sun, Moon, etc.):

S4b. Total Number of Orbital Planes in Network or System:

S4d. Orbit Epoch Date:

For each Orbital Plane Provide:

| (e) Orbital Plane No. | (f) No. of Satellites in Plane | (g) Inclination Angle (degrees) | (h) Orbital Period (Seconds) | (i) Apogee (km) | (j) Perigee (km) | (k) Right Ascension of the Ascending Node (Deg.) | (l) Argument of Perigee (Degrees) | Active Service Arc Range (Degrees) | | |
|-----------------------|--------------------------------|---------------------------------|------------------------------|-----------------|------------------|--|-----------------------------------|------------------------------------|---------------|-----------|
| | | | | | | | | (m) Begin Angle | (n) End Angle | (o) Other |
| | | | | | | | | | | |

S5. INITIAL SATELLITE PHASE ANGLE For each satellite in each orbital plane, provide the initial phase angle.

| (a) Orbital Plane No. | (b) Satellite Number | (c) Initial Phase Angle (Degrees) |
|-----------------------|----------------------|-----------------------------------|
| | | |

NO NGSO DATA FILED

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SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

S6. SERVICE AREA CHARACTERISTICS for each service area provide:

| (a) Service Area ID | (b) Type of Associated Station (Earth or Space) | (c) Service Area Diagram File Name (GXT File) | (d) Service Area Description. Provide list of geographic areas (state postal codes or ITU 3-ltr codes), satellites or Figure No. of Service Area Diagram. |
|---------------------|---|---|---|
| SA1 | S | E_SD1sa.gxt | Conus, Alaska, Canada as required by Canadian Authority |
| SA2 | S | E_SD2a.gxt | Hawaii |
| SA3 | S | E_SD3prsa.gxt | Puerto Rico and US Virgin Islands |
| SAFL | S | E_SAFL.gxt | Conus, Southern Canada |
| OMNI | S | E_OMSA.gxt | Global |

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

S7. SPACE STATION ANTENNA BEAM CHARACTERISTICS For each antenna beam provide:

| (a) Beam ID | (b) T/R Mode | Isotropic Antenna Gain | | (e) Pointing Error (Degrees) | (f) Rotational Error (Degrees) | (g) Min. Cross- Polar Iso- lation (dB) | (h) Polar- ization Switch- able? (Y/N) | (i) Polarization Alignment Rel. Equatorial Plane (Degrees) | (j) Service Area ID | Transmit | | | Receive | | | Input Attenuator (dB) | |
|-------------------|--------------------|---------------------------|-------------------|---------------------------------------|---|---|--|---|------------------------|--------------------------------|--------------------------------------|------------------------------|------------------------------------|---------------------------------------|--|-----------------------|------------------|
| | | | | | | | | | | (k) Input Losses (dB) | (l) Effective Output Power (W) | (m) Max. EIRP (dBW) | (n) System Noise Temp (k) | (o) G/T Max. Gain Pt. (db/K) | (p) Min. Saturation Flux Density (dBW/m2) | (q) Max. Value | (r) Step Size |
| | | (c) Peak (dBi) | (d) Edge (dBi) | | | | | | | | | | | | | | |
| SU1 | R | 47 | 46.2 | 0.03 | 0.16 | 21.3 | N | | SA1 | | | | 331 | 21.8 | -158.2 | 31 | 1 |
| SD1 | T | 48 | 47.2 | 0.03 | 0.16 | 18.8 | N | | SA1 | 2.3 | 269 | 72.3 | | | | | |
| SU2 | R | 39.9 | 38.6 | 0.03 | 0.16 | 21.3 | N | | SA2 | | | | 282 | 15.4 | -152.1 | 31 | 1 |
| SD2 | T | 40.8 | 39.1 | 0.03 | 0.16 | 18.3 | N | | SA2 | 2.3 | 107 | 61.1 | | | | | |
| SU3 | R | 43.6 | 41.5 | 0.03 | 0.16 | 21.3 | N | | SA3 | | | | 417 | 17.4 | -154.8 | 31 | 1 |
| SD3 | T | 43.85 | 41.43 | 0.03 | 0.16 | 18.3 | N | | SA3 | 2.3 | 106 | 64.1 | | | | | |
| KU1 | R | 46.7 | 43.9 | 0.16 | 0.16 | 30 | N | | SAFL | | | | 617 | 18.8 | -112 | 36 | 1 |
| KU1 | T | 46.4 | 43.6 | 0.16 | 0.16 | 30 | N | | SAFL | 2.6 | 3.8 | 52.15 | | | | | |
| CMD | R | 46.7 | 43.9 | 0.16 | 0.16 | 30 | N | | SAFL | | | | 32767 | -0.5 | -112 | | |
| TLM | T | 46.4 | 43.6 | 0.16 | 0.16 | 30 | N | | SAFL | 10 | 0.0034 | 21.7 | | | | | |
| BCN | T | 46.4 | 43.6 | 0.16 | 0.16 | 30 | N | | SAFL | 10 | 0.0046 | 23 | | | | | |
| PLT | R | 46.7 | 43.9 | 0.16 | 0.16 | 30 | N | | SAFL | | | | 32767 | -0.5 | -107 | | |
| CES | R | 43.42 | 28.91 | 0.16 | 0.16 | 19 | N | | SA1 | | | | 982 | 13.5 | -158.2 | 31 | 1 |
| CES | T | 43.42 | 28.91 | 0.16 | 0.16 | 19 | N | | SA1 | 3.4 | 0.47 | 40.1 | | | | | |
| OMN | R | 3 | -4 | 0 | 0.16 | 30 | N | | OMNI | | | | 2042 | -30.1 | -82.3 | | |
| OMN | T | 3 | -4 | 0 | 0.16 | 30 | N | | OMNI | 3.39 | 11 | 13.41 | | | | | |
| CES | R | 43.42 | 28.91 | 0.16 | 0.16 | 19 | N | | SA1 | | | | 982 | 13.5 | -158.2 | 31 | 1 |

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SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

S8. ANTENNA BEAM DIAGRAMS For each beam pattern provide the reference to the graphic image and numerical data:
Also provide the power flux density levels in each beam that result from the emission with the highest power flux density.

| (a) Beam ID | (b) T/R Mode | (c) Co-or Cross Polar Mode ("C" or" X") | (d) GSO Ref. Orbital Longitude (Deg. E/W) | (e) NGSO Antenna Gain Contour Description (Figure/Table/ Exhibit) | (f) GSO Antenna Gain Contour Data (GXT File) | Max. Power Flux Density (dBW/M2/Hz) | | | | |
|-------------------|--------------------|---|---|---|--|--|------------|------------|------------|------------|
| | | | | | | At Angle of Arrival above horizontal (for emission with highest PFD) | | | | |
| | | | | | | (g) 5 Deg | (h) 10 Deg | (i) 15 Deg | (j) 20 Deg | (k) 25 Deg |
| SU1 | R | C | -111.1 | | -Composite-Rx-updat | | | | | |
| SD1 | T | C | -111.1 | | -Composite-Tx-updat | | | | | |
| SU2 | R | C | -111.1 | | R_SU2co.gxt | | | | | |
| SD2 | T | C | -111.1 | | E_SD2co.gxt | | | | | |
| SU3 | R | C | -111.1 | | R_SU3co.gxt | | | | | |
| SD3 | T | C | -111.1 | | E_SD3co.gxt | | | | | |
| KU1 | R | C | -111.1 | | ku-lv-12750L.gxt | | | | | |
| KU1 | T | C | -111.1 | | ku-lv-10700L.gxt | -153.7 | -153.6 | -153.5 | -153.4 | -153.3 |
| OMN | T | C | -111.1 | | OMNID.gxt | | | | | |

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SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

S9. SPACE STATION CHANNELS For each frequency channel provide: S10. SPACE STATION TRANSPONDERS For each transponder provide:

| (a) Channel No. | (B) Assigned Bandwidth (kHz) | (c) T/R Mode | (d) Center Frequency (MHz) | (e) Polarization (H, V, L, R) | (f) TTC or Comm Channel (T or C) |
|-----------------|------------------------------|--------------|----------------------------|-------------------------------|----------------------------------|
| KLDU | 250000 | R | 12875 | L | C |
| KRDU | 250000 | R | 12875 | R | C |
| KLDD1 | 250000 | T | 10825 | L | C |
| KRDD1 | 250000 | T | 10825 | R | C |
| KLDD2 | 250000 | T | 11325 | L | C |
| KRDD2 | 250000 | T | 11325 | R | C |
| SLD | 10000 | T | 2190 | L | C |
| SLU | 10000 | R | 2010 | L | C |
| SRU | 10000 | R | 2010 | R | C |
| CMD1 | 800 | R | 12751 | L | T |
| CMD2 | 800 | R | 12999 | L | T |
| TLM1 | 100 | T | 11200.5 | R | T |
| TLM2 | 100 | T | 11449.5 | R | T |
| ELOU1 | 800 | R | 13750.5 | L | T |
| ELOU2 | 800 | R | 13752.5 | L | T |
| BEAC | 0.001 | T | 11448 | R | T |
| PILOT | 0.001 | T | 12992 | L | T |
| CES | 50 | T | 2190 | L | C |
| CES | 50 | R | 2010 | R | C |

| (a) Transponder ID | (b) Transponder Gain (dB) | Receive Band | | Transmit Band | |
|--------------------|---------------------------|-----------------|-------------|-----------------|-------------|
| | | (c) Channel No. | (d) Beam ID | (e) Channel No. | (f) Beam ID |
| FLINK | 153 | KLDU | KU1U | SLD | SD1 |
| RLINK | 145 | SRU | SU1 | KLDD1 | KU1D |

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

S11. DIGITAL MODULATION PARAMETERS For each digital emission provide:

| (a) Digital Mod. ID | (b) Emission Designator | (c) Assigned Bandwidth (kHz) | (d) No. of Phases | (e) Uncoded Data Rate (kbps) | (f) FEC Error Correction Coding Rate | (g) CDMA Processing Gain (dB) | (h) Total C/N Performance Objective (dB) | (i) Single Entry C/I Objective (dB) |
|---------------------|-------------------------|------------------------------|-------------------|------------------------------|--------------------------------------|-------------------------------|--|-------------------------------------|
| CDMAR | 1M25G7W | 1250 | 4 | 63 | 0.2 | | -2.98 | -3.484154 |
| CDMAR | 1M25G7W | 1250 | 4 | 5.64 | 0.2 | | -2.98 | -13.96477 |
| GMR1R | 31K3G7W | 31.25 | 4 | 35.1 | 0.75 | | 5.5 | 17.97154 |
| GMR1R | 156K0G7W | 156.25 | 4 | 156 | 0.67 | | 4.4 | 16.87154 |
| FDMAR | 6K50G7W | 6.5 | 4 | 5.64 | 0.58 | | 3.4 | 15.87154 |
| FDMAR | 26K0G7W | 26 | 12 | 38.9 | 0.5 | | 7.4 | 19.87154 |
| GMR2R | 50K0G7W | 50 | 4 | 45.1 | 0.67 | | 4.4 | 16.87154 |
| GMR2R | 200K0G7W | 200 | 4 | 180.7 | 0.68 | | 4.4 | 16.87154 |
| OFDMA | 54K7G7W | 54.7 | 12 | 50.8 | 0.5 | | 7.4 | 19.87154 |
| OFDMA | 54K7G7W | 54.7 | 4 | 33.9 | 0.67 | | 4.4 | 18.87154 |
| EVD0F | 1M25G7W | 1250 | 4 | 964 | 0.5 | | 1.51 | 12.85321 |
| EVD0F | 1M25G7W | 1250 | 4 | 5.64 | 0.2 | | -3.53 | -14.51477 |
| GMR1F | 31K3G7W | 31.25 | 4 | 35.1 | 0.75 | | 4.76 | 17.23154 |
| GMR1F | 313K0G7W | 312.512 | 12 | 624 | 0.67 | | 9.58 | 22.05154 |
| GMR2F | 200K0G7W | 200 | 12 | 361.1 | 0.67 | | 9.58 | 22.05154 |
| GMR2F | 200K0G7W | 200 | 4 | 180.5 | 0.67 | | 3.72 | 16.19154 |
| OFDMF | 1M25G7W | 1250 | 12 | 1445.1 | 0.67 | | 9.58 | 22.05154 |
| OFDMF | 1M25G7W | 1250 | 4 | 372.57 | 0.67 | | 3.72 | 16.19154 |
| CESF | 50K0G7W | 50 | 2 | | 1 | | 38 | 14.67154 |
| CESR | 50K0G7W | 50 | 2 | | 1 | | 26 | 6.43154 |
| CESPR | 50K0G7W | 50 | 2 | | 1 | | 32 | 12.43154 |

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

S13. TYPICAL EMISSIONS For each planned type of emission provide:

| Associated Transponder ID Range (a) Start (b) End | | Modulation ID | | (e) Carriers per Transponder | (f) Carrier Spacing (kHz) | (g) Noise Budget Reference (Table No.) | (h) Energy Dispersal Bandwidth (kHz) | Receive Band (Assoc. Transmit Stn) | | | Transmit Band (This Space Station) | | | |
|--|----------|-------------------------|------------------------|------------------------------|---------------------------|--|--------------------------------------|---|-------------------------------------|------|------------------------------------|------|--|--------------------------------|
| | | (c) Digital (Table S11) | (d) Analog (Table S12) | | | | | (i) Assoc. Stn. Max. Antenna Gain (dBi) | Assoc. Station Transmit Power (dBW) | | EIRP (dBW) | | (n) Max. Power Flux Density (dBW/m ² /Hz) | (o) Assoc. Stn Rec. G/T (dB/K) |
| (j) Min. | (k) Max. | (l) Min. | (m) Max. | | | | | | | | | | | |
| RLINK | RLINK | CDMAR | | 129 | 1250 | LB1.doc | | 0 | -9 | -6 | -1.32 | 6.95 | -181 | 34.5 |
| RLINK | RLINK | GMR1R | | 13 | 31.25 | LB2.doc | | 0 | -9 | -6 | 9.2 | 14.5 | -164 | 34.5 |
| RLINK | RLINK | FDMAR | | 64 | 6.5 | LB3.doc | | 0 | -9 | -6 | 2.6 | 8.5 | -162 | 34.5 |
| RLINK | RLINK | GMR2R | | 8 | 50 | LB4.doc | | 0 | -9 | -6 | 10.6 | 14.5 | -165 | 34.5 |
| RLINK | RLINK | OFDMA | | 8 | 43.8 | LB5.doc | | 0 | -9 | -6 | 9.7 | 9.7 | -162 | 34.5 |
| FLINK | FLINK | EVDOF | | 1 | | LB6.doc | | 61 | -12.1 | -5.9 | 52.86 | 75.1 | -112 | -28 |
| FLINK | FLINK | GMR1F | | 4 | 31.25 | LB7.doc | | 61 | -18.5 | -5.9 | 46.4 | 73.6 | -108 | -28 |
| FLINK | FLINK | GMR2F | | 1 | | LB8.doc | | 61 | -13.8 | -9.8 | 52.6 | 69.9 | -110 | -28 |
| FLINK | FLINK | OFDMF | | 17 | 10.94 | LB9.doc | | 61 | -20 | -20 | 40.7 | 63.9 | -121 | -28 |

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

S14. Is the space station(s) controlled and monitored remotely? If Yes, provide the location and telephone number of the TT and C control point(s): #Error

Remote Control (TT C) Location(s):

| | | | |
|--|---------------|---|---------------------------|
| S14a: Street Address: 133438 Allan Park Rd. | | | |
| S14b. City: Allan Park | S14c. County: | S14d. State/Country ON | S14e. Zip Code: N4N B8 |
| S14f. Telephone Number: 519-371-7490 | | S14g. Call Sign of Control Station (if appropriate): NEW | |

Remote Control (TT C) Location(s):

| | | | |
|--|---------------|---|--------------------------|
| S14a: Street Address: One Aerojet Way | | | |
| S14b. City: North Las Vegas | S14c. County: | S14d. State/Country NV | S14e. Zip Code: 89030 |
| S14f. Telephone Number: 571-223-6604 | | S14g. Call Sign of Control Station (if appropriate): NEW | |

**FEDERAL COMMUNICATIONS COMMISSION
 SATELLITE SPACE STATION AUTHORIZATIONS
 FCC Form 312 - Schedule S: (Technical and Operational Description)**

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

| | | |
|---|-----------------------------------|---|
| S15a. Mass of spacecraft without fuel (kg): 3801 | Spacecraft Dimensions (meters) | Probability of Survival to End of Life (0.0 - 1.0) |
| S15b. Mass of fuel and disposables at launch (kg): 2899 | | |
| S15c. Mass of spacecraft and fuel at launch (kg): 6700 | S15f. Length (m): 32 | S15i. Payload: 0.84 |
| S15d. Mass of fuel, in orbit, at beginning of life (kg): 334.8 | S15g. Width (m): 26.3 | S15j. Bus: 0.84 |
| S15e. Deployed Area of Solar Array (square meters): 58.25 | S15h. Height (m): 7.6 | S15k. Total: 0.7 |

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS:

| Spacecraft Subsystem | Electrical Power (Watts) At Beginning of Life | | Electrical Power (Watts) At End of Life | |
|---------------------------------|---|-------------|---|-------------|
| | At Equinox | At Solstice | At Equinox | At Solstice |
| Payload (Watts): | (a): 10270 | (f): 10270 | (k): 10270 | (p): 10270 |
| Bus (Watts): | (b): 1535 | (g): 1535 | (l): 1535 | (q): 1535 |
| Total (Watts): | (c): 13193 | (h): 11805 | (m): 12905 | (r): 10890 |
| Solar Array (Watts): | (d): 15808 | (i): 14218 | (n): 15560 | (s): 14020 |
| Depth of Battery Discharge (%): | (e) 74 % | (j) 0 % | (o) 74 % | (t) 0 % |

S17. CERTIFICATIONS:

| | | | |
|--|---|-----------------------------|------------------------------|
| a. Are the power flux density limits of § 25.208 met? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| b. Are the appropriate service area coverage requirements of § 25.143(b)(ii) and (iii), or § 25.145(c)(1) and (2) met? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |
| c. Are the frequency tolerances of § 25.202(e) and the out-of-band emission limits of § 25.202(f)(1), (2) and (3) met? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A |

In addition to the information required in this Form, the space station applicant is required to provide all the information specified in Section 25.114 of the Commission's rules, 47 C.F.R § 25.114.