Referencias

[1] F. Aguado, J. Puig-Suari, S. Camacho, E. Vicente Vivas, A. Castro, W. Balogh, and V. Reglero. *The HumSAT Constellation*. International Astronautical Federation, http://www.iafastro.com/docs/2010/iac/nanosat/13_Aguado.pdf.

[2] The Radio Amateur Satellite Corporation AMSAT. http://www.amsat.org/amsat-new/index.php.

[3] Constantine A. Balanis. *Antenna Theory, Analysis and Design*. John Wiley & Sons Ltd, 2da. edición, Estados Unidos, 1997.

[4] Bruce A. Blevins. *Small Satellite Antennas*. Antenna Development Corporation, http://www.antdevco.com/ADC-0807201342%20-%20R0%20Small%20Satellite%20Antenna%20Paper.htm.

[5] Charles D. Brown. *Elements of Spacecraft Design*. American Institute of Aeronautics and Astronautics, Estados Unidos, 1ra. edición, 2002.

[6] Maria-Mihaela Burlacu and Pascal Lorenz. *A survey of small satellites domain: challenges, applications and communications key issues*. ICST's Global Community Magazine, http://icast-magazine.org/2010/09/survey-small-satellites-domain-challenges-applications-and\-communications-key-issues.

[7] Clyde-Space. http://www.clyde-space.com/.

[8] Unión Internacional de Telecomunicaciones. *Recomendación UIT-R P.618-5*.

[9] Unión Internacional de Telecomunicaciones. *Recomendación UIT-R P.837-1*.

[10] Unión Internacional de Telecomunicaciones. *Recomendación UIT-R P.838*.

[11] B. G. Evans. *Satellite Communication Systems*. The Institution of Engineering and Technology, 3ra. edición, Inglaterra, 2008.

[12] Peter Fortescue, John Stark, and Graham Swinerd. *Spacecraft Systems Engineering*. John Wiley & Sons Ltd, 3ra. edición, Inglaterra, 2008.

[13] S. Gao, K. Clar, M. Unwin, J. Zackrisson, W. A. Shiroma, J. M. Akagf, K. Maynarcf, P. Garner, L. Boccia, G. Amendola, G. Massa, C. Underwood, M. Brenchley, M. Pointer, and M. N. Sweeting. *Antennas for Modern Small Satellites*. IEEE Xplore, http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=5338683.

[14] Ruth García, Adrián Torregrosa, Andrés García, and Ángel Cifuentes. *Antenas Embarcadas en Satélites*. Universidad Politécnica de Valencia, http://www.upv.es/satelite/trabajos/Grupo9_99.00/index.htmll.

[15] Gary D. Gordon and Walter L. Morgan. *Principles of Communications Satellites*. John Wiley & Sons Ltd, 1ra. edición, Estados Unidos, 1993.

[16] Yiming He and Xianyi Qian. *Performance of High-Power Transmitter which used in Satellite Communication of Earth Station*. IEEE Xplore, http://ieeexplore.ieee.org/search/freesrchabstract.jsp?tp=&arnumber=5659075&queryText%3DPerformance+of+HighPower+Transmitter+which+used+in+Satellite+Communication+of+Earth+Station%26openedRefinements%3D*%26searchField%3DSearch+All.

[17] G. A. Hufford, A. G. Longley, and W. A. Kissick. *A guide to use ITS Irregular Terrain Model in the Area Prediction Mode*. Departamento de Comercio de Estados Unidos, 1982.

[18] Humanitary Satellite Network Project HumSAT. http://www.humsat.org/.

[19] Ángel Martínez Jiménez. *Tesis Doctoral: Diseño de un Sistema de Comunicaciones para Satélite de Órbita Baja Basada en Modulaciones de Fase Continua*. Universidad Politécnica de Madrid, E.T.S.I. de Telecomunicación, 2000.

[20] Louis J. Ippolito Jr. *Satellite Communications Systems Engineering.* John Wiley & Sons Ltd, 1ra. edición, Inglaterra, 2008.

[21] Surrey Satellite Technology Ltd. http://www.sstl.co.uk/.

[22] Anil K. Maini and Varsha Agrawal. *Satellite Technology, Principles and Applications.* John Wiley & Sons Ltd, 1ra. edición, Inglaterra, 2007.

[23] Gérard Maral and Michel Bousquet. *Satellite Communications Systems: Systems, Techniques and Technology.* John Wiley & Sons Ltd, 4ta. edición, Estados Unidos, 2002.

[24] About Radio Mobile. http://radiomobile.pe1mew.nl/?Welcome...

[25] Delft University of Technology. http://www.delfispace.nl/.

[26] Small Satellite Home Page. http://centaur.sstl.co.uk/SSHP/index.html.

[27] Universidad Alas Peruanas. *Avances del Proyecto UAPSat.* http://uapsat.info/.

[28] Bernard Sklar. *Digital Communications, Fundamentals and Applications.* Prentice Hall, 2da. edición, Estados Unidos, 2001.

[29] Innovative Solutions In Space. http://www.isispace.nl/.

[30] Cita textual de la información vía e-mail que proporcionó la Universidad de Surrey.
"S-band communications are used in al satellite systems for satellite telemetry and telecommand, as well as radio ranging (position determination). [abbreviated TT&C]
S-band is also used in some equatorial satellite communication systems to provide television in areas where the atmospheric attenuation due to rain is too great to use the more conventional frequencies. The "Big LEO"satellite constellations also use S-band communications to provide a global communications network using relatively small hand-held terminals.
The ADCS for these satellites is different depending on which one of these applications is used, although all of them use nadir pointing modes with the satellite maintaining pointing towards the sub-satellite

point. The required accuracy depends on the size of the communications beam, and is typically 0.1 degree in most applications, but in some applications can be less critical.
Depending on your definition of "small satellites", the majority of small satellites operating outside the radio amateur bands will use S-band for TT&C. SSTL builds S-band equipment for such missions and you can find datasheets for transmitters, receivers and antennas here (http://www.sstl.co.uk/getdoc/4a2a88ad-3357-45c6-8d24-51fe63f0413f/Sub-system-Datasheets). This page also includes typical Attitude control actuators and sensors which are used ion small satellites.
* For ground stations, pointing accuracy is usually determined by avoiding excessive losses - ie usually 0.1-1.0dB pointing losses.
* Typical BER for telemetry and telecommand is 10e-6, although some systems operate at much better BER if they do not employ Forward Error Correction or Automatic Request for Repeat (ARQ protocols).
Link budget design is covered well in books by Prof Evans of the University of Surrey (http://www.amazon.co.uk/Satellite-Communication-Systems-Telecommunications-PBTE0380/dp/085296899X/ref=sr_1_3?s=books&ie=UTF8&qid=1301396859&sr=1-3) [note that there are cheaper versions of this]".

[31] Wayne Tomasi. *Sistemas de Comunicaciones Electrónicas*. Pearson Educación, 4ta. edición, México, 2003.

[32] Space Flight Laboratory University of Toronto Institute for Aerospace Studies. http://www.utias-sfl.net/index.html.

[33] Rodolfo Neri Vela. *Comunicaciones por Satélite*. Thomson, 1ra. edición, México, 2003.