INTELSAT EARTH STATION STANDARDS (IESS)

Document IESS–101 (Rev. 61)

INTRODUCTION AND APPROVED IESS DOCUMENT LIST

Note: The most updated information listing and documents are available to Intelsat's authorized customers on Intelsat's IBN web site https://ibn.intelsat.com.

Approval Date: 10 March 2005

INTELSAT EARTH STATION STANDARDS (IESS)

INTRODUCTION AND APPROVED IESS DOCUMENT LIST

1.   INTRODUCTION

1.1   All earth stations accessing the Intelsat space segment are required to obtain Intelsat's prior approval.

1.2   It is the user's responsibility to establish compatibility between all earth stations within their system and to comply with Intelsat criteria for interference between earth stations and Intelsat satellites on which space segment capacity is provided. To assist prospective users, Intelsat provides documents detailing performance characteristics that are necessary to achieve the following:

          (a)   Satisfy Intelsat's technical requirements in order to obtain Intelsat's approval to access its space segment.

          (b)   Qualify for acceptance as a "Standard" earth station when accessing the Intelsat space segment.

          The Intelsat Earth Station Standards (IESS) are published by Intelsat to provide users with a common source of reference for the performance characteristics required from earth stations and associated equipment to access the Intelsat space segment for the purposes of establishing communication links.

1.3   The following standard modulation and access methods are currently approved and specified in detail in the IESS modules for providing various Intelsat global services:

          (a)   Time Division Multiple Access with Direct Digital Interface (TDMA/DDI), Digital Speech Interpolation (TDMA/DSI) and without Digital Speech Interpolation (TDMA/DNI).

          (b)   Digital transmission using Quadrature Phase Shift Keying/Frequency Division Multiple Access Carriers (QPSK/FDMA) for Intermediate Data Rates (IDR) Carriers and Dedicated Digital Carriers within the Internet Trunking Service (ITS).

          (c)   Digital transmission for Intelsat Business Services (IBS) using Quadrature Phase Shift Keying/Frequency Division Multiple Access or Binary Phase Shift Keying/Frequency Division Multiple Access (QPSK/FDMA or BPSK/FDMA) Carriers.

          (d)   Digital transmission for Intelsat Business Services (IBS) using Octal Phase Shift Keying/Frequency Division Multiple Access Carriers (8PSK/FDMA).

(e)   Digital transmission using Octal Phase Shift Keying/Frequency Division Multiple Access Carriers (8PSK/FDMA) for Intermediate Data Rates (IDR) Carriers and Dedicated Digital Carriers within the Internet Trunking Service (ITS).

(f)   Demand Assigned Multiple Access Digital Carriers (DAMA) using Quadrature Phase Shift Keying/Frequency Division Multiple Access Carriers (QPSK/FDMA).

(g)   Digital transmission for the Internet Trunking Service (ITS) using a Quadrature Phase Shift Keying/Frequency Division Multiple Access Carrier (QPSK/FDMA) compliant with DVB–S Standard ETS 300 421 for the forward channel (hub–to–remote) and Quadrature Phase Shift Keying/Single Channel Per Carrier (QPSK/SCPC) for the return channels (remote–to–hub).

(h)   Digital transmission using Turbo Coding with Quadrature Phase Shift Keying/Frequency Division Multiple Access (QPSK/FDMA) or Offset Quadrature Phase Shift Keying/Frequency Division Multiple Access Carriers (OQPSK/FDMA) for VSAT service.

(i)   Digital transmission using 16–Level Quadrature Amplitude Modulation (16QAM)/Frequency Division Multiple Access (16QAM/FDMA).

1.4   In conjunction with the standard modulation and access methods listed in paragraph 1.3 above, Intelsat has established performance characteristics for various earth station types:

(a)   Standard A, having a nominal G/T of 35.0 dB/K and operating in the 6/4 GHz bands, for international service.

(b)   Standard B, having a nominal G/T of 31.7 dB/K and operating in the 6/4 GHz bands, for international service.

(c)   Standard C, having a nominal G/T of 37.0 dB/K and operating in the 14/11 GHz and/or 14/12 GHz bands, for international service.

(d)   Standard E, having nominal G/Ts of 25.0 dB/K (Standard E–1), 29.0 dB/K (Standard E–2) and 34.0 dB/K (Standard E–3) and operating in the 14/11 or 14/12 GHz bands, for Intelsat Business Services (IBS), IDR international service, the Internet Trunking Service (ITS) and VSAT Service using Turbo Coding with QPSK/OQPSK (Standard E–1).

(e)   Standard F, having nominal G/Ts of 22.7 dB/K (Standard F–1), 27.0 dB/K (Standard F–2) and 29.0 dB/K (Standard F–3) and operating in the 6/4 GHz bands, for Intelsat Business Services (IBS), IDR international service, the Internet Trunking Service (ITS) and VSAT Service using Turbo Coding with QPSK/OQPSK (Standard F–1).

(f)   Standard G, having no specified G/T, for accessing the Intelsat space segment to provide international and domestic services not covered by Standard A through F earth stations listed above.

Standard G earth stations also allow the use of modulation and access techniques other than those listed in paragraph 1.3 above and only define performance characteristics in terms of general RF boundary conditions.

(g)   Standard H, having nominal G/Ts of 15.1 dB/K (Standard H–2), 18.3 dB/K (Standard H–3) and 22.1 dB/K (Standard H–4) and operating in the 6/4 GHz bands, for Intelsat DAMA, VSAT IBS, the Internet Trunking Service (ITS) and VSAT Service using Turbo Coding with QPSK/OQPSK.

(h)   Standard K, having nominal G/Ts of 19.8 dB/K (Standard K–2) and 23.3 dB/K (Standard K–3) and operating in the 14/11 GHz and/or 14/12 GHz bands, for VSAT IBS, the Internet Trunking Service (ITS) and VSAT Service using Turbo Coding with QPSK/OQPSK.

1.5   Non–standard earth stations having performance characteristics and/or operational modes lower than those specified as mandatory, but otherwise meeting all other requirements, will be considered individually as they arise and on their merits. An earth station that does not meet all of the mandatory requirements may require additional satellite resources and may, therefore, be assessed higher space segment charges.

2.   DESCRIPTION OF THE IESS

2.1   The IESS comprises six groups of documents as shown in Table 1:

- Group 1, titled INTRODUCTORY, contains general guidelines intended to assist earth station users in acquiring earth station facilities for the provision of certain communication service(s). Documents from this group are numbered 101, 102, 103, etc.

- Group 2, titled ANTENNA AND RF EQUIPMENT CHARACTERISTICS, contains the performance characteristics of the various earth station categories (Standard A, B, C, etc.) approved for access to the Intelsat space segment. Documents from this group are numbered 201, 202, 203, etc.

- Group 3, titled MODULATION & ACCESS CHARACTERISTICS, contains the performance characteristics of the various types of modulation and access techniques (e.g., IBS, QPSK/IDR, TDMA, etc.) approved for access to the Intelsat space segment. Documents from this group are numbered 301, 302, 303, etc.

- Group 4, titled SUPPLEMENTARY, contains additional performance characteristics or technical information on specialized areas that may be required by users to build their earth station facilities. Documents from this group are numbered 401, 402, 403, etc.

- Group 5, titled BASEBAND PROCESSING, contains system specifications, such as, Digital Circuit Multiplication Equipment (DCME)[*] and Digital TV transmission. Documents from this group are numbered 501, 502, etc.

- Group 6, titled GENERIC EARTH STATION STANDARDS, boundary RF characteristics for earth stations accessing the Intelsat space segment for international and domestic services not covered by other earth station standards, such as used with leased services. Documents from this group are numbered 601, 602, 603, etc.

- Group 7, titled INTELSAT–MANAGED TELECOMMUNICATIONS NETWORKS, contain service descriptions, performance characteristics and technical information that may be required by users to establish their own telecommunications networks using satellite and/or terrestrial facilities owned or managed by Intelsat. Documents from this group are numbered 701, 702, 703, etc.

2.2   Communications provided through Intelsat satellites, which make use of the various modulation and access methods (see paragraph 1.3) and standard earth station types (see paragraph 1.4) are fully described with regard to their technical requirements by the combination of the IESS modules indicated in Table 2.

2.3   As of the approval date of this document, the IESS modules listed in the IESS Document List presented in Appendix A have been approved.

2.4   Criteria regarding revisions to IESS modules:

   (a)   In general the entire module will be re–issued as a full revision and identified as a numerical revision (e.g., Rev. 1). Any module with less than 35 pages will always be re–issued in its entirety.

   (b)   In special cases, when only a few pages are affected, partial revisions will be issued as follows:

   - The cover page will show the approved date of the numerical revision as well as the partial revision.

   - Partial revisions will be identified by a letter placed just after the revision number (e.g., Rev. 1A). If the partial revision affects a module that has never been revised, it will be identified only by a letter (e.g., Rev. A).

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[*]   See footnote (*) on the DCME following Table A.1 of Appendix A.

- Several partial revisions may be issued (e.g., Rev. 1A and 1B). Once the total number of pages affected by all partial revisions exceeds 15% of the module, however, a full revision will be issued.

(c) Revisions to IESS modules are considered to apply whenever these modules are referred to within the text.

2.5 For clarity, characteristics that are mandatory have been marked by a thick line in the left–hand margin in each of the IESS modules, as illustrated for this paragraph.

2.6 References To Standards Organizations

In recognition of the evolving nature of Recommendations and Standards that may be issued by standards–setting organizations, for example, the ITU[*], IETF[†] and DVB[‡], it is necessary that the pertinent references be included in the IESS. For modules approved after 1 January 1989, an Appendix is included that specifically identifies the appropriate version of each Recommendation or Standard referenced.

2.7 Satellite Nomenclature

Intelsat has adopted a standard naming convention for Intelsat satellites. For modules approved as of 19 June 1992, the Intelsat satellite nomenclature will consist of a three digit Arabic number code, which identifies the satellite series and the flight model. This replaces the previous nomenclature, whereby a mixture of Roman and Arabic numerals was used. Thus, for example, Intelsat VI (F–3) becomes Intelsat 603, etc. Generations of satellites continue to be referred to in the traditional manner, for example, Intelsat VI, VII, etc.

3. GENERAL GUIDELINES FOR INTELSAT EARTH STATIONS

3.1 An earth station will normally comprise: one or more antennas with steering and/or tracking equipment as required, one or more RF transmitters, one or more low–noise RF receiving amplifiers, RF transmission lines, ground communications equipment for conversion from baseband–to–RF and vice-versa, multiplex and terrestrial interface equipment.

3.2 The number of antennas is dependent on the number of satellites through which communication is required and any facilities for system diversity and redundancy that may be deemed necessary.

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[*] International Telecommunications Union

[†] Internet Engineering Task Force

[‡] Digital Video Broadcasting

3.3   The minimum steering and tracking capabilities of antennas operating with the various satellite series are given in the Group 2 IESS modules. It is believed that users will wish to have their antennas so constructed that, if necessary, the main beam pointing can be varied significantly to cover the portion of the orbital arc visible from the station since, at some later time, it might be desired to operate the antenna with a satellite at a different longitude. This would also permit on-site demonstration of compliance with the mandatory sidelobe envelope specification.

3.4   As of the approval date of this document, the IESS applies to earth stations accessing the Intelsat VI, VII, VIIA, VIII, VIIIA, IX, X (10–02), APR–1 and APR-2 capacities on INSAT–2E and SINOSAT–1, respectively. Users should bear in mind that earth stations working normally with one series of satellites may find it necessary to switch over to another series under certain contingency circumstances in order to maintain continuity of service.

3.5   The RF subsystem shall be capable of covering the minimum RF transmit and receive bands specified in the modules describing the earth station performance characteristics. For the RF transmit subsystem, this can be accomplished by means of a single power amplifier or by means of narrower band units that are properly combined to provide coverage of the required transmit bandwidth.

3.6   It is recommended that the earth station design be such that changes in the transmitted and received RF carrier frequencies can be made easily and without unacceptable interruption of service. It is also recommended that the design be such that expansion can be effected without difficulty.

3.7   The reliability of the earth station equipment should be such that the space segment cannot be jeopardized by emissions that are in error due to carrier level, frequency, deviation, synchronism or polarization state. The desired level of station reliability and the extent of provisioning standby equipment is a matter for decision by individual users in the light of their particular circumstances. It should noted, however, that failures can affect large numbers of circuits and numerous distant countries. It is therefore believed that, in their own interests, users will wish to engineer their equipment so that a very high standard of reliability is achieved. Experience has shown that, except in special circumstances, at least 99.8 percent can readily be attained.

3.8   It is stressed that while the required characteristics of a standard earth station have been determined on the basis of its ability to provide a channel performance consistent with ITU–recommended standards, the actual performance achieved may be dependent upon local climatic conditions. After considering the statistics of the local climatic conditions, and any particular service requirements, users will be in a position to determine whether the earth station will need to have enhanced standards of performance.

4.   INTELSAT EARTH STATION STANDARDS POLICY

          The following is Intelsat's policy with respect to the consideration and adoption
          of proprietary technology in the Intelsat Earth Station Standards (IESS):

4.1   It is Intelsat's general policy to maintain non–proprietary IESS specifications;

4.2   It is the responsibility of the entity submitting a specification for consideration to
          advise Intelsat if the proposed specification includes known patented or other
          proprietary technology. Prior to consideration of such proprietary technology,
          the owner shall agree to place those proprietary rights necessary for the
          implementation of the applicable specification in the public domain or to grant,
          upon request, a royalty–free license to those proprietary rights necessary for the
          implementation of the applicable specification, to all interested persons or
          entities on a worldwide, non–discriminatory basis. Such licenses may, on the
          technology owners' request, be subject to the grant of a cross–license for
          relevant technology owned by the licensee; and

4.3   The adoption of patented or other proprietary technology on a basis other than
          that described above may, in exceptional circumstances, be considered by
          Intelsat.

4.4   Any conditions on the manufacture, use or sale of equipment necessary to
          implement the IESS specifications adopted pursuant to paragraphs 4.2 and 4.3
          above shall be clearly documented in the IESS.

4.5   Where appropriate, Intelsat will undertake a due diligence review of patent rights
          in the technology being recommended for adoption in the IESS.

Table 1

DOCUMENTS COMPRISING THE IESS

Group 1 – INTRODUCTORY

IESS No.   Title

101   Introduction and Approved IESS Document List

Group 2 – ANTENNA AND RF EQUIPMENT CHARACTERISTICS

IESS No.   Title

207   Standards A, B, F and H – Antenna and Wideband RF Performance Characteristics of
         Earth Stations Operating in the 6 and 4 GHz Frequency Bands

208   Standards C, E and K – Antenna and Wideband RF Performance Characteristics of
         Earth Stations Operating in the 14/11 and/or 14/12 GHz Frequency Bands

Group 3[*] – MODULATION & ACCESS CHARACTERISTICS

IESS No.   Title

307   Intelsat TDMA/DSI System Specification

308   Performance Characteristics for Intermediate Data Rates Digital Carriers Using
         Convolutional Encoding/Viterbi Decoding and QPSK Modulation (QPSK/IDR)

309   Performance Characteristics for Intelsat Business Services (IBS)

310   Performance Characteristics for Intermediate Data Rates Digital Carriers Using Rate
         2/3 TCM/8PSK and Reed–Solomon Outer Coding (TCM/IDR)

311   Performance Characteristics for Demand Assigned Multiple Access (DAMA) Digital
         Carriers

314   Performance Characteristics for Intelsat Business Services (IBS) Digital Carriers Using
         Rate 2/3 TCM/8PSK and Reed–Solomon Outer Coding (TCM/IBS)

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[*]   IESS modules 301 (FDM/FM), 302 (CFDM/FM), 303 (SCPC/QPSK), 305 (SCPC/CFM) and 306
       (TV/FM) were retired on 31 October 2002.

Group 3 – MODULATION & ACCESS CHARACTERISTICS (Cont'd)

IESS No.   Title

315   Performance Characteristics for VSAT Service Using Turbo Coding With
       QPSK / OQPSK Modulation

316   Performance Characteristics For Digital Carriers Using 16QAM Modulation

317   Intelsat TDMA/DDI System Specification

Group 4[*] – SUPPLEMENTARY

IESS No.   Title

401   Performance Requirements for Intermodulation Products Transmitted from Intelsat
       Earth Stations (6 and 14 GHz Frequency Bands)

402   Earth Station EIRP Adjustment Factors to Account for Satellite Antenna Pattern
       Advantage and Path Loss Differential with Elevation Angle (K1 and K2)

408   Intelsat VI Satellite Characteristics

409   Intelsat VII Satellite Characteristics

410   Intelsat Space Segment Leased Transponder Definitions and Associated Operating
       Conditions

411   Requirements For Earth Stations Accessing Intelsat VA Satellites Having Higher Than
       Nominal Orbital Inclination (Operating In A Contingency Mode Or With Satellites At
       Designated Inclined Orbit Locations)

412   Earth Station Pointing Data

415   Intelsat VIIA Satellite Characteristics

417   Intelsat VIII Satellite Characteristics

418   Intelsat VIIIA Satellite Characteristics

419   Performance Characteristics for 139.264 Mbit/s PDH and 155.52 Mbit/s SDH High Data
       Rate (HDR) Digital Carriers

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[*]   IESS–403 (ESC) was retired on 31 October 2002.
       IESS–406 (VA Description) was retired on 6 October 2003; all modules affected by this retirement
       will be modified in the near future.

Group 4 – SUPPLEMENTARY (Cont'd)

IESS No.   Title

420   Intelsat APR–1 Capacity on INSAT–2E

422   Intelsat IX Satellite Characteristics

423   Intelsat APR–2 Capacity on SINOSAT–1

424   Intelsat 10–02 Satellite Characteristics

Group 5 – BASEBAND PROCESSING

IESS No.

501   Digital Circuit Multiplication Equipment* Specification 32 kbit/s ADPCM with DSI

502   Not used

503   Performance Characteristics for Open-Network Digital Television Transmission

Group 6 – GENERIC EARTH STATION STANDARDS

IESS No.   Title

601   Standard G – Performance Characteristics for Earth Stations Accessing the Intelsat
        Space Segment for International and Domestic Services not Covered by Other Earth
        Station Standards

Group 7 – INTELSAT–MANAGED TELECOMMUNICATIONS NETWORKS

IESS No.   Title

701   Performance Requirements for the Internet Trunking Service (ITS)
702   Dedicated Video Solutions (DVS) Service (Space Segment Only)

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*   See footnote (*) on the DCME following Table A.1 of Appendix A.

Table 2*

IESS MODULE COMBINATIONS AVAILABLE TO DESCRIBE INTELSAT
PERFORMANCE CHARACTERISTICS

Doc. No. †‡	Doc. Title	Earth Station Standard							
		A	B	C	E	F	G	H	K
101	Introduction	X	X	X	X	X	X	X	X
207	Std. A, B, F & H	X	X			X		X	
208	Std. C, E & K			X	X				X
307	TDMA	X							
308	QPSK/IDR	X	X	X	X	X			
309	IBS	X	X	X	X	X		X	X
310	TCM/IDR	X	X	X	X	X			
311	DAMA	X	X			X		X	
314	TCM/IBS	X	X	X	X	X			
315	VSAT Turbo	X	X	X	X	X		X	X
316	16QAM	X	X			X			
317	Low–Cost TDMA	X	X						
401	IM Criteria	X	X	X	X	X		X	X
402	EIRP Adj. Factor	X	X	X	X	X		X	X
408	VI Description	X	X	X	X	X	X	X	X
409	VII Description	X	X	X	X	X	X	X	X
410	Lease Definitions						X		
411	Inclined Orbit	X	X	X	X	X	X		
412	E.S. Pointing Data	X	X	X	X	X	X	X	X
415	VIIA Description	X	X	X	X	X	X	X	X

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* NOTE: This table shows the combinations of modules for which parameters are currently provided within the IESS documents. The table is not intended to fully identify the various connectivities that may develop.

† IESS modules 301 (FDM/FM), 302 (CFDM/FM), 303 (SCPC/QPSK), 305 (SCPC/CFM), 306 (TV/FM) and 403 (ESC) were retired on 31 October 2002.

‡ IESS–406 (VA Description) was retired on 6 October 2003; all modules affected by this retirement will be modified in the near future.

Table 2 (Continued)

<u>IESS MODULE COMBINATIONS AVAILABLE TO DESCRIBE INTELSAT
PERFORMANCE CHARACTERISTICS</u>

Doc. No.	Doc. Title	Earth Station Standard							
		A	B	C	E	F	G	H	K
417	VIII Description	X	X	X	X	X	X	X	X
418	VIIIA Description	X	X	X	X	X	X	X	X
419	140 & 155 Mbit/s HDR						X		
420	APR–1 Description						X		
422	IX Description	X	X	X	X	X	X	X	X
423	APR–2 Description	X	X	X	X	X	X	X	X
424	10–02 Description	X	X	X	X	X	X	X	X
501[*]	DCME	X	X	X	X	X			
502	Not used								
503	Digital TV	X	X	X	X	X		X	
601	Standard G						X		
701	Internet Trunking	X	X	X	X	X		X	X
702	Dedicated Video Solutions						X		

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[*]   See footnote (*) on the DCME following Table A.1 of Appendix A.

Table 3

<u>IESS–101 REVISION HISTORY</u>

<u>Revision No.</u>	<u>Approval Date</u>
(Original)	01 Jul 1985
1	12 Mar 1986
2	25 Jun 1986
3	17 Sep 1986
4	11 Dec 1986
5	12 Mar 1987
6	17 Jun 1987
7	16 Sep 1987
8	10 Dec 1987
9	15 Mar 1988
10	14 Dec 1988
11	14 Mar 1989
12	21 Jun 1989
13	12 Sep 1989
14	11 Dec 1989
15	09 Mar 1990
16	13 Jun 1990
17	17 Dec 1990
18	12 Mar 1991
19	09 Dec 1991
20	19 Jun 1992
21	04 Dec 1992
22	22 Feb 1993
23	18 May 1993
24	18 Aug 1993
25	05 Nov 1993
26	09 Feb 1994
27	19 May 1994
28	25 Aug 1994
29	09 Nov 1994
30	29 May 1995

Table 3 (Continued)

<u>IESS–101 REVISION HISTORY</u>

31	15 Aug 1995
32	10 Nov 1995
33	19 Feb 1996
34	16 May 1996
35	20 Aug 1996
36	11 Nov 1996
37	13 Feb 1997
38	16 May 1997
39	18 Aug 1997
40	05 Nov 1997
41	17 Feb 1998
42	18 May 1998
43	30 Nov 1998
44	13 May 1999
45	10 Aug 1999
46	10 Feb 2000
47	11 May 2000
48	11 Aug 2000
49	20 Nov 2000
50	22 May 2001
51	10 Dec 2001
52	13 Feb 2002
53	02 Apr 2002
54	31 Oct 2002
55	15 Nov 2002
56	06 Dec 2002
57	20 Dec 2002
58	31 Jan 2003
59	28 Apr 2003
60	24 Oct 2003
61	16 Jan 2004

Table A.1

INTELSAT EARTH STATION STANDARDS (IESS)

CURRENTLY APPROVED DOCUMENT LIST

Abbreviated Title[*]	Document No:	Approval Date
Introduction	101 Rev. 61	16 Jan 2004
Standards A, B, F & H	207 Rev. 5	07 Oct 2002
Standards C, E & K	208 Rev. 6	07 Oct 2002
TDMA	307, Rev. A & Rev. B	12 Mar 1987, 10 Dec 1987 & 12 Mar 1991
QPSK/IDR	308 Rev. 11	31 Jan 2003
IBS	309 Rev. 8	24 Oct 2003
TCM/IDR	310 Rev. 3	31 Jan 2003
DAMA	311 Rev. 2	24 Oct 2003
TCM/IBS	314 Rev. 1	16 Jan 2004
VSAT Turbo	315	20 Dec 2002
16QAM	316	24 Oct 2003
Low–Cost TDMA	317 Rev. 1	16 Jan 2004
IM Criteria	401 Rev. 7	16 Oct 2002
EIRP Adj. Factor	402 Rev. 8	16 Oct 2002
VI Description	408 Rev. 7	06 Dec 2002
VII Description	409 Rev. 5	06 Dec 2002
Lease Definitions	410 Rev. 10	24 Oct 2003
Inclined Orbit	411 Rev. 4	01 Oct 2002
Earth Station Pointing Data	412 Rev. 2	06 Dec 2002
VIIA Description	415 Rev. 3	01 Oct 2002
VIII Description	417 Rev. 2	06 Dec 2002

[*] IESS–406 (VA Description) was retired on 6 October 2003; all modules affected by this retirement will be modified in the near future.

Table A.1 (Continued)

<u>INTELSAT EARTH STATION STANDARDS (IESS)</u>

<u>CURRENTLY APPROVED DOCUMENT LIST</u>

<u>Abbreviated Title</u>[*]	<u>Document No:</u>	<u>Approval Date</u>
VIIIA Description	418 Rev. 3	20 Dec 2002
140 & 155 Mbit/s HDR	419 Rev. 2	20 Dec 2002
APR–1 Description	420 Rev. 3	20 Dec 2002
IX Description	422 Rev. 2	16 Oct 2002
APR–2 Description	423 Rev. 1	20 Dec 2002
10–02 Description	424	24 Oct 2003
DCME	501 Rev. 3[*]	04 Dec 1992
Not used[†]	502	Not used
Digital TV	503 Rev. 3A	31 Jan 2003
Standard G	601 Rev. 11	08 Oct 2002
Internet Trunking	701	01 Oct 2002
Dedicated Video Solutions	702	28 Apr 2003

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[*] Although DCME is still used in the Intelsat system, IESS–501 is no longer being updated or distributed since its contents have been subsumed under ITU–T Recommendations G.763 and G.766. Users should, therefore, refer to these ITU Recommendations instead for the DCME performance requirements.

[†] IESS–502 is not used in order to maintain correspondence with the SSOG numbering system that has already allocated this number for FDM/FM Multiplex (this subject is not specifically addressed in the IESS modules).