

BUREAU OF INDIAN STANDARDS

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Draft Indian Standard

Satellite receiver – Specification (*First Revision*)

प्रारंभिक मसौदा भारतीय मानक

उपग्रह अभिग्राही – विशीष्टि (*पहला पुनरीक्षण*)

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BUREAU OF INDIAN STANDARDS

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG NEW DELHI 110002

FOREWORD

This Indian Standard may be adopted by the Bureau of Indian Standards, after the draft finalized by Audio, Video and Multimedia Systems and Equipment Sectional Committee would be approved by the Electronics and Information Technology Divisional Council.

This standard was published in 1995 and First Revision has been taken up to include specification for satellite receivers receiving both IP and digital AVB inputs, in contrast to earlier standard which was more focused towards only analog signals. The incorporation of this change has led to major modifications in the Performance Parameters listed in Table 1. Also the scope of the standard has been modified in order to not limit it to the cabled distribution system only.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (second revision)'.

*Indian Standard***Satellite Receiver- specification****1 SCOPE**

This Indian Standard specifies the performance for satellite receivers used.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
IS 13986 (Part 1) : 1994	Methods of measurement on receivers for satellite broadcast transmissions in the 12 GHz band: Part 1 Radio frequency measurements on outdoor units.
IS 13986 (Part 2) : 1994	Methods of measurement on receivers for satellite broadcast transmissions in the 12GHz band: Part 2 Electrical measurements on DBS tuner units
IS 14231 (Part 1): 1995	Cabled distribution system for television and sound signals - Specification: Part 1 Safety requirements

3 PERFORMANCE REQUIREMENTS**3.1 Methods of Measurements**

The general test conditions and .methods of measurements shall be in accordance with IS 13986 (Part 1) : 1994 and IS 13986 (Part 2) : 1994.

3.2 Performance Parameters

The requirements for various performance parameters for satellite receiver shall be as given in Table 1.

3.3 Safety Requirements

The safety requirements of satellite receiver shall conform to IS 14231 (Part 1): 1995.

4 MARKING**4.1 The following information shall be provided with each satellite receiver:**

- i) Manufacturer's name or trade-mark,

- ii) Technical specifications,
- iii) Connectors details, and
- iv) Power supply requirements.

4.2 Standard mark may be given on the satellite receiver.

4.2.1 The use of the Standard Mark is governed by the provision of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. Details of conditions under which a license for the use of Standard Mark may be granted to manufacturers and producers may be obtained from the Bureau of Indian Standards.

**Table 1 Performance Parameters
(Clause 3.2)**

	<i>Parameter</i>	Mandatory	Optional
1	RF. Parameters		
	Input frequency	950-2150Mhz	
	Input impedance	75 ohms	
	Input return loss	Better than 15 dB	
	Input level	-25 to -65 dBm	
	L.O. leakage at input	-60 dBm or less	
	Image rejection	Better than 40 dB	
	IF bandwidth	27 MHz (typical)	
	Demodulator threshold	Less than 8dB C/N	
	Tuning frequency control	Synthesized in 1MHz or less steps or continuously variable	
	No. of Ports	2	
	Connector	F type 75 ohm female connector (as per IEC 60169-2)	
	LNB Power	13V DC , 18V DC /350mA	
	Diseqc Support	Supports Diseqc 1.0 , Diseqc 1.2 and Diseqc 2.0	
2. a)	Transport Stream Input		
	DVB S		
	i Constellation	QPSK	
	ii Symbol Rate	1-45Msym/s	
	iii FEC	All ratios compliant with standards	
	DVB-S2		
	i Constellation	QPSK/8PSK/16PSK/32APSK	
	ii Symbol Rate	1-45Msym/s	
	iii FEC	All ratios compliant with standards	

	DVB-S2X		
i	Constellation		QPSK/8PSK/16PSK/32APSK
ii	Symbol Rate		1-64Msym/s
iii	FEC		All ratios compliant with standards
iv	Roll Off		0.05,0.1,0.15,0.2,0.25 and 0.35
v	RF Input Max Bitrate		160Mbps per port
vi	Mode		CCM , VCM
b)	IP Port Input		
i	Physical	RJ45	
ii	Ethernet	100/1000 BASE-T Ethernet , RJ45	
iii	In/Output Modes	UDP, RTP, FEC (SMPTE 2022)	
iv	Addressing	Unicast / Multicast	
v	TS Type	SPTS or MPTS	
vi	Rates	Input : 400 Mbps	
vii	MPE Data	Up to 10 Mbps	
viii	Sockets	Minimum One	
c)	ASI		ASI in should also be optional because it is getting outdated. Most of the compressed signals are now with IP inputs/outputs
i	Number of Inputs		Minimum One
ii	Connectors		BNC / HD BNC / DIN 1.0-2.3 / SMA
iii	TS MAX Bitrate		169 Mbps
iv	Packet length		188 byte packets
d)	MPEG over IP1		
i	Number of Inputs	04 SPTS/MPTS	
ii	Sockets	4	
iii	Encapuslation Protocol	MPEG 2 TS over UDP	
Iv	Addressing	Multicast/Unicast	
V	Connectors	Two 100/1000 Base T RJ45 for redundancy	
e)	G.7032		
i	Connectivity		DS3
ii	No of ports		Two
iii	Input Data Rate		44.736
Iv	Interface		B3ZS
V	Levels		ITU -T, G823/G824/ANSI T1.103-1993

3	Transport Stream Outputs		
a)	IP Port Output		
i	Physical	RJ45	
ii	Ethernet	100/1000 BASE-T Ethernet , RJ45	
iii	In/Output Modes	UDP, RTP, FEC (SMPTE 2022)	
Iv	Addressing	Unicast / Multicast	
V	TS Type	SPTS or MPTS	
Vi	Rates	Output : up to 800 Mbps	
Vii	MPE Data	Up to 10 Mbps	
Viii	Sockets	minimum 02 - duplicate or independent	
b)	ASI		ASI out should also be optional because it is getting outdated. Most of the compressed signals are now with IP inputs/outputs
i	Number of Outputs		minimum one
ii	Connectors		BNC / HD BNC / DIN 1.0-2.3 / SMA
iii	Packet Length		188
Iv	TS Maximum Output		108 Mbps
4	Conditional Access Handling		
i	BISS	Embedded upto full TS	
ii	DVB CI Interface EN 50221	one (EN 50221)	
iii	CA Methods	Multicrypt and Simulcrypt support	
5	Video Decoding		
	MPEG 2 SD	4:2:0 MP @ ML	
	MPEG-2 SD	4:2:2 @ ML	
	MPEG-2 HD	4:2:0 MP @ HL	
	MPEG-4 AVC SD	4:2:2 P @ HL	
	MPEG-4 AVC HD	4:2:0 MP @ L3	
	HEVC HD	4:2:2 HP @ L3	
		4:2:0 MP @ L4.0 / HP @ 4.1	
		4:2:2 @ HiP/Hi10P/Hi422P @ L4.1 (8 and 10 bit)	
		Main/Main 10	
		1080i/720p 4:2:0 @L4.0	
		**1080P and 4:2:2@L4.1 (8 and 10 bit)	
6	Maximum Video Rate		

	MPEG-2 SD	4:2:0 – 15 Mbps	
	MPEG-2 HD	4:2:2 – 50 Mbps	
	MPEG-4 AVC SD	4:2:0 – 50 Mbps	
	MPEG-4 AVC HD	4:2:2 – 80 Mbps	
		4:2:0 – 10 Mbps	
		4:2:2 – 50 Mbps	
		4:2:0 – 20 Mbps (MP), 25 Mbps (HP)	
		4:2:2 – 100 Mbps (CAVLAC), 50 Mbps (CABAC)	
	HEVC HD	Up to 50 Mbps (CABAC)	
7	Decoded Baseband Outputs		
a)	SDI	SD-SDI (SMPTE ST 259) / HD-SDI (SMPTE ST 292-1)	
	Connector	BNC / HD BNC / DIN 1.0-2.3 / SMA	
b)	Analog (Optional)		PAL-B/G/I/M/N/D, NTSC, Russian SECAM
	Type		CVBS
	Connector		RCA / BNC 75 ohm
c)	Format HDMI		Digital
8	Audio Options		
	Balanced Audio Output	Connector: 2x 9-Pin D-type	
		Analog audio: two balanced stereo pairs	
		Digital audio: two balanced stereo pairs	
	Standard with any Video Decode Option:	2x MPEG-1 Layer-II audio decode	
		2x Dolby Digital® decode	
		2x Dolby Digital® Pass-through	
		2x Dolby® Digital Plus Pass-through	
		2x Dolby®E pass-through	
		2x Linear PCM decode	
		Audio sampling rate: 48 kHz	
		Decoded audio gain adjustment	
	AAC Audio	2x 5.1 down-mix to 2.0	
		2x 2.0 decode	

		1x 5.1 decode	
	Phase Aligned Audio	MPEG-1 Layer II audio or AAC audio	
		2x phase aligned groups of 4x stereo pairs, or 1x group of 8x stereo pairs	
		Phase aligned to enable 5.1 carriage	
9	Video Processing		
	High Quality Format-Conversion	Simultaneous Down-conversion (HD to SD): center cut out, manual/AFD controlled	
	Grade 1 quality down-conversion	Down-conversion from 1080p 50/60 to 1080i, 720p or SD	
	Up-conversion	Non-simultaneous up-conversion (SD to HD): To 720p or 1080i (4:2:0 modes only)	
	Cross-conversion	Non-simultaneous cross-conversion 720p to 1080i or 1080 to 720p	
		No frame rate conversion	
	Aspect Ratio Conversion	16:9 to 4:3 center cut ARC in SD modes	
	Frame Synchronization	Enables Frame Sync	
		Connector: 1x BNC (F) 75 Ohm	
		Input signal: Analog SD HSync (black & burst)	
10	Control	Front panel keypad and LCD	
		SNMP control, traps and alarms	
		Web browser	
		Ethernet – RJ45 10/100BaseT control interface	
		Terminal via RS-232 or RS-485	
		Presets	
11	Input Voltage	90 VAC / 240 VAC	
12	Power Consumption	100W Max. (depending on options fitted)	
13	Cooling	Integrated fan	

14	Dimensions (H x W x D)	1.75 in x 19 in x 15.5 in (1 RU)	
		4.4 cm x 48.3 cm x 39.37 cm	
15	Power Supply		
	Mains voltage	230 V \pm 10 percent, 50 Hz single phase	
	Supply to LNC/LNBC/LNB	+16 V to +28 Vdc via RF coaxial cable with RF input	
16	Environmental		
	Operating temperature range	+ 10°C to 40°C	
	Relative humidity	95 percent at 40°C	
	Storage Temperature	-20°C to +60°C (-4° to 140°F)	
17	EMC Compliance	EN55022, EN55024, EN61000-3-2, EN61000-3-3,	
18	Safety Compliance	EN60950-1,	