[LAB LOGO]

Test Report No.:	**Page 1 of** **Issue Date:**

Manufacturer:	
Test item: ***Digital Television Receiver for Satellite Broadcast Transmission***	
Identification:	*Serial No.:*
Receipt No.:	*Date of receipt:*
Testing laboratory and its address:	
Test specification:	**IS 18112 : 2022**
Test Result:	*The test item* ***passed*** */* ***failed*** *the test specification(s).*
Other Aspects:	
This test report relates to the test sample submitted and list of documents attached.	

Tested by:	**Approved by / Authorized Signatory:**	**Issued by:**
(Name / Designation)	(Name / Designation	(Name / Designation)
Date:	Date:	Date:

TEST REPORT IS
18112 : 2022
Digital Television Receiver for Satellite Broadcast Transmission — Specification

Report Reference No. ..... :	
Date of issue ..... :	
Total number of pages	
Applicants name ..... :	
Address ..... :	
Test specification:	
Standard ..... :	**IS 18112 : 2022**
Test procedure ..... :	Compliance Report
Non-standard test method……..:	N/A
Test Report Form No. ..... :	
Test Report Form(s) Originator :	Bureau of Indian Standards
Master TRF ..... :	
Test item description ..... :	
Trade Mark..... :	
Manufacturer……:	
Model/Type reference ..... :	
Ratings ..... :	
Other Documents submitted ..... :	

Tested by:	**Approved by / Authorized Signatory:**	**Issued by:**
(Name / Designation)	(Name / Designation)	(Name / Designation)
Date:	Date:	Date:

Report No.:		
	IS 18112:2022	Page___of___
Dated :		

Description	**Measurement / Testing**	**Total no. of tests**	**Total no of applicable tests / Req.**	**No. of tests / Req. passed**	**Page no.**
Cl. 3 Requirements					
Cl. 3.1 Shall fully comply with detailed specification as given in Table 1					
Cl. 3.2 The manufacturer shall ensure compatibility and interfacing with Consumer Electronic equipment such as Audio and Video systems in the country.					
Cl. 3.3 Specification Shall comply Table 1					
Cl. 3.4 Performance Requirement Shall comply table 2.					
Cl. 3.5 Safety requirement Shall confirm to IS 616					
Cl. 3.6 Electromagnetic Compatibility (EMC) requirement Shall confirm to IS/CISPR 32.					
Cl. 4 Marking					
Cl. 5 Operating life test					

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement test.

.....
(Approving Authority)

Test item particulars……..:
Sample received condition……...: ☐ Good ☐ Others
Classification of installation and use……: **Supply Connection……:**
Laboratory conditions……..……: **Ambient Temperature ……:** **Ambient Humidity……:**
Testing: **Date of receipt of test item……:** **Date (s) of performance of tests……..:**
Copy of marking plate: Copy of trademark: (provided on the equipment)

Table – List of Attachments

Attachment No.	Attachment Description	No. of pages in Attachment
Attachment – 1	Photo Documentation	Page No.

Possible test case verdicts:

- test case does not apply to the test object : N/A
- test object does meet the requirement : P (Pass)
- test object does not meet the requirement : F (Fail)

General remarks:

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General Product Information:-
Product Description:

Model Tested:

Sr. No.	Product description	Model	Specification
1.			

Representative Models:

Sr. No.	Product description	Model	Specification	Variation From Family Representative
1				
2				
3				
4				
5				

Supply Connections:
Condition of sample at the time of receipt:

Tested Model:

Technical Considerations:

Report summary:

3.1,3.2, 3.3	General requirements	CODE	Test Result Observation	Verdict
	Table 1 Specifications			
i)	**BASIC DTV RECEIVER PROFILE:.....:**			
a)	Hardware specification			
	The processing power and memory configuration of the DTV receiver shall be suitable for the routine operation of the digital reception of the DVB-S and DVB S2 signals, and DTV receiver shall have provision of the routine upgradation or replacement of software			
b)	Decompression and decoding of SDTV video			
	Capability to decompress and decode SDTV signals compressed using MPEG-2 MP@ML (see Sl.. No. 2 and Sl. No. 3 of Annex B) and MPEG-4 Part 10 AVC MP @ L3 (see Sl. No. 3 of Annex A and Sl. No. 4 of Annex B).			
c)	Decompression and decoding of HDTV video			
	a) Capability to decompress and decode HDTV signals compressed using MPEG-4 Part 10 AVC HP@L4 (see Sl. No. 3 of Annex A and Sl. No. 4 of Annex B).			
	b) The DTV receiver shall be capable of decoding both 1080i and 720p formats and up scaling/down scaling it to the best format supported by it.			
d)	Decompression and decoding of audio			
	a) Capability to decompress and decode Audio using MPEG-1 Layer 2 (see Sl. No. 5 of Annex B).			
	b) Capability to pass through the multi-channel audio formats over compatible outputs such as HDMIARC,S/PDIF etc.			
	a) Capability to decompress and decode the multichannel audio formats.(Optional)			
e)	Active Format descriptors			

	Ability to handle 16 : 9 widescreen and 4 : 3 picture format changes as detailed in the 'transmission rules' including support for correct aspect ratio and Active Format Descriptors. (see Sl. No. 6 of Annex B).			
f)	Captioning and Sub-titling			
	Capability to receive and process DVB Subtitle Streams. (see Sl.. No. 11 and Sl No. 12 of Annex B). DVB subtitles shall be invoked from a remote control			
g)	Teletext			
	The DTV receiver shall include a Teletext decoder (as laid down in Sl No. 13 of Annex B) including up to Teletext Ver 1.5. A suitable remote control button should be provided to launch the Teletext OSD display. (Optiona)			
h)	Multi-language support			
	The DTV receiver is to at least support The setting of a primary and secondary audio language based on the language descriptors associated with the audio- streams transport stream (see Sl. No. 2 and Sl. No. 3 of Annex B). If the primary language is not present then the DTV receiver shall automatically select the secondary audio language.			
	When the secondary audio language is also not available then the 'country default language' shall be selected. When the default language is also not available then the DTV receiver shall select the first audio PID appearing in the PMT elementary stream loop.(Optional)			
j)	DTV receiver mixed Audio Description			
	DTV receivers that are capable of presenting audio description should provide at least the minimum user controls (as per Sl No. 6 of Annex B). (Optional)			
k)	Broadcast mixed audio description			

	In addition to multi-language support specifications mentioned at Sl No. i) h) of Table 1 specified above, DTV receivers shall provide a user preference to enable or prioritize broadcast mixed audio description.			
m)	Service de-multiplexing			
	Capability to receive and process SI (Service Information) (see Sl. No. 10 and Sl. No. 11 of Annex B).			
n)	Data services			
	If DVB SSU is supported then Capability to receive and process data streams (see Sl. No. 7 and Sl. No. 8 of Annex B).			
p)	OSD			
	Video layer (a full colour layer displaying the output of the MPEG video decoder) to support: a) Y=8 bit, CB=8 bit, CR=8 bit; b) Chroma to be sub-sampled to either 4 : 2 : 0 or 4 : 2 : 2; c) Alpha blending need not be supported, but the layer may be shown or hidden. OSD/Graphics Layer (an 8-bit palletized layer which can display region-based graphics): 1) each CLUT palette entry to support: Y= 6 bit, CB = 4 bit, CR= 4 bit; 2) Chroma to be sub-sampled to either 4 : 2 : 0 or 4 : 2 : 2; Alpha blending to be either 6 bit across the entire layer, or 2 bit per pixel.			
q)	DTV Receiver character set			
	The main character set of the DTV receiver shall be the character code table 00 – Latin Alphabet (as per Sl. No. 15 of Annex B)			
r)	Electronic Service Guide (ESG)'Now/Next'			

	'Now/Next' information for use in an on-screen banner shall be derived using information from DVB SI EIT p/f tables (see Sl. No. 10 of Annex B). The actual appearance of the Now/Next banner is left to the manufacturer but it is recommended that the following information be displayed in the bottom third of the screen: a) Current time; b) Start time of now and next program; c) End time of now and next program; d) Channel Number; e) Channel Name; and f) Date.			
	a) The ESG "Now and next" shall be displayed when the user changes channels for approximately 2 seconds and shall also be launched using the *i* (info) button on the remote control. b) ESG 'Schedule': An Electronic Program Guide (EPG) application may be provided using EIT schedule information from the SI. (Optional)			
s)	Time			
	The DTV receiver shall have a time clock or calendar running continuously (*see* Sl. No. 10 of Annex B). The clock shall be updated by the incoming TDT and TOT table in the SI. The time displayed by the DTV receiver shall be the current time based on time zone			
t)	Digital TV output			
	The DTV receiver may offer output(s) for connection to a recording device.(Optional)			
ii)	**DIGITAL SATELLITE RECEPTION**			
a)	Demodulation and FEC decoding			
	Capability to demodulate and decode satellite signals, channel coded and modulated (*see* Sl. No. 1 of Annex B).			
b)	DTV Receiver Installation			

	During DTV receiver installation, the user shall be able to perform tuning by: a) tuning to a list of user selectable transponders or performing a linear scan of all frequencies and polarizations, and b) Manually entering the tuning parameters of the transponder.			
c)	Network evolution			
	The DTV receiver shall support dynamic SI/PSI on tuned transponder in order to automatically detect and suitably handle service changes without the need for user intervention. The DTV receiver shall also have the capability to update the service list, including suitably handle transponder changes based on the installation method selected by the user, and appropriate menu options, where applicable. The DTV receiver should not delete transponder parameters and channels due to low signal.			
d)	Services available			
	After DTV receiver installation, all services that may be received shall be available to the viewer. The actual services being broadcast may subsequently change [*see* ii) c) of Table1].			
e)	Selection via Service List			
	The service list displayed immediately following a full automatic scan shall present services in ascending Channel Number or Service ID.			
f)	Selection via Numeric Entry			
	Selection of a service using numeric entry shall always select a service with that Channel Number regardless of any viewer favorites.			
g)	Favorite Channel list			

	The user shall be able to move, sort, swap and delete channels and lock in those changes to update the main channel list based on their preferences. The user shall also be able to add channels and remove channels for one or more Favorite lists, which shall be separate to the main channel list.			
h)	Hidden Services			
	Services marked as 'hidden' in the Logical Channel Number (LCN) descriptor shall not appear in the service list presented to the viewer. Services may also be identified as not selectable by numeric entry in a similar way. The DTV receiver shall locate conflict services and store the same. (Optional)			
j)	Logical Channel Number for Satellite services			
	The DTV receiver service list shall be managed by Logical Channel Number Descriptors (LCN) carried by the SDT (Service description table) or NIT (Network Information table). The DTV receiver shall locate, store and handle services with Logical (Optional)			
k)	RF input signal			
	-65 dBm to -25 dBm			
m)	LNB supply current			
	Minimum 300mA			
n)	LNB supply voltage			
	Vertical polarization: 13 V D.C Horizontal polarisation: 18 V D.C			
p)	LNB Control			
	The following control of the LNB shall be provided: a) Low band/High band switching: 1) Low Band: 10.70 GHz to 11.70 GHz 2) High Band: 11.70 GHz to 12.75 GHz b) Polarization: horizontal/vertical selection.			
q)	Modulation/Demodulation parameters for DVB-S & DVB-S2standard			

	As per Sl. No. 1 of Annex B			
iii)	**CONNECTORS:**			
a)	Interfaces, Connectors			
	a) Satellite Input: 75 Ω, Female Type (see Sl. No. 14 of Annex B). b) Input: One HDMI version 1.3a port, or higher port. c) Output: Coaxial or Optical compatible connector such as HDMI ARC, S/PDIF etc			
	a) Analog Video: RCA Type: Yellow. b) Analog Audio: RCA Stereo: L (White) and R (Red). c) Additional HDMI inputs and/or outputs. d) HDMI inputs having Audio Return Channel (ARC). e) Component (Y, Pb, Pr) Video. f) USB 2.0 Ports. g) RJ11 (for PSTN Modem). h) RJ45 for Fast Ethernet connection. j) 3.5mm Headphone Jack for stereo audio output or Audio Description and Broadcast Mix Audio Description as mentioned in Sl. No. i) j) and k) of Table 1 above. k) 15-pin D-sub female connector for PC connectivity. m) DVI-I Connector for PC connectivity. n) ARC capable HDMI inputs should pass through native, input audio bit streams. (Optional)			
iv)	**MAINTENANCE AND UPGRADE:**			
	Automatic software upgrade mechanism			
	The software upgrade mechanism shall be DVB SSU, to at least the simple profile (as per Sl.. No. 9 of Annex B) is required or through a USB port for uploading the control software or via Network.			
	RS 232C or USB port or RJ 45 Ethernet for uploading control software and/or additional services. (Optional)			

v)	**USER INFORMATION**			
a)	Remote Control			
	The manufacture is free to design the remote control. The following remote control functionalities are required: a) Numeric 0-9; b) Power — to turn the DTV receiver on and off; c) Program up/down — to switch between programs; d) Volume up/down — to adjust the volume output level; i) Subtitle — to display as per Sl. No. f) of Table 1 above; f) Info — to display additional information like reception quality, signal strength indicator and Channel ID etc.; g) EPG/Guide — to display an Electronic Program Guide; h) Back — this function exits from the current menu or OSD and returns to the previous state; and j) Free satellite — user shall be able to access FTA satellite channels from any menu by this shortcut key or functionality. This shortcut key or functionality shall also guide user for scanning of satellite channels.			
b)	Easy to use and simple documentation			
	DTV receivers shall be simple to set up and operate and be provided with clear easy to understand user documentation in line with that requirement.			
c)	Support package			
	The following peripheral items shall be included within a baseline DTV receiver package: a) Remote control and batteries; and b) An easy to understand user manual.			
	A basic status check should be invoked by a menu driven option or a user selected key. (Optional)			

Total number of Requirements to be observed / inspected =
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =
Total number of tests to be conducted =
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be passing in the requirement tested.

.....
(Approving Authority

3.4	**Performance Requirements**			
	Table – 2			
i)	**Electrical specifications**			
a)	Input voltage range (110 – 240 VA.C.)			
b)	Frequency (50 Hz ± 2 percent.)			
ii)	**RF characteristics to be supported by the DTV receiver**			
	As per DVB-S and DVB-S2 standard for Satellite signal			
iii)	**Satellite DTV: DVB-S tuner performance characteristics**			
a)	Input level per carrier			
	a) Required C/N for QEF(BER = 10^{-10} to 10^{-11}) **Mode Pilots C/N (dB)** QPSK 1/2 No 3.8 QPSK 2/3 No 5.6 QPSK 3/4 No 6.7 QPSK 5/6 No 7.7 QPSK 7/8 No 8.4			
b)	Input frequency range (950 to 2150 MHz)			
c)	RF input impedance(75 Ω)			
iv)	**Satellite DTV: DVB-S2 tuner performance Characteristics**			
	a) Required C/N for QEF(PER = 10^{-10} to 10^{-11})			
a)	Input level per carrier **Mode Pilots C/N (dB)** QPSK ½ No 2.0 QPSK 3/5 No 3.2 QPSK 2/3 No 4.1 QPSK 3/4 No 5.0 QPSK 4/5 No 5.7 QPSK 5/6 No 6.2 QPSK 8/9 No 7.2 QPSK 9/10 No 7.4 8PSK 3/5 Yes 6.5 8PSK 2/3 Yes 7.6 8PSK 3/4 Yes 8.9 8PSK 5/6 Yes 10.4 8PSK 8/9 Yes 11.7 8PSK 9/10 Yes 12.0			
b)	Input frequency range (950 to 2150 MHz)			
c)	RF input impedance(75 Ω)			
v)	Symbol rate(2 to 45 Msps)			

vi)	RF input return loss(8dB Minimum)			
vii)	DisEqC (DisEqC 1.2) (Optional)			
viii)	Operating ambient temperature range(5 °C to 45 °C)			
ix)	Operating humidity range(Up to 90 percent (non-condensing))			
x)	Power consumption DTV shall comply with Power consumption requirements as per prevailing Bureau of Energy Efficiency (BEE) regulations or Notifications issued for TV.			

Total number of Requirements to be observed / inspected =
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =
Total number of tests to be conducted =
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

.....
(Approving Authority

3.5	**Safety Requirements**			
	The safety requirements of DTV receiver shall conform to IS 616.			

Total number of Requirements to be observed / inspected =
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =
Total number of tests to be conducted =
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

.....
(Approving Authority

3.6	**Electromagnetic Compatibility (EMC) Requirements**			
	The EMC requirements of the DTV receiver shall conform to IS .CISPR 32			

Total number of Requirements to be observed / inspected =
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =
Total number of tests to be conducted =
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

.....
(Approving Authority

4	**MARKING**			
4.1	Each DTV receiver shall be legibly and indelibly marked with at least the following information:			
a)	Manufacturer's name or trade mark (if any);			
b)	Model designation and Serial Number;			
c)	Country of manufacture;			
d)	Input supply voltage and frequency (If an external power adapter is provided, DC input voltage, polarity and wattage shall be marked on the TV and AC input voltage, frequency and wattage shall be marked on the power adapter);			
e)	Power consumption;			
f)	Input Terminals as applicable; and			
g)	All Connectors.			
4.2	The User Interface (UI) of the DTV receiver shall display all the hardware input ports available, serial number and model number of the DTV receiver unit at appropriate place			
4.3	**BIS Certification Marking**			
4.3.1	The DTV receiver may also be marked with the Standard Mark. The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 2016 and the Rules and Regulation made there under. 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.			

Total number of Requirements to be observed / inspected =
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =
Total number of tests to be conducted =
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

.....
(Approving Authority

5	**OPERATING LIFE TEST**		
	The DTV receiver shall be subjected to operating life test while viewing Live Free-To-Air TV Channel via the in-built satellite tuner. The test shall consist of 48 h of operation at 1.1 times of upper voltage of Input voltage range (declared by the TV manufacturer) and at ambient temperature (45 ºC). For supply voltage and temperature to be maintained during the test, tolerance of ± 5 percent is allowed The DTV receiver shall be considered to have failed the test: a) if there is loss of video and/or Audio longer than 5 seconds; b) if the DTV receiver reboots or is non- responsive to the Remote Control at the end of the test. At the end of the operating life duration, the requirements specified in Table 2 shall also be met with.		

Total number of Requirements to be observed / inspected =
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =
Total number of tests to be conducted =
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be passing/failing in the requirement tested.

.....
(Approving Authority

Attachment –I

Copy of marking plate:

Photographs of the sample tested:

*****End of Test Report*****