

Comparative Test

The Flat-screen TV Revolution



TV sales are set to soar as the 2007 Cricket World Cup kicks off. *Consumer VOICE* tests 15 flat screen TVs

BRANDS TESTED	RANK
Philips 21 PT 2125	1
Onida 21 Black	2
Panasonic	3
LG Flatron	4
Haier 21 F2A	5
Salora SPF 210	6
Sony Wega-21	7
TCL DP 21185H	8
T-Series Planus	9
Samsung Plano	10
Sanyo 21 Platinum	11
Videocon 22 NP	12
Hyundai HY 22F	13
Beltek Lazor 21TF	14
Sansui K2K	15



TV technology has come a long way from the time that *Consumer VOICE* tested colour televisions last in 2002. The 21-inch category is still most favoured by consumers but flat screen televisions have since made a sizeable dent in the market. The leading brands in terms of quality have also changed. The 2002 *Consumer VOICE* test-winner Sony has not been able to maintain its top position anymore and has been usurped by Philips, and the made-in-India brand—Onida in the flat-screen category. Not only are these brands competitively priced, but also offer great picture and overall quality. Philips is miles ahead of other brands in energy-efficiency.

The bad news is that brands like Videocon, Beltek and Sansui cost the consumer a lot when it comes to running them. Every hour of TV watched with these brands will translate into the electricity meter in your home running a little faster

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Flat screen colour TV testing in progress

HOW WE TEST

Testing flat-screen colour TVs was a challenge as colour televisions are one of the most expensive and time-consuming products to test. The tests, which took seven months of rigorous testing of over 40 parameters to conclude successfully, were conducted according to IS 10662:1992, and other relevant standards in an independent and NABL-accredited lab.

One sample each of the 15 flat screen 21-inch colour TV sets was purchased from the retail market by Consumer VOICE.

The most difficult thing to judge while buying a TV is to decide which one would have the best picture and sound quality. Philips 21PT 2125 and Onida 21 Black Oxygen are the best overall performers in the 21-inch colour TV category. Philips especially is the leader since not only does it have the best picture quality; it also is the most energy-efficient brand. Few viewers would imagine that even in the non-operating 'Stand By' mode, the TV set consumes upto 17.18 W of electricity, enough to light a Compact Fluorescent Lamp in your bedroom. Choosing Philips means a straight saving of a thousand rupees every year over a TV like Videocon, for example, that is most energy-efficient.

Picture Quality

More often than not, there will be a difference between the picture quality that you may see in a TV store, and what your TV will show in your living room. Generally, TV store dealers will set the TV's controls to a higher level and sell it as a testimony of the TV set's good performance in terms of picture quality. The truth however is that living rooms have dimmer lighting. The

picture quality is a function of at least 10 different parameters like the resolution, linearity, centering, colour purity, hue, high-voltage stability, contrast & brightness range, grey-scale linearity etc.

There is no clear winner, which gets the top scores in all these parameters. However, Philips and Onida are much ahead of the rest of the 13 brands in terms of the picture quality aspect of flat screen TVs. Sansui and Sanyo, on the other hand, have average picture quality.

Sound quality

Loud sound has a more high-pressure effect on our eardrums than a faint sound. The sound system of a television set should be such that the ears do not have to be strained to hear the sound, which should be clear. LG has the best sound quality of all the 15 brands of flat screen TVs, followed by Onida and Haier.

Videocon on the other hand has very indifferent sound quality.

Reception Quality

This aspect shows the merit of the TV receiver, to receive signals of all the TV channels including Hyper-band. All

brands tested had the facility to receive 250 channels except for Beltek. It certainly is an advantage to have more band coverage spread in different frequencies. The brands Onida, Hyundai, Samsung topped in reception quality.

Selectivity

This is the feature that describes the quality of TV receiver which effectively makes the TV picture free from interference by adequately rejecting the unwanted adjacent channels. The brands Onida, Samsung, and Hyundai performed well in this aspect.

Power consumption

If you are buying a television set, do not forget that it will be consuming power even when it is in stand-by mode. The best option therefore is to switch off the television set from the mains—and not just with your remote control—when the TV is not being viewed.

The Videocon flat screen television was found to be consuming 107 W of electricity while running—a good 41 W more than the most energy-efficient brand Philips. Philips not only consumes the least power while in active mode, but also conserves electricity in the stand-by mode. It consumes only 0.89 W of energy in the stand-by mode, which is very modest as compared to Beltek that will cost a consumer an extra Rs 30 in energy bills, even when nobody is watching this TV.

Ease of use and operations without remote control

It is hard to imagine life without a TV remote control, but it is equally important that a TV should be easily operable even without a remote control. The setting of the colours, selection of channels—nothing should be difficult to navigate without a remote control. The good news is that all the 15 brands tested scored equally well in the 'ease of use' and 'operations without remote control' tests. This means that you will

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POWER CONSUMPTION & OPERATING COST

Brand	Power consumption at standard operations (watts)	Operating cost of running a TV per annum* (Rs)	Power consumption in standby mode (watts)	Money you can save by switching off per annum* (Rs)
Haier	90.14	1974.07	9.79	214.40
Hyundai	89.01	1949.32	12.52	274.19
LG	87.00	1905.30	6.17	135.12
Onida	85.15	1864.79	11.46	250.97
T series	73.94	1619.29	8.82	193.16
Salora	88.68	1942.09	12.08	264.55
Samsung	87.16	1908.80	6.85	150.02
Sansui	97.80	2141.82	15.33	335.73
Sanyo	84.54	1851.43	2.71	59.35
Sony	85.00	1861.50	14.43	316.02
Panasonic	83.38	1826.02	1.17	25.62
Videocon	106.97	2342.64	14.43	316.02
TCL	89.22	1953.92	3.38	74.02
Philips	65.00	1423.50	0.89	19.49
Beltek	91.60	2006.04	17.18	376.24

* Watts x 12 hours use x 365 x Rs.5 (energy tariff)/1000

The cost has been calculated assuming 12-hour, average use in operation and stand-by mode in a day.

not have any problem operating a TV with a remote control.

Similarly, all 15 flat-screen TVs have provision for audio-video facility, where external audio/video can be viewed through the TV receiver satisfactorily. In this test too, the line-up of the 15 brands did well.

Operating manual

An operations manual is a critical document in assisting consumers in understanding their TV. In fact, it is sometimes the only interface that consumers have with the manufacturer.

When *Consumer VOICE* evaluated the operation manual of the 15 TVs, Onida and Sansui were found wanting as the instructions and guidelines they provided were rather sketchy. The rest of the manuals were rated as 'very good' and 'good'.

During the label evaluation it was noticed that some brands did not mention the Maximum Retail Price (MRP) on product packaging or it

found to be tampered with, which is serious violation of the Weights & Measure Act.

The brands Sony and Sanyo claim being manufactured in Thailand and Japan respectively.

Warranty: Most of the TVs tested gave a 12-month warranty on their products.

Weight and Dimensions:

Consumer VOICE also checked the weight and dimensions of the 15 brands of flat-screen TVs and found that Onida and Philips acquired less space and were more compact in comparison to brands like LG and Panasonic which are big in size.

Safety features

Leakage current: If the manufacturing of a TV set is faulty, one get an electric shock if one touches any external metal parts of the TV set. Models of Sony and Sanyo are less safe. While Sony and Sanyo showed high leakage current, Samsung and TCL also did not do very well in this parameter.

LG is the safest television in this regard.

Special features: Televisions are not about picture and sound quality alone anymore. Now, almost all receivers come packed with options like 'selectable picture', 'child lock', 'selectable sound' etc. Sansui is the trendiest TV with its special features being most easy to use, and well-structured.

Sony, surprisingly, has complicated features. The rest of the brands fair well in this test.



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Subjective viewing

Viewer opinion of the picture and sound quality gives one an idea on how a TV set's quality is perceived by the one watching TV. The subjective viewing tests of the 15 TV sets were conducted under standard/recommended test conditions. Before commencement of these tests, all equipment and TV sets were installed in the laboratory and the brightness and contrast levels, and 'Sound pressure level' were maintained as recommended by the IEC guidelines. The tests included picture quality, colour purity, picture disturbance, sharpness,

and overall picture quality in the viewing test. In the subjective listening tests, absence of hums/crackles, noise, speech quality, background music and clarity were tested.

Brands Onida and Philips topped in subjective viewing tests and the brands Haier topped in subjective listening tests.

Market Scenario

The Indian colour television market is showing a rapid transition towards flat televisions. The year 2006 witnessed a steady increase in contribution of flat televisions to overall colour TV sales. Flat

TV sales in 2005-6 stood at 5 million units. This segment constituted 48.5 percent of the overall CTV market in the year 2005-6, as against 31.6 percent in 2004-5, registering a year-on-year growth of 66.6 percent. The flat TV segment is expected to surpass the conventional CTV segment and account for 60 percent of the overall CTV market by the end of 2006-7. The key contributor to this shift in consumer preference is the marginal price difference between the conventional and flat television segments.

Ref: TV Veopar Journal, December 2006

Picture quality parameter	What it means	The lead performers
Resolution	Determines the sharpness of the picture. Poor sharpness results in loss of detail in the picture being viewed	Philips, Panasonic, Sansui
Horizontal & Vertical Linearity	Poor linearity is what makes the picture look elongated and flattened. The travelling of electron beam to illuminate picture on the TV screen from left to right and top to bottom, by the deflection voltages inside the TV tube. If these deflection voltages are non-linear, we get a distortion called 'non-linearity due to scanning'.	Philips, LG, Sony, Haier, Videocon
Centering	It is desirable that the picture in a TV is properly centred so that no part of the picture is lost	Beltek
Colour purity	Colour purity defines how well the television is able to reproduce the colours that the TV set receives. For e.g. whether the reds turn into pink or not. The best way to fine-tune a TV's colour is to first set it to Black & White and then gradually increase the colour till the best colour reproduction is achieved.	All brands do well (Haier, T. Series and Beltek have average performance)
Hue	Colour parity as is seen on the TV screen	T-Series, Beltek
High-voltage stability	A TV requires 'extra high tension' voltage of about 2000 V to draw out the electron beam to hit the screen and 'render' the picture. This voltage should not vary too much when the picture is varied from minimum brightness to maximum.	Samsung, T-Series
Contrast range	The contrast range gives us an idea of the brightest and darkest value of the picture	Sanyo, Salora, LG, Onida, Panasonic, Videocon, TCL
Brightness range	Range of brightness from minimum to maximum	Sony
Auto-contrast feature	The feature of TV receiver that sets the control automatically	Onida; Videocon & T Series (in manual)
Gray scale linearity	The grey scale linearity tells us how brightness varies from a dark scene to a bright scene	Philips, Onida, Haier, LG, Salora, Sony, Panasonic, Videocon, TCL

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COMPARATIVE PERFORMANCE OF COLOUR TELEVISIONS: 21 INCHES—FLAT SCREEN

Parameters (weightage assigned)	Brands	Grade scale taken	Best Buy	Philips	Onida	Panasonic	LG	Haier	Salora	Sony	TCL	T-series	Samsung	Sanyo	Videocon	Hyundai	Beltek	Sansui
MRP (Rs)			8990	8990	9980	9390	8990	Defaced	6990	11200	8700	6800	9590	11990	NA	9690	NA	—
Competitive Price* (Rs)			8490	8200	9800	8800	8200	8200	3.7	3.3	3.3	4	3.7	2.8	4.1	3.2	4	8300
Inventory (5)		5	3.9	3.3	3.5	2.4	3.7	3.7	3.7	3.3	3.3	4	3.7	2.8	4.1	3.2	4	3.2
Reception Quality (10)		5	3.6	4.6	4.1	4.3	4.2	4	4	3.8	4.2	4.2	4.4	3.9	4	4.6	2.5	3.6
Picture Quality (35)		5	4.15	4.05	3.7	3.9	3.7	3.7	3.85	3.7	3.5	3.35	3.35	3.3	3.95	3.4	3.7	3.3
Sound Quality (20)		5	3.5	3.75	3.5	3.8	3.75	3.75	3.25	3.5	3.5	3	3.25	3.25	1.8	2.75	3	2.54
Ease of Use (5)		6	5.6	5.2	5.2	5.2	6	6	5.4	5.2	5.44	5.6	5.2	5.4	5.2	5.2	6	5
ECO Criteria (5)		5	3	3	4	2	2	3	3	3	2	3	4	3	3	2	1	3
Voltage & Frequency Range (5)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Power Consumption (5)		2.5	2.5	1.5	2.0	1.7	1.7	1.7	1.5	1.5	1.9	2	1.7	1.9	1.2	1.5	1.3	1.3
Safety (8)		5	4.7	4.4	4.6	4.7	4.4	4.4	4.6	4.3	4.4	4.9	3.9	4.2	4.6	4.4	4.6	4.9
Other Special Features (2)		5	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	4
Overall Grading		5	4.0	3.95	3.88	3.85	3.85	3.85	3.80	3.72	3.70	3.68	3.66	3.55	3.52	3.49	3.46	3.38
Star Rating			★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★

Energy Guzzler

*Competitive prices include VAT

Note: The above grades obtained are w.r.t. actual performance in 5 point international grade scale (5-Very Good to 1-Very Poor)

Grading: >4.5 Very Good★★★★★, 3.6-4.5 Good★★★★, 2.6-3.5 Average★★★, 1.6-2.5 Poor★★, <1.5 Very Poor★

Various tests conducted under the main parameters: **Inventory:** Weight, Dimension, Instruction Manual. **Reception Quality:** Band Coverage, Sensitivity, Selectivity. **Picture Quality:** Resolution, Linearity, Centering, Colour Purity, Hue, HV Stability, contrast & brightness range, gray scale linearity, subjective tests etc. **Sound Quality:** Sound Pressure level, frequency response distortion, subjective listening tests. **Ease of use:** Remote control, operating distance, manual control, optional use without remote control. Audio video facilities, operating instruction, programming facilities etc. **Eco criteria:** Radiation, electro magnetic interferences & compatibility. **Safety:** Mains chord anchorage, H.V. test, leakage current etc.