

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of:)
)
Carriage of Digital Television Broadcast) CS Docket No. 98-120
Signals: Amendment to Part 76 of the)
Commission's Rules)

Comments of the



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I. Introduction

ACA recommends that the Commission adopt an exemption from the requirement to carry broadcast signals in digital format post-DTV transition¹ for cable systems with (i) 5,000 or fewer subscribers, or (ii) less than 552 MHz capacity. These systems should be able to comply with must-carry obligations by converting must-carry signals to analog and distributing them to all basic subscribers. In support of the requested relief, ACA provides the Commission with additional information on the cost for small cable operators to comply with the digital carriage requirement, and the related capacity constraints. ACA also responds to the Commission's inquiry on the applicability of its material degradation rules to retransmission consent stations. In short, the material degradation rules should not be applied to retransmission consent stations.

About the American Cable Association. ACA represents nearly 1,100 small and medium-sized cable companies that serve more than seven million cable subscribers, primarily in smaller markets and rural areas. ACA member systems are located in all 50 states, and in virtually every congressional district. The companies range from family-run cable businesses serving a single town to multiple system operators with small systems in small markets. More than half of ACA's members serve fewer than 1,000 subscribers. All ACA members face the challenges of upgrading and operating broadband networks in lower-density markets.

¹ See *In the Matter of: Carriage of Digital Television Broadcast Signals*, Third Report and Order and Third Further Notice of Proposed Rulemaking, CS Docket No. 98-120 at Appendix C (rel. November 30, 2007) ("*DTV Must-Carry Order*" and "*DTV Third FNPRM*") (amending 47 C.F.R. § 76.62(b) and adding new subsection (e)).

II. The minimum cost of compliance with the DTV must-carry rules is \$28,600. The cost is for analog-only systems is significantly higher: \$54,900.

The minimum cost of compliance with the Commission's DTV must-carry rules is \$28,600. According to information provided by the National Cable Television Cooperative ("NCTC"), for systems already providing digital satellite programming services via HITS or another method, the minimum cost to upgrade the system to carry the primary stream of one must-carry channel would be \$28,600.² Note that these costs do not include a minimum of \$350 for each set-top box, maintenance costs, training costs, or the cost of redundant equipment to be used in the event of a malfunction.³ For analog-only systems, the minimum cost to upgrade to carry digital broadcast signals is almost twice as much: \$54,900 for the first channel, with incremental costs of approximately \$8,000 for each additional channel. We break down these costs on Exhibit 1.⁴

² If an already-digital cable system had available capacity on both its groomer and modulator, the cost to add digital must-carry broadcast signals could be lower. If capacity were available on both pieces of equipment, carriage of each must-carry channel would cost approximately \$8,000 (\$3,000 for a DTV receiver/demodulator for each channel, \$4,000 for an additional license and port activation on the groomer for each channel, and \$800 for an additional port on the QAM modulator for each channel). If capacity were unavailable on one of the pieces of equipment, even to add one must-carry channel, the system would incur a cost of \$20,000 for an additional groomer, or \$5,600 for an additional QAM modulator (depending on which piece of equipment was at capacity). Adding incremental channels would result in the incremental costs outlined above.

³ The Motorola DCH6200 set-top box is the least expensive CableCARD-compatible HD set-top box. With the NCTC discount, these set-top boxes cost small cable operators approximately \$350 each. Non-members' prices would be higher.

⁴ It is not workable for cable systems to merely pass broadcast signals through in their original broadcast 8 VSB format instead of converting them to QAM. This is because when setting up the tuner in a digital television to function with a cable system, the tuner defaults to QAM tuning, and the tuner will not recognize 8 VSB channels. If, instead, the consumer set up the television to tune to broadcast channels in 8 VSB format, the tuner would not recognize any of the consumer's cable programming channels. See, e.g., Exhibit 2 (excerpt from owner's manuals for Sony and Panasonic digital televisions). Further, passing through a signal in 8 VSB requires

ACA also addresses the statement in the *DTV Must-Carry Order* that “ACA’s estimates [of digital carriage costs] are in contrast to the comments of NAB, who describe the costs of downconversion as ‘modest.’”⁵ This is comparing apples to oranges. ACA’s estimates are for the cost of carrying a digital signal. NAB’s estimates are for the cost of downconverting a digital signal to analog.⁶

III. The cost of compliance with the DTV must-carry rules warrants an exemption for small cable systems.

The \$28,600 cost of compliance with the DTV must-carry rules warrants an exemption for systems serving fewer than 5,000 subscribers.⁷

As an initial matter, this cost far exceeds the \$6,000 – \$10,000 per system cost of compliance that the Commission found would be a significant financial hardship for

two 6-MHz channels. The 8 VSB transport stream itself takes up a full 6-MHz. But because 8 VSB frequencies are offset 3 MHz from cable channel assignments, a channel passed through in 8 VSB will occupy two 6-MHz channel assignments.

⁵ *In the Matter of: Carriage of Digital Television Broadcast Signals*, Comments of the National Association of Broadcasters and The Association for Maximum Television Service, Inc., CS Docket No. 98-120, at 11, n. 11 (filed July 16, 2007).

⁶ Note that NAB’s claim that cable operators can downconvert must-carry signals at the headend using a set-top box is unworkable for a number of reasons, including the fact that a cable operator would not be able to comply with current closed captioning regulations unless the cable operator displayed the closed captioning on every subscriber’s television. This is because the set-top boxes are designed to work with a single television set. If the set-top boxes are used to convert a digital signal to analog at the headend, the cable operator would be required to turn the closed captioning function on the set-top box “on” or “off.” If the closed captioning function were turned on, all subscribers would see the closed captioning displayed on their programming, whether they wanted to see it or not. But if the closed captioning function were turned off, no closed captioning would be displayed at the output, nor would the line 21 closed captioning data be passed through to subscribers.

⁷ The need for an exemption is even more compelling for analog-only systems. For these systems, the minimum cost to upgrade to carry digital broadcast signals is \$54,900 for the first channel, with incremental costs of approximately \$8,000 for each additional channel. See Exhibit 1.

the same-sized systems in hundreds of EAS waiver orders,⁸ and therefore constitute *per se* financial hardship for these systems.⁹ Further, these systems do not have the financial resources to retain an attorney and pay a \$1,250 filing fee to request a waiver. Moreover, the public interest in lessening financial hardship and capacity burdens for small cable systems is even greater here than in the *EAS Orders*.

First, no public safety issue is implicated by the requested relief. Subscribers will receive the analog version of every must-carry broadcast signal, along with any EAS messages carried on that channel.

Second, failure to implement the requested exemptions will discourage broadband deployment in the small markets and rural areas served by these small systems. These systems will be forced to divert capacity and tens of thousands of dollars that could have been used to deploy and upgrade broadband facilities to carry duplicative broadcast signals, or to pay the legal and filing fees for a waiver request. Surely, the public interest in improved broadband facilities outweighs the public interest in providing duplicative broadcast signals or paying attorneys.

Moreover, the 1992 Cable Act and the 1996 Telecommunications Act both contain Congress's express recognition of the public interest in reducing administrative

⁸ See, e.g., *In the Matter of Clearvision Cable Systems, Inc.*, Order, 19 FCC Rcd. 14,592 (2004) (granting relief on the basis of financial hardship where compliance with EAS requirements would cost \$6,000 per system); *In the Matter of Charter Communications, Inc.*, Order, 19 FCC Rcd. 13,178 (2004) (granting relief on the basis of financial hardship where compliance with EAS requirements would cost \$6,000 – \$10,000 per system); *In the Matter of Cable & Communications Corporation*, Order, 19 FCC Rcd. 11,843 (2004) (granting relief on the basis of financial hardship where compliance with EAS requirements would cost \$9,000 per system); *In the Matter of SM Cable Holdings, LLC*, Order, 19 FCC Rcd. 2213 (2004) (granting relief on the basis of financial hardship where compliance with EAS requirements would cost \$7,300 per system) ("*EAS Orders*").

⁹ Under the precedent set by the *EAS Orders*, the \$8,000 incremental cost of adding a single additional digital broadcast channel alone warrants an exemption for these systems.

and entry barriers for small entities.¹⁰ Likewise, extensive Commission action has demonstrated the importance to the public interest of maintaining viable smaller cable companies and the need to provide regulatory relief to further this public interest.¹¹ In providing small system relief from rate regulation in 1995, the Commission concluded that systems with fewer than 15,000 subscribers “do not have access to the financial resources, purchasing discounts, and other efficiencies of larger companies.”¹² As a result, these small systems “face difficult challenges in attempting simultaneously to provide good service to subscribers, to charge reasonable rates, to upgrade networks, and to prepare for potential competition.”¹³ The special circumstances of smaller systems recognized by the Commission in 1995, and applied to systems with up to

¹⁰ See 47 USC § 543(i) (“In developing and prescribing regulations pursuant to this section, the Commission shall design such regulations to reduce the administrative burdens and cost of compliance for cable systems that have 1,000 or fewer subscribers.”); Section 301(c) 1996 Telecommunications Act (providing greater deregulation for small systems), *codified at* 47 U.S.C. § 543(m); 47 U.S.C. § 247(a) and (b) (requiring the Commission to eliminate market entry barriers for entrepreneurs and other small businesses in the provision and ownership information services, and, in doing so, to promote policies favoring diversity of media voices, vigorous economic competition, technological advancement, and promotion of the public interest, convenience, and necessity).

¹¹ For a summary of these efforts in the context of rate regulation, see *In the Matter of Implementation of Sections of the Cable Television Consumer Protection and Competition Act of 1992: Rate Regulation*, Sixth Report and Order and Eleventh Order on Reconsideration, 10 FCC Rcd. 7393, 7401-7402 and 7420 (1995) (“*Small System Order*”). For special small cable leased access rules, see *In the Matter of Implementation of Sections of the Cable Television Consumer Protection and Competition Act of 1992: Leased Commercial Access*, Second Report and Order and Second Order on Reconsideration of the First Report and Order, 12 FCC Rcd. 5267, 5331-5332 and 5333 (1997).

¹² *Small System Order*, ¶ 28.

¹³ *Id.*, ¶ 25.

15,000 subscribers per headend, apply with even more force today to the much-smaller systems for which ACA requests relief.¹⁴

For the reasons set forth above, the Commission should exempt systems serving 5,000 or fewer subscribers from compliance with the requirement to carry must-carry signals in digital format.

IV. Capacity constraints warrant an exemption for systems of 552 MHz or less.

A 552 MHz system can accommodate, at most, seventy-seven 6-MHz channels.¹⁵ Smaller systems – which may have capacity of only 450 MHz or 330 MHz –

¹⁴ Note that neither Section 614 nor 615 of the Cable Act pose any statutory impediment to exempting systems of 552 MHz or less or 5,000 subscribers or fewer from the requirement to carry must-carry signals in digital format. The prohibition on material degradation requires only that “the quality of signal processing and carriage provided by a cable system for the carriage of local commercial television stations will be no less than that provided by the system for carriage of any other type of signal.” 47 U.S.C. § 534(b)(4)(A) (similarly, Section 615(g)(2) requires only that the signal be carried without “material degradation.” 47 U.S.C. § 535(g)(2)). Material degradation is measured by “the picture quality the consumer receives and is capable of perceiving.” See *DTV Must-Carry Order*, ¶ 8. Accordingly, exempting a cable system from the requirement to carry DTV signals in their original format will not run afoul of the material degradation prohibition so long as the picture quality of these must-carry signals as perceived by consumers is the same as for other signals on the system.

With regard to the “viewability” requirement in the Cable Act, under 47 U.S.C. § 534(b)(7), commercial must-carry signals “shall be viewable via cable on all television receivers of a subscriber which are connected to a cable system by a cable operator...” Under 47 U.S.C. § 535(h), noncommercial stations must be “available to every subscriber as part of the cable system's lowest priced service tier that includes the retransmission of local commercial television broadcast signals.” Because the exempted systems would be providing the must-carry signals in analog format to all their subscribers, they will satisfy the viewability/availability requirement.

On a final note, if there were a statutory impediment to carving a cable system out of the digital must-carry requirements, the Commission would not be able to provide for waivers of these requirements for any cable systems. Since the *DTV Must-Carry Order* expressly provides for waivers, the Commission itself has found no statutory impediment. See *DTV Must-Carry Order*, ¶ 37.

¹⁵ The frequency band for Channel 2 begins at 55.25 MHz, and the FM band also occupies frequency. This leaves bandwidth for only seventy-seven 6-MHz channels on a 552 MHz system.

have correspondingly less capacity. Considering the number of channels devoured by programming and retransmission consent tying and bundling,¹⁶ a significant number of these low-capacity systems are close to channel-locked and short on capacity for new broadband and other advanced services. Further, requiring these systems to devote bandwidth to duplicative signals rather than broadband and new programming services impedes these systems' ability to compete with well-financed, bandwidth-rich competitors like DirecTV, EchoStar, Verizon and AT&T. The public policy interest in encouraging the deployment of advanced services¹⁷ and MVPD competition¹⁸ certainly outweighs any public policy interest in providing a duplicate of a channel already carried on a cable system.

In summary, the Commission should provide an exemption from its requirement to provide must-carry signals in digital format for systems (i) serving 5,000 or fewer subscribers, and (ii) with capacity of 552 MHz or less.

¹⁶ ACA discusses this issue in detail in its comments in the Commission's inquiry into programming tying arrangements. See *In the Matter of: Review of the Commission's Program Access Rules and Examination of Programming Tying Arrangements*, Comments of the American Cable Association, MB Docket No. 07-198, at 5-14 (filed Jan. 3, 2008). ACA requests that the Commission incorporate these comments into the record in this proceeding.

¹⁷ See Pub.L. 104-104, Title VII, § 706, Feb. 8, 1996, 110 Stat. 153, as amended Pub.L. 107-110, § 1076(gg), Jan. 8, 2002, 115 Stat. 2093, reproduced in notes to 47 U.S.C. § 157(a):

The Commission...shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans...

...

The term 'advanced telecommunications capability' is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.

¹⁸ See 47 U.S.C. § 521(6).

V. The Commission should not apply the material degradation rules to retransmission consent stations.

Under Section 325(b)(4) of the Communications Act, if a television station elects to exercise retransmission consent rights, then “the provisions of Section 614 shall not apply to the carriage of the signal of such station by such cable system.”¹⁹ The material degradation prohibition is found in Section 614. Under the plain language of Section 325(b)(4), the material degradation requirement is, therefore, inapplicable to retransmission consent stations.

That said, in a 1993 order, the Commission found otherwise.²⁰ The Commission’s analysis seemed to be that because the prohibition on material degradation in Section 614(b)(4)(A) refers to “local commercial television stations,” it is referring to all local commercial television stations – retransmission consent stations as well as must-carry stations. This is a tortured read of the statutory scheme governing broadcast signal carriage. If Congress had intended to carve Section 614(b)(4)(A) from Section 325’s exclusion on the application of Section 614 to retransmission consent stations, Congress could have easily done so by saying “the provisions of Section 614, other than Section 614(b)(4)(A), shall not apply to the carriage of the signal of such station by such cable system.” Congress did not.

¹⁹ See 47 U.S.C. § 325(b)(4).

²⁰ See *In the Matter of Implementation of the Cable Television Consumer and Competition Act of 1992, Broadcast Signal Carriage Issues*, Report and Order, 8 FCC Rcd. 2965, ¶ 171 (1993).

Moreover, Section 614 itself mandates that carriage of retransmission consent stations shall be “subject to Section 325(b) of this title”²¹ and not “subject to Section 325(b) and 614(b)(4)(A) of this title.”

In any event, the Commission seemed to repudiate its 1993 finding in its *First Report and Order* in 2001.²² The *First Report and Order* is correct. A harmonious reading of Sections 325 and 614 shows that the prohibition on material degradation applies only to must-carry stations.

VI. Conclusion

The demonstrated cost of carrying must-carry signals in digital format and capacity constraints warrant an exemption from the obligation to provide must-carry signals in digital format for systems (i) serving 5,000 or fewer subscribers, or (ii) with less than 552 MHz of capacity. This is especially true in the small and rural markets served by these systems, where upgrading to provide or improve broadband services poses, at best, a significant financial challenge. An exemption will permit these cable systems to direct already-scarce resources and capacity to providing their customers with broadband and other advanced services, as opposed to duplicative channel offerings. These systems should be able to comply with must-carry obligations by converting must-carry signals to analog and distributing them to all basic subscribers.

In addition, the Commission should refrain from applying the material degradation rules to retransmission consent stations. There is no statutory support for

²¹ 47 U.S.C. § 614(a) (emphasis added).

²² See *In the Matter of: Carriage of Digital Television Broadcast Signals*, First Report and Order, 16 FCC Rcd. 2598, ¶ 73 (2001) (“*First Report and Order*”) (prohibition on material degradation applies “in the context of mandatory carriage of digital broadcast signals.” (emphasis added)).

this regulatory regime, and to do will further divert scarce resources and capacity from broadband deployment.

Respectfully submitted,

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EXHIBIT 1
Cost of Upgrading System to Provide Digital Broadcast Signals

1. Minimum cost of compliance with the DTV must-carry rules²³

Equipment Needed	Manufacturer and Model	Cost	Notes
DTV Receiver	KTech DVM-150	\$3000 per must-carry station.	ATSC to ASI.
Groomer	Terayon 6400-2	One to two must-carry stations: \$20,000. Each additional must-carry station results incremental license and port costs of approximately \$4000. This groomer can support up to four must-carry stations.	The groomer is required due to capacity constraints – without a groomer, each broadcast channel occupies 6 MHz instead of 3 MHz.
QAM Modulator	Motorola SEM V8	One must-carry station: \$5,600. Each additional must-carry station results in incremental port costs of approximately \$800. This QAM modulator can support up to eight must-carry stations.	

Total cost: \$28,600

2. Additional cost of compliance for analog-only systems²⁴

Equipment Needed	Model	Cost	Notes
Digital headend (NAS data only; no HITS content satellite receivers)	1 OM2000 1 SEM 1 VPN	\$12,000	Required for digital set-top control.
Headend Management Station		\$2,800	
New System Rapid Launch		\$11,500	Cost for installation of new headend and launching of management services.

Total additional cost: \$26,300

²³ These costs apply to all systems, analog and digital.

²⁴ These costs are in addition to the costs in Table 1. Accordingly, the minimum cost to upgrade an analog system to provide a single digital must-carry signal is \$54,900.

EXHIBIT 2
EXCERPTS FROM OWNER'S MANUALS FOR
SONY KDF 50E2000 AND
PANASONIC TH-42PX6U

Sony
KDF50E2000

Specifications

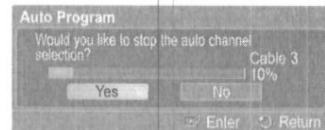
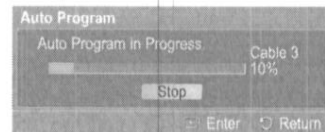
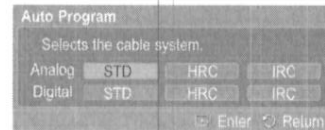
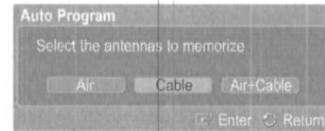
Projection System	3 LCD Panels, 1 lens projection system	
LCD Panel	0.73 inch TFT LCD panel (1,280 × 720 pixels)	
Projection Lens	High Performance, large diameter hybrid lens F2.4	
Antenna	75-ohm external terminal for VHF/UHF	
Lamp	100W, XL-2400 Ultra High Pressure Lamp	
Television System	NTSC	American TV Standard
	ATSC (8VSB terrestrial)	ATSC compliant 8VSB
	QAM on cable	ANSI/SCTE 07 2000
Visible Screen Size (Picture measured diagonally)	KDF-42E2000: 42 inches KDF-46E2000: 46 inches KDF-50E2000: 50 inches KDF-55E2000: 55 inches	
Channel Coverage	Terrestrial (analog)	2-69
	Cable TV (analog)	1-125
	Terrestrial (digital)	2-69
	Cable TV (digital)	1-135
Number of Inputs/Outputs		
HDMI IN	2 Video	1080i, 720p, 480p, 480i, PC
	1 Audio	Two channel linear PCM 32, 44.1 and 48 kHz, 16, 20 and 24 bit
Video (IN)	3 total (1 on side panel)	1 Vp-p, 75 ohms unbalanced, sync negative
S Video (IN)	1	Y: 1 Vp-p, 75 ohms unbalanced, sync negative C: 0.286 Vp-p (Burst signal), 75 ohms
Audio (IN)	5 total (1 on side panel)	500 mVrms (100% modulation) Impedance: 47 kilohms
Component Video Input	3 (YPbPr) (1 on side panel)	Y: 1 Vp-p, 75 ohms unbalanced, sync negative Pb: 0.7 Vp-p, 75 ohms Pr: 0.7 Vp-p, 75 ohms
AUDIO (VAR/FIX) OUT	1	500 mVrms at the maximum volume setting (Variable) 500 mVrms (Fixed) Impedance (output): 2 kilohms
RF Inputs	2	
Digital Audio Optical Output (PCM/Dolby Digital)	1	Optical Rectangular (1)
Speaker output	12 W + 12 W	
Power requirement	120 V, 60 Hz	
Power consumption	In use: 200 W In standby: 0.8 W	

Storing Channels in Memory (Automatic Method)

- 3 Press the ▲ or ▼ button to select **Auto Program**, then press the **ENTER** button.
- 4 Press the ◀ or ▶ button to select an antenna connection, then press the **ENTER** button.
 - **Air:** "Air" antenna signal.
 - **Cable:** "Cable" antenna signal.
 - **Air+Cable:** "Air" and "Cable" antenna signals.
 - If the antenna is connected to ANT 1 IN (CABLE), select **Cable** and if it is connected to ANT 2 IN (AIR), select **Air**.
 - If both ANT 1 IN (CABLE) and ANT 2 IN (AIR) are connected, select the **Air+Cable**.
 - If you selected **Air**, then go to step 6.
- 5 Press the ◀ or ▶ to select the correct analog signal source among **STD**, **HRC**, and **IRC**, then press the **ENTER** button. If you have Digital cable, select the signal source for both **Analog** and **Digital**.
 - **STD**, **HRC**, and **IRC** identify various types of cable TV systems. Contact your local cable company to identify the type of cable system that exists in your particular area. At this point the signal source has been selected.
- 6 The TV begins memorizing all available stations. When pressing the **ENTER** button during a storing process, the message **Would you like to stop the auto channel selection?** is displayed. Select **Yes** by pressing the ◀ or ▶ button.

Press the **EXIT** button to exit.

- The TV must be connected to an antenna/cable in order to receive digital TV signals. Even if a particular channel is deleted from the memory, you can always tune to that channel directly by using the number buttons on the remote control.
- All available DTV and analog channels are automatically stored in memory. It takes approximately 3 to 10 minutes to memorize channels.



Setting Up Your Remote Control

After your remote control has been properly set up, your remote control can operate in five different modes: **TV**, **VCR**, **Cable**, **DVD**, or **Set-Top Box**. Pressing the corresponding button on the remote control allows you to switch among these modes, and control whichever piece of equipment you choose.

- The remote control might not be compatible with all DVD Players, VCRs, Cable boxes, and Set-Top Boxes.

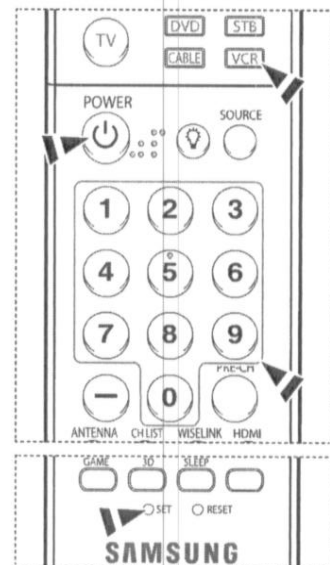
Setting Up the Remote to Operate Your VCR

- 1 Turn off your VCR.
- 2 Press the **VCR** button on your TV's remote control.
- 3 Press the **SET** button on your TV's remote control.
- 4 Using the number buttons on your remote control, enter three digits of the VCR code listed on page 23 of this manual for your brand of VCR. Make sure you enter three digits of the code, even if the first digit is a "0". (If more than one code is listed, try the first one.)
- 5 Press the **POWER** button on the remote control. Your VCR should turn on if your remote is set up correctly.

If your VCR does not turn on after set-up, repeat steps 2, 3 and 4, but try one of the other codes listed for your brand of VCR. If no other codes are listed, try each VCR code, 000 through 080.

Note on Using Remote Control Modes: **VCR**

When your remote control is in **VCR** mode, the volume buttons still control your TV's volume.



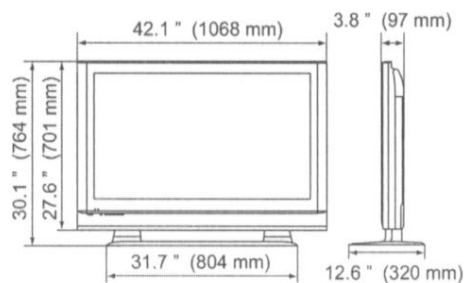
Continued...

SAMSUNG
HL-TS0765

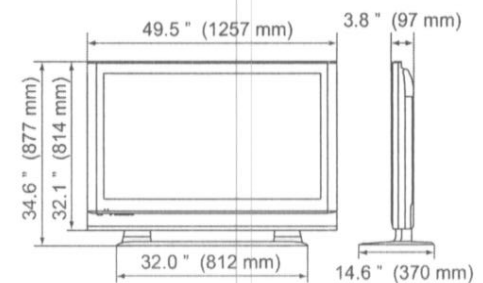
Specifications

		TH-42PX6U	TH-50PX6U
Power Source		AC 120 V, 50 / 60 Hz	
Power Consumption	Maximum	390 W	515 W
	Standby condition	0.2 W	0.2 W
Plasma Display panel	Drive method	AC type	
	Aspect Ratio	16:9	
	Contrast Ratio	(max) 10000:1	
	Visible screen size (W × H × Diagonal)	106 cmV 36.3" × 20.4" × 41.6" (920 mm × 518 mm × 1,056 mm)	127 cmV 43.6" × 24.5" × 50.0" (1,106 mm × 622 mm × 1,269 mm)
	(No. of pixels)	786,432 (1,024 (W) × 768 (H)) [3,072 × 768 dots]	1,049,088 (1,366 (W) × 768(H)) [4,098 × 768 dots]
Sound	Speaker	4.8" × 2.4" (120 mm × 60 mm) × 2pcs, 8 Ω	
	Audio Output	20 W [10 W + 10 W] (10 % THD)	
Channel Capability (Digital/Analog)		VHF/ UHF : 2-69, CATV:1-135	
Operating Conditions		Temperature : 32 °F - 104 °F (0 °C - 40 °C) Humidity : 20 % - 80 % RH (non-condensing)	
Connection Terminals	INPUT 1-2	VIDEO : RCA PIN Type × 1 1.0 V [p-p] (75 Ω) S-VIDEO : Mini DIN 4-pin Y:1.0 V [p-p] (75 Ω) C:0.286 V [p-p] (75 Ω) AUDIO L - R : RCA PIN Type × 2 0.5 V [rms]	
	COMPONENT VIDEO INPUT 1-2	Y : 1.0 V [p-p] (including synchronization) Pb, Pr: ±0.35 V [p-p] AUDIO L-R : RCA PIN Type × 2 0.5 V [rms]	
	HDMI 1-2	TYPE A Connector AUDIO L-R: RCA PIN Type × 2 0.5 V [rms]	
	Card slot (SERVICE ONLY) (p. 30)	SD CARD slot × 1	
	AV PROG. OUT	VIDEO: RCA PIN Type × 1 1.0 V [p-p] (75 Ω) AUDIO L - R: RCA PIN Type × 2 0.5 V [rms]	
	DIGITAL AUDIO OUT	PCM / Dolby Digital, Fiber Optic	
FEATURES		3D Y/C FILTER CLOSED CAPTION V-Chip	
Dimensions (W × H × D)	Including pedestal	42.1" × 30.1" × 12.6" (1,068 mm × 764 mm × 320 mm)	49.5" × 34.6" × 14.6" (1,257 mm × 877 mm × 370 mm)
	TV Set only	42.1" × 27.6" × 3.8" (1,068 mm × 701 mm × 97 mm)	49.5" × 32.1" × 3.8" (1,257 mm × 814 mm × 97 mm)
Weight	Including pedestal	70.5 lb. (32 kg)	97.0 lb. (44 kg)
	TV Set only	66.1 lb. (30 kg)	90.4 lb. (41 kg)

[TH-42PX6U]



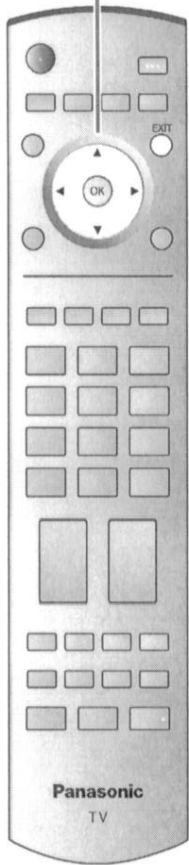
[TH-50PX6U]



Note

● Design and Specifications are subject to change without notice. Weight and Dimensions shown are approximate.

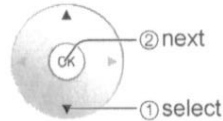
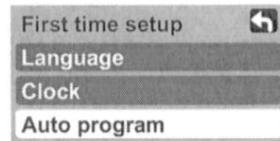
First Time Setup



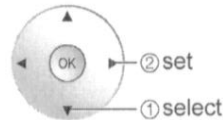
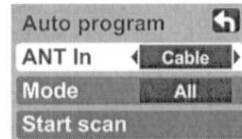
4

Auto channel setup

① Select "Auto program"



② Select antenna and input modes



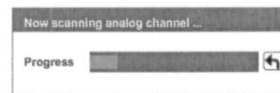
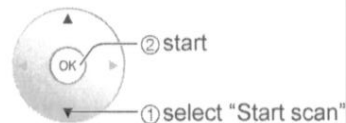
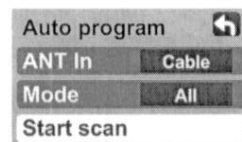
ANT In

Cable: Cable TV
Antenna: Antenna

Mode

All: digital and analog
Analog: analog only
(Reduces time for scanning)

③ Start scanning the channels

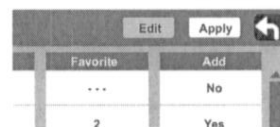


● Available channels (analog/digital) are automatically set.

■ Press to exit



④ Confirm registered channels



● If OK is not pressed after selecting "Apply", the channels will not be memorized.

Note

- About broadcasting systems
Analog: traditional TV system
Digital: new system that allows you to view more channels featuring high-quality video and sound