

## Basic TV System

### TV System 3 type.

**PAL** - Phase Alternating Line Developed by German engineer Walter Bruch in 1963 and the first commercial application of the PAL system in August 1967. TV line a 625-line horizontal display and a 576-line vertical lines and 25 frame per second and separate bandwidth between picture and sound. Using the power 220v/50hz provide an overview (720x576) = 414,720 points (or 768 x 576 = 442,368 points) the ratio of the display area 4:3 standard the values 0.41 MegaPixel or 0.44 MegaPixel used in Thailand, England, France, Germany.

**NTSC** - The National Television System Committee was established in 1940 the first image signal system started used in 1940 in the world by NTSC this system uses 30 frames per second. Each of these consists of TV line 525 horizontal line and 480 line vertical lines and more important the system is used lighting 110V/60HZ. in home, provide an overview 720x480 = 345,600 points, Ratio of image display 1.5 (3:2) the values 0.34 MegaPixel used in America, Japan, Myanmar, Canada.

**SECAM** - System Electronique Pour Couleur Avec Memoire or Sequential Color and Memory was developed in [France](#) and used in 1967 a horizontal line number 625 - line and a 576-line vertical line send multiform signal each bandwidth, such as B,D send VHF Series G,H,K send UHF Series I,N,M,K1,L to the VHF/UHF and each will be receiving revelations and send TV line up to 800-1000 line, 60Hz power system frequency band is very wide a few slots available and make unpopular in used.

	PAL	NTSC	SECAM
Fields	50 Hz	59.94 Hz	50 Hz
Lines	625	525	625
Active Lines	576i	480i	576i
Video Bandwidth	5.0 MHz	4.2 MHz	6.0 MHz
Colour Subcarrier	4.43361875 MHz	3.57954545 MHz	4.406250 MHz
Sound Carrier	Sound Carrier	5.5 MHz	6.5 MHz

Table compares three parameters of the television system.

### TV System of Network 2 Type.

**MATV**- Master Antenna Television the system included items from multiple down include room send only a single point. And signal distribution to various points. Within the same building or nearby buildings.

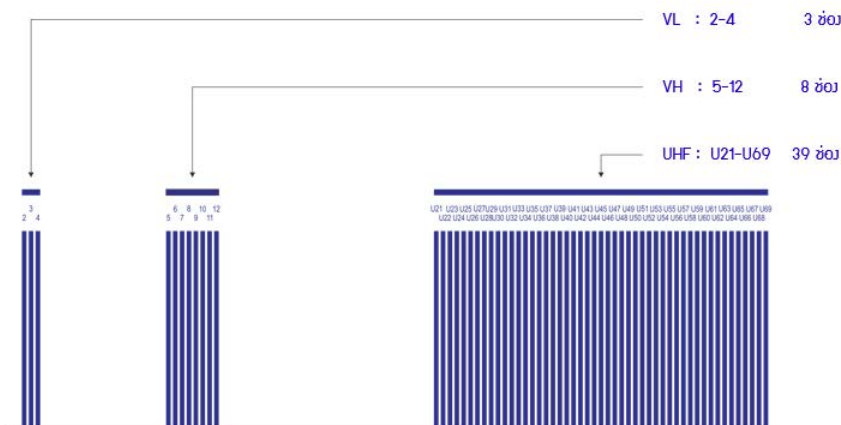


**CATV** - Community Antenna Television degraded by the reflection of signals from tall buildings, community, village, district or province so it is larger than the MATV.

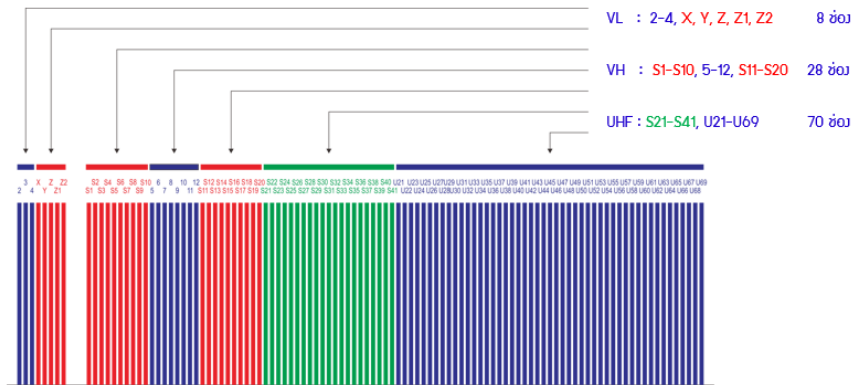


### TV Systems frequency used 3

When started TV System in the Thailand we used PAL BG and frequency is divided into 3 parts is VL,VH and UHF each district will have a frequency channel is VL (CH.2-4) VH (CH.5-12) and UHF (CH.21-69), including 50 channels.



Later, Channels are more TV system wants to use more frequencychannels the frequency S-Band used by each area will channel frequency increased. Is VL (CH.2-4 X Y,Z Z1 Z2) VH (S1-S10, CH.5-12,S11-S20) and UHF (S21-S41,CH.21-69) total 106 channel.



FREQUENCY TABLE PAL BG FOR ANALOG TV & DIGITAL TV SYSTEM

NO	CH	VIDEO MHZ	AUDIO MHZ	DIGITAL MHZ	NO	CH	VIDEO MHZ	AUDIO MHZ	DIGITAL MHZ	NO	CH	VIDEO MHZ	AUDIO MHZ	DIGITAL MHZ
1	E2	48.25	53.75	51	37	S21	303.25	308.75	306	73	U36	591.25	596.75	594
2	E3	55.25	60.75	58	38	S22	311.25	316.75	314	74	U37	599.25	604.75	602
3	E4	62.25	67.75	65	39	S23	319.25	324.75	322	75	U38	607.25	612.75	610
4	X	69.25	74.75	72	40	S24	327.25	332.75	330	76	U39	615.25	620.75	618
5	Y	76.25	81.75	79	41	S25	335.25	340.75	338	77	U40	623.25	628.75	626
6	Z	83.25	88.75	86	42	S26	343.25	348.75	346	78	U41	631.25	636.75	634
7	Z1	90.25	95.75	93	43	S27	351.25	356.75	354	79	U42	639.25	644.75	642
8	Z2	97.25	102.75	100	44	S28	359.25	364.75	362	80	U43	647.25	652.75	650
9	S1	105.25	110.75	108	45	S29	367.25	372.75	370	81	U44	655.25	660.75	658
10	S2	112.25	117.75	115	46	S30	375.25	380.75	378	82	U45	663.25	668.75	666
11	S3	119.25	124.75	122	47	S31	383.25	388.75	386	83	U46	671.25	676.75	674
12	S4	126.25	131.75	129	48	S32	391.25	396.75	394	84	U48	679.25	684.75	682
13	S5	133.25	138.75	136	49	S33	399.25	404.75	402	85	U48	687.25	692.75	690
14	S6	140.25	145.75	143	50	S34	407.25	412.75	410	86	U49	695.25	700.75	698
15	S7	147.25	152.75	150	51	S35	415.25	420.75	418	87	U50	703.25	708.75	706
16	S8	154.25	159.75	157	52	S36	423.25	428.75	426	88	U51	711.25	716.75	714
17	S9	161.25	166.75	164	53	S37	431.25	436.75	434	89	U52	719.25	724.75	722
18	S10	168.25	173.75	171	54	S38	439.25	444.75	442	90	U53	727.25	732.75	730
19	E5	175.25	180.75	178	55	S39	447.25	452.75	450	91	U54	735.25	740.75	738
20	E6	182.25	187.75	185	56	S40	455.25	460.75	458	92	U55	743.25	748.75	746
21	E7	189.25	194.75	192	57	S41	463.25	468.75	466	93	U56	751.25	756.75	754
22	E8	196.25	201.75	199	58	U21	471.25	476.75	474	94	U57	759.25	764.75	762
23	E9	203.25	208.75	206	59	U22	479.25	484.75	482	95	U58	767.25	772.75	770
24	E10	210.25	215.75	213	60	U23	487.25	492.75	490	96	U59	775.25	780.75	778
25	E11	217.25	222.75	220	61	U24	495.25	500.75	498	97	U60	783.25	788.75	786
26	E12	224.25	229.75	227	62	U25	503.25	508.75	506	98	U61	791.25	796.75	794
27	S11	231.25	236.75	234	63	U26	511.25	516.75	514	99	U62	799.25	804.75	802
28	S12	238.25	243.75	241	64	U27	519.25	524.75	522	100	U63	807.25	812.75	810
29	S13	245.25	250.75	248	65	U28	527.25	532.75	530	101	U64	815.25	820.75	818
30	S14	252.25	257.75	255	66	U29	535.25	540.75	538	102	U65	823.25	828.75	826
31	S15	259.25	264.75	262	67	U30	543.25	548.75	546	103	U66	831.25	836.75	834
32	S16	266.25	271.75	269	68	U31	551.25	556.75	554	104	U67	839.25	844.75	841
33	S17	273.25	278.75	276	69	U32	559.25	564.75	562	105	U68	847.25	852.75	850
34	S18	280.25	285.75	283	70	U33	567.25	572.75	570	106	U69	855.25	860.75	858
35	S19	287.25	292.75	290	71	U34	575.25	580.75	578					
36	S20	294.25	299.75	297	72	U35	583.25	588.75	586					

VHF B.W. 7 MHZ & UHF B.W. 8 MHZ  
VIDEO to AUDIO B.W. 5.5 MHZ

PAL BG Frequency

## Signal Type

- AV - signals AVvideo/audio signals the two signals is a voltage 0.5-2 Connect CVBS cable AV the sources isReceiver,DVD Player,DVR, HDD Player
- RF - Radio Frequency the frequency range 40-860MHz. connect cable Coaxial (RG6,RG11,Half Inc.)Uiit is decibel the sources is Antenna,TV signal system included within the building.
- multiform signal each bandwidth 5.5MHz
- multiform signal each different 10-15 dB
- Channel signal VHF bandwidth 7 MHz (CH.2-4, X, Y, Z, Z1, Z2, S1-S10, CH.5-12, S11-S20)
- Channel signal UHF bandwidth 8 MHz (S21-S41, CH.21-69)

## Choosing a channel frequency

- Choose a frequency that is not too high
- DO not choose the frequency VL because interfering signal (2,3,4,X,Y,Z,Z1,Z2)
- Do not select channels that match the frequency band FM 88-108 MHz (Z,Z1,Z2,S1)
- Do not select channels with police radio (S7)
- Do not select channels with security radio (S13)
- Do not select channels with frequency Analog TV on air (5,7,9,11,29,32)
- Do not select channels with frequency Digital TV on air (26,36,40,44,52)
- Do not select channels with frequency phone (U62-U69)Frequency channels TV in PAL BG has 106 channels Cut the channel out to the actual channel 76 channels.And Analog TV channels in the air (5,7,9,11,29,32) will be canceled. It will have more frequencies to use.

**Remark:** Analog TV frequencies in air and Digital TV frequenciesin each province are not the same. Find out from the NBTC or the HSTN website.