TEF0016:08/93

NATIONAL / PANASONIC

NO. : RS-97-0118

DATE : 12.11.1997

株式会社 トーク

CUSTOMER : SHINTOM

ATTN :

PRODUCT NAME	:	RF FRONT-END SYSTEM UNIT
MODEL NO.	:	ENG 56604G
CUST. PART NO.	:	10430 7950

PRODUCT SPECIFICATION (FOR SUPPLY)

RECEPTION USED COLUMN

トーク仕様確認 1998/01/09
トーク品目コード 104307950
トーク品 日 名 ET-ENG56604G
御 社 品 番 ENG56604G

藤田 | 中村 | 西木 | 森田 | 高濱 | 小嶋

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MATSUSHITA ELECTRONIC COMPONENTS (M) SDN. BHD.
HIGH FREQUENCY PRODUCTS DIVISION
NO. 1, JALAN SS 8/4, SUNGEI WAY (FTZ),
47300 PETALING JAYA, SELANGOR DARUL EHSAN.

(Manufacturing Section)

Final Production Plant	Name	Matsushita Electronic Components (M) Sdn. Bhd. (MECOM).
	Address	No.1, Jalan SS 8/4, Sungei Way (FTZ), 47300 Petaling Jaya, Selangor Darul Ehsan, Malaysia.
Final Inspection Plant		The same as above

THE MATERIALS OF THIS PRODUCT ARE DESIGNATED AS THE EXISTING CHEMICAL MATERIALS BASED ON THE LAW THAT SUBJECT TO REGULATIONS OF INSPECTION,PRODUCTION AND OTHERS OF CHEMICAL MATERIALS.

EXPLANATION OF PRODUCT SPECIFICATION (FOR SUPPLY)

CUSTOMER : SHINTOM

ISSUE NO. : RS-97-0118

Matsushita Electronic Components (M) Sdn. Bhd.
High Frequency Products Division

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We will supply the product(s) requested by your Company applying the following standard.

Your Part No.	10430 7950
Our Part No.	ENG 56604G
Your Set name	
Application	USA Channel / [Standard] / Special. VIF 45.75 MHz [Color] Black White
Differences and changes with a similar model.	Following difference(s) is (are) made to _____ which has (have) been delivered to your Company. NEW PRODUCT INTRODUCTION
Remark and request item.	ISSUED 14 NOV 1997 TECHNICAL ENGINEERING
Enter if any item is to be noted as the result of investigation in your Company.	
Attached documents	Specification / Material list / Schematic Diagram / Dimensional Drawing

PRODUCT SPECIFICATION (FOR SUPPLY) 1 / 1

REVISION HISTORY

PRODUCT NAME RF FRONT END SYSTEM UNIT PRODUCT P/NO. : ENG 56604G

CUSTOMER P/NO. 10430 7950

NO.	ISSUE NO. AND DATE	AMENDMENTS DIVISON	PAGE	DETAILS REVISION AND REASON	ENFORCEMENT DATE	REMARKS
1.	RS-97-0118 11.11.1997			NEW PRODUCT INTRODUCTION	DEC 1997	

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1. SCOPE

1.1 Applicable Tuner

This specification applies to FRONT-END SYSTEM UNIT 10430 7950 (ENG 56604G)

1.2 Type

1.2.1 Channel : USA (include CATV ch) standard

Band :		
	I.	ch. 2 ~ B
	II.	ch. C ~ KK
		ch.
	III.	ch. LL ~ 69

1.2.2 Receiving System : NTSC

1.2.3 Intermediate Frequency :

VIF :	45.75	MHz
CIF :	42.17	MHz
SIF :	41.25	MHz

1.2.4 Input impedance : ANT IN : 75 Ω Unbalanced F connector
1.0 Vp-p (1kΩ Unbalanced) VIDEO IN Terminal
- 7.5dBs (Unbalanced when higher than 10kΩ)
AUDIO IN Terminal.

1.2.5 Output impedance : ANT OUT : 75 Ω Unbalanced F connector
1.0Vp-p VIDEO OUT Terminal
0.55Vrms AUDIO OUT Terminal

1.2.6 BAND Change-over system : Digital change by PLL I.C

1.2.7 PLL system : I^2C.

2. APPLICABLE STANDARD.

The product conforms to : UL/FCC , CSA/DOC.

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3. RATINGS AND TEST CONDITIONS

Measurements shall be made under room temperature and humidity conditions.
The following conditions shall be applied for the measurement of electrical characteristics unless otherwise specified.

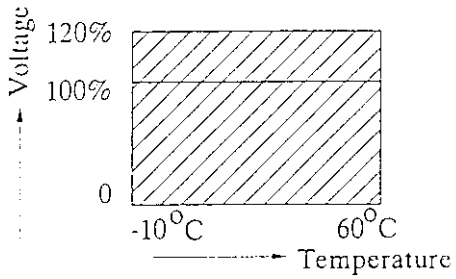
3.1 Voltage and current at each terminal and operation guaranteed voltage.

Terminal	Used Voltage (V)	Current average AGC G. MAX (mA)		Operation guaranteed voltage (V)
		TYP.	MAX.	
CONTROL	5.0/0 (VTR/TV)	–	–	4 ~ 5 / 0 ~ 0.5
BC	5.0	35	45	5 ± 0.3
BV	9.0	120	145	9 ± 0.5
BTL	30.0	2	4	30^{+4}_{-1}
BPL	5.0	20	50	$5^{+0.25}_{-0.5}$
BM	9.0	70	90	$9^{+1.0}_{-1.5}$

3.2 RF CONVERTER CH SW Terminal.

TERMINAL	RF CONVERTER OUTPUT CHANNEL
CHANNEL SW	OPEN CH 3 f= 61.25 MHz GND CH 4 f= 67.25 MHz (USA CH)

3.3 Maximum allowable voltage for BM,BV; must be positioned within the hatched area.



CLOCK
DATA
ENABLE
BPL + 6.0V

BTL+34V BPL + 6.0V

3.4 Operation guaranteed -10 °C ~ + 60°C

3.5 Operation temperature range 0 °C ~ + 55 °C

3.6 Signal levels are 75Ω open unless other condition is specified.

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4. Performance of ANT section.

Test Items		Test Conditions	Specification	Remarks
1. VSWR	ANT OUT.	TV	54 ~ 470 MHz 3.0 MAX. 470 ~ 801 MHz 3.5 MAX.	
		VTR	60 ~ 73 MHz 3.5 MAX.	
2. ISOLATION ANT IN - ANT OUT		VTR	60 ~ 73 MHz 60 dB MIN.	
3. INSERTION LOSS ANT IN - ANT OUT		TV	54 ~ 470 MHz 6.5 dB MAX. 470 ~ 801 MHz 7.0 dB MAX.	
4. ANT IN TERMINAL LEAKAGE		VTR	9.0 dBμ MAX.	75 Ω closed (fv only)
5. ANT IN AND ANT OUT TERMINAL LEAKAGE (Tuner section local)		AGC 6.5V		1700 MHz 75 Ω open.

	ch. 2 ~ 13	ch. J ~ FFF	ch. 14 ~ 69
Fundamental & Harmonics below 300 MHz	MAX. 40 dBμ	MAX. 40 dBμ	———
Fundamental & Harmonics between 300 MHz to 1000 MHz .	MAX. 56 dBμ	MAX. 56 dBμ	MAX. 56 dBμ
Fundamental & Harmonics between 1000 MHz to 1700 MHz .	MAX. 58 dBμ	MAX. 58 dBμ	MAX. 58 dBμ

* 4.1 ~ 4.5		Unused RF ports should be terminated by 75Ω	

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5. Performance of Tuner section.

5.1 Specified channels (The specified channels shall be as follows unless particularly specified).

VHF : ch. 2 , 6 , A-2 , B , C , I , 10 , J , N , R , W , FF , KK.

UHF : ch. LL , QQ , WW , 14 , 20 , 26 , 32 , 38 , 44 , 50 , 56 , 62, 69.

5.2 High - frequency waveform characteristics (F-characteristics,S/N related items)

Test Items	Test Conditions	Specification	Remarks
1. NF	AGC voltage 6.5V Gain MAX. Include CONVERTER (ANT) LOSS	ch. 2 ~ B : MAX. 13 dB : TYP. dB ch. C ~ I : MAX. 13 dB : TYP. dB ch. 7 ~ 13 : MAX. 13 dB : TYP. dB ch. J ~ FFF : MAX. 14 dB : TYP. dB ch. 14 ~ 19 : MAX. 14 dB : TYP. dB ch. 20 ~ 69 : MAX. 14 dB : TYP. dB ch. ~ : MAX. dB : TYP. dB	However,the tester shall be of HP make.

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Test Items	Test Conditions	Specification	Remarks
1. Image Rejection	G. MAX.	See table below	Regulated by -D/U + S/I
2. IF Rejection	G. MAX.	See table below	Regulated by -D/U + S/I
3. 1% Cross Modulation 1% (Next to the adjacent) ± 12MHz		See table below	75 Ω open

1. Image Rejection

Channel	GAIN MAX. MIN.	GAIN MAX. TYP.
ch. 2 ~ 5	60 dB	dB
ch. 6 ~ A-3	60 dB	dB
ch. A-2 ~ B	60 dB	dB
ch. C ~ 13	60 dB	dB
ch. J ~ 20	55 dB	dB
ch. 21 ~ 69	45 dB	dB

2. IF Rejection

Channel	GAIN MAX. MIN.	GAIN MAX. TYP.
ch. 2 ~ B	60 dB	dB
ch. C ~ KK	65 dB	dB
ch. LL ~ FFF	65 dB	dB
ch. 14 ~ 69	65 dB	dB

3. 1% Cross Modulation 1% (Next to the adjacent) ± 12MHz

Channel	AGC : G MAX. Point	- 30dB point
ch. 2 ~ KK	MIN. 70 dBμ	MIN. 90 dBμ
ch. LL ~ FFF	MIN. 70 dBμ	MIN. 90 dBμ
ch. 16	MIN. 65 dBμ	MIN. 90 dBμ
ch. 69	MIN. 65 dBμ	MIN. 90 dBμ

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Test Items	Test Conditions	Specification	Remarks
1. Oscillator starting voltage	BM	ch. 2 ~ KK : MAX. 8.6 V ch. LL ~ 69 : MAX. 8.6 V	
2. B Voltage drift (TENTATIVE)	BM ± 10%	ch. 2 ~ B : MAX. ± 500 kHz ch. C ~ KK : MAX. ± 700 kHz ch. LL ~ FFF : MAX. ± 1000 kHz ch. 14 ~ 69 : MAX. ± 1000 kHz	Related to tuner circuit only.
3. Warm-up drift (TENTATIVE)		(see table below)	Related to tuner circuit only.

Condition	Channel	+ (kHz)	- (kHz)
-10 °C + 25 °C up	ch. 2 ~ B	MAX. 800	MAX. 800
	ch. C ~ KK	MAX. 600	MAX. 2000
	ch. LL ~ 69	MAX. 1200	MAX. 1400
	ch. ~	MAX.	MAX.
15 °C + 25 °C up	ch. 2 ~ B	MAX. 800	MAX. 800
	ch. C ~ KK	MAX. 600	MAX. 2000
	ch. LL ~ 69	MAX. 600	MAX. 2000
	ch. ~	MAX.	MAX.
40 °C + 25 °C up	ch. 2 ~ B	MAX. 600	MAX. 900
	ch. C ~ KK	MAX. 600	MAX. 2000
	ch. LL ~ 69	MAX. 600	MAX. 2000
	ch. ~	MAX.	MAX.

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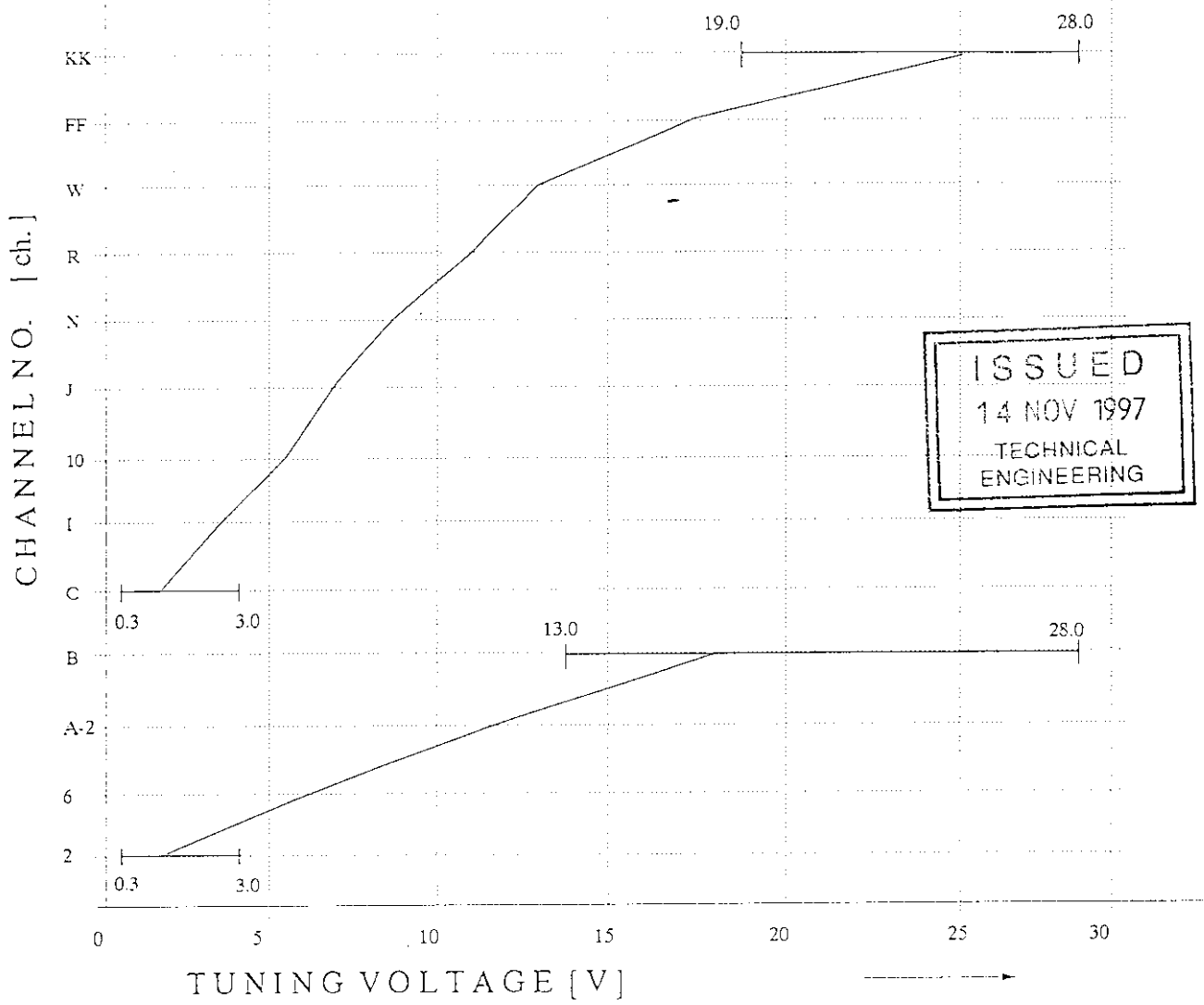
THIS TENTATIVE SPECIFICATION

APPLIES TO PLL SYSTEM

(VHF)



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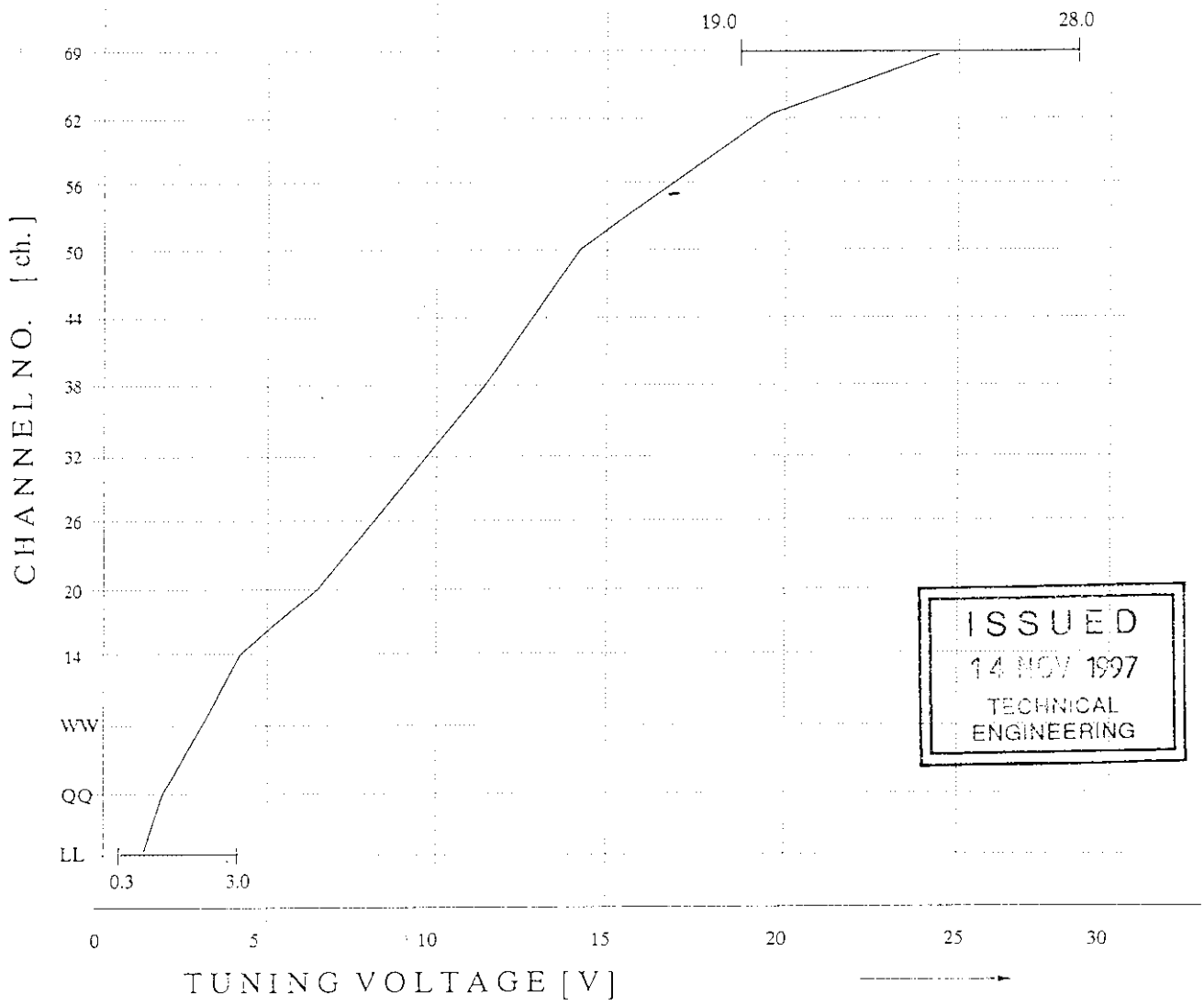
THIS TENTATIVE SPECIFICATION

APPLIES TO PLL SYSTEM

(UHF)



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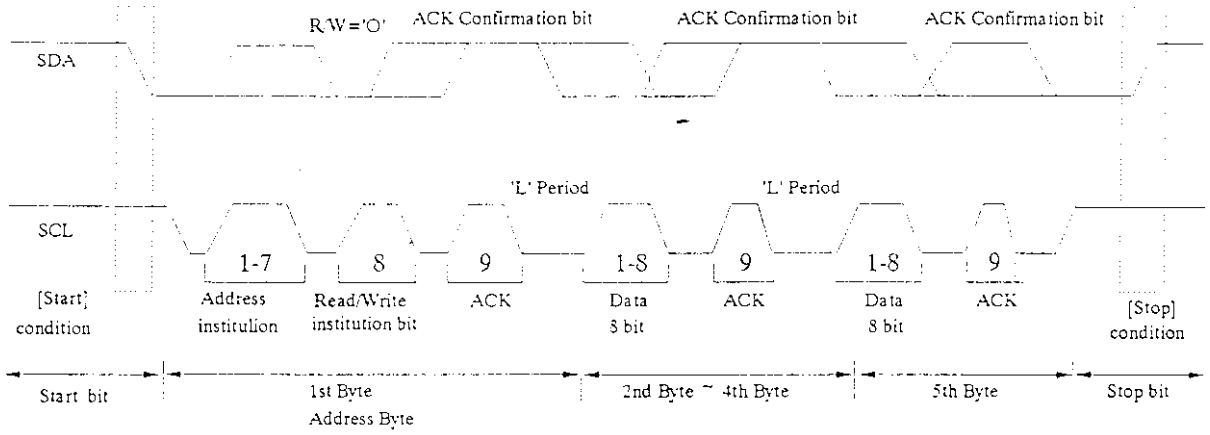
6. PLL Part Characteristics

6.1 Band switching output

BAND		Band switching output data							
		X	X	X	X	B4	B3	B2	B1
BAND I	ch. 2 ~ B	--	--	--	--	0	0	0	1
BAND II	ch. C ~ KK	--	--	--	--	0	0	1	0
BAND IV	ch. LL ~ 69	--	--	--	--	1	0	0	0
		--	--	--	--	--	--	--	--

(Notes) There are no abnormal operations when input data are 1 or 0 to I/0 port 'X'

6.2 Bit forward



6.3 Tuning Frequency.

$$fv.c.o = 62.5 \times n$$

(n14 to n0 are the programable divider bits :
$n = n14 \times 2^{14} + n13 \times 2^{13} + - - - + n1 \times 2 + n0$)

6.4 Frequency stability

MAX. ± 60 kHz tuning at ch. 69

6.5 Lock up speed

MAX. 300 msec tuning at ch. 2 ⟶ ch. 69

BM 9 V
BPL 5 V
BTL 30 V

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6.6 Input Signal Voltage

(SDA,SCL)

" L " Input Voltage MAX. 1.2 V

" H " Input Voltage MIN. 3.5 V MAX. 5.5V

Write data format

	MSB							LSB		
address	1	1	0	0	0	MA1	MA0	0*	A	byte 1
programable divider	0	n14	n13	n12	n11	n10	n9	n8	A	byte 2
programable divider	n7	n6	n5	n4	n3	n2	n1	n0	A	byte 3
charge-pump and test bits	1	CP	T2	T1	T0	1	I	OS	A	byte 4
I/0 port control bits	X	X	X	X	B4	B3	B2	B1	A	byte 5

Where
X is don't care.
A is the acknowledge bit.
0* = Read /Write institution bit is ' 0 '
n 14 to n0 are the programable divider bits :
$n = n\,14 \times 2^{14} + n\,13 \times 2^{13} + \cdots + n\,1 \times 2 + n\,0.$
CP is the charge-pump current:
CP = 0 : 50 μA
CP = 1 : 250 μA
B4 to B1 = 1 : Limited current output is active.
B4 to B1 = 0 : output are in high-impedance state.
OS = 1 : operational amplifier output is switched off (variable capacilor drive is disabled).
O : operational amplifier output is switched on.

Programable address bit

MA1	MAO	Adress terminal applied voltages
0	0	0 ~ 0.1 x VBPL
0	1	always valid
1	0	0.4 x VBPL ~ 0.6 x VBPL
1	1	0.9 x VBPL ~ 1.0 x VBPL

Test bits

Device operation	T2	T1	T0
Normal mode	0	0	1
Charge-pump is 'OFF'	0	1	X
Charge-pump is sinking current	1	1	0
Charge-pump is sourcing current	1	1	1

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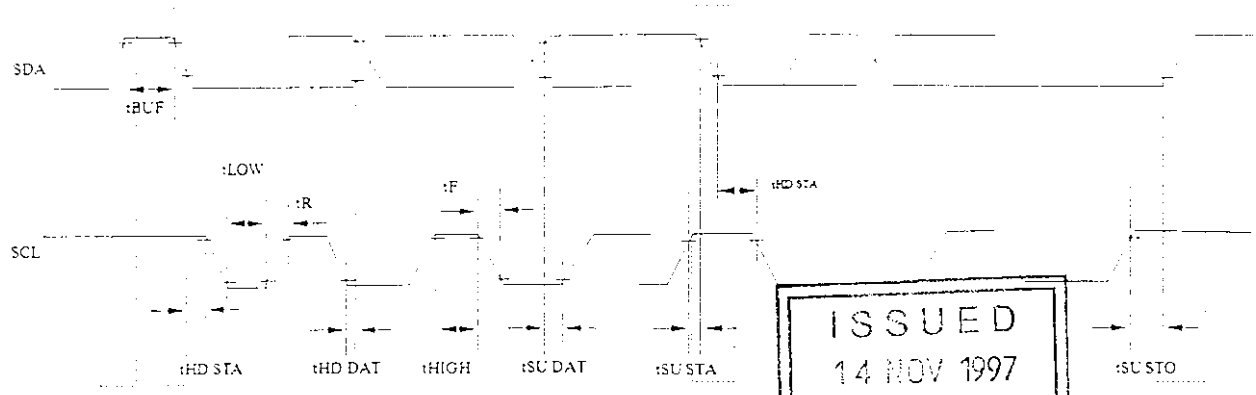
6.7 BUS TIMING



* When tuner mounted on the set,it shall satisfy the following values.

Parameter	Symbol	MIN.	MAX.	Unit
SCL clock frequency	f SCL	0	100	kHz
Bus free time between a STOP and START condition.	t BUF	4.7	-	μs
Hold time (repeated) START condition. After this period the first clock pulse is generated.	t HDSTA	4	-	μs
LOW period of the SCL clock.	t LOW	4.7	-	μs
HIGH period of the SCL clock.	t HIGH	4	-	μs
Set-up time for a repeated START condition.	t SUSTA	4.7	-	μs
DATA hold time	t HDDAT	0	-	s
DATA set-up time	t SUDAT	250	-	ns
Rise time of both SDA and SCL sigals.	t R	-	1000	ns
Fall time of both SDA and SCL signals.	t F	-	300	ns
Set-up time for STOP condition.	t SUSTO	4		μs
Capacitive load for each bus line.	C b	-	350	pF

7. Performance of VIF section.

Test Items	Test Conditions	Specification	Remarks
1. MAX. signal level at S/N =30dB	75Ω closed.	VHF : MAX. 54 dBμ UHF : MAX. 55 dBμ	
2. Video S / N	Input :76 dBμ Video mod : 87.5%	VHF : MIN. 44 dB (CH 12) UHF : MIN. 44 dB (CH 33) Video signal : white 100% HPF = 100 kHz, LPF = 4.2 MHz	
3. MAX. Input level	P/S=10dB	VHF : MAX. 100 dBμ UHF : MAX. 100 dBμ < Reference > Ability:110 dBμ (75Ω closed) Measuring method : There shall be no problem in the practical operation with no color dying beat and excessive pull out.	
4. VHF Tuner RF AGC	Video signal color bar Video mod : 87.5% BV:9±0.1V	Delayed point: TYP. 69dBμ (VHF: CH 12)	
5. AGC Characteristics	Video signal color bar Video mod. : 87.5%	VHF/UHF :less than 3dB for 40dBμ to 100dBμ input signal level.	

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Test Items	Test Conditions	Specification

6. Signal selectivity

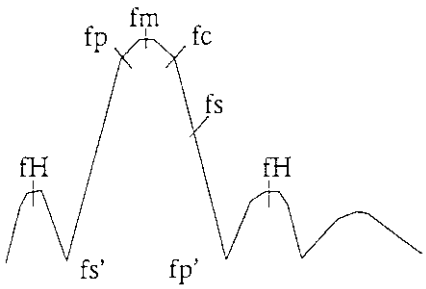
Tuner G. MAX.
IF AGC :-20 dB
CH 12

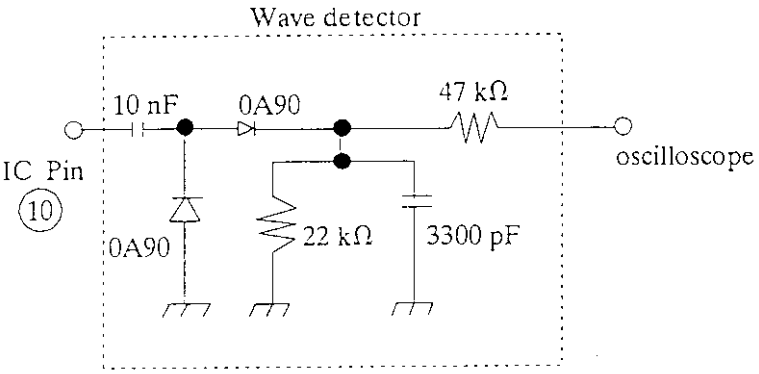
Picture carrier	fp	0 dB
Color sub-carrier	fc	2 ± 3 dB
Sound carrier	fs	-12 ± 4 dB
Adjacent sound carrier	fs'	-35 dB (MIN)
Adjacent picture carrier	fp'	-35 dB (MIN)
Max gain point to picture carrier	fm - fp	6 ± 3 dB
Max gain point to bounce point	fm - fH	-30 dB (MIN)

Measuring method ;

detect output
IC Pin (10)

From IC Pin (9) to GND
10μ load





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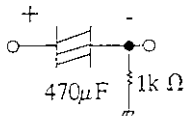
Test Items	Test Conditions	Specification	Remarks
7. Video Frequency Characteristics.	Input : 70dBμ Video mod:70% VHF : CH 12 UHF : CH 33	<table><tr><th></th><th>VHF</th><th>UHF</th></tr><tr><td>0.1 MHz</td><td>0 dB</td><td>0 dB</td></tr><tr><td>1.0 MHz</td><td>0 ± 2dB</td><td>0 ± 2dB</td></tr><tr><td>2.0 MHz</td><td>0 ± 2dB</td><td>0 ± 2dB</td></tr><tr><td>3.0 MHz</td><td>0 ± 3dB</td><td>0 ± 4dB</td></tr><tr><td>3.58 MHz</td><td>-1 ± 3dB</td><td>-1 ± 4dB</td></tr><tr><td>4.5 MHz</td><td>MIN -40dB</td><td>MIN -40dB</td></tr></table><Reference> 4.08 MHz :TYP.-11dB (VHF)	
8. Video output	Input: 70dBμ Video mod: 87.5% Video signal color bar BV: 9 ± 0.1 V	1 ± 0.25Vp-p (Load resistor 1k Ω) But horizontal sync : 28 ± 3 % Burst signal : VHF 0.13 ~ 0.33 Vp - p UHF 0.13 ~ 0.33 Vp - p	
9. Phase Characteristics		Over shoot MAX: 15 % Under shoot MAX: 15 % Vertical sag MAX : 10 %	
10. Differential phase (DP)	Input: 90 dBμ Video mod: 80 %	MAX. ± 10° (CH 12)	
11. Differential gain (DG)		MAX. ± 12 % (CH 12)	
12. Audio output level	fm= 400Hz Load 47 kΩ	0.55 ± 0.17Vrms ± 2 5kHz deviation	DE-EMPHASIS 5.6kΩ/18nF

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Test Items	Test Conditions	Specification	Remarks
13.Audio S/N	fm =1kHz 100% / 0% Load:47kΩ input Video mod 87.5%	Min : 40 dB (P / S = 10 dB) NOISE METER : Q-PEAK,WIDE BAND Video signal color bar	DE-EMPHASIS 5. 6k Ω / 18nF
14.Audio distortion	fm =400Hz Load:47kΩ Video mod off Input:70dBμ	± 7.5kHz deviation MAX. 2 % ± 25kHz deviation MAX. 2 %	DE-EMPHASIS 5. 6k Ω / 18nF
15. Audio frequency Charactreri-stics	Load:47kΩ AT 400Hz=0dB	50Hz ~ 100 kHz : 0^{+3}_{-8} dB	
16. AFT Output Voltage	VHF :CH 12 Input level :70dBμ Videomod:87.5% Video signal color bar BV : 9±0.1(V)	2.0 ± 0.6 V (CH12) Video signal color bar	

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8. Performance of RF CONVERTER section

Test Items	Test Conditions	Specification	Remarks
1. Video Carrier Frequency		CH 3 : 61250 ± 100 kHz CH 4 : 67250 ± 100 kHz	USA
2. Video Carrier Output Level.		66 $^{+\ 2.5}_{-\ 3}$ dBμ	75Ω terminated MAX. RMS Output voltage.
3. Video Modulation Factor	1.0Vp-p APL 50 % 10 stair step	80 ± 5 %	RFC Open
4. Differential Gain	At standard modulation	± 10 %	
5. Differential Phase	"	± 10 deg	
6. Amplitude Frequency Characteristics	Measurement range; 0.1 ~ 4.1 MHz 1 MHz as reference.	± 3 dB	
7. Sync Linearity	V:S= 7:3	$^{+\ 5}_{-\ 10}$ %	$\frac{7 \times S}{V} - 3$ / $\frac{}{3}$ x 100%
8. Over Shoot		10% MAX.	Measure at the output of the Standard Demodulator.

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Test Items	Test Conditions	Specification	Remarks
9.Pre Shoot		10 % MAX.	Measure at the output of the Standard Demodulator.
10.Sag		5 % MAX.	"
11.Smear		5 % MAX.	"
12.Rise Up Time		0.15μsec MAX.	"
13. Video S/N		48 dB MIN.	"
14.Chroma Beat	Measure the difference between Fv and Chroma Beat level	- 60 dB MAX.	SC=0.4Vp-p 3.58MHz Sine Wave
15. Video Limiter Modulation	Input signal: 1.5Vp-p	TYP. 95 % MAX. 99 % MIN. 88 %	
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Test Items	Test Conditions	Specification	Remarks
16.In-Band Spurious	Measure the difference between Fv and Spurious Beat levels Measure frequency between Fv ~ Fs.	- 60 dB MAX.	
17.Out-Band Spurious	Measure the difference between Fv and Spurious levels except the range of Fv ± Fs	- 33 dB MAX.	
18.Operating Rise Up Time		1.5 sec MAX.	Picture stable time.
19.Sound Carrier Frequency	The time to approach the set value is within 3 min.	4500 ± 7kHz	
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Test Items	Test Conditions	Specification	Remarks
20.Sound Carrier Output Level(Fs)	Measure the difference between Fv and Fs levels.	-16 $^{+3}_{-4}$ dB	P/S Ratio
21. Audio Modulation Factor	Input Signal; Sine wave -7.5dBs 1kHz	60 ± 12 % (TYP. 60 ± 10 %)	100% = ± 25 kHz/DEV.
22. Amplitude Frequency Characteri-stics	Measurement range; 0.1 ~ 10kHz Value against 75 μ sec. standard pre - emphasis curve. 1 kHz as reference.	± 3 dB ISSUED 14 NOV 1997 TECHNICAL ENGINEERING	
23. Sound S/N	Input Signal; Sine wave -7.5dBs 1kHz	48 dB MIN. Video Input Signal : All Black (SYNC Only) Use Standard De-Modulator of Inter-Carrier system and measure by Quasi Peak Noise Meter with CCIR weighting filter.	
24. Sound Distortion	Input Signal; Sine wave -7.5dBs 1kHz	2 % MAX.	De-emphasis is ON

9.Temperature Stability (Test Condition; 0 ~ 60°C)

Test Items	Test Conditions	Specification	Remarks
1.Video Carrier Frequency	0 ~ 60°C	± 100 kHz	Based on standard room temperature of 25° C
2.Video Carrier Output Level	"	66 dBμ $^{+\ 3}_{-\ 5}$ dB	
3.Video Modulation Factor	"	± 10 %	Based on standard room temperature of 25° C
4.Sync Linearity	"	± 12 %	"
5.Sound Carrier Frequency	"	± 15 kHz	"
6.P/S Ratio	"	-16 $^{+\ 2.5}_{-\ 5}$ dB	
7. Sound Modulation Factor	"	± 20 %	Based on standard room temperature of 25° C
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No. 1, Jalan SS 8/4, Sungei Way (FTZ),
47300 Petaling Jaya, Selangor Darul Ehsan.

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10. Stability against the Supply Voltage Drift

Test Items	Test Conditions	Specification	Remarks
1.Video Carrier Frequency	Based on the drift of supply voltage 5.0V of ± 0.3V	± 10 kHz	
2.Video Carrier Output Level	"	± 2 dB	
3.Video Modulation Factor	"	± 3 %	
4.Sound Carrier Frequency	"	± 5 kHz	
5. P/S Ratio	"	± 2 dB	
6. Sound Modulation Factor	"	± 3 %	

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11. Reliability

Test Items	Test Conditions	Specification	Remarks
1. Load life test in humidity		The electrial performance shall be satisfied when left at room temperature and humidity for 1 hour after being actively used at 40 ± 2 °C with 90 ~ 95 % RH for 500 ± 8 hours.	
2. Load life test in temperature		The electrial performance shall be satisfied when left at room temperature and humidity for 1 hour after being actively used at 50 ± 2 °C with 96 ± 8 hours.	
3. Low temperature test		The unit satisfy specifications and there shall be no abnormality on external and internal structure when left at room temperature and humidity for 1 hour after being OFF at -30 ± 2°C for 2^{+1}_{-0} hours.	
4. High temperature test		The unit satisfy specifications and there shall be no abnormality on external and internal structure when left at room temperature and humidity for 1 hour after being OFF at 70 ± 2°C for 2^{+1}_{-0} hours.	
5. Vibration test		The unit satisfy specifications and there shall be no abnormality on external and internal structure when 1.5mm vibrations varying from 10Hz to 55Hz in 1 minute are applied in X, Y and Z directions for 30 ± 5 minutes.	

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Test Items	Test Conditions	Specification	Remarks
6. Shock test		The unit satisfy specifications and there shall be no abnormality on external and internal structure after being dropped from a 60cm height on to a concrete board once for 3 faces except the connectors side.	
7. Drop test for the packed unit.		The unit satisfy specifications and there shall be no abnormality on external and internal structure after the packed unit is dropped from 65 cm height once for 1 face.	
8. Thunder resisting property	135kV 3 times	There shall be no practical problem when mounted in the set.	
9. Guarantee against abnormal oscillation and local oscillation stop		There shall be no abnormal oscillation and local oscillation stop under the conditions of operation guaranteed voltage and operating temperature range on page 2.	

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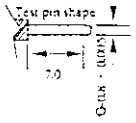
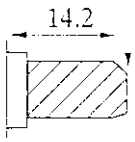
12. Mechanical characteristics

Test Items	Test Conditions	Specification	Remarks
1. Holding strength of F connector		Initial inserting force MAX. 29.4 N (3.0kgf) Extracting force after 5 cycles MIN. 0.294 N (30gf)	 Shall confirm to RC-6012A of EIAJ Standard.
2. Destructive strength of F connector		 Shall stand the force up to 98N applied to the end (14.2mm) We recommend to fix to the back panel by using a nut.	

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47300 Petaling Jaya, Selangor Darul Ehsan.

Approved	Checked	Designed
		11/11/97

LIST OF PLASTIC MATERIALS

10430 7950

1/1

MODEL NO. ENG56604G

PARTS	MATERIALS		MAKER	ADDRESS	UL94 FLAME CLASS	UL FILE NO.	REMARKS
	GENERAL NAME	COMERCIAL NAME					
Printed Wiring Board < <SIZE> > 40.2X84.5x1.0mm.	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.	1048 Kadoma Kadoma-shi, Osaka 571 Japan.	94V-0	E81336	BSI NO. 6604 JQA NO. V-0042
Printed Wiring Board (VIF) < <SIZE> > 40.4X26.1x1.0mm.	Phenol Resin Laminates	R-8700	Matsushita Electric Works Ltd.	1048 Kadoma Kadoma-shi, Osaka 571 Japan.	94V-0	E81336	BSI NO. 6369 JQA NO. TV-0009
	or Phenol Resin Laminates	MCL-437F	Hitachi Chemical Co., Ltd.	Mitsui Bldg POBox233, Shinjuku-ku, Tokyo 160 Japan.	94V-0	E80148	BSI NO. 5145 JQA NO. V-0015
	or Phenol Resin Laminates	CCP-3400	Chang Chun Plastics Co., Ltd.	7th/FL 301 Songkiang Rd, Taipei Taiwan.	94V-0	E108591	BSI NO. 6806
	or Phenol Resin Laminates	ETL-XPC-801	Eternal Chemical Co., Ltd.	578 Chien-kung Rd, Kaohsiung Taiwan.	94V-0	E95862	BSI NO. 6927
	or Phenol Resin Laminates	DS-1107A	Doosan Electro-materials Co. Ltd.	66-1 Yongkang-ri Jeungpyung-eup Goesan-kun 367-900, Choongchung Bug-do Korea.	94V-0	E103670	BSI NO. 6741 JQA NO. V-0034
	or Phenol Resin Laminates	KL-200	Kolon Electromaterials Co., Ltd.	Textile Center Bldg, 12th Fl 944-31 Daechi-dong Kangnam-ku, Seoul, Korea.	94V-0	E120399	BSI NO. 7132
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High Frequency Products Division
No. 1, Jalan SS8/4, Sungei Way Free Trade Zone,
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P.O. Box 1111, Jalan Semangat, 46870 Petaling Jaya, Malaysia.

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		ZAIRIN
13/10/97	13/10/97	13. OCT. 97

LIST OF PRINTED MAKER

10430 7950

MODEL NO. ENG56604G

PARTS	PRINTED MAKER	ADDRESS	UL FILE NO.	TRADE-MARK AND TYPE DESIGNATION	UL94 FLAME CLASS	MATERIALS GENERAL NAME	MATERIALS COMERCIAL NAME	MAKER
Printed Wiring Board	Matsushita Electric Industrial Co.,Ltd.	1006 Kadoma, Osaka, Japan.	E36779	Ⓜ EAMR7 Ⓜ TEAMR7 Ⓜ NEAMR7	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
	Yamanashi Matsushita Electric Work.,Ltd.	432-5 Aza Shimotoda Toda Kosai-cho Nakakoma-gun Yamanashi-ken, 400-04 Japan.	E107496	NTP-S70-T	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
	CMK CORP	1106 Fujikobo Miyoshi-machi Iruma-gun, Saitama-ken Japan.	E41363	CMK 162X CMK C2X	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
	Nippon Elec. Co.,Ltd.	17-14 Himonya 5-chome Meguro-ku, Tokyo Japan.	E41166	NEM CE6	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
	Pentex Circuits Private Ltd.	11, Penjuru Ln, Singapore 2260 Singapore.	E68999	PCL38	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
	LG Electronics Inc.	LG Twin Tower 20 Yoido-dong Youngdungpo-gu, Seoul 15-010 Korea.	E71042	GSEP2304B	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
Printed Wiring Board (VIF)	Matsushita Electric Industrial Co.,Ltd.	1006 Kadoma, Osaka, Japan.	E36779	Ⓜ EAMR5 Ⓜ TEAMR5 Ⓜ NEAMR5	94V-0	Phenol Resin Laminates	R-8700	Matsushita Electric Works Ltd.
	CMK CORP.	1106 Fujikubo Miyoshi-machi Iruma-gun, Saitama-ken Japan.	E41363	CMK 54X	94V-0	Phenol Resin Laminates	R-8700	Matsushita Electric Works Ltd.
	Yamanashi Matsushita Electric Works.,Ltd.	432-5 Aza Shimotoda Toda Kosai-cho, Nakakoma-gun Yamanashi-ken, 400-04 Japan.	E107496	NTP-N87A-T	94V-0	Phenol Resin Laminates	R-8700	Matsushita Electric Works Ltd.
	Pentex Circuit Private Ltd.	11 Penjuru Ln, Singapore 2260 Singapore.	E68999	PCL27	94V-0	Phenol Resin Laminates	R-8700	Matsushita Electric Works Ltd.
				PCL35	94V-0	Phenol Resin Laminates	ETL-XPC-801	Eternal Chemical Co.,Ltd.

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LIST OF PRINTED MAKER

10430 7950 | 2/2

MODEL NO. ENG56604G

PARTS	PRINTED MAKER	ADDRESS	UL FILE NO.	TRADE-MARK AND TYPE DESIGNATION	UL94 FLAME CLASS	MATERIALS		MAKER
						GENERAL NAME	COMERCIAL NAME	
Printed Wiring Board (VIF)	Goldstar Telecommunication Co.LTD.	Lucky-Goldstar Twin Tower 20 Yoido-dong Youngdongpo-gu, seoul 150 Korea.	E71042	GSEP 2112	94V-0	Phenol Resin Laminates	R-8700	Matsushita Electric Works Ltd.
				GSEP 2112	94V-0	Phenol Resin Laminates	DS-1107A	Doosan Electro-materials Co., Ltd.
				GSEP 2112	94V-0	Phenol Resin Laminates	KL-200	Kolon Electromaterials Co., Ltd.
	Nippon Elec Co., Ltd.	17-14 Himonya 5-chome Meguro-ku, Tokyo Japan.	E41166	NEM PF1	94V-0	Phenol Resin Laminates	R-8700	Matsushita Electric Works Ltd.
				NEM PF2	94V-0	Phenol Resin Laminates	MCL-437F	Hitachi Chemical Co., Ltd.
				NEM PF5	94V-0	Phenol Resin Laminates	CCP-3400	Chang Chun Plastics Co.Ltd

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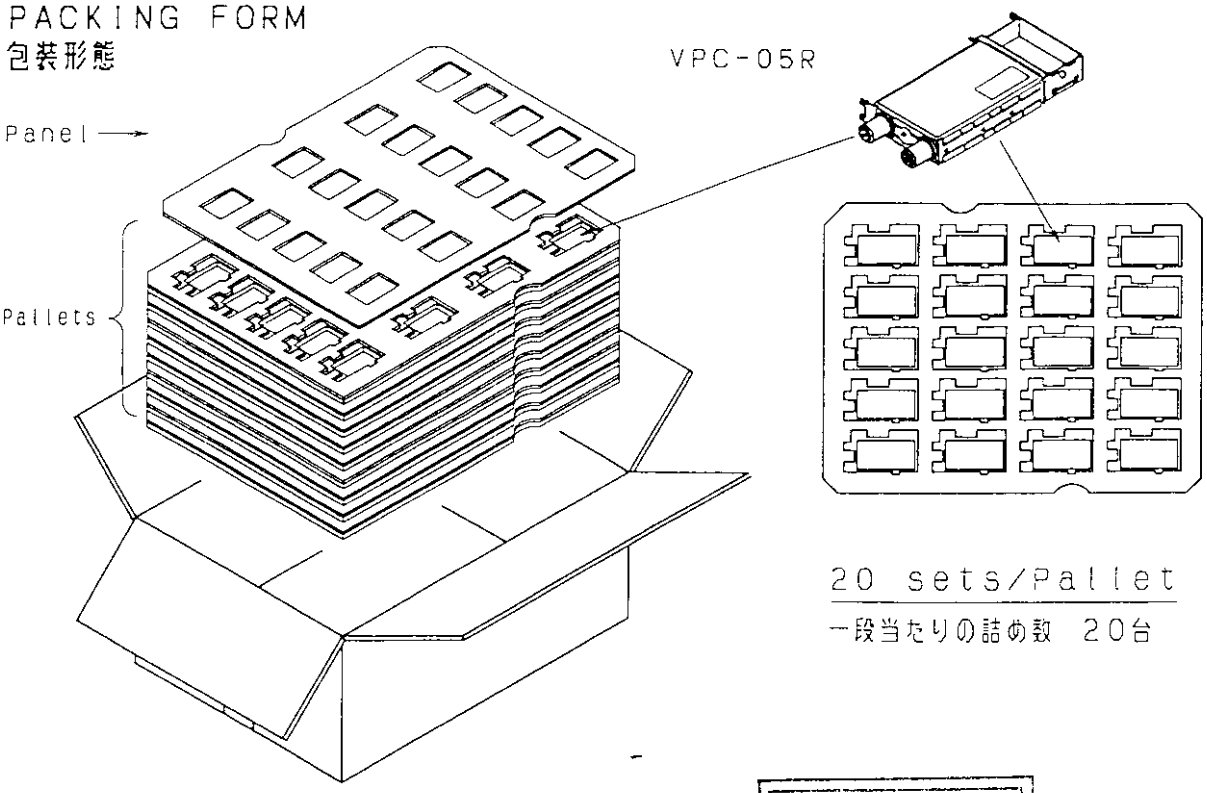
P.O. Box 1111, Jalan Semangat, 46870 Petaling Jaya, Malaysia.

Approved by	Checked by	Designed by
		ZAIRIN
13/10/97	13/10/97	13. OCT. 97

CLASSIFICATION	PRODUCTS SPECIFICATION (FOR SUPPLY) 納入仕様書	No. 151-ENG-0214
		Page: 1 of 1
SUBJECT	10430 7950 (ENG56604G)	Date: 13. OCT. 1997

PACKING FORM
包装形態

VPC-05R



20 sets/Pallet
一段当たりの詰め数 20台

9 Pallets/Box(180 sets/Box)
製品は 9段積みとし、180台詰めとする

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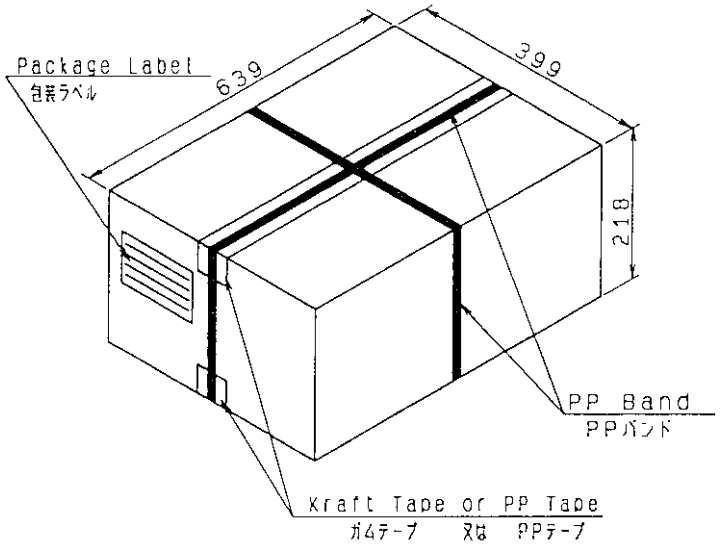
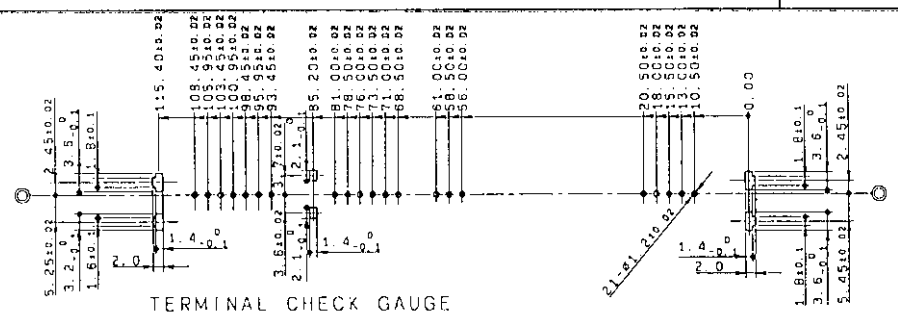


Customer	Customer
Customer Pt No.	Customer Part No.
Matsushita Pt No.	Matsushita Part No.
Lot No.	Lot No.
Quantity	Quantity PCS
Panasonic	Made in Malaysia Matsushita Electronic Components (M) Sdn. Bhd.

ex. 包装ラベル表示例(マレーシア製)
Packing label detail(in MALAYSIA)

Matsushita Electronic Components (M) Sdn. Bhd. High Frequency Products Division No. 1, Jalan SS8/4, Sungei Way Free Trade Zone, Selangor Darul Ehsan, Malaysia. P. O. Box 1111, Jalan Semangat, 46870 Petaling Jaya, Malaysia.	Approved	Checked	Designed
			ZAIRIN
	13/10/97	13/10/97	13. OCT. 97

General Dimension Tolerance	Mark	Date	Revision	Signed Checked
	△			



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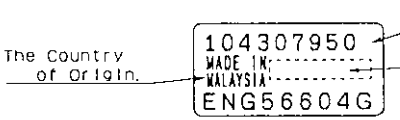
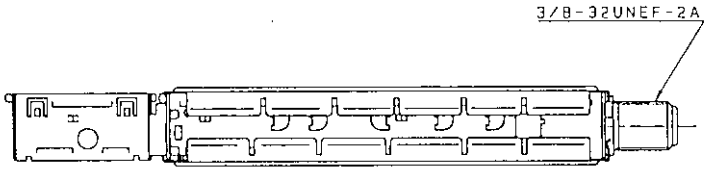
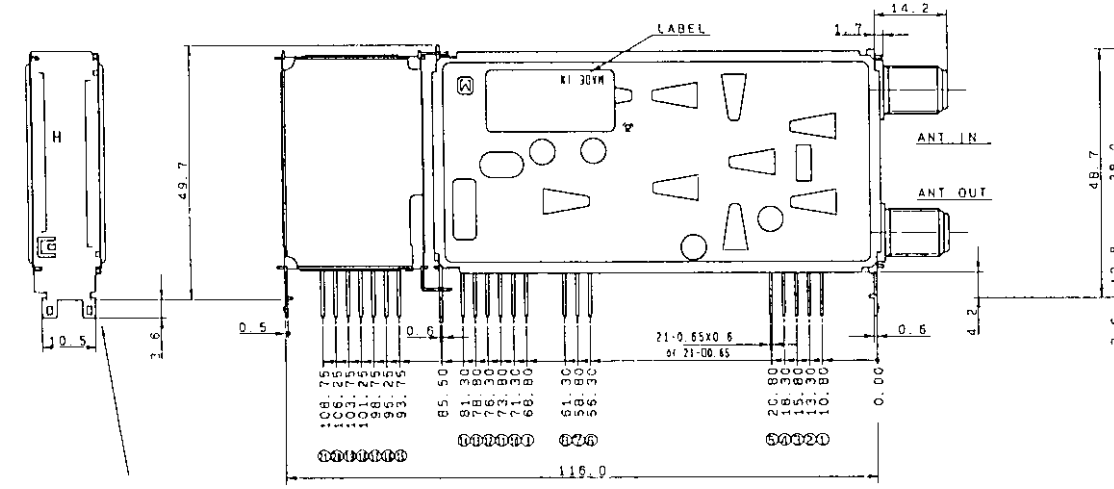
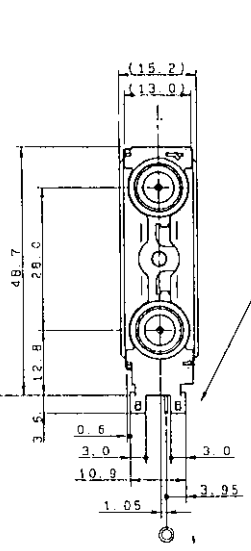


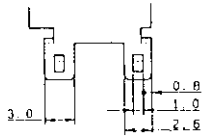
7···YEAR(1997)
0···MONTH
O···OCT.
N···NOV.
D···DEC.
13··DAY

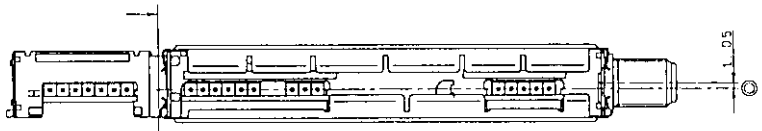


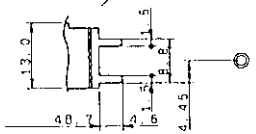




	TERMINAL NAME	SUPPLY VOLTAGE
1	AUDIO IN	0.327Vrms
2	CH SW	OPEN3CH/GND4CH
3	BC	5.0V
4	CONTROL	5.0/0V
5	VIDEO IN	1.0Vp-p(OPEN)
6	RF AGC IN	——
7	BM	9.0V
8	BPL	5.0V
9	BTL	30.0V
10	SCL	——
11	SDA	——
12	ADD	——
13	NC	——
14	IF OUT	——
15	IF IN	——
16	BV	9.0V
17	AUDIO OUT	——
18	GND	——
19	AFT	——
20	RF AGC OUT	——
21	VIDEO OUT	——







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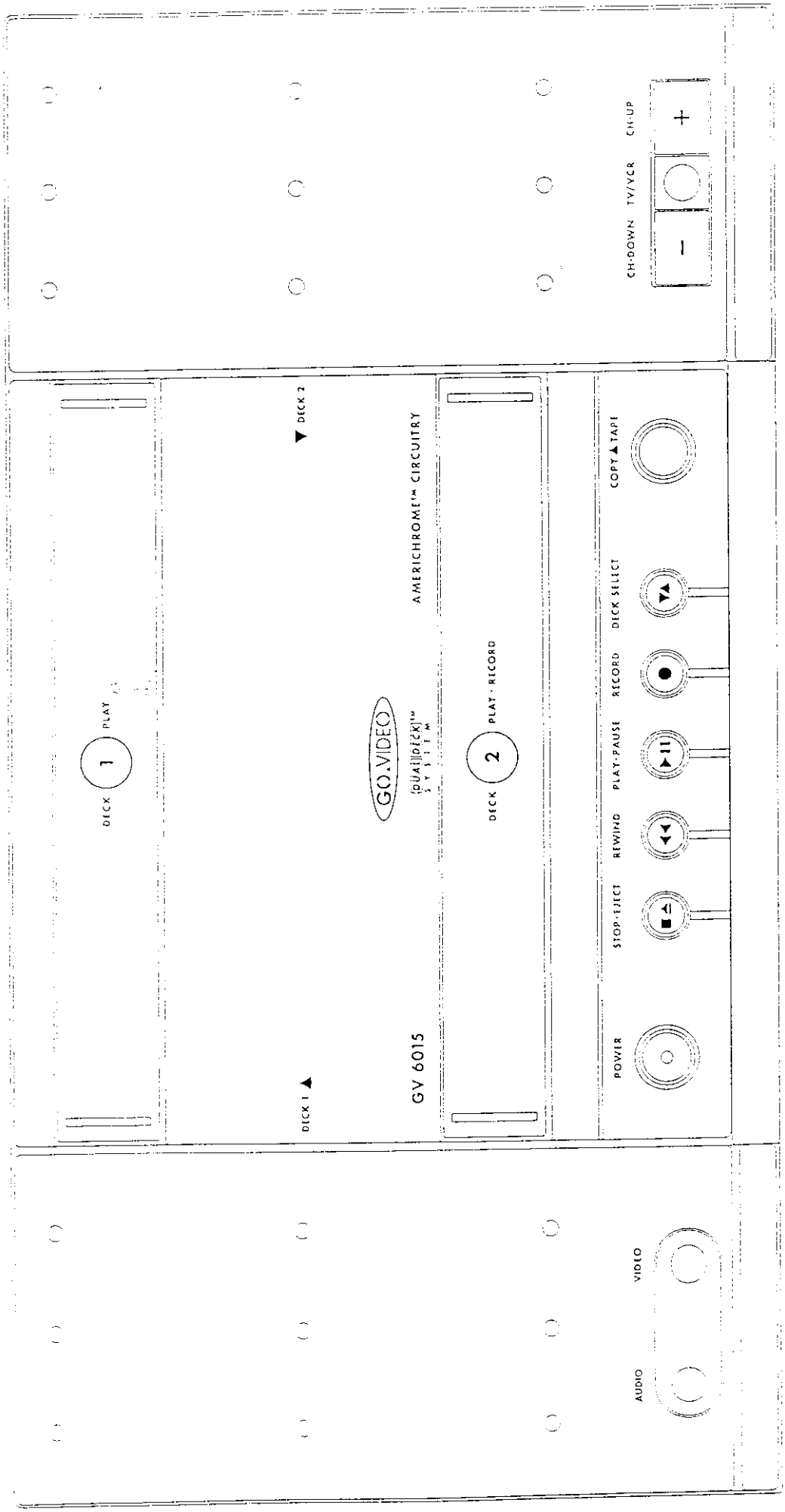
Sym	104307950 Item or Code No.	Material & Size qt.	Process	Remark
	For Shintom ENG56604G			

Scale	Designed	Drawn	Traced	Checked	Approved
1/1	ZAIRIN 11 NOV 97	ZAIRIN 11 NOV 97			

Model	VPC-05R
Name	PRODUCT SPECIFICATION
No.	DM17-0864-00

GV 6015


CH-DOWN
TV/VCR
CH-UP
AMERICHROME™ CIRCUITRY
DECK 2
DECK 1
GO VIDEO
DUAL DECK™ SYSTEM
GV 6015
DECK 1 PLAY
DECK 2 PLAY · RECORD
POWER
STOP · EJECT
REWIND
PLAY · PAUSE
RECORD
DECK SELECT
COPY ▲ TAPE
VIDEO
AUDIO

GV 6015