

株式会社 トーク 殿

納入仕様書

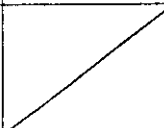
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受領印欄

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1 Common (共通)

1-1 Application
(適用範囲)

This specification applies to NJH3091 TYPE (RF Front-End System)
for TV,VTR.

(本仕様書は TV、VTRで使用するNJH3091型について規定する。)

1-2 Structure
(構造)

Refer to the attached assembly drawing.
(組立図による)

1-3 Circuit
(回路)

Refer to the attached circuit diagram.
(配線図による。)

2 General Specifications (一般仕様)

2-1 Applicable Broad Casting System
(適合放送方式)

M NTSC/USA

2-2 Receiving System
(受信方式)Upper Heterodyne
(上側 ヘテロダイン)2-3 Intermediate Frequency
(中間周波数)Picture Intermediate Frequency : 45.75 MHz
(映像中間周波数)Sound Intermediate Frequency : 41.25MHz
(音声中間周波数)2-4 Receiving Channel
(受信チャンネル)

VHF Low : 2 ~ B CH

VHF High : C ~ W + 11 CH

UHF : W + 12 ~ 69 CH

2-5 Output Channel of Modulator
(モジュレータ 出力チャンネル)

3/4 CH.

	TERMINAL NO.2
3CH	OPEN.
4CH	GND.

2-6 Input, Output Condition (入出力条件)

ANT Nominal Impedance
(ANT公称インピーダンス)

ANT IN 75 Ω Unbalance
ANT OUT 75 Ω Unbalance

Video IN Impedance : 0.7K Ω ~ 1.3K Ω (TYP.1K Ω)
Audio IN Impedance : 10K Ω Min.
Control Impedance : 30K Ω Min. (TYP.100k Ω)
Video Out Load : 10K Ω
Audio Out Load : 100k Ω

2-7 Guarantee Condition for Operation (動作保証)

2-7-1 Supply Voltage (印加電圧)

TERMINAL		Supply Voltage (印加電圧)			UNIT
		MIN	TYP	MAX	
+B (Supply Voltage)		8.5	9.0	9.5	V
MB (Modulator Supply Voltage)		4.8	5.0	5.2	
PB (PLL Supply Voltage)		4.8	5.0	5.2	
TU		30.0	32.0	34.0	
CONTROL	(MD:ON)	4.8	5.0	5.2	
	(MD:OFF)	—	0	0.2	

2-7-2 Operating Temperature Range (動作温度範囲)

Temperature (温度) : -10°C ~ 60°C
Humidity (湿度) : Less than 85% RH
(85% RH 以下)

2-8 Maximum Ratings

(絶対最大定格)

Terminal	SPECIFICATION		
+B	(Supply Voltage)	9.5V	
	+B Should be within hatched area. 電圧印加時、右図で示す領域以外の条件は、 瞬時といえども、与えてはならない。 温度については、許容差 $\pm 2^{\circ}\text{C}$	9.0V 0V	
MB	(Modulator Supply Voltage)	5.2V	
	+B Should be within hatched area. 電圧印加時、右図で示す領域以外の条件は、 瞬時といえども、与えてはならない。 温度については、許容差 $\pm 2^{\circ}\text{C}$	5.0V 0V	
PB	(PLL Supply Voltage)	5.2V	
	+B Should be within hatched area. 電圧印加時、右図で示す領域以外の条件は、 瞬時といえども、与えてはならない。 温度については、許容差 $\pm 2^{\circ}\text{C}$	5.0V 0V	
TU	35.0V		
CONTROL	6.0V		
Enable, Data, Clock	Within "PB" Supply Voltage. PB電源電圧を越えないこと。		

2-9 Storage Temperature Range

(保存温度範囲)

Temperature (温度) : $-20^{\circ}\text{C} \sim 70^{\circ}\text{C}$ Humidity (湿度) : Less than 90 % RH
(90% RH 以下)

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2-10 Current Consumption (消費電流)

TERMINAL	Current Consumption (消費電流)				Power Dissipation (消費電力)			
	MIN	TYP	MAX	UNIT	MIN	TYP	MAX	UNIT
+B (Supply Voltage)	108	135	162	mA	918	1080	1368	mW
MB (Modulator Supply Voltage)	—	28	35		—	140	182	
PB (PLL Supply Voltage)	—	39	50		—	195	260	
TU	—	1.5	5.0		—	48	170	
CONTROL	—	47.0	173	μA	—	0.24	0.90	mW

2-11 PLL Data Format (PLL データフォーマット)

2-11-1 Input Signal Level(SCL, SDA) (信号入力レベル)

High-level Input Voltage : 3.0 V MIN.

Low-level Input Voltage : 1.5V MAX.

2-11-2 (1)Data Format (データフォーマット)

	HSB								LSB	
Address	1	1	0	0	0	0	1	0	A	byte 1
Prog. Divider	0	N14	N13	N12	N11	N10	N9	N8	A	byte 2
Prog. Divider	N7	N6	N5	N4	N3	N2	N1	N0	A	byte 3
Charge pump and test bit	1	CP	0	0	1	1	1	0	A	byte 4
I/O port control bits	*	*	*	*	B3	B2	B1	B0	A	byte 5

* : Input not used.

(2) Band switching output
(バンド 切り換え出力)

BAND	B 3	B 2	B 1	B 0
UHF	1	0	0	0
VHF High	0	0	1	0
VHF Low	0	0	0	1

2-12 Test Condition
(試験条件)

* Unless otherwise specified, Electrical Characteristic tests shall performed under the following conditions.

(電気的特性の試験は、特に指定のない限り下記の条件で行う。)

TERMINAL	Supply Voltage (印加電圧)
+B	9 V $\pm$ 0.1 V
MB	5 V $\pm$ 0.1 V
PB	5 V $\pm$ 0.1 V
TU	+2 32 V -2 V
CONTROL	5 V $\pm$ 0.1 V
Ambient Temperature (周囲温度)	25°C $\pm$ 5°C
Relative Humidity (相対湿度)	65 % $\pm$ 10 %

(NOTE) +B Ripple : 10mVp-p MAX.

3 Electrical Characteristics (電气的特性)

The unit stated in dB μ V is defined the value at 75 Ω terminate this specification.(0 dBm = 109 dB μ V)

(本仕様書中、dB μ Vの単位は 75 Ω 終端値で定義される。)

3-1 RF-Modulator Section

R F モジュレータ部

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-1-1 Video Modulation (映像変調度)	70	77	84	%	Input signal : 1Vp-p 10 stair step Measure at the output of the standard De-Modulator. (標準復調器出力で測定)
3-1-2 Video Limiter Modulation (映像最大変調度)	87	93	99	%	Input signal : 1.5Vp-p 10 stair step Measure at the output of the standard De-Modulator. (標準復調器出力で測定)
3-1-3 V/S Ratio (V/S 比)	10:3.8	10:4.0	10:4.1		Input signal : 1Vp-p 10 stair step V:S=10:4 Measure at the output of the standard De-Modulator. (標準復調器出力で測定)
3-1-4 Video Amplitude Frequency Characteristics (映像振幅周波数特性)	-2.5	-0.5	+2.0	dB	Measure range : 0.1MHz~4.2MHz Based on 1 MHz (1MHz 基準) Audio input signal : None

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-1-5 Differential Gain (DG) (微分利得)		2	7	%	Input signal : 1.0Vp-p stair step Chrominance : 20 IRE Luminance : 10~90%
3-1-6 Differential Phase (DP) (微分位相)		1.5	7	deg	Input signal : 1.0Vp-p stair step Chrominance : 20 IRE Luminance : 10~90%
3-1-7 Video S/N (映像 S/N)	45	52		dB	Compensation of spectral luminous efficacy. (感度補正無し。) Measurement Condition. (測定条件) Measure at the out of the standard DE-Modulator H.P.F : 100KHz , L.P.F : 4.2MHz SC TRAP : on, WEIGHT : OFF Input signal Video : 100% White signal Audio : None Video band : 0.1~4.2MHz
3-1-8 Chroma Beat (Fs * Fc Beat) (クロマビート)	55	65		dB	Input signal Video : 1.0Vp-p, 3.58MHz, Sine wave Audio : None Use Spectrum analyzer to measure the level of Fp+0.92MHz. The value is relative to the level of Fp without video modulation. (スペクトラムアナライザを使用し Fp+0.92MHzのレベルを測定する。 測定値は無変調時のFpのレベルを 基準とする。)

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-1-9 Audio Modulation (Deviation) (音声変調度)	30 (60)	50 (100)	70 (140)	KHzp-p dev. (%)	Input signal : -3.8dBs, 1KHz ($\approx 0.5V$ rms.) Sine wave (100% Mod. = ± 25 KHz p-p dev.)
3-1-10 Audio Maximum Modulation (音声最大変調度)	150 (300)	220 (440)		KHzp-p dev. (%)	Input signal : 1KHz, Sine wave The input should be adjusted to the level just before the saturation of the modulation. (入力信号レベルを、変調が飽和する直前まで上げて測定する。)
3-1-11 Audio Amplitude Frequency Characteristics (音声振幅周波数特性)	-3	+0.2 -0.6	+3	dB	Input signal : -3.8dBs ($\approx 0.5V$ rms.) Measure range : 50Hz $\sim$ 10KHz Based on 1KHz (1KHz基準)
3-1-12 Audio Distortion (音声歪率)		0.3	1.0	%	Input signal Audio : -3.8dBs, 1KHz ($\approx 0.5V$ rms.) Sine wave Video : 1Vp-p color bar signal De-emphasis(75 μ Sec.) is ON. (デエムファシス ON)

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-1-13 Audio S/N (音声S/N)	45	56	—	dB	Reference audio input signal : -3.8dBs, 1KHz ($\approx 0.5V$ rms.) Sine wave Video input signal : ALL Black (Sync.Only.) (全黒信号) Use standard De-Modulator of Inter-Carrier system. and measure by Audio Analyzer. De-emphasis(75 μ Sec.) is ON. (標準復調器使用でデエムファシス ON) インターキャリア方式 デエムファシス ON)
3-1-14 Audio buzz (音声バズ)	45	63		dB	Video input signal : 1Vp-p Color Bar. Other conditions : Same as Item 3-1-13 (その他の条件は3-1-13項と同じ。)
3-1-15 Video Carrier Output Level (映像搬送波出力レベル)	63.5	66.5	69.5	dB μ V	Video input signal : 1Vp-p 10 stair step
3-1-16 P/S Ratio (Sound Carrier Level) (音声出力レベル差)	-13	-16.0	-19	dB	Audio input signal : None Other conditions : Same as Item 3-1-15 (音声入力無し。 他の条件は3-1-15項と同様。)
3-1-17 Video Carrier Frequency (映像搬送波周波数)	-200		+200	KHz	Video Input signal : None

3-1-22 Stability
(安定度)

3-1-22-1 Video Carrier Frequency Rise Up Time
(映像搬送波立上り)

The time to approach the set value ± 50 KHz : within 10seconds.
(設定値 ± 50 KHzに達する時間) : (10秒以内)

3-1-22-2 Audio Carrier Frequency Rise Up Time
(音声搬送波立ち上がり)

The time to approach the set value ± 3 KHz : within 10 seconds.
(設定値 ± 3 KHzに達する時間) : (10秒以内)

3-1-22-3 Video Carrier Frequency Shift by Supply Voltage Drift
(映像搬送波周波数電圧安定度)

Within ± 10 KHz by ± 0.3 V shift of the supply voltage.
(+B ± 0.3 Vで ± 10 KHz以内)

3-1-22-4 Audio Carrier Frequency Shift by Supply Voltage Drift
(音声搬送波周波数電圧安定度)

Within ± 2 KHz by ± 0.3 V shift of the supply voltage.
(+B ± 0.3 Vで ± 2 KHz以内)

3-1-23 Thermal Stability

(温度安定度)

3-1-23-1 Thermal Stability of Video Modulation

(映像変調度温度安定度)

Within $\pm 4\%$ based on the temperature of 25°C .(25°Cを基準として $\pm 4\%$ 以内)

* Unless otherwise specified, thermal stability tests shall performed
under the following conditions.

(温度安定度の試験は、特に指定のない限り下記の条件で行う。)

Measurement temperature range (測定温度範囲) : $-10^{\circ}\text{C} \sim 60^{\circ}\text{C}$ Humidity range (湿度範囲) : 45% RH $\sim$ 85% RH

Test, Measurement order and time :

(試験及び測定順序と時間)

 $25^{\circ}\text{C} \rightarrow -10^{\circ}\text{C}(2\text{H}) \rightarrow 10^{\circ}\text{C}(1\text{H}) \rightarrow 25^{\circ}\text{C}(1\text{H}) \rightarrow 45^{\circ}\text{C}(1\text{H}) \rightarrow 60^{\circ}\text{C}(2\text{H})$

3-1-23-2 Thermal Stability of Audio Modulation

(音声変調度温度安定度)

Within $\pm 10\text{KHzp-p}$ based on the temperature of 25°C .(25°Cを基準にして $\pm 10\text{KHzp-p}$ 以内)

3-1-23-3 Thermal Stability of Video Carrier Frequency

(映像搬送波周波数温度安定度)

Within $\pm 180\text{KHz}$ based on the temperature of 25°C .(25°Cを基準にして $\pm 180\text{KHz}$ 以内)

3-1-23-4 Thermal Stability of Audio Carrier Frequency

(音声搬送波周波数温度安定度)

Within ± 10 KHz based on the temperature of 25°C .

(25°C を基準にして $\pm 10\text{KHz}$ 以内)

3-1-23-5 Thermal Stability of Video Carrier Output Level

(映像搬送波出力レベル温度安定度)

Within $\pm 2.0\text{dB}$ based on the temperature of 25°C .

(25°C を基準にして $\pm 2.0\text{dB}$ 以内)

3-1-23-6 Thermal Stability of P/S Ratio

(P/S比 温度安定度)

Within $\pm 2.5\text{dB}$ based on the temperature of 25°C , but the P/S ratio itself should not be less than 13 dB.

(25°C を基準にして $\pm 2.5\text{dB}$ 以内、但し そのP/S比は13dB以下にならない事)

3-2 ANT SW Section
(ANT SW部)

Unless otherwise specified, measurement range shall be 54MHz ~810MHz, and unused

RF terminals shall be terminated by rated impedance terminator.

(特に記述のない限り、測定周波数範囲は54MHz~810MHzで、使用していないRF端子は定格インピーダンス終端器で終端するものとする。)

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-2-1 Insertion Loss (挿入損失)		5	6	dB	ANT IN to ANT OUT Mode : TV (at MD OFF)
3-2-2 VSWR I (入力整合比)		3.5	4.5		ANT IN terminal. Mode : TV (at MD OFF)54~ 810MHz
3-2-3 VSWR II (入力整合比)		2 2	3 3		ANT OUT terminal. Mode : TV (at MD OFF)54~810MHz Mode : VTR (at MD ON)61~72MHz
3-2-4 Isolation (アイソレーション)	60	65		dB	Isolation from ANT OUT to ANT IN. Mode : VTR (at MD ON)61~72MHz
3-2-5 ANT IN Leakage (ANT入力端子漏れ電圧)		0 45	(MD) 9.5 (Tuner OSC) 52	dB μ dB μ	Mode : VTR (at MD ON) RF-Modulator Section: Non-Input Signal (モジュレータ部は、無入力) Tuner OSC Leakage. (Tuner OSC端子漏れ電圧)

3-3 Tuner Section

(チューナ部)

When the test characteristics, testpoint is pin NO.12 /IF output terminal.

(各性能測定時のテストポイントは⑫番pin/IF出力端子とする。)

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-3-1 IF Rejection (中間周波妨害比)					
	UHF	60	90		ANT INPUT 65dB μ V
	VHF	High	60	90	
		Low	55	80	
	UHF	40	65		ANT INPUT 95dB μ V
	VHF	High	50	75	
		Low	45	70	
					(75 Ω terminate)
3-3-2 Image Rejection (映像周波妨害比)					
	UHF	50	60		ANT INPUT 65dB μ V
	VHF	CATV	50	70	
		13~7	55	75	
		6~2	55	75	
	UHF	40	55		ANT INPUT 95dB μ V
	VHF	CATV	45	60	
		13~7	50	75	
		6~2	50	75	
					(75 Ω terminate)
3-3-3 920KHz Color Beat Rejection (920KHzカラービート 妨害比)					ANT INPUT
	UHF	55	70		P: 54dB μ V 75 Ω terminate
	VHF	55	70		C: 38dB μ V 75 Ω terminate
					S: 48dB μ V 75 Ω terminate

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-3-4 CH 6 Beat (6 CH ビート)	50	65	—	dB	ANT INPUT Des : 54dB μ V (75 Ω terminate) Und : 54dB μ V (75 Ω terminate)
3-3-5 CB Rejection (CB 妨害比)	0.535MHz~30MHz -7dBm Min				Desire : 55.25MHz~83.25MHz (CH2~CH6) -66dBm
3-3-6 1% Cross (1) Modulation (1%混変調妨害比 隣々接CH)					

ITEM (項目)	SPECIFICATION (仕様)						NOTE (備考)
3-3-7 Over range (局発余裕周波数)	CH	OSC Frequency	MIN.	TYP.	MAX.	UNIT	V
	UHF	849MHz	—		30		
		411MHz	0.5		—		
	V High	409MHz	—		30		
		177MHz	0.5		—		
	V Low	175MHz	—		30		
		99MHz	0.5		—		
3-3-9 Noise Figure (雑音指数)	Applied for FCC. (FCCを満足する。)						

3-4 IF Section

(IF部)

When the test electrical characteristics when there are no instruction.

Fp input level is 70dB μ v and P/S ratio is -6dB.

(電気性能測定時 指定なき場合、fp ANT入力は70dB μ V, P/Sレベル差は-6dBとする。)

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-4-1 Video S/N (映像S/N)					100% white signal. 87.5% modulation. Subcarrier trap : ON HPF : 100KHz, LPF : 4.2MHz ANT INPUT Level VHF:70dB μ V 75 Ω term. UHF: 70dB μ V 75 Ω term
VHF	44	48		dB	
UHF	43	47			
3-4-2 Noise Limiting Sensitivity (雑音制限感度)					100% white signal. 87.5% modulation. Subcarrier trap : ON HPF : 100KHz, LPF : 4.2MHz Video S/N = 30 dB
VHF		47	54	dB μ	
UHF		48	55		
3-4-3 Video Output Level (映像出力レベル) [CH:11]	0.8	1.0	1.2	Vp-p	Standard color bar : 87.5% mod. (標準カラーバー)
3-4-4 Sync Ratio (同期比率) [CH:11]	24.0	28.0	33.0	%	Standard color bar : 87.5% mod. (標準カラーバー) V+S = 100%

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-4-5 Video Amplitude Frequency Characteristics (映像振幅周波数特性)					
1.0MHz	-2.5	0	+2.0	dB	Multi Burst: 87.5% Mod. Based ON 500KHz.
2.0MHz	-3.0	0	+2.0		
3.0MHz	-3.5	-0.5	+2.5		
3.58MHz	-6.0	-2.5	+2.0		
3-4-6 Differential Gain (微分利得) [CH:11]		+3	±10	%	10 stair-steps : 87.5% mod. Set modulation at the peak of 10th chroma signal. (変調度は10段目クロマピークで設定)
3-4-7 Differential Phase (微分位相) [CH:11]		+3	±10	deg	10 stair-steps : 87.5% mod. Set modulation at the peak of 10th chroma signal. (変調度は10段目クロマピークで設定)
3-4-8 Y/C Delay time (Y/C遅延時間) [CH:11]	-150	0	+150	nS	0.25MHz standard Envelope delay meter or VM700A (エンベロープ遅延計又はVM700Aにて測定)
3-4-9 Audio Output Level (音声出力レベル) [CH:11]	340	480	683	mVrms	1KHz / ±25KHz Dev. Standard color bar : 87.5% mod. (標準カラーバー) De-emphasis : ON
3-4-10 Audio Distortion (音声歪率) [CH:11]		0.5	2.0	%	1KHz / ±25KHz Dev. Standard color bar : 87.5% mod. (標準カラーバー) De-emphasis : ON

ITEM (項目)	SPECIFICATION (仕様)				NOTE (備考)
	MIN.	TYP.	MAX.	UNIT	
3-4-11 Audio Amplitude Frequency Characteristics (音声振幅周波数特性)					1KHz / ± 25 KHz Standard (基準) Standard color bar : 87.5% mod. (標準カラーバー) De-emphasis : OFF
100Hz	-1	0	+1	dB	
1KHz	-1	0	+1		
10KHz	-1	0	+1		
55KHz	-3	-1	+1		
100KHz	-5	-3	0		
[CH:11]					
3-4-12 Audio S/N (音声S/N)	42	50		dB	1KHz / ± 25 KHz Dev. Standard color bar : 87.5% mod. (標準カラーバー) De-emphasis : ON
3-4-13 Audio Buzz (音声バズ) [CH:11]		30	100	mVp-p	Standard color bar : 87.5% mod. (標準カラーバー) P/S = -10dB De-emphasis : ON
3-4-14 AFT Alignment Accuracy (AFT調整精度)	-50	0	+50	KHz	Alignment center : 2.5V at PIF (調整センター) IF input level : 90dB μ V (IF入力レベル) P/S = -6dB Standard color bar : 87.5% mod. (標準カラーバー)
3-4-15 Maximum Input Level (最大入力レベル)					Standard color bar : 87.5% mod. (標準カラーバー) V+S = 100% 受信可能な事
VHF	100			dB μ V	
UHF	100				

4 Environmental Test

(信頼性試験)

(規格値は初期値に対する変化範囲を示す。)

ITEM (項目)	SPECIFICATION (仕様)			NOTE (備考)
	TUNER	MODULATOR	IF	
4-1 Heat Load Test (耐熱負荷試験)	OSC Frequency	Video modulation (映像変調度) $\pm 8\% \text{ MAX}$	Video S/N (映像S/N) $\pm 6\text{dB}$	Test Condition 4-1-1
	UHF: $\pm 10\text{MHz}$	Video carrier Frequency (映像搬送波周波数) $\pm 200\text{KHz MAX}$	Video output (映像出力) $\pm 0.2\text{V}_{\text{p-p MAX}}$	
	VHF: $\pm 10\text{MHz}$	Video carrier output level (映像搬送波出力レベル) $\pm 4\text{dB MAX}$	Noise Limiting sensitivity (雑音制限感 度) $\pm 6\text{dB}$	
		Audio modulation (音声変調度) $\pm 8\% \text{ MAX}$	Audio output (音声出力) $\pm 30\% \text{ MAX}$	
		Audio carrier frequency (音声搬送波周波数) $\pm 20\text{KHz MAX}$		
		P/S ratio (Sound carrier level) (音声出力レベル差) $\pm 3\text{dB MAX}$		

ITEM (項目)	SPECIFICATION (仕様)			NOTE (備考)
	TUNER	MODULATOR	IF	
4-2 Humidity Load Test (耐湿負荷試験)	Same as in item 4-1 (4-1項に同じ)			Test Condition 4-2-1
4-3 Cold Test (耐寒試験)	Same as in item 4-1 (4-1項に同じ)			Test Condition 4-3-1
4-4 Operating Life Test (実動寿命試験)	Same as in item 4-1 (4-1項に同じ)			Test Condition 4-4-1
4-5 High Voltage Test (落雷試験)	Same as in item 4-1 (4-1項に同じ)			Test Condition 4-5-1
4-6 Vibration Test (振動試験)	Same as in item 4-1 (4-1項に同じ)			Test Condition 4-6-1
4-7 Impact Test (衝撃試験)	Same as in item 4-1 (4-1項に同じ)			Test Condition 4-7-1

Environmental Test Condition

(信頼性試験条件)

ITEM (項目)	TEST CONDITION (試験条件)
4-1-1 Heat Load Test (耐熱負荷試験)	1. Initial value measure at standard test condition. (常温、常湿にて初期測定) 2. Level samples in $70^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 96 ± 5 hours, and in standard test condition for 30 minutes, then take measurements within 1 hour. ($70^{\circ}\text{C} \pm 2^{\circ}\text{C}$にて$96 \pm 5\text{H}$放置後 槽より取り出し常温、常湿にて30分放置後測定。尚、一時間以内に測定完了のこと) 3. Supply voltage : Standard +10% (印加電圧) (定格+10%) 4. Supply Voltage cycle : 1.5H ON, 0.5H OFF (印加電圧サイクル)
4-2-1 Humidity Load Test (耐湿負荷試験)	1. Level samples in $40 \pm 5^{\circ}\text{C}$ for 24 ± 2 hours, and in standard test condition for 30 minutes, then take measurements. (予備処理$40 \pm 5^{\circ}\text{C}$にて$24 \pm 2\text{H}$放置後 槽より取り出し 常温、常湿にて30分放置後初期測定) 2. Leave samples in $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$, 90~95% RH, for 96 ± 5 hours, and in standard test condition for 30 minutes, then take measurements within 1 hour. ($40 \pm 2^{\circ}\text{C}$, 90~95% RHにて$96 \pm 5\text{H}$放置後 槽より取り出し常温、常湿にて放置後測定) 3. Supply voltage : Standard +10% (印加電圧) (定格 +10%) 4. Supply Voltage cycle : 1.5H ON, 0.5H OFF (印加電圧サイクル)
4-3-1 Cold Test (耐寒試験)	1. Initial value measure at standard, test condition. (常温、常湿にて初期測定) 2. Leave samples in $-20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 96 ± 5 hours, and in standard test condition for 2hour then take measurements within 1 hour. ($-20 \pm 2^{\circ}\text{C}$にて$96 \pm 5\text{H}$放置後 槽より取り出し2H放置後測定。尚、1H以内に測定完了のこと)

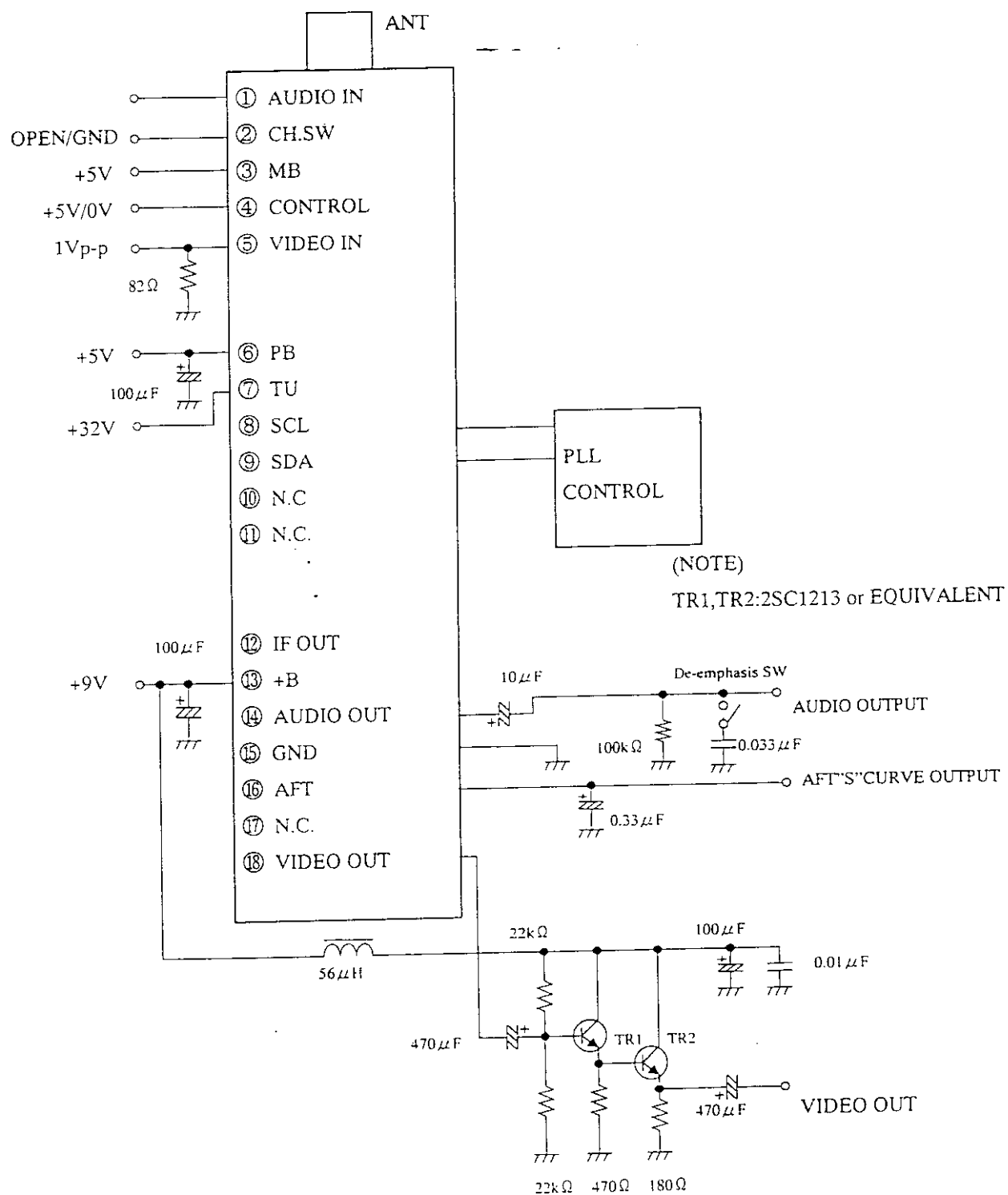
ITEM (項目)	TEST CONDITION (試験条件)
4-4-1 Operating Life Test (実動寿命試験)	1. Take measurements in standard test condition. (常温、常湿にて初期測定) 2. Leave samples for 500 hours, then take measurements. (500H放置後測定) 3. Apply voltage : Standards (印加電圧) (定格)
4-5-1 High Voltage Test (落雷試験)	15KV ,10 times (150pF charged) (15KV 10回) (150pF 充電) Series R=150 Ω (直列抵抗 150 Ω)
4-6-1 Vibration Test (振動試験)	Vibration test fixture is used to vibrate the tuner with a total amplitude of 1mm and frequency ranging from 10 to 55Hz, once per minute consecutively, for 40 minuets in each of three direction, X, Y and Z. (全振幅1mm、周波数範囲10~55Hz、周波数反転時間1分にて振動試験を行う。尚、加振時間は 取付面に平行な軸方向、互いに直角な3方向に各40分)
4-7-1 Impact Test (衝撃試験)	1. Impact acceleration : 50 m/s^2 (衝撃加速度) 2. Impact time : 11 msec (衝撃時間) 3. Impact time and direction : 3 times per each 6 sides. (衝撃回数と方向) (各6面に対し3回ずつ)

5 Mechanical Characteristics

(機構特性)

ITEM (項目)	TEST CONDITION (試験条件)
5-1 Outline View (外観)	
Assembly (加工不備)	No defects of wiring, solder and assembling. (異常がない事)
Appearance (汚損)	No dirt, rust, corrosion or foreign material. (異常がない事)
5-2 Appearance	
Structure (構造)	
Dimension (寸法)	As assembly drawing. (組立図による)
Mounting (取付図)	As assembly drawing. (組立図による)
Weight (重量)	Approximately 95 ± 5 g (95 ± 5 g)

6 Test Circuit (測定回路)



7.Remark (その他)

【オゾン層破壊物質(ODC)使用の有無について】

本部品(ユニット)は、原材料から製品完成品までの全生産工程に於いて下記ODCは一切使用していません。

対象ODC

フロン : CFC-11,-12,-113,-114,-115

ハロン : HON-1211,-1301,-2402

その他のフロン : CFC-13,-111,-112,-211,-212,-213,-214,-215,-216,-217

四塩化炭素

1.1.1-トリクロロエタン(メチルクロロホルム)

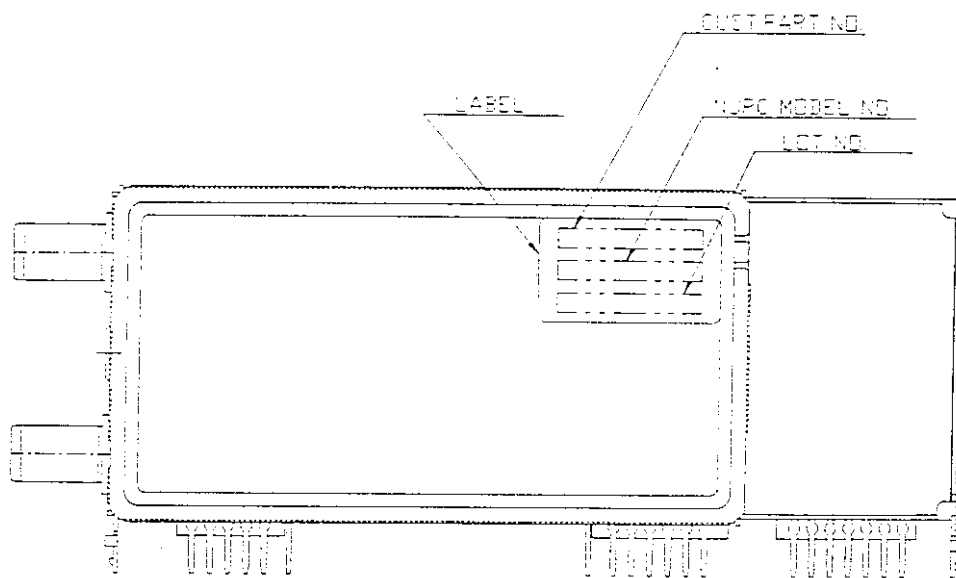
【特定臭素系難燃材料使用の有無について】

原材料及び製品には下記物質は含有しておりません。

対象物質 : PBB Os → PBDO,PBDPO,PBDE,PBDRE

PBBs

BRANDING (マーク仕様)

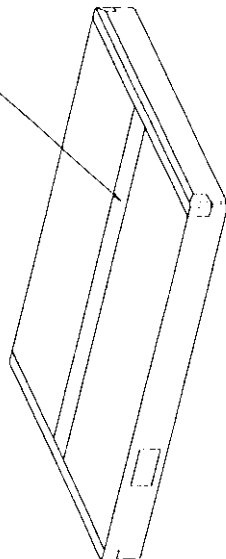


①			
NJH3091U119			
②			
8	07	01	K
③	④	⑤	⑥

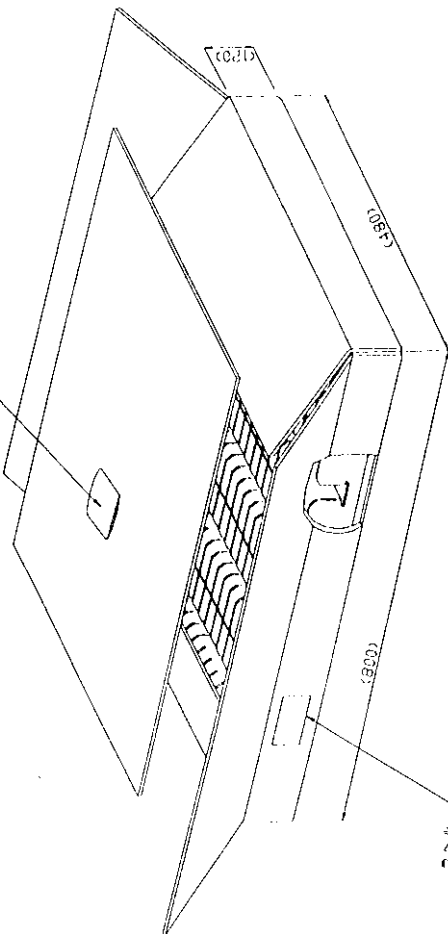
①	CUST. PART NO 顧客品名
②	NJRC MODEL NO NJRC品名
③	LAST DIGT OF THE YEAR' S NUMBER 製造年度表示 <西暦年度末尾番号>
④	MONTH' S NUMBER 製造月度表示
⑤	LOT NO ロット番号 (ロット追番)
⑥	LINE NO (A~) ライン番号 (A~)

梱包仕様
PACKING SPECIFICATION

テープ
TAPE

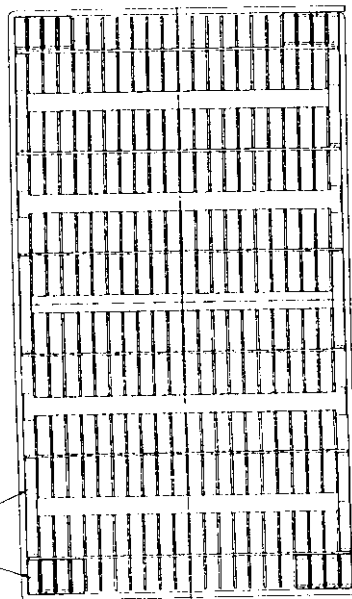


シリカゲル
(50g/CASE)



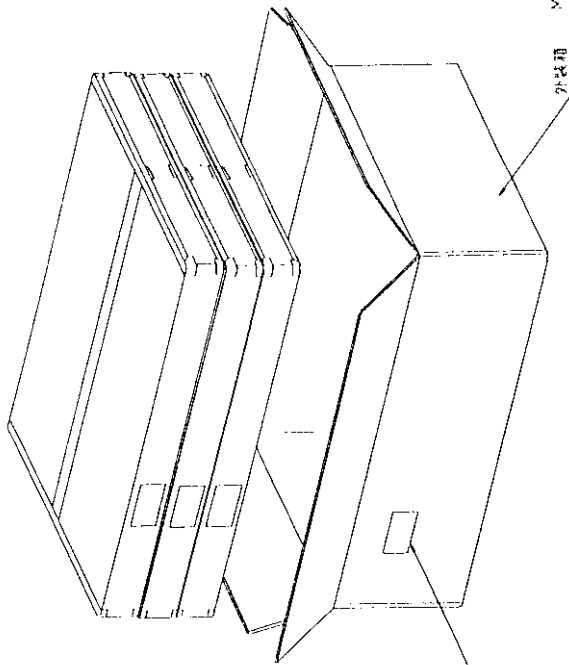
ラベル
LABEL

緩衝パッド
CUSHION PAD



ラベル
LABEL

外箱
MASTER CARTON



収納数 : 300個/箱
QUANTITY : 300PCS / CASE
収納箱総重量 : 約30kg/箱
WEIGHT : 30kg / CASE

収納数 : 100個/箱
QUANTITY : 100PCS / CASE
収納箱総重量 : 約10kg/箱
WEIGHT : 10kg / CASE

FCC/MELLON SEP 22 1998

NATIONAL / PANASONIC

NO. : RS-97-0118

DATE : 12.11.1997

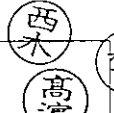
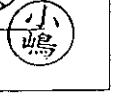
株式会社 トー ク

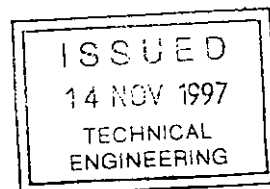
CUSTOMER : SHINTOM

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 トーク品目名 ET-ENG56604G 御社品番 ENG56604G	
	
	
	



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.

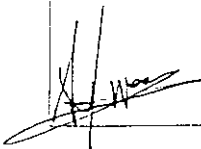
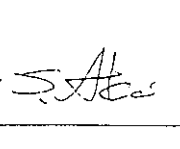
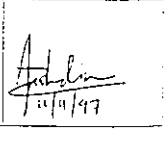
(Manufacturing Section)

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.

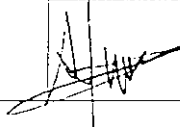
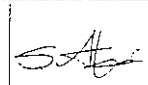
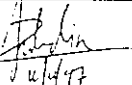
EXPLANATION OF PRODUCT SPECIFICATION (FOR SUPPLY)

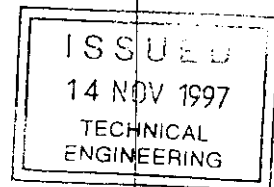
CUSTOMER : SHINTOMISSUE NO. : RS-97-0118Matsushita Electronic Components (M) Sdn. Bhd.
High Frequency Products Division

Approved	Checked	Designed
		 11/11/97

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 / <u>Standard</u> / Special. VIF <u>45.75</u> 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 Schematic Diagram Material list 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 DIVISION	PAGE	DETAILS REVISION AND REASON	ENFORCEMENT DATE	REMARKS	
1.	RS-97-0118 11.11.1997			NEW PRODUCT INTRODUCTION	DEC 1997		
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.				APPROVED 	CHECKED 	PREPARED  26/11/97	



CLASSIFICATION	PRODUCT SPECIFICATION	NO. : 151-ENG-0274
SUBJECT	RF FRONT END SYSTEM UNIT 10430 7950	PAGE : 1 OF 24
	ENG 56604G	DATE : 11.11.1997

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 (1k Ω Unbalanced) VIDEO IN Terminal
- 7.5dBs (Unbalanced when higher than 10k Ω)
AUDIO IN Terminal.

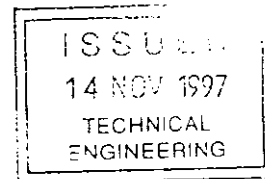
1.2.5 Output impedance : ANT OUT : 75 Ω Unbalanced F connector
1.0Vp-p VIDEO OUT Terminal
0.55Vrms AUDIO OUT Terminal

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

1.2.7 PLL system : 1² C.

2. APPLICABLE STANDARD.

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



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.

Approved Checked Designed

[Signature] *[Signature]* *[Signature]*
11/11/97

CLASSIFICATION	PRODUCT SPECIFICATION	NO. : 151-ENG-0274
SUBJECT	RF FRONT END SYSTEM UNIT 10430 7950	PAGE : 2 OF 24 ENG 56604G DATE : 11.11.1997

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.

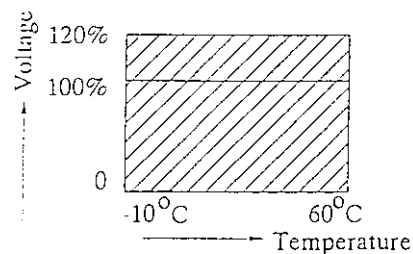
Terminal	Used Voltage (V)	Current average AGC G. MAX (mA)		Operation guaranteed voltage (V)
		TYP.	MAX.	
CONTROL	5.0/0 (VTR/TV)	—	—	4 ~ 5/0 ~ 0.5
BC	5.0	35	45	5 ± 0.3
BV	9.0	120	145	9 ± 0.5
BTL	30.0	2	4	30 $\pm \frac{4}{1}$
BPL	5.0	20	50	5 $\pm \frac{0.25}{0.5}$
BM	9.0	70	90	9 $\pm \frac{1.0}{1.5}$

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

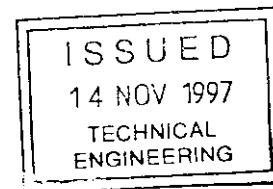


BTL+34V BPL + 6.0V

3.4 Operation guaranteed $-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$

3.5 Operation temperature range $0^{\circ}\text{C} \sim +55^{\circ}\text{C}$

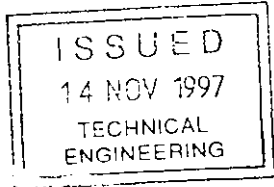
3.6 Signal levels are 75Ω open unless other condition is specified.



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.

Approved Checked Designed

[Signatures]
14/11/97

CLASSIFICATION		PRODUCT SPECIFICATION		NO. : 151-ENG-0274																	
SUBJECT		RF FRONT END SYSTEM UNIT		PAGE : 3 OF 24																	
		10430 7950		ENG 56604G																	
				DATE : 11.11.1997																	
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 dB μ MAX.		75 Ω closed (fv only)																
5. ANT IN AND ANT OUT TERMINAL LEAKAGE (Tuner section local)		<u>AGC 6.5V</u> <table border="1"> <thead> <tr> <th></th> <th>ch. 2 ~ 13</th> <th>ch. J ~ FFF</th> <th>ch. 14 ~ 69</th> </tr> </thead> <tbody> <tr> <td>Fundamental & Harmonics below 300 MHz</td> <td>MAX. 40 dBμ</td> <td>MAX. 40 dBμ</td> <td>—</td> </tr> <tr> <td>Fundamental & Harmonics between 300 MHz to 1000 MHz.</td> <td>MAX. 56 dBμ</td> <td>MAX. 56 dBμ</td> <td>MAX. 56 dBμ</td> </tr> <tr> <td>Fundamental & Harmonics between 1000 MHz to 1700 MHz.</td> <td>MAX. 58 dBμ</td> <td>MAX. 58 dBμ</td> <td>MAX. 58 dBμ</td> </tr> </tbody> </table>				ch. 2 ~ 13	ch. J ~ FFF	ch. 14 ~ 69	Fundamental & Harmonics below 300 MHz	MAX. 40 dB μ	MAX. 40 dB μ	—	Fundamental & Harmonics between 300 MHz to 1000 MHz.	MAX. 56 dB μ	MAX. 56 dB μ	MAX. 56 dB μ	Fundamental & Harmonics between 1000 MHz to 1700 MHz.	MAX. 58 dB μ	MAX. 58 dB μ	MAX. 58 dB μ	1700 MHz 75 Ω open.
	ch. 2 ~ 13	ch. J ~ FFF	ch. 14 ~ 69																		
Fundamental & Harmonics below 300 MHz	MAX. 40 dB μ	MAX. 40 dB μ	—																		
Fundamental & Harmonics between 300 MHz to 1000 MHz.	MAX. 56 dB μ	MAX. 56 dB μ	MAX. 56 dB μ																		
Fundamental & Harmonics between 1000 MHz to 1700 MHz.	MAX. 58 dB μ	MAX. 58 dB μ	MAX. 58 dB μ																		
* 4.1 ~ 4.5		Unused RF ports should be terminated by 75 Ω																			
																					
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				Designed																	

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5. Performance of Tuner section.

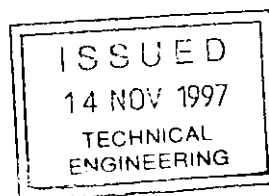
5.1 Specified channels (The specified channels shall be as follows unless particularly specified).

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.	<table border="1"><thead><tr><th rowspan="2">Channel</th><th colspan="2">GAIN MAX.</th></tr><tr><th>MIN.</th><th>TYP.</th></tr></thead><tbody><tr><td>ch. 2 ~ 5</td><td>60 dB</td><td>dB</td></tr><tr><td>ch. 6 ~ A-3</td><td>60 dB</td><td>dB</td></tr><tr><td>ch. A-2 ~ B</td><td>60 dB</td><td>dB</td></tr><tr><td>ch. C ~ 13</td><td>60 dB</td><td>dB</td></tr><tr><td>ch. J ~ 20</td><td>55 dB</td><td>dB</td></tr><tr><td>ch. 21 ~ 69</td><td>45 dB</td><td>dB</td></tr></tbody></table>	Channel	GAIN MAX.		MIN.	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	Regulated by -D/U + S/I
Channel	GAIN MAX.																									
	MIN.	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	G. MAX.	<table border="1"><thead><tr><th rowspan="2">Channel</th><th colspan="2">GAIN MAX.</th></tr><tr><th>MIN.</th><th>TYP.</th></tr></thead><tbody><tr><td>ch. 2 ~ B</td><td>60 dB</td><td>dB</td></tr><tr><td>ch. C ~ KK</td><td>65 dB</td><td>dB</td></tr><tr><td>ch. LL ~ FFF</td><td>65 dB</td><td>dB</td></tr><tr><td>ch. 14 ~ 69</td><td>65 dB</td><td>dB</td></tr></tbody></table>	Channel	GAIN MAX.		MIN.	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	Regulated by -D/U + S/I						
Channel	GAIN MAX.																									
	MIN.	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		<table border="1"><thead><tr><th>Channel</th><th>AGC : G MAX. Point</th><th>- 30dB point</th></tr></thead><tbody><tr><td>ch. 2 ~ KK</td><td>MIN. 70 dBμ</td><td>MIN. 90 dBμ</td></tr><tr><td>ch. LL ~ FFF</td><td>MIN. 70 dBμ</td><td>MIN. 90 dBμ</td></tr><tr><td>ch. 16</td><td>MIN. 65 dBμ</td><td>MIN. 90 dBμ</td></tr><tr><td>ch. 69</td><td>MIN. 65 dBμ</td><td>MIN. 90 dBμ</td></tr></tbody></table> ISSUED 14 NOV 1997 TECHNICAL ENGINEERING	Channel	AGC : G MAX. Point	- 30dB point	ch. 2 ~ KK	MIN. 70 dB μ	MIN. 90 dB μ	ch. LL ~ FFF	MIN. 70 dB μ	MIN. 90 dB μ	ch. 16	MIN. 65 dB μ	MIN. 90 dB μ	ch. 69	MIN. 65 dB μ	MIN. 90 dB μ	75 Ω open								
Channel	AGC : G MAX. Point	- 30dB point																								
ch. 2 ~ KK	MIN. 70 dB μ	MIN. 90 dB μ																								
ch. LL ~ FFF	MIN. 70 dB μ	MIN. 90 dB μ																								
ch. 16	MIN. 65 dB μ	MIN. 90 dB μ																								
ch. 69	MIN. 65 dB μ	MIN. 90 dB μ																								

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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 $\pm$ 10%	ch. 2 ~ B : MAX. $\pm$ 500 kHz ch. C ~ KK : MAX. $\pm$ 700 kHz ch. LL ~ FFF : MAX. $\pm$ 1000 kHz ch. 14 ~ 69 : MAX. $\pm$ 1000 kHz	Related to tuner circuit only.

3. Warm-up drift

(TENTATIVE)

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.

Related to tuner circuit only.

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PRODUCT SPECIFICATION

NO. : 151-ENG-0274

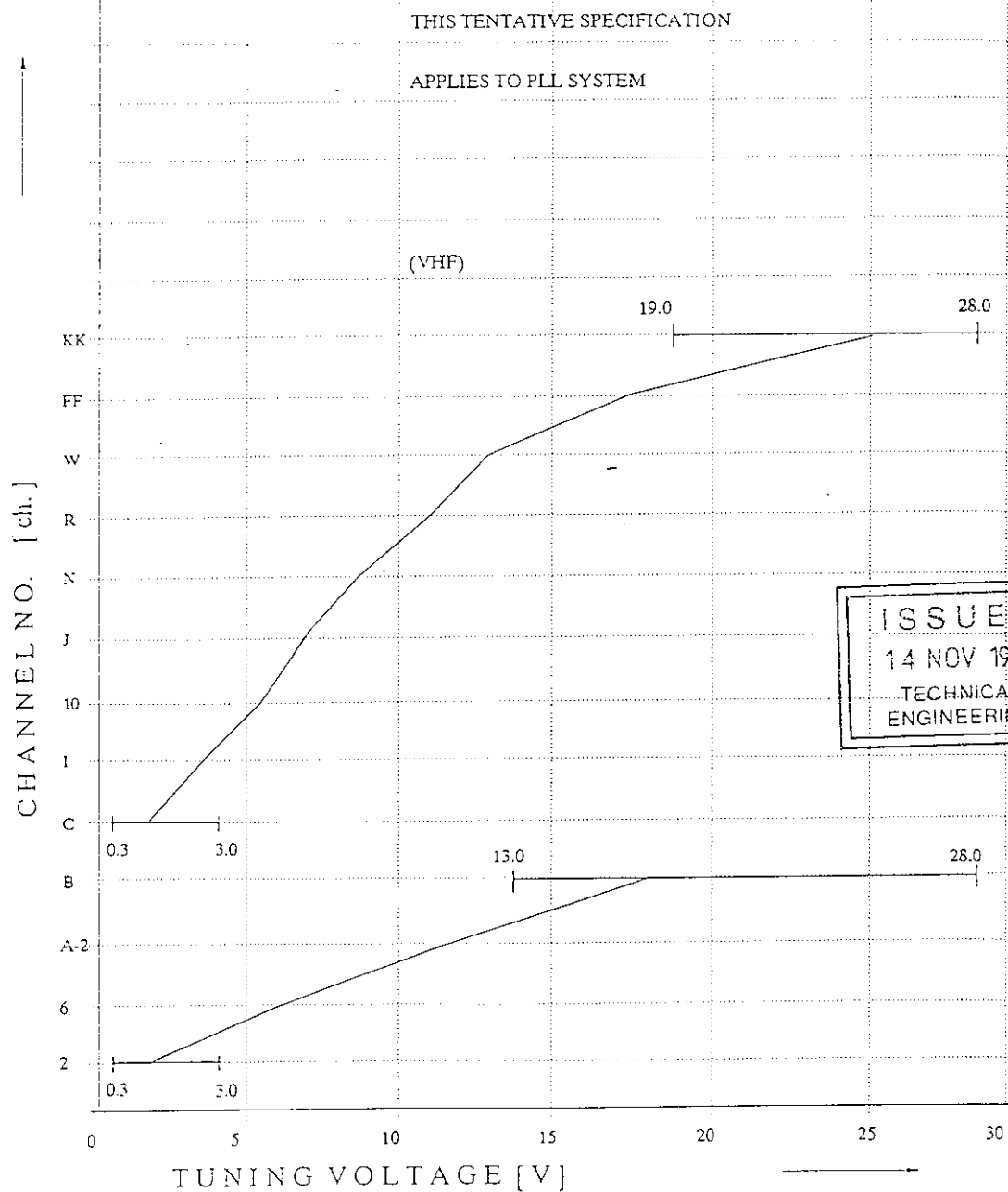
SUBJECT

RF FRONT END SYSTEM UNIT
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ENG 56604G

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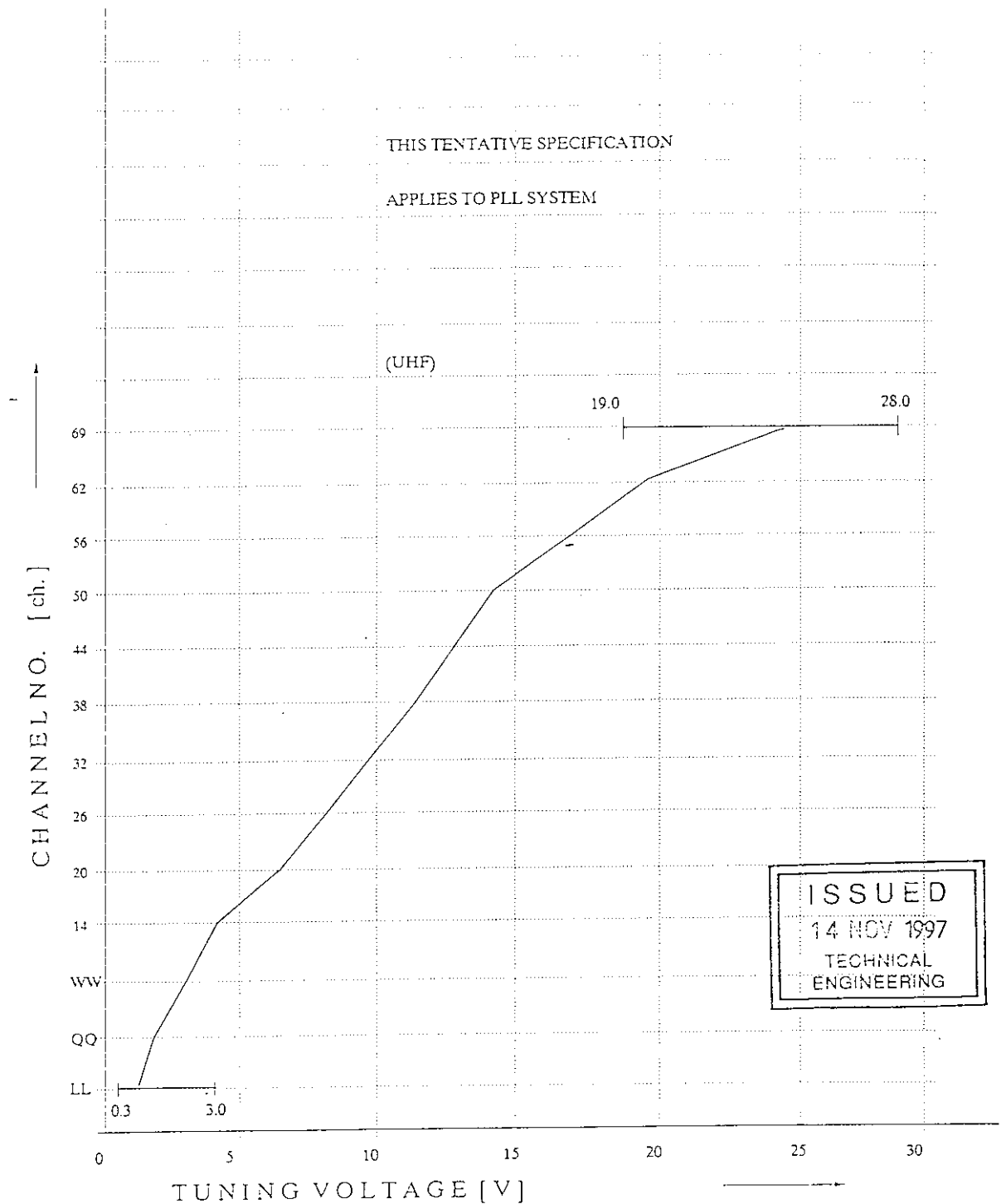


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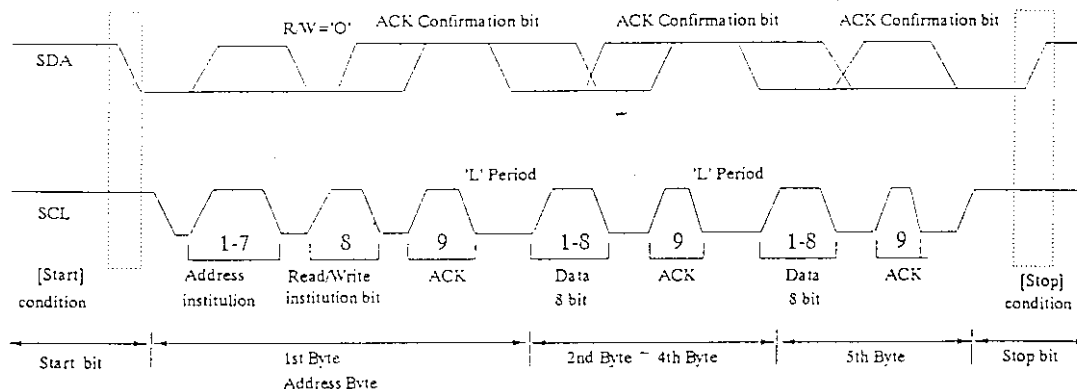
6. PLL Part Characteristics

6.1 Band switching output

BAND		Baud 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/O port 'X'

6.2 Bit forward



6.3 Tuning Frequency.

$$f_{v.c.o} = 62.5 \times n$$

$$\left(\begin{array}{l} n_{14} \text{ to } n_0 \text{ are the programmable divider bits :} \\ n = n_{14} \times 2^4 + n_{13} \times 2^{13} + \dots + n_1 \times 2 + n_0 \end{array} \right)$$

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

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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	1	OS	A	byte 4
I/O 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 :

$$n = n_{14} \times 2^{14} + n_{13} \times 2^{13} + \dots + n_1 \times 2^1 + n_0$$

CP is the charge-pump current:

CP = 0 : 50 μ A

CP = 1 : 250 μ A

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 capacitor drive is disabled).

0 : operational amplifier output is switched on.

Programable address bit

MA1	MA0	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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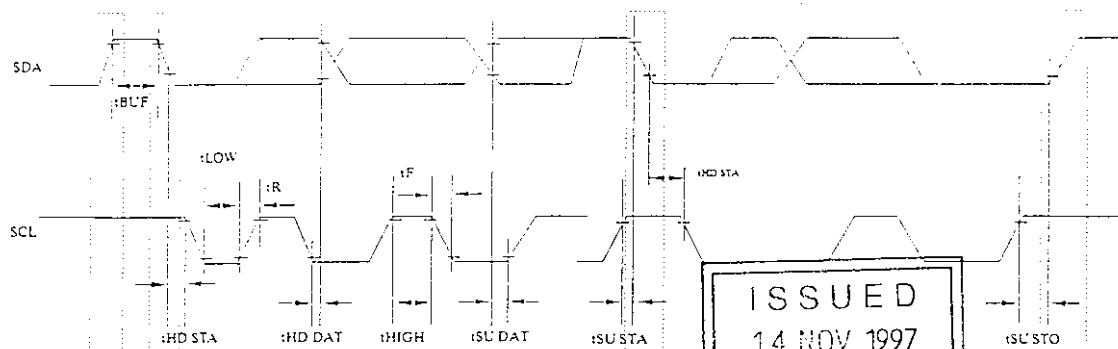
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6.7 BUS TIMING



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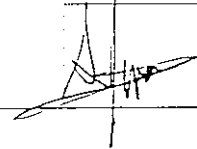
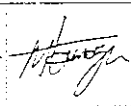
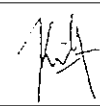
* When tuner mounted on the set, it shall satisfy the following values.

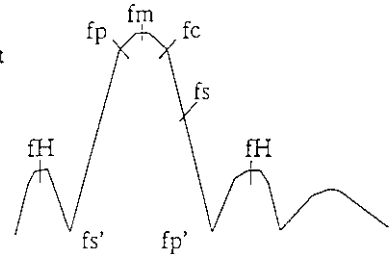
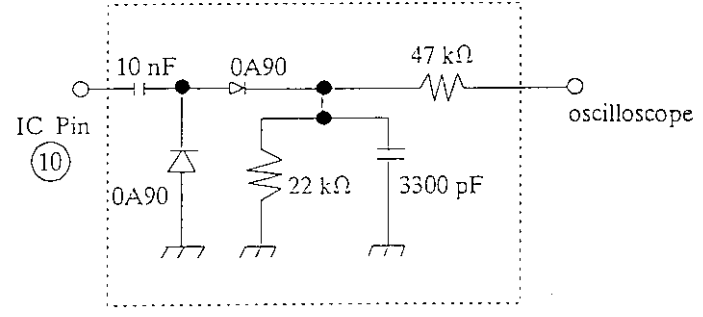
Parameter	Symbol	MIN.	MAX.	Unit
SCL clock frequency	f SCL	0	100	kHz
Bus free time between a STOP and START condition.	t BUF	4.7	-	μ s
Hold time (repeated) START condition. After this period the first clock pulse is generated.	t HDSTA	4	-	μ s
LOW period of the SCL clock.	t LOW	4.7	-	μ s
HIGH period of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

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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	<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 20px;"> <tr> <td>Picture carrier</td><td>fp</td><td>0 dB</td></tr> <tr> <td>Color sub-carrier</td><td>fc</td><td>2 ± 3 dB</td></tr> <tr> <td>Sound carrier</td><td>fs</td><td>-12 ± 4 dB</td></tr> <tr> <td>Adjacent sound carrier</td><td>fs'</td><td>-35 dB (MIN)</td></tr> <tr> <td>Adjacent picture carrier</td><td>fp'</td><td>-35 dB (MIN)</td></tr> <tr> <td>Max gain point to picture carrier</td><td>fm - fp</td><td>6 ± 3 dB</td></tr> <tr> <td>Max gain point to bounce point</td><td>fm - fH</td><td>-30 dB (MIN)</td></tr> </table> Measuring method ; detect output IC Pin (10) From IC Pin (9) to GND 10μ load  Wave detector 	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)
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)																					

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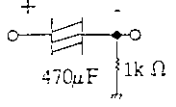
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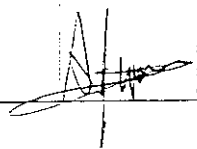
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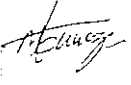
CLASSIFICATION		PRODUCT SPECIFICATION		NO. : 151-ENG-0274																				
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7. Video Frequency Characteristics.	Input : 70dB μ Video mod: 70% VHF : CH 12 UHF : CH 33	<table border="1"> <thead> <tr> <th></th> <th>VHF</th> <th>UHF</th> </tr> </thead> <tbody> <tr> <td>0.1 MHz</td> <td>0 dB</td> <td>0 dB</td> </tr> <tr> <td>1.0 MHz</td> <td>0 $\pm$ 2dB</td> <td>0 $\pm$ 2dB</td> </tr> <tr> <td>2.0 MHz</td> <td>0 $\pm$ 2dB</td> <td>0 $\pm$ 2dB</td> </tr> <tr> <td>3.0 MHz</td> <td>0 $\pm$ 3dB</td> <td>0 $\pm$ 4dB</td> </tr> <tr> <td>3.58 MHz</td> <td>-1 $\pm$ 3dB</td> <td>-1 $\pm$ 4dB</td> </tr> <tr> <td>4.5 MHz</td> <td>MIN -40dB</td> <td>MIN -40dB</td> </tr> </tbody> </table> <Reference> 4.08 MHz :TYP.-11dB (VHF)		VHF	UHF	0.1 MHz	0 dB	0 dB	1.0 MHz	0 $\pm$ 2dB	0 $\pm$ 2dB	2.0 MHz	0 $\pm$ 2dB	0 $\pm$ 2dB	3.0 MHz	0 $\pm$ 3dB	0 $\pm$ 4dB	3.58 MHz	-1 $\pm$ 3dB	-1 $\pm$ 4dB	4.5 MHz	MIN -40dB	MIN -40dB	
	VHF	UHF																						
0.1 MHz	0 dB	0 dB																						
1.0 MHz	0 $\pm$ 2dB	0 $\pm$ 2dB																						
2.0 MHz	0 $\pm$ 2dB	0 $\pm$ 2dB																						
3.0 MHz	0 $\pm$ 3dB	0 $\pm$ 4dB																						
3.58 MHz	-1 $\pm$ 3dB	-1 $\pm$ 4dB																						
4.5 MHz	MIN -40dB	MIN -40dB																						
8. Video output	Input: 70dB μ Video mod: 87.5% Video signal color bar BV: 9 $\pm$ 0.1 V	<u>1 $\pm$ 0.25Vp-p (Load resistor 1k Ω)</u> <u>But horizontal sync : 28 $\pm$ 3 %</u> Burst signal : <u>VHF 0.13 ~ 0.33 Vp - p</u> <u>UHF 0.13 ~ 0.33 Vp - p</u>	 ISSUED 14 NOV 1997 TECHNICAL ENGINEERING																					
9. Phase Characteristics		<u>Over shoot MAX: 15 %</u> <u>Under shoot MAX: 15 %</u> <u>Vertical sag MAX: 10 %</u>																						
10. Differential phase (DP)	Input: 90 dB μ Video mod: 80 %	<u>MAX. $\pm$ 10° (CH 12)</u>																						
11. Differential gain (DG)		<u>MAX. $\pm$ 12 % (CH 12)</u>																						
12. Audio output level	fm= 400Hz Load 47 k Ω	<u>0.55 $\pm$ 0.17Vrms $\pm$ 2.5kHz deviation</u>	DE-EMPHASIS 5.6k Ω /18nF																					

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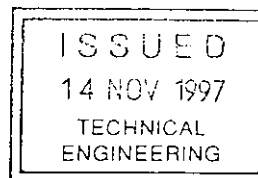


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CLASSIFICATION	PRODUCT SPECIFICATION	NO. : 151-ENG-0274
SUBJECT	RF FRONT END SYSTEM UNIT 10430 7950	PAGE : 15 OF 24
	ENG 56604G	DATE : 11.11.1997

Test Items	Test Conditions	Specification	Remarks
13.Audio S/N	fm =1kHz 100% / 0% Load:47k Ω 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:47k Ω Video mod off Input:70dB μ	$\pm$ 7.5kHz deviation MAX. 2 % $\pm$ 25kHz deviation MAX. 2 %	DE-EMPHASIS 5.6k Ω / 18nF
15. Audio frequency Charactreristics	Load:47k Ω AT 400Hz=0dB	50Hz ~ 100 kHz : 0 $\begin{smallmatrix} + 3 \\ - 8 \end{smallmatrix}$ dB	
16. AFT Output Voltage	VHF :CH 12 Input level :70dB μ Videomod:87.5% Video signal color bar BV : 9 $\pm$ 0.1(V)	2.0 $\pm$ 0.6 V (CH12) Video signal color bar	



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Approved Checked Designed

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CLASSIFICATION	PRODUCT SPECIFICATION	NO. : 151-ENG-0274
SUBJECT	RF FRONT END SYSTEM UNIT 10430 7950	PAGE : 16 OF 24
	ENG 56604G	DATE : 11.11.1997

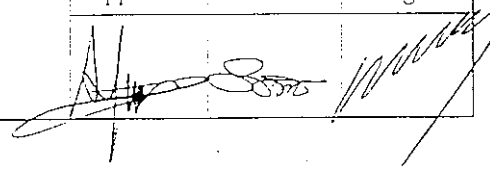
8. Performance of RF CONVERTER section

Test Items	Test Conditions	Specification	Remarks
1. Video Carrier Frequency		CH 3 : 61250 $\pm$ 100 kHz CH 4 : 67250 $\pm$ 100 kHz	USA
2. Video Carrier Output Level.		66 + 2.5 - 3 dB μ	75 Ω terminated MAX. RMS Output voltage.
3. Video Modulation Factor	1.0Vp-p APL 50 % 10 stair step	80 $\pm$ 5 %	RFC Open
4. Differential Gain	At standard modulation	$\pm$ 10 %	
5. Differential Phase	"	$\pm$ 10 deg	
6. Amplitude Frequency Characteristics	Measurement range; 0.1 ~ 4.1 MHz 1 MHz as reference.	$\pm$ 3 dB	ISSUED 14 NOV 1997 TECHNICAL ENGINEERING
7. Sync Linearity	V:S= 7:3	+ 5 - 10 %	
8. Over Shoot		10% MAX.	Measure at the output of the Standard Demodulator.

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CLASSIFICATION		PRODUCT SPECIFICATION		NO. : 151-ENG-0274
SUBJECT		RF FRONT END SYSTEM UNIT 10430 7950		PAGE : 17 OF 24
		ENG 56604G		DATE : 11.11.1997
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		0.15 μ sec 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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CLASSIFICATION	PRODUCT SPECIFICATION		NO. : 151-ENG-0274
SUBJECT	RF FRONT END SYSTEM UNIT 10430 7950	ENG 56604G	PAGE : 18 OF 24
			DATE : 11.11.1997

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 $\pm$ 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 $\pm$ 7kHz	
		ISSUED 14 NOV 1997 TECHNICAL ENGINEERING	

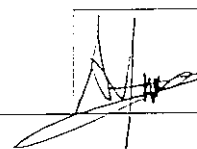
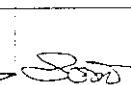
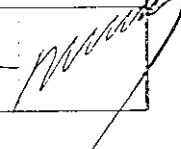
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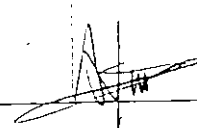
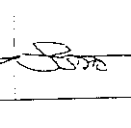
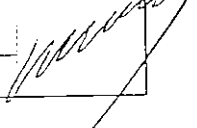
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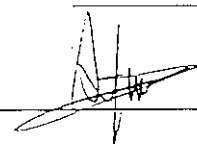
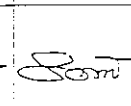
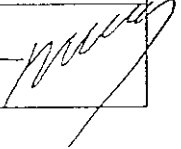
CLASSIFICATION		PRODUCT SPECIFICATION		NO. : 151-ENG-0274
SUBJECT		RF FRONT END SYSTEM UNIT 10430 7950		PAGE : 19 OF 24
		ENG 56604G		DATE : 11.11.1997
Test Items	Test Conditions	Specification	Remarks	
20. Sound Carrier Output Level(Fs)	Measure the difference between Fv and Fs levels.	-16 + 3 dB - 4	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 Characteristics	Measurement range; 0.1 ~ 10kHz Value against 75 μ sec. standard pre-emphasis curve. 1 kHz as reference.	± 3 dB		
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	

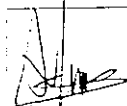
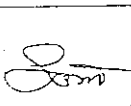
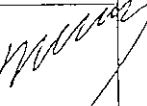
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CLASSIFICATION		PRODUCT SPECIFICATION		NO. : 151-ENG-0274
SUBJECT		RF FRONT END SYSTEM UNIT 10430 7950		PAGE : 20 OF 24
		ENG 56604G		DATE : 11.11.1997
9. Temperature Stability (Test Condition; 0 ~ 60°C)				
Test Items	Test Conditions	Specification	Remarks	
1. Video Carrier Frequency	0 ~ 60°C	$\pm 100 \text{ kHz}$	Based on standard room temperature of 25° C	
2. Video Carrier Output Level	"	66 dB μ + 3 dB - 5		
3. Video Modulation Factor	"	$\pm 10 \%$	Based on standard room temperature of 25° C	
4. Sync Linearity	"	$\pm 12 \%$	"	
5. Sound Carrier Frequency	"	$\pm 15 \text{ kHz}$	"	
6. P/S Ratio	"	-16 + 2.5 dB - 5		
7. Sound Modulation Factor	"	$\pm 20 \%$	Based on standard room temperature of 25° C	
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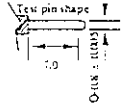
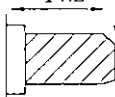
CLASSIFICATION		PRODUCT SPECIFICATION		NO. : 151-ENG-0274
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10. Stability against the Supply Voltage Drift				
Test Items	Test Conditions	Specification	Remarks	
1.Video Carrier Frequency	Based on the drift of supply voltage 5.0V of $\pm 0.3V$	$\pm 10 \text{ kHz}$		
2.Video Carrier Output Level	"	$\pm 2 \text{ dB}$		
3.Video Modulation Factor	"	$\pm 3 \%$		
4.Sound Carrier Frequency	"	$\pm 5 \text{ kHz}$		
5. P/S Ratio	"	$\pm 2 \text{ dB}$		
6. Sound Modulation Factor	"	$\pm 3 \%$		
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CLASSIFICATION	PRODUCT SPECIFICATION	NO. : 151-ENG-0274
SUBJECT	RF FRONT END SYSTEM UNIT 10430 7950	PAGE : 22 OF 24 DATE : 11.11.1997
11. Reliability		
Test Items	Test Conditions	Specification
1. Load life test in humidity		The electrical performance shall be satisfied when left at room temperature and humidity for 1 hour after being actively used at $40 \pm 2^\circ\text{C}$ with 90 ~ 95 % RH for 500 ± 8 hours.
2. Load life test in temperature		The electrical performance shall be satisfied when left at room temperature and humidity for 1 hour after being actively used at $50 \pm 2^\circ\text{C}$ 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 $-30 \pm 2^\circ\text{C}$ for $2 \pm \frac{1}{0}$ 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 $70 \pm 2^\circ\text{C}$ for $2 \pm \frac{1}{0}$ 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. ISSUED 14 NOV 1997 TECHNICAL ENGINEERING
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CLASSIFICATION		PRODUCT SPECIFICATION		NO. : 151-ENG-0274
SUBJECT		RF FRONT END SYSTEM UNIT 10430 7950		PAGE : 23 OF 24
		ENG 56604G		DATE : 11.11.1997
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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CLASSIFICATION	PRODUCT SPECIFICATION	NO. : 151-ENG-0274
SUBJECT	RF FRONT END SYSTEM UNIT 10430 7950	PAGE : 24 OF 24 DATE : 11.11.1997
	ENG 56604G	

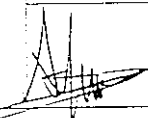
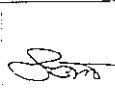
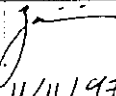
12. Mechanical characteristics

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		14.2  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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11/11/97

LIST OF PLASTIC MATERIALS

10430 7950
MODEL NO. ENG56604G

1/1

MODEL NO. ENG56604G							
PARTS	MATERIALS		MAKER	ADDRESS	UL94 FLAME CLASS	UL FILE NO.	REMARKS
	GENERAL NAME	COMERCIAL NAME					
Printed Wiring Board < <SIZE> > 40.2X84.5tl. 0mm.	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.	1048 Kadoma Kadoma-shi, Osaka 571 Japan.	94V-0	E81336	BSI NO. 6604 JQA NO. Y-0042
	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
	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. Y-0015
	Phenol Resin Laminates	CCP-3400	Chang Chun Plastics Co., Ltd.	7th/Ft 301 Songxiang Rd, Taipei Taiwan.	94V-0	E108591	BSI NO. 6806
	Phenol Resin Laminates	ETL-XPC-801	Eternal Chemical Co., Ltd.	578 Chien-tung Rd, Kaohsiung Taiwan.	94V-0	E95862	BSI NO. 6927
	Phenol Resin Laminates	DS-1107A	Dooosan Electro-materials Co. Ltd.	66-1 Yongtang-ri Jeungpyung-eup Goesan-gun 367-900, Choongchung 8ug-do Korea.	94V-0	E103670	BSI NO. 6741 JQA NO. Y-0034
	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
			ISSUED 14 NOV 1997 TECHNICAL ENGINEERING				
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				Approved by	Checked by	Designed by	
				<i>Lucy</i>	<i>Lucy</i>	<i>Lucy</i>	
				13/10/97	12/10/97		TAIRIN 13. OCT. 97

LIST OF PRINTED MAKER

MODEL NO. 10430 7950
ENG56604G

1/2

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)	Matsushita Electric Industrial Co., Ltd.	1006 Kadoma, Osaka, Japan.	E36779	EA MR 7 TEAMR 7 NEAMR 7	94V-0	Industrial Laminates	R-1781	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-570-T	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
	CMX CORP	1106 Fujikubo Miyoshi-machi Iruma-gun, Seitama-ken Japan.	E41363	CMX 162X CMX 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.
	Peter Circuits Private Ltd.	11, Penjuru Ln, Singapore 2260 Singapore.	E68999	PCL38	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
Printed Wiring Board (VIF)	Electronic Inc.	LG Twin Tower 20 Yoido-dong Youngdeungpo-gu, Seoul 15-010 Korea.	E71042	GSEP23048	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
	Matsushita Electric Industrial Co., Ltd.	1006 Kadoma, Osaka, Japan.	E36779	EA MR 5 TEAMR 5 NEAMR 5	94V-0	Phenol Resin Laminates	R-8700	Matsushita Electric Works Ltd.
	CMX CORP.	1106 Fujikubo Miyoshi-machi Iruma-gun, Seitama-ken Japan.	E41363	CMX 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 PCL35	94V-0	Phenol Resin Laminates	R-8700 ETI-XPC-801	Matsushita Electric Works Ltd. Eternal Chemical Co., Ltd.

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

No. 1, Jalan SS8/4, Sungai Way Free Trade Zone,
Selangor Darul Ehsan, Malaysia.
P.O. Box 1111, Jalan Semangat, 46870 Petaling Jaya, Malaysia.

Approved by
Checked by
Designed by

13/10/97
13/10/97
13 OCT 97

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	COMMERCIAL 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	Watsushita Electric Works Ltd.
				GSEP 2112	94V-0	Phenol Resin Laminates	DS-1107A	Daesan Electro-Materials Co. Ltd.
				GSEP 2112	94V-0	Phenol Resin Laminates	KL-200	Kolon Electro-Materials 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	Watsushita Electric Works Ltd.
				NEM PF2	94V-0	Phenol Resin Laminates	WCL-437F	Hilachi Chemical Co. Ltd.
				NEM PFS	94V-0	Phenol Resin Laminates	CCP-3400	Chang Chun Plastics Co. Ltd.

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High Frequency Products Division

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P.O. Box 1111, Jalan Semangat, 48870 Petaling Jaya, Malaysia.

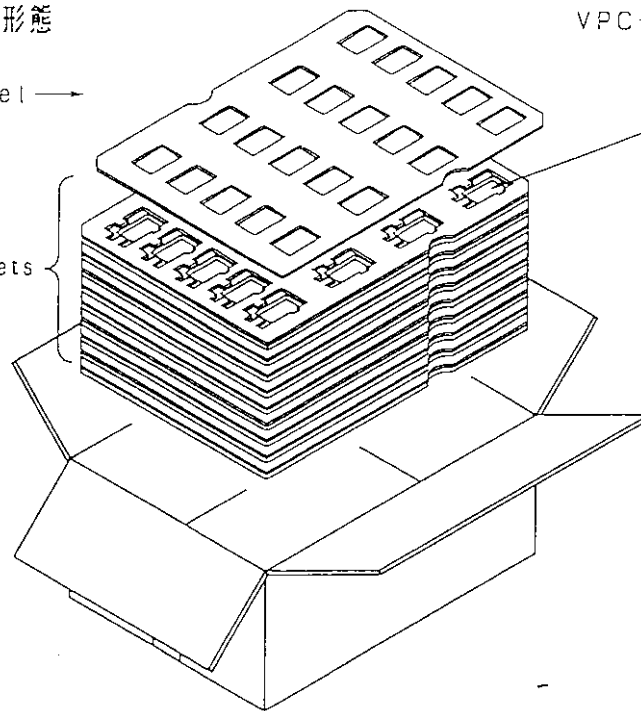
Approved by *[Signature]* 13/10/97
Checked by *[Signature]* 13/10/97
Designed by *[Signature]* 13 OCT. 97
ZAPIN

CLASSIFICATION	PRODUCTS SPECIFICATION (FOR SUPPLY) 納入仕様書	No. 151-ENG-0274
		Page: 1 of 1
SUBJECT	10430 7950 (ENG56604G)	Date: 13. OCT. 1997

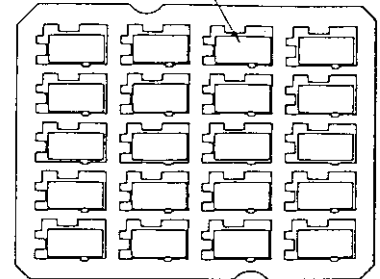
PACKING FORM
包装形態

Panel →

Pallets



VPC-05R



20 sets/Pallet

一段当たりの詰め数 20台

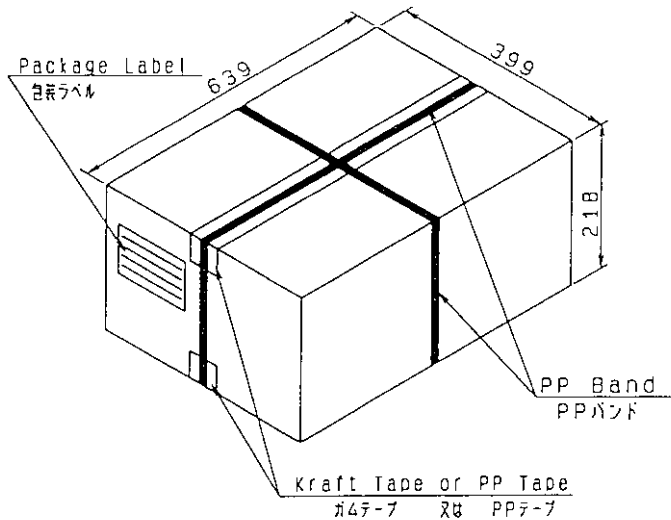
9 Pallets/Box (180 sets/Box)

製品は 9段積みとし、180台詰めとする

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14 NOV 1997

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Package Label
包装ラベル

PP Band
PPバンド

Kraft Tape or PP Tape
ガムテープ 又は PPテープ

Customer	
Customer	
Customer Pt. No.	
Customer Part No.	
Matsushita Pt. No.	
Matsushita Part No.	
Lot No.	Quantity
Lot No.	Quantity
PCS	
Panasonic e 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,
45870 Petaling Jaya, Malaysia.

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

ZAIRIN

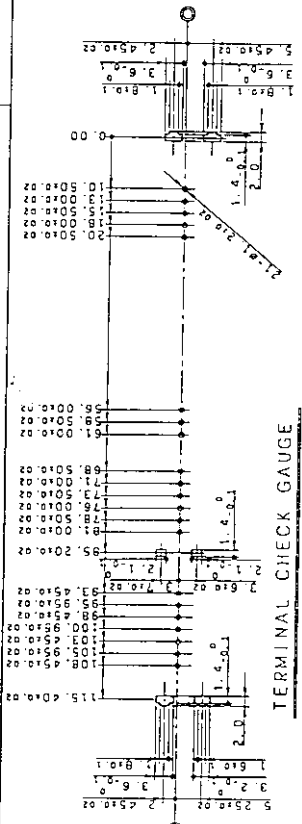
REVISION	DATE	DESCRIPTION
1	10/10/97	Initial Design

LABEL

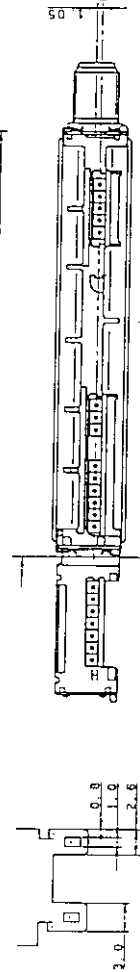
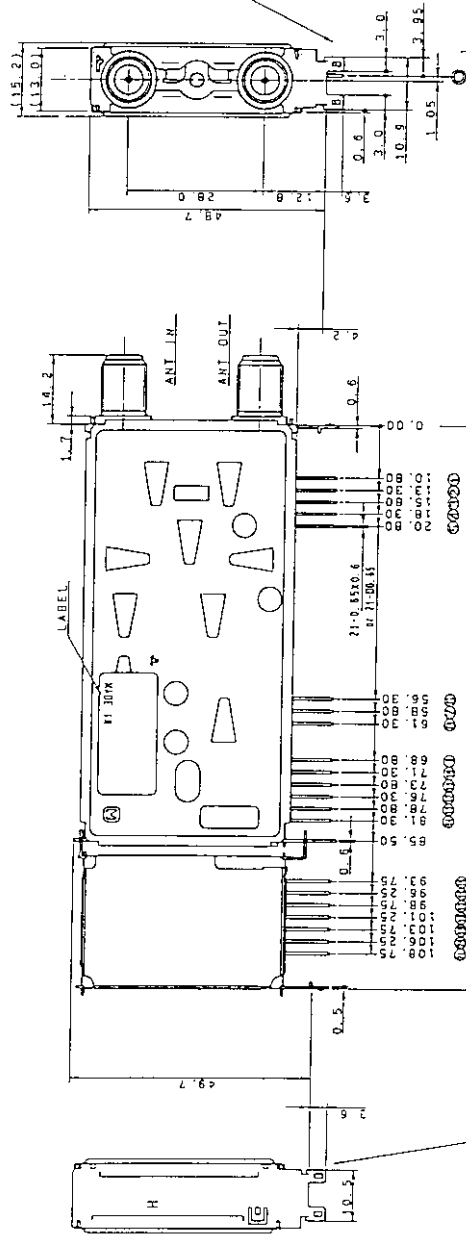
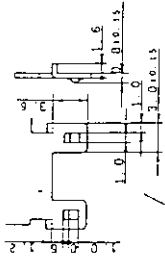
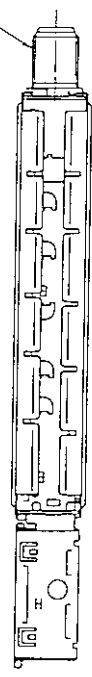
104307950
MADE IN
MALAYSIA
ENG56604G

Part No.
LOT NO.
8X
70 13
7...YEAR(1997)
0...MONTH
0...OCT.
N...NOV.
0...DEC.
13...DAY

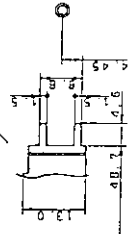
The Country
of Origin



TERMINAL CHECK GAUGE



ISSUED
14 NOV 1997
TECHNICAL
ENGINEERING



TERMINAL NAME	SUPPLY VOLTAGE
1 AUDIO IN	0.327Vrms
2 CH SW	OPEN/3CH/GND/4CH
3 IBC	5.0V
4 CONTROL	5.0/0V
5 VIDEO IN	1.0V0-D(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	

Item or Code No.	Material & Size	Process	Remark
104307950		VPC-05R	
For Shintom		PRODUCT	
ENG56604G		SPECIFICATION	
Scale	Designed	Checked	Approved
1	24/11/97	24/11/97	24/11/97
No.		DM17-0864-00	

Sep. 3, 1998
BFYVRJ6A1NAT

Attachment to Application
of FCC Certification
TV Interface Device

FCC/NEILL SEP 22 1998

Comments to the samples tested

We tested 2 units of Video Cassette Recorder, M-625 (FCC ID : BFYVRJ6A1NAT), as samples to apply for FCC approval.

For your information , each WS-0001 and WS-0002 uses a different type RF Front-End System unit (including RF Modulator) as stated below :

Serial No. of sampls	RF unit Model No.	Manufacturer
WS-0001	ENG56604G	Matsushita Electronic Components (M) Sdn. Bhd.
WS-0002	NJH3091U119	New Japan Radio Co.,Ltd.

Please note that we would use both RF units for mass production of M-625.