株式会社　トーク　殿

納　入　仕　様　書

品　名　　NJH3091U119

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受領印欄

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INDEX（目次）

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 ﾍﾃﾛﾀﾞｲﾝ）

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
(ﾓｼﾞｭﾚｰﾀ 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	75Ω	Unbalance
ANT OUT	75Ω	Unbalance

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

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

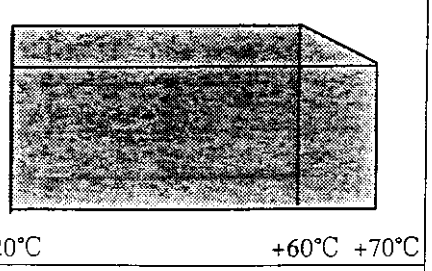
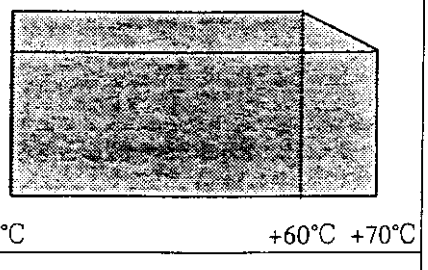
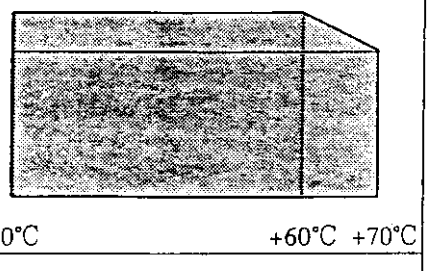
2-7-1 Supply Voltage
（印加電圧）

TERMINAL		Supply Voltage（印加電圧） MIN	TYP	MAX	UNIT
+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	

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

Temperature（温度）	:	-10℃～60℃
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) +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±2℃ 
MB	(Modulator Supply Voltage) +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±2℃ 
PB	(PLL Supply Voltage) +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±2℃ 
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℃～70℃

Humidity（湿度） :Less than 90 % RH
(90% RH 以下)

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
(ﾊﾞﾝﾄﾞ 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 ± 0.1 V
MB	5V ± 0.1 V
PB	5 V ± 0.1 V
TU	+2 32 V -2 V
CONTROL	5 V ± 0.1 V
Ambient Temperature (周囲温度)	25°C ± 5°C
Relative Humidity (相対温度)	65 % ± 10 %

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

3 Electrical Characteristics（電気的特性）

The unit stated in dBμV is defined the value at 75Ω terminate this specification.(0 dBm = 109 dBμV)
（本仕様書中、dBμVの単位は　７５Ω終端値で定義される。）

3-1 RF-Modulator Section
ＲＦ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) MIN.	TYP.	MAX.	UNIT	NOTE (備考)
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 (≒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 (≒0.5Vrms.) Measure range : 50Hz～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 (≒0.5Vrms.) Sine wave Video : 1Vp-p color bar signal De-emphasis(75μSec.) is ON. (ﾃﾞｨｴﾝﾌｧｼｽ ON)

ITEM (項目)	SPECIFICATION (仕様) MIN.	TYP.	MAX.	UNIT	NOTE (備考)
3-1-13 Audio S/N (音声S/N)	45	56	— —	dB	Reference audio input signal : -3.8dBs,1KHz (≒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(75μ Sec.) is ON. (標準復調器使用でｵｰﾃﾞｨｵｱﾅﾗｲｻﾞで測定する。 ｲﾝﾀｰｷｬﾘｱ方式 ﾃﾞｨｴﾝﾌｧｼｽ 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	dBμV	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±50KHz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±3KHz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 ±10KHz by ±0.3V shift of the supply voltage.
（+B ±0.3Vで±10KHz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 ±2KHz by ±0.3V shift of the supply voltage.
（+B ±0.3Vで±2KHz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 ±4% based on the temperature of 25°C.
（25°Cを基準として±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°C ～ 60°C

Humidity range（湿度範囲） : 45% RH ～ 85% RH

Test, Measurement order and time :
（試験及び測定順序と時間）

25°C → -10°C(2H) → 10°C(1H) → 25°C(1H) → 45°C(1H) → 60°C(2H)

3-1-23-2 Thermal Stability of Audio Modulation
（音声変調度温度安定度）

Within ±10KHzp-p based on the temperature of 25°C.
（25°Cを基準にして±10KHzp-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 ±180KHz based on the temperature of 25°C.
（25°Cを基準にして±180KHz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±10KHz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 ±2.0dB based on the temperature of 25°C.
(25°Cを基準にして±2.0dB以内)

3-1-23-6 Thermal Stability of P/S Ratio
（P/S比　温度安定度）

Within ±2.5dB 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±2.5dB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）

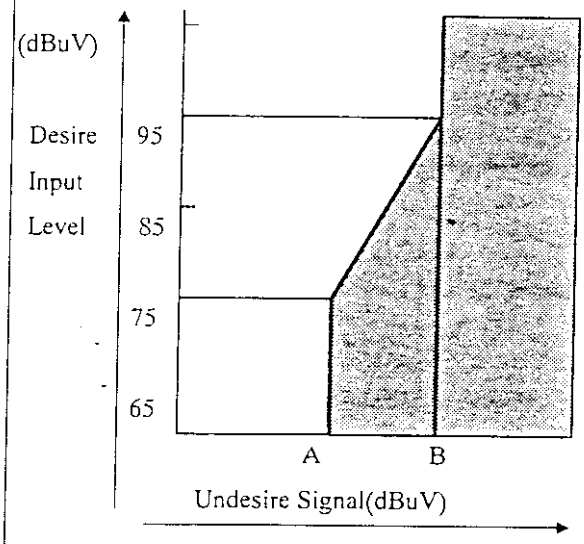
Unless otherwise specified, measurement range shall be 54MHz ～810MHz, and unused RF terminals shall be terminated by rated impedance terminator.
（特に記述のない限り、測定周波数範囲は54MHz～810MHZで、使用していないＲＦ端子は定格インピーダンス終端器で終端するものとする。）

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	dBμ dBμ	Mode : VTR (at MD ON) RF-Modulator Section: Non-Input Signal （ﾓｼﾞｭﾚｰﾀｰ部は、無入力） Tuner OSC Leakage. （Tuner　OSC端子漏れ電圧）

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

ITEM (項目)	SPECIFICATION (仕様) MIN.	TYP.	MAX.	UNIT	NOTE (備考)
3-3-4 CH 6 Beat (6 CH ビート)	50	65	— —	dB	ANT INPUT Des : 54dBμV (75Ω terminate) Und : 54dBμV (75Ω 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)					75Ω terminate

CH	A (dBμ)	B(dBμ)
UHF	64	84
VHF	64	84

Cross modulation value should be within hatched area.

※Tuner should be measured for 1% cross modulation with ±2 channel undesired signal.

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	
	UHF	849MHz	—		30	V	
		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 70dBμv and P/S ratio is -6dB.

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

ITEM (項目)	SPECIFICATION (仕様) MIN.	TYP.	MAX.	UNIT	NOTE (備考)
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:70dBμV 75Ω term. UHF: 70dBμV 75Ω 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	dBμ	
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	
2.0MHz	-3.0	0	+2.0		Multi Burst: 87.5% Mod.
3.0MHz	-3.5	-0.5	+2.5		Based ON 500KHz.
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段目ｸﾛﾏﾋﾟｰｸで設定)
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段目ｸﾛﾏﾋﾟｰｸで設定)
3-4-8 Y/C Delay time (Y/Cﾃﾞｨﾚｲﾀｲﾑ) [CH:11]	-150	0	+150	nS	0.25MHz standard Envelope delay meter or VM700A (ｴﾝﾍﾞﾛｰﾌﾟﾃﾞｨﾚｲ計又は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 / ±25KHz Standard (基準) Standard color bar : 87.5% mod. (標準カラーバー)
100Hz	-1	0	+1		
1KHz	-1	0	+1	dB	De-emphasis : OFF
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 / ±25KHz 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 : 90dBμV (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%
VHF	100			dBμV	
UHF	100				受信可能な事

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 UHF:±10MHz VHF:±10MHz	Video modulation （映像変調度） ±8%MAX Video carrier Frequency （映像搬送波周波数） ±200KHz MAX Video carrier output level （映像搬送波出力ﾚﾍﾞﾙ） ±4dB MAX Audio modulation （音声変調度） ±8% MAX Audio carrier frequency （音声搬送波周波数） ±20KHz MAX P/S ratio (Sound carrier level) （音声出力ﾚﾍﾞﾙ差） ±3dB MAX	Video S/N （映像S/N） ±6dB Video output （映像出力） ±0.2Vp-p MAX Noise Limiting sensitivity （雑音制限感度） ±6dB Audio output （音声出力） ±30% MAX	Test Condition 4-1-1

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°C±2°C for 96±5 hours, and in standard test condition for 30 minutes, then take measurements within 1 hour. (70°C±2°Cにて96±5H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±5°C for 24±2 hours, and in standard test condition for 30 minutes, then take measurements. (予備処理40±5°Cにて24±2H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°C±2°C, 90～95% RH, for 96±5 hours, and in standard test condition for 30 minutes, then take measurements within 1 hour. (40±2°C,90～95% RHにて96±5H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°C±2°C for 96±5 hours,and in standard test condition for 2hour then take measurements within 1 hour. (-20±2°Cにて96±5H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)

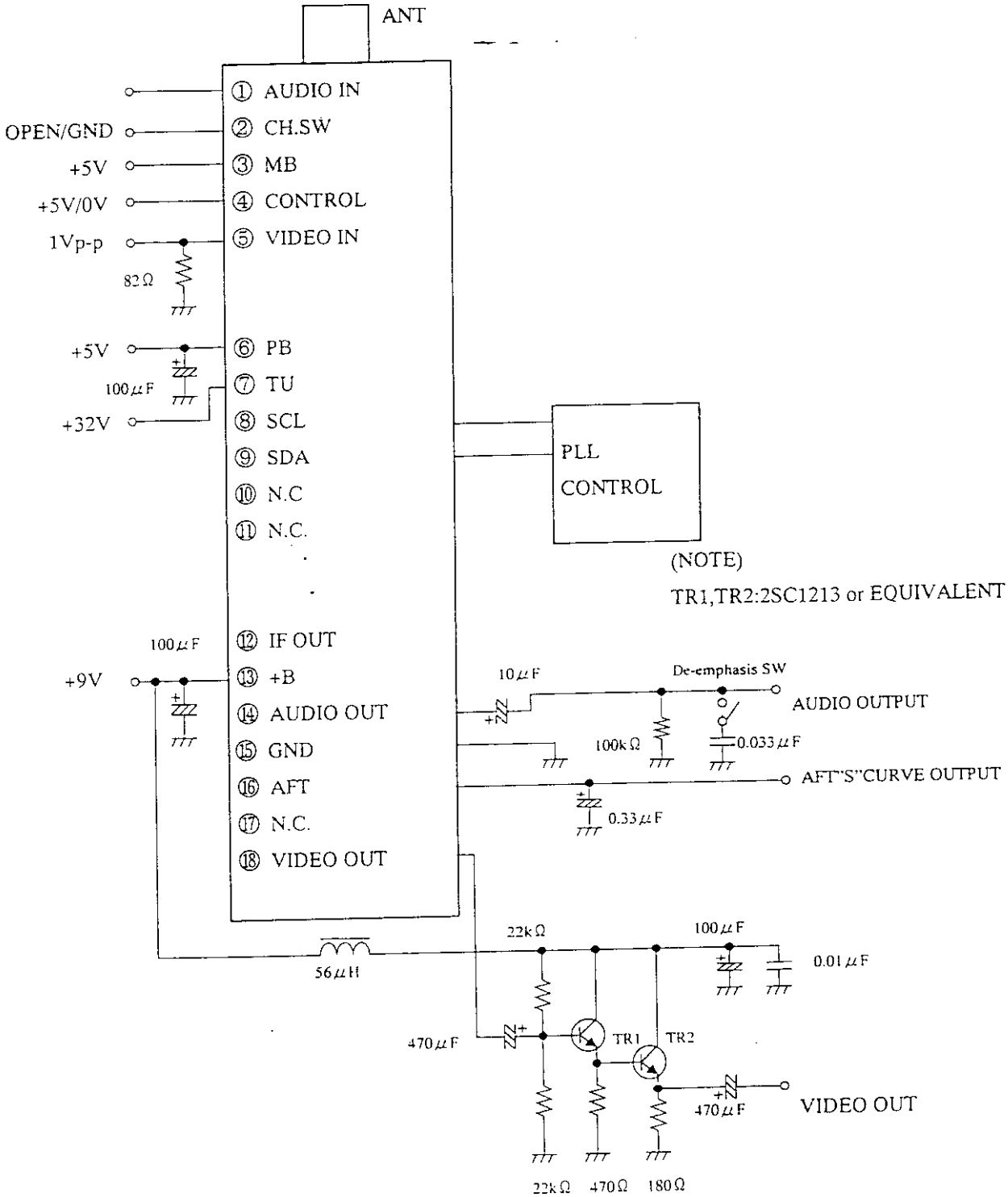
ITEM（項目）	TEST CONDITION （試験条件）
4-4-1 Operating Life Test （実動寿命試験）	1. Take measurements in standard test condition. （常温、常湿にて初期測定） 2. Leave samples for 500 hours, then take measurements. （500H放置後測定） 3. Apply voltage : Standards （印加電圧） （定格）
4-5-1 High Voltage Test （落雷試験）	15KV ,10 times (150pF charged) (15KV 10回） （150pF 充電） Series R=150Ω (直列抵抗 150Ω）
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：ﾊﾛﾝ-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)

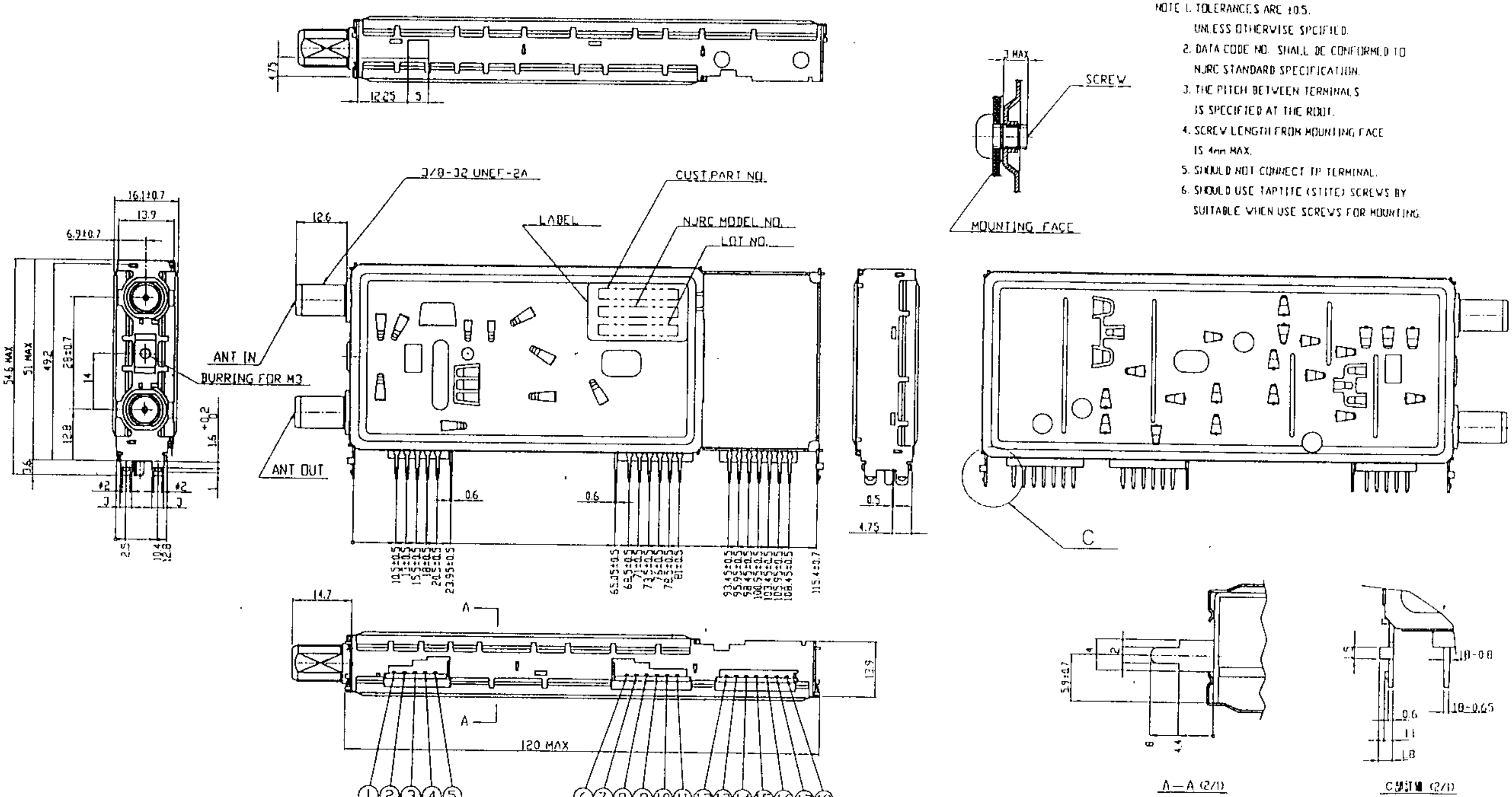
【特定臭素系難燃材料使用の有無について】

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：ＰＢＢＯs → PBDO,PBDPO,PBDE,PBDRE

ＰＢＢs

DATE	RECORD OF REVISIONS



NOTE 1. TOLERANCES ARE ±0.5.
UNLESS OTHERWISE SPECIFIED.
2. DATA CODE NO. SHALL BE CONFORMED TO NJRC STANDARD SPECIFICATION.
3. THE PITCH BETWEEN TERMINALS IS SPECIFIED AT THE ROOT.
4. SCREW LENGTH FROM MOUNTING FACE IS 4mm MAX.
5. SHOULD NOT CONNECT TP TERMINAL.
6. SHOULD USE TAPTITE (STITE) SCREWS BY SUITABLE WHEN USE SCREWS FOR MOUNTING.

(NOTE)Specifications subject to change whithout notice

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10
TERMINAL NAME	AUDIO IN	CH.SW	MB	CONTROL	VIDEO IN	PB	TU	SCL	SDA	N.C.
TERMINAL NO.	11	12	13	14	15	16	17	18		
TERMINAL NAME	N.C.	IF OUT	+B	AUDIO OUT	GND	AFT	N.C.	VIDEO OUT		

New Japan Radio Co.,Ltd

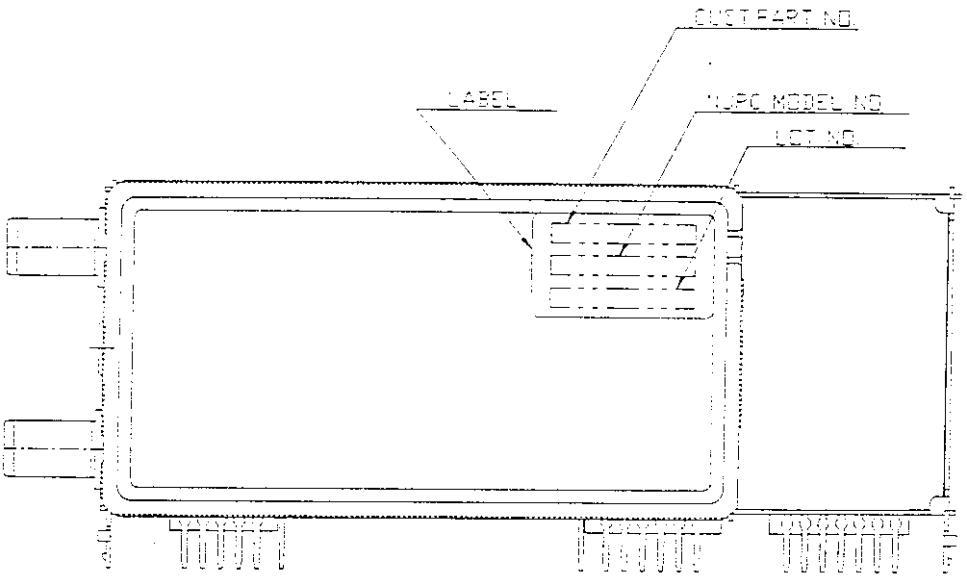
CUST. PART NO :

DSGD. Jul. 2.'98 [signature]
CHKD. Jul. 22.'98 [signature]
APPD. Jul. 22.'98 [signature]

NJRC MODEL NO : NJH3091U119

TITLE US181CH 3in1 DEMENSIONS

BRANDING（マーク仕様）

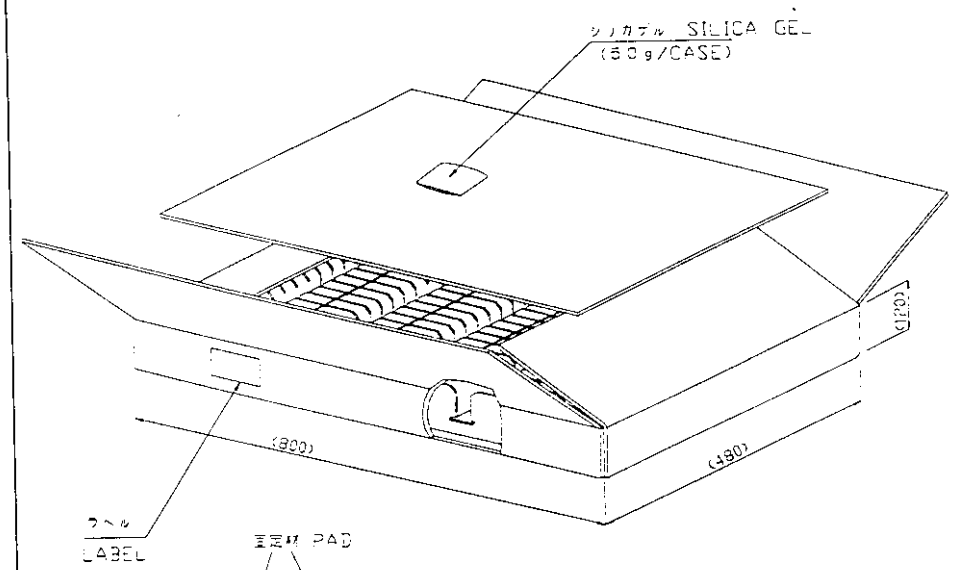


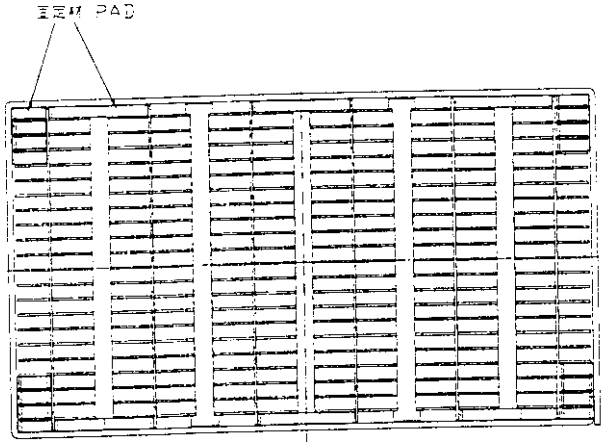
①
NJH3091U119
②

③	④	⑤	⑥
8	07	01	K

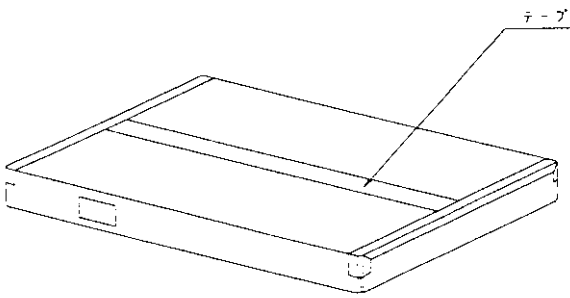
①	CUST. PART NO 顧客品名
②	NJRC MODEL NO NJRC品名
③	LAST DIGT OF THE YEAR' S NUMBER 製造年度表示 <西暦年度末尾番号>
④	MONTH' S NUMBER 製造月度表示
⑤	LOT NO ロット番号（ロット追番）
⑥	LINE NO (A～) ライン番号（A～）

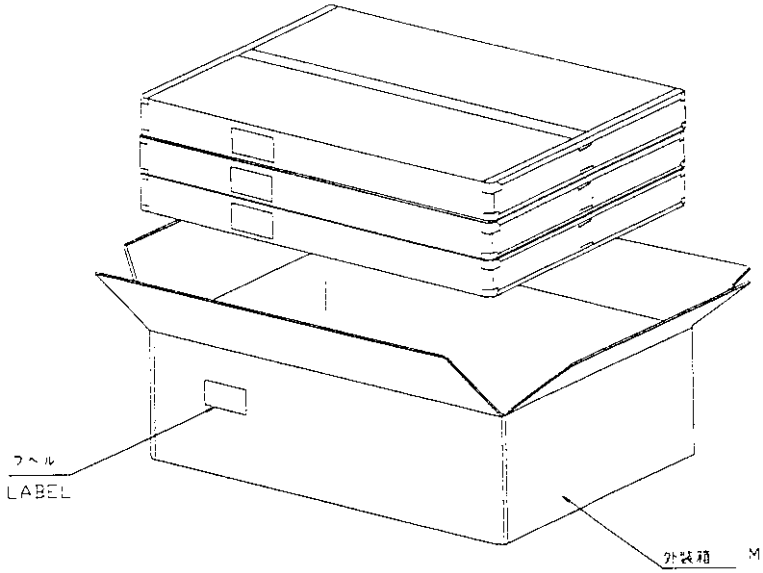
梱包仕様
PACKING SPECIFICATION





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





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

TEF0015/08/93

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 (済) 十(2)
トーク品目コード 104307950
トーク品 目 名 ET-ENG56604G
御 社 品 番 ENG56604G

藤田 | 中村 | 西木 高濱 | 森苗 小嶋

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ENGINEERING

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

Approved	Checked	Designed
		14/9/97

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 / [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)

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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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
		7/11/97

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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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
		11/11/97

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.

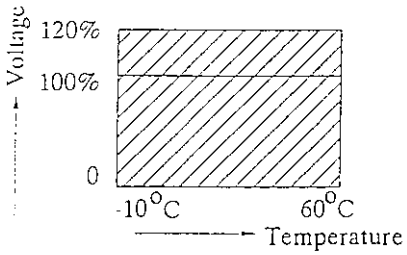
3.1 Voltage and current at each terminal and operation guaranteed voltage.

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	$30 \begin{smallmatrix} +4 \\ -1 \end{smallmatrix}$
BPL	5.0	20	50	$5 \begin{smallmatrix} +0.25 \\ -0.5 \end{smallmatrix}$
BM	9.0	70	90	$9 \begin{smallmatrix} +1.0 \\ -1.5 \end{smallmatrix}$

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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<table>
<tr><th>Test Items</th><th>Test Conditions</th><th>Specification</th><th>Remarks</th></tr>
<tr><td>1. Image Rejection</td><td>G. MAX.</td><td>
<table>
<tr><th rowspan="2">Channel</th><th colspan="2">GAIN MAX.</th></tr>
<tr><th>MIN.</th><th>TYP.</th></tr>
<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>
</table>
</td><td>Regulated by -D/U + S/I</td></tr>
<tr><td>2. IF Rejection</td><td>G. MAX.</td><td>
<table>
<tr><th rowspan="2">Channel</th><th colspan="2">GAIN MAX.</th></tr>
<tr><th>MIN.</th><th>TYP.</th></tr>
<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>
</table>
</td><td>Regulated by -D/U + S/I</td></tr>
<tr><td>3. 1% Cross Modulation 1% (Next to the adjacent) ± 12MHz</td><td></td><td>
<table>
<tr><th>Channel</th><th>AGC : G MAX. Point</th><th>- 30dB point</th></tr>
<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>
</table>
</td><td>75 Ω open</td></tr>
</table>

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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)			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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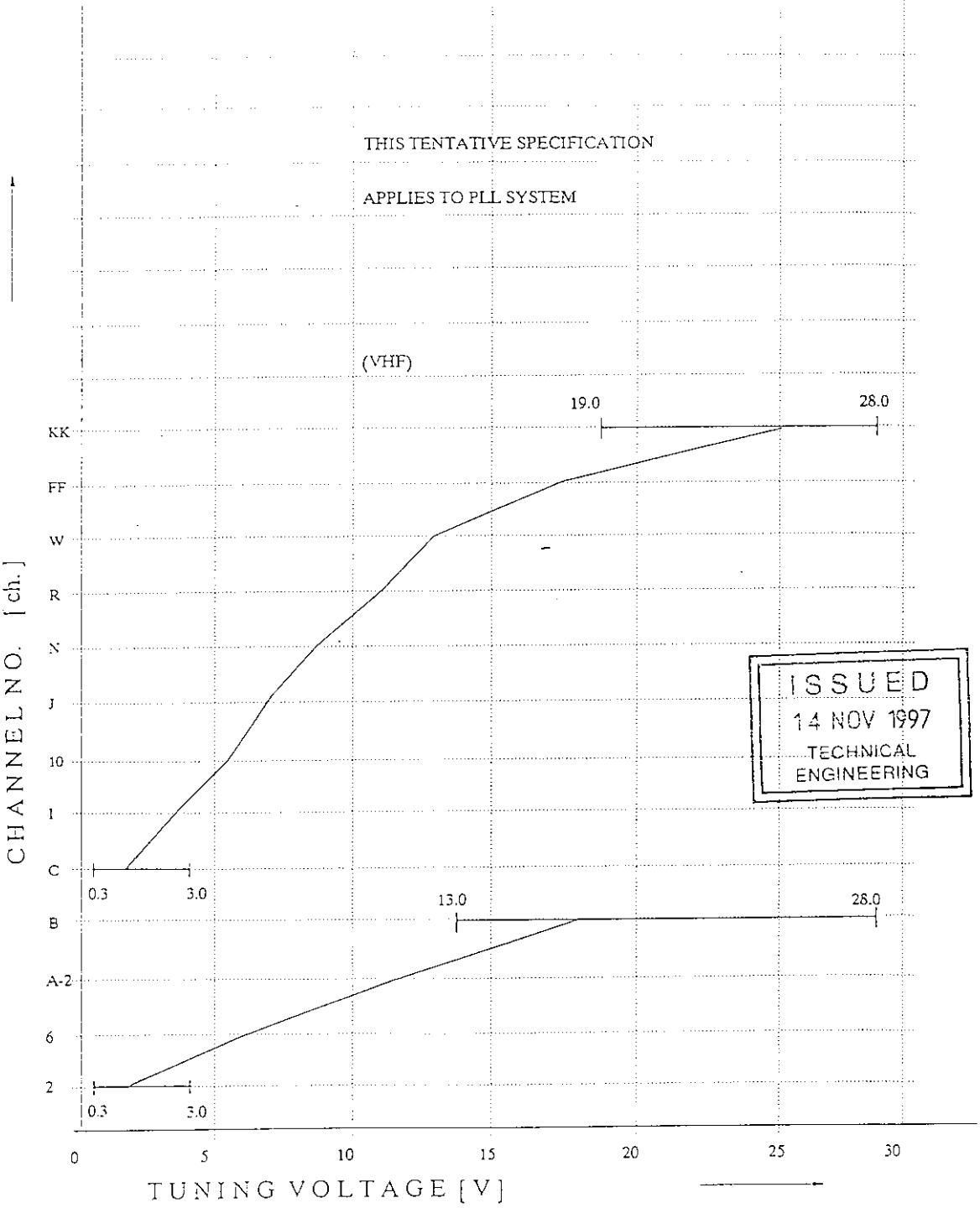
THIS TENTATIVE SPECIFICATION

APPLIES TO PLL SYSTEM



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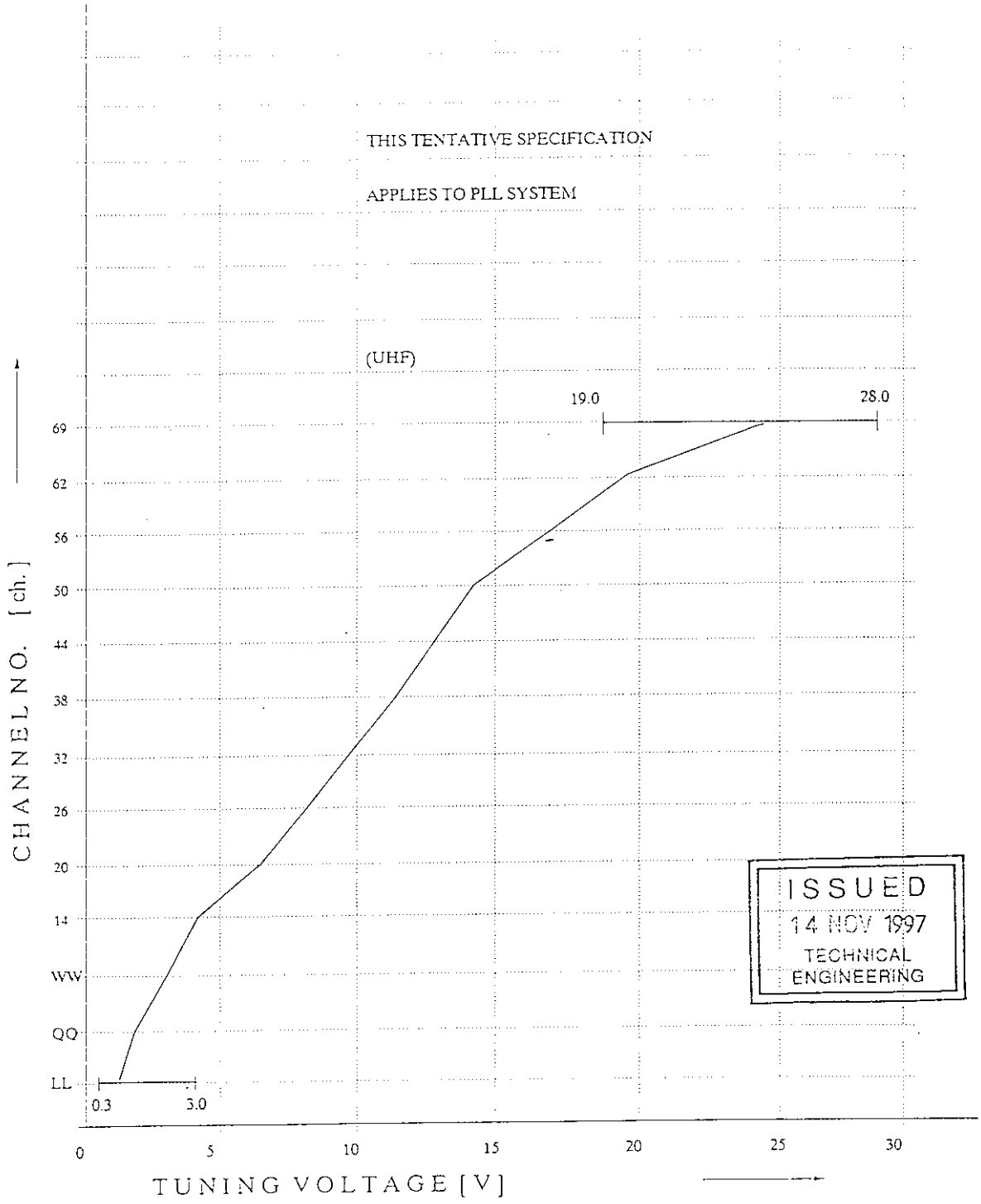
THIS TENTATIVE SPECIFICATION

APPLIES TO PLL SYSTEM

(UHF)



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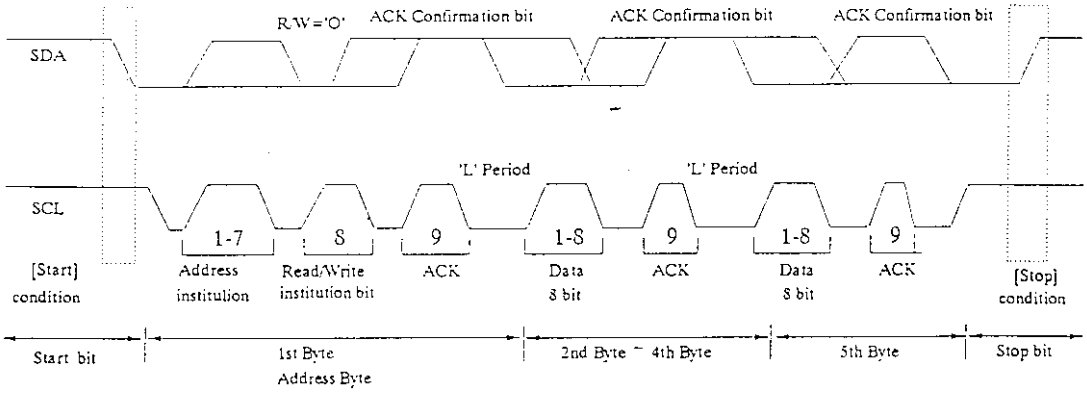
6. PLL Part Characteristics

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



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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

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 capacitor 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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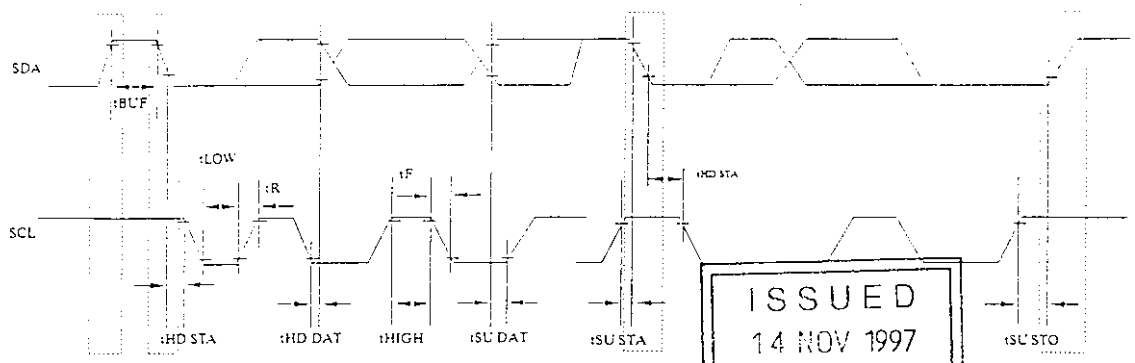
6.7 BUS TIMING



* 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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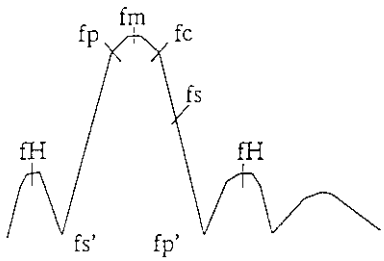
Test Items	Test Conditions	Specification
6. Signal selectivity	Tuner G. MAX. IF AGC :-20 dB CH 12	

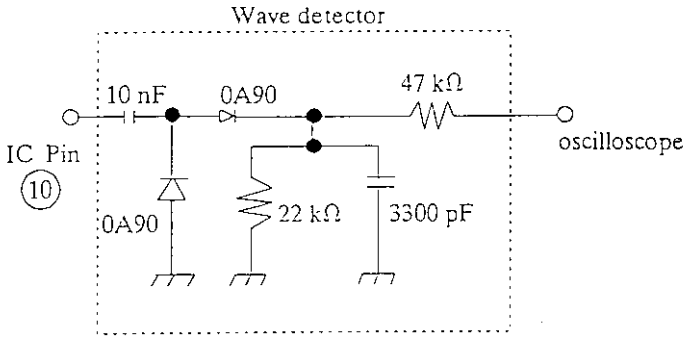
Picture carrier	fp	0 dB
Color sub-carrier	fc	2 ± 3 dB
Sound carrier	fs	-12 ± 4 dB
Adjacent sound carrier	fs'	-35 dB (MIN)
Adjacent picture carrier	fp'	-35 dB (MIN)
Max gain point to picture carrier	fm - fp	6 ± 3 dB
Max gain point to bounce point	fm - fH	-30 dB (MIN)

Measuring method ;

detect output
IC Pin (10)

From IC Pin (9) to GND
10μ load





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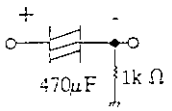
<table>
<tr><th>Test Items</th><th>Test Conditions</th><th>Specification</th><th>Remarks</th></tr>
<tr><td>7. Video Frequency Characteristics.</td><td>Input : 70dBμ
Video mod:70%

VHF : CH 12
UHF : CH 33</td><td>
<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)
</td><td></td></tr>
<tr><td>8. Video output</td><td>Input: 70dBμ

Video mod: 87.5%

Video signal
color bar
BV: 9 ± 0.1 V</td><td>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</td><td>  </td></tr>
<tr><td>9. Phase Characteristics</td><td></td><td>Over shoot MAX: 15 %
Under shoot MAX: 15 %
Vertical sag MAX : 10 %</td><td></td></tr>
<tr><td>10. Differential phase (DP)</td><td rowspan="2">Input: 90 dBμ
Video mod: 80 %</td><td>MAX. ± 10° (CH 12)</td><td></td></tr>
<tr><td>11. Differential gain (DG)</td><td>MAX. ± 12 % (CH 12)</td><td></td></tr>
<tr><td>12. Audio output level</td><td>fm= 400Hz
Load 47 kΩ</td><td>0.55 ± 0.17Vrms ± 2 5kHz deviation</td><td>DE-EMPHASIS
5.6kΩ/18nF</td></tr>
</table>

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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 Charactreristics	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.		$66 \begin{smallmatrix} +2.5 \\ -3 \end{smallmatrix}$ 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	$\begin{smallmatrix} +5 \\ -10 \end{smallmatrix}$ %	$\frac{\frac{7 \times S}{V} - 3}{3} \times 100\%$
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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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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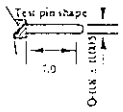
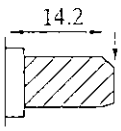
12. Mechanical characteristics

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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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. IV-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.
Selangor Darul Ehsan. Malaysia.
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

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-570-T	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
	CMK CORP	1106 Fujikobo Miyoshi-machi Iruma-gun, Seitama-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	GSEP23048	94V-0	Industrial Laminates	R-1781	Matsushita Electric Works Ltd.
Printed Wiring Board (YIF)	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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14 NOV 1997
TECHNICAL ENGINEERING

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 by	Checked by	Designed by
13/10/97	13/10/97	ZAIRIN 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 GENERAL NAME	MATERIALS COMERCIAL NAME	MAKER
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 PFS	94V-0	Phenol Resin Laminates	CCP-3400	Chang Chun Plastics Co.Ltd

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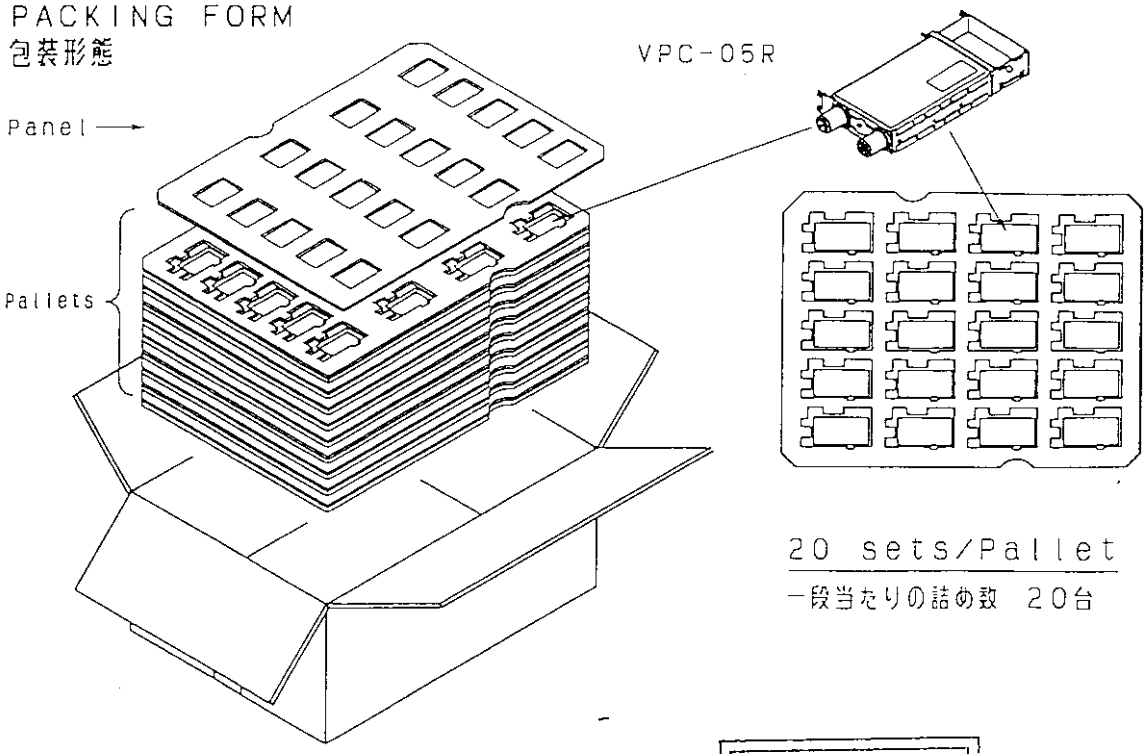
14 NOV 1997
TECHNICAL ENGINEERING

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 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-0274
		Page: 1 of 1
SUBJECT	10430 7950 (ENG56604G)	Date: 13. OCT. 1997

PACKING FORM
包装形態



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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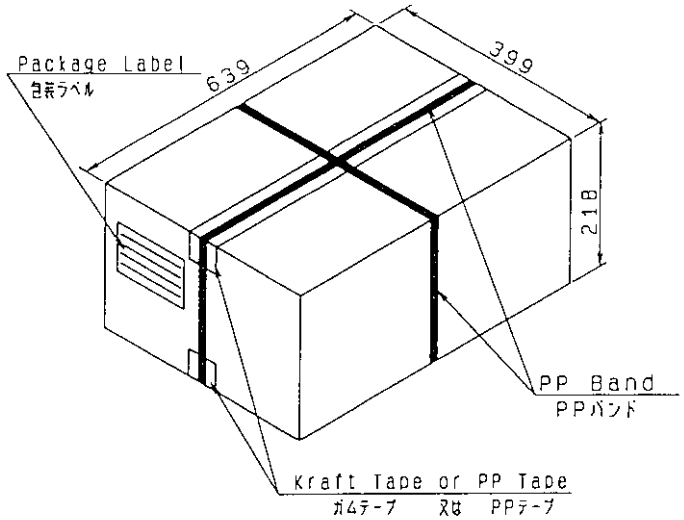
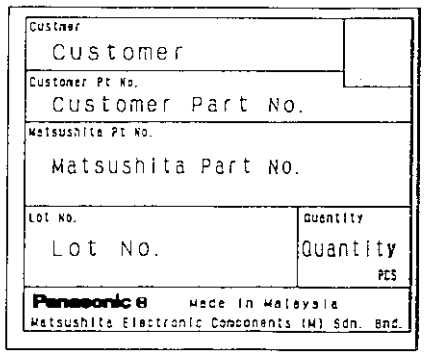
14 NOV 1997
TECHNICAL
ENGINEERING



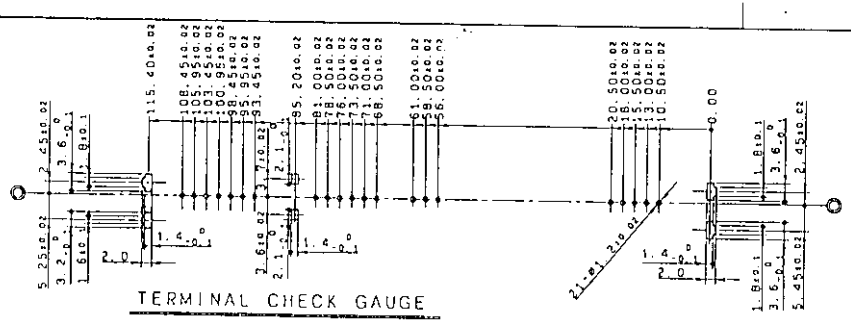


ex. 包装ラベル表示例(マレーシア製)
Packing label detail(in MALAYSIA)

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	Sym.	Date	Revision	Signed	Checked
	1				
	2				



LABEL

The Country of Origin

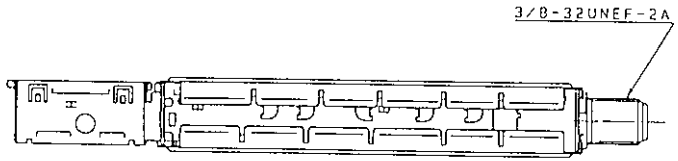
104307950
MADE IN: MALAYSIA
ENG56604G

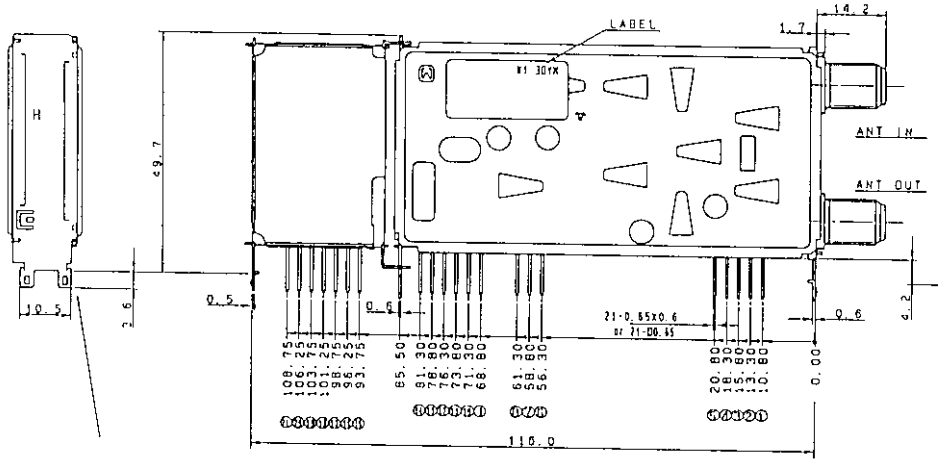
Part No.

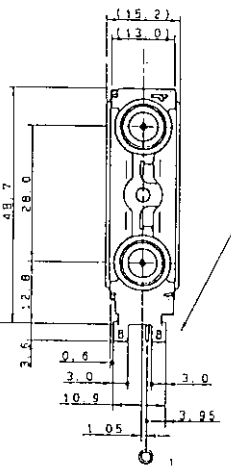
Lot No.

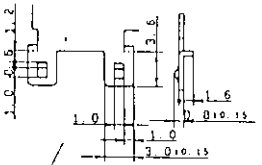
ex
70 13

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

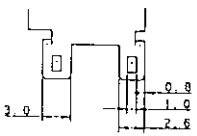


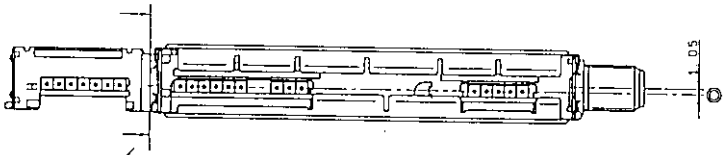


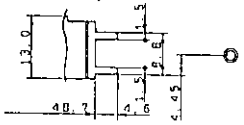




	TERMINAL NAME	SUPPLY VOLTAGE
1	AUDIO IN	0.327Vrms
2	CH SW	OPEN3CH/GND4CH
3	BC	5.0V
4	CONTROL	5.0/0V
5	VIDEO IN	1.0Vp-p(OPEN)
6	RF AGC IN	—
7	BM	9.0V
8	BPL	5.0V
9	BTL	30.0V
10	SCL	—
11	SDA	—
12	ADD	—
13	NC	—
14	IF OUT	—
15	IF IN	—
16	BV	9.0V
17	AUDIO OUT	—
18	GND	—
19	AFT	—
20	RF AGC OUT	—
21	VIDEO OUT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







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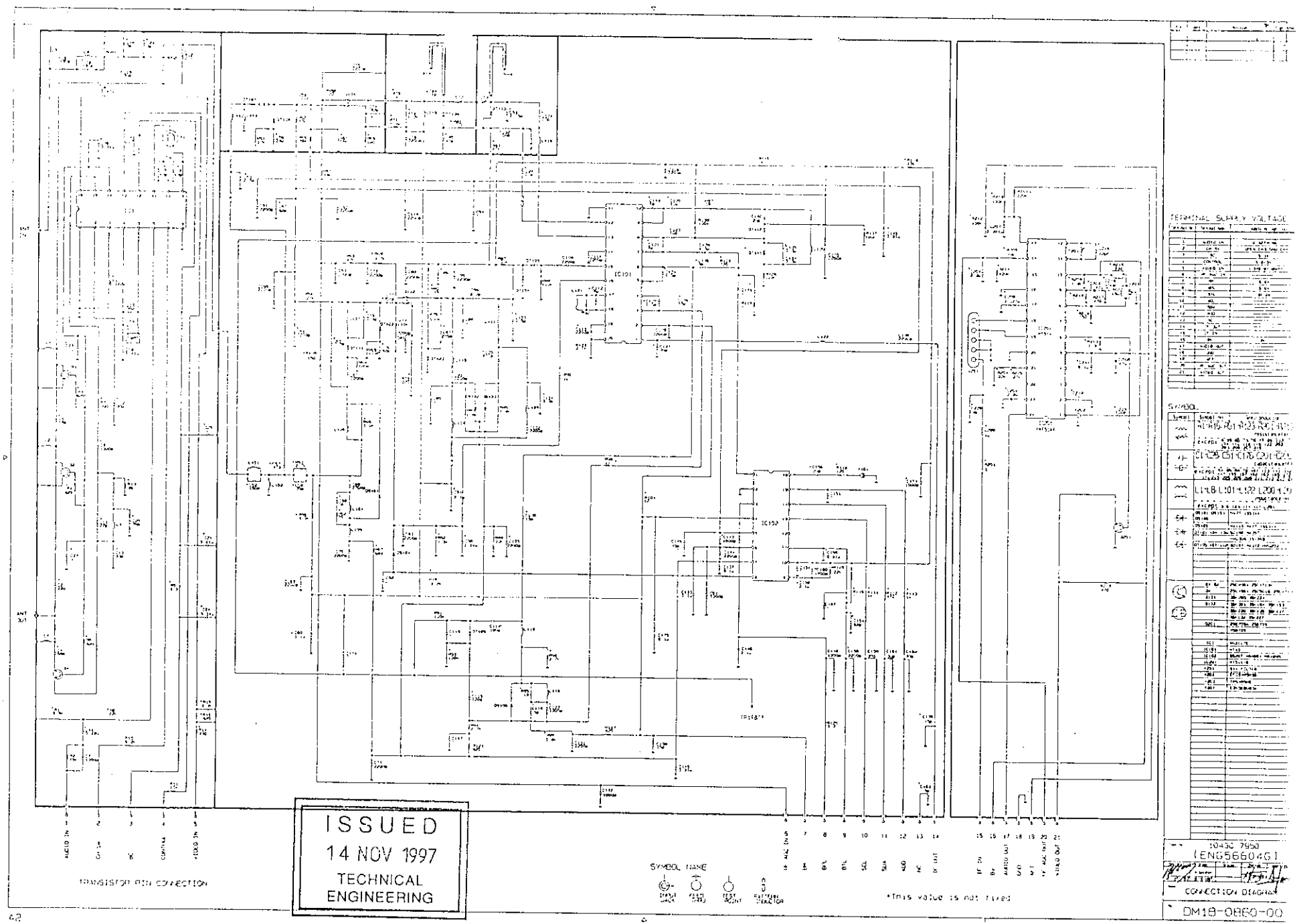
104307950					
Sym	Item or Code No.	Material & Size of		Process	Remark
For Shintom ENG56604G			Model	VPC-05R	
			Name	PRODUCT SPECIFICATION	
Scale 1/1	Designed ZAIRIN 11 NOV. 97	Drawn ZAIRIN 11 NOV. 97	Traced	Checked	Approved
			No.	DM17-0864-00	


TERMINAL SUPPLY VOLTAGE
SYMBOL
ISSUED
14 NOV 1997
TECHNICAL
ENGINEERING
TRANSISTOR PIN CONNECTION
SYMBOL NAME
*This value is not fixed
10430 7950
(ENG56604G)
CONNECTION DIAGRAM
DM19-0860-00

Sep. 3, 1998
BFYVRJ6A1NAT

Attachment to Application
of FCC Certification
TV Interface Device

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.