

Customer :

No. E990019 (1/17)

Date: Feb. 3, '99

Attention:

Your ref. No.:

Your Part No.:

SPECIFICATIONS

ALPS :

MODEL : TSBE5x016A

Spec. No. :

Sample No. :

RECEIPT STATUS

RECEIVED

By. Date

Signature

Name

Title

ALPS ELECTRIC CO., LTD.

HEAD OFFICE

1-7, YUKIGAYA OTSUKA-CHO, OHTA-KU, TOKYO, 145 JAPAN

PHONE: (3) 3726-1211

FAX : (3) 3728-1741

RF DEVICES DIVISION

16, OKINOUCHI, KOIZUMI, SOMA-SHI, FUKUSHIMA-KEN,

976 JAPAN

PHONE: (244) 36-5111

FAX : (244) 36-1902

DSG'D *R. Inoue*

APP'D *T. Kamenashi*

ENG. DEPT. RF DEVICES DIVISION

COMPONENTS BUSINESS UNIT

Sales

SPECIFICATIONS

					ALPS ELECTRIC CO.,LTD.				
					APPD.	Feb. 3. 1999 J. Kamenashi			
					CHKD.	Feb. 3. 1999 R. Inoue			
					DSGD.	Feb. 3. '99 J. Kikuchi			
SYMB.	NO.	APPD.	CHKD.	DSGD.	TITLE				DOCUMENT NO.
					TSBE5				(1/13)
					PRODUCT SPECIFICATIONS				

TSBE5

TV TUNER/IF UNIT

WITH BUILT-IN DC/DC CONVERTER

1. PRODUCT DESCRIPTIONS

(製品概要)

NO.	PARAMETER	SPECIFICATIONS	
1-1.	Applied Standards (適用規格)	CENELEC	
1-2.	Applicable broadcasting system (適合放送方式)	PAL-B/G	
1-3.	Receiving channel (受信チャンネル)	VHF low	CH E2~CH S4 fp : 48.25~126.25MHz
		VHF high	CH S5~CH S26 fp : 133.25~343.25MHz
		UHF	CH S27~CH E69 fp : 351.25MHz~855.25MHz
1-4.	Intermediate frequency (中間周波数)	Picture	fp : 38.9MHz
		Sound	fs : 33.4MHz
1-5.	Nominal input impedance (公称入力インピーダンス)	75Ω unbalanced	
1-6.	Nominal power supply voltage (公称供給電圧)	+B : DC 5V	
1-7.	Current consumption (消費電流)	+B : 140mA Typ.	
1-8.	Output load condition (出力負荷条件)	Video output	High impedance
		Audio output	100kΩ

ALPS ELECTRIC CO., LTD.

APPD.

TSBE5

CHKD.

TITLE

PRODUCT SPECIFICATIONS

DSGD.

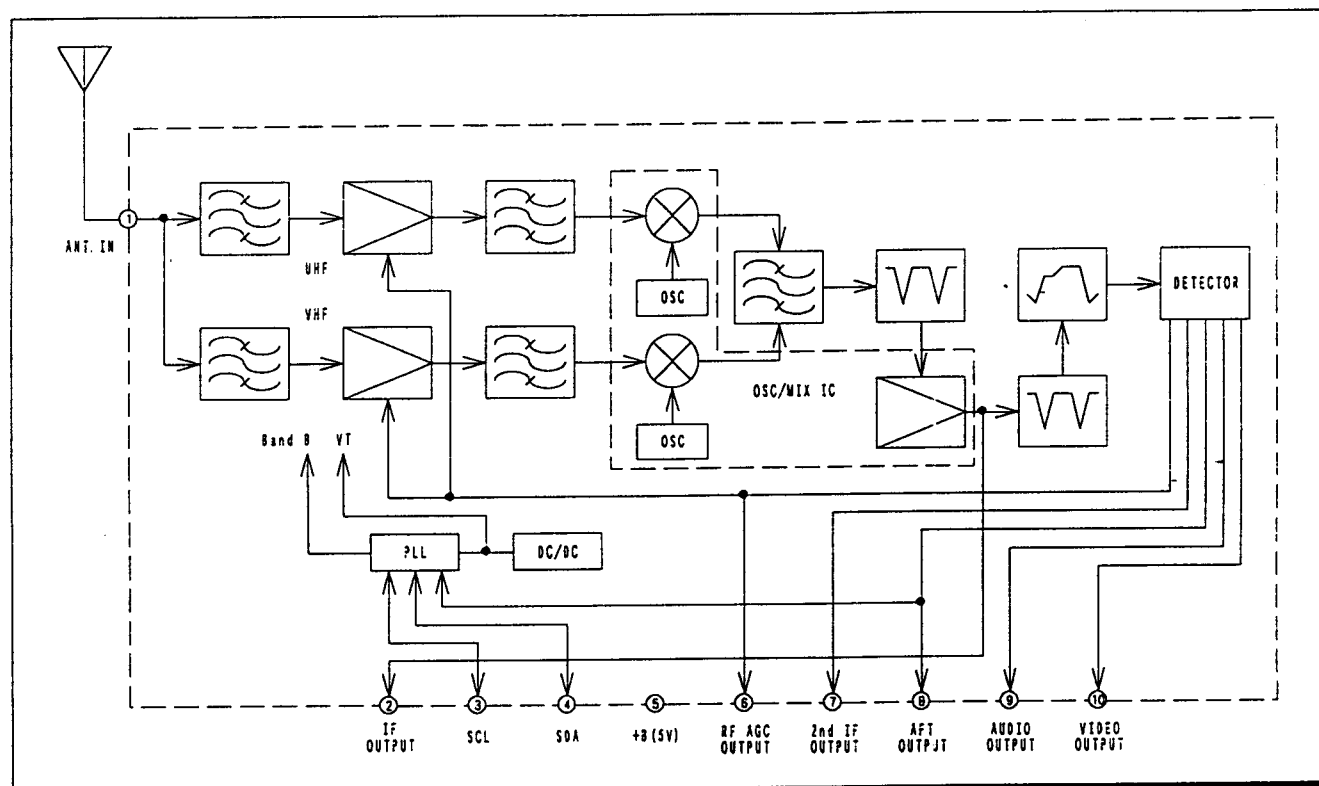
DOCUMENT NO.

(2/)

SYMB. NO. APPD. CHKD. DSGD.

(規格・仕様書用紙)

2. ELECTRICAL BLOCK DIAGRAM (ブロック図)



3. TERMINALS (端子説明)

Terminal	description
1 ANT. IN	Aerial connection/Mini phono socket female 75Ω
2 IF OUT	IF($f_p=38.9\text{MHz}$, $f_s=33.4\text{MHz}$) OUT
3 SCL	I2C-Serial clock
4 SDA	I2C-Serial data
5 +B	Power supply : 5v
6 RF AGC OUT	RF AGC voltage output
7 2nd IF OUT	Output for Sound multiplexing of 2-carrier system
8 AFT OUT	AFT S curve output
9 AUDIO OUT	Composite audio baseband signal output
10 VIDEO OUT	Composite video baseband signal output

ALPS ELECTRIC CO., LTD.

APPD.

T S B E 5

CHKD.

TITLE

PRODUCT SPECIFICATIONS

DSGD.

DOCUMENT NO.

(3/)

SYMB. NO. APPD. CHKD. DSGD.

(規格・仕様書用紙)

4. MAXIMUM RATINGS

(最大定格)

NO.	PARAMETER	SPECIFICATIONS
4-1.	ENVIRONMENTAL CONDITIONS (環境条件)	
4-1-1.	Non-operational conditions (保存条件) Ambient temperature (周囲温度) Relative humidity (相对湿度)	$-20 \sim +70^{\circ}\text{C}$ $100\% \text{ Max.}$
4-1-2.	Operational conditions (動作条件) Ambient temperature (周囲温度) Relative humidity (相对湿度)	$\pm 0 \sim +60^{\circ}\text{C}$ $95\% \text{ Max.}$
4-2.	SUPPLY VOLTAGE (供給電圧)	
4-2-1.	Supply voltage +B (+B 供給電圧)	$+5 \pm 0.5 \text{ V}$
4-2-2.	SCL bus input voltage (SCL 入力電圧)	$-0.3 \sim +5.5 \text{ V}$
4-2-3.	SDA bus input voltage (SDA 入力電圧)	$-0.3 \sim +5.5 \text{ V}$

5. TESTING CONDITIONS

(試験条件)

NO.	PARAMETER	SPECIFICATIONS
5-1.	ENVIRONMENTAL CONDITIONS (環境条件)	
5-1-1.	Ambient temperature (周囲温度)	$+25 \pm 5^{\circ}\text{C}$
5-1-2.	Relative humidity (相对湿度)	$65 \pm 10\%$
5-2.	SUPPLY VOLTAGE (供給電圧)	
5-2-1.	Supply voltage +B (+B 供給電圧)	$+5 \pm 0.1 \text{ V}$

					ALPS ELECTRIC CO.,LTD.	
					APPD.	T S B E 5
					CHKD.	TITLE
						PRODUCT SPECIFICATIONS
					DSGD.	DOCUMENT NO.
SYMB.	NO.	APPD.	CHKD.	DSGD.		(4/)

6. ELECTRICAL CHARACTERISTICS

(電気的性能)

NOTE1 Indication of input level : 75Ω terminate value

(注記1 入力レベル表示 : 75Ω 終端値)

NO.	PARAMETER		SIG.	T. P	SW	MIN	TYP	MAX	UNIT	NOTE
6-1.	Video output level (映像出力レベル)		SG1	TP1	---	0.8	1.0	1.2	V _{p-p}	
6-2.	Video S/N (映像S／N)		SG2	TP1	---	39	46	---	dB	NOTE2
6-3.	Noise limiting sensitivity (雑音制限感度)		SG2	TP1	---	---	45	52	dB μ V	NOTE3
6-4.	Sync. ratio (同期比率)		SG2	TP1	---	27	30	33	%	
6-5.	Differential gain (微分利得)		SG3	TP1	---	-10	3	10	%	
6-6.	Differential phase (微分位相)		SG3	TP1	---	-10	-3	10	°	
6-7.	Video frequency characteristics (映像周波数特性)	1 MHz	SG4	TP1	---	-2.0	0	2.5	dB	100kHz STANDARD
		2 MHz				-2.5	0	3.5		
		3 MHz				-3.5	0	4.0		
		4 MHz				-7.0	-2	4.0		
		4.43MHz				-10	-5	2.5		
6-8.	Audio output level (音声出力レベル)		SG5	TP2	ON	450	600	750	mVrms	PRE-EN ON
6-9.	Audio S/N (音声S／N)		SG5	TP2	ON	45	55	---	dB	PRE-EN ON
6-10.	Audio distortion (音声歪率)		SG5	TP2	ON	---	1	3	%	PRE-EN ON
6-11.	Audio frequency characteristics (音声周波数特性)	1 kHz	SG5	TP2	ON	-2.5	-0.4	1.5	dB	PRE-EN ON 400Hz STD
		5 kHz				-8.5	-5.4	-2.5		
		10 kHz				-14.5	-10.4	-6.5		
		15 kHz				-19.0	-13.7	-8.0		
6-12.	Sub carrier output level (サブキャリア出力レベル)		SG6	TP4	---	58	68	---	dB μ V	at 5.742 MHz
6-13.	IF output level (IF 出力レベル)		SG6	TP5	---	87	97	---	dB μ V	at 38.9 MHz
6-14.	AFT center frequency (AFT 中心周波数)		SG1	TP3	---	-50	0	+50	kHz	at 2.5V CH:E9CH

NOTE2 : FILTER CONDITIONS

(注記2) (フィルター条件)

HPF : 100kHz

LPF : 5MHz

SC TRAP : ON

NOTE3 :

VIDEO S/N = 30dB

ALPS ELECTRIC CO.,LTD.

APPD.

T S B E 5

CHKD.

TITLE

PRODUCT SPECIFICATIONS

DSGD.

DOCUMENT NO.

(5 /)

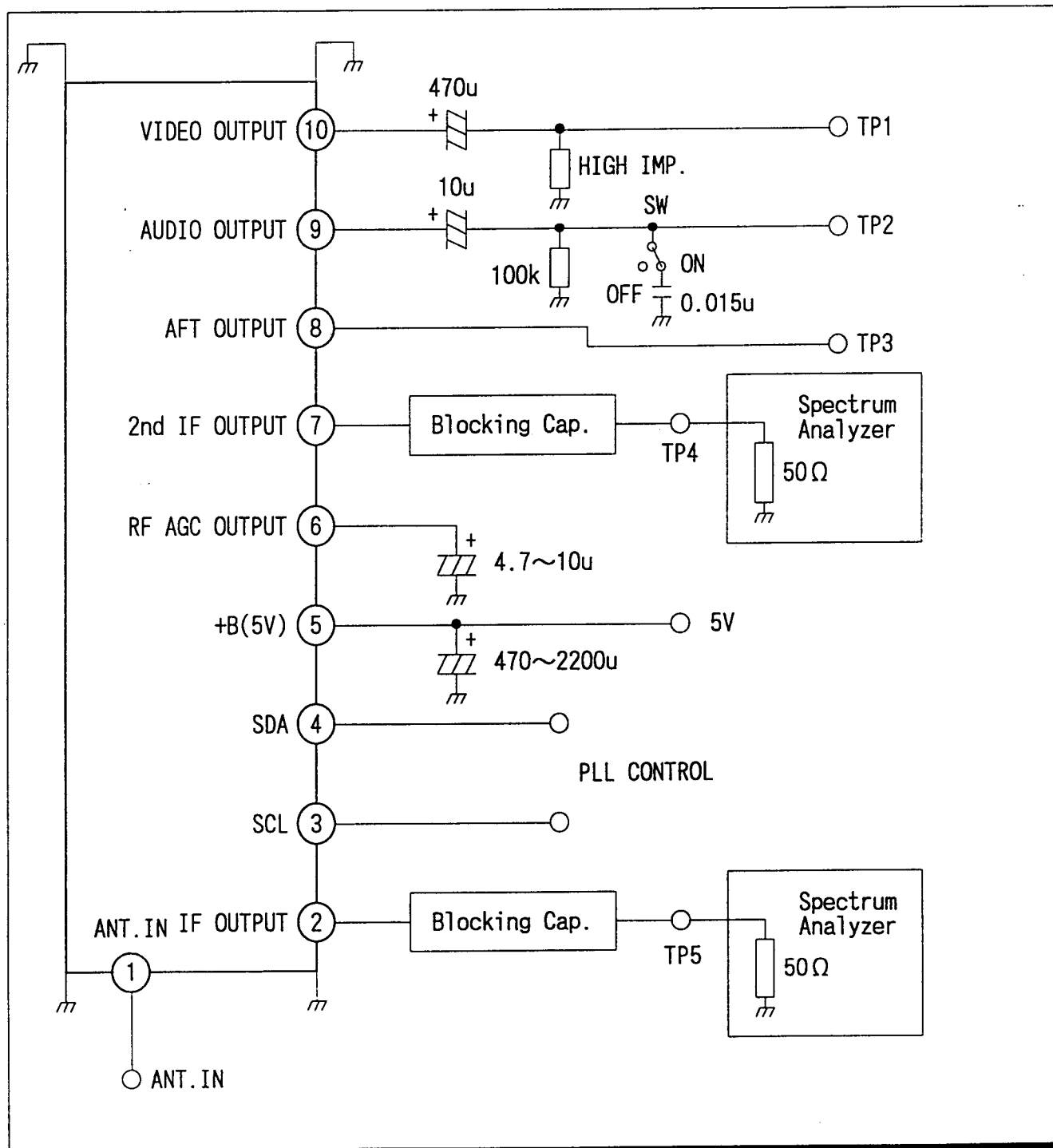
SYMB.	NO.	APPD.	CHKD.	DSGD.

7. INPUT SIGNALS (入力信号)

NO.	PARAMETER	CONTENTS
7-1.	Standard input signal conditions (標準入力信号条件)	
a	RF signal (RF信号)	PAL standard signal
b	Frequency (周波数)	CH N
c	Amplitude (入力信号レベル)	70dB μ v
d	P/S ratio (P/S比)	10dB
e	Video modulation (映像変調度)	87.5%
f	Audio modulation (音声変調度)	400Hz, $\pm$ 50kHz deviation
7-2.	TESTING SIGNALS (試験信号)	
	SG1	Color bar signal (カラーバー)
	SG2	100% white signal (100%白信号)
	SG3	5 stair-steps signal (5階調信号)
	SG4	Line sweep signal (ラインスイープ信号)
	SG5	Black burst signal (ブラックバースト信号)
	SG6	fp = CH N/carrier only fs2= fp+5.742MHz/carrier only P/S ratio= 20dB

					ALPS ELECTRIC CO.,LTD.	
					APPD.	T S B E 5
					CHKD.	TITLE PRODUCT SPECIFICATIONS
					DSGD.	DOCUMENT NO. (6 /)
SYMB.	NO.	APPD.	CHKD.	DSGD.		

8. TESTING DIAGRAM (測定回路)



ALPS ELECTRIC CO.,LTD.

APPD.

TSBE5

CHKD.

TITLE

PRODUCT SPECIFICATIONS

DSGD.

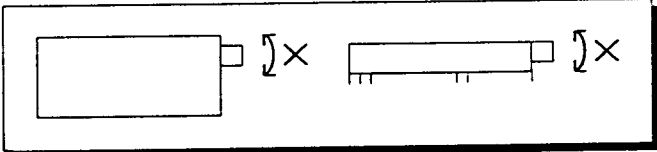
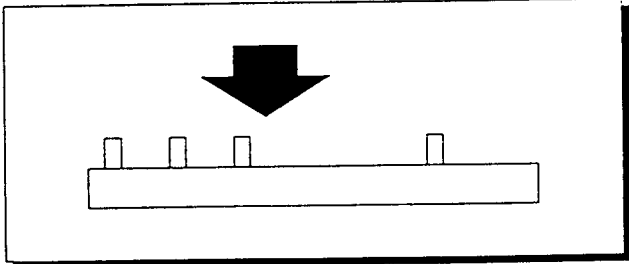
DOCUMENT NO.

(7/)

SYMB. NO. APPD. CHKD. DSGD.

(規格・仕様書用紙)

9. MECHANICAL CHARACTERISTICS (機械的性能)

NO.	PARAMETER	SPECIFICATIONS
9-1.	Outline view (外観)	No defects of wiring, soldering and assembling. (配線、半田付け、組立等異常が無い事) No dirt, rust, corrosion or foreign material. (汚れ、サビ、腐食、材料違い等が無い事)
9-2.	Form and dimension (形状、及び、寸法)	As assembly drawing (組立図による)
9-3.	Weight (重量)	Approximately 32g (約32g)
9-4.	Terminal strength (端子強度)	Vertical direction : More than 9.8N (垂直方向 : 9.8N以上)
9-5.	ANT. jack insertion (ANT. ジャック挿入抜去力)	3.9~44.1N (0.4~4.5kg)
9-6.	ANT. jack strength (ANT. ジャック強度)	Please avoid loading the ANT. jack with stress by end users. (エンドユーザーによる力が、直接ANT. ジャック に掛かる構造は避けて下さい。)
		
9-7.	Soldering (半田付け)	Manual soldering (手付け半田の事) Temperature : 320°C±5°C (within 5 sec.) (温度) (5秒以内) No vertical force to the terminals. (端子に垂直方向の力を加えない事)
		

					ALPS ELECTRIC CO., LTD.				
					APPD.				
					CHKD.				
					DSGD.				
					TITLE				
					PRODUCT SPECIFICATIONS				
					DOCUMENT NO.				
					(8 /)				
SYMB.	NO.	APPD.	CHKD.	DSGD.					

1 0. PLL CHARACTERISTICS (50.0kHz STEP) (PLL部特性)

NO.	PARAMETER	SPECIFICATIONS								
-1	Input signal level (SCL,SDA) (入力信号レベル)	VIL(Low-level input voltage) VIH(High-level input voltage)						Max : 1.5V Min : 3V Max : 5.5V		
-2	I2C bus data format (I2Cバスデータフォーマット)									
		MSB						LSB		
Address Byte		1	1	0	0	0	0	0	A	
Divider Byte1		0	N14	N13	N12	N11	N10	N9	N8	A
Divider Byte2		N7	N6	N5	N4	N3	N2	N1	N0	A
Control Byte		1	CP	0	0	0	0	0	0	A
Bandswitch Byte		X	X	X	X	BS4	BS3	BS2	BS1	A

A : Acknowledge bit

N14 to N0 : Programmable divider bits
 $N=N14 \times 2^{14} + N13 \times 2^{13} + \dots + N1 \times 2 + N0$

CP : Charge pump current
CP=1 : 280 μ A
CP=0 : 60 μ A

BS1 to BS4 : PNP bandwitch buffers control bits

	BS4	BS3	BS2	BS1
UHF	1	0	0	0
VHF High	0	0	1	0
VHF Low	0	0	0	1
E2~Z CH	0	1	0	1

X : Don't care : may be a 0 or a 1

Oscillator frequency calculation : $N = fosc(\text{MHz}) \times 20$
 $fosc = fref \times 8 \times N$
 $\therefore N = 1/8 \times fosc/fref$
 $fref = 4/640(\text{MHz})$

					ALPS ELECTRIC CO.,LTD.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
					APPD.					T S B E 5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
					CHKD.					TITLE PRODUCT SPECIFICATIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
					DSGD.					DOCUMENT NO. (9/)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
SYMB.	NO.	APPD.	CHKD.	DSGD.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						</

NO.	PARAMETER	SPECIFICATIONS										
10-3	I2C bus data format / Read mode : R/W=1 (I2Cバスデータフォーマット)											
		MSB							LSB			
Address Byte		1	1	0	0	0	0	1	R/W=1	A		
Status Byte		POR	FL	ACPS	1	1	A2	A1	A0	--		
A : Acknowledge bit POR : Power-on reset flag (POR=1 at power-on) FL : In-lock flag (FL=1 when the loop is phase-locked) ACPS : Automatic Charge-Pump Switch flag "Active" : ACPS=0, "Not active" : ACPS=1 A2, A1, A0 : Digital output of the 5-level ADC												
Read mode : R/W = 1 Data can be read out of the device by setting the R/W bit to 1. After the slave address has been recognized, the device generates an acknowledge pulse and the first data byte (status byte) is transferred on the SDA line (MSB first). Data is valid on the SDA line during a high level of the SCL clock signal. A second data byte can be read out of the device if the processor generate an acknowledge on the SDA line (master acknowledge). End of transmission will occur if no master acknowledge occurs. The device will then release the data line to allow the processor to generate a STOP condition. The POR flag is set to 1 at power-on. It is reset when an end of data is detected by the device (end of a READ sequence). Control of the loop is made possible with the in-lock flag FL which indicates (FL=1) when the loop is locked. The Automatic Charge-Pump Switch flag (ACPS) is low when automatic charge-pump switch mode is "ON" and the loop is locked. In other cases, ACPS=1. When ACPS=0, the charge-pump current is forced to the low value. A built-in ADC is available on pin 12 (I2C bus only). This converter can be used to feed AFC infoemation to the controller from the IF section of the television. The relationship between the bits A2, A1, and A0 is given in following table.												
		Voltage applied on ADC input			A2	A1	A0					
		3. 0~5. 0	[V]		1	0	0					
		2. 25~3. 0	[V]		0	1	1					
		1. 5~2. 25	[V]		0	1	0					
		0. 75~1. 5	[V]		0	0	1					
		0~0. 75	[V]		0	0	0					
Accuracy is ±0.15V												

					ALPS ELECTRIC CO.,LTD.				
					APPD.				
					T S B E 5				
					CHKD.				
					TITLE				
					PRODUCT SPECIFICATIONS				
					DSGD.				
					DOCUMENT NO.				
					(10/)				
SYMB.	NO.	APPD.	CHKD.	DSGD.					

1 1. ENVIRONMENTAL TESTS (信頼性試験)

NO.	PARAMETER	CONDITIONS
11-1.	TESTING CONDITIONS (試験条件)	
11-1-1.	Hest load test (耐熱負荷試験)	Measure initial value at standard testing conditions. (常温・常湿にて初期設定) Leave samples in $70\pm 2^{\circ}\text{C}$ for 96 ± 5 hours, and in standard testing conditions for 2 hours, then take measurements within 1 hour. ($70\pm 2^{\circ}\text{C}$にて$96\pm 5\text{H}$経過後、常温・常湿に2H放置し、その後1H以内に測定を行う。) Supply voltage(印加電圧) : 5.5V Supply voltage cycle(印加電圧周期) : 1.5H ON/0.5H OFF
11-1-2.	Humidity load test (耐湿負荷試験)	Leave samples in $40\pm 5^{\circ}\text{C}$ for 24 ± 2 hours, and in standard testing conditions for 2 hours, then take measurements. ($40\pm 5^{\circ}\text{C}$にて$24\pm 2\text{H}$経過後、常温・常湿に2H放置し、その後測定を行う。) Leave samples in $40\pm 2^{\circ}\text{C}$, 90~95%RH, for 96 ± 5 hours, and in standard testing conditions for 2 hours, then take measurements within 1 hour. ($40\pm 2^{\circ}\text{C}$, 90~95%RHにて$96\pm 5\text{H}$経過後、常温・常湿に2H放置し、その後1H以内に測定を行う。) Supply voltage(印加電圧) : 5.5V Supply voltage cycle(印加電圧周期) : 1.5H ON/0.5H OFF
11-1-3.	Cold test (耐寒試験)	Measure initial value at standard testing conditions. (常温・常湿にて初期設定) Leave samples in $-20\pm 2^{\circ}\text{C}$ for 96 ± 5 hours, and in standard testing conditions for 2 hours, then take measurements within 1 hour. ($-20\pm 2^{\circ}\text{C}$にて$96\pm 5\text{H}$経過後、常温・常湿に2H放置し、その後1H以内に測定を行う。)

					ALPS ELECTRIC CO.,LTD.	
					APPD.	T S B E 5
					CHKD.	
					DSGD.	PRODUCT SPECIFICATIONS
					DOCUMENT NO. (11/)	
SYMB.	NO.	APPD.	CHKD.	DSGD.		

NO.	PARAMETER	CONDITIONS / SPECIFICATIONS
11-1-4.	Vibration test (振動試験)	Vibration test fixture is used to vibrate the tuner with a total amplitude 1mm and frequency ranging from 10 to 55Hz, once per minute consecutively, for 40 minute in each of three directions, X, Y and Z. (周波数範囲 : 10~55Hz) (周波数反転時間 : 1分間(10 - 55 - 10Hz)) (振幅 : 0.5mm) (加振時間 : 互いに直角な三方向(X,Y,Z)に各40分 計120分)
11-1-5.	Impact test (衝撃試験)	Impact acceleration : 50G (衝撃加速度) Impact time : 11msec. (衝撃時間) Impact time and direction : 3 times each in 6 direction (衝撃回数と方向) (各6面に対し3回づつ)
11-2.	Specifications (規格) Video output level (映像出力レベル) Audio output level (音声出力レベル)	Compared with initial value. (初期値に対する変化) ±0.1Vp-p Max. ±100mVrms Max.

					ALPS ELECTRIC CO., LTD.				
					APPD.				
					T S B E 5				
					CHKD.				
					TITLE				
					PRODUCT SPECIFICATIONS				
					DSGD.				
					DOCUMENT NO.				
					(12/)				
SYMB.	NO.	APPD.	CHKD.	DSGD.					

1 2. FREQUENCY TABLE (周波数表)

Band Assign- ment	CH NO.	f p [MHz]	f osc [MHz]	I2C BUS DATA	CH NO.	f p [MHz]	f osc [MHz]	I2C BUS DATA	Band Assign- ment
VHF LOW	E 2	48.25	87.15	C0 06 CF C0 05	S 38	439.25	478.15	C0 25 5B C0 08	UHF
	E 3	55.25	94.15	C0 07 5B C0 05	S 39	447.25	486.15	C0 25 FB C0 08	
	E 4	62.25	101.15	C0 07 E7 C0 05	S 40	455.25	494.15	C0 26 9B C0 08	
	X	69.25	108.15	C0 08 73 C0 05	S 41	463.25	502.15	C0 27 3B C0 08	
	Y	76.25	115.15	C0 08 FF C0 05	E 21	471.25	510.15	C0 27 DB C0 08	
	Z	83.25	122.15	C0 09 8B C0 05	E 22	479.25	518.15	C0 28 7B C0 08	
	Z+1	90.25	129.15	C0 0A 17 C0 01	E 23	487.25	526.15	C0 29 1B C0 08	
	Z+2	97.25	136.15	C0 0A A3 C0 01	E 24	495.25	534.15	C0 29 BB C0 08	
	S 1	105.25	144.15	C0 0B 43 C0 01	E 25	503.25	542.15	C0 2A 5B C0 08	
	S 2	112.25	151.15	C0 0B CF C0 01	E 26	511.25	550.15	C0 2A FB C0 08	
	S 3	119.25	158.15	C0 0C E7 C0 01	E 27	519.25	558.15	C0 2B 9B C0 08	
	S 4	126.25	165.15	C0 0C E7 C0 01	E 28	527.25	566.15	C0 2C 3B C0 08	
	S 5	133.25	172.15	C0 0D 73 C0 02	E 29	535.25	574.15	C0 2C DB C0 08	
	S 6	140.25	179.15	C0 0D FF C0 02	E 30	543.25	582.15	C0 2D 7B C0 08	
	S 7	147.25	186.15	C0 0E 8B C0 02	E 31	551.25	590.15	C0 2E 1B C0 08	
VHF HIGH	S 8	154.25	193.15	C0 0F 17 C0 02	E 32	559.25	598.15	C0 2E BB C0 08	
	S 9	161.25	200.15	C0 0F A3 C0 02	E 33	567.25	606.15	C0 2F 5B C0 08	
	S 10	168.25	207.15	C0 10 2F C0 02	E 34	575.25	614.15	C0 2F FB C0 08	
	E 5	175.25	214.15	C0 10 BB C0 02	E 35	583.25	622.15	C0 30 9B C0 08	
	E 6	182.25	221.15	C0 11 47 C0 02	E 36	591.25	630.15	C0 31 3B C0 08	
	E 7	189.25	228.15	C0 11 D3 C0 02	E 37	599.25	638.15	C0 31 DB C0 08	
	E 8	196.25	235.15	C0 12 5F C0 02	E 38	607.25	646.15	C0 32 7B C0 08	
	E 9	203.25	242.15	C0 12 EB C0 02	E 39	615.25	654.15	C0 33 1B C0 08	
	E 10	210.25	249.15	C0 13 77 C0 02	E 40	623.25	662.15	C0 33 BB C0 08	
	E 11	217.25	256.15	C0 14 03 C0 02	E 41	631.25	670.15	C0 34 5B C0 08	
	E 12	224.25	263.15	C0 14 8F C0 02	E 42	639.25	678.15	C0 34 FB C0 08	
	S 11	231.25	270.15	C0 15 1B C0 02	E 43	647.25	686.15	C0 35 9B C0 08	
	S 12	238.25	277.15	C0 15 A7 C0 02	E 44	655.25	694.15	C0 36 3B C0 08	
	S 13	245.25	284.15	C0 16 33 C0 02	E 45	663.25	702.15	C0 36 DB C0 08	
	S 14	252.25	291.15	C0 16 BF C0 02	E 46	671.25	710.15	C0 37 7B C0 08	
	S 15	259.25	298.15	C0 17 4B C0 02	E 47	679.25	718.15	C0 38 1B C0 08	
	S 16	266.25	305.15	C0 17 D7 C0 02	E 48	687.25	726.15	C0 38 BB C0 08	
	S 17	273.25	312.15	C0 18 63 C0 02	E 49	695.25	734.15	C0 39 5B C0 08	
	S 18	280.25	319.15	C0 18 EF C0 02	E 50	703.25	742.15	C0 39 FB C0 08	
	S 19	287.25	326.15	C0 19 7B C0 02	E 51	711.25	750.15	C0 3A 9B C0 08	
	S 20	294.25	333.15	C0 1A 07 C0 02	E 52	719.25	758.15	C0 3B 3B C0 08	
	S 21	303.25	342.15	C0 1A BB C0 02	E 53	727.25	766.15	C0 3B DB C0 08	
	S 22	311.25	350.15	C0 1B 5B C0 02	E 54	735.25	774.15	C0 3C 7B C0 08	
	S 23	319.25	358.15	C0 1B FB C0 02	E 55	743.25	782.15	C0 3D 1B C0 08	
	S 24	327.25	366.15	C0 1C 9B C0 02	E 56	751.25	790.15	C0 3D BB C0 08	
	S 25	335.25	374.15	C0 1D 3B C0 02	E 57	759.25	798.15	C0 3E 5B C0 08	
	S 26	343.25	382.15	C0 1D DB C0 02	E 58	767.25	806.15	C0 3E FB C0 08	
	S 27	351.25	390.15	C0 1E 7B C0 08	E 59	775.25	814.15	C0 3F 9B C0 08	
	S 28	359.25	398.15	C0 1F 1B C0 08	E 60	783.25	822.15	C0 40 3B C0 08	
	S 29	367.25	406.15	C0 1F BB C0 08	E 61	791.25	830.15	C0 40 DB C0 08	
	S 30	375.25	414.15	C0 20 5B C0 08	E 62	799.25	838.15	C0 41 7B C0 08	
	S 31	383.25	422.15	C0 20 FB C0 08	E 63	807.25	846.15	C0 42 1B C0 08	
	S 32	391.25	430.15	C0 21 9B C0 08	E 64	815.25	854.15	C0 42 BB C0 08	
	S 33	399.25	438.15	C0 22 3B C0 08	E 65	823.25	862.15	C0 43 5B C0 08	
	S 34	407.25	446.15	C0 22 DB C0 08	E 66	831.25	870.15	C0 43 FB C0 08	
	S 35	415.25	454.15	C0 23 7B C0 08	E 67	839.25	878.15	C0 44 9B C0 08	
	S 36	423.25	462.15	C0 24 1B C0 08	E 68	847.25	886.15	C0 45 3B C0 08	
	S 37	431.25	470.15	C0 24 BB C0 08	E 69	855.25	894.15	C0 45 DB C0 08	

ALPS ELECTRIC CO.,LTD.

APPD.

TSBE5

CHKD.

TITLE

PRODUCT SPECIFICATIONS

DSGD.

DOCUMENT NO.

(13/13)

SYMB. NO. APPD. CHKD. DSGD.

(規格・仕様書用紙)

RECORD OF REVISIONS

TSBE5-016□

DATE	PRESENT CONTENTS	NEW CONTENTS / REASON	DSGN BY
Feb. 3, '99 (E990019)	New		R. Inoue
		JAPAN	ALPS ELECTRIC CO., LTD.
		M A U N F A C T U R E R	