	ANT ELECTRON		LTD.				
	: Alignment Proced	ure		,			
Mod	lel: T5320	į			Page: 2/6		
Docu	ment No.: ENG-T5320-0	08	Issue No.: 01 R	lev. No.: 00	Issued date: SEP,22	2,2001	
Prepa	ared by: BN WU		Checked by: QP KA	.NG	Approved by: Vinc	ent Kwok	

A.	PCB LEVEL (Te	est Co	ndition: under (CH1)			
NO	ITEM	ALI	GNMENT METHOL)		REMARK	
1.	LCD display	1. P	ress and hold the '+' l	cey and 'Men	ı' key together.		
	(Should enter test		urn on the radio powe				
	mode)		nd the backlight is on		ms. finally, the		
			CD should be display				
			ress 'DOWN' key, th		gments should be	1	
			anticlockwise displayed.				
		4. F	inally, all the LCD se	gments shoul	d be shown for		
	G. 11	a	bout 500ms as follow	s: 18°° .			
2.	Standby current		1. Set A-METER, and RX mode @50ohm load.				
3.	T-11		2. Check the standby current <45mA DC.				
٥.	Talk on current		 Set A-METER, and TX mode. Check the talk on current <400mA DC. 				
4	RX VCO		et RX mode CH14.	iii \400mA i		*	
4	KA VCO		djust L113 to provide	10 vpc+0 1	/DC at TD103 on		
			H14.	3 1.9 VDC ±0.1 V	DC at 11 103 on	•	
		_	heck TP103 to provid	le 0 5~ 14 VD	C on CH1	i	
5.	TX VCO		et TX mode on CH1.	0.5 1.4 1.5	C OH CITY.	*	
			heck TP103 to provid	le 0.5 ~ 1.4 VE	C on CH1.	ļ	
			heck TP1043 to provi				
6.	TX Power		et TX mode CH1.				
		2. C	heck transmit power t	o provide 25	~ 28dBm.		
7.	TX Frequency	Adj	ust C159 to provide 4	62.5625MHz	± 50Hz.		
8.	TX Modulation	1. S	et AF level at 25mv;1	KHz,Adjust V	R101 to provide		
	& distortion		ax TX deviation 2.2K				
			heck input mic level i	n 0.5~10 mV	to provide normal	}	
			eviation 1.5KHz.				
			heck the demodulatio		= 5%.		
			udio Frequency Resp				
		1	a) Input a 2.0mV 1K		uency to TP116		
			and press 'PTT' s		17777		
	1		b) Check the respons	e compare to	IKHZ tone		

i) 500Hz: -5.0 dB to -11.0dB. ii) 2.5KHz: +3.0 dB to +9.0dB.

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	red by: BN WU		Checked by: QP KANG	Approved by: Vinc	ent Kwok		
A .]	PCB LEVEL (Tes	t Co	ndition: under CH1)				
NO	ITEM		GNMENT METHOD		REMARK		
9.	Rx Audio test	1	et RX mode CH7.				
			et SG RF level to -50dBm with 1.5	KHz deviation			
			KHz modulation Signal.	stantian Promos			
			djust L114 to provide minimum dis utput level at TP117.	Stortion & max			
			otate the volume switch to the posi	tion which give an			
			fax audio output at TP117.	, B • • • • • • • • • • • • • • • • • •			
			heck Max audio output level >1500	mV.			
			heck Rx current <150mA.				
			heck the 1KHz distortion <= 3.5%.				
			et SG RF level to -119dBm with 1.	5kHz deviation at	1		
			1KHz audio frequency. a). Check SINAD sensitivity <= -119dBm@				
		"	12dB SINAD at TP117.	dDiffe			
1		9. A	udio frequency response.				
) Set SG RF level to -50dBm with:	1.5kHz deviation at			
		ŀ	1KHz audio frequency.				
		b	Rotate the volume switch to the po an output 100mV ±5mV at TP117.				
		ے ا) Vary the audio frequency from 30				
) Check the RX response compare t				
			i) 500Hz: +5.0 dB to +14				
			ii) 2.5KHz: -12.0 dB to -20).0 dB.			
			Maximum and Minimum Audio Ou				
		a) Set SG RF level to -50dBm with	1.5kHz deviation at			
		h	1KHz audio frequency. Rotate the volume switch to the po	vaition which aire			
		"	a maximum output.	osition, which give			
		l c) Check the voltage at TP117 >/=15	00mV.			
) Set maximum audio output to 0dB				
			switch to the position, which give				
			Check the minimum voltage -23 t				
10.	Noise- Detector		et SG to -120dBm with 1.5KHz de	viation., 1KHz AF	1		
			n CH7.	OAD CINIA D			
			djust VR102 for transient state @ 1 heck high state @8 to 12dB SINAI				
]	neck ingh state (650 to 120D SINAL	, .			
11.	Normal Battery level	1. P	rovide 1.5V DC at BP102.				
	Detect	1	attery level: 4.25+/-0.1V level 1, 3	.8+/-0.1V level 2.			
			evel 3: 2.75+/-0.1V.	· · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · ·			
			visconnect 1.5V DC at BP102.				
			attery level: 3.8+/-0.1V level 1, 3.4	1+/-0.1V level 2,			
<u> </u>		le	evel 3: 2.75+/-0.1V.		<u>l</u>		

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Prepa	red by: BN WU		Checked by: QP	KANG	Approved by: Vinc	
В. С	CASING LEVEL					
NO	ITEM	ALI	GNMENT METH	OD		REMARK
2.	Current Consumption TX Frequency	2. W < 3. W < 4. T a)	et A-METER. Vith volume switch 10µA. Vith volume switch 45mA. 'X Current.) Press 'PTT' switch <400mA. Theck CH1=462.56	n ON, check the	standby current	
	124 Troquency		heck CH14 =467.		*	
2. T to 3. ra 4. S			nit to $0.3M \sim 0.5M$ the antennas of SC o make the electronadiate equably to the	I. and checked ur nagnetic field of ne antenna of che with 1.5KHz de	ecked unit . viation, 1KHz tone	When adjusting Noise-Det., Should reduce any interference from other Instruments and body.

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	red by: BN WU	Checked by: QP		Approved by: Vince	•
В. (CASING LEVEL				
NO	ITEM	ALIGNMENT METI			REMARK
4.	Audio RX Path CH7	1. Set SG RF level to			
İ		, Rotate the volume an Max output.	e switch to the pos	sition, which give	
		2. Check speaker O/P	level >85dBspL((30cm distance).	
		3. Set SG RF level to			
		4. Plug the dummy sp	eaker and dummy	y microphone into	
		audio jet.5. Rotate the volume	excitab to the noci	tion which give on	
		output 900+/-50mx		mon, which give an	
		6. Set SG RF level to		kHz Dev.;1kHz AF.	
		7. Check the radiated	sensitivity correla	ate to the golden	
		sample. 8. Audio frequency re	umanca		
				1.5kHz deviation at	
		1KHz audio freq	uency.		
		b) Rotate the volun			
			V ±5mV (voltage	difference of	
		dummy speaker) c) Vary the audio f		OHz to 3KHz	
		d) Check the RX re			
		i) 500Hz:+	5.0 dB to +14.0	dB.	
		•	12.0 dB to -20.0		
		9. Maximum and Mir		put Power 1.5kHz deviation at	
		1KHz audio freq		1.5KHZ deviation at	
		b) Rotate the volun			
			out with distortion		
		c) Check the voltage >/=900mV.	ge difference of di	ımmy speaker	
			idio output to 0dB	3, rotate the volume	,
		switch to the pos	sition, which give	a minimum output.	
		e) Check the voltage		een of dummy	
5.	Audio TX Path CH1	speaker –23 dB t 1. Check the radiated		o golden sample	
J.	Tradio 17x Fum Ciri	2. Plug the dummy sp			
		audio jet.	Ť	•	
		3. Standard TX Devia			
		a) Input mic level t 'PTT' switch.	o dummy micropi	none and press	
		b) Check max dev	1.8KHz <max dev<="" th=""><td>/ <2.5KHz.</td><td></td></max>	/ <2.5KHz.	
		c) Check input leve	el in 0.5~10mV to		
		deviation 1.5KH			
		4. Audio Frequency R a) Input a 2.0mv@		iency to dummy	
			press 'PTT' swite		
		b) Check the respon	ise.		
		•	5.0 dB to -11.0		
		2.5KHz: 5.Repeat CH14.	+3.0 dB to +9.0	dB.	
THE C	ONTENT OF THIS DOCU		C LTD INTELL	ECTILL DROBERTY	AND IC THE

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Prepa	red by: BN WU		Checked by: QP	KANG	Approved by: Vinc	
В. (CASING LEVEL					
NO	ITEM	ALI	GNMENT METH	OD		REMARK
6.	Function check and		urn on the radio po			
	Intercom function		or a while and a go	od key chirp sho	ould be heard at	
	(between sample and		e same time.			ļ
	production unit)				ot miss the segment	
			hen pressing '+' ar nould also be heard		, the key tone	F
			et channel of the sa	•	ction unit CH=11	
			ress 'PTT' switch			
			roduction unit, the			
					ald be clear and no	
		•	etal sound.			
		6. Press 'CALL' key, the call tone should be heard clearly each other.				
					nit to CH=12, then	
			ress 'PTT' switch of			
			ny noise should no	t be heard from	the speaker of	
			roduction unit .	, , ,, ,	11	
Ĺ		9. P	ress any key, the c	lead problem sho	ould not occur.	

* Remark:

TX mode:

1. Press and hold PTT button

RX mode:

1. Release PTT button

Power supply: Min DC 3.5v; Max DC4.5v

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	ared by: BN WU		Checked by: QP KANG	Approved by: Vinc	
Λ	PCB LEVEL (Tes	t Co	ndition: under CH1)	<u> </u>	
	ITEM ITEM		<u> </u>		DEMARK
NO 1.	LCD display		GNMENT METHOD ress and hold the '+' key and 'Men	u' Irari tawathan	REMARK
1.	(Should enter test mode)	2. T a: L	urn on the radio power until a good and the backlight is on for about 500 CD should be display '1 ^{CH} '.	key chirp is heard, ms. finally, the	
			ress 'DOWN' key, then all LCD so	egments should be	
		a:	nticlockwise displayed. Finally, all the LCD segments shoul	d he chown for	}
		4.1	bout 500ms as follows: 18^{88.} .	a ng showh tot	
2.	Standby current	, 	et A-METER, and RX mode.		<u> </u>
2.	Swindy various		theck the standby current <45mA D	C.	
3.	Talk on current	• 	et A-METER, and TX mode @500		
			heck the talk on current <400mA		
4.	RX VCO	2. A	et RX mode CH14. djust L113 to provide 1.9 VDC±0.1 H14. heck TP103 to provide 0.5 ~1.4 VI		
5.	TX VCO	1. S 2. C	et TX mode on CH1. Theck TP103 to provide $0.5 \sim 1.4 \text{ V}$. Theck TP103 to provide $1.4 \sim 2.0 \text{ V}$.	DC on CH1.	
6.	TX Power	1. S	et TX mode CH1. theck transmit power to provide 25		
7.	CTCSS Tone		t CH1/code1.	2042111	
	Frequency		et Tx mode. heck Tp113 to be within 66.8Hz to	67 2Hz	
8.	TX Frequency		ust C159 to provide 462.5625MHz		
9.	CTCSS Tone Dev.	1. S be 2. S	et CH1/CODE1. AF input level to e 350Hz~600Hz. et CH1/CODE38. AF input level t e 350Hz~600Hz.	off, check DEV to	
10.	TX Modulation & distortion	4. C de 5. C 6. A	et AF level at 25mv;1KHz,Adjust V ax TX deviation 2.2KHz to 2.3KH heck input mic level in 0.5~10 mV eviation 1.5KHz. heck the demodulation distortion < udio Frequency Response. a) Input a 2.0mV 1KHz audio free and press 'PTT' switch. b) Check the response compare to i) 500Hz: -5.0 dB to -11.0 d ii) 2.5KHz: +3.0 dB to +9.0 dl	z. to provide normal = 5%. quency to TP116 1KHz tone. IB.	

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	red by: BN WU		Checked by: QP I		Approved by: Vinc	·
•	•		'`		, ,	
A . 1	PCB LEVEL (Tes	st Co	ndition: under	CH1)		
NO	ITEM	_	IGNMENT METHO			REMARK
11.	Rx Audio test		et RX mode CH7.			
]		2. S	et SG RF level to -5	0dBm with 1.5	KHz deviation	
1			KHz modulation Sig			
		3. A	djust L114 to provi	de minimum di	stortion & max	
			utput level at TP117			
			totate the volume sw		tion, which give an	
			Max audio output at		hus V	
			theck Max audio out theck Rx current <1:		mv.	
			Theck the 1KHz disto			
			et SG RF level to -1			
			KHz audio frequenc		one of the one	
). Check SINAD sen		dBm.	
			@12dB SINAD at	TP117.		
			audio frequency resp			
		a) Set SG RF level to		1.5kHz deviation at	
		١.	1KHz audio freque			
		b) Rotate the volume		osition, which give	
			an output 100mV± Vary the audio frec		OUz to 2VUz	
) Check the RX resp			
		, ,		-5.0 dB to +14.		
			,	-12.0 dB to -20		
		10.	Maximum and Mini			
) Set SG RF level to			
			1KHz audio freque			
		b		switch to the po	osition, which give a	
			maximum output.		00 17	
) Check the voltage			
		") Set maximum audi		a minimum output.	
		l e			3 to -40dB at TP117	
12.	Noise- Detector		et SG to -120dBm v			
			n CH7.		, 	
		2. A	djust VR102 for tra	nsient state @ 1	.0dB SINAD.	
			heck high state @8			
13.	CTCSS tone Detect		et CH1/CODE1and		n with 67Hz tone	
			equency, 400Hz de			
			heck the Pin25 of IC	C106 to be low,	and high for RF	
			odulation off.			
			epeat item 1 and 2		.3Hz).	
		4. R	epeat item 1 and 3	tor CH14.		

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Prepa	red by: BN WU		Checked by: QP K.		Approved by: Vine		
A .]	PCB LEVEL (Tes	st Co	ndition: under (CH1)			
NO	ITEM		GNMENT METHOI			REMARK	
14.	Normal Batter level		rovide 1.5V DC at Bl			1057721741	
-	Detect		attery level: 4.25+/-0		3.8+/-0.1V level 2.		
			evel 3: 2.75+/-0.1V.	· · -, -	, , , , , , , , , , , , , , , , , , ,		
		3. D	isconnect 1.5V DC a	t BP102.		ļ	
	4. Battery level: 3.8+/-0.1V level 1, 3.4+/-0.1V level 2,						
			evel 3: 2.75+/-0.1V.	,	,		
15.	VOX Detector	1. S	et VOX level at 1.			 	
	(For T5420 only)	2. S	2. Set AF level at 17mV,1KHz at TP116.				
		3. U	nit start to transmit.				
			et AF level at 16mV,	1KHz at TP1	6.		
			nit sop to transmit.				
			et VOX level at 2.				
			et AF level at 10mV,	1KHz at TP11	6.		
			nit start to transmit.				
			et AF level at 9mV,1	KHz at TP116	ó.		
			Jnit sop to transmit.				
			Set VOX level at 3				
			Set AF level at 4mV,1	KHz at TP11	6.		
			Unit start to transmit.	Izzi	_		
			Set AF level at 3mV,1	KHz at TP11	6.		
16	SCAN		Jnit sop to transmit.	50 ID 14	COOL 1 1 1	-	
16.			Set SG RF level to -	-SudBm with	SUUHZ deviation,		
	(For T5410 only)		00Hz modulation.				
		2. 3.	Press "mon" key. Unit show channel 8			1	

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В. (CASING LEVEL						
NO	ITEM	AL	GNMENT METHO	OD		REMARK	
2.	Current Consumption TX Frequency	2. V < I 1. C	et A-METER. With DFF current <10 µ A With volume switch 50mA. Press 'PTT' switch a Check CH1=462.562 Check CH14=467.7	ON, check the sand check the T.25MHz+/-500Hz	standby current X current <400mA.		
3.	Noise- Detector	2. T to 3. ra 4. S	nit to 0.3M ~ 0.5M	. and checked un agnetic field of a antenna of che vith 1.5KHz dev	cked unit . riation, 1KHz tone	When adjusting Noise-Det., Should reduce any interference from other Instruments and body.	

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				,		
	B. CASING LEVEL					
NO	ITEM	ALIGNMENT METHOD REMA				
4.	Audio RX Path CH7	1. Set SG RF level to -50dBm with 1.5kHz Dev.;1kHz AF				
		, Rotate the vo an Max output	lume switch to the pos	sition, which give		
	1	•	O/P level >85dBspL(30cm distance)		
ŀ	j		el to -60dBm with 1.5			
			y speaker and dummy			
		audio jet.				
			me switch to the posi	tion, which give an		
		output 900+/-5	omv. el to -90dBm with 1.5]	kHz Dev ∙1kHz AF		
			ated sensitivity correla			
		sample.	-	8		
		8. Audio frequen				
			evel to -60dBm with	1.5kHz deviation at		
		1KHz audio	rrequency. Solume switch to the po	eition which give		
			0mV ±5mV (voltage			
		dummy spea				
			lio frequency from 30			
ł			X response compare to			
		,	6: +5.0 dB to +14.0			
		·	z : -12.0 dB to -20.0 Minimum Audio Out			
			evel to -60dBm with 1			
		1KHz audio	frequency.			
			olume switch to the po			
			output with distortion			
		>/=900mV.	oltage difference of du	immy speaker		
			n audio output to 0dB			
			position, which give			
		e) Check the ve speaker -23e	oltage difference betw lB to -40dB.	een of dummy		
5.	Audio TX Path CH1		ated power correlate to	o golden sample.		
		2. Plug the dumm	y speaker and dummy			
		audio jet.				
		3. Standard TX D		iono and meses		
		'PTT' switch	vel to dummy microph n.	ione and press		
			i. lev 2.0KHz <max dev<="" th=""><td><2.5KHz.</td><td></td></max>	<2.5KHz.		
		c) Check input	level in 0.5~10mV to			
	i	deviation 1.5		,		
		4. Audio Frequen		amari ta daman		
			v@1KHz audio frequent and press 'PTT' switc			
		b) Check the re		24.		
		i) 500Hz	: -5.0 dB to -11.0 d			
			z : +3.0 dB to +9.0 d	В		
	ONTENT OF THIS DOC	5.Repeat CH14.				

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Prepared by: BN WU	Checked by: QP	KANG	Approved by: Vincent Kwok

B. CASING LEVEL

NO	ITEM	ALIGNMENT METHOD	REMARK
6.	Function check and	1. Turn on the radio power, the backlight should be on	KLIVIAKK
l °.	Intercom function	For a while and a good key chirp should be heard at	
		the same time.	
1	(between sample and		
	production unit)	2. The LCD display should be clear, not miss the segment	
		when pressing '+' and '-' or '-' key, the key tone	
		should also be heard clearly.	
		3. Set channel of the sample and production unit CH=11.	
		4. Press 'PTT' switch to intercom between sample and	
l		Production unit, the LED should be light.	
		5. The sound quality between both should be clear and no	
		metal sound.	
		6. Press 'CALL' key, the call tone should be heard clearly	
		each other.	
		7. Change channel of the production unit to CH=12, then	
		Press 'PTT' switch of sample.	
		8. Any noise should not be heard from the speaker of	
		Production unit.	
		9. Press any key, the dead problem should not occur.	
		10. Set CH1/code5,SG to be CH1/code4 and	
		code6,check the speaker mute.	
1		11. Set CH1/code37,SG to be CH1/code36 and	
l		code38,check the speaker mute.	
	1	12. Repeat item 10 and 11 for CH14.	

* Remark:

TX mode:

1. Press and hold PTT button

RX mode:

1. Release PTT button

Power supply: Min DC 3.5v; Normal DC4.0v; Max DC4.5v