

PCS AMPS Dual-Mode RF Module/Parts List

MODEL NO. UGKA7-001A

FCC USE ONLY

Ref NO.	Description	Ref NO.	Description	Ref NO.	Description	Ref NO.	Description	Ref NO.	Description
C1	2p	C415	OPEN	C1501	0.022u				
C2	3.6p	C416	1000p	C1502	0.47u				
C3	OPEN	C417	1000p	C1503	560p				
C51	1PF	C418	100p	C1504	1000p				
C52	0.5p	C601	100p	C1505	91p				
C53	1000p	C602	100p	C1506	91p				
C54	0.01u	C603	20p	C1507	12p				
C55	1000p	C605	1.5p	C2001	1000p				
C56	OPEN	C606	8.2p	C2002	0.01u				
C101	OPEN	C607	3.6p	C2003	4700p				
C102	OPEN	C608	1000p	C2004	1000p				
C103	100p	C609	100p	C2005	0.22u				
C104	6.8p	C610	100p	C2006	0.01u				
C105	7.5p	C611	100p	C2007	0.1u				
C106	100p	C612	1.8p	C2008	0.1u				
C107	0.01u	C613	2.4p	C2009	OPEN				
C108	33p	C614	6.2p	C2010	OPEN				
C109	1.8p	C614	OPEN	C2011	OPEN				
C110	1.8p	C615	5.6p	C2501	OPEN				
C111	3.3p	C615	OPEN	C2502	20p				
C112	33p	C616	12p	C2503	20p				
C201	15p	C801	1p	C2504	1000p				
C202	2.4p	C802	3p	C2505	1000p				
C203	4.7p	C803	1000p	C2506	100p				
C204	15p	C804	1000p	C2507	0.1u				
C205	0.0u	C805	0.1u	C3001	0.01u				
C206	4.7u	C806	1000p	C3002	10u				
C207	15p	C807	4700p	C3003	1000p				
C208	15p	C808	0.47u	C3004	10u				
C209	15p	C809	0.022u	C3005	OPEN				
C210	12p	C810	100p	C3006	10u				
C211	0.01UF	C811	0.1u	C3007	1000p				
C212	10p	C812	1000p	C3008	10u				
C213	4.3p	C812	0.1u	C3009	4.7u				
C214	2.7p	C813	2.2u	C3010	1000p				
C215	OPEN	C814	0.01u	C3011	10u				
C216	51p	C815	0.22u	C3012	OPEN				
C217	OPEN	C816	0.022u	C4001	200p				
C218	1000p	C817	1u	C4002	0.1u				
C219	1000p	C819	2.2u	C4003	20p				
C220	51p	C820	0.01u	C4004	20p				
C221	3.9p	C821	330p	C4005	0.01u				
C222	3.3p	C1001	47p	C4006	0.68u				
C223	51p	C1002	47p						
C401	100p	C1003	100p						
C402	1000p	C1004	3300p						
C403	1p	C1005	47p						
C404	100p	C1006	0.1u						
C405	1000p	C1007	1000p						
C406	30p	C1008	1000p						
C407	1000p	C1009	0.12u						
C408	1000p	C1010	4700p						
C409	1.8p	C1011	100p						
C410	5.6n	C1012	0.1u						
C411	0.01u	C1013	30p						
C412	2p	C1014	30p						
C413	2p	C1015	1000p						
C414	OPEN	C1016	1000p						

Applicant :

Co., Ltd.

Transmitter Type :

DESCRIPTIVE INFORMATIONParts List

<u>Reference NO.</u>	<u>Function</u>	<u>Part NO.</u>
<u>PLL Synthesizer</u>		
IC7	PLL IC	MB15F03SL
TR7	Transistor	IMT17
TR8,10	Transistor	UMH1N
TR18	Transistor	UMH2N
D8	Diode	DAN235E
Vco1	PCS VCO	URAA8-423A
Vco2	AMPS VCO	UCVA3-122A
<u>Transmitter</u>		
IC12	PCS Power Amplifier	RF2153
IC3	AMPS Power Amplifier	RF2119
TR2	Transistor	UMZ1N
TR3	Transistor	IMZ4
TR5	Switch	μ PG158TB
D1	Diode	MA715
D2,3	Diode	DA221
F1	Diplexer	LFDP20N0022A
F2	PCS Duplexer	DFYK1R88C1R96HHJ
F3	AMPS Duplexer	EFSD836MB2A2
F4	PCS Isolator	CU452A1F-1880-1T
F9	PCS RF SAW Filter	SAFC1867.5T1897.5ML1D0T
F10	AMPS RF SAW Filter	SRF836NJCC31-TB12R
F12	AMPS Isolator	CE053R836DCB
<u>Regulator</u>		
IC8	Regulator(2.9V)	TK11129S
IC9	Regulator(2.8V)	R1121N281B-TRA
IC10	Ripple Filter	TK70006S
IC11	Regulator(2.8V)	R1121N281B-TRA

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Transmitter Type :

DESCRIPTIVE INFORMATION(Continued)

(Continued)

<u>Reference NO.</u>	<u>Function</u>	<u>Part NO.</u>
	<u>Receiver</u>	
IC4	LNA/Mixer	MAX2320
TR19	PCS LNA	NE34018-V64
TR20	Transistor	IMZ4
TR21	Transistor	UMC5N
F5	PCS RF SAW Filter	SAFC1960ML1C0T
F6	AMPS RF SAW Filter	SRF881NJCC31-TB12R
F7	PCS IF SAW Filter	B4915
F8	AMPS IF SAW Filter	SAFC85.38MAX
	<u>AGC Circuit</u>	
IC5	RX AGC IC	IFR3000
IC6	TX AGC IC	RFT3100
TR11,12	Transistor	DTC144EE
D4,5,6,7	Diode	HVC202BTRU
D9	Diode	DAN235E
	<u>TCXO Circuit</u>	
X1	TCXO	TCXO-204C2
TR16	Transistor	UMC5N
TR17	Transistor	UMW1N

Reference No	Function	Part No	PDF NAME
MOBILE STATION MODEM			
IC201	MSM	MSM3100-280FBGA-TR	
FLASH/SRAM			
IC202	32MFLASH,4MSRAM	M6MGT321S4TP	M6MGBT321S4
EEPROM			
IC203	256K 2-wire serial EEPROM	AT24C256N-10SI-2.7 or M24256-AWMN6	AT24C256 M24256A
INVERTER			
IC204	INVERTER	TC7S04FU	TC7S04FU
1/4 TCXO GENERATER CIRCUIT			
IC205	D-Type FLIP FLOP With Preset And Clear	TC7W74FU	TC74W74FU
IC206	D-Type FLIP FLOP With Preset And Clear	TC7W74FU	TC74W74FU
BUFFER POWER CONTROL			
Q2000	SWITCHING	2SA1774 or 2SA1832	2SA1774 2SA1832
Q2001	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
HANDS FREE AMP			
IC210	HANDS FREE AMP	LM4864IMM	LM4864ENG
Q2100	SWITCHING	DTC114EE	DTC114EE
Q2101	SWITCHING	2SB815	2SB815
MIC AMP			
IC211	MIC AMP	NJU7011F	NJU7011ENG
Q2102	SWITCHING	2SK3019 or 2SK2035	2SK3019 2SK2035
Q2103	SWITCHING	2SA1774 or 2SA1832	2SA1774 2SA1832
MELODY GENERATER CIRCUIT			
IC212	2-Channel Multiplexer/Demultiplexer	TC7W53FU or SN74AHC2G53HDCT	TC7W53FU SN74AHC2G53H
IC213	Melody Generater	BU8766FV	BU8766FV
EARPHONE JACK SWITCH			
IC214	Schmitt INVERTER	TC7S14FU	TC7S14FU
EAR DTECTOR			

Q2104	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
CHARGE CIRCUIT			
IC220	Li-ion Power Supply Control	MM1485AV	MM1485AVBE
Q2200	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
Q2201	SWITCHING	2SA1774 or 2SA1832	2SA1774 2SA1832
Q2203	SWITCHING	2SB1386	2SB1386
CHARGE CIRCUIT CONTROL			
Q2204	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
Q2205	SWITCHING	DTC115EE	DTC115EE
Q2206	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
Q2207	SWITCHING	2SC4617 or 2SC4738	2SC4617 2SC4738
AUTOMATIC POWER ON CIRCUIT			
IC230	2.9V Reset	S-80829ANNP-EDS or XC61CN2902N	S808 XC61C
IC231	2-Input AND Gate	PST3429U TC7S08FU or SN74AHC1G08HDCK	PST34x TC7S08FU SN74AHC1G08H
IC232	D-Type FLIP FLOP With Preset And Clear	TC7W74FU	TC7W74FU
VOLTAGE REGULATOR			
IC240	3.0V Regulator	R1120N301B	R1120N
VOLTAGE REGULATOR			
IC241	2.9V Regulator	R1121N291B	R1121N
VOLTAGE REGULATOR			
IC242	2.5V Regulator	R1121N251B	R1121N
VOLTAGE REGULATOR			
IC243	2.6V Regulator	R1121N261B	R1121N
RESET			
IC244	2.7V Reset	PST9227N	PST92xx
POWER SWITCH			

IC245	2-Input NAND Gate	TC7S00FU or SN74AHC1G00HDCK	TC7S00FU SN74AHC1G00H
Q2400	SWITCHING	SI5443DC	SI5443DC
Q2401	SWITCHING	2SK3019 or 2SK2035	2SK3019 2SK2035
Q2402	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
Q2403	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
I/F LEVEL CHANGER			
Q2500	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
Q2501	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
Q2502	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
Q2503	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
POWERKEY SWITCH			
Q2600	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
KEYLED SWITCH			
Q2601	SWITCHING	2SC4555	2SC4555
EL DRIVER			
IC270	EL Driver	SM8142BD	SM8142B
VIBRATOR DRIVER			
Q2800	SWITCHING	2SC4984	2SC4984
Q2801	SWITCHING	2SB815	2SB815
Q2802	SWITCHING	DTC124XE or RN1108	DTC124XE RN1108
TCXO CONTROL CIRCUIT			
IC290	2-Input OR Gate	TC7S32FU	TC7S32FU
Q2901	SWITCHING	2SA1774 or 2SA1832	2SA1774 2SA1832
CALLLED SWITCH			

Q2900	SWITCHING	2SC4617 or 2SC4738	2SC4617 2SC4738
LCD01	LCD Driver	LCD	MN86520(0-3)

SCP-4700 Adjustment Discription for Mass production.

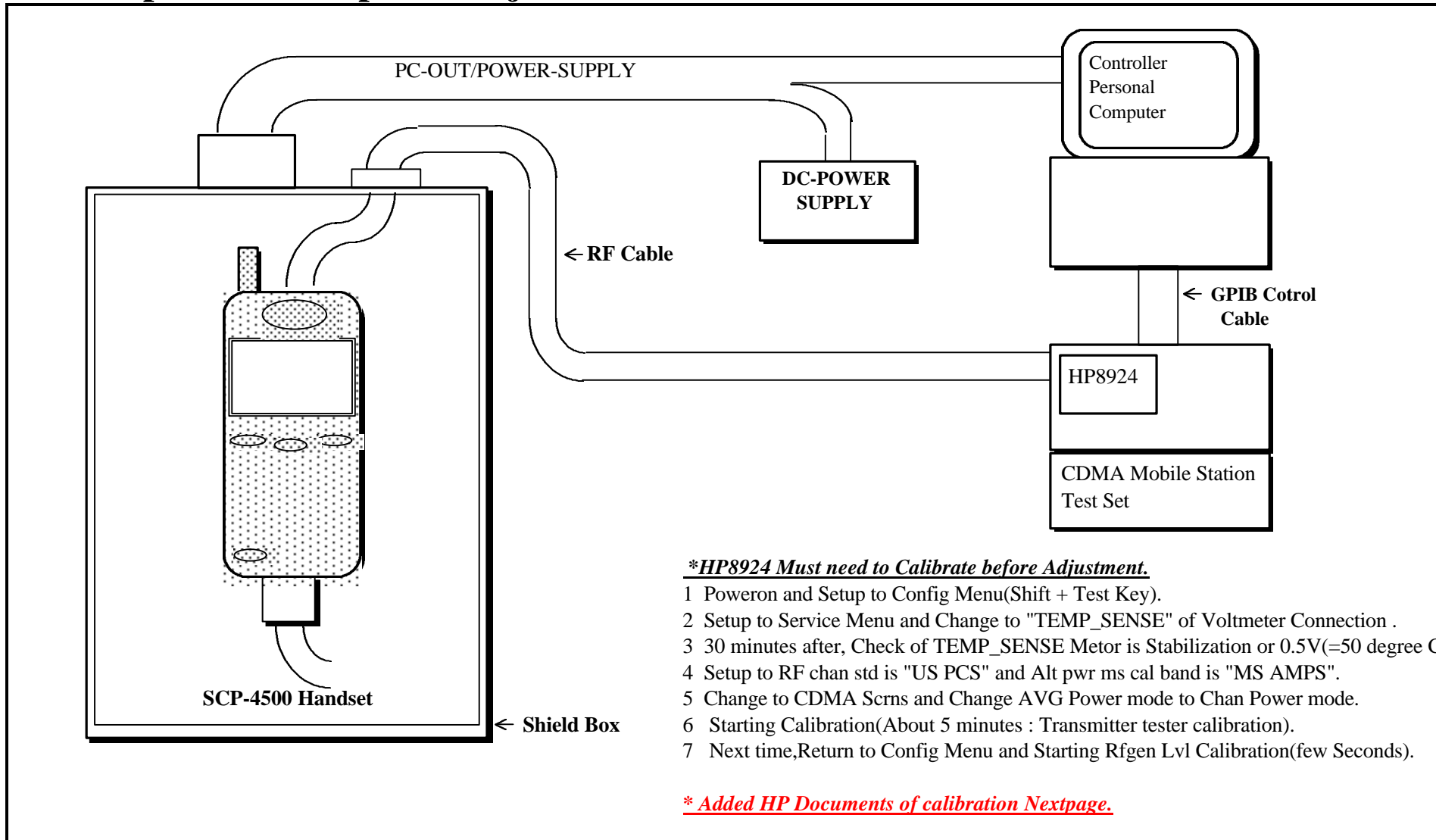
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1-163-268-01	SCP-4700S/H.US.MJ			

Eng. Section	Personal Telecommunication Division Technical Engineering Department RF Group
NAME	Y.Kawamoto Y.Uragami

No.	Contents
1	Set-Up for Tune-Up and Adjustment of Transmitter
2	Alignment Procedure
3	Adjust Value
4	Measurement Specification of Adjustment

Minor Change Version

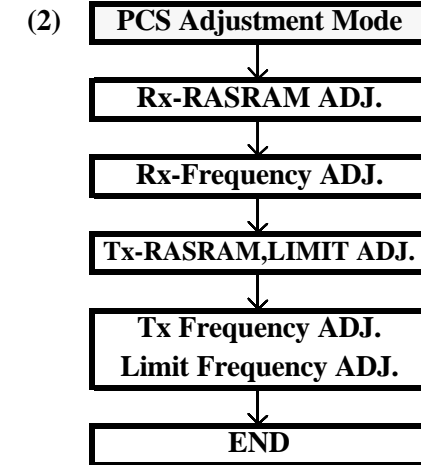
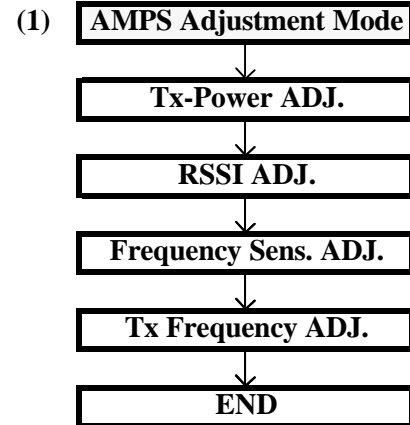
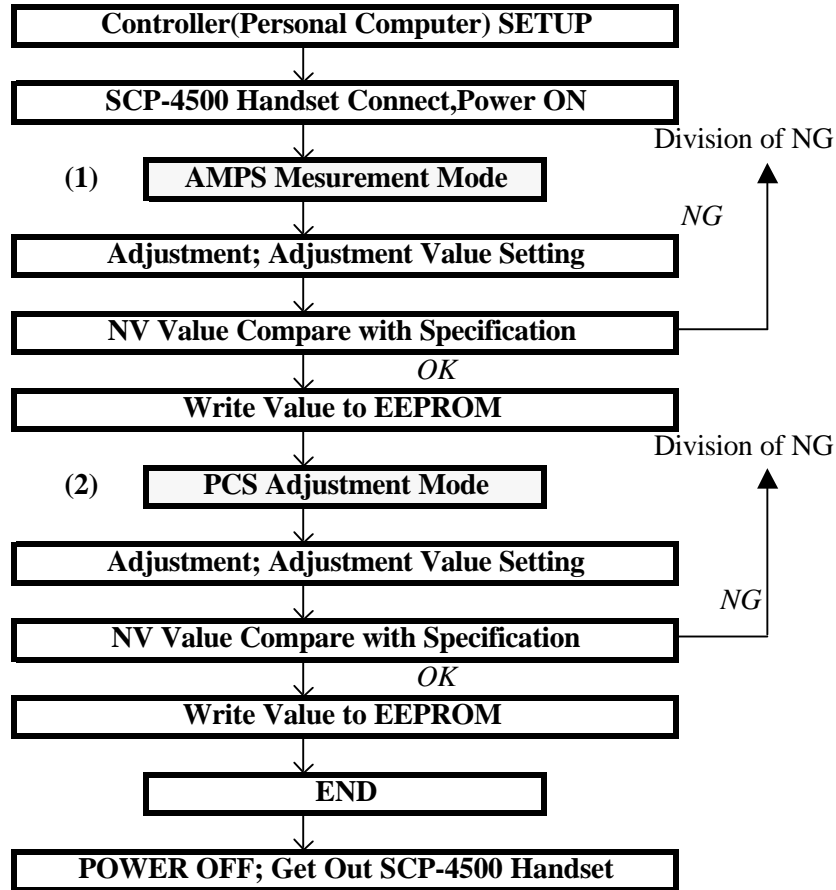
1. Set-Up for Tune-Up and Adjustment of Transmitter



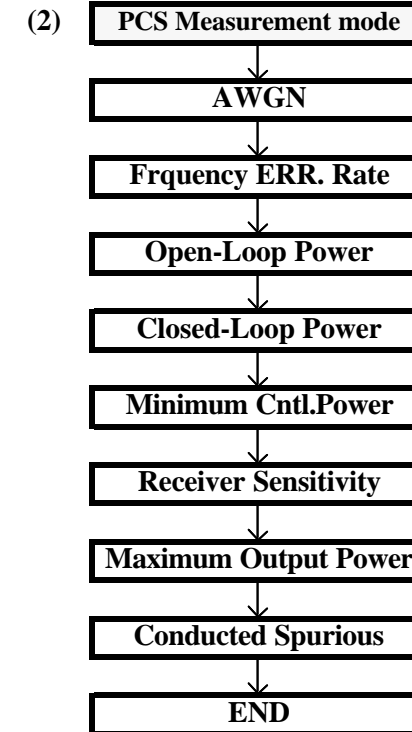
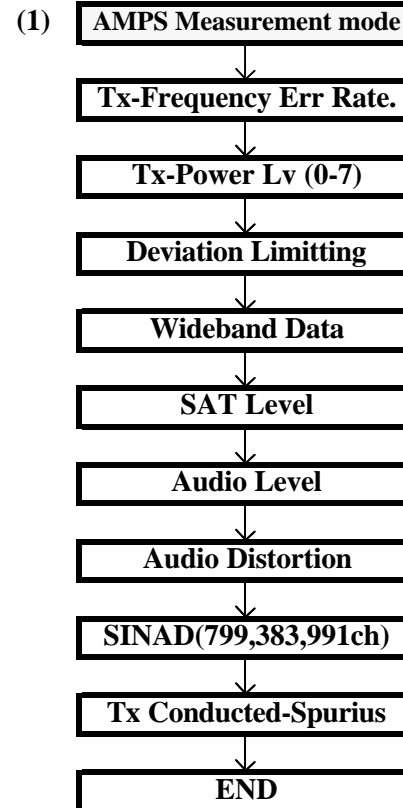
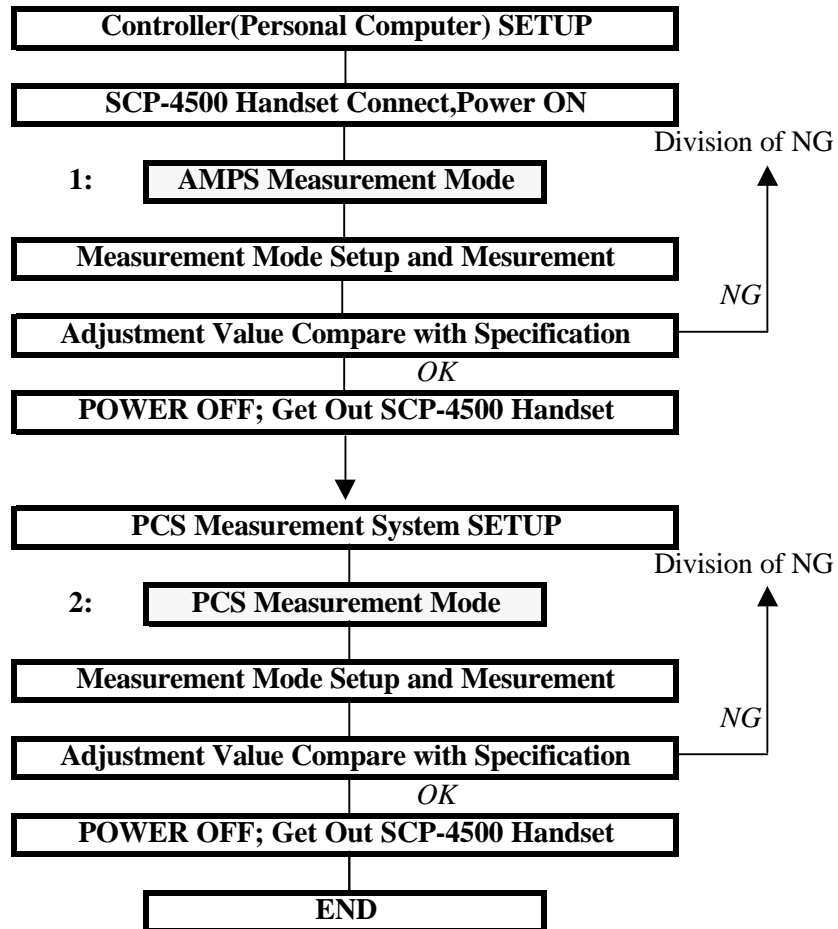


2 Alignment Procedure

(1) Adjustment Procedure



(2) Measurement Procedure



3. Adjustment Value

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1. AMPS Adjustment

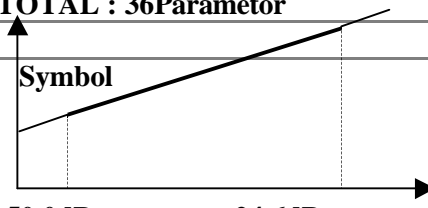
ITEM	Sub-ITEM	Handset Setup (Internal Setup)	HP8924 Setup	Adj. Value	Accuracy of NV-Value
Tx-Power Adjustment	PL=0,1,2	<u>Normal Test Mode</u>	<u>AMPS Mode</u>	+26.0dBm	
	PL=3	Tx AGC SET : 3-2-3-2	Txpowers : dBm Mode	+23.0dBm	
	PL=4			+19.0dBm	
	PL=5			+15.0dBm	
	PL=6			+11.0dBm	
	PL=7			+ 7.0dBm	
Tx-Power Frequency Adjustment	Bk 0=1017ch	<u>FCC Test Mode</u>	PL=0	+26.0dBm	
	Bk 1=46ch			+26.0dBm	
	Bk 2=98ch			+26.0dBm	
	Bk 3=150ch			+26.0dBm	
	Bk 4=202ch			+26.0dBm	
	Bk 5=254ch			+26.0dBm	
	Bk 6=306ch			+26.0dBm	
	Bk 7=358ch			+26.0dBm	
	Bk 8=410ch			+26.0dBm	
	Bk 9=462ch			+26.0dBm	
	Bk10=514ch			+26.0dBm	
	Bk11=566ch			+26.0dBm	
	Bk12=618ch			+26.0dBm	
	Bk13=670ch			+26.0dBm	
	Bk14=722ch			+26.0dBm	
Bk15=774ch			+26.0dBm		
Frequency Sensibility Adjustment		<u>FCC Test Mode : AMPS</u> Tx : ST,CH : 358	<u>AF ANL Mode</u> Detector : Pk+Max DE-EMPH :750 us Fil1: >20hz, Fil2: <99khz pass	8KHz dev.	dev. 8Khz±0.1Khz ↓ NV_FM_FREQ_SENSE_GAIN_I
RSSI Adjustment	-60dBm In -113dBm In	<u>FCC TEST Mode</u> RSSI=Filter*116+AgcRSSI*47	-60dBm RF input ; -113dBm RF input	-60dBm : BAR4 BAR1	<u>NV_FM_RSSI_I</u>

*Handset SETUP & HP8923 SETUP is Auto Set by Controller(Personal Computer).

2. PCS RX Adjustment

ITEM	Sub-ITEM	Handset Setup(Internal Setup)	HP8924 Setup	Adj. Value	Accuracy of NV-Value
Rx-RASRAM Adjustment	Table 1	<u>Normal Mode</u>	PCS Ch=563 : SG LV=-106.0dBm	-106.0dBm	
	Table 2	OFF Line Mode	SG LV=-100.6dBm	-100.6dBm	
	Table 3		SG LV=-95.3dBm	-95.3dBm	
	Table 4		SG LV=-90.0dBm	-90.0dBm	
	Table 5		SG LV=-84.7dBm	-84.7dBm	
	Table 6		SG LV=-79.4dBm	-79.4dBm	
	Table 7		SG LV=-74.1dBm	-74.1dBm	
	Table 8		SG LV=-68.8dBm	-68.8dBm	
	Table 9		SG LV=-63.5dBm	-63.5dBm	
	Table 10		SG LV=-58.1dBm	-58.1dBm	
	Table 11		SG LV=-52.8dBm	-52.8dBm	
	Table 12		SG LV=-47.5dBm	-47.5dBm	
	Table 13		SG LV=-42.2dBm	-42.2dBm	
	Table 14		SG LV=-36.9dBm	-36.9dBm	
	Table 15		SG LV=-31.6dBm	-31.6dBm	
	Table 16		SG LV=-26.3dBm	-26.3dBm	
	Table 17		SG LV=-21.0dBm	-21.0dBm	
RX AGC Frequency Adjustment	Bk 0=38ch	<u>Normal Mode</u>	<u>RF INPUT(SG) LV=-63.5dBm</u>	AGC DIFF.	
	Bk 1=113ch	Reference ch : 563ch	Change to Channel 16 Time.	AGC DIFF.	
	Bk 2=188ch	Deference of Center ch AGCsym.		AGC DIFF.	
	Bk 3=263ch	Change to Channel 16 Time.		AGC DIFF.	
	Bk 4=338ch	OFF Line Mode		AGC DIFF.	
	Bk 5=413ch			AGC DIFF.	
	Bk 6=488ch			AGC DIFF.	
	Bk 7=563ch			Center CH	
	Bk 8=638ch			AGC DIFF.	
	Bk 9=713ch			AGC DIFF.	
	Bk10=788ch			AGC DIFF.	
	Bk11=863ch			AGC DIFF.	
	Bk12=938ch			AGC DIFF.	
	Bk13=1013c			AGC DIFF.	
	Bk14=1088c			AGC DIFF.	
	Bk15=1163c			AGC DIFF.	

3. PCS TX & TX-LIMIT Adjustment

ITEM	Sub-ITEM	Handset Setup(Internal Setup)	HP8924 Setup	Adj. Value	Accuracy of NV-Value
Tx-RASRAM Adjustment		<u>Nomal Test Mode</u>	PCS Ch=1163ch		
				+23.5dBm	
				~	
				-50.0dBm	
&		TOTAL : 36Paramotor			
		Symbol			
					
		-50.0dBm	+24.6dBm		
Tx-Limit Adjustment	Table 1		PCS Ch=1163ch	+8.75dBm	
	Table 2			+10.1dBm	
	Table 3			+11.4dBm	
	Table 4			+12.7dBm	
	Table 5			+14.1dBm	
	Table 6			+15.4dBm	
	Table 7			+16.7dBm	
	Table 8			+18.1dBm	
	Table 9			+19.4dBm	
	Table 10			+20.7dBm	
	Table 11			+22.1dBm	
	Table 12			+23.4dBm	
	Table 13			+24.7dBm	
	Table 14			+26.0dBm	
	Table 15			+26.0dBm	
	Table 16			+26.0dBm	
	OFFSET	Offset : 16.7dB(Table 7)			+16.7dBm
SPN	Spn : 26dBm(Table 14)			+26.0dBm	

4. Mesurment Specification of Adjustment

1. AMPS Measurement Specification

Measurement Item	Standard Item	IS98A Standard Spec	Measurement Spec	Measurement Condition	Measurement Channel	Others
Tx-Frequency Err	IS-98-A : 3.1.2	< ± 2.5 ppm	< ± 2.0 ppm	Measurement Equipment Accuray < 0.1ppm	799ch	
Tx-Power Level(0,1,2)	IS-98-A : 3.2.1	24dBm to 30dBm	24.5dBm to 26.0dBm	Measurement Equipment	991(L),383(M),799(H)	
Tx-Power Level(3)	IS-98-A : 3.2.1	20dBm to 26dBm	20dBm to 25dBm	Accuray < 0.2dB	991(L),383(M),799(H)	
Tx-Power Level(4)	IS-98-A : 3.2.1	16dBm to 22dBm	16dBm to 22dBm		991(L),383(M),799(H)	
Tx-Power Level(5)	IS-98-A : 3.2.1	12dBm to 18dBm	12dBm to 18dBm		991(L),383(M),799(H)	
Tx-Power Level(6)	IS-98-A : 3.2.1	8dBm to 14dBm	8dBm to 14dBm		991(L),383(M),799(H)	
Tx-Power Level(7)	IS-98-A : 3.2.1	4dBm to 10dBm	4dBm to 10dBm		991(L),383(M),799(H)	
Deviation Limitting	IS-98-A : 3.3.2.3	< ± 12 Khz dev.	< ± 12 Khz dev.	Comp=ON,SAT=OFF HF Mode,Mic=6.3V IN	799ch	
Wideband Data	IS-98-A : 3.3.3	± 8 Khz dev. $\pm 10\%$ (± 7.2 to 8.8 Khz dev.)	± 8 Khz dev. $\pm 10\%$ (± 7.2 to 8.8 Khz dev.)	Wideband Mode		
SAT Level	IS-98-A : 3.3.4	± 2 Khz ± 0.2 Khz dev.	± 2 Khz ± 0.2 Khz dev.	SAT Mode		
Audio Distortion	IS-98-A : 2.2.2.5	< 5%	< 5%	Voice Mode 8KHZdev -50dBm	799ch	
SINAD	IS-98-A : 2.3.1	> 12dB	> 12dB	RF IN = -116dBm	799(H),383(M),991(L)	
Tx-Conducted Spurious	IS-98-A : 3.4.2	> $43+10*\text{Log}(W)$ W : Tx-Power	< -14dBm		799ch	

2. PCS Measurement Specification

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Measurement Item	Standard Item	JSTD018 Standard Spec	Measurement Spec	Measurement Condition	Measurement Channel	Others
<i>RTC Demod. of FW.ch</i>	TIA/EIA-98-C			Rateset2 SVC opt9		
	3.3.3					
AWGN Test10(Eb/Nt=4.1)		1%(0.010)	1%(0.010)	7200(TEST10)	25ch	
<i>Waveform Quality</i>	TIA/EIA-98-C			Rateset2 SVC opt9		
RHO	4.3.2	>0.944	>0.944	14400bps	25ch	
Frequency Err Rate	4.1.1	±150Hz	±150Hz		25ch	
Time Offset	4.3.1	±1uS	±1uS		25ch	
<i>TTC Range of Openloop</i>	TIA/EIA-98-C			Rateset2 SVC opt9		
Openloop Power Test1	4.4.1	-51±9.5(CLASSII)	-51±9.5(CLASS II)	14400bps	25ch	
Openloop Power Test2		-11±9.5(CLASS II)	-11±9.5(CLASS II)		25ch	
Openloop Power Test3		20±9.5(CLASS II)	20±9.5(CLASS II)		25ch	
<i>TTC Range of Closedloop</i>	TIA/EIA-98-C			Rateset2 SVC opt9		
Closedloop Full Power	4.4.4	RF Output = -13dBm	-14±3dBm	14400bps	25ch	
Closedloop Max Power		>+24dB	>+23dB			
Closedloop Min Power		<-24dB	<-24dB			
<i>TTC Min.Controlled Pow</i>	TIA/EIA-98-C			Rateset2 SVC opt9		
Minimum Controlled Pow	4.4.6	-50dBm/1.23Mhz	-50dBm/1.23Mhz	14400bps	25ch	
<i>RTC Receiver Sensitivity</i>	TIA/EIA-98-C			Rate2 Full -106.3dBm	600ch, 1175ch	
Receiver Sensitivity FER	3.4.1	0.5%(Confidence95%)	0.5%(Confidence95%)	Rate2 Full -105.0dBm	25ch	
Single Tone Desensitization	TIA/EIA-98-C	1.0%(Confidence95%)	1.0%(Confidence95%)	Rate2 Full -101.0dBm	25ch(-), 1175ch(+)	
	3.4.2	-15dBW (+15dBm)	-15dBW(+15dBm)	Undesired <-30dBm		
<i>TTC Max RF Output Pow</i>	TIA/EIA-98-C				1175ch	
Max Power Output	4.4.5	> 0.2W	23.00dBm~24.4dBm		25ch,600ch,	
		> 0.2W	23.00dBm~25.0dBm			
<i>TTC Conducted Spurious</i>	TIA/EIA-98-C			SVC Opt9(14400)		
>1.25MHz	3.5.1	< -42dBc	< -45dBc	Max Power Output	1175ch	
>1.98MHz		< -50dBc	< -50dBc	Max Power Output	1175ch	
>2.25MHz		<-13dBm	<-13dBm	Max Power Output	1175ch	