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# 1. PERFORMANCE CHECK PROCEDURE

## 1-1. GENERAL

This section contains the Procedures required to check and maintain specified instrument performance. The adjustments should be performed at an ambient temperature of  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$  and a relative humidity of less than 60%. It allows the instrument to stabilize at this environment for a minimum of 30 minutes.

## 1-2. EQUIPMENT'S REQUIRED

Table 1-1 is shown test equipment's required.

Table 1-1 Equipment's required

No.	Equipment name	Specification	Remark
1.	10MHz SIGNAL SOURCE	10MHz STANDARD	
2.	TEST OSCILLATOR	0.1Hz to 30MHz	
2.	RF SIGNAL GENERATOR	100kHz to 3.7 GHz	
3.	50-ohm TERMINATION	100MHz BANDWIDTH	
4.	D.M.M.		
5.	OSCILLOSCOPE	V: 5mV H:50ns	

## 1-3. PERFORMANCE CHECK

### 1-3-1. FREQUENCY RESPONSE AND SENSITIVITY

#### A. INPUT A

#### SPECIFICATION ;

- Frequency Range ; 0.1Hz to 100MHz(DC Coupled), 30Hz to 100MHz(AC Coupled)
- Sensitivity ; 30mVrms (0.1Hz to 100MHz)

1. Set the front panel controls as follows;

- FUNCTION : FREQ. A
- GATE TIME : 1S
- ATTN.(A) : 1/1 (PULL OUT)
- COUPLE(A) : DC (PULL OUT)

2. Connect the Test Oscillator to INPUT A with a BNC cable.

3. Vary the out-put frequency of Test Oscillator from 0.1Hz to 10MHz, maintaining a 30mVrms signal level and check the counter display the correct frequencies.

4. Connect the RF Signal Generator to INPUT A with a BNC cable and  $50\Omega$  feed through.

5. Vary the out-put frequency of RF Signal Generator from 10MHz to 100MHz, maintaining a 30mVrms signal level and check the counter display the correct frequencies.

## B. INPUT C

### SPECIFICATION ;

Frequency Range	Sensitivity
80MHz – 3.5GHz	10mVrms from 80 MHz to 2.0GHz 20mVrms from 2.0GHz to 3.0GHz 30mVrms from 3.0GHz to 3.2GHz 40mVrms from 3.2GHz to 3.5GHz 70mVrms from 3.5GHz to 3.7GHz

1. Set the front panel controls as follows;
  - FUNCTION : FREQ. C
  - GATE TIME : 1S
2. Connect the RF Signal Generator to INPUT C with a BNC(with N-to-BNC Adaptor)cable.
3. Vary the out-put frequency of RF Signal Generator from 80MHz to 2000MHz, maintaining a 10mVrms signal level and check the counter display the correct frequencies.
4. Vary the out-put frequency of RF Signal Generator from 2.0GHz to 3.0GHz, maintaining a 20mVrms signal level and check the counter display the correct frequencies.
5. Vary the out-put frequency of RF Signal Generator from 3.0GHz to 3.2GHz, maintaining a 30mVrms signal level and check the counter display the correct frequencies.
6. Vary the out-put frequency of RF Signal Generator from 3.2GHz to 3.5GHz, maintaining a 40mVrms signal level and check the counter display the correct frequencies.
7. Vary the out-put frequency of RF Signal Generator from 3.5GHz to 3.7GHz, maintaining a 70mVrms signal level and check the counter display the correct frequencies.

### 1-3-2. PERIOD

#### SPECIFICATION ; 10 nS to 10 S

1. Repeat step 1-3-1. A 1. Set the function to PERIOD A.
2. Connect the Test Oscillator to INPUT A with a BNC cable.
3. Vary the out-put frequency of Test Oscillator from 0.1Hz to 10MHz, maintaining a 30mVrms signal level and check the counter display the correct period of all frequencies in specified range.
4. Connect the RF Signal Generator to INPUT A with a BNC cable and 50 $\Omega$  feed through.
5. Vary the out-put frequency of Signal Generator from 10MHz to 100MHz, maintaining a 30mVrms signal level and check the counter display the correct period of all frequencies in specified range.

### 1-3-3. TOTALIZE

#### SPECIFICATION ;

10Hz to 30 MHz, 30mVrms

1. Set the front panel controls as follows;

- FUNCTION : TOTAL A
- HOLD : NORM(PULL OUT)
- ATTN.(A) : 1/1 (PULL OUT)
- COUPLE(A) : DC (PULL OUT)

The totalize mode is used to count the total number of events occurring during a specific time period. Maximum frequency is 30 MHz.

- a. Set the totalize mode. Any gate and units setting is ignored.
- b. Apply the signal to be measured to input A, and then the counter display is the count continually. Maximum count is 999999999. If this is exceeded the overflow message display as "OF"
- c. Low pass filter and attenuator, coupling switch application is same as frequency measurements mode.

#### **NOTE**

**THE HOLD SWITCH MAY BE USED TO BE LATCH THE DISPLAY. HOWEVER, THE COUNTER TO INCREMENT AND WHEN THE HOLD IS RELEASED, THE UPDATE COUNT IS DISPLAY.**

### 1-3-4. RPM (Rotation Per Minute)

SPECIFICATION ; 600 to  $600 \times 10^6$  RPM , OVER FLOW : "OF"

1. Set the front panel controls as follows;

- FUNCTION : RPM A
- HOLD : NORM(PULL OUT)
- ATTN.(A) : 1/1 (PULL OUT)
- COUPLE(A) : DC (PULL OUT)

- a. Set the RPM mode. Any gate time and units setting is ignored
- b. Apply the signal to be measured to the input A BNC, and then the counter displays the RPM. Maximum count is 999999999. If this is exceeded, the overflow message displays as "OF"
- c. Low pass filter and attenuator, coupling switch application is same as frequency measurements mode.

## 2. ADJUSTMENT PROCEDURE

### 2-1. PRELIMINARY SET-UP

Remove top cover and top shield case.

Apply power, and allow at least 30 minutes for warm-up.

### 2-2. POWER SUPPLY

a. Check the voltage in each position according to table 2-1.

Table 2-1 Power supply outputs

Check position	Supplying Voltage	Tolerance	Remark
U16 OUT-PUT	+ 5 V	$\pm 0.5V$	
U17 OUT-PUT	+ 5 V	$\pm 0.5V$	

### 2-3. TIME BASE FREQUENCY ADJUSTMENT

**NOTE** ; If this adjustment is to be considered valid, the unit should have a half-hour warm-up and the line voltage should be within  $\pm 5 \%$ .

#### 2-3-1. Method #1

1. Apply an external signal of known frequency(10MHz standard signal) and suitable amplitude(minimum 30mVrms) to Input A terminal.

2. Set the front panel controls as follows ;

- FUNCTION : FREQ. A
- GATE TIME : 1S
- ATTN.(A) : 1/1 (PULL OUT)
- COUPLE(A) : DC (PULL OUT)

The approximate input frequency should be in the display with an update once a second.

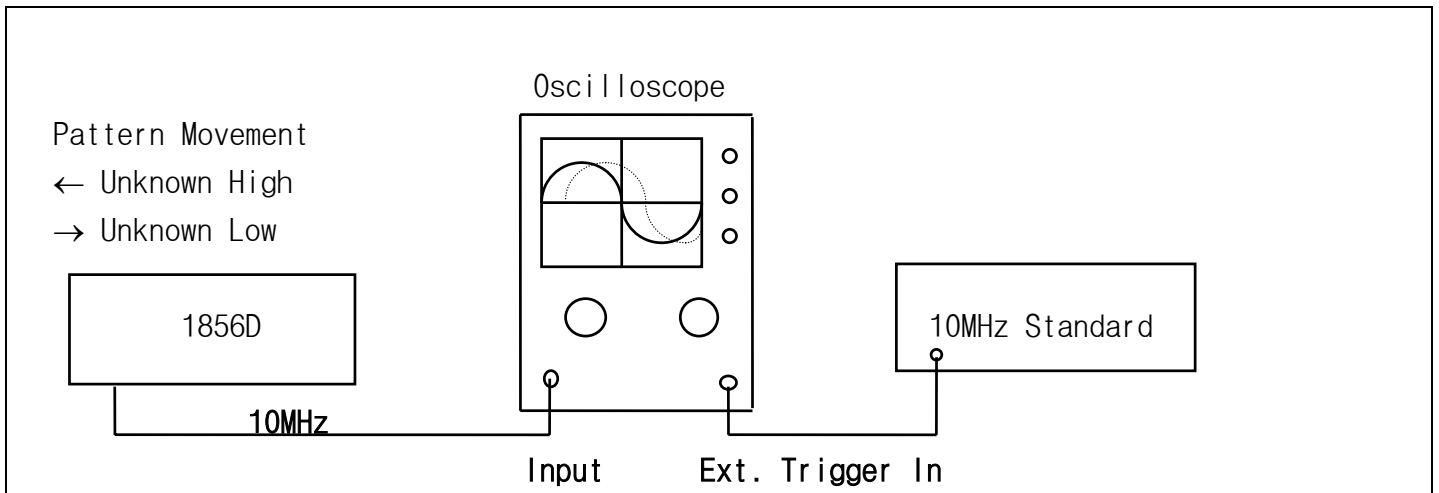
3. Adjust "TC0" slowly until the display shows the input frequency by using a plastic tuning wand.

### 2-3-2. Method #2

This method accomplishes a more accurate adjustment of the time base frequency than Method #1.

1. Connect an Oscilloscope to Internal Oscillator(10MHz) Out-put terminal on rear panel.
2. Connect a 10MHz Standard Signal to the EXT trigger input of Oscilloscope. Refer to the diagram below.

Every few months, the oscillator should be checked to a standard signal. When adjustment is required, use the oscilloscope method shown. Using the appropriate sweep speed, adjust the oscillator until the movement of the pattern(wave form) is stopped.



3. Set the controls of the oscilloscope as follows;
  - Coupling : AC
  - Input Impedance : 1 Mohm
  - Hor. Trigger : EXT.
  - Time Base : 0.1 uS/div
4. Adjust Vertical Gain for a full screen waveform. The waveform should be moving either to the left or to the right.
5. Adjust "TC0" until the waveform is stationary. The accuracy of frequency adjustment can be determined by referring the following table.

Table 2-1. Time Base Adjustment

Movement	SWEEP SPEED			NOTES
	1uS/cm	0.1uS/cm	0.01uS/cm	
1 cm/S	$1 \times 10^{-6}$	$1 \times 10^{-7}$	$1 \times 10^{-8}$	Time scope trace movement with Second hand or Watch or Clock
1 cm/10 S	$1 \times 10^{-7}$	$1 \times 10^{-8}$	-	
1 cm/100 S	$1 \times 10^{-8}$	-	-	

## 2-4. INPUT SENSITIVITY ADJUSTMENT

### 2-4-1. INPUT A

#### SPECIFICATION ;

- Frequency Range ; 0.1Hz to 100MHz(DC Coupled)  
30Hz to 100MHz(AC Coupled)
- Sensitivity ; 30mVrms (0.1Hz to 100MHz)

1. Set the front panel controls as follows;

- FUNCTION : FREQ. A
- GATE TIME : 1S
- ATTN.(A) : 1/1 (PULL OUT)
- COUPLE(A) : DC (PULL OUT)

2. Connect the Test Oscillator to INPUT A with a BNC cable.

3. Set the out-put frequency of Test Oscillator to 100kHz , 10mVrms and adjust "SFR1" for displaying the correct frequency.

4. Check Minimum input voltage from 0.1Hz to 100MHz according to the performance check step "1-3-1. A".

## 3. Troubleshooting Procedure

### 3-1. Troubleshooting techniques

3-1-1. Check the function selector and switch setting. Incorrect switch settings can give a false indication of instrument malfunction. If there is any question about the correct function or operation, Refer to OPERATOR'S MANUAL.

3-1-2. Check associated equipment's

Before proceeding, ensure that any equipment's used with Frequency counter is operating correctly and verify that out and input signals are properly connected and that the interconnecting cables are not defective.

3-1-3. Visual Check

Look for broken terminals, damaged components, mounting status of components, damaged circuit boards, or other clues to the cause of a malfunction.

## 3-2. Troubleshooting procedure

### 3-2-1. NO Display

1. Check the "FUSE" and if it is broken, change to new one with same rating.
2. Check the output voltage of power transformer.
  - . 6 to 8 Vac between pin 1 and 2 of CN7, and between pin 2 and 3 of CN7 on main board.
  - . 6 to 8 Vac between pin 1 and 2 of CN13, and between pin 2 and 3 of CN13 on main board.
3. Check the DC Power Voltage.
  - . +5VDC at U16 output
  - . +5VDC at U17 output
4. Check the frequency at pin 19 of U11. It should be "11.0592MHz".
5. Check the DC Power voltage of Counter Circuit, Micro-processor, Driver, Buffer, Scanner (U1,2,3,4,5,6,8,9,10,11,12,13,NU20)
6. Check the connector cable from CN4', 4-1'(main board) to display board(CN4,CN4-1).
7. Check the operation of Display controller(U12,U13) on main board.

### 3-2-2. INPUT A

1. Check the input coaxial(1P shield wire) cable connection.
2. Check the Input Attenuator switch operation.
3. Connect 1MHz , 50mVrms sine wave signal to Input A and check the frequency and waveform at Q2 Emitter. The amplified 1MHz Sine wave should appeared.
4. If not, check the operation of Impedance Converter(Q1,Q2,D3,D4).
5. Check the frequency and wavefore at Q4 Collector. The amplified 1MHz Square wave should appeared.
6. If not, check the operation of ECL Amplifier and TTL Converter(U1, Q3, Q4).
7. Check the frequency at Pin 2 of U3. It should be "10.0000 MHz". If not, check the operation of Time Base Circuit(TC0, Q18, Q19).
8. Check the Waveform at Pin 1 of U3. The burst Signal should be appeared.  
If not, check the operation of Input Controller(U3).
9. Check the operation of Counter Circuit, Micro-processor(U11), Driver(U4,5), Buffer(U9), BUS(U6,7), Scanner(U12,13), Display Driver(U10).
10. Connect 10MHz , 50mVrms sine wave signal to Input A and check the frequency and waveform at Pin 6 of U2. The 1.25MHz Square wave signal should be appeared.  
If not,check the operation of 1/8 Divider(U2).



### 3-2-3. INPUT C

#### --- PRESCALER PCB PART ---

1. Check the input cable connection(NJ'-4P shield wire, Main-Prescaler).
2. Check the DC Power voltage of Prescaler Circuit pin 6 of U1, pin 6 of U4, Pin 2 of U3,NJ1-1( 4P shield wire pin1 -Red wire) : +5Vdc( $\pm 0.5V$ ) .
3. Check the DC voltage of Prescaler Circuit  
pin1 of U4 : 1.06V , pin4 of U4 : 4.35V , pin6 of U4 : 1.06V.  
pin1 of U1 : 1.06V , pin4 of U1 : 4.35V , pin6 of U1 : 1.06V. pin1 of U2 : 0.64V  
pin2 of U3 : 4.96V , pin4 of U3 : 2.94V , pin8 of U3 : 2.68V
4. If not, check the operation of U1,2,3,4 and D6 .
5. Connect 100MHz , 50mVrms sine wave signal to Input C and check the frequency at Pin 4 of U3(Main-Prescaler). The "0.390625 MHz" should appeared.
6. If not, check the operation of 1/256 Divider(U5).
7. Check the Waveform at Pin 1 of U3(main-board). The "0.390625 MHz" should appeared.If not, check the operation of Input Controller(U3-main).
8. Check the operation of Counter Circuit, Micro-processor(U11), Driver(U4,5), Buffer(U9), BUS(U6,7), Scanner(U12,13), Display Driver(U10).

#### --- MAIN PCB PART ---

1. Check the DC Power voltage of Main Circuit pin 14 of NU20, anode of ND15.
2. Connect 100MHz , 50mVrms sine wave signal to Input C and check the frequency at Collector of NQ101(main-board) ,pin3 of NU20(main-board), pin5 of U3.  
The "0.390625 MHz" should appeared.
3. If not, check the operation of NQ101,NU20.
4. Repeat Step 3-2-3. 7 to 8.

### 3-2-4. Function Selector(Period,Total)

1. Check the switch operation.
2. Check Diode D9, D10.
3. Check the operation of U12 and U11.

### 3-2-5. Gate Time

1. Check the switch operation.
2. Check Diode D11,Q7.
3. Check the operation of U12 and U11.

### **3-2-6. EXT/INT Reference Signal**

1. Check the Switch operation and Cable connection from switch to main board.
2. Set to INT and check the out frequency at BNC terminal.
3. If not, check the operation of TCO circuit and cable connection.
4. Set the switch to EXT and connect 10MHz Standard Signal to BNC terminal.
5. Check the frequency at Pin2 of U3. The 10MHz signal from external standard should be appeared.
6. If not, check the operation of Time Base Circuits(Q18,19) and cable connection.

## 4. PARTS LIST

3U01-8037DAG-00

### 4-1. MAIN PCB ASS'Y PART

PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1C120-CE004-50	CER. CAPACITOR. SMD	4pF50V	1.00	C98
1C120-CE008-50	CER. CAPACITOR. SMD	8pF50V	1.00	C76
1C120-CE030-50	CER. CAPACITOR. SMD	30pF50V	2.00	C43.44
1C120-CE051-50	CER. CAPACITOR. SMD	51pF50V	2.00	C14, C02
1C120-CE103-50	CER. CAPACITOR. SMD	0.01uF50V(10nF)	9.00	C4, 6, 11, 15, 17, 56, 57, 94, C20
1C120-CE104-50	CER. CAPACITOR. SMD	0.1uF50V(100nF)	16.00	C9.26.28.30.32.45-52.54.55, 100
1C120-CE131-50	CER. CAPACITOR. SMD	130pF50V	2.00	C5.10
1C120-CE151-50	CER. CAPACITOR. SMD	150pF50V	1.00	C58
1C120-CE2R5-50	CER. CAPACITOR. SMD	2.5pF50V	1.00	C75
1C510-MF473-250	M/F CAPACITOR	0.047uF250V(47nF) J	1.00	C74
1C710-EC010-16	ELEC. CAPACITOR	10uF16V	1.00	C36
1C710-EC047-16	ELEC. CAPACITOR	47uF16V	6.00	C7.8.12.13.16.18
1C710-EC222-16	ELEC. CAPACITOR	2200uF16V	2.00	C27.31
1C710-EC471-16	ELEC. CAPACITOR	470uF16V	2.00	C29.33
1D120-4148S	SWITCHING DIODE. SMD	1N4148	11.00	D1-4.9-13.20.15, 20, D14(232C)
1D213-4004	RECTIFIER DIODE	1N4004	4.00	D5.6.7.8
1D710-P521	PHOTO COUPLER	P521G	2.00	OP1, OP2
1I140-DSS306	EMI FILTER	102M100V	4.00	L1, 2, 3, 4
1I240-CV035031P	CHOKE COIL	3.5A/31uH	1.00	L10
1J110-LW02503	WAFER	3pin, LW064003	2.00	CN7.13
1J110-LW03903	WAFER	3pin, LW114303	2.00	CN10, 11
1J110-YW02502	WAFER	2pin, YW02502	1.00	CN6
1J110-YW02504	WAFER	4pin, YW02504	3.00	CN3, 12, CN2
1J110-YW02508	WAFER	8pin, YW02508	1.00	CN4'
1J110-YW02513	WAFER	13pin, YW02513	1.00	CN4-1'
1N911-40PIN	I.C. SOCKET		1.00	U11- IC SOCKET.
1Q000-M03640	TRANSISTOR	MPS3640	1.00	Q2
1Q111-M03906	TRANSISTOR(MOTO)	2N3906	4.00	Q3, 4, 101, Q20(232C)
1Q111-T01730	TRANSISTOR(SAM.FC.)	2SC1730	2.00	Q18, 19
1Q121-T01015S	TRANSISTOR, SMD	2SA1015/1266(1504)	13.00	Q5-17
1Q511-SI5486	FET(SIL.MOTO)	2N5486	1.00	Q1
1R122-CF100J	C/F. RESISTOR. SMD	10J, 1/8W	1.00	R22
1R122-CF103J	C/F. RESISTOR. SMD	10KJ, 1/8W	2.00	R48.50(232C)
1R122-CF104J	C/F. RESISTOR. SMD	100KJ, 1/8W	2.00	R4, 8
1R122-CF105J	C/F. RESISTOR. SMD	1MJ, 1/8W	1.00	R61
1R122-CF151J	C/F. RESISTOR. SMD	150J, 1/8W	2.00	R7.13

PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1R122-CF220J	C/F. RESISTOR.SMD	22J, 1/8W	1.00	R101
1R122-CF222J	C/F. RESISTOR.SMD	2.2KJ, 1/8W	5.00	R9.10.29.30.31
1R122-CF271J	C/F. RESISTOR.SMD	270J, 1/8W	2.00	R40,43
1R122-CF272J	C/F. RESISTOR.SMD	2.7KJ, 1/8W	4.00	R39,46,47,49(232C)
1R122-CF330J	C/F. RESISTOR.SMD	33J, 1/8W	1.00	R21
1R122-CF331J	C/F. RESISTOR.SMD	330J, 1/8W	4.00	R14.17.18.41
1R122-CF470J	C/F. RESISTOR.SMD	47J, 1/8W	1.00	R103
1R122-CF471J	C/F. RESISTOR.SMD	470J, 1/8W	8.00	R3.11.12.15.16.19.20.37
1R122-CF472J	C/F. RESISTOR.SMD	4.7KJ, 1/8W	1.00	R42
1R122-CF511J	C/F. RESISTOR.SMD	510J, 1/8W	5.00	R5.6.44.R02,102.
1R122-CF562J	C/F. RESISTOR.SMD	5.6KJ, 1/8W	1.00	R38
1R122-CF822J	C/F. RESISTOR.SMD	8.2KJ, 1/8W	1.00	R26
1R15H-067103	SEMI-FIXED RESISTOR	VZ067TH1, 10KB	1.00	SFR1
1R212-MF1213F	M/F. RESISTOR.SMD	121KF,1/8W	1.00	R62
1S160-99099	KEY SWITCH	SPUN40X1C061	1.00	FUNTION,GATE TIME.
1S160-99100	KEY SWITCH	SPUN30X1C011	1.00	INPUT A (ATT,LPF,COUPLE)
1S321-JPP2295	POWER SWITCH	JPP2295MDA,250V4A	1.00	POWER
1U120-M07805	I.C.(SAM.MOTO.NS.)	MC7805	2.00	U16.17
1U151-M010116	I.C.(MOTO.)	MC10116	1.00	U1
1U211-T17400S	I.C.SMD(SIG)	SN7400/SN74S00	1.00	U20
1U221-T174245S	I.C.SMD(HAR.HIT.NS.)	SN74HC245	2.00	U6.8
1U221-T174374S	I.C.SMD(HIT.NS.SGS)	SN74HC374	1.00	U9
1U231-NS191	I.C(NS)	74F191N	1.00	U18
1U231-T174393S	I.C.SMD(NS.HIT.PHI.)	SN74HC393	2.00	U4.5
1U271-T174138S	I.C.SMD(NS.HIT.SGS.)	SN74HC138	2.00	U12.13
1U310-AT89C52	I.C.(ATMEL)	AT89C52	1.00	U11
1U410-TS62783	I.C.(TOSHIBA)	TD62783AP	1.00	U10
1U511-AD16V8	I.C.(AMD)	GAL16V8	1.00	U3
1W780-IN00130	WIRE ASS'Y(1365#30)	IN PUT CABLE,130mm	1.00	INPUTA COXIAL CABLE
1X130-11R05MHZ	CRYSTAL	11.0592Mz(HC-49/U)	1.00	X-TAL
1X250-21A8-10M	TCO	21A8 10MHz5ppm	1.00	TCO
1Z112-8037M1	MAIN PCB	FC-8037M1-MAIN	1.00	FC 8037M1.
2I320-SP0007	SPONGE TAPE	45x25x2T	3.00	MAIN SOLDER SIDE (AC LINE)
2S233-ZN0001	SCREW, TAPPING	T3x6BH,ZN-PL	2.00	HEAT SINKER ASS'Y
2U110-SR0001	SPRING, COIL	6x2x7(SHIELD)	1.00	MAIN+ BOTTOM SHIELD CASE GND
2ZH11-HS0002	HEAT SINK	78SERIES	2.00	U16,17

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## 4-2. DISPLAY PCB ASS'Y PART

PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1J110-YW02508	WAFER	8pin,YW02508	1.00	CN4
1J110-YW02513	WAFER	13pin,YW02513	1.00	CN4-1
1L110-HPH513	FND(hp)	HDSP-H513#001	1.00	FND5
1L110-HPK513	FND(hp)	HDSP-K513#001	4.00	FND1-4
1L220-BL-R2130A	LED	BL-R2130A-T(5x5X10)	19.00	LED1-13,15,17-21
1Z122-FC,UC-M02	DISPLAY PCB(80SER.)	DAG-F/C,U/C-M02	1.00	FC DISPLAY PCB

3U01-8037DAG-00

## 4-3. PRESCALER PCB ASS'Y PART

PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1C120-CE010-50	CER.CAPACITOR.SMD	10pF/50V	1.00	C5
1C120-CE102-50	CER.CAPACITOR.SMD	0.001uF50V(1nF)	11.00	C1-4,6,7,8,9,11,12,22
1C120-CE103-50	CER.CAPACITOR.SMD	0.01uF50V(10nF)	1.00	C7
1C120-CE104-50	CER.CAPACITOR.SMD	0.1uF50V(100nF)	1.00	C10
1D120-4148S	SWITCHING DIODE.SMD	1N4148	2.00	D2,3
1D750-1SS315	UHF BAND MIXER	1SS315-TPH3(TOSHIBA)	1.00	D1
1R122-CF101J	C/F. RESISTOR.SMD	100J, 1/8W	1.00	R7
1R122-CF103J	C/F. RESISTOR.SMD	10KJ, 1/8W	1.00	R6
1R122-CF104J	C/F. RESISTOR.SMD	100KJ, 1/8W	1.00	R4
1R122-CF151J	C/F. RESISTOR.SMD	150J, 1/8W	2.00	R2
1R122-CF224J	C/F. RESISTOR.SMD	220KJ, 1/8W	1.00	R3
1R122-CF332J	C/F. RESISTOR.SMD	3.3KJ, 1/8W	1.00	R1
1R122-CF381J	C/F. RESISTOR.SMD	380J,1/8W	2.00	R5
1R122-CF510J	C/F. RESISTOR.SMD	51J, 1/8W	1.00	R14
1U110-TI358S	I.C.SMD(SGS.NS.MOTO)	LM358	1.00	U2-A
1U180-UPC2711T	I.C.SMD	UPC2711T/TB(NEC)	2.00	U1,4
1U230-MC12079S	I.C.SMD(MOTO)	MC12079D	1.00	U3
1W731-SW04150	WIRE ASS'Y( #24 )	4pin 150mm solder	1.00	PRESCALER WIRE ASS'Y
1Z172-8030-06	PRESCALER PCB	FC-8030-06	1.00	3.5GHz FC PRESCALER PCB

3U08-8037-00

## 4-4. SLIDE S/W PCB ASS'Y

FC-8037

PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1C120-CE103-50	CER.CAPACITOR.SMD	0.01uF50V(10nF)	2.00	C34,35
1R122-CF101J	C/F. RESISTOR.SMD	100J, 1/8W	1.00	R25
1S180-SS4210	SLIDE SWITCH	4210,BENCH	1.00	INT/EXT TB S/W
1W721-LW02340	WIRE ASS'Y(#24)	2pin 340mm,solder	1.00	CN6
1W731-SW04160	WIRE ASS'Y( )	4pin 160mm,1p SWx2	1.00	CN3
1Z182-DAG	SLIDE SWITCH PCB	SSP1	1.00	FC,UC

#### 4-5. FRONT PANEL ASS'Y PART

PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1N110-BNCRB4	BNC CONNECTOR	BNC-RB-4CUTTING	1.00	INPUT A
1N130-N-R-C	N-CONNECTOR	N-F-4H CUTTING	1.00	INPUT C
1W722-LW08200	WIRE ASS'Y(#24)	8-8pin 200mm	1.00	CN4-CN4'
1W722-LW13160	WIRE ASS'Y	13-13pin 160mm	1.00	CN4-1~CN4-1'
2C120-BR0009	BRACKET,BNC	BN(FC8030)-41x25x1t	1.00	INPUT A FRONT PANEL
2C120-SC0009	SHIELD CASE(PRE-TOP)	Zn-pl 49x44X24x0.5t	1.00	PRESCALER PCB ASS'Y
2C120-SC0010	SHIELD CASE(PRE-BOT)	Zn-pl 50x45x5x0.3t	1.00	PRESCALER PCB ASS'Y
2C212-FP0002	FRONT PANEL, ABS	BN(80SER)-12965	1.00	FRONT PANEL
2L210-BK-PP001	PLATE,FRONT,PC	3.7GHz FREQ. COUNTER	1.00	3.7GHz FC
2L320-BK-AC001	ACRYL FILTER	8037 DAGATRON	1.00	8037 DAG.
2N110-CR0001	NUT(BNC,F)		1.00	INPUT A BNC ASS'Y
2S123-NI0001	SCREW, MACHINE	M3x6DH, H5, NI-PL	4.00	INPUT C ASS'Y+FRONT
2S133-NI0006	SCREW, MACHINE	M3x6BH, NI-PL	2.00	PRESCALER CASE ASS'Y
2S233-NI0003	SCREW, TAPPING	T3x6BH, NI-PL	3.00	DISPLAY+FRONT PANEL
2W031-NI0002	WASHER,LATCH(BNC)	9.5x13x0.5t/NI-PL	1.00	INPUT A BNC
2W051-NI0001	WASHER,PLAIN(BNC S.)	10x13x0.3t/NI-PL	1.00	INPUT A BNC
3U02-BK1856D-00	DISPLAY PCB ASS'Y	DAGATRON 8037	1.00	3U02-8037DAG-00
3U07-BK1856D-00	PRESCALER PCB ASS'Y	8037	1.00	3U07-BK1856D-00

## 4-6. REAR PANEL ASS'Y PART

PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1F250-50F500	FUSE(UL,VDE)	50F,250V250mA(20mm)	1.00	"UL", "VDE"
1FH20-R311	FUSE HOLDER	R3-11,BN	1.00	FUSE IN
1I340-71TSK10	EMI GASKET	71TSK10-R0-170-00	1.00	REAR PANEL ASS'Y
1N110-BNCRB4	BNC CONNECTOR	BNC-RB-4CUTTING	1.00	INT/EXT CONNECTOR
1N150-TE503	GND CONNECTOR		1.00	GND
1N352-9P-D-SUB	RS-232C CONNECTOR	DE-09SSDUCD1	1.00	RS-322C
1N711-NF1-101	AC INLET(SAM IL)	NF1-101.NOISE FILTER	1.00	AC IN
1T100-DG7013	POWER TRANS	FC-7013	1.00	AC POWER TRANS
1W110-JUMP	JUMP WIRE	RESISTOR pin,15mm	1.00	SLIDE S/W + BNC
1W510-0001	HEAT TUBE	Pi3 x 15mm	6.00	VOLTAGE SELECTOR
1W510-0003	HEAT TUBE	Pi 12 x 60 mm	1.00	FUSE HOLDER
1W510-0004	HEAT TUBE	Pi4x20mm	4.00	NOISE FILTER
1W510-0005	HEAT TUBE	Pi1x20mm	4.00	RS-232C CONNECTOR
1W731-SW04340	WIRE ASS'Y(#24)	4PIN,340mm	1.00	232C CONNECTOR
1W763-GW00150	WIRE ASS'Y(1015#22)	GND WIRE,150mm,LUG	2.00	GND+MAIN
1W790-DW00080	WIRE ASS'Y(1015#22)	DIW,80mm,BLACK	1.00	NOISE FILTER+FUSE HOLDER
1W791-DW03200	WIRE ASS'Y(1015#22)	3pin 2wire 200mm	1.00	NOISE FILTER+FUSE HOLDER
2C120-BR0003	BRACKET, POWER TRANS	BN-DAG, 27x10.5,2T	2.00	TRANS
2C120-RP0005	REAR PANEL ,PRESS	BN 8037	1.00	"CE'
2N110-BB0001	NUT(GND TERMINAL)	INCH	2.00	GND TERMINAL ASS'Y
2N110-CR0001	NUT(BNC,F)		1.00	BNC ASS'Y
2N110-NI0001	NUT	M3, NI-PL	4.00	GND WIRE ASS'Y
2S133-BL0001	SCREW, MACHINE	M3x10BH,BLACK	4.00	AC INLET, VOLTAGE SELECTOR
2S133-NI0004	SCREW, MACHINE	M2.6x4BH, NI-PL	2.00	SLIDE S/W ASS'Y
2S183-NI0001	SCREW, MACHINE	M3x8BH-W, NI-PL	2.00	POWER TRANS ASS'Y
2V210-MP0002	MOUNTING POLE	3x5,w. M3 N/S	2.00	RS-232C CONNECTOR ASS'Y
2W011-NI0001	WASHER, PLAIN	3x10/NI-PL	4.00	POWER TRANS.NOISE FILTER
2W021-ZN0001	WASHER, SPRING	3x5/ZN-PL	5.00	TRANS,NOISE FILTER,GND CONNECTOR
2W031-NI0001	WASHER, LATCH	4x6.5x0.3t	1.00	GND CONNECTOR ASS'Y
2W031-NI0002	WASHER,LATCH(BNC)	9.5x13x0.5t/NI-PL	1.00	BNC CONNECTOR ASS'Y
2W051-NI0001	WASHER,PLAIN(BNC S.)	10x13x0.3t/NI-PL	1.00	BNC CONNECTOR ASS'Y
3U08-8037-00	SLIDE S/W PCB ASS'Y	FC-8037	1.00	<b>3U08-8037-00</b>

## 4-7.CASE ASSEMBLY PART

PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1I240-SUI40-24	EMI AIR VENT FILTER	SUI40-24-125-45-13	2.00	TOP,BOTTOM SHIELD CASE
1I340-71TSK10	EMI GASKET	71TSK10-R0-170-00	1.00	BOTTOM SHIELD CASE ASS'Y
1W611-0001	CABLE TIE	100mm, WHITE	7.00	
2C120-SC0001	SHIELD CASE	Zn-pl 0.3t 60x50x16	1.00	TIME BASE PART
2C120-SC0007	SHIELD CASE 8K-B0T	Znpl 0.6t 210x202x35	1.00	BOTTOM CASE ASS'Y
2C120-SC0008	SHIELD CASE	Zn-PL 40x102x18x0.3t	1.00	INPUT A PART
2C120-SC0011	SHIELDCASE(8037TOP)	0.6t 210x202(155)x35	1.00	TOP CASE ASS'Y
2C211-BC0004	BOTTOM CASE, ABS	BN(80SER)-12965	1.00	BOTTOM CASE,ABS
2C211-TC0006	TOP CASE, ABS	BN(80SER)-12965	1.00	TOP CASE,ABS
2D212-HD0002	HANDLE, ABS	BN(80SER)-12965	1.00	HANDLE,ABS
2D311-RF0006	RUBBER FOOT	BN-DAG,37x8.5	2.00	BOTTOM CASE ASS'Y
2D311-RF0007	RUBBER FOOT	BN-DAG,32x8.5	2.00	TOOP CASE ASS'Y
2K211-KN0015	KNOB, POWER, ABS	BN-DAG(80SER.)	1.00	POWER S/W ASS'Y
2K211-KN0016	KNOB, PUSH S/W, ABS	BN(80SER.)-12965	7.00	KEY S/W KNOB
2K211-KN0017	KNOB,PUSH S/W,ABS	10.9x10x7.9, RED	1.00	POWER S/W KNOB.
2S133-ZN0002	SCREW, MACHINE	M4x45BH, ZN-PL	4.00	CASE ASS'Y
2S183-ZN0002	SCREW,MACHINE	M3x6BH-SW,ZN-PL	1.00	MAIN MOUNTING POLE+SHIELD TOP
2S233-NI0002	SCREW, TAPPING	T3x8BH, H6, NI-PL	3.00	MAIN PCB + BOTTOM CASE
2V120-MP0005	MOUNTING POLE	PI3x50	1.00	MAIN +SHIELD TOP
2V120-MP0006	HEXON POLE	5mm NAIL PI(M3.0)	1.00	MOUNTING POLE+SHIELD TOP
3E02-8037DAG-00	FRONT PANEL ASS'Y	DAGATRON 8037	1.00	3E02-8037DAG-00
3E03-8037DAG-00	REAR PANEL ASS'Y	DAGATRON 8037	1.00	3E03-8037DAG-00
3U01-8037DAG-00	MAIN PCB ASS'Y	DAGATRON 8037	1.00	3U01-8037DAG-00



PART CODE	PART NAME	SPECIFICATION	Q"TY	REFERENCE NUMBER
1F250-50F500	FUSE(UL,VDE)	50F,250V250mA(20mm)	1.00	F 250mA/250V
1W312-SP102	POWER CORDE(230V)	SP102/1.83m 'VDE'	1.00	"VDE"
1W740-00002	CABLE ASS'Y( )	BNC TO BNC	1.00	BNC to BNC, RG-58.
6D000-SG0001	SILICA GEL	3g	1.00	IN BOX IN.
6L110-LS0029	STICKER, S/N	BN,9W, 115V/230V~	1.00	9W ,115/230V~
6M220-UA0007	MANUAL	FC,UC DAGATRON	1.00	FC,UC OPERATION MANUAL
6C10G-ST0002	STYROFOAM BOX	BENCH, 300x150x65mm	2.00	IN BOX FRONT & REAR SIDE
6P21G-1B0001	INNER BOX(무인쇄)	BN,340x310x165,BROWN	1.00	BN 8K
6P22G-CB0007	CARTON BOX(무인쇄)	BN,645x355x360	0.34	6P22G-CB0007
6S40G-VB0001	VINYLE BAG	70x100mm,Zipper Type	1.00	SPARE FUSE
6S40G-VB0004	VINYLE BAG	E4x420x360mm,BENCH	1.00	PRODUCT PACK INNG.

## 5. CIRCUIT DIAGRAM

5-1. Main Circuit diagram.

Refer to attached 8037DAG Main,Display Circuit Diagram.

5-2. Prescaler Circuit diagram.

Refer to attached 8037DAG – 8037 Prescaler Circuit Diagram.

