GOODWILL INSTRUMENT

CALIBRATION STANDARD PROCEDURES

FUNCTION GENERATOR
MODEL : GFG-8216A

APPLICABLE ODM MODEL :

GW GOODWILL INSTRUMENT (M) SDN BHD.		
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TOTAL PAGE : 8

(INCLUDING COVER PAGE)

FOR INTERNAL USE ONLY
CALIBRATION PROCESS

MODEL:GFG-8216A

STATION : PRE-ADJUST

NO	Adjustment	Location	Particular	Specification	Remarks
1	Initial Setting.		Adjust all VRs to MAX .		
2	Puncture Test.		Switch ON the Power switch (without AC source).	2KV/ 1mA/1 min	Punture Tester
			Connect AC cord's GND; Life & Neutral pins of UUT		GPT-515A setting :
			to the Punture Tester's GND; Life & Neutral pins		o/p Voltage : 2KV
			respectively.		Cutoff Current : 1 mA
					Timer : 60 sec
3	Functioning Check.		Check the function of all VRs / button switches / display		20/40 Mhz O'scope
			segments / display Led & FAN function corresponding		
			to the output waveform.		
4	Burn - In .		Deliver the sets to the burn-in chamber.	50 ℃ / 4 hours	

GOODWILL INSTRUMENT (MALAYSIA) SDN. BHD. **ENGINEERING DEPARTMENT**	APPROVED BY	CHECKED BY	PREPARED BY	**APPLICABLE ODM MODEL :**

NO	Adjustment	Location	Particular	Specification	Remarks
1	External Counter Sensitivity	SVR801	COUNTER = EXT; Gate time=0.01Sec;SG-503 setting:	second digit	SG-503 setting :
	Adjust		≦38mVrms (150Mhz); with 50 Ω load terminator	from right hand side	Amplitude : ≦38 mVrms
			connected to EXT Input & another end of BNC cable	must be stable	O/p freq : 150 Mhz
			connect to output terminal of SG-503, adjust SVR801		
			to get display reading is the same as which displayed		
			on SG-503 (make sure the display digits are stable).		
			Adjust for SG-503 multiplier : X1 ; X.1	150 Mhz / 38 mVrms	
			Set SG-503 Range = 100 MHz Check		Amplitude : ≦25 mVrms
			Adjust for SG-503 multiplier : X1 & X.1	100 Mhz / 25 mVrms	O/p freq : 100.0 Mhz
2	External Counter 5hz Check		Check forDF-193 output= 5Hz;Amplitude=60mVrms with	5hz / 60 mVrms with	DF-193 setting :
			50Ω Load confirm the stability	50Ω Load	Amplitude : 60 mVrms
					O/p freq :5hz
3	Time Base Adjust	SVC801	COUNTER = EXT ,Gate Time = 1s ,connect BNC-BNC		
			from Time Base to EXT INPUT & adjust SVC801 to	± 10ppm	Instrument used :
			0.00000 & press Gate = 10s ,check Time Base = ±10ppm		Time Base
			make sure the " OVER " LED (on the display window		
			lights up).		
4	+15.5V DC Adjust.	SVR101	Measure TP3 by using DMM (GDM-8055 on the range	+15.5V +/- 0.02V	GDM-8055G Setting :
			of V Auto).		Range : V Auto
5	-15.5V DC Adjust.	SVR102	Measure TP4 by using DMM (GDM-8055 on the range	-15.5V +/- 0.02V	GDM-8055G Setting :
			of V Auto).		Range : V Auto
6	+9.1V Check	Check	Measure ZD103 **(Cathode)** by using DMM (GDM-	+9.1V +/-0.7V	GDM-8055G Setting :
			8055 on the range of V Auto).		Range : V Auto
7	-9.1V Check	Check	Measure ZD104 **(Anode)** by using DMM (GDM-	-9.1V +/-0.7V	GDM-8055G Setting :
			8055 on the range of V Auto).		Range : V Auto

NO	Adjustment	Location	Particular	Specification	Remarks
8	+5.0V Check	Check	Measure J802 (**Pin 1**) by using DMM (GDM-8055,on	5.0V +/-0.25V	GDM-8055G Setting :
			the range of V Auto).		Range : V Auto
9	Internal Zero Adjust	SVR204	Function=Sinewave, AMPL=Min ,Duty=OFF,ATT=OFF	≦+/- 3 mV	GDM-8055G Setting :
			Dial Scale =Max; Range=1Khz.		Range : V Auto
			Measure the TP 5 by using DMM (GDM-8055 on the		
			range of V Auto).		
10	Outer zoro Adjust	SVR401	Function=Sinewave, AMPL=Min ,Duty=OFF,ATT=OFF	≦2 sub .Div	Scope Setting :
			Dial Scale =Max; Range=1Khz.Scope setting: .2V/1 ms		V/D : .2V
			Adjust the symmetrical output waveform "+"&"-" must		T/D : 1ms
			be same .		
11	Amplitude of TTL / CMOS	Check	Range = 1khz,connect BNC-BNC from the TTL/COMS	TTL : ≧3vpp	Scope Setting :
	Check		output terminal to the scope. Measure the TTL output ,	Cmos 5v : ≧4±1vpp	V/D : 5V
			pull out CMOS VR (5V) & (15V) check.	Cmos 15v :	T/D : 1ms
				≧ 14.5±0.5vpp	
12	VAR DC OFFSET Check	Check	Range = 1khz , Scale = MAX , AMPL = MIN , ATT =	＞+5V ＜-5V	GDM-8145 Setting :
			OFF , DC OFFSET VR = **PULL** . Connect BNC-Banana		DC V 20
			with 50Ω load from the OUTPUT terminal to GDM .		

MODEL: GFG-8216A

NO	Adjustment	Location	Particular	Specification	Remarks
1	Frequency Minimum Adjust	SVR202	Range = 1khz , Function = Squarewave , Scale = MIN	＞100 : 1	Scope Setting :
	(100 : 1)	SVR203	AMPL = MAX , Duty = OFF , ATT = OFF.	(10Hz ± 1Hz)	V/D : 5V
			Connect BNC-BNC from OUTPUT terminal to input		T/D : 5ms
			terminal of scope & connect BNC-BNC from the TTL/		GFC-8130G Setting :
			CMOS OUTPUT terminal to the Intelligent Counter.		Gate Time = push & Min
			Scope : 5v/5ms , SLOPE = "+"adjust SVR203 to positive		LPF,ATT,COUP = Release
			10 DIV.SLOPE = "-"adjust SVR202 to negative 10DIV.		
			Counter readout = 10Hz ± 1Hz .		
2	Duty Cycle of 1KHz Check	Check	Range = 1khz , Function = Squarewave , Scale = 1khz	≦ ± 0.3 DIV	Scope Setting :
			AMPL = MAX , Duty = OFF , ATT = OFF.		V/D : 5V
			Check duty cycle with scope must spec IN .		T/D : 50us
3	Dial Scale Adjust	SVR201	Range = 1 , Function = Sinewave , AMPL =MAX ,	1Hz = ≧ 3.2xxx Hz	GFC-8130G Setting :
		SVC201	Duty = OFF , ATT = OFF , Scale = MAX	1Mhz = ≧3.2xxxMhz	Gate Time = push & Min
			Measure the TTL output terminal by using Counter.Adjust		LPF,ATT,COUP = Release
			SVR201 to get 3.20xxHz .		
			For range = 1M , Adjust SVC201 to get 3.2xxxxMHz		
4	Dial Scale Accuracy Check	Check	Check the output frequency Min & Max of ALL RANGE		GFC-8130G Setting :
			from 1 to 1M .		Gate Time = push & Min
			All Range 1 to 1M		LPF,ATT,COUP = Release
			Freq Min ≧0.032Hz ≦32KHz		
			Freq Max ≧3.2xHz ≦3.3MHz		
5	VCF Check	Check	Range = 100khz , connect BNC-BNC from TTL/CMOS	(0 ~ 10) ± 1V	GDM-8145 Setting :
			OUTPUT terminal to Intelligent Counter INPUT A ter-		DC V 20
			minal . Set Freq Control until the Intelligent Counter is		GPR-3030D Setting :
			300.xxkhz . Connect VCF test jig from the DC power		V 30
			supply +/- terminal to the INPUT VCF terminal & DMM		

GOODWILL INSTRUMENT (MALAYSIA) SDN. BHD.
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APPLICABLE ODM MODEL :

MODEL: GFG-8216A

NO	Adjustment	Location	Particular	Specification	Remarks
1	Sinewave Distortion Adjust	SVR301	Range=100K,Frequency=200khz,Ampl=Max Function=	≦ 0.8%	GFC-8130G Setting :
		SVR302	Sinewave.Adjust both SVR until it reached the least distor-		Gate Time : Push & Min
			tion & adjust SVR301 to 0.5~0.6%.Freq=20Khz adjust		LPF,ATT,COUP : Release
			SVR302 to 0.5~0.6% & check 2khz,20hz distortion with		DM-153B(Distortion Meter)
			load & without load.Check 200khz distortion with load.		
2	Attenuation Check (-20dB)	Check	Range = 1khz , Function = Sinewave , AMPL = MAX	± 0.5dB	DM-153B(Distortion Meter)
			Distortion Meter Function to CAL,Meter Range to CAL		
			Adjust VERNIER SENSITIVITY until the pointer		
			reaches the CAL position.Pull out AMPL Control VR &		
			Set Meter Range of Distortion Meter to -30dB and check		
			if it within spec.Press ATT -20dB button (ON) & check		
			within spec .		
3	OUTPUT DC OFFSET	Check	Range = 1khz ,Function = Sinewave,Triangle,Squarewave	≦ ± 350mV	GDM-8145 Setting :
	Check		AMPL = MIN,Duty = OFF,ATT = OFF.Measure the		DC V 20
			output by using DMM .		
4	Sinewave Output Level	Check	Range = 1khz , Function = Sinewave , AMPL = MAX	≧3.60 ~ ≦4.06Vrms	GDM-8145 Setting :
	Check		Duty = OFF,ATT = OFF.Measure the output level by	**(If Output level fail**	AC V 20
			using DMM (ADD 50Ω load).	**change R330 value)**	
5	Trianglewave Output Level	Check	Range = 1khz , Function = Triangle , AMPL = MAX	≧2.95 ~ ≦3.32Vrms	GDM-8145 Setting :
	Check		Duty = OFF,ATT = OFF.Measure the output level by	**(If Output level fail**	AC V 20
			using DMM (ADD 50Ω load).	**change R343 value)**	
6	Squarewave Output Level	Check	Range = 1khz , Function = Squarewave , AMPL = MAX	≧5.15 ~ ≦5.70Vrms	GDM-8145 Setting :
	Check		Duty = OFF,ATT = OFF.Measure the output level by	**(If Output level fail**	AC V 20
			using DMM (ADD 50Ω load).	**change R346 value)**	

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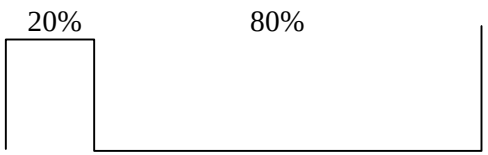
NO	Adjustment	Location	Particular	Specification	Remarks
1	TTL/CMOS Rise & Falling	Check	Range = 1M , Scale = 1MHz .Measure the TTL/CMOS	TTL = ≦20ns	Instrument used :
	Time Check.		output by scope (use 10 : 1 test probe) .	CMOS = ≦100ns	scope 100MHz.
			When CMOS measured , CMOS = **PULL** and **MIN** .		
2	Sinewave Frequency	SVC401	Duty = OFF , ATT = OFF , AMPL = MAX , Range =	6 ± 0.1 DIV	Instrument used :
	Response Adjust		1k ,Scale = Max , with 50Ω load adjust scope attenuation		scope 100MHz.
			so that amplitude shown on scope screen = 6 DIV,switch		V/D : 1V
			Range to 1M , adjust SVC401 until amplitude = 6 DIV.		T/D : 1ms
			(Waveform without " **cutoff** ").		
3	Squarewave Rise & Fall Time	Check	Range=1M,Scale= MAX , AMPL = MAX , ATT =OFF	≦ 70ns	Instrument used :
	Check		Duty = OFF , Function = Squarewave.Connect 50Ω		scope 100MHz.
			load to the input terminal of scope,adjust V/D VAR		V/D : 1V
			until the trace exactly located at 0%&100& position of		T/D : 20ns
			scope.Adjust LEVEL knob until the curve cuts at both		
			10%&90% position,then check Rise Time make sure		
			the curve cutting point IN spec.		
			Pull LEVEL knob of scope & adjust the curve cuts at		
			90%&10% to check Fall Time IN spec.		
4	Squarewave Overshoot	Check	Range=100K,Scale=Max,Ampl=Max,ATT=OFF,Duty=	≦ 0.3 DIV	
	Check		OFF,Function=Squarewave.Measure the output by scope	Ampl Min≦ 0.6 DIV	
			(1V/1us,with load).Adjust the amplitude of scope up to 8	Ampl + ATT(-20dB) =	
			Div.The portion A & B should be small than 0.3 DIV.	≦ 0.8 DIV	
			Ampl=Min.Scope setting:.2V,Adjust the amplitude of		
			scope up to 6Div.The portion A & B should be small		
			than 0.6 DIV.		A
			Ampl=Min + ATT(-20dB),Scope setting:10mV,Adjust		
			the amplitude of scope up to 6Div.The portion A & B		
			should be smal than 0.8 DIV.		
					B

NO	Adjustment	Location	Particular	Specification	Remarks
5	200khz Sinewave Interference	Check	Range = 100K , Scale = 200khz , Function = Sinewave ,	≦ 12mVPP	Scope Setting :
	Check		AMPL = MIN (PULL -20dB) , ATT = ON (-20dB).		V/D : 5mV
			Measure the output waveform by using scope,the output		T/D : 1us
			waveform should be small than spec.		
6	Duty 20%:80%:20% Check	Check	Range = 10K , Scale = MAX , Function = Squarewave ,	80% : 20%(±0.2Div)	Scope Setting :
			ATT = OFF . Scope setting : 5V/2us , turn the "DUTY"		V/D : 5V
			knob clockwise & counter-clockwise check duty wave-		T/D : 2us
			form must IN spec.		
					
7	Freq.Min Duty 20%80%20%	Check	Range = 10k , Scale = MIN , Function = Squarewave	80% : 20%(±0.2Div)	Scope setting :
	Check		ATT = OFF.Scope setting : 5V/1ms,Pull DUTY VR		V/D : 5V
			& adjust scope variable VR to 10Div.Turn DUTY		T/D : 1ms
			Knob clockwise & counter-clockwise,check Duty		
			waveform must IN spec.		

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