



Haicom Electronics CORP.

GC Series

GPS/Cellular/Wi-Fi Antenna





- 1. Electrical Specification 2
 - 1.1 Electrical Date..... 2
- 2. Mechanical Specification..... 2
 - 2.1 Mechanical Data 2
 - 2.2 Dimensions 3
 - 2.3 Connectors 3
 - 2.4 RF Cable 4
 - RG-174/U..... 4
 - RG-316/U..... 4
 - RG-58A/U..... 4
- 3. Environmental Specification..... 5
- 4. Ordering Information 5
 - 4.1 Model NO. Item NO.:xxxxx-sxxxxxxxxx 5
 - 4.2 Housing Type Item NO.:xxxxx-sxxxxxxxxx 5
 - 4.3 Connector Type Item NO.:xxxxx-sxxxxxxxxx 6
 - 4.4 Cable Type Item NO.:xxxxx-sxxxxxxxxx 6
 - 4.5 Cable Length Item NO.:xxxxx-sxxxxxxxxx 7
 - 4.6 Label Type Item NO.:xxxxx-sxxxxxxxxx 7
 - 4.7 Package Type Item NO.:xxxxx-sxxxxxxxxx 7
- 5. Appendix..... 8
 - 5.1 Appendix 1 : GC Series ROHS Report..... 8



1. Electrical Specification

1.1 Electrical Data

GPS Active Antenna:

Patch Antenna					
Frequency	1575.42 ± 3 MHz				
VSWR	1.5 Max.				
Bandwidth	20 MHz Min. at -10 dB				
Axial Ratio	3 dB Typical				
Impedance	50 Ω				
Peak Gain	4 dBic Min. (7 cm×7 cm ground plane)				
Gain Coverage	≥ -4dBic at -90°≤ θ≤90°(over 75% volume)				
Polarization	RHCP				
Amplifier Module					
Type	Amplifier Gain without cable	Noise Figure	Output VSWR	DC Voltage	DC Current
A	27dB Typical	1.4dB Typical	2.0 Max.	DC 3.0V to 5.5V	22±5mA
B		1.8dB Typical		DC 2.7V to 6.0V	8.5±4.5mA

Cellular Antenna:

Frequency	AMPS 804~896MHz	GSM 880~960MHz	Cellular 880~960MHz 1710~1880MHz 1850~1990MHz 1920~2170MHz
VSWR	2.0 : 1		
Impedance	50Ω		
Pattern Type	Omni-direction		
Power Handling	25 watt		

Wi-Fi Antenna:

Frequency	2.4~2.4835GHz
VSWR	2.0 : 1
Impedance	50Ω
Pattern Type	Omni-direction
Power Handling	25 watt

2. Mechanical Specification

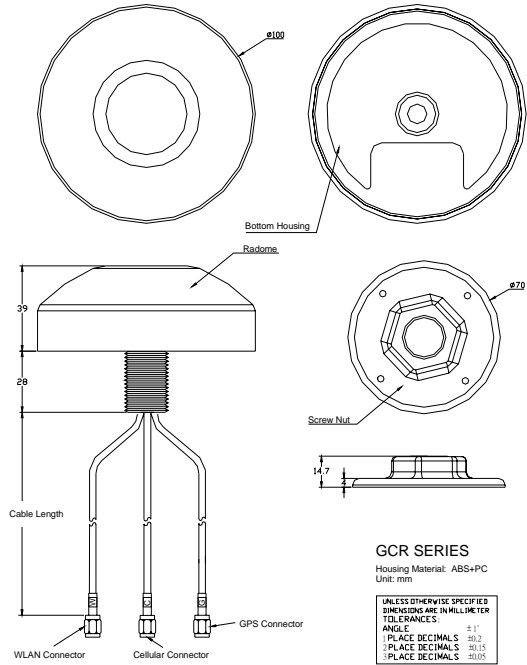
2.1 Mechanical Data

Item	Specification
Weight (Without Cable)	280 grams Max.
Housing Material	ABS+PC
Size	100mm Dia.× 67mm(39mm)
Connector	See 2.3
RF Cable	See 2.4
Label	See 4.6
Mounting	Permanent mount or Magnetic base
Housing Color	White

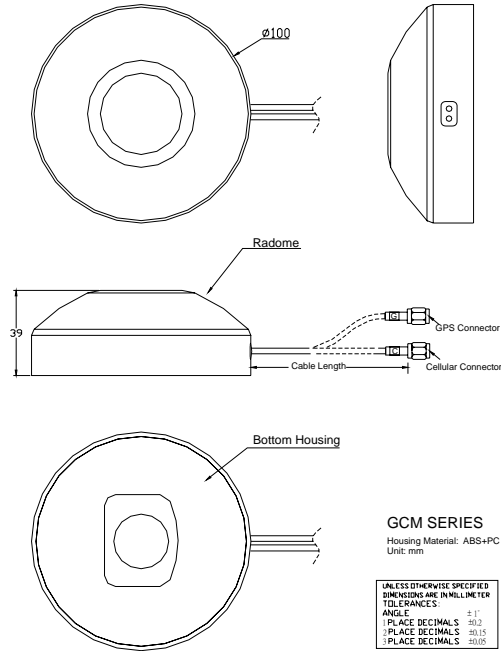


2.2 Dimensions

GCR Series



GCM Series

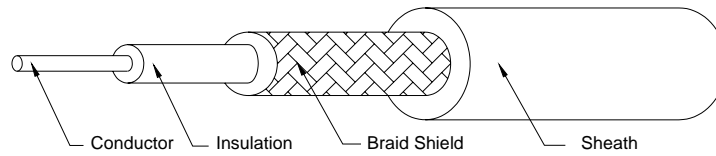


2.3 Connectors

SMA Plug(MB)	SMA Jack(FB)	SMA R/A Plug(MQ)	SMB Plug(MC)	SMB Jack(FC)
SMC Plug(MH)	MCX Plug(ME)	MCX Jack(FE)	MCX R/A Plug(MP)	MMCX Plug(MF)
MMCX Jack(FF)	MMCX R/A Plug(MT)	TNC Plug(MG)	Fakra SMB Plug(KA)	MC CARD Plug(MK)
	* Please see 4.3,if you need other connectors.			
GT5 Jack(FM)				



2.4 RF Cable



●RG-174/U

Structure :

Conductor			CPE Insulation			Braid Shield		Sheath		
Bare Strand Copper Wire			XLPE (Cross-Linked Polyethylene)			Tinned Copper Wire		PVC (Polyvinyl Chloride)		
AWG	Construction	Diameter	Min. Thickness	Nominal Thickness	Diameter	Construction	Diameter	Min. Thickness	Nominal Thickness	Diameter
26	7 / 0.16A	approx. 0.48 mm	0.40 mm	0.485 mm	1.45 ± 0.10 mm	16/5/0.10	approx. 0.31 mm	0.31mm	0.375mm	2.70 ± 0.10 mm

Characteristics :

Items	Specification
Rating	80°C 30V
Dielectric Strength	AC 500V / min.(Between Conductor and Shield)
	Spark Test AC 2000V / 0.15sec.
Insulation Resistance	Min.1000MΩ - Km (20°C) at DC 500V
Characteristic Impedance	50Ω ± 5Ω (1MHz)

●RG-316/U

Structure :

Conductor			CPE Insulation		Braid Shield		Sheath	
Silver-Coated Copper Clad Steel			FEP		Silver-Coated Copper		FEP	
AWG	Conductors NO.	O.D.	Average Thickness	Diameter	Construction	Coverage	Average Thickness	Diameter
26	0.17mm	0.51mm	0.51 mm	1.53 ± 0.03 mm	16/5/0.10	95%	0.375mm	2.53 ± 0.10 mm

Characteristics :

Items	Specification
Rating	105°C 30V
Dielectric Strength	AC 1000V/Minute
Insulation Resistance	Min.3000MΩ /Km
Characteristic Impedance	50Ω

●RG-58A/U

Structure :

Conductor		CPE Insulation		Braid Shield		Sheath	
Tinned Strand Copper Wire		PE		Tinned Copper Wire		PVC	
Construction (NO./mm)	O.D.	Thickness	Diameter	Construction	Coverage	Thickness	Diameter
19/0.18	0.9mm	1.025 mm	2.95 ± 0.10 mm	16/7/0.12mm	95%	0.7mm	4.95 ± 0.20 mm

Characteristics :

Items	Specification
Rating	80°C 30V
Dielectric Strength	AC 1000V/Minute
Insulation Resistance	Min.5000MΩ /Km
Characteristic Impedance	50Ω ± 5Ω (1MHz)

* If you need other cables, please see 4.4.



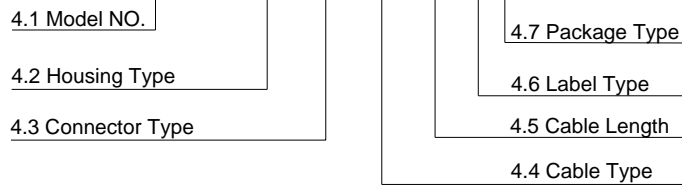
3. Environmental Specification

Items	Specification
Working Temperature	-40°C < T < +85°C
Storage Temperature	-50°C < T < +85°C
Vibration	Sine Sweep, 1G(0-P), 10-150-10Hz each axis
Humidity	95%~100% RH
EMC Test	EN 50081-1:1992 / EN 50082-1:1997 / ETS300 339:1998
Degrees of Protection	IP56 (Dustproof and Waterproof)

4. Ordering Information

Item NO.

XXXXX-SXXXXXXXXXX



4.1 Model NO. Item NO.: XXXXX-SXXXXXXXXXX

Type	BASIC NO.	GPS Type		AMPS 804~896MHz	GSM 880~960MHz	Cellular 880~960MHz 1710~1880MHz 1850~1990MHz 1920~2170MHz	Wi-Fi 2.4~2.4835GHz
		A	B				
Dual-Band Antenna	GCMDA	√		√			
	GCMDC	√			√		
	GCRDA	√		√			
	GCRDC	√			√		
Tri-Band Antenna	GCMTA	√				√	
	GCMTB		√			√	
	GCRTA	√				√	
	GCRTB		√			√	
Four-Band Antenna	GCRFA	√				√	√

GPS Type	Amplifier Gain without cable	Noise Figure	Output VSWR	DC Voltage	DC Current
A	27dB Typical	1.4dB Typical	2.0 Max.	DC 3.0V to 5.5V	22±5mA
B		1.8dB Typical		DC 2.7V to 6.0V	8.5±4.5mA

4.2 Housing Type Item NO.: XXXXX-SXXXXXXXXXX

NO.	Specification
SW	White

* "S" means ROSH, please see appendix 1



4.3 Connector Type

Item NO.:xxxxx-sxxxxxxxx

NO.	Specification (GPS Connector + Cellular Connector)	NO.	Specification (GPS Connector + Cellular Connector)
DA	SMA plug + TNC plug	DB	SMA plug + SMA plug
DC	MCX plug + SMA plug	DD	SMA plug + Mini UHF plug
DE	SMB plug + SMA plug	DF	FAKRA SMB plug(Blue) + FAKRA SMB plug(Bordeaux Violet)
FF	FAKRA SMB jack(Blue) + FAKRA SMB jack(Bordeaux Violet)	DG	MMCX plug + MMCX plug
DJ	SMA plug + BNC plug	DK	BNC plug + SMA plug
DL	MMCX R/A plug + MMCX R/A plug	DM	SMB plug + TNC plug
DN	MMCX R/A plug + SMA plug	DI	SMA plug + FME plug
DP	SMA R/A plug + SMA plug	DQ	SMC plug + SMA plug
DR	MCX plug + TNC plug	DS	SMA plug + FME jack
DT	SMA plug + SMA R/P plug	DU	SMA jack + SMA plug
DV	MMCX R/A plug + SMA plug		

NO.	Specification (GPS Connector + Cellular Connector + Cellular Connector)
TA	SMA plug + SMA plug + SMA plug
TB	FAKRA SMB plug(Blue)+FAKRA SMB plug(Bordeaux)+ FAKRA SMB plug(Blue&Gray)
TC	FAKRA SMB plug(Blue)+FAKRA SMB plug(Bordeaux)+ FAKRA SMB plug(Black)
TD	TNC R/P plug + TNC plug + TNC plug

NO.	Specification (GPS Connector + Cellular Connector + Wi-Fi Connector)
FA	SMA plug + SMA plug + MMCX plug
FC	SMA plug + SMA plug + SMA plug
FD	SMA plug + BNC plug + TNC R/P plug
FE	SMA R/A plug + SMA R/A plug + SMA R/A plug
FF	SMA plug + TNC plug + SMA R/P plug
FG	SMA plug + TNC plug + TNC R/P plug

4.4 Cable Type

Item NO.:xxxxx-sxxxxxxxx

NO.	Specification	NO.	Specification
DA	RG174 + RG58(GPS+Cellular)	DB	RG174 x2
DC	RG58 x2	DD	RG174 + RG316(GPS+Cellular)
TA	RG316 x2	TB	RG316 x3
TC	RG174 x3	SA	Dual bonded RG174 cable
SB	Three bonded RG174 cable		





4.5 Cable Length

Item NO.:xxxxx-sxxxxxxxxx

NO.	Length	NO.	Length	NO.	Length	NO.	Length
LX	Without Cable	MA	1m	EA	3"	FA	1 feet
CA	2.7cm	MB	1.5m	EB	4"	FB	4 feet
CB	4.0cm	MC	2 m	EC	5"	FC	25 feet
CC	4.84cm	ME	2.5m	EE	5.5"	FD	103 feet
CE	5cm	MF	3m	EF	6"	FE	120 feet
CF	8cm	MG	3.5m	EG	7"	FG	130 feet
CG	10cm	MH	4m	EH	8"	FH	2 feet
CH	11cm	MJ	5m	EJ	8.5"	FJ	20 feet
CJ	12cm	MK	6m	EK	9"	FK	3 feet
CK	15cm	ML	8m	EL	9.5"	FL	8 feet
CL	17cm	MM	9m	EM	10"	FM	10 feet
CM	18cm	MN	10m	EN	12"		
CN	19.5cm	MP	10.5m	EP	25"		
CP	20cm	MQ	12m	EQ	72"	GA	GPS:5m Cellular:3m
CQ	25cm	MR	12.5m	ER	4.5"		
CR	30cm	MS	15m	ES	2.4"		
CS	50cm	MT	20m	ET	19"		
CT	40cm	MU	30m	EU	6.3"		
CU	122cm	MV	25m	EV	18"		
CV	60cm	MW	2.15m	EW	10.82"		
		MX	3.3m	EX	15"		
		MY	7m	EY	16"		
				EZ	2.75"		

4.6 Label Type

Item NO.:xxxxx-sxxxxxxxxx

NO.	Specification	NO.	Specification
X	Without Label	C	Customer Label

4.7 Package Type

Item NO.:xxxxx-sxxxxxxxxx

NO.	Specification	NO.	Specification
S	Standard	C	Non-Standard



Standard



5. Appendix

5.1 Appendix 1 : GC Series ROSH Report

Component	Original Report No.	Report refer to	Cadmium (Cd)	Lead(Pb)	Mercury (Hg)	Hex.Chromium (Cr+6)	PBB	PBDE
Patch antenna	ET940-02-013	Taiwan ETC	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	SHEC0051237898-1	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
	SHEC0050719293-1	SGS Ltd.	N.D.	6.0	N.D.	N.D.	N/A	N/A
	GZ050606340EC-2.1	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
	GZ050606340EC-2.2	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
Housing	ET940-09-043	Taiwan ETC	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Silicon Rubber Packing	CE/2005/42477	SGS Ltd.	N/A	N.D.	N.D.	N.D.	N.D.	N.D.
	CE/2005/44452	SGS Ltd.	N.D.	N/A	N/A	N/A	N/A	N/A
Metal Base	CE/2005/14060	SGS Ltd.	N.D.	21.0	N.D.	N.D.	N/A	N/A
	CE/2004/A3564	SGS Ltd.	N.D.	64.6	N.D.	N.D.	N/A	N/A
Magnet	CE/2005/51839	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	CE/2005/51839	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Screw	CE/2004/C5772	SGS Ltd.	N/A	N/A	N/A	N/A	N.D.	N.D.
	CE/2004/B1320	SGS Ltd.	N.D.	86.9	N.D.	N.D.	N.D.	N.D.
	C418489	Intertek Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
PCB SMT	CE/2005/72610	SGS Ltd.	N/A	N/A	N/A	N/A	N.D.	N.D.
	CE/2004/B2398	SGS Ltd.	N.D.	12.70	N.D.	N.D.	N/A	N/A
PCB	CE/2005/63784	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	CE/2005/63784A	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Filter	ET940-02-013	Taiwan ETC	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	SH304686/CHEM	SGS Ltd.	N.D.	40.0	N.D.	N.D.	N/A	N/A
Transistor	CE/2004/83087	SGS Ltd.	N.D.	33.9	N.D.	N.D.	N.D.	N.D.
Capacitor	CE/2005/21030	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Resistor	KA/2005/70988	SGS Ltd.	N/A	10.80	N/A	N/A	N/A	N/A
	KA/2005/70978	SGS Ltd.	N/A	N/A	N/A	59.3	N/A	N/A
	KA/2005/70989	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
LNA IC	LPCE/2373/04	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
	CE/2004/30804	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
	M/0026B/04	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
	4U07059A	NABBIR Lab.	0.70	5.39	0.02	4.41	N/A	N/A
			0.04	2.39	0.05	1.97	N/A	N/A
1.64			1.52	0.03	0.71	N/A	N/A	
			0.44	0.36	0.14	3.29	N/A	N/A
Solder	CE/2004/C0246A	SGS Ltd.	N.D.	327.0	N.D.	N.D.	N/A	N/A
Connector	CE/200483645	SGS Ltd.	N.D.	3751.8	N.D.	N.D.	N/A	N/A
	CE/200480306	SGS Ltd.	37.7	26092.0	N.D.	N.D.	N/A	N/A
	CE/2004/30164	SGS Ltd.	N.D.	N.D.	N.D.	36.3	N/A	N/A
	CE/2004/83004A	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	CE/2004/30165	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
	CE/2004/11176	SGS Ltd.	N.D.	16.7	N.D.	N.D.	N/A	N/A
Cable	CE/2004/B3818	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	CE/2004/C0308	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
	CE/2004/B3819	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
Cartons	CE/2004/51058A	SGS Ltd.	N.D.	N.D.	N.D.	N.D.	N/A	N/A
	CE/2004/A0493C	SGS Ltd.	N.D.	17.2	N.D.	N.D.	N/A	N/A
	CE/2004/A0490C	SGS Ltd.	N.D.	16.2	N.D.	N.D.	N/A	N/A

N.D. :None detect

N/A :Not available

Result: Complied with 2005/618/EC Article