

Designing of mobile devices like playing with toys



Game cubes or puzzle?

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- It could be a non-complete puzzle



- It could be easy like game cubes as well

Where buy the toys?

Broadline distributor

- 30000 components
- You get a few pieces of a puzzle
- Poor support, because the team has to serve several lines



Special distributor

- 3000 components
- You get a puzzle and miss one piece
- Good support, because the team has to serve a few lines



Wireless Solution supplier

- 300 components
- You get all cubes you need and it fits always together
- Best support, because team has to serve minimum lines



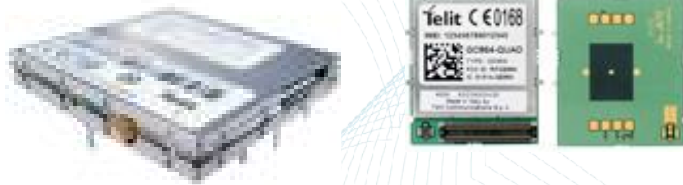
● Q: How to find the best partner?

A: Just divide the number of listed components on line card by support engineers

GPRS / UMTS Module

Connector version

- **Costs for connector**
- **Costs for pick and place**
- **Higher costs for module assembling**



BGA version

- **No board to board connector needed**
- **Lower assembling costs**
- **Smaller PCB ⇒ lower costs for PCB, smaller and cheaper enclosures**

30 x 30 x 2,8 mm only



- **Q: What is the price of the module?**
A: What will be the most economic concept for you?

GPS or combined GPRS/GPS Module

Connector version

- **Costs for connector**
- **Costs for pick and place**
- **Higher costs for module assembling**



Embedded version

- **No board to board connector needed**
- **Lower assembling costs**
- **Smaller PCB ⇒ lower costs for PCB, smaller and cheaper enclosures**



- **Q: Which is the cheapest module?**

A: What about to talk the best and most economic concept?

Bluetooth, ISM, ZigBee, WIFI Modules

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- **Q: Which starter kit do you recommend?**
A: You don't need a new starter kit, because you can upgrade on our Philosophy "One for all – All for one"

Batteries

Lithium polymer

- **Medium costs**
- **Small size**
- **Handling more difficult**
- **Nearly no standard batteries in supermarkets available**
- **Charger is already inside the GPRS module**



NiMH

- **Low costs**
- **Medium size**
- **Handling very easy**
- **Standard batteries available**
- **External charger is necessary**

- **Q: Which battery should I use?**

A: Please explain more details about the application.

RF Cables



FME
MMCX
GSC
FAKRA
H.FL

SMB
SMA
TNC
U.FL
IPEX

Try us: **Standard or low loss cables - free samples**
Choose your connector and cable length

● **Q: What is the price for a cable?**

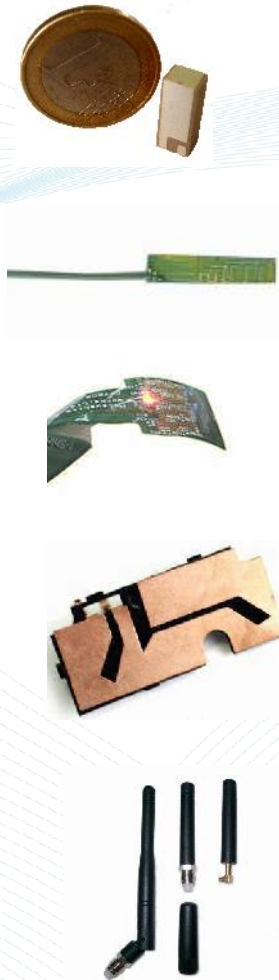
A: Today we offer cables free of charge if you visit us at our stand number 37.

Try us and get highest quality on interesting price level.

Round Solutions gives you best price guarantee on RF link.

Embedded Antennas

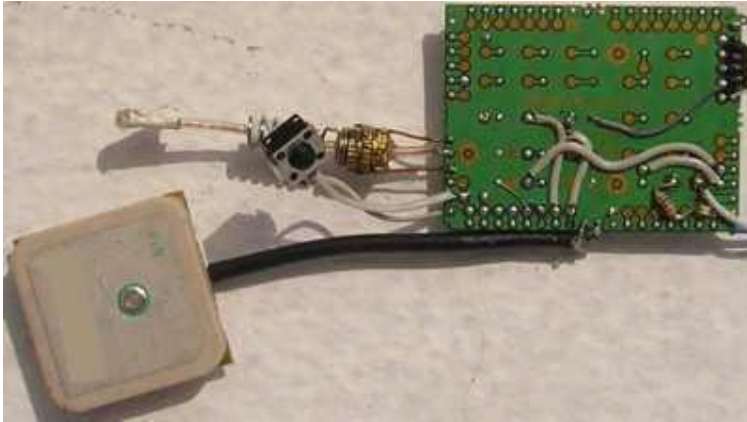
- Ceramic
- Flexible PCB
- FR4 PCB
- Stamped metal
- Helical



- **Q: My PCB should fit in a matchbox. Which antenna you recommend?**

A: Please tell me some more about your application. We can help with such small antennas, but please note that you will lose performance, because the ground plane is much too small.

Ground plane



- **Customer: My GSM antenna radiates, but my GPS antenna antenna does not work.**

A: Why didn't your supplier sell you a starter kit; why didn't they recommend to take care on ground plane?

- **Q: My GPS antenna does not work. My supplier and the manufacturer recommend to use coax cable instead of micro strip lines.**

A: Please change the layout from 2 layer PCB to a 4 layer PCB, use the tools of Round Solutions to calculate the micro strip line and save the money to order 2 RF cables from us.

GPS Antennas



Magnetic



Magnetic/Patch Dashboard
or Window



Embedded
with 2 LNA



Embedded
on PCB

● **Q: What type of antenna can I use for my tracking application?**

A: Is it a vehicle, people, pet or asset tracker? Is the enclosure made with metal or plastic? How big is the enclosure? What about standby time of the battery? What is more important: Price or Performance?

External Antennas

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GSM Quad Band,
UMTS, GPS



GSM Quad Band, UMTS,
Wifi, Bluetooth, GPS



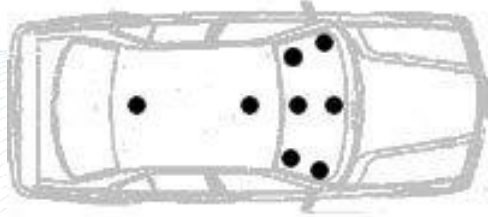
GSM Quad Band, UMTS,
WiFi, Bluetooth, GPS



GSM Quad Band, UMTS
Wifi, Bluetooth, GPS



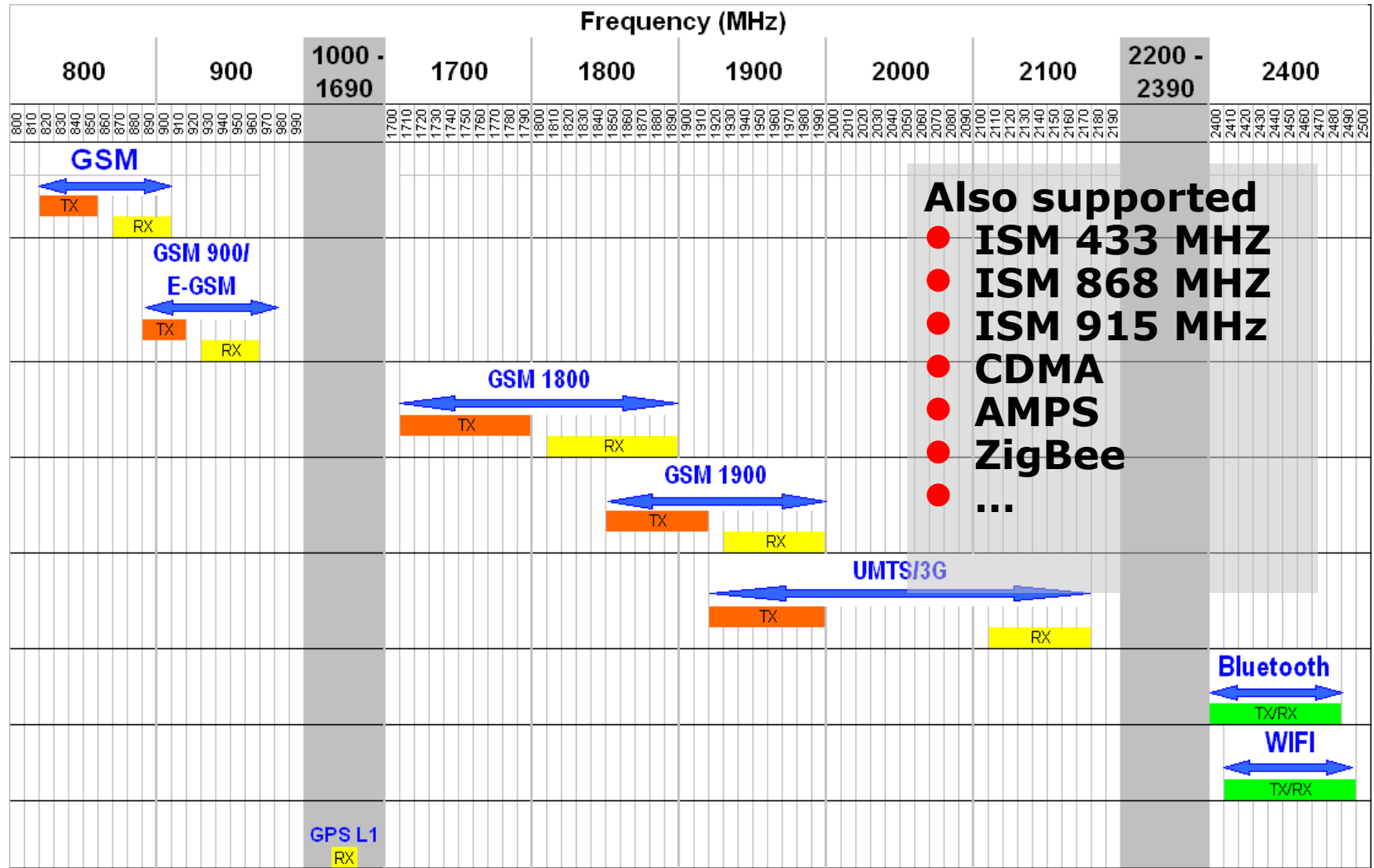
GSM Quad Band, GPS



- **Q: What type of antenna I can screw on my enclosure?**
A: What kind of material is in use? Metal or plastic?

Frequency bands of antennas

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Microphone, buzzer and speaker

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- **Q: My microphone is puzzled by GSM antenna?**
A: Are you using a GSM approved microphone of us?

Embedded Linux Solutions

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EMBEDDED LINUX SOLUTIONS



GE863-PRO³

- ARM9 200 MIPS
- 8MB RAM/4MB FLASH
- Ethernet Controller
- USB
- SSL



**XScale +
GE863-GPS**

- 64MB RAM/32MB Flash
- 4x USB
- Ethernet 10/100
- CAN Controller
- GSM/GPRS



- **Q: Can you help with development and assembling services?
A: Yes, we can help with design aid, prototype service up to mass production.**

AarLogic product family

AarLogic C01/3

- GPRS/GPS-Module or GPRS Module
- Python engine
- SIM card holder
- RF plugs
- Low ESR capacitors
- 48 pins 1,27 mm
- PSU 3,4 - 4,2 V
- RS232 CMOS 2,8 V
- Battery charger



AarLogic C05/3

- GPRS/GPS-Module or GPRS Module
- Python engine
- SIM card holder
- RF plugs
- Low ESR capacitors
- 68 pins 1,27 mm
- PSU 9 - 32 V
- RS232 +/-12 V
- Battery charger



AarLogic C10/3

- GPRS-Module
- Nucleus OS or LINUX
- SIM card holder
- RF plug
- Low ESR capacitors
- 160 pins 1,27 mm
- PSU 9 - 32 V
- RS232 2,8 Volt
- Battery charger
- ARM9 with 200MIPS
- 8MB RAM, 2 MB flash
- SPI, IIC, SD/MMC, A/D and D/A converter ...



Easy, fast and secure development



- **Q: Which tools do you recommend for developing a mobile device?**

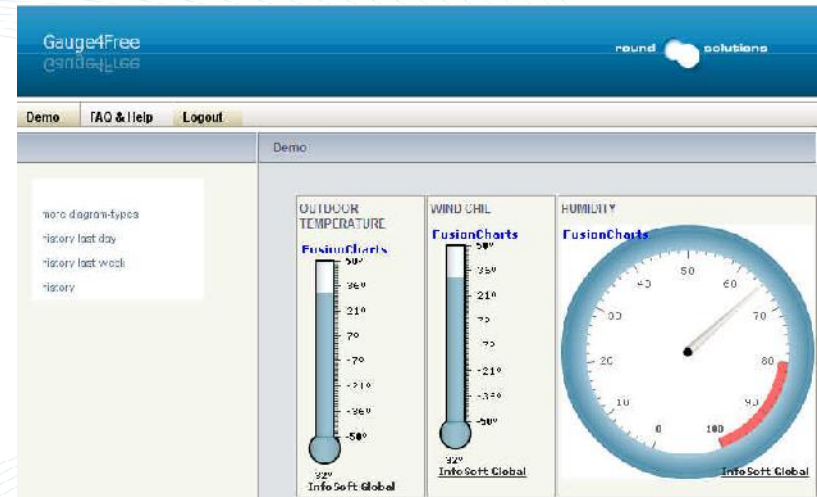
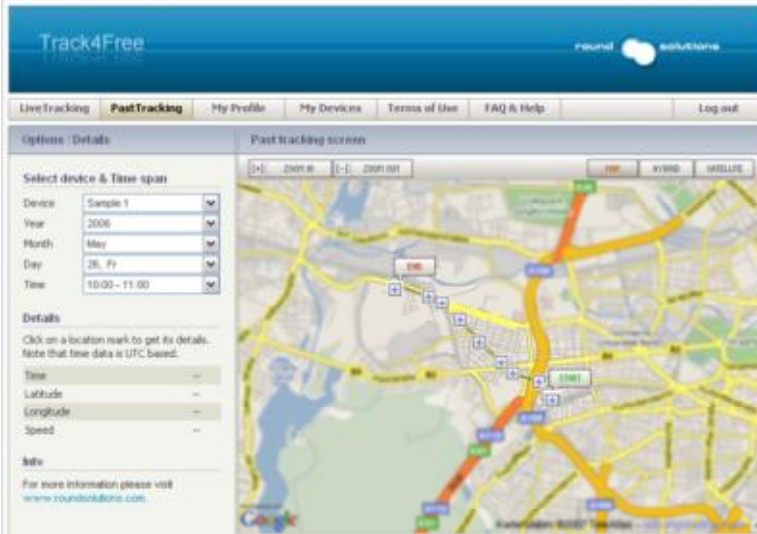
A: A battery monitor to test the performance of the battery, GSM tester to force 2 Watt power, GSM current monitor to measure the peak current and Python debugger if you would like to use the license-free Python.

Enhanced services www.track4free.com and www.gauge4free.com

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- **Screenshot track4free**

- **Screenshot gauge4free**



- **Q: How to develop a tracking device?**

A: Order a starter kit or AarLogic board, upload the free of charge Python code and register the module to www.track4free.com

Python code for GM862-GPS for free

#General Functions

#Debug message

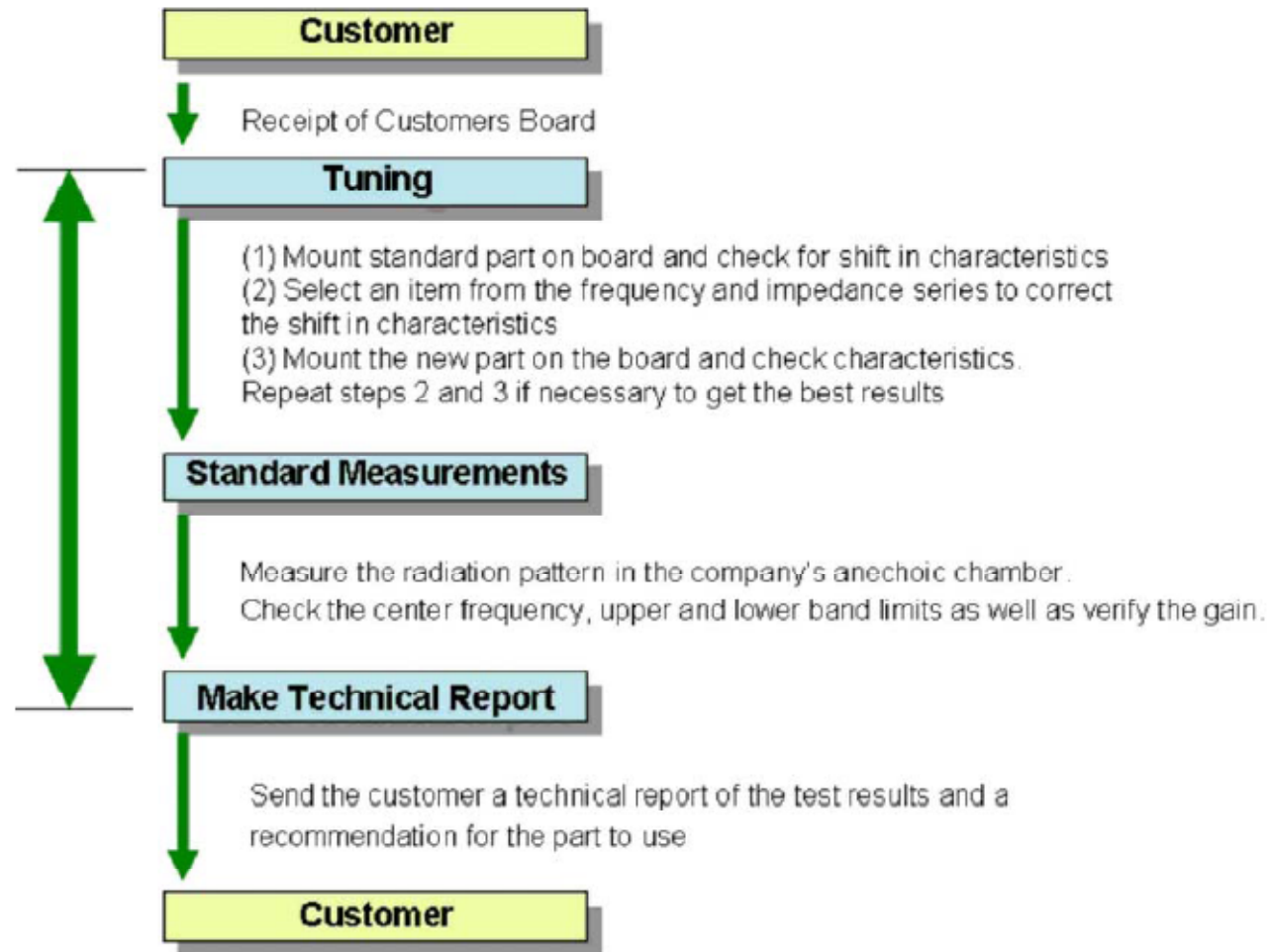
```
def debugmsg(msgtext):  
    msgtext = msgtext.replace('\r', '\\r')  
    msgtext = msgtext.replace('\n', '\\n')  
    print msgtext  
    SER.send(msgtext + '\r\n')  
    #f = open('log.txt','ab')  
    #f.write(msgtext + '\n')  
    #f.close()
```

#GPS status

```
def gps_status(gpspos):  
    debugmsg('Retrieving GPS status')  
  
    gpspos_parts = gpspos.split(',')  
  
    if ( (gpspos_parts[5] == '2') or (gpspos_parts[5] == '3') ): #2D or 3D fix  
        debugmsg('GPS fix "' + gpspos_parts[5] + '" is valid');  
        status = TRUE  
    else:  
        debugmsg('GPS fix "' + gpspos_parts[5] + '" is not valid');  
        status = FALSE  
  
    return status
```

Enhanced services Design in aid for embedded antennas

- Tuning and customisation of antennas
- Development of matching circuit
- Development of new customised antennas



Enhanced services Design Check by GSM tester



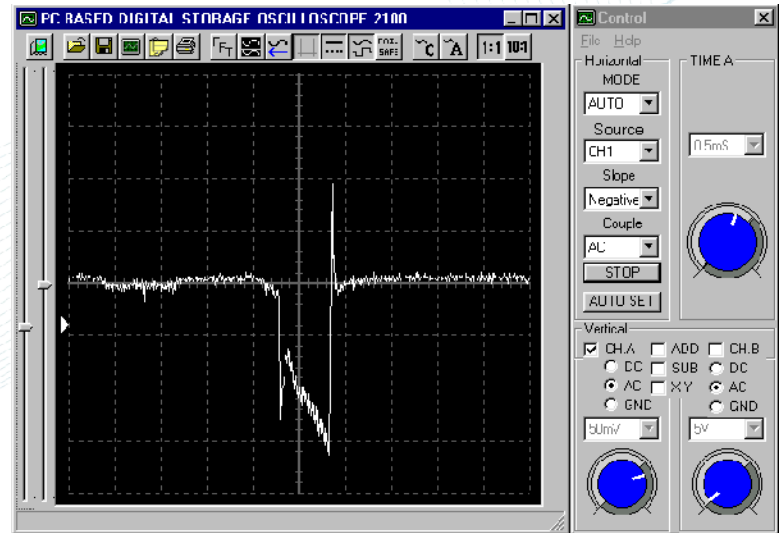
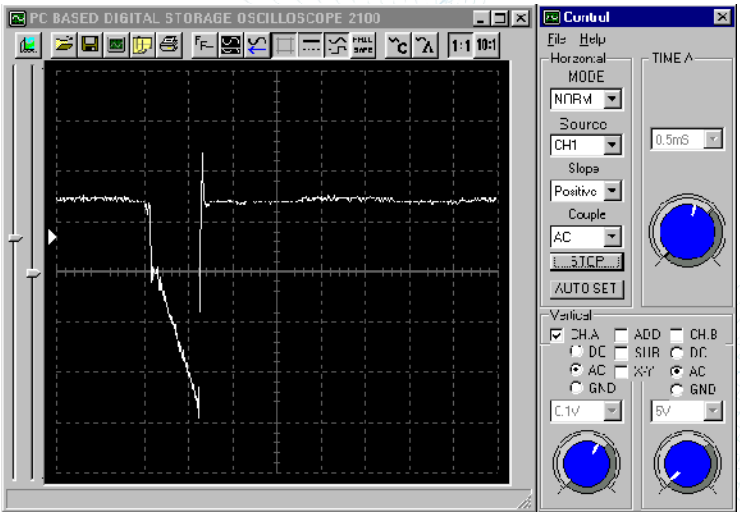
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Origin customer design

- Power supply during 2 Watt power and capacitor 100 uF
- 400 mV ripple

Our design

- Power supply during 2 Watt power and capacitor 220 uF
- 150 mV ripple



Enhanced services

Rapid prototyping of enclosures

Prototype



- **Robust material Polyamide**
- **Very detailed by using files in format STL**
- **Minimum edge length of polygons 0,01 mm**
- **Only Euro 350 to 400 for handheld enclosure**

Final enclosure



- **Delivery after 2 - 3 working days**

Enhanced services

User forum for wireless modules

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- World biggest forum
- More than 4.000 members
- Support and information 24 hours and 7 days a week

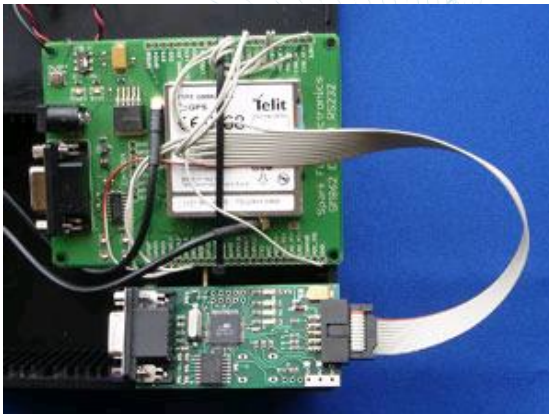
Username	IP Address	Browser	Last Active	Location
Harald	83.129.0.79	Mozilla/5.0 (Windows; U; Windows NT 5.1; de; rv:1.9.1.0)	14:41	Who is where online?
ivieqas	213.63.0.27	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1;...)	14:40	Thread: AT\$GPSACP sentence
denise	217.221.237.206	Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1;...)	14:39	Thread: Tracking Script Python
mati	213.199.250.51	Opera/9.20 (X11; Linux i686; U; en)	14:37	Thread: GPS antenna with long lead
ThomasDK	87.48.51.38	Mozilla/5.0 (Windows; U; Windows NT 5.1; da; rv:1.9.1.0)	14:36	Thread: The Python-Debugger...the indispensable assistant during TELIT-Module software development
doaken	83.71.235.121	Mozilla/5.0 (Windows; U; Windows NT 5.1; en-GB; rv:1.9.1.0)	14:32	Thread: own telephone Nr
Cosmin Buhu	89.120.152.235	Opera/9.20 (Windows NT 5.1; U; en)	14:28	Main Page

Sorted by **Last Active** in **descending** order.



What other people are saying about our tools and services

- The only reliable solution I have found is to purchase the hardware based on Round Solutions Python-Debugger however this will require an additional PC serial port and a custom cable.
- I finally managed to piece together enough information to get started. Thanks to Google and the informations of Round Solutions and their forum.



- However a much faster way is to use the RS term application from Round Solutions (note if using RSterm the Python IDE is also required).



- The whole story is listed here: <http://www.digitaldawgpound.org>

What broad line distributors are saying about user forum

- **“Cosmin, i dont have a ID.... I work for a company call XXXXX we are 1 of the main distributers of modems in Europe...**

But this website is the most best for source of knoweledge

That is way i ask here !!!!!

Kind Regards

Lee XXXXXX (FAE North/England and Scotland)”

- **The whole thread you can read here:
<http://www.roundsolutions.com/forum>**

- **Answer of Cosmin:
“This one is good ... I will ask XXXXX to pay my salary then.**

A perfect example why people should buy from Round Solutions, thank you Lee for raising the ball.”

- **See also slide number 3 of this presentation**

International References

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Medical Intelligence,
Canada



Medical Intelligence
leader of the mobile
tele-security industry

Liberty
peace of mind

t+t netcom
Germany



PHYTEC
Germany



**Thank you for listening.
More about game cubes at stand 37**

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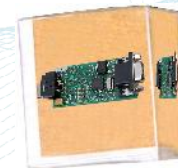
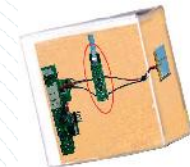
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Fax +49 (0)6103 27044-199

info@roundsolutions.com

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Order Form For Starter Kits

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Round Solutions GmbH & Co KG Steingrund 3 D-63303 Dreieich Germany	CREDIT CARD PAYMENT FORM (All fields needs to be filled in)
Company name:	
Country:	
Contact person:	
Telephone number:	
Fax number:	
Email address:	
VAT registration number: <small>(only for companies within the EC European Community)</small>	
Card name (Visa or Master Card):	
Card number:	
Name of cardholder:	
Expiry date:	
Security number: <small>(3 last digits on the back of the card where the signature is)</small>	
Amount authorised:	
Cardholder signature and date:	

Order number	Price	Quantity	Sum
STK-RS-BLUE-KC22	250,00 €		
STK-RS-COP	195,00 €		
STK-RS-GC864-PYT	340,00 €		
STK-RS-GE863-GPS	399,00 €		
STK-RS-GE863-PYT	372,00 €		
STK-RS-GE863-QUAD	370,00 €		
STK-RS-GE864-PYT	374,00 €		
STK-RS-GE864-QUAD	354,00 €		
STK-RS-GM862-GPS	376,00 €		
STK-RS-GM862-PYT	343,00 €		
STK-RS-GM862-QUAD	341,00 €		
STK-RS-IQ	190,00 €		

Total	
--------------	--

Fax +49 – (0)6103-27044199

Freight Pricing

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	UPS		TNT	
	Price for up to 2kg	Delivery Time* (working days)	Price for 0,5kg	Delivery Time* (working days*)
Argentina	€ 90,0	3-5 wd	€ 75,0	3-5 WD
Austria	€ 13,0	2-3 wd	€ 35,0	Next Day
Australia	€ 85,0	3-5 wd	€ 75,0	3-5 WD
Benelux	€ 10,0	2-3 wd	€ 25,0	Next Day
Brazil	€ 90,0	3-5 wd	€ 75,0	3-5 WD
Bulgaria	€ 30,0	2-3 wd	€ 75,0	1-2 WD
Czech Rep.	€ 22,0	2-3 wd	€ 55,0	1-2 WD
Canada	€ 60,0	3-5 wd	€ 75,0	3-5 WD
Denmark	€ 12,0	2-3 wd	€ 35,0	Next Day
Estonia	€ 26,0	2-3 wd	€ 55,0	1-2 WD
Finland	€ 26,0	2-3 wd	€ 35,0	Next Day
France	€ 17,0	2-3 wd	€ 35,0	Next Day
Germany	€ 8,0	1 wd	€ 20,0	Next Day
Greece	€ 29,0	2-3 wd	€ 35,0	Next Day
Hungary	€ 32,0	2-3 wd	€ 55,0	1-2 WD
Hong Kong	€ 85,0	3-5 wd	€ 75,0	3-5 WD
India	€ 85,0	3-5 wd	€ 75,0	3-5 WD
Ireland	€ 27,0	2-3 wd	€ 35,0	Next Day
Italy	€ 25,0	2-3 wd	€ 35,0	Next Day
Latvia	€ 26,0	2-3 wd	€ 55,0	1-2 WD
Lithuania	€ 26,0	2-3 wd	€ 55,0	1-2 WD
New Zealand	€ 85,0	3-5 wd	€ 75,0	3-5 WD
Norway	€ 31,0	2-3 wd	€ 55,0	1-2 WD
Mexico	€ 80,0	3-5 wd	€ 75,0	3-5 WD
Malaysia	€ 85,0	3-5 wd	€ 75,0	3-5 WD
Poland	€ 22,0	2-3 wd	€ 55,0	1-2 WD
Portugal	€ 27,0	2-3 wd	€ 35,0	Next Day
Romania	€ 30,0	2-3 wd	€ 75,0	1-2 WD
Slovak Rep.	€ 22,0	2-3 wd	€ 55,0	1-2 WD
Slovenia	€ 22,0	2-3 wd	€ 55,0	1-2 WD
South Africa	€ 90,0	3-5 wd	€ 75,0	3-5 WD
Spain	€ 27,0	2-3 wd	€ 40,0	Next Day
Sweden	€ 21,0	2-3 wd	€ 35,0	Next Day
Switzerland	€ 28,0	2-3 wd	€ 55,0	1-2 WD
Turkey	€ 55,0	2-3 wd	€ 55,0	1-2 WD
UK	€ 15,0	2-3 wd	€ 35,0	Next Day
USA	€ 59,0	3-5 wd	€ 75,0	3-5 WD
Non EC Europe	€ 55,0	2-3 wd	€ 65,0	1-3 WD
Worldwide (outside of Europe)	Please inquire		€ 75,0	3-5 WD