

Dear Texas Instruments,

My name is Mychaela Falconia, and I am a devoted admirer of the Calypso GSM baseband chipset solution which your company once produced. I don't know if anyone in present-day TI still remembers it or not, but a decade and a half ago you used to make chipsets for GSM cellular phones and modems, GSM baseband processor chipsets that were known by names like Calypso and LoCosto. To the best of my knowledge and understanding, some time around 2008 or 2009 your company was exiting that line of business, and I found some old press releases from that time saying that you were looking to sell that Wireless Terminal Chipset Business Unit. I never found any press releases or announcements saying that it has been sold, thus I assume that no interested buyer could be found and that entire business got shut down and disbanded instead.

I first learned about your Calypso chipset from mid-2000s when I saw it used in the legendary Neo FreeRunner smartphone by Openmoko, and I immediately fell in love with it, so to speak. I used a Google Chrome browser with built-in translation to trawl through several Chinese mobile phone developer forum sites, looking for any and all documentation I could find for the Calypso chipset, and I found all of the needed chip datasheets, application notes and schematics for your Leonardo reference board. I couldn't find any reference PCB layout files from TI, but I was able to convince Openmoko to release their PCB layout (different from TI's, so it must have been OM's original work), and I used OM's PCB layout as the basis for my own.

Fast-forwarding to the present, I was able to buy TI-made Calypso, Iota and Rita chips on the Chinese surplus market, as well as all of the needed additional components (VCXO, RF PA, antenna switch, SAW filters etc), and I used these historical TI chips and supporting components to build my own Calypso modem boards based on your Leonardo reference schematics and Openmoko's PCB layout. Yes, you read that right, I have built my own GSM modem board based on your Calypso chipset from a decade and a half ago; I built the first version of my board last year (2017) and I am currently in the process of making version 2 — I made a design mistake in my first version that causes Calypso sleep modes to not work, and I am making V2 boards to correct it.

For the software to run on my FreeCalypso boards, in 2013 I found what I believe to be the world's last surviving copy of your TCS211 (TCS2.1.1) firmware package for the Calypso chipset. This (to the best of my knowledge) world's last surviving copy of TCS211 was very incomplete in that many of the critical components survived only in the form of binary objects, with the original source irretrievably lost, but through several years of work I have painstakingly reconstructed the missing source. For the Calypso-specific Layer 1 and for the Rita-specific RF TPU driver I have reconstructed the code from disassembly of the surviving binary objects, whereas for the G23M protocol stack I took the code from the LoCosto TCS3.2 source that was released freely to the whole world by Peek Inc. in 2012 as that company was closing down and back-ported it to the Calypso TCS211 environment. I also developed my own tools to replace TI's FLUID, PCO, TMSH, RiViera Tracer and other development tools — my FreeCalypso host tools are 100% my own original work (I never found any source for any of your original tools), and they differ from yours in that they run under Linux instead of Windows. Same for RF calibration: I bought my own CMU200 instrument and developed my own Linux-based RF calibration software, replacing whatever Windows-based software was used back in the day.

The reason I am writing to you is because there are a couple of pieces still missing, and I am wondering if you might be able and willing to dig them up from your archives and release them:

1. I currently have no visibility into the workings of the DSP part of the Calypso: I load the same downloadable patch codes that came with (what I assume to be) the world's last surviving copy of your TCS211 software (the patch code identifies itself as version 6840), but without any DSP source code (neither for the ROM already in the silicon nor for the downloadable patches), it is very difficult for me to maintain the L1 code that works with this DSP. I understand that back in the days when your GSM chipsets were an active product, TI would fully maintain all DSP and L1 code and your customers had no need to delve into it, but now that the Calypso has entered the life cycle phase in which it no longer has any commercial value and the only people interested in it are hobbyist tinkerers like me, I wonder if you might be willing to release the source for the DSP ROM in the Calypso (ROM version 3606) and make it possible for the hobbyist community to make and maintain our own DSP patch codes.
2. Underlying the GSM+GPRS protocol stack there is a software component called GPF (Generic Protocol stack Framework), and underneath GPF lies the Nucleus PLUS RTOS. I found the complete source on the Internet for a version of Nucleus from 2002, close enough to the even older version used by TI in TCS211

to make a working substitute, but I am missing the source for the glue layer between GPF and Nucleus: I got the source for most of GPF, but the OSL and OSX components are missing. I have reconstructed a recompilable source for these OSL and OSX components from disassembly of the surviving binary objects, but in some places I am not certain of the correctness of this reconstruction, especially when my goal is to have this code compile both with your original TMS470 compiler and with gcc (GNU C compiler), with the aim of eventually migrating to the latter. Hence I wonder if you might be willing to release the source for some version of GPF that includes the Nucleus OS adaptation layer.

I also realize that because I am building my own hardware products (FreeCalypso development boards for enthusiasts and tinkerers) that use not only TI-made chips which I buy on the Chinese surplus market, but also your copyrighted software (fragments from TCS211 and from TCS3.2), I probably need to pay you some kind of royalty for my use of your code. I don't know what kind of per-unit royalties your customers (GSM handset and modem manufacturers) paid to you for this software back in the day, but I am offering to pay you \$100 for every physical hardware unit which I produce and sell — I assume it is more than what those mainstream high-volume manufacturers paid per unit in royalties, as the total cost of their consumer-oriented products was less than this figure. Unless some miracle happens, I do not expect to produce more than 100 units in total over my lifetime: so far I have produced 13 non-defective boards and sold only 3 — I am an ultra-low-volume hobbyist device manufacturer.

I am addressing this letter to the San Diego office of TI, as opposed to Dallas or anywhere else, for two reasons: (1) I live in San Diego area, and (2) to the best of my knowledge your office was once directly involved in the wireless chipset business of TI (as I understand it, 3G or UMTS or WCDMA work was done in your office, whereas most of GSM/2G was done in France and Germany), thus I reason there is a chance that someone in your office may remember those days and know what I am talking about.

Given that I live in San Diego area, I would be very interested in getting an in-person meeting with someone at your office to discuss my work with your Calypso chips and any possibility of licensing the related IP for hobbyist community use.

Sincerely,
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