

Revolutionary Bolt-On GPS Anti-Virus: Anti-Jamming Module for GPS Receivers For Homeland Security, Drones, Timing and Autonomous Vehicle Applications



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"We bring to the world, the first GPS anti-virus." - Omer Sharar

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CEOCFO: *Mr. Sharar, what is the idea behind GPS Dome?*

Mr. Sharar: GPS Dome basically is a disruptive revolutionary cyber product. It is meant to protect all kinds of GPS receivers or GPS based systems against disruption. Disruptions of GPS can be in the form of GPS-jamming which basically

is to jam the signal that you are receiving (which causes the GPS receiver to stop receiving anything) or even more complicated and more dangerous, GPS-spoofing which is actually tricking the GPS receiver into thinking that it is at a different position at a different time. In a nutshell, our competitive advantage is our amazing SWaP (Size Weight and Power consumption). We introduced into the market something that has never been seen before and at an affordable price – less than one-tenth of the price of any GPS anti-jammer in the market.

CEOCFO: *Is jamming of GPS receivers very common?*

Mr. Sharar: I will give you some background of myself and where GPSdome comes from. We come from a company called Focus Telecom which Ehud, GPSdome's CEO, founded in 1995. Focus Telecom plans, sells and deploys synchronization solutions of timing and frequency systems. Focus Telecom represents the leading vendor in the field of synchronization called Microsemi Corporation, which is a huge corporation based in California and leads the timing and synchronization market. Our expertise is time, and time, is very heavily based on GPS which delivers UTC (Coordinated Universal Time) all over the globe. About a year and a half ago, I was asked by one of Focus's customers, from the defense market; to see how these timing servers, recover from GPS jamming. I had no idea how to get a GPS jammer which I thought was very hard to get, perhaps illegal and probably very expensive. So, I went online and I was astounded to find out that you could buy these simple jammers for as low as \$20 from a huge number of websites from all over the world. After easily buying it online I was shocked to find out that when I turned it on, it created a blackout of about 100-200 meter radius around me where GPS signal was not available at all, no matter how good a GPS receiver I used. So, finally, to answer your question, today it is an epidemic at its preliminary stages.

I guess the immediate question though is why anyone would use a jammer, right? Well the classic case is when someone wants to create damage to a GPS based system, for example, jam a GPS-based tracking system used to track a freight truck delivering expensive goods. This will allow the attacker to stop it and steal its goods. Another use case, much more common by the way, is people using these jammers to hide their own location from their boss or anyone who might be tracking them. What they don't realize is when they do this, they affect all GPS-based systems around them for several hundreds of meters. This is exactly what happened when a truck driver used a personal GPS jammer to hide from his boss but disrupted critical GPS based ground systems at Newark airport back in 2012 for an entire week. Today as we speak, there are more than ten

thousand active GPS jammers in London alone. Why? Probably because professional drivers want to hide from their boss or even private citizens that want to hide from “big brother”. It is a growing concern and not a lot of people like talking about it because it’s scary.

CEOCFO: *Would almost any company have use for GPS Dome?*

Mr. Sharar: Today we use GPS almost everywhere. Yes, the most known use is in our smartphone. What most people don’t know is that GPS is widely used in power plants and power production and all other critical infrastructure and utilities. It is used in the entire finance system for accurate timestamps, it is used for base stations delivering cellular service, it is used to track delivery of goods, to monitor and manage emergency services (police, ambulances, fire trucks) and of course, anything autonomous that needs to get from point A to point B on its own. Without GPS we won’t have electricity, cellular reception, banking services, efficient critical services and transportation and many many more services we rely on today.

We produced the first production batch of GPSdome rev 1.0 and at the current price point it is aimed at what we call special applications which include timing applications (energy, finance, cellular), HLS (Homeland Security) applications, critical services etc.; If you do not want the Brinks truck carrying your money or a truck carrying Intel chips to be jammed and taken off the road by these so-called “asphalt bandits” (which is very common in in South America, Africa & Asia) then these companies will need our solution right now, and we see a lot of interest from this market already.

In the future we have our site on the entire vehicle industry as a whole and the autonomous vehicle industry specifically. The reason for that is that autonomous vehicles need GPS to get from point A to point B. If they do not have any kind of cyber protection product that includes anti-jamming, they will not be able to make it to their destination. Currently, with GPSdome rev 1.0, we are ready to do and intend to do pilots with the many interested manufacturers in the automotive industry that are working on their autonomous future. Our goal is to reach the year 2020 with a chip-based product at a much lower price point which will allow us to protect any autonomous vehicle – cars, UAVs etc.

CEOCFO: *Where are you in the development and commercialization process?*

Mr. Sharar: We have GPSdome rev 1.0 out. This is our initial product which protects the most common GPS L1 frequency. It already works and functions very well and we have tested it thoroughly against jammers and spoofers. To achieve what we did here, which was truly disruptive, we recruited a team from Israeli defense industries. We took an algorithm from the EW (Electronic Warfare) world which is used in military applications for more than 15 years now and we applied it on a commercial, civilian, platform which allowed the product to reach its amazing SWaP and competitive price. We have performed successful tests with Microsemi and Qualcomm. We were able to prove that our product works well in stationary and mobile applications against both jamming and spoofing systems. We are looking in future revision on how to lower the cost, protect more frequencies, and protect against more jammers. As I said before we intend to bring everything down onto chip level which of course will allow us to sell the units for a much better price. Right now we are raising capital because we want to be able to develop these next revisions and eventually move to a chip.

CEOCFO: *What has been the interest in the marketplace as far as investment?*

Mr. Sharar: We see a lot of interest. We are a special breed of startup because today, although we are invited to a lot of startup competitions and conferences, we find ourselves surrounded by software companies with teenager CEOs in their hoodies that are looking for \$100K to make things work. No disrespect to software engineers (I am a Mathematics and Software engineer myself) but we are a different kind of startup. We are a hardware startup led by a very experienced CEO, Mr. Ehud Sharar and a brilliant, experienced CTO, Mr. Moshe Kaplan, both over the age of 60. We want to do something amazing which is bring our product from its current price point of around \$2000 (which is already less than one tenth of any competing product) to a \$30 price point. We are looking for more capital and we are looking for smart money – people who can bring more than money to the table. We have a lot of interest from telecommunication companies for both testing and investment. We have a lot of interest from the automotive industry looking to add cyber protection to their future autonomous vehicle concept. Up until a few months ago we were completely “off the radar” and now we know that we need to raise money to get to the next level, bootstrapping won’t cut it anymore. It is a process, a difficult one, but hopefully we will make it.

CEOCFO: *When you are speaking with people about investment, do they understand easily why it is so important?*

Mr. Sharar: Most people do not really understand and they wonder why they would need anything to protect their smartphone’s WAZE application. It all depends on who we are talking to. Sometimes we get these very goggle-eyed looks from people who are trying to understand what we want from them throughout the entire meeting. We understand that the niche market we have to approach is the autonomous and cyber market. We see that a lot of the cyber guys, especially in Israel coming from a military background and defense industries, all understand what we are doing and why it is so

important. In the next couple of months we are going to present at CyberTech, a huge conference in Tel Aviv, we were chosen by Innovex 2017, another conference for innovation in Israel, to be one of 8 companies running for the title of The Most Innovative Startup of the Year. We were selected for the Alpha program at Collision 2017 in New Orleans in May. So, to answer your question, it does not apply to everybody. Some people you have to illustrate why this solution is even important. The GPS anti-jamming market is estimated to be worth \$4B by 2020. The competition today is focused mainly on the military chunk of that market with \$30K solutions and up. Yes, their products are military grade and literally bullet-proof but they are simply irrelevant for all non-military segments which are much more price-sensitive.

CEOCFO: *With all the noise in the industry, how do you stand out when you are at a conference or when you are speaking to somebody?*

Mr. Sharar: We are a different breed. Every cyber company today talks about protecting your data against hacking, espionage or any other type of attack. But we are the only ones making sure the data itself and the correct data even reaches your system. Nobody talks about this “front line” of defense of GPS systems. For example, cyber security for autonomous cars currently is sort of a smart operating system that sits on the computer of autonomous cars. They receive the data, they analyze it and assess whether they are at risk or not and if so, how to protect against it. That is cyber security today. What we are doing is trying to avoid any kind of denial of communication to the system itself. We are the front end of any kind of communication system that integrated with GPS. We are doing what a lot of Israeli companies had been known to do – take military knowhow and technology and apply it for civilian use.

CEOCFO: *Why is GPS Dome an important company?*

Mr. Sharar: In the past 10-15 years more and more applications are relying heavily on GPS, for timing, positioning and navigation purposes. Much like computers that in the early 80’s started connecting to the internet and computer viruses started spreading all over the world, we now see these GPS jammers spreading worldwide without a real solution to protect against them. *We bring to the world, the first GPS anti-virus.*

CEOCFO: *Final thoughts?*

Mr. Sharar: Perhaps a very important point to make is that our product is completely retro fit, meaning we do not develop the GPS receiver itself and we do not want to replace the customer’s GPS system. We can work with any GPS receiver as long as it has an external antenna. It is incredibly simple to install our GPSdome – all you have to do is disconnect the antenna, connect our GPSdome which comes with two small antennas and immediately you have protection to your GPS based system. We insisted on minimizing the “switching cost” of adopting our technology and we believe we’ve succeeded in doing so. This is a huge competitive advantage when you are trying to reach the market with a new product. The Total Available Market today is huge, even when talking only about our first revision (what we call the “GPS special purpose applications” market). According to the CEA (Consumer Electronics Association) this market alone will have over 6.5 million GPS based systems by 2020. Of course, when we are looking towards our GPSdome for the autonomous vehicles, this is a much bigger market expected to reach 10M cars by 2020 and grow exponentially from there.

