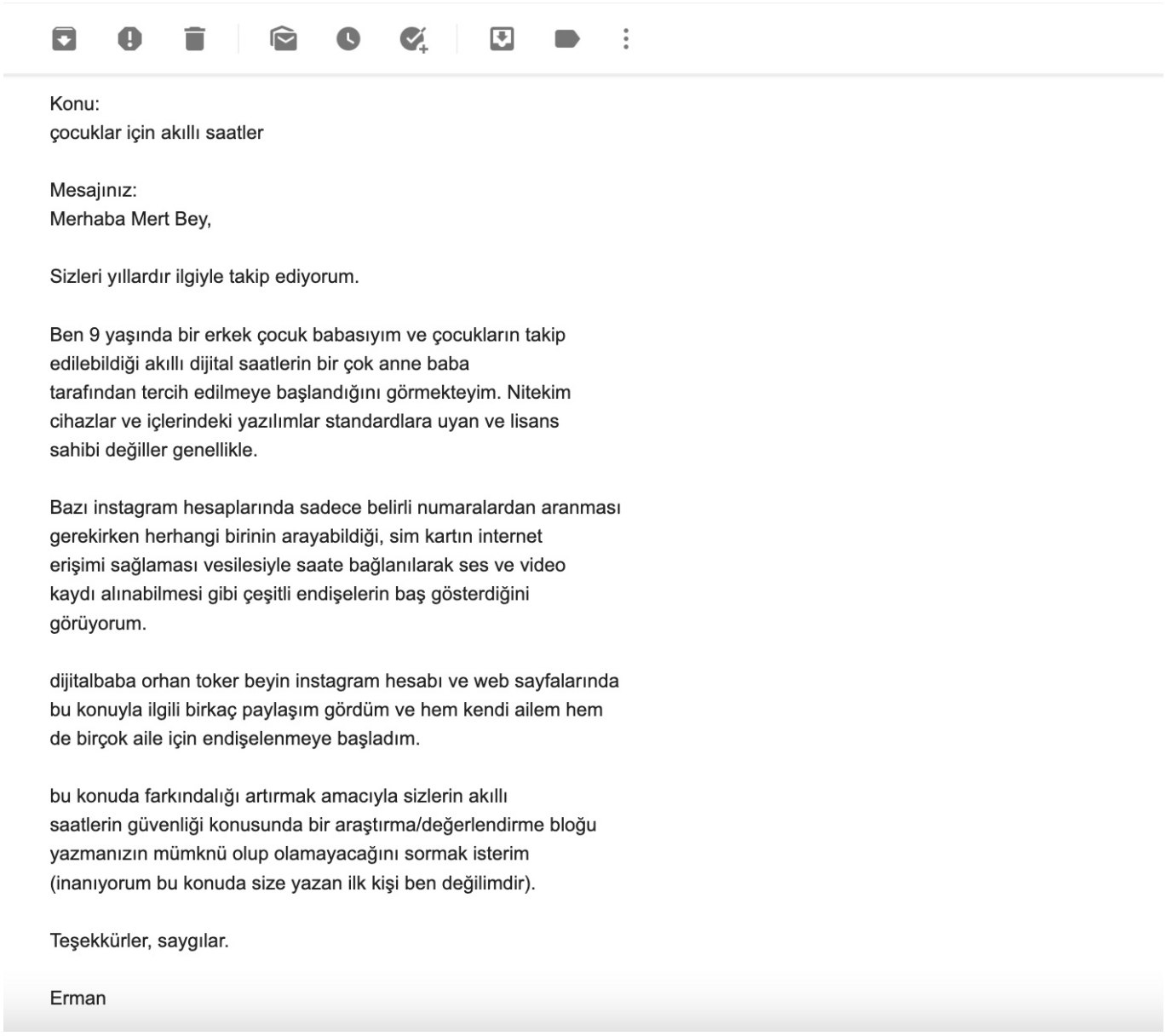
Smart Watches for Kids

written by Mert SARICA | 1 September 2022

This story began on May 4, 2022, with an email from a reader named Erman ATEŞ. In his email, Mr. Erman, a conscious and sensitive father, stated that smart kids' watches are increasingly being preferred by many parents for valid reasons, but due to their lack of conformity to standards in terms of software, security, and privacy, and also due to a message he saw on Instagram, he began to worry on behalf of all parents and asked me to focus on this issue. As a security researcher who always listens to readers, as in my blog posts Instagram Scammers, Backdoor Hunting, Hacker Hunt with a Deception System, I decided to address this issue for the benefit of society and awareness of information security.



Konu:
çocuklar için akıllı saatler

Mesajınız:
Merhaba Mert Bey,

Sizleri yıllardır ilgiyle takip ediyorum.

Ben 9 yaşında bir erkek çocuk babasıyım ve çocukların takip edilebildiği akıllı dijital saatlerin bir çok anne baba tarafından tercih edilmeye başlandığını görmekteyim. Nitekim cihazlar ve içlerindeki yazılımlar standardlara uyan ve lisans sahibi değiller genellikle.

Bazı instagram hesaplarında sadece belirli numaralardan aranması gerekirken herhangi birinin arayabildiği, sim kartın internet erişimi sağlaması vesilesiyle saate bağlanılarak ses ve video kaydı alınabilmesi gibi çeşitli endişelerin baş gösterdiğini görüyorum.

dijitalbaba orhan toker beyin instagram hesabı ve web sayfalarında bu konuyla ilgili birkaç paylaşım gördüm ve hem kendi ailem hem de birçok aile için endişelenmeye başladım.

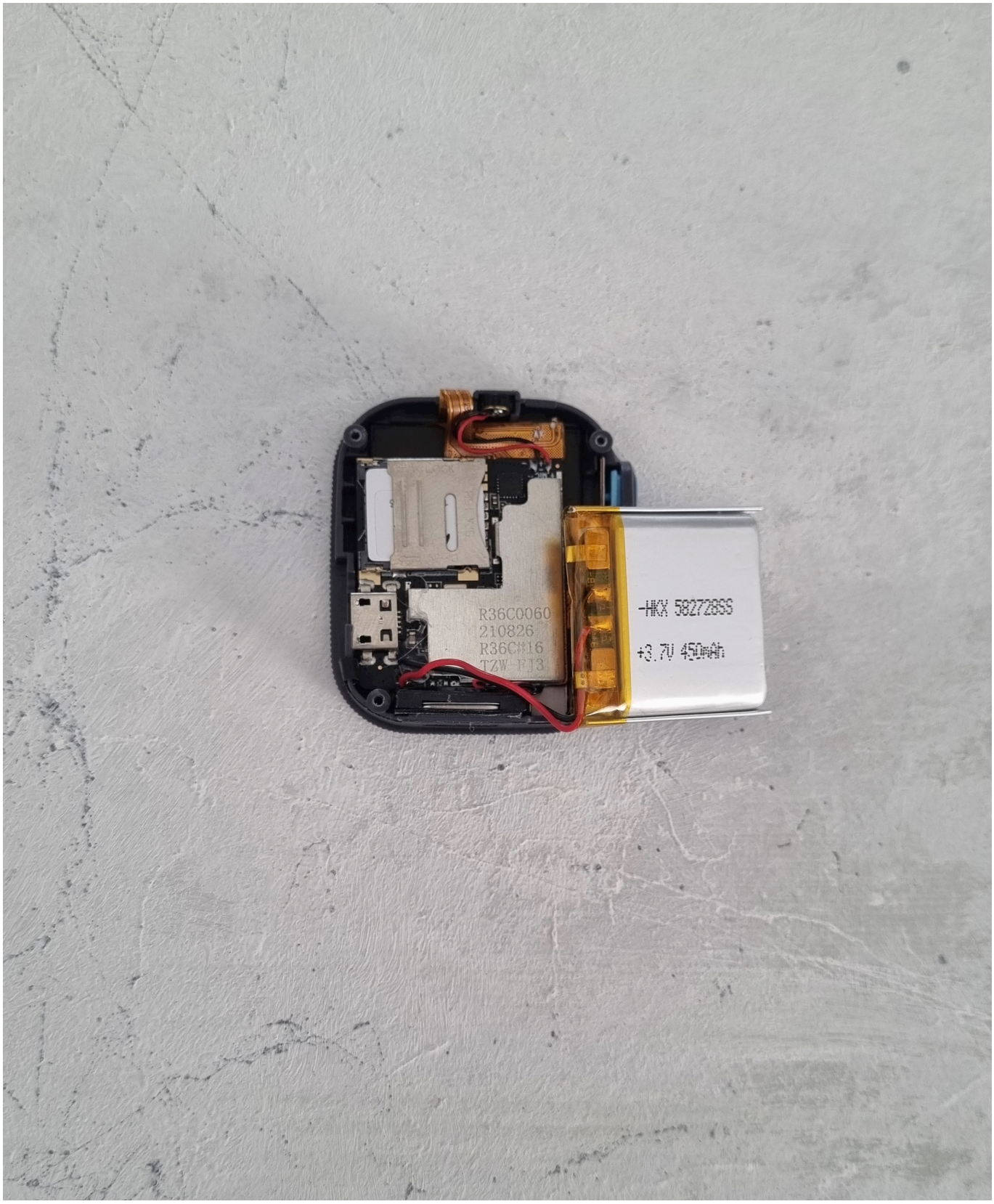
bu konuda farkındalığı artırmak amacıyla sizlerin akıllı saatlerin güvenliği konusunda bir araştırma/değerlendirme bloğu yazmanızın mümknü olup olamayacağını sormak isterim (inanıyorum bu konuda size yazan ilk kişi ben değilimdir).

Teşekkürler, saygılar.

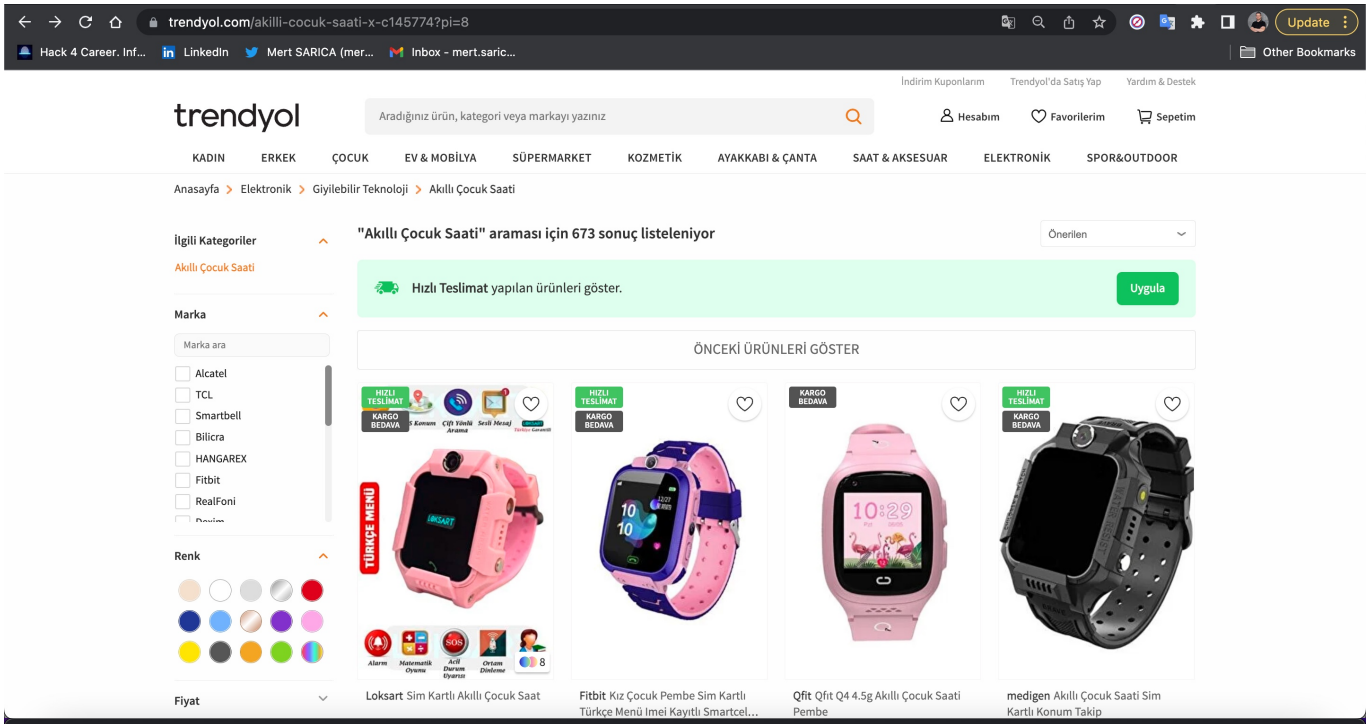
Erman

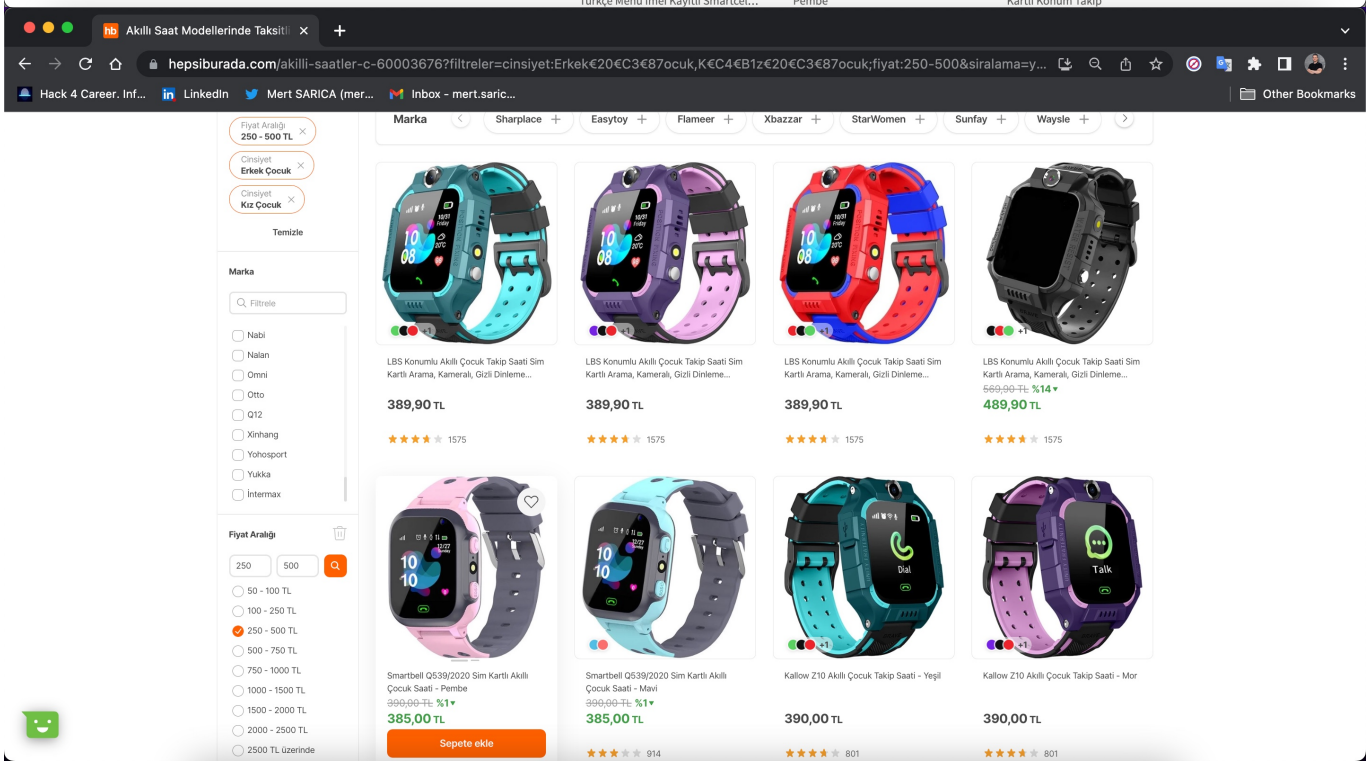
Upon looking at the following photo, are kids’ smartwatches really a tremendous technological boon for parents to keep their children under surveillance?

Or, upon looking at the following other photo, are parents unwittingly putting their own and their children’s privacy and secrecy of their private lives at risk with a watch-like potential spy device that allows for audio surveillance?



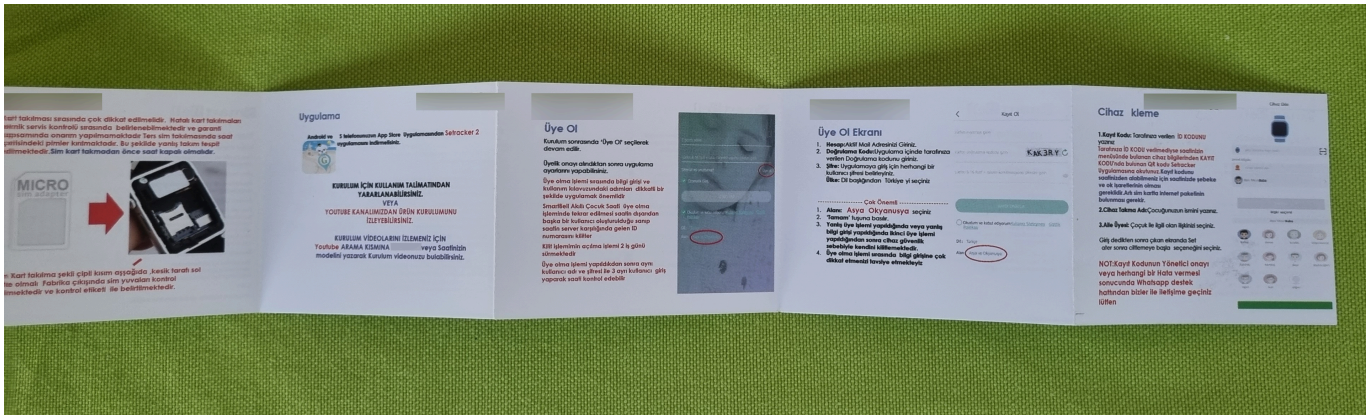
To find answers to these questions, I decided to purchase a children’s smartwatch that was affordable in terms of price for my security research. For this, I began to examine the Kid’s Smartwatches categories on shopping sites such as Hepsiburada and Trendyol. After looking at the most popular watches with the most reviews and ratings, I decided on a brand and model with over 1000 ratings and purchased it.


trendyol.com/akilli-cocuk-saati-x-c145774?pi=8
Update
Hack 4 Career. Inf...
LinkedIn
Mert SARICA (mer...
Inbox - mert.saric...
Other Bookmarks
İndirim Kuponlarım
Trendyol'da Satış Yap
Yardım & Destek
trendyol
Aradığınız ürün, kategori veya markayı yazınız
Hesabım
Favorilerim
Sepetim
KADIN
ERKEK
ÇOCUK
EV & MOBİLYA
SÜPERMARKET
KOZMETİK
AYAKKABI & ÇANTA
SAAT & AKSESUAR
ELEKTRONİK
SPOR&OUTDOOR
Anasayfa
Elektronik
Giyilebilir Teknoloji
Akıllı Çocuk Saati
İlgili Kategoriler
Akıllı Çocuk Saati
Marka
Marka ara
Alcatel
TCL
Smartbell
Bilicra
HANGAREX
Fitbit
RealFoni
Renk
Fiyat
"Akıllı Çocuk Saati" araması için 673 sonuç listeleniyor
Önerilen
Hızlı Teslimat yapılan ürünleri göster.
Uygula
ÖNCEKİ ÜRÜNLERİ GÖSTER
HIZLI TESLİMAT
KARGO BEDAVA
TÜRKÇE MENÜ
Loksart Sim Kartlı Akıllı Çocuk Saat
Fitbit Kız Çocuk Pembe Sim Kartlı Türkçe Menü İmei Kayıtlı Smartcel...
Qfit Qfit Q4 4.5g Akıllı Çocuk Saati Pembe
medigen Akıllı Çocuk Saati Sim Kartlı Konum Takip


Akıllı Saat Modellerinde Taksitli
hepsiburada.com/akilli-saatler-c-60003676?filtreler=cinsiyet:Erkek€20€C3€87ocuk,K€C4€B1z€20€C3€87ocuk;fiyat:250-500&siralama=y...
Hack 4 Career. Inf...
LinkedIn
Mert SARICA (mer...
Inbox - mert.saric...
Other Bookmarks
Fiyat Aralığı 250 - 500 TL
Cinsiyet Erkek Çocuk
Cinsiyet Kız Çocuk
Temizle
Marka
Filtrele
Nabi
Nalan
Omni
Otto
Q12
Xinhang
Yohosport
Yukka
İntermax
Fiyat Aralığı
50 - 100 TL
100 - 250 TL
250 - 500 TL
500 - 750 TL
750 - 1000 TL
1000 - 1500 TL
1500 - 2000 TL
2000 - 2500 TL
2500 TL üzerinde
Marka
Sharplace
Easytoy
Flameer
Xbazzar
StarWomen
Sunfay
Waysle
LBS Konumlu Akıllı Çocuk Takip Saati Sim Kartlı Arama, Kameralı, Gizli Dinleme...
389,90 TL
1575
489,90 TL
%14
Smartbell Q539/2020 Sim Kartlı Akıllı Çocuk Saati - Pembe
385,00 TL
Sepete ekle
Smartbell Q539/2020 Sim Kartlı Akıllı Çocuk Saati - Mavi
385,00 TL
914
Kallow Z10 Akıllı Çocuk Takip Saati - Yeşil
390,00 TL
801
Kallow Z10 Akıllı Çocuk Takip Saati - Mor
390,00 TL
801

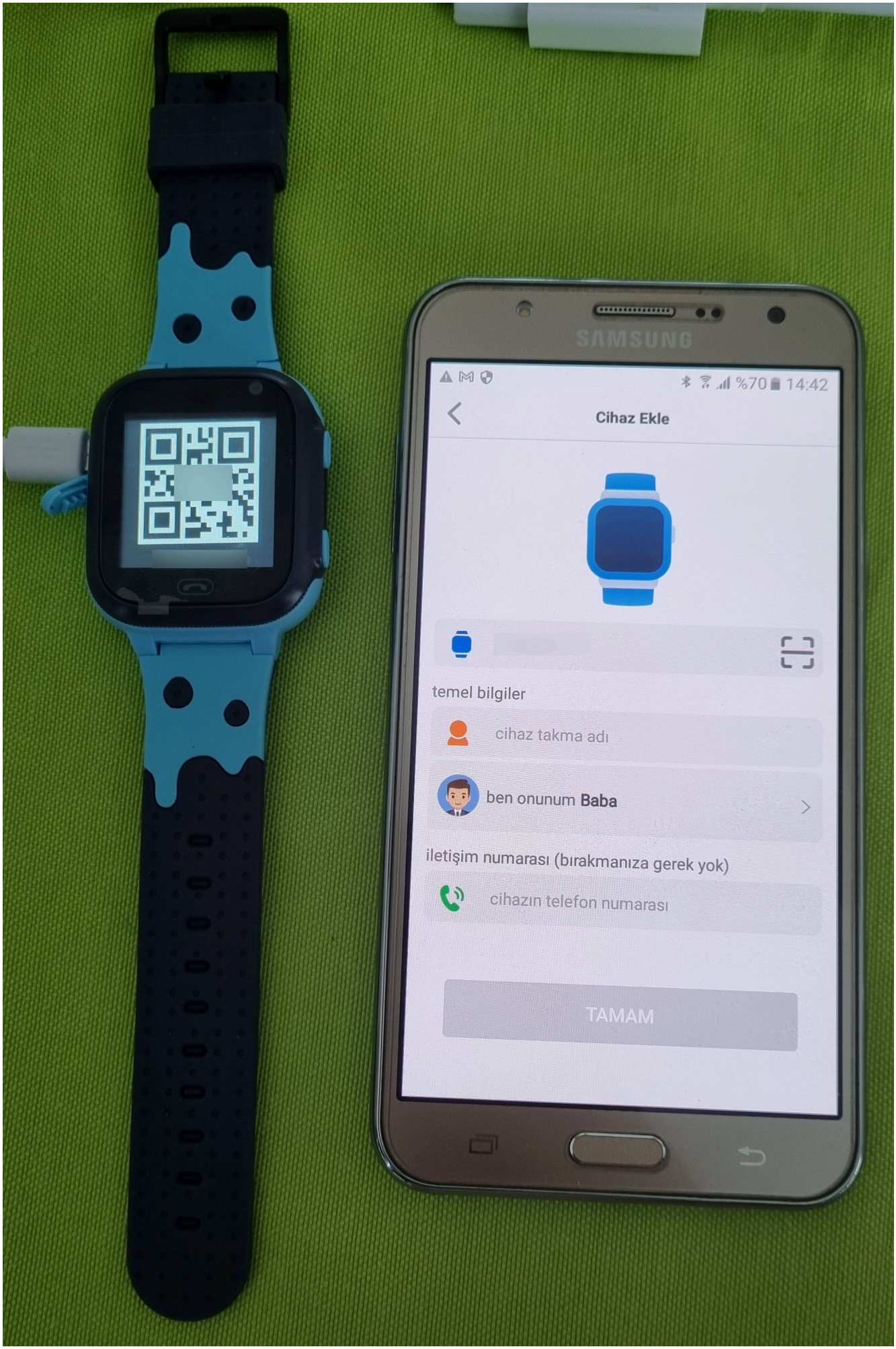

KONTROL EDİLMİŞTİR
ÜRÜNÜ 2 SAAT BOYUNCA POWER BANK VEYA BİLGİSAYAR İLE ŞARJ EDİNİZ.
AKSİ TAKDİRDE ÜRÜN GARANTİ KAPSAMI DIŞINDA KALACAKTIR.

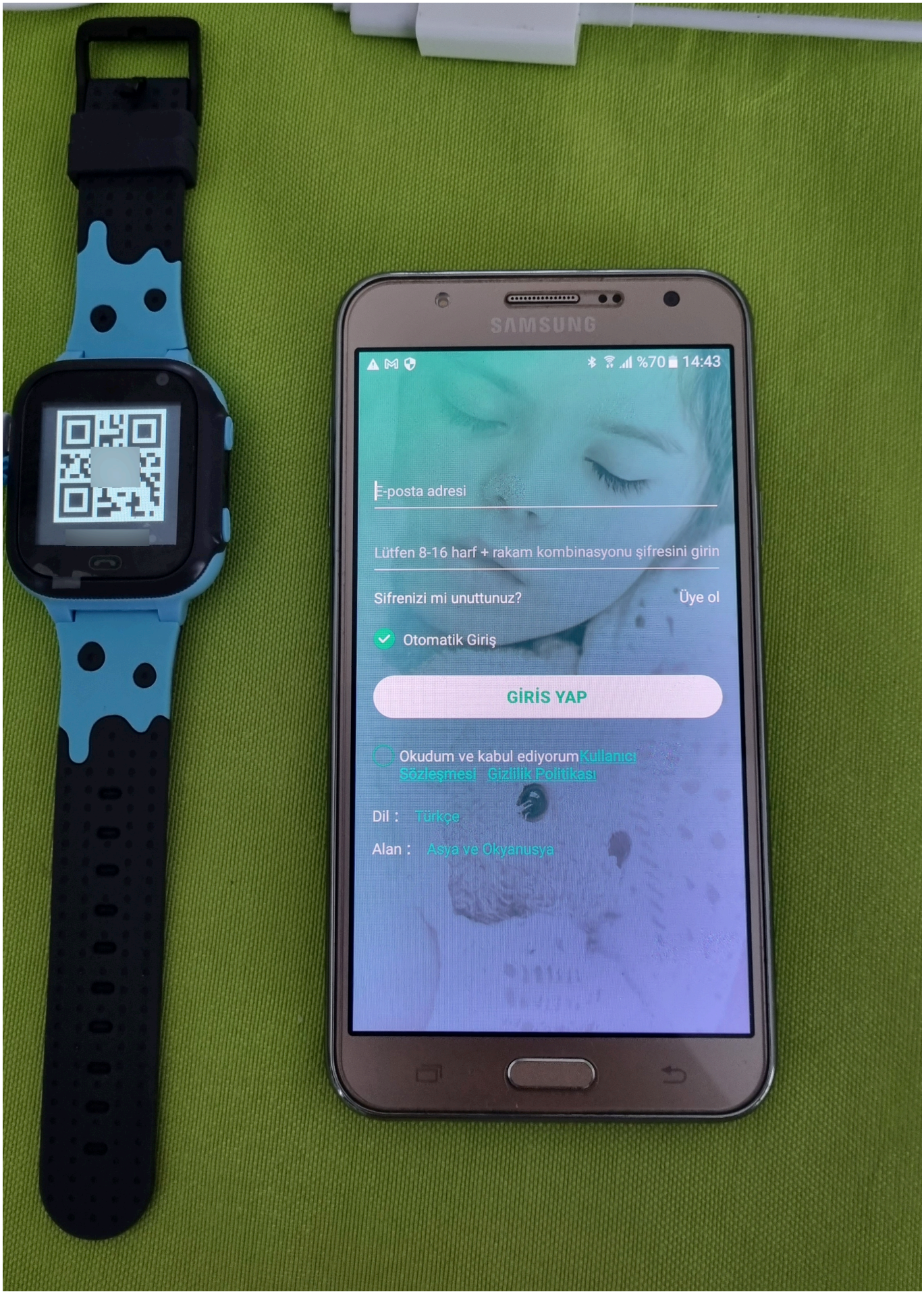
When I took the watch out of the box and looked at the installation guide, it stated that an Android or iOS mobile application developed by a Chinese company called 3G Electronics was required to remotely manage the watch.

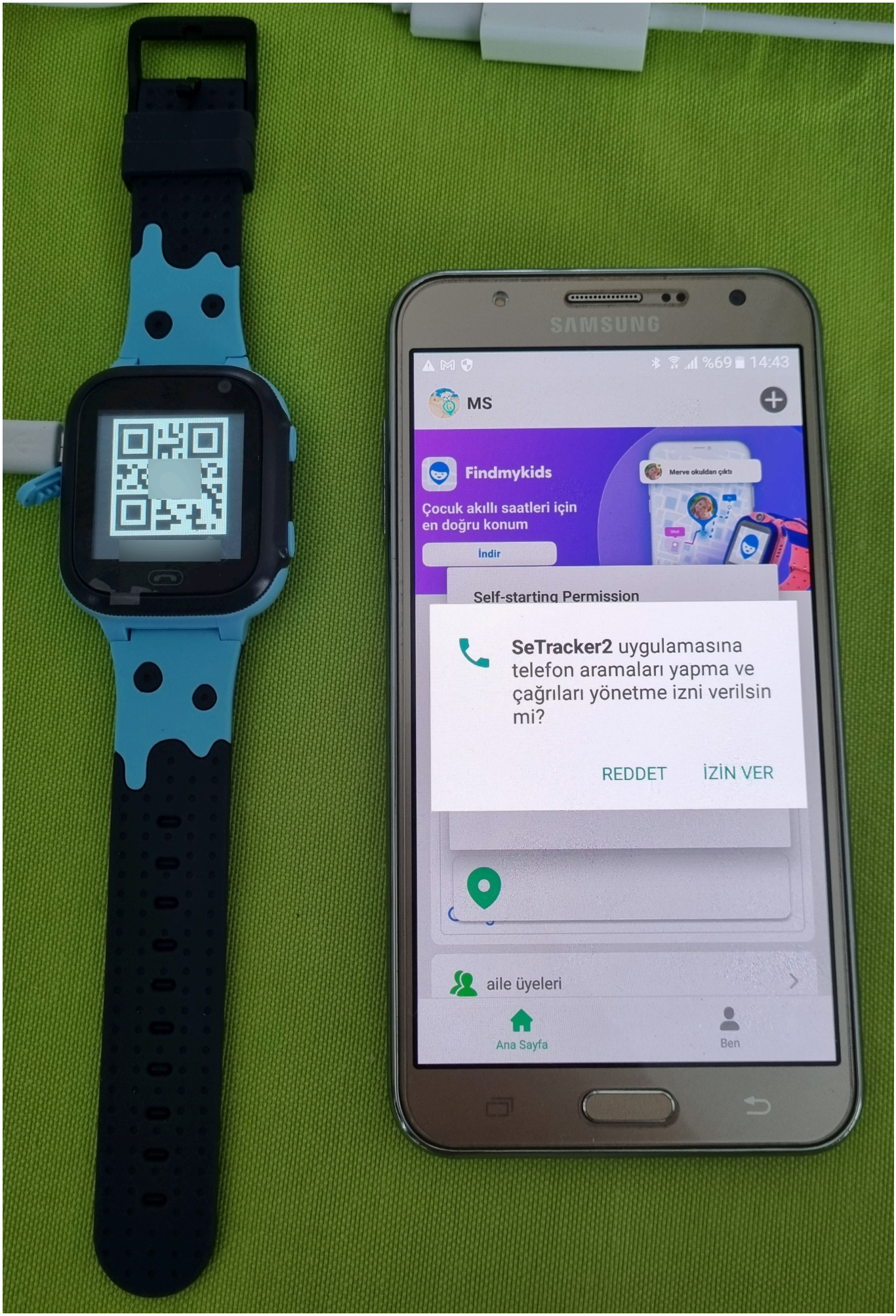


Upon examining the information collected by the SeTracker2 app, I saw that it collected personal, sensitive, and potentially private information ranging from location, audio, and video recordings, to the contact list, name, phone number, and email address.

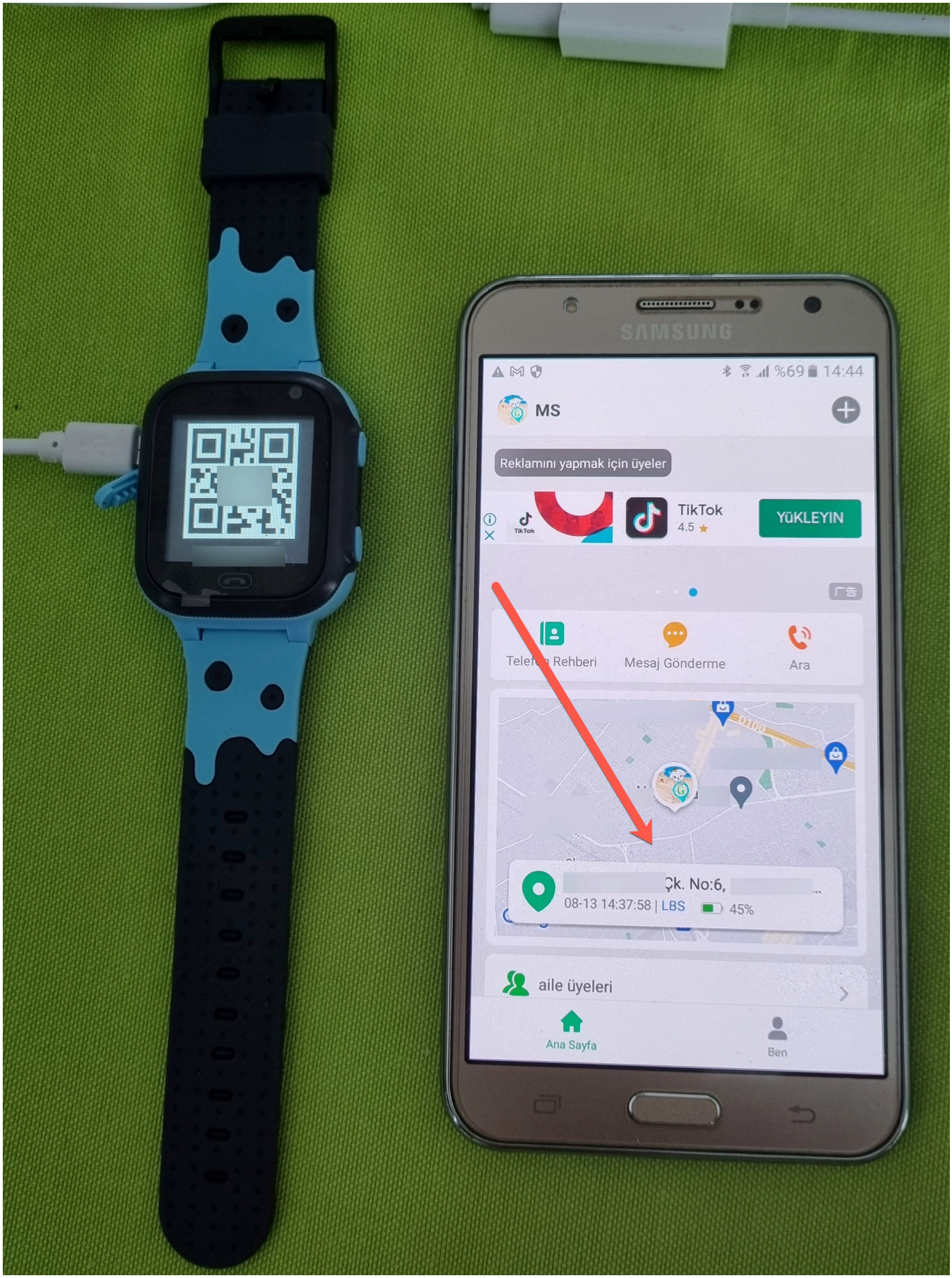
After inserting a SIM card into the watch and turning it on, I opened the SeTracker2 app and registered. Then, after pairing the app with the watch, I began to examine the app and the menu steps.

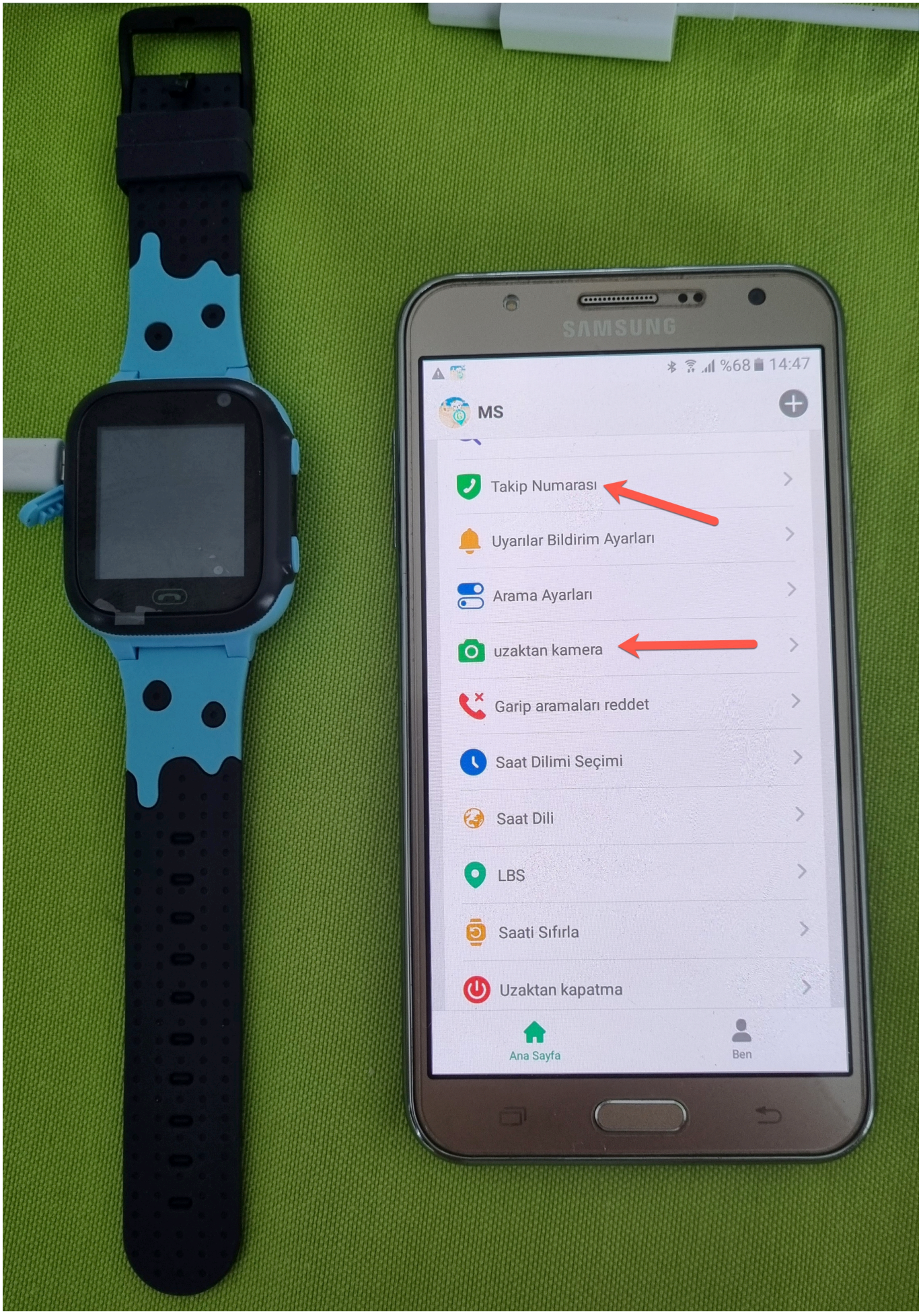

SAMSUNG
%70 14:42
Cihaz Ekle
temel bilgiler
cihaz takma adı
ben onunum Baba
iletişim numarası (bırakmanıza gerek yok)
cihazın telefon numarası
TAMAM

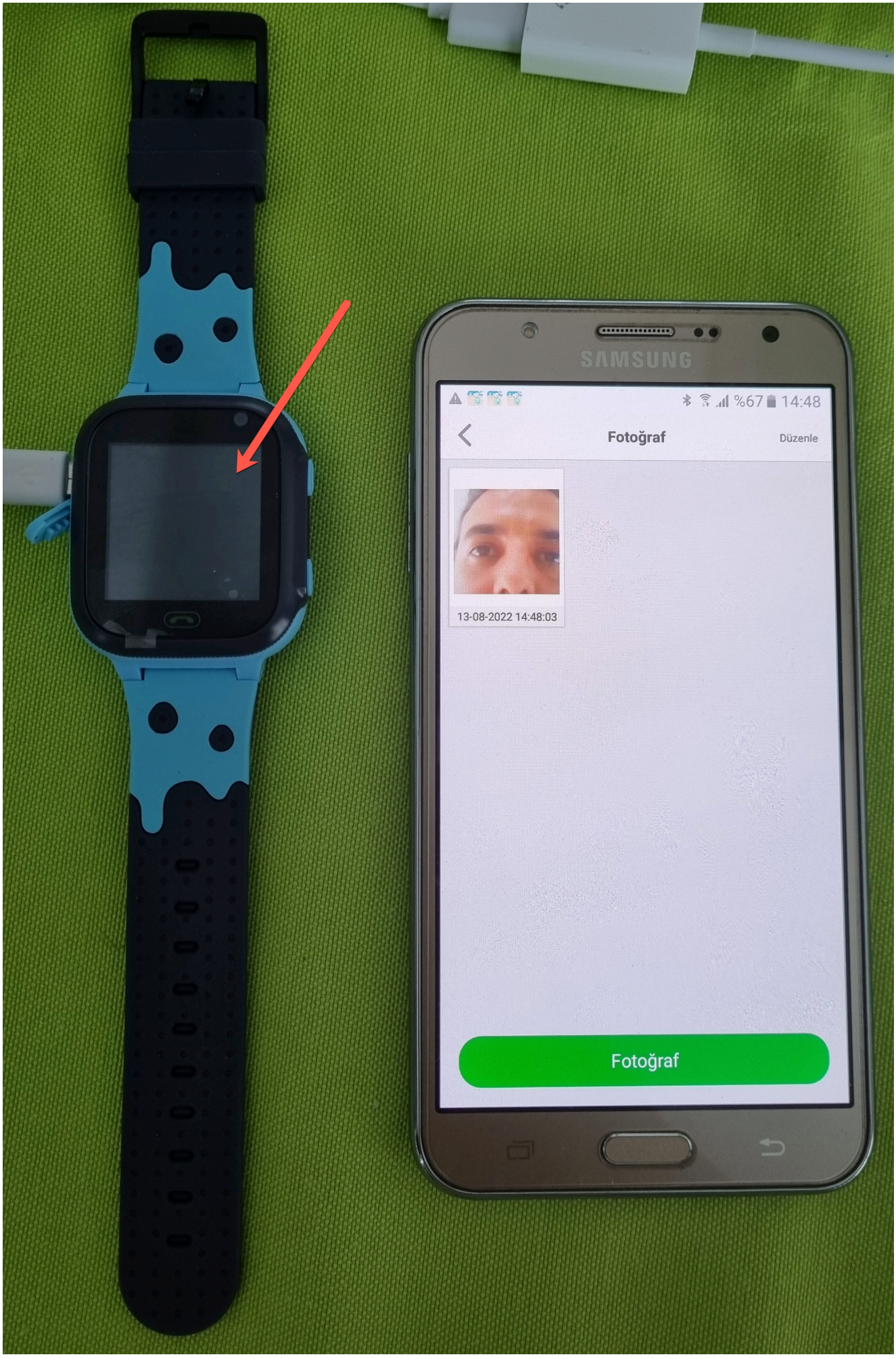

SAMSUNG
%70 14:43
E-posta adresi
Lütfen 8-16 harf + rakam kombinasyonu şifresini girin
Sifrenizi mi unuttunuz?
Üye ol
Otomatik Giriş
GİRİS YAP
Okudum ve kabul ediyorum Kullanıcı Sözleşmesi Gizlilik Politikası
Dil : Türkçe
Alan : Asya ve Okyanusya


SAMSUNG
%69 14:43
MS
Findmykids
Çocuk akıllı saatleri için
en doğru konum
İndir
Merve okuldan çıktı
Self-starting Permission
SeTracker2 uygulamasına telefon aramaları yapma ve çağrıları yönetme izni verilsin mi?
REDDET
İZİN VER
aile üyeleri
Ana Sayfa
Ben

The first thing that caught my attention in the app was the ability to track the watch on a map in real-time, followed by the Tracking Number and Remote Camera menu steps. The Remote Camera menu allows you to take photos with the watch’s camera at any time. The watch does not produce any visual or auditory alerts at this time. The Tracking Number menu allows you to make the watch call the entered phone number, and audio surveillance can also be performed using the watch’s microphone. Again, as in the Remote Camera step, the phone does not provide any alert that surveillance is being performed.


SAMSUNG
%69 14:44
MS
Reklamını yapmak için üyeler
TikTok
4.5
YÜKLEYIN
Mesaj Gönderme
Ara
08-13 14:37:58 | LBS
45%
aile üyeleri
Ana Sayfa
Ben


SAMSUNG
%68 14:47
MS
Takip Numarası
Uyarılar Bildirim Ayarları
Arama Ayarları
uzaktan kamera
Garip aramaları reddet
Saat Dilimi Seçimi
Saat Dili
LBS
Saati Sıfırla
Uzaktan kapatma
Ana Sayfa
Ben


SAMSUNG
%67 14:48
Fotoğraf
Düzenle
13-08-2022 14:48:03
Fotoğraf

“Oh, how wonderful, we can track and listen to our child in real-time,” you might think. But let’s suppose that the email address you used to log in to the SeTracker2 app, and the password you could not strengthen by using special characters, was stolen or guessed by malicious people for a moment. A malicious person could violate your privacy and secrecy of your private life by accessing the app through the watch on your child’s arm and tracking their location in real-time, taking their photo, sending messages, deleting the sent message without leaving a trace, and making the watch call the phone number specified to perform ambient listening. In addition, let me emphasize that there is no chance of accessing the log of all these operations performed by a malicious person through the SeTracker2 app!

“I am very careful and cautious and don’t easily fall into the hands of scammers,” you might say. But if you use the same password for multiple websites during login, one of those websites may have already been hacked, and your username/email and password may have been obtained. If you do not use Multi-factor Authentication (MFA) (the SeTracker2 app does not support MFA!), remember that malicious people can easily log into websites and mobile applications (such as the SeTracker2 app) where your account is with the information obtained!

Multi-factor authentication (MFA; encompassing two-factor authentication, or 2FA, along with similar terms) is an electronic authentication method in which a user is granted access to a website or application only after successfully presenting two or more pieces of evidence (or factors) to an authentication mechanism: knowledge (something only the user knows), possession (something only the user has), and inherence (something only the user is). MFA protects user data—which may include personal identification or financial assets—from being accessed by an unauthorized third party that may have been able to discover, for example, a single password.

Another important issue is that you may inadvertently commit a crime through your child using watches with audio surveillance feature.

I hope that those familiar with my security research, especially my blog post titled Run Mert Run expect to see in this article how the vulnerabilities I identified through reverse engineering, static and dynamic code analysis of the SeTracker2 application can be exploited, or how a hardware vulnerability I discovered can turn the watch into a spy device. After all this, I believe that I can clearly convey that these watches, through the SeTracker2

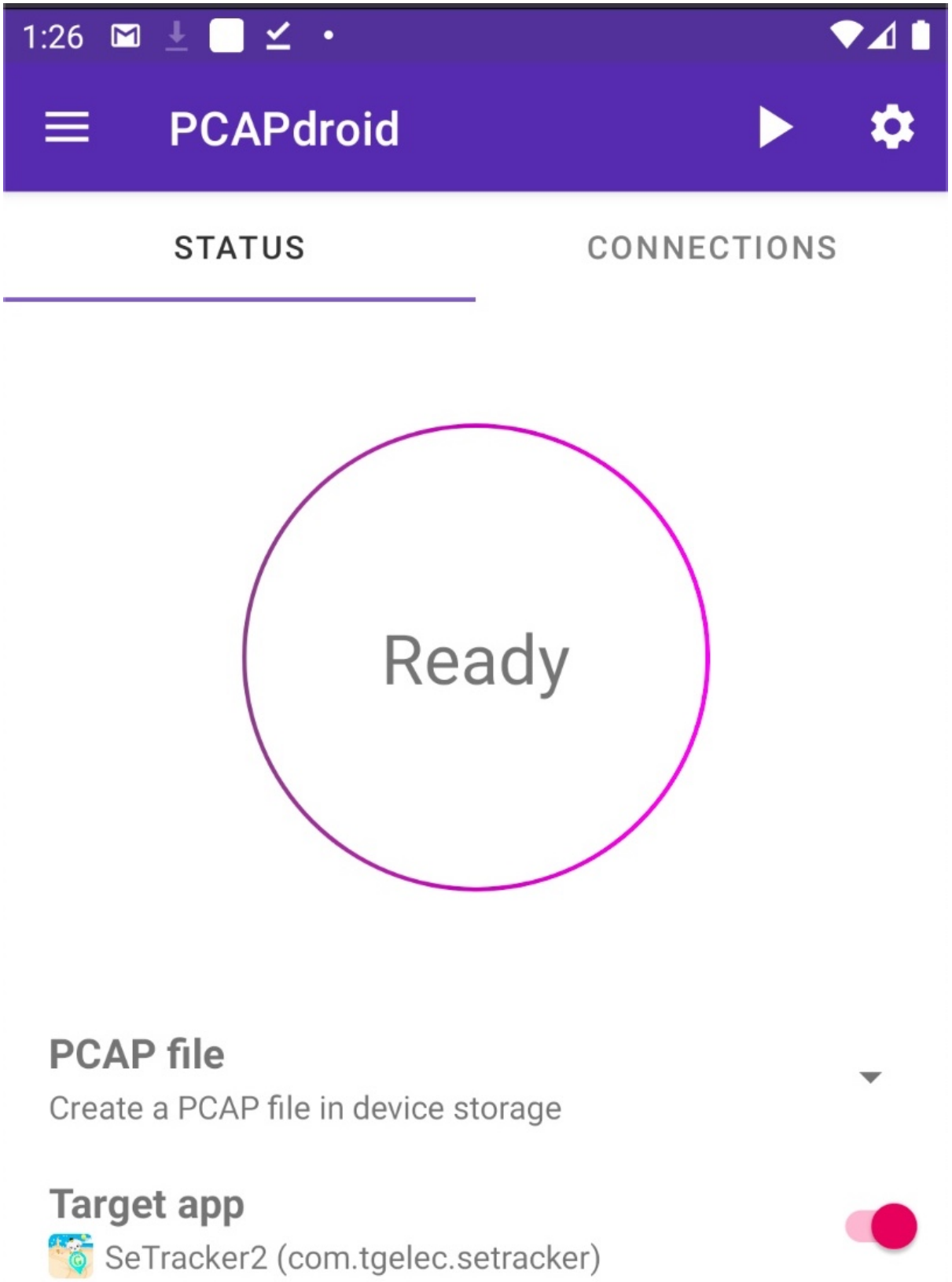
application, invite malicious individuals to use them for nefarious purposes and pose a significant danger to parents and children. :) Still, anybody who wants to learn more about the application’s technical aspects can take a look here and here for studies that were conducted in previous years.

I hope that, like the example set by the decision taken by Germany in 2017, our authorities will also take a similar decision and ban the sale of these potential spy devices that look like watches on shopping websites, thus bringing an essential step towards protecting parents and children from such dangers.

In light of this information, I strongly recommend that those who use smart children’s watches that can record their surroundings use them with awareness of the risks. Please share this article with other parents, friends, and loved ones to create awareness.

Hope to see you in the following articles.

Note: For my technical readers, I would like to share that the SSL Pinning method is used in the SeTracker2 application, and through the use of a simple Android application called PCAPdroid, it is possible to record and analyze HTTPS traffic. This can be done quickly by recording the traffic and then analyzing it using the Wireshark tool.


1:26
PCAPdroid
STATUS
CONNECTIONS
Ready
PCAP file
Create a PCAP file in device storage
Target app
SeTracker2 (com.tgelec.setracker)

Collector port
1234

Traffic inspection

Block private DNS
Detect and possibly block private DNS to inspect DNS traffic. Disabling this can hinder traffic analysis

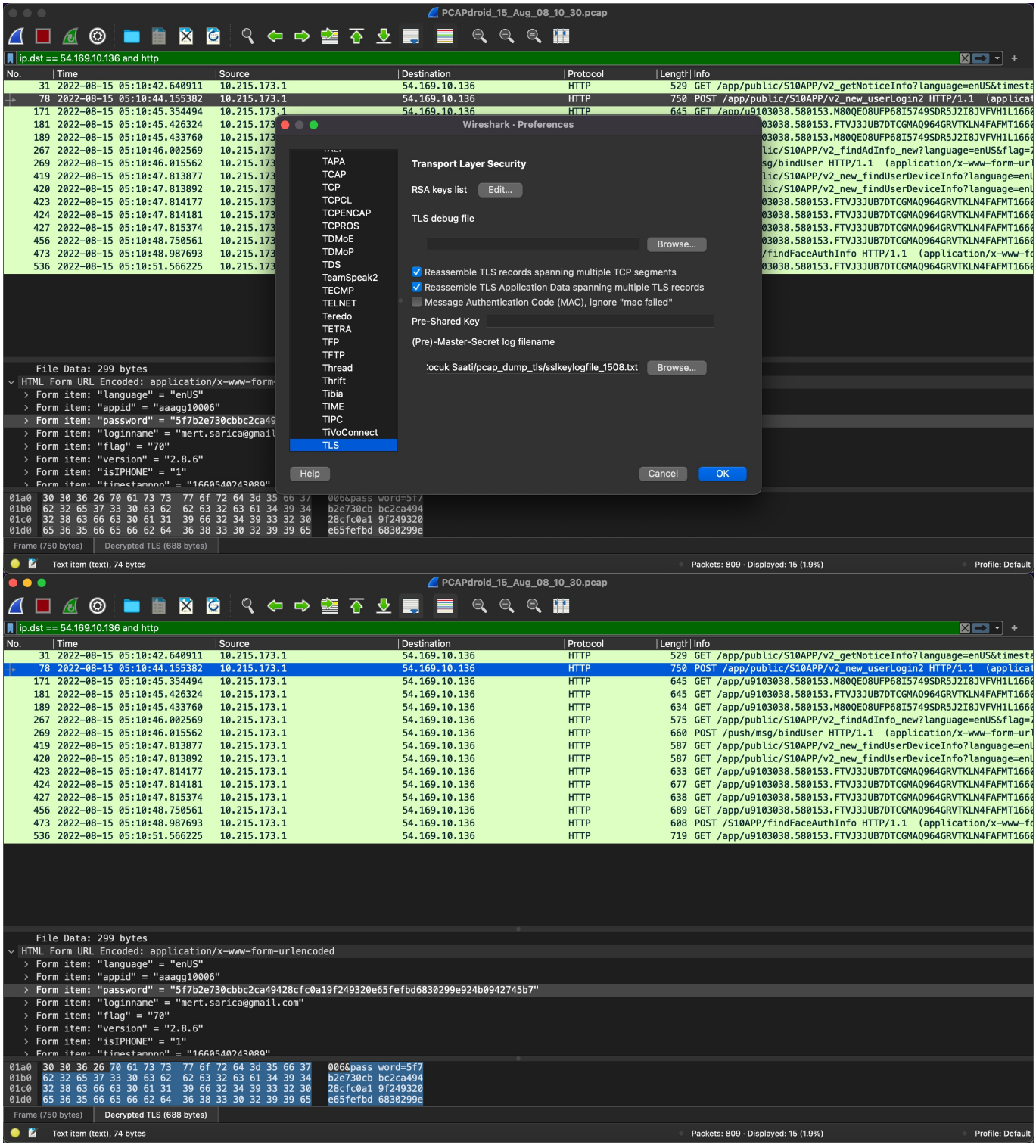
Geolocation
Show country and ASN info by performing offline lookups

TLS decryption
Decrypt the SSL/TLS traffic by performing mitm. This may now work with some apps, check out the user guide

Block QUIC
Block QUIC connections to possibly fall back to decryptable TLS. Some apps may stop working

Capture

Capture as root
Allows PCAPdroid to run with other VPN apps


PCAPdroid_15_Aug_08_10_30.pcap
ip.dst == 54.169.10.136 and http
No. Time Source Destination Protocol Length Info
31 2022-08-15 05:10:42.640911 10.215.173.1 54.169.10.136 HTTP 529 GET /app/public/S10APP/v2_getNoticeInfo?language=enUS&timesta
78 2022-08-15 05:10:44.155382 10.215.173.1 54.169.10.136 HTTP 750 POST /app/public/S10APP/v2_new_userLogin2 HTTP/1.1 (applicat
171 2022-08-15 05:10:45.354494 10.215.173.1 54.169.10.136 HTTP 645 GET /app/u9103038.580153.M80QE08UFP68I5749SDR5J2I8JVFVH1L1660
181 2022-08-15 05:10:45.426324 10.215.173
189 2022-08-15 05:10:45.433760 10.215.173
267 2022-08-15 05:10:46.002569 10.215.173
269 2022-08-15 05:10:46.015562 10.215.173
419 2022-08-15 05:10:47.813877 10.215.173
420 2022-08-15 05:10:47.813892 10.215.173
423 2022-08-15 05:10:47.814177 10.215.173
424 2022-08-15 05:10:47.814181 10.215.173
427 2022-08-15 05:10:47.815374 10.215.173
456 2022-08-15 05:10:48.750561 10.215.173
473 2022-08-15 05:10:48.987693 10.215.173
536 2022-08-15 05:10:51.566225 10.215.173
Wireshark · Preferences
TAPA
TCAP
TCP
TCPCL
TCPENCAP
TCPROS
TDMoE
TDMoP
TDS
TeamSpeak2
TECMP
TELNET
Teredo
TETRA
TFP
TFTP
Thread
Thrift
Tibia
TIME
TIPC
TiVoConnect
TLS
Transport Layer Security
RSA keys list
Edit...
TLS debug file
Browse...
Reassemble TLS records spanning multiple TCP segments
Reassemble TLS Application Data spanning multiple TLS records
Message Authentication Code (MAC), ignore "mac failed"
Pre-Shared Key
(Pre)-Master-Secret log filename
:ocuk Saati/pcap_dump_tls/sslkeylogfile_1508.txt
Browse...
Help
Cancel
OK
File Data: 299 bytes
HTML Form URL Encoded: application/x-www-form
Form item: "language" = "enUS"
Form item: "appid" = "aaagg10006"
Form item: "password" = "5f7b2e730cbbc2ca49
Form item: "loginname" = "mert.sarica@gmail
Form item: "flag" = "70"
Form item: "version" = "2.8.6"
Form item: "isIPHONE" = "1"
Form item: "timestampnn" = "1660540243089"
01a0 30 30 36 26 70 61 73 73 77 6f 72 64 3d 35 66 37 006&pass word=5f7
01b0 62 32 65 37 33 30 63 62 62 63 32 63 61 34 39 34 b2e730cb bc2ca494
01c0 32 38 63 66 63 30 61 31 39 66 32 34 39 33 32 30 28cfc0a1 9f249320
01d0 65 36 35 66 65 66 62 64 36 38 33 30 32 39 39 65 e65fefbd 6830299e
Frame (750 bytes)
Decrypted TLS (688 bytes)
Text item (text), 74 bytes
Packets: 809 · Displayed: 15 (1.9%)
Profile: Default
PCAPdroid_15_Aug_08_10_30.pcap
ip.dst == 54.169.10.136 and http
No. Time Source Destination Protocol Length Info
31 2022-08-15 05:10:42.640911 10.215.173.1 54.169.10.136 HTTP 529 GET /app/public/S10APP/v2_getNoticeInfo?language=enUS&timesta
78 2022-08-15 05:10:44.155382 10.215.173.1 54.169.10.136 HTTP 750 POST /app/public/S10APP/v2_new_userLogin2 HTTP/1.1 (applicat
171 2022-08-15 05:10:45.354494 10.215.173.1 54.169.10.136 HTTP 645 GET /app/u9103038.580153.M80QE08UFP68I5749SDR5J2I8JVFVH1L1660
181 2022-08-15 05:10:45.426324 10.215.173.1 54.169.10.136 HTTP 645 GET /app/u9103038.580153.FTVJ3JUB7DTCGMAQ964GRVTKLN4FAFMT1660
189 2022-08-15 05:10:45.433760 10.215.173.1 54.169.10.136 HTTP 634 GET /app/u9103038.580153.M80QE08UFP68I5749SDR5J2I8JVFVH1L1660
267 2022-08-15 05:10:46.002569 10.215.173.1 54.169.10.136 HTTP 575 GET /app/public/S10APP/v2_findAdInfo_new?language=enUS&flag=7
269 2022-08-15 05:10:46.015562 10.215.173.1 54.169.10.136 HTTP 660 POST /push/msg/bindUser HTTP/1.1 (application/x-www-form-url
419 2022-08-15 05:10:47.813877 10.215.173.1 54.169.10.136 HTTP 587 GET /app/public/S10APP/v2_new_findUserDeviceInfo?language=enU
420 2022-08-15 05:10:47.813892 10.215.173.1 54.169.10.136 HTTP 587 GET /app/public/S10APP/v2_new_findUserDeviceInfo?language=enU
423 2022-08-15 05:10:47.814177 10.215.173.1 54.169.10.136 HTTP 633 GET /app/u9103038.580153.FTVJ3JUB7DTCGMAQ964GRVTKLN4FAFMT1660
424 2022-08-15 05:10:47.814181 10.215.173.1 54.169.10.136 HTTP 677 GET /app/u9103038.580153.FTVJ3JUB7DTCGMAQ964GRVTKLN4FAFMT1660
427 2022-08-15 05:10:47.815374 10.215.173.1 54.169.10.136 HTTP 638 GET /app/u9103038.580153.FTVJ3JUB7DTCGMAQ964GRVTKLN4FAFMT1660
456 2022-08-15 05:10:48.750561 10.215.173.1 54.169.10.136 HTTP 689 GET /app/u9103038.580153.FTVJ3JUB7DTCGMAQ964GRVTKLN4FAFMT1660
473 2022-08-15 05:10:48.987693 10.215.173.1 54.169.10.136 HTTP 608 POST /S10APP/findFaceAuthInfo HTTP/1.1 (application/x-www-fo
536 2022-08-15 05:10:51.566225 10.215.173.1 54.169.10.136 HTTP 719 GET /app/u9103038.580153.FTVJ3JUB7DTCGMAQ964GRVTKLN4FAFMT1660
File Data: 299 bytes
HTML Form URL Encoded: application/x-www-form-urlencoded
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Form item: "appid" = "aaagg10006"
Form item: "password" = "5f7b2e730cbbc2ca49428cfc0a19f249320e65fefbd6830299e924b0942745b7"
Form item: "loginname" = "mert.sarica@gmail.com"
Form item: "flag" = "70"
Form item: "version" = "2.8.6"
Form item: "isIPHONE" = "1"
Form item: "timestampnn" = "1660540243089"
01a0 30 30 36 26 70 61 73 73 77 6f 72 64 3d 35 66 37 006&pass word=5f7
01b0 62 32 65 37 33 30 63 62 62 63 32 63 61 34 39 34 b2e730cb bc2ca494
01c0 32 38 63 66 63 30 61 31 39 66 32 34 39 33 32 30 28cfc0a1 9f249320
01d0 65 36 35 66 65 66 62 64 36 38 33 30 32 39 39 65 e65fefbd 6830299e
Frame (750 bytes)
Decrypted TLS (688 bytes)
Text item (text), 74 bytes
Packets: 809 · Displayed: 15 (1.9%)
Profile: Default