



Project Reveal

Reference Section

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REFERENCE: WIRELESS NETWORKS OF NORTH KOREA

North Korea has two 3G cellular networks and at least one public Wi-Fi network currently in operation. The cellular networks are Koryolink, run by Egyptian-North Korean joint venture Cheo Technologies, and Kangsong, which is understood to be run by the North Korean government. The Wi-Fi network is called Mirae and is available in parts of central Pyongyang.



Figure 1
SIM cards for the Koryolink and Kangsong networks (Photo: Martyn Williams)

KORYOLINK

Koryolink (고려링크) is believed to be North Korea's largest cellular network. It was launched in December 2008 as a joint venture between the Ministry of Posts and Telecommunications (25%) and Egypt's Orascom Telecom (75%). In the mid-2000s, Orascom specialized in investing in developing nations with low cellular penetration and North Korea appeared to fit the bill.

The network is still run as a joint venture, although the business partnership soured in 2015 when Orascom attempted to withdraw profits from the country. Orascom invested money at the official exchange rate, but when it attempted to bring money out of North Korea the government proposed a much worse exchange rate. The difference between the two slashed the value of the profits from \$565 million to \$7.2 million.

As a result, the exchange was halted, and the partners fell out. The North Korean government then launched a second cellular network to take customers away from Koryolink and forced Orascom to admit that it had “lost control” of the subsidiary.

The dispute does not appear to have ever been resolved, but in 2018 Orascom applied for and won exemption from United Nations sanctions to operate the network, signaling it still maintains some level of relations with the company.

• TECHNOLOGY

Koryolink chose 3G WCDMA technology for the network, which was the dominant cellular technology in use around the world at the time. That selection made Koryolink phones incompatible with South Korean cellular networks, the majority of which were based on the CDMA 3G standard at the time.

The network runs in the 2,100MHz band.

Despite the widespread roll-out of 4G services around the world and the start of 5G service in some countries, the Koryolink network has not been upgraded.

The Koryolink network consists of hundreds of 3G base stations across North Korea. Most are built to a similar design and feature a tower with accompanying equipment building and solar panels.



Figure 2

A Koryolink base station shown on North Korean television on August 30, 2020 (Photo: KCTV)

• SERVICES

Koryolink has three classes of users: domestic, international, and elite. Most subscribers are in the first two classes.

The network has an internal firewall to separate domestic and international subscribers. Domestic subscribers were able to access domestic numbers while international subscribers could access other international subscribers and make overseas calls, but not connect to domestic numbers.

A similar arrangement exists on the fixed network and is used to hamper information flow. International subscribers initially consisted of resident foreigners in Pyongyang and later included visiting tourists.

Domestic subscribers have access to local voice calls, text messaging and access to the state-run intranet. Overseas calls and Internet access are not possible.

Users are required to register for service at a local telecom shop to obtain a SIM card. Credits are available via top-up scratch cards.¹

In January 2013, foreign visitors to the DPRK were able to keep their phones and access Koryolink voice and text services. Visitors had previously had to surrender their mobile phones as they entered the country. They were kept by customs authorities until departure.

The service allowed visitors for make and receive international calls, but texting was not possible. The service cost 50 euros for 14 days and came with 30 euros of calling credit. It cost 0.2 euros per minute to make and receive locals calls so the credit would have been enough for 150 minutes of local calls. International calls were more expensive at 1.43 euros per minute to China and Southeast Asia; 0.68 euros to Russia; 0.38 euros per minute to France and Switzerland; 1.58 euros per minute to the UK and Germany; and 5 euros per minute to the U.S.²

On 25 February 2013, Orascom began offering Internet access via 3G to resident foreigners in Pyongyang. A Chinese reporter for the Xinhua news service reported it cost 75 euros to register for the PC-based service. There was an additional charge of 10 euros for a SIM card and access cost 150 euros for 2GB of data, 250 euros for 5GB and 400 euros for 10GB.³

¹ Orascom H1 2009 financial report

² Getting Connected in North Korea, Koryo Group Blog, March 4, 2013

³ [DPRK offers mobile internet access for foreigners](#), Xinhua News, February 25, 2013

A mobile Internet line for smartphones cost 10 euros per month but offered only 50MB of included data. Additional data cost 0.15 euros per MB.

The Internet service didn't block any websites. For the first time, resident foreigners were able to off near-real time photos and video from Pyongyang through social media.^{4 5}

Koryolink maintains a service for a limited number of elite users. The service is encrypted with a domestically developed encryption algorithm and runs on special handsets. Little is known about the service.

• SUBSCRIBERS

Subscriptions initially climbed slowly after the service launch in late 2008. At the end of the first quarter of 2009, Orascom reported just 19,208 subscribers and at the end of June it was just 47,863 subscribers.

Subscriptions began rising faster from the middle of 2010 as new handsets became available and coverage area spread throughout the country. The service had a million subscribers in February 2012, 2 million in April 2013 and 3 million in October 2015. More up-to-date data is not available, but the service is estimated to have approximately 6 million subscribers at present.

KANGSONG

Kangsong is a 3G cellular service established by the North Korean government in 2015. The service was started during a dispute with Orascom after the Egyptian company requested to repatriate profits from North Korea. The two sides disagreed on the exchange rate to be used for the currency transfer and the government set up its own network in response.

In the early days of the network, it was often referred to as "Byol," or Star, suggesting it could be operating in partnership with Star JV, the company that provides North Korea's Internet connectivity.

Little information is available on Kangsong, which only targets North Korean users. Anecdotal evidence from foreigners who have visited North Korea say Kangsong often has coverage in remote areas where Koryolink does not.

It is believed to operate in the same 2,100MHz band as Koryolink.

⁴ [New Internet Regulations Provide Window into N.Korea](#), Voice of America, February 28, 2013

⁵ [Tweets, pics give real-time peek into North Korea](#), Associated Press, February 27, 2013

• MIRAE WI-FI NETWORK

The Mirae (미래) Wi-Fi Network was established in 2018 along Ryongmyong Street in central Pyongyang.

The service is described in full earlier in this report.

SUNNET

Sunnet was North Korea's first cellular network. It was based on second-generation GSM technology and operated from 2002 to 2004.

The service was operated by Northeast Asia Telegraph and Telephone (NEAT&T). The company was a joint venture between Thailand's Loxley Pacific, which held 70 percent of the shares, and the North Korean Ministry of Posts and Telecommunications, which held the remaining 30 percent.

Loxley acquired a 30-year license to offer international telecommunications services in the Rason international trade zone in April 1996 and the service began in 2002. At around the same time, the North Korean government built a compatible 2G network in major cities around the country.

The first handset offered on the network was the Motorola 3588, which was made in Singapore at the time.

Total cellular subscriptions grew to around 40,000 in the country by 2004 but service was abruptly shut down in the spring of that year. There are a variety of theories on why that happened, but it seems the North Korean government became worried about illicit use of phones and halted service as a precaution.

Sunnet never returned to service and North Korea was without cellular service for several years until Koryolink launched in late 2008.

REFERENCE: SMARTPHONE COMPANIES OF NORTH KOREA

While several smartphone brands exist in North Korea, none of the companies are believed to manufacture the phones they sell. The level of miniaturization required to produce a modern smartphone appears to be beyond the capability of commercial electronics manufacturing operations in the country.

Instead, phones are procured on an OEM basis from major Chinese smartphone makers. The Chinese companies produce the phones to order from basic designs and badge them with a local brand name. This is a common practice in the industry and as a result, smartphones similar or identical to North Korean handsets can often be found in other markets.

The biggest difference in the phones is in the level and amount of customization that takes place in software. The North Korean companies install a modified version of the Android operating system that includes security software and restrictions.

ARIRANG IT COMPANY

The Arirang IT Company (아리랑정보기술교류사) is responsible for the “Arirang” line of smartphones. The company is a general electronics supplier and markets LCD televisions.

The phone “production line” is at the May 11 Factory, although like all other North Korean phones the handsets are made in China. The factory occupies prime real estate near the party headquarters building in central Pyongyang.^{6 7}

The company has been visited twice by leadership. In July 2011, Kim Jong Il visited and looked at LCD television production and in August 2013 Kim Jong Un visited to look at the smartphone line.

State media reported that Kim praised workers “for developing an application program in Korean style which provides the best convenience to the users while strictly guaranteeing security.”

⁶ [Kim Jong Il visits ‘LCD TV factory’](#), North Korea Tech, July 30, 2011

⁷ [Kim Jong Il Provides Field Guidance to May 11 Factory](#), Korean Central News Agency, July 28, 2011



Figure 3
May 11 Factory in Pyongyang (Photo: Maxar/Google Earth)



Figure 4

Kim Jong Un visits the Arirang IT Corp in August 2013 (Photo: KCNA)

It's unclear what program he was referring to, but it hints at software development taking place at the company.

Kim is also said to have told workers the phones need to have touch-sensitive screens and high-resolution cameras.

Like other North Korean smartphones, there is some question as to how much work these factories do in preparing them for sale. North Korea has never shown photos of manufacturing lines instead publishing photos of workers testing assembled devices.^{8 9}

CHECOM TECHNOLOGY JV

Checom Technology Joint Venture Company (체콤기술합영회사) is a North Korean company based in Pyongyang that markets smartphones under the “Pyongyang” brand name. The phones are the most popular models available in North Korea and Checom has been in operation since at least 2010.

⁸ [Kim Jong Un visits 'cell phone factory'](#), North Korea Tech, August 12, 2013

⁹ [Kim Jong Un Visits May 11 Factory](#), Korean Central News Agency, August 10, 2013

A 2012 report by the U.S. Government's Open Source Center said the company was established in July 2003 and partnered with a company in China's Zhejiang province, although no additional information or source was listed.¹⁰

No other information is known about the company.

JONSUNG ECONOMY & TECHNOLOGY EXCHANGE COMPANY

The Jonsung Economy & Technology Exchange Company (전승경제기술교류사) is a new company in North Korea's smartphone industry. It was first spotted at the 2019 Autumn International Trade Fair in Pyongyang where advertising promoted the company and its Samthaesong (삼태성) brand.¹¹

The phone does not appear to have made it to market. In the July to September 2021 edition of North Korea's "Foreign Trade" magazine, the company is featured as an organization that is still working to produce a phone. It is possible the delay in the phone development is due to the border closure in January 2020 related to COVID-19.

The same magazine also revealed the company has developed a web browser and messaging application.

• OFFICIAL COMPANY PROFILE

The Foreign Trade profile of the company read as follows:

Jonsung Eco & Tech Trading Company

The Jonsung Eco & Tech Trading Company is a new business in the national arena of IT industry. It developed different programs including the multilingual input program Jonsung with its own technical force.

Its talented program developers in their twenties and thirties are continuously developing updated versions of programs such as the Jonsung browser and the Jonsung message program. Together with this, it conducted a correct market survey and devised a rational business strategy in keeping with the different growing demands for technical products, and is carrying out projects to develop new intelligent game programs for different ages.

Now the company is making efforts to develop a new smartphone, Samthaesong, of high functional and intelligent capabilities, establish the relevant production line and build up its own technical personnel for the purpose. Working hard for a high goal of becoming the backbone of the domestic IT industry, the company is also conducting active technical cooperation with other countries.

¹⁰ [North Korea -- Characteristics of Joint Ventures With Foreign Partners, 2004-2011](#), Open Source Center, March 1, 2012

¹¹ [Chinese company offering "custom order" North Korean smartphones at Pyongyang fair](#), NK News, September 24, 2019.

Jongsung Eco & Tech Trading Company
Add: Phyongchon District, Pyongyang, DPR Korea
Tel: 850-2-18111-341-8903
E-mail: jongsung1212@star-co.net.kp

MANGYONGDAE IT CORP

The Mangyongdae IT Corp (만경대정보기술사) is a Pyongyang-based company that markets smartphones under the Jindallae (Azalea, 진달래) brand name. It also works on various wired and wireless communications products, entertainment and operating system software, automation systems and biometric ID systems, according to state media.¹²

It counts graduates of Kim Il-sung University and Kim Chaek University of Technology among its staff.

Its headquarters are on the west side of the city.¹³

¹² [《진달래》손전화기와 함께 유명해진 만경대정보기술사](#), DPRK Today, February 4, 2020

¹³ Korean Central Television, April 23, 2022



Figure 5
Mangyongdae IT Corp building in Pyongyang (Photo: Maxar/Google Earth)



Figure 6
Mangyongdae IT Corp building in Pyongyang (Photo: KCTV)



Figure 8
Inside the Mangyongdae IT Corp building in Pyongyang (Photo: KCTV)



Figure 7
Inside the Mangyongdae IT Corp building in Pyongyang (Photo: KCTV)

PHURUNHANAL ELECTRONICS

The Phurunhanal Electronics JV Co. Ltd. (푸른하늘) is a general high-tech electronics manufacturer and distributor. Its name Phurunhanal means “Blue Sky” in Korean.

It was established in October 2014.

The ownership of the company is unknown although North Korean companies that identify as joint ventures (usually with “JV” in their names) are typically run with a foreign partner. In a 2019 edition of North Korea’s Foreign Trade magazine the company was referred to as “Phurun Hanal Corp.,” without the “JV,” which could indicate the departure of the foreign investor or an attempt to avoid scrutiny under sanctions.

Youth played a key role in the company. At the time of its establishment, its CEO was named as 29-year-old Choi Jin Hyok and a profile in the Choson Sinbo newspaper reported many of the engineers were also in their 20s.¹⁴

• HEADQUARTERS

Its headquarters are on Tongil Street in Pyongyang and consist of several two- and three-story factory and office buildings. Construction of the first factory building began around 2006 and a second building was added to the site in 2010. Work on a third building began in 2012 and a fourth building was added in 2017. The latest construction has seen a fountain and solar panels added.



Figure 9

Phurunhanal Electronics location in Pyongyang (Photo: Maxar/Google Earth)

¹⁴ [국산컴퓨터 개발, 대량생산과 판매](#), Choson Sinbo, June 19, 2015



Figure 10

Phurunhanal Electronics building in Pyongyang (Photo: KCTV)

The factory appears to be home to some of North Korea's most advanced electronics production lines. A circuit-board tester at the factory was featured on the cover of Foreign Trade magazine for the second quarter of 2016 and a profile at the time said the factory could handle surface-mount components. These are tiny components that require machine placement and processing and are difficult to use by hand.

The profile said the factory was over 10,000 square meters at the time and could produce 300,000 circuit boards and 200,000 products per year.



Figure 11
Phurunhanul Electronics products featured in Foreign Trade magazine (Photo: Foreign Trade)

The electronics company was the subject of a two-part feature that aired on Korean Central Television on June 17 and 18, 2016. In the video, the factory, production line and products are shown.^{15 16}

• **MAIN PRODUCTS**

When the company was founded in 2014, its main products were desktop and laptop personal computers, including an all-in-one model. Other products included USB sticks, a digital TV set-top box and portable projector.

Its first smartphone, the Phurunhanul H1, was launched in 2018 at the 21st Pyongyang Spring International Trade Fair.¹⁷

¹⁵ [Phurunhanul Electronics 1](#), YouTube

¹⁶ [Phurunhanul Electronics 2](#), YouTube

¹⁷ [North Korean electronics corporation launches new smartphone brand](#), NK News, June 7, 2018

• OFFICIAL COMPANY PROFILE

The following profile was carried in the DPRK Foreign Trade magazine for the fourth quarter of 2019.¹⁸ The website address listed is only accessible from the North Korean domestic intranet and the email address is likely filtered to only accept emails from known correspondents.

The Phurun Hanul Corporation that was established in October 2014 is a hi-tech enterprise incorporating IT research and exchange, production and sale.

Its business management is conducted by the integrated manufacturing and control system.

The IT research institute under the corporation with more than 100 professionals specializes in the hardware and software development.

The electronics factory is equipped with flow lines for manufacturing boards through SMT, assembling, testing and packing. It turns out several hundred thousand IT products every year. It has obtained a GMP certificate.

The Phurun Hanul IT Company offers information exchange, sale and repair service through its nationwide electronic commerce network, www.Phe.com.

Various types of IT products, including TV sets of various sizes, computers, USB, intelligent and functional cellular phones of various models, anion-generating devices and IP cameras, are convenient to use and of good quality, thus enjoying a great demand at home.

The Phurun Hanul Corporation ranks among the top ten IT businesses in the country.

It is stepping up the development of new products and programs with competitive edge in the international markets, with innovative insight and creative work style as required by the developing IT era.

Its energetic efforts will produce a larger number of Phurun Hanul-brand goods favoured by everyone.

Phurun Hanul Corporation

Add: Rangnang District, Pyongyang, DPR Korea

Tel: 850-2-18111-341-8305 E-mail: PHE@star-co.net.kp

¹⁸ DPRK Foreign Trade magazine, 4th quarter 2019, pp28-29

POTONGGANG NEW TECHNOLOGY DEVELOPMENT CENTER

The Potonggang New Technology Development Center is the company behind the Chollyong smartphones.

No other information is known about the company.

REFERENCE: SMARTPHONES OF NORTH KOREA

ARIRANG 1201

The Arirang 1201 (아리랑1201) is the first smartphone produced by the Arirang IT Corp. The phone went on sale in 2013 with support for the Koryolink network.

An analysis of the handset by a Japanese blogger determined it is based on the Chinese Uniscope AS1201 handset.¹⁹



Figure 12
The Arirang AS1201 smartphone

• SPECIFICATIONS

According to published photographs of the phone, it has the following specifications

- Android v4.0.4
- Dual core 1GHz Mediatek CPU
- 4.3-inch display
- 540 x 960-pixel resolution
- 8MP rear camera

¹⁹ [北朝鮮の携帯電話事情 \(2\) - 端末ラインナップ](#), Wireless Wire, February 14, 2014

ARIRANG 151

The Arirang 151 (아리랑151) is an Android smartphone that went on sale in 2016.

The phone has a low-end sister handset, the Arirang 152. Specifications have been published by the NKICT blog.²⁰

• SPECIFICATIONS

- OS: Android 4.4.2
- Chipset: Mediatek MT6580 1.3GHz
- Display: 5 inches
- Resolution: 1,280 x 720 pixels
- Rear Camera: 13 megapixels
- Front camera: 5 megapixels
- Memory: 32GB ROM, 2GB RAM
- Battery: 2,500mAh
- Weight: 148 grams

ARIRANG 152

The Arirang 152 is a smartphone marketing by Pyongyang-based Arirang IT Corp. Its existence was revealed by the NKICT blog, which said it's a low-end version of the Arirang 151 that went on sale in 2016.

In December 2017, the NKICT blog published photos of the phone on display and provided specifications for the device.²¹

• SPECIFICATIONS

- OS: Android 4.4.2
- Chipset: 1.3GHz
- 5MP camera
- Memory: 16GB ROM, 1GB RAM
- Resolution: 480 x 800 pixels
- Weight: 125 grams
- Battery: 1,500mAh

²⁰ [진화하는 북한 아리랑 스마트폰](#), Digital Hurricane, December 30, 2017

²¹ [진화하는 북한 아리랑 스마트폰](#), Digital Hurricane, December 30, 2017

ARIRANG 161

The Arirang 161 (아리랑161) is an Android smartphone that went on sale in 2017. It was the first phone in the Arirang range to feature fingerprint recognition.

The phone is available in black and gold, has a 4.7-inch screen and 32GB of memory. It weighs 120 grams. No other information is known.



ARIRANG 171

The Arirang 171 (아리랑171) is an Android smartphone that went on sale in 2018.²² In 2018, the phone was shown on state television being used to demonstrate the country's new Mirae Wi-Fi network.²³



Figure 13

The Arirang 171 smartphone shown on Korean Central Television in 2018

²² [북한 안드로이드 '누가' 탑재 아리랑171 스마트폰 개발](#), NK Economy, June 4, 2018

²³ [Smartphone-capable Wi-Fi on show at Pyongyang IT exhibition, state TV reveals](#), NK News, November 14, 2018

• SPECIFICATIONS

- OS: Android 7.1.1
- Chipset: Mediatek MT6797
- Display: 5.5-inch
- Resolution: 1080p resolution display
- Front camera: 8 megapixels
- Rear camera: 13 megapixels
- Memory: 4GB RAM, 32GB ROM

CHOLLYONG 201

The Chollyong 201 (철령201) was released in early 2020. It is the first reported smartphone to carry the Chollyong name. The brand is linked to the Potonggang New Technology Development Center (보통강새기술개발소).

This company has not been mentioned in North Korean state media and nothing is known about it. It is possibly related to Potonggang Electronics, which sells LCD televisions and USB sticks, although the Potonggang name is common in North Korea so the companies could be independent.

The Chollyong 201 is based on the Oujia 2019 smartphone produced by Shenzhen Oujia Electronic Technology, according to an IMEI record reported by Daily NK.²⁴ However, the Chollyong 201 photograph received by the publication does not closely match that of the Chinese handset.

• SPECIFICATIONS

The following specifications are known:²⁵

- Display: 7.12 inches
- Resolution: 2,244 x 1,080 pixels

No other information on the phone is available.

JINDALLAE

The Jindallae (진달래) was the first smartphone from the Mangyondae IT Corp. Details of the phone were published in 2018 although the name and specifications indicate it went on sale prior to the Jindallae 3, which launched in June 2017.²⁶

SPECIFICATIONS

The following specifications were published in 2018:

- Android 4.4.2
- Processor: ARM Cortex A7 quad-core 1.3GHz
- Graphics processor: Mali 400
- Display: 4.7-inch
- Resolution: 1,280 x 720 pixels
- Front camera: 2 megapixels
- Rear camera: 8 megapixels
- Memory: 1GB RAM, 16GB Flash
- Battery: 1 850mA

²⁴ [N. Korea's new Chollyong 201 phone was made in China](#), Daily NK, July 8, 2020

²⁵ [사용하기에 편리한 새형의 지능형손전화기 개발](#), Tongil Voice, January 29, 2020

²⁶ [New-model Mobile Phone JINDALLE](#), Naenara Web Site, January 13, 2018

JINDALLAE 3

The Jindallae 3 (진달래3) went on sale in June 2017.^{27 28}

• SPECIFICATIONS

Wikipedia lists the following specifications although the source of the information is not provided.²⁹

- OS: Android 7.1.1
- Processor: Qualcomm Snapdragon 427 quad-core processor
- Chipset: 28nm ARM Cortex-A53 MP4 1.4 GHz CPU and Qualcomm Adreno 308 MP6 500 MHz GPU
- Display: 5.2 inch
- Resolution: 720 x 1,280 pixel
- Memory: 4GB RAM, 32GB ROM
- Rear camera: 13 megapixels
- Front camera: 8 megapixels
- Battery: 3,100mAh



Figure 14
The Jindallae 3 smartphone

²⁷ [우리 식의 새로운 지능형손전화기 《진달래3》이 출품](#), Arirang Meari, 6 March, 2017

²⁸ [호평받는 지능형손전화기 《진달래3》](#), Daily NK, June 24, 2017

²⁹ [진달래-3](#), Wikipedia

JINDALLAE 5

The Jindallae 5 (진달래5) smartphone was launched in January 2019 and is a mid-range Android smartphone.



Figure 15
The Jindallae 5 smartphone

• SPECIFICATIONS

The phone has the following specifications:

- OS: Android
- Chipset: MediaTek Mali 400MP
- Processor: ARM Cortex-A73 MT6580T Quad core 1.3GHz CPU
- GPU: ARM Mali-G72 800MHz MP3 GPU
- Display: 5.45 inch
- Resolution: 1,440 x 720 pixel
- Memory: 2GB RAM, 16GB ROM
- Rear camera: 13 megapixels
- Front camera: 8 megapixels
- Battery: 3,800mAh
- Dimensions: 147 x 70 x 9.4mm
- Weight: 145g

JINDALLAE 6

The Jindallae 6 (진달래6) and Jindallae 6+ (진달래6가) went on sale in early 2020 simultaneously with the Jindallae 7 (진달래7) and were the first from the company to run Android 8.

Jindallae is the Korean word for rhododendron.

The phones include biometric identification functions including fingerprint, voice and facial recognition, according to DPRK Today.

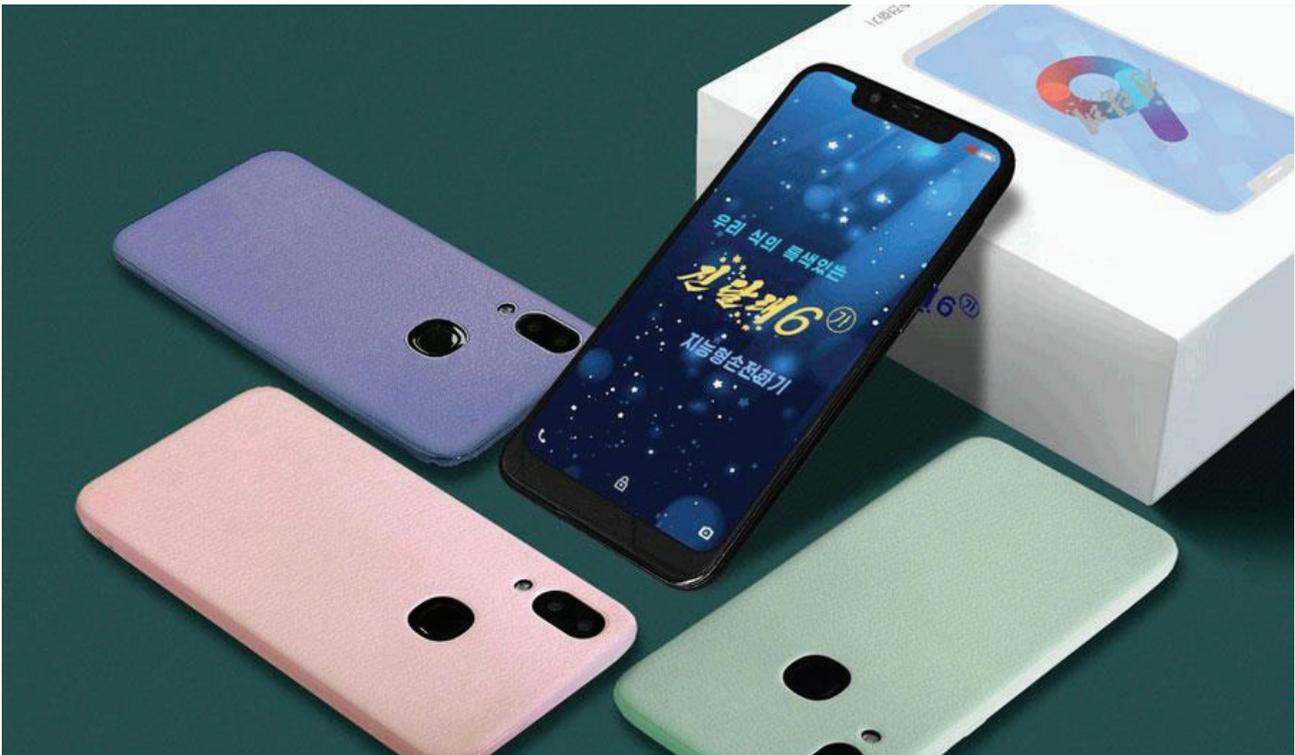


Figure 16

The Jindallae 6+ smartphone (Photo: DPRK Today)

SPECIFICATIONS

Wikipedia lists the following specifications for the Jindallae 6 although the source is unclear.³⁰

- OS: Android 8.1
- Chipset: MediaTek MT6771 octa core, 12nm processor
- Processor: ARM Cortex-A73 MP4 2.0GHz and ARM Cortex-A53 MP4 2.0GHz CPUs
- GPU: ARM Mali-G72 800MHz MP3 GPU
- Display: 6.2 inch
- Resolution: 2,246 x 1,080 pixel
- Memory: 6GB RAM, 64GB ROM
- Rear camera: 16 megapixels
- Front camera: 8 megapixels
- Battery: 3,550mAh

³⁰ [진달래6](#), Wikipedia

JINDALLAE 7

The Jindallae 7 (진달래7) is an Android-based smartphone that went on sale in early 2020 simultaneously with the Jindallae 6 (진달래6) and Jindallae 6+ (진달래6가) and was the first from the company to run Android 9.

The phones include biometric identification functions including fingerprint, voice and facial recognition, according to DPRK Today.

Daily NK reported the IMEI number of a Jindallae 7 belonged to the F7 smartphone produced by China's Umdigi. While the appearance of the two phones is similar, the specifications are not the same, so the match is not conclusive.³¹



Figure 17
The Jindallae 7 smartphone
(Photo: DPRK Today)

• SPECIFICATIONS

- OS: Android 9.0
- Display: 6.3 inches
- Resolution: 2,340 x 1,080 pixels
- Front camera: 16 megapixels
- Rear camera: 2 megapixels
- Battery: 5,200mAh

³¹ [The Jindallae 7 phone was manufactured in China](#), Daily NK, July 23, 2020

PHURUNHANAL H1

The Phurunhanal H1 (푸른하늘H1) is the first smartphone marketed by Pyongyang-based Phurunhanal Electronics.

The phone debuted at the 21st Pyongyang Spring International Trade Fair in May 2018 and features a 5.5-inch display and 6,000mAh battery.³²

• SPECIFICATIONS

Additional specifications were published by NK News.³³

- OS: Android
- Chipset: Mediatek MT6753 1.3GHz
- Display: 5.5 inch
- Memory: 3GB RAM, 32GB ROM
- Front camera: 8 megapixels
- Rear camera: 16 megapixels
- Battery: 6,000mAh

PHURUNHANAL H2

This is the second phone in the Phurunhanal range.

The IMEI of a Phurunhanal phone matches that of the Sancup A8 in the imei.info database. However, the A8 is a candy bar feature phone and does not match the specifications of the H2.

• SPECIFICATIONS

The phone has the following specifications:³⁴

- OS: Android
- Chipset: Mediatek MT6750
- Display: 6 inches
- Resolution: 1,440 x 720 pixels
- Front camera: 13.3 megapixels
- Rear camera: 21.2 megapixels
- Memory: 4GB RAM, 64GB ROM
- Battery: 4,300 mAh
- Size: 159 x 76.2 x 9.6 mm
- Weight: 240 grams

³² [새형의 지능형손전화기 《푸른하늘H1》](#), Sogwang, June 5, 2018

³³ [North Korean electronics corporation launches new smartphone brand](#), NK News, June 7, 2018

³⁴ Phurunhanal H2 user manual

PYONGYANG 1105

The Pyongyang 1105 is a candy bar phone.

It was seen on show at a Pyongyang electronics store in a photo published by the North Korean Sogwang website on April 8, 2019.

No other information is known.



Figure 18

Pyongyang 1105 cellphone seen in an April 2019 photo (Photo: Sogwang)

PYONGYANG 1202

The Pyongyang 1202 is a clamshell phone.

It was seen on show at a Pyongyang electronics store in a photo published by the North Korean Sogwang website on April 8, 2019.

No other information is known.



Figure 19

Pyongyang 1202 cellphone seen in an April 2019 photo (Photo: Sogwang)

PYONGYANG 2405

The Pyongyang 2405 appears to be an early-generation smartphone.

It was seen on show at a Pyongyang electronics store in a photo published by the North Korean Sogwang website on April 8, 2019.

No other information is known.



Figure 20

Pyongyang 2405 cellphone seen in an April 2019 photo (Photo: Sogwang)

PYONGYANG 2406

The Pyongyang 2406 is an early-generation smartphone that runs version 4.2.2 of the Android operating system. It went on sale in late 2015 or early 2016. It features 1GB of user memory. The phone includes Bluetooth support but no Wi-Fi.

PYONGYANG 2407

The Pyongyang 2407 is an Android-based smartphone released in North Korea in 2016 or 2017.

It was the first North Korean Android phone to receive wide public scrutiny thanks to the publishing of a disk image on the KCC website.³⁵

The phone is based on a handset produced by China's Gionee and has the following specifications:

- Android OS
- Mediatek MT6582SC CPU
- 4.7-inch display
- 720 x 1280-pixel resolution
- 2-megapixel front camera
- 8-megapixel rear camera
- 8GB memory
- 1,800mAh battery



Figure 21

Pyongyang 2407 cellphone seen in an April 2019 photo (Photo: Sogwang)

³⁵ [Pyongyang 2407 Cellphone disk image](#), Korea Computer Center

The same basic Gionee phone is sold in other markets as the Gionee CTRL V5, the Walton Primo H3 and the Blu Life Play 2.

After the disk image of the phone was published online, a team got the software running on a foreign handset. The work was introduced and released online.³⁶

The work confirmed that several known-North Korean surveillance and security techniques were present on the phone including the NATISIGN and SELFSIGN digital signature system and Trace Viewer.

The researchers were successfully able to watch a movie on the handset after patching the phone's software to bypass the digital signature check for all media.

PYONGYANG 2408

The Pyongyang 2408 appears to be an early-generation smartphone.

It was seen on show at a Pyongyang electronics store in a photo published by the North Korean Sogwang website on April 8, 2019.

No other information is known.



Figure 22

Pyongyang 2408 cellphone seen in an April 2019 photo (Photo: Sogwang)

³⁶ [Hacking North Korea's Android](#), Hacker House

PYONGYANG 2409

The Pyongyang 2409 is an Android-based smartphone that went on sale in 2016.

The phone was on sale at a Koryolink store in Pyongyang in 2017 for 14,000 North Korean won (US\$133 at official exchange rate).

It was seen on show at a Pyongyang electronics store in a photo published by the North Korean Sogwang website on April 8, 2019.

No other information is known.



Figure 23

Pyongyang 2409 cellphone seen in an April 2019 photo (Photo: Sogwang)

PYONGYANG 2410

The Pyongyang 2410 is an Android-based smartphone that went on sale around 2016 or 2017.

It was seen on show at a Pyongyang electronics store in a photo published by the North Korean Sogwang website on April 8, 2019.

No other information is known.



Figure 24

Pyongyang 2410 cellphone seen in an April 2019 photo (Photo: Sogwang)

PYONGYANG 2411

The Pyongyang 2411 is an Android-based smartphone that went on sale around 2016 or 2017.

It was seen on show at a Pyongyang electronics store in a photo published by the North Korean Sogwang website on April 8, 2019.

No other information is known.

PYONGYANG 2413

The Pyongyang 2413 is an Android-based smartphone. It was mentioned in an interview detailed earlier in this report on phone hacking but no other information is available.



Figure 25

Pyongyang 2411 cellphone seen in an April 2019 photo (Photo: Sogwang)

PYONGYANG 2416

The Pyongyang 2416 is an Android-based smartphone that went on sale around 2017.

It was photographed at the Central Information Equipment Shop (중앙정보통신기자판매소) in Pyongyang in 2017.³⁷

No other information is known.

PYONGYANG 2418

The Pyongyang 2418 is an Android smartphone that went on sale in 2017.

It was photographed at the Central Information Equipment Shop (중앙정보통신기자판매소) in Pyongyang the same year by the South Korean Digital Hurricane blog.³⁸

In June 2019, Daily NK reported the Pyongyang 2418 was made by China's Gionee and is like Gionee's 2413 model.³⁹

• SPECIFICATIONS

Daily NK published these specifications for the Pyongyang 2418 as part of a comparison with the Pyongyang 2423⁴⁰

- OS: Android 5.1
- Chipset: Mediatek MT6580 CPU with 1.2GHz ARM Cortex A7 MP4 core
- CPU: ARM Mali 400 MP2 GPU
- Front camera: 5 megapixels
- Rear camera: 8 megapixels
- Display: 5.0 inch
- Resolution: 720 x 1280 pixels
- RAM: 2GB
- ROM: 16GB
- Battery: 4,000mAh
- Size: 142 x 71 x 9mm
- Weight: 199 grams

³⁷ [북한 지문인식 가능한 스마트폰 '평양 2419' 개발](#), Digital Hurricane, December 23, 2017

³⁸ [북한 지문인식 가능한 스마트폰 '평양 2419' 개발](#), Digital Hurricane, December 23, 2017

³⁹ [North Korea's latest smartphone made by Chinese manufacturer](#), Daily NK, June 19, 2019

⁴⁰ [A look inside the Pyongyang 2423, North Korea's latest smartphone](#), Daily NK, January 11, 2019

PYONGYANG 2419

The Pyongyang 2419 is an Android-based smartphone that went on sale in 2017.

The NK Economy blog obtained one of the handsets in 2019 and published photographs and specifications.⁴¹

It was also photographed by the Digital Hurricane blog on sale at the Central Information Equipment Shop (중앙정보통신기자판매소) in Pyongyang in 2017.⁴²

• SPECIFICATIONS

- OS: Android
- Chipset: Mediatek MT6755M CPU
- Display: 5.5 inch
- Resolution: 1,080 x 1,920 pixels
- Memory: 4GB RAM, 32GB ROM
- Battery: 3,130mAh
- Weight: 168 grams
- Size: 153 x 75.26 x 7.6mm

PYONGYANG 2423

The Pyongyang 2423 (평양2423) smartphone was released in late 2018 by Checom Technology JV. The Daily NK website managed to obtain a phone and said several security controls had been added to further restrict what users could do on the device.

With the country's previous smartphones and tablets, it was possible to access internal folders by connecting them to a computer via USB, but the Pyongyang 2423's internal folders cannot be accessed in such a way. This means that external files cannot be transferred to North Korea's latest smartphone.⁴³

Further, the site said the phone requires SD cards to be formatted when inserted into the phone. Users are also asked to decide if the SD card is used as "a memory card" or as "internal memory." The former doesn't allow folder access while the latter is restricted to use with the handset into which it was inserted.

However, the phone wasn't completely locked down. It included a card playing app that allowed up to four people to play over Bluetooth.⁴⁴

⁴¹ [안드로이드 마시멜로 탑재된 북한 스마트폰 '평양2419'](#), NK Economy

⁴² [북한 지문인식 가능한 스마트폰 '평양 2419' 개발](#), Digital Hurricane, December 23, 2017

⁴³ [A look inside the Pyongyang 2423, North Korea's latest smartphone](#), Daily NK, January 11, 2019

⁴⁴ [Smartphones interwoven into all aspects of North Korean life](#), Hankyoreh, March 24, 2019

• SPECIFICATIONS

- Android 8.0
- Chipset: Mediatek MT6737 CPU (4x 1.3GHz Cortex A53-cores)
- Processor: ARM Mali T720 MP2 GPU
- Memory: 16GB ROM, 2GB RAM
- Front camera: 8 megapixels
- Rear camera: 13 megapixels
- Display: 5.5 inch
- Resolution: 720 x 1440 pixels
- Battery: 3,000mAh
- Size: 148.3 x 71.76 x 8.1mm
- Weight: 140 grams



Figure 26
The Pyongyang 2423 smartphone (Image: Lumen)

• ORIGINS

The specifications helped narrow down the original manufacturer of the phone to be Shenzhen Chenyee Technology Co. Ltd. (深圳市诚壹科技有限公司), a Chinese ODM smartphone maker. The phone shares almost the same specifications as the Chenyee Soda S1.⁴⁵

The same base model phone was on sale in several other countries under different brand names: the Blu Vivo XL3, sold in the U.S., the Condor Plume L2, sold in Europe, the Allview Viper V3, sold in Poland, and the Highscreen Expanse, sold in Russia.

• APPS

The phone comes with many of the same apps that are present in the Pyongyang 2425 smartphone.

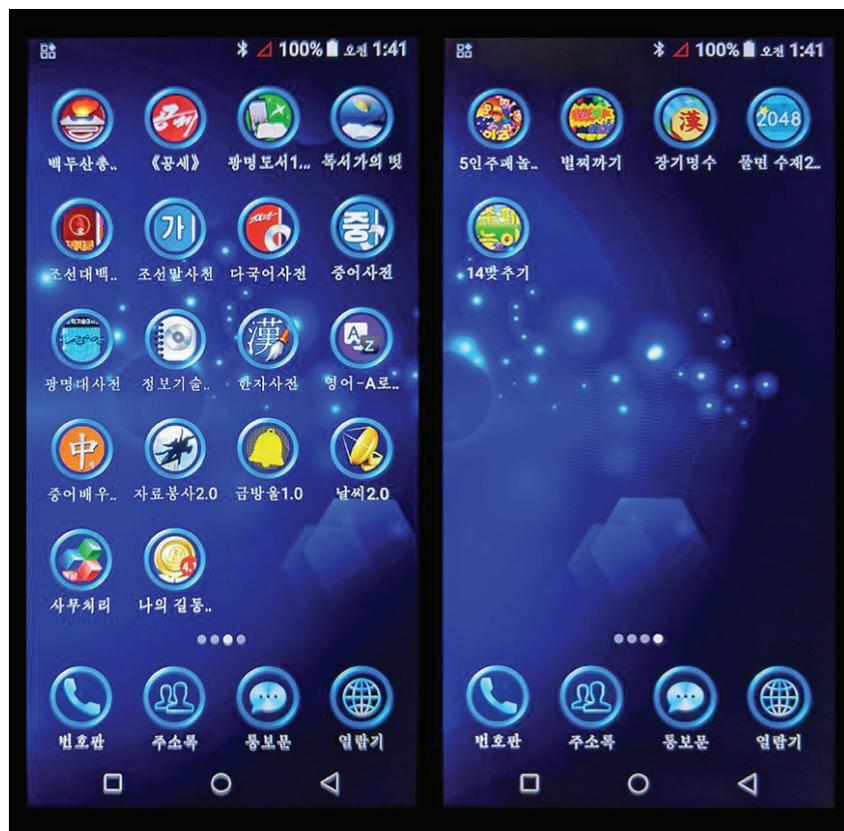


Figure 27

Apps on the Pyongyang 2423 (Image: Lumen)

⁴⁵ [The origins of the Pyongyang 2423 smartphone](#), North Korea Tech, February 5, 2019

PYONGYANG 2425

The Pyongyang 2425 smartphone was released in late 2018 or early 2019.

For in-depth details on this handset, see the section at the beginning of this report.

Its major features include:

- OS: Android 8.1
- Chipset: Mediatek MT6771
- Display: 6.2 inches
- Resolution: 2,246 x 1,080 pixel
- 16MP front camera
- 16MP, 5MP rear camera
- 4GB RAM
- 32GB ROM
- “Wi-Fi ready”
- Fingerprint reader
- Wireless charging
- 3,050mAh battery
-

The IMEI number of the phone obtained matched one associated with China’s Gionee. The model name of the Chinese handset is reported to be 2417, but no reference could be found. Gionee was associated with Shenzhen Chenyee Technology but both companies went out of business.

North Korean state media published several photos of the handset, and the phone was featured in the New DPRK YouTube channel.

PYONGYANG 2426

The Pyongyang 2426 (평양2426) was launched in mid-2019 by Checom Technology JV.

• SPECIFICATIONS

It has the following specifications:⁴⁶

- OS: Android 8.1
- Display: 6.19 inches
- Resolution: 1,520 x 720 pixels
- Front camera: 8 megapixels
- Rear camera: 13 megapixels and 2 megapixels
- Memory: 3GB RAM, 32GB ROM
- Battery: 4,050 mAh

⁴⁶ [성능 떨어진 평양2426... '외화 흡수전략' 맞춤 보급형 가능성](#), Daily NK, April 16, 2020

PYONGYANG 2428

The Pyongyang 2428 (평양2428) smartphone was released in 2020, according to a report by Daily NK. The phone was a follow-on from the Pyongyang 2426 model.⁴⁷ It runs Android 9.0, which makes it likely the first North Korean smartphone to run the “Pie” version of the operating system.⁴⁸

• SPECIFICATIONS

It has the following specifications:⁴⁹

- OS: Android 9.0 “Pie”
- Display: 6.3 inches
- Resolution: 2,340 x 1,080 pixels
- Front camera: 16 megapixels
- Rear camera: 45 megapixels and 5 megapixel
- Memory: 4GB RAM, 32GB ROM
- Battery: 4,000 mAh

⁴⁷ [North Korea launches new smartphone: the Pyongyang 2428](#), Daily NK, April 7, 2020

⁴⁸ [Pyongyang 2428 boasts only slight performance upgrades](#), Daily NK, September 24, 2020

⁴⁹ [Pyongyang 2428 boasts only slight performance upgrades](#), Daily NK, September 24, 2020

SAMTHAESONG

The Samthaesong smartphone is a planned phone from Jongsung Economy & Technology Exchange Company. The phone first appeared in posters at the 2019 Autumn International Trade Fair in Pyongyang where it was advertised as running Android 9.⁵⁰

No other information on the phone was published until the third quarter 2021 issue of North Korea's Foreign Trade magazine, which said the phone was still under development.

⁵⁰ [Chinese company offering “custom order” North Korean smartphones at Pyongyang fair](#), NK News, September 24, 2019.