

Star Army Standard Communications Array

These standard communications systems are found on most ships in the [Star Army of Yamatai](#). They were most recently updated in [YE 41](#).

About and History

Communications systems are vital to ships in the [Star Army of Yamatai](#). These systems have seen major upgrades over the years and seen major components added and removed as more reliable and advanced technologies became available. In [YE 41](#), during the [Kuvexian War](#), [Ketsurui Fleet Yards](#) and other [Corporations](#) that contribute to shipbuilding for the [Star Army of Yamatai](#) came together to develop standardized and modular packages for ships. This way parts and components could be produced in mass production and be compatible on different [Star Army Starship Classes](#) until more advanced technologies and upgrades are developed.

Standard Star Army Communications Array	
Faction	Yamatai Star Empire
Designer	Ketsurui Fleet Yards , Kessaku Systems
Manufacturer	Ketsurui Fleet Yards , Kessaku Systems , Yugumo Corporation
Fielded by	Star Army of Yamatai
Type of Product	KFY Starship Systems and Parts
Production	Mass Production

Upgrades from previous designs for existing starships can be done at any [Iori-Class Star Fortress](#), [Zodiac-Class Star Fortress](#) or other [Star Army Bases](#) with shipyard facilities (Including [Yugumo Corporation](#) operated [Ketsurui Fleet Yards](#) facilities in the [Yugumo Cluster](#)). They will be implemented on all future [Star Army Starship Classes](#).

Communications Array

The Communications Array on all [Star Army Starship Classes](#) serves as an extension/sub-system of [PANTHEON](#), developed by [Kessaku Systems](#).

Laser Communications System

Laser communications antennae that utilize modulated multi-frequency laser beams to transmit directional signals to a specific receiver. Due to the narrow beam and line-of-sight nature of this system, lasers are difficult – though not impossible – to detect, jam or eavesdrop upon. In order to intercept a laser beam, one must lie in its path. This is an old-style communication system and is commonly left unused in favour of more modern neutrino beam comms tech – which has both similar capabilities and

superior performance – but has been included in the ships comms suite should the need arise.

Performance of laser communications can also be drastically impaired when forced to pass through certain environments; nebulae clouds for instance – depending on their composition – can easily reduce communications range to a hundredth the normal distance.

The laser beam frequencies utilized are usually invisible to the eye, though in order to function at great distances they are necessarily tightly focused and are powerful enough to cause light damage if used at full power and at close range (under ~300,000km).

- Effective Broadcast Range: ~200 million km (~125 million mi. or 1.34 AU)
- Transmission Speed: 299,792.454 km/sec (186,282.395 mi/sec, or 1 c)
- Maximum Data Transfer Rate: ~1 TB/min (~18,325 MB/sec)

Subspace Communications System

The subspace communications transceiver can detect or propagates old-style radio signals through the universe's subspace spatial membrane. This essentially accelerates a normal radio message to extreme superluminal velocities and allows for long-distance communication between distant star systems. Such messages are extremely fast, omnidirectional, can be encrypted, but are also easily detected by any subspace transceiver within range and are vulnerable to jamming.

Due to the dependence on radio-waves – which spread out and become less coherent over distance – the maximum range and data transmission rate for this technology is comparably low; for long-distance communications hyperspace-based communications tech is usually preferred despite the lower transmission speed. Normally, subspace communications are only used when time is of the essence and brief transmissions are acceptable.

- Effective Broadcast Range: ~150 LY
- Transmission Speed: ~2.65 LY/min
- Maximum Data Transfer Rate: ~1.7 MB/sec

Hyperspace Communications System

The hyperspace communication system is the preferred method for long-distance communication; this system propagates modulated gravity waves through hyperspace, allowing high-bandwidth communications at extremely long ranges. Hyperspace messages are fast, omnidirectional, can be encrypted, but like subspace comms, they are easily detected and are vulnerable to jamming.

- Effective Broadcast Range: ~875 LY
- Transmission Speed: ~1.12 LY/min
- Maximum Data Transfer Rate: ~1 GB/min (~17.89 MB/sec)

Radio Communications System

The radio communication system – as its name suggests – is designed to broadcast and receive data using radio waves. The system incorporates spread-spectrum technology with which communications clarity and reliability can be significantly improved by distributing the signal over a range of frequencies. Also through the use of frequency hopping the location of the transmitter can be made intentionally harder to detect and locate. Radio wave transmissions are relatively easy to encrypt, but are extremely vulnerable to jamming – many pre-FTL civilizations possess this capability.

The listed “effective” range can be extended by lowering the signals data transfer rate – if the data of a signal is repeated so that the transmission time is quadrupled that would approximately double the range; if the transmission time is multiplied by one hundred then the range is increased by roughly a factor of 10. This is a technique that is commonly used by pre-FTL civilizations for deep-space transmissions.

- Effective Broadcast Range: ~80 million km (~50 million mi. or 0.53 AU)
- Transmission Speed: 299,792.454 km/sec (186,282.395 mi/sec, or 1 c)
- Maximum Data Transfer Rate: ~1.7 MB/sec

Gravity Pulse Communications System

For omnidirectional light-speed transmissions, gravity pulse communications are the next technological tier above radio comms. Gravity waves – similar to radio and the rest of the electromagnetic spectrum – propagate through normal space at the speed of light, however, the amount of information able to be transmitted through use of gravity pulses is many times greater than that of radio waves and the effective broadcast range is considerably greater.

Additionally, encryption is easy and gravity pulses are practically impossible to jam or obscure – doing so requires an immense source of gravity equivalent to a star or quantum singularity. Unfortunately, the system is not particularly covert and can be easily traced with the right type of sensor.

As with radio communications tech, the listed “effective” range can be extended by lowering the signals data transfer rate.

- Effective Broadcast Range: ~1.3 billion km (~800 million mi. or 8.69 AU)
- Transmission Speed: 299,792.454 km/sec (186,282.395 mi/sec, or 1 c)
- Maximum Data Transfer Rate: ~1 GB/min

Neutrino Beam Communications System

For directional light-speed transmissions, neutrino beam arrays are the next technological tier above laser comms antennae. The Neutrino arrays utilize modulated neutrino particle beams to transmit a directional signal to a specific receiver. These neutrino beam transmissions are virtually impossible to block or jam as the particles can pass through miles of rock with relative ease; it is only through the use of specialized sensor systems with extremely sensitive energy fields that react to neutrinos that such

beams are detected at all.

Performance-wise, neutrino beam comms has roughly double the range of laser communications and roughly an equal data transfer rate. Typically, neutrino comms are used in favour of their laser equivalents for covert in-system communications or uninterruptable fire control for missiles and drones.

- Effective Broadcast Range: ~400 million km (~250 million mi. or 2.67 AU)
- Transmission Speed: 299,792.454 km/sec (186,282.395 mi/sec, or 1 c)
- Maximum Data Transfer Rate: ~1 TB/min

Tachyon Communications System

Tachyon pulse communicators – like the radar systems based on the same technology – utilize omnidirectional bursts of exotic massless particles that travel at superluminal velocities. Because these particles are inherently unstable tachyon comms systems have an inferior range to other FTL communicators based on subspace and hyperspace technology – though with larger and more powerful transmitters the tachyon stability can be increased and particle transmission range extended.

As with neutrino beam transmissions, a burst of tachyon particles is virtually impossible to jam. However, with the right kind of sensors tachyons are relatively easy to detect and trace to their source.

- Effective Broadcast Range: ~250 AU
- Transmission Speed: 5.7 AU/sec (~2,844 c)
- Maximum Data Transfer Rate: ~1 GB/min

Psion Communications System

A system derived from the study of telepathic communication and as an outgrowth of older psionic signaller technology, the communications system generates omnidirectional superluminal telepathic messages that can be broadcasted to sentient organic minds or otherwise compatible receivers as sub-vocalized thoughts, sounds, sensations, feelings, and imagery.

The technology uses exotic 'thought' particles known as psions to convey information and though any sufficiently advanced organic brain is usually a compatible receiver, that does not necessarily mean that the content of the message can always be understood. As an example; a sentence broadcasted in Yamataian would still be unintelligible to its recipient if they do not know that language, but feelings, sensations, and images might possibly be comprehended. A species with brain chemistry incapable of expressing a particular emotion however may not correctly interpret broadcasted emotions by this technology.

Transmissions with this technology can be manipulated and blocked through the use of specialized devices, such as psionic signal controllers.

- Effective Broadcast Range: ~100 AU
- Transmission Speed: Instantaneous

- Maximum Data Transfer Rate: ~0.1 GB/min

Quantum Communications System

A system that utilizes the principle of quantum entanglement to bond pairs of particles for the purposes of instantaneous communication. In order to function the receivers location must first be specified in order to establish a connection; from that point onward the two communications devices remain connected on a quantum level so that when particles in one device are manipulated to convey information the particles in its counterpart are instantaneously changed in the same manner, regardless of distance between the two devices.

No signal or emissions exist to be intercepted or jammed, but the data transfer rate is relatively limited. Unfortunately, distortion shielding can interfere with the particle entanglement between two devices - severing the connection - making the system of little use during combat when shields must remain active.

- Effective Broadcast Range: Infinite
- Transmission Speed: Instantaneous
- Maximum Data Transfer Rate: ~0.1 GB/min

OOO Notes

[Andrew](#) created this article on 2019/05/07 18:19.

Communications System Descriptions were utilized from [The Naginata-Class Communications Systems](#) to help make this standard article for use on all [Star Army of Yamatai](#) ships.

Approved by [Syaoran](#) on 5/12/2019

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