

New Products

Leaky Coaxial Cable, or LCX, for Sub6-band Local 5G

Currently, 5G communication is spreading mainly for mobile phones, but in Japan there is a movement to acquire the license and build their own 5G networks as local 5G by companies, municipalities and others to create a high-speed, secure, and reliable wireless communication environment according to the usage purpose.

On the other hand, local 5G is limited to use within one's own building or land except for exceptions, and requires control of the communication area.

The LCX20D-S6 series leaky coaxial cable (Table 1), developed by Fujikura Dia Cable Ltd., is a cable-type antenna that can communicate in Sub6 band (frequency 4.6 to 4.9 GHz) allocated for local 5G.

The LCX can form an electric field along the cable, so it can construct a communication area in a long and narrow area.

For this reason, LCX is suitable for constructing area-controlled communication areas to meet the shape of the site, even in narrow areas and spaces such as railways, roads, and underground malls, as well as in areas hidden behind large machines in factories.

The product also has two types of polarization of mainly radiated waves: horizontal and vertical (Table 2), which make it easier to construct high-speed communications using polarized MIMO by combining them.

We are also developing products with different radio emission levels (coupling loss), making it easier to control the radio wave radiation area.

These LCXs were used in the "Development demonstration for realizing problem-solving type local 5G and other" public offering by the Ministry of Internal Affairs and Communications in FY2022 and are expected to contribute to new communication fields such as railways, roads, factories, livestock farming and agriculture.

Table 1. Leaky coaxial cable configuration for local 5G.

Item		Units	Cable size
			20D
Inner conductor	Material	—	Copper tube
Insulation	Material	—	Highly foamed polyethylene
Outer conductor	Material	—	Copper tape (with pleats) with slots
Self-supporting wire	Material	—	Galvanized steel stranded wire
	Number/Wire diameter	—/mm	7/1.6
Sheath	Material	—	Non-halogen flame retardant polyolefin
Nom. cable outer diameter (Minor dia. × Major dia.)		mm	29×39
Approx. net weight		kg/m	0.7

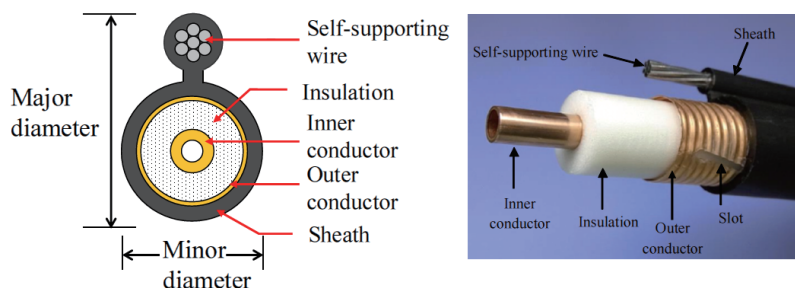


Table 2. Leaky coaxial cable performance for Local 5G (Frequency 4.6 to 4.9 GHz).

	EM-LCX20D-S6H6F	EM-LCX20D-S6V6F
Polarization	Horizontal	Vertical
Coupling loss(dB)	60	60
Attenuation (dB/m)	0.23 (4.6GHz)	0.16 (4.6GHz)
	0.30 (4.9GHz)	0.20 (4.9GHz)

Abbreviations, Acronyms, and Terms.

5G—5th Generation

A 5th generation communication system for cell phones

Local 5G—Local 5G

Companies other than mobile carriers to build and use their own 5G communication environment.

Sub6—Sub 6

Abbreviation used for cell phones using 4.6 to 5 GHz

LCX—Leaky Coaxial Cable

General term for coaxial cables capable of radiating radio waves

MIMO—Multi input Multi output

Abbreviation for a method using multiple transmitting and receiving antennas for high-speed communication

Coupling loss—Coupling loss

A measure of the performance of a leaky coaxial cable that indicates the emissivity of radio waves.

[Information]

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