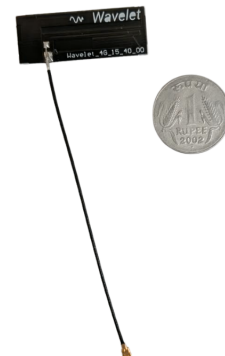


4G/LTE Compact PCB Antenna

Wavelet_4G_15_40_00

A compact wideband cellular antenna in a 15 × 40 mm footprint — less than half the board area of the 25.5 × 54 mm part. Strongest through the high band, where it reaches 5.2 dBi, and the one to specify when the enclosure sets the budget and the deployment sits on mid- and high-band LTE.



FREQUENCY	PEAK GAIN	BEST VSWR	FOOTPRINT
3 LTE bands	5.2 dBi	1.79:1	40 × 15 mm

FEATURES

- Covers 824–960, 1710–2170 and 2300–2690 MHz
- Peak realized gain of 5.2 dBi at the top of the band
- VSWR better than 1.79:1 across the 2300–2690 MHz band
- Compact 15 × 40 mm footprint, 1 mm profile
- Near-omnidirectional pattern in the horizontal plane
- 100 mm of 1.13 mm coaxial cable with I-PEX MHF I connector
- Single part number for global deployments
- RoHS compliant

1. DESCRIPTION

Wavelet_4G_15_40_00 is a compact printed circuit antenna for cellular applications, cabled on I-PEX MHF I. It occupies less than half the board area of the 25.5 × 54 mm part in the same range while covering the same three LTE band groups, and performs best through the high band where realized gain reaches 5.2 dBi. Low-band performance is correspondingly weaker — see section 6 — so the choice between this part and the full-size one is a trade of board area against low-band link margin.

2. APPLICATIONS

- Network devices, gateways and routers
- Remote monitoring and CCTV cameras
- Point-of-sale terminals
- Digital signage
- Asset tracking
- Smart meters — water and electricity
- IoT devices
- eHealth equipment
- Modules and sensors

3. GENERAL DATA

Frequency bands	824–960, 1710–2170 and 2300–2690 MHz
Polarization	Linear
Impedance	50 Ω
Operating temperature	-40 °C to +85 °C
Antenna type	Rigid FR-4 printed circuit antenna
Dimensions (W × L × H)	15 × 40 × 1 mm
Connector	U.FL / I-PEX MHF I
Cable	1.13 mm coaxial, black
Mounting	3M adhesive tape, or mechanical fixing to the host enclosure

4. PART NUMBER

The part code gives the band and the footprint in millimetres: Wavelet_4G_15_40_00 is the 4G part in a 15 × 40 mm footprint. The standard build is 100 mm of 1.13 mm coaxial cable; other lengths and connector types are available to order.

Part number	Cable	Connector	Description
Wavelet_4G_15_40_00	100 mm	U.FL	Standard length

Cable length, connector type and cable grade are all build options. State the length required with the enquiry — lengths other than the 100 mm standard are supplied to order and do not carry a separate part number until a build is agreed.

5. MECHANICAL DIMENSIONS

Width (W)	Length (L)	Height (H)	Tolerance
15.0 mm	40.0 mm	1.0 mm	± 0.2 mm

All dimensions in millimetres. Cable exits from the connector edge; the U.FL plug adds approximately 2.5 mm to the overall height at the termination.

6. RF CHARACTERISTICS

Frequency band	Min. gain	Max. gain	Return loss	VSWR
824 – 960 MHz	-12.9 dBi	-11.2 dBi	-6.8 dB	2.68:1
1710 – 2170 MHz	-5.2 dBi	4.5 dBi	-7.3 dB	2.51:1
2300 – 2690 MHz	4.0 dBi	5.2 dBi	-11.0 dB	1.79:1

Test conditions. Characterised in free space on the Wavelet reference layout, fed through 100 mm of 1.13 mm coaxial cable terminated in a U.FL plug. Gain figures are realized gain, which includes mismatch loss. Return loss and VSWR are the worst case within each sub-band, not the value at resonance. **Total radiated efficiency is not published for this part** — the the data is under review — and is available on request.

THIS PART IS A HIGH-BAND ANTENNA

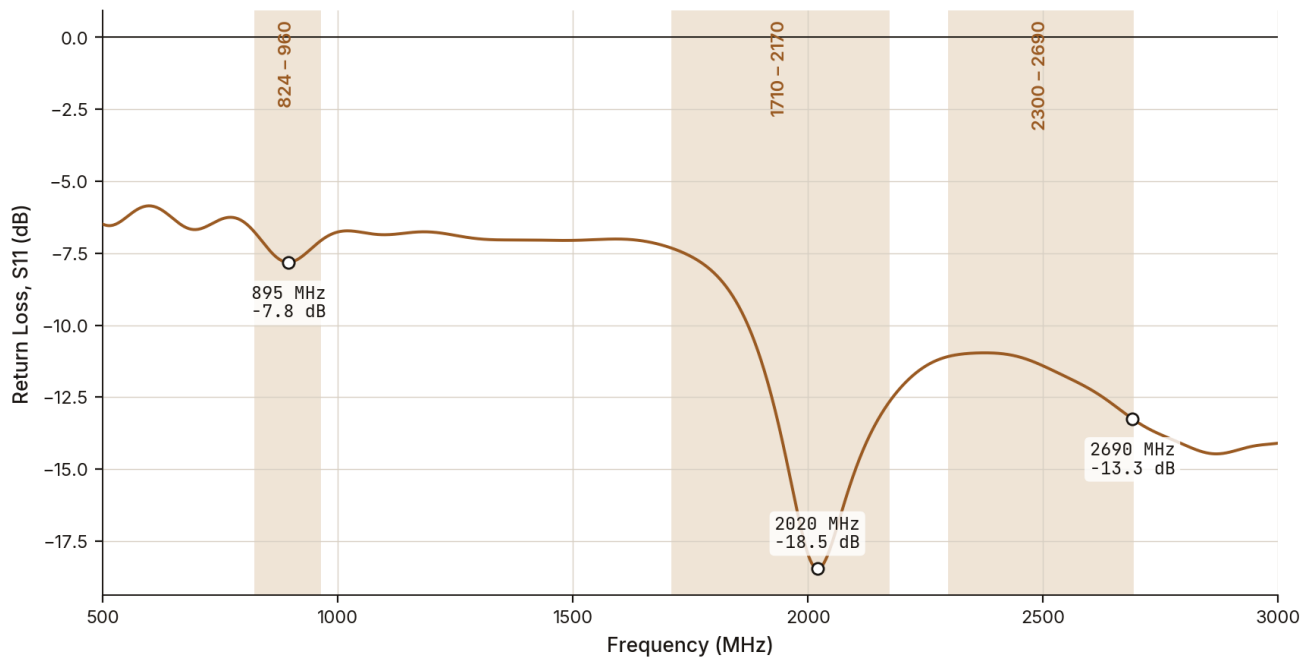
The sub-band figures are not a formality here: performance varies by nearly 20 dB across the range. At 2300–2700 MHz the part is excellent, holding better than 1.79:1 VSWR and reaching 5.2 dBi. At 824–960 MHz it is not: gain sits between -12.9 and -11.2 dBi, which is roughly a thirtyfold power reduction against the high band. Forty millimetres is a small fraction of a wavelength at 824 MHz and this is the physical consequence. If the deployment uses low-band LTE (B12, B13, B17, B20, B28) specify Wavelet_4G_25.5_54_00 instead, which reaches +1.1 dBi over the same band. Where board area rules that out, talk to engineering@wavelet.in before committing the design.

7. INTEGRATION GUIDELINES

Placement	Along an outer edge of the host PCB, as far from metal as the enclosure allows. Corners generally outperform mid-edge positions
Keep-out	Clear of copper pour, ground fill and components on all layers beneath and around the radiating element
Ground plane	The host ground plane forms part of the radiating structure. A larger continuous plane is the single most effective improvement available to this part at low band
Cable routing	Keep the coaxial run away from switching regulators, displays and high-speed digital traces. Do not coil the surplus against the antenna
Nearby metal	Batteries, shield cans, displays and metal bezels detune the antenna. Verify the match in the assembled enclosure rather than on a bare board
Mounting surface	3M adhesive tape onto a non-conductive surface. Avoid mounting directly onto metal

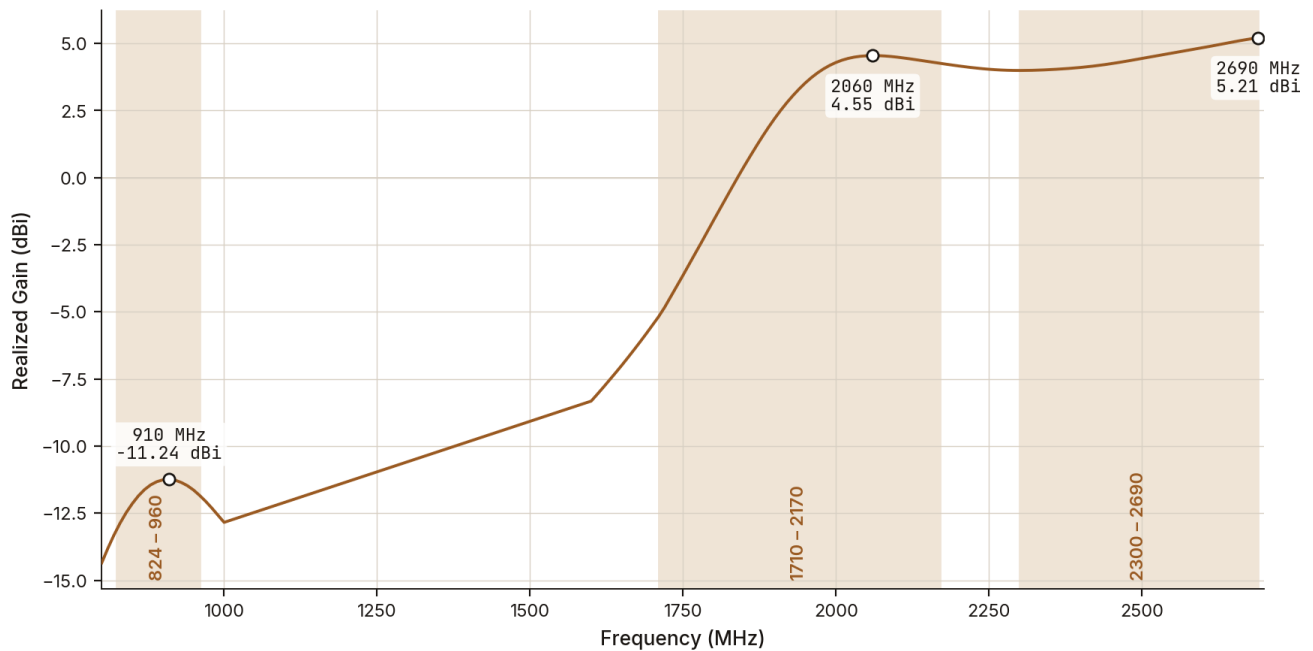
8. RF PERFORMANCE

8.1 Return Loss



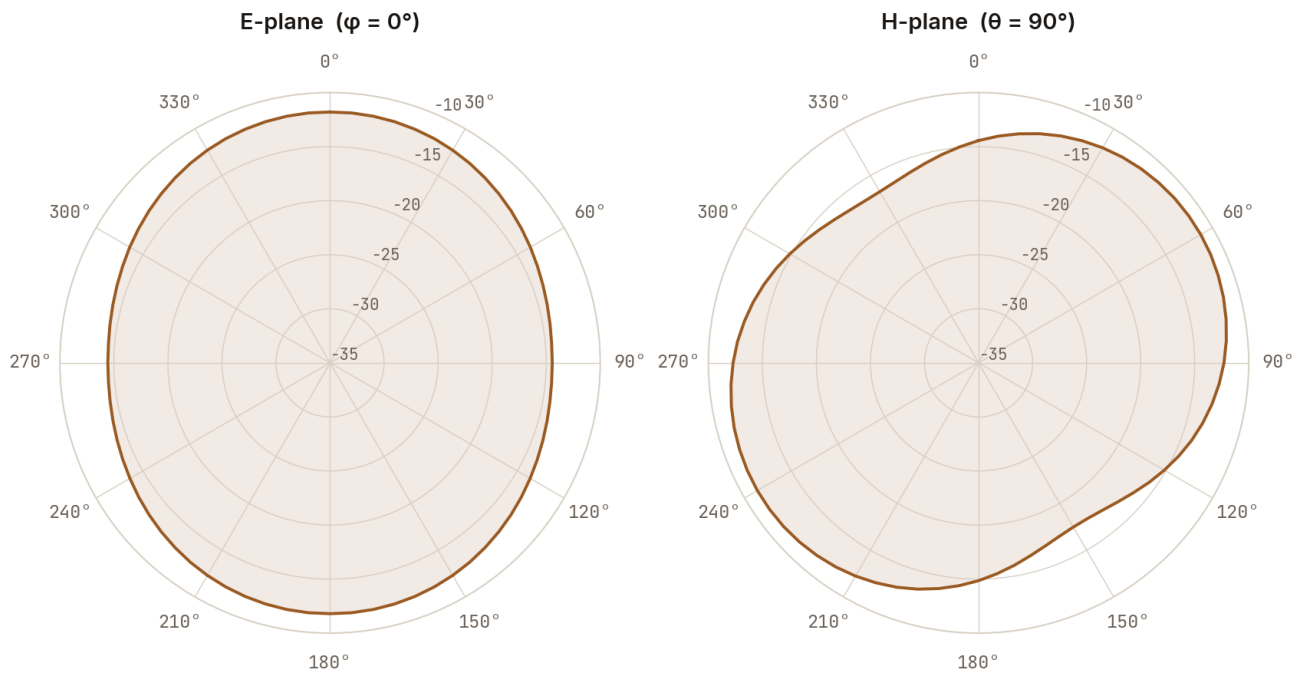
S11 from 500 to 3000 MHz; the shaded region marks the 700–2700 MHz operating band. Resonance falls at 2020 MHz with a return loss of -18.5 dB. The match is weakest at the low edge, reaching -6.8 dB in the 824–960 MHz band.

8.2 Realized Gain



Peak realized gain across the band, mismatch loss included. The rise from low band to high band is the dominant feature of this part and the reason section 6 quotes figures per sub-band.

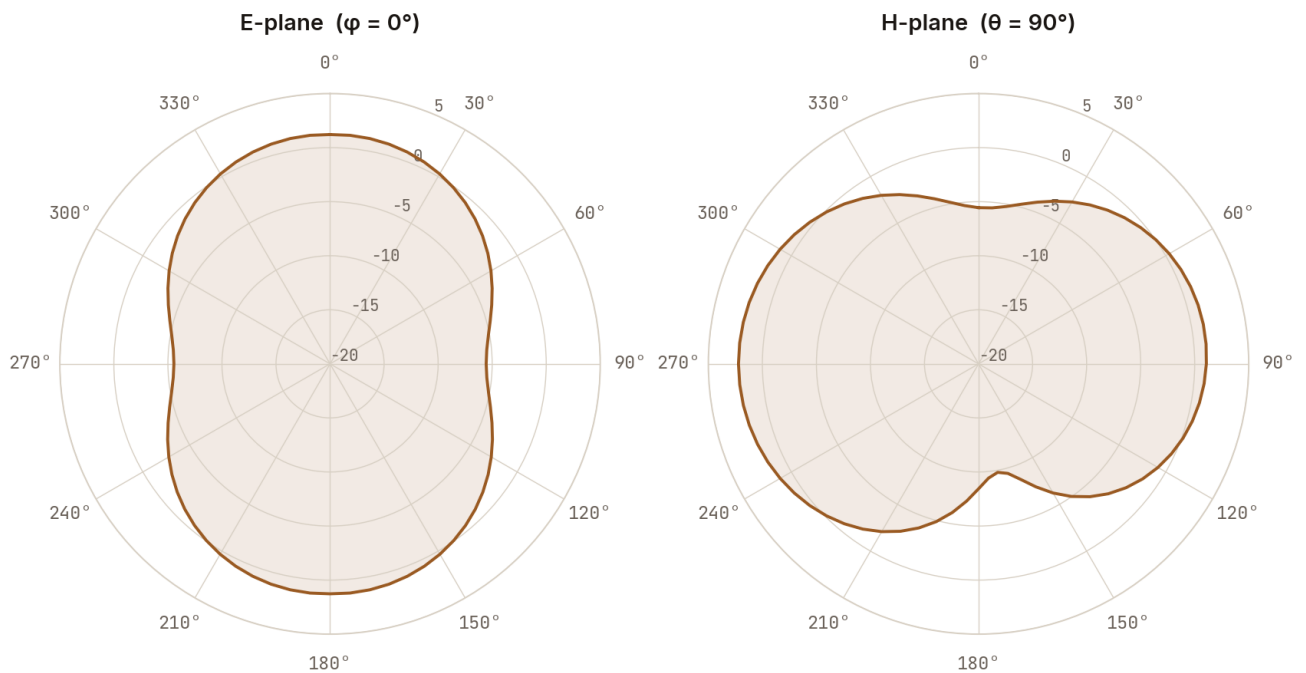
8.3 Radiation Pattern at 900 MHz



Realized gain (dBi) at 900 MHz · peak -11.26 dBi

E-plane and H-plane cuts at 900 MHz, low band.

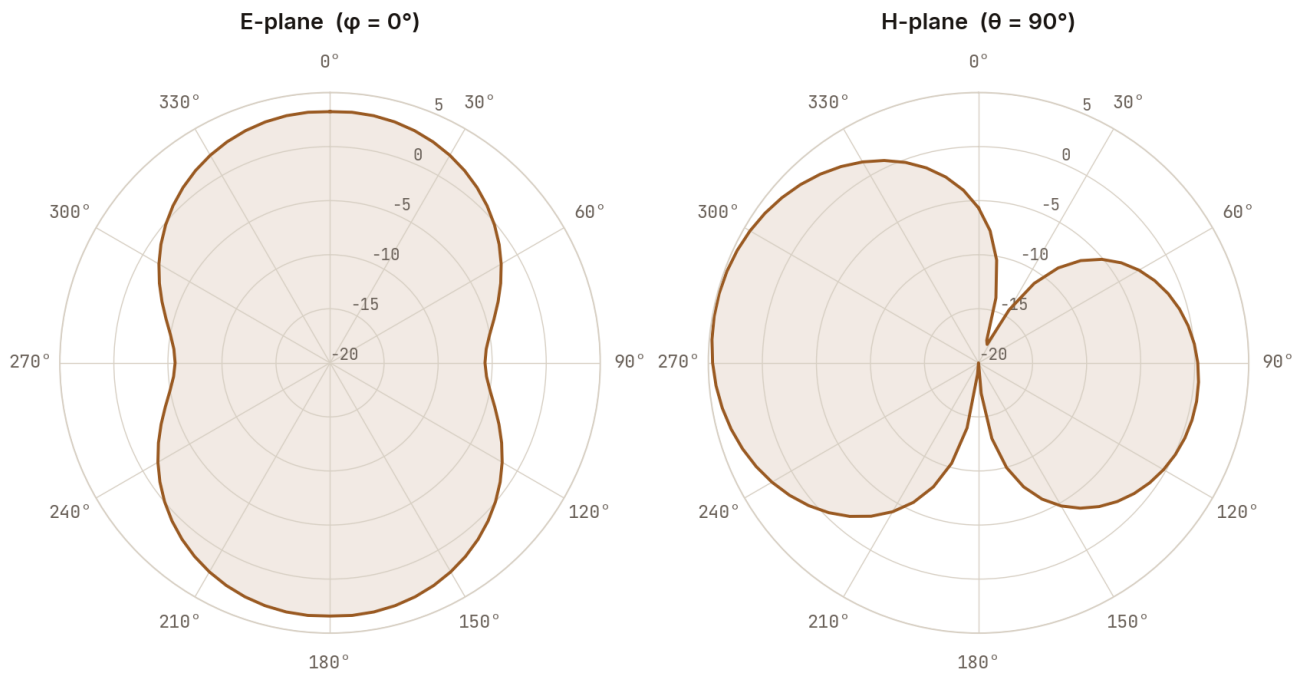
8.4 Radiation Pattern at 1900 MHz



Realized gain (dBi) at 1900 MHz · peak 2.21 dBi

E-plane and H-plane cuts at 1900 MHz, mid band.

8.5 Radiation Pattern at 2600 MHz



Realized gain (dBi) at 2600 MHz · peak 4.84 dBi

E-plane and H-plane cuts at 2600 MHz, high band — where this part performs best.

9. PACKAGING & STORAGE

Packaging Individual PE bag, 100 pieces per outer bag

Storage temperature -10 °C to +40 °C

Humidity BeLow 75 % RH

Shelf life 18 months in sealed packaging

Compliance RoHS compliant

REVISION HISTORY

Rev.	Date	Description
1.0	24 Sep 2026	Initial release



CONTACT

Quote this part number when enquiring. Samples, volume pricing and lead times are issued per enquiry; an RF engineer answers technical questions directly.

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REGISTERED OFFICE

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Specification notice. Performance of any embedded antenna depends on the host PCB, the ground plane it is matched against, enclosure materials and nearby metal. The figures in this document are measured under the test conditions stated in section 6 and should be verified in your own design. Wavelet reserves the right to change specifications without notice. Data is believed to be accurate at the time of release and is provided for design guidance only; it does not constitute a warranty.