

IDC777 Long Range Application Note

This document is to describe an experiment that was made to estimate what range would one get by using the IDC767 with an external antenna. Please note that this was a quick experiment to get some measurements. We believe with better research (choice of antenna) and better layout, one could achieve better performances.

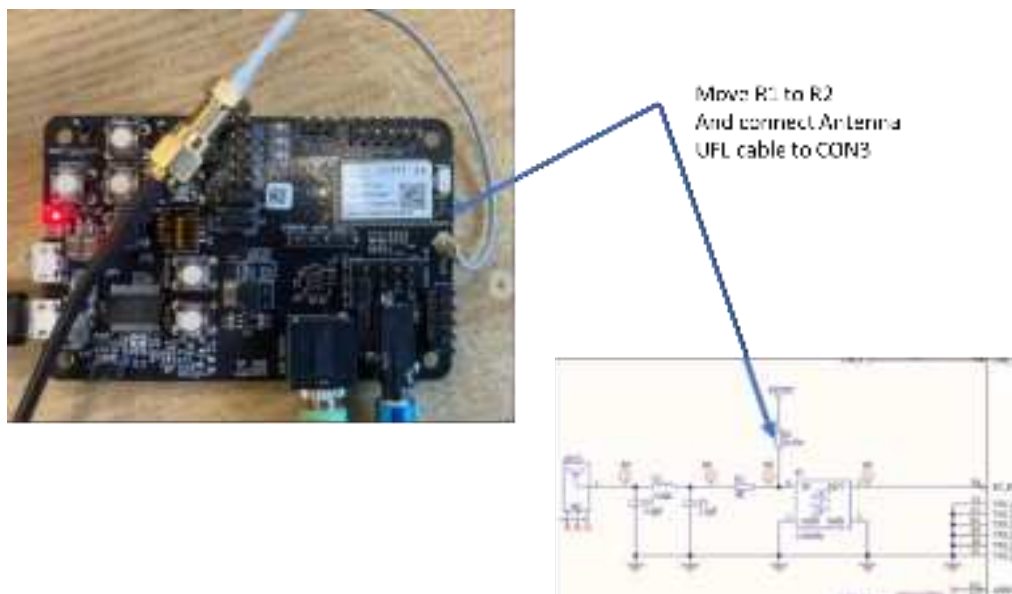
Summary:

Two IDC777-DISKITs were modified to use an external UFL Antenna. The IDC777 module was hand modified to divert the 50 Ohm terminated RF end point (PIN xxx) to a UFL where an off the shelf antenna was fitted. There estimated power output from the antenna was estimated at 15dBm.

Then a few range measurement were done using the 2 IDC777-KITs and an iPhone SE (iOS 17.5.1). The measurements were done outdoors in line of sight in a half full car park. There was a slight drizzle rain. All devices were at 1m50 from the ground. The ranges achieved were between 80m and 150m+ (lost line of sight after 120m).

Devices used:

The IDC777-DISKIT were modified to direct the RF to a UFL connector (See diagram below).



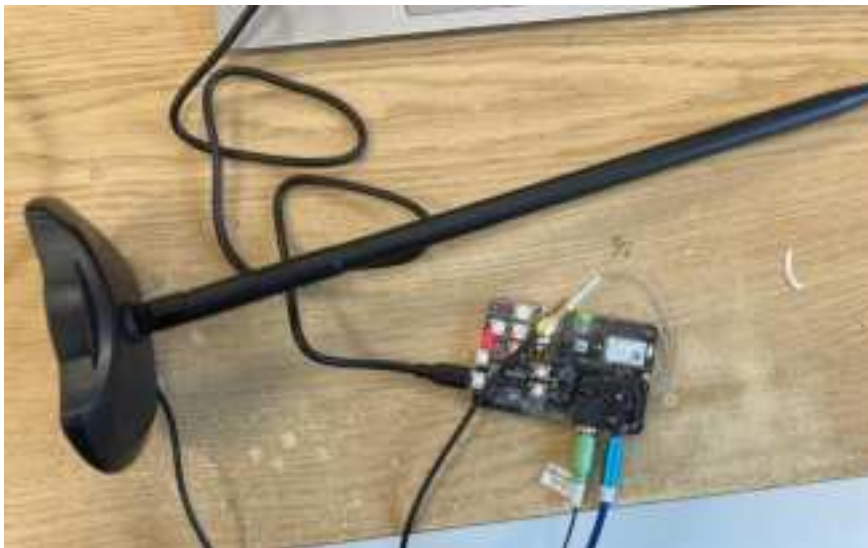
Then the UFL connector was attached to a 12dBi Antenna bought from amazon:

https://www.amazon.co.uk/Eightwood-Antenna-Magnetic-Wireless-Bluetooth/dp/B0B2DMNZ7S/ref=sr_1_11?crid=34HTRMDR4TDRN&dib=eyJ2ljojMSJ9.2OYcsoS5OVRTvFCfc7PD2oKRx12VN0md06l_TSblmHtGP0mFjzLjvw15pChndYhuSdR-kl4XnyeuqanDrwp3lt5XVsnqHDYCMuWargNAEtSj6CE5QsSj5CMPn6O_eD0A-TUUGjEazXux7xziOCuyLAIEcf9-NyRWnV0Ea4OYBs0xXHv21PuG2tERYjKnnIEKncI2bkmygLSxVZi3Ro9Jolaa9fCNR2dWsJr64Vs4U.EiK0hRBbhwpxiaOTJHY1YbaHGPjR_Bqx7SkTdzwaOL4&dib_tag=se&keywords=eightwood+wifi+antenna&nsdOptOutParam=true&qid=1729849050&sprefix=eightwood+wifi+antenna%2Caps%2C93&sr=8-11

The cable loss was estimated at 3.5dB.



Test Devices:



Parking Lot:



Results:

Bluetooth	Scenario	Range	Comment
Classic	iPhone to IDC777 - A2DP	80m	Audio is clear then it cuts very quickly within 2m
Classic	IDC777 to IDC77 - A2DP	120m	Audio is clear then it cuts very quickly within 2m
LE Audio	IDC777 to IDC777 - Auracast	180m	Audio is clear then gets noisy but still OK within additional 50m
LE Audio	IDC777 to IDC777 - Unicast	110m	Audio is clear then it cuts very quickly within 2m

*If we remove line of sight (put our body between the antenna and the device, we reduce by ~30m the range)