

## Addendum to Charge Code Application on behalf of Virgin Media for a Cable Network Cabinet

### Existing Unmetered Supplies Arrangements

Virgin Media have extensive unmetered supplies for their cable network cabinets, the charge codes used in their inventories are derived from on-site measurement of the electrical loads, as described in the [Operational Information Document](#) at Para 4.3. This was a solution to the issue of the original networks using a variety of different equipment, operated by various franchise companies. Over time these networks have been consolidated under the ownership of Virgin Media.

### Future Virgin Media Cable Network Cabinets

Virgin Media are looking to the future by specifying a standard cabinet build that only uses fibre cable to the premises. Telephone services are now provided digitally via the internet, which eliminates the variation in electrical load that was caused previously by the copper telephone cables. The result is a constant predictable load. In addition, because light is used to carry data, there is no variation in electrical load with data load.

A number of these new cabinets have been installed with connections provided on a metered basis, but in common with many other companies requiring road side electrical connections have they found issues with metered connections, e.g. delays in getting the connection in the first place and once connected; multiple bills, meter reading issues, estimated bills, co-ordinating site visits, health and safety around site visits, etc.

Virgin Media already have established processes in place for maintaining an inventory of unmetered connections. For these new cabinets, these same processes will apply, but the measurements described above will not be necessary (although will continue for existing cabinets) and the new Charge Code will be automatically entered in the inventory provided to the UMSO.

There may be some concern that the test results show a constant load that is in excess of the 500 watts, but as identified in the [NMRO guidance](#) 500 watts is not an absolute limit and may be exceeded where the equipment meets the other criteria in particular predictability. More recently Charge Codes have been issued for other street furniture with higher wattages.

### Operation of Cable Network Cabinet

The following are supplementary notes to the test document issued by the LIA Laboratories to enable review of the application, in line with question 7 of the application form.

#### 1. Light Amplification

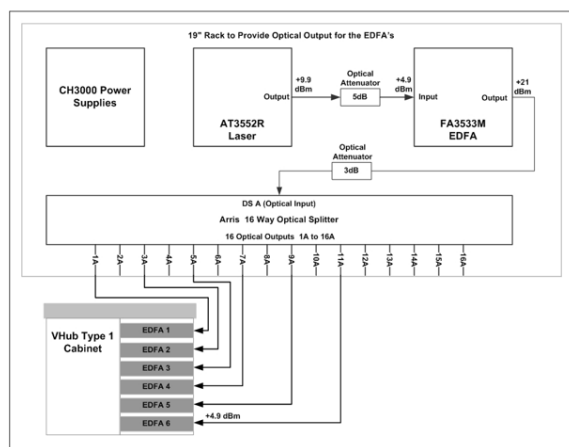
The Cabinet operates by taking data from an optical cable using a laser light source. The equipment amplifies the incoming light source and splits it across six Erbium Doped Fibre Amplifiers (EDFAs), which also provide the final connections to the individual fibre cables to the customers. The photo below shows the internal equipment from either side of the cabinet, note that pink foam is packaging for transit purposes.



In the first photo you can see the rear of the EDFAs (left hand rack) with the customer connections. The second picture shows the front of the EDFAs (now on the right). The other rack contains the other operational equipment including the power supply and the optical splitter used to feed the EDFAs. Although there is additional space in the second rack, there will not be any further equipment installed in this rack.

To simulate the passage of light (data) through the cabinet to the end customers, an externally powered laser (shown in the test report) was used during testing to simulate operation of the cabinet in the field and ensure that the test results reflected electrical power take during full operation. A photo of the external laser is included in test report, a schematic to show the light passage is shown below.

Test Rack Configuration.



## 2. Battery Backup

There is a need to ensure that the customers' services (Broadband, TV & Telephony) continue to work in the event of loss of mains supply to a cabinet. This is provided via back up batteries. The cabinet was tested with fully charged batteries installed using trickle charge as described in the test report. However, the photos of the battery compartment in the test report were taken after the tests were complete. The photo below shows a cabinet with batteries installed.



## 3. Cooling Fans

Finally, in common with other Cable Network Cabinets, there are cooling fans installed. During testing the fans were in operation, they only cease to operate when the internal temperature of the cabinet falls below 10°C. As the temperature sensor is inside the cabinet, the dissipated heat from the other electrical components will mean that it is unlikely that the fans will ever switch off, except during an extreme cold snap. The fans start at half speed at 10°C and maintain that speed until 20°C, then increase in speed linearly to full speed at 40°C.

The Cabinet was tested by the LIA at an ambient temperature of 24.7°C in the lab. Although the internal temperature of the main cabinet was not recorded, it is likely to have been significantly higher. A measurement of 32°C was taken from the battery compartment but not recorded in the test results. The test results are therefore believed to be a reasonable estimate of the average operating cycle of the cooling fans and will not make a significant difference to the overall annual consumption. If anything, it is likely to be slightly overstated, which Virgin Media accept.