Intellectual Property Office

BL O/507/15

29 October 2015

PATENTS ACT 1977

APPLICANT Xtera Communications Ltd

ISSUE Whether Patent Number GB2436693 B should be revoked under Section 73(2)

HEARING OFFICER Peter Slater

DECISION

1 GB2436693 B entitled "A depolarised WDM source" was filed on 15 March 2007 claiming an earliest priority date of 21 March 2006. The patent was subsequently granted on 2 April 2008. The corresponding EP(UK) 2002574 B1 was granted on 8 August 2012 with a similar claim to priority. Both patents are no longer in force.

An official letter dated 2 September 2013 reported that the above UK patent appeared to be for the same invention as European patent (UK) EP 2002574 B1 and that revocation of the UK patent under Section 73(2) might therefore be necessary. The proprietor submitted observations dated 2 Janaury 2014. These were considered by the Examiner, but he was still of the opinion that the patents were for the same invention. The proprietor submitted additional observations on 15 May 2014 which still did not satisfy the examiner's objections. A hearing was therefore offered in an official letter dated 14 July 2014, but the proprietor has not asked to be heard. My decision is therefore based on the papers currently on file.

The Invention

2 The invention relates to Wavelength Division Multiplexed (WDM) sources in Ultra Long Haul (ULH) communications systems. A particular arrangement is disclosed in which a Differential Group Delay (DGD) is used to depolarise the output of a polarisation maintaining multiplexer which receives a plurality of optical signal sources at its input. The DGD alters the polarisation state of the source signals by an amount that depends on their frequency. Each source signal is therefore affected differently so that, while individual channels remain polarised, the resulting total optical field of the overall multiplexed signal is depolarised. This technique reduces the impact of non-linear effects on the data channels, since adjacent data channels will have different polarisation states by virtue of their differing frequencies. Moreover, the present invention overcomes the problems of Polarisation Dependent Gain (PDG) and Polarisation Hole Burning (PHB) by introducing means to depolarise the overall WDM signal. The damaging consequences of PDG, such as fluctuations

in the optical power of the data channels (which can affect the Optical Signal-to-Noise Ratio (OSNR) and the Bit Error Rate (BER)), are thereby eliminated.

3 The UK patent as granted contains two independent claims which read as follows:

> 1. An optical device for a wavelength division multiplexed (WDM) transmission system comprising: a plurality of optical sources, each source providing an optical source signal; a polarisation maintaining (PM) multiplexer coupled to the optical sources for multiplexing the optical source signals to form a polarised multiplexed signal; and, a differential group delay (DGD) element coupled to an output of the PM multiplexer, wherein the DGD element is adapted to depolarise the multiplexed signal while retaining a substantial time-averaged degree of polarisation (DOP) for each source signal.
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> 14. A method of processing optical signals comprising the steps of: passing a plurality of optical source signals through a polarisation maintaining multiplexer to form a polarised multiplexed signal; and, passing the multiplexed signal through an optical path that includes a DGD element to depolarise the multiplexed signal while retaining a substantial time-averaged degree of polarisation (DOP) for each source signal.

4 The corresponding European patent EP(UK) 2002574 B1 includes two similarly worded independent claims which read as follows:

> 1. An optical device for a wavelength division multiplexed (WDM) transmission system comprising: a plurality of optical sources (101), each source providing an optical source signal characterised in that system further comprises; a polansation maintaining (PM) multiplexer (102) coupled to the optical sources for multiplexing the optical source signals to form a polarised multiplexed signal; a differential group delay (DGD) element (103) coupled to an output of the PM multiplexer, which DGD element is adapted to depolarise the multiplexed signal while retaining a substantial time-averaged degree of polarisation (DOP) for each source signal, and in that the plurality of optical sources provide optical signals in the same polarisation state.
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> 14. A method of processing optical signals comprises the steps of: passing a plurality of optical source signals in the same polarisation state through a polarisation maintaining multiplexer to form a polarised multiplexed signal; and, passing the multiplexed signal through an optical path that includes a DGD element to depolarise the multiplexed signal while retaining a substantial time-averaged degree of polarisation (DOP) for each source signal.

The Law

5 Section 73(2) reads as follows:

> *If it appears to the comptroller that a patent under this Act and a European patent(UK) have been granted for the same invention having the same priority date, and that the applications for the patents were filed by the same applicant or his successor in title, he shall give the proprietor of the patent under this Act an opportunity of making observations and of amending the specification of the patent, and if the proprietor fails to satisfy the comptroller that there are not two patents in*

respect of the same invention, or to amend the specification so as to prevent there being two patents in respect of the same invention, the comptroller shall revoke the patent.

Argument and analysis

6 The examiner argues that the claims of EP(UK) 2002574 B1 relate to the same invention as that claimed in GB2436693 B, and that the latter should therefore be revoked. His objections are set out in detail in his letters of 24 February 2014 and 14 July 2014.

7 The attorney's arguments are contained in their submissions dated 2 January 2014 and 19 May 2014 respectively. Whilst I do not think it necessary to repeat their arguments here in their entirety, I will provide a summary of the key points as I see them.

8 The attorney sees fit to draw an analogy between the present case and that which was the subject of the Hearing Officer's decision in *Kimberley-Clark Worldwide Inc BL O/279/04* with specific reference to paragraphs 33, 37 & 38 of that decision. He argues that there are two features claimed in EP(UK) 2002574 B1 which are inventions in their own right as follows:

- Feature A – A DGD element adapted to depolarise the multiplexed signal while retaining a substantial time-averaged degree of polaristiaon (DOP) for each source signal; and

- Feature B - That the source signals of the optical source each have the same polarisation state.

9 He argues, that the claims of GB2436693 B are directed to feature A and those of EP(UK) 2002574 B1 are directed to a combination of features A+B wherein feature B requires that the plurality of optical sources provide optical signals in the same polarisation state. This feature, he says, was introduced during the prosecution of the European patent to overcome an objection to a lack of inventive step raised by the EPO examiner. As such, the attorney argues that feature B must be inventive in its own right and that therefore, by analogy with the decision in *BL O/279/04*, the two patents relate to distinctly different inventions. The attorney has also asked that, in line with paragraph 38 of that decision, the applicant be given the benefit of any doubt that I might have in coming to my decision,

10 However, the examiner disagrees, and argues that the addition of feature B to the EP(UK) patent does not provide anything inventive to distinguish it from the UK patent. In fact, it appears to him, to provide no difference at all, as the requirement for the optical sources to provide optical signals having the same polarisation is implicit in the disclosure of GB2436693 B. In support of his argument, he refers to lines 2 to 8 on page 12 of the description which states that "*In the present invention, the channel sources are launched with a linear SOP....preferably at 45^{o} to the x-axis*" and notes that no further examples are given to show that any alternative arrangements of source signal polarisation are envisaged. The examiner himself then goes on to draw an analogy between the present situation and that which was the subject of the decision in *Maag Gear Wheel and Machine Co Ltd's Patent* [1985]

RPC 572 where the Comptroller found there to be conflict between a UK patent and the corresponding EP(UK) patent, the latter claiming additional “pad geometry” features not to be found in the claims of the UK patent. In that case, the Hearing Officer construed claim 1 of the UK patent to include the additional pad geometry, as this was the only construction described in the patent.

11 So, do the patents relate to the same invention? Having carefully considered all the arguments before me, I am in no doubt that they do. The invention as a matter of substance, resides in the use of a DGD element to depolarise the multiplexed signal to reduce the impact of non-linear effects on the data channels in a WDM system, a key distinguishing feature of both patents. The additional requirement for the optical sources to provide optical signals having the same polarisation as is claimed in the EP(UK) patent provides nothing more of inventive merit. Indeed, I agree with the examiner when he says that this feature is implicit in the teaching of GB2436693 B.

Conclusion

12 I have found that GB2436693 B and EP(UK) 2002574 B1, having been granted, relate to the same invention. I therefore order the revocation of GB2386032 B1 under Section 73(2).

Appeal

13 Any appeal must be lodged within 28 days after the date of this decision.

PETER SLATER

Deputy Director, acting for the Comptroller