

FORM 2

THE PATENTS ACT, 1970
(39 of 1970)
AND
THE PATENTS RULES, 2003

**COMPLETE
SPECIFICATION**

(See Section 10; rule 13)

TITLE OF THE INVENTION

“A METHOD OF PROCESSING A DIGITAL SIGNAL FOR TRANSMISSION,
A METHOD OF PROCESSING AN OPTICAL DATA UNIT
UPON RECEPTION, AND A NETWORK ELEMENT
FOR A TELECOMMUNICATIONS NETWORK”

APPLICANT

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The following specification particularly describes
the invention and the manner in which
it is to be performed

Claims:

1. A method of processing a digital signal for transmission comprising digital data frames, by
5 compressing the digital data frames; and
generating an optical data unit for transmission comprising multiple of the compressed digital data frames, the optical data unit being configured for transport by an Optical Transport Network, OTN.
2. A method of processing according to claim 1, in which the generation is by
10 concatenating multiple of the compressed digital data frames into a composite frame and encapsulating the composite frame to form an optical data unit.
3. A method of processing according to claim 2, in which the compressed data frames are concatenated into a plurality of composite frames, and each composite frame is encapsulated to form a respective optical data unit.
- 15 4. A method according to any preceding claim, in which the or each digital data frame is a Common Public Radio Interface, CPRI, data frame.
5. A method of processing according to any preceding claim, in which the or each optical data unit is an ODU2 in accordance with ITU-T Recommendation G.709.
6. A method of processing according to any preceding claim, in which the
20 compressing comprises reducing redundancies in each digital data frame, scaling a block of samples output from the reducing step by a scaling factor and quantising the scaled samples to produce compressed samples.
7. A method of processing an optical data unit upon reception from an Optical Transport Network, OTN, by
25 splitting the optical data unit into multiple compressed digital data frames; and

- 17 -

decompressing each of the compressed digital data frames.

8. A method of processing according to claim 7, in which the splitting is by de-encapsulating the optical data unit to provide a composite data frame, and deconcatenating the composite data frame to provide the multiple compressed digital data frames.
9. A method of processing according to claim 8, in which multiple optical data units are each received and de-encapsulated to provide a respective composite frame, and each composite frame is de-concatenated into a plurality of digital data frames.
10. A method of processing according to any of claims 7 to 9, in which the or each digital data frame is a Common Public Radio Interface, CPRI, data frame.
11. A method of processing according to any of claims 7 to 10, in which the optical data unit is an ODU2 in accordance with ITU-T Recommendation G.709.
12. A method of processing according to any of claims 7 to 11, in which the decompressing comprises dequantising received samples, descaling a block of the dequantised samples, and inserting redundancies into the descaled samples to produce the digital frames.
13. A network element for a telecommunications network, the element comprising:
- a compressor configured to compress digital data frames;
 - a generator configured to generate a first optical data unit for transmission comprising multiple of the compressed digital data frames, the first optical data unit being configured for transport by an Optical Transport Network, OTN;
 - a processor configured to split a second optical data unit upon reception from an Optical Transport Network, OTN, into multiple compressed digital data frames; and
 - a decompressor configured to decompressing each of the compressed digital data frames from the second optical data unit so as to provide digital data frames.

- 18 -

14. A network element according to claim 13, in which said generation is by concatenating multiple of the compressed digital data frames into a composite frame and encapsulating the composite frames as a first optical data unit; and in which said splitting is by de-encapsulating the second optical data unit to provide a composite data frame, and deconcatenating the composite data frame to provide multiple of the compressed digital data frames.
15. A network element according to claim 13 or claim 14, in which each digital data frame is a Common Public Radio Interface, CPRI, data frame, and in which each optical data unit is an ODU2 in accordance with ITU-T Recommendation G.709.
16. A telecommunications network comprising a number of network elements according to any of claims 13 to 15 connected between an Optical Transport Network and a number of base band units, in which the number of base band units is greater than the number of network elements, so as to provide greater base band unit processing capacity.
17. A telecommunications network comprising a number of network elements according to any of claims 13 to 15 connected between an Optical Transport Network and a number of base band units, in which the number of base band units is less than the number of network elements, so as to provide sharing of base band unit processing capacity.
18. A telecommunications network comprising a plurality of network elements according to any of claims 13 to 15 connected between the Optical Transport Network and a plurality of base band units, in which at least one of the network elements is configured to be switchably connectable to a plurality of the base band units dependent upon time of day.

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