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(71) Applicant(s)
Plessey Semiconductors Limited

(Incorporated in the United Kingdom)

Cheney Manor, SWINDON, Wiltshire, SN2 2QW,
United Kingdom

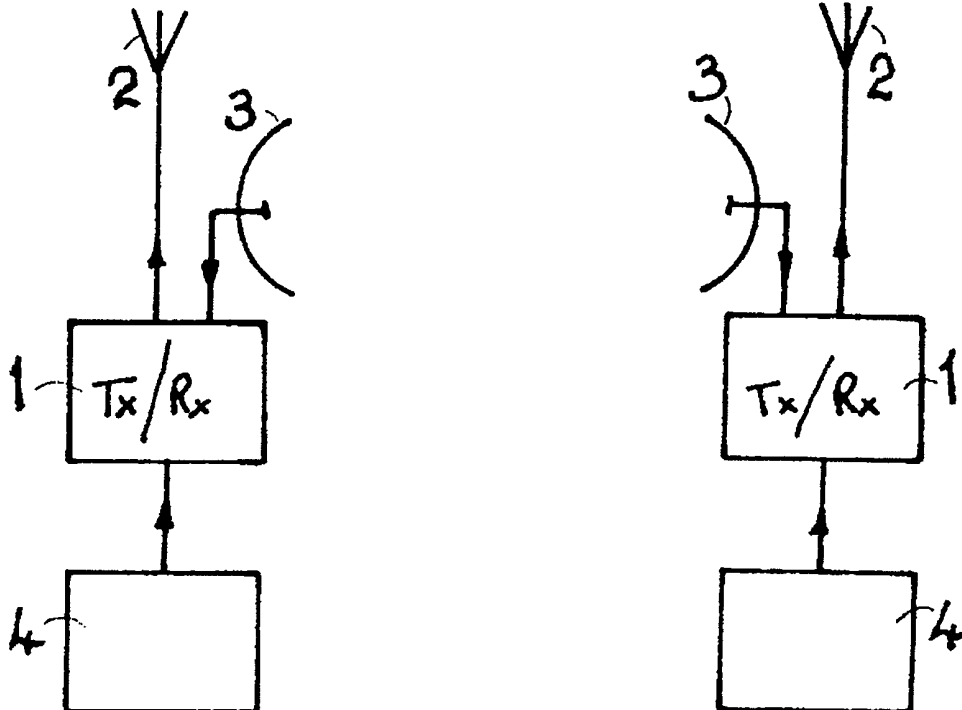
(72) Inventor(s)
Peter John Minett

(74) Agent and/or Address for Service
Maurice Edward Casey
GEC Patent Department, Waterhouse Lane,
CHELMSFORD, Essex, CM1 2QX, United Kingdom

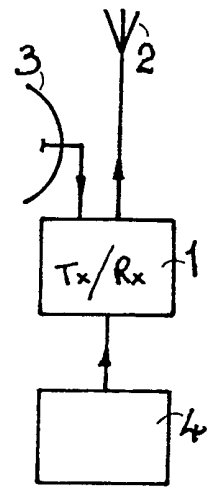
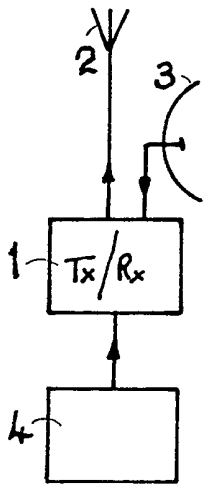
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(58) Field of Search
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(54) Radio local area network

(57) In a radio local area network in which the output power for any transmitter/receiver station is limited to a specified maximum equivalent isotropically radiated power (EIRP), two or more of the transmitter/receiver stations may have separate transmit and receive antennae, the receive antennae being directional high gain antennae such that the range at which two such stations can communicate is correspondingly greater than for stations using omnidirectional receive antennae.



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Radio Local Area Network

Radio, or wireless, local area networks are being developed for linking together small computers within a building or other defined small area, or linking small computers to a central facility, without the need for dedicated wiring.

The regulations governing the radio frequencies to be used for such networks
5 limit the maximum transmitted power density to avoid interference between adjacent networks. For example, for the frequency band from 2.4 to 2.5 GHz it is proposed to limit the maximum output power to 100mW equivalent isotropically radiated power (EIRP). In a typical office environment this may result in a "worst-case" reliable range of 50 metres.

10 According to one aspect of the present invention in a radio local area network system at least two transmitter/receiver arrangements each have separate transmitter and receiver antennae, the respective receiver antennae being high gain antennae whereby the range between said two transmitter/receiver arrangements may be increased.

15 The receiver antennae may be dish antennae.

According to another aspect of the present invention a transmitter/receiver arrangement for a radio local area network system has separate transmitter and receiver antennae, the receiver antenna being a high gain directional antenna.

The receiver antenna may be a dish antenna.

20 According to another aspect of the present invention a long range link for a radio local area network comprises two transmitter/receiver arrangements each having separate transmitter and receiver antennae, the respective receiver antennae being high gain directional antennae capable of being aimed towards the transmitter antennae of

the respective opposite transmitter/receiver arrangements.

Part of a radio local area network in accordance with the present invention is illustrated in the accompanying drawing, which shows schematically a pair of transmitter/receiver arrangements each having a directional receiver antenna.

5 Referring to the drawing each of a pair of transmitter/receivers 1 has an omnidirectional transmitter antenna 2 and a directional receiver antenna 3, which may for example be a dish antenna as indicated. The use of such directional antennae enables the establishment of a long-range link in what is essentially a system providing short range links, the two directional receiver antennae 3 being able to pick up usable
10 signals at greater range than omnidirectional antennae. For example, if a dish antenna of 10cm radius is provided for the receivers at either end of a link a 25-fold increase in range is possible, giving a range of more than 1Km. Higher gain receiver antennae, of any type, will allow a proportionate increase in range without increasing the EIRP. Such links may be used, for example, to connect remote individual users
15 into an existing network.

As well as providing digital data links between sources 4, such as computers, the present arrangement may be used to communicate other digital data, analogue data such as video or compressed video, or high quality audio data. Applications may include links to remote tills in large stores, remote surveillance closed circuit cameras
20 or remote alarms.

Alternatively the present arrangement may be used in conjunction with networks utilising lower than the maximum permitted radiated power levels such that cell sizes or the spacing between cells may be reduced without increasing the risk of interference between cells.

The transmitter/receivers 1 may be provided with switch means (not shown) whereby signals may be received selectively either by way of their directional antennae 3 or by way of their omnidirectional antennae 2.

CLAIMS

1. A radio local area network system wherein at least two transmitter/receiver arrangements each have separate transmitter and receiver antennae, the respective receiver antennae being high gain antennae whereby the range between said two transmitter/receiver arrangements may be increased.
- 5 2. A radio local area network system in accordance with Claim 1 wherein the receiver antennae are dish antennae.
3. A transmitter/receiver arrangement for a radio local area network system having separate transmitter and receiver antennae, the receiver antenna being a high gain directional antenna.
- 10 4. A transmitter/receiver arrangement in accordance with Claim 3 wherein the receiver antenna is a dish antenna.
5. A long range link for a radio local area network comprising two transmitter/receiver arrangements each having separate transmitter and receiver antennae, the respective receiver antennae being high gain directional antennae capable
15 of being aimed towards the transmitter antennae of the respective opposite transmitter/receiver arrangements.
6. A long range link for a local area network substantially as hereinbefore described with reference to the accompanying drawing.

-5-

Relevant Technical Fields

- (i) UK Cl (Ed.M) H4L (LDLX, LDA, LDRR, LDRSF, LDRSX)
- (ii) Int Cl (Ed.5) H04L 12/28, 12/56

Search Examiner
N W HALL

Date of completion of Search
17 AUGUST 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE: WPI

Documents considered relevant following a search in respect of Claims :-
1-6

Categories of documents

- X:** Document indicating lack of novelty or of inventive step.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.
- A:** Document indicating technological background and/or state of the art.
- P:** Document published on or after the declared priority date but before the filing date of the present application.
- E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- &:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2237478 A (BRITISH AEROSPACE) see Figure 3	3, 4
X	GB 1112053 (TOKYO SHIBAURA) see Figure 1	3, 4
A	EP 0475681 A2 (NCR)	

Databases:The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).