

CLAIMS:

1. An apparatus, comprising:

a processor configured to determine a power headroom report; and

a transmitter configured to transmit the headroom report,

wherein the processor is configured to determine the power headroom report with both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements, and

wherein the processor is configured to determine the power headroom by subtracting the nominal maximum transmission power and the power that the apparatus would use if it did not apply maximum power limitations, wherein the result of said subtracting is not limited to zero and positive values.

2. The apparatus of claim 1, wherein the apparatus comprises a user equipment.

3. The apparatus of claim 1, wherein the processor is configured to determine the power headroom report comprising a 6 bit report configured to identify a level selected from a range of +40 to -23 dB, in 1 dB steps.

4. An apparatus, comprising:

a receiver configured to receive a power headroom report;

a processor configured to allocate radio network resources based on the power headroom report,

wherein the processor is configured to obtain both positive and negative values of power headroom from the power headroom report, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements,

wherein the processor is configured to allocate additional radio network resources to a user equipment when the power headroom indicates positive headroom, when applicable, and to allocate fewer radio network resources to the user equipment when the power headroom report indicates negative headroom.

5. The apparatus of claim 4, wherein the apparatus comprises an enhanced node B.

6. The apparatus of claim 4, wherein the processor is configured to obtain, from the power headroom report, a 6 bit report configured to identify a level selected from a range of +40 to -23 dB, in 1 dB steps.

7. A method, comprising:

determining a power headroom report; and

transmitting the headroom report,

wherein the determining comprises determining the power headroom report with both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements, and

wherein the determining comprises determining the power headroom by subtracting the nominal maximum transmission power and the power that the apparatus would use if it did not apply maximum power limitations, wherein the result of said subtracting is not limited to zero and positive values.

8. The method of claim 7, wherein the method is performed by a user equipment.

9. The method of claim 7, further comprising: configuring the power headroom report as a 6 bit report configured to identify a level selected from a range of +40 to -23 dB, in 1 dB steps.

10. A method, comprising:

receiving a power headroom report;

allocating radio network resources based on the power headroom report,

wherein the allocating comprises obtaining, from the power headroom report, both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements,

wherein the allocating radio resources comprises allocating additional radio network resources to a user equipment when the power headroom indicates positive headroom, when applicable, and to allocate fewer radio network resources to the user equipment when the power headroom report indicates negative headroom.

11. The method of claim 10, wherein the method is performed by an enhanced node B.

12. The method of claim 10, further comprising: obtaining, from the power headroom report, a 6 bit report configured to identify a level selected from a range of +40 to -23 dB, in 1 dB steps.

13. A non-transitory computer-readable storage medium encoded with instructions configured to control a computer to execute a process, the process including:

determining a power headroom report; and

transmitting the headroom report, wherein the determining comprises determining the power headroom report

with both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements, and

wherein the determining comprises determining the power headroom by subtracting the nominal maximum transmission power and the power that the apparatus would use if it did not apply maximum power limitations, wherein the result of said subtracting is not limited to zero and positive values.

14. A non-transitory computer-readable storage medium encoded with instructions configured to control a computer to execute a process, the process including:

receiving a power headroom report;

allocating radio network resources based on the power headroom report, wherein the allocating comprises obtaining, from the power headroom report,

both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements,

wherein the allocating radio resources comprises allocating additional radio network resources to a user equipment when the power headroom indicates positive headroom, when applicable, and to allocate fewer radio network resources to the user equipment when the power headroom report indicates negative headroom.

15. An apparatus, comprising:

determining means for determining a power headroom report; and

transmitting means for transmitting the headroom report,

wherein the determining means is configured to determine the power headroom report with both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements, and

wherein the determining means is configured to determine the power headroom by subtracting the nominal maximum transmission power and the power that the apparatus would use if it did not apply maximum power limitations, wherein the result of said subtracting is not limited to zero and positive values.

16. An apparatus, comprising:

receiving means for receiving a power headroom report; allocating means for

allocating radio network resources based on the power headroom report,

wherein the allocating means is configured to obtain both positive and negative values of power headroom from the power headroom report, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements,

wherein the allocating means is configured to allocate additional radio network resources to a user equipment when the power headroom indicates positive headroom, when applicable, and to allocate fewer radio network resources to the user equipment when the power headroom report indicates negative headroom.

CLAIMS:

1. An apparatus, comprising:
a processor configured to determine a power headroom report; and
a transmitter configured to transmit the headroom report,
5 wherein the processor is configured to determine the power headroom report with both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements.
2. The apparatus of claim 1, wherein the processor is configured to determine
10 the power headroom by subtracting the nominal maximum transmission power and the power that the apparatus would use if it did not apply maximum power limitations, wherein the result of said subtracting is not limited to zero and positive values.
3. The apparatus of claim 1, wherein the apparatus comprises a user equipment.
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4. The apparatus of claim 1, wherein the processor is configured to determine the power headroom report comprising a 6 bit report configured to identify a level selected from a range of +40 to -23 dB, in 1 dB steps.
- 20 5. An apparatus, comprising:
a receiver configured to receive a power headroom report;
a processor configured to allocate radio network resources based on the power headroom report,
wherein processor is configured to obtain both positive and negative values of
25 power headroom from the power headroom report, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements.
6. The apparatus of claim 5, wherein the processor is configured to allocate additional radio network resources to a user equipment when the power headroom
30 indicates positive headroom, when applicable, and to allocate fewer radio network

resources to the user equipment when the power headroom report indicates negative headroom.

5 7. The apparatus of claim 5, wherein the apparatus comprises an enhanced node B.

8. The apparatus of claim 5, wherein the processor is configured to obtain, from the power headroom report, a 6 bit report configured to identify a level selected from a range of +40 to -23 dB, in 1 dB steps.

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9. A method, comprising:
determining a power headroom report; and
transmitting the headroom report,
wherein the determining comprises determining the power headroom report
15 with both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements.

10. The method of claim 9, wherein the determining comprises determining the power headroom by subtracting the nominal maximum transmission power and the
20 power that the apparatus would use if it did not apply maximum power limitations, wherein the result of said subtracting is not limited to zero and positive values.

11. The method of claim 9, wherein the method is performed by a user
equipment.

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12. The method of claim 9, further comprising:
configuring the power headroom report as a 6 bit report configured to identify a
level selected from a range of +40 to -23 dB, in 1 dB steps.

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13. A method, comprising:
receiving a power headroom report;

allocating radio network resources based on the power headroom report,
wherein the allocating comprises obtaining, from the power headroom report,
both positive and negative values of power headroom, as applicable, in which negative
values indicate the missing power in dB to fulfill transmission requirements.

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14. The method of claim 13, wherein the allocating radio resources comprises
allocating additional radio network resources to a user equipment when the power
headroom indicates positive headroom, when applicable, and to allocate fewer radio
network resources to the user equipment when the power headroom report indicates
10 negative headroom.

15. The method of claim 13, wherein the method is performed by an enhanced
node B.

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16. The method of claim 13, further comprising:
obtaining, from the power headroom report, a 6 bit report configured to identify
a level selected from a range of +40 to -23 dB, in 1 dB steps.

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17. A computer-readable storage medium encoded with instructions
configured to control a computer to execute a process, the process including:

determining a power headroom report; and
transmitting the headroom report,

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wherein the determining comprises determining the power headroom report
with both positive and negative values of power headroom, as applicable, in which
negative values indicate the missing power in dB to fulfill transmission requirements.

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18. A computer-readable storage medium encoded with instructions
configured to control a computer to execute a process, the process including:
receiving a power headroom report;
allocating radio network resources based on the power headroom report,

wherein the allocating comprises obtaining, from the power headroom report, both positive and negative values of power headroom, as applicable, in which negative values indicate the missing power in dB to fulfill transmission requirements.

5 19. An apparatus, comprising:

 determining means for determining a power headroom report; and
 transmitting means for transmitting the headroom report,

 wherein the determining means is configured to determine the power headroom
report with both positive and negative values of power headroom, as applicable, in
10 which negative values indicate the missing power in dB to fulfill transmission
requirements.

 20. An apparatus, comprising:

 receiving means for receiving a power headroom report;

15 allocating means for allocating radio network resources based on the power
headroom report,

 wherein the allocating means is configured to obtain both positive and negative
values of power headroom from the power headroom report, as applicable, in which
negative values indicate the missing power in dB to fulfill transmission requirements.