**3GPP TGS-RAN WG4 Meeting #99e R4-2107950
Electronic Meeting, May 19 – 27, 2021**

**Title:** Draft LS reply on maximum UE EIRP and conducted power

**Response to:** R1-2104061

**Release:** Rel-17

**Work Item:** NR\_ext\_to\_71GHz

**Source:** TSG RAN WG4

**To:** TSG RAN WG1

**Contact person:** Aida Vera Lopez

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**Send any reply LS to:** 3GPP Liaisons Coordinator, mailto:3GPPLiaison@etsi.org

**Attachments:** None

# 1 Overall description

RAN4 would like to thank RAN1 for the LS. Before addressing the question, we provide a brief background on our discussions. Currently, power classes are a package of four parameters: minimum peak EIRP, EIRP spherical coverage, maximum TRP and maximum EIRP (regulatory defined, captured in specs for reference). Derivation of the minimum peak EIRP and spherical coverage requirements is done per-band, with a reference UE type. The maximum TRP parameter considers both UL co-channel interference and regulatory limits. At this time, RAN4 is reviewing the regulatory requirements to determine if updates for the maximum EIRP and maximum TRP values are needed.

**RAN1 description and question**



**Answer**

RAN4 can confirm that the current regulatory limits, i.e. max EIRP, are higher than the above values**.** We further note that for the 52.6 to 71 GHz frequency range, some regions also specify a maximum spectral power density (EIRP).

* Regarding what *minimum* peak EIRP value will be specified for a power class in this range, it is premature to answer at this stage. RAN4 will continue discussing the power classes, reference UE type, antenna array size, and design considerations to make this assessment. While power class performance is TBD, an FWA UE is expected to yield the highest minimum peak EIRP, and it may be specified around 25 dBm or higher. However, further study is needed to confirm this and provide an exact value. A power range from minimum peak EIRP to the maximum EIRP, is a valid range for the UE to transmit out.

For additional context, different radiated output powers in 38.101-2 are summarized in the table below. There are no conducted output power requirements defined for FR2 in RAN4 specifications.

**Table 1.** FR2 minimum peak EIRP requirements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Power class** | **Max TRP****[dBm]** | **FR2 band** | **Min peak EIRP****[dBm]** | **Max EIRP****[dBm]** |
| Power class 1Fixed wireless access UE | 35 | n257/n258/n261 | 40.0 | 55 |
| n260 | 38.0 |
| Power class 2Vehicular UE | 23 | n257/n258/n261 | 29.0 | 43 |
| Power class 3Handheld UE | 23 | n257/n258/n261 | 22.4 | 43 |
| n260 | 20.6 |
| n259 | 18.7 |
| n262 | 16.0 |
| Power class 4High-power non-handheld UE | 23 | n257/n258/n261 | 34.0 | 43 |
| n260 | 31.0 |
| Power class 5Fixed wireless access UE | 23 | n257 | 30.0 | 43 |
| n258 | 30.4 |

TRP: Total **Radiated** Power

EIRP: Effective Isotropic **Radiated** Power

Considering RAN4 is in the early stages of our discussions, this is the information we can provide at this time. Further guidance will be provided as power class discussions progress in RAN4.

# 2 Actions

**To 3GPP RAN1**

**ACTION:** RAN4 respectfully asks RAN1 to take the information detailed above into account.

# 3 Dates of next TSG RAN WG4 meetings

TSG RAN WG4 Meeting #100-e August 16 – 27, 2021 E-meeting

TSG RAN WG4 Meeting #101-e November 1 – 12, 2021 E-meeting

# 4 References

1. R1-2104061, “LS to RAN4 on maximum UE conducted power and maximum UE EIRP for operation in the 52.6 – 71 GHz band,” RAN1, RAN1 #104Bis-e, April 2021
2. 3GPP TS 38.101-2, “NR; User Equipment (UE) radio transmission and reception; Part 2: Range 2 Standalone,” version 17.1.0