**3GPP TSG-RAN4 Meeting #116-bisR4-251xxxx (Rev of R4-2514329)**

**Prague, Czechia, 13rd - 17th October, 2025**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.870** | **CR** | **Draft** | **rev** | **-** | **Current version:** | 19.2.0 |  |
|  | | | | | | | | |
| *For* ***HE******LP*** *on using this form: comprehensive instructions can be found at  http://www.3gpp.org/Change-Requests.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | Introduction of Near Horizon Metrics | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Keysight Technologies UK Ltd | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TRP\_TRS\_MIMO\_OTA\_Ph3-Core | | | | |  | ***Date:*** | | | 2025-09-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP TR 21.900. | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | In RAN4#116 WF, R4-2512693, it was agreed to add Near Horizon metrics into the TR as they could be considered in the future for XR device testing | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add NH metrics in Clause 5.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Near Horizon metrics are not defined otherwise and cannot be considered in future | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3.1.1, 5.3.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | Near Horizon metrics discussion paper in RAN4#116: R4-2509919 | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | v1: typos/clarifications | | | | | | | | |

<<< Skip Unchanged Sections >>>

**<<< START OF CHANGES >>>**

## 5.3 Definition of the Partial Radiated Metrics (PRP/PRS)

### 5.3.1 Definition of the Partial Radiated Metrics (PRP/PRS) for AC

#### 5.3.1.1 Applicability of metrics

The PRP/PRS metrics for partial surface integrated quantities are defined in Clauses 5.3.1.2 through 5.3.1.7, with the applicability provided in Table 5.3.1.1-1 below.

Table 5.3.1.1-1: Applicability of PRP/PRS metrics

|  |  |  |  |
| --- | --- | --- | --- |
| Clause | TX/RX | PRP/PRS definition | Applicability |
| 5.3.1.2 | TX |  | FFS |
| 5.3.1.3 | TX |  | Applicable to NTN scenario 2 |
| 5.3.1.4 | TX |  | Applicable to NTN scenario 2 |
| 5.3.1.5 | RX |  | FFS |
| 5.3.1.6 | RX |  | Applicable to NTN scenario 2 |
| 5.3.1.7 | RX |  | Applicable to NTN scenario 2 |
| where  and are the quadrature weights of either the Clenshaw-Curtis (CC) weights or the traditional sin(q) weights, and  and  are the coefficients for the partial segments. | | | |

#### 5.3.1.2 Upper Partial Radiated Power Integrated over ±30° Sector (UPRP±30)

The UPRP±30 metric is defined as the power radiated with EIRP integrated for the partial surface from q=0° to q=30° in the upper hemisphere. This metric with the partial surface visualized in Figure 5.3.1.2-1 can be expressed mathematically as

with

A diagram of a sphere

AI-generated content may be incorrect.

Figure 5.3.1.2-1: Visualization of partial surface with ±30° angular width for classical TRP grid.

#### 5.3.1.3 Upper Partial Radiated Power Integrated over ±60° Sector (UPRP±60)

The UPRP±60 metric is defined as the power radiated with EIRP for the partial surface integrated from q=0° to q=60° in the upper hemisphere. This metric with the partial surface visualized in Figure 5.3.1.3-1 can be expressed mathematically as

with

A diagram of a sphere

AI-generated content may be incorrect.

Figure 5.3.1.3-1: Visualization of partial surface with ±60° angular width for classical TRP grid.

#### 5.3.1.4 Upper Hemisphere Partial Radiated Power (UHRPP)

The UHPRP metric, which could also be referred to as UPRP±90, is defined as the radiated power for the partial surface in the upper hemisphere. This metric with the partial surface visualized in Figure 5.3.1.4-1 can be expressed mathematically as

with

for both Clenshaw-Curtis or sin(q) quadratures whose weights are expressed using , defined in Clause 5.1.1.2.

A diagram of a sphere

AI-generated content may be incorrect.

Figure 5.3.1.4-1: Visualization of upper hemisphere partial surface with ±90° angular width for classical TRP grids.

#### 5.3.1.5 Upper Partial Radiated Sensitivity Integrated over ±30° Sector (UPRS±30)

The UPRS±30 metric is defined as the sensitivity with EIS integrated for the partial surface from q=0° to q=30° in the upper hemisphere. This metric with the partial surface visualized in Figure 5.3.1.5-1 can be expressed mathematically as

with

A sphere with different colored circles

AI-generated content may be incorrect.

Figure 5.3.1.5-1: Visualization of partial surface with ±30° angular width for classical TRS grid.

#### 5.3.1.6 Upper Partial Radiated Sensitivity Integrated over ±60° Sector (UPRS±60)

The UPRS±60 metric is defined as the sensitivity with EIS for the partial surface integrated from q=0° to q=60° in the upper hemisphere. This metric with the partial surface visualized in Figure 5.3.1.6-1 can be expressed mathematically as

with

A diagram of a sphere with different colored spheres

AI-generated content may be incorrect.

Figure 5.3.1.6-1: Visualization of partial surface with ±60° angular width for classical TRS grid.

#### 5.3.1.7 Upper Hemisphere Partial Radiated Sensitivity (UHRPS)

The UHPRS metric, which could also be referred to as UPRS±90, is defined as radiated sensitivity for the partial surface in the upper hemisphere. This metric with the partial surface visualized in Figure 5.3.1.7-1 can be expressed mathematically as

with

for both Clenshaw-Curtis or sin(q) quadratures whose weights are expressed using , defined in Clause 5.1.1.2.

A diagram of a sphere

AI-generated content may be incorrect.

Figure 5.3.1.7-1: Visualization of upper hemisphere partial surface with ±90° angular width for classical TRS grids.

### 5.3.2 Definition of the Near Horizon Partial Radiated Metrics (NHPRP/NHPRS) for AC

#### 5.3.2.1 Applicability of metrics

The NHPRP/NHPRS metrics for partial surface integrated quantities are defined in Clauses 5.3.2.2 through 5.3.2.5, with the applicability provided in Table 5.3.2.1-1 below.

Table 5.3.1.2-1: Applicability of NHPRP/NHPRS metrics

|  |  |  |  |
| --- | --- | --- | --- |
| Clause | TX/RX | NHPRP/NHPRS definition | Applicability |
| 5.3.2.2 | TX |  | FFS |
| 5.3.2.3 | TX |  | FFS |
| 5.3.1.4 | RX |  | FFS |
| 5.3.1.5 | RX |  | FFS |
| where  and are the quadrature weights of either the Clenshaw-Curtis (CC) weights or the traditional sin(q) weights, and  and  i.e.,  are the coefficients for the partial segments. | | | |

#### 5.3.2.2 Near Horizon Partial Radiated Power Integrated over ±30° Sector (NHPRP±30)

The NHPRP±30 metric is defined as the power radiated with EIRP integrated for the partial surface from q=60° to q=120° symmetrical to the horizon at θ=90°. This metric with the partial surface visualized in Figure 5.3.2.2-1 can be expressed mathematically as

with

A sphere with different colored lines and dots

AI-generated content may be incorrect.

Figure 5.3.2.2-1: Visualization of near horizon partial surface with ±30° angular width for classical TRP grid.

#### 5.3.2.3 Near Horizon Partial Radiated Power Integrated over ±45° Sector (NHPRP±45)

The NHPRP±45 metric is defined as the power radiated with EIRP for the partial surface integrated from q=45° to q=135° symmetrical to the horizon at θ=90°. This metric with the partial surface visualized in Figure 5.3.2.3-1 can be expressed mathematically as

with

A sphere with different colored dots

AI-generated content may be incorrect.

Figure 5.3.2.3-1: Visualization of near horizon partial surface with ±45° angular width for classical TRP grid.

#### 5.3.2.4 Near Horizon Radiated Sensitivity Integrated over ±30° Sector (NHPRS±30)

The NHPRS±30 metric is defined as the sensitivity with EIS integrated for the partial surface from q=60° to q=120° symmetrical to the horizon at θ=90°. This metric with the partial surface visualized in Figure 5.3.2.4-1 can be expressed mathematically as

with

A diagram of a sphere with different colored spheres

AI-generated content may be incorrect.

Figure 5.3.2.4-1: Visualization of near horizon partial surface with ±30° angular width for classical TRS grid.

#### 5.3.2.5 Near Horizon Radiated Sensitivity Integrated over ±45° Sector (NHPRS±45)

The NHPRS±45 metric is defined as the sensitivity with EIS integrated for the partial surface from q=45° to q=135° symmetrical to the horizon at θ=90°. This metric with the partial surface visualized in Figure 5.3.2.5-1 can be expressed mathematically as

with

A diagram of a sphere with different colored balls

AI-generated content may be incorrect.

Figure 5.3.2.5-1: Visualization of near horizon partial surface with ±45° angular width for classical TRS grid.

**<<< END OF CHANGES >>>**