**3GPP TSG-RAN WG4 Meeting#98-bis-e R4-2106601**

**E-meeting,12th April– 20th April, 2021**

**Agenda item: 5.3.2.3.2**

**Source: ZTE Corporation**

**Title: TP to TS 38.176-1: RX ICS requirements**

**Document for:** **Approval**

1. Introduction

In the past RAN4#98e meetings, work split has been agreed among companies, therefore in this contribution, we want to share the draft TP for section 7.8 ICS requirements test for further discussion.

1. Reference
2. R4-2103856 WF on IAB conformance specification work split and drafting guidelines, approved.
3. R4-2103849 WF on IAB-MT EVM measurement in core spec, approved.
4. Annex

<Start of TP>

## 7.8 In-channel selectivity

### 7.8.1 Definition and applicability

In-channel selectivity (ICS) is a measure of the receiver ability to receive a wanted signal at its assigned resource block locations at the *antenna connector* for *TAB connector* for *IAB-DU type 1-H* in the presence of an interfering signal received at a larger power spectral density. In this condition a throughput requirement shall be met for a specified reference measurement channel. The interfering signal shall be an NR signal which is time aligned with the wanted signal.

### 7.8.2 Minimum requirement

The minimum requirements for *IAB-DU type 1-H* are in TS 38.174 [2], clause 7.8.2.

### 7.8.3 Test purpose

The purpose of this test is to verify the IAB-DU receiver ability to suppress the IQ leakage.

### 7.8.4 Method of test

#### 7.8.4.1 Initial conditions

Test environment: Normal; see annex B.2.

RF channels to be tested for single carrier: M; see clause 4.9.1.

#### 7.8.4.2 Procedure

The minimum requirement is applied to all connectors under test.

For *IAB-DU type 1-H* the procedure is repeated until all *TAB connectors* necessary to demonstrate conformance have been tested; see clause 7.1.

1) Set the signal generator for the wanted signal to transmit as specified in sub-clause 7.8.5.

2) Set the signal generator for the interfering signal to transmit at the frequency offset and as specified in sub-clause 7.8.5.

3) Measure the throughput according to annex A.1.

In addition, for a *multi-band* *connector*, the following steps shall apply:

4) For *multi-band* *connector* and single band tests, repeat the steps above per involved band where single band test configurations and test models shall apply with no carrier activated in the other band.

### 7.8.5 Test requirements

#### 7.8.5.1 *IAB-DU type 1-H*

For *IAB-DU type 1-H*, the throughput shall be ≥ 95% of the maximum throughput of the reference measurement channel as specified in annex A.1 with parameters specified in table 7.8.5.1-1 for Wide Area IAB-DU, in table 7.8.5.1-2 for Medium Range IAB-DU and in table 7.8.5.1-3 for Local Area IAB-DU. The characteristics of the interfering signal is further specified in annex E.

Table 7.8.5.1-1: Wide Area IAB-DU in-channel selectivity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NR channel bandwidth | Subcarrier spacing | Reference measurement | Wanted signal mean power (dBm) | Interfering signal mean | Type of interfering signal |
| (MHz) | (kHz) | channel | f ≤ 3.0 GHz | 3.0 GHz < f ≤ 4.2 GHz | 4.2 GHz < f ≤ 6.0 GHz | power (dBm) |  |
| 5 | 15 | G-FR1-A1-7 | -99.2 | -98.8 | -98.5 | -81.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 10 RBs |
| 10, 15, 20, 25, 30 | 15 | G-FR1-A1-1 | -97.3 | -96.9 | -96.6 | -77.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 25 RBs |
| 40, 50 | 15 | G-FR1-A1-4 | -90.9 | -90.5 | -90.2 | -71.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 100 RBs |
| 5 | 30 | G-FR1-A1-8 | -99.9 | -99.5 | -99.2 | -81.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 5 RBs |
| 10, 15, 20, 25, 30 | 30 | G-FR1-A1-2 | -97.4 | -97 | -96.7 | -78.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 10 RBs |
| 40, 50, 60, 70, 80, 90, 100 | 30 | G-FR1-A1-5 | -91.2 | -90.8 | -90.5 | -71.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 50 RBs |
| 10, 15, 20, 25, 30 | 60 | G-FR1-A1-9 | -96.8 | -96.4 | -96.1 | -78.4 | DFT-s-OFDM NR signal, 60 kHz SCS, 5 RBs |
| 40, 50, 60, 70, 80, 90, 100 | 60 | G-FR1-A1-6 | -91.3 | -90.9 | -90.6 | -71.6 | DFT-s-OFDM NR signal, 60 kHz SCS, 24 RBs |
| NOTE: Wanted and interfering signal are placed adjacently around Fc, where the Fc is defined for *IAB-DU channel bandwidth* of the wanted signalaccording to the table 5.4.2.2-1 in TS 38.104 [2]. The aggregated wanted and interferer signal shall be centred in the IAB-DU channel bandwidth of the wanted signal. |

Table 7.8.5.1-2: Medium Range IAB-DU in-channel selectivity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NR channel bandwidth | Subcarrier spacing | Reference measurement | Wanted signal mean power (dBm) | Interfering signal mean | Type of interfering signal |
| (MHz) | (kHz) | channel | f ≤ 3.0 GHz | 3.0 GHz < f ≤ 4.2 GHz | 4.2 GHz < f ≤ 6.0 GHz | power (dBm) |  |
| 5 | 15 | G-FR1-A1-7 | -94.2 | -93.8 | -93.5 | -76.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 10 RBs |
| 10, 15, 20, 25, 30 | 15 | G-FR1-A1-1 | -92.3 | -91.9 | -91.6 | -72.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 25 RBs |
| 40, 50 | 15 | G-FR1-A1-4 | -85.9 | -85.5 | -85.2 | -66.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 100 RBs |
| 5 | 30 | G-FR1-A1-8 | -94.9 | -94.5 | -94.2 | -76.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 5 RBs |
| 10, 15, 20, 25, 30 | 30 | G-FR1-A1-2 | -92.4 | -92 | -91.7 | -73.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 10 RBs |
| 40, 50, 60, 70, 80, 90, 100 | 30 | G-FR1-A1-5 | -86.2 | -85.8 | -85.5 | -66.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 50 RBs |
| 10, 15, 20, 25, 30 | 60 | G-FR1-A1-9 | -91.8 | -91.4 | -91.1 | -73.4 | DFT-s-OFDM NR signal, 60 kHz SCS, 5 RBs |
| 40, 50, 60, 70, 80, 90, 100 | 60 | G-FR1-A1-6 | -86.3 | -85.9 | -85.6 | -66.6 | DFT-s-OFDM NR signal, 60 kHz SCS, 24 RBs |
| NOTE: Wanted and interfering signal are placed adjacently around Fc, where the Fc is defined for *IAB-DU channel bandwidth* of the wanted signalaccording to the table 5.4.2.2-1 in TS 38.104 [2]. The aggregated wanted and interferer signal shall be centred in the IAB-DU channel bandwidth of the wanted signal. |

Table 7.8.5.1-3: Local area BS in-channel selectivity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NR channel bandwidth | Subcarrier spacing | Reference measurement | Wanted signal mean power (dBm) | Interfering signal mean | Type of interfering signal |
| (MHz) | (kHz) | channel | f ≤ 3.0 GHz | 3.0 GHz < f ≤ 4.2 GHz | 4.2 GHz < f ≤ 6.0 GHz | power (dBm) |  |
| 5 | 15 | G-FR1-A1-7 | -91.2 | -90.8 | -90.5 | -73.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 10 RBs |
| 10, 15, 20, 25, 30 | 15 | G-FR1-A1-1 | -89.3 | -88.9 | -88.6 | -69.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 25 RB |
| 40, 50 | 15 | G-FR1-A1-4 | -82.9 | -82.5 | -82.2 | -63.4 | DFT-s-OFDM NR signal, 15 kHz SCS, 100 RBs |
| 5 | 30 | G-FR1-A1-8 | -91.9 | -91.5 | -91.2 | -73.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 5 RBs |
| 10, 15, 20, 25, 30 | 30 | G-FR1-A1-2 | -89.4 | -89 | -88.7 | -70.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 10 RBs |
| 40, 50, 60, 70, 80, 90, 100 | 30 | G-FR1-A1-5 | -83.2 | -82.8 | -82.5 | -63.4 | DFT-s-OFDM NR signal, 30 kHz SCS, 50 RBs |
| 10, 15, 20, 25, 30 | 60 | G-FR1-A1-9 | -88.8 | -88.4 | -88.1 | -70.4 | DFT-s-OFDM NR signal, 60 kHz SCS, 5 RBs |
| 40, 50, 60, 70, 80, 90, 100 | 60 | G-FR1-A1-6 | -83.3 | -82.9 | -82.6 | -63.6 | DFT-s-OFDM NR signal, 60 kHz SCS, 24 RBs |
| NOTE: Wanted and interfering signal are placed adjacently around Fc, where the Fc is defined for *IAB-DU channel bandwidth* of the wanted signal according to the table 5.4.2.2-1 in TS 38.104 [2]. The aggregated wanted and interferer signal shall be centred in the IAB-DU channel bandwidth of the wanted signal. |

<End of TP>