RP-020491

Title CRs (Rel-5) to TS 25.105 and TS25.142 "Correction of the ACS and DR

requirements (3.84 Mcps and 1.28 Mcps)"

Source TSG RAN WG4

Agenda Item 7.4.5

| RAN4 Tdoc | Spec | CR | R | Cat | Rel | Curr Ver | Title | Work Item |
|-----------|--------|-----|---|-----|-------|-------------|--|-------------------------------|
| R4-021309 | 25.105 | 122 | 1 | F | Rel-5 | 5.1.0 | 3,84 Mcps TDD option LA ACS and DR desired signal level correction | RInImp- BSClass- TDD |
| R4-021287 | 25.105 | 127 | | F | Rel-5 | 5.1.0 | 1,28 Mcps TDD option Local Area BS ACS and Dynamic Range desired signal level correction | RInImp- BSClass- LCRTDD |
| R4-021310 | 25.142 | 130 | 1 | F | Rel-5 | 5.1.0 | 3,84 Mcps TDD option LA ACS and DR desired signal level correction | RInImp- BSClass- TDD |
| R4-021288 | 25.142 | 145 | | F | Rel-5 | 5.1.0 | 1,28 Mcps TDD option Local Area BS ACS and Dynamic Range desired signal level correction | RInImp- BSClass- LCRTDD |

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7.3.1 Minimum requirement

7.3.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in Table 7.2.

Table 7.2: Dynamic Range

| Para | meter | Level | Unit |
|-----------------|----------------------------|------------|--------------|
| Reference mea | | 12.2 | kbps |
| channel data ra | te | | |
| Wanted signal | Wanted signal Wide Area BS | | dBm |
| mean power | Local Area BS | <u>-65</u> | <u>dBm</u> |
| Interfering | Wide Area BS | -73 | dBm/3.84 MHz |
| AWGN signal | Local Area BS | -59 | dBm/3.84 MHz |

<Next changed Section>

7.4.1 Minimum Requirement

7.4.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 7.3.

Table 7.3: Adjacent channel selectivity

| Para | meter | Level | Unit |
|--------------------|---------------|------------|------------|
| Reference mea | | 12.2 | kbps |
| Wanted signal mean | Wide Area BS | -103 | dBm |
| power | Local Area BS | <u>-89</u> | <u>dBm</u> |
| Interfering | Wide Area BS | -52 | dBm |
| signal mean power | Local Area BS | -38 | dBm |
| Fuw offset (Mo | dulated) | 5 | MHz |

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7.3 Dynamic range

Receiver dynamic range is the receiver ability to handle a rise of interference in the reception frequency channel. The receiver shall fulfil a specified BER requirement for a specified sensitivity degradation of the wanted signal in the presence of an interfering AWGN signal in the same reception frequency channel.

7.3.1 Minimum requirement

7.3.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in Table 7.2.

Table 7.2: Dynamic Range

| Para | meter | Level | Unit |
|-----------------|---------------|-------|--------------|
| Reference mea | surement | 12.2 | kbps |
| channel data ra | ate | | |
| Wanted signal | mean power | -79 | dBm |
| Interfering | Wide Area BS | -73 | dBm/3.84 MHz |
| AWGN signal | Local Area BS | -59 | dBm/3.84 MHz |

7.3.1.2 1,28 Mcps TDD Option:

The BER shall not exceed 0.001 for the parameters specified in Table 7.2A

Table 7.2A: Dynamic Range

| Para | meter | Level | Unit |
|--------------------|--------------------------|------------|--------------|
| | measurement data rate | 12.2 | kbps |
| Wanted signal mean | Wide Area BS | -80 | dBm |
| power | Local Area BS | <u>-66</u> | <u>dBm</u> |
| Interfering | Wide Area BS | -76 | dBm/1.28 MHz |
| AWGN signal | Local Area BS | -62 | dBm/1.28 MHz |

7.4 Adjacent Channel Selectivity (ACS)

Adjacent channel selectivity (ACS) is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of a single code CDMA modulated adjacent channel signal at a given frequency offset from the center frequency of the assigned channel. ACS is the ratio of the receiver filter attenuation on the assigned channel frequency to the receiver filter attenuation on the adjacent channel(s).

7.4.1 Minimum Requirement

7.4.1.1 3,84 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 7.3.

Table 7.3: Adjacent channel selectivity

| Para | meter | Level | Unit |
|-----------------|---------------|-------|------|
| Reference mea | asurement | 12.2 | kbps |
| channel data ra | ate | | |
| Wanted signal | mean power | -103 | dBm |
| | · | | |
| Interfering | Wide Area BS | -52 | dBm |
| signal mean | Local Area BS | -38 | dBm |
| power | | | |
| Fuw offset (Mo | dulated) | 5 | MHz |

7.4.1.2 1,28 Mcps TDD Option

The BER shall not exceed 0.001 for the parameters specified in table 7.3A

Table 7.3A: Adjacent channel selectivity

| Para | ımeter | Level | Unit |
|--------------------|--------------------------|-----------------|------------|
| | measurement data rate | 12.2 | kbps |
| Wanted signal mean | Wida Area BS | -104 | dBm |
| power | Local Area BS | <u>-90</u> | <u>dBm</u> |
| Interfering | Wide Area BS | - 55 | dBm |
| signal mean power | Local Area BS | -4 1 | dBm |
| Fuw offset | (Modulated) | 1.6 | MHz |

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7.3.2 Minimum Requirements

7.3.2.1 3,84 Mcps TDD option

The BER shall not exceed 0,001 for the parameters specified in table 7.3.

Table 7.3: Minimum Requirements for Dynamic Range

| Parai | meter | Level | Unit |
|----------------|----------------------------|------------|--------------|
| Reference meas | urement channel | 12,2 | kbit/s |
| data | rate | | |
| Wanted signal | Wanted signal Wide Area BS | | dBm |
| mean power | Local Area BS | <u>-65</u> | <u>dBm</u> |
| Interfering | Wide Area BS | -73 | dBm/3,84 MHz |
| AWGN signal | Local Area BS | -59 | dBm/3,84 MHz |

The normative reference for this requirement is TS 25.105 [1] subclause 7.3.1.1.

<Next changed Section>

+7.3.5 Test Requirements

NOTE: If the Test Requirement below differs from the Minimum Requirement, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

7.3.5.1 3,84 Mcps TDD option

For any BS Rx port tested, the measured BER shall not exceed 0,001 for the parameters specified in table 7.4.

Table 7.4: Test Requirements for Dynamic Range

| Parai | neter | Level | Unit |
|--------------------------|-----------------|--------------|--------------|
| Reference meas | urement channel | 12,2 | kbit/s |
| data | rate | | |
| Wanted signal | Wide Area BS | -77,8 | dBm |
| mean power | Local Area BS | <u>-63.8</u> | <u>dBm</u> |
| Interfering Wide Area BS | | -73 | dBm/3,84 MHz |
| AWGN signal | Local Area BS | -59 | dBm/3,84 MHz |

<Next changed Section>

7.4.2 Minimum Requirements

7.4.2.1 3,84 Mcps TDD option

The BER, measured on the wanted signal in the presence of an interfering signal, shall not exceed 0,001 for the parameters specified in table 7.5.

Table 7.5: Parameters of the wanted signal and the interfering signal for ACS testing

| Parameter | | Level | Unit | |
|--|---------------|------------|------------|--|
| Reference measurement channel | | 12,2 | kbit/s | |
| data | rate | | | |
| Wanted signal | Wide Area BS | -103 | dBm | |
| mean power | Local Area BS | <u>-89</u> | <u>dBm</u> | |
| Interfering signal | Wide Area BS | -52 | dBm | |
| mean power | Local Area BS | -38 | dBm | |
| Fuw (modulated) | | 5 | MHz | |
| NOTE: Fuw is the frequency offset of the unwanted interfering signal from the assigned channel frequency of the wanted signal. | | | | |

The normative reference for this requirement is TS 25.105 [1] subclause 7.4.1.1.

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.3 Dynamic range

7.3.1 Definition and applicability

Receiver dynamic range is the receiver ability to handle a rise of interference in the reception frequency channel. The receiver shall fulfil a specified BER requirement for a specified sensitivity degradation of the wanted signal in the presence of an interfering AWGN signal in the same reception frequency channel.

In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.

7.3.2 Minimum Requirements

7.3.2.1 3,84 Mcps TDD option

The BER shall not exceed 0,001 for the parameters specified in table 7.3.

Table 7.3: Minimum Requirements for Dynamic Range

| Parai | neter | Level | Unit |
|--------------|----------------------|-------|--------------|
| | urement channel rate | 12,2 | kbit/s |
| Wanted signa | l mean power | -79 | dBm |
| Interfering | Wide Area BS | -73 | dBm/3,84 MHz |
| AWGN signal | Local Area BS | -59 | dBm/3,84 MHz |

The normative reference for this requirement is TS 25.105 [1] subclause 7.3.1.1.

7.3.2.2 1,28 Mcps TDD option

The BER shall not exceed 0,001 for the parameters specified in table 7.3A.

Table 7.3A: Minimum Requirements for Dynamic Range for 1,28 Mcps TDD

| Parai | meter | Level | Unit |
|-------------------------------|---------------|------------|--------------|
| Reference measurement channel | | 12,2 | kbit/s |
| data rate | | | |
| Wanted signal | Wida Area BS | -80 | dBm |
| mean power | Local Area BS | <u>-66</u> | <u>dBm</u> |
| Interfering | Wide Area BS | -76 | dBm/1,28 MHz |
| AWGN signal | Local Area BS | -62 | dBm/1,28 MHz |

The normative reference for this requirement is TS 25.105 [1] subclause 7.3.1.2.

7.3.3 Test purpose

The test purpose is to verify the ability of the BS to receive a prescribed single-code test signal of maximum input power under defined conditions (specified interference, no multipath) with a BER not exceeding a specified limit.

7.3.4 Method of test

7.3.4.1 Initial conditions

7.3.4.1.0 General test conditions

Test environment: normal; see subclause 5.9.1.

RF channels to be tested: B, M and T; see subclause 5.3.

7.3.4.1.1 3,84 Mcps TDD option

- (1) Connect the BS tester (UE simulator), generating the wanted signal, and a band-limited white noise source, generating the interfering AWGN signal, to the antenna connector of one BS Rx port.
- (2) Terminate or disable any other BS Rx port not under test.
- (3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12,2 kbps) defined in Annex A.2.1.
- (4) The level of the BS tester output signal measured at the BS antenna connector shall be adjusted as specified in table 7.4.
- (5) The power spectral density of the band-limited white noise source measured at the BS antenna connector shall be adjusted as specified in table 7.4. The characteristics of the white noise source shall comply with the AWGN interferer definition in subclause 5.18

7.3.4.1.2 1,28 Mcps TDD option

- (1) Connect the BS tester (UE simulator), generating the wanted signal, and a band-limited white noise source, generating the interfering AWGN signal, to the antenna connector of one BS Rx port.
- (2) Terminate or disable any other BS Rx port not under test.
- (3) Start transmission from the BS tester to the BS using the UL reference measurement channel (12.2 kbps) defined in Annex A.2.1.
- (4) The level of the BS tester output signal measured at the BS antenna connector shall be adjusted as specified in table 7.3A.
- (5) The power spectral density of the band-limited white noise source measured at the BS antenna connector shall be adjusted as specified in table 7.3A. The characteristics of the white noise source shall compy with the AWGN interferer definition in subclause 5.18.

7.3.4.2 Procedure

- (1) Measure the BER by comparing the bit sequence of the information data transmitted by the BS tester with the bit sequence obtained from the BS receiver.
- (2) Interchange the connections of the BS Rx ports and repeat the measurement according to (1)

7.3.5 Test Requirements

NOTE: If the Test Requirement below differs from the Minimum Requirement, then the Test Tolerance applied for this test is non-zero. The Test Tolerance for this test is defined in subclause 5.11 and the explanation of how the Minimum Requirement has been relaxed by the Test Tolerance is given in Annex D.

7.3.5.1 3,84 Mcps TDD option

For any BS Rx port tested, the measured BER shall not exceed 0,001 for the parameters specified in table 7.4.

Table 7.4: Test Requirements for Dynamic Range

| Parameter | | Level | Unit |
|-------------------------------|---------------|-------|--------------|
| Reference measurement channel | | 12,2 | kbit/s |
| data rate | | | |
| Wanted signal mean power | | -77,8 | dBm |
| Interfering | Wide Area BS | -73 | dBm/3,84 MHz |
| AWGN signal | Local Area BS | -59 | dBm/3,84 MHz |

7.3.5.2 1,28 Mcps TDD option

For any BS Rx port tested, the measured BER shall not exceed 0,001 for the parameters specified in table 7.4A.

Table 7.4A: Test Requirements for Dynamic Range for 1,28 Mcps TDD option

| Para | ameter | Level | Unit |
|-------------------------------|---------------|--------------|--------------|
| Reference measurement channel | | 12,2 | kbit/s |
| data rate | | | |
| Wanted signal | Wide Area BS | -79,8 | dBm |
| mean power | Local Area BS | <u>-65,8</u> | <u>dBm</u> |
| Interfering | Wide Area BS | -76 | dBm/1,28 MHz |
| AWGN signal | Local Area BS | -62 | dBm/1,28 MHz |

7.4 Adjacent Channel Selectivity (ACS)

7.4.1 Definition and applicability

Adjacent channel selectivity (ACS) is a measure of the receiver ability to receive a wanted signal at its assigned channel frequency in the presence of a single code CDMA modulated adjacent channel signal at a given frequency offset from the center frequency of the assigned channel.

In this subclause, different requirements shall apply to Wide Area BS and Local Area BS.

7.4.2 Minimum Requirements

7.4.2.1 3,84 Mcps TDD option

The BER, measured on the wanted signal in the presence of an interfering signal, shall not exceed 0,001 for the parameters specified in table 7.5.

Table 7.5: Parameters of the wanted signal and the interfering signal for ACS testing

| Param | neter | Level | Unit | |
|--|--------------|-------|--------|--|
| Reference measurement channel data rate | | 12,2 | kbit/s | |
| Wanted signal mean power | | -103 | dBm | |
| Interfering signal | Wide Area BS | -52 | dBm | |
| mean power Local Area BS | | -38 | dBm | |
| Fuw (modulated) | | 5 | MHz | |
| NOTE: Fuw is the frequency offset of the unwanted interfering signal from the assigned channel frequency of the wanted signal. | | | | |

The normative reference for this requirement is TS 25.105 [1] subclause 7.4.1.1.

7.4.2.2 1,28 Mcps TDD option

The BER, measured on the wanted signal in the presence of an interfering signal, shall not exceed 0,001 for the parameters specified in table 7.5A.

Table 7.5A: Parameters of the wanted signal and the interfering signal for ACS testing for 1,28 Mcps TDD

| Paran | neter | Level | Unit | |
|--|---------------|------------|------------|--|
| Reference measurement channel | | 12,2 | kbit/s | |
| data rate | | | | |
| Wanted signal | Wide Area BS | -104 | dBm | |
| mean power | Local Area BS | <u>-90</u> | <u>dBm</u> | |
| Interfering signal | Wide Area BS | -55 | dBm | |
| mean power | Local Area BS | -41 | dBm | |
| Fuw (modulated) | | 1,6 | MHz | |
| NOTE: Fuw is the frequency offset of the unwanted interfering signal from the assigned | | | | |

channel frequency of the wanted signal.

The normative reference for this requirement is TS 25.105 [1] subclause 7.4.1.2.