RP-020795

Title CRs (Rel-4 and Rel-5 Category A) to TS 25.106 & TS 25.143 on "Input

intermodulation: Correction of co-location and addition of co-existence"

Source TSG RAN WG4

Agenda Item 7.4.4

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-021675	25.106	011	1	F	Rel-4	4.3.0	Input intermodulation: Correction of co-location and addition of co-existence	RInImp-REP
R4-021676	25.106	012	1	Α	Rel-5	5.2.0	Input intermodulation: Correction of co-location and addition of co-existence	RInImp-REP
R4-021683	25.143	021	1	F	Rel-4	4.5.0	Input intermodulation: Correction of co-location and addition of co-existence	RInImp-REP
R4-021684	25.143	022	1	Α	Rel-5	5.2.0	Input intermodulation: Correction of co-location and addition of co-existence	RInImp-REP

R4-021675

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×	25.106 CR 0	11	<b>1</b>	rrent version:	<b>4.3.0</b> **
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Proposed change	affects: UICC app	s# ME	Radio Acces	ss Network X	Core Network
Title: #	Input intermodulati	on: correction of co-l	ocation and a	ddition of co-ex	ristence
Source: #	RAN WG4				
Work item code: ₩	RInImp-REP			Date: 第 26/	11/2002
Category:	Use one of the following of (correction)  A (corresponds of B (addition of feating of functional module)  D (editorial modification)	to a correction in an ea ature), dification of feature) fication) of the above categorie	L rlier release)	2 (GSM R96 (Rele R97 (Rele R98 (Rele R99 (Rele Rel-4 (Rele Rel-5 (Rele	-4 Ilowing releases: 1 Phase 2) ase 1996) ase 1997) ase 1998) ase 1999) ase 4) ase 5)
Reason for change	GSM/DCS of the 2. There was o	ing level in the recei	ver blocking re "Co-location	equirement for with GSM/DCS	co-location with 5". A requirement
	2. A co-existen area as GSM/D	ng requirement for co ce requirement for a OCS systems is adde	-location with repeater oper d.	GSM/DCS of trating in the sai	he basestation.
Consequences if not approved:		nent for repeater and night disturb the netwon systems.			geographical area
Clauses affected:	策 <mark>11.1, 11.2, 11</mark>	.3			

How to create CRs using this form:

 $\mathfrak{R}$ 

Other specs affected:

Other comments:

Equivalent CRs in other Releases: CR012r1 cat. A to 25.106 v5.2.0

TS25.143

Other core specifications

Test specifications

X O&M Specifications

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
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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.

# 11 Input Intermodulation

The input intermodulation is a measure of the capability of the repeater to inhibit the generation of interference in the operating band, in the presence of interfering signals on frequencies other than the operating band.

## 11.1 General Requirement

The following requirement applies for interfering signals in the frequency bands defined in sub-clause 5.1(a) or 5.1(b), depending on the repeaters operating band. The requirement shall bet met with the repeater operating at maximum gain.

### 11.1.1 Minimum requirement

For the parameters specified in table 11.1, the power in the operating band, shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

The frequency separation between the two interfering signals shall be adjusted so that the 3<sup>rd</sup> order intermodulation product is positioned in the centre of the operating band.

Table 11.1 specifies the parameters for two interfering signals, where:

 f\_offset is the separation between the centre frequency of first or last 5 MHz channel in the operating band and one the interfering signals.

Table 11.1: Input intermodulation requirement

f_offset	Interfering Signal Levels	Type of signals	Measurement bandwidth
3,5 MHz	-40 dBm	2 CW carriers	1 MHz

### 11.2 Co-location with GSM 900 and/or DCS 1800

The following requirement may be applied when GSM 900 BTS and/or DCS 1800 BTS and UTRA-FDD Repeaters are co-located. The requirement shall bet met with the repeater operating at maximum gain.

## 11.2.1 Minimum requirements

For the parameters specified in table 11.2, the power in the operating band shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

The frequency separation between the two interfering signals shall be adjusted so that the lowest order intermodulation product is positioned in the centre of the operating band.

Table 11.2: Input intermodulation requirements for interfering signals in the GSM 900 and DCS 1800 bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<del>876 - 915 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
921 - 960 MHz	<del>20+16</del> dBm	2 CW carriers	1 MHz
<del>1710 - 1785 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
1805 - 1880 MHz	<del>20+</del> 16 dBm	2 CW carriers	1 MHz

## 11.3 Co-existence with GSM 900 and/or DCS 1800

The following requirement may be applied when GSM 900 BTS and/or DCS 1800 BTS and UTRA-FDD Repeaters are co-exist<del>located</del>. The requirement shall bet met with the repeater operating at maximum gain.

### 11.3.1 Minimum requirements

For the parameters specified in table 11.2a, the power in the operating band shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

The frequency separation between the two interfering signals shall be adjusted so that the lowest order intermodulation product is positioned in the centre of the operating band.

<u>Table 11.2a: Input intermodulation requirements for interfering signals in the GSM 900 and DCS 1800</u> bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<u>876 - 915 MHz</u>	<u>-15 dBm</u>	2 CW carriers	<u>1 MHz</u>
<u>1710 - 1785 MHz</u>	<u>–15 dBm</u>	2 CW carriers	<u>1 MHz</u>

R4-021676

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Summary of c	hang	with the	ne blo	cking requir	ement for co	-loca	tion	dulation of the with GSM/DC operating in the	S of	the b	ases	tation.

Clauses affected:	第 11.1, 11.2, 11.3
Other specs affected:	Y N  X Other core specifications X Test specifications O&M Specifications TS25.143
Other comments:	# Equivalent CRs in other Releases: CR011r1 cat. F to 25.106 v4.3.0

# 1. The requirement for repeater and base station differs.

2. A repeater might disturb the network if operating in the same geographical area

area as GSM/DCS systems is added.

as GSM/DCS systems.

How to create CRs using this form:

Consequences if

not approved:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 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.

# 11 Input Intermodulation

The input intermodulation is a measure of the capability of the repeater to inhibit the generation of interference in the operating band, in the presence of interfering signals on frequencies other than the operating band.

## 11.1 General Requirement

The following requirement applies for interfering signals in the frequency bands defined in sub-clause 5.1(a) or 5.1(b), depending on the repeaters operating band. The requirement shall bet met with the repeater operating at maximum gain.

### 11.1.1 Minimum requirement

For the parameters specified in table 11.1, the power in the operating band, shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

The frequency separation between the two interfering signals shall be adjusted so that the 3<sup>rd</sup> order intermodulation product is positioned in the centre of the operating band.

Table 11.1 specifies the parameters for two interfering signals, where:

 f\_offset is the separation between the centre frequency of first or last 5 MHz channel in the operating band and one the interfering signals.

Table 11.1: Input intermodulation requirement

f_offset	Interfering Signal Levels	Type of signals	Measurement bandwidth		
3,5 MHz	-40 dBm	2 CW carriers	1 MHz		

### 11.2 Co-location with GSM 900 and/or DCS 1800

The following requirement may be applied when GSM 900 BTS and/or DCS 1800 BTS and UTRA-FDD Repeaters are co-located. The requirement shall bet met with the repeater operating at maximum gain.

## 11.2.1 Minimum requirements

For the parameters specified in table 11.2, the power in the operating band shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

The frequency separation between the two interfering signals shall be adjusted so that the lowest order intermodulation product is positioned in the centre of the operating band.

Table 11.2: Input intermodulation requirements for interfering signals in the GSM 900 and DCS 1800 bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<del>876 - 915 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
921 - 960 MHz	<del>20+16</del> dBm	2 CW carriers	1 MHz
<del>1710 - 1785 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
1805 - 1880 MHz	<del>20+</del> 16 dBm	2 CW carriers	1 MHz

## 11.3 Co-existence with GSM 900 and/or DCS 1800

The following requirement may be applied when GSM 900 BTS and/or DCS 1800 BTS and UTRA-FDD Repeaters are co-exist<del>located</del>. The requirement shall bet met with the repeater operating at maximum gain.

### 11.3.1 Minimum requirements

For the parameters specified in table 11.2a, the power in the operating band shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

The frequency separation between the two interfering signals shall be adjusted so that the lowest order intermodulation product is positioned in the centre of the operating band.

<u>Table 11.2a: Input intermodulation requirements for interfering signals in the GSM 900 and DCS 1800</u> bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<u>876 - 915 MHz</u>	<u>−15 dBm</u>	2 CW carriers	<u>1 MHz</u>
<u>1710 - 1785 MHz</u>	<u>−15 dBm</u>	2 CW carriers	<u>1 MHz</u>

**F** (correction)

**B** (addition of feature),

be found in 3GPP TR 21.900.

**D** (editorial modification)

**C** (functional modification of feature)

Detailed explanations of the above categories can

R4-021683

(GSM Phase 2)

(Release 1996)

(Release 1997)

(Release 1998) (Release 1999)

(Release 4)

(Release 5)

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A (corresponds to a correction in an earlier release)

Reason for change: 

1. Align the input intermodulation interferer level of the repeater, with changes of the corresponding level in the receiver blocking requirement for co-location with GSM/DCS of the base station.

2. There was only a requirement for "Co-location with GSM/DCS". A requirement for a repeater operating in the same geographical area as GSM/DCS system was missing.

Summary of change: 

1. The level of the interferer for input intermodulation of the repeater is now in line with the blocking requirement for co-location with GSM/DCS of the basestation.

2. A co-existence requirement for a repeater operating in the same geographical area as GSM/DCS systems is added.

Consequences if not approved:

1. The requirement for repeater and base station differs.

2. A repeater might disturb the network if operating in the same geographical area as GSM/DCS systems.

Clauses affected:	$\mathfrak{R}$	11.2.2, 11.2.3, 11.5.2, 11.5.3
Other specs affected:	ж	N Other core specifications X Test specifications O&M Specifications
Other comments:	¥	Equivalent CRs in other Releases: CR022r1 cat. A to 25.143 v5.2.0

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# 11 Input intermodulation

The input intermodulation is a measure of the capability of the Repeater to inhibit the generation of interference in the operating band, in the presence of interfering signals on frequencies other than the operating band.

## 11.1 Definition and applicability

Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the Repeater to maintain the wanted frequency free of internally created interference.

This test applies to Uplink and Downlink path of the Repeater.

## 11.2 Minimum Requirements

### 11.2.1 General requirement

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

Table 11.1: General input intermodulation requirement

F_offset	Interfering Signal Levels	Type of signals	Measurement bandwidth
3,5 MHz	-40 dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.1, the power in the operating band shall not increase by more than 10 dB at the output of the Repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

#### 11.2.2 Co-location with GSM900 and/or DCS1800

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

Table 11.2: Input intermodulation requirements for interfering signals in the GSM900 and DCS1800 bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<del>876 - 915 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
921 - 960 MHz	<del>20</del> <u>+16</u> dBm	2 CW carriers	1 MHz
<del>1710 - 1785 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
1805 - 1880 MHz	<del>20</del> -+16 dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.2, the power in the operating band shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

### 11.2.3 Co-existence with GSM900 and/or DCS1800

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

<u>Table 11.2a: Input intermodulation requirements for interfering signals in the GSM900 and DCS1800</u> bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
876 - 915 MHz	<u>-15 dBm</u>	2 CW carriers	1 MHz
<u>1710 - 1785 MHz</u>	<u>-15 dBm</u>	2 CW carriers	<u>1 MHz</u>

For the parameters specified in table 11.2a, the power in the operating band shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

### 11.3 Test purpose

The purpose of this test is to verify that the Repeater meets the intermodulation characteristics requirements as specified in TS 25.106, subclause 11.1.

### 11.4 Method of test

#### 11.4.1 Initial conditions

- 1) Set-up the equipment as shown in annex A.
- 2) Set the Repeater to maximum gain.
- 3) Connect two signal generators with a combining circuit or one signal generator with the ability to generate several CW carriers to the input.
- 4) Connect a spectrum analyser to the output of the Repeater. Set the resolution bandwidth to 1 MHz in the centre of the operating band. Set averaging to 1 second or more.

#### 11.4.2 Procedure

- 1) Adjust the frequency of the input signals, either below or above the operating band, so that the lowest order intermodulation product is positioned in the centre of the operating band, according to subclause 11.2.
- 2) Take the measurement of the rise of the output signal.
- 3) Repeat the measurement for the opposite path of the Repeater.

## 11.5 Test requirements

## 11.5.1 Mandatory requirement

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

Table 11.3: Input intermodulation requirement

f_offset	Interfering Signal Levels	Type of signals	Measurement bandwidth
3,5 MHz	-40 dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.3, the power in the operating band shall not increase by more than 11,2 dB at the output of the Repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

#### 11.5.2 Co-location with GSM900 and/or DCS1800

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

Table 11.4: Input intermodulation requirements for interfering signals in the GSM900 and DCS1800 bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<del>876 - 915 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
921 - 960 MHz	<del>20_+16_</del> dBm	2 CW carriers	1 MHz
<del>1710 - 1785 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
1805 - 1880 MHz	<del>20_+16_</del> dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.4, the power in the operating band shall not increase with more than 11,2 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

### 11.5.3 Co-existence with GSM900 and/or DCS1800

<u>In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:</u>

<u>Table 11.4a: Input intermodulation requirements for interfering signals in the GSM900 and DCS1800 bands</u>

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
876 - 915 MHz	<u>-15 dBm</u>	2 CW carriers	1 MHz
1710 - 1785 MHz	-15 dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.4a, the power in the operating band shall not increase with more than 11,2 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

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Summary of cl	nange: ₩	with the blo	ocking require	ment for co ement for a	-location repeater	odulation of the with GSM/DC operating in t	S of the base	estation.
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第 11.2.2, 11.2.3, 11.5.2, 11.5.3 Clauses affected: Other core specifications Other specs **光 TS25.106** affected: X Test specifications X O&M Specifications Other comments: Equivalent CRs in other Releases: CR021r1 cat. F to 25.143 v4.5.0

as GSM/DCS systems.

How to create CRs using this form:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
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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.

# 11 Input intermodulation

The input intermodulation is a measure of the capability of the Repeater to inhibit the generation of interference in the operating band, in the presence of interfering signals on frequencies other than the operating band.

## 11.1 Definition and applicability

Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the Repeater to maintain the wanted frequency free of internally created interference.

This test applies to Uplink and Downlink path of the Repeater.

## 11.2 Minimum Requirements

### 11.2.1 General requirement

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

Table 11.1: General input intermodulation requirement

F_offset	Interfering Signal Levels	Type of signals	Measurement bandwidth
3,5 MHz	-40 dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.1, the power in the operating band shall not increase by more than 10 dB at the output of the Repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

#### 11.2.2 Co-location with GSM900 and/or DCS1800

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

Table 11.2: Input intermodulation requirements for interfering signals in the GSM900 and DCS1800 bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<del>876 - 915 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
921 - 960 MHz	<del>20_+16_</del> dBm	2 CW carriers	1 MHz
<del>1710 - 1785 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
1805 - 1880 MHz	<del>20</del> +16 dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.2, the power in the operating band shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

### 11.2.3 Co-existence with GSM900 and/or DCS1800

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

<u>Table 11.2a: Input intermodulation requirements for interfering signals in the GSM900 and DCS1800</u> bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<u>876 - 915 MHz</u>	<u>-15 dBm</u>	2 CW carriers	<u>1 MHz</u>
<u>1710 - 1785 MHz</u>	<u>-15 dBm</u>	2 CW carriers	<u>1 MHz</u>

For the parameters specified in table 11.2a, the power in the operating band shall not increase with more than 10 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

## 11.3 Test purpose

The purpose of this test is to verify that the Repeater meets the intermodulation characteristics requirements as specified in TS 25.106, subclause 11.1.

### 11.4 Method of test

#### 11.4.1 Initial conditions

- 1) Set-up the equipment as shown in annex A.
- 2) Set the Repeater to maximum gain.
- 3) Connect two signal generators with a combining circuit or one signal generator with the ability to generate several CW carriers to the input.
- 4) Connect a spectrum analyser to the output of the Repeater. Set the resolution bandwidth to 1 MHz in the centre of the operating band. Set averaging to 1 second or more.

#### 11.4.2 Procedure

- 1) Adjust the frequency of the input signals, either below or above the operating band, so that the lowest order intermodulation product is positioned in the centre of the operating band, according to subclause 11.2.
- 2) Take the measurement of the rise of the output signal.
- 3) Repeat the measurement for the opposite path of the Repeater.

## 11.5 Test requirements

## 11.5.1 Mandatory requirement

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

Table 11.3: Input intermodulation requirement

f_offset	Interfering Signal Levels	Type of signals	Measurement bandwidth
3,5 MHz	-40 dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.3, the power in the operating band shall not increase by more than 11,2 dB at the output of the Repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

#### 11.5.2 Co-location with GSM900 and/or DCS1800

In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:

Table 11.4: Input intermodulation requirements for interfering signals in the GSM900 and DCS1800 bands

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
<del>876 - 915 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
921 - 960 MHz	<del>20_+16_</del> dBm	2 CW carriers	1 MHz
<del>1710 - 1785 MHz</del>	<del>20 dBm</del>	2 CW carriers	<del>1 MHz</del>
1805 - 1880 MHz	<del>20_+16_</del> dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.4, the power in the operating band shall not increase with more than 11,2 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.

### 11.5.3 Co-existence with GSM900 and/or DCS1800

<u>In normal conditions as specified in section 5.4.1 the intermodulation performance should be met when the following signals are applied to the Repeater:</u>

<u>Table 11.4a: Input intermodulation requirements for interfering signals in the GSM900 and DCS1800 bands</u>

Frequency of interfering signals	Interfering Signal Levels	Type of signals	Measurement bandwidth
876 - 915 MHz	<u>-15 dBm</u>	2 CW carriers	1 MHz
1710 - 1785 MHz	-15 dBm	2 CW carriers	1 MHz

For the parameters specified in table 11.4a, the power in the operating band shall not increase with more than 11,2 dB at the output of the repeater as measured in the centre of the operating band, compared to the level obtained without interfering signals applied.