

ETSI TS 102 735 V7.1.0 (2010-01)

Technical Specification

**Universal Mobile Telecommunications System (UMTS);
Band-specific requirements for UMTS
Frequency Division Duplex (FDD) operation in the bands
1 900 MHz to 1 920 MHz paired with 2 600 MHz to 2 620 MHz
and 2 010 MHz to 2 025 MHz paired with 2 585 MHz to 2 600 MHz**



Reference

RTS/MSG-002600FDDr2

Keywords

FDD, radio, UMTS

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Mobile Standards Group (MSG).

1 Scope

The present document defines the Band Specific Requirements for UMTS FDD operation in the bands 2 570 MHz to 2 620 MHz paired with 1 900 MHz to 1 920 MHz and 2 010 MHz to 2 025 MHz. These requirements apply in addition to what is specified by the ETSI deliverables of the 3GPP specifications.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
 - for informative references.

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2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ITU-R Recommendation SM.329: "Unwanted emissions in the spurious domain".
- [2] ETSI TS 125 101: "Universal Mobile Telecommunications System (UMTS); User Equipment (UE) radio transmission and reception (FDD) (Release 7)".
- [3] ETSI TS 125 104: "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (FDD) (Release 7)".
- [4] See reference [1].
- [5] ETSI TS 125 113: "Universal Mobile Telecommunications System (UMTS); Base station and repeater electromagnetic compatibility (EMC) (Release 7)".
- [6] ETSI TS 125 133: "Universal Mobile Telecommunications System (UMTS); Requirements for support of radio resource management (FDD) (Release 7)".
- [7] ETSI TS 125 141: "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (FDD) (Release 7)".
- [8] ETSI TS 125 307: "Universal Mobile Telecommunications System (UMTS); Requirements on User Equipments (UEs) supporting a release-independent frequency band (Release 7)".
- [9] ETSI TS 125 331: "Universal Mobile Telecommunications System (UMTS); Radio Resource Control (RRC); Protocol specification (Release 7)".
- [10] ETSI TS 125 461: "Universal Mobile Telecommunications System (UMTS); UTRAN Iuant interface: Layer 1 (Release 7)".

- [11] ETSI TS 125 463: "Universal Mobile Telecommunications System (UMTS); UTRAN Iuant interface: Remote Electrical Tilting (RET) antennas Application Part (RETAP) signalling (Release 7)".
- [12] ETSI TS 134 124: "Universal Mobile Telecommunications System (UMTS); Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment (Release 7)".
- [13] ETSI TS 125 307: "Universal Mobile Telecommunications System (UMTS); Requirements on UEs supporting a release-independent frequency band (Release 5)".
- [14] ETSI TS 125 307: "Universal Mobile Telecommunications System (UMTS); Requirements on User Equipments (UEs) supporting a release-independent frequency band (Release 6)".
- [15] ETSI TR 121 905: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Vocabulary for 3GPP Specifications".
- [16] ETSI TS 125 106: "Universal Mobile Telecommunications System (UMTS); UTRA repeater radio transmission and reception (Release 7)".
- [17] ETSI TS 125 143: "Universal Mobile Telecommunications System (UMTS); UTRA repeater conformance testing (Release 7)".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Not applicable.

3 Definitions, symbols and abbreviations

For the purposes of the present document, the terms and definitions, symbols and abbreviations given in [1] to [15] apply.

4 Band Specific Requirements for Band XV and XVI

Band XV for UTRA FDD is defined with:

- Uplink in 1 900 MHz to 1 920 MHz.
- Downlink in 2 600 MHz to 2 620 MHz.

Band XVI for UTRA FDD is defined with:

- Uplink in 2 010 MHz to 2 025 MHz.
- Downlink in 2 585 MHz to 2 600 MHz.

Band XV and Band XVI operation is defined by the relevant ETSI deliverables of the 3GPP specification as amended by the present document. For the ETSI deliverables of the 3GPP specifications in table 4.1, additional requirements and specifications shall apply as referenced in the table. The additional requirements are detailed in clause 5 through clause 14 of the present document.

Table 4.1: Overview of additional requirements that applies for Band XV and XVI

Requirements	ETSI specification	Additional requirements
User Equipment (UE) transmission and reception (FDD)	TS 125 101 [2]	clause 5
Base Station (BS) transmission and reception (FDD)	TS 125 104 [3]	clause 6
Base station and repeater electromagnetic compatibility (EMC)	TS 125 113 [5]	clause 7
Requirements for support of radio resource management (FDD)	TS 125 133 [6]	clause 8
Base Station (BS) conformance testing (FDD)	TS 125 141 [7]	clause 9
Radio Resource Control (RRC); Protocol specification	TS 125 331 [9]	clause 10
UTRAN Iuant interface: Layer 1	TS 125 461 [10]	clause 11
UTRAN Iuant interface: Remote Electrical Tilting (RET) antennas Application Part (RETAP) signalling	TS 125 463 [11]	clause 12
Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment	TS 134 124 [12]	clause 13
Requirements on User Equipments (UEs) supporting a release-independent frequency band	TS 125 307 [13] and [14]	clause 14

4.1 Release independence of Band XV and XVI requirements

Standardization of new frequency bands is generally done independent of a release. In order to implement a UE that conforms to a particular release but supports a band of operation that is specified in a later release, it is necessary to specify some extra requirements. These additional requirements are identified in clause 14.

5 Requirements additional to those of TS 125 101

This clause gives requirements applicable to UEs operating in Band XV and XVI. These requirements are additional to those given in TS 125 101 [2]. Each additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of each requirement identified below are detailed in TS 125 101 [2].

5.1 Frequency bands and channel arrangement

5.1.1 Frequency bands

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	5.2
Original table reference in [2]	Table 5.0
Additional requirement in present document	Table entries for Bands XV and XVI as in table 5.1

Table 5.1: UTRA FDD frequency bands

Operating Band	UL Frequencies UE transmit, Node B receive	DL frequencies UE receive, Node B transmit
XV	1900-1920 MHz	2600-2620 MHz
XVI	2010-2025 MHz	2585-2600 MHz

5.1.2 TX-RX frequency separation

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	5.3
Original table reference in [2]	Table 5.0A
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 5.2

Table 5.2: TX-RX frequency separation

Operating Band	TX-RX frequency separation
XV	700 MHz
XVI	575 MHz

5.1.3 Channel arrangement

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	5.4.3, 5.4.4
Original table reference in [2]	Tables 5.1, 5.1A and 5.2
Additional requirement in present document	Table entries for Bands XV and XVI as in Tables 5.3, 5.4 and 5.5

Table 5.3: UARFCN definition (general)

Band	UPLINK (UL) UE transmit, Node B receive			DOWNLINK (DL) UE receive, Node B transmit		
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency (F_{UL}) range [MHz]		UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency (F_{DL}) range [MHz]	
		F_{UL_low}	F_{UL_high}		F_{DL_low}	F_{DL_high}
XV	240	1902.4	1917.6	840	2602.4	2617.6
XVI	380	2012.4	2022.6	855	2587.4	2597.6

Table 5.4: UARFCN definition (additional channels)

Band	UPLINK (UL) UE transmit, Node B receive		DOWNLINK (DL) UE receive, Node B transmit	
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency [MHz] (F_{UL})	UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency [MHz] (F_{DL})
XV	220.1	1902.5, 1907.5, 1912.5, 1917.5	820.1	2602.5, 2607.5, 2612.5, 2617.5
XVI	365.1	2012.5, 2017.5, 2022.5	840.1	2587.5, 2592.5, 2597.5

Table 5.5: UTRA Absolute Radio Frequency Channel Number

Band	Uplink (UL) UE transmit, Node B receive		Downlink (DL) UE receive, Node B transmit	
	General	Additional	General	Additional
XV	8312 to 8388	8412, 8437, 8462, 8487	8812 to 8888	8912, 8937, 8962, 8987
XVI	8162 to 8213	8237, 8262, 8287	8662 to 8713	8737, 8762, 8787

5.2 Transmitter characteristics

5.2.1 UE maximum output power

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	6.2.1
Original table reference in [2]	Table 6.1
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 5.6

Table 5.6: UE Power Classes

Operating Band	Power Class 1		Power Class 2		Power Class 3		Power Class 3bis		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
Band XV	-	-	-	-	+24	+1/-3	+23	+2/-1	+21	+2/-1
Band XVI	-	-	-	-	+24	+1/-3	+23	+2/-1	+21	+2/-1

5.2.2 Spectrum emission mask

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	6.6.2.1.1
Original table reference in [2]	Table 6.10
Additional requirement in present document	None
NOTE:	Additional requirements for spectrum emission mask are not needed.

5.2.3 Spurious emissions

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	6.6.3.1
Original table reference in [2]	Table 6.13
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 5.7. For Bands I, III, VII and VIII, only requirement in the Band XV and XVI related frequency ranges are shown here

Table 5.7: Additional spurious emissions requirements

Operating Band	Frequency Bandwidth	Measurement Bandwidth	Minimum requirement
I	$2585 \text{ MHz} \leq f \leq 2690 \text{ MHz}$	3.84 MHz	-60 dBm
III	$2585 \text{ MHz} \leq f \leq 2690 \text{ MHz}$	3.84 MHz	-60 dBm
VII	$2590 \text{ MHz} \leq f \leq 2620 \text{ MHz}$	3.84 MHz	-50 dBm
VIII	$2585 \text{ MHz} \leq f \leq 2640 \text{ MHz}$	3.84 MHz	-60 dBm
	$2640 \text{ MHz} < f \leq 2690 \text{ MHz}$	3.84 MHz	-60 dBm **
XV	$921 \text{ MHz} \leq f \leq 925 \text{ MHz}$	100 kHz	-60 dBm *
	$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm *
		3.84 MHz	-60 dBm
	$935 \text{ MHz} \leq f \leq 960 \text{ MHz}$	100 kHz	-79 dBm *
	$1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$	100 kHz	-71 dBm *
	$2110 \text{ MHz} \leq f \leq 2170 \text{ MHz}$	3.84 MHz	-60 dBm
	$2585 \text{ MHz} \leq f \leq 2620 \text{ MHz}$	3.84 MHz	-50 dBm
$2620 \text{ MHz} \leq f \leq 2690 \text{ MHz}$	3.84 MHz	-60 dBm	

Operating Band	Frequency Bandwidth	Measurement Bandwidth	Minimum requirement
XVI	$921 \text{ MHz} \leq f \leq 925 \text{ MHz}$	100 kHz	-60 dBm *
	$925 \text{ MHz} \leq f \leq 935 \text{ MHz}$	100 kHz	-67 dBm *
		3.84 MHz	-60 dBm
	$935 \text{ MHz} \leq f \leq 960 \text{ MHz}$	100 kHz	-79 dBm *
	$1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$	100 kHz	-71 dBm *
	$2110 \text{ MHz} \leq f \leq 2170 \text{ MHz}$	3.84 MHz	-60 dBm
	$2585 \text{ MHz} \leq f \leq 2620 \text{ MHz}$	3.84 MHz	-50 dBm
	$2620 \text{ MHz} \leq f \leq 2690 \text{ MHz}$	3.84 MHz	-60 dBm
NOTE *	The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in Table 6.12 are permitted for each UARFCN used in the measurement.		
NOTE **	The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, measurements with a level up to the applicable requirements defined in Table 6.12 are permitted for each UARFCN used in the measurement due to 2nd or 3rd harmonic spurious emissions.		

5.3 Receiver characteristics

5.3.1 Reference sensitivity level

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	7.3.1
Original table reference in [2]	Table 7.2
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 5.8

Table 5.8: Test parameters for reference sensitivity

Operating Band	Unit	DPCH_Ec <REFSENS>	<REFI _{or} >
XV	dBm/3.84 MHz	-115	-104.7
XVI	dBm/3.84 MHz	-115	-104.7
NOTE 1: For Power class 3 and 3bis this shall be at the maximum output power.			
NOTE 2: For Power class 4 this shall be at the maximum output power.			

5.3.2 Minimum requirement (In-band blocking)

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	7.6.1
Original table reference in [2]	Table 7.6
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 5.9

Table 5.9: In-band blocking

Parameter	Unit	Level	
DPCH_Ec	dBm/3.84 MHz	<REFSENS>+3 dB	
I _{or}	dBm/3.84 MHz	<REFI _{or} > + 3 dB	
I _{blocking} mean power (modulated)	dBm	-56	-44
F _{uw} offset		= ±10 MHz	≤ -15 MHz & ≥ 15 MHz
F _{uw} (Band XV operation)	MHz	2 592.4 ≤ f ≤ 2 627.4 (Note 2)	2 585 ≤ f ≤ 2 705
F _{uw} (Band XVI operation)	MHz	2 577.4 ≤ f ≤ 2 607.6 (Note 2)	2 570 ≤ f ≤ 2 705
UE transmitted mean power	dBm	20 (for Power class 3 and 3bis) 18 (for Power class 4)	

NOTE 2: For each carrier frequency the requirement is valid for two frequencies, the carrier frequency ±10 MHz.

5.3.3 Minimum requirement (Out of-band blocking)

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	7.6.2
Original table reference in [2]	Table 7.7
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 5.10

Table 5.10: Out of band blocking

Parameter	Unit	Frequency range 1	Frequency range 2	Frequency range 3	Frequency range 4
DPCH_Ec	dBm / 3.84 MHz	<REFSENS>+3 dB	<REFSENS>+3 dB	<REFSENS>+3 dB	<REFSENS> +3 dB
I _{or}	dBm / 3.84 MHz	<REFI _{or} > + 3 dB	<REFI _{or} > + 3 dB	<REFI _{or} > + 3 dB	<REFI _{or} > + 3 dB
I _{blocking} (CW)	dBm	-44	-30	-15	-15
F _{uw} (Band XV operation)	MHz	2570 < f < 2585 2705 < f < 2750	2750 ≤ f < 2775	1 < f ≤ 2570 2775 ≤ f < 12750	-
F _{uw} (Band X operation)	MHz	2705 < f < 2750	2500 < f ≤ 2570 2750 ≤ f < 2775	1 < f ≤ 2500 2775 ≤ f < 12750	-
UE transmitted mean power	dBm	20 (for Power class 3 and 3bis) 18 (for Power class 4)			
Band XV operation	For 2585 ≤ f ≤ 2705 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 7.5.1 and clause 7.6.1 shall be applied.				
Band XVI operation	For 2570 ≤ f ≤ 2705 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 7.5.1 and clause 7.6.1 shall be applied				

5.3.4 RX spurious emissions

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	7.9.1
Original table reference in [2]	Table 7.11
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 5.11. For Bands I, III, VII and VIII, only requirement in the Band XV and XVI related frequency ranges are shown here

Table 5.11: Additional receiver spurious emission requirements

Band	Frequency Band	Measurement Bandwidth	Maximum level	Note
I	2585 MHz ≤ f ≤ 2690 MHz	3.84 MHz	-60 dBm	
III	2585 MHz ≤ f ≤ 2690 MHz	3.84 MHz	-60 dBm	
VII	2590 MHz ≤ f ≤ 2620 MHz	3.84 MHz	-50 dBm	
VII	2585 MHz ≤ f ≤ 2690 MHz	3.84 MHz	-60 dBm	
XV	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *	
	925 MHz ≤ f < 935 MHz	100 kHz	-67 dBm *	
		3.84 MHz	-60 dBm	
	935 MHz ≤ f ≤ 960 MHz	100 kHz	-79 dBm *	
	1805 MHz ≤ f ≤ 1880 MHz	100 kHz	-71 dBm *	
	1900 MHz ≤ f ≤ 1920 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	
XVI	2585 MHz ≤ f ≤ 2690 MHz	3.84 MHz	-60 dBm	UE receive band
	921 MHz ≤ f < 925 MHz	100 kHz	-60 dBm *	
	925 MHz ≤ f < 935 MHz	100 kHz	-67 dBm *	
		3.84 MHz	-60 dBm	
	935 MHz ≤ f ≤ 960 MHz	100 kHz	-79 dBm *	
	1805 MHz ≤ f ≤ 1880 MHz	100 kHz	-71 dBm *	
	2010 MHz ≤ f ≤ 2025 MHz	3.84 MHz	-60 dBm	UE transmit band in URA_PCH, Cell_PCH and idle state
	2110 MHz ≤ f ≤ 2170 MHz	3.84 MHz	-60 dBm	
2585 MHz ≤ f ≤ 2690 MHz	3.84 MHz	-60 dBm	UE receive band	

5.4 Performance requirements

5.4.1 Multi-path fading propagation conditions

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	B.2.2
Original table reference in [2]	Tables B.1, B.1B, B.1C and B.1D
Additional requirement in present document:	Table entries for Bands XV and XVI as in Table 5.12, 5.13, 5.14, 5.15

Table 5.12: Propagation Conditions for Multi path Fading Environments (Cases 1 to 6)

Case 1		Case 2		Case 3		Case 4		Case 5 (Note 1)		Case 6	
Speed for Band XV and XVI: 2.3 km/h		Speed for Band XV and XVI: 2.3 km/h		Speed for Band XV and XVI: 92 km/h		Speed for Band XV and XVI: 2.3 km/h		Speed for Band XV and XVI: 38 km/h		Speed for Band XV and XVI: 192 km/h	
Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]	Relative Delay [ns]	Relative mean Power [dB]
0	0	0	0	0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	976	0	976	-10	260	-3
		20000	0	521	-6					521	-6
				781	-9					781	-9

NOTE 1: Case 5 is only used in TS 125 133 [6].

NOTE 2: Speed above 250 km/h is applicable to demodulation performance requirements only.

Table 5.13: Propagation Conditions for Multi-Path Fading Environments for HSDPA Performance Requirements

ITU Pedestrian A Speed 3 km/h (PA3)		ITU Pedestrian B Speed 3 km/h (PB3)		ITU vehicular A Speed 30 km/h (VA30)		ITU vehicular A Speed 120 km/h (VA120)	
Speed for Band XV and XVI: 2.3 km/h		Speed for Band XV and XVI: 2.3 km/h		Speed for Band XV and XVI: 23 km/h		Speed for Band XV and XVI: 92 km/h	
Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]
0	0	0	0	0	0	0	0
110	-9.7	200	-0.9	310	-1.0	310	-1.0
190	-19.2	800	-4.9	710	-9.0	710	-9.0
410	-22.8	1200	-8.0	1090	-10.0	1090	-10.0
		2300	-7.8	1730	-15.0	1730	-15.0
		3700	-23.9	2510	-20.0	2510	-20.0

NOTE 1: Speed above 120 km/h is applicable to demodulation performance requirements only.

Table 5.14: Propagation Conditions for CQI test in multi-path fading

Case 8, Speed for Band XV and XVI: 23 km/h	
Relative Delay [ns]	Relative mean Power [dB]
0	0
976	-10

Table 5.15: Propagation Conditions for Multi-Path Fading Environments for MBMS Performance Requirements

ITU vehicular A Speed 3 km/h (VA 3)	
Speed for Band XV and XVI: 2.3 km/h	
Relative Delay [ns]	Relative Mean Power [dB]
0	0
310	-1.0
710	-9.0
1090	-10.0
1730	-15.0
2510	-20.0

5.5 UARFCN numbers

NOTE: This clause is informative, as it refers to the informative clause E.1 in TS 125 101 [2].

Specification reference:	TS 125 101 [2]
Original clause reference in [2]	E.2
Original table reference in [2]	Table E.1
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 5.16

Table 5.16: UARFCN used for the UTRA FDD bands

UTRA FDD Band	Band range [MHz]	Range res. [MHz]	Uplink UARFCN				Downlink UARFCN			
			Formula offset F_{UL_Offset} [MHz]	Assigned/Reserved	N_U	F_{UL} [MHz]	Formula offset F_{DL_Offset} [MHz]	Assigned/Reserved	N_D	F_{DL} [MHz]
XV	2x20	2x20	240	Start res.	8300	1900.0	840	Start res.	8800	2600.0
				Min.	8312	1902.4		Min.	8812	2602.4
				Max.	8388	1917.6		Max.	8888	2617.6
				Stop res.	8399	1919.8		Stop res.	8899	2619.8
XV (Add.)	2x20	2x20	220.1	Start res.	8400	1900.1	820.1	Start res.	8900	2600.1
				Min.	8412	1902.5		Min.	8912	2602.5
				Max.	8487	1917.5		Max.	8987	2617.5
				Stop res.	8499	1919.9		Stop res.	8999	2619.9
XVI	2x 15	2x 15	380	Start res.	8150	2010.0	855	Start res.	8650	2585.0
				Min.	8162	2012.4		Min.	8662	2587.4
				Max.	8213	2022.6		Max.	8713	2597.6
				Stop res.	8224	2024.8		Stop res.	8724	2599.8
XVI (Add.)	2x 15	2x 15	365.1	Start res.	8225	2010.1	840.1	Start res.	8725	2585.1
				Min.	8237	2012.5		Min.	8737	2587.5
				Max.	8287	2022.5		Max.	8787	2597.5
				Stop res.	8299	2024.9		Stop res.	8799	2599.9

6 Requirements additional to those of TS 125 104

This clause gives requirements applicable to Base Stations operating in Band XV and XVI. These requirements are additional to those given in TS 125 104 [3]. Each additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of each requirement identified below are detailed in TS 125 104 [3].

6.1 Frequency bands and channel arrangements

6.1.1 Frequency bands

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	5.2
Original table reference in [3]	Table 5.0
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 6.1

Table 6.1: Frequency bands

Operating Band	UL Frequencies	DL frequencies
	UE transmit, Node B receive	UE receive, Node B transmit
XV	1900 - 1920 MHz	2600 - 2620 MHz
XVI	2010 - 2025 MHz	2585 - 2600 MHz

6.1.2 TX-RX frequency separation

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	5.3
Original table reference in [3]	Table 5.0A
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 6.2

Table 6.2: Tx-Rx frequency separation

Operating Band	TX-RX frequency separation
XV	700 MHz
XVI	575 MHz

6.1.3 Channel number

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	5.4.3
Original table reference in [3]	Tables 5.1 and 5.1A
Additional requirement in present document	Table entries for Bands XV and XVI as in Tables 6.3 and 6.4

Table 6.3: UARFCN definition (general)

Band	UPLINK (UL) UE transmit, Node B receive			DOWNLINK (DL) UE receive, Node B transmit		
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency (F_{UL}) range [MHz]		UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency (F_{DL}) range [MHz]	
		F_{UL_low}	F_{UL_high}		F_{DL_low}	F_{DL_high}
XV	240	1902.4	1917.6	840	2602.4	2617.6
XVI	380	2012.4	2022.6	855	2587.4	2597.6

Table 6.4: UARFCN definition (additional channels)

Band	UPLINK (UL) UE transmit, Node B receive		DOWNLINK (DL) UE receive, Node B transmit	
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency [MHz] (F_{UL})	UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency [MHz] (F_{DL})
XV	220.1	1902.5, 1907.5, 1912.5, 1917.5	820.1	2602.5, 2607.5, 2612.5, 2617.5
XVI	365.1	2012.5, 2017.5, 2022.5	840.1	2587.5, 2592.5, 2597.5

6.2 Transmitter Characteristics

6.2.1 Spectrum emission mask

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	6.6.2.1
Original table reference in [3]	Tables 6.3, 6.4, 6.5 and 6.6
Additional requirement in present document	Requirements in third column of Tables 6.5, 6.6, 6.7 and 6.8 are applicable to Band XV and XVI

Table 6.5: Spectrum emission mask values, BS maximum output power $P \geq 43$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Minimum requirement Band XV, XVI	Additional requirements	Measurement bandwidth ²
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	-14 dBm	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$-14 \text{ dBm} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
(see note 3)	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	-26 dBm	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-13 dBm	NA	1 MHz

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE 3: This frequency range ensures that the range of values of f_{offset} is continuous.

Table 6.6: Spectrum emission mask values, BS maximum output power $39 \leq P < 43$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Minimum requirement Band XV, XVI	Additional requirements	Measurement bandwidth ²
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	-14 dBm	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$-14 \text{ dBm} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
(see note 3)	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	-26 dBm	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	-13 dBm	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	$P - 56 \text{ dB}$	NA	1 MHz

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE 3: This frequency range ensures that the range of values of f_{offset} is continuous.

Table 6.7: Spectrum emission mask values, BS maximum output power $31 \leq P < 39$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Minimum requirement Band XV, XVI	Additional requirements	Measurement bandwidth ²
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	$P - 53 \text{ dB}$	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$P - 53 \text{ dB} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
(see note 3)	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	$P - 65 \text{ dB}$	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	$P - 52 \text{ dB}$	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	$P - 56 \text{ dB}$	NA	1 MHz

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE 3: This frequency range ensures that the range of values of f_{offset} is continuous.

Table 6.8: Spectrum emission mask values, BS maximum output power $P < 31$ dBm

Frequency offset of measurement filter -3dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Minimum requirement Band XV, XVI	Measurement bandwidth ²
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	-22 dBm	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$-22 \text{ dBm} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	30 kHz
(see note 3)	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	-34 dBm	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	-21 dBm	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-25 dBm	1 MHz

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE 3: This frequency range ensures that the range of values of f_{offset} is continuous.

6.2.2 Spurious emissions (Category B)

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	6.6.3.1.2
Original table reference in [3]	Table 6.9
Additional requirement in present document	Table 6.9 is applicable to Bands XV and XVI

Table 6.9: BS Mandatory spurious emissions limits, operating band XV, XVI (Category B)

Band	Maximum Level	Measurement Bandwidth	Note
9 kHz ↔ 150 kHz	-36 dBm	1 kHz	Note 1
150 kHz ↔ 30 MHz	-36 dBm	10 kHz	Note 1
30 MHz ↔ 1 GHz	-36 dBm	100 kHz	Note 1
1 GHz ↔ $F_{low} - 10$ MHz	-30 dBm	1 MHz	Note 1
$F_{low} - 10$ MHz ↔ $F_{high} + 10$ MHz	-15 dBm	1 MHz	Note 2
$F_{high} + 10$ MHz ↔ 12.75 GHz	-30 dBm	1 MHz	Note 3
NOTE 1: Bandwidth as in ITU-R Recommendation SM.329 [1], s4.1.			
NOTE 2: Limit based on ITU-R Recommendation SM.329 [1], s4.3 and Annex 7.			
NOTE 3: Bandwidth as in ITU-R Recommendation SM.329 [1], s4.1. Upper frequency as in ITU-R Recommendation SM.329 [1], s2.5 Table 1.			
Key:			
F_{low} : The lowest downlink frequency of the operating band as defined in Table 5.0.			
F_{high} : The highest downlink frequency of the operating band as defined in Table 5.0.			

6.2.3 Protection of the BS receiver of own or different BS

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	6.6.3.2
Original table reference in [3]	Tables 6.10, 6.10A and 6.10B
Additional requirement in present document	Table entries for Bands XV and XVI as in Tables 6.10, 6.11 and 6.12

Table 6.10: Wide Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-96 dBm	100 kHz	
XVI	2010 - 2025 MHz	-96 dBm	100 kHz	

Table 6.11: Medium Range BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-86 dBm	100 kHz	
XVI	2010 - 2025 MHz	-86 dBm	100 kHz	

Table 6.12: Local Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-82 dBm	100 kHz	
XVI	2010 - 2025 MHz	-82 dBm	100 kHz	

6.2.4 Co-existence with other systems in the same geographical area

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	6.6.3.3
Original table reference in [3]	Table 6.11
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 6.13

Table 6.13: BS Spurious emissions limits for UTRA FDD BS in geographic coverage area of systems operating in other frequency bands

System type operating in the same geographical area	Band for co-existence requirement	Maximum Level	Measurement Bandwidth	Note
FDD Band XV	2600 - 2620 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA FDD BS operating in band XV
	1900 - 1920 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA FDD BS operating in band XV, since it is already covered by the requirement in clause 6.2.3.
FDD Band XVI	2585 - 2600 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA FDD BS operating in band XVI
	2010 - 2025 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA FDD BS operating in band XVI, since it is already covered by the requirement in clause 6.2.3.

6.2.5 Co-existence with co-located and co-sited base stations

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	6.6.3.4
Original table reference in [3]	Tables 6.12, 6.13 and 6.14
Additional requirement in present document	Table entries for Bands XV and XVI as in Tables 6.14, 6.15 and 6.16

Table 6.14: BS Spurious emissions limits for Wide Area BS co-located with another BS

Type of co-located BS	Band for co-location requirement	Maximum Level	Measurement Bandwidth	Note
WA UTRA FDD Band XV	1900 - 1920 MHz	-96 dBm	100 kHz	
WA UTRA FDD Band XVI	2010 - 2025 MHz	-96 dBm	100 kHz	

Table 6.15: BS Spurious emissions limits for Medium Range BS co-located with another BS

Type of co-located BS	Band for co-location requirement	Maximum Level	Measurement Bandwidth	Note
MR UTRA FDD Band XV	1900 - 1920 MHz	-86 dBm	100 kHz	
MR UTRA FDD Band XVI	2010 - 2025 MHz	-86 dBm	100 kHz	

Table 6.16: BS Spurious emissions limits for Local Area BS co-located with another BS

Type of co-located BS	Band for co-location requirement	Maximum Level	Measurement Bandwidth	Note
LA UTRA FDD Band XV	1900 - 1920 MHz	-82 dBm	100 kHz	
LA UTRA FDD Band XVI	2010 - 2025 MHz	-82 dBm	100 kHz	

6.3 Receiver characteristics

6.3.1 Blocking characteristics

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	7.5
Original table reference in [3]	Tables 7.4, 7.4A and 7.4B
Additional requirement in present document	Table entries for Bands XV and XVI and additional note (**) as in Tables 6.17, 6.18 and 6.19

Table 6.17: Blocking performance requirement for Wide Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
XV	1900 - 1920 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz 1920 - 1940 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 1940 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
XV and I **	1900 - 1980 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz 1980 - 2000 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 2000 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
XVI	2010 - 2025 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1990 - 2010 MHz 2025 - 2045 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1990 MHz 2045 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier

NOTE *: The characteristics of the W-CDMA interference signal are specified in Annex C.
NOTE **: This requirements applies for a BS supporting both Band XV and Band I.

Table 6.18: Blocking performance requirement for Medium range BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
XV	1900 - 1920 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz 1920 - 1940 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 1940 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
XV and I **	1900 - 1980 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz 1980 - 2000 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 2000 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
XVI	2010 - 2025 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1990 - 2010 MHz 2025 - 2045 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1990 MHz 2045 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier

NOTE *: The characteristics of the W-CDMA interference signal are specified in Annex C.
NOTE **: This requirements applies for a BS supporting both Band XV and Band I.

Table 6.19: Blocking performance requirement for Local Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
XV	1900 - 1920 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1920 - 1940 MHz				
XV and I **	1 MHz - 1880 MHz	-15 dBm	-101 dBm	—	CW carrier
	1940 MHz - 12750 MHz				
	1900 - 1980 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
XVI	1980 - 2000 MHz				
	1 MHz - 1880 MHz	-15 dBm	-101 dBm	—	CW carrier
	2000 MHz - 12750 MHz				
	2010 - 2025 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1990 - 2010 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
XVI	2025 - 2045 MHz				
	1 MHz - 1990 MHz	-15 dBm	-101 dBm	—	CW carrier
	2045 MHz - 12750 MHz				

NOTE *: The characteristics of the W-CDMA interference signal are specified in Annex C.
NOTE **: This requirements applies for a BS supporting both Band XV and Band I.

6.3.2 Blocking for co-location with UTRA FDD

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	7.5.2
Original table reference in [3]	Tables 7.5C, 7.5D and 7.5E
Additional requirement in present document	Table entries for Bands XV and XVI as in Tables 6.20, 6.21 and 6.22

Table 6.20: Blocking performance requirement for Wide Area BS when co-located with BS in other bands

Co-located BS type	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Type of Interfering Signal
WA UTRA-FDD Band XV	2600 - 2620 MHz	+16 dBm	-115 dBm	CW carrier
WA UTRA-FDD Band XVI	2585 - 2600 MHz	+16 dBm	-115 dBm	CW carrier

Table 6.21: Blocking performance requirement for Medium Range BS when co-located with BS in other bands

Co-located BS type	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Type of Interfering Signal
MR UTRA-FDD Band XV	2600 - 2620 MHz	+8 dBm	-105 dBm	CW carrier
MR UTRA-FDD Band XVI	2585 - 2600 MHz	+8 dBm	-105 dBm	CW carrier

Table 6.22: Blocking performance requirement for Local Area BS when co-located with BS in other bands

Co-located BS type	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Type of Interfering Signal
LA UTRA-FDD Band XV	2600 - 2620 MHz	-6 dBm	-101 dBm	CW carrier
LA UTRA-FDD Band XVI	2585 - 2600 MHz	-6 dBm	-101 dBm	CW carrier

6.3.3 Receiver spurious emissions

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	7.7
Original table reference in [3]	Table 7.7A
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 6.23

Table 6.23: Additional spurious emission requirements

Operating Band	Band	Maximum level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-78 dBm	3.84 MHz	
XVI	2010 - 2025 MHz	-78 dBm	3.84 MHz	

6.4 Performance requirements

6.4.1 Multi-path fading propagation conditions

Specification reference:	TS 125 104 [3]
Original clause reference in [3]	B.2 and B.5
Original table reference in [3]	Tables B.1 and B.3
Additional requirement in present document	Tables are applicable for Bands XV and XVI as in Tables 6.24 and 6.25

Table 6.24: Propagation Conditions for Multi path Fading Environments

Case 1		Case 2		Case 3		Case 4	
Speed for Band XV, XVI 3 km/h		Speed for Band XV, XVI 3 km/h		Speed for Band XV, XVI 120 km/h		Speed for Band XV, XVI 250 km/h	
Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]
0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	260	-3
		20000	0	521	-6	521	-6
				781	-9	781	-9

Table 6.25: Propagation Conditions for Multipath Fading Environments for E-DPDCH and E-DPCCH Performance Requirements

ITU Pedestrian A Speed 3 km/h (PA3)		ITU Pedestrian B Speed 3 km/h (PB3)		ITU vehicular A Speed 30 km/h (VA30)		ITU vehicular A Speed 120 km/h (VA120)	
Speed for Band XV, XVI 3 km/h		Speed for Band XV, XVI 3 km/h		Speed for Band XV, XVI 30 km/h		Speed for Band XV, XVI 120 km/h	
Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]
0	0	0	0	0	0	0	0
110	-9.7	200	-0.9	310	-1.0	310	-1.0
190	-19.2	800	-4.9	710	-9.0	710	-9.0
410	-22.8	1200	-8.0	1090	-10.0	1090	-10.0
		2300	-7.8	1730	-15.0	1730	-15.0
		3700	-23.9	2510	-20.0	2510	-20.0

NOTE 1: Speed above 120 km/h is applicable to demodulation performance requirements only.

7 Requirements additional to those of TS 125 113 [5]

This clause gives requirements applicable to Base Stations operating in Band XV and XVI. These requirements are additional to those given in TS 125 113 [5]. Each additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of each requirement identified below are detailed in TS 125 113 [5]. The requirement should be interpreted together with the original clause in [5] as outlined below.

7.1 Receiver exclusion band

Specification reference:	TS 125 113 [5]
Original clause reference in [5]	4.5.2
Additional requirement in present document:	Additional entries for UTRA FDD Bands XV and XVI as below

- o) 1880 MHz to 1940 MHz (Band XV)
- p) 1990 MHz to 2045 MHz (Band XVI)

8 Requirements additional to those of TS 125 133

This clause gives requirements for support of Radio Resource Management for FDD in Bands XV and XVI. These requirements are additional to those given in TS 125 133 [6]. Each requirement identified below is specified with a description of how it applies to Bands XV and XVI together with a reference, while the prerequisites and further definitions of the identified requirement are detailed in TS 125 133 [6].

8.1 Measurement Performance for UE

8.1.1 CPICH RSCP

8.1.1.1 Intra frequency measurements accuracy

8.1.1.1.1 Absolute accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.1.1.1
Original table reference in [6]	Table 9.1
Additional requirement in present document	The requirements in the original Table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1_{dBm} \geq -112$ dBm for Bands XV and XVI,

$$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH - E_c}{I_{or}} \right)_{in\ dB} \leq 20dB$$

8.1.1.1.2 Relative accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.1.1.2
Original table reference in [6]	Table 9.2
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1_{dBm} \geq -112$ dBm for Bands XV and XVI,

$$\left| CPICH_RSCP1_{in\ dBm} - CPICH_RSCP2_{in\ dBm} \right| \leq 20dB$$

$$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}} \right)_{in\ dB} \leq 20dB$$

8.1.1.2 Inter frequency measurement accuracy

8.1.1.2.1 Relative accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.1.2.1
Original table reference in [6]	Table 9.3
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1_{dBm} \geq -112$ dBm if CPICH_RSCP1 is on Bands XV and XVI,

$CPICH_RSCP2_{dBm} \geq -112$ dBm if CPICH_RSCP2 is on Bands XV and XVI,

$$\left| CPICH_RSCP1_{in\ dBm} - CPICH_RSCP2_{in\ dBm} \right| \leq 20dB$$

$|\text{Channel 1_Io}_{dBm/3,84\ MHz} - \text{Channel 2_Io}_{dBm/3,84\ MHz}| \leq 20$ dB.

$$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}} \right)_{in\ dB} \leq 20dB$$

8.1.2 CPICH Ec/Io

8.1.2.1 Intra frequency measurements accuracy

8.1.2.1.1 Absolute accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.2.1.1
Original table reference in [6]	Table 9.5
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1|_{dBm} \geq -112$ dBm for Bands XV and XVI,

$$\left| \frac{I_o}{\hat{I}_{or}} \right|_{in\ dB} - \left(\frac{CPICH - E_c}{I_{or}} \right)_{in\ dB} \leq 20dB$$

8.1.2.1.2 Relative accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.2.1.2
Original table reference in [6]	Table 9.6
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1,2|_{dBm} \geq -112$ dBm for Bands XV and XVI,

$$\left| CPICH_RSCP1|_{in\ dBm} - CPICH_RSCP2|_{in\ dBm} \right| \leq 20dB$$

$$\left| \frac{I_o}{\hat{I}_{or}} \right|_{in\ dB} - \left(\frac{CPICH - E_c}{I_{or}} \right)_{in\ dB} \leq 20dB$$

8.1.2.2 Inter frequency measurement accuracy

8.1.2.2.1 Absolute accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.2.2.1
Original table reference in [6]	Table 9.7
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1|_{dBm} \geq -112$ dBm for Bands XV and XVI,

$$\left| \frac{I_o}{\hat{I}_{or}} \right|_{in\ dB} - \left(\frac{CPICH - E_c}{I_{or}} \right)_{in\ dB} \leq 20dB$$

8.1.2.2.2 Relative accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.2.2.2
Original table reference in [6]	Table 9.8
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1|_{dBm} \geq -112$ dBm if CPICH_RSCP1 is on Bands XV and XVI,

$CPICH_RSCP2|_{dBm} \geq -112$ dBm if CPICH_RSCP2 is on Bands XV and XVI,

$$\left| CPICH_RSCP1|_{in\ dBm} - CPICH_RSCP2|_{in\ dBm} \right| \leq 20\text{dB}$$

$| \text{Channel 1_Io}|_{dBm/3,84\ MHz} - \text{Channel 2_Io}|_{dBm/3,84\ MHz} | \leq 20$ dB.

$$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}} \right)_{in\ dB} \leq 20\text{dB}$$

8.1.3 UTRA Carrier RSSI

8.1.3.1 Absolute accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.3.1
Original table reference in [6]	Table 9.10
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.1.3.2 Relative accuracy requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.3.2
Original table reference in [6]	Table 9.11
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.1.4 SFN-CFN observed time difference

8.1.4.1 Intra frequency measurement requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.7.1
Original table reference in [6]	Table 9.16
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1_{dBm} \geq -112$ dBm for Bands XV and XVI,

$$\left| CPICH_RSCP1_{in\ dBm} - CPICH_RSCP2_{in\ dBm} \right| \leq 20\text{dB}$$

$$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}} \right)_{in\ dB} \leq 20\text{dB}$$

$$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{P - CCPCH_E_c}{I_{or}} \right)_{in\ dB}$$

is low enough to ensure successful SFN decoding.

8.1.4.2 Inter frequency measurement requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.7.2
Original table reference in [6]	Table 9.17
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1_{dBm} \geq -112$ dBm if CPICH_RSCP1 is on Bands XV and XVI,

$CPICH_RSCP2_{dBm} \geq -112$ dBm if CPICH_RSCP2 is on Bands XV and XVI,

$$\left| CPICH_RSCP1_{in\ dBm} - CPICH_RSCP2_{in\ dBm} \right| \leq 20\text{dB},$$

$|\text{Channel 1_Io}_{dBm/3,84\ MHz} - \text{Channel 2_Io}_{dBm/3,84\ MHz}| \leq 20\text{ dB},$

$$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}} \right)_{in\ dB} \leq 20\text{dB}.$$

8.1.5 SFN-SFN observed time difference

8.1.5.1 SFN-SFN observed time difference type 1

8.1.5.1.1 Measurement requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.8.1.1
Original table reference in [6]	Table 9.19
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1_{dBm} \geq -112$ dBm if CPICH_RSCP1 is on Band XV and XVI,

$CPICH_RSCP2_{dBm} \geq -112$ dBm if CPICH_RSCP2 is on Band XV and XVI,

$$\left| CPICH_RSCP1 \Big|_{in\ dBm} - CPICH_RSCP2 \Big|_{in\ dBm} \right| \leq 20dB,$$

$$\left(\frac{I_o}{\hat{I}_{or}} \right) \Big|_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}} \right) \Big|_{in\ dB} \leq 20dB,$$

$$\left(\frac{I_o}{\hat{I}_{or}} \right) \Big|_{in\ dB} - \left(\frac{P-CCPCH_E_c}{I_{or}} \right) \Big|_{in\ dB}$$

is low enough to ensure successful SFN decoding.

8.1.5.2 SFN-SFN observed time difference type 2

8.1.5.2.1 Intra frequency measurement requirement accuracy without IPDL period active

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.8.2.1
Original table reference in [6]	Table 9.21
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1,2|_{dBm} \geq -112$ dBm for Band XV and XVI,

$$\left(\frac{I_o}{\hat{I}_{or}} \right) \Big|_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}} \right) \Big|_{in\ dB} \leq 20dB$$

8.1.5.2.2 Intra frequency measurement requirement accuracy with IPDL period active

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.8.2.2
Original table reference in [6]	Table 9.22
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1,2|_{dBm} \geq -112$ dBm for Bands XV and XVI,

$$\left(\frac{I_o}{\hat{I}_{or}} \right) \Big|_{in\ dB} - \left(\frac{CPICH_E_c}{I_{or}} \right) \Big|_{in\ dB} \leq 20dB$$

For additional conditions see the original clause in TS 125 133 [6].

8.1.5.2.3 Inter frequency measurement requirement accuracy

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.8.2.3
Original table reference in [6]	Table 9.23
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

The accuracy requirements in the table referred to above are valid under the following conditions:

$CPICH_RSCP1_{dBm} \geq -112$ dBm if CPICH_RSCP1 is on Bands XV and XVI,

$CPICH_RSCP2_{dBm} \geq -112$ dBm if CPICH_RSCP2 is on for Bands XV and XVI,

$| Channel\ 1_Io_{dBm} - Channel\ 2_Io_{dBm} | \leq 20$ dB,

$$\left(\frac{I_o}{\hat{I}_{or}} \right)_{in\ dB} - \left(\frac{CPICH - E_c}{I_{or}} \right)_{in\ dB} \leq 20\ dB.$$

8.1.6 UE Rx-Tx time difference

8.1.6.1 UE Rx-Tx time difference type 1

8.1.6.1.1 Measurement requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.9.1.1
Original table reference in [6]	Table 9.25
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.1.6.2 UE Rx-Tx time difference type 2

8.1.6.2.1 Measurement requirement

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	9.1.9.2.1
Original table reference in [6]	Table 9.27
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2 Measurement Performance for UE (Test Cases)

8.2.1 CPICH RSCP

8.2.1.1 Test Purpose and Environment

8.2.1.1.1 Intra frequency test parameters

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.1.1.1
Original table reference in [6]	Table A.9.1
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.1.1.2 Inter frequency test parameters

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.1.1.2
Original table reference in [6]	Table A.9.2
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.2 CPICH Ec/Io

8.2.2.1 Test Purpose and Environment

8.2.2.1.1 Intra frequency test parameters

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.2.1.1
Original table reference in [6]	Table A.9.3
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.2.1.2 Inter frequency test parameters

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.2.1.2
Original table reference in [6]	Table A.9.4
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.2.2 Test Requirements

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.2.2
Original table reference in [6]	Tables A.9.4A and A.9.4B
Additional requirement in present document	The requirements in the original tables and in the original clause for Band VII apply to Bands XV and XVI as well

8.2.3 UTRA Carrier RSSI

8.2.3.1 Test Purpose and Environment

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.3.1
Original table reference in [6]	Tables A.9.5 and A.9.5.1
Additional requirement in present document	The requirements in the original tables for Band VII apply to Bands XV and XVI as well

8.2.3.2 Test Requirements

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.3.2
Original table reference in [6]	Tables A.9.5A and A.9.5A1
Additional requirement in present document	The requirements in the original tables and in the original clause for Band VII apply to Bands XV and XVI as well

8.2.4 SFN-CFN observed time difference

8.2.4.1 Test Purpose and Environment

8.2.4.1.1 Intra frequency test parameters

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.4.1.1
Original table reference in [6]	Table A.9.6
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.4.1.2 Inter frequency test parameters

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.4.1.2
Original table reference in [6]	Table A.9.7
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.5 SFN-SFN observed time difference

8.2.5.1 SFN-SFN observed time difference type 1

8.2.5.1.1 Test Purpose and Environment

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.5.1.1
Original table reference in [6]	Table A.9.8
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.5.2 SFN-SFN observed time difference type 2 without IPDL period active

8.2.5.2.1 Test Purpose and Environment

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.5.2.1
Original table reference in [6]	Table A.9.9
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.6 UE Rx-Tx time difference

8.2.6.1 UE Rx-Tx time difference type 1

8.2.6.1.1 Test Purpose and Environment

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.6.1.1
Original table reference in [6]	Table A.9.11
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

8.2.6.2 UE Rx-Tx time difference type 2

8.2.6.2.1 Test Purpose and Environment

Specification reference:	TS 125 133 [6]
Original clause reference in [6]	A.9.1.6.2.1
Original table reference in [6]	Table A.9.12
Additional requirement in present document	The requirements in the original table for Band VII apply to Bands XV and XVI as well

9 Requirements additional to those of TS 125 141

This clause gives requirements applicable to Base Stations operating in Band XV and XVI. These requirements are additional to those given in TS 125 141 [7]. Each additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of each requirement identified below are detailed in TS 125 141 [7].

9.1 Frequency bands and channel arrangements

9.1.1 Frequency bands

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	3.4.1
Original table reference in [7]	Table 3.0
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 9.1

Table 9.1: Frequency bands

Operating Band	UL Frequencies UE transmit, Node B receive	DL frequencies UE receive, Node B transmit
XV	1900 - 1920 MHz	2600 - 2620 MHz
XVI	2010 - 2025 MHz	2585 - 2600 MHz

9.1.2 TX-RX frequency separation

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	3.4.2
Original table reference in [7]	Table 3.0A
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 9.2

Table 9.2: TX-RX frequency separation

Operating Band	TX-RX frequency separation
XV	700 MHz
XVI	575 MHz

9.1.3 Channel number

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	3.5.3
Original table reference in [7]	Table 3.1 and 3.2
Additional requirement in present document	Table entries for Bands XV and XVI as in Tables 9.3 and 9.4

Table 9.3: UARFCN definition (general)

Band	UPLINK (UL) UE transmit, Node B receive			DOWNLINK (DL) UE receive, Node B transmit		
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency (F_{UL}) range [MHz]		UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency (F_{DL}) range [MHz]	
		F_{UL_low}	F_{UL_high}		F_{DL_low}	F_{DL_high}
XV	240	1902.4	1917.6	840	2602.4	2617.6
XVI	380	2012.4	2022.6	855	2587.4	2597.6

Table 9.4: UARFCN definition (additional channels)

Band	UPLINK (UL) UE transmit, Node B receive		DOWNLINK (DL) UE receive, Node B transmit	
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency [MHz] (F_{UL})	UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency [MHz] (F_{DL})
XV	220.1	1902.5, 1907.5, 1912.5, 1917.5	820.1	2602.5, 2607.5, 2612.5, 2617.5
XVI	365.1	2012.5, 2017.5, 2022.5	840.1	2587.5, 2592.5, 2597.5

9.2 Transmitter Characteristics

9.2.1 Spectrum emission mask

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	6.5.2.1
Original table reference in [7]	Tables 6.18, 6.19, 6.20 and 6.21
Additional requirement in present document	Requirements in third column of Tables 9.5, 9.6, 9.7 and 9.8 are applicable to Band XV and XVI

Table 9.5: Spectrum emission mask values, BS maximum output power $P \geq 43$ dBm

Frequency offset of measurement filter - 3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Test Requirement Band XV, XVI	Additional Requirements	Measurement bandwidth
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{offset} < 2.715 \text{ MHz}$	-12.5 dBm	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{offset} < 3.515 \text{ MHz}$	$-12.5 \text{ dBm} - 15 \cdot \left(\frac{f_{offset}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
	$3.515 \text{ MHz} \leq f_{offset} < 4.0 \text{ MHz}$	-24.5 dBm	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{offset} < 8.0 \text{ MHz}$	-11.5 dBm	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{max}$	$8.0 \text{ MHz} \leq f_{offset} < f_{offset_{max}}$	-11.5 dBm	NA	1 MHz

Table 9.6: Spectrum emission mask values, BS maximum output power $39 \leq P < 43$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Test Requirement Band XV, XVI	Additional Requirements	Measurement bandwidth
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	-12.5 dBm	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$-12.5 \text{ dBm} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	-24.5 dBm	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	-11.5 dBm	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	$P - 54.5 \text{ dB}$	NA	1 MHz

Table 9.7: Spectrum emission mask values, BS maximum output power $31 \leq P < 39$ dBm

Frequency offset of measurement filter - 3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Test Requirement Band XV, XVI	Additional Requirements	Measurement bandwidth
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	$P - 51.5 \text{ dB}$	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$P - 51.5 \text{ dB} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	$P - 63.5 \text{ dB}$	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	$P - 50.5 \text{ dB}$	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	$P - 54.5 \text{ dB}$	NA	1 MHz

Table 9.8: Spectrum emission mask values, BS maximum output power $P < 31$ dBm

Frequency offset of measurement filter - 3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Test Requirement Band XV, XVI	Measurement bandwidth
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	-20.5 dBm	30 kHz
$2.7 \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$-20.5 \text{ dBm} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	30 kHz
	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	-32.5 dBm	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	-19.5 dBm	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-23.5 dBm	1 MHz

9.2.2 Spurious emissions (Category B)

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	6.5.3.7.2
Original table reference in [7]	Table 6.36
Additional requirement in present document	Table 9.9 is applicable to Bands XV and XVI

Table 9.9: BS Mandatory spurious emissions limits, operating band XV, XVI (Category B)

Band	Maximum Level	Measurement Bandwidth	Note
9 kHz ↔ 150 kHz	-36 dBm	1 kHz	Note 1
150 kHz ↔ 30 MHz	-36 dBm	10 kHz	Note 1
30 MHz ↔ 1 GHz	-36 dBm	100 kHz	Note 1
1 GHz ↔ $F_{low} - 10$ MHz	-30 dBm	1 MHz	Note 1
$F_{low} - 10$ MHz ↔ $F_{high} + 10$ MHz	-15 dBm	1 MHz	Note 2
$F_{high} + 10$ MHz ↔ 12.75 GHz	-30 dBm	1 MHz	Note 3
NOTE 1: Bandwidth as in ITU-R Recommendation SM.329 [4], s4.1.			
NOTE 2: Limit based on ITU-R Recommendation SM.329 [4], s4.3 and Annex 7.			
NOTE 3: Bandwidth as in ITU-R Recommendation SM.329 [4], s4.1. Upper frequency as in ITU-R Recommendation SM.329 [4], s2.5 Table 1.			
Key:			
F_{low} : The lowest downlink frequency of the operating band as defined in Table 5.0.			
F_{high} : The highest downlink frequency of the operating band as defined in Table 5.0.			

9.2.3 Protection of the BS receiver of own or different BS

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	6.5.3.7.3
Original table reference in [7]	Tables 6.37, 6.37A and 6.37B
Additional requirement in present document	Table entries for Bands XV and XVI as in tables 9.10, 9.11 and 9.12

Table 9.10: Wide Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-96 dBm	100 kHz	
XVI	2010 - 2025 MHz	-96 dBm	100 kHz	

Table 9.11: Medium Range BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-86 dBm	100 kHz	
XVI	2010 - 2025 MHz	-86 dBm	100 kHz	

Table 9.12: Local Area BS Spurious emissions limits for protection of the BS receiver

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-82 dBm	100 kHz	
XVI	2010 - 2025 MHz	-82 dBm	100 kHz	

9.2.4 Co-existence with other systems in the same geographical area

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	6.5.3.7.4
Original table reference in [7]	Table 6.38
Additional requirement in present document	Table entries for Bands XV and XVI as in table 9.13

Table 9.13: BS Spurious emissions limits for UTRA FDD BS in geographic coverage area of systems operating in other frequency bands

System type operating in the same geographical area	Band for co-existence requirement	Maximum Level	Measurement Bandwidth	Note
FDD Band XV	2600 - 2620 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA FDD BS operating in band XV
	1900 - 1920 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA FDD BS operating in band XV, since it is already covered by the requirement in clause 9.2.3
FDD Band XVI	2585 - 2600 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA FDD BS operating in band XVI
	2010 - 2025 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA FDD BS operating in band XVI, since it is already covered by the requirement in clause 9.2.3

9.2.5 Co-existence with co-located and co-sited base stations

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	6.5.3.7.5
Original table reference in [7]	Table 6.39, 6.40 and 6.41
Additional requirement in present document	Table entries for Bands XV and XVI as in tables 9.14, 9.15 and 9.16

Table 9.14: BS Spurious emissions limits for Wide Area BS co-located with another BS

Type of co-located BS	Band for co-location requirement	Maximum Level	Measurement Bandwidth	Note
WA UTRA FDD Band XV	1900 - 1920 MHz	-96 dBm	100 kHz	
WA UTRA FDD Band XVI	2010 - 2025 MHz	-96 dBm	100 kHz	

Table 9.15: BS Spurious emissions limits for Medium Range BS co-located with another BS

Type of co-located BS	Band for co-location requirement	Maximum Level	Measurement Bandwidth	Note
WA UTRA FDD Band XV	1900 - 1920 MHz	-86 dBm	100 kHz	
WA UTRA FDD Band XVI	2010 - 2025 MHz	-86 dBm	100 kHz	

Table 9.16: BS Spurious emissions limits for Local Area BS co-located with another BS

Type of co-located BS	Band for co-location requirement	Maximum Level	Measurement Bandwidth	Note
WA UTRA FDD Band XV	1900 - 1920 MHz	-82 dBm	100 kHz	
WA UTRA FDD Band XVI	2010 - 2025 MHz	-82 dBm	100 kHz	

9.3 Receiver characteristics

9.3.1 Blocking characteristics

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	7.5.5
Original table reference in [7]	Tables 7.4K, 7.4L and 7.4M
Additional requirement in present document	Table entries for Bands XV and XVI and additional note (**) as in tables 9.17, 9.18 and 9.19

Table 9.17: Blocking characteristics for Wide Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
XV	1900 - 1920 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz 1920 - 1940 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 1940 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
XV and I **	1900 - 1980 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz 1980 - 2000 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 2000 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier
XVI	2010 - 2025 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1990 - 2010 MHz 2025 - 2045 MHz	-40 dBm	-115 dBm	10 MHz	WCDMA signal *
	1 MHz - 1990 MHz 2045 MHz - 12750 MHz	-15 dBm	-115 dBm	—	CW carrier

NOTE *: The characteristics of the W-CDMA interference signal are specified in Annex I.
NOTE **: This requirements applies for a BS supporting both Band XV and Band I.

Table 9.18: Blocking characteristics for Medium Range BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
XV	1900 - 1920 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz 1920 - 1940 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 1940 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
XV and I **	1900 - 1980 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz 1980 - 2000 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 2000 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier
XVI	2010 - 2025 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1990 - 2010 MHz 2025 - 2045 MHz	-35 dBm	-105 dBm	10 MHz	WCDMA signal *
	1 MHz - 1990 MHz 2045 MHz - 12750 MHz	-15 dBm	-105 dBm	—	CW carrier

NOTE *: The characteristics of the W-CDMA interference signal are specified in Annex I.
NOTE **: This requirements applies for a BS supporting both Band XV and Band I.

Table 9.19: Blocking characteristics for Local Area BS

Operating Band	Center Frequency of Interfering Signal	Interfering Signal Level	Wanted Signal mean power	Minimum Offset of Interfering Signal	Type of Interfering Signal
XV	1900 - 1920 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1920 - 1940 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 1940 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
XV and I **	1900 - 1980 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1880 - 1900 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1980 - 2000 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1880 MHz 2000 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier
XVI	2010 - 2025 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1990 - 2010 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	2025 - 2045 MHz	-30 dBm	-101 dBm	10 MHz	WCDMA signal *
	1 MHz - 1990 MHz 2045 MHz - 12750 MHz	-15 dBm	-101 dBm	—	CW carrier

NOTE *: The characteristics of the W-CDMA interference signal are specified in Annex I.
NOTE **: This requirements applies for a BS supporting both Band XV and Band I.

9.3.2 Blocking for co-location with UTRA FDD

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	7.5.5
Original table reference in [7]	Tables 7.4N, 7.4P and 7.4Q
Additional requirement in present document	Table entries for Bands XV and XVI as in Tables 9.20, 9.21 and 9.22

Table 9.20: Blocking performance requirement for Wide Area BS when co-located with BS in other bands

Co-located BS type	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Type of Interfering Signal
WA UTRA-FDD Band XV	2600 - 2620 MHz	+16 dBm	-115 dBm	CW carrier
WA UTRA-FDD Band XVI	2585 - 2600 MHz	+16 dBm	-115 dBm	CW carrier

Table 9.21: Blocking performance requirement for Medium Range BS when co-located with BS in other bands

Co-located BS type	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Type of Interfering Signal
WA UTRA-FDD Band XV	2600 - 2620 MHz	+8 dBm	-105 dBm	CW carrier
WA UTRA-FDD Band XVI	2585 - 2600 MHz	+8 dBm	-105 dBm	CW carrier

Table 9.22: Blocking performance requirement for Local Area BS when co-located with BS in other bands

Co-located BS type	Center Frequency of Interfering Signal	Interfering Signal mean power	Wanted Signal mean power	Type of Interfering Signal
WA UTRA-FDD Band XV	2600 - 2620 MHz	-6 dBm	-101 dBm	CW carrier
WA UTRA-FDD Band XVI	2585 - 2600 MHz	-6 dBm	-101 dBm	CW carrier

9.3.3 Receiver spurious emissions

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	7.7.5
Original table reference in [7]	Table 7.7A(b)
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 9.23

Table 9.23: Additional spurious emission requirements

Operating Band	Band	Maximum level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-78 dBm	3.84 MHz	
XVI	2010 - 2025 MHz	-78 dBm	3.84 MHz	

9.4 Performance requirements

9.4.1 Multi-path fading propagation conditions

Specification reference:	TS 125 141 [7]
Original clause reference in [7]	D.2 and D.5
Original table reference in [7]	Tables D.1 and D.3
Additional requirement in present document	Tables are applicable for Bands XV and XVI as in tables 9.24 and 9.25

Table 9.24: Propagation Conditions for Multi path Fading Environments

Case 1		Case 2		Case 3		Case 4	
Speed for Band XV, XVI 3 km/h		Speed for Band XV, XVI 3 km/h		Speed for Band XV, XVI 120 km/h		Speed for Band XV, XVI 250 km/h	
Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]	Relative Delay [ns]	Average Power [dB]
0	0	0	0	0	0	0	0
976	-10	976	0	260	-3	260	-3
		20000	0	521	-6	521	-6
				781	-9	781	-9

Table 9.25: Propagation Conditions for Multipath Fading Environments for E-DPDCH and E-DPCCH Performance Requirements

ITU Pedestrian A Speed 3 km/h (PA3)		ITU Pedestrian B Speed 3 km/h (PB3)		ITU vehicular A Speed 30 km/h (VA30)		ITU vehicular A Speed 120 km/h (VA120)	
Speed for Band XV, XVI 3 km/h		Speed for Band XV, XVI 3 km/h		Speed for Band XV, XVI 30 km/h		Speed for Band XV, XVI 120 km/h	
Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]	Relative Delay [ns]	Relative Mean Power [dB]
0	0	0	0	0	0	0	0
110	-9.7	200	-0.9	310	-1.0	310	-1.0
190	-19.2	800	-4.9	710	-9.0	710	-9.0
410	-22.8	1200	-8.0	1090	-10.0	1090	-10.0
		2300	-7.8	1730	-15.0	1730	-15.0
		3700	-23.9	2510	-20.0	2510	-20.0

10 Requirements additional to those of TS 125 331

This clause specifies the addition of Bands XV and XVI to the Radio Resource Control protocol specification for the UE-UTRAN radio interface. These are additional to those bands given in TS 125 331 [9]. In the following sections, only that/those row(s) of the original table or that/those part(s) of the description text of the original clause, which are relevant for the addition of Bands XV and XVI, are presented, i.e. the entire original table and original clause are not repeated. In addition, the prerequisites and further definitions of each requirement or term identified below are detailed in TS 125 331 [9].

10.1 System information blocks

Specification reference:	TS 125 331 [9]
Original clause reference in [9]	8.1.1.1.2
Original table reference in [9]	Table 8.1.1
Additional requirement in present document	Entries for Bands XV and XVI as in table 10.1 in the row related to "System information block type 5 and 5bis"

Table 10.1: Specification of system information block characteristics

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 5 and 5bis	Cell	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Idle mode, (CELL_FACH, CELL_PCH, URA_PCH, CELL_DCH (TDD only))	Specified by the IE "Scheduling information"	Value tag	System information block type 5bis is sent instead of system information block type 5 in cells that use Band XV or Band XVI

10.2 System Information Block type 5 and 5bis

Specification reference:	TS 125 331 [9]
Original clause reference in [9]	10.2.48.8.8
Original table reference in [9]	NA
Additional requirement in present document	Clause description to indicate system information block type 5bis is sent in networks that use Bands XV and XVI

System information block type 5bis is sent instead of system information block type 5 in cells that use Band XV or Band XVI.

10.3 Measurement capability extension

Specification reference:	TS 125 331 [9]
Original clause reference in [9]	10.3.3.21a
Original table reference in [9]	The first table in clause 10.3.3.21a (with Information Element/Group name entries)
Additional requirement in present document	"Type and reference" entries in the table for Bands XV and XVI respecting "FDD Frequency band 2"

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>FDD Frequency band 2	MD		Enumerate d(Band XV, Band XVI, extension Indicator)	The default value is the same as indicated in the IE "Frequency band 2" included in the IE " UE radio access capability extension". if the IE "FDD Frequency band" above is not included. The default value is the same as the IE "FDD Frequency band", if the IE "FDD Frequency band" is included	REL-6

10.4 UE radio access capability extension

Specification reference:	TS 125 331 [9]
Original clause reference in [9]	10.3.3.42a
Original table reference in [9]	No table number
Additional requirement in present document	"Type and reference" entries in the table for Bands XV and XVI respecting "FDD Frequency band 2"

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
>Frequency band 2	OP		Enumerate d(Band XV, Band XVI, extension Indicator)	This IE indicates the supported frequency bands Band VIII and beyond	REL-6

10.5 Frequency band indicator 2

Specification reference:	TS 125 331 [9]
Original clause reference in [9]	10.3.6.35c
Original table reference in [9]	The table in clause 10.3.6.35c
Additional requirement in present document	Exclusion of Bands XV and XVI in the "Semantics description"

Information Element/Group name	Need	Multi	Type and reference	Semantics description	Version
Frequency band indicator 2	MP		Enumerated(B and VIII, Band IX, Band X, Band XI, Band XII, Band XIII, Band XIV, Band XV, Band XVI, Band XVII, Band XVIII, Band XIX, Band XX, Band XXI, Band XXII, extension indicator)	Those bands in Column 4 different from Bands XV and XVI are defined in the appropriate versions of specification TS 125 331 [9]	REL-6

11 Requirements additional to those of TS 125 461

This clause gives requirements applicable to UTRAN Iuant interface for Band XV and XVI. These requirements are additional to those given in TS 125 461 [10]. The additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of the requirement identified below are detailed in TS 125 461 [10].

11.1 Operating bands

Specification reference:	TS 125 461 [10]
Original clause reference in [10]	4.3.7
Original table reference in [10]	Table 4.3.7.1
Additional requirement in present document	Table entries for Bands XV and XVI as in table 11.1

Table 11.1: Frequency bands

Operating Band	UL Frequencies UE transmit, Node B receive	DL frequencies UE receive, Node B transmit
XV	1900 - 1920 MHz	2600 - 2620 MHz
XVI	2010 - 2025 MHz	2585 - 2600 MHz

12 Requirements additional to those of TS 125 463

This clause gives requirements applicable to UTRAN Iuant interface for Band XV and XVI. These requirements are additional to those given in TS 125 463 [11]. The additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of the requirement identified below are detailed in TS 125 463 [11].

12.1 Coding for operating bands

Specification reference:	TS 125 463 [11]
Original clause reference in [11]	Annex B
Original table reference in [11]	Table B.2
Additional requirement in present document	Table entries for Bands XV, XVI and "Spare" as in table 12.1

Table 12.1: Coding for operating bands in field 0x03

Bit no	15	14	13...10
Operating band	XVI	XV	Spare

13 Requirements additional to those of TS 134 124

This clause gives requirements applicable to UE supporting Band XV and/or XVI. These requirements are additional to those given in TS 134 124 [12]. Each additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of each requirement identified below are detailed in TS 134 124 [12]. The requirement should be interpreted together with the original clause in [12] as outlined in clause 13.1.

13.1 Receiver exclusion band

Specification reference:	TS 134 124 [12]
Original clause reference in [12]	4.4
Additional requirement in present document	Additional entries for UTRA FDD Bands XV and XVI as below

- o) 2515 MHz to 2705 MHz (Band XV)
- p) 2500 MHz to 2685 MHz (Band XVI)

14 Requirements additional to those of TS 125 307

This clause identifies requirements applicable to User Equipment operating in Band XV and XVI independent of Release. These requirements are additional to those given in TS 125 307 [13] and [14] for other operating bands.

14.1 UE operating in Band XV independent of Release

Specification reference:	TS 125 307 [13] (Release 5) TS 125 307 [14] (Release 6)
Additional requirement in present document	RF requirements for Band XV in clause 14.1.1 Signalling requirements for Band XV in clause 14.1.2

In the present document, Band XV is specified based on Release 7 of the UMTS specifications, but is defined as a release-independent frequency band. This approach aligns the Band XV band with other frequency bands when considering features that have to be supported in different releases.

UEs that conform to Release 5 or Release 6 and support Band XV shall support the following requirements in the present document.

14.1.1 RF Requirements

The UE shall comply with the RF requirements for Band XV specified in the present document. These requirements are:

Section/Clause	Description
5.1	Frequency bands and channel arrangement
5.2.1	UE maximum output power
5.2.2, 5.2.3	Output RF spectrum emissions
5.3.1	Reference sensitivity level
5.3.2, 5.3.3	Blocking characteristics
5.3.4	Spurious emissions
5.4.1	Multi-path fading propagation conditions

The UE shall comply with the following Radio Resource Management requirements for Band XV specified in the present document. These requirements are:

Section/Clause	Description
8.1	Measurement Performances for UE

14.1.2 Signalling Requirements

The UE shall be able to decode "System Information Block type 5bis" specified in [9].

The UE shall support the following RRC extensions specified in the present document:

- The parameter value "Band XV" for the IE "FDD frequency band 2" contained within the IEs "UE radio access capability extension" and "Measurement capability extension". The UE shall use this parameter value in order to signal its radio access capabilities relating to Band XV.
- The IEs "Frequency band indicator" and "Frequency band indicator2" contained within the IEs "System Information Block type 5bis" and "System Information Block type 6". The UE shall use these IEs to determine whether it is compliant with the RF requirement in the indicated frequency band, in case the UE is in the frequency that belongs to multiple frequency bands.

The UE shall be able to at least decode any unrelated RRC extensions that can be included in between the release it supports, and the IE "Frequency band indicator" and "Frequency Band Indicator 2".

14.2 UE operating in Band XVI independent of Release

Specification reference:	TS 125 307 [13] (Release 5) TS 125 307 [14] (Release 6)
Additional requirement in present document	RF requirements for Band XVI in clause 14.2.1 Signalling requirements for Band XVI in clause 14.2.2

In the present document, Band XVI is specified based on Release 7 of the UMTS specifications, but is defined as a release-independent frequency band. This approach aligns the Band XVI band with other frequency bands when considering features that have to be supported in different releases.

UEs that conform to Release 5 or Release 6 and support Band XVI shall support the following requirements in the present document.

14.2.1 RF Requirements

The UE shall comply with the RF requirements for Band XVI specified in the present document. These requirements are:

Section/Clause	Description
5.1	Frequency bands and channel arrangement
5.2.1	UE maximum output power
5.2.2, 5.2.3	Output RF spectrum emissions
5.3.1	Reference sensitivity level
5.3.2, 5.3.3	Blocking characteristics
5.3.4	Spurious emissions
5.4.1	Multi-path fading propagation conditions

The UE shall comply with the following Radio Resource Management requirements for Band XVI specified in the present document. These requirements are:

Section/Clause	Description
8.1	Measurement Performances for UE

14.2.2 Signalling Requirements

The UE shall be able to decode "System Information Block type 5bis" specified in [9].

The UE shall support the following RRC extensions specified in the present document:

- The parameter value "Band XVI" for the IE "FDD frequency band 2" contained within the IEs "UE radio access capability extension" and "Measurement capability extension". The UE shall use this parameter value in order to signal its radio access capabilities relating to Band XVI.
- The IEs "Frequency band indicator" and "Frequency band indicator2" contained within the IEs "System Information Block type 5bis" and "System Information Block type 6". The UE shall use these IEs to determine whether it is compliant with the RF requirement in the indicated frequency band, in case the UE is in the frequency that belongs to multiple frequency bands.

The UE shall be able to at least decode any unrelated RRC extensions that can be included in between the release it supports, and the IE "Frequency band indicator" and "Frequency Band Indicator 2".

15 Requirements additional to those of TS 125 106

This clause gives requirements applicable to Repeaters operating in Band XV and XVI. These requirements are additional to those given in TS 125 106 [16]. Each additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of each requirement identified below are detailed in TS 125 106 [16].

15.1 Frequency bands and channel arrangements

15.1.1 Frequency bands

Specification reference:	TS 125 106 [16]
Original clause reference in [16]	5.1
Original table reference in [16]	Table 5.1
Additional requirement in present document	Table entries for Bands XV and XVI as in table 15.1

Table 15.1: Frequency bands

Operating Band	UL Frequencies	DL frequencies
	UE transmit, Node B receive	UE receive, Node B transmit
XV	1900 - 1920 MHz	2600 - 2620 MHz
XVI	2010 - 2025 MHz	2585 - 2600 MHz

15.1.2 TX-RX frequency separation

Specification reference:	TS 125 106 [16]
Original clause reference in [16]	5.2
Original table reference in [16]	Table 5.2
Additional requirement in present document	Table entries for Bands XV and XVI as in table 15.2

Table 15.2: Tx-Rx frequency separation

Operating Band	TX-RX frequency separation
XV	700 MHz
XVI	575 MHz

15.1.3 Channel number

Specification reference:	TS 125 106 [16]
Original clause reference in [16]	5.3.3
Original table reference in [16]	Tables 5.3 and 5.4
Additional requirement in present document	Table entries for Bands XV and XVI as in tables 15.3 and 15.4

Table 15.3: UARFCN definition (general)

Band	UPLINK (UL) UE transmit, Node B receive			DOWNLINK (DL) UE receive, Node B transmit		
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency (F_{UL}) range [MHz]		UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency (F_{DL}) range [MHz]	
		F_{UL_low}	F_{UL_high}		F_{DL_low}	F_{DL_high}
XV	240	1902.4	1917.6	840	2602.4	2617.6
XVI	380	2012.4	2022.6	855	2587.4	2597.6

Table 15.4: UARFCN definition (additional channels)

Band	UPLINK (UL) UE transmit, Node B receive		DOWNLINK (DL) UE receive, Node B transmit	
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency [MHz] (F_{UL})	UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency [MHz] (F_{DL})
XV	220.1	1902.5, 1907.5, 1912.5, 1917.5	820.1	2602.5, 2607.5, 2612.5, 2617.5
XVI	365.1	2012.5, 2017.5, 2022.5	840.1	2587.5, 2592.5, 2597.5

15.2 Spectrum emission mask

Specification reference:	TS 125 106 [16]
Original clause reference in [16]	9.1.1
Original table reference in [16]	Tables 9.1, 9.2, 9.3 and 9.4
Additional requirement in present document	Requirements in third column of tables 15.5, 15.6, 15.7 and 15.8 are applicable to Band XV and XVI

Table 15.5: Spectrum emission mask values, maximum output power $P \geq 43$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Minimum requirement Band XV, XVI	Additional requirements	Measurement bandwidth ²
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{offset} < 2.715 \text{ MHz}$	-14 dBm	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{offset} < 3.515 \text{ MHz}$	$-14 \text{ dBm} - 15 \cdot \left(\frac{f_{offset}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
(see note 3)	$3.515 \text{ MHz} \leq f_{offset} < 4.0 \text{ MHz}$	-26 dBm	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f \leq \Delta f_{max}$	$4.0 \text{ MHz} \leq f_{offset} < f_{offset_{max}}$	-13 dBm	NA	1 MHz

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE 3: This frequency range ensures that the range of values of f_{offset} is continuous.

Table 15.6: Spectrum emission mask values, maximum output power $39 \leq P < 43$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Minimum requirement Band XV, XVI	Additional requirements	Measurement bandwidth ²
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	-14 dBm	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$-14 \text{ dBm} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
(see note 3)	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	-26 dBm	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	-13 dBm	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	$P - 56 \text{ dB}$	NA	1 MHz

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE 3: This frequency range ensures that the range of values of f_{offset} is continuous.

Table 15.7: Spectrum emission mask values, maximum output power $31 \leq P < 39$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Minimum requirement Band XV, XVI	Additional requirements	Measurement bandwidth ²
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	$P - 53 \text{ dB}$	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$P - 53 \text{ dB} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
(see note 3)	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	$P - 65 \text{ dB}$	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	$P - 52 \text{ dB}$	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	$P - 56 \text{ dB}$	NA	1 MHz

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE 3: This frequency range ensures that the range of values of f_{offset} is continuous.

Table 15.8: Spectrum emission mask values, maximum output power P < 31 dBm

Frequency offset of measurement filter -3dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Minimum requirement Band XV, XVI	Measurement bandwidth ²
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	-22 dBm	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$-22 \text{ dBm} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	30 kHz
(see note 3)	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	-34 dBm	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	-21 dBm	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-25 dBm	1 MHz

NOTE 2 As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth can be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

NOTE 3: This frequency range ensures that the range of values of f_{offset} is continuous.

15.3 Spurious emissions (Category B)

15.3.1 Spurious emissions (Category B)

Specification reference:	TS 125 106 [16]
Original clause reference in [16]	9.2.1.2
Original table reference in [16]	Table 9.6
Additional requirement in present document	Table 15.9 is applicable to Bands XV and XVI

Table 15.9: General spurious emissions limits, operating band XV, XVI (Category B)

Band	Maximum Level	Measurement Bandwidth	Note
9 kHz ↔ 150 kHz	-36 dBm	1 kHz	Note 1
150 kHz ↔ 30 MHz	-36 dBm	10 kHz	Note 1
30 MHz ↔ 1 GHz	-36 dBm	100 kHz	Note 1
1 GHz ↔ $F_{\text{low}} - 10 \text{ MHz}$	-30 dBm	1 MHz	Note 1
$F_{\text{low}} - 10 \text{ MHz} \leftrightarrow F_{\text{high}} + 10 \text{ MHz}$	-15 dBm	1 MHz	Note 2
$F_{\text{high}} + 10 \text{ MHz} \leftrightarrow 12.75 \text{ GHz}$	-30 dBm	1 MHz	Note 3

NOTE 1: Bandwidth as in ITU-R Recommendation SM.329 [1], s4.1.
NOTE 2: Limit based on ITU-R Recommendation SM.329 [1], s4.3 and Annex 7.
NOTE 3: Bandwidth as in ITU-R Recommendation SM.329 [1], s4.1. Upper frequency as in ITU-R Recommendation SM.329 [1], s2.5 table 1.

Key:
 F_{low} : The lowest down- or up-link frequency of the operating band as defined in table 5.1.
 F_{high} : The highest down- or up-link frequency of the operating band as defined in table 5.1.

15.3.2 Protection of the BS receiver in the operating band

Specification reference:	TS 125 106 [16]
Original clause reference in [16]	9.2.2
Original table reference in [16]	Table 9.7A
Additional requirement in present document	Table entries for Bands XV and XVI as in table 15.10

Table 15.10: UTRA Repeater up-link spurious emissions limits for protection of UTRA FDD BS receiver for the up-link direction of the Repeater

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-53 dBm	100 kHz	
XVI	2010 - 2025 MHz	-53 dBm	100 kHz	

15.3.3 Co-existence with other systems in the same geographical area

Specification reference:	TS 125 106 [16]
Original clause reference in [16]	9.2.3
Original table reference in [16]	Table 9.9
Additional requirement in present document	Table entries for Bands XV and XVI as in table 15.11

Table 15.11: UTRA Repeater up-link and down-link spurious emissions limits in geographic coverage area of systems operating in other frequency bands

System type operating in the same geographical area	Band for co-existence requirement	Maximum Level	Measurement Bandwidth	Note
FDD Band XV	2600 - 2620 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA FDD Repeater operating in band XV
	1900 - 1920 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA FDD Repeater operating in band XV, since it is already covered by the requirement in clause 9.2.2
FDD Band XVI	2585 - 2600 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA FDD Repeater operating in band XVI
	2010 - 2025 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA FDD Repeater operating in band XVI, since it is already covered by the requirement in clause 9.2.2

15.3.4 Co-existence with co-located and co-sited base stations

Specification reference:	TS 125 106 [16]
Original clause reference in [16]	9.2.4
Original table reference in [16]	Table 9.10
Additional requirement in present document	Table entries for Bands XV and XVI as in table 15.12

Table 15.12: UTRA Repeater up-link and down-link spurious emissions limits for Repeater co-located with Base Stations

Type of co-located Base Station	Band for co-location requirement	Maximum Level	Measurement Bandwidth	Note
UTRA FDD Band XV	1900 - 1920 MHz	-96 dBm	100 kHz	This requirement does not apply to the up-link of UTRA FDD Repeater operating in band XV. The requirement of band VIII in sub-clause 9.2.2 applies, but requires a 73dB coupling loss between base station and the repeater UL transmit port
UTRA FDD Band XVI	2010 - 2025 MHz	-96 dBm	100 kHz	This requirement does not apply to the up-link of UTRA FDD Repeater operating in band XVI. The requirement of band VIII in sub-clause 9.2.2 applies, but requires a 73dB coupling loss between base station and the repeater UL transmit port

16 Requirements additional to those of TS 125 143

This clause gives requirements applicable to Repeaters operating in Band XV and XVI. These requirements are additional to those given in TS 125 143 [17]. Each additional requirement below is only specified with the minimum requirement value in tabular format, while the prerequisites and further definitions of each requirement identified below are detailed in TS 125 143 [17].

16.1 Frequency bands and channel arrangements

16.1.1 Frequency bands

Specification reference:	TS 125 143 [17]
Original clause reference in [17]	4.1
Original table reference in [17]	Table 4.1
Additional requirement in present document	Table entries for Bands XV and XVI as in table 16.1

Table 16.1: Frequency bands

Operating Band	UL Frequencies UE transmit, Node B receive	DL frequencies UE receive, Node B transmit
XV	1900 - 1920 MHz	2600 - 2620 MHz
XVI	2010 - 2025 MHz	2585 - 2600 MHz

16.1.2 TX-RX frequency separation

Specification reference:	TS 125 143 [17]
Original clause reference in [17]	4.2
Original table reference in [17]	Table 4.2
Additional requirement in present document	Table entries for Bands XV and XVI as in table 16.2

Table 16.2: Tx-Rx frequency separation

Operating Band	TX-RX frequency separation
XV	700 MHz
XVI	575 MHz

16.1.3 Channel number

Specification reference:	TS 125 143 [17]
Original clause reference in [17]	4.3.3
Original table reference in [17]	Tables 4.3 and 4.4
Additional requirement in present document	Table entries for Bands XV and XVI as in tables 16.3 and 16.4

Table 16.3: UARFCN definition (general)

Band	UPLINK (UL) UE transmit, Node B receive			DOWNLINK (DL) UE receive, Node B transmit		
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency (F_{UL}) range [MHz]		UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency (F_{DL}) range [MHz]	
		F_{UL_low}	F_{UL_high}		F_{DL_low}	F_{DL_high}
XV	240	1902.4	1917.6	840	2602.4	2617.6
XVI	380	2012.4	2022.6	855	2587.4	2597.6

Table 16.4: UARFCN definition (additional channels)

Band	UPLINK (UL) UE transmit, Node B receive		DOWNLINK (DL) UE receive, Node B transmit	
	UARFCN formula offset F_{UL_Offset} [MHz]	Carrier frequency [MHz] (F_{UL})	UARFCN formula offset F_{DL_Offset} [MHz]	Carrier frequency [MHz] (F_{DL})
XV	220.1	1902.5, 1907.5, 1912.5, 1917.5	820.1	2602.5, 2607.5, 2612.5, 2617.5
XVI	365.1	2012.5, 2017.5, 2022.5	840.1	2587.5, 2592.5, 2597.5

16.2 Spectrum emission mask

Specification reference:	TS 125 143 [17]
Original clause reference in [17]	9.1.1
Original table reference in [17]	Tables 9.5, 9.6, 9.7 and 9.8
Additional requirement in present document	Requirements in third column of tables 16.5, 16.6, 16.7 and 16.8 are applicable to Band XV and XVI

Table 16.5: Spectrum emission mask values, maximum output power $P \geq 43$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Test Requirement Band XV, XVI	Additional Requirements	Measurement bandwidth
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{offset} < 2.715 \text{ MHz}$	-12.5 dBm	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{offset} < 3.515 \text{ MHz}$	$-12.5 \text{ dBm} - 15 \cdot \left(\frac{f_{offset}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
	$3.515 \text{ MHz} \leq f_{offset} < 4.0 \text{ MHz}$	-24.5 dBm	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{offset} < 8.0 \text{ MHz}$	-11.5 dBm	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{max}$	$8.0 \text{ MHz} \leq f_{offset} < f_{offset_{max}}$	-11.5 dBm	NA	1 MHz

Table 16.6: Spectrum emission mask values, maximum output power $39 \leq P < 43$ dBm

Frequency offset of measurement filter -3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Test Requirement Band XV, XVI	Additional Requirements	Measurement bandwidth
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{offset} < 2.715 \text{ MHz}$	-12.5 dBm	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{offset} < 3.515 \text{ MHz}$	$-12.5 \text{ dBm} - 15 \cdot \left(\frac{f_{offset}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
	$3.515 \text{ MHz} \leq f_{offset} < 4.0 \text{ MHz}$	-24.5 dBm	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{offset} < 8.0 \text{ MHz}$	-11.5 dBm	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{max}$	$8.0 \text{ MHz} \leq f_{offset} < f_{offset_{max}}$	$P - 54.5 \text{ dB}$	NA	1 MHz

Table 16.7: Spectrum emission mask values, maximum output power $31 \leq P < 39$ dBm

Frequency offset of measurement filter - 3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Test Requirement Band XV, XVI	Additional Requirements	Measurement bandwidth
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	P - 51.5 dB	NA	30 kHz
$2.7 \text{ MHz} \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$P - 51.5 \text{ dB} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	NA	30 kHz
	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	P - 63.5 dB	NA	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	P - 50.5 dB	NA	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	P - 54.5 dB	NA	1 MHz

Table 16.8: Spectrum emission mask values, maximum output power $P < 31$ dBm

Frequency offset of measurement filter - 3 dB point, Δf	Frequency offset of measurement filter centre frequency, f_{offset}	Test Requirement Band XV, XVI	Measurement bandwidth
$2.5 \text{ MHz} \leq \Delta f < 2.7 \text{ MHz}$	$2.515 \text{ MHz} \leq f_{\text{offset}} < 2.715 \text{ MHz}$	-20.5 dBm	30 kHz
$2.7 \leq \Delta f < 3.5 \text{ MHz}$	$2.715 \text{ MHz} \leq f_{\text{offset}} < 3.515 \text{ MHz}$	$-20.5 \text{ dBm} - 15 \cdot \left(\frac{f_{\text{offset}}}{\text{MHz}} - 2.715 \right) \text{ dB}$	30 kHz
	$3.515 \text{ MHz} \leq f_{\text{offset}} < 4.0 \text{ MHz}$	-32.5 dBm	30 kHz
$3.5 \text{ MHz} \leq \Delta f < 7.5 \text{ MHz}$	$4.0 \text{ MHz} \leq f_{\text{offset}} < 8.0 \text{ MHz}$	-19.5 dBm	1 MHz
$7.5 \text{ MHz} \leq \Delta f \leq \Delta f_{\text{max}}$	$8.0 \text{ MHz} \leq f_{\text{offset}} < f_{\text{offset}_{\text{max}}}$	-23.5 dBm	1 MHz

16.3 Spurious emissions (Category B)

16.3.1 Spurious emissions (Category B)

Specification reference:	TS 125 143 [17]
Original clause reference in [17]	9.2.2.2
Original table reference in [17]	Table 9.10
Additional requirement in present document	Table 16.9 is applicable to Bands XV and XVI

Table 16.9: General spurious emissions limits, operating band XV, XVI (Category B)

Band	Maximum Level	Measurement Bandwidth	Note
9 kHz ↔ 150 kHz	-36 dBm	1 kHz	Note 1
150 kHz ↔ 30 MHz	-36 dBm	10 kHz	Note 1
30 MHz ↔ 1 GHz	-36 dBm	100 kHz	Note 1
1 GHz ↔ $F_{low} - 10$ MHz	-30 dBm	1 MHz	Note 1
$F_{low} - 10$ MHz ↔ $F_{high} + 10$ MHz	-15 dBm	1 MHz	Note 2
$F_{high} + 10$ MHz ↔ 12.75 GHz	-30 dBm	1 MHz	Note 3
NOTE 1: Bandwidth as in ITU-R Recommendation SM.329 [1], s4.1.			
NOTE 2: Limit based on ITU-R Recommendation SM.329 [1], s4.3 and Annex 7.			
NOTE 3: Bandwidth as in ITU-R Recommendation SM.329 [1], s4.1. Upper frequency as in ITU-R Recommendation SM.329 [1], s2.5 table 1.			
Key:			
F_{low} : The lowest down- or up-link frequency of the operating band as defined in table 5.1.			
F_{high} : The highest down- or up-link frequency of the operating band as defined in table 5.1.			

16.3.2 Protection of the BS receiver in the operating band

Specification reference:	TS 125 143 [17]
Original clause reference in [17]	9.2.2.3
Original table reference in [17]	Table 9.11A
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 16.10

Table 16.10: UTRA Repeater up-link spurious emissions limits for protection of UTRA FDD BS receiver for the up-link direction of the Repeater

Operating Band	Band	Maximum Level	Measurement Bandwidth	Note
XV	1900 - 1920 MHz	-53 dBm	100 kHz	
XVI	2010 - 2025 MHz	-53 dBm	100 kHz	

16.3.3 Co-existence with other systems in the same geographical area

Specification reference:	TS 125 143 [17]
Original clause reference in [17]	9.2.2.4
Original table reference in [17]	Table 9.13
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 16.11

Table 16.11: UTRA Repeater up-link and down-link spurious emissions limits in geographic coverage area of systems operating in other frequency bands

System type operating in the same geographical area	Band for co-existence requirement	Maximum Level	Measurement Bandwidth	Note
FDD Band XV	2600 - 2620 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA FDD Repeater operating in band XV
	1900 - 1920 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA FDD Repeater operating in band XV, since it is already covered by the requirement in clause 9.2.2
FDD Band XVI	2585 - 2600 MHz	-52 dBm	1 MHz	This requirement does not apply to UTRA FDD Repeater operating in band XVI
	2010 - 2025 MHz	-49 dBm	1 MHz	This requirement does not apply to UTRA FDD Repeater operating in band XVI, since it is already covered by the requirement in clause 9.2.2

16.3.4 Co-existence with co-located and co-sited base stations

Specification reference:	TS 125 143 [17]
Original clause reference in [17]	9.2.2.5
Original table reference in [17]	Table 9.14
Additional requirement in present document	Table entries for Bands XV and XVI as in Table 16.12

Table 16.12: UTRA Repeater up-link and down-link spurious emissions limits for Repeater co-located with Base Stations

Type of co-located Base Station	Band for co-location requirement	Maximum Level	Measurement Bandwidth	Note
UTRA FDD Band XV	1900 - 1920 MHz	-96 dBm	100 kHz	This requirement does not apply to the up-link of UTRA FDD Repeater operating in band XV. The requirement of band VIII in sub-clause 9.2.2.3 applies, but requires a 73dB coupling loss between base station and the repeater UL transmit port
UTRA FDD Band XVI	2010 - 2025 MHz	-96 dBm	100 kHz	This requirement does not apply to the up-link of UTRA FDD Repeater operating in band XVI. The requirement of band VIII in sub-clause 9.2.2.3 applies, but requires a 73dB coupling loss between base station and the repeater UL transmit port

Annex A (informative): Change history

Time	Doc	CR	Rev	Subject/Comment	New
MSG-15	-	-	-	Version 7.0.0 (first version, for Release 7)	7.0.0
				Correction to title	7.0.1
MSG-21				Version 7.1.0 inclusion of Repeater	7.1.0

History

Document history		
V7.0.0	August 2007	Publication (Withdrawn)
V7.0.1	August 2007	Publication
V7.1.0	January 2010	Publication