TEST REPORT

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1. Report No : DRRFCC2407-0043(3)
2. Customer
   - Name : BLUEBIRD INC.
   - Address : 3F, 115, Irwon-ro, Gangnam-gu, Seoul South Korea
3. Use of Report : FCC Original Grant
4. Product Name / Model Name : Enterprise Full Touch Handheld Computer / S50
   FCC ID : SS4S50F1
5. FCC Regulation(s) : CFR 47 Part 2 subpart 2.1093
   Test Method Used : IEEE 1528-2013, FCC SAR KDB Publications (Details in test report)
   IEC/IEEE 62209-1528:2020
6. Date of Test : 2024.04.08 ~ 2024.07.11
7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing
8. Testing Environment : Refer to appended test report.
9. Test Result : Refer to attached test report.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test report is not related to KOLAS accreditation.

Affirmation	Tested by Name : BumJun Park	Reviewed by Name : HakMin Kim

2024 . 09 . 10 .

Dt&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

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Test Report Version

Test Report No.	Date	Description	Tested by	Reviewed by
DRRFCC2407-0043	Jul. 24, 2024	Initial issue	BumJun Park	HakMin Kim
DRRFCC2407-0043(1)	Aug. 9, 2024	Revised SAR Summary Table, Sec.1.4 & Sec.12	BumJun Park	HakMin Kim
DRRFCC2407-0043(2)	Aug. 14, 2024	Revised Sec.1.4	BumJun Park	HakMin Kim
DRRFCC2407-0043(3)	Sep. 10, 2024	Revised Sec.1.4	BumJun Park	HakMin Kim

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1. DESCRIPTION OF DEVICE

1.1 General Information

EUT type	Enterprise Full Touch Handheld Computer				
FCC ID	SS4S50F1				
Equipment model name(s)	S50, 70				
HVIN(Hardware Version Identification Number)	S5S7F1				
PMN(Product Marketing Name)	Enterprise Full Touch Handheld Computer				
Equipment serial no.	Identical prototype				
FVIN (Firmware Version Identification Number)	R1.00				
FCC & ISED MRA Designation No.	KR0034				
ISED#	5740A				
Mode(s) of Operation	GSM 850, GSM 1900, WCDMA 850, WCDMA 1700, WCDMA 1900, LTE Band 71, 12, 17, 13, 14, 5, 66, 4, 2, 7, 38, 48, Bluetooth, NFC				
TX Frequency Range	**Band**	**Mode**	**Operating Modes**	**Bandwidth**	**Frequency**
	GSM 850	GSM/GPRS/EDGE	Voice/Data	-	824.2 ~ 848.8 MHz
	GSM 1900	GSM/GPRS/EDGE	Voice/Data	-	1 850.2 ~ 1 909.8 MHz
	WCDMA 850	WCDMA	Voice/Data	-	826.4 ~ 846.6 MHz
	WCDMA 1700	WCDMA	Voice/Data	-	1 712.4 ~ 1 752.6 MHz
	WCDMA 1900	WCDMA	Voice/Data	-	1 852.4 ~ 1 907.6 MHz
	LTE Band 71	LTE	Voice/Data	5/10/15/20 MHz	665.5 ~ 695.5 MHz
	LTE Band 12	LTE	Voice/Data	1.4/3/5/10 MHz	699.7 ~ 715.3 MHz
	LTE Band 17	LTE	Voice/Data	5/10 MHz	706.5 ~ 713.5 MHz
	LTE Band 13	LTE	Voice/Data	5/10 MHz	779.5 ~ 784.5 MHz
	LTE Band 14	LTE	Voice/Data	5/10 MHz	790.5 ~ 795.5 MHz
	LTE Band 5	LTE	Voice/Data	1.4/3/5/10 MHz	824.7 ~ 848.3 MHz
	LTE Band 66	LTE	Voice/Data	1.4/3/5/10/15/20 MHz	1 710.7 ~ 1 779.3 MHz
	LTE Band 4	LTE	Voice/Data	1.4/3/5/10/15/20 MHz	1 710.7 ~ 1 754.3 MHz
	LTE Band 2	LTE	Voice/Data	1.4/3/5/10/15/20 MHz	1 850.7 ~ 1 909.3 MHz
	LTE Band 7	LTE	Voice/Data	5/10/15/20 MHz	2 502.5 ~ 2 567.5 MHz
	LTE Band 38	LTE	Voice/Data	5/10/15/20 MHz	2 572.5 ~ 2 617.5 MHz
	LTE Band 48	LTE	Voice/Data	5/10/15/20 MHz	3 552.5 ~ 3 697.5 MHz
	NR Band n71	NR(SCS 15 kHz)	Voice/Data	5/10/15/20 MHz	665.5 ~ 695.5 MHz
	NR Band n12	NR(SCS 15 kHz)	Voice/Data	5/10/15 MHz	701.5 ~713.5 MHz
	NR Band n13	NR(SCS 15 kHz)	Voice/Data	5/10 MHz	779.5 ~714.5 MHz
	NR Band n14	NR(SCS 15 kHz)	Voice/Data	5/10 MHz	790.5 ~795.5 MHz
	NR Band n5	NR(SCS 15 kHz)	Voice/Data	5/10/15/20 MHz	826.5 ~ 846.5 MHz
	NR Band n66	NR(SCS 15 kHz)	Voice/Data	5/10/15/20 MHz	1 712.5 ~ 1 777.5 MHz
	NR Band n2	NR(SCS 15 kHz)	Voice/Data	5/10/15/20 MHz	1 852.5 ~ 1 907.5 MHz
	NR Band n7	NR(SCS 15 kHz)	Voice/Data	5/10/15/20 MHz	2 502.5 ~ 2 567.5 MHz
	NR Band n41	NR(SCS 30 kHz)	Voice/Data	20/40/50/60/80/90/100 MHz	2 506.02 ~ 2 679.99 MHz
	NR Band n38	NR(SCS 30 kHz)	Voice/Data	20 MHz	2 580.00 ~ 2 610.00 MHz
	NR Band n48	NR(SCS 30 kHz)	Voice/Data	20/40 MHz	3 560.01 ~ 3 690.00 MHz
	NR Band n77	NR(SCS 30 kHz)	Voice/Data	20/40/60/80/100 MHz	3 710.01 ~ 3 969.99 MHz
	NR Band n78	NR(SCS 30 kHz)	Voice/Data	20/30/40/50/60/70/80/90/100 MHz	3 460.02 ~ 3 540.00 MHz
	NR Band n78	NR(SCS 30 kHz)	Voice/Data	20/30/40/50/60/70/80/90/100 MHz	3 710.01 ~ 3 789.99 MHz
	Bluetooth	-	Data	-	2 402 ~ 2 480 MHz
	NFC	-	Data	-	13.56 MHz

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SAR Summary Table

Equipment Class	Band	Reported SAR			
		1g SAR (W/kg)			10g SAR (W/kg)
		Head	Body-Worn	Hotspot	Phablet
PCE	GSM/GPRS/EDGE 850	0.26	**0.59**	**0.59**	-
PCE	GSM/GPRS/EDGE 1900	0.19	0.57	0.57	-
PCE	WCDMA 850	0.15	0.35	0.35	-
PCE	WCDMA 1700	0.20	**0.59**	**0.59**	-
PCE	WCDMA 1900	0.16	0.55	0.55	-
PCE	LTE Band 71	< 0.1	0.18	0.18	-
PCE	LTE Band 12	< 0.1	0.26	0.26	-
PCE	LTE Band 17	-	-	-	-
PCE	LTE Band 13	0.14	0.30	0.30	-
PCE	LTE Band 14	0.12	0.27	0.27	-
PCE	LTE Band 5	0.18	0.33	0.33	-
PCE	LTE Band 66	0.18	**0.59**	**0.59**	-
PCE	LTE Band 4	-	-	-	-
PCE	LTE Band 2	0.25	**0.59**	**0.59**	-
PCE	LTE Band 7	< 0.1	0.19	0.50	-
PCE	LTE Band 38	< 0.1	0.12	0.38	-
PCE	LTE Band 48	**0.81**	0.28	0.58	-
PCE	NR Band n71	< 0.1	0.17	0.17	-
PCE	NR Band n12	< 0.1	0.13	0.13	-
PCE	NR Band n13	< 0.1	< 0.1	< 0.1	-
PCE	NR Band n14	< 0.1	0.11	0.11	-
PCE	NR Band n5	< 0.1	0.16	0.16	-
PCE	NR Band n66	< 0.1	0.39	0.39	-
PCE	NR Band n2	< 0.1	0.41	0.41	-
PCE	NR Band n7	< 0.1	0.12	0.16	-
PCE	NR Band n41	< 0.1	0.30	0.50	-
PCE	NR Band n38	-	-	-	-
PCE	NR Band n48	0.62	0.21	0.48	-
PCE	NR Band n77	0.75	0.31	0.57	-
PCE	NR Band n78	-	-	-	-
DSS	Bluetooth	< 0.1	< 0.1	< 0.1	-
DSS	Bluetooth LE	< 0.1	< 0.1	< 0.1	-
DXX	NFC	-	-	-	**< 0.1**
Simultaneous SAR per KDB 690783 D01v01r03		**1.51**	**1.57**	**1.53**	**1.38**
TER		**0.84**	**0.71**	**-**	**0.34**

FCC Equipment Class	Licensed Portable Transmitter Held to Ear (PCE) Part 15 Spread Spectrum Transmitter(DSS) Digital Transmission System(DTS) Low Power Communications Device Transmitter (DXX)
Date(s) of Tests	2024.04.08 ~ 2024.07.11
Antenna Type	Internal Antenna
Functions	● GSM/GPRS/EDGE (GPRS/EDGE Class: 33) supported. * DTM not supported. ● VoIP is supported.
Note	● Simultaneous SAR's WLAN SAR data was calculated by referring to BV SAR/PD Report Data.

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1.2 Power Reduction for SAR

There is no power reduction used for any band/mode implemented in this device for SAR purposes.

1.3 Nominal and Maximum Output Power Specifications

The Nominal and Maximum Output Power Specifications are in section 9 of this test report.

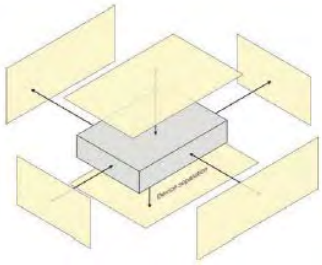
1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device of the device antenna can be found in (S50)_Antenna Location. Since the diagonal dimension of this device is > 160 mm and < 200 mm. it is considered a “phablet”

Top

Left

Right



S50			
Ant.	Function	Band	
0	Tx	LB1 / MB1 /HB1	LMHB_TRX
1	Rx	LB2 / MB2 /HB2	LMHB_RX
2	Rx	HB3	HB3 RX_DMIMO
3	Rx	HB4	HB4 RX_PMIMO
4	Tx	UHB1	N77/78/79_TRX_TRX
5	Rx	UHB2	N77/78/79_RX_PMIMO
6	Rx	UHB3	N77/78/79_RX_DMIMO
7	RX	UHB4	N77/78/79_RX_DRX
8	Wifi6e1		
9	GPS L1+ Wifi6e0		
10	GPS L5		
11	NFC		

Bottom

Mode	Device Sides for SAR Testing					
	Top	Bottom	Front	Rear	Right	Left
GSM/GPRS/EDGE 850_Ant.0	X	O	O	O	O	O
GSM/GPRS/EDGE 1900_Ant.0	X	O	O	O	O	O
WCDMA 850_Ant.0	X	O	O	O	O	O
WCDMA 1700_Ant.0	X	O	O	O	O	O
WCDMA 1900_Ant.0	X	O	O	O	O	O
LTE Band 71_Ant.0	X	O	O	O	O	O
LTE Band 12_Ant.0	X	O	O	O	O	O
LTE Band 17_Ant.0	X	O	O	O	O	O
LTE Band 13_Ant.0	X	O	O	O	O	O
LTE Band 14_Ant.0	X	O	O	O	O	O
LTE Band 5_Ant.0	X	O	O	O	O	O
LTE Band 66_Ant.0	X	O	O	O	O	O
LTE Band 4_Ant.0	X	O	O	O	O	O
LTE Band 2_Ant.0	X	O	O	O	O	O
LTE Band 7_Ant.0	X	O	O	O	O	O
LTE Band 38_Ant.0	X	O	O	O	O	O
LTE Band 48_Ant.0	X	O	O	O	O	O
NR Band n71_Ant.0	X	O	O	O	O	O
NR Band n12_Ant.0	X	O	O	O	O	O
NR Band n13_Ant.0	X	O	O	O	O	O
NR Band n14_Ant.0	X	O	O	O	O	O
NR Band n5_Ant.0	X	O	O	O	O	O
NR Band n66_Ant.0	X	O	O	O	O	O
NR Band n2_Ant.0	X	O	O	O	O	O
NR Band n7_Ant.0	X	O	O	O	O	O
NR Band n41_Ant.0	X	O	O	O	O	O
NR Band n38_Ant.0	X	O	O	O	O	O
NR Band n48_Ant.4	O	O	O	O	O	X
NR Band n77_Ant.4	O	O	O	O	O	X
NR Band n78_Ant.4	O	O	O	O	O	X

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Bluetooth_Ant.8	O	X	O	O	O	O
NFC_Ant.11	O	O	O	O	O	O

Note 1: Particular DUT edges were not required to be evaluated for Hotspot or Phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 648474 D04v01r03.The antenna document shows the distances between the transmit antennas and the edges of the device.

Note 2: O - Test / X - Not test.

Note 3: This DUT has NFC operations. The NFC antenna is integrated into the back side.
A diagram showing the location of the device antenna can be found in (S50)_Antenna Location.

1.5 Simultaneous Transmission Capabilities

The Simultaneous Transmission Capabilities are in section 12 of this test report.

1.6 Miscellaneous SAR Test Considerations

Licensed Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

This device supports LTE Carrier Aggregation (CA) in the downlink. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05v01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not > 0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive. The downlink carrier aggregation exclusion analysis can be found in Downlink LTE CA RF Conducted Powers.

This device supports LTE/NR capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE/NR Band falls completely within an LTE/NR band with a larger transmission frequency range, both LTE/NR bands have the same target power (or the band with the lager transmission frequency range has a higher target power), and both LTE/NR bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

NR implementation supports SA and NSA mode. In EN-DC mode, NR operates with the LTE Bands shown in the NR RF1 cheklist acting as anchor bands. Per FCC guidance, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors.

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1.7 Guidance Applied

- IEEE 1528-2013
- IEC/IEEE 62209-1528:2020
- FCC KDB Publication 941225 D01v03r01 (3G SAR Procedures)
- FCC KDB Publication 941225 D05v02r05 (SAR for LTE Devices)
- FCC KDB Publication 941225 D05Av01r02 (LTE Rel.10 KDB Inquiry Sheet)
- FCC KDB Publication 941225 D06v02r01(Hotspot Mode)
- FCC KDB Publication 447498 D01v06 (General RF Exposure Guidance)
- FCC KDB Publication 648474 D04v01r03 (Handset SAR)
- FCC KDB Publication 690783 D01v01r03 (SAR Listings on Grants)
- FCC KDB Publication 865664 D01v01r04 (SAR Measurement 100 MHz to 6 GHz)
- FCC KDB Publication 865664 D02v01r02 (RF Exposure Reporting)
- October 2013 TCB Workshop Notes (GPRS testing criteria)
- October 2014 TCB Workshop Notes (Overlapping LTE Bands, Other LTE Considerations)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)
- October 2016 TCB Workshop Notes (Bluetooth Duty Factor, DUT Holder Perturbations)
- May 2017 TCB Workshop Notes (LTE Test Conditions)
- November 2017 TCB Workshop Notes (LTE UL/DL Carrier Aggregation SAR)
- April 2018 TCB Workshop Notes (LTE DLCA SAR Test Exclusion Update)
- April 2019 TCB Workshop Notes (Tissue Simulating Liquids)
- October 2020 TCB Workshop Notes (Intra-band and Inter-band NSA-EN-DC evaluation)
- April 2022 TCB Workshop Notes (5G NR FR1 Measurement)
- October 2022 TCB Workshop Notes (SAR test frequencies in multi-rule)

1.8 Device Serial Numbers

The serial numbers used for each test are indicated alongside the results in Section 11.

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2. LTE AND NR INFORMATION

LTE Information					
Form Factor	Enterprise Full Touch Handheld Computer				
Frequency Range of each LTE transmission Band	LTE Band 71 (665.5 ~ 695.5 MHz) LTE Band 12 (699.7 ~ 715.3 MHz) LTE Band 17 (706.5 ~ 713.5 MHz) LTE Band 13 (779.5 ~ 784.5 MHz) LTE Band 14 (790.5 ~ 795.5 MHz) LTE Band 5 (Cell) (824.7 ~ 848.3 MHz) LTE Band 66 (AWS) (1 710.7 ~ 1 779.3 MHz) LTE Band 4 (AWS) (1 710.7 ~ 1 754.3 MHz) LTE Band 2 (PCS) (1 850.7 ~ 1 909.3 MHz) LTE Band 7 (2 502.5 ~ 2 567.5 MHz) LTE Band 38 (2 572.5 ~ 2 617.5 MHz) LTE Band 48 (3 552.5 ~ 3 697.5 MHz)				
Channel Bandwidths	LTE Band 71: 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 12 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz LTE Band 17 : 5 MHz, 10 MHz LTE Band 13 : 5 MHz, 10 MHz LTE Band 14 : 5 MHz, 10 MHz LTE Band 5 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz LTE Band 66 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 4 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 2 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 38: 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 48: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Number and Frequencies(MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 71: 5 MHz	665.5 (133147)	N/A	680.5 (133297)	N/A	695.5 (133447)
LTE Band 71: 10 MHz	668.0 (133172)	N/A	680.5 (133297)	N/A	693.0 (133422)
LTE Band 71: 15 MHz	670.5 (133197)	N/A	680.5 (133297)Note1	N/A	690.5 (133397)
LTE Band 71: 20 MHz	673.0 (133222)	N/A	**680.5 (133297)**Note1	N/A	688.0 (133372)
LTE Band 12: 1.4 MHz	699.7 (23017)	N/A	707.5 (23095)	N/A	715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)	N/A	707.5 (23095)	N/A	714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)	N/A	707.5 (23095)	N/A	713.5 (23155)
LTE Band 12: 10 MHz	704.0 (23060)	N/A	**707.5 (23095)**Note2	N/A	711.0 (23130)
LTE Band 17: 5 MHz	706.5(23755)	N/A	710.0(23790) Note3	N/A	713.5(23825)
LTE Band 17: 10 MHz	709.0(23780)	N/A	710.0(23790)Note3	N/A	711.0(23800)
LTE Band 13: 5 MHz	779.5(23205)	N/A	782.0(23230)Note4	N/A	784.5(23255)
LTE Band 13: 10 MHz	N/A	N/A	**782.0(23230)**	N/A	N/A
LTE Band 14: 5 MHz	790.5(23305)	N/A	793.0(23330)Note5	N/A	795.5(23355)
LTE Band 14: 10 MHz	N/A	N/A	**793.0(23330)**Note5	N/A	N/A
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)	N/A	836.5 (20525)	N/A	848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)	N/A	836.5 (20525)	N/A	847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)	N/A	836.5 (20525)	N/A	846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829.0 (20450)	N/A	836.5 (20525)Note6	N/A	844.0 (20600)
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)	N/A	1745.0 (132322)	N/A	1779.3 (132665)
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)	N/A	1745.0 (132322)	N/A	1778.5 (132657)
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)	N/A	1745.0 (132322)	N/A	1777.5 (132647)
LTE Band 66 (AWS): 10 MHz	1715.0 (132022)	N/A	1745.0 (132322)	N/A	1775.0 (132622)
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)	N/A	1745.0 (132322)	N/A	1772.5 (132597)
LTE Band 66 (AWS): 20 MHz	**1720.0 (132072)**	N/A	**1745.0 (132322)**	N/A	**1770.0 (132572)**
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)	N/A	1732.5 (20175)	N/A	1754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)	N/A	1732.5 (20175)	N/A	1753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)	N/A	1732.5 (20175)	N/A	1752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1715.0 (20000)	N/A	1732.5 (20175)	N/A	1750.0 (20350)
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)	N/A	1732.5 (20175)	N/A	1747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1720.0 (20050)	N/A	1732.5 (20175)Note7	N/A	1745.0 (20300)
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)	N/A	1880.0 (18900)	N/A	1909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)	N/A	1880.0 (18900)	N/A	1908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)	N/A	1880.0 (18900)	N/A	1907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1855.0 (18650)	N/A	1880.0 (18900)	N/A	1905.0 (19150)
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)	N/A	1880.0 (18900)	N/A	1902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1860.0 (18700)	N/A	1880.0 (18900)	N/A	1900.0 (19100)
LTE Band 7: 5 MHz	2502.5 (20775)	N/A	2535.0 (21100)	N/A	2567.5 (21425)
LTE Band 7: 10 MHz	2505.0 (20800)	N/A	2535.0 (21100)	N/A	2565.0 (21400)
LTE Band 7: 15 MHz	2507.5 (20825)	N/A	2535.0 (21100)	N/A	2562.5 (21375)
LTE Band 7: 20 MHz	**2510.0 (20850)**	N/A	**2535.0 (21100)**	N/A	**2560.0 (21350)**
LTE Band 38: 5 MHz	2572.5 (37775)	N/A	2595.0 (38000)	N/A	2617.5 (38225)
LTE Band 38: 10 MHz	2575.0 (37800)	N/A	2595.0 (38000)	N/A	2615.0 (38200)
LTE Band 38: 15 MHz	2577.5 (37825)	N/A	2595.0 (38000)	N/A	2612.5 (38175)
LTE Band 38: 20 MHz	**2580.0 (37850)**	N/A	**2595.0 (38000)**Note8	N/A	**2610.0 (38150)**
LTE Band 48: 5 MHz	3552.5 (55265)	3600.8 (55748)	N/A	3649.2 (56232)	3697.5 (56715)
LTE Band 48: 10 MHz	3555.0 (55290)	3601.7 (55757)	N/A	3648.3 (56223)	3695.0 (56690)
LTE Band 48: 15 MHz	3557.5 (55315)	3602.5 (55765)	N/A	3647.5 (56215)	3692.5 (56665)
LTE Band 48: 20 MHz	3560.0 (55340)	3603.3 (55773)	N/A	3646.7 (56207)	3690.0 (56640)
UE Category	DL UE Cat 16, UL UE Cat 20				
Modulations Supported in UL	QPSK, 16QAM, 64QAM, 256 QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	Yes				
A-MPR (Additional MPR) disabled for SAR Testing?	Yes				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 14. It supports only downlink carrier aggregation. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. The following LTE Release 14 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

Note(s)
1. LTE B71 can not contain three non-overlapping channels of 20 MHz, 10 MHz bandwidth.
   Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
2. LTE B12 can not contain three non-overlapping channels of 10 MHz bandwidth.
   Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
3. LTE B17 can not contain three non-overlapping channels of 10 MHz, 5 MHz bandwidth.
   Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
4. LTE B13 can not contain three non-overlapping channels of 5 MHz bandwidth.
   Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
5. LTE B14 can not contain three non-overlapping channels of 10 MHz, 5 MHz bandwidth.
   Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
6. LTE B5 (Cell) can not contain three non-overlapping channels of 10 MHz bandwidth.
   Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B4 (AWS) can not contain three non-overlapping channels of 20 MHz bandwidth.
   Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
8. LTE B38 can not contain three non-overlapping channels of 20 MHz bandwidth.
   Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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NR Information	
Form Factor	Enterprise Full Touch Handheld Computer
Frequency Range of each NR transmission Band	NR Band n71 (665.5 – 695.5 MHz) NR Band n12 (701.5 –713.5 MHz) NR Band n13 (779.5 – 714.5 MHz) NR Band n14 (790.5 – 795.5 MHz) NR Band n5 (826.5 – 846.5 MHz) NR Band n66 (1 712.5 – 1 777.5 MHz) NR Band n2 (1 852.5 – 1 907.5 MHz) NR Band n7 (2 502.5 – 2 567.5 MHz) NR Band n41 (2 506.02 – 2 679.99 MHz) NR Band n38 (2 580.0 – 2 610.0 MHz) NR Band n48 (3 560.01 – 3 690.0 MHz) NR Band n77 (3 455.01 – 3544.98 MHz, 3 705 – 3 975 MHz) NR Band n78 (3 455.01 – 3544.98 MHz, 3 705 – 3 795 MHz)
Channel Bandwidths	NR Band n71: 5 MHz, 10 MHz, 15 MHz, 20 MHz NR Band n12: 5 MHz, 10 MHz, 15 MHz NR Band n13: 5 MHz, 10 MHz NR Band n14: 5 MHz, 10 MHz NR Band n5: 5 MHz, 10 MHz, 15 MHz, 20 MHz NR Band n66: 5 MHz, 10 MHz, 15 MHz, 20 MHz NR Band n2: 5 MHz, 10 MHz, 15 MHz, 20 MHz NR Band n7: 5 MHz, 10 MHz, 15 MHz, 20 MHz NR Band n41: 20 MHz, 40 MHz, 50 MHz, 60 MHz, 80 MHz, 90 MHz, 100 MHz NR Band n38: 20 MHz NR Band n48: 20 MHz, 40 MHz NR Band n77: 20 MHz, 40 MHz, 60 MHz, 80 MHz, 100 MHz NR Band n78: 20 MHz, 30 MHz, 40 MHz, 50 MHz, 60 MHz, 70 MHz, 80 MHz, 90 MHz, 100 MHz

Channel Number and Frequencies(MHz)	Low	Low-Mid	Mid-A	Mid	Mid-B	Mid-High	High
NR Band n71: 5 MHz	665.5 (133100)	N/A	N/A	680.5 (136100)	N/A	N/A	695.5 (139100)
NR Band n71: 10 MHz	668.0 (133600)	N/A	N/A	680.5 (136100)	N/A	N/A	693.0 (138600)
NR Band n71: 15 MHz	670.5 (134100)	N/A	N/A	680.5 (136100)Note1	N/A	N/A	690.5 (138100)
NR Band n71: 20 MHz	673.0 (134600)	N/A	N/A	**680.5 (136100)**Note1	N/A	N/A	688.0 (137600)
NR Band n12: 5 MHz	701.5 (140300)	N/A	N/A	707.5 (141500)	N/A	N/A	713.5 (142700)
NR Band n12: 10 MHz	704.0 (140800)	N/A	N/A	707.5 (141500)Note2	N/A	N/A	711.0 (142200)
NR Band n12: 15 MHz	706.5 (141300)	N/A	N/A	**707.5 (141500)**Note2	N/A	N/A	708.5 (141700)
NR Band n13: 5 MHz	779.5(23205)	N/A	N/A	782.0(23230)Note3	N/A	N/A	784.5(23255)
NR Band n13: 10 MHz	N/A	N/A	N/A	**782.0(23230)**Note3	N/A	N/A	N/A
NR Band n14: 5 MHz	790.5(23305)	N/A	N/A	793.0(23330)Note4	N/A	N/A	795.5(23355)
NR Band n14: 10 MHz	N/A	N/A	N/A	**793.0(23330)**Note4	N/A	N/A	N/A
NR Band n5: 5 MHz	826.5 (165300)	N/A	N/A	836.5 (167300)	N/A	N/A	846.5 (169300)
NR Band n5: 10 MHz	829.0 (165800)	N/A	N/A	836.5 (167300)Note5	N/A	N/A	844.0 (168800)
NR Band n5: 15 MHz	831.5 (166300)	N/A	N/A	836.5 (167300)Note5	N/A	N/A	841.5 (168300)
NR Band n5: 20 MHz	834.0 (166800)	N/A	N/A	**836.5 (167300)**Note5	N/A	N/A	839.0 (167800)
NR Band n66: 5 MHz	1712.5 (342500)	N/A	N/A	1745.0 (349000)	N/A	N/A	1777.5 (355500)
NR Band n66: 10 MHz	1715.0 (343000)	N/A	N/A	1745.0 (349000)	N/A	N/A	1775.0 (355000)
NR Band n66: 15 MHz	1717.5 (343500)	N/A	N/A	1745.0 (349000)	N/A	N/A	1772.5 (354500)
NR Band n66: 20 MHz	1720.0 (344000)	N/A	N/A	**1745.0 (349000)**	N/A	N/A	1770.0 (354000)
NR Band n2: 5 MHz	1852.5 (370500)	N/A	N/A	1880.0 (376000)	N/A	N/A	1907.5 (381500)
NR Band n2: 10 MHz	1855.0 (371000)	N/A	N/A	1880.0 (376000)	N/A	N/A	1905.0 (381000)
NR Band n2: 15 MHz	1857.5 (371500)	N/A	N/A	1880.0 (376000)	N/A	N/A	1902.5 (380500)
NR Band n2: 20 MHz	1860.0 (372000)	N/A	N/A	**1880.0 (376000)**	N/A	N/A	1900.0 (380000)
NR Band n7: 5 MHz	2502.5 (500500)	N/A	N/A	2535 (507000)	N/A	N/A	2567.5 (513500)
NR Band n7: 10 MHz	2505.0 (501000)	N/A	N/A	2535 (507000)	N/A	N/A	2565.0 (513000)
NR Band n7: 15 MHz	2507.5 (501500)	N/A	N/A	2535 (507000)	N/A	N/A	2562.5 (512500)
NR Band n7: 20 MHz	2510.0 (502000)	N/A	N/A	**2535 (507000)**	N/A	N/A	2560.0 (512000)
NR Band n41: 20 MHz	2506.02 (501204)	2549.49 (509898)	N/A	2592.99 (518598)	N/A	2636.49 (527298)	2679.98 (535998)
NR Band n41: 40 MHz	2516.01 (503202)	2567.34 (513468)	N/A	N/A	N/A	2618.67 (523734)	2670.00 (534000)
NR Band n41: 50 MHz	2521.02 (504204)	N/A	N/A	2592.99 (518598)	N/A	N/A	2664.99 (532998)
NR Band n41: 60 MHz	2526.00 (505200)	N/A	N/A	2592.99 (518598)	N/A	N/A	2659.98 (531996)
NR Band n41: 80 MHz	2536.02 (507204)	N/A	N/A	N/A	N/A	N/A	2649.99 (529998)
NR Band n41: 90 MHz	2541.00 (508200)	N/A	N/A	N/A	N/A	N/A	2644.98 (528996)
NR Band n41: 100 MHz	2546.01 (509202)	N/A	N/A	**2592.99 (518598)**Note6	N/A	N/A	2640.00 (528000)
NR Band n38: 20 MHz	2580.0 (516000)	N/A	N/A	**2595.0 (519000)**Note7	N/A	N/A	2610.0 (522000)
NR Band n48: 20 MHz	3560.01 (637334)	3603.33 (640222)	N/A	N/A	N/A	3646.68 (643112)	3690.00 (646000)
NR Band n48: 40 MHz	3570.00 (638000)	N/A	N/A	**3624.99 (641666)**	N/A	N/A	3679.98 (645332)
NR Band n77 DoD: 20 MHz	3460.02 (630668)	N/A	N/A	3500.01 (633334)	N/A	N/A	3540.00 (636000)
NR Band n77 DoD: 40 MHz	3470.01 (631334)	N/A	N/A	N/A	N/A	N/A	3529.98 (635332)
NR Band n77 DoD: 60 MHz	N/A	N/A	N/A	3500.01 (633334)	N/A	N/A	N/A
NR Band n77 DoD: 80 MHz	N/A	N/A	N/A	3500.01 (633334)	N/A	N/A	N/A
NR Band n77 DoD: 100 MHz	N/A	N/A	N/A	**3500.01 (633334)**	N/A	N/A	N/A
NR Band n77: 20 MHz	3710.01 (647334)	3762.00 (650800)	3813.99 (654266)	N/A	3866.01 (657734)	3918.00 (661200)	3969.99 (664666)
NR Band n77: 40 MHz	3720.00 (648000)	3768.00 (651200)	3816.00 (654400)	N/A	3864.00 (657600)	3912.00 (660800)	3960.00 (664000)
NR Band n77: 60 MHz	3730.02 (648668)	3803.34 (653556)	N/A	N/A	N/A	3976.66 (658444)	3949.98 (663332)
NR Band n77: 80 MHz	3740.01 (649334)	N/A	N/A	3840.00 (656000)	N/A	N/A	3939.99 (662666)
NR Band n77: 100 MHz	**3750.00 (650000)**	N/A	N/A	N/A	N/A	N/A	**3930.00 (662000)**
NR Band n78: 20 MHz	3460.02 (630668)	N/A	N/A	3500.01 (633334)	N/A	N/A	3540.00 (636000)
NR Band n78: 30 MHz	3465.00 (631000)	N/A	N/A	3500.01 (633334)	N/A	N/A	3534.99 (635666)
NR Band n78: 40 MHz	3470.01 (631334)	N/A	N/A	3500.01 (633334)	N/A	N/A	3529.98 (635332)
NR Band n78: 50 MHz	3475.02 (631668)	N/A	N/A	N/A	N/A	N/A	3525.00 (635000)
NR Band n78: 60 MHz	N/A	N/A	N/A	3500.01 (633334)	N/A	N/A	N/A
NR Band n78: 70 MHz	N/A	N/A	N/A	3500.01 (633334)	N/A	N/A	N/A
NR Band n78: 80 MHz	N/A	N/A	N/A	3500.01 (633334)	N/A	N/A	N/A
NR Band n78: 90 MHz	N/A	N/A	N/A	3500.01 (633334)	N/A	N/A	N/A
NR Band n78: 100 MHz	N/A	N/A	N/A	3500.01 (633334)	N/A	N/A	N/A
NR Band n78: 20 MHz	3710.01 (647334)	N/A	N/A	3750.00 (650000)	N/A	N/A	3789.99 (652666)
NR Band n78: 30 MHz	3715.02 (647500)	N/A	N/A	3750.00 (650000)	N/A	N/A	3784.98 (652332)
NR Band n78: 40 MHz	3720.00 (648000)	N/A	N/A	N/A	N/A	N/A	3780.00 (652000)
NR Band n78: 50 MHz	3725.00 (648333)	N/A	N/A	N/A	N/A	N/A	3774.99 (651666)
NR Band n78: 60 MHz	N/A	N/A	N/A	3750.00 (650000)	N/A	N/A	N/A
NR Band n78: 70 MHz	N/A	N/A	N/A	3750.00 (650000)	N/A	N/A	N/A
NR Band n78: 80 MHz	N/A	N/A	N/A	3750.00 (650000)	N/A	N/A	N/A
NR Band n78: 90 MHz	N/A	N/A	N/A	3750.00 (650000)	N/A	N/A	N/A
NR Band n78: 100 MHz	N/A	N/A	N/A	3750.00 (650000)	N/A	N/A	N/A
SCS for NR Band n71/n12/n13/n14/n5/n66/n2/n7	15 kHz						
SCS for NR Band n41/n38/n48/n77/n78	30 kHz						
Modulations Supported in UL	DFT-s-OFDM: π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM						
A-MPR (Additional MPR) disabled for SAR Testing?	YES						
EN-DC Carrier Aggregation Possible Combinations	Does not support EN-DC.						

Note(s)
1. n71 can not contain three non-overlapping channels of 20 MHz, 15 MHz bandwidth. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
2. n12 can not contain three non-overlapping channels of 15 MHz, 10 MHz bandwidth. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
3. n13 can not contain three non-overlapping channels of 10 MHz, 5 MHz bandwidth. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
4. n14 can not contain three non-overlapping channels of 10 MHz, 5 MHz bandwidth. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
5. n5 can not contain three non-overlapping channels of 20 MHz, 15 MHz, 10 MHz bandwidth. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
6. n41 can not contain three non-overlapping channels of 100 MHz bandwidth. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. n38 can not contain three non-overlapping channels of 20 MHz bandwidth. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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3. INTROCUCTION

The FCC and Industry Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ) It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Fig. 3.1)

$$SAR = \frac{d}{dt}\left(\frac{dU}{dm}\right) = \frac{d}{dt}\left(\frac{dU}{\rho dv}\right)$$

Fig. 3.1 SAR Mathematical Equation

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

where:

σ = conductivity of the tissue-simulating material (S/m)

ρ = mass density of the tissue-simulating material (kg/m^3)

E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

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4. DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4.1).

2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.

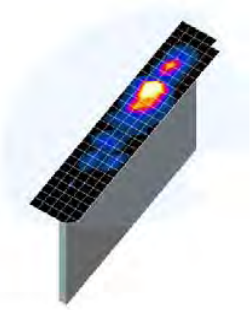

Figure 4.1
Sample SAR Area Scan

3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4.1). On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4.1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

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			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

Table 4.1 Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

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5. DEFINITION OF REFERENCE POINTS

5.1 Ear Reference Point

Figure 5.1 shows the front, back and side views of the SAM Twin Phantom. The point"M" is the reference point for the center of the mouth, "LE" is the left ear reference point(ERP), and "RE" is the right ERP. The ERPs are 15 mm posterior to the entrance to the Ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5.1. The plane Passing, through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck- Front) is perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 5.1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning.

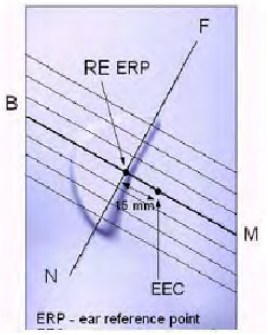

Figure 5.1
Close-up side view of ERP

5.2 Handset Reference Points

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the "test device reference point" located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (See Fig. 5.3). The "test device reference point" was than located at the same level as the center of the ear reference point. The test device was positioned so that the "vertical centerline" was bisecting the front surface of the handset at it's top and bottom edges, positioning the "ear reference point" on the outer surface of the both the left and right head phantoms on the ear reference point.

Figure 5.2 Front, back and side view SAM Twin Phantom

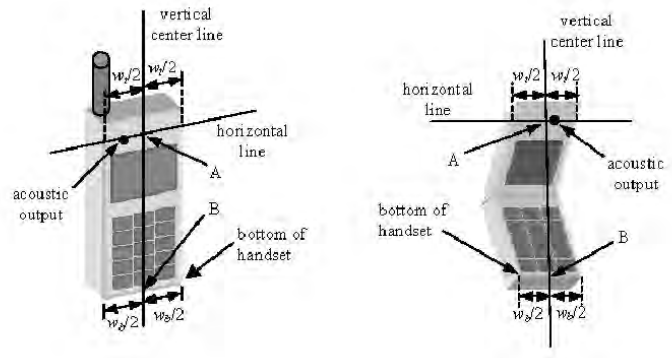

Figure 5.3 Handset Vertical Center & Horizontal Line Reference Points

6. TEST CONFIGURATION POSITIONS FOR HANDSETS

6.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02.

6.2 Positioning for Cheek/Touch

1. The test device was positioned with the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6.1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

Figure 6.1 Front, Side and Top View of Cheek/Touch Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the ear.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the plane normal to MB-NF including the line MB (reference plane).
4. The phone was hen rotated around the vertical centerline until the phone (horizontal line) was symmetrical was respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the phone contact with the ear, the handset was rotated about the line NF until any point on the handset made contact with a phantom point below the ear (cheek). (See Figure 6.2)

6.3 Positioning for Ear / 15 ° Tilt

With the test device aligned in the “Cheek/Touch Position”:

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15 degree.
2. The phone was then rotated around the horizontal line by 15 degree.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the phone touches the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. The tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6.3).

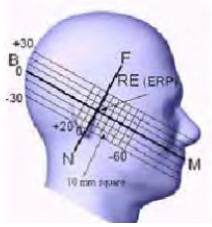

Figure 6.2 Side view w/relevant markings

Figure 6.3 Front, Side and Top View of Ear/15º Position

6.4 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6.4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

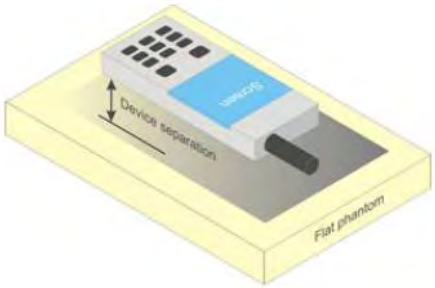

Figure 6.4 Sample Body-Worn Diagram

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.
Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.5 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

Per KDB Publication 447498 D01v06, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance. Therefore, extremity SAR was not evaluated for this device.

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6.6 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front the front, rear and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitter often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each KDB Publication 447498 D01v06 procedures. The “Portable Hotspot” feature on the handset was not activated during SAR assessment, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

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7. RF EXPOSURE LIMITS

Uncontrolled Environment:

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

Controlled Environment:

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 8.1.SAR Human Exposure Specified in ANSI/IEEE C95.1-1992

	HUMAN EXPOSURE LIMITS	
	General Public Exposure (W/kg) or (mW/g)	Occupational Exposure (W/kg) or (mW/g)
SPATIAL PEAK SAR * (Brain)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.0

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e.as a result of employment or occupation).

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8. FCC MEASUREMENT PROCEDURES

Power measurements were performed using a base station simulator under digital average power.

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, When SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as reported SAR. The highest reported SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

8.2 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01.

The device was placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test were evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device was tested throughout the SAR test at maximum output power, the SAR measurement system measures a “point SAR” at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviated by more than 5%, the SAR test and drift measurements were repeated.

8.3 SAR Measurement Conditions for WCDMA (UMTS)

8.3.1 Output Power Verification

Maximum output power is measured on the High, Middle and Low channels for each applicable transmission band according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1s”.

Maximum output power is verified on the High, Middle and Low channels according to the general, descriptions in section 5.2 of 3GPP TS 34.121 (release 5), using the appropriate RMC with TPC,(transmit power control) set to all “1s” or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.3.2 Head SAR Measurements for Handsets

SAR for head exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all “1s”. SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than 0.25 dB higher than that measured in12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 AMR with a 3.4 kbps SRB (signaling radio bearer) using the exposure configuration that resulted in the highest SAR for that RF channel in the 12.2 kbps RMC mode.

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8.3.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all“1s”.

8.3.4 Release 5 HSDPA Data Devices

The following procedures are applicable to HSDPA data devices operating under 3GPP Release 5. SAR is required for devices in body-worn accessory and other body exposure conditions, including handsets and data modems operating in various electronic devices. HSDPA operates in conjunction with WCDMA and requires an active DPCCH. The default test configuration is to measure SAR in WCDMA with HSDPA remain inactive, to establish a radio link between the test device and a communication test set using a 12.2 kbps RMC configured in Test Loop Mode 1. SAR for HSDPA is selectively measured using the highest reported SAR configuration in WCDMA, with an FRC in H-set 1 and a 12.2 kbps RMC. SAR is selectively confirmed for other physical channel configurations (DPCCH & DPDCHn) according to exposure conditions, device operating capabilities and maximum output power specified for production units, including tune-up tolerance by applying the 3G SAR test reduction procedures. Maximum output power is verified according to the applicable versions of 3GPP TS 34.121. SAR must be measured based on these maximum output conditions and requirements in KDB Publication 447498, with respect to the UE Categories, and explained in the SAR report. When Maximum Power Reduction (MPR) applies, the implementations must be clearly identified in the SAR report to support test results according to Cubic Metric (CM) and, as appropriate, Enhanced MPR (E-MPR) requirements.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM (dB) (2)
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 (3)	15/15 (3)	64	12/15 (3)	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.
Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Figure 9.1 Table 1

8.3.5 Release 6 HSUPA Data Devices

The following procedures are applicable to HSPA (HSUPA/HSDPA) data devices operating under 3GPP Release 6. SAR is required for devices in body-worn accessory and other body exposure conditions, including handsets and data modems operating in various electronic devices. HSUPA operates in conjunction with WCDMA and HSDPA. SAR is initially measured in WCDMA test configurations with HSPA remain inactive. The default test configuration is to establish a radio link between the test device and a communication test set to configure a 12.2 kbps RMC in Test Loop Mode 1. SAR for HSPA is selectively measured with HS-DPCCH, E-DPCCH and E-DPDCH, all enabled, along with a 12.2 kbps RMC using the highest reported SAR configuration in WCDMA with 12.2 kbps RMC only.
An FRC is configured according to HS-DPCCH Sub-test 1 using H-set 1 and QPSK. HSPA is configured according to E-DCH Sub-test 5 requirements. SAR for other HSPA sub-test configurations is confirmed selectively according to exposure conditions, E-DCH UE Category and maximum output power of production units, including tune-up tolerance by applying the 3G SAR test reduction procedure. Maximum output power is verified according to procedures in applicable versions of 3GPP TS 34.121. SAR must be measured based on these maximum output conditions and requirements in KDB Publication 447498, with respect to the UE Categories for HS-DPCCH and HSPA, and explained in the SAR report. When Maximum Power Reduction (MPR) applies, the implementations must be clearly identified in the SAR report to support test results according to Cubic Metric (CM) and, as appropriate, Enhanced MPR (E-MPR) requirements.

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Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}: 47/15 β_{ed2}: 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 8 ⇔ $A_{hs} = \beta_{hs}/\beta_c$ = 30/15 ⇔ β_{hs}= 30/15 *β_c.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

Figure 9.2 Table 2

8.3.6 SAR Measurement Conditions for DC-HSDPA

In the following DB 941225 D01v03r01 procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

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8.4 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05v02r05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR. The call simulator was used for LTE output power measurement and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.4.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

8.4.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36. 101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.4.3 A-MPR

A-MPR (Addition MPR) has been disable for all SAR tests by setting NS=01 on the base station simulator.

8.4.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r05:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
   i. The required channel and offset combination with the highest maximum output power is required for SAR.
   ii. When the reported SAR is $\leq$ 0.8 W/kg, testing of the remaining RB offset configurations and required test channel is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to 0.5 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

8.4.5 64QAM uplink

(1) Per KDB 941225 D05 V02r05, we'll measure conducted powers per Section 5.1 for all uplink modulations (QPSK, 16QAM, 64QAM) and include in the test report.

(2) From these power measurements, we will apply the procedures in Section 5.2.4 ("Higher Order Modulations") to determine SAR test reduction for 16QAM and 64QAM test cases.

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8.4.6 LTE TDD Consideration setup for SAR measurement

According to KDB 941225 D05 SAR for LTE Devices v02r05 for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33 %) using Uplink-downlink configuration 0 and Special subframe configuration 6.

LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame and Table 4.2-2 for uplink-downlink configuration and Table 4.2-1 for Special subframe configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			-	-	-
8	$24144 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Calculated Duty Cycle = Extended cyclic prefix in uplink * (Ts) * # of S + # of U

Ts = 1/(15000 * 2048) seconds

Example for calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = 5120 * [1/(15000 * 2048)] * 2 + 6 ms = 63.33 %

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9. RF CONDUCTED POWERS

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06

9.1 GSM Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Voice[dBm]	Burst Average GMSK [dBm]				Burst Average GMSK [dBm]			
		1 TX Slot	1 TX Slot	2 TX Slot	3 TX Slot	4 TX Slot	1 TX Slot	2 TX Slot	3 TX Slot	4 TX Slot
GSM/GPRS/EDGE 850	Maximum	32.0	32.0	31.0	29.5	28.1	26.5	25.0	23.5	22.5
	Nominal	31.0	31.0	30.0	28.5	27.1	25.5	24.0	22.5	21.5
GSM/GPRSEDGE 1900	Maximum	29.0	29.0	27.5	26.6	24.5	26.0	24.5	22.5	21.5
	Nominal	28.0	28.0	26.5	25.6	23.5	25.0	23.5	21.5	20.5

Table 9.1.1 GSM Nominal and Maximum Output Power Spec

Band	Channel	Maximum Burst-Averaged Output Power(dBm)								
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
		GSM CS 1 Slot	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
GSM850	128	31.40	31.40	30.80	28.80	27.80	26.0	24.5	22.8	21.7
	190	31.50	31.50	30.90	29.00	28.00	26.1	24.7	23.0	22.0
	251	31.50	31.50	30.90	28.80	27.90	26.1	24.8	22.9	21.9
PCS 1900	512	28.50	28.50	26.90	26.40	24.20	25.3	24.0	22.0	20.8
	661	28.30	28.30	27.00	26.50	24.30	25.4	23.9	21.9	21.0
	810	28.80	28.80	27.30	26.30	24.20	25.3	23.8	21.8	20.9
Band	Channel	Calculated Maximum Frame-Averaged Output Power(dBm)								
		Voice	GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
		GSM CS 1 Slot	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
GSM850	128	22.37	22.37	24.78	24.54	24.79	16.97	18.48	18.54	18.69
	190	22.47	22.47	24.88	24.74	24.99	17.07	18.68	18.74	18.99
	251	22.47	22.47	24.88	24.54	24.89	17.07	18.78	18.64	18.89
PCS 1900	512	19.47	19.47	20.88	22.14	21.19	16.27	17.98	17.74	17.79
	661	19.27	19.27	20.98	22.24	21.29	16.37	17.88	17.64	17.99
	810	19.77	19.77	21.28	22.04	21.19	16.27	17.78	17.54	17.89
GSM850	Frame Avg. Targets:	21.97	21.97	23.98	24.24	24.09	16.47	17.98	18.24	18.49
PCS 1900		18.97	18.97	20.48	21.34	20.49	15.97	17.48	17.24	17.49

Table 9.1.2 GSM Conducted Power

Note:

1. Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
2. GPRS (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.
3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

GPRS Multislot class: 33 (max 4 TX Uplink slots)
EDGE Multislot class: 33 (max 4 TX Uplink slots)
DTM Multislot Class: N/A

Figure 9.1 Power Measurement Setup

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9.2 WCDMA Nominal and Maximum Output Power Spec and Conducted Powers

3GPP Release Version	Mode			Cellular Band (dBm)	AWS Band (dBm)	PCS Band (dBm)	3GPP MPR (dB)
99	WCDMA	Voice	Maximum	22.5	22.5	22.5	-
			Nominal	21.5	21.5	21.5	
5	HSDPA	Subtest 1	Maximum	21.5	21.5	21.5	0
			Nominal	20.5	20.5	20.5	
5		Subtest 2	Maximum	21.5	21.5	21.5	0
			Nominal	20.5	20.5	20.5	
5		Subtest 3	Maximum	21.0	21.0	21.0	0.5
			Nominal	20.0	20.0	20.0	
5		Subtest 4	Maximum	21.0	21.0	21.0	0.5
			Nominal	20.0	20.0	20.0	
6	HSUPA	Subtest 1	Maximum	21.5	21.5	21.5	0
			Nominal	20.5	20.5	20.5	
6		Subtest 2	Maximum	19.5	19.5	19.5	2
			Nominal	18.5	18.5	18.5	
6		Subtest 3	Maximum	20.5	20.5	20.5	1
			Nominal	19.5	19.5	19.5	
6		Subtest 4	Maximum	19.5	19.5	19.5	2
			Nominal	18.5	18.5	18.5	
6		Subtest 5	Maximum	21.5	21.5	21.5	0
			Nominal	20.5	20.5	20.5	
8	DC-HSDPA	Subtest 1	Maximum	21.5	21.5	21.5	0
			Nominal	20.5	20.5	20.5	
8		Subtest 2	Maximum	21.5	21.5	21.5	0
			Nominal	20.5	20.5	20.5	
8		Subtest 3	Maximum	21.0	21.0	21.0	0.5
			Nominal	20.0	20.0	20.0	
8		Subtest 4	Maximum	21.0	21.0	21.0	0.5
			Nominal	20.0	20.0	20.0	

Table 9.2.1 WCDMA Nominal and Maximum Output Power Spec

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band (dBm)			AWS Band (dBm)			PCS Band (dBm)			3GPP MPR (dB)
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	21.96	22.07	22.02	22.15	22.29	22.28	22.47	22.42	22.40	-
99		12.2 kbps AMR	21.96	22.05	22.01	22.13	22.28	22.25	22.45	22.40	22.38	-
5	HSDPA	Subtest 1	20.95	21.05	21.01	21.15	21.28	21.28	21.47	21.41	21.41	0
5		Subtest 2	20.94	21.08	21.02	21.13	21.32	21.30	21.48	21.42	21.40	0
5		Subtest 3	20.48	20.57	20.51	20.64	20.78	20.78	20.99	20.91	20.90	0.5
5		Subtest 4	20.46	20.54	20.52	20.64	20.75	20.74	20.98	20.90	20.90	0.5
6	HSUPA	Subtest 1	20.96	21.06	21.03	21.15	21.29	21.28	21.47	21.41	21.37	0
6		Subtest 2	18.97	19.07	19.04	19.15	19.30	19.29	19.45	19.41	19.41	2
6		Subtest 3	19.95	20.07	20.05	20.13	20.31	20.30	20.45	20.40	20.38	1
6		Subtest 4	18.97	19.10	19.04	19.17	19.30	19.32	19.47	19.45	19.44	2
6		Subtest 5	20.97	21.08	21.05	21.16	21.29	21.31	21.48	21.43	21.40	0
8	DC-HSDPA	Subtest 1	20.94	21.02	20.99	21.10	21.23	21.25	21.43	21.40	21.34	0
8		Subtest 2	20.91	21.00	20.97	21.14	21.24	21.25	21.42	21.38	21.33	0
8		Subtest 3	20.41	20.52	20.48	20.58	20.75	20.74	20.94	20.89	20.90	0.5
8		Subtest 4	20.40	20.50	20.48	20.56	20.72	20.73	20.92	20.87	20.89	0.5

Table 9.2.2 WCDMA Conducted Power

WCDMA SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

The manufacturer declares that the HSDPA, HSUPA and DC-HSDPA transmitter's power will not exceed the R99 maximum transmit power in devices based on Qualcomm's HSPA chipset solutions.

DC-HSDPA considerations

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance.
- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements.
- The DUT supports UE category 24 for HSDPA.

Figure 9.2 Power Measurement Setup

9.3 LTE Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Modulated Average[dBm]
LTE Band 71	Maximum	22.5
	Nominal	21.5

Table 9.3.1.1 Nominal and Maximum Output Power Spec

1) LTE Band 71

LTE Band 71 Conducted Power– 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 133297 (680.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	21.92	≤ 1	0
	1	**50**	**22.02**		
	1	99	21.91		
	50	0	20.96		1
	50	**25**	**21.08**		
	50	50	21.00		
	100	0	21.05		1
16QAM	1	0	20.99	≤ 1	1
	1	50	21.17		
	1	99	21.01		
	50	0	19.99	≤ 2	2
	50	25	20.08		
	50	50	20.03		
	100	0	20.03		2
64QAM	1	0	19.98	≤ 2	2
	1	50	20.13		
	1	99	19.99		
	50	0	18.95	≤ 3	3
	50	25	19.08		
	50	50	18.98		
	100	0	19.00		3
256QAM	1	0	17.11	≤ 5	5
	1	50	17.18		
	1	99	17.05		
	50	0	17.02	≤ 5	5
	50	25	17.10		
	50	50	17.01		
	100	0	17.02	≤ 5	5

Table 9.3.1.2 LTE Conducted Power

Note: LTE B71 can not contain three non-overlapping channels of 20 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

LTE Band 71 Conducted Power– 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 133297 (680.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	21.86	≤ 1	0
	1	36	21.95		
	1	74	21.84		
	36	0	20.84		1
	36	18	20.98		
	36	37	20.93		
	75	0	20.97		1
16QAM	1	0	20.93	≤ 1	1
	1	36	21.09		
	1	74	21.00		
	36	0	19.85	≤ 2	2
	36	18	19.98		
	36	37	19.95		
	75	0	19.95		2
64QAM	1	0	19.81	≤ 2	2
	1	36	20.02		
	1	74	19.90		
	36	0	18.87	≤ 3	3
	36	18	18.97		
	36	37	18.91		
	75	0	18.93		3
256QAM	1	0	16.94	≤ 5	5
	1	36	17.06		
	1	74	17.03		
	36	0	16.90	≤ 5	5
	36	18	17.00		
	36	37	16.89		
	75	0	16.98	≤ 5	5

Table 9.3.1.3 LTE Conducted Power

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LTE Band 71 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			133172 (668.0 MHz)	133297 (680.5 MHz)	133422 (693.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	21.96	22.02	22.05	≤ 1	0
	1	**25**	22.04	22.03	**22.16**		
	1	49	22.01	21.96	22.14		
	25	0	21.12	20.99	21.11		1
	25	12	21.14	21.05	21.22		
	25	25	21.06	21.04	21.20		
	50	0	21.12	21.07	21.14		1
16QAM	1	0	21.15	21.15	21.24	≤ 1	1
	1	25	21.23	21.18	21.31		
	1	49	21.13	21.07	21.28		
	25	0	20.14	20.00	20.12	≤ 2	2
	25	12	20.15	20.06	20.21		
	25	25	20.10	20.05	20.17		
	50	0	20.13	20.06	20.12		2
64QAM	1	0	20.09	20.04	20.10	≤ 2	2
	1	25	20.23	20.19	20.29		
	1	49	20.11	20.01	20.21		
	25	0	19.13	18.97	19.15	≤ 3	3
	25	12	19.14	19.06	19.24		
	25	25	19.12	19.05	19.23		
	50	0	19.15	19.05	19.12		3
256QAM	1	0	17.10	17.03	17.05	≤ 5	5
	1	25	17.23	17.17	17.23		
	1	49	17.07	17.05	17.22		
	25	0	17.15	16.88	17.12	≤ 5	5
	25	12	17.16	17.09	17.16		
	25	25	16.99	17.00	17.14		
	50	0	17.19	17.04	17.08	≤ 5	5

Table 9.3.1.4 LTE Conducted Power

LTE Band 71 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			133147 (665.5 MHz)	133297 (680.5 MHz)	133447 (695.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	21.84	21.81	21.81	≤ 1	0
	1	12	21.89	21.84	21.94		
	1	24	21.86	21.83	21.84		
	12	0	20.92	20.91	20.81		0
	12	6	20.96	20.93	21.00		
	12	13	20.95	20.92	20.83		
	25	0	20.94	20.91	20.96		1
16QAM	1	0	20.97	20.85	20.88	≤ 1	1
	1	12	21.07	21.03	21.13		
	1	24	20.98	20.97	20.99		
	12	0	19.93	19.92	19.81		1
	12	6	20.00	19.95	20.01		
	12	13	19.95	19.94	19.82		
	25	0	19.95	19.84	19.99	≤ 2	2
64QAM	1	0	20.00	19.94	19.82	≤ 2	2
	1	12	20.03	20.00	20.07		
	1	24	19.97	19.95	20.00		
	12	0	18.91	18.88	18.82		2
	12	6	18.97	18.96	19.03		
	12	13	18.93	18.92	18.91		
	25	0	18.95	18.93	19.02	≤ 3	3
256QAM	1	0	17.03	16.91	16.80	≤ 5	5
	1	12	17.08	17.03	17.13		
	1	24	17.01	16.99	16.98		
	12	0	16.94	16.90	16.93	≤ 5	5
	12	6	16.96	16.94	17.04		
	12	13	16.88	16.90	17.01		
	25	0	16.95	16.92	17.02	≤ 5	5

Table 9.3.1.5 LTE Conducted Power

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Band & Mode		Modulated Average[dBm]
LTE Band 12	Maximum	22.5
	Nominal	21.5

Table 9.3.2.1 Nominal and Maximum Output Power Spec

2) LTE Band 12

LTE Band 12 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	21.78	≤ 1	0
	1	**25**	21.89		
	1	49	21.80		
	25	0	20.76		1
	25	**12**	20.96		
	25	25	20.90		
	50	0	20.90		1
16QAM	1	0	20.96	≤ 1	1
	1	25	21.08		
	1	49	20.98		
	25	0	19.84	≤ 2	2
	25	12	19.98		
	25	25	19.94		
	50	0	19.95		2
64QAM	1	0	19.85	≤ 2	2
	1	25	20.08		
	1	49	19.95		
	25	0	18.83	≤ 3	3
	25	12	18.95		
	25	25	18.92		
	50	0	18.92		3
256QAM	1	0	16.92	≤ 5	5
	1	25	17.05		
	1	49	16.98		
	25	0	16.81	≤ 5	5
	25	12	16.95		
	25	25	16.90		
	50	0	16.92	≤ 5	5

Table 9.3.2.2 LTE Conducted Power

Note: LTE B12 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

LTE Band 12 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	21.67	21.77	21.74	≤ 1	0
	1	**12**	21.76	**21.85**	21.81		
	1	24	21.74	21.79	21.74		
	12	0	20.77	20.87	20.82		1
	12	6	20.87	20.94	20.91		
	12	13	20.81	20.89	20.84		
	25	0	20.82	20.89	20.86		1
16QAM	1	0	20.85	20.88	20.87	≤ 1	1
	1	12	20.95	21.04	20.97		
	1	24	20.93	20.94	20.91		
	12	0	19.80	19.86	19.82	≤ 2	2
	12	6	19.91	19.95	19.94		
	12	13	19.84	19.92	19.87		
	25	0	19.83	19.85	19.82		2
64QAM	1	0	19.78	19.81	19.86	≤ 2	2
	1	12	19.94	19.99	19.88		
	1	24	19.90	19.98	19.85		
	12	0	18.67	18.74	18.75	≤ 3	3
	12	6	18.79	18.83	18.84		
	12	13	18.72	18.82	18.77		
	25	0	18.73	18.71	18.68		3
256QAM	1	0	16.84	16.90	16.88	≤ 5	5
	1	12	16.95	17.02	16.96		
	1	24	16.89	16.98	16.92		
	12	0	16.76	16.84	16.85	≤ 5	5
	12	6	16.86	16.88	16.93		
	12	13	16.82	16.84	16.82		
	25	0	16.87	16.86	16.78	≤ 5	5

Table 9.3.2.3 LTE Conducted Power

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LTE Band 12 Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	21.75	21.75	21.75	≤ 1	0
	1	7	21.76	21.83	21.80		
	1	14	21.69	21.78	21.73		
	8	0	20.83	20.83	20.82		1
	8	4	20.86	20.90	20.89		
	8	7	20.81	20.88	20.84		
	15	0	20.75	20.82	20.78		1
16QAM	1	0	20.90	20.94	20.95	≤ 1	1
	1	7	20.94	21.02	20.99		
	1	14	20.87	20.98	20.90		
	8	0	19.87	19.89	19.86	≤ 2	2
	8	4	19.89	19.90	19.94		
	8	7	19.80	19.88	19.84		
	15	0	19.83	19.82	19.77		2
64QAM	1	0	19.93	19.90	19.88	≤ 2	2
	1	7	19.95	20.01	19.97		
	1	14	19.84	19.96	19.90		
	8	0	18.79	18.78	18.77	≤ 3	3
	8	4	18.82	18.85	18.84		
	8	7	18.75	18.82	18.81		
	15	0	18.76	18.77	18.72		3
256QAM	1	0	16.91	16.94	16.93	≤ 5	5
	1	7	16.94	16.99	16.97		
	1	14	16.83	16.92	16.92		
	8	0	16.92	16.89	16.88	≤ 5	5
	8	4	16.93	16.92	16.89		
	8	7	16.91	16.89	16.83		
	15	0	16.80	16.88	16.81	≤ 5	5

Table 9.3.2.4 LTE Conducted Power

LTE Band 12 Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	21.55	21.61	21.59	≤ 1	0
	1	2	21.56	21.67	21.63		
	1	5	21.51	21.59	21.54		
	3	0	21.52	21.61	21.60		0
	3	2	21.54	21.63	21.62		
	3	3	21.50	21.60	21.56		
	6	0	20.61	20.66	20.64		1
16QAM	1	0	20.74	20.80	20.77	≤ 1	1
	1	2	20.75	20.86	20.81		
	1	5	20.70	20.78	20.73		
	3	0	20.66	20.66	-20.79		1
	3	2	20.68	20.71	20.80		
	3	3	20.53	20.67	20.68		
	6	0	19.60	19.64	19.74	≤ 2	2
64QAM	1	0	19.46	19.80	19.75	≤ 2	2
	1	2	19.58	19.84	19.81		
	1	5	19.51	19.51	19.73		
	3	0	19.45	19.50	19.76		2
	3	2	19.55	19.80	19.80		
	3	3	19.52	19.79	19.75		
	6	0	18.67	18.67	18.69	≤ 3	3
256QAM	1	0	16.74	16.53	16.74	≤ 5	5
	1	2	16.75	16.80	16.78		
	1	5	16.65	16.51	16.40		
	3	0	16.58	16.52	16.61	≤ 5	5
	3	2	16.62	16.79	16.63		
	3	3	16.53	16.61	16.47		
	6	0	16.67	16.73	16.75	≤ 5	5

Table 9.3.2.5 LTE Conducted Power

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Band & Mode		Modulated Average[dBm]
LTE Band 13	Maximum	22.2
	Nominal	21.2

Table 9.3.3.1 Nominal and Maximum Output Power Spec

3) LTE Band 13

LTE Band 13 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	**1**	**0**	**21.83**	≤ 1	0
	1	25	21.74		
	1	49	21.75		
	25	**0**	**20.68**		1
	25	12	20.62		
	25	25	20.58		
	50	0	20.70		1
16QAM	1	0	20.95	≤ 1	1
	1	25	20.92		
	1	49	20.81		
	25	0	19.69	≤ 2	2
	25	12	19.65		
	25	25	19.60		
	50	0	19.67		2
64QAM	1	0	19.88	≤ 2	2
	1	25	19.75		
	1	49	19.74		
	25	0	18.69	≤ 3	3
	25	12	18.67		
	25	25	18.60		
	50	0	18.69		3
256QAM	1	0	16.94	≤ 5	5
	1	25	16.75		
	1	49	16.86		
	25	0	16.85	≤ 5	5
	25	12	16.75		
	25	25	16.74		
	50	0	16.89	≤ 5	5

Table 9.3.3.2 LTE Conducted Power

LTE Band 13 Conducted Power– 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	21.80	≤ 1	0
	1	12	21.75		
	1	24	21.70		
	12	0	20.62		1
	12	6	20.60		
	12	13	20.51		
	25	0	20.63		1
16QAM	1	0	20.92	≤ 1	1
	1	12	20.84		
	1	24	20.82		
	12	0	19.64	≤ 2	2
	12	6	19.62		
	12	13	19.53		
	25	0	19.62		2
64QAM	1	0	19.83	≤ 2	2
	1	12	19.75		
	1	24	19.70		
	12	0	18.65	≤ 3	3
	12	6	18.64		
	12	13	18.58		
	25	0	18.58		3
256QAM	1	0	16.90	≤ 5	5
	1	12	16.89		
	1	24	16.84		
	12	0	16.81	≤ 5	5
	12	6	16.79		
	12	13	16.70		
	25	0	16.73	≤ 5	5

Table 9.3.3.3 LTE Conducted Power

Note: LTE B13 can not contain three non-overlapping channels of 10 MHz, 5 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Band & Mode		Modulated Average[dBm]
LTE Band 14	Maximum	23.0
	Nominal	22.0

Table 9.3.4.1 Nominal and Maximum Output Power Spec

4) LTE Band 14

LTE Band 14 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23330 (793.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	22.81	≤ 1	0
	1	**25**	**22.84**		
	1	49	22.69		
	25	0	21.81		1
	25	**12**	**21.86**		
	25	25	21.76		
	50	0	21.84		1
16QAM	1	0	21.86	≤ 1	1
	1	25	21.96		
	1	49	21.88		
	25	0	20.82	≤ 2	2
	25	12	20.87		
	25	25	20.83		
	50	0	20.85		2
64QAM	1	0	20.78	≤ 2	2
	1	25	20.80		
	1	49	20.79		
	25	0	19.85	≤ 3	3
	25	12	19.86		
	25	25	19.84		
	50	0	19.86		3
256QAM	1	0	17.82	≤ 5	5
	1	25	17.86		
	1	49	17.71		
	25	0	17.71	≤ 5	5
	25	12	17.75		
	25	25	17.72		
	50	0	17.66	≤ 5	5

Table 9.3.4.2 LTE Conducted Power

LTE Band 14 Conducted Power– 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23330 (793.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	22.74	≤ 1	0
	1	12	22.75		
	1	24	22.72		
	12	0	21.76		1
	12	6	21.80		
	12	13	21.77		
	25	0	21.77		1
16QAM	1	0	21.91	≤ 1	1
	1	12	21.94		
	1	24	21.88		
	12	0	20.84	≤ 2	2
	12	6	20.85		
	12	13	20.83		
	25	0	20.81		2
64QAM	1	0	20.76	≤ 2	2
	1	12	20.82		
	1	24	20.74		
	12	0	19.80	≤ 3	3
	12	6	19.84		
	12	13	19.82		
	25	0	19.83		3
256QAM	1	0	17.85	≤ 5	5
	1	12	17.87		
	1	24	17.78		
	12	0	17.77	≤ 5	5
	12	6	17.79		
	12	13	17.71		
	25	0	17.71	≤ 5	5

Table 9.3.4.3 LTE Conducted Power

Note: LTE B13 can not contain three non-overlapping channels of 5 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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Band & Mode		Modulated Average[dBm]
LTE Band 5	Maximum	22.7
	Nominal	21.7

Table 9.3.5.1 Nominal and Maximum Output Power Spec

5) LTE Band 5 (Cell)

LTE Band 5 (Cell) Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20525 (836.5 MHz)		
			Conducted Power (dBm)		
QPSK	1	0	22.14	≤ 1	0
	1	**25**	**22.20**		
	1	49	22.18		
	25	0	21.14		1
	25	**12**	**21.21**		
	25	25	21.19		
	50	0	21.16		1
16QAM	1	0	21.24	≤ 1	1
	1	25	21.27		
	1	49	21.25		
	25	0	20.21	≤ 2	2
	25	12	20.29		
	25	25	20.28		
	50	0	20.19		2
64QAM	1	0	20.10	≤ 2	2
	1	25	20.23		
	1	49	20.16		
	25	0	19.23	≤ 3	3
	25	12	19.32		
	25	25	19.27		
	50	0	19.26		3
256QAM	1	0	17.19	≤ 5	5
	1	25	17.26		
	1	49	17.21		
	25	0	17.08	≤ 5	5
	25	12	17.11		
	25	25	17.09		
	50	0	17.10	≤ 5	5

Table 9.3.5.2 LTE Conducted Power

Note: LTE B26 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

LTE Band 5 (Cell) Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20425 (826.5 MHz)	20525 (836.5 MHz)	20625 (846.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.08	22.09	22.11	≤ 1	0
	1	12	22.14	22.13	22.12		
	1	24	22.06	22.05	22.04		
	12	0	21.15	21.17	21.14		1
	12	6	21.22	21.21	21.19		
	12	13	21.20	21.16	21.18		
	25	0	21.20	21.12	21.11		1
16QAM	1	0	21.21	21.22	21.23	≤ 1	1
	1	12	21.24	21.26	21.26		
	1	24	21.17	21.15	21.16		
	12	0	20.22	20.20	20.20	≤ 2	2
	12	6	20.28	20.28	20.24		
	12	13	20.24	20.22	20.21		
	25	0	20.24	20.15	20.18		2
64QAM	1	0	20.08	20.08	20.09	≤ 2	2
	1	12	20.15	20.11	20.14		
	1	24	20.11	20.07	20.08		
	12	0	19.25	19.27	19.28	≤ 3	3
	12	6	19.34	19.32	19.32		
	12	13	19.28	19.28	19.30		
	25	0	19.28	19.18	19.15		3
256QAM	1	0	17.09	17.15	17.18	≤ 5	5
	1	12	17.32	17.29	17.23		
	1	24	17.25	17.21	17.19		
	12	0	17.00	17.14	17.09	≤ 5	5
	12	6	17.06	17.18	17.21		
	12	13	17.05	17.16	17.19		
	25	0	17.04	17.02	17.05	≤ 5	5

Table 9.3.5.3 LTE Conducted Power

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LTE Band 5 (Cell) Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20415 (825.5 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20635 (847.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	22.16	22.10	22.10	≤ 1	0
	1	7	22.17	22.14	22.13		
	1	14	22.12	22.13	22.12		
	8	0	21.19	21.11	21.17		1
	8	4	21.22	21.20	21.19		
	8	7	21.17	21.19	21.16		
	15	0	21.17	21.14	21.11		1
16QAM	1	0	21.22	21.17	21.17	≤ 1	1
	1	7	21.24	21.20	21.19		
	1	14	21.12	21.15	21.11		
	8	0	20.25	20.17	20.24	≤ 2	2
	8	4	20.30	20.31	20.29		
	8	7	20.22	20.22	20.24		
	15	0	20.22	20.16	20.25		2
64QAM	1	0	20.17	20.09	20.17	≤ 2	2
	1	7	20.19	20.20	20.19		
	1	14	20.17	20.09	20.18		
	8	0	19.34	19.25	19.28	≤ 3	3
	8	4	19.35	19.32	19.31		
	8	7	19.29	19.27	19.23		
	15	0	19.28	19.20	19.29		3
256QAM	1	0	17.22	17.19	17.29	≤ 5	5
	1	7	17.25	17.33	17.32		
	1	14	17.19	17.32	17.06		
	8	0	17.09	17.07	17.12	≤ 5	5
	8	4	17.12	17.14	17.18		
	8	7	17.06	17.12	17.16		
	15	0	17.06	17.02	17.12	≤ 5	5

Table 9.3.5.4 LTE Conducted Power

LTE Band 5 (Cell) Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20407 (824.7 MHz)	Mid Channel 20525 (836.5 MHz)	High Channel 20643 (848.3 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	22.01	22.06	22.03	0	0
	1	2	22.13	22.07	22.06		
	1	5	22.03	22.03	22.05		
	3	0	22.01	22.01	22.00	0	0
	3	2	22.08	22.05	22.04		
	3	3	22.03	22.03	22.01		
	6	0	21.08	21.06	21.04	0-1	1
16QAM	1	0	21.04	21.02	21.03	0-1	1
	1	2	21.15	21.09	21.13		
	1	5	21.03	21.00	21.03		
	3	0	21.20	21.06	-21.15	0-1	1
	3	2	21.24	21.18	21.17		
	3	3	21.13	21.11	21.11		
	6	0	20.13	20.14	20.11	0-2	2
64QAM	1	0	20.01	20.03	20.04	0-2	2
	1	2	20.03	20.09	20.06		
	1	5	20.02	20.04	20.01		
	3	0	20.19	20.13	20.19	0-2	2
	3	2	20.26	20.24	20.23		
	3	3	20.20	20.22	20.16		
	6	0	19.07	19.10	19.07	0-3	3
256QAM	1	0	17.19	17.25	17.07	≤ 5	5
	1	2	17.29	17.26	17.25		
	1	5	17.17	17.17	17.22		
	3	0	17.07	17.07	17.12	≤ 5	5
	3	2	17.16	17.23	17.16		
	3	3	17.14	17.21	17.14		
	6	0	17.08	17.06	17.02	≤ 5	5

Table 9.3.5.5 LTE Conducted Power

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Band & Mode		Modulated Average[dBm]
LTE Band 66 (AWS)	Maximum	22.7
	Nominal	21.7

Table 9.3.6.1 Nominal and Maximum Output Power Spec

6) LTE Band 66 (AWS)

LTE Band 66 (AWS) Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.25	22.43	22.21	≤ 1	0
	1	**50**	22.30	22.45	22.37		
	1	99	22.18	22.31	22.17		
	50	0	21.11	21.31	21.14		1
	50	**25**	21.19	21.32	21.22		
	50	50	21.09	21.21	21.08		
	100	**0**	21.13	21.29	21.16		1
16QAM	1	0	21.37	21.50	21.36	≤ 1	1
	1	50	21.43	21.54	21.45		
	1	99	21.28	21.46	21.34		
	50	0	20.27	20.39	20.21	≤ 2	2
	50	25	20.28	20.43	20.25		
	50	50	20.16	20.31	20.21		
	100	0	20.22	20.36	20.22		2
64QAM	1	0	20.40	20.54	20.36	≤ 2	2
	1	50	20.43	20.55	20.48		
	1	99	20.33	20.42	20.29		
	50	0	19.30	19.47	19.31	≤ 3	3
	50	25	19.38	19.51	19.35		
	50	50	19.26	19.40	19.22		
	100	0	19.27	19.46	19.30		3
256QAM	1	0	17.10	17.38	17.15	≤ 5	5
	1	50	17.24	17.39	17.39		
	1	99	17.22	17.29	17.34		
	50	0	17.12	17.15	17.10	≤ 5	5
	50	25	17.16	17.24	17.23		
	50	50	17.15	17.22	17.20		
	100	0	17.19	17.19	17.26	≤ 5	5

Table 9.3.6.2 LTE Conducted Power

LTE Band 66 (AWS) Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			132047 (1717.5 MHz)	132322 (1745.0 MHz)	132597 (1772.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.11	22.28	22.13	≤ 1	0
	1	**36**	22.16	**22.34**	22.19		
	1	74	22.01	22.25	22.05		
	36	0	21.07	21.20	21.08		1
	36	18	21.15	21.21	21.19		
	36	37	21.03	21.18	21.05		
	75	0	21.05	21.16	21.07		1
16QAM	1	0	21.12	21.40	21.31	≤ 1	1
	1	36	21.35	21.47	21.34		
	1	74	21.20	21.36	21.24		
	36	0	20.26	20.31	20.17	≤ 2	2
	36	18	20.28	20.40	20.28		
	36	37	20.20	20.25	20.16		
	75	0	20.24	20.25	20.25		2
64QAM	1	0	20.22	20.47	20.24	≤ 2	2
	1	36	20.28	20.49	20.27		
	1	74	20.08	20.41	20.15		
	36	0	19.24	19.35	19.24	≤ 3	3
	36	18	19.30	19.38	19.31		
	36	37	19.21	19.32	19.22		
	75	0	19.24	19.32	19.25		3
256QAM	1	0	17.14	17.16	17.14	≤ 5	5
	1	36	17.34	17.37	17.29		
	1	74	17.20	17.35	17.20		
	36	0	17.17	17.18	17.13	≤ 5	5
	36	18	17.26	17.35	17.28		
	36	37	17.17	17.33	17.18		
	75	0	17.18	17.26	17.23	≤ 5	5

Table 9.3.6.3 LTE Conducted Power

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LTE Band 66 (AWS) Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			132022 (1715.0 MHz)	132322 (1745.0 MHz)	132622 (1775.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.05	22.16	22.03	≤ 1	0
	1	**25**	22.24	**22.40**	22.29		
	1	49	22.03	22.18	22.05		
	25	0	21.10	21.18	21.03		1
	25	12	21.13	21.21	21.15		
	25	25	21.03	21.11	21.06		
	50	0	21.08	21.16	21.09		1
16QAM	1	0	21.19	21.29	21.17	≤ 1	1
	1	25	21.38	21.50	21.44		
	1	49	21.19	21.37	21.21		
	25	0	20.20	20.25	20.14	≤ 2	2
	25	12	20.25	20.31	20.23		
	25	25	20.12	20.30	20.15		
	50	0	20.14	20.25	20.16		2
64QAM	1	0	20.17	20.21	20.12	≤ 2	2
	1	25	20.36	20.54	20.39		
	1	49	20.09	20.25	20.19		
	25	0	19.24	19.33	19.17	≤ 3	3
	25	12	19.31	19.40	19.34		
	25	25	19.20	19.30	19.23		
	50	0	19.22	19.30	19.23		3
256QAM	1	0	17.24	17.34	17.22	≤ 5	5
	1	25	17.37	17.50	17.44		
	1	49	17.22	17.36	17.24		
	25	0	17.23	17.28	17.20	≤ 5	5
	25	12	17.32	17.39	17.26		
	25	25	17.22	17.29	17.25		
	50	0	17.23	17.30	17.25	≤ 5	5

Table 9.3.6.4 LTE Conducted Power

LTE Band 66 (AWS) Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			131997 (1712.5 MHz)	132322 (1745.0 MHz)	132647 (1777.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.01	22.29	22.02	≤ 1	0
	1	12	22.16	22.40	22.19		
	1	24	22.02	22.25	22.01		
	12	0	21.03	21.15	21.04		1
	12	6	21.13	21.24	21.14		
	12	13	21.01	21.12	21.02		
	25	0	21.04	21.13	21.07		1
16QAM	1	0	21.10	21.43	21.15	≤ 1	1
	1	12	21.29	21.49	21.33		
	1	24	21.04	21.38	21.06		
	12	0	20.11	20.25	20.13	≤ 2	2
	12	6	20.22	20.34	20.24		
	12	13	20.10	20.24	20.12		
	25	0	20.12	20.17	20.14		2
64QAM	1	0	20.09	20.39	20.10	≤ 2	2
	1	12	20.29	20.46	20.32		
	1	24	20.07	20.37	20.11		
	12	0	19.21	19.31	19.19	≤ 3	3
	12	6	19.26	19.40	19.29		
	12	13	19.17	19.30	19.19		
	25	0	19.19	19.27	19.22		3
256QAM	1	0	17.18	17.48	17.14	≤ 5	5
	1	12	17.34	17.57	17.31		
	1	24	17.10	17.40	17.13		
	12	0	17.22	17.26	17.18	≤ 5	5
	12	6	17.31	17.33	17.22		
	12	13	17.20	17.29	17.14		
	25	0	17.23	17.26	17.20	≤ 5	5

Table 9.3.6.5 LTE Conducted Power

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LTE Band 66 (AWS) Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			131987 (1711.5 MHz)	132322 (1745.0 MHz)	132657 (1778.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.28	22.43	22.25	≤ 1	0
	1	7	22.29	22.44	22.31		
	1	14	22.23	22.32	22.19		
	8	0	21.19	21.28	21.14		1
	8	4	21.20	21.31	21.21		
	8	7	21.12	21.23	21.12		
	15	0	21.17	21.28	21.19		1
16QAM	1	0	21.43	21.56	21.33	≤ 1	1
	1	7	21.44	21.57	21.45		
	1	14	21.31	21.50	21.35		
	8	0	20.30	20.41	20.24	≤ 2	2
	8	4	20.35	20.43	20.37		
	8	7	20.24	20.32	20.20		
	15	0	20.22	20.34	20.25		2
64QAM	1	0	20.45	20.53	20.40	≤ 2	2
	1	7	20.46	20.57	20.44		
	1	14	20.31	20.48	20.25		
	8	0	19.32	19.46	19.31	≤ 3	3
	8	4	19.34	19.47	19.40		
	8	7	19.28	19.40	19.29		
	15	0	19.31	19.43	19.30		3
256QAM	1	0	17.45	17.49	17.42	≤ 5	5
	1	7	17.47	17.58	17.44		
	1	14	17.33	17.45	17.30		
	8	0	17.31	17.25	17.28	≤ 5	5
	8	4	17.33	17.47	17.40		
	8	7	17.31	17.41	17.23		
	15	0	17.36	17.31	17.31	≤ 5	5

Table 9.3.6.6 LTE Conducted Power

LTE Band 66 (AWS) Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			131979 (1710.7 MHz)	132322 (1745.0 MHz)	132665 (1779.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.26	22.39	22.24	≤ 1	0
	1	2	22.27	22.40	22.28		
	1	5	22.16	22.28	22.19		
	3	0	22.19	22.35	22.22		0
	3	2	22.23	22.36	22.24		
	3	3	22.13	22.29	22.19		
	6	0	21.05	21.21	21.07		1
16QAM	1	0	21.38	21.48	21.35	≤ 1	1
	1	2	21.39	21.50	21.36		
	1	5	21.32	21.37	21.25		
	3	0	21.13	21.24	-21.12		1
	3	2	21.15	21.27	21.14		
	3	3	21.05	21.19	21.04		
	6	0	20.20	20.34	20.20	≤ 2	2
64QAM	1	0	20.37	20.46	20.35	≤ 2	2
	1	2	20.38	20.47	20.37		
	1	5	20.29	20.42	20.24		
	3	0	20.22	20.42	20.26		2
	3	2	20.34	20.45	20.31		
	3	3	20.27	20.38	20.27		
	6	0	19.24	19.35	19.22	≤ 3	3
256QAM	1	0	17.33	17.58	17.39	≤ 5	5
	1	2	17.39	17.59	17.40		
	1	5	17.26	17.42	17.37		
	3	0	17.32	17.40	17.29	≤ 5	5
	3	2	17.36	17.53	17.37		
	3	3	17.26	17.37	17.35		
	6	0	17.19	17.26	17.24	≤ 5	5

Table 9.3.6.7 LTE Conducted Power

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Band & Mode		Modulated Average[dBm]
LTE Band 2(PCS)	Maximum	22.7
	Nominal	21.7

Table 9.3.7.1 Nominal and Maximum Output Power Spec

7) LTE Band 2 (PCS)

LTE Band 2 (PCS) Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18700 (1860.0 MHz)	18900 (1880.0 MHz)	19100 (1900.0 MHz)		
			Conducted Power (dBm)				
QPSK	**1**	**0**	22.39	22.47	22.42	≤ 1	0
	1	50	22.37	22.45	22.35		
	1	99	22.32	22.36	22.34		
	50	**0**	21.40	21.49	21.42		1
	50	25	21.35	21.46	21.40		
	50	50	21.34	21.43	21.35		
	100	**0**	21.40	21.43	21.42		1
16QAM	1	0	21.45	21.49	21.45	≤ 1	1
	1	50	21.43	21.48	21.43		
	1	99	21.29	21.35	21.32		
	50	0	20.40	20.44	20.39	≤ 2	2
	50	25	20.39	20.42	20.35		
	50	50	20.31	20.37	20.27		
	100	0	20.33	20.34	20.30		2
64QAM	1	0	20.34	20.44	20.36	≤ 2	2
	1	50	20.29	20.40	20.33		
	1	99	20.18	20.35	20.25		
	50	0	19.44	19.48	19.42	≤ 3	3
	50	25	19.43	19.43	19.40		
	50	50	19.33	19.46	19.29		
	100	0	19.34	19.36	19.37		3
256QAM	1	0	17.46	17.46	17.51	≤ 5	5
	1	50	17.45	17.38	17.48		
	1	99	17.30	17.29	17.44		
	50	0	17.43	17.32	17.45	≤ 5	5
	50	25	17.33	17.30	17.39		
	50	50	17.35	17.31	17.33		
	100	0	17.36	17.25	17.36	≤ 5	5

Table 9.3.7.2 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18675 (1857.5 MHz)	18900 (1880.0 MHz)	19125 (1902.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.09	22.14	22.12	≤ 1	0
	1	36	22.00	22.13	22.06		
	1	74	22.05	22.07	22.01		
	36	0	21.18	21.21	21.20		1
	36	18	21.15	21.19	21.18		
	36	37	21.16	21.18	21.19		
	75	0	21.17	21.23	21.21		1
16QAM	1	0	21.24	21.26	21.24	≤ 1	1
	1	36	21.17	21.24	21.17		
	1	74	21.22	21.22	21.12		
	36	0	20.22	20.25	20.26	≤ 2	2
	36	18	20.21	20.23	20.21		
	36	37	20.19	20.21	20.19		
	75	0	20.21	20.23	20.21		2
64QAM	1	0	20.18	20.27	20.15	≤ 2	2
	1	36	20.11	20.21	20.14		
	1	74	20.16	20.15	20.05		
	36	0	19.30	19.31	19.31	≤ 3	3
	36	18	19.29	19.27	19.24		
	36	37	19.25	19.28	19.24		
	75	0	19.26	19.24	19.25		3
256QAM	1	0	17.27	17.20	17.28	≤ 5	5
	1	36	17.15	17.14	17.14		
	1	74	17.20	17.19	17.10		
	36	0	17.24	17.10	17.24	≤ 5	5
	36	18	17.22	17.06	17.22		
	36	37	17.21	17.08	17.20		
	75	0	17.18	17.12	17.16	≤ 5	5

Table 9.3.7.3 LTE Conducted Power

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LTE Band 2 (PCS) Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18650 (1855.0 MHz)	18900 (1880.0 MHz)	19150 (1905.0 MHz)		
			Conducted Power (dBm)				
QPSK	**1**	**0**	22.25	**22.33**	22.29	≤ 1	0
	1	25	22.17	22.31	22.16		
	1	49	22.15	22.24	22.19		
	25	0	21.34	21.39	21.37		1
	25	12	21.32	21.32	21.34		
	25	25	21.29	21.33	21.27		
	50	0	21.30	21.36	21.33		1
16QAM	1	0	21.39	21.44	21.43	≤ 1	1
	1	25	21.31	21.36	21.29		
	1	49	21.34	21.34	21.30		
	25	0	20.37	20.42	20.40	≤ 2	2
	25	12	20.36	20.40	20.37		
	25	25	20.33	20.37	20.32		
	50	0	20.34	20.41	20.36		2
64QAM	1	0	20.34	20.43	20.34	≤ 2	2
	1	25	20.26	20.40	20.32		
	1	49	20.26	20.29	20.30		
	25	0	19.38	19.46	19.44	≤ 3	3
	25	12	19.37	19.44	19.43		
	25	25	19.35	19.38	19.36		
	50	0	19.37	19.40	19.36		3
256QAM	1	0	17.35	17.35	17.39	≤ 5	5
	1	25	17.31	17.30	17.29		
	1	49	17.32	17.29	17.38		
	25	0	17.34	17.26	17.38	≤ 5	5
	25	12	17.33	17.22	17.32		
	25	25	17.23	17.25	17.37		
	50	0	17.33	17.17	17.30	≤ 5	5

Table 9.3.7.4 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18625 (1852.5 MHz)	18900 (1880.0 MHz)	19175 (1907.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.27	22.36	22.28	≤ 1	0
	1	12	22.25	22.35	22.26		
	1	24	22.20	22.25	22.19		
	12	0	21.30	21.42	21.33		1
	12	6	21.29	21.38	21.32		
	12	13	21.26	21.29	21.26		
	25	0	21.29	21.34	21.33		1
16QAM	1	0	21.43	21.45	21.45	≤ 1	1
	1	12	21.40	21.41	21.42		
	1	24	21.30	21.37	21.37		
	12	0	20.35	20.40	20.36	≤ 2	2
	12	6	20.29	20.37	20.34		
	12	13	20.22	20.28	20.23		
	25	0	20.31	20.33	20.29		2
64QAM	1	0	20.26	20.44	20.31	≤ 2	2
	1	12	20.25	20.37	20.30		
	1	24	20.17	20.20	20.20		
	12	0	19.41	19.42	19.40	≤ 3	3
	12	6	19.39	19.40	19.38		
	12	13	19.26	19.30	19.28		
	25	0	19.29	19.33	19.31		3
256QAM	1	0	17.44	17.35	17.45	≤ 5	5
	1	12	17.40	17.33	17.42		
	1	24	17.35	17.24	17.37		
	12	0	17.40	17.34	17.44	≤ 5	5
	12	6	17.39	17.31	17.41		
	12	13	17.33	17.16	17.28		
	25	0	17.37	17.22	17.37	≤ 5	5

Table 9.3.7.5 LTE Conducted Power

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LTE Band 2 (PCS) Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18615 (1851.5 MHz)	18900 (1880.0 MHz)	19185 (1908.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.13	22.16	22.15	≤ 1	0
	1	7	22.12	22.11	22.07		
	1	14	22.11	22.08	22.03		
	8	0	21.22	21.25	21.24		1
	8	4	21.20	21.24	21.21		
	8	7	21.21	21.18	21.18		
	15	0	21.20	21.24	21.23		1
16QAM	1	0	21.33	21.35	21.35	≤ 1	1
	1	7	21.28	21.29	21.23		
	1	14	21.22	21.21	21.19		
	8	0	20.27	20.27	20.28	≤ 2	2
	8	4	20.26	20.26	20.27		
	8	7	20.24	20.24	20.23		
	15	0	20.24	20.24	20.27		2
64QAM	1	0	20.22	20.24	20.23	≤ 2	2
	1	7	20.19	20.21	20.10		
	1	14	20.21	20.14	20.12		
	8	0	19.33	19.33	19.33	≤ 3	3
	8	4	19.30	19.29	19.29		
	8	7	19.26	19.22	19.24		
	15	0	19.28	19.31	19.28		3
256QAM	1	0	17.24	17.11	17.29	≤ 5	5
	1	7	17.21	17.01	17.20		
	1	14	17.23	17.08	17.22		
	8	0	17.19	17.10	17.19	≤ 5	5
	8	4	17.18	17.05	17.18		
	8	7	17.17	17.00	17.16		
	15	0	17.21	17.07	17.18	≤ 5	5

Table 9.3.7.6 LTE Conducted Power

LTE Band 2 (PCS) Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			18607 (1850.7 MHz)	18900 (1880.0 MHz)	19193 (1909.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.22	22.42	22.30	≤ 1	0
	1	2	22.21	22.40	22.27		
	1	5	22.14	22.27	22.13		
	3	0	22.16	22.39	22.28		0
	3	2	22.15	22.38	22.27		
	3	3	22.11	22.31	22.21		
	6	0	21.29	21.33	21.30		1
16QAM	1	0	21.30	21.43	21.38	≤ 1	1
	1	2	21.27	21.42	21.37		
	1	5	21.20	21.35	21.25		
	3	0	21.25	21.39	-21.30		1
	3	2	21.24	21.32	21.26		
	3	3	21.22	21.33	21.18		
	6	0	20.34	20.34	20.34	≤ 2	2
64QAM	1	0	20.33	20.43	20.37	≤ 2	2
	1	2	20.25	20.39	20.27		
	1	5	20.18	20.29	20.22		
	3	0	20.31	20.42	20.36		2
	3	2	20.30	20.40	20.35		
	3	3	20.30	20.41	20.31		
	6	0	19.19	19.25	19.16	≤ 3	3
256QAM	1	0	17.37	17.52	17.43	≤ 5	5
	1	2	17.36	17.50	17.40		
	1	5	17.29	17.25	17.25		
	3	0	17.32	17.44	17.42	≤ 5	5
	3	2	17.30	17.21	17.31		
	3	3	17.29	17.26	17.36		
	6	0	17.20	17.16	17.26	≤ 5	5

Table 9.3.7.7 LTE Conducted Power

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Band & Mode		Modulated Average[dBm]
LTE Band 7	Maximum	22.9
	Nominal	21.9

Table 9.3.8.1 Nominal and Maximum Output Power Spec

8) LTE Band 7

LTE Band 7 Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	22.36	22.68	22.58	≤ 1	0
	1	50	22.41	22.76	22.66		
	1	**99**	**22.43**	**22.78**	**22.68**		
	50	0	21.23	21.51	21.47		1
	50	**25**	21.27	**21.60**	21.54		
	50	50	21.25	21.54	21.47		
	100	**0**	21.25	**21.53**	21.47		1
16QAM	1	0	21.46	21.77	21.76	≤ 1	1
	1	50	21.60	21.79	21.85		
	1	99	21.62	21.84	21.87		
	50	0	20.23	20.50	20.47	≤ 2	2
	50	25	20.30	20.57	20.54		
	50	50	20.23	20.56	20.50		
	100	0	20.28	20.51	20.46		2
64QAM	1	0	20.36	20.67	20.61	≤ 2	2
	1	50	20.46	20.82	20.68		
	1	99	20.47	20.84	20.71		
	50	0	19.25	19.57	19.48	≤ 3	3
	50	25	19.36	19.63	19.56		
	50	50	19.31	19.59	19.51		
	100	0	19.23	19.54	19.43		3
256QAM	1	0	17.52	17.69	17.63	≤ 5	5
	1	50	17.60	17.77	17.74		
	1	99	17.62	17.87	17.79		
	50	0	17.38	17.70	17.64	≤ 5	5
	50	25	17.46	17.75	17.66		
	50	50	17.44	17.72	17.63		
	100	0	17.42	17.70	17.64	≤ 5	5

Table 9.3.8.2 LTE Conducted Power

LTE Band 7 Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20825 (2507.5 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21375 (2562.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	22.21	22.48	22.44	≤ 1	0
	1	36	22.23	22.58	22.51		
	1	74	22.28	22.60	22.53		
	36	0	21.21	21.39	21.41		1
	36	18	21.24	21.48	21.47		
	36	37	21.22	21.47	21.46		
	75	0	21.21	21.40	21.39		1
16QAM	1	0	21.33	21.61	21.57	≤ 1	1
	1	36	21.41	21.73	21.61		
	1	74	21.45	21.76	21.67		
	36	0	20.21	20.41	20.37	≤ 2	2
	36	18	20.23	20.48	20.44		
	36	37	20.22	20.47	20.43		
	75	0	20.22	20.39	20.37		2
64QAM	1	0	20.21	20.47	20.40	≤ 2	2
	1	36	20.38	20.66	20.52		
	1	74	20.40	20.72	20.53		
	36	0	19.22	19.41	19.37	≤ 3	3
	36	18	19.24	19.50	19.47		
	36	37	19.23	19.49	19.46		
	75	0	19.23	19.39	19.36		3
256QAM	1	0	17.27	17.53	17.42	≤ 5	5
	1	36	17.40	17.56	17.50		
	1	74	17.47	17.71	17.57		
	36	0	17.22	17.54	17.41	≤ 5	5
	36	18	17.39	17.60	17.56		
	36	37	17.36	17.54	17.45		
	75	0	17.27	17.55	17.48	≤ 5	5

Table 9.3.8.3 LTE Conducted Power

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LTE Band 7 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20800 (2505.0 MHz)	21100 (2535.0 MHz)	21400 (2565.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.31	22.63	22.53	≤ 1	0
	1	25	22.33	22.69	22.56		
	1	49	22.38	22.70	22.61		
	25	0	21.26	21.53	21.49		1
	25	12	21.29	21.58	21.55		
	25	25	21.28	21.57	21.53		
	50	0	21.22	21.51	21.46		1
16QAM	1	0	21.46	21.75	21.72	≤ 1	1
	1	25	21.48	21.88	21.72		
	1	49	21.53	21.89	21.80		
	25	0	20.27	20.55	20.48	≤ 2	2
	25	12	20.32	20.59	20.52		
	25	25	20.30	20.57	20.51		
	50	0	20.22	20.53	20.47		2
64QAM	1	0	20.41	20.67	20.59	≤ 2	2
	1	25	20.41	20.82	20.62		
	1	49	20.51	20.85	20.73		
	25	0	19.25	19.54	19.47	≤ 3	3
	25	12	19.30	19.61	19.55		
	25	25	19.29	19.60	19.53		
	50	0	19.23	19.52	19.45		3
256QAM	1	0	17.49	17.70	17.55	≤ 5	5
	1	25	17.46	17.64	17.56		
	1	49	17.52	17.72	17.60		
	25	0	17.44	17.55	17.48	≤ 5	5
	25	12	17.48	17.69	17.57		
	25	25	17.47	17.64	17.47		
	50	0	17.41	17.61	17.50	≤ 5	5

Table 9.3.8.4 LTE Conducted Power

LTE Band 7 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20775 (2502.5 MHz)	21100 (2535.0 MHz)	21425 (2567.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.21	22.32	22.37	≤ 1	0
	1	12	22.28	22.57	22.46		
	1	24	22.37	22.61	22.52		
	12	0	21.21	21.38	21.35		0
	12	6	21.23	21.46	21.38		
	12	13	21.21	21.45	21.37		
	25	0	21.22	21.35	21.28		1
16QAM	1	0	21.30	21.51	21.53	≤ 1	1
	1	12	21.46	21.77	21.59		
	1	24	21.55	21.81	21.72		
	12	0	20.22	20.39	20.37		1
	12	6	20.25	20.47	20.42		
	12	13	20.23	20.46	20.35		
	25	0	20.21	20.37	20.33	≤ 2	2
64QAM	1	0	20.24	20.31	20.41	≤ 2	2
	1	12	20.38	20.70	20.54		
	1	24	20.47	20.72	20.56		
	12	0	19.21	19.29	19.35		2
	12	6	19.26	19.40	19.42		
	12	13	19.25	19.37	19.36		
	25	0	19.21	19.26	19.30	≤ 3	3
256QAM	1	0	17.40	17.49	17.55	≤ 5	5
	1	12	17.45	17.60	17.59		
	1	24	17.47	17.70	17.60		
	12	0	17.38	17.57	17.41	≤ 5	5
	12	6	17.41	17.63	17.43		
	12	13	17.33	17.61	17.36		
	25	0	17.29	17.54	17.39	≤ 5	5

Table 9.3.8.5 LTE Conducted Power

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Band & Mode		Modulated Average[dBm]
LTE Band 38	Maximum	22.9
	Nominal	21.9

Table 9.3.9.1 Nominal and Maximum Output Power Spec

9) LTE Band 38

LTE Band 38 Conducted Power– 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 38000 (2595.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	22.53	≤ 1	0
	1	**50**	**22.55**		
	1	99	22.54		
	50	0	21.38		1
	50	**25**	**21.40**		
	50	50	21.35		
	100	**0**	**21.38**		1
16QAM	1	0	21.54	≤ 1	1
	1	50	21.70		
	1	99	21.49		
	50	0	20.36	≤ 2	2
	50	25	20.49		
	50	50	20.47		
	100	0	20.43		2
64QAM	1	0	20.43	≤ 2	2
	1	50	20.48		
	1	99	20.47		
	50	0	19.46	≤ 3	3
	50	25	19.48		
	50	50	19.46		
	100	0	19.48		3
256QAM	1	0	17.60	≤ 5	5
	1	50	17.74		
	1	99	17.73		
	50	0	17.57	≤ 5	5
	50	25	17.59		
	50	50	17.54		
	100	0	17.57	≤ 5	5

Table 9.3.9.2 LTE Conducted Power

Note: LTE B38 can not contain three non-overlapping channels of 20 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

LTE Band 38 Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 37825 (2577.5 MHz)	Mid Channel 38000 (2595.0 MHz)	High Channel 38175 (2612.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	22.48	22.39	22.37	≤ 1	0
	1	36	22.49	22.43	22.46		
	1	74	22.42	22.41	22.44		
	36	0	21.42	21.30	21.24		1
	36	18	21.49	21.36	21.37		
	36	37	21.33	21.31	21.35		
	75	0	21.39	21.28	21.30		1
16QAM	1	0	21.56	21.53	21.47	≤ 1	1
	1	36	21.61	21.56	21.57		
	1	74	21.60	21.48	21.55		
	36	0	20.42	20.27	20.22	≤ 2	2
	36	18	20.48	20.30	20.38		
	36	37	20.30	20.28	20.32		
	75	0	20.44	20.31	20.29		2
64QAM	1	0	20.52	20.39	20.31	≤ 2	2
	1	36	20.53	20.44	20.47		
	1	74	20.43	20.41	20.46		
	36	0	19.51	19.36	19.28	≤ 3	3
	36	18	19.56	19.39	19.42		
	36	37	19.38	19.34	19.36		
	75	0	19.43	19.31	19.31		3
256QAM	1	0	17.33	17.45	17.46	≤ 5	5
	1	36	17.53	17.62	17.64		
	1	74	17.44	17.60	17.53		
	36	0	17.32	17.46	17.43	≤ 5	5
	36	18	17.39	17.50	17.56		
	36	37	17.29	17.47	17.46		
	75	0	17.28	17.45	17.49	≤ 5	5

Table 9.3.9.3 LTE Conducted Power

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LTE Band 38 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			37800 (2575.0 MHz)	38000 (2595.0 MHz)	38200 (2615.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.53	22.41	22.48	≤ 1	0
	1	25	22.57	22.46	22.49		
	1	49	22.51	22.45	22.47		
	25	0	21.55	21.41	21.39		1
	25	12	21.56	21.43	21.46		
	25	25	21.47	21.41	21.43		
	50	0	21.44	21.40	21.43		1
16QAM	1	0	21.67	21.60	21.58	≤ 1	1
	1	25	21.76	21.65	21.64		
	1	49	21.70	21.61	21.62		
	25	0	20.59	20.47	20.42	≤ 2	2
	25	12	20.60	20.48	20.54		
	25	25	20.50	20.47	20.52		
	50	0	20.51	20.46	20.44		2
64QAM	1	0	20.68	20.53	20.53	≤ 2	2
	1	25	20.72	20.61	20.63		
	1	49	20.55	20.58	20.62		
	25	0	19.68	19.50	19.50	≤ 3	3
	25	12	19.71	19.55	19.60		
	25	25	19.55	19.53	19.58		
	50	0	19.55	19.47	19.45		3
256QAM	1	0	17.40	17.58	17.48	≤ 5	5
	1	25	17.45	17.65	17.56		
	1	49	17.41	17.60	17.53		
	25	0	17.39	17.47	17.43	≤ 5	5
	25	12	17.42	17.59	17.48		
	25	25	17.39	17.54	17.43		
	50	0	17.39	17.56	17.39	≤ 5	5

Table 9.3.9.4 LTE Conducted Power

LTE Band 38 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			37775 (2572.5 MHz)	38000 (2595.0 MHz)	38225 (2617.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.43	22.35	22.35	≤ 1	0
	1	12	22.45	22.37	22.42		
	1	24	22.41	22.31	22.32		
	12	0	21.39	21.25	21.24		0
	12	6	21.41	21.31	21.37		
	12	13	21.32	21.30	21.36		
	25	0	21.34	21.29	21.31		1
16QAM	1	0	21.55	21.51	21.44	≤ 1	1
	1	12	21.61	21.53	21.55		
	1	24	21.56	21.44	21.45		
	12	0	20.47	20.32	20.25		1
	12	6	20.48	20.36	20.38		
	12	13	20.36	20.32	20.37		
	25	0	20.38	20.30	20.28	≤ 2	2
64QAM	1	0	20.46	20.41	20.33	≤ 2	2
	1	12	20.53	20.46	20.45		
	1	24	20.38	20.41	20.38		
	12	0	19.50	19.34	19.27		2
	12	6	19.53	19.39	19.44		
	12	13	19.37	19.35	19.40		
	25	0	19.41	19.34	19.32	≤ 3	3
256QAM	1	0	17.43	17.42	17.49	≤ 5	5
	1	12	17.53	17.54	17.59		
	1	24	17.45	17.50	17.51		
	12	0	17.31	17.42	17.29	≤ 5	5
	12	6	17.44	17.50	17.34		
	12	13	17.36	17.49	17.21		
	25	0	17.30	17.45	17.30	≤ 5	5

Table 9.3.9.5 LTE Conducted Power

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Band & Mode		Modulated Average[dBm]
LTE Band 48	Maximum	21.2
	Nominal	20.2

Table 9.3.10.1 Nominal and Maximum Output Power Spec

10) LTE Band 48

LTE Band 48 Conducted Power– 20 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55340 (3 560.0 MHz)	Low-Mid Channel 55773 (3 603.3 MHz)	Mid-High Channel 56207 (3 646.7 MHz)	High Channel 56640 (3 690.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)					
QPSK	1	0	20.86	20.85	20.93	20.86	≤ 1	0
	1	**50**	**20.90**	**20.87**	**21.00**	**20.88**		
	1	99	20.86	20.83	20.95	20.87		
	50	0	19.83	19.79	19.94	19.80		1
	50	**25**	19.85	19.80	**19.98**	19.81		
	50	50	19.83	19.73	19.91	19.77		
	100	0	19.86	19.77	19.93	19.80		1
16QAM	1	0	19.98	19.94	20.13	19.95	≤ 1	1
	1	50	20.08	20.06	20.16	20.07		
	1	99	20.03	20.02	20.13	19.90		
	50	0	18.92	18.83	19.05	18.85	≤ 2	2
	50	25	19.04	18.86	19.07	18.97		
	50	50	19.01	18.79	18.98	18.96		
	100	0	19.00	18.86	19.09	18.92		2
64QAM	1	0	18.99	18.92	19.11	18.92	≤ 2	2
	1	50	19.05	19.06	19.12	18.96		
	1	99	19.04	19.02	19.10	18.95		
	50	0	17.99	17.90	18.05	17.92	≤ 3	3
	50	25	18.01	17.92	18.09	17.94		
	50	50	17.96	17.86	18.06	17.92		
	100	0	18.00	17.96	18.07	17.94		3
256QAM	1	0	15.93	15.91	15.96	16.00	≤ 5	5
	1	50	16.06	16.03	16.03	16.03		
	1	99	15.95	15.99	16.02	16.02		
	50	0	15.92	15.83	15.75	15.88	≤ 5	5
	50	25	15.96	15.90	15.89	15.90		
	50	50	15.94	15.80	15.83	15.85		
	100	0	15.92	15.81	15.85	15.88	≤ 5	5

Table 9.3.10.2 LTE Conducted Power

LTE Band 48 Conducted Power– 15 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel 55315 (3 557.5 MHz)	Low-Mid Channel 55765 (3 602.5 MHz)	Mid-High Channel 56215 (3 647.5 MHz)	High Channel 56665 (3 692.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)					
QPSK	1	0	20.71	20.69	20.81	20.73	≤ 1	0
	1	36	20.80	20.73	20.82	20.77		
	1	74	20.78	20.72	20.76	20.75		
	36	0	19.67	19.64	19.83	19.73		1
	36	18	19.79	19.75	19.90	19.78		
	36	37	19.77	19.71	19.75	19.74		
	75	0	19.73	19.67	19.81	19.71		1
16QAM	1	0	19.88	19.80	19.97	19.92	≤ 1	1
	1	36	19.98	19.81	20.01	19.96		
	1	74	19.96	19.76	19.95	19.89		
	36	0	18.73	18.72	18.91	18.77	≤ 2	2
	36	18	18.87	18.76	18.96	18.80		
	36	37	18.81	18.74	18.80	18.78		
	75	0	18.79	18.74	18.93	18.80		2
64QAM	1	0	18.80	18.80	19.00	18.88	≤ 2	2
	1	36	18.96	18.91	19.01	18.93		
	1	74	18.95	18.89	18.92	18.90		
	36	0	17.85	17.79	17.97	17.92	≤ 3	3
	36	18	17.98	17.91	18.02	17.95		
	36	37	17.93	17.87	17.85	17.91		
	75	0	17.88	17.82	17.99	17.88		3
256QAM	1	0	15.78	15.83	15.75	15.77	≤ 5	5
	1	36	15.94	15.87	15.94	15.93		
	1	74	15.84	15.85	15.85	15.91		
	36	0	15.75	15.72	15.74	15.78	≤ 5	5
	36	18	15.87	15.81	15.80	15.81		
	36	37	15.78	15.77	15.71	15.79		
	75	0	15.80	15.78	15.70	15.77	≤ 5	5

Table 9.3.10.3 LTE Conducted Power

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LTE Band 48 Conducted Power– 10 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			55290 (3 555.0 MHz)	55757 (3 601.7 MHz)	56223 (3 648.3 MHz)	56690 (3 695.0 MHz)		
			Conducted Power (dBm)					
QPSK	1	0	20.81	20.74	20.86	20.75	≤ 1	0
	1	25	20.82	20.78	20.90	20.80		
	1	49	20.81	20.76	20.84	20.79		
	25	0	19.81	19.79	19.96	19.82		1
	25	12	19.87	19.81	19.97	19.84		
	25	25	19.84	19.75	19.88	19.82		
	50	0	19.84	19.81	19.85	19.81		1
16QAM	1	0	19.98	19.89	20.05	19.93	≤ 1	1
	1	25	20.01	19.92	20.08	19.99		
	1	49	19.99	19.86	20.03	19.97		
	25	0	18.91	18.84	19.07	18.94	≤ 2	2
	25	12	19.02	18.98	19.08	18.96		
	25	25	19.00	18.90	18.98	18.95		
	50	0	18.92	18.91	18.99	18.95		2
64QAM	1	0	19.00	18.85	19.05	18.80	≤ 2	2
	1	25	19.01	18.97	19.09	18.99		
	1	49	19.00	18.86	18.93	18.96		
	25	0	17.96	17.90	18.13	17.96	≤ 3	3
	25	12	18.05	17.96	18.16	18.01		
	25	25	18.03	17.93	18.05	17.99		
	50	0	17.91	17.89	18.00	17.93		3
256QAM	1	0	15.89	15.80	15.81	15.89	≤ 5	5
	1	25	15.97	15.83	15.86	15.95		
	1	49	15.94	15.81	15.82	15.91		
	25	0	15.84	15.77	15.80	15.79	≤ 5	5
	25	12	15.89	15.82	15.83	15.90		
	25	25	15.84	15.81	15.80	15.85		
	50	0	15.80	15.87	15.80	15.87	≤ 5	5

Table 9.3.10.4 LTE Conducted Power

LTE Band 48 Conducted Power– 5 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			55265 (3 552.5 MHz)	55748 (3 600.8 MHz)	56232 (3 649.2 MHz)	56715 (3 697.5 MHz)		
			Conducted Power (dBm)					
QPSK	1	0	20.70	20.67	20.77	20.70	≤ 1	0
	1	12	20.76	20.69	20.79	20.71		
	1	24	20.67	20.65	20.75	20.66		
	12	0	19.67	19.69	19.81	19.68		1
	12	6	19.79	19.73	19.82	19.74		
	12	13	19.78	19.67	19.74	19.73		
	25	0	19.74	19.70	19.76	19.70		1
16QAM	1	0	19.85	19.84	19.96	19.82	≤ 1	1
	1	12	19.96	19.88	19.98	19.90		
	1	24	19.86	19.83	19.94	19.85		
	12	0	18.76	18.78	18.95	18.81	≤ 2	2
	12	6	18.87	18.82	18.96	18.85		
	12	13	18.86	18.78	18.85	18.81		
	25	0	18.78	18.79	18.87	18.80		2
64QAM	1	0	18.82	18.78	18.85	18.80	≤ 2	2
	1	12	18.94	18.81	18.91	18.85		
	1	24	18.86	18.79	18.77	18.80		
	12	0	17.84	17.70	17.96	17.81	≤ 3	3
	12	6	17.96	17.83	17.99	17.85		
	12	13	17.86	17.80	17.84	17.82		
	25	0	17.89	17.88	17.87	17.81		3
256QAM	1	0	15.80	15.73	15.84	15.74	≤ 5	5
	1	12	15.90	15.83	15.94	15.85		
	1	24	15.82	15.75	15.86	15.81		
	12	0	15.71	15.72	15.73	15.74	≤ 5	5
	12	6	15.76	15.80	15.85	15.81		
	12	13	15.63	15.68	15.78	15.80		
	25	0	15.72	15.75	15.72	15.77	≤ 5	5

Table 9.3.10.5 LTE Conducted Power

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9.4 LTE Downlink CA Conducted Powers

9.4.1 LTE Downlink Only Carrier Aggregation Test Reduction Methodology

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number of component carriers (CCs) supported by the product implementation. Per April 2018 TCBC Workshop Notes, the following test reduction methodology was applied to determine the combinations required for conducted power measurements.

LTE DL CA Test Reduction Methodology:

(1) Test supported combinations were arranged by the number of component carriers in columns.
(2) Any limitations on the PCC or SCC for each combination were identified alongside the combination (e.g. CA_2A-2A-4A-12A, but B12 can only be configured as a SCC).
(3) Power measurements were performed for “supersets” (LTE CA combinations with multiple components carriers) and any “subsets” (LTE CA combinations with fewer component carriers) that were not completely covered by the supersets.
(4) Only subsets that have the exact same components as a superset were excluded for measurement.
(5) When there were certain restrictions on component carriers that existed in the superset that were not applied for the subset, the subset configuration was additionally evaluated.
(6) Both inter-band and intra-band downlink carrier aggregation scenarios were considered.

Index	2CC	Restriction	Completely Covered by Measurement Superset	Index	3CC	Restriction	Completely Covered by Measurement Superset	Index	4CC	Restriction	Completely Covered by Measurement Superset	Index	5CC	Restriction	Completely Covered by Measurement Superset
2CC #1	CA_2C		3CC #7	3CC #1	CA_2A-2A-4A		4CC #1	4CC #1	CA_2A-2A-4A-4A		No	5CC #1	CA_2A-2A-46D	B46 SCC Only	No
2CC #2	CA_2A-2A		4CC #1	3CC #2	CA_2A-2A-5A		4CC #2	4CC #2	CA_2A-2A-4A-5A		No	5CC #2	CA_2A-5B-30A-66A		No
2CC #3	CA_2A-4A (2)		4CC #1	3CC #3	CA_2A-2A-12A		No	4CC #3	CA_2A-2A-4A-12A	B12 SCC Only	No	5CC #3	CA_2A-5B-66A-66A		No
2CC #4	CA_2A-5A		4CC #2	3CC #4	CA_2A-2A-13A		4CC #8	4CC #4	CA_2A-2A-5A-30A		No	5CC #4	CA_2A-46D-66A	B46 SCC Only	No
2CC #5	CA_2A-7A		4CC #16	3CC #5	CA_2A-2A-29A	B29 SCC Only	4CC #9	4CC #5	CA_2A-2A-5A-66A		No	5CC #5	CA_2A-46A-46C-66A	B46 SCC Only	No
2CC #6	CA_2A-12A (1)		3CC #3	3CC #6	CA_2A-2A-30A		4CC #9	4CC #6	CA_2A-2A-12A-30A	B12 SCC Only	No	5CC #6	CA_41C-41D		No
2CC #7	CA_2A-13A		4CC #31	3CC #7	CA_2C-66A		No	4CC #7	CA_2A-2A-12A-66A	B12 SCC Only	No	5CC #7	CA_46D-66A-66A	B46 SCC Only	No
2CC #8	CA_2A-14A		3CC #27	3CC #8	CA_2A-2A-66A		4CC #7	4CC #8	CA_2A-2A-13A-66A		No	5CC #8			
2CC #9	CA_2A-17A		No	3CC #9	CA_2A-2A-71A	B71 SCC Only	No	4CC #9	CA_2A-2A-29A-30A	B29 SCC Only	No	5CA_9			
2CC #10	CA_2A-29A (2)	B29 SCC Only	4CC #9	3CC #10	CA_2A-4A-4A		4CC #1	4CC #10	CA_2A-2A-66A-66A		No	5CA_10			
2CC #11	CA_2A-30A		4CC #9	3CC #11	CA_2A-4A-5A		4CC #2	4CC #11	CA_2A-4A-4A-5A		No	5CA_11			
2CC #12	CA_2A-46A	B46 SCC Only	5CC #5	3CC #12	CA_2A-4A-7A		4CC #16	4CC #12	CA_2A-4A-4A-12A	B12 SCC Only	No	5CA_12			
2CC #13	CA_2A-66A		5CC #2	3CC #13	CA_2A-4A-12A		No	4CC #13	CA_2A-4A-5B		No	5CA_13			
2CC #14	CA_2A-71A	B71 SCC Only	3CC #17	3CC #14	CA_2A-4A-13A		No	4CC #14	CA_2A-4A-5A-30A		No	5CA_14			
2CC #15	CA_4A-4A		4CC #1	3CC #15	CA_2A-4A-29A	B29 SCC Only	4CC #20	4CC #15	CA_2A-4A-7C		No	5CA_15			
2CC #16	CA_4A-5A (1)		4CC #2	3CC #16	CA_2A-4A-30A		4CC #19	4CC #16	CA_2A-4A-7A-7A		No	5CA_16			
2CC #17	CA_4A-7A (1)		4CC #16	3CC #17	CA_2A-4A-71A	B71 SCC Only	No	4CC #17	CA_2A-4A-7A-12A	B12 SCC Only	No	5CA_17			
2CC #18	CA_4A-12A (2)		4CC #3	3CC #18	CA_2A-5B		4CC #13	4CC #18	CA_2A-4A-12B	B12 SCC Only	No	5CA_18			
2CC #19	CA_4A-13A		3CC #14	3CC #19	CA_2A-5A-30A		4CC #23	4CC #19	CA_2A-4A-12A-30A	B12 SCC Only	No	5CA_19			
2CC #20	CA_4A-17A	B17 SCC Only	No	3CC #20	CA_2A-5A-66A		4CC #23	4CC #20	CA_2A-4A-29A-30A	B29 SCC Only	No	5CA_20			
2CC #21	CA_4A-29A (2)	B29 SCC Only	4CC #20	3CC #21	CA_2A-7A-7A		4CC #16	4CC #21	CA_2A-5B-30A		5CC #2	5CA_21			
2CC #22	CA_4A-30A		4CC #19	3CC #22	CA_2A-7A-12A		No	4CC #22	CA_2A-5B-66A		5CC #3	5CA_22			
2CC #23	CA_4A-46A	B46 SCC Only	4CC #42	3CC #23	CA_2A-12B		No	4CC #23	CA_2A-5A-30A-66A		No	5CA_23			
2CC #24	CA_4A-71A	B71 SCC Only	3CC #43	3CC #24	CA_2A-12A-30A		No	4CC #24	CA_2A-5A-66B		No	5CA_24			
2CC #25	CA_5B		5CC #2	3CC #25	CA_2A-12A-66A		No	4CC #25	CA_2A-5A-66C		No	5CA_25			
2CC #26	CA_5A-25A		No	3CC #26	CA_2A-13A-66A		4CC #31	4CC #26	CA_2A-5A-66A-66A		No	5CA_26			
2CC #27	CA_5A-30A		4CC #23	3CC #27	CA_2A-14A-30A		No	4CC #27	CA_2A-12A-30A-66A	B12 SCC Only	No	5CA_27			
2CC #28	CA_5A-66A		4CC #23	3CC #28	CA_2A-29A-30A	B29 SCC Only	4CC #9	4CC #28	CA_2A-12A-66A-66A	B12 SCC Only	No	5CA_28			
2CC #29	CA_7A-7A (1)		4CC #16	3CC #29	CA_2A-30A-66A		4CC #23	4CC #29	CA_2A-13A-66B		No	5CA_29			
2CC #30	CA_7A-12A		3CC #22	3CC #30	CA_2A-46C	B46 SCC Only	5CC #5	4CC #30	CA_2A-13A-66C		No	5CA_30			
2CC #31	CA_7A-46A (1)	B46 SCC Only	No	3CC #31	CA_2A-46A-46A	B46 SCC Only	4CC #34	4CC #31	CA_2A-13A-66A-66A		No	5CA_31			
2CC #32	CA_12B		3CC #23	3CC #32	CA_2A-46A-66A	B46 SCC Only	4CC #34	4CC #32	CA_2A-46D	B46 SCC Only	5CC #1	5CA_32			
2CC #33	CA_12A-25A		No	3CC #33	CA_2A-66B		4CC #24	4CC #33	CA_2A-46A-46C	B46 SCC Only	5CC #5	5CA_33			
2CC #34	CA_12A-30A		4CC #4	3CC #34	CA_2A-66C		4CC #25	4CC #34	CA_2A-46A-46A-66A	B46 SCC Only	No	5CA_34			
2CC #35	CA_12A-66A (1)		3CC #25	3CC #35	CA_2A-66A-66A		4CC #26	4CC #35	CA_2A-46C-66A	B46 SCC Only	5CC #5	5CA_35			
2CC #36	CA_13A-46A	B46 SCC Only	No	3CC #36	CA_2A-66A-71A	B71 SCC Only	No	4CC #36	CA_4A-4A-5B		No	5CA_36			
2CC #37	CA_13A-66A		4CC #8	3CC #37	CA_4A-4A-5A		4CC #37	4CC #37	CA_4A-4A-5A-30A		No	5CA_37			
2CC #38	CA_14A-30A		3CC #27	3CC #38	CA_4A-4A-7A (1)		No	4CC #38	CA_4A-4A-12A-30A	B12 SCC Only	No	5CA_38			
2CC #39	CA_14A-66A		3CC #66	3CC #39	CA_4A-4A-12A		4CC #38	4CC #39	CA_4A-4A-29A-30A	B29 SCC Only	No	5CA_39			
2CC #40	CA_25A-25A (1)		4CC #49	3CC #40	CA_4A-4A-13A		No	4CC #40	CA_4A-5B-30A		No	5CA_40			

Table 9.4.1.1 Example of Exclusion Table for LTE DL CA

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9.4.2 LTE Downlink Only Carrier Aggregation Test Selection and Setup

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number of component carriers (CCs) supported by the product implementation. For those configurations required by April 2018 TCBC Workshop Notes, conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation and RB combinations in each frequency band.

Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

General PCC and SCC configuration selection procedure

PCC uplink channel, channel bandwidth, modulation and RB configurations were selected based on section C)3)b)ii) of KDB 941225 D05v01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.

To maximize aggregation bandwidth, highest channel bandwidth available for that CA combination was selected for SCC. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.

All selected PCC and SCC(s) remained fully within the uplink/downlink transmission band of the respective component carrier.

When a device supports LTE capabilities with overlapping transmission frequency ranges, the standalone powers from the band with a larger transmission frequency range can be used to select measurement configurations for the band with the fully covered transmission frequency range.

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9.4.3 LTE DL Carrier Aggregation Conducted Powers

- **Below downlink CA configurations were determined based on Manufacturer's information.**

Table 9.4.3.1 CA BW Class

Class	ATBC		Maximum number of CC
	NRB.agg	MHz	
A	N ≤ 100	20	1
B	25 < N ≤ 100	20	2
C	100 < N ≤ 200	40	2
D	200 < N ≤ 300	60	3
E	300 < N ≤ 400	80	4
F	400 < N ≤ 500	100	5
I	700 < N ≤ 800	160	8

Table 9.4.3.2 Exclusion Table for LTE DL CA (2CC)

Index	2CC	Supported Channel Bandwidth [MHz]		Restriction	Completely Covered by Measurement Superset
		CC1	CC2		
2CC #1	CA_2A-4A (0)	1.4, 3, 5, 10, 15, 20	5, 10, 15, 20		No
2CC #2	CA_2A-4A (1)	5, 10	5, 10		No
2CC #3	CA_2A-4A (2)	5, 10, 15, 20	5, 10, 15, 20		No
2CC #4	CA_2A-5A (0)	5, 10, 15, 20	5, 10		No
2CC #5	CA_2A-5A (1)	5, 10	5, 10		No
2CC #6	CA_2A-7A (0)	5, 10, 15, 20	5, 10, 15, 20		No
2CC #7	CA_2A-12A (0)	5, 10, 15, 20	5, 10		No
2CC #8	CA_2A-12A (1)	5, 10, 15, 20	3, 5, 10		No
2CC #9	CA_2A-12A (2)	5, 10	5, 10		No
2CC #10	CA_2A-17A (0)	5, 10	5, 10		No
2CC #11	CA_2A-66A (0)	1.4, 3, 5, 10, 15, 20	5, 10, 15, 20		No
2CC #12	CA_2A-66A (1)	5, 10	5, 10		No
2CC #13	CA_2A-66A (2)	5, 10, 15, 20	5, 10, 15, 20		No
2CC #14	CA_2A-71A (0)	5, 10, 15, 20	5, 10, 15, 20		No
2CC #15	CA_2A-71A (1)	5, 10	5, 10		No
2CC #16	CA_4A-5A (0)	5, 10	5, 10		No
2CC #17	CA_4A-5A (1)	5, 10, 15, 20	5, 10		No
2CC #18	CA_4A-7A (0)	5, 10	5, 10, 15, 20		No
2CC #19	CA_4A-7A (1)	5, 10, 15, 20	5, 10, 15, 20		No
2CC #20	CA_4A-12A (0)	1.4, 3, 5, 10	5, 10		No
2CC #21	CA_4A-12A (1)	1.4, 3, 5, 10, 15, 20	5, 10		No
2CC #22	CA_4A-12A (2)	5, 10, 15, 20	3, 5, 10		No
2CC #23	CA_4A-12A (3)	5, 10	5, 10		No
2CC #24	CA_4A-12A (4)	5, 10, 15, 20	5, 10		No
2CC #25	CA_4A-12A (5)	5, 10, 15	5		No
2CC #26	CA_4A-17A (0)	5, 10	5, 10		No
2CC #27	CA_4A-71A (0)	5, 10, 15, 20	5, 10, 15, 20		No
2CC #28	CA_5A-7A (0)	1.4, 3, 5, 10	10, 15, 20		No
2CC #29	CA_5A-7A (1)	5, 10	10, 15, 20		No
2CC #30	CA_5A-66A (0)	5, 10	5, 10, 15, 20		No
2CC #31	CA_7A-7A (0)	5, 10, 15, 20	10, 15, 20		No
2CC #32	CA_7A-7A (1)	5, 10, 15, 20	5, 10, 15, 20		No
2CC #33	CA_7A-7A (2)	5, 10, 15, 20	5, 10		No
2CC #34	CA_7A-7A (3)	10, 15, 20	10, 15, 20		No
2CC #35	CA_7A-12A (0)	5, 10, 15, 20	5, 10		No
2CC #36	CA_7A-66A (0)	5, 10, 15, 20	5, 10, 15, 20		No
2CC #37	CA_12A-66A (0)	5, 10	1.4, 3, 5, 10		No
2CC #38	CA_12A-66A (1)	5, 10	1.4, 3, 5, 10, 15, 20		No
2CC #39	CA_12A-66A (2)	3, 5, 10	5, 10, 15, 20		No
2CC #40	CA_12A-66A (3)	5, 10	5, 10		No
2CC #41	CA_12A-66A (4)	5, 10	5, 10, 15, 20		No
2CC #42	CA_12A-66A (5)	5	5, 10, 15		No
2CC #43	CA_13A-66A (0)	5, 10	5, 10, 15, 20		No
2CC #44	CA_66A-71A (0)	5, 10, 15, 20	5, 10, 15, 20		No

Note: Orange and blue highlighted cells need power measurement.

Table 9.4.3.3 LTE Band 2 as PCC

PCC										SCC				Power	
Combination	PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
CA_2A-4A (0)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B4	20	2175	2132.5	22.43	22.47
CA_2A-4A (1)	LTE B2	10	18900	1880.0	QPSK	1	0	900	1960.0	LTE B4	10	2175	2132.5	22.29	22.33
CA_2A-4A (2)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B4	20	2175	2132.5	22.42	22.47
CA_2A-5A (0)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B5	10	2525	881.5	22.41	22.47
CA_2A-5A (1)	LTE B2	10	18900	1880.0	QPSK	1	0	900	1960.0	LTE B5	10	2525	881.5	22.27	22.33
CA_2A-7A (0)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B7	20	3100	2655.0	22.40	22.47
CA_2A-12A (0)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B12	10	5095	737.5	22.42	22.47
CA_2A-12A (1)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B12	10	5095	737.5	22.39	22.47
CA_2A-12A (2)	LTE B2	10	18900	1880.0	QPSK	1	0	900	1960.0	LTE B12	10	5095	737.5	22.26	22.33
CA_2A-17A (0)	LTE B2	10	18900	1880.0	QPSK	1	0	900	1960.0	LTE B17	10	5790	740.0	22.24	22.33
CA_2A-66A (0)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B66	20	66786	2145.0	22.40	22.47
CA_2A-66A (1)	LTE B2	10	18900	1880.0	QPSK	1	0	900	1960.0	LTE B66	10	66786	2145.0	22.22	22.33
CA_2A-66A (2)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B66	20	66786	2145.0	22.38	22.47
CA_2A-71A (0)	LTE B2	20	18900	1880.0	QPSK	1	0	900	1960.0	LTE B71	20	68761	634.5	22.36	22.47
CA_2A-71A (1)	LTE B2	10	18900	1880.0	QPSK	1	0	900	1960.0	LTE B71	10	68761	634.5	22.21	22.33

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Table 9.4.3.4 LTE Band 4 as PCC

PCC										SCC				Power	
Combination	PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
CA_2A-4A (0)	LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B2	20	900	1960.0	22.21	22.26
CA_2A-4A (1)	LTE B4	10	20175	1732.5	QPSK	1	25	2175	2132.5	LTE B2	10	900	1960.0	22.15	22.19
CA_2A-4A (2)	LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B2	20	900	1960.0	22.20	22.26
CA_4A-5A (0)	LTE B4	10	20175	1732.5	QPSK	1	25	2175	2132.5	LTE B5	10	2525	881.5	22.13	22.19
CA_4A-5A (1)	LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B5	10	2525	881.5	22.18	22.26
CA_4A-7A (0)	LTE B4	10	20175	1732.5	QPSK	1	25	2175	2132.5	LTE B7	20	3100	2655.0	22.14	22.19
CA_4A-7A (1)	LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B7	20	3100	2655.0	22.16	22.26
CA_4A-12A (0)	LTE B4	10	20175	1732.5	QPSK	1	25	2175	2132.5	LTE B12	10	5095	737.5	22.12	22.19
CA_4A-12A (1)	LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B12	10	5095	737.5	22.17	22.26
CA_4A-12A (2)	LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B12	10	5095	737.5	22.15	22.26
CA_4A-12A (3)	LTE B4	10	20175	1732.5	QPSK	1	25	2175	2132.5	LTE B12	10	5095	737.5	22.11	22.19
CA_4A-12A (4)	LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B12	10	5095	737.5	22.13	22.26
CA_4A-12A (5)	LTE B4	15	20300	1745.0	QPSK	1	36	2300	2145.0	LTE B12	5	5095	737.5	22.11	22.16
CA_4A-17A (0)	LTE B4	10	20175	1732.5	QPSK	1	25	2175	2132.5	LTE B17	10	5790	740.0	22.10	22.19
CA_4A-71A (0)	LTE B4	20	20175	1732.5	QPSK	1	50	2175	2132.5	LTE B71	20	68761	634.5	22.14	22.26

Table 9.4.3.5 LTE Band 5 as PCC

PCC										SCC				Power	
Combination	PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
CA_2A-5A (0)	LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B2	20	900	1960.0	22.15	22.20
CA_2A-5A (1)	LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B2	10	900	1960.0	22.13	22.20
CA_4A-5A (0)	LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B4	10	2175	2132.5	22.11	22.20
CA_4A-5A (1)	LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B4	20	2175	2132.5	22.10	22.20
CA_5A-7A (0)	LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B7	20	3100	2655.0	22.14	22.20
CA_5A-7A (1)	LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B7	20	3100	2655.0	22.12	22.20
CA_5A-66A (0)	LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B66	20	66786	2145.0	22.13	22.20

Table 9.4.3.6 LTE Band 7 as PCC

PCC										SCC				Power	
Combination	PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
CA_2A-7A (0)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B2	20	900	1960.0	22.75	22.78
CA_4A-7A (0)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B4	10	2175	2132.5	22.73	22.78
CA_4A-7A (1)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B4	20	2175	2132.5	22.70	22.78
CA_5A-7A (0)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B5	10	2525	881.5	22.74	22.78
CA_5A-7A (1)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B5	10	2525	881.5	22.72	22.78
CA_7A-7A (0)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B7	20	3350	2680.0	22.69	22.78
CA_7A-7A (1)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B7	20	3350	2680.0	22.66	22.78
CA_7A-7A (2)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B7	10	3400	2685.0	22.65	22.78
CA_7A-7A (3)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B7	20	3350	2680.0	22.63	22.78
CA_7A-12A (0)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B12	10	5095	737.5	22.71	22.78
CA_7A-66A (0)	LTE B7	20	21100	2535.0	QPSK	1	99	3100	2655.0	LTE B66	20	66786	2145.0	22.68	22.78

Table 9.4.3.7 LTE Band 12 as PCC

PCC										SCC				Power	
Combination	PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
CA_2A-12A (0)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B2	20	900	1960.0	21.88	21.89
CA_2A-12A (1)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B2	20	900	1960.0	21.85	21.89
CA_2A-12A (2)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B2	10	900	1960.0	21.83	21.89
CA_4A-12A (0)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B4	10	2175	2132.5	21.87	21.89
CA_4A-12A (1)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B4	20	2175	2132.5	21.82	21.89
CA_4A-12A (2)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B4	20	2175	2132.5	21.80	21.89
CA_4A-12A (3)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B4	10	2175	2132.5	21.77	21.89
CA_4A-12A (4)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B4	20	2175	2132.5	21.75	21.89
CA_4A-12A (5)	LTE B12	5	23095	707.5	QPSK	1	12	5095	737.5	LTE B4	15	2175	2132.5	21.80	21.85
CA_7A-12A (0)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B7	20	3100	2655.0	21.86	21.89
CA_12A-66A (0)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B66	10	66786	2145.0	21.84	21.89
CA_12A-66A (1)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B66	20	66786	2145.0	21.81	21.89
CA_12A-66A (2)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B66	20	66786	2145.0	21.79	21.89
CA_12A-66A (3)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B66	10	66786	2145.0	21.76	21.89
CA_12A-66A (4)	LTE B12	10	23095	707.5	QPSK	1	25	5095	737.5	LTE B66	20	66786	2145.0	21.75	21.89
CA_12A-66A (5)	LTE B12	5	23095	707.5	QPSK	1	12	5095	737.5	LTE B66	15	66786	2145.0	21.77	21.85

Table 9.4.3.8 LTE Band 17 as PCC

PCC										SCC				Power	
Combination	PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
CA_2A-17A (0)	LTE B17	10	23790	710.0	QPSK	1	0	5790	740.0	LTE B2	10	900	1960.0	22.30	22.32
CA_4A-17A (0)	LTE B17	10	23790	710.0	QPSK	1	0	5790	740.0	LTE B4	10	2175	2132.5	22.28	22.32

Table 9.4.3.9 LTE Band 66 as PCC

PCC										SCC				Power	
Combination	PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
CA_2A-66A (0)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B2	20	900	1960.0	22.43	22.45
CA_2A-66A (1)	LTE B66	10	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B2	10	900	1960.0	22.35	22.40
CA_2A-66A (2)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B2	20	900	1960.0	22.40	22.45
CA_5A-66A (0)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B5	10	2525	881.5	22.39	22.45
CA_7A-66A (0)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B7	20	3100	2655.0	22.42	22.45
CA_12A-66A (0)	LTE B66	10	132322	1745.0	QPSK	1	25	66786	2145.0	LTE B12	10	5095	737.5	22.33	22.40
CA_12A-66A (1)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B12	10	5095	737.5	22.41	22.45
CA_12A-66A (2)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B12	10	5095	737.5	22.37	22.45
CA_12A-66A (3)	LTE B66	10	132322	1745.0	QPSK	1	25	66786	2145.0	LTE B12	10	5095	737.5	22.30	22.40
CA_12A-66A (4)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B12	10	5095	737.5	22.35	22.45
CA_12A-66A (5)	LTE B66	15	132322	1745.0	QPSK	1	36	66786	2145.0	LTE B12	5	5095	737.5	22.30	22.34
CA_13A-66A (0)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B13	10	5230	751.0	22.38	22.45
CA_66A-71A (0)	LTE B66	20	132322	1745.0	QPSK	1	50	66786	2145.0	LTE B71	20	68761	634.5	22.33	22.45

Table 9.4.3.10 LTE Band 71 as PCC

PCC										SCC				Power	
Combination	PCC Band	PCC BW (MHz)	PCC (UL) CH.	PCC (UL) Freq. (MHz)	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) CH.	PCC (DL) Freq. (MHz)	SCC Band	SCC BW (MHz)	SCC (DL) CH.	SCC (DL) Freq. (MHz)	LTE Tx. Power with DL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)
CA_2A-71A (0)	LTE B71	20	133297	680.5	QPSK	1	50	68761	634.5	LTE B2	20	900	1960.0	22.00	22.02
CA_2A-71A (1)	LTE B71	10	133422	693.0	QPSK	1	25	68886	647.0	LTE B2	10	900	1960.0	22.05	22.16
CA_4A-71A (0)	LTE B71	20	133297	680.5	QPSK	1	50	68761	634.5	LTE B4	20	2175	2132.5	21.95	22.02
CA_66A-71A (0)	LTE B71	20	133297	680.5	QPSK	1	50	68761	634.5	LTE B66	20	66786	2145.0	21.92	22.02

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9.5 NR Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Modulated Average[dBm]
NR Band n71	Maximum	23.0
	Nominal	22.0

Table 9.5.1.1 Nominal and Maximum Output Power Spec

1) NR Band n71

NR Band n71 Conducted Power– 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 136100 (680.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	22.67	0	0.0
	1	53	22.30		
	1	104	22.37		
	50	0	21.82	≤ 0.5	0.5
	50	28	22.40	0	0.0
	50	56	21.80	≤ 0.5	0.5
	100	0	21.86		
DFT-s OFDM QPSK	**1**	**1**	**22.78**	0	0.0
	1	53	22.38		
	1	104	22.38		
	50	0	21.85	≤ 1	1.0
	50	**28**	**22.46**	0	0.0
	50	56	21.88	≤ 1	1.0
	100	0	21.89		
DFT-s OFDM 16QAM	1	1	21.79	≤ 1	1.0
	1	53	21.41		
	1	104	21.42		
DFT-s OFDM 64QAM	1	1	20.36	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.35	≤ 4.5	4.5
CP OFDM QPSK	**1**	**1**	**21.35**	≤ 1.5	1.5

Table 9.5.1.2 NR Conducted Power

Note: NR Band n71 can not contain three non-overlapping channels of 20 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

NR Band n71 Conducted Power– 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 136100 (680.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	22.44	0	0.0
	1	40	22.31		
	1	77	22.30		
	36	0	21.81	≤ 0.5	0.5
	36	22	22.30	0	0.0
	36	43	21.87	≤ 0.5	0.5
	75	0	21.85		
DFT-s OFDM QPSK	1	1	22.59	0	0.0
	1	40	22.36		
	1	77	22.36		
	36	0	21.84	≤ 1	1.0
	36	22	22.33	0	0.0
	36	43	21.95	≤ 1	1.0
	75	0	21.87		
DFT-s OFDM 16QAM	1	1	21.60	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.25	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.15	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.11	≤ 1.5	1.5

Table 9.5.1.3 NR Conducted Power

Note: NR Band n71 can not contain three non-overlapping channels of 15 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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NR Band n71 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			133600 (668.0 MHz)	136100 (680.5 MHz)	138600 (693.0 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.60	22.37	22.44	0	0.0
	1	26	22.45	22.36	22.43		
	1	50	22.42	22.35	22.32		
	25	0	21.82	21.85	21.82	≤ 0.5	0.5
	25	14	22.31	22.31	22.32	0	0.0
	25	27	21.84	21.87	21.86	≤ 0.5	0.5
	50	0	21.85	21.84	21.80		
DFT-s OFDM QPSK	1	1	22.64	22.42	22.46	0	0.0
	1	26	22.51	22.39	22.45		
	1	50	22.44	22.38	22.35		
	25	0	21.86	21.94	21.88	≤ 1	1.0
	25	14	22.32	22.36	22.34	0	0.0
	25	27	21.91	21.96	21.92	≤ 1	1.0
	50	0	21.88	21.86	21.85		
DFT-s OFDM 16QAM	1	1	21.68	21.48	21.48	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.22	19.94	20.06	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.22	18.01	17.99	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.15	21.00	20.99	≤ 1.5	1.5

Table 9.5.1.4 NR Conducted Power

NR Band n71 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			133100 (665.5 MHz)	136100 (680.5 MHz)	139100 (695.5 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.64	22.40	22.43	0	0.0
	1	13	22.59	22.32	22.33		
	1	23	22.53	22.31	22.37		
	12	0	21.91	21.84	21.83	≤ 0.5	0.5
	12	7	22.34	22.38	22.30	0	0.0
	12	13	21.90	21.81	21.85	≤ 0.5	0.5
	25	0	21.80	21.84	21.82		
DFT-s OFDM QPSK	1	1	22.67	22.43	22.48	0	0.0
	1	13	22.63	22.36	22.47		
	1	23	22.57	22.33	22.38		
	12	0	21.93	21.87	21.89	≤ 1	1.0
	12	7	22.41	22.42	22.33	0	0.0
	12	13	21.96	21.85	21.94	≤ 1	1.0
	25	0	21.88	21.85	21.88		
DFT-s OFDM 16QAM	1	1	21.71	21.46	21.53	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.25	19.95	20.03	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.21	17.97	18.04	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.23	20.97	21.03	≤ 1.5	1.5

Table 9.5.1.5 NR Conducted Power

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Band & Mode		Modulated Average[dBm]
NR Band n12	Maximum	22.5
	Nominal	21.5

Table 9.5.2.1 Nominal and Maximum Output Power Spec

2) NR Band n12

NR Band n12 Conducted Power– 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 141500 (707.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	21.96	0	0.0
	1	40	22.32		
	1	77	21.97		
	36	0	21.39	≤ 0.5	0.5
	36	22	22.27	0	0.0
	36	43	21.32	≤ 0.5	0.5
	75	0	21.30		
DFT-s OFDM QPSK	1	1	21.99	0	0.0
	1	**40**	**22.40**		
	1	77	21.99		
	36	0	21.44	≤ 1	1.0
	36	**22**	**22.38**	0	0.0
	36	43	21.35	≤ 1	1.0
	75	0	21.38		
DFT-s OFDM 16QAM	1	1	21.03	≤ 1	1.0
	1	40	21.45		
	1	77	21.06		
DFT-s OFDM 64QAM	1	1	19.53	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	17.56	≤ 4.5	4.5
CP OFDM QPSK	**1**	**1**	**20.52**	≤ 1.5	1.5

Table 9.5.2.2 NR Conducted Power

Note: NR Band n12 can not contain three non-overlapping channels of 15 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

NR Band n12 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 141500 (707.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	22.27	0	0.0
	1	26	22.34		
	1	50	22.28		
	25	0	21.40	≤ 0.5	0.5
	25	14	22.18	0	0.0
	25	27	21.37	≤ 0.5	0.5
	50	0	21.30		
DFT-s OFDM QPSK	1	1	22.29	0	0.0
	1	26	22.36		
	1	50	22.30		
	25	0	21.43	≤ 1	1.0
	25	14	22.26	0	0.0
	25	27	21.39	≤ 1	1.0
	50	0	21.33		
DFT-s OFDM 16QAM	1	1	21.32	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	19.82	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	17.85	≤ 4.5	4.5
CP OFDM QPSK	1	1	20.86	≤ 1.5	1.5

Table 9.5.2.3 NR Conducted Power

Note: NR Band n12 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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NR Band n12 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			140300 (701.5 MHz)	141500 (707.5 MHz)	142700 (713.5 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.27	22.09	22.01	0	0.0
	1	13	22.32	22.26	22.04		
	1	23	22.17	22.05	21.95		
	12	0	21.40	21.43	21.39	≤ 0.5	0.5
	12	7	22.22	22.25	21.92	0	0.0
	12	13	21.40	21.44	21.34	≤ 0.5	0.5
	25	0	21.32	21.33	21.35		
DFT-s OFDM QPSK	1	1	22.31	22.13	22.05	0	0.0
	1	13	22.35	22.29	22.08		
	1	23	22.19	22.09	22.00		
	12	0	21.42	21.47	21.40	≤ 1	1.0
	12	7	22.26	22.26	21.96	0	0.0
	12	13	21.42	21.49	21.39	≤ 1	1.0
	25	0	21.34	21.36	21.37		
DFT-s OFDM 16QAM	1	1	21.33	21.18	21.08	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	19.83	19.67	19.57	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	17.85	17.67	17.58	≤ 4.5	4.5
CP OFDM QPSK	1	1	20.85	20.68	20.56	≤ 1.5	1.5

Table 9.5.2.4 NR Conducted Power

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Band & Mode		Modulated Average[dBm]
NR Band n13	Maximum	22.7
	Nominal	21.7

Table 9.5.3.1 Nominal and Maximum Output Power Spec

3) NR Band n13

NR Band n13 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	22.54	0	0.0
	1	26	22.43		
	1	50	22.32		
	25	0	21.59	≤ 0.5	0.5
	25	14	22.43	0	0.0
	25	27	21.60	≤ 0.5	0.5
	50	0	21.48		
DFT-s OFDM QPSK	**1**	**1**	**22.62**	0	0.0
	1	26	22.48		
	1	50	22.35		
	25	0	21.62	≤ 1	1.0
	25	**14**	**22.55**	0	0.0
	25	27	21.65	≤ 1	1.0
	50	0	21.66		
DFT-s OFDM 16QAM	1	1	21.63	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.19	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.20	≤ 4.5	4.5
CP OFDM QPSK	**1**	**1**	**21.13**	≤ 1.5	1.5

Table 9.5.3.2 NR Conducted Power

Note: NR Band n13 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

NR Band n13 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23205 (779.5MHz)	Mid Channel 23230 (782.0MHz)	High Channel 23255 (784.5MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.52	22.58	22.51	0	0.0
	1	13	22.40	22.57	22.22		
	1	23	22.37	22.51	22.24		
	12	0	21.55	21.65	21.64	≤ 0.5	0.5
	12	7	22.47	22.47	22.48	0	0.0
	12	13	21.58	21.61	21.59	≤ 0.5	0.5
	25	0	21.60	21.61	21.58		
DFT-s OFDM QPSK	1	1	22.57	22.61	22.56	0	0.0
	1	13	22.46	22.59	22.26		
	1	23	22.39	22.56	22.28		
	12	0	21.58	21.68	21.67	≤ 1	1.0
	12	7	22.49	22.49	22.52	0	0.0
	12	13	21.60	21.66	21.63	≤ 1	1.0
	25	0	21.65	21.63	21.63		
DFT-s OFDM 16QAM	1	1	21.63	21.64	21.61	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.09	20.14	20.08	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.12	18.19	18.16	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.11	21.15	21.09	≤ 1.5	1.5

Table 9.5.3.3 NR Conducted Power

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Band & Mode		Modulated Average[dBm]
NR Band n14	Maximum	22.7
	Nominal	21.7

Table 9.5.4.1 Nominal and Maximum Output Power Spec

4) NR Band n14

NR Band n14 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23330 (793.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	22.27	0	0.0
	1	26	22.22		
	1	50	22.13		
	25	0	21.55	≤ 0.5	0.5
	25	14	22.23	0	0.0
	25	27	21.63	≤ 0.5	0.5
	50	0	21.61		
DFT-s OFDM QPSK	**1**	**1**	**22.55**	0	0.0
	1	26	22.26		
	1	50	22.17		
	25	0	21.58	≤ 1	1.0
	25	**14**	**22.50**	0	0.0
	25	27	21.67	≤ 1	1.0
	50	0	21.68		
DFT-s OFDM 16QAM	1	1	21.57	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.11	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.09	≤ 4.5	4.5
CP OFDM QPSK	1	1	**21.10**	≤ 1.5	1.5

Table 9.5.4.2 NR Conducted Power

Note: NR Band n14 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

NR Band n14 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23305 (790.5 MHz)	Mid Channel 23330 (793.0 MHz)	High Channel 23355 (795.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.29	22.31	22.36	0	0.0
	1	13	22.19	22.26	22.29		
	1	23	22.12	22.13	22.23		
	12	0	21.59	21.56	21.58	≤ 0.5	0.5
	12	7	22.44	22.31	22.34	0	0.0
	12	13	21.56	21.48	21.49	≤ 0.5	0.5
	25	0	21.51	21.51	21.55		
DFT-s OFDM QPSK	1	1	22.49	22.54	22.39	0	0.0
	1	13	22.40	22.41	22.35		
	1	23	22.20	22.40	22.26		
	12	0	21.63	21.58	21.59	≤ 1	1.0
	12	7	22.47	22.35	22.37	0	0.0
	12	13	21.60	21.50	21.53	≤ 1	1.0
	25	0	21.54	21.53	21.58		
DFT-s OFDM 16QAM	1	1	21.52	21.58	21.43	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.04	20.07	19.91	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.07	18.09	17.94	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.04	21.08	20.90	≤ 1.5	1.5

Table 9.5.4.3 NR Conducted Power

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Band & Mode		Modulated Average[dBm]
NR Band n5	Maximum	23.0
	Nominal	22.0

Table 9.5.5.1 Nominal and Maximum Output Power Spec

5) NR Band n5

NR Band n5 Conducted Power– 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 167300 (836.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	22.80	0	0.0
	1	53	22.43		
	1	104	22.50		
	50	0	21.76	≤ 0.5	0.5
	50	28	22.56	0	0.0
	50	56	21.70	≤ 0.5	0.5
	100	0	21.79		
DFT-s OFDM QPSK	**1**	**1**	**22.86**	0	0.0
	1	53	22.50		
	1	104	22.52		
	50	0	21.95	≤ 1	1.0
	50	**28**	**22.58**	0	0.0
	50	56	21.84	≤ 1	1.0
	100	0	21.91		
DFT-s OFDM 16QAM	1	1	21.96	≤ 1	1.0
	1	53	21.53		
	1	104	21.55		
DFT-s OFDM 64QAM	1	1	20.48	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.45	≤ 4.5	4.5
CP OFDM QPSK	**1**	**1**	**21.47**	≤ 1.5	1.5

Table 9.5.5.2 NR Conducted Power

Note: NR Band n5 can not contain three non-overlapping channels of 20 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

NR Band n5 Conducted Power– 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 167300 (836.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	22.77	0	0.0
	1	40	22.57		
	1	77	22.50		
	36	0	21.88	≤ 0.5	0.5
	36	22	22.41	0	0.0
	36	43	21.89	≤ 0.5	0.5
	75	0	21.86		
DFT-s OFDM QPSK	1	1	22.78	0	0.0
	1	40	22.64		
	1	77	22.52		
	36	0	21.92	≤ 1	1.0
	36	22	22.50	0	0.0
	36	43	21.92	≤ 1	1.0
	75	0	21.89		
DFT-s OFDM 16QAM	1	1	21.80	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.31	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.36	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.31	≤ 1.5	1.5

Table 9.5.5.3 NR Conducted Power

Note: NR Band n5 can not contain three non-overlapping channels of 15 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

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NR Band n5 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			167300 (836.5 MHz)		
			Conducted Power (dBm)		
DFT-s OFDM π/2 BPSK	1	1	22.36	0	0.0
	1	26	22.35		
	1	50	22.31		
	25	0	21.87	≤ 0.5	0.5
	25	14	22.33	0	0.0
	25	27	21.77	≤ 0.5	0.5
	50	0	21.84		
DFT-s OFDM QPSK	1	1	22.44	0	0.0
	1	26	22.37		
	1	50	22.35		
	25	0	21.90	≤ 1	1.0
	25	14	22.36	0	0.0
	25	27	21.78	≤ 1	1.0
	50	0	21.88		
DFT-s OFDM 16QAM	1	1	21.63	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.07	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.07	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.09	≤ 1.5	1.5

Table 9.5.5.4 NR Conducted Power

Note: NR Band n5 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

NR Band 5 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			165300 (826.5 MHz)	167300 (836.5 MHz)	169300 (846.5 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.67	22.66	22.42	0	0.0
	1	13	22.44	22.49	22.36		
	1	23	22.53	22.50	22.30		
	12	0	21.87	21.94	21.93	≤ 0.5	0.5
	12	7	22.63	22.44	22.36	0	0.0
	12	13	21.89	21.95	21.85	≤ 0.5	0.5
	25	0	21.85	21.94	21.82		
DFT-s OFDM QPSK	1	1	22.77	22.71	22.46	0	0.0
	1	13	22.59	22.70	22.43		
	1	23	22.76	22.70	22.35		
	12	0	21.90	21.96	21.96	≤ 1	1.0
	12	7	22.65	22.50	22.38	0	0.0
	12	13	21.93	21.97	21.97	≤ 1	1.0
	25	0	21.98	21.96	21.88		
DFT-s OFDM 16QAM	1	1	21.83	21.78	21.51	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.32	20.26	20.03	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.35	18.28	18.03	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.35	21.28	20.99	≤ 1.5	1.5

Table 9.5.5.5 NR Conducted Power

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Band & Mode		Modulated Average[dBm]
NR Band n66	Maximum	22.5
	Nominal	21.5

Table 9.5.6.1 Nominal and Maximum Output Power Spec

6) NR Band n66

NR Band n66 Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 344000 (1 720.0 MHz)	Mid Channel 349000 (1 745.0 MHz)	High Channel 354000 (1 770.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.04	21.96	21.89	0	0.0
	1	53	22.22	22.32	21.94		
	1	104	22.16	21.97	21.81		
	50	0	21.26	21.39	21.18	≤ 0.5	0.5
	50	28	21.98	22.27	21.82	0	0.0
	50	56	21.26	21.32	21.06	≤ 0.5	0.5
	100	0	21.24	21.30	20.99		
DFT-s OFDM QPSK	1	1	22.10	21.99	21.94	0	0.0
	1	**53**	**22.35**	**22.40**	**21.97**		
	1	104	22.19	21.99	21.82		
	50	0	21.29	21.44	21.22	≤ 1	1.0
	50	**28**	22.00	**22.38**	21.84	0	0.0
	50	56	21.28	21.35	21.10	≤ 1	1.0
	100	0	21.27	21.34	21.02		
DFT-s OFDM 16QAM	1	1	21.11	21.03	21.02	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	19.62	19.53	19.50	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	17.62	17.56	17.48	≤ 4.5	4.5
CP OFDM QPSK	**1**	**1**	20.63	**20.52**	20.47	≤ 1.5	1.5

Table 9.5.6.2 NR Conducted Power

NR Band n66 Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 343500 (1 717.5 MHz)	Mid Channel 349000 (1 745.0 MHz)	High Channel 354500 (1 772.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.05	22.27	21.86	0	0.0
	1	40	22.13	22.34	21.89		
	1	77	22.07	22.28	21.81		
	36	0	21.31	21.40	21.36	≤ 0.5	0.5
	36	22	22.12	22.18	21.81	0	0.0
	36	43	21.32	21.37	20.95	≤ 0.5	0.5
	75	0	21.30	21.30	21.12		
DFT-s OFDM QPSK	1	1	22.08	22.29	21.88	0	0.0
	1	40	22.15	22.36	21.91		
	1	77	22.09	22.30	21.83		
	36	0	21.34	21.43	21.39	≤ 1	1.0
	36	22	22.14	22.26	21.85	0	0.0
	36	43	21.35	21.39	20.96	≤ 1	1.0
	75	0	21.32	21.33	21.18		
DFT-s OFDM 16QAM	1	1	21.12	21.32	20.92	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	19.60	19.82	19.42	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	17.64	17.85	17.41	≤ 4.5	4.5
CP OFDM QPSK	1	1	20.63	20.86	20.41	≤ 1.5	1.5

Table 9.5.6.3 NR Conducted Power

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NR Band n66 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			343000 (1 715.0 MHz)	349000 (1 745.0 MHz)	355000 (1 775.0 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.27	22.09	22.01	0	0.0
	1	26	22.32	22.25	22.04		
	1	50	22.17	22.05	21.95		
	25	0	21.40	21.43	21.12	≤ 0.5	0.5
	25	14	22.22	22.25	21.92	0	0.0
	25	27	21.40	21.44	21.05	≤ 0.5	0.5
	50	0	21.21	21.19	21.13		
DFT-s OFDM QPSK	1	1	22.31	22.13	22.05	0	0.0
	1	26	22.35	22.27	22.08		
	1	50	22.19	22.09	22.00		
	25	0	21.42	21.47	21.19	≤ 1	1.0
	25	14	22.26	22.26	21.96	0	0.0
	25	27	21.42	21.49	21.09	≤ 1	1.0
	50	0	21.26	21.23	21.18		
DFT-s OFDM 16QAM	1	1	21.33	21.18	21.08	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	19.83	19.67	19.57	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	17.85	17.67	17.58	≤ 4.5	4.5
CP OFDM QPSK	1	1	20.85	20.68	20.56	≤ 1.5	1.5

Table 9.5.6.4 NR Conducted Power

NR Band n66 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			342500 (1 712.5 MHz)	349000 (1 745.0 MHz)	355500 (1 777.5 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.27	22.26	21.99	0	0.0
	1	13	22.32	22.33	22.03		
	1	23	22.27	22.24	21.81		
	12	0	21.40	21.40	21.36	≤ 0.5	0.5
	12	7	22.23	22.28	21.84	0	0.0
	12	13	21.43	21.33	21.33	≤ 0.5	0.5
	25	0	21.23	21.19	21.19		
DFT-s OFDM QPSK	1	1	22.33	22.29	22.05	0	0.0
	1	13	22.37	22.37	22.09		
	1	23	22.31	22.28	21.86		
	12	0	21.43	21.45	21.41	≤ 1	1.0
	12	7	22.26	22.34	21.88	0	0.0
	12	13	21.45	21.37	21.37	≤ 1	1.0
	25	0	21.27	21.25	21.24		
DFT-s OFDM 16QAM	1	1	21.37	21.35	21.14	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	19.86	19.81	19.60	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	17.89	17.87	17.57	≤ 4.5	4.5
CP OFDM QPSK	1	1	20.88	20.85	20.59	≤ 1.5	1.5

Table 9.5.6.5 NR Conducted Power

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Band & Mode		Modulated Average[dBm]
NR Band n2	Maximum	21.9
	Nominal	20.9

Table 9.5.7.1 Nominal and Maximum Output Power Spec

7) NR Band n2

NR Band n2 Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			372000 (1 860.0 MHz)	376000 (1 880.0 MHz)	380000 (1 900.0 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	21.25	21.44	21.32	0	0.0
	1	53	21.40	21.60	21.40		
	1	104	21.38	21.56	21.39		
	50	0	20.66	20.83	20.80	≤ 0.5	0.5
	50	28	21.20	21.55	21.48	0	0.0
	50	56	20.72	20.87	20.85	≤ 0.5	0.5
	100	0	20.62	20.85	20.81		
DFT-s OFDM QPSK	1	1	21.46	21.46	21.41	0	0.0
	1	**53**	**21.50**	**21.77**	**21.42**		
	1	104	21.49	21.60	21.40		
	50	0	20.67	20.87	20.85	≤ 1	1.0
	50	**28**	21.23	**21.61**	21.50	0	0.0
	50	56	20.74	20.88	20.87	≤ 1	1.0
	100	0	20.64	20.88	20.83		
DFT-s OFDM 16QAM	1	1	20.56	20.49	20.42	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	19.04	18.98	18.93	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	16.97	17.02	16.98	≤ 4.5	4.5
CP OFDM QPSK	**1**	**1**	20.10	**20.01**	19.93	≤ 1.5	1.5

Table 9.5.7.2 NR Conducted Power

NR Band n2 Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			371500 (1 857.5 MHz)	376000 (1 880.0 MHz)	380500 (1 902.5 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	21.26	21.52	21.49	0	0.0
	1	40	21.35	21.71	21.66		
	1	77	21.20	21.69	21.62		
	36	0	20.56	20.77	20.81	≤ 0.5	0.5
	36	22	21.26	21.40	21.42	0	0.0
	36	43	20.63	20.82	20.79	≤ 0.5	0.5
	75	0	20.65	20.82	20.71		
DFT-s OFDM QPSK	1	1	21.29	21.55	21.52	0	0.0
	1	40	21.40	21.76	21.67		
	1	77	21.35	21.70	21.65		
	36	0	20.58	20.79	20.85	≤ 1	1.0
	36	22	21.35	21.44	21.43	0	0.0
	36	43	20.66	20.85	20.81	≤ 1	1.0
	75	0	20.67	20.84	20.83		
DFT-s OFDM 16QAM	1	1	20.36	20.65	20.60	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	18.79	19.15	19.09	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	16.80	17.13	17.10	≤ 4.5	4.5
CP OFDM QPSK	1	1	19.79	20.12	20.10	≤ 1.5	1.5

Table 9.5.7.3 NR Conducted Power

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NR Band n2 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			371000 (1 855.0 MHz)	376000 (1 880.0 MHz)	381000 (1 905.0 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	21.20	21.55	21.38	0	0.0
	1	26	21.23	21.55	21.40		
	1	50	21.22	21.51	21.33		
	25	0	20.52	20.74	20.75	≤ 0.5	0.5
	25	14	21.21	21.37	21.28	0	0.0
	25	27	20.51	20.75	20.81	≤ 0.5	0.5
	50	0	20.66	20.74	20.70		
DFT-s OFDM QPSK	1	1	21.25	21.58	21.40	0	0.0
	1	26	21.29	21.59	21.42		
	1	50	21.24	21.55	21.35		
	25	0	20.59	20.80	20.80	≤ 1	1.0
	25	14	21.28	21.44	21.35	0	0.0
	25	27	20.55	20.81	20.87	≤ 1	1.0
	50	0	20.68	20.78	20.79		
DFT-s OFDM 16QAM	1	1	20.28	20.60	20.41	≤ 1	1.0
	1	26	20.33	20.66	20.45		
	1	50	20.26	20.56	20.43		
DFT-s OFDM 64QAM	1	1	18.75	19.13	18.91	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	16.78	17.11	16.92	≤ 4.5	4.5
CP OFDM QPSK	1	1	19.76	20.13	19.92	≤ 1.5	1.5

Table 9.5.7.4 NR Conducted Power

NR Band n2 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			370500 (1 852.5 MHz)	376000 (1 880.0 MHz)	381500 (1 907.5 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	21.21	21.24	21.41	0	0.0
	1	13	21.48	21.57	21.55		
	1	23	21.23	21.21	21.40		
	12	0	20.63	20.81	20.82	≤ 0.5	0.5
	12	7	21.45	21.53	21.48	0	0.0
	12	13	20.71	20.75	20.78	≤ 0.5	0.5
	25	0	20.40	20.74	20.76		
DFT-s OFDM QPSK	1	1	21.25	21.27	21.44	0	0.0
	1	13	21.58	21.60	21.57		
	1	23	21.34	21.27	21.42		
	12	0	20.76	20.83	20.85	≤ 1	1.0
	12	7	21.53	21.58	21.55	0	0.0
	12	13	20.76	20.78	20.80	≤ 1	1.0
	25	0	20.42	20.79	20.79		
DFT-s OFDM 16QAM	1	1	20.28	20.70	20.62	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	18.75	19.20	19.09	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	16.75	17.19	17.12	≤ 4.5	4.5
CP OFDM QPSK	1	1	19.80	20.19	20.12	≤ 1.5	1.5

Table 9.5.7.5 NR Conducted Power

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Band & Mode		Modulated Average[dBm]
NR Band n7	Maximum	23.3
	Nominal	22.3

Table 9.5.8.1 Nominal and Maximum Output Power Spec

8) NR Band n7

NR Band n7 Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			502000 (2 510.0 MHz)	507000 (2 535.0 MHz)	512000 (2 560.0 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.63	23.00	22.62	0	0.0
	1	53	22.61	23.08	22.64		
	1	104	22.82	23.22	22.80		
	50	0	21.83	22.15	22.21	≤ 0.5	0.5
	50	28	22.63	23.18	22.79	0	0.0
	50	56	21.95	22.09	22.23	≤ 0.5	0.5
	100	0	21.84	22.24	22.23		
DFT-s OFDM QPSK	1	1	22.76	23.05	22.66	0	0.0
	1	53	22.62	23.10	22.65		
	1	**104**	**22.84**	**23.25**	**22.82**		
	50	0	21.85	22.27	22.23	≤ 1	1.0
	50	**28**	22.67	**23.21**	22.80	0	0.0
	50	56	21.97	22.11	22.24	≤ 1	1.0
	100	0	21.88	22.27	22.25		
DFT-s OFDM 16QAM	1	1	21.79	22.08	22.22	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.76	20.64	20.17	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.52	18.73	18.61	≤ 4.5	4.5
CP OFDM QPSK	**1**	**1**	21.41	**21.59**	21.23	≤ 1.5	1.5

Table 9.5.8.2 NR Conducted Power

NR Band n7 Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			501500 (2 507.5 MHz)	507000 (2 535.0 MHz)	512500 (2 562.5 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.63	22.63	22.77	0	0.0
	1	40	22.64	22.71	22.87		
	1	77	22.66	22.76	22.90		
	36	0	21.66	22.21	22.21	≤ 0.5	0.5
	36	22	22.64	22.84	22.80	0	0.0
	36	43	21.61	22.08	22.25	≤ 0.5	0.5
	75	0	21.67	21.95	22.15		
DFT-s OFDM QPSK	1	1	22.67	22.65	22.79	0	0.0
	1	40	22.66	22.75	22.90		
	1	77	22.68	22.78	22.92		
	36	0	21.68	22.25	22.27	≤ 1	1.0
	36	22	22.66	22.88	22.85	0	0.0
	36	43	21.64	22.10	22.26	≤ 1	1.0
	75	0	21.69	21.97	22.20		
DFT-s OFDM 16QAM	1	1	21.86	21.68	21.98	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.26	20.72	20.35	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.24	18.19	18.37	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.21	21.18	21.34	≤ 1.5	1.5

Table 9.5.8.3 NR Conducted Power

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NR Band n7 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			501000 (2 505.0 MHz)	507000 (2 535.0 MHz)	513000 (2 565.0 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	22.65	22.60	23.13	0	0.0
	1	26	22.65	22.66	23.14		
	1	50	22.70	22.82	23.16		
	25	0	21.66	22.02	22.21	≤ 0.5	0.5
	25	14	22.66	22.62	23.08	0	0.0
	25	27	21.69	21.68	22.27	≤ 0.5	0.5
	50	0	21.68	21.64	22.17		
DFT-s OFDM QPSK	1	1	22.70	22.64	23.15	0	0.0
	1	26	22.72	22.69	23.16		
	1	50	22.74	22.83	23.18		
	25	0	21.69	22.07	22.24	≤ 1	1.0
	25	14	22.68	22.66	23.10	0	0.0
	25	27	21.71	21.69	22.29	≤ 1	1.0
	50	0	21.70	21.68	22.19		
DFT-s OFDM 16QAM	1	1	21.72	21.71	22.21	≤ 1	1.0
	1	26	21.74	21.74	22.27		
	1	50	21.79	21.92	22.30		
DFT-s OFDM 64QAM	1	1	20.25	20.16	20.67	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.26	18.19	18.77	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.23	21.20	21.77	≤ 1.5	1.5

Table 9.5.8.4 NR Conducted Power

NR Band n7 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			500500 (2 502.5 MHz)	507000 (2 535.0 MHz)	513500 (2 567.5 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	23.12	22.68	22.88	0	0.0
	1	13	23.11	22.72	22.83		
	1	23	23.17	22.73	23.02		
	12	0	21.63	21.99	22.15	≤ 0.5	0.5
	12	7	23.12	22.60	23.18	0	0.0
	12	13	21.77	22.14	22.28	≤ 0.5	0.5
	25	0	21.65	22.20	22.23		
DFT-s OFDM QPSK	1	1	23.14	22.72	23.00	0	0.0
	1	13	23.20	22.75	23.05		
	1	23	23.24	22.81	23.10		
	12	0	21.64	22.00	22.19	≤ 1	1.0
	12	7	23.15	22.62	23.20	0	0.0
	12	13	21.79	22.15	22.30	≤ 1	1.0
	25	0	21.68	22.24	22.26		
DFT-s OFDM 16QAM	1	1	22.28	21.74	22.03	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.78	20.28	20.57	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.79	18.29	18.52	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.78	21.26	21.54	≤ 1.5	1.5

Table 9.5.8.5 NR Conducted Power

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Band & Mode		Modulated Average[dBm]
NR Band n41	Maximum	24.0
	Nominal	23.0

Table 9.5.9.1 Nominal and Maximum Output Power Spec

9) NR Band n41

NR Band n41 Conducted Power– 100 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 518598 (2 592.99 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
DFT-s OFDM π/2 BPSK	1	1	23.46	0	0.0
	1	137	23.33		
	1	271	23.90		
	135	0	22.81	≤ 0.5	0.5
	135	69	23.71	0	0.0
	135	138	22.80	≤ 0.5	0.5
	270	0	22.95		
DFT-s OFDM QPSK	1	1	23.51	0	0.0
	1	137	23.37		
	1	**271**	**23.93**		
	135	0	22.86	≤ 1	1.0
	135	**69**	**23.74**	0	0.0
	135	138	22.87	≤ 1	1.0
	270	0	22.98		
DFT-s OFDM 16QAM	1	1	22.53	≤ 1	1.0
	1	137	22.41		
	1	271	22.97		
DFT-s OFDM 64QAM	1	1	21.05	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	19.09	≤ 4.5	4.5
CP OFDM QPSK	**1**	**1**	**22.05**	≤ 1.5	1.5

Table 9.5.9.2 NR Conducted Power

NR Band n41 Conducted Power– 90 MHz Bandwidth						
Modulation	RB Size	RB Offset	Low-Mid Channel 508200 (2 541.00 MHz)	Mid-High Channel 528996 (2 644.98 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)			
DFT-s OFDM π/2 BPSK	1	1	23.35	23.42	0	0.0
	1	123	23.42	23.52		
	1	243	23.45	23.54		
	120	0	22.81	22.91	≤ 0.5	0.5
	120	63	23.33	23.53	0	0.0
	120	125	22.83	22.82	≤ 0.5	0.5
	243	0	22.87	22.92		
DFT-s OFDM QPSK	1	1	23.37	23.43	0	0.0
	1	123	23.45	23.55		
	1	243	23.48	23.57		
	120	0	22.85	22.93	≤ 1	1.0
	120	63	23.37	23.55	0	0.0
	120	125	22.87	22.88	≤ 1	1.0
	243	0	22.92	22.95		
DFT-s OFDM 16QAM	1	1	22.39	22.45	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.87	21.27	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.88	19.01	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.87	21.96	≤ 1.5	1.5

Table 9.5.9.3 NR Conducted Power

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NR Band n41 Conducted Power– 80 MHz Bandwidth						
Modulation	RB Size	RB Offset	Low-Mid Channel	Mid-High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			507204 (2 536.02 MHz)	529998 (2 649.99 MHz)		
			Conducted Power (dBm)			
DFT-s OFDM π/2 BPSK	1	1	23.30	23.63	0	0.0
	1	109	23.46	23.43		
	1	215	23.49	23.67		
	108	0	22.86	22.93	≤ 0.5	0.5
	108	55	23.48	23.52	0	0.0
	108	109	22.80	22.90	≤ 0.5	0.5
	216	0	22.85	22.88		
DFT-s OFDM QPSK	1	1	23.42	23.66	0	0.0
	1	109	23.48	23.48		
	1	215	23.52	23.71		
	108	0	22.89	22.96	≤ 1	1.0
	108	55	23.51	23.55	0	0.0
	108	109	22.84	22.94	≤ 1	1.0
	216	0	22.91	22.91		
DFT-s OFDM 16QAM	1	1	22.44	22.69	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.95	21.19	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.93	19.25	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.92	22.19	≤ 1.5	1.5

Table 9.5.9.4 NR Conducted Power

NR Band n41 Conducted Power– 60 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			505200 (2526.00 MHz)	518598 (2 592.99 MHz)	531996 (2659.98 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	23.35	23.62	23.64	0	0.0
	1	81	23.55	23.50	23.47		
	1	160	23.75	23.73	23.67		
	81	0	22.83	22.89	22.90	≤ 0.5	0.5
	81	41	23.63	23.63	23.49	0	0.0
	81	81	22.86	22.89	22.86	≤ 0.5	0.5
	162	0	22.82	22.80	22.86		
DFT-s OFDM QPSK	1	1	23.37	23.64	23.67	0	0.0
	1	81	23.58	23.52	23.50		
	1	160	23.79	23.77	23.71		
	81	0	22.84	22.93	22.93	≤ 1	1.0
	81	41	23.65	23.64	23.52	0	0.0
	81	81	22.88	22.92	22.89	≤ 1	1.0
	162	0	22.84	22.83	22.90		
DFT-s OFDM 16QAM	1	1	22.41	22.66	22.76	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.94	21.38	21.19	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	19.07	19.15	19.37	≤ 4.5	4.5
CP OFDM QPSK	1	1	21.89	22.24	22.22	≤ 1.5	1.5

Table 9.5.9.5 NR Conducted Power

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NR Band n41 Conducted Power– 50 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			504204 (2521.02MHz)	518598 (2 592.99 MHz)	532998 (2664.99 MHz)		
			Conducted Power (dBm)				
DFT-s OFDM π/2 BPSK	1	1	23.39	23.77	23.57	0	0.0
	1	67	23.58	23.60	23.46		
	1	131	23.79	23.81	23.69		
	64	0	22.91	22.82	22.80	≤ 0.5	0.5
	64	35	23.60	23.66	23.49	0	0.0
	64	69	22.80	22.83	22.84	≤ 0.5	0.5
	128	0	22.86	22.85	22.80		
DFT-s OFDM QPSK	1	1	23.43	23.81	23.65	0	0.0
	1	67	23.61	23.61	23.48		
	1	131	23.81	23.85	23.72		
	64	0	22.95	22.87	22.86	≤ 1	1.0
	64	35	23.61	23.68	23.52	0	0.0
	64	69	22.84	22.86	22.87	≤ 1	1.0
	128	0	22.89	22.91	22.86		
DFT-s OFDM 16QAM	1	1	22.46	22.84	22.71	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	20.95	21.46	21.16	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	18.94	19.34	19.17	≤ 4.5	4.5
CP OFDM QPSK	1	1	22.09	22.46	22.16	≤ 1.5	1.5

Table 9.5.9.6 NR Conducted Power

NR Band n41 Conducted Power– 40 MHz Bandwidth								
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid-High Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			503202 (2 516.01 MHz)	513468 (2 567.34 MHz)	523734 (2 618.67 MHz)	534000 (2 670.00 MHz)		
			Conducted Power (dBm)					
DFT-s OFDM π/2 BPSK	1	1	23.51	23.44	23.72	23.52	0	0.0
	1	53	23.57	23.44	23.48	23.47		
	1	104	23.84	23.80	23.89	23.76		
	50	0	22.80	22.81	22.84	22.82	≤ 0.5	0.5
	50	28	23.56	23.66	23.42	23.61	0	0.0
	50	56	22.83	22.86	22.81	22.80	≤ 0.5	0.5
	100	0	22.82	22.82	22.83	22.81		
DFT-s OFDM QPSK	1	1	23.54	23.47	23.74	23.54	0	0.0
	1	53	23.60	23.46	23.51	23.51		
	1	104	23.90	23.85	23.91	23.79		
	50	0	22.82	22.86	22.87	22.84	≤ 1	1.0
	50	28	23.59	23.71	23.60	23.65	0	0.0
	50	56	22.87	22.91	22.86	22.81	≤ 1	1.0
	100	0	22.86	22.87	22.86	22.84		
DFT-s OFDM 16QAM	1	1	22.56	22.51	22.83	22.56	≤ 1	1.0
DFT-s OFDM 64QAM	1	1	21.06	21.02	21.26	21.11	≤ 2.5	2.5
DFT-s OFDM 256QAM	1	1	19.08	19.03	19.26	19.25	≤ 4.5	4.5
CP OFDM QPSK	1	1	22.07	21.98	22.25	22.15	≤ 1.5	1.5

Table 9.5.9.7 NR Conducted Power

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