NOKIA

5G Radio Access, Rel. 5G19B, Operating Documentation

5G Licenses

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Issue 03
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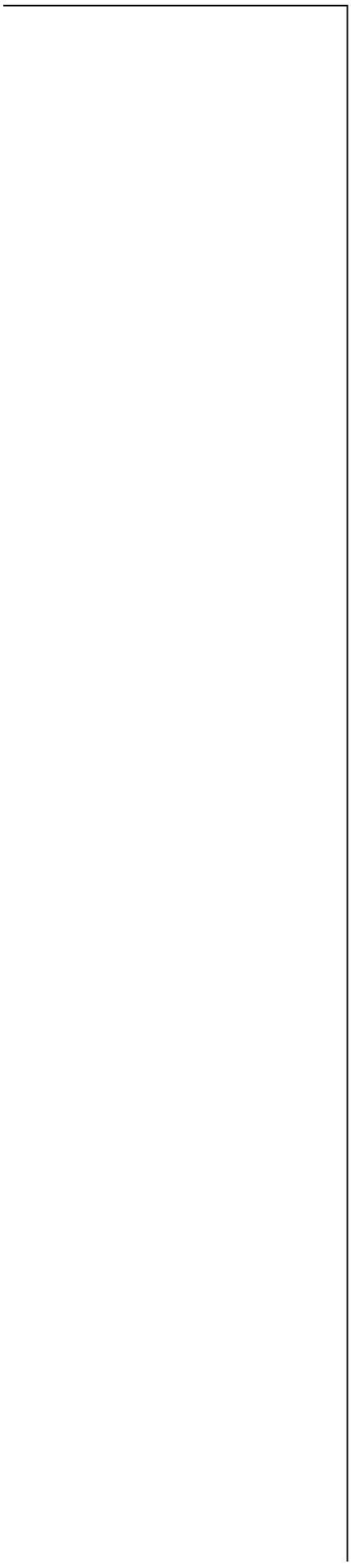

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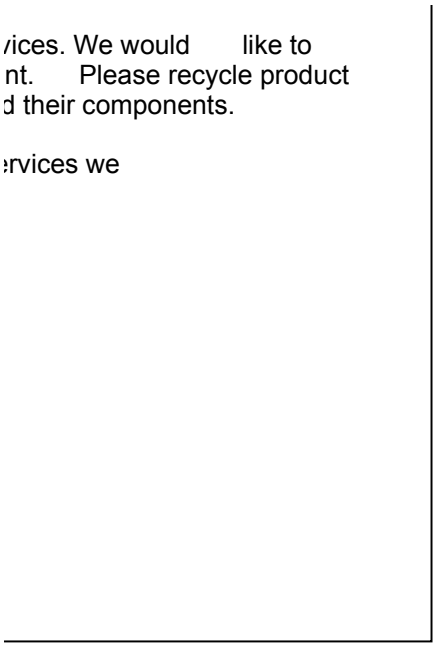
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1. Introduction

1.1 Introduction to licenses

This manual describes licenses which are required to use the functionalities of network elements and interfaces. T
licenses which allow to use the functions defined in 5G features.

2. How to read this report

The Excel report provides complete information on licenses. It shows the full set of license attributes.

2.1 5G SW and HW SI

This section presents complete measurement information including the following:
- Sales item (SI)
- Feature code
- License key sales Item
- Sales item description
- Feature ID
- SW category
- Feature availability
- Capacity unit
- Yearly subscription (S)/perpetual (P)
- License control action
- Additional information

2.2 5G ASW feature list

This section presents information on Application Software (ASW) features included in packages listed in *5G SW a*
following information:
- Feature ID
- Feature name
- Feature availability
- 5G eMBB use case level (information on the package including the feature)
- Additional information

2.2 5G HWA feature list

This section presents information on Hardware Activation (HWA) features included in packages listed in *5G SI*
the following information:
- Feature ID
- Feature name
- Feature availability
- License key sales item
- Additional information

2.3 5G Essential feature list

This section presents information on feature included in the **Essential** package. It presents the following informati
- Feature ID
- Feature name
- Feature availability
- Additional information

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and HWA SI. It presents the

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ion:

SCC definition

Sector Component Carriers (SCC) is price unit to de

The number and definition of SCC in gNB: SCC is calc
frequency (band) and new radio unit with new compone
and SCC is counted to each (sub)sector summarizing all
where on the same band there in case of several CCs are

SCC usage in known by the gNB and information is use

Bandwidth calculation steps forward SCC where SCC p

Frequency range	SCC BW range
<1 GHz	One SCC = 5 MHz BW
1-3 GHz	One SCC = 10 MHz BW
3-6 GHz	One SCC = 20 MHZ BW
>6-20 Hz	SCC is not defined in this pl
>20 GHz	One SCC = 200 MHz BW

fine 5G software price in gNB.

ulated for each band and for each radio unit independently where each
nt carrier introduce new set of SCC. gNB can contain multiple (sub)sectors
SCCs together in 5G gNB. SCC is one sub-sector on 5G component carrier
CC BWs summarized quantifying SCC usage for the band and radio unit.

d for CLS/SWEM licensing cntrl and for 5G software pricing.

ricing unit definition is frequency dependent:

hase

5G Licenses Summary of Change

Date	Release	Issue	Section
May 16, 2019	5G19	01	-
June 28, 2019	5G19A	02	*5G licences list*
June 28, 2019	5G19A	02	*5G ASW feature list*
June 28, 2019	5G19A	02	*5G Essential feature list*
October 24, 2019	5G19A	02A	*5G ASW feature list*
October 24, 2019	5G19A	02A	*5G Essential feature list*
March 27, 2019	5G19B	03	*5G SW and HW SI*
March 27, 2019	5G19B	03	*5G ASW feature list*
March 27, 2019	5G19B	03	*5G HWA feature list*
March 27, 2019	5G19B	03	*5G Essential feature list*

Change description
This is the first issue of the document. New features and feature description were added. New features were added. New features were added. New features were added. New features were added. *5G licences list* tab was chanded to *5G SW and HW SI* tab. New features were added. *5G HWA feature list tab* was added. Feature list was updated.

Note:
See the *How to Read This Report* tab for instructions on the usage of *5G SW and HW SI*

Sales item (SI)	Feature code	License key sales item	Sales item description
			Baseline common to all 5G Use Cases
5G000001.TTL	49981	5G000001LK	5G Essential SW
			eMBB General Connectivity
5G000002.TTL	49982	5G000002LK	5G eMBB Bronze SW
5G000003.TTL	49983	5G000003LK	5G eMBB Silver SW
5G000004.TTL	49984	5G000004LK	5G eMBB Gold SW
			HWA for 5G Massive MIMO Active Antenna R
5G000005.T	47612	RCOM00005LK	20MHz bandwidth for mMIMO LTU
5G000006.T	47610	RCOM00003LK	4 layers activation for mMIMO LTU
5G000007.T	37991	RCOM00001LK	20W output power for mMIMO LTU
5G000008.T	47611	RCOM00004LK	mMIMO add band activation LTU
			HWA for 5G mmW RF
5G000021.T	51007	RCOM00019LK	200MHz bandwidth for mmW CLTU
5G000022.T	51008	RCOM00020LK	2 layer activation for mmW CLTU
5G000023.T	51009	RCOM00021LK	3dBm output power for mmW CLTU
			HWA for 5G cmW RF
5G000015.T	34065	RCOM00012LK	RF unit Band Activation CLTU
5G000016.T	34063	RCOM00013LK	RF unit TX Activation CLTU
5G000017.T	34064	RCOM00014LK	RF unit RX Activation CLTU
5G000018.T	34066	RCOM00015LK	oBW Activation beyond 40Mhz/MHz CLTU
5G000019.T	34068	RCOM00016LK	iBW Activation beyond 60Mhz/Band CLTU
5G000020.T	5650	RCOM00017LK	20W power CLTU
5G000026.T	35876	RCOM00026LK	2x5W output power for 5G Micro RRH CLTU
			HWA for 5G ASIR
5G0001001.T	53578	5G0001001LK	5G ASiR-pRRH 4x50mW Power License LTU

5G0001002.T	53579	5G0001002LK	ASiR-sHUB F43 power 5G ASiR-pRRH LTU
5G0001003.T	54303	5G0001003LK	ASiR Port activation (4G 5G) per HUB LTU
5G0001004.T	54304	5G0001004LK	ASiR port expans.(8-12) ANTs per HUB LTU
5G0001005.T	54305	5G0001005LK	ASiR Single Freq Network (5G) Hub LTU
5G000009.T	5646	RCOM00018LK	ASiR concurrent 4G 5G mode Hub LTU
			HWA for 5G system module
5G000010.T	50680	5G000010LK	gNB wideband operation CLTU
5G000013.T	15947	RCOM00009LK	ABIL Half Capacity Activation CLTU
5G000024.T	5692	RCOM00022LK	Additional 1GE transport interface CLTU
5G000011.T	33967	RCOM00008LK	10G transport interface CLTU
			Concurrent operation
5G000009.T	5646	RCOM00018LK	RF Sharing CLTU (concurrent 4G 5G mode)
			Fronthaul switch
5G000025.T	52772	RCOM00023LK	Fronthaul Switch port activation CLTU

Feature ID	SW category	Feature availability	Capacity unit	Yearly subscription (S) / perpetual (P)
see 5G Essential feature list sheet	BSW	from 5G19	Eur/SCC/year	S
see 5G ASW feature list sheet	ASW	from 5G19	Eur/SCC/year	S
see 5G ASW feature list sheet	ASW	from 5G19	Eur/SCC/year	S
see 5G ASW feature list sheet	ASW	from 5G19B	Eur/SCC/year	S
F				
see 5G HWA feature list sheet	HWA	from 5G19	Eur/20MHz	P
see 5G HWA feature list sheet	HWA	from 5G19	Eur/4 DL layers or beam streams	P
see 5G HWA feature list sheet	HWA	from 5G19	Eur/20W	P
see 5G HWA feature list sheet	HWA	from 5G19	Eur/band	P
see 5G HWA feature list sheet	HWA	from 5G19A	Eur/200MHz	P
see 5G HWA feature list sheet	HWA	from 5G19A	Eur/2 DL layers	P
see 5G HWA feature list sheet	HWA	from 5G19A	Eur/3dBm	P
see 5G HWA feature list sheet	HWA	from 5G19	EUR/ additional band	P
see 5G HWA feature list sheet	HWA	from 5G19	EUR/1 TX	P
see 5G HWA feature list sheet	HWA	from 5G19	EUR/1 RX	P
see 5G HWA feature list sheet	HWA	from 5G19	EUR/ MHz beyond 40 MHz oBW	P
see 5G HWA feature list sheet	HWA	from 5G19	EUR/ if iBW beyond 60MHz	P
see 5G HWA feature list sheet	HWA	from 5G19	EUR/ 20W	P
see 5G HWA feature list sheet	HWA	from 5G19B	EUR/ 2x5W	P
see 5G HWA feature list sheet	HWA	from 5G19A	Eur/4x50mW ASiR	P

see 5G HWA feature list sheet	HWA	from 5G19A	Eur/ AsiR Hub PoE port	P
see 5G HWA feature list sheet	HWA	from 5G19A	Eur/ASiR Hub port activation	P
see 5G HWA feature list sheet	HWA	from 5G19A	Eur/ASiR Hub port activation	P
see 5G HWA feature list sheet	HWA	from 5G19A	Eur/ASiR Hub on 5G	P
see 5G HWA feature list sheet	HWA	from 5G19A	Eur/shared ASiR Hub	P
see 5G HWA feature list sheet	HWA	from 5G19	Eur/BB Capacity board when >20MHz	P
see 5G HWA feature list sheet	HWA	from 5G19	Eur/half BB Capacity board	P
see 5G HWA feature list sheet	HWA	from 5G19	Eur/1GE addl port	P
see 5G HWA feature list sheet	HWA	from 5G19	Eur/10GE port	P
see 5G HWA feature list sheet	HWA	from 5G19	Eur/shared RF	P
5GC000933	HWA	from 5G19B	Eur/port	P

License control action
Alarm 41003 LICENSE CAPACITY NOT AVAILABLE raised in NetAct
Alarm 41003 LICENSE CAPACITY NOT AVAILABLE raised in NetAct
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Alarm 41003 LICENSE CAPACITY NOT AVAILABLE raised in NetAct

Additional information
Mandatory, introduced by the 5GC000769 feature
eMBB Bronze level requires Essential, the eMBB use case is introduced by the 5GC000256 feature
eMBB Silver level requires eMBB Bronze and Essential, the eMBB use case is introduced by the 5GC000256 feature
eMBB Gold level requires eMBB Silver. eMBB Bronze and Essential, the eMBB use case is introduced by 5GC000256 feature
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HW activation license to enable the use of additional 4x50mW

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Two licenses required for full capacity. AirScale capacity plug-in unit ABIL requires always two licenses.
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When radio unit is used for both LTE and NR
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Note:
See the *How to Read This Report* tab for instructions on the usage of *5G ASW feature list*

Feature ID	Feature name
	BRONZE
5GC000092	5G Node B Plug and Play
5GC000264	IPsec on Backhaul
5GC000300	VNF High Availability Foundation for C-plane
5GC000309	Support of F1 Interface over IPv4 or IPv6
5GC000311	M-Plane over IPv6
5GC000313	Timing over Packet with Phase Synchronization
5GC000315	Sync Hub Direct Forward
5GC000317	1PPS&ToD Sync from Sync Hub Master
5GC000318	1PPS&ToD Sync from External GNSS Receiver
5GC000376	PCMD Support for 5G NB
5GC000378	Beamforming Run-Time Calibration for 3rd Gen RF
5GC000391	IPv6 for S Plane
5GC000519	QoS Aware Ethernet Switch
5GC000526	DL Interference Generation - Single Cell
5GC000527	Intra-band CA TDD FR2 up to 2 CCs
5GC000533	Digital Beamforming for CPRI Based RUs
5GC000535	Analog Beamforming
5GC000561	eCPRI Sync Master Support
5GC000577	TRS Support of NSA Interfaces (X2 and S1-U) over IPv4 / IPv6
5GC000579	Long Fiber Support for CPRI Fronthaul
5GC000605	DL SU Adaptive 4x4 MIMO (Open Loop)
5GC000647	Multiple VLAN Interfaces
5GC000679	UL/DL FDM Scheduling
5GC000713	Timing over Packet (ToP) with Frequency Synchronization
5GC000714	Synchronous Ethernet for gNB
5GC000720	Asymmetric Carrier Aggregation
5GC000721	PSCell Load Balancing
5GC000772	Common DRX
5GC000795	Multiple DRBs per UE (NSA Mode 3x)
5GC000864	Cell Trace for NSA
5GC000886	Secondary RAT Data Volume Reporting
5GC000918	Analog Beamforming for eCPRI Based RUs
5GC000920	DL 4x4 SU MIMO without Beamforming (Open Loop)
5GC000986	Fast IP Rerouting
5GC001097	Basic PCMD For NSA
5GC001258	Sounding Based Beamforming for GoB Sub 6GHz for CPRI
5GC001300	Frame Structure Enhancement: Preamble Format C2 - 120 kHz
5GC001301	Frame Structure Enhancement: Preamble Format C2 - 30 kHz
5GC001304	Frame Structure Enhancement: Preamble Format B4 - 30 kHz
5GC001329	EIRP Monitor
5GC001695	Extension of GoB Pattern sub 6GHz
5GC001846	AirScale Indoor Radio ASiR-pRRH 2T2R split mode

5GC001849	Support of 8T8R 8 Port BF Antenna with Calibration Port below 6 GHz
5GC001856	DL SU Adaptive 4x4 MIMO (Closed Loop)
5GC001867	Secondary RAT Data Volume Reporting for Multiple DRBs
5GC001878	DL Interference Generation - Multiple Cells
5GC001927	Multiple DRBs per UE - Additional Scenarios
5GC002052	EIRP Control
5GC002139	DL 4x4 SU MIMO without Beamforming (Closed Loop)
5GC002177	A2 Based SgNB Release
5GC002226	Coverage Based Handling of Non-coherent MIMO UEs
	SILVER
5GC000392	IPsec on F1
5GC000522	256 QAM for PDSCH
5GC000609	ToP with Phase Sync Resiliency
5GC000738	Multiple PLMN ID Support
5GC001095	Inter-Frequency Mobility (NSA Option 3x) without MeNB Coordination
5GC001200	Dynamic Uplink Data Split Mode
5GC001242	UL and DL PRB Blanking at Carrier Edge
5GC001357	ToP Phase Resiliency with Ethernet Multicast
5GC001725	Intra-band CA TDD mmW up to 4CCs DL
5GC001726	Intra-band CA TDD mmW up to 8CCs DL
5GC001840	5G RAN Sharing with multiple PLMNs NSA
CB005834	Transport Separation for RAN Sharing in NSA Classical gNB with up to Two Operator
	GOLD
5GC001904	LTE-NR In-Carrier Dynamic Spectrum Sharing Phase1 FDD

Feature availability	5G eMBB use case level
5G19A	bronze
5G19	bronze
5G19A	bronze
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5G19A	bronze
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5G19B	silver
5G19A	silver
5G19B	silver
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5G19B	silver
5G19B	silver
5G19B	silver
5G19B	gold

Additional information
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There is a LICENSE mechanism at NetAct for Plug and Play functionality
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No license required to use IPv4
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No license required to use IPv4
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Note:
See the *How to Read T*
for instructions on the

Feature ID
5GC000257
5GC000381
5GC000418
5GC000726
5GC000869
5GC000933
5GC001025
5GC001028
5GC001075
5GC001077
5GC001100
5GC001246
5GC001417
5GC001684
5GC001702
5GC001861
5GC001933
5GC001962
5GC002009
5GC002054

This Report tab
e usage of *5G ASW feature list*

Feature name
Introduction of HWA Sales Items for MIMO AAS in 5G
Small Form Factor Pluggable SFP/SFP+/SFP28 slot
AMOB outdoor sub-rack for 5G
NR-LTE FDD concurrent operation for CPRI RUs
80 Mhz cell bandwidth for cmWave
MDEA Fronthaul Switch for 5G Deployments
NR-LTE concurrent operation for CPRI TDD MAA radios
Backplane Interfaces for Subrack Sharing
60 Mhz cell bandwidth for cmWave
40 Mhz cell bandwidth for cmWave
NR-SRAN FDD concurrent operation for CPRI RUs
AirScale Indoor Radio LTE and NR concurrent operation
DU Configuration AirScale Indoor Radio SFN configuration for 40MHz 60MHz and 80MHz
HW activation license for ASiR-pRRH Tx power
NR-LTE/SRAN concurrent operation with OBSAI RUs
NR and LTE concurrent operation for the multimode ASiR-pRRH
AAHJ 60 MHz carrier support
Baseband block FR1 TDD CPRI - 1 cell 8DL/4UL
AEQA 60 & 80 MHz carrier support
AirScale Indoor Radio SFN configuration:20MHz

Feature availability	License key sales item	Additional information
5G19B	5G000005/6/7/8.T	-
5G19	5G000011.T	-
5G19	5G000011.T	-
5G19A	5G000009.T	-
5G19	5G000005.T	-
5G19B	5G000025.T	-
5G19	5G000009.T	-
5G19A	5G000011.T	-
5G19	5G000005.T	-
5G19	5G000005.T	-
5G19B	5G000009.T	-
5G19A	5G0001006.T	-
5G19A	5G0001005.T	-
5G19A	5G0001001.T : 4x50 mW Tx Power	-
5G19B	5G000009.T	-
5G19B	5G000009.T	-
5G19A	5G000005.T	-
5G19B	5G000006.T	-
5G19A	5G000005.T	-
5G19B	5G0001005.T	-

Note:
See the *How to Read Th*
for instructions on the

Feature ID
5GC000157
5GC000160
5GC000174
5GC000256
5GC000310
5GC000314
5GC000319
5GC000320
5GC000321
5GC000323
5GC000324
5GC000326
5GC000343
5GC000353
5GC000360
5GC000375
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5GC000765
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is Report **tab**
usage of ***5G Essential feature list***

Feature name
Support NetAct Connectivity
5G Node B Radio Access Point Hardware Management in NMS
5G Node B Software Management
License Management for 5G
M Plane over IPv4
Synchronization Hub
Flexible Sync Input Priority
Synchronization Holdover Support
NTP Based Time Synchronization on CU
Operator Certificate Management & Multi Layer of CA
Operator Account Management on gNB
OAM Transport Layer Security (TLS 1.2) Support on CU & DU
VNF Lifecycle Management: Deployment with CBAM
QSFP+ for Fronthaul LL interface
Login Restriction with CNUM
5G Performance Monitoring for CPRI Link
Vendor Certificate Management for DU
eCPRI Fronthaul Interface
GNSS Firmware Upgrade
TDD Lower Layer Support - 100 MHz Cell Bandwidth
AirScale Sub-rack Sharing
X2 Management for NSA Mode 3x Operation
SgNB Addition and Release for NSA Mode 3x Operation
Radio Link Failure Handling for NSA Mode 3x Operation
UE Inactivity Handling for NSA Mode 3x Operation
Radio Admission Control for NSA Mode 3x Operation
F1 Link Management
UE Capability Handling for NSA Mode 3x Operation
Classical BTS Introduction
PM Reporting Time Improvement (5 min)
L3 Non Standalone Call with Data Transmission
Uplink Open Loop Power Control
PRACH Control
DL Power Control
Uplink and Downlink Link Adaptation
TDD Scheduler for Multi-UE Support
DL SU Adaptive MIMO
UL SU Adaptive MIMO
Ciphering of U-Plane (NSA Option 3x)
Ciphering and Integrity Protection of C-Plane (NSA Option 3x)
eCPRI Transport
eCPRI Sync Slave RU
5G - LTE flow control at X2

5G - LTE Flow Control at X2
Intra-Frequency Inter-DU en-gNB Mobility (NSA Option 3x, Cloud gNB)
Intra-MeNB LTE Handover without en-gNB Change (NSA Option 3x)
Intra-Frequency Inter en-gNB Mobility (NSA Option 3x)
7750-SR as Security Gateway
CPRI Fronthaul Interface
F1-U Interface
3GPP Specification Baseline Rel. 15 09/2018 and NBC NSA 12/2018
Support of intra node gNB checks in WPS
VNF CU on Third Party Infrastructure: Generic Approach
CU VNF Architecture, Configuration and Capacity 5G19
VNF Airframe Compatibility Matrix
F1 Cell Management
System Information Broadcast - Intra-NR
PDU Session Resource Setup and Release
User Plane Performance Counters for 19
Control Plane Performance Counters for 19
NTP Time Synchronization for DU & Classical gNB
Licensing Management Framework for 5G
Non GBR Service Differentiation
Additional Security Algorithms for Ciphering of U-Plane (NSA Option 3x)
FDD Scheduler for Multi-UE Support
FDD Lower Layer Support - 5-20 MHz Cell Bandwidth
Source Based Routing
QoS Support for Terminated Traffic
ALD Support in gNB for Nokia CPRI Radio Units
20 MHz Cell Bandwidth for cmWave
Enforced LTE Measurement Gaps (NSA Option 3x)
Bi-Periodic 5 Slot Subframe Configuration
AirScale Indoor Radio NR Operation
Intra-Frequency Intra-DU en-gNB Mobility (NSA Option 3x)
TD-LTE Co-existence Subframe Configuration
FR2 Frame Structure 4-1
CU VNF Compatibility Matrix 5G19B
Plug-in Radio SW Interface for CPRI
DU Configuration AirScale Indoor Radio SFN configuration
Micro Discontinuous Trans. and Recept. (µDTRX) for Energy Efficiency
FR1 Frame Configuration 4-1
Transport Reference Configurations
3GPP Specification Baseline for 19B Release
AirScale Indoor Radio Daisy Chaining 4G and 5G ASiR-pRRH
User Plane Performance Counters for 5G19B
Control Plane Performance Counters for 5G19B
Additional DMRS Configuration
LXC Container Hardening
Time Alignment Extensions
Support of 8T8R RU for 2T2R / 4T4R Antenna Deployments Below 6GHz
System Upgrade to 5G19B

ASiR Web Element Manager-5G Phase1
Supplemental Downlink Cell - FR2
Remote access to gNB based on NCF
Configurable Frame Structure for ASiR
CU VNF Architecture, Configuration and Capacity 5G19B
Enhanced Link Adaptation Procedures
CPRI Extension to SFP for Broadband
CU VNF Architecture, Configuration and Capacity 5G19A
CU VNF Compatibility Matrix 5G19A
4Rx MRC Receiver for FR1 FDD
Non-contention Based Random Access
AirScale Indoor Radio Operability Enhancement - NetAct CM/FM Support
4T4R/2T2R Cell Coverage Extension
Antenna Tilt for 2D GoB
gNB Deployment - 5G19B
Support of Additional Functionalities in 5G19B on Existing 5G Radios
Extended Power Range for AEQV
Beamforming Mode for AZQG, AZQH and AZQL (CPRI)
Enhancement of Link Diagnostic and Monitoring
Security Improvements on Cloud gNB
Antenna tilt for 2D GoB (Com. Introduction)
FDM of DMRS and PDSCH

Feature availability	Additional information
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