Nokia 7730 SXR-1 series Service Interconnect Routers

Release 26

The Nokia 7730 Service Interconnect Router (SXR)-1[1] series of IP routing platforms is designed for telecommunications providers, AI and cloud providers, and mission-critical enterprise network environments. It delivers high port and service density in compact, fixed-form-factor and extended-temperature variants. Built on the fully programmable Nokia FPcx routing silicon, these routers provide numerous benefits for scale, security, flexibility and resiliency of the network.

Overview

Networks are evolving to distribute network functions and applications closer to the user, while network operations shift toward to a NetOps model.

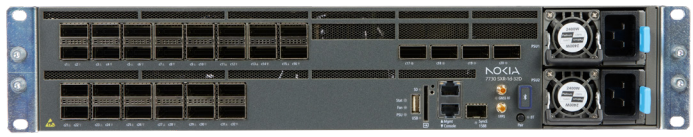
These requirements are satisfied with the 7730 SXR-1 series. The platform offers two capacity options—4.4 Tb/s full duplex (FD) and 5.6 Tb/s FD—in three compact form factors. It supports a broad range of connector speeds and optics, including 400G QSFP-DD, 100G QSFP28 and 100G SFP-DD, together with flexible optical breakout options. Pluggable DCO 100G ZR and 400G ZR/ZR+ modules are also supported.

The 7730 SXR-1 supports a rich set of IP routing, MPLS, segment routing, EVPN and OAM capabilities, making it ideal for data center gateway (DC GW), provider edge and border router applications in the most demanding, dynamic, and reliable Ethernet and IP/MPLS networks.

Powered by Nokia SR Linux, a cloud-native network operating system (NOS), the platform provides a robust foundation, scalable automation, and unmatched extensibility on a compact, fixed, next-generation router. These routers combine foundational capabilities with exceptional power efficiency, avoiding the compromises often found in alternative solutions.

7730 SXR-1x-44S

7730 SXR-1-32D



7730 SXR-1d-32D

1 The 7730 SXR-1 series is part of the 7730 SXR product family. The 7730 SXR-R data sheet is available. Contact Nokia for details.

Network Processor-based architecture

At 5.0Tb/s full-duplex (FD), the Nokia FPcx routing silicon — based on a network-processor design — delivers right-sized capacity to address next-generation access and aggregation requirements. With a fully programmable pipeline of eight independent clusters, each capable of running independent code, this provides un-matched flexibility to
meet the needs of today as well as tomorrow.

The independent nature of cluster operations enables FPcx-powered platforms to be upgraded in-service with zero packet loss, all while continuing to forward data-plane traffic without interruption. This is the first silicon of this type in the industry, and it changes the nature of how systems can be upgraded and maintained, re-defining the meaning of high availability and increasing the ease with which new services and capabilities can be deployed. A 100 percent programmable pipeline will always drive the lowest TCO with respect to any other silicon type. This completely mitigates against future unknown standards evolution allowing for a network to always run in the most efficient way possible.

With a network-processor-based architecture that provides 8GB of egress buffer and up to 192MB of ingress buffer memory, FPcx is effectively fully buffered and delivers an order-of-magnitude higher capability than competing silicon, directly translating into greater upstream and downstream throughput.

Speed and compact platforms

Demanding network roles require in-house silicon. Three fixed, compact Nokia 7730 SXR-1 platforms are available, and provide support an extended temperature range:

- 7730 SXR-1x-44S
  - Fixed, 5.6 Tb/s, 1RU, integrated GNSS
  - 40 x 100G SFP-DD + 4 x 400G QSFP-DD
- 7730 SXR-1-32D
  - Fixed, 4.4 Tb/s, 1RU, integrated GNSS
  - 28 x 100G QSFP28 + 4 x 400G QSFP-DD
- 7730 SXR-1d-32D
  - Fixed, 4.4 Tb/s, 2RU, integrated GNSS
  - 28 x 100G QSFP28 + 4 x 400G QSFP-DD

All 100G SFP-DD ports support all combinations of 10G, 25G, 50G and 100G SFP-DD optics, allowing for ports to change from 10G to 100G with only a change of the optic.

All odd numbered QSFP28 ports support 4 x 25GE and 4 x 10GE breakout.

All 400G QSFP-DD ports are fully backward compatible to QSFP28-DD and QSFP28, supporting any combination of 4 x 10GE, 4 x 25GE, 100G, 2 x 100G, 4 x 100G and 1 x 400G.

All 7730 SXR platforms are designed with a capability called PCB enhanced plating (PEP). This built-in design attribute provides conformal coating level protection, without the need for conformal coating and so comes with none of the disadvantages of conformal coating. The design process is proprietary and delivers proven results compared to conformal coating.

All-in-one system synchronization

The 7730 SXR-1 series provides precise frequency and time synchronization to meet the stringent requirements of 4G/5G mobile base stations and other mission-critical networks. It improves timing accuracy over packet networks by combining built-in architectural features with port-based timestamping, dual-band Global Navigation Satellite System (GNSS) capabilities, ITU-T Synchronous Ethernet (SyncE) and the Nokia Bell Labs IEEE 1588v2 algorithm. Sync performance achieved in the 7730 SXR include G.8272 PRTC-B for GNSS and G.8262.1 eEEC for SyncE. Combine these with powerful QoS features that provide granular traffic controls reduce delay and delay variation experienced by packet synchronization technologies.

IP Network security

To protect against escalating security threats, the Nokia 7750 SXR-1 embeds robust security measures across all aspects of the data path without compromising router performance. For advanced DDoS mitigation, it uses signature-based ACLs to provide first-level payload inspection at line rate, filtering out DDoS traffic without impacting the performance of any function or service running on it. In combination with Nokia Deepfield Defender, the solution can mitigate 100 percent of all DDoS attacks in-band at the network edge, without the need to redirect any traffic to a scrubbing center.

To provide end-to-end secure and trusted network connectivity, it supports enhanced IEEE 802.1AE MACsec, branded as ANYsec. It provides universal, line-rate MACsec and ANYsec encryption on all connectors and speeds from 10 Gb/s up to 400 Gb/s for MPLS, segment routing, and IP networks, without impacting router performance. ANYsec operates hop-by-hop or end-to-end and can be extended to any network topology at scale. It also interworks with legacy network equipment and can be added as a network overlay.

With Trusted Platform Module (TPM) 2.0 technology and capabilities to support secure boot and measured boot, security is not only a network wide value add but is built into the DNA of every single platform.

Service Routing with SR Linux

Nokia SR Linux is a Linux®-based open, extensible and resilient NOS that enables scalability, flexibility and efficiency in wide area and data center network environments. The Nokia 7730 SXR-1 series implements Nokia SR Linux.

Ground-up, model-driven architecture delivers extensibility

SR Linux is designed from the ground up with a management architecture that meets the demands of a model-driven world where visibility—and the scalability and granularity of that visibility— are paramount.

SR Linux features a completely model-driven architecture for flexible and simplified management and operations. SR Linux delivers an extensible and open infrastructure that allows applications to define and declare their own schemas, enabling the retrieval of fine-grained system state and setting of configuration.

Modular, state-sharing architecture

SR Linux uses an unmodified Linux kernel as the foundation on which applications share state via a publish/subscribe (pub/sub) architecture. The Nokia pub/sub architecture is implemented using generalized Remote Procedure Call (gRPC), protocol buffers (protobufs) and the Nokia Impart Database (IDB).

The Nokia IDB is a lightweight database that is optimized to handle high volumes of messages while protecting against any one application slowing down the whole system.

Field-proven protocol stacks ensures resiliency

SR Linux leverages field-proven protocol stacks from the Nokia Service Router Operating System (SR OS), which has a strong pedigree in IP routing. By using field-proven protocol stacks, planning and operations teams can immediately benefit from the stability, scalability and interoperability of a resilient NOS.

In Wide Area Networks (WAN), SR Linux delivers a rich set of IP routing, MPLS and Segment Routing labeled forwarding capabilities together with EVPN for both IP and MAC-VRF transport in support of data center gateway (DC GW), provider edge (PE) and border router applications. These capabilities include extensive EVPN and OAM features that can power the most demanding, dynamic and reliable Ethernet and IP/MPLS networks.

Scalable streaming telemetry

SR Linux was built with an open, scalable telemetry framework at its core, internally using gRPC, gRPC Network Management Interface (gNMI) and protobufs. Because SR Linux is natively model-driven, it is immediately ready for streaming telemetry without requiring any translation layers.

Superior CLI programmability and integration of third-party applications

Operations teams can leverage command line interface (CLI) plugins to completely customize the way the CLI operates, plugging in Linux commands or pulling the state/configuration from various locations.

SR Linux allows third-party applications to be fully integrated into the system and given all the same benefits as Nokia applications. This includes consistent configuration via YANG, telemetry support, life-cycle management and visibility of system resources.

SR Linux offers a state-of-the-art NetOps Development Kit (NDK) for data center teams to develop new applications and operational tools in the language of their choice with deep programmatic access to, and control of, the entire system.

Network automation

To simplify and automate network operations, the Nokia 7730 SXR-1 series, powered by the SR Linux NOS, enables model-driven network management features and can be deployed across a wide range of applications.

The Nokia Network Services Platform (NSP) provides IP network automation, a consistent user experience, and management capabilities across all Nokia IP routing platforms. It reduces risk and accelerates implementation with prepackaged software and services and offers a rich set of service management features that automates new service delivery and reduces operating cost.

Standards-based software-defined networking (SDN) interfaces enable best-path computation to be offloaded to SDN controllers such as the Nokia NSP. Operating as path-computation clients (PCCs), the 7730 SXR-1 collects and reports per-link and per-service delay, jitter, and loss metrics, together with port-utilization levels, for efficient path computation by a path-computation element (PCE) function in the SDN controller.

Technical specifications

Table 1. Nokia 7730 SXR-1 specifications

Feature	7730 SXR-1x-44S	7730 SXR-1-32D	7730 SXR-1d-32D
System throughput (FD)	5.6 Tb/s	4.4 Tb/s	4.4 Tb/s
Connectors	• 4 x 400G QSFP-DD • 40 x 100G SFP-DD	• 4 x 400G QSFP-DD • 28 x 100G QSFP28	• 4 x 400G QSFP-DD • 28 x 100G QSFP28
Optical breakouts	4 x 10G, 4 x 25G, 100G, 2 x 100G, 4 x 100G	4 x 10G, 4 x 25G, 100G, 2 x 100G, 4 x 100G	4 x 10G, 4 x 25G, 100G, 2 x 100G, 4 x 100G
Control interfaces	Console, management, SyncE/1588, USB, GNSS in, 1PPS out, SD slot with security cover		
Security	• DDoS mitigation via signature ACL • TPM2.0	• DDoS mitigation via signature ACL • Enhanced IEEE 802.1AE MACsec (ANYsec)* • TPM2.0	• DDoS mitigation via signature ACL • TPM2.0
Timing and synchronization	• Includes Stratum 3E oscillator • ITU-T Synchronous Ethernet (SyncE) – ITU-T G.8262.1 (eEEC) • IEEE 1588v2 clock types: Boundary, Grandmaster • IEEE 1588v2 profiles: – ITU-T G.8275.1 – ITU-T G.8275.2 with PTS • IEEE 1588v2 PTP encapsulations: – Ethernet – UDP/IPv4/IPv6 • RFC 5905 Network Time Protocol (NTP) • SyncE/IEEE1588 input and output timing port • Pulse-per-second (1PPS) output timing • Integrated GNSS receiver: – ITU-T G.8272 PRTC-B dual-band GNSS receiver		
Indicators	Power status (A & B), fan		
Memory buffer size	• 384 MB ingress buffer • 16 GB egress buffer	• 192 MB ingress buffer • 8 GB egress buffer	• 192 MB ingress buffer • 8 GB egress buffer
Hardware redundancy	Power supplies, cooling fans N+1		
Dimensions	• Height: 1 RU, 4.5 cm (1.75 in) • Depth: 42.67 cm (16.8 in) • Width: 44.45 cm (17.5 in)	• Height: 1 RU, 4.5 cm (1.75 in) • Depth: 42.67 cm (16.8 in) • Width: 44.45 cm (17.5 in)	• Height: 2 RU, 8.81 cm (3.47 in) • Depth: 27.5 cm (10.83 in) • Width: 44.45 cm (17.5 in)
Power supply options	1+1 redundant, modular AC or DC power supplies		
Power requirements	• AC input (rated): 200 V AC to 240 V AC, 50 Hz to 60 Hz • DC input (rated): -48 V DC/-60 V DC		
PCB enhanced plating (PEP)	Supported on all platforms		
Cooling	• Front-to-back airflow without a filter • Separate air filter kit available for 1 RU and 2 RU systems		
Normal operating temperature range	-40°C to +65°C (-40°F to +149°F) sustained		
Shipping and storage temperature	-40°C to +70°C (-40°F to +158°F)		
Normal humidity	5% to 95%, non-condensing		

* Future software deliverable

Software features

The 7730 SXR-1 series supports, but is not limited to, the following features.

Open Linux support

- Support for unmodified Linux kernel
- Linux control groups (cgroupsv2)

Layer 2 features

- Ethernet IEEE 802.1Q (VLAN) and 802.1ad (QinQ) with support for jumbo frames
- Link Layer Discovery Protocol (LLDP)
- Ethernet Virtual Private Network (EVPN)
  - Virtual Private Wire Service (EVPN-VPWS)
  - Multihoming with single-active or all-active modes
- EVPN-MPLS support on MAC-VRFs, including support for control word
- TLDP based PWs for VPWS and VPLS services
- FAT (Flow-Aware Transport) label in EVPN-VPWS/TLDP
- Layer 2 proxy-ARP in MAC-VRF
- Layer 2 Control Protocol (L2CP) Tunnelling
- Split Horizon Groups

Layer 3 features

- IP routing
  - Static, aggregate routes for IPv4/v6
  - IP unnumbered interfaces
  - Dual-stack Interior Gateway Protocol (IGP)
  - Multi-topology IS-IS v4/v6
  - Open Shortest Path First (OSPFv2 and OSPFv3)
  - Multiprotocol BGP (MP-BGP)
- BGP with iBGP/eBGP: Support for IPv4/v6, including:
  - Core Prefix Independent Convergence (PIC)
  - Route reflector
  - Dynamic peers
  - BGP unnumbered
  - eBGP multi-hop
  - Add-paths for IPv4 and IPv6 routes
  - BGP maintenance modes
- BGP-Link State (BGP-LS)
- BGP Labeled Unicast (BGP-LS) next-hop-self
- IPv6 flow label hashing
- Layer-3 VPNs:
  - IP-VRF: Multiple VRF support
  - IP-VPN (VPN-IPv4 and VPN-IPv6 families) and EVPN Interface-less (EVPN-IFL) support
  - Multi-instance IP-VRF and EVPN-IFL in the same IP VPN
  - Inter-AS option B and Next Hop Self RR support
  - EVPN IFL IP Aliasing and unequal ECMP
- Routing policy:
  - Structured rules for accepting, rejecting and modifying routes that are learned and advertised to routing peers
  - Routes can be matched based on prefix lists, autonomous system (AS) path regular expressions, BGP communities, Address Family Indicator/Subsequent Address Family Indicator (AFI/SAFI) protocol, etc.
  - Policy-based forwarding based on DiffServ Code Point (DSCP) and/or IP protocol
  - Route leaking between network instances
- Traffic steering to next-hop, network instance
- Multicast:
  - Internet Group Management Protocol (IGMP) v1/2 with SSM translation, IGMPv3
  - Multicast Listener Discovery (MLD)v1 with SSM translation, MLD v2
  - PIM, PIM SSM
  - NG-mVPN with mLDP
  - IGMP-MLD Policy
  - Multicast IPv4 and IPv6 policy

Tunnels: MPLS data plane

- LER and LSR with both IPv4 and IPv6 NHLFEs
  - Unnumbered subinterfaces
  - Null label
  - Load balancing in both LER and LSR roles
- SR-ISIS with MT=0/2
- Segment Routing (SR) flexible algorithms
- Loop-free Alternate (LFA), Topology Independent LFA (TI-LFA)
- Colored/uncolored SR-MPLS TE-Policy
  - Explicit-path support with a mix of strict and loose hops
  - Local CSPF based path computation
  - Label stack reduction, exclude SRLG, delay metric
- PCE computed, PCC initialized LSPs
  - B-SID insertion/stitching
- Seamless BFD with 10ms timers
  - Hold up and down timers
- LSP redundancy with Active, Standby, and Secondary Segment-Lists
- LSP stats
  - BGP-LU
  - TE policy
- Make-before-Break (MBB)
- Fast Re-Route (FRR) protection via LFA, TI-LFA
- Tag-set (a.k.a. admin-tag) for steering services/ shortcuts LDP
- Link-LDP with ISIS IPv4/v6 and OSPFv2/v3
  - Downstream unsolicited label distribution with ordered control
  - LFA fast reroute and remote LFA
  - BFD for I-LDP and t-LDP with 10ms timers
  - FEC-originate, per peer import and export policies, LDP-IGP synchronization
- Targeted LDP support

Tunnels: SRv6 data plane

- End/uN (node SID)
- End.X/uA (Adj SID)
- End.DT4/uDT4 (IPv4 VRF, IPv4 Base)
- End.DT6/uDT6 (IPv6 VRF, IPv6 Base)
- End.DT46/uDT46 (IPv4 and IPv6 VRF, IPv4 Base)
- End.DX2/uDX2 (EVPN-VPWS)
- SRv6 IS-IS shortest path tunnel support MT=2
- Protection:
  - LFA
  - Remote LFA
  - TI-LFA with SRH insertion
- Penultimate Segment Popping (PSP) of SRH
- Ultimate Segment Popping (USP) of SRH
- Ultimate Segment Decapsulation (USD)
- Hash output insertion into the flow-label field at the ingress PE route
- Hashing based on the flow label at the transit P router
- Flexible algorithm: admin-group include and exclude, IGP, TE, and latency metric
- Flexible algorithm-aware locator summarization in IS-IS

Services

- IP-VRF (IPv4 and IPv6 routes)
- EVPN Layer 2 and Layer 3 connectivity
- EVPN all-active multi-homing; single-active multi-homing for Layer 2 and Layer 3
- EVPN-VPWS including MH all Active
- EVPN host route mobility
- Provider edge-to-customer edge (PE-CE) BGP path attribute propagation in EVPN
- EVPN IP aliasing
- Gateway-IP based load balancing for EVPN IP Prefix rout

Quality of Service

- Intelligent packet classification based on combination of dot1p/dscp/mpls criteria on any type of subinterface
- Ingress dscp based remarking
- Ingress per subinterface rate limiting with 2 level policer hierarchies (per-FC and per CVLAN)
- Egress marking, and dscp-based reclassification
- Egress per subinterface Queuing/scheduling:
  - Strict priority
  - Weighted round robin (WRR)
  - 4 hierarchy levels: FC queue/aggregate/multi-aggregate (SVLAN)/interface
  - Sophisticated egress: Buffer management with Weighted Random Early Detection (WRED) at queue/interface-pool/fp-pool levels

Flow monitoring

- Cflowd IPFIX (CPU based)

Operations, administration and maintenance

- Two-Way Active Measurement Protocol (TWAMP) server and session reflector
- STAMP session reflector
- STAMP OAM Performance Monitoring (PM) IP delay and loss measurement
- STAMP Link Measurement
- Eth-CFM; Up/Down MEP
  - Fault Mgmt, CCM, LBM, LT
  - Performance monitoring, delay and jitter
- Link Layer Discovery Protocol (LLDP)
- Mirroring interface/subinterface source to local/remote destination
- Bi-directional forwarding detection (BFD)
  - 10ms timer support
  - Asynchronous BFD liveliness support for all dynamic and static routing
  - Seamless BFD (S-BFD)
  - Micro-BFD for LAG
- LSP ping and traceroute for LDP and SR-ISIS tunnels
- LSP ping and traceroute for IPv4 or IPv6
- VRF routes ping and traceroute for IPv4 or IPv6 default network instance
- Routes ping and traceroute of a SID or locator

System management and automation

- Native model-driven architecture, configuration candidates, exclusive mode, checkpoints and rollbacks
  - Support for SR Linux and OpenConfig data models
- Management interfaces: gNMI, gRPC Routing Information Base Interface (gRIBI), JSON-RPC and CLI (transactional, Python CLI and CLI plugins)
- gRPC network operations interface (gNOI)
- gRPC Network Security Interface (gNSI)
- P4 runtime packet extraction and injection
- SNMPv2c and SNMPv3 gets and traps
- Per-user configurable options for CLI
- Local, RADIUS and TACACS+ authentication, authorization and accounting with role-based access control (RBAC)
- Password complexity policies and lockout management
- Access to common Linux utilities: Bash, cron and Python
- Syslog RFC 5424
- Telemetry
  - Subscription-based telemetry for modeled data structures, either on change or sampled
  - Logging infrastructure
- Telemetry-driven event management
- Python-based Zero Touch Provisioning (ZTP)
- Dynamic Host Configuration Protocol (DHCP) v4/v6 relay
- DHCP v4/v6 server with static allocations

NetOps Development Kit (NDK)

- gRPC and protobuf-based interface for tight integration
- Leverages SR Linux model-driven architecture
- Direct access to other application functionality, e.g., forwarding information base (FIB), LLDP and BFD
- Native support for streaming telemetry

Load balancing and resiliency

- Support for redundant fan and power configurations
- Link aggregation: Link Aggregation Group (LAG) and Link Aggregation Control Protocol (LACP)
- Equal Cost Multi Path (ECMP) for IPv4 and IPv6 forwarding
- Graceful restart client for IS-IS, BGPv4/v6
- VRRP v2 and v3 support

Security

- Distributed and aggregated ACLs and policers for control and management plane
- Layer 3, Layer 4 Control Plane Policing (CoPP)
- Mirroring to Switch Port Analyzer (SPAN) and Encapsulated Remote SPAN (ERSPAN)
- Secure boot
- Measured boot
- TPM Initial Device Identity (IDevID) and Initial Attestation Key (IAK)
- IEEE 802.1x EAP, including per host authentication

Standards compliance[2]

Environmental specifications

- ATIS-0600010.03
- ATIS-0600015.03
- ATT-TP-76200
- ETSI EN 300 019-2-1; Storage Tests, Class 1.2
- ETSI EN 300 019-2-2; Transportation Tests, Class 2.3
- ETSI EN 300 019-2-3; Operational Tests, Class 3.3 (with I-Temp pluggable)
- ETSI EN 300 753 Acoustic Noise Class 3.2
- GR-63-CORE
- GR-3108-CORE Class 2
- GR-3160-CORE
- VZ-TPR-9205
- VZ.TPR.9203 (CO)

Safety

- AS/NZS 62368.1
- IEC/EN/BS/UL/CSA 62368-1
- IEC/EN 60825-1
- IEC/EN 60825-2
- IEC 60529 IP20

Electromagnetic compatibility

- AS/NZS CISPR 32 Class A
- ATIS-0600315
- BS/EN 55032 Class A
- BS/EN 55035
- BS/EN/IEC 61000-3-2
- BS/EN/IEC 61000-3-3
- BSMI CNS15936 Class A
- BT GS-7
- CISPR 32 Class A
- CISPR 35
- ETSI EN 300 386
- EN 55032 Class A
- EN 55035
- ETSI ES 201 468
- ETSI EN 300 132-1
- ETSI EN 300 132-2
- FCC Part 15 Class A
- GR-1089-CORE
- ICES-003 Class A

2 System design intent is according to standards listing. Refer to product documentation for detailed compliance status.

- IEC/EN 61000-3-2
- IEC/EN 61000-3-3
- IEC/EN 61000-6-2
- IEC/EN 61000-6-4
- IEC/EN 61000-4-2 ESD
- IEC/EN 61000-4-3 Radiated Immunity
- IEC/EN 61000-4-4 EFT
- IEC/EN 61000-4-5 Surge
- IEC/EN 61000-4-6 Conducted Immunity
- IEC/EN 61000-4-11 Voltage Interruptions
- KCC Korea-Emissions & Immunity
  (In accordance KS C 9832/KS C 9835)
- VCCI Class A

Radio

- EN 303 413 (GNSS)
- EN 301 489-1
- EN 301 489-19 (GNSS)
- KS X 3124

Power utility substations

- IEEE 1613 (Exception, forced air system)
- IEEE 1613.1
- IEC 61000-6-5
- IEC 61850-3 (Normal environmental conditions)

Directives, regional approvals and certifications

- DIRECTIVE 2011/65/EU Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (Recast) Directive (including Commission Delegated Directive (EU) 2015/863)
- DIRECTIVE 2012/19/EU Waste Electrical and Electronic Equipment (WEEE)
- DIRECTIVE 2014/30/EU Electromagnetic Compatibility (EMC)
- DIRECTIVE 2014/35/EU Low Voltage Directive (LVD)
- DIRECTIVE 2014/53/EU Radio Equipment Directive (RED)
- MEF certification:

  For a list of Nokia CE 1.0-, CE 2.0- and CE3.0-certified products, refer to the MEF certification registry.
- NEBS Level 3
- BSMI Mark – Taiwan
- CE Mark - Common Europe
- CRoHS - China RoHS
- KC Mark - South Korea
- RCM Mark – Australia
- VCCI Mark – Japan
- UKCA Mark – United Kingdom

About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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