



The Standards People

DECT 5G IMT-2020 next steps / ETSI update

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IMT-2020 Proposal

Set of Radio Interface Technologies (SRIT)

- DECT-2020 New Radio (NR) Component RIT
- 3GPP New Radio (NR) Component RIT

Supported Test Scenarios

Test Scenarios	DECT-2020 NR	3GPP NR
enhanced Mobile Broadband eMBB	-	✓
Ultra Reliable Low Latency Communication URLLC	✓	✓
massive Machine Type Communication mMTC	✓	✓

IMT-2020 Proposal

DECT-2020 New Radio (NR) Component RIT

- TS 103 636 Part 1: DECT-2020 NR, Overview
- TS 103 636 Part 2: DECT-2020 NR, Radio reception and transmission requirements
- TS 103 636 Part 3: DECT-2020 NR, Physical Layer
- TS 103 636 Part 4: DECT-2020 NR, Medium Access Control (MAC) Layer
- TS 103 634: Low Complexity Communication Codec plus (LC3plus)

3GPP New Radio (NR) Component RIT

- Release 15 New Radio Specifications
- Release 16 New Radio Specifications

DECT-2020 Key features

- ✓ Flexible radio access technology with dynamic channel selection based on cognitive radio (spectrum sensing)
 - ✓ No frequency planning required, ideal for local network deployments
 - ✓ Compatible with legacy DECT technology including uncoordinated systems
 - ✓ Very advanced capabilities for multiple overlaying DECT-2020 networks in the same area
- ✓ Improved transmission quality, link budget and increased data rate compared to legacy DECT
 - ✓ Applies OFDM Physical layer combined with advanced channel coding and Hybrid ARQ providing state of art performance
- ✓ Support of
 - ✓ scheduled and unscheduled services
 - ✓ low latency operation
 - ✓ ultra low power consumption devices
 - ✓ seamless handover
 - ✓ Mesh radio network topologies
 - ✓ MIMO
- ✓ Up-to-date security based on AES and CCM

Technical Characteristics

- ✓ Radio technology is OFDM with MIMO support
 - ✓ Sub-carrier spacing (SCS) is 27 kHz with 2^{μ} scaling options up to 216 kHz
 - ✓ Symbol time is 41.67 μ s. Cyclic prefix is 4.6 μ s with 27 kHz SCS.
 - ✓ BW operation supported with large SCS and/or large DFT size.
 - ✓ 1.9 GHz range and in principle all IMT-bands below 6 GHz, depending on national regulation.
 - ✓ Improved link budget, approx. 6 dB better performance with comparable bit rate in the legacy DECT with single 1.728MHz channel.
- ✓ TDMA/FDMA based channel access
 - ✓ Basic frame is 10 ms, split into 24 slots and subslots.
 - ✓ Very short latency as minimum transmission unit is a subslot
 - ✓ Length of the subslot is depending on used SCS and is between: 26 μ s – 208 μ s.
 - ✓ Single transmission can have duration over multiple slots and subslots.

Technical Characteristics

- ✓ Basic channel width is 1.728 MHz, with scalable bandwidth support up to 221 MHz
- ✓ Adaptive Modulation and Channel coding supporting :
 - ✓ BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM
 - ✓ All information coded with Turbo coding for release 1, LDPC or other coding may be introduced in later releases
- ✓ Dual mode MAC architecture supporting unscheduled and scheduled services
 - ✓ Listen before Talk (LBT) to protect other systems and other transmissions
 - ✓ Capability to schedule protected resources for high quality services.
- ✓ Very low latency Hybrid ARQ support, latency after 1st retransmission can be less than 2.5 ms with 27 kHz SCS.

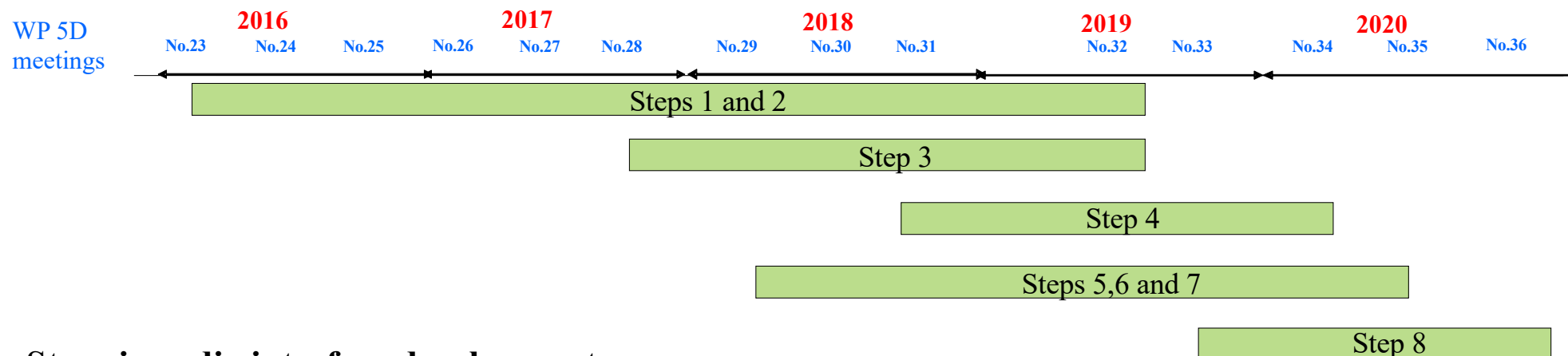
Example Data Rates

Maximum throughput with single spatial stream and maximum turbo code block size of 6144 bits.

Subcarrier spacing: 27kHz (first two examples), 216kHz (last example)

Bandwidth	1 Full Slot	12 Full Slots
1,7 MHz	0,3 Mbps	6,2 Mbps
20 MHz	5,8 Mbps	98 Mbps
200 MHz	77 Mbps	1283 Mbps

IMT-2020 Radio Interface Development Process



Steps in radio interface development process:

- | | |
|---|--|
| Step 1: Issuance of the circular letter | Step 5: Review and coordination of outside evaluation activities |
| Step 2: Development of candidate RITs and SRITs | Step 6: Review to assess compliance with minimum requirements |
| Step 3: Submission/Reception of the RIT and SRIT proposals and acknowledgement of receipt | Step 7: Consideration of evaluation results, consensus building and decision |
| Step 4: Evaluation of candidate RITs and SRITs by Independent Evaluation Groups | Step 8: Development of radio interface Recommendation(s) |

Final IMT-2020 Technology Proposals

Proposal	Technology
3GPP SRIT	3GPP NR + LTE
3GPP RIT	3GPP NR
3GPP RIT -India	3GPP NR modified
DECT 3GPP NR SRIT	DECT-2020 NR + 3GPP NR
Nufront RIT	EUHT (IEEE based)

ITU-R WP 5D Status

Way Forward Option 2 Pictorially (Picture not to scale)

