**3GPP TSG-RAN WG4 Meeting #110 R4-2401104**

**Athens, Greece, February 26 – March 1, 2024**

**Agenda item: 13.2**

**Source:** Moderator (Ericsson)

**Title:** Topic summary for [110][145] n101\_coexist

**Document for:** Information

# Introduction

This document is a summary of the proposals made in the contributions submitted under AI 13.2 for the RAN4 #110 meeting.

# Topic #1: RAN task

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2400648**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400648.zip) | Qualcomm Germany | Observation 1: RAN4 Rel-17 work aimed at incorporating technical conditions for 900MHz and 1900MHz following assumptions and recommendations from ECC Decision (20)02.  Observation 2: Although high-power CAB radios were not in the scope of the Rel-17 work in RAN4, CEPT has shown in ECC report 318 that for CAB radios with 31 dBm output power to MFCN uplink is acceptable when uplink power control is implemented.  Observation 3: ECC report 318 concluded that with current level of MFCN selectivity for in-block EIRP limit of 65 dBm/ 10 MHz, the technical conditions for FRMCS may result in interference to some MFCN BSs located near FRMCS BS sites and that one way of addressing this interference is to coordinate FRMC and MFCN deployment.  Observation 4: The enhanced selectivity requirement for MFCN BSs were not included in 3GPP specs as this is a regional requirement, nevertheless, they have been incorporated in ETSI TS 103 807 V1.1.1 (2021-10). |
| [**R4-2400690**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400690.zip) | Nokia, Nokia Shanghai Bell | Observation 1: RAN4 has analysed and transferred the least restrictive technical conditions (LRTC) for wideband RMR in 1900-1910 MHz specified in the ECC Decision (20)02 into the 3GPP specifications, including the coexistence with other 3GPP radio technologies, while noting that the co-location with other operators and resulting coordination is subjected to national regulation and not further detailed by RAN4.  Observation 2: The LRTC for wideband RMR in 1900-1910 MHz specified in the ECC Decision (20)02 have been transferred into the additional requirements in the 3GPP specifications on the maximum output power, maximum spurious emissions, and out-of-band blocking for base station in band n101.  Observation 3: The LRTC for wideband RMR in 1900-1910 MHz in the ECC Decision (20)02 assume that MFCN base stations (BS) receiving above 1920 MHz have an enhanced selectivity and current MFCN BS located near an RMR radio site may need to be adapted so that they do not suffer interference.  Observation 4: CEPT has considered additional mitigation techniques, like antenna directivity, azimuth, tilt, or (receiver filter) selectivity improvement, need to be implemented on a case-by-case basis in the MFCN BS in the vicinity of the railway tracks if 65 dBm EIRP uncoordinated FRMCS base stations is desired. Indeed, this kind of site engineering solutions have been considered in RAN4 when specifying base station requirements for coexistence and co-location in other adjacent bands.  Observation 5: CEPT has performed Monte Carlo studies the interference from FRMCS cab-radio of 31 dBm output power to MFCN uplink in adjacent bands and shown that it is acceptable when uplink-power control is implemented and activated as in NR equipment. |
| [**R4-2401966**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2401966.zip) | Vodafone, Telecom Italia, Telefónica, Bouygues Telecom, Deutsche Telekom, Telia Company, Orange, Swisscom, KPN | Observation 1: Blocking caused by FRMCS base stations (in case EIRP is 65 dBm)   * Mobile Operator base stations in the 2 GHz band which are <500 m away from a FRMCS base station: 27.9 dB additional selectivity required. * Interference possible even at distances > 3.6 km   Observation 2: Blocking caused by FRMCS Cab Radios (in case Tx power is 31 dBm & EIRP is 33 dBm)   * Possible at distances to mobile operator base station up to 450 m.   Observation 3: Results from the TU Wien measurement campaign show around 10 dB greater damage to public operators compared to the COST-Hata path loss model.  Proposal 1: RAN WG 4 to respond to RAN plenary stating that the requirement to “avoid causing interference on already established networks” has not been achieved by neither the base station specifications for band n101 nor the UE specifications for band n101.  Observation 4: provided that the n101 base station complies with the restrictions of table 6.6.5.2.3-12 in TS 38.104, the unwanted emissions from the n101 base station are probably acceptable to the band n1 base station.  Proposal 2: RAN 4 should indicate to RAN plenary that compliance with table 6.6.5.2.3-12 in TS 38.104 should be part of the certification process for n101 base stations.  Observation 5: the unwanted emissions from the n101 cab radio may cause problems to public operator base stations deployed to give in-train coverage to their customers.  Observation 6: the antenna gain, and roof top positioning of the cab radio antenna can lead to the n101 HPUE’s unwanted emissions causing problems to the band 1 base stations of public operators.  Proposal 3: the unwanted emission specifications for band n101 UE should apply to the power emitted from the aerial, i.e. the “conducted” measurement requirements for the unwanted emissions should compensate for the antenna gain.  Observation 7: the mechanisms to handle post antenna connector gain for V2X and NS\_33 and documented in TS 38.101 by reference to Annex I of TS 36.101 might be reusable.  Proposal 4: Change Requests are drafted to TS 38.101 to ensure that the n101 UE’s unwanted emissions are compensated for post antenna connector gain.  Observation 7: co-ordinated n101 and band 1 base station deployment should consider the likely consequences on cab radio transmit power.  Proposal 5: RAN 4 to indicate to RAN plenary that FRMCS n101 gNBs should use knowledge of the distance between cab radios and band 1 base stations to reduce the n101 UE transmit power to levels that are not harmful to the band 1 base station. |
| [**R4-2402236**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402236.zip) | ZTE Corporation | *Observation 1: A large BS-BS separation distance of more than 600 m is needed for UMa path loss model to maintain the blocking requirement. If 8 dB margin is considered for blocking requirement, the separation distance is less than 500 m.*  *Proposal 1: Modify the antenna orientation to reduce the interference caused by band n101 downlink transmissions to uplink reception in 1920-1930 MHz of band B1/n1.* |
| [**R4-2402320**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402320.zip) | Ericsson | Observation1: The European Commission mandated CEPT to assess the 1900-1920 MHz frequency range for the future railway mobile communication system.  Observation2: ECC Report 313 studies the compatability of FRMCS in the 900 MHz range with adjacent services.  Observation3: ECC Report 314 studies the compatability of RMR in the 1900-1920 MHz frequency range with adjacent services, focusing on the interference of MFCN on FRMCS.  Observation4: ECC Report 318 studies the compatability between RMR in the 1900-1910 MHz frequency range and MFCN above 1920 MHz.  Observation5: Despite the concern of BS manufacturers and operators, the CEPT Administrations decided to assume a considerable improvement of MFCN BS selectivity (band n1) when specifying FRMCS BS maximum EIRP for uncoordinated deployment.  Observation6: CEPT Report 74 answers tasks 1 to 4 of the EC Mandate, based on ECC Reports 313, 314 and 318.  Observation7: CEPT Report 76 answers task 5 of the EC Mandate, based on ECC Reports 313, 314 and 318.  Observation8: ECC Decision(20)02 regulates the RMR technical and operational parameters in the frequency band 1900-1910 MHz, assuming an enhanced selectivity (compared to the current Harmonized Standards) of MFCN BS in band n1.  Observation9: The European Commission implemented the EC Decision 2021/1730 with the same technical conditions and assumptions than ECC Decision(20)02.  Observation10: CEPT requested ETSI to update the relevant European Harmonized Standards to consider the assumed MFCN BS enhanced selectivity.  Observation11: ETSI decided to convert this enhanced selectivity in a blocking requirement and add it in a separate Technical Specification, warning about potential risk of interference.  Observation12: The band n101 was specified following ECC Decision(20)02 and assuming uncoordinated deployment.  Observation13: FRMCS coordinated deployment would help avoiding interference with already deployed MFCN BS.  Observation14: Mitigation techniques (e.g. adjusting antenna directivity, azimuth, tilt, ...) would help avoiding interference with already deployed MFCN BS.  Observation15: RAN4 might wish to specify more stringent baseline limit in 1920-1980MHz to improve coexistence. Nevertheless, this would not have any impact in real network as long as the ECC Decision(20)02 is not updated accordingly as well.  Observation16: FRMCS band n101 definition follows the existing European Regulation which assumed a MFCN BS enhanced selectivity to address the interferences issue.  And in the following table, we recap the different alternatives mentioned in this contribution. |
| [**R4-2402391**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402391.zip) | Union Inter. Chemins de Fer | Observation 1: The technical conditions specified in ECC Decision (20)02 [5], i.e. EIRP limits were analysed accordingly and the necessary conclusions for an uncoordinated operational approach were derived. These include the BS rated output power using corresponding assumptions, the resulting emission values of the transmitter and the specifications of the receiver.  Observation 2: The technical conditions specified in ECC Decision (20)02 [5], i.e. the BS rated output power using corresponding assumptions to convert from the EIRP limits, the resulting emission values of the transmitter and the specifications of the receiver have been transferred to the 3GPP specifications.  Observation 3: In the Commission Implementing Decision (EU) 2021/1730, ECC Decision(20)02, CEPT Report 76 as well as ECC Report 318 [7] it is clearly stated that the regulation has assumed that the harmonised technical conditions for RMR (FRMCS) base stations operating in the 1900-1910MHz band assume that base stations providing electronic communications services, which use frequencies above 1920MHz for reception under Commission Implementing Decision (EU) 2020/667(4), have enhanced selectivity compared to the current Harmonised European Standards. Base stations providing electronic communications services, which are located in the vicinity of a RMR base station and do not meet the enhanced selectivity criterion, should, where necessary, be adapted, in order to mitigate harmful interference.  Observation 4: The ECC in Report 318 has considered that additional mitigation techniques need to be implemented on a case-by-case basis, such as adjustments of antenna directivity, azimuth, tilt, or improve the selectivity of the MFCN BS in the vicinity of the railway tracks. Such site engineering solutions have been considered by RAN 4 for TDD and FDD coexistence scenarios as described in TR 25.942 [11] section 8.4.  Observation 5: From CEPT report 76, ECC DEC(20)02 and ECC Report 318 it is clear that Operators of mobile networks in 1920-1980 MHz should have, sufficiently far in advance, information on the rollout of a new RMR BS in 1900-1910 MHz.  Observation 6: In response to the EC/CEPT regulation for the 1900-1910MHz band ETSI has specified enhanced selectivity requirements for protection of Band 1 BSs.  Observation 7: The number of MFCN sectors that may be interfered by n101 BS will be less than around 7% of the MFCN sectors that are near railways due to the coupling loss expected to be higher than calculated, e.g. due to the effects of terrain, clutter, ground occupancy In urban areas, the temporal nature due to train speed and the uplink orientation of the FRMCS TDD frame. As the number of urban MFCN BS is over-represented in the above percentage the actual number of interfered MFCN BS will be lower.  Observation 8: From ECC Report 318 it is clear that ECC has performed Monte Carlo studies that show that the interference from FRMCS cab-radio of 31 dBm output power to MFCN uplink is acceptable when uplink power-control is implemented and activated.  Observation 9: from both the Commission Implementing Decision (EU) 2021/1730 and the ECC Decision(20)02 it is clear that Uplink power control is mandatory and shall be activated.  Observation 10: The Commission Implementing Decision (EU) 2021/1730, the ECC Decision(20)02, The ECC Report 318 and the CEPT report 76 all have been subject to their regular consultation phases. These have not amended the assumption that base stations providing electronic communications services, which use frequencies above 1 920MHz for reception under Commission Implementing Decision (EU) 2020/667(4), have enhanced selectivity compared to the current Harmonised European Standards. Base stations providing electronic communications services, which are located in the vicinity of a RMR base station and do not meet the enhanced selectivity criterion, should, where necessary, be adapted, in order to mitigate harmful interference. |
| [**R4-2402583**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402583.zip) | Huawei, HiSilicon | **Proposal 1**: Considering ECC (20)02 wording on informing operators of commercial mobile networks, ask railway community to provide more detailed feedback on the expected FRMCS n101 deployment plans, including more details on the timelines across CEPT countries/markets.  **Proposal 2**: Rely on the coordination procedures, or other mitigation measures in order to resolve any potential country/market specific interference issues among the FRMCS band n101 operation and MFCN band n1 operation.  **Proposal 3:** Seek for feedback on the expected time required to arrange potential co-existence coordination among FRMCS n101 and MFCN n1.  **Proposal 4:** Collect more details on technical concerns (if any) on the n101 HPUE implementation in Rel-18 TS 38.101-1. |

## Open issues summary

### Sub-topic 1-1

*Sub-topic description:* Observations summary

**Issue 1-1-1: Band n101 specification**

* Recommended WF

Many observations were made in various contributions. From those observations, it seems there is a common view that band n101 was specified in accordance with ECC Decision(20)02 and EC Decision 2021/1730. Those 2 Decisions are based on coexistence studies made by CEPT, assuming an enhanced selectivity for MFCN operating above 1920 MHz and deployed in the vicinity of FRMCS BSs.

Still, many operators (Vodafone, Telecom Italia, Telefónica, Bouygues Telecom, Deutsche Telekom, Telia Company, Orange, Swisscom, KPN) think this band was not specified according to the WID objectives. As moderator, to save time, I would propose to discuss this while drafting the LS to RAN.

### Sub-topic 1-2

*Sub-topic description:* This sub-topic is related to band n101 BS requirements

**Issue 1-2-1: Band n101 BS additional spurious**

* Proposals: Indicate to RAN plenary that compliance with table 6.6.5.2.3-12 in TS 38.104 should be part of the certification process for n101 base stations.
  + Agree (Telecom Italia, Telefónica, Bouygues Telecom, Deutsche Telekom, Telia Company, Orange, Swisscom, KPN)
  + Disagree
* Recommended WF

Moderator’s understanding is that the additional spurious for band n101 (table 6.6.5.2.3-12) is based on ECC Decision(20)02 table 10 and EC Decision 2021/1730 table 10. It’s then part of the Regulation, and n101 BS shall be compliant with this requirement to get CE certification. Regarding 3GPP, it should be tested as part of the conformance tests.

### Sub-topic 1-3

*Sub-topic description:* This sub-topic is related to band n101 HPUE requirements

**Issue 1-3-1: Antenna gain compensation**

* Proposals: The unwanted emission specifications for band n101 UE should apply to the power emitted from the aerial, i.e. the “conducted” measurement requirements for the unwanted emissions should compensate for the antenna gain.
  + Agree (Telecom Italia, Telefónica, Bouygues Telecom, Deutsche Telekom, Telia Company, Orange, Swisscom, KPN)
  + Disagree
* Recommended WF
  + To be discussed.

Moderator’s note: Huawei (R4-2402583 proposal 4) was seeking for more information on the issue with HPUE, this might have been clarified in R4-2401966.

**Issue 1-3-2: Antenna gain compensation**

* Proposals: The unwanted emission specifications for band n101 UE should apply to the power emitted from the aerial, i.e. the “conducted” measurement requirements for the unwanted emissions should compensate for the antenna gain.
  + Agree (Telecom Italia, Telefónica, Bouygues Telecom, Deutsche Telekom, Telia Company, Orange, Swisscom, KPN)
  + Disagree
* Recommended WF
  + To be discussed

### Sub-topic 1-4

*Sub-topic description:* This sub-topic is related to the alternative mitigation techniques

**Issue 1-4-1: Alternative mitigation techniques**

* Proposals: The following mitigation techniques have been proposed:
  + FRMCS n101 gNBs should use knowledge of the distance between cab radios and band 1 base stations to reduce the n101 UE transmit power to levels that are not harmful to the band 1 base station (Telecom Italia, Telefónica, Bouygues Telecom, Deutsche Telekom, Telia Company, Orange, Swisscom, KPN)
  + Modify band n101 BS antenna orientation to reduce interference (ZTE)
  + Coordinated deployment (Huawei, Ericsson)
  + Decrease band n101 BS max output power limit depending on deployment (Ericsson).
    - Moderator’s note: Administrations will decide on this limit anyway.
* Recommended WF
  + To be discussed

### Sub-topic 1-5

*Sub-topic description:* This sub-topic is related to FRMCS deployment

**Issue 1-5-1: Additional information related to FRMCS deployment.**

* Proposals: Collect more information on:
  + FRMCS n101 deployment plans, , including more details on the timelines across CEPT countries/markets (Huawei)
  + Expected time required to arrange potential co-existence coordination among FRMCS n101 and MFCN n1 (Huawei)
* Recommended WF
  + TBA

### Sub-topic 1-6

*Sub-topic description:* LS to RAN

The following LS have been drafted for agreement.

Moderator’s proposal: Merge those draft LS and reword them based on the previous topics’ discussions. The proposal 1 from R4-2401966 (“RAN WG 4 to respond to RAN plenary stating that the requirement to “avoid causing interference on already established networks” has not been achieved by neither the base station specifications for band n101 nor the UE specifications for band n101.”) could also be further discussed in this LS drafting’s context.

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2400691**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400691.zip) | Nokia, Nokia Shanghai Bell | *Reply LS on co-existence for existing mobile networks with band n101* |
| [**R4-2402392**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402392.zip) | Union Inter. Chemins de Fer | *Reply LS on co-existence for existing mobile networks with band n101* |

### Sub-topic 1-7

*Sub-topic description: CRs*

Proposals: Following related CRs have been proposed for approval:

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2402446**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402446.zip) | Vodafone, Deutsche Telekom, Orange, Telia Company, KPN, Telecom Italia | *CR to TS 38.101-1:* Compensating for post antenna connector gain impact to unwanted emissions for n101 band |
| [**R4-2402449**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402449.zip) | Vodafone, Deutsche Telekom, Orange, Telia Company, KPN, Telecom Italia | *withdrawn* |
| [**R4-2402619**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402619.zip) | Vodafone, Deutsche Telekom, Orange, Telia Company, KPN, Telecom Italia | CR to TS 38.101-1 Compensating for post antenna connector gain impact to unwanted emissions for n101 band  *Cat A* |

# Topic #2: Other topics related to band n100/n101 – LS from CEPT FM56

## Companies’ contributions summary

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2402321**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402321.zip) | Ericsson | Proposal1: Clarify that the additional BS output power requirements for band n100 and band n101 are when deployment is uncoordinated and when Administrations do not consider any relevant mitigation measure.  Observation1: The category B option 2 limit (TS 38.104) for the interval 0.2 – 1 MHz is more stringent than the limit specified in ECC Decision(20)02 table 5.  Proposal2: RAN4 should remove the additional OBUE requirement specified for band n100 in TS 38.104. |
| [**R4-2402588**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402588.zip) | Huawei, HiSilicon | Proposal 1: Reply back to WG FM with the clarification that from TS 38.104 v 17.11.0 (October 2023) onwards, RAN4 specification captured both the uncoordinated, as well as coordinated FRMCS deployment cases in the in-block output power requirements.  Proposal 2: Keep the existing n100/n101 output power requirements wording (for both coordinated and uncoordinated cases) as per TS 38.104 v17.11.0, until further clarification from WG FM, if any. |

## Open issues summary

### Sub-topic 2-1

*Sub-topic description:* This sub-topic discusses the BS specific requirements for bands n100 and n101

**Issue 2-1-1: BS max output power for bands n100/n101**

* Proposals:
  + Clarify that the additional BS output power requirements for band n100 and band n101 are when deployment is uncoordinated and when Administrations do not consider any relevant mitigation measure (Ericsson)
  + Keep the existing n100/n101 output power requirements wording (for both coordinated and uncoordinated cases) as per TS 38.104 v17.11.0, until further clarification from WG FM, if any. (Huawei)
  + Remove BS max output power for bands n100 and n101 (CEPT WG FM56 LS)
* Recommended WF
  + Keep the BS max output power requirement and clarify this requirement are only applicable when deployment is uncoordinated and when Administrations do not consider any relevant mitigation measure. This is aligned with ECC Decision(20)02.

**Issue 2-1-2: Additional OBUE requirement for band n100**

* Proposals: Remove the additional OBUE requirement for band n100
  + Agree (Ericsson, Huawei, Nokia, CEPT WG FM56 LS)
  + Disagree
* Recommended WF
  + Remove the additional OBUE requirement for band n100.

**Issue 2-1-3: Co-location requirements for bands n100 and n101**

* Proposals: Remove the co-location requirements for bands n100 and n101
  + Agree (Huawei)
  + Disagree
* Recommended WF
  + The proposal seems consistent with the assumptions made when specifying those bands (see TRs)

### Sub-topic 2-2

*Sub-topic description: CRs*

**Issue 2-2-1: CRs to TR 38.852**

Proposals: Following related CRs have been proposed for approval:

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2400681**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400681.zip) | Nokia, Nokia Shanghai Bell | (NR\_RAIL\_EU\_1900MHz\_TDD-Core) CR to TR 38.852 on correction of reference to EU Decision |
| [**R4-2402584**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402584.zip) | Huawei, HiSilicon | TR 38.852: Corrections on FRMCS n101 deployment aspects and related output power limits, Rel-17 |
| [**R4-2402586**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402586.zip) | Huawei, HiSilicon | (NR\_RAIL\_EU\_1900MHz\_TDD-Core) CR to TR 38.852: complementary update for the n101 cab-radio aspects, Rel-17 |

* Recommended WF
  + Check one by one if agreeable.

**Issue 2-2-2: CRs to TR 38.853**

Proposals: Following related CRs have been proposed for approval:

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2400682**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400682.zip) | Nokia, Nokia Shanghai Bell | (NR\_RAIL\_EU\_900MHz-Core) CR to TR 38.853 on correction of reference to EU Decision |
| [**R4-2402585**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402585.zip) | Huawei, HiSilicon | *CR to TR 38.853: Corrections on FRMCS n100 deployment aspects and related output power limits, Rel-17* |
| [**R4-2402587**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402587.zip) | Huawei, HiSilicon | (NR\_RAIL\_EU\_900MHz-Core) CR to TR 38.853: complementary update for the n100 cab-radio aspects, Rel-17 |

* Recommended WF
  + Check one by one if agreeable.

**Issue 2-2-3: CRs to TS 38.104**

Proposals: Following related CRs have been proposed for approval:

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2400683**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400683.zip) | Nokia, Nokia Shanghai Bell | (NR\_RAIL\_EU\_900MHz-Core) CR to TS 38.104 on additional unwanted emission limits for band n100 |
| R4-2400684 | Nokia, Nokia Shanghai Bell | (NR\_RAIL\_EU\_900MHz-Core) CR to TS 38.104 on additional unwanted emission limits for band n100 |
| [**R4-2402322**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402322.zip) | Ericsson | (NR\_RAIL\_EU\_900MHz, NR\_RAIL\_EU\_1900MHz\_TDD) CR TS 38.104 - Updates related to LS from CEPT WG FM56 |
| R4-2402323 | Ericsson | (NR\_RAIL\_EU\_900MHz, NR\_RAIL\_EU\_1900MHz\_TDD) CR TS 38.104 - Updates related to LS from CEPT WG FM56 - Rel18 |
| [**R4-2402594**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402594.zip) | Huawei, HiSilicon | CR to TS 38.104: correction on n100/n101 deployment aspects and additional n100 OBUE |
| R4-2402595 | Huawei, HiSilicon | Cat A |
| [**R4-2402590**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402590.zip) | Huawei, HiSilicon | (NR\_RAIL\_EU\_900MHz-Core, NR\_RAIL\_EU\_1900MHz\_TDD-Core) CR to TS 38.104: removal of obsolete co-location requirements for n100/n101 co-located with MFCN BS, Rel-17 |
| R4-2402591 | Huawei, HiSilicon | (NR\_RAIL\_EU\_900MHz-Core, NR\_RAIL\_EU\_1900MHz\_TDD-Core) CR to TS 38.104: removal of obsolete co-location requirements for n100/n101 co-located with MFCN BS, Rel-18 |

* Recommended WF
  + Merge all CRs in one

**Issue 2-2-4: CRs to TS 38.141-1**

Proposals: Following related CRs have been proposed for approval:

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| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2400685**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400685.zip) | Nokia, Nokia Shanghai Bell | (NR\_RAIL\_EU\_900MHz-Perf) CR to TS 38.141-1 on additional unwanted emission limits for band n100 |
| R4-2400686 | Nokia, Nokia Shanghai Bell | (NR\_RAIL\_EU\_900MHz-Perf) CR to TS 38.141-1 on additional unwanted emission limits for band n100 |
| [**R4-2400687**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400687.zip) | Nokia, Nokia Shanghai Bell | Reply LS on in-block output power requirements for bands n100 and n101 and on additional unwanted emission limits for band n100 |
| [**R4-2402324**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402324.zip) | Ericsson | (NR\_RAIL\_EU\_900MHz, NR\_RAIL\_EU\_1900MHz\_TDD) CR TS 38.141-1 - Updates related to LS from CEPT WG FM56 |
| R4-2402325 | Ericsson | (NR\_RAIL\_EU\_900MHz, NR\_RAIL\_EU\_1900MHz\_TDD) CR TS 38.141-1 - Updates related to LS from CEPT WG FM56 - Rel18 |
| [**R4-2402592**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402592.zip) | Huawei, HiSilicon | (NR\_RAIL\_EU\_900MHz-Perf, NR\_RAIL\_EU\_1900MHz\_TDD- Perf) CR to TS 38.1411: removal of obsolete co-location requirements for n100/n101 co-located with MFCN BS, Rel-17 |
| R4-2402593 | Huawei, HiSilicon | (NR\_RAIL\_EU\_900MHz-Perf, NR\_RAIL\_EU\_1900MHz\_TDD-Perf) CR to TS 38.141-1: removal of obsolete co-location requirements for n100/n101 co-located with MFCN BS, Rel-18 |
| [**R4-2402596**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402596.zip) | Huawei, HiSilicon | CR to TS 38.141-1: correction on n100/n101 deployment aspects and additional n100 OBUE |
| R4-2402597 | Huawei, HiSilicon | Cat A |

* Recommended WF
  + Merge all CRs in one

**Issue 2-2-5: LS to CEPT WG FM56**

Proposals: Following related LSs have been proposed for approval:

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2400687**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2400687.zip) | Nokia, Nokia Shanghai Bell | Reply LS on in-block output power requirements for bands n100 and n101 and on additional unwanted emission limits for band n100 |
| [**R4-2402589**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_110/Docs/R4-2402589.zip) | Huawei, HiSilicon | Draft LS to ECC WG FM on in-block output power requirements clarification for bands n100 and n101 |

* Recommended WF
  + Merge all LSs in one