

3GPP Status on 6 GHz

3GPP RAN

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6 GHz Overview



➤ 6 GHz band (5.925-7.125 GHz) is currently being investigated in several regulatory forums and in 3GPP for deployment of mobile services.

5.925 GHz

7.125 GHz



5.925 - 7.125 GHz

3GPP Activities on 6 GHz: SI on 6 GHz



6 GHz band (5.925-7.125 GHz) is being studied in 3GPP under the following SI:

- Study Item, “Feasibility Study on 6 GHz for LTE and NR in Licensed and Unlicensed Operations”, RP-190957.
- Main Objectives of the SI:
 - Investigate and monitor the progress of 6 GHz regulatory framework in different regulatory organisations.
 - To enable future 3GPP work for using 6 GHz for LTE and NR operations if this frequency range becomes available for operation based on outcome of regulatory framework
 - SI includes consideration of licensed and unlicensed use

3GPP Activities on 6 GHz: WI on NR-U




6 GHz band (5.925-7.125 GHz) is studied in 3GPP under the following SI:

- Work Item, “NR-based Access to Unlicensed Spectrum”, RP-191575.
- Main Objective of the WI related to 6 GHz:
 - Specify new unlicensed band for the 6 GHz frequency .
 - The actual frequency range in 6 GHz for specification can be further discussed based on regulatory updates in the US and Europe.

3GPP Status of SI on 6 GHz



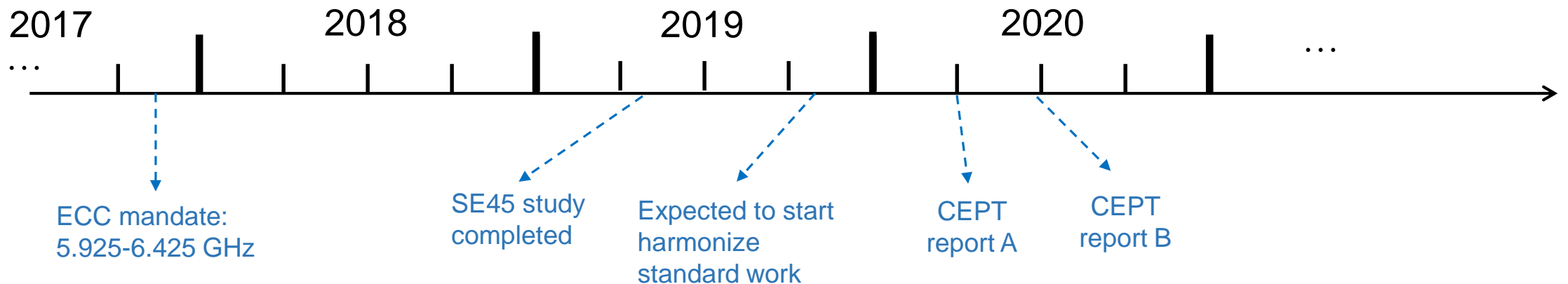
 3GPP has monitored progress of 6 GHz on regulatory framework in:

- ITU-R Region 1: Europe
- ITU-R Region 2: US
- ITU-R Region 3: China

3GPP Progress on 6 GHz SI: Status in ECC



- Regulatory activities on going in CEPT/ECC under SE 45 only in the lower part of 6 GHz: 5.925-6.425 GHz for unlicensed operation.
- SE45 has completed sharing and compatibility studies within 5.925-6.425 GHz.
 - ECC 302 is available with studies on incumbent protection requirements
- Final ECC report B is expected by mid of 2020.

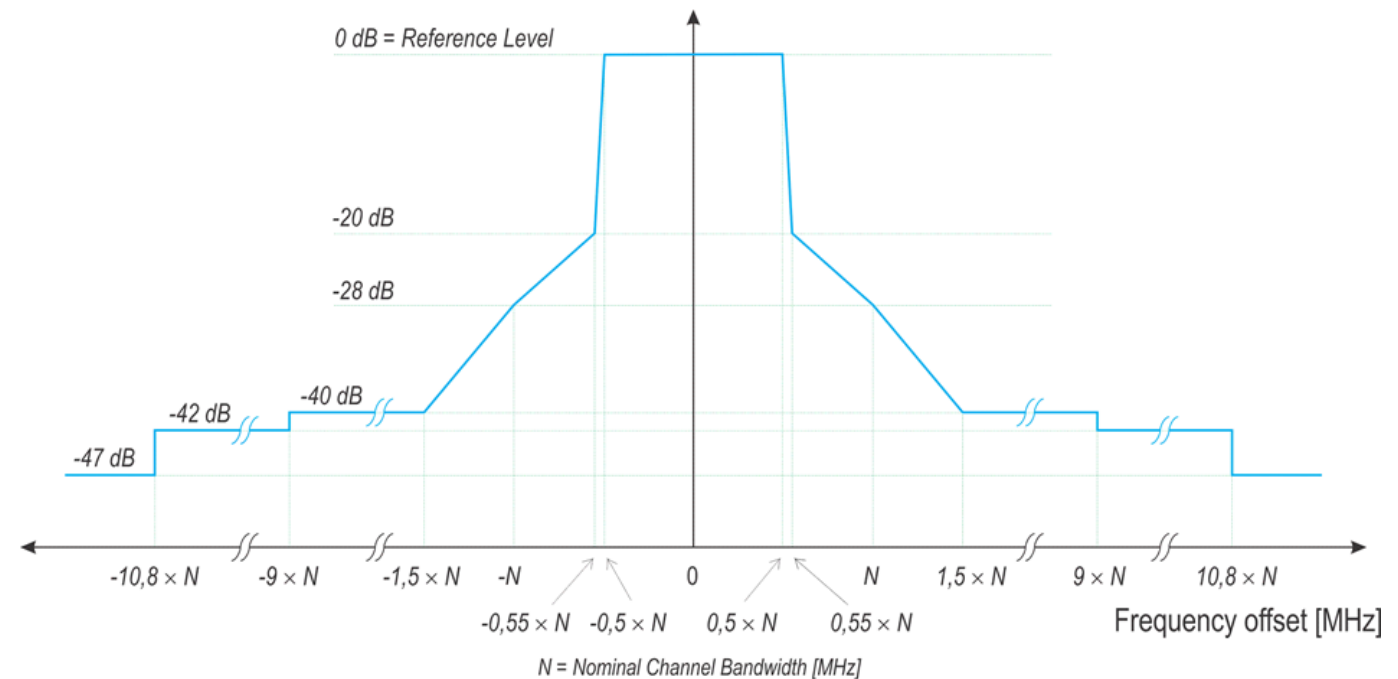


3GPP Progress on 6 GHz SI: Status in ETSI



Apart from regulatory activities in CEPT/ECC for the 5.925-6.425 GHz for unlicensed operation, following preparation work is on going in ETSI on upper part (6.425-7.125 GHz):

- ETSI BRAN has recently approved TR 103 631 promoting unlicensed usage for the upper part of 6 GHz.
- ETSI TFES has finalized TR 103 612 promoting licensed usage for the upper part of 6 GHz and approved at TFES#63 meeting (June 10th-13th).

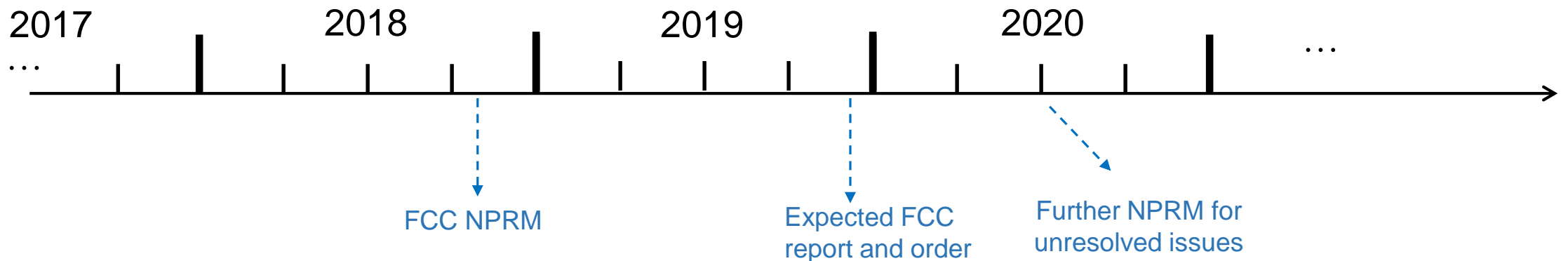


ETSI spectral mask for RLAN equipment

3GPP Progress on 6 GHz SI: Status in FCC



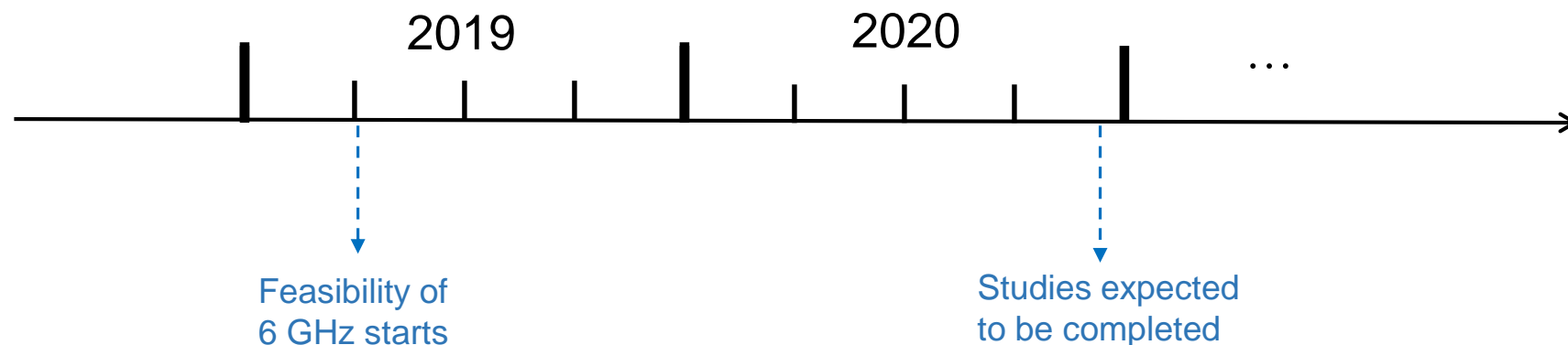
- The entire 6 GHz band: 5.925-7.125 GHz has been considered by FCC in four subbands, U-NII-5 to U-NII-8
- FCC released Notice Of Proposed Rulemaking (NPRM) proposing tailored rules to support compatibility of unlicensed operations in the 6 GHz band.
 - Report and order expected by end of 2019.



3GPP Progress on 6 GHz SI: Status in China



- In April 2019, CCSA in China established a new project on the feasibility study of IMT using entire 6 GHz band
- Study includes identifying IMT parameters for coexistence between IMT system and incumbent services
- Study expected to be completed by 2020.



3GPP Progress on 6 GHz in NR-U WI



- Different proposals on band arrangement for 6 GHz for unlicensed operation have been discussed in 3GPP RAN4 WG. But no agreements have been reached.
- Proposals include:
 - Specify one band covering lower part: 5.925-6.425 GHz.
 - Specify one band covering entire 6 GHz: 5.925-7.125 GHz.
 - Specify two bands: one in lower part and another one over entire range 6 GHz range.

Conclusions



- The 6 GHz band over entire range (5.925-7.125 GHz) is being studied under 3GPP RAN level SI. The purpose is to monitor regulatory framework in different organizations.
 - SI completion timeline is December 2019; but can be extended subject to progress in regulation.
 - SI agreements are documented in 3GPP TR 37.890 (RP-190961).
- The specification of 6 GHz band over entire range (5.925-7.125 GHz) is also one of the objectives of the Rel-16 WI on NR-U.
 - No band has yet been specified; the WI completion is timeline is March 2020.