3GPP RAN TSG Meeting #91e RP-210631

Electronic meeting, 16 – 26th March 2021

Agenda item: 9.6.1

Source: Apple Inc.

Title: Regulatory update for the 6GHz frequency range

WI/SI: FS\_6GHz\_LTE\_NR

Release: Rel-17

Document for: Approval

# 1 Introduction

Study on 6 GHz for LTE and NR in Licensed and Unlicensed Operations is the RAN level study item, which aims at capturing the latest information and status of the regulatory decisions for the 6GHz frequency range. In this discussion paper we present a text proposal for the corresponding TR 37.890 that captures new regulatory decisions in the ITU region 3.

# 2 Text proposal

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

1. 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
2. RP-172804: “Feasibility Study on 6 GHz for LTE and NR”, Ericsson, Verizon Wireless, Qualcomm Incorporated.
3. ITU-R Radio Regulations, Articles, Edition 2016;
4. FCC ONLINE TABLE OF FREQUENCY ALLOCATIONS, 47 C.F.R. § 2.106, December 13, 2017;
5. FCC 17-104, Notice of Inquiry, “Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz”;
6. Comments of IEEE 802, in GN Docket No. 17-183;
7. APPLE INC., BROADCOM LIMITED,,CISCO SYSTEMS, INC., FACEBOOK, INC., GOOGLE LLC, HEWLETT PACKARD ENTERPRISE, INTEL CORPORATION,MEDIATEK INC., MICROSOFT CORPORATION, and QUALCOMM INCORPORATED, in GN Docket No. 17-183;
8. Reply Comments of the Wireless Internet Service Providers Association, in GN Docket No. 17-183;
9. Comments of Ericsson, in GN Docket No. 17-183;
10. Comments of T-Mobile USA, in GN Docket No. 17-183;
11. Comments of Verizon, in GN Docket No. 17-183;
12. Reply Comments of the Satellite Industry Association, in GN Docket No. 17-183;
13. Reply Comments of the Fixed Wireless Communications Coalition, in GN Docket No. 17-183;
14. Comments of Dynamic Spectrum Alliance, in GN Docket No. 17-183;
15. Comments of the National Spectrum Management Association, in GN Docket No. 17-183;
16. Comments of CTIA, in GN Docket No. 17-183;
17. Reply Comments of Cisco Systems, Inc., in GN Docket No. 17-183;
18. Reply Comments of WI-FI Alliance, in GN Docket No. 17-183;
19. PART 15 - Radio Frequency Devices, Title 47 of electronic Code of Federal Regulations;
20. The European Table of Frequency Allocations and applications in the frequency range 8.3 kHz and 3000 GHz (ECA Table), October 2017;
21. RSCOM17-53rev1- Mandate to CEPT to study and identify harmonised compatibility and sharing conditions for wireless access systems including radio local area networks in the band 5925-6425 MHz for the provision of wireless broadband services.
22. Draft ETSI TR 103 524 V0.0.10 (2018-01) - ERM System Reference document (SRdoc), “Wireless Access Systems including Radio Local Area Networks (WAS/RLANs) in the band 5 925 MHz to 6 725 MHz”;
23. CEPT/ERC/REC 74-01: “Unwanted Emissions in the Spurious Domain”;
24. Draft ECC Report, “Compatibility studies related to Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the frequency band 5 925 – 6 425 MHz”, December 2017.
25. FCC Notice of Proposed Rulemaking. FCC 18-147. October 24, 2018
26. ETSI TR 103 612, MFCN in the band 6425-7125 MHz
27. ETSI TR 103 631, Characteristics of WAS/RLANs in 6 725 to 7 125 MHz
28. ECC Report 302, “Sharing and compatibility studies related to Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) in the frequency band 5925-6425 MHz”
29. CCSA-TC5-WG8-2019-003 Project Proposal on the feasibility study of IMT system using 5925-7125MHz frequency band, [http://www.ccsa.org.cn/tc/meeting.php?meeting\_id=6243#](http://www.ccsa.org.cn/tc/meeting.php?meeting_id=6243)
30. World Radiocommunication Conference 2019 (WRC-19) Provisional Final Acts, ITU-R <https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.13-2019-PDF-E.pdf>
31. Report and order and further notice of proposed rulemaking, FCC 20-51
32. ECC Report 306, “Sharing studies assessing short-term interference from Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) into Fixed Service in the frequency band 5925-6425 MHz”, 21 May 2020
33. CEPT Report 075, “to study feasibility and identify harmonised technical conditions for Wireless Access Systems including Radio Local Area Networks in the 5925-6425 MHz band for the provision of wireless broadband services”; Report B: Harmonised technical parameters for WAS/RLANs operating on a coexistence basis with appropriate mitigation techniques and/or operational compatibility/coexistence conditions, operating on the basis of a general authorisation. Not yet published
34. ECC Decision (20)01; “On the harmonised use of the frequency bands 5945 to 6425 MHz for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLAN)” Not yet published
35. ETSI TR 103 524, "System Reference document (SRDoc); Wireless access systems including radio local area networks (WAS/RLANs) in the band 5925 MHz to 6725 MHz"
36. EN 303 687, “"6 GHz RLAN Harmonised Standard for access to radio spectrum", Draft
37. doc 2.1\_LS to 3GPP TSG RAN – ENG (18th meeting of the RCC Commission on Spectrum and Satellite Orbits), [to be updated]
38. Korea’s Ministry of Science and ICT, "Technical standards for radio equipment for radio stations", URL: https://www.law.go.kr/admRulLsInfoP.do?admRulSeq=2100000196974

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## 4.3 ITU Region 3

### 4.3.1 China

In April 2019, CCSA established a new project on technical report for the feasibility study of IMT system using 5925-7125 MHz frequency band [29].

This CCSA study includes identifying IMT parameters in 5925-7125MHz in order to develop coexistence between IMT system and incumbent services and applications.

*Editor’s note: This work is expected to be finalized in 2020.*

### 4.3.2 South Korea

In June 2020, Korea’s Ministry of Science and ICT (MSICT) issued an amendment of technical standards that also includes proposed rules for the 5925–7125MHz frequency band, which was finally approved in October 2020 [38]. The key points are as follows:

- The whole range of 5925–7125MHz is allocated for the license-exempt low power indoor:

- the occupied channel bandwidth should be less or equal 160MHz;

- the EIRP limit is 24dBm;

- the maximum power spectral density is 2dBm/MHz;

- a device shall use power supply from a wired connection, and a client battery powered device must communicate through the device connected to a wired power supply;

- this frequency range cannot be used for indoor automotive or airplane deployments;

- usage inside moving vehicles is prohibited.

- The 5925-6425MHz frequency range is allocated for the license-exempt very low power indoor and outdoor:

- the occupied channel bandwidth should be less or equal 160MHz;

- the EIRP limit is 14dBm;

- the maximum power spectral density is 1dBm/MHz;

- this frequency range cannot be used for drones;

- automotive embedded systems shall use 6085-6425MHz.

- Unwanted emissions at frequencies outside the operational frequency range shall be below -27dBm/MHz.

- Unwanted emissions at frequencies outside the operational frequency of 5925-6445MHz shall be below -34dBm/MHz.

- Transmitter and receiver spurious emission limits should be as follows:

|  |  |  |
| --- | --- | --- |
| Frequency Range | Maximum level (average) | Measurement bandwidth |
| f<1GHz | -54dBm | 100kHz |
| f>1GHz | -47dBm | 1MHz |

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