3GPP TSG-RAN WG4 Meeting # 99-e R4-2110946

Electronic Meeting, 19 May – 27 May 2021

**Agenda Item:** **12.1**

**Source: Huawei, HiSilicon**

**Title:** **TP to TR 37.880: UL harmonic analysis for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

**Document for:** **Approval**

**1. Introduction**

The study item on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 was approved at TSG RAN#88-e [1]. The purpose of this study item is to study RF requirements that are applicable for high power UE operation in LTE band 12 and band 5, and in NR band n71 for fixed wireless and vehicle-mounted use cases, in ITU Region 2.

During TSG-RAN WG4 Meeting #98-bis-e, we raised comments about harmonic analysis provided in Table 1 of [2]. In this contribution we propose to include more harmonics to have them recorded for TR 37.880.

**2. Discussion**

**2.1. UE Transmitter Harmonics Interfering on DL bands:**

Since no additional requirements were defined due to 3rd,4th and 5th harmonics of PC1 bands 3, 14, 20 and 28, no additional requirement is also needed for B5, B12 and n71. However the UL harmonics are provided for these bands, available for ITU-R2 in Table below. We suggest to have more harmonics added to it. The added harmonics are highlighted in table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2nd harmonic | 3rd harmonic | 4th harmonic | 5th harmonic |
| Band 3 | n77 |  |  |  |
| Band 5 |  | 41, 52, n90 | n77 | n77 |
| Band 12 | 75, 76 | 1,4, 65, 66 |  | 48 ,n77 |
| Band 14 |  |  |  | n77 |
| Band 20 |  | 38, 69 | 42, n77 |  |
| Band 28 | 32, 74 | 1, 4, 66 |  | n77 |
| Band n71 |  | 2, 25, 70 | 7, 41 | n77, n90 |

**3. Conclusion**

**Proposal 1:** This contribution suggests to include more harmonic terms in TR37.880 for B5,B12 and n71.

**4. Text proposal**

**<Start of text proposal>**

## 6.1 UE transmitter third harmonic

Table 1 presents UL harmonic analysis based on UE to UE co-existence tables in 36.101 and 38.101-1. Table is not exhaustive presentation. It can be seen that newly proposed band 2 has 2nd harmonic landing on bands 50 and 51 and 3rd and 5th order harmonics interfering some bands. Band 5 has 3rd and 4th order harmonics interfering some bands and n71 has 3rd, 4th and 5th harmonic relation with some bands. However as can been also seen from Table 1 already existing PC1 bands 3, 14, 20 and 28 have also 2nd, 3rd, 4th and 5th order harmonics interfering other bands and no additional requirement or relaxations is specified due to that. Therefore, it is justified that for bands 5, 12 and n71 the introduction of PC1 does not create any additional requirements or relaxations due to uplink harmonics.



Table 1: UL harmonic analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2nd harmonic | 3rd harmonic | 4th harmonic | 5th harmonic |
| Band 3 | n77 |  |  |  |
| Band 5 |  | 41, 52, n90 | n77 | n77 |
| Band 12 | 75, 76 | 1,4, 65, 66 |  | 48 ,n77 |
| Band 14 |  |  |  | n77 |
| Band 20 |  | 38, 69 | 42, n77 |  |
| Band 28 | 32, 74 | 1, 4, 66 |  | n77 |
| Band n71 |  | 2, 25, 70 | 7, 41 | n77, n90 |

**<End of text proposal>**

**References**

[1] RP-201261, “New SID on high-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71”, U.S. Cellular.

[2] R4-2104459, “TR 37.880 V1.0.0: High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71”, Nokia, Nokia Shanghai Bell.