**GPP TSG- Meeting #**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **-** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | Draft CR on TS 38.101-1 to Introduce R19 ATG enhancement emissions requirements (NR\_ATG\_enh-Core) | | | | | | | | | |
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| ***Source to WG:*** | CMCC | | | | | | | | | |
| ***Source to TSG:*** | R4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_ATG\_enh-Core | | | | |  | ***Date:*** | | | 2025-08-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | Introduce R19 ATG Output RF spectrum emissions requirements. | | | | | | | | |
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| ***Summary of change:*** | | Specify output RF spectrum emissions requirements for ATG with UL MIMO. | | | | | | | | |
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| ***Consequences if not approved:*** | | R19 ATG enhancement UE RF requirements would be missing. | | | | | | | | |
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| ***Clauses affected:*** | | 6.5J | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | | **X** |  | Test specifications | | | | TS 38.521-1 | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Revised from R4-2510123 | | | | | | | | |

## **<<Start of Change for TS 38.101-1>>**

## 6.5J Output RF spectrum emissions for ATG

### 6.5J.1 Occupied bandwidth for ATG

The requirements for occupied bandwidth in clause 6.5.1 apply. For ATG UE, the requirements for occupied bandwidth are defined at each transmit antenna connector or each TAB connector.

### 6.5J.1D Occupied bandwidth for ATG with UL MIMO

For ATG UE supporting UL MIMO, the requirements for occupied bandwidth apply to the sum of the powers from all ATG UE antenna ports. The occupied bandwidth is defined as the bandwidth containing 99 % of the total integrated mean power of the transmitted spectrum on the assigned channel at each transmit antenna port.

For ATG UE with two or four transmit antenna connectors or groups of TAB connectors (e.g. each of which supporting one layer) in closed-loop spatial multiplexing scheme, the occupied bandwidth shall be less than the channel bandwidth specified in Table 6.5.1-1. The requirements shall be met with UL MIMO configurations described in clause 6.2D.1.

If ATG UE is scheduled for single antenna-port PUSCH transmission by DCI format 0\_0 or by DCI format 0\_1 for single antenna port codebook based transmission with precoding matrix W=1 [6.3.1.5 TS 38.211], the requirements in clause 6.5.1 apply when TxD is not indicated.

### 6.5J.2 Out of band emission for ATG

#### 6.5J.2.1 General

This clause contains requirements for out of band emissions for ATG UE, the requirement defined in general part of clause 6.5.2.1 should apply.

#### 6.5J.2.2 Spectrum emission mask

If the actual transmission power of ATG UE is less than or equal to 31dBm, the requirements for spectrum emission mask in clause 6.5.2.2 apply; if the actual transmission power of ATG UE is larger than 31dBm, the requirements of spectrum emission mask in clause 6.5.2.2 shall be relaxed with scaling factor equal to (the actual transmission power minus 31) dB.For ATG UE, the requirements for spectrum emission mask are defined as the sum of the emissions from all UE transmit antenna connectors or all TAB connectors.

NOTE: This scaling factor is only applicable to ATG airborne UE.

#### 6.5J.2.3 Adjacent channel leakage ratio

NR Adjacent Channel Leakage power Ratio (NRACLR) is the ratio of the filtered mean power centred on the assigned NR channel frequency to the filtered mean power centred on an adjacent NR channel frequency at nominal channel spacing. For ATG UE, the requirements for ACLR are defined as the sum of the emissions from all UE transmit antenna connectors or all TAB connectors.

The assigned NR channel power and adjacent NR channel power are measured with rectangular filters with measurement bandwidths specified in Table 6.5J.2.3-1.

If the measured adjacent channel power is greater than –50 dBm then the NRACLR shall be higher than the value 30dBc.

Table 6.5J.2.3-1: NR ACLR measurement bandwidth

|  |  |  |  |
| --- | --- | --- | --- |
| Channel bandwidth | (MHz) | 5,10,15,20,25,30,35,40,45,50 | 60,70,80,90,100 |
| REF\_SCS | (kHz) | 15 | 30 |
| NR ACLR measurement bandwidth | (MHz) | MBW=REF\_SCS\*(12\*NRB+1)/1000 | |
| NOTE : “NRB” in the formula is the maximum transmission bandwidth configuration as defined in Table 5.3.2-1. | | | |

### 6.5J.2D Out of band emission for ATG with UL MIMO

For ATG UE supporting UL MIMO or uplink full power transmission (ULFPTx) for UL MIMO, the requirements for Out of band emissions resulting from the modulation process and non-linearity in the transmitters is defined as the sum of the emissions from all UE transmit antenna port.

For ATG UEs with two or four transmit antenna connectors or groups of TAB connectors (e.g. each of which supporting one layer) in closed-loop spatial multiplexing scheme, the requirements in subclause 6.5.2 apply. The requirements shall be met with UL MIMO configurations described in clause 6.2D.1.

For ATG UE support uplink full power transmission (ULFPTx) for UL MIMO, the requirements in clause 6.5.2 shall apply. The requirements shall be met with the PUSCH configurations specified in Table 6.2D.1-3, based upon UE’s support of uplink full power transmission mode.

If ATG UE is scheduled for single antenna-port PUSCH transmission by DCI format 0\_0 or by DCI format 0\_1 for single antenna port codebook based transmission with precoding matrix W=1 [6.3.1.5 TS 38.211], the requirements in clause 6.5.2 apply when TxD is not indicated.

### 6.5J.3 Spurious emissions for ATG

The requirements for spurious emission in general part of clause 6.5.3.0 and clause 6.5.3.1 apply. For ATG UE, the requirements for Spurious emissions are defined as the sum of the emissions from all UE transmit antenna connectors or all TAB connectors.

### 6.5J.3D Spurious emissions for ATG with UL MIMO

For ATG UE supporting UL MIMO or uplink full power transmission (ULFPTx) for UL MIMO, the requirements for Spurious emissions which are caused by unwanted transmitter effects such as harmonics emission, parasitic emissions, intermodulation products and frequency conversion products is defined as the sum of the emissions from all UE transmit antenna ports.

For ATG UEs with two or four transmit antenna connectors or groups of TAB connectors (e.g. each of which supporting one layer) in closed-loop spatial multiplexing scheme, the requirements specified in subclause 6.5.3 apply. The requirements shall be met with the UL MIMO configurations described in clause 6.2D.1.

For ATG UE support uplink full power transmission (ULFPTx) for UL MIMO, the requirements in clause 6.5.3 shall apply. The requirements shall be met with the PUSCH configurations specified in Table 6.2D.1-3, based upon UE’s support of uplink full power transmission mode.

If ATG UE is scheduled for single antenna-port PUSCH transmission by DCI format 0\_0 or by DCI format 0\_1 for single antenna port codebook based transmission with precoding matrix W=1 [6.3.1.5 TS 38.211], the requirements in clause 6.5.3 apply when TxD is not indicated.

### 6.5J.4D Transmit intermodulation for ATG with UL MIMO

For ATG UE supporting UL MIMO, the transmit intermodulation requirements are specified at each transmit antenna connector and the wanted signal is defined as the sum of output powers from all UE transmit antenna ports.

For ATG UEs with two or four transmit antenna connectors or groups of TAB connectors (e.g. each of which supporting one layer) in closed-loop spatial multiplexing scheme, the requirements specified in clause 6.5.4 apply to each transmit antenna connector. The requirements shall be met with the UL MIMO configurations described in clause 6.2D.1.

If ATG UE is scheduled for single antenna-port PUSCH transmission by DCI format 0\_0 or by DCI format 0\_1 for single antenna port codebook based transmission with precoding matrix W=1 [6.3.1.5 TS 38.211], the requirements in clause 6.5.4 apply when TxD is not indicated.

## **<<End of Change>>**