

To: TSG RAN
Source: TSG RAN WG4
Title: **LS to TSG RAN on UTRA Carrier Raster**

1 Background

TSG RAN WG4 is currently responsible for the definition of a channel raster for UTRA. WG4 has concluded that a raster of 200kHz is necessary to allow operators to optimise the channel spacing for different scenarios. However, WG4 believes that the range of deployments envisaged for UTRA will not use all of the positions on the 200kHz raster.

WG4 has concluded that the time taken for a terminal to search for a network may have a significant impact on the terminal. In particular, when a mobile is out of coverage of any network, it will have to continue to search for signals until it returns to coverage. Because the channel raster is 200kHz and the channel bandwidth is about 4MHz, it is not sufficient to measure power to identify the channel centre frequency; it will be necessary for the terminal to attempt to decode the received signal. WG4 has concluded that the time taken for a terminal to perform this search will result in a significant drain on the terminal battery, which will reduce its standby time.

WG4 has therefore concluded that it is necessary to restrict the number of raster positions.

2 Definition of Channel Raster

There are 275 possible raster positions in the paired IMT 2000 band (allowing for guard bands at the band edges). WG4 has defined a subset of 60 of these, which it believes will include the great majority of raster positions which will be used by network operators [1], [2].

WG4 has received a liaison statement from CEPT ERC TG1 [3] which concludes:

“TG1 suggests that the current working assumption, which is a total flexibility in the channel raster, should be retained for both the paired and unpaired bands until the needed flexibility is estimated. Other possibilities to improve the performance while keeping the total flexibility would be preferred.”

WG4 has received two proposals which add flexibility to the defined subset of raster positions [4], [5]. WG4 has concluded that these proposals impact the work of other groups in 3GPP, and are therefore forwarding them to TSG RAN.

3 Proposed responsibilities for channel raster definition and signalling support

WG4 proposes to TSG RAN that the responsibility for aspects of the UTRA channel raster should be assigned as follows:

TSG RAN WG4:

- Definition of raster and total frequency ranges to be supported.
- Definition of subset(s) of the raster to meet operator and regulatory deployment scenarios.
- Analysis of impact of frequency raster on idle mode behaviour (searching) of terminals in networks, especially when out of coverage.

Items for study outside the scope of RAN WG4:

- Signalling mechanisms relating to the channel raster, including
 - “numbering” scheme for identifying frequencies within the channel raster
 - signalling mechanisms
- Terminal capabilities for support of subsets of the raster (if more than one is defined)
- Handover between systems (consistency of approach with inter-UTRA handover)

WG4 requests TSG RAN to consider whether a specific work item is needed for the definition of channel raster and the consequential requirements.

4 References

- [1] TSGR4#3 (99) 100; Definition of Channel Raster; Siemens
- [2] TSGR4#4 (99) 202; Suitability of Channel Raster for various Scenarios; Siemens
- [3] TSGR#4 (99) 303; Response to 3GPP TSG RAN LS on Carrier Frequency Raster; ERC TG1.
- [4] TSGR4#5 (99) 294; A flexible method for defining RF channels for UMTS; Lucent Technologies
- [5] TSGR4#5 (99) 300; Carrier numbering; Ericsson