

Agenda Item:

Source: Samsung Electronics Research Institute
Title: Proposed Liaison statement on Physical Layer Service Implementation Capabilities
To: TSG T WG2
Cc: TSG RAN WG2

TSG RAN WG1 has considered the liaison statement from TSG T WG2 requesting the identification of physical layer service implementation capabilities. RAN WG1 has identified the following service implementation capabilities that are required in addition to the baseline implementation capabilities, to support speech and circuit switched data services with rates up to 64 kbps. TSG T WG2 is requested to note that the tables below are an initial indication of what is required to support the identified services, and are subject to revision based upon further work carried out within this group. This liaison statement is copied to TSG RAN WG2 to help ensure consistency in responses between R1 and R2. TSG RAN WG1 would welcome feedback from TSG T WG2 and TSG RAN WG2 on the identified service implementation capabilities. Tables 1 and 2 show physical layer implementation capabilities for FDD and TDD modes respectively.

Table 1. FDD mode Physical Layer Service implementation capabilities for support of the default speech service and of CS data services up to 64 kbps

Service Implementation Capability	Specification	Section(s) ¹	Comments
Physical Layer UE procedures and measurements:			
Handover	25.231	5.1.1, 5.1.2, 5.1.3, 5.1.4	Support of soft handover is mandatory for all terminals supporting CS services. Support of Inter-Frequency handover is mandatory for all terminals. Support of intra-frequency hard handover is FFS.
Power control	25.214 25.231	5.1.2, 5.2.3 7.3	Support of closed loop power control is mandatory for all terminals. Not yet decided if there is a need to standardise measurements in relation to power control.
Multiplexing and Channel Coding	25.212	4.2.3.2, 4.2.4 – 4.2.15, 4.3, 4.4	Turbo coding to be used for BER requirement of less than 10 ⁻³ . Channel coding requirements to support the default speech service depend on a decision on whether or not Unequal Error Protection is used for AMR. Support of DL compressed mode is mandatory for all terminals supporting CS data. Support of UL compressed mode is mandatory for dual mode FDD/TDD and dual system FDD/GSM 1800/1900 terminals.
Modulation	25.213	4.4.3	

¹ The list of references to the 25.2 series should not be considered exhaustive. References will need to be refined and updated as the standard is further elaborated.

Spreading and Scrambling Code Generation	25.213	4.3	Required Spreading Factor is dependent on channel coding rate, and on whether services are to be supported simultaneously. Terminals should support all spreading factors between the maximum (256) and minimum (SFs of 16 & 64 are required for support of individual 64 kbps and 16 kbps services respectively). Compressed mode requires the minimum Spreading Factor to be halved. The Spreading Factor required to support the default speech service may depend on whether or not Unequal Error Protection is used for AMR.
Code de-spreading and de-scrambling	25.213	5.2	
Support for downlink Transmit Diversity	25.211 25.214	5.3.2 8	Support of feedback mode transmit diversity is mandatory in Terminals supporting dedicated channels.
Support for Site Selection Diversity Transmission	25.214	5.3.2.4	Support of SSDT is mandatory for all terminals supporting soft handover.
Transport channels required:			
Dedicated channel (DCH)	25.211	4.1.1, 6	
Physical channels required:			
Dedicated Physical Data Channel (DPDCH)	25.211	5.2.1, 5.3.2, 6	
Dedicated Physical Control Channel (DPCCH)	25.211	5.2.1, 5.3.2, 6	

Table 2. TDD mode Physical Layer Service implementation capabilities for support of the default speech service and of CS data services up to 64 kbps

Baseline Implementation Capability	Specification	Section(s)²	Comments
Physical Layer UE procedures and measurements:			
Handover	25.231	5.1.5, 5.1.6, 5.1.7	Support of Intra and Inter Frequency hard handover is mandatory for all terminals.
Dynamic Channel Allocation	25.231	5.4	
Power control	25.224 25.231	4.3.3.2 5.3	Not yet decided if there is a need to standardise measurements in relation to power control.
Multiplexing and Channel Coding	25.222	6.2.3.2, 6.2.4 – 6.2.11, 6.3	Turbo coding to be used for BER requirement of less than 10^{-3} . Channel coding requirements to support the default speech service depend on a decision on whether or not Unequal Error Protection is used for AMR.
Transport channels necessary for the above:			
DCH	25.221	4.1.1, 6	
Physical channels necessary for above:			
Dedicated Physical CHannel (DPCH)	25.221	5.2, 6	

² The list of references to the 25.2 series should not be considered exhaustive. References will need to be refined and updated as the standard is further elaborated.