Appendix I:

Call for 6G Potential Key Technologies: Technical Directions

Referring to the “*IMT.FUTURE TECHNOLOGY TRENDS OF TERRESTRIAL IMT SYSTEMS TOWARDS 2030 AND BEYOND*” (to be formally released) by the International Telecommunication Union (ITU), IMT-2030(6G) Promotion Group will call for 6G potential key technologies, accelerating the transition from research results to practical use for 6G. The technologies of concerns include (but are not limited to) the following directions.

**1. Key fundamental research**

1.1 Fundamental research on communications;

1.2 Interdisciplinary fundamental research：*e.g., Computing theory, artificial intelligence (AI) theory, control theory*.

**2. Novel wireless technologies**

2.1 Air-interface evolution technologies: *e.g., physical layer technologies (such as advanced modulation, coding, waveform, and multiple access schemes), advanced antenna technologies, full-duplex technologies*;

2.2 Integrated technologies: *e.g., wireless AI technologies, integrated sensing and communication (ISAC), convergence of communication and computing*;

2.3 Multiple physical dimension transmission: *e.g., reconfigurable*

*intelligent surfaces (RIS), holographic radio technologies, orbital angular momentum technologies*;

2.4 New spectrum technologies: *e.g., Terahertz (THz) communications, visible light communications, spectrum sharing technologies*;

2.5 Basic technologies or modeling: *e.g., wireless channel measurement and modeling*;

2.6 Low power consumption and green communication technologies.

**3. Novel network technologies**

3.1 Novel network architectures: *e.g., radio access network (RAN) architecture, core network architecture, distributed autonomous network architecture*;

3.2 Novel networking technologies: *e.g., space-air-ground integrated network, technologies for interconnection with non-terrestrial networks*;

3.3 Advanced network technologies: *e.g., computing-aware network, AI-native network, digital twin network, deterministic networking, green network and network energy saving technologies*;

3.4 Technologies for network operations, administration and management.

**4. Novel Security technologies**

4.1 Physical layer security technologies;

4.2 Network security technologies;

4.3 Secure data and protocols technologies;

4.4 Application-oriented security technologies.

**5. Industrial technologies**

5.1 Basic software and hardware technologies: *e.g., chip/integrated circuit design, hardware architecture design, basic software development and design*;

5.2 New materials and manufacturing technologies.

**6. Other technologies**