CLAIMS

1. A receptacle for an electrical interface at cryogenic temperatures comprising:

   - a cable support block, wherein the cable support block has a top surface and a bottom surface, and the top surface of the cable support block defines a horizontal xy-plane and a vertical z-direction which is perpendicular to the xy-plane, and wherein the cable support block comprises at least one aperture, and the at least one aperture extends along the z-direction from the top surface of the cable support block to the bottom surface of the cable support block,

   - a set of cables, wherein the set of cables comprises at least one signal cable,

   - a first set of means for mechanical connection,

   characterized in that

   the at least one signal cable comprises a first conductor, and wherein the at least one signal cable is positioned within the at least one aperture of the cable support block so that the first conductor extends through the whole depth of the at least one aperture.

2. A receptacle according to any of claim 1, wherein the at least one signal cable further comprises a second conductor, wherein the second conductor terminates in the cable support block, wherein further the at least one signal cable is a coaxial cable comprising a center conductor and a shield, and wherein the first conductor is the center conductor and the second conductor is the shield.

3. A receptacle according to any of claims 1-2, wherein the receptacle further comprises at least one cast, wherein the at least one cast is located within the at least one aperture so that the at least one signal cable is fixed within the at least one aperture by the at least one cast, wherein further the at least one cast comprises solder.

4. A receptacle according to claim 3, wherein the at least one cast comprises an electrically insulating resin.

5. A receptacle according to any of claims 1-4, wherein the first conductor

comprises a superconducting material.

6. A receptacle according to any of claims 2-5, wherein the second conductor comprises a superconducting material.

7. A plug for co-operation with the receptacle in claim 1, wherein the plug comprises:

   - a substrate, wherein the substrate has a top surface and a bottom surface, and wherein the substrate comprises at least one electrical connection,

   - a second set of means for mechanical connection with the receptacle in claim 1,

   characterized in that

   the top surface of the substrate comprises at least one contact area,

   and wherein the plug further comprises a deformable contact metal structure, wherein the deformable contact metal structure is located in the at least one contact area, and the deformable contact metal structure extends upwards from the top surface of the substrate, and wherein the deformable contact metal structure is electrically coupled to the at least one electrical connection of the substrate.

8. A plug according to claim 7, wherein the deformable contact metal structure comprises a superconducting material, wherein further the superconducting material comprises indium.

9. A plug according to any of claims 7-8, wherein the deformable contact metal structure is substantially spherical.

10. A plug according to any of claims 7-9, wherein the top surface of the substrate further comprises at least one grounding area, wherein the at least one grounding area is adjacent to the at least one contact area, and wherein the plug further comprises a deformable grounding metal structure and the deformable grounding metal structure is located in the at least one grounding area, and wherein the deformable grounding metal structure extends upwards from the top surface of the substrate and the deformable grounding metal structure is at ground potential.

11. A plug according to claim 10, wherein the at least one grounding area surrounds the at least one contact area, wherein further the deformable grounding metal structure is a continuous ring surrounding the contact area, and wherein further the deformable grounding metal structure comprises multiple bumps, and the multiple bumps surround the contact area.

12. A plug according to any of claims 7-11, wherein the plug further comprises a setting for receiving a quantum chip, and wherein the setting for receiving a quantum chip is attached to the substrate, wherein the plug further comprises a quantum chip, wherein the quantum chip is attached to the setting for receiving a quantum chip, and wherein the quantum chip is electrically coupled to the at least one electrical connection.

13. A plug according to any of claims 7-12, wherein the substrate further comprises at least one substrate via, wherein the at least one substrate via is located in the at least one contact area, and wherein at least one substrate via extends in the z-direction from the top surface of the substrate through at least a portion of the thickness of the substrate, and wherein the deformable contact metal structure is electrically coupled to the at least one electrical connection through the at least one substrate via.

14. An assembly comprising a receptacle according to any of claims 1-6 and a plug according to any of claims 7-13, wherein the receptacle is mechanically connected to the plug via the first set and the second set of means for mechanical connection so that the first conductor in the at least one signal cable is aligned with the deformable contact metal structure and connected to the deformable contact metal structure, and wherein the deformable contact metal structure is deformed when the plug and receptacle are connected to each other.

15. A quantum computing system comprising one or more assemblies according to claim 14.