CLAIMS

What is claimed is:

1. A multi-band antenna system, comprising:

a plurality of radiating element arrays, a plurality of feeding networks separately corresponding to the plurality of radiating element arrays, a frequency selective surface (FSS), and a reflection panel, wherein

the plurality of radiating element arrays are located above the reflection panel when the reflection panel is horizontally placed, and all or some of the plurality of radiating element arrays are stacked;

the FSS is located between stacked radiating element arrays; and

a feeding network of the plurality of feeding networks corresponding to at least one radiating element array in the stacked radiating element arrays is electrically connected to the FSS, or is integrated on the FSS.

2. The multi-band antenna system according to claim 1, wherein the FSS comprises a plurality of layers of the FSS,

that the feeding network of the plurality of feeding networks corresponding to at least one radiating element array is electrically connected to the FSS comprises: the feeding network corresponding to the at least one radiating element array is electrically connected to at least one layer of the plurality of layers of the FSS; or

that the feeding network of the plurality of feeding networks corresponding to the at least one radiating element array is integrated on the FSS comprises: the feeding network corresponding to the at least one radiating element array is integrated on at least one layer of the plurality of layers of the FSS.

3. The multi-band antenna system according to claim 2, wherein at least two of the layers of the FSS are disposed adjacent to each other.

4. The multi-band antenna system according to claim 1, wherein the FSS comprises one layer of the FSS.

5. The multi-band antenna system according to any one of claims 1 to 4, wherein the plurality of radiating element arrays comprise a first radiating element array and a second radiating element array, the first radiating element array corresponds to a first frequency band, the second radiating

element array corresponds to a second frequency band, and the first frequency band is different from the second frequency band.

6. The multi-band antenna system according to any one of claims 1 to 5, wherein an electrical connection manner between the feeding network and the FSS is any one of the following:

a direct current connection manner, a coupling connection manner, or a segmented direct current connection manner.

7. The multi-band antenna system according to any one of claims 1 to 6, wherein the feeding network comprises a cable.

8. The multi-band antenna system according to claim 7, wherein at least a part of the cable is parallel to the FSS.

9. The multi-band antenna system according to any one of claims 1 to 6, wherein the feeding network comprises a microstrip.

10. The multi-band antenna system according to claim 1 , wherein the FSS comprises one or more layers of the FSS, and in the plurality of radiating element arrays, a radiating element array located at an upper layer of a FSS layer and a radiating element array located at a lower layer of the FSS layer are respectively disposed in different radomes.

11. The multi-band antenna system according to claim 10, wherein the radiating element arrays located at the upper layer comprise a plurality of radiating element arrays separately corresponding to at least two different frequency bands.

12. The multi-band antenna system according to claim 10, wherein the radiating element arrays located at the lower layer comprise a plurality of radiating element arrays separately corresponding to at least two different frequency bands.

13. The multi-band antenna system according to claim 1 , wherein the FSS comprises one or more layers of the FSS, and wherein at least one layer of the FSS is with a grid.

14. A base station, comprising the multi-band antenna system according to any one of claims 1 to 13 and a radio frequency module connected to the multi-band antenna system.