the cellular handsets may also include a signal isolator coupled to the antenna. These signal isolators may allow only outward transmission of signals through the antenna.

[010] A disclosed embodiment of a method of performing EMI susceptibility testing may include operating multiple EMI generating devices using a controller to simultaneously produce EMI. The method may also include subjecting an electronic device under test to the EMI generated by the multiple EMI generating devices. The EMI generated by each of the multiple EMI generating devices may be substantially similar to each other.

[010a] According to a first aspect of the invention, there is provided a system for performing EMI susceptibility testing, comprising: a controller configured to emulate a live cellular network; and an EMI generation unit coupled to the controller, the EMI generation unit including a plurality of EMI generating devices, each EMI generating device being controlled by the controller to generate EMI, wherein characteristics of the EMI generated by each of the plurality of EMI generating devices are substantially similar, wherein each EMI generating device is a cellular handset.

[010b] According to a second aspect of the invention, there is provided a method of performing EMI susceptibility testing of an electronic device, comprising: operating multiple EMI generating devices using a controller to simultaneously produce EMI, wherein each EMI generating device is a cellular handset; and subjecting the electronic device to the EMI simultaneously generated by the multiple EMI generating devices, the EMI generated by each of the multiple EMI generating devices being substantially similar to each other.

[010c] According to a third aspect of the invention, there is provided a method of generating net EMI from a system, comprising: generating EMI from multiple EMI generating devices, wherein the EMI generated by each EMI generating device of the multiple EMI generating devices is substantially similar, wherein each EMI generating device is a cellular handset; and combining the EMI generated by each EMI generating device of the multiple EMI generating devices to produce net EMI, wherein the net EMI is a higher level of EMI than the EMI produced by each EMI generating device.

BRIEF DESCRIPTION OF THE DRAWINGS

[011] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description, serve to explain the principles of the invention.

[012] Figure 1 is a schematic illustration of an EMI generation system (EGS) according to an embodiment of the current invention.

[013] Figure 2 is a schematic illustration of the internal design of an EMI generation Unit (EGU) included in the EGS of Figure 1, according to an embodiment of the current invention,

[014] Figure 3 is a schematic illustration of an EGU building block according to an embodiment of the current invention.

[015] Figure 4 is an illustration of the communication between the cellular phone and EGU controller of Figure 3 during an authentication procedure according to an embodiment of the current invention.

[015] Figure 5 is a schematic illustration of an EGU building block according to an embodiment of the current invention.

[017] Figure 6 is a schematic illustration of a simplified EMI generation unit according to an embodiment of the current invention.

DESCRIPTION OF THE EMBODIMENTS

[018] Embodiments of the current invention include a system and methods for subjecting an electronic system (referred to herein as the equipment under test or EUT) to a high-level of EMI by combining the output from multiple EMI producing

CLAIMS

We claim:

1. A system for performing EMI susceptibility testing, comprising:

a controller configured to emulate at least partly a live cellular network; and

an EMI generation unit coupled to the controller, the EMI generation unit including a plurality of EMI generating devices, each EMI generating device being controlled by the controller to generate EMI, wherein characteristics of the EMI generated by each of the plurality of EMI generating devices are substantially similar.

2. The system of claim 1, wherein the EMI generating devices are cellular handsets, each of the cellular handsets including a SIM card that contains substantially identical data as SIM cards of the other cellular handsets.

3. The system of claim 1, wherein the EMI generation unit includes a signal splitter.

4. The system of claim 3, wherein at least one EMI generating device of the plurality of EMI generating devices is electrically coupled to the signal splitter such that a signal emitted by the at least one EMI generating device is divided into multiple components, one component of the multiple components being directed to an antenna and another component being directed to the controller through a cable.

5. The system of claim 4, wherein the cable electrically connects the at least one EMI generating device to the controller through a signal isolator that allows signal propagation in one direction only.

6. The system of claim 5, wherein the cable includes a switch connected in parallel to the signal isolator.

7. The system of claim 4, wherein each EMI generating device of the plurality or EMI generating devices is wirelessly coupled to the controller through signal isolators, at least one signal isolator being configured to only allow outward transmission of signals through the antenna.

8. The system of claim 1, wherein the controller is a call box.

9. The system of claim 1, wherein each of the plurality of EMI generating devices are electrically coupled together using coaxial cables.

10. A method of performing EMI susceptibility testing of an electronic device, comprising:

operating multiple EMI generating devices using a controller to simultaneously produce EMI; and

subjecting the electronic device to the EMI simultaneously generated by the multiple EMI generating devices, the EMI generated by each of the multiple EMI generating devices being substantially similar to each other.

11. The method of claim 10, wherein the multiple EMI generating devices include a plurality of cellular handsets.

12. The method of claim 11, wherein each cellular handset includes a SIM card that contains substantially identical data as SIM cards of the other cellular handsets.

13. The method of claim 10, further including blocking signals from at least some of the multiple EMI generating devices to the controller using signal isolators.

14. The method of claim 13, wherein blocking signals from at least some of the multiple EMI generating devices includes allowing bidirectional communication between the controller and only one of the multiple EMI generating devices.

15. The method of claim 10, wherein the controller includes a call box and operating the multiple EMI generating devices include running a test function of the call box on each of the multiple EMI generating devices.

16. The method of claim 15, wherein the test function is Test Mode A.

17. A method of generating net EMI from a system, comprising:

generating EMI from multiple EMI generating devices, wherein the EMI generated by each EMI generating device of the multiple EMI generating devices is substantially similar; and

combining the EMI generated by each EMI generating device of the multiple EMI generating devices to produce net EMI, wherein the net EMI is a higher level of EMI than the EMI produced by each EMI generating device.

18. The method of claim 17, wherein the net EMI varies substantially linearly with the number of EMI generating devices.

19. The method of claim 17, wherein each of the multiple EMI generating devices includes a cellular handset and each cellular handset includes a SIM card

that contains substantially identical data as SIM cards of the other cellular handsets.

20. The method of claim 17, wherein generating EMI from multiple EMI generating devices includes running a test function simultaneously on each of the multiple EMI generating devices.

CLAIMS

1. A system for performing EMI susceptibility testing, comprising: a controller configured to emulate a live cellular network; and an EMI generation unit coupled to the controller, the EMI generation unit including a plurality of EMI generating devices, each EMI generating device being controlled by the controller to generate EMI, wherein characteristics of the EMI generated by each of the plurality of EMI generating devices are substantially similar, wherein each EMI generating device is a cellular handset.

2. The system of claim 1, wherein each of the cellular handsets includes a SIM card that contains substantially identical data as SIM cards of the other cellular handsets.

3. The system of claim 1, wherein the EMI generation unit includes a signal splitter.

4. The system of claim 3, wherein at least one EMI generating device of the plurality of EMI generating devices is electrically coupled to the signal splitter such that a signal emitted by the at least one EMI generating device is divided into multiple components, one component of the multiple components being directed to an antenna and another component being directed to the controller through a cable.

5. The system of claim 4, wherein the cable electrically connects the at least one EMI generating device to the controller through a signal isolator that allows signal propagation in one direction only.

6. The system of claim 5, wherein the cable includes a switch connected in parallel to the signal isolator.

7. The system of claim 4, wherein each EMI generating device of the plurality or EMI generating devices is wirelessly coupled to the controller through signal isolators, at least one signal isolator being configured to only allow outward transmission of signals through the antenna.

8. The system of claim 1, wherein the controller is a call box.

9. The system of claim 1, wherein each of the plurality of EMI generating devices are electrically coupled together using coaxial cables.

10. A method of performing EMI susceptibility testing of an electronic device, comprising: operating multiple EMI generating devices using a controller to simultaneously produce EMI, wherein each EMI generating device is a cellular handset; and subjecting the electronic device to the EMI simultaneously generated by the multiple EMI generating devices, the EMI generated by each of the multiple EMI generating devices being substantially similar to each other.

11. The method of claim 10, wherein each cellular handset includes a SIM card that contains substantially identical data as SIM cards of the other cellular handsets.

12. The method of claim 10, further including blocking signals from at least some of the multiple EMI generating devices to the controller using signal isolators.

13. The method of claim 12, wherein blocking signals from at least some of the multiple EMI generating devices includes allowing bidirectional communication between the controller and only one of the multiple EMI generating devices.

14. The method of claim 10, wherein the controller includes a call box and operating the multiple EMI generating devices include running a test function of the call box on each of the multiple EMI generating devices.

15. The method of claim 14, wherein the test function is Test Mode A.

16. A method of generating net EMI from a system, comprising: generating EMI from multiple EMI generating devices, wherein the EMI generated by each EMI generating device of the multiple EMI generating devices is substantially similar, wherein each EMI generating device is a cellular handset; and combining the EMI generated by each EMI generating device of the multiple EMI generating devices to produce net EMI, wherein the net EMI is a higher level of EMI than the EMI produced by each EMI generating device.

17. The method of claim 16, wherein the net EMI varies substantially linearly with the number of EMI generating devices.

18. The method of claim 16, wherein each cellular handset includes a SIM card that contains substantially identical data as SIM cards of the other cellular handsets.

19. The method of claim 16, wherein generating EMI from multiple EMI generating devices includes running a test function simultaneously on each of the multiple EMI generating devices.