

CLAIMS

1. Infrared countermeasure system (1) designed to be installed on a platform (A) for protection against infrared-guided missiles and to be connected to a missile warning system (2) installed on said platform (A), wherein said missile warning system (2) is configured to detect approaching infrared-guided missiles; said infrared countermeasure system (1) comprising:

- a directed infrared countermeasure system (11) operable to track and jam approaching infrared-guided missiles;
 - a flare deployment/launch apparatus (12) operable to deploy/launch flares; and
 - a self-protection suite manager (114) configured to
 - store one or more DIRCM-flare coordination libraries indicative of a predefined policy of coordination of flare deployment/launch with operation of the directed infrared countermeasure system (11),
 - operate the directed infrared countermeasure system (11) to track and jam an approaching infrared-guided missile detected by the missile warning system (2) and,
 - when the directed infrared countermeasure system (11) is tracking and jamming an approaching infrared-guided missile, operate also the flare deployment/launch apparatus (12) to deploy/launch flares based on the stored DIRCM-flare coordination library(ies).
2. The infrared countermeasure system of claim 1, wherein the self-protection suite manager (114) is configured to, when the directed infrared countermeasure system (11) is tracking and jamming an approaching infrared-guided missile, operate also the flare deployment/launch apparatus (12) to deploy/launch flares at

one or more given times and according to one or more predefined flare deployment/launch sequences; wherein said given time(s) is/are determined by the self-protection suite manager (114) based on, and said predefined flare deployment/launch sequence(s) is/are indicated in, the stored DIRCM-flare coordination library(ies).

3. The infrared countermeasure system of claim 1 or 2, wherein the self-protection suite manager (114) is configured to:

- 10 • receive, from the missile warning system (2), messages related to infrared-guided missiles detected by said missile warning system (2), wherein said messages related to detected infrared-guided missiles include
 - 15 - pre-alarm messages signaling potential approaching infrared-guided missiles,
 - pre-alarm update messages indicative of updates on potential approaching infrared-guided missiles previously signaled,
 - alarm confirmation messages confirming actual approaching infrared-guided missiles, and
 - 20 - alarm update messages indicative of updates on actual approaching infrared-guided missiles;
- 25 • receive, from the directed infrared countermeasure system (11), tracking update messages indicative of updates on approaching infrared-guided missiles tracked and jammed by said directed infrared countermeasure system (11);
- 30 • in response to a pre-alarm message received from the missile warning system (2) and indicative of a potential approaching infrared-guided missile, operate the directed infrared countermeasure system (11) to track and jam said potential approaching infrared-guided missile;
- 35 • carry out a scenario analysis based on
 - the pre-alarm message and pre-alarm update messages received from the missile warning system (2) and related to said potential approaching

infrared-guided missile, and

- tracking update messages received from the directed infrared countermeasure system (11) and related to said potential approaching infrared-guided missile tracked and jammed by said directed infrared countermeasure system (11);

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- in response to an alarm confirmation message received from the missile warning system (2) and confirming that said potential approaching infrared-guided missile is

10 an actual approaching infrared-guided missile, operate also the flare deployment/launch apparatus (12) to deploy/launch flares based on

- the stored DIRCM-flare coordination library(ies) and

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- the scenario analysis carried out;

- inform the directed infrared countermeasure system (11) of flare deployment/launch, whereby said directed infrared countermeasure system (11) disregards flares' glares during tracking thereby keeping tracking and jamming

20 the actual approaching infrared-guided missile; and,

- for a predefined blanking period after flare deployment/launch, keep carrying out the scenario analysis only based on tracking update messages received from the directed infrared countermeasure system (11) and related to

25 the actual approaching infrared-guided missile tracked and jammed by said directed infrared countermeasure system (11), while disregarding messages received from the missile warning system (2) and related to infrared-guided missile(s) detected by said missile warning system (2) in a

30 given space sector where the actual approaching infrared-guided missile is located.

4. The infrared countermeasure system of claim 3, wherein said predefined blanking period and said given space sector are indicated in the stored DIRCM-flare

35 coordination library(ies).

5. The infrared countermeasure system according to any preceding claim, wherein the directed infrared countermeasure system includes a plurality of directed infrared countermeasure steerable turrets, each operable to track and jam infrared-guided missiles in a respective coverage region; and wherein the self-protection suite manager (114) is configured to coordinate operation of said directed infrared countermeasure steerable turrets.

6. The infrared countermeasure system according to any preceding claim, comprising a plurality of flare deployment/launch apparatus/systems/devices.

7. Method of operation of an infrared countermeasure system (1) installed on a platform (A) for protection against infrared-guided missiles, wherein said infrared countermeasure system (1) is connected to a missile warning system (2) that is installed on the platform (A) and that is configured to detect approaching infrared-guided missiles; said infrared countermeasure system (1) comprising:

- a directed infrared countermeasure system (11) operable to track and jam approaching infrared-guided missiles;

- a flare deployment/launch apparatus (12) operable to deploy/launch flares; and

- a self-protection suite manager (114) configured to store one or more DIRCM-flare coordination libraries indicative of a predefined policy of coordination of flare deployment/launch with operation of the directed infrared countermeasure system (11);

the method comprising carrying out the following operations by means of the self-protection suite manager (114):

- operating the directed infrared countermeasure system (11) to track and jam an approaching infrared-guided missile detected by the missile warning system (2); and,

• when the directed infrared countermeasure system (11) is tracking and jamming an approaching infrared-guided missile, operating also the flare deployment/launch apparatus (12) to deploy/launch flares based on the stored
5 DIRCM-flare coordination library(ies).

8. The method of claim 7, including: when the directed infrared countermeasure system (11) is tracking and jamming an approaching infrared-guided missile, operating also the flare deployment/launch apparatus (12) to deploy/launch
10 flares at one or more given times and according to one or more predefined flare deployment/launch sequences; wherein said given time(s) is/are determined by the self-protection suite manager (114) based on, and said predefined flare deployment/launch sequence(s) is/are indicated in, the
15 stored DIRCM-flare coordination library(ies).

9. The method of claim 7 or 8, comprising carrying out the following operations by means of the self-protection suite manager (114):

- receiving, from the missile warning system (2),
20 messages related to infrared-guided missiles detected by said missile warning system (2), wherein said messages related to detected infrared-guided missiles include
 - pre-alarm messages signaling potential approaching IR-guided missiles,
 - 25 - pre-alarm update messages indicative of updates on potential approaching IR-guided missiles previously signaled,
 - alarm confirmation messages confirming actual approaching IR-guided missiles, and
 - 30 - alarm update messages indicative of updates on actual approaching IR-guided missiles;
- receiving, from the directed infrared countermeasure system (11), tracking update messages indicative of updates on approaching infrared-guided
35 missiles tracked and jammed by said directed infrared

countermeasure system (11);

- in response to a pre-alarm message received from the missile warning system (2) and indicative of a potential approaching infrared-guided missile, operating the directed infrared countermeasure system (11) to track and jam said potential approaching infrared-guided missile;

- carrying out a scenario analysis based on

- the pre-alarm message and pre-alarm update messages received from the missile warning system (2) and related to said potential approaching infrared-guided missile, and

- tracking update messages received from the directed infrared countermeasure system (11) and related to said potential approaching infrared-guided missile tracked and jammed by said directed infrared countermeasure system (11);

- in response to an alarm confirmation message received from the missile warning system (2) and confirming that said potential approaching infrared-guided missile is an actual approaching infrared-guided missile, operating also the flare deployment/launch apparatus (12) to deploy/launch flares based on

- the stored DIRCM-flare coordination library(ies) and

- the scenario analysis carried out;

- informing the directed infrared countermeasure system (11) of flare deployment/launch, whereby said directed infrared countermeasure system (11) disregards flares' glares during tracking thereby keeping tracking and jamming the actual approaching infrared-guided missile; and,

- for a predefined blanking period after flare deployment/launch, keep carrying out the scenario analysis only based on tracking update messages received from the directed infrared countermeasure system (11) and related to

the actual approaching infrared-guided missile tracked and jammed by said directed infrared countermeasure system (11), while disregarding messages received from the missile warning system (2) and related to infrared-guided missile(s) detected by said missile warning system (2) in a given space sector where the actual approaching infrared-guided missile is located.

10. The method of claim 9, wherein said predefined blanking period and said given space sector are indicated in the stored DIRCM-flare coordination library(ies).

11. The method according to any preceding claim, wherein the directed infrared countermeasure system includes a plurality of directed infrared countermeasure steerable turrets, each operable to track and jam infrared-guided missiles in a respective coverage region; and wherein the method comprises coordinating, by means of the self-protection suite manager (114), operation of said directed infrared countermeasure steerable turrets.

12. The method according to any preceding claim, wherein the infrared countermeasure system (1) comprises a plurality of flare deployment/launch apparatus/systems/devices.

13. Software program product comprising software and/or firmware code portions loadable on an electronic control and processing unit of an infrared countermeasure system (1) installed on a platform (A) for protection against infrared-guided missiles, wherein said infrared countermeasure system (1) is connected to a missile warning system (2) that is installed on the platform (A) and that is configured to detect approaching infrared-guided missiles; said infrared countermeasure system (1) comprising:

- a directed infrared countermeasure system (11) operable to track and jam approaching infrared-guided missiles; and

• a flare deployment/launch apparatus (12) operable to deploy/launch flares;

wherein said software and/or firmware code portions are such that to cause, when loaded on the electronic control and processing unit, said electronic control and processing unit to become configured as the self-protection suite manager (114) of the infrared countermeasure system (1) as claimed in any claim 1-6.

14. Land platform or vehicle equipped with the infrared countermeasure system (1) as claimed in any claim 1-6.

15. Avionic platform (A) equipped with the infrared countermeasure system (1) as claimed in any claim 1-6.

16. Naval unit equipped with the infrared countermeasure system (1) as claimed in any claim 1-6.

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