



THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

COMMUNICATION CONCERNING APPROVAL GRANTED OF A TYPE OF ELECTRONIC SUB-
ASSEMBLY WITH REGARD TO REGULATION NO. 10.06



Approval No: E11*10R06/01*11543*00

1. Make (trade name of manufacturer): WISENET
2. Type and general commercial description(s): TRM-410S (NVR) / TRM-410S
3. Means of identification of type, if marked on the component: TRM-410S
 - 3.1. Location of that marking: Top side of product
4. Category of vehicle: Not applicable
5. Name and address of manufacturer:

Hanwha Techwin Co., Ltd.
6, Pangyo-ro 319 beon-gil
Bundang-gu
Seongnam-si
Gyeonggi-do
Republic of Korea
6. In the case of components and separate technical units, location and method of affixing of the approval mark: Label on the top side of product

7. Address(es) of assembly plant(s):

D-Tech Co., Ltd.
173-25, Saneop-ro
Gwonseon-gu
Suwon-si
Gyeonggi-do
Korea

8. Additional information (where applicable): See Appendix below

9. Technical Service responsible for carrying out the tests: Vehicle Certification Agency

10. Date of test report: 24 June 2021

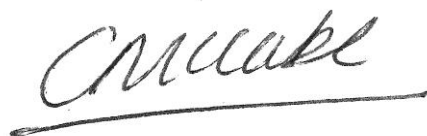
11. No. of test report: KSY540694 (11543)

12. Remarks (if any): See Appendix below

13. Place: BRISTOL

14. Date: 01 SEPTEMBER 2021

15. Signature:



C McCABE

Chief Technical and Statutory Operations Officer

16. The index to the information package lodged with the Approval Authority, which may be obtained on request, is attached.

17. Reasons for extension:

Not applicable

Appendix

to type approval communication form No. E11*10R06/01*11543*00
concerning the type approval of an electrical/electronic sub-assembly under UN Regulation No. 10.06

1. Additional information:
 - 1.1. Electrical system rated voltage: DC 9V~36 V. neg ground
 - 1.2. This ESA can be used on any vehicle type with the following restrictions: 12V and 24V negative earth vehicles only
 - 1.2.1. Installation conditions, if any:
See the manufacturer's documentation
 - 1.3. This ESA can be used only on the following vehicle types: Not applicable
 - 1.3.1. Installation conditions, if any:
Not applicable
 - 1.4. The specific test method(s) used and the frequency ranges covered to determine immunity were: (Please specify precise method used from Annex 9):
Not applicable
 - 1.5. Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests: LTA EMC Test Lab.
2. Remarks: None



Vehicle
Certification
Agency

THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

APPROVAL NUMBER: E11*10R06/01*11543*00

INFORMATION PACKAGE CONTENTS

INDEX REVISION NUMBER: Not applicable

Conformity of Production (COP) Declaration COP Confirmed

Assessment Method COP Audit

Date of Initial Clearance September 2017

Date of Last Clearance July 2021

Total number of sheets: 15 (Fifteen)

Reasons for Revision: Not applicable

Revision Date
&
Office Stamp

	Information document no. 10R-0611543-00 for type-approval of an electrical/electronic sub-assembly with respect to electromagnetic compatibility ECE R10.06 ESA Type : TRM-410S	Page: 1
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1. Make (trade name of manufacturer) : WISENET
2. Type : TRM-410S (NVR)
3. Means of identification of type, if marked on the component : TRM-410S marking on adhesive label
- 3.1. Location of that marking : Top side of product
4. Name and address of manufacturer : Hanwha Techwin Co., Ltd.
6, Pangyo-ro 319 beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
- Name and address of authorized representative, if any : Not Applicable
5. In the case of components, location and method of affixing of the approval mark : Label on the top side of product
6. Address (es) of assembly plant(s) : D-Tech Co., Ltd.
173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea
7. This ESA shall be approved as a Component
8. Any restriction of use and conditions for fitting : Manufacturer's instructions to be followed, 12V and 24V negative earth vehicles only
9. Electrical system rated voltage : DC 9V ~ 36V, Negative ground
10. Charger : N/A
11. Charging Current: : N/A
12. Maximal nominal current (in each mode if necessary) : N/A

	Information document no. 10R-0611543-00 for type-approval of an electrical/electronic sub-assembly with respect to electromagnetic compatibility ECE R10.06 ESA Type : TRM-410S	Page: 2
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13. Nominal charging voltage : N/A

14. Basic ESA interface functions : N/A

15. Minimum Rsce value : N/A

List of contents

Appendix 1	Description of the ESA	page 3
Attachment 1	Photo of the ESA	page 4 to 7
Attachment 2	Block Diagram	page 8
Attachment 3	Photo of PCB	page 9 to 12
Attachment 4	Electric Circuit	page 13 to 14
Attachment 5	List of main components	page 15

This information document consists of pages 1 to 15 including Appendix and Attachments.

	Appendix 1 to Information document no. 10R-0611543-00 Description of the ESA	Page: 3
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1. Description of the ESA

TRM-410S (NVR)

Power input : DC 9V ~ 36V

Power consumption : Max 83W

Operation temperature : -25~55°C (HDD)

Dimensions : 210x80x250mm

Weight(Kg) : 3.4Kg (no HDD)

Top View



Location of E-mark and Type Designation

6
3
E11 10R-0611543 2
*mm

Front View



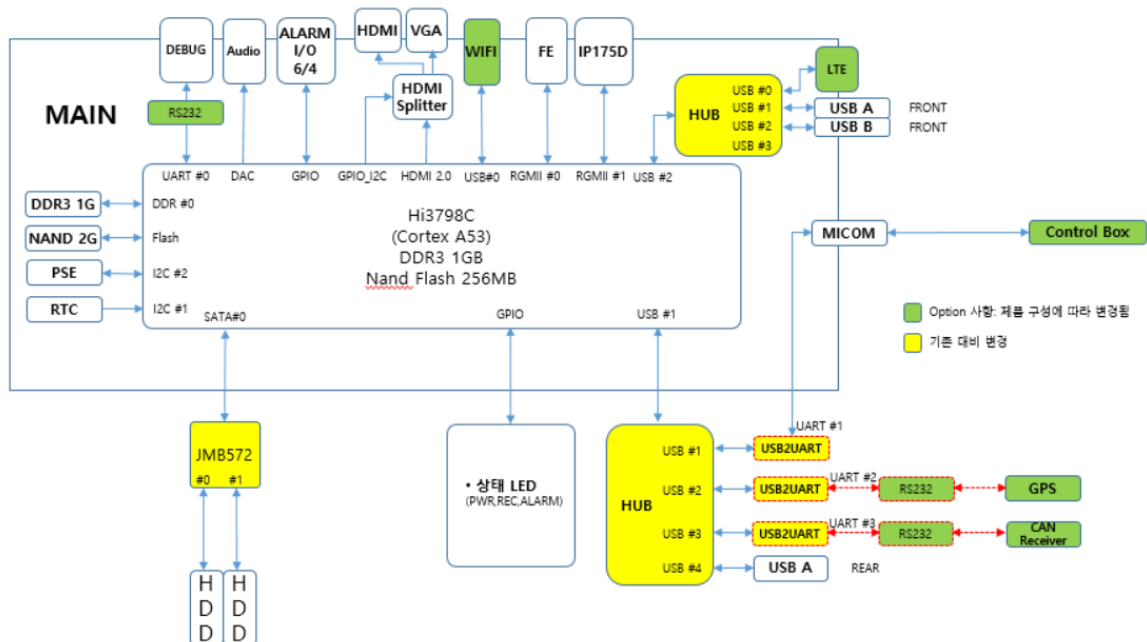
Rear View



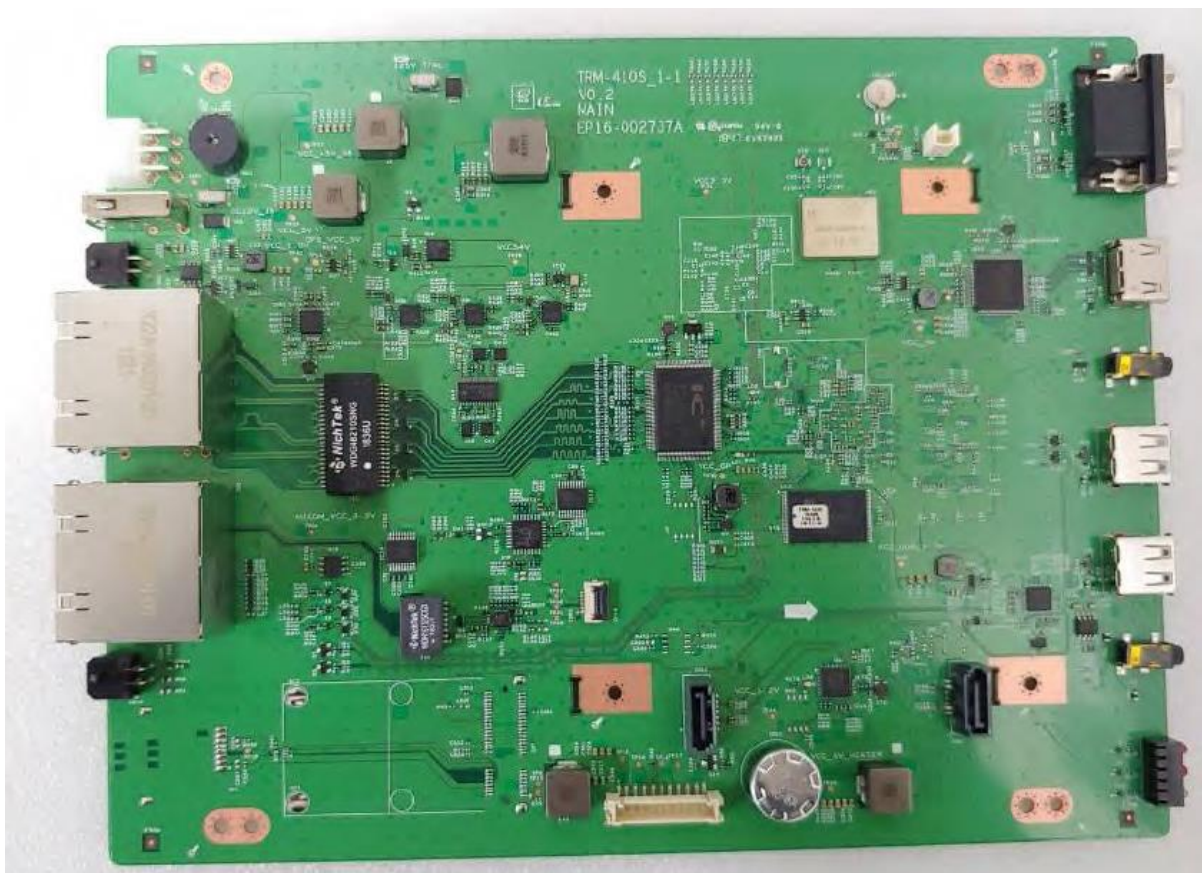
Internal View



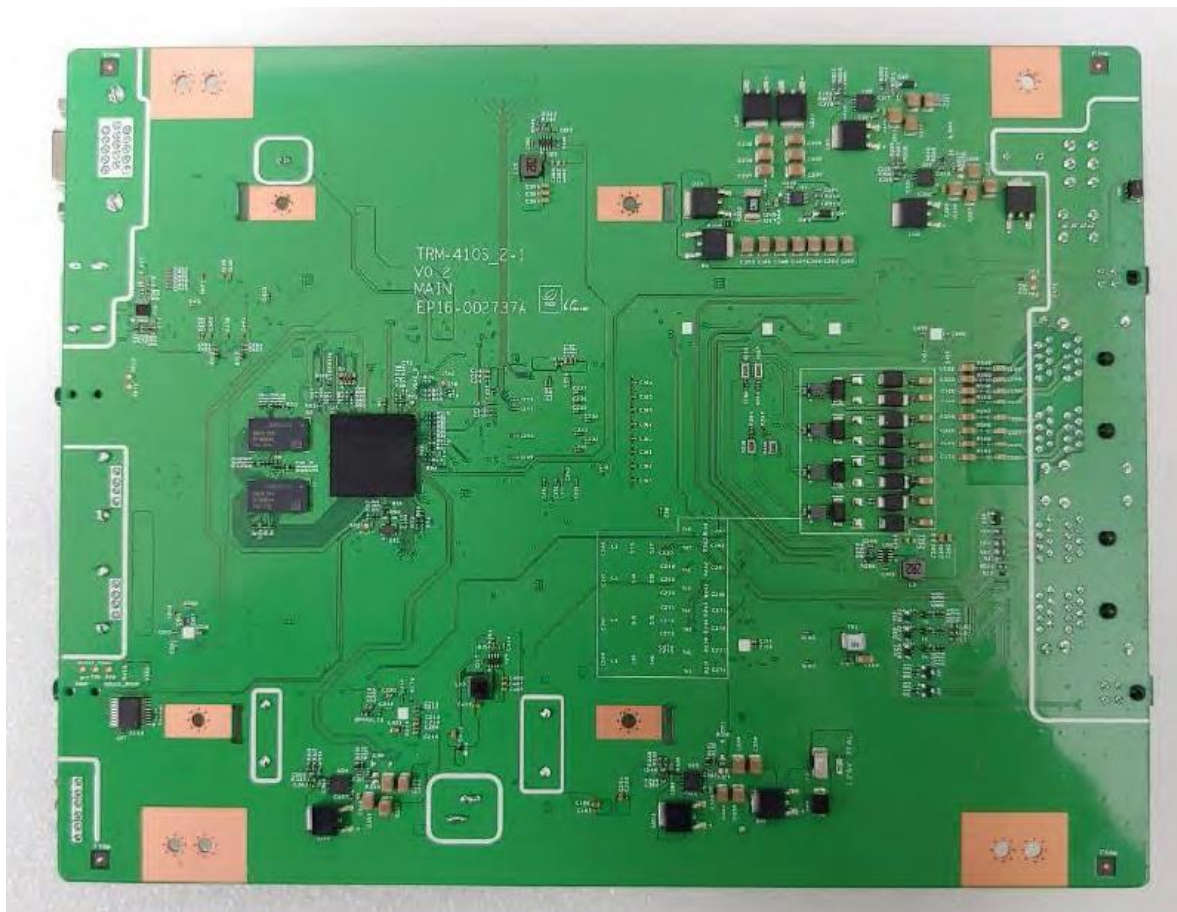
TRM-410S (Hi3798C) Block Diagram



Main board – Top View



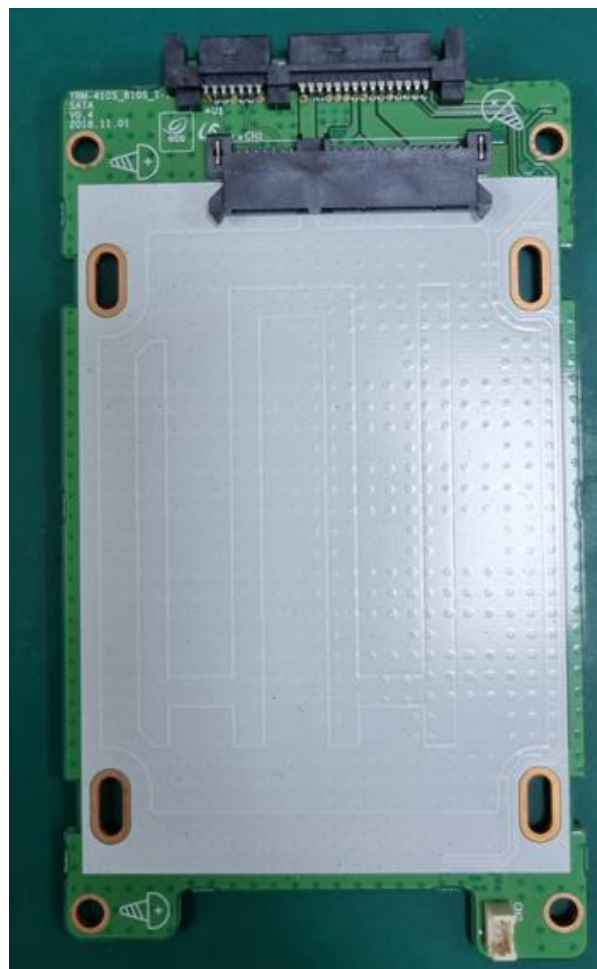
Main board – Bottom View



Sub Board – Top View



< Backplane >

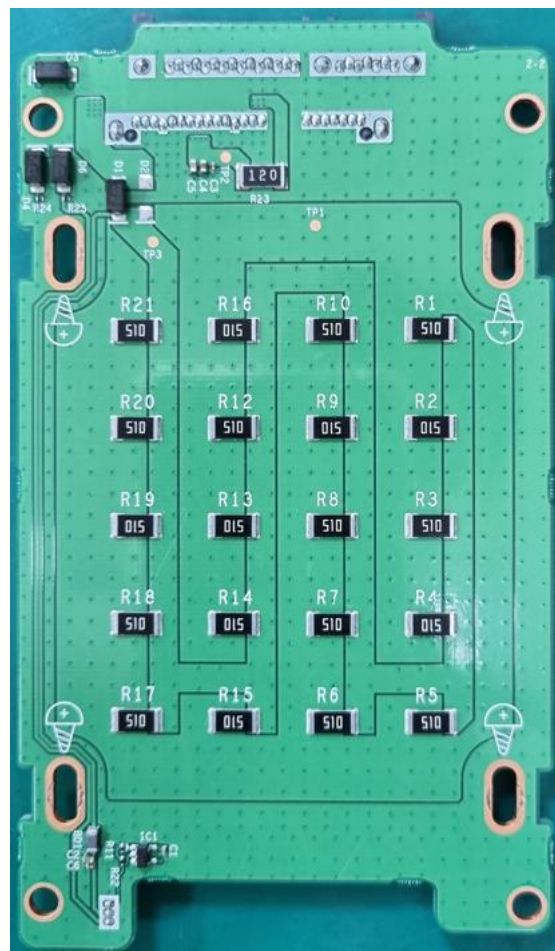


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Sub Board - Bottom View

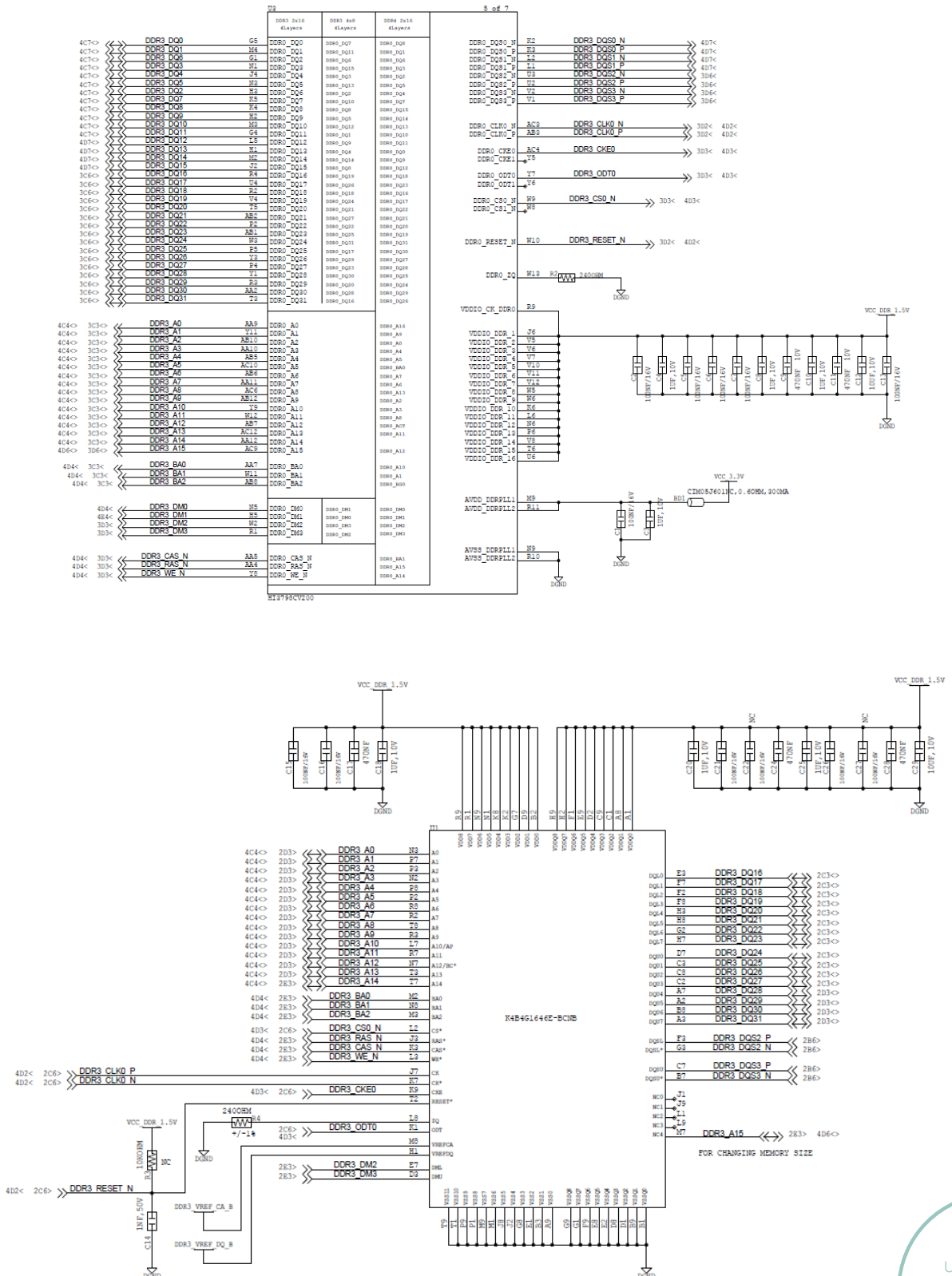


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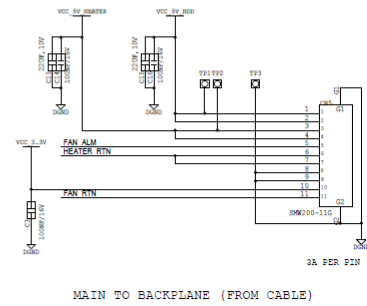
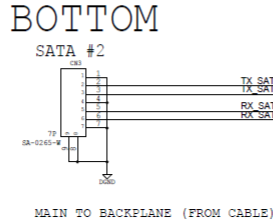
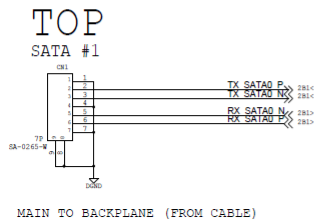
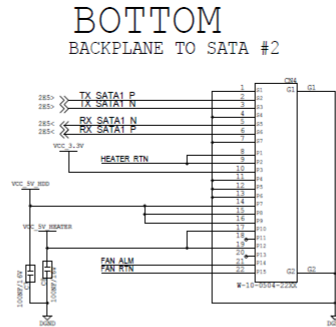
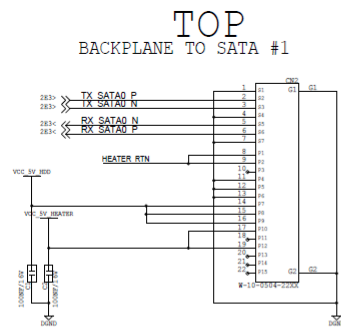


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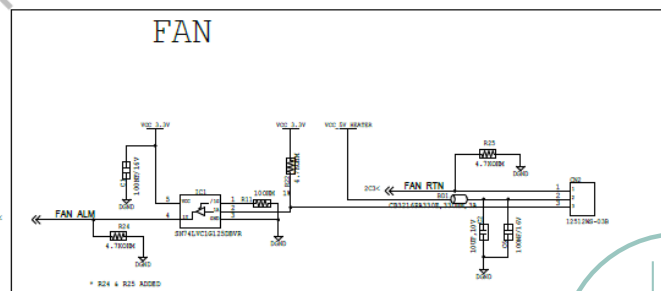
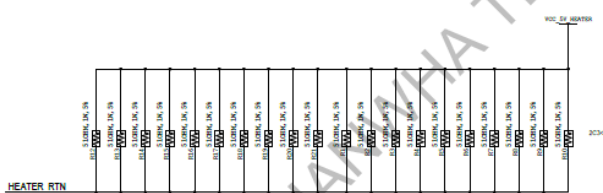
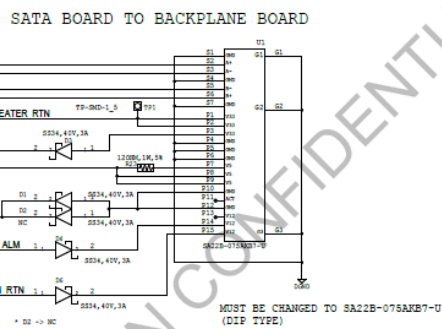
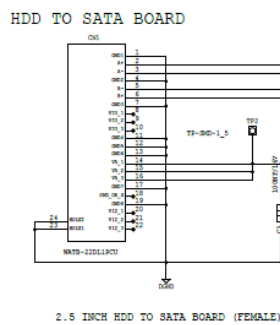
Main PCB Circuit



Sub PCB Circuit



< Backplane >



< Sata >

	Attachment 5, Appendix 1 to Information document no. 10R-0611543-00 List of main components	Page: 15
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Main Board

Component	Make / Manufacturer	Type / Model	Comment
Micro Processor	Hisilicon	Hi3798CV200	
Crystal	NDK	NX3225GA-EXS10B	24MHz
DDR	Samsung	K4B4G1646E-BCNB	
Ethernet Switch	ICplus	IP175DLF	
PSE IC	TI	TPS23861	
Micom	Atmel	ATSAMD20E18A	

Sub Board

Component	Make / Manufacturer	Type / Model	Comment
Connector	JCTC	W-10-0504-22xx	Backplane
Connector	Win Win Precision	WATB-22DL1PCU	SATA
Logic IC	TI	SN74LVC1G125DBVR	SATA
Diode	Jinan_Jingheng	SS34	SATA



Inspection/Test Report: Electromagnetic Compatibility – ESA

Legislation

UNECE Regulation 10.06 to Supplement 1

Inspection/Test Details

Location of Inspection/Test: LTA EMC Test Lab.
Date of Inspection/Test: 24 June 2021
VCA Representative(s): Seung-Hwan Kim
Inspectors office location: VCA Korea
Manufacturer's Representative(s): Jeisoon Kang
Reason for Test Report: New approval / ~~Extension of approval~~ / Report only

Manufacturer Details

Name and Address: Hanwha Techwin Co., Ltd.
6, Pangyo-ro 319 beon-gil, Bundang-gu,
Seongnam-si, Gyeonggi-do, Republic of Korea
Type: TRM-410S (NVR)
Commercial Description: TRM-410S
Category: Component

Conclusion

The above mentioned component was tested in accordance with the above mentioned legislation and was found to comply in all respects. This report relates only to the items tested.

Witness Engineer/Test Engineer
Signature:

Name: Seung-Hwan Kim
Position: Type Approval Engineer
Date: 24 June 2021

List of Annexes

Annex	No of Pages	Subject
I	2	Diagrams of BroadBand and NarrowBand radiated emissions, Horizontal and Vertical pol.
II	2	ISO 7637-2 test results
III	2	Photo of the test setup





Issue Record

Issue 0 is original report

Worst Case Rationale

- 1) The ESA is not related to Immunity related functions.
 - RE(radiated emission) test.
 - CTI/CTE tests are done by ISO7637-2.
- 2) The DOC is attached for RF mode.

Note: Include information on variants and versions this report covers, as applicable. Supporting documents may be annexed to this report

Significant Interpretations, Alternative Test Methods, New Technologies

Not applicable

Inspection/Tests Required

	Yes, NA, See Report ... / Approval ... / Annex ...
Radiated Emissions:	Yes
Radiated Immunity	N/A
BCI Immunity:	N/A
Free Field Immunity:	N/A
150 mm Stripline Immunity:	N/A
800 mm Stripline Immunity:	N/A
Transient Testing:	Yes

Component Specification

Component Part Number: Not applicable

Manufacturer's Documentation

Manufacturer's documentation is complete and reflects the agreed specification for the component tested, and covers all variants and versions agreed in the worst case rationale. Information document uploaded to job folder and identified by job number.

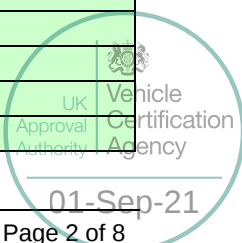
Yes

Facility and Equipment Checks

Calibration certificates checked and valid, recorded in the following table:

Yes

Equipment	Serial / Certificate No.	Calibration due*
EMI Test Receiver	100772	03 September 2021
Amplifier	254388	15 March 2022
DC LISN	101468	03 September 2021
DC LISN	100378	03 September 2021
Bi-Conical Antenna	8172	14 September 2022
Log-Periodic Antenna	849	11 September 2022





Report Number: KSY540694 (11543) Issue: 0

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Voltage Drop Simulator	P2027242343	28 September 2021
Ultra Compact Simulator	P1949235464	28 September 2021
Digital Phosphor Oscilloscope	B020330	14 January 2022
Voltage Probe	153535	24 September 2021
Electronic Switch	P1950236176	28 September 2021
Shunt Resistor Box	P2025241547	28 September 2021
Single Line Artificial Network	P1614178371	21 September 2021

**Specify calibrated date + (interval) or calibration due date.*



Inspection/Test Requirements		Complies Yes / NA
Radiated Emissions		
CISPR25, 4.5.	Measuring equipment complies with CISPR 16-1-4 (2010).	Yes
	Types and calibration date: See the above table	
Test Location		
Ann 7, 3.1. Ann 7, 3.3.	Test performed in: - A.L.S.E (Absorber-lined Shielded Enclosure)* - O.A.T.S (Open Area Test Site)* *Strikethrough, as appropriate.	Yes
Ann 7, 3.3.	O.A.T.S level is a clear area, free from electromagnetic reflecting surfaces, within a circle of 15 m minimum radius.	N/A
Ann 7, 3.3.	Measuring equipment is outside 15 m minimum radius circle.	N/A
Ann 7, 3.4.	Ambient noise is at least 6 dB below reference limits, in either case.	Yes
Test Arrangements		
CISPR25, 4.4.2.	EUT and antenna are more than 2 m from the walls and ceiling, and 1 m from the nearest absorber material.	Yes
CISPR25, 6.1.1.	Ground plane is 900 ± 50 mm high and made from 0.5 mm thick copper, brass or galvanised steel.	Yes
CISPR25, 6.1.1.	Ground plane is at least 2,000 mm length x 1,000 mm width.	Yes
CISPR25, 6.4.2.3.	ESA and harness are supported at 50 ± 5 mm above the ground plane on low relative permittivity material.	Yes
CISPR25, 6.4.2.3.	Face of the ESA is within 200 mm ± 10 mm from the edge of the ground plane.	Yes
CISPR25, 6.4.2.4.	Length of test harness, parallel to the front of the ground plane, is 1,500 ± 75 mm and does not exceed 2,000 mm.	Yes
CISPR25, 6.4.2.4.	Long segment of test harness is located parallel to the edge of the ground plane, facing the antenna at a distance of 100 ± 10 mm from the edge.	Yes
CISPR25, 6.1.2.	Power supply is Artificial Network (AN) rated at 50 Ω/50 µH.	Yes



	EUT is:	Yes
CISPR25, 6.1.2.	- Remotely grounded (vehicle power return line longer than 200 mm): two artificial networks are required, one for the positive supply line and one for the power return line* - Locally grounded (vehicle power return line 200 mm or shorter): one artificial network is required for the positive supply* <i>*Strikethrough, as appropriate.</i>	
CISPR25, 6.1.2.	Case of the ESA is: - Grounded, simulating actual vehicle configuration* - Not grounded, simulating actual vehicle configuration* <i>*Strikethrough, as appropriate.</i>	Yes
CISPR25, 6.1.2.	AN is electrically bonded to the ground plane.	Yes
Antenna		
Types and calibration date:		
See the above table		
CISPR25, 6.4.2.6.	Height of the phase centre is 100 ± 10 mm above the ground plane.	Yes
CISPR25, 6.4.2.6.	No part of any antenna radiating element is closer than 250 mm to the floor.	Yes
CISPR25, 6.4.2.6.	Radiating elements of the measuring antenna are not closer than 1,000 mm to any absorber material, except that used on the floor, and are not closer than 2,000 mm to the walls or ceiling of the shielded enclosure.	Yes
CISPR25, 6.4.2.6.	Phase centre (for biconical) or tip (for log-periodic) is 1,000 ± 50 mm from the harness.	Yes
CISPR25, 6.4.2.6.	Antenna calibrated for this distance to correct measuring point (phase centre or tip).	Yes
CISPR25, 6.4.2.6.	Phase centre of the antenna is in line with the centre of the longitudinal part of the wiring harness.	Yes
Ann 7, Ann 8, 4.3.	Pre-test sweep supplied to show compliance throughout frequency range 30 to 1,000 MHz.	Yes
Ann 7, Ann 8, 4.3.	Test frequencies chosen from pre-test data.	N/A

Narrowband Test Results

Ann 8, 2.	Operational mode of ESA:
	Normal operational(Wi-Fi+GPS+USB+Camera) at each input voltage



Ann 8, 2.

Detector used and bandwidth:

Average detector with 120kHz bandwidth

6.6.2.

ESA meets narrowband emissions limits, with both vertical and horizontal polarisations.

Yes

Broadband Test Results

Ann 7, 2.

Operational mode of ESA:

Normal operational(Wi-Fi+GPS+USB+Camera) at each input voltage

Ann 7, 2.

Detector used and bandwidth:

Peak detector with 120KHz bandwidth (for initial scan)

Quasi-peak detector with 120kHz bandwidth (for inspection)

6.5.2.

ESA meets broadband emissions limits, with both vertical and horizontal polarisations.

Yes

Radiated Immunity : Not applicable_Section removed for clarity

BCI Immunity : Not applicable_Section removed for clarity

Free Field Immunity : Not applicable_Section removed for clarity

150 mm Stripline Immunity : Not applicable_Section removed for clarity

800 mm Stripline Immunity : Not applicable_Section removed for clarity



Transient Testing

Case of ESA is:

- ~~Grounded, simulating actual vehicle configuration*~~
- ~~Not grounded, simulating actual vehicle configuration*~~

*Strikethrough, as appropriate.

Transient Immunity

6.9.1.	Test set up according to ISO 7637-2 (second edition 2004 and Amd.1:2008).	Yes
Ann 10, 2.	Supply lines and other lines, which may be connected to supply lines, are tested.	Yes
	Test voltage and time parameters are within allowed envelopes.	Yes
	Test pulses and duration according to the following:	Yes

Test Pulse	Immunity Test Level	Functional Status for Systems		Test Duration	
		Related to Immunity-related Functions	Not Related to Immunity-related Functions		
1	III	E	D	5000 pulses	12V(24V) D(D)
2a	III	B	D	5000 pulses	D(D)
2b	III	E	D	10 pulses	A(A)
3a	III	A	D	1 hour	A(A)
3b	III	A	D	1 hour	A(A)
4	III	B (for ESA, which must be operational during engine start, or C, for other ESA)	D	1 pulse	A(A)

ESA operational after the tests, according to the above classification. Yes

Emission of Conducted Disturbances

6.9.1.	Test set up according to ISO 7637-2.	Yes
Ann 10, 3.	Supply lines and other lines, which may be connected to supply lines, are tested.	Yes



Report Number: KSY540694 (11543) Issue: 0

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Comments:

None

Slow pulses and fast pulses tested on both powering up and powering down.

Yes

Polarity of Pulse Amplitude	Maximum Allowed Pulse Amplitude	
	Vehicles with 12 V systems	Vehicles with 24 V system
Positive	+ 75 V	+ 150 V
Negative	- 100 V	- 450 V

Remarks

None

Note: VCA apply measurement uncertainty to calibrated items but not test results.

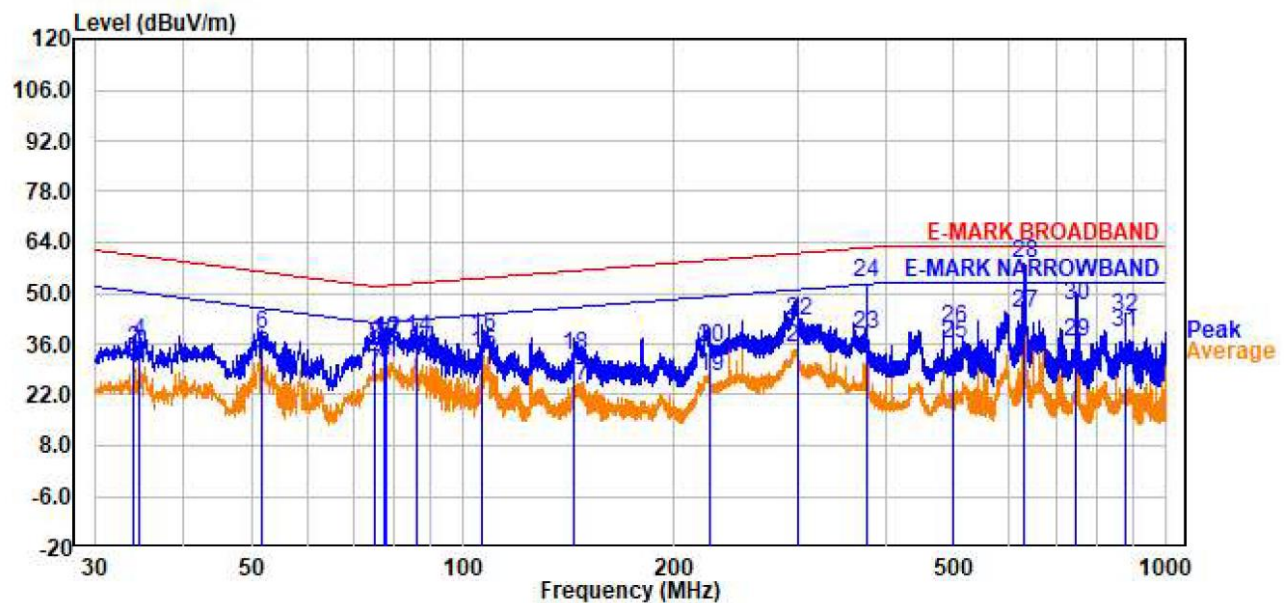
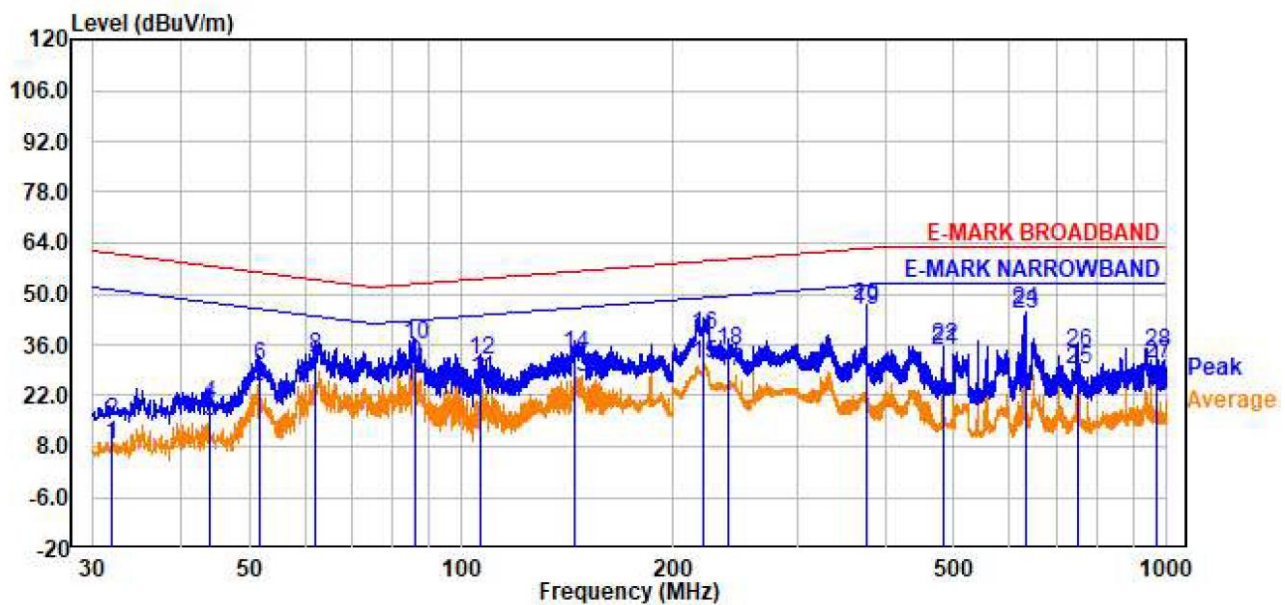


Annex I

Diagrams of BroadBand and NarrowBand radiated emissions

Test lab. : LTA EMC Test Lab.
Test product : TRM-410S (NVR)
Test date : 24 June 2021

Horizontal and Vertical antenna polarization_12V



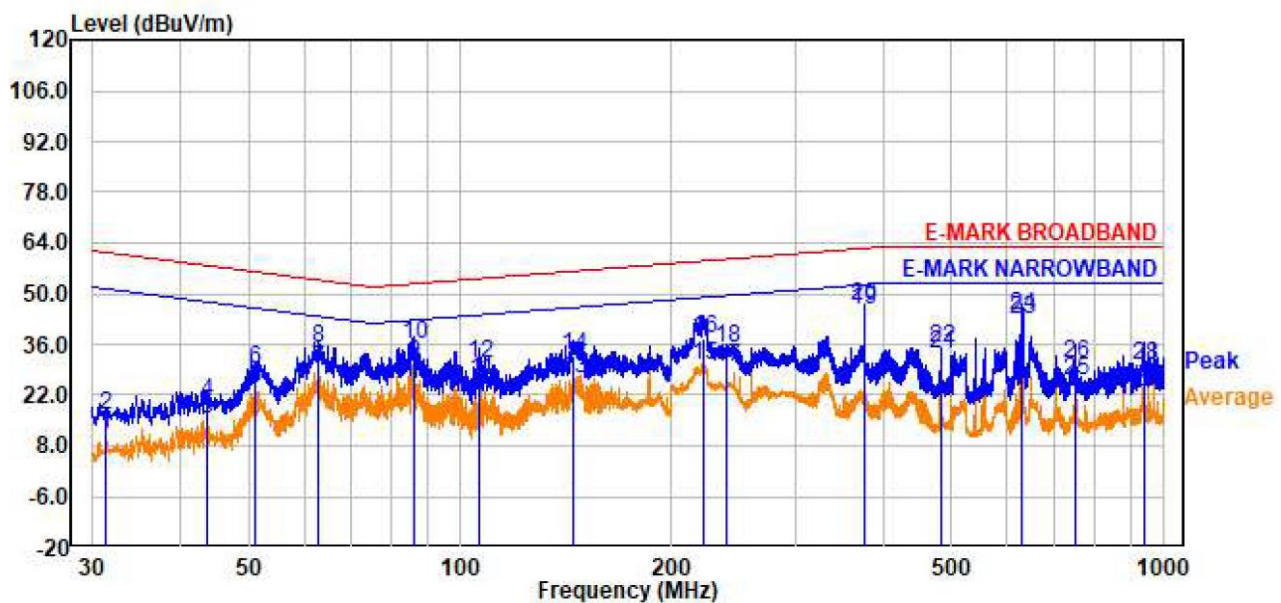


Annex I

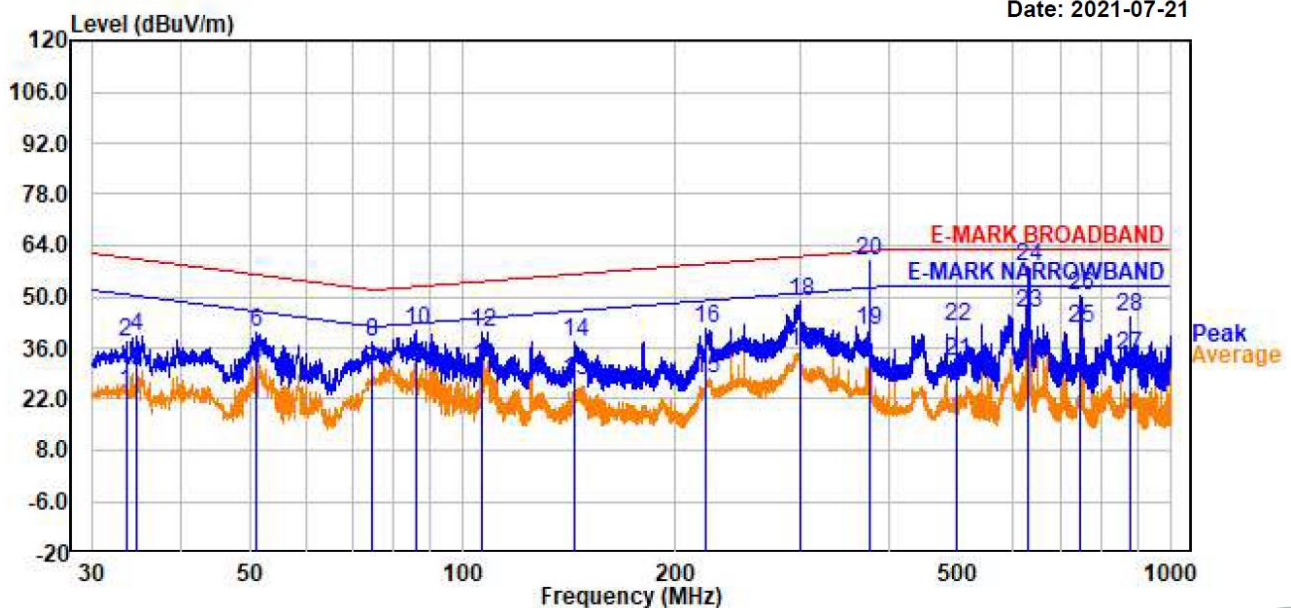
Diagrams of BroadBand and NarrowBand radiated emissions

Test lab. : LTA EMC Test Lab.
Test product : TRM-410S (NVR)
Test date : 24 June 2021

Horizontal and Vertical antenna polarization_24V



Date: 2021-07-21



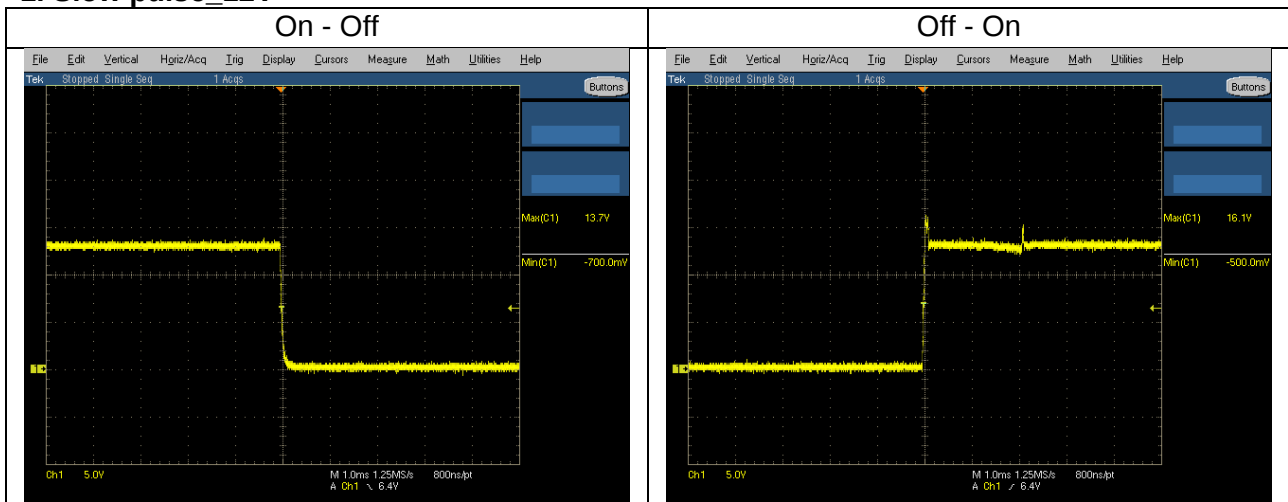


Annex II

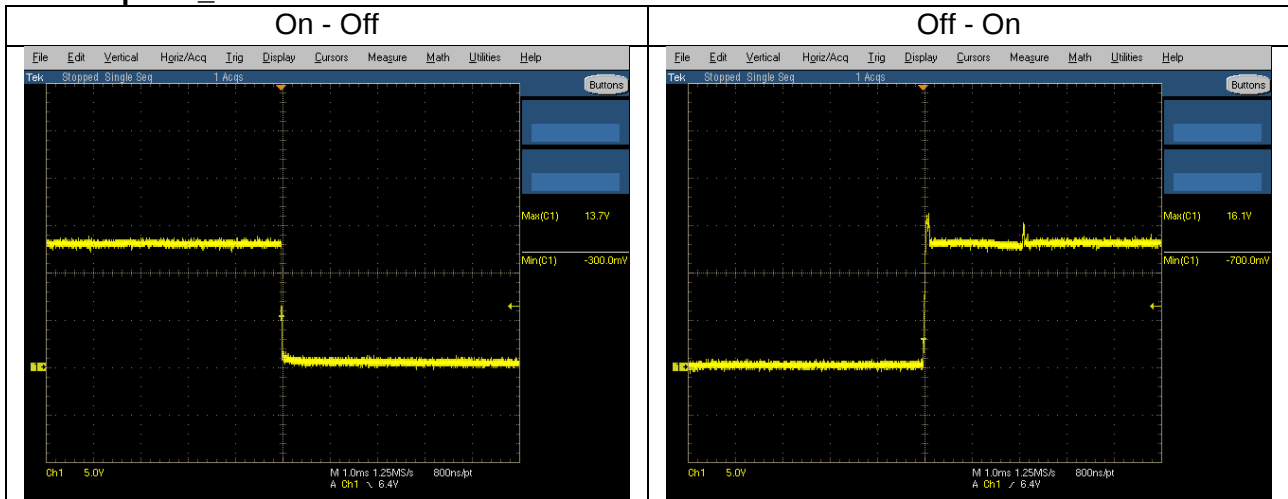
ISO 7637-2 test results

Test lab. : LTA EMC Test Lab.
Test product : TRM-410S (NVR)
Test date : 24 June 2021

1. Slow pulse_12V



2. Fast pulse_12V



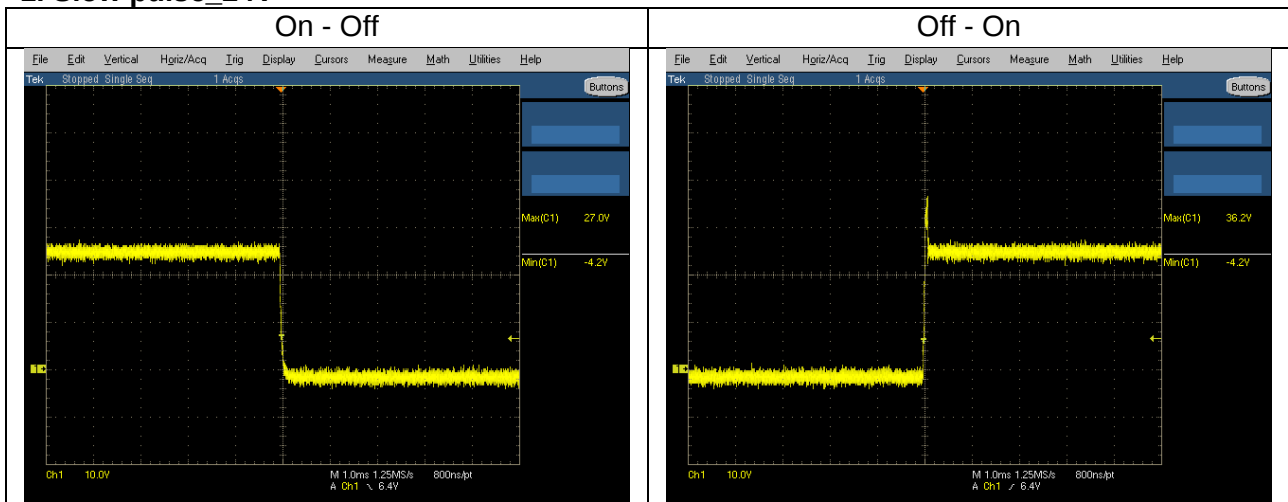


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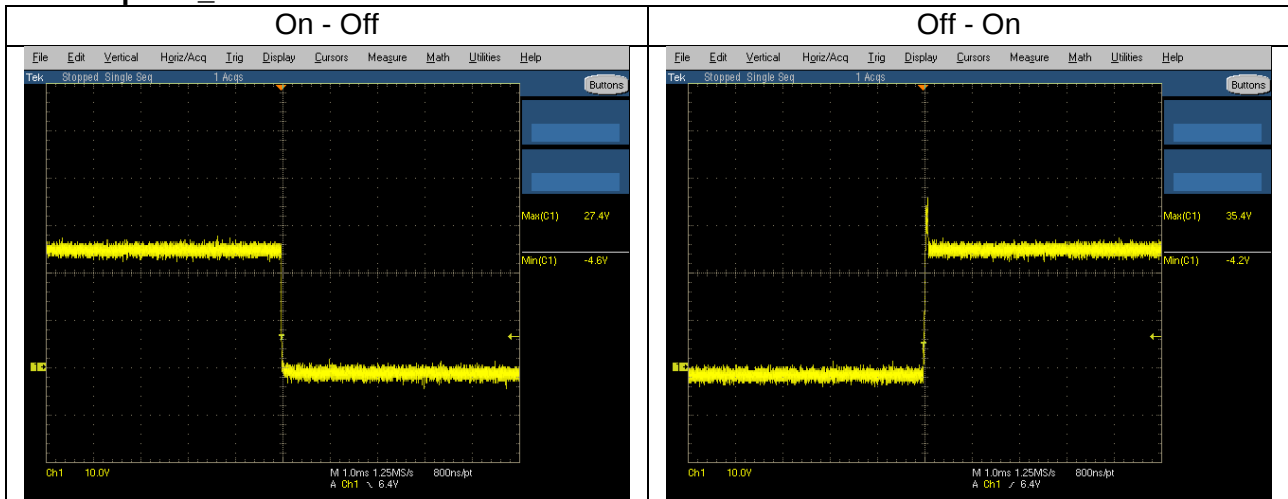
ISO 7637-2 test results

Test lab. : LTA EMC Test Lab.
Test product : TRM-410S (NVR)
Test date : 24 June 2021

1. Slow pulse_24V



2. Fast pulse_24V



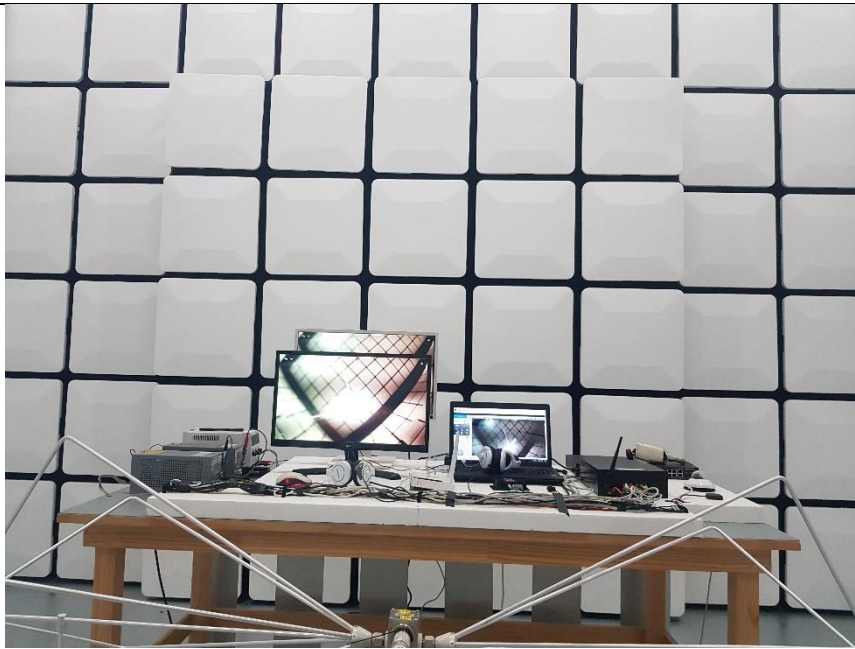


Annex III

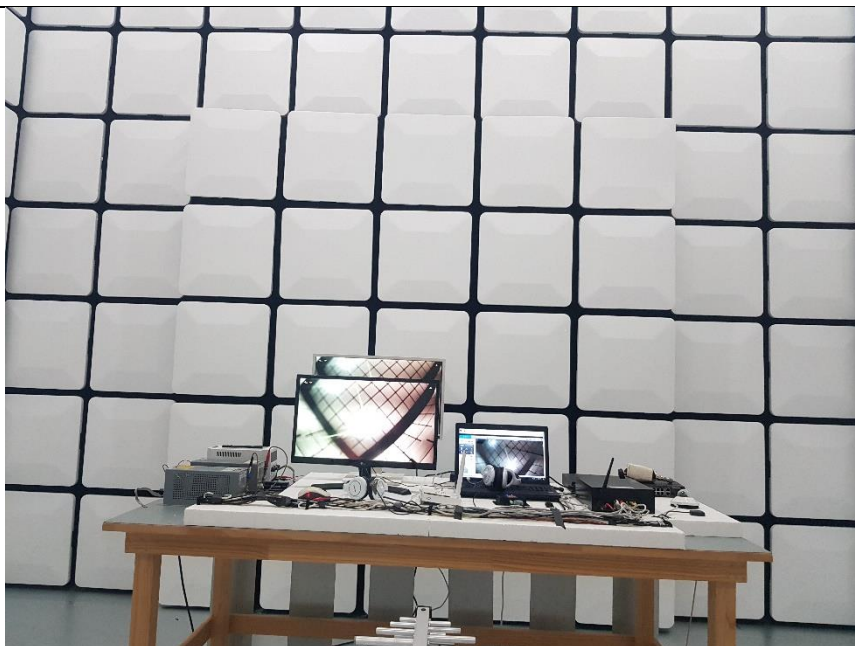
Photo of the test setup

Test lab. : LTA EMC Test Lab.
Test product : TRM-410S (NVR)
Test date : 24 June 2021

1. Radiated Emission



Biconical Antenna



Log-Periodic Antenna

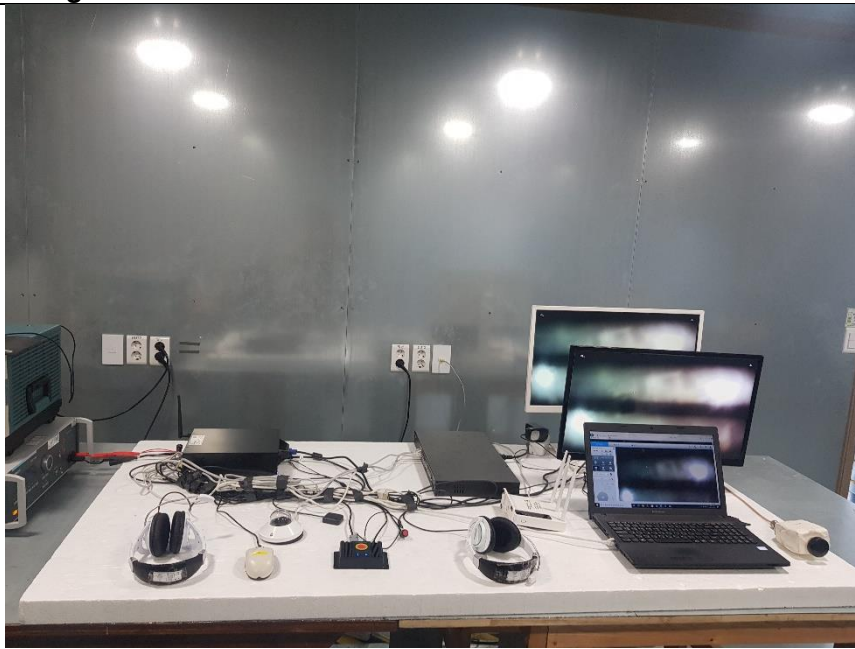


Annex III

Photo of the test setup

Test lab. : LTA EMC Test Lab.
Test product : TRM-410S (NVR)
Test date : 24 June 2021

2. Transient Testing



CTI



CTE

EU Declaration of Conformity

WISeNET



We hereby declare that the product

Type of equipment : NVR
Brand Name / Trade Mark : WISENET
Model number : TRM-410S
Variant Model : -

satisfies all the technical regulations applicable to the product within the scope of Council Directives 2014/30/EU, 2014/35/EU and 2014/53/EU:

EMC : EN 55032:2015
: EN 50130-4:2011+A1:2014
: EN 301 489-1 V2.1.1
: EN 301 489-17 V3.1.1
: EN 61000-3-2:2014
: EN 61000-3-3:2013
: EN50121-3-2:2016
LVD : EN 60950-1 : 2006 +A11:2009 +A1:2010 +A12:2011+A2:2013
Radio : EN 301 893 V2.1.1
Railway Fire Protection : EN 45545-2

All essential testing suites have been carrier out.

Manufacturer 1 : Hanwha Techwin(Tianjin) Co., Ltd.
Manufacturer address 1 : No.11 Weiliu Rd, Micro-Electronic Industrial Park, TEDA, Tianjin, 300385, People's Republic of China
Manufacturer 2 : HANWHA TECHWIN SECURITY VIETNAM CO.,LTD.
Manufacturer address 2 : Lot O-2, Que Vo Industrial Zone extended area ,Nam Son commune, Bac Ninh city,Bac Ninh province, Vietnam
Manufacturer 3 : D-TECH CO.,LTD.
Manufacturer address 3 : 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)
Applicant : Hanwha Techwin Co., Ltd.
Applicant address : 6, Pangyo-ro 319 Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488, KOREA
Telephone / Fax : +82-70-7147-8753(<http://hanhwa-security.com>)

This declaration is issued under the sole responsibility of the manufacturer and his authorised representative.

Authorized signatory

Name / Title : Jei Soon, Kang / Principal Research Engineer
Date of issue : Oct. 12, 2020
Place of issue : Kyunggi-do, Korea

The year code of the CE marking affixed to the product is 19.

