



TEST REPORT


Application No.: SHEM1906013862AT
Applicant: Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Applicant: No. 555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Manufacturer: Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Manufacturer: No. 555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Factory: 1, Hangzhou Hikvision Technology Co., Ltd.
 2, Hangzhou Hikvision Electronics Co., Ltd.
 3, Chongqing Hikvision technology Co., LTD.
 4, Hangzhou Hikvision Digital Technology Co., Ltd.
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 2, No. 299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, Zhejiang, 310052, China.
 3, No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, Chongqing, 401325, China
 4, No. 555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Equipment Under Test (EUT):
EUT Name: Digital Video Recorder
Model No.: Refer to Page 2
 Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade mark: HIKVISION
Standard(s): EN 55032:2015, EN 50130-4:2011 +A1:2014
 EN 61000-3-2:2014, EN 61000-3-3:2013
Date of Receipt: 2019-05-13
Date of Test: 2019-05-13 to 2019-05-22
Date of Issue: 2019-06-27

| | |
|---------------------|--------------|
| Test Result: | Pass* |
|---------------------|--------------|

* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Parlan Zhan



Parlan Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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Model No.:

iDS-7216HQHI-M2/S, iDS-7216HQHI-M2/S/UHK, iDS-7216HQHI-M2/S/CKV, iDS-7216HQHI-M2/S/UVS, iDS-7216HQHI-M2/S/KVO, iDS-7216HQHI-M2/S/HUN, iDS-7216HQHI-M2/S/A, iDS-7216HQHI-K2/4S



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| Revision Record | | | |
|-----------------|-------------|------------|--------|
| Version | Description | Date | Remark |
| 00 | Original | 2019-06-27 | / |
| | | | |
| | | | |

| | | | |
|---------------------------------|--|--|--|
| Authorized for issue by: | | | |
| | |  | |
| | | <hr/> Evan Yan /Project Engineer | |
| | |  | |
| | | <hr/> Bruce Tang /Reviewer | |

2 Test Summary

| Emission Part | | | | |
|---|--------------------------|------------------------------------|---|---------------|
| Item | Standard | Method | Requirement | Result |
| Conducted Emissions at Mains Terminals (150kHz-30MHz) | EN 55032:2015 | EN 55032:2015 | Class B | Pass |
| Asymmetric Mode Conducted Emissions (150kHz-30MHz) | EN 55032:2015 | EN 55032:2015 | Class B | Pass |
| Radiated Emissions (30MHz-1GHz) | EN 55032:2015 | EN 55032:2015 | Class B | Pass |
| Radiated Emissions (above 1GHz) | EN 55032:2015 | EN 55032:2015 | Class B | Pass |
| Harmonic Current Emission | EN 61000-3-2:2014 | EN 61000-3-2:2014 | Class A | N/A* |
| Voltage Fluctuations and Flicker | EN 61000-3-3:2013 | EN 61000-3-3:2013 | Clause 5 of EN 61000-3-3 | Pass |
| Immunity Part | | | | |
| Item | Standard | Method | Requirement | Result |
| Electrostatic Discharge | EN 50130-4:2011 +A1:2014 | EN 61000-4-2:2009 | 6kV Contact Discharge 2,4,8kV Air Discharge | Pass |
| Electrical Fast Transients/Burst at Power Port | EN 50130-4:2011 +A1:2014 | EN 61000-4-4:2012 | 2kV 5/50ns Tr/Td 100kHz Repetition Frequency | Pass |
| Electrical Fast Transients/Burst at Signal Port | EN 50130-4:2011 +A1:2014 | EN 61000-4-4:2012 | 1kV 5/50ns Tr/Td 100kHz Repetition Frequency | Pass |
| Surge at Power Port | EN 50130-4:2011 +A1:2014 | EN 61000-4-5:2014 | 1.2/50µs Tr/Td 0.5,1kV Line to Line 0.5,1,2kV Line to Ground | Pass |
| Surge at Signal Port | EN 50130-4:2011 +A1:2014 | EN 61000-4-5:2014 | 1.2/50µs Tr/Td 0.5,1kV Line to Ground | Pass |
| Voltage Dips and Interruptions | EN 50130-4:2011 +A1:2014 | EN 61000-4-11:2004 | 80 % UT for 250per 70 % UT for 25per 40 % UT for 10per 0 % UT for 250per UT is Supply Voltage | Pass |
| Mains Supply Voltage Variations-Conditioning | EN 50130-4:2011 +A1:2014 | EN 50130-4:2011+A1:2014 | Unom+10% Unom-15% | Pass |
| Radiated Immunity(80MHz-2.7GHz) | EN 50130-4:2011 +A1:2014 | EN 61000-4-3:2006 +A1:2008+A2:2010 | 10V/m, 80%, 1kHz sinusoidal Amp. Mod. | Pass |



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| | | | | |
|---|--------------------------|-------------------|--|------|
| Conducted Immunity at Power Port (150kHz-100MHz) | EN 50130-4:2011 +A1:2014 | EN 61000-4-6:2014 | 10Vrms (emf),80%,1kHz sinusoidal Amp. Mod. | Pass |
| Conducted Immunity at Signal Port (150kHz-100MHz) | EN 50130-4:2011 +A1:2014 | EN 61000-4-6:2014 | 10Vrms (emf),80%,1kHz sinusoidal Amp. Mod. | Pass |

N/A*: Not applicable. Please refer to Section 6.5 of this report for details.

| InternalSource | UpperFrequency |
|------------------|---|
| Below 108MHz | 1GHz |
| 108MHz to 500MHz | 2GHz |
| 500MHz to 1GHz | 5GHz |
| Above 1GHz | 5 times the highest frequency or 6 GHz, whichever is less |

Note1: Declaration of EUT Family Grouping:

There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model iDS-7216HQHI-M2/S was tested since their differences are model number.

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4 General Information

4.1 Details of E.U.T.

| | |
|---------------|--|
| Power supply: | AC 230V |
| Cables: | Interface: Power*1, Video in*16, Lan*1, Audio in*16, Audio out*1, Alarm in*16, Alarm out*1, HDMI*1, VGA*1, USB2.0*2, RS485*1 |
| Cable length: | LAN cable (unshielded) 2m, BNC cable 3m, Power cable 1.5m |

4.2 Description of Support Units

| Description | Manufacturer | Model No. |
|----------------|--------------|-------------------|
| Monitor | SAMSUNG | SMT-2233/CH |
| Notebook | Lenovo | L480 |
| Notebook | HP | HP ProBook 440 G5 |
| Digital Camera | Hikvision | DS-2CE16D3T-I3F |
| Digital Camera | Hikvision | DS-2CE56D1T-I |
| HDMI Cable | / | 2m |
| VGA Cable | / | 2m |
| BNC Cable | / | 3m |

4.3 Measurement Uncertainty

| No. | Item | Measurement Uncertainty |
|-----|---|---------------------------|
| 1 | Conducted Emission at mains port using AMN | ±2.6dB (9kHz to 150kHz) |
| | | ±2.3dB (150kHz to 30MHz) |
| 2 | Conducted Emission at mains port using VP | ±1.9 dB (9kHz to 30MHz) |
| 3 | Conducted Emission at telecommunication port using AAN | ±4.1 dB (150kHz to 30MHz) |
| 4 | Radiated Power | ±3.0dB |
| 5 | Radiated emission | ±4.4dB (30MHz-1GHz) |
| | | ±4.8dB (1GHz-6GHz) |
| | | ±5.2dB (6GHz-18GHz) |

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Test Location

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Tel: +86 21 6191 5666 Fax: +86 21 6191 5678
sub-contracted
Hangzhou Hikvision Digital Technology Co., Ltd
No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L0599)

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• NVLAP (Certificate No. 201034-0)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program(NVLAP). Certificate No. 201034-0.

• FCC –Designation Number: CN5033

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

Designation Number: CN5033. Test Firm Registration Number: 479755.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

IC Registration No.: 8617A-1. CAB Identifier: CN0020.

• VCCI (Member No.: 3061)

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: work status and video quality

5 Equipment List

| Conducted Emissions at Mains Terminals | | | | | |
|---|--------------|------------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model NO | Serial NO. | Cal Date | Cal Due Date |
| EMI test Receiver | R&S | ESR3 | 101831 | 2019/5/5 | 2020/5/4 |
| Line impedance stabilization network | R&S | ENV216 | 10107 | 2019/5/5 | 2020/5/4 |
| Radiated Emission | | | | | |
| Equipment | Manufacturer | Model NO | Serial NO. | Cal Date | Cal Due Date |
| EMI test Receiver | R&S | ESU26 | 100499 | 2018/12/11 | 2019/12/11 |
| PRE-Amplifier | Connphy | CLN-1G18G-4030-S | 517002 | 2018/8/30 | 2019/8/30 |
| TRLIOG Broad Band Antenna | Schwarzbeck | VULB 9168 | 796 | 2017/7/10 | 2019/7/10 |
| Horn antenna | Schwarzbeck | BBHA 9120D | 7794 | 2017/8/19 | 2019/8/19 |
| Voltage Fluctuations and Flicker | | | | | |
| Equipment | Manufacturer | Model NO | Serial NO. | Cal Date | Cal Due Date |
| Harmonic & Flicker analyzer | TESEQ | NSG1007 | 1438A04118-1 | 2019/5/22 | 2020/5/21 |
| AC power source | TESEQ | CCN1000-1 | 1438A04118-1 | 2019/5/22 | 2020/5/21 |
| Electrostatic Discharge | | | | | |
| Equipment | Manufacturer | Model NO | Serial NO. | Cal Date | Cal Due Date |
| Electrostatic Discharge Simulator | TESEQ | NSG 437 | 1254 | 2018/7/4 | 2019/7/3 |
| EFT | | | | | |
| Equipment | Manufacturer | Model NO | Serial NO. | Cal Date | Cal Due Date |
| Immunity Test system | TESEQ | NSG3040 | 2173 | 2019/5/5 | 2020/5/4 |
| Capacitive coupling clamp | TESEQ | CDN 3425 | 1928 | 2019/5/5 | 2020/5/4 |
| Surge | | | | | |
| Immunity Test system | TESEQ | NSG3060 | 1716 | 2019/5/5 | 2020/5/4 |
| Data coupling network | TESEQ | CDN 117M | 38777 | 2019/5/5 | 2020/5/4 |
| Power coupling network | TESEQ | CDN 3061-S16 | 1513 | 2019/5/5 | 2020/5/4 |
| Immunity Test system | 3C test | SG-728G | EC0630906 | 2018/11/09 | 2019/11/08 |
| Immunity Test system | 3C test | SG-5006G | EC5580932 | 2018/11/09 | 2019/11/08 |
| Data coupling network | 3C test | SGN-C3 | EC5620903 | 2018/11/09 | 2019/11/08 |
| Power coupling network | 3C test | SGN-5010G | EC5590919 | 2018/11/09 | 2019/11/08 |
| Data coupling network | 3C test | SGN-C2 | EC5620903 | 2018/11/09 | 2019/11/08 |
| CS | | | | | |
| Immunity Test system | TESEQ | NSG 4070C-0 | 47944 | 2019/4/2 | 2020/4/1 |
| CDN | TESEQ | CDN M016 | 50365 | 2019/4/2 | 2020/4/1 |



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| | | | | | |
|--|--------------|--------------|-------------|------------|--------------|
| Coupling clamp | TESEQ | KEMZ 801A | 50113 | 2019/4/2 | 2020/4/1 |
| RS | | | | | |
| Signal generator | keysight | N5181A | MY50146343 | 2018/11/09 | 2019/11/08 |
| Power meter | keysight | N1914A | MY55336002 | 2018/11/09 | 2019/11/08 |
| Amplifier | milmege | 80RF1000-500 | 1069892 | 2018/11/09 | 2019/11/08 |
| Amplifier | milmege | AS0827-230 | 1069893 | 2018/11/09 | 2019/11/08 |
| Antenna | Schwarzbeck | STLP9128E | 9128E7#3009 | / | / |
| Antenna | Schwarzbeck | STLP 9149 | 9149-349 | / | / |
| DIP & Mains Supply Voltage Variations -conditioning | | | | | |
| Immunity Test system | TESEQ | NSG3040 | 2173 | 2019/5/5 | 2020/5/4 |
| | TESEQ | VAR 3005-D16 | 2018 | 2019/5/5 | 2020/5/4 |
| Other | | | | | |
| Equipment | Manufacturer | Model NO | Serial NO. | Cal Date | Cal Due Date |
| Temperature&humidity recorder | PINYI | HTC-1 | / | 2018/7/19 | 2019/7/18 |
| Pressure meter | YIOU | BY-2003P | E01406062 | 2018/11/27 | 2019/11/26 |

6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

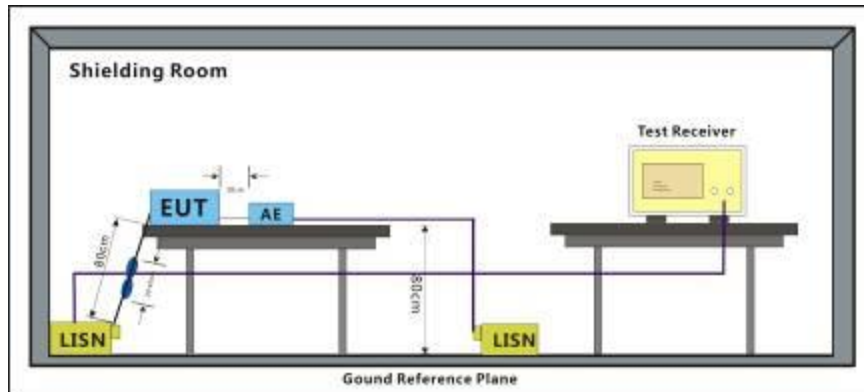
| | |
|-------------------|--|
| Test Requirement: | EN 55032:2015 |
| Test Method: | EN 55032:2015 |
| Frequency Range: | 150kHz to 30MHz |
| Limit: | |
| 0.15M-0.5MHz | 66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average |
| 0.5M-5MHz | 56dB(μV) quasi-peak, 46dB(μV) average |
| 5M-30MHz | 60dB(μV) quasi-peak, 50dB(μV) average |
| Detector: | Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz |

6.1.1 E.U.T. Operation

Operating Environment:

| | | | | | |
|--------------|---|-----------|---------|-----------------------|-------------|
| Temperature: | 26 °C | Humidity: | 58 % RH | Atmospheric Pressure: | 1022.2 mbar |
| Test mode: | a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q. b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI | | | | |

6.1.2 Test Setup Diagram

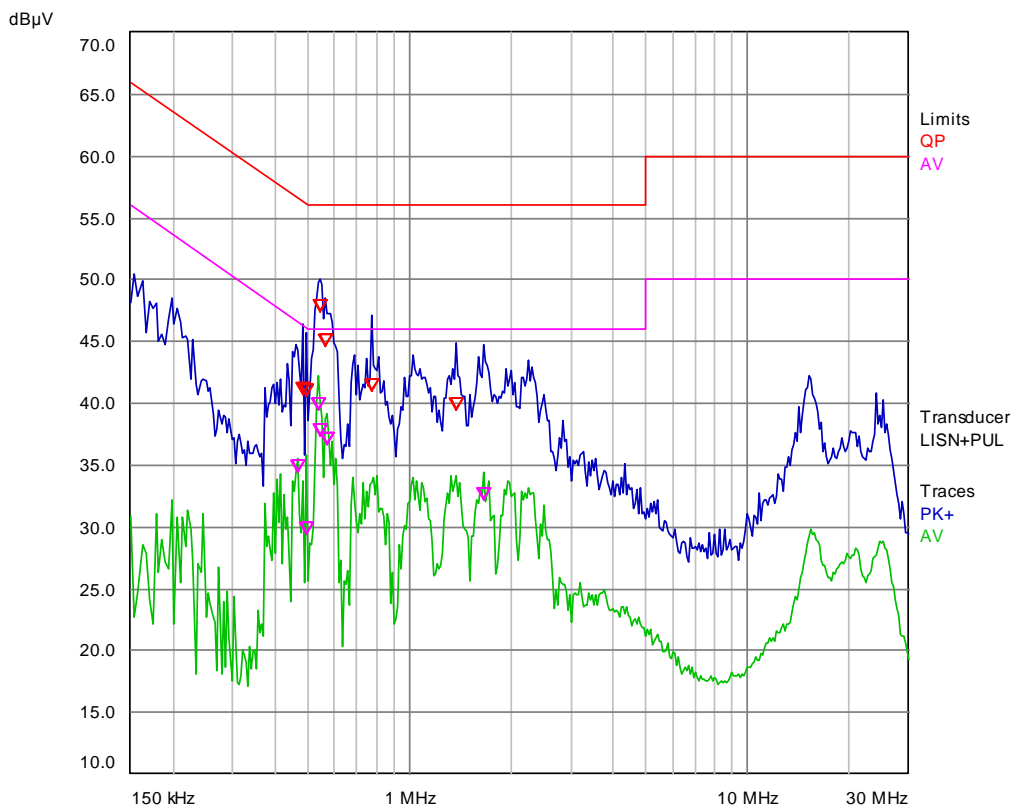


6.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Notes : Emission Level=Read Level + LISN Factor + Cable Loss

Mode:a; Line:Live Line

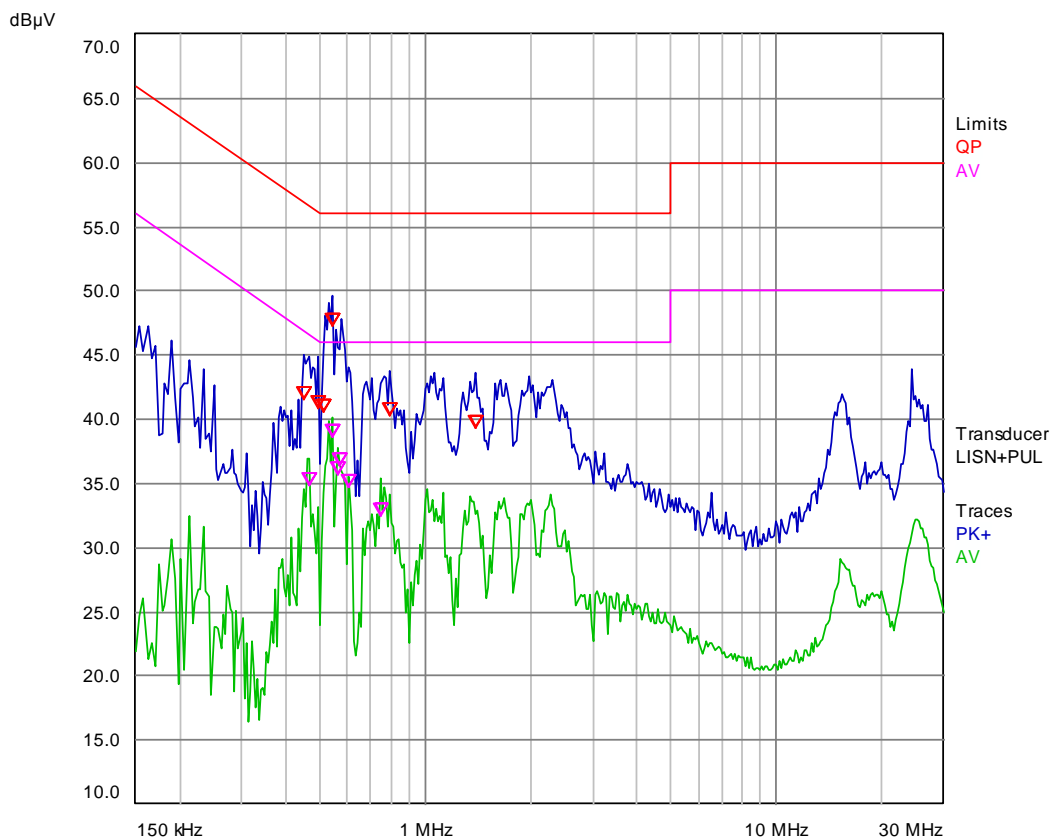


Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) | Comment |
|-------|--------------------|------------------|------------------|---------------------|---------|
| 2 CA | 0.466 | 34.39 | 46.58 | -12.19 | L1 / on |
| 1 QP | 0.482 | 40.72 | 56.30 | -15.58 | L1 / on |
| 1 QP | 0.498 | 40.54 | 56.03 | -15.49 | L1 / on |
| 2 CA | 0.498 | 29.39 | 46.03 | -16.64 | L1 / on |
| 2 CA | 0.538 | 39.40 | 46.00 | -6.60 | L1 / on |
| 1 QP | 0.546 | 47.39 | 56.00 | -8.61 | L1 / on |
| 2 CA | 0.546 | 37.36 | 46.00 | -8.64 | L1 / on |
| 1 QP | 0.566 | 44.65 | 56.00 | -11.35 | L1 / on |
| 2 CA | 0.57 | 36.71 | 46.00 | -9.29 | L1 / on |
| 1 QP | 0.778 | 40.91 | 56.00 | -15.09 | L1 / on |
| 1 QP | 1.374 | 39.47 | 56.00 | -16.53 | L1 / on |
| 2 CA | 1.65 | 32.24 | 46.00 | -13.76 | L1 / on |

* = limit exceeded

Mode:a; Line:Neutral Line

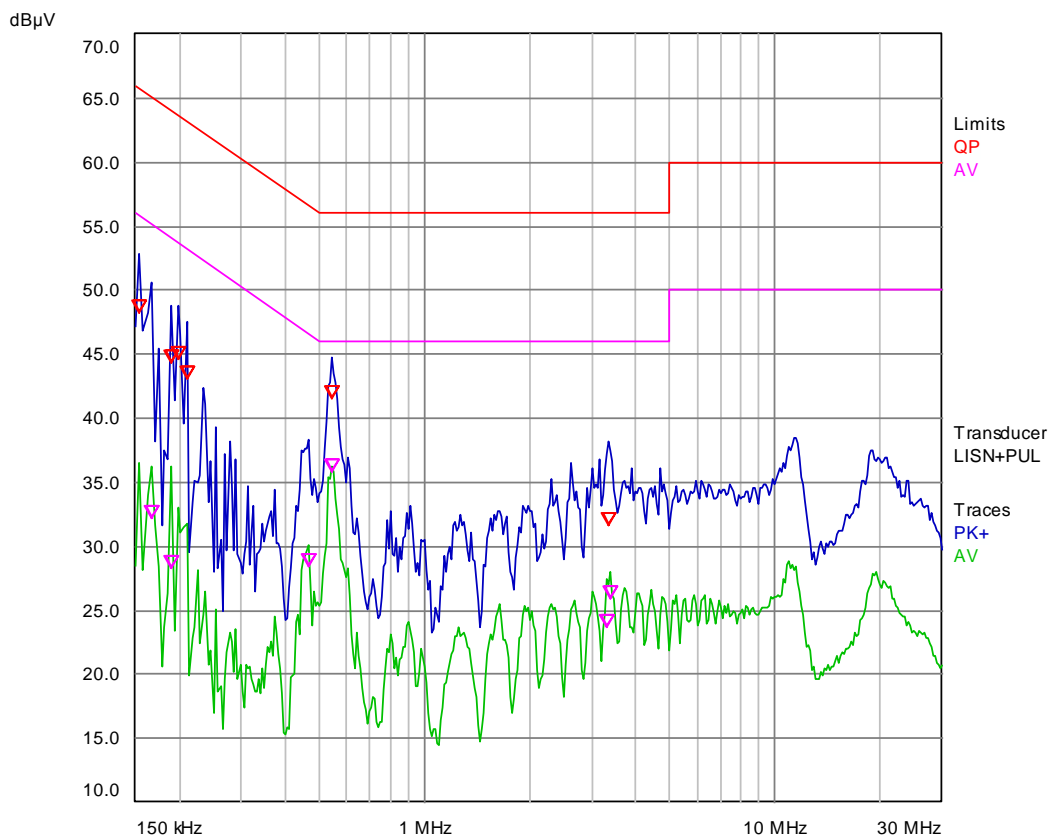


Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) | Comment |
|-------|--------------------|------------------|------------------|---------------------|---------|
| 1 QP | 0.45 | 41.53 | 56.88 | -15.35 | N / on |
| 2 CA | 0.466 | 34.78 | 46.58 | -11.80 | N / on |
| 1 QP | 0.494 | 40.83 | 56.10 | -15.27 | N / on |
| 1 QP | 0.514 | 40.56 | 56.00 | -15.44 | N / on |
| 2 CA | 0.542 | 38.54 | 46.00 | -7.46 | N / on |
| 1 QP | 0.546 | 47.21 | 56.00 | -8.79 | N / on |
| 2 CA | 0.566 | 35.73 | 46.00 | -10.27 | N / on |
| 2 CA | 0.574 | 36.38 | 46.00 | -9.62 | N / on |
| 2 CA | 0.602 | 34.73 | 46.00 | -11.27 | N / on |
| 2 CA | 0.746 | 32.51 | 46.00 | -13.49 | N / on |
| 1 QP | 0.79 | 40.23 | 56.00 | -15.77 | N / on |
| 1 QP | 1.398 | 39.24 | 56.00 | -16.76 | N / on |

* = limit exceeded

Mode:b; Line:Live Line

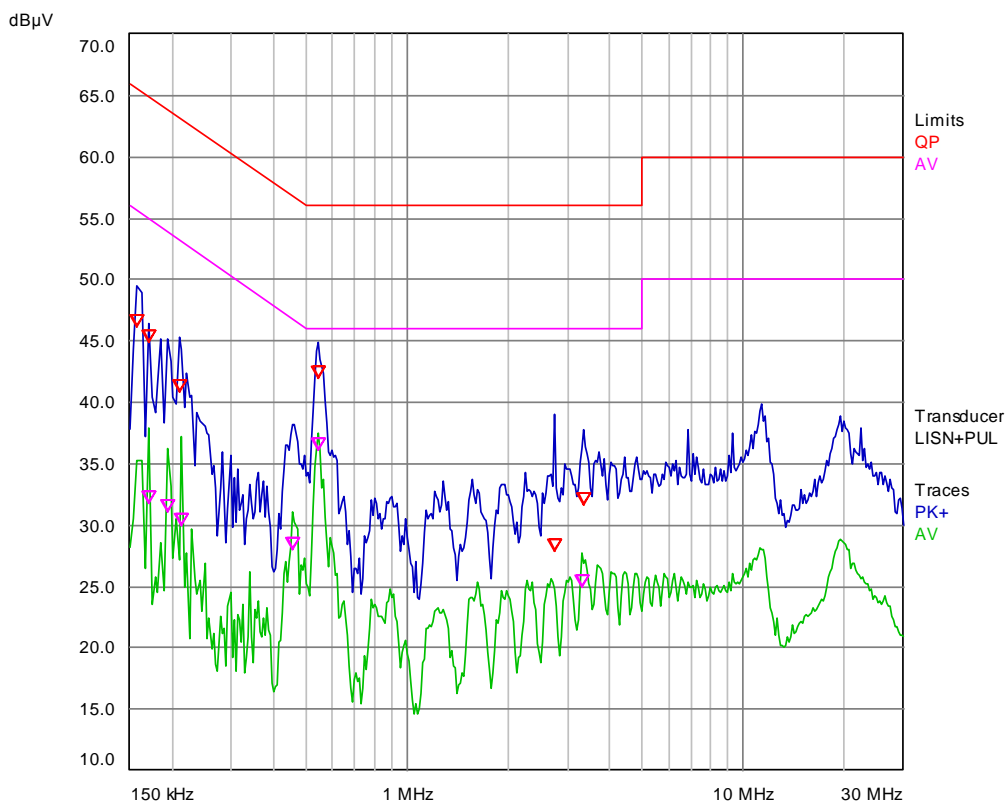


Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) | Comment |
|-------|--------------------|-----------------|-----------------|---------------------|---------|
| 1 QP | 0.154 | 48.17 | 65.78 | -17.61 | L1 / on |
| 2 CA | 0.166 | 32.24 | 55.16 | -22.92 | L1 / on |
| 1 QP | 0.19 | 44.33 | 64.04 | -19.71 | L1 / on |
| 2 CA | 0.19 | 28.34 | 54.04 | -25.70 | L1 / on |
| 1 QP | 0.198 | 44.61 | 63.69 | -19.08 | L1 / on |
| 1 QP | 0.21 | 43.12 | 63.21 | -20.09 | L1 / on |
| 2 CA | 0.466 | 28.40 | 46.58 | -18.18 | L1 / on |
| 1 QP | 0.546 | 41.58 | 56.00 | -14.42 | L1 / on |
| 2 CA | 0.546 | 35.81 | 46.00 | -10.19 | L1 / on |
| 2 CA | 3.298 | 23.72 | 46.00 | -22.28 | L1 / on |
| 1 QP | 3.334 | 31.58 | 56.00 | -24.42 | L1 / on |
| 2 CA | 3.378 | 25.97 | 46.00 | -20.03 | L1 / on |

* = limit exceeded

Mode:b; Line:Neutral Line



Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) | Comment |
|-------|--------------------|------------------|------------------|---------------------|---------|
| 1 QP | 0.158 | 46.14 | 65.57 | -19.43 | N / on |
| 1 QP | 0.17 | 44.87 | 64.96 | -20.09 | N / on |
| 2 CA | 0.17 | 31.76 | 54.96 | -23.20 | N / on |
| 2 CA | 0.194 | 31.06 | 53.86 | -22.80 | N / on |
| 1 QP | 0.21 | 40.88 | 63.21 | -22.33 | N / on |
| 2 CA | 0.214 | 29.94 | 53.05 | -23.11 | N / on |
| 2 CA | 0.458 | 28.06 | 46.73 | -18.67 | N / on |
| 1 QP | 0.546 | 41.94 | 56.00 | -14.06 | N / on |
| 2 CA | 0.546 | 36.04 | 46.00 | -9.96 | N / on |
| 1 QP | 2.734 | 27.92 | 56.00 | -28.08 | N / on |
| 2 CA | 3.33 | 24.92 | 46.00 | -21.08 | N / on |
| 1 QP | 3.366 | 31.67 | 56.00 | -24.33 | N / on |

* = limit exceeded

6.2 Asymmetric Mode Conducted Emissions (150kHz-30MHz)

Test Requirement: EN 55032:2015
Test Method: EN 55032:2015
Frequency Range: 150kHz to 30MHz

Limit:

0.15M-0.5MHz(Voltage) 84-74(dB μ V) quasi-peak; 74-64(dB μ V) average

0.5M-30MHz(Voltage) 74(dB μ V) quasi-peak; 64(dB μ V) average

0.15M-0.5MHz(Current) 40-30(dB μ V) quasi-peak; 30-20(dB μ V) average

0.5M-30MHz(Current) 30(dB μ V) quasi-peak; 20(dB μ V) average

Detector: 9kHz resolution bandwidth 0.15M to 30MHz

Remark: The voltage measured shall be corrected at each frequency of interest as follows:

if the current margin with respect to the current limit is ≤ 6 dB, the actual current margin shall be subtracted from the measured voltage;

if the current margin with respect to the current limit is > 6 dB, 6 dB shall be subtracted from the measured voltage.

6.2.1 E.U.T. Operation

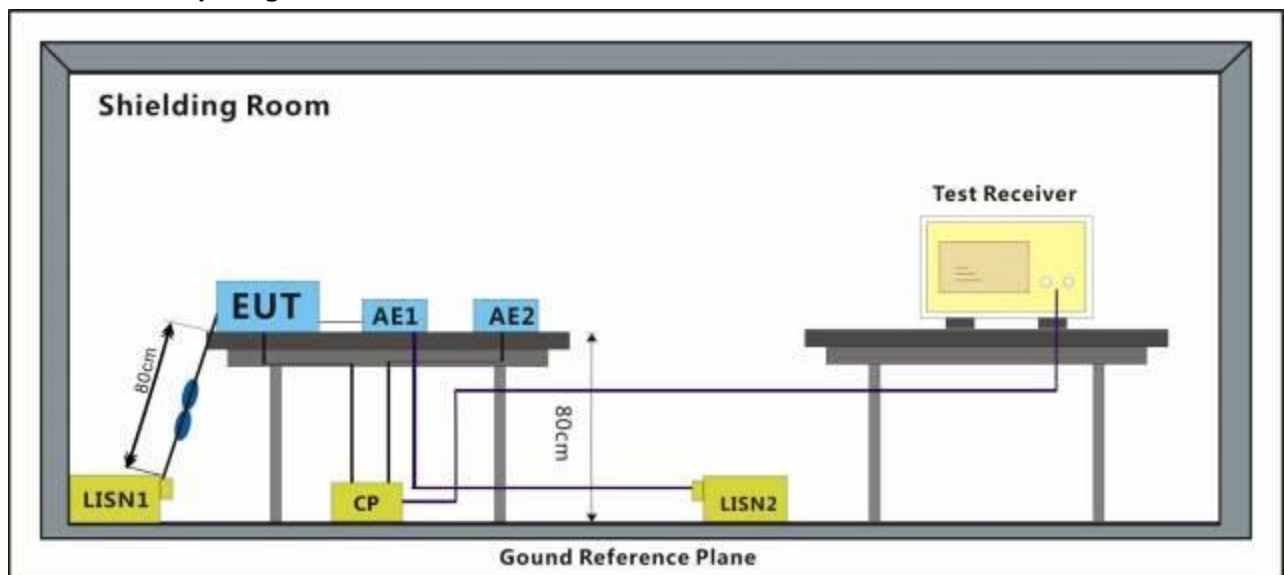
Operating Environment:

Temperature: 26 °C Humidity: 58 % RH Atmospheric Pressure: 1022.2 mbar

Test mode a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.

b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

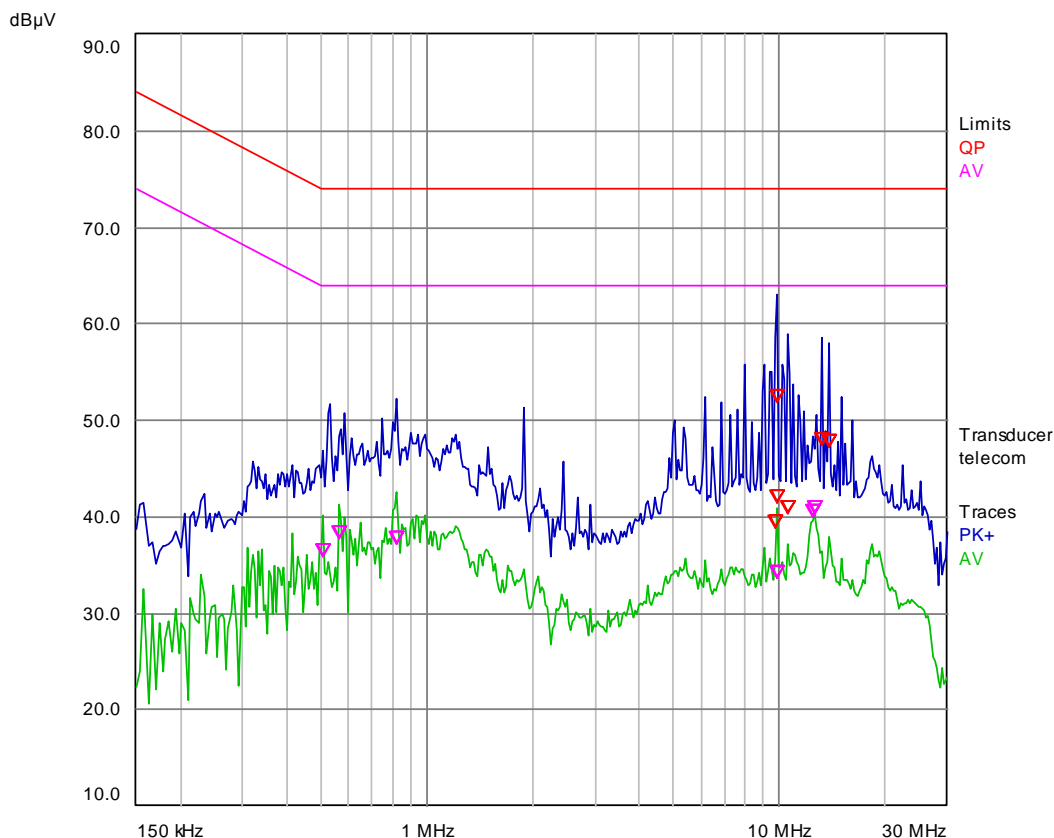
6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Notes : Emission Level=Read Level + LISN Factor + Cable Loss

Mode a :
10Mbps

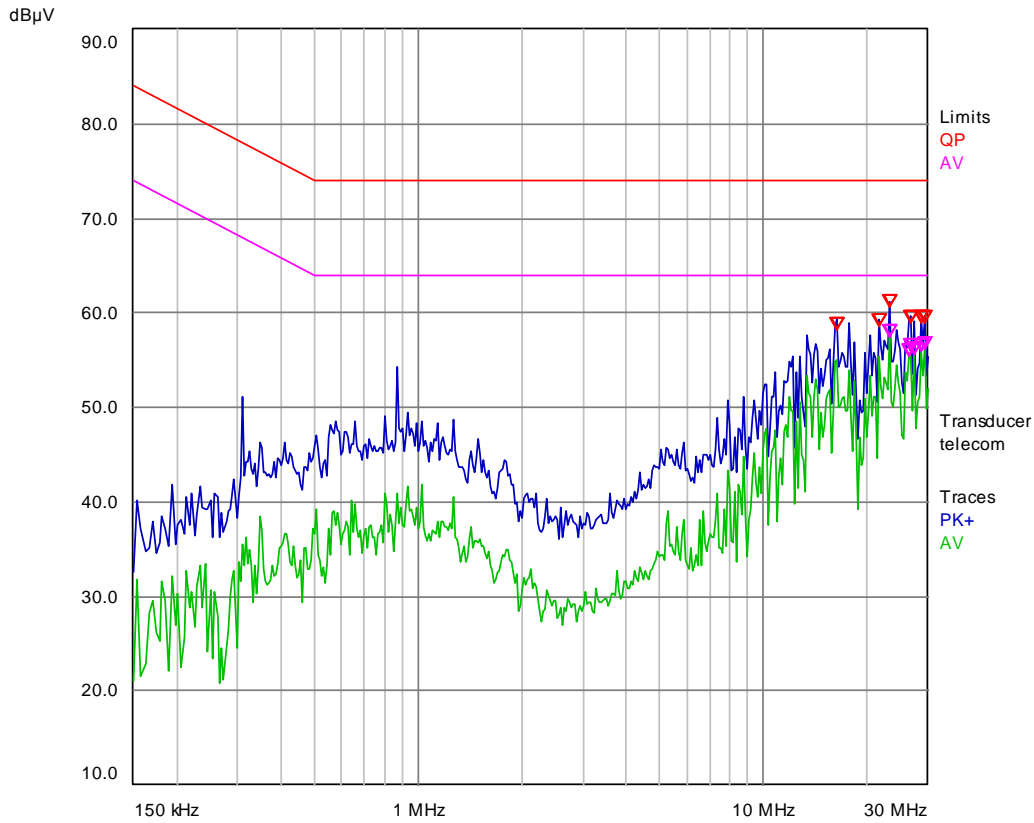


Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) |
|-------|--------------------|------------------|------------------|---------------------|
| 2 CA | 0.506 | 35.88 | 64.00 | -28.12 |
| 2 CA | 0.562 | 37.69 | 64.00 | -26.31 |
| 2 CA | 0.818 | 37.09 | 64.00 | -26.91 |
| 1 QP | 9.754 | 38.80 | 74.00 | -35.20 |
| 1 QP | 9.826 | 41.46 | 74.00 | -32.54 |
| 1 QP | 9.838 | 51.85 | 74.00 | -22.15 |
| 2 CA | 9.838 | 33.58 | 64.00 | -30.42 |
| 1 QP | 10.55 | 40.26 | 74.00 | -33.74 |
| 2 CA | 12.45 | 39.92 | 64.00 | -24.08 |
| 2 CA | 12.55 | 40.34 | 64.00 | -23.66 |
| 1 QP | 13.15 | 47.33 | 74.00 | -26.67 |
| 1 QP | 13.914 | 47.18 | 74.00 | -26.82 |

* = limit exceeded

100Mbps

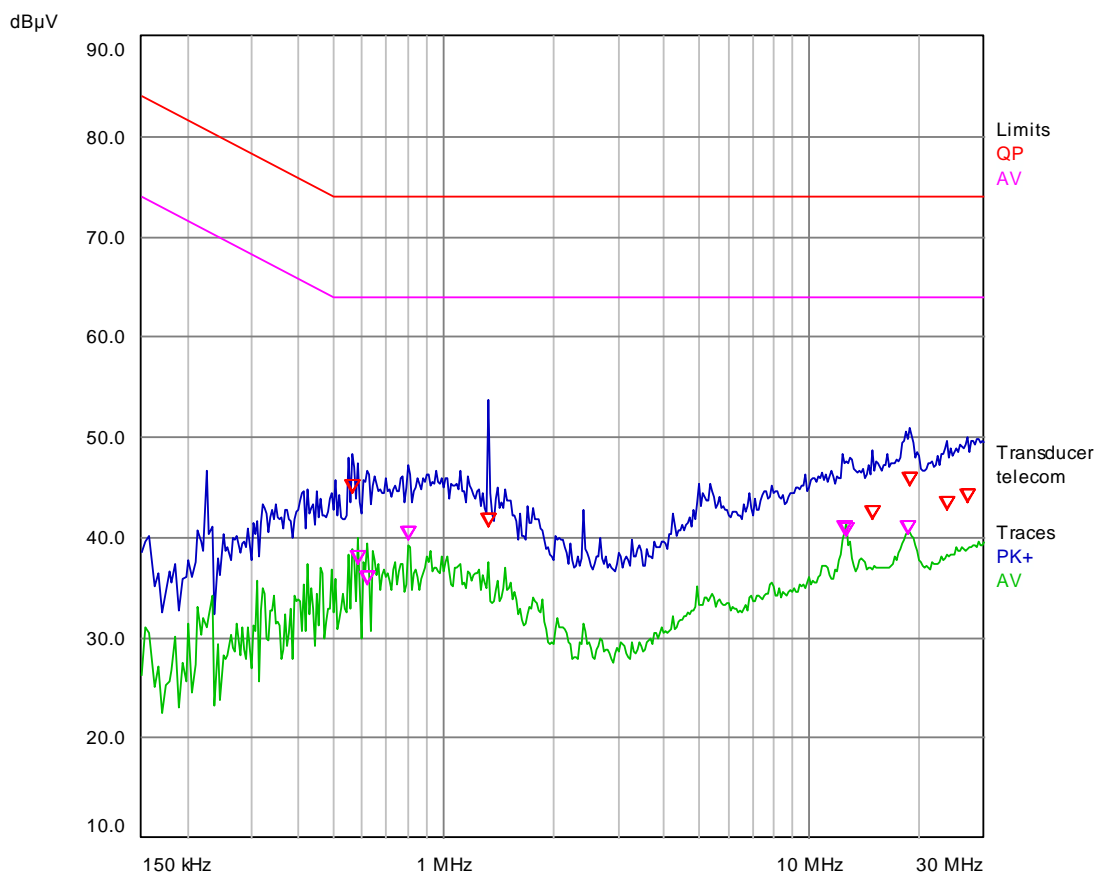


Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) |
|-------|--------------------|------------------|------------------|---------------------|
| 1 QP | 16.226 | 58.16 | 74.00 | -15.84 |
| 1 QP | 21.662 | 58.52 | 74.00 | -15.48 |
| 1 QP | 23.13 | 60.53 | 74.00 | -13.47 |
| 2 CA | 23.13 | 57.35 | 64.00 | -6.65 |
| 2 CA | 26.486 | 55.45 | 64.00 | -8.55 |
| 1 QP | 26.61 | 58.97 | 74.00 | -15.03 |
| 2 CA | 26.61 | 56.00 | 64.00 | -8.00 |
| 2 CA | 27.158 | 55.62 | 64.00 | -8.38 |
| 1 QP | 28.686 | 58.86 | 74.00 | -15.14 |
| 2 CA | 28.686 | 56.04 | 64.00 | -7.96 |
| 1 QP | 29.234 | 58.94 | 74.00 | -15.06 |
| 2 CA | 29.234 | 56.06 | 64.00 | -7.94 |

* = limit exceeded

1000Mbps

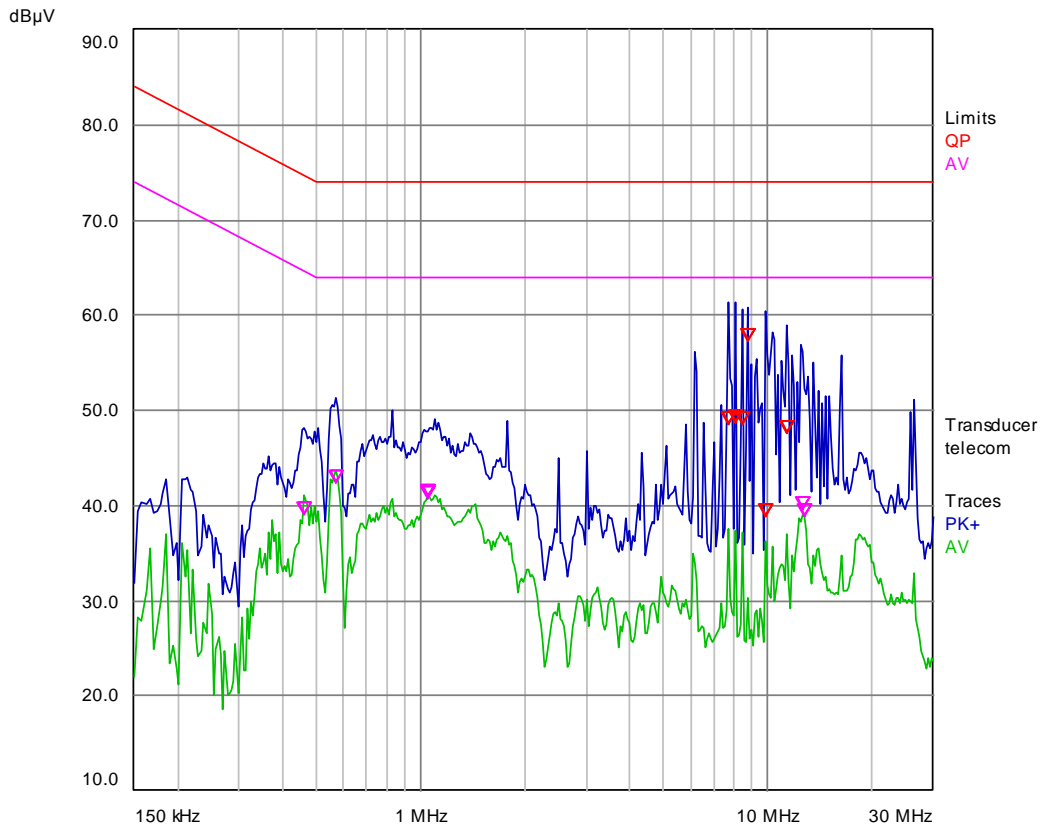


Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) |
|-------|--------------------|------------------|------------------|---------------------|
| 1 QP | 0.562 | 44.36 | 74.00 | -29.64 |
| 2 CA | 0.582 | 37.28 | 64.00 | -26.72 |
| 2 CA | 0.622 | 35.30 | 64.00 | -28.70 |
| 2 CA | 0.806 | 39.76 | 64.00 | -24.24 |
| 1 QP | 1.326 | 41.09 | 74.00 | -32.91 |
| 2 CA | 12.45 | 40.27 | 64.00 | -23.73 |
| 2 CA | 12.654 | 40.15 | 64.00 | -23.85 |
| 1 QP | 14.898 | 41.78 | 74.00 | -32.22 |
| 2 CA | 18.562 | 40.25 | 64.00 | -23.75 |
| 1 QP | 18.742 | 45.18 | 74.00 | -28.82 |
| 1 QP | 23.746 | 42.71 | 74.00 | -31.29 |
| 1 QP | 27.066 | 43.43 | 74.00 | -30.57 |

* = limit exceeded

Mode b:
10Mbps

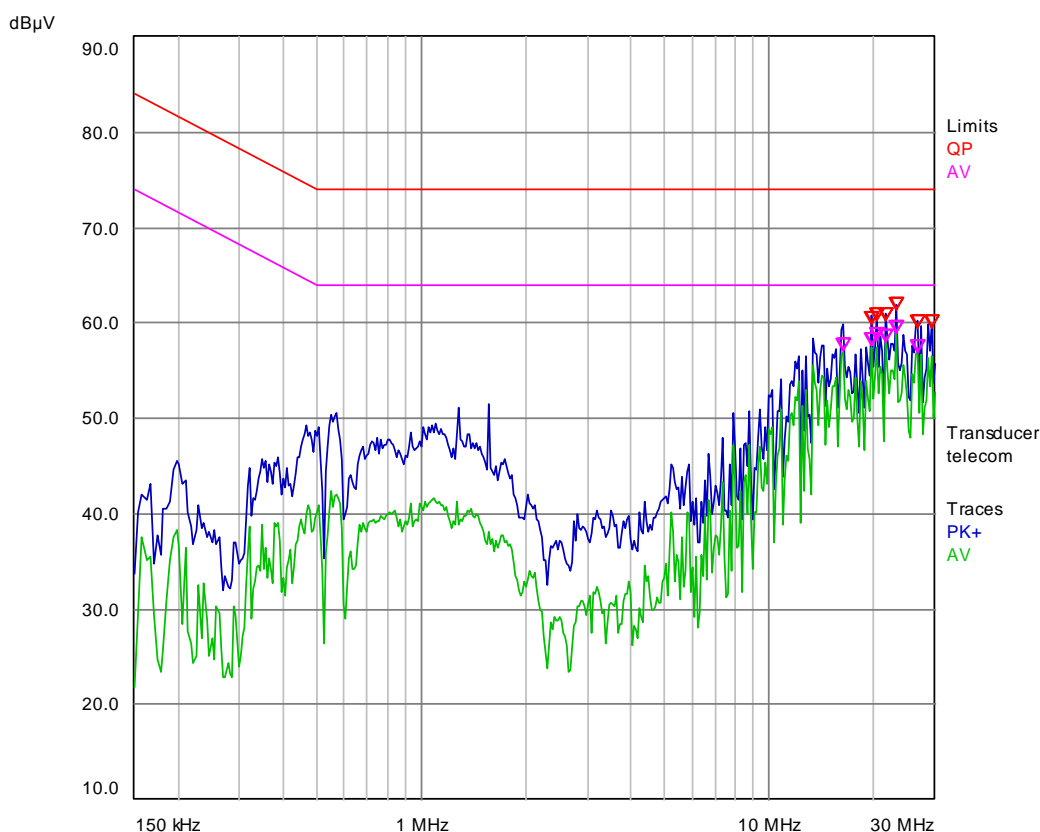


Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) |
|-------|--------------------|-----------------|-----------------|---------------------|
| 2 CA | 0.462 | 39.05 | 64.66 | -25.61 |
| 2 CA | 0.57 | 42.45 | 64.00 | -21.55 |
| 2 CA | 1.046 | 40.69 | 64.00 | -23.31 |
| 2 CA | 1.054 | 40.91 | 64.00 | -23.09 |
| 1 QP | 7.662 | 48.50 | 74.00 | -25.50 |
| 1 QP | 8.098 | 48.62 | 74.00 | -25.38 |
| 1 QP | 8.422 | 48.43 | 74.00 | -25.57 |
| 1 QP | 8.75 | 57.33 | 74.00 | -16.67 |
| 1 QP | 9.846 | 38.77 | 74.00 | -35.23 |
| 1 QP | 11.362 | 47.49 | 74.00 | -26.51 |
| 2 CA | 12.55 | 39.53 | 64.00 | -24.47 |
| 2 CA | 12.754 | 38.75 | 64.00 | -25.25 |

* = limit exceeded

100Mbps

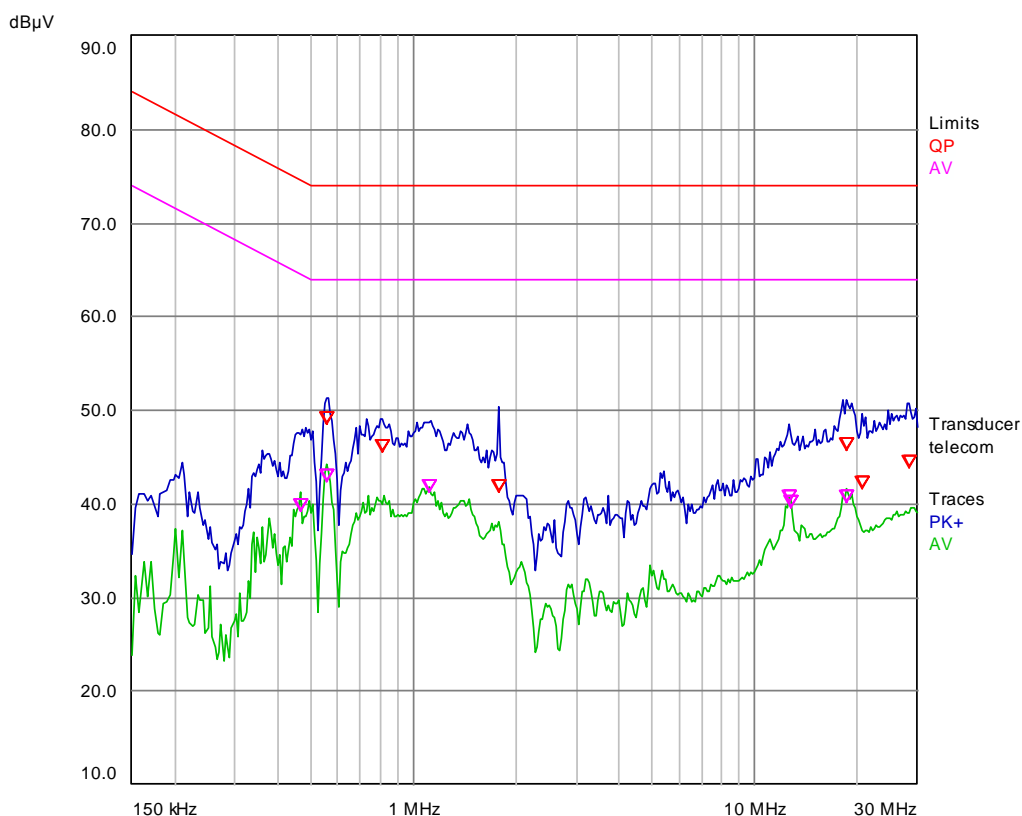


Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) |
|-------|--------------------|-----------------|-----------------|---------------------|
| 2 CA | 16.226 | 57.01 | 64.00 | -6.99 |
| 1 QP | 19.71 | 59.89 | 74.00 | -14.11 |
| 2 CA | 19.71 | 57.59 | 64.00 | -6.41 |
| 1 QP | 20.258 | 60.30 | 74.00 | -13.70 |
| 2 CA | 20.258 | 58.09 | 64.00 | -5.91 |
| 1 QP | 21.662 | 60.31 | 74.00 | -13.69 |
| 2 CA | 21.662 | 58.01 | 64.00 | -5.99 |
| 1 QP | 23.13 | 61.35 | 74.00 | -12.65 |
| 2 CA | 23.13 | 58.86 | 64.00 | -5.14 |
| 1 QP | 26.61 | 59.45 | 74.00 | -14.55 |
| 2 CA | 26.61 | 56.80 | 64.00 | -7.20 |
| 1 QP | 29.234 | 59.44 | 74.00 | -14.56 |

* = limit exceeded

1000Mbps



Final Measurement Results

| Trace | Frequency (MHz) | Level (dBµV) | Limit (dBµV) | Delta Limit (dB) |
|-------|--------------------|------------------|------------------|---------------------|
| 2 CA | 0.47 | 39.25 | 64.51 | -25.26 |
| 1 QP | 0.558 | 48.48 | 74.00 | -25.52 |
| 2 CA | 0.558 | 42.34 | 64.00 | -21.66 |
| 1 QP | 0.814 | 45.52 | 74.00 | -28.48 |
| 2 CA | 1.114 | 41.24 | 64.00 | -22.76 |
| 1 QP | 1.774 | 41.33 | 74.00 | -32.67 |
| 2 CA | 12.55 | 40.07 | 64.00 | -23.93 |
| 2 CA | 12.754 | 39.49 | 64.00 | -24.51 |
| 1 QP | 18.478 | 45.67 | 74.00 | -28.33 |
| 2 CA | 18.478 | 40.23 | 64.00 | -23.77 |
| 1 QP | 20.662 | 41.66 | 74.00 | -32.34 |
| 1 QP | 28.394 | 43.81 | 74.00 | -30.19 |

* = limit exceeded

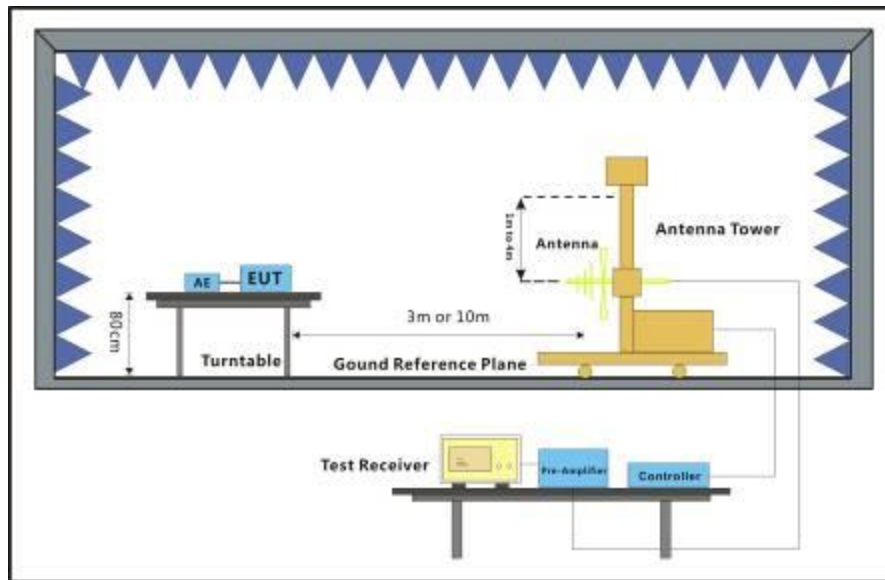
6.3 Radiated Emissions (30MHz-1GHz)

| | |
|-------------------|--|
| Test Requirement: | EN 55032:2015 |
| Test Method: | EN 55032:2015 |
| Frequency Range: | 30MHz to 1GHz |
| Limit: | |
| 30MHz-230MHz | 40 dB(μV/m) quasi-peak |
| 230MHz-1GHz | 47 dB(μV/m) quasi-peak |
| Detector: | Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz |

6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 23 °C Humidity: 57 % RH Atmospheric Pressure: 1022 mbar
 Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

6.3.2 Test Setup Diagram

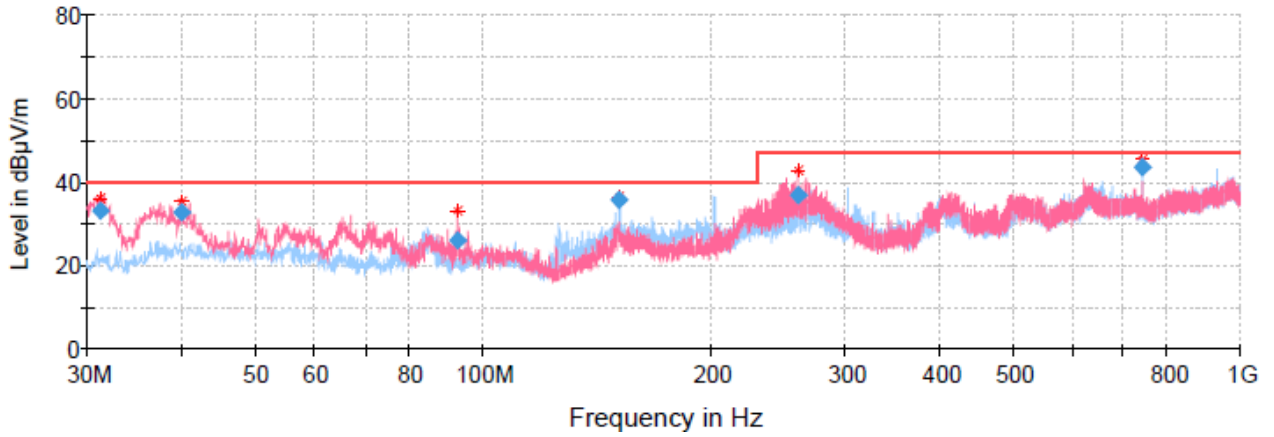


6.3.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Notes : Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

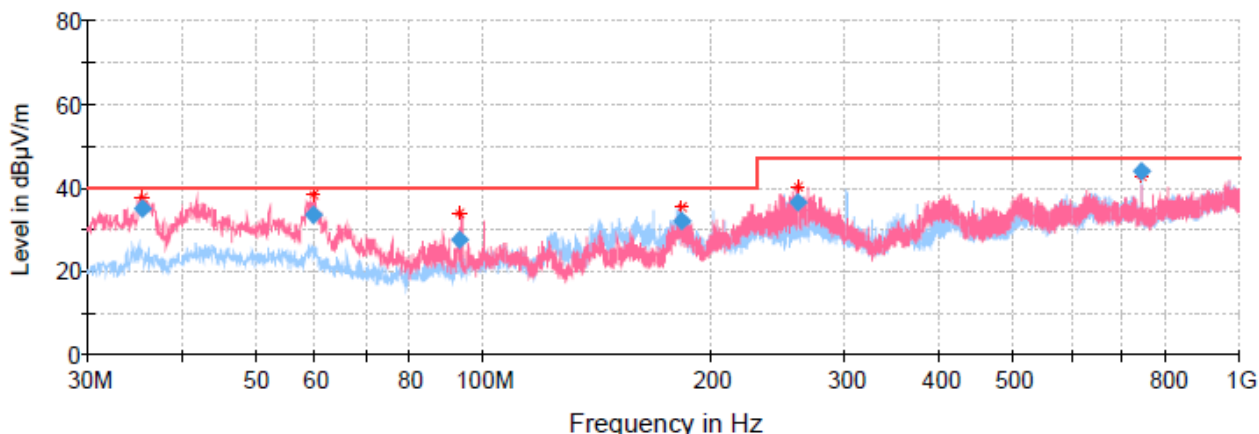
Mode:a, Polarization:Horizontal & Vertical



Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 31.164000 | 33.28 | 40.00 | 6.72 | 1000.0 | 120.000 | 111.0 | V | 8.0 | 11.0 |
| 39.951000 | 32.88 | 40.00 | 7.12 | 1000.0 | 120.000 | 100.0 | V | 246.0 | 12.9 |
| 92.788000 | 26.09 | 40.00 | 13.91 | 1000.0 | 120.000 | 124.0 | V | 326.0 | 10.7 |
| 151.461000 | 35.55 | 40.00 | 4.45 | 1000.0 | 120.000 | 225.0 | H | 148.0 | 8.8 |
| 260.840500 | 36.73 | 47.00 | 10.27 | 1000.0 | 120.000 | 180.0 | V | 188.0 | 13.9 |
| 742.482000 | 43.64 | 47.00 | 3.36 | 1000.0 | 120.000 | 111.0 | H | 123.0 | 23.0 |

Mode b; Polarization:Horizontal& Vertical



Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 35.455000 | 34.87 | 40.00 | 5.13 | 1000.0 | 120.000 | 100.0 | V | 242.0 | 11.4 |
| 59.541500 | 33.53 | 40.00 | 6.47 | 1000.0 | 120.000 | 107.0 | V | 17.0 | 12.4 |
| 93.129000 | 27.66 | 40.00 | 12.34 | 1000.0 | 120.000 | 134.0 | V | -1.0 | 10.8 |
| 182.753000 | 32.12 | 40.00 | 7.88 | 1000.0 | 120.000 | 111.0 | H | 202.0 | 10.5 |
| 261.262500 | 36.40 | 47.00 | 10.60 | 1000.0 | 120.000 | 166.0 | V | 186.0 | 13.9 |
| 742.513500 | 43.84 | 47.00 | 3.16 | 1000.0 | 120.000 | 115.0 | H | 88.0 | 23.0 |

6.4 Radiated Emissions (above 1GHz)

| | |
|-----------------------|---|
| Test Requirement: | EN 55032:2015 |
| Test Method: | EN 55032:2015 |
| Frequency Range: | Above 1GHz |
| Measurement Distance: | 3m |
| Limit: | |
| 1GHz-3GHz | 70 dB(μV/m) peak, 50 dB(μV/m) average |
| 3GHz-6GHz | 74 dB(μV/m) peak, 54dB(μV/m) average |
| Detector: | Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 6000MHz |

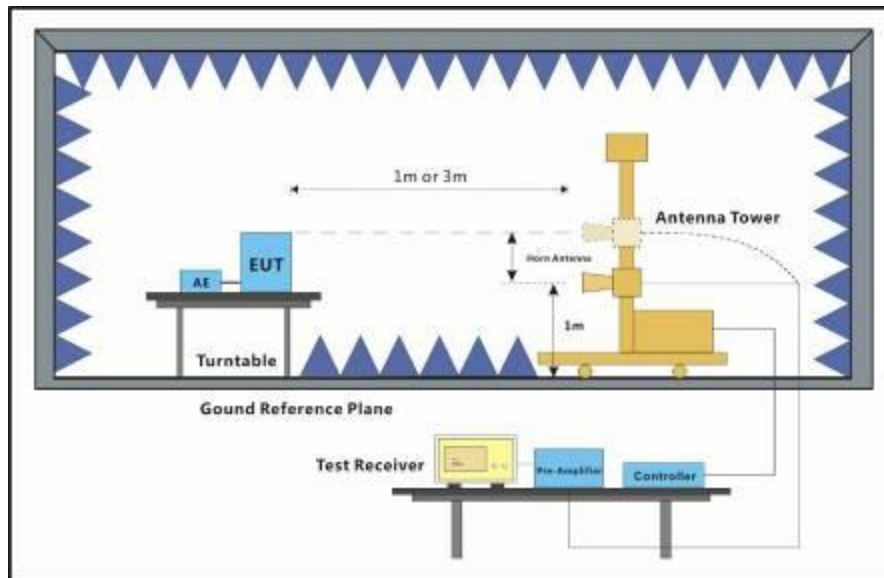
6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 57 % RH Atmospheric Pressure: 1022 mbar

Test mode a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

6.4.2 Test Setup Diagram

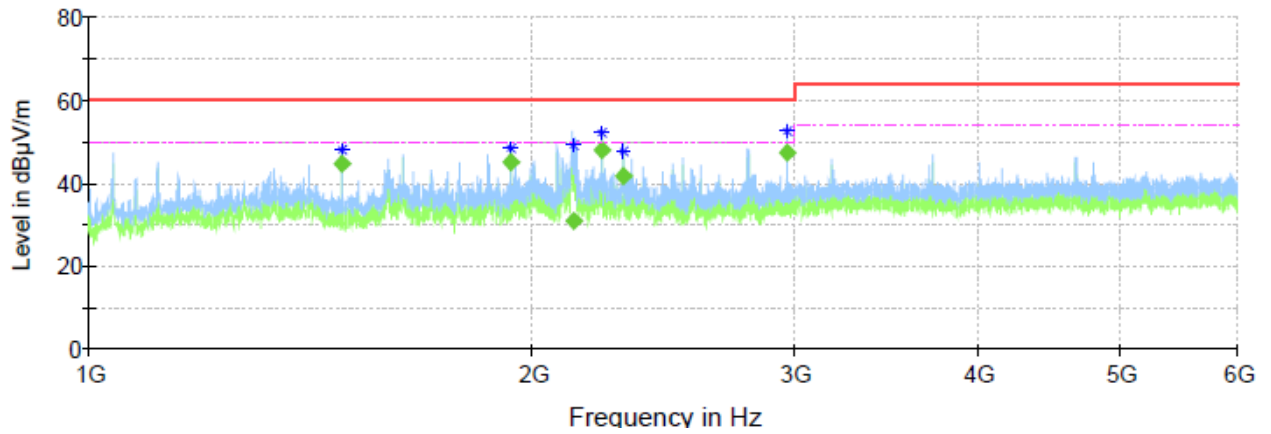


6.4.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Notes : Emission Level=Read Level + Antenna Factor + Cable Loss – Preamp Factor

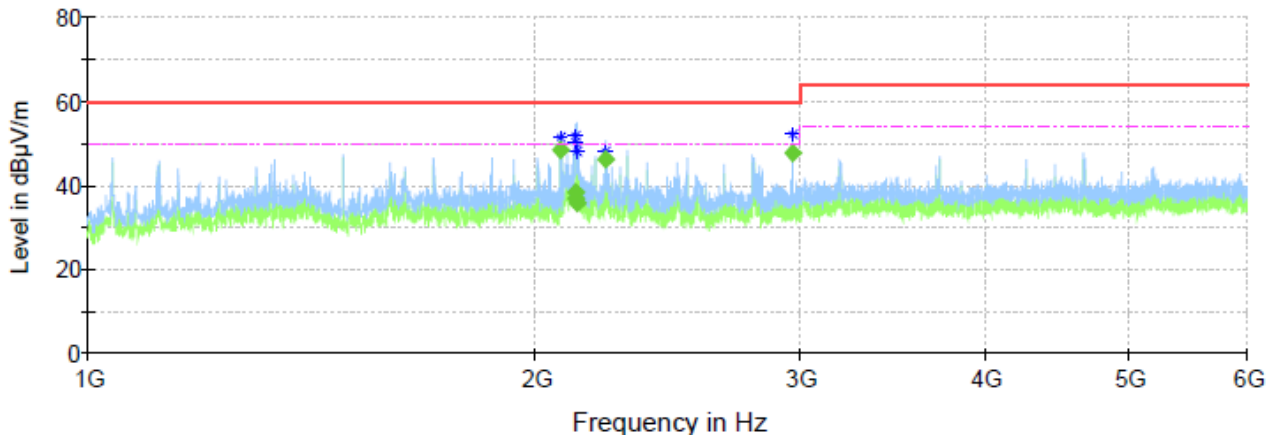
Mode:a; Polarization:Horizontal & Vertical



Final Result

| Frequency (MHz) | MaxPeak (dBµV/m) | Average (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|------------------|------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 1484.800000 | --- | 44.71 | 50.00 | 5.29 | 1000.0 | 1000.000 | 107.0 | H | 108.0 | -15.8 |
| 1930.300000 | --- | 45.03 | 50.00 | 4.97 | 1000.0 | 1000.000 | 202.0 | V | 165.0 | -15.0 |
| 2132.000000 | --- | 30.87 | 50.00 | 19.13 | 1000.0 | 1000.000 | 100.0 | H | 322.0 | -14.3 |
| 2227.300000 | --- | 48.88 | 50.00 | 1.12 | 1000.0 | 1000.000 | 107.0 | V | 180.0 | -14.0 |
| 2301.800000 | --- | 41.80 | 50.00 | 8.20 | 1000.0 | 1000.000 | 137.0 | V | 184.0 | -13.9 |
| 2969.800000 | --- | 48.31 | 50.00 | 1.69 | 1000.0 | 1000.000 | 196.0 | V | 133.0 | -10.6 |

Mode b; Polarization: Horizontal & Vertical



Final Result

| Frequency (MHz) | MaxPeak (dBµV/m) | Average (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB) |
|-----------------|------------------|------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|------------|
| 2078.800000 | --- | 48.52 | 50.00 | 1.48 | 1000.0 | 1000.000 | 100.0 | V | 188.0 | -14.3 |
| 2125.000000 | --- | 38.22 | 50.00 | 11.78 | 1000.0 | 1000.000 | 107.0 | V | 188.0 | -14.3 |
| 2126.300000 | --- | 36.84 | 50.00 | 13.16 | 1000.0 | 1000.000 | 107.0 | V | 27.0 | -14.3 |
| 2129.900000 | --- | 35.70 | 50.00 | 14.30 | 1000.0 | 1000.000 | 118.0 | V | 30.0 | -14.3 |
| 2227.300000 | --- | 46.32 | 50.00 | 3.68 | 1000.0 | 1000.000 | 202.0 | V | 228.0 | -14.0 |
| 2969.800000 | --- | 47.48 | 50.00 | 2.52 | 1000.0 | 1000.000 | 107.0 | H | 12.0 | -10.6 |

6.5 Harmonic Current Emission

| | |
|-------------------|-------------------|
| Test Requirement: | EN 61000-3-2:2014 |
| Test Method: | EN 61000-3-2:2014 |
| Frequency Range: | 100Hz to 2kHz |

6.5.1 Measurement Data

There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2:2014.

For further details, please refer to Clause 7 of EN 61000-3-2 which states:

"For the following categories of equipment, limits are not specified in this standard.- equipment with a rated power of 75W or less, other than lighting equipment."

6.6 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013
Test Method: EN 61000-3-3:2013

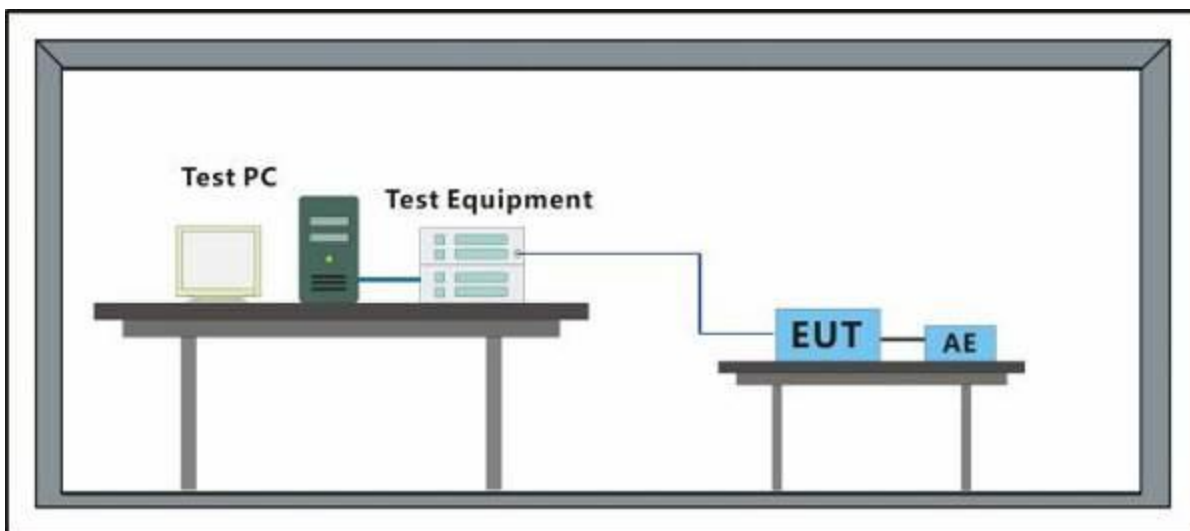
6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 55 % RH Atmospheric Pressure: 1019 mbar

Test mode: a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

6.6.2 Test Setup Diagram



6.6.3 Measurement Data

Mode:a

Parameter values recorded during the test:

| | | | | |
|---------------------------------|--------|------------------|-------|------|
| Vrms at the end of test (Volt): | 229.76 | | | |
| Highest dt (%): | 0.00 | Test limit (%): | N/A | N/A |
| T-max (mS): | 0 | Test limit (mS): | 500.0 | Pass |
| Highest dc (%): | 0.00 | Test limit (%): | 3.30 | Pass |
| Highest dmax (%): | 0.04 | Test limit (%): | 4.00 | Pass |
| Highest Pst (10 min. period): | 0.263 | Test limit: | 1.000 | Pass |
| Highest Plt (2 hr. period): | 0.115 | Test limit: | 0.650 | Pass |

Mode:b

Parameter values recorded during the test:

| | | | | |
|---------------------------------|--------|------------------|-------|------|
| Vrms at the end of test (Volt): | 229.80 | | | |
| Highest dt (%): | 0.00 | Test limit (%): | N/A | N/A |
| T-max (mS): | 0 | Test limit (mS): | 500.0 | Pass |
| Highest dc (%): | 0.00 | Test limit (%): | 3.30 | Pass |
| Highest dmax (%): | 0.03 | Test limit (%): | 4.00 | Pass |
| Highest Pst (10 min. period): | 0.259 | Test limit: | 1.000 | Pass |



Highest Plt (2 hr. period): 0.113 Test limit: 0.650 Pass

7 Immunity Test Results

7.1 Performance Criteria Description in EN 50130-4:2011 +A1:2014

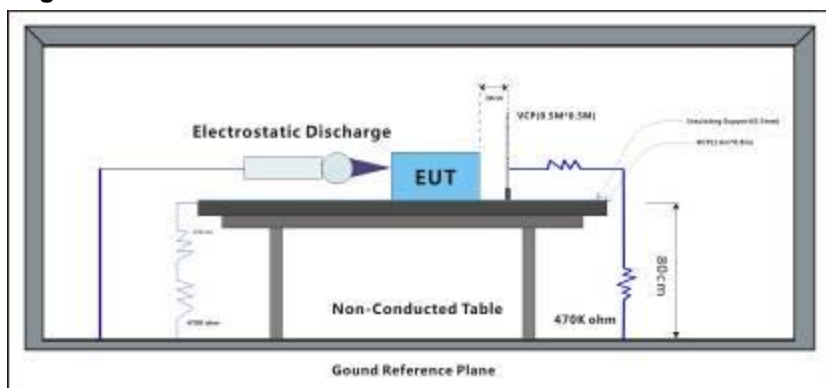
There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

For further details, please refer to Clause 7.4, 8.4, 9.4, 10.4, 11.4, 12.4 and 13.4, of EN 50130-4.

7.2 Electrostatic Discharge

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-2:2009
 Number of Discharge: Minimum 10 times at each test point for Air Discharge
 Minimum 50 times at each test point for Contact or VCP & HCP Discharge
 Discharge Mode: Single Discharge
 Discharge Period: 1 second minimum

7.2.1 Test Setup Diagram



7.2.2 E.U.T. Operation

Operating Environment:
 Temperature: 19.8 °C Humidity: 58 % RH Atmospheric Pressure: 1022.2 mbar
 Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.2.3 Test Results:

Observations: Test Point:
 1. All insulated enclosure and seams.
 2. All accessible metal parts of the enclosure.
 3. All side

| Discharge type | Level (kV) | Polarity | Test Point | Result / Observations |
|---------------------|------------|----------|------------|-----------------------|
| Air Discharge | 2,4,8 | + | 1 | Pass |
| Air Discharge | 2,4,8 | - | 1 | Pass |
| Contact Discharge | 6 | + | 2 | Pass |
| Contact Discharge | 6 | - | 2 | Pass |
| Horizontal Coupling | 6 | + | 3 | Pass |
| Horizontal Coupling | 6 | - | 3 | Pass |
| Vertical Coupling | 6 | + | 3 | Pass |
| Vertical Coupling | 6 | - | 3 | Pass |

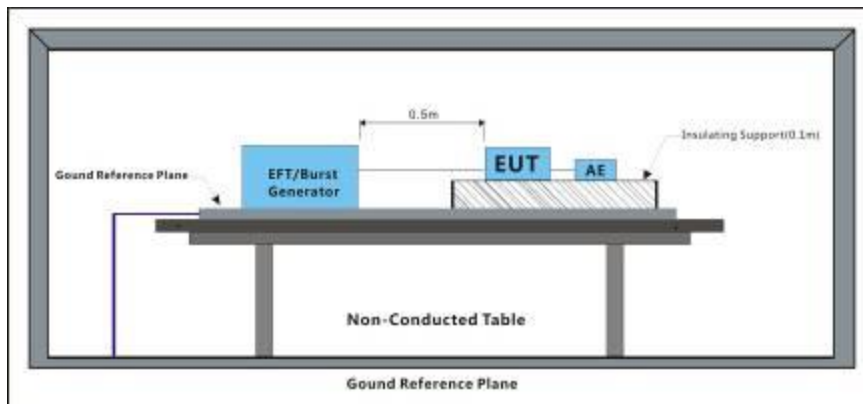
Results:

- The EUT working normal, before the conditioning.
- Monitor the EUT during the conditioning period there was no status change has occurred, during the conditioning.
- No degradation in the performance of the EUT was observed, after the conditioning.

7.3 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-4:2012
 Repetition Frequency: 100kHz
 Burst Period: 300ms
 Test Duration: 1 minute per level & polarity

7.3.1 Test Setup Diagram



7.3.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 58 % RH Atmospheric Pressure: 1022.2 mbar

Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.3.3 Test Results:

| Test Line | Level (kV) | Polarity | CDN/Clamp | Result / Observations |
|---------------|------------|----------|-----------|-----------------------|
| AC power port | 2 | + | CDN | Pass |
| AC power port | 2 | - | CDN | Pass |

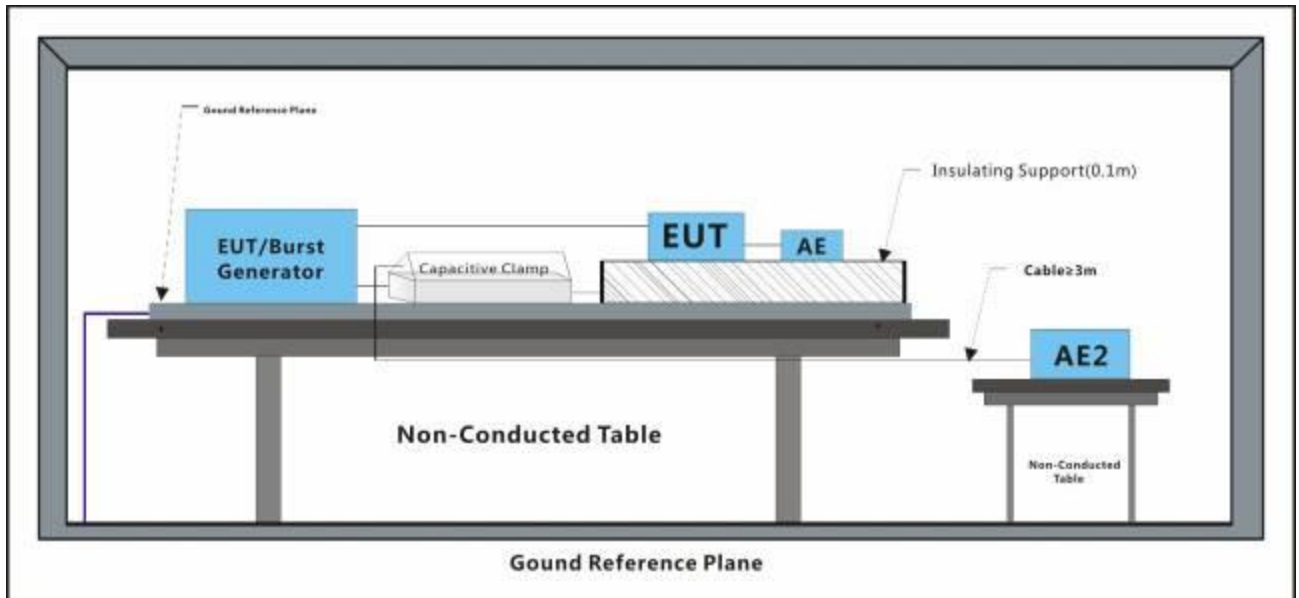
Results:

1. The EUT working normal, before the conditioning.
2. Monitor the EUT during the conditioning period there was no status change has occurred, during the conditioning.
3. No degradation in the performance of the EUT was observed, after the conditioning.

7.4 Electrical Fast Transients/Burst at Signal Port

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-4:2012
 Repetition Frequency: 100kHz
 Burst Period: 300ms
 Test Duration: 1 minute per level & polarity

7.4.1 Test Setup Diagram



7.4.2 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 58 % RH Atmospheric Pressure: 1022.2 mbar
 Test mode: a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.4.3 Test Results:

| Port | Level (kV) | Polarity | CDN/Clamp | Result / Observations |
|-------------|------------|----------|-----------|-----------------------|
| Signal port | 1 | + | Clamp | Pass |
| Signal port | 1 | - | Clamp | Pass |

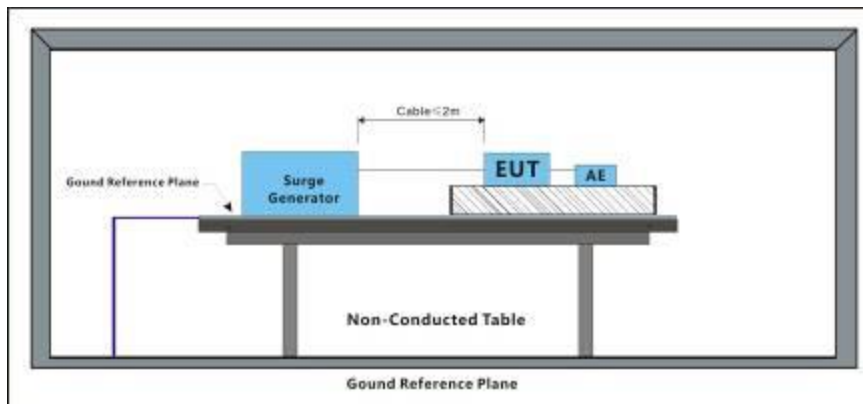
Results:

1. The EUT working normal, before the conditioning.
2. Monitor the EUT during the conditioning period there was no status change has occurred, during the conditioning.
3. No degradation in the performance of the EUT was observed, after the conditioning.

7.5 Surge at Power Port

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-5:2014
 Interval: 60s between each surge
 No. of surges: 5 positive, 5 negative

7.5.1 Test Setup Diagram



7.5.2 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 56 % RH Atmospheric Pressure: 1022.2 mbar

Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.5.3 Test Results:

| Test Line | Level (kV) | Polarity | Phase (deg) | Result / Observations |
|-----------|------------|----------|-------------|-----------------------|
| L-N | 0.5,1 | + | 0° | Pass |
| L-N | 0.5,1 | - | 0° | Pass |
| L-N | 0.5,1 | + | 90° | Pass |
| L-N | 0.5,1 | - | 90° | Pass |
| L-N | 0.5,1 | + | 180° | Pass |
| L-N | 0.5,1 | - | 180° | Pass |
| L-N | 0.5,1 | + | 270° | Pass |
| L-N | 0.5,1 | - | 270° | Pass |
| L-PE | 0.5,1,2 | + | 0° | Pass |
| L-PE | 0.5,1,2 | - | 0° | Pass |
| L-PE | 0.5,1,2 | + | 90° | Pass |
| L-PE | 0.5,1,2 | - | 90° | Pass |
| L-PE | 0.5,1,2 | + | 180° | Pass |
| L-PE | 0.5,1,2 | - | 180° | Pass |
| L-PE | 0.5,1,2 | + | 270° | Pass |
| L-PE | 0.5,1,2 | - | 270° | Pass |
| N-PE | 0.5,1,2 | + | 0° | Pass |
| N-PE | 0.5,1,2 | - | 0° | Pass |
| N-PE | 0.5,1,2 | + | 90° | Pass |



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| | | | | |
|------|---------|---|------|------|
| N-PE | 0.5,1,2 | - | 90° | Pass |
| N-PE | 0.5,1,2 | + | 180° | Pass |
| N-PE | 0.5,1,2 | - | 180° | Pass |
| N-PE | 0.5,1,2 | + | 270° | Pass |
| N-PE | 0.5,1,2 | - | 270° | Pass |

Results:

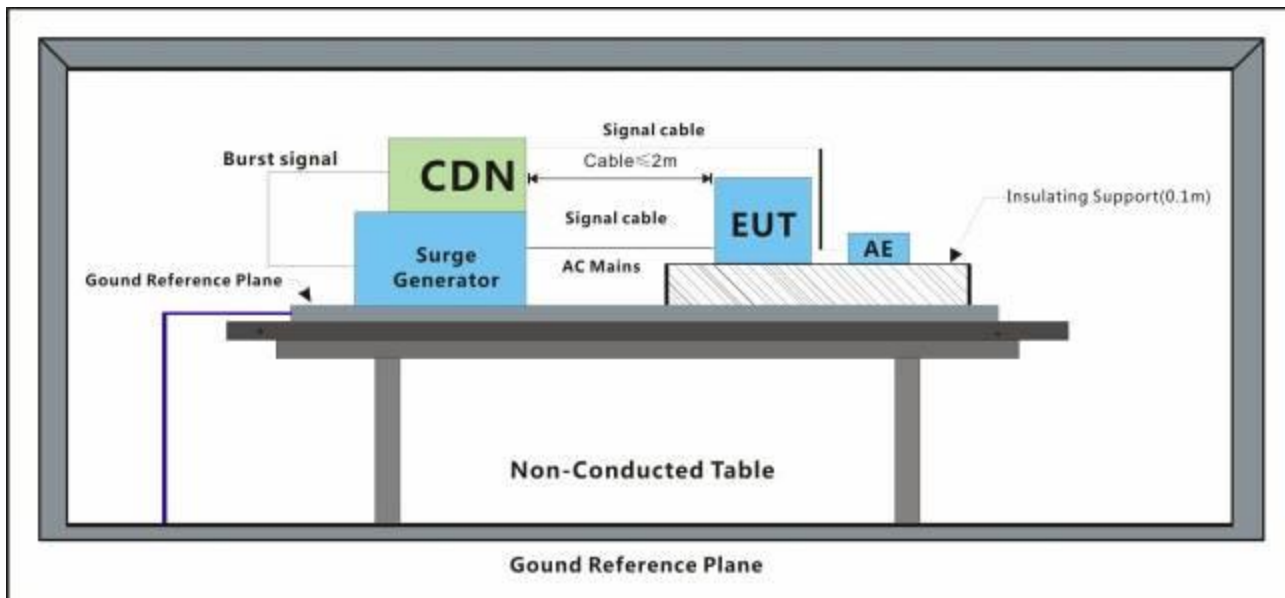
1. The EUT working normal, before the conditioning.
2. Monitor the EUT during the conditioning period there was no status change has occurred, during the conditioning.
3. No degradation in the performance of the EUT was observed, after the conditioning.

7.6 Surge at Signal Port

Test Requirement: EN 50130-4:2011 +A1:2014

Test Method: EN 61000-4-5:2014

7.6.1 Test Setup Diagram



7.6.2 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 56 % RH Atmospheric Pressure: 1022.2 mbar

Test mode: a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.

b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.6.3 Test Results:

| Port | Line | Level (kV) | Polarity | Result / Observations |
|-------------|-------------|------------|----------|-----------------------|
| Signal port | Line-Ground | 0.5 | + | Pass |
| Signal port | Line-Ground | 0.5 | - | Pass |
| Signal port | Line-Ground | 1 | + | Pass |
| Signal port | Line-Ground | 1 | - | Pass |

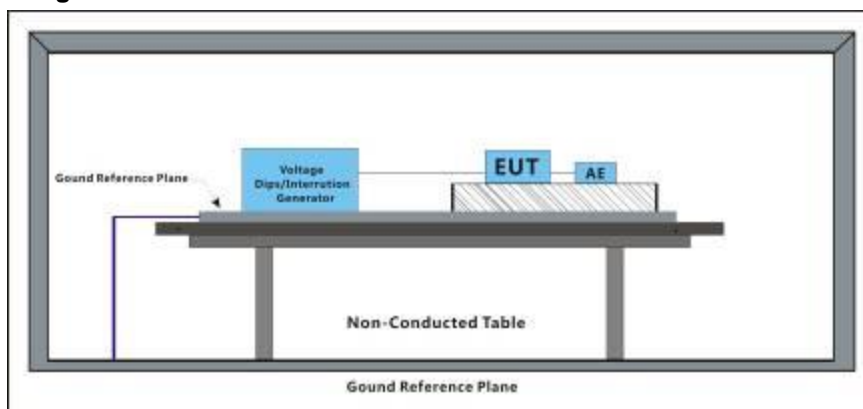
Results:

1. The EUT working normal, before the conditioning.
2. Monitor the EUT during the conditioning period there was no status change has occurred, during the conditioning.
3. No degradation in the performance of the EUT was observed, after the conditioning.

7.7 Voltage Dips and Interruptions

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-11:2004
 Performance Criterion: 0% of UT (Supply Voltage) for 250 Periods; 40% of UT for 10 Periods; 70% of UT for 25 Periods; 80% of UT for 250 Periods;
 No. of Dips / Interruptions: 3 per Level
 Time between dropout 10s

7.7.1 Test Setup Diagram



7.7.2 E.U.T. Operation

Operating Environment:
 Temperature: 24 °C Humidity: 58 % RH Atmospheric Pressure: 1012.5 mbar
 Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.7.3 Test Results:

| Level % UT | Phase (deg) | Duration | No. of Dips / Interruptions | Result / Observations |
|------------|-------------|------------|-----------------------------|-----------------------|
| 80 | 0° | 250 Cycles | 3 | Pass |
| 80 | 180° | 250 Cycles | 3 | Pass |
| 70 | 0° | 25 Cycles | 3 | Pass |
| 70 | 180° | 25 Cycles | 3 | Pass |
| 40 | 0° | 10 Cycles | 3 | Pass |
| 40 | 180° | 10 Cycles | 3 | Pass |
| 0 | 0° | 250 Cycles | 3 | Pass |
| 0 | 180° | 250 Cycles | 3 | Pass |

Results:

- The EUT working normal, before the conditioning.
- Monitor the EUT during the conditioning period :
 80%UT Lasts for 250 cycles: During the test, No degradation in the performance of the EUT was observed
 70%UT Lasts for 25 cycles: During the test, No degradation in the performance of the EUT was observed
 40%UT Lasts for 10 cycles: During the test, No degradation in the performance of the EUT was observed
 0%UT Lasts for 250 cycles: During the test , the Sample restart, after the test ,all the functions recovery automatically
- No degradation in the performance of the EUT was observed, after the conditioning.



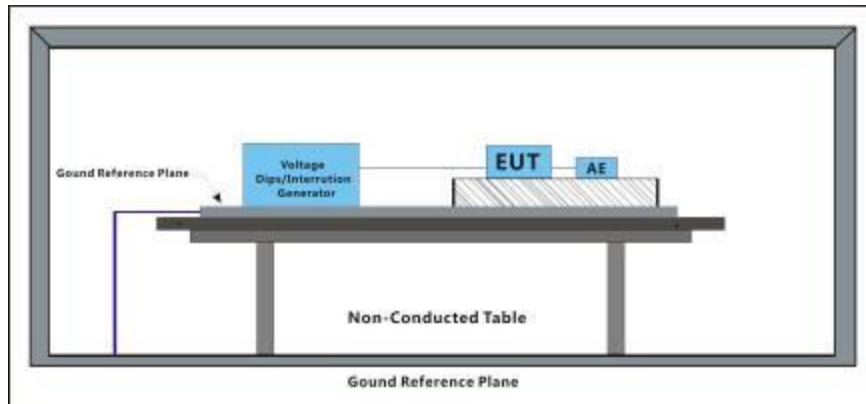
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7.8 Mains Supply Voltage Variations-Conditioning

| | |
|-------------------|-----------------------------|
| Test Requirement: | EN 50130-4:2011 +A1:2014 |
| Test Method: | EN 50130-4:2011+A1:2014 |
| Voltage max.: | AC 264V (Umax: Unom + 10%) |
| Voltage min.: | AC 85V (Umin: Unom - 15%) |
| Unom Voltage: | AC 230V |

7.8.1 Test Setup Diagram



7.8.2 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 58 % RH Atmospheric Pressure: 1012.5 mbar

Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.8.3 Test Results: Pass

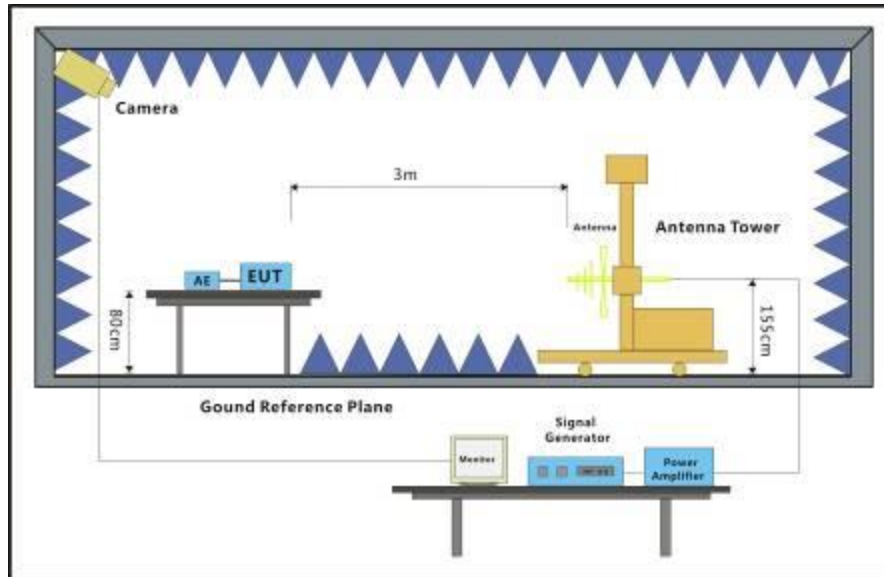
Test phenomenon description for the EUT:

1. The EUT working normal, before the conditioning.
2. Monitor the EUT during the conditioning period and detected no any changes in states, during the conditioning.
3. No degradation in the performance of the EUT was observed, after the conditioning.

7.9 Radiated Immunity(80MHz-2.7GHz)

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010
 Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation

7.9.1 Test Setup Diagram



7.9.2 E.U.T. Operation

Operating Environment:
 Temperature: 21.3 °C Humidity: 49 % RH Atmospheric Pressure: 1020.2 mbar
 Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.9.3 Test Results:

| Frequency | Level (V/m) | EUT Face | Dwell time | Result / Observations |
|--------------|-------------|--|------------|-----------------------|
| 80MHz-2.7GHz | 10 | Front/ Back/ Left/ Right/ Top/ Underside | 3s | Pass |
| 80MHz-2.7GHz | 3 | Front/ Back/ Left/ Right/ Top/ Underside | 3s | Pass |
| 80MHz-2.7GHz | 1 | Front/ Back/ Left/ Right/ Top/ Underside | 3s | Pass |

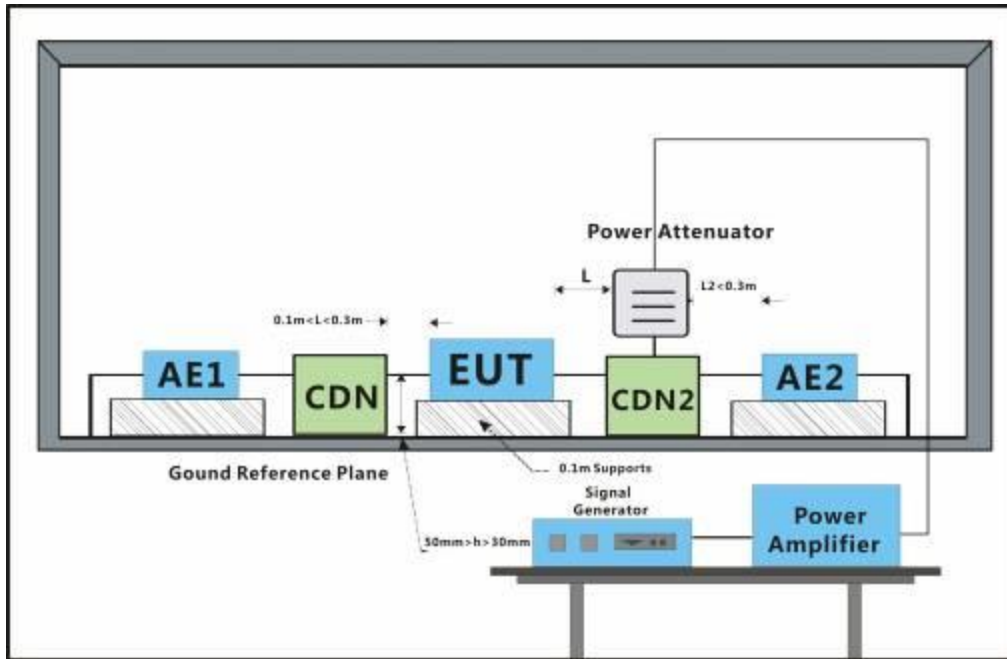
Results:

- The EUT working normal, before the conditioning.
- Monitor the EUT during the conditioning period:
 - 10V/M: During the test, No degradation in the performance of the EUT was observed
 - 3V/M: During the test, No degradation in the performance of the EUT was observed
 - 1V/M: During the test, No degradation in the performance of the EUT was observed
- No degradation in the performance of the EUT was observed, after the conditioning.

7.10 Conducted Immunity at Power Port (150kHz-100MHz)

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-6:2014
 Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation

7.10.1 Test Setup Diagram



7.10.2 E.U.T. Operation

Operating Environment:
 Temperature: 21.4 °C Humidity: 47 % RH Atmospheric Pressure: 1021.2 mbar
 Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.10.3 Test Results:

| Cable port | Level (Vrms) | CDN/Clamp | Dwell time | Result / Observations |
|---------------|--------------|-----------|------------|-----------------------|
| AC power port | 10 | CDN | 3s | Pass |
| AC power port | 3 | CDN | 3s | Pass |
| AC power port | 1 | CDN | 3s | Pass |

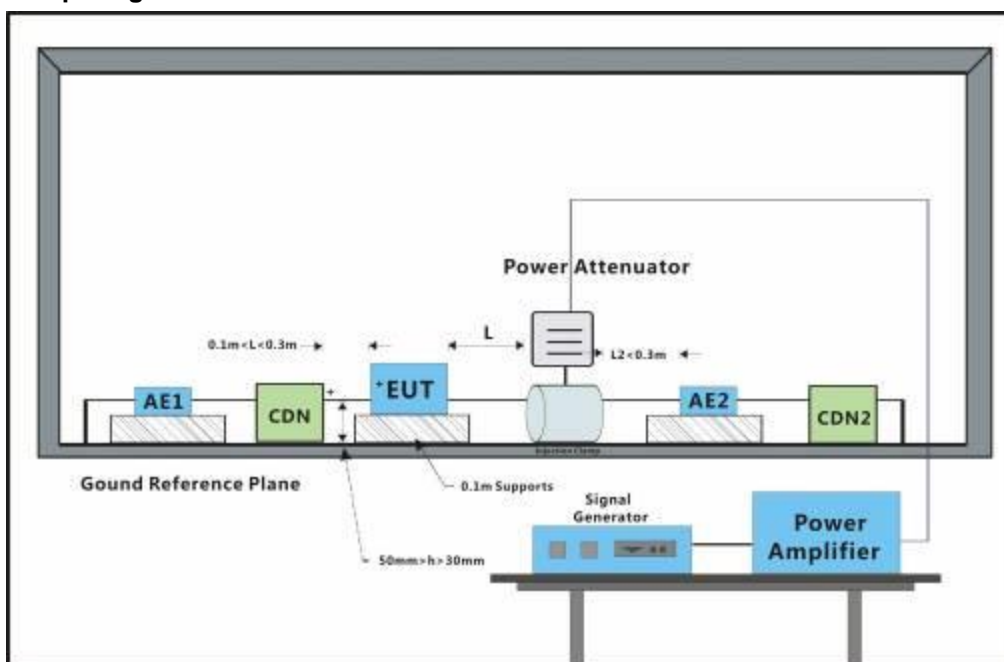
Results:

- The EUT working normal, before the conditioning.
- Monitor the EUT during the conditioning period:
 - 10V: During the test, no degradation in the performance of the EUT was observed.
 - 3V: During the test, no degradation in the performance of the EUT was observed.
 - 1V: During the test, no degradation in the performance of the EUT was observed.
- No degradation in the performance of the EUT was observed, after the conditioning.

7.11 Conducted Immunity at Signal Port (150kHz-100MHz)

Test Requirement: EN 50130-4:2011 +A1:2014
 Test Method: EN 61000-4-6:2014
 Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation

7.11.1 Test Setup Diagram



7.11.2 E.U.T. Operation

Operating Environment:
 Temperature: 21.4 °C Humidity: 47 % RH Atmospheric Pressure: 1021.2 mbar
 Test mode:
 a: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power MSA-Z3330IC12.0-48W-Q.
 b: Typical configuration: Keep EUT monitoring and data running continual, recording video during the test. Powered by power KPL-040F-VI

7.11.3 Test Results:

| Port | Level (Vrms) | CDN/Clamp | Dwell time | Result / Observations |
|-------------|--------------|-----------|------------|-----------------------|
| Signal port | 10 | Clamp | 3s | Pass ¹⁾ |
| Signal port | 3 | Clamp | 3s | Pass ²⁾ |
| Signal port | 1 | Clamp | 3s | Pass* |

Results:

- The EUT working normal, before the conditioning.
- Monitor the EUT during the conditioning period:
 TVI Video in:
 10V: Water ripples was observed on the TVI preview in the frequency band of and 1M~15MHz. Color stripe was observed on the TVI preview in the frequency band of 40M~54MHz.
 3V: Slight Water ripples was observed on the TVI preview in the frequency band of and 1M~25MHz. Slight color stripe was observed on the TVI preview in the frequency band of 45M~60MHz.
 1V: During the test, no degradation in the performance of the EUT was observed.
 CVBS Video out:
 10V: Water ripples was observed on the TVI preview in the frequency band of and 5M~35MHz. Color stripe



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was observed on the TVI preview in the frequency band of 39M~54MHz.

3V: Slight Water ripples was observed on the TVI preview in the frequency band of and 5M~40MHz. Slight color stripe was observed on the TVI preview in the frequency band of 39M~47MHz.

1V: During the test, no degradation in the performance of the EUT was observed.

3.No degradation in the performance of the EUT was observed, after the conditioning.

8 Photographs

8.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup



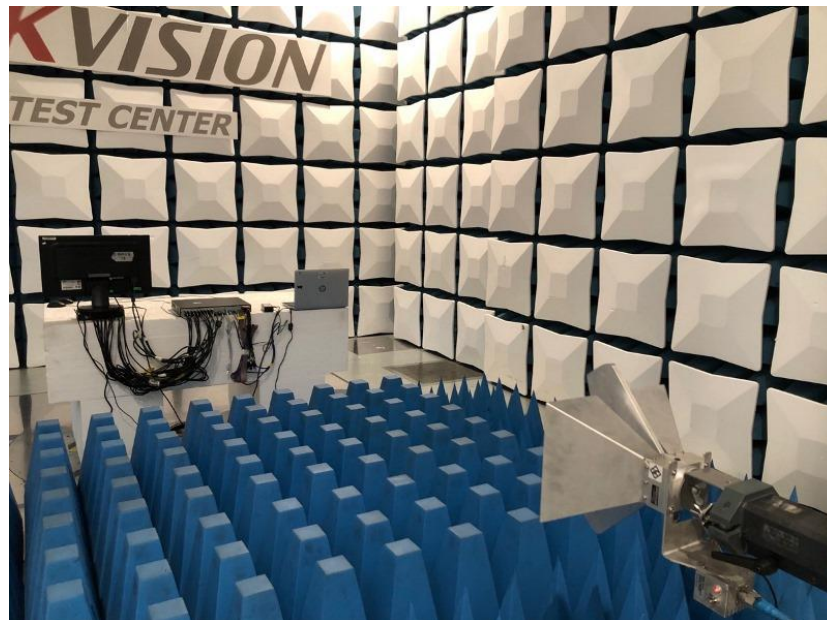
8.2 Asymmetric Mode Conducted Emissions (150kHz-30MHz) Test Setup



8.3 Radiated Emissions (30MHz-1GHz) Test Setup



8.4 Radiated Emissions (above 1GHz) Test Setup



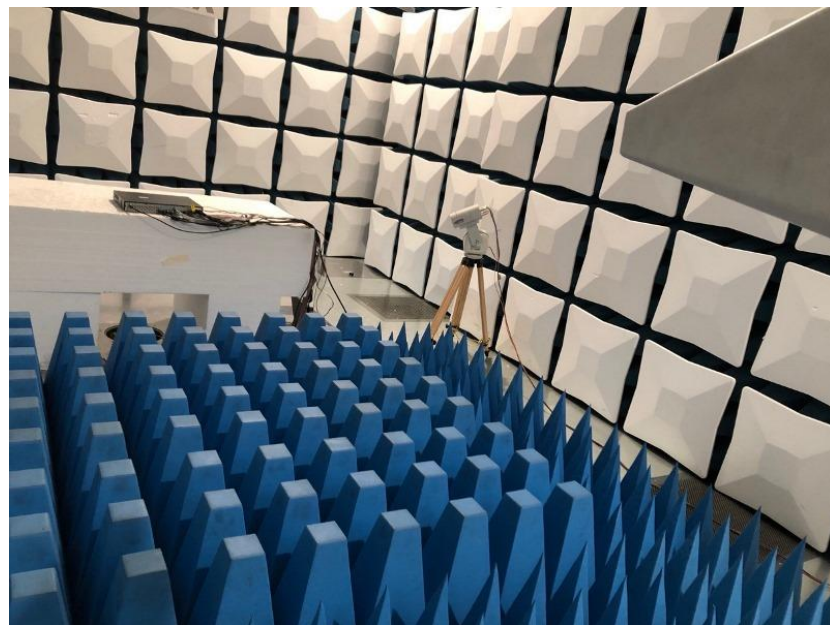
8.5 Voltage Fluctuations and Flicker Test Setup



8.6 Electrostatic Discharge Test Setup



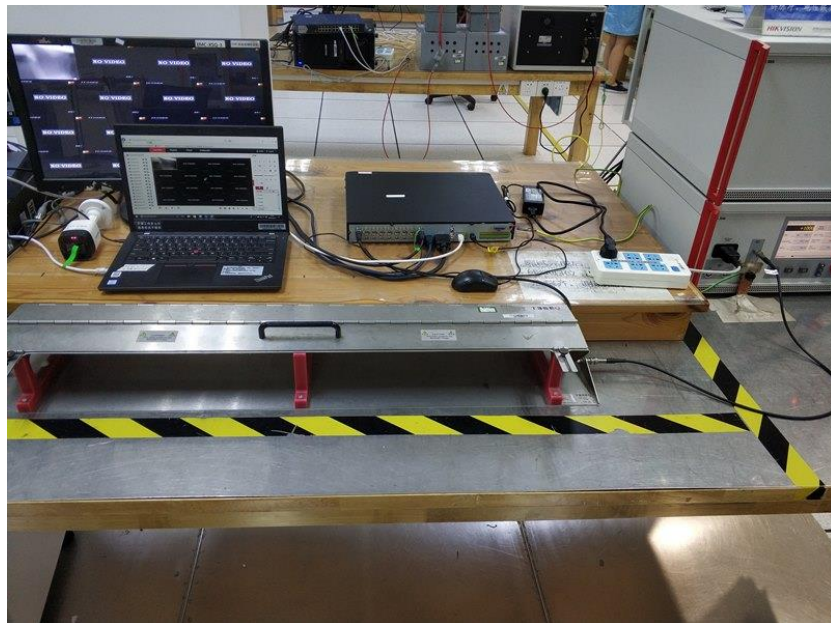
8.7 Radiated Immunity (80MHz-2.7GHz) Test Setup



8.8 Electrical Fast Transients/Burst at Power Port Test Setup



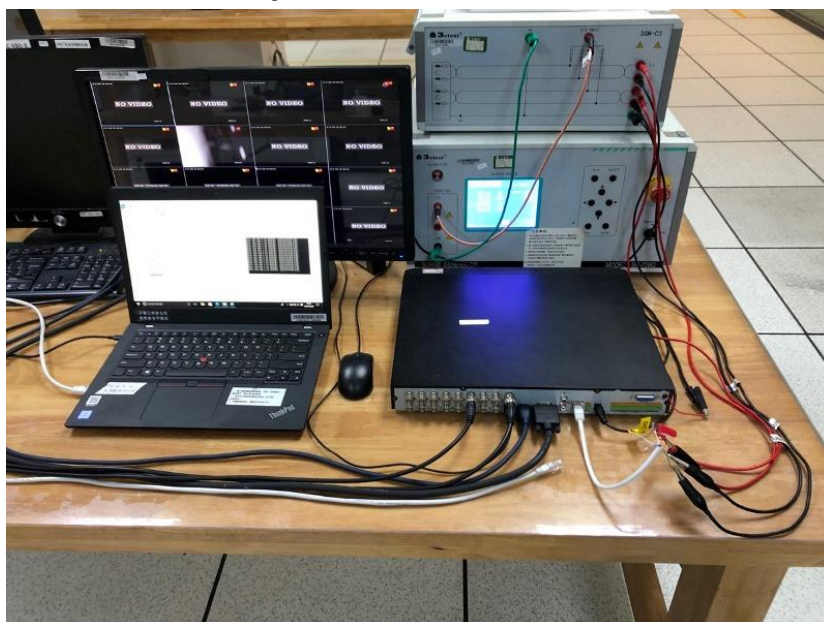
8.9 Electrical Fast Transients/Burst at Signal Port Test Setup

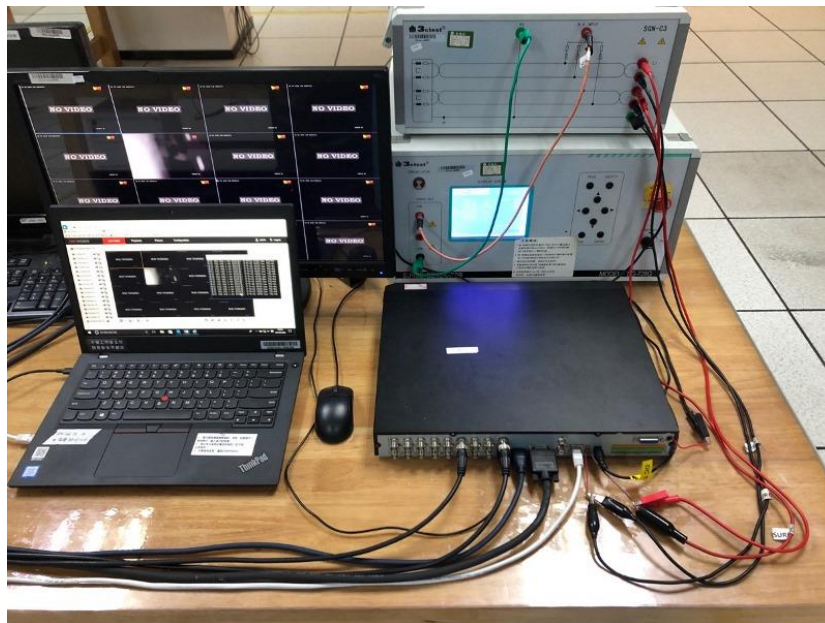


8.10 Surge at Power Port Test Setup

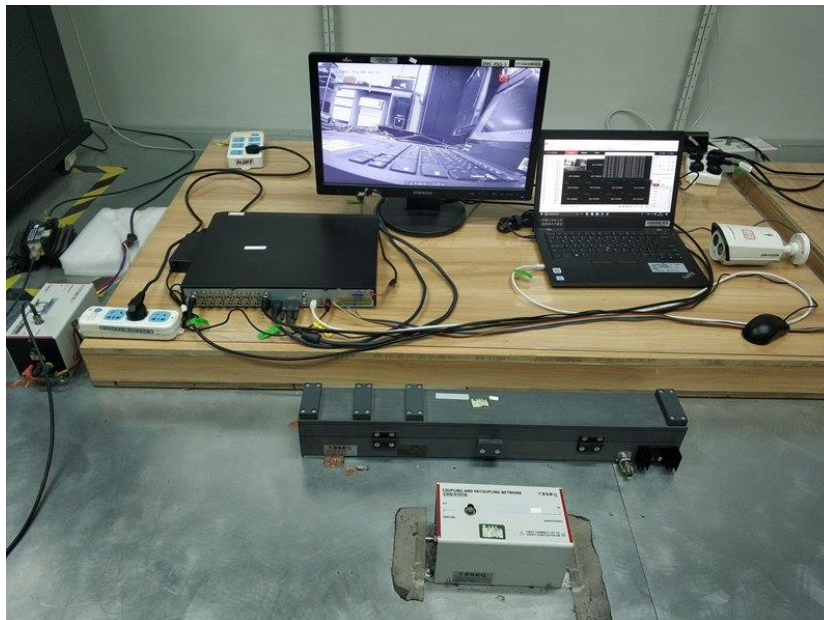


8.11 Surge at Signal Port Test Setup

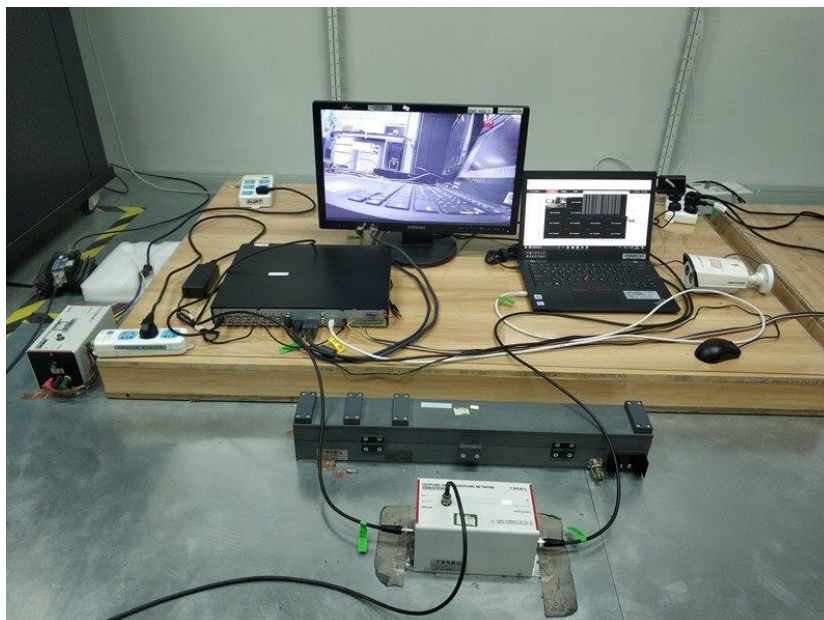




8.12 Conducted Immunity at Power Port (150kHz-100MHz) Test Setup



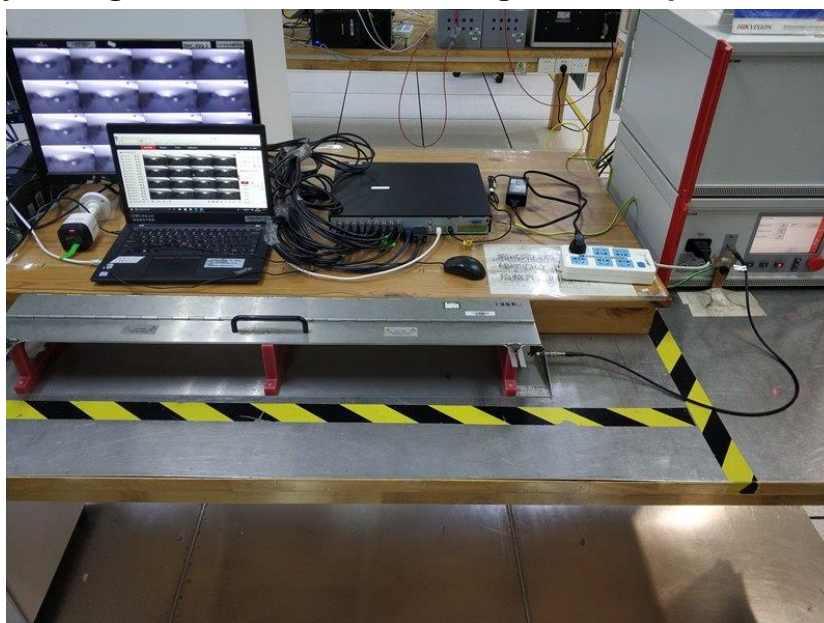
8.13 Conducted Immunity at Signal Port (150kHz-100MHz) Test Setup



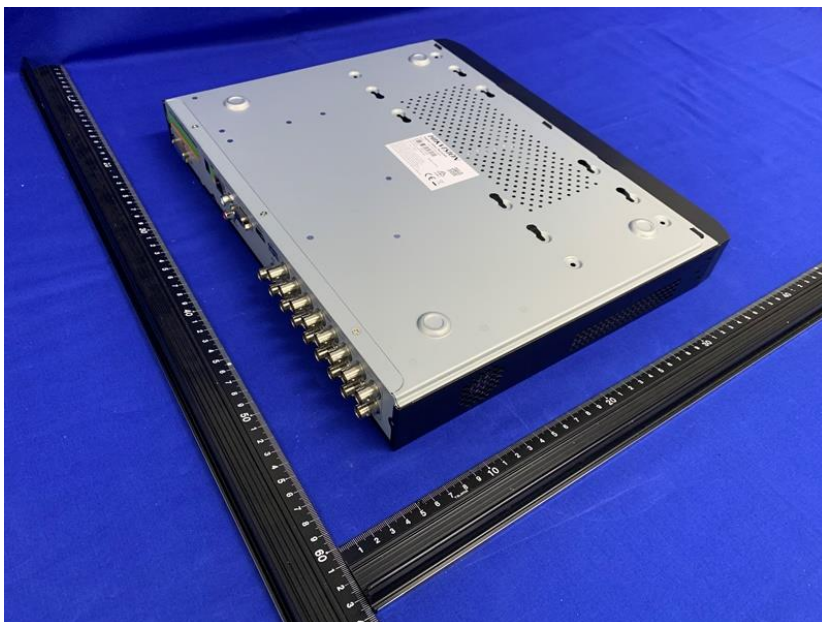
8.14 Voltage Dips and Interruptions Test Setup

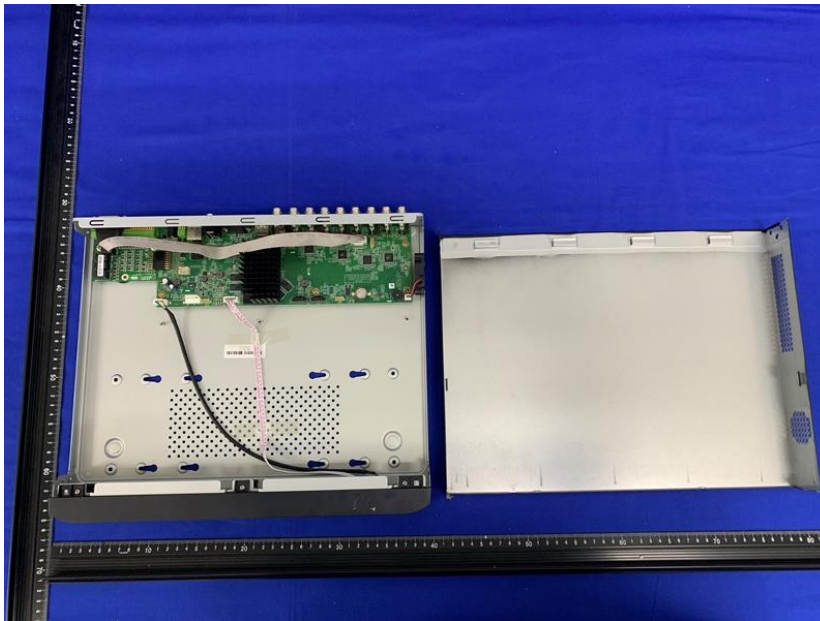


8.15 Mains Supply Voltage Variations-Conditioning Test Setup

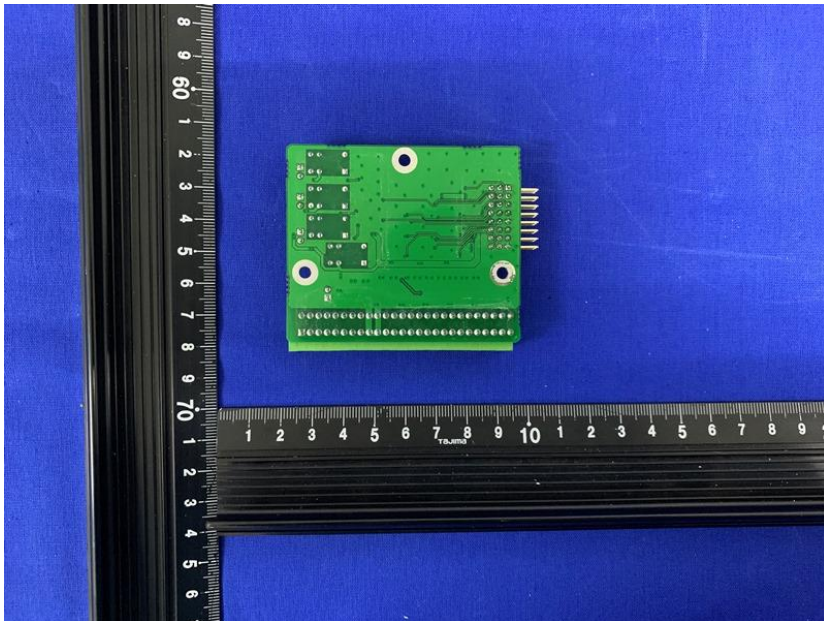
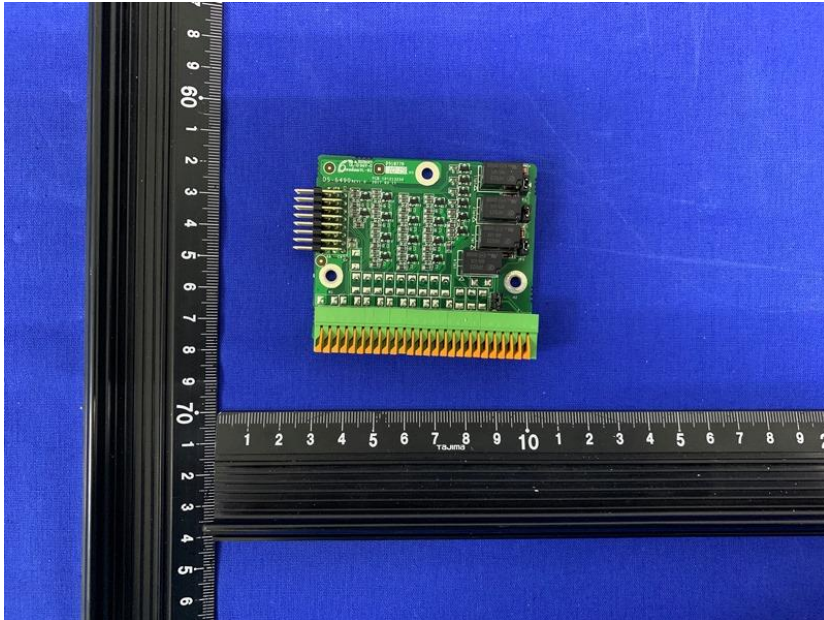


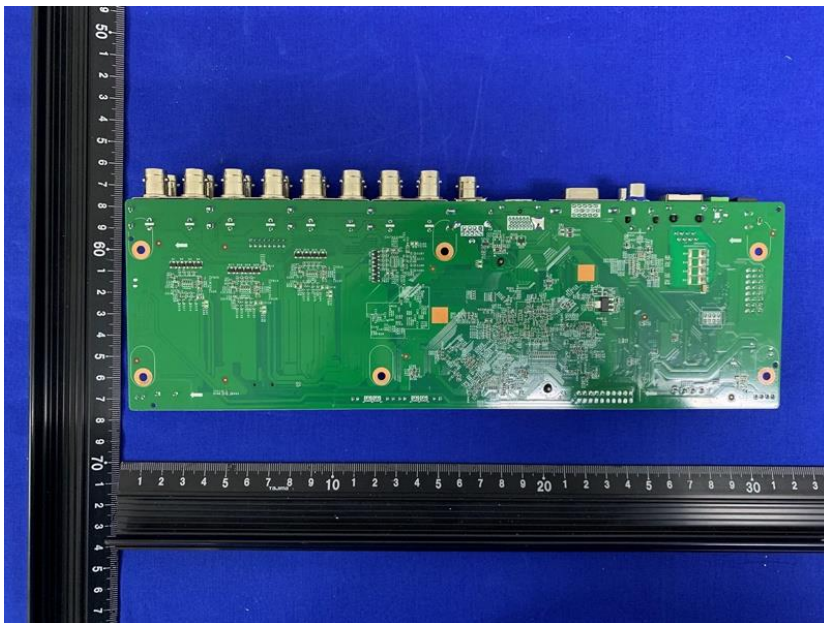
8.16 EUT Constructional Details (EUT Photos)

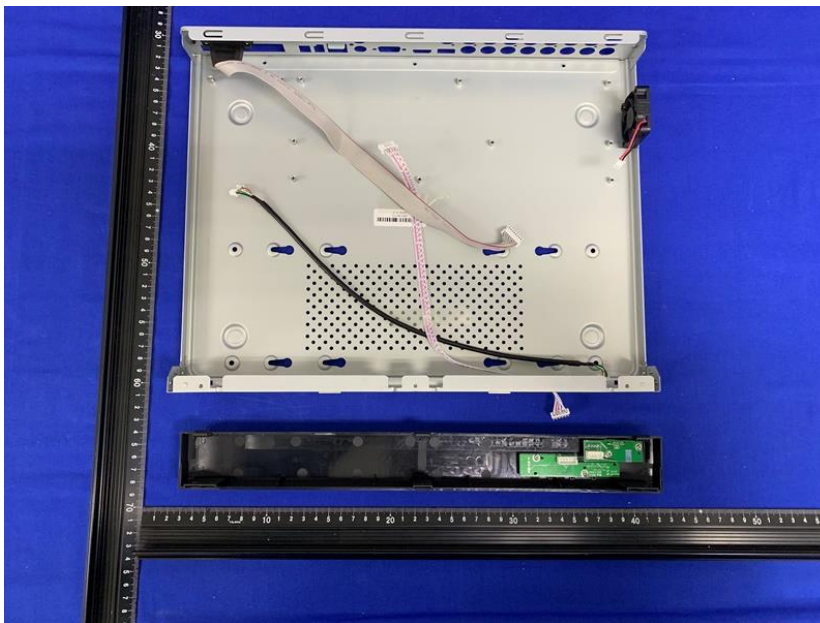
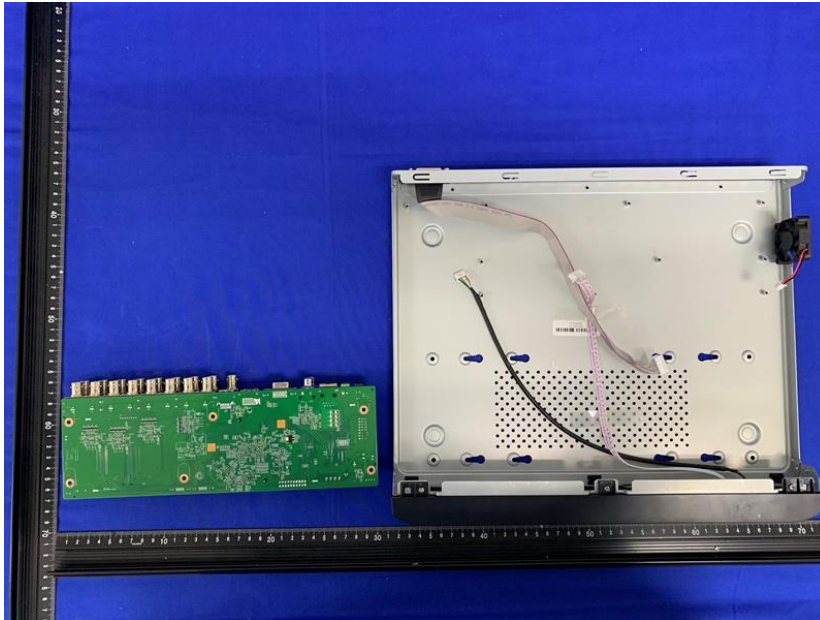




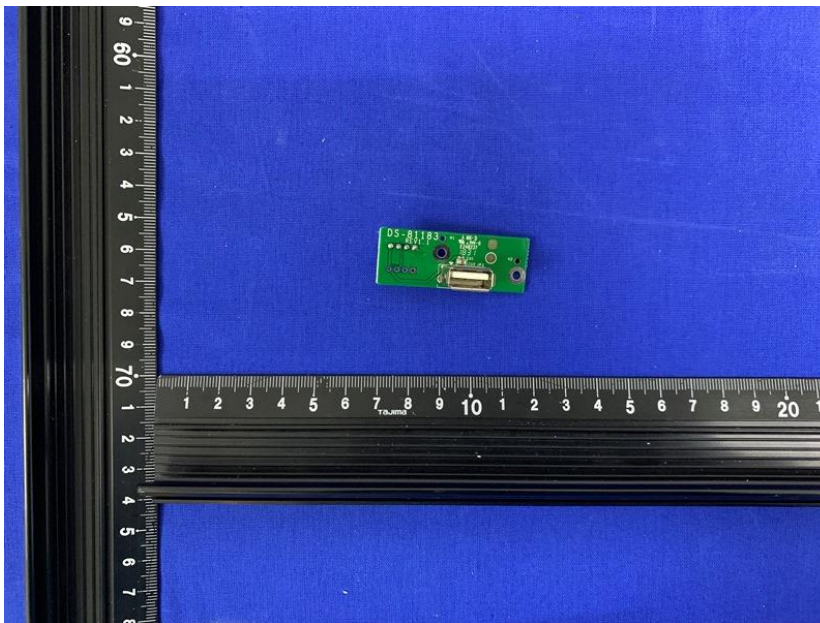
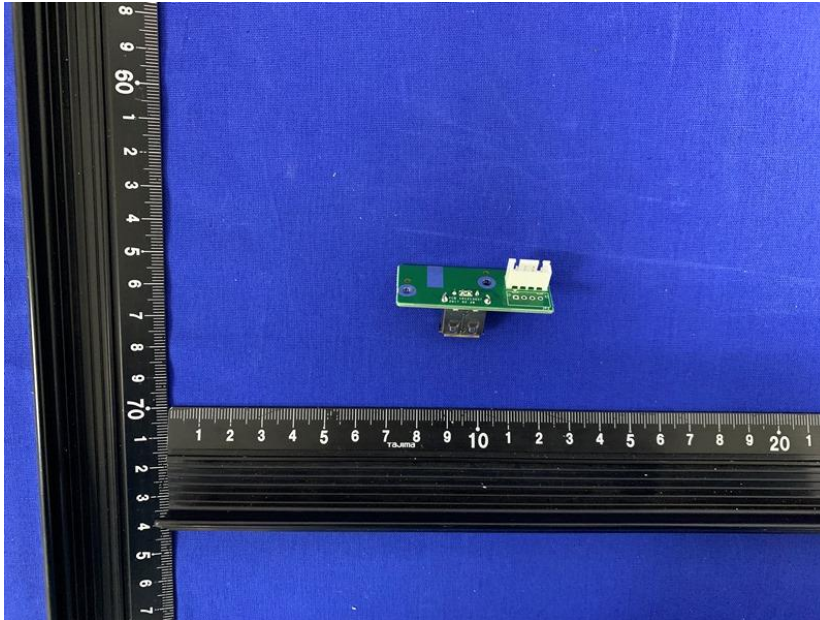


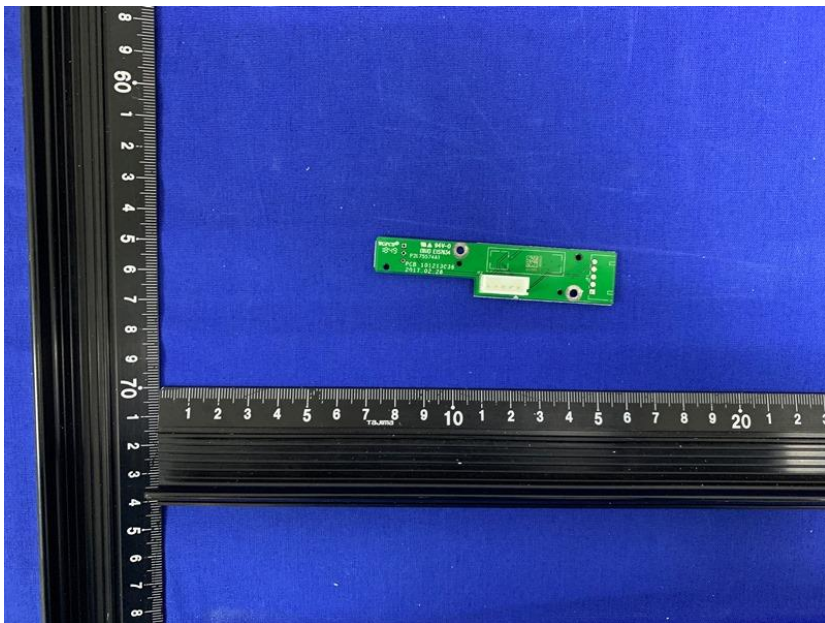


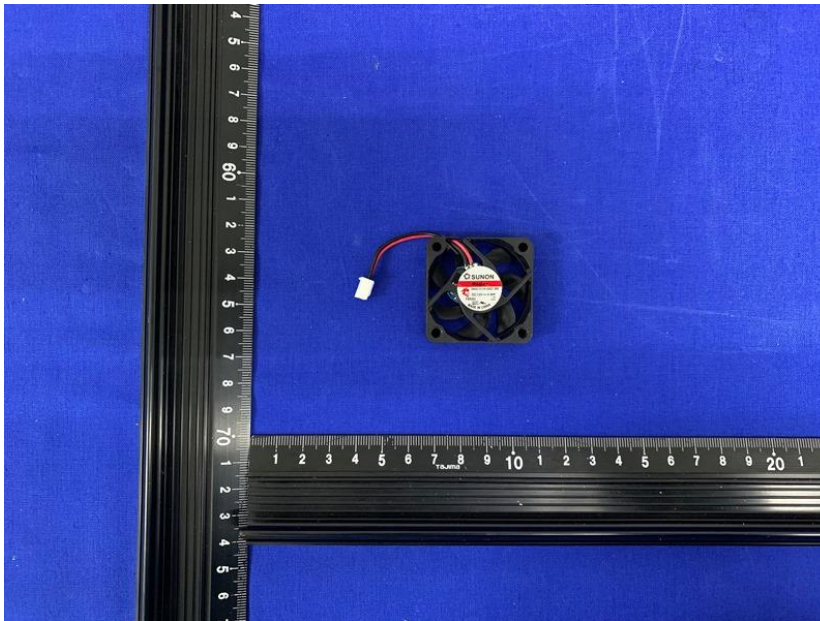
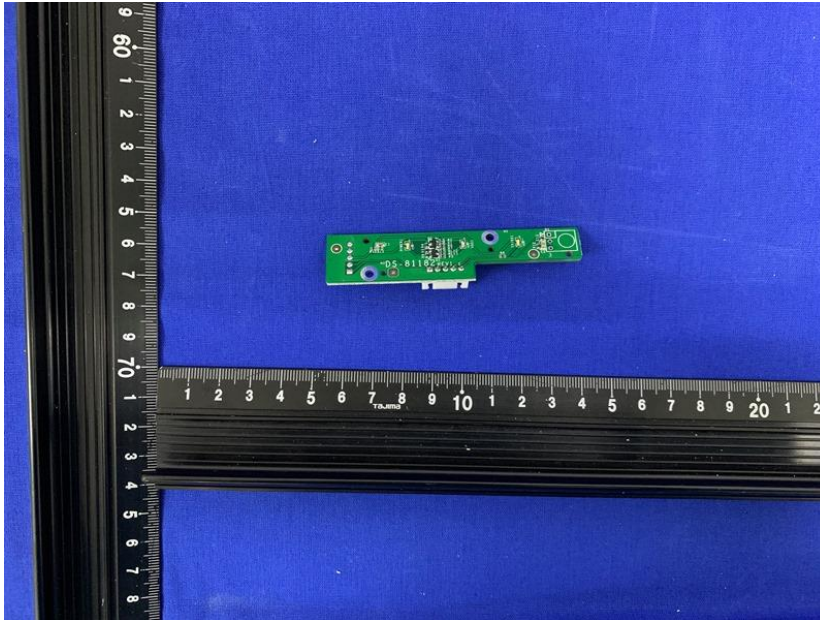


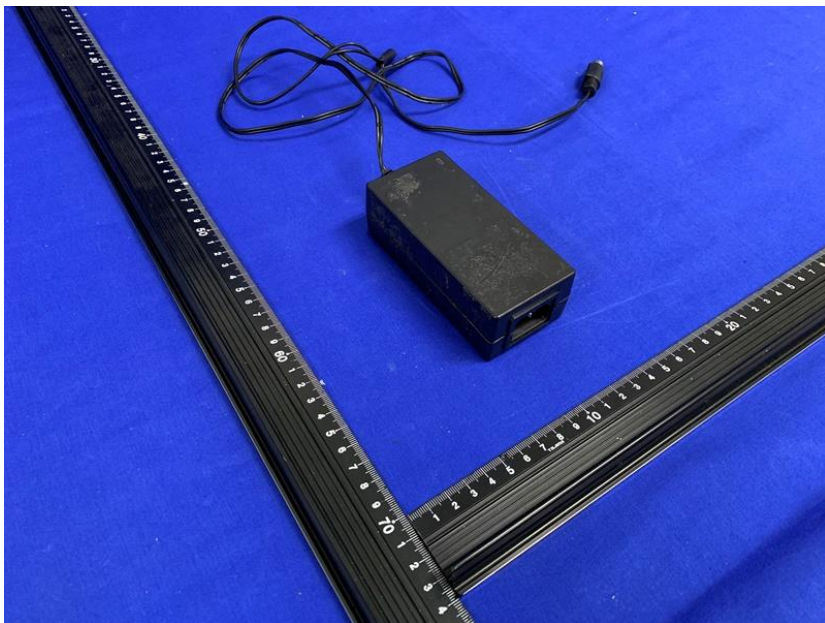
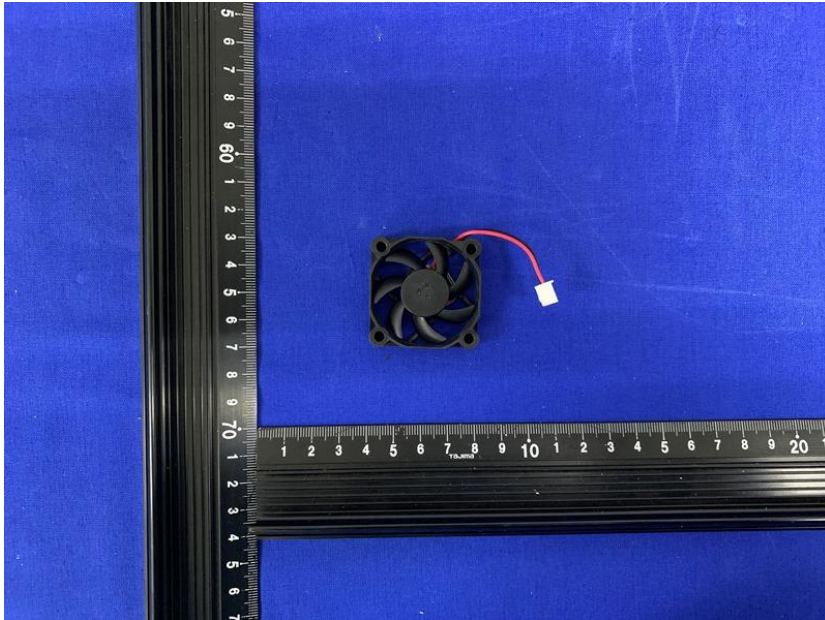


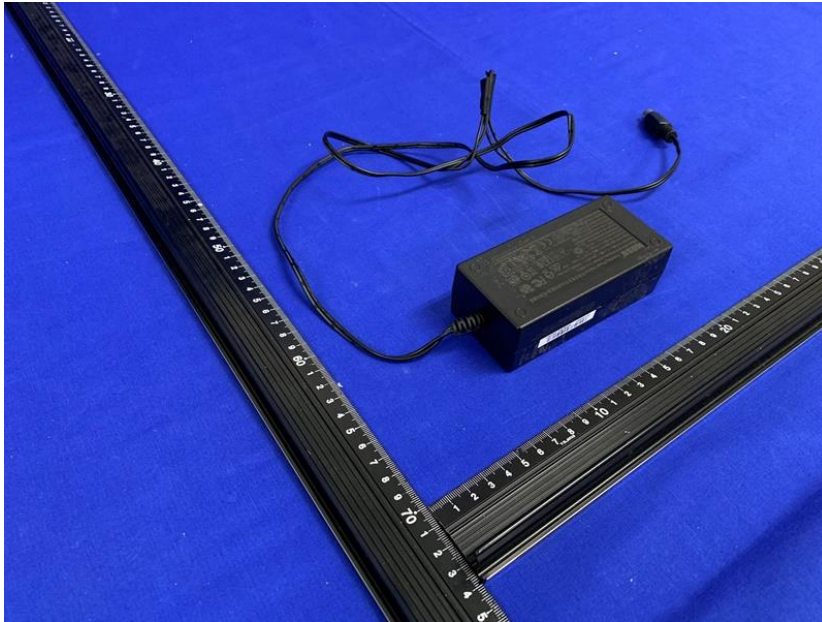


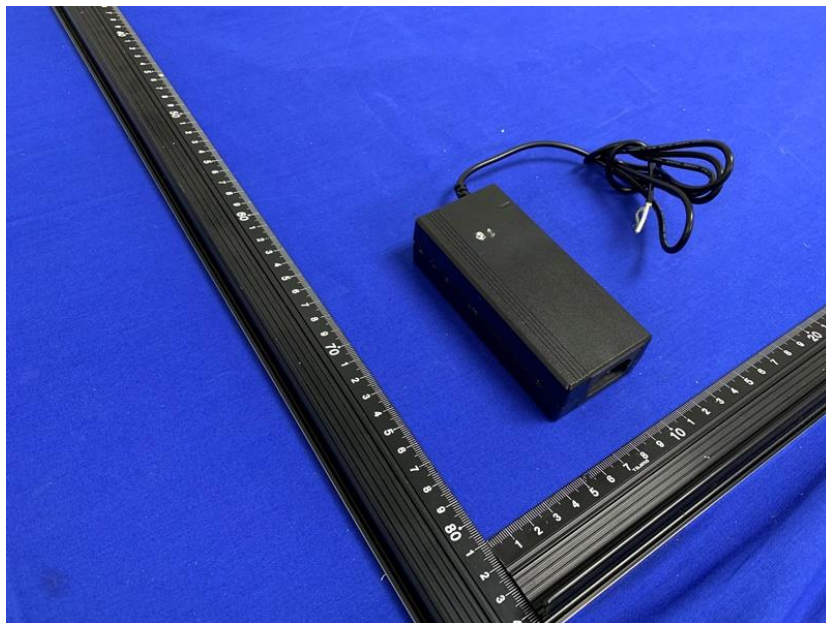














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