

MITAC EMC Laboratory

No.200, Wen Hwa 2nd Rd., Kuei Shan Dist., Taoyuan City 33383, Taiwan
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TEST REPORT

Regulatory Model No.:E420-12ADI

Prepared For:

MITAC COMPUTING TECHNOLOGY CORP.

**According to
EN 55032 、 CISPR 32 、 BS EN 55032 、
EN 55035 、 CISPR 35 、 BS EN 55035 、
IEC 61000-3-2 、 EN IEC 61000-3-2 、
BS EN IEC 61000-3-2 、 IEC 61000-3-3 、
EN 61000-3-3 and BS EN 61000-3-3
Requirements**

Test Report No.: 20230032CAR0A
Application Date: 08/16/2023
Tested Date: 08/17/2023~08/29/2023
Issued Date: 09/07/2023
Prepared by: MITAC EMC Laboratory

Test Report No.:20230032CAR0A

Prepared for MITAC COMPUTING TECHNOLOGY CORP.

Prepared by MITAC EMC Laboratory

No.200, Wen Hwa 2nd Rd., Kuei Shan Dist., Taoyuan City 33383, Taiwan

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DISCLAIMER NOTICE

The following information listed in this report, including detailed specification and photo of EUT, measuring equipment and conditions, testing results, and photography of measuring equipment and testing set-up, are all provided solely by our laboratory for testing purpose.

Our laboratory is not liable to those following information listed in this report, including applicant basic information, product model, product specification and application, trademark, interference source, suppression component, printed circuit board diagram, and take-back & storage service of EUT after being tested.

All information listed in this report is exclusive property to our laboratory, and is protected by the intellectual property laws and right of the countries where the laboratory is located. The reproduction of all or partial content of this report in any format for any purpose is forbidden without consent permission from our laboratory.

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The method of testing described in this report refers to the new version of the regulations according to customer's requirements. If there is a risk of misjudgment, it is not the responsibility of the laboratory.

The results shown in this test report refer only to the EUT subjected under test.

REPRODUCTION CLAUSE

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APPLIED STANDARDS

According to specification of manufacturer , the EUT must comply with the following requirements.

Below are basic standards version used for all the test items in this report.

Emission Test items	Basic Standard version used in this report	Remark
Conducted Emission	EN 55032:2015/A11:2020 CISPR 32:2015/AMD1:2019 BS EN 55032:2015+A11:2020	---
Radiated Emission	EN 55032:2015/A11:2020 CISPR 32:2015/AMD1:2019 BS EN 55032:2015+A11:2020	---
Harmonic Current Emission	IEC 61000-3-2:2018/AMD1:2020 EN IEC 61000-3-2:2019+A1:2021 BS EN IEC 61000-3-2:2019+A1:2021	---
Voltage Fluctuations/Flicker	IEC 61000-3-3:2013/AMD1:2017+AMD2:2021 EN 61000-3-3:2013+A1:2019 BS EN 61000-3-3:2013+A1:2019+A2:2021	---

Immunity Test items	Basic Standard version used in this report	Remark
Electrostatic Discharge	EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-2:2008 EN 61000-4-2:2009 BS EN 61000-4-2:2009	---
Radiated Susceptibility	EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-3:2020 EN IEC 61000-4-3:2020 BS EN IEC 61000-4-3:2020	---
Electrical Fast Transients	EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-4:2012 EN 61000-4-4:2012 BS EN 61000-4-4:2012	---

(cont'd)

Surge Immunity	EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-5:2014/AMD1:2017 EN 61000-4-5:2014+A1:2017 BS EN 61000-4-5:2014+A1:2017	---
Conducted Susceptibility	EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-6:2023 EN 61000-4-6:2014/AC:2015 BS EN 61000-4-6:2014	---
Power Frequency Magnetic Field	EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-8:2009 EN 61000-4-8:2010 BS EN 61000-4-8:2010	---
Voltage Dips and Short Interruption	EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-11:2020/COR1:2020 EN IEC 61000-4-11:2020/AC:2020 BS EN IEC 61000-4-11:2020	---

ADMINISTRATIVE DATA

Product Name: :Embedded System

Classification of EUT :Class B

Regulatory Model Number :E420-12ADI

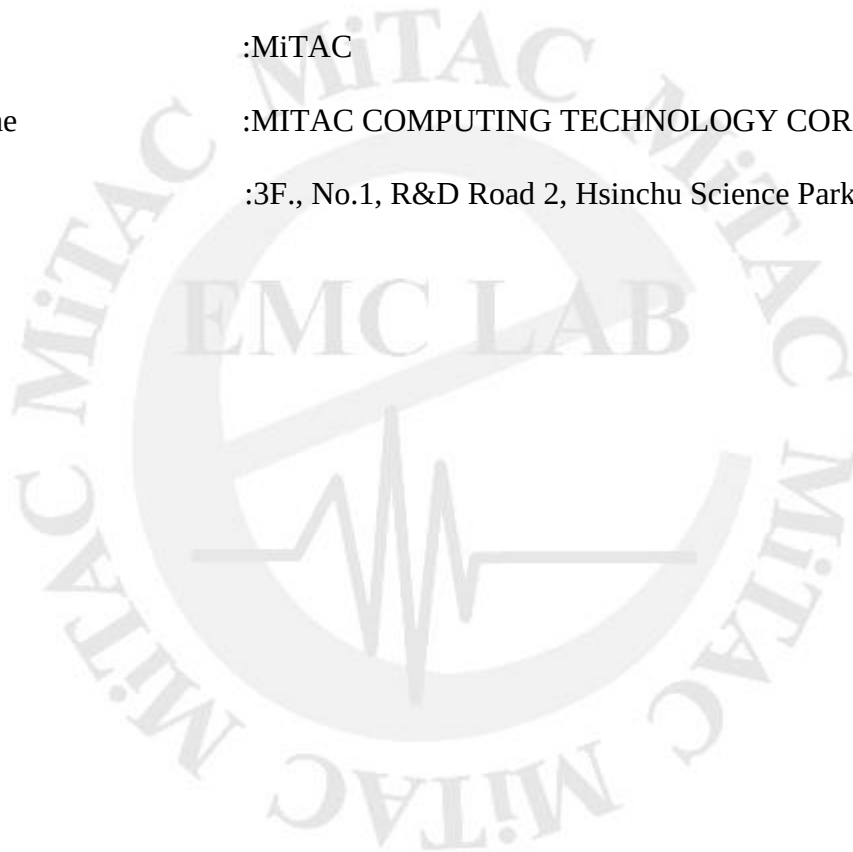
Series Model Number :E420-XXXXXXXXXXXXXXXXXX (Where “X” can be 0-9, A-Z or blank for marketing purpose)

Rating of EUT :DC Input: 12.0V  7.5A

Brand Name :MiTAC

Applicant Name :MITAC COMPUTING TECHNOLOGY CORP.

Address :3F., No.1, R&D Road 2, Hsinchu Science Park, Hsinchu, Taiwan



CONSTRUCTION OF EUT

Description	Model Number/ Part Number	Manufacturer	Technical Data
CPU	Raptor Lake	Intel	i3-13100TE 2.4GHz
DIMM	M425R4GA3BB0-CQK0D	Samsung	DDR5-4800, 32GB*2
SSD	MITSSL128GTLCG-SBC	Phison	M.2 2242, 128GB
SSD	MITSSO128GTLCG-SBC	Phison	M.2 2280, 128GB
STORAGE	MITSSB060GTLC9-SBA	TOSHIBA	SATA 2.5" HDD, 60GB
Wi-Fi & BT Module	AW-CB209NF	AzureWave	Wi-Fi 5
Wi-Fi Antenna	MPAMB24495804	PCTEL	2.4GHz / 5GHz WIFI Antenna
Chassis	E420	MiTAC	---
M/B	PH12ADI	MiTAC	R01(PH12ADI-12V)
PSU	EA10953F-120	EDACPOWER ELEC.	Input: 100-240V, 2.5A, 50~60Hz; Output: 12.0V, 7.5A 90W

FINAL TEST CONSTRUCTION OF EUT

Regulatory Model Number: E420-12ADI	
Item	Mode
CPU	Raptor Lake/2.4GHz (Intel)
DIMM	M425R4GA3BB0-CQK0D/32GB*2 (Samsung)
SSD	MITSSL128GTLCG-SBC/128GB (Phison)
SSD	MITSSO128GTLCG-SBC/128GB (Phison)
STORAGE	MITSSB060GTLC9-SBA/60GB (Toshiba)
Wi-Fi & BT Module	AW-CB209NF (AzureWave)
Wi-Fi Antenna	MPAMB24495804 (PCTEL)
Chassis	E420 (MiTAC)
M/B	PH12ADI (MiTAC)
PSU	EA10953F-120 (EDACPOWER ELEC.)

DESCRIPTION OF RESOLUTION 、 LAN SPEED AND OPERATING MODE OF WORST CASE

Interface	Final Resolution/Max.Lan Speed		Lan Operating Mode
	2.5G LAN	1G LAN	PC Transfer
DP	3840*2160/2.5Gbps	3840*2160/1Gbps	
HDMI	3840*2160/2.5Gbps	3840*2160/1Gbps	

MEASUREMENT UNCERTAINTY

Test Item	Measurement Uncertainty
Conducted Emission (Mains power port)	Conducted Emission Measurement Uncertainty $\pm 3.18\text{dB}$. Derived from ISO/IEC 17025 and CISPR 16-4-2 :ed2.0+ AMD.1:2014. +AMD2:2018 to the determination of uncertainties with a coverage factor $K=2$. At 95% minimum confidence level.
Conducted Emission (Asymmetric mode)	Conducted Emission ISN Measurement Uncertainty $\pm 3.31\text{dB}$. Derived from ISO/IEC 17025 and CISPR 16-4-2 :ed2.0+ AMD.1:2014. +AMD2:2018 to the determination of uncertainties with a coverage factor $K=2$. At 95% minimum confidence level.
Radiated Emission	Radiated Emission from 30MHz to 1GHz measurement uncertainty $\pm 4.54\text{dB}$. From 1GHz to 6GHz measurement uncertainty $\pm 4.97\text{dB}$. Derived from ISO/IEC 17025 and CISPR 16-4-2 :ed2.0+ AMD.1:2014. +AMD2:2018 to the determination of uncertainties with a coverage factor $K=2$. At 95% minimum confidence level.

MEASUREMENT SOFTWARE

Test Item	Measurement Software
Conducted Emission Test	EZ_EMC for Windows Version Mit-A15
Radiated Emission Test	EZ_EMC for Windows Version Mit-A15
Harmonic Current Emission(S3)	CTS 4 Version 4.29.0
Voltage Fluctuations/Flicker(S3)	CTS 4 Version 4.29.0
EFT Immunity Test(S3)	iec.control Version 7.1.3
Surge Immunity Test(S3)	iec.control Version 7.1.3
Voltage Dips, Short Interruption(S3)	iec.control Version 7.1.3
Harmonic Current Emission(S3)	Net.control Version 3.2.8
Voltage Fluctuations/Flicker(S3)	Net.control Version 3.2.8
EFT Immunity Test(S3) NX5	iec.control Version 8.3.7
Surge Immunity Test(S3) NX5	iec.control Version 8.3.7
Voltage Dips, Short Interruption(S3)NX5	iec.control Version 8.3.7
Conducted Susceptibility Test	EZ-CS for Windows Version Mit-A13
Radiated Susceptibility Test	EZ_RS for Windows Version Mit- A13
Voltage Dips, Short Interruption(S3)	AC Source CIGui-SII Version:2.3.0

TEST SUMMARY

The Electromagnetic Compatibility requirements on model **E420-12ADI** for these tests are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

Meanwhile, conducted emission in asymmetric mode is verified in shielded and unshielded cables and present the worst result under unshielded cable.

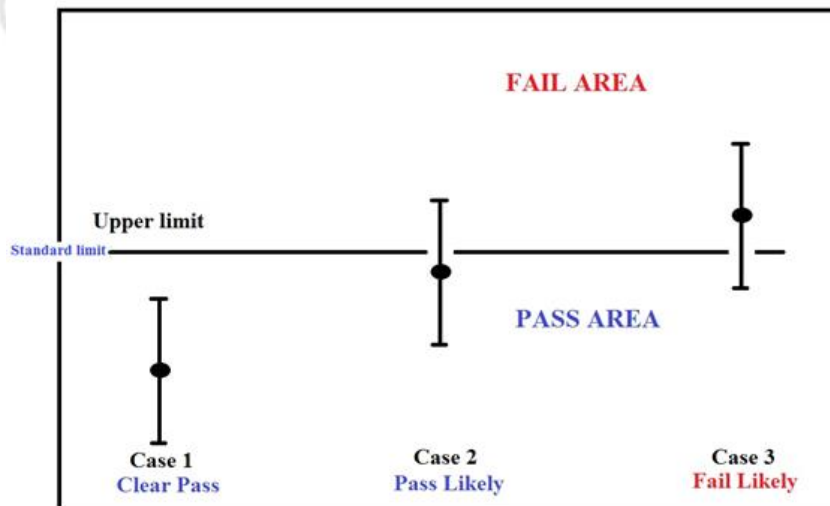
Conducted emission test in asymmetric mode is performed under link and idle modes and present the worst result under link mode.

The function of Wifi and BT were operating during the test.

Test results conformance statement decision principle: Decision rules governed by regulations or standards.

Test results Compliant and Not compliant decision principle, in accordance with: Priority when product (or product family) standards have individual specifications or the CISPR 16-4-2, Chapter 4.2 decision rules apply. If MU does not need to be counted on CISPR32, under limit is Compliant.

In the Radiate and Conducted emission test, the test result is expressed with measurement uncertainty as the below.



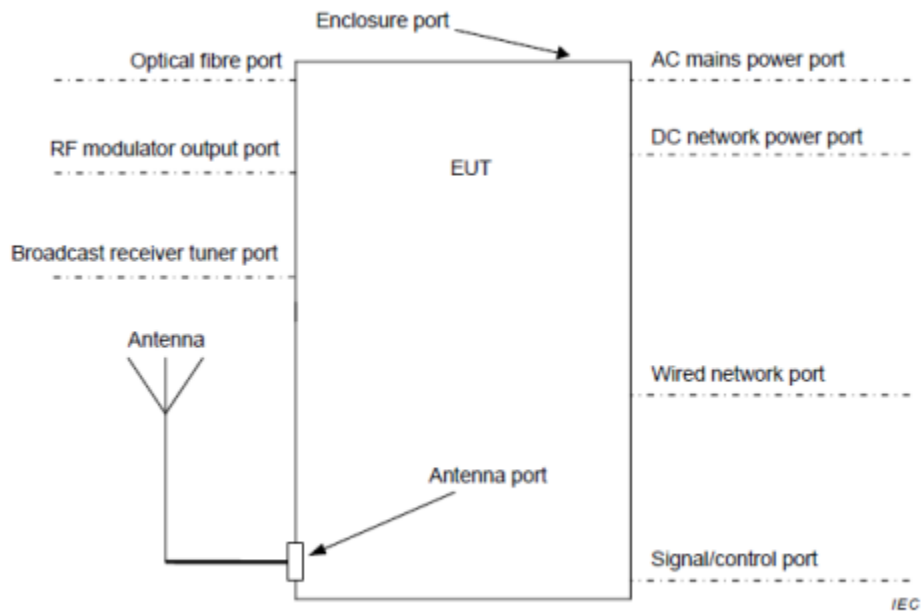


Figure 1 – Examples of ports

According to standard contains requirements for immunity testing of MME including: selection of applicable tests; disturbance levels to be applied during testing; configuration; performance criteria; and other necessary details. These requirements are contained in the main body of the document and in various annexes.

In this immunity testing, shall be application of an EM phenomenon to a port of the EUT and the assessment of its impact on the primary function(s).

During testing of ports as specified in Table 1 to Table 4 of the standard, we will be monitored primary function and assessed against the relevant performance criteria. e.g.

- Direct functions that can be observed or monitored.
- Indirect functions that can only be observed by monitoring direct functions.

Emission Tests				
Standard	Test Item	Test Result	Specification of Result	Remark
EN 55032:2015/A11:2020 CISPR 32:2015/AMD1:2019 BS EN 55032:2015+A11:2020 Class A	Conducted Emission (Mains power port)	Compliant	Worst margin is Passed by -12.08dB of QP Passed by -14.72dB of AVG At 0.4693MHz Frequency	Attachment 1
	Conducted Emission (Asymmetric mode)	Compliant	Worst margin is 2.5G Lan/10Mbps Passed by -21.28dB of QP Passed by -16.26dB of AVG At 0.4816MHz Frequency 1G Lan/100Mbps Passed by -12.63dB of QP Passed by -5.86dB of AVG At 18.2432MHz Frequency	
EN 55032:2015/A11:2020 CISPR 32:2015/AMD1:2019 BS EN 55032:2015+A11:2020 Class A	Radiated Emission	Compliant	Worst margin is Passed by -3.05dB of QP At 31.5022MHz Frequency	Attachment 2
EN IEC 61000-3-2:2019+ A1:2021 IEC 61000-3-2:2018/ AMD1:2020 BS EN IEC 61000-3-2:2019+ A1:2021	Power Harmonics	Compliant	This test was waived since input power of EUT is less than 75W.	Attachment 3
EN 61000-3-3:2013+A1:2019 IEC 61000-3-3:2013/ AMD1:2017+AMD2:2021 BS EN 61000-3-3:2013+ A1:2019+A2:2021	Voltage Fluctuation	Compliant	Pass	Attachment 4
Immunity Tests				
Standard	Test Item	Test Result	Specification of Result	Remark
EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-2:2008 EN 61000-4-2:2009 BS EN 61000-4-2:2009	Electrostatic Discharge	Compliant	Air Discharge: Level 3 at ±8kV with Performance Criteria B Contact Discharge: Level 2 at ±4kV with Performance Criteria B	Attachment 5
EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-3:2020 EN IEC 61000-4-3:2020 BS EN IEC 61000-4-3:2020	Radiated Immunity	Compliant	Level 2 at 3V/m from 80MHz-1000MHz with Performance Criteria A Level 2 at 3V/m in 1800MHz、2600MHz、 3500MHz and 5000MHz with Performance Criteria A	Attachment 6

(cont'd)

EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-4:2012 EN 61000-4-4:2012 BS EN 61000-4-4:2012	EFT/Bursts Immunity	Compliant	Power Port: Level 2 at $\pm 1\text{kV}$ with Performance Criteria B Signal Ports: Level 2 at $\pm 0.5\text{kV}$ with Performance Criteria B	Attachment 7
EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-5:2014/ AMD1:2017 EN 61000-4-5:2014+A1:2017 BS EN 61000-4-5:2014+ A1:2017	Surge Immunity	Compliant	Power Port: Common Mode(L-G): Level 3 at $\pm 2\text{kV}$ with Performance Criteria A Diff. Mode(L-L): Level 3 at $\pm 1\text{kV}$ with Performance Criteria A	Attachment 8
EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-6:2023 EN 61000-4-6:2014/AC:2015 BS EN 61000-4-6:2014	Conducted Immunity	Compliant	Power Port and Signal Port: Level 2 at 3V(RMS) from 0.15MHz to 10MHz with Performance Criteria A Level X from 3V(RMS) to 1V(RMS) from 10MHz- 30MHz with Performance Criteria A Level 1 at 1V(RMS) from 30MHz-80MHz with Performance Criteria A	Attachment 9
EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-8:2009 EN 61000-4-8:2010 BS EN 61000-4-8:2010	Power Frequency Magnetic Field	Compliant	Level 1 at 1A/m 50Hz power frequency with Performance Criteria A	Attachment 10
EN 55035:2017+A11:2020 CISPR 35:2016 BS EN 55035:2017+A11:2020 IEC 61000-4-11:2020/ COR1:2020 EN IEC 61000-4-11:2020/ AC:2020 BS EN IEC 61000-4-11:2020	Voltage Dips, Short interruption	Compliant	The EUT meets test requirements. Refer to attachment 11 for details.	Attachment 11

TECHNICAL REVIEWED:

Jeff.T.Chan
Jeff.T.Chan

QUALITY REVIEWED:

Richard Chien
Richard Chien

APPROVED:

Vincent Chia
Vincent Chia/Lab Manager

Test Report No.:20230032CAR0A

Prepared for MITAC COMPUTING TECHNOLOGY CORP.

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No.200, Wen Hwa 2nd Rd., Kuei Shan Dist., Taoyuan City 33383, Taiwan

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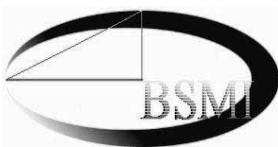
TEST LOCATION

MITAC EMC Laboratory
No.200, Wen Hwa 2nd Rd., Kuei Shan Dist., Taoyuan City 33383, Taiwan

ACCREDITATION BODIES



In compliance with the FCC requirement is through BSMI multilateral MRA (Mutual Recognition Arrangement). MITAC EMC Lab has been accredited as a Conformity Assessment Body (CAB). Designation Number: TW-1080.



In compliance with the site registration requirements from BSMI according to ISO/IEC 17025. Site reference No. SL2-IN-E-0063



Registered in accordance with Japanese VCCI Regulations and member No.1433
Conduction Emission Registration No: C-11173
Radiation Emission Registration No: R-11114 & G-10021
Telecommunication Ports Conducted Emission Interference Measurement Registration No.: T-11551



In compliance with the Council of Chinese National Laboratory Accreditation accredited. Lab accreditation No.3021

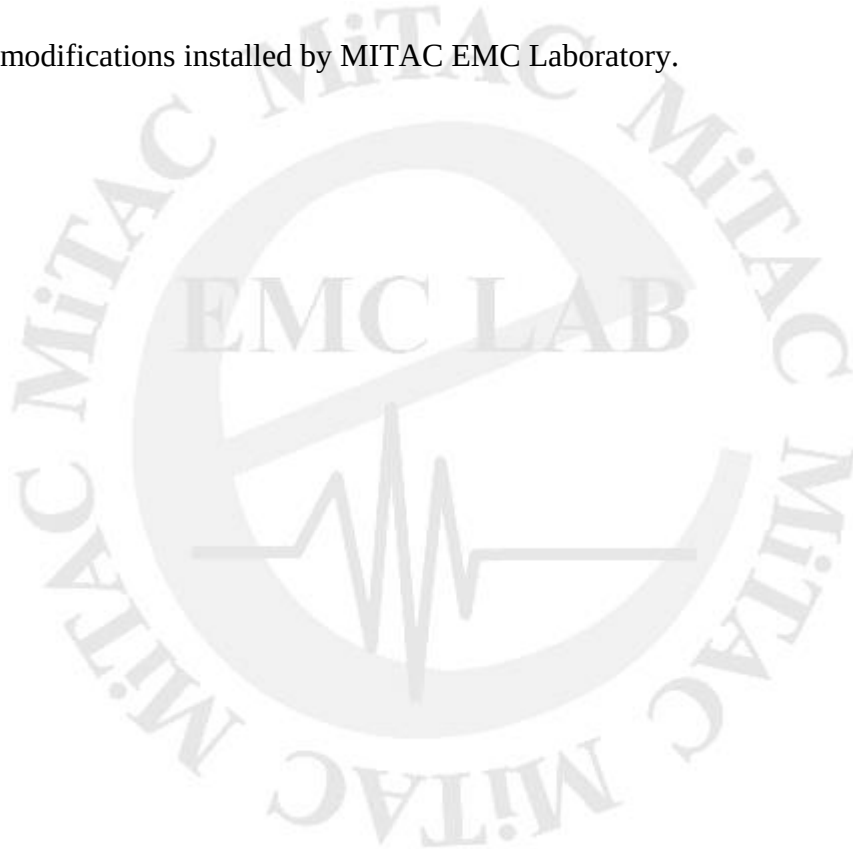
EUT EXERCISE SOFTWARE

The EUT exercise program “BurnIn test Version 9.0 、Iperf Version 2.0.5” were used to test during compliance testing. The program contained in a hard disk, and was loaded under ” Windows 10”. Once loaded, the test engineer selected each connected support device, then the program exercises each connected support device in turn, data is transmitted to them during testing.

EQUIPMENT MODIFICATION

Any modifications installed previous to testing by MITAC COMPUTING TECHNOLOGY CORP. will be incorporated in each production model sold or leased in European Union.

There were no modifications installed by MITAC EMC Laboratory.

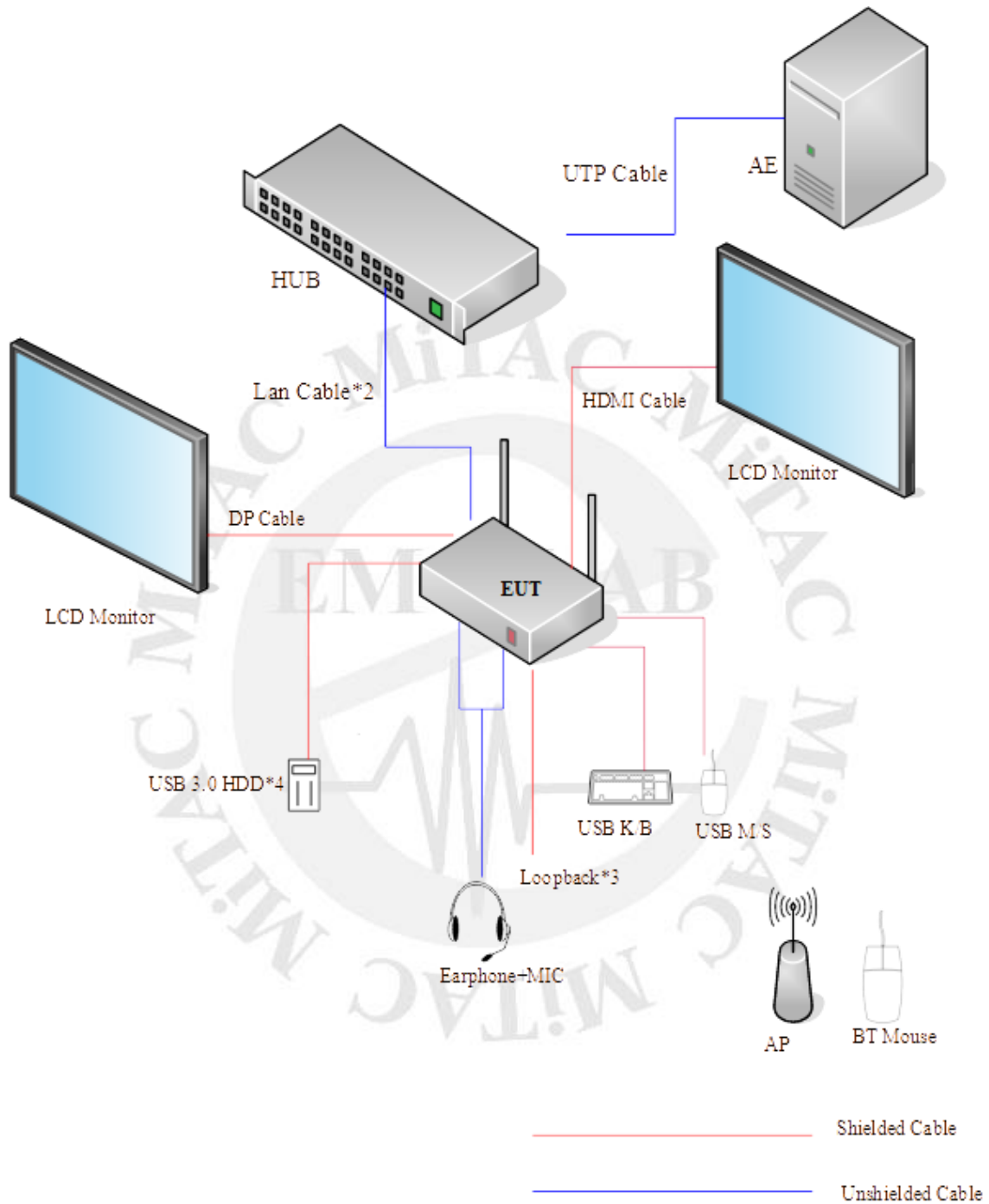


DESCRIPTION OF PERIPHERAL DEVICES AND CABLE CONNECTION

Peripheral Device		
Description	Model Number	Manufacturer
27" LCD Monitor*2 (RE and CE Used)	P2715Qt	Dell Inc.
24" LCD Monitor*2 (Harmonic 、Flicker and EMS Used)	P2415Qb	Dell Inc.
USB Keyboard	KB216t	Dell Inc.
USB Mouse	MS116p	Dell Inc.
USB HDD *4 (RE and CE Used)	Elements	WD
USB HDD *4 (Harmonic 、Flicker and EMS Used)	My Book	WD
Audio	EM-1120MV	I-GOTA
BT mouse	RJN-00011	Microsoft
Loopback*3	---	---
AE	OPTIPLEX 3020	Dell Inc.
HUB	XS508M	Netgear
AP	Dir-859	Dink

Cable Description					
From	To	Length (Meters)	Shielded (Y/N)	Ferrite Loaded (Y/N)	Type
EUT	LCD	1.8	Y	N	DP Cable
EUT	LCD	1.8	Y	N	HDMI Cable
EUT	K/B	1.8	Y	N	USB Cable
EUT	Mouse	1.8	Y	N	USB Cable
EUT	MIC+EARPHONE	1.8	N	N	Audio Cable
EUT	Loopback	2.5	Y	N	GPIO Cable
EUT	Loopback	2.5	Y	N	COM Cable*2
EUT	USB HDD	1.2	Y	N	USB Cable*4
EUT	HUB	3	N	N	2.5GbE Lan Cable
EUT	HUB	3	N	N	1GbE Lan Cable
HUB	AE	RE:10 Others:3	N	N	UTP Cable

CONNECTION DIAGRAM OF EUT



Remark:

The AE is placed in outside of 10M chamber during the radiated emission test.

ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS

- **Test Reference:** EN 55032 、 CISPR 32 and BS EN 55032
- **Test Procedure:**
The EUT is set up according to the guideline of EN 55032 、 CISPR 32 and BS EN 55032 for conducted emissions. The measurement using an AMN on each line and an EMI receiver peak scan is made at the frequency measurement range. The six highest significant peaks are then marked, and these signals are then quasi-peaked and averaged. The frequency range investigated is from 150kHz to 30MHz.

The basic equation with a sample calculation is as follows:

Corr.Data = Raw Data + LISN/ISN Loss (or AMN/AAN Loss) + Cable Loss

Corr.Data = Field Strength

Raw Data = Receiver Amplitude

LISN/ISN Loss = LISN/ISN Factor

AMN/AAN Loss = AMN/AAN Factor

Cable Loss = Cable Loss

*All cables those are considered part of the EUT shall be arrange on GRP above non-conductive support detail as Annex D of EN 55032

*EUTs that display video images or EUTs with ports that are used to provide video signals shall be exercised in accordance with Table B.1 and B.2 requirements of CISPR 32.

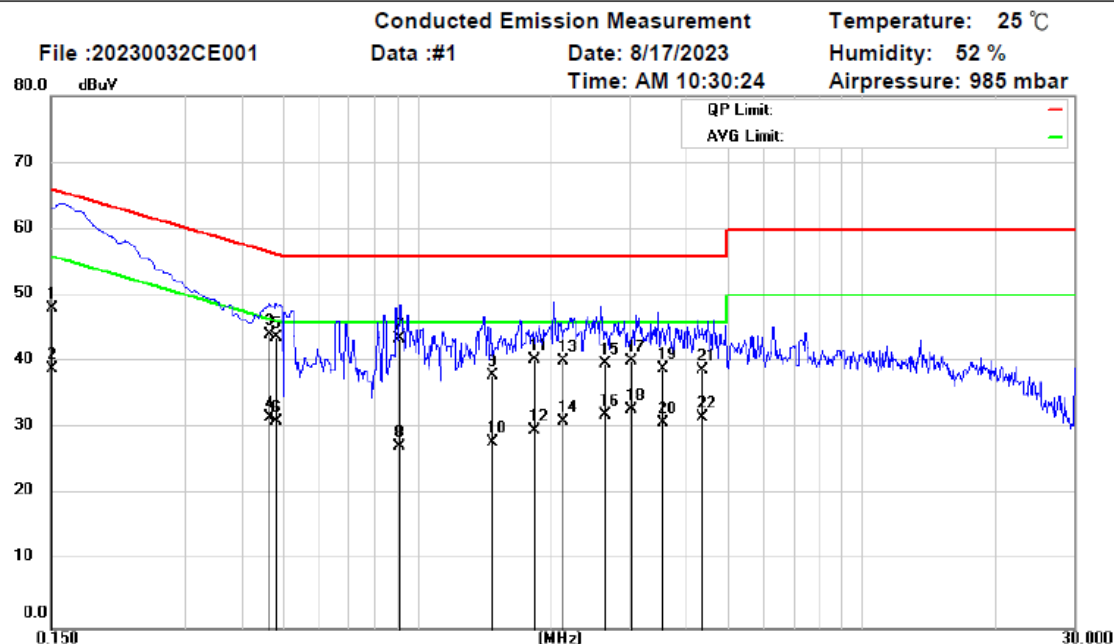
- **Test Result:** The EUT meets the Class B device requirement.
- **Change or Modification:** There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:** Following pages are detailed testing contents
- **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
EMI Receiver	ROHDE&SCHWARZ /ESR	102549	2023/4/25	2024/4/23
AMN	ROHDE&SCHWARZ /ENV216	101330	2023/6/28	2024/6/27
Cable	EMC400-BNCM- BNCM-6000	140304	2022/8/24	2023/8/23



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Address: NO. 200, Wen Hua 2nd RD., Kuei San Dist., Taoyuan, Taiwan.

Operator: ABEL KAO



Site : Conduction Emission
Limit : (AMN)CISPR32 class B_QP
Company : MITAC
EUT : E420-12ADI
Exercise Program : BurnIn test
Comments: FULL SYSTEM

Phase: L1
Power : 230VAC/50Hz

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.1505	38.50	9.61	0.04	48.15	65.97	-17.82	QP	
	0.1505	29.45	9.61	0.04	39.10	55.97	-16.87	AVG	
*	0.4658	34.46	9.6	0.06	44.12	56.59	-12.47	QP	
	0.4658	21.97	9.6	0.06	31.63	46.59	-14.96	AVG	
	0.4806	34.12	9.6	0.06	43.78	56.33	-12.55	QP	
	0.4806	21.40	9.6	0.06	31.06	46.33	-15.27	AVG	
	0.9072	33.81	9.61	0.08	43.50	56.00	-12.50	QP	
	0.9072	17.61	9.61	0.08	27.30	46.00	-18.70	AVG	
	1.4794	28.35	9.61	0.1	38.06	56.00	-17.94	QP	
	1.4794	18.28	9.61	0.1	27.99	46.00	-18.01	AVG	
	1.8293	30.66	9.62	0.11	40.39	56.00	-15.61	QP	
	1.8293	20.07	9.62	0.11	29.80	46.00	-16.20	AVG	
	2.1187	30.46	9.62	0.12	40.20	56.00	-15.80	QP	
	2.1187	21.42	9.62	0.12	31.16	46.00	-14.84	AVG	

Spectrum Analyzer: ESR
Receiver: ESR_1
AMN/AAN ENV216-330
Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin
RBW: 9 KHz
VBW: 30 KHz

File :20230032CE001\Data :#1

Page: 1

Site : Conduction Emission

Limit : (AMN)CISPR32 class B_QP

Phase: L1

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : BurnIn test

Comments: FULL SYSTEM

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	2.6371	30.09	9.62	0.14	39.85	56.00	-16.15	QP	
	2.6371	22.32	9.62	0.14	32.08	46.00	-13.92	AVG	
	3.0231	30.35	9.63	0.15	40.13	56.00	-15.87	QP	
	3.0231	23.07	9.63	0.15	32.85	46.00	-13.15	AVG	
	3.5536	29.27	9.63	0.17	39.07	56.00	-16.93	QP	
	3.5536	21.07	9.63	0.17	30.87	46.00	-15.13	AVG	
	4.3686	28.94	9.64	0.18	38.76	56.00	-17.24	QP	
	4.3686	21.80	9.64	0.18	31.62	46.00	-14.38	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN ENV216-330

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

File :20230032CE001\Data :#1

Page: 2

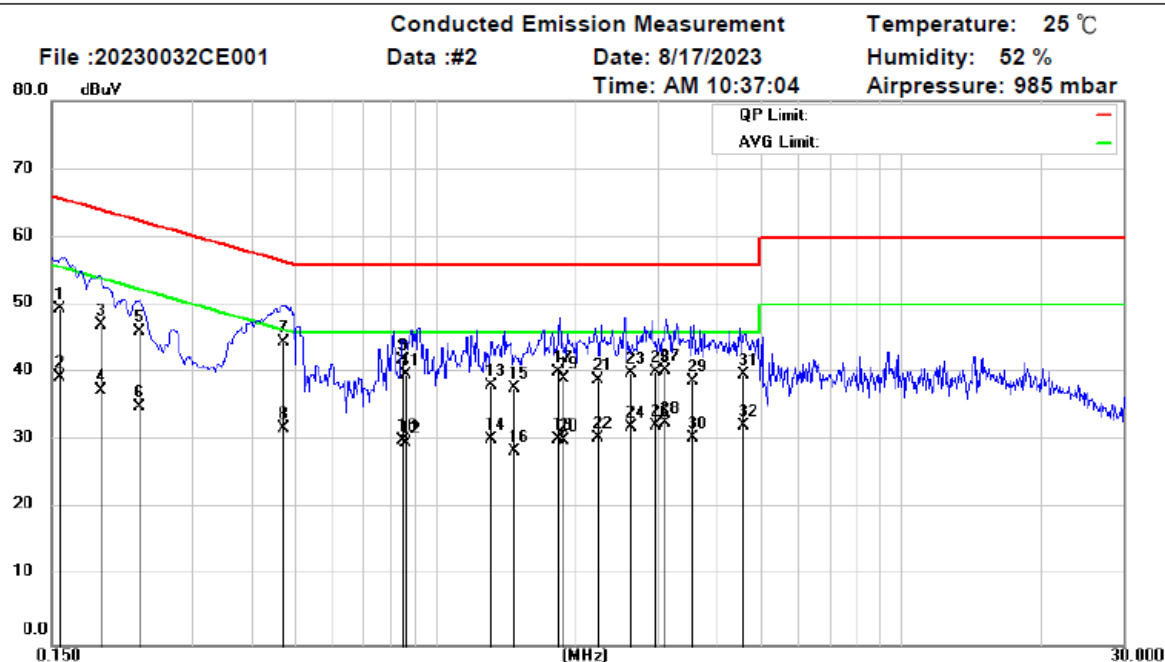
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Site : Conduction Emission

Limit : (AMN)CISPR32 class B_QP

Phase: N

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : BurnIn test

Comments: FULL SYSTEM

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.1552	39.89	9.63	0.04	49.56	65.72	-16.16	QP	
	0.1552	29.65	9.63	0.04	39.32	55.72	-16.40	AVG	
	0.1905	37.44	9.63	0.04	47.11	64.01	-16.90	QP	
	0.1905	27.82	9.63	0.04	37.49	54.01	-16.52	AVG	
	0.2301	36.53	9.63	0.04	46.20	62.45	-16.25	QP	
	0.2301	25.42	9.63	0.04	35.09	52.45	-17.36	AVG	
*	0.4693	34.77	9.62	0.06	44.45	56.53	-12.08	QP	
	0.4693	22.13	9.62	0.06	31.81	46.53	-14.72	AVG	
	0.8500	32.19	9.62	0.07	41.88	56.00	-14.12	QP	
	0.8500	20.47	9.62	0.07	30.16	46.00	-15.84	AVG	
	0.8590	30.12	9.62	0.08	39.82	56.00	-16.18	QP	
	0.8590	20.07	9.62	0.08	29.77	46.00	-16.23	AVG	
	1.3135	28.58	9.62	0.09	38.29	56.00	-17.71	QP	
	1.3135	20.57	9.62	0.09	30.28	46.00	-15.72	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN ENV216-330

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

File :20230032CE001\Data :#2

Page: 1

Test Report No.:20230032CAR0A

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Site : Conduction Emission

Limit : (AMN)CISPR32 class B_QP

Phase: *N*

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : BurnIn test

Comments: FULL SYSTEM

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	1.4683	28.11	9.62	0.1	37.83	56.00	-18.17	QP	
	1.4683	18.82	9.62	0.1	28.54	46.00	-17.46	AVG	
	1.8206	30.38	9.63	0.11	40.12	56.00	-15.88	QP	
	1.8206	20.55	9.63	0.11	30.29	46.00	-15.71	AVG	
	1.8773	29.51	9.63	0.12	39.26	56.00	-16.74	QP	
	1.8773	20.32	9.63	0.12	30.07	46.00	-15.93	AVG	
	2.2308	29.26	9.63	0.13	39.02	56.00	-16.98	QP	
	2.2308	20.81	9.63	0.13	30.57	46.00	-15.43	AVG	
	2.6341	30.15	9.64	0.14	39.93	56.00	-16.07	QP	
	2.6341	22.31	9.64	0.14	32.09	46.00	-13.91	AVG	
	2.9774	30.38	9.64	0.15	40.17	56.00	-15.83	QP	
	2.9774	22.56	9.64	0.15	32.35	46.00	-13.65	AVG	
	3.0924	30.60	9.64	0.15	40.39	56.00	-15.61	QP	
	3.0924	22.82	9.64	0.15	32.61	46.00	-13.39	AVG	
	3.5637	28.90	9.65	0.17	38.72	56.00	-17.28	QP	
	3.5637	20.76	9.65	0.17	30.58	46.00	-15.42	AVG	
	4.5951	29.86	9.66	0.19	39.71	56.00	-16.29	QP	
	4.5951	22.46	9.66	0.19	32.31	46.00	-13.69	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN ENV216-330

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

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Test Report No.:20230032CAR0A

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- **Test Reference:** EN 55032 、 CISPR 32 and BS EN 55032

- **Test Procedure:**

The EUT is set up according to the guideline of EN 55032 、 CISPR 32 and BS EN 55032 for conducted emissions. The measurement is using an AAN on each line and an EMI receiver peak scan is made at the frequency measurement range. In order to make reliable emission measurements representative of high LAN utilization it is only necessary to create a condition of LAN utilization in excess of 10% and sustain that level for a minimum of 250ms. The six highest significant peaks are then marked, and these signals are then quasi-peaked and averaged. The frequency range investigated is from 150kHz to 30MHz.

The basic equation with a sample calculation is as follows:

Corr.Data = Raw Data + LISN/ISN Loss (or AMN/AAN Loss) + Cable Loss

Corr.Data = Field Strength

Raw Data = Receiver Amplitude

LISN/ISN Loss = LISN/ISN Factor

AMN/AAN Loss = AMN/AAN Factor

Cable Loss = Cable Loss

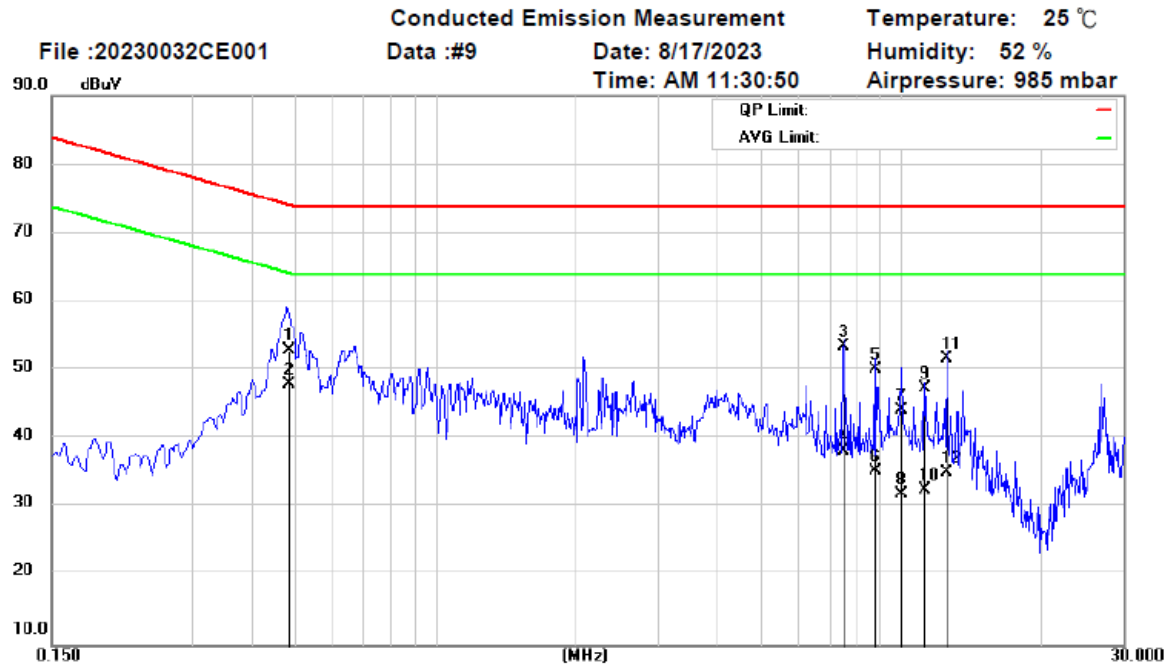
*All cables those are considered part of the EUT shall be arrange on GRP above non-conductive support detail as Annex D of EN 55032

- **Cable Type:**The Cat5e and Cat6A cables were used for 10/100/1000Mbps and 10/100/1000Mbps and 2.5Gbps from EUT to AAN.
- **Name of Analogue/digital data port:**2.5G Lan and 1G Lan
- **Test Result:** The EUT meets the Class B device requirement.
- **Change or Modification:**There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:**Following pages are detailed testing contents

● **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
EMI Receiver	ROHDE&SCHWARZ/ ESR	102549	2023/4/25	2024/4/23
AAN	TESEQ/ ISN T8-Cat6	53576	2023/6/7	2024/6/6
AAN	TESEQ/ISN T800	36193	2022/9/7	2023/9/6
Cable	EMC400-BNCM- BNCM-6000	140304	2022/8/24	2023/8/23





Site : Conduction Emission

Limit : (AAN)CISPR32 class B_QP_VOLTAGE

Phase:

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : lperf

Comments: FULL SYSTEM,2.5G LAN 10Mbps link

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.4816	43.41	9.56	0.06	53.03	74.31	-21.28	QP	
*	0.4816	38.43	9.56	0.06	48.05	64.31	-16.26	AVG	
	7.5000	44.02	9.36	0.22	53.60	74.00	-20.40	QP	
	7.5000	28.69	9.36	0.22	38.27	64.00	-25.73	AVG	
	8.7500	40.51	9.36	0.24	50.11	74.00	-23.89	QP	
	8.7500	25.70	9.36	0.24	35.30	64.00	-28.70	AVG	
	10.0002	34.74	9.36	0.25	44.35	74.00	-29.65	QP	
	10.0002	22.51	9.36	0.25	32.12	64.00	-31.88	AVG	
	11.2502	37.76	9.37	0.27	47.40	74.00	-26.60	QP	
	11.2502	22.90	9.37	0.27	32.54	64.00	-31.46	AVG	
	12.5000	42.17	9.37	0.28	51.82	74.00	-22.18	QP	
	12.5000	25.60	9.37	0.28	35.25	64.00	-28.75	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN T8 Cat6 53576

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

File :20230032CE001\Data :#9

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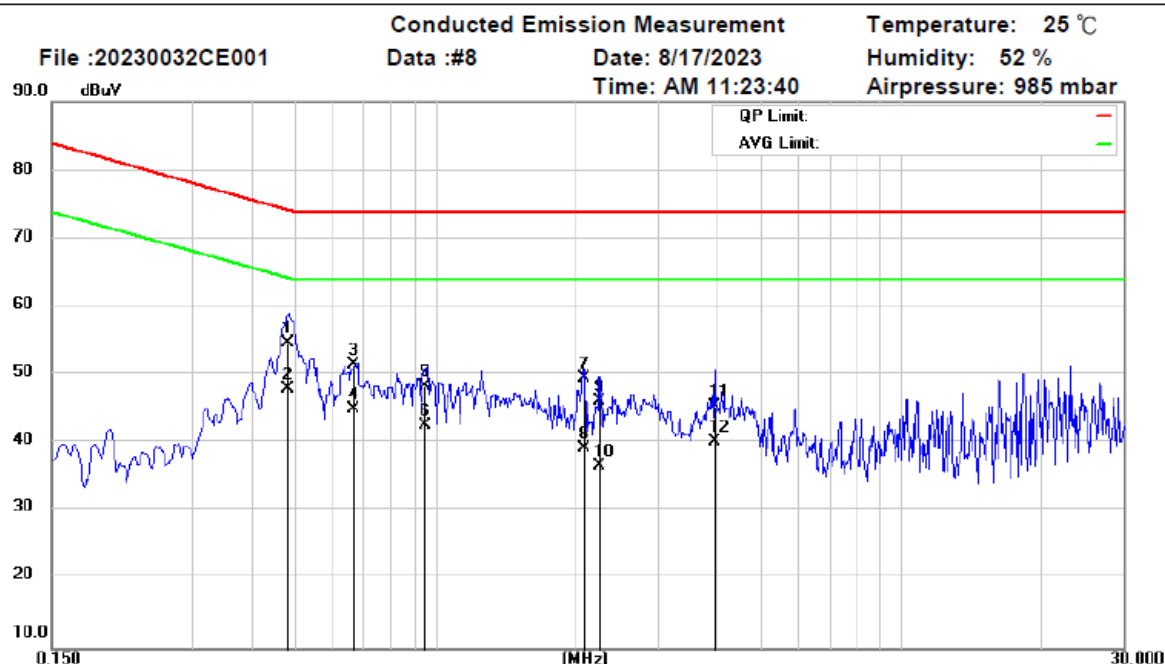
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Site : Conduction Emission

Limit : (AAN)CISPR32 class B_QP_VOLTAGE

Phase:

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : lperf

Comments: FULL SYSTEM,2.5G LAN 100Mbps link

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.4800	45.11	9.56	0.06	54.73	74.34	-19.61	QP	
*	0.4800	38.38	9.56	0.06	48.00	64.34	-16.34	AVG	
	0.6678	42.01	9.52	0.07	51.60	74.00	-22.40	QP	
	0.6678	35.54	9.52	0.07	45.13	64.00	-18.87	AVG	
	0.9460	38.93	9.48	0.08	48.49	74.00	-25.51	QP	
	0.9460	33.09	9.48	0.08	42.65	64.00	-21.35	AVG	
	2.0808	40.02	9.41	0.12	49.55	74.00	-24.45	QP	
	2.0808	29.82	9.41	0.12	39.35	64.00	-24.65	AVG	
	2.2368	36.80	9.41	0.13	46.34	74.00	-27.66	QP	
	2.2368	27.15	9.41	0.13	36.69	64.00	-27.31	AVG	
	3.9551	35.97	9.38	0.18	45.53	74.00	-28.47	QP	
	3.9551	30.81	9.38	0.18	40.37	64.00	-23.63	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN T8 Cat6 53576

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

File :20230032CE001\Data :#8

Page: 1

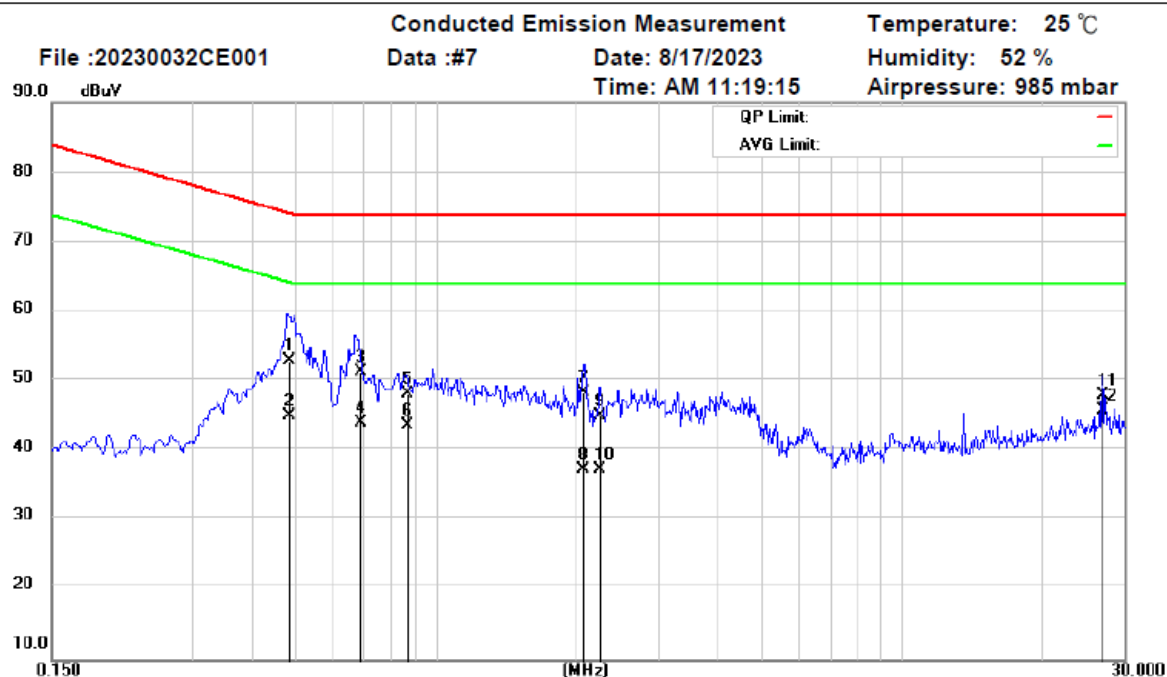
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Site : Conduction Emission

Limit : (AAN)CISPR32 class B_QP_VOLTAGE

Phase:

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : lperf

Comments: FULL SYSTEM,2.5G LAN 1Gbps link

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.4816	43.39	9.56	0.06	53.01	74.31	-21.30	QP	
	0.4816	35.51	9.56	0.06	45.13	64.31	-19.18	AVG	
	0.6877	41.76	9.51	0.07	51.34	74.00	-22.66	QP	
	0.6877	34.51	9.51	0.07	44.09	64.00	-19.91	AVG	
	0.8678	38.70	9.48	0.08	48.26	74.00	-25.74	QP	
	0.8678	34.13	9.48	0.08	43.69	64.00	-20.31	AVG	
	2.0725	38.95	9.41	0.12	48.48	74.00	-25.52	QP	
	2.0725	27.91	9.41	0.12	37.44	64.00	-26.56	AVG	
	2.2406	35.52	9.41	0.13	45.06	74.00	-28.94	QP	
	2.2406	27.74	9.41	0.13	37.28	64.00	-26.72	AVG	
	26.9156	38.07	9.44	0.42	47.93	74.00	-26.07	QP	
*	26.9156	36.05	9.44	0.42	45.91	64.00	-18.09	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN T8 Cat6 53576

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

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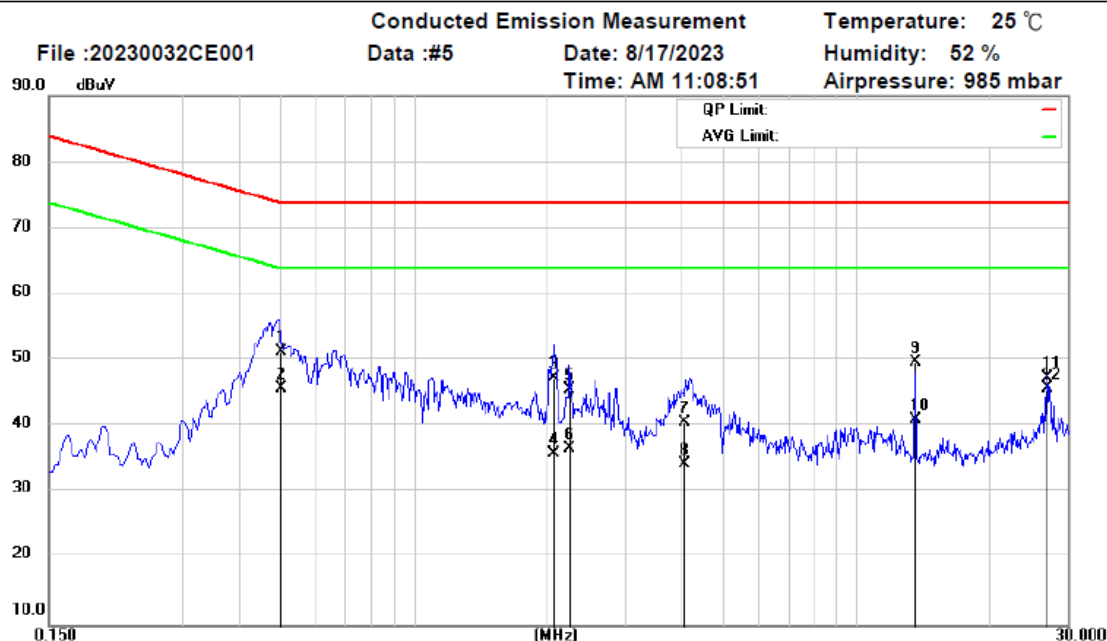
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MITAC EMC LAB Tel:+886-3-3962888 Fax:+886-3-3276328
Address: NO. 200, Wen Hua 2nd RD., Kuei San Dist., Taoyuan, Taiwan.

Operator: ABEL KAO



Site : Conduction Emission

Limit : (AAN)CISPR32 class B_QP_VOLTAGE

Phase:

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : lperf

Comments: FULL SYSTEM,2.5G LAN 2.5Gbps link

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.4986	41.81	9.55	0.06	51.42	74.02	-22.60	QP	
*	0.4986	36.34	9.55	0.06	45.95	64.02	-18.07	AVG	
	2.0691	37.99	9.41	0.12	47.52	74.00	-26.48	QP	
	2.0691	26.44	9.41	0.12	35.97	64.00	-28.03	AVG	
	2.2391	36.08	9.41	0.13	45.62	74.00	-28.38	QP	
	2.2391	27.16	9.41	0.13	36.70	64.00	-27.30	AVG	
	4.0882	31.13	9.38	0.18	40.69	74.00	-33.31	QP	
	4.0882	24.80	9.38	0.18	34.36	64.00	-29.64	AVG	
	13.5616	40.06	9.37	0.29	49.72	74.00	-24.28	QP	
	13.5616	31.51	9.37	0.29	41.17	64.00	-22.83	AVG	
	26.9326	37.50	9.44	0.42	47.36	74.00	-26.64	QP	
	26.9326	36.05	9.44	0.42	45.91	64.00	-18.09	AVG	

Spectrum Analyzer: ESR
Receiver: ESR_1
AMN/AAN T8 Cat6 53576
Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin
RBW: 9 KHz
VBW: 30 KHz

File :20230032CE001\Data :#5

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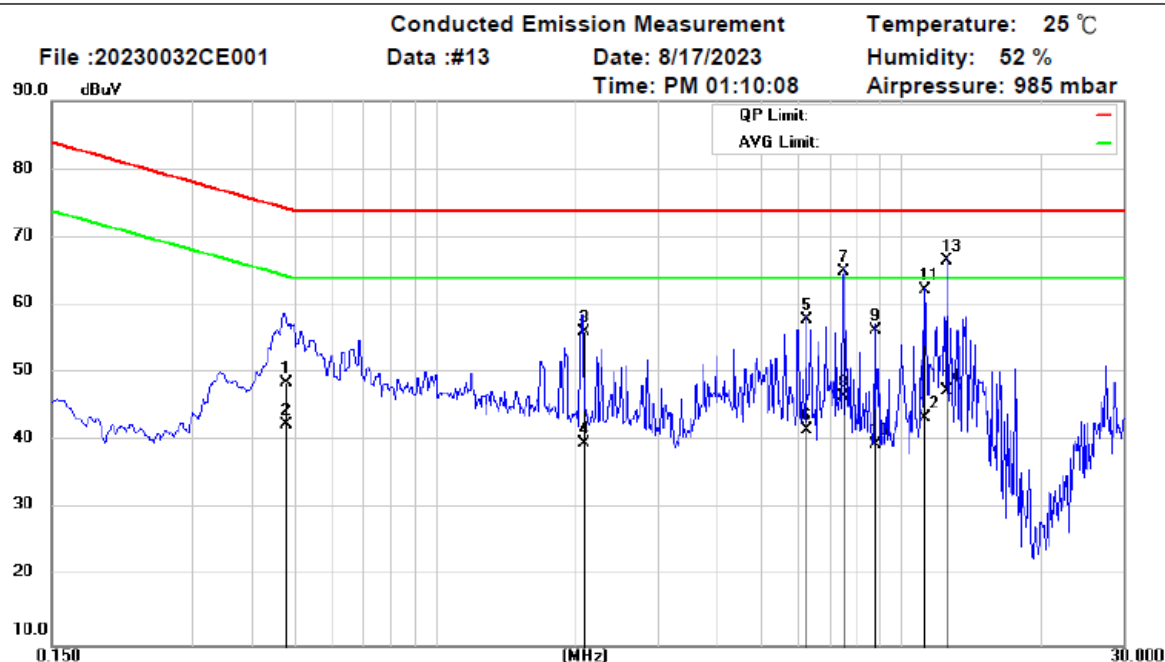
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Site : Conduction Emission

Limit : (AAN)CISPR32 class B_QP_VOLTAGE

Phase:

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : lperf

Comments: FULL SYSTEM,1G LAN 10Mbps link

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.4763	38.91	9.66	0.06	48.63	74.40	-25.77	QP	
	0.4763	32.82	9.66	0.06	42.54	64.40	-21.86	AVG	
	2.0832	46.46	9.5	0.12	56.08	74.00	-17.92	QP	
	2.0832	30.06	9.5	0.12	39.68	64.00	-24.32	AVG	
	6.2500	48.31	9.46	0.21	57.98	74.00	-16.02	QP	
	6.2500	32.06	9.46	0.21	41.73	64.00	-22.27	AVG	
	7.5000	55.33	9.46	0.22	65.01	74.00	-8.99	QP	
	7.5000	36.98	9.46	0.22	46.66	64.00	-17.34	AVG	
	8.7500	46.63	9.45	0.24	56.32	74.00	-17.68	QP	
	8.7500	29.77	9.45	0.24	39.46	64.00	-24.54	AVG	
	11.2500	52.41	9.47	0.27	62.15	74.00	-11.85	QP	
	11.2500	33.73	9.47	0.27	43.47	64.00	-20.53	AVG	
*	12.5000	56.76	9.48	0.28	66.52	74.00	-7.48	QP	
	12.5000	37.58	9.48	0.28	47.34	64.00	-16.66	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN TESEQ T800 Cat5

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

File :20230032CE001\Data :#13

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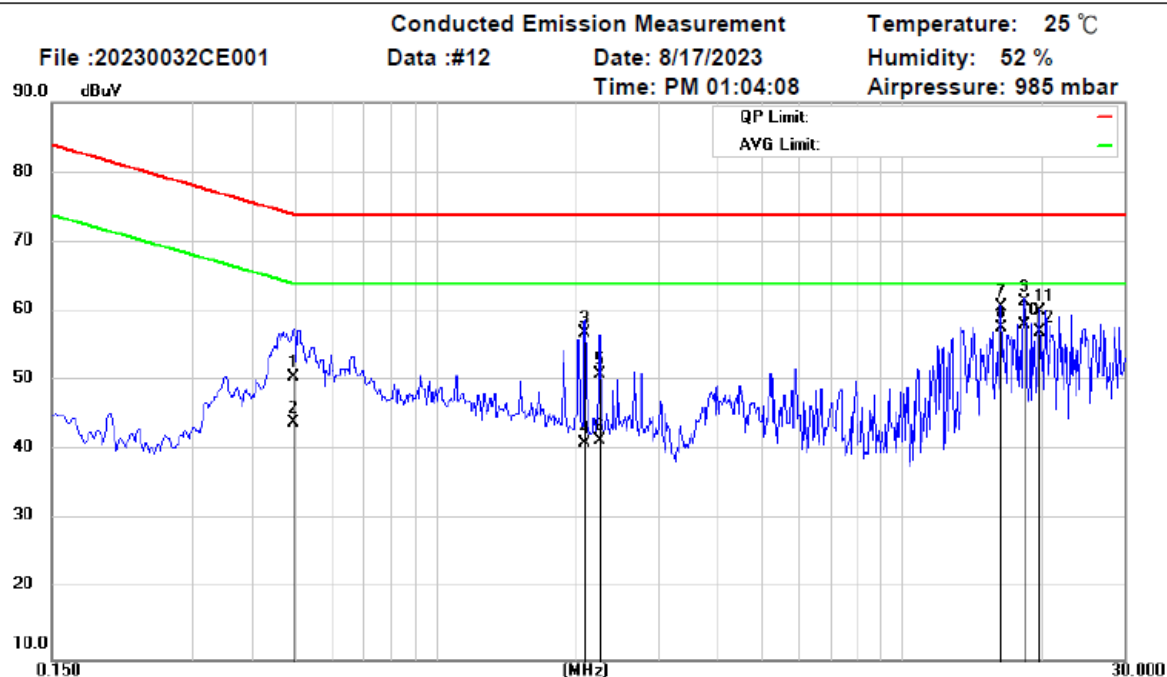
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Site : Conduction Emission

Limit : (AAN)CISPR32 class B_QP_VOLTAGE

Phase:

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : lperf

Comments: FULL SYSTEM,1G LAN 100Mbps link

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.4933	40.80	9.65	0.06	50.51	74.11	-23.60	QP	
	0.4933	34.32	9.65	0.06	44.03	64.11	-20.08	AVG	
	2.0778	47.28	9.5	0.12	56.90	74.00	-17.10	QP	
	2.0778	31.55	9.5	0.12	41.17	64.00	-22.83	AVG	
	2.2444	41.43	9.5	0.13	51.06	74.00	-22.94	QP	
	2.2444	31.97	9.5	0.13	41.60	64.00	-22.40	AVG	
	16.2280	50.88	9.54	0.32	60.74	74.00	-13.26	QP	
	16.2280	47.90	9.54	0.32	57.76	64.00	-6.24	AVG	
	18.2432	51.46	9.57	0.34	61.37	74.00	-12.63	QP	
*	18.2432	48.23	9.57	0.34	58.14	64.00	-5.86	AVG	
	19.7088	50.17	9.59	0.36	60.12	74.00	-13.88	QP	
	19.7088	47.15	9.59	0.36	57.10	64.00	-6.90	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN TESEQ T800 Cat5

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

File :20230032CE001\Data :#12

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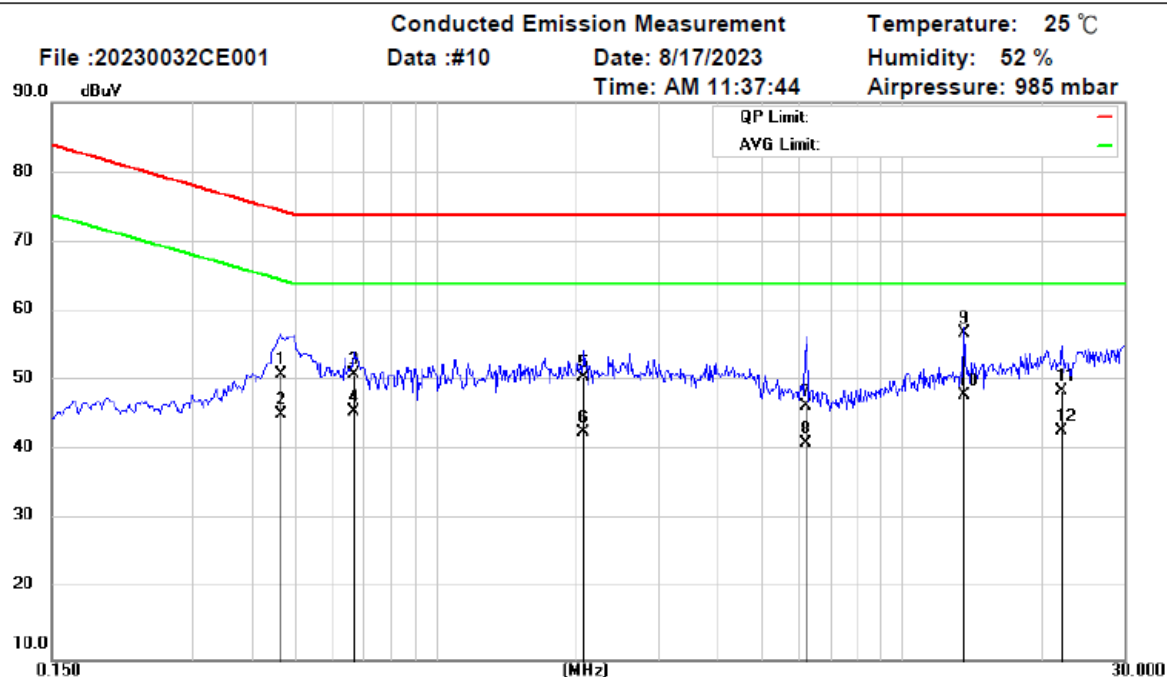
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Site : Conduction Emission

Limit : (AAN)CISPR32 class B_QP_VOLTAGE

Phase:

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : lperf

Comments: FULL SYSTEM,1G LAN 1Gbps link

Mk.	Frequency MHz	Raw Data dBuV	AMN/AAN Loss	Cable Loss dB	Corr. Data dBuV	Limit dBuV	Margin dB	Detector	Remarks
	0.4650	41.24	9.67	0.06	50.97	74.60	-23.63	QP	
	0.4650	35.60	9.67	0.06	45.33	64.60	-19.27	AVG	
	0.6680	41.39	9.61	0.07	51.07	74.00	-22.93	QP	
	0.6680	35.99	9.61	0.07	45.67	64.00	-18.33	AVG	
	2.0760	40.95	9.5	0.12	50.57	74.00	-23.43	QP	
	2.0760	33.10	9.5	0.12	42.72	64.00	-21.28	AVG	
	6.2182	36.83	9.46	0.21	46.50	74.00	-27.50	QP	
	6.2182	31.50	9.46	0.21	41.17	64.00	-22.83	AVG	
	13.5612	47.13	9.5	0.29	56.92	74.00	-17.08	QP	
*	13.5612	38.26	9.5	0.29	48.05	64.00	-15.95	AVG	
	21.9483	38.62	9.65	0.38	48.65	74.00	-25.35	QP	
	21.9483	32.79	9.65	0.38	42.82	64.00	-21.18	AVG	

Spectrum Analyzer: ESR

Receiver: ESR_1

AMN/AAN TESEQ T800 Cat5

Cable: EMC400 B140304

*:Maximum data x:Over limit !:over margin

RBW: 9 KHz

VBW: 30 KHz

File :20230032CE001\Data :#10

Page: 1

Test Report No.:20230032CAR0A

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ATTACHMENT 2 - RADIATED EMISSION TEST RESULTS

- **Test Reference:** EN 55032 、 CISPR 32 and BS EN 55032

- **Test Procedure:**

The EUT is set up according to the guidelines of EN 55032 、 CISPR 32 and BS EN 55032 for radiated emissions on table was placed on ground plane. The turn table can rotate 360 degrees to determine the position of the max. emission level. For 30MHz to 1GHz frequency range, EUT was set 10 meters distances and from 1GHz to 6GHz frequency range, EUT was set 3 meters distances Semi-Anechoic chamber away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters for 30MHz to 1GHz frequency range and above 1GHz to 6GHz frequency range, in accordance with the requirements in CISPR 16-2-3, the following information as table shall be referred during the test to find out the max. emission level contains horizontal and vertical polarization.

CISPR 16-2-3 Calculate minimum acceptable dimension of ω -min(m) Antenna (model 3117)

Freq.(GHz)	1	2	3	4	5	6
ω -min(m)	5.03	3.19	3.9	3.05	2.67	2.86
d	3	3	3	3	3	3
θ	80	56	66	54	48	51

(Note: The smallest ω is 3M at 6GHz. Receive Antenna height is scanning from 1M. The EUT maximum dimension $1M + 3M/2 = 2.5M$. If EUT maximum dimension is smaller than 2.5M, the receive antenna height would be fixed at 1M.)

The basic equation with a sample calculation is as follows:

Corr.Data = Raw Data + Ant_F + Cab_L - PreAmp

Corr.Data = Field Strength

Raw Data = Receiver Amplitude

Ant_F = Antenna Factor

Cab_L = Cable Loss

PreAmp = Amplifier Factor

*All cables those are considered part of the EUT shall be arrange on GRP above non-conductive support detail as Annex D of EN 55032

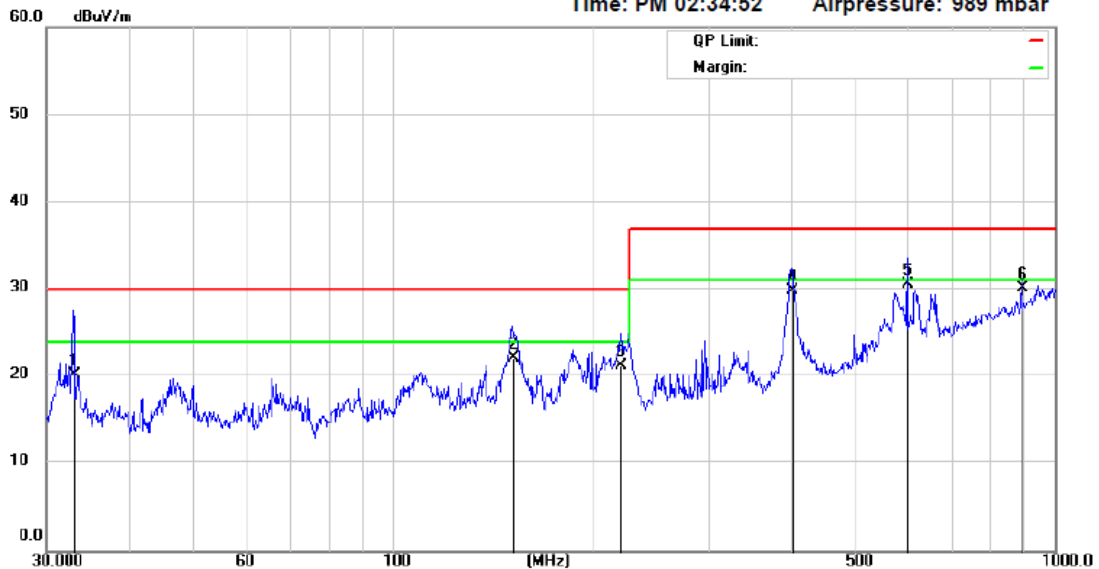
*EUTs that display video images or EUTs with ports that are used to provide video signals shall be exercised in accordance with Table B.1 and B.2 requirements of CISPR 32

- **Test Result:** The EUT meets the Class B device requirement.
- **Change or Modification:** There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:** Following pages are detailed testing contents
- **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
EMI Receiver	ROHDE&SCHWARZ / ESU	100501	2023/3/2	2024/3/1
EMI Receiver	ROHDE&SCHWARZ / ESCI	100696	2022/9/14	2023/9/13
Antenna	Shwazbeck & EMCI / VULB9168 & N-6-05	805 & AT-N0545	2023/3/10	2024/3/9
Antenna	EMCO 3117	86195	2022/9/27	2023/9/26
Pre-Amplifier	EMC9135	980517	2022/8/23	2023/8/22
Pre-Amplifier	AGILENT / 8449B	3008A01732	2023/8/9	2024/8/8
CABLE	10m Left	---	2023/8/4	2024/8/3
CABLE	EMC105-NM	210230 210231	2022/9/15	2023/9/14
CABLE	EMC104-SM-SF	170812&141007	2022/9/15	2023/9/14



File :20230032RE001R0 Radiated Emission Measurement Temperature: 22 °C
Data :#3 Date: 8/17/2023 Humidity: 59 %
Time: PM 02:34:52 Airpressure: 989 mbar



Site : 10m Chamber
Limit : (RE)CISPR32 class B 10m
Company : MiTAC
EUT : E420-12ADI
Exercise Program : BurnIn test
Comments: FULL SYSTEM
Polarization: *Horizontal*
Power : 230VAC/50Hz

Mk.	Frequency MHz	Raw Data dBuV	Ant_F dB/m	Cab_L dB	PreAmp dB	Corr. Data dBuV/m	Limit dBuV/m	Margin dB	Ant. cm	Ang. deg.	Detector	Remarks
	32.9944	38.64	17.67	0.96	37.1	20.17	30.00	-9.83	294	277	QP	
	152.3733	38.17	18.14	2.16	36.31	22.16	30.00	-7.84	399	100	QP	
	221.3754	38.97	15.71	2.61	36.03	21.26	30.00	-8.74	400	72	QP	
	401.0335	41.69	20.73	3.5	36.1	29.82	37.00	-7.18	209	168	QP	
*	599.9941	38.02	24.9	4.31	36.7	30.53	37.00	-6.47	100	20	QP	
	890.9692	33.99	27.99	5.25	37.1	30.13	37.00	-6.87	100	140	QP	

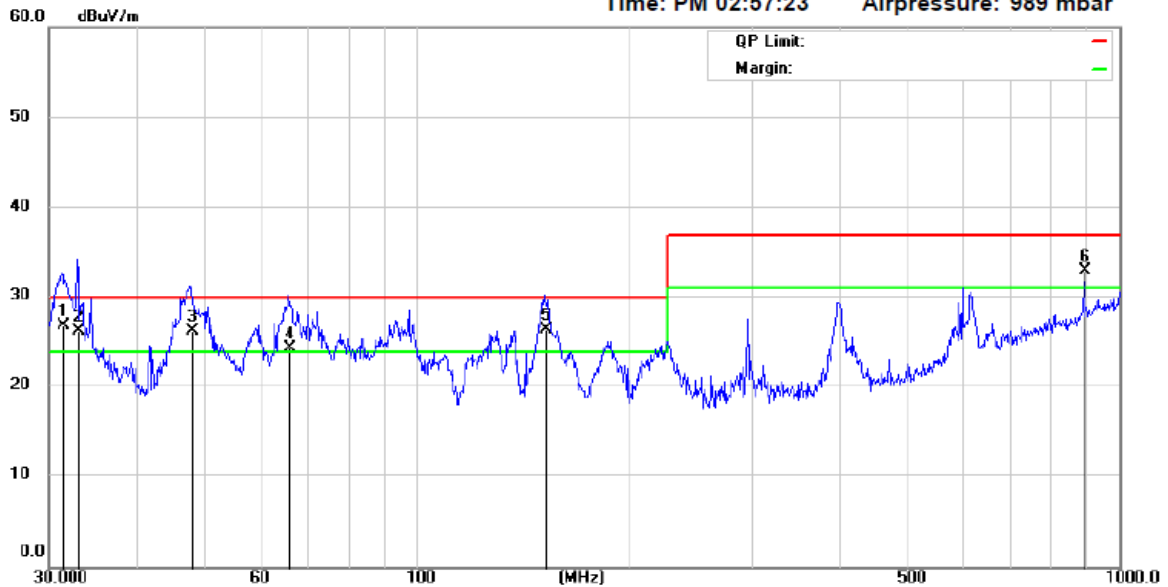
Spectrum Analyzer: ESCI
Receiver: ESCI_1
Antenna: 9168-805+PAD
Amplifier: 9135 980517

*:Maximum data x:Over limit !:over margin
RBW: 120 KHz
VBW: 300 KHz
Cable: 10ML + EMC105

File :20230032RE001R0Data :#3

Page: 1

File :20230032RE001R0 Radiated Emission Measurement Temperature: 22 °C
Data :#4 Date: 8/17/2023 Humidity: 59 %
Time: PM 02:57:23 Airpressure: 989 mbar



Site : 10m Chamber
Limit : (RE)CISPR32 class B 10m Polarization: *Vertical*
Company : MiTAC Power : 230VAC/50Hz
EUT : E420-12ADI
Exercise Program : BurnIn test
Comments: FULL SYSTEM

Mk.	Frequency MHz	Raw Data dBuV	Ant_F dB/m	Cab_L dB	PreAmp dB	Corr. Data dBuV/m	Limit dBuV/m	Margin dB	Ant. cm	Ang. deg.	Detector	Remarks
*	31.5022	45.60	17.54	0.93	37.12	26.95	30.00	-3.05	345	83	QP	
!	33.0094	44.71	17.67	0.96	37.1	26.24	30.00	-3.76	157	49	QP	
!	47.9072	43.22	18.85	1.2	36.92	26.35	30.00	-3.65	230	330	QP	
!	65.8574	42.46	17.29	1.42	36.8	24.37	30.00	-5.63	311	141	QP	
!	152.6753	42.44	18.12	2.16	36.31	26.41	30.00	-3.59	100	359	QP	
!	890.9822	36.86	27.99	5.25	37.1	33.00	37.00	-4.00	199	187	QP	

Spectrum Analyzer: ESCI

Receiver: ESCI_1

Antenna: 9168-805+PAD

Amplifier: 9135 980517

*:Maximum data x:Over limit !:over margin

RBW: 120 KHz

VBW: 300 KHz

Cable: 10ML + EMC105

File :20230032RE001R0\Data :#4

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Test Report No.:20230032CAR0A

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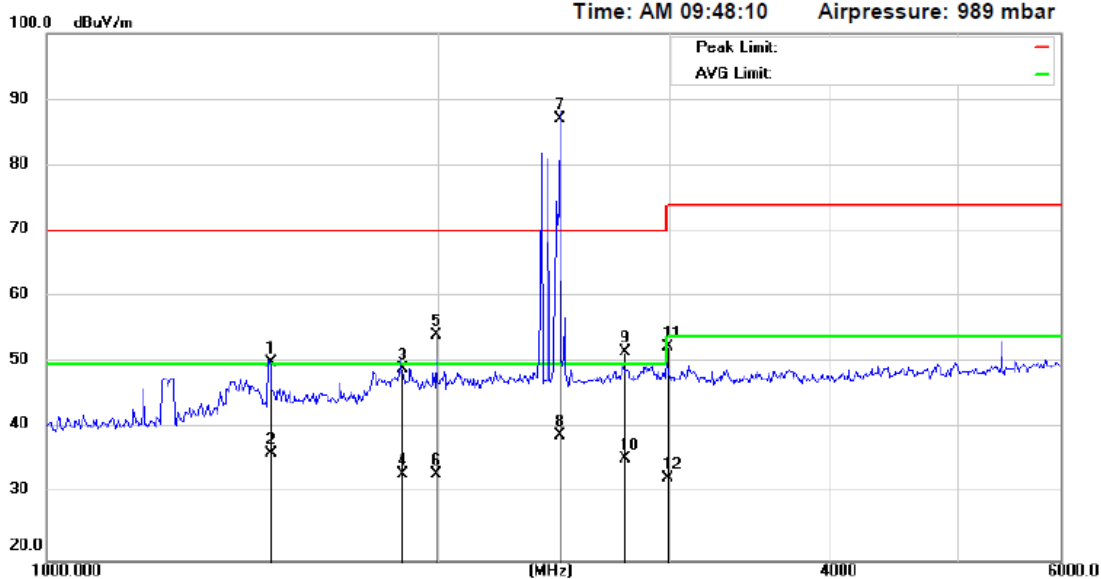
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MITAC EMC LAB Tel:+886-3-3962888 Fax:+886-3-3276328
Address: NO. 200, Wen Hua 2nd RD., Kuei San Dist., Taoyuan,
TAIWAN. Operator: Weilin Wang

File :20230032RE002-1R0 Radiated Emission Measurement Temperature: 22 °C
Data :#1 Date: 08/24/2023 Humidity: 58 %
Time: AM 09:48:10 Airpressure: 989 mbar



Site : 10m Chamber

Limit : (RE)CISPR32 class B 3m_PEAK

Polarization: Horizontal

Company : MITAC

Power : 230VAC/50Hz

EUT : E420-12ADI

Exercise Program : BurnIn test

Comments: FULL SYSTEM

Mk.	Frequency MHz	Raw Data dBuV	Ant_F dB/m	Cab_L dB	PreAmp dB	Corr. Data dBuV/m	Limit dBuV/m	Margin dB	Ant. cm	Ang. deg.	Detector	Remarks
	1484.807	57.02	27.98	2.44	37.31	50.13	70.00	-19.87	100	248	peak	
	1484.807	43.14	27.98	2.44	37.31	36.25	50.00	-13.75	100	248	AVG	
	1872.682	52.45	31.13	2.76	37.2	49.14	70.00	-20.86	100	255	peak	
	1872.682	36.36	31.13	2.76	37.2	33.05	50.00	-16.95	100	255	AVG	
	1992.960	56.47	32.14	2.86	37.17	54.30	70.00	-15.70	100	172	peak	
	1992.960	35.30	32.14	2.86	37.17	33.13	50.00	-16.87	100	172	AVG	
*	2477.401	88.93	32.39	3.18	37.34	87.16	70.00	17.16	100	47	peak	WIFI
	2477.401	40.93	32.39	3.18	37.34	39.16	50.00	-10.84	100	47	AVG	WIFI
	2774.311	53.04	32.67	3.38	37.48	51.61	70.00	-18.39	100	172	peak	
	2774.311	36.91	32.67	3.38	37.48	35.48	50.00	-14.52	100	172	AVG	
	2993.841	53.68	32.89	3.54	37.59	52.52	70.00	-17.48	100	338	peak	
	2993.841	33.77	32.89	3.54	37.59	32.61	50.00	-17.39	100	338	AVG	

Spectrum Analyzer: ESU
Receiver: ESU_1
Antenna: 3117-3m-86195
Amplifier: PA-8449B-1732

*:Maximum data x:Over limit !:over margin
RBW: 1000 KHz
VBW: 3000 KHz
Cable: 104 170812&14

File :20230032RE002-1R0>Data :#1

Page: 1

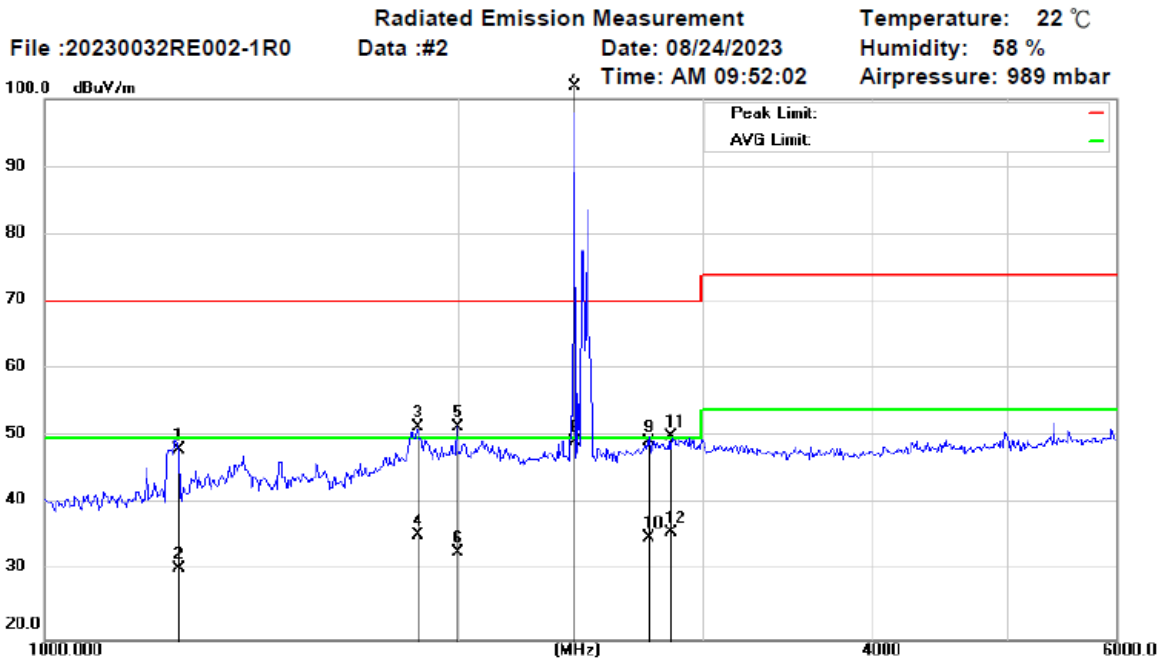
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Site : 10m Chamber

Limit : (RE)CISPR32 class B 3m_PEAK

Company : MiTAC

EUT : E420-12ADI

Exercise Program : BurnIn test

Comments: FULL SYSTEM

Polarization: Vertical

Power : 230VAC/50Hz

Mk.	Frequency MHz	Raw Data dBuV	Ant_F dB/m	Cab_L dB	PreAmp dB	Corr. Data dBuV/m	Limit dBuV/m	Margin dB	Ant. cm	Ang. deg.	Detector	Remarks
	1250.940	55.75	27.6	2.23	37.42	48.16	70.00	-21.84	100	192	peak	
	1250.940	38.21	27.6	2.23	37.42	30.62	50.00	-19.38	100	192	AVG	
	1865.942	54.84	31.07	2.76	37.2	51.47	70.00	-18.53	100	172	peak	
	1865.942	38.88	31.07	2.76	37.2	35.51	50.00	-14.49	100	172	AVG	
	1994.017	53.72	32.15	2.86	37.17	51.56	70.00	-18.44	100	215	peak	
	1994.017	35.11	32.15	2.86	37.17	32.95	50.00	-17.05	100	215	AVG	
*	2426.140	103.70	32.37	3.14	37.32	101.89	70.00	31.89	100	149	peak	WIFI
	2426.140	51.15	32.37	3.14	37.32	49.34	50.00	-0.66	100	149	AVG	WIFI
	2745.892	50.71	32.65	3.36	37.47	49.25	70.00	-20.75	100	165	peak	
	2745.892	36.50	32.65	3.36	37.47	35.04	50.00	-14.96	100	165	AVG	
	2852.122	51.50	32.75	3.44	37.52	50.17	70.00	-19.83	100	160	peak	
	2852.122	37.15	32.75	3.44	37.52	35.82	50.00	-14.18	100	160	AVG	

Spectrum Analyzer: ESU

Receiver: ESU_1

Antenna: 3117-3m-86195

Amplifier: PA-8449B-1732

*:Maximum data x:Over limit !:over margin

RBW: 1000 KHz

VBW: 3000 KHz

Cable: 104 170812&14

File :20230032RE002-1R0\Data :#2

Page: 1

Test Report No.:20230032CAR0A

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ATTACHMENT 3 - HARMONIC CURRENT EMISSIONS TEST

- **Test Reference:** IEC 61000-3-2 、 EN IEC 61000-3-2 and BS EN IEC 61000-3-2
- **Test Procedure:**

The Net.control Version 3.2.8 software performs compliant tests to the IEC 61000-3-2 、 EN IEC 61000-3-2 and BS EN IEC 61000-3-2 standards in the following manner:

 - It sets up the Harmonic Test System.

When the compliance test is run, the software generates a bar graph that represents either the absolute magnitudes of 40 harmonics, or the magnitudes of 40 harmonics compared to predetermined test limits. Besides, the software will generate the voltage & current graph and with RMS voltage, RMS current, peak current, real power, apparent power and power factor as well.

 - The software also generates a table that displays either the absolute magnitudes of 40 harmonics, or the magnitudes of 40 harmonics compared to predetermined test limits. The table shows both the peak data values and the present data values. Note that you can also display the data of any single harmonic versus time, either as an absolute magnitude or compared to limits.
- **Test Result:** The EUT meets the Class A device requirement.
- **Change or Modification:** There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:** Following pages are detailed testing contents
- **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
Harmonic/Flicker Tester	EM Test DPA 500N	V1006105894	2023/4/11	2024/4/9
Power Source	EM Test HFS 500	HK 53807	2023/4/11	2024/4/9

Report Number :	20230032HA001		
Test Object :	E420-12ADI		
Test Standard :	IEC 61000-3-2 (Ed5-1) - Class A (230V - 50Hz)		
Tester :	John Hsieh		
Test site:	S3		
Company :	MITAC		
Test Date :	8/23/2023 10:28:43 AM		
Climatic Conditions	Temperature:22°C	Pressure :97kPa	Humidity :50%
Measure Results	Standard Group: Industry Standard Name: IEC 61000-3-2 (Edition 5.1) Limits for harmonic current emissions (equipment input current < 16 A per phase) Device Under Test: PASS Power Source: PASS Connection Type: L - N Classification: Class A Appli. of Limits: less than or equal to 150 % (Without POHC Enhancement) Current limits are disabled because rated power is less than 75W.		

Measured values			
Fundamental Current			
Line 1:	0.212 A		
Active input Power			
Line 1:	46.997 W *		
Circuit power factor			
Line 1:	0.906 *		

ATTACHMENT 4 - VOLTAGE FLUCTUATIONS/FLICKER TEST

- **Test Reference:** IEC 61000-3-3 、 EN 61000-3-3 and BS EN 61000-3-3
- **Test Procedure:**
The EUT power is plugged into a Harmonic and Flicker Test Set (Power Source & Signal Conditioning Unit) and a software program is chosen to run the Flicker and Voltage Fluctuation Test. The software performs compliant tests to the IEC 61000-3-3 、 EN 61000-3-3 and BS EN 61000-3-3 standards in the following manner:

It sets up the Flicker Test System.

Summary data included maximum RMS voltage deviation (Dmax), steady-state voltage change (AC), and the time interval during which the voltage deviation exceeds the prescribed limit (D(t)), and the short-term flicker indicator (Pst). Check the data complied with the limit list below:

Parameter	Limit
Dmax	4
DC	3.3
Pst	1
Plt	0.65
D(t)	0.5

- **Test Result:** The EUT meets requirement.
- **Change or Modification:** There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:** Following pages are detailed testing contents
- **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
Harmonic/Flicker Tester	EM Test DPA 500N	V1006105894	2023/4/11	2024/4/9
Power Source	EM Test HFS 500	HK 53807	2023/4/11	2024/4/9

Report Number :	20230032FL001
Test Object :	E420-12ADI
Test Standard :	IEC 61000-3-3 (Ed3-2) - General Test conditions (230V - 50Hz)
Tester :	John Hsieh
Test site:	S3
Company :	MiTAC
Test Date :	8/23/2023 10:56:43 AM
Climatic Conditions	Temperature:22 °C Pressure :97kPa Humidity :50%
Measure Results	Standard Group:Industry Standard Name:IEC 61000-3-3 (Edition 3) Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection Test Condition: General Test Conditions Analysis Status: PASS

Meas. No.	P0,1	P1s	P3s	P10s	P50s	Pst	dc [%]	dmax [%]	Tmax [s]
1	0.048	0.036	0.032	0.025	0.011	0.116	0	0.078	0

ATTACHMENT 5 - ESD IMMUNITY TEST

- **Test Reference:** IEC 61000-4-2 、 EN 61000-4-2 and BS EN 61000-4-2

- **Test Procedure:**

The EUT is set up according to the guidelines of IEC 61000-4-2 、 EN 61000-4-2 and BS EN 61000-4-2 for tabletop equipment. A calibrated ESD gun is then used to test a predetermined set of points of the EUT as described below.

Air discharge: The ESD is applied to all normally accessible points of non-conducted surfaces of the EUT. The test is performed as follows:

- Single discharges;
- At least 10 discharges each at positive and negative polarity;
- Intervals of at least 1 second between successive discharges.

Direct Contact Discharge: The discharges are applied to all conductive surfaces, to the horizontal coupling plane and on a vertical coupling metal plate of 50 cm x 50 cm at front 、 rear 、 left and right of the EUT. (At 0.1 m from EUT) The test is performed as follows:

- Single discharges;
- At least 25 discharges each at positive and negative polarity;
- Intervals of at least 1 second between successive discharges.

- **Required Performance Criteria:**B

- **Test Result:** The EUT meets requirement with Performance Criteria B. The function of 2.5G Lan port is degraded during the test but could be recovered automatically.

- **Change or Modification:** There is no modification installed by MITAC EMC Laboratory test personnel.

- **Test Raw Data:** Following pages are detailed testing contents

- **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
ESD Generator	TESEQ AG/NSG438	1558	2022/9/16	2023/9/15

Date : 08/29/2023	Report No. : 20230032ESD001	Engineer : JEFF									
Temperature : 25 °C	Humidity : 45 %	Pressure : 984 mbar									
EUT M/N : E420-12ADI	EUT info: DVT stage BIOS info:5.27 F/W info: n/a PSU info:EZ10953F-120 REV : n/a	Voltage/Freq : ☒ VAC: 230V/50Hz ☐ VDC:									
EUT Comment : full system											
Harmonised Standard : ☒ EN 55035:2017/A11:2020 ☒ CISPR 35: 2016 ☒ BS EN 55035:2017/A11:2020											
Basic Standard : ☐ IEC 61000-4-2 / EN 61000-4-2 (Corresponding version) ☒ IEC 61000-4-2 / EN 61000-4-2 (Latest version)											
ESD Gun : ☐ EM TEST DITO () ☐ THERMO MZ-15/EC ☒ TESEQ AG/NSG438 (1558) ☐ NoiseKen		Test Site: ☐ S3 ☒ S4 ☐ S6									
Power Cord : ☒ One ☐ More than One(single PSU connect to test equipment and other PSUs will NOT connected to supply mains) ☐ More than One(single PSU connect to test equipment and other PSUs will connected to supply mains) ☐ More than One(All PSU connect to test equipment) PSU: ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4											
Video: ☐ Front ☒ Rear ☐ None Type: ☐ D-Sub x ☐ DVI x ☒ HDMI x 1 ☒ DP x 1 Audio: ☐ Front ☒ Rear ☐ None											
Discharge : Contact Direct 【Metallic Surfaces (Sharp Tip)】											
Times : ☐ least 10 @ 1 PPS ☒ 25 @ 1 PPS											
Test Level/ Acceptance Criteria B											
Test Result											
HCP											
Test Point List	+2 kV	+4 kV	kV	kV	kV	-2 kV	-4 kV	kV	kV	kV	Note
Front	/	A				/	A				
Rear	/	A				/	A				
Right	/	A				/	A				
Left	/	A				/	A				
VCP											
Test Point List	+2 kV	+4 kV	kV	kV	kV	-2 kV	-4 kV	kV	kV	kV	Note
Front	/	A				/	A				
Rear	/	A				/	A				
Right	/	A				/	A				
Left	/	A				/	A				
Additional Note:											
Sign: JEFF											

Discharge : Air Direct 【Nonmetallic Surfaces (Rounded Tip)】											
Times : ☒ least 10 @ 1 PPS ☐ @ 1 PPS											
Test Level/ Acceptance Criteria B											
Test Result											
Test Point List	+2 kV	+4 kV	+8 kV	kV	kV	-2 kV	-4 kV	-8 kV	kV	kV	Note
Front			A					A			
Rear			B					B			#1
LEFT			A					A			
RIGHY			A					A			
Additional Note: #1. During the test, 2.5G LAN Port out of function than recovery by itself. Sign: <u>JEFF</u>											

Discharge : Contact Direct 【Metallic Surfaces (Sharp Tip)】											
Times : ☐ least 10 @ 1 PPS ☒ 25 @ 1 PPS											
Test Level/ Acceptance Criteria B											
Test Result											
Test Point List	+2 kV	+4 kV	kV	kV	kV	-2 kV	-4 kV	kV	kV	kV	Note
Front		A					A				
Rear		B					B				#1
Left		A					A				
Right		A					A				
Top		A					A				
Additional Note: #1. During the test, 2.5G LAN Port out of function than recovery by itself. Sign: <u>JEFF</u>											

ATTACHMENT 6 - RADIATED SUSCEPTIBILITY IMMUNITY TEST

- **Test Reference:** IEC 61000-4-3 、 EN IEC 61000-4-3 and BS EN IEC 61000-4-3
- **Test Procedure:**

The EUT is set up according to the guidelines of IEC 61000-4-3 、 EN IEC 61000-4-3 and BS EN IEC 61000-4-3 for tabletop equipment. Four sides of the EUT are subjected successively to horizontal and vertical electric fields as described below.

 - Frequency range from 80MHz - 1000MHz
 - Step size of 1% of fundamental of linear interpolation between points;
 - 80 % amplitude modulated with a 1kHz sine-wave.
 - With a minimum 3V/m intensity at 2.9 meters
 - Dwell time refer to raw data
 - Frequency range in 1800MHz 、 2600MHz 、 3500MHz and 5000MHz($\pm 1\%$)
 - 80 % amplitude modulated with a 1kHz sine-wave.
 - With a minimum 3V/m intensity at 2 meters
 - Dwell time refer to raw data

Video camera monitoring system shall be sufficient to provide visibility of the whole display
- **Required Performance Criteria:**A
- **Test Result:** The EUT meets requirement with Performance Criteria A. No performance degradation detected during this test.
- **Change or Modification:**There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:**Following pages are detailed testing contents

● **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
RF Power Amplifier	AR 500W1000CM1	0359527	---	---
RF Power Amplifier	AR 50S1G4AM3	310103	---	---
RF Power Amplifier	AR 35S4G8AM4	330223	---	---
Antenna	ATL80M1G	332351	---	---
Antenna	AR ATT700M12G	350233	---	---
Signal Generator	Agilent/E4428C	MY47380011	2022/10/6	2023/10/5
Laser Probe	AR FL7006	34990	2023/7/5	2024/7/4
RF Power Meter	Boonton 4242	16723	2022/12/23	2023/12/22
Audio analyzer	R&S/UPV	104640	2022/10/24	2023/10/23
Directional coupler	AR/DC7205A	0350045	2023/4/18	2024/4/16
Directional coupler	AR/DC6180A	359732	2022/11/10	2023/11/9

Date : 8/22/2023	Report No. : 20230032RS001	Engineer : Jason Wen					
Temperature : 24 °C	Humidity : 48 %	Pressure : 988 mbar					
EUT M/N : E420-12ADI	EUT info: DVT stage BIOS info:5.27 F/W info: n/a PSU info:EZ10953F-120 REV : n/a	Voltage/Freq : ☒ VAC: 230V / 50Hz ☐ VDC:					
EUT Comment : Full system.							
Harmonised Standard : ☒ EN 55035:2017/A11:2020 ☒ CISPR 35: 2016 ☒ BS EN 55035:2017/A11:2020							
Basic Standard : ☐ IEC 61000-4-3 / EN IEC 61000-4-3 (Corresponding version) ☒ IEC 61000-4-3 / EN IEC 61000-4-3 (Latest version)							
Dwell Time : ☐ 5 Sec ☒ 3 Sec	Step : ☒ 1 % ☐ %	Test Site: S5					
Power Cord : ☒ One ☐ More than One(single PSU connect to test equipment and other PSUs will NOT connected to supply mains) ☐ More than One(single PSU connect to test equipment and other PSUs will connected to supply mains) ☐ More than One(All PSU connect to test equipment) PSU: ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4							
Video: ☐ Front ☒ Rear ☐ None Type: ☐ D-Sub x ☐ DVI x ☒ HDMI x 1 ☒ DP x 1 Audio: ☐ Front ☒ Rear ☐ None Type: ☒ audio output ports (G.2.3) ☐ loudspeakers (G.2.8) Measurement method: ☐ Acoustic (G.6.3) ☒ Electrical (G.6.2)							
Angle (°)	Freq. Range (MHz)	Modulation	Test Field (V/m)	Ant. Pol.	Acceptance Criteria	Result Criteria	Note
0	80-1000	80% @1KHz	3	H	A	A	
0	80-1000	80% @1KHz	3	V	A	A	
90	80-1000	80% @1KHz	3	H	A	A	
90	80-1000	80% @1KHz	3	V	A	A	
180	80-1000	80% @1KHz	3	H	A	A	
180	80-1000	80% @1KHz	3	V	A	A	
270	80-1000	80% @1KHz	3	H	A	A	
270	80-1000	80% @1KHz	3	V	A	A	
0	1800,2600,3500,5000 (+/-1%)	80% @1KHz	3	H	A	A	
0	1800,2600,3500,5000 (+/-1%)	80% @1KHz	3	V	A	A	
90	1800,2600,3500,5000 (+/-1%)	80% @1KHz	3	H	A	A	
90	1800,2600,3500,5000 (+/-1%)	80% @1KHz	3	V	A	A	
180	1800,2600,3500,5000 (+/-1%)	80% @1KHz	3	H	A	A	
180	1800,2600,3500,5000 (+/-1%)	80% @1KHz	3	V	A	A	
270	1800,2600,3500,5000 (+/-1%)	80% @1KHz	3	H	A	A	
270	1800,2600,3500,5000 (+/-1%)	80% @1KHz	3	V	A	A	
Additional Note:							
Sign: <u>Jason Wen</u>							

ATTACHMENT 7 - EFT IMMUNITY TEST

- **Test Reference:** IEC 61000-4-4 、 EN 61000-4-4 and BS EN 61000-4-4
- **Test Procedure:**

The EUT is set up according to the guidelines of IEC 61000-4-4 、 EN 61000-4-4 and BS EN 61000-4-4 for tabletop equipment. The AC line of the EUT is then coupled through a “Capacitive Coupler” using a waveform described in reference standard of a Fast Transient (EFT) generator. Burst signals described below are then introduced into the individual power port 、 signal port and its combinations. The EUT is then monitored and evaluated for results. The burst are specified as follows:

 - 5kHz Repetition frequency, 5ns rise-time, and 50ns pulse width;
 - 300ms burst period;
 - Test levels 1kV(positive and negative bursts) in power port;
 - Test levels 0.5kV(positive and negative bursts) in signal port;
 - Test Duration set to 60 sec.
- **Required Performance Criteria:**B
- **Test Result:** The EUT meets requirement with Performance Criteria B. The function of 2.5G Lan port is degraded during the test but could be recovered automatically.
-
- **Change or Modification:**There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:**Following pages are detailed testing contents
- **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
Surge/EFT/DIP Simulator	EM TEST/ Compact NX5 bspt-1-300-16	P1807214326	2023/6/27	2024/6/26
Capacitive Coupling Clamp	EM Test HFK	001	2023/5/2	2024/4/30

Date : 08/23/2023	Report No. : 20230032EFT001-002	Engineer : JOHN HSIEH					
Temperature : 22 °C	Humidity : 50 %	Pressure : 978 mbar					
EUT M/N : E420-12ADI	EUT info: DVT stage BIOS info:5.27 F/W info: n/a PSU info:EZ10953F-120 REV : n/a	Voltage/Freq : ☒ VAC: 230V/50Hz ☐ VDC:					
EUT Comment : full system							
Harmonised Standard : ☒ EN 55035:2017/A11:2020 ☒ CISPR 35: 2016 ☒ BS EN 55035:2017/A11:2020							
Basic Standard : ☐ IEC 61000-4-4 / EN 61000-4-4 (Corresponding version) ☒ IEC 61000-4-4 / EN 61000-4-4 (Latest version)							
Test Equipment : ☒ NX5 ☐ UCS 500N	Test Site: ☐ S2 ☒ S3						
Power Cord : ☒ One ☐ More than One(single PSU connect to test equipment and other PSUs will NOT connected to supply mains) ☐ More than One(single PSU connect to test equipment and other PSUs will connected to supply mains) ☐ More than One(All PSU connect to test equipment) PSU: ☐ ☐ ☐ ☐ ☐							
Video: ☐ Front ☒ Rear ☐ None Type: ☐ D-Sub x ☐ DVI x ☒ HDMI x 1 ☒ DP x1 Audio: ☐ Front ☒ Rear ☐ None							
Line Under Test	Voltage (KV)	Pol.	Burst Repetition Rate	Test Duration	Acceptance Criteria	Result Criteria	Note
Immunity requirements for AC mains power ports							
L, N, PE, L+N, L+PE, N+PE, L+N+PE	1	+	5KHz	60 Sec	B	B	#1
L, N, PE, L+N, L+PE, N+PE, L+N+PE	1	-	5KHz	60 Sec	B	B	#1
Immunity requirements for analogue/digital data ports							
☐ signal/control port (3.1.32) ☐ antenna port (3.1.3) ☒ wired network port (3.1.34) ☐ broadcast receiver tuner port (3.1.8) ☐ optical fibre port (3.1.25) with metallic shielding and/or metallic strain relief member(s)							
2.5G LAN	0.5	+	5KHz	60 Sec	B	B	#1
2.5G LAN	0.5	-	5KHz	60 Sec	B	B	#1
1G LAN	0.5	+	5KHz	60 Sec	B	A	
1G LAN	0.5	-	5KHz	60 Sec	B	A	
Additional Note: #1: The function of 2.5G LAN port is degraded during the test. Sign: JOHN HSIEH							

ATTACHMENT 8 - SURGE IMMUNITY TEST

- **Test Reference:** IEC 61000-4-5 、 EN 61000-4-5 and BS EN 61000-4-5
- **Test Procedure:**

The EUT is set up according to the guidelines of IEC 61000-4-5 、 EN 61000-4-5 and BS EN 61000-4-5 for tabletop equipment. The AC power cord of the EUT is then plugged into a surge generator. Power surges described below are then introduced to Common Mode(L-G) and Diff. Mode(L-L) .The EUT is then monitored and evaluated for results. The surge pulses are specifies as follows:

 - 1.2 μ s rise-time, 50 μ s hold-time;
 - 5 positive and negative pulsed per combination;
 - Impulse rate refer to raw data
 - Test levels from 0.5kV to 2kV in power port
- **Required Performance Criteria:**B
- **Test Result:** The EUT meets requirement with Performance Criteria A. No performance degradation detected during this test.
- **Change or Modification:**There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:**Following pages are detailed testing contents
- **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
Surge/EFT/DIP Simulator	EM TEST/ Compact NX5 bspt-1-300-16	P1807214326	2023/6/27	2024/6/26

Date : 08/23/2023	Report No. : 20230032SUR001	Engineer : JOHN HSIEH					
Temperature : 22 °C	Humidity : 50 %	Pressure : 978 mbar					
EUT M/N : E420-12ADI	EUT info: DVT stage BIOS info:5.27 F/W info: n/a PSU info:EZ10953F-120 REV : n/a	Voltage/Freq : ☒ VAC: 230V/50Hz ☐ VDC:					
EUT Comment : full system							
Harmonised Standard : ☒ EN 55035:2017/A11:2020 ☒ CISPR 35: 2016 ☒ BS EN 55035:2017/A11:2020							
Basic Standard : ☐ IEC 61000-4-5 / EN 61000-4-5 (Corresponding version) ☒ IEC 61000-4-5 / EN 61000-4-5 (Latest version)							
Test Equipment : ☒ NX5 ☐ UCS 500N ☐ CNV 508T5 ☐ CNI 508N2 ☐ CNI 503 ☐ CNI 501AS1		Test Site: ☐ S2 ☒ S3					
Power Cord : ☒ One ☐ More than One(single PSU connect to test equipment and other PSUs will NOT connected to supply mains) ☐ More than One(single PSU connect to test equipment and other PSUs will connected to supply mains) ☐ More than One(All PSU connect to test equipment) PSU: ☐ ☐ ☐ ☐ ☐							
Video: ☐ Front ☒ Rear ☐ None Type: ☐ D-Sub x ☐ DVI x ☒ HDMI x 1 ☒ DP x 1 Audio: ☐ Front ☒ Rear ☐ None							
Line Under Test	Voltage(KV)	Pol.	Angle(°)	Times	Acceptance Criteria	Result Criteria	Note
Immunity requirements for AC mains power ports							
Waveform : 1,2/50 (8/20)							
time between successive impulses: ☐ 1 min ☒ 30 s							
L-N	0.5, 1	+	90	5	B	A	
L-N	0.5, 1	-	270	5	B	A	
L-PE	0.5, 1, 2	+	90	5	B	A	
N-PE	0.5, 1, 2	-	90	5	B	A	
L-PE	0.5, 1, 2	-	270	5	B	A	
N-PE	0.5, 1, 2	+	270	5	B	A	
Additional Note:							
Sign: JOHN HSIEH							

ATTACHMENT 9 - CONDUCTED IMMUNITY TEST

- **Test Reference:** IEC 61000-4-6 、 EN 61000-4-6 and BS EN 61000-4-6
- **Test Procedure:**

The EUT is set up according to the guidelines of IEC 61000-4-6 、 EN 61000-4-6 and BS EN 61000-4-6 for tabletop equipment. A CDN is then used to inductively couple the stimulus as described below into the power port and the other providing a return path for the AE. The CDN is also then used to inductively couple the stimulus as described below into the signal port and the other providing a return path for the Power Port. The EUT is then monitored and evaluated for results.

 - Frequency range from 0.15 to 10MHz and additional comprehensive functional test selected
 - Step size of 1% of fundamental of linear interpolation between points;
 - Voltage level of minimum 3Volts (RMS) in the Power Port and Signal Port before adding modulation;
 - 80% amplitude modulated with a 1kHz sine-wave;
 - Dwell time refer to raw data.
 - Frequency range from 10 to 30MHz and additional comprehensive functional test selected
 - Step size of 1% of fundamental of linear interpolation between points;
 - Voltage level of minimum from 3Volts (RMS) to 1Volts(RMS) in the Power Port and Signal Port before adding modulation;
 - 80% amplitude modulated with a 1kHz sine-wave;
 - Dwell time refer to raw data.
 - Frequency range from 30 to 80MHz and additional comprehensive functional test selected
 - Step size of 1% of fundamental of linear interpolation between points;
 - Voltage level of minimum 1Volt (RMS) in the Power Port and Signal Port before adding modulation;
 - 80% amplitude modulated with a 1kHz sine-wave;
 - Dwell time set to to raw data.

Viewing distance no more than 1 meter
- **Required Performance Criteria:**A
- **Test Result:** The EUT meets requirement with Performance Criteria A. No performance degradation detected during this test.
- **Change or Modification:**There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:**Following pages are detailed testing contents

● **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
RF Amplifier	AR 125A250M1	0353501	---	---
Signal Generator	N5171B	MY61253275	2022/11/23	2023/11/22
RF Power Meter	Boonton 4232A	122302	2023/1/16	2024/1/15
Power Line CDN	FCC/FCC-801-M3-16A	140586	2022/12/22	2023/12/21
CDN	TESEQ/ ISN T8-Cat6	38907	2022/12/22	2023/12/21
Directional coupler	WERLATONE INC/C3653	7412	2022/11/10	2023/11/9
Audio analyzer	R&S/UPV	104886	2023/6/4	2024/6/2

Date : 8/18/2023	Report No. : 20230032CS001	Engineer : Archie Young					
Temperature : 23 °C	Humidity : 54 %	Pressure : 980 mbar					
EUT M/N : E420-12ADI	EUT info: DVT stage BIOS info:5.27 F/W info: n/a PSU info:EZ10953F-120 REV : n/a	Voltage/Freq : ☒ VAC: 230V / 50Hz ☐ VDC:					
EUT Comment : Full system.							
Harmonised Standard : ☒ EN 55035:2017/A11:2020 ☒ CISPR 35: 2016 ☒ BS EN 55035:2017/A11:2020 Basic Standard : ☐ IEC 61000-4-6 / EN 61000-4-6 (Corresponding version) ☒ IEC 61000-4-6 / EN 61000-4-6 (Latest version)							
Dwell Time : ☐ 5 Sec ☒ 3 Sec	Step : ☒ 1 % ☐ %	Test Site: S2					
Power Cord : ☒ One ☐ More than One(single PSU connect to test equipment and other PSUs will NOT connected to supply mains) ☐ More than One(single PSU connect to test equipment and other PSUs will connected to supply mains) ☐ More than One(All PSU connect to test equipment) PSU: ☐ ☐ ☐ ☐ ☐							
Video: ☐ Front ☒ Rear ☐ None Type: ☐ D-Sub x ☐ DVI x ☒ HDMI x 1 ☒ DP x 1 Audio: ☐ Front ☒ Rear ☐ None Type: ☒ audio output ports (G.2.3) ☐ loudspeakers (G.2.8) Measurement method: ☒ Acoustic (G.6.3) ☐ Electrical (G.6.2)							
Immunity requirements for analogue/digital data ports ☐ signal/control port (3.1.32) ☐ antenna port (3.1.3) ☒ wired network port (3.1.34) ☐ broadcast receiver tuner port (3.1.8) ☐ optical fibre port (3.1.25) with metallic shielding and/or metallic strain relief member(s)							
Test	Freq. Range (MHz)	Modulation	Test Voltage (r.m.s)	Injection Type	Acceptance Criteria	Result Criteria	Note
I225V (2.5G_LAN)	0.15-10 10-30 30-80	80% @1KHz	3 3 to 1 1	☐ CDN-T8 Cat5 ☒ CDN-T8 Cat6 (S/N: 38907) ☐ CDN-ST08A (S/N:) ☐ EM Clamp	A	A	
I219-LM #2 (1G_LAN)	0.15-10 10-30 30-80	80% @1KHz	3 3 to 1 1	☐ CDN-T8 Cat5 ☒ CDN-T8 Cat6 (S/N: 38907) ☐ CDN-ST08A (S/N:) ☐ EM Clamp	A	A	
Immunity requirements for ☒ AC mains power ports or ☐ DC network power ports							
PSU	0.15-10 10-30 30-80	80% @1KHz	3 3 to 1 1	☐ CDN-M2(16A) ☐ CDN-M2(200A) ☒ CDN-M3(16A) ☐ CDN-M3(50A) ☐ CDN-M5(75A) ☐ EM Clamp	A	A	
Additional Note:							
Sign: Archie Young							

ATTACHMENT 10 - POWER FREQUENCY MAGNETIC FIELD TEST

- **Test Reference:** IEC 61000-4-8 、 EN 61000-4-8 and BS EN 61000-4-8

- **Test Procedure:**

The EUT is set up according to the guidelines of IEC 61000-4-8 、 EN 61000-4-8 and BS EN 61000-4-8 for tabletop equipment. For standalone equipment, a calibrated 1 square meter magnetic loop is used to test the EUT in its x, y, and z-axis. A current generator is used to provide power to the magnetic loop and generate the required magnetic field level. The EUT is centered in the loop and then monitored and evaluated for results.

For the floor standing or equipment larger than the loop, the “proximity method” of testing is adopted to accomplish the test. The loop is moved as close as possible to the most probable susceptible areas of the EUT. The EUT is then monitored and evaluated for results

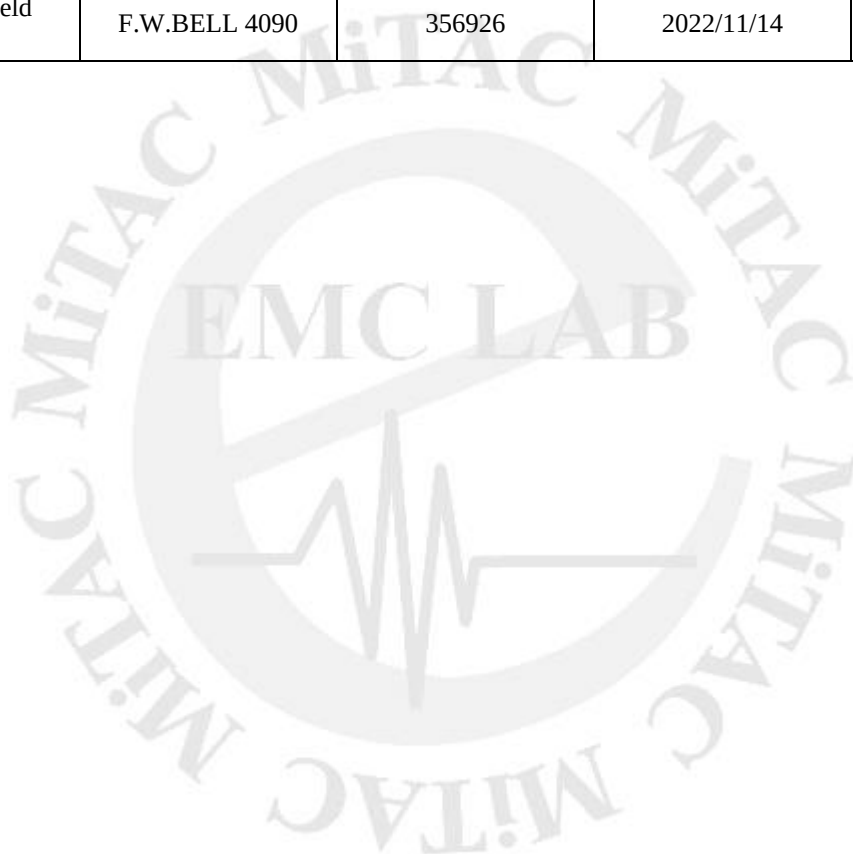
The magnetic field is specified as follows:

- Test levels of 1A/m;
- Dwell time set to 60 sec.

- **Dimension of EUT:** 209mm(L)*209mm(W)*87mm(H)
- **Required Performance Criteria:**A
- **Test Result:** The EUT meets requirement with Performance Criteria A. No performance degradation detected during this test.
- **Change or Modification:**There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:**Following pages are detailed testing contents

● **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
Magnetic Field Tester	HAEFELY MAG 100.1	081896-03	2022/10/19	2023/10/18
Voltage Regulator	Single	---	---	---
Magnetic Coil	HAEFELY	---	---	---
Clamp Multimeter	PROVA/CM-01	19360185	2023/2/6	2024/2/5
Magnetic Field meter	F.W.BELL 4090	356926	2022/11/14	2025/11/13



Date : 08/23/2023	Report No. : 20230032MF001	Engineer : JOHN HSIEH
Temperature : 22 °C	Humidity : 50 %	Pressure : 978 mbar
EUT M/N : E420-12ADI	EUT info: DVT stage BIOS info:5.27 F/W info: n/a PSU info:EZ10953F-120 REV : n/a	Voltage/Freq : ☒ VAC: 230V/50Hz ☐ VDC:
EUT Comment : full system		
Harmonised Standard : ☒ EN 55035:2017/A11:2020 ☒ CISPR 35: 2016 ☒ BS EN 55035:2017/A11:2020 Basic Standard : ☐ IEC 61000-4-8 / EN 61000-4-8 (Corresponding version) ☒ IEC 61000-4-8 / EN 61000-4-8 (Latest version)		Test Site: S3
Power Cord : ☒ One ☐ More than One(single PSU connect to test equipment and other PSUs will NOT connected to supply mains) ☐ More than One(single PSU connect to test equipment and other PSUs will connected to supply mains) ☐ More than One(All PSU connect to test equipment) PSU: ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4		
Video: ☐ Front ☒ Rear ☐ None Type: ☐ D-Sub x ☐ DVI x ☒ HDMI x 1 ☒ DP x 1 Audio: ☐ Front ☒ Rear ☐ None		
☒ The power frequency magnetic field value of the laboratory shall be at least 20 dB lower than the selected test level.		
Ant. Orientation	Dwell Time (Min)	Current Level (A/m)
☒ 50Hz ☐ 60Hz		
X	1	1
Y	1	1
Z	1	1
Additional Note:		
Sign: JOHN HSIEH		

ATTACHMENT 11 - VOLTAGE DIPS, SHORT INTERRUPTION

- **Test Reference:** IEC 61000-4-11 、 EN IEC 61000-4-11 and BS EN IEC 61000-4-11

- **Test Procedure:**

The EUT is set up according to the guidelines of IEC 61000-4-11 、 EN IEC 61000-4-11 and BS EN IEC 61000-4-11 for tabletop equipment. The EUT power cord is then plugged into a power source module capable of performing the desired voltage dips. The test is performed at the maximum and minimum rated EUT operating voltage levels. The voltage level is then dipped to >95% reduction for 0.5 period; dipped to 30% reduction for 25/ 30 periods; interruption to >95% reduction for 250/300 periods. Three cycles are performed for each test level at a rate of one dip per five minutes. The EUT is then monitored and evaluated for results.

- **Test Result:** The EUT meets test requirements.
- **Change or Modification:** There is no modification installed by MITAC EMC Laboratory test personnel.
- **Test Raw Data:** Following pages are detailed testing contents
- **Test Equipment:**

Test Equipment	Manufacturer/ Model	Serial No.	Last Calibration Date	Due Date
Surge/EFT/DIP Simulator	EM TEST/ Compact NX5 bspt-1-300-16	P1807214326	2023/5/2	2024/4/30

Date : 08/23/2023	Report No. : 20230032DIP001-012	Engineer : JOHN HSIEH				
Temperature : 22 °C	Humidity : 50 %	Pressure : 978 mbar				
EUT M/N : E420-12ADI	EUT info: DVT stage BIOS info:5.27 F/W info: n/a PSU info:EZ10953F-120 REV : n/a					
EUT Comment : full system						
Harmonised Standard : ☒ EN 55035:2017/A11:2020 ☒ CISPR 35: 2016 ☒ BS EN 55035:2017/A11:2020 Basic Standard : ☐ IEC 61000-4-11 / EN IEC 61000-4-11 (Corresponding version) ☒ IEC 61000-4-11 / EN IEC 61000-4-11 (Latest version)						
Test Equipment : ☒ NX5 ☐ UCS 500N	Test Site: ☐ S2 ☒ S3					
Power Cord : ☒ One ☐ More than One(single PSU connect to test equipment and other PSUs will NOT connected to supply mains) ☐ More than One(single PSU connect to test equipment and other PSUs will connected to supply mains) ☐ More than One(All PSU connect to test equipment) PSU: ☐ ☐ ☐ ☐ ☐						
Video: ☐ Front ☒ Rear ☐ None Type: ☐ D-Sub x ☐ DVI x ☒ HDMI x 1 ☒ DP x 1 Audio: ☐ Front ☒ Rear ☐ None						
Test	cycles	Angle(°)	Times	Acceptance Criteria	Result Criteria	Note
Highest Voltages: 240V /50Hz						
Voltage dips >95% reduction	0.5	☒ 0 ☐ 90 & 270	3	B	A	
Voltage dips 30% reduction	25	☒ 0 ☐ 90 & 270	3	C	A	
Highest Voltages: 240V /60Hz						
Voltage dips >95% reduction	0.5	☒ 0 ☐ 90 & 270	3	B	A	
Voltage dips 30% reduction	30	☒ 0 ☐ 90 & 270	3	C	A	
Lowest Voltages: 100V /50Hz						
Voltage dips >95% reduction	0.5	☒ 0 ☐ 90 & 270	3	B	A	
Voltage dips 30% reduction	25	☒ 0 ☐ 90 & 270	3	C	C	#1
Lowest Voltages: 100V /60Hz						
Voltage dips >95% reduction	0.5	☒ 0 ☐ 90 & 270	3	B	A	
Voltage dips 30% reduction	30	☒ 0 ☐ 90 & 270	3	C	C	#1
Highest Voltages: 240V /50Hz						
Voltage interruptions >95% reduction	250	☒ 0 ☐ 90 & 270	3	C	C	#1
Highest Voltages: 240V /60Hz						
Voltage interruptions >95% reduction	300	☒ 0 ☐ 90 & 270	3	C	C	#1
Lowest Voltages: 100V /50Hz						
Voltage interruptions >95% reduction	250	☒ 0 ☐ 90 & 270	3	C	C	#1
Lowest Voltages: 100V /60Hz						
Voltage interruptions >95% reduction	300	☒ 0 ☐ 90 & 270	3	C	C	#1
Additional Note:						
#1: EUT shutdown						
Sign: JOHN HSIEH						

Test Report No.:20230032CAR0A

Prepared for MITAC COMPUTING TECHNOLOGY CORP.

Prepared by MITAC EMC Laboratory

No.200, Wen Hwa 2nd Rd., Kuei Shan Dist., Taoyuan City 33383, Taiwan

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PHOTOGRAPHS OF TEST



Conducted Emission Test Set up-Front View of Power Ports



Conducted Emission Test Set up-Rear View of Power Ports



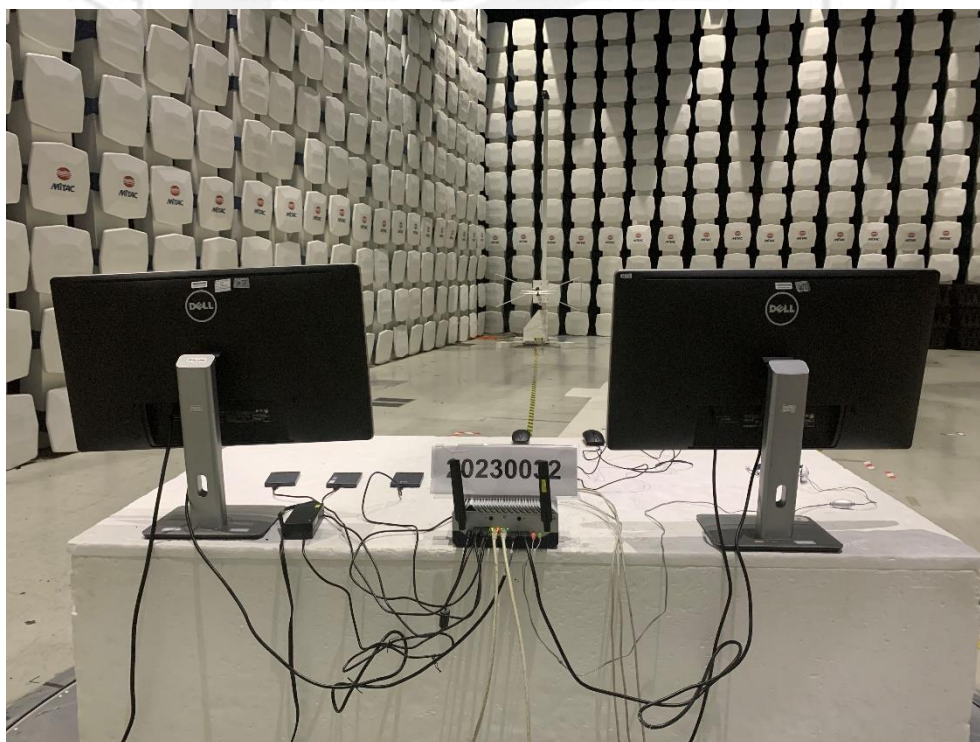
Conducted Emission Test Set up-Asymmetric mode(1Gbps)



Conducted Emission Test Set up-Asymmetric mode(2.5Gbps)



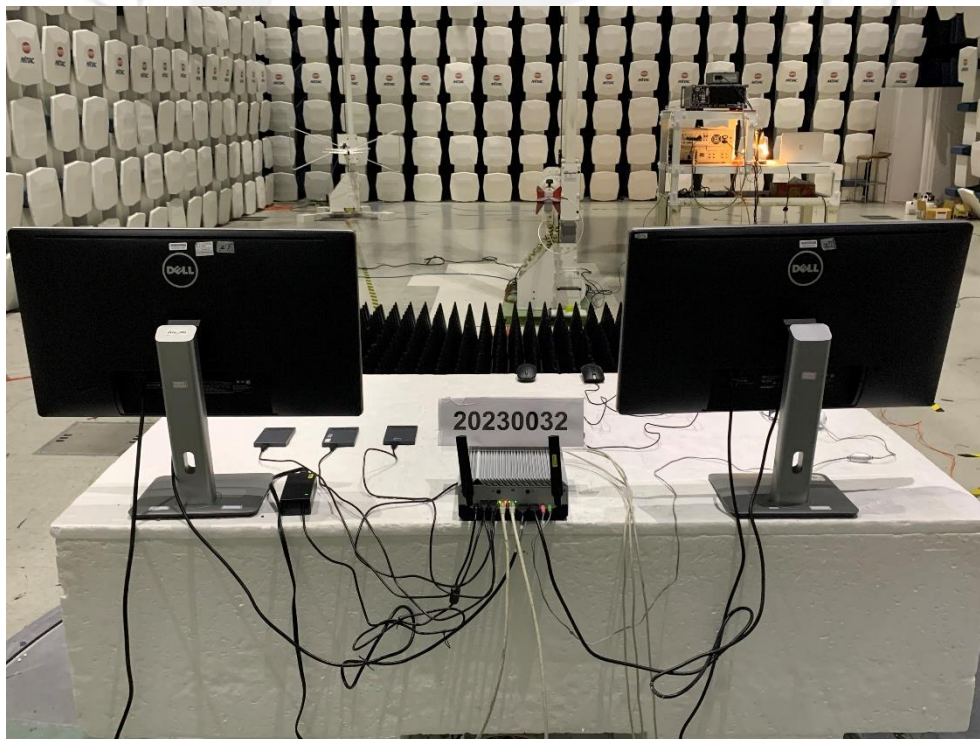
Radiated Emission Test Set up(Below 1GHz)-Front View



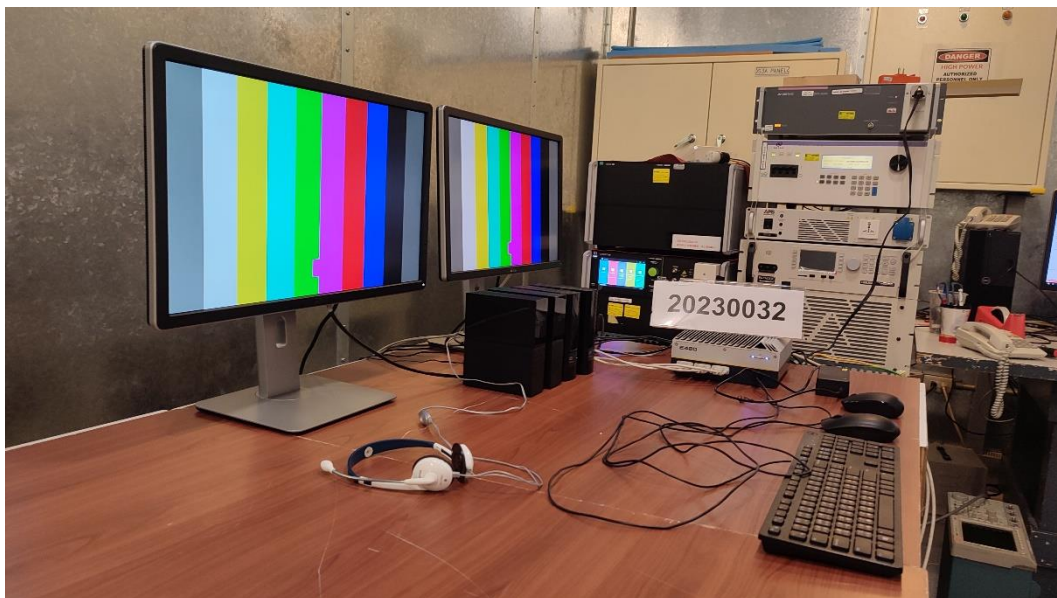
Radiated Emission Test Set up(Below 1GHz)-Rear View



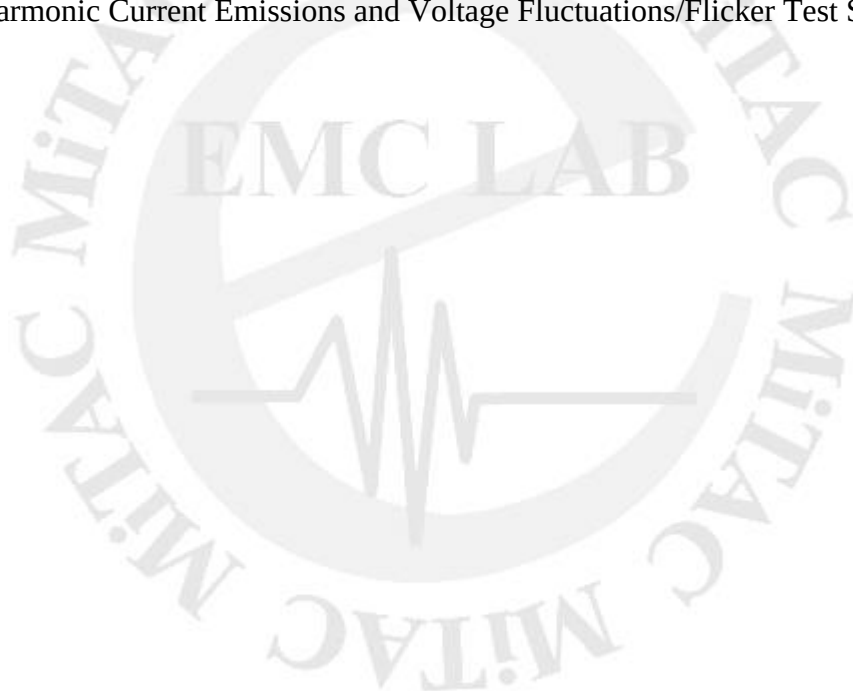
Radiated Emission Test Set up(Above 1GHz)-Front View



Radiated Emission Test Set up(Above 1GHz)-Rear View



Harmonic Current Emissions and Voltage Fluctuations/Flicker Test Set up





ESD Test Set up-Front View



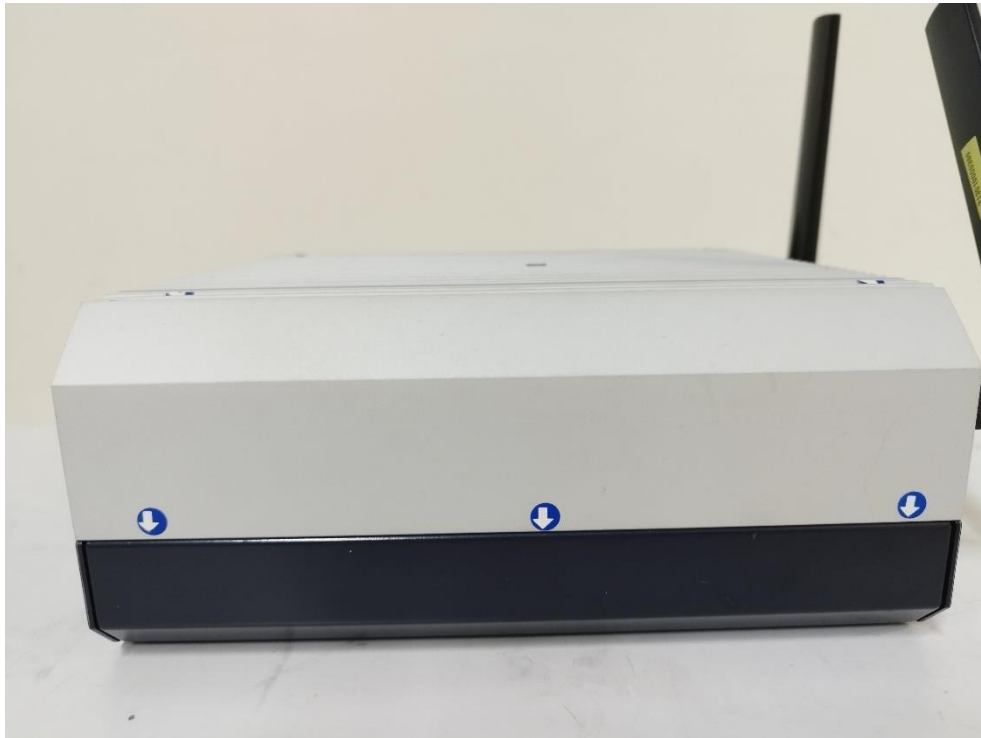
ESD Test Set up-Rear View



Air and Contact Discharge Test Point-Front View



Air and Contact Discharge Test Point-Rear View



Contact Discharge Test Point-Left View



Contact Discharge Test Point-Right View



Contact Discharge Test Point-Top View



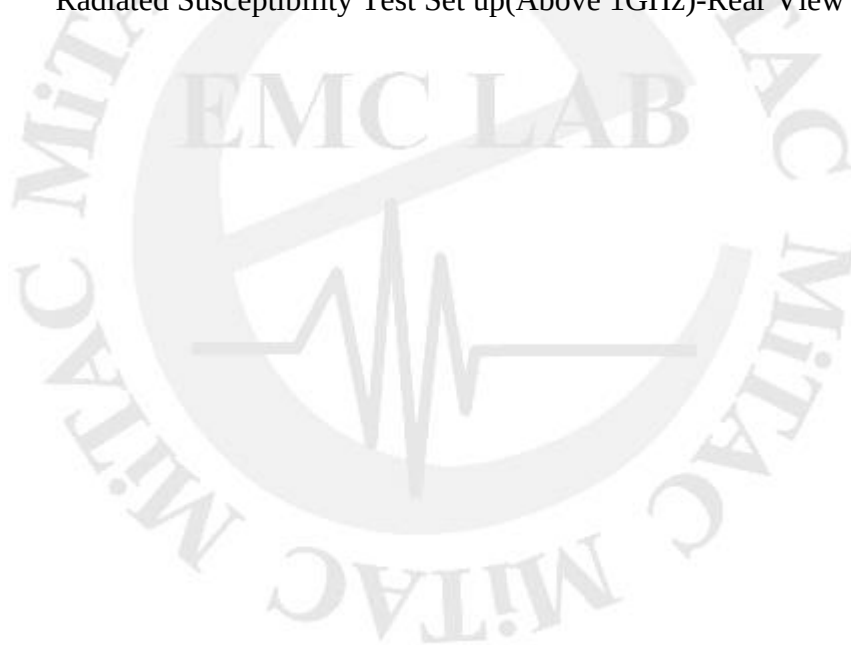
Radiated Susceptibility Test Set up-Front View

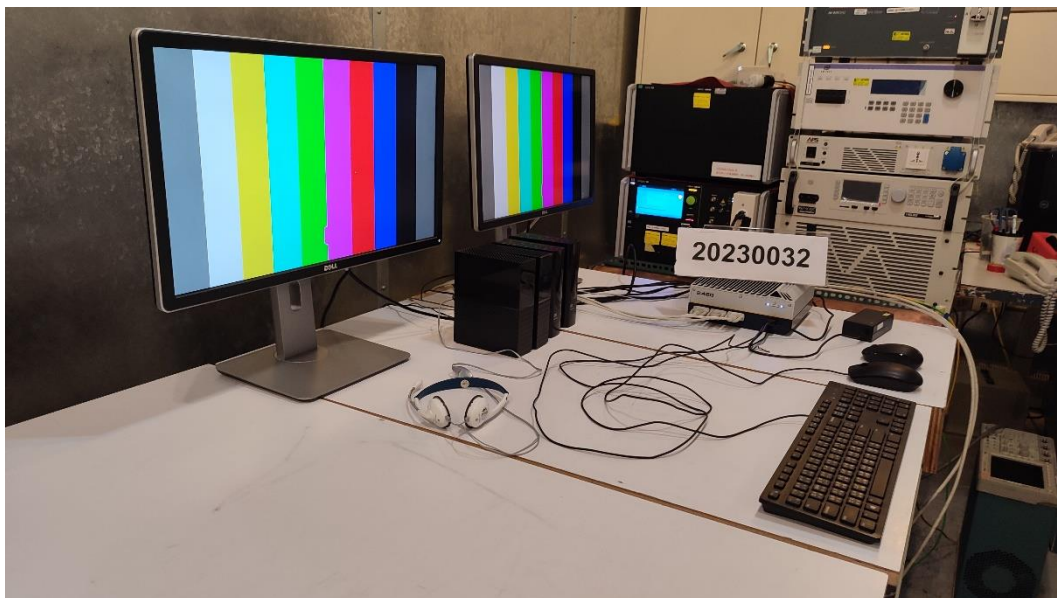


Radiated Susceptibility Test Set up(Below 1GHz)-Rear View



Radiated Susceptibility Test Set up(Above 1GHz)-Rear View

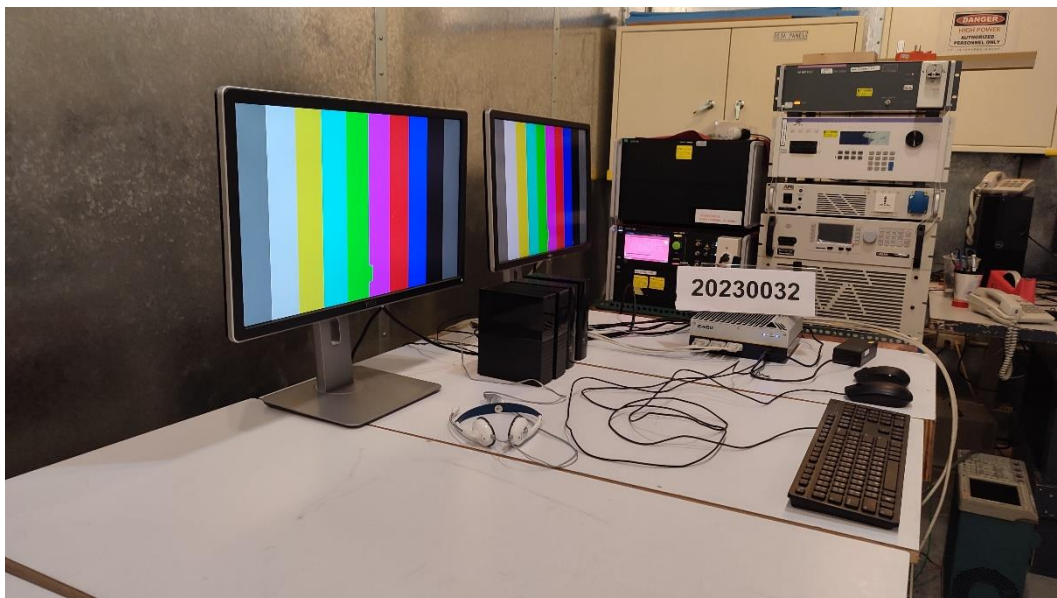




Electrical Fast Transient/Burst Set up-Power Port



Electrical Fast Transient/Burst Set up-Signal Port



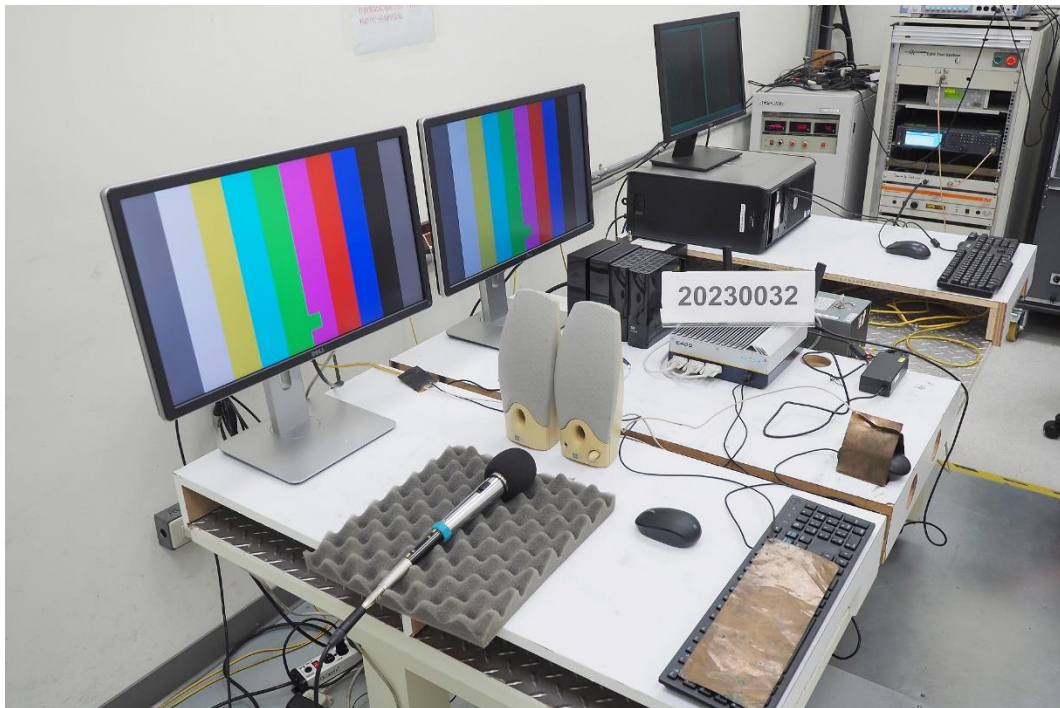
Surge Test Set up-Power Port



Conducted Immunity Test Set up-Front of Power Port



Conducted Immunity Test Set up-Rear of Power Port



Conducted Immunity Test Set up-Front of Signal Port



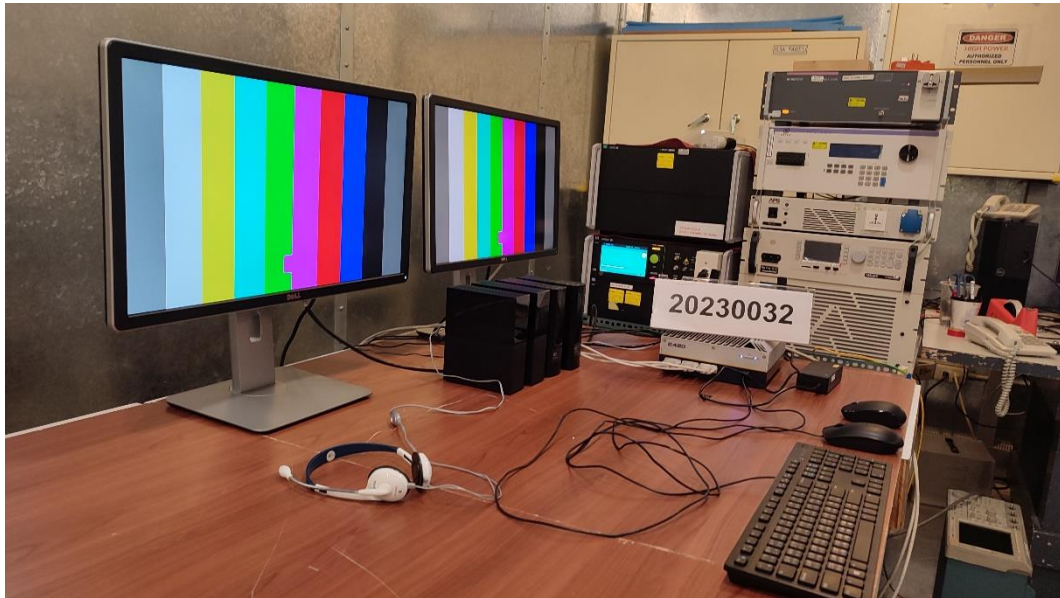
Conducted Immunity Test Set up-Rear of Signal Port



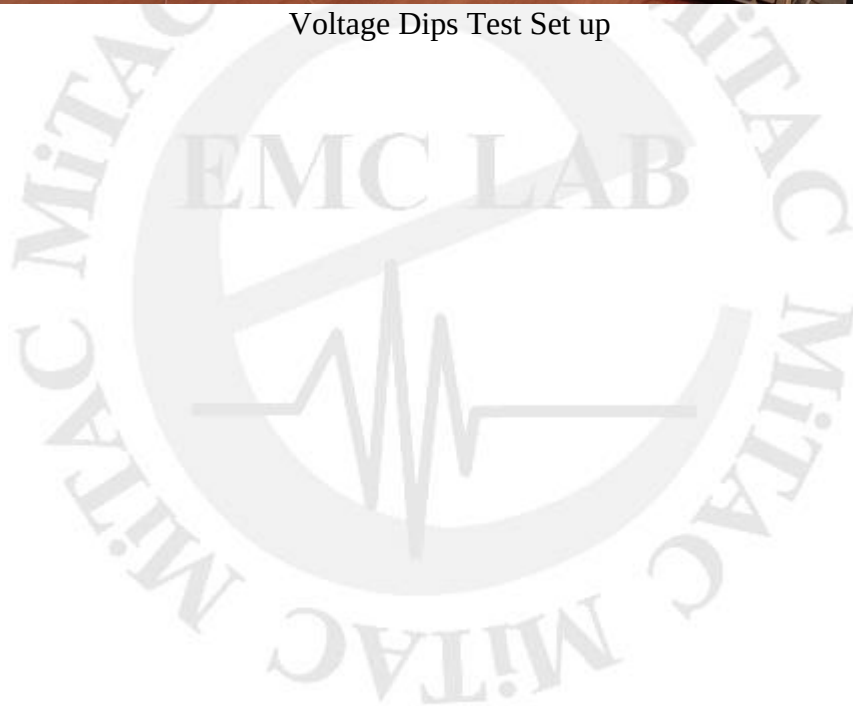
Power Frequency Magnetic Field Test-Horizontal View



Power Frequency Magnetic Field Test-Vertical View



Voltage Dips Test Set up



PHOTOGRAPHS OF EUT



EUT-Front View



EUT-Rear View



IO Ports-Front View



IO Ports-Rear View