



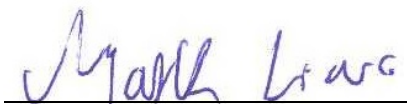
# FCC RADIO TEST REPORT

Applicant : LITE-ON Technology Corp.  
Address : Bldg. C, 90, Chien 1 Rd., Chung-Ho,  
New Taipei City, 23585, Taiwan  
Equipment : Outdoor Wi-Fi 6 Enterprise Access Point  
Model No. : WPX9926R, WPX9926RE  
Trade Name : LITEON  
FCC ID : PPQ-WPX9926R

**I HEREBY CERTIFY THAT :**

The sample was received on Aug. 16, 2023 and the testing was completed on Sep. 23, 2023 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:

  
Mark Liab / Supervisor

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





## Contents

<b>1. Summary of Test Procedure and Test Results .....</b>	<b>5</b>
1.1 Applicable Standards .....	5
<b>2. Test Configuration of Equipment under Test .....</b>	<b>6</b>
2.1 Feature of Equipment under Test.....	6
2.2 Carrier Frequency of Channels.....	7
2.3 Test Mode and Test Software.....	7
2.4 Description of Test System.....	9
2.5 General Information of Test.....	12
2.6 Measurement Uncertainty .....	13
<b>3. Test Equipment and Ancillaries Used for Tests .....</b>	<b>14</b>
<b>4. Antenna Requirements.....</b>	<b>16</b>
4.1 Standard Applicable .....	16
4.2 Antenna Construction and Directional Gain.....	16
<b>5. Test of AC Power Line Conducted Emission .....</b>	<b>17</b>
5.1 Test Limit .....	17
5.2 Test Procedures .....	17
5.3 Typical Test Setup .....	18
5.4 Test Result and Data.....	19
5.5 Test Photographs .....	27
<b>6. Test of Radiated Spurious Emission.....</b>	<b>29</b>
6.1 Test Limit .....	29
6.2 Test Procedures .....	30
6.3 Typical Test Setup .....	31
6.4 Test Result and Data (9KHz ~ 30MHz).....	32
6.5 Test Result and Data (30MHz ~ 1GHz) .....	32
6.6 Test Result and Data (1GHz ~ 25GHz).....	40
6.7 Restricted Bands of Operation .....	112
6.8 Test Photographs (30MHz ~ 1GHz).....	113
6.9 Test Photographs (1GHz ~ 25GHz).....	115
<b>7. Test of Conducted Spurious Emission .....</b>	<b>119</b>
7.1 Test Limit .....	119
7.2 Test Procedure .....	119
7.3 Test Setup Layout .....	119
7.4 Test Result and Data.....	119
<b>8. On Time, Duty Cycle and Measurement methods .....</b>	<b>138</b>
8.1 Test Limit .....	138
8.2 Test Procedure .....	138
8.3 Test Setup Layout .....	138
8.4 Test Result and Data.....	138
<b>9. 6dB Bandwidth Measurement Data.....</b>	<b>141</b>
9.1 Test Limit .....	141
9.2 Test Procedures .....	141



9.3 Test Setup Layout .....141

9.4 Test Result and Data .....141

**10. Maximum Average Output Power .....154**

10.1 Test Limit .....154

10.2 Test Procedures .....154

10.3 Test Setup Layout .....154

10.4 Test Result and Data .....155

**11. Power Spectral Density .....157**

11.1 Test Limit .....157

11.2 Test Procedures .....157

11.3 Test Setup Layout .....157

11.4 Test Result and Data .....157

**12. Radio Frequency Exposure .....171**

12.1 Applicable Standards .....171

12.1 EUT Specification .....172

12.2 Test Result .....172





# 1. Summary of Test Procedure and Test Results

## 1.1 Applicable Standards

**ANSI C63.10:2013**

**FCC Rules and Regulations Part 15 Subpart C §15.247**

FCC Rule	Description of Test	Result
15.203	. Antenna Requirement	PASS
15.207	. AC Power Line Conducted Emission	PASS
15.209 15.205	. Radiated Spurious Emission	PASS
15.247(d)	. Conducted Spurious Emission	PASS
15.247(a)(2)	. 6dB Bandwidth	PASS
15.247(b)	. Output Power	PASS
15.247(e)	. Power Spectral Density	PASS
2.1091	. Radio Frequency Exposure	PASS

\*The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement, measurement uncertainty evaluation is not considered.

\*This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report (23070089-TEFV01).



## 2. Test Configuration of Equipment under Test

### 2.1 Feature of Equipment under Test

Operation Frequency Range	802.11b/g/n/Turbo QAM/ax: 2400-2483.5MHz 802.11a/n/ac/ax: 5150-5250MHz, 5725-5850MHz
Center Frequency Range	802.11b/g/n/Turbo QAM/ax: 2412-2462MHz 802.11a/n/ac/ax: 5180-5240MHz, 5745-5825MHz
Modulation Type	2.4GHz 802.11b: CCK, DQPSK, DBPSK 802.11g/n: BPSK, QPSK, 16QAM, 64QAM, 256QAM(TurboQAM) 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM 5GHz 802.11n/a: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Modulation Technology	DSSS, OFDM, OFDMA
Data Rate	2.4GHz 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40(Turbo QAM) 802.11ax: MCS0 – MCS11, HE20/40 5GHz 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40/80 802.11ax: MCS0 – MCS11, HE20/40/80
Antenna Type	Dipole ANT for Model No.: WPX9926RE Patch ANT for Model No.: WPX9926R
Antenna Gain (Dipole ANT with cable loss for Model No.: WPX9926RE)	2412-2462MHz: ANT A(Black): 3.46dBi, ANT B(Gray): 3.67dBi 5180-5240MHz, 5745-5825MHz: ANT C(Blue): 4.40dBi, ANT D(White): 4.22dBi
Antenna Gain (Patch ANT with cable loss for Model No.: WPX9926R)	2412-2462MHz: ANT A(Red): 7.00dBi, ANT B(Blue): 7.00dBi 5180-5240MHz, 5745-5825MHz: ANT C(Gray): 6.50dBi, ANT D(White): 6.50dBi

Note:

1. EUT supports TPC Function.
2. WLAN 2.4G 802.11n Support TurboQAM.
3. WLAN 2.4GHz & WLAN 5GHz 802.11ax support beamforming Function.
4. For more details, please refer to the User's manual of the EUT.

Difference Description:	
Model No.	Remark
WPX9926RE	External Antenna
WPX9926R	Internal Antenna
These two models can use Micron & Winbond DDR NAND.	



### 2.2 Carrier Frequency of Channels

802.11b, 802.11g, 802.11n HT20, VHT20, 802.11ax HE20 (2412MHz-2462MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
<b>*01</b>	<b>2412</b>	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	<b>*11</b>	<b>2462</b>
<b>*06</b>	<b>2437</b>	---	---

802.11n HT40, VHT40, 802.11ax HE40 (2422MHz-2452MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
---	---	07	2442
---	---	08	2447
<b>*03</b>	<b>2422</b>	<b>*09</b>	<b>2452</b>
04	2427	---	---
05	2432	---	---
<b>*06</b>	<b>2437</b>	---	---

Note: Channels remarked \* are selected to perform test.

### 2.3 Test Mode and Test Software

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.10.
- b. For Non-beamforming test, "QSPR ver.: 5.0-00202" under Windows 7 system was executed to transmit and receive data via WLAN.
- c. For beamforming test, "Command" under Windows 7 system was executed to transmit and receive data via WLAN.



d. Model no. WPX9926RE & WPX9926R can use Micron & Winbond DDR NAND, so we use these samples to test with AC 120V & AC 240V, the worst case is Micron DDR NAND with AC 120V & AC 240V. The following test modes were performed for the test:

<b>Conducted Emissions Test</b>	
Test Mode	Operating Description
ANT: Dipole	
Test Mode 1	AC 120V, 802.11b (1Mbps), Power from PoE, Non-beamforming
Test Mode 2	AC 120V, 802.11g (6Mbps), Power from PoE, Non-beamforming
Test Mode 3	AC 120V, 802.11ax HE20 (7.3Mbps), Power from PoE, Non-beamforming
Test Mode 4	AC 120V, 802.11ax HE40 (14.6Mbps), Power from PoE, Non-beamforming
Test Mode 5	AC 240V, 802.11b (1Mbps), Power from PoE, Non-beamforming
Test Mode 6	AC 120V, 802.11ax HE20 (7.3Mbps), Power from PoE, Beamforming
Test Mode 7	AC 120V, 802.11ax HE40 (14.6Mbps), Power from PoE, Beamforming
ANT: Patch	
Test Mode 8	AC 120V, 802.11b (1Mbps), Power from PoE, Non-beamforming
Test Mode 9	AC 120V, 802.11g (6Mbps), Power from PoE, Non-beamforming
Test Mode 10	AC 120V, 802.11ax HE20 (7.3Mbps), Power from PoE, Non-beamforming
Test Mode 11	AC 120V, 802.11ax HE40 (14.6Mbps), Power from PoE, Non-beamforming
Test Mode 12	AC 120V, 802.11ax HE20 (7.3Mbps), Power from PoE, Beamforming
Test Mode 13	AC 120V, 802.11ax HE40 (14.6Mbps), Power from PoE, Beamforming
Test Mode 14	AC 240V, 802.11ax HE20 (7.3Mbps), Power from PoE, Beamforming
For Conducted Emission test, caused "Test Mode 2,6,9,12" were the worst case, they were reported as the final data. For Radiation Emission (below 1GHz) test, caused "Test Mode 5,6,8,14" were the worst case, they were reported as the final data. For Radiation Emission (above 1GHz) test, caused "Test Mode 1~4,6~13" were the worst case, they were reported as the final data. After engineering evaluation, Duty cycle, Conducted spurious emission and 6dB Bandwidth test, Dipole ANT was the worst case, it was reported as the final data.	

The EUT incorporates a MIMO function

Modulation Type	TX CONFIGURATION
802.11b	2TX
802.11g	2TX
802.11n HT20	2TX
802.11n HT40	2TX
802.11n HT20(TurboQAM)	2TX
802.11n HT40(TurboQAM)	2TX
802.11ax HE20	2TX
802.11ax HE40	2TX





## 2.4 Description of Test System

### Model No.: WPX9926RE, ANT: Dipole, Non-beamforming

RF Conducted				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
Notebook	lenovo	S1GL2W	N/A	Adapter / 1.8m / NS
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
RJ45 Cable*2	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
PoE	UBIQUITI	GP-H480-050G	N/A	0.6m / NS

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	15m / NS	N/A
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
PoE	Cambium Networks	NET-P60-56IN	N/A	N/A

AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
RJ45 Cable*2	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
PoE	Cambium Networks	NET-P60-56IN	N/A	N/A

### Model No.: WPX9926RE, ANT: Dipole, Beamforming

RF Conducted				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
Notebook	lenovo	S1GL2W	N/A	Adapter / 1.8m / NS
Notebook	lenovo	S1GL2W	N/A	Adapter / 1.8m / NS
Power Cord	KING-CORD	KC-003	1m / NS	N/A
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
RJ45 Cable*4	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
PoE*2	UBIQUITI	GP-H480-050G	N/A	0.6m / NS
AP	LITEON	WPX9926R	N/A	N/A



Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
RJ45 Cable*3	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	15m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
PoE	N/A	NET-P60-56IN	N/A	N/A
Power Cord	KING-CORD	KC-003	1m / NS	N/A
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
PoE	Bluewave	JS-100GT	N/A	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
AP	LITEON	WPX9926R	N/A	N/A

AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
RJ45 Cable*4	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
Power Cord	KING-CORD	KC-003	1m / NS	N/A
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
PoE	N/A	NET-P60-56IN	N/A	N/A
PoE	Bluewave	JS-100GT	N/A	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
AP	LITEON	WPX9926R	N/A	N/A

**Model No.: WPX9926R, ANT: Patch, Non-beamforming**

RF Conducted				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
Notebook	lenovo	S1GL2W	N/A	Adapter / 1.8m / NS
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
RJ45 Cable*2	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
PoE	UBIQUITI	GP-H480-050G	N/A	0.6m / NS

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
PoE	PowerDsine	PD-9001GR	N/A	N/A
RJ45 Cable	N/A	N/A	15m / NS	N/A



AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
RJ45 Cable*2	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
PoE	Cambium Networks	NET-P60-56IN	N/A	N/A

**Model No.: WPX9926R, ANT: Patch, Beamforming**

RF Conducted				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
Notebook	lenovo	S1GL2W	N/A	Adapter / 1.8m / NS
Power Cord *2	Powersync	TPCMRN0006	1.2m / NS	N/A
Notebook	lenovo	S1GL2W	N/A	Adapter / 1.8m / NS
RJ45 Cable*4	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
PoE*2	UBIQUITI	GP-H480-050G	N/A	0.6m / NS
AP	LITEON	WPX9926R	N/A	N/A

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
RJ45 Cable*3	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	15m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
PoE	Cambium Networks	NET-P60-56IN	N/A	N/A
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
PoE	Bluewave	JS-100GT	N/A	N/A
Power Cord	KING-CORD	KC-003	1m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
AP	LITEON	WPX9926R	N/A	N/A

AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/ Length/Type
RJ45 Cable*4	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
PoE	Cambium Networks	NET-P60-56IN	N/A	N/A
Power Cord	KING-CORD	KC-003	1m / NS	N/A
PoE	Bluewave	JS-100GT	N/A	N/A
Power Cord	Powersync	TPCMRN0006	1.2m / NS	N/A
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
AP	LITEON	WPX9926R	N/A	N/A

**2.5 General Information of Test**

Test Site	<b>CerpPASS Technology Corporation Test Laboratory</b> Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881	
	FCC	TW1439, TW1079
	IC	4934E-1, 4934E-2
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 25,000MHz	
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.	

**Model No.: WPX9926RE, ANT: Dipole, Non-beamforming**

Test Item	Test Site	Finish Date	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2023/9/20 ~ 2023/09/22	24.2~25.6°C / 47~55%	Leon Huang
Radiated Emissions	3M02-NK	2023/08/23 ~ 2023/09/04	23~25°C / 41~61%	Leon Huang
AC Power Line Conducted Emission	CON01-NK	2023/09/01	26°C / 53%	Leon Huang

**Model No.: WPX9926RE, ANT: Dipole, Beamforming**

Test Item	Test Site	Finish Date	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2023/9/20 ~ 2023/09/21	24.2~24.8°C / 47~55%	Leon Huang
Radiated Emissions	3M02-NK	2023/08/30 ~ 2023/09/04	25~27°C / 41~43%	Leon Huang
AC Power Line Conducted Emission	CON01-NK	2023/09/01	26°C / 53%	Leon Huang

**Model No.: WPX9926R, ANT: Patch, Non-beamforming**

Test Item	Test Site	Finish Date	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2023/9/20 ~ 2023/09/22	24.2~25.6°C / 47~55%	Leon Huang
Radiated Emissions	3M02-NK	2023/08/30 ~ 2023/09/04	17.8~27.3°C / 41~43%	Leon Huang
AC Power Line Conducted Emission	CON01-NK	2023/09/01	26°C / 53%	Leon Huang

**Model No.: WPX9926R, ANT: Patch, Beamforming**

Test Item	Test Site	Finish Date	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2023/9/20 ~ 2023/09/21	24.2~24.8°C / 47~55%	Leon Huang
Radiated Emissions	3M02-NK	2023/08/31 ~ 2023/09/04	22~27.8°C / 43%	Leon Huang
AC Power Line Conducted Emission	CON01-NK	2023/09/01	26°C / 53%	Leon Huang

**2.6 Measurement Uncertainty**

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.28dB
Radiated Spurious Emission(9KHz~30MHz)	±3.5dB
Radiated Spurious Emission(30MHz~1GHz)	±5.1dB
Radiated Spurious Emission(1GHz~40GHz)	±5.2dB
Conducted Spurious Emission	±2.1dB
6dB Bandwidth	±5.4%
20dB Bandwidth	±4.4%
Occupied Bandwidth	±4.5%
Peak Output Power(Conducted Power Meter)	±1.1dB
Dwell Time / Deactivation Time	±7.6%
Power Spectral Density	±2.0dB
Duty Cycle	±3.5%



### 3. Test Equipment and Ancillaries Used for Tests

Test Item	Radiated Emissions				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	275	2022/11/18	2023/11/17
Active Loop Antenna	Schwarzbeck	FMZB 1513	414	2023/02/03	2024/02/02
Horn Antenna	EMCO	3115	31589	2023/03/23	2024/03/22
Horn Antenna	EMCO	3116	31970	2023/03/03	2024/03/02
EMI Receiver	R&S	ESCI	101423	2023/07/05	2024/07/04
Spectrum Analyzer	R&S	FSV 40-N	102151	2023/08/16	2024/08/15
Preamplifier	Agilent	8449B	3008A01954	2023/03/08	2024/03/07
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2022/11/11	2023/11/10
Preamplifier	EM Electronics corp.	EM330	60658	2022/10/04	2023/10/03
Cable-6m (9k~300M)	NA	EMC5D-BM-BM-6	130606	2023/03/13	2024/03/12
Cable-3in1 (30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2023/02/25	2024/02/24
Cable-0.5m (1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2023/03/07	2024/03/06
Cable-3m (1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2023/03/07	2024/03/06
Cable-8m (1G-26.5G)	WOKEN	WCBA-WCA203SM	CCE1374	2023/03/07	2024/03/06
Cable-0.5m (30M-40G)	HUBER SUHNER	SUCOFLEX 102	28420/2	2023/03/07	2024/03/06
Cable-3m (10M-40G)	HUBER SUHNER	SF102	804619/2	2022/10/11	2023/10/10
High Pass Filter	Warison	WFIL-H3000-18000F-03	WRJ5CFWC2J1	2023/07/03	2024/07/02
High Pass Filter	Warison	WFIL-H7500-18000F	WRQ4BFWC2J1	2023/03/13	2024/03/12
Notch Filter	Warison	WFIL-N5925-7125F-04	WRQ4BFWC4M1	2023/03/13	2024/03/12
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA



Test Item	RF Conducted				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100339	2022/11/29	2023/11/28
Spectrum Analyzer	R&S	FSP 40	100047	2023/02/24	2024/02/23
Attenuator	KEYSIGHT	8491B	MY39250703	2023/03/07	2024/03/06
Cable-0.5m (1G-26.5G)	HUBER SUHNER	SUCOFLEX 102	28422/2	2023/03/07	2024/03/06
Power Meter	Anritsu	ML2495A	1224005	2023/03/07	2024/03/06
Power Sensor	Anritsu	MA2411B	1207295	2023/03/07	2024/03/06
Switch Box	Theda	1-4	TW5451159	NA	NA

Test Item	AC Power Line Conducted Emission				
Test Site	CON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI	101200	2022/12/09	2023/12/08
LISN	Schwarzbeck	NSLK 8127	8127-568	2023/05/10	2024/05/09
Pulse Limiter	R&S	ESH3-Z2	101933	2022/09/29	2023/09/28
Cable-6m(9k~300M)	NA	EMC5D-BM-BM-6	130605	2022/09/06	2023/09/05
E3	AUDIX	v8.2014-8-6	RK-000531	NA	NA



### 4. Antenna Requirements

#### 4.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

#### 4.2 Antenna Construction and Directional Gain

Model No.	Antenna Type	Antenna Gain
WPX9926RE	Dipole ANT	2412-2462MHz: ANT A(Black): 3.46dBi, ANT B(Gray): 3.67dBi
WPX9926R	Patch ANT	2412-2462MHz: ANT A(Red): 7.00dBi, ANT B(Blue): 7.00dBi

<b>(Non-Beamforming)</b>	
Dipole ANT	2412-2462MHz
For Power directional gain= $G_{ant}= 3.67$ dBi For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ = 6.58 dBi *MIMO type: Cyclic Delay Diversity (CDD) mode.	
<b>(Beamforming)</b>	
Dipole ANT	2412-2462MHz
For Power directional gain= $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ = 6.58 dBi For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ = 6.58 dBi	

<b>(Non-Beamforming)</b>	
Patch ANT	2412-2462MHz
For Power directional gain= $G_{ant}= 7.00$ dBi For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ = 10.01 dBi *MIMO type: Cyclic Delay Diversity (CDD) mode.	
<b>(Beamforming)</b>	
Dipole ANT	2412-2462MHz
For Power directional gain= $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ = 10.01 dBi For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ = 10.01 dBi	





## 5. Test of AC Power Line Conducted Emission

### 5.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.10-2013. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB $\mu$ V)	Average (dB $\mu$ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

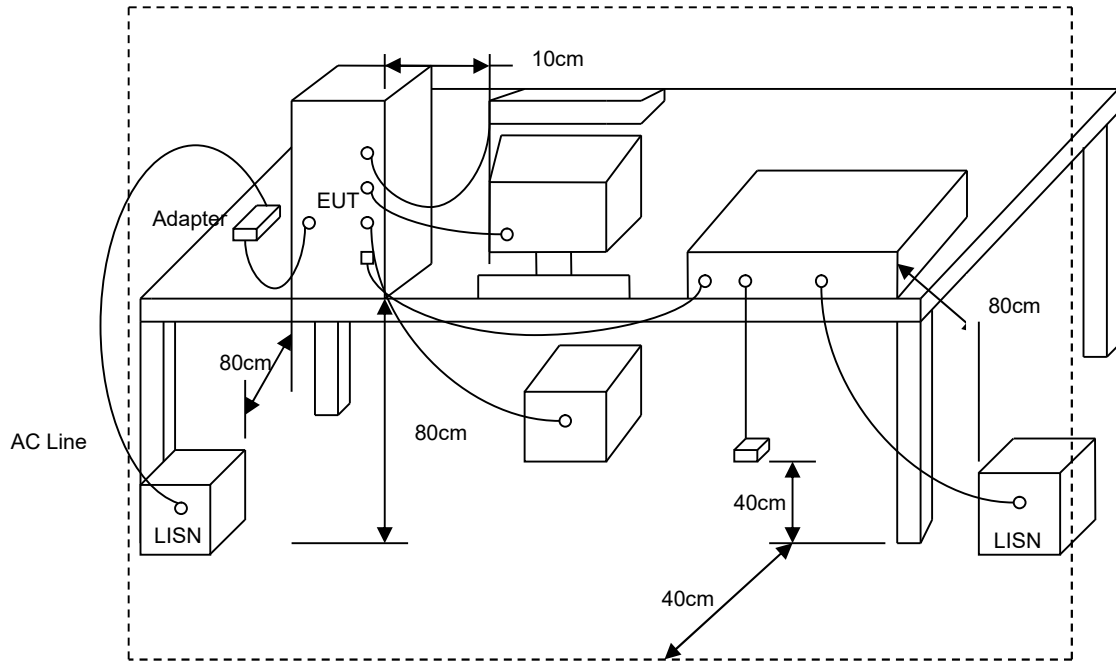
\*Decreases with the logarithm of the frequency.

### 5.2 Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



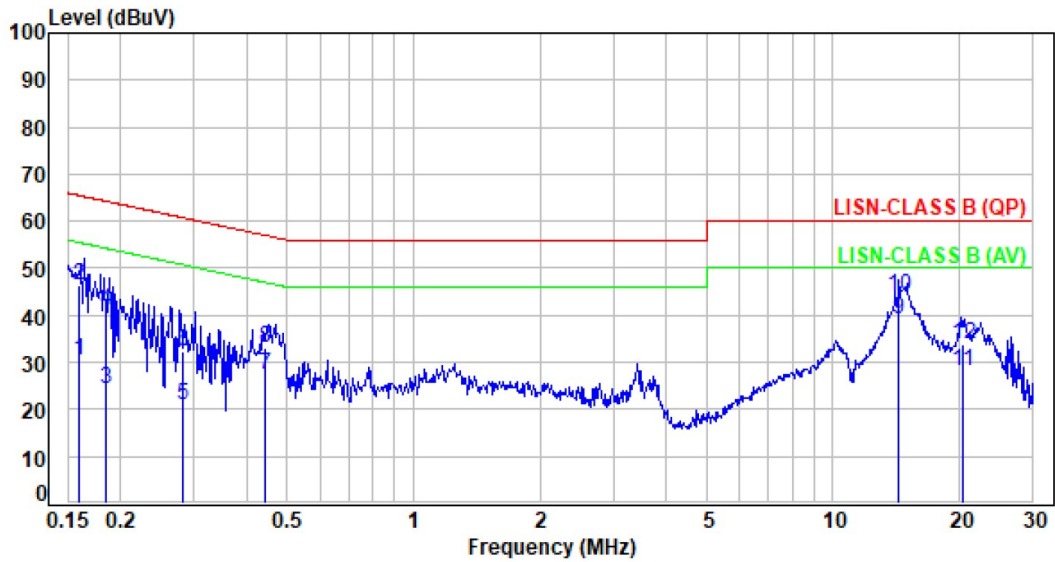
### 5.3 Typical Test Setup





5.4 Test Result and Data

Power	: AC 120V / 60Hz from PoE	Pol/Phase	: LINE
Test Mode	: Mode 2, 11g CH06		

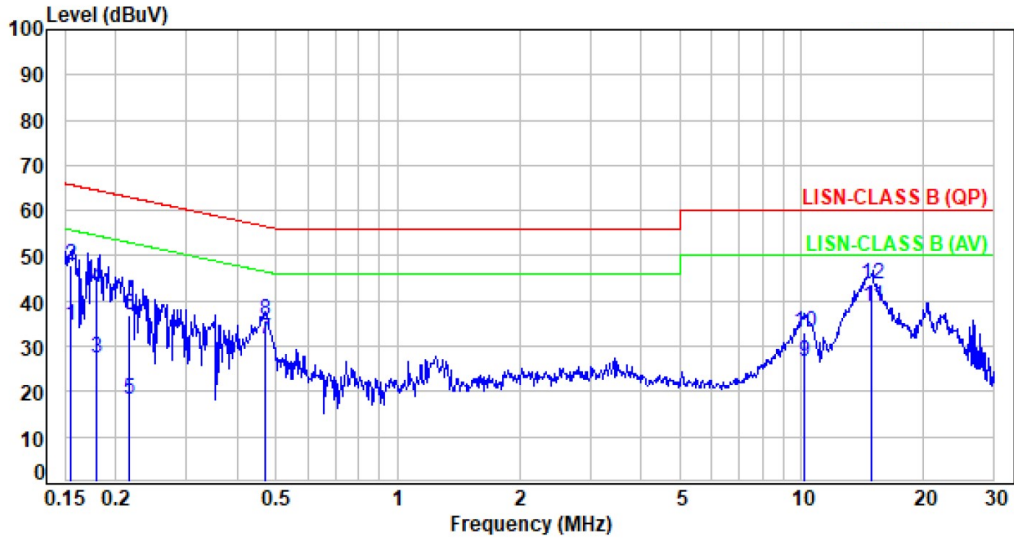


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.16	9.97	20.48	30.45	55.48	-25.03	Average	P
2	0.16	9.97	36.25	46.22	65.48	-19.26	QP	P
3	0.19	9.97	14.22	24.19	54.24	-30.05	Average	P
4	0.19	9.97	31.17	41.14	64.24	-23.10	QP	P
5	0.28	9.97	10.98	20.95	50.74	-29.79	Average	P
6	0.28	9.97	22.22	32.19	60.74	-28.55	QP	P
7	0.44	9.97	17.37	27.34	46.99	-19.65	Average	P
8	0.44	9.97	22.96	32.93	56.99	-24.06	QP	P
9	14.34	10.58	28.68	39.26	50.00	-10.74	Average	P
10	14.34	10.58	33.61	44.19	60.00	-15.81	QP	P
11	20.33	10.71	17.56	28.27	50.00	-21.73	Average	P
12	20.33	10.71	23.18	33.89	60.00	-26.11	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 120V / 60Hz from PoE	Pol/Phase	: NEUTRAL
Test Mode	: Mode 2, 11g CH06		

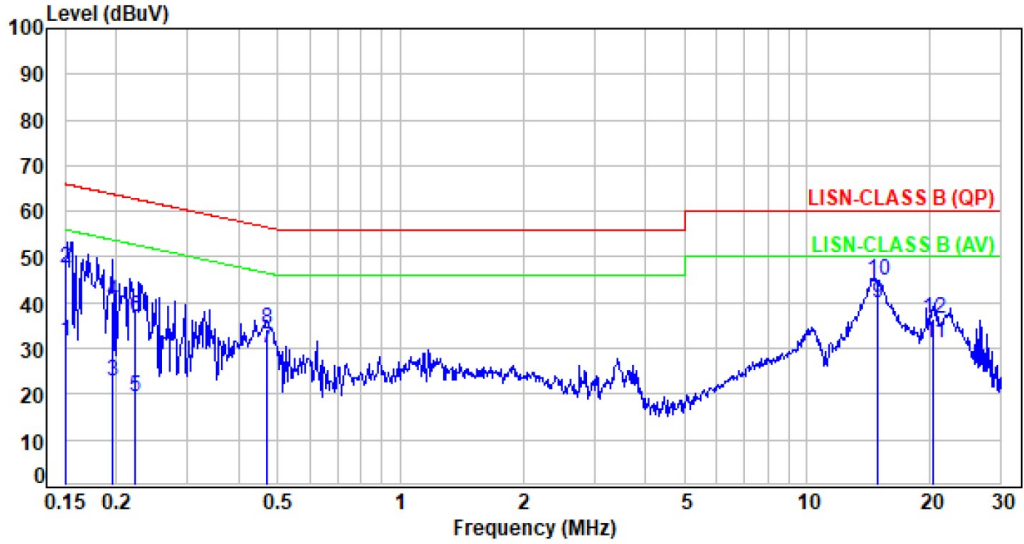


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.97	24.67	34.64	55.77	-21.13	Average	P
2	0.15	9.97	37.89	47.86	65.77	-17.91	QP	P
3	0.18	9.96	17.29	27.25	54.54	-27.29	Average	P
4	0.18	9.96	33.18	43.14	64.54	-21.40	QP	P
5	0.22	9.96	8.47	18.43	52.93	-34.50	Average	P
6	0.22	9.96	27.01	36.97	62.93	-25.96	QP	P
7	0.47	9.97	21.58	31.55	46.50	-14.95	Average	P
8	0.47	9.97	25.82	35.79	56.50	-20.71	QP	P
9	10.16	10.35	16.27	26.62	50.00	-23.38	Average	P
10	10.16	10.35	22.55	32.90	60.00	-27.10	QP	P
11	14.95	10.54	28.38	38.92	50.00	-11.08	Average	P
12	14.95	10.54	33.24	43.78	60.00	-16.22	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 120V / 60Hz from PoE	Pol/Phase	: LINE
Test Mode	: Mode 6, 11ax HE20 CH06		

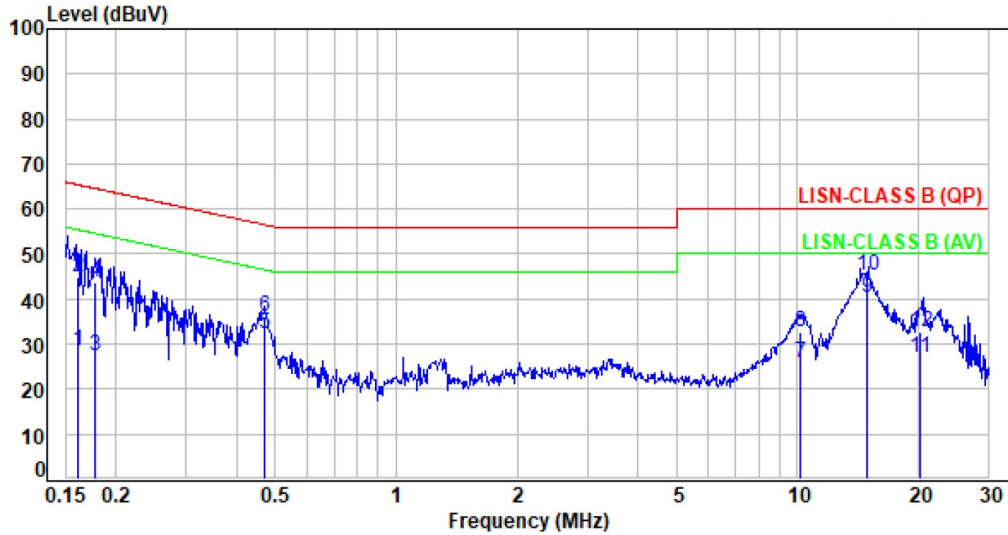


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.97	21.57	31.54	55.97	-24.43	Average	P
2	0.15	9.97	37.63	47.60	65.97	-18.37	QP	P
3	0.20	9.97	12.99	22.96	53.81	-30.85	Average	P
4	0.20	9.97	30.15	40.12	63.81	-23.69	QP	P
5	0.22	9.97	9.48	19.45	52.74	-33.29	Average	P
6	0.22	9.97	26.92	36.89	62.74	-25.85	QP	P
7	0.47	9.98	20.19	30.17	46.49	-16.32	Average	P
8	0.47	9.98	24.31	34.29	56.49	-22.20	QP	P
9	14.94	10.60	29.39	39.99	50.00	-10.01	Average	P
10	14.94	10.60	34.09	44.69	60.00	-15.31	QP	P
11	20.48	10.71	20.52	31.23	50.00	-18.77	Average	P
12	20.48	10.71	25.73	36.44	60.00	-23.56	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 120V / 60Hz from PoE	Pol/Phase	: NEUTRAL
Test Mode	: Mode 6, 11ax HE20 CH06		:



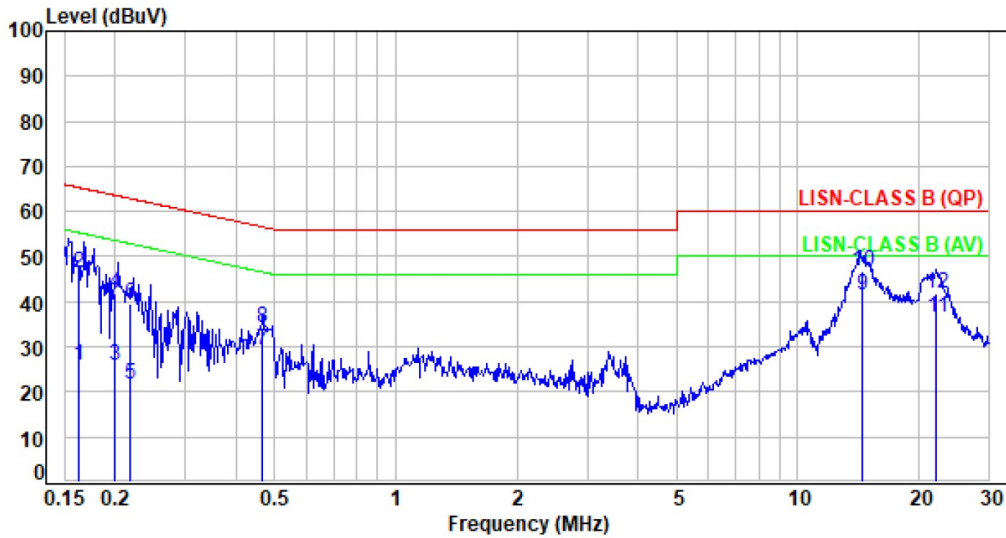
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.16	9.97	18.48	28.45	55.40	-26.95	Average	P
2	0.16	9.97	35.01	44.98	65.40	-20.42	QP	P
3	0.18	9.96	17.37	27.33	54.58	-27.25	Average	P
4	0.18	9.96	33.63	43.59	64.58	-20.99	QP	P
5	0.47	9.97	22.17	32.14	46.52	-14.38	Average	P
6	0.47	9.97	26.33	36.30	56.52	-20.22	QP	P
7	10.17	10.35	15.51	25.86	50.00	-24.14	Average	P
8	10.17	10.35	22.47	32.82	60.00	-27.18	QP	P
9	14.94	10.54	29.79	40.33	50.00	-9.67	Average	P
10	14.94	10.54	34.54	45.08	60.00	-14.92	QP	P
11	20.18	10.67	16.33	27.00	50.00	-23.00	Average	P
12	20.18	10.67	22.18	32.85	60.00	-27.15	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss





Power	: AC 120V / 60Hz from PoE	Pol/Phase	: LINE
Test Mode	: Mode 9, 11g CH06		

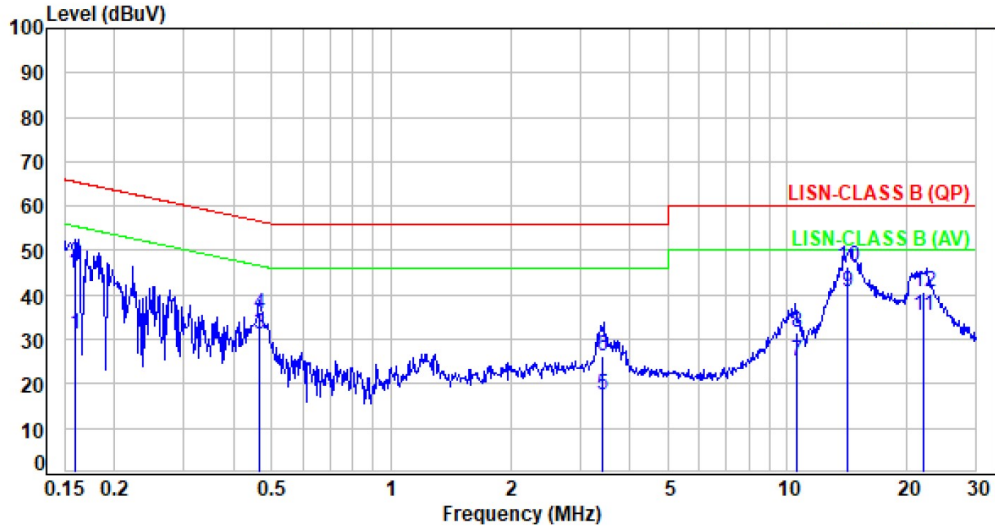


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.16	9.97	15.76	25.73	55.31	-29.58	Average	P
2	0.16	9.97	36.31	46.28	65.31	-19.03	QP	P
3	0.20	9.97	15.71	25.68	53.61	-27.93	Average	P
4	0.20	9.97	31.97	41.94	63.61	-21.67	QP	P
5	0.22	9.97	11.73	21.70	52.86	-31.16	Average	P
6	0.22	9.97	29.42	39.39	62.86	-23.47	QP	P
7	0.47	9.98	19.39	29.37	46.57	-17.20	Average	P
8	0.47	9.98	24.09	34.07	56.57	-22.50	QP	P
9	14.42	10.59	30.97	41.56	50.00	-8.44	Average	P
10	14.42	10.59	36.32	46.91	60.00	-13.09	QP	P
11	22.11	10.76	25.77	36.53	50.00	-13.47	Average	P
12	22.11	10.76	31.11	41.87	60.00	-18.13	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 120V / 60Hz from PoE	Pol/Phase	: NEUTRAL
Test Mode	: Mode 9, 11g CH06		



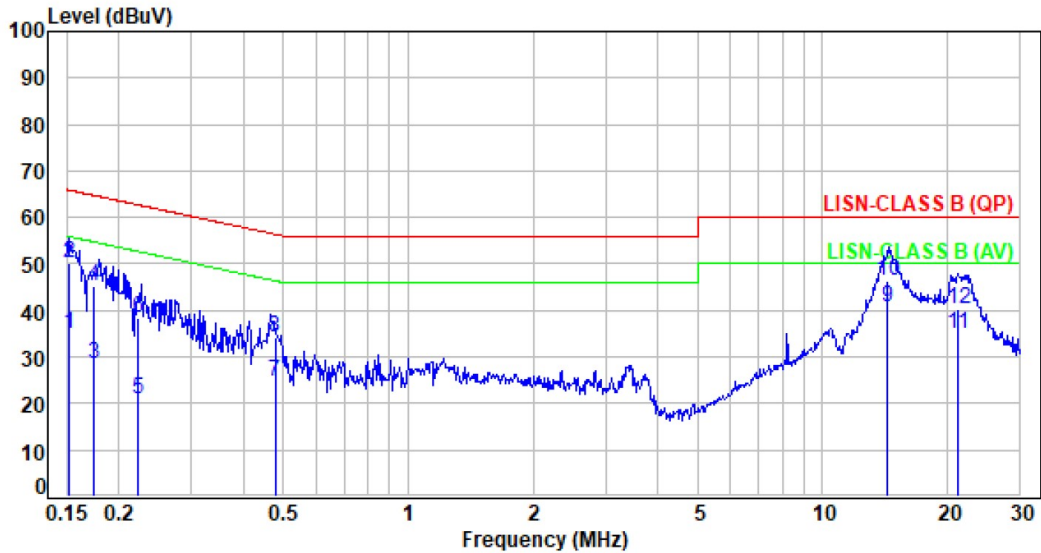
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.16	9.97	21.03	31.00	55.49	-24.49	Average	P
2	0.16	9.97	37.16	47.13	65.49	-18.36	QP	P
3	0.46	9.97	21.15	31.12	46.62	-15.50	Average	P
4	0.46	9.97	25.94	35.91	56.62	-20.71	QP	P
5	3.43	10.13	7.38	17.51	46.00	-28.49	Average	P
6	3.43	10.13	16.25	26.38	56.00	-29.62	QP	P
7	10.58	10.38	14.59	24.97	50.00	-25.03	Average	P
8	10.58	10.38	21.08	31.46	60.00	-28.54	QP	P
9	14.19	10.52	30.35	40.87	50.00	-9.13	Average	P
10	14.19	10.52	35.72	46.24	60.00	-13.76	QP	P
11	22.01	10.73	24.64	35.37	50.00	-14.63	Average	P
12	22.01	10.73	29.96	40.69	60.00	-19.31	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss





Power	: AC 120V / 60Hz from PoE	Pol/Phase	: LINE
Test Mode	: Mode 12, 11ax HE20 CH06		

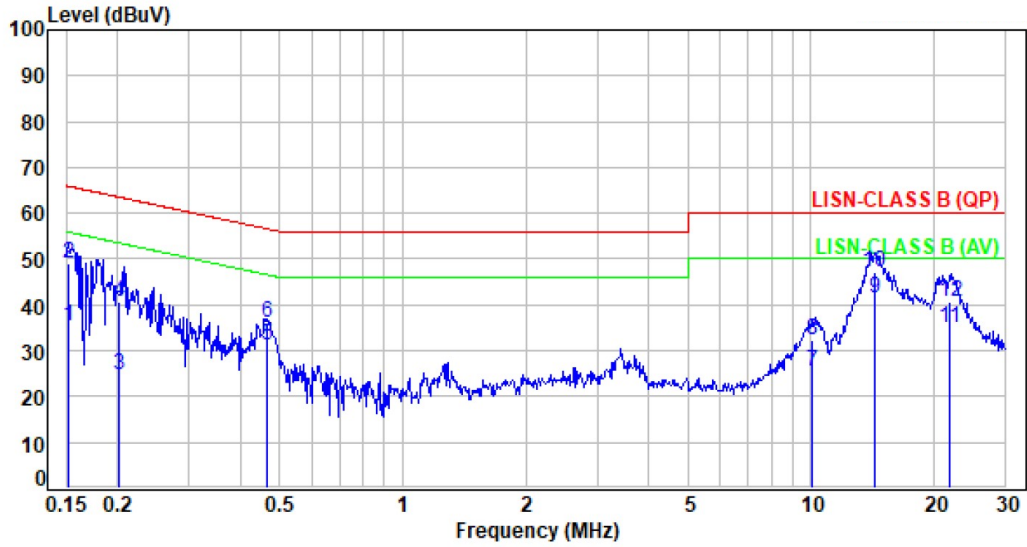


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.97	25.14	35.11	55.88	-20.77	Average	P
2	0.15	9.97	40.04	50.01	65.88	-15.87	QP	P
3	0.17	9.97	18.56	28.53	54.74	-26.21	Average	P
4	0.17	9.97	35.45	45.42	64.74	-19.32	QP	P
5	0.22	9.97	11.13	21.10	52.69	-31.59	Average	P
6	0.22	9.97	28.25	38.22	62.69	-24.47	QP	P
7	0.48	9.98	14.73	24.71	46.39	-21.68	Average	P
8	0.48	9.98	24.12	34.10	56.39	-22.29	QP	P
9	14.37	10.58	30.09	40.67	50.00	-9.33	Average	P
10	14.37	10.58	35.69	46.27	60.00	-13.73	QP	P
11	21.21	10.75	24.29	35.04	50.00	-14.96	Average	P
12	21.21	10.75	29.44	40.19	60.00	-19.81	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 120V / 60Hz from PoE	Pol/Phase	: NEUTRAL
Test Mode	: Mode 12, 11ax HE20 CH06		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.97	25.36	35.33	55.87	-20.54	Average	P
2	0.15	9.97	39.23	49.20	65.87	-16.67	QP	P
3	0.20	9.96	14.61	24.57	53.51	-28.94	Average	P
4	0.20	9.96	30.87	40.83	63.51	-22.68	QP	P
5	0.47	9.97	21.34	31.31	46.60	-15.29	Average	P
6	0.47	9.97	26.01	35.98	56.60	-20.62	QP	P
7	10.09	10.35	15.27	25.62	50.00	-24.38	Average	P
8	10.09	10.35	21.82	32.17	60.00	-27.83	QP	P
9	14.27	10.52	31.04	41.56	50.00	-8.44	Average	P
10	14.27	10.52	36.49	47.01	60.00	-12.99	QP	P
11	21.88	10.73	24.43	35.16	50.00	-14.84	Average	P
12	21.88	10.73	29.83	40.56	60.00	-19.44	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss