

Test report no.: <i>Prüfbericht-Nr.:</i>	CN23WJS4 002	Order No.: <i>Auftragsnr.:</i>	168377368	Page 1 of 20 <i>Seite 1 von 20</i>
Client reference no.: <i>Kunden-Referenz-Nr.:</i>	N/A	Order date: <i>Auftragsdatum:</i>	2022-06-15	
Client: <i>Auftraggeber:</i>	Siemens AG Frauenauracher Str. 80, Erlangen, Germany			
Test item: <i>Prüfgegenstand:</i>	SINAMICS Smart Adapter			
Identification / Type no.: <i>Bezeichnung / Typ-Nr.:</i>	6SL4050-0AJ00-0AA0			
Order content: <i>Auftrags-Inhalt:</i>	Test Report			
Test specification <i>Prüfgrundlage:</i>	CFR47 FCC Part15: Subpart E Section 15.407			
Date of sample receipt: <i>Wareneingangsdatum:</i>	2023-05-20	Please refer to Photo Document		
Test sample no: <i>Prüfmuster-Nr.:</i>	A003334773-001~003			
Testing period: <i>Prüfzeitraum:</i>	2022-09-27 - 2022-11-07			
Place of testing: <i>Ort der Prüfung:</i>	Refer to section 2.1			
Testing laboratory: <i>Prüflaboratorium:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Test result*: <i>Prüfergebnis*:</i>	Pass			
tested by: <i>geprüft von:</i>		authorized by: <i>genehmigt von:</i>		
Date: 2023-10-07 <i>Datum:</i>	Signed by Bell Hu	Issue date: 2023-10-07 <i>Ausstellungsdatum:</i>	Signed by Lin Lin	
Position / Stellung:	Expert/Sachverständige(r)	Position / Stellung:	Expert/Sachverständige(r)	
Other: <i>Sonstiges:</i>	FCC ID: 2BCUK-SMARTADAPTER			
Condition of the test item at delivery: <i>Zustand des Prüfgegenstandes bei Anlieferung:</i>	Test item complete and undamaged Prüfmuster vollständig und unbeschädigt			
* Legend: P(pass) = passed a.m. test specification(s) F(fail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested * Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(fail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet				
This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark. Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.				

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Remarks
Anmerkungen

- | | |
|---|--|
| 1 | <p>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</p> <p><i>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</i></p> <p><i>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</i></p> |
| 2 | <p>As contractually agreed, this document has been signed digitally only. TÜV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TÜV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.</p> <p><i>Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben.</i></p> |
| 3 | <p>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</p> <p><i>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</i></p> |
| 4 | <p>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</p> <p><i>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</i></p> |

Test Summary

5.1.1 ANTENNA REQUIREMENT*RESULT: Pass***5.1.2 MAXIMUM CONDUCTED OUTPUT POWER***RESULT: Pass***5.1.3 CONDUCTED POWER SPECTRAL DENSITY***RESULT: Pass***5.1.4 FREQUENCY STABILITY***RESULT: Pass***5.1.5 26dB BANDWIDTH AND 99% BANDWIDTH***RESULT: Pass***5.1.6 RADIATED SPURIOUS EMISSION***RESULT: Pass*

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of 5.2GHz Wi-Fi

Appendix B: Photographs of the Test Set-up

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

382 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China

FCC Accreditation Designation No.: 694916

ISED wireless device testing laboratory: 25089

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing (SRD-Tonscend)				
Equipment	Manufacturer	Model	Serial No.	Cal. until
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY60241175	2023-10-10
MXG X-Series RF Vector Signal Generator	Keysight	N5182B	MY61250137	2023-10-10
EXG X-Series Microwave Analog Signal Generator	Keysight	N5173B	MY61250141	2023-10-10
DC power supply	Keysight	E3642A	MY61276100	2023-10-10
Power Control Unit	Tonscend	JS0806-4ADC	N/A	2023-10-10
Automation Control Unit	Tonscend	JS0806-2	21C8060396	2023-10-10
Test Software	Tonscend	JS1120-3	N/A	N/A
Control PC	Lenovo	TianYi510S-071MB	YLX23JMF	N/A
Shielding Room 8#	Albatross	SR8	APC17151-SR8	2024-06-22
Unwanted Emission Testing (TS9975)				
Equipment	Manufacturer	Model	Serial No.	Cal. until
EMI Test Receiver	R&S	ESR 7	102021	2023-08-02
Signal Analyzer	R&S	FSV 40	101439	2023-08-01
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2023-08-01
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2023-08-02
Amplifier	R&S	SCU-18F	180070	2023-08-02
Amplifier	R&S	SCU40A	100475	2023-08-02
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2024-08-06
Double-Ridged Antenna (1 -18	ETS-LINDGREN	3117	00218717	2024-08-06

GHz)				
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2024-08-27
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2023-08-06
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2024-06-22
EMI Test Receiver	R&S	ESR 7	102021	2023-08-02

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty (k=2)
RF output power, conducted	± 0.99 dB
Occupied Channel Bandwidth	± 2.08 %
RF power density, conducted	± 0.99 dB
Unwanted Emissions, conducted	± 0.89 dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	±4.17 dB
Radiated Emission of Receiver, valid up to 26.5 GHz	±4.17 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. File for certification follow-up purposes.

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2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 362 Huanguan Road Middle Longhua District, Shenzhen 518110 People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a SINAMICS Smart Adapter, which supports 2.4GHz Wi-Fi 802.11 b/g/n and 5GHz Wi-Fi 802.11a/n wireless technology.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment:	SINAMICS Smart Adapter
Type Designation:	6SL4950-0AJ00-0AA0
FCC ID:	2BCUK-SMARTADAPTER
Operating Voltage:	DC 24V
Testing Voltage:	DC 24V from DC Source
Technical Specification of Wi-Fi 802.11 b/g/n	
Operating Frequency:	2412 - 2462 MHz for 802.11b/g/n(HT20)
Type of Modulation:	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate:	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 Mbps for 802.11n(HT20) (All data rates considered, only the Worst-cases reported)
Channel Number:	11 channels for 802.11b/g/n(HT20)
Channel Separation:	5 MHz
Antenna Type:	Integral Antenna
Antenna Number:	1
Antenna Gain :	1.2 dBi Max
Technical Specification of Wi-Fi 802.11 a/n	
Operating Frequency:	5180-5240MHz
Type of Modulation:	OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate:	6/9/12/18/24/36/48/54 Mbps for 802.11a MCS0 ~ MCS7 Mbps for 802.11n(HT20) (All data rates considered, only the Worst-cases reported)
Channel Number:	5180-5240MHz, 4CHs, 802.11 a/n20
Channel Separation:	20 MHz
Antenna Type:	Integral Antenna
Antenna Number:	1
Antenna Gain:	1.6 dBi Max
Type of Device:	Master Device

Table 3: RF Channel and Frequency of 5GHz Wi-Fi 802.11 a/n

U-NII-1	
20MHz Bandwidth	
Channel	Frequency (MHz)
36	5180
40	5200
44	5220
48	5240

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Wi-Fi 802.11 a/n wireless transmitting mode
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- User Manual
- ID Label and Location Info
- Operation Description

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model 6SL4950-0AJ00-0AA0 in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 4: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
DC power Supply	Topward	3303D	809332	0-30 Volts, 0-3 Amps
Laptop	Lenovo	T480	PF-16A8N8	N/A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

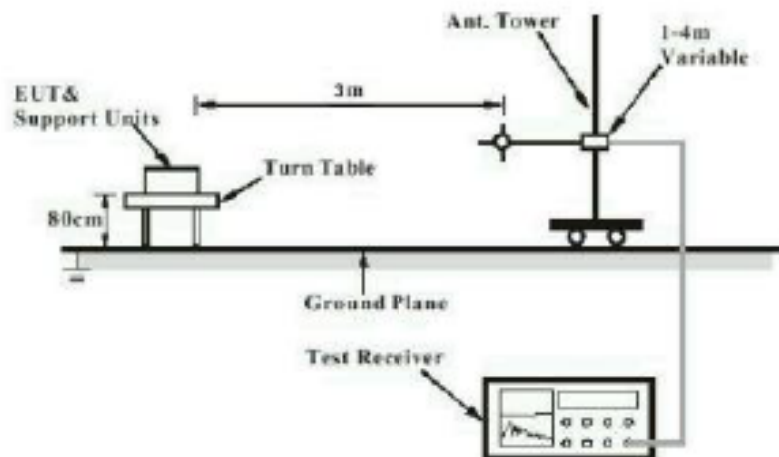


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

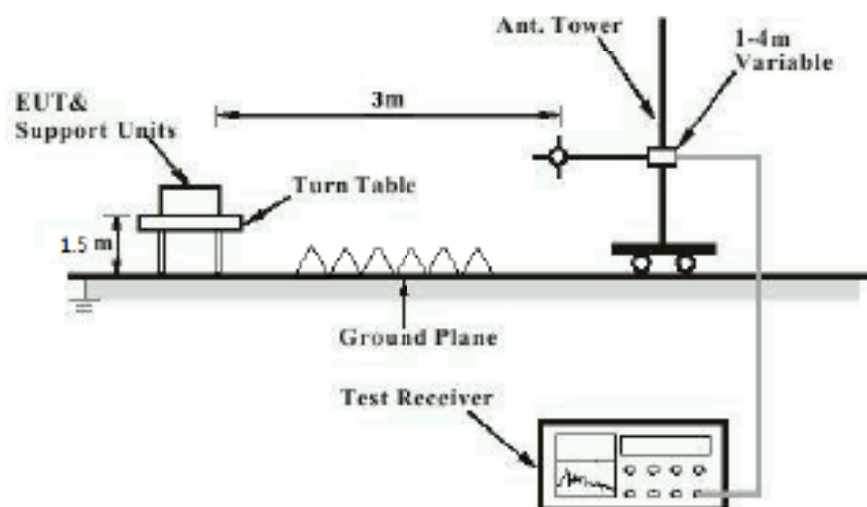
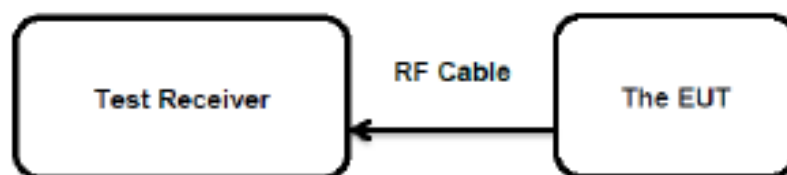


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.203

The EUT has an Integral Antenna, the maximum uncorrelated antenna gain of antenna is 1.6 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement.

Therefore, the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Maximum Conducted Output Power**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.407(a)(1)&(2)&(4)
Basic standard	: ANSI C63.10: 2013
Limits	: FCC: <250mW (24dBm) (5150-5250MHz)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2022-09-28
Input voltage	: DC 24V for DC Source
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24.8 °C
Relative humidity	: 55 %
Atmospheric pressure	: 101 kPa

For details, refer to following test result.

Table 5: Test Result of Maximum Conducted Output Power, 5.2GHz Wi-Fi

Test Mode	Data Rate	Test Channel	Measured Power		Limit (W)
			(dBm)	(W)	
802.11a	6 Mbps	5180	11.31	0.0135	< 0.25
		5200	13.28	0.0213	
		5240	13.28	0.0212	
802.11n (HT20)	MCS0	5180	11.87	0.0154	
		5200	12.50	0.0178	
		5240	12.29	0.0169	

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G): 1.6dBi
e.i.r.p.= $P_{(Peak\ power)} + G$, which is far below the 4 W

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Page 16 of 20**5.1.3 Conducted Power Spectral Density****RESULT:****Pass****Test Specification**

Test standard : FCC part 15.407(a)

Basic standard : ANSI C63.10: 2013
KDB 789033 D02 v01r03

Limits : FCC:
<11dBm/MHz (5150-5250MHz)

Kind of test site : Shielded Room

Test Setup

Date of testing : 2022-09-28

Input voltage : DC 24V for DC Source

Operation mode : A

Test channel : Low / Middle / High

Ambient temperature : 24.8 °C

Relative humidity : 55 %

Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A.

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5.1.4 Frequency Stability

RESULT:**Pass****Test Specification**

Test standard : FCC Part 15.407(g)

Basic standard : ANSI C63.10: 2013

Limits : Within assigned bands

Kind of test site : Shielded Room

Test Setup

Date of testing : 2022-11-07

Input voltage : DC 24V for DC Source

Operation mode : A

Test channel : Low / Middle / High

Ambient temperature : 24.8 °C

Relative humidity : 55 %

Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A.

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Page 18 of 20**5.1.5 26dB Bandwidth and 99% Bandwidth****RESULT:****Pass****Test Specification**

Test standard : FCC Part 15.407(e)
Basic standard : ANSI C63.10: 2013
Limits : N/A
Kind of test site : Shielded Room

Test Setup

Date of testing : 2022-09-28
Input voltage : DC 24V for DC Source
Operation mode : A
Test channel : Low / Middle / High
Ambient temperature : 24.8 °C
Relative humidity : 55 %
Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A.

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5.1.6 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.407(b) & FCC Part 15.205 & FCC Part 15.209
Basic standard	: ANSI C63.10: 2013 KDB 789033 D02 v01r03
Limits	: • For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. • Restricted Bands meet the requirement of 15.209 limit
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: 2022-09-27 to 2022-09-28
Input voltage	: DC 24V for DC Source
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: Refer to test result
Relative humidity	: Refer to test result
Atmospheric pressure	: 101 kPa

Remark:

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix A.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix B.

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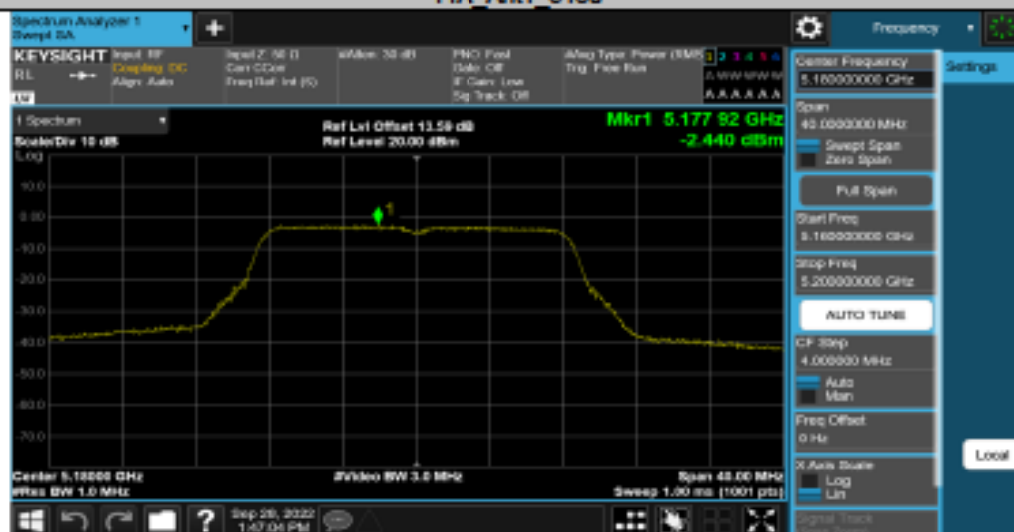
Appendix A: Test Results of 5.2GHz/5.8GHz Wi-Fi

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Appendix A.1: Test Results of Conducted Power Spectral Density

TestMode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	-2.44	≤11.00	PASS
		5220	-1.05	≤11.00	PASS
		5240	-0.67	≤11.00	PASS
11N20SISO	Ant1	5180	1.87	≤11.00	PASS
		5220	1.67	≤11.00	PASS
		5240	1.95	≤11.00	PASS

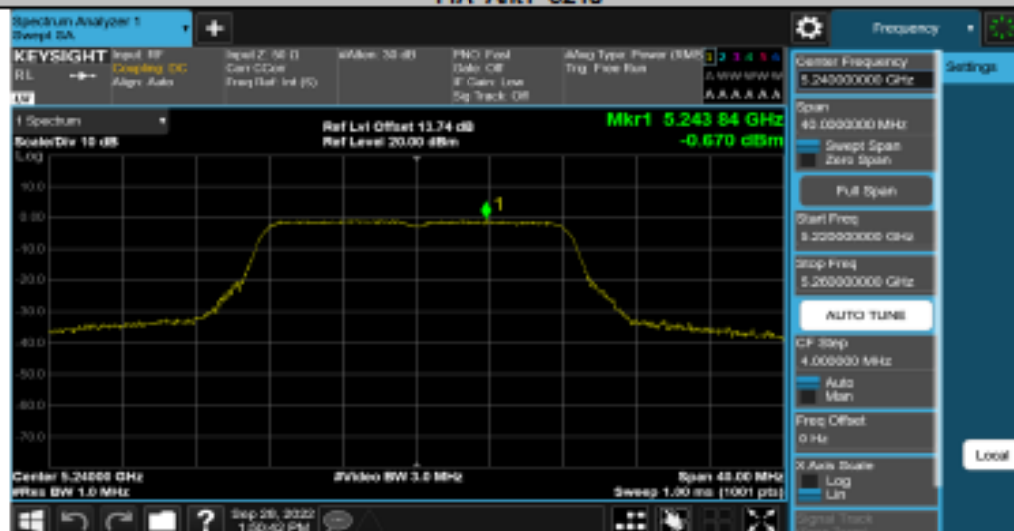
11A Ant1 5180

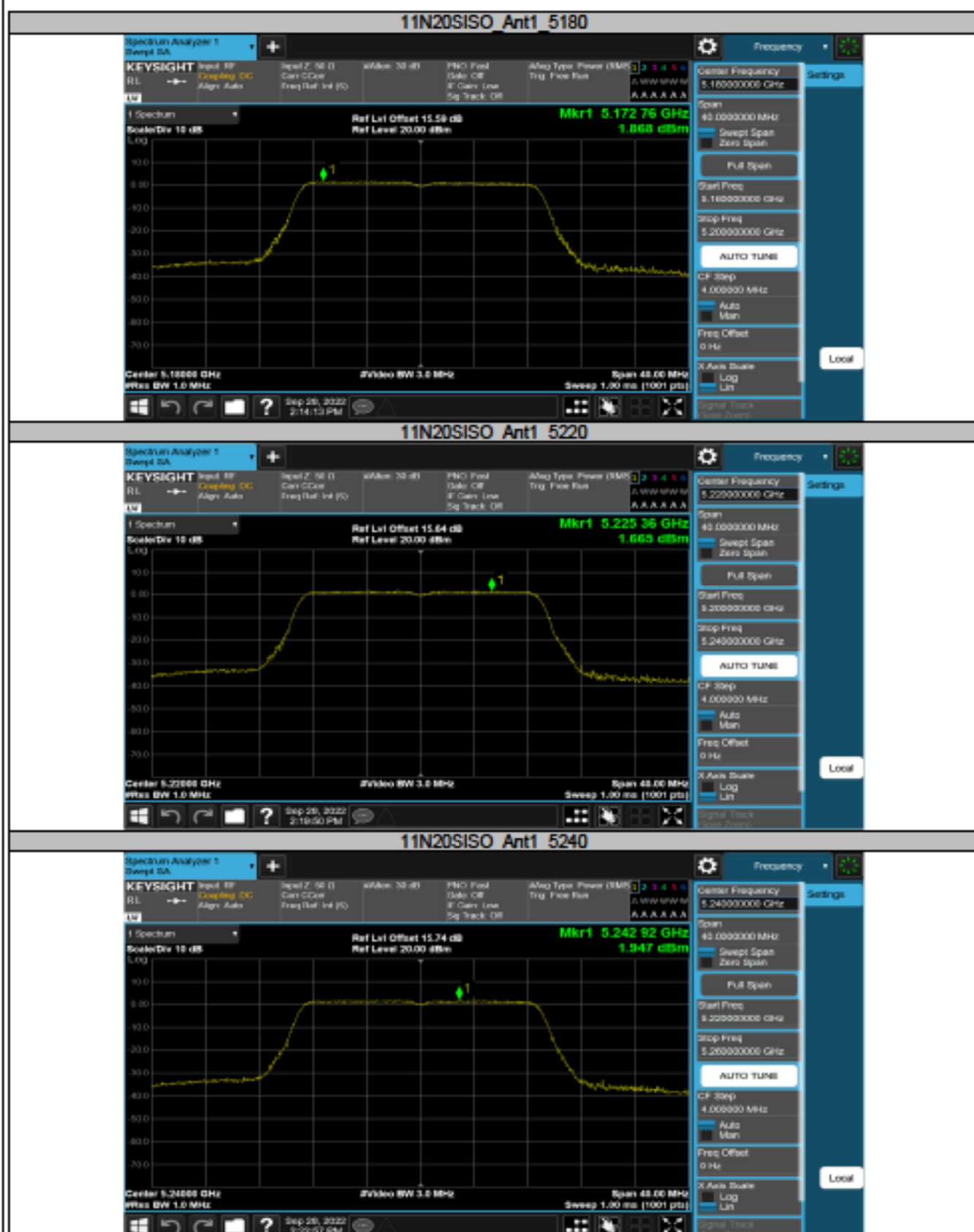


11A Ant1 5220



11A Ant1 5240





Appendix A.2: Test Results of Frequency Stability

TestMode	Antenna	Channel	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11N20SISO	Ant1	5180	20000.00	3.861004	20	PASS
		5220	20000.00	3.831418	20	PASS
		5240	0.00	0.000000	20	PASS

Test performed under normal and extreme conditions, all frequency are within the authored bandwidth.

Appendix A.3: Test Results of 26dB Bandwidth

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	21.360	5189.320	5190.680	—	PASS
		5220	21.520	5209.360	5230.880	—	PASS
		5240	21.760	5229.120	5250.880	—	PASS
11N20SISO	Ant1	5180	21.440	5189.360	5190.800	—	PASS
		5220	21.560	5209.160	5230.720	—	PASS
		5240	21.600	5229.120	5250.720	—	PASS

11A Ant1 5180



11A Ant1 5220



11A Ant1 5240

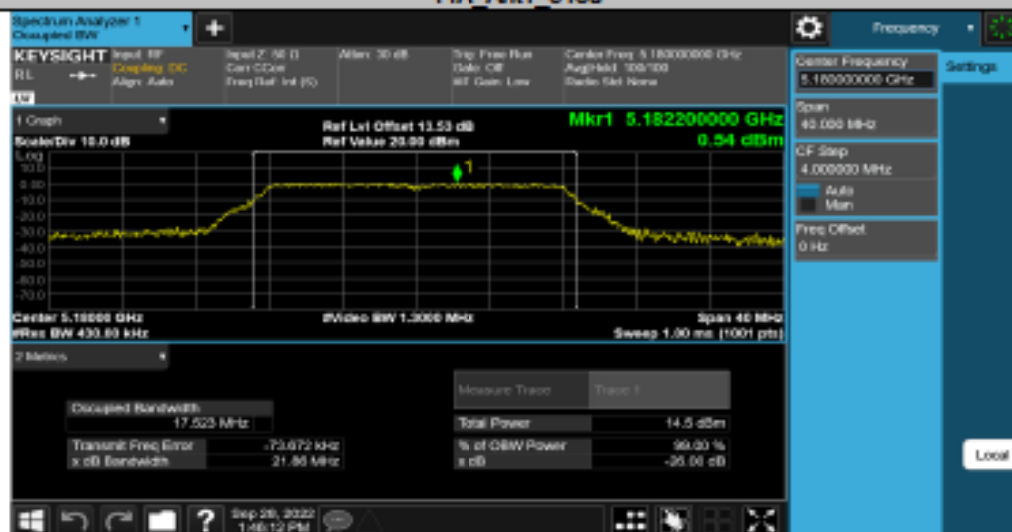




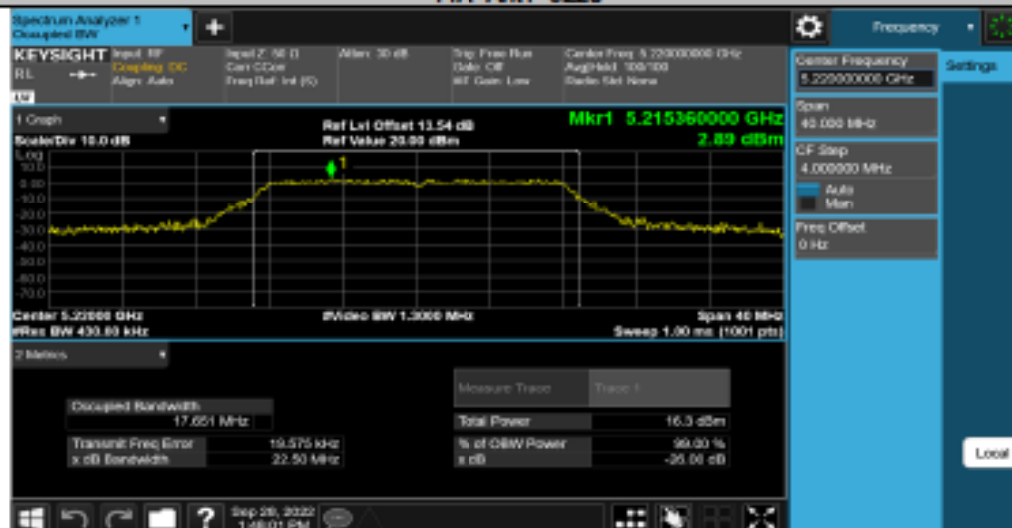
Appendix A.4: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.523	5171.1648	5188.6878	—	PASS
		5220	17.651	5211.1941	5228.8451	—	PASS
		5240	17.547	5231.1855	5248.7325	—	PASS
11N20SISO	Ant1	5180	18.346	5170.7960	5189.1420	—	PASS
		5220	18.405	5210.8448	5229.2498	—	PASS
		5240	18.371	5230.8420	5249.2130	—	PASS

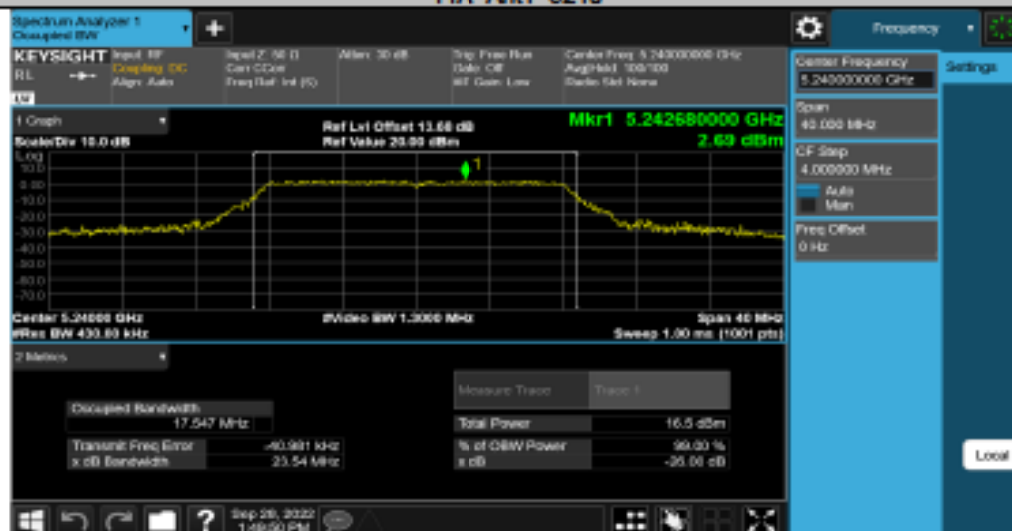
11A Ant1 5180



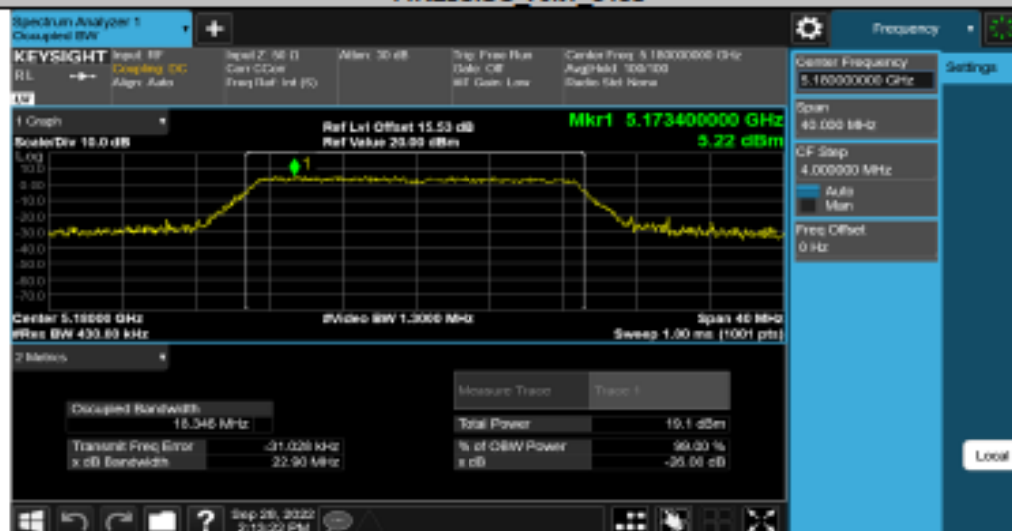
11A Ant1 5220



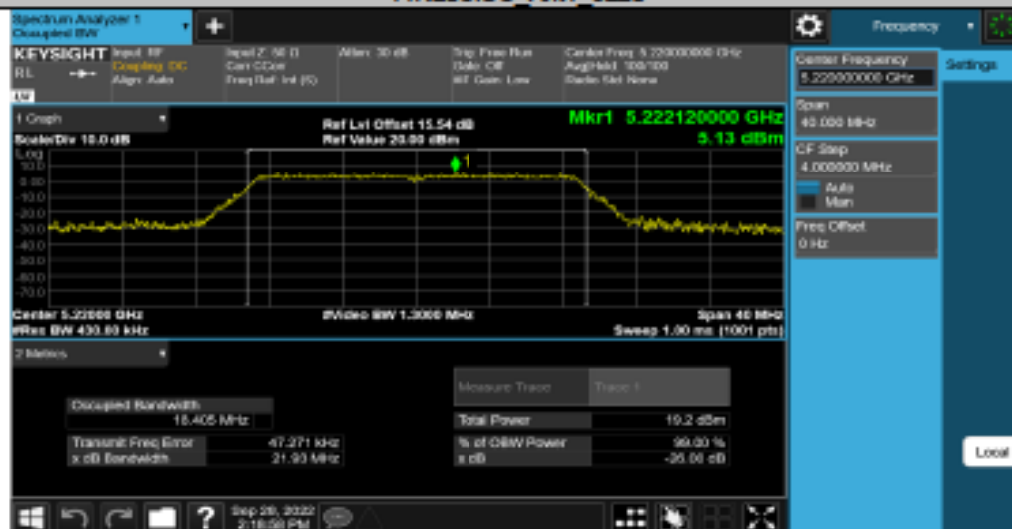
11A Ant1 5240



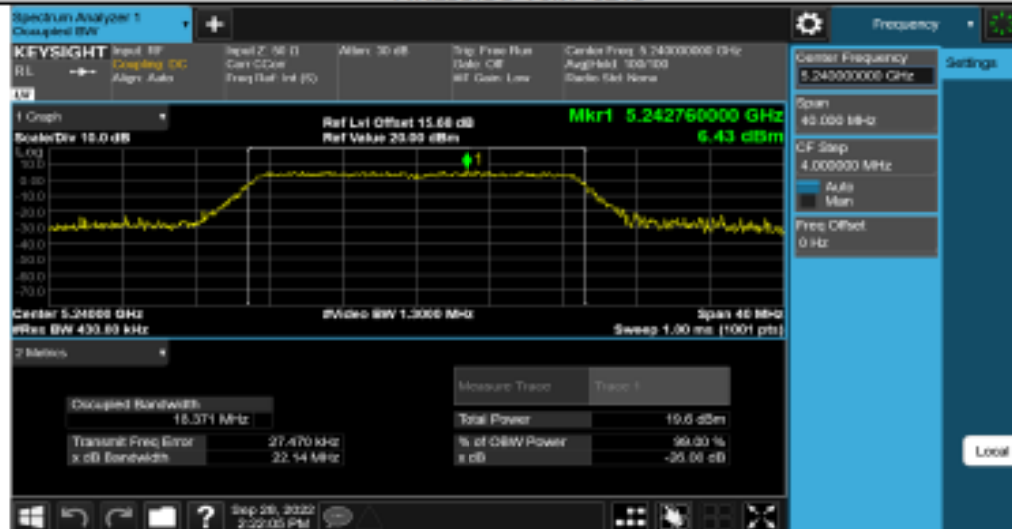
11N20SISO Ant1 5180



11N20SISO Ant1 5220



11N20SISO Ant1 5240



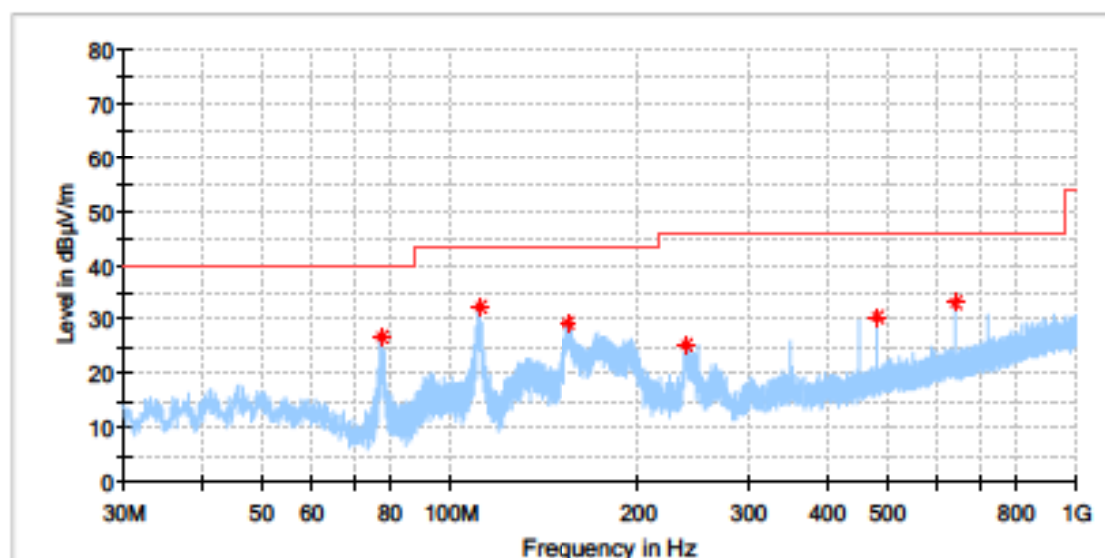
Appendix A.5: Test Results of Radiated Spurious Emissions

Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

30MHz - 1GHz (Worst case)

EUT Information

EUT Name:	SINAMICS Smart Adapter
Model:	6SL4950-0AJ00-0AA0
Test Mode:	WIFI 5G_11a_Ch40
Order No./Sample No:	168377368/A003334773-003
Test Voltage:	DC 24V From DC Source
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.407
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

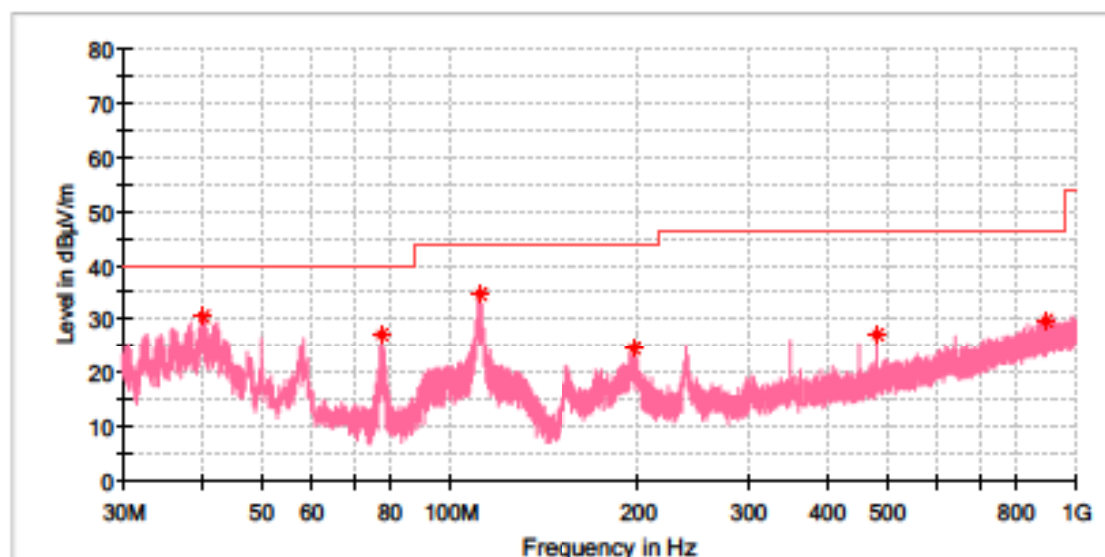
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
77.675500	26.62	40.00	13.38	100.0	H	269.0	-23.4
111.528500	32.47	43.50	11.03	100.0	H	235.0	-19.3
154.160000	29.43	43.50	14.07	100.0	H	229.0	-22.0
238.841000	25.48	46.00	20.52	100.0	H	216.0	-17.8
480.080000	30.43	46.00	15.57	100.0	H	290.0	-12.2
640.081500	33.20	46.00	12.80	100.0	H	295.0	-9.3

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11a_Ch40
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
40.262000	30.67	40.00	9.33	100.0	V	2.0	-20.0
77.724000	27.21	40.00	12.79	100.0	V	294.0	-23.4
111.577000	34.75	43.50	8.75	100.0	V	336.0	-19.3
196.646000	24.74	43.50	18.76	100.0	V	294.0	-19.1
480.080000	27.09	46.00	18.91	100.0	V	230.0	-12.2
892.621000	29.67	46.00	16.33	100.0	V	268.0	-5.0

Final Result

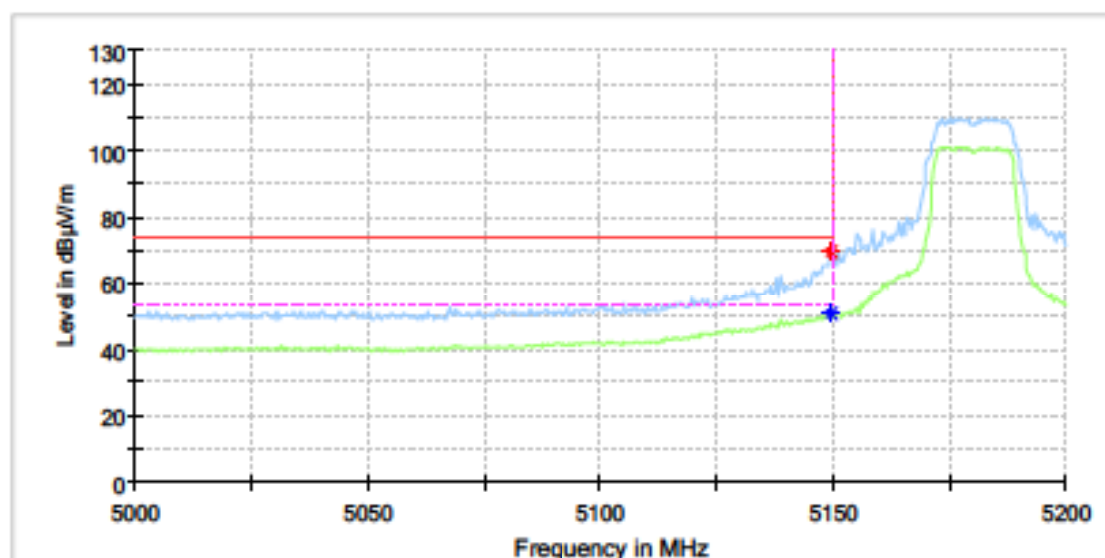
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

Above 1GHz

Note: The highest waveform in the figure is 5GHz Wi-Fi Fundamental.

EUT Information

EUT Name:	SINAMICS Smart Adapter
Model:	6SL4950-0AJ00-0AA0
Test Mode:	WIFI 5G_11a_Ch36
Order No/Sample No:	168377368/A003334773-003
Test Voltage:	DC 24V From DC Source
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.407
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

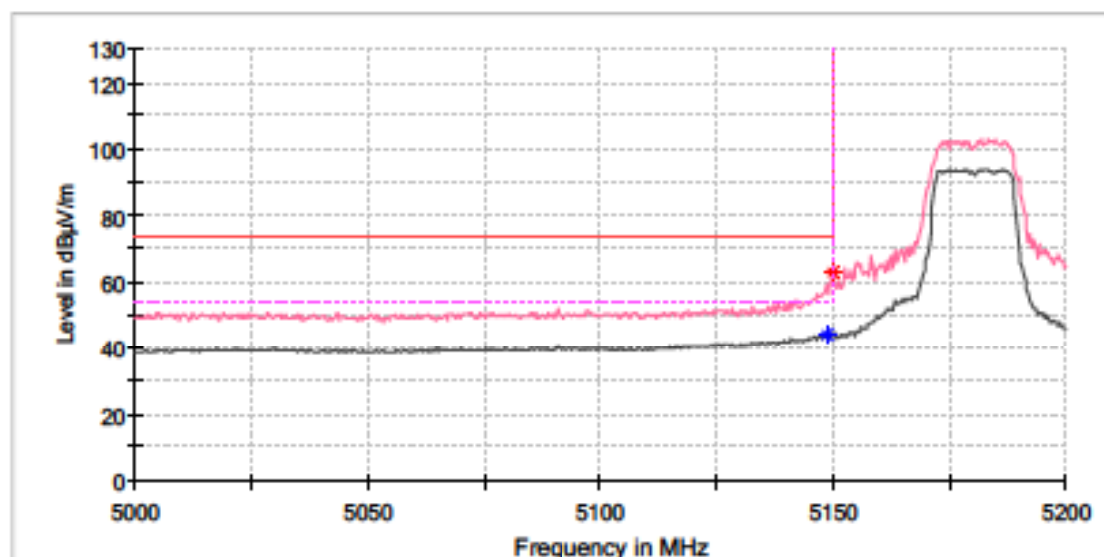
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5149.627778	—	50.72	54.00	3.28	100.0	H	86.0	12.4
5149.627778	69.75	—	74.00	4.25	100.0	H	86.0	12.4

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name:	SINAMICS Smart Adapter
Model:	6SL4950-0AJ00-0AA0
Test Mode:	WIFI 5G_11a_Ch36
Order No/Sample No:	168377368/A003334773-003
Test Voltage:	DC 24V From DC Source
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.407
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

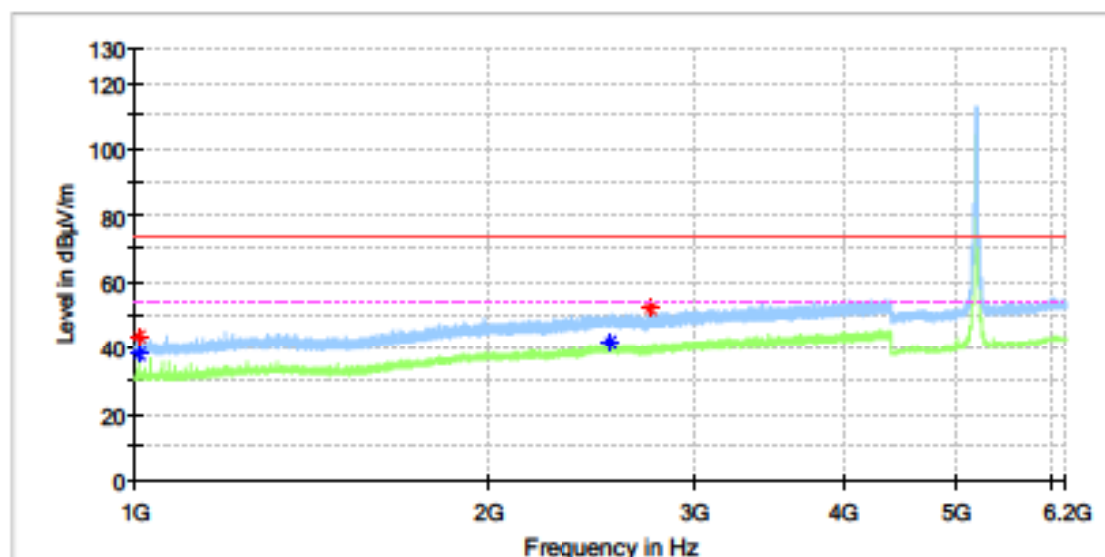
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5148.644445	—	44.24	54.00	9.76	100.0	V	195.0	12.4
5149.955556	62.69	—	74.00	11.31	100.0	V	195.0	12.4

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11a_Ch40
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

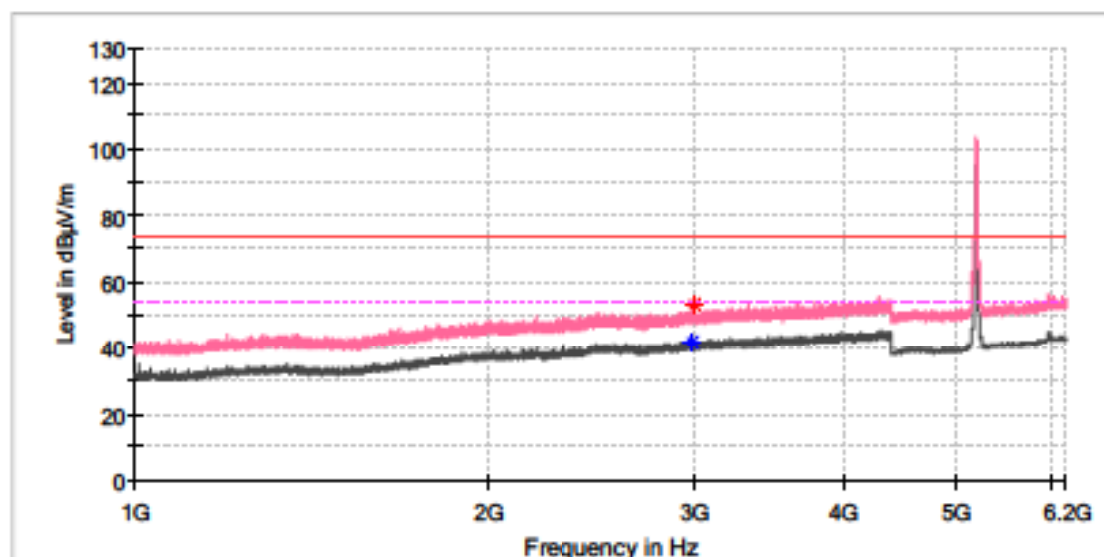
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1007.650000	—	37.94	54.00	16.06	100.0	H	111.0	-0.1
1008.330000	43.67	—	74.00	30.33	100.0	H	74.0	-0.2
2540.710000	—	41.49	54.00	12.51	100.0	H	0.0	7.6
2748.620000	51.99	—	74.00	22.01	100.0	H	259.0	7.8

Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11a_Ch40
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

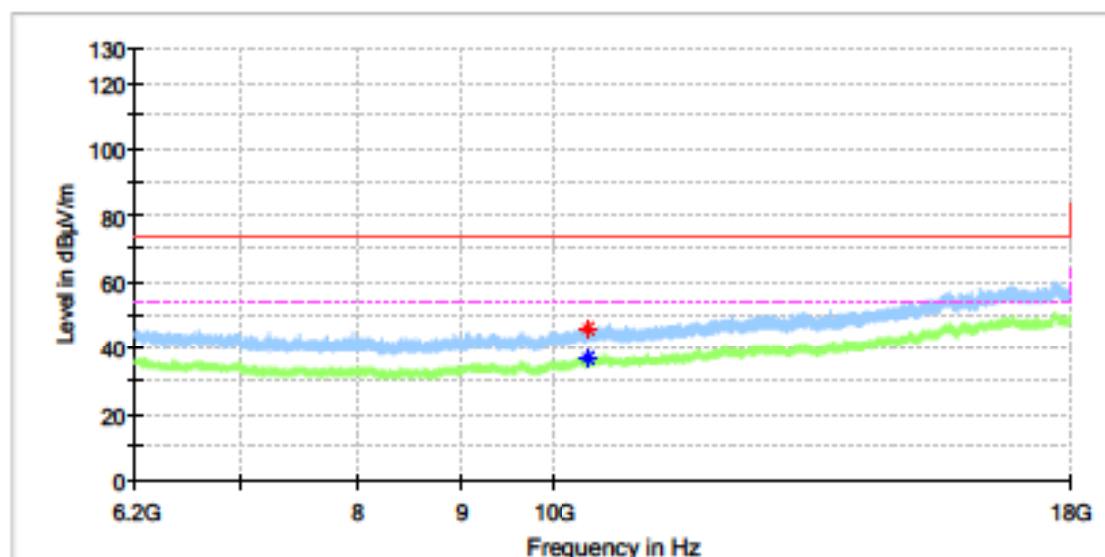
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2984.240000	—	41.59	54.00	12.41	100.0	V	282.0	8.5
2996.650000	53.01	—	74.00	20.99	100.0	V	222.0	8.5

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11a_Ch40
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

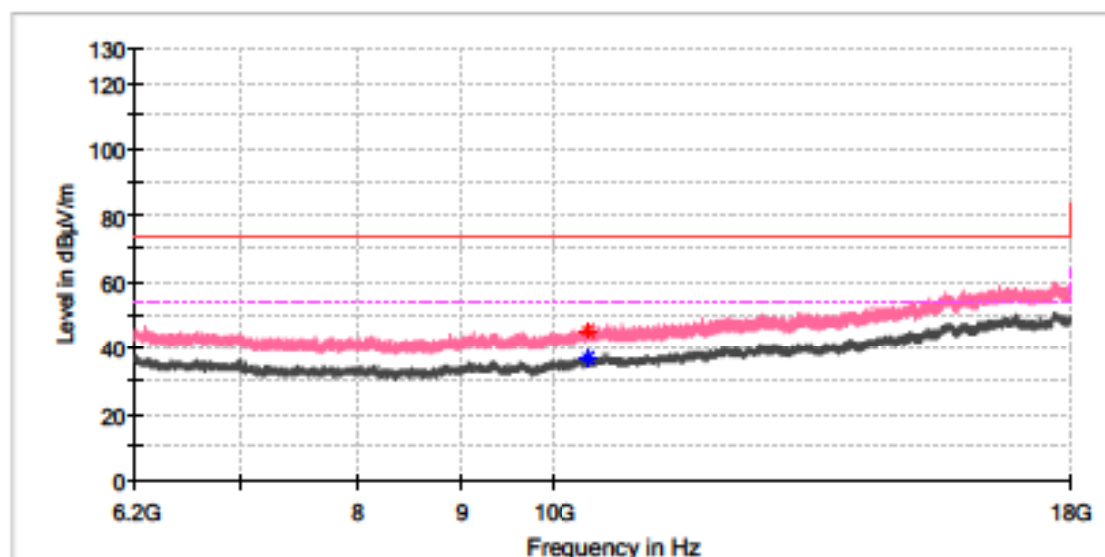
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
10395.391667	46.11	—	74.00	27.89	100.0	H	83.0	11.9
10404.733333	—	36.71	54.00	17.29	100.0	H	108.0	11.9

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11a_Ch40
Order No/Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

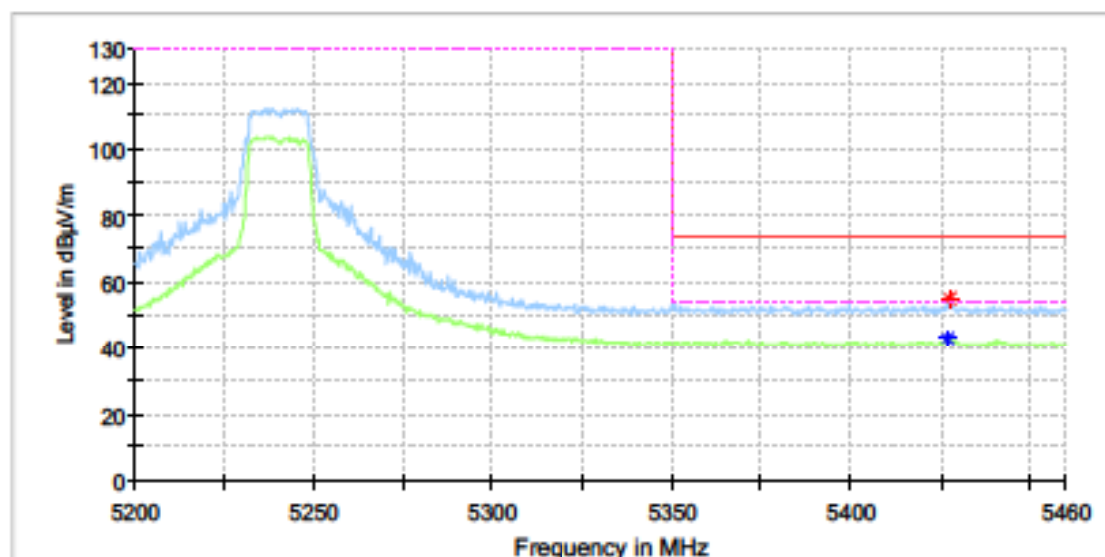
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
10399.816667	—	37.08	54.00	16.92	100.0	V	0.0	11.9
10406.700000	45.23	—	74.00	28.77	100.0	V	342.0	11.9

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name:	SINAMICS Smart Adapter
Model:	6SL4950-0AJ00-0AA0
Test Mode:	WIFI 5G_11a_Ch48
Order No/Sample No:	168377368/A003334773-003
Test Voltage:	DC 24V From DC Source
Remark:	Temp 23 Humi:56%
Test Standard:	FCC 15.407
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

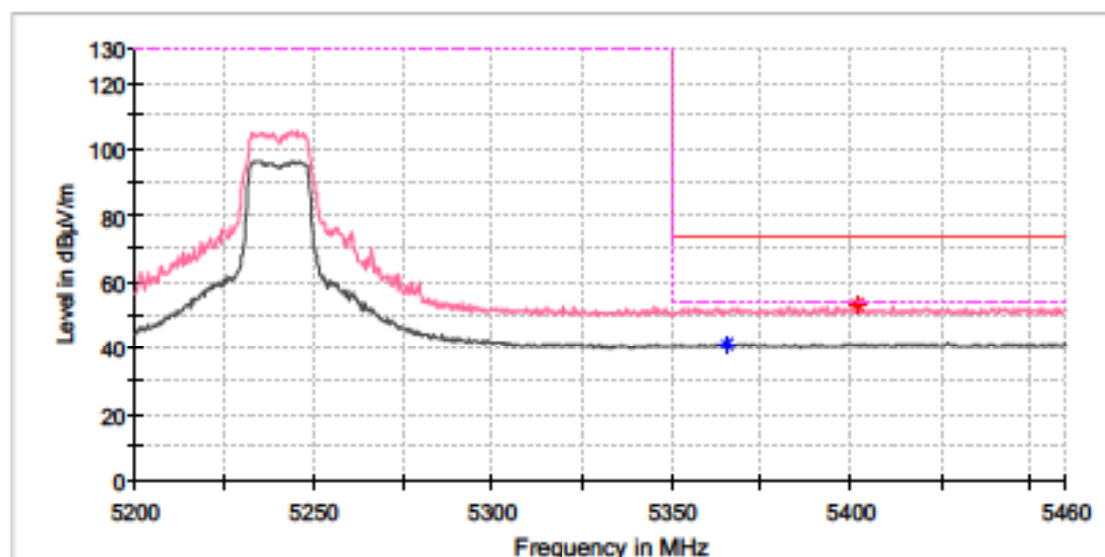
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5426.727778	—	42.95	54.00	11.05	100.0	H	106.0	13.5
5427.611111	54.77	—	74.00	19.23	100.0	H	100.0	13.5

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11a_Ch48
Order No/Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

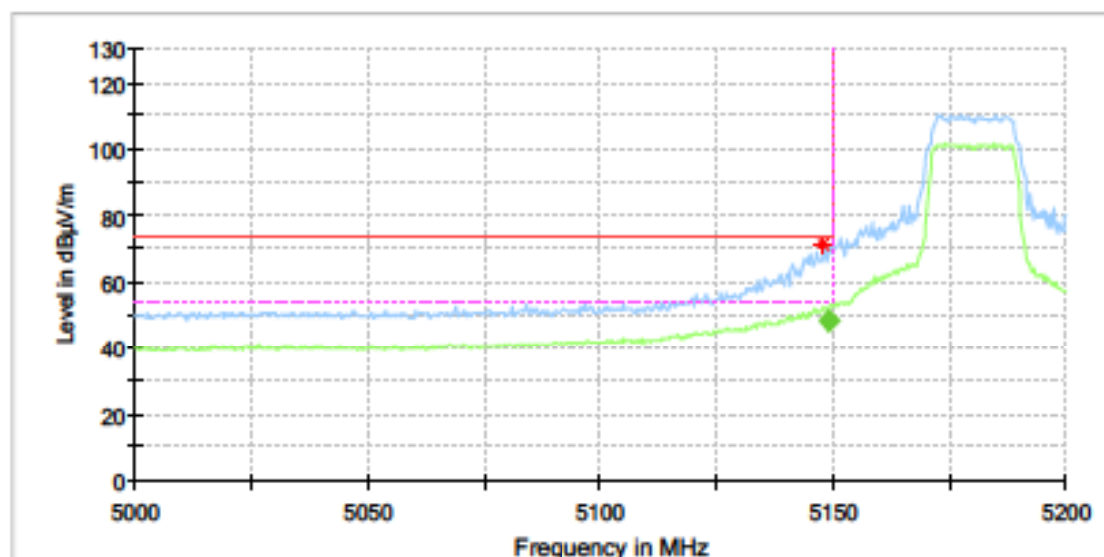
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5365.483333	—	41.09	54.00	12.91	100.0	V	294.0	13.3
5401.954444	53.28	—	74.00	20.72	100.0	V	68.0	13.5

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11n20_Ch38
Order No/Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

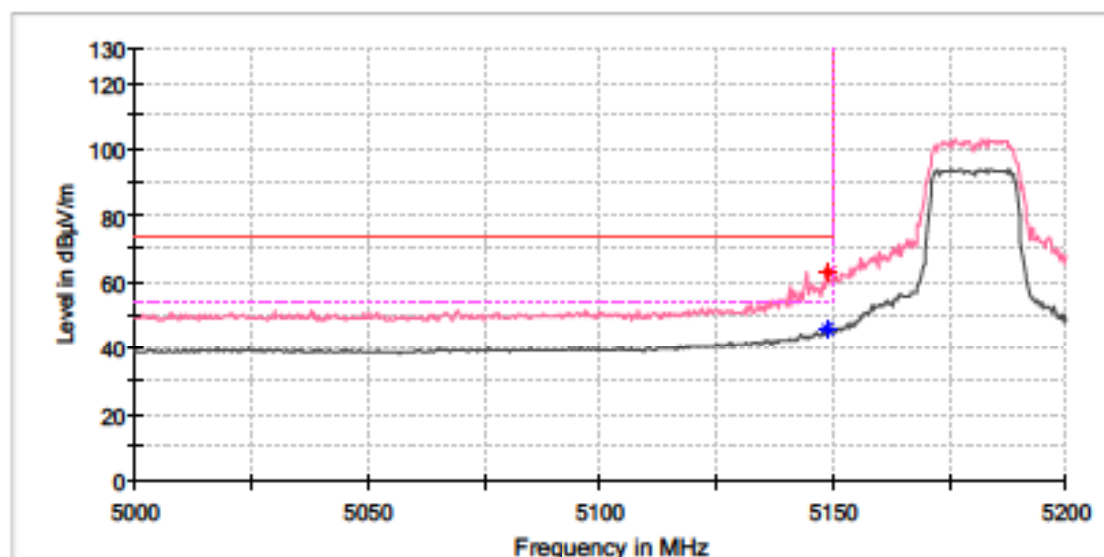
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5147.968889	71.48	—	74.00	2.52	100.0	H	87.0	12.4

Final Result

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5149.202778	48.39	54.00	5.61	105.0	H	159.0	12.4

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11n20_Ch38
Order No/Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

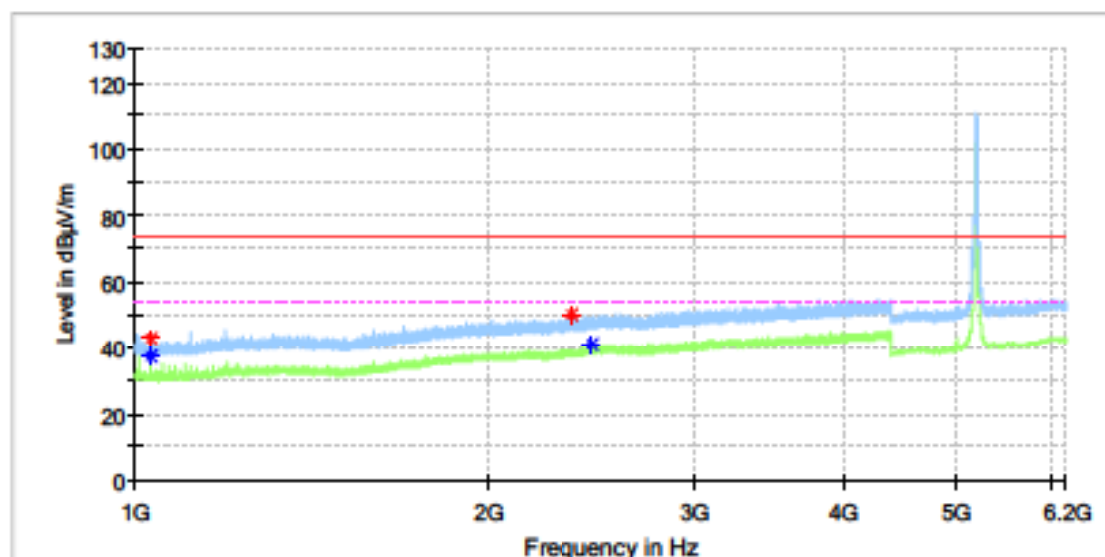
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5148.644445	—	45.99	54.00	8.01	100.0	V	210.0	12.4
5148.972222	62.64	—	74.00	11.36	100.0	V	196.0	12.4

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11n20_Ch40
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

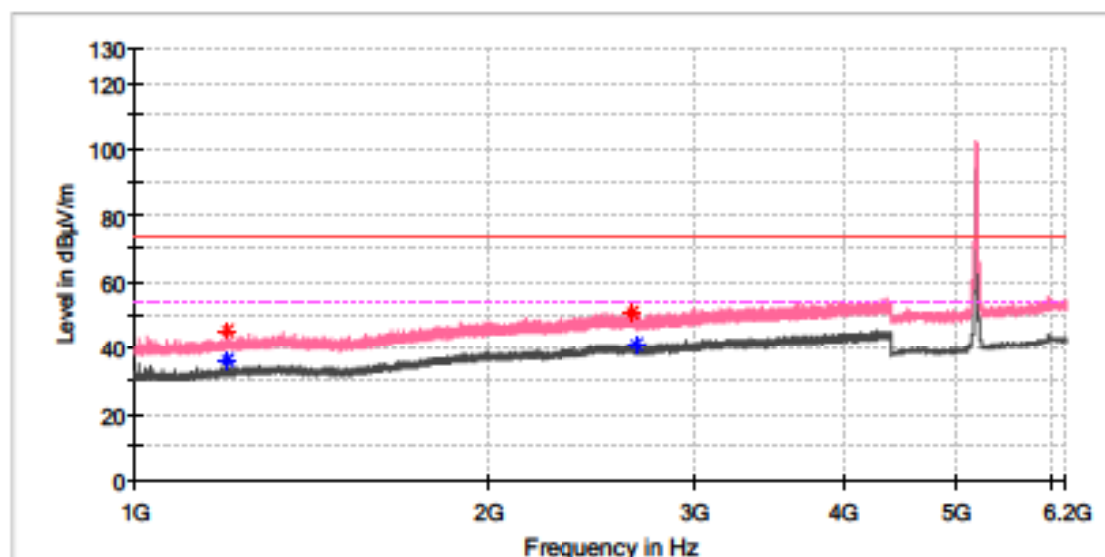
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1031.960000	43.10	—	74.00	30.90	100.0	H	122.0	-0.2
1031.960000	—	37.23	54.00	16.77	100.0	H	122.0	-0.2
2352.010000	49.97	—	74.00	24.03	100.0	H	53.0	6.9
2450.610000	—	40.92	54.00	13.08	100.0	H	112.0	7.5

Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11n20_Ch40
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

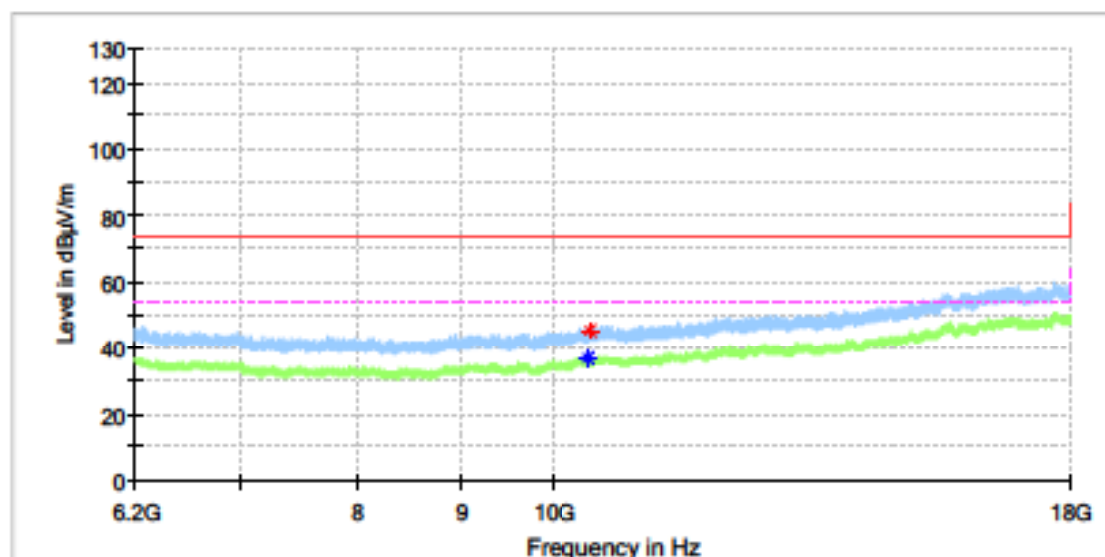
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1198.220000	45.44	—	74.00	28.56	100.0	V	159.0	1.1
1198.220000	—	36.25	54.00	17.75	100.0	V	159.0	1.1
2656.480000	50.85	—	74.00	23.15	100.0	V	79.0	7.6
2668.380000	—	40.91	54.00	13.09	100.0	V	202.0	7.5

Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11n20_Ch40
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

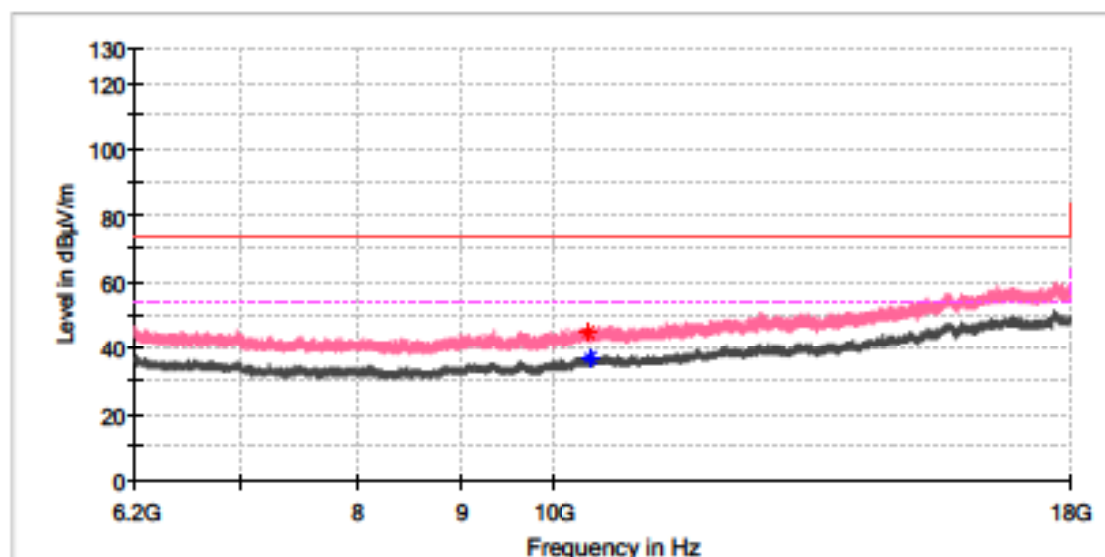
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
10407.683333	—	36.84	54.00	17.16	100.0	H	321.0	11.9
10410.141667	45.52	—	74.00	28.48	100.0	H	170.0	11.9

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11n20_Ch40
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

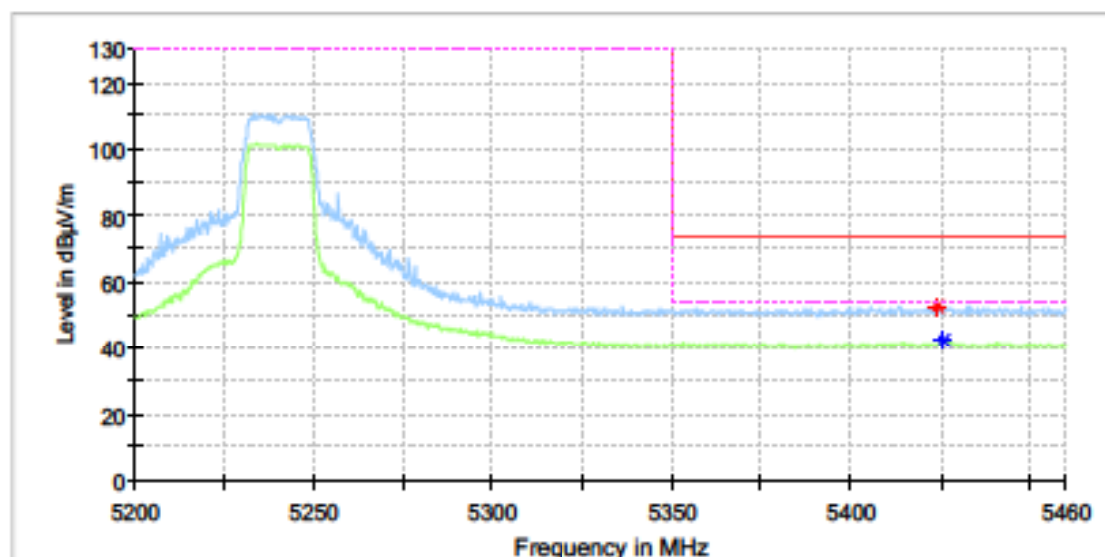
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
10400.800000	45.01	—	74.00	28.99	100.0	V	39.0	11.9
10426.366667	—	37.11	54.00	16.89	100.0	V	0.0	11.9

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name: SINAMICS Smart Adapter
Model: 6SL4950-0AJ00-0AA0
Test Mode: WIFI 5G_11n20_Ch48
Order No./Sample No: 168377368/A003334773-003
Test Voltage: DC 24V From DC Source
Remark: Temp 23 Humi:56%
Test Standard: FCC 15.407
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

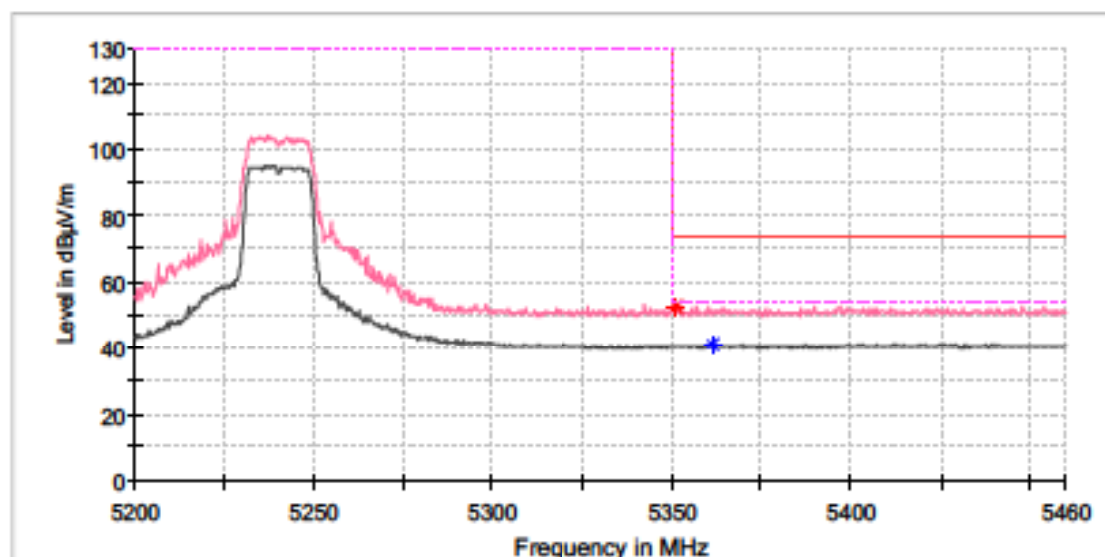
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5424.372222	52.70	—	74.00	21.30	100.0	H	165.0	13.5
5425.550000	—	42.38	54.00	11.62	100.0	H	151.0	13.5

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

EUT Information

EUT Name:	SINAMICS Smart Adapter
Model:	6SL4950-0AJ00-0AA0
Test Mode:	WIFI 5G_11n20_Ch48
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Test Voltage:	DC 24V From DC Source
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Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5351.055556	52.55	—	74.00	21.45	100.0	V	45.0	13.3
5361.361111	—	40.95	54.00	13.05	100.0	V	1.0	13.3

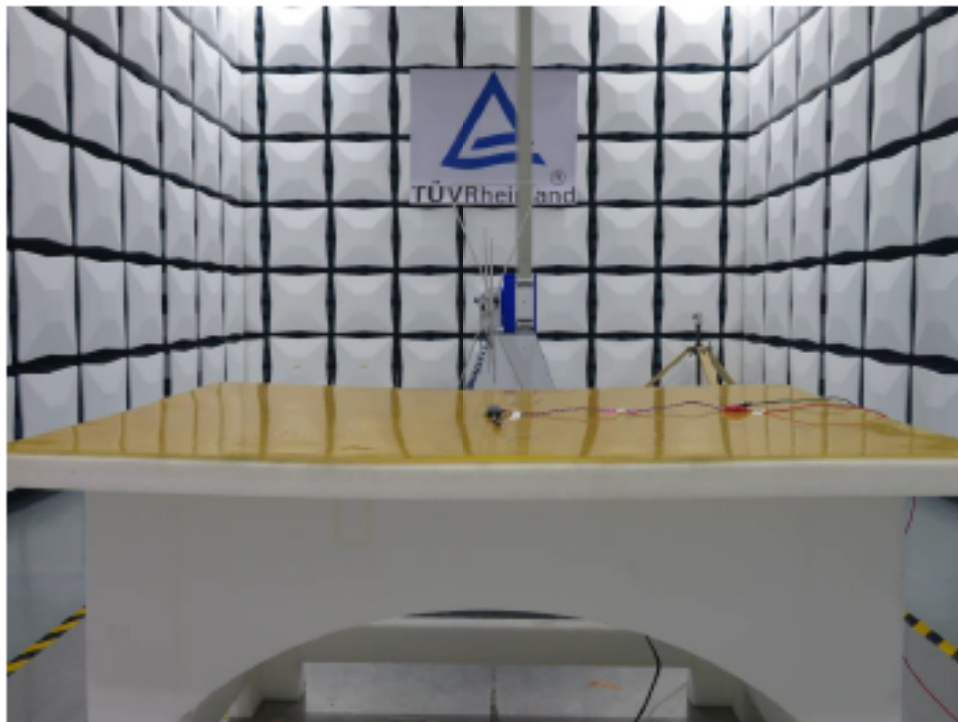
Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
—	—	—	—	—	—	—	—

Appendix B: Photographs of the Test Set-Up

APPENDIX B: PHOTOGRAPHS OF THE TEST SET-UP	1
PHOTOGRAPH 1: SET-UP PHOTO FOR RADIATED SPURIOUS EMISSION, 30MHz - 1GHz	2
PHOTOGRAPH 2: SET-UP PHOTO FOR RADIATED SPURIOUS EMISSION, 1GHz - 18GHz	2

Photograph 1: Set-up photo for Radiated Spurious Emission, 30MHz - 1GHz



Photograph 2: Set-up photo for Radiated Spurious Emission, 1GHz - 18GHz

