



Test Report – Products
Prüfbericht – Produkte

Test Report No.: <i>Prüfbericht-Nr.:</i>	JP2494EX 001	Order No.: <i>Auftrags-Nr.:</i>	150292510	Page 1 of 106 <i>Seite 1 von 106</i>
Client Reference No.: <i>Kunden-Referenz-Nr.:</i>	N/A	Order Date: <i>Auftragsdatum:</i>	2024-02-20	
Client: <i>Auftraggeber:</i>	AlphaTheta Corporation 6F, Yokohama i-Mark place, 4-4-5 Minatomirai, Nishi-ku Yokohama, Kanagawa 220-0012, Japan			
Test Item: <i>Prüfgegenstand:</i>	All-In-One DJ System			
Identification / Type No.: <i>Bezeichnung / Typ-Nr.:</i>	XDJ-AZ	Serial No.: <i>Serien-Nr.:</i>	See clause 4.3	
Order Content: <i>Auftrags-Inhalt:</i>	Wireless Testing			
Test Specification: <i>Prüfgrundlage:</i>	FCC 47 CFR Part 15, Subpart C, Section 15.247 RSS-247 (Issue 3): 2023			
Date of Sample Receipt: <i>Wareneingangsdatum:</i>	2024-03-06, 2024-04-23, 2024-05-23	N/A		
Test Sample No.: <i>Prüfmuster-Nr.:</i>	A003671775-001 to 007, A003704275-001 to 003			
Testing Period: <i>Prüfzeitraum:</i>	2024-03-06 to 2024-05-23			
Place of Testing: <i>Ort der Prüfung:</i>	Yokohama EMC Laboratory			
Testing Laboratory: <i>Prüflaboratorium:</i>	TÜV Rheinland Japan Ltd.			
Test Result*: <i>Prüfergebnis*:</i>	Pass			
compiled by: <i>zusammengestellt von:</i>		authorized by: <i>genehmigt von:</i>		
Date: 2024-06-24 <i>Datum:</i>	Pin Zhang	Issue Date: 2024-06-24 <i>Ausstellungsdatum:</i>	Daisuke Watanuki	
Position / Stellung:	Test Engineer	Position / Stellung:	Authorizer	
Other / Sonstiges:				
Condition of the test item at delivery: <i>Zustand des Prüfgegenstandes bei Anlieferung:</i>		Test item complete and undamaged <i>Prüfmuster vollständig und unbeschädigt</i>		
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = 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. <i>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.</i>				

V05

Revisions

Report No.	Issue date	Changes / Remarks
JP2494EX 001	2024-06-24	Original document

Remarks

1	The equipment used during the specified testing period was calibrated according to the 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 the laboratory's management system.
2	Unless otherwise specified by the applied standard(s), the decision rule used in this test report for statements of conformity based on numerical measurement results is the "Zero Guard Band"/"Simple Acceptance" rule in accordance with ILAC G8:2019 and IEC Guide 115:2021. When the "Zero Guard Band" rule is applied, measurement uncertainty is not taken in account. For additional information on the risk resulting from the application of the "Zero Guard Band" decision rule, refer to ILAC G8:2019.

Contents

1.	General Remarks	5
1.1	Test Specifications	5
1.2	Test Report Purpose	6
1.3	Complementary Materials.....	6
2.	Test Sites.....	7
2.1	Test Facilities.....	7
2.2	List of Test and Measurement Instruments.....	7
2.3	Measurement Uncertainty	10
3.	General Product Information	11
3.1	Product Function and Intended Use.....	11
3.2	Ratings and System Details	11
3.3	Noise Generating and Noise Suppressing Parts.....	12
3.4	Submitted Documents and Information	12
4.	Test Setup and Operation Modes	13
4.1	Principle of Test Configuration Selection	13
4.2	Operation Modes	13
4.3	Physical Configuration for Testing.....	14
4.4	Test Software	17
4.5	Special Accessories and Auxiliary Equipment	17
4.6	Countermeasures to achieve Compliance	19
5.	Test Results R A D I O	20
5.1	Supply Voltage Requirements.....	20
5.2	Antenna Requirements.....	21
5.3	Restricted Bands of Operation	22
5.4	Maximum Peak Output Power.....	23
5.5	6dB Bandwidth	25
5.6	99% Bandwidth.....	30
5.7	Conducted Spurious Emissions	35
5.8	Peak Power Spectral Density.....	42
5.9	Radiated Spurious Emissions of Transmitter	47
5.10	AC Power Line Conducted Emission of Transmitter	95
6.	Photographs of the Test Setup.....	97
7.	List of Tables.....	102

Test Report No.: Prüfbericht-Nr.:	JP2494EX 001	Page 4 of 106 Seite 4 von 106
--------------------------------------	---------------------	----------------------------------

8.	List of Figures	103
9.	List of Photographs	105

1. General Remarks

1.1 Test Specifications

Table 1: Test Summary

Test	Specifications	Result
Radio: FCC 47 CFR Part 15, Subpart C, Section 15.247 RSS-247 (Issue 3): 2023 RSS-Gen (Issue 5): 2018+Amendment 1:2019+Amendment 2:2021 ANSI C63.10-2020 KDB Publication No. 558074 D01 (v05r02): Guidance for Compliance Measurement on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operation under Section 15.247 of the FCC Rules		
Supply Voltage Requirements FCC §15.31(e)	See the section 5.1.	Pass
Antenna Requirements FCC §15.203	See the section 5.2.	Pass
Restricted Bands of Operation FCC §15.205 RSS-Gen §8.10	See the section 5.3.	Pass
Maximum Peak Output Power FCC §15.247(b)(3) RSS-247 §5.4 d.	1W (30dBm) (Peak Conducted) 4W (36dBm) (Peak EIRP) for ISSED	Pass
6dB Bandwidth FCC §15.247(a)(2) and §15.215(c) RSS-247 §5.2 a.	Minimum 500kHz 6dB bandwidth shall be contained within the designated frequency band.	Pass
99% Bandwidth RSS-Gen §6.7	-/-	For. Ref.
Conducted Spurious Emissions FCC §15.247(d) RSS-247 §5.5	20dBc 30MHz - 25GHz (10 th Harmonics)	Pass
Peak Power Spectral Density FCC §15.247(e) RSS-247 §5.2 b.	8dBm in any 3kHz band	Pass
Radiated Spurious Emissions of Transmitter FCC §15.209 and §15.247(d) RSS-247 §5.5 and RSS-Gen §8.9, 8.10	9kHz - 25GHz	Pass

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 6 of 106
Seite 6 von 106

Test	Specifications	Result
Conducted Emission on AC Power Ports of Transmitter FCC §15.207(a) and RSS-Gen §8.8	150kHz - 30MHz	Pass

1.2 Test Report Purpose

The purpose of this test report is to show compliance of the EUT (Equipment Under Test) with the requirements of the standards listed in section 1.1.

The EUT incorporates

1. WLAN/Bluetooth module supporting Bluetooth, WLAN 2.4GHz/5GHz (Single Modular Approval certified).
2. An Original Wireless Communication module working at 2.4GHz.

This test report is prepared for the application of certificate for Original Wireless Communication (simultaneous transmissions of both modules regarding Radiated Spurious Emissions of Transmitter and Band-Edge are included).

1.3 Complementary Materials

None.

2. Test Sites

2.1 Test Facilities

TÜV Rheinland Japan Ltd. – Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan

The test facility is accredited by VLAC (member of ILAC) under accreditation number VLAC-017-1 according to ISO/IEC 17025:2017.

The test facility is recognized by the Federal Communications Commission (FCC) as a Conformity Assessment Body under designation number JP0017 and test firm registration number 386498.

The test site is registered by Innovation, Science and Economic Development Canada (ISED) under OATS filing number 3466B-1.

2.2 List of Test and Measurement Instruments

Table 2: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equip. ID	Cal. Interval	Cal. Date	Next Cal.
For Antenna Port Conducted Emission							
EMI Receiver	Rohde & Schwarz	ESW 26	101316	RF-0812	1 year	2023-05-26	2024-05-26
RF Power Meter	Agilent	N1911A	MY45101737	RF-0393	1 year	2024-01-15	2025-01-15
RF Peak Power Sensor	Agilent	N1921A	MY45242228	RF-0394	1 year	2024-01-15	2025-01-15
For Power Port Conducted Emission (CE)							
Path Loss Correction Factors for CE	-	-	-	RF-0597	1 year	2024-01-30	2025-01-30
Conducted Emission Measurement Software	Toyo Corporation	EP5/CE	Ver. 5.6.10	RF-0025	N/A	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESW 26	101316	RF-0812	1 year	2023-05-26	2024-05-26
LISN	Rohde & Schwarz	ENV216	100276	RF-0016	1 year	2023-05-16	2024-06-16
LISN	Rohde & Schwarz	ENV216	101958	RF-0708	1 year	2023-05-16	2024-06-16
For Radiated Emission (RE)							
Path Loss Correction Factors for RE below 1GHz	-	-	-	RF-0596	1 year	2024-01-30	2025-01-30

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 8 of 106
Seite 8 von 106

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equip. ID	Cal. Interval	Cal. Date	Next Cal.
Path Loss Correction Factors for RE above 1GHz	-	-	-	RF-0995	1 year	2023-12-04	2024-12-04
Radiated Emission Measurement Software (below 30MHz)	Toyo Corporation	EP5/ME	Ver. 5.2.10	RF-0172	N/A	N/A	N/A
Radiated Emission Measurement Software (above 30MHz)	Toyo Corporation	EP7/RE	VER. 8.0.90	RF-0026	N/A	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESU 8	100025	RF-0020	1 year	2024-03-22	2025-03-22
EMI Receiver	Rohde & Schwarz	ESU 40	100029	RF-0021	1 year	2023-09-11	2024-09-11
EMI Receiver	Rohde & Schwarz	ESW 26	101316	RF-0812	1 year	2023-05-26	2024-05-26
RF Selector (10m Chamber)	Toyo Corporation	NS4900	0703-182	RF-0029	N/A	N/A	N/A
Loop Antenna with Amplifier, 9kHz-30MHz	Rohde & Schwarz	HFH2-Z2	100139	RF-0048	1 year	2023-07-25	2024-07-25
Trilog Antenna No. 2, 30-1000MHz	Schwarzbeck	VULB 9168	9168-475	RF-0462	1 year	2023-05-30	2024-05-30
5dB Attenuator	Pasternack	PE7047-5	-	RF-0731	1 year	2023-05-29	2024-05-29
Biconical Antenna, 30-200MHz	Schwarzbeck	BBA9106-VHBB912	00235-00963	RF-0784	1 year	2024-03-04	2025-03-04
5dB Attenuator	Pasternack	PE7047-5	-	RF-0732	1 year	2024-03-05	2025-03-05
Low Noise Preamplifier, 9kHz-1GHz	TSJ	MLA-10K01-B01-35	1370750	RF-0253	1 year	2023-12-27	2024-12-27
Low Pass Filter, DC-1GHz	R&K	LP1000CH 3	12104001	RF-0515	1 year	2023-12-27	2024-12-27
Band Pass Filter	Microwave Factory	MBP301	224969	RF-1015	1 year	2024-03-19	2025-03-19
Horn Antenna, 1-8GHz	Schwarzbeck	BBHA9120 D	9120D-2280	RF-0845	1 year	2024-03-08	2025-03-08
MMW PreAmp 0-50GHz	NEXTEM	RFA-1050000-40	RFA-1905-01	RF-1140	1 year	2024-03-19	2025-03-19
Horn Antenna, 1-18GHz	Schwarzbeck	BBHA9120 D	9120D-2280	RF-0845	1 year	2024-03-08	2025-03-08
Microwave Preamplifier, 1-18GHz	Toyo Corporation	TPA0118-48	B2310482 009-052	RF-0860	1 year	2023-05-17	2024-05-17
Band Reject Filter, 1-8GHz	Nitsuki	NF-49BT	027	RF-0131	1 year	2023-12-27	2024-12-27
3dB Attenuator	Huber & Suhner	6603_SMA -50-1/199_NE	-	RF-0760	1 year	2024-03-19	2025-03-19
Horn Antenna with Preamplifier, 8-18GHz (RX)	Toyo Corporation	HAP06-18W	00000025	RF-0065	1 year	2023-05-01	2024-05-01

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 9 of 106
Seite 9 von 106

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equip. ID	Cal. Interval	Cal. Date	Next Cal.
High Pass Filter, 8-18GHz	Micro-Tronics	HPM50107	006	RF-0334	1 year	2023-05-01	2024-05-01
Horn Antenna with Preamplifier, 6-18GHz (RX)	Toyo Corporation	HAP06-18W	B1510452 210-123	RF-1095	N/A	N/A	N/A
High Pass Filter, 8-18GHz	Micro-Tronics	HPM50107	G089	RF-1094	1 year	2023-11-10	2024-11-10
Horn Antenna with Preamplifier, 18-26.5GHz (RX)	Toyo Corporation	HAP18-26N	00000010	RF-0070	1 year	2023-05-01	2024-05-01
Horn Antenna with Preamplifier, 18-26.5GHz (RX)	Toyo Corporation	HAP18-26W	B2010482 210-125	RF-1096	1 year	2023-11-10	2024-11-10
Band Reject Filter, 2.4-2.5GHz	Micro-Tronics	BRM50702	G488	RF-0933	1 year	2023-09-19	2024-09-19
Band Reject Filter, 5150-5350MHz	Micro-Tronics	BRC50703	027	RF-0408	1 year	2023-07-14	2024-07-14
Band Reject Filter, 5470-5725MHz	Micro-Tronics	BRC50704	G149	RF-0849	1 year	2023-07-14	2024-07-14
Band Reject Filter, 5725-5875MHz	Micro-Tronics	BRC50705	G155	RF-0850	1 year	2023-07-14	2024-07-14
Constant Voltage Constant Frequency Stabilizers and Power Accessories							
CVCF (Shielded Room)	NF Corporation	ES2000S	9075612	RF-0210	1 year	2024-03-19	2025-03-19
CVCF Booster (Shielded Room)	NF Corporation	ES2000B	9074403	RF-0211	1 year	2024-03-19	2025-03-19
CVCF (10m Chamber)	NF Corporation	ES2000U	9067307	RF-0212	1 year	2024-03-19	2025-03-19
CVCF Booster (10m Chamber)	NF Corporation	ES2000B	9074408	RF-0213	1 year	2024-03-19	2025-03-19
CVCF (Pulse Test Lab)	NF Corporation	ES2000U	9067195	RF-0122	1 year	2023-05-17	2024-05-17
CVCF Booster (Pulse Test Lab)	NF Corporation	ES2000B	9072108	RF-0121	1 year	2023-05-17	2024-05-17
True RMS Multimeter	Fluke	87V	97680445	RF-0281	1 year	2023-12-06	2024-12-06
True RMS Multimeter	Fluke	87V	16110176	RF-0414	1 year	2023-07-05	2024-07-05

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025 has been confirmed before testing.

2.3 Measurement Uncertainty

Table 3: Measurement Uncertainty

Measurement Type	Frequency	Uncertainty (k=2)
AC Power Line Conducted Emission	150kHz - 30MHz	±3.31dB
Antenna Port Conducted Emission	20Hz - 40GHz	±1.5dB
Radiated Emission	150kHz - 30MHz	±4.79dB
	30MHz - 1GHz (3m distance)	±6.01dB (Vertical) ±4.91dB (Horizontal)
	1 - 6GHz	±5.15dB
	6 - 18GHz	±5.09dB
	18 - 40GHz	±5.18dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is an All-In-One DJ system. The product supports Bluetooth Classic, BLE, 2.4GHz/5GHz WLAN interfaces and Original Wireless Communication interface.

Refer to clause 1.2 for the information of modules equipped in the EUT.

3.2 Ratings and System Details

1) EUT

System Input Voltage:	AC 100-240V
Typical Nominal Voltage:	AC 120V for North America
Frequency:	50/60Hz
Protection Class:	I

Rated temperature:	+5 to +35°C
--------------------	-------------

Dimensions:	895mm x 504.1mm x 133.4mm
Weight:	13.5kg

Test Voltage:	Refer to each test item.
Test Frequency:	Refer to each test item.

2) Original Wireless Communication Module

Radio standard:	Original standard
Frequency range:	2402 – 2480MHz
Specified output power	6.3dBm (conducted peak power)
Antenna number:	2 (diversity)
Antenna gain:	ANT 1: 2.02dBi ANT 2: 1.45dBi
Antenna type:	PCB pattern antenna
Antenna mounting type:	Internal
Modulation type:	GFSK
Channel spacing:	1MHz

Simultaneous Tx:	Pattern 1: Original Wireless Communication + WLAN 5GHz + Bluetooth Classic Pattern 2: Original Wireless Communication + WLAN 5GHz + Bluetooth Low Energy
------------------	---

Pattern 3: Original Wireless Communication + WLAN
2.4GHz

Note: WLAN 2.4GHz/5GHz and Bluetooth Classic/Low
Energy are supported by the WLAN/Bluetooth module,
which is not subject to this test report.

3.3 Noise Generating and Noise Suppressing Parts

The highest frequency generated or used by the EUT is 5825MHz for radio portion and 1800MHz for digital interface.

3.4 Submitted Documents and Information

Following documents have been submitted by the client:

Following information provided in this test report has been submitted by the client:

- client name and address;
- EUT identification, ratings, system details, and description of product function and intended use;
- information related to noise generating and noise suppressing parts (if any).

4. Test Setup and Operation Modes

4.1 Principle of Test Configuration Selection

Radio: The test methodology used is based on the requirements of 47 CFR Part 15, sections 15.31, 15.33, 15.35, 15.205, 15.207, 15.209 and 15.247.
The test methodology used is based on the requirements of RSS-Gen, sections 3.2 and RSS-247.

The test methods, which have been used, are based on ANSI C63.10 and KDB 558074 D01.

For details, see under each test item.

4.2 Operation Modes

The operation modes used for testing are:

- L. Transmitting at the lowest frequency Channel with the highest available Duty Cycle.
- M. Transmitting at the middle frequency Channel with the highest available Duty Cycle.
- H. Transmitting at the highest frequency Channel with the highest available Duty Cycle.

Above modes are coupled with the following Configurations:

Table 4: Setting of Test Frequencies

Radio	Mode L	Mode M	Mode H	Remark
Original Wireless Communication	2402MHz	2441MHz	2480MHz	

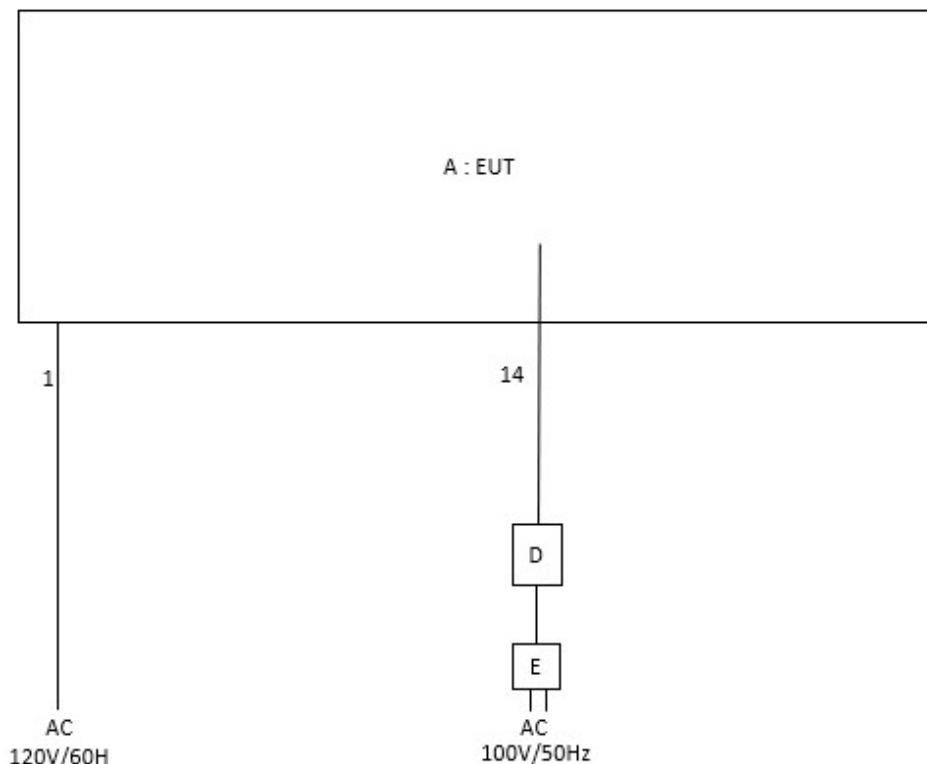
4.3 Physical Configuration for Testing

The test system was configured in a typical fashion (as a customer would normally use it).

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.10.

Figure 1: Block Diagram

1) Conducted Radio Testing for Original Wireless Communication

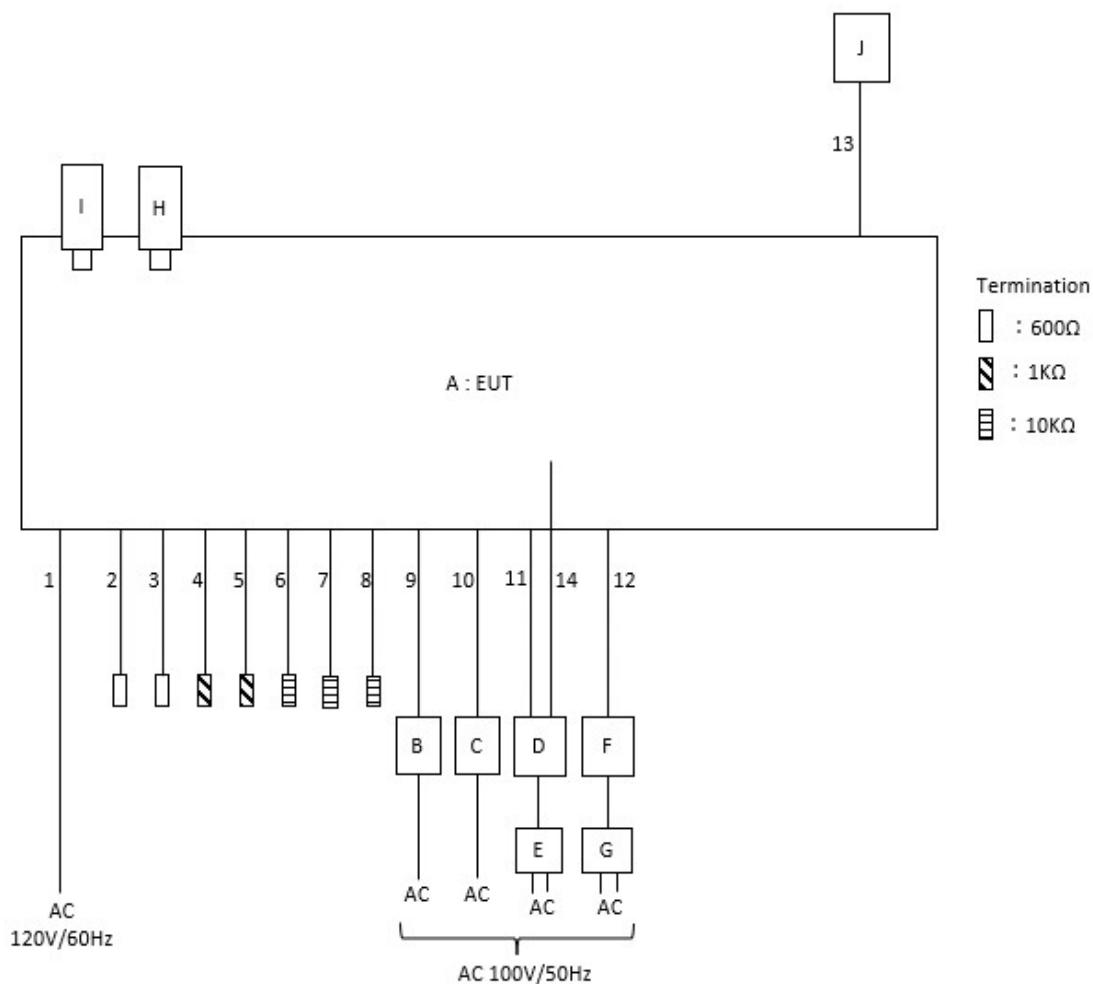


Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 15 of 106
Seite 15 von 106

2) Radiated Spurious Emissions of Transmitter and AC Power Line Conducted Emission of Transmitter



Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 16 of 106
Seite 16 von 106

Table 5: Interfaces present on the EUT

No.	Interface	Cable Length for Testing, Shielding	Interface Classification
1.	AC Cable	2.0m, un-shielded	AC input power port
2.	MIC1(XLR) Cable	3.0m, shielded	Signal port
3.	MIC2(XLR) Cable	3.0m, shielded	Signal port
4.	CH3(RCA L/R) Cable	3.0m, shielded	Signal port
5.	CH4(RCA L/R) Cable	3.0m, shielded	Signal port
6.	BOOTH L Cable	3.0m, shielded	Signal port
7.	BOOTH R Cable	3.0m, shielded	Signal port
8.	MASTER2 Cable	3.0m, shielded	Signal port
9.	MASTER1 L Cable	3.0m, shielded	Signal port
10.	MASTER1 R Cable	3.0m, shielded	Signal port
11.	LAN Cable	3.0m, shielded	Telecommunication port
12.	USB Type C Cable	3.0m, shielded	Signal port
13.	Headphone Cable	3.0m, shielded	Signal port
14.	USB Cable for Original Wireless Communication Control	1.2m, shielded	Signal port

For more details, refer to section 6 “Photographs of the Test Setup”.

Table 6: Auxiliary Equipment List

No.	Equipment	Model	Serial Number	Manufacturer
B	SPEAKER	SMS-1P	223026	SONY
C	SPEAKER	SMS-1P	223028	SONY
D	Laptop PC	B1100FK	M6NXP01R526246	ASUS
E	AC Adapter for Laptop	AD10280	0A001-01102300	ASUS
F	Laptop PC	A2681	VJ0Q7T2Y4Y	Apple
G	AC Adapter for Laptop	A2164	ES-10449	Apple
H	USB Memory	USBP8GVG2	No.9	Verbatim
I	USB Memory	USBP8GVG2	No.12	Verbatim
J	Headphone	HDJ-1000	-	Pioneer

For more details, refer to section 6 “Photographs of the Test Setup”.

Table 7: EUT Serial Numbers

Test Items	Serial Number
Conducted Radio For Original Wireless Communication	ES-10696
Radiated Spurious Emissions of Transmitter	ES-10671
AC Power Line Conducted Emission of Transmitter	ES-10676

4.4 Test Software

The EUT was provided by the manufacturer with suitable internal software to allow operation in all the required modes.

Software used for testing:

Command version 10.0.19042.1706 by Microsoft Corporation.

Tera Term version 4.106.0.0 by Tera Term Project.

This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed in section 4.2 as appropriate.

4.5 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

1. Product: Laptop PC
Manufacturer: ASUS
Model: B1100FK
Rated Voltage: DC19V
Input Current: 2.37A
Protection Class: III
Serial Number: M6NXL P01R526246
2. Product: AC Adapter for Laptop
Manufacturer: ASUS
Model: AD10280
Rated Voltage: AC100-240V
Input Current: 1A
Frequency: 50/60Hz
Protection Class: II
Serial Number: 0A001-01102300
3. Product: Laptop PC
Manufacturer: Apple
Model: A2681
Rated Voltage: DC20V
Input Current: 1.5A
Protection Class: III
Serial Number: VJ0Q7T2Y4Y

4. Product: AC Adapter for Laptop
Manufacturer: Apple
Model: A2164
Rated Voltage: AC100-240V
Input Current: 0.75A
Frequency: 50-60Hz
Protection Class: II
Serial Number: ES-10449

5. Product: SPEAKER
Manufacturer: SONY
Model: SMS-1P
Rated Voltage: AC100V
Input Current: 22W
Frequency: 50-60Hz
Protection Class: I
Serial Number: 223026

6. Product: SPEAKER
Manufacturer: SONY
Model: SMS-1P
Rated Voltage: AC100V
Input Current: 22W
Frequency: 50-60Hz
Protection Class: I
Serial Number: 223028

7. Product: HEADPHONES
Manufacturer: PIONEER
Model: HDJ-1000



8. Product: USB Memory
Manufacturer: Verbatim
Serial Number: No.9



Test Report No.:
Prüfbericht-Nr.: **JP2494EX 001**

Page 19 of 106
Seite 19 von 106

9. Product: USB Memory
Manufacturer: Verbatim
Serial Number: No.12



4.6 Countermeasures to achieve Compliance

No additional measures were employed to achieve compliance.

5. Test Results RADIO

5.1 Supply Voltage Requirements

RESULT:

Pass

Requirements:

FCC §15.31(e)

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Verdict:

The EUT has an internal voltage regulator to supply the RF circuit. Hence it complies with the supply voltage requirements.

5.2 Antenna Requirements

RESULT:

Pass

Requirements:

FCC §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.

All antennas for use with the EUT must be listed in the application, including a test report.

Verdict:

As per the guidance by KDB Publication No. 353028 D01, three ways can be used for a Part 15 Intentional radiator. a) Antenna permanently addached is applicable to the EUT.

The EUT has an antenna permanently attached by soldering to a printed circuit board an internal antenna which is not user accessible. Hence it complies with the antenna requirements.

5.3 Restricted Bands of Operation

RESULT:

Pass

Requirements:

FCC §15.205 and RSS-Gen §8.10

Only spurious emissions are permitted in any of the restricted frequency bands, unless otherwise specified.

Verdict:

The Operation frequency range of the EUT (Original Wireless Communication) is 2400 – 2483.5MHz, only spurious emissions may be found in the restricted bands below 25GHz. Hence the EUT complies with the restricted frequency band requirement.

5.4 Maximum Peak Output Power

RESULT:

Pass

Date of testing: 2024-04-05

Ambient temperature: 25°C

Relative humidity: 35%

Atmospheric pressure: 1016hPa

Requirements:

FCC §15.247(b)(3) and RSS-247 §5.4

For systems using digital modulation in the 2400 – 2483.5MHz band, the maximum peak output power is 1W (30dBm). The e.i.r.p. shall not exceed 4W (36dBm) for ISSED.

If transmitting antennas of directional gain greater than 6dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Test procedure:

ANSI C63.10-2020 §11.9, KDB 558074 D01.

The maximum peak output power was measured at the antenna port with broadband peak power meter.

The readings of the measurements take into account the loss generated by all the involved cables.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 24 of 106
Seite 24 von 106

Table 8: Maximum Peak Output Power, ANT1

Freq. [MHz]	Peak Output Power [dBm]	Peak Output Power Limit [dBm]	Peak Output Power Margin [dB]	Antenna Gain [dBi]	e.i.r.p. [dBm]	e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
2402	6.27	30	23.73	2.02	8.29	36	27.71
2441	6.27	30	23.73	2.02	8.29	36	27.71
2480	6.01	30	23.99	2.02	8.03	36	27.97

Note:

Cable (including temporary RF cable) and attenuator loss has been compensated for Peak Output Power

$\text{e.i.r.p. [dBm]} = \text{Peak Output Power [dBm]} + \text{Antenna Gain [dBi]}$

Table 9: Maximum Peak Output Power, ANT2

Freq. [MHz]	Peak Output Power [dBm]	Peak Output Power Limit [dBm]	Peak Output Power Margin [dB]	Antenna Gain [dBi]	e.i.r.p. [dBm]	e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
2402	6.30	30	23.70	1.45	7.75	36	28.25
2441	6.26	30	23.74	1.45	7.71	36	28.29
2480	6.01	30	23.99	1.45	7.46	36	28.54

Note:

Cable (including temporary RF cable) and attenuator loss has been compensated for Peak Output Power

$\text{e.i.r.p. [dBm]} = \text{Peak Output Power [dBm]} + \text{Antenna Gain [dBi]}$

5.5 6dB Bandwidth

RESULT:

Pass

Date of testing: 2024-04-05

Ambient temperature: 25°C

Relative humidity: 35%

Atmospheric pressure: 1016hPa

Requirements:

FCC §15.215(c), §15.247(a)(2) and RSS-247 §5.2 a)

For system using digital modulation techniques in the 2400-2483.5MHz band, the 6dB bandwidth shall be at least 500kHz.

Additionally, for FCC, the 6dB bandwidth shall be contained within the frequency band designated in the rule section under which the equipment is operated.

Test procedure:

ANSI C63.10-2020 §11.8 and KDB 558074 D01.

The 6dB bandwidth was measured at the antenna port with a spectrum analyzer using a peak detector. The RBW was set to 100kHz and the VBW was set to 300kHz. Markers placed at the lowest and highest intersections of the trace with a 6dBc line were used to calculate the emission bandwidth.

Table 10: 6dB Bandwidth, Original Wireless Communication, ANT1

Operating Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
2402	0.679	>0.5
2441	0.678	>0.5
2480	0.677	>0.5

Figure 2: 6dB Bandwidth, Original Wireless Communication, Mode L (2402MHz), ANT1



03:25:40 PM 04/05/2024

Figure 3: 6dB Bandwidth, Original Wireless Communication, Mode M (2441MHz), ANT1

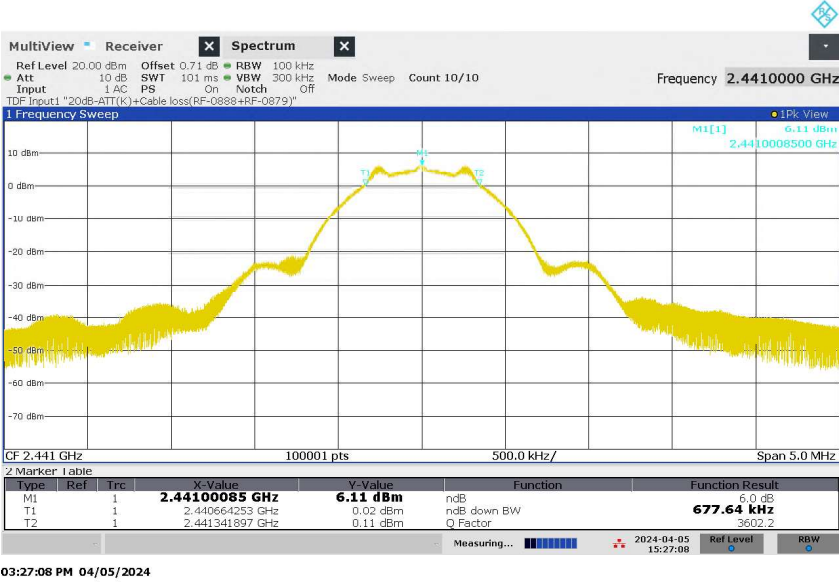


Figure 4: 6dB Bandwidth, Original Wireless Communication, Mode H (2480MHz), ANT1

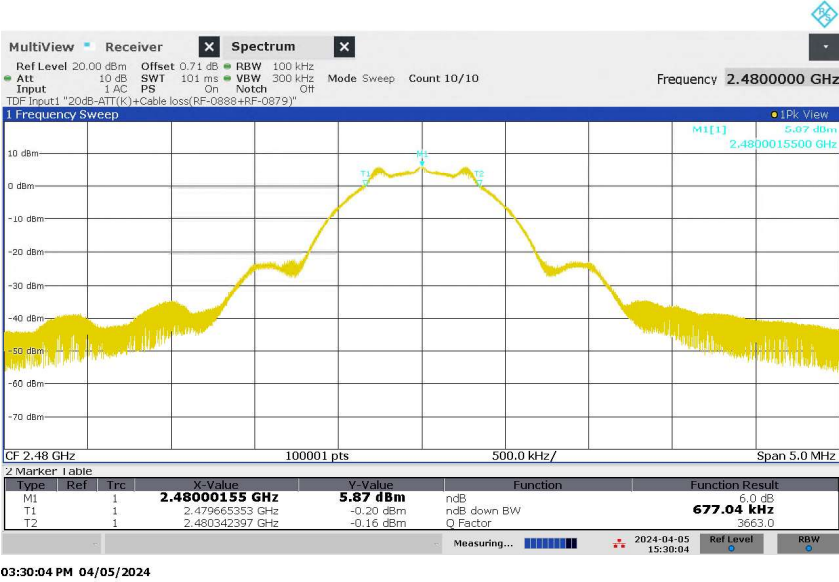


Table 11: 6dB Bandwidth, Original Wireless Communication, ANT2

Operating Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
2402	0.680	>0.5
2441	0.676	>0.5
2480	0.677	>0.5

Figure 5: 6dB Bandwidth, Original Wireless Communication, Mode L (2402MHz), ANT2



03:11:01 PM 04/05/2024

Figure 6: 6dB Bandwidth, Original Wireless Communication, Mode M (2441MHz), ANT2

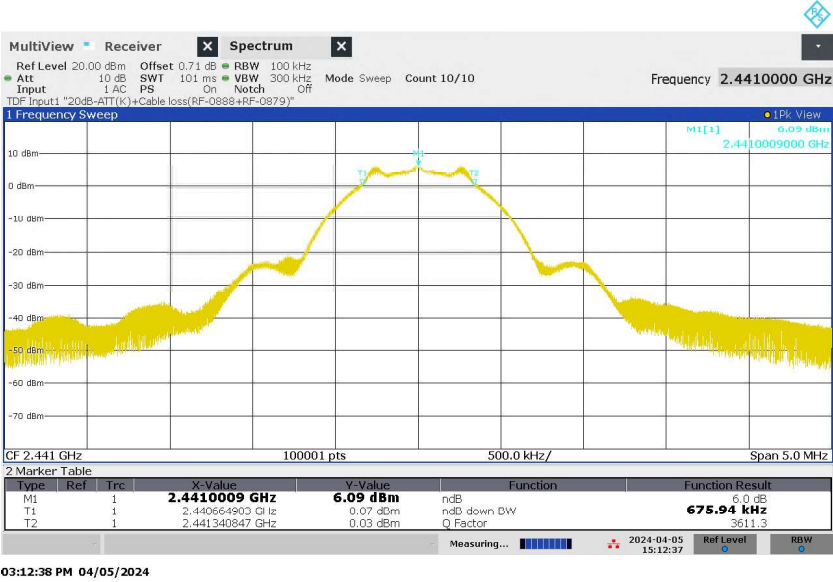
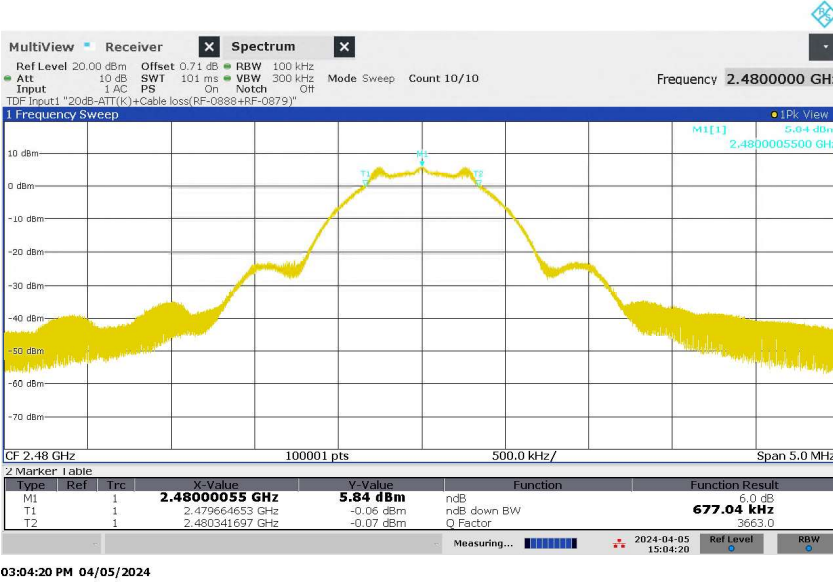


Figure 7: 6dB Bandwidth, Original Wireless Communication, Mode H (2480MHz), ANT2



Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 30 of 106
Seite 30 von 106

5.6 99% Bandwidth

RESULT:

For. Ref.

Date of testing: 2024-04-05

Ambient temperature: 25°C

Relative humidity: 35%

Atmospheric pressure: 1016hPa

Requirements:

RSS-Gen §6.7

The 99% occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSS.

Test procedure:

ANSI C63.10-2020 §6.9.3

The 99% bandwidth was measured at the antenna port with a spectrum analyzer using with the following settings:

- RBW = 30kHz, VBW = 100kHz, Peak detector with Max Hold

The RBW was set in the range from 1% to 5% of the observed OBW, VBW was set to at least three times of RBW.

Markers were placed at the lowest and highest intersections of the trace by 99% OBW function to obtain the value of the 99% emission bandwidth.

Table 12: 99% Bandwidth, Original Wireless Communication, ANT1

Operating Frequency [MHz]	99% Bandwidth [MHz]	Remarks
2402	1.046	
2441	1.049	
2480	1.049	

Figure 8: 99% Bandwidth, Original Wireless Communication, Mode L (2402MHz), ANT1



03:51:25 PM 04/05/2024

Figure 9: 99% Bandwidth, Original Wireless Communication, Mode M (2441MHz), ANT1



03:48:52 PM 04/05/2024

Figure 10: 99% Bandwidth, Original Wireless Communication, Mode H (2480MHz), ANT1



03:46:08 PM 04/05/2024

Table 13: 99% Bandwidth, Original Wireless Communication, ANT2

Operating Frequency [MHz]	99% Bandwidth [MHz]	Remarks
2402	1.046	
2441	1.050	
2480	1.052	Widest OBW

Figure 11: 99% Bandwidth, Original Wireless Communication, Mode L (2402MHz), ANT2



03:57:04 PM 04/05/2024

Figure 12: 99% Bandwidth, Original Wireless Communication, Mode M (2441MHz), ANT2



03:59:28 PM 04/05/2024

Figure 13: 99% Bandwidth, Original Wireless Communication, Mode H (2480MHz), ANT2



04:02:06 PM 04/05/2024

5.7 Conducted Spurious Emissions

RESULT:

Pass

Date of testing: 2024-04-05

Ambient temperature: 25°C

Relative humidity: 35%

Atmospheric pressure: 1016hPa

Requirements:

FCC §15.247(d) and RSS-247 §5.5

In any 100kHz bandwidth outside the frequency band in which the intentional radiator is operating, the RF power shall be at least 20dBc below that of the maximum in-band 100kHz emission.

Test procedure:

ANSI C63.10-2020 §6.7, §6.10 and KDB 558074 D01.

The conducted spurious emissions were measured at the antenna port with a spectrum analyzer using a peak detector. The RBW was set to 100kHz and the VBW was set to 300kHz. Measurements were performed from 30MHz to 25GHz (10th harmonics).

The readings of the measurements take into account the loss generated by all the involved cables.

Authorized-band band-edge measurements (relative method) were performed by conducted, as per §6.10.4 of ANSI C63.10-2020.

Figure 14: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode L (2402MHz), ANT 1

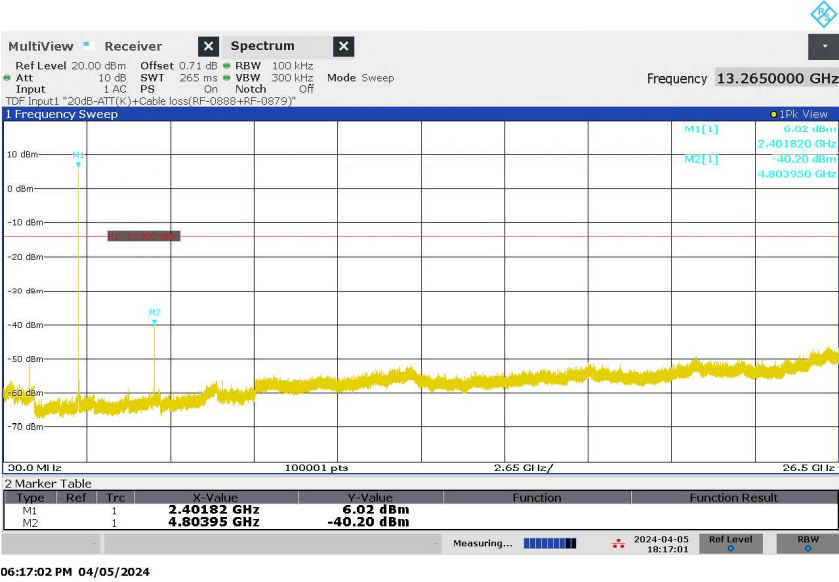


Figure 15: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode M (2441MHz), ANT 1

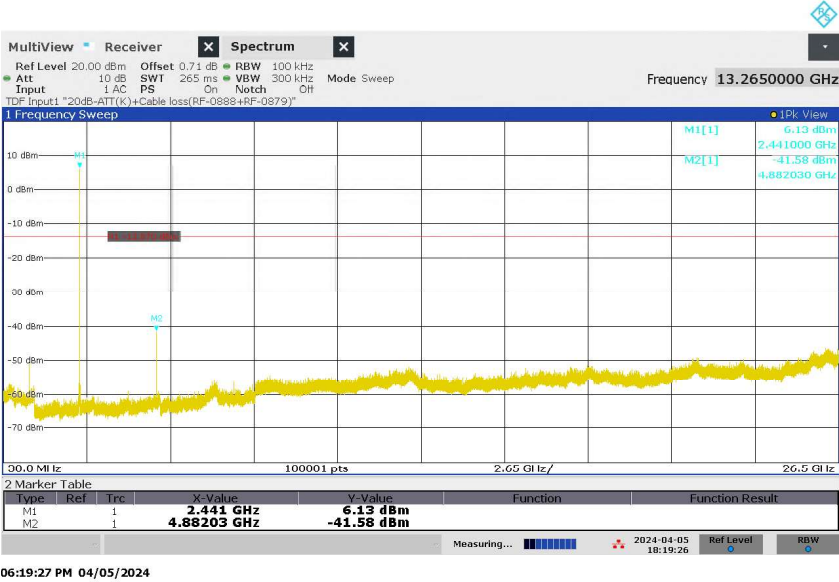


Figure 16: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode H (2480MHz), ANT 1

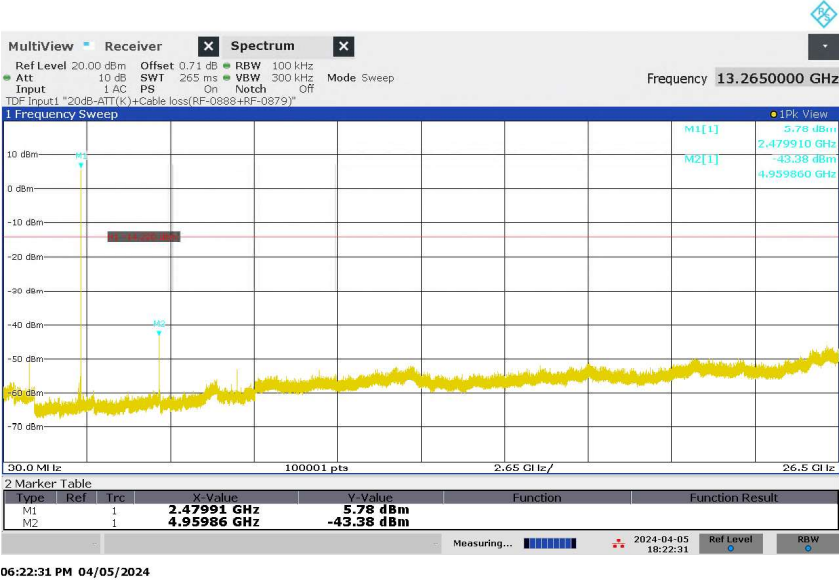


Figure 17: Authorized-band band-edge, Original Wireless Communication, Mode L (2402MHz), ANT 1



Figure 18: Authorized-band band-edge, Original Wireless Communication, Mode H (2480MHz), ANT 1

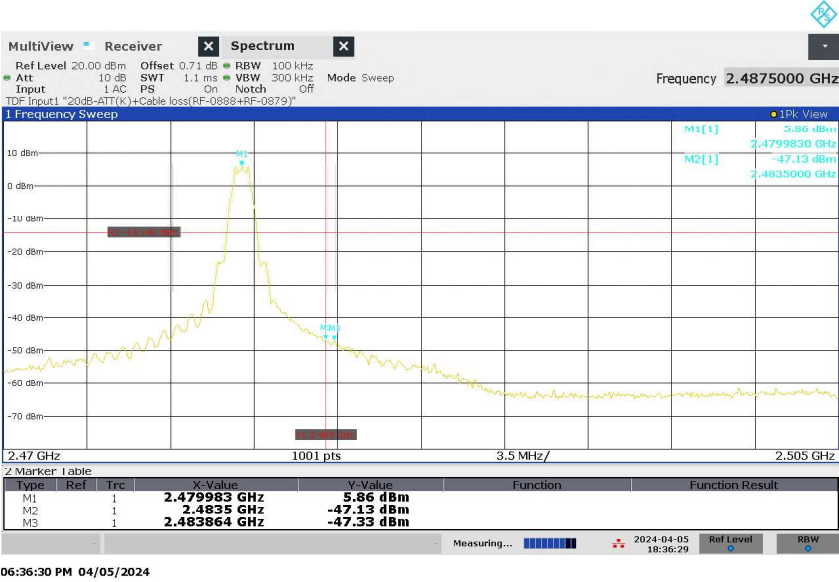


Figure 19: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode L (2402MHz), ANT 2

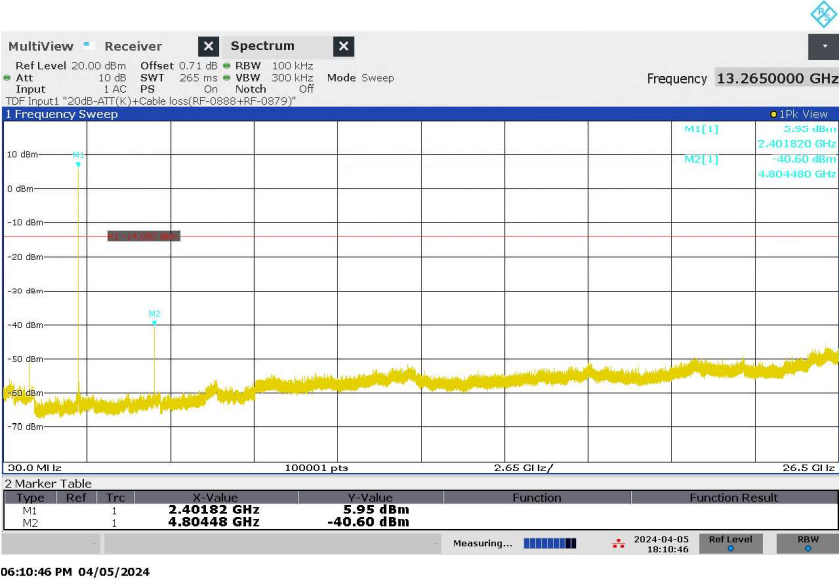


Figure 20: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode M (2441MHz), ANT 2

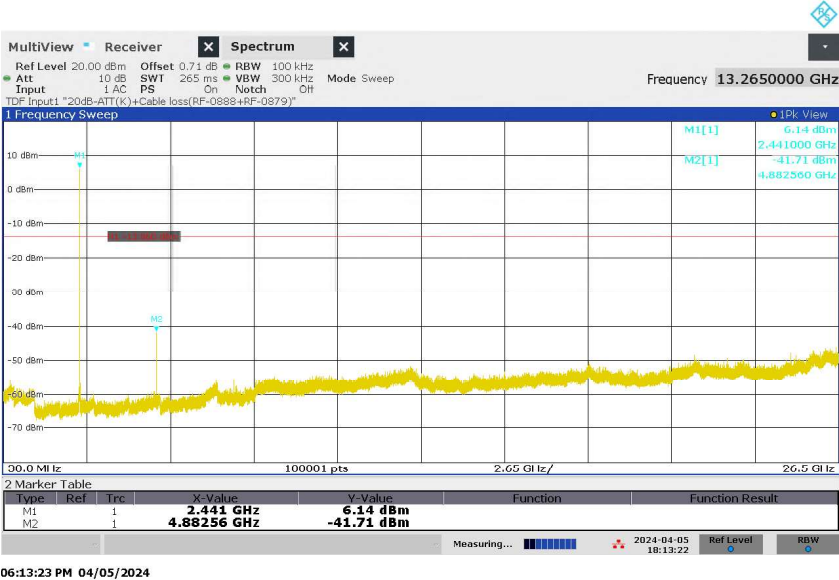


Figure 21: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode H (2480MHz), ANT 2

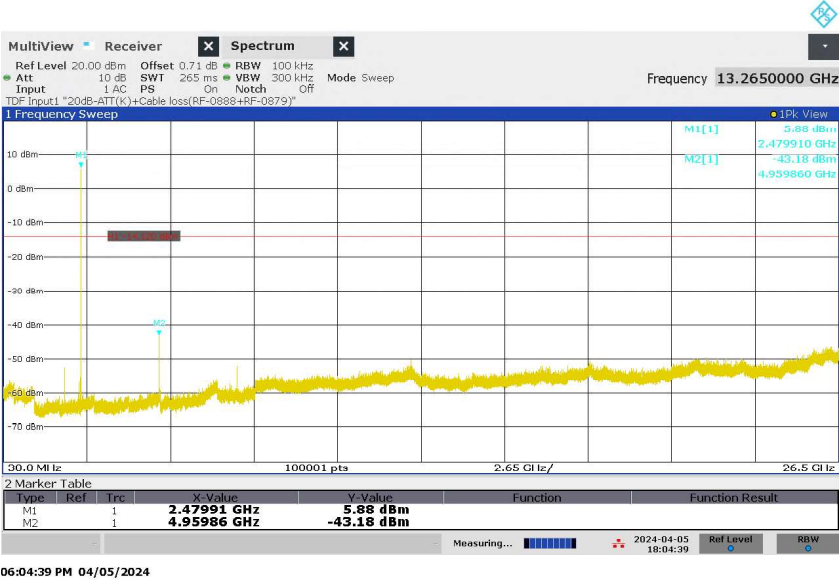
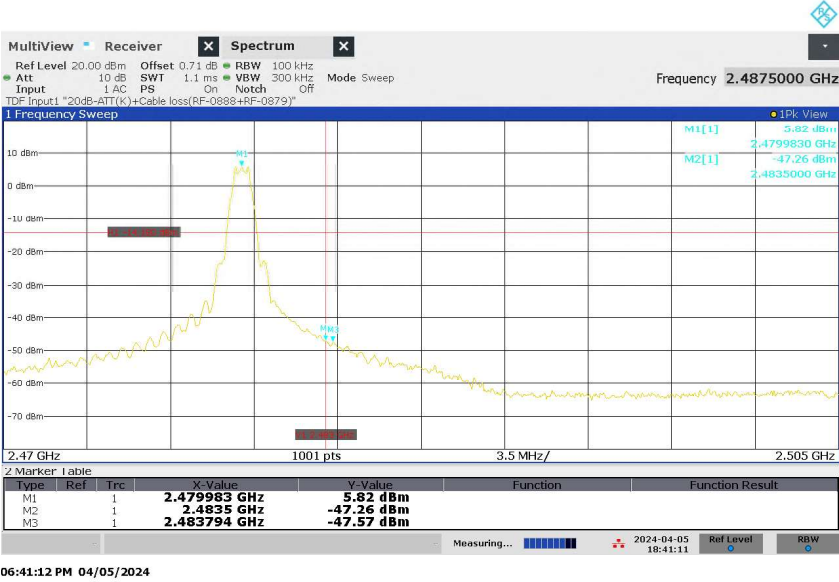


Figure 22: Authorized-band band-edge, Original Wireless Communication, Mode L (2402MHz), ANT 2



Figure 23: Authorized-band band-edge, Original Wireless Communication, Mode H (2480MHz), ANT 2



5.8 Peak Power Spectral Density

RESULT:

Pass

Date of testing: 2024-04-05

Ambient temperature: 25°C

Relative humidity: 35%

Atmospheric pressure: 1016hPa

Requirements:

FCC §15.247(e) and RSS-247 §5.2(b)

For digitally modulated systems, the power spectral density (PSD) conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

Test procedure:

ANSI C63.10-2020 §11.10, KDB 558074 D01.

The peak power spectral density was measured at the antenna port with a spectrum analyzer using a peak detector with a RBW of 3kHz and a VBW of 10kHz.

The readings of the measurements take into account the loss generated by all the involved cables.

Table 14: Peak Power Spectral Density, Original Wireless Communication, ANT1

Operating Frequency [MHz]	Max PSD [dBm]	Limit [dBm]	Margin [dB]
2402	-5.26	8	13.26
2441	-5.46	8	13.46
2480	-5.75	8	13.75

Note:
Cable (including temporary RF cable) and attenuator loss has been compensated for Peak Output Power

Figure 24: Power Spectral Density, Original Wireless Communication, Mode L (2402MHz), ANT1



Figure 25: Power Spectral Density, Original Wireless Communication, Mode M (2441MHz), ANT1



Figure 26: Power Spectral Density, Original Wireless Communication, Mode H (2480MHz), ANT1

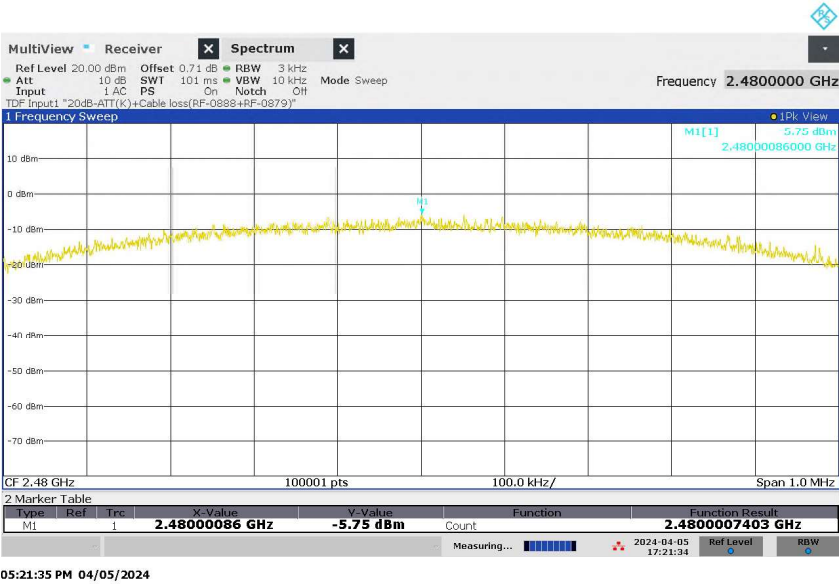
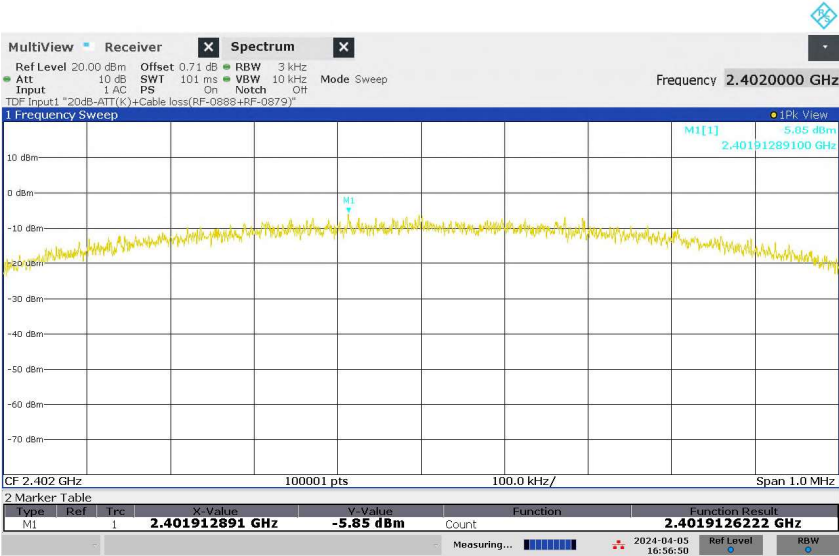


Table 15: Peak Power Spectral Density, Original Wireless Communication, ANT2

Operating Frequency [MHz]	Max PSD [dBm]	Limit [dBm]	Margin [dB]
2402	-5.85	8	13.85
2441	-5.84	8	13.84
2480	-5.84	8	13.84

Note:
Cable (including temporary RF cable) and attenuator loss has been compensated for Peak Output Power

Figure 27: Power Spectral Density, Original Wireless Communication, Mode L (2402MHz), ANT2



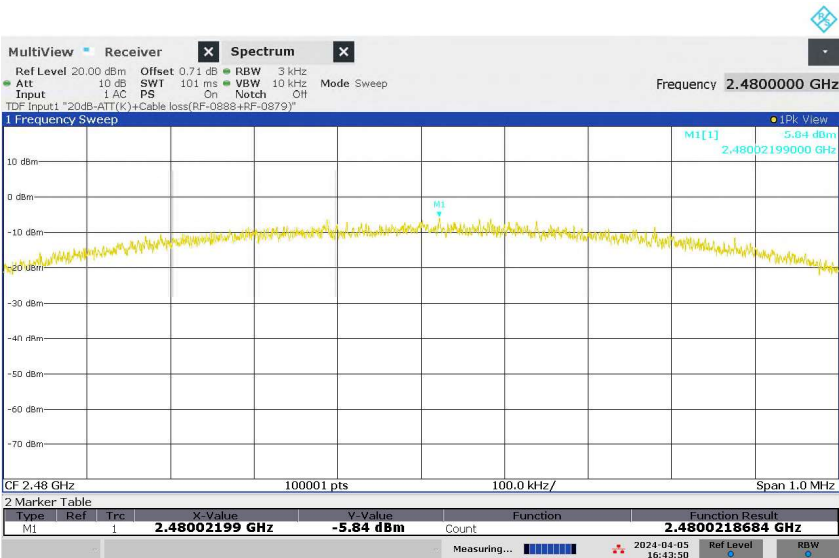
04:56:51 PM 04/05/2024

Figure 28: Power Spectral Density, Original Wireless Communication, Mode M (2441MHz), ANT2



05:02:35 PM 04/05/2024

Figure 29: Power Spectral Density, Original Wireless Communication, Mode H (2480MHz), ANT2



04:43:50 PM 04/05/2024

5.9 Radiated Spurious Emissions of Transmitter

RESULT:

Pass

Date of testing:	2024-04-09, 2024-04-10, 2024-04-11 2024-04-12, 2024-04-16, 2024-04-17 2024-04-18
Ambient temperature:	25, 24, 24, 24, 21, 20, 24°C
Relative humidity:	50, 49, 49, 51, 56, 60, 55%
Atmospheric pressure:	999, 1004, 1004, 1005, 1007, 1009, 1007hPa
Frequency range:	9kHz - 25GHz
Measurement distance:	3m
Kind of test site:	Semi Anechoic Chamber

Requirements:

FCC §15.205, §15.209, §15.247(d) and RSS-247 §5.5, RSS-Gen §8.9, §8.10.

Radiated emissions which fall in the restricted bands, as defined in FCC §15.205(a) must comply with the radiated emission limits specified in FCC §15.209(a).

Radiated emissions which fall outside the operation frequency band and outside restricted bands shall either meet the limit specified in FCC §15.209(a) or be attenuated at least 20dB below the power level in the 100kHz bandwidth within the band that contains the highest level of the desired power (the less severe limit applies).

Test procedure:

ANSI C63.10-2020 §6.3, §6.4, §6.5, §6.6, §6.10 and KDB 558074 D01

The EUT was placed on a nonconductive turntable. The table height was 0.8m for measurements below 1GHz and 1.5m for measurements above 1GHz. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The physical arrangement of the test system, the associated cabling were varied in order to ensure that maximum emission amplitudes were attained.

The spectrum was examined from 9kHz to the 10th harmonic of the highest fundamental transmitter frequency (25GHz). Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° in order to determine the emission's maximum level. For frequencies above 30MHz, the antenna was raised and lowered from 1 to 4m and measurements were taken using both horizontal and vertical antenna polarizations.

For emissions between 30MHz and 1GHz, measurements were performed with a test receiver operating in the CISPR quasi-peak detection mode with a 6dB bandwidth set to 120kHz.

For emissions above 1GHz, measurements were performed with a spectrum analyzer using the following settings: for peak field strength: RBW = 1MHz & VBW = 3MHz; for average field strength: RBW = 1MHz & VBW = 10Hz. Positive peak detector was applied.

Absorbers have been placed on the floor between the EUT and the measuring antenna for testing above 1GHz.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned are small or not detectable.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 49 of 106
Seite 49 von 106

Part 1: Original Wireless Communication (Single RF Source)

Table 16: Radiated Emissions, Quasi Peak Data, 9kHz - 30MHz, Original Wireless Communication, 2402MHz, ANT1

Freq. [MHz]	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Angle [°]
0.03797	19.7	19.5	39.2	116.1	76.9	320.0
0.07466	20.8	19.5	40.3	110.1	69.8	331.0
0.21187	22.3	19.4	41.7	101.1	59.4	215.0
0.64640	19.4	19.3	38.7	71.4	32.7	14.0
1.99961	32.4	19.3	51.7	69.5	17.8	15.0
3.99748	16.5	19.4	35.9	69.5	33.6	4.0

Note: Level QP = Reading QP + Factor

Table 17: Radiated Emissions, Quasi Peak Data, 9kHz - 30MHz, Original Wireless Communication, 2402MHz, ANT2

Freq. [MHz]	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Angle [°]
0.03852	22.7	19.5	42.2	116.0	73.8	218.0
0.09433	23.5	19.4	42.9	108.1	65.2	342.0
0.21582	24.9	19.4	44.3	101.0	56.7	215.0
0.64474	19.0	19.3	38.3	71.4	33.1	14.0
1.99937	32.0	19.3	51.3	69.5	18.2	20.0
3.99996	17.4	19.4	36.8	69.5	32.7	24.0

Note: Level QP = Reading QP + Factor

Table 18: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Height [cm]	Angle [°]
62.495	V	64.7	-25.0	39.7	40.0	0.3 (*)	100	266
62.499	H	57.3	-25.0	32.3	40.0	7.7	251	9
71.938	V	56.4	-25.3	31.1	40.0	8.9	100	218
89.998	H	57.0	-25.2	31.8	43.5	11.7	384	174
327.003	V	52.5	-20.1	32.4	46.0	13.6	217	49
361.267	H	55.3	-18.9	36.4	46.0	9.6	100	219
500.001	V	55.2	-15.6	39.6	46.0	6.4	122	179
500.003	H	53.7	-15.6	38.1	46.0	7.9	183	149

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 50 of 106
Seite 50 von 106

Table 19: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Height [cm]	Angle [°]
62.491	H	56.7	-25.0	31.7	40.0	8.3	254	10
62.492	V	64.3	-25.0	39.3	40.0	0.7 (*)	100	266
72.138	V	55.6	-25.3	30.3	40.0	9.7	100	270
293.529	H	50.4	-14.1	36.3	46.0	9.7	121	274
361.269	H	55.9	-18.9	37.0	46.0	9.0	100	220
500.000	V	55.0	-15.6	39.4	46.0	6.6	121	181
500.001	H	53.5	-15.6	37.9	46.0	8.1	183	149
600.004	V	50.7	-14.1	36.6	46.0	9.4	100	80

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Table 20: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Height [cm]	Angle [°]
39.994	V	53.0	-23.4	29.6	40.0	10.4	105	53
62.497	H	57.1	-25.0	32.1	40.0	7.9	262	8
62.498	V	64.4	-25.0	39.4	40.0	0.6 (*)	100	266
91.509	H	56.5	-25.0	31.5	43.5	12.0	362	180
300.003	V	52.1	-20.2	31.9	46.0	14.1	255	7
327.035	H	56.6	-20.1	36.5	46.0	9.5	105	282
474.163	H	53.0	-16.0	37.0	46.0	9.0	100	46
500.002	V	55.6	-15.6	40.0	46.0	6.0 (*)	116	181

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 51 of 106
Seite 51 von 106

Table 21: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Height [cm]	Angle [°]
62.503	H	57.2	-25.0	32.2	40.0	7.8	255	259
62.497	V	64.6	-25.0	39.6	40.0	0.4 (*)	100	269
71.878	V	56.0	-25.3	30.7	40.0	9.3	100	95
91.500	H	56.6	-25.0	31.6	43.5	11.9	373	185
326.972	V	51.7	-20.1	31.6	46.0	14.4	199	52
327.055	H	55.1	-20.1	35.0	46.0	11.0	100	282
500.001	H	53.9	-15.6	38.3	46.0	7.7	183	151
500.005	V	56.2	-15.6	40.6	46.0	5.4 (*)	116	177

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Table 22: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Height [cm]	Angle [°]
62.498	H	57.1	-25.0	32.1	40.0	7.9	245	7
62.494	V	64.3	-25.0	39.3	40.0	0.7 (*)	100	268
72.452	V	55.4	-25.4	30.0	40.0	10.0	105	267
89.998	H	57.1	-25.2	31.9	43.5	11.6	179	175
327.048	H	55.6	-20.1	35.5	46.0	10.5	100	280
474.162	H	52.9	-16.0	36.9	46.0	9.1	100	48
500.001	V	56.2	-15.6	40.6	46.0	5.4 (*)	116	182
600.006	V	50.9	-14.1	36.8	46.0	9.2	111	78

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 52 of 106
Seite 52 von 106

Table 23: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Height [cm]	Angle [°]
62.496	V	64.1	-25.0	39.1	40.0	0.9 (*)	100	266
62.502	H	56.8	-25.0	31.8	40.0	8.2	234	257
69.999	V	54.3	-25.3	29.0	40.0	11.0	121	90
89.998	H	56.3	-25.2	31.1	43.5	12.4	190	184
321.045	V	47.6	-20.1	27.5	46.0	18.5	127	224
361.267	H	56.3	-18.9	37.4	46.0	8.6	100	221
496.744	H	51.9	-15.6	36.3	46.0	9.7	100	271
500.001	V	56.0	-15.6	40.4	46.0	5.6 (*)	116	177

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 53 of 106
Seite 53 von 106

Table 24: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1269.249	V	66.2	-17.4	48.9	74.0	25.1	175	81
1799.782	V	64.8	-17.4	47.4	74.0	26.6	133	69
2401.931	H	61.0	-14.2	46.8	74.0	27.2	100	313
2567.940	V	66.7	-13.2	53.5	74.0	20.5	182	53
2567.981	H	60.0	-13.2	46.8	74.0	27.2	106	354
7862.820	H	53.1	1.5	54.7	74.0	19.3	192	115
12009.121	H	50.7	-3.5	47.2	74.0	26.8	200	266
12010.984	V	53.8	-3.5	50.3	74.0	23.7	147	49
14410.870	H	53.3	-3.9	49.4	74.0	24.6	157	289
14410.995	V	59.2	-3.9	55.3	74.0	18.7	192	31
16812.634	V	54.3	-2.0	52.3	74.0	21.7	200	15
16812.670	H	55.2	-2.0	53.2	74.0	20.8	135	19
19215.532	V	54.4	-15.8	38.6	74.0	35.4	100	320
19271.208	H	54.5	-15.9	38.6	74.0	35.4	185	122
21622.138	H	53.0	-13.6	39.4	74.0	34.6	111	94
21659.130	V	53.8	-13.6	40.2	74.0	33.8	136	155

Note: Level PK = Reading PK + Factor

Table 25: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1269.249	V	47.6	-17.4	30.2	54.0	23.8	175	81
1799.782	V	50.0	-17.4	32.6	54.0	21.4	133	69
2401.931	H	47.4	-14.2	33.2	54.0	20.8	100	313
2567.940	V	57.0	-13.2	43.8	54.0	10.2	182	53
2567.981	H	53.6	-13.2	40.4	54.0	13.6	106	354
7862.820	H	39.6	1.5	41.1	54.0	12.9	192	115
12009.121	H	37.3	-3.5	33.8	54.0	20.2	200	266
12010.984	V	40.5	-3.5	37.0	54.0	17.0	147	49
14410.870	H	39.6	-3.9	35.7	54.0	18.3	157	289
14410.995	V	48.3	-3.9	44.4	54.0	9.6	192	31
16812.634	V	40.6	-2.0	38.6	54.0	15.4	200	15
16812.670	H	41.2	-2.0	39.2	54.0	14.8	135	19
19215.532	V	40.5	-15.8	24.7	54.0	29.3	100	320
19271.208	H	40.8	-15.9	24.9	54.0	29.1	185	122
21622.138	H	39.1	-13.6	25.5	54.0	28.5	111	94
21659.130	V	39.3	-13.6	25.7	54.0	28.3	136	155

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 54 of 106
Seite 54 von 106

Table 26: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1275.705	V	65.0	-17.4	47.7	74.0	26.3	169	26
1523.995	V	63.3	-17.2	46.1	74.0	27.9	177	89
2235.290	V	58.8	-14.6	44.2	74.0	29.8	163	282
2567.906	V	64.4	-13.2	51.2	74.0	22.8	131	56
2567.955	H	58.1	-13.2	44.9	74.0	29.1	193	81
7833.894	V	53.6	1.4	55.1	74.0	18.9	138	354
12206.119	V	53.2	-4.6	48.6	74.0	25.4	157	33
12206.580	H	49.7	-4.6	45.0	74.0	29.0	154	303
14644.887	V	59.4	-4.3	55.1	74.0	18.9	194	0
14644.901	H	57.0	-4.3	52.7	74.0	21.3	151	1
17085.664	H	53.9	-1.4	52.5	74.0	21.5	193	359
17085.664	V	54.7	-1.4	53.3	74.0	20.7	119	346
19398.582	V	55.5	-15.9	39.6	74.0	34.4	175	142
19492.364	H	55.0	-15.9	39.1	74.0	34.9	178	284
21942.964	V	53.1	-13.4	39.7	74.0	34.3	198	25
21949.586	H	53.7	-13.3	40.4	74.0	33.6	155	60

Note: Level PK = Reading PK + Factor

Table 27: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1275.705	V	46.3	-17.4	28.9	54.0	25.1	169	26
1523.995	V	46.9	-17.2	29.7	54.0	24.3	177	89
2235.290	V	46.7	-14.6	32.1	54.0	21.9	163	282
2567.906	V	57.0	-13.2	43.8	54.0	10.2	131	56
2567.955	H	49.1	-13.2	35.9	54.0	18.1	193	81
7833.894	V	39.8	1.4	41.2	54.0	12.8	138	354
12206.119	V	40.2	-4.6	35.6	54.0	18.4	157	33
12206.580	H	36.6	-4.6	32.0	54.0	22.0	154	303
14644.887	V	48.7	-4.3	44.4	54.0	9.6	194	0
14644.901	H	43.3	-4.3	39.0	54.0	15.0	151	1
17085.664	H	40.3	-1.4	38.9	54.0	15.1	193	359
17085.664	V	40.7	-1.4	39.3	54.0	14.7	119	346
19398.582	V	41.1	-15.9	25.2	54.0	28.8	175	142
19492.364	H	41.1	-15.9	25.2	54.0	28.8	178	284
21942.964	V	39.4	-13.4	26.0	54.0	28.0	198	25
21949.586	H	39.4	-13.3	26.1	54.0	27.9	155	60

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 55 of 106
Seite 55 von 106

Table 28: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1288.638	V	66.9	-17.3	49.6	74.0	24.4	108	46
1475.762	H	60.5	-17.3	43.2	74.0	30.8	109	77
1800.038	V	64.7	-17.4	47.3	74.0	26.7	100	68
2479.986	H	61.2	-13.7	47.3	74.0	26.7	102	318
2567.973	V	64.4	-13.2	51.2	74.0	22.8	169	54
7200.430	H	54.0	0.8	54.8	74.0	19.2	197	232
7440.031	V	57.0	0.3	57.3	74.0	16.7	105	335
12376.121	V	50.2	-5.3	44.9	74.0	29.1	160	352
12398.980	H	51.9	-5.3	46.6	74.0	27.4	192	344
14881.310	V	60.1	-3.6	56.5	74.0	17.5	173	0
14881.476	H	53.9	-3.6	50.3	74.0	23.7	187	335
17358.546	H	49.6	-0.6	49.0	74.0	25.0	154	311
17358.584	V	51.0	-0.6	50.4	74.0	23.6	190	22
19810.932	V	55.0	-15.7	39.3	74.0	34.7	161	259
19812.664	H	54.8	-15.7	39.1	74.0	34.9	155	126
22267.210	V	53.3	-13.2	40.1	74.0	33.9	191	133
22336.864	H	52.9	-13.2	39.7	74.0	34.3	190	70

Note: Level PK = Reading PK + Factor

Table 29: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT1

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1288.638	V	47.7	-17.3	30.4	54.0	23.6	108	46
1475.762	H	45.3	-17.3	28.0	54.0	26.0	109	77
1800.038	V	47.5	-17.4	30.1	54.0	23.9	100	68
2479.986	H	51.8	-13.7	38.1	54.0	15.9	102	318
2567.973	V	57.6	-13.2	44.4	54.0	9.6	169	54
7200.430	H	40.6	0.8	41.4	54.0	12.6	197	232
7440.031	V	45.7	0.3	46.0	54.0	8.0	105	335
12376.121	V	36.1	-5.3	30.8	54.0	23.2	160	352
12398.980	H	38.6	-5.3	33.3	54.0	20.7	192	344
14881.310	V	51.0	-3.6	47.4	54.0	6.6	173	0
14881.476	H	40.3	-3.6	36.7	54.0	17.3	187	335
17358.546	H	35.8	-0.6	35.2	54.0	18.8	154	311
17358.584	V	37.4	-0.6	36.8	54.0	17.2	190	22
19810.932	V	40.7	-15.7	25.0	54.0	29.0	161	259
19812.664	H	40.7	-15.7	25.0	54.0	29.0	155	126
22267.210	V	39.0	-13.2	25.8	54.0	28.2	191	133
22336.864	H	38.9	-13.2	25.7	54.0	28.3	190	70

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 56 of 106
Seite 56 von 106

Table 30: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1286.990	V	66.9	-17.3	49.6	74.0	24.4	106	43
2401.960	V	61.7	-14.2	47.5	74.0	26.5	141	273
2401.974	H	60.2	-14.2	46.1	74.0	27.9	140	229
2567.934	H	58.9	-13.2	45.7	74.0	28.3	122	348
2567.974	V	69.4	-13.2	56.2	74.0	17.8	167	52
7909.792	V	52.9	1.6	54.4	74.0	19.6	105	36
12009.140	V	53.8	-3.5	50.3	74.0	23.7	115	349
14410.974	V	57.5	-3.9	53.6	74.0	20.4	187	36
14411.014	H	58.7	-3.9	54.8	74.0	19.2	182	0
16812.722	H	55.1	-2.0	53.1	74.0	20.9	135	9
16812.800	V	55.7	-2.0	53.7	74.0	20.3	103	351
19189.984	H	55.1	-15.8	39.3	74.0	34.7	172	260
19204.802	V	54.4	-15.8	38.6	74.0	35.4	111	199
21595.830	V	53.0	-13.6	39.4	74.0	34.6	191	43
21648.080	H	53.0	-13.6	39.4	74.0	34.6	188	135

Note: Level PK = Reading PK + Factor

Table 31: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1286.990	V	48.5	-17.3	31.2	54.0	22.8	106	43
2401.960	V	49.1	-14.2	34.9	54.0	19.1	141	273
2401.974	H	48.3	-14.2	34.1	54.0	19.9	140	229
2567.934	H	51.3	-13.2	38.1	54.0	15.9	122	348
2567.974	V	58.7	-13.2	45.5	54.0	8.5	167	52
7909.792	V	39.5	1.6	41.1	54.0	12.9	105	36
12009.140	V	39.8	-3.5	36.3	54.0	17.7	115	349
14410.974	V	47.1	-3.9	43.2	54.0	10.8	187	36
14411.014	H	44.9	-3.9	41.0	54.0	13.0	182	0
16812.722	H	41.3	-2.0	39.3	54.0	14.7	135	9
16812.800	V	41.8	-2.0	39.8	54.0	14.2	103	351
19189.984	H	40.8	-15.8	25.0	54.0	29.0	172	260
19204.802	V	40.6	-15.8	24.8	54.0	29.2	111	199
21595.830	V	39.0	-13.6	25.4	54.0	28.6	191	43
21648.080	H	39.1	-13.6	25.5	54.0	28.5	188	135

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 57 of 106
Seite 57 von 106

Table 32: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1268.981	V	65.5	-17.4	48.2	74.0	25.8	189	88
1799.803	V	64.4	-17.4	47.0	74.0	27.0	108	77
2417.032	H	60.2	-14.2	46.0	74.0	28.0	146	231
2567.961	V	66.5	-13.2	53.3	74.0	20.7	161	56
3762.109	H	56.4	-9.5	47.0	74.0	27.0	154	206
7197.978	V	54.5	0.8	55.4	74.0	18.6	146	70
9657.642	H	50.5	-7.0	43.5	74.0	30.5	176	213
12206.175	V	51.9	-4.6	47.3	74.0	26.7	115	294
14644.835	H	57.6	-4.3	53.3	74.0	20.7	173	350
14644.861	V	59.8	-4.3	55.5	74.0	18.5	190	0
17088.670	H	54.5	-1.4	53.1	74.0	20.9	135	357
17088.700	V	54.1	-1.4	52.7	74.0	21.3	100	345
19383.596	H	54.9	-15.9	39.0	74.0	35.0	198	240
19510.710	V	55.7	-15.9	39.8	74.0	34.2	197	78
21913.828	V	53.8	-13.4	40.4	74.0	33.6	183	149
21947.054	H	54.1	-13.3	40.7	74.0	33.3	140	296

Note: Level PK = Reading PK + Factor

Table 33: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1268.981	V	46.5	-17.4	29.1	54.0	24.9	189	88
1799.803	V	53.4	-17.4	36.0	54.0	18.0	108	77
2417.032	H	44.7	-14.2	30.5	54.0	23.5	146	231
2567.961	V	56.2	-13.2	43.0	54.0	11.0	161	56
3762.109	H	42.8	-9.5	33.3	54.0	20.7	154	206
7197.978	V	40.6	0.8	41.4	54.0	12.6	146	70
9657.642	H	36.3	-7.0	29.3	54.0	24.7	176	213
12206.175	V	38.2	-4.6	33.6	54.0	20.4	115	294
14644.835	H	43.3	-4.3	39.0	54.0	15.0	173	350
14644.861	V	49.0	-4.3	44.7	54.0	9.3	190	0
17088.670	H	40.6	-1.4	39.2	54.0	14.8	135	357
17088.700	V	40.6	-1.4	39.2	54.0	14.8	100	345
19383.596	H	41.2	-15.9	25.3	54.0	28.7	198	240
19510.710	V	41.0	-15.9	25.1	54.0	28.9	197	78
21913.828	V	39.5	-13.4	26.1	54.0	27.9	183	149
21947.054	H	39.5	-13.3	26.2	54.0	27.8	140	296

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 58 of 106
Seite 58 von 106

Table 34: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1250.646	V	66.0	-17.4	48.6	74.0	25.4	121	89
1799.715	V	64.6	-17.4	47.2	74.0	26.8	100	78
2235.360	V	58.1	-14.6	43.5	74.0	30.5	182	348
2567.973	H	61.3	-13.2	48.1	74.0	25.9	106	350
2567.981	V	66.5	-13.2	53.3	74.0	20.7	169	55
7279.028	H	54.2	1.1	55.3	74.0	18.7	121	85
12398.938	H	50.0	-5.3	44.7	74.0	29.3	103	316
12401.190	V	54.2	-5.3	48.9	74.0	25.1	186	347
14878.961	H	57.6	-3.6	54.0	74.0	20.0	198	353
14881.312	V	60.5	-3.6	56.9	74.0	17.1	184	0
17351.972	V	49.0	-0.6	48.4	74.0	25.6	160	177
17358.604	H	49.4	-0.6	48.8	74.0	25.2	154	310
19831.028	H	54.9	-15.7	39.2	74.0	34.8	195	61
19906.358	V	55.0	-15.5	39.5	74.0	34.5	107	336
22330.260	H	52.8	-13.2	39.6	74.0	34.4	190	285
22371.810	V	53.1	-13.2	39.9	74.0	34.1	187	315

Note: Level PK = Reading PK + Factor

Table 35: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT2

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1250.646	V	46.9	-17.4	29.5	54.0	24.5	121	89
1799.715	V	50.1	-17.4	32.7	54.0	21.3	100	78
2235.360	V	44.6	-14.6	30.0	54.0	24.0	182	348
2567.973	H	53.6	-13.2	40.4	54.0	13.6	106	350
2567.981	V	56.9	-13.2	43.7	54.0	10.3	169	55
7279.028	H	40.7	1.1	41.8	54.0	12.2	121	85
12398.938	H	36.2	-5.3	30.9	54.0	23.1	103	316
12401.190	V	41.1	-5.3	35.8	54.0	18.2	186	347
14878.961	H	43.7	-3.6	40.1	54.0	13.9	198	353
14881.312	V	51.0	-3.6	47.4	54.0	6.6	184	0
17351.972	V	35.2	-0.6	34.6	54.0	19.4	160	177
17358.604	H	35.8	-0.6	35.2	54.0	18.8	154	310
19831.028	H	40.8	-15.7	25.1	54.0	28.9	195	61
19906.358	V	40.6	-15.5	25.1	54.0	28.9	107	336
22330.260	H	39.1	-13.2	25.9	54.0	28.1	190	285
22371.810	V	39.1	-13.2	25.9	54.0	28.1	187	315

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

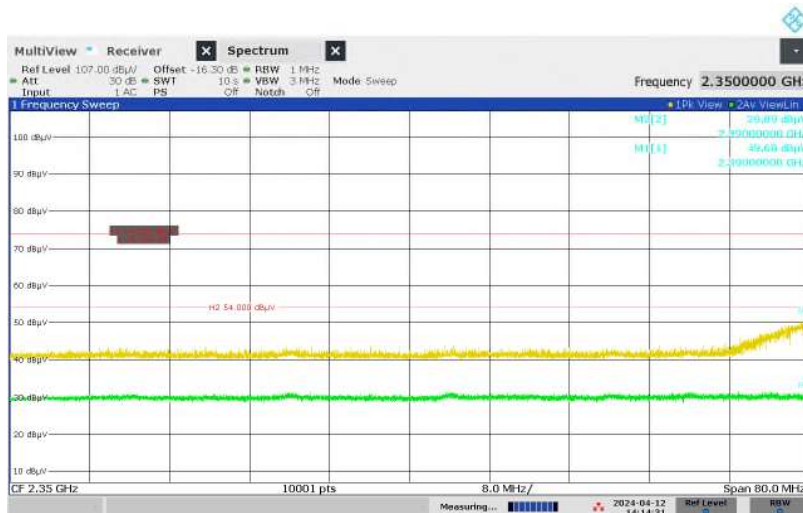
Page 59 of 106
Seite 59 von 106

Table 36: Restricted-band Band-edge, Original Wireless Communication, ANT1

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBμV/m]	Level PK [dBμV/m]	Limit AV [dBμV/m]	Limit PK [dBμV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	29.89	49.68	54	74	24.11	24.32
2402	V	29.94	48.39	54	74	24.06	25.61
2480	H	32.98	61.70	54	74	21.02	12.30
2480	V	33.98	59.06	54	74	20.02	14.94

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBμV/m is calculated as follows: Average limit = $20 \times \log_{10}(500\mu\text{V/m})$.
Peak limit in dBμV/m is calculated as follows: Peak limit = Average limit + 20dB.

Figure 30: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2402MHz, Horizontal Antenna Orientation, ANT1



02:14:31 PM 04/12/2024

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 60 of 106
Seite 60 von 106

Figure 31: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2402MHz, Vertical Antenna Orientation, ANT1

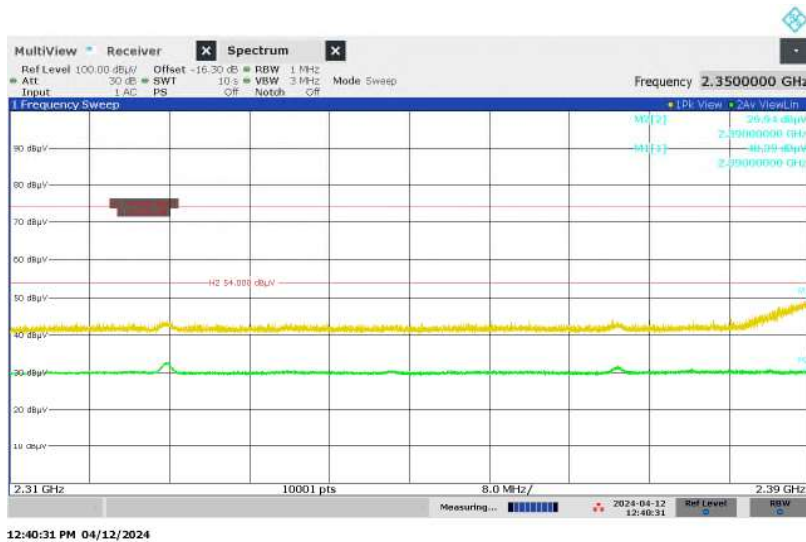


Figure 32: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2480MHz, Horizontal Antenna Orientation, ANT1

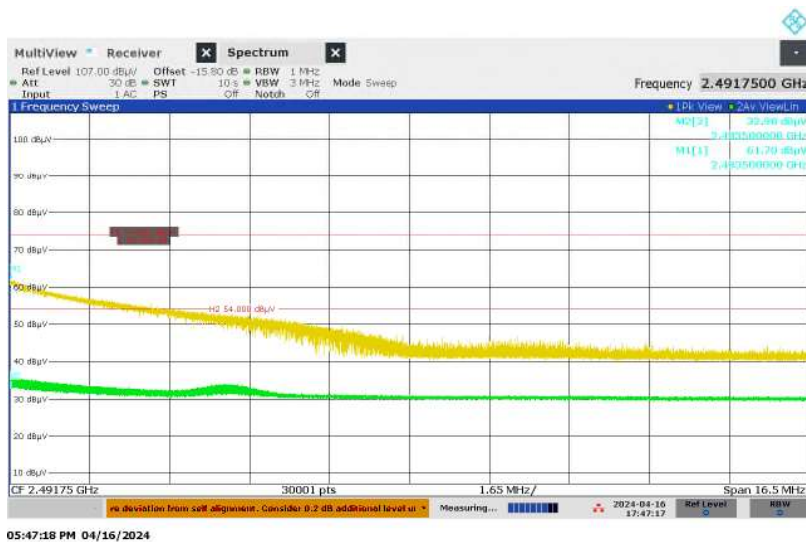


Figure 33: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2480MHz, Vertical Antenna Orientation, ANT1



Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 62 of 106
Seite 62 von 106

Table 37: Restricted-band Band-edge, Original Wireless Communication, ANT2

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBµV/m]	Level PK [dBµV/m]	Limit AV [dBµV/m]	Limit PK [dBµV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	31.00	52.51	54	74	23.00	21.49
2402	V	31.02	51.13	54	74	22.98	22.87
2480	H	36.77	64.62	54	74	17.23	9.38
2480	V	35.98	62.05	54	74	18.02	11.95

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBµV/m is calculated as follows: Average limit = $20 \times \log_{10}(500\mu\text{V/m})$.
Peak limit in dBµV/m is calculated as follows: Peak limit = Average limit + 20dB.

Figure 34: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2402MHz, Horizontal Antenna Orientation, ANT2



02:46:15 PM 04/12/2024

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 63 of 106
Seite 63 von 106

Figure 35: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2402MHz, Vertical Antenna Orientation, ANT2

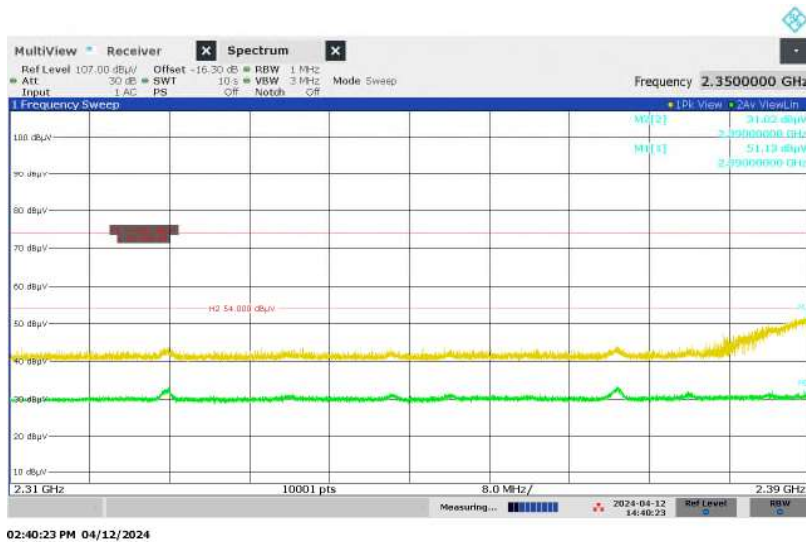


Figure 36: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2480MHz, Horizontal Antenna Orientation, ANT2



Figure 37: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2480MHz, Vertical Antenna Orientation, ANT2



Part 2: Simultaneous Transmission

Pattern 1: Original Wireless Communication + WLAN 5GHz + Bluetooth Classic

Table 38: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic

Freq. [MHz]	Antenna Orient.	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Height [cm]	Angle [°]
47.994	V	57.5	-24.6	32.9	40.0	7.1	101	125
62.497	H	56.7	-25.0	31.7	40.0	8.3	228	258
62.509	V	64.7	-25.0	39.7	40.0	0.3 (*)	100	202
94.495	H	57.8	-24.8	33.0	43.5	10.5	205	194
94.497	V	56.3	-24.8	31.5	43.5	12.0	101	173
144.000	H	56.0	-22.0	34.0	43.5	9.5	239	176
327.089	H	49.7	-20.1	29.6	46.0	16.4	105	272
474.167	H	54.6	-16.0	38.6	46.0	7.4	139	93
500.005	V	52.8	-15.6	37.2	46.0	8.8	100	188
600.003	V	51.6	-14.1	37.5	46.0	8.5	116	4

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 66 of 106
Seite 66 von 106

Table 39: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1284.944	V	66.3	-17.3	49.0	74.0	25.0	135	73
1512.806	H	60.9	-17.2	43.7	74.0	30.3	135	116
1799.868	V	65.7	-17.4	48.3	74.0	25.7	130	63
2568.001	V	68.2	-13.1	55.1	74.0	18.9	196	43
4824.492	V	57.0	-6.3	50.7	74.0	23.3	162	211
4826.428	H	56.4	-6.3	50.1	74.0	23.9	135	119
7191.219	H	55.7	0.9	56.6	74.0	17.4	156	328
7964.570	V	55.4	1.7	57.0	74.0	17.0	200	305
8520.176	V	64.0	-9.3	54.7	74.0	19.3	129	260
10359.667	H	62.7	-7.7	55.0	74.0	19.0	159	69
10359.727	V	66.1	-7.7	58.4	74.0	15.6	135	59
14413.295	H	58.1	-6.8	51.3	74.0	22.7	176	356
14413.357	V	59.5	-6.8	52.7	74.0	21.3	113	287
16812.684	V	56.3	-5.7	50.6	74.0	23.4	105	348
16812.732	H	55.7	-5.7	50.0	74.0	24.0	109	2
19208.280	H	54.4	-15.8	38.6	74.0	35.4	123	141
19209.500	V	55.0	-15.8	39.2	74.0	34.8	187	351
20727.300	V	54.0	-14.4	39.6	74.0	34.4	194	68
20728.420	H	53.4	-14.4	39.0	74.0	35.0	198	69
21616.770	V	52.4	-13.6	38.8	74.0	35.2	183	315
21618.990	H	51.9	-13.6	38.3	74.0	35.7	178	68
24003.440	V	51.8	-12.8	39.0	74.0	35.0	116	332
24035.110	H	52.2	-12.8	39.4	74.0	34.6	123	339

Note: Level PK = Reading PK + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 67 of 106
Seite 67 von 106

Table 40: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1284.944	V	46.2	-17.3	28.9	54.0	25.1	135	73
1512.806	H	47.7	-17.2	30.5	54.0	23.5	135	116
1799.868	V	51.8	-17.4	34.4	54.0	19.6	130	63
2568.001	V	57.0	-13.1	43.9	54.0	10.1	196	43
4824.492	V	42.4	-6.3	36.1	54.0	17.9	162	211
4826.428	H	42.4	-6.3	36.1	54.0	17.9	135	119
7191.219	H	41.1	0.9	42.0	54.0	12.0	156	328
7964.570	V	40.5	1.7	42.2	54.0	11.8	200	305
8520.176	V	36.9	-9.3	27.6	54.0	26.4	129	260
10359.667	H	47.9	-7.7	40.2	54.0	13.8	159	69
10359.727	V	51.1	-7.7	43.4	54.0	10.6	135	59
14413.295	H	44.2	-6.8	37.4	54.0	16.6	176	356
14413.357	V	45.4	-6.8	38.6	54.0	15.4	113	287
16812.684	V	42.1	-5.7	36.4	54.0	17.6	105	348
16812.732	H	41.8	-5.7	36.1	54.0	17.9	109	2
19208.280	H	40.7	-15.8	24.9	54.0	29.1	123	141
19209.500	V	40.7	-15.8	24.9	54.0	29.1	187	351
20727.300	V	39.8	-14.4	25.4	54.0	28.6	194	68
20728.420	H	39.6	-14.4	25.2	54.0	28.8	198	69
21616.770	V	38.6	-13.6	25.0	54.0	29.0	183	315
21618.990	H	38.5	-13.6	24.9	54.0	29.1	178	68
24003.440	V	38.1	-12.8	25.3	54.0	28.7	116	332
24035.110	H	38.0	-12.8	25.2	54.0	28.8	123	339

Note: Level AV = Reading AV + Factor

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 68 of 106
Seite 68 von 106

Table 41: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Classic

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1215.715	H	60.0	-18.9	41.1	74.0	32.9	117	349
1281.721	V	67.7	-18.8	48.9	74.0	25.1	140	86
1799.998	V	65.9	-19.3	46.6	74.0	27.4	100	67
4279.953	V	60.3	-10.2	50.1	74.0	23.9	100	342
7440.071	V	58.2	-2.3	55.9	74.0	18.1	100	348

Note: Level PK = Reading PK + Factor

Table 42: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Classic

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1215.715	H	46.7	-18.9	27.8	54.0	26.2	117	349
1281.721	V	46.1	-18.8	27.3	54.0	26.7	140	86
1799.998	V	54.0	-19.3	34.7	54.0	19.3	100	67
4279.953	V	44.8	-10.2	34.6	54.0	19.4	100	342
7440.071	V	46.1	-2.3	43.8	54.0	10.2	100	348

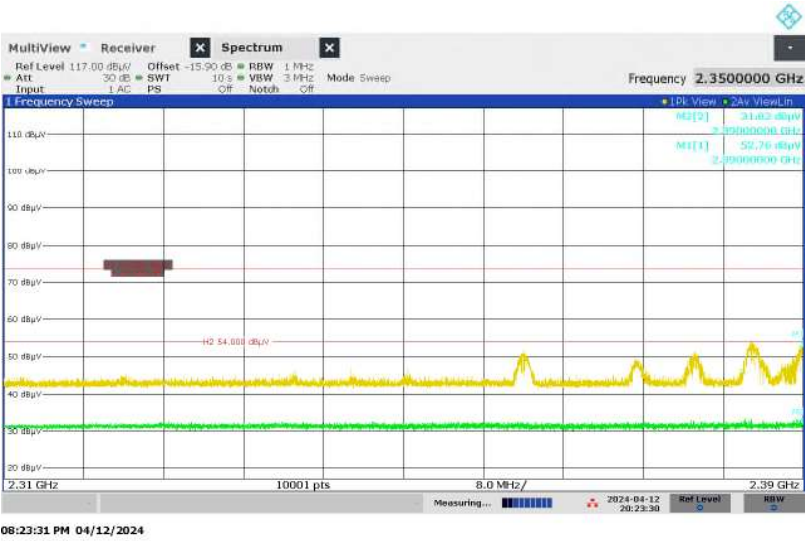
Note: Level AV = Reading AV + Factor

Table 43: Restricted-band Band-edge, Original Wireless Communication (ANT1) + WLAN 5GHz + Bluetooth Classic

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBµV/m]	Level PK [dBµV/m]	Limit AV [dBµV/m]	Limit PK [dBµV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	31.82	52.76	54	74	22.18	21.24
2402	V	31.83	47.25	54	74	22.17	26.75
2480	H	36.43	54.25	54	74	17.57	19.75
2480	V	36.10	56.59	54	74	17.90	17.41

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBµV/m is calculated as follows: Average limit = 20 x Log₁₀(500µV/m).
Peak limit in dBµV/m is calculated as follows: Peak limit = Average limit + 20dB.

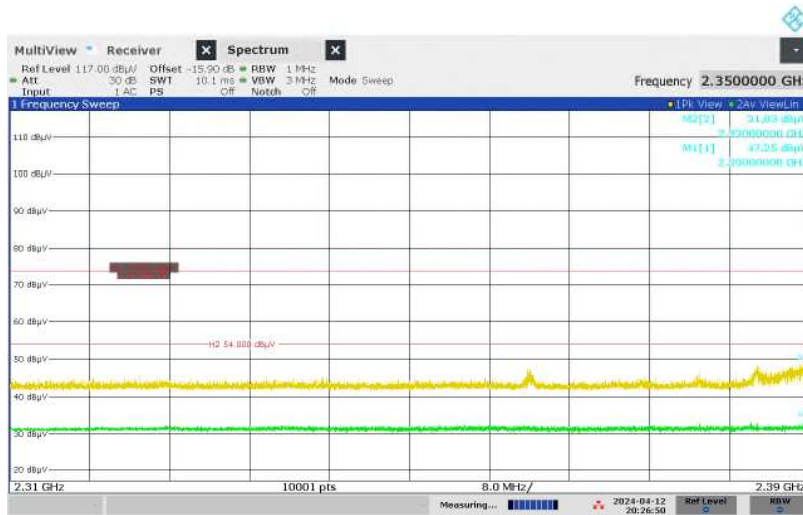
Figure 38: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic, Horizontal Antenna Orientation



Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

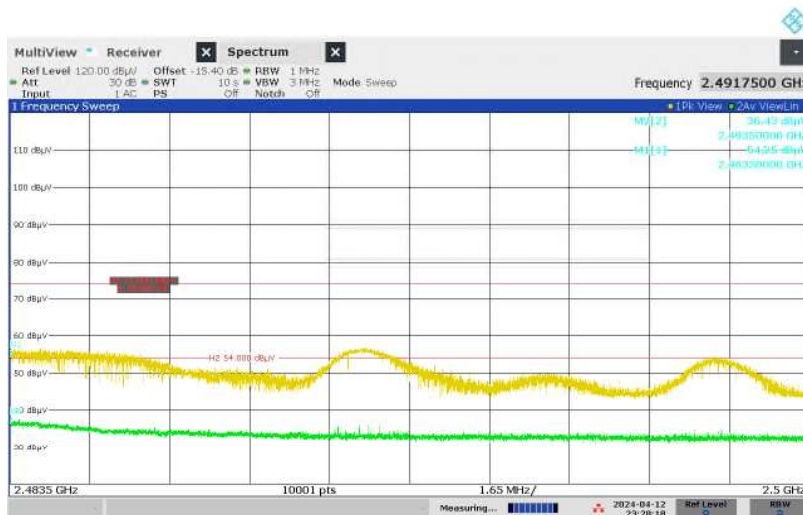
Page 70 of 106
Seite 70 von 106

Figure 39: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic, Vertical Antenna Orientation



08:26:50 PM 04/12/2024

Figure 40: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 5GHz + Bluetooth Classic, Horizontal Antenna Orientation



11:28:19 PM 04/12/2024

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 71 of 106
Seite 71 von 106

Figure 41: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 5GHz + Bluetooth Classic, Vertical Antenna Orientation



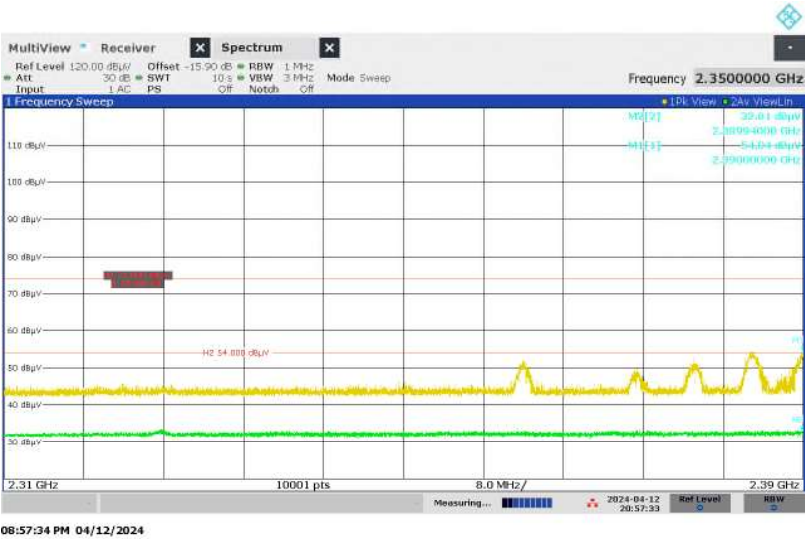
11:30:39 PM 04/12/2024

Table 44: Restricted-band Band-edge, Original Wireless Communication (ANT2) + WLAN 5GHz + Bluetooth Classic

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBµV/m]	Level PK [dBµV/m]	Limit AV [dBµV/m]	Limit PK [dBµV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	32.81	54.04	54	74	21.19	19.96
2402	V	32.74	51.72	54	74	21.26	22.28
2480	H	36.40	50.56	54	74	17.60	23.44
2480	V	36.54	63.71	54	74	17.46	10.29

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBµV/m is calculated as follows: Average limit = 20 x Log₁₀(500µV/m).
Peak limit in dBµV/m is calculated as follows: Peak limit = Average limit + 20dB.

Figure 42: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 5GHz + Bluetooth Classic, Horizontal Antenna Orientation



Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

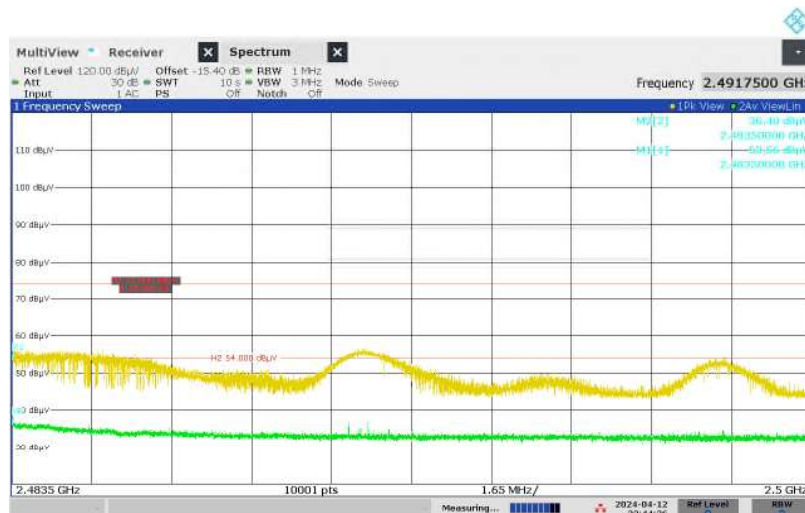
Page 73 of 106
Seite 73 von 106

Figure 43: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 5GHz + Bluetooth Classic, Vertical Antenna Orientation



08:59:36 PM 04/12/2024

Figure 44: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Classic, Horizontal Antenna Orientation

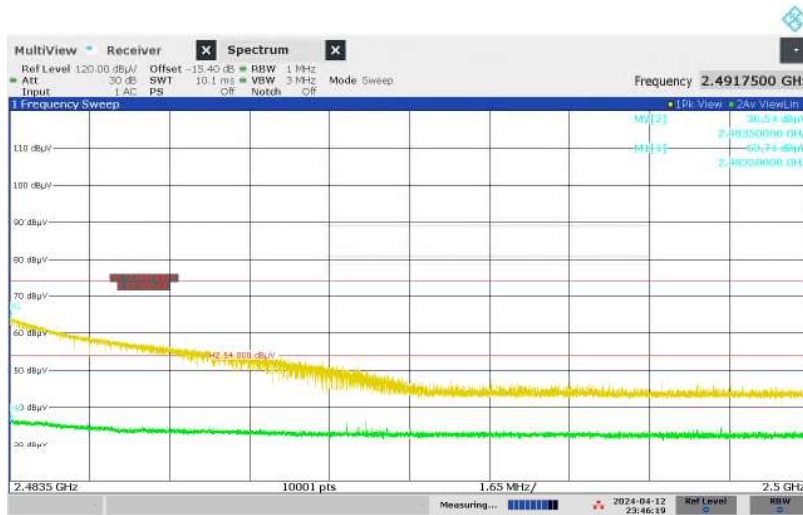


11:44:26 PM 04/12/2024

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 74 of 106
Seite 74 von 106

Figure 45: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Classic, Vertical Antenna Orientation



11:46:20 PM 04/12/2024

Pattern 2: Original Wireless Communication + WLAN 5GHz + Bluetooth Low Energy

Table 45: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy

Freq. [MHz]	Antenna Orient.	Reading QP [dBµV]	Factor [dB(1/m)]	Level QP [dBµV/m]	Limit [dBµV/m]	Margin QP [dB]	Height [cm]	Angle [°]
46.867	V	58.3	-24.5	33.8	40.0	6.2	100	127
62.500	V	64.9	-25.0	39.9	40.0	0.1 (*)	100	202
62.505	H	56.5	-25.0	31.5	40.0	8.5	229	252
144.000	V	52.8	-22.0	30.8	43.5	12.7	100	222
144.001	H	55.8	-22.0	33.8	43.5	9.7	239	171
312.001	H	55.9	-20.2	35.7	46.0	10.3	116	1
500.002	V	52.3	-15.6	36.7	46.0	9.3	100	183
500.004	H	54.3	-15.6	38.7	46.0	7.3	194	165
600.003	V	51.5	-14.1	37.4	46.0	8.6	116	9

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 76 of 106
Seite 76 von 106

Table 46: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1284.079	V	67.5	-17.3	50.2	74.0	23.8	100	43
1486.137	V	60.3	-17.2	43.1	74.0	30.9	131	74
1800.030	V	64.9	-17.4	47.5	74.0	26.5	126	63
2567.975	V	67.8	-13.1	54.7	74.0	19.3	180	43
4803.979	V	56.0	-6.4	49.6	74.0	24.4	162	306
7191.444	H	55.1	0.9	56.1	74.0	17.9	183	255
7206.384	V	55.4	1.0	56.2	74.0	17.8	162	5
7859.629	H	54.5	1.7	56.2	74.0	17.8	198	9
10359.682	V	64.2	-7.7	56.5	74.0	17.5	100	42
10359.732	H	61.3	-7.7	53.6	74.0	20.4	100	136
12010.546	V	56.7	-5.2	51.5	74.0	22.5	120	260
14411.407	H	61.5	-6.8	54.7	74.0	19.3	191	359
14411.590	V	60.8	-6.8	54.0	74.0	20.0	114	41
16812.632	V	56.4	-5.7	50.7	74.0	23.3	107	348
16812.644	H	57.2	-5.7	51.5	74.0	22.5	122	2
19212.620	H	54.0	-15.8	38.2	74.0	35.8	145	346
19216.780	V	53.8	-15.8	38.0	74.0	36.0	177	347
20718.880	H	54.0	-14.4	39.6	74.0	34.4	162	69
20724.870	V	53.4	-14.4	39.0	74.0	35.0	196	68
21618.970	H	51.8	-13.6	38.2	74.0	35.8	143	305
21623.430	V	52.0	-13.6	38.4	74.0	35.6	103	244
24013.370	H	51.2	-12.8	38.4	74.0	35.6	102	232

Note: Level PK = Reading PK + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 77 of 106
Seite 77 von 106

Table 47: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1284.079	V	47.4	-17.3	30.1	54.0	23.9	100	43
1486.137	V	44.7	-17.2	27.5	54.0	26.5	131	74
1800.030	V	51.8	-17.4	34.4	54.0	19.6	126	63
2567.975	V	58.0	-13.1	44.9	54.0	9.1	180	43
4803.979	V	43.0	-6.4	36.6	54.0	17.4	162	306
7191.444	H	41.1	0.9	42.0	54.0	12.0	183	255
7206.384	V	41.6	1.0	42.6	54.0	11.4	162	5
7859.629	H	40.6	1.7	42.3	54.0	11.7	198	9
10359.682	V	49.2	-7.7	41.5	54.0	12.5	100	42
10359.732	H	45.9	-7.7	38.2	54.0	15.8	100	136
12010.546	V	43.2	-5.2	38.0	54.0	16.0	120	260
14411.407	H	47.2	-6.8	40.4	54.0	13.6	191	359
14411.590	V	46.8	-6.8	40.0	54.0	14.0	114	41
16812.632	V	42.2	-5.7	36.5	54.0	17.5	107	348
16812.644	H	43.1	-5.7	37.4	54.0	16.6	122	2
19212.620	H	40.6	-15.8	24.8	54.0	29.2	145	346
19216.780	V	40.6	-15.8	24.8	54.0	29.2	177	347
20718.880	H	39.8	-14.4	25.4	54.0	28.6	162	69
20724.870	V	39.7	-14.4	25.3	54.0	28.7	196	68
21618.970	H	38.2	-13.6	24.6	54.0	29.4	143	305
21623.430	V	38.2	-13.6	24.6	54.0	29.4	103	244
24013.370	H	37.9	-12.8	25.1	54.0	28.9	102	232

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 78 of 106
Seite 78 von 106

Table 48: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1204.238	V	63.9	-18.9	45.0	74.0	29.0	113	49
1241.823	H	61.8	-18.9	42.9	74.0	31.1	163	300
1284.015	V	68.2	-18.8	49.4	74.0	24.6	174	67
1467.646	V	63.5	-19.2	44.3	74.0	29.7	153	9
1799.986	V	64.5	-19.3	45.2	74.0	28.8	196	66
4342.537	V	54.6	-9.9	44.7	74.0	29.3	181	49
7440.067	H	55.1	-2.3	52.8	74.0	21.2	100	259
7440.068	V	58.3	-2.3	56.0	74.0	18.0	100	349

Note: Level PK = Reading PK + Factor

Table 49: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1204.238	V	52.3	-18.9	33.4	54.0	20.6	113	49
1241.823	H	47.3	-18.9	28.4	54.0	25.6	163	300
1284.015	V	46.5	-18.8	27.7	54.0	26.3	174	67
1467.646	V	54.4	-19.2	35.2	54.0	18.8	153	9
1799.986	V	52.0	-19.3	32.7	54.0	21.3	196	66
4342.537	V	40.9	-9.9	31.0	54.0	23.0	181	49
7440.067	H	42.7	-2.3	40.4	54.0	13.6	100	259
7440.068	V	47.3	-2.3	45.0	54.0	9.0	100	349

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 79 of 106
Seite 79 von 106

Table 50: Restricted-band Band-edge, Original Wireless Communication (ANT1) + WLAN 5GHz + Bluetooth Low Energy

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBμV/m]	Level PK [dBμV/m]	Limit AV [dBμV/m]	Limit PK [dBμV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	32.32	51.20	54	74	21.68	22.80
2402	V	32.31	50.10	54	74	21.69	23.90
2480	H	37.13	70.00	54	74	16.87	4.00 (*)
2480	V	35.05	66.50	54	74	18.95	7.50

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBμV/m is calculated as follows: Average limit = $20 \times \log_{10}(500\mu\text{V/m})$.
Peak limit in dBμV/m is calculated as follows: Peak limit = Average limit + 20dB.

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Figure 46: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy, Horizontal Antenna Orientation

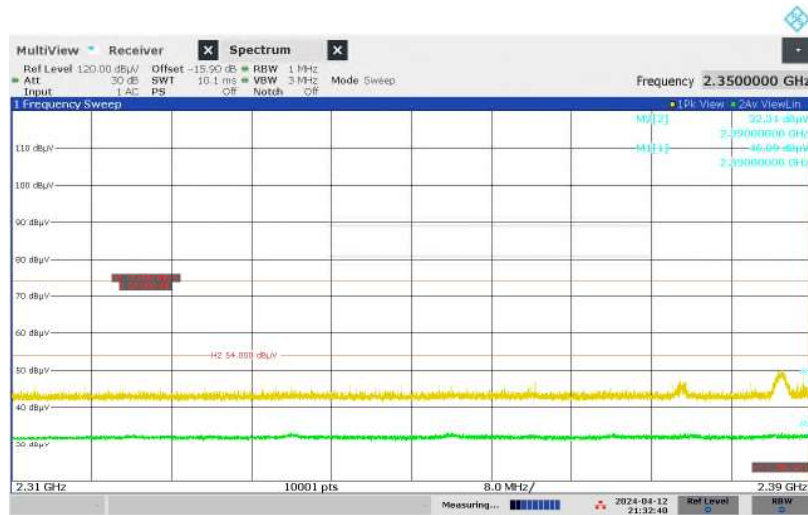


09:30:27 PM 04/12/2024

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 80 of 106
Seite 80 von 106

Figure 47: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy, Vertical Antenna Orientation



09:32:41 PM 04/12/2024

Figure 48: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy, Horizontal Antenna Orientation

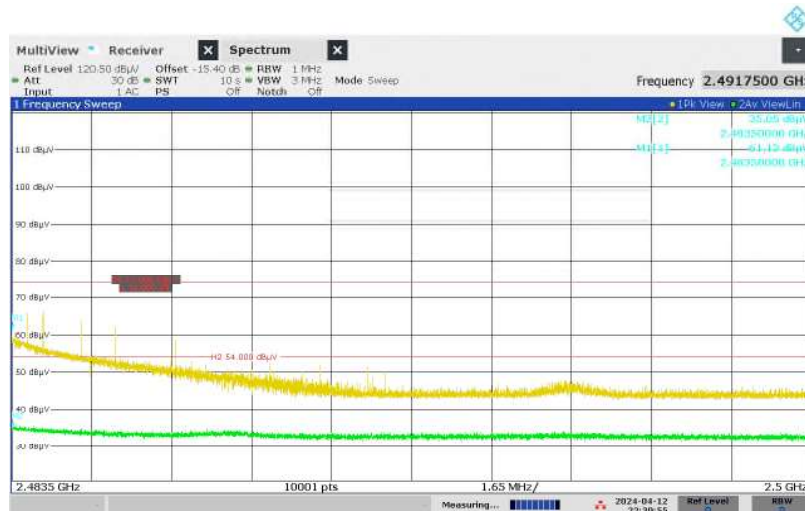


10:37:23 PM 04/12/2024

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 81 of 106
Seite 81 von 106

Figure 49: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy, Vertical Antenna Orientation



10:39:56 PM 04/12/2024

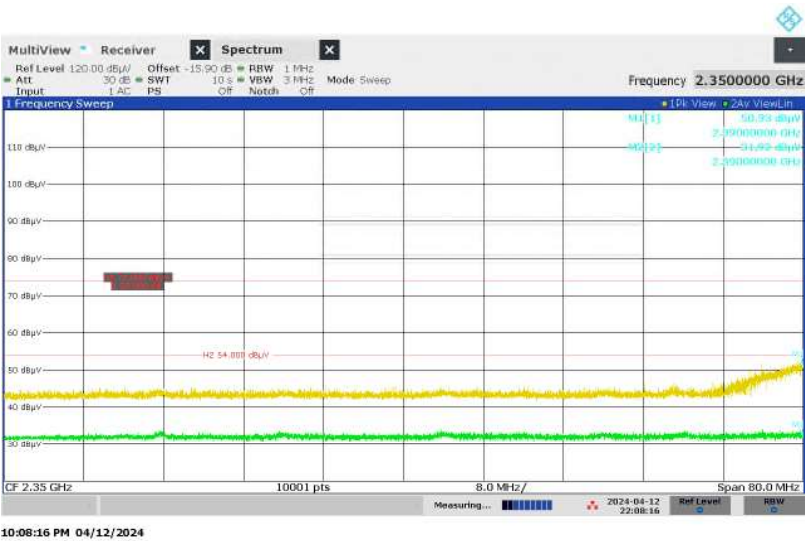
Table 51: Restricted-band Band-edge, Original Wireless Communication (ANT2) + WLAN 5GHz + Bluetooth Low Energy

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBµV/m]	Level PK [dBµV/m]	Limit AV [dBµV/m]	Limit PK [dBµV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	31.92	50.93	54	74	22.08	23.07
2402	V	32.77	49.04	54	74	21.23	24.96
2480	H	37.59	64.10	54	74	16.41	9.90
2480	V	37.10	69.80	54	74	16.90	4.20 (*)

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBµV/m is calculated as follows: Average limit = 20 x Log₁₀(500µV/m).
Peak limit in dBµV/m is calculated as follows: Peak limit = Average limit + 20dB.

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

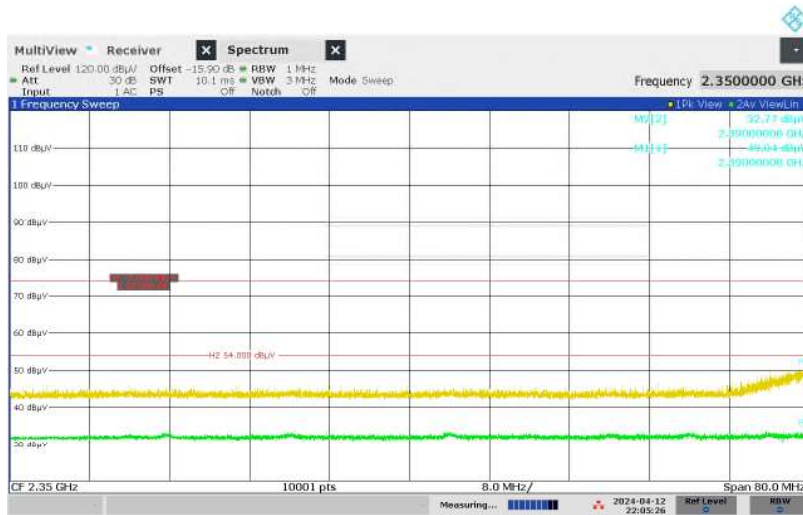
Figure 50: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy, Horizontal Antenna Orientation



Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

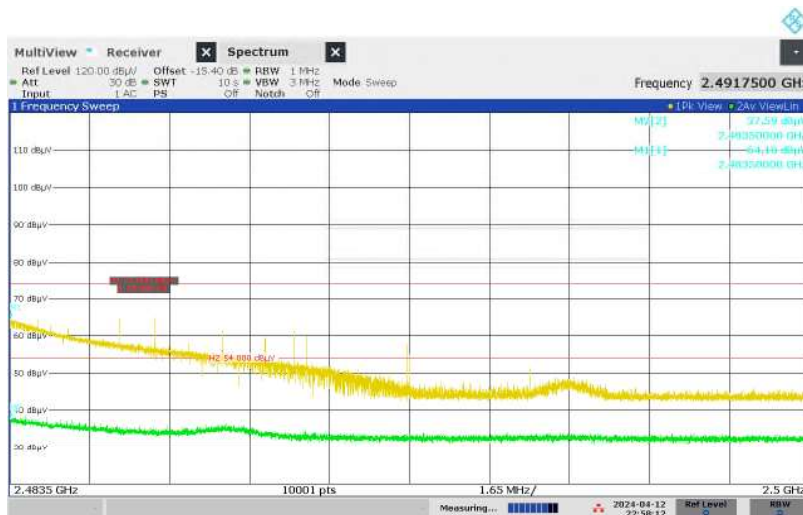
Page 83 of 106
Seite 83 von 106

Figure 51: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy, Vertical Antenna Orientation



10:05:26 PM 04/12/2024

Figure 52: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy, Horizontal Antenna Orientation

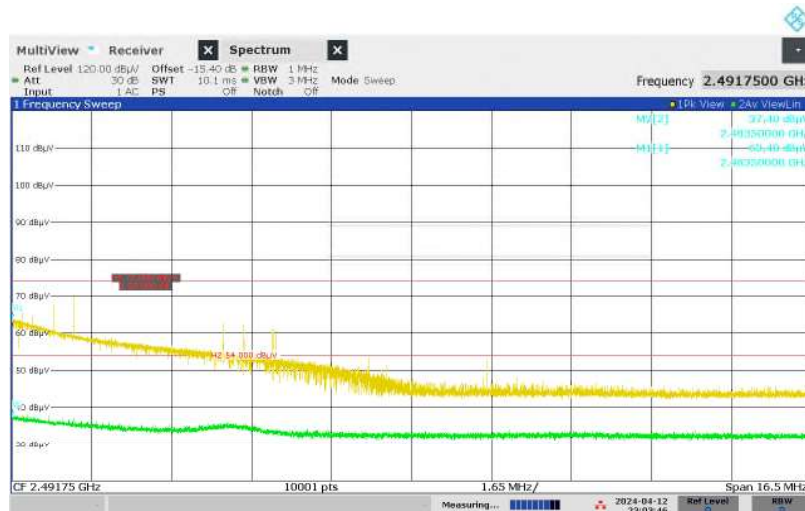


10:58:13 PM 04/12/2024

Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

Page 84 of 106
Seite 84 von 106

Figure 53: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy, Vertical Antenna Orientation



11:03:47 PM 04/12/2024

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 85 of 106
Seite 85 von 106

Pattern 3: Original Wireless Communication + WLAN 2.4GHz

Table 52: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz

Freq. [MHz]	Antenna Orient.	Reading QP [dBμV]	Factor [dB(1/m)]	Level QP [dBμV/m]	Limit [dBμV/m]	Margin QP [dB]	Height [cm]	Angle [°]
46.879	V	55.0	-24.5	30.5	40.0	9.5	100	133
62.498	H	57.8	-25.0	32.8	40.0	7.2	234	261
62.501	V	63.8	-25.0	38.8	40.0	1.2 (*)	100	178
94.497	H	59.2	-24.8	34.4	43.5	9.1	212	187
144.001	V	54.2	-22.0	32.2	43.5	11.3	101	213
144.003	H	54.8	-22.0	32.8	43.5	10.7	239	177
312.001	H	56.2	-20.2	36.0	46.0	10.0	111	1
474.160	H	54.9	-16.0	38.9	46.0	7.1	138	95
499.999	V	52.4	-15.6	36.8	46.0	9.2	101	183
600.005	V	51.3	-14.1	37.2	46.0	8.8	100	6

Note: Level QP = Reading QP + Factor

(*) The measured result is below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to determine compliance at a level of confidence of 95%. However, the measured result indicates a high probability that the tested product complies with the specification limit.

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 86 of 106
Seite 86 von 106

Table 53: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1268.678	V	61.2	-18.2	43.0	74.0	31.0	104	240
1799.849	V	63.7	-18.0	45.7	74.0	28.3	118	58
2235.340	V	61.8	-13.3	48.5	74.0	25.5	135	42
3423.912	V	58.3	-11.4	46.9	74.0	27.1	104	43
4792.867	H	56.0	-7.7	48.3	74.0	25.7	170	115
5318.050	V	55.8	-6.7	49.1	74.0	24.9	198	114
7273.978	H	54.7	-0.7	54.0	74.0	20.0	135	350
9608.666	V	56.0	-8.3	47.7	74.0	26.3	159	290
12009.134	H	53.9	-5.2	48.7	74.0	25.3	183	246
12010.986	V	56.7	-5.2	51.5	74.0	22.5	116	260
14411.048	V	61.1	-6.8	54.3	74.0	19.7	136	29
14411.056	H	60.2	-6.8	53.4	74.0	20.6	179	353
16812.692	H	56.7	-5.7	51.1	74.0	22.9	144	351
16812.702	V	59.0	-5.7	53.3	74.0	20.7	194	18
19212.750	V	53.9	-15.8	38.1	74.0	35.9	105	105
19218.360	H	54.7	-15.8	38.9	74.0	35.1	153	310
21622.560	V	51.3	-13.6	37.7	74.0	36.3	171	311
21623.060	H	51.3	-13.6	37.7	74.0	36.3	193	78
21718.820	H	51.5	-13.6	37.9	74.0	36.1	196	240
24015.050	V	52.0	-12.8	39.2	74.0	34.8	180	103
24015.730	H	51.3	-12.8	38.5	74.0	35.5	153	104

Note: Level PK = Reading PK + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 87 of 106
Seite 87 von 106

Table 54: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1268.678	V	45.8	-18.2	27.6	54.0	26.4	104	240
1799.849	V	50.8	-18.0	32.8	54.0	21.2	118	58
2235.340	V	46.0	-13.3	32.7	54.0	21.3	135	42
3423.912	V	48.4	-11.4	37.0	54.0	17.0	104	43
4792.867	H	41.9	-7.7	34.2	54.0	19.8	170	115
5318.050	V	41.2	-6.7	34.5	54.0	19.5	198	114
7273.978	H	40.8	-0.7	40.1	54.0	13.9	135	350
9608.666	V	43.1	-8.3	34.8	54.0	19.2	159	290
12009.134	H	40.7	-5.2	35.5	54.0	18.5	183	246
12010.986	V	42.9	-5.2	37.7	54.0	16.3	116	260
14411.048	V	46.6	-6.8	39.8	54.0	14.2	136	29
14411.056	H	46.0	-6.8	39.2	54.0	14.8	179	353
16812.692	H	42.4	-5.7	36.7	54.0	17.3	144	351
16812.702	V	44.1	-5.7	38.4	54.0	15.6	194	18
19212.750	V	40.2	-15.8	24.4	54.0	29.6	105	105
19218.360	H	40.2	-15.8	24.4	54.0	29.6	153	310
21622.560	V	37.8	-13.6	24.2	54.0	29.8	171	311
21623.060	H	37.8	-13.6	24.2	54.0	29.8	193	78
21718.820	H	38.1	-13.6	24.5	54.0	29.5	196	240
24015.050	V	37.5	-12.8	24.7	54.0	29.3	180	103
24015.730	H	37.5	-12.8	24.7	54.0	29.3	153	104

Note: Level AV = Reading AV + Factor

Test Report No.:
Prüfbericht-Nr.:

JP2494EX 001

Page 88 of 106
Seite 88 von 106

Table 55: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 2.4GHz

Freq. [MHz]	Antenna Orient.	Reading PK [dBμV]	Factor [dB(1/m)]	Level PK [dBμV/m]	Limit [dBμV/m]	Margin PK [dB]	Height [cm]	Angle [°]
1204.225	V	64.7	-19.0	45.7	74.0	28.3	109	50
1246.906	H	59.7	-18.9	40.8	74.0	33.2	118	165
1467.697	V	64.0	-19.1	44.9	74.0	29.1	200	15
1536.823	H	62.2	-19.0	43.2	74.0	30.8	118	359
1799.990	V	66.3	-19.1	47.2	74.0	26.8	144	70
4923.989	H	59.8	-8.8	51.0	74.0	23.0	100	163
4923.995	V	59.0	-8.8	50.2	74.0	23.8	184	200
7440.079	V	58.2	-3.1	55.1	74.0	18.9	113	348

Note: Level PK = Reading PK + Factor

Table 56: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 2.4GHz

Freq. [MHz]	Antenna Orient.	Reading AV [dBμV]	Factor [dB(1/m)]	Level AV [dBμV/m]	Limit [dBμV/m]	Margin AV [dB]	Height [cm]	Angle [°]
1204.225	V	53.3	-19.0	34.3	54.0	19.7	109	50
1246.906	H	46.1	-18.9	27.2	54.0	26.8	118	165
1467.697	V	51.0	-19.1	31.9	54.0	22.1	200	15
1536.823	H	48.8	-19.0	29.8	54.0	24.2	118	359
1799.990	V	54.2	-19.1	35.1	54.0	18.9	144	70
4923.989	H	54.1	-8.8	45.3	54.0	8.7	100	163
4923.995	V	51.5	-8.8	42.7	54.0	11.3	184	200
7440.079	V	45.7	-3.1	42.6	54.0	11.4	113	348

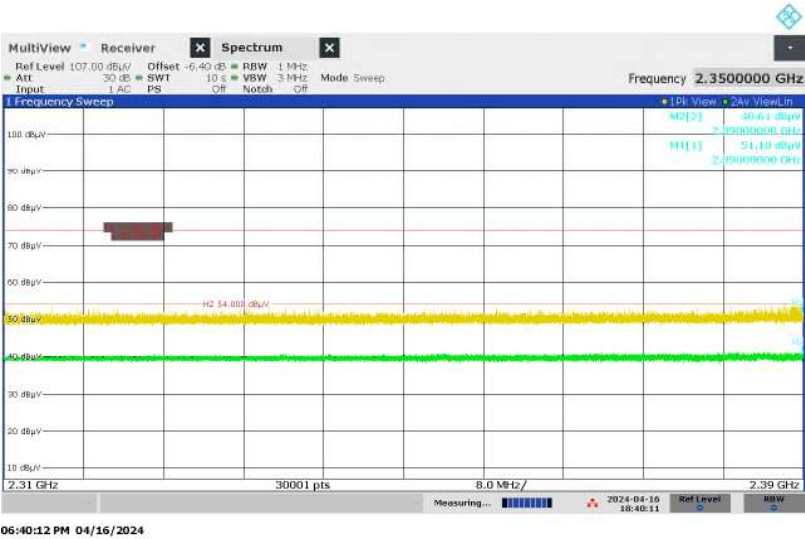
Note: Level AV = Reading AV + Factor

Table 57: Restricted-band Band-edge, Original Wireless Communication (ANT1) + WLAN 2.4GHz

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBµV/m]	Level PK [dBµV/m]	Limit AV [dBµV/m]	Limit PK [dBµV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	40.61	51.10	54	74	13.39	22.90
2402	V	39.23	51.19	54	74	14.77	22.81
2480	H	40.87	61.79	54	74	13.13	12.21
2480	V	40.83	61.74	54	74	13.17	12.26

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBµV/m is calculated as follows: Average limit = 20 x Log₁₀(500µV/m).
Peak limit in dBµV/m is calculated as follows: Peak limit = Average limit + 20dB.

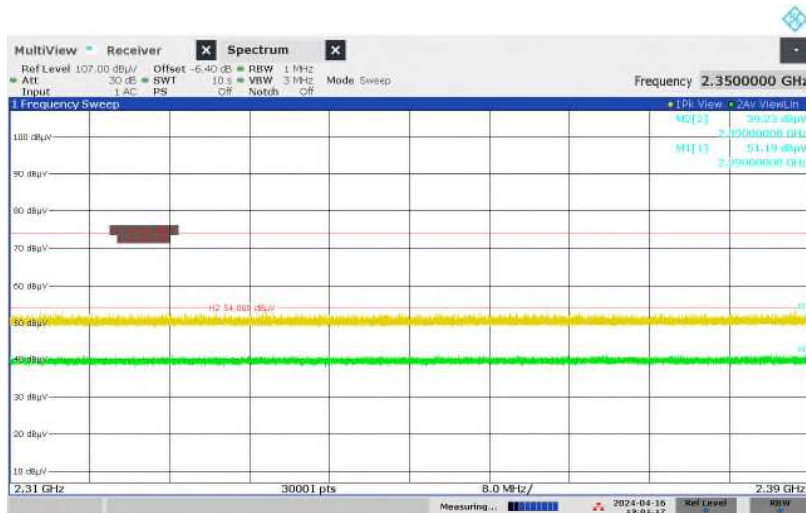
Figure 54: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz, Horizontal Antenna Orientation



Test Report No.: **JP2494EX 001**
Prüfbericht-Nr.:

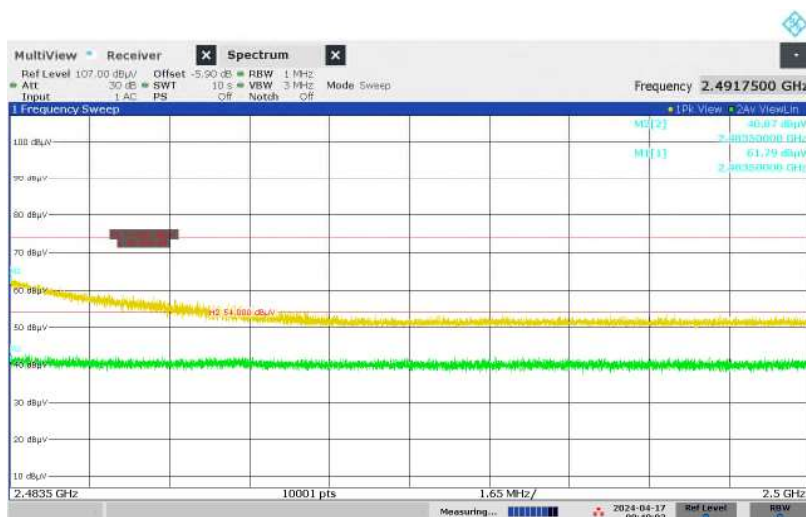
Page 90 of 106
Seite 90 von 106

Figure 55: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz, Vertical Antenna Orientation



07:01:17 PM 04/16/2024

Figure 56: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 2.4GHz, Horizontal Antenna Orientation



12:40:02 AM 04/17/2024

Figure 57: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 2.4GHz, Vertical Antenna Orientation

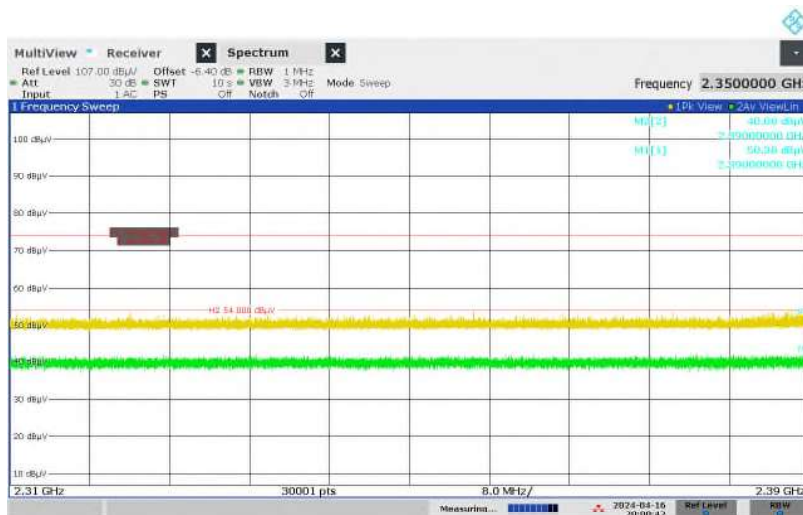


Table 58: Restricted-band Band-edge, Original Wireless Communication (ANT2) + WLAN 2.4GHz

Operating Frequency [MHz]	Antenna Orient.	Level AV [dBμV/m]	Level PK [dBμV/m]	Limit AV [dBμV/m]	Limit PK [dBμV/m]	Margin AV [dB]	Margin PK [dB]
2402	H	40.08	50.38	54	74	13.92	23.62
2402	V	40.08	54.92	54	74	13.92	19.08
2480	H	42.53	63.56	54	74	11.47	10.44
2480	V	41.62	63.07	54	74	12.38	10.93

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBμV/m is calculated as follows: Average limit = $20 \times \log_{10}(500\mu\text{V/m})$.
Peak limit in dBμV/m is calculated as follows: Peak limit = Average limit + 20dB.

Figure 58: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 2.4GHz, Horizontal Antenna Orientation



08:00:43 PM 04/16/2024

Figure 59: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 2.4GHz, Vertical Antenna Orientation

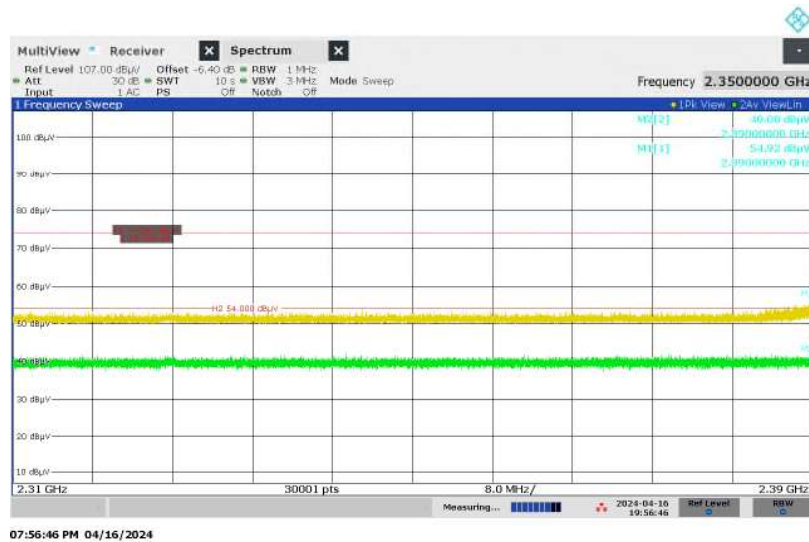


Figure 60: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 2.4GHz, Horizontal Antenna Orientation

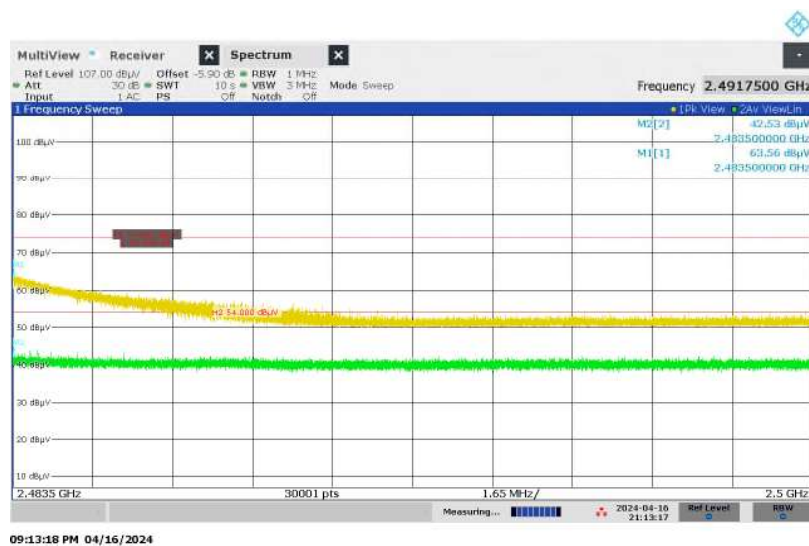


Figure 61: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 2.4GHz, Vertical Antenna Orientation



5.10 AC Power Line Conducted Emission of Transmitter

RESULT:

Pass

Date of testing: 2024-05-23

Ambient temperature: 24°C

Relative humidity: 56%

Atmospheric pressure: 1007hPa

Frequency range: 0.15 - 30MHz

Kind of test site: Shielded Room

Requirements:

FCC §15.207 and RSS-Gen §8.8

The AC power line conducted emission on any frequency within the band 150kHz to 30MHz shall not exceed the limits specified in FCC §15.207(a) and RSS-Gen §8.8 (table 4).

Test procedure:

ANSI C63.10-2020 §6.2 and RSS-Gen §8.1

The EUT was placed on an wooden table raised 80cm above the reference ground plane. A vertical conducting plane of the screened room was located 40cm to the rear of the EUT. The AC input port of the EUT was connected to a Line Impedance Stabilization Network (LISN).

The physical arrangement of the test system and associated cabling was varied to determine the effect on the EUT's emissions in amplitude and frequency in order to ensure that maximum emission amplitudes were attained.

The measurements were performed with a measurement receiver operating in the CISPR quasi-peak and average detection modes. The receiver's 6dB bandwidth was set to 9kHz.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned were small or not detectable.

Table 59: AC Power Line Conducted Emission, 0.15 - 30MHz, Quasi Peak and Average Data, Phase N (N) and L1 (L), Original Wireless Communication Transmission

Freq. [MHz]	Phase	Reading QP [dBµV]	Reading AV [dBµV]	Factor [dB]	Level QP [dBµV]	Level AV [dBµV]	Limit QP [dBµV]	Limit AV [dBµV]	Margin QP [dB]	Margin AV [dB]
0.157	N	36.9	33.2	9.6	46.5	42.8	65.6	55.6	19.1	12.8
0.484	N	29.7	26.7	9.7	39.4	36.4	56.3	46.3	16.9	9.9
2.000	N	30.3	29.7	9.8	40.1	39.5	56	46	15.9	6.5
4.000	N	31.1	25.7	9.8	40.9	35.5	56	46	15.1	10.5
9.387	N	30.0	23.4	10.0	40.0	33.4	60	50	20.0	16.6
14.000	N	32.0	28.9	10.1	42.1	39.0	60	50	17.9	11.0
18.000	N	30.8	26.9	10.1	40.9	37.0	60	50	19.1	13.0
0.157	L1	38.1	34.8	9.6	47.7	44.4	65.6	55.6	17.9	11.2
0.488	L1	29.9	24.7	9.7	39.6	34.4	56.2	46.2	16.6	11.8
2.000	L1	30.2	29.7	9.8	40.0	39.5	56	46	16.0	6.5
4.000	L1	31.0	25.5	9.8	40.8	35.3	56	46	15.2	10.7
9.359	L1	29.7	22.8	10.0	39.7	32.8	60	50	20.3	17.2
14.000	L1	31.2	28.1	10.1	41.3	38.2	60	50	18.7	11.8
18.000	L1	28.6	24.5	10.1	38.7	34.6	60	50	21.3	15.4

Note: Level QP = Reading QP + Factor, Level AV = Reading AV + Factor

7. List of Tables

Table 1: Test Summary	5
Table 2: List of Test and Measurement Equipment	7
Table 3: Measurement Uncertainty	10
Table 4: Setting of Test Frequencies	13
Table 5: Interfaces present on the EUT	16
Table 6: Auxiliary Equipment List	16
Table 7: EUT Serial Numbers	16
Table 8: Maximum Peak Output Power, ANT1	24
Table 9: Maximum Peak Output Power, ANT2	24
Table 10: 6dB Bandwidth, Original Wireless Communication, ANT1	26
Table 11: 6dB Bandwidth, Original Wireless Communication, ANT2	28
Table 12: 99% Bandwidth, Original Wireless Communication, ANT1	31
Table 13: 99% Bandwidth, Original Wireless Communication, ANT2	33
Table 14: Peak Power Spectral Density, Original Wireless Communication, ANT1	43
Table 15: Peak Power Spectral Density, Original Wireless Communication, ANT2	45
Table 16: Radiated Emissions, Quasi Peak Data, 9kHz - 30MHz, Original Wireless Communication, 2402MHz, ANT1	49
Table 17: Radiated Emissions, Quasi Peak Data, 9kHz - 30MHz, Original Wireless Communication, 2402MHz, ANT2	49
Table 18: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT1	49
Table 19: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT1	50
Table 20: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT1	50
Table 21: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT2	51
Table 22: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT2	51
Table 23: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT2	52
Table 24: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT1	53
Table 25: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT1	53
Table 26: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT1	54
Table 27: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT1	54
Table 28: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT1	55
Table 29: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT1	55
Table 30: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT2	56
Table 31: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2402MHz, ANT2	56
Table 32: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT2	57
Table 33: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2441MHz, ANT2	57
Table 34: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT2	58

Table 35: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication, 2480MHz, ANT2	58
Table 36: Restricted-band Band-edge, Original Wireless Communication, ANT1	59
Table 37: Restricted-band Band-edge, Original Wireless Communication, ANT2	62
Table 38: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic ..	65
Table 39: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic	66
Table 40: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic ..	67
Table 41: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Classic	68
Table 42: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Classic ..	68
Table 43: Restricted-band Band-edge, Original Wireless Communication (ANT1) + WLAN 5GHz + Bluetooth Classic	69
Table 44: Restricted-band Band-edge, Original Wireless Communication (ANT2) + WLAN 5GHz + Bluetooth Classic	72
Table 45: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy	75
Table 46: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy	76
Table 47: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy	77
Table 48: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy	78
Table 49: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy	78
Table 50: Restricted-band Band-edge, Original Wireless Communication (ANT1) + WLAN 5GHz + Bluetooth Low Energy	79
Table 51: Restricted-band Band-edge, Original Wireless Communication (ANT2) + WLAN 5GHz + Bluetooth Low Energy	82
Table 52: Radiated Emissions, Quasi Peak Data, 30MHz - 1GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz	85
Table 53: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz	86
Table 54: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz	87
Table 55: Radiated Emissions, Peak Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 2.4GHz	88
Table 56: Radiated Emissions, Average Data, 1 - 25GHz, Horizontal and Vertical Antenna Orientations, Original Wireless Communication (2480MHz, ANT2) + WLAN 2.4GHz	88
Table 57: Restricted-band Band-edge, Original Wireless Communication (ANT1) + WLAN 2.4GHz	89
Table 58: Restricted-band Band-edge, Original Wireless Communication (ANT2) + WLAN 2.4GHz	92
Table 59: AC Power Line Conducted Emission, 0.15 - 30MHz, Quasi Peak and Average Data, Phase N (N) and L1 (L), Original Wireless Communication Transmission	96

8. List of Figures

Figure 1: Block Diagram	14
-------------------------------	----

Figure 2: 6dB Bandwidth, Original Wireless Communication, Mode L (2402MHz), ANT1	26
Figure 3: 6dB Bandwidth, Original Wireless Communication, Mode M (2441MHz), ANT1	27
Figure 4: 6dB Bandwidth, Original Wireless Communication, Mode H (2480MHz), ANT1	27
Figure 5: 6dB Bandwidth, Original Wireless Communication, Mode L (2402MHz), ANT2	28
Figure 6: 6dB Bandwidth, Original Wireless Communication, Mode M (2441MHz), ANT2	29
Figure 7: 6dB Bandwidth, Original Wireless Communication, Mode H (2480MHz), ANT2	29
Figure 8: 99% Bandwidth, Original Wireless Communication, Mode L (2402MHz), ANT1	31
Figure 9: 99% Bandwidth, Original Wireless Communication, Mode M (2441MHz), ANT1	32
Figure 10: 99% Bandwidth, Original Wireless Communication, Mode H (2480MHz), ANT1	32
Figure 11: 99% Bandwidth, Original Wireless Communication, Mode L (2402MHz), ANT2	33
Figure 12: 99% Bandwidth, Original Wireless Communication, Mode M (2441MHz), ANT2	34
Figure 13: 99% Bandwidth, Original Wireless Communication, Mode H (2480MHz), ANT2	34
Figure 14: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode L (2402MHz), ANT 1	36
Figure 15: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode M (2441MHz), ANT 1	36
Figure 16: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode H (2480MHz), ANT 1	37
Figure 17: Authorized-band band-edge, Original Wireless Communication, Mode L (2402MHz), ANT 1	37
Figure 18: Authorized-band band-edge, Original Wireless Communication, Mode H (2480MHz), ANT 1	38
Figure 19: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode L (2402MHz), ANT 2	39
Figure 20: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode M (2441MHz), ANT 2	39
Figure 21: Conducted Spurious Emissions, 30MHz - 25GHz, Original Wireless Communication, Mode H (2480MHz), ANT 2	40
Figure 22: Authorized-band band-edge, Original Wireless Communication, Mode L (2402MHz), ANT 2	40
Figure 23: Authorized-band band-edge, Original Wireless Communication, Mode H (2480MHz), ANT 2	41
Figure 24: Power Spectral Density, Original Wireless Communication, Mode L (2402MHz), ANT1	43
Figure 25: Power Spectral Density, Original Wireless Communication, Mode M (2441MHz), ANT1	44
Figure 26: Power Spectral Density, Original Wireless Communication, Mode H (2480MHz), ANT1	44
Figure 27: Power Spectral Density, Original Wireless Communication, Mode L (2402MHz), ANT2	45
Figure 28: Power Spectral Density, Original Wireless Communication, Mode M (2441MHz), ANT2	46
Figure 29: Power Spectral Density, Original Wireless Communication, Mode H (2480MHz), ANT2	46
Figure 30: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2402MHz, Horizontal Antenna Orientation, ANT1	59
Figure 31: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2402MHz, Vertical Antenna Orientation, ANT1	60
Figure 32: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2480MHz, Horizontal Antenna Orientation, ANT1	60
Figure 33: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2480MHz, Vertical Antenna Orientation, ANT1	61
Figure 34: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2402MHz, Horizontal Antenna Orientation, ANT2	62
Figure 35: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2402MHz, Vertical Antenna Orientation, ANT2	63
Figure 36: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2480MHz, Horizontal Antenna Orientation, ANT2	63
Figure 37: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication, 2480MHz, Vertical Antenna Orientation, ANT2	64
Figure 38: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic, Horizontal Antenna Orientation	69
Figure 39: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Classic, Vertical Antenna Orientation	70
Figure 40: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 5GHz + Bluetooth Classic, Horizontal Antenna Orientation	70

Figure 41: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 5GHz + Bluetooth Classic, Vertical Antenna Orientation	71
Figure 42: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 5GHz + Bluetooth Classic, Horizontal Antenna Orientation	72
Figure 43: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 5GHz + Bluetooth Classic, Vertical Antenna Orientation	73
Figure 44: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Classic, Horizontal Antenna Orientation	73
Figure 45: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Classic, Vertical Antenna Orientation	74
Figure 46: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy, Horizontal Antenna Orientation	79
Figure 47: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy, Vertical Antenna Orientation	80
Figure 48: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy, Horizontal Antenna Orientation	80
Figure 49: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 5GHz + Bluetooth Low Energy, Vertical Antenna Orientation	81
Figure 50: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy, Horizontal Antenna Orientation	82
Figure 51: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy, Vertical Antenna Orientation	83
Figure 52: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy, Horizontal Antenna Orientation	83
Figure 53: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 5GHz + Bluetooth Low Energy, Vertical Antenna Orientation	84
Figure 54: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz, Horizontal Antenna Orientation	89
Figure 55: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT1) + WLAN 2.4GHz, Vertical Antenna Orientation	90
Figure 56: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 2.4GHz, Horizontal Antenna Orientation	90
Figure 57: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT1) + WLAN 2.4GHz, Vertical Antenna Orientation	91
Figure 58: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 2.4GHz, Horizontal Antenna Orientation	92
Figure 59: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2402MHz, ANT2) + WLAN 2.4GHz, Vertical Antenna Orientation	93
Figure 60: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 2.4GHz, Horizontal Antenna Orientation	93
Figure 61: Restricted-band Band-edge, Spectral Diagram, Original Wireless Communication (2480MHz, ANT2) + WLAN 2.4GHz, Vertical Antenna Orientation	94

9. List of Photographs

Photograph 1: Set-up for Antenna Port Conducted Emission of Transmitter	97
Photograph 2: Set-up for Radiated Spurious Emission below 30MHz, Front View	97
Photograph 3: Set-up for Radiated Spurious Emission below 30MHz, Rear View	98
Photograph 4: Set-up for Radiated Spurious Emission below 1GHz, Front View	98
Photograph 5: Set-up for Radiated Spurious Emission below 1GHz, Rear View	99
Photograph 6: Set-up for Radiated Spurious Emission above 1GHz, Front View	99
Photograph 7: Set-up for Radiated Spurious Emission above 1GHz, Rear View	100
Photograph 8: Set-up for AC Power Line Conducted Emission, Front View	100

Test Report No.: <i>Prüfbericht-Nr.:</i>	JP2494EX 001	Page 106 of 106 <i>Seite 106 von 106</i>
--	---------------------	--

Photograph 9: Set-up for AC Power Line Conducted Emission, Rear View101

– End of test report –