

Prüfbericht-Nr.: <i>Test report no.:</i>	DE24VRBW 001	Auftrags-Nr.: <i>Order no.:</i>	1140889 100	Seite 1 von 41 <i>Page 1 of 41</i>	
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	41373144	Auftragsdatum: <i>Order date:</i>	2023-05-25		
Auftraggeber: <i>Client:</i>	INFICON GmbH, Bonner Str. 498, 50968 Köln, Deutschland				
Prüfgegenstand: <i>Test item:</i>	IFCBT-Dongle				
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	551-060				
Auftrags-Inhalt: <i>Order content:</i>	Prüfung der Funkparameter nach FCC & ISED <i>Test of radio parameters acc. to FCC & ISED</i>				
Prüfgrundlage: <i>Test specification:</i>	Teilprüfung / Partial test FCC CFR 47 Part 15 Subpart C- §15.247 ISED RSS-247:2017				
Wareneingangsdatum: <i>Date of sample receipt:</i>	2024-03-04	There are no photos of the EUT in this report acc. to the confidentiality letter. For EUT- and test setup photos please see the Photo Documentation to this report Number.			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003668536-001 to 004				
Prüfzeitraum: <i>Testing period:</i>	2024-03-04 - 2024-03-07				
Ort der Prüfung: <i>Place of testing:</i>	Nürnberg <i>Nuremberg</i>				
Prüflaboratorium: <i>Testing laboratory:</i>	Wireless Labor <i>Wireless Test Lab</i>				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von: <i>tested by:</i>			genehmigt von: <i>authorized by:</i>		
Datum: <i>Date:</i>	2024-05-02	Signiert von: Primoz Erzen		Ausstellungsdatum: <i>Issue date:</i>	2024-05-02
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert	
Sonstiges / Other:	USA/FCC: C2PC for add new host system Canada/ISED: C4PC add new host system Host device integrated with FCC & IC certificate radio module.				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>				
* Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet * 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					
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>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>					

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 2 von 41
Page 2 of 41

Anmerkungen Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system.</i> <i>Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature <i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature</i>
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>
5	Wenn auf dem Bericht kein Akkreditierungshinweis aufgebracht ist, wurde der Bericht nicht im akkreditierten Bereich erstellt und ist folglich auch nicht vom EA MLA abgedeckt. Unabhängig davon wurde der Bericht auf Basis der allgemeinen Regeln der ISO/IEC 17000er Reihe erstellt. Mit "#" gekennzeichnete Prüfungen sind nicht Bestandteil der Akkreditierung D-PL-14169-03-00. <i>If there is no accreditation notice on the report, the report has not been produced in the accredited area and is consequently not covered by the EA MLA. Regardless of this, the report has been prepared based on the general rules of the ISO/IEC 17000 series. Tests marked with "#" are not covered by the accreditation D-PL-14169-03-00.</i>

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 3 von 41
Page 3 of 41

Produktbeschreibung
Product description

1	Test item	IFCBT-Dongle
2	Typ-No.	551-060
3	Test sample obtaining	☒ Sampling by customer ☐ Sampling by TÜV Rheinland Group ☐ others:
4	Serial-No.	ICBT9754
5	Supported radio technologies	BLE
6	Description of EUT	The device can be used to transfer data wirelessly between INFICON devices.
7	Max RF output power (measured)	4.39dBm
8	Operating Frequency (declared)	BLE: 2402-2480MHz
9	Channel Bandwidth (declared)	BLE: 2MHz
10	Number of Channels	BLE: 40
11	Modulation	BLE: GFSK
12	Rated Voltage / Frequency	5..24V DC
13	FCC-ID (Radio module)	2BFIX-1101102
14	IC (Radio module)	32279-1101102
15	Antenna Type	☒ Integral antenna (designed as a fixed part of the EUT) ☐ Dedicated antenna (removable, obligation to be used) ☐ Permanent antenna connector
16	Antenna number of chains	1
17	Antenna Gain (declared)	2402MHz:-2.6dBi 2440MHz:-1.6dBi 2480MHz:-2.8dBi
18	Software / Firmware	Bluetooth Firmware Würth IFCBT Dongle 1.4 Bluetooth Config Version Inficon IFCBT Dongle 1.4.1
19	Hardware	v0.1
20	Provided Samples	A003668536-001 to 004
21	Conducted measurements sample	A003668536-001 (cond. sample)
22	Radiated measurements sample	A003668536-004 (rad. sample)
23	Companion Device used for radio connection with the EUT	EUT in Test Mode. Therefore, no Companion Device was used.
24	Auxiliary equipment used to set up the EUT	Customer provided PC with Control Software (Smart Commander) and USB to Serial Converter with Power injection.
25	Accessory Devices used together with the EUT	-

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Bemerkungen/ Remarks	Ergebnis Result
FCC 15.247 (a)(1) RSS-247 sec. 5.1	20 dB Bandwidth	Does not apply for DTS equipment	P ☐ F ☐ N/A ☒ N/T ☐
FCC 15.247 (a)(1) RSS-247 sec. 5.1	Number of Hopping Frequencies	Does not apply for DTS equipment	P ☐ F ☐ N/A ☒ N/T ☐
FCC 15.247 (a)(1) RSS-247 sec. 5.1	Time of Occupancy	Does not apply for DTS equipment	P ☐ F ☐ N/A ☒ N/T ☐
FCC 15.247 (a)(1) RSS-247 sec. 5.1	Carrier Frequency Separation	Does not apply for DTS equipment	P ☐ F ☐ N/A ☒ N/T ☐
FCC 15.247 (b) RSS-247 sec. 5.4	Maximum Output Power	-	P ☒ F ☐ N/A ☐ N/T ☐
FCC 15.247 (e) RSS-247 sec. 5.2 (b)	Power Spectral Density	-	P ☐ F ☐ N/A ☐ N/T ☒
FCC 15.247 (a)(2) RSS-247 sec. 5.2 (a)	6dB Bandwidth	-	P ☐ F ☐ N/A ☐ N/T ☒
FCC 15.247 (d) RSS-247 sec. 5.5	Unwanted Emissions	-	P ☒ F ☐ N/A ☐ N/T ☐
FCC 15.207 RSS-Gen sec. 8.8	AC Power Conducted Emissions	Does not apply for equipment with DC supply voltage	P ☐ F ☐ N/A ☒ N/T ☐

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 5 von 41
Page 5 of 41

Prüfdokumentation
Test documentation

Contents

1	Registration	6
2	EUT Classification	6
2.1	Wireless technologies and frequencies supported by the EUT	6
2.2	Standard specific classification of the EUT	6
2.3	System Type	6
3	Test conditions and configurations	6
3.1	Normal environmental test conditions	6
3.2	Equipment modifications	6
3.3	Antenna assemblies	7
3.4	Test modes	7
3.5	Measurement Uncertainty	8
4	Test results in detail	9
4.1	Maximum Output Power	9
4.2	Unwanted emissions	19
5	Test Setup Photo	38
6	Application form	39
7	Equipment List	40
7.1	Hardware	40
7.2	Software	40
8	Change history	41

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 6 von 41
Page 6 of 41

Prüfdokumentation
Test documentation

1 Registration

The measurement facilities for conducted and radiated disturbance measurements of the TÜV Rheinland LGA Products have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules. Measurement data will be accepted in conjunction with applications for Certification under Parts 15 and 18 of the Commission's Rules.

FCC Registration Number: 939976

Bundesnetzagentur Registration Number: BNetzA-CAB-17/21-16

The measurement facilities are also recognized by Innovation, Science and Economic Development (ISED) Canada to test to Canadian radio equipment requirements.

Company Number: 11235A

CAB Identifier: DE0018

2 EUT Classification

2.1 Wireless technologies and frequencies supported by the EUT.

The named technologies are only those falling in the specification of the applied standard.

Technology	Frequency Range (TX)	TX Function	Supported by the EUT	Evaluated in this report
BLE	2400 – 2483.5 MHz	SISO	☒	☒

SISO: Single Input Single Output

2.2 Standard specific classification of the EUT

2.2.1 Applied standards

FCC CFR 47 Part 15 Subpart C - §15.247

ISED RSS-247:2017

2.2.2 Test Methods and Guidance Documents

ANSI C63.10:2013

KDB 558074 D01 DTS Measurement Guidance v05

KDB 996369 D04 Module Integration Guide v01

2.3 System Type

DTS (Digital Transmission System)

2.3.1 Type of equipment

Equipment that can be used in multiple orientations

3 Test conditions and configurations

3.1 Normal environmental test conditions

Environmental condition	Parameter	Range during test
Temperature	°C	21-24
Relative humidity	%	20-60
Supply voltage		5..24V DC

3.2 Equipment modifications

No modifications were found to be necessary to perform the tests or to achieve compliance.

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 7 von 41
Page 7 of 41

Prüfdokumentation
Test documentation

3.3 Antenna assemblies

Antenna connector is prepared so tests were done in conducted and radiated mode.

3.4 Test modes

Mode description	Mode configuration
All Modes	The auxiliary equipment was connected to the EUT during the tests. DTM Mode was used and the payload was set to PRBS9 for the Test.
Mode 1: TX-Mode	TX mode on 2402MHz, 2440MHz and 2480MHz.
Mode 2: N/A	
Mode 3: N/A	
Mode 4: N/A	

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 8 von 41
Page 8 of 41

Prüfdokumentation
Test documentation

3.5 Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to ETSI TR 100 028-1/-2 and ETSI TS 103 051 (radiated measurements) and is documented in the quality system acc. to ISO/IEC 17025:2017.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

The stated values are the expanded uncertainty values, the measured value lies within the assigned range of values with a probability of 95% ($k = 1.96$).

The manufacturer has the sole responsibility of continued compliance of the device.

Test	Value	Unit	Range
Frequency Error	$2.7 \cdot 10^{-8}$	Hz	-
Frequency Stability under low voltage conditions			
Time	$1.1 \cdot 10^{-9}$	s	-
Conducted Carrier Power	1.0	dB	9k-1GHz
Conducted Spurious Emissions (RX/TX)	1.7	dB	1GHz-6GHz
	2.8	dB	6GHz-40GHz
Occupied Bandwidth (OBW)	0.1	%	-
TX Power Spectral Density	4.2	mW	9kHz - 6GHz
	1.6	dB	9kHz - 6GHz
Dwell Time	$4.6 \cdot 10^{-7}$	Hz	-
Frequency Separation			-
Measurement of conducted emissions at the power supply connection to LISN	2.3	dB	9kHz – 150kHz
	2.2	dB	150kHz – 30MHz
Measurement of the field strength at distance 3m	1.6	dB	9k-150kHz
	4.5	dB	30-1000MHz
	5	dB	1-6GHz
	5.3	dB	6-40GHz
Temperature	0.8	K	-
Humidity	4	%	-
Voltage (AC/DC)	1.0	%	-

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 9 von 41
Page 9 of 41

Prüfdokumentation
Test documentation

4 Test results in detail

4.1 Maximum Output Power

4.1.1 Requirements / Limits (Maximum Output Power)

The maximum output power limit is expressed in terms of either maximum peak conducted output power or maximum conducted output power.

The maximum peak conducted output power is defined as the maximum power level measured with a peak detector using a filter with width and shape of which is sufficient to accept the full signal bandwidth.

The maximum conducted output power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level.

	Condition		Limit
☒	Systems using digital modulation techniques in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands		<i>FCC Part 15, Subpart C, §15.247 (b) (3)</i> 1 watt = 30dBm. Maximum conducted peak output power: 30 dBm (excluding antenna gain, if antennas with directional gains that do not exceed 6 dBi are used).
☐	Frequency hopping systems operating 2400-2483.5 MHz band.	Employing less than 75 non-overlapping hopping channels	<i>FCC Part 15, Subpart C, §15.247 (b) (1)</i> 0.125 watt = 21dBm.
☐		Employing at least 75 non-overlapping hopping channels	<i>FCC Part 15, Subpart C, §15.247 (b) (1)</i> 1 watt = 30dBm.
☐	Frequency hopping systems operating 5725-5850 MHz band.		<i>FCC Part 15, Subpart C, §15.247 (b) (1)</i> 1 watt = 30dBm.
☐	Frequency hopping systems operating 902-928 MHz band.	Employing less than 50 but at least 25 hopping channels	<i>FCC Part 15, Subpart C, §15.247 (b) (2)</i> 0.25 watt = 24dBm.
☐		Employing at least 50 hopping channels	<i>FCC Part 15, Subpart C, §15.247 (b) (2)</i> 1 watt = 30dBm
☐	Antenna gain greater than 6dBi		<i>FCC Part 15, Subpart C, §15.247 (b) (4)</i> The conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3), as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 10 von 41
Page 10 of 41

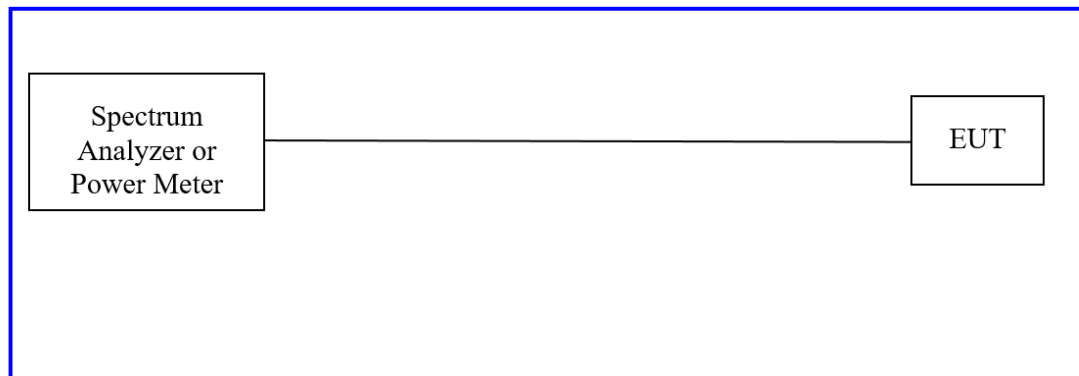
Prüfdokumentation
Test documentation

4.1.2 Test Method (Maximum Output Power)

4.1.2.1 Conducted measurements (Maximum Output Power)

Measurements were done according to ANSI C63.10:2013 clause 11.9.1.1 peak power (RBW > DTS bandwidth).

The EUT was connected to the spectrum analyzer or Power Meter via a coax cable with a known loss.



4.1.2.2 Radiated measurements (Maximum Output Power)

Measurements were done according to ANSI C63.10:2013 clause 11.9.1.1 peak power (RBW > DTS bandwidth).

The equivalent conducted output power is calculated as follows:

$$P_{\text{Out}} = P_{\text{Rad}} - G$$

Where:

P_{Out} is the maximum conducted output power in dBm,

P_{Rad} is the maximum radiated output power in dBm EIRP,

G is the antenna directional gain in dBi.

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 11 von 41
Page 11 of 41

Prüfdokumentation
Test documentation

4.1.3 Test setup (Maximum Output Power)

4.1.3.1 Conducted measurements (Maximum Output Power)

EUT		A003668536-001 (cond. sample)
Chamber details		Shielded room
Companion device		EUT in Test Mode. Therefore, no Companion Device was used.
Operation mode		☒ 1: TX-Mode ☐ 2: N/A ☐ 3: N/A ☐ 4: N/A
Spectrum Analyzer	Resolution Bandwidth	3MHz
	Video Bandwidth	10MHz
	Sweep Time	1,271µs (Max Hold until stable)
	Detector	Peak
Further parameters		-
Test engineer		Dipl. Ing. Primož Erzen

4.1.3.2 Radiated measurements (Maximum Output Power)

EUT		A003668536-004 (rad. sample)
Chamber details		☒ 3m Fully Anechoic Chamber (FAC) ☐ 10m Semi Anechoic Chamber (SAC) ☐ Shielded room
Measurement positioning		Distance: ☒ 3m ☐ 10m EUT height: ☒ 1.5m ☐ 0.8m Antenna height: ☒ 1.5m ☐ 1m to 4m – height scan
Companion device		EUT in Test Mode. Therefore, no Companion Device was used.
Operation mode		☒ 1: TX-Mode ☐ 2: N/A ☐ 3: N/A ☐ 4: N/A
Spectrum Analyzer	Resolution Bandwidth	100kHz during exploratory tests 2MHz for final measurements
	Video Bandwidth	300kHz during exploratory tests 10MHz for final measurements
	Measurement Time	2s during exploratory tests 10s for final measurements
	Span	93,5MHz during exploratory tests Zero Span for final measurements
	Detector	Peak and RMS during exploratory tests Peak for final measurements
Further parameters		-
Test engineer		Dipl. Ing. Primož Erzen

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 12 von 41
Page 12 of 41

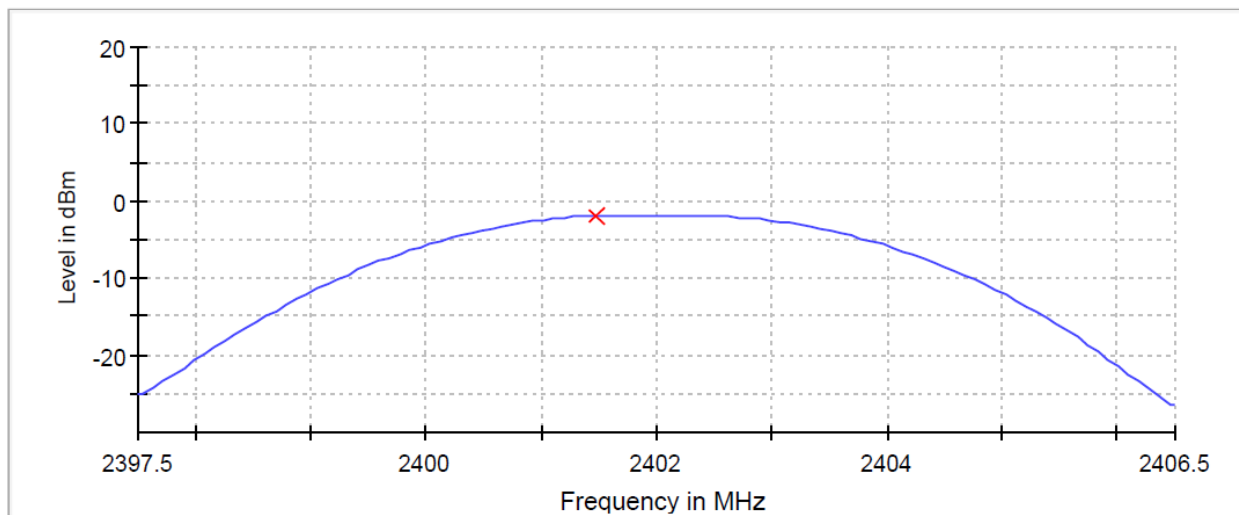
Prüfdokumentation
Test documentation

4.1.4 Test results (Maximum Output Power)

4.1.4.1 Conducted measurements 5V (Maximum Output Power)

4.1.4.1.1 Lowest Channel 2402MHz

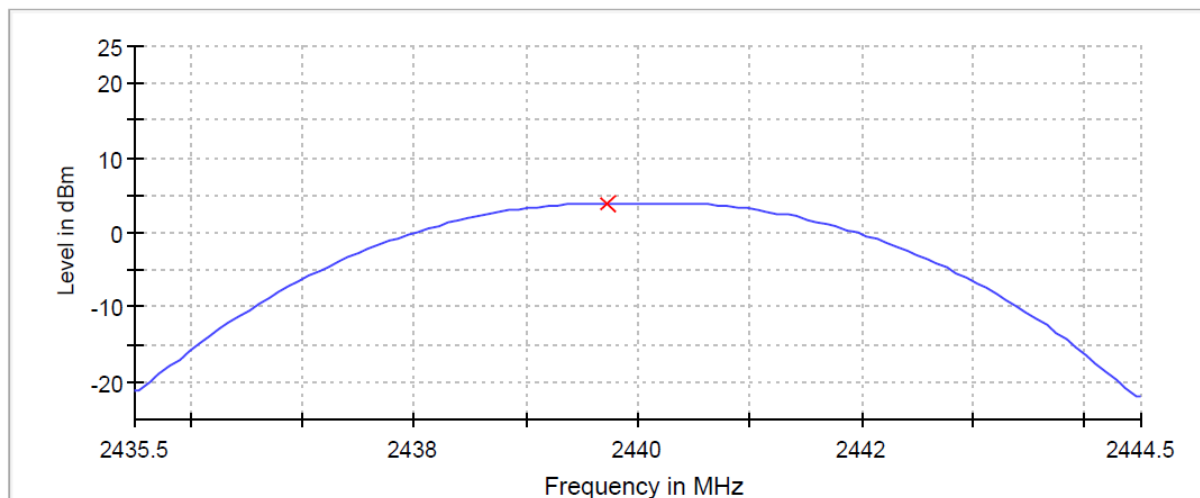
Peak Power



— Connector 1 X Peak Connector 1

4.1.4.1.2 Middle Channel 2440MHz

Peak Power



— Connector 1 X Peak Connector 1

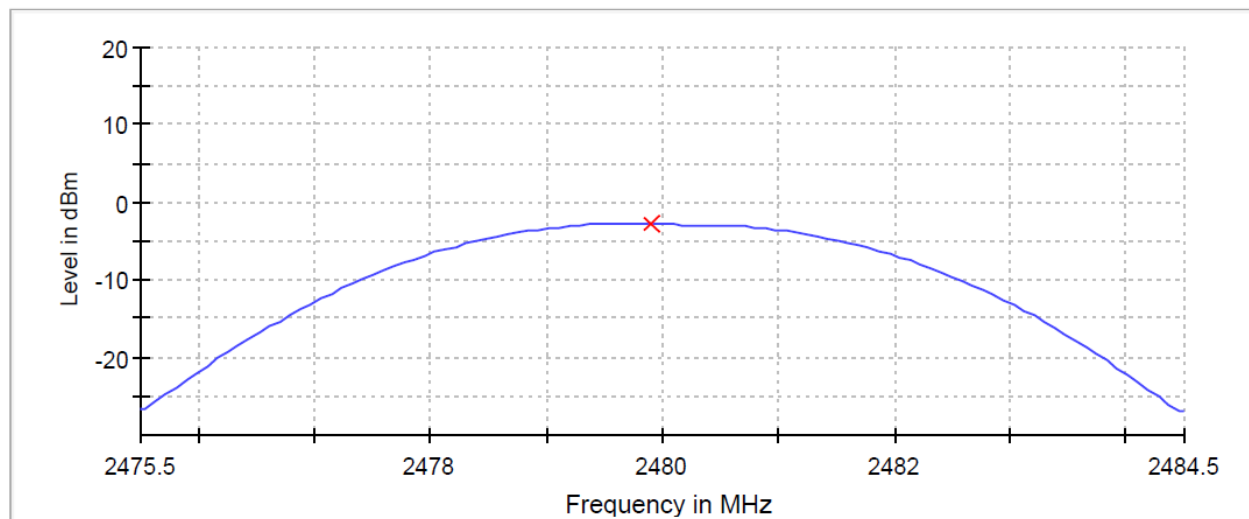
Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 13 von 41
Page 13 of 41

Prüfdokumentation
Test documentation

4.1.4.1.3 Highest Channel 2480MHz

Peak Power



— Connector 1 × Peak Connector 1

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

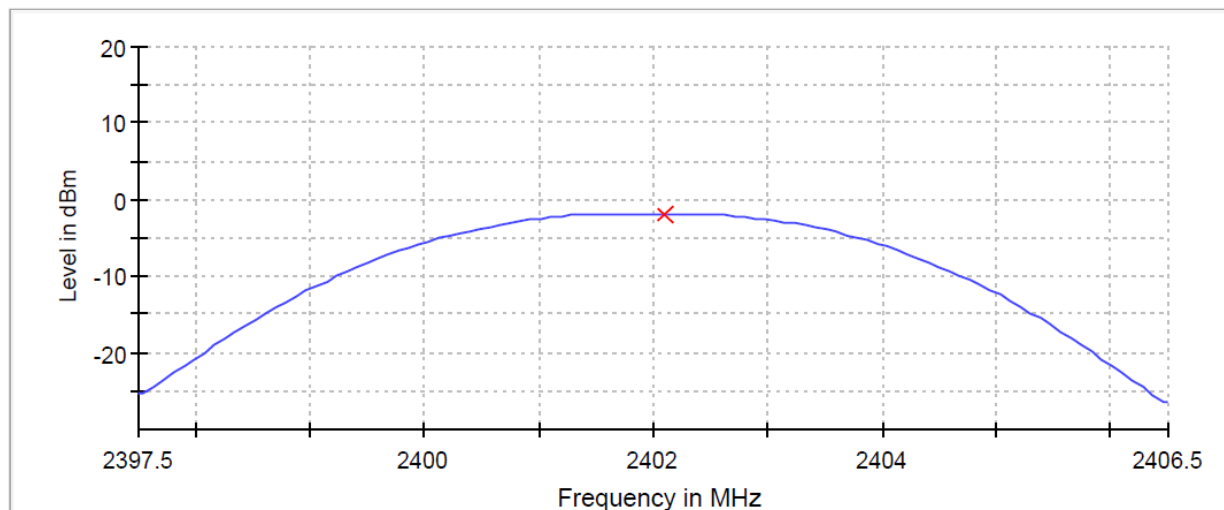
Seite 14 von 41
Page 14 of 41

Prüfdokumentation
Test documentation

4.1.4.2 Conducted measurements 24V (Maximum Output Power)

4.1.4.2.1 Lowest Channel 2402MHz

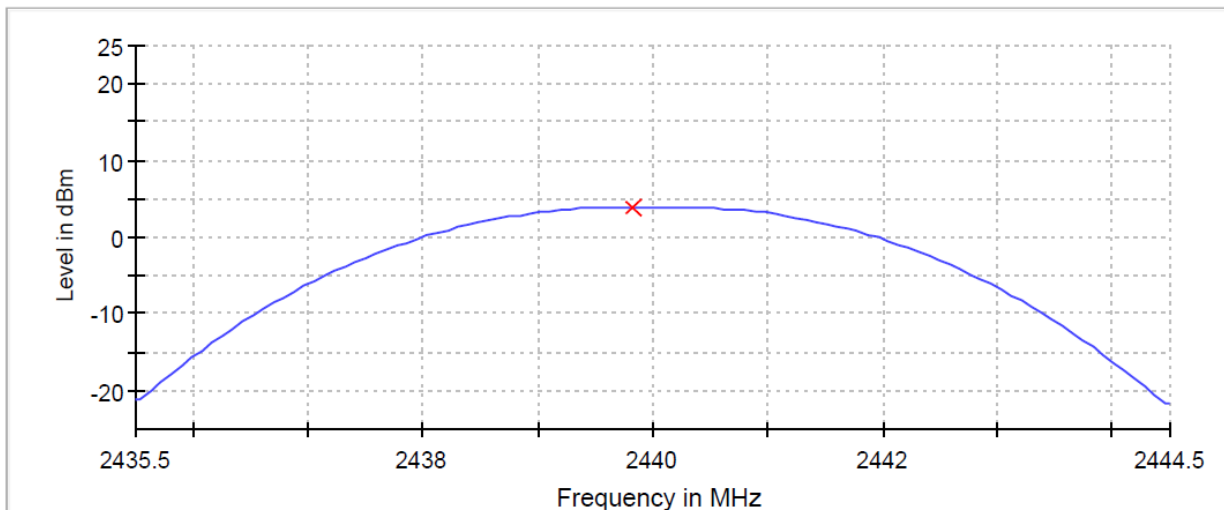
Peak Power



— Connector 1 X Peak Connector 1

4.1.4.2.2 Middle Channel 2440MHz

Peak Power



— Connector 1 X Peak Connector 1

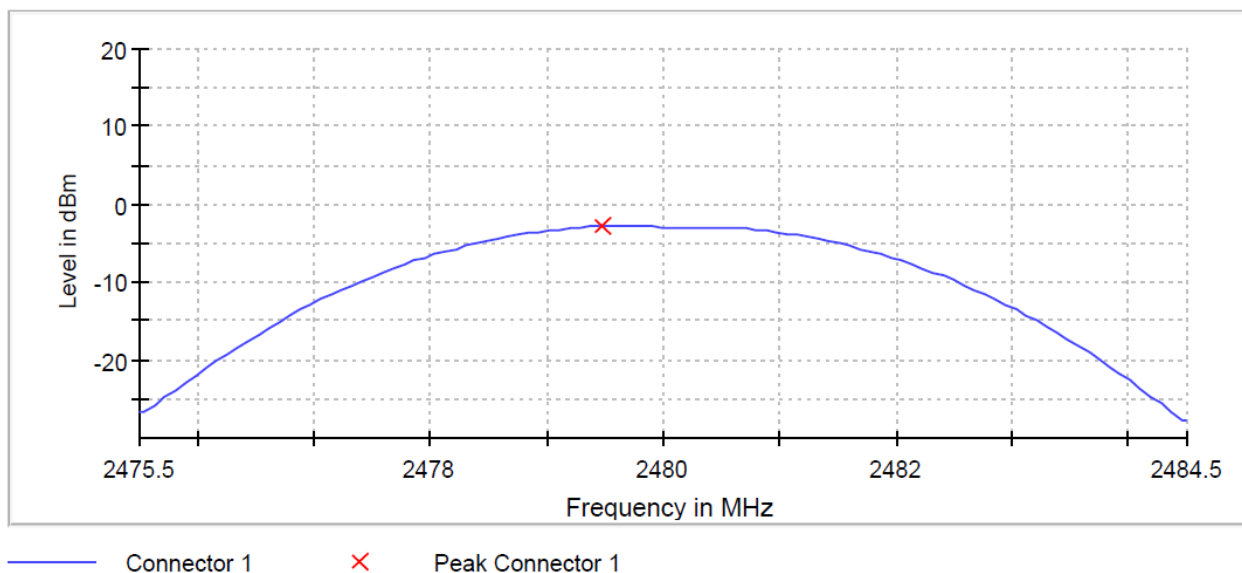
Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 15 von 41
Page 15 of 41

Prüfdokumentation
Test documentation

4.1.4.2.3 Highest Channel 2480MHz

Peak Power



4.1.4.2.4 Conducted measurements summary (Maximum Output Power)

Frequency	Peak conducted output power (dBm)	Limit (dBm)	Margin (dB)	Test Result
Lowest 5V	-1.9	30	31.9	Pass
Middle 5V	3.9		26.1	Pass
Highest 5V	-2.8		32.8	Pass
Lowest 24V	-1.8		31.8	Pass
Middle 24V	3.9		26.1	Pass
Highest 24V	-2.8		32.8	Pass

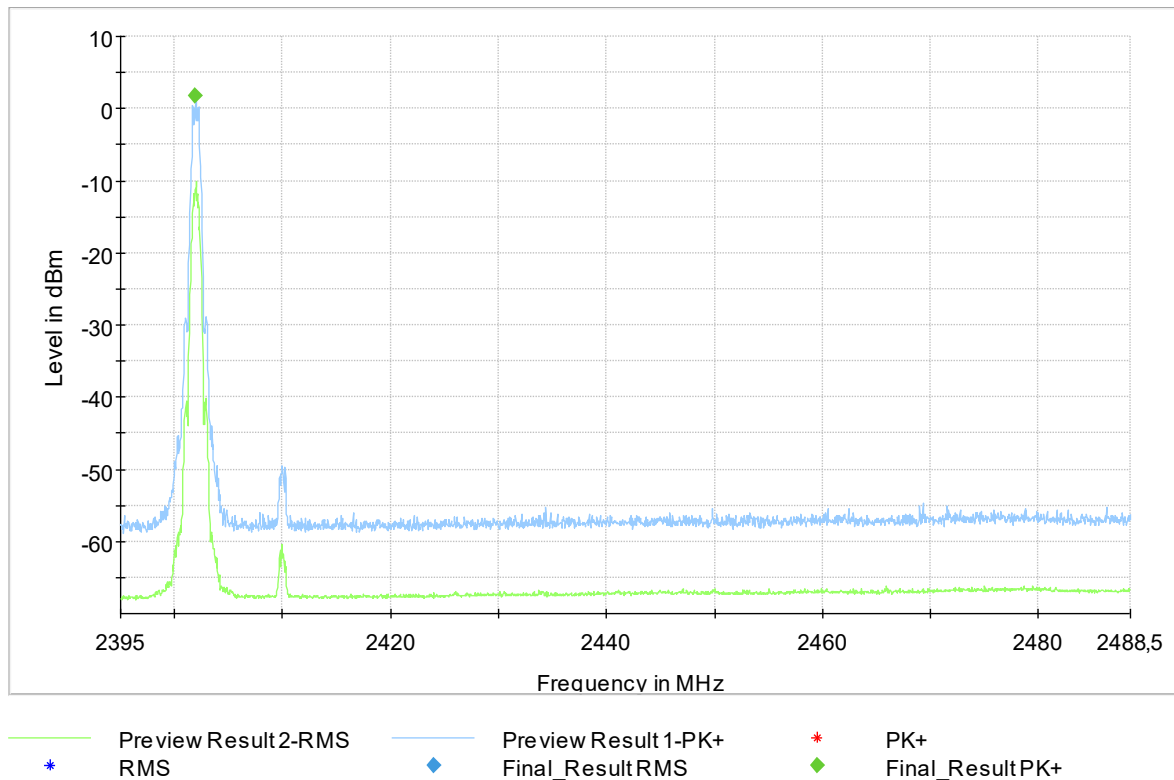
Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 16 von 41
Page 16 of 41

Prüfdokumentation
Test documentation

4.1.4.3 Radiated measurements (Maximum Output Power)

4.1.4.3.1 Lowest Channel

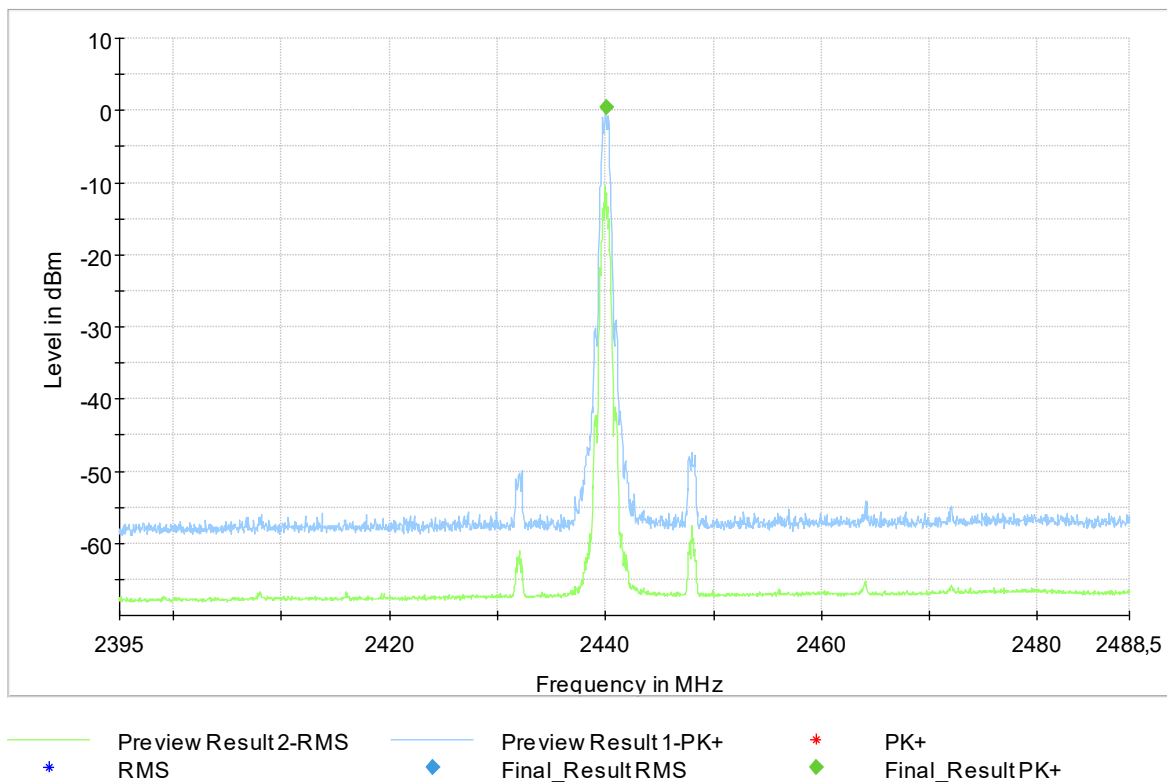


Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

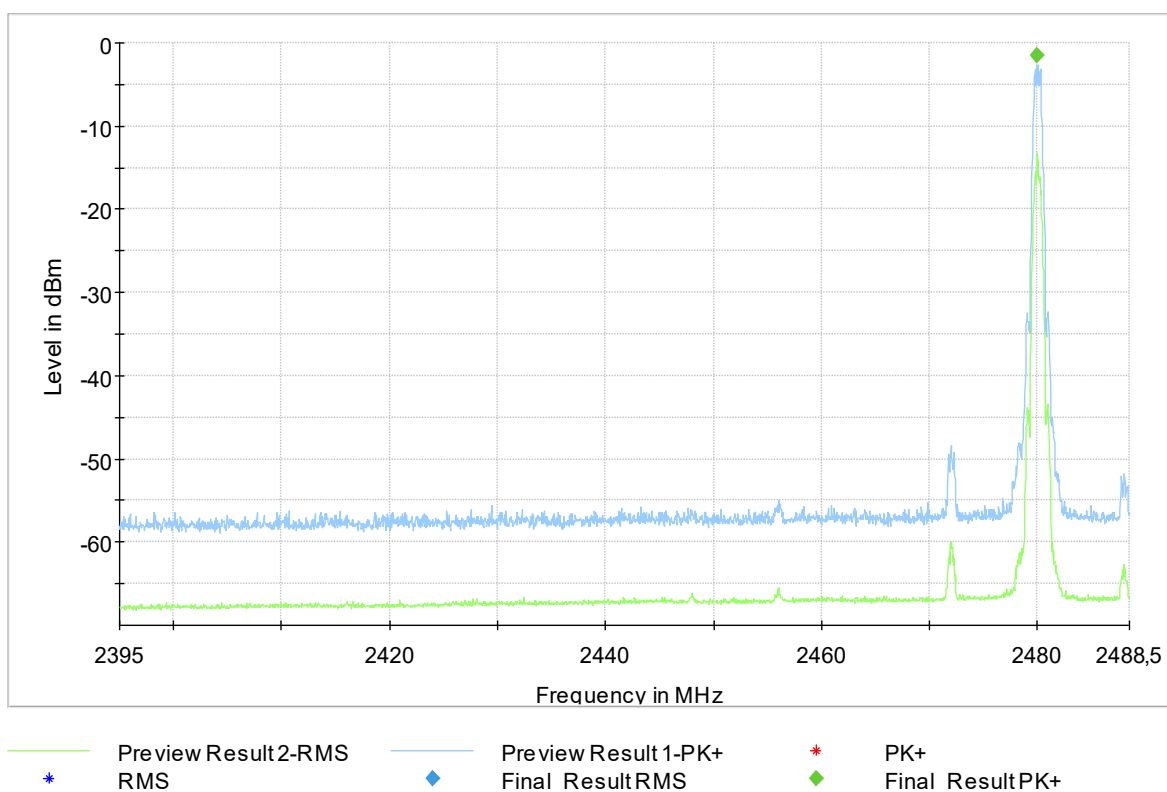
Seite 17 von 41
Page 17 of 41

Prüfdokumentation Test documentation

4.1.4.3.2 Middle Channel



4.1.4.3.3 Highest Channel



Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 18 von 41
Page 18 of 41

Prüfdokumentation
Test documentation

4.1.4.3.4 Radiated measurements summary (Maximum Output Power)

Frequency [MHz]	P _{Rad} Peak [dBm] EIRP	Height [cm]	Pol.	Azimuth [deg]	Elevation [deg]	Corr. [dB]	Ant. Gain [dBi]	P _{out} Peak [dBm]
2401.895617	1.79	150.0	H	254.0	3.0	-82.7	-2.6	4.39
2440.033237	0.43	150.0	H	252.0	3.0	-82.1	-1.6	2.03
2479.960328	-1.43	150.0	H	255.0	7.0	-81.6	-2.8	1.37

4.1.5 Final test result (Maximum Output Power)

Final test result	Pass
-------------------	------

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 19 von 41
Page 19 of 41

Prüfdokumentation
Test documentation

4.2 Unwanted emissions

4.2.1 Requirements / Limits

☒	FCC Part 15, Subpart C, §15.247 (d); [RSS-247 sec. 5.5]: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) [RSS-Gen sec. 8.9] is not required. Radiated emissions which fall in the restricted bands, as defined in § 15.205(a) [RSS-Gen sec.8.10], must comply with the radiated emission limits specified in § 15.209(a) [RSS-Gen sec. 8.9].
☐	FCC Part 15, Subpart C, §15.247 (d); [RSS-247 sec. 5.5]: If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this test shall be 30 dB instead of 20 dB.

FCC Part 15, Subpart C, §15.209; [RSS-Gen sec. 8.9]; Radiated Emission Limits

Frequency [MHz]	Measurement distance [m]	Limit [μV/m]	Limits [dBμV/m]	Limits @3m [dBμV/m]
0.009 – 0.49	300	2400/F(kHz)	48.5 ... 13.8	128.5 ... 93.8
0.49 – 1.705	30	24000/F(kHz)	33.8 ... 23.0	73.8 ... 63.0
1.705 – 30	30	30	29.5	69.5
30 – 88	3	100	40.0	40.0
88 – 216	3	150	43.5	43.5
216 – 960	3	200	46.0	46.0
960 - 40000	3	500	54.0	54.0

Used conversion factor $\mu\text{V/m} \rightarrow \text{dB}\mu\text{V/m}$: $\text{Limit} [\text{dB}\mu\text{V/m}] = 20 \log (\text{Limit} [\mu\text{V/m}] / 1\mu\text{V/m})$

At frequencies below 30MHz, the measured values are corrected with an inverse linear distance extrapolation factor (40 dB/decade) according to FCC 15.31 (f)(2).

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing a linear average detector.

FCC Part 15, Subpart C, §15.35(b) [RSS-Gen sec. 8.1]:

..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

ANSI C63.10:2013 clause 5.5:

The spectrum shall be investigated from the lowest radio frequency signal generated in the device and up to at least the frequency shown in Table 2. However, frequencies below 9 kHz do not need to be investigated.

Table 2—Frequency range of measurements for unlicensed wireless device

Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified

Prüfdokumentation
Test documentation

4.2.2 Radiated measurements with general limit (Unwanted emissions)

4.2.2.1 Test Method

Radiated unwanted Emissions were tested against the general limits specified in § 15.209(a) [RSS-Gen sec. 8.9]. Emissions that fall inside the frequency band in which the intentional radiator is operating were excluded.

Emissions that exceed the general limits were additionally tested for the further requirements of §15.247 (d); [RSS-247 sec. 5.5]

A test program that controls instrumentation and data logging was used to automate the preliminary RF emission test procedure.

Testing was performed inside an anechoic chamber. The receiving antenna was placed at a distance of 3m for all measurements. Measurement equipment was located outside of the chamber. A video camera was placed inside the chamber to view the EUT. The different measurement setup for each frequency range are shown below.

For the final testing, the placement of EUT and cables were the same as for preliminary testing. The six highest emissions relative to the limit were measured unless such emissions were more than 20 dB below the limit. If less than six emissions are within 20 dB of the limit, then the noise level of the receiver is measured at frequencies where emissions are expected. Multiples of all oscillator and microprocessor frequencies were also checked. For the measurements in the frequency range 30 MHz to 1 GHz for each measured frequency the peak emission was maximized by manipulating the receiving antenna from 1 to 4 meters above the ground plane and placing it at the position that produced the maximum signal strength reading. The turntable was then rotated through 360° while observing the peak signal and placing the EUT at the position that produced maximum radiation.

For measurement above 1 GHz the turntable and positioner step sizes were set to a range of 22° and the antenna height is fixed.

For the measurements in the frequency ranges (90-110kHz, 490 kHz-1 GHz) quasi-peak detector is used, while average and peak detectors are used in other ranges.

Final testing was performed on an SVSWR compliant test site.

The final average electric field value (E_{final}) is calculated in the final measurement table using the following equation:

$$E_{final} = \text{RawRec} + \text{Corr.}$$

While

$$\text{Corr.} = \text{Trd. Corr.} + \text{Sig Path} + \text{Preamp}$$

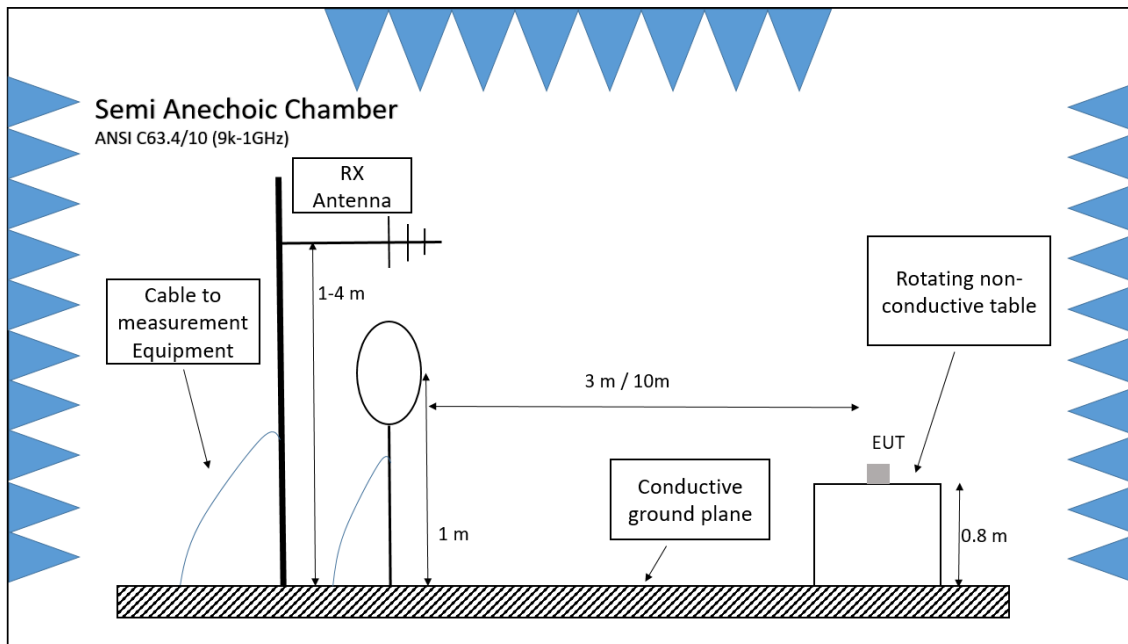
Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 21 von 41
Page 21 of 41

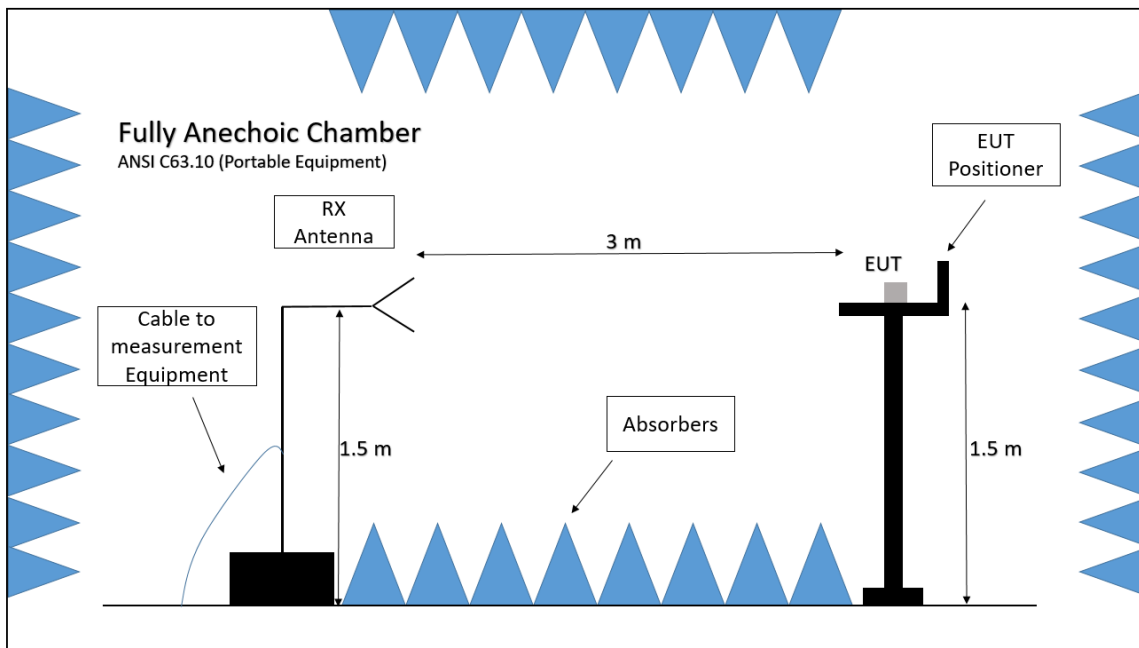
Prüfdokumentation Test documentation

4.2.2.2 EUT positioning (Radiated measurements with general limit; Unwanted emissions)

4.2.2.2.1 EUT positioning below 1GHz



4.2.2.2.2 EUT positioning above 1GHz; portable Device



Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 22 von 41
Page 22 of 41

Prüfdokumentation
Test documentation

4.2.2.3 Measurement Setup (Radiated measurements with general limit; Unwanted emissions)

4.2.2.3.1 Measurement Setup 9 kHz - 30 MHz

Test Site	SAC (Semi Anechoic Chamber)
Receiving Antenna	Loop antenna (HFH 2)
Receiving Antenna Height	1m (center of Loop antenna)
Receiving Antenna Polarization	Parallel and perpendicular to the EUT (EUT without Loop antenna) According to ANSI C63.10:2013 clause 6.4.6
EUT Table	1.0m x 1.5m non-conductive table 80cm above the floor
EUT Turn Table Step Size	22.5° during exploratory tests Linear during maximizations for final measurements
Receiver Configurations	Average and peak detector (9-90kHz and 110-490kHz) Quasi Peak detector (90-110kHz and 490kHz-30MHz)
	RBW: 200Hz (9 - 150 kHz) and 9 kHz (150 kHz – 30 MHz)
	Step Size: 50Hz (9-150kHz) and 2.25kHz (150k-30MHz)
	Sweep Time: 100ms (FFT) during exploratory tests Sweep Time: 1s for final measurements

4.2.2.3.2 Measurement Setup 30 MHz - 1 GHz

Test Site	SAC (Semi Anechoic Chamber)
Receiving Antenna	Hybrid Antenna VULB 9168
Receiving Antenna height	Varied (1m to 4m, step size 1m) during exploratory tests Linear during maximizations for final measurements
Receiving Antenna Polarization	Horizontal and Vertical
EUT Table	1.0m x 1.5m non-conductive table 80cm above the floor
EUT Turn Table Step Size	45° during exploratory tests Linear during maximizations for final measurements
Receiver Configurations	Average and peak detector
	RBW :120 kHz
	Step Size: 30kHz (30-1000MHz)
	Sweep Time: 100ms (FFT) during exploratory tests Sweep Time: 1s for final measurements

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 23 von 41
Page 23 of 41

Prüfdokumentation
Test documentation

4.2.2.3.3 Measurement Setup above 1GHz; portable Device

Test Site	Fully-anechoic chamber
Receiving Antenna	Horn Antenna HF907 (1-18GHz), 3116C-PA (18-40GHz)
Receiving Antenna Height	1.5m
Receiving Antenna Polarization	Horizontal and Vertical
EUT Positioner	40cm x 60cm non-conductive positioner 1.5m above the floor Step size elevation angle 45° during exploratory tests Linear during maximizations for final measurements
EUT Turn Table Step Size	45° during exploratory tests Linear during maximizations for final measurements
Spectrum Analyzer	Average and peak detector
	RBW: 1MHz
	Sweep Time: 50s during exploratory tests Sweep Time: 10s for final measurements

4.2.2.4 **Test Setup** (Radiated measurements with general limit; Unwanted emissions)

EUT	A003668536-004 (rad. sample)
Companion device	EUT in Test Mode. Therefore, no Companion Device was used.
Operation mode	☒ 1: TX-Mode ☐ 2: N/A ☐ 3: N/A ☐ 4: N/A
Further parameters	-
Test engineer	Dipl. Ing. Primož Erzen

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 24 von 41
Page 24 of 41

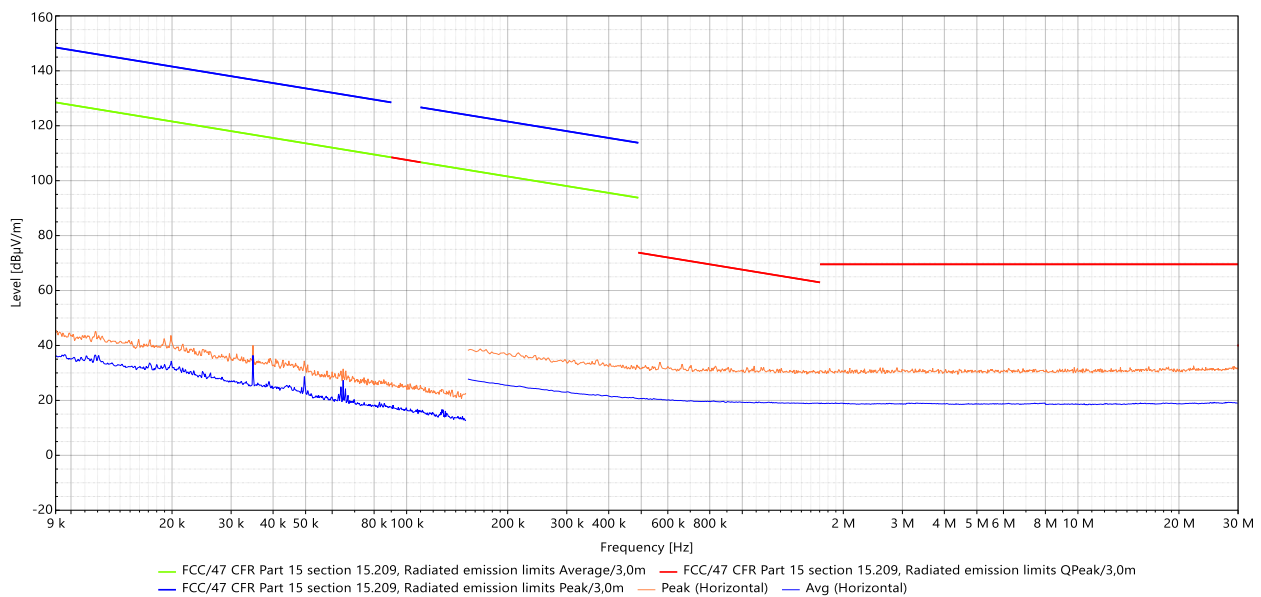
Prüfdokumentation Test documentation

4.2.3 Test results (Radiated measurements with general limit; Unwanted emissions)

4.2.3.1 9 kHz to 30 MHz, lowest Channel

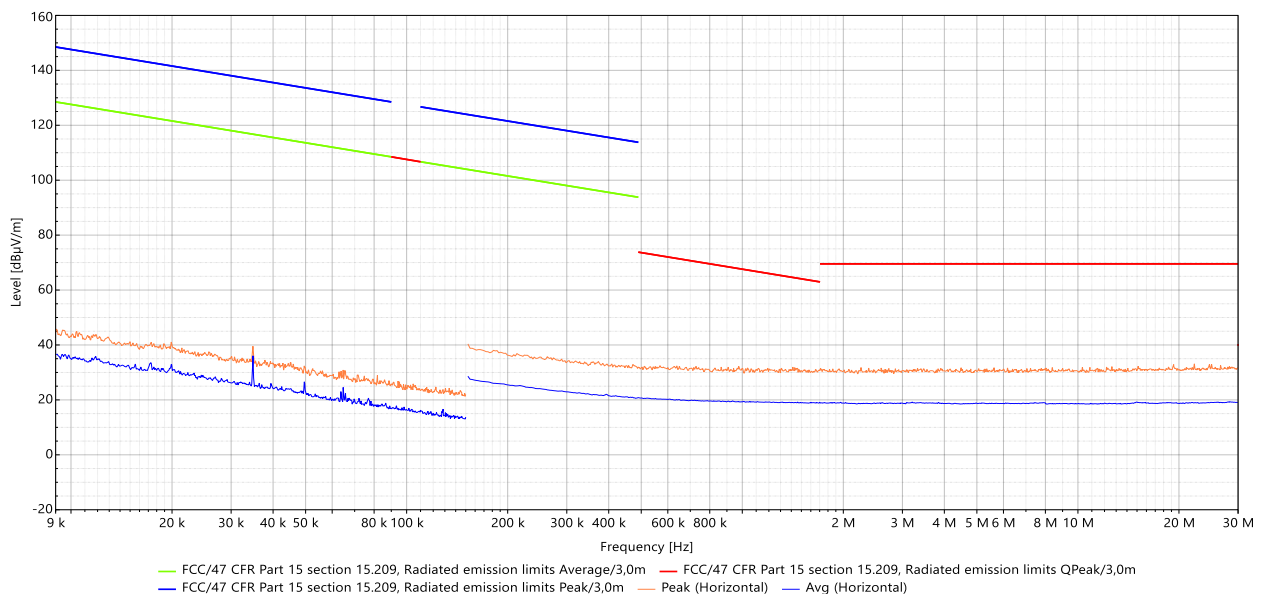
4.2.3.1.1 Perpendicular Polarization

#1670(9 kHz-30 MHz), Horizontal



4.2.3.1.2 Parallel Polarization

#1671(9 kHz-30 MHz), Horizontal



Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

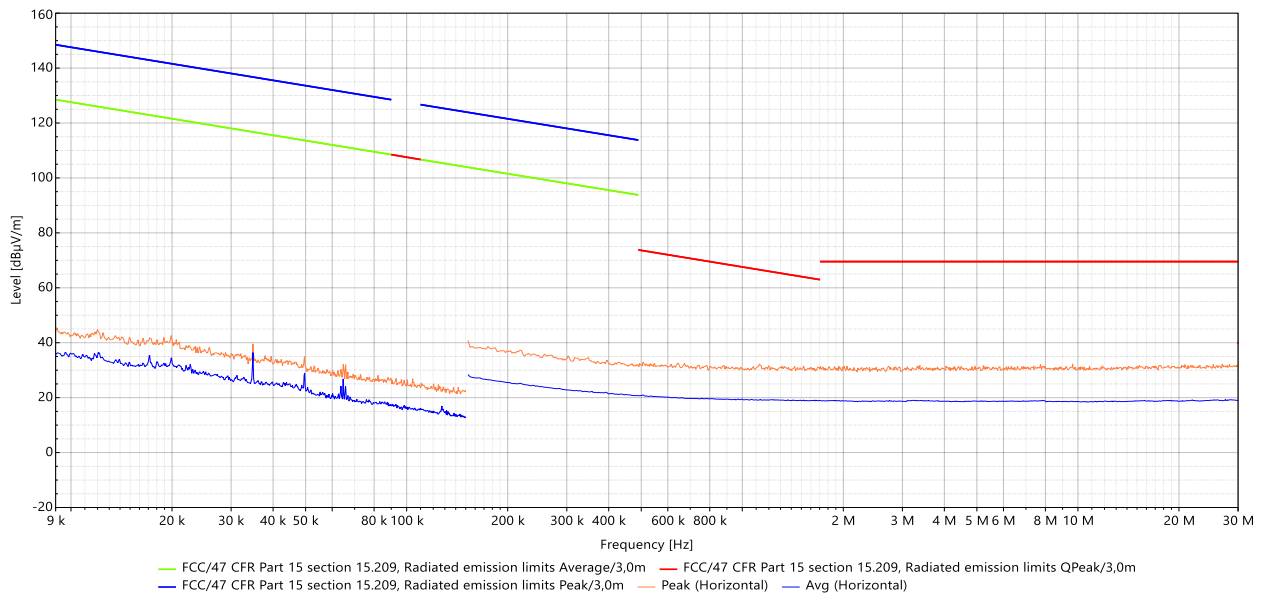
Seite 25 von 41
Page 25 of 41

Prüfdokumentation Test documentation

4.2.3.2 9 kHz to 30 MHz, middle Channel

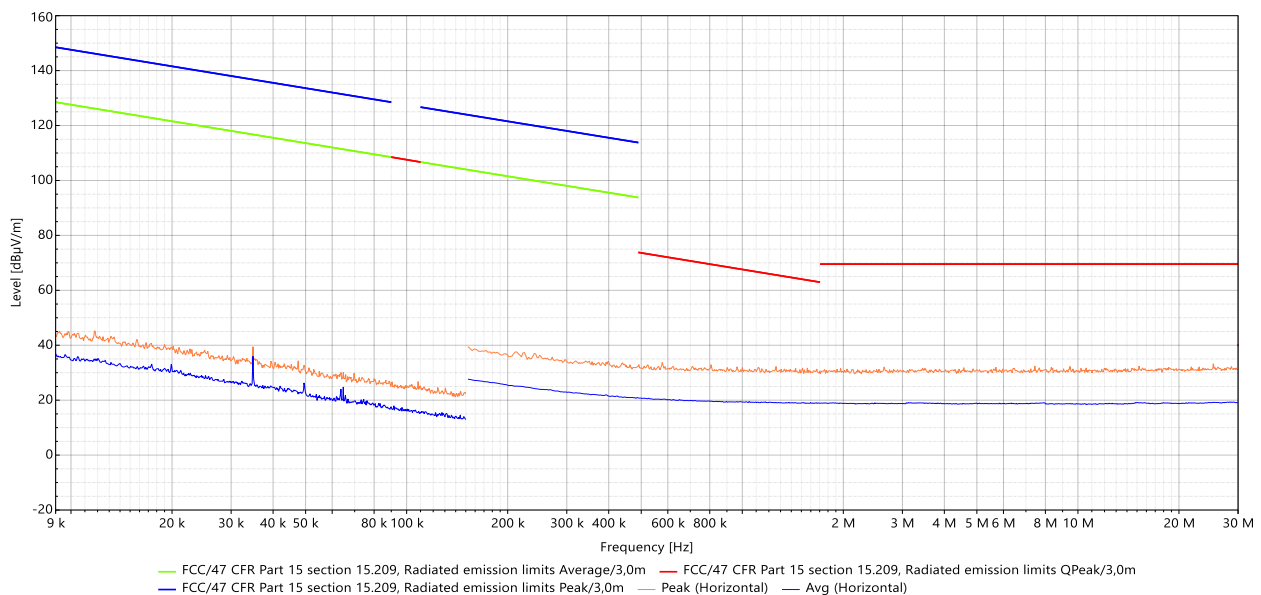
4.2.3.2.1 Perpendicular Polarization

#1672(9 kHz-30 MHz), Horizontal



4.2.3.2.2 Parallel Polarization

#1663(9 kHz-30 MHz), Horizontal



Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

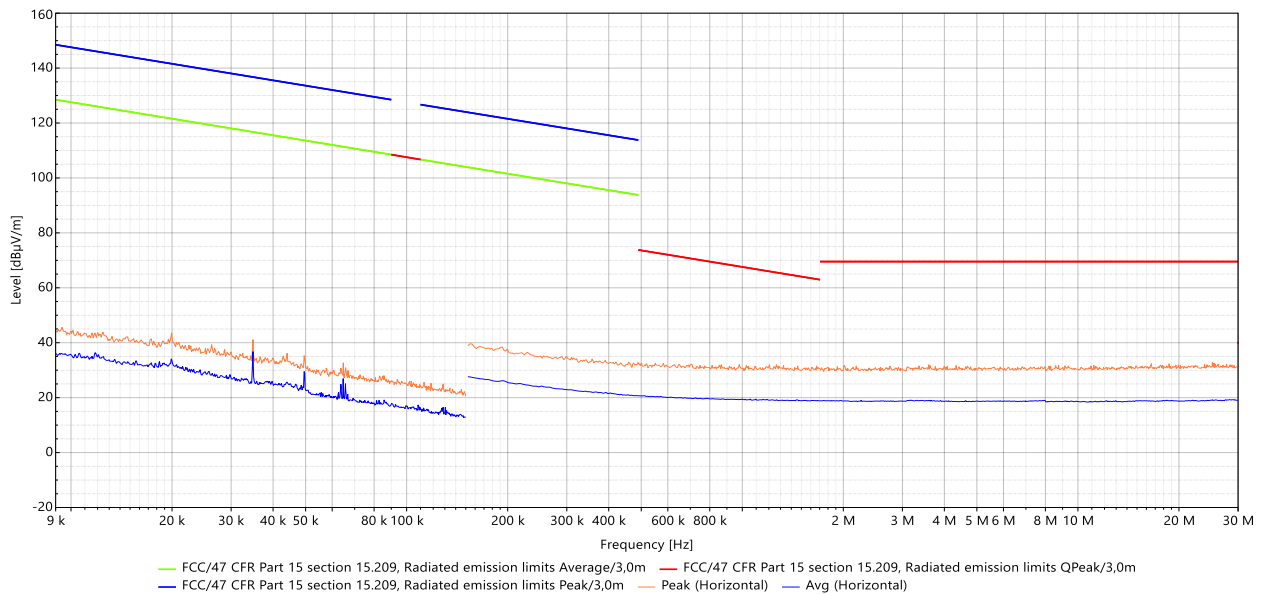
Seite 26 von 41
Page 26 of 41

Prüfdokumentation Test documentation

4.2.3.3 9 kHz to 30 MHz, highest Channel

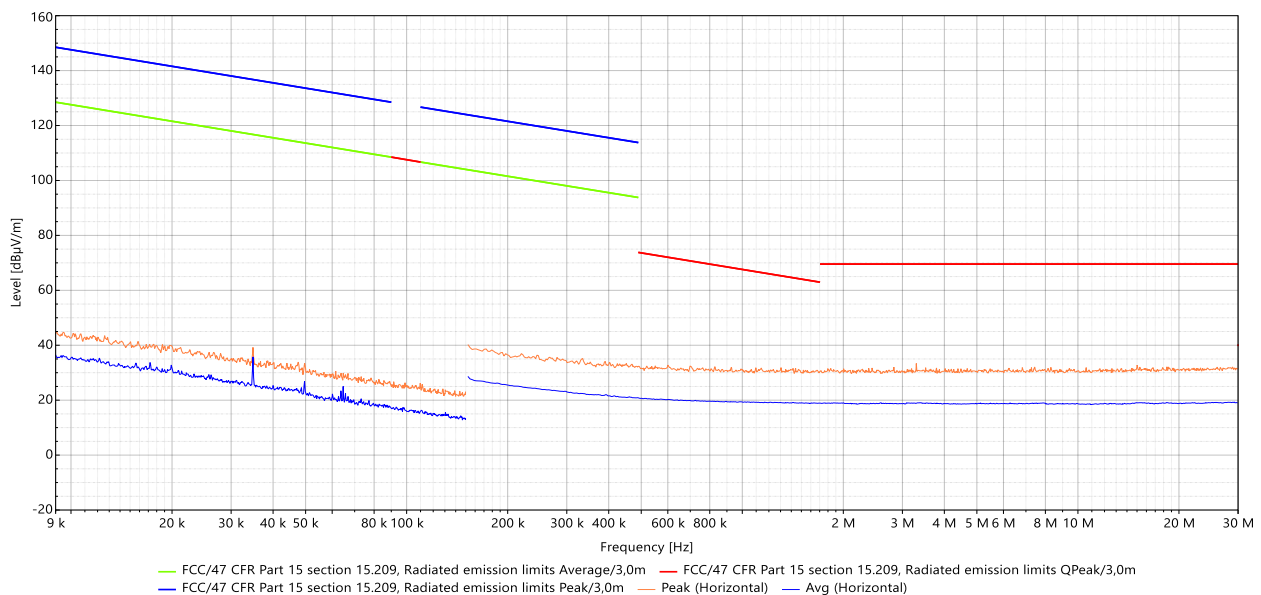
4.2.3.3.1 Perpendicular Polarization

#1674(9 kHz-30 MHz), Horizontal



4.2.3.3.2 Parallel Polarization

#1673(9 kHz-30 MHz), Horizontal



Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

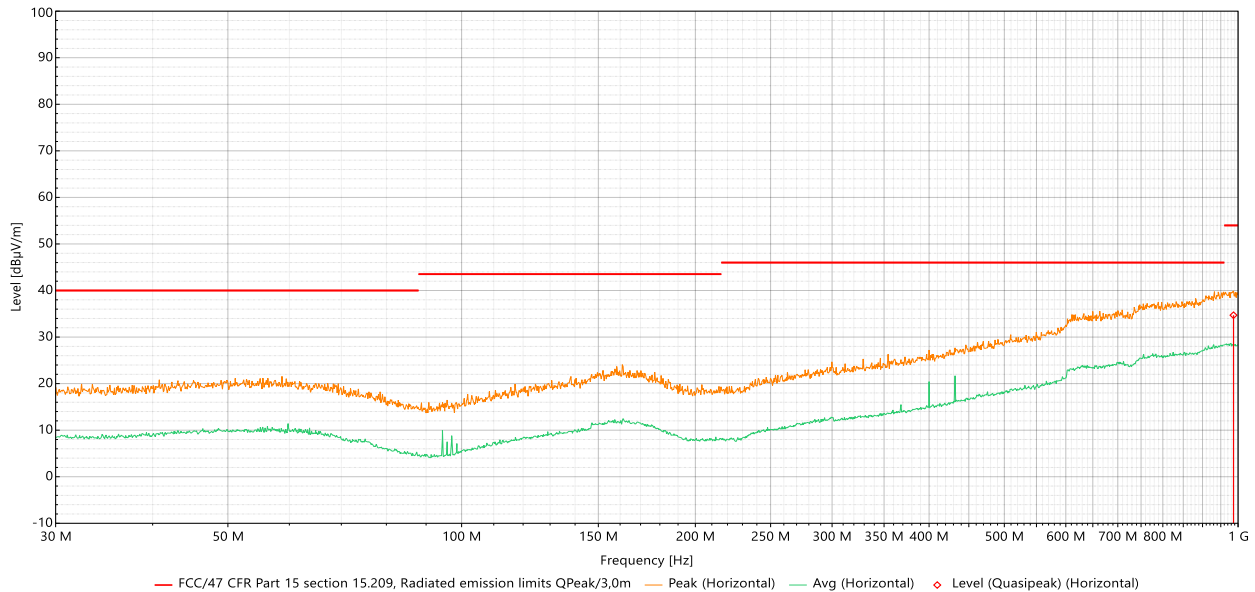
Seite 27 von 41
Page 27 of 41

Prüfdokumentation Test documentation

4.2.3.4 30 MHz to 1 GHz, lowest Channel

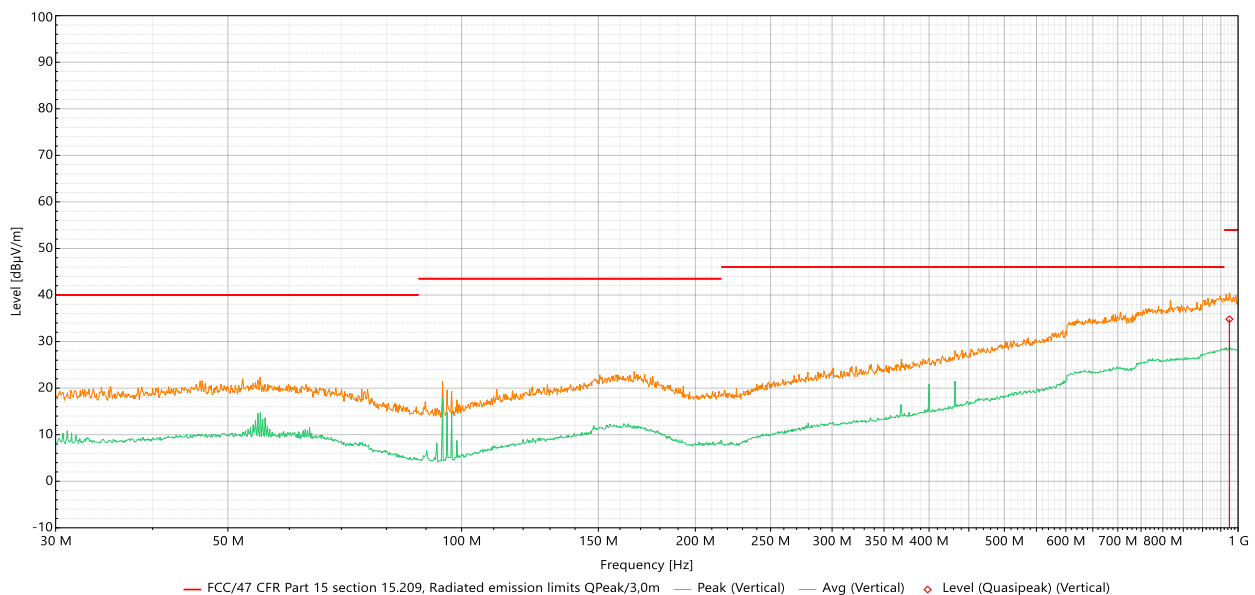
4.2.3.4.1 Horizontal Polarization

#1667(30 MHz-1 GHz), Horizontal



4.2.3.4.2 Vertical Polarization

#1667(30 MHz-1 GHz), Vertical



Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Height (m)	Corr. (dB)
986.575 M	34.7	54.0	-19.3	H	120.2	1.47	34.8
974.7 M	34.8	54.0	-19.2	V	125.1	2.83	34.9

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

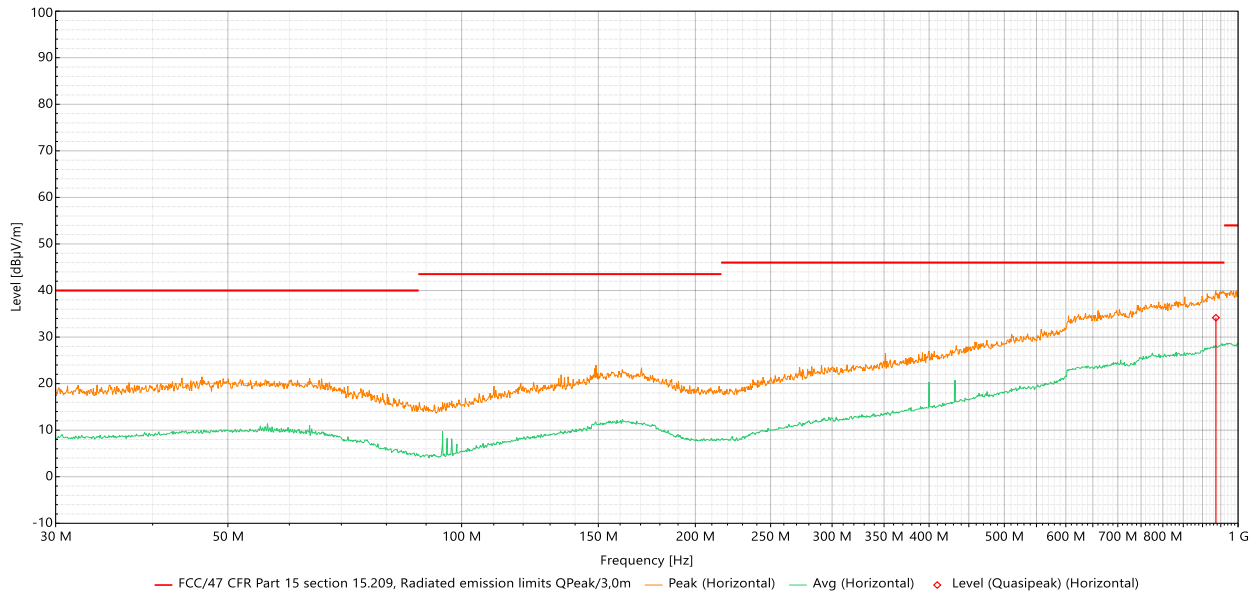
Seite 28 von 41
Page 28 of 41

Prüfdokumentation Test documentation

4.2.3.5 30 MHz to 1 GHz, middle Channel

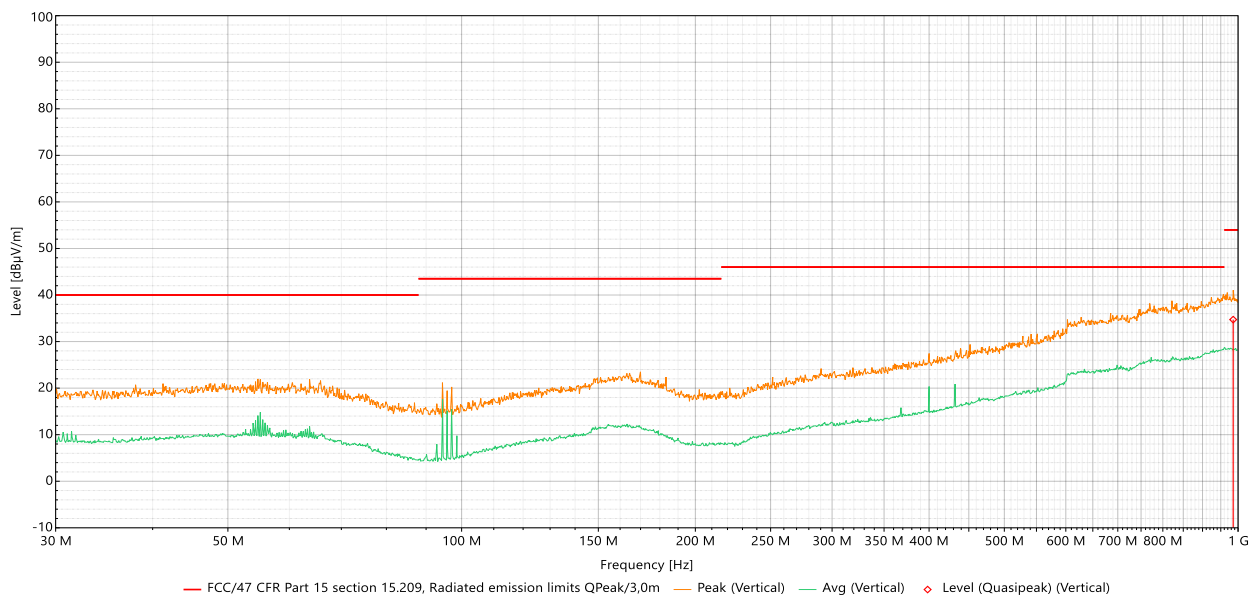
4.2.3.5.1 Horizontal Polarization

#1668(30 MHz-1 GHz), Horizontal



4.2.3.5.2 Vertical Polarization

#1668(30 MHz-1 GHz), Vertical



Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Height (m)	Corr. (dB)
985.6 M	34.7	54.0	-19.3	V	81.4	3.16	34.8
936.375 M	34.2	46.0	-11.8	H	187.4	2.15	34.5

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

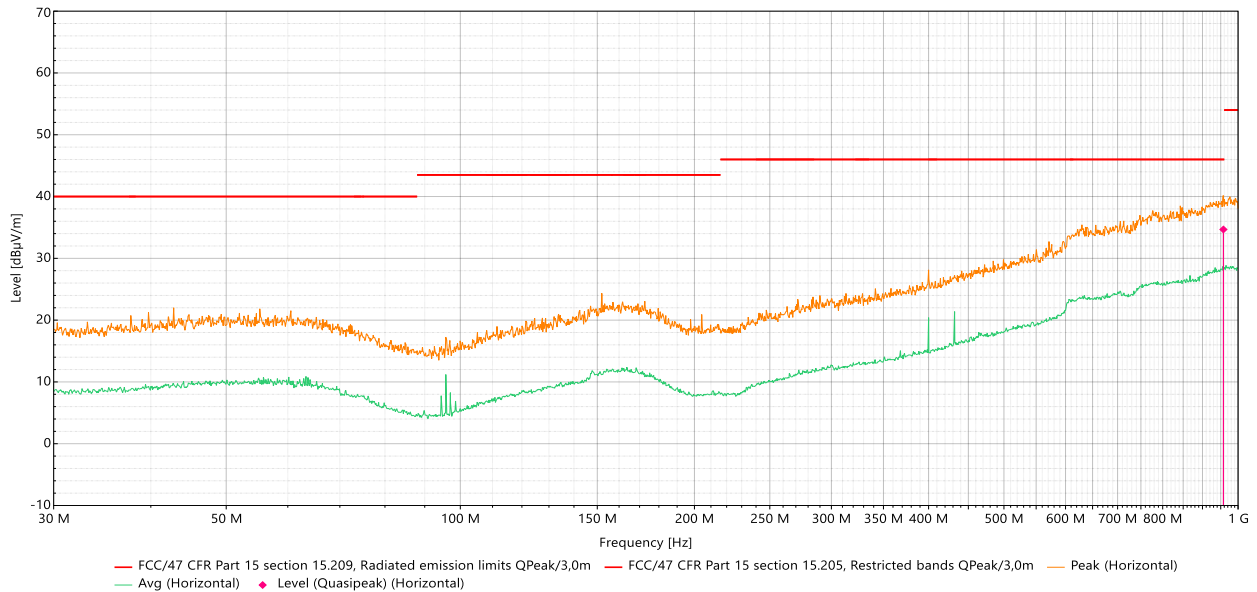
Seite 29 von 41
Page 29 of 41

Prüfdokumentation
Test documentation

4.2.3.6 30 MHz to 1 GHz, highest Channel

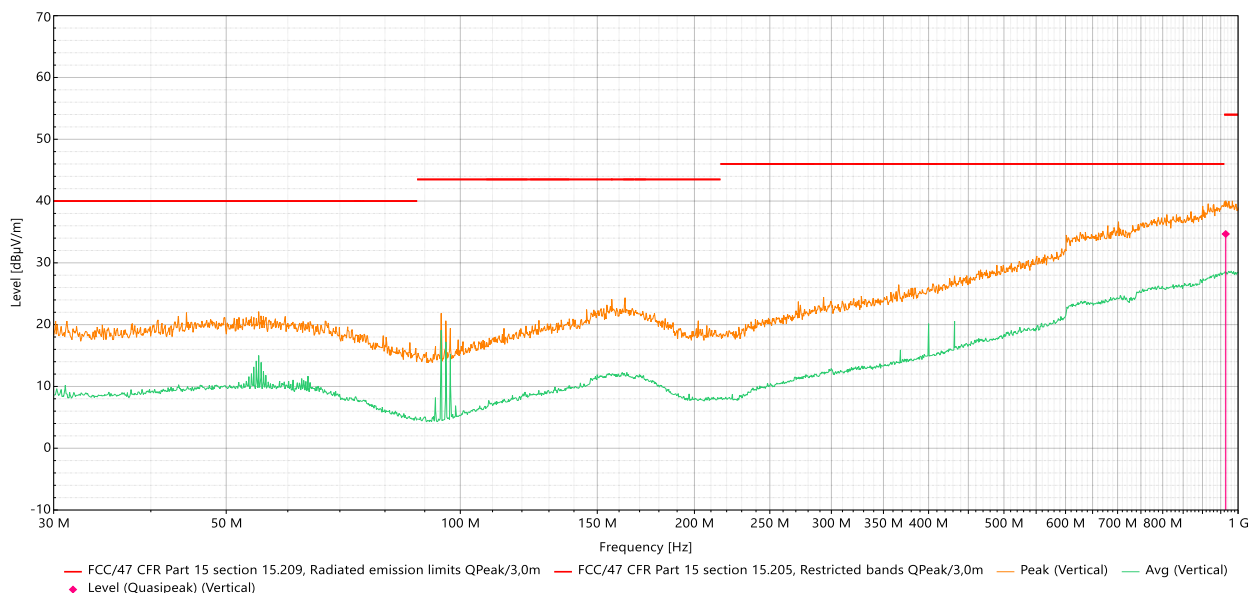
4.2.3.6.1 Horizontal Polarization

#1669(30 MHz-1 GHz), Horizontal



4.2.3.6.2 Vertical Polarization

#1669(30 MHz-1 GHz), Vertical



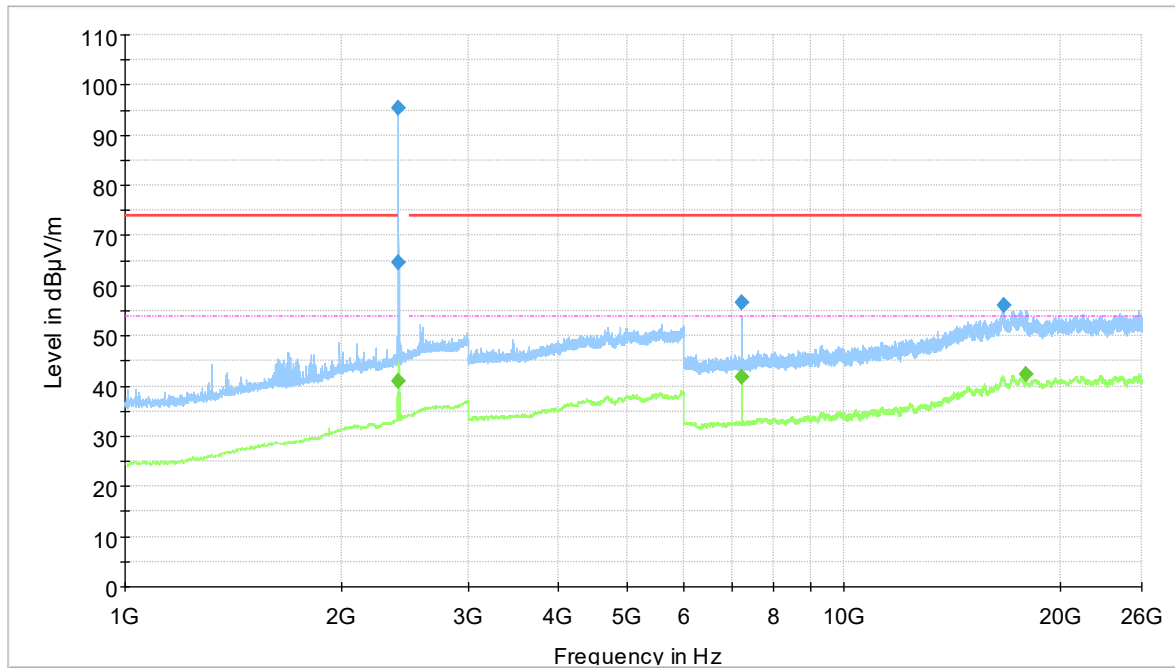
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Height (m)	Corr. (dB)
964.175 M	34.7	54.0	-19.3	V	263.0	2.02	34.9
957.55 M	34.7	46.0	-11.3	H	39.3	1.42	34.9

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 30 von 41
Page 30 of 41

Prüfdokumentation
Test documentation

4.2.3.7 1 to 26GHz, lowest Channel, elevation 3deg



— Preview Result 2-AVG
— FCC_15C_15.209_Radiated Emissions_Peak
◆ Final_Result PK+
 — Preview Result 1-PK+
— FCC_15C_15.209_Radiated Emissions_Avg
◆ Final_Result AVG

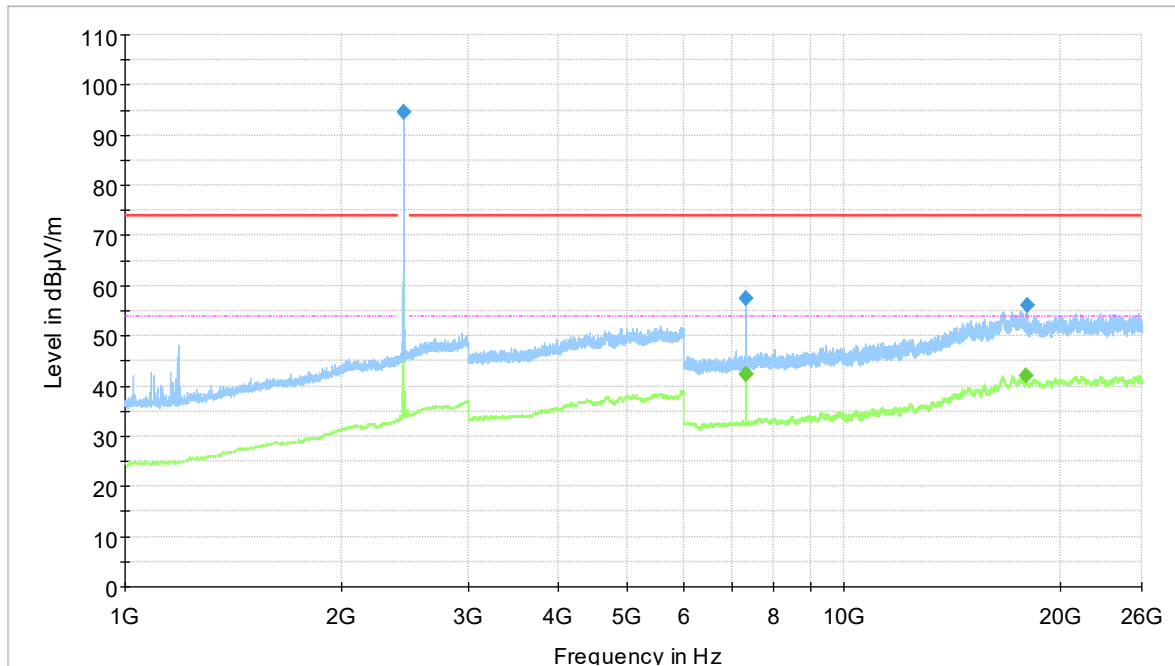
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2399.500	---	41.07	54.00	12.93	10000.0	1000.000	150.0	V	290.0	12.5
2399.500	64.74	---	74.00	9.26	10000.0	1000.000	150.0	H	264.0	12.5
2401.968	TX-Signal				10000.0	1000.000	150.0	H	258.0	12.5
7205.156	56.53	---	74.00	17.47	10000.0	1000.000	150.0	V	290.0	-2.9
7205.896	---	41.73	54.00	12.27	10000.0	1000.000	150.0	V	290.0	-2.9
16713.88	56.00	---	74.00	18.00	10000.0	1000.000	150.0	V	194.0	10.0
17961.40	---	42.41	54.00	11.59	10000.0	1000.000	150.0	V	228.0	12.1

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 31 von 41
Page 31 of 41

Prüfdokumentation
Test documentation

4.2.3.8 1 to 26GHz, middle Channel, elevation 3deg



— Preview Result 2-AVG
— FCC_15C_15.209_Radiated Emissions_Peak
◆ Final_Result PK+
 — Preview Result 1-PK+
— FCC_15C_15.209_Radiated Emissions_Avg
◆ Final_Result AVG

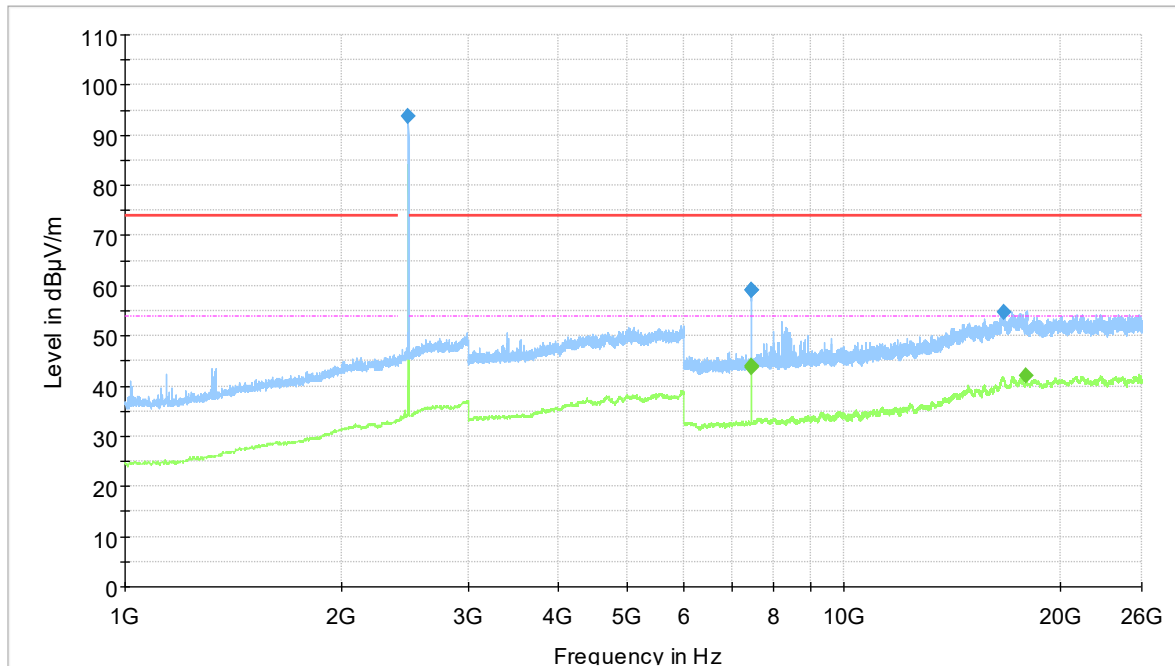
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2440.019	TX-Signal				10000.0	1000.000	150.0	H	255.0	13.1
7319.247	57.37	---	74.00	16.63	10000.0	1000.000	150.0	V	290.0	-3.1
7319.812	---	42.32	54.00	11.68	10000.0	1000.000	150.0	V	289.0	-3.1
7319.864	---	42.37	54.00	11.63	10000.0	1000.000	150.0	V	289.0	-3.1
17974.14	---	42.19	54.00	11.81	10000.0	1000.000	150.0	V	172.0	12.2
17978.36	56.06	---	74.00	17.94	10000.0	1000.000	150.0	V	107.0	12.2

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 32 von 41
Page 32 of 41

Prüfdokumentation
Test documentation

4.2.3.9 1 to 26GHz, highest Channel, elevation 7deg



— Preview Result 2-AVG
— FCC_15C_15.209_Radiated Emissions_Peak
— Preview Result 1-PK+
— FCC_15C_15.209_Radiated Emissions_Avg
◆ Final_Result PK+
◆ Final_Result AVG

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2480.032	TX-Signal				10000.0	1000.000	150.0	H	255.0	13.7
7439.194	59.16	---	74.00	14.84	10000.0	1000.000	150.0	V	-12.0	-3.2
7439.246	59.20	---	74.00	14.80	10000.0	1000.000	150.0	V	-11.0	-3.2
7439.675	---	43.82	54.00	10.18	10000.0	1000.000	150.0	V	277.0	-3.2
7440.012	---	44.05	54.00	9.95	10000.0	1000.000	150.0	V	278.0	-3.2
16687.38	54.75	---	74.00	19.25	10000.0	1000.000	150.0	V	92.0	10.0
17972.88	---	42.09	54.00	11.91	10000.0	1000.000	150.0	V	215.0	12.2

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 33 von 41
Page 33 of 41

Prüfdokumentation
Test documentation

4.2.4 Band Edge Measurement (Unwanted emissions)

4.2.4.1 Test Method

Unwanted emissions close to the operating band were additionally tested here.

Antenna connector is prepared, so conducted method was used according to ANSI C63.10:2013 clause 6.10. The maximum in-band antenna gain, or 2 dBi, whichever is greater was used outside the operating band.

The EUT was connected to the spectrum analyzer via a coax cable with a known loss. The measurements are done with DUT configured to the lowest and highest channels.

4.2.4.2 Test Setup

EUT		A003668536-001 (cond. sample)
Chamber details		Shielded room
Companion device		EUT in Test Mode. Therefore, no Companion Device was used.
Operation mode		☒ 1: TX-Mode ☐ 2: N/A ☐ 3: N/A ☐ 4: N/A
Spectrum Analyzer	Resolution Bandwidth	100kHz
	Video Bandwidth	300kHz
	Sweep time	200µs (max hold until stable)
Further parameters		-
Test engineer		Dipl. Ing. Primoz Erzen

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

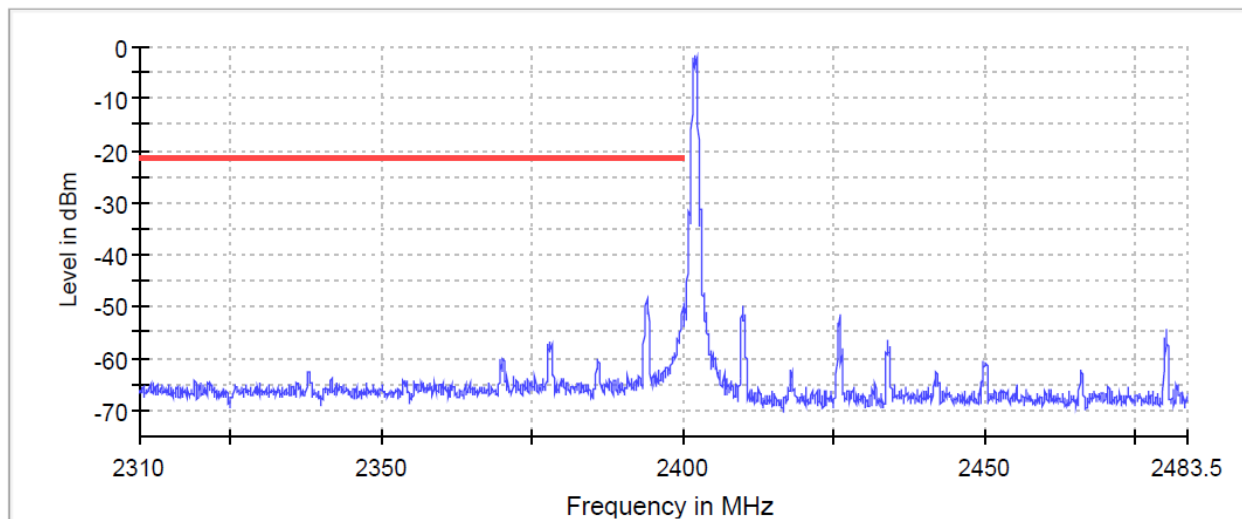
Seite 34 von 41
Page 34 of 41

Prüfdokumentation Test documentation

4.2.4.3 Test results (Unwanted emissions; Band Edge Measurement)

4.2.4.3.1 Lowest Channel 5V

Band Edge



Inband Peak

Frequency [MHz]	Level [dBm]
2401.975000	-1.5

Measurements

Frequency [MHz]	Level [dBm]	Margin [dB]	Limit [dBm]	Result
2393.975000	-48.8	27.3	-21.5	Pass

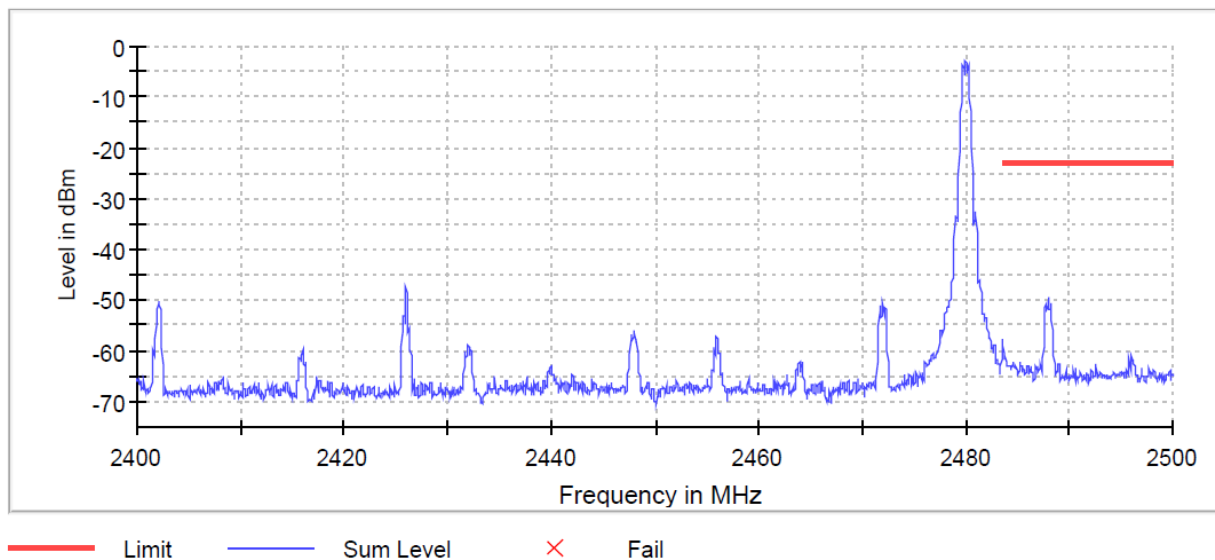
Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 35 von 41
Page 35 of 41

Prüfdokumentation
Test documentation

4.2.4.3.2 Highest Channel 5V

Band Edge



Inband Peak

Frequency [MHz]	Level [dBm]
2479.975000	-3.0

Measurements

Frequency [MHz]	Level [dBm]	Margin [dB]	Limit [dBm]	Result
2487.975000	-49.4	26.3	-23.0	Pass

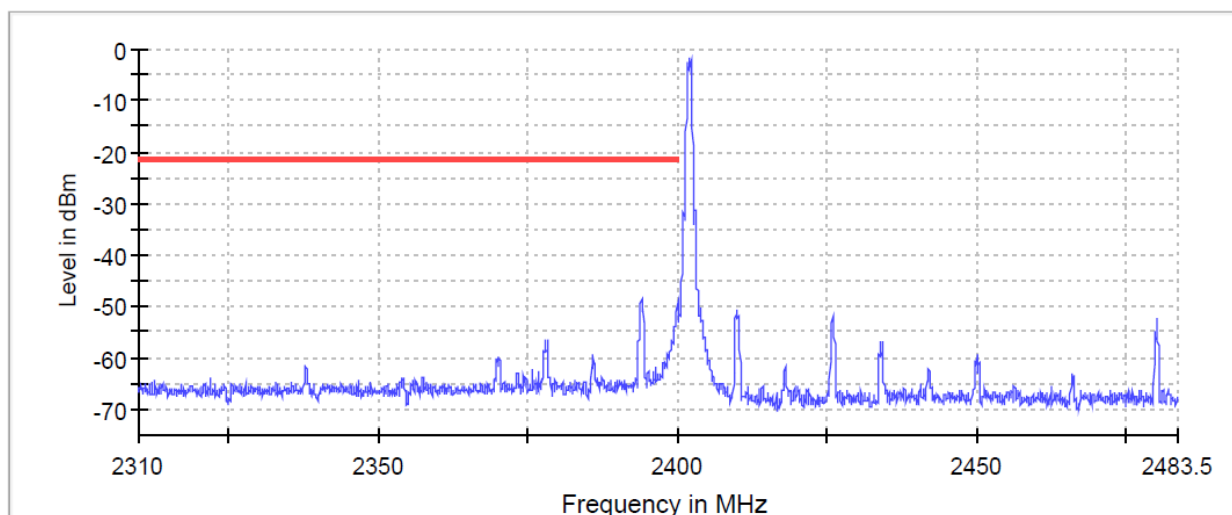
Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 36 von 41
Page 36 of 41

Prüfdokumentation
Test documentation

4.2.4.3.3 Lowest Channel 24V

Band Edge



— Limit — Sum Level × Fail

Inband Peak

Frequency [MHz]	Level [dBm]
2401.975000	-1.6

Measurements

Frequency [MHz]	Level [dBm]	Margin [dB]	Limit [dBm]	Result
2393.975000	-48.7	27.1	-21.6	Pass

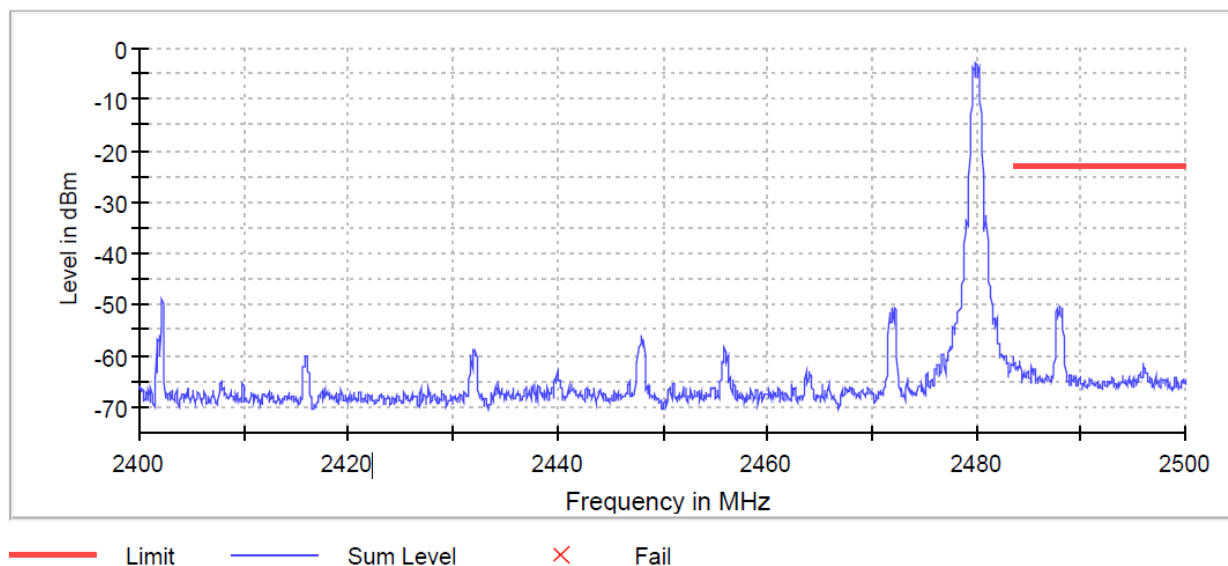
Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 37 von 41
Page 37 of 41

Prüfdokumentation Test documentation

4.2.4.3.4 Highest Channel 24V

Band Edge



Inband Peak

Frequency [MHz]	Level [dBm]
2479.975000	-3.0

Measurements

Frequency [MHz]	Level [dBm]	Margin [dB]	Limit [dBm]	Result
2487.975000	-50.3	27.3	-23.0	Pass

4.2.5 Final test result (Unwanted emissions)

Final test result	Pass
-------------------	------

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 38 von 41
Page 38 of 41

Fotodokumentation
Photo documentation

5 Test Setup Photo

There are no photos of the EUT in this report acc. to the confidentiality letter.
For EUT- and test setup photos please see the Photo Documentation to this report Number.

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 39 von 41
Page 39 of 41

Zusatzdokumentation
Additional documentation

6 Application form

The following information was provided by the customer and form the basis for the execution of the tests and the assessment of conformity. The given information can affect the results of both.

No application form was provided.

Prüfbericht-Nr.: DE24VRBW 001
Test report no.:

Seite 40 von 41
Page 40 of 41

Liste der verwendeten Prüfmittel
List of used test equipment

7 Equipment List

7.1 Hardware

Prüfmittel Test equipment			Prüfmittel-Nr. / ID-Nr. Equipment No. / ID-No.	Letzte Kalibrierung Last calibration	Nächste Kalibrierung Next calibration	
TS8997	OSP-B157 WX. (with integrated power meter)	Rohde & Schwarz	9000266	08.09.2022	08.09.2024	
	OSP-B157W8	Rohde & Schwarz	9000267	07.09.2022	07.09.2024	
	Spectrum Analyzer: FSV-30	Rohde & Schwarz	9000268	10.08.2023	10.08.2025	
	Humidity / Baro / Temp. Data Recorder	PCE Instruments	9000207	08.08.2023	08.08.2024	
Fully Anechoic Room		Albatross Projects GmbH	2959749	08.10.2021	08.10.2024	*
Signal Analyzer FSU 26		Rohde & Schwarz	2844118	04.08.2023	04.08.2025	
Signal Analyzer UXA N9041B		Keysight	2971644	06.04.2022	06.04.2024	
RSE-Filtersystem		Rohde & Schwarz	9002802	06.02.2024	06.02.2025	*
Antenna CBL 6111D 25MHz-1GHz		CHASE	2815644	06.09.2021	06.09.2024	
Antenna HF907 1-18GHz		Rohde & Schwarz	2856263	01.09.2021	01.09.2024	
Horn Antenna 3116C-PA 18-40GHz		ETS LINDGREN	2900393	19.12.2022	19.12.2025	
Semi-Anechoic Chamber 30-1000 MHz		Siemens	2729645	15.06.2022	15.06.2025	*
Receiver ESU 8		Rohde & Schwarz	2728844	23.02.2024	23.02.2025	
Antenna HFH 2 (Loop) 9kHz-30MHz		Rohde & Schwarz	2728893	09.07.2021	09.07.2024	
Antenna VULB 9168 30MHz – 1GHz		Schwarzbeck	2728136	05.10.2023	05.10.2026	

*Equipment only verified and not calibrated

7.2 Software

Test Software	Developer	Version
EMC32	Rohde & Schwarz	10.60.20
WMS32	Rohde & Schwarz	10.60.10
BAT-EMC	NEXIO	2022.0.8.0

Prüfbericht-Nr.: DE24VRBW 001
 Test report no.:

Seite 41 von 41
 Page 41 of 41

Änderungsverzeichnis
 Change history

8 Change history

Revision Number	List of revisions	Date of issue
001	Initial Release	2024-05-02
Note: Latest revision report will replace all previous reports.		

Ende des Prüfberichts
 End of Test Report