

Prüfbericht-Nr.: Test report no.:	CN24VPHN 001	Auftrags-Nr.: Order no.:	180273092	Seite 1 von 39 Page 1 of 39
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2023.10.10	
Auftraggeber: Client:	SUNTEK-GROUP, INC 4648 Troy Ct Riverside, CA 92509 United States			
Prüfgegenstand: Test item:	Robotic Lawn Mower			
Bezeichnung / Typ-Nr.: Identification / Type no.:	uRM1060, uRM1060.x, uRM1100, uRM1100.x (x=0-9, u=A-Z)			
Auftrags-Inhalt: Order content:	TÜV Rheinland – FCC Service			
Prüfgrundlage: Test specification:	FCC 47 CFR Part 15.203 FCC 47 CFR Part 15.247			
Wareneingangsdatum: Date of sample receipt:	2024.02.20	Refer to Photo Documentation		
Prüfmuster-Nr.: Test sample no.:	A003613463-001			
Prüfzeitraum: Testing period:	2024.02.28 - 2024.03.08			
Ort der Prüfung: Place of testing:	Refer to section 1.1			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	genehmigt von: authorized by:			
Datum: Date:	2024.12.31	Ausstelldatum: Issue date:	2024.12.31	
Stellung / Position:	Keda Zhou/PE	Stellung / Position:	Chonghai Liang/Authorizer	
Sonstiges / Other:	FCC ID: 2BDQH-SRM001 Series 1060 and 1100 are the same except for battery capacity, so all the tests were performed on model SRM1100.			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* 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. This test report only relates to the a. m. 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.				

Prüfbericht-Nr.: CN24VPHN 001
Test report no.:

Seite 2 von 39
Page 2 of 39

Anmerkungen Remarks

- | | |
|----------|--|
| 1 | <p>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.</p> <p><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. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p> |
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| 3 | <p>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.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.
Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p> |
| 4 | <p>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.</p> <p><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></p> |

Test Summary

4.1.1 ANTENNA REQUIREMENT

Result:

Pass

4.1.2 20dB BANDWIDTH

Result:

N/A

4.1.3 CARRIER SEPARATION

Result:

Pass

4.1.4 NUMBER OF HOPPING CHANNELS

Result:

Pass

4.1.5 TIME OF OCCUPANCY

Result:

Pass

4.1.6 MAXIMUM PEAK CONDUCTED OUTPUT POWER

Result:

Pass

4.1.7 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 kHz BANDWIDTH

Result:

Pass

4.1.8 RADIATED EMISSION

Result:

Pass

Contents

1. TEST SITES	5
1.1 TEST FACILITIES.....	5
1.2 LIST OF TEST AND MEASUREMENT INSTRUMENTS	5
1.3 UNCERTAINTY OF MEASUREMENT	5
2. GENERAL PRODUCT INFORMATION.....	6
2.1 PRODUCT FUNCTION AND INTENDED USE	6
2.2 RATINGS AND SYSTEM DETAILS	6
2.3 INDEPENDENT OPERATION MODES	7
2.4 NOISE GENERATING AND NOISE SUPPRESSING PARTS	7
2.5 SUBMITTED DOCUMENTS	7
3. TEST SET-UP AND OPERATION MODES	8
3.1 PRINCIPLE OF CONFIGURATION SELECTION	8
3.2 TEST OPERATION AND TEST SOFTWARE	8
3.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT.....	8
3.4 COUNTERMEASURES TO ACHIEVE ERM COMPLIANCE.....	8
3.5 TEST SET-UP.....	9
4. TEST RESULTS	10
4.1 TRANSMITTER REQUIREMENT & TEST SUITES	10
4.1.1 Antenna Requirement.....	10
4.1.2 20dB Bandwidth.....	11
4.1.3 Carrier Separation.....	12
4.1.4 Number of Hopping Channels.....	14
4.1.5 Time of Occupancy	16
4.1.6 Maximum Peak Conducted Output Power.....	18
4.1.7 Conducted Spurious Emissions Measured in 100 kHz Bandwidth.....	19
4.1.8 Radiated Emission	25
5. LIST OF TABLES	39
6. LIST OF FIGURES	39

Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 5 von 39

Page 5 of 39

1. Test Sites

1.1 Test Facilities

Laboratory: TÜV Rheinland /CCIC (Ningbo) Co., Ltd.

1st Floor, Building 11, Scholar Innovation Park, No.1188 Zhongguan Road, Zhenhai District, Ningbo 315200 P.R. China

FCC Designation Number: CN1237

FCC Test Firm Registration Number: 647754

The used test equipment is in accordance with CISPR 16-1 series standards.

1.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment, Laboratory

Kind of Equipment	Type	Serial No.	Last cal. date	Cal. due date
EMI test receiver	ESR7	101929	2023.10.30	2024.10.29
Spectrum analyzer	FSV40	101412	2023.10.30	2024.10.29
Bilog Antenna	CBL6112D	49033	2024.03.17	2027.03.16
Horn antenna	HF907	102653	2023.07.20	2026.07.19
Broad-Band Horn Antenna	BBHA 9170	899	2024.01.05	2027.01.04
Pre-amplifier	SCU-18F	180051	2023.10.30	2024.10.29
Pre-amplifier	LNPA_1840G-50	SK2021040801	2023.10.30	2024.10.29
RF control Unit	JS0806-2	22G8060598	2023.11.03	2024.11.02
Mains control unit	JS0806-4ADC	21L8060536	2023.10.30	2024.10.29

1.3 Uncertainty of Measurement

Table 2: Measurement Uncertainty

Test Item	Expanded Measurement Uncertainty (k=2)
Conducted Emission (9-150kHz)	3.70dB
Conducted Emission (150k-30MHz)	3.30dB
Occupied Channel Bandwidth	±5 %
Radiated Emission (30-1000MHz)	4.39dB
Radiated Emission (1-18GHz)	4.67dB

Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 6 von 39

Page 6 of 39

2. General Product Information

2.1 Product Function and Intended Use

The EUT (equipment under test) is a Robotic Lawn Mower operated at 2400-2483.5MHz.

For more detail information, refer to the user's manual.

2.2 Ratings and System Details

Table 3: General Description of EUT

General Description of EUT	
Charging Voltage:	DC 20.5V
Internal battery Voltage:	DC 18V
Protection Class:	Class III
Technical Specification of Bluetooth (BR, EDR)	
Frequency Range:	2402 – 2480MHz
Modulation Type:	GFSK(BR), $\pi/4$ -DQPSK(EDR), 8DPSK(EDR)
Data Rate:	DH1, DH3, DH5, 2DH1, 2DH3, 2DH5, 3DH1, 3DH3, 3DH5
Channel:	0-78 (hopping)
Antenna Type:	External PCB Antenna with IPEX
Antenna Gain:	1.8dBi

Table 4: Channel List

Channel List for BR/EDR							
Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)	Ch.	Freq. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477

Channel List for BR/EDR							
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

2.3 Independent Operation Modes

There are some modes:

Mode A: Transmitting continuously of BT_ GFSK

1. Channel 2402MHz
2. Channel 2441MHz
3. Channel 2480MHz
4. Hopping

Mode B: Transmitting continuously of BT_ $\pi/4$ -DQPSK

1. Channel 2402MHz
2. Channel 2441MHz
3. Channel 2480MHz
4. Hopping

Mode C: Transmitting continuously of BT_ 8DPSK

1. Channel 2402MHz
2. Channel 2441MHz
3. Channel 2480MHz
4. Hopping

Refer to the user's manual for further information.

2.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram for further information.

2.5 Submitted Documents

Circuit diagram, label, user manual etc.

3. Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

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

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

3.2 Test Operation and Test Software

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power was selected according to the instruction given by the manufacturer. The setting of the RF output power expected by the customer shall be fixed on the firmware of the final end product.

All testing were performed according to the procedures in ANSI C63.10: 2020.

Test Software EMC32 V10.30 was used in the radiated emission test.

More details refer to the related paragraph of this report.

3.3 Special Accessories and Auxiliary Equipment

Table 5: List of Auxiliary Equipment

Description	Manufacturer	Model No.
Notebook	Lenovo	ThinkPad X380 Yoga

3.4 Countermeasures to Achieve ERM Compliance

The test sample which has been tested contained the noise suppression parts as described in the Circuit Diagram. No additional measures were employed to achieve compliance.

3.5 Test set-up

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

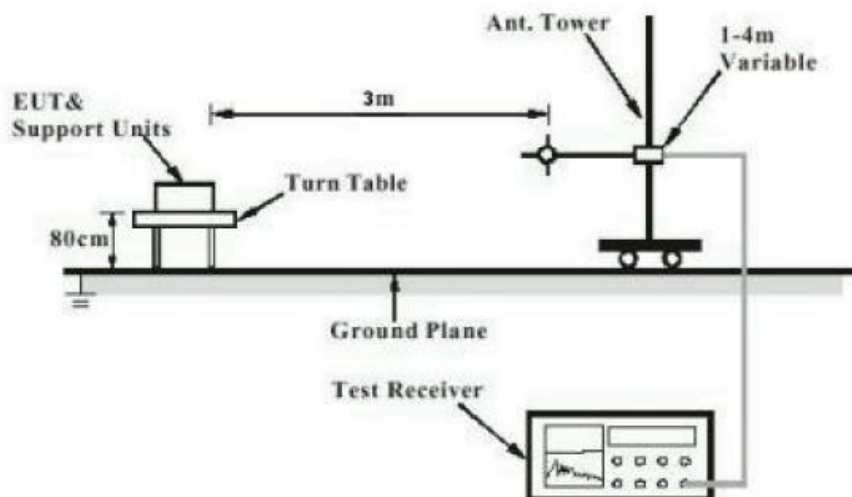


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

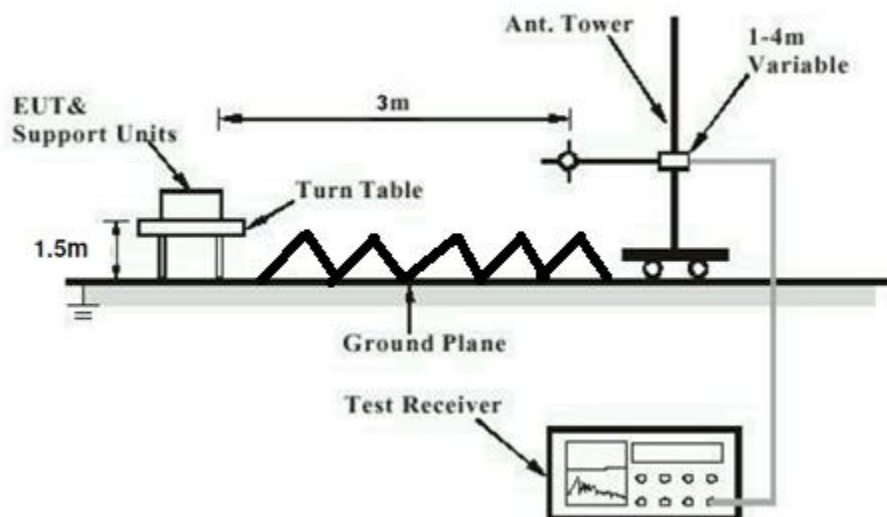
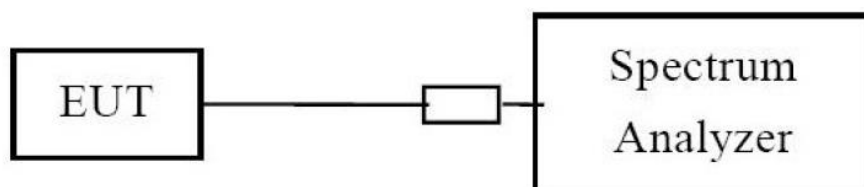


Diagram of Measurement Configuration for Conducted Transmitter Measurement



Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 10 von 39

Page 10 of 39

4. Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

Result:

Pass

Test Specification

Test standard

Limit

: FCC 47 CFR Part 15.203

: FCC: the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an integral antenna (External PCB Antenna, Antenna Gain: 1.8dBi), and no consideration of replacement. Therefore, the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 11 von 39

Page 11 of 39

4.1.2 20dB Bandwidth

Result:

N/A

Test Specification

Test standard : FCC 47 CFR Part 15.247 (a)(1)

Basic standard : ANSI C63.10: 2020

Limits : No Limit

Kind of test site : Shielded Room

Test Setup

Date of testing : 2024.02.28

Input voltage : DC 18V

Operational mode : A.1, A.2, A.3, B.1, B.2, B.3, C.1, C.2, C.3

Temperature : 23°C

Relative humidity : 56%

Atmospheric pressure : 101.2 kPa

Table 6: Test result of 20dB Bandwidth

Mode	Bandwidth (kHz)	Limit (kHz)	Verdict
A.1	945	N/A	N/A
A.2	945	N/A	N/A
A.3	945	N/A	N/A
B.1	1287	N/A	N/A
B.2	1287	N/A	N/A
B.3	1287	N/A	N/A
C.1	1293	N/A	N/A
C.2	1293	N/A	N/A
C.3	1290	N/A	N/A

Note: For frequency hopping systems operating in the 2400 – 2483.5MHz band, no bandwidth limit is specified. The test data is provided for reference.

Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 12 von 39

Page 12 of 39

4.1.3 Carrier Separation

Result:

Pass

Test Specification

Test standard : FCC 47 CFR Part 15.247 (a)(1)

Basic standard : ANSI C63.10: 2020

Limits : FCC 47 CFR Part 15.247 (a)(1)

Kind of test site : Shielded Room

Test Setup

Date of testing : 2024.02.28

Input voltage : DC 18V

Operational mode : A.4, B.4, C.4

Temperature : 23°C

Relative humidity : 56%

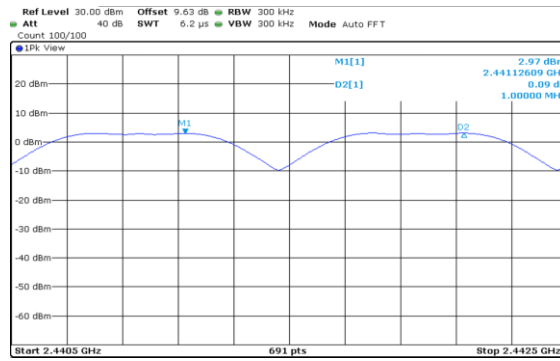
Atmospheric pressure : 101.2 kPa

Table 7: Test result of carrier separation

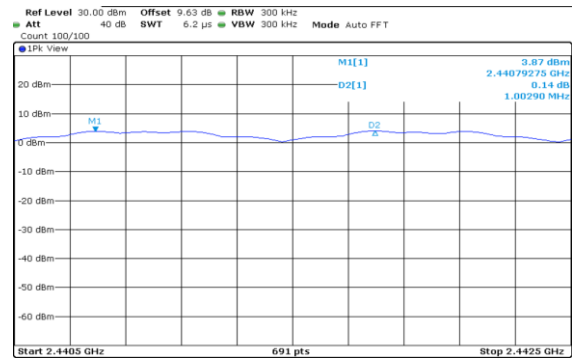
Mode	Separation (kHz)	Limit (kHz)	Verdict
A.4	1000	≥ 945	Pass
B.4	1003	≥ 858	Pass
C.4	997	≥ 861	Pass

Figure 1: Carrier separation

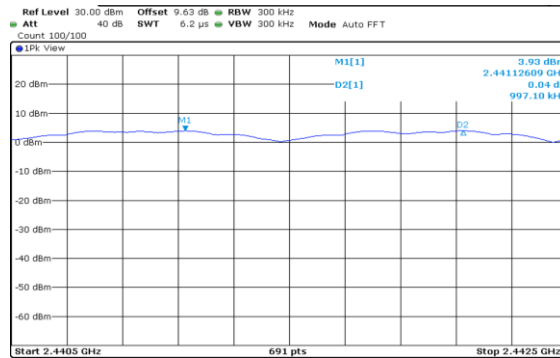
A.4



B.4



C.4



Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 14 von 39

Page 14 of 39

4.1.4 Number of Hopping Channels

Result:

Pass

Test Specification

Test standard : FCC 47 CFR Part 15.247 (a)(1)(iii)

Basic standard : ANSI C63.10: 2020

Limits : At least 15

Kind of test site : Shielded Room

Test Setup

Date of testing : 2024.02.28

Input voltage : DC 18V

Operational mode : A.4, B.4, C.4

Temperature : 23°C

Relative humidity : 56%

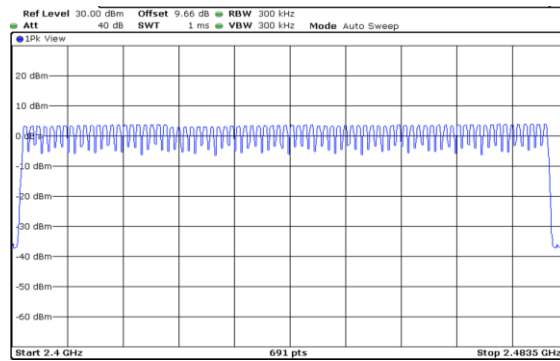
Atmospheric pressure : 101.2 kPa

Table 8: Test result of number of hopping channels

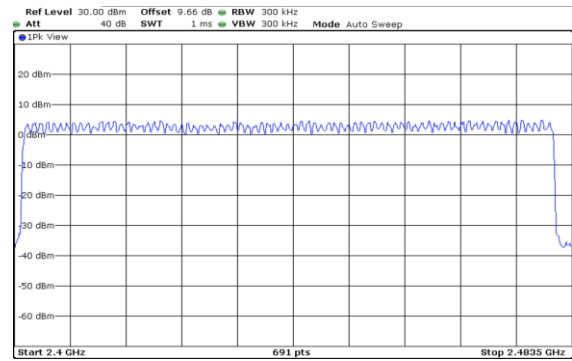
Mode	Number	Limit	Verdict
A.4	79	≥ 15	Pass
B.4	79	≥ 15	Pass
C.4	79	≥ 15	Pass

Figure 2: Number of hopping channels

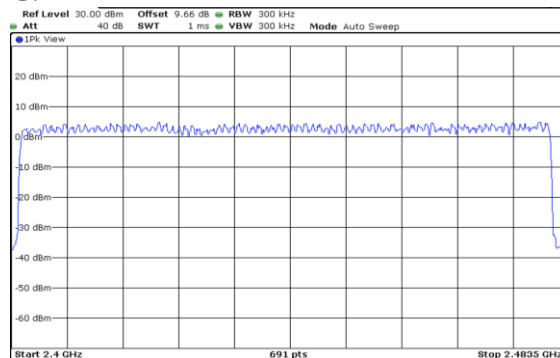
A.4



B.4



C.4



Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 16 von 39

Page 16 of 39

4.1.5 Time of Occupancy

Result:

Pass

Test Specification

Test standard : FCC 47 CFR Part 15.247 (a)(1)(iii)

Basic standard : ANSI C63.10: 2020

Limits : Not more than 400ms

Kind of test site : Shielded Room

Test Setup

Date of testing : 2024.02.28

Input voltage : DC 18V

Operational mode : A.4, B.4, C.4

Temperature : 23°C

Relative humidity : 56%

Atmospheric pressure : 101.2 kPa

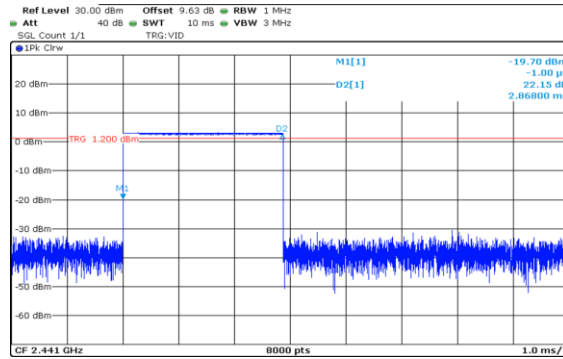
Table 9: Test result of time of occupancy

Mode	Single Burst Time(ms)	Number of Hopping	Total Burst Time (ms)	Limit (ms)	Verdict
A.4	2.868	106.67	306	≤400	Pass
B.4	2.873	106.67	306	≤400	Pass
C.4	2.874	106.67	307	≤400	Pass

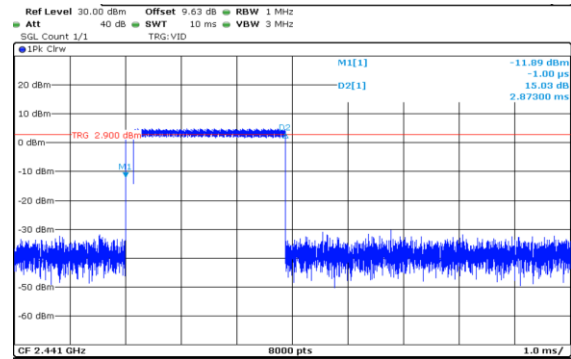
Note: Total Burst Time= Single Burst Time* Number of Hopping

Figure 3: Time of occupancy

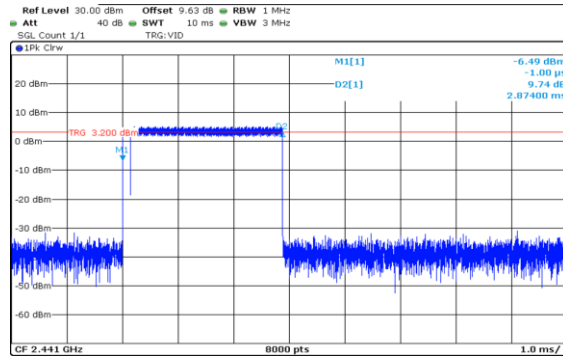
A.4



B.4



C.4



Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 18 von 39

Page 18 of 39

4.1.6 Maximum Peak Conducted Output Power

Result:

Pass

Test Specification

Test standard : FCC 47 CFR Part 15.247 (b)(1)

Basic standard : ANSI C63.10: 2020

Limits : FCC 47 CFR Part 15.247 (a)(1)&(b)(1)

Kind of test site : Shielded Room

Test Setup

Date of testing : 2024.02.28

Input voltage : DC 18V

Operational mode : A.1, A.2, A.3, B.1, B.2, B.3, C.1, C.2, C.3

Temperature : 23°C

Relative humidity : 56%

Atmospheric pressure : 101.2 kPa

Table 10: Test result of Maximum Peak Output Power

Mode	Peak Output Power (dBm)	Limit (dBm)	Verdict
A.1	2.94	≤30	Pass
A.2	3.30	≤30	Pass
A.3	3.77	≤30	Pass
B.1	4.24	≤20.97	Pass
B.2	4.63	≤20.97	Pass
B.3	5.06	≤20.97	Pass
C.1	4.81	≤20.97	Pass
C.2	5.16	≤20.97	Pass
C.3	5.59	≤20.97	Pass

Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 19 von 39

Page 19 of 39

4.1.7 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Result:

Pass

Test Specification

Test standard : FCC 47 CFR Part 15.247 (d)

Basic standard : ANSI C63.10: 2020

Limits : 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power)

Kind of test site : Shielded Room

Test Setup

Date of testing : 2024.02.28

Input voltage : DC 18V

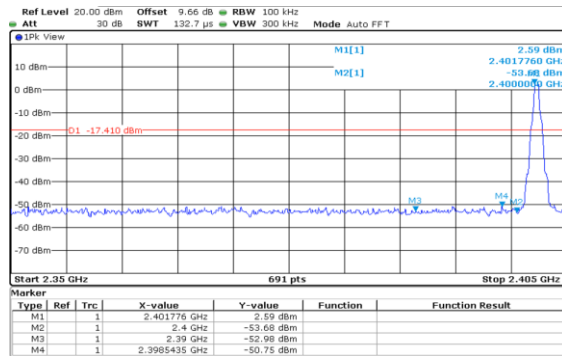
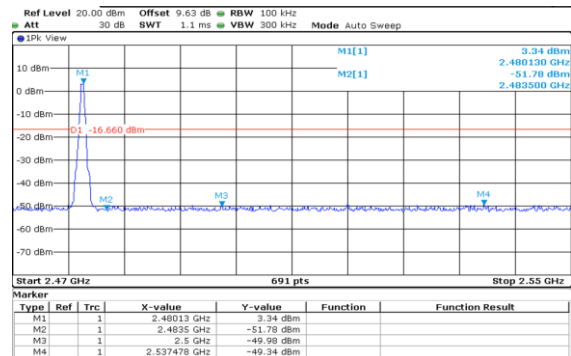
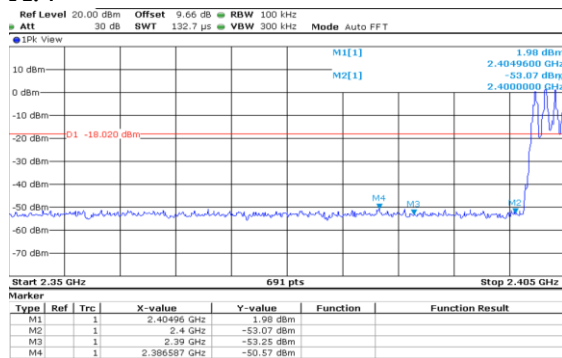
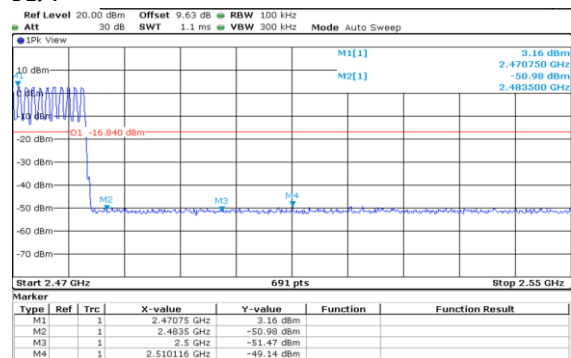
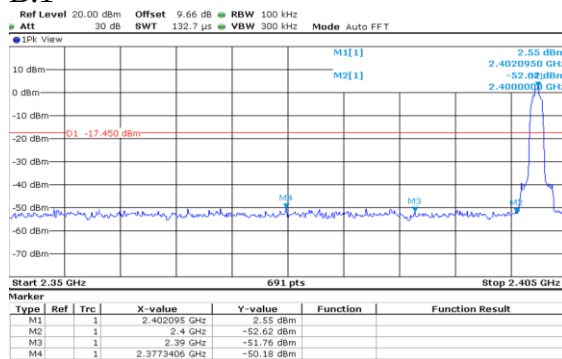
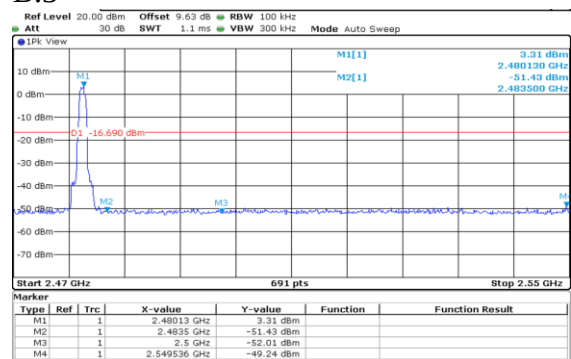
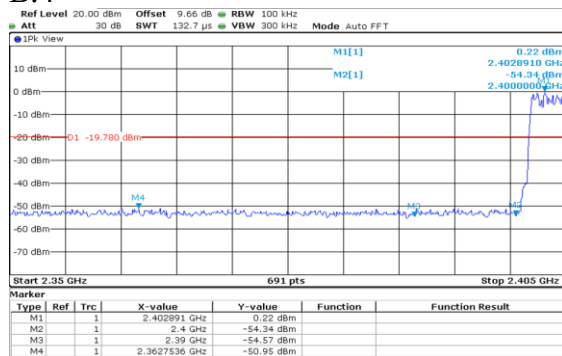
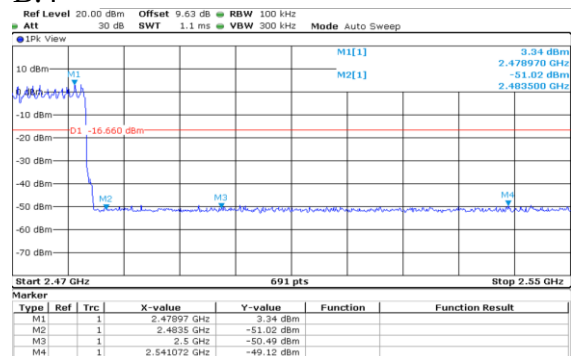
Operational mode : A.1, A.2, A.3, A.4, B.1, B.2, B.3, B.4, C.1, C.2, C.3, C.4

Temperature : 23°C

Relative humidity : 56%

Atmospheric pressure : 101.2 kPa

All emissions are more than 20dB below fundamental, compliance is achieved as well.

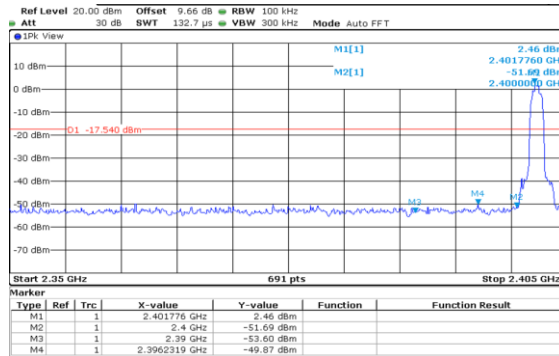
Figure 4: Band Edge
A.1

A.3

A.4

A.4

B.1

B.3

B.4

B.4


Prüfbericht - Nr.: CN24VPHN 001

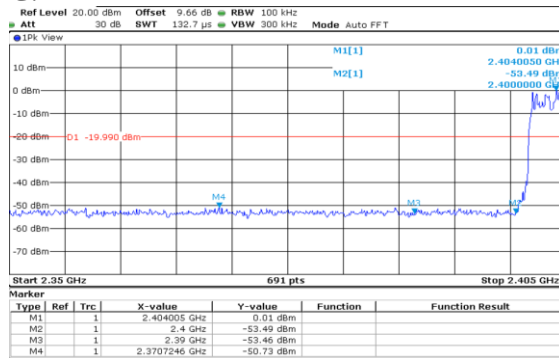
Test Report No.:

Seite 21 von 39
Page 21 of 39

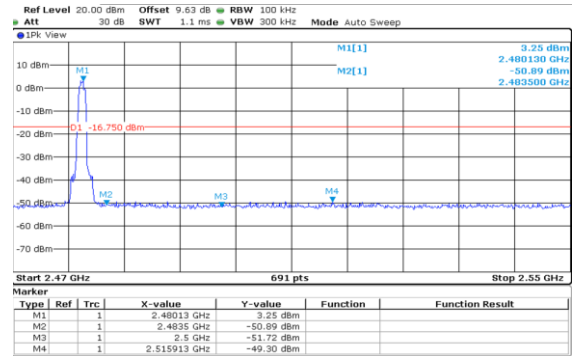
C.1



C.4



C.3



C.4

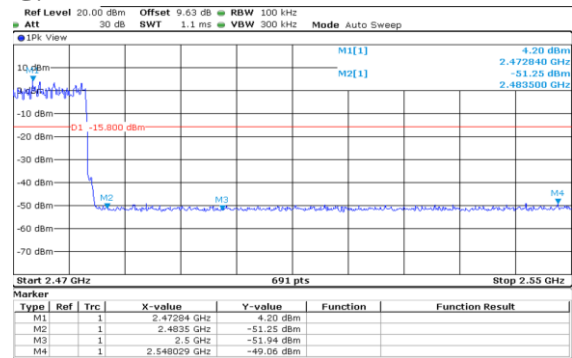
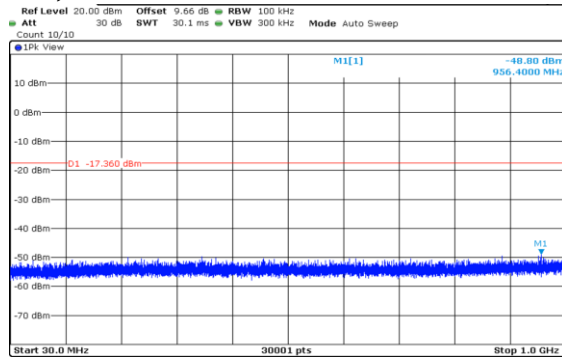
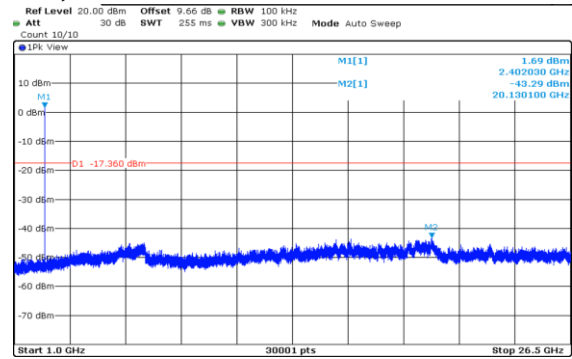


Figure 5: Conducted Spurious Emission

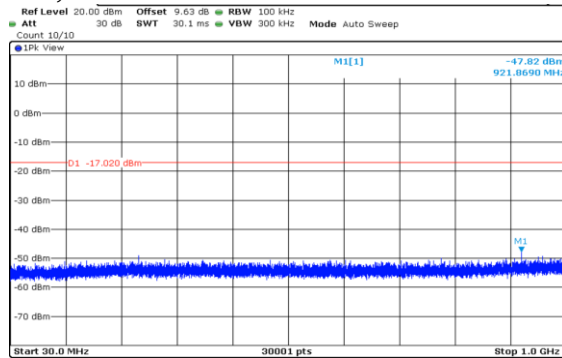
A.1, 30MHz-1000MHz



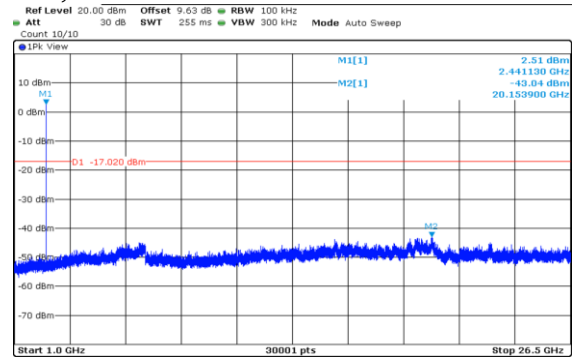
A.1, 1GHz-26.5GHz



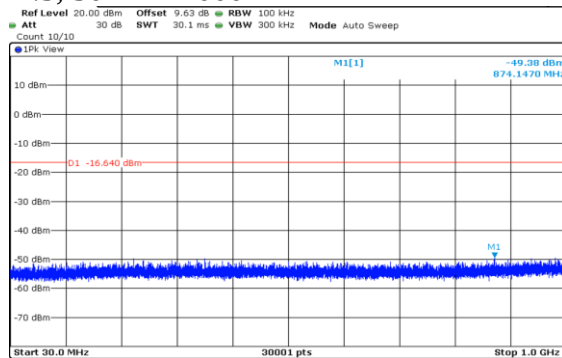
A.2, 30MHz-1000MHz



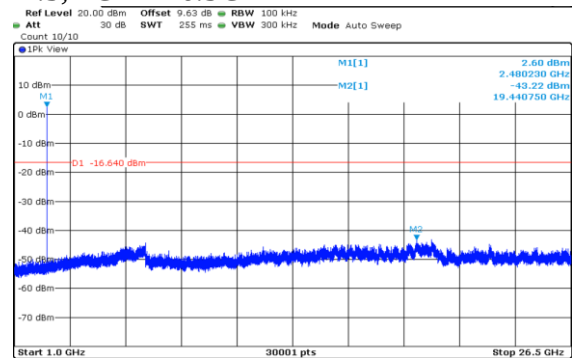
A.2, 1GHz-26.5GHz



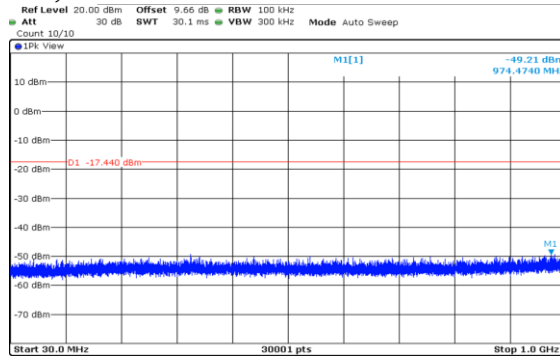
A.3, 30MHz-1000MHz



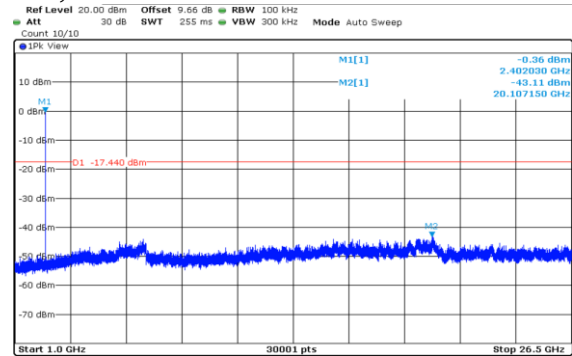
A.3, 1GHz-26.5GHz



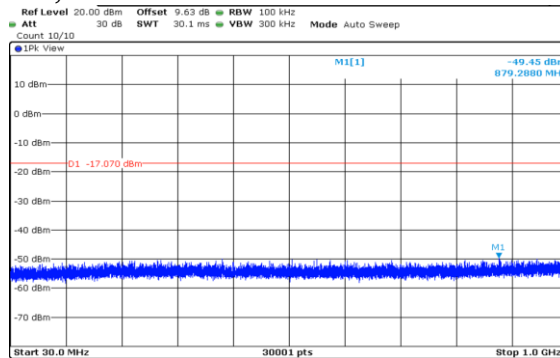
B.1, 30MHz-1000MHz



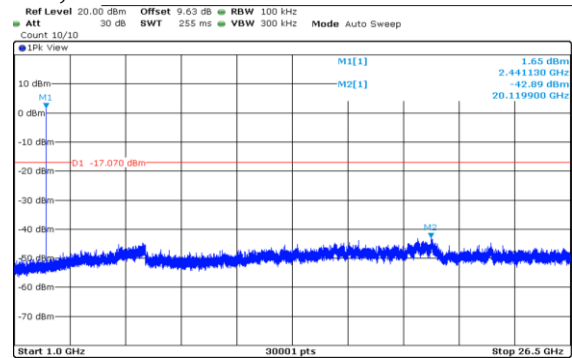
B.1, 1GHz-26.5GHz



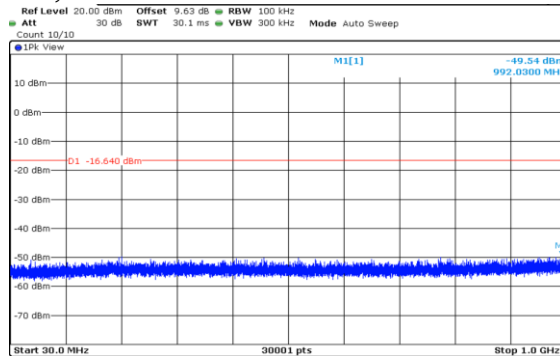
B.2, 30MHz-1000MHz



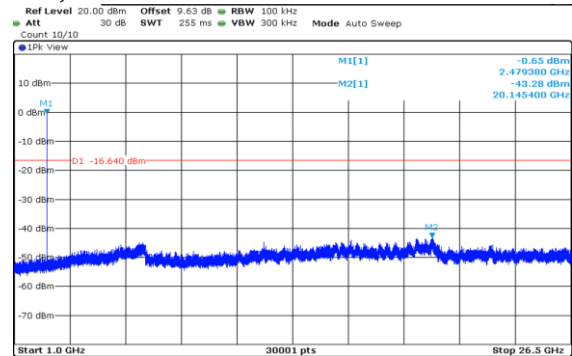
B.2, 1GHz-26.5GHz



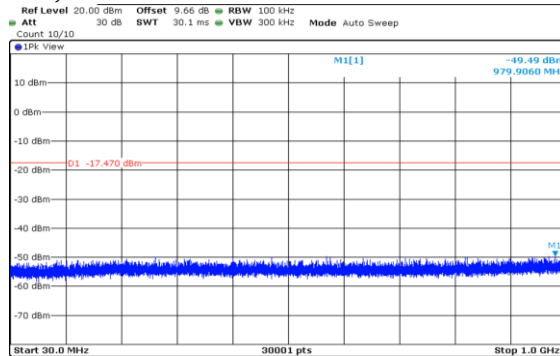
B.3, 30MHz-1000MHz



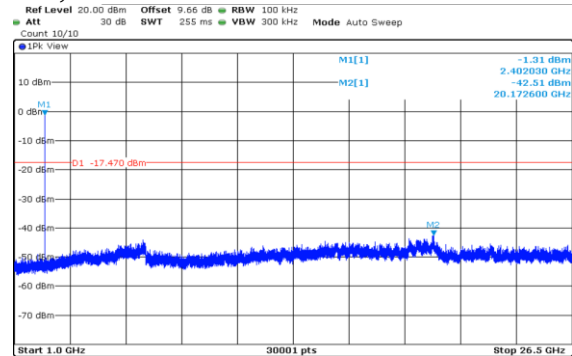
B.3, 1GHz-26.5GHz



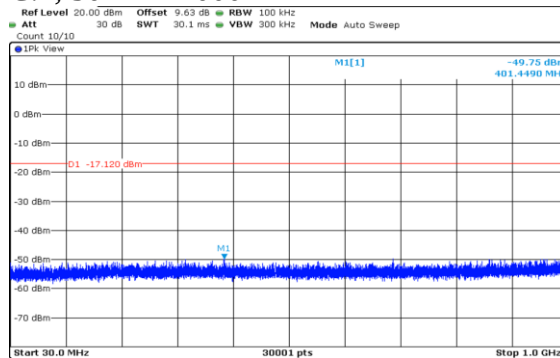
C.1, 30MHz-1000MHz



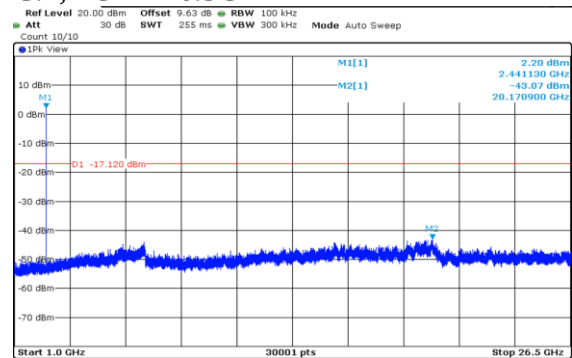
C.1, 1GHz-26.5GHz



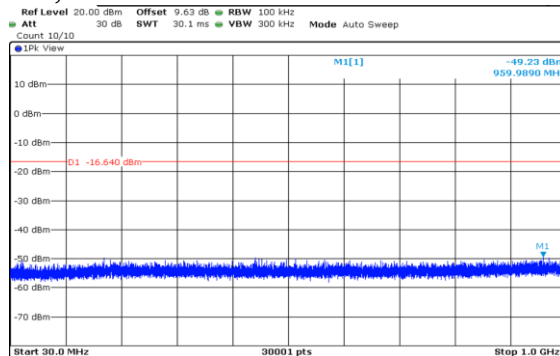
C.2, 30MHz-1000MHz



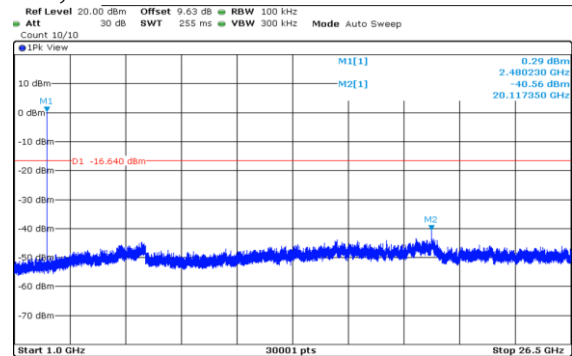
C.2, 1GHz-26.5GHz



C.3, 30MHz-1000MHz



C.3, 1GHz-26.5GHz



Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 25 von 39

Page 25 of 39

4.1.8 Radiated Emission

Result:

Pass

Test Specification

Test standard : CFR47 FCC Part 15.209

Test procedure : ANSI C63.10: 2020

Port : Enclosure

Frequency range : 30MHz-10th Harmonic for intentional radiator

Limits : CFR47 FCC Part 15.205

CFR47 FCC Part 15.209

Kind of test site : 3m Semi-anechoic Chamber

Test Setup

Date of testing : 2024.03.07-2024.03.12

Input voltage : DC 18V

Operational mode : A.1, A.2, A.3, B.1, B.2, B.3, C.1, C.2, C.3

Temperature : 21°C

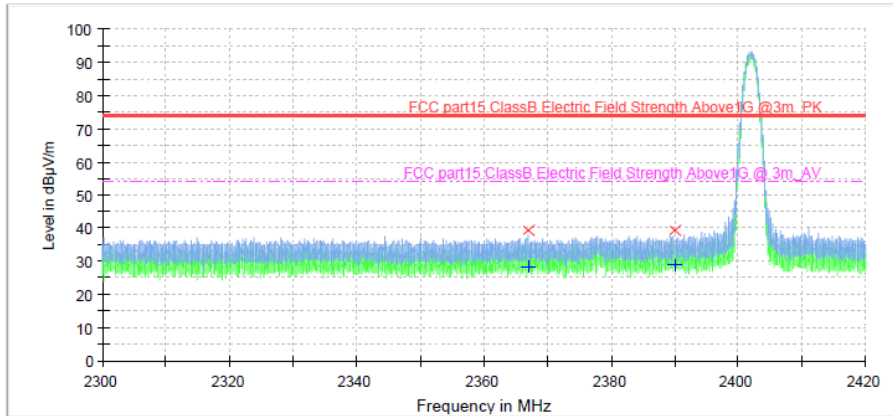
Relative humidity : 63%

Atmospheric pressure : 101.2 kPa

The radiated measurement result is calculated based on the following formula by the test software: Emission Level = Reading level + Correction (Antenna factor + Cable loss Preamplifier)

Figure 6: Spectral Diagrams, Restricted frequency bands, Mode A.1

2310MHz-2390MHz, Horizontal

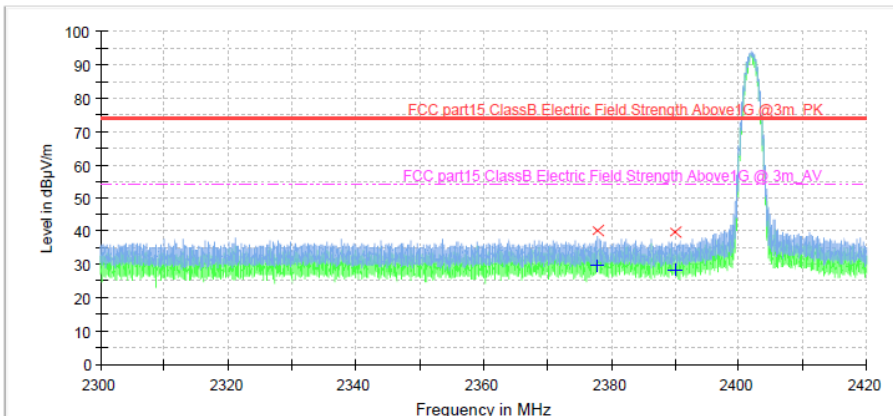

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2367.010000	39.4	1000.0	1000.000	150.0	H	0.0	-5.8	34.7	74.0
2390.000000	39.5	1000.0	1000.000	150.0	H	0.0	-5.7	34.5	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2367.010000	28.7	1000.0	1000.000	150.0	H	0.0	-5.8	25.3	54.0
2390.000000	29.1	1000.0	1000.000	150.0	H	0.0	-5.7	24.9	54.0

2310MHz-2390MHz, Vertical


Limit and Margin-PK

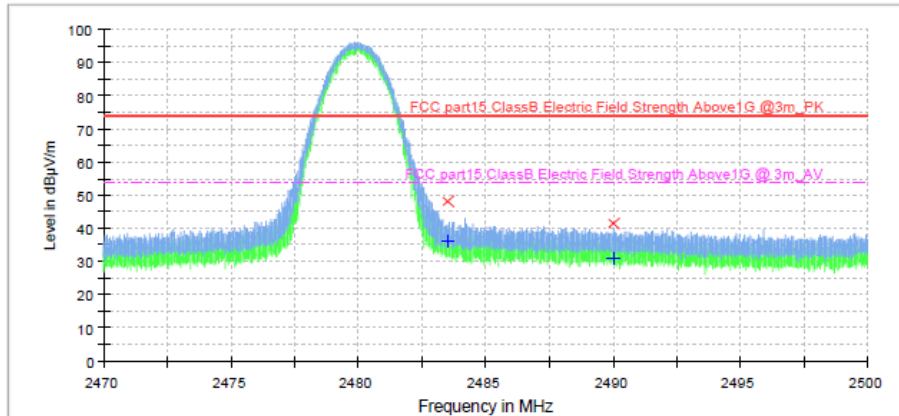
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2377.790000	40.2	1000.0	1000.000	150.0	V	0.0	-5.7	33.8	74.0
2390.000000	39.7	1000.0	1000.000	150.0	V	0.0	-5.7	34.3	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2377.790000	29.6	1000.0	1000.000	150.0	V	0.0	-5.7	24.5	54.0
2390.000000	28.3	1000.0	1000.000	150.0	V	0.0	-5.7	25.7	54.0

Figure 7: Spectral Diagrams, Restricted frequency bands, Mode A.3

2483.5MHz-2500MHz, Horizontal



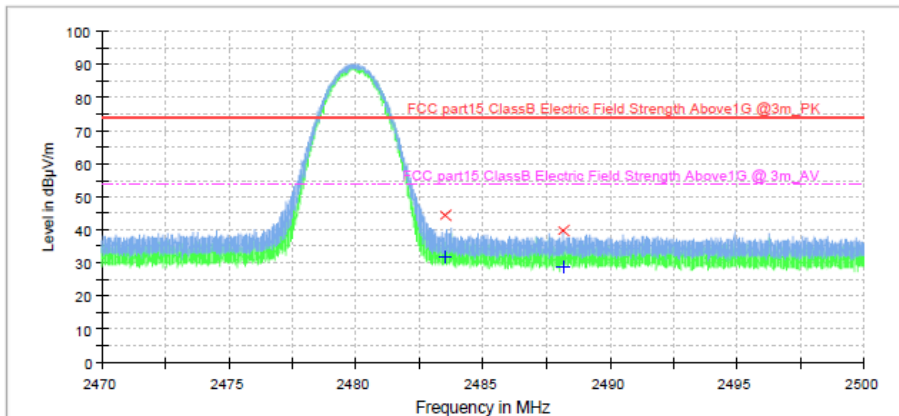
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2483.500000	48.1	1000.0	1000.000	150.0	H	0.0	-5.2	25.9	74.0
2490.030000	41.5	1000.0	1000.000	150.0	H	0.0	-5.1	32.5	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2483.500000	35.8	1000.0	1000.000	150.0	H	0.0	-5.2	18.2	54.0
2490.030000	30.8	1000.0	1000.000	150.0	H	0.0	-5.1	23.2	54.0

2483.5MHz-2500MHz, Vertical



Limit and Margin-PK

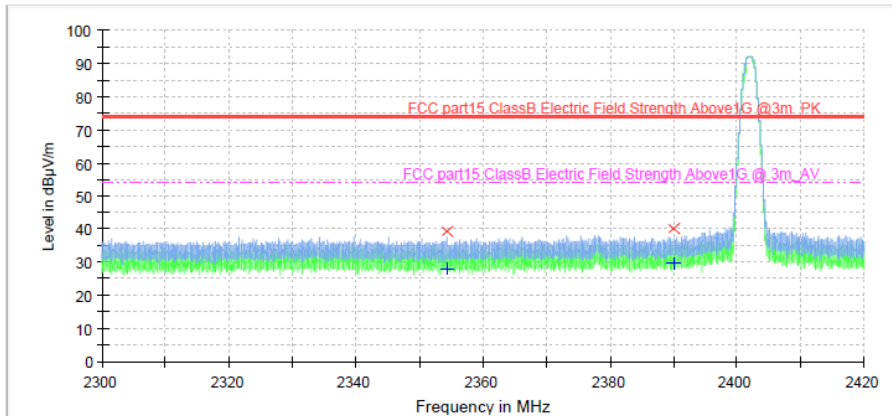
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2483.500000	44.5	1000.0	1000.000	150.0	V	0.0	-5.2	29.6	74.0
2488.190000	39.9	1000.0	1000.000	150.0	V	0.0	-5.2	34.2	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2483.500000	31.6	1000.0	1000.000	150.0	V	0.0	-5.2	22.4	54.0
2488.190000	28.8	1000.0	1000.000	150.0	V	0.0	-5.2	25.2	54.0

Figure 8: Spectral Diagrams, Restricted frequency bands, Mode C.1

2310MHz-2390MHz, Horizontal



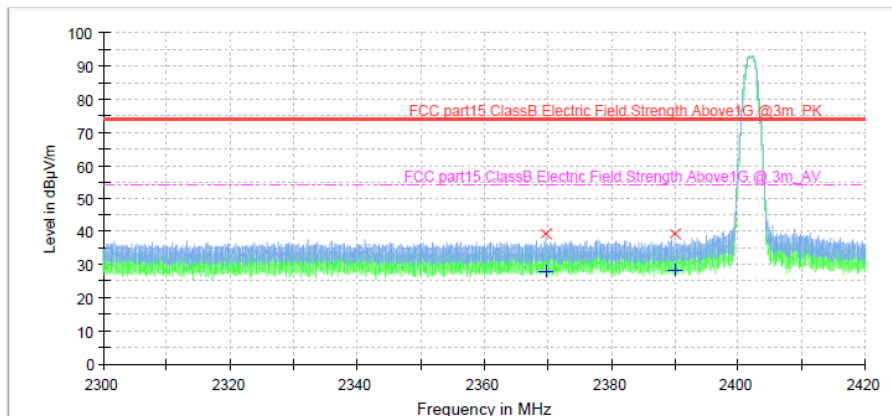
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2354.255000	39.5	1000.0	1000.000	150.0	H	0.0	-5.9	34.5	74.0
2390.000000	40.0	1000.0	1000.000	150.0	H	0.0	-5.7	34.0	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2354.255000	28.0	1000.0	1000.000	150.0	H	0.0	-5.9	26.0	54.0
2390.000000	29.5	1000.0	1000.000	150.0	H	0.0	-5.7	24.5	54.0

2310MHz-2390MHz, Vertical



Limit and Margin-PK

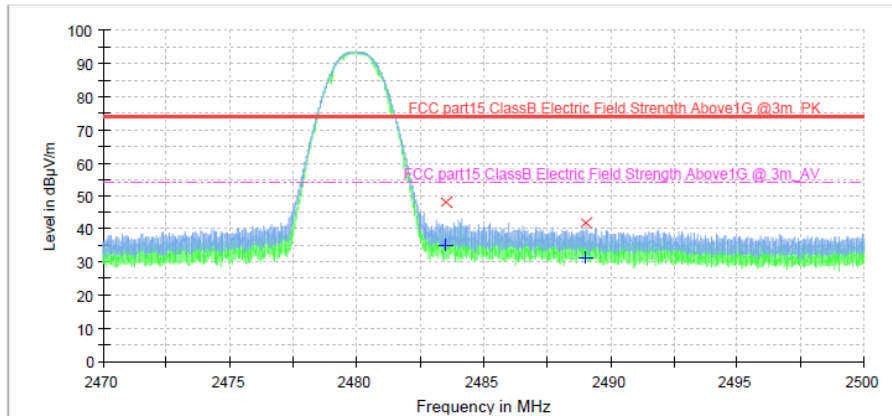
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2369.760000	39.2	1000.0	1000.000	150.0	V	0.0	-5.8	34.8	74.0
2390.000000	39.2	1000.0	1000.000	150.0	V	0.0	-5.7	34.8	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2369.760000	28.2	1000.0	1000.000	150.0	V	0.0	-5.8	25.8	54.0
2390.000000	28.6	1000.0	1000.000	150.0	V	0.0	-5.7	25.4	54.0

Figure 9: Spectral Diagrams, Restricted frequency bands, Mode C.3

2483.5MHz-2500MHz, Horizontal



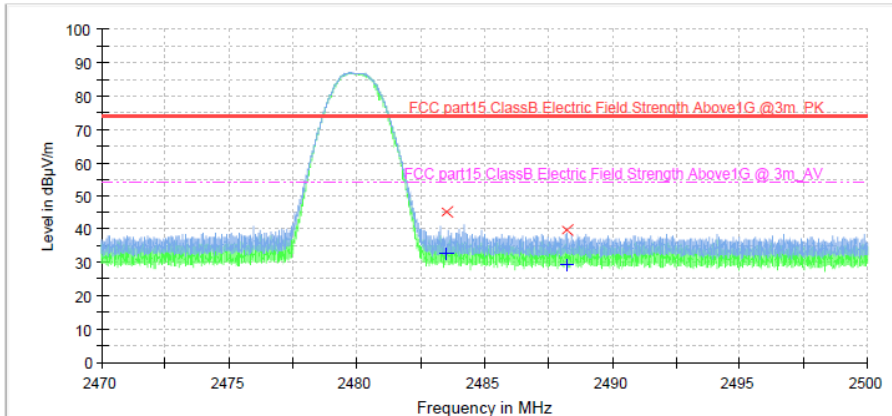
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2483.500000	48.1	1000.0	1000.000	150.0	H	0.0	-5.2	25.9	74.0
2489.025000	41.9	1000.0	1000.000	150.0	H	0.0	-5.2	32.1	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2483.500000	35.1	1000.0	1000.000	150.0	H	0.0	-5.2	18.9	54.0
2489.025000	31.6	1000.0	1000.000	150.0	H	0.0	-5.2	22.4	54.0

2483.5MHz-2500MHz, Vertical



Limit and Margin-PK

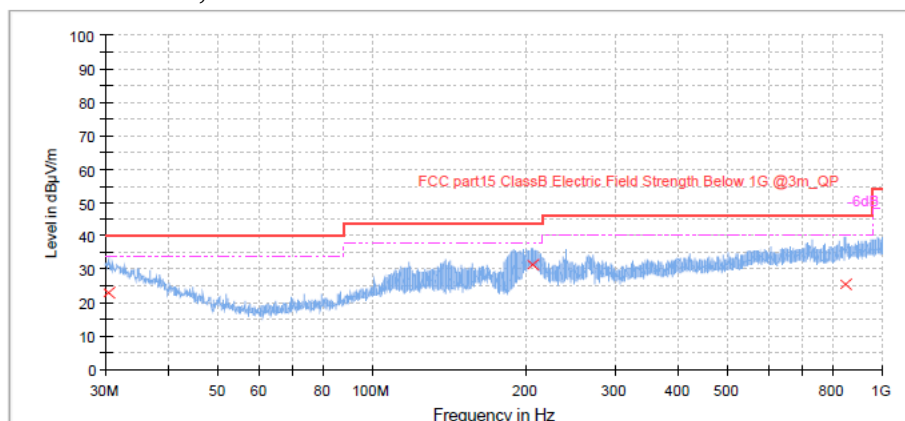
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2483.500000	45.2	1000.0	1000.000	150.0	V	0.0	-5.2	28.8	74.0
2488.210000	39.7	1000.0	1000.000	150.0	V	0.0	-5.2	34.3	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2483.500000	32.5	1000.0	1000.000	150.0	V	0.0	-5.2	21.5	54.0
2488.210000	29.1	1000.0	1000.000	150.0	V	0.0	-5.2	24.9	54.0

Figure 10: Spectral Diagrams, Radiated Spurious Emission, Mode A.1

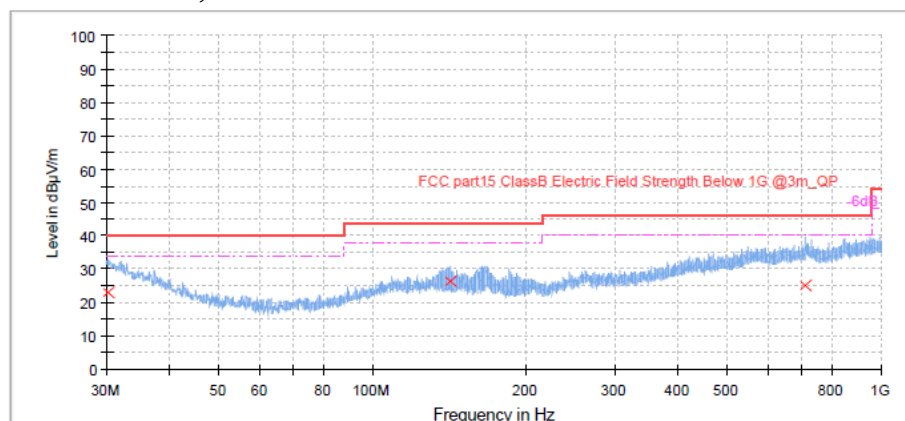
30MHz-1000MHz, Horizontal



Limit and Margin

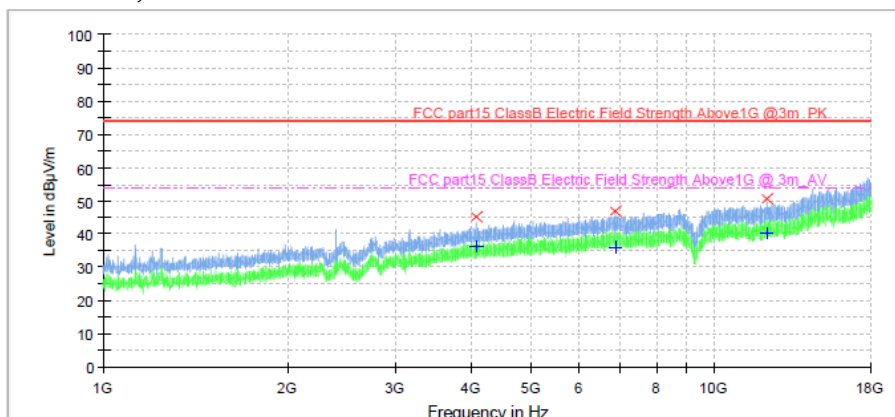
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.380000	22.8	1000.0	120.000	100.0	H	11.0	25.7	17.2	40.0
206.050000	31.6	1000.0	120.000	100.0	H	11.0	17.0	11.9	43.5
845.230000	25.6	1000.0	120.000	100.0	H	11.0	29.4	20.5	46.0

30MHz-1000MHz, Vertical



Limit and Margin

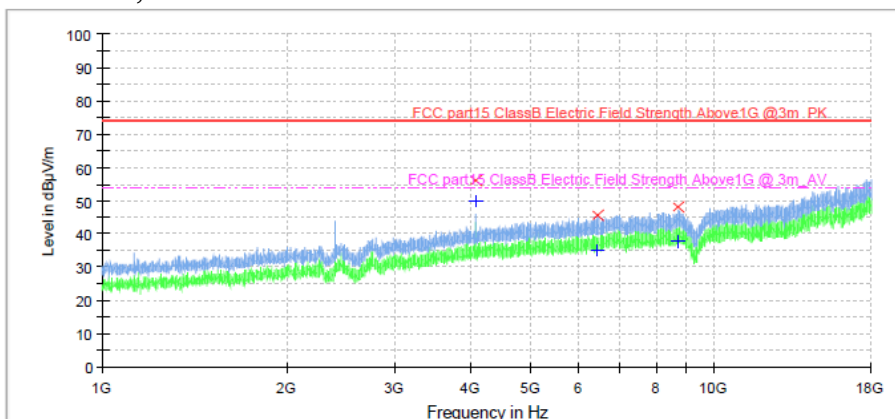
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.160000	23.0	1000.0	120.000	100.0	V	11.0	25.9	17.0	40.0
142.090000	26.4	1000.0	120.000	100.0	V	11.0	18.4	17.2	43.5
709.650000	25.1	1000.0	120.000	100.0	V	11.0	27.8	21.0	46.0

1GHz-18GHz, Horizontal

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4063.720000	45.4	1000.0	1000.000	150.0	H	0.0	1.4	28.6	74.0
6866.595000	47.0	1000.0	1000.000	150.0	H	0.0	7.1	27.0	74.0
12169.530000	50.6	1000.0	1000.000	150.0	H	0.0	12.1	23.4	74.0

Limit and Margin-AV

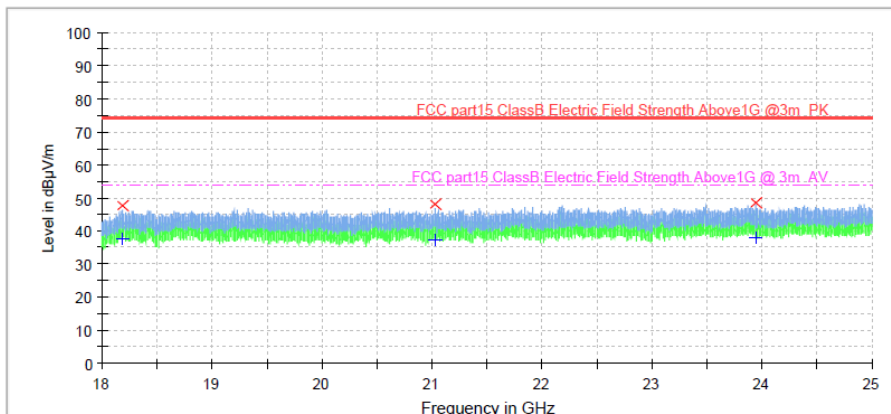
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4063.720000	36.4	1000.0	1000.000	150.0	H	0.0	1.4	17.6	54.0
6866.595000	36.2	1000.0	1000.000	150.0	H	0.0	7.1	17.8	54.0
12169.530000	40.2	1000.0	1000.000	150.0	H	0.0	12.1	13.8	54.0

1GHz-18GHz, Vertical

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4064.250000	56.2	1000.0	1000.000	150.0	V	0.0	1.4	17.8	74.0
6423.000000	45.8	1000.0	1000.000	150.0	V	0.0	6.3	28.2	74.0
8715.345000	48.2	1000.0	1000.000	150.0	V	0.0	9.3	25.8	74.0

Limit and Margin-AV

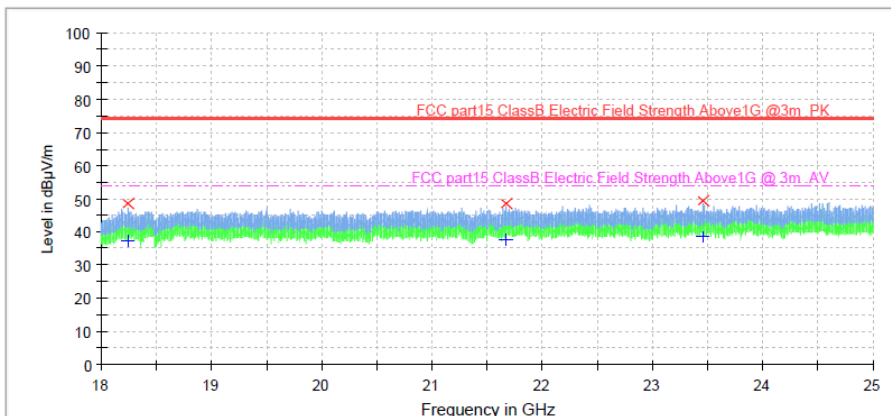
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4064.250000	49.8	1000.0	1000.000	150.0	V	0.0	1.4	4.3	54.0
6423.000000	35.2	1000.0	1000.000	150.0	V	0.0	6.3	18.8	54.0
8715.345000	37.5	1000.0	1000.000	150.0	V	0.0	9.3	16.5	54.0

18GHz-25GHz, Horizontal

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
18184.405000	47.8	1000.0	1000.000	150.0	H	0.0	-9.9	26.2	74.0
21028.595000	48.0	1000.0	1000.000	150.0	H	0.0	-8.2	26.0	74.0
23947.155000	48.6	1000.0	1000.000	150.0	H	0.0	-5.2	25.4	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
18184.405000	37.6	1000.0	1000.000	150.0	H	0.0	-9.9	16.4	54.0
21028.595000	37.4	1000.0	1000.000	150.0	H	0.0	-8.2	16.6	54.0
23947.155000	38.2	1000.0	1000.000	150.0	H	0.0	-5.2	15.8	54.0

18GHz-25GHz, Vertical

Limit and Margin-PK

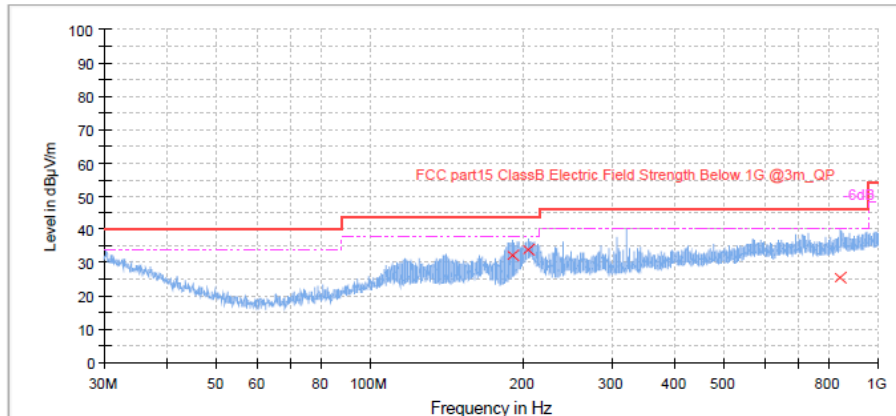
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
18241.720000	48.7	1000.0	1000.000	150.0	V	0.0	-9.9	25.3	74.0
21669.970000	48.5	1000.0	1000.000	150.0	V	0.0	-7.3	25.5	74.0
23456.500000	49.3	1000.0	1000.000	150.0	V	0.0	-5.1	24.7	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
18241.720000	37.2	1000.0	1000.000	150.0	V	0.0	-9.9	16.8	54.0
21669.970000	37.9	1000.0	1000.000	150.0	V	0.0	-7.3	16.2	54.0
23456.500000	38.4	1000.0	1000.000	150.0	V	0.0	-5.1	15.6	54.0

Figure 11: Spectral Diagrams, Radiated Spurious Emission, Mode A.2

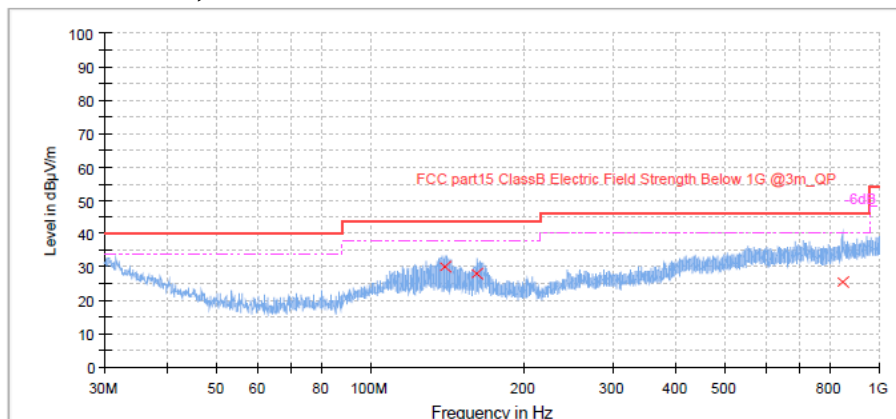
30MHz-1000MHz, Horizontal



Limit and Margin

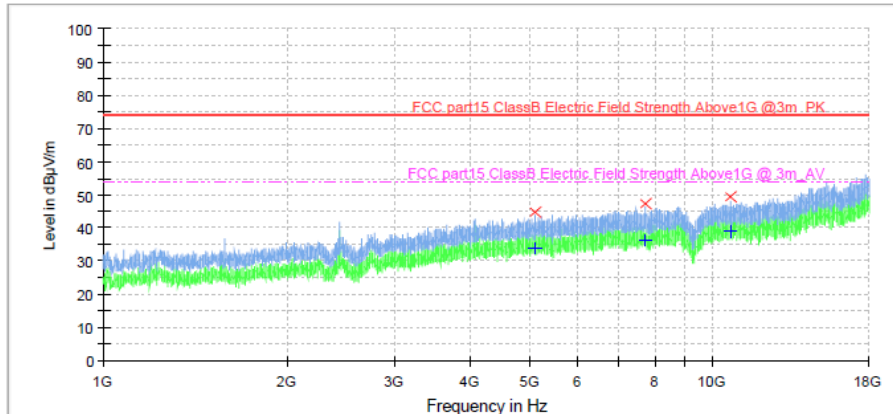
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
190.700000	32.2	1000.0	120.000	100.0	H	11.0	16.3	11.3	43.5
205.680000	33.7	1000.0	120.000	100.0	H	11.0	17.0	9.8	43.5
844.910000	25.5	1000.0	120.000	100.0	H	11.0	29.4	20.5	46.0

30MHz-1000MHz, Vertical



Limit and Margin

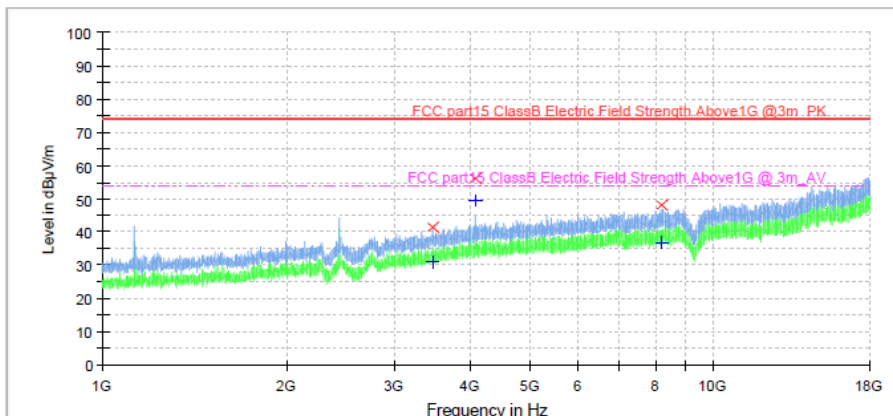
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
140.200000	30.0	1000.0	120.000	100.0	V	11.0	18.5	13.5	43.5
161.380000	28.2	1000.0	120.000	100.0	V	11.0	17.1	15.3	43.5
845.020000	25.6	1000.0	120.000	100.0	V	11.0	29.4	20.4	46.0

1GHz-18GHz, Horizontal

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
5093.280000	44.7	1000.0	1000.000	150.0	H	0.0	3.8	29.3	74.0
7748.470000	47.4	1000.0	1000.000	150.0	H	0.0	8.0	26.7	74.0
10648.030000	49.2	1000.0	1000.000	150.0	H	0.0	11.1	24.8	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
5093.280000	33.8	1000.0	1000.000	150.0	H	0.0	3.8	20.2	54.0
7748.470000	36.3	1000.0	1000.000	150.0	H	0.0	8.0	17.7	54.0
10648.030000	38.8	1000.0	1000.000	150.0	H	0.0	11.1	15.2	54.0

1GHz-18GHz, Vertical

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
3461.280000	41.6	1000.0	1000.000	150.0	V	0.0	-0.3	32.4	74.0
4064.250000	56.2	1000.0	1000.000	150.0	V	0.0	1.4	17.8	74.0
8214.375000	48.0	1000.0	1000.000	150.0	V	0.0	8.5	26.0	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
3461.280000	30.8	1000.0	1000.000	150.0	V	0.0	-0.3	23.2	54.0
4064.250000	49.6	1000.0	1000.000	150.0	V	0.0	1.4	4.5	54.0
8214.375000	37.0	1000.0	1000.000	150.0	V	0.0	8.5	17.0	54.0

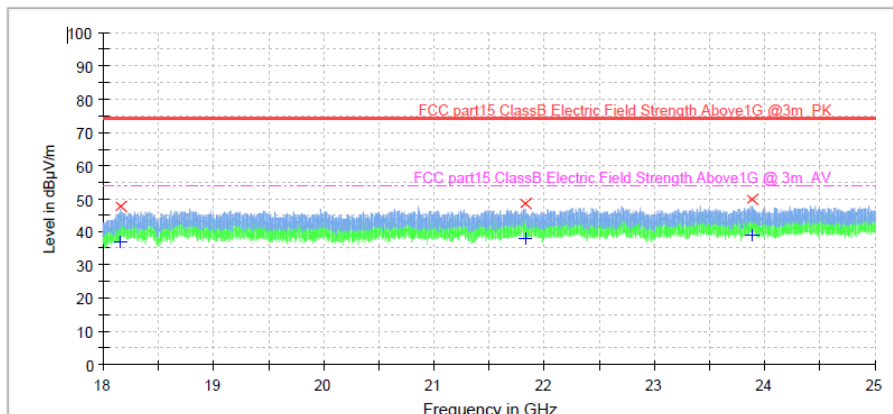
Prüfbericht - Nr.: CN24VPHN 001

Test Report No.:

Seite 35 von 39

Page 35 of 39

18GHz-25GHz, Horizontal



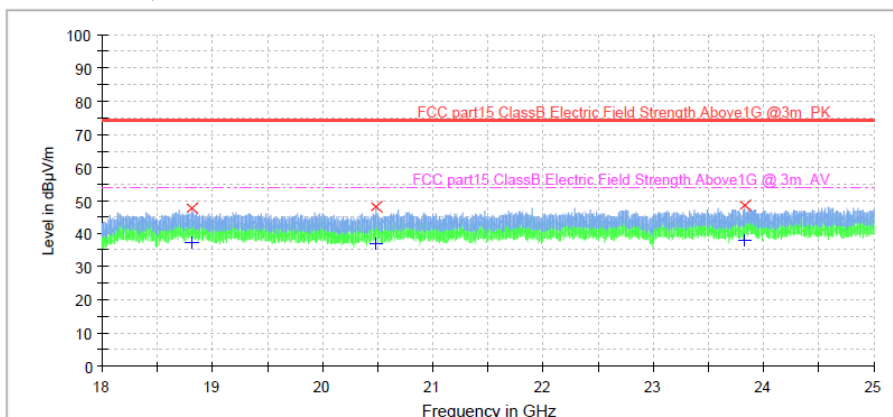
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
18160.560000	47.5	1000.0	1000.000	150.0	H	0.0	-9.9	26.5	74.0
21827.470000	48.5	1000.0	1000.000	150.0	H	0.0	-7.2	25.5	74.0
23882.845000	49.8	1000.0	1000.000	150.0	H	0.0	-5.2	24.2	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
18160.560000	37.0	1000.0	1000.000	150.0	H	0.0	-9.9	17.1	54.0
21827.470000	37.9	1000.0	1000.000	150.0	H	0.0	-7.2	16.1	54.0
23882.845000	39.0	1000.0	1000.000	150.0	H	0.0	-5.2	15.0	54.0

18GHz-25GHz, Vertical



Limit and Margin-PK

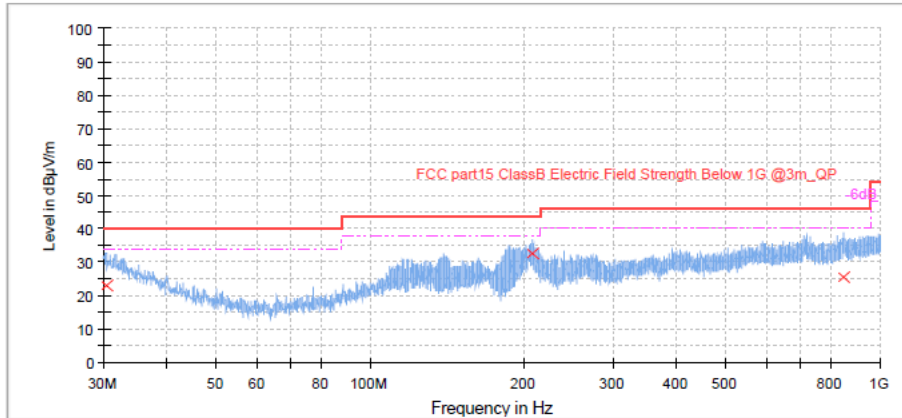
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
18818.560000	47.8	1000.0	1000.000	150.0	V	0.0	-9.9	26.2	74.0
20485.000000	48.2	1000.0	1000.000	150.0	V	0.0	-9.0	25.8	74.0
23834.500000	48.7	1000.0	1000.000	150.0	V	0.0	-5.1	25.3	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
18818.560000	37.1	1000.0	1000.000	150.0	V	0.0	-9.9	16.9	54.0
20485.000000	37.0	1000.0	1000.000	150.0	V	0.0	-9.0	17.1	54.0
23834.500000	38.3	1000.0	1000.000	150.0	V	0.0	-5.1	15.8	54.0

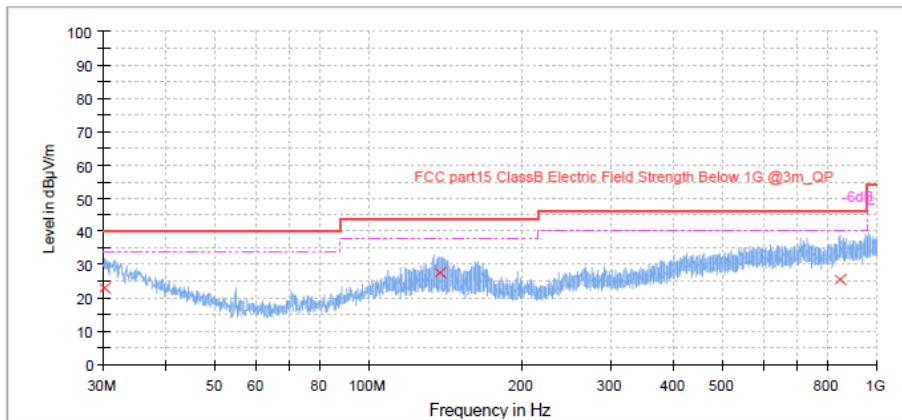
Figure 12: Spectral Diagrams, Radiated Spurious Emission, Mode A.3

30MHz-1000MHz, Horizontal

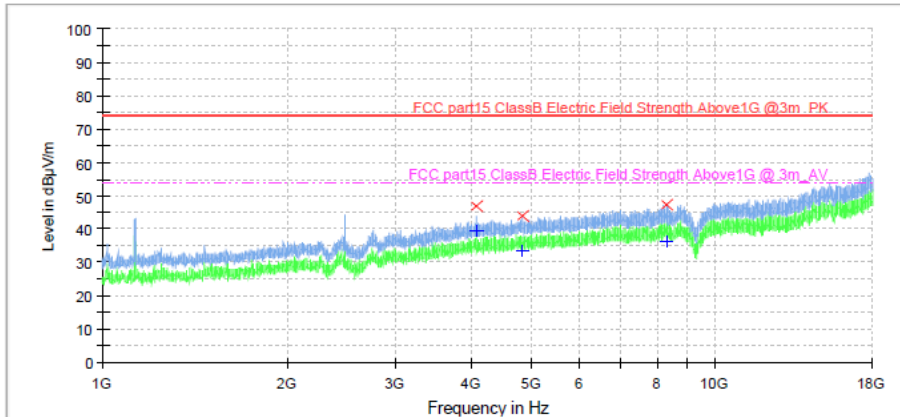

Limit and Margin

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.380000	22.8	1000.0	120.000	100.0	H	11.0	25.7	17.2	40.0
207.510000	32.5	1000.0	120.000	100.0	H	11.0	17.0	11.0	43.5
845.070000	25.6	1000.0	120.000	100.0	H	11.0	29.4	20.5	46.0

30MHz-1000MHz, Vertical


Limit and Margin

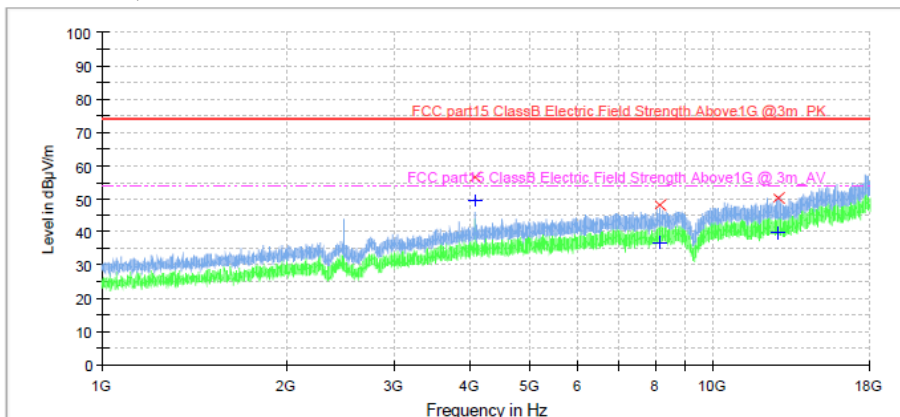
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
30.220000	23.0	1000.0	120.000	100.0	V	11.0	25.8	17.0	40.0
137.720000	27.8	1000.0	120.000	100.0	V	11.0	18.6	15.7	43.5
845.180000	25.5	1000.0	120.000	100.0	V	11.0	29.4	20.5	46.0

1GHz-18GHz, Horizontal

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4064.250000	47.1	1000.0	1000.000	150.0	H	0.0	1.4	26.9	74.0
4843.060000	44.1	1000.0	1000.000	150.0	H	0.0	3.1	29.9	74.0
8313.720000	47.3	1000.0	1000.000	150.0	H	0.0	8.7	26.7	74.0

Limit and Margin-AV

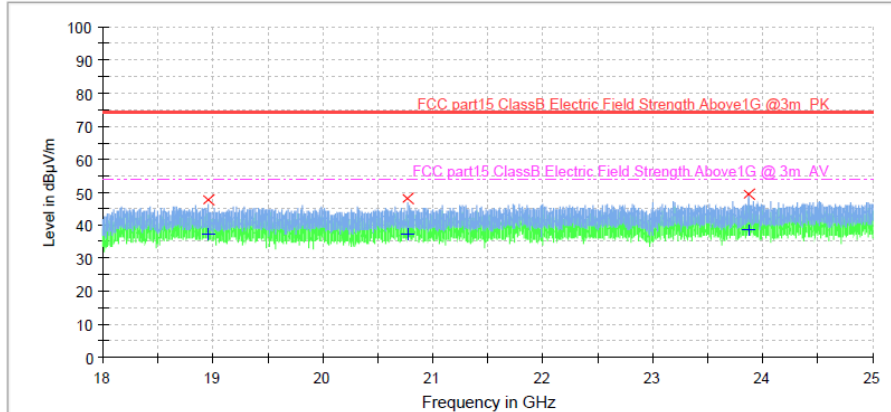
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4064.250000	39.5	1000.0	1000.000	150.0	H	0.0	1.4	14.5	54.0
4843.060000	33.6	1000.0	1000.000	150.0	H	0.0	3.1	20.4	54.0
8313.720000	36.5	1000.0	1000.000	150.0	H	0.0	8.7	17.5	54.0

1GHz-18GHz, Vertical

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4064.250000	56.4	1000.0	1000.000	150.0	V	0.0	1.4	17.7	74.0
8171.345000	48.0	1000.0	1000.000	150.0	V	0.0	8.5	26.0	74.0
12786.310000	50.2	1000.0	1000.000	150.0	V	0.0	12.2	23.8	74.0

Limit and Margin-AV

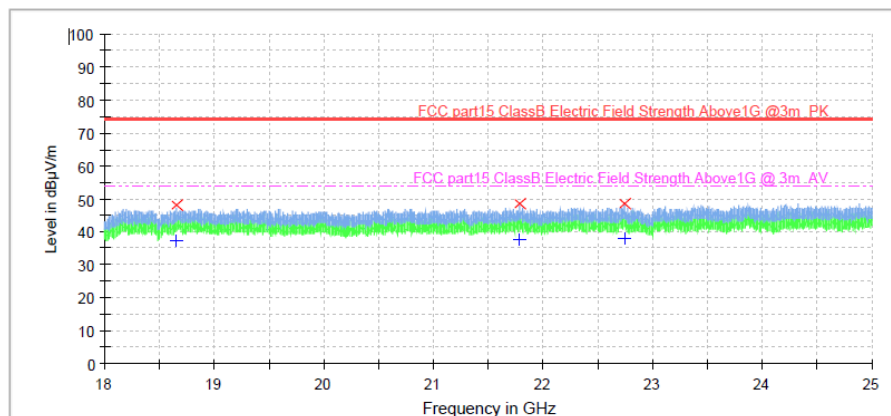
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4064.250000	49.3	1000.0	1000.000	150.0	V	0.0	1.4	4.7	54.0
8171.345000	36.7	1000.0	1000.000	150.0	V	0.0	8.5	17.3	54.0
12786.310000	39.7	1000.0	1000.000	150.0	V	0.0	12.2	14.4	54.0

18GHz-25GHz, Horizontal

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
18950.470000	47.7	1000.0	1000.000	150.0	H	0.0	-9.9	26.3	74.0
20774.625000	48.0	1000.0	1000.000	150.0	H	0.0	-8.6	26.0	74.0
23878.250000	49.5	1000.0	1000.000	150.0	H	0.0	-5.2	24.6	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
18950.470000	37.1	1000.0	1000.000	150.0	H	0.0	-9.9	16.9	54.0
20774.625000	37.1	1000.0	1000.000	150.0	H	0.0	-8.6	17.0	54.0
23878.250000	38.7	1000.0	1000.000	150.0	H	0.0	-5.2	15.3	54.0

18GHz-25GHz, Vertical

Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
18654.280000	48.0	1000.0	1000.000	150.0	V	0.0	-9.8	26.0	74.0
21785.685000	48.6	1000.0	1000.000	150.0	V	0.0	-7.2	25.5	74.0
22740.970000	48.7	1000.0	1000.000	150.0	V	0.0	-5.7	25.3	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
18654.280000	37.4	1000.0	1000.000	150.0	V	0.0	-9.8	16.6	54.0
21785.685000	37.9	1000.0	1000.000	150.0	V	0.0	-7.2	16.2	54.0
22740.970000	37.9	1000.0	1000.000	150.0	V	0.0	-5.7	16.1	54.0

Remark: All the modes had been tested, but only the worst data was recorded in the report.

5. List of Tables

Table 1: List of Test and Measurement Equipment, Laboratory	5
Table 2: Measurement Uncertainty	5
Table 3: General Description of EUT	6
Table 4: Channel List.....	6
Table 5: List of Auxiliary Equipment.....	8
Table 6: Test result of 20dB Bandwidth	11
Table 7: Test result of carrier separation	12
Table 8: Test result of number of hopping channels.....	14
Table 9: Test result of time of occupancy.....	16
Table 10: Test result of Maximum Peak Output Power.....	18

6. List of Figures

Figure 1: Carrier separation	13
Figure 2: Number of hopping channels	15
Figure 3: Time of occupancy	17
Figure 4: Band Edge	20
Figure 5: Conducted Spurious Emission.....	22
Figure 6: Spectral Diagrams, Restricted frequency bands, Mode A.1	26
Figure 7: Spectral Diagrams, Restricted frequency bands, Mode A.3.....	27
Figure 8: Spectral Diagrams, Restricted frequency bands, Mode C.1	28
Figure 9: Spectral Diagrams, Restricted frequency bands, Mode C.3	29
Figure 10: Spectral Diagrams, Radiated Spurious Emission, Mode A.1	30
Figure 11: Spectral Diagrams, Radiated Spurious Emission, Mode A.2	33
Figure 12: Spectral Diagrams, Radiated Spurious Emission, Mode A.3	36

--The END --