

Prüfbericht-Nr.: <i>Test report no.:</i>	IN26THBW 001	Auftrags-Nr.: <i>Order no.:</i>	147196350 040	Seite 1 von 64 Page 1 of 64
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	2131006	Auftragsdatum: <i>Order date:</i>	2026-04-24	
Auftraggeber: <i>Client:</i>	APTENER MECHATRONICS PRIVATE LIMITED No: R32, V N Arcade, I Floor,KSSIDC Industrial Estate, I Cross, Bommasandra, Industrial Area, II Phase, Jigani Link Road, Yarandahally, Circle Bangalore, Karnataka, India ,560099			
Prüfgegenstand: <i>Test item:</i>	BLUARMOR C10			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	C10			
Auftrags-Inhalt: <i>Order content:</i>	Testing and issue of Test Report			
Prüfgrundlage: <i>Test specification:</i>	FCC Part15 SubpartC 15.247; 15.205; 15.209			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2026-04-15			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A004250044-001 A004250044-005			
Prüfzeitraum: <i>Testing period:</i>	2026-04-25 - 2026-05-04			
Ort der Prüfung: <i>Place of testing:</i>	Wireless laboratory, Bangalore			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (India) Pvt.Ltd., 27/B, 2nd Cross, Electronic City Phase1 Bangalore -560 100, India			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i> 2026-05-18			Ausstellungsdatum: <i>Issue date:</i> 2026-05-18	
Stellung / Position:	Darshan D Senior Engineer	Stellung / Position:	M.V.Naveen Kumar Senior Engineer	
Sonstiges / <i>Other:</i>	FCC ID:2BUSF-HI8763XXXX-01			
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.:

IN26THBW 001

Seite 2 von 64

Test Report No.:

Page 2 of 64

- | | |
|---|--|
| 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.</p> <p>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> |
| 2 | <p>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</p> <p><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></p> |
| 3 | <p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.</p> <p>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.</i></p> <p><i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p> |

Prüfbericht - Nr.:

Test Report No.:

IN26THBW 001

Seite 3 von 64

Page 3 of 64

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 115:2023, 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 115:2023, 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	Other <i>Sonstiges</i> Test sample(s), as well sample information, description, product details and intended usage was provided by customer. The Laboratory is not be responsible for the information/data provided by the customer which can affect the validity of results.
6	Test sample obtaining <i>Prüfmusterbereitstellung</i> ☒ Sending by customer ☐ Sampling by TÜV Rheinland Group ☐ Others:
7	Additional Information FCC Test site registration number: 570793 ISED Test site registration number: 27711 Refer the Appendix of 1 for Test Setup Photos Refer the Appendix of 2 for External Photos Refer the Appendix of 3 for Internal Photos

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 4 von 64
Page 4 of 64

TEST SUMMARY

Test Item	Applicable Standard	Result
	FCC	
Maximum conducted (Peak) output power	FCC 15.247(b)(1)	Pass
20dB Bandwidth	FCC 15.247(a)(1)(iii)	Pass
Channel Frequency Separation	15.247(a)(1)	Pass
Number of Hopping Channels	15.247(a)(1)(iii)	Pass
Time of Occupancy (Dwell Time)	15.247(a)(1)(iii)	Pass
Emissions in non-restricted frequency bands	FCC 15.247(d)	Pass
Spurious Radiated Emissions and Restricted Bands of Operation	FCC 15.209 / FCC 15.205	Pass
Antenna Requirement	FCC 15.203	-

Product Category: Electronics Testing

Test Discipline: EMC Test Facility

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 5 von 64
Page 5 of 64

REVISION HISTORY OF THIS REPORT

Report Number	Version	Description	Issue date
IN26THBW 001	01	Initial issue of report	2026-05-18

Table of Contents

1	GENERAL REMARKS	7
1.1	Attachments	7
2	TEST SITES	8
2.1	Testing Facilities.....	8
2.2	List of Test and Measurement Instruments.....	8
3	GENERAL PRODUCT INFORMATION	9
3.1	Product Function and Intended Use.....	9
3.2	Ratings and System Details of Equipment under Test.....	9
3.3	Measurement Uncertainty:.....	10
4	TEST SET-UP AND OPERATION MODE	11
4.1	Principle of Configuration Selection.....	11
4.2	Test Operation and Test Software	11
4.3	Special Accessories and Auxiliary Equipment	11
4.4	Simultaneous Transmission	11
4.5	Countermeasures to achieve EMC Compliance	11
4.6	List of frequencies	11
4.7	TUV Sample Identification	12
5	Operational Description	13
6	Test Methodology.....	14
6.1	Radiated Emission Test.....	14
6.1.1	Test Setup Configuration	14
7	TEST RESULTS FOR BT.....	16
7.1	DUTY CYCLE.....	16
7.2	Maximum Peak Conducted Output Power.....	17
7.3	20dB Bandwidth & 99% Bandwidth	21
7.4	Number of Hopping Channels	23
7.5	Carrier Frequency Separation.....	25
7.6	Time Of Occupancy(Dwell Time)	27
7.7	Emissions in non-restricted frequency bands and Conducted Spurious Emission	29
7.7.1	Reference plots	30
7.7.2	Band Edge	31
7.7.3	Hopping mode ON condition Band Edge	32
7.7.4	Out-Of-Band Emissions	33
7.8	Spurious Radiated Emissions & Restricted Bands of Operation	36
7.9	Simultaneous Operation:	61
8	LIST OF TABLES.....	64
9	List of Figures	64

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 7 von 64
Page 7 of 64

1 GENERAL REMARKS

1.1 Attachments

All attachments are part of this test report and are issued in separate documents.

1. Test Setup Photos
2. External Photos
3. Internal Photos
4. FCC Label and Label Location
5. Block Diagram
6. Specification of EUT
7. Schematic Diagrams
8. Bill of Material
9. User Manual
10. Maximum Permissible Exposure Information

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 8 von 64
Page 8 of 64

2 TEST SITES

2.1 Testing Facilities

1. TÜV Rheinland (India) Pvt.Ltd.,
27/B, 2nd Cross,
ElectronicCityPhase1
Bangalore – 560 100,
India
2. TUV Rheinland (India) Pvt.Ltd.,
108, Beside ISBR Business School,
Electronic city Phase I
Bangalore - 560 100,
India

2.2 List of Test and Measurement Instruments

Table 1: List of test and measurement instruments

Equipment	Manufacturer	Model Name	Serial Number	Firmware Versions	Calibration Due Date	Periodicity	Test Facility
EMI Receiver	Rohde & Schwarz	ESW 44	103384	3.20.SP2	20.11.2026	Yearly	Radiated Spurious Emission
Loop Antenna	Schwarzbeck	FMZB 1519 B	1519B-00111	-	17.11.2026	Yearly	
Balun & Biconical Antenna	Schwarzbeck mess-elektronik	BBA 9106+VH BB 9124	9124-1117	-	14.02.2027	Yearly	
Log-Periodic Antenna	Schwarzbeck mess-elektronik	VUSLP 9111B	9111B-324	-	21.02.2027	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-01944	-	11.11.2026	Yearly	
Double-Ridged Waveguide Horn Antenna	ETS	116706	00107323	-	16.05.2026	Yearly	
EMI Test Receiver	Rohde & Schwarz	ESW44	101773	1.72.SP1	16.02.2027	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	-	
Fully Anechoic Chamber	Albatross	-	-	-	-	-	Conducted Test Parameters
Spectrum Analyzer	Agilent	E4407B	US411927 72	A.14.07	16.01.2027	Yearly	
10 dB RF Attenuator (DUT-1)	Rohde & Schwarz	-	-	-	10.10.2026	Yearly	

Table 2: Instrument application Software versions

SL. No.	Test Type	Application software	Version
1	Radiated spurious emission measurement in FAC	EMC 32	10.60.20
2	Radiated spurious emission measurement in 10mtr SAC	BAT EMC	3.20.0.17

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

The BLUARMOR C10 is a wireless motorcycle helmet intercom designed for rider-to-rider and rider-to-passenger communication. It enables hands-free voice communication using Bluetooth Classic (BR/EDR) for phone calls and audio streaming, and Bluetooth Low Energy (BLE) for device configuration and control via a companion smartphone application. The device is intended to be mounted on motorcycle helmets and operated during riding. It supports connection to smartphones for music playback, GPS navigation audio, and phone calls via Bluetooth. The C10 is optimized for single-radio operation, providing reliable Bluetooth intercom and audio in a compact form factor.

3.2 Ratings and System Details of Equipment under Test

Table 3: Ratings and System Details as declared by Client*

Protocol		Bluetooth
Operating Frequency Range		2402MHz to 2480MHz
Channel Spacing		1 MHz
Measured Power (dBm)		18.75 dBm
Modulation		GFSK, pi/4-DQPSK,8-DPSK
Data Rate		1Mbps,2Mbps,3Mbps
Number of antennas		1
Antenna Gain & Antenna Type		1.3dBi & Ceramic Chip Antenna
Antenna Part Number		(Pulse Electronics W3008C, Ceramic Loaded PIFA)
Supply Voltage to Product		3.7V DC Through Battery
Environmental conditions	Operating Condition	0°C to +60°C
	Storage Condition	-20°C to +80°C
EUT Dimension		61 mm x 43 mm x 22 mm

***Disclaimer:** The information/data is supplied by the client and the same is considered to arrive at the final value. Any changes made apart from the specified specification, can directly impact on the tests results. Refer the products user manual for more details.

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 10 von 64
Page 10 of 64

3.3 Measurement Uncertainty:

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$

Table 4: Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	± 0.87 dB
Power Spectral Density, conducted	± 1.07 dB
Bandwidth, conducted	0.36 %
Unwanted Emissions, conducted	± 2.13 dB
All emissions, radiated	± 4.61 dB

4 TEST SET-UP AND OPERATION MODE

4.1 Principle of Configuration Selection

Transmission was enabled with highest possible duty cycle transmission on low, mid and high channel.

4.2 Test Operation and Test Software

Test Firmware:	C10_BUILD_RELEASE_V1.5.0.84
Software Name:	RTLBTAPP.exe
Hardware Name:	C10
Hardware revision:	1.1

4.3 Special Accessories and Auxiliary Equipment

- None

4.4 Simultaneous Transmission

- This product supports Simultaneous transmission.

4.5 Countermeasures to achieve EMC Compliance

- None

4.6 List of frequencies

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
2402 – 2480 BT(BDR+EDR)	0	2402
	1	2403
	2	2404
	3	2405
	:	:
	:	:
	:	:
	37	2439
	38	2440
	39	2441
	40	2442
	:	:
	:	:
	:	:
	74	2476
	75	2477
	:	:
	:	:
	78	2480

Table 5: List of Bluetooth Centre frequencies

Prüfbericht - Nr.:

Test Report No.:

IN26THBW 001

Seite 12 von 64

Page 12 of 64

Channel used for Bluetooth testing.

Channel low: 2402MHz

Channel mid: 2440MHz

Channel high : 2480MHz

4.7 TUV Sample Identification

TUV Sample Identification number: A004252449-001- Radiated test Sample.
A004250044-005- Conducted test Sample

5 Operational Description

The C10 operates using a single radio subsystem in the 2.4 GHz ISM band (2.400–2.4835 GHz). The radio subsystem is a dual-mode Bluetooth Classic (BR/EDR) and BLE radio used for smartphone connectivity, audio streaming (A2DP), hands-free calling (HFP), remote control (AVRCP), and BLE-based device configuration. The subsystem uses frequency hopping spread spectrum (FHSS) per FCC §15.247. The device is powered by an internal rechargeable Li-ion battery with a regulated 5V DC supply rail. Audio input and output are handled via an integrated microphone and speaker housed within the helmet mount unit. Device configuration and firmware updates are performed via a companion smartphone application over BLE.

6 Test Methodology

6.1 Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2020. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1 GHz & 1.5 m height for above 1 GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000 MHz was performed by horn antenna, the measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 200 MHz was performed by Balloon and Biconical Antenna, and measurement from 200 MHz to 1 GHz was performed by Log-Periodic Antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded

6.1.1 Test Setup Configuration

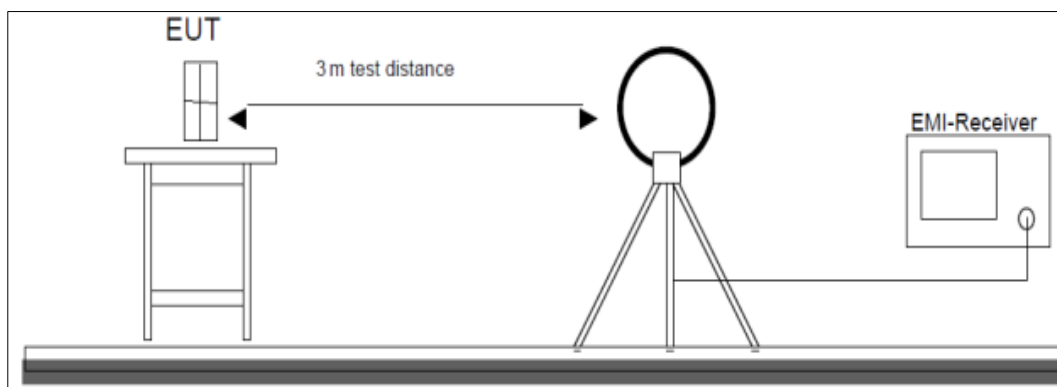


Figure 1: Frequency Range 9 kHz- 30 MHz

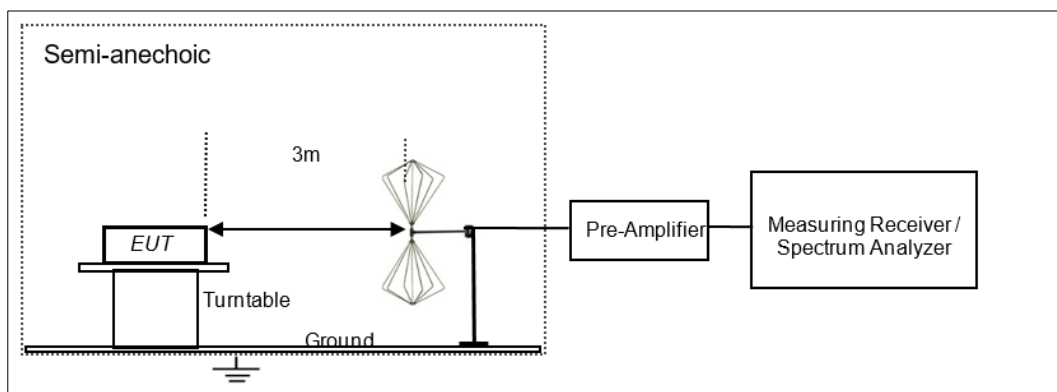


Figure 2: Frequency Range 30 MHz – 200 MHz

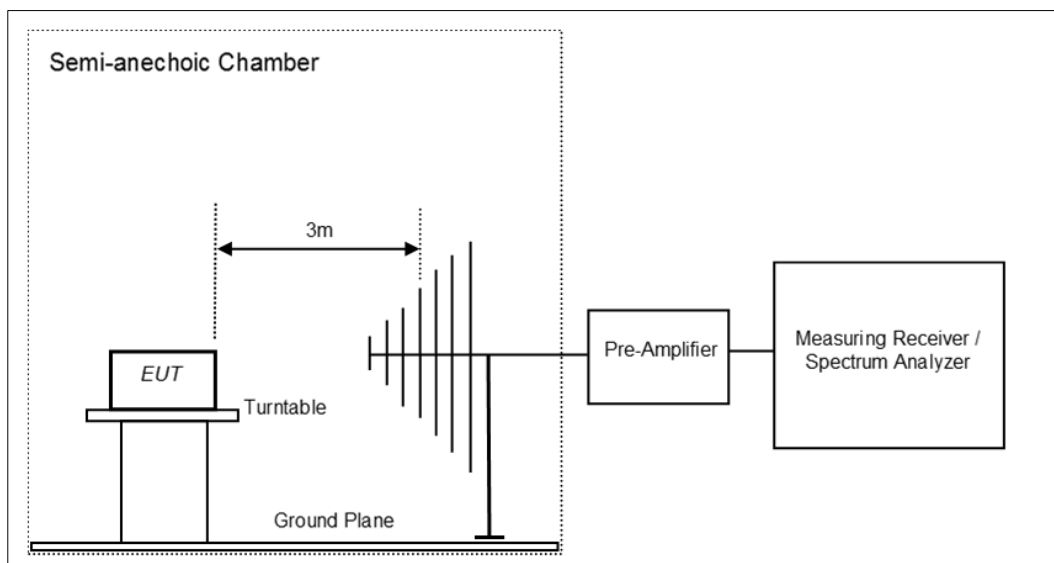


Figure 3: Frequency Range 200 MHz - 1GHz

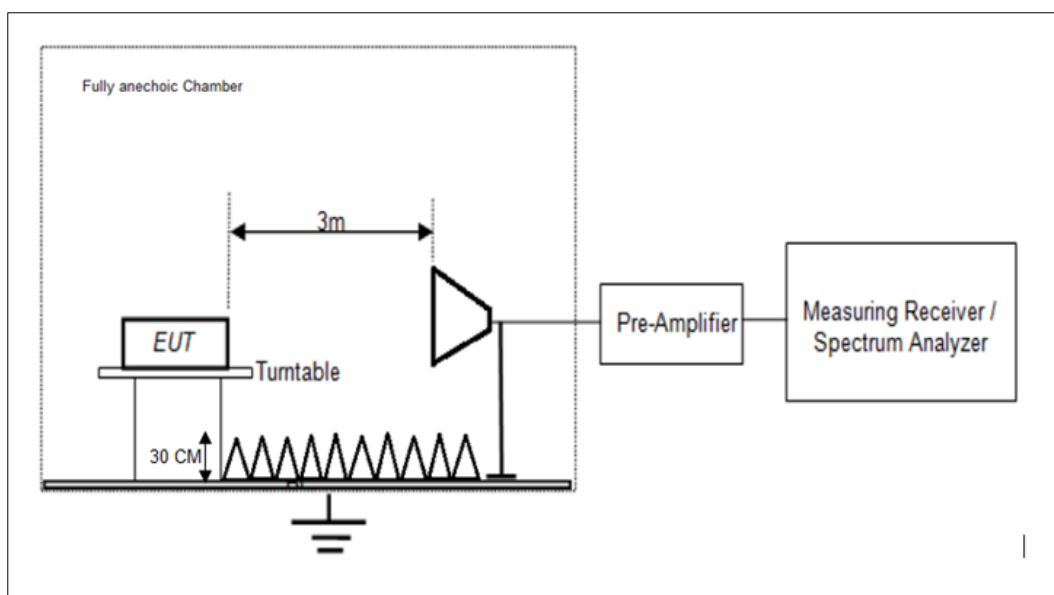
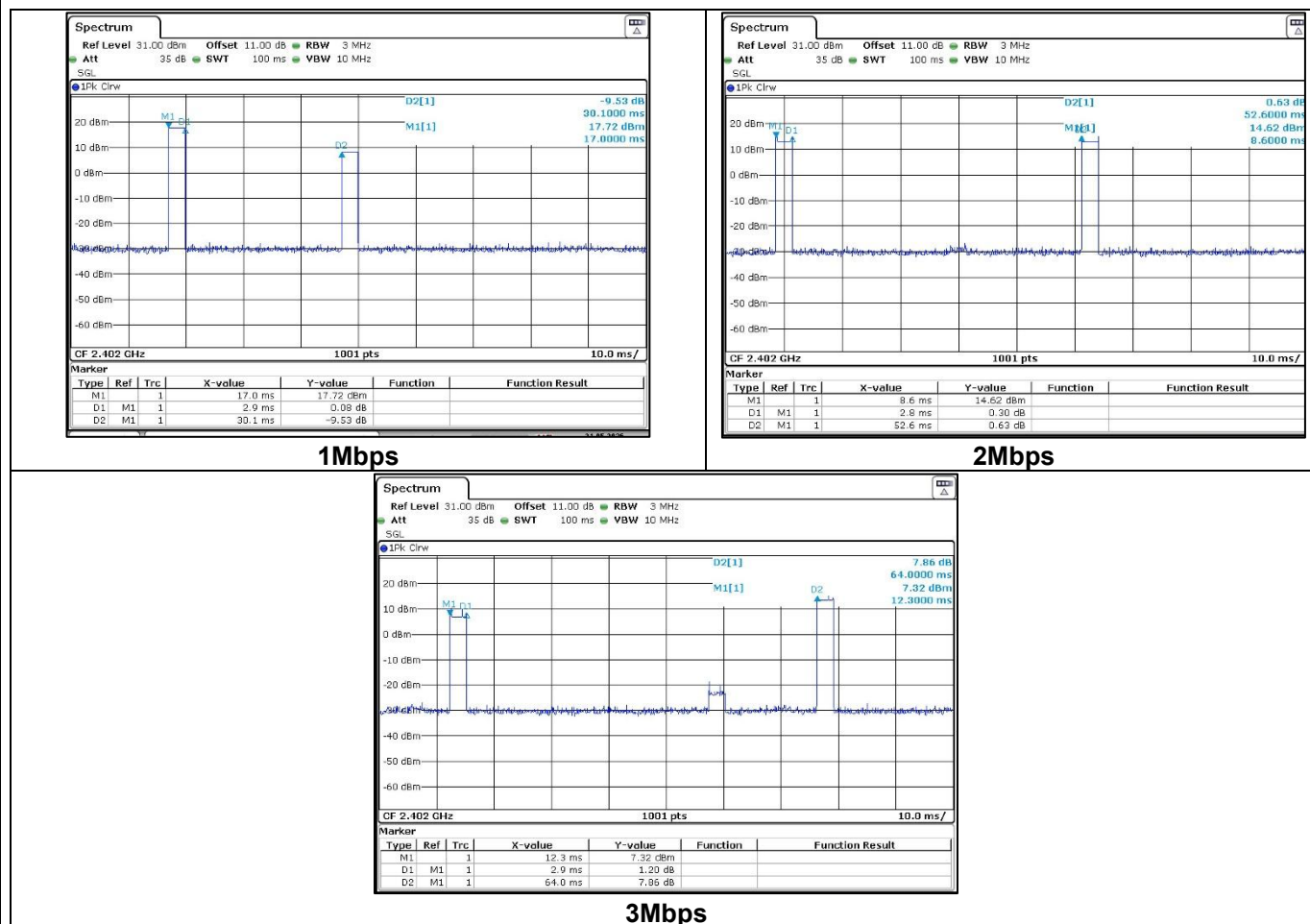


Figure 4: Frequency Range above 1 GHz

7 TEST RESULTS FOR BT

7.1 DUTY CYCLE

Test Plot:



Duty Cycle Calculation:

Duty Cycle: On Time/Total Period

Data Rate	1Mbps	On Time	2.9mSec
		Total Period	30.1mSec
		Duty Cycle formula	On Time ÷ Total Period
		Duty Cycle	0.0963
		Duty Cycle %	9.63
	2Mbps	On Time	2.8mSec
		Total Period	52.6mSec
		Duty Cycle formula	On Time ÷ Total Period
		Duty Cycle	0.0532
		Duty Cycle %	5.32
	3Mbps	On Time	2.9mSec
		Total Period	64.0mSec
		Duty Cycle formula	On Time ÷ Total Period
		Duty Cycle	0.0453
		Duty Cycle %	4.53

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

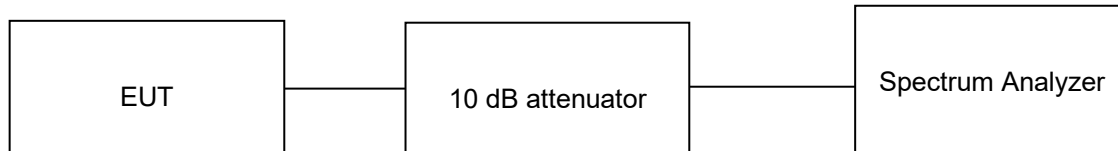
Seite 17 von 64
Page 17 of 64

7.2 Maximum Peak Conducted Output Power

Result

Pass

Test Specification	FCC part 15 Subpart C 15.247 (b)(1)
Test Method	Subclause 7.8.5 of ANSI C63.10-2020
Measurement Bandwidth	1MHz
Detector	Peak
Port of testing	Antenna port
Requirement	Power $\leq$ 1 W (30 dBm)



Test Condition

Normal Test Condition:

Temperature (Norm) = +22.3°C Voltage = 3.7 VDC through Battery Relative humidity: 58%

KDB Guidelines applied:

Measurements were made as per section 9 b) in KDB 558074 D01 15.247 Measurement Guidance v05r02.

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 18 von 64
Page 18 of 64

Test results:

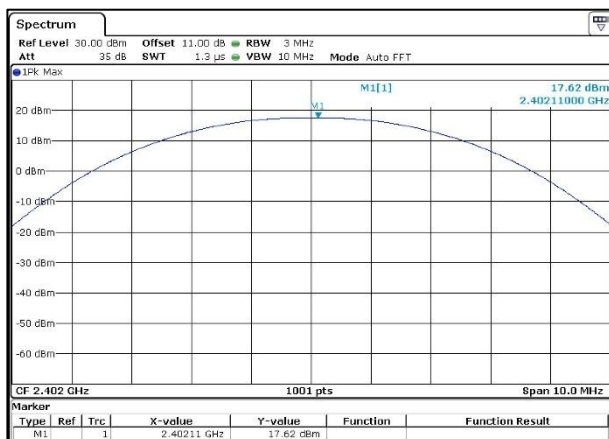
Note:

1. All the losses are included during measurement and final values are mentioned in the test report.
2. Total Peak Output power (dBm) = Measured Peak power (dBm) + Attenuator factor (10dB) + Cable loss (1dB)

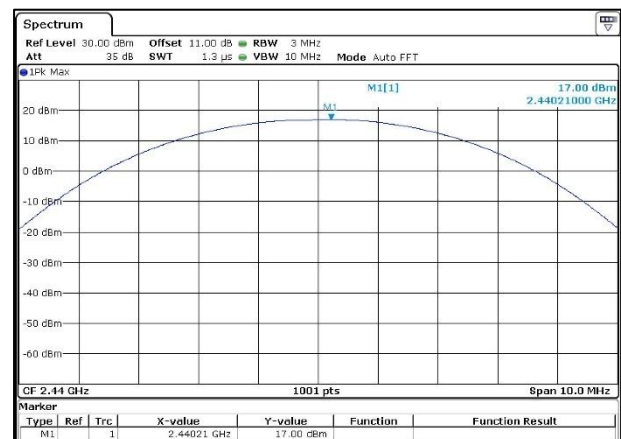
Data rate	Channel frequency	Total Peak Power (dBm)	Limit (dBm)
1 Mbps	2402.00	17.62	30.00
	2440.00	17.00	30.00
	2480.00	15.84	30.00
2 Mbps	2402.00	18.63	30.00
	2440.00	18.19	30.00
	2480.00	18.00	30.00
3 Mbps	2402.00	18.75	30.00
	2440.00	18.24	30.00
	2480.00	18.24	30.00

Test Plots:

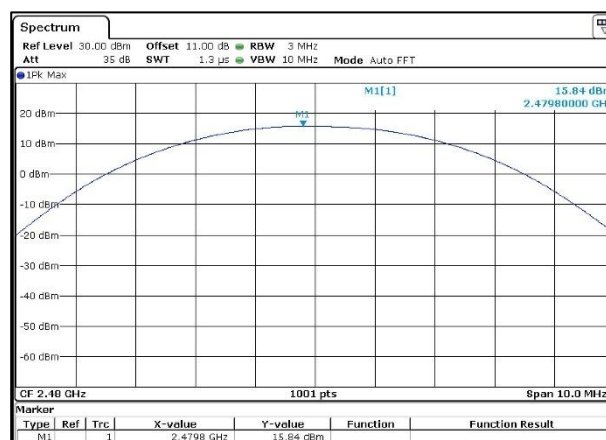
Data Rate: 1Mbps



Channel Frequency:2402MHz

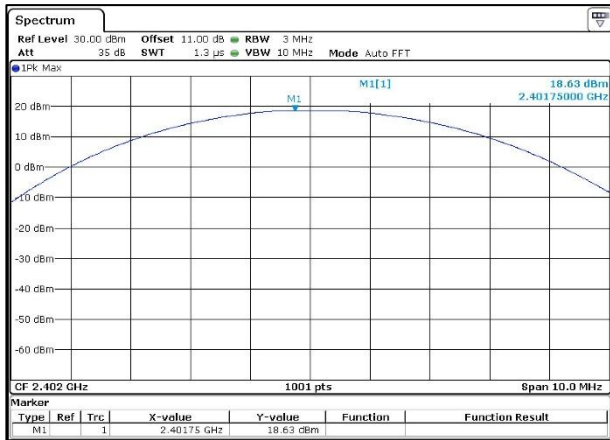


Channel Frequency:2440MHz

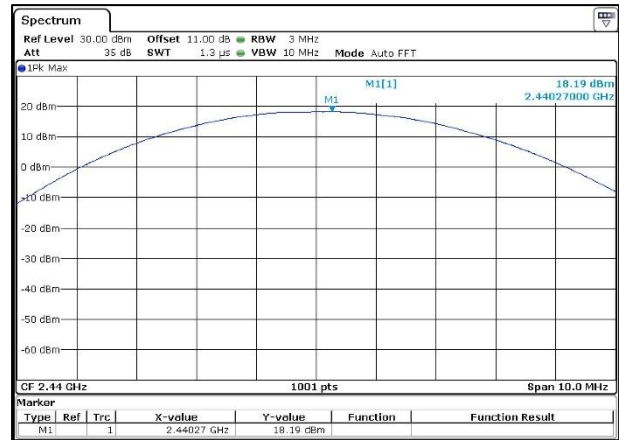


Channel Frequency:2480MHz

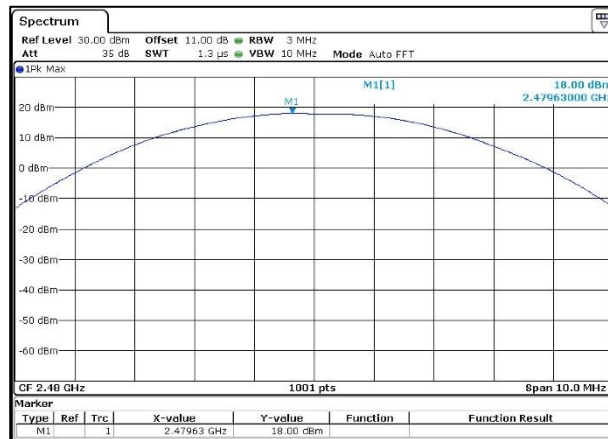
Data Rate: 2Mbps



Channel Frequency:2402MHz



Channel Frequency:2440MHz



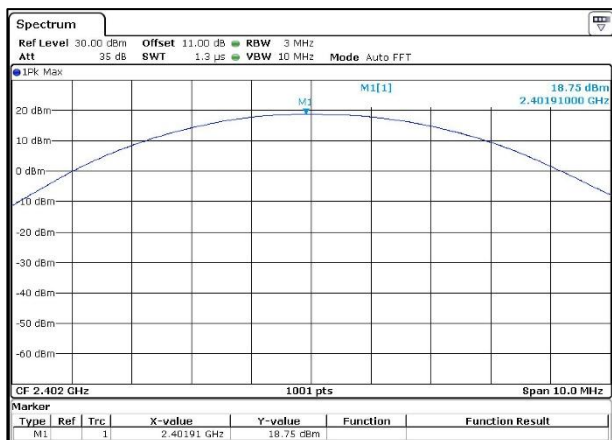
Channel Frequency:2480MHz

Prüfbericht - Nr.:
Test Report No.:

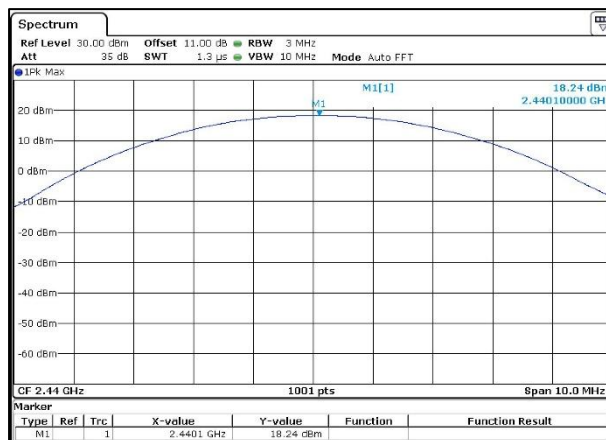
IN26THBW 001

Seite 20 von 64
Page 20 of 64

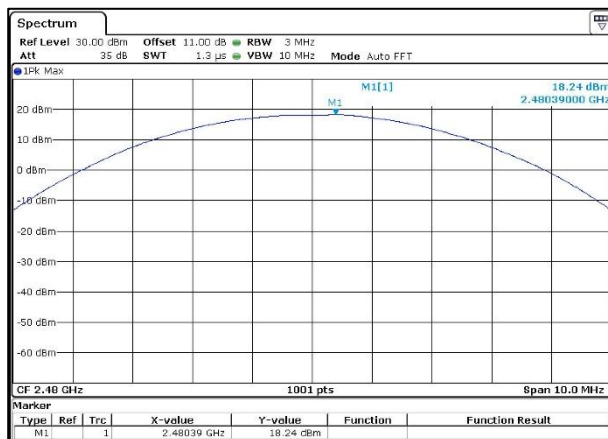
Data Rate: 3Mbps



Channel Frequency:2402MHz



Channel Frequency:2440MHz



Channel Frequency:2480MHz

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 21 von 64
Page 21 of 64

7.3 20dB Bandwidth & 99% Bandwidth

Result

Pass

Test Specification FCC part 15 Subpart C 15.247 (a) (i)

Test Method Subclause 7.8.7 of ANSI C63.10

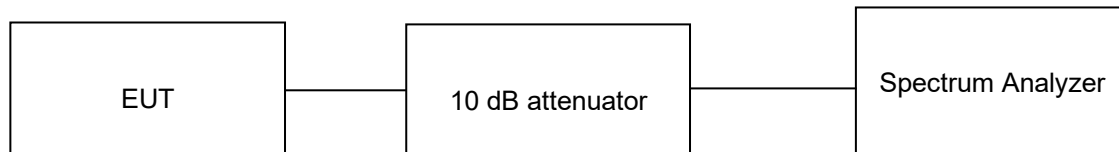
Measurement Bandwidth 30 kHz

Detector Peak

Port of testing Antenna port

Requirement The bandwidth of frequency hopping channel is the 20 dB emission bandwidth ,measured with the hopping stopped. The system RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random , with sequential hops randomly distributed in both direction and magnitude of change in the hopset while the long-term distribution appears evenly distributed.

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = +22.3°C

Voltage = 3.7 VDC through Battery

Relative humidity: 58%

KDB Guidelines applied:

Measurements were made as per section 9(b) in KDB 558074 D01 15.247 Measurement Guidance v05r02.

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 22 von 64
Page 22 of 64

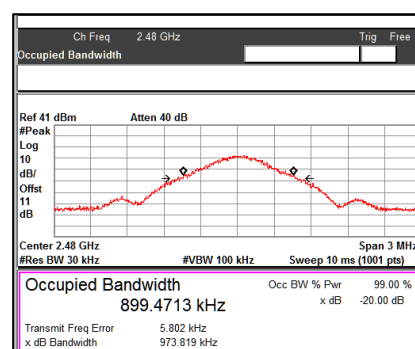
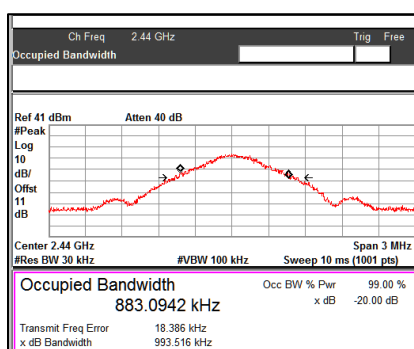
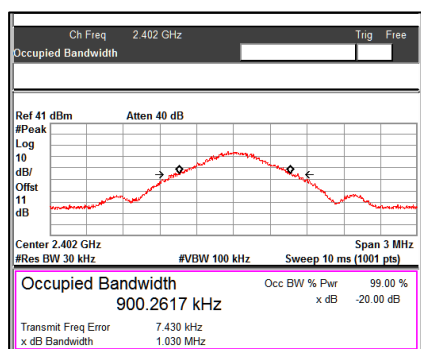
Test results:

1. All the losses are included during measurement and final values are mentioned in the test report.

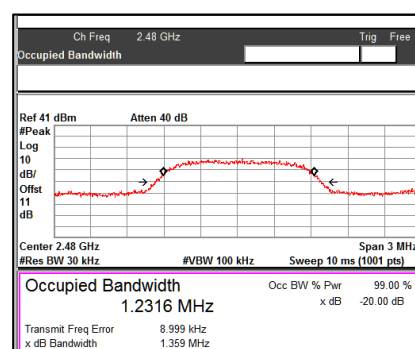
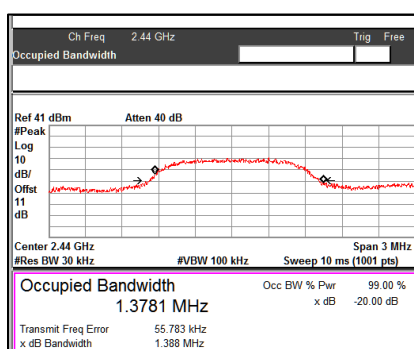
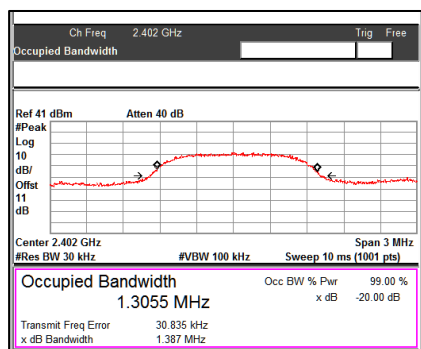
Data rate	Channel frequency	99% (MHz)	20dB BW (MHz)
1 Mbps	2402.00	0.90	1.03
	2440.00	0.88	0.99
	2480.00	0.89	0.97
2 Mbps	2402.00	1.30	1.38
	2440.00	1.37	1.38
	2480.00	1.23	1.35
3 Mbps	2402.00	1.32	1.41
	2440.00	1.34	1.38
	2480.00	1.23	1.36

99% Bandwidth & 20dB Bandwidth

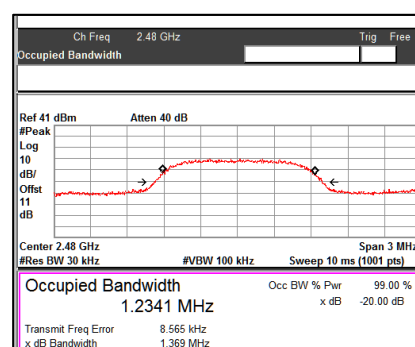
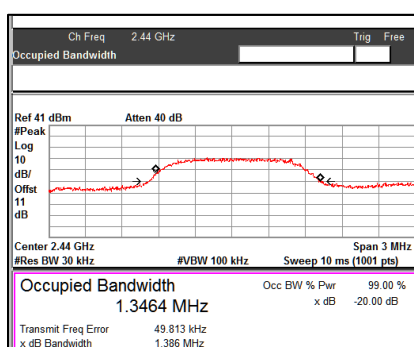
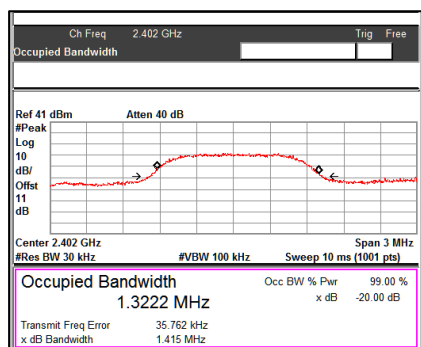
Data Rate: 1Mbps



Data Rate: 2Mbps



Data Rate: 3Mbps



Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 23 von 64
Page 23 of 64

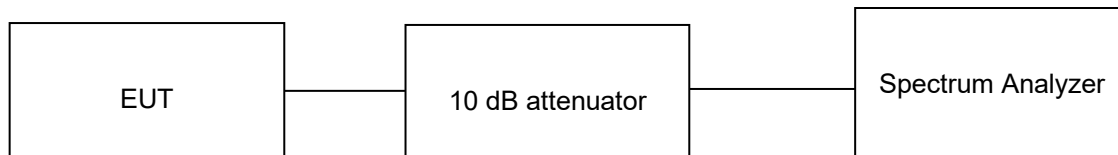
7.4 Number of Hopping Channels

Result

Pass

Test Specification	FCC Part 15 Subpart C Section 15.247 (a) (i)
Test Method	Subclause 7.8.3 of ANSI C63.10
Measurement Bandwidth	100 kHz
Detector	Peak
Port of testing	Antenna port
Requirement	Frequency hopping systems operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = +22.3°C Voltage = 3.7 VDC through Battery Relative humidity: 58%

KDB Guidelines applied:

Measurements were made as per section 9(b) in KDB 558074 D01 15.247 Measurement Guidance v05r02.

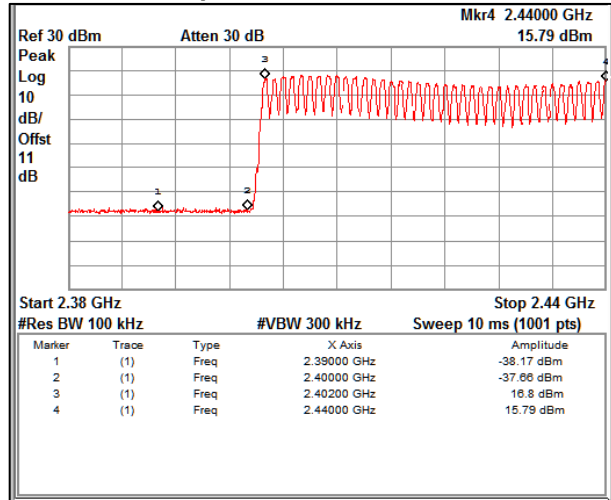
Test results:

Note:

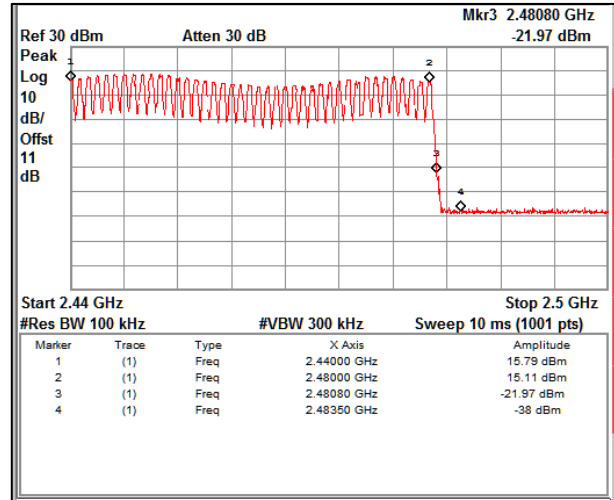
1. All the losses are included during measurement and final values are mentioned in the test report.

Test Plots:

Data Rate: 1Mbps

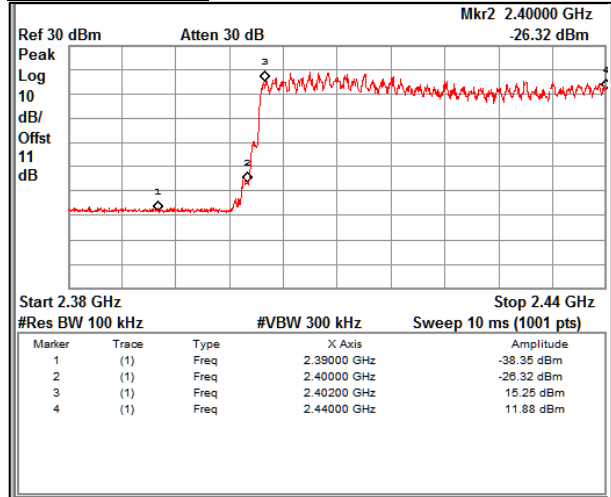


Frequency range: 2380MHz to 2440MHz

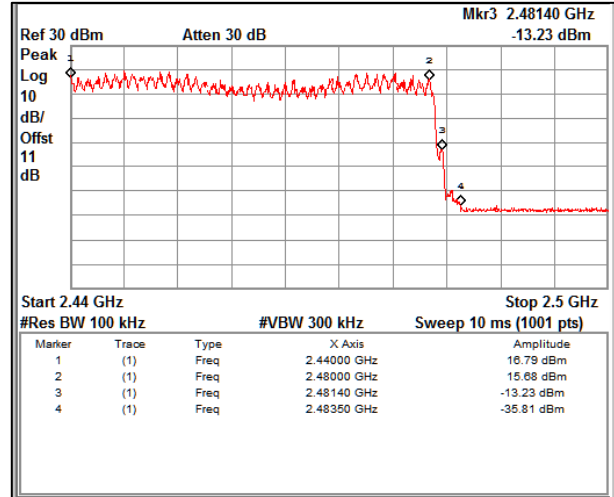


Frequency range: 2440MHz to 2500MHz

Data Rate: 2Mbps

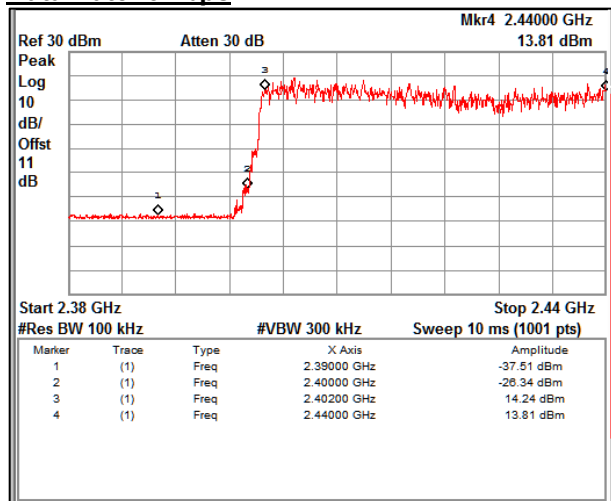


Frequency range: 2380MHz to 2440MHz

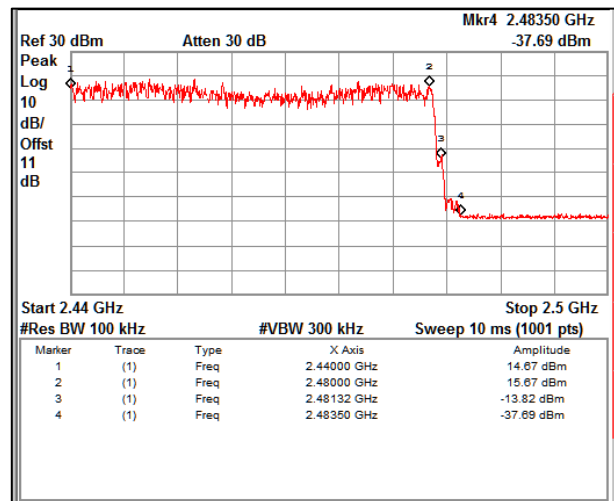


Frequency range: 2440MHz to 2500MHz

Data Rate: 3Mbps



Frequency range: 2380MHz to 2440MHz



Frequency range: 2440MHz to 2500MHz

Number of Hopping frequencies for all data rates = 79

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 25 von 64
Page 25 of 64

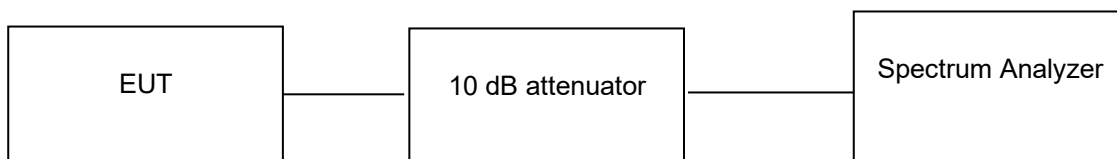
7.5 Carrier Frequency Separation

Result

Pass

Test Specification	FCC Part 15 Subpart C Section 15.247 (a) (1)
Test Method	Clause 7.8.2 of ANSI C63.10
Measurement Bandwidth	300 kHz
Detector	Peak
Port of testing	Antenna port
Requirement	Frequency hopping systems shall have hopping channel carrier frequency separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 23.2 °C Voltage = 3.7 VDC through Battery Relative humidity: 62%

KDB Guidelines applied:

Measurements were made as per section 9(b) in KDB 558074 D01 15.247 Measurement Guidance v05r02.

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 26 von 64
Page 26 of 64

Test results:

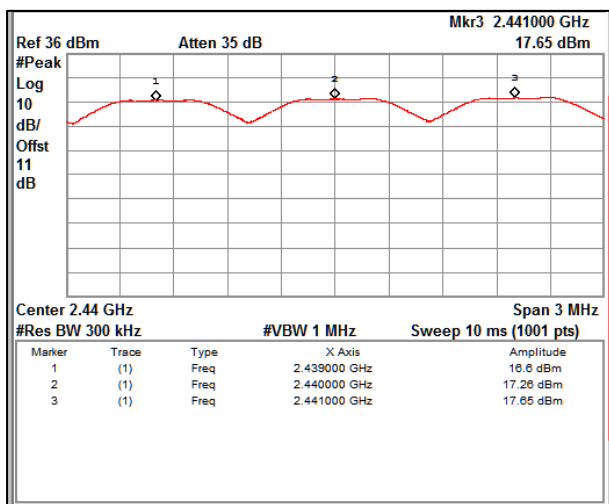
Note:

1. All the losses are included during measurement and final values are mentioned in the test report.

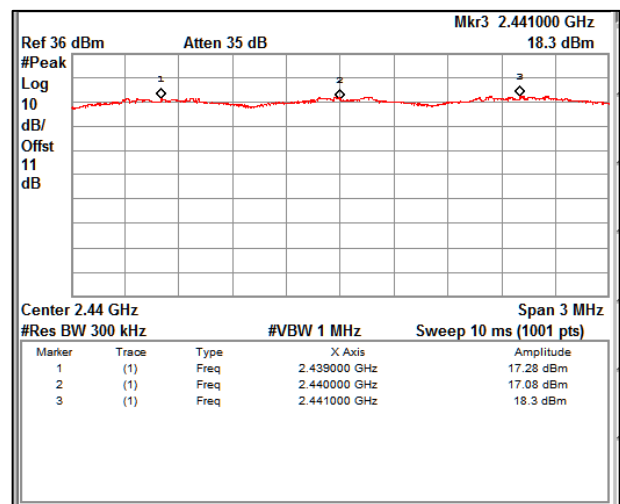
Data rate (Mbps)	Channel Frequency (MHz)	Channel spacing Observed (MHz)
1	2439	1
	2440	1
	2441	1
2	2439	1
	2440	1
	2441	1
3	2439	1
	2440	1
	2441	1

Test Plots:

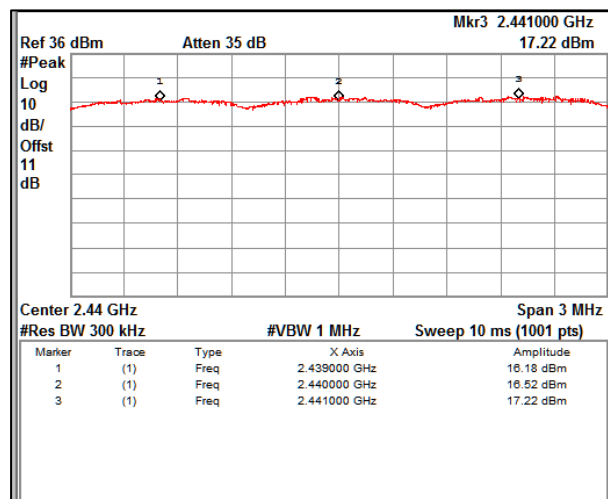
Data rate:1Mbps



Data rate:2Mbps



Data rate:3Mbps



Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 27 von 64
Page 27 of 64

7.6 Time Of Occupancy(Dwell Time)

Result

Pass

Test Specification

FCC Part 15 Subpart C Section 15.247 (a) (i)

Test Method

Clause 7.8.4 of ANSI C63.10

Measurement Bandwidth

100 kHz

Detector

Peak

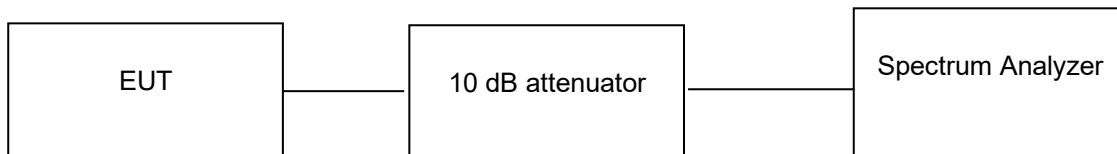
Port of testing

Antenna port

Requirement

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 23.2 °C

Voltage = 3.7 VDC through Battery

Relative humidity: 62%

KDB Guidelines applied:

Measurements were made as per section 9(b) in KDB 558074 D01 15.247 Measurement Guidance v05r02

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

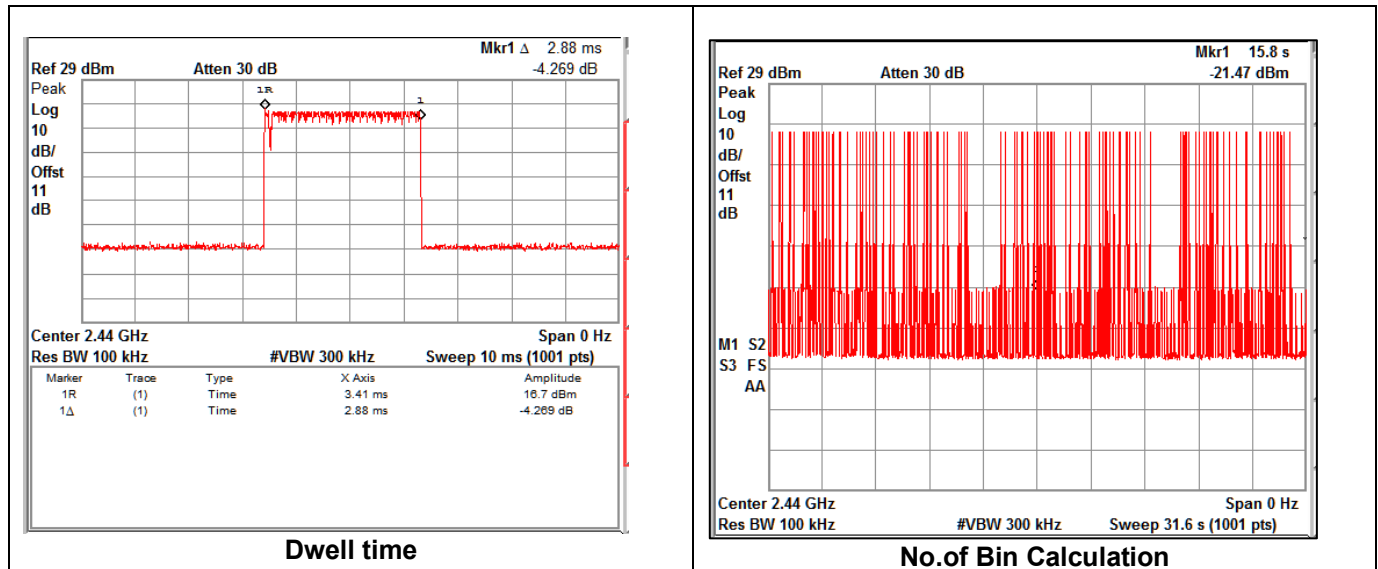
Seite 28 von 64
Page 28 of 64

Test results:

Note:

1. All the losses are included during measurement and final values are mentioned in the test report
2. Testing is performed for all the applicable data rates only worst case graphs are reported (3DH5)

Data Rate: 3DH5



Single Burst	2.88	ms
Measured Span (Seconds)	31.6	sec
No. Of Bins/Bursts in Measured Span	93	No.
Observation Period (79 hop ch x0.4s) - Seconds	31.6	sec
Total Burst in 31.6sec	267.84	ms
Limit	400.00	ms

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 29 von 64
Page 29 of 64

7.7 Emissions in non-restricted frequency bands and Conducted Spurious Emission

Result

Pass

Test Specification FCC part 15 Subpart C 15.247 (d)

Test Method Subclause 11.11 of ANSI C63.10

Measurement Bandwidth 100 kHz

Detector Peak

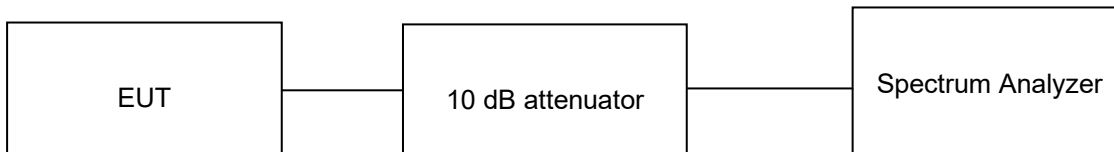
Port of testing Antenna port

Requirement

In any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits

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 paragraph shall be 30 dB instead of 20 dB

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 25 °C

Voltage = 3.7 VDC through Battery

Relative humidity: 62%

KDB Guidelines applied:

Measurements were made as per section 8.5 in KDB 558074 D01 15.247 Measurement Guidance v05r02.

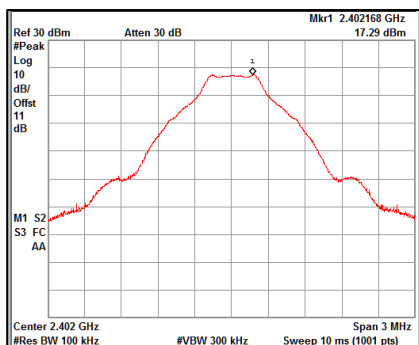
Test results:

Note:

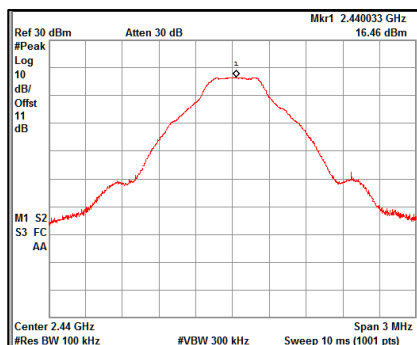
1. All the losses are included during measurement and final values are mentioned in the test report.
2. Final Value (dBm) = Measured Value (dBm) + Attenuator factor (10dB) + Cable loss (0.5dB)
3. This product do not support additional beamforming gain / directional gain, it uses signal antenna and hence directional gain of the single antenna is 3.60 dBi

7.7.1 Reference plots

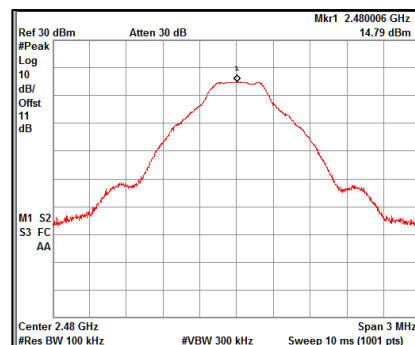
Data Rate: 1Mbps



Reference Plot for Channel Frequency 2402MHz

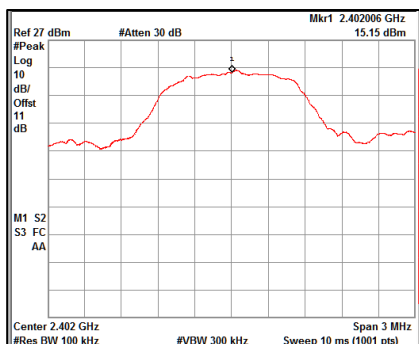


Reference Plot for Channel Frequency 2440MHz

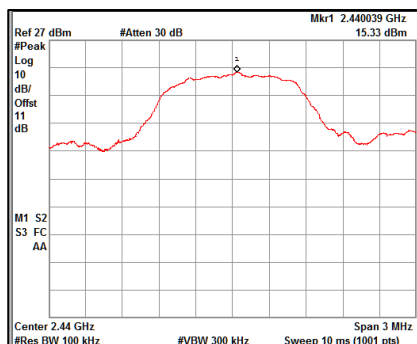


Reference Plot for Channel Frequency 2480MHz

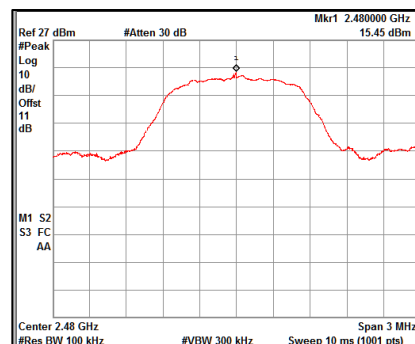
Data Rate: 2Mbps



Reference Plot for Channel Frequency 2402MHz

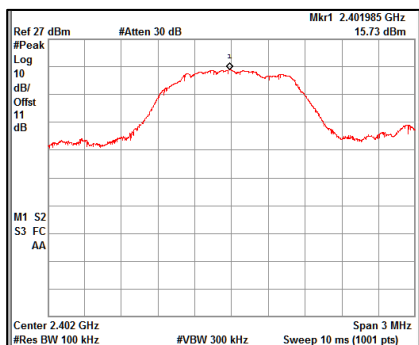


Reference Plot for Channel Frequency 2440MHz

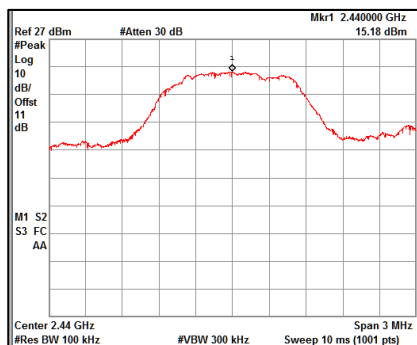


Reference Plot for Channel Frequency 2480MHz

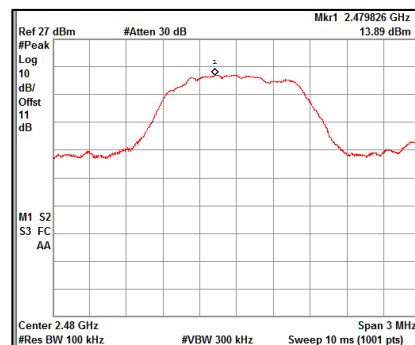
Data Rate: 3Mbps



Reference Plot for Channel Frequency 2402MHz



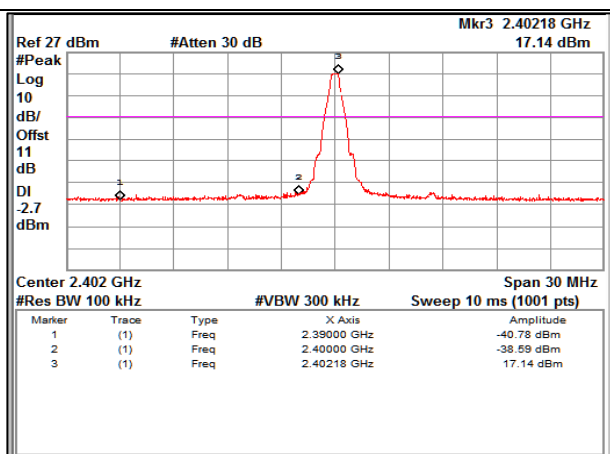
Reference Plot for Channel Frequency 2440MHz



Reference Plot for Channel Frequency 2480MHz

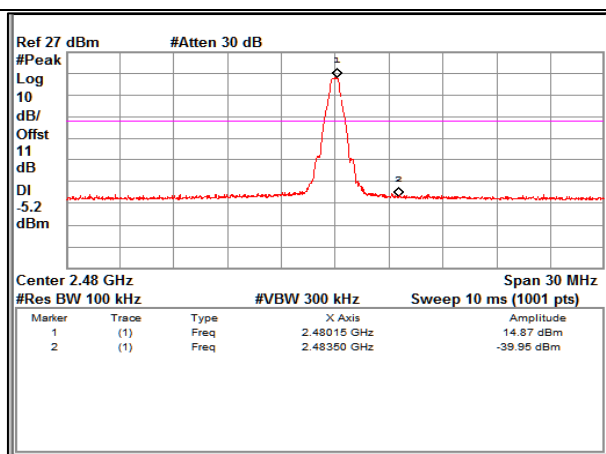
7.7.2 Band Edge

Data rate	Channel Frequency (MHz)	Band edge Frequency (MHz)	Value at band edge (A) (dBm)	Reference value (B) (dBm)	A-B (dBc)	Minimum Limit (dBc)
1 Mbps	2402.00	2400.00	-38.59	17.29	-55.88	-20.00
	2480.00	2483.50	-39.95	14.79	-54.74	-20.00
2 Mbps	2402.00	2400.00	-26.45	15.15	-41.60	-20.00
	2480.00	2483.50	-33.96	15.45	-49.41	-20.00
3 Mbps	2402.00	2400.00	-24.39	15.73	-40.12	-20.00
	2480.00	2483.50	-31.90	13.89	-45.79	-20.00



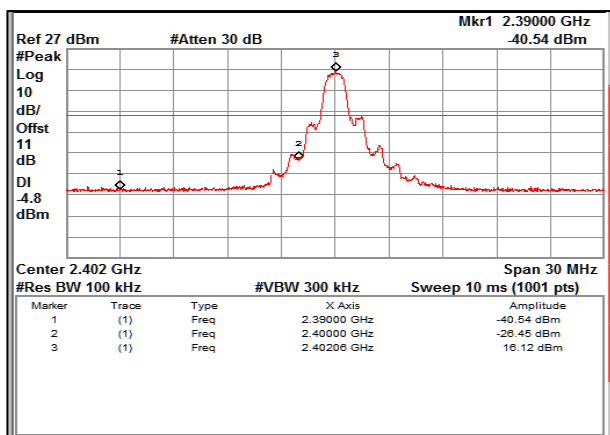
Data rate: 1Mbps

Channel Frequency 2402MHz



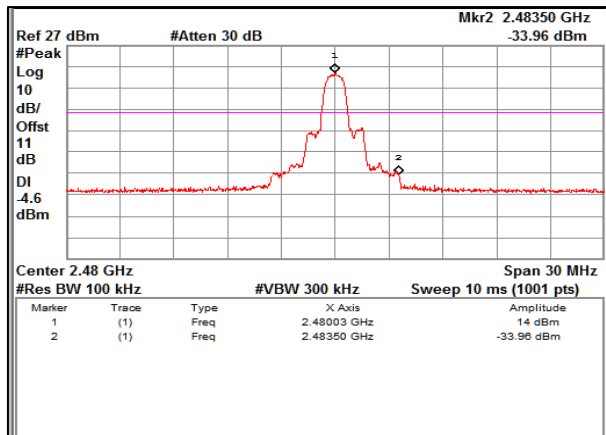
Data rate: 1Mbps

Channel Frequency 2480MHz



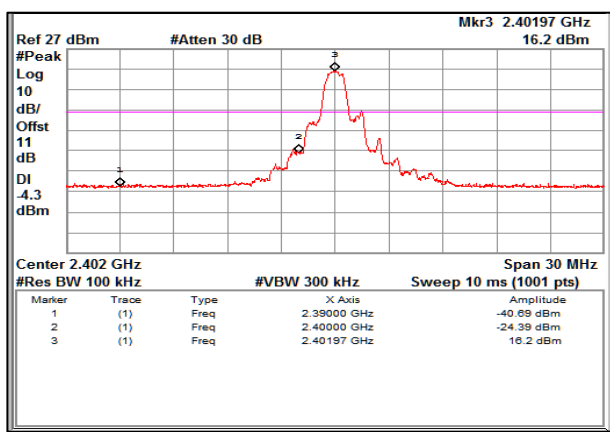
Data rate: 2Mbps

Channel Frequency 2402MHz



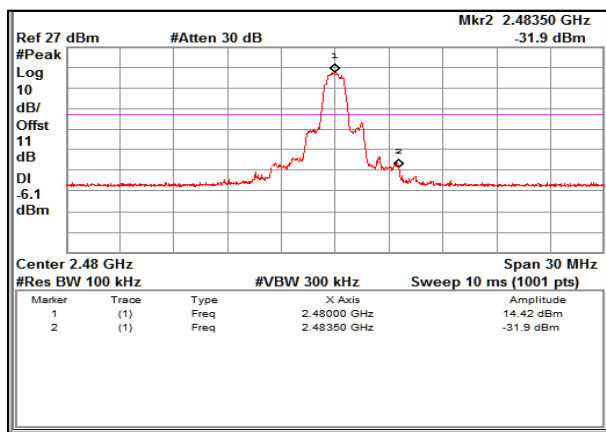
Data rate: 2Mbps

Channel Frequency 2480MHz



Data rate: 3Mbps

Channel Frequency 2402MHz

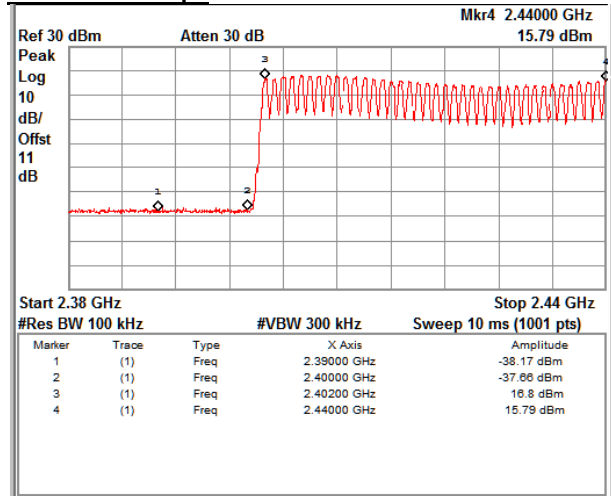


Data rate: 3Mbps

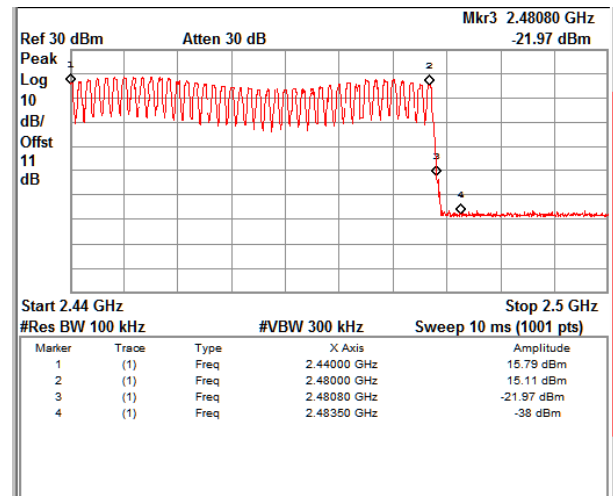
Channel Frequency 2480MHz

7.7.3 Hopping mode ON condition Band Edge

Data Rate: 1Mbps

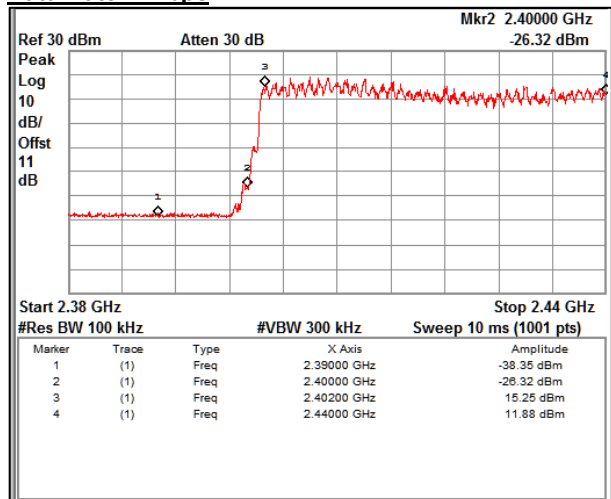


Frequency range: 2380MHz to 2440MHz

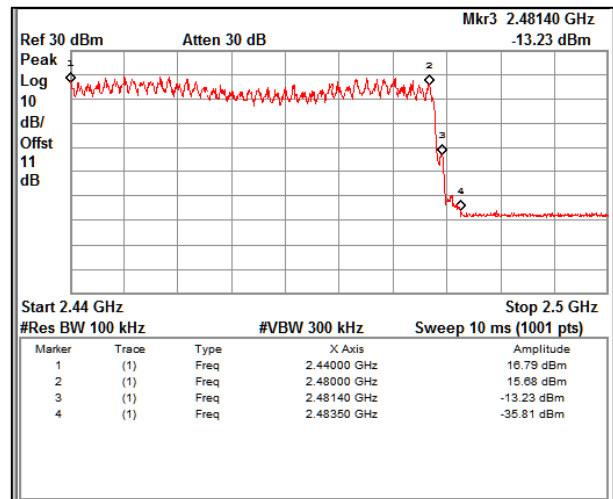


Frequency range: 2440MHz to 2500MHz

Data Rate: 2Mbps

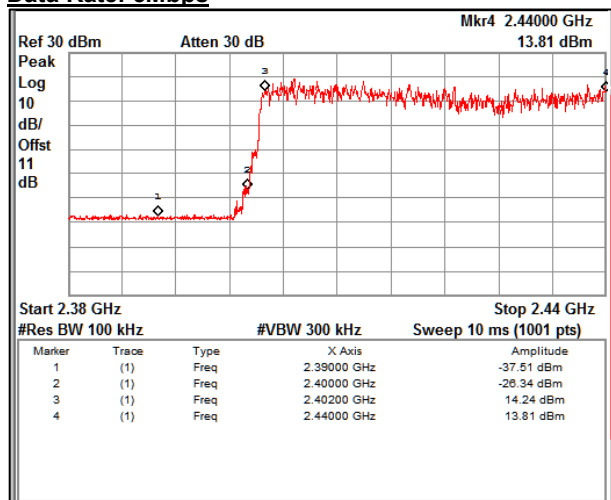


Frequency range: 2380MHz to 2440MHz

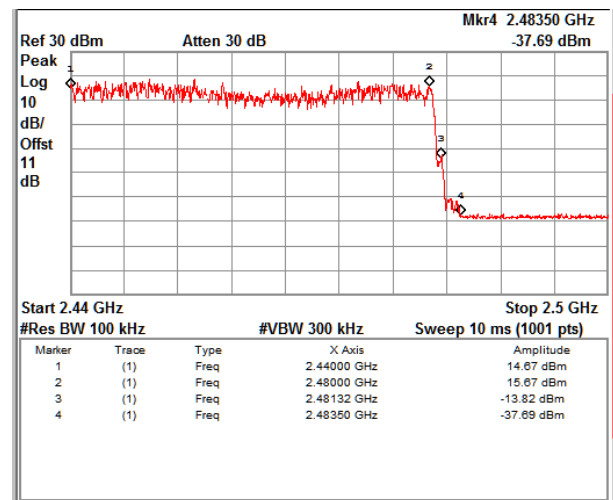


Frequency range: 2440MHz to 2500MHz

Data Rate: 3Mbps



Frequency range: 2380MHz to 2440MHz



Frequency range: 2440MHz to 2500MHz

Prüfbericht - Nr.:

Test Report No.:

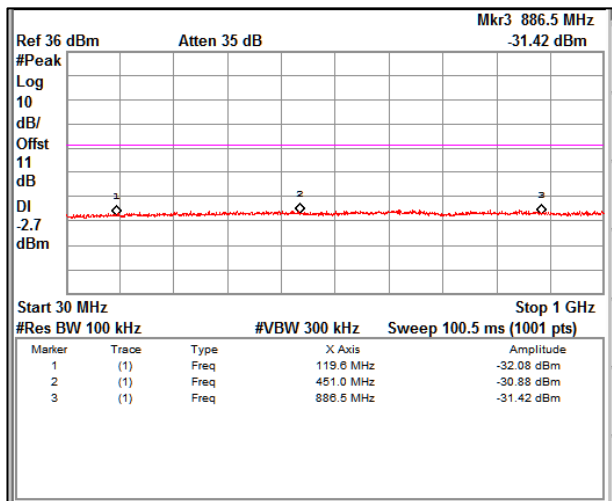
IN26THBW 001

Seite 33 von 64

Page 33 of 64

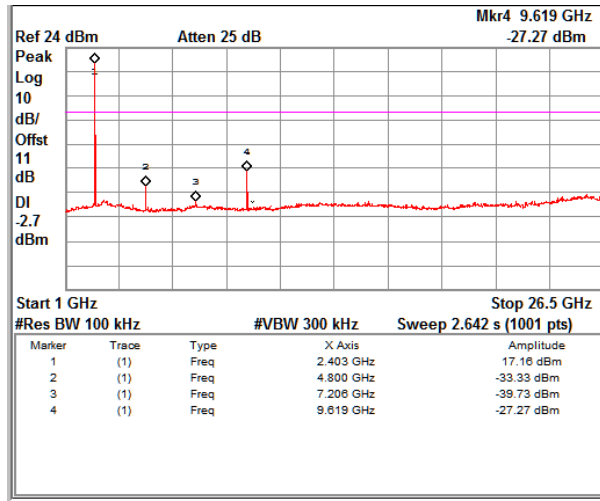
7.7.4 Out-Of-Band Emissions

Data Rate: 1Mbps



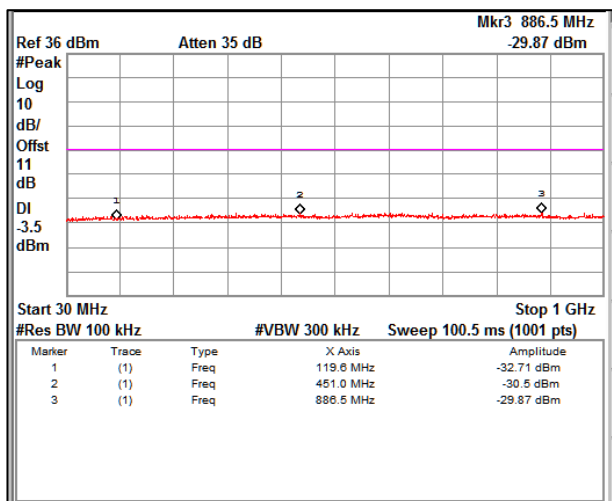
Channel Frequency 2402MHz

Frequency Range 30 MHz – 1GHz



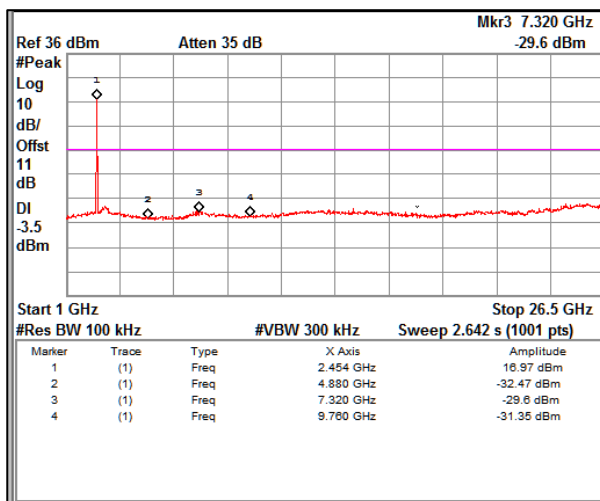
Channel Frequency 2402MHz

Frequency Range 1 GHz – 26.5GHz



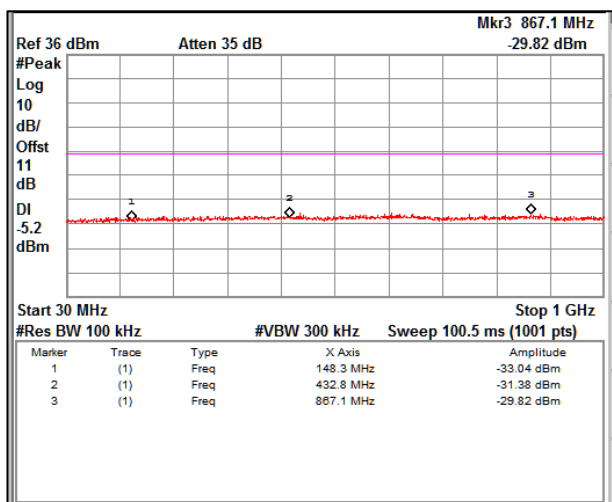
Channel Frequency 2440MHz

Frequency Range 30 MHz – 1GHz



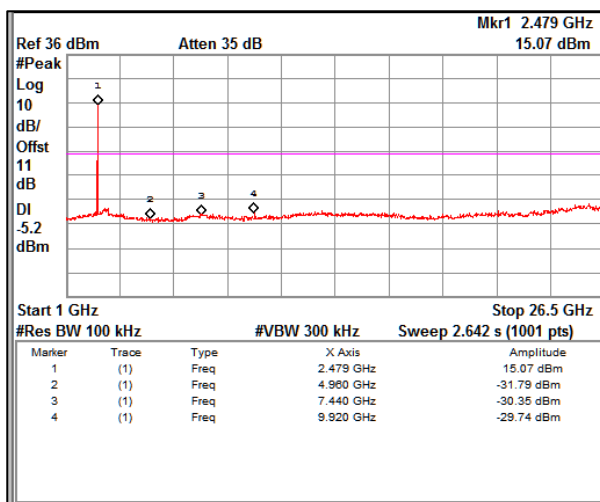
Channel Frequency 2440MHz

Frequency Range 1 GHz – 26.5GHz



Channel Frequency 2480MHz

Frequency Range 30 MHz – 1GHz



Channel Frequency 2480MHz

Frequency Range 1 GHz – 26.5GHz

Prüfbericht - Nr.:

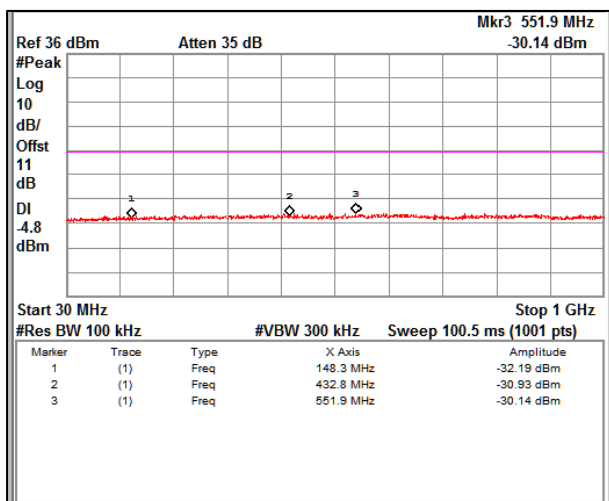
Test Report No.:

IN26THBW 001

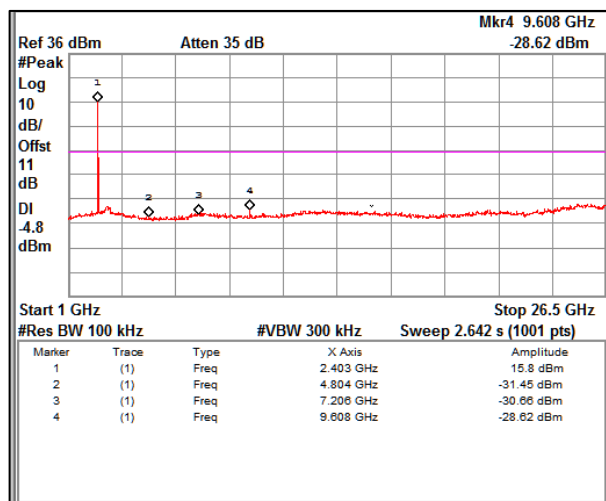
Seite 34 von 64

Page 34 of 64

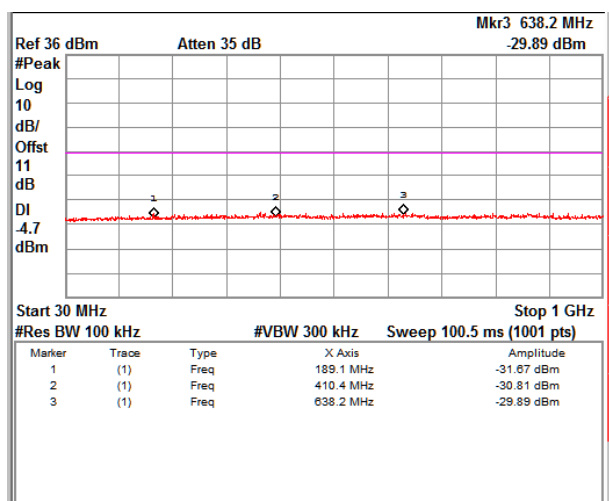
Data Rate: 2Mbps



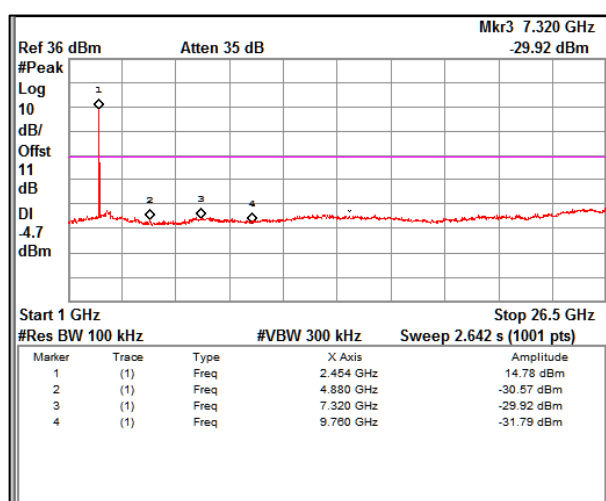
Channel Frequency 2402MHz Frequency Range 30 MHz – 1GHz



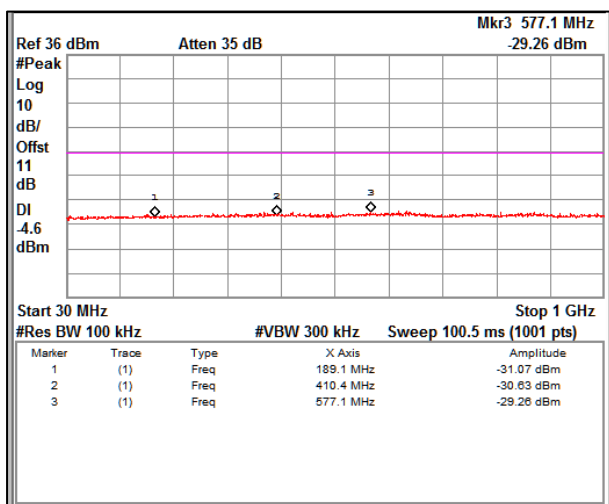
Channel Frequency 2402MHz Frequency Range 1 GHz – 26.5GHz



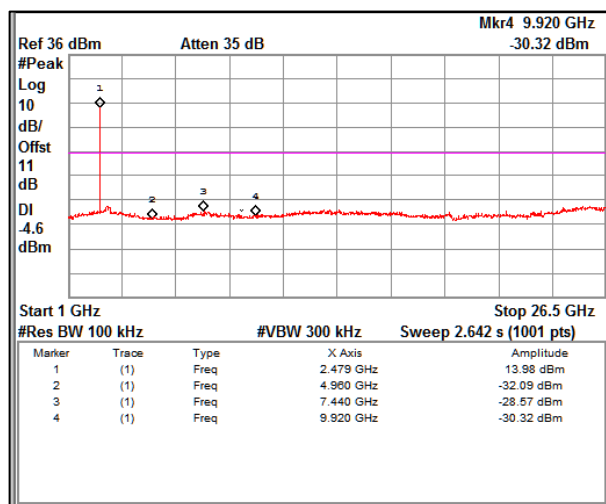
Channel Frequency 2440MHz Frequency Range 30 MHz – 1GHz



Channel Frequency 2440MHz Frequency Range 1 GHz – 26.5GHz

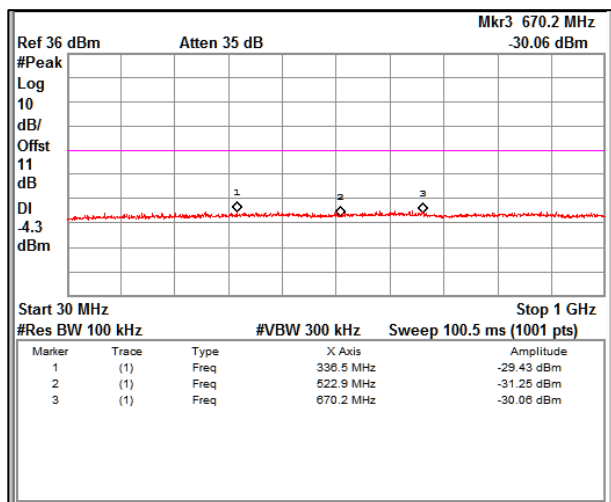


Channel Frequency 2480MHz Frequency Range 30 MHz – 1GHz

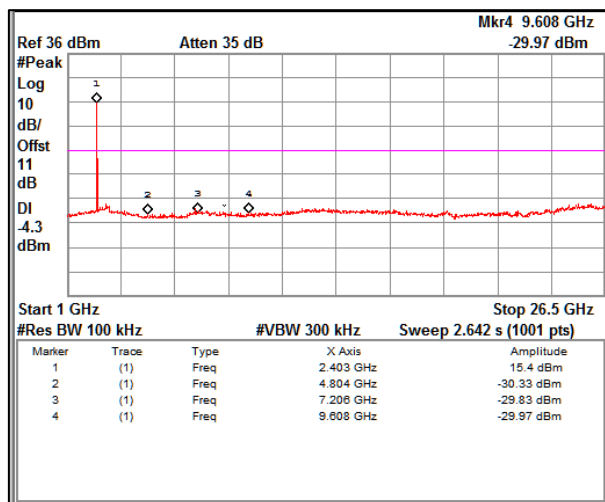


Channel Frequency 2480MHz Frequency Range 1 GHz – 26.5GHz

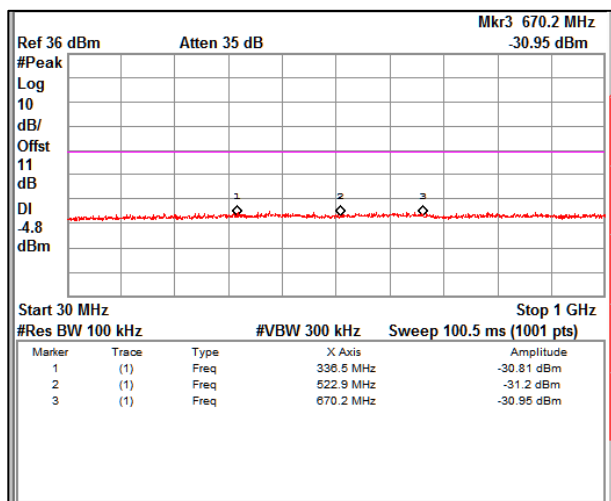
Data Rate: 3Mbps



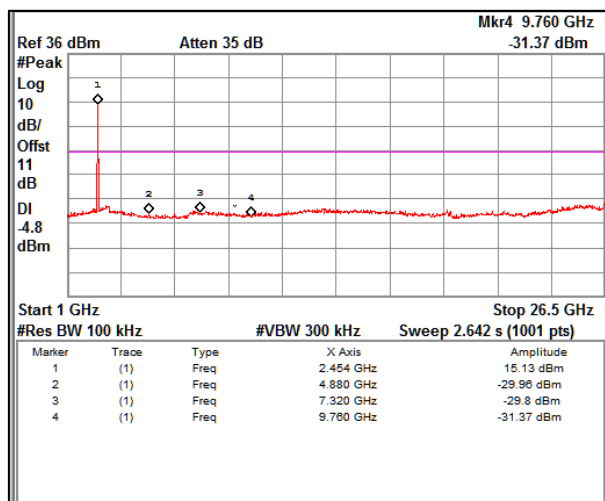
Channel Frequency 2402MHz Frequency Range 30 MHz – 1GHz



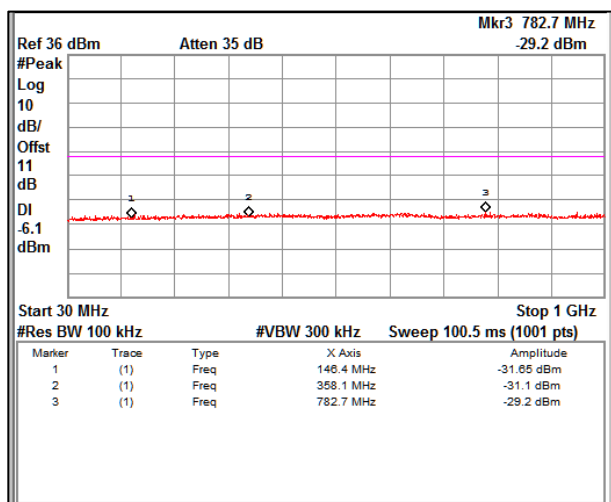
Channel Frequency 2402MHz Frequency Range 1 GHz – 26.5GHz



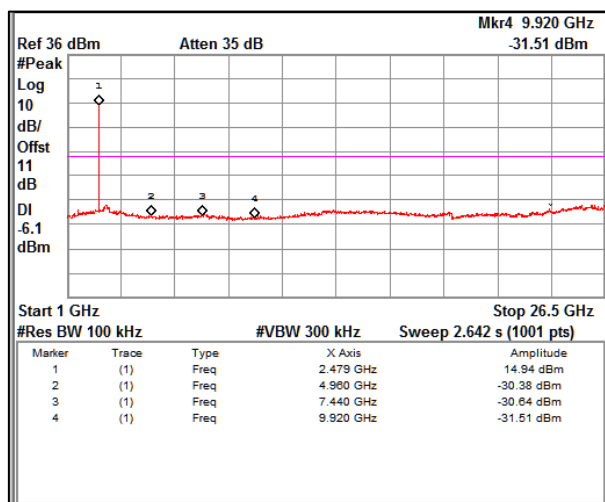
Channel Frequency 2440MHz Frequency Range 30 MHz – 1GHz



Channel Frequency 2440MHz Frequency Range 1 GHz – 26.5GHz



Channel Frequency 2480MHz Frequency Range 30 MHz – 1GHz



Channel Frequency 2480MHz Frequency Range 1 GHz – 26.5GHz

7.8 Spurious Radiated Emissions & Restricted Bands of Operation

Result

Pass

Test Specification	FCC part 15 Subpart C 15.247 (d) / (15.209 & 15.205)/ RSS-Gen Issue 5, Section 8.9 /8.10
Test Method	ANSI C63.10:2020
Measurement Location	Semi Anechoic Chamber 9kHz - 1 GHz Fully Anechoic Chamber 1 GHz - 26GHz
Measurement Bandwidth	100 kHz for frequency range < 1GHz 1 MHz for Frequency range >1GHz
Detector	Refer remarks below
Measuring Distance	3 m
Requirement	As per the limits mentioned in the below table
Test setup	Refer Test Methodology

Table 6: Transmitter limits for Radiated emission

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 128.51 – 93.80, 73.80 – 62.96 and 69.54 dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

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 an average detector.

Test Conditions:

Temperature (Norm) = +22.3°C

Voltage = 3.7 VDC through Battery

Relative humidity: 58%

Prüfbericht - Nr.:

Test Report No.:

IN26THBW 001

Seite 37 von 64

Page 37 of 64

Test results:

Note: All the losses are included during measurement and final values are mentioned in the test report. Refer TEST METHODOLOGY for more details

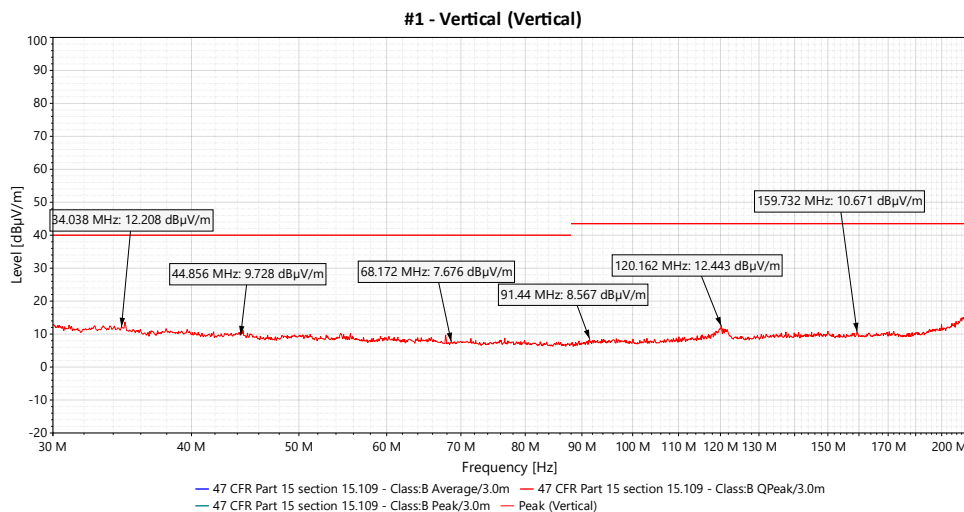
Test results for frequency range 9kHz – 30MHz

No emissions found in frequency range 9 kHz to 30 MHz, and measured levels are below 20dB from the limit line, hence not reported.

Table 7: Test results for frequency range 30MHz – 200MHz

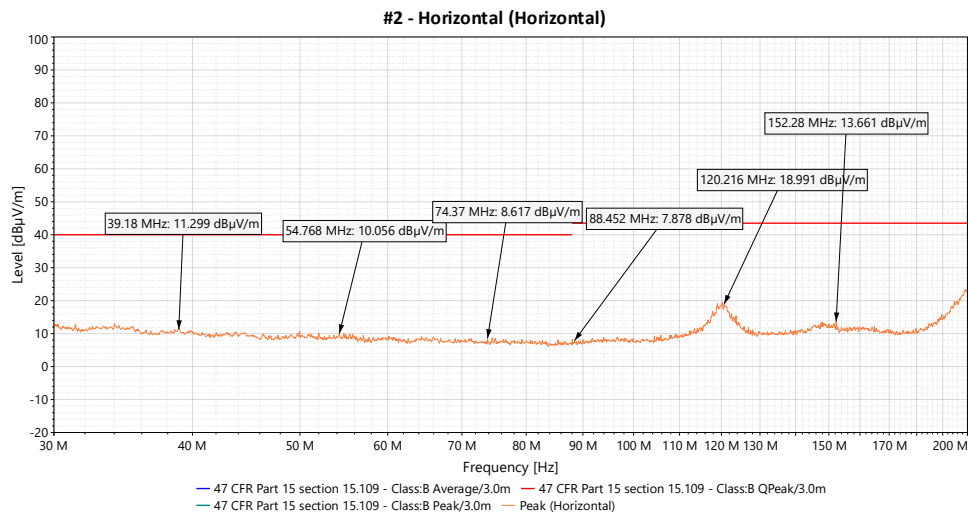
Antenna Polarization	Measured Frequency (MHz)	Measured emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Vertical	34.03	12.20	40.00	-27.80
	44.85	9.72	40.00	-30.28
	68.17	7.67	40.00	-32.33
	91.44	8.56	43.50	-34.94
	120.16	12.44	43.50	-31.06
	159.73	10.67	43.50	-32.83
Horizontal	39.18	11.29	40.00	-28.71
	54.76	10.05	40.00	-29.95
	74.37	8.61	40.00	-31.39
	88.45	7.87	43.50	-35.63
	120.21	18.99	43.50	-24.51
	152.28	13.66	43.50	-29.84

Test Plots:



Channel Frequency 30MHz – 200MHz

Polarization Vertical

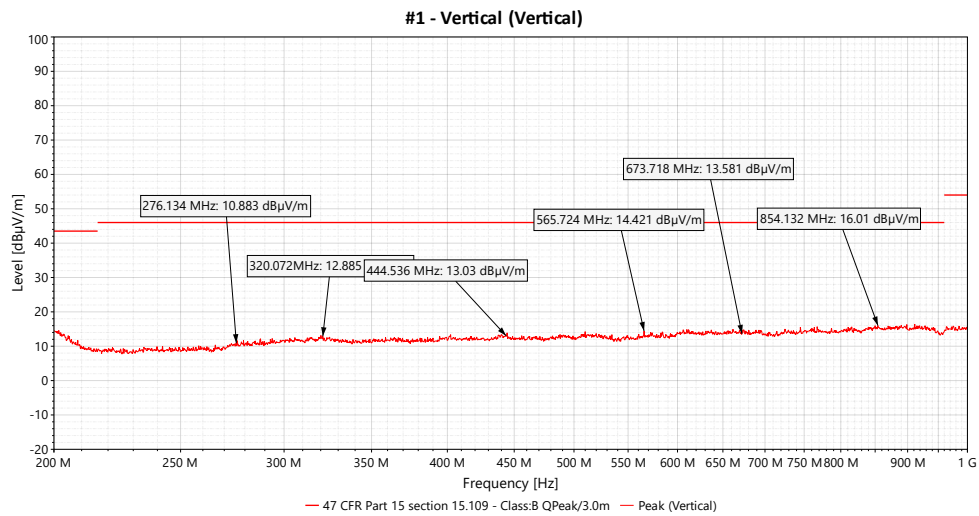


Channel Frequency 30MHz – 200MHz

Polarization Horizontal

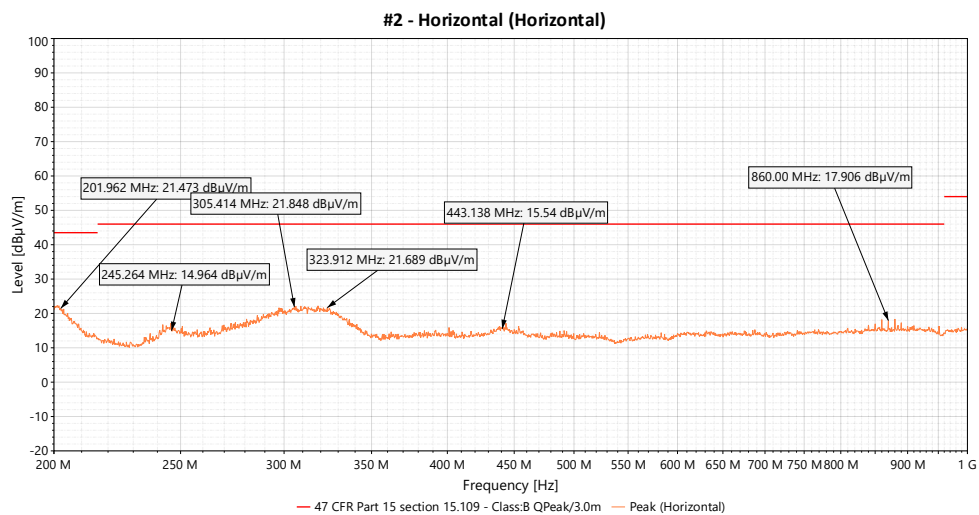
Table 8: Test results for frequency range 200MHz – 1GHz

Antenna Polarization	Measured Frequency (MHz)	Measured emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	276.13	10.88	46.00	-35.12
	320.07	12.88	46.00	-33.12
	444.53	13.03	46.00	-32.97
	565.72	14.42	46.00	-31.58
	673.71	13.58	46.00	-32.42
	854.13	16.01	46.00	-29.99
Horizontal	201.96	21.47	46.00	-24.53
	245.26	14.96	46.00	-31.04
	305.41	21.84	46.00	-24.16
	323.91	21.68	46.00	-24.32
	443.13	15.54	46.00	-30.46
	860.00	17.90	46.00	-28.10



Channel Frequency 200MHz – 1GHz

Polarization Vertical



Channel Frequency 200MHz – 1GHz

Polarization Horizontal

Prüfbericht - Nr.:

Test Report No.:

IN26THBW 001

Seite 40 von 64

Page 40 of 64

Table 9: Bluetooth Test results for the frequencies above 1GHz:

Data Rate: 1Mbps

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Duty Correction Factor (dB)	Final Measured Emission (dBµV/m)		Limit (dBµV/m)		Margin (dB)	
				PK	AV	PK	AV	PK	AV
2402	2402.00	Vertical	20.92	113.08	92.16	-	-	-	-
	2390.00		20.92	46.16	25.24	74.00	54.00	-27.84	-28.76
	4804.00		20.92	59.18	38.26	74.00	54.00	-14.82	-15.74
	7206.00		20.92	60.97	40.05	74.00	54.00	-13.03	-13.95
	9608.00		20.92	64.09	43.17	74.00	54.00	-9.91	-10.83
	2402.00	Horizontal	20.92	110.01	89.09	-	-	-	-
	2390.00		20.92	43.59	22.67	74.00	54.00	-30.41	-31.33
	4804.00		20.92	48.29	27.37	74.00	54.00	-25.71	-26.63
	7206.00		20.92	59.08	38.16	74.00	54.00	-14.92	-15.84
	9608.00		20.92	65.14	44.22	74.00	54.00	-8.86	-9.78
2440	2440.00	Vertical	20.92	111.94	103.38	-	-	-	-
	4882.00		20.92	58.90	37.98	74.00	54.00	-15.10	-16.02
	7323.00		20.92	60.89	39.97	74.00	54.00	-13.11	-14.03
	9760.00		20.92	63.92	43.00	74.00	54.00	-10.08	-11.00
	2440.00	Horizontal	20.92	104.72	94.28	-	-	-	-
	4882.00		20.92	49.51	28.59	74.00	54.00	-24.49	-25.41
	7323.00		20.92	59.78	38.86	74.00	54.00	-14.22	-15.14
	9760.00		20.92	65.71	44.79	74.00	54.00	-8.29	-9.21
2480	2480.00	Vertical	20.92	105.85	84.93	-	-	-	-
	2483.50		20.92	50.74	29.82	74.00	54.00	-23.26	-24.18
	4960.00		20.92	61.69	40.77	74.00	54.00	-12.31	-13.23
	7440.00		20.92	55.20	34.28	74.00	54.00	-18.80	-19.72
	9920.00		20.92	45.07	24.15	74.00	54.00	-28.93	-29.85
	2480.00	Horizontal	20.92	103.00	82.08	-	-	-	-
	2483.50		20.92	48.77	27.85	74.00	54.00	-25.23	-26.15
	4960.00		20.92	50.08	29.16	74.00	54.00	-23.92	-24.84
	7440.00		20.92	49.79	28.87	74.00	54.00	-24.21	-25.13
	9920.00		20.92	57.32	36.40	74.00	54.00	-16.68	-17.60

***Note: DCCF is added in Average detector (Duty Cycle: 9.63%)**

DCCF = 20*log(1/D) where D is the duty cycle

_ → Fundamental Frequency:

***→ Restricted Band edges**

Pk: Peak Detector;

Av: Average Detector

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 41 von 64
Page 41 of 64

Data Rate: 2Mbps

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Duty Correction Factor (dB)	Final Measured Emission (dBµV/m)		Limit (dBµV/m)		Margin (dB)	
				PK	AV	PK	AV	PK	AV
2402	2402.00	Vertical	25.51	113.78	88.27	-	-	-	-
	2390.00		25.51	49.60	24.09	74.00	54.00	-24.40	-29.91
	4804.00		25.51	59.20	33.69	74.00	54.00	-14.80	-20.31
	7206.00		25.51	59.12	33.61	74.00	54.00	-14.88	-20.39
	9608.00		25.51	62.72	37.21	74.00	54.00	-11.28	-16.79
	2402.00	Horizontal	25.51	109.95	84.44	-	-	-	-
	2390.00		25.51	44.25	18.74	74.00	54.00	-29.75	-35.26
	4804.00		25.51	50.63	25.12	74.00	54.00	-23.37	-28.88
	7206.00		25.51	59.58	34.07	74.00	54.00	-14.42	-19.93
	9608.00		25.51	65.84	40.33	74.00	54.00	-8.16	-13.67
2440	2440.00	Vertical	25.51	111.41	85.90	-	-	-	-
	4882.00		25.51	58.59	33.08	74.00	54.00	-15.41	-20.92
	7323.00		25.51	63.46	37.95	74.00	54.00	-10.54	-16.05
	9760.00		25.51	64.03	38.52	74.00	54.00	-9.97	-15.48
	2440.00	Horizontal	25.51	107.49	81.98	-	-	-	-
	4882.00		25.51	47.55	22.04	74.00	54.00	-26.45	-31.96
	7323.00		25.51	60.96	35.45	74.00	54.00	-13.04	-18.55
	9760.00		25.51	66.30	40.79	74.00	54.00	-7.70	-13.21
2480	2480.00	Vertical	25.51	107.18	81.67	-	-	-	-
	2483.50		25.51	64.09	38.58	74.00	54.00	-9.91	-15.42
	4960.00		25.51	63.40	37.89	74.00	54.00	-10.60	-16.11
	7440.00		25.51	55.02	29.51	74.00	54.00	-18.98	-24.49
	9920.00		25.51	56.12	30.61	74.00	54.00	-17.88	-23.39
	2480.00	Horizontal	25.51	101.74	76.23	-	-	-	-
	2483.50		25.51	58.76	33.25	74.00	54.00	-15.24	-20.75
	4960.00		25.51	49.68	24.17	74.00	54.00	-24.32	-29.83
	7440.00		25.51	53.34	27.83	74.00	54.00	-20.66	-26.17
	9920.00		25.51	56.86	31.35	74.00	54.00	-17.14	-22.65

*Note: DCCF is added in Average detector (Duty Cycle: 5.32%)

$DCCF = 20 \cdot \log(1/D)$ where D is the duty cycle

_ → Fundamental Frequency:

*→ Restricted Band edges

Pk: Peak Detector;

Av: Average Detector

Prüfbericht - Nr.:

Test Report No.:

IN26THBW 001

Seite 42 von 64

Page 42 of 64

Data Rate: 3 Mbps

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Duty Correction Factor (dB)	Final Measured Emission (dBµV/m)		Limit (dBµV/m)		Margin (dB)	
				PK	AV	PK	AV	PK	AV
2402	2402.00	Vertical	26.93	112.40	85.47	-	-	-	-
	2390.00		26.93	51.41	24.48	74.00	54.00	-22.59	-29.52
	4804.00		26.93	60.04	33.11	74.00	54.00	-13.96	-20.89
	7206.00		26.93	61.31	34.38	74.00	54.00	-12.69	-19.62
	9608.00		26.93	63.00	36.07	74.00	54.00	-11.00	-17.93
	2402.00	Horizontal	26.93	109.24	82.31	-	-	-	-
	2390.00		26.93	43.87	16.94	74.00	54.00	-30.13	-37.06
	4804.00		26.93	50.84	23.91	74.00	54.00	-23.16	-30.09
	7206.00		26.93	60.40	33.47	74.00	54.00	-13.60	-20.53
	9608.00		26.93	65.70	38.77	74.00	54.00	-8.30	-15.23
2440	2440.00	Vertical	26.93	111.79	84.86	-	-	-	-
	4882.00		26.93	59.57	32.64	74.00	54.00	-14.43	-21.36
	7323.00		26.93	60.50	33.57	74.00	54.00	-13.50	-20.43
	9760.00		26.93	63.17	36.24	74.00	54.00	-10.83	-17.76
	2440.00	Horizontal	26.93	107.44	80.51	-	-	-	-
	4882.00		26.93	48.87	21.94	74.00	54.00	-25.13	-32.06
	7323.00		26.93	61.15	34.22	74.00	54.00	-12.85	-19.78
	9760.00		26.93	65.57	38.64	74.00	54.00	-8.43	-15.36
2480	2480.00	Vertical	26.93	106.82	79.89	-	-	-	-
	2483.50		26.93	65.11	38.18	74.00	54.00	-8.89	-15.82
	4960.00		26.93	62.94	36.01	74.00	54.00	-11.06	-17.99
	7440.00		26.93	56.03	29.10	74.00	54.00	-17.97	-24.90
	9920.00		26.93	56.26	29.33	74.00	54.00	-17.74	-24.67
	2480.00	Horizontal	26.93	103.19	76.26	-	-	-	-
	2483.50		26.93	62.14	35.21	74.00	54.00	-11.86	-18.79
	4960.00		26.93	48.81	21.88	74.00	54.00	-25.19	-32.12
	7440.00		26.93	54.64	27.71	74.00	54.00	-19.36	-26.29
	9920.00		26.93	57.78	30.85	74.00	54.00	-16.22	-23.15

*Note: DCCF is added in Average detector (Duty Cycle: 4.53%)

$DCCF = 20 \cdot \log(1/D)$ where D is the duty cycle

_ → Fundamental Frequency:

*→ Restricted Band edges

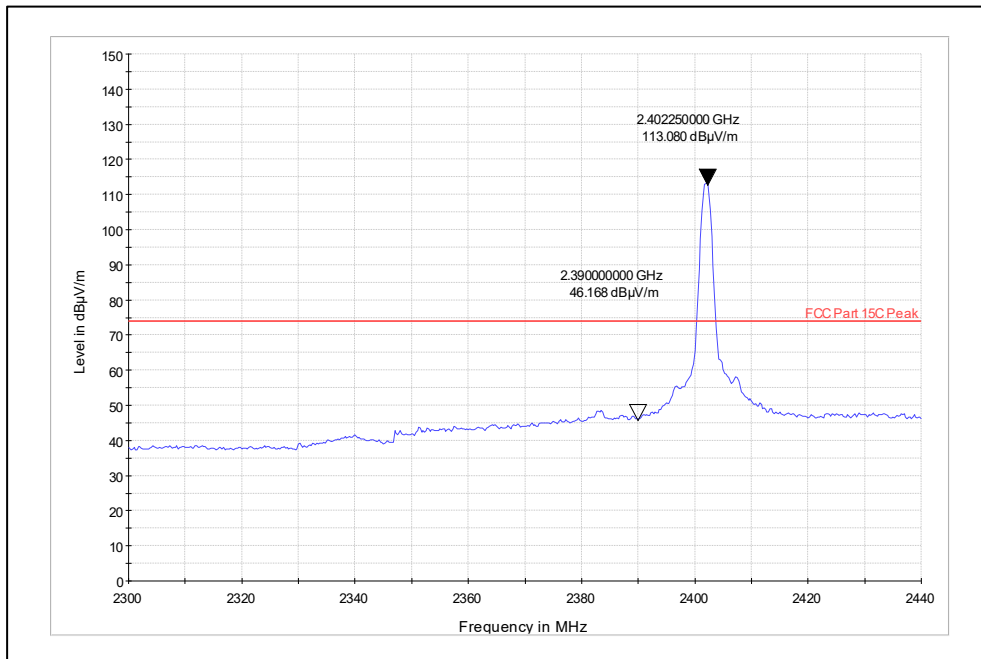
Pk: Peak Detector;

Av: Average Detector

Test Plots:

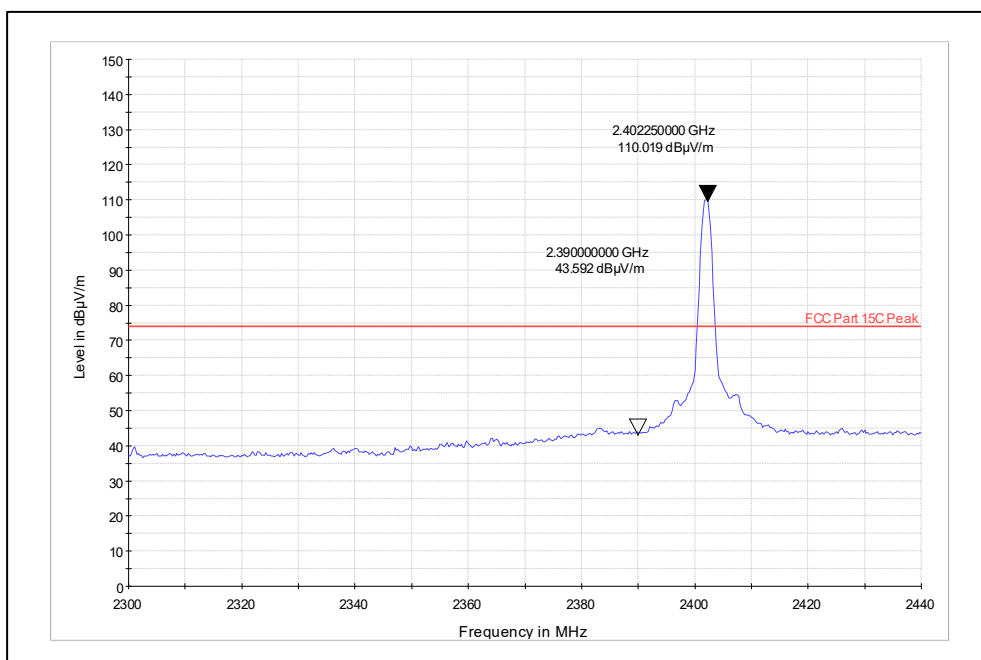
Restricted Bands of Operation

Data Rate: 1Mbps



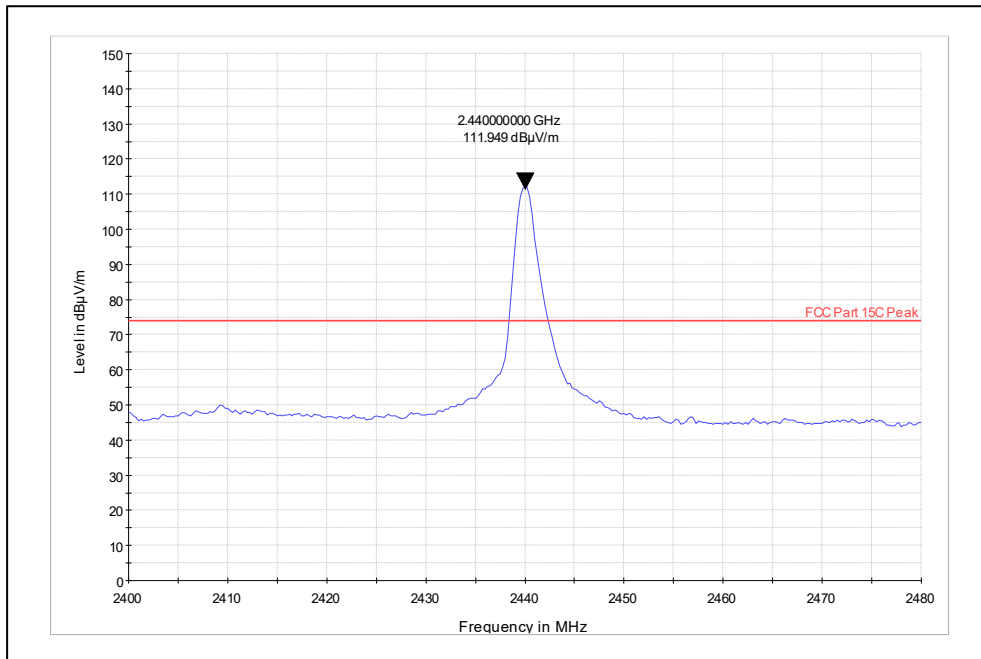
Channel Frequency: 2402MHz

Polarization: Vertical



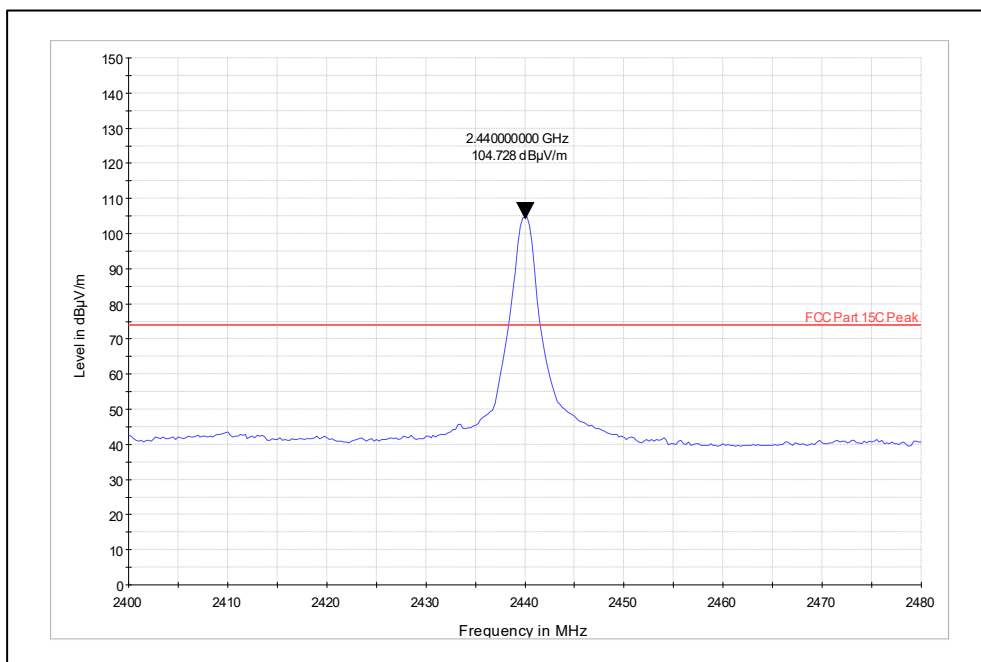
Channel Frequency: 2402MHz

Polarization: Horizontal



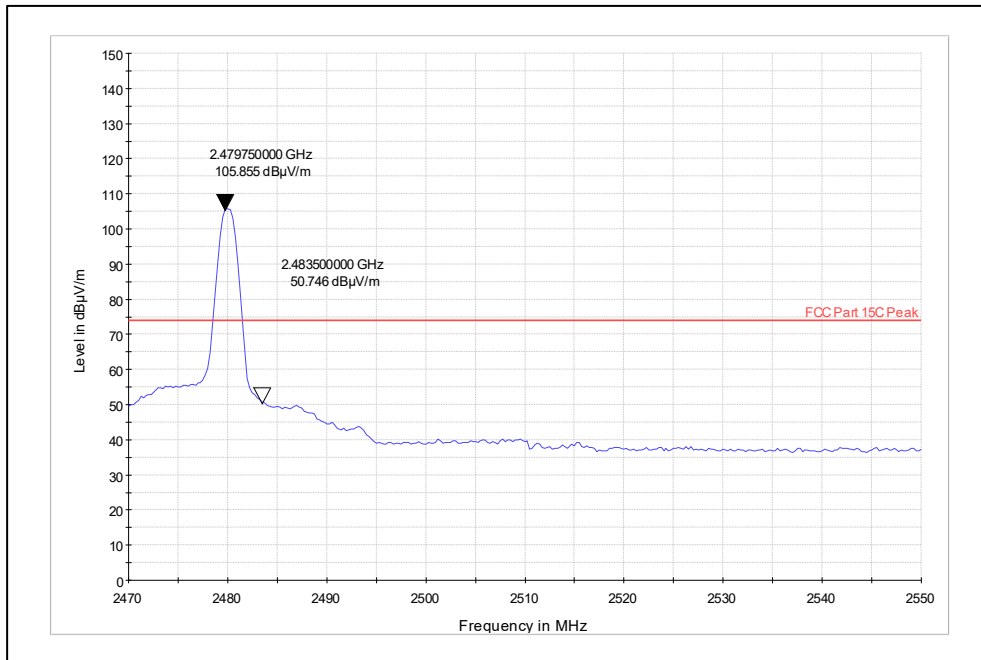
Channel Frequency: 2440MHz

Polarization: Vertical



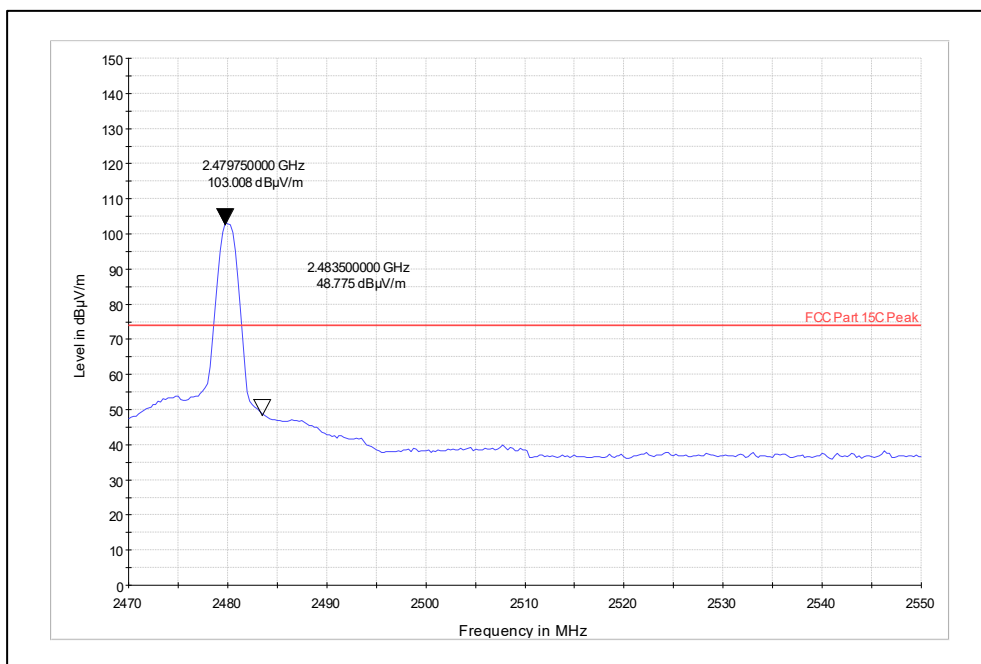
Channel Frequency: 2440MHz

Polarization: Horizontal



Channel Frequency: 2480MHz

Polarization: Vertical



Channel Frequency: 2480MHz

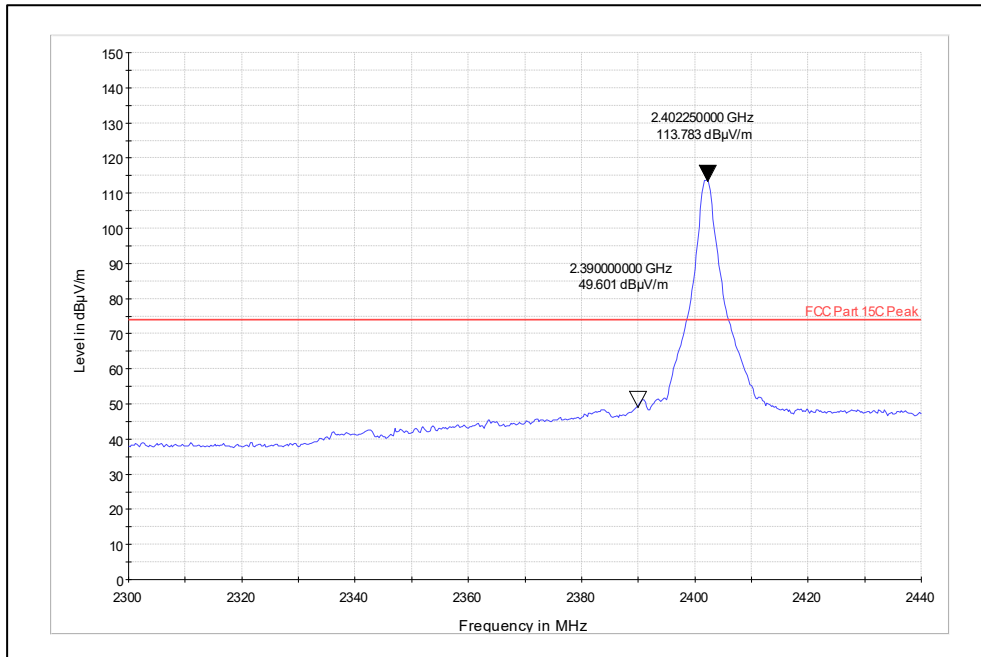
Polarization: Horizontal

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

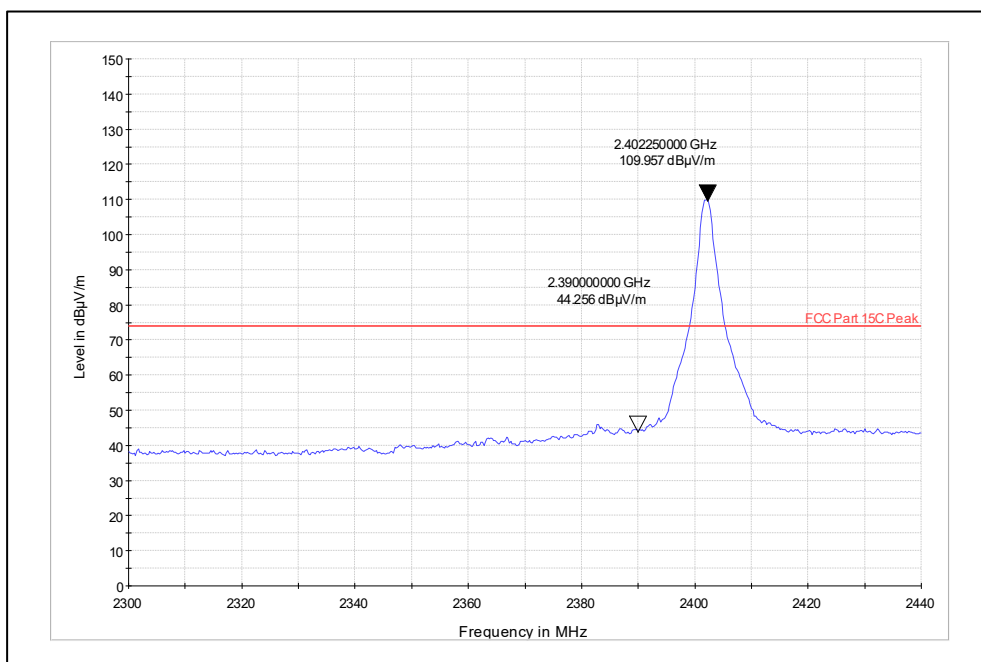
Seite 46 von 64
Page 46 of 64

Data Rate: 2Mbps



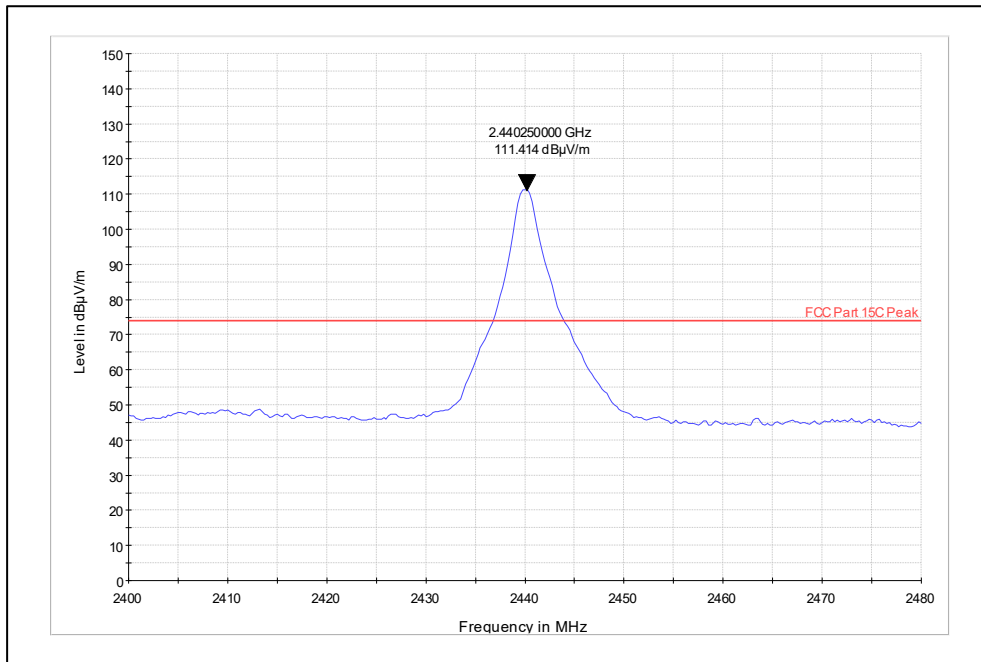
Channel Frequency: 2402MHz

Polarization: Vertical



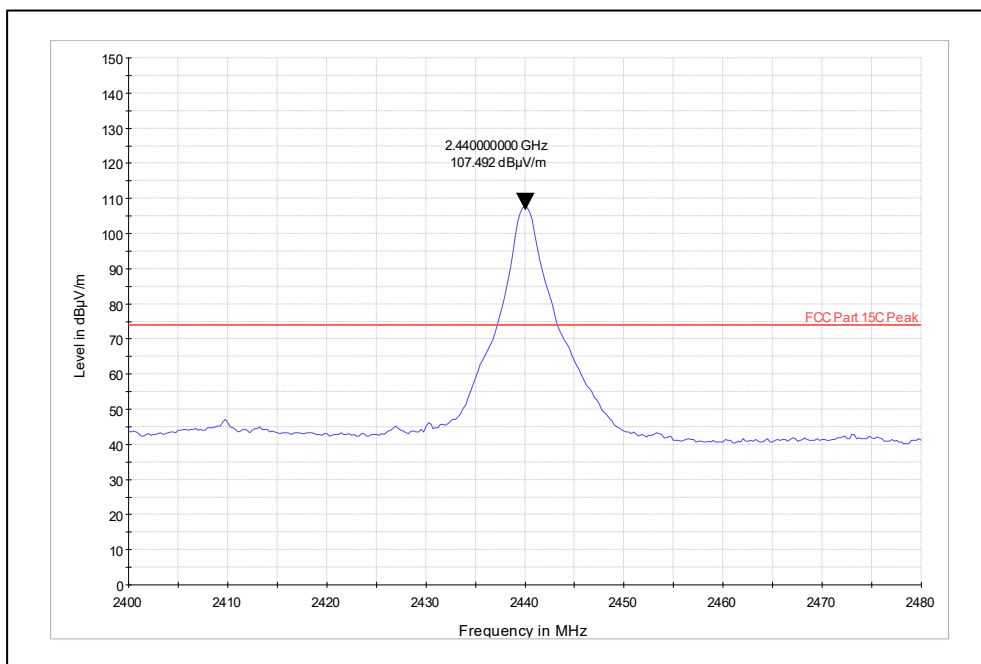
Channel Frequency: 2402MHz

Polarization: Horizontal



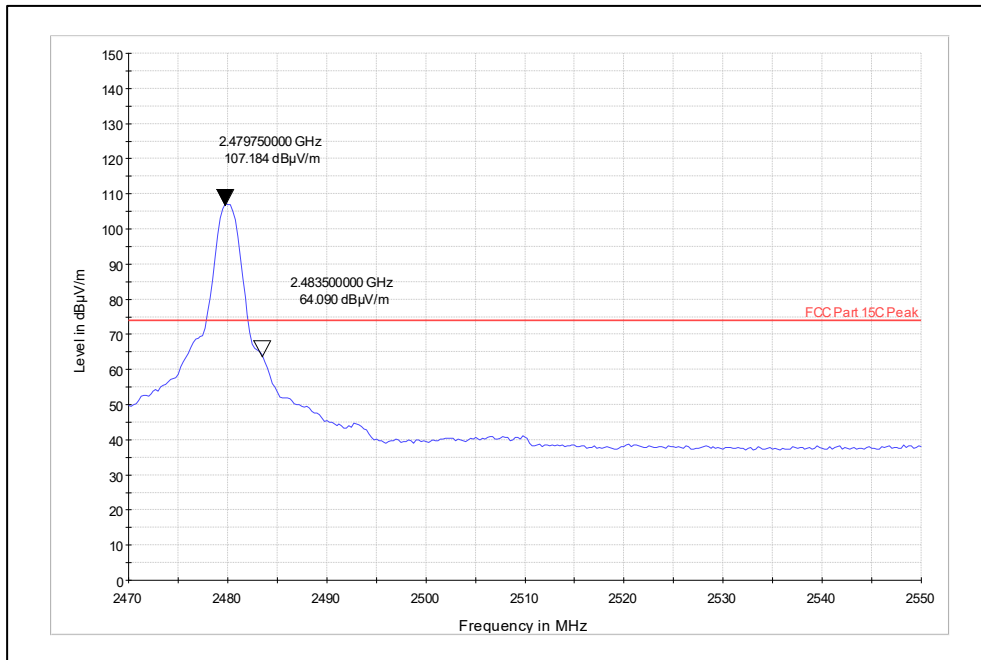
Channel Frequency: 2440MHz

Polarization: Vertical



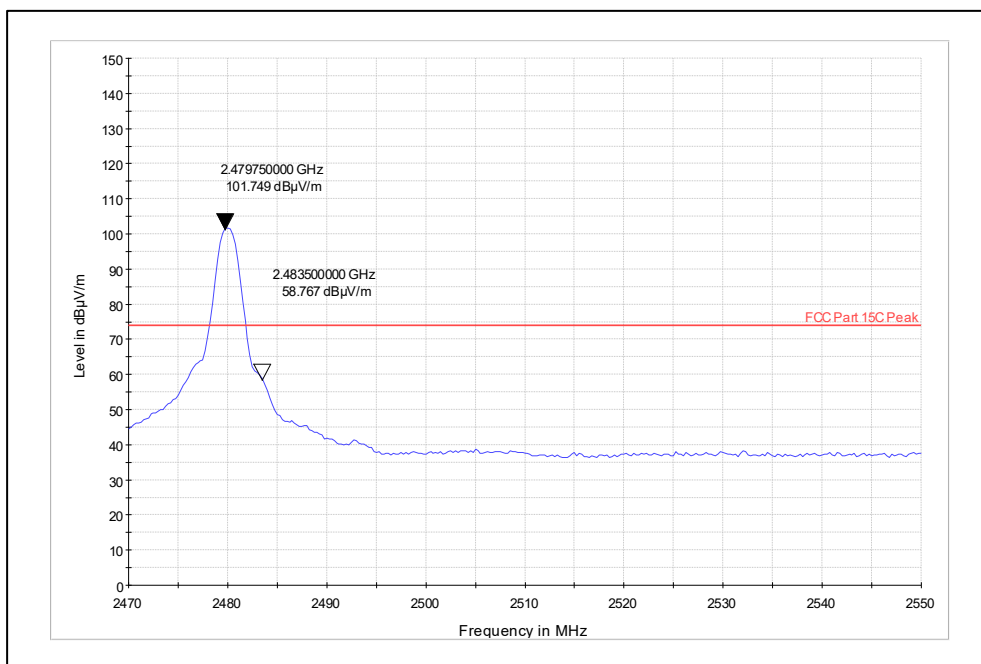
Channel Frequency: 2440MHz

Polarization: Horizontal



Channel Frequency: 2480MHz

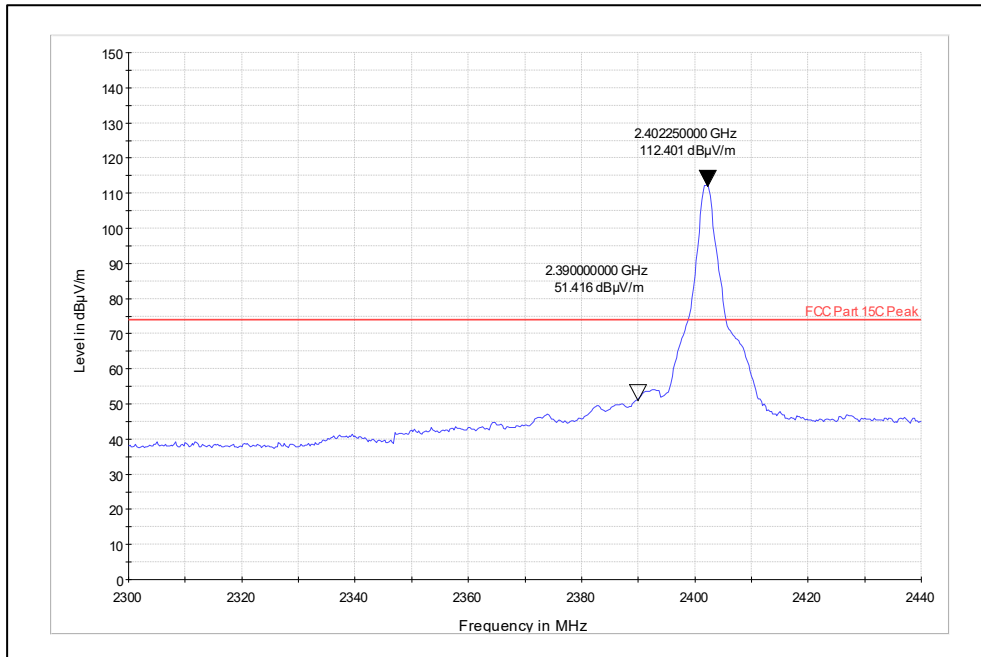
Polarization: Vertical



Channel Frequency: 2480MHz

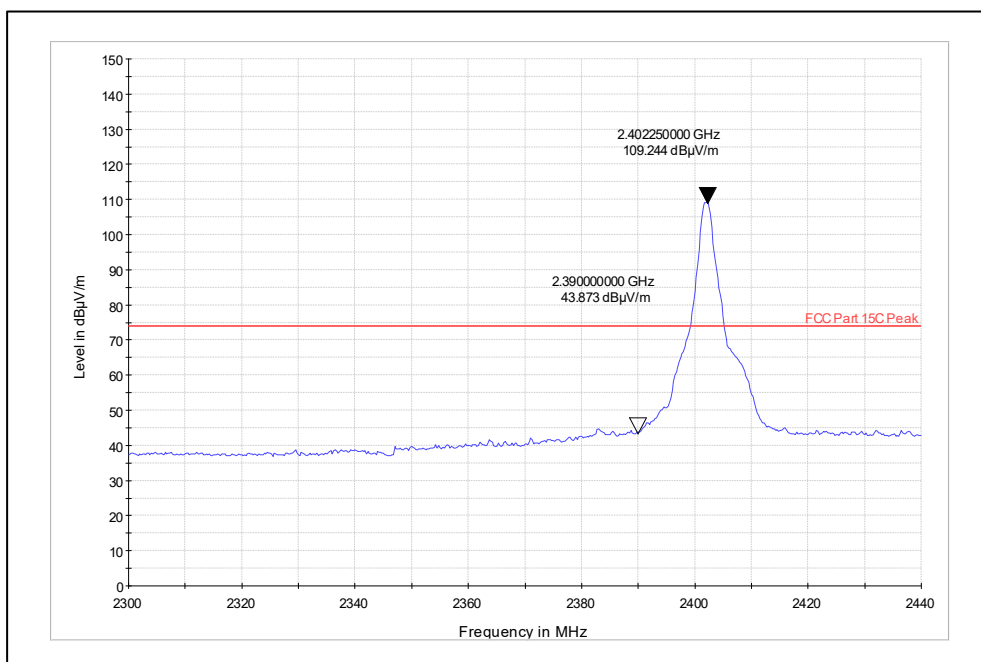
Polarization: Horizontal

Data Rate: 3 Mbps



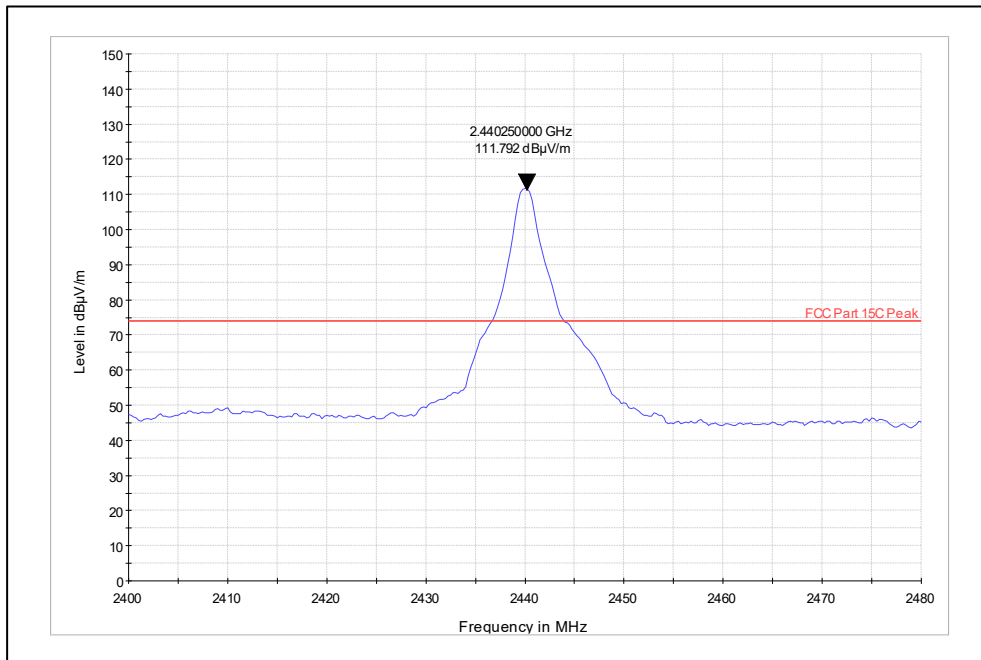
Channel Frequency: 2402MHz

Polarization: Vertical



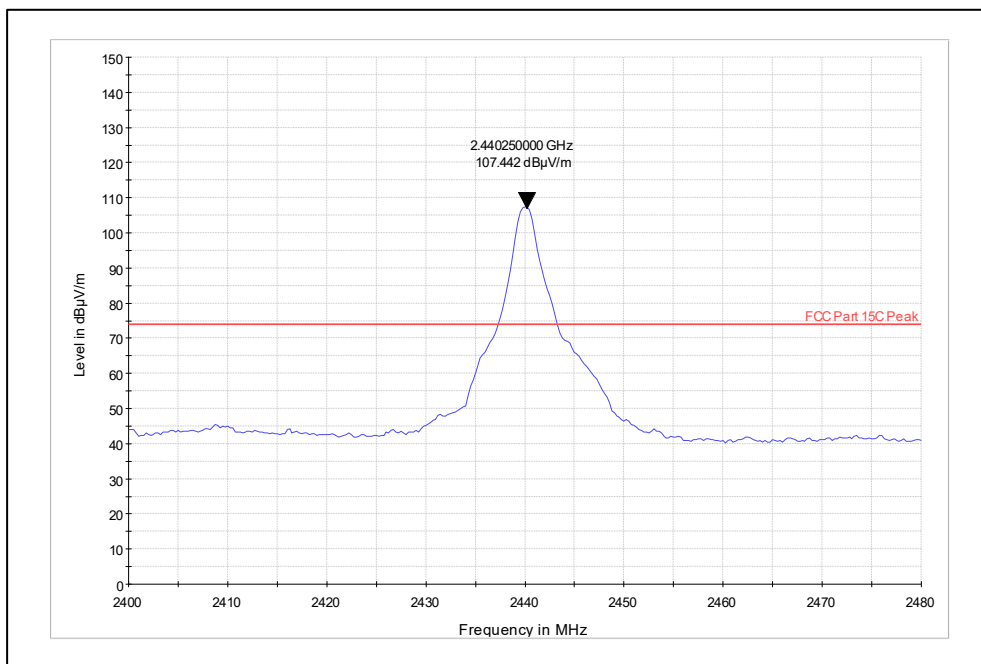
Channel Frequency: 2402MHz

Polarization: Horizontal



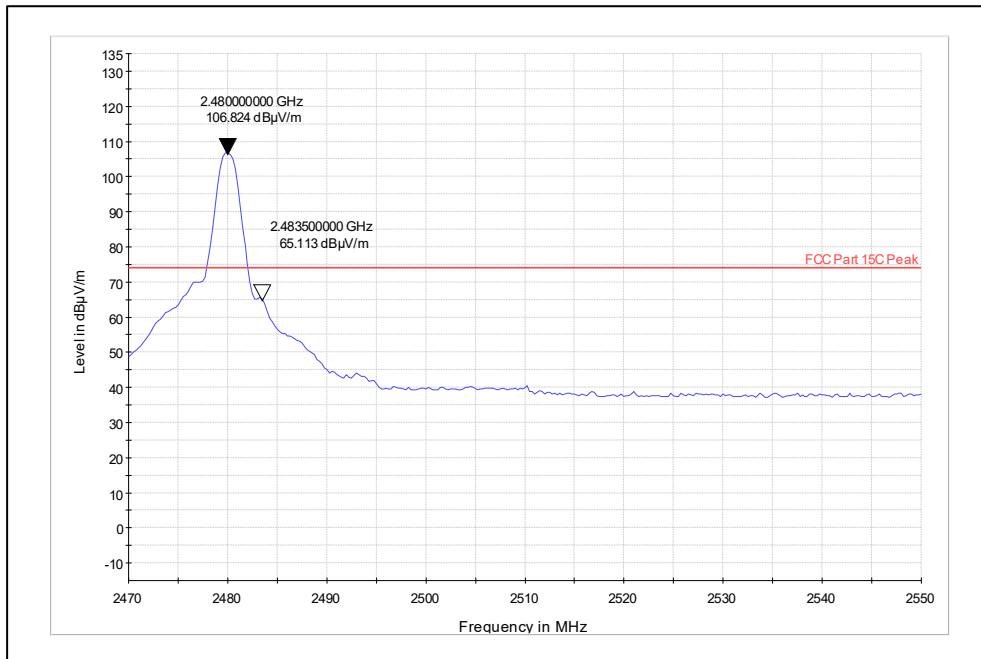
Channel Frequency: 2440MHz

Polarization: Vertical



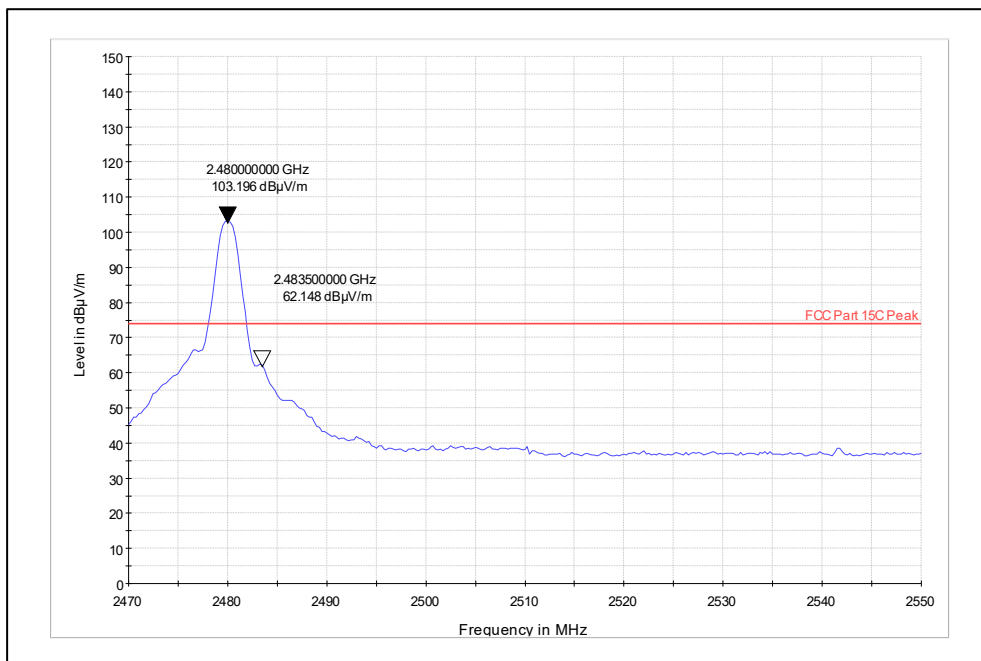
Channel Frequency: 2440MHz

Polarization: Horizontal



Channel Frequency: 2480MHz

Polarization: Vertical



Channel Frequency: 2480MHz

Polarization: Horizontal

Prüfbericht - Nr.:

Test Report No.:

IN26THBW 001

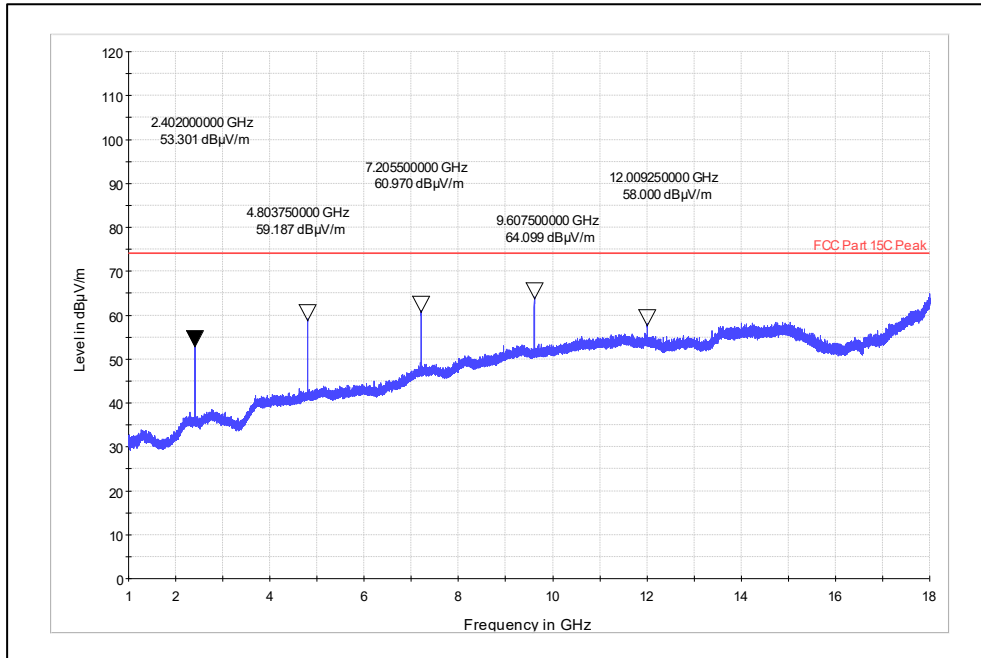
Seite 52 von 64

Page 52 of 64

Spurious Radiated emission:

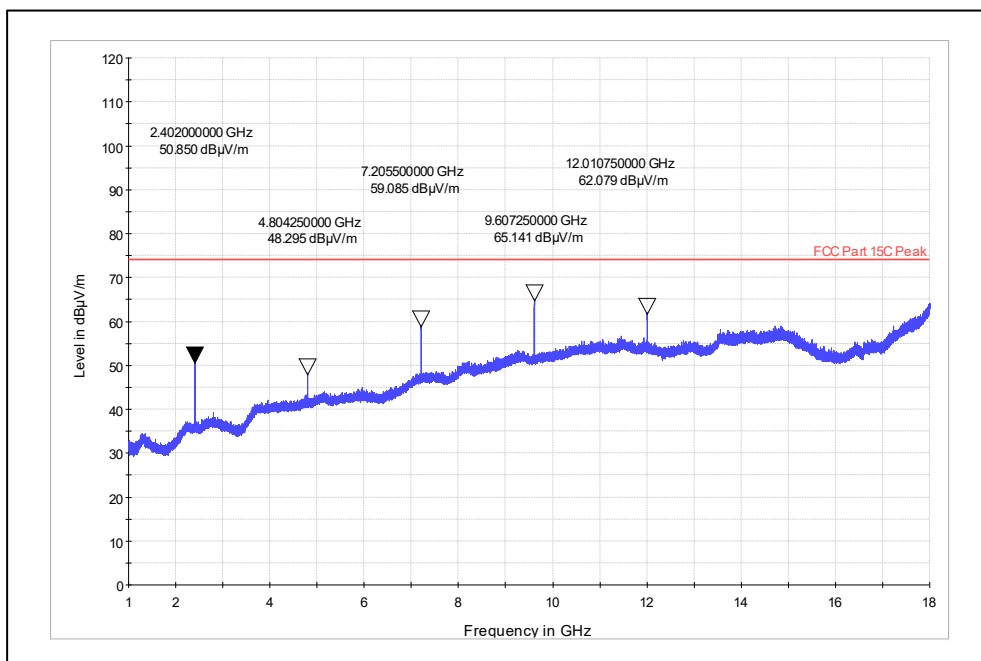
Data Rate: 1Mbps

Channel frequency: 2402MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

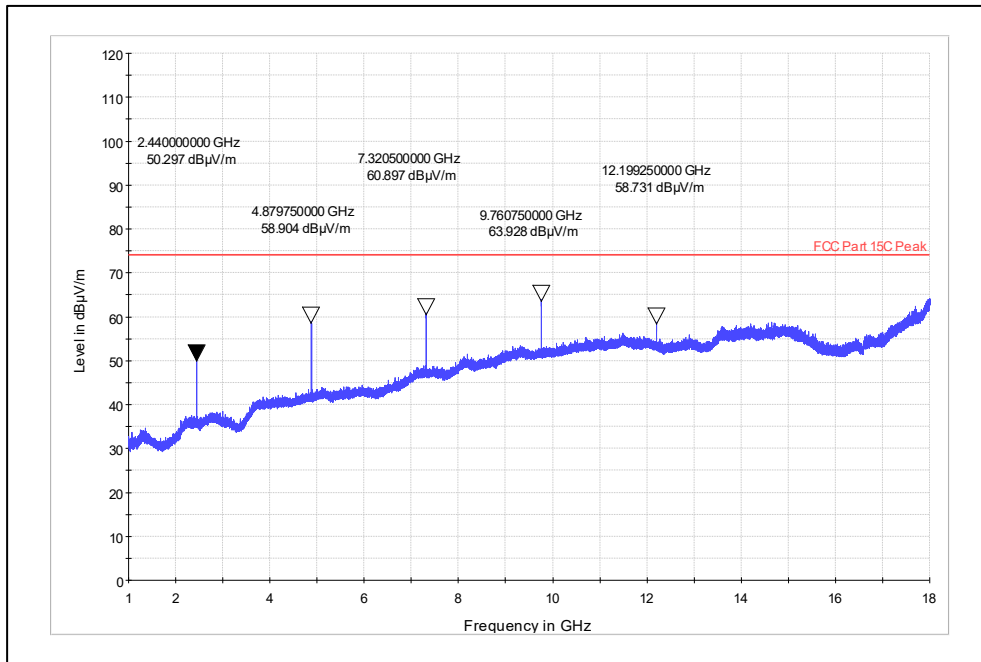
Frequency range: 1GHz to 18GHz

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

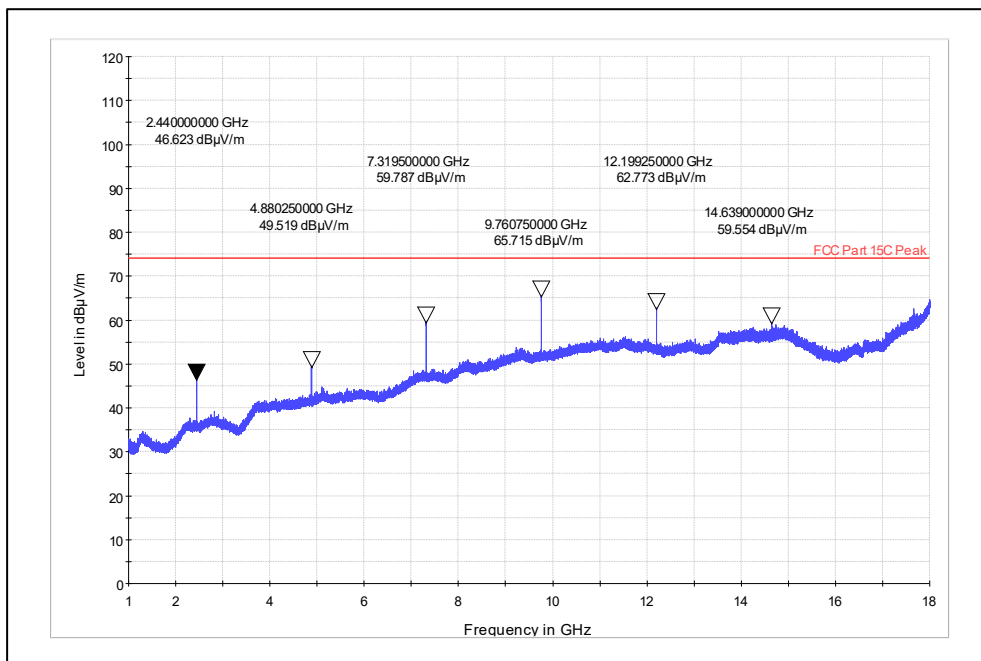
Seite 53 von 64
Page 53 of 64

Channel frequency:2440MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

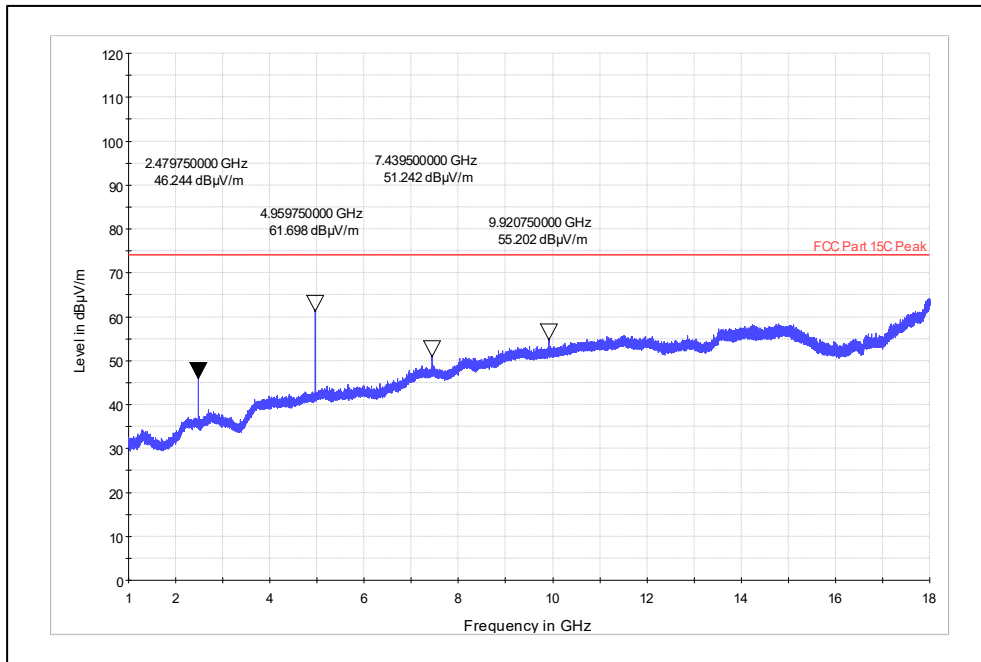
Frequency range: 1GHz to 18GHz

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

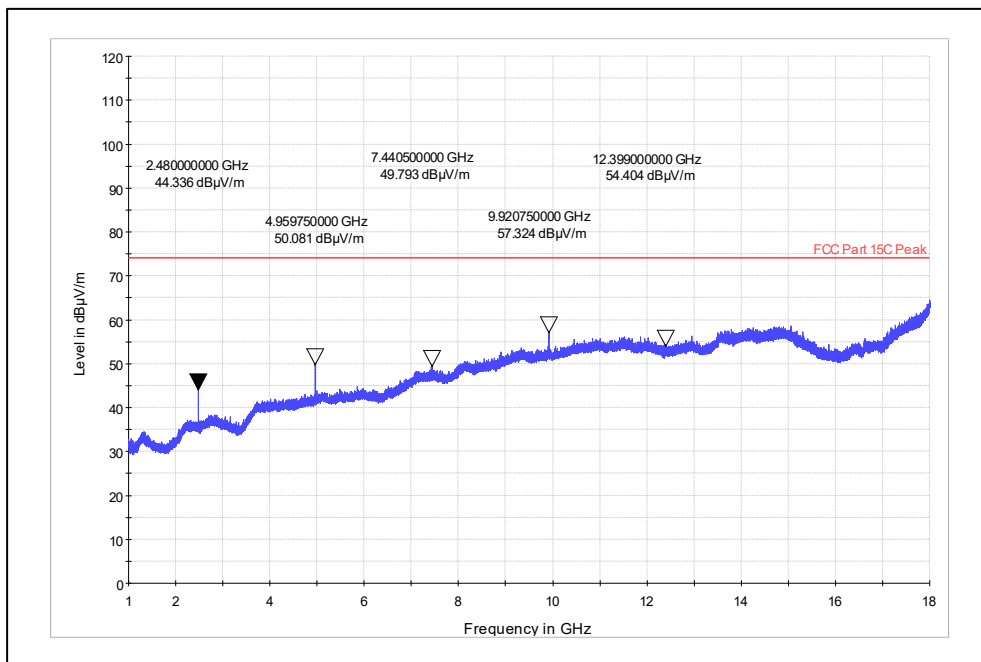
Seite 54 von 64
Page 54 of 64

Channel frequency: 2480MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

Frequency range: 1GHz to 18GHz

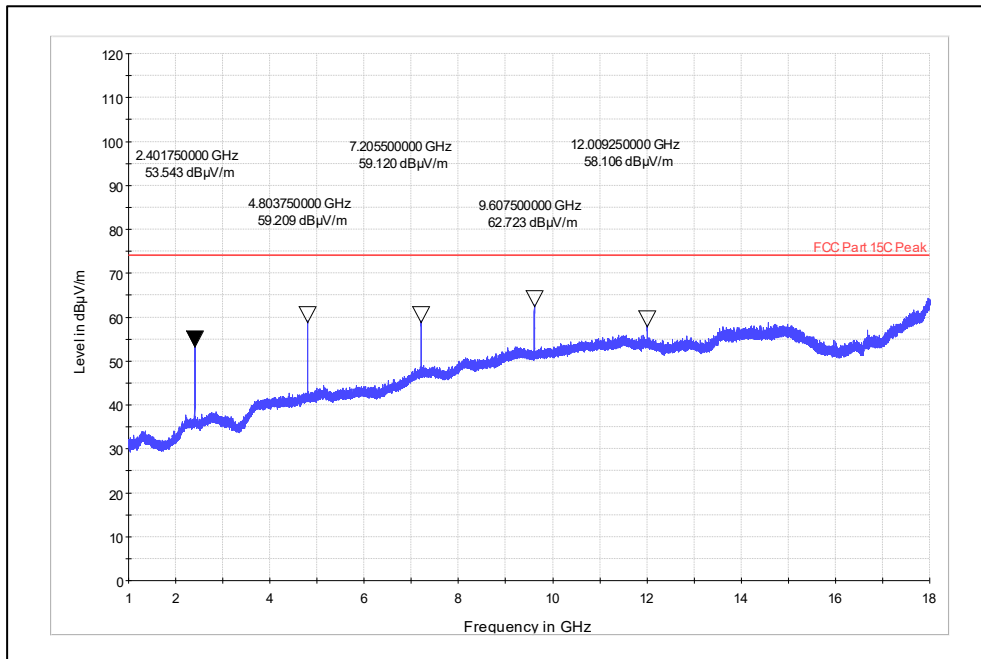
Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 55 von 64
Page 55 of 64

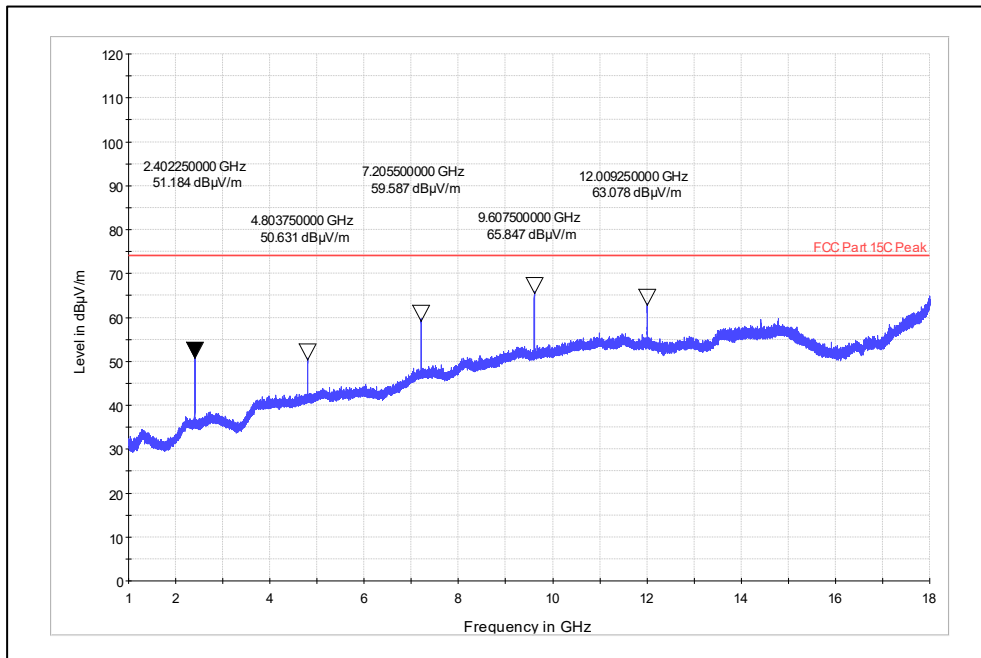
Data Rate: 2Mbps

Channel frequency: 2402MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

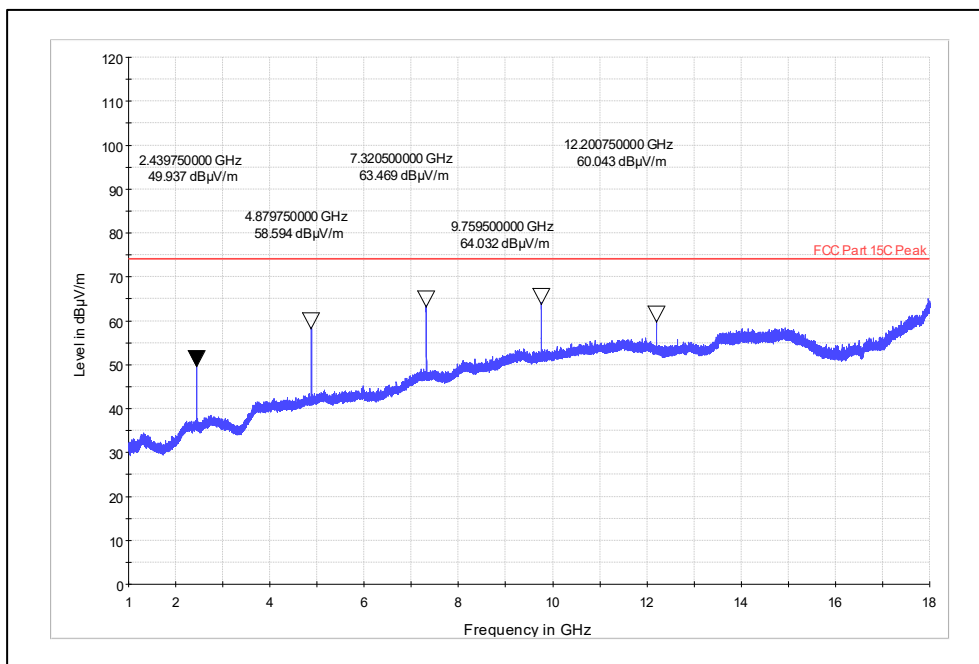
Frequency range: 1GHz to 18GHz

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

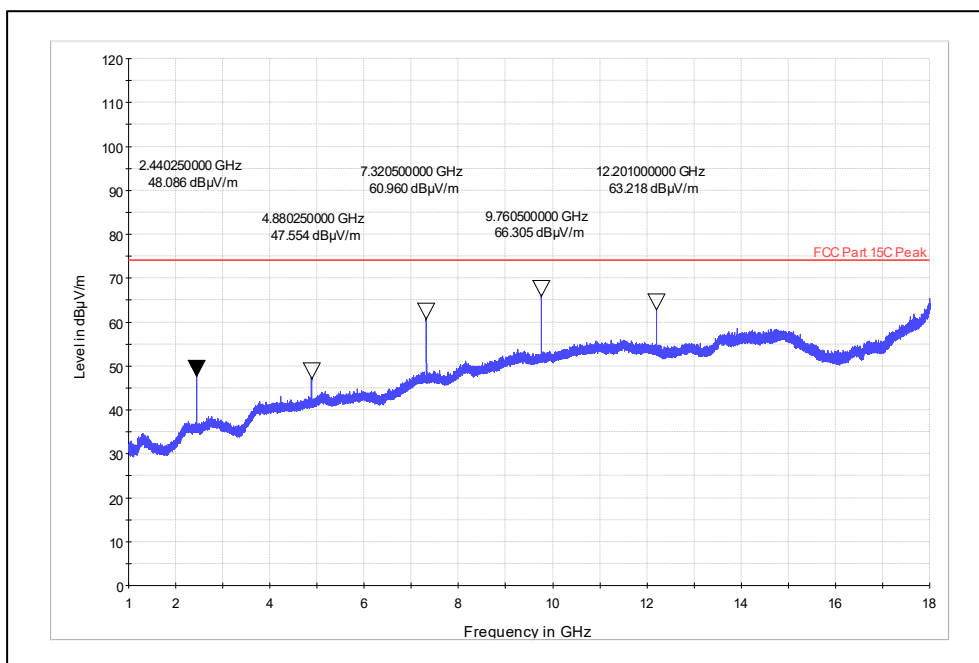
Seite 56 von 64
Page 56 of 64

Channel frequency:2440MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

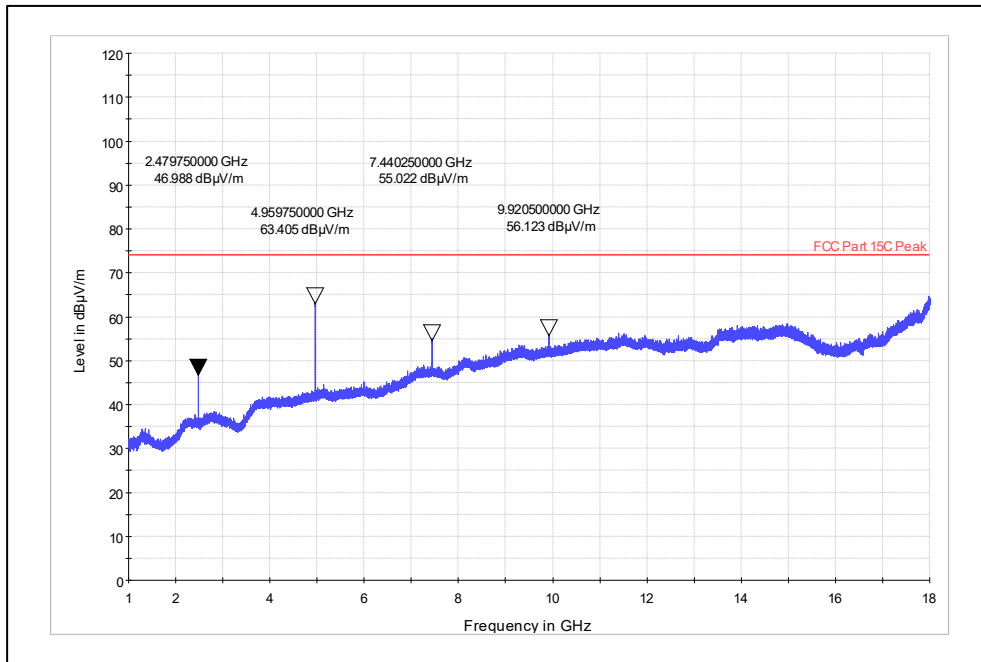
Frequency range: 1GHz to 18GHz

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

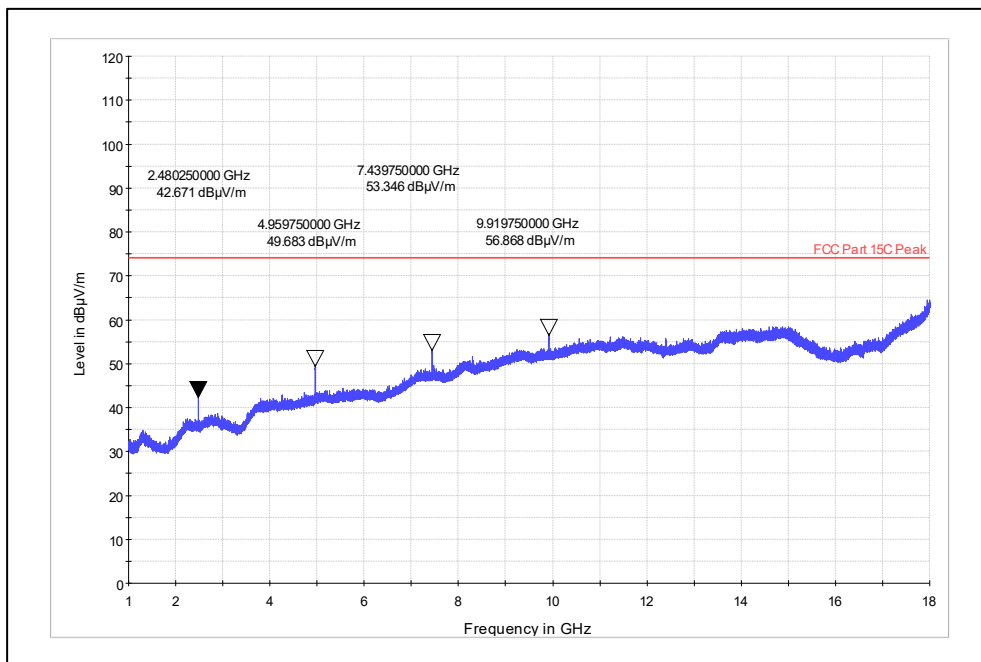
Seite 57 von 64
Page 57 of 64

Channel frequency: 2480MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

Frequency range: 1GHz to 18GHz

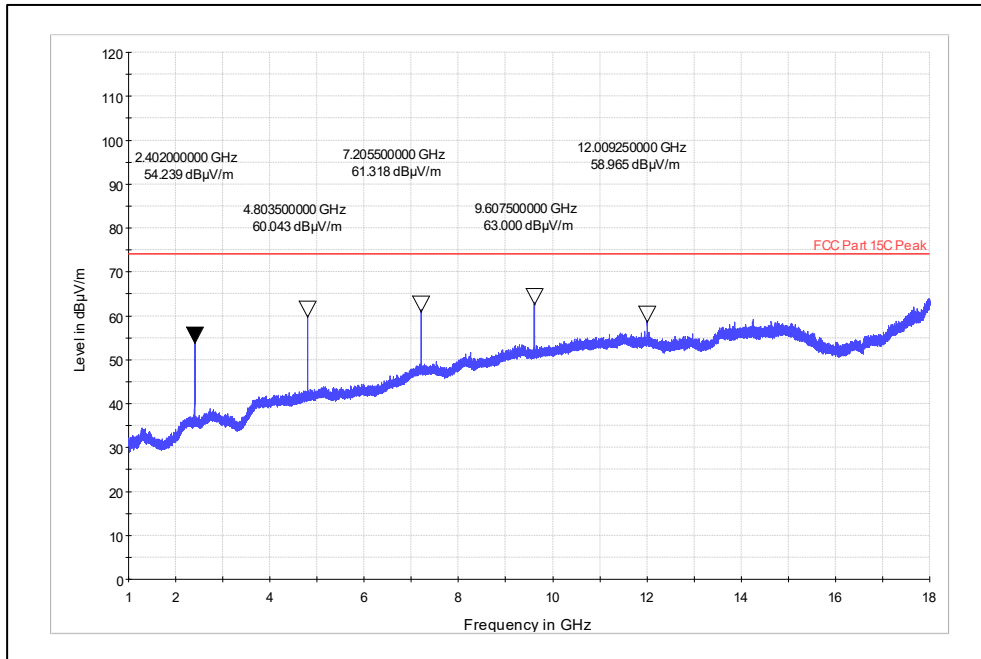
Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 58 von 64
Page 58 of 64

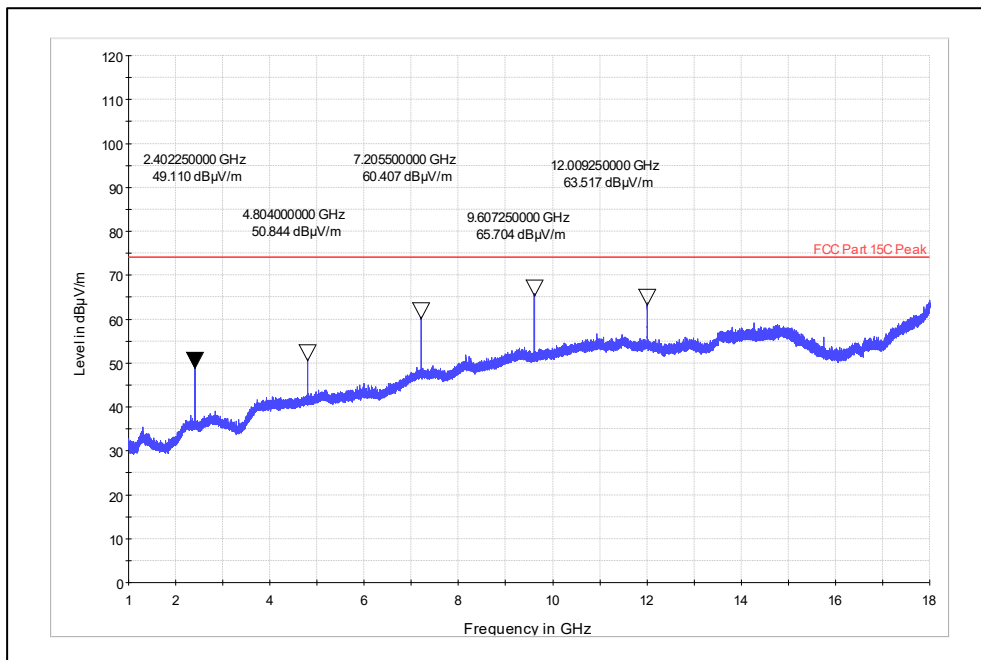
Data Rate: 3 Mbps

Channel frequency: 2402MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

Frequency range: 1GHz to 18GHz

Prüfbericht - Nr.:

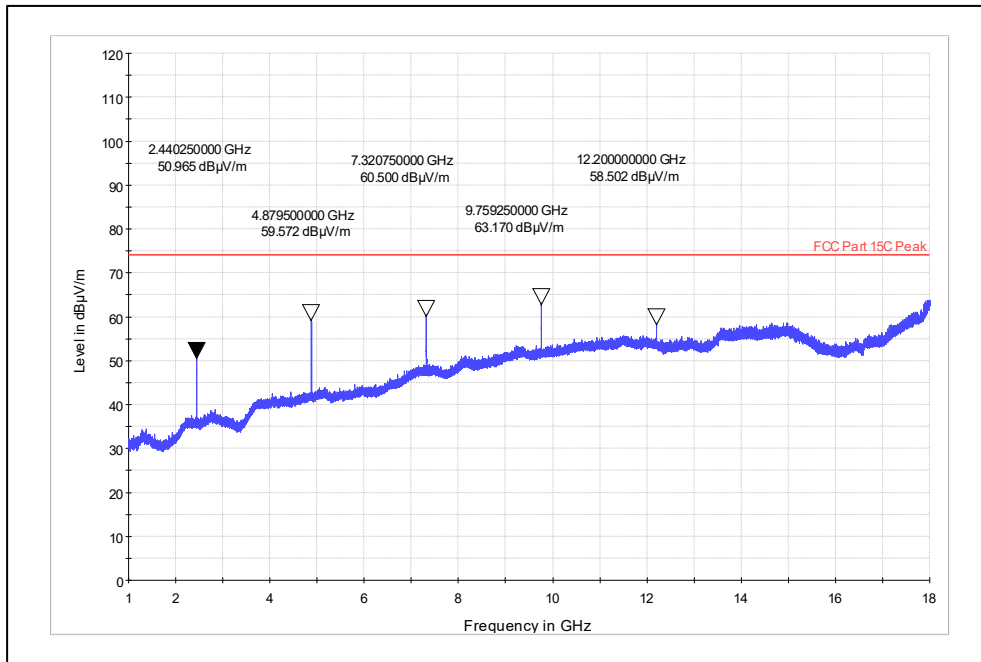
Test Report No.:

IN26THBW 001

Seite 59 von 64

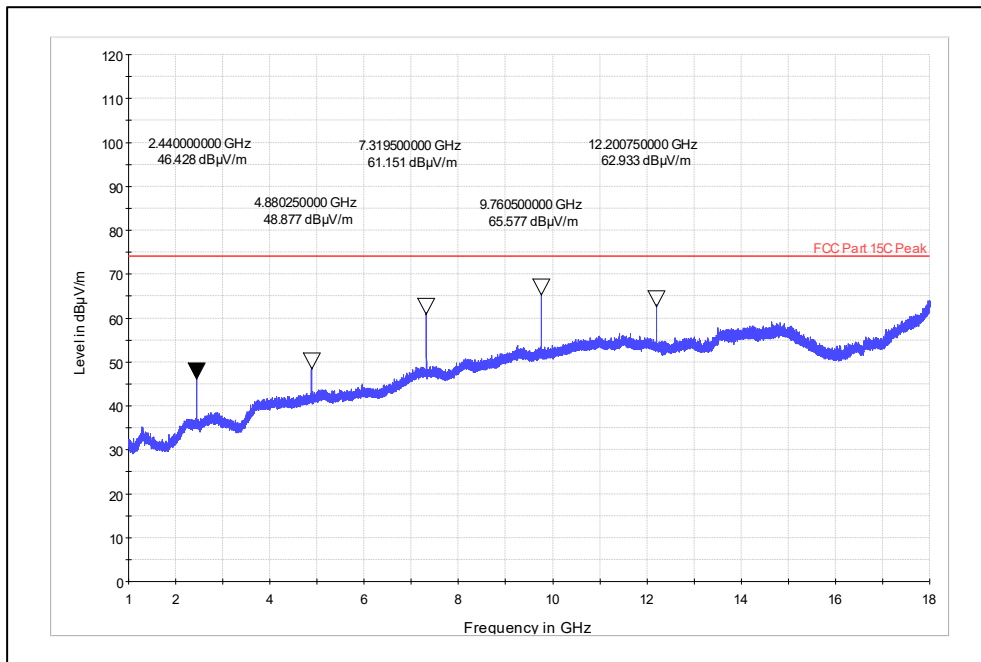
Page 59 of 64

Channel frequency: 2440MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

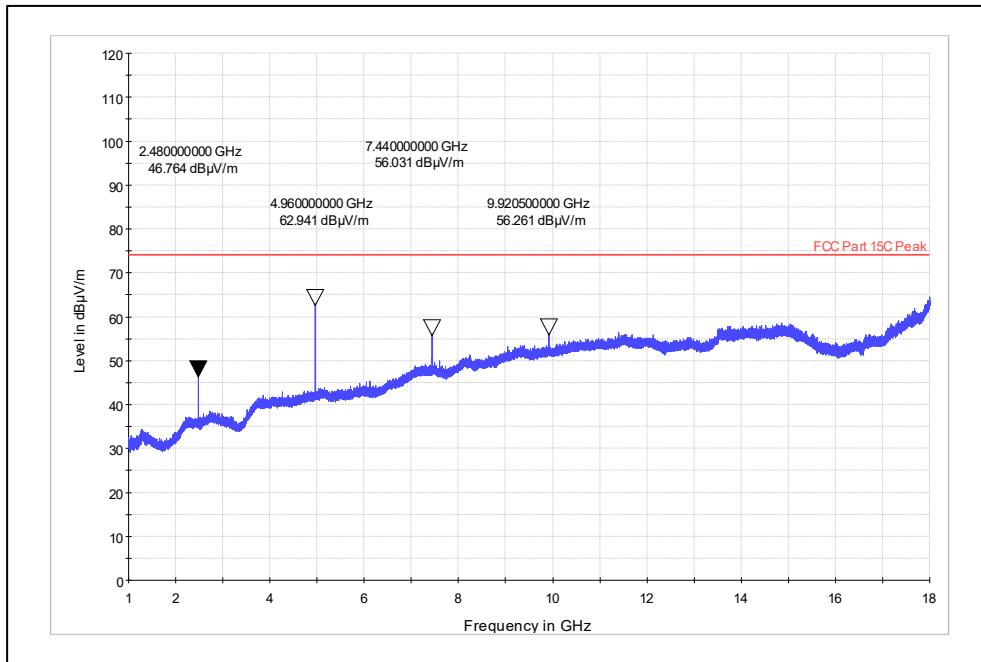
Frequency range: 1GHz to 18GHz

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

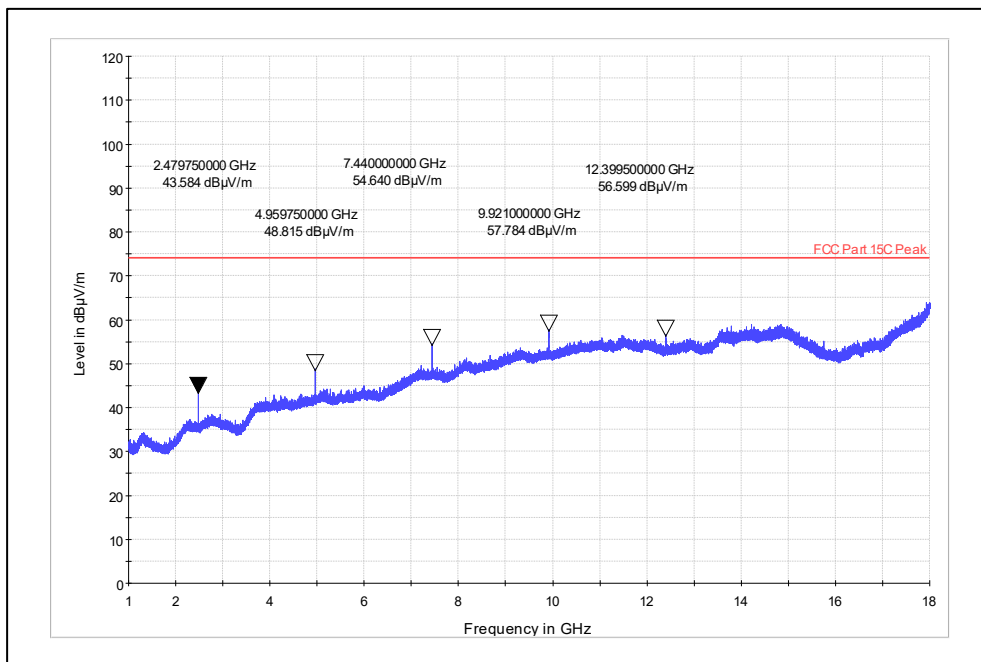
Seite 60 von 64
Page 60 of 64

Channel frequency: 2480MHz



Polarization: Vertical

Frequency range: 1GHz to 18GHz



Polarization: Horizontal

Frequency range: 1GHz to 18GHz

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 61 von 64
Page 61 of 64

7.9 Simultaneous Operation:

Combination	Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Duty Correction Factor (dB)	Final Measured Emission (dBµV/m)		Limit (dBµV/m)		Margin (dB)	
					PK	AV	PK	AV	PK	AV
BT and BLE	2402	4804.00	Vertical	20.92	59.35	38.43	74.00	54.00	-14.65	-15.57
		7206.00		20.92	61.17	40.25	74.00	54.00	-12.83	-13.75
		9608.00		20.92	63.70	42.78	74.00	54.00	-10.30	-11.22
		4804.00	Horizontal	20.92	49.26	28.34	74.00	54.00	-24.74	-25.66
		7206.00		20.92	56.49	35.57	74.00	54.00	-17.51	-18.43
		9608.00		20.92	60.92	40.00	74.00	54.00	-13.08	-14.00
	2480	4960.00	Vertical	16.03	62.73	46.70	74.00	54.00	-11.27	-7.30
		7440.00		16.03	51.56	35.53	74.00	54.00	-22.44	-18.47
		9920.00		16.03	56.59	40.56	74.00	54.00	-17.41	-13.44
		4960.00	Horizontal	16.03	50.82	34.79	74.00	54.00	-23.18	-19.21
		7440.00		16.03	51.33	35.30	74.00	54.00	-22.67	-18.70
		9920.00		16.03	58.05	42.02	74.00	54.00	-15.95	-11.98

*Note: DCCF is added in Average detector (Duty Cycle: For BLE 15.87% and For BT 9.63%)
DCCF = $20 \cdot \log(1/D)$ where D is the duty cycle

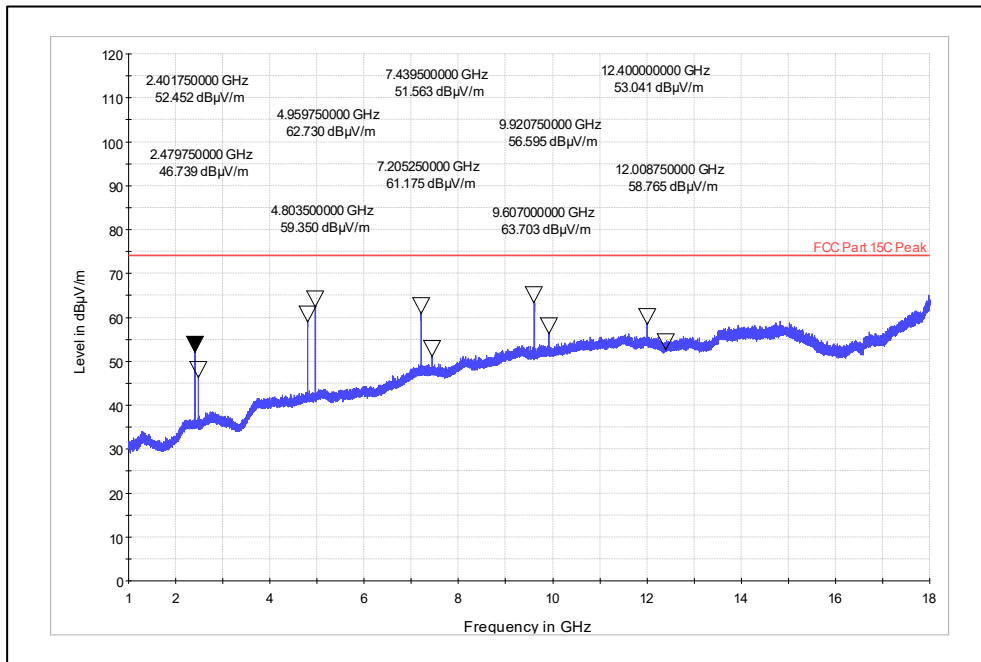
Pk: Peak Detector;
Av: Average Detector

Prüfbericht - Nr.:
Test Report No.:

IN26THBW 001

Seite 62 von 64
Page 62 of 64

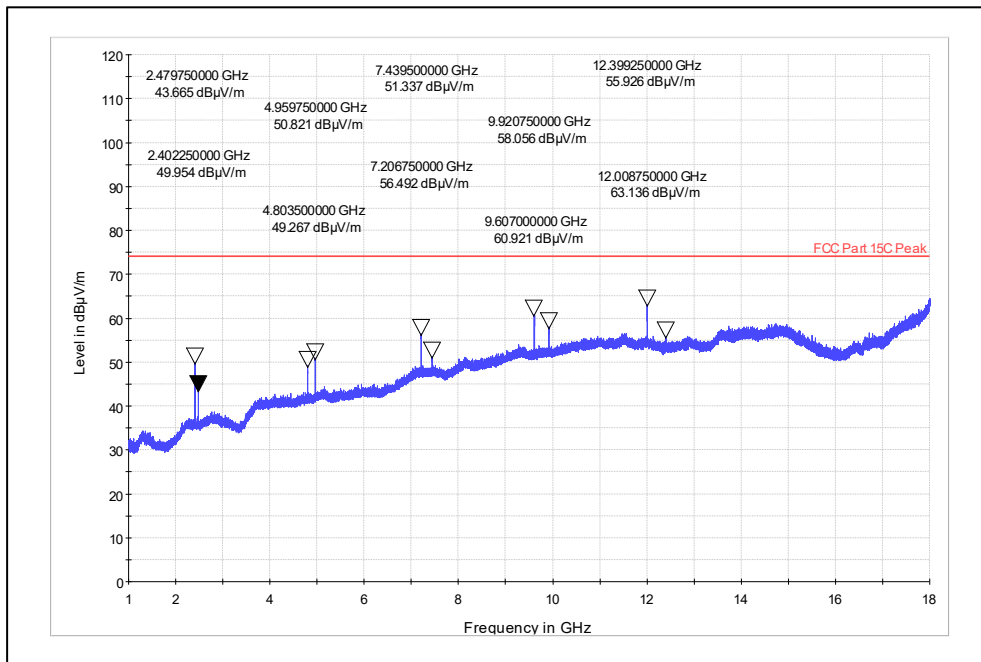
BLE_Channel frequency: 2402MHz & BT_Channel frequency: 2480MHz



Polarization: Vertical

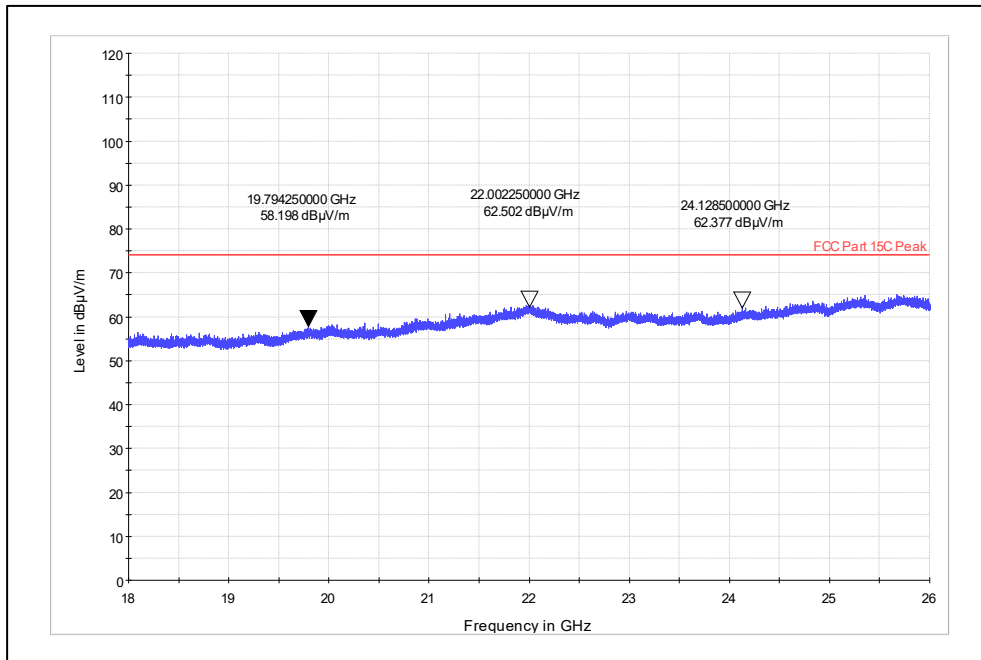
Frequency range: 1GHz to 18GHz

BLE_Channel frequency: 2402MHz & BT_Channel frequency: 2480MHz



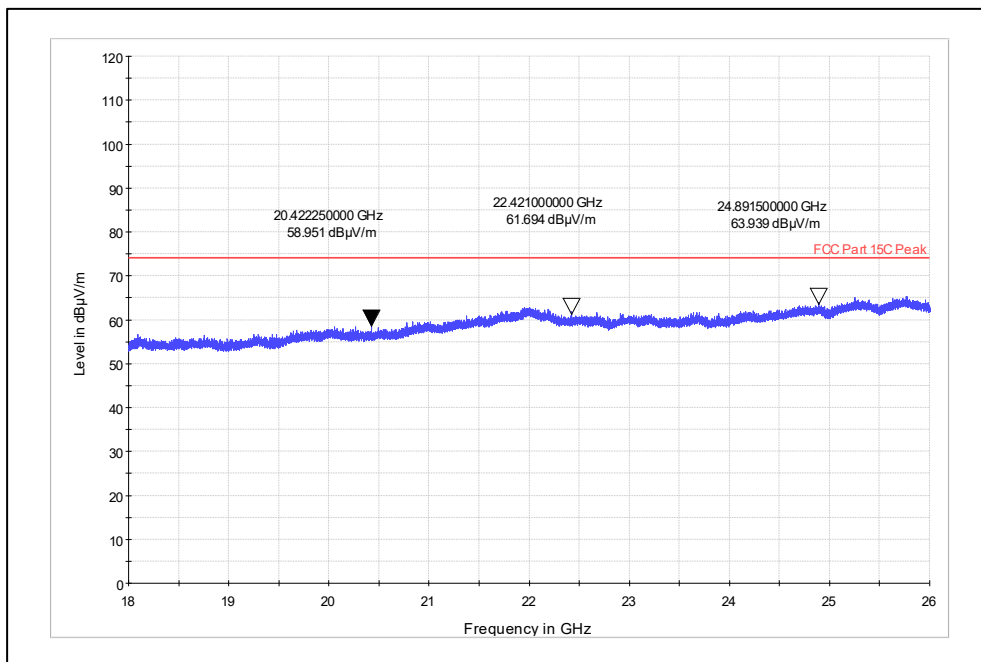
Polarization: Horizontal

Frequency range: 1GHz to 18GHz



Polarization: Vertical

Frequency range: 18GHz to 26GHz



Polarization: Horizontal

Frequency range: 18GHz to 26GHz

8 LIST OF TABLES

Table 1: List of test and measurement instruments.....	8
Table 2: Instrument application Software versions.....	8
Table 3: Ratings and System Details as declared by Client*	9
Table 4: Measurement Uncertainty	10
Table 5: List of Bluetooth Centre frequencies	11
Table 6: Transmitter limits for Radiated emission.....	36
Table 7: Test results for frequency range 30MHz – 200MHz.....	37
Table 8: Test results for frequency range 200MHz – 1GHz.....	38
Table 9: Bluetooth Test results for the frequencies above 1GHz:	40

9 List of Figures

Figure 1: Frequency Range 9 kHz- 30 MHz.....	14
Figure 2: Frequency Range 30 MHz – 200 MHz	14
Figure 3: Frequency Range 200 MHz - 1GHz.....	15
Figure 4: Frequency Range above 1 GHz.....	15

*****End of test report*****