

Prüfbericht-Nr.: <i>Test report no.:</i>	CN26BSMC 001	Auftrags-Nr.: <i>Order no.:</i>	48307480	Seite 1 von 25 Page 1 of 25
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2026-07-03	
Auftraggeber: <i>Client:</i>	Microchip Technology Inc. 2355 West Chandler Blvd. Chandler, Arizona 85224-6199, United States			
Prüfgegenstand: <i>Test item:</i>	ATZB-RF-233-1-C ZigBit 2.4GHz Wireless Modules			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	ATZB-RF-233-1-C			
Auftrags-Inhalt: <i>Order content:</i>	FCC Part 15C Test report (IEEE® 802.15.4)			
Prüfgrundlage: <i>Test specification:</i>	FCC 47CFR Part 15: Subpart C Section 15.247			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2026-07-07			
Prüfmuster-Nr.: <i>Test sample no:</i>	A004329461-003 A004329461-004			
Prüfzeitraum: <i>Testing period:</i>	2026-07-15 - 2026-07-16			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland Taiwan Ltd. New Taipei Branch			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland Taiwan Ltd. Taipei Testing Laboratories			
Prüfergebnis*: <i>Test result*:</i>	Pass			
zusammengestellt von: <i>compiled by:</i>			genehmigt von: <i>authorized by:</i>	
Datum: <i>Date:</i>	2026-07-30		Ausstellungsdatum: <i>Issue date:</i>	2026-07-30
Stellung / Position:	Senior Project Manager		Stellung / Position:	Project Engineer
Sonstiges / Other:	This report is issued as an extension of TUV India Report No. 19660034 001 to add alternative parts from secondary source for inductors L1 and L4 to the new applicant. Therefore, only output power, radiation and mains conducted emissions were evaluated in this report.			
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:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar N/T = nicht getestet
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient 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 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.</i>				

Prüfbericht-Nr.:
Test report no.:

CN26BSMC 001

Seite 2 von 25
Page 2 of 25

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> |
| 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.
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>
<i>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 115:2023, 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.</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 115:2023, 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></p> |

Prüfbericht-Nr.: CN26BSMC 001
Test report no.:Seite 3 von 25
Page 3 of 25

TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	15.247(b) & 15.203	Antenna Requirement	Pass
5.1.2	15.247(b)(3)	Peak Output Power	Pass
-	15.247(a)(2)	6 dB Bandwidth	Note 2
-	2.1049	99% Occupied Bandwidth	Note 2
-	15.247(e)	Power Spectral Density	Note 2
-	15.247(d)	Conducted Spurious Emissions and Band Edges	Note 2
5.1.3	15.247(d) & 15.205 & 15.209	Radiated Spurious Emissions and Band Edges	Pass
5.2.1	15.207	Mains Conducted Emission	Pass

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. Refer to TUV India Report No. 19660034 001

Prüfbericht-Nr.: CN26BSMC 001
Test report no.:

Seite 4 von 25
Page 4 of 25

Contents

HISTORY OF THIS TEST REPORT	6
1. GENERAL REMARKS	7
1.1 COMPLEMENTARY MATERIALS	7
1.2 DECISION RULE OF CONFORMITY	7
2. TEST SITES	8
2.1 TEST LABORATORY	8
2.2 TEST FACILITY	8
2.3 TRACEABILITY	9
2.4 CALIBRATION	9
2.5 MEASUREMENT UNCERTAINTY	9
3. GENERAL PRODUCT INFORMATION	10
3.1 PRODUCT FUNCTION AND INTENDED USE	10
3.2 SYSTEM DETAILS AND RATINGS	10
3.3 NOISE GENERATING AND NOISE SUPPRESSING PARTS	11
3.4 SUBMITTED DOCUMENTS	11
4. TEST SET-UP AND OPERATION MODES	12
4.1 PRINCIPLE OF CONFIGURATION SELECTION	12
4.2 CARRIER FREQUENCY AND CHANNEL	12
4.3 TEST OPERATION AND TEST SOFTWARE	13
4.4 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	14
4.5 TEST SETUP DIAGRAM	15
5. TEST RESULTS	16
5.1 TRANSMITTER REQUIREMENT & TEST SUITES	16
5.1.1 Antenna Requirement	16
5.1.2 Peak Output Power	17
5.1.3 Radiated Spurious Emissions and Band Edges	19
5.2 MAINS EMISSION	24
5.2.1 Mains Conducted Emission	24

Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 5 von 25
Page 5 of 25

APPENDIX A - TEST RESULT OF CONDUCTED

APPENDIX B - TEST RESULT OF RADIATED EMISSIONS & MAINS CONDUCTED EMISSION

APPENDIX SP - PHOTOGRAPHS OF TEST SETUP

APPENDIX EP - PHOTOGRAPHS OF EUT

Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 6 von 25
Page 6 of 25

HISTORY OF THIS TEST REPORT

Revision	Description	Date Issued
R01	Original Release	2026-07-30

Prüfbericht-Nr.: CN26BSMC 001
Test report no.:Seite 7 von 25
Page 7 of 25

1. General Remarks

1.1 Complementary Materials

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

Appendix A - Test Result of Conducted

Appendix B - Test Result of Radiated Emissions & Mains Conducted Emission

Appendix SP - Photographs of Test Setup

Appendix EP - Photographs of EUT

Applied Standard and Test Levels

Radio
FCC 47CFR Part 15: Subpart C Section 15.247
FCC 47CFR Part 2: Subpart J Section 2.1049
ANSI C63.10-2020
KDB 558074 D01 15.247 Meas Guidance v05r02

1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 8 von 25
Page 8 of 25

2. Test Sites

2.1 Test Laboratory

TÜV Rheinland Taiwan Ltd. Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

2.2 Test Facility

TÜV Rheinland Taiwan Ltd. Taipei Testing Laboratories

No.458-18, 458-19, Sec. 2, Fenliao Rd., Linkou Dist.,
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 180491 (TW3567)
ISED Registration No.: 25563 (TW3567)

2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of $k=2$ to indicate a 95% level of confidence.

Emission Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission (9 kHz ~ 30 MHz)	± 1.15 dB
Radiated Emission (30 MHz ~ 200 MHz)	± 1.32 dB
Radiated Emission (200 MHz ~ 1 GHz)	± 1.31 dB
Radiated Emission (1 GHz ~ 18 GHz)	± 1.53 dB
Radiated Emission (18 GHz ~ 40 GHz)	± 2.50 dB
Mains Conducted Emission	± 1.65 dB

Prüfbericht-Nr.: CN26BSMC 001
Test report no.:Seite 10 von 25
Page 10 of 25

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a ATZB-RF-233-1-C ZigBit 2.4GHz Wireless Modules. It contains an IEEE® 802.15.4 compatible module enabling the user to communicate data through a Wireless interface. For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details and Ratings

Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	ATZB-RF-233-1-C ZigBit 2.4GHz Wireless Modules
Type Identification	ATZB-RF-233-1-C
FCC ID	VW4A091729

Technical Specification of EUT

Item	EUT information
Operating Frequency	2405 MHz ~ 2475 MHz
Channel Number	15
Data Rate	250 kbps
Operation Voltage	1.8 Vdc to 3.6 Vdc (tested at 5Vdc from USB port)
Modulation	OQPSK
Maximum Output Power (mW)	210.38
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.4

Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 11 von 25
Page 11 of 25

3.3 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.4 Submitted Documents

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The test modes were adapted accordingly in reference to the instructions for use.

During testing, Channel and 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 selection is for the setting of RF output expected by the customer and is going to be fixed on the firmware of the final end product.

Table for Parameters of Test Software Setting

Frequency (MHz)	Power Setting	Register Value
2405	13	0xD
2440	0	0x0
2475	14	0xE

4.2 Carrier Frequency and Channel

Channel	Freq. (MHz)	Channel	Freq. (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440	26	

Prüfbericht-Nr.: CN26BSMC 001
Test report no.:

Seite 13 von 25
Page 13 of 25

4.3 Test Operation and Test Software

Setup for testing: Test samples are provided with a USB interface which makes it possible to control them through a test software installed on a notebook computer.

This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed as below.

Test Software	AtmelStudio.exe
---------------	-----------------

The samples were used as follows:

A004329461-003

A004329461-004

Full test was applied on all test modes, but only worst case was shown.

EUT Configure Mode	Applicable To				Description
	Antenna Port Conducted Measurement	Radiated Spurious Emissions above 1 GHz	Radiated Spurious Emissions below 1 GHz	Mains Conducted Emission	
-	√	√	√	√	-

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when position on **Z-plane**.
2. "-" means no effect.

Antenna Port Conducted Measurement (Power Only)

- ☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
-	2405 to 2475	2405, 2440, 2475	0.25

Radiated Spurious Emissions (Above 1 GHz)

- ☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
-	2405 to 2475	2405, 2440, 2475	0.25

Radiated Spurious Emissions (Below 1 GHz)

- ☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
-	2405 to 2475	2405, 2440, 2475	0.25

Mains Conducted Emission

- ☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)	Date Rate (Mbps)
-	2405 to 2475	2405, 2440, 2475	0.25

Prüfbericht-Nr.: CN26BSMC 001
Test report no.:

Seite 14 von 25
Page 14 of 25

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Conducted Measurement	23.5-24.2 °C	58-63 %	Nick Guan
Radiated Spurious Emissions above 1 GHz	25.7-27.2 °C	45-53 %	Chuan Chu
Radiated Spurious Emissions below 1 GHz	25.7-27.2 °C	45-53 %	Chuan Chu
Mains Conducted Emission	23.5 °C	66 %	Chuan Chu

4.4 Special Accessories and Auxiliary Equipment

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

Accessory of EUT

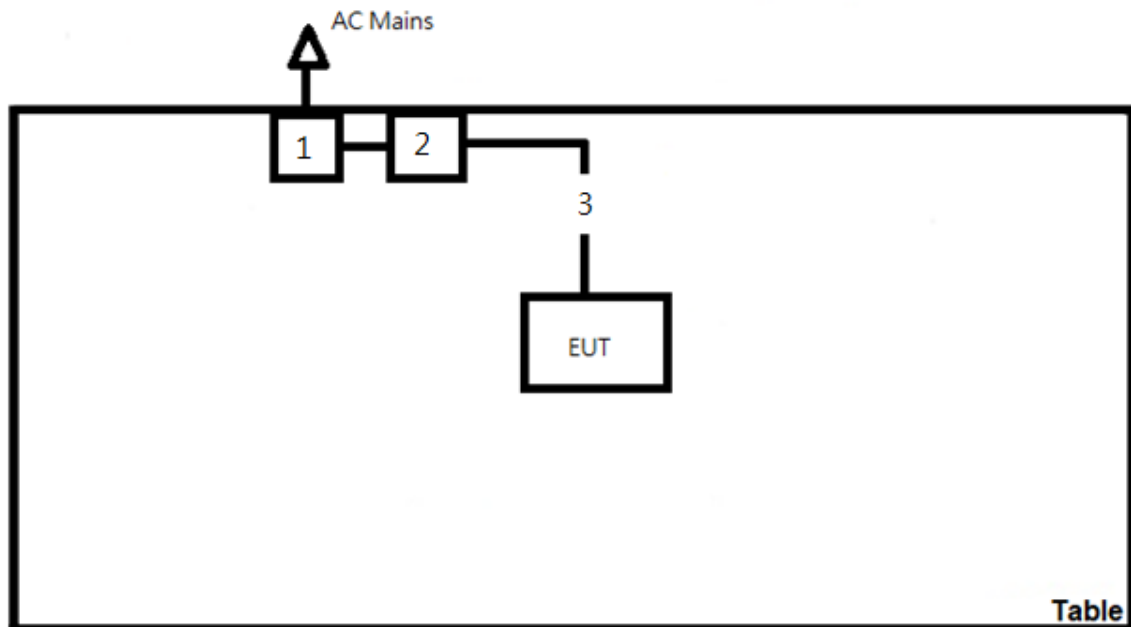
None.

Support Unit

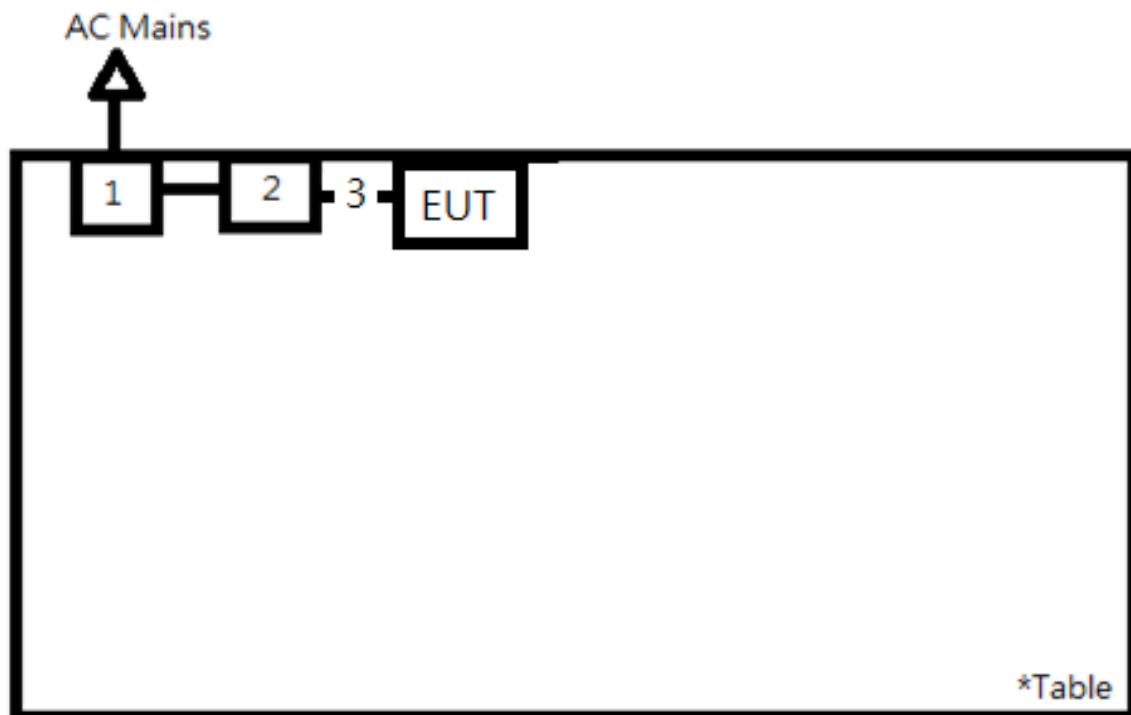
Support Unit								
No	Description	Brand	Model	S/N	Shielded	Ferrite Core (Qty)	Length (cm)	Remark
1	AC Adapter	DELL	LA65M130	PC0DH09R	-	-	-	Radiated and Mains Conducted Tests
2	Notebook	DELL	Latitude 7490	887V7Y2	-	-	-	
3	USB to Type A Cable	TUV	TUV-01	-	-	-	175	
-	Notebook	DELL	Latitude 7490	887V7Y2	-	-	-	Conducted Test

4.5 Test Setup Diagram

<Radiated Spurious Emissions Mode>



<Mains Conducted Emission Mode>



Prüfbericht-Nr.: CN26BSMC 001
Test report no.:Seite 16 von 25
Page 16 of 25

5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

Requirement Use of approved antennas only

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 0 dBi. The antenna is a chip antenna with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.
Refer to EUT photo for details.

Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 17 von 25
Page 17 of 25

5.1.2 Peak Output Power

Limit 1 watt (30 dBm)

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV	101512	2026/02/24	2027/02/23	2026/07/16	2026/07/16

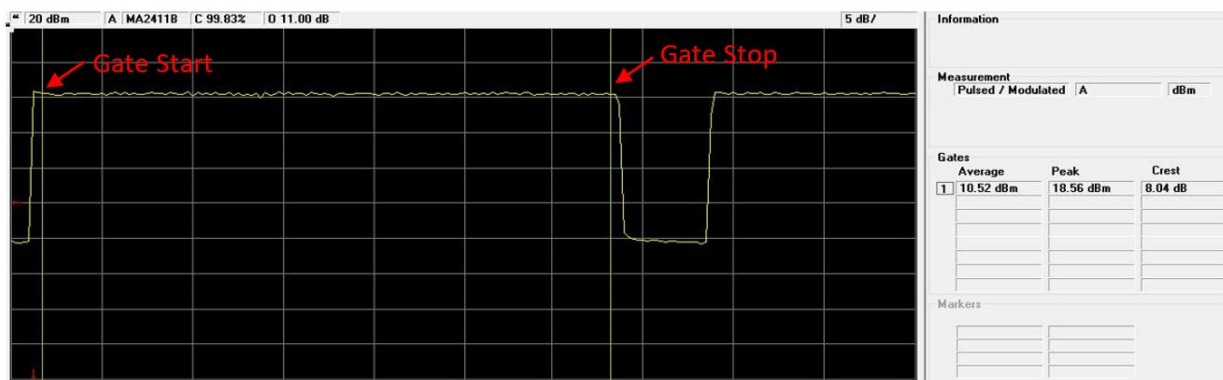
Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

Gate Setup:

1. Select the [Gates] tab in the software.
2. Check the box (e.g., Gate 1) to display it on the trace.
3. Set Gate Position
 - Drag the gate line with the mouse to the desired point on the waveform, or
 - Enter Values using the [Set] button and input start/stop times.
4. Switch to the next measurement channel and repeat the same gate setup procedure.
5. The instrument calculates average/peak power only within the defined gate interval.



Prüfbericht-Nr.: CN26BSMC 001
Test report no.:

Seite 18 von 25
Page 18 of 25

Test Result

Frequency (MHz)	Margin (dBm)	Limit (dBm)	Margin (dB)
2405	15.43	30.00	-14.57
2440	23.23	30.00	-6.77
2475	12.72	30.00	-17.28



5.1.3 Radiated Spurious Emissions and Band Edges

Limit

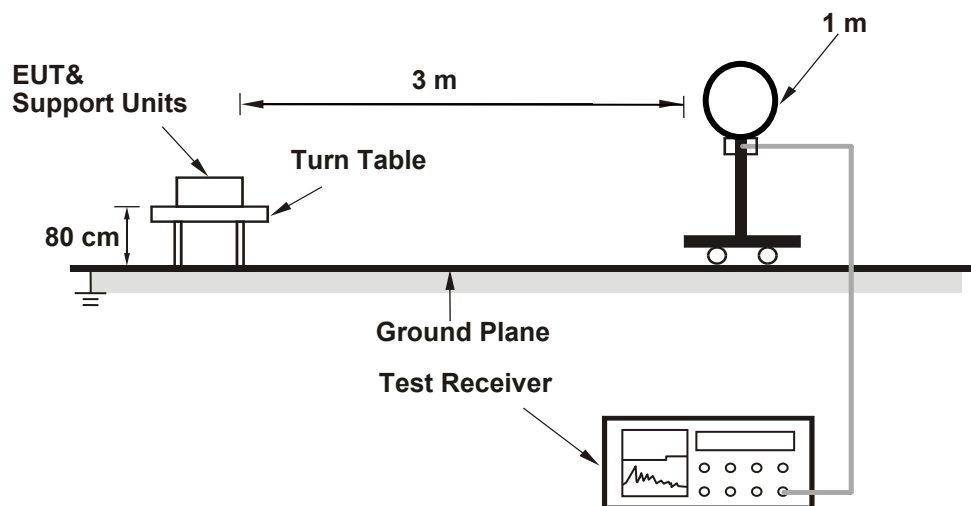
Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a).

Emissions radiated outside the restricted and authorized frequency bands must either comply with the radiated emission limits specified for the restricted bands or in §15.247(d).

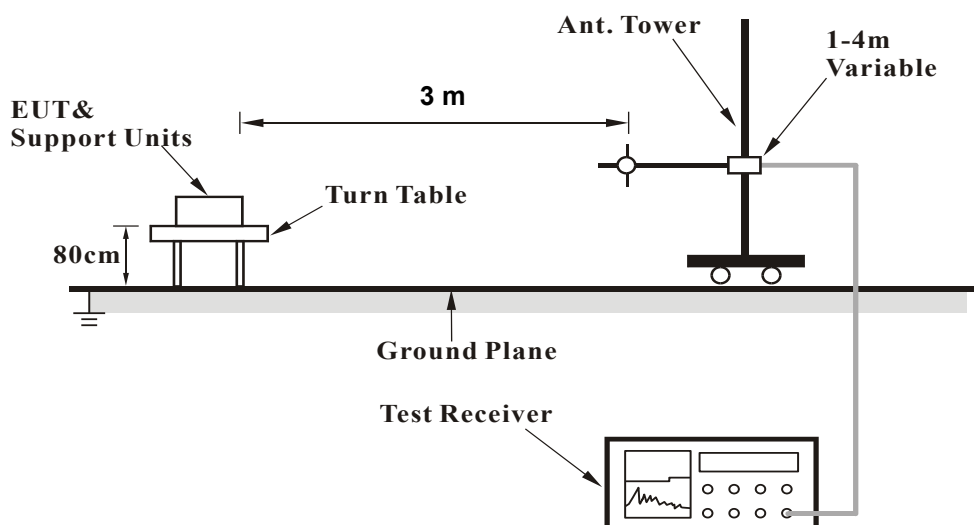
Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup

<Radiated Emissions below 30 MHz>



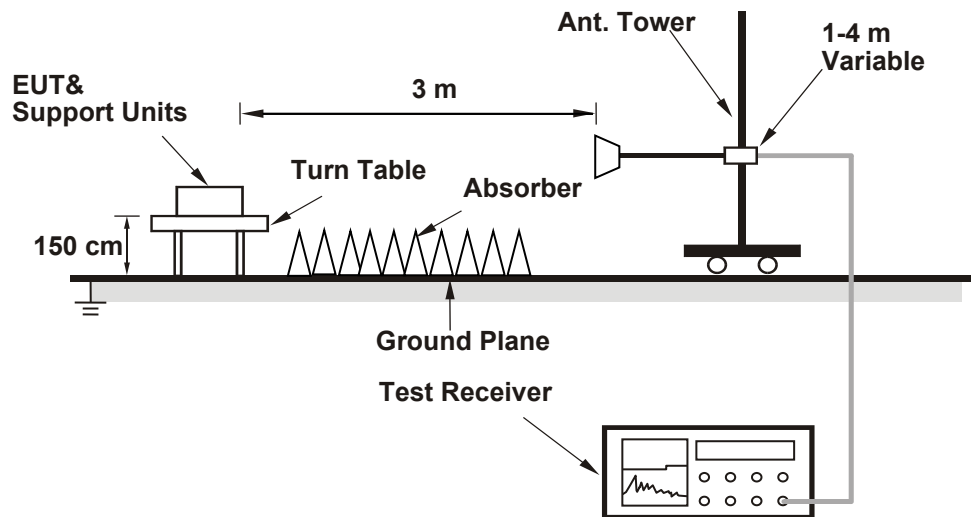
<Radiated Emissions 30 MHz to 1 GHz>



Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 20 von 25
Page 20 of 25

<Radiated Emissions above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Prüfbericht-Nr.: CN26BSMC 001
Test report no.:

Seite 21 von 25
Page 21 of 25

Test Instruments

Test Date: 2026/07/15 ~ 2026/07/16

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Above 1GHz					
Signal Analyzer	R&S	FSV40	101509	2026/05/06	2027/05/05
Horn Antenna	ETS-Lindgren	3117	00218929	2025/11/20	2026/11/19
Horn Antenna	SCHWARZBECK	BBHA 9170	00890	2026/04/29	2027/04/28
HF-AMP + AC source	EMCI	EMC051845SE	980635	2026/03/31	2027/03/30
HF-AMP + AC source	EMCI	EMC184045SE	980656	2026/01/15	2027/01/14
Microwave Cable	EMCI	EM102A-KMKM-700	504231101002	2026/05/08	2027/05/07
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800902/2EA	2026/06/05	2027/06/04
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	801026/2EA	2026/06/05	2027/06/04
3G High Pass Filter	EMCI	ZHPF3180	08223315	2025/12/18	2026/12/17
7G High Pass Filter	EMCI	HPF0718	G001	2026/04/10	2027/04/09
Test Software	Audix E3	15914a_20191106_tuv	PK-001087	N/A	N/A
30MHz – 1GHz					
Receiver	R&S	ESR7	102109	2026/02/04	2027/02/03
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2026/05/11	2027/05/10
LF-AMP	Agilent	8447D	2727A05146	2026/01/15	2027/01/14
RF Cable	EM	RG 214_U/2*11N/7M	24038601	2026/02/25	2027/02/24
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104	802244/4	2026/02/25	2027/02/24
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104	MY37203/4	2026/02/25	2027/02/24
Test Software	Audix E3	15914a_20191106_tuv	PK-001087	N/A	N/A

Test Procedures**For Radiated Emissions below 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated Emissions above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3

Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 23 von 25
Page 23 of 25

- MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
 4. All modes of operation were investigated and the worst-case emissions are reported.
 5. The Radiated Emissions testing was performed in the X(E1), Y(H) and Z(E2) axis orientation. The worst-case Axis orientation is recorded in this test report.
 6. The emission levels of other frequencies (including the 10th harmonic of the highest fundamental frequency) are very lower than the limit and are not shown in the test report.

Test Results

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – Amplifier (dB)
Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

Please refer to Appendix A.

Note: The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated at least 20 dB below the permissible value to be reported.

Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 24 von 25
Page 24 of 25

5.2 Mains Emission

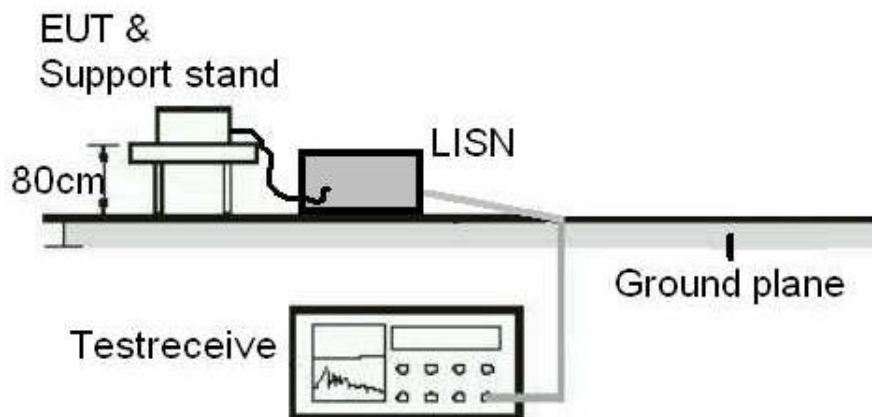
5.2.1 Mains Conducted Emission

Limit

Mains Conducted Emission as defined in §15.207 must comply with the mains conducted emission limits.

Kind of Test Site Shielded room

Test Setup



Test Instruments

Test Date: 2026/07/16

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Two-Line V-Network	SCHWARZBECK	NSLK 8127	8127-00976	2026/1/7	2027/1/6
EMI Test Receiver	R&S	ESCI	101094	2025/11/19	202611/18
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A

Prüfbericht-Nr.: **CN26BSMC 001**
Test report no.:

Seite 25 von 25
Page 25 of 25

Test Procedures

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

Test Results

Please refer to Appendix A.

Appendix A: Test Results of Radiated Spurious Emissions & Mains

Conducted Emission Test

Band Edges, 2.31GHz ~ 2.5GHz

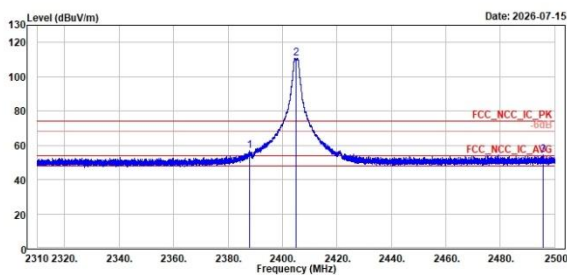
IEEE® 802.15.4

Low Channel (Horizontal) Peak

Low Channel (Vertical) Peak



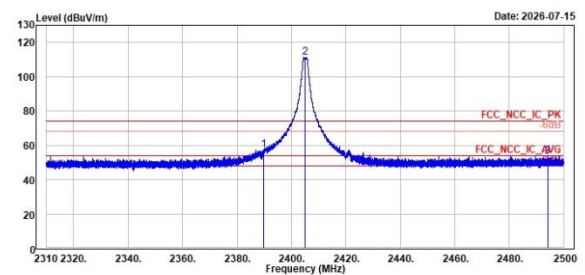
TÜV Rheinland Taiwan Ltd.
No. 438-18, Sec. 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	2387.86	56.95	20.66	36.29	74.00	-17.05	282	123	Peak	Horizontal	
2 *	2405.00	110.92	74.63	36.29	74.00	36.92	282	123	Peak	Horizontal	
3	2495.60	54.23	17.22	37.01	74.00	-19.77	282	123	Peak	Horizontal	



TÜV Rheinland Taiwan Ltd.
No. 438-18, Sec. 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



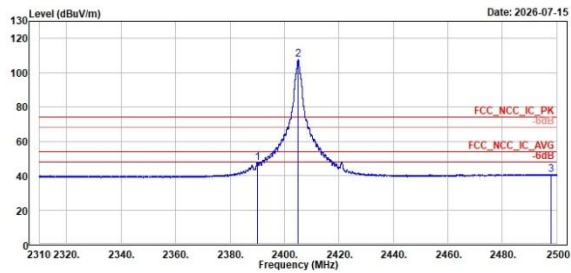
Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	2389.73	57.51	21.23	36.28	74.00	-16.49	319	165	Peak	Vertical	
2 *	2405.00	111.41	75.12	36.29	74.00	37.41	319	165	Peak	Vertical	
3	2494.02	53.30	16.30	37.00	74.00	-20.70	319	165	Peak	Vertical	

IEEE® 802.15.4

Low Channel (Horizontal) Average



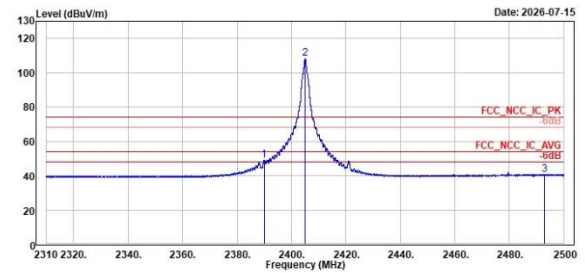
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	2389.96	47.67	11.39	36.28	54.00	-6.33	282	123	Average	Horizontal		
2 *	2405.00	107.79	71.50	36.29	54.00	53.79	282	123	Average	Horizontal		
3	2497.87	40.66	3.63	37.03	54.00	-13.34	282	123	Average	Horizontal		



TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



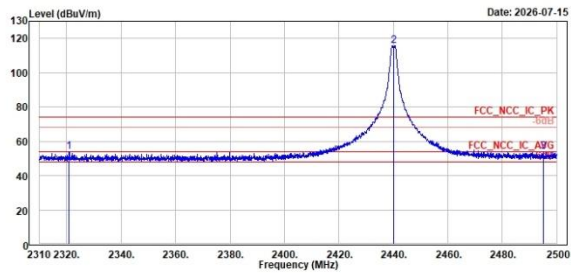
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	2389.93	48.86	12.58	36.28	54.00	-5.14	319	165	Average	Vertical		
2 *	2405.00	100.28	71.99	36.29	54.00	54.28	319	165	Average	Vertical		
3	2492.94	40.61	3.61	37.00	54.00	-13.39	319	165	Average	Vertical		

IEEE® 802.15.4

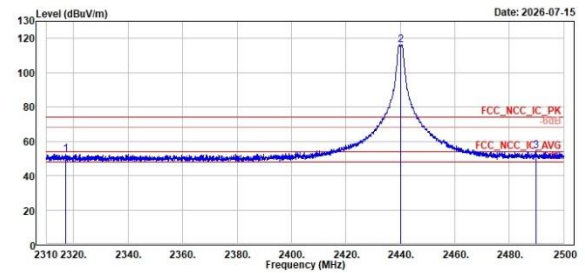
Middle Channel (Horizontal) Peak



TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322

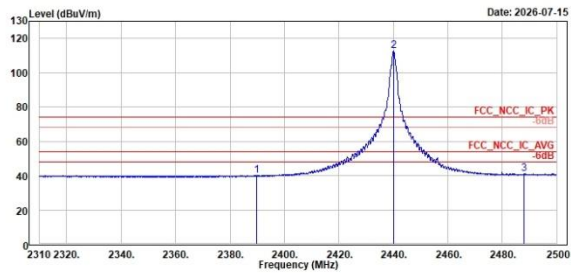


IEEE® 802.15.4

Middle Channel (Horizontal) Average



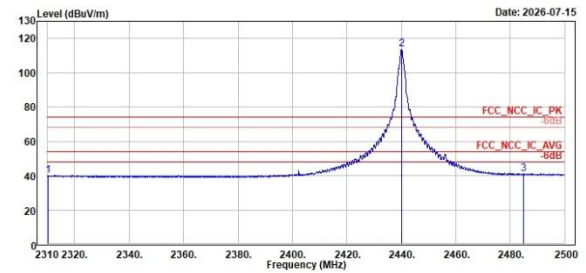
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



Middle Channel (Vertical) Average



TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322

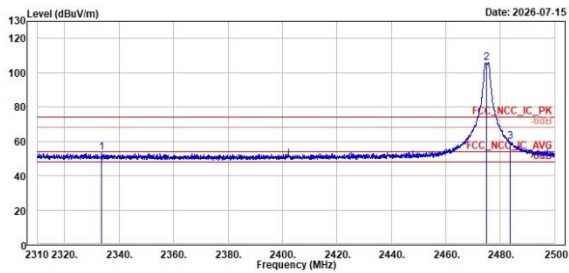


IEEE® 802.15.4

High Channel (Horizontal) Peak



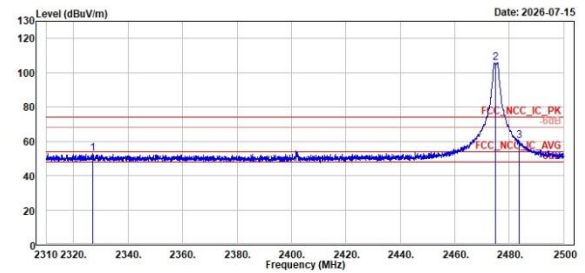
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	cm	deg			
1	2333.61	53.16	16.77	36.39	74.00	-20.84	297	49	Peak	Horizontal		
2 *	2475.00	105.00	68.93	36.07	74.00	31.00	297	49	Peak	Horizontal		
3	2483.61	59.72	22.79	36.93	74.00	-14.28	297	49	Peak	Horizontal		



TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



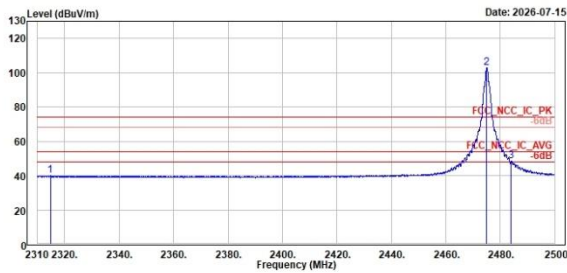
	Freq	Level	Read	Level	Factor	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	cm	deg			
1	2326.96	52.97	16.59	36.38	74.00	-21.03	300	136	Peak	Vertical		
2 *	2475.00	105.00	68.93	36.07	74.00	31.00	300	136	Peak	Vertical		
3	2483.52	60.13	23.20	36.93	74.00	-13.87	300	136	Peak	Vertical		

IEEE® 802.15.4

High Channel (Horizontal) Average



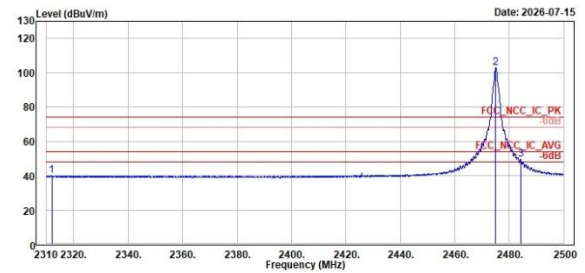
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	2314.75	39.82	3.45	36.37	54.00	-14.18	297	49	Average	Horizontal		
2 *	2475.00	102.75	65.88	36.87	54.00	48.75	297	49	Average	Horizontal		
3 †	2483.95	48.64	11.71	36.93	54.00	-5.36	297	49	Average	Horizontal		



TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	2311.95	39.91	3.54	36.37	54.00	-14.09	300	136	Average	Vertical		
2 *	2475.00	102.76	65.89	36.87	54.00	48.76	300	136	Average	Vertical		
3 †	2484.09	49.26	12.33	36.93	54.00	-4.74	300	136	Average	Vertical		

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

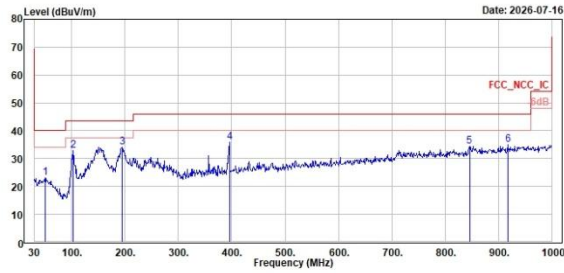
Worst

(Horizontal)

(Vertical)



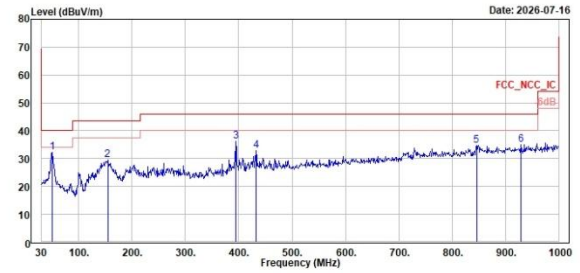
TÜV Rheinland Taiwan Ltd.
No. 438-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	Freq	Level		Line	Limit					
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	58.37	23.07	29.06	-5.99	40.00	-16.93	100	215 Peak	Horizontal	
2	182.75	32.93	43.63	-10.70	43.50	-10.57	200	305 Peak	Horizontal	
3	193.93	34.13	42.61	-8.48	43.50	-9.37	200	77 Peak	Horizontal	
4	395.69	35.78	39.03	-3.25	46.00	-10.22	100	306 Peak	Horizontal	
5	845.77	34.44	30.41	4.03	46.00	-11.56	100	360 Peak	Horizontal	
6	917.55	35.07	30.00	5.07	46.00	-10.93	100	59 Peak	Horizontal	



TÜV Rheinland Taiwan Ltd.
No. 438-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	Freq	Level		Line	Limit					
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	58.37	32.12	38.11	-5.99	40.00	-7.88	100	222 Peak	Vertical	
2	154.16	29.47	35.49	-6.02	43.50	-14.03	100	182 Peak	Vertical	
3	394.72	36.12	39.43	-3.31	46.00	-9.88	100	171 Peak	Vertical	
4	432.55	32.84	35.43	-2.59	46.00	-13.16	100	220 Peak	Vertical	
5	845.77	34.61	30.58	4.03	46.00	-11.39	148	360 Peak	Vertical	
6	929.19	35.03	29.85	5.18	46.00	-10.97	200	39 Peak	Vertical	

Spurious Emissions, Tx Mode, 1GHz ~ 26.5GHz

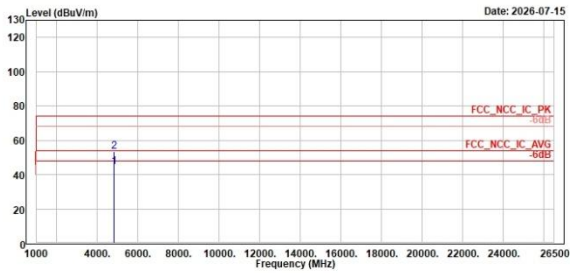
IEEE® 802.15.4

Low Channel (Horizontal)

Low Channel (Vertical)



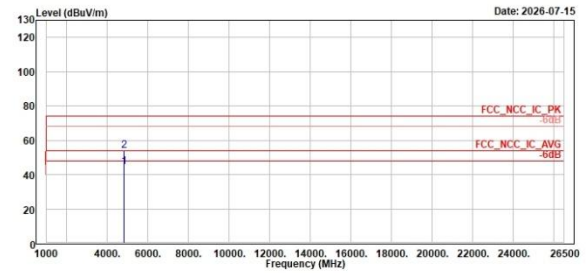
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	4818.00	44.28	53.68	-9.40	54.00	-9.72	180	325	Average	Horizontal		
2	4818.00	53.68	63.00	-9.40	74.00	-20.40	180	325	Peak	Horizontal		



TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



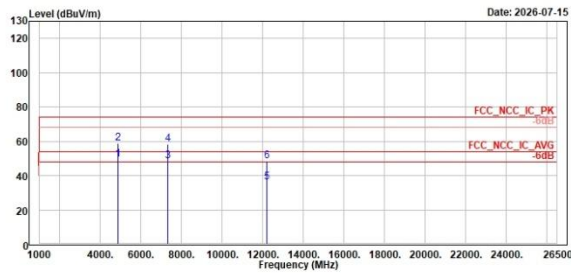
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	4818.00	44.68	54.00	-9.40	54.00	-9.40	268	275	Average	Vertical		
2	4818.00	53.81	63.21	-9.40	74.00	-20.19	268	275	Peak	Vertical		

IEEE® 802.15.4

Middle Channel (Horizontal)



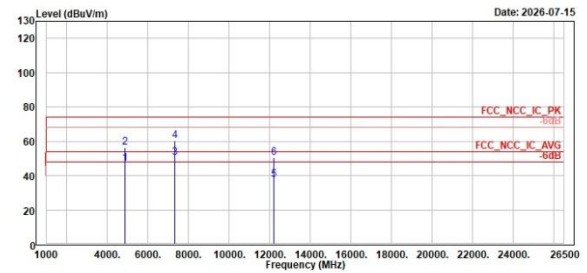
TÜV Rheinland Taiwan Ltd.
No. 438-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	4880.00	49.48	58.89	-9.41	54.00	-4.52	100	322	Average	Horizontal		
2	4880.00	58.68	68.09	-9.41	74.00	-15.32	100	322	Peak	Horizontal		
3	7320.00	48.22	55.29	-7.07	54.00	-5.78	100	21	Average	Horizontal		
4	7320.00	58.44	65.51	-7.07	74.00	-15.56	100	21	Peak	Horizontal		
5	12200.00	36.00	36.13	-0.13	54.00	-18.00	100	63	Average	Horizontal		
6	12200.00	48.42	48.55	-0.13	74.00	-25.58	100	63	Peak	Horizontal		



TÜV Rheinland Taiwan Ltd.
No. 438-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	4880.00	47.17	56.58	-9.41	54.00	-6.83	281	163	Average	Vertical		
2	4880.00	56.41	65.82	-9.41	74.00	-17.59	281	163	Peak	Vertical		
3	7320.00	50.24	57.31	-7.07	54.00	-3.76	343	348	Average	Vertical		
4	7320.00	60.07	67.14	-7.07	74.00	-13.93	343	348	Peak	Vertical		
5	12200.00	37.62	37.75	-0.13	54.00	-16.38	353	360	Average	Vertical		
6	12200.00	50.45	50.58	-0.13	74.00	-23.55	353	360	Peak	Vertical		

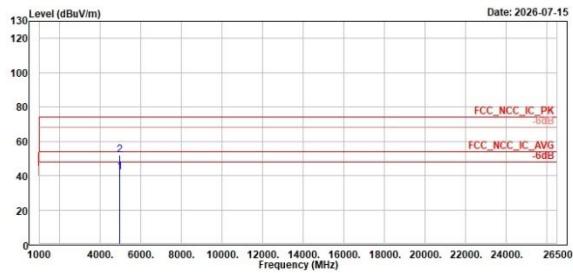
IEEE® 802.15.4

High Channel (Horizontal)

High Channel (Vertical)



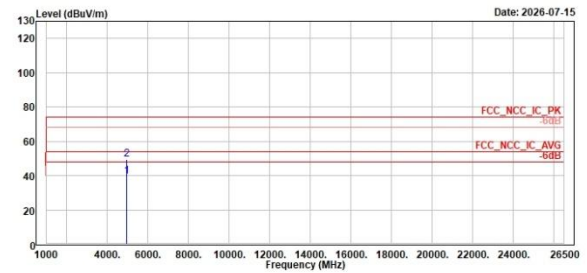
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	4950.00	42.00	51.19	-9.11	54.00	-11.92	263	0	Average	Horizontal		
2	4950.00	51.96	61.07	-9.11	74.00	-22.04	263	0	Peak	Horizontal		



TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	4950.00	39.30	48.41	-9.11	54.00	-14.70	285	297	Average	Vertical		
2	4950.00	49.50	58.61	-9.11	74.00	-24.50	285	297	Peak	Vertical		

Mains Conducted Emission, Tx Mode, 150kHz ~ 30MHz

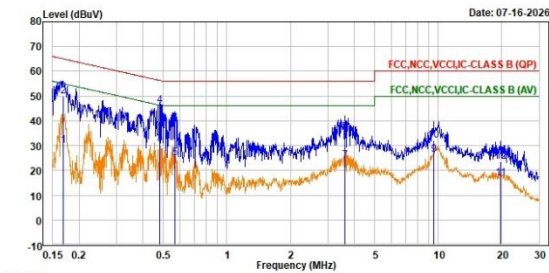
Worst

(Line)

(Neutral)



TUV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322

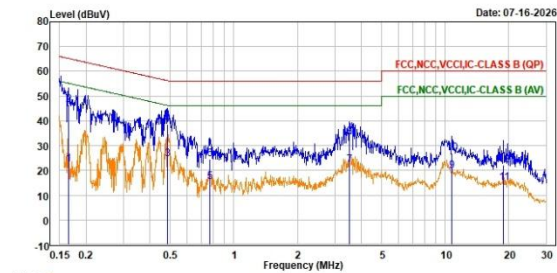


Trace: 1

	Freq	Level	Read	Limit	Over		
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase Note
	MHz	dBuV	dB	dB	dB	dB	
1	0.17	30.13	20.19	9.94	55.05	-24.92 Average	line1
2	0.17	49.98	40.04	9.94	65.05	-15.07 QP	line1
3	0.48	30.70	20.73	9.97	46.31	-15.61 Average	line1
4	0.48	45.96	35.99	9.97	56.31	-10.35 QP	line1
5	0.57	24.84	14.86	9.98	46.00	-21.16 Average	line1
6	0.57	38.99	29.01	9.98	56.00	-17.01 QP	line1
7	3.62	23.88	13.72	10.16	46.00	-22.12 Average	line1
8	3.62	35.31	25.15	10.16	56.00	-20.69 QP	line1
9	9.49	26.44	16.08	10.36	50.00	-23.56 Average	line1
10	9.49	32.14	21.78	10.36	60.00	-27.86 QP	line1
11	19.74	16.78	6.12	10.66	50.00	-33.22 Average	line1
12	19.74	23.68	13.02	10.66	60.00	-36.32 QP	line1



TUV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



Trace: 1

	Freq	Level	Read	Limit	Over		
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase Note
	MHz	dBuV	dB	dB	dB	dB	
1	0.16	22.64	12.70	9.94	55.21	-32.57 Average	neutral
2	0.16	46.55	36.61	9.94	65.21	-18.66 QP	neutral
3	0.48	24.64	14.70	9.94	46.27	-21.63 Average	neutral
4	0.48	38.57	28.63	9.94	56.27	-17.70 QP	neutral
5	0.77	15.44	5.49	9.95	46.00	-30.56 Average	neutral
6	0.77	24.70	14.75	9.95	56.00	-31.30 QP	neutral
7	3.54	22.21	12.15	10.06	46.00	-23.79 Average	neutral
8	3.54	33.36	23.30	10.06	56.00	-22.64 QP	neutral
9	10.74	19.73	9.41	10.32	50.00	-30.27 Average	neutral
10	10.74	26.95	16.63	10.32	60.00	-33.05 QP	neutral
11	18.87	14.83	4.26	10.57	50.00	-35.17 Average	neutral
12	18.87	22.27	11.70	10.57	60.00	-37.73 QP	neutral