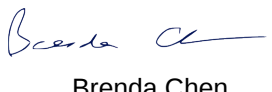


Prüfbericht-Nr.: Test report no.:	CN25N7TV 001	Auftrags-Nr.: Order no.:	48272791	Seite 1 von 33 Page 1 of 33	
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2025-02-11		
Auftraggeber: Client:	Microchip Technology Inc. 2355 West Chandler Blvd. Chandler, Arizona 85224-6199, United States				
Prüfgegenstand: Test item:	ATA8510M				
Bezeichnung / Typ-Nr.: Identification / Type no.:	ATA8510MPE, ATA8510MUE				
Auftrags-Inhalt: Order content:	FCC Part 15C Test report (433.92 MHz)				
Prüfgrundlage: Test specification:	FCC CFR47 Part 15: Subpart C Section 15.231				
Wareneingangsdatum: Date of sample receipt:	2025-01-07				
Prüfmuster-Nr.: Test sample no:	A003912605-019, 020 A003912605-042, 043, 046				
Prüfzeitraum: Testing period:	2025-03-14 - 2025-05-02				
Ort der Prüfung: Place of testing:	EMC/RF Taipei Testing Site				
Prüflaboratorium: Testing laboratory:	Taipei Testing Laboratories				
Prüfergebnis*: Test result*:	Pass				
zusammengestellt von: compiled by:	genehmigt von: authorized by:				
Datum: Date: 2025-05-08	 Ryan Chen		 Brenda Chen		
Stellung / Position:	Senior Project Manager		Senior Project Manager		
Sonstiges / Other:	This EUT also includes the test of substitute (2nd sources) in this test report.				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged				
* 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	5 = mangelhaft 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	5 = poor 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.:

CN25N7TV 001

Seite 2 von 33
Page 2 of 33

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature <i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature</i>
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, 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>

TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	15.203	Antenna Requirement	Pass
5.1.2	15.231(c)	20 dB Bandwidth and Occupied Bandwidth	Pass
5.1.3	15.231(a)	Pulse Width / TX Gap	Pass
5.1.4	15.231(a)	Field Strength of Fundamental Emissions	Pass
5.1.5	15.231(b) & 15.205 & 15.209	Radiated Spurious Emissions	Pass
5.2.1	15.207	Mains Conducted Emission	Pass

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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	12
3.4 SUBMITTED DOCUMENTS.....	12
4. TEST SET-UP AND OPERATION MODES.....	13
4.1 PRINCIPLE OF CONFIGURATION SELECTION	13
4.2 TEST OPERATION AND TEST SOFTWARE.....	13
4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	14
4.4 TEST SETUP DIAGRAM	15
5. TEST RESULTS	16
5.1 TRANSMITTER REQUIREMENT & TEST SUITES	16
5.1.1 Antenna Requirement	16
5.1.2 20 dB Bandwidth and Occupied Bandwidth.....	17
5.1.3 Pulse Width/TX Gap.....	20
5.1.4 Field Strength of Fundamental Emissions	22
5.1.5 Radiated Spurious Emissions	28
5.2 MAINS EMISSION	32
5.2.1 Mains Conducted Emission.....	32

Prüfbericht - Nr.: **CN25N7TV 001**
Test Report No.

Seite 5 von 33
Page 5 of 33

APPENDIX A - TEST RESULT OF RADIATED SPURIOUS EMISSIONS AND MAINS CONDUCTED EMISSION FOR PCB ANTENNA_FSK

APPENDIX B - TEST RESULT OF RADIATED SPURIOUS EMISSIONS AND MAINS CONDUCTED EMISSION FOR UFL ANTENNA_FSK

APPENDIX C - TEST RESULT OF RADIATED SPURIOUS EMISSIONS AND MAINS CONDUCTED EMISSION FOR PCB ANTENNA_ASK

APPENDIX D - TEST RESULT OF RADIATED SPURIOUS EMISSIONS AND MAINS CONDUCTED EMISSION FOR UFL ANTENNA_ASK

APPENDIX SP - PHOTOGRAPHS OF TEST SETUP

APPENDIX EP - PHOTOGRAPHS OF EUT

Prüfbericht - Nr.: **CN25N7TV 001**
Test Report No.

Seite 6 von 33
Page 6 of 33

HISTORY OF THIS TEST REPORT

Revision	Description	Date Issued
R01	Original Release	2025-05-08

1. General Remarks

1.1 Complementary Materials

The following attachments are integral parts of this test report:

Appendix A - Test Result of Radiated Spurious Emissions and Mains Conducted Emission for PCB Antenna_FSK

Appendix B - Test Result of Radiated Spurious Emissions and Mains Conducted Emission for UFL Antenna_FSK

Appendix C - Test Result of Radiated Spurious Emissions and Mains Conducted Emission for PCB Antenna_ASK

Appendix D - Test Result of Radiated Spurious Emissions and Mains Conducted Emission for UFL Antenna_ASK

Appendix SP - Photographs of Test Setup

Appendix EP - Photographs of EUT

Test Specifications

The following standards were applied.

Applied Standard and Test Levels

Radio
FCC 47CFR Part 15: Subpart C Section 15.231
ANSI C63.10:2013

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.

2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

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

2.2 Test Facility

Taipei Testing Laboratories

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

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

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a ATA8510M working at 433.92 MHz.
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	ATA8510M
Type Identification	ATA8510MPE, ATA8510MUE
FCC ID	2ADHK-ATA8510M

Technical Specification of EUT

Item	EUT information
Operating Frequency	433.92 MHz
Operation Voltage	3.3 Vdc
Modulation	FSK / ASK
Antenna Information	Refer to Note 2
Accessory Device	Refer to 4.3

Note:

1. All models are listed as below.

Model Type	Type Identification	Difference
Main	ATA8510MPE	All models are electrically identical, different model names are for marketing purpose. ATA8510M module is available with following antenna options: • PCB Antenna (ATA8510MPE) • U.FL Connector (ATA8510MUE) for External Antenna
Series	ATA8510MUE	

2. There're 2 samples used for the test. The only difference between the second source and main source lies in the supplier, all specifications are identical.

Prüfbericht - Nr.: CN25N7TV 001
Test Report No.Seite 11 von 33
Page 11 of 33

3. Antenna List:

ANT No.: 1, 2, 4, 5 are selected to the worst case for RSE test.

ANT No.	Brand Name	SN/Model #	Antenna Type	Peak Gain (dBi)	Placement
1	TAOGLAS	FXP450.07.0100C	FPC (UFL)	-1.57	External
2	Aristotle	RFA-04-AP296	FPC (UFL)	0.41	External
3	Aristotle	RFA-433-C58-100-D034	Dipole(UFL)	1	External
4	Aristotle	RFA-04-T118H1-70B150	Dipole (UFL)	1.29	External
5	Microchip	ATA8510	PCB	-1.8	On Board

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 equipment under test (EUT) was configured to measure its maximum emission level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Setup for testing: Test samples are modified to continuous transmitter mode which makes it possible to transmit when the power on.

The samples were used as follows:

A003912605-019, 020 for Conducted Test

A003912605-042, 043, 046 for Radiated Test

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

EUT Configure Mode	Applicable To					Description
	20 dB Bandwidth	Pulse Width / TX Gap	Field Strength of Fundamental Emissions	Radiated Spurious Emissions	Mains Conducted Emission	
-	√	√	√	√	√	-

Note:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when position on Y-plane for ANT 1, 2, 5, and X-plan for ANT 4.
- "-" means no effect.

20 dB Bandwidth

☒ 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)
-	433.92	433.92

Pulse Width / TX Gap

☒ 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)
-	433.92	433.92

Field Strength of Fundamental

☒ 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)
-	433.92	433.92

Radiated Spurious Emissions

- ☒ 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)
-	433.92	433.92

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)
-	433.92	433.92

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
20 dB Bandwidth	21.9-22.4 °C	66.3-67.5 %	Andy Chen
Pulse Width / TX Gap	21.9-22.4 °C	66.3-67.5 %	Andy Chen
Field Strength of Fundamental	22-24.3 °C	53-55 %	Ivan Chiang
Radiated Spurious Emissions	22-24.3 °C	53-55 %	Ivan Chiang
Mains Conducted Emission	20.7 °C	35 %	Chuan Chu

4.3 Special Accessories and Auxiliary Equipment

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

Accessory of EUT

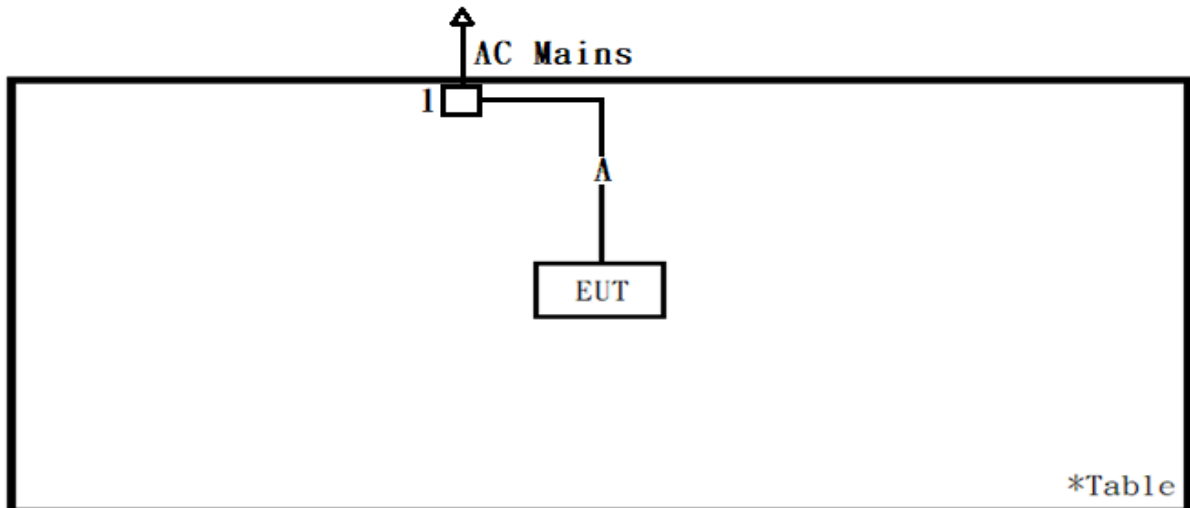
None.

Support Unit

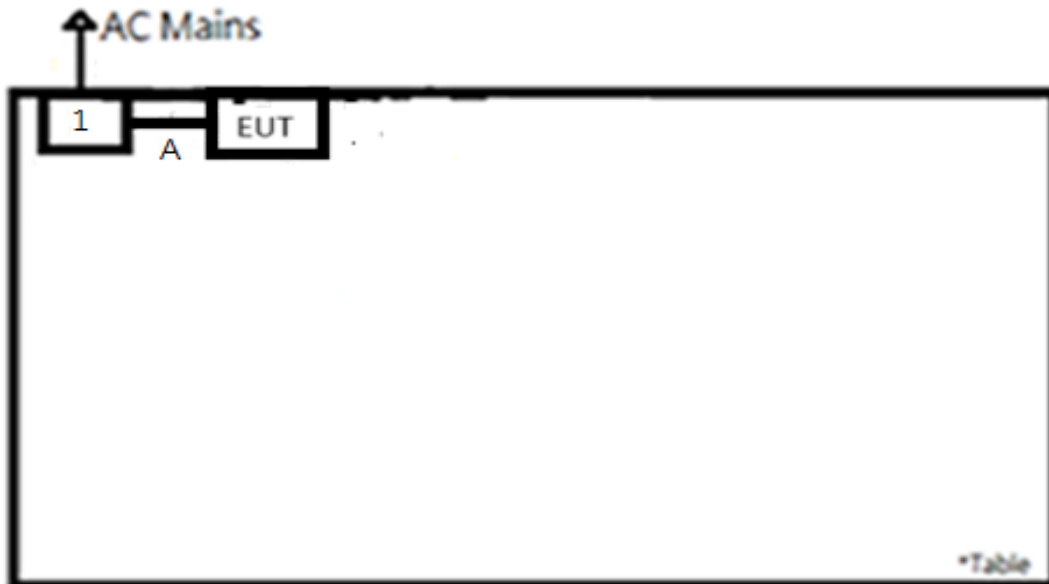
Support Unit						
No	Description	Brand	Model	S/N	Length (cm)	Remark
Radiated and Mains Conducted Tests						
A	USB Type-C	Microchip	-	-	94	Conducted Test A003912605-002
1	Adapter	OPPO	VC56JACH	J119492A C1009359	-	--

4.4 Test Setup Diagram

<Radiated Spurious Emissions Mode>



<Mains Conducted Emission Mode>



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 1.29 dBi. The antenna is a ipex – dipole with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

ANT No.	Brand Name	SN/Model #	Antenna Type	Gain (dBi)	Placement
1	TAOGLAS	FXP450.07.0100C	FPC (UFL)	-1.57	External
2	Aristotle	RFA-04-AP296	FPC (UFL)	0.41	External
3	Aristotle	RFA-433-C58-100-D034	Dipole(UFL)	1	External
4	Aristotle	RFA-04-T118H1-70B150	Dipole (UFL)	1.29	External
5	Microchip	ATA8510	PCB	-1.8	On Board

Refer to EUT photo for details.

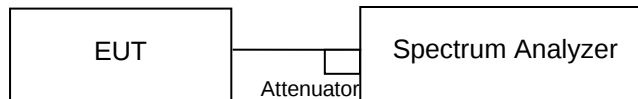
5.1.2 20 dB Bandwidth and Occupied Bandwidth

Limit

The bandwidth of the emission shall be no wider than 0.25 % of the center frequency for devices operating above 70 MHz and below 900 MHz.

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	2025/02/26	2026/02/25	2025/3/14	2025/3/14
Spectrum Analyzer	R&S	FSV	101513	2024/05/09	2025/05/08	2025/5/2	2025/5/2

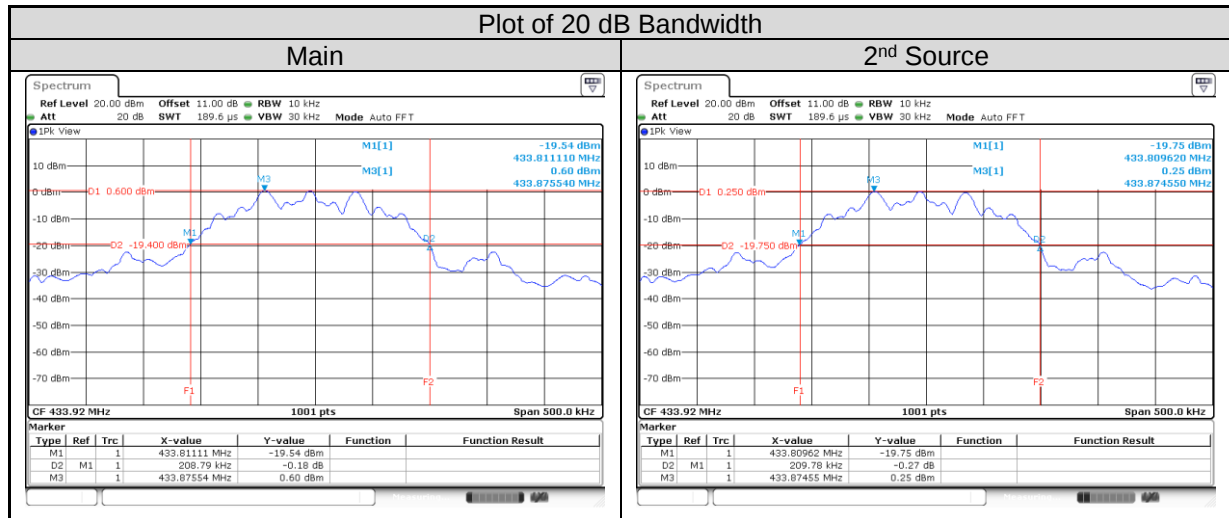
Test Procedures

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
- Repeat above procedures until all frequencies measured were complete.
- For occupied bandwidth, the transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1 % to 5 % of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to Sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

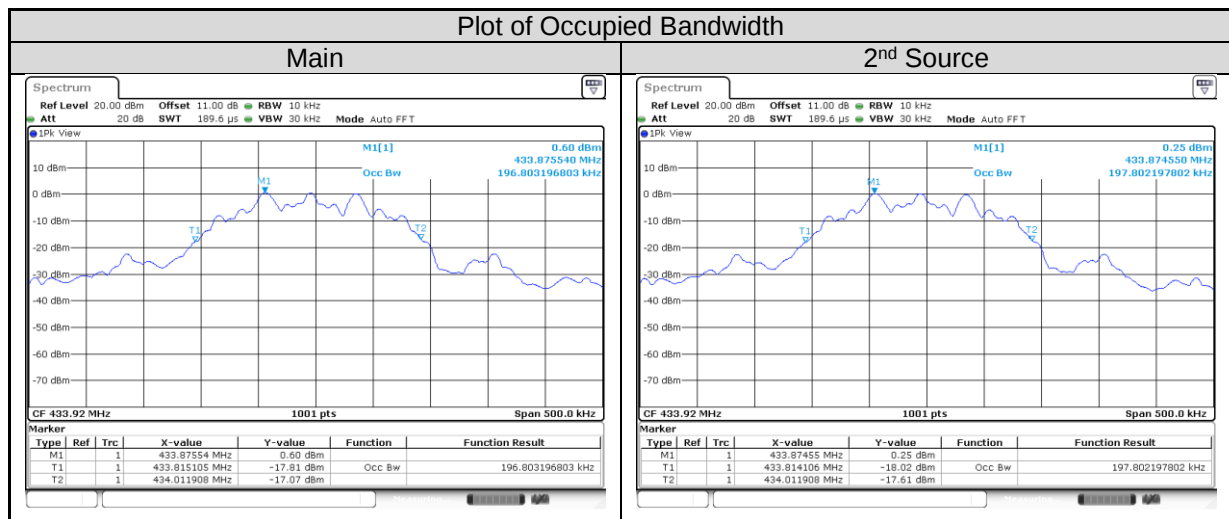
Test Results

<FSK>

Source	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)
Main	433.92	208.79	1084.80
2 nd Source	433.92	209.78	1084.80

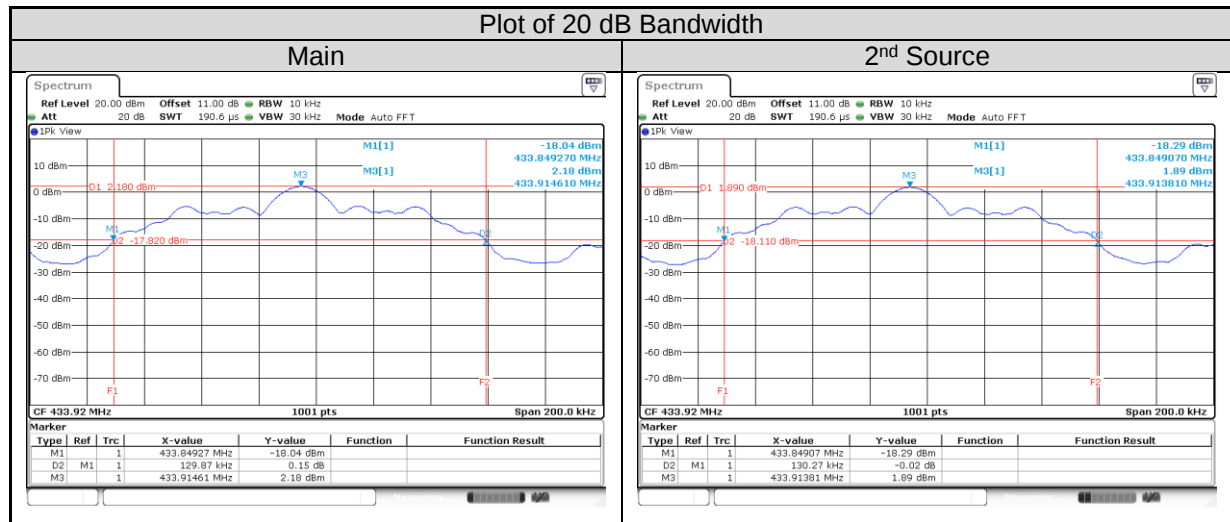


Source	Channel Frequency (MHz)	Occupied Bandwidth (kHz)
Main	433.92	196.80
2 nd Source	433.92	197.80

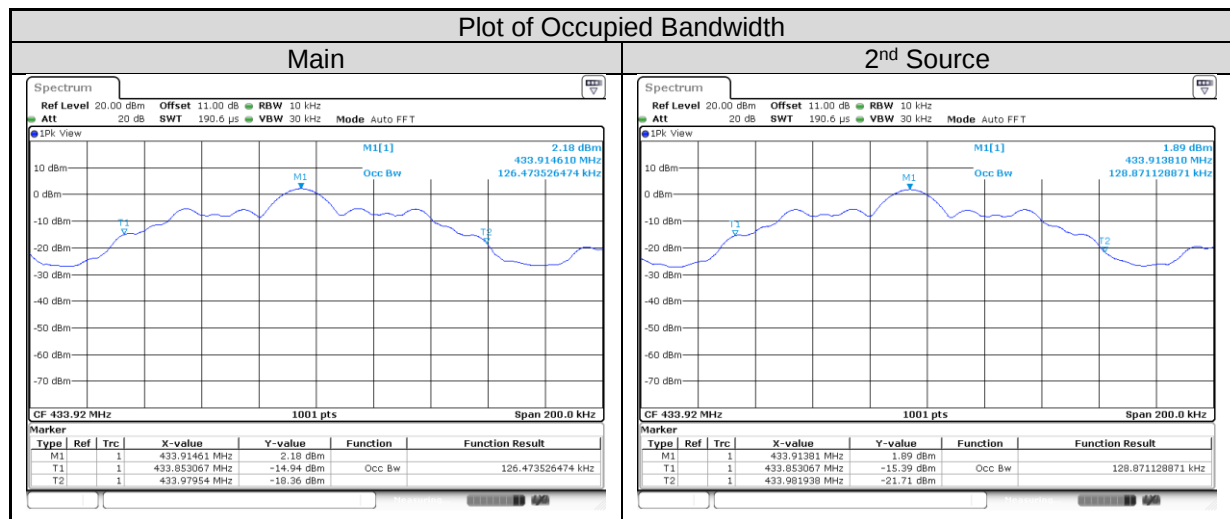


<ASK>

Source	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)
Main	433.92	129.87	1084.80
2nd Source	433.92	130.27	1084.80



Source	Channel Frequency (MHz)	Occupied Bandwidth (kHz)
Main	433.92	126.47
2nd Source	433.92	128.87



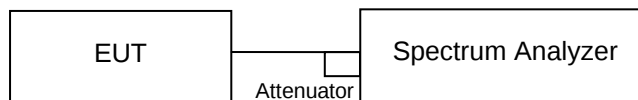
5.1.3 Pulse Width/TX Gap

Limit

For operation in 314-316 MHz and 433-435 MHz: A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds being released. A transmitter activated automatically shall cease transmission within 5 seconds after activation.

Kind of Test Site Shielded room

Test Setup



Test Instruments

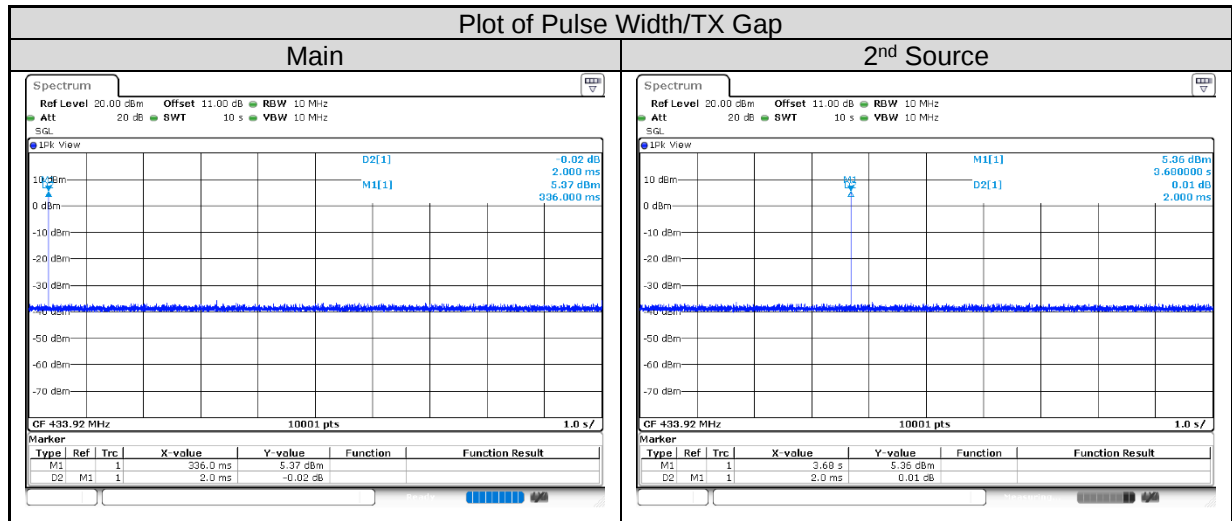
Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV	101512	2025/02/26	2026/02/25	2025/3/14	2025/3/14
Spectrum Analyzer	R&S	FSV	101513	2024/05/09	2025/05/08	2025/5/2	2025/5/2

Test Procedures

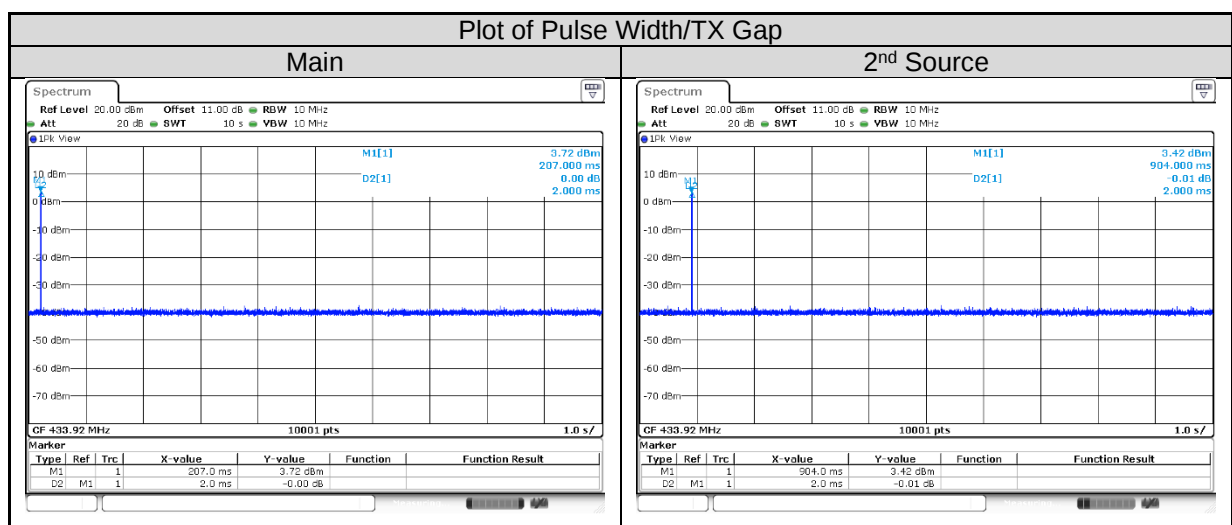
- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- Measure the transmission time (Pulse width) and stop duration of a transmission period (TX gap).
- Repeat above procedures until all frequencies measured were complete.

Test Results
<FSK>

Source	Channel Frequency (MHz)	Pulse Width (ms)	Limit (ms)	Result
Main	433.92	2.00	5000	Pass
2nd	433.92	2.00	5000	Pass


<ASK>

Source	Channel Frequency (MHz)	Pulse Width (ms)	Limit (ms)	Result
Main	433.92	2.00	5000	Pass
2nd	433.92	2.00	5000	Pass

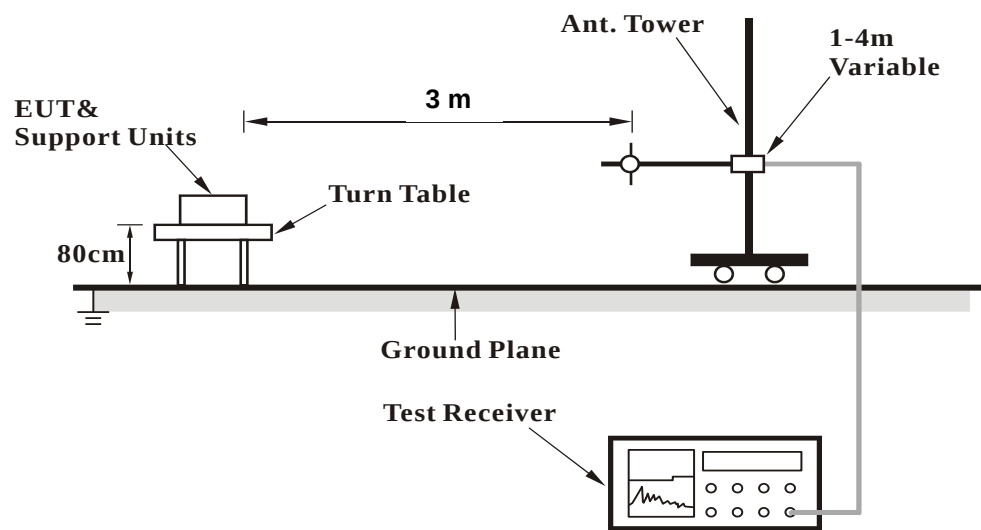


5.1.4 Field Strength of Fundamental Emissions

Limit Refer to §15.231(b) for reference

Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup



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

Prüfbericht - Nr.: CN25N7TV 001
Test Report No.

Seite 23 von 33
Page 23 of 33

Test Instruments

<FSK>

Test Date: 2025/3/17 ~ 2025/3/28

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Above 1 GHz					
Signal Analyzer	R&S	FSV40	101509	2024/4/30	2025/4/29
Horn Antenna	ETS-Lindgren	3117	00218929	2024/11/21	2025/11/20
Horn Antenna	SCHWARZBECK	BBHA 9170	00890	2024/4/30	2025/4/29
HF-AMP + AC source	EMCI	EMC051845SE	980633	2025/1/15	2026/1/14
HF-AMP + AC source	EMCI	EMC184045SE	980656	2025/1/15	2026/1/14
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
30 MHz – 1 GHz					
Receiver	R&S	ESR7	102108	2024/7/4	2025/7/3
Bilog Antenna	SCHWARZBECK	VULB-9168	00950	2024/5/9	2025/5/8
LF-AMP	Agilent	8447D	2727A05146	2025/1/15	2026/1/14
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
Below 30 MHz					
Receiver	R&S	ESR7	102108	2024/7/4	2025/7/3
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2024/12/11	2025/12/10

Prüfbericht - Nr.: CN25N7TV 001
Test Report No.

 Seite 24 von 33
 Page 24 of 33

<ASK>

Test Date: 2025/4/29 ~ 2025/5/2

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Above 1 GHz					
Signal Analyzer	R&S	FSV40	101513	2024/5/9	2025/5/8
Horn Antenna	ETS-Lindgren	3117	00218929	2024/11/21	2025/11/20
Horn Antenna	SCHWARZBECK	BBHA 9170	00887	2025/3/28	2026/3/27
HF-AMP + AC source	EMCI	EMC051845SE	980633	2025/1/15	2026/1/14
HF-AMP + AC source	EMCI	EMC184045SE	980656	2025/1/15	2026/1/14
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
30 MHz – 1 GHz					
Receiver	R&S	ESR7	102108	2024/7/4	2025/7/3
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2025/4/8	2026/4/7
LF-AMP	Agilent	8447D	2727A05146	2025/1/15	2026/1/14
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
Below 30 MHz					
Receiver	R&S	ESR7	102108	2024/7/4	2025/7/3
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2024/12/11	2025/12/10
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A

Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 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 peak and average detect function and specified bandwidth with maximum hold mode.

Note:

1. All modes of operation were investigated and the worst-case emissions are reported.
2. 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.

Test Results

The EUT employs pulsed operation.

<FSK>

ANT NO.	Source	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Antenna Orientation	Detector or calculated value
ANT 5	Main	433.92	70.91	80.83	Horizontal	Average
		433.92	94.52	100.83		Peak
		433.92	76.83	80.83	Vertical	Average
		433.92	100.45	100.83		Peak
	2 nd	433.92	71.08	80.83	Horizontal	Average
		433.92	94.69	100.83		Peak
		433.92	75.83	80.83	Vertical	Average
		433.92	99.44	100.83		Peak
ANT 1	Main	433.92	75.80	80.83	Horizontal	Average
		433.92	99.40	100.83		Peak
		433.92	72.59	80.83	Vertical	Average
		433.92	96.19	100.83		Peak
	2 nd	433.92	75.32	80.83	Horizontal	Average
		433.92	98.92	100.83		Peak
		433.92	70.75	80.83	Vertical	Average
		433.92	94.34	100.83		Peak
ANT 2	Main	433.92	76.11	80.83	Horizontal	Average
		433.92	99.72	100.83		Peak
		433.92	72.75	80.83	Vertical	Average
		433.92	96.36	100.83		Peak
	2 nd	433.92	76.07	80.83	Horizontal	Average
		433.92	99.66	100.83		Peak
		433.92	72.70	80.83	Vertical	Average
		433.92	96.29	100.83		Peak
ANT 4	Main	433.92	75.69	80.83	Horizontal	Average
		433.92	99.30	100.83		Peak
		433.92	72.79	80.83	Vertical	Average
		433.92	96.40	100.83		Peak
	2 nd	433.92	74.75	80.83	Horizontal	Average
		433.92	98.35	100.83		Peak
		433.92	71.62	80.83	Vertical	Average
		433.92	95.21	100.83		Peak

Note:

1. With linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths is as follows:

$$433.92\text{MHz}, \mu\text{V/m at 3 meters} = 41.6667 \times (433.92\text{MHz}) - 7083.3333 = 10996.68 \mu\text{V/m}$$

$$20\log(10996.68) = 80.83 \text{ dB}\mu\text{V/m (Average Limit)}$$

$$80.82 + 20 = 100.83 \text{ dB}\mu\text{V/m (Peak Limit)}$$

$$2. \text{Duty Cycle correction(dB)} = 20\log(\text{pulse width}/100\text{ms}) = 20\log(6.6/100) = -23.61\text{dB}$$

(There are three 2.2 ms pulses within a 100 ms period.)

<ASK>

ANT NO.	Source	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Antenna Orientation	Detector or calculated value
ANT 5	Main	433.92	61.49	80.83	Horizontal	Average
		433.92	95.47	100.83		Peak
		433.92	64.79	80.83	Vertical	Average
		433.92	98.77	100.83		Peak
	2 nd	433.92	63.70	80.83	Horizontal	Average
		433.92	97.68	100.83		Peak
		433.92	65.49	80.83	Vertical	Average
		433.92	99.47	100.83		Peak
ANT 1	Main	433.92	65.75	80.83	Horizontal	Average
		433.92	99.73	100.83		Peak
		433.92	63.55	80.83	Vertical	Average
		433.92	97.53	100.83		Peak
	2 nd	433.92	65.28	80.83	Horizontal	Average
		433.92	99.26	100.83		Peak
		433.92	65.19	80.83	Vertical	Average
		433.92	99.17	100.83		Peak
ANT 2	Main	433.92	66.71	80.83	Horizontal	Average
		433.92	100.69	100.83		Peak
		433.92	61.57	80.83	Vertical	Average
		433.92	95.55	100.83		Peak
	2 nd	433.92	66.23	80.83	Horizontal	Average
		433.92	100.21	100.83		Peak
		433.92	65.37	80.83	Vertical	Average
		433.92	99.35	100.83		Peak
ANT 4	Main	433.92	66.04	80.83	Horizontal	Average
		433.92	100.02	100.83		Peak
		433.92	61.68	80.83	Vertical	Average
		433.92	95.66	100.83		Peak
	2 nd	433.92	63.70	80.83	Horizontal	Average
		433.92	97.68	100.83		Peak
		433.92	63.77	80.83	Vertical	Average
		433.92	97.75	100.83		Peak

Note:

1. With linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths is as follows:

$$433.92\text{MHz}, \mu\text{V/m at 3 meters} = 41.6667 \times (433.92\text{MHz}) - 7083.3333 = 10996.68 \mu\text{V/m}$$

$$20\log(10996.68) = 80.83 \text{ dB}\mu\text{V/m (Average Limit)}$$

$$80.82 + 20 = 100.83 \text{ dB}\mu\text{V/m (Peak Limit)}$$

 2. Duty Cycle correction(dB) = $20\log(\text{pulse width}/100\text{ms}) = 20\log(2/100) = -33.98\text{dB}$

(There are one 2 ms pulses within a 100 ms period.)

5.1.5 Radiated Spurious Emissions

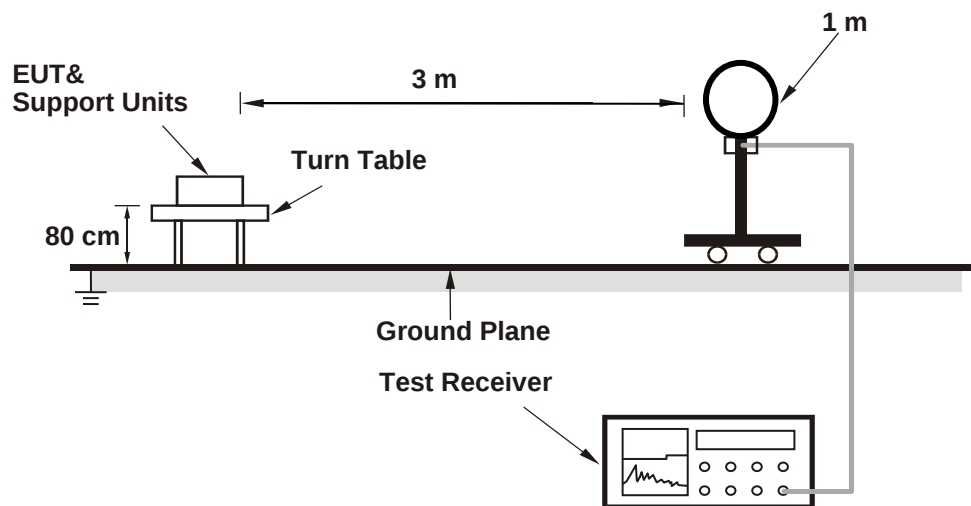
Limit

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).

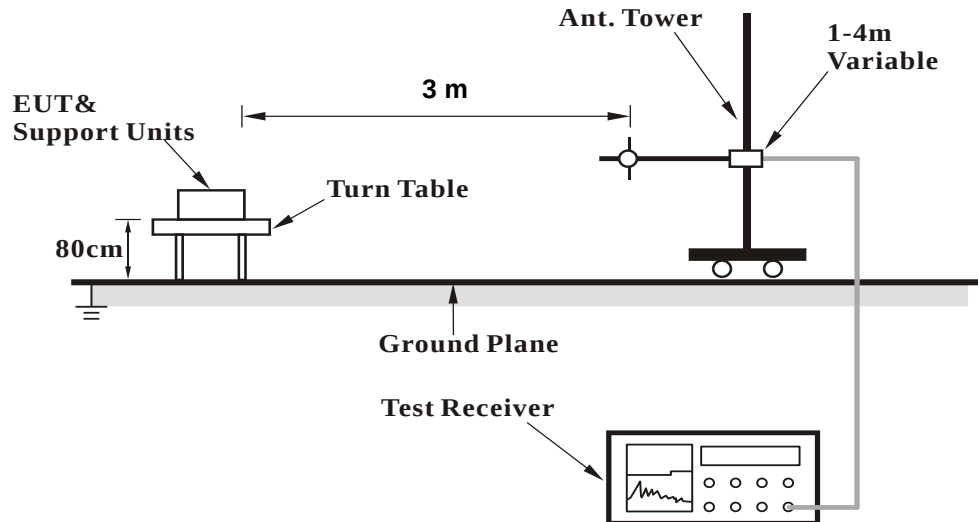
Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup

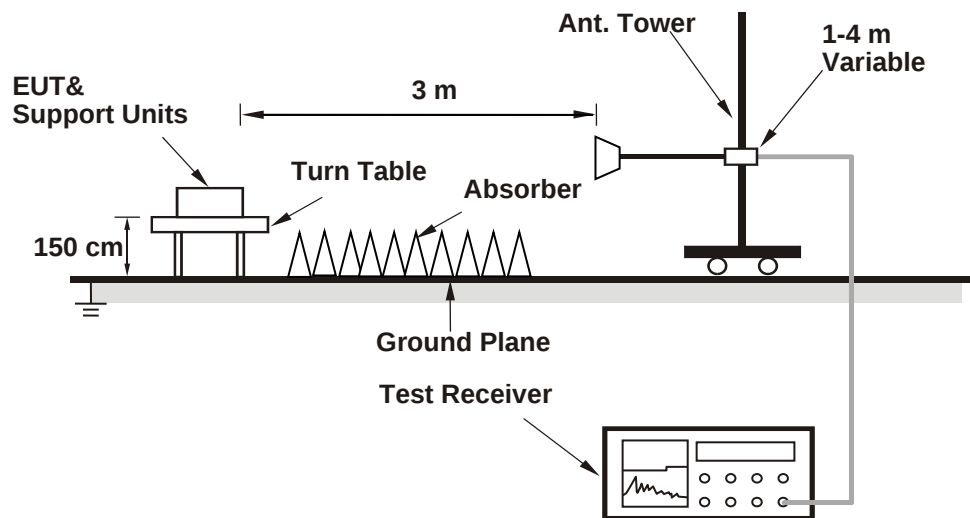
<Radiated Emissions below 30 MHz>



<Radiated Emissions 30 MHz to 1 GHz>



<Radiated Emissions above 1 GHz>



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

Test Instruments

Please refer to 5.1.4 Instruments

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. All modes of operation were investigated and the worst-case emissions are reported.
3. 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.
4. 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.

Prüfbericht - Nr.: **CN25N7TV 001**
Test Report No.

Seite 31 von 33
Page 31 of 33

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 - D.

5.2 Mains Emission

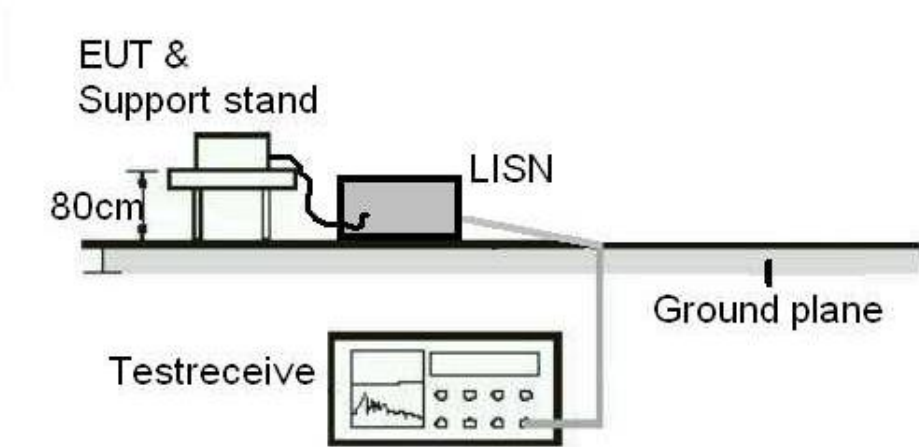
5.2.1 Mains Conducted Emission

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

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Two-Line V-Network	Rohde & Schwarz	ENV216	101938	2024/10/22	2025/10/21
EMI Test Receiver	R&S	ESCI	101094	2024/11/25	2025/11/24

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 - D.

Appendix A: Test Results of Radiated Spurious Emissions and Mains Conducted Emission for PCB Antenna_FSK

Main Source, ANT 5 (-1.8 dBi)
Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

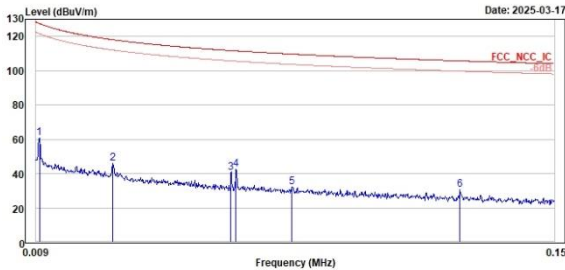
433.92 MHz

9kHz~150kHz(Open)

150kHz~30MHz(Open)



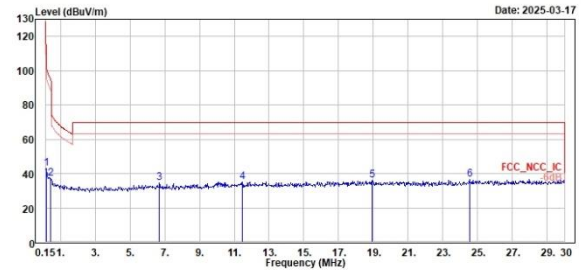
TUV Rheinland Taiwan Ltd.
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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.01	60.78	42.67	18.11	127.60	-66.82	100	200	Peak	Open	
2	0.03	46.17	26.16	20.01	116.05	-71.88	100	101	Peak	Open	
3	0.06	40.52	22.48	18.04	111.74	-71.22	100	198	Peak	Open	
4	0.06	42.37	24.24	18.13	111.55	-69.18	100	341	Peak	Open	
5	0.08	32.31	14.05	18.26	109.68	-77.37	100	190	Peak	Open	
6	0.12	30.48	12.30	18.18	105.71	-75.23	100	165	Peak	Open	



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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.21	42.91	24.28	18.63	101.17	-58.26	100	157	Peak	Open	
2	0.45	36.95	18.25	18.70	94.57	-57.62	100	33	Peak	Open	
3	6.69	34.81	14.05	20.76	69.50	-34.69	100	96	Peak	Open	
4	11.46	35.33	13.70	21.63	69.50	-34.17	100	61	Peak	Open	
5	18.93	35.87	13.14	22.73	69.50	-33.63	100	176	Peak	Open	
6	24.54	36.73	13.89	22.84	69.50	-32.77	100	63	Peak	Open	

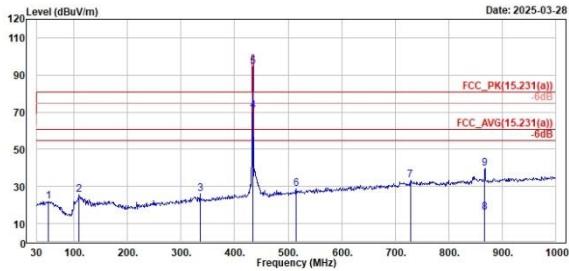
Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

433.92 MHz

Horizontal



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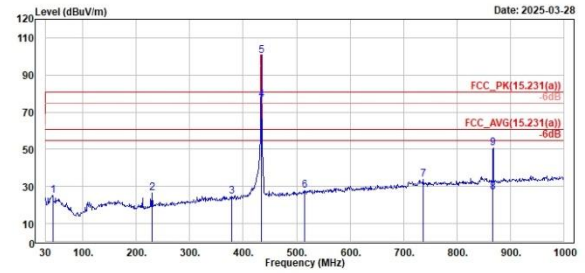


	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	51.34	21.90	28.55	-6.65	80.83	-58.93		200	272	Peak	Horizontal	
2	109.54	25.74	36.56	-10.82	80.83	-55.09		248	0	Peak	Horizontal	
3	335.55	26.00	31.31	-5.31	80.83	-54.83		190	152	Peak	Horizontal	
4	433.92	70.91	74.24	-3.33	80.83	-9.92		100	201	Average	Horizontal	CF
5	433.92	94.52	97.85	-3.33	100.83	-6.31		100	201	Peak	Horizontal	
6	515.00	28.63	30.50	-1.87	80.83	-52.20		287	0	Peak	Horizontal	
7	728.40	33.41	31.16	2.25	80.83	-47.42		200	290	Peak	Horizontal	
8	867.84	16.01	11.70	4.23	60.83	-44.82		200	96	Average	Horizontal	CF
9	867.84	39.62	35.39	4.23	80.83	-41.21		200	96	Peak	Horizontal	

Vertical



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	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	43.58	25.02	32.28	-7.26	80.83	-55.81		109	360	Peak	Vertical	
2	229.82	26.64	34.89	-8.25	80.83	-54.19		249	0	Peak	Vertical	
3	378.23	24.56	28.97	-4.41	80.83	-56.27		300	103	Peak	Vertical	
4	433.92	76.83	80.16	-3.33	80.83	-4.00		100	83	Average	Vertical	CF
5	433.92	100.45	103.78	-3.33	100.83	-0.38		100	83	Peak	Vertical	
6	515.00	28.04	29.91	-1.87	80.83	-52.79		300	158	Peak	Vertical	
7	737.13	33.76	31.47	2.29	80.83	-47.67		400	33	Peak	Vertical	
8	867.84	26.86	22.63	4.23	60.83	-33.97		100	279	Average	Vertical	CF
9	867.84	50.47	46.24	4.23	80.83	-30.36		100	279	Peak	Vertical	

Spurious Emissions, Tx Mode, 1GHz ~ 5GHz

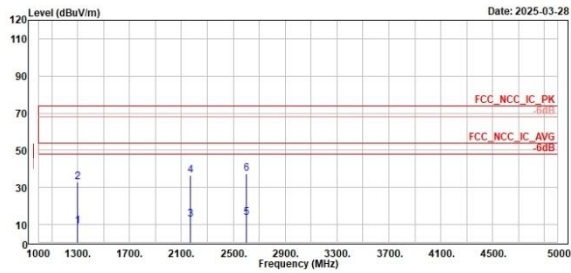
433.92 MHz

Horizontal

Vertical



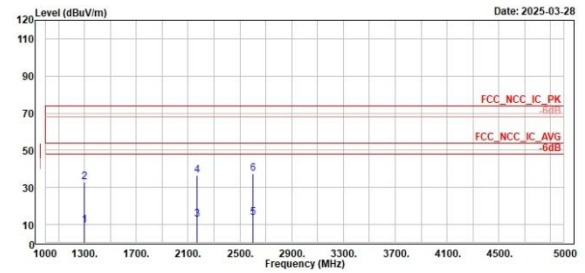
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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	1301.76	9.35	26.69	-17.34	54.00	-44.65	200	165	Average	Horizontal	CF	
2	1301.76	32.96	50.30	-17.34	74.00	-41.04	200	165	Peak	Horizontal	CF	
3	2169.60	12.74	26.05	-13.31	54.00	-41.26	300	258	Average	Horizontal	CF	
4	2169.60	36.35	49.66	-13.31	74.00	-37.65	300	258	Peak	Horizontal	CF	
5	2603.52	13.75	25.78	-12.03	54.00	-40.25	300	223	Average	Horizontal	CF	
6	2603.52	37.36	49.39	-12.03	74.00	-36.64	300	223	Peak	Horizontal	CF	



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	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	1301.76	9.37	26.71	-17.34	54.00	-44.63	300	213	Average	Vertical	CF	
2	1301.76	32.98	50.32	-17.34	74.00	-41.02	300	213	Peak	Vertical	CF	
3	2169.60	12.83	26.14	-13.31	54.00	-41.17	400	285	Average	Vertical	CF	
4	2169.60	36.44	49.75	-13.31	74.00	-37.56	400	285	Peak	Vertical	CF	
5	2603.52	13.72	25.75	-12.03	54.00	-40.28	199	360	Average	Vertical	CF	
6	2603.52	37.33	49.36	-12.03	74.00	-36.67	199	360	Peak	Vertical	CF	

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

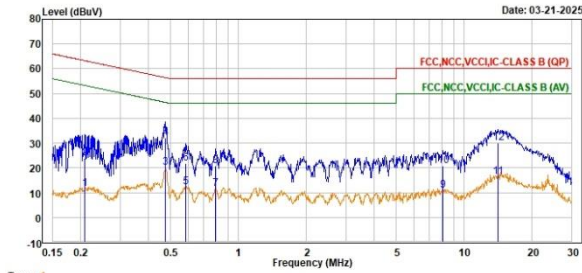
Worst Band

(Line)

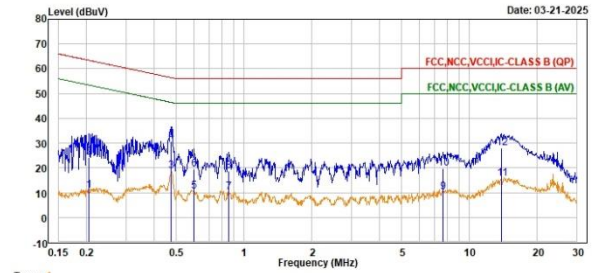
(Neutral)



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2nd Source, ANT 5 (-1.8 dBi)
Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

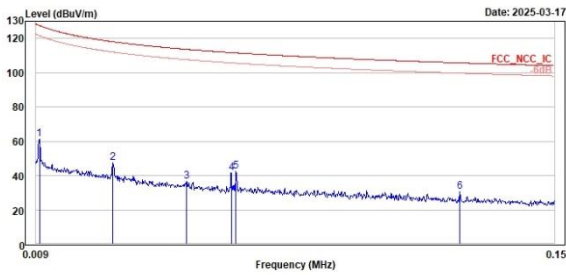
433.92 MHz

9kHz~150kHz(Open)

150kHz~30MHz(Open)



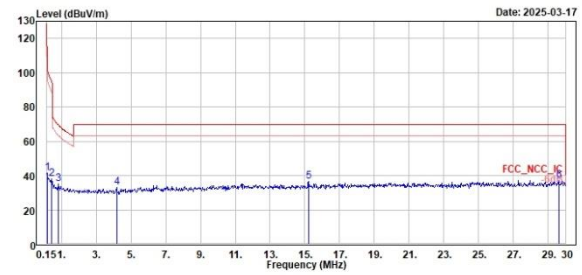
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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.01	61.25	43.14	18.11	127.60	-66.35	100	196	Peak	Open	
2	0.03	47.28	27.27	20.01	118.05	-70.77	100	196	Peak	Open	
3	0.05	36.35	17.33	19.02	113.61	-77.26	100	83	Peak	Open	
4	0.06	41.70	23.65	18.05	111.72	-78.02	100	183	Peak	Open	
5	0.06	42.48	24.35	18.13	111.55	-69.07	100	55	Peak	Open	
6	0.12	30.57	12.39	18.18	105.71	-75.14	100	129	Peak	Open	



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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.18	41.41	22.89	18.52	102.50	-61.09	100	171	Peak	Open	
2	0.45	38.29	19.59	18.70	94.57	-56.28	100	171	Peak	Open	
3	0.81	35.07	16.11	18.96	69.47	-34.40	100	115	Peak	Open	
4	4.18	33.31	13.86	19.45	69.50	-36.19	100	242	Peak	Open	
5	15.22	36.75	15.09	21.66	69.50	-32.75	100	338	Peak	Open	
6	29.61	36.98	13.73	23.25	69.50	-32.52	100	238	Peak	Open	

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

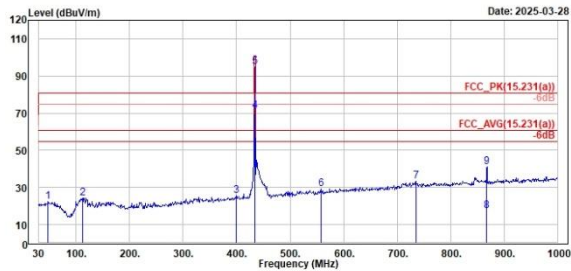
433.92 MHz

Horizontal

Vertical



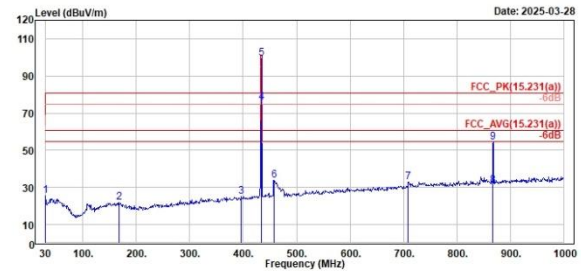
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Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	47.46	22.45	29.32	-6.87	80.83	-58.38	100	36	Peak	Horizontal	
2	111.48	24.28	34.98	-10.70	80.83	-56.55	400	55	Peak	Horizontal	
3	398.60	25.59	29.70	-4.11	80.83	-55.24	200	0	Peak	Horizontal	
4	433.92	71.08	74.41	-3.33	80.83	-9.75	200	172	Average	Horizontal	CF
5	433.92	94.69	98.02	-3.33	100.83	-6.14	200	172	Peak	Horizontal	
6	557.68	29.14	30.19	-1.05	80.83	-51.69	400	111	Peak	Horizontal	
7	735.19	33.10	30.62	2.28	80.83	-47.73	400	360	Peak	Horizontal	
8	867.84	17.33	13.10	4.23	60.83	-43.50	100	200	Average	Horizontal	CF
9	867.84	40.94	36.71	4.23	80.83	-39.89	100	200	Peak	Horizontal	



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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	38.00	25.58	34.15	-8.57	69.50	-43.92	100	171	Peak	Vertical	
2	167.74	21.69	28.55	-6.86	80.83	-59.14	200	90	Peak	Vertical	
3	396.66	24.90	29.06	-4.16	80.83	-55.93	300	40	Peak	Vertical	
4	433.92	75.83	79.16	-3.33	80.83	-5.00	100	348	Average	Vertical	CF
5	433.92	99.44	102.77	-3.33	100.83	-1.39	100	348	Peak	Vertical	
6	457.77	33.95	36.82	-2.87	80.83	-46.88	100	246	Peak	Vertical	
7	709.00	32.94	31.17	1.77	80.83	-47.69	400	223	Peak	Vertical	
8	867.84	30.89	26.66	4.23	60.83	-29.94	100	85	Average	Vertical	CF
9	867.84	54.50	50.27	4.23	80.83	-26.33	100	85	Peak	Vertical	

Spurious Emissions, Tx Mode, 1GHz ~ 5GHz

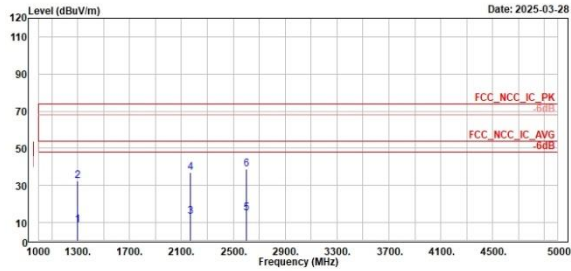
433.92 MHz

Horizontal

Vertical



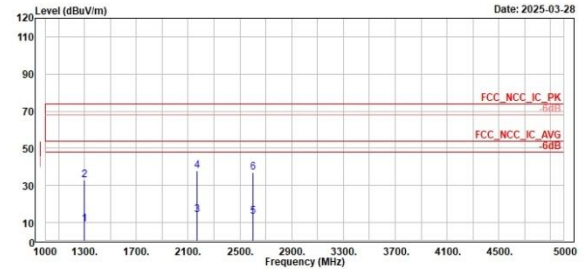
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Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	1301.76	8.64	26.18	-17.34	54.00	-45.16	201	0	Average	Horizontal	CF
2	1301.76	32.45	49.79	-17.34	74.00	-41.55	201	0	Peak	Horizontal	CF
3	2169.60	13.14	26.45	-13.31	54.00	-40.86	300	360	Average	Horizontal	CF
4	2169.60	36.75	50.06	-13.31	74.00	-37.25	300	360	Peak	Horizontal	CF
5	2603.52	15.28	27.31	-12.03	54.00	-38.72	300	351	Average	Horizontal	CF
6	2603.52	38.89	50.92	-12.03	74.00	-35.11	300	351	Peak	Horizontal	CF



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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	1301.76	9.24	26.58	-17.34	54.00	-44.76	100	309	Average	Vertical	CF
2	1301.76	32.05	50.19	-17.34	74.00	-41.15	100	309	Peak	Vertical	CF
3	2169.60	14.09	27.40	-13.31	54.00	-39.91	100	360	Average	Vertical	CF
4	2169.60	37.70	51.01	-13.31	74.00	-36.30	100	360	Peak	Vertical	CF
5	2603.52	13.36	25.39	-12.03	54.00	-40.64	163	360	Average	Vertical	CF
6	2603.52	36.97	49.00	-12.03	74.00	-37.03	163	360	Peak	Vertical	CF

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

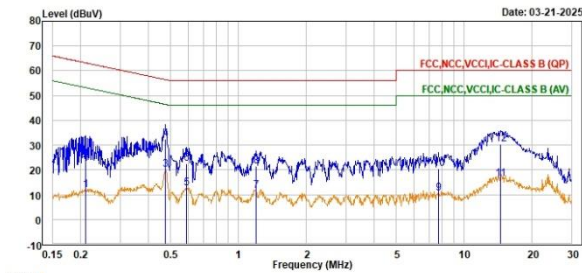
Worst Band

(Line)

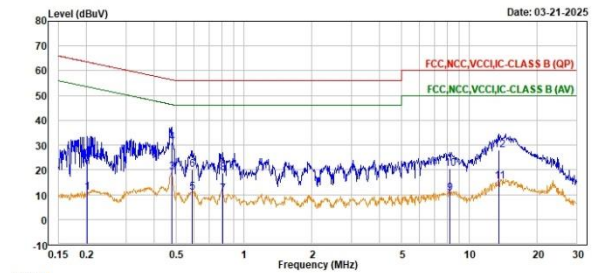
(Neutral)



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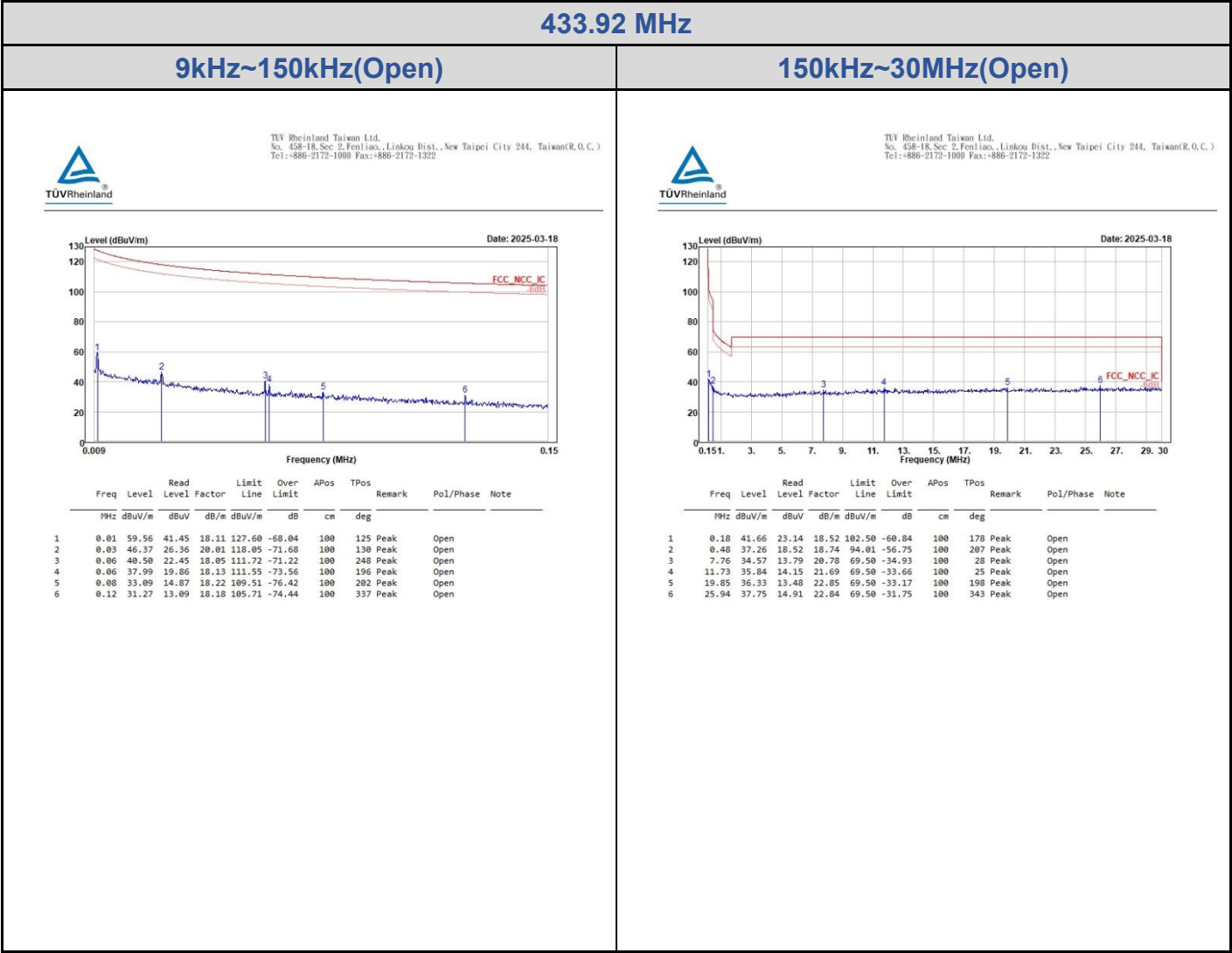


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Appendix B: Test Results of Radiated Spurious Emissions and Mains
Conducted Emission for UFL Antenna_FSK

Main Source, ANT 1 (-1.57 dBi)
Spurious Emissions, Tx Mode, 9kHz ~ 30MHz



Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

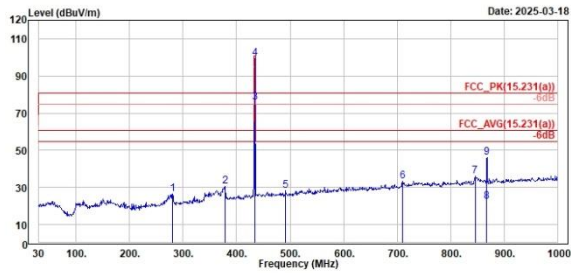
433.92 MHz

Horizontal

Vertical



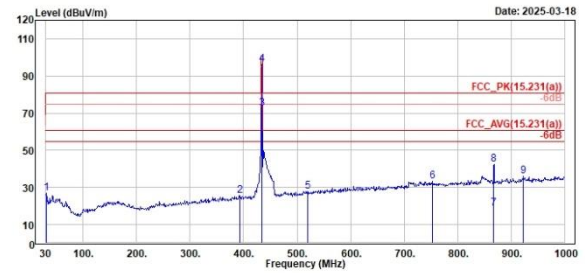
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	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	280.26	26.27	33.10	-6.83	80.83	-54.56	100	248 Peak	Horizontal	
2	378.23	30.59	35.16	-4.57	80.83	-50.24	100	308 Peak	Horizontal	
3	433.92	75.80	79.27	-3.47	80.83	-5.03	100	236 Average	Horizontal	CF
4	433.92	99.40	102.89	-3.49	100.83	-1.43	100	236 Peak	Horizontal	
5	491.72	28.23	30.93	-2.70	80.83	-52.60	200	134 Peak	Horizontal	
6	709.97	33.38	31.40	1.98	80.83	-47.45	269	0 Peak	Horizontal	
7	845.77	36.00	32.07	4.01	80.83	-44.75	300	328 Peak	Horizontal	
8	867.84	22.38	18.41	3.97	80.83	-38.45	300	51 Average	Horizontal	CF
9	867.84	45.99	42.02	3.97	80.83	-34.84	300	51 Peak	Horizontal	



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	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	31.94	27.13	35.68	-8.55	80.83	-53.70	100	345 Peak	Vertical	
2	392.70	25.64	29.85	-4.21	80.83	-55.19	400	308 Peak	Vertical	CF
3	433.92	72.59	76.06	-3.47	80.83	-8.24	200	170 Average	Vertical	CF
4	433.92	96.19	99.68	-3.49	100.83	-4.64	200	170 Peak	Vertical	
5	519.85	28.03	29.78	-1.75	80.83	-52.80	100	51 Peak	Vertical	
6	753.62	33.30	30.38	2.92	80.83	-47.53	200	221 Peak	Vertical	CF
7	867.87	10.82	14.84	3.98	80.83	-42.01	200	181 Average	Vertical	
8	867.87	42.43	38.45	3.98	80.83	-38.40	200	181 Peak	Vertical	
9	923.37	36.14	31.03	5.11	80.83	-44.69	200	360 Peak	Vertical	

433.92 MHz

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

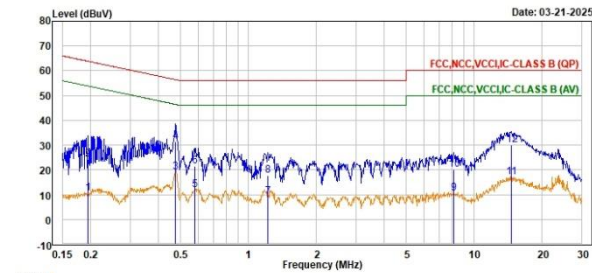
Worst Band

(Line)

(Neutral)



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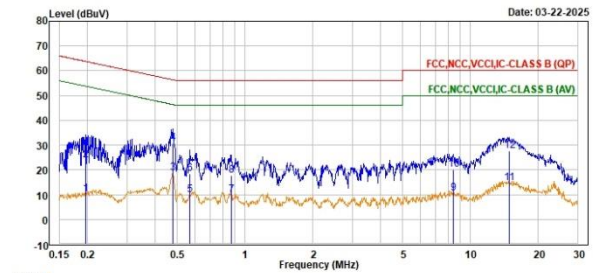


Trace: 1

	Freq	Level	Read	Limit	Over		
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase Note
	MHz	dBuV	dB	dB	dB		
1	0.19	10.61	0.98	9.63	53.89	-43.28 Average	line1
2	0.19	24.15	14.52	9.63	63.89	-39.74 QP	line1
3	0.47	19.13	9.50	9.63	46.48	-27.35 Average	line1
4	0.47	31.30	21.67	9.63	56.48	-25.18 QP	line1
5	0.58	11.78	2.15	9.63	46.00	-34.22 Average	line1
6	0.58	21.44	11.81	9.63	56.00	-34.56 QP	line1
7	1.22	9.08	-0.56	9.64	46.00	-36.92 Average	line1
8	1.22	17.06	8.22	9.64	56.00	-38.14 QP	line1
9	8.13	10.37	0.64	9.73	50.00	-39.63 Average	line1
10	8.13	20.08	10.35	9.73	60.00	-39.92 QP	line1
11	14.64	17.13	7.38	9.75	50.00	-32.87 Average	line1
12	14.64	29.91	20.16	9.75	60.00	-30.09 QP	line1



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Trace: 1

	Freq	Level	Read	Limit	Over		
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase Note
	MHz	dBuV	dB	dB	dB		
1	0.20	10.34	0.71	9.63	53.76	-43.42 Average	neutral
2	0.20	23.97	14.34	9.63	63.76	-39.79 QP	neutral
3	0.48	18.04	9.21	9.63	46.40	-27.56 Average	neutral
4	0.48	30.85	21.22	9.63	56.40	-25.55 QP	neutral
5	0.57	9.81	0.18	9.63	46.00	-36.19 Average	neutral
6	0.57	18.43	8.80	9.63	56.00	-37.57 QP	neutral
7	0.87	9.73	0.09	9.64	46.00	-36.27 Average	neutral
8	0.87	17.08	8.24	9.64	56.00	-38.12 QP	neutral
9	8.42	10.60	0.84	9.76	50.00	-39.40 Average	neutral
10	8.42	20.23	10.47	9.76	60.00	-39.77 QP	neutral
11	14.86	14.71	4.89	9.82	50.00	-35.29 Average	neutral
12	14.86	27.64	17.82	9.82	60.00	-32.36 QP	neutral

2nd Source, ANT 1 (-1.57 dBi)

Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

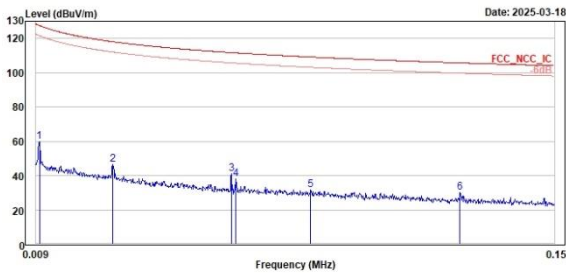
433.92 MHz

9kHz~150kHz(Open)

150kHz~30MHz(Open)



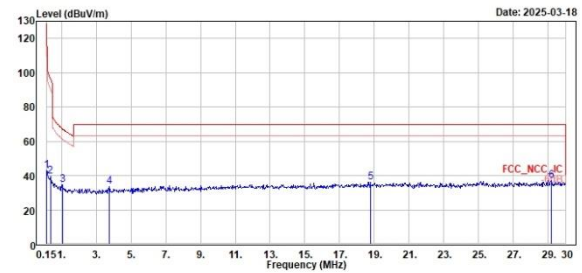
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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	0.01	59.59	41.48	18.11	127.60	-68.01	100	298	Peak	Open		
2	0.03	46.45	26.44	20.01	118.05	-71.60	100	298	Peak	Open		
3	0.06	40.98	22.93	18.05	111.72	-70.74	100	216	Peak	Open		
4	0.06	37.82	19.69	18.13	111.55	-73.73	100	336	Peak	Open		
5	0.08	31.48	13.33	18.15	109.14	-77.66	100	139	Peak	Open		
6	0.12	29.91	11.73	18.18	105.71	-75.80	100	181	Peak	Open		



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	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	0.15	42.96	24.62	18.34	104.88	-61.12	100	5	Peak	Open		
2	0.36	39.44	20.83	18.61	96.50	-57.06	100	200	Peak	Open		
3	1.05	34.51	15.72	18.79	67.22	-32.71	100	222	Peak	Open		
4	3.73	33.54	14.26	19.28	69.50	-35.96	100	269	Peak	Open		
5	18.78	36.26	13.54	22.72	69.50	-33.24	100	185	Peak	Open		
6	29.16	37.27	14.03	23.24	69.50	-32.23	100	165	Peak	Open		

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

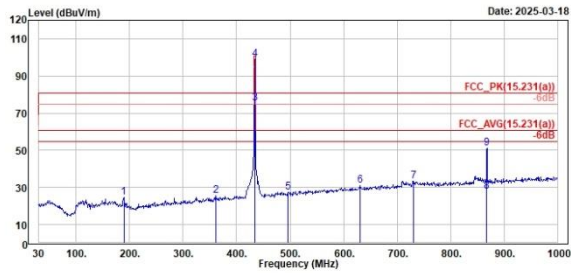
433.92 MHz

Horizontal

Vertical



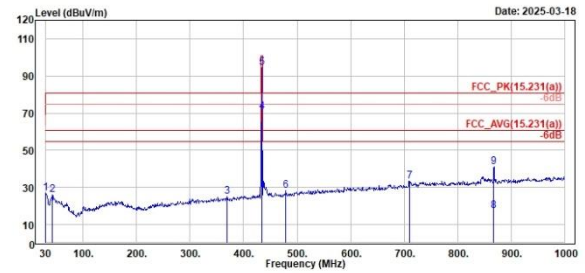
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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	189.08	24.71	33.57	-8.86	80.83	-56.12		200		296 Peak	Horizontal	
2	360.77	25.63	30.63	-5.00	80.83	-55.20		100		156 Peak	Horizontal	CF
3	433.92	75.32	78.79	-3.47	80.83	-5.51		100		234 Average	Horizontal	CF
4	433.92	98.92	102.41	-3.49	100.83	-1.91		100		234 Peak	Horizontal	
5	495.60	27.60	30.30	-2.70	80.83	-53.23		200		290 Peak	Horizontal	
6	630.43	30.99	30.59	0.40	80.83	-49.84		300		0 Peak	Horizontal	
7	731.31	33.47	31.45	2.02	80.83	-47.36		400		239 Peak	Horizontal	
8	867.84	27.68	23.71	3.97	80.83	-33.15		100		234 Average	Horizontal	CF
9	867.84	51.29	47.32	3.97	80.83	-29.54		100		234 Peak	Horizontal	



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	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	38.00	26.95	35.62	-8.67	69.50	-42.55		100		102 Peak	Vertical	
2	42.61	26.04	33.43	-7.39	80.83	-54.79		100		102 Peak	Vertical	
3	369.50	25.00	29.76	-4.76	80.83	-55.83		144		360 Peak	Vertical	
4	433.92	70.75	74.22	-3.47	80.83	-10.08		100		285 Average	Vertical	CF
5	433.92	94.34	97.83	-3.49	100.83	-6.49		100		285 Peak	Vertical	
6	479.11	28.45	31.06	-2.61	80.83	-52.38		400		302 Peak	Vertical	
7	709.97	33.23	31.25	1.98	80.83	-47.60		100		184 Peak	Vertical	
8	867.84	17.46	13.49	3.97	80.83	-43.37		200		178 Average	Vertical	CF
9	867.84	41.07	37.10	3.97	80.83	-39.76		200		178 Peak	Vertical	

	Freq	Level	Read Level Factor	Limit Line	Over Limit	APOS	TPOS	Remark	Pol/Phase	Note
	Hz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1301.76	9.27	26.61 -17.34	54.00	-44.73	100	138	Average	Vertical	CF
2	1301.76	9.28	50.22 -17.34	54.00	-41.12	100	138	Peak	Vertical	
3	2169.60	14.51	27.82 -13.31	54.00	-39.49	400	182	Average	Vertical	CF
4	2169.60	18.12	51.43 -13.31	54.00	-35.88	400	182	Peak	Vertical	CF

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

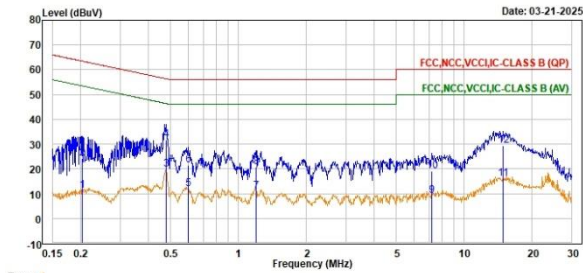
Worst Band

(Line)

(Neutral)



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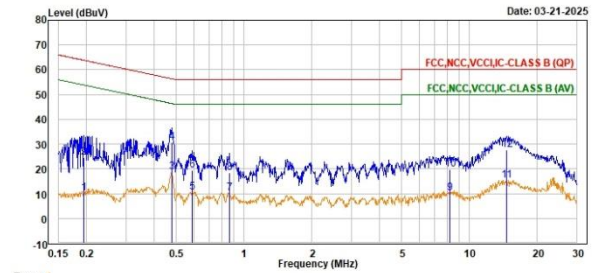


Trace: 1

	Freq	Level	Read	Factor	Limit	Over	Remark	Pol/Phase	Note
	MHz	dBuV	dBuV	dB	dBuV	dB			
1	0.20	11.16	1.53	9.63	53.52	-42.36	Average	line1	
2	0.20	24.05	14.42	9.63	63.52	-39.47	QP	line1	
3	0.40	19.90	10.27	9.63	46.40	-26.50	Average	line1	
4	0.40	31.76	22.13	9.63	56.40	-24.64	QP	line1	
5	0.60	11.98	2.35	9.63	46.00	-34.02	Average	line1	
6	0.60	21.51	11.88	9.63	56.00	-34.49	QP	line1	
7	1.20	11.03	1.39	9.64	46.00	-34.97	Average	line1	
8	1.20	20.66	11.02	9.64	56.00	-35.34	QP	line1	
9	7.18	9.28	-0.44	9.72	50.00	-40.72	Average	line1	
10	7.18	19.23	9.51	9.72	60.00	-40.77	QP	line1	
11	14.86	15.99	6.24	9.75	50.00	-34.01	Average	line1	
12	14.86	29.35	19.60	9.75	60.00	-30.65	QP	line1	



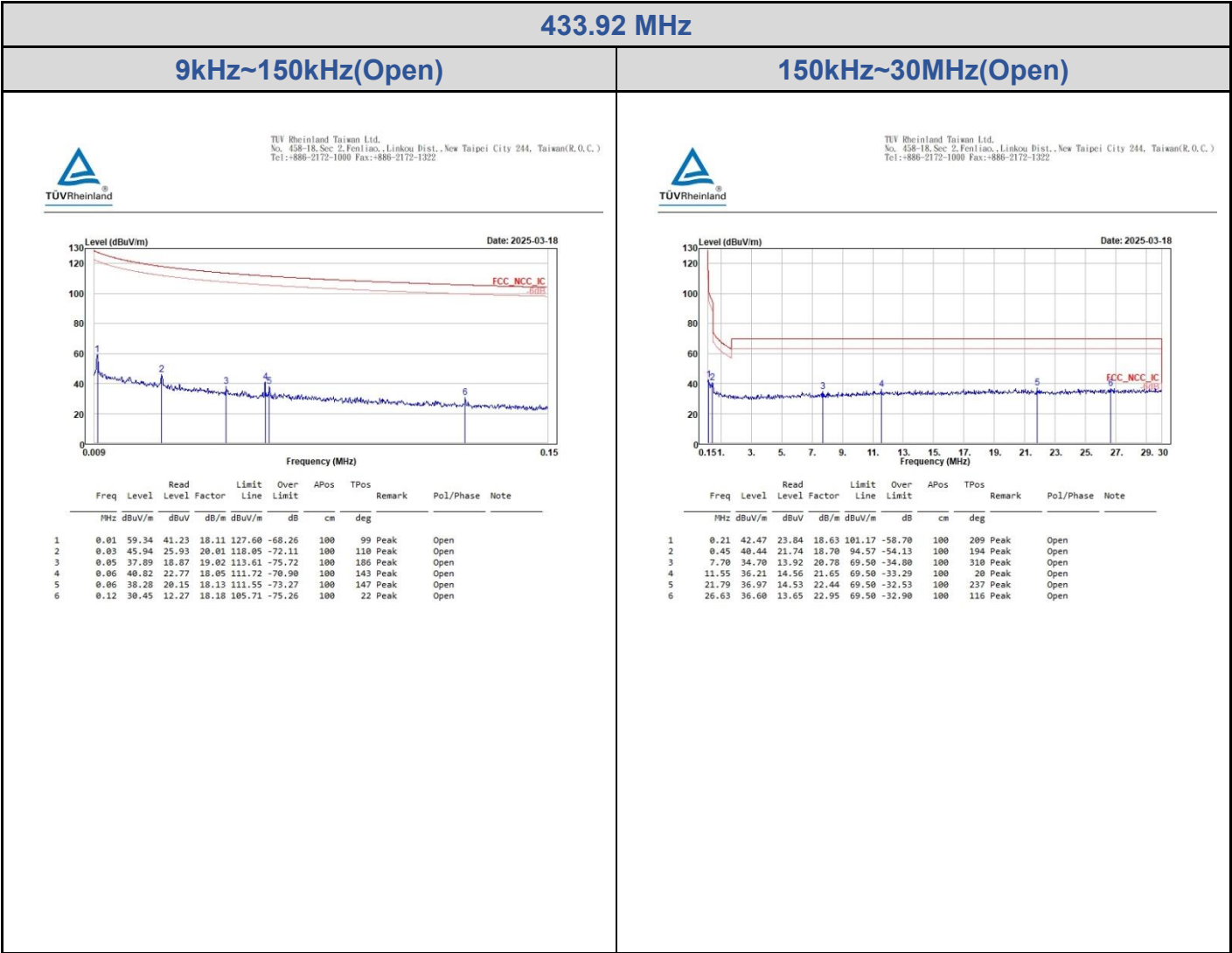
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Trace: 1

	Freq	Level	Read	Factor	Limit	Over	Remark	Pol/Phase	Note
	MHz	dBuV	dBuV	dB	dBuV	dB			
1	0.19	10.23	0.60	9.63	53.85	-43.62	Average	neutral	
2	0.19	24.40	14.77	9.63	63.85	-39.45	QP	neutral	
3	0.40	18.05	9.02	9.63	46.40	-27.75	Average	neutral	
4	0.40	30.58	20.95	9.63	56.40	-25.82	QP	neutral	
5	0.59	10.65	1.02	9.63	46.00	-35.35	Average	neutral	
6	0.59	19.59	9.96	9.63	56.00	-36.41	QP	neutral	
7	0.86	10.03	0.39	9.64	46.00	-35.97	Average	neutral	
8	0.86	18.46	8.82	9.64	56.00	-37.54	QP	neutral	
9	8.21	10.28	0.52	9.76	50.00	-39.72	Average	neutral	
10	8.21	19.73	9.97	9.76	60.00	-40.27	QP	neutral	
11	14.64	15.35	5.53	9.82	50.00	-34.65	Average	neutral	
12	14.64	27.71	17.89	9.82	60.00	-32.29	QP	neutral	

Main Source, ANT 2 (0.41dBi)
Spurious Emissions, Tx Mode, 9kHz ~ 30MHz



Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

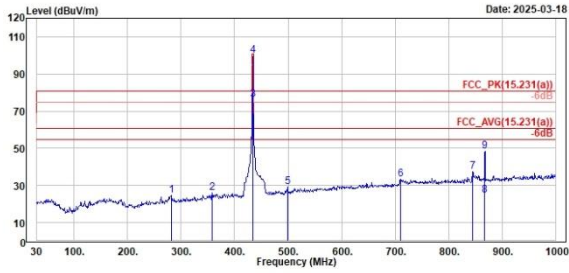
433.92 MHz

Horizontal

Vertical



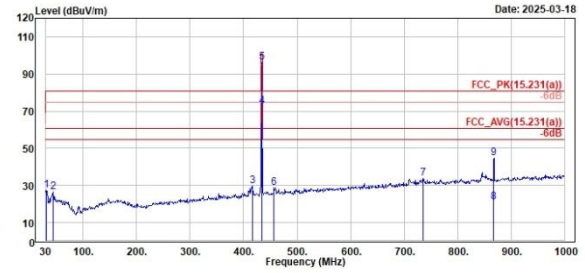
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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	281.23	24.78	31.57	-6.79	80.83	-56.05	100		247 Peak	Horizontal	
2	357.86	26.18	31.26	-5.08	80.83	-54.65	100		303 Peak	Horizontal	
3	433.92	76.11	79.58	-3.47	80.83	-4.72	100		128 Average	Horizontal	CF
4	433.92	99.72	103.19	-3.47	100.83	-1.11	100		128 Peak	Horizontal	
5	498.51	29.16	31.74	-2.58	80.83	-51.67	100		300 Peak	Horizontal	
6	789.97	33.40	31.42	1.98	80.83	-47.43	300		204 Peak	Horizontal	
7	844.00	37.21	33.22	3.99	80.83	-43.62	100		153 Peak	Horizontal	
8	867.84	24.71	28.74	3.97	80.83	-36.12	200		238 Average	Horizontal	CF
9	867.84	48.32	44.35	3.97	80.83	-32.51	200		238 Peak	Horizontal	



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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	31.94	27.39	35.94	-8.55	80.83	-53.44	100		71 Peak	Vertical	
2	44.55	26.55	33.88	-7.33	80.83	-54.28	100		71 Peak	Vertical	
3	416.06	29.48	33.35	-3.87	80.83	-51.35	400		360 Peak	Vertical	
4	433.92	72.75	76.22	-3.47	80.83	-8.08	200		184 Average	Vertical	CF
5	433.92	96.36	99.83	-3.47	100.83	-4.47	200		184 Peak	Vertical	
6	456.00	28.85	31.85	-3.00	80.83	-51.98	300		53 Peak	Vertical	
7	735.19	33.83	31.64	2.19	80.83	-47.00	300		111 Peak	Vertical	
8	867.84	21.06	17.09	3.97	80.83	-39.77	200		170 Average	Vertical	CF
9	867.84	44.67	40.70	3.97	80.83	-36.16	200		170 Peak	Vertical	

Spurious Emissions, Tx Mode, 1GHz ~ 5GHz

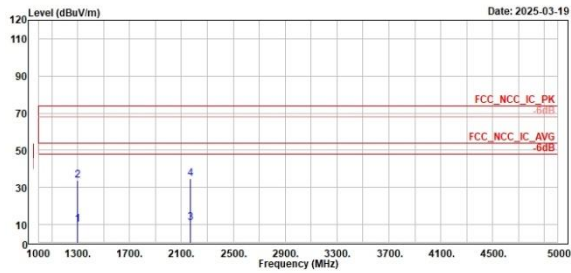
433.92 MHz

Horizontal

Vertical



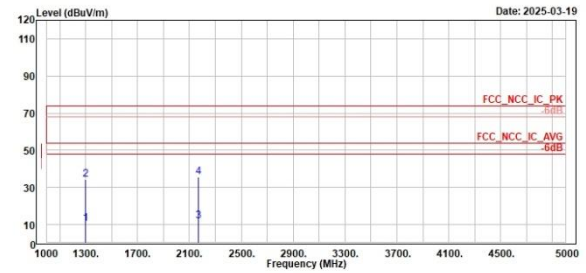
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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	1301.76	10.22	27.56	-17.34	54.00	-43.78		100	120	Average	Horizontal	CF
2	1301.76	33.83	51.17	-17.34	74.00	-40.17		100	120	Peak	Horizontal	CF
3	2169.60	10.89	24.20	-13.31	54.00	-43.11		400	167	Average	Horizontal	CF
4	2169.60	34.50	47.81	-13.31	74.00	-39.50		400	167	Peak	Horizontal	



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	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	1301.76	10.45	27.79	-17.34	54.00	-43.55		100	249	Average	Vertical	CF
2	1301.76	34.06	51.40	-17.34	74.00	-39.94		100	249	Peak	Vertical	
3	2169.60	12.04	25.35	-13.31	54.00	-41.96		200	13	Average	Vertical	CF
4	2169.60	35.65	48.96	-13.31	74.00	-38.35		200	13	Peak	Vertical	

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

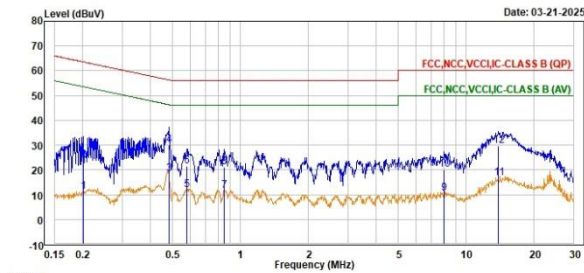
Worst Band

(Line)

(Neutral)



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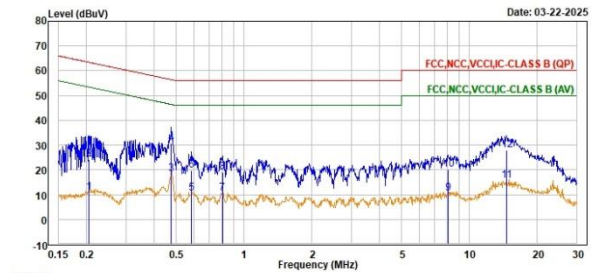


Trace: 1

	Freq	Level	Read	Limit	Over		
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase Note
	MHz	dBuV	dB	dBuV	dB		
1	0.20	11.20	1.57	9.63	53.56	-42.36 Average	line1
2	0.20	23.97	14.34	9.63	63.56	-39.59 QP	line1
3	0.40	18.40	8.05	9.63	46.31	-27.83 Average	line1
4	0.40	30.16	20.53	9.63	56.31	-26.15 QP	line1
5	0.58	11.79	2.16	9.63	46.00	-34.21 Average	line1
6	0.58	21.46	11.83	9.63	56.00	-34.54 QP	line1
7	0.85	11.59	1.95	9.64	46.00	-34.41 Average	line1
8	0.85	21.14	11.50	9.64	56.00	-34.86 QP	line1
9	8.01	10.42	0.69	9.73	50.00	-39.58 Average	line1
10	8.01	20.01	10.28	9.73	60.00	-39.99 QP	line1
11	13.92	16.72	6.97	9.75	50.00	-33.28 Average	line1
12	13.92	29.75	20.00	9.75	60.00	-30.25 QP	line1



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Trace: 1

	Freq	Level	Read	Limit	Over		
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase Note
	MHz	dBuV	dB	dBuV	dB		
1	0.20	10.91	1.28	9.63	53.43	-42.52 Average	neutral
2	0.20	24.10	14.47	9.63	63.43	-39.33 QP	neutral
3	0.47	18.55	8.92	9.63	46.44	-27.89 Average	neutral
4	0.47	30.68	21.05	9.63	56.44	-25.76 QP	neutral
5	0.58	10.64	1.01	9.63	46.00	-35.36 Average	neutral
6	0.58	19.68	10.05	9.63	56.00	-36.32 QP	neutral
7	0.80	10.42	0.78	9.64	46.00	-35.58 Average	neutral
8	0.80	18.90	9.34	9.64	56.00	-37.02 QP	neutral
9	8.05	10.57	0.81	9.76	50.00	-39.43 Average	neutral
10	8.05	20.02	10.26	9.76	60.00	-39.98 QP	neutral
11	14.64	15.53	5.71	9.82	50.00	-34.47 Average	neutral
12	14.64	27.89	18.07	9.82	60.00	-32.11 QP	neutral

2nd Source, ANT 2 (0.41dBi)
Spurious Emissions, Tx Mode, 9kHz ~ 30MHz



Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

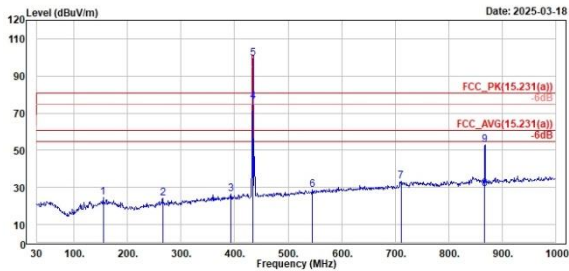
433.92 MHz

Horizontal

Vertical



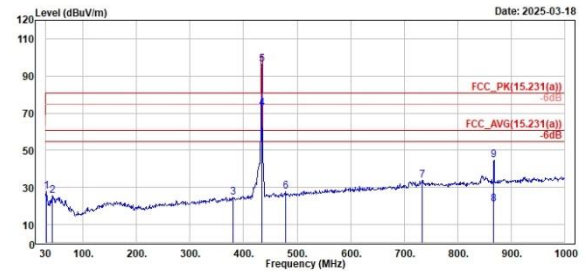
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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	154.16	24.55	31.42	-6.87	80.83	-56.28	300	182	Peak	Horizontal	
2	265.71	24.05	31.45	-7.40	80.83	-56.78	300	232	Peak	Horizontal	
3	392.78	26.61	30.82	-4.21	80.83	-54.22	400	341	Peak	Horizontal	
4	433.92	76.07	79.54	-3.47	80.83	-4.76	200	80	Average	Horizontal	CF
5	433.92	99.66	103.15	-3.49	100.83	-1.17	200	80	Peak	Horizontal	
6	545.07	28.55	29.90	-1.35	80.83	-52.28	300	299	Peak	Horizontal	
7	710.94	33.33	31.34	1.99	80.83	-47.50	126	360	Peak	Horizontal	
8	867.84	29.34	25.37	3.97	60.83	-31.49	100	224	Average	Horizontal	CF
9	867.84	52.95	48.98	3.97	80.83	-27.88	100	224	Peak	Horizontal	



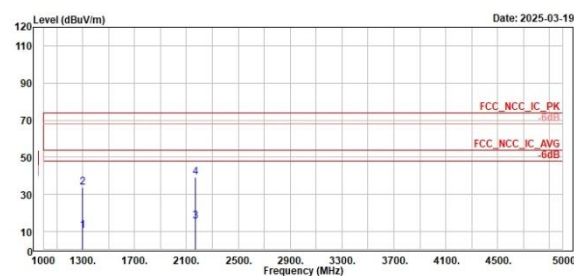
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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	31.94	27.88	36.43	-8.55	80.83	-52.95	100	184	Peak	Vertical	
2	42.61	25.61	33.00	-7.39	80.83	-55.22	100	184	Peak	Vertical	
3	380.17	24.60	29.16	-4.56	80.83	-56.23	300	46	Peak	Vertical	
4	433.92	72.70	76.17	-3.47	80.83	-8.13	200	155	Average	Vertical	CF
5	433.92	96.29	99.78	-3.49	100.83	-4.54	200	155	Peak	Vertical	
6	479.11	27.71	30.32	-2.61	80.83	-53.12	333	360	Peak	Vertical	
7	734.22	33.77	31.63	2.14	80.83	-47.06	300	324	Peak	Vertical	
8	867.84	21.01	17.04	3.97	60.83	-39.82	200	187	Average	Vertical	CF
9	867.84	44.62	40.65	3.97	80.83	-36.21	200	187	Peak	Vertical	

433.92 MHz

Vertical



	Freq	Level	Read Level	Limit Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	1301.76	10.36	27.70	-17.34	54.00	-43.64	300	138	Average	Vertical	CF
2	1301.76	39.37	51.11	-17.34	74.00	-40.03	300	138	Peak	Vertical	
3	2169.60	15.72	29.00	-13.31	54.00	-40.00	300	181	Average	Vertical	CF
4	2169.60	33.93	52.64	-13.31	74.00	-34.67	300	181	Peak	Vertical	

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

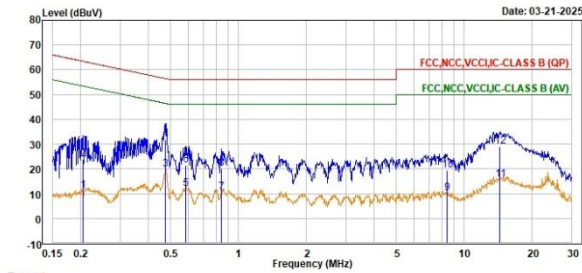
Worst Band

(Line)

(Neutral)



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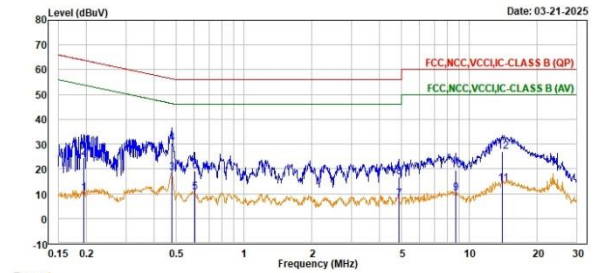


Trace: 1

	Freq	Level	Read	Factor	Limit	Over	Remark	Pol/Phase	Note
	MHz	dBuV	dBuV	dB	dBuV	dB			
1	0.21	11.25	1.62	9.63	53.39	-42.14	Average	line1	
2	0.21	23.83	14.20	9.63	63.39	-39.56	QP	line1	
3	0.47	19.71	10.00	9.63	46.44	-26.73	Average	line1	
4	0.47	31.67	22.04	9.63	56.44	-24.77	QP	line1	
5	0.58	11.98	2.35	9.63	46.00	-34.02	Average	line1	
6	0.58	21.48	11.85	9.63	56.00	-34.52	QP	line1	
7	0.84	10.60	0.96	9.64	46.00	-35.40	Average	line1	
8	0.84	20.67	10.43	9.64	56.00	-35.93	QP	line1	
9	8.42	10.15	0.42	9.73	50.00	-39.85	Average	line1	
10	8.42	19.56	9.83	9.73	60.00	-40.44	QP	line1	
11	14.42	15.74	5.99	9.75	50.00	-34.26	Average	line1	
12	14.42	29.10	19.35	9.75	60.00	-30.90	QP	line1	



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Trace: 1

	Freq	Level	Read	Factor	Limit	Over	Remark	Pol/Phase	Note
	MHz	dBuV	dBuV	dB	dBuV	dB			
1	0.19	10.26	0.63	9.63	53.89	-43.63	Average	neutral	
2	0.19	24.65	15.02	9.63	63.89	-39.24	QP	neutral	
3	0.48	18.57	8.94	9.63	46.40	-27.83	Average	neutral	
4	0.48	30.50	20.87	9.63	56.40	-25.50	QP	neutral	
5	0.60	10.39	0.76	9.63	46.00	-35.61	Average	neutral	
6	0.60	19.00	9.37	9.63	56.00	-37.00	QP	neutral	
7	4.86	7.93	-1.78	9.71	46.00	-38.07	Average	neutral	
8	4.86	16.72	7.01	9.71	56.00	-39.28	QP	neutral	
9	8.72	10.04	0.28	9.76	50.00	-39.56	Average	neutral	
10	8.72	19.37	9.61	9.76	60.00	-40.63	QP	neutral	
11	14.06	14.08	4.26	9.82	50.00	-35.92	Average	neutral	
12	14.06	27.02	17.20	9.82	60.00	-32.98	QP	neutral	

Main Source, ANT 4 (1.29 dBi)
Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

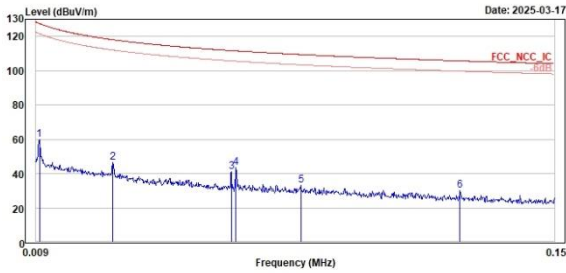
433.92 MHz

9kHz~150kHz(Open)

150kHz~30MHz(Open)



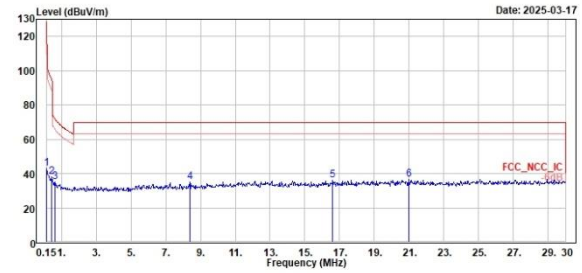
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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	0.01	59.71	41.60	18.11	127.60	-67.89		100	233	Peak	Open	
2	0.03	46.52	26.51	20.01	118.05	-71.53		100	312	Peak	Open	
3	0.06	40.97	22.92	18.05	111.72	-70.75		100	28	Peak	Open	
4	0.06	43.58	25.45	18.13	111.55	-67.97		100	312	Peak	Open	
5	0.08	33.13	14.93	18.20	109.42	-76.29		100	188	Peak	Open	
6	0.12	30.18	12.00	18.18	105.71	-75.53		100	185	Peak	Open	



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	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	0.15	43.02	24.68	18.34	104.80	-61.06		100	360	Peak	Open	
2	0.45	30.28	19.58	18.70	94.57	-56.29		100	166	Peak	Open	
3	0.63	35.19	16.43	18.76	71.65	-36.46		100	274	Peak	Open	
4	8.39	35.22	14.43	20.79	69.50	-34.28		100	159	Peak	Open	
5	16.60	36.30	14.15	22.15	69.50	-33.20		100	106	Peak	Open	
6	20.99	36.57	13.90	22.67	69.50	-32.93		100	316	Peak	Open	

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

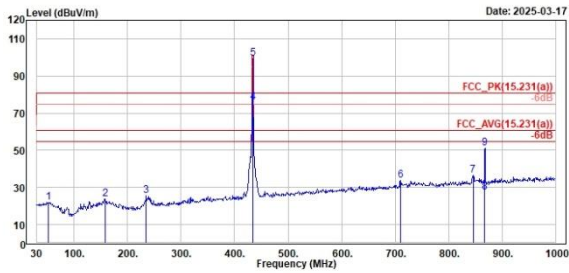
433.92 MHz

Horizontal

Vertical



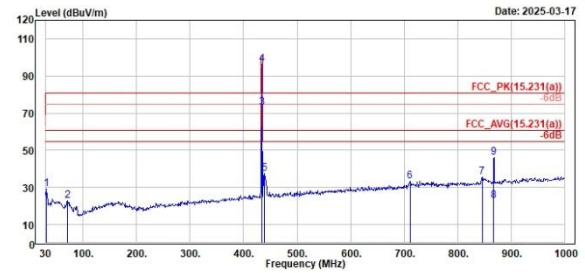
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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	52.31	22.10	29.01	-6.91	80.83	-58.73	100		128 Peak	Horizontal	
2	158.04	23.73	30.48	-6.75	80.83	-57.10	400		276 Peak	Horizontal	
3	234.67	25.47	33.44	-7.97	80.83	-55.36	100		172 Peak	Horizontal	
4	433.92	75.69	79.16	-3.47	80.83	-5.14	100		360 Average	Horizontal	CF
5	433.92	99.30	102.77	-3.47	100.83	-1.53	100		360 Peak	Horizontal	
6	709.97	33.56	31.58	1.98	80.83	-47.27	100		201 Peak	Horizontal	
7	845.77	36.29	32.28	4.01	80.83	-44.54	220		8 Peak	Horizontal	
8	867.84	27.48	23.51	3.97	80.83	-33.35	100		181 Average	Horizontal	CF
9	867.84	51.09	47.12	3.97	80.83	-29.74	100		181 Peak	Horizontal	



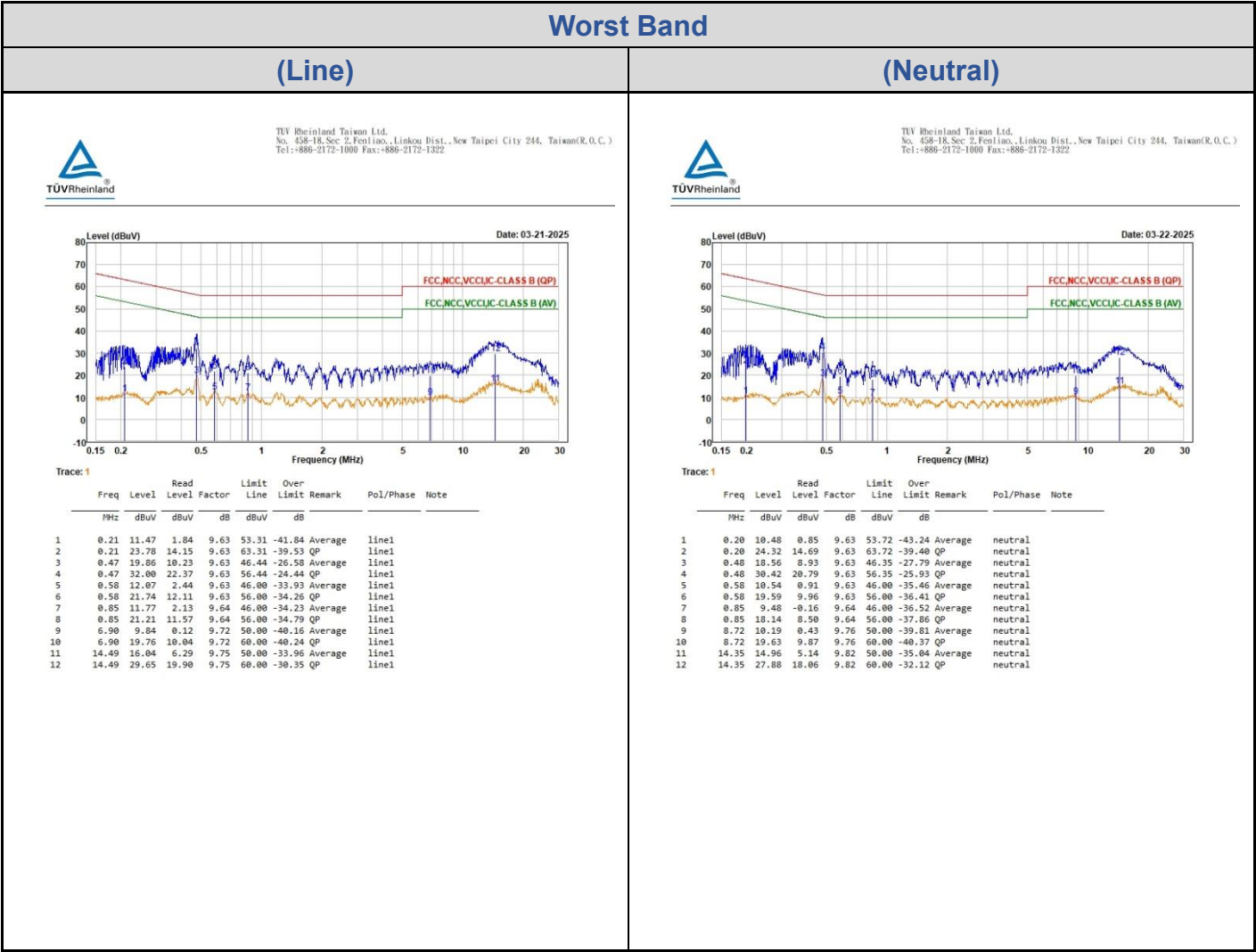
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	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	31.94	29.42	37.97	-8.55	80.83	-51.41	100		166 Peak	Vertical	
2	70.74	22.67	32.76	-9.89	80.83	-57.96	100		46 Peak	Vertical	
3	433.92	72.79	76.26	-3.47	80.83	-8.04	116		360 Average	Vertical	CF
4	433.92	96.40	99.87	-3.47	100.83	-4.43	116		360 Peak	Vertical	
5	439.34	37.30	40.57	-3.27	80.83	-43.53	100		257 Peak	Vertical	
6	710.94	33.49	31.50	1.99	80.83	-47.34	400		112 Peak	Vertical	
7	845.77	35.45	31.44	4.01	80.83	-45.38	200		312 Peak	Vertical	
8	867.84	22.65	18.68	3.97	80.83	-38.18	110		360 Average	Vertical	CF
9	867.84	46.26	42.29	3.97	80.83	-34.57	110		360 Peak	Vertical	

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Apos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	1301.76	8.54	26.28	-17.34	54.00	-45.06	300	349	Average	Vertical	CF
2	1301.76	32.95	49.89	-17.34	74.00	-41.45	300	349	Peak	Vertical	
3	2169.60	11.56	25.27	-13.31	54.00	-42.04	232	0	Average	Vertical	CF
4	2169.60	35.97	48.88	-13.31	74.00	-38.43	232	0	Peak	Vertical	

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



2nd Source, ANT 4 (1.29 dBi)

Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

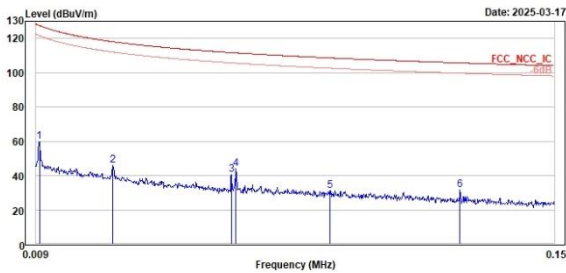
433.92 MHz

9kHz~150kHz(Open)

150kHz~30MHz(Open)



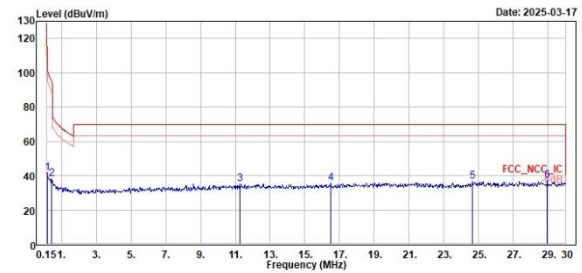
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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	0.01	60.02	41.91	18.11	127.60	-67.58	100	107	Peak	Open		
2	0.03	45.96	25.95	20.01	118.05	-72.09	100	113	Peak	Open		
3	0.06	40.74	22.69	18.05	111.72	-70.98	100	106	Peak	Open		
4	0.06	44.02	25.89	18.13	111.55	-67.53	100	324	Peak	Open		
5	0.09	31.20	13.16	18.04	106.61	-77.41	100	210	Peak	Open		
6	0.12	31.56	13.38	18.18	105.71	-74.15	100	149	Peak	Open		



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	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	0.18	41.69	23.17	18.52	102.50	-60.81	100	142	Peak	Open		
2	0.45	38.13	19.43	18.70	94.57	-56.44	100	154	Peak	Open		
3	11.25	35.28	13.69	21.59	69.50	-34.22	100	104	Peak	Open		
4	16.48	35.68	13.58	22.10	69.50	-33.82	100	209	Peak	Open		
5	24.66	36.36	13.40	22.96	69.50	-33.14	100	147	Peak	Open		
6	28.96	36.95	13.72	23.23	69.50	-32.55	100	112	Peak	Open		

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

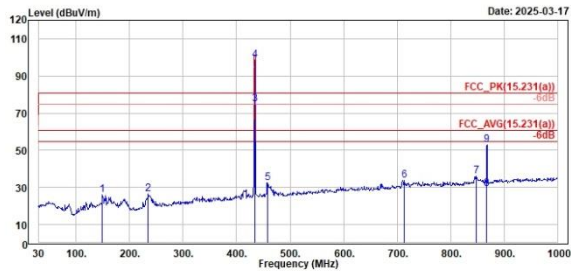
433.92 MHz

Horizontal

Vertical



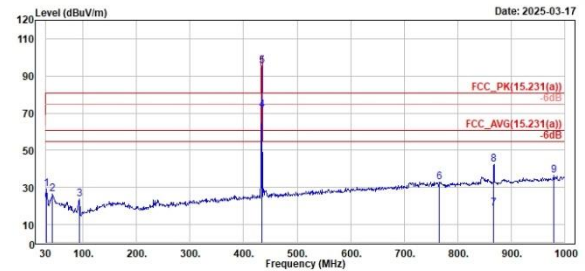
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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	149.31	26.07	33.11	-7.04	80.83	-54.76	200			72 Peak	Horizontal	
2	234.07	26.58	34.55	-7.97	80.83	-54.25	100			210 Peak	Horizontal	
3	433.92	74.75	78.22	-3.47	80.83	-6.08	200			178 Average	Horizontal	CF
4	433.92	98.35	101.84	-3.49	100.83	-2.48	200			178 Peak	Horizontal	
5	457.77	32.42	35.45	-3.03	80.83	-48.41	300			360 Peak	Horizontal	
6	713.85	33.89	31.89	2.00	80.83	-46.94	400			137 Peak	Horizontal	
7	847.71	36.13	32.07	4.06	80.83	-44.70	125			360 Peak	Horizontal	
8	867.84	29.20	25.23	3.97	80.83	-31.63	200			167 Average	Horizontal	CF
9	867.84	52.81	48.84	3.97	80.83	-28.02	200			167 Peak	Horizontal	



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	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	31.94	29.41	37.96	-8.55	80.83	-51.42	100			39 Peak	Vertical	
2	42.61	26.63	34.02	-7.39	80.83	-54.20	100			258 Peak	Vertical	
3	93.05	23.52	36.69	-13.17	80.83	-57.31	400			90 Peak	Vertical	
4	433.92	71.62	75.09	-3.47	80.83	-9.21	200			219 Average	Vertical	CF
5	433.92	95.21	98.70	-3.49	100.83	-5.62	200			219 Peak	Vertical	
6	765.23	32.84	29.69	3.15	80.83	-47.99	100			308 Peak	Vertical	
7	867.84	18.63	14.66	3.97	80.83	-42.20	200			107 Average	Vertical	CF
8	867.84	42.24	38.27	3.97	80.83	-38.59	200			107 Peak	Vertical	
9	979.63	36.29	30.60	5.69	80.83	-44.54	400			160 Peak	Vertical	

Spurious Emissions, Tx Mode, 1GHz ~ 5GHz

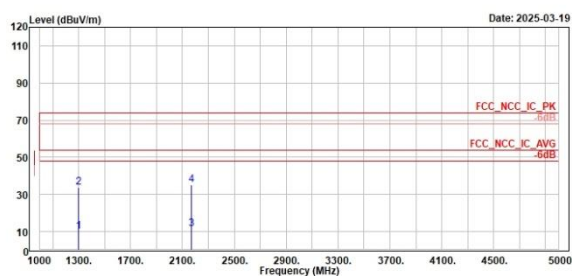
433.92 MHz

Horizontal

Vertical



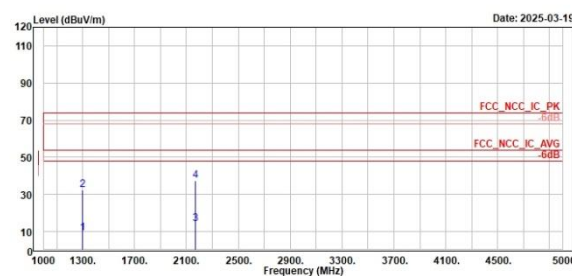
TUV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Read Level	Limit	Over	AFOS	TPOS	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dB	cm	deg		
1	1301.76	9.96	27.30	-17.34	54.00	-44.04	300	236 Average	Horizontal CF
2	1301.76	33.57	50.91	-17.34	74.00	-40.43	300	236 Peak	Horizontal
3	2169.60	11.95	28.00	-13.31	70.00	-42.45	400	240 Average	Horizontal CF
4	2169.60	35.56	48.37	-13.31	74.00	-38.84	400	240 Peak	Horizontal



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	Freq	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	Factor	Line	Limit				
		dBuV	dB	dBuV/m	dB	cm	deg		
1	1301.76	8.92	26.26	-17.34	54.00	-45.08	400	290 Average	Vertical CF
2	1301.76	32.53	49.87	-17.34	74.00	-41.47	400	290 Peak	Vertical
3	2169.60	14.00	21.31	-13.31	54.00	-45.08	400	183 Average	Vertical CF
4	2169.60	37.61	50.92	-13.31	74.00	-36.39	300	183 Peak	Vertical

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

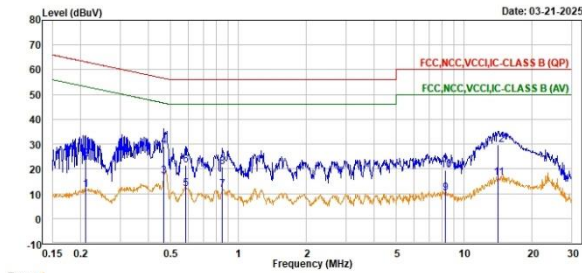
Worst Band

(Line)

(Neutral)



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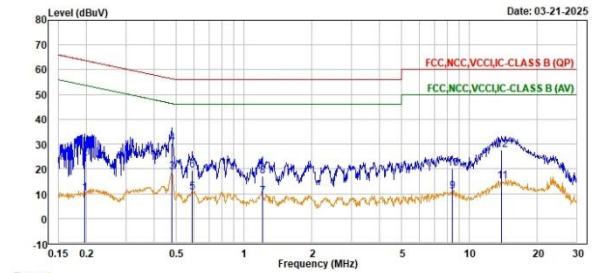


Trace: 1

	Freq	Level	Read	Factor	Limit	Over	Remark	Pol/Phase	Note
	MHz	dBuV	dBuV	dB	dBuV	dB			
1	0.21	11.65	2.02	9.63	53.23	-41.58	Average	line1	
2	0.21	23.74	14.11	9.63	63.23	-39.49	QP	line1	
3	0.47	16.89	7.26	9.63	46.56	-29.67	Average	line1	
4	0.47	28.86	19.23	9.63	56.56	-27.70	QP	line1	
5	0.58	12.05	2.42	9.63	46.00	-33.95	Average	line1	
6	0.58	21.63	12.00	9.63	56.00	-34.37	QP	line1	
7	0.85	11.47	1.83	9.64	46.00	-34.53	Average	line1	
8	0.85	20.92	11.28	9.64	56.00	-35.00	QP	line1	
9	8.25	10.03	0.30	9.73	50.00	-39.97	Average	line1	
10	8.25	19.49	9.76	9.73	60.00	-40.51	QP	line1	
11	14.20	16.35	6.60	9.75	50.00	-33.65	Average	line1	
12	14.20	29.58	19.83	9.75	60.00	-30.42	QP	line1	



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Trace: 1

	Freq	Level	Read	Factor	Limit	Over	Remark	Pol/Phase	Note
	MHz	dBuV	dBuV	dB	dBuV	dB			
1	0.20	10.32	0.69	9.63	53.76	-43.44	Average	neutral	
2	0.20	24.34	14.71	9.63	63.76	-39.42	QP	neutral	
3	0.48	18.63	9.00	9.63	46.40	-27.77	Average	neutral	
4	0.48	30.53	20.90	9.63	56.40	-25.87	QP	neutral	
5	0.59	10.69	1.06	9.63	46.00	-35.31	Average	neutral	
6	0.59	19.51	9.88	9.63	56.00	-36.49	QP	neutral	
7	1.20	8.83	-0.81	9.64	46.00	-37.17	Average	neutral	
8	1.20	16.93	7.29	9.64	56.00	-39.07	QP	neutral	
9	8.42	10.71	0.95	9.76	50.00	-39.29	Average	neutral	
10	8.42	20.11	10.35	9.76	60.00	-39.89	QP	neutral	
11	13.92	14.95	5.13	9.82	50.00	-35.05	Average	neutral	
12	13.92	27.48	17.66	9.82	60.00	-32.52	QP	neutral	