

Prüfbericht-Nr.: <i>Test report no.:</i>	CN24SSE4 001	Auftrags-Nr.: <i>Order no.:</i>	48252100	Seite 1 von 25 Page 1 of 25										
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2024-09-10											
Auftraggeber: <i>Client:</i>	CUBTEK INC. Rm. 7, 6F., No. 38, Taiyuan St., Zhubei City, Hsinchu County, 30265, Taiwan													
Prüfgegenstand: <i>Test item:</i>	Middle-short range radar													
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	A001-029, A001-029XXX-XXX, A001-029XXX-XX (X = a-z, A-Z, 0-9 or blank) For the marketing purpose.													
Auftrags-Inhalt: <i>Order content:</i>	FCC Part 95 Test report													
Prüfgrundlage: <i>Test specification:</i>	FCC 47CFR Part 95 Subpart M													
Wareneingangsdatum: <i>Date of sample receipt:</i>	2024-01-16													
Prüfmuster-Nr.: <i>Test sample no:</i>	A003644536-003													
Prüfzeitraum: <i>Testing period:</i>	2024-09-20 - 2024-09-24													
Ort der Prüfung: <i>Place of testing:</i>	EMC/RF Taipei Testing Site													
Prüflaboratorium: <i>Testing laboratory:</i>	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>	2024-10-04	Ausstellungsdatum: <i>Issue date:</i>	2024-10-04											
Stellung / Position:	Senior Project Manager	Stellung / Position:	Senior Project Manager											
Sonstiges / Other:														
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>												
<table><tr><td>* Legende:</td><td>1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)</td><td>2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)</td><td>3 = befriedigend N/A = nicht anwendbar</td><td>4 = ausreichend N/T = nicht getestet</td></tr><tr><td>* Legend:</td><td>1 = very good P(ass) = passed a.m. test specification(s)</td><td>2 = good F(ail) = failed a.m. test specification(s)</td><td>3 = satisfactory N/A = not applicable</td><td>4 = sufficient N/T = not tested</td></tr></table>					* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend 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 N/A = not applicable	4 = sufficient N/T = not tested
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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>														

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.</p> <p>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p> |
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| 3 | <p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.</p> <p>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i></p> <p><i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p> |
| 4 | <p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p> |

TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	95.3367(a)(b)	Radiated Power	Pass
5.1.2	2.1049 95.3379(b)	Occupied Bandwidth	Pass
5.1.3	95.3379(a)	Radiated Emissions	Pass
5.1.4	2.1055 95.3379(b)	Frequency Stability	Pass

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

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APPENDIX A - TEST RESULT OF RADIATED EMISSIONS

APPENDIX SP - PHOTOGRAPHS TEST SETUP

APPENDIX EP - PHOTOGRAPHS OF EUT

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Test Report No.

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HISTORY OF THIS TEST REPORT

Revision	Description	Date Issued
R01	Original Release	2024-10-04

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 Radiated Emissions

Appendix SP - Photographs Test Setup

Appendix EP - Photographs of EUT

Applied Standard and Test Levels

Radio
FCC 47CFR Part 2
FCC 47CFR Part 95 Subpart M
ANSI C63.10-2013
ANSI C63.4-2014

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)	± 1.30 dB
Radiated Emission (200 MHz ~ 1 GHz)	± 1.30 dB
Radiated Emission (1 GHz ~ 18 GHz)	± 1.54 dB
Radiated Emission (18 GHz ~ 40 GHz)	± 2.52 dB
Radiated Emission (40 GHz ~ 231 GHz)	± 2.84 dB
Mains Conducted Emission	± 1.65 dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT is Middle-short range radar. It contains a 76-77GHz 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	Middle-short range radar
Type Identification	A001-029, A001-029XXX-XXX, A001-029XXX-XX (X = a-z, A-Z, 0-9 or blank) For the marketing purpose.
FCC ID	2AN3BA001-029

Technical Specification of EUT

Item	EUT information
Operating Frequency	76 ~ 77 GHz
Modulation	FMCW
Operation Voltage	12 Vdc
Maximum EIRP (dBm)	Average Power: 8.80 Peak Power: 27.36
Antenna Information	Microstrip with 12.65 dBi gain
Accessory Device	Refer to 4.3

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 power 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 sample is provided with test mode firmware which makes it possible to continuously transmitting and receiving when power on the device. It was used to enable the operation modes listed as below.

The samples were used as follows:

A003644536-003

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

EUT Configure Mode	Applicable To				Description
	Radiated Power (e.i.r.p.)	Occupied Bandwidth	Radiated Spurious Emissions	Frequency Stability	
-	√	√	√	√	-

Note:

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

Radiated Power (e.i.r.p.)

- ☒ 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 (GHz)	Tested Frequency (GHz)
-	76 ~ 77	76.45

Occupied 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 (GHz)	Tested Frequency (GHz)
-	76 ~ 77	76.45

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 (GHz)	Tested Frequency (GHz)
-	76 ~ 77	76.45

Frequency Stability

- ☒ 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 (GHz)	Tested Frequency (GHz)
-	76 ~ 77	76.45

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Radiated Power (e.i.r.p.)	22.5-24.7 °C	56-59 %	Peter Chiou
Occupied Bandwidth	22.5-24.7 °C	56-59 %	Peter Chiou
Radiated Spurious Emissions	22.5-24.7 °C	56-59 %	Peter Chiou
Frequency Stability	22.5-24.7 °C	56-59 %	Peter Chiou

4.3 Special Accessories and Auxiliary Equipment

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

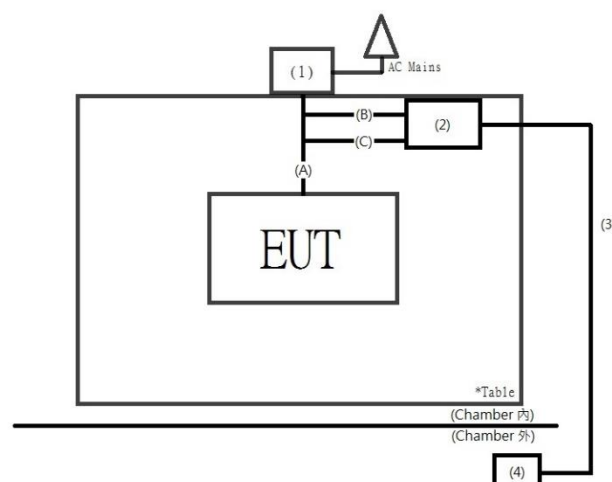
Accessory of EUT

None.

Support Unit

Support Unit								
No.	Description	Brand	Model	S/N	Shielded	Ferrite Core (Qty)	Length (cm)	Remark
Radiated Test								
A	Radar Cable	CUBTEK	N/A	-	N/A	N/A	200	-
B	CAN Transmission line	CUBTEK	N/A	-	N/A	N/A	80	-
C	CAN Transmission line	CUBTEK	N/A	-	N/A	N/A	80	-
1	Power Supply	Gwinstek	GPS-3030	GEU915613	NO	NO	-	-
2	Notebook	HP	EliteBOOK	00073500PR	-	-	-	-
3	RJ45	TUV	TUV-001	-	-	-	-	-
4	AP	TP-LINK	TL-MR6400	221A163002389	-	-	-	-

4.4 Test Setup Diagram

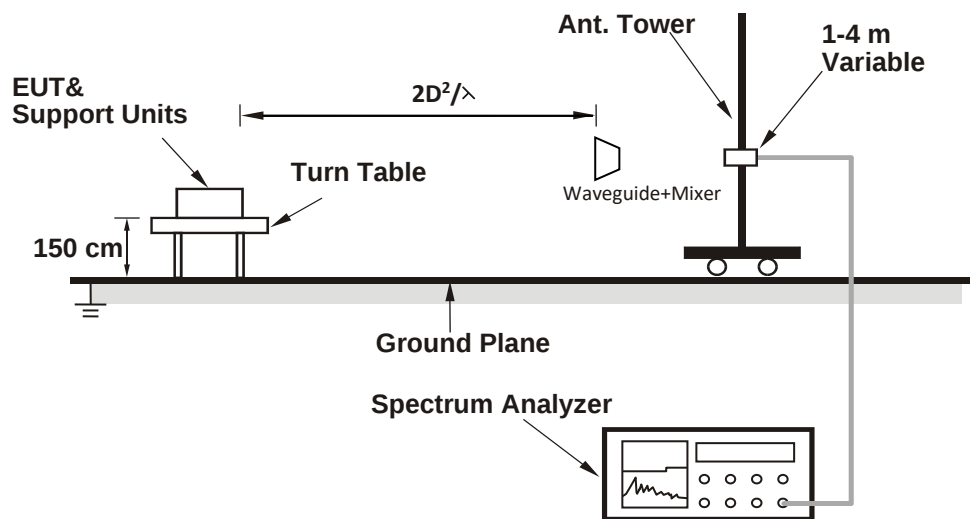


5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Radiated Power Measurement

Limit	FCC Part 95.3367 (a), Average E.I.R.P. $\leq 50\text{dBm/MHz}$ FCC Part 95.3367 (b), Peak E.I.R.P. $\leq 55\text{dBm/MHz}$
Test standard	FCC Part 95.3367
Basic standard	ANSI C63.10: 2013, Clause 9
Kind of Test Site	3m Semi-anechoic Chamber
Test Setup	



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Above 1GHz					
Signal Analyzer	R&S	FSV40	101509	2024/4/24	2025/4/23
Horn Antenna	ETS-Lindgren	3117	00218930	2024/2/22	2025/2/20
HF-AMP + AC source	EMCI	EM01G18GA	980633	2024/1/24	2025/1/22
HF-AMP + AC source	EMCI	EMC184045SE	980657	2024/1/24	2025/1/22
Horn Antenna	SCHWARZBECK	BBHA 9170	00890	2024/5/2	2025/5/1
Coincal Horn Antenna	VDI	WR15CH	1-15	2023/8/22	2026/8/21
Coincal Horn Antenna	VDI	WR12CH	RCH012RL	2023/8/22	2026/8/21
Coincal Horn Antenna	VDI	WR10CH	1-10	2023/8/22	2026/8/21
Coincal Horn Antenna	VDI	WR8.0CH	1-8.0	2023/8/22	2026/8/21
Coincal Horn Antenna	VDI	WR5.1CH	1-5.1	2023/8/28	2026/8/27
Coincal Horn Antenna	VDI	WR3.1CH	1-33	2023/8/28	2026/8/27
Mixer SA	VDI	SAX WR15	US54250104	2023/8/23	2026/8/22
Mixer SA	VDI	SAX WR12	US54250151	2023/8/23	2026/8/22
Mixer SA	VDI	SAX WR10	US53250005	2023/8/23	2026/8/22
Mixer SA	VDI	SAX WR8.0	US53250003	2023/8/24	2026/8/23
Mixer SA	VDI	SAX WR5.1	US53250002	2023/8/28	2026/8/27
Mixer SA	VDI	SAX WR3.4	US53250013	2023/8/28	2026/8/27
Horn Antenna	OML	M19RH	16070501	2023/8/21	2026/8/20
Harmonic Mixer	OML	M19HWDX	160118-1	2023/8/23	2026/8/22
Signal Analyzer	Agilent	N9010A	MY52221334	2024/3/13	2025/3/12
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
30MHz ~ 1GHz					
Receiver	R&S	ESR7	102109	2024/2/23	2025/2/21
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2024/3/29	2025/3/28
LF-AMP	Agilent	8447D	2944a107722	2024/3/20	2025/3/19
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
Below 30MHz					
Receiver	R&S	ESR7	102109	2024/2/23	2025/2/21
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2024/1/4	2025/1/2
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A

Test Result

<Horizontal>

Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)
76.45	1	-21.75	21	27.36	55 (Peak)
76.45	1	-40.31	21	8.80	50 (Average)

<Vertical>

Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)
76.45	1	-44.78	21	4.33	55 (Peak)
76.45	1	-62.69	21	-13.58	50 (Average)

Remark:

1. Rx antenna is the receiver antenna from the test equipment.
2. The measured power level is converted to EIRP using the Friis equation:

$$\text{EIRP} = \text{PT} * \text{GT} = (\text{PR} / \text{GR}) * (4 * \text{Pi} * \text{D} / \lambda)^2$$

Where :

PR is the power of the receive measurement

GR is the gain of the receive measurement antenna

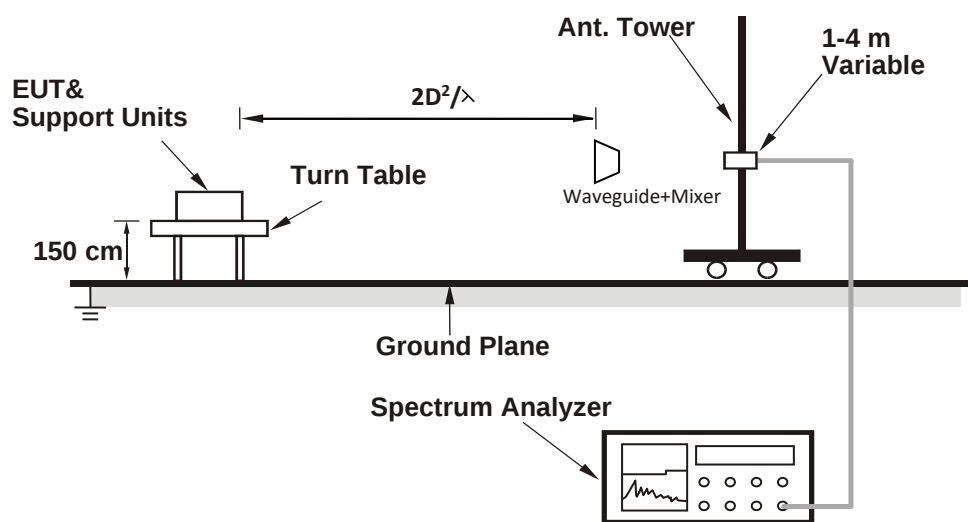
D is the measurement distance

λ is the wavelength

5.1.2 Occupied Bandwidth

Limit	Within assigned band (76 GHz to 81 GHz)
Test standard	FCC Part 2.1049; FCC Part 95.3379 (b)
Basic standard	ANSI C63.26: 2015, Clause 5.4
Kind of Test Site	3m Full-anechoic Chamber

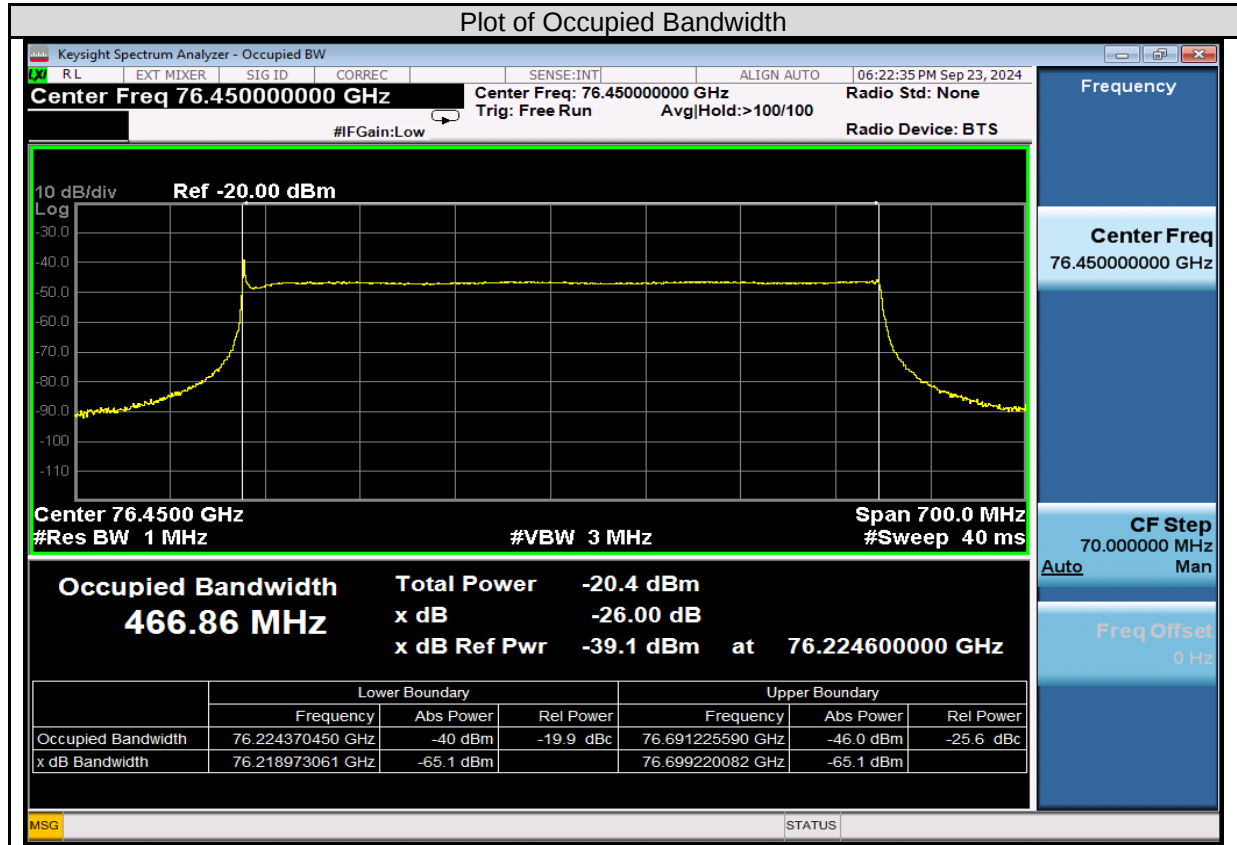
Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	Agilent	N9010A	MY52221334	2024/03/13	2025/03/12	2024/9/20	2024/9/20
Thermal Chamber	GIANT FORCE	GCT-099-40-S	MAF0103-007	2024/02/22	2025/02/20	2024/9/20	2024/9/20

Test Results

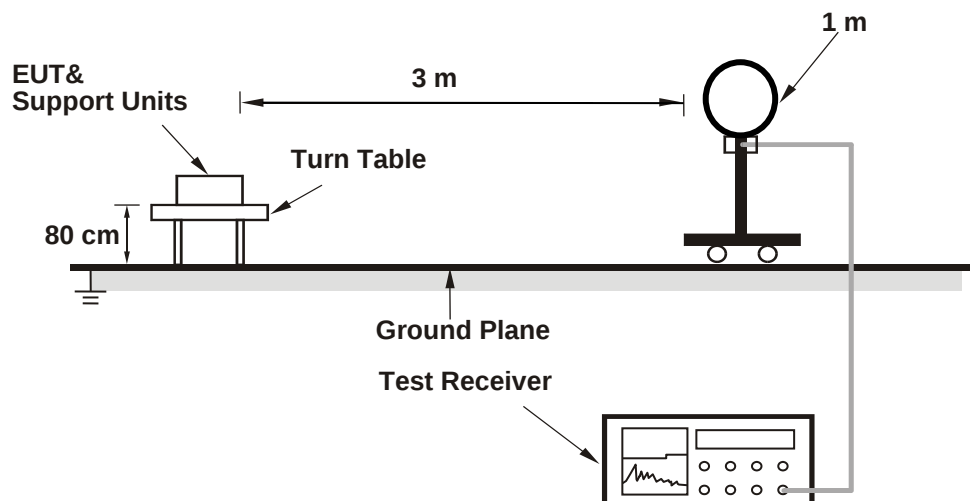


5.1.3 Radiated Emissions

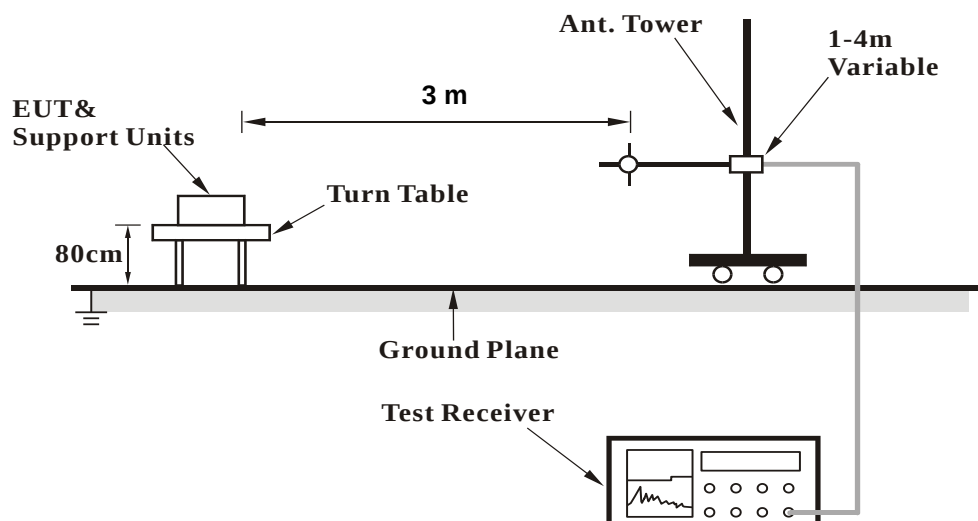
Limit	FCC Part 95.3379 (a)(1)
	FCC Part 95.3379 (a)(2)
	FCC Part 95.3379 (a)(3)
Test standard	FCC Part 95.3379
Basic standard	ANSI C63.26: 2015, Clause 5.5
Kind of Test Site	3m Semi-anechoic Chamber

Test Setup

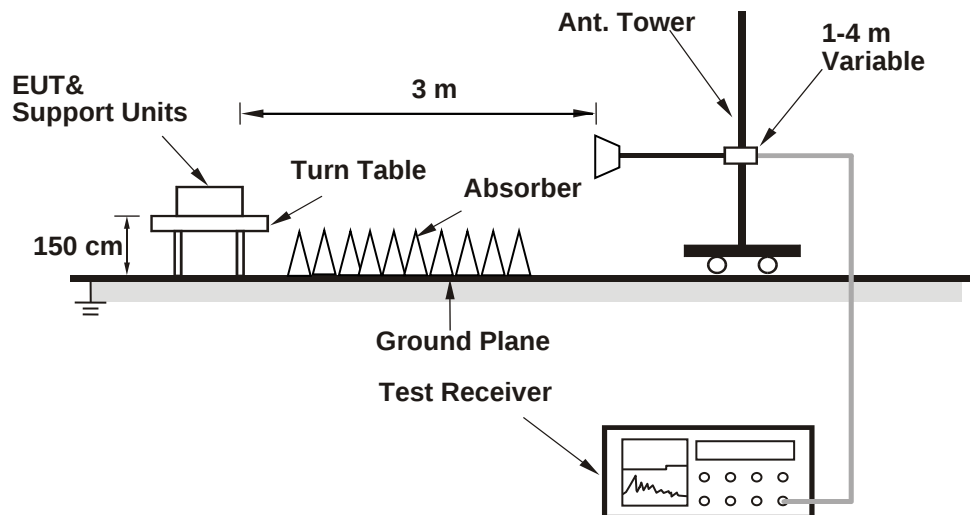
<Radiated Emissions below 30 MHz>



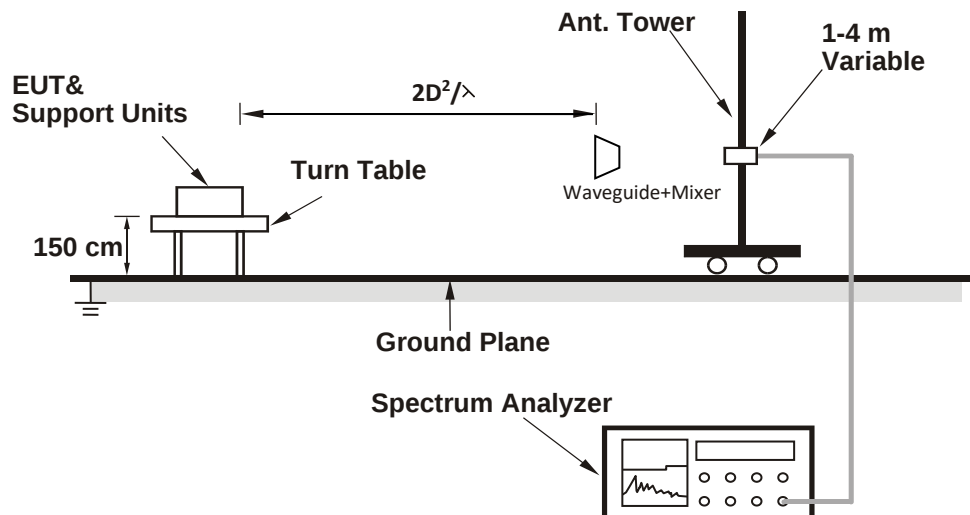
<Radiated Emissions 30 MHz to 1 GHz>



<Radiated Emissions 1 GHz to 40 GHz>



<Radiated Emissions 40 GHz to 231 GHz>



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

Test Instruments

Refer to 5.1.1 Test 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 from 30 MHz to 40 GHz

- 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 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.

For Radiated Emissions above 40GHz

- The EUT was placed on the top of a rotating table 1.5 meters (for above 40 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.
- The EUT was set $2D^2/\lambda$ away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to average detected function and specified bandwidth with maximum hold mode when the test frequency is above 40 GHz.

Note:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1MHz or 3MHz for Average detection (AV) at frequency above 40GHz.
- All modes of operation were investigated and the worst-case emissions are reported.
- 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

Refer to Appendix A for the test results below 40GHz.

Test results above 40GHz are as below:

Tx 40GHz ~ 50GHz				
Horizontal				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
45.319	1	-91.924	21	-47.36
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000002	3	0.0000000002	0.02	600
Vertical				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
44.685	1	-91.228	21	-46.78
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000002	3	0.0000000002	0.02	600

Tx_50GHz ~ 75GHz				
Horizontal				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
65.44	1	-85.497	21	-37.74
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000017	3	0.000000001	0.15	600
Vertical				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
65.3825	1	-94.727	21	-46.98
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000002	3	0.0000000002	0.02	600

Tx_75GHz ~ 110GHz				
Horizontal				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
83.2775	1	-89.171	21	-39.32
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000012	3	0.000000001	0.10	600
Vertical				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
83.4315	1	-101.412	21	-51.54
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000001	3	0.0000000001	0.01	600

Tx_110GHz ~ 140GHz				
Horizontal				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
117.167	1	-101.448	21	-48.63
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000001	3	0.0000000001	0.01	600
Vertical				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
131.879	1	-102.151	21	-48.31
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000001	3	0.0000000001	0.01	600

Tx_140GHz ~ 231GHz				
Horizontal				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
142.1294	1	-101.322	21	-46.83
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000002	3	0.0000000002	0.02	600
Vertical				
Frequency (GHz)	Measurement Distance (m)	Measured Power (dBm)	Rx Antenna Gain (dBi)	EIRP (dBm)
142.1203	1	-101.266	21	-46.77
EIRP (W)	Specification Distance (m)	Power Density (W/cm ²)	Power Density (pW/cm ²)	Limit (pW/cm ²)
0.00000002	3	0.0000000002	0.02	600

Remark:

1. Rx antenna is the receiver antenna from the test equipment.
2. The measured power level is converted to EIRP using the Friis equation:

$$EIRP = P_T * G_T = (P_R / G_R) * (4 * \pi * D / \lambda)^2$$

Where :

PR is the power of the receive measurement
 GR is the gain of the receive measurement antenna
 D is the measurement distance
 λ is the wavelength

3. The PD is converted using the equation below:

$$PD = EIRP_{Linear} / (4 * \pi * d^2)$$

Where:

PD is the power density at the distance specified by the limit, in W/m²
 EIRP_{Linear} is the equivalent isotropic radiated power, in watts
 D is the distance at which the power density limit is specified, in m

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5.1.4 Frequency Stability

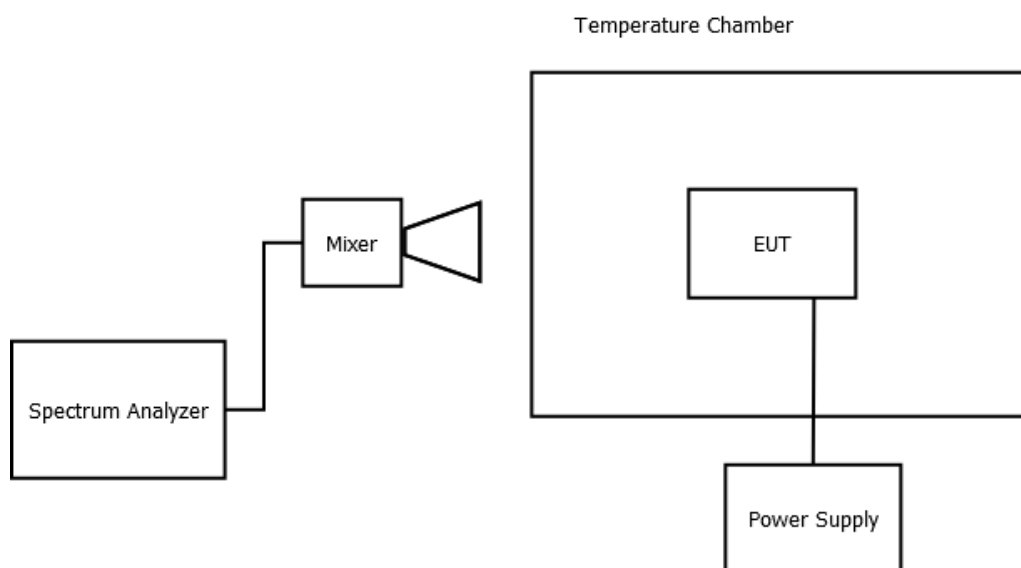
Limit Within assigned band (76 GHz to 81 GHz)

Test standard FCC Part 95.3379 (b)

Basic standard ANSI C63.26: 2015, Clause 5.6

Kind of Test Site Temperature and Humidity Chamber

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	Agilent	N9010A	MY52221334	2024/03/13	2025/03/12	2024/9/20	2024/9/20
Thermal Chamber	GIANT FORCE	GCT-099-40-S	MAF0103-007	2024/02/22	2025/02/20	2024/9/20	2024/9/20

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Test Results

Power Supply (Vdc)	Temperature (°C)	FL (GHz)	FH (GHz)	Limit Range (GHz)	Test Result
12	-20	76.22586	76.69535	76-81	Pass
12	-10	76.22397	76.69423		Pass
12	0	76.22418	76.69374		Pass
12	10	76.22418	76.69339		Pass
12	20	76.22383	76.69143		Pass
12	30	76.22376	76.69220		Pass
12	40	76.22383	76.69115		Pass
12	50	76.22355	76.69129		Pass

Power Supply (Vdc)	Temperature (°C)	FL (GHz)	FH (GHz)	Limit Range (GHz)	Test Result
16	20	76.22369	76.69150	76-81	Pass
12		76.22383	76.69143		Pass
9		76.22383	76.69136		Pass

Appendix A: Test Results of Radiated Spurious Emissions

Tx Mode, 9kHz ~ 30MHz



Tx Mode, 30MHz ~ 1GHz

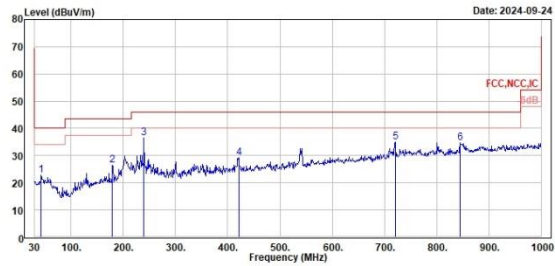
76.45GHz Radar

Horizontal

Vertical



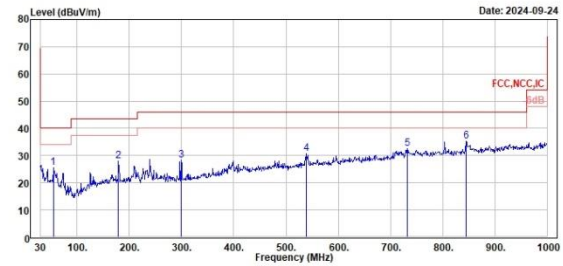
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fentiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



Freq	Level	Read	Limit	Over	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB		
1	42.61	22.70	30.14	-7.44	40.00	-17.30	Peak Horizontal
2	179.38	26.48	34.25	-7.77	43.50	-17.02	Peak Horizontal
3	239.52	36.42	44.18	-7.76	46.00	-9.58	Peak Horizontal
4	420.91	29.12	32.61	-3.49	46.00	-16.88	Peak Horizontal
5	720.64	34.09	32.60	2.21	46.00	-11.11	Peak Horizontal
6	844.80	34.59	30.38	4.21	46.00	-11.41	Peak Horizontal



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Freq	Level	Read	Limit	Over	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB		
1	54.25	25.50	32.39	-6.89	40.00	-14.50	Peak Vertical
2	179.38	28.11	35.88	-7.77	43.50	-15.39	Peak Vertical
3	298.69	28.30	34.57	-6.27	46.00	-17.70	Peak Vertical
4	538.28	30.76	32.00	-1.32	46.00	-15.24	Peak Vertical
5	732.28	32.57	30.31	2.26	46.00	-13.43	Peak Vertical
6	844.80	35.14	30.93	4.21	46.00	-10.86	Peak Vertical

Tx Mode, 1GHz ~ 40GHz

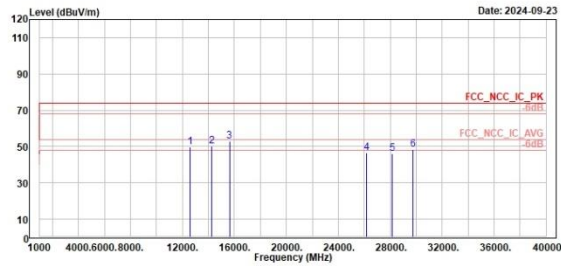
76.45GHz Radar

Horizontal

Vertical



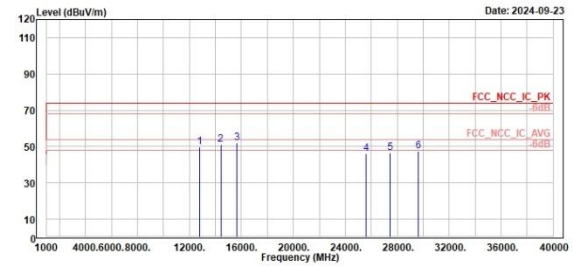
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Freq	Level	Read	Limit	Over	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB		
1 12588.00	49.92	38.40	11.52	74.00	-24.08	Peak	Horizontal
2 14241.00	50.38	40.37	10.01	74.00	-23.62	Peak	Horizontal
3 15624.00	52.72	43.42	9.30	74.00	-21.28	Peak	Horizontal
4 26171.00	46.39	44.83	1.56	74.00	-27.61	Peak	Horizontal
5 28179.53	46.16	44.12	2.04	74.00	-27.84	Peak	Horizontal
6 29748.00	48.51	46.32	2.19	74.00	-25.49	Peak	Horizontal



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Freq	Level	Read	Limit	Over	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB		
1 12815.00	49.88	38.22	11.66	74.00	-24.12	Peak	Vertical
2 14418.00	51.27	41.45	9.82	74.00	-22.73	Peak	Vertical
3 15652.00	51.81	42.36	9.45	74.00	-22.19	Peak	Vertical
4 25605.53	45.88	44.49	1.39	74.00	-28.12	Peak	Vertical
5 27440.59	46.57	44.06	1.71	74.00	-27.43	Peak	Vertical
6 29625.06	47.63	45.38	2.25	74.00	-26.37	Peak	Vertical