



Prüfbericht-Nr.: Test report no.:	CN217T5E(LP0002-24GHz) 001	Auftrags-Nr.: Order no.:	238495290	Seite 1 von 22 Page 1 of 22
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2020-12-10	
Auftraggeber: Client:	台灣安迅士網絡通訊股份有限公司 臺北市內湖區瑞光路 258 巷 39 號 6 樓			
Prüfgegenstand: Test item:	Security Radar			
Bezeichnung / Typ-Nr.: Identification / Type no.:	AXIS D2110-VE			
Auftrags-Inhalt: Order content:	NCC LP0002 Test Report			
Prüfgrundlage: Test specification:	NCC Low-power Radio-frequency Devices Technology Regulations LP0002 (2020) Section 4.10.2			
Wareneingangsdatum: Date of sample receipt:	2021-01-15 2020-02-19			
Prüfmuster-Nr.: Test sample no.:	A002988420-001 A001065458-003			
Prüfzeitraum: Testing period:	2020-03-13 - 2021-01-25			
Ort der Prüfung: Place of testing:	EMC/RF Taipei Testing Site			
Prüflaboratorium: Testing laboratory:	Taipei Testing Laboratories			
Prüfergebnis*: Test result*:	Pass			
überprüft von: reviewed by:	genehmigt von: authorized by:			
Datum: Date:	2021-02-01	Ausstellungsdatum: Issue date:	2021-02-01	
Stellung / Position:	Senior Project Manager	Stellung / Position:	Senior Project Manager	
Sonstiges / Other:	This report is mainly evaluated and tested the Field Strength of Fundamental Emissions according to applicant changed. The results are in compliance with the output power +-2dB, the other test results are all referred to TUV test report no. 60360049 001.			
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
* 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
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

TEST SUMMARY

Report Section	NCC Clause	Test Item	Result
5.1.1	LP0002 3.2	Antenna Requirement	Pass
5.1.2	LP0002 4.10.2.2	Field Strength of Fundamental Emissions	Pass
5.1.3	LP0002 4.10.2.2	Radiated Spurious Emissions	Refer to TUV test report no. 60360049 001
5.2.1	LP0002 3.3	Mains Conducted Emission	Refer to TUV test report no. 60360049 001

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

Contents

HISTORY OF THIS TEST REPORT	4
1. GENERAL REMARKS	5
1.1 COMPLEMENTARY MATERIALS.....	5
1.2 DECISION RULE OF CONFORMITY	5
2. TEST SITES	6
2.1 TEST LABORATORY	6
2.2 TEST FACILITY.....	6
2.3 TRACEABILITY	7
2.4 CALIBRATION	7
2.5 MEASUREMENT UNCERTAINTY	7
3. GENERAL PRODUCT INFORMATION.....	8
3.1 PRODUCT FUNCTION AND INTENDED USE	8
3.2 NOISE GENERATING AND NOISE SUPPRESSING PARTS	9
3.3 SUBMITTED DOCUMENTS.....	9
4. TEST SET-UP AND OPERATION MODES	10
4.1 PRINCIPLE OF CONFIGURATION SELECTION	10
4.2 TEST OPERATION AND TEST SOFTWARE.....	10
4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	11
4.4 TEST SETUP DIAGRAM	12
5. TEST RESULTS	13
5.1 TRANSMITTER REQUIREMENT & TEST SUITES	13
5.1.1 Antenna Requirement	13
5.1.2 Field Strength of Fundamental Emissions	14
5.1.3 Radiated Spurious Emissions	17
5.2 MAINS EMISSION	21
5.2.1 Mains Conducted Emission.....	21
 APPENDIX A - TEST RESULT OF RADIATED EMISSIONS & MAINS CONDUCTED EMISSION	
APPENDIX SP - PHOTOGRAPHS OF TEST SETUP	
APPENDIX EP - PHOTOGRAPHS OF EUT	

Prüfbericht - Nr.: **CN217T5E(LP0002-24GHz) 001**
Test Report No.

Seite 4 von 22
Page 4 of 22

HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN217T5E(LP0002-24GHz) 001	Original Release	2021-02-01

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 & Mains Conducted Emission

Appendix SP - Photographs of Test Setup

Appendix EP - Photographs of EUT

Applied Standard and Test Levels

Radio
NCC Low-power Radio-frequency Devices Technical Regulations LP0002 (2020) (109 年 7 月 1 日)
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

AC Mains Conduction:
11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)
FCC Registration No.: 180491
IC Canada Registration No.: 9465A

Conducted/ Radiated Test:
No. 458-18, Sec 2, Fenliao., Linkou Dist.
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 226631
IC Canada Registration No.: 25563

TAF Accredited NCC Test Lab. No.:3567
TAF ISO17025 Certification effective period:

6th-May-2019 to 05th-May-2022

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
Radiated Emission (40 GHz ~ 100 GHz)	± 1.78 dB
Mains Conducted Emission	± 1.65 dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a 24 GHz surveillance radar short range device (SRD), Intended use is perimeter surveillance of areas around offices and industrial buildings. Product detects movement of humans, and objects such as cars, trucks, busses etc. Detected movement can be used as an alarm, for triggering different events.

For details refer to the User Guide, Data Sheet and Circuit Diagram. System Details and Ratings

Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	Security Radar
Type Identification	AXIS D2110-VE
Brand Name	Axis Communications

Technical Specification of EUT

Item	EUT information
Operating Frequency	24.05 to 24.25 GHz, Central frequency at 24.15GHz
Operation Voltage	24Vdc
Modulation	FMCW
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.3

3.2 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.3 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: EUT is modified by manufacturer at a test mode firmware. It can transmit and receive continuously when powered on.

Test Software	None.
---------------	-------

The samples were used as follows:

A002988420-001 for fundamental emissions test

A001065458-003 for radiated spurious emissions test

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

EUT Configure Mode	Applicable To			Description
	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.
- "-" means no effect.

Field Strength of Fundamental 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)
-	24.05 to 24.25	24.05 - 24.25

Radiated Spurious 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 (GHz)	Tested Frequency (GHz)
Tx / Rx		
-	24.05 to 24.25	24.05 - 24.25

Mains Conducted Emission

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (GHz)	Tested Frequency (GHz)
-	24.05 to 24.25	24.05 - 24.25

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Field Strength of Fundamental Emissions	21~23 °C	65~68 %	Eagle Tsai
Radiated Spurious Emissions	21~23 °C	65~68 %	Eagle Tsai
Mains Conducted Emission	24 °C	38 %	Kevin Kuo

4.3 Special Accessories and Auxiliary Equipment

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

Accessory of EUT

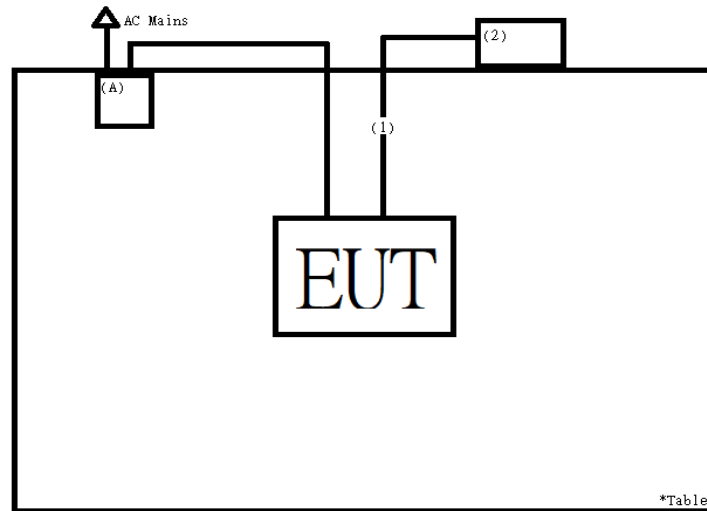
None

Support Unit

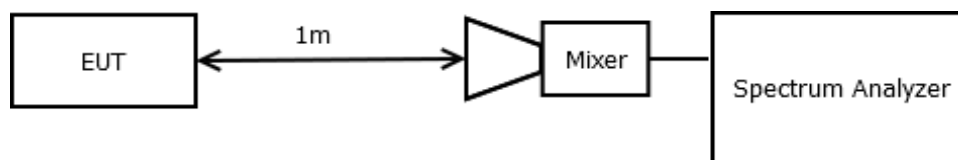
Radiated Test					
No.	Description	Brand	Model	S/N	Remark
A	Switching Power Adapter	AXIS COMMUNICATIONS	FSP040-DAAN2	-	I/P: 100-240 Vac, 50/60 Hz, 1.4 A O/P: 24 Vdc, 1.57 A MAX 180cm non-shielded cable with core
1	Lan Cable	TUV	10	-	160cm non-shielded cable w/o core
2	Notebook	HP	15s-du0007TX	CND93662VF	-
-	Notebook (Setup)	Lenovo	TP00048A	-	-
Mains Conducted Test					
1	DC Power Supply	GWINSTEK	GPS-3303	-	-
2	RJ45 Cable	TUV	1	-	10cm non-shielded cable w/o core

4.4 Test Setup Diagram

<Radiated Spurious Emissions mode>



<40GHz-110GHz Radiated Spurious Emissions>



<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 antenna information is as listed below. The antenna is with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

Brand Name	Model No.	Antenna Type	Antenna Gain (dBi)
AXIS	D2110-VE	PCB Arrays Antenna	8.5

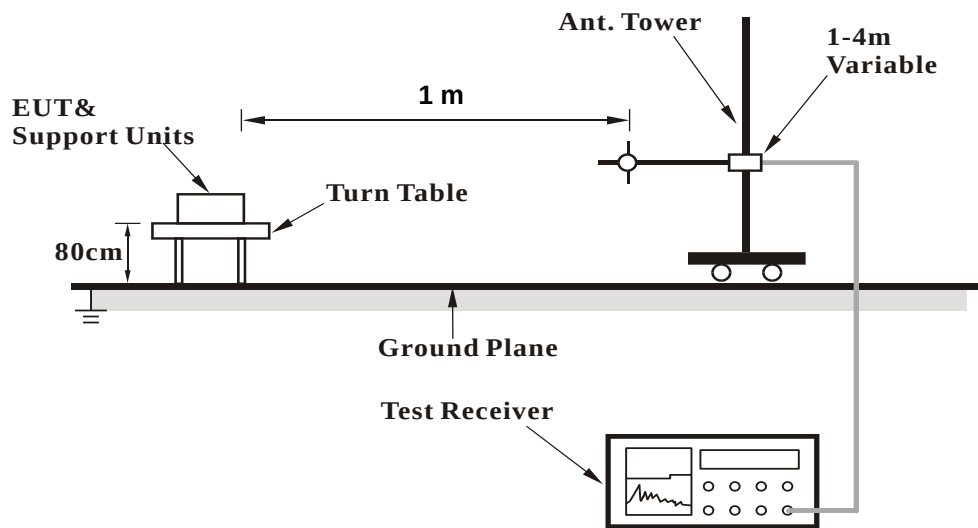
Refer to EUT photo for details.

5.1.2 Field Strength of Fundamental Emissions

Limit Refer to LP0002 4.10.2.2 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).

Test Instruments

Test Period: 2020/3/13~2020/4/1

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV40	101112	2019/10/15	2020/10/15
Pre-Amplifier	Agilent	8447D	2727A05146	2020/02/17	2021/02/16
Pre-Amplifier	EMCI	EMC051845SE	980635	2020/02/11	2021/02/10
Pre-Amplifier	EMCI	EMC184045SE	980656	2020/02/11	2021/02/10
Bilog Antenna	SCHWARZBECK	VULB-9168	00950	2020/01/20	2021/01/19
Horn Antenna	ETS-Lindgren	3117	00218929	2019/11/27	2020/11/26
Horn Antenna	SCHWARZBECK	BBHA 9170	00890	2019/04/12	2020/04/11
Loop Antenna	EMCI	LPA600	287	2019/12/20	2020/12/19
Test Cable	HUBER+SUHNER	SUCOFLEX 104EA	800057/4EA	2019/04/11	2020/04/10
Test Cable	HUBER+SUHNER	SUCOFLEX 104	802244/4	2019/04/11	2020/04/10
Test Cable	HUBER+SUHNER	SUCOFLEX 104	MY37203/4	2019/04/11	2020/04/10
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA	800897/2EA	2019/04/11	2020/04/10
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA	800902/2EA	2019/04/11	2020/04/10
Test Cable	HUBER+SUHNER	SUCOFLEX 102EA	801026/2EA	2019/04/11	2020/04/10
Spectrum Analyzer	Keysight	N9010A	MY52221334	2020/02/10	2021/02/09
Harm. Mixer, 40-60 GHz	OML	WR-19	1601 1801	2019/07/01	2020/06/30
Harm. Mixer, 50-75 GHz	Keysight / VDI	N9029AV15	US54250104	2019/07/01	2020/06/30
Harm. Mixer, 75-110 GHz	Keysight / VDI	N9029AV10	US53250005	2019/07/01	2020/06/30

Test Period: 2021/1/25

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV40	101509	2020/5/5	2021/5/4
HF-AMP + AC source	EMCI	EMC184045SE	980656	2020/2/11	2021/2/9
Horn Antenna	SCHWARZBECK	BBHA 9170	00890	2020/4/13	2021/4/12
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800897/2EA	2020/3/25	2021/3/24
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800902/2EA	2020/3/25	2021/3/24
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	801026/2EA	2020/3/25	2021/3/24

Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) or 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. All modes of operation were investigated and the worst-case emissions are reported.
4. The Radiated Emissions testing was performed in the X, Y and Z axis orientation. The worst-case Axis orientation is recorded in this test report.

Test Results

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)

Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

Please refer to Appendix A.

5.1.3 Radiated Spurious Emissions

Limit

Radiated emissions which fall in the restricted bands, as defined in LP0002 (2020): 3.5, must comply with the radiated emission limits specified in LP0002 (2020): 3.6.

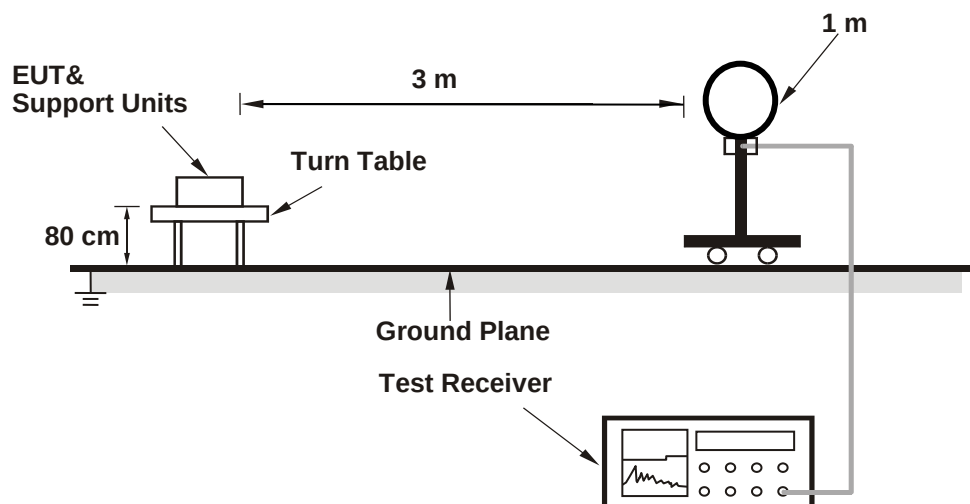
Emissions radiated outside the specified frequency bands must comply with the radiated emission limits specified in LP0002 (2020): 3.6.

For the limitation of harmonics emissions, please refer to LP0002 4.10.2.2.

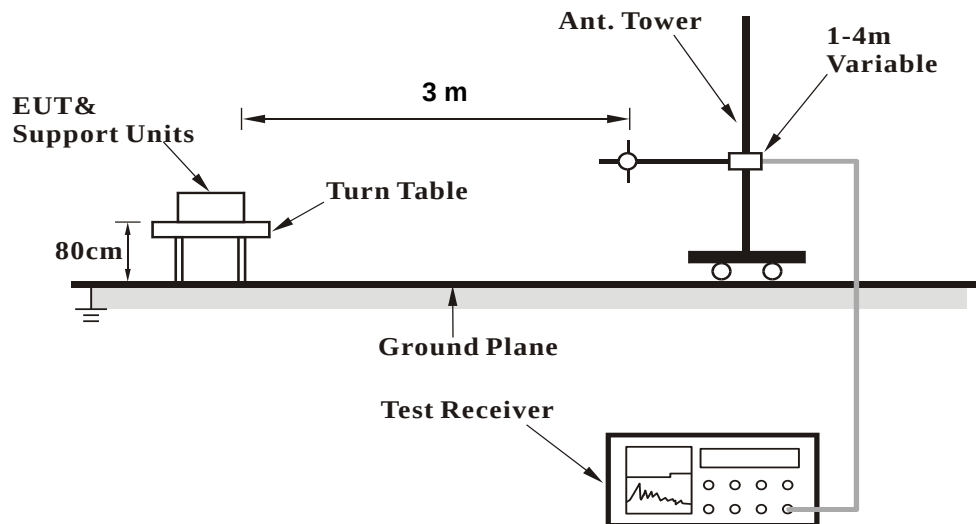
Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup

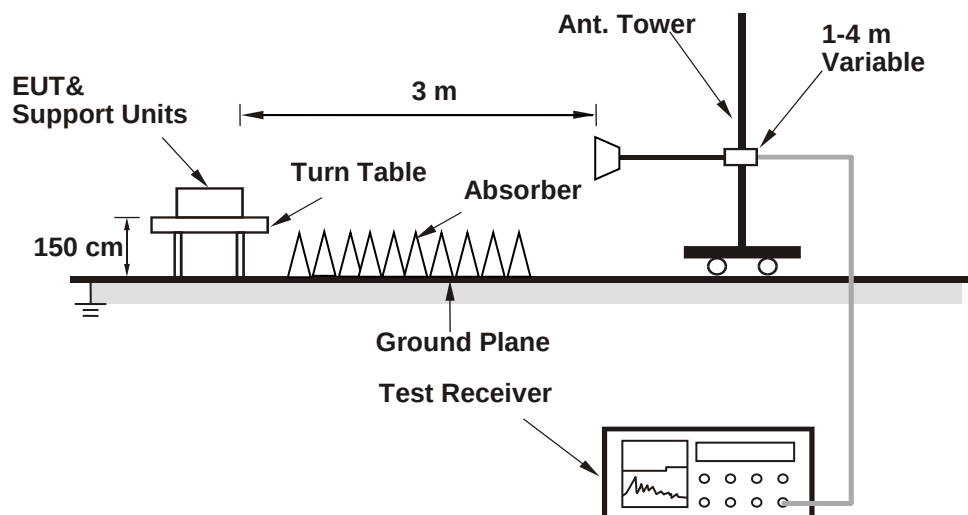
<Radiated Emissions below 30 MHz>



<Radiated Emissions 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

Test Instruments

Please refer to 5.1.2 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. 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. All modes of operation were investigated and the worst-case emissions are reported.
4. The Radiated Emissions testing was performed in the X, Y and Z axis orientation. The worst-case Axis orientation is recorded in this test report.

Prüfbericht - Nr.: CN217T5E(LP0002-24GHz) 001
Test Report No.

Seite 20 von 22
Page 20 of 22

Test Results

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)

Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

Please refer to Appendix A.

5.2 Mains Emission

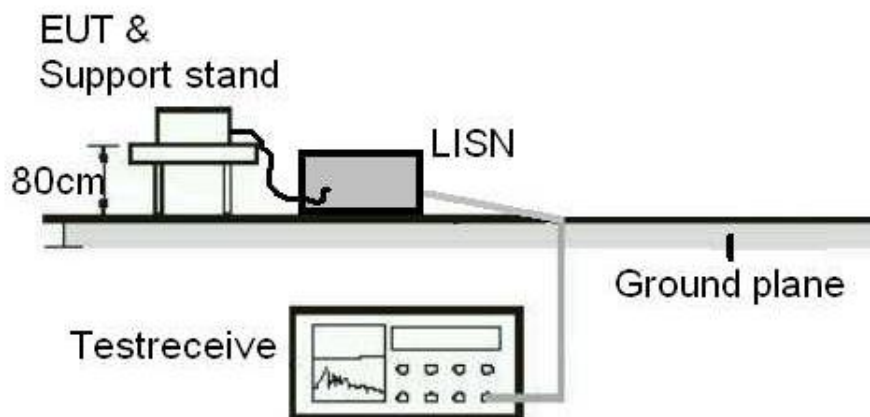
5.2.1 Mains Conducted Emission

Limit

Mains Conducted emissions as defined in LP0002 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
EMI Test Receiver	R&S	ESR7	102109	2019/04/17	2020/04/16
Test Software	Audix	e3	Ver. 9	N/A	N/A

Test Procedures

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

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

Test Results

Please refer to Appendix A.

Appendix A: Test Results of Radiated Emissions & Mains Conducted

Emission Test

Fundamental Emissions

24 GHz Radar

Horizontal_Peak

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

Level (dBuV/m) Date: 2021-01-25

Frequency (MHz)

NCC Class B_PK_24G 100dB

NCC Class B_AVG_24G 60dB

	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	23999.48	48.18	44.11	3.99	74.00	-25.98		172	360	Peak	Horizontal	
2	24062.20	103.95	99.98	3.97	127.96	-24.01		172	360	Peak	Horizontal	
3	24253.88	55.79	51.89	3.90	74.00	-18.21		172	360	Peak	Horizontal	

Vertical_Peak

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

Level (dBuV/m) Date: 2021-01-25

Frequency (MHz)

NCC Class B_PK_24G 100dB

NCC Class B_AVG_24G 60dB

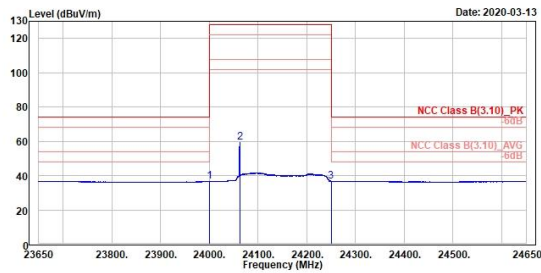
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	23894.20	47.18	43.17	3.93	74.00	-26.98		200	64	Peak	Vertical	
2	24062.20	93.32	89.35	3.97	127.96	-34.64		200	64	Peak	Vertical	
3	24256.20	49.14	45.25	3.89	74.00	-24.86		200	64	Peak	Vertical	

24 GHz Radar

Horizontal_Average



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

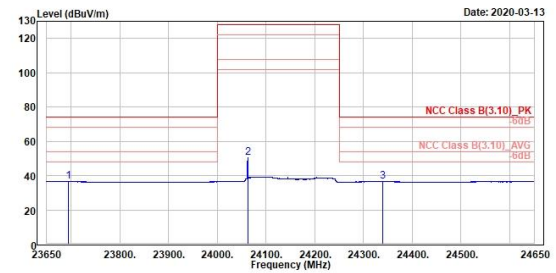


	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	24000.000	36.54	32.55	3.99	54.00	-17.46	218	78	Average	HORIZONTAL
2	24062.400	59.52	55.55	3.97	107.96	-48.44	218	78	Average	HORIZONTAL
3	24250.000	36.77	32.87	3.90	54.00	-17.23	218	78	Average	HORIZONTAL

Vertical_Average



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



	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	23695.200	36.49	32.66	3.83	54.00	-17.51	121	33	Average	Vertical
2	24062.400	50.45	46.48	3.97	107.96	-57.51	121	33	Average	Vertical
3	24340.200	36.54	32.60	3.94	54.00	-17.46	121	33	Average	Vertical

Refer to report no. 60360049 001 APPENDIX D.

Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

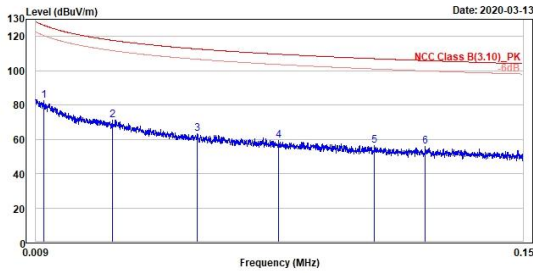
24 GHz Radar

OPEN_9kHz~150kHz

OPEN_150kHz~30MHz



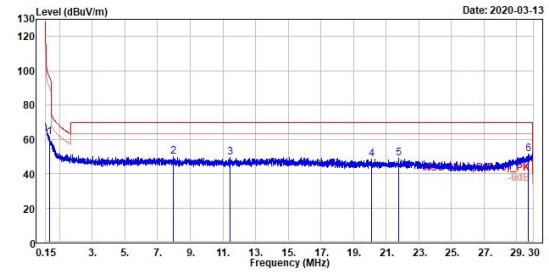
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	0.011	82.43	4.42	78.01	126.51	-44.08	100	285 QP	vertical	
2	0.031	71.04	0.66	70.38	117.72	-46.68	100	81 QP	vertical	
3	0.056	63.39	-0.85	64.24	112.67	-49.28	100	156 QP	vertical	
4	0.079	59.36	-1.97	61.33	109.62	-50.26	100	246 QP	vertical	
5	0.107	56.55	-2.29	58.84	107.01	-50.46	100	57 QP	vertical	
6	0.122	55.76	-2.23	57.99	105.89	-50.13	100	325 QP	vertical	



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



	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	0.368	61.48	12.45	49.03	96.29	-34.81	100	306 QP	vertical	
2	7.986	50.04	11.97	38.07	69.50	-19.46	100	289 QP	vertical	
3	11.451	49.20	11.95	37.25	69.50	-20.30	100	289 QP	vertical	
4	20.114	48.57	12.33	36.24	69.50	-20.93	100	163 QP	vertical	
5	21.770	48.88	12.96	35.92	69.50	-20.62	100	126 QP	vertical	
6	29.696	51.43	12.40	39.03	69.50	-18.07	100	346 QP	vertical	

Refer to report no. 60360049 001 APPENDIX D.

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

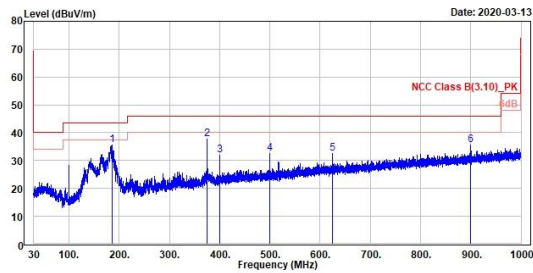
24 GHz Radar

Horizontal

Vertical



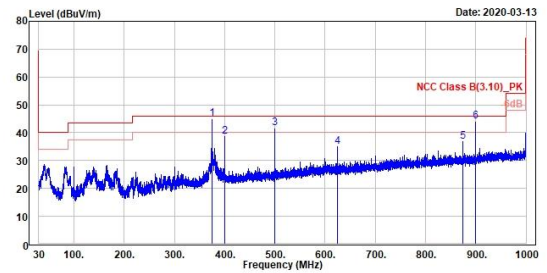
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	185.588	35.63	43.44	-7.81	43.50	-7.87	200	79 QP	horizontal	
2	375.029	37.73	41.31	-3.58	46.00	-8.27	200	299 QP	horizontal	
3	400.055	31.92	35.10	-3.18	46.00	-14.08	200	115 QP	horizontal	
4	500.062	32.55	34.42	-1.87	46.00	-13.45	200	63 QP	horizontal	
5	624.998	32.47	32.03	0.44	46.00	-13.53	100	144 QP	horizontal	
6	900.090	35.56	31.50	4.06	46.00	-10.44	200	79 QP	horizontal	



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



	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	375.029	44.92	48.50	-3.58	46.00	-1.08	160	0 QP	vertical	
2	400.055	38.68	41.86	-3.18	46.00	-7.32	126	0 QP	vertical	
3	500.062	41.53	43.40	-1.87	46.00	-4.47	126	0 QP	vertical	
4	625.095	35.04	34.60	0.44	46.00	-10.96	100	63 QP	vertical	
5	875.064	36.79	33.10	3.69	46.00	-9.21	138	0 QP	vertical	
6	900.090	43.96	39.90	4.06	46.00	-2.04	152	342 QP	vertical	

Refer to report no. 60360049 001 APPENDIX D.

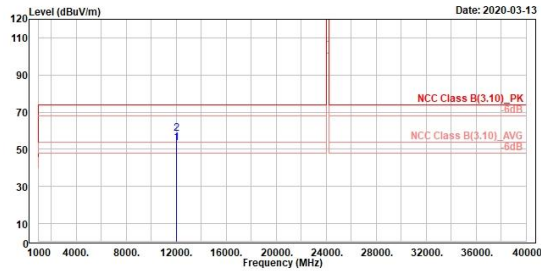
Spurious Emissions, Tx Mode, 1GHz ~ 40GHz

24 GHz Radar

Horizontal



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

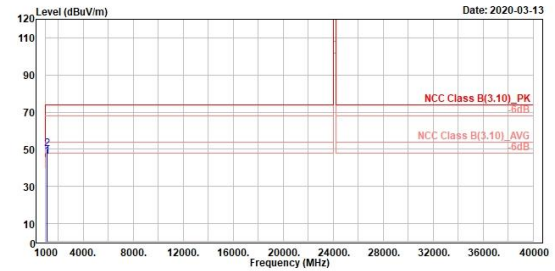


Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1 12031.720	53.53	53.55	-0.02	54.00	-0.47	200	340	Average	horizontal	
2 12031.720	58.49	58.51	-0.02	74.00	-15.51	200	340	Peak	horizontal	

Vertical



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



Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1 1124.674	46.27	66.68	-20.41	54.00	-7.73	336	360	Average	vertical	
2 1124.674	50.38	70.79	-20.41	74.00	-23.62	336	360	Peak	vertical	

Refer to report no. 60360049 001 APPENDIX D.

Spurious Emissions, Rx Mode, 9kHz ~ 30MHz

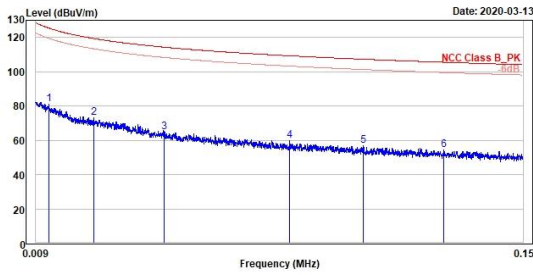
24 GHz Radar

OPEN_9kHz~150kHz

OPEN_150kHz~30MHz



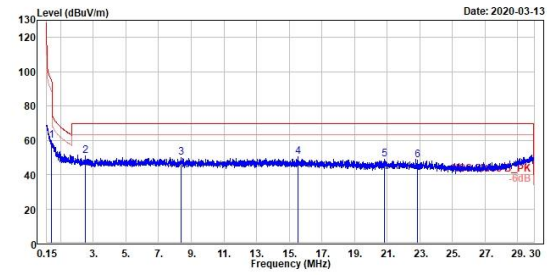
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec. 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	0.013	80.83	3.74	77.09	125.46	-44.63	100	4 QP	vertical
2	0.026	73.15	1.64	71.51	119.38	-46.23	100	324 QP	vertical
3	0.046	64.93	-1.06	65.99	114.29	-49.36	100	239 QP	vertical
4	0.083	59.59	-1.46	61.05	109.26	-49.67	100	0 QP	vertical
5	0.104	56.67	-2.36	59.03	107.27	-50.60	100	34 QP	vertical
6	0.127	54.13	-3.55	57.68	105.51	-51.38	100	146 QP	vertical



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



	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg	
1	0.431	59.57	11.70	47.87	94.92	-35.35	100	152 QP	vertical
2	2.499	50.90	12.44	38.46	69.50	-18.60	100	22 QP	vertical
3	8.380	49.96	11.99	37.97	69.50	-19.54	100	346 QP	vertical
4	15.523	50.20	12.57	37.63	69.50	-19.30	100	132 QP	vertical
5	20.860	48.88	12.79	36.09	69.50	-20.62	100	336 QP	vertical
6	22.845	48.34	12.71	35.63	69.50	-21.16	100	129 QP	vertical

Refer to report no. 60360049 001 APPENDIX D.

Spurious Emissions, Rx Mode, 30MHz ~ 1GHz

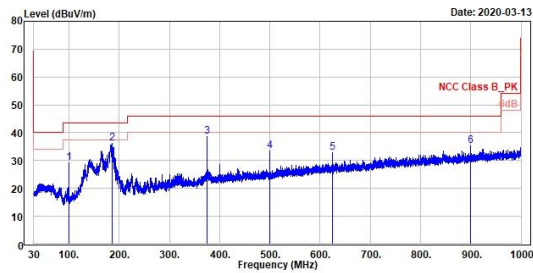
24 GHz Radar

Horizontal

Vertical



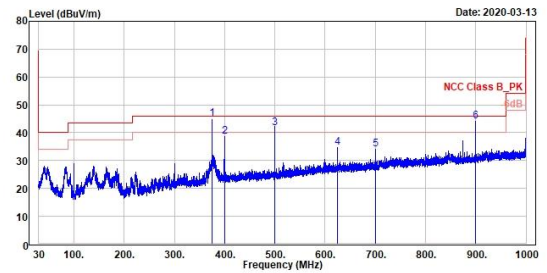
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	99.937	29.18	40.25	-11.07	43.50	-14.32	200	268	QP	horizontal
2	185.879	36.28	44.12	-7.84	43.50	-7.22	200	57	QP	horizontal
3	375.029	38.71	42.29	-3.58	46.00	-7.29	200	265	QP	horizontal
4	499.965	33.54	35.41	-1.87	46.00	-12.46	200	271	QP	horizontal
5	624.998	32.85	32.41	0.44	46.00	-13.15	300	74	QP	horizontal
6	900.090	35.35	31.29	4.06	46.00	-10.65	400	47	QP	horizontal



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



	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	375.029	44.92	48.50	-3.58	46.00	-1.08	160	360	QP	vertical
2	400.055	38.49	41.67	-3.18	46.00	-7.51	126	360	QP	vertical
3	499.965	41.53	43.40	-1.87	46.00	-4.47	126	360	QP	vertical
4	624.998	34.61	34.17	0.44	46.00	-11.39	100	55	QP	vertical
5	699.979	34.20	32.86	1.34	46.00	-11.80	130	360	QP	vertical
6	900.090	43.96	39.90	4.06	46.00	-2.04	152	360	QP	vertical

Refer to report no. 60360049 001 APPENDIX D.

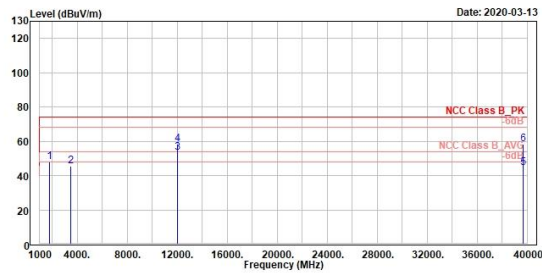
Spurious Emissions, Rx Mode, 1GHz ~ 40GHz

24 GHz Radar

Horizontal



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

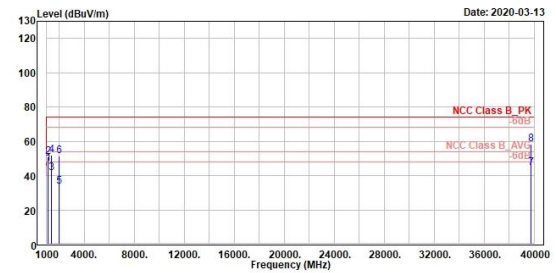


	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1770.709	47.83	64.62	-16.79	74.00	-26.17	300	110	Peak	horizontal
2	3500.083	45.64	57.48	-11.84	74.00	-28.36	200	0	Peak	horizontal
3	112831.720	53.53	53.55	-0.02	54.00	-0.47	200	340	Average	horizontal
4	12831.720	58.49	58.51	-0.02	74.00	-15.51	200	340	Peak	horizontal
5	39718.290	44.32	28.68	15.64	54.00	-9.68	100	0	Average	horizontal
6	39718.290	58.21	42.57	15.64	74.00	-15.79	100	0	Peak	horizontal

Vertical



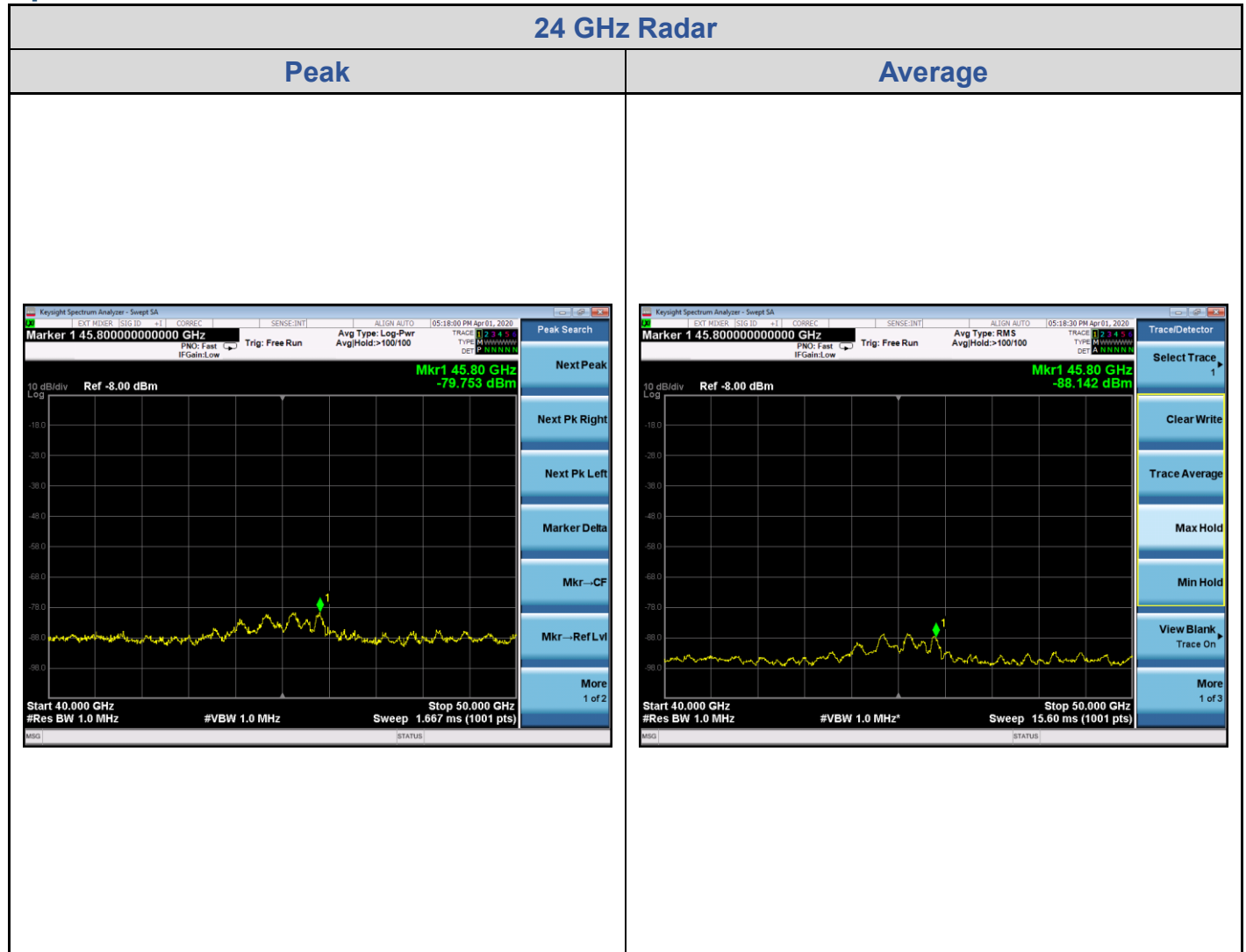
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel: +886-2172-1000 Fax: +886-2172-1322



	Freq	Level	Read	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	1124.674	46.85	66.68	-19.83	54.00	-7.15	336	360	Average	vertical
2	1124.674	50.96	70.79	-19.83	74.00	-23.04	336	360	Peak	vertical
3	1399.522	41.28	60.18	-18.90	54.00	-12.72	383	360	Average	vertical
4	1399.522	51.67	70.57	-18.90	74.00	-22.33	383	360	Peak	vertical
5	2000.222	33.38	48.51	-15.13	54.00	-20.62	103	360	Average	vertical
6	2000.222	51.52	66.65	-15.13	74.00	-22.48	103	360	Peak	vertical
7	39779.910	44.68	28.96	15.72	54.00	-9.32	200	135	Average	vertical
8	39779.910	58.50	42.78	15.72	74.00	-15.50	200	135	Peak	vertical

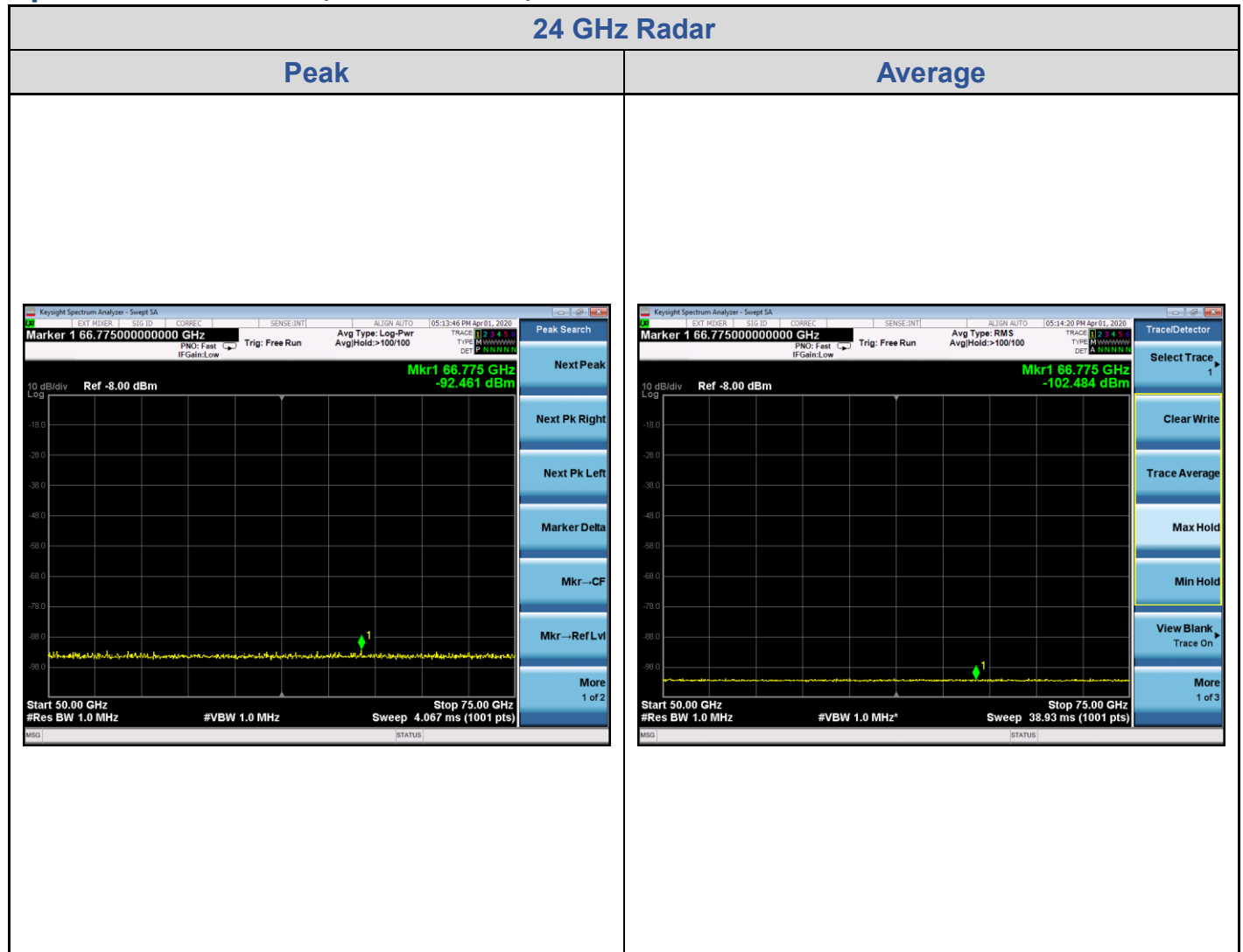
Refer to report no. 60360049 001 APPENDIX D.

Spurious Emissions, Tx Mode, 40GHz ~ 50GHz



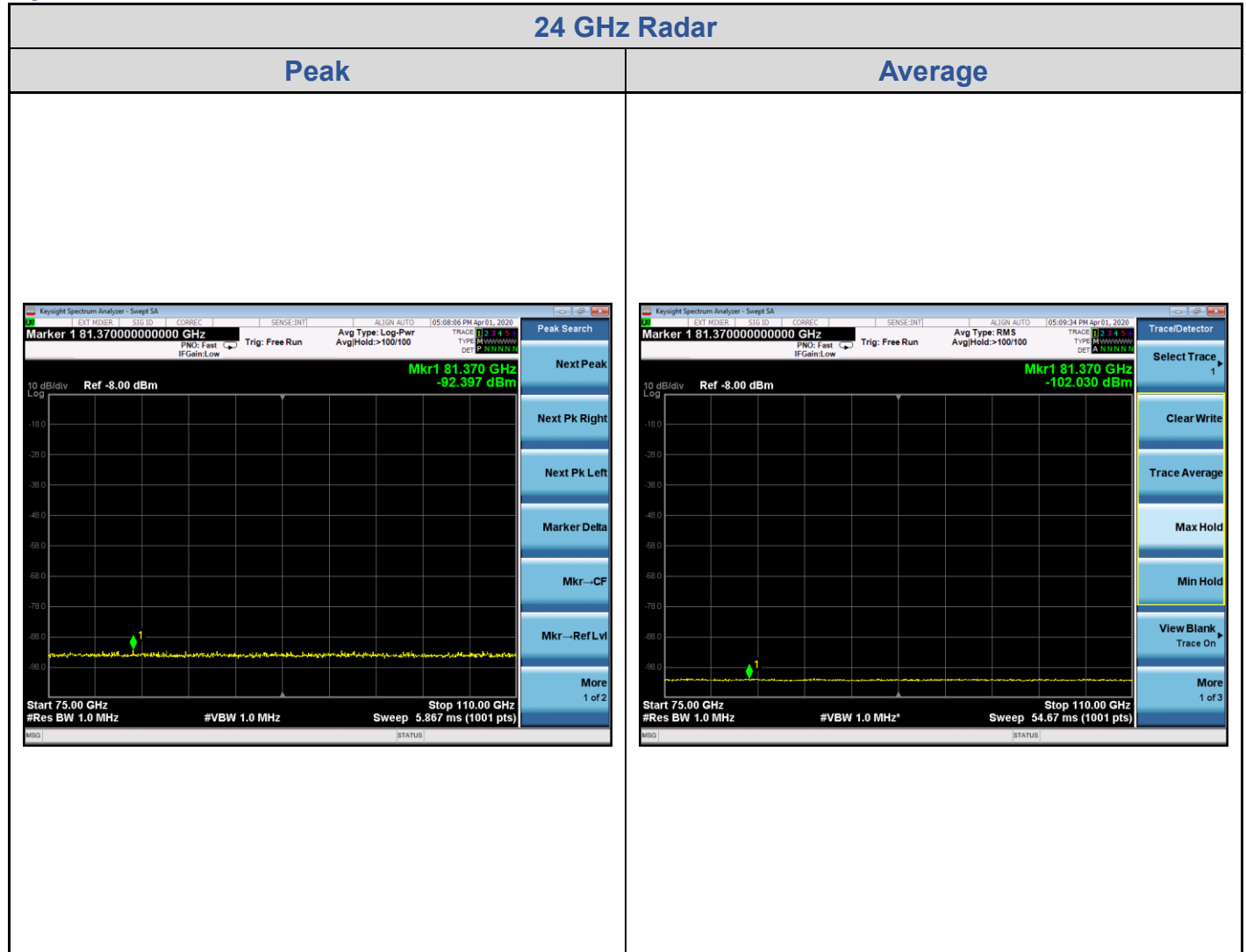
Refer to report no. 60360049 001 APPENDIX D.

Spurious Emissions, Tx/Rx Mode, 50GHz ~ 75GHz



Refer to report no. 60360049 001 APPENDIX D.

Spurious Emissions, Tx/Rx Mode, 75GHz ~ 110GHz



Refer to report no. 60360049 001 APPENDIX D.

Mains Conducted Emission, 150kHz ~ 30MHz

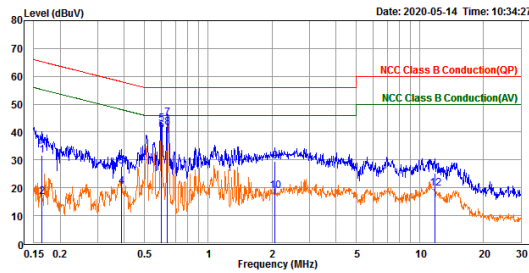
Worst Band

(Line)

(Neutral)



TUV Rheinland Taiwan Ltd.
11F., No.758, Sec.4 Bade Road, Songshan Dist, Taipei City 105
Tel:+886-2172-7000 Fax:+886-2528-0018

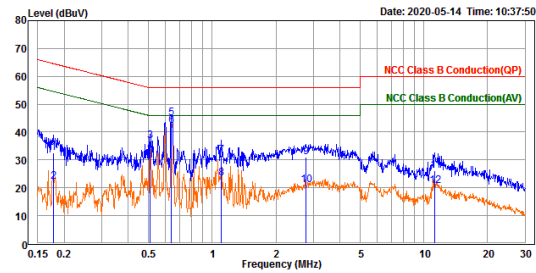


Trace: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Note
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.163	22.00	9.61	31.61	65.30	-33.69	QP	
2	0.163	7.12	9.61	16.73	55.30	-38.57	Average	
3	0.391	18.19	9.62	27.81	58.05	-30.24	QP	
4	0.391	10.85	9.62	20.47	48.05	-27.58	Average	
5	0.600	33.15	9.62	42.77	56.00	-13.23	QP	
6	0.600	30.83	9.62	40.45	46.00	-5.55	Average	
7	0.643	35.44	9.62	45.06	56.00	-10.94	QP	
8	0.643	31.96	9.62	41.58	46.00	-4.42	Average	
9	2.064	19.78	9.64	29.42	56.00	-26.58	QP	
10	2.064	9.23	9.64	18.87	46.00	-27.13	Average	
11	11.753	15.45	9.75	25.20	60.00	-34.80	QP	
12	11.753	9.89	9.75	19.64	50.00	-30.36	Average	



TUV Rheinland Taiwan Ltd.
11F., No.758, Sec.4 Bade Road, Songshan Dist, Taipei City 105
Tel:+886-2172-7000 Fax:+886-2528-0018



Trace: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Note
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.178	23.08	9.62	32.70	64.59	-31.89	QP	
2	0.178	12.61	9.62	22.23	54.59	-32.36	Average	
3	0.509	27.17	9.63	36.80	56.00	-19.20	QP	
4	0.509	23.57	9.63	33.20	46.00	-12.80	Average	
5	0.643	35.50	9.63	45.13	56.00	-10.87	QP	
6	0.643	32.80	9.63	42.43	46.00	-3.57	Average	
7	1.101	22.01	9.63	31.64	56.00	-24.36	QP	
8	1.101	13.78	9.63	23.41	46.00	-22.59	Average	
9	2.770	21.42	9.66	31.08	56.00	-24.92	QP	
10	2.770	11.32	9.66	20.98	46.00	-25.02	Average	
11	11.294	16.41	9.75	26.16	60.00	-33.84	QP	
12	11.294	10.79	9.75	20.54	50.00	-29.46	Average	

Refer to report no. 60360049 001 APPENDIX D.