

Prüfbericht-Nr.: Test report no.:	CN23UNR2 (P15C-NFC) 001	Auftrags-Nr.: Order no.:	48217302	Seite 1 von 25 Page 1 of 25
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2023-03-23	
Auftraggeber: Client:	Dot Origin Ltd Unit 7 Coopers Place, Combe Lane, Wormley, Godalming, GU8 5SZ, UK			
Prüfgegenstand: Test item:	VTAP50			
Bezeichnung / Typ-Nr.: Identification / Type no.:	VTAP50			
Auftrags-Inhalt: Order content:	FCC Part 15C Test report (NFC)			
Prüfgrundlage: Test specification:	FCC 47CFR Part 15: Subpart C Section 15.225			
Wareneingangsdatum: Date of sample receipt:	2023-03-09			
Prüfmuster-Nr.: Test sample no.:	A003445605-001 A003445605-002			
Prüfzeitraum: Testing period:	2023-04-12			
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: 2023-05-08	 Ethan Shao		 Brenda Chen	
Stellung / Position:	Assistant Project Engineer	Ausstellungsdatum: Issue date: 2023-05-08	Senior Project Manager	
Sonstiges / Other:				
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
5 = mangelhaft N/T = nicht getestet 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. 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	FCC Clause	Test Item	Result
5.1.1	15.203	Antenna Requirement	Pass
5.1.2	15.225 (a)(b)(c)	Field Strength of Fundamental Emissions	Pass
5.1.3	15.225 (d)	Radiated Spurious Emissions	Pass
5.1.4	15.225 (e)	Frequency Stability	Pass
5.1.5	15.215 (c)	20 dB Bandwidth	Pass
5.1.5	2.1049	99% Occupied Bandwidth	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.

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HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN23UNR2 (P15C-NFC) 001	Original Release	2023-05-08

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
FCC 47CFR Part 15: Subpart C Section 15.225
FCC 47CFR Part 2: Subpart J Section 2.1049
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)	± 1.30 dB
Radiated Emission (200 MHz ~ 1 GHz)	± 1.30 dB
Mains Conducted Emission	± 1.65 dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a VTAP50 working at 13.56 MHz with NFC function.
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	VTAP50
Type Identification	VTAP50
FCC ID	2A282-VTAP50

Technical Specification of EUT

Item	EUT information
Operating Frequency	13.56 MHz
Operation Voltage	5Vdc
Modulation	ASK
Antenna Information	Refer to 5.1.1
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 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: The EUT has a serial interface which makes it possible to read data from the NFC reader. The NFC reader is permanently on.

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

The samples were used as follows:

A003445605-001

A003445605-002

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

EUT Configure Mode	Applicable To				Description
	Radiated Spurious Emissions	Frequency Stability	20 dB Bandwidth	Mains Conducted Emission	
-	√	√	√	√	-

Note:

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

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)
-	13.56	13.56

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 (MHz)	Tested Frequency (MHz)
-	13.56	13.56

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)
-	13.56	13.56

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)
-	13.56	13.56

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Radiated Spurious Emissions	23.4-24.9 °C	61-63 %	Ray Huang
Frequency Stability	22.5-23.2 °C	48.7-53.4 %	Andy Chen
20 dB Bandwidth	22.5-23.2 °C	48.7-53.4 %	Andy Chen
Mains Conducted Emission	21.1-24.9- °C	51.7-54.9 %	Ray Haung

4.3 Special Accessories and Auxiliary Equipment

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

Accessory of EUT

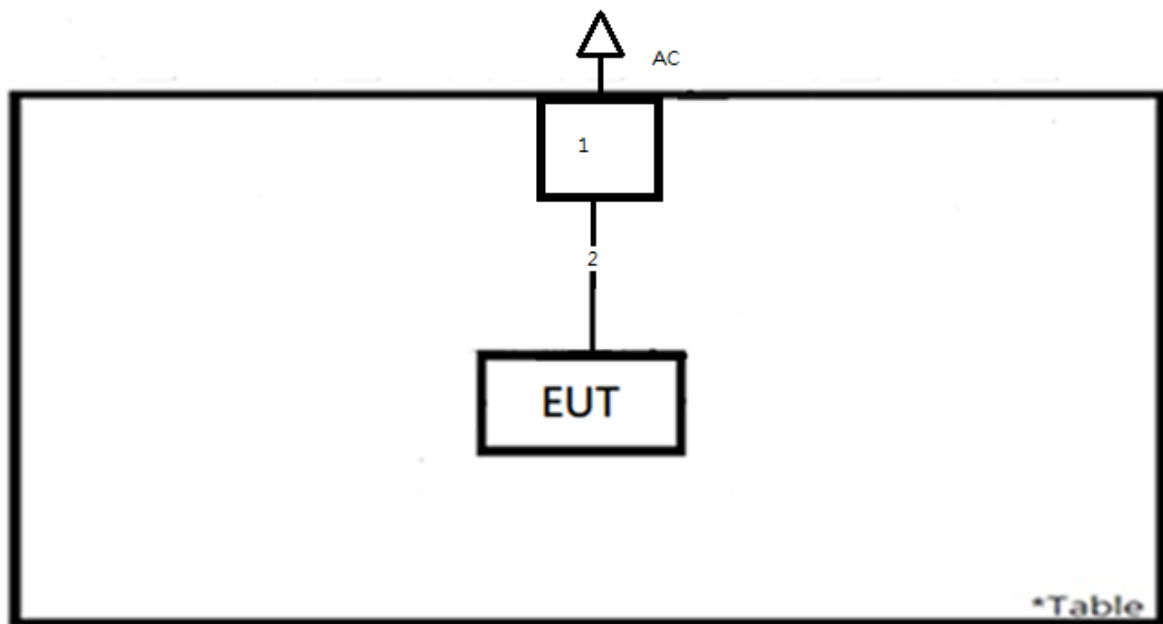
None.

Support Unit

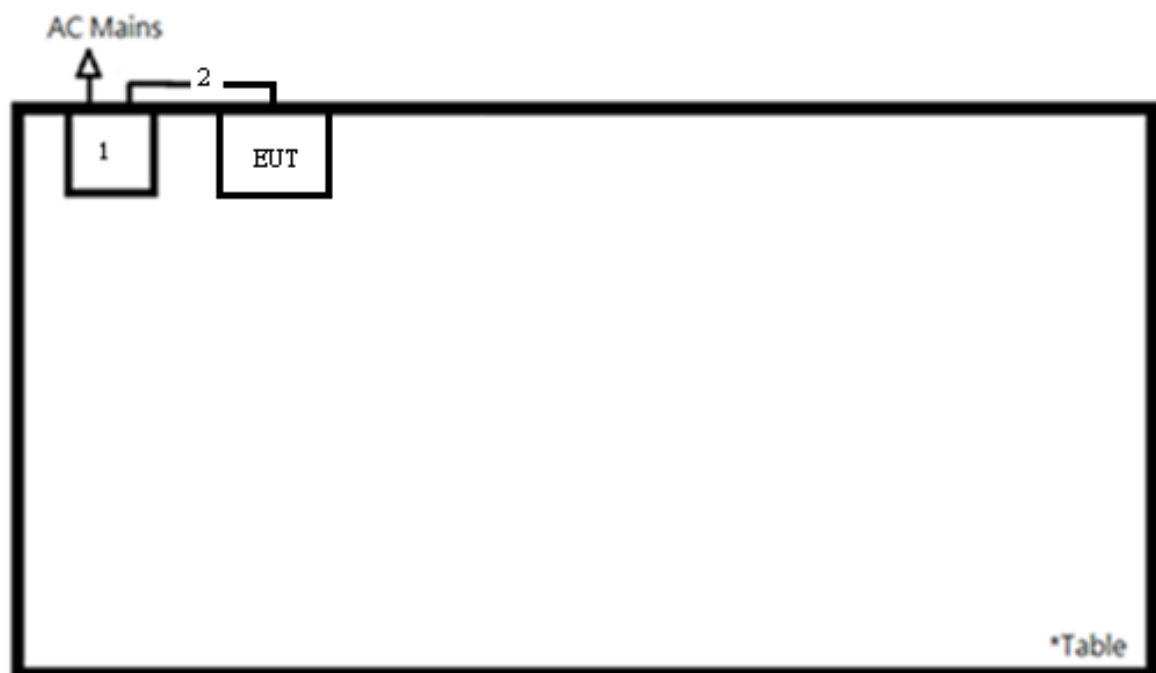
For radiated and mains conducted tests					
No.	Description	Brand	Model	S/N	Remark
1	Adapter	OPPO	VC56JACH	-	-
2	USB to Micro	TUV	TUV-01	-	150 cm non-shielded cable w/o core
Conducted Test					
-	Power Supply	GWINSTEK	GPS-3303	GEU915620	-

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

The antenna is a printed PCB antenna with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.
Refer to EUT photo for details.

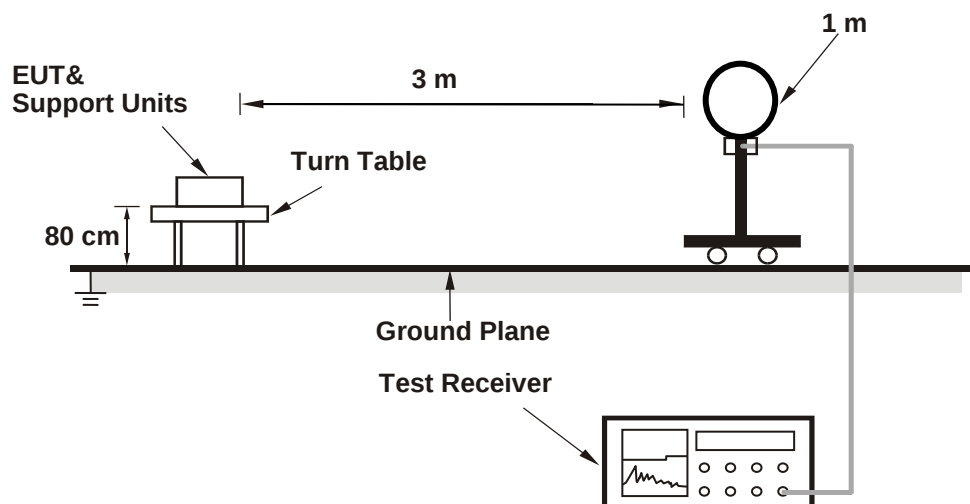
5.1.2 Field Strength of Fundamental Emissions

Limit

- The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup



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

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Page 15 of 25**Test Instruments**

Test Date: 2023/4/12

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
30MHz ~ 1GHz					
Receiver	R&S	ESR7	102109	2023/2/24	2024/2/23
Bilog Antenna	SCHWARZBECK	VULB-9168	00949	2022/5/29	2023/5/28
LF-AMP	Agilent	8447D	2944A107722	2023/3/22	2024/3/20
9kHz ~ 30MHz					
Receiver	R&S	ESR7	102109	2023/2/24	2024/2/23
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2023/1/4	2024/1/3

Test Procedures

- 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: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

Test Results

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

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

Limit at 30m = 15848 (uV/m)

****Limit at 3m** = $20 \cdot \log(15848) + 40 \log(30\text{m}/3\text{m})$ (dBuV/m)
= 84+40 (dBuV/m)
= 124 (dBuV/m)

Please refer to Appendix A.

5.1.3 Radiated Spurious Emissions

Limit

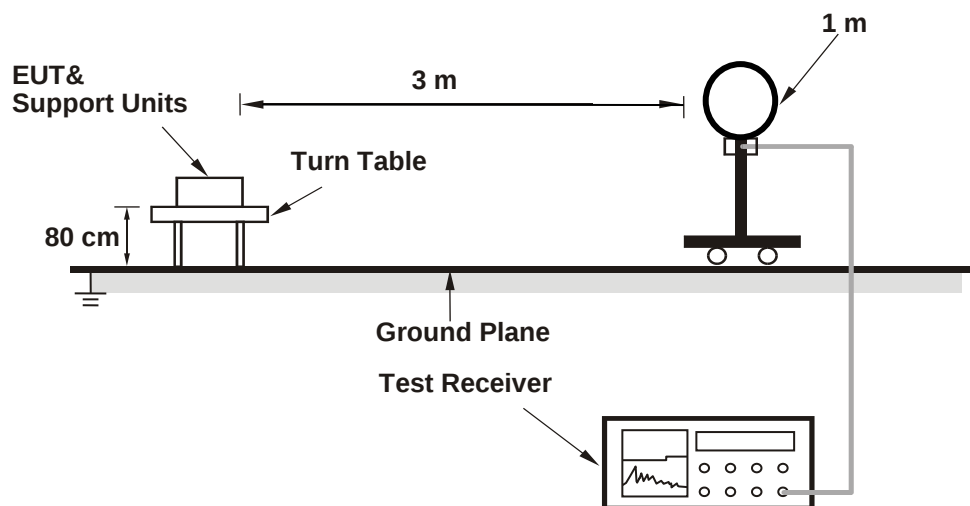
The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209 as below table:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

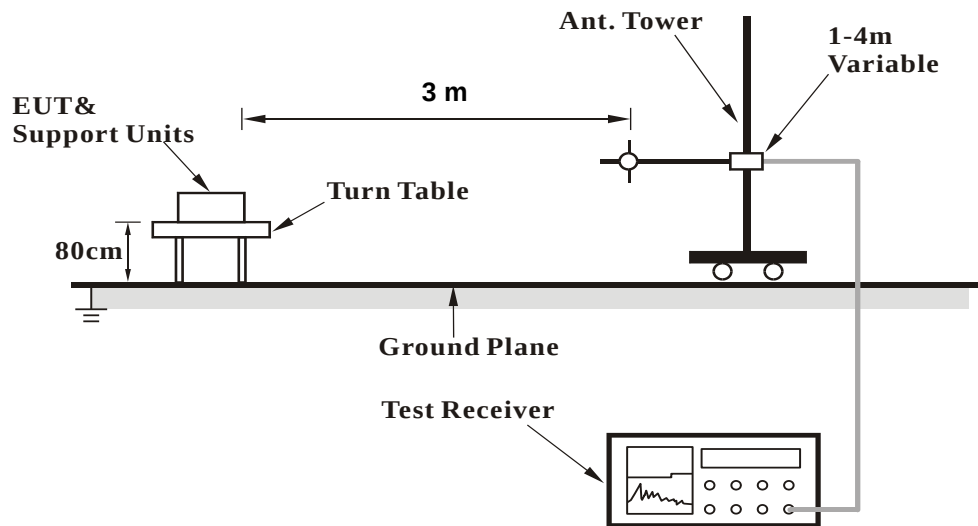
Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup

<Radiated Emissions below 30 MHz>



<Radiated Emissions 30 MHz to 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. 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.

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.

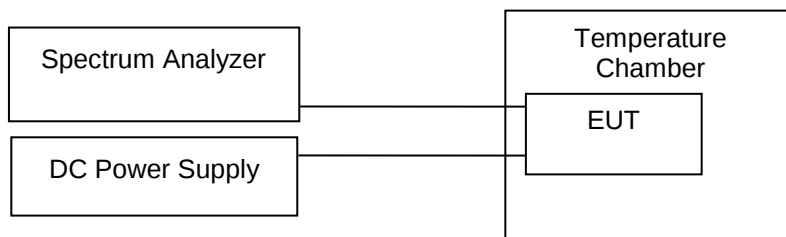
5.1.4 Frequency Stability

Limit

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01 % of the operating frequency over a temperature variation of -20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85 % to 115 % of the rated supply voltage at a temperature of 20 degrees C.

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	2023/2/23	2024/2/22	2023/4/12	2023/4/12
Thermal Chamber	Giant Force	GHT-150-40-CP-SD	MAA1902-011	2022/4/15	2023/4/14	2023/4/12	2023/4/12

Test Procedures

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turned the EUT on and coupled its output to a spectrum analyzer.
- Turned the EUT off and set the chamber to the highest temperature specified.
- Allowed sufficient time (approximately 30 min) for the temperature of the chamber to stabilize then turned the EUT on and measured the operating frequency after 2, 5, and 10 minutes.
- Repeated step b and c with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85 % to 115 % and the frequency record.

Frequency (MHz)		13.56		V _{normal} : 5Vdc		V _{max} : 5.75Vdc		V _{min} : 4.25Vdc	
Condition		Test Time				Frequency Error (ppm)			
Extreme	Modulation Mode	0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min
T _{20°C} V _{max}	CW	13.56094	13.56094	13.56094	13.56094	69.40	69.40	69.40	69.40
T _{20°C} V _{min}	CW	13.56094	13.56094	13.56094	13.56094	69.40	69.40	69.40	69.40
T _{70°C} V _{nom}	CW	13.56101	13.56101	13.56101	13.56101	74.71	74.71	74.71	74.71
T _{60°C} V _{nom}	CW	13.56094	13.56094	13.56101	13.56101	69.40	69.40	74.71	74.71
T _{50°C} V _{nom}	CW	13.56094	13.56094	13.56094	13.56094	69.40	69.40	69.40	69.40
T _{40°C} V _{nom}	CW	13.56094	13.56094	13.56094	13.56094	69.40	69.40	69.40	69.40
T _{30°C} V _{nom}	CW	13.56094	13.56094	13.56094	13.56094	69.40	69.40	69.40	69.40
T _{20°C} V _{nom}	CW	13.56094	13.56094	13.56094	13.56094	69.40	69.40	69.40	69.40
T _{10°C} V _{nom}	CW	13.56094	13.56094	13.56094	13.56094	69.40	69.40	69.40	69.40
T _{0°C} V _{nom}	CW	13.56094	13.56094	13.56087	13.56087	69.40	69.40	64.01	64.01
T _{-10°C} V _{nom}	CW	13.56087	13.56087	13.56087	13.56087	64.01	64.01	64.01	64.01
T _{-20°C} V _{nom}	CW	13.56087	13.56087	13.56087	13.56087	64.01	64.01	64.01	64.01
T _{-25°C} V _{nom}	CW	13.56087	13.56087	13.56087	13.56087	64.01	64.01	64.01	64.01
Limit (ppm)		-				100			
Result		Pass							

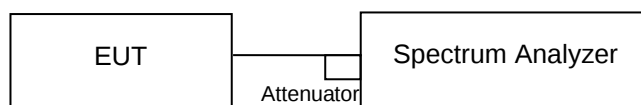
5.1.5 20 dB Bandwidth and 99% Occupied Bandwidth

Limit

The 20 dB bandwidth shall be specified in operating frequency band.

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	2023/2/23	2024/2/22	2023/4/12	2023/4/12
Thermal Chamber	Giant Force	GHT-150-40-CP-SD	MAA1902-011	2022/4/15	2023/4/14	2023/4/12	2023/4/12

Test Procedure

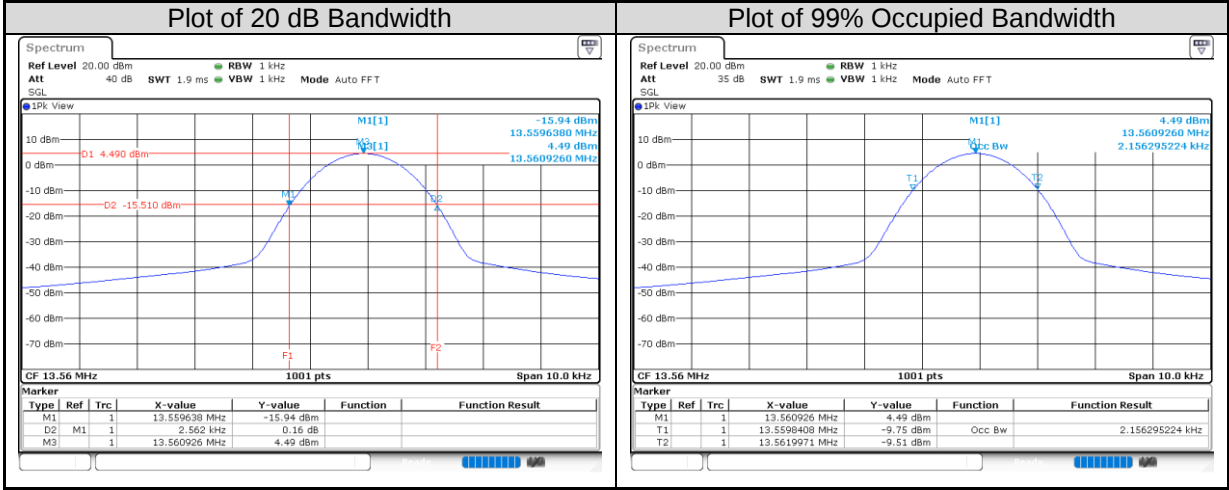
<20 dB Bandwidth>

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 1 kHz RBW and 3 kHz VBW. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

<99% 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



5.2 Mains Emission

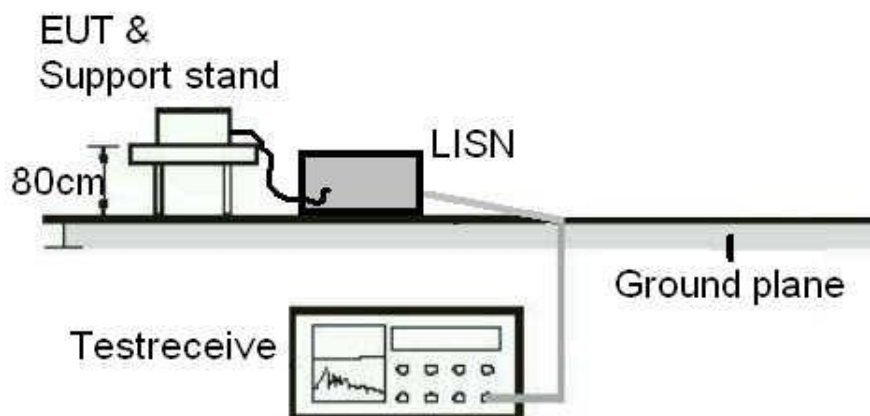
5.2.1 Mains Conducted Emission

Limit

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

Kind of Test Site Shielded room

Test Setup



Test Instruments

Test Date: 2023/4/12

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Two-Line V-Network	Rohde & Schwarz	ENV216	101938	2022/9/22	2023/9/21
EMI Test Receiver	R&S	ESCI	100797	2022/6/19	2023/6/18

Test Procedures

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

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

Test Results

Please refer to Appendix A.

Appendix A: Test Results of Radiated Spurious Emissions

Fundamental Emissions

Open

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

Level (dBuV/m) Date: 2023-04-12

Frequency (MHz)

	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	13.552	62.68	40.88	21.80	90.50	-27.82	100	1	QP	Open		
2	13.560	72.10	50.30	21.80	124.00	-51.90	100	354	Peak	Open		
3	13.566	68.46	46.66	21.80	124.00	-55.54	100	11	QP	Open		

Close

TÜV Rheinland Taiwan Ltd.
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Level (dBuV/m) Date: 2023-04-12

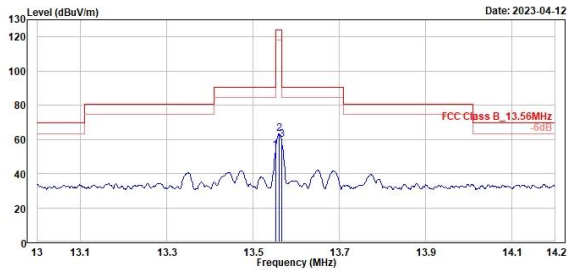
Frequency (MHz)

	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	13.552	58.40	36.60	21.80	90.50	-32.10	100	279	QP	Close		
2	13.560	68.00	46.20	21.80	124.00	-56.00	100	279	Peak	Close		
3	13.566	64.34	42.54	21.80	124.00	-59.66	100	279	QP	Close		

Ground



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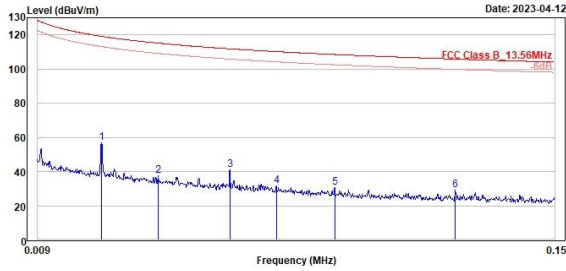
	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	13.552	53.53	31.73	21.80	90.50	-36.97	100	349 QP	Ground	
2	13.560	63.33	41.53	21.80	124.00	-60.67	100	349 Peak	Ground	
3	13.566	59.70	37.90	21.80	124.00	-64.30	100	42 QP	Ground	

Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

9kHz~150kHz(Open)



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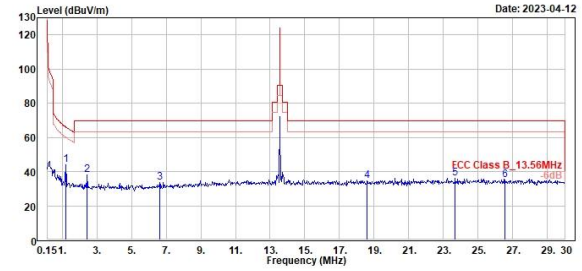


	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	0.026	57.03	38.08	18.95	119.13	-62.10	100	266	Peak	Open		
2	0.042	37.56	18.41	19.15	115.16	-77.60	100	278	Peak	Open		
3	0.061	40.83	21.98	18.85	111.82	-70.99	100	173	Peak	Open		
4	0.074	31.41	12.87	18.54	110.19	-78.78	100	67	Peak	Open		
5	0.090	30.65	12.49	18.16	108.50	-77.85	100	113	Peak	Open		
6	0.123	29.27	11.25	18.02	105.80	-76.53	100	67	Peak	Open		

150kHz~30MHz(Open)



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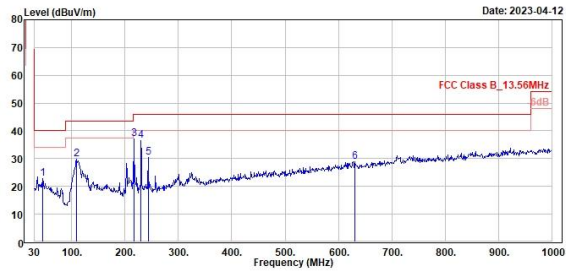
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	1.225	44.23	25.09	19.14	65.84	-21.61	100	42	Peak	Open		
2	2.448	38.16	18.68	19.48	69.50	-31.34	100	42	Peak	Open		
3	6.627	33.44	13.27	20.17	69.50	-36.06	100	208	Peak	Open		
4	18.597	34.77	12.62	22.15	69.50	-34.73	100	80	Peak	Open		
5	23.672	36.07	13.80	22.27	69.50	-33.43	100	300	Peak	Open		
6	26.567	34.89	12.59	22.30	69.50	-34.61	100	66	Peak	Open		

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

Horizontal



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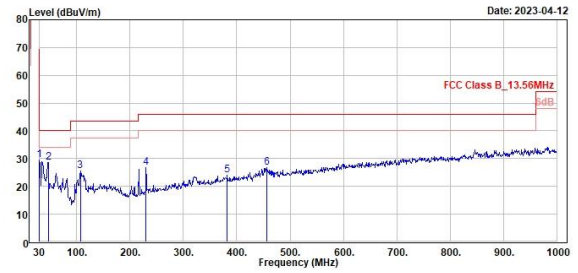


	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			
1	45.520	22.91	30.23	-7.32	40.00	-17.09		300	360	Peak	Horizontal	
2	188.570	29.82	40.87	-11.05	43.50	-13.68		300	70	Peak	Horizontal	
3	216.240	37.08	46.63	-9.55	46.00	-8.92		100	278	Peak	Horizontal	
4	229.820	36.51	45.22	-8.71	46.00	-9.49		100	114	Peak	Horizontal	
5	243.400	38.52	38.82	-8.30	46.00	-15.48		100	99	Peak	Horizontal	
6	631.400	28.96	28.83	0.13	46.00	-17.04		300	256	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	30.000	29.40	38.00	-8.60	40.00	-10.60		100	193	Peak	Vertical	
2	46.490	28.54	35.76	-7.22	40.00	-11.46		200	330	Peak	Vertical	
3	106.630	25.68	37.05	-11.37	43.50	-17.82		100	240	Peak	Vertical	
4	229.820	26.66	35.37	-8.71	46.00	-19.34		200	24	Peak	Vertical	
5	382.110	24.07	28.82	-4.75	46.00	-21.93		300	200	Peak	Vertical	
6	455.830	26.66	30.88	-3.42	46.00	-19.34		200	172	Peak	Vertical	

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

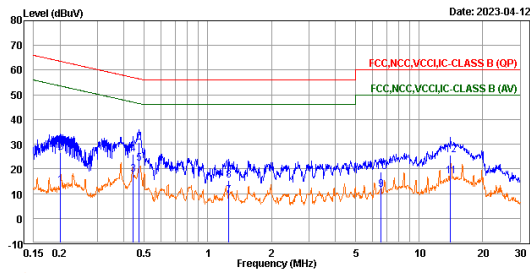
Worst Band

(Line)

(Neutral)



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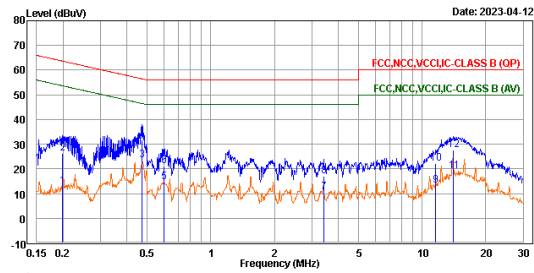


Trace: 1

	Freq	Level	Read	Limit	Over			
	MHz	dBuV	Level	Line	Limit	Remark	Pol/Phase	Note
		dBuV	Factor	dB	dB			
1	0.20	13.22	3.54	53.56	-40.34	Average	line1	
2	0.20	26.58	16.90	63.56	-36.98	QP	line1	
3	0.44	17.85	8.17	57.02	-39.17	Average	line1	
4	0.44	25.79	16.11	57.02	-31.23	QP	line1	
5	0.47	22.29	12.61	56.44	-34.15	Average	line1	
6	0.47	30.72	21.04	56.44	-25.72	QP	line1	
7	1.26	9.25	-0.45	50.00	-40.75	Average	line1	
8	1.26	15.44	5.74	50.00	-34.56	QP	line1	
9	6.59	11.61	1.83	50.00	-38.39	Average	line1	
10	6.59	18.71	8.93	50.00	-31.29	QP	line1	
11	14.06	16.97	7.16	50.00	-33.03	Average	line1	
12	14.06	25.52	15.71	50.00	-24.48	QP	line1	



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Trace: 1

	Freq	Level	Read	Limit	Over			
	MHz	dBuV	Level	Line	Limit	Remark	Pol/Phase	Note
		dBuV	Factor	dB	dB			
1	0.20	12.89	3.23	53.64	-40.75	Average	neutral	
2	0.20	26.22	16.56	63.64	-37.42	QP	neutral	
3	0.47	23.58	13.92	56.44	-32.86	Average	neutral	
4	0.47	31.89	22.23	56.44	-24.55	QP	neutral	
5	0.60	14.76	5.10	56.00	-41.24	Average	neutral	
6	0.60	21.30	11.64	56.00	-34.70	QP	neutral	
7	3.41	10.57	0.85	50.00	-39.43	Average	neutral	
8	3.41	17.18	7.46	50.00	-32.82	QP	neutral	
9	11.58	13.41	3.60	50.00	-36.59	Average	neutral	
10	11.58	22.20	12.39	50.00	-27.80	QP	neutral	
11	14.06	18.98	9.15	50.00	-31.02	Average	neutral	
12	14.06	27.77	17.94	50.00	-22.23	QP	neutral	