

TEST REPORT

Test Report No. : UL-RPT-RP13754225-2716A

Customer	:	VEGA Grieshaber KG
Model No.	:	VEGAPULS 6X
FCC ID	:	O6QPS6XW
Technology	:	Level Probing Radar
Test Standard(s)	:	FCC Parts 15.209(a) & 15.256(f)(g)(h)
Test Laboratory	:	UL International (UK) Ltd, Basingstoke, Hampshire, RG24 8AH, United Kingdom

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- 2. The results in this report apply only to the sample(s) tested.
- 3. The sample tested is in compliance with the above standard(s).
- 4. The test results in this report are traceable to the national or international standards.
- 5. Version 1.0.

Date of Issue:

23 February 2022

Checked by:

- WELDERS

Sarah Williams RF Operations Leader, Radio Laboratory

Company Signatory:

Ulle

Ben Mercer Lead Project Engineer, Radio Laboratory



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UL International (UK) LTD

Customer Information

Company Name:	VEGA Grieshaber KG	
Address:	Am Hohenstein 113 D-77761 Schiltach	
	Germany	

Report Revision History

Version Number	Issue Date	Revision Details	Revised By
1.0	23/02/2022	Initial Version	Sarah Williams

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1 Attestation of Test Results

1.1 Description of EUT

The equipment under test was a radar sensor for the continuous level measurement of liquids.

1.2 General Information

Specification Reference:	47CFR15.256	
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) – Section 15.256	
Specification Reference:	47CFR15.209	
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) – Sections 15.209	
Site Registration:	685609	
Lab Designation No.:	UK2011	
Location of Testing:	Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom	
Test Dates:	04 January 2022 to 21 February 2022	

1.3 Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.35(c)	Transmitter Duty Cycle	
Part 15.256(f)	Transmitter Fundamental Emission Bandwidth	
Part 15.256(g) Transmitter Maximum Peak EIRP		0
Part 15.256(g)	(g) Transmitter Maximum Average EIRP	
Part 15.256(h) & 15.209(a)	Transmitter Unwanted Emissions	
Key to Results		
I = Complied	bly	

Note(s):

1. The measurement was performed to assist in the calculation of the maximum average EIRP level.

1.4 Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

2 Summary of Testing

2.1 Facilities and Accreditation

The test site and measurement facilities used to collect data are located at Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom. The following table identifies which facilities were utilised for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

Site 1	х
Site 2	-
Site 17	х

UL International (UK) Ltd is accredited by the United Kingdom Accreditation Service (UKAS). UKAS is one of the signatories to the International Laboratory Accreditation Co-operation (ILAC) Arrangement for the mutual recognition of test reports. The tests reported herein have been performed in accordance with its terms of accreditation.

2.2 Methods and Procedures

Reference:	ANSI C63.10-2013	
Title:	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	
Reference:	KDB 890966 D01 Level Probing Radar v01r01 September 10, 2014	
Title:	Measurement Procedure for Level Probing Radars	

2.3 Calibration and Uncertainty

Measuring Instrument Calibration

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

Measurement Uncertainty & Decision Rule

Overview

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

Decision Rule

The decision rule applied is based upon the accuracy method criteria. The measurement uncertainty is met and the result is considered in conformance with the requirement criteria if the observed value is within the prescribed limit.

Measurement Uncertainty

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Duty Cycle	75 GHz to 85 GHz	95%	±1.14 %
Fundamental Emission Bandwidth	75 GHz to 85 GHz	95%	±4.59 %
Maximum Peak EIRP	75 GHz to 85 GHz	95%	±5.12 dB
Maximum Average EIRP	75 GHz to 85 GHz	95%	±5.12 dB
Radiated Emissions	9 kHz to 30 MHz	95%	±5.32 dB
Radiated Emissions	30 MHz to 1 GHz	95%	±3.30 dB
Radiated Emissions	1 GHz to 40 GHz	95%	±2.94 dB
Radiated Emissions	40 GHz to 200 GHz	95%	±5.12 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

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2.4 Test and Measurement Equipment

Test Equipment Used for Transmitter Bandwidth, Duty Cycle and EIRP Tests

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M2038	Thermohygrometer	Testo	608-H1	45124919	09 Dec 2022	12
M1832	Signal Analyser	Keysight	N9010A	MY53470303	06 Mar 2022	24
G0614	Signal Generator	Rohde & Schwarz	SMB100A	177687	30 Jun 2023	36
M2064	Downconverter	Virginia Diodes	WR12SAX	SAX 325	17 Feb 2022	24
A3194	Attenuator	AtlanTecRF	AS8167	J510060687	Calibrated before use	-

Test Equipment Used for Transmitter Radiated Emissions Tests

Asset No.	Instrument	Manufacturer	Туре No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M2003	Thermohygrometer	Testo	608-H1	45046641	09 Dec 2022	12
K0017	3m RSE Chamber	Rainford EMC	N/A	N/A	26 Oct 2022	12
M1995	Test Receiver	Rohde & Schwarz	ESU40	100428	12 Oct 2022	12
A3167	Pre-Amplifier	Com-Power	PAM-103	18020010	20 Oct 2022	12
A2148	Attenuator	AtlanTecRF	AN18-06	090202-06	Calibrated before use	-
A2948	Pre-Amplifier	Com-Power	PAM-118A	551087	20 Oct 2022	12
A2889	Antenna	Schwarzbeck	BBHA 9120 B	653	26 Oct 2022	12
A2892	Antenna	Schwarzbeck	BBHA 9170	9170-727	02 Nov 2022	12
M2041	Thermohygrometer	Testo	608-H1	45119912	09 Dec 2022	12
M1832	Signal Analyzer	Keysight	N9010A	MY53470303	09 May 2022	12
A2963	Antenna	Link Microtek	AM19HA-ULV1	14929	04 Feb 2023	12
A3212	Low Pass Filter	Sage Millimeter	SWF-50354340- 22-L1	B10754-01	Calibrated before use	-
M1621	Harmonic Mixer	Keysight	11970U	3003A01631	27 May 2024	36
M2066	Downconverter	Virginia Diodes	WR6.5SAX	SAX 392	17 Feb 2022	24
M2067	Downconverter	Virginia Diodes	WR4.3SAX	SAX 391	17 Feb 2022	24
M2069	Downconverter	Virginia Diodes	WR15.0 SAX	SAX 394	17 Feb 2022	24
M2065	Downconverter	Virginia Diodes	WR10SAX	SAX 393	17 Feb 2022	24
A2967	Antenna	Link Microtek	AM10HA-ULV1	14933	04 Feb 2023	12
A2964	Antenna	Link Microtek	AM15HA-ULV1	14930	04 Feb 2023	12
M2040	Thermohygrometer	Testo	608-H1	45124934	09 Dec 2022	12
K0001	3m RSE Chamber	Rainford EMC	N/A	N/A	06 Sep 2022	12
M2044	Test Receiver	Rohde & Schwarz	ESU26	100122	29 Apr 2022	12
A553	Antenna	Chase	CBL6111A	1593	23 Nov 2022	12
A3154	Pre-Amplifier	Com-Power	PAM-103	18020012	24 Aug 2022	12
A3165	Loop Antenna	ETS-Lindgren	6502	00224383	12 Oct 2022	12

<u>3 Equipment Under Test (EUT)</u>

3.1 Identification of Equipment Under Test (EUT)

Brand Name:	VEGAPULS
Model No.:	VEGAPULS 6X
Test Sample Serial Number:	55822749
Hardware Version:	1.0.0
Software Version:	1.00.00
FCC ID:	O6QPS6XW

3.2 Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.3 Additional Information Related to Testing

Technology Tested:	Level Probing Radar		
Type of Unit:	Transceiver		
Modulation:	FMCW		
Power Supply Requirement(s):	Nominal 24.0 VDC		
Maximum Conducted Output Power:	2.9 dBm		
Transmit Frequency Range:	75 GHz to 85 GHz		
Transmit Channels Tested:	Channel Bandwidth Channel Frequency (GHz) (GHz)		
	2 79.500		79.500
	4 80.000		80.000
	8 80.000		

3.4 Description of Available Antennas

The radio utilizes various external antennas, with the following maximum gains:

Model Number	Туре	Frequency Range (MHz)	Antenna Gain (dBi)
VEGAZW-6-74539	Thread with Integrated Horn Antenna	75000 to 85000	25.3
VEGAZW-6-74538	Flange with Lens Antenna	75000 to 85000	30.7

3.5 Description of Test Setup

Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Waveguide Adapter
Brand Name:	MI-WAVE
Model Name or Number:	284E-102/387
Serial Number:	2051
Description:	Round Nose Pliers
Brand Name:	Belzer
Model Name or Number:	2464-A19
Serial Number:	2051
Description:	DC Power Supply
Brand Name:	ISO-Tech
Model Name or Number:	IPS2302A
Serial Number:	504E005G2
Description:	DC Power Supply
Brand Name:	Tenma
Model Name or Number:	72-10480
Serial Number:	08250099280

Operating Modes

The EUT was tested in the following operating mode(s):

• Transmitting at maximum power on each supported chirp bandwidth with FMCW modulation.

Configuration and Peripherals

The EUT was tested in the following configuration(s):

- The EUT was configured using the built-in user interface. The chirp bandwidth was set by varying the maximum measurement distance setting.
- The EUT was powered via a 24 VDC bench power supply connected to a 120 VAC 60 Hz mains supply.
- The customer supplied a waveguide adapter to transition from the proprietary connector to rectangular waveguide. The adapter loss is considered negligible and has therefore not been included in path loss calculations.
- The customer requested for conducted measurements to be performed for test efficiency and accuracy purposes.
- Radiated Transmitter Unwanted Emissions were performed with the EUT in the position that produced worst case with respect to emission. No accessories/peripherals were employed during test as there were no ports on the EUT to populate.
- Radiated Transmitter Unwanted Emissions were performed with the EUT transmitting an 8 GHz chirp bandwidth, as preliminary investigation showed this to be the worst case with respect to emissions.
- The EUT can be supplied with a range of antennas. Testing was performed on the highest gain antenna of each type.

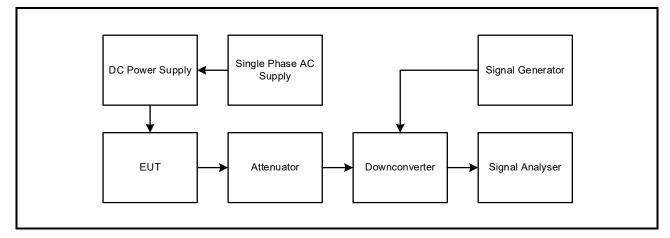
VERSION 1.0

ISSUE DATE: 23 FEBRUARY 2022

Test Setup Diagrams

Conducted Tests:

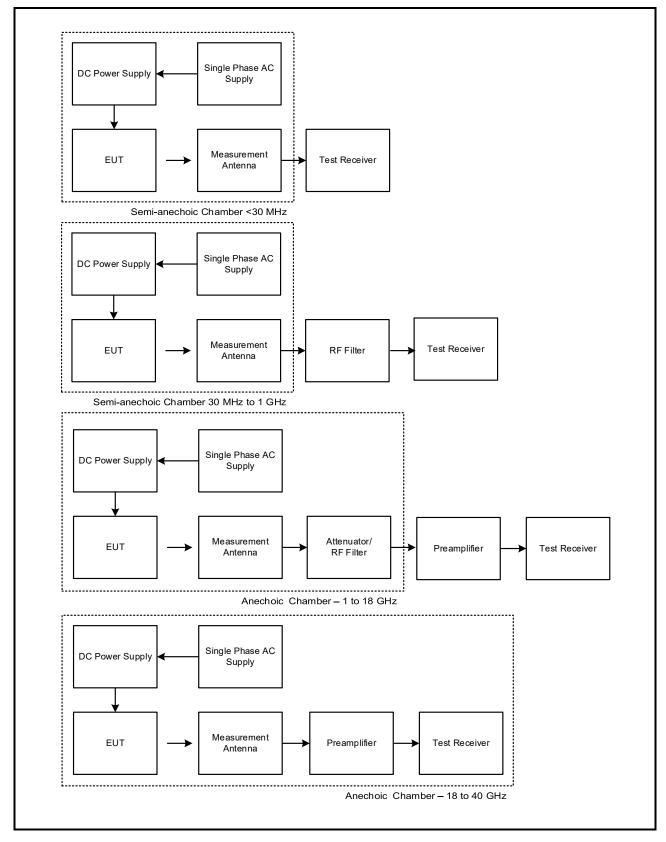
Test Setup for Transmitter Bandwidth, Duty Cycle and EIRP



Test Setup Diagrams (continued)

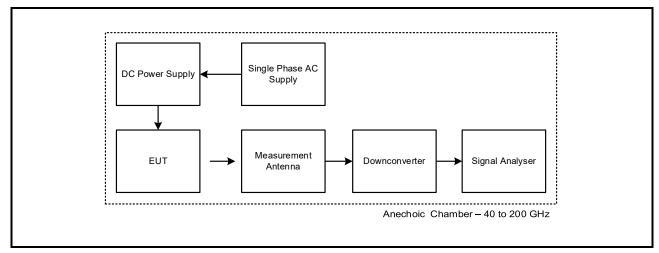
Radiated Tests:

Test Setup for Transmitter Radiated Emissions



Test Setup Diagrams (continued)

Test Setup for Transmitter Radiated Emissions (continued)



4 Antenna Port Test Results

4.1 Transmitter Duty Cycle

Test Summary:

Test Engineer:	Ben Mercer	Test Dates:	04 February 2022 & 21 February 2022
Test Sample Serial Number:	55822749		

FCC Reference:	Part 15.35(c)
Test Method Used:	ANSI C63.10 Section 11.6

Environmental Conditions:

Temperature (°C):	21 to 23
Relative Humidity (%):	39 to 42

Note(s):

1. In order to assist with the measurement of the Maximum Average EIRP, measurements were made of the duty cycle. The transmitter duty cycle was measured using a signal analyser in the time domain.

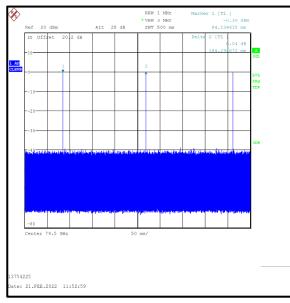
2. The customer has declared duty cycle of 170 ms to 200 ms, depending on voltage supply conditions.

3. The customer has declared a sweep time (T_S) of 2 ms.

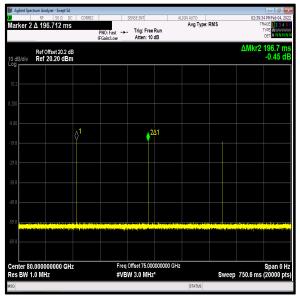
Transmitter Duty Cycle (continued)

Results:

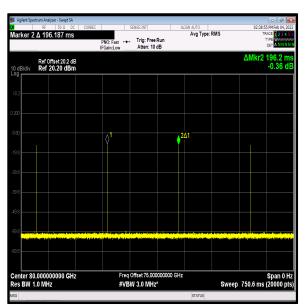
Channel Bandwidth (GHz)	Duty Cycle (ms)
2	184.295
4	196.200
8	196.700







8 GHz



4 GHz

4.2 Transmitter Fundamental Emission Bandwidth

Test Summary:

Test Engineer:	Ben Mercer	Test Dates:	04 February 2022 & 07 February 2022
Test Sample Serial Number:	55822749		

FCC Reference:	Part 15.256(f)
Test Method Used:	KDB 890966 Section D & ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	20 to 21
Relative Humidity (%):	36 to 42

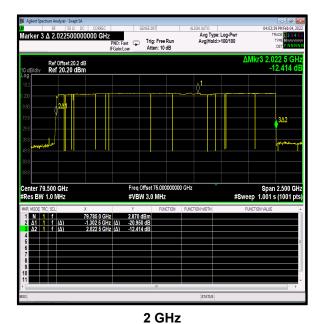
Note(s):

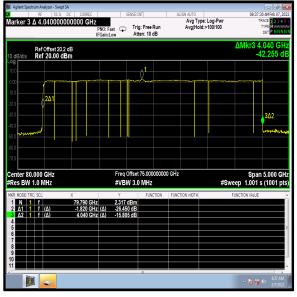
- 1. The signal analyser resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz. A peak detector was used, with Max Hold trace mode, and with sweep time set to ensure coincidence with the FMCW signal. The emission bandwidth was measured at 10 dB down from the peak of the signal.
- 2. The downconverter was connected to the antenna port on the EUT using suitable attenuation and waveguide.

Transmitter Fundamental Emission Bandwidth (continued)

Results:

Channel Bandwidth (GHz)	10 dB Bandwidth (GHz)	Limit (MHz)	Margin (GHz)	Result
2	2.023	≥50	1.973	Complied
4	4.040	≥50	3.990	Complied
8	8.040	≥50	7.990	Complied





4 GHz



8 GHz

4.3 Transmitter Maximum Peak EIRP

Test Summary:

Test Engineer:	Ben Mercer	Test Date:	04 February 2022
Test Sample Serial Number:	55822749		

FCC Reference:	Part 15.256(g)
Test Method Used:	KDB 890996 Section F

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	42

Note(s):

- 1. The signal analyser resolution bandwidth was set to 1 MHz and video bandwidth of 3 MHz. A peak detector was used, with Max Hold trace mode, and a sweep time set to ensure coincidence with the FMCW signal. A marker was placed at the peak of the signal and the results recorded in the tables below.
- 2. The 50 MHz correction factor was not applied since the EUT uses FMCW modulation and the instantaneous signal is narrowband, with full power in a 3 MHz bandwidth.
- 3. The Downconverter was connected to the antenna port on the EUT using suitable attenuation and waveguide. An RF level offset was entered on the signal analyser to compensate for the loss of the attenuator and waveguide.
- 4. The conducted power was added to the declared antenna gain to obtain the EIRP.

Results: VEGAZW-6-74539

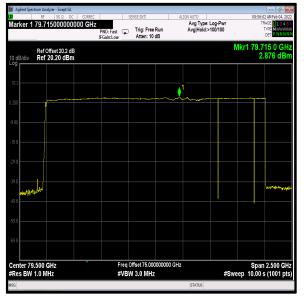
Channel Bandwidth (GHz)	Conducted Peak Power (dBm/1 MHz)	Declared Antenna Gain (dBi)	EIRP (dBm/1 MHz)	EIRP Limit (dBm/ 50 MHz)	Margin (dB)	Result
2	2.9	25.3	28.2	34.0	5.8	Complied
4	2.2	25.3	27.5	34.0	6.5	Complied
8	1.4	25.3	26.7	34.0	7.3	Complied

Results: VEGAZW-6-74538

Channel Bandwidth (GHz)	Conducted Peak Power (dBm/1 MHz)	Declared Antenna Gain (dBi)	EIRP (dBm/1 MHz)	EIRP Limit (dBm/ 50 MHz)	Margin (dB)	Result
2	2.9	30.7	33.6	34.0	0.4	Complied
4	2.2	30.7	32.9	34.0	1.1	Complied
8	1.4	30.7	32.1	34.0	1.9	Complied

Transmitter Maximum Peak EIRP (continued)

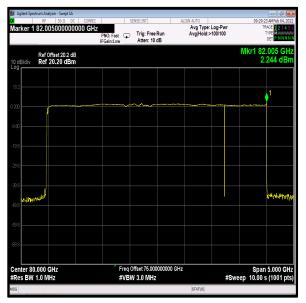
Conducted Results







8 GHz



4 GHz

4.4 Transmitter Maximum Average EIRP

Test Summary:

Test Engineer:	Ben Mercer	Test Date:	04 February 2022
Test Sample Serial Number:	55822749		

FCC Reference:	Part 15.256(g)
Test Method Used:	KDB 890996 Section F

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	42

Note(s):

1. A calculated average factor was subtracted from the peak EIRP level to obtain the average EIRP. The average factor was calculated as follows:

Average Factor = $10Log((T_s/\Delta F)/Cycle Time)$

Where:

Ts is the signal sweep time in seconds

 ΔF is the signal sweep frequency span in MHz

Cycle Time is the total time for a complete cycle of the signal including retrace and any other latency times

The minimum declared cycle time of 170 ms and sweep time of 2 ms have been used in the calculations as this represents the worst case.

- 2 GHz Bandwidth Average Factor = 10Log((2/2000)/170) = -52.3 dB
- 4 GHz Bandwidth Average Factor = 10Log((2/4000)/170) = -55.3 dB
- 8 GHz Bandwidth Average Factor = 10Log((2/8000)/170) = -58.3 dB

Channel Average Average EIRP Limit Peak EIRP Margin Bandwidth Factor EIRP Result (dBm/MHz) (dBm/MHz) (dB) (dBm/MHz) (GHz) (dB) 2 -52.3 21.1 Complied 28.2 -24.1 -3.0 4 27.5 -55.3 -27.8 -3.0 24.8 Complied 8 -31.6 28.6 Complied 26.7 -58.3 -3.0

Results: VEGAZW-6-74539

Results: VEGAZW-6-74538

Channel Bandwidth (GHz)	Peak EIRP (dBm/MHz)	Average Factor (dB)	Average EIRP (dBm/MHz)	EIRP Limit (dBm/MHz)	Margin (dB)	Result
2	33.6	-52.3	-18.7	-3.0	15.7	Complied
4	32.9	-55.3	-22.4	-3.0	19.4	Complied
8	32.1	-58.3	-26.2	-3.0	23.2	Complied

5 Radiated Test Results

5.1 Transmitter Radiated Emissions <1 GHz

Test Summary:

Test Engineers:	Nick Tye & Vi Van	Test Dates:	04 January 2022 & 19 January 2022
Test Sample Serial Number:	55822749		

FCC Reference: Part 15.256(h) & 15.209(a)			
Test Method Used:KDB 890966 Section G & ANSI C63.10 Sections 6.3, 6.4 and 6			
Frequency Range	9 kHz to 1000 MHz		

Environmental Conditions:

Temperature (°C):	20 to 22
Relative Humidity (%):	39 to 40

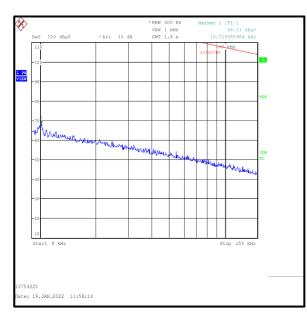
Note(s):

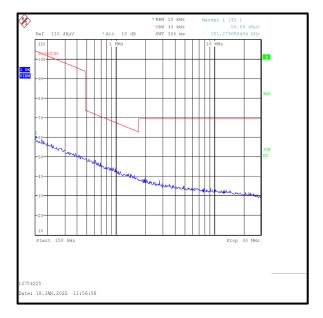
- 1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
- 2. All emissions shown on the pre-scans were investigated and found to be ambient, or > 20 dB below the appropriate limit or below the noise floor of the measurement system.
- 3. Measurements below 1 GHz were performed in semi-anechoic chambers (Asset Numbers K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Between 30 MHz and 1 GHz, maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
- 4. Pre-scans were performed and markers placed on the highest measured levels. The test receiver was configured as follows: For 9 kHz to 150 kHz, the resolution bandwidth was set to 300 Hz and video bandwidth 1 kHz. A peak detector was used and trace mode was Max Hold. For 150 kHz to 30 MHz, the resolution bandwidth was set to 10 kHz and video bandwidth 30 kHz, trace mode was Max Hold. For 30 MHz to 1 GHz, the resolution bandwidth was set to 120 kHz and video bandwidth 500 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold.
- 5. Pre-scans were performed with each antenna. Emission frequencies and amplitudes did not vary between antennas, therefore final measurements were performed on the Thread with Integrated Horn Antenna.
- 6. Final measurements were performed on the marker frequencies and the results entered into the table below. The test receiver resolution bandwidth was set to 120 kHz, using a CISPR quasi-peak detector and span wide enough to see the whole emission.

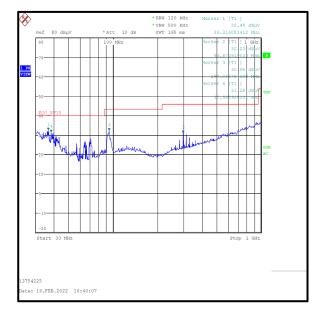
Transmitter Radiated Emissions (continued)

Results: Quasi-Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
35.3	Vertical	24.2	40.0	15.8	Complied
38.9	Vertical	22.4	40.0	17.6	Complied
280.0	Horizontal	29.4	47.0	17.6	Complied
296.0	Horizontal	31.9	47.0	15.1	Complied
312.0	Horizontal	29.3	47.0	17.7	Complied







Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying table.

5.2 Transmitter Radiated Emissions >1 GHz

Test Summary:

Test Engineer:	Vi Van	Test Dates:	05 January 2022 to 13 January 2022
Test Sample Serial Number:	55822749		

FCC Reference:	Part 15.256(h) & 15.209(a)
Test Method Used:	KDB 890966 Section G & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range	1 GHz to 200 GHz

Environmental Conditions:

Temperature (°C):	21 to 24
Relative Humidity (%):	31 to 39

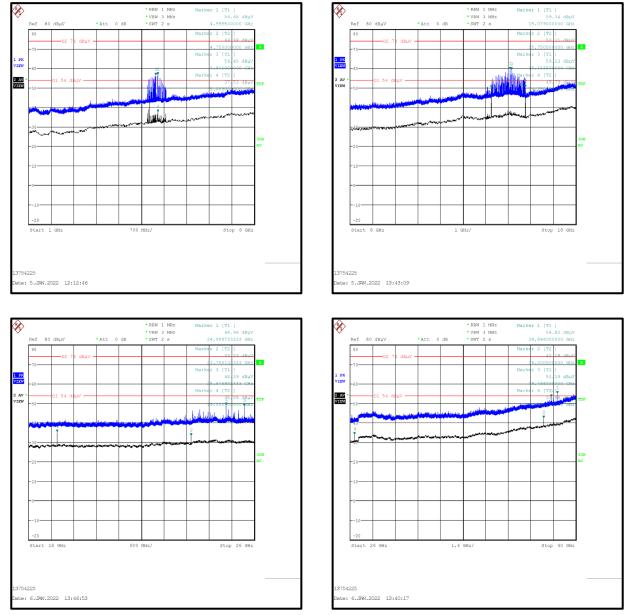
Note(s):

- 1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
- 2. All other emissions shown on the pre-scans were investigated and found to be ambient, or > 20 dB below the appropriate limit or below the noise floor of the measurement system.
- 3. In accordance with Part 15.256(I)(5), the Part 15.35(b) & (c) provisions that require emissions to be averaged over a 100 ms period and that limit the peak power to 20 dB above the average limit have not been applied.
- 4. Pre-scans above 1 GHz were performed in fully anechoic chambers (Asset Numbers K0002 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
- 5. Final measurements between 1 GHz and 40 GHz were performed in a fully anechoic chamber (Asset Number K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 m above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
- 6. Measurements above 40 GHz were performed in accordance with ANSI C63.10 Clause 9.12. Exploratory scans were performed in both azimuth and elevation with the analyser sweep time set to auto. Pre-scans were repeated at the maximised orientation using a long sweep time to minimise the impact of mixing products.
- 7. Measurement distances above 40 GHz were determined according to ANSI C63.10 Clause 9.8. Measurement distances were reduced until 6 dB noise floor clearance was achieved:

40-50 GHz – 0.5 metres 50-75 GHz – 1.0 metres 75-110 GHz – 1.0 metres 110-170 GHz – 0.5 metres 170-200 GHz – 0.5 metres

Transmitter Radiated Emissions (continued)

esults: VEGAZW-6-74539 / Average							
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result		
4686.306	Vertical	39.7	54.0	14.3	Complied		
5250.714	Vertical	37.9	54.0	16.1	Complied		
14250.020	Vertical	44.4	54.0	9.6	Complied		
38000.196	Vertical	43.7	54.0	10.3	Complied		
74906.500	Vertical	45.8	54.0	8.2	Complied		
85681.500	Vertical	48.4	54.0	5.6	Complied		
100102.500	Vertical	48.3	54.0	5.7	Complied		



Note: The above plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Radiated Emissions (continued)

et løstnen halper-lægt 27 D711061. 00460. SDKE D41 ser 2.49,5502475123756 GHz	ADDI 670	#Avg Type: Yotage Avg(Hold>11	000115 PM Jan 11, 2022 TRADE 02, 34 K 0 TRADE 02, 34 K 0	Marker 1 50.393013100437 GHz		stång Type: Yo ev Run AngHold:>11	012023 Nage 1153
<u>s</u>	PNC fast 🧊 Tidg: Free Run FGatcrilgh		Mkr2 49.502 5 GHz		PND: Fast 🖵 Tridge Fi FGeintligh Attack	048	o Mkr1 50.39
Ref 015el 253 dB Ref 01.00 dByV			47.222 dBµV	10 dBklv Ref 80.00 dBpV			42.45
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an a		enti tui test succede les esti año diaste et ester fide		710			
تقملين مقادمتناه والتعقل			2 - SK 65				
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.000 GHz V 1.0 MHz	#VBW 3.0 NHz*		Stop 50.000 GHz #Sweep 2.001 s (20000 pts)	20.0			
TTC SCL X Y FU 1 f 49.619.5 GHz 91.711 dByV 2 f 49.502.5 GHz 47.222 dByV	ICTON PUICTONNOTH	FACTORIALE		110			
2 1 49.002 5 GHz 4/7222 dByV							
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eservlage: wyt2 07900 0992 1992 1992 1992 199 174,6905116333223 042	COLOR POLINE (T) Top Free Data Francisco Harri (13)	Si keta Akng Type Ketanga Ang Hoje Ketanga	TRACE 234410 INVE 74 Available proj	60) Biggergenninger-lægt k		jonal	059 7 59 9
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1 74.9064968833229 GHz		yan) Beg Type Silage Angasat 11	TRACE 234410 INVE 74 Available proj	aci 18 Sper Speno Sogo Sang Sa 19 A – Or Trea – Orac – Dat 18 Kar 1 55:0515/2217124 Chita	127400	jonal	055 754
1 74.9064968833229 GHz		yan) Bing Tyon Silang Anghan Ti	TRACE 234410 INVE 74 Available proj	aci 18 Sper Speno Sogo Sang Sa 19 A – Or Trea – Orac – Dat 18 Kar 1 55:0515/2217124 Chita	127400	jonal	055 754
74.906496683229 GHz		yana) Beng Tyon Yahaya Anghata Ti	TRACE 234410 INVE 74 Available proj	aci 18 Sper Speno Sogo Sang Sa 19 A – Or Trea – Orac – Dat 18 Kar 1 55:0515/2217124 Chita	127400	jonal	059 7 59 9
74.905496888229 GHz		yan) Bog Tyo Song Anghar 11	TRACE 234410 INVE 14 Available proj	aci 18 Sper Speno Sogo Sang Sa 19 A – Or Trea – Orac – Dat 18 Kar 1 55:0515/2217124 Chita	127400	jonal	059 7 59 9
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1 74.9064963833229 GHz	Pole Total	9.410) 6 -0 fpr folge Apples 11 11 11 11 11 11 11 11 11 11	TRACE 234410 INVE 14 Available proj	1	isi caso Rolas C Par Edulp Ban	jorus mitas Brighter (1 Kell	ase taye (1990) 1
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1 74.906496883229 GHz	Pole Total	jossi	TRACE 234410 INVE 14 Available proj	1		jorus mitas Brighter (1 Kell	0550 1020 (19 10 10 10 10 10 10 10 10 10 10 10 10 10

Note: The above plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Radiated Emissions (continued)

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VERSION 1.0

Transmitter Radiated Emissions (continued)

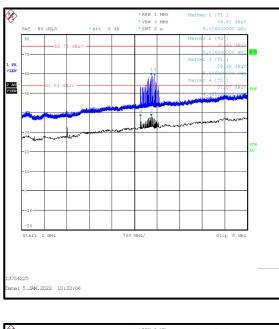


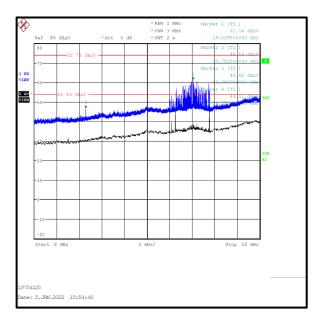
Note: The above plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

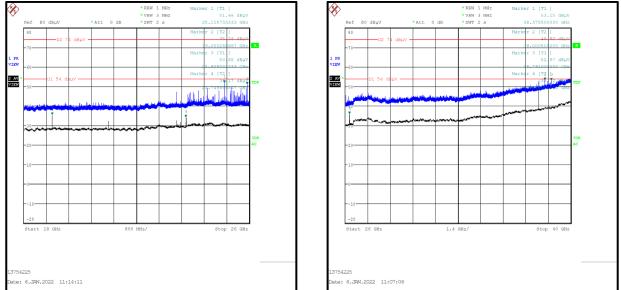
Transmitter Radiated Emissions (continued)

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4750.159	Vertical	47.9	54.0	6.1	Complied
14250.028	Vertical	46.3	54.0	7.7	Complied
15750.184	Vertical	40.7	54.0	13.3	Complied
37999.963	Vertical	44.6	54.0	9.4	Complied
48147.851	Vertical	47.1	54.0	6.9	Complied
74994.000	Vertical	46.6	54.0	7.4	Complied
85727.500	Vertical	47.6	54.0	6.4	Complied
101440.100	Vertical	46.6	54.0	7.4	Complied

Results: VEGAZW-6-74538 / Average

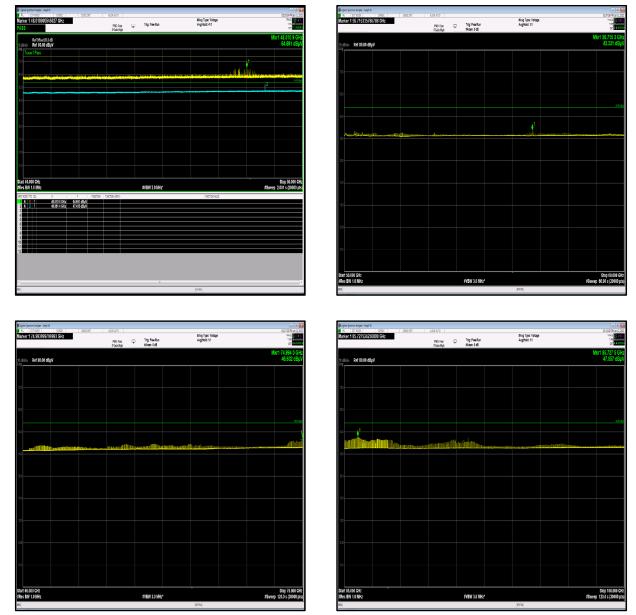






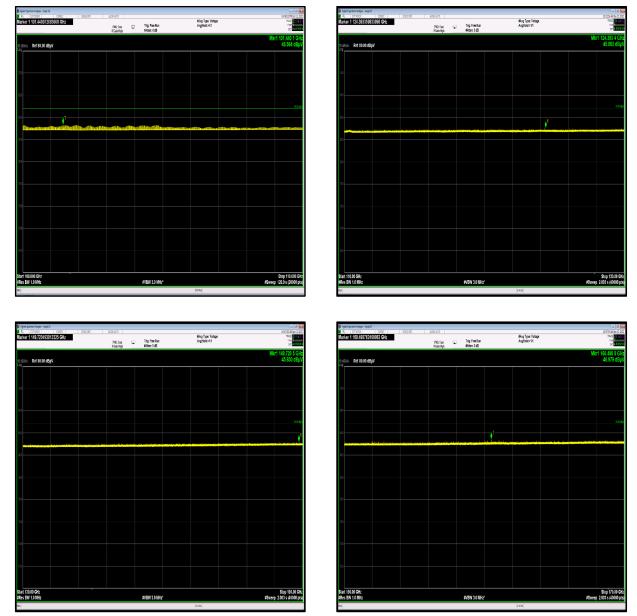
Note: The above plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Radiated Emissions (continued)



Note: The above plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Radiated Emissions (continued)



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TEST REPORT

Transmitter Radiated Emissions (continued)



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--- END OF REPORT ---