RADIO REPORT

FCC 47 CFR Part 97 D

Amateur Radio Service

Report Reference No	G0M-2106-9872-TFC97D-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	DIY599 Oliver Harms
Address	Gross Koeriser Str. 1b 15741 Bestensee Germany
Test Specification	47 CFR Part 97 D
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	RF linear Amplifier for Amatuer Radio
Model(s)	PA500
Additional Model(s)	None
Brand Name(s)	DIY599
Hardware Version(s)	V2.4
Software Version(s)	V2.4.1
FCC ID	2A2IEPA500
Test Result	**PASSED**

Possible test case verdicts:		
Required by standard but not tested	N/T	
Not required by standard	N/R	
Not applicable to EUT	N/A	
Test object does meet the requirement	P(PASS)	
Test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 °C - 30 °C	
Test Lab Humidity	25 % - 55 %	
Date of receipt of test item	2021-07-19	
Report:		
Compiled by	Toralf Jahn	
Tested by (+ signature) (Responsible for Test)	Toralf Jahn	T. J .....
Approved by (+ signature) (Test Lab Engineer)	Wilfried Treffke	W. Treffk .....
Date of Issue	2021-07-19	
Total number of pages	25	
General Remarks:		
The test results presented in this report relate only to the object tested. **The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.** This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2021-07-19	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
V_{NOM}	Nominal supply voltage

REPORT INDEX

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

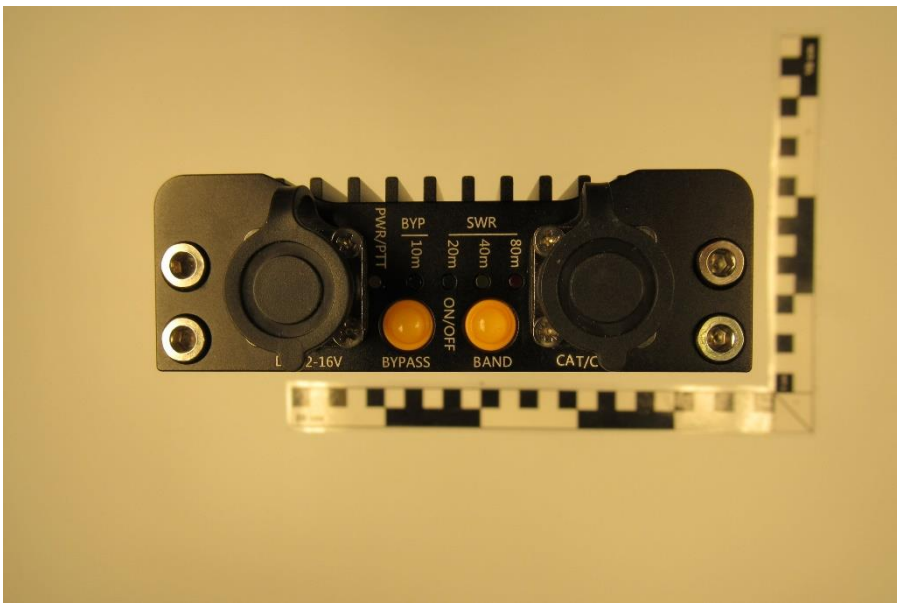
1 Equipment (Test Item) Under Test

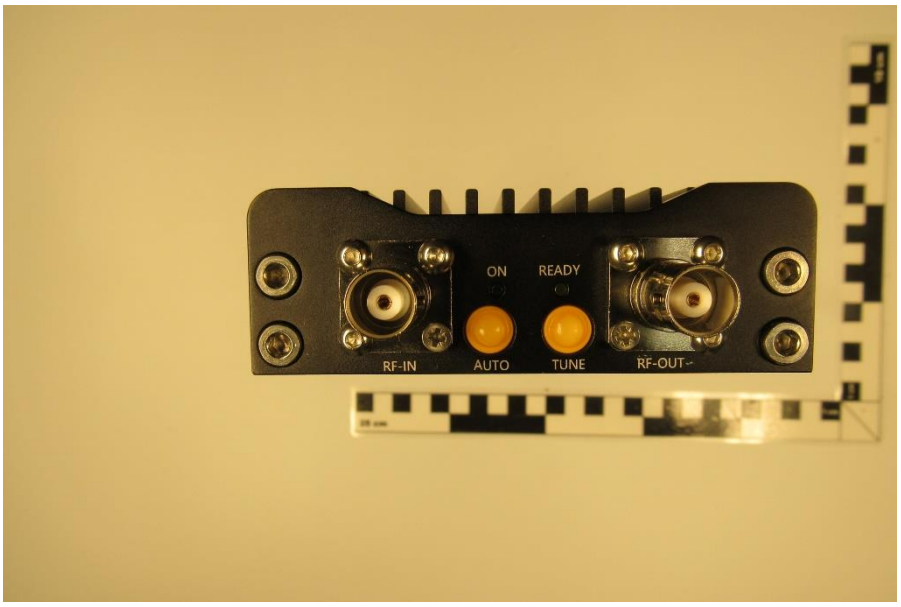
Description	RF linear Amplifier for Amatuer Radio	
Model	PA500	
Additional Model(s)	None	
Brand Name(s)	DIY599	
Serial Number(s)	DL4KA2	
Hardware Version(s)	V2.4	
Software Version(s)	V2.4.1	
FCC ID	2A2IEPA500	
Equipment type	End Product	
Number of antenna ports	1	
Operating band	80m, 60m, 40m, 30m, 20m, 17m, 15m, 12m, 10m HAM frequencies only, 26 MHz to 28 MHz not amplified	
Supply Voltage	V_{NOM}	13.8 VDC
Operating Temperature	T_{NOM}	20 °C
AC/DC-Adaptor	Model	None
	Vendor	None
	Input	None
	Output	None
Manufacturer	DIY599 Oliver Harms Gross Koeriser Str. 1b 15741 Bestensee Germany	

1.1 Photos – Equipment External

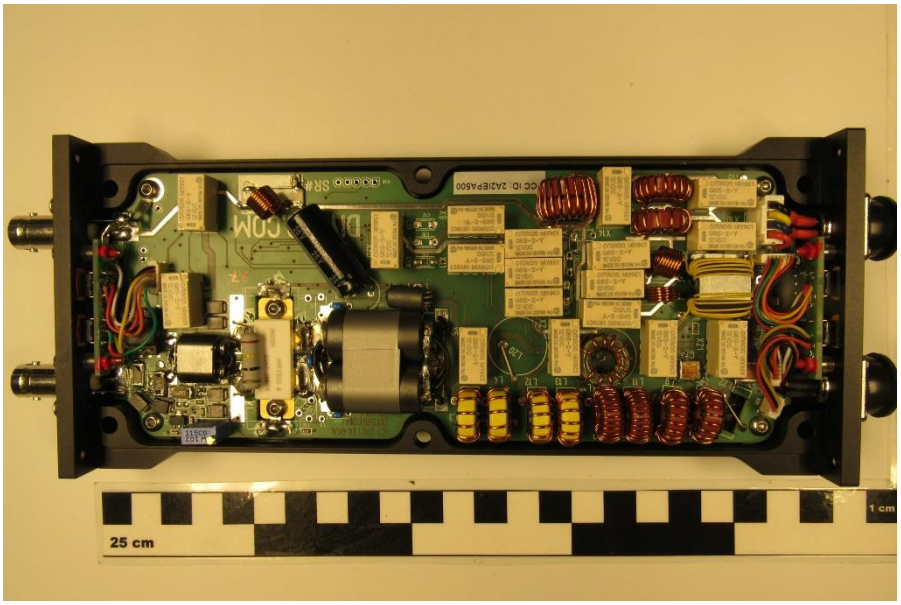
EUT TOP


EUT BOTTOM


EUT SIDE


EUT SIDE


1.2 Photos – Equipment Internal

PCB


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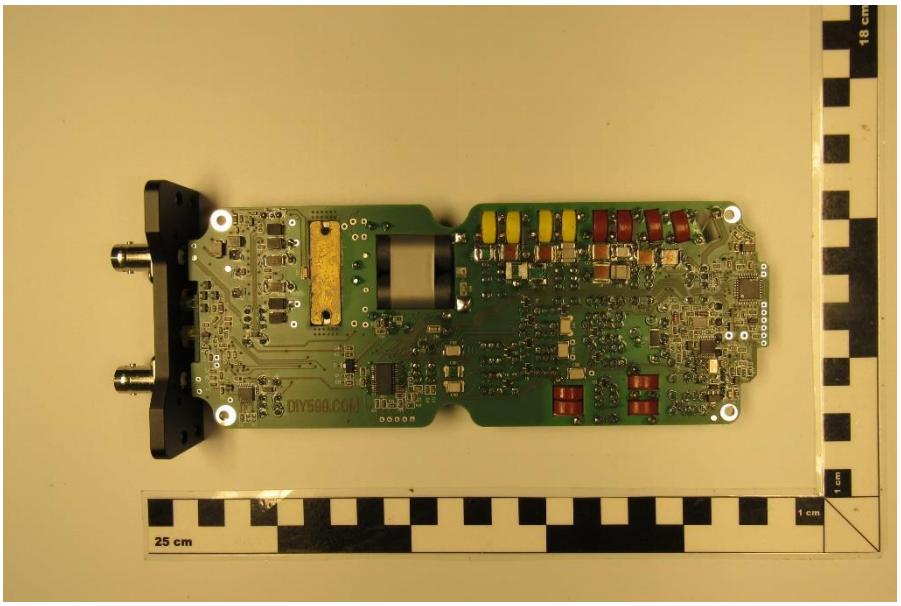
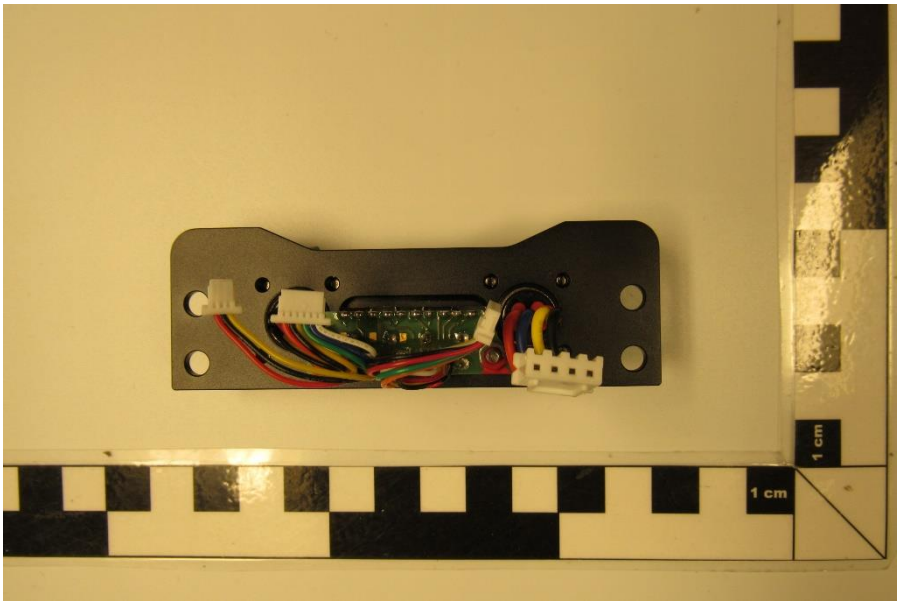


SIDE


1.3 Photos – Test Setup

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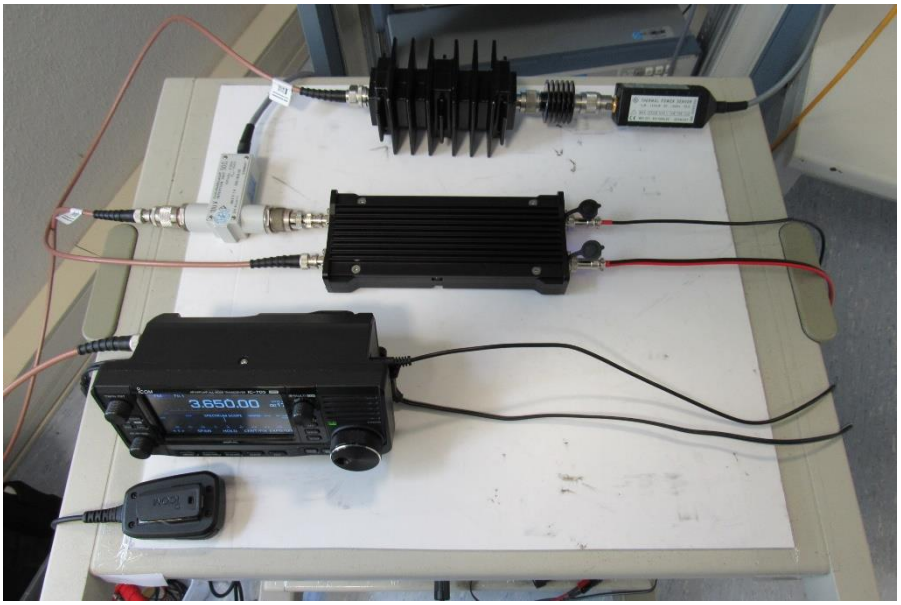


1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
CBL	12 Volt power cable	Oliver Harms (DIY599)	N/A	
CBL	Radio/PA control cable	Oliver Harms (DIY599)	N/A	
CBL	RG58	N/A	N/A	
AE	HF/VHF/UHF All Mode Tranceiver	ICOM	IC-705	
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.5 Test Modes

Mode	Description
Amplification	ICOM IC-705 is used as unmodulated RF source
Comment:	

2 Result Summary

FCC 47 CFR Part 97D				
Product Standard Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
FCC § 97.307(d)	Emission standards	N/A	PASS	
FCC § 97.317(a)	Gain	N/A	PASS	
Comment:				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results – Emission standards

3.1.1 Information

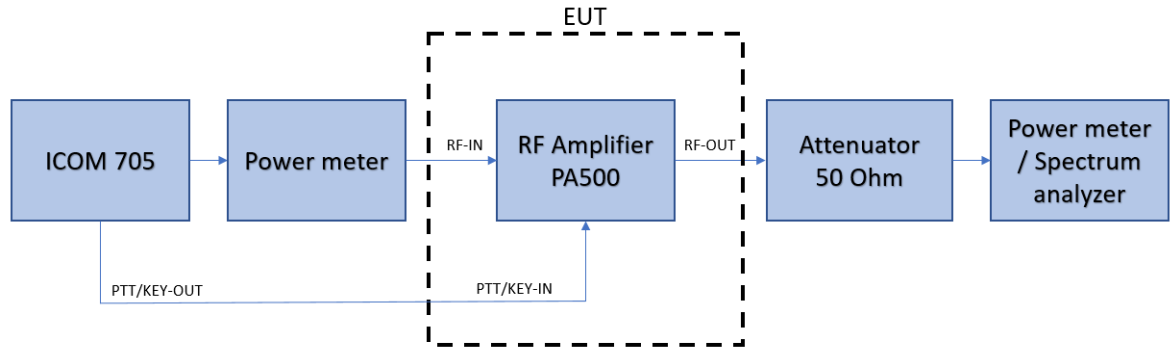
Test Information	
Reference	FCC 97.307(d)
Measurement Method	N/A
Measurement Uncertainty	± 1.77 dB
Test Sample ID	35428
Operator	Toralf Jahn
Date	2021-07-19

3.1.2 Limits

Limits
At least 43 dBc

3.1.3 Setup

Test Setup



3.1.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyser	R&S	FSW 43	EF00896	2020-09	2021-07
Power meter	R&S	NRVD	EF00401	2020-07	2023-07
Power sensor	R&S	NRV-Z6	EF00322	2019-07	2021-07
Power sensor	R&S	NRV-Z51	EF00172	2020-07	2023-07
Cable	Gigalane	1730	EF00779 CAABC	2020-12	2021-12
Attenuator	MCE	57-20-33	ETS0093	2021-07	2021-07
Attenuator	Radiall GmbH	R416010000	EF01013	2020-08	2021-08

3.1.5 Procedure

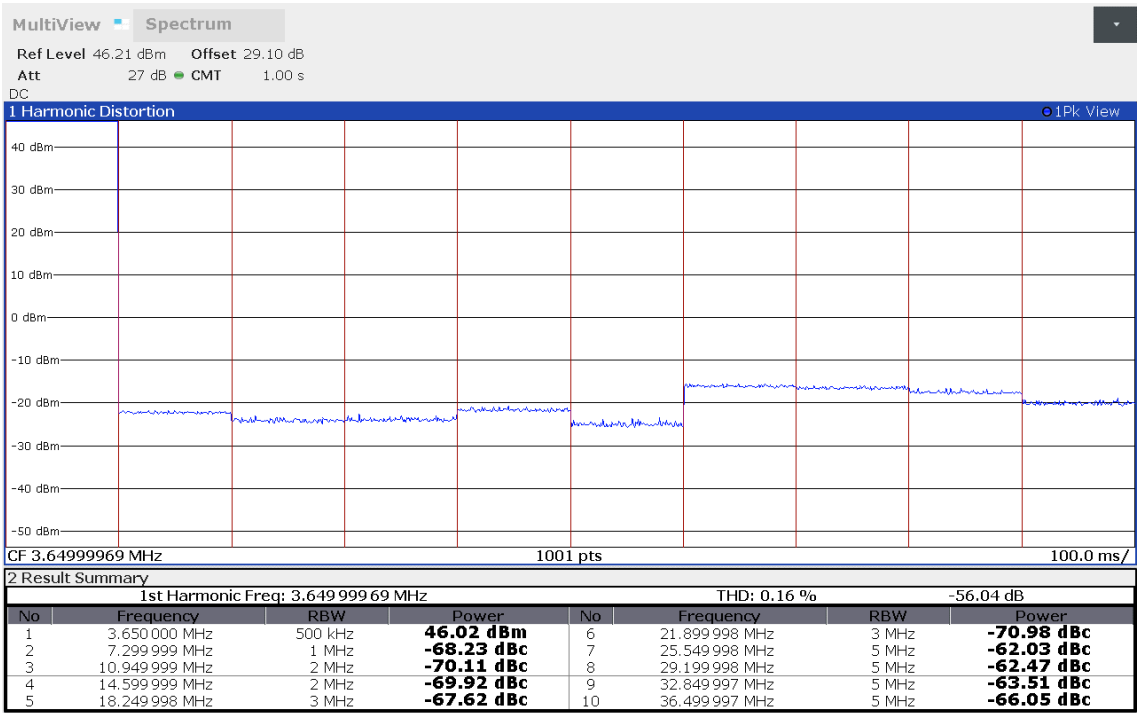
Test Procedure
1. Attenuation of attenuator combination is is measured (29.2 dB) 2. Output power is measured with power sensor and adjusted to nominal output power (46 dBm) 3. Power sensor is replaced by spectrum analyzer 4. Harmonics up to 10th are measured by using the harmonic distortion function measurement function

3.1.6 Results

Test Results	
Frequency [MHz]	Verdict
3.650	Pass
7.100	Pass
14.175	Pass
18.110	Pass
21.225	Pass
24.945	Pass
28.850	Pass

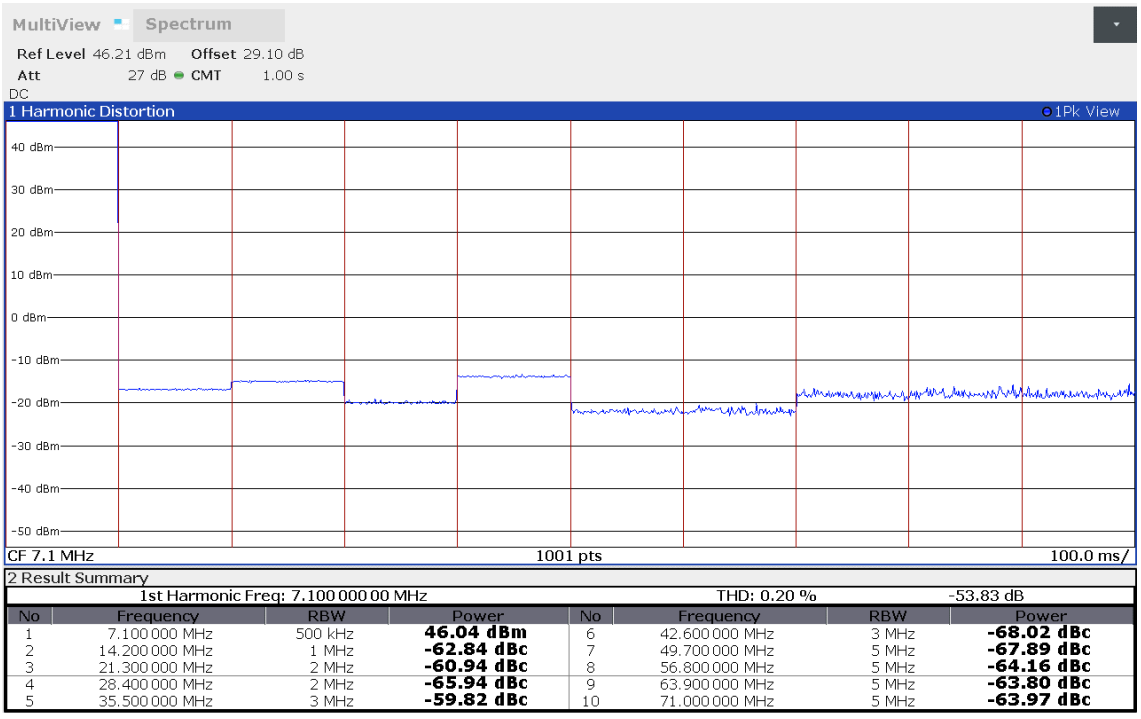
Screen Capture

Project Number:	G0M-2106-9872
Applicant:	DIY599 Oliver Harms
Model Description:	RF linear Amplifier for Amatuer Radio
Model:	PA500
Test Sample ID:	35428
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-19
Operating Conditions:	Tnom/Vnom
Mode:	3.650 MHz



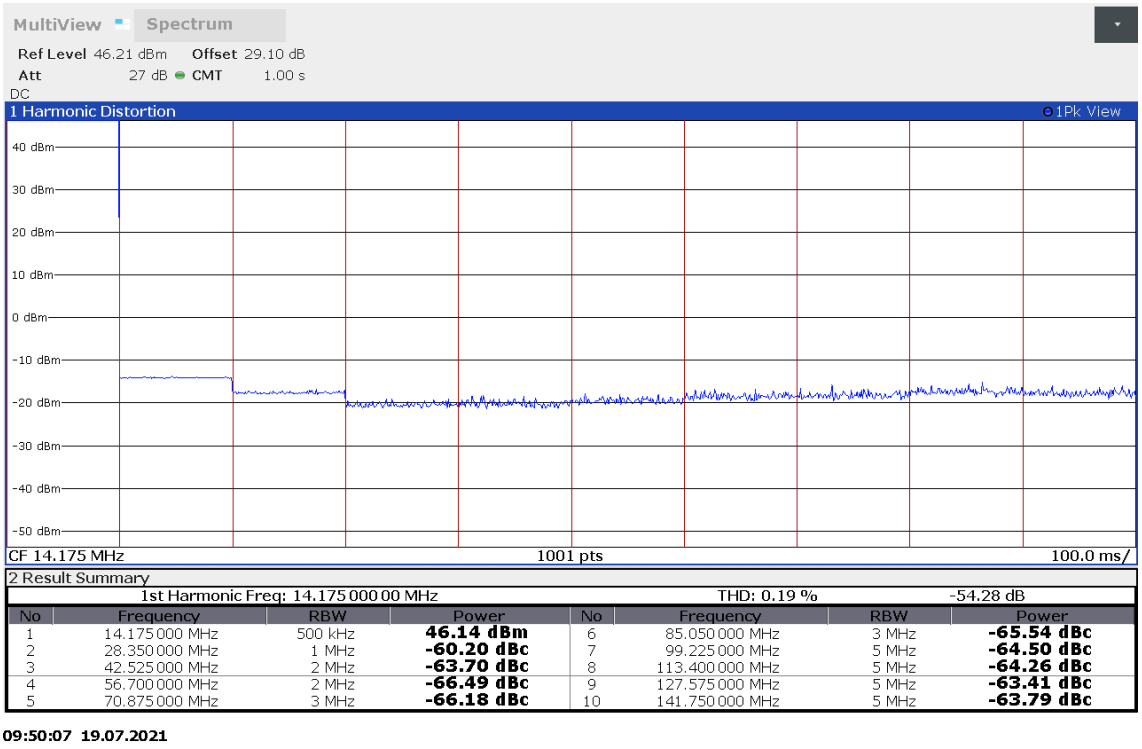
Screen Capture

Project Number:	G0M-2106-9872
Applicant:	DIY599 Oliver Harms
Model Description:	RF linear Amplifier for Amatuer Radio
Model:	PA500
Test Sample ID:	35428
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-19
Operating Conditions:	Tnom/Vnom
Mode:	7.100 MHz



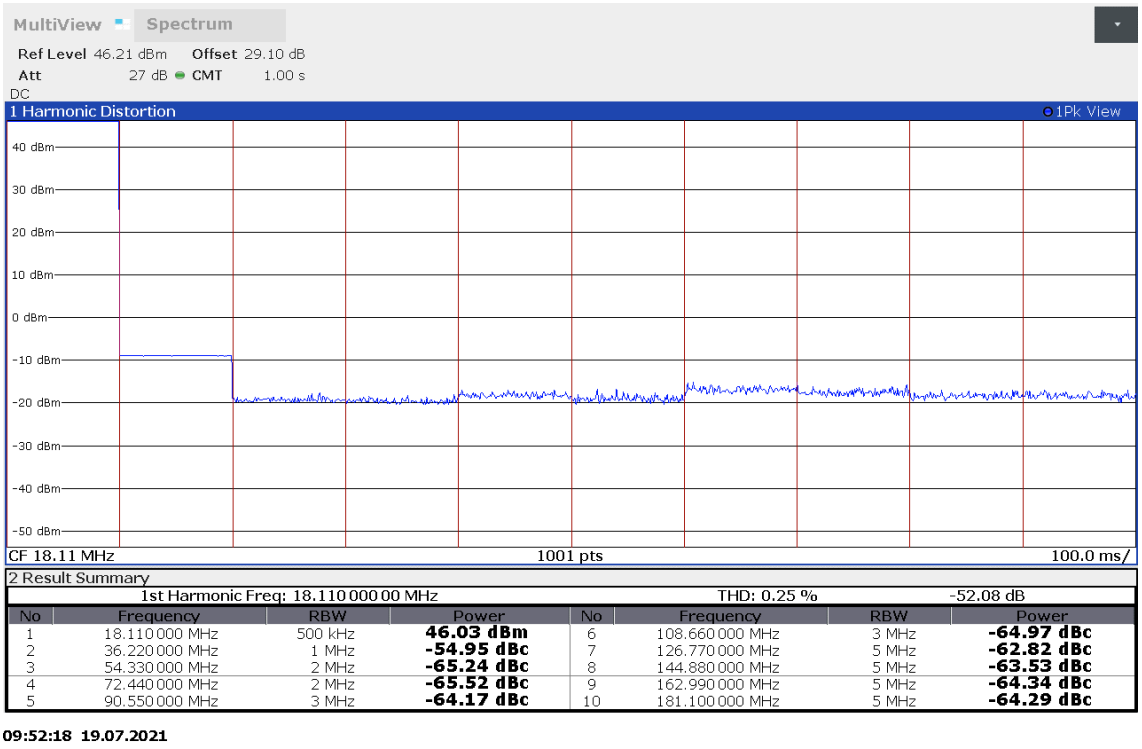
Screen Capture

Project Number:	G0M-2106-9872
Applicant:	DIY599 Oliver Harms
Model Description:	RF linear Amplifier for Amatuer Radio
Model:	PA500
Test Sample ID:	35428
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-19
Operating Conditions:	Tnom/Vnom
Mode:	14.175 MHz



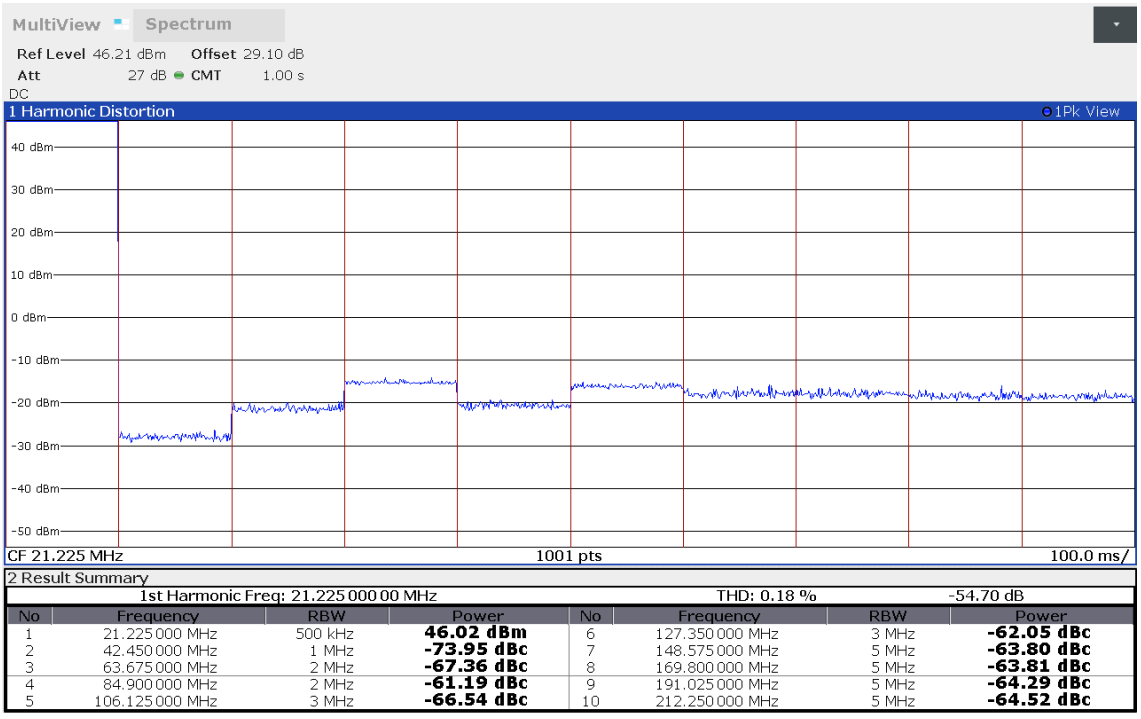
Screen Capture

Project Number:	G0M-2106-9872
Applicant:	DIY599 Oliver Harms
Model Description:	RF linear Amplifier for Amatuer Radio
Model:	PA500
Test Sample ID:	35428
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-19
Operating Conditions:	Tnom/Vnom
Mode:	18.110 MHz



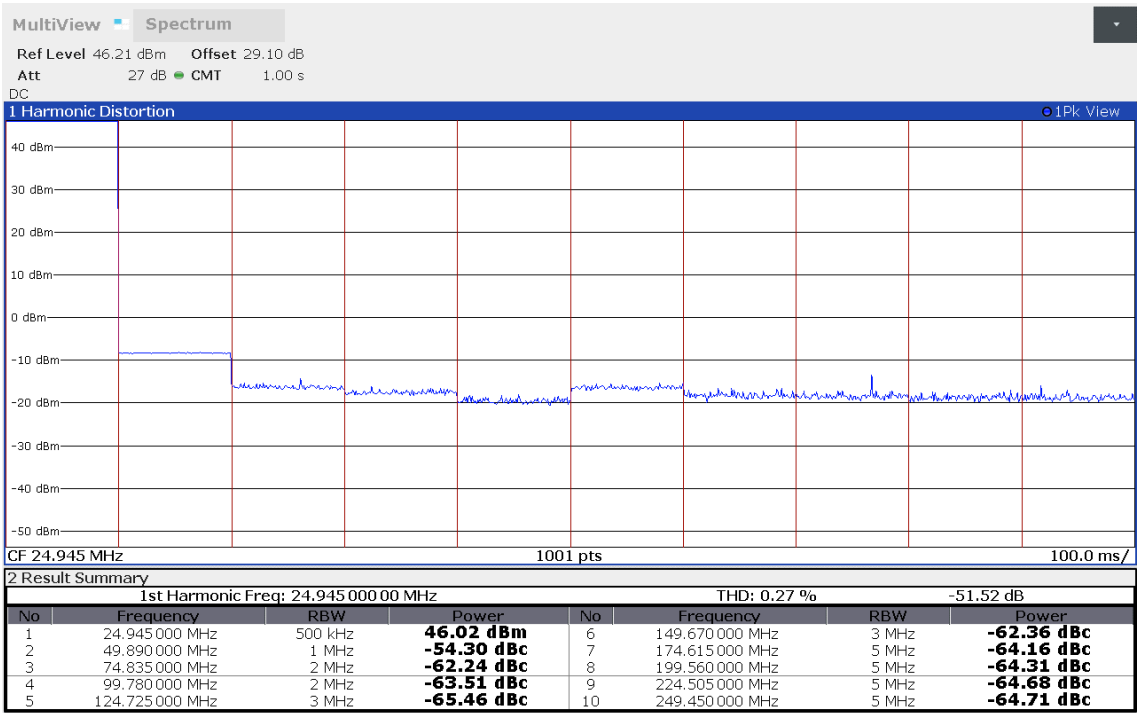
Screen Capture

Project Number:	G0M-2106-9872
Applicant:	DIY599 Oliver Harms
Model Description:	RF linear Amplifier for Amatuer Radio
Model:	PA500
Test Sample ID:	35428
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-19
Operating Conditions:	Tnom/Vnom
Mode:	21.225 MHz



Screen Capture

Project Number:	G0M-2106-9872
Applicant:	DIY599 Oliver Harms
Model Description:	RF linear Amplifier for Amatuer Radio
Model:	PA500
Test Sample ID:	35428
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-19
Operating Conditions:	Tnom/Vnom
Mode:	24.945 MHz



2 Result Summary

1st Harmonic Freq: 24.945 000 00 MHz THD: 0.27 % -51.52 dB

No	Frequency	RBW	Power	No	Frequency	RBW	Power
1	24.945 000 MHz	500 kHz	**46.02 dBm**	6	149.670 000 MHz	3 MHz	**-62.36 dBc**
2	49.890 000 MHz	1 MHz	**-54.30 dBc**	7	174.615 000 MHz	5 MHz	**-64.16 dBc**
3	74.835 000 MHz	2 MHz	**-62.24 dBc**	8	199.560 000 MHz	5 MHz	**-64.31 dBc**
4	99.780 000 MHz	2 MHz	**-63.51 dBc**	9	224.505 000 MHz	5 MHz	**-64.68 dBc**
5	124.725 000 MHz	3 MHz	**-65.46 dBc**	10	249.450 000 MHz	5 MHz	**-64.71 dBc**

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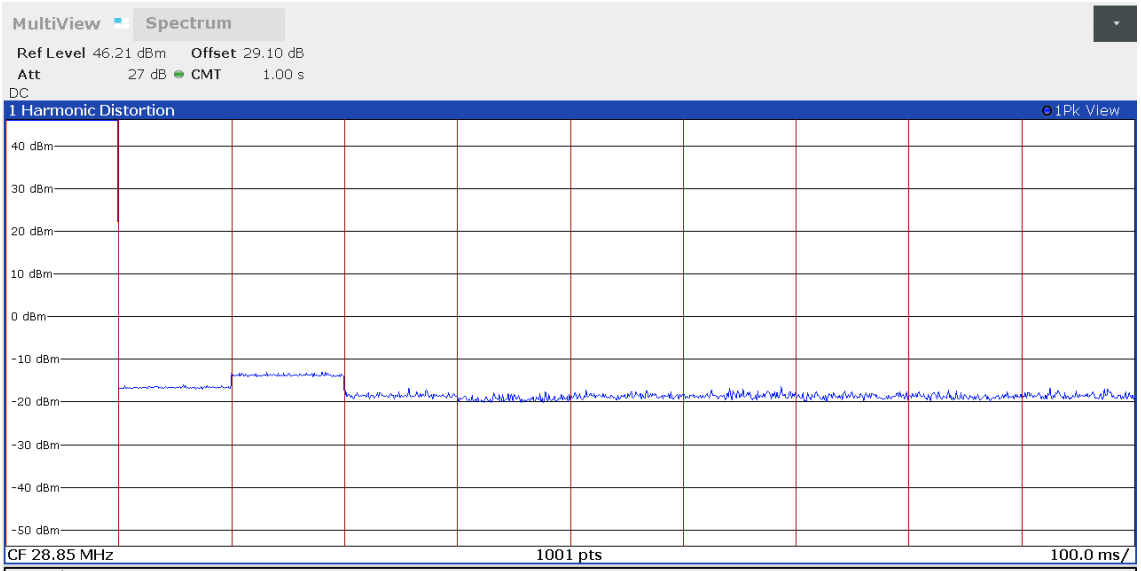
Screen Capture

Project Number:	G0M-2106-9872
Applicant:	DIY599 Oliver Harms
Model Description:	RF linear Amplifier for Amatuer Radio
Model:	PA500
Test Sample ID:	35428
Operator:	Toralf Jahn
Test Site:	Eurofins Product Service GmbH
Test Date:	2021-07-19
Operating Conditions:	Tnom/Vnom
Mode:	28.850 MHz



2 Result Summary

1st Harmonic Freq: 28.850 000 00 MHz THD: 0.20 % -53.97 dB

No	Frequency	RBW	Power	No	Frequency	RBW	Power
1	28.850 000 MHz	500 kHz	**46.04 dBm**	6	173.100 000 MHz	3 MHz	**-64.59 dBc**
2	57.700 000 MHz	1 MHz	**-62.60 dBc**	7	201.950 000 MHz	5 MHz	**-64.42 dBc**
3	86.550 000 MHz	2 MHz	**-59.72 dBc**	8	230.800 000 MHz	5 MHz	**-64.67 dBc**
4	115.400 000 MHz	2 MHz	**-64.48 dBc**	9	259.650 000 MHz	5 MHz	**-64.73 dBc**
5	144.250 000 MHz	3 MHz	**-65.23 dBc**	10	288.500 000 MHz	5 MHz	**-64.51 dBc**

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3.2 Test Conditions and Results - Gain

3.2.1 Information

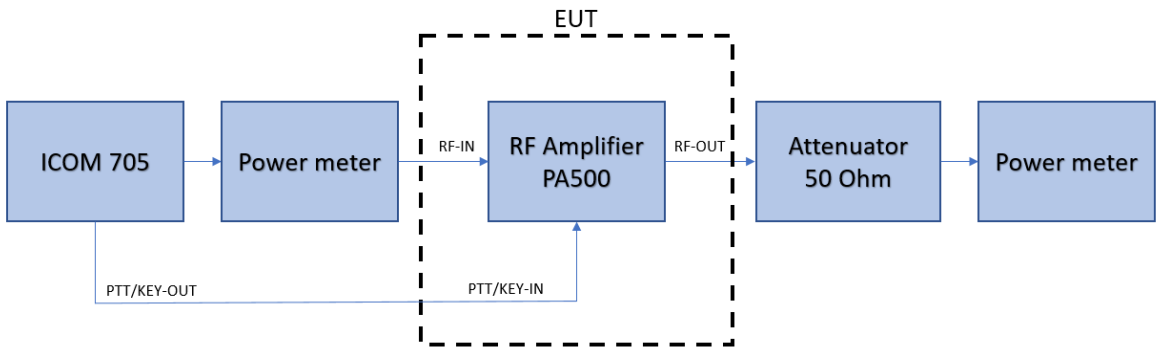
Test Information	
Reference	FCC 97.317(a)
Measurement Method	N/A
Measurement Uncertainty	± 0.727 dB
Test Sample ID	35428
Operator	Toralf Jahn
Date	2021-07-19

3.2.2 Limits

Limits
Gain ≤ 15 dB Gain ≤ 0 dB (26 MHz to 28 MHz)

3.2.3 Setup

Test Setup



3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power meter	R&S	NRVD	EF00401	2020-07	2023-07
Power sensor	R&S	NRV-Z6	EF00322	2019-07	2021-07
Power sensor	R&S	NRV-Z51	EF00172	2020-07	2023-07
Attenuator	MCE	57-20-33	ETS0093	2021-07	2021-07
Attenuator	Radiall GmbH	R416010000	EF01013	2020-08	2021-08

3.2.5 Procedure

Test Procedure
1. Attenuation of attenuator combination is is measured (29.2 dB) 2. Output power is measured with power sensor and adjusted to nominal output power (46 dBm) 3. Input power is measured with power sensor 4. Gain is calculated

3.2.6 Results

Test Results				
Frequency [MHz]	Input Power [dBm]	Output Power [dBm]	Amplifier Gain [dB]	Verdict
3.650	35.8	46.0	10.2	Pass
7.100	32.1	46.0	13.9	Pass
14.175	32.0	46.0	14	Pass
18.110	31.1	46.0	14.9	Pass
21.225	33.2	46.0	12.8	Pass
24.945	32.6	46.0	13.4	Pass
26.000	31.7	31.5	-0.2	Pass
27.000	31.7	31.5	-0.2	Pass
27.999	31.7	31.5	-0.2	Pass
28.000	31.7	31.5	-0.2	Pass
28.850	32.6	46.0	13.4	Pass
30.000	34.5	34.3	-0.2	Pass