



Material No 1312.8000K43 **Serial No** 100560 **Certificate** 0001A300631026
Page 2/3 **Number**

Calibration Procedure

The calibration of the object can be classified as a direct measurement. Frequency was compared using a GPS synchronized rubidium oscillator. RF power was measured with a power standard. Linearity was compared with a precision step attenuator. Reflection was measured using a Vector Network Analyzer, calibrated with a calibration kit. The calibrations and measurements follow the guideline VDI/VDE/DGQ/DKD 2622 Part 11 (2003-09).

Only option K54Cal:
 CISPR detectors were measured using either a CISPR Pulse Generator or a pulsed RF generator.
 The traceability is represented in the table Working Standards used.
 Only option K54Cal: The calibration method is in line with the standard IEC CISPR 16-1-1 (Ed. 3.2) 2014-06, CISPR 16-1-1:2015 (Ed. 4.0) and CISPR 16-1-1:2019 (Ed. 5.0)

Working Standards used

Item	Type	Serial Number	Calibration Certificate Number	Cal. Due
Standard Frequency System	FREQSTD	100257	20A1001465	2022-10-31
Signal/Spectrum Analyser	FSW8	104028	593010 D-K-15195-01-00 2021-03	2022-09-30
Calibration Pulse Gen. CISPR16	IGUU2918	100972	593013 D-K-15195-01-00 2021-03	2022-09-30
Average Power Sensor	NRP18A	101038	593018 D-K-15195-01-00 2021-03	2022-09-30
Average Power Sensor	NRP18A	101039	593021 D-K-15195-01-00 2021-03	2022-09-30
Thermal Power Sensor 18GHz	NRP18T	101321	0001A300626944	2023-06-30
Thermal Power Sensor	NRP40T	101049	593003 D-K-15195-01-00 2021-03	2022-09-30
3-Path Diode Power Sensor	NRP50S	101100	0001A300616684	2023-03-31
Thermal Power Sensor 50 GHz	NRP50T	101014	593017 D-K-15195-01-00 2021-03	2022-09-30
Step Attenuator 139dB 6GHz	RSC	101663	593012 D-K-15195-01-00 2021-03	2022-09-30
Vector Network Analyzer 2 Port	ZNB40	101701	593000 D-K-15195-01-00 2021-03	2022-09-30
SWR Bridge 40kHz - 4GHz 50 Ohm	ZRC	100117	593011 D-K-15195-01-00 2021-03	2022-09-30
Calibration Kit 2,92mm	ZV-Z229	101058	590260 D-K-15195-01-00 2021-02	2022-02-28
Calibration Kit 18GHz N-Typ	ZV-Z270	101071	589023 D-K-15195-01-00 2021-02	2022-02-28
Digital Multimeter 8 1/2 Digit	3458A	MY45054719	11A300616752	2023-03-31

Remarks



Material No 1312.8000K43 **Serial No** 100560 **Certificate** 0001A300631026
Page 3/3 **Number**

Environmental Conditions			
Ambient Temperature	(23 ± 3) °C	Relative Humidity	20%-70%

Comments on Measurement Results
<p>The measurement results in the test report stated below have been tested for compliance with the given specifications and marked if necessary. The associated uncertainty of measurement has been taken into account, if not otherwise stated. Measurement results that are not covered by the DAkkS accreditation are marked with ¹. Ref.: ILAC G8:09/2019 'Guidelines on Decision Rules and Statements of Conformity'.</p> <p>The expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor k = 2. It was determined in accordance with EA-4/02 M:2013. The true value is located in the corresponding interval with a probability of 95 %.</p> <p>In addition to the calibration results, the calibration certificate includes functional measurements that might have an influence on the measurement uncertainty of the calibration results. The functional measurement results are marked and are not intended to be used to support the further dissemination of metrological traceability. They are intended to verify the requirements on the measurement object according to manufacturer specifications and technical standards.</p>

Outgoing Results

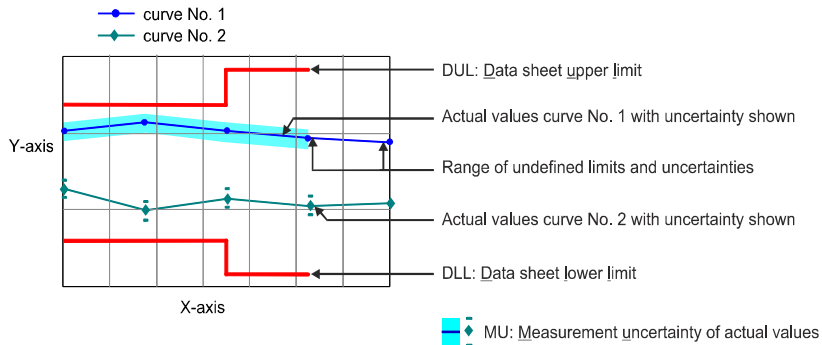
Designation:	Signal Analyzer
Type:	FSW-43
Material No.:	1312.8000K43
Serial No.:	100560
Certificate No.:	0001A300631026
Referring to Test Documentation:	1312.8000.01-PB-02.41

Test Department:	3MES2
Name:	See certificate
Date:	2022-01-19

The following abbreviations may be used in this document

- {a} No measurement uncertainty stated because the errors always add together. So it is sure that a measurement result evaluated as "PASS" is pass.
 - {b} The measurement uncertainty depends on the measurement result. The stated measurement uncertainty is valid for the close area around the specification. Measurement results outside the close area have a higher measurement uncertainty but are within the specification.
 - {c} Functional test, therefore no measurement uncertainty is stated.
 - {d} Typical value, refer to performance test.
 - {e} The measurement uncertainty is taken into account when setting the measuring system.
 - {g} Verification of specified requirements, non-accredited measurements. Technical operations that consist of the determination of one or more characteristics to a specified procedure (formerly {f}).
- DL or DT Data Limit for symmetrical tolerance limits
 DLL Datasheet Lower Limit
 DUL Datasheet Upper Limit
 MU Symmetrical Measurement Uncertainty
 MLL or MLV Measurement Uncertainty Lower Value
 MUL or MUV Measurement Uncertainty Upper Value
 Nom. Nominal Value
 Dev. Deviation
 Act. Actual Value
 UGB Uncertainty Guard Band: Measuring uncertainty violates the data (spec.) limit.
 UGB1 A compliance statement may be possible where a confidence level of less than 95 % is acceptable.
 UGB2 A non-compliance statement may be possible where a confidence level of less than 95 % is acceptable.
 DU Datasheet Uncertainty

Explanation of charts



Explanation of the compact 2D chart

Only the status and the position of the measured point is represented, e.g. "PASS" at frequency X and level measurement Y.

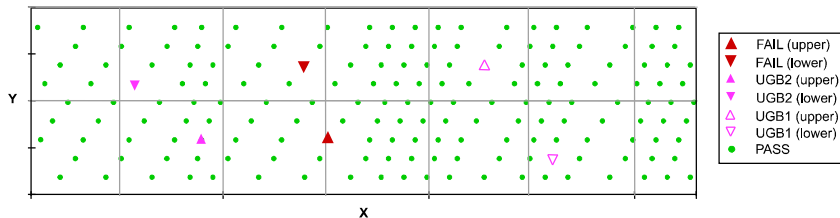


Table of contents

Software used for measurement	5
1. General function tests	6
2. Checking the reference frequency uncertainty	6
3. Immunity to interference	6
3.1 2nd IF Image Frequency Rejection	6
3.2 3rd IF Image Frequency Rejection	6
3.3 2nd IF Rejection	6
3.4 3rd IF Rejection	6
4. Third-order intercept point (TOI)	7
5. Third-order intercept point (TOI) > 8 GHz	7
6. Second harmonic intercept (SHI)	7
7. Second harmonic intercept (SHI) high pass filter "ON"	8
8. Checking IF Filters	8
8.1 Checking the bandwidth switching level uncertainty	8
8.2 Checking the bandwidth switching level uncertainty with option FSW-B8	8
9. Spurious response 1 MHz.. 8.9 GHz	8
10. Spurious response 8.9 GHz .. 25.0 GHz	9
11. Spurious response 25.0 GHz .. 43.5 GHz	9
12. Displayed average noise level (DANL)	9
13. Displayed average noise level (DANL) YIG OFF	10
14. Displayed average noise level (FSW-B24) YIG ON	10
15. Displayed average noise level (DANL) (FSW-B13)	11
16. Absolute level uncertainty at 64 MHz and frequency response	11
16.1 Absolute level uncertainty at 64 MHz	11
16.2 RF attenuation 0 dB, AC coupled	11
16.3 RF attenuation 5 dB, AC coupled	11
16.4 RF attenuation 10 dB, DC coupled	12
16.5 RF attenuation 10 dB, AC coupled	12
16.6 RF attenuation 20 dB, AC coupled	12
16.7 RF attenuation 40 dB, AC coupled	13
17. Frequency response > 8GHz YIG ON	13
17.1 RF attenuation 0 dB, AC coupled	13
17.2 RF attenuation 5 dB, AC coupled	13
17.3 RF attenuation 10 dB, AC coupled	14
17.4 RF attenuation 20 dB, AC coupled	14
17.5 RF attenuation 40 dB, AC coupled	14
18. Frequency response > 8GHz YIG OFF	15
18.1 RF attenuation 10 dB, AC coupled	15
19. Frequency response check at specific frequencies	15
20. Display nonlinearity	16
21. Attenuator switching uncertainty	17

22. Checking the Phase Noise	17
23. VSWR at RF input	17
24. Frequency response (FSW-B24)	18
24.1 Frequency response Preamp 30dB	18
24.2 Frequency response (FSW-B24) > 8 GHz, Preamp 30dB	19
25. Checking LO-level (FSW-B21)	19
25.1 Output Level uncertainty	19
26. Checking the Inputs LOout / IFin (FSW-B21)	20
26.1 Level Display	20
26.2 Updating service information on the instrument	20

Software used for measurement			
Item	Type	Version	Remark
7010.2181.00_FSW.G5Lim Suite Test Program (7010.2181.00)	Limit File Setup Component	2021-09-08 12:46 V12.20.04 V01.13.94	Test Management Software G5

1. General function tests

Selftest successful	pass	pass
Self Alignment successful	pass	pass

2. Checking the reference frequency uncertainty

	DUL	DLL	Actual	MU
Error of internal 10 MHz	1.00 Hz..	-1.00 Hz	+0.0300 Hz	0.0120 Hz

3. Immunity to interference

3.1 2nd IF Image Frequency Rejection

IF2 = fc	DLL	Actual	MU
1317.0 MHz			
1000.0 MHz	90 dB	112.2 dB	3.1 dB
9000.0 MHz	90 dB	109.2 dB	4.1 dB

3.2 3rd IF Image Frequency Rejection

IF3 = fc	DLL	Actual	MU
37.0 MHz			
63.0 MHz	90 dB	113.5 dB	3.1 dB
100.0 MHz	90 dB	113.3 dB	3.1 dB
900.0 MHz	90 dB	111.6 dB	3.1 dB
1100.0 MHz	90 dB	113.6 dB	3.1 dB
7990.0 MHz	90 dB	111.3 dB	3.1 dB

3.3 2nd IF Rejection

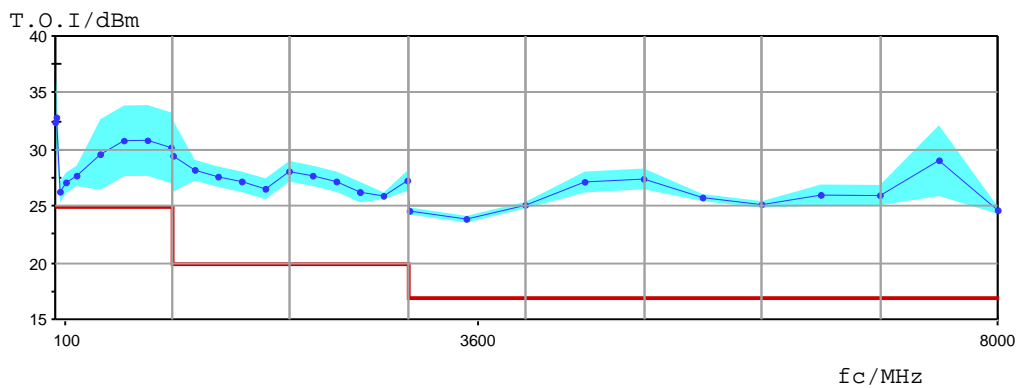
IF2 = fc	DLL	Actual	MU
1317.0 MHz			
50.0 MHz	90 dB	113.2 dB	3.1 dB
200.0 MHz	90 dB	112.1 dB	3.1 dB
500.0 MHz	90 dB	110.7 dB	3.1 dB
900.0 MHz	90 dB	111.8 dB	3.1 dB
1100.0 MHz	90 dB	113.9 dB	3.1 dB
7990.0 MHz	90 dB	112.1 dB	3.1 dB
9000.0 MHz	90 dB	111.4 dB	4.1 dB
12000.0 MHz	90 dB	110.6 dB	4.1 dB
25000.0 MHz	90 dB	103.9 dB	4.1 dB
38000.0 MHz	90 dB	103.7 dB	4.1 dB

3.4 3rd IF Rejection

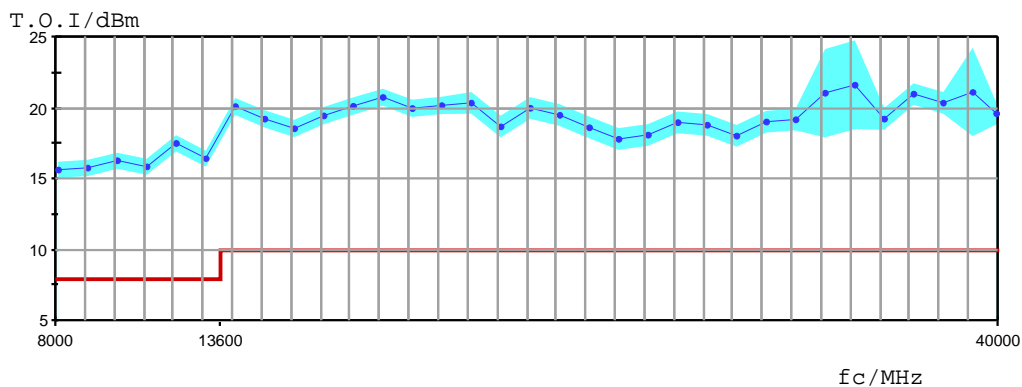
IF3 = 37.0 MHz

fc	DLL	Actual	MU
100.0 MHz	90 dB	113.3 dB	3.1 dB
200.0 MHz	90 dB	111.8 dB	3.1 dB
500.0 MHz	90 dB	111.8 dB	3.1 dB
900.0 MHz	90 dB	111.0 dB	3.1 dB
1100.0 MHz	90 dB	114.5 dB	3.1 dB
7990.0 MHz	90 dB	112.2 dB	3.1 dB
9000.0 MHz	90 dB	111.6 dB	4.1 dB
12000.0 MHz	90 dB	110.7 dB	4.1 dB
25000.0 MHz	90 dB	102.9 dB	3.7 dB
38000.0 MHz	90 dB	104.2 dB	4.1 dB

4. Third-order intercept point (TOI)



5. Third-order intercept point (TOI) > 8 GHz



6. Second harmonic intercept (SHI)

fin	DLL	Actual	MU
9.0 MHz	45.0 dBm	51.0 dBm	0.6 dB
21.0 MHz	45.0 dBm	50.2 dBm	0.6 dB
106.0 MHz	45.0 dBm	48.5 dBm	0.6 dB
274.0 MHz	45.0 dBm	55.7 dBm	0.6 dB
449.9 MHz	45.0 dBm	51.4 dBm	0.6 dB
699.9 MHz	47.0 dBm	62.1 dBm	0.6 dB
999.9 MHz	47.0 dBm	61.3 dBm	0.6 dB
1499.9 MHz	47.0 dBm	72.3 dBm	0.6 dB
1749.9 MHz	62.0 dBm	77.1 dBm	0.6 dB
2699.9 MHz	62.0 dBm	81.5 dBm	1.5 dB
3449.9 MHz	62.0 dBm	80.8 dBm	1.5 dB

7. Second harmonic intercept (SHI) high pass filter "ON"

fin	DLI	Actual	MU
699.9 MHz	52.0 dBm	54.1 dBm	0.6 dB
1499.9 MHz	52.0 dBm	71.6 dBm	0.6 dB

8. Checking IF Filters

8.1 Checking the bandwidth switching level uncertainty

reference is 10.0 kHz RBW

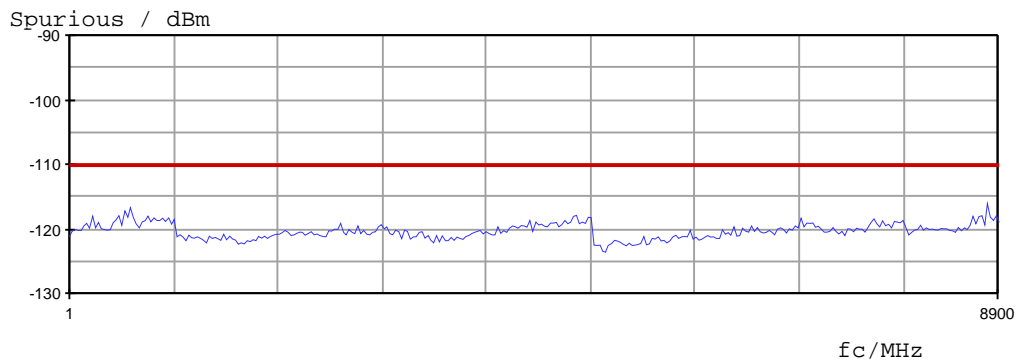
Bandwidth	DL	Actual	MU
10.0 MHz	0.1 dB	0.01 dB	0.01 dB
1.0 MHz	0.1 dB	0.01 dB	0.01 dB
100 kHz	0.1 dB	0.01 dB	0.01 dB
10 kHz	0.1 dB	0.00 dB	0.01 dB
1 kHz	0.1 dB	0.01 dB	0.01 dB
100 Hz	0.1 dB	-0.01 dB	0.01 dB

8.2 Checking the bandwidth switching level uncertainty with option FSW-B8

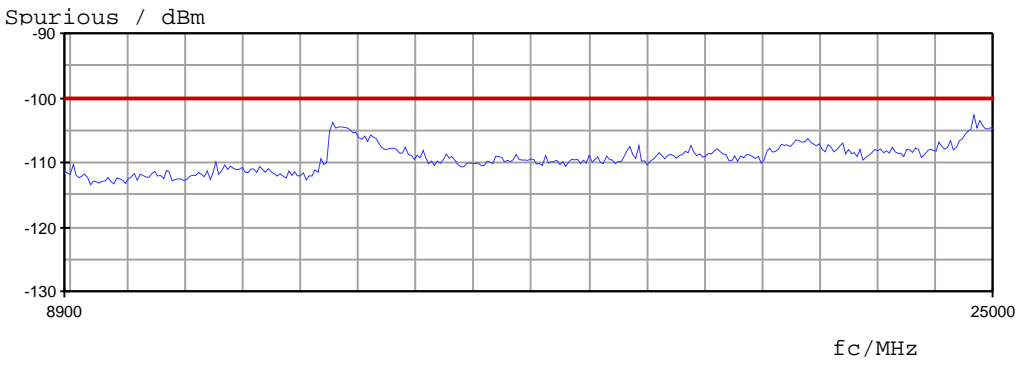
reference is 10.0 kHz RBW

Bandwidth	DL	Actual	MU
20.0 MHz	0.1 dB	0.02 dB	0.01 dB
28.0 MHz	0.1 dB	0.01 dB	0.01 dB
50.0 MHz	0.1 dB	0.02 dB	0.01 dB
80.0 MHz	0.1 dB	0.02 dB	0.01 dB

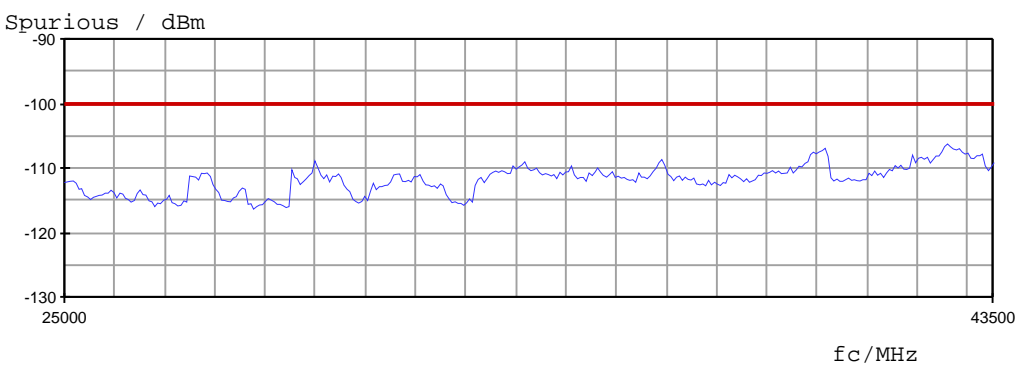
9. Spurious response 1 MHz.. 8.9 GHz



10. Spurious response 8.9 GHz .. 25.0 GHz

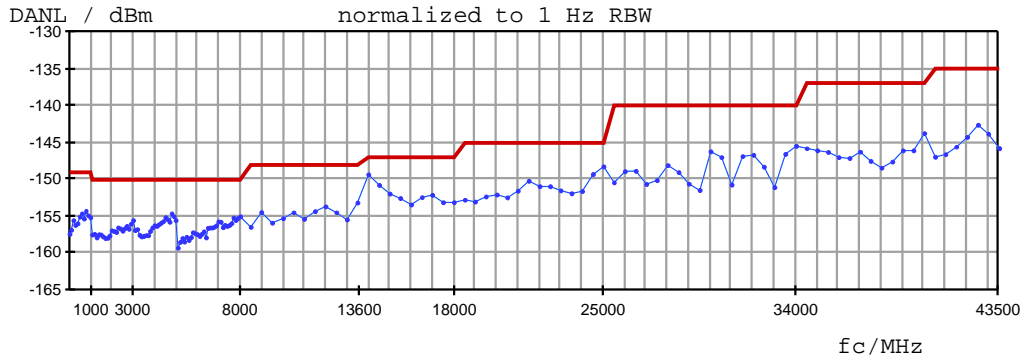


11. Spurious response 25.0 GHz .. 43.5 GHz

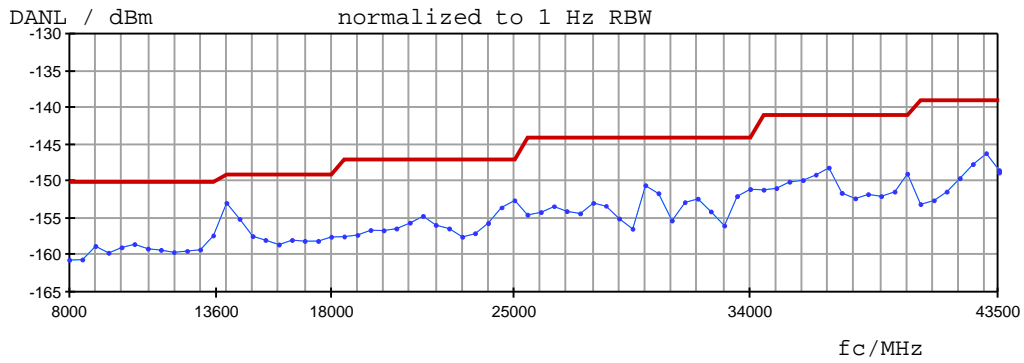


12. Displayed average noise level (DANL)

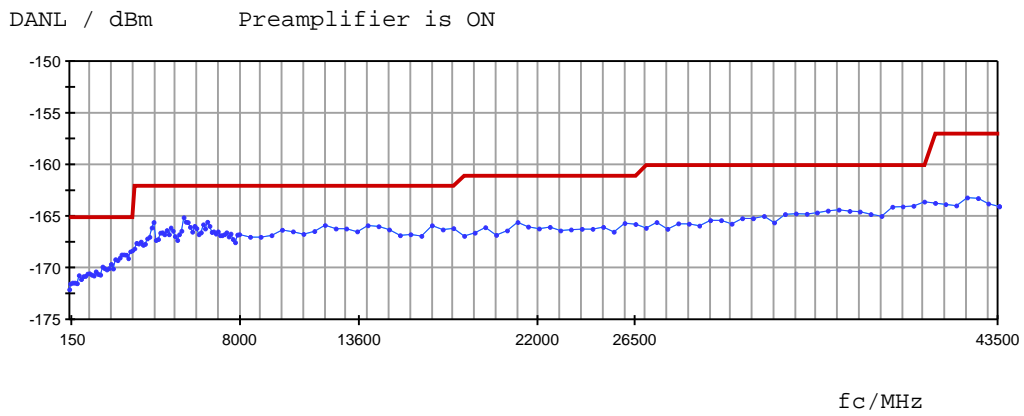
fc	DUL	Actual	MU
2 Hz (1 Hz BW)	-110 dBm	-114.61 dBm	0.01 dB
10 Hz (1 Hz BW)	-110 dBm	-127.33 dBm	0.01 dB
30 Hz (1 Hz BW)	-110 dBm	-121.88 dBm	0.01 dB
98 Hz (1 Hz BW)	-110 dBm	-134.71 dBm	0.01 dB
300 Hz (1 Hz BW)	-120 dBm	-137.73 dBm	0.01 dB
980 Hz (1 Hz BW)	-120 dBm	-140.77 dBm	0.01 dB
fc	DUL	Actual	MU
9.8 kHz (1 Hz BW)	-145 dBm	-149.59 dBm	0.01 dB
98 kHz (1 Hz BW)	-145 dBm	-152.96 dBm	0.01 dB
998 kHz (1 Hz BW)	-145 dBm	-156.72 dBm	0.01 dB
9800 kHz (1 Hz BW)	-149 dBm	-157.03 dBm	0.01 dB



13. Displayed average noise level (DANL) YIG OFF

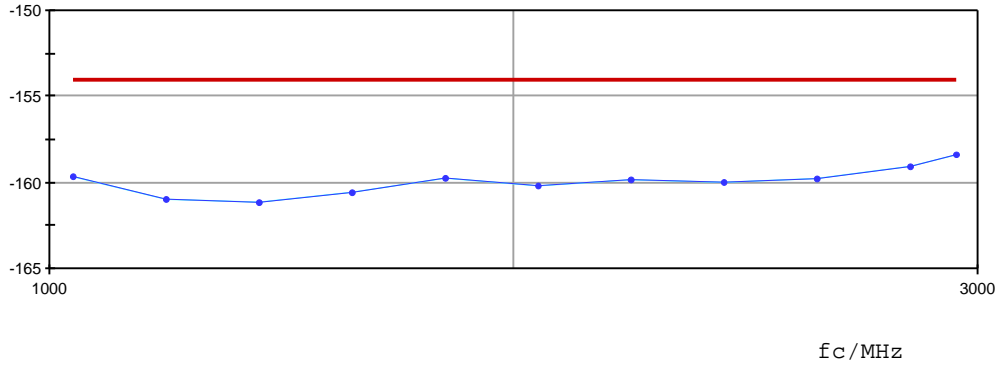


14. Displayed average noise level (FSW-B24) YIG ON



15. Displayed average noise level (DANL) (FSW-B13)

DANL / dBm High pass activated

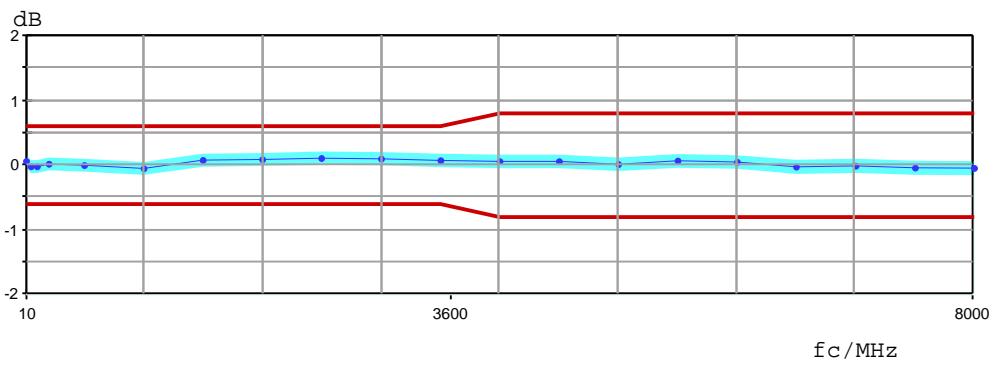


16. Absolute level uncertainty at 64 MHz and frequency response

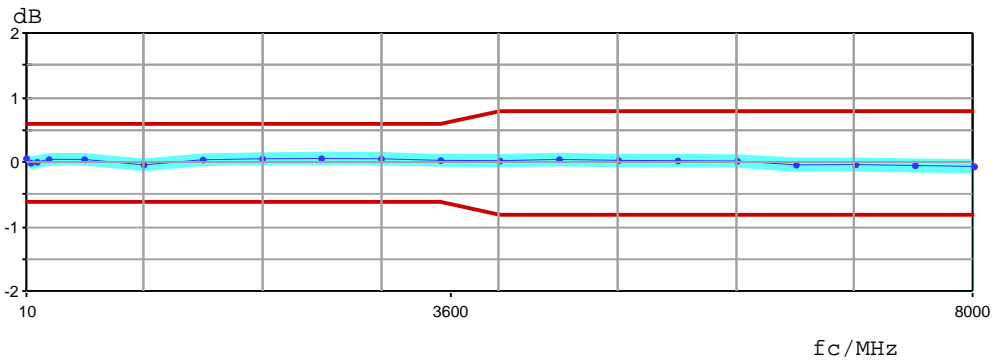
16.1 Absolute level uncertainty at 64 MHz

fc	DL	Actual	MU
64 MHz	0.20 dB	-0.09 dB	0.04 dB

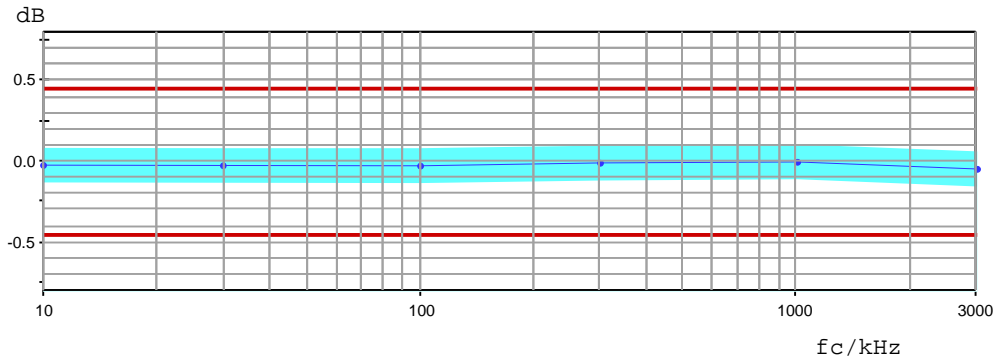
16.2 RF attenuation 0 dB, AC coupled



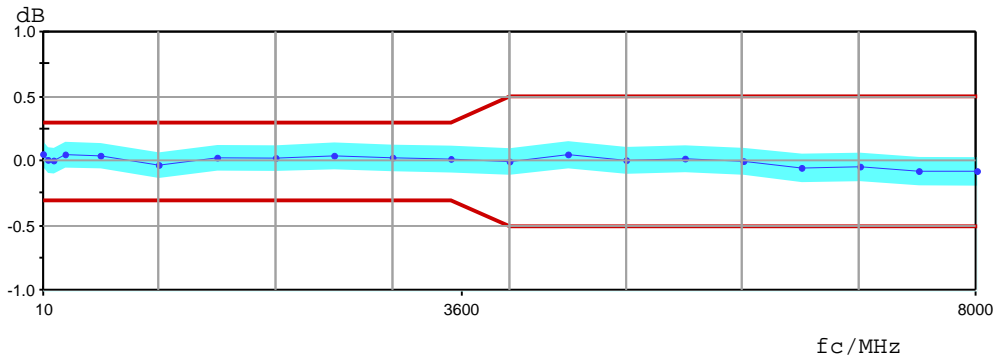
16.3 RF attenuation 5 dB, AC coupled



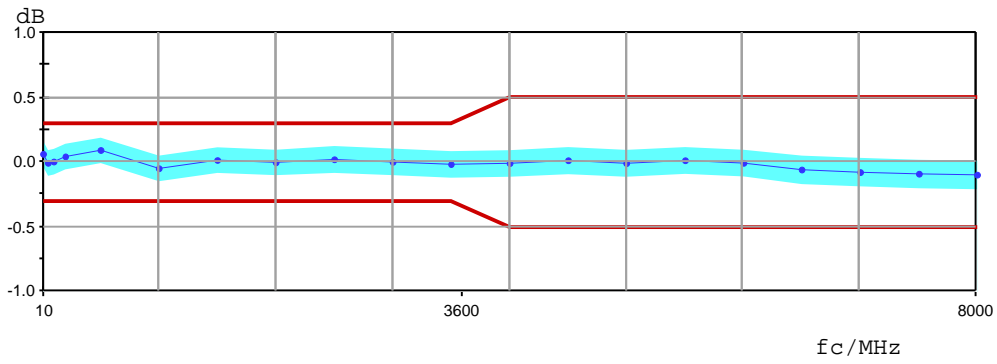
16.4 RF attenuation 10 dB, DC coupled



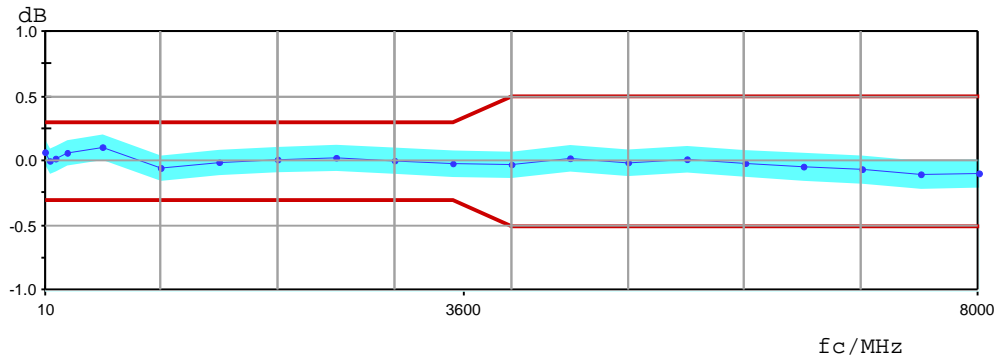
16.5 RF attenuation 10 dB, AC coupled



16.6 RF attenuation 20 dB, AC coupled

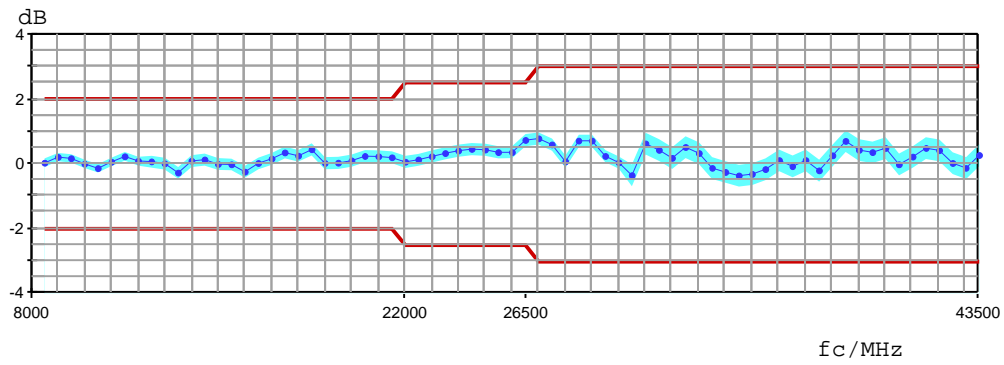


16.7 RF attenuation 40 dB, AC coupled

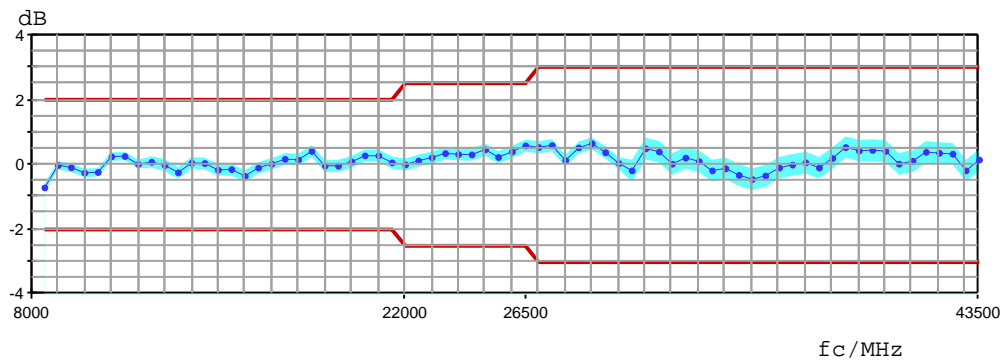


17. Frequency response > 8GHz YIG ON

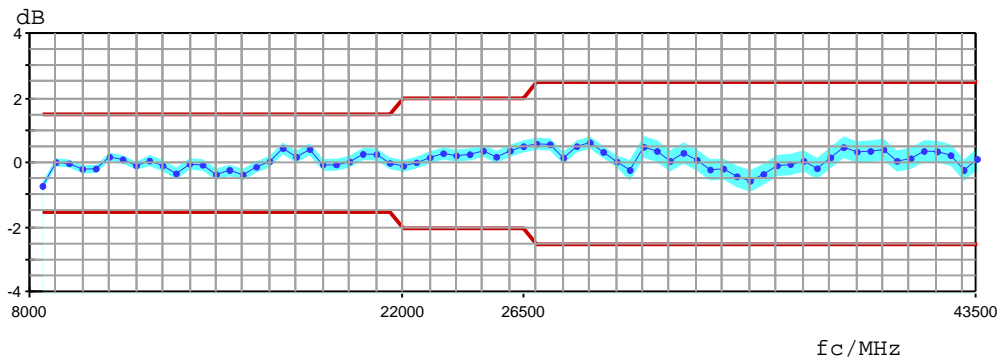
17.1 RF attenuation 0 dB, AC coupled



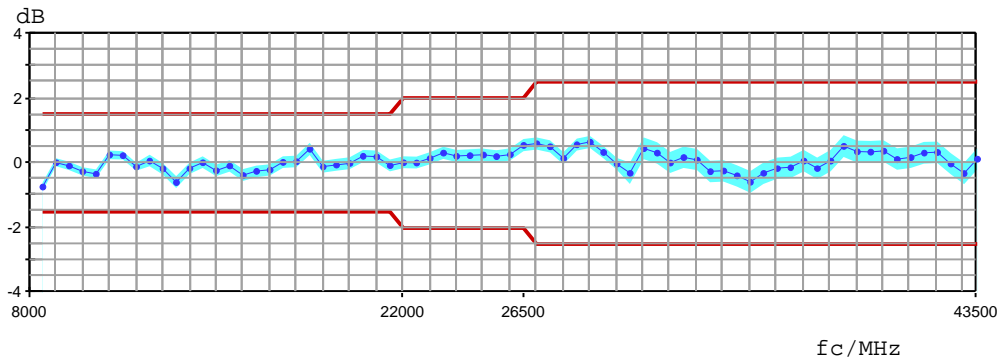
17.2 RF attenuation 5 dB, AC coupled



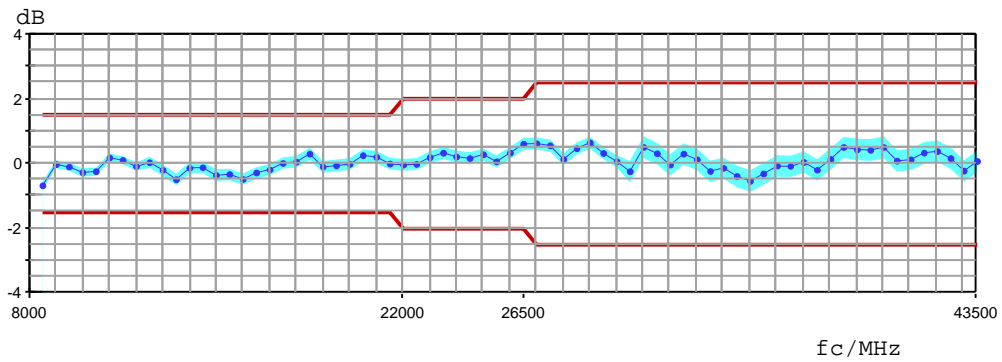
17.3 RF attenuation 10 dB, AC coupled



17.4 RF attenuation 20 dB, AC coupled

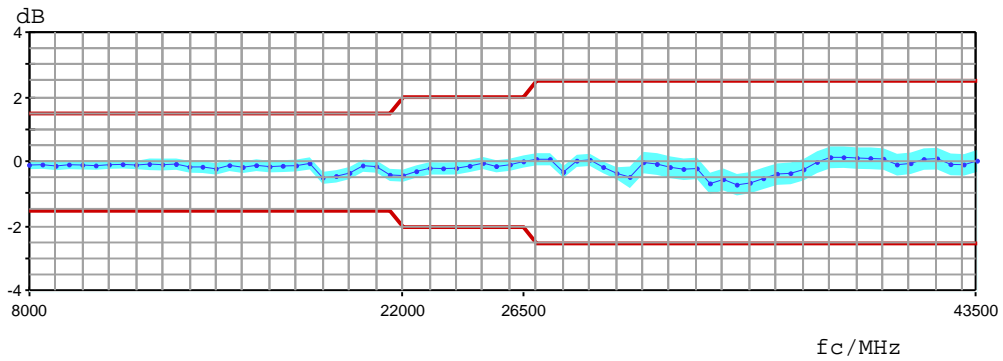


17.5 RF attenuation 40 dB, AC coupled



18. Frequency response > 8GHz YIG OFF

18.1 RF attenuation 10 dB, AC coupled



19. Frequency response check at specific frequencies

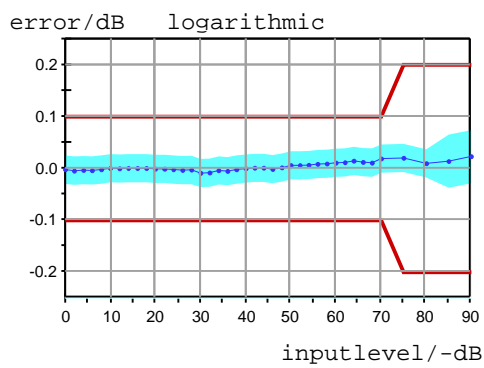
YIG ON

Frequency response check at specific frequencies PASS

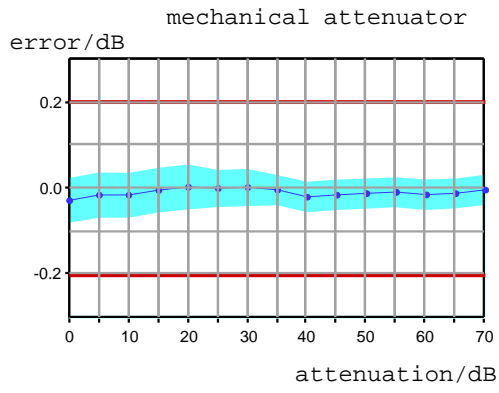
YIG OFF

Frequency response check at specific frequencies PASS

20. Display nonlinearity



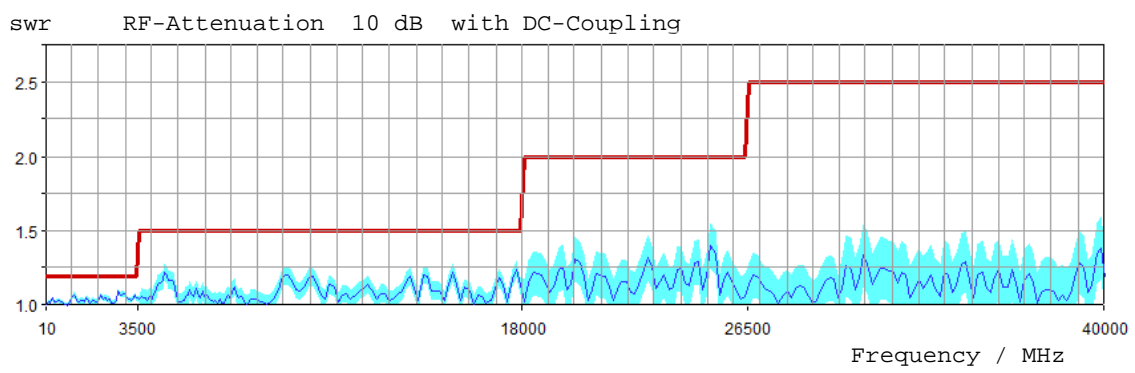
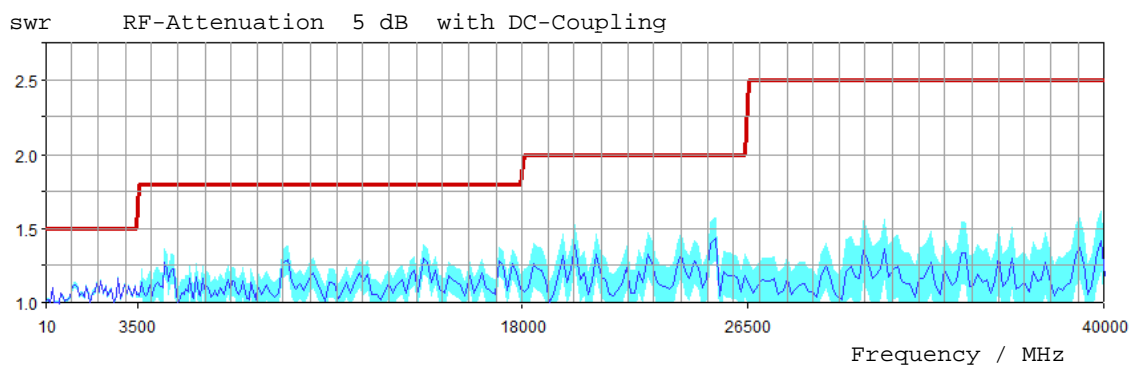
21. Attenuator switching uncertainty

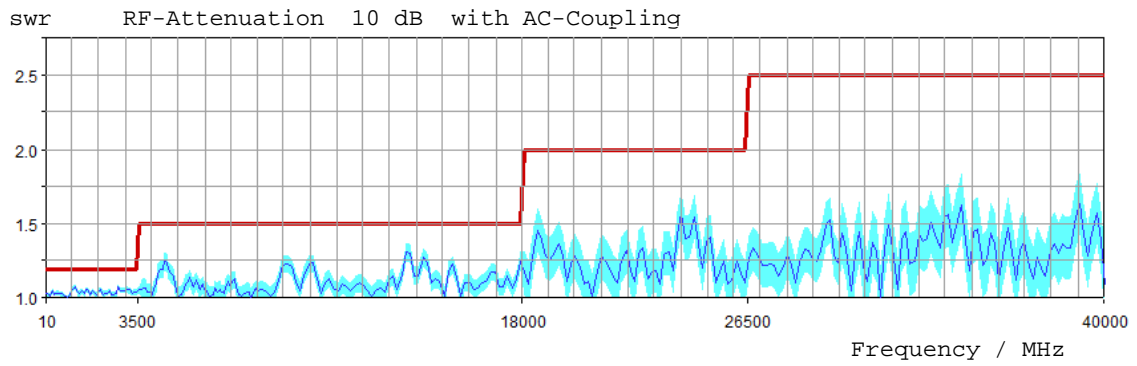
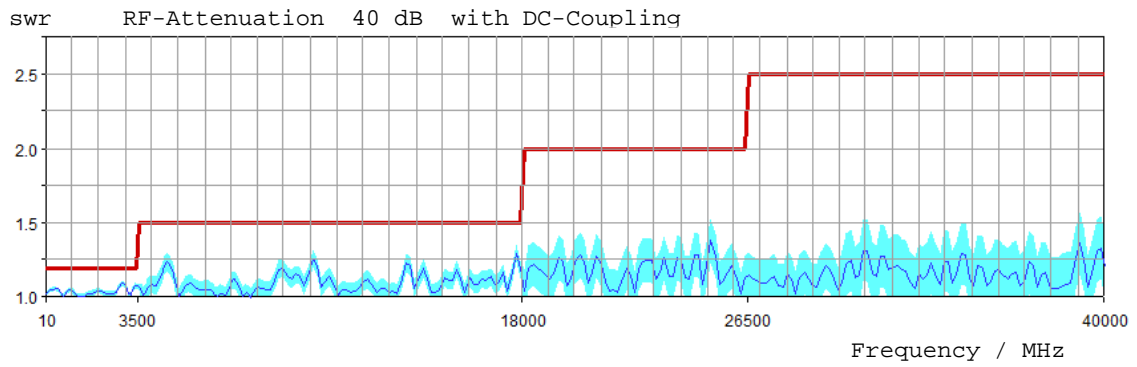
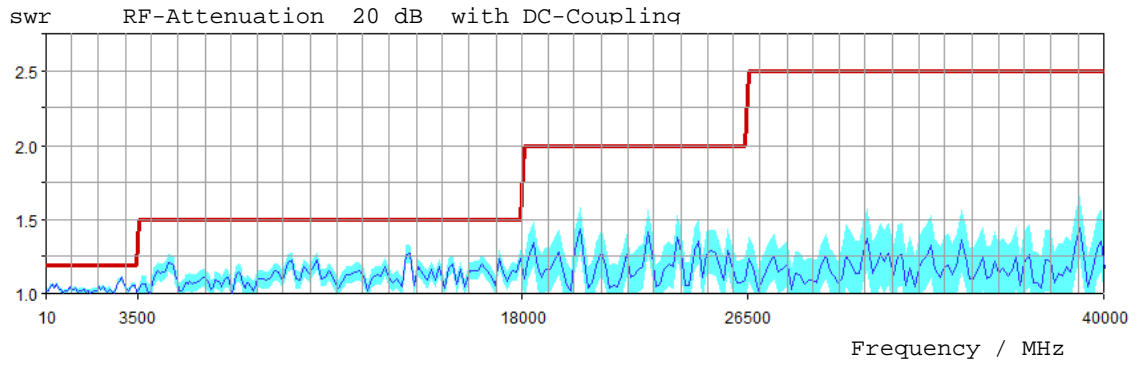


22. Checking the Phase Noise

carrier	carrier offset	DUL / dBc (1Hz)	Actual / dBc (1Hz)	
1000.0 MHz	1.0 MHz	-145	-150.15	{a}
1000.0 MHz	100.0 kHz	-136	-138.81	{a}
1000.0 MHz	10.0 kHz	-134	-137.66	{a}
1000.0 MHz	1.0 kHz	-125	-130.03	{a}

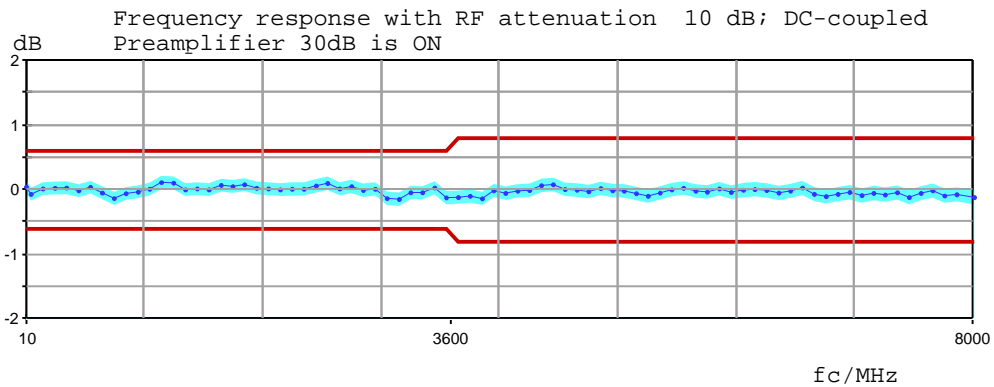
23. VSWR at RF input



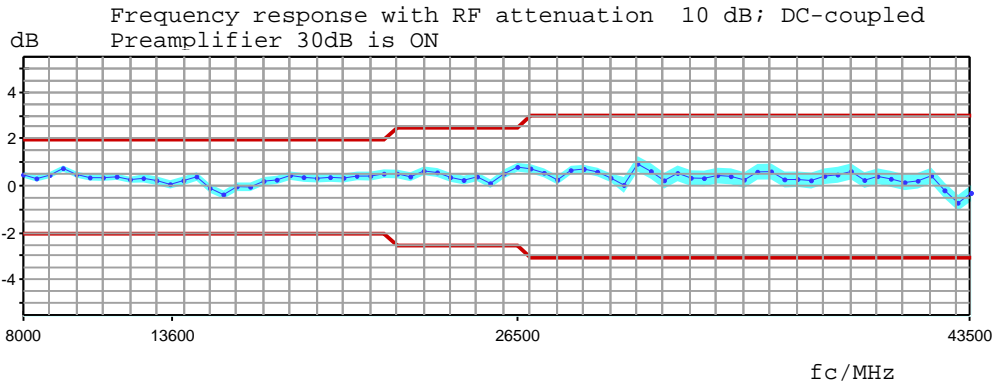


24. Frequency response (FSW-B24)

24.1 Frequency response Preamp 30dB

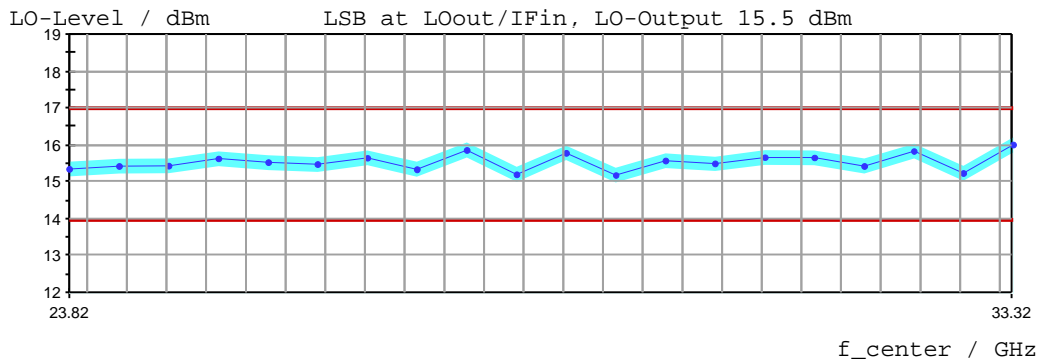
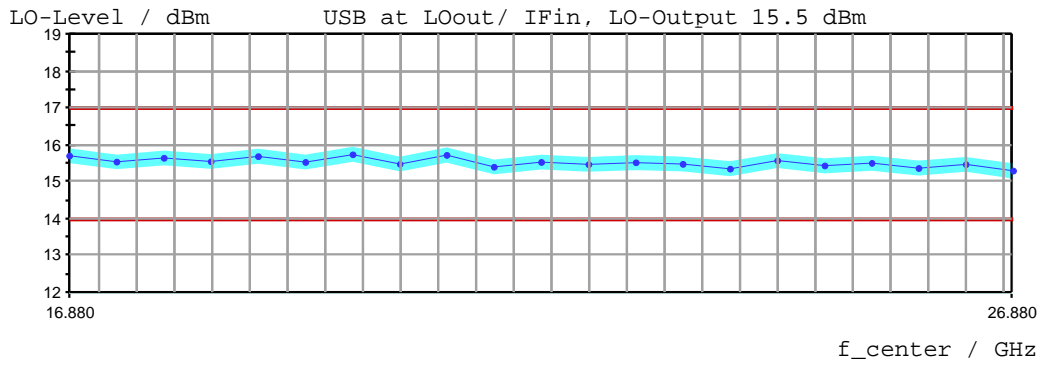


24.2 Frequency response (FSW-B24) > 8 GHz, Preamp 30dB



25. Checking LO-level (FSW-B21)

25.1 Output Level uncertainty



26. Checking the Inputs LOout / IFin (FSW-B21)

26.1 Level Display

measurement		input-signal		displayed level				
				absolute		deviation		
for mixer	at port	freq.	level	nominal	actual	DL	actual	MU
type		/MHz	/dBm	/dBm	/dBm	/dB	/dB	/dB
3-Port	IFin	1330.0	-30.0	-30.0	-30.40	1.0	-0.37	0.10
2-Port	LOout/IFin	1330.0	-30.0	-30.0	-30.43	1.0	-0.41	0.10

26.2 Updating service information on the instrument

PASS

Incoming Results

Designation:	Signal Analyzer
Type:	FSW-43
Material No.:	1312.8000K43
Serial No.:	100560
Certificate No.:	0001A300631026
Referring to Test Documentation:	1312.8000.01-PB-02.41

Test Department:	3MES2
Name:	See certificate
Date:	2022-01-04

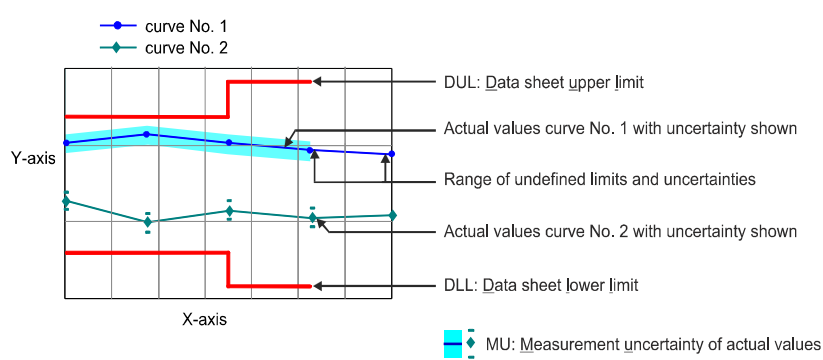
Incoming Results



The following abbreviations may be used in this document

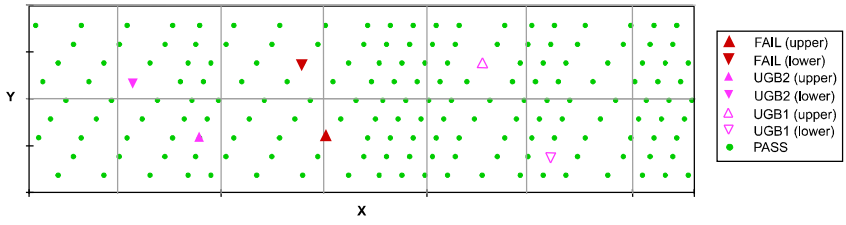
- {a} No measurement uncertainty stated because the errors always add together. So it is sure that a measurement result evaluated as "PASS" is pass.
 - {b} The measurement uncertainty depends on the measurement result. The stated measurement uncertainty is valid for the close area around the specification. Measurement results outside the close area have a higher measurement uncertainty but are within the specification.
 - {c} Functional test, therefore no measurement uncertainty is stated.
 - {d} Typical value, refer to performance test.
 - {e} The measurement uncertainty is taken into account when setting the measuring system.
 - {g} Verification of specified requirements, non-accredited measurements. Technical operations that consist of the determination of one or more characteristics to a specified procedure (formerly {f}).
- DL or DT Data Limit for symmetrical tolerance limits
 DLL Datasheet Lower Limit
 DUL Datasheet Upper Limit
 MU Symmetrical Measurement Uncertainty
 MLL or MLV Measurement Uncertainty Lower Value
 MUL or MUV Measurement Uncertainty Upper Value
 Nom. Nominal Value
 Dev. Deviation
 Act. Actual Value
 UGB Uncertainty Guard Band: Measuring uncertainty violates the data (spec.) limit.
 UGB1 A compliance statement may be possible where a confidence level of less than 95 % is acceptable.
 UGB2 A non-compliance statement may be possible where a confidence level of less than 95 % is acceptable.
 DU Datasheet Uncertainty

Explanation of charts



Explanation of the compact 2D chart

Only the status and the position of the measured point is represented, e.g. "PASS" at frequency X and level measurement Y.



Incoming Results

Table of contents

Software used for measurement	5
1. General function tests	6
2. Checking the reference frequency uncertainty	6
3. Immunity to interference	6
3.1 2nd IF Image Frequency Rejection	6
3.2 3rd IF Image Frequency Rejection	6
3.3 2nd IF Rejection	6
3.4 3rd IF Rejection	6
4. Third-order intercept point (TOI)	7
5. Third-order intercept point (TOI) > 8 GHz	7
6. Second harmonic intercept (SHI)	7
7. Second harmonic intercept (SHI) high pass filter "ON"	8
8. Checking IF Filters	8
8.1 Checking the bandwidth switching level uncertainty	8
8.2 Checking the bandwidth switching level uncertainty with option FSW-B8	8
9. Spurious response 1 MHz.. 8.9 GHz	8
10. Spurious response 8.9 GHz .. 25.0 GHz	9
11. Spurious response 25.0 GHz .. 43.5 GHz	9
12. Displayed average noise level (DANL)	9
13. Displayed average noise level (DANL) YIG OFF	10
14. Displayed average noise level (FSW-B24) YIG ON	10
15. Displayed average noise level (DANL) (FSW-B13)	11
16. Absolute level uncertainty at 64 MHz and frequency response	11
16.1 Absolute level uncertainty at 64 MHz	11
16.2 RF attenuation 0 dB, AC coupled	11
16.3 RF attenuation 5 dB, AC coupled	11
16.4 RF attenuation 10 dB, DC coupled	12
16.5 RF attenuation 10 dB, AC coupled	12
16.6 RF attenuation 20 dB, AC coupled	12
16.7 RF attenuation 40 dB, AC coupled	13
17. Frequency response > 8GHz YIG ON	13
17.1 RF attenuation 0 dB, AC coupled	13
17.2 RF attenuation 5 dB, AC coupled	13
17.3 RF attenuation 10 dB, AC coupled	14
17.4 RF attenuation 20 dB, AC coupled	14
17.5 RF attenuation 40 dB, AC coupled	14
18. Frequency response > 8GHz YIG OFF	15
18.1 RF attenuation 10 dB, AC coupled	15
19. Frequency response check at specific frequencies	15
20. Display nonlinearity	16
21. Attenuator switching uncertainty	17

Incoming Results

22. Checking the Phase Noise	17
23. VSWR at RF input	17
24. Frequency response (FSW-B24)	18
24.1 Frequency response Preamp 30dB	18
24.2 Frequency response (FSW-B24) > 8 GHz, Preamp 30dB	19
25. Checking LO-level (FSW-B21)	19
25.1 Output Level uncertainty	19
26. Checking the Inputs LOout / IFin (FSW-B21)	20
26.1 Level Display	20

Software used for measurement			
Item	Type	Version	Remark
7010.2181.00_FSW.G5Lim Suite Test Program (7010.2181.00)	Limit File Setup Component	2021-09-08 12:46 V12.20 V01.13.92	Test Management Software G5

1. General function tests

Selftest successful	pass	pass
Self Alignment successful	pass	pass

2. Checking the reference frequency uncertainty

	DUL	DLL	Actual	MU
Error of internal 10 MHz	1.00 Hz..	-1.00 Hz	-0.0200 Hz	0.0120 Hz

3. Immunity to interference

3.1 2nd IF Image Frequency Rejection

IF2 = 1317.0 MHz				
fc	DLL	Actual	MU	
1000.0 MHz	90 dB	111.7 dB	3.1 dB	
9000.0 MHz	90 dB	111.3 dB	4.1 dB	

3.2 3rd IF Image Frequency Rejection

IF3 = 37.0 MHz				
fc	DLL	Actual	MU	
63.0 MHz	90 dB	113.1 dB	3.1 dB	
100.0 MHz	90 dB	112.7 dB	3.1 dB	
900.0 MHz	90 dB	111.3 dB	3.1 dB	
1100.0 MHz	90 dB	113.1 dB	3.1 dB	
7990.0 MHz	90 dB	111.3 dB	3.1 dB	

3.3 2nd IF Rejection

IF2 = 1317.0 MHz				
fc	DLL	Actual	MU	
50.0 MHz	90 dB	112.6 dB	3.1 dB	
200.0 MHz	90 dB	111.8 dB	3.1 dB	
500.0 MHz	90 dB	110.7 dB	3.1 dB	
900.0 MHz	90 dB	111.2 dB	3.1 dB	
1100.0 MHz	90 dB	113.8 dB	3.1 dB	
7990.0 MHz	90 dB	112.1 dB	3.1 dB	
9000.0 MHz	90 dB	110.9 dB	4.1 dB	
12000.0 MHz	90 dB	110.7 dB	4.1 dB	
25000.0 MHz	90 dB	103.1 dB	4.1 dB	
38000.0 MHz	90 dB	103.7 dB	4.1 dB	

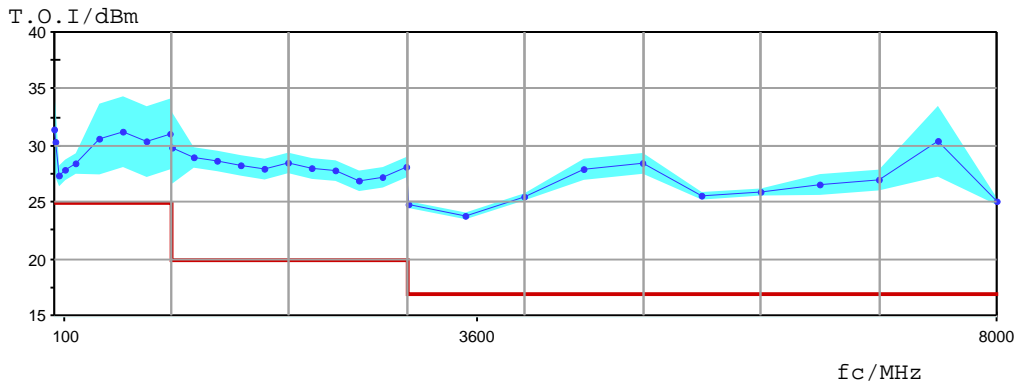
3.4 3rd IF Rejection

IF3 = 37.0 MHz

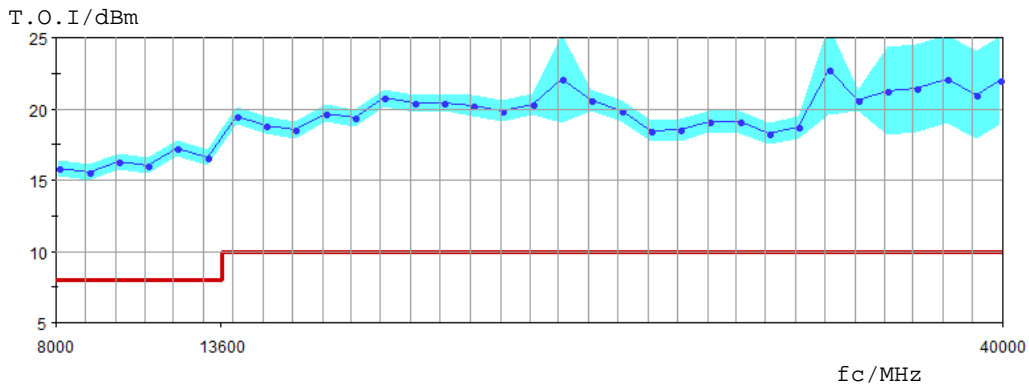
Incoming Results

fc	DLL	Actual	MU
100.0 MHz	90 dB	110.3 dB	3.1 dB
200.0 MHz	90 dB	112.2 dB	3.1 dB
500.0 MHz	90 dB	111.0 dB	3.1 dB
900.0 MHz	90 dB	111.2 dB	3.1 dB
1100.0 MHz	90 dB	113.8 dB	3.1 dB
7990.0 MHz	90 dB	111.1 dB	3.1 dB
9000.0 MHz	90 dB	111.0 dB	4.1 dB
12000.0 MHz	90 dB	110.2 dB	4.1 dB
25000.0 MHz	90 dB	103.5 dB	4.1 dB
38000.0 MHz	90 dB	105.0 dB	4.1 dB

4. Third-order intercept point (TOI)



5. Third-order intercept point (TOI) > 8 GHz



6. Second harmonic intercept (SHI)

fin	DLL	Actual	MU
9.0 MHz	45.0 dBm	51.2 dBm	0.6 dB
21.0 MHz	45.0 dBm	48.4 dBm	0.6 dB
106.0 MHz	45.0 dBm	47.7 dBm	0.6 dB
274.0 MHz	45.0 dBm	55.5 dBm	0.6 dB
449.9 MHz	45.0 dBm	51.5 dBm	0.6 dB
699.9 MHz	47.0 dBm	60.7 dBm	0.6 dB
999.9 MHz	47.0 dBm	60.4 dBm	0.6 dB
1499.9 MHz	47.0 dBm	72.7 dBm	0.6 dB
1749.9 MHz	62.0 dBm	77.0 dBm	0.6 dB
2699.9 MHz	62.0 dBm	81.1 dBm	1.5 dB
3449.9 MHz	62.0 dBm	80.6 dBm	1.5 dB

7. Second harmonic intercept (SHI) high pass filter "ON"

fin	DLI	Actual	MU
699.9 MHz	52.0 dBm	53.2 dBm	0.6 dB
1499.9 MHz	52.0 dBm	72.0 dBm	0.6 dB

8. Checking IF Filters

8.1 Checking the bandwidth switching level uncertainty

reference is 10.0 kHz RBW

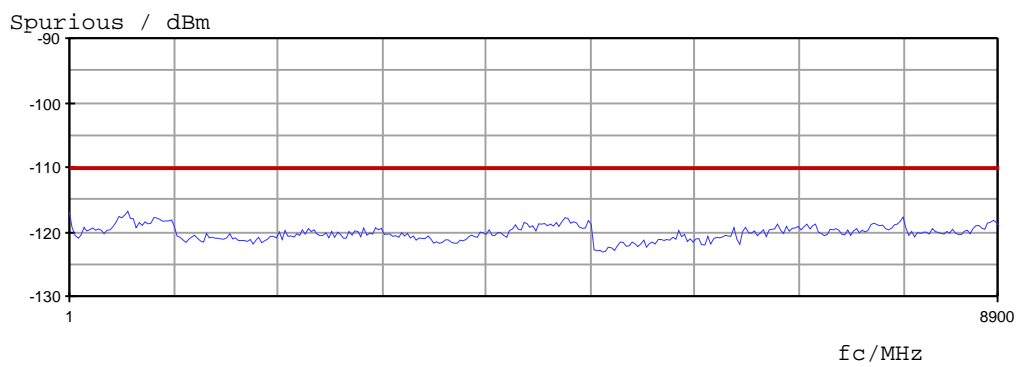
Bandwidth	DL	Actual	MU
10.0 MHz	0.1 dB	0.03 dB	0.01 dB
1.0 MHz	0.1 dB	0.02 dB	0.01 dB
100 kHz	0.1 dB	0.02 dB	0.01 dB
10 kHz	0.1 dB	0.00 dB	0.01 dB
1 kHz	0.1 dB	0.01 dB	0.01 dB
100 Hz	0.1 dB	0.00 dB	0.01 dB

8.2 Checking the bandwidth switching level uncertainty with option FSW-B8

reference is 10.0 kHz RBW

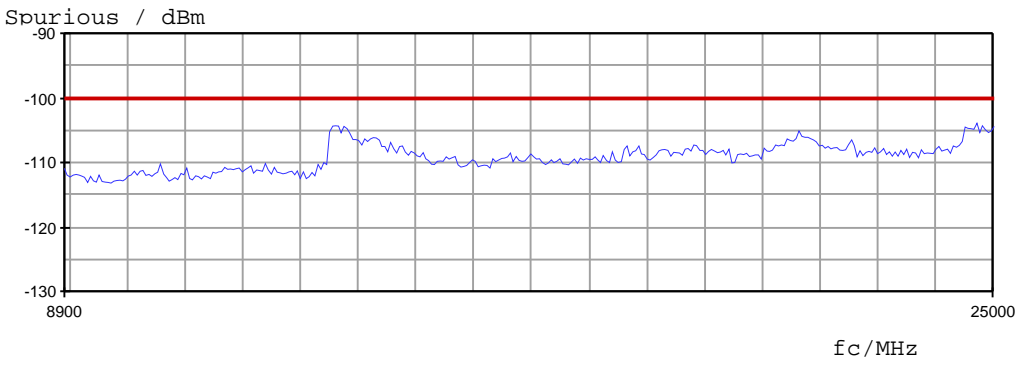
Bandwidth	DL	Actual	MU
20.0 MHz	0.1 dB	0.03 dB	0.01 dB
28.0 MHz	0.1 dB	0.04 dB	0.01 dB
50.0 MHz	0.1 dB	0.04 dB	0.01 dB
80.0 MHz	0.1 dB	0.04 dB	0.01 dB

9. Spurious response 1 MHz.. 8.9 GHz

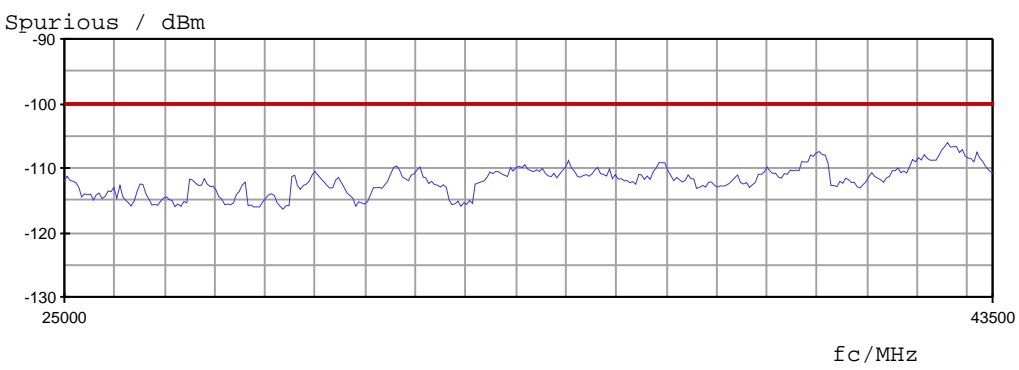


Incoming Results

10. Spurious response 8.9 GHz .. 25.0 GHz



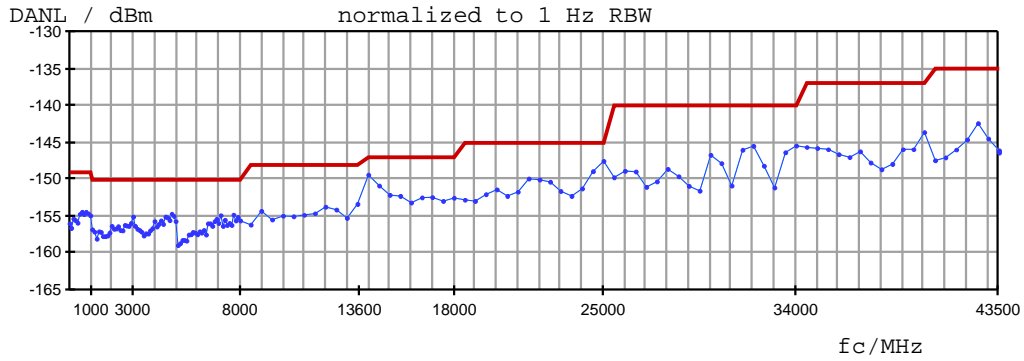
11. Spurious response 25.0 GHz .. 43.5 GHz



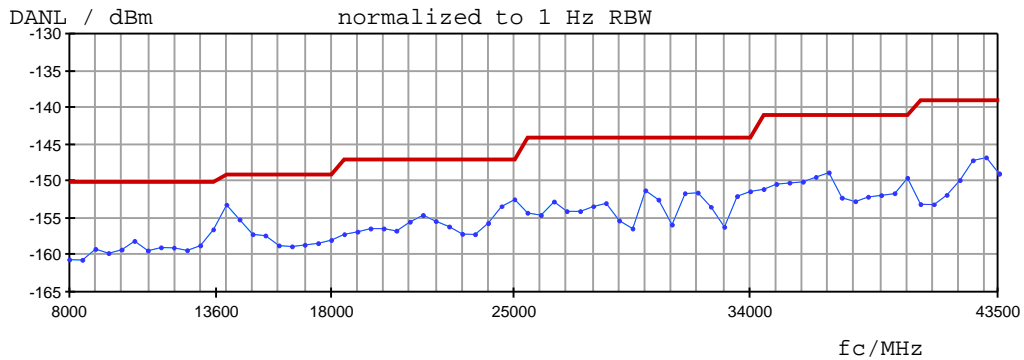
12. Displayed average noise level (DANL)

fc	DUL	Actual	MU
2 Hz (1 Hz BW)	-110 dBm	-116.55 dBm	0.01 dB
10 Hz (1 Hz BW)	-110 dBm	-129.54 dBm	0.01 dB
30 Hz (1 Hz BW)	-110 dBm	-123.17 dBm	0.01 dB
98 Hz (1 Hz BW)	-110 dBm	-137.20 dBm	0.01 dB
300 Hz (1 Hz BW)	-120 dBm	-138.48 dBm	0.01 dB
980 Hz (1 Hz BW)	-120 dBm	-141.46 dBm	0.01 dB
fc	DUL	Actual	MU
9.8 kHz (1 Hz BW)	-145 dBm	-149.94 dBm	0.01 dB
98 kHz (1 Hz BW)	-145 dBm	-151.38 dBm	0.01 dB
998 kHz (1 Hz BW)	-145 dBm	-154.54 dBm	0.01 dB
9800 kHz (1 Hz BW)	-149 dBm	-154.68 dBm	0.01 dB

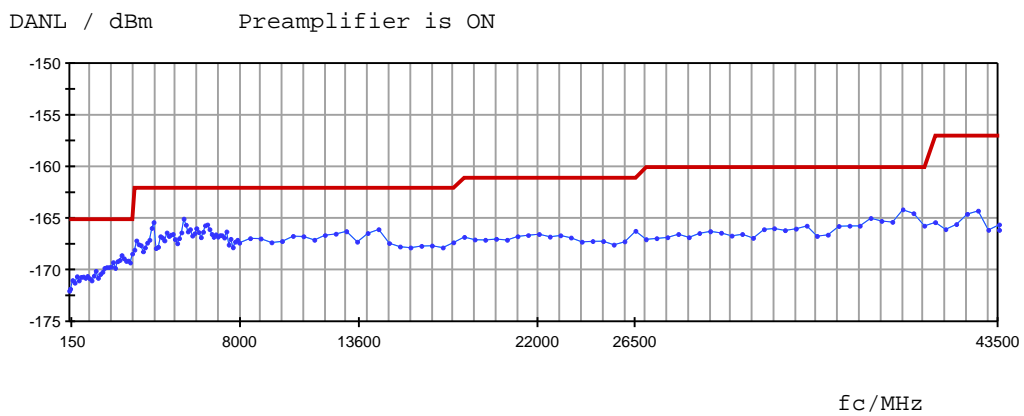
Incoming Results



13. Displayed average noise level (DANL) YIG OFF



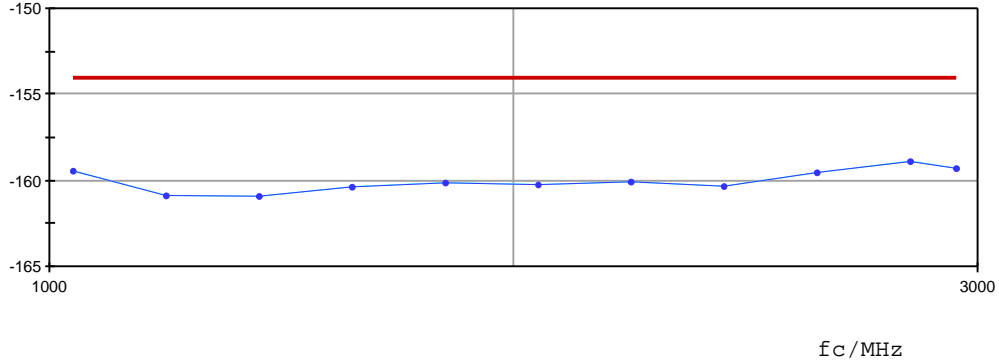
14. Displayed average noise level (FSW-B24) YIG ON



Incoming Results

15. Displayed average noise level (DANL) (FSW-B13)

DANL / dBm High pass activated

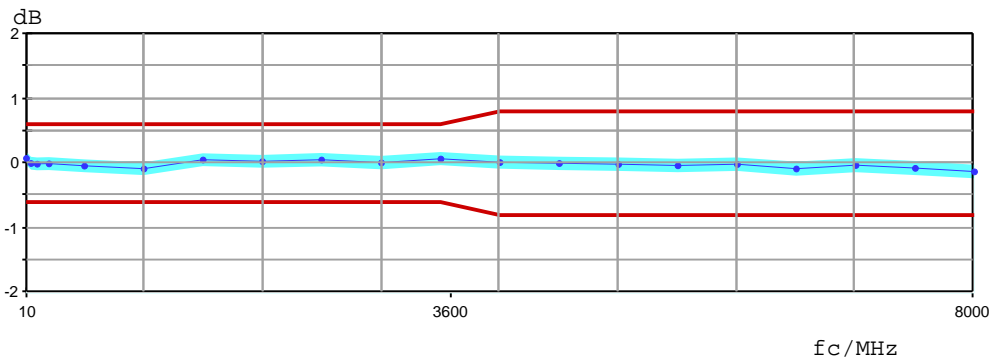


16. Absolute level uncertainty at 64 MHz and frequency response

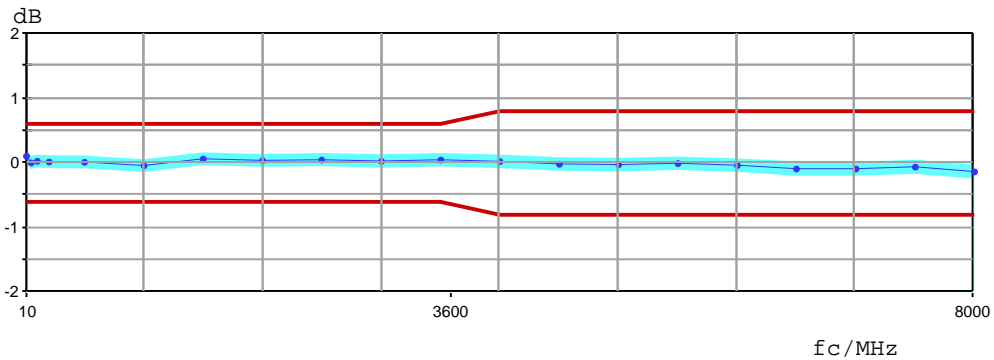
16.1 Absolute level uncertainty at 64 MHz

fc	DL	Actual	MU
64 MHz	0.20 dB	-0.13 dB	0.04 dB

16.2 RF attenuation 0 dB, AC coupled

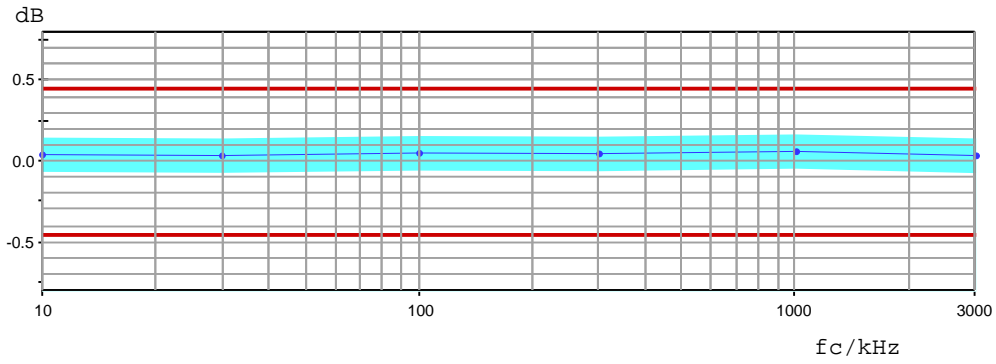


16.3 RF attenuation 5 dB, AC coupled

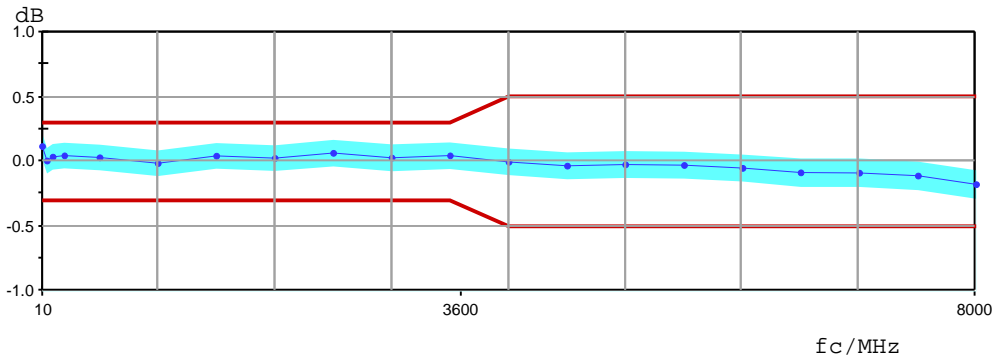


Incoming Results

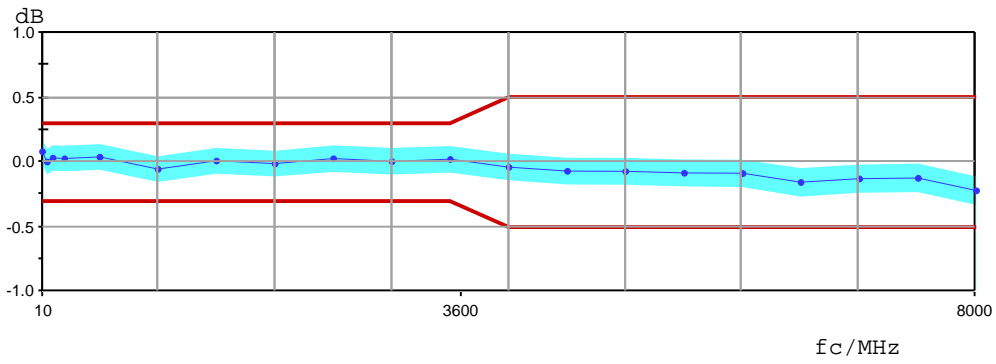
16.4 RF attenuation 10 dB, DC coupled



16.5 RF attenuation 10 dB, AC coupled

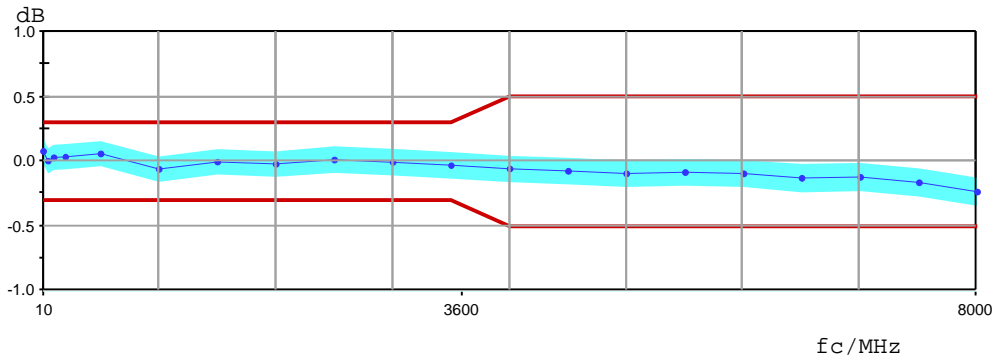


16.6 RF attenuation 20 dB, AC coupled



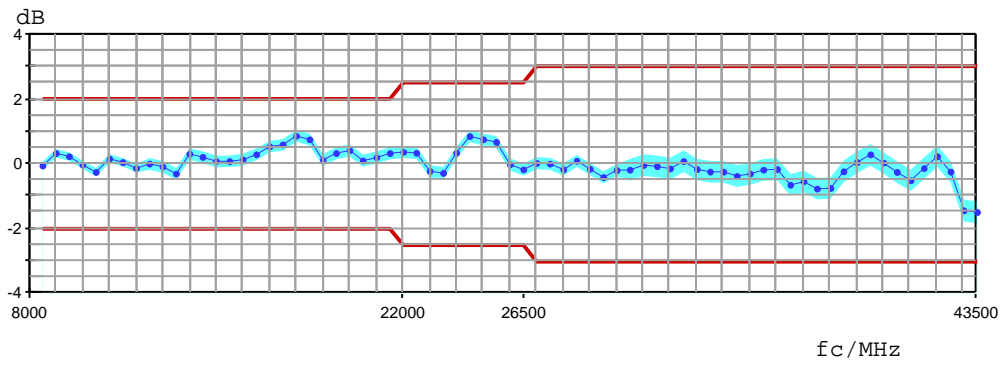
Incoming Results

16.7 RF attenuation 40 dB, AC coupled

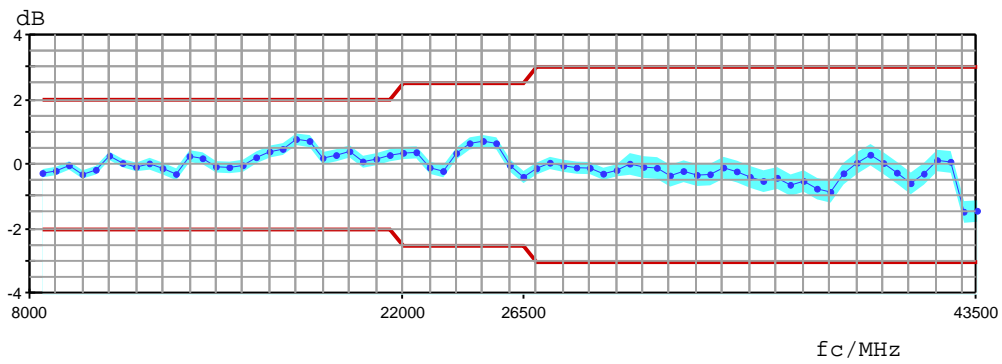


17. Frequency response > 8GHz YIG ON

17.1 RF attenuation 0 dB, AC coupled

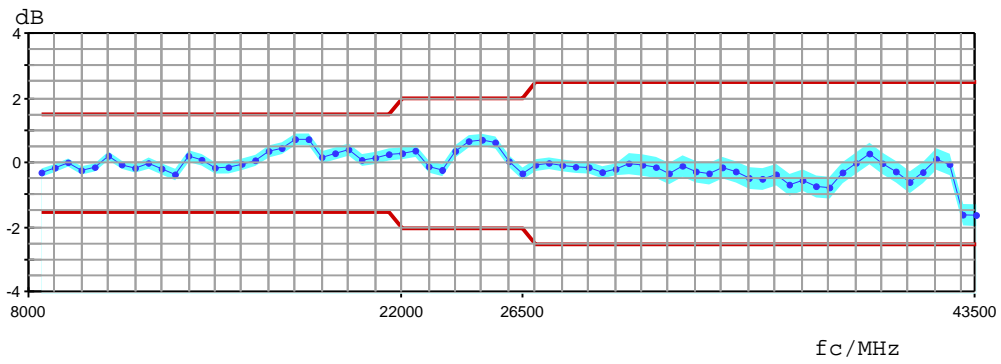


17.2 RF attenuation 5 dB, AC coupled

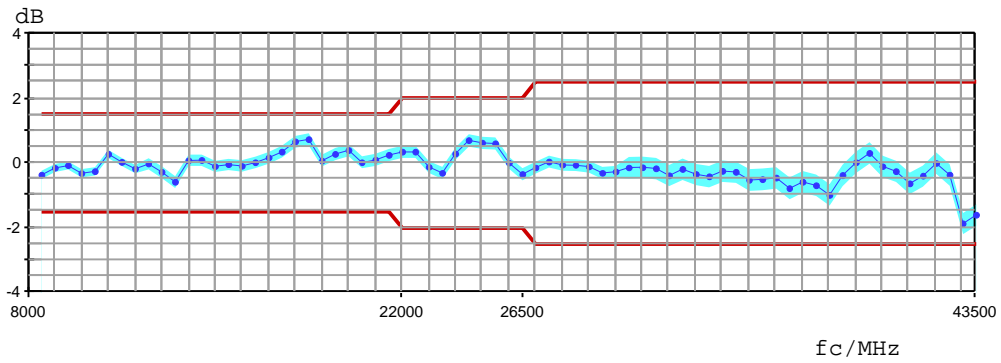


Incoming Results

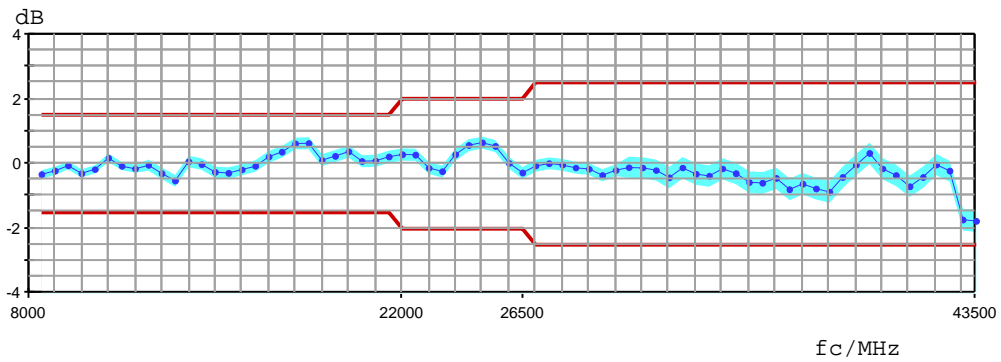
17.3 RF attenuation 10 dB, AC coupled



17.4 RF attenuation 20 dB, AC coupled

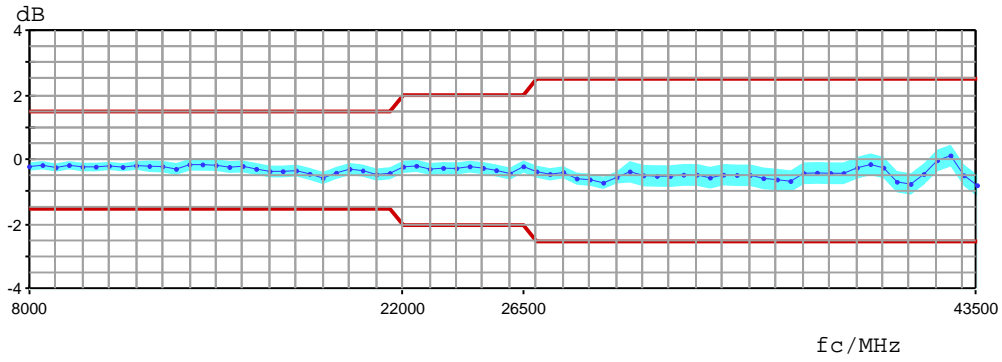


17.5 RF attenuation 40 dB, AC coupled



18. Frequency response > 8GHz YIG OFF

18.1 RF attenuation 10 dB, AC coupled



19. Frequency response check at specific frequencies

YIG ON

Frequency response check at specific frequencies

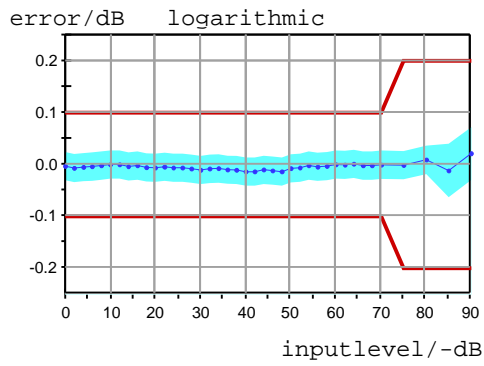
PASS

Incoming Results

YIG OFF

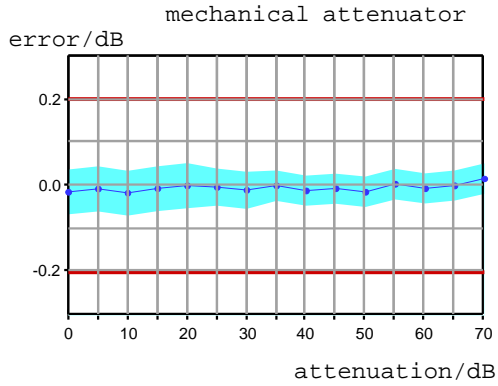
Frequency response check at specific frequencies PASS

20. Display nonlinearity



Incoming Results

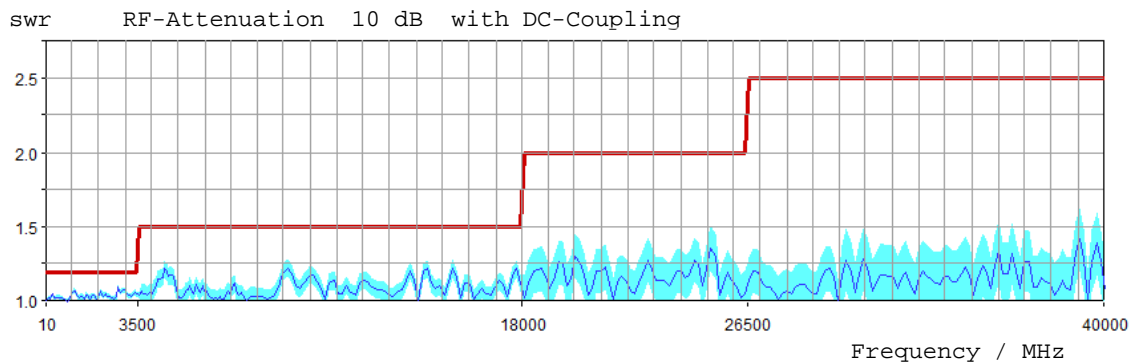
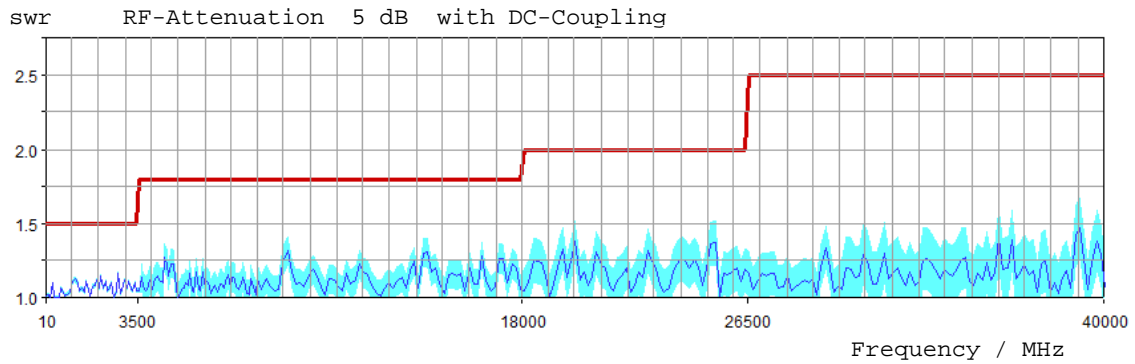
21. Attenuator switching uncertainty



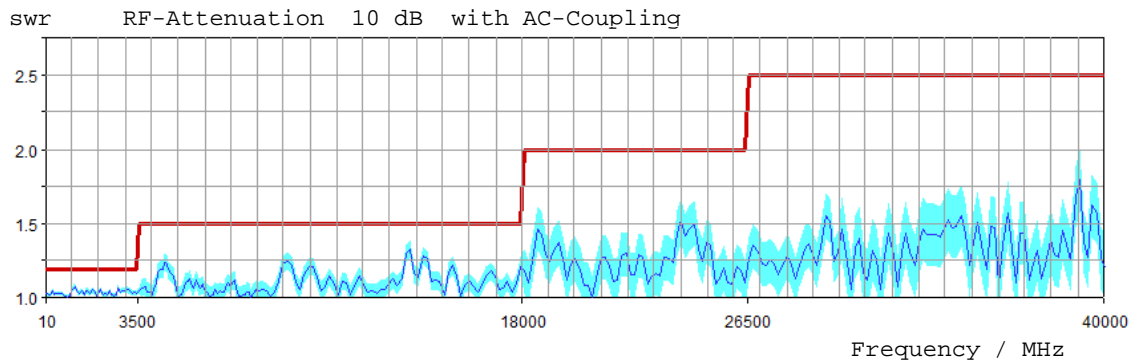
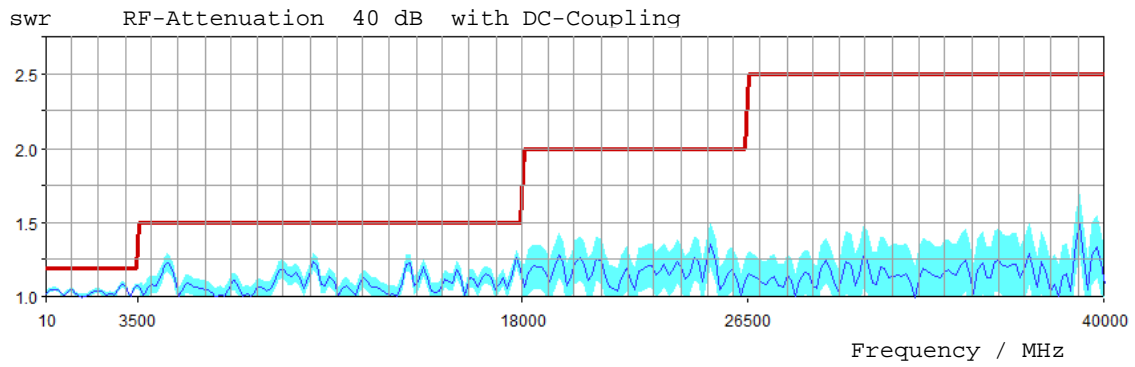
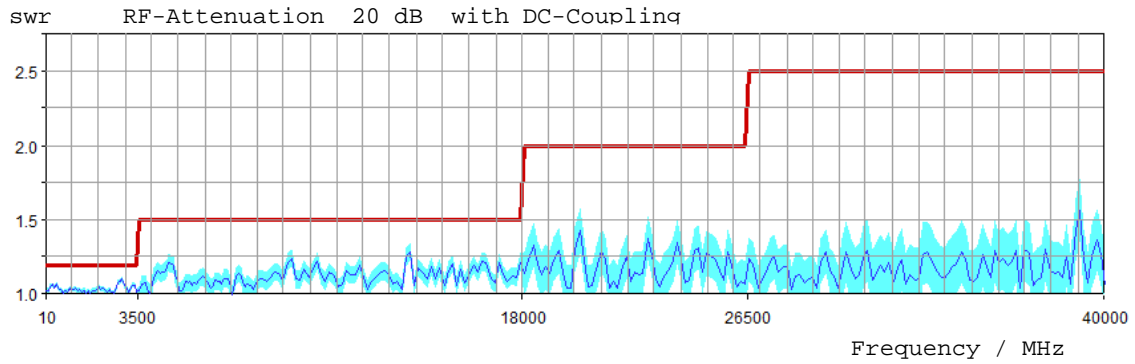
22. Checking the Phase Noise

carrier	carrier offset	DUL / dBc (1Hz)	Actual / dBc (1Hz)	
1000.0 MHz	1.0 MHz	-145	-148.08	{a}
1000.0 MHz	100.0 kHz	-136	-138.53	{a}
1000.0 MHz	10.0 kHz	-134	-138.55	{a}
1000.0 MHz	1.0 kHz	-125	-131.10	{a}

23. VSWR at RF input



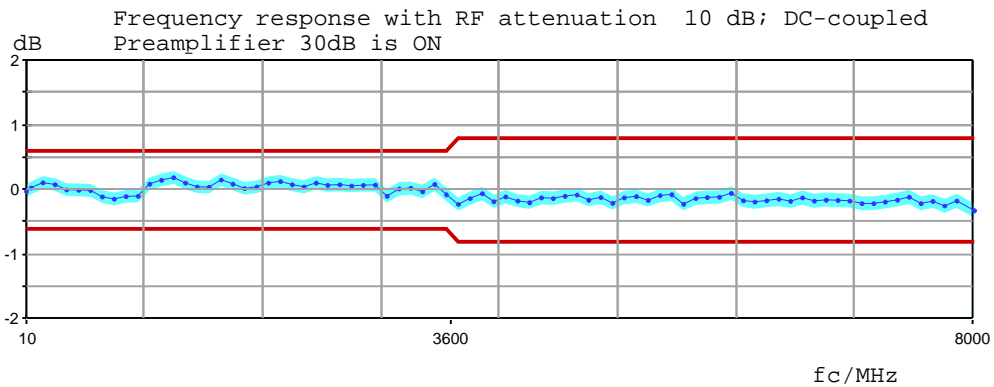
Incoming Results



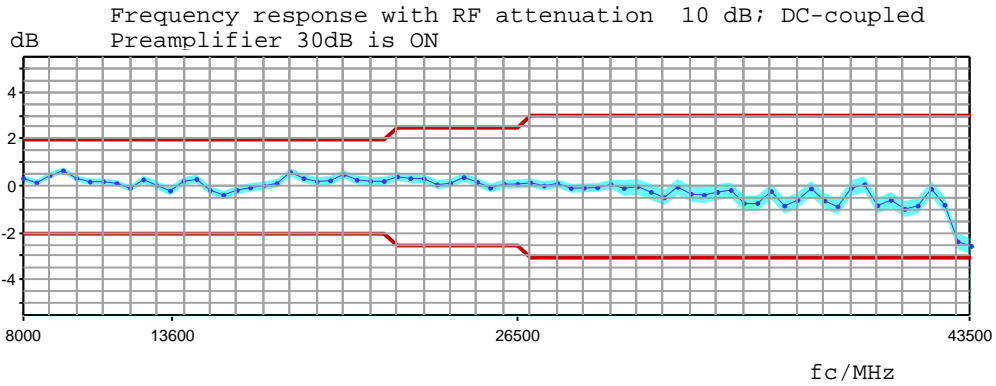
Incoming Results

24. Frequency response (FSW-B24)

24.1 Frequency response Preamp 30dB

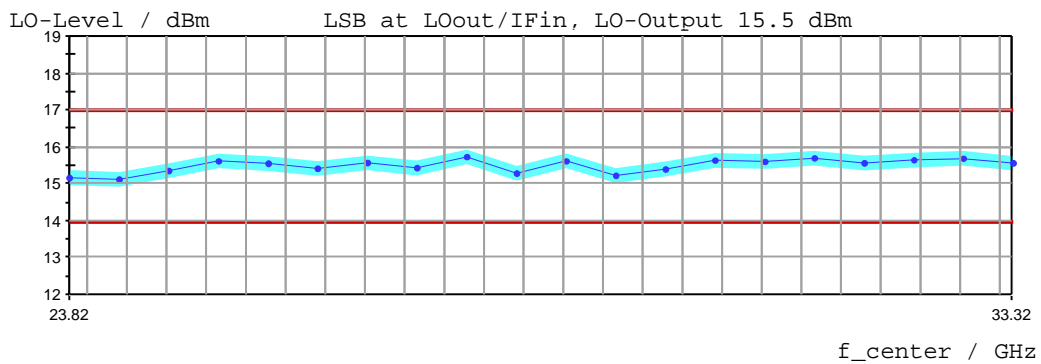
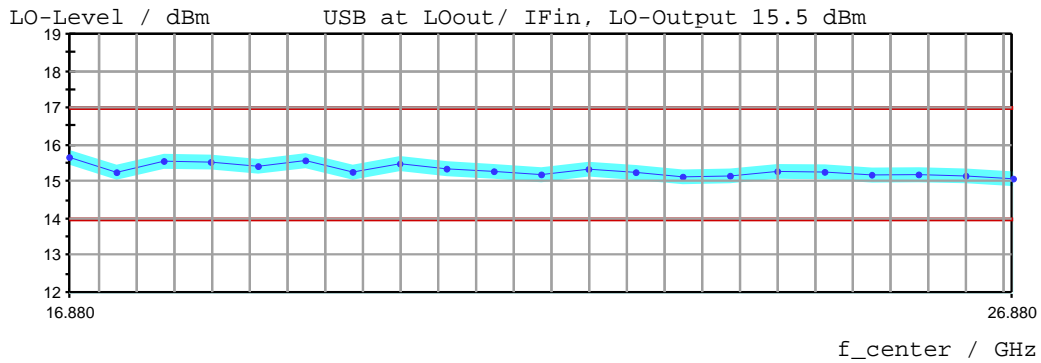


24.2 Frequency response (FSW-B24) > 8 GHz, Preamp 30dB



25. Checking LO-level (FSW-B21)

25.1 Output Level uncertainty



Incoming Results

26. Checking the Inputs LOout / IFin (FSW-B21)

26.1 Level Display

measurement		input-signal		displayed level				
				absolute		deviation		
for mixer type	at port	freq. /MHz	level /dBm	nominal	actual	DL	actual	MU
				/dBm	/dBm	/dB	/dB	/dB
3-Port	IFin	1330.0	-30.0	-30.0	-30.62	1.0	-0.60	0.10
2-Port	LOout/IFin	1330.0	-30.0	-30.0	-30.34	1.0	-0.31	0.10

Incoming Results