# Outgoing 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.
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
MErr.	Measurement Error
Act.	Actual Value
UGB	Uncertainty Guard Band: Measuring uncertainty violates the data (spec.) limit.
UGB1	Measurement results marked as UGB1 show conformity with a probability of >50 % and <95 %.
UGB2	Measurement results marked as UGB2 show non-conformity with a probability of >50 % and <95 %.
DU	Datasheet Uncertainty

Explanation of charts
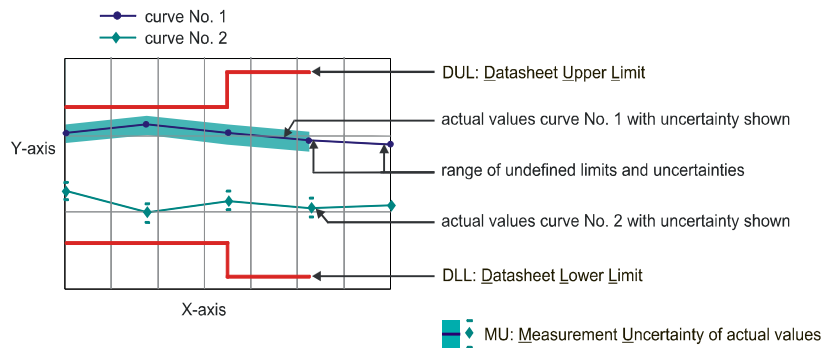
Explanation of the Compact 2D chart

Only the status and the position of the measured point is represented, e.g. "PASS" at frequency X and level measurement Y.
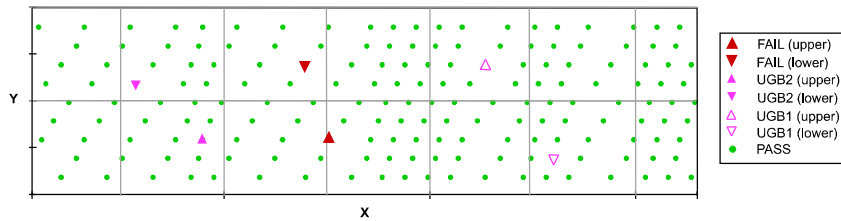
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Software used for measurement			
Item	**Type**	**Version**	**Remark**
7010.2181.00_FSW.G5Lim	Limit File	2014-03-13 17:13	
Suite	Setup	V10.10.01	Test Management Software G5
Test Program (7010.2181.00)	Component	V01.06.49	

1. Checking the reference frequency uncertainty

	DUL	DLL	Actual	MU
Error of internal 10 MHz	1.00 Hz..	−1.00 Hz	+0.0000 Hz	0.0019 Hz

2. Immunity to interference

2.1 2nd IF Image Frequency Rejection

IF2 =   1317.0 MHz

fc	DLL	Actual	MU
1000.0 MHz	90 dB	117.06 dB	3.05 dB

2.2 3rd IF Image Frequency Rejection

IF3 =   37.0 MHz

fc	DLL	Actual	MU
63.0 MHz	90 dB	116.09 dB	3.05 dB
100.0 MHz	90 dB	116.38 dB	3.05 dB
900.0 MHz	90 dB	115.32 dB	3.05 dB
1100.0 MHz	90 dB	116.18 dB	3.05 dB
7990.0 MHz	90 dB	115.76 dB	3.05 dB

2.3 2nd IF Rejection

IF2 =   1317.0 MHz

fc	DLL	Actual	MU
50.0 MHz	90 dB	115.47 dB	3.05 dB
200.0 MHz	90 dB	117.77 dB	3.05 dB
500.0 MHz	90 dB	115.48 dB	3.05 dB
900.0 MHz	90 dB	115.90 dB	3.05 dB
1100.0 MHz	90 dB	115.96 dB	3.05 dB
7990.0 MHz	90 dB	116.11 dB	3.05 dB

2.4 3rd IF Rejection

IF3 =   37.0 MHz

fc	DLL	Actual	MU
100.0 MHz	90 dB	116.13 dB	3.05 dB
200.0 MHz	90 dB	116.73 dB	3.05 dB
500.0 MHz	90 dB	116.49 dB	3.05 dB
900.0 MHz	90 dB	116.35 dB	3.05 dB
1100.0 MHz	90 dB	116.28 dB	3.05 dB
7990.0 MHz	90 dB	115.21 dB	3.05 dB

3. Third-order intercept point


```
T.O.I/dBm
40

35

30

25

20

15
  100                      3600                      8000

                                            fc/MHz
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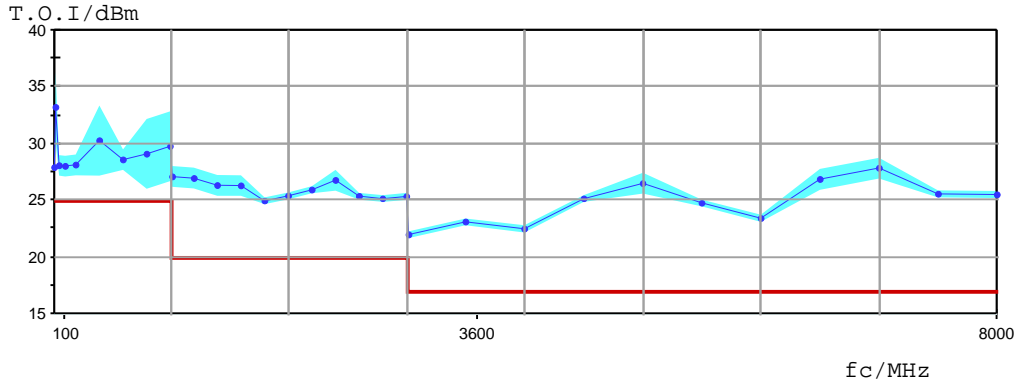
4. Second harmonic intercept (SHI)

| fin	DLL	Actual	MU
9.0 MHz	50.0 dBm	73.0 dBm	0.6 dB
21.0 MHz	50.0 dBm	65.8 dBm	0.6 dB
106.0 MHz	50.0 dBm	60.0 dBm	0.6 dB
274.0 MHz	50.0 dBm	61.6 dBm	0.6 dB
449.9 MHz	70.0 dBm	103.5 dBm	1.5 dB
699.9 MHz	47.0 dBm	65.7 dBm	0.6 dB
999.9 MHz	47.0 dBm	65.9 dBm	0.6 dB
1499.9 MHz	47.0 dBm	98.1 dBm	1.5 dB
1749.9 MHz	62.0 dBm	97.3 dBm	1.5 dB
2699.9 MHz	62.0 dBm	78.7 dBm	0.6 dB
3449.9 MHz	62.0 dBm	82.0 dBm	1.5 dB

5. Checking IF Filters

5.1 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	−0.04 dB	0.01 dB
100 kHz	0.1 dB	−0.04 dB	0.01 dB
10 kHz	0.1 dB	0.00 dB	0.01 dB
1 kHz	0.1 dB	0.00 dB	0.01 dB
100 Hz	0.1 dB	−0.02 dB	0.01 dB

6. Spurious response (full span)

Spurious / dBm
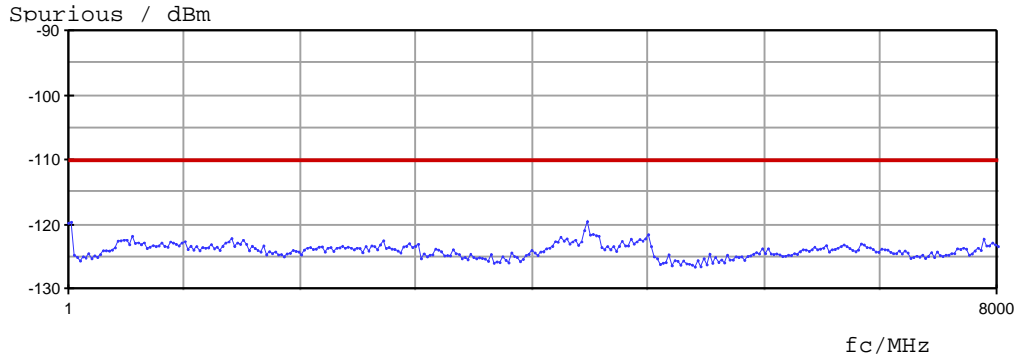
7. Displayed average noise level (DANL)

fc			DUL	Actual	MU
2	Hz	(1 Hz BW)	-110 dBm	-111.54 dBm	0.01 dB
10	Hz	(1 Hz BW)	-110 dBm	-124.99 dBm	0.01 dB
30	Hz	(1 Hz BW)	-110 dBm	-122.89 dBm	0.01 dB
98	Hz	(1 Hz BW)	-110 dBm	-134.01 dBm	0.01 dB
300	Hz	(1 Hz BW)	-120 dBm	-133.56 dBm	0.01 dB
980	Hz	(1 Hz BW)	-120 dBm	-139.82 dBm	0.01 dB

fc			DUL	Actual	MU
9.8	kHz	(1 Hz BW)	-144 dBm	-147.41 dBm	0.01 dB
98	kHz	(1 Hz BW)	-144 dBm	-152.13 dBm	0.01 dB
998	kHz	(1 Hz BW)	-144 dBm	-154.62 dBm	0.01 dB
9800	kHz	(1 Hz BW)	-149 dBm	-155.46 dBm	0.01 dB

DANL / dBm   normalized to 1 Hz RBW
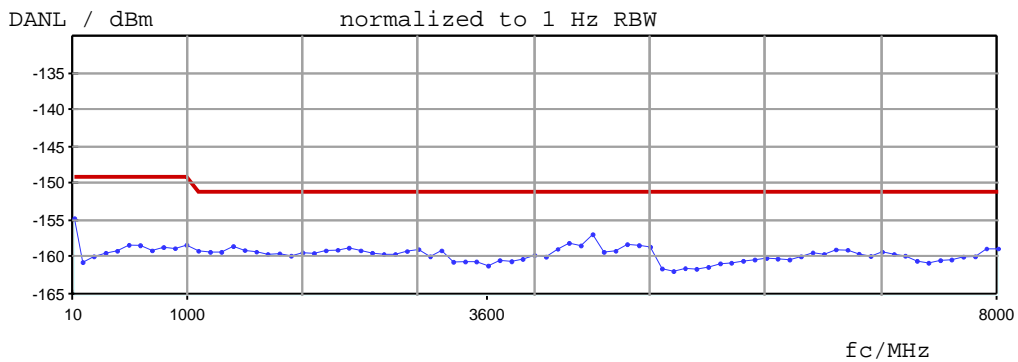
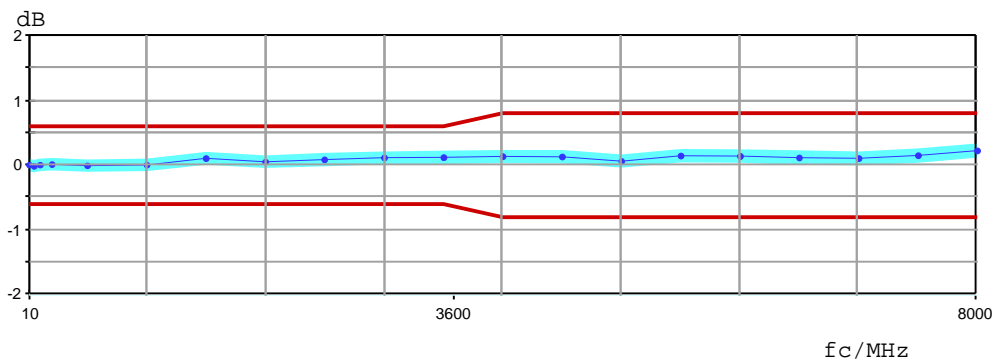## 8. Absolute level uncertainty at 64 MHz and frequency response

8.1 Absolute level uncertainty at 64 MHz

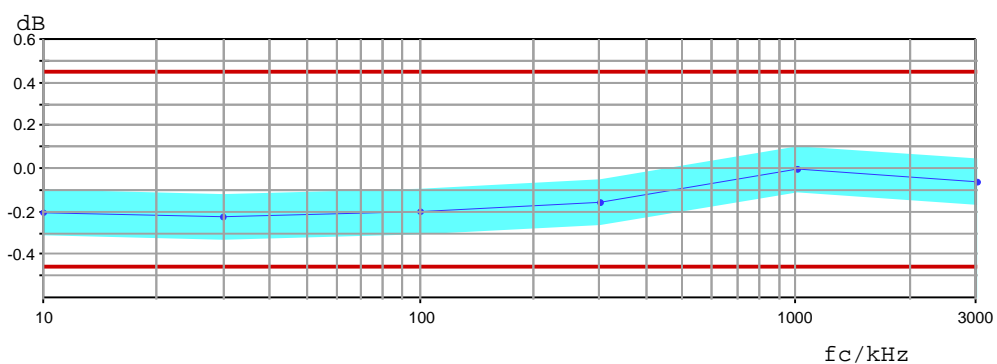| fc	DL	Actual	MU
64 MHz	0.20 dB	0.01 dB	0.08 dB

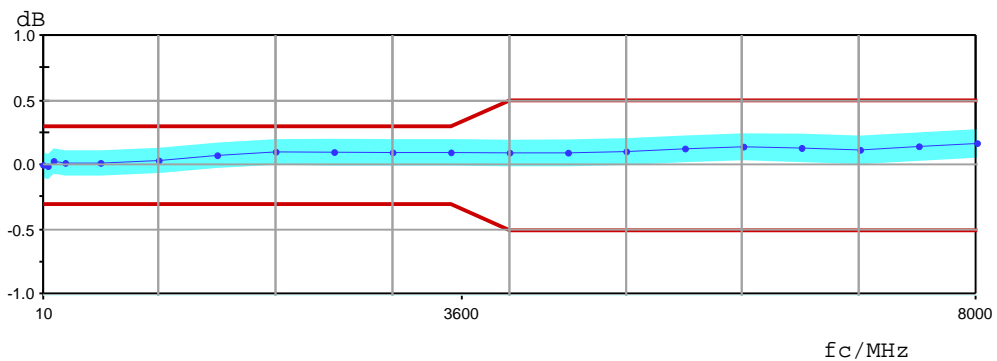## 8.2 RF attenuation 0 dB, AC coupled
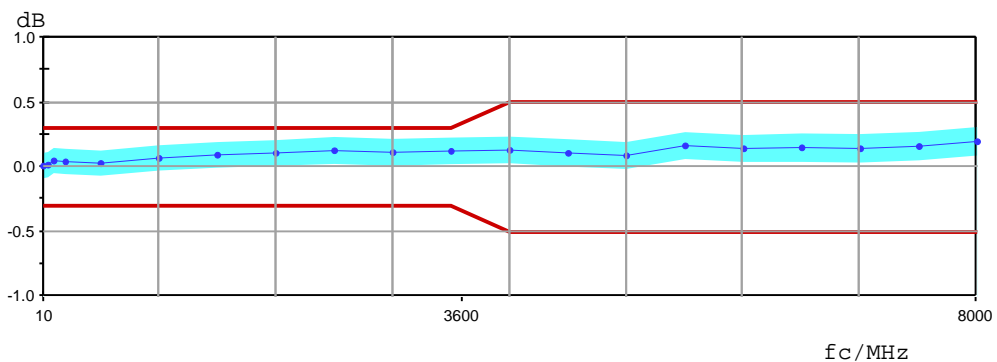

8.3 RF attenuation 5 dB, AC coupled
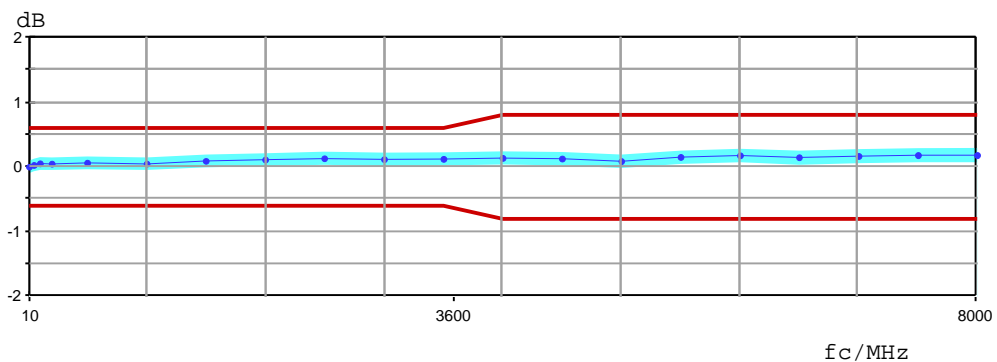
8.4 RF attenuation 10 dB, DC coupled

8.5 RF attenuation 10 dB, AC coupled

8.6 RF attenuation 20 dB, AC coupled

8.7 RF attenuation 40 dB, AC coupled
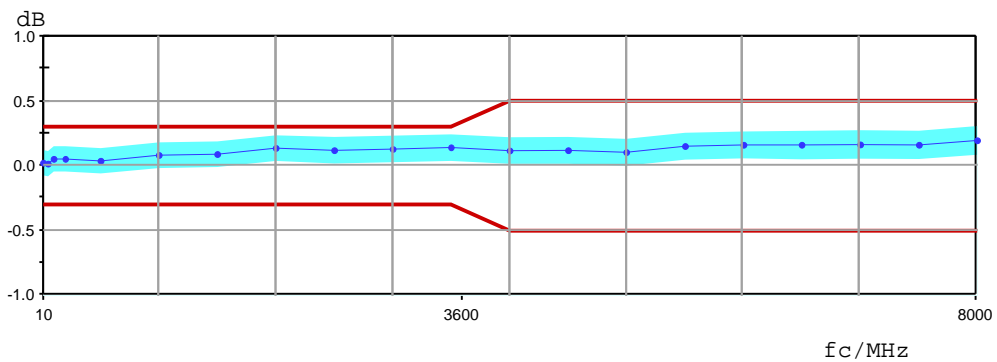
9. Display nonlinearity

error/dB   logarithmic
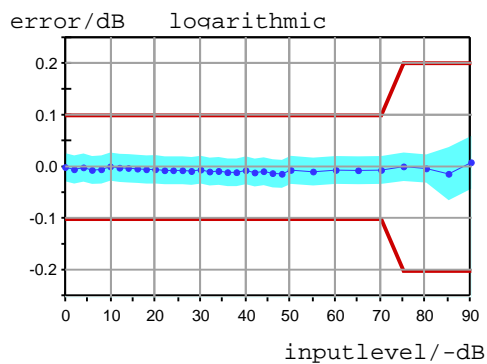
10. Attenuator switching uncertainty

mechanical attenuator

error/dB
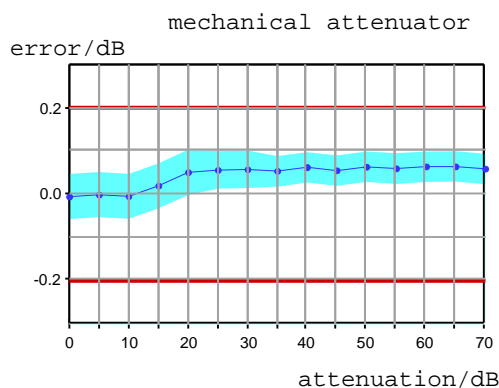
11. Checking the Phase Noise

carrier	carrier offset	DUL / dBc(1Hz)	Actual/ dBc(1Hz)	
1000.0 MHz	1.0 MHz	−145	−149.82	{a}
1000.0 MHz	100.0 kHz	−136	−140.20	{a}
1000.0 MHz	10.0 kHz	−134	−138.36	{a}
1000.0 MHz	1.0 kHz	−125	−130.60	{a}
1000.0 MHz	95 Hz	−100	−110.56	{a}

12. VSWR at RF input

swr   RF-Attenuation   5 dB   with DC-Coupling

swr   RF-Attenuation   10 dB   with DC-Coupling

swr   RF-Attenuation   20 dB   with DC-Coupling

swr   RF-Attenuation   40 dB   with DC-Coupling

swr   RF-Attenuation 10 dB   with AC-Coupling
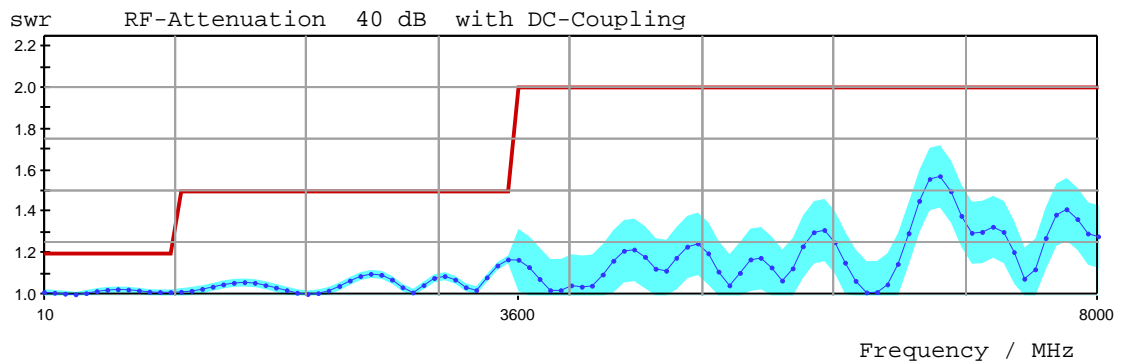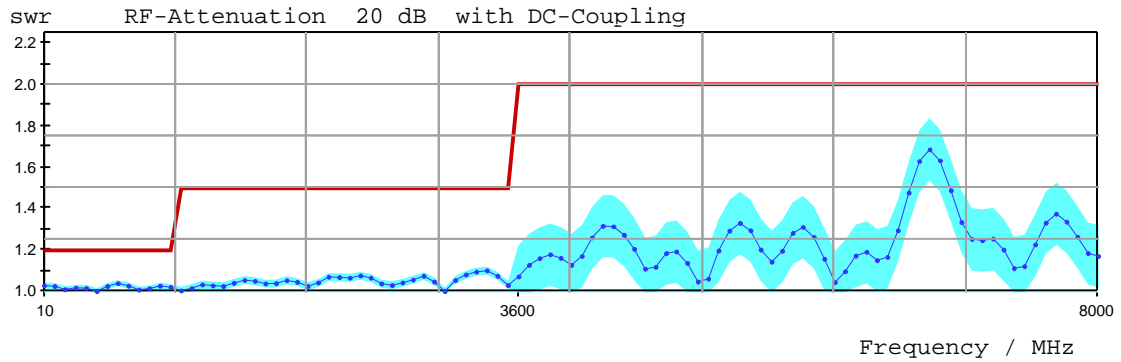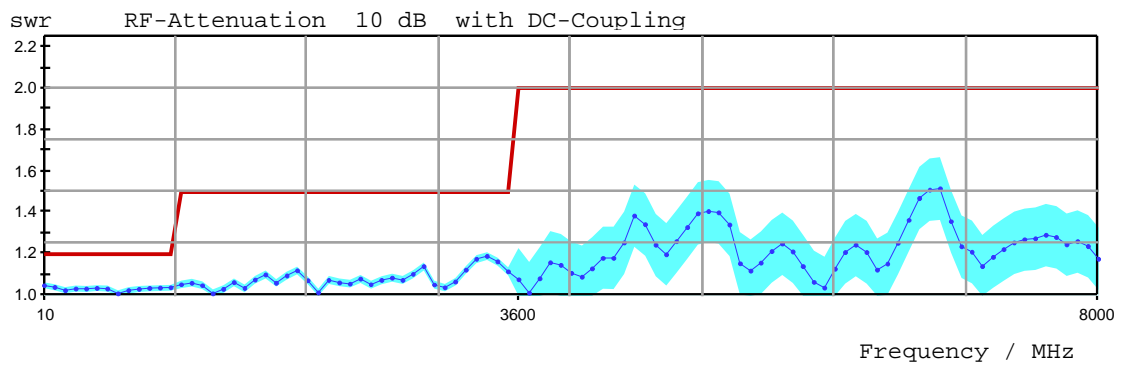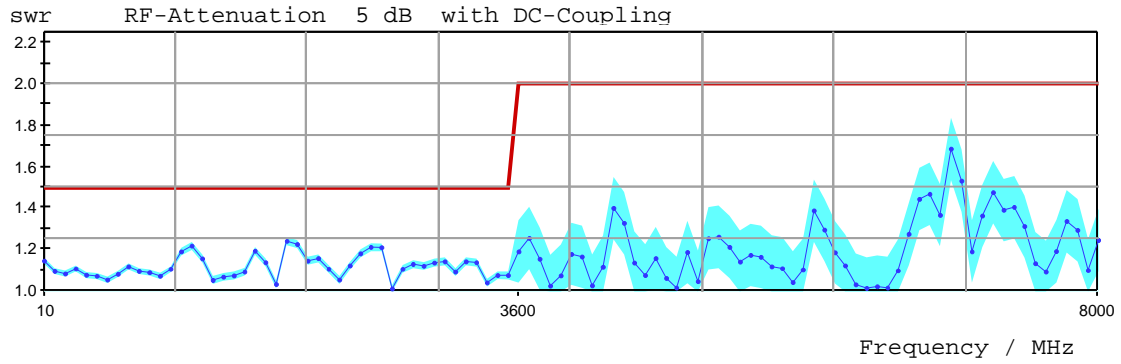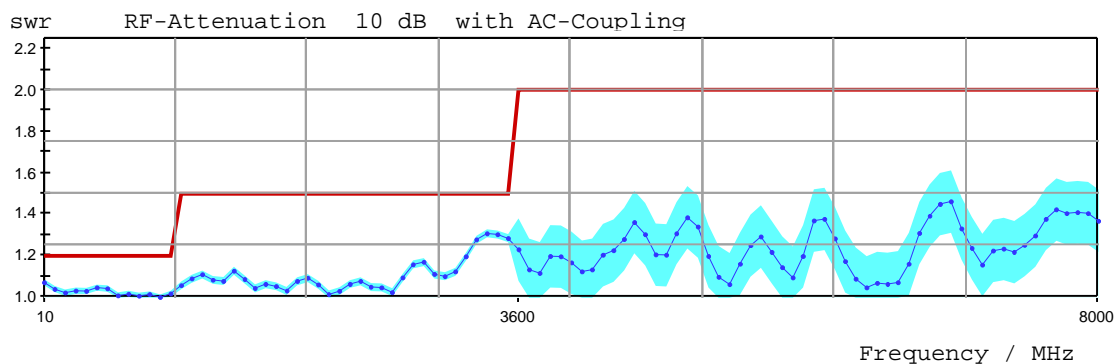
Frequency / MHz

13. Frequency response (FSW-B24) Preamp 30dB

Frequency response with RF attenuation 10 dB; DC-coupled
dB   Preamplifier 30dB is   ON

fc/MHz
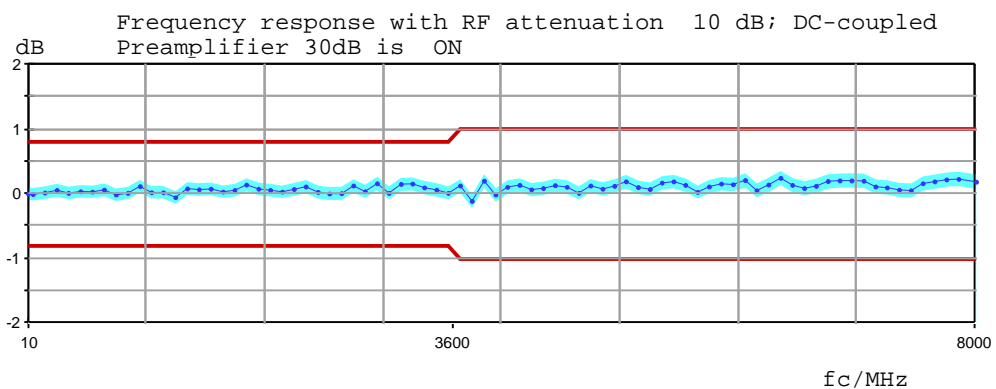
14. Frequency response (FSW-B24) Preamp 15dB

Frequency response with RF attenuation 10 dB; DC-coupled
dB   Preamplifier 15dB is   ON

fc/MHz
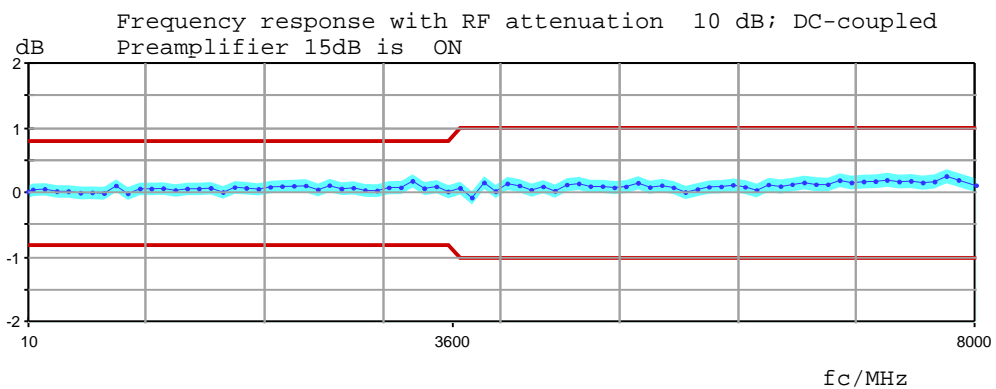
15. Displayed average noise level (FSW-B24) YIG ON

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DANL / dBm       Preamplifier is ON
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                                                      fc/MHz
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16. Absolute level uncertainty at 64 MHz (FSW-B25)

fc	eAtt	DL	Actual	MU
64 MHz	0 dB	0.40 dB	0.00 dB	0.08 dB
64 MHz	10 dB	0.40 dB	0.07 dB	0.08 dB
64 MHz	20 dB	0.40 dB	0.05 dB	0.08 dB

17. Absolute Amplitude Accuracy at 1 MHz (FSW-B71)

Input Level	Baseband Input	IQ Mode	Full Scale Level	DL	Act.	MU
10.0 dBm	I	Real I	2.00 V peak	0.15 dB	-0.008 dB	0.06 dB
4.0 dBm	I	Real I	1.00 V peak	0.15 dB	-0.011 dB	0.06 dB
-2.0 dBm	I	Real I	0.50 V peak	0.15 dB	-0.013 dB	0.06 dB
-8.0 dBm	I	Real I	0.25 V peak	0.15 dB	-0.013 dB	0.06 dB

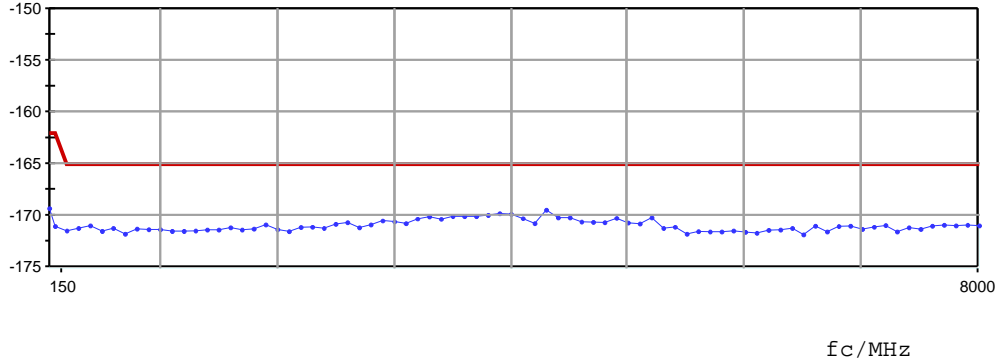| Input Level	Baseband Input	IQ Mode	Full Scale Level	DL	Act.	MU
10.0 dBm	I\	Real I	2.00 V peak	0.15 dB	-0.026 dB	0.06 dB
4.0 dBm	I\	Real I	1.00 V peak	0.15 dB	-0.026 dB	0.06 dB
-2.0 dBm	I\	Real I	0.50 V peak	0.15 dB	-0.021 dB	0.06 dB
-8.0 dBm	I\	Real I	0.25 V peak	0.15 dB	-0.020 dB	0.06 dB

Input Level	Baseband Input	IQ Mode	Full Scale Level	DL	Act.	MU
10.0 dBm	Q	Real Q	2.00 V peak	0.15 dB	0.002 dB	0.06 dB
4.0 dBm	Q	Real Q	1.00 V peak	0.15 dB	-0.010 dB	0.06 dB
-2.0 dBm	Q	Real Q	0.50 V peak	0.15 dB	-0.006 dB	0.06 dB
-8.0 dBm	Q	Real Q	0.25 V peak	0.15 dB	-0.005 dB	0.06 dB

Input Level	Baseband Input	IQ Mode	Full Scale Level	DL	Act.	MU
10.0 dBm	Q\	Real Q	2.00 V peak	0.15 dB	-0.016 dB	0.06 dB
4.0 dBm	Q\	Real Q	1.00 V peak	0.15 dB	-0.034 dB	0.06 dB
-2.0 dBm	Q\	Real Q	0.50 V peak	0.15 dB	-0.025 dB	0.06 dB
-8.0 dBm	Q\	Real Q	0.25 V peak	0.15 dB	-0.028 dB	0.06 dB

18. Frequency response (FSW-B71)

18.1 Input I

```
Ref. 1 MHz
Ref Level 0.25 V
```

Input Frequency	Baseband Input	IQ Mode	DL	Act.	MU
2.5 MHz	I	Real I	0.15 dB	0.004 dB	0.09 dB
5.0 MHz	I	Real I	0.15 dB	0.017 dB	0.09 dB
10.0 MHz	I	Real I	0.15 dB	0.006 dB	0.09 dB
20.0 MHz	I	Real I	0.15 dB	0.006 dB	0.09 dB
30.0 MHz	I	Real I	0.15 dB	0.006 dB	0.09 dB
40.0 MHz	I	Real I	0.15 dB	0.028 dB	0.09 dB

18.2 Input Q

```
Ref. 1 MHz
Ref Level 0.25 V
```

Input Frequency	Baseband Input	IQ Mode	DL	Act	MU
2.5 MHz	Q	Real Q	0.15 dB	0.004	0.09 dB
5.0 MHz	Q	Real Q	0.15 dB	0.019	0.09 dB
10.0 MHz	Q	Real Q	0.15 dB	0.013	0.09 dB
20.0 MHz	Q	Real Q	0.15 dB	0.014	0.09 dB
30.0 MHz	Q	Real Q	0.15 dB	0.007	0.09 dB
40.0 MHz	Q	Real Q	0.15 dB	0.033	0.09 dB

19. Frequency response (FSW-B71E)

19.1 Input I

```
Ref. 1 MHz
Ref Level 0.25 V
```

Input Frequency	Baseband Input	IQ Mode	DL	Act.	MU
50.0 MHz	I	Real I	0.250 dB	0.001 dB	0.09 dB
60.0 MHz	I	Real I	0.250 dB	-0.005 dB	0.09 dB
70.0 MHz	I	Real I	0.250 dB	0.058 dB	0.09 dB
75.0 MHz	I	Real I	0.250 dB	0.068 dB	0.09 dB
80.0 MHz	I	Real I	0.250 dB	-0.015 dB	0.09 dB

19.2 Input Q

```
Ref. 1 MHz
Ref Level 0.25 V
```

Input Frequency	Baseband Input	IQ Mode	DL	Act	MU
50.0 MHz	Q	Real Q	0.250 dB	-0.004	0.09 dB
60.0 MHz	Q	Real Q	0.250 dB	0.001	0.09 dB
70.0 MHz	Q	Real Q	0.250 dB	0.063	0.09 dB
75.0 MHz	Q	Real Q	0.250 dB	0.077	0.09 dB
80.0 MHz	Q	Real Q	0.250 dB	-0.010	0.09 dB