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Deutsche Akkreditierungsstelle GmbH

als Kalibrierlaboratorium im / *as calibration laboratory in the*

Deutschen Kalibrierdienst



Kalibrierschein
Calibration Certificate



Deutsche
Akkreditierungsstelle
D-K-15195-01-00

Kalibrierzeichen
Calibration Mark

606118
D-K- 15195-01-00
2021-07

Gegenstand
Object **Signal & Spectrum Analyzer**

Hersteller
Manufacturer **ROHDE & SCHWARZ**

Typ
Type **FSW43**

Fabrikat/Serien-Nr.
Serial number **100560
Inventarienummer: 902073**

Auftraggeber
Customer **RISE Research Institutes of Sweden AB
Brinellgatan 4
SE 504 62 Borås**

Auftragsnummer
Order No. **8800006615 10, X1004157**

Anzahl der Seiten des Kalibrierscheins
Number of pages of the certificate **19
+12 Incoming Results**

Ort, Datum der Kalibrierung
Place, date of calibration **Köln, 2021-07-27**

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI).

Die DAkkS ist Unterzeichner der multilateralen Übereinkommen der European co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine.

Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI).

The DAkkS is signatory to the multilateral agreements of the European co-operation for Accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC) for the mutual recognition of calibration certificates.

The user is obliged to have the object recalibrated at appropriate intervals.

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine sind bei Nennung des für die Freigabe Verantwortlichen in Klarschrift auch ohne Unterschrift gültig.

This calibration certificate may not be reproduced other than in full except with the permission of the issuing laboratory. Calibration certificates with the full name of the approval responsible person are valid without signature.

Datum der Ausstellung
Date of issue

2021-07-29

Freigabe des Kalibrierscheins durch
Approval of the calibration certificate by

Dieter Hübinger
Leitung des Laboratoriums
Laboratory management

Uwe Reinacher
Bearbeiter
Person in charge

Object Signal & Spectrum Analyzer
Type FSW43 **Serial No.** 100560
Date 2021-07-27 **Material No.** 1312.8000K43
Page 2 of 19 **Calibration Mark** 606118-D-K-15195-01-00-2021-07

Calibration Procedure

The calibration was performed according to service manual 1173.9428.02-13 following the procedures as described in calibration guideline VDI/VDE/DGQ/DKD 2622 part 11 by comparing the relevant measurands of the instrument under test with the numerical values of the quantities represented by the reference standards used.

Statement of Compliance

Incoming: One or more measured values are outside the datasheet specifications, marked as FAIL.

Outgoing: All measured values are within the datasheet specifications.

Working Standards used

Item	Type	Serial Number	Calibration Certificate Number	Cal. Due
Signal Generator	SMF100A	105795	602089-D-K-15195-01-00-2021-06	2022-06-30
Signal Generator	SMA100B	102331	597407-D-K-15195-01-00-2021-04	2023-04-30
Step Attenuator 139dB 6GHz	RSC	101943	593163-D-K-15195-01-00-2021-03	2022-03-31
Spectrum Analyzer	FSW50	103192	598705-D-K-15195-01-00-2021-05	2022-05-31
Power Sensor	NRP50T	101022	593506-D-K-15195-01-00-2021-03	2022-03-31
Power Sensor	NRP18A	101217	593167-D-K-15195-01-00-2021-03	2022-03-31
Power Sensor	NRP-Z55	130785	593173-D-K-15195-01-00-2021-03	2022-03-31
Power Splitter	1870A	11910	598918-D-K-15195-01-00-2021-05	2023-05-31
Power Splitter	1534	1319	604492-D-K-15195-01-00-2021-06	2022-06-30
Calibration Kit	ZV-Z229	101005	564640-D-K-15195-01-00-2020-08	2021-08-31
Network Analyzer	ZVA40	100418	587949-D-K-15195-01-00-2021-02	2022-02-28
Frequency Standard	XSRM	300877/030	K20-1365-D-K-15195-01-00-2020-11	2021-11-30

Remarks

SelfTest passed
 TotalCal passed
 Incoming test fails with frequency response and external mixer.
 Complete factory alignment performed.
 Firmware updates from 4.80SP1 to 4.90.

Object	Signal & Spectrum Analyzer	Serial No.	100560
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Environmental Conditions

Ambient Temperature	(23 ± 3) °C	Relative Humidity	(45 ± 30) %
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Comments on the measured results

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. 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'.

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 %.

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.

The following abbreviations may be used in this certificate:

- ¹ Measurement results that are not covered by the DAkkS accreditation.
- {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}, ² 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.
- {f} Functional measurement result, not to be used for metrological traceability
- DL, DT Data Limit for symmetrical tolerance limits
- UGB Uncertainty guard band: Measuring uncertainty violates the data sheet tolerance
- UGB1, u Measurement results marked as UGB1 show conformity with a probability of >50 % and <95 %.
- UGB2, u Measurement results marked as UGB2 show non-conformity with a probability of >50 % and <95 %.
- FAIL, f Measurement results marked as FAIL show non-conformity
- n. i. not installed: Does not apply due to instrument configuration
- n. m. not measured
- ref. Reference value, used for relative measurements

Object Data

Firmware version:	4.90
Installed options:	B24, B21, B8, B3, K14, K9, B28, B40, B80, B13, K104

Object Signal & Spectrum Analyzer
Type FSW43
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Serial No. 100560
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V1-07/Temp/Eng/2015-04

Page	Section	Test Description	Result
6	1	Ref.-Frequency Accuracy	PASS
6	2	Immunity to Interference	PASS
7	3.1	3rd order Intercept (freq < 2 GHz)	PASS
7	3.2	3rd order Intercept (freq > 2 GHz)	PASS
7	4.1	2nd order Intercept	PASS
7	4.2	2nd order Intercept (Opt FSW-B13)	PASS
8	5	Resolution Bandwidths Accuracy	PASS
8	6	Full Span Spurious Response	PASS
9	7.1	Average Noise Level	PASS
9	7.2	Average Noise Level (FSW-B13 ON)	PASS
9	7.3	Average Noise Level (FSW-B24 ON)	PASS
10	7.4	Average Noise Level (YIG OFF)	PASS
10	8	Level Accuracy	PASS (3 n. i.)
10	9.1	Freq. Resp Att 10 dB DC-Coup.	PASS
10	9.2	Freq. Resp Att 0 dB AC-Coup.	PASS
11	9.3	Freq. Resp Att 5 dB AC-Coup.	PASS
11	9.4	Freq. Resp Att 10 dB AC-Coup.	PASS
11	9.5	Freq. Resp Att 20 dB AC-Coup.	PASS
11	9.6	Freq. Resp Att 40 dB AC-Coup.	PASS
12	9.7	Freq. Resp Att 10 dB DC-Coup. (FSW-B24 on)	PASS
12	9.8	Freq. Resp Att 10 dB AC-Coup. YIG OFF	PASS
12	10	Display Nonlinearity	PASS
12	11	RF Attenuator Accuracy	PASS
13	12	Phase Noise	PASS
13	13.1.1	VSWR at RF Input Att 5 dB DC-Coup.	PASS
13	13.2.1	VSWR at RF Input Att 10 dB DC-Coup.	PASS
13	13.3.1	VSWR at RF Input Att 20 dB DC-Coup.	PASS
14	13.4.1	VSWR at RF Input Att 40 dB DC-Coup.	PASS
14	13.5.1	VSWR at RF Input Att 10 dB AC-Coup.	PASS
15	14.1	Baseband Inputs abs. Amplitude Accuracy	n. i.
16	14.2	Baseband Inputs Frequency Response	n. i.
17	15.1	Ext Mixer LO Level Acc. of 13 dBm nominal Power	PASS
18	15.2	Ext Mixer LO Level Acc. of 15.5 dBm nominal Power	PASS
19	15.3	Ext Mixer LO Level Acc. of 17 dBm nominal Power	PASS
19	15.4	Ext Mixer Level Display	PASS

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V1-07/Temp/Eng/2015-04

Page	Section	Test Description	Result
Incoming Results			
1	1	Ref.-Frequency Accuracy	PASS
1	2	Immunity to Interference	PASS
2	3.1	3rd order Intercept (freq < 2 GHz)	PASS
2	3.2	3rd order Intercept (freq > 2 GHz)	PASS
2	4.1	2nd order Intercept	PASS
2	4.2	2nd order Intercept (Opt FSW-B13)	PASS
3	5	Resolution Bandwidths Accuracy	PASS
3	6	Full Span Spurious Response	1 UGB1
4	7.1	Average Noise Level	PASS
4	7.2	Average Noise Level (FSW-B13 ON)	PASS
4	7.3	Average Noise Level (FSW-B24 ON)	PASS
5	7.4	Average Noise Level (YIG OFF)	PASS
5	8	Level Accuracy	PASS (3 n. i.)
5	9.1	Freq. Resp Att 10 dB DC-Coup.	PASS
5	9.2	Freq. Resp Att 0 dB AC-Coup.	1 UGB1
6	9.3	Freq. Resp Att 5 dB AC-Coup.	2 UGB1
6	9.4	Freq. Resp Att 10 dB AC-Coup.	1 UGB2 10 UGB1
6	9.5	Freq. Resp Att 20 dB AC-Coup.	1 FAIL 10 UGB1
6	9.6	Freq. Resp Att 40 dB AC-Coup.	1 FAIL 11 UGB1
7	9.7	Freq. Resp Att 10 dB DC-Coup. (FSW-B24 on)	PASS
7	9.8	Freq. Resp Att 10 dB AC-Coup. YIG OFF	PASS
7	10	Display Nonlinearity	PASS
7	11	RF Attenuator Accuracy	PASS
8	12	Phase Noise	PASS
8	13.1.1	VSWR at RF Input Att 5 dB DC-Coup.	PASS
8	13.2.1	VSWR at RF Input Att 10 dB DC-Coup.	PASS
8	13.3.1	VSWR at RF Input Att 20 dB DC-Coup.	PASS
9	13.4.1	VSWR at RF Input Att 40 dB DC-Coup.	PASS
9	13.5.1	VSWR at RF Input Att 10 dB AC-Coup.	PASS
10	15.1	Ext Mixer LO Level Acc. of 13 dBm nominal Power	3 FAIL 7 UGB2 12 UGB1
11	15.2	Ext Mixer LO Level Acc. of 15.5 dBm nominal Power	5 UGB1
12	15.3	Ext Mixer LO Level Acc. of 17 dBm nominal Power	1 UGB2 2 UGB1
12	15.4	Ext Mixer Level Display	PASS

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EXE-Vers: 3.1.13.0/MeaFsw1.01/2021-07-09 16:28 INI-Vers: V1-22/531600/2021-05-05 V1-01/FSW1/Eng/2012-01

V1-07/Temp/Eng/2015-04

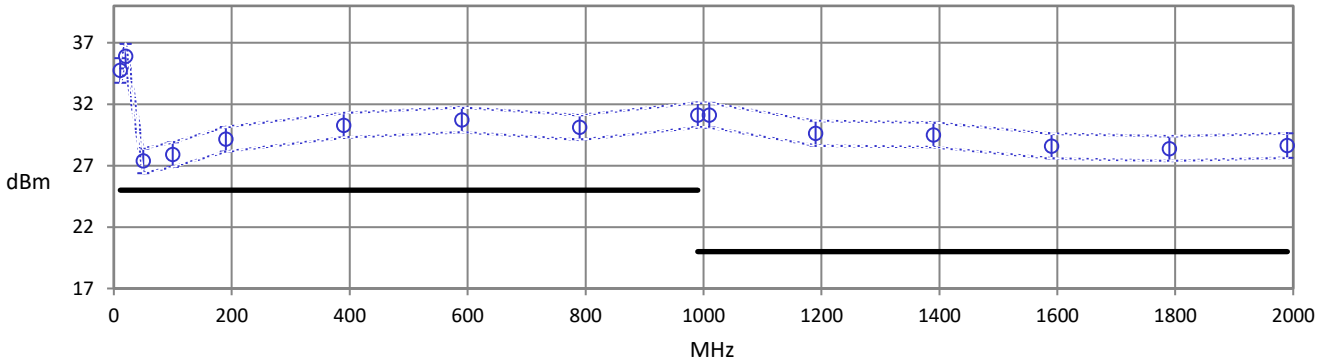
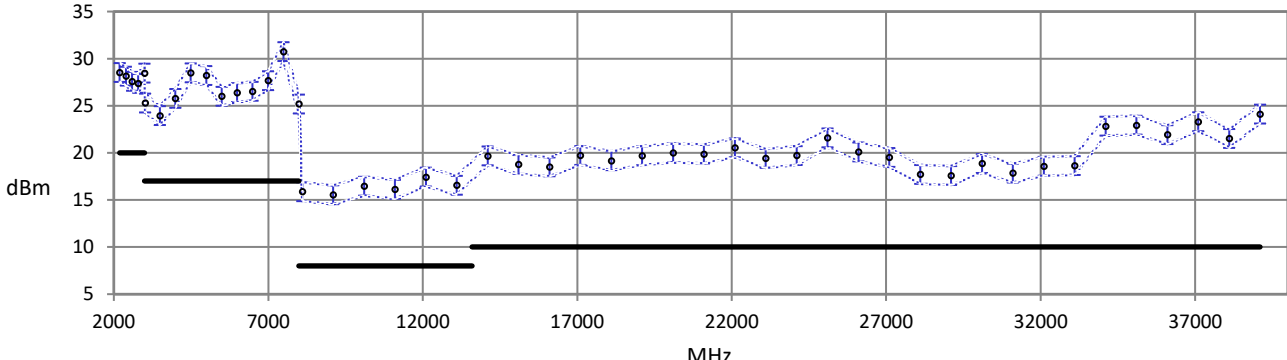
Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
1 Ref.-Frequency Accuracy measured at: 1000 MHz	-100 Hz	-1 Hz	100 Hz	2 Hz
2 Imunity to Interference				
2nd IF Image Freq. Rejection center freq: 2nd IF freq:				
1000 MHz 1317 MHz	--	-109,7 dBc	-90,0 dBc	0,5 dB
9000 MHz 1317 MHz	--	-116,8 dBc	-90,0 dBc	0,6 dB
3rd IF Image Freq. Rejection center freq: 3rd IF freq:				
63 MHz 37 MHz	--	-120,9 dBc	-90,0 dBc	0,5 dB
100 MHz 37 MHz	--	-121,6 dBc	-90,0 dBc	0,5 dB
900 MHz 37 MHz	--	-114,4 dBc	-90,0 dBc	0,5 dB
1100 MHz 37 MHz	--	-110,0 dBc	-90,0 dBc	0,5 dB
7990 MHz 37 MHz	--	-119,4 dBc	-90,0 dBc	0,6 dB
2nd IF Rejection center freq: 2nd IF freq:				
50 MHz 1317 MHz	--	-121,1 dBc	-90,0 dBc	0,5 dB
200 MHz 1317 MHz	--	-119,0 dBc	-90,0 dBc	0,5 dB
500 MHz 1317 MHz	--	-118,2 dBc	-90,0 dBc	0,5 dB
900 MHz 1317 MHz	--	-113,9 dBc	-90,0 dBc	0,5 dB
1100 MHz 1317 MHz	--	-108,9 dBc	-90,0 dBc	0,5 dB
7990 MHz 1317 MHz	--	-119,7 dBc	-90,0 dBc	0,6 dB
9000 MHz 1317 MHz	--	-120,3 dBc	-90,0 dBc	0,6 dB
12000 MHz 1317 MHz	--	-118,9 dBc	-90,0 dBc	0,6 dB
25000 MHz 1317 MHz	--	-112,0 dBc	-90,0 dBc	0,9 dB
38000 MHz 1317 MHz	--	-112,8 dBc	-90,0 dBc	1,2 dB
3rd IF Rejection center freq: 3rd IF freq:				
100 MHz 37 MHz	--	-121,7 dBc	-90,0 dBc	0,5 dB
200 MHz 37 MHz	--	-117,9 dBc	-90,0 dBc	0,5 dB
500 MHz 37 MHz	--	-119,2 dBc	-90,0 dBc	0,5 dB
900 MHz 37 MHz	--	-113,3 dBc	-90,0 dBc	0,5 dB
1100 MHz 37 MHz	--	-111,1 dBc	-90,0 dBc	0,5 dB
7990 MHz 37 MHz	--	-120,3 dBc	-90,0 dBc	0,6 dB
9000 MHz 37 MHz	--	-120,4 dBc	-90,0 dBc	0,6 dB
12000 MHz 37 MHz	--	-118,8 dBc	-90,0 dBc	0,6 dB
25000 MHz 37 MHz	--	-111,1 dBc	-90,0 dBc	0,9 dB
38000 MHz 37 MHz	--	-113,1 dBc	-90,0 dBc	1,2 dB

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EXE-Vers: 3.1.13.0/MeaFsw1.01/2021-07-09 16:28 INI-Vers: V1-22/531600/2021-05-05 V1-01/FSW1/Enq/2012-01

V1-07/Temp/Enq/2015-04

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
3.1 3rd order Intercept (freq < 2 GHz) 				
3.2 3rd order Intercept (freq > 2 GHz) 				
4.1 2nd order Intercept results calculated from power and attenuation measurements fin =				
9 MHz	45,0 dBm	51,7 dBm	--	1,5 dB
21 MHz	45,0 dBm	49,6 dBm	--	1,5 dB
106 MHz	45,0 dBm	48,2 dBm	--	1,5 dB
274 MHz	45,0 dBm	56,4 dBm	--	1,5 dB
449,9 MHz	45,0 dBm	50,1 dBm	--	1,5 dB
699,9 MHz	47,0 dBm	59,9 dBm	--	1,5 dB
999,9 MHz	47,0 dBm	63,6 dBm	--	1,5 dB
1499,9 MHz	47,0 dBm	66,6 dBm	--	1,5 dB
1749,9 MHz	62,0 dBm	81,5 dBm	--	1,5 dB
2699,9 MHz	62,0 dBm	83,9 dBm	--	1,5 dB
3449,9 MHz	62,0 dBm	77,9 dBm	--	1,5 dB
4.2 2nd order Intercept (Opt FSW-B13) results calculated from power and attenuation measurements fin =				
699,9 MHz	52,0 dBm	55,9 dBm	--	1,5 dB
1499,9 MHz	52,0 dBm	75,3 dBm	--	1,5 dB

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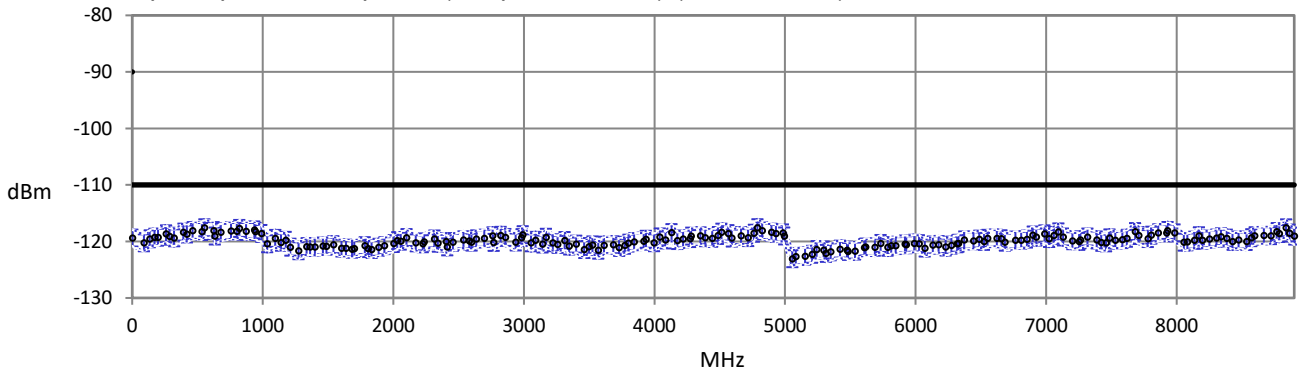
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Material No. 1312.8000K43
Calibration Mark 606118-D-K-15195-01-00-2021-07

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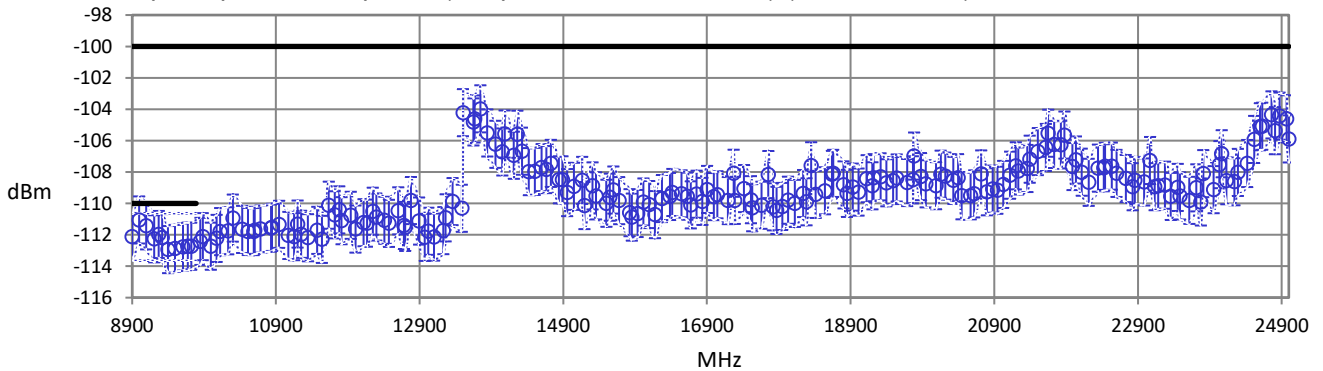
V1-07/Temp/Enq/2015-04

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
5 Resolution Bandwidths Accuracy				
RBW level uncertainty				
80 MHz (only FSW-B8)	-0,10 dB	0,06 dB	0,10 dB	0,02 dB
50 MHz (only FSW-B8)	-0,10 dB	0,05 dB	0,10 dB	0,02 dB
28 MHz (only FSW-B8)	-0,10 dB	0,05 dB	0,10 dB	0,02 dB
20 MHz (only FSW-B8)	-0,10 dB	0,04 dB	0,10 dB	0,02 dB
10 MHz	-0,10 dB	0,00 dB	0,10 dB	0,02 dB
1 MHz	-0,10 dB	0,00 dB	0,10 dB	0,02 dB
100 kHz	-0,10 dB	0,00 dB	0,10 dB	0,02 dB
10 kHz	--	0,00 dB	--	reference
1 kHz	-0,10 dB	-0,03 dB	0,10 dB	0,02 dB
100 Hz	-0,10 dB	-0,03 dB	0,10 dB	0,02 dB

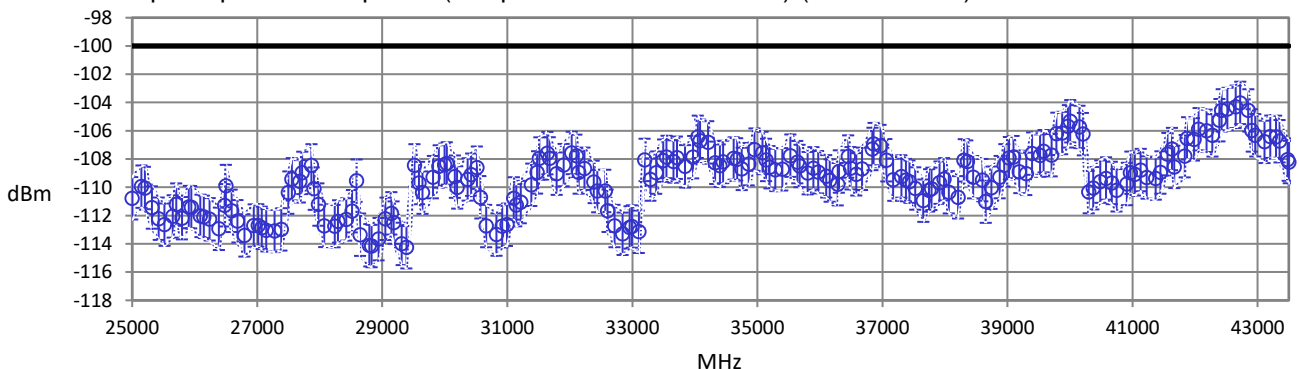
6.1 Full Span Spurious Response (Freq < 8900 MHz) (RBW=200Hz)



6.2 Full Span Spurious Response (Freq = 8900 ... 25000 MHz) (RBW=1000Hz)



6.3 Full Span Spurious Response (Freq = 25000 ... 43500 MHz) (RBW=300Hz)

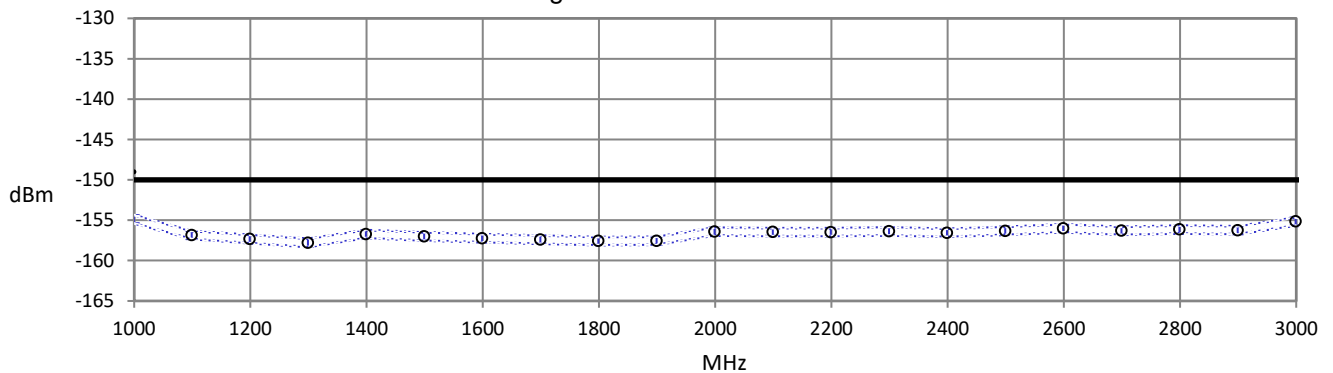


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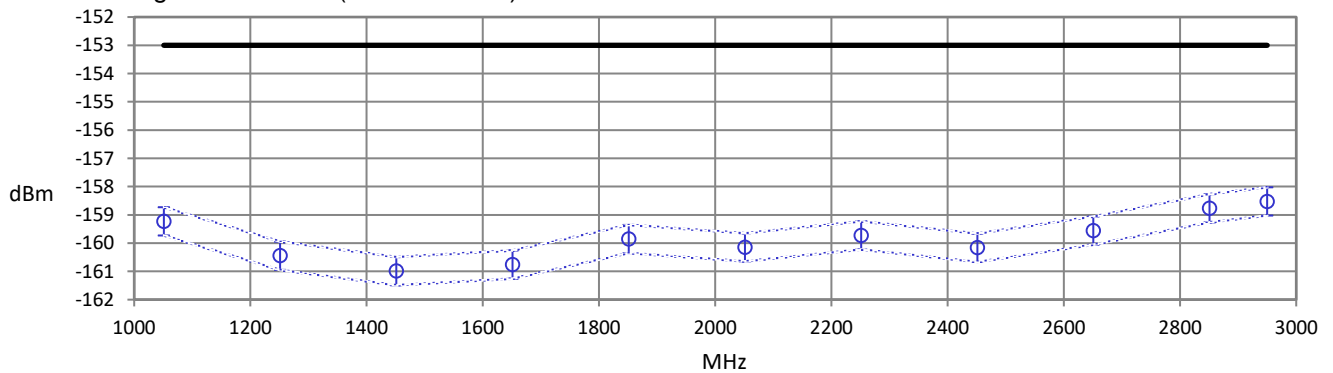
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Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
7.1 Average Noise Level				
results calculated from power and attenuation measurements				
fin = 2 Hz	--	1 -116,3 dBm	-110,0 dBm	0,5 dB
10 Hz	--	1 -127,0 dBm	-110,0 dBm	0,5 dB
30 Hz	--	1 -121,3 dBm	-110,0 dBm	0,5 dB
90 Hz	--	1 -134,6 dBm	-110,0 dBm	0,5 dB
300 Hz	--	1 -139,0 dBm	-120,0 dBm	0,5 dB
980 Hz	--	1 -141,7 dBm	-120,0 dBm	0,5 dB
9,8 kHz	--	1 -149,7 dBm	-145,0 dBm	0,5 dB
98 kHz	--	1 -151,3 dBm	-145,0 dBm	0,5 dB
998 kHz	--	1 -154,9 dBm	-145,0 dBm	0,5 dB
9800 kHz	--	1 -155,1 dBm	-149,0 dBm	0,5 dB

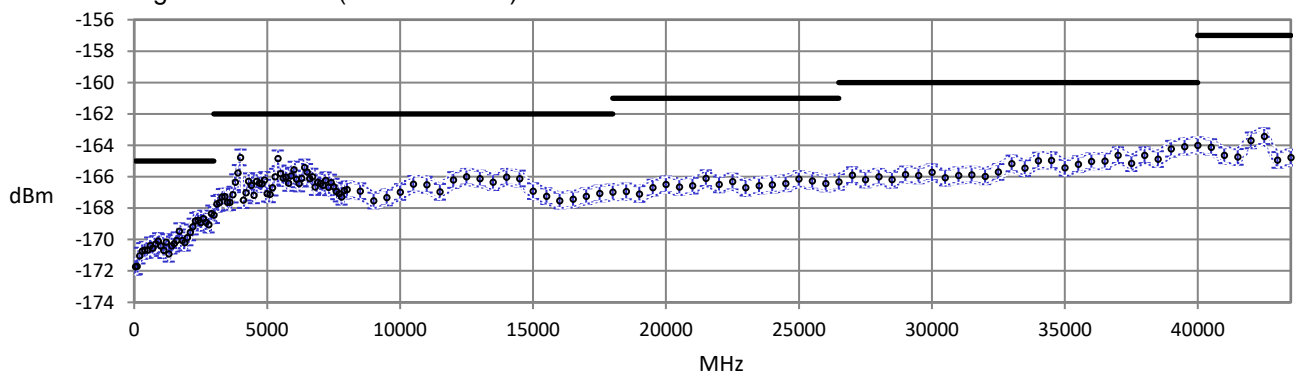
Average Noise Level > 10 MHz



7.2 Average Noise Level (FSW-B13 ON)



7.3 Average Noise Level (FSW-B24 ON)

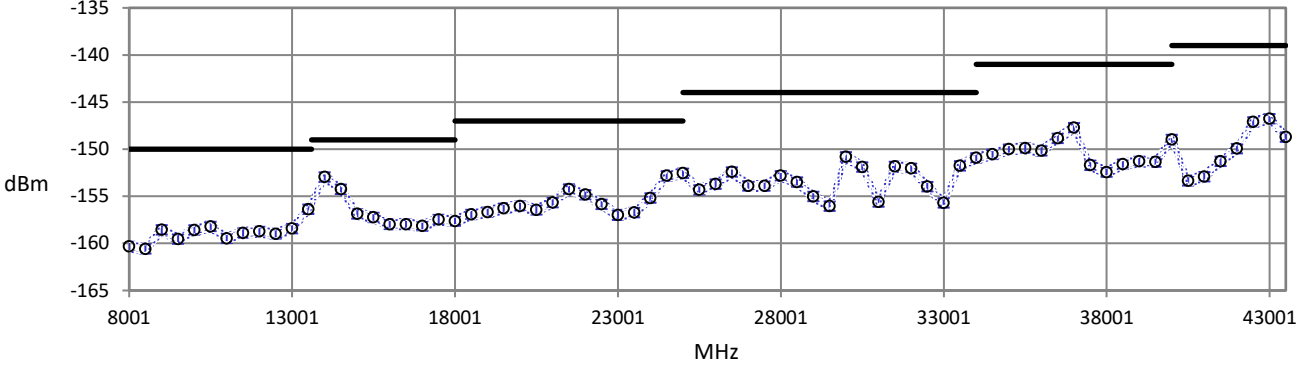
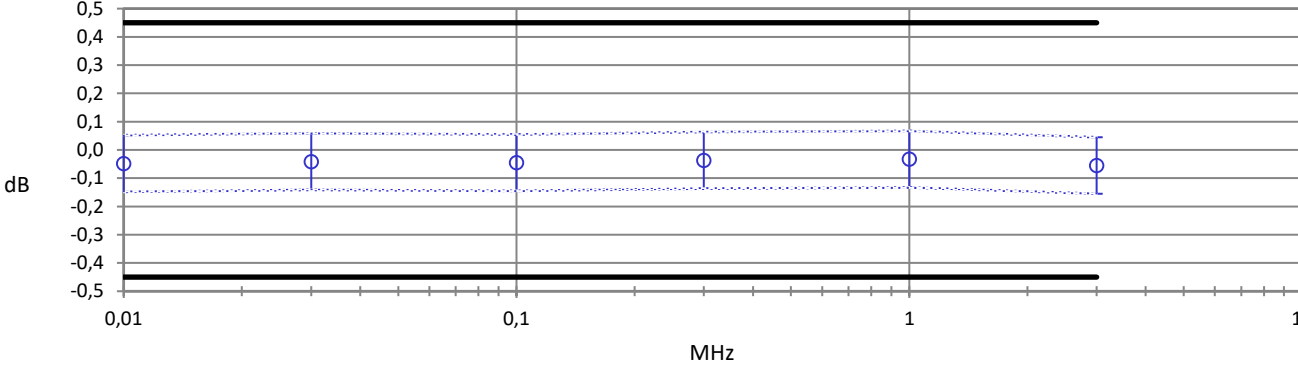
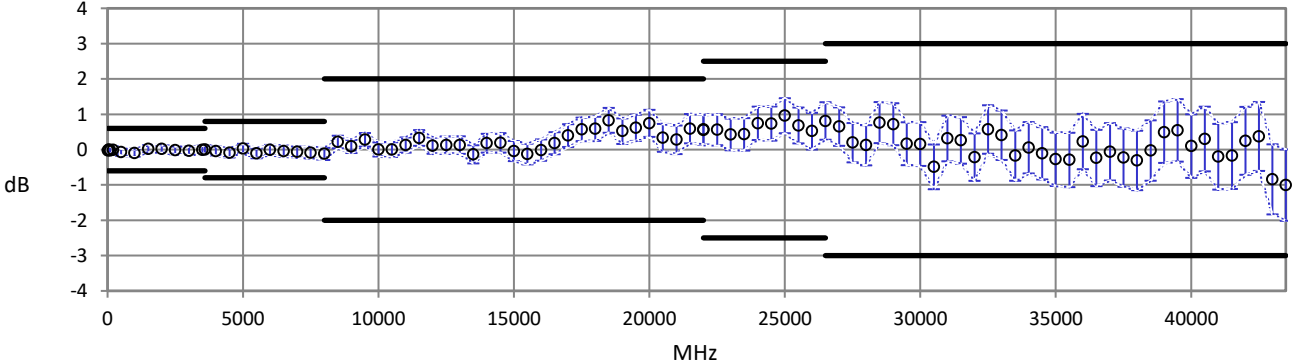


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V1-07/Temp/Enq/2015-04

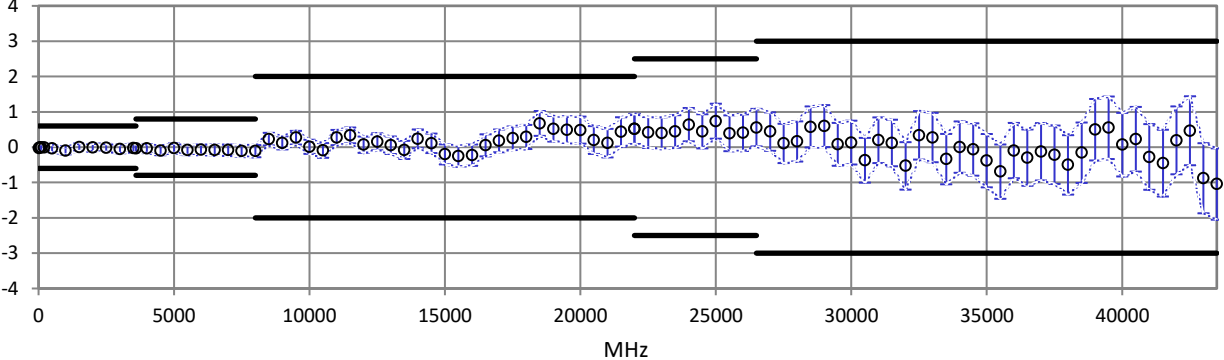
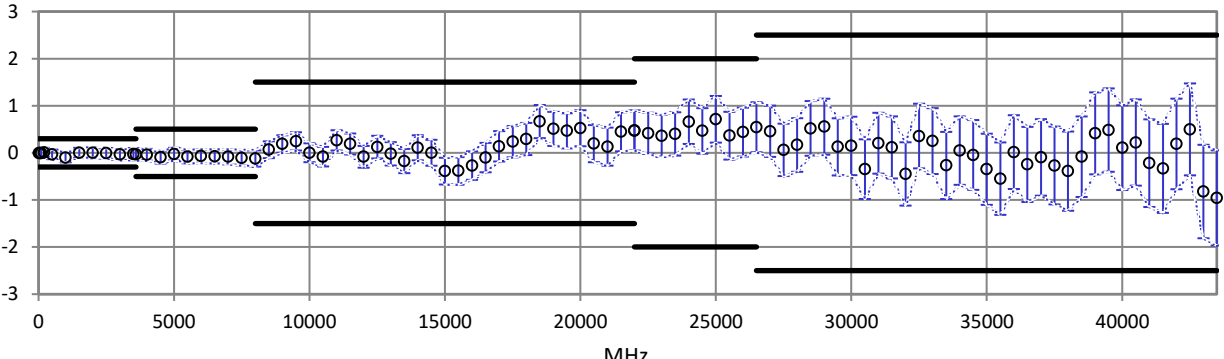
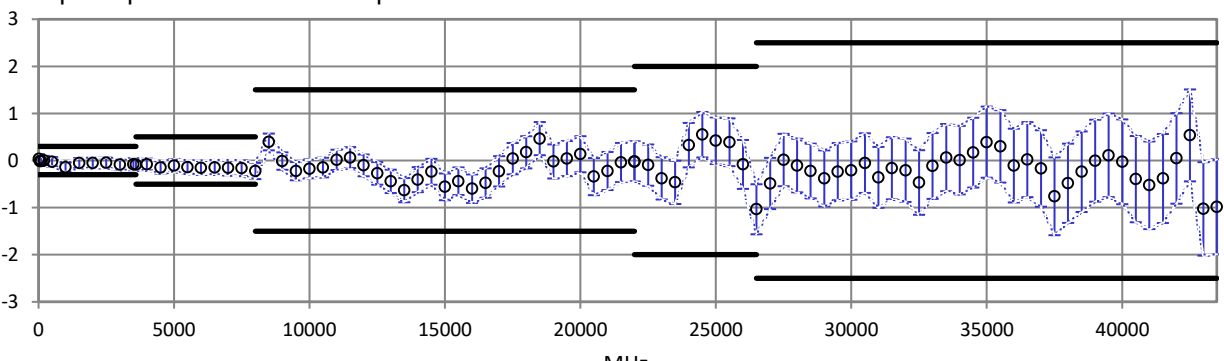
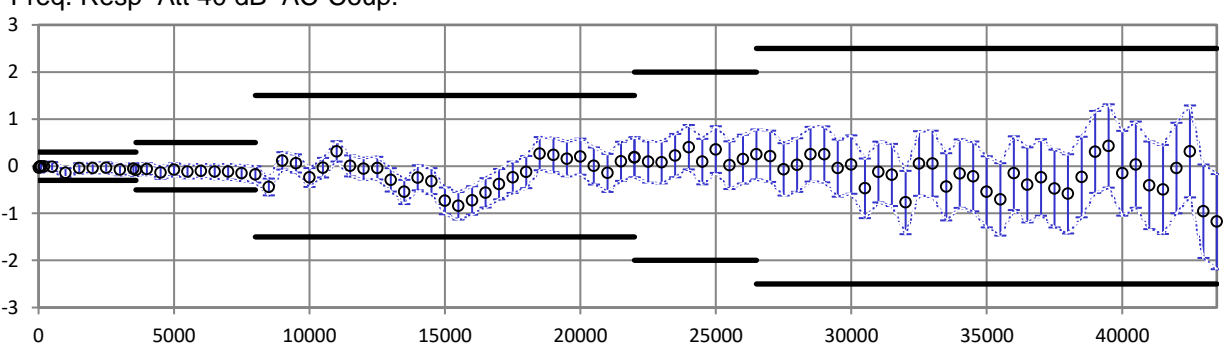
Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
<p>7.4 Average Noise Level (YIG OFF)</p> 				
<p>8 Level Accuracy</p> <p>Ref. lev= -10 dBm Freq= 64 MHz RF Att = 10 dB</p> <p>electr. Att:</p> <p>0 dB (only FSW-B25)</p> <p>10 dB (only FSW-B25)</p> <p>20 dB (only FSW-B25)</p>	<p>-0,20 dB</p> <p>-0,40 dB</p> <p>-0,40 dB</p> <p>-0,40 dB</p>	<p>-0,01 dB</p> <p>n. i.</p> <p>n. i.</p> <p>n. i.</p>	<p>0,20 dB</p> <p>0,40 dB</p> <p>0,40 dB</p> <p>0,40 dB</p>	<p>0,05 dB</p> <p>0,05 dB</p> <p>0,05 dB</p> <p>0,05 dB</p>
<p>9.1 Freq. Resp Att 10 dB DC-Coup.</p> 				
<p>9.2 Freq. Resp Att 0 dB AC-Coup.</p> 				

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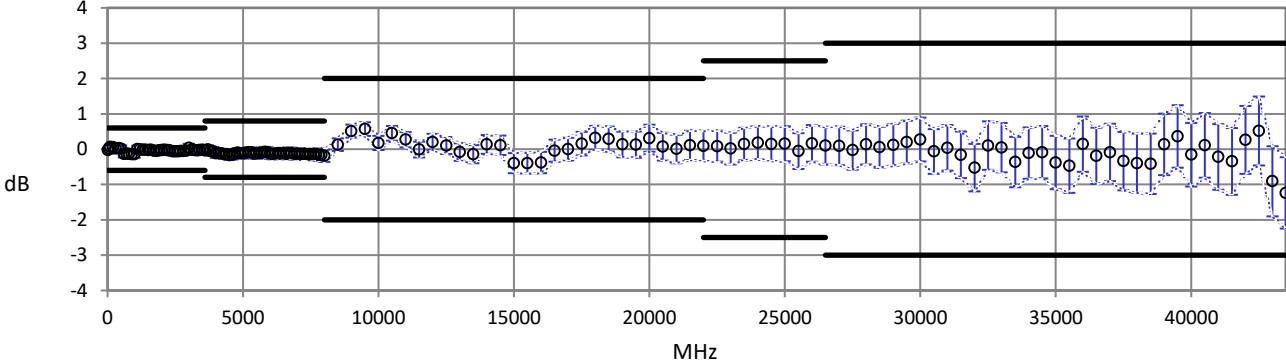
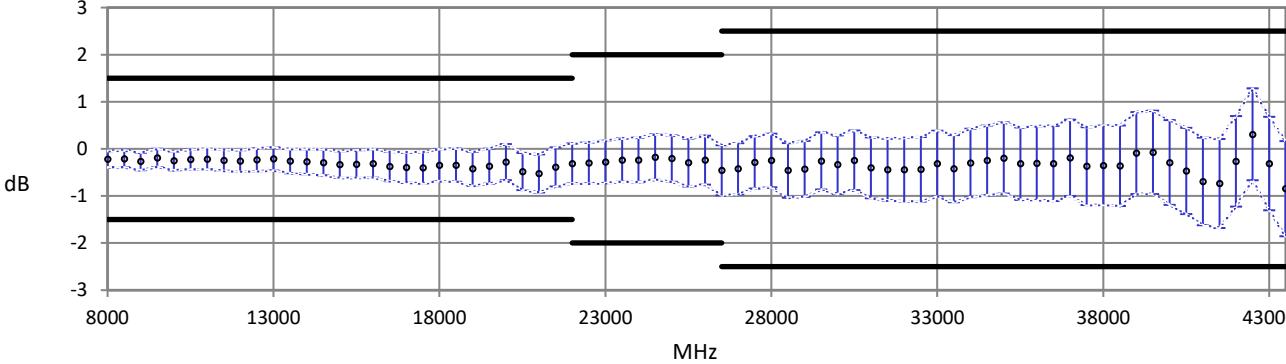
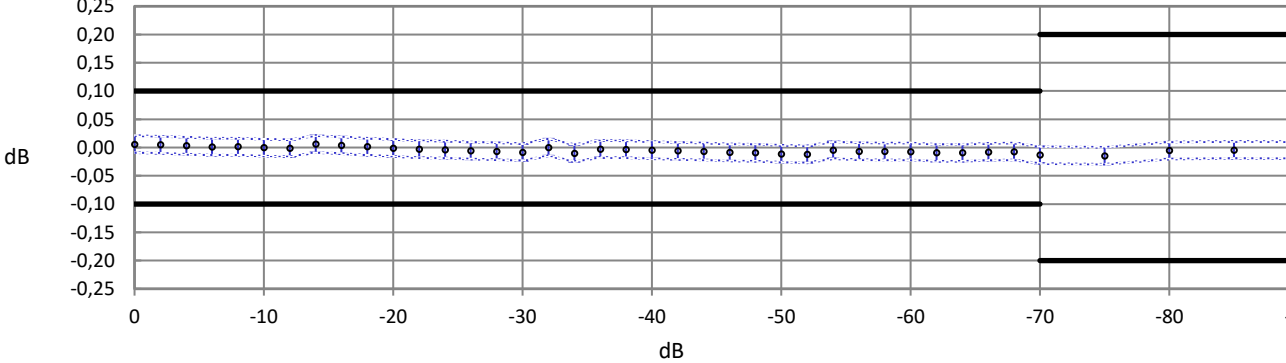
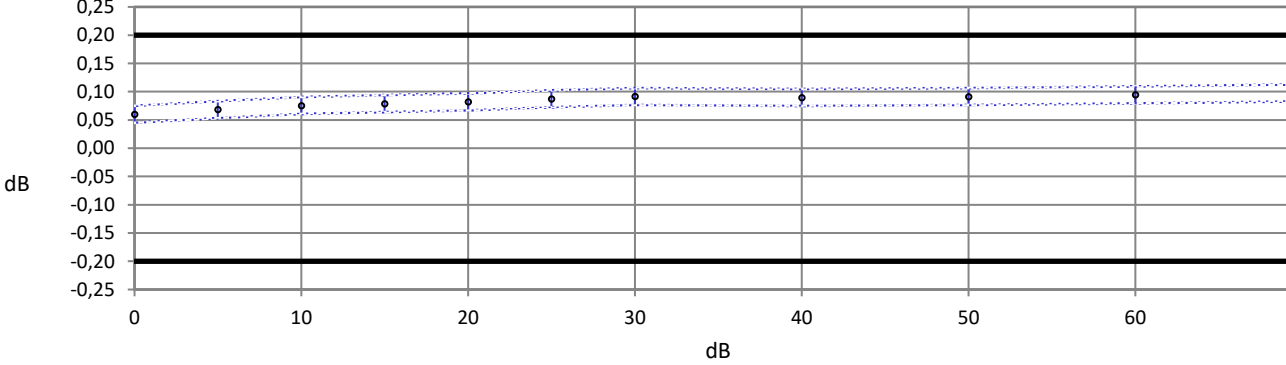
EXE-Vers: 3.1.13.0/Meafsw1.01/2021-07-09 16:28 INI-Vers: V1-22/531600/2021-05-05 V1-01/FSW1/Enq/2012-01

V1-07/Temp/Enq/2015-04

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
9.3 Freq. Resp Att 5 dB AC-Coup. 				
9.4 Freq. Resp Att 10 dB AC-Coup. 				
9.5 Freq. Resp Att 20 dB AC-Coup. 				
9.6 Freq. Resp Att 40 dB AC-Coup. 				

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Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
9.7 Freq. Resp Att 10 dB DC-Coup. (FSW-B24 on)				
				
9.8 Freq. Resp Att 10 dB AC-Coup. YIG OFF				
				
10 Display Nonlinearity				
				
11 RF Attenuator Accuracy				
				

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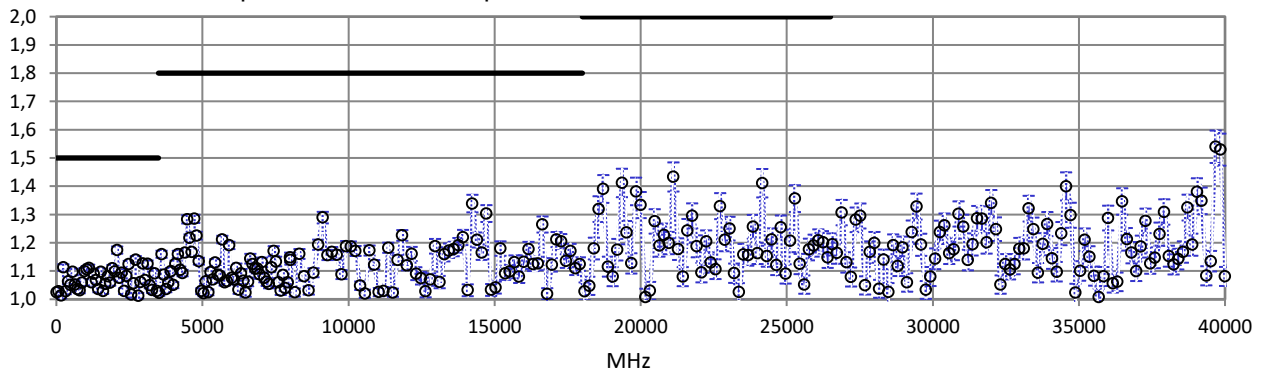
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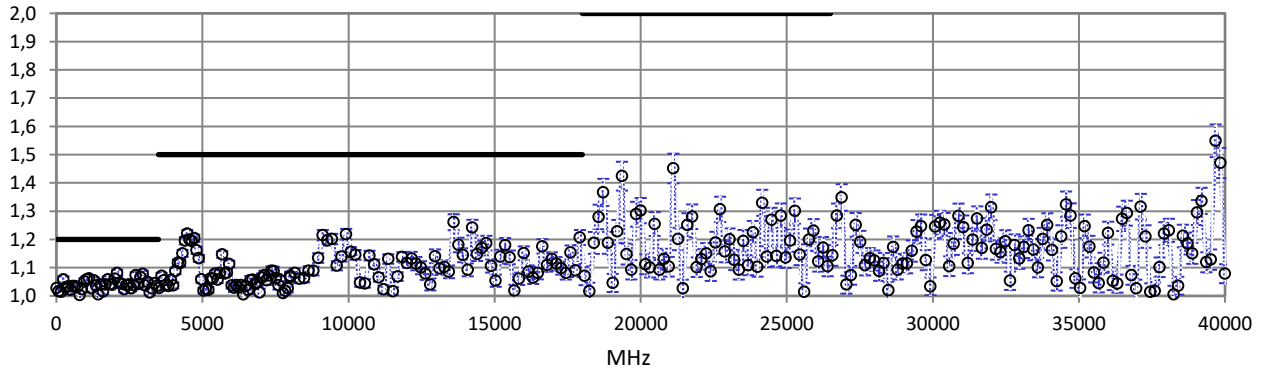
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Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
12 Phase Noise				
referred to 1 Hz RBW				
1 kHz	--	1 -129,3 dBc	-125,0 dBc	0,5 dB
10 kHz	--	1 -137,0 dBc	-134,0 dBc	0,5 dB
100 kHz	--	1 -138,3 dBc	-136,0 dBc	0,5 dB
1 MHz	--	1 -147,9 dBc	-145,0 dBc	0,5 dB

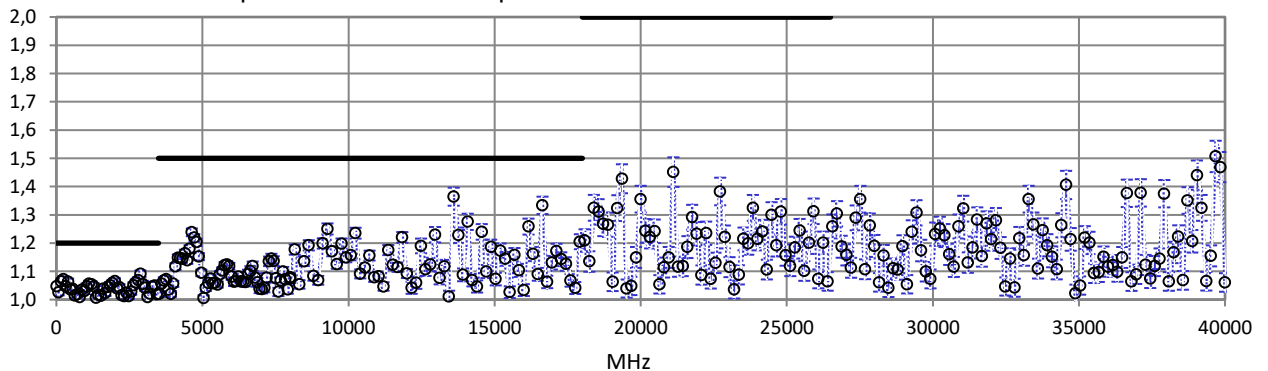
13.1.1 VSWR at RF Input Att 5 dB DC-Coup.



13.2.1 VSWR at RF Input Att 10 dB DC-Coup.

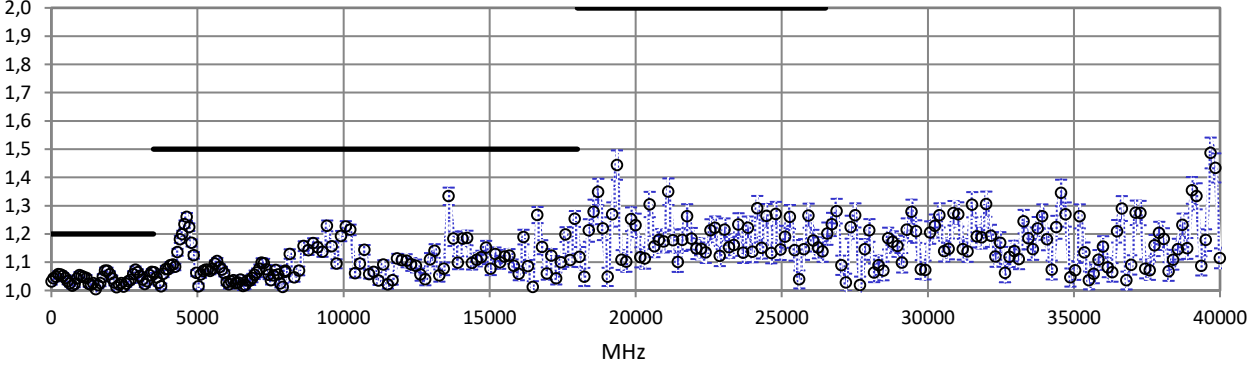
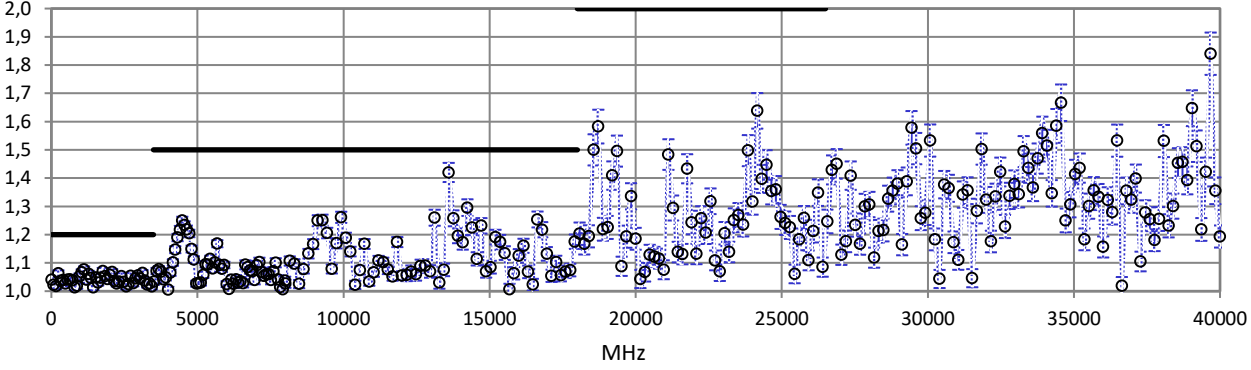


13.3.1 VSWR at RF Input Att 20 dB DC-Coup.



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Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
13.4.1 VSWR at RF Input Att 40 dB DC-Coup. 				
13.5.1 VSWR at RF Input Att 10 dB AC-Coup. 				

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Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
14 IQ Baseband Inputs FSW-B71				
14.1 Baseband Inputs abs. Amplitude Accuracy				
input: I (freq = 1 MHz)				
input level: full scale level:				
10 dBm 2 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
4 dBm 1 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
-2 dBm 0,5 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
-8 dBm 0,25 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
input: Q (freq = 1 MHz)				
input level: full scale level:				
10 dBm 2 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
4 dBm 1 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
-2 dBm 0,5 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
-8 dBm 0,25 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
input: I/ (freq = 1 MHz)				
input level: full scale level:				
10 dBm 2 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
4 dBm 1 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
-2 dBm 0,5 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
-8 dBm 0,25 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
input: Q/ (freq = 1 MHz)				
input level: full scale level:				
10 dBm 2 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
4 dBm 1 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
-2 dBm 0,5 V	-0,15 dB	n. i.	0,15 dB	0,03 dB
-8 dBm 0,25 V	-0,15 dB	n. i.	0,15 dB	0,03 dB

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V1-07/Temp/Enq/2015-04

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
14.2 Baseband Inputs Frequency Response				
input: I (referred to 1 MHz 0,25 V)				
input freq:				
2,5 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
5 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
10 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
20 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
30 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
40 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
50 MHz (only FSW-B71E)	-0,25 dB	n. i.	0,25 dB	0,03 dB
60 MHz (only FSW-B71E)	-0,25 dB	n. i.	0,25 dB	0,03 dB
70 MHz (only FSW-B71E)	-0,25 dB	n. i.	0,25 dB	0,03 dB
80 MHz (only FSW-B71E)	-0,25 dB	n. i.	0,25 dB	0,03 dB
input: Q (referred to 1 MHz 0,25 V)				
input freq:				
2,5 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
5 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
10 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
20 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
30 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
40 MHz	-0,15 dB	n. i.	0,15 dB	0,03 dB
50 MHz (only FSW-B71E)	-0,25 dB	n. i.	0,25 dB	0,03 dB
60 MHz (only FSW-B71E)	-0,25 dB	n. i.	0,25 dB	0,03 dB
70 MHz (only FSW-B71E)	-0,25 dB	n. i.	0,25 dB	0,03 dB
80 MHz (only FSW-B71E)	-0,25 dB	n. i.	0,25 dB	0,03 dB

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Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
15 External Mixing FSW-B21				
15.1 Ext Mixer LO Level Acc. of 13 dBm nominal Power				
mode: upper sideband				
fc = 16,88 GHz	12,00 dBm	13,37 dBm	14,00 dBm	0,20 dB
17,38 GHz	12,00 dBm	13,53 dBm	14,00 dBm	0,20 dB
17,88 GHz	12,00 dBm	13,41 dBm	14,00 dBm	0,20 dB
18,38 GHz	12,00 dBm	13,47 dBm	14,00 dBm	0,20 dB
18,88 GHz	12,00 dBm	13,65 dBm	14,00 dBm	0,20 dB
19,38 GHz	12,00 dBm	13,49 dBm	14,00 dBm	0,20 dB
19,88 GHz	12,00 dBm	13,60 dBm	14,00 dBm	0,20 dB
20,38 GHz	12,00 dBm	13,63 dBm	14,00 dBm	0,20 dB
20,88 GHz	12,00 dBm	13,49 dBm	14,00 dBm	0,20 dB
21,38 GHz	12,00 dBm	13,68 dBm	14,00 dBm	0,20 dB
21,88 GHz	12,00 dBm	13,50 dBm	14,00 dBm	0,20 dB
22,38 GHz	12,00 dBm	13,65 dBm	14,00 dBm	0,20 dB
22,88 GHz	12,00 dBm	13,66 dBm	14,00 dBm	0,20 dB
23,38 GHz	12,00 dBm	13,55 dBm	14,00 dBm	0,20 dB
23,88 GHz	12,00 dBm	13,68 dBm	14,00 dBm	0,20 dB
24,38 GHz	12,00 dBm	13,54 dBm	14,00 dBm	0,20 dB
24,88 GHz	12,00 dBm	13,49 dBm	14,00 dBm	0,20 dB
25,38 GHz	12,00 dBm	13,62 dBm	14,00 dBm	0,20 dB
25,88 GHz	12,00 dBm	13,59 dBm	14,00 dBm	0,20 dB
26,38 GHz	12,00 dBm	13,62 dBm	14,00 dBm	0,20 dB
26,88 GHz	12,00 dBm	13,62 dBm	14,00 dBm	0,20 dB
mode: lower sideband				
fc = 23,82 GHz	12,00 dBm	13,66 dBm	14,00 dBm	0,20 dB
24,32 GHz	12,00 dBm	13,59 dBm	14,00 dBm	0,20 dB
24,82 GHz	12,00 dBm	13,59 dBm	14,00 dBm	0,20 dB
25,32 GHz	12,00 dBm	13,05 dBm	14,00 dBm	0,20 dB
25,82 GHz	12,00 dBm	13,09 dBm	14,00 dBm	0,20 dB
26,32 GHz	12,00 dBm	13,24 dBm	14,00 dBm	0,20 dB
26,82 GHz	12,00 dBm	13,11 dBm	14,00 dBm	0,20 dB
27,32 GHz	12,00 dBm	13,16 dBm	14,00 dBm	0,20 dB
27,82 GHz	12,00 dBm	13,20 dBm	14,00 dBm	0,20 dB
28,32 GHz	12,00 dBm	13,20 dBm	14,00 dBm	0,20 dB
28,82 GHz	12,00 dBm	13,25 dBm	14,00 dBm	0,20 dB
29,32 GHz	12,00 dBm	13,23 dBm	14,00 dBm	0,20 dB
29,82 GHz	12,00 dBm	13,37 dBm	14,00 dBm	0,20 dB
30,32 GHz	12,00 dBm	13,18 dBm	14,00 dBm	0,20 dB
30,82 GHz	12,00 dBm	13,04 dBm	14,00 dBm	0,20 dB
31,32 GHz	12,00 dBm	13,23 dBm	14,00 dBm	0,20 dB
31,82 GHz	12,00 dBm	13,17 dBm	14,00 dBm	0,20 dB
32,32 GHz	12,00 dBm	13,26 dBm	14,00 dBm	0,20 dB
32,82 GHz	12,00 dBm	13,44 dBm	14,00 dBm	0,20 dB
33,32 GHz	12,00 dBm	13,30 dBm	14,00 dBm	0,20 dB

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Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
15.2 Ext Mixer LO Level Acc. of 15.5 dBm nominal Power				
mode: upper sideband				
fc = 16,88 GHz	14,50 dBm	15,72 dBm	16,50 dBm	0,20 dB
17,38 GHz	14,50 dBm	15,84 dBm	16,50 dBm	0,20 dB
17,88 GHz	14,50 dBm	15,80 dBm	16,50 dBm	0,20 dB
18,38 GHz	14,50 dBm	15,88 dBm	16,50 dBm	0,20 dB
18,88 GHz	14,50 dBm	16,01 dBm	16,50 dBm	0,20 dB
19,38 GHz	14,50 dBm	15,86 dBm	16,50 dBm	0,20 dB
19,88 GHz	14,50 dBm	15,95 dBm	16,50 dBm	0,20 dB
20,38 GHz	14,50 dBm	15,97 dBm	16,50 dBm	0,20 dB
20,88 GHz	14,50 dBm	15,91 dBm	16,50 dBm	0,20 dB
21,38 GHz	14,50 dBm	16,11 dBm	16,50 dBm	0,20 dB
21,88 GHz	14,50 dBm	15,90 dBm	16,50 dBm	0,20 dB
22,38 GHz	14,50 dBm	16,08 dBm	16,50 dBm	0,20 dB
22,88 GHz	14,50 dBm	16,08 dBm	16,50 dBm	0,20 dB
23,38 GHz	14,50 dBm	15,86 dBm	16,50 dBm	0,20 dB
23,88 GHz	14,50 dBm	16,14 dBm	16,50 dBm	0,20 dB
24,38 GHz	14,50 dBm	15,89 dBm	16,50 dBm	0,20 dB
24,88 GHz	14,50 dBm	16,03 dBm	16,50 dBm	0,20 dB
25,38 GHz	14,50 dBm	15,93 dBm	16,50 dBm	0,20 dB
25,88 GHz	14,50 dBm	16,01 dBm	16,50 dBm	0,20 dB
26,38 GHz	14,50 dBm	15,94 dBm	16,50 dBm	0,20 dB
26,88 GHz	14,50 dBm	15,93 dBm	16,50 dBm	0,20 dB
mode: lower sideband				
fc = 23,82 GHz	14,50 dBm	15,89 dBm	16,50 dBm	0,20 dB
24,32 GHz	14,50 dBm	16,01 dBm	16,50 dBm	0,20 dB
24,82 GHz	14,50 dBm	15,77 dBm	16,50 dBm	0,20 dB
25,32 GHz	14,50 dBm	15,74 dBm	16,50 dBm	0,20 dB
25,82 GHz	14,50 dBm	15,62 dBm	16,50 dBm	0,20 dB
26,32 GHz	14,50 dBm	15,77 dBm	16,50 dBm	0,20 dB
26,82 GHz	14,50 dBm	15,68 dBm	16,50 dBm	0,20 dB
27,32 GHz	14,50 dBm	15,64 dBm	16,50 dBm	0,20 dB
27,82 GHz	14,50 dBm	15,91 dBm	16,50 dBm	0,20 dB
28,32 GHz	14,50 dBm	15,61 dBm	16,50 dBm	0,20 dB
28,82 GHz	14,50 dBm	15,91 dBm	16,50 dBm	0,20 dB
29,32 GHz	14,50 dBm	15,60 dBm	16,50 dBm	0,20 dB
29,82 GHz	14,50 dBm	15,85 dBm	16,50 dBm	0,20 dB
30,32 GHz	14,50 dBm	15,75 dBm	16,50 dBm	0,20 dB
30,82 GHz	14,50 dBm	15,60 dBm	16,50 dBm	0,20 dB
31,32 GHz	14,50 dBm	15,83 dBm	16,50 dBm	0,20 dB
31,82 GHz	14,50 dBm	15,63 dBm	16,50 dBm	0,20 dB
32,32 GHz	14,50 dBm	15,85 dBm	16,50 dBm	0,20 dB
32,82 GHz	14,50 dBm	15,83 dBm	16,50 dBm	0,20 dB
33,32 GHz	14,50 dBm	15,81 dBm	16,50 dBm	0,20 dB

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V1-07/1emp/Enq/2015-04

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
15.3 Ext Mixer LO Level Acc. of 17 dBm nominal Power				
mode: upper sideband				
fc = 16,88 GHz	16,00 dBm	16,95 dBm	18,00 dBm	0,20 dB
17,38 GHz	16,00 dBm	17,15 dBm	18,00 dBm	0,20 dB
17,88 GHz	16,00 dBm	16,99 dBm	18,00 dBm	0,20 dB
18,38 GHz	16,00 dBm	17,08 dBm	18,00 dBm	0,20 dB
18,88 GHz	16,00 dBm	17,17 dBm	18,00 dBm	0,20 dB
19,38 GHz	16,00 dBm	17,06 dBm	18,00 dBm	0,20 dB
19,88 GHz	16,00 dBm	17,20 dBm	18,00 dBm	0,20 dB
20,38 GHz	16,00 dBm	17,26 dBm	18,00 dBm	0,20 dB
20,88 GHz	16,00 dBm	17,14 dBm	18,00 dBm	0,20 dB
21,38 GHz	16,00 dBm	17,41 dBm	18,00 dBm	0,20 dB
21,88 GHz	16,00 dBm	17,18 dBm	18,00 dBm	0,20 dB
22,38 GHz	16,00 dBm	17,34 dBm	18,00 dBm	0,20 dB
22,88 GHz	16,00 dBm	17,37 dBm	18,00 dBm	0,20 dB
23,38 GHz	16,00 dBm	17,22 dBm	18,00 dBm	0,20 dB
23,88 GHz	16,00 dBm	17,56 dBm	18,00 dBm	0,20 dB
24,38 GHz	16,00 dBm	17,16 dBm	18,00 dBm	0,20 dB
24,88 GHz	16,00 dBm	17,46 dBm	18,00 dBm	0,20 dB
25,38 GHz	16,00 dBm	17,25 dBm	18,00 dBm	0,20 dB
25,88 GHz	16,00 dBm	17,38 dBm	18,00 dBm	0,20 dB
26,38 GHz	16,00 dBm	17,33 dBm	18,00 dBm	0,20 dB
26,88 GHz	16,00 dBm	17,28 dBm	18,00 dBm	0,20 dB
mode: lower sideband				
fc = 23,82 GHz	16,00 dBm	17,18 dBm	18,00 dBm	0,20 dB
24,32 GHz	16,00 dBm	17,49 dBm	18,00 dBm	0,20 dB
24,82 GHz	16,00 dBm	17,06 dBm	18,00 dBm	0,20 dB
25,32 GHz	16,00 dBm	17,29 dBm	18,00 dBm	0,20 dB
25,82 GHz	16,00 dBm	17,03 dBm	18,00 dBm	0,20 dB
26,32 GHz	16,00 dBm	17,27 dBm	18,00 dBm	0,20 dB
26,82 GHz	16,00 dBm	17,16 dBm	18,00 dBm	0,20 dB
27,32 GHz	16,00 dBm	17,04 dBm	18,00 dBm	0,20 dB
27,82 GHz	16,00 dBm	17,43 dBm	18,00 dBm	0,20 dB
28,32 GHz	16,00 dBm	16,94 dBm	18,00 dBm	0,20 dB
28,82 GHz	16,00 dBm	17,49 dBm	18,00 dBm	0,20 dB
29,32 GHz	16,00 dBm	16,98 dBm	18,00 dBm	0,20 dB
29,82 GHz	16,00 dBm	17,33 dBm	18,00 dBm	0,20 dB
30,32 GHz	16,00 dBm	17,17 dBm	18,00 dBm	0,20 dB
30,82 GHz	16,00 dBm	17,01 dBm	18,00 dBm	0,20 dB
31,32 GHz	16,00 dBm	17,35 dBm	18,00 dBm	0,20 dB
31,82 GHz	16,00 dBm	16,99 dBm	18,00 dBm	0,20 dB
32,32 GHz	16,00 dBm	17,34 dBm	18,00 dBm	0,20 dB
32,82 GHz	16,00 dBm	17,15 dBm	18,00 dBm	0,20 dB
33,32 GHz	16,00 dBm	17,32 dBm	18,00 dBm	0,20 dB
15.4 Ext Mixer Level Display				
2-port-mixer	-1,00 dBm	-0,23 dBm	1,00 dBm	0,20 dB
3-port-mixer	-1,00 dBm	-0,43 dBm	1,00 dBm	0,20 dB

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Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
1 Ref.-Frequency Accuracy measured at: 1000 MHz	-100 Hz	-17 Hz	100 Hz	2 Hz
2 Imunity to Interference 2nd IF Image Freq. Rejection center freq: 2nd IF freq: 1000 MHz 1317 MHz 9000 MHz 1317 MHz 3rd IF Image Freq. Rejection center freq: 3rd IF freq: 63 MHz 37 MHz 100 MHz 37 MHz 900 MHz 37 MHz 1100 MHz 37 MHz 7990 MHz 37 MHz 2nd IF Rejection center freq: 2nd IF freq: 50 MHz 1317 MHz 200 MHz 1317 MHz 500 MHz 1317 MHz 900 MHz 1317 MHz 1100 MHz 1317 MHz 7990 MHz 1317 MHz 9000 MHz 1317 MHz 12000 MHz 1317 MHz 25000 MHz 1317 MHz 38000 MHz 1317 MHz 3rd IF Rejection center freq: 3rd IF freq: 100 MHz 37 MHz 200 MHz 37 MHz 500 MHz 37 MHz 900 MHz 37 MHz 1100 MHz 37 MHz 7990 MHz 37 MHz 9000 MHz 37 MHz 12000 MHz 37 MHz 25000 MHz 37 MHz 38000 MHz 37 MHz	--	--	-90,0 dBc	0,5 dB
	--	-120,4 dBc	-90,0 dBc	0,5 dB
	--	-118,6 dBc	-90,0 dBc	0,6 dB
	--	-122,4 dBc	-90,0 dBc	0,5 dB
	--	-119,6 dBc	-90,0 dBc	0,5 dB
	--	-120,1 dBc	-90,0 dBc	0,5 dB
	--	-123,6 dBc	-90,0 dBc	0,5 dB
	--	-118,9 dBc	-90,0 dBc	0,6 dB
	--	-120,9 dBc	-90,0 dBc	0,5 dB
	--	-119,7 dBc	-90,0 dBc	0,5 dB
	--	-120,8 dBc	-90,0 dBc	0,5 dB
	--	-120,3 dBc	-90,0 dBc	0,5 dB
	--	-121,0 dBc	-90,0 dBc	0,5 dB
	--	-119,1 dBc	-90,0 dBc	0,6 dB
	--	-118,4 dBc	-90,0 dBc	0,6 dB
	--	-117,9 dBc	-90,0 dBc	0,6 dB
	--	-112,7 dBc	-90,0 dBc	0,9 dB
	--	-113,8 dBc	-90,0 dBc	1,2 dB
	--	-122,3 dBc	-90,0 dBc	0,5 dB
	--	-121,0 dBc	-90,0 dBc	0,5 dB
	--	-119,3 dBc	-90,0 dBc	0,5 dB
	--	-120,2 dBc	-90,0 dBc	0,5 dB
	--	-121,9 dBc	-90,0 dBc	0,5 dB
	--	-118,1 dBc	-90,0 dBc	0,6 dB
	--	-118,0 dBc	-90,0 dBc	0,6 dB
	--	-117,7 dBc	-90,0 dBc	0,6 dB
	--	-113,0 dBc	-90,0 dBc	0,9 dB
	--	-114,1 dBc	-90,0 dBc	1,2 dB

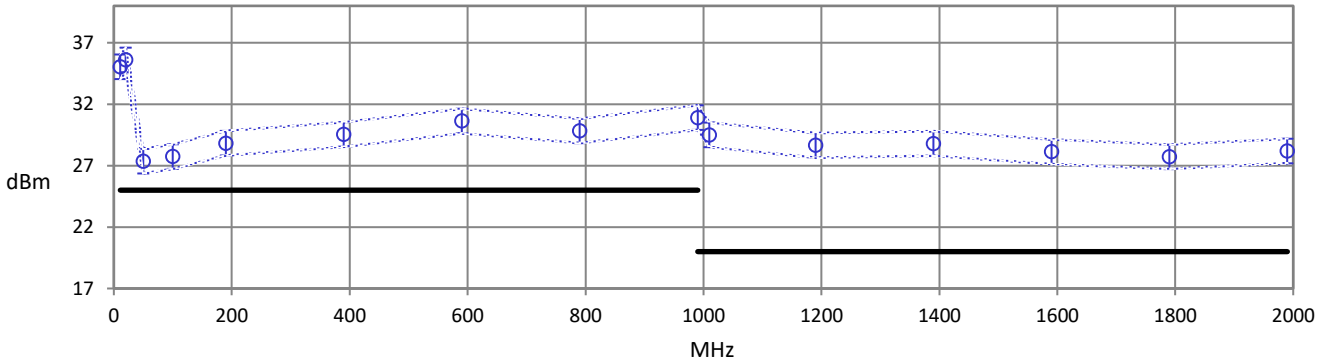
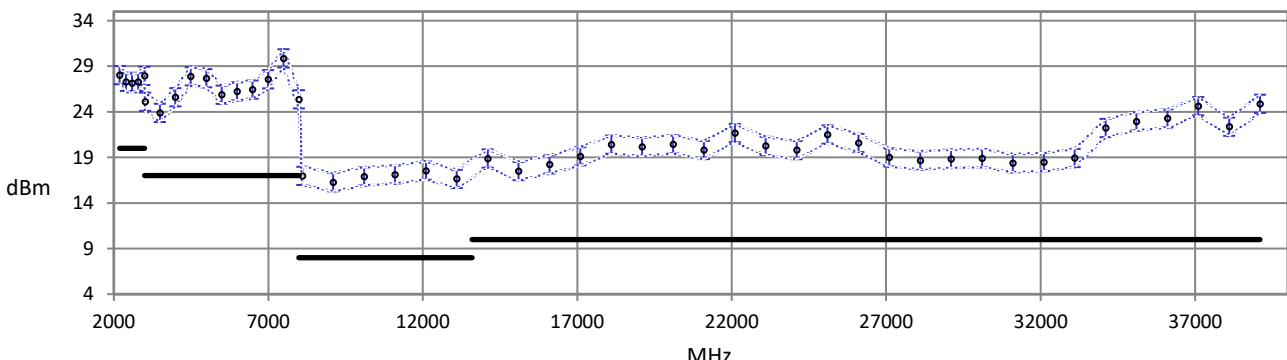
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V1-07/Temp/Enq/2015-04

Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty																																																							
3.1 3rd order Intercept (freq < 2 GHz) 																																																											
3.2 3rd order Intercept (freq > 2 GHz) 																																																											
4.1 2nd order Intercept results calculated from power and attenuation measurements fin = <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">9 MHz</td> <td style="width: 20%;">45,0 dBm</td> <td style="width: 20%;">49,3 dBm</td> <td style="width: 10%;">--</td> <td style="width: 10%;">1,5 dB</td> </tr> <tr> <td>21 MHz</td> <td>45,0 dBm</td> <td>49,4 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>106 MHz</td> <td>45,0 dBm</td> <td>48,6 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>274 MHz</td> <td>45,0 dBm</td> <td>57,5 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>449,9 MHz</td> <td>45,0 dBm</td> <td>52,8 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>699,9 MHz</td> <td>47,0 dBm</td> <td>62,0 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>999,9 MHz</td> <td>47,0 dBm</td> <td>62,7 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>1499,9 MHz</td> <td>47,0 dBm</td> <td>64,7 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>1749,9 MHz</td> <td>62,0 dBm</td> <td>78,0 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>2699,9 MHz</td> <td>62,0 dBm</td> <td>80,0 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> <tr> <td>3449,9 MHz</td> <td>62,0 dBm</td> <td>77,4 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> </table>	9 MHz	45,0 dBm	49,3 dBm	--	1,5 dB	21 MHz	45,0 dBm	49,4 dBm	--	1,5 dB	106 MHz	45,0 dBm	48,6 dBm	--	1,5 dB	274 MHz	45,0 dBm	57,5 dBm	--	1,5 dB	449,9 MHz	45,0 dBm	52,8 dBm	--	1,5 dB	699,9 MHz	47,0 dBm	62,0 dBm	--	1,5 dB	999,9 MHz	47,0 dBm	62,7 dBm	--	1,5 dB	1499,9 MHz	47,0 dBm	64,7 dBm	--	1,5 dB	1749,9 MHz	62,0 dBm	78,0 dBm	--	1,5 dB	2699,9 MHz	62,0 dBm	80,0 dBm	--	1,5 dB	3449,9 MHz	62,0 dBm	77,4 dBm	--	1,5 dB				
9 MHz	45,0 dBm	49,3 dBm	--	1,5 dB																																																							
21 MHz	45,0 dBm	49,4 dBm	--	1,5 dB																																																							
106 MHz	45,0 dBm	48,6 dBm	--	1,5 dB																																																							
274 MHz	45,0 dBm	57,5 dBm	--	1,5 dB																																																							
449,9 MHz	45,0 dBm	52,8 dBm	--	1,5 dB																																																							
699,9 MHz	47,0 dBm	62,0 dBm	--	1,5 dB																																																							
999,9 MHz	47,0 dBm	62,7 dBm	--	1,5 dB																																																							
1499,9 MHz	47,0 dBm	64,7 dBm	--	1,5 dB																																																							
1749,9 MHz	62,0 dBm	78,0 dBm	--	1,5 dB																																																							
2699,9 MHz	62,0 dBm	80,0 dBm	--	1,5 dB																																																							
3449,9 MHz	62,0 dBm	77,4 dBm	--	1,5 dB																																																							
4.2 2nd order Intercept (Opt FSW-B13) results calculated from power and attenuation measurements fin = <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">699,9 MHz</td> <td style="width: 20%;">52,0 dBm</td> <td style="width: 20%;">56,2 dBm</td> <td style="width: 10%;">--</td> <td style="width: 10%;">1,5 dB</td> </tr> <tr> <td>1499,9 MHz</td> <td>52,0 dBm</td> <td>74,7 dBm</td> <td>--</td> <td>1,5 dB</td> </tr> </table>	699,9 MHz	52,0 dBm	56,2 dBm	--	1,5 dB	1499,9 MHz	52,0 dBm	74,7 dBm	--	1,5 dB																																																	
699,9 MHz	52,0 dBm	56,2 dBm	--	1,5 dB																																																							
1499,9 MHz	52,0 dBm	74,7 dBm	--	1,5 dB																																																							

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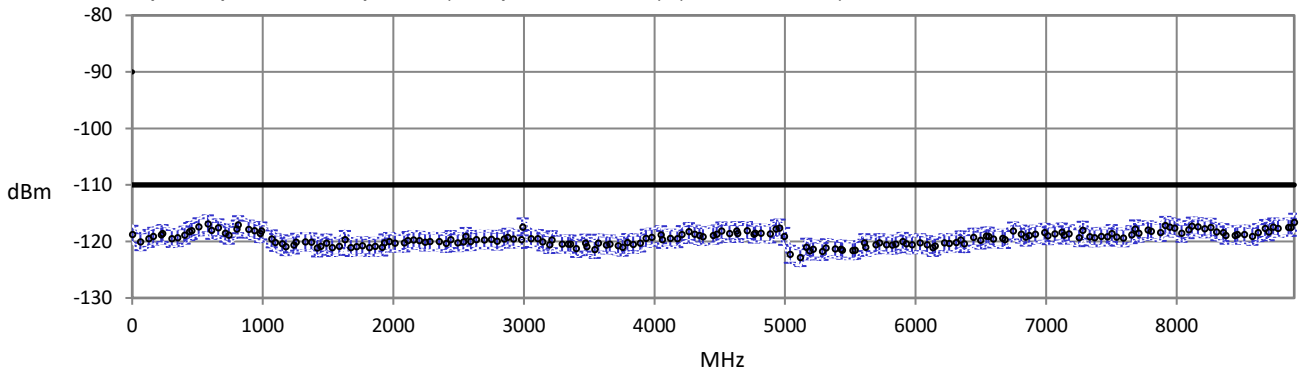
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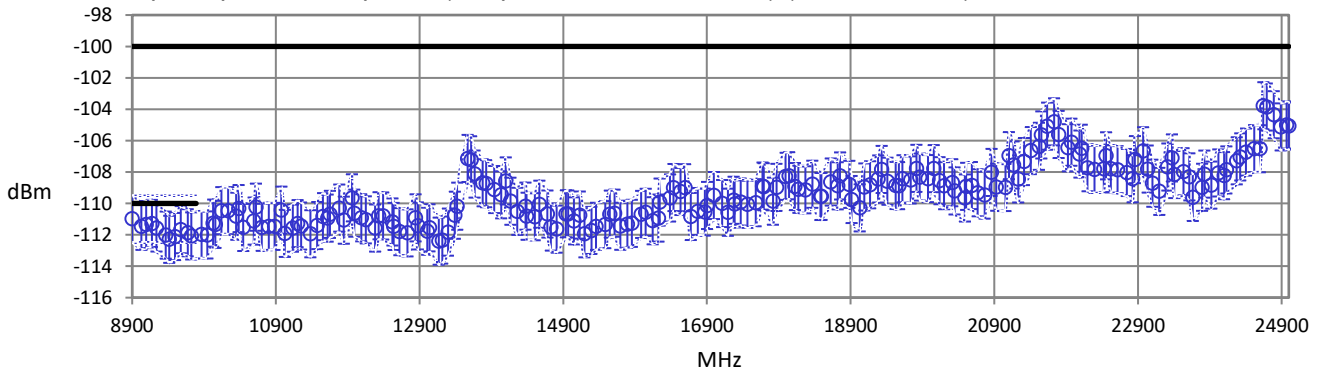
Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
5 Resolution Bandwidths Accuracy				
RBW level uncertainty				
80 MHz (only FSW-B8)	-0,10 dB	0,03 dB	0,10 dB	0,02 dB
50 MHz (only FSW-B8)	-0,10 dB	0,02 dB	0,10 dB	0,02 dB
28 MHz (only FSW-B8)	-0,10 dB	0,02 dB	0,10 dB	0,02 dB
20 MHz (only FSW-B8)	-0,10 dB	0,01 dB	0,10 dB	0,02 dB
10 MHz	-0,10 dB	-0,03 dB	0,10 dB	0,02 dB
1 MHz	-0,10 dB	0,00 dB	0,10 dB	0,02 dB
100 kHz	-0,10 dB	-0,01 dB	0,10 dB	0,02 dB
10 kHz	--	0,00 dB	--	reference
1 kHz	-0,10 dB	-0,04 dB	0,10 dB	0,02 dB
100 Hz	-0,10 dB	-0,04 dB	0,10 dB	0,02 dB

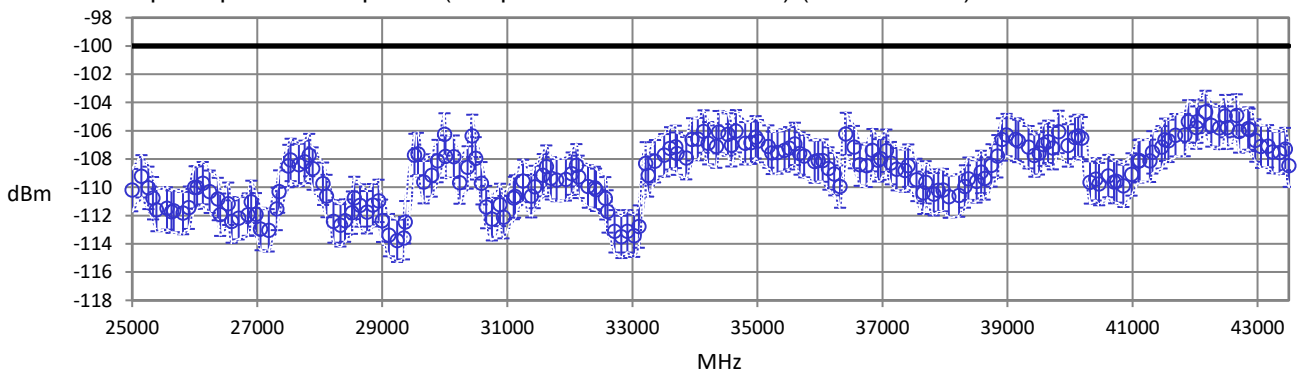
6.1 Full Span Spurious Response (Freq < 8900 MHz) (RBW=200Hz)



6.2 Full Span Spurious Response (Freq = 8900 ... 25000 MHz) (RBW=1000Hz)



6.3 Full Span Spurious Response (Freq = 25000 ... 43500 MHz) (RBW=300Hz)



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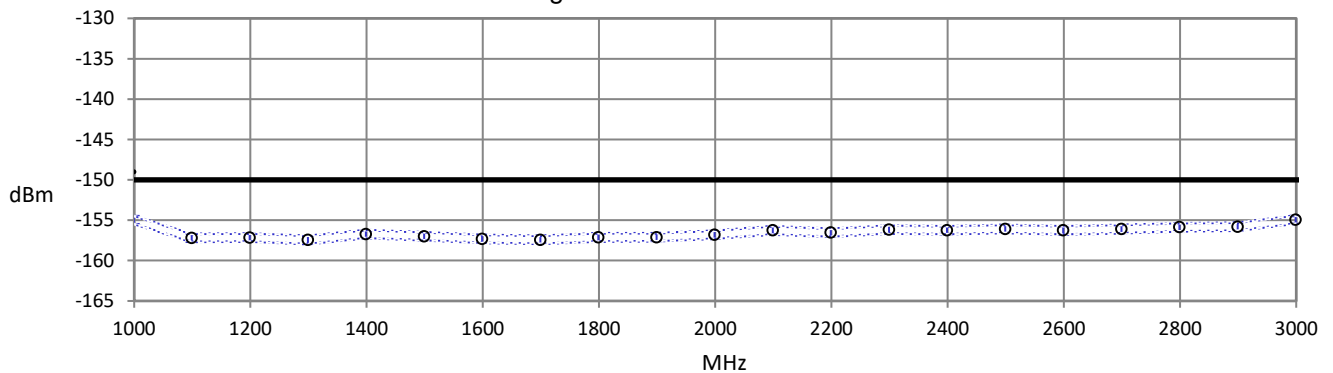
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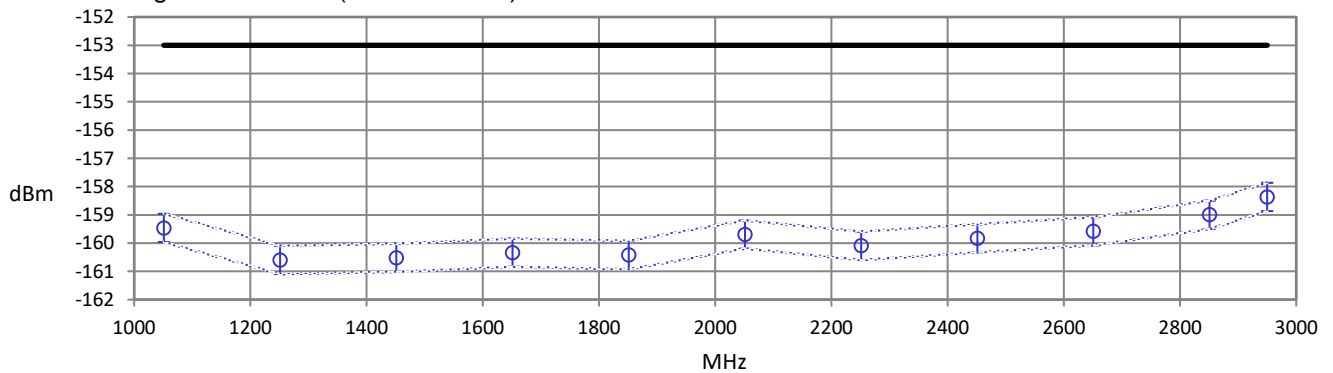
Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
7.1 Average Noise Level				
results calculated from power and attenuation measurements				
fin = 2 Hz	--	1 -117,3 dBm	-110,0 dBm	0,5 dB
10 Hz	--	1 -131,7 dBm	-110,0 dBm	0,5 dB
30 Hz	--	1 -123,5 dBm	-110,0 dBm	0,5 dB
90 Hz	--	1 -135,3 dBm	-110,0 dBm	0,5 dB
300 Hz	--	1 -138,5 dBm	-120,0 dBm	0,5 dB
980 Hz	--	1 -142,1 dBm	-120,0 dBm	0,5 dB
9,8 kHz	--	1 -149,6 dBm	-145,0 dBm	0,5 dB
98 kHz	--	1 -150,9 dBm	-145,0 dBm	0,5 dB
998 kHz	--	1 -154,3 dBm	-145,0 dBm	0,5 dB
9800 kHz	--	1 -155,0 dBm	-149,0 dBm	0,5 dB

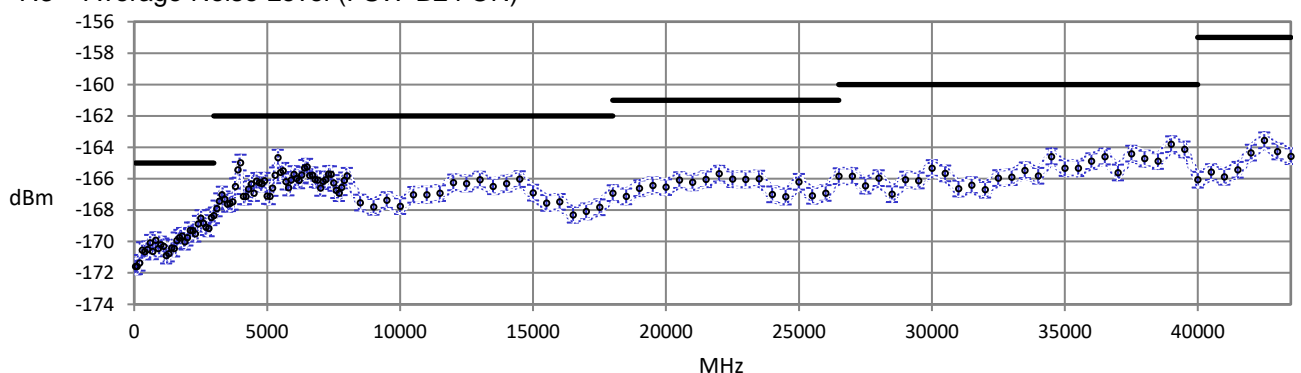
Average Noise Level > 10 MHz



7.2 Average Noise Level (FSW-B13 ON)



7.3 Average Noise Level (FSW-B24 ON)



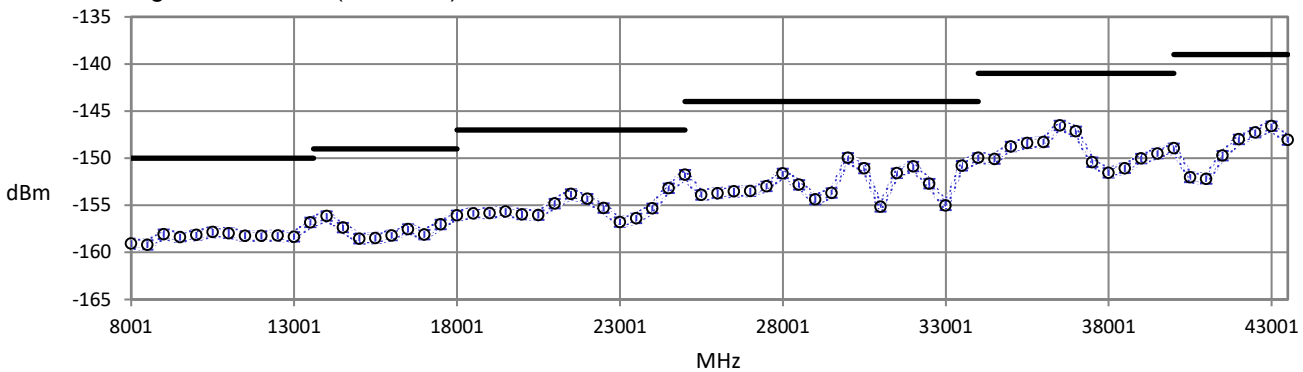
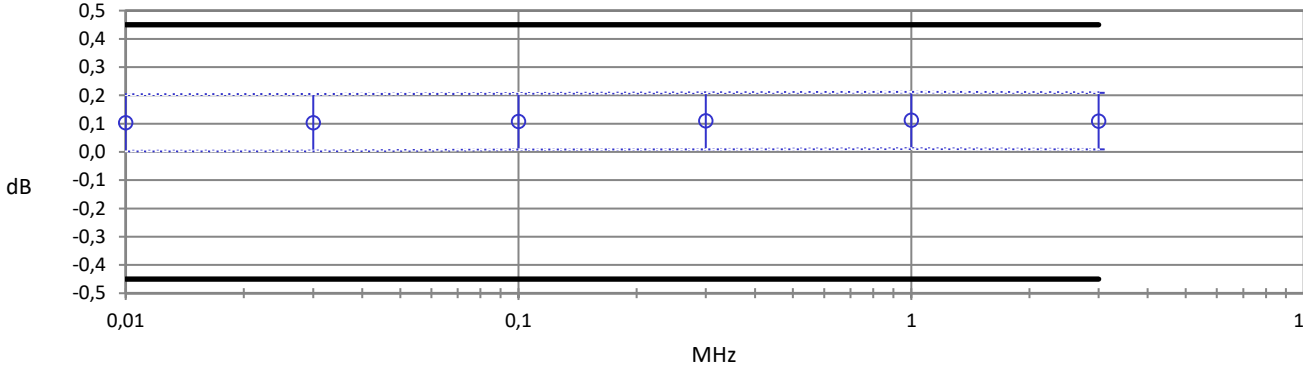
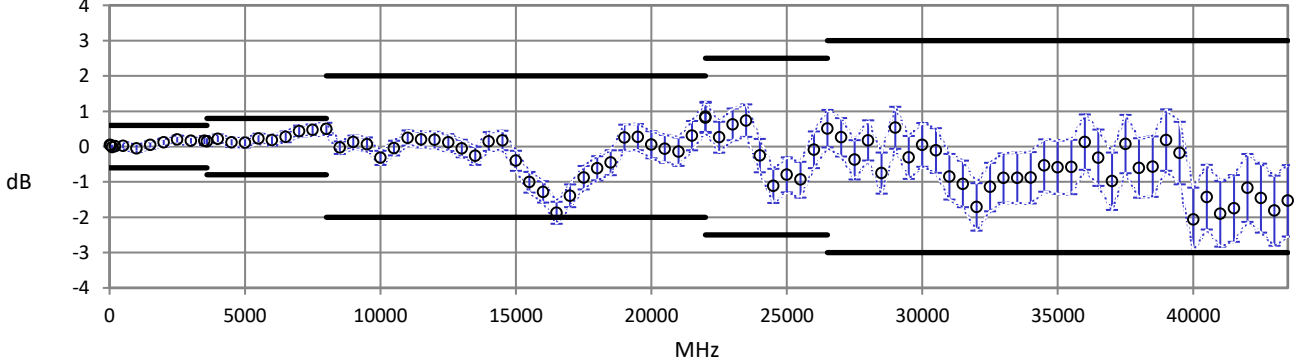
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Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
7.4 Average Noise Level (YIG OFF) 				
8 Level Accuracy Ref. lev= -10 dBm Freq= 64 MHz RF Att = 10 dB electr. Att: 0 dB (only FSW-B25) 10 dB (only FSW-B25) 20 dB (only FSW-B25)	-0,20 dB	-0,04 dB	0,20 dB	0,05 dB
	-0,40 dB	n. i.	0,40 dB	0,05 dB
	-0,40 dB	n. i.	0,40 dB	0,05 dB
	-0,40 dB	n. i.	0,40 dB	0,05 dB
9.1 Freq. Resp Att 10 dB DC-Coup. 				
9.2 Freq. Resp Att 0 dB AC-Coup. 				

U

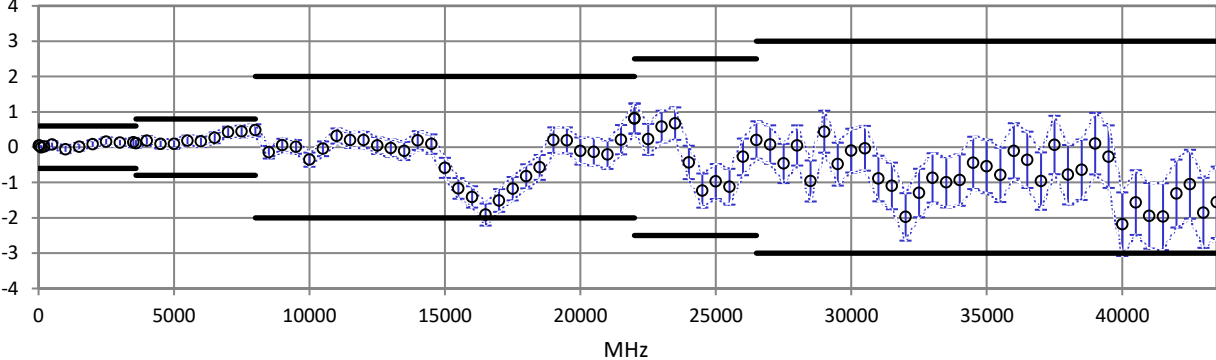
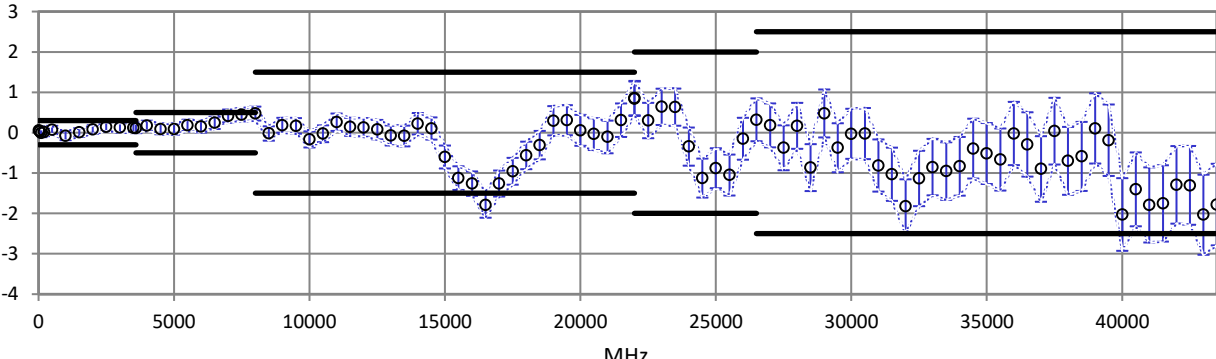
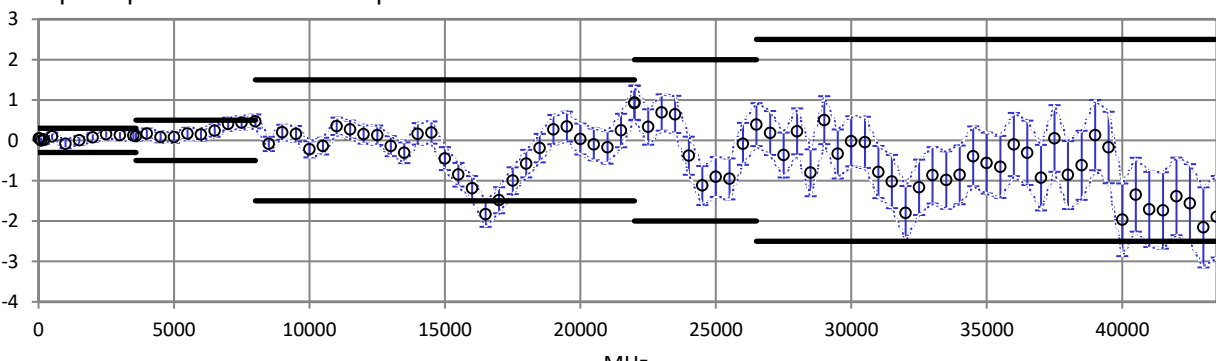
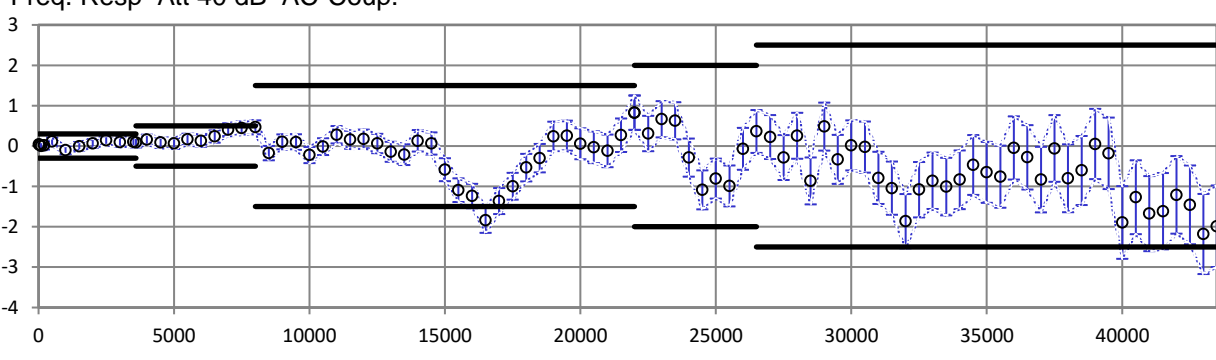
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Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
9.3 Freq. Resp Att 5 dB AC-Coup. 				
9.4 Freq. Resp Att 10 dB AC-Coup. 				
9.5 Freq. Resp Att 20 dB AC-Coup. 				
9.6 Freq. Resp Att 40 dB AC-Coup. 				

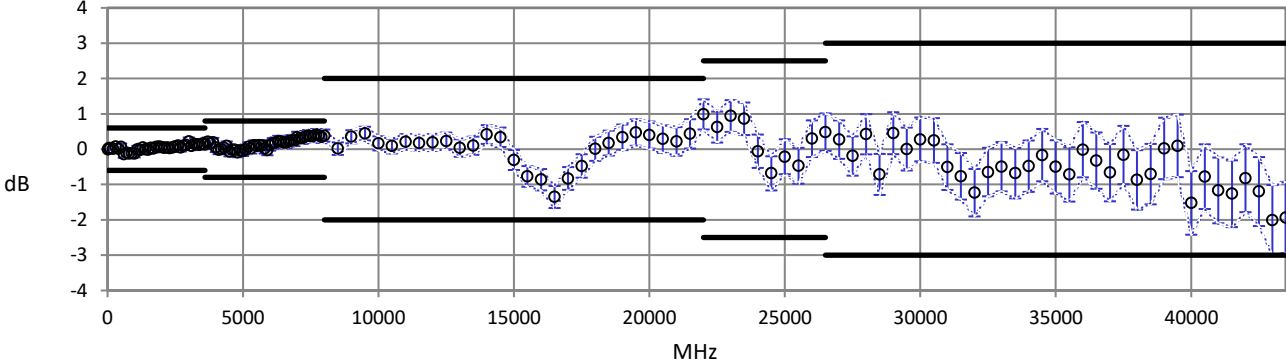
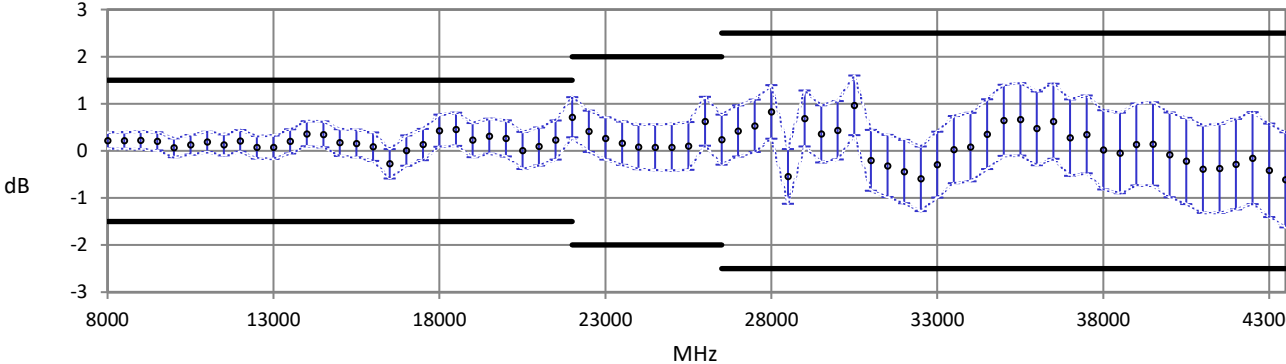
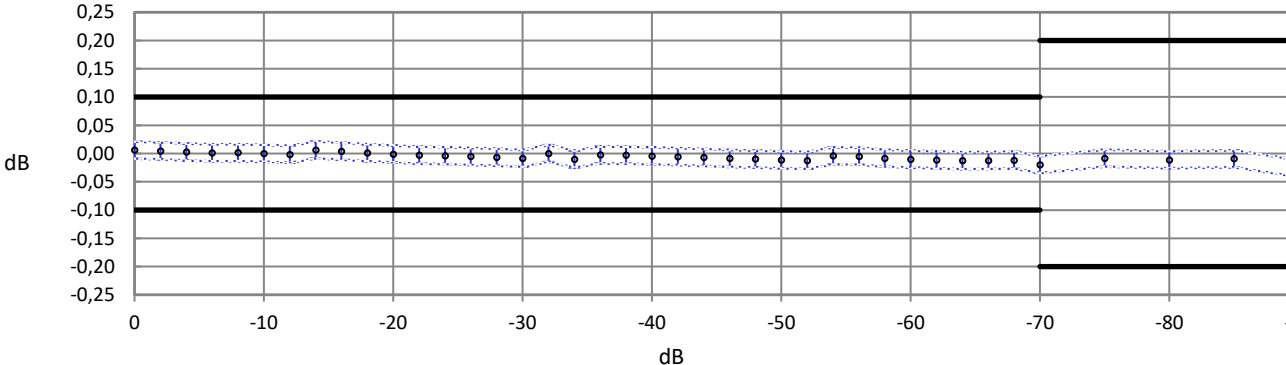
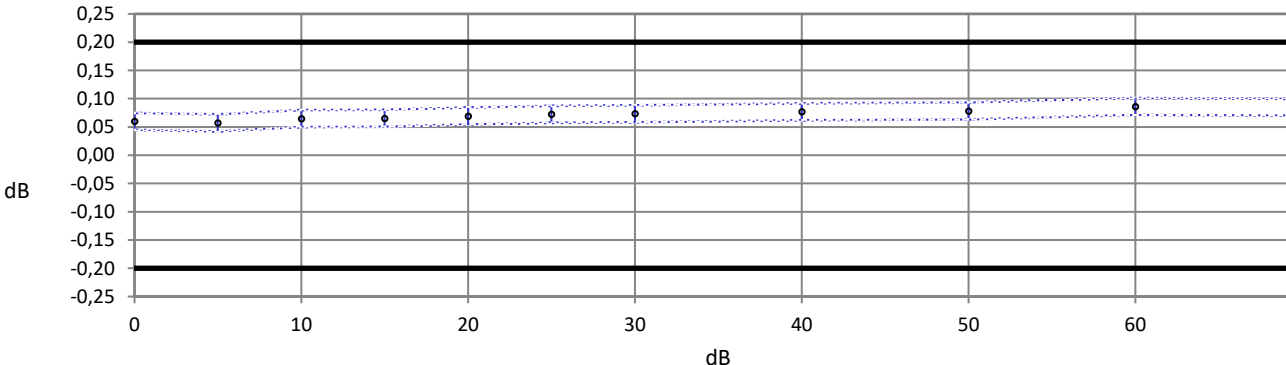
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V1-07/Temp/Enq/2015-04

Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
9.7 Freq. Resp Att 10 dB DC-Coup. (FSW-B24 on)				
				
9.8 Freq. Resp Att 10 dB AC-Coup. YIG OFF				
				
10 Display Nonlinearity				
				
11 RF Attenuator Accuracy				
				

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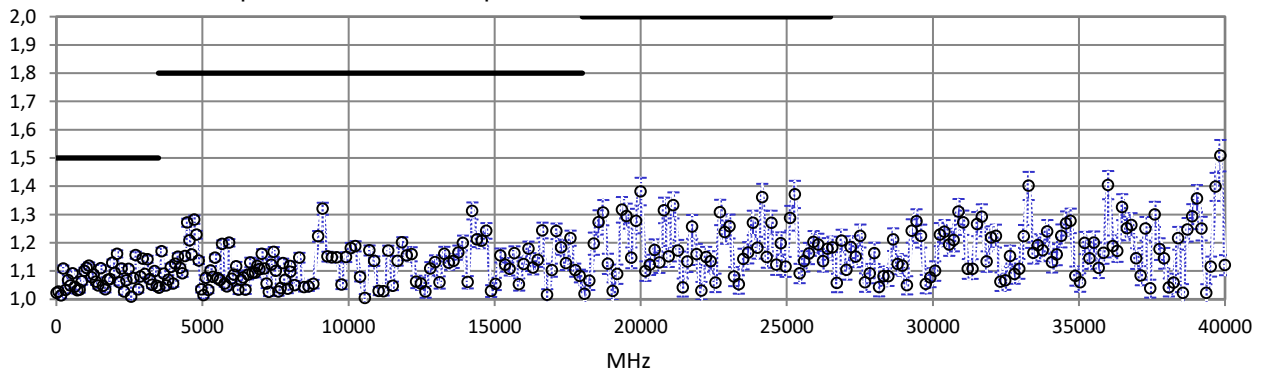
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V1-07/1emp/Enq/2015-04

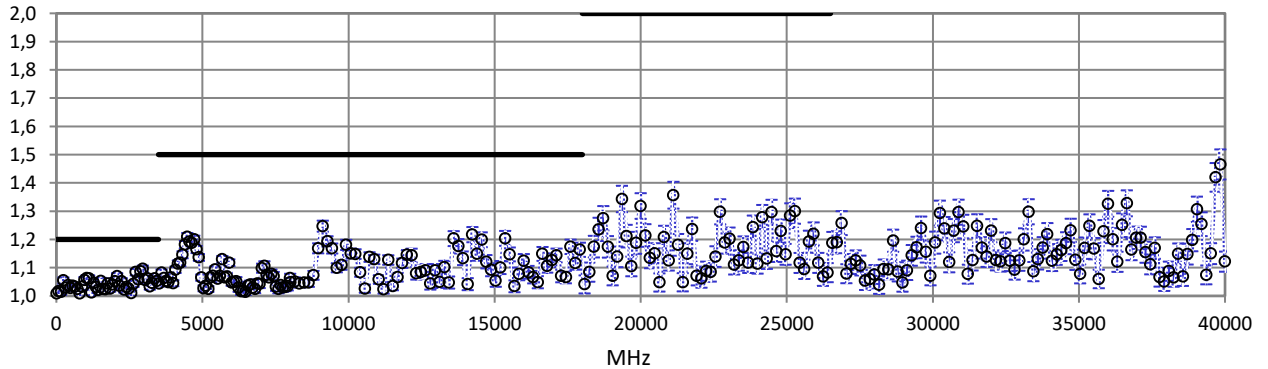
Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
12 Phase Noise				
referred to 1 Hz RBW				
1 kHz	--	1 -129,4 dBc	-125,0 dBc	0,5 dB
10 kHz	--	1 -136,2 dBc	-134,0 dBc	0,5 dB
100 kHz	--	1 -137,8 dBc	-136,0 dBc	0,5 dB
1 MHz	--	1 -147,8 dBc	-145,0 dBc	0,5 dB

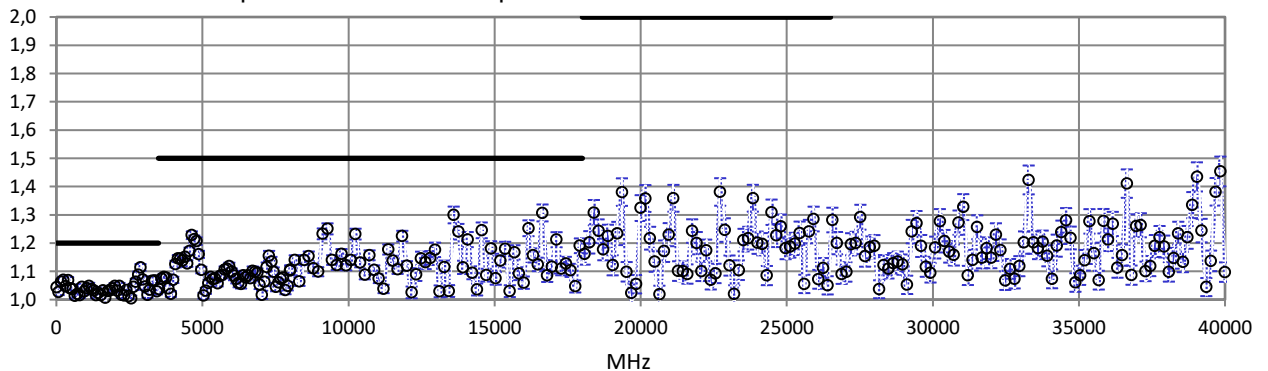
13.1.1 VSWR at RF Input Att 5 dB DC-Coup.



13.2.1 VSWR at RF Input Att 10 dB DC-Coup.



13.3.1 VSWR at RF Input Att 20 dB DC-Coup.



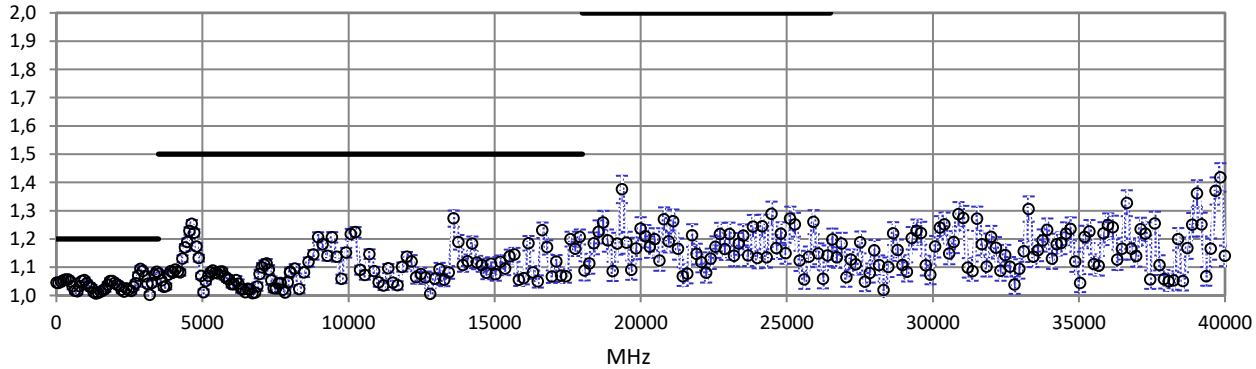
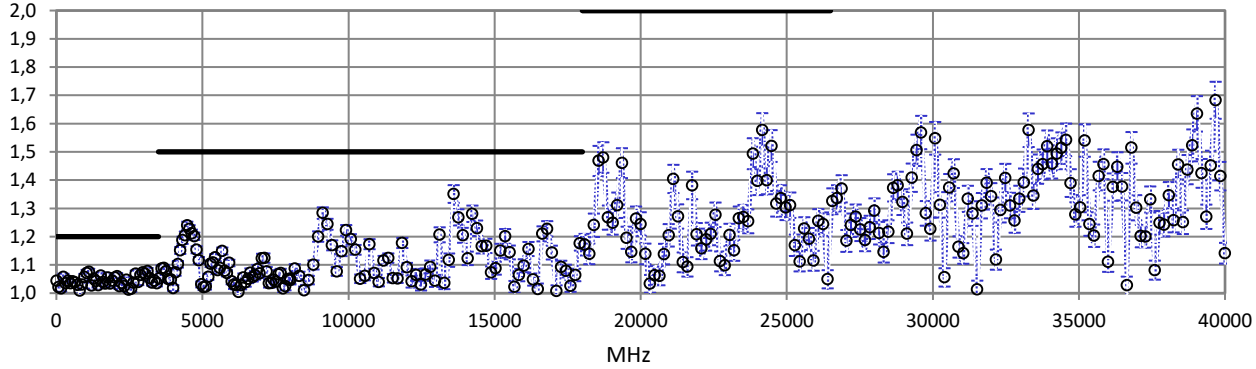
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V1-07/Temp/Enq/2015-04

Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
<p>13.4.1 VSWR at RF Input Att 40 dB DC-Coup.</p> 				
<p>13.5.1 VSWR at RF Input Att 10 dB AC-Coup.</p> 				

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Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
15 External Mixing FSW-B21				
15.1 Ext Mixer LO Level Acc. of 13 dBm nominal Power				
mode: upper sideband				
fc = 16,88 GHz	12,00 dBm	12,51 dBm	14,00 dBm	0,20 dB
17,38 GHz	12,00 dBm	12,40 dBm	14,00 dBm	0,20 dB
17,88 GHz	12,00 dBm	12,45 dBm	14,00 dBm	0,20 dB
18,38 GHz	12,00 dBm	12,71 dBm	14,00 dBm	0,20 dB
18,88 GHz	12,00 dBm	12,12 dBm	14,00 dBm	0,20 dB
19,38 GHz	12,00 dBm	12,48 dBm	14,00 dBm	0,20 dB
19,88 GHz	12,00 dBm	12,24 dBm	14,00 dBm	0,20 dB
20,38 GHz	12,00 dBm	12,05 dBm	14,00 dBm	0,20 dB
20,88 GHz	12,00 dBm	12,52 dBm	14,00 dBm	0,20 dB
21,38 GHz	12,00 dBm	11,79 dBm	14,00 dBm	0,20 dB
21,88 GHz	12,00 dBm	12,26 dBm	14,00 dBm	0,20 dB
22,38 GHz	12,00 dBm	12,06 dBm	14,00 dBm	0,20 dB
22,88 GHz	12,00 dBm	12,03 dBm	14,00 dBm	0,20 dB
23,38 GHz	12,00 dBm	12,14 dBm	14,00 dBm	0,20 dB
23,88 GHz	12,00 dBm	11,91 dBm	14,00 dBm	0,20 dB
24,38 GHz	12,00 dBm	12,02 dBm	14,00 dBm	0,20 dB
24,88 GHz	12,00 dBm	12,09 dBm	14,00 dBm	0,20 dB
25,38 GHz	12,00 dBm	11,81 dBm	14,00 dBm	0,20 dB
25,88 GHz	12,00 dBm	12,06 dBm	14,00 dBm	0,20 dB
26,38 GHz	12,00 dBm	11,81 dBm	14,00 dBm	0,20 dB
26,88 GHz	12,00 dBm	11,84 dBm	14,00 dBm	0,20 dB
mode: lower sideband				
fc = 23,82 GHz	12,00 dBm	11,81 dBm	14,00 dBm	0,20 dB
24,32 GHz	12,00 dBm	11,75 dBm	14,00 dBm	0,20 dB
24,82 GHz	12,00 dBm	11,82 dBm	14,00 dBm	0,20 dB
25,32 GHz	12,00 dBm	12,51 dBm	14,00 dBm	0,20 dB
25,82 GHz	12,00 dBm	12,27 dBm	14,00 dBm	0,20 dB
26,32 GHz	12,00 dBm	12,50 dBm	14,00 dBm	0,20 dB
26,82 GHz	12,00 dBm	12,41 dBm	14,00 dBm	0,20 dB
27,32 GHz	12,00 dBm	12,32 dBm	14,00 dBm	0,20 dB
27,82 GHz	12,00 dBm	12,24 dBm	14,00 dBm	0,20 dB
28,32 GHz	12,00 dBm	12,50 dBm	14,00 dBm	0,20 dB
28,82 GHz	12,00 dBm	12,09 dBm	14,00 dBm	0,20 dB
29,32 GHz	12,00 dBm	12,07 dBm	14,00 dBm	0,20 dB
29,82 GHz	12,00 dBm	11,77 dBm	14,00 dBm	0,20 dB
30,32 GHz	12,00 dBm	12,44 dBm	14,00 dBm	0,20 dB
30,82 GHz	12,00 dBm	12,82 dBm	14,00 dBm	0,20 dB
31,32 GHz	12,00 dBm	12,32 dBm	14,00 dBm	0,20 dB
31,82 GHz	12,00 dBm	12,41 dBm	14,00 dBm	0,20 dB
32,32 GHz	12,00 dBm	12,17 dBm	14,00 dBm	0,20 dB
32,82 GHz	12,00 dBm	11,94 dBm	14,00 dBm	0,20 dB
33,32 GHz	12,00 dBm	12,12 dBm	14,00 dBm	0,20 dB

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Serial No. 100560
Material No. 1312.8000K43
Calibration Mark 606118-D-K-15195-01-00-2021-07

EXE-Vers: 3.1.13.0/MeaFsw1.01/2021-07-09 16:28 INI-Vers: V1-22/531600/2021-05-05 V1-01/FSW1/Enq/2012-01

V1-07/Temp/Enq/2015-04

Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
15.2 Ext Mixer LO Level Acc. of 15.5 dBm nominal Power				
mode: upper sideband				
fc = 16,88 GHz	14,50 dBm	15,43 dBm	16,50 dBm	0,20 dB
17,38 GHz	14,50 dBm	15,25 dBm	16,50 dBm	0,20 dB
17,88 GHz	14,50 dBm	15,36 dBm	16,50 dBm	0,20 dB
18,38 GHz	14,50 dBm	15,70 dBm	16,50 dBm	0,20 dB
18,88 GHz	14,50 dBm	14,97 dBm	16,50 dBm	0,20 dB
19,38 GHz	14,50 dBm	15,54 dBm	16,50 dBm	0,20 dB
19,88 GHz	14,50 dBm	15,23 dBm	16,50 dBm	0,20 dB
20,38 GHz	14,50 dBm	14,97 dBm	16,50 dBm	0,20 dB
20,88 GHz	14,50 dBm	15,52 dBm	16,50 dBm	0,20 dB
21,38 GHz	14,50 dBm	14,57 dBm	16,50 dBm	0,20 dB
21,88 GHz	14,50 dBm	15,14 dBm	16,50 dBm	0,20 dB
22,38 GHz	14,50 dBm	14,85 dBm	16,50 dBm	0,20 dB
22,88 GHz	14,50 dBm	14,91 dBm	16,50 dBm	0,20 dB
23,38 GHz	14,50 dBm	15,00 dBm	16,50 dBm	0,20 dB
23,88 GHz	14,50 dBm	14,69 dBm	16,50 dBm	0,20 dB
24,38 GHz	14,50 dBm	14,96 dBm	16,50 dBm	0,20 dB
24,88 GHz	14,50 dBm	15,16 dBm	16,50 dBm	0,20 dB
25,38 GHz	14,50 dBm	14,62 dBm	16,50 dBm	0,20 dB
25,88 GHz	14,50 dBm	15,16 dBm	16,50 dBm	0,20 dB
26,38 GHz	14,50 dBm	14,61 dBm	16,50 dBm	0,20 dB
26,88 GHz	14,50 dBm	14,83 dBm	16,50 dBm	0,20 dB
mode: lower sideband				
fc = 23,82 GHz	14,50 dBm	14,72 dBm	16,50 dBm	0,20 dB
24,32 GHz	14,50 dBm	14,69 dBm	16,50 dBm	0,20 dB
24,82 GHz	14,50 dBm	14,75 dBm	16,50 dBm	0,20 dB
25,32 GHz	14,50 dBm	15,48 dBm	16,50 dBm	0,20 dB
25,82 GHz	14,50 dBm	15,06 dBm	16,50 dBm	0,20 dB
26,32 GHz	14,50 dBm	15,24 dBm	16,50 dBm	0,20 dB
26,82 GHz	14,50 dBm	15,36 dBm	16,50 dBm	0,20 dB
27,32 GHz	14,50 dBm	15,16 dBm	16,50 dBm	0,20 dB
27,82 GHz	14,50 dBm	15,28 dBm	16,50 dBm	0,20 dB
28,32 GHz	14,50 dBm	15,46 dBm	16,50 dBm	0,20 dB
28,82 GHz	14,50 dBm	15,05 dBm	16,50 dBm	0,20 dB
29,32 GHz	14,50 dBm	15,02 dBm	16,50 dBm	0,20 dB
29,82 GHz	14,50 dBm	14,90 dBm	16,50 dBm	0,20 dB
30,32 GHz	14,50 dBm	15,26 dBm	16,50 dBm	0,20 dB
30,82 GHz	14,50 dBm	15,87 dBm	16,50 dBm	0,20 dB
31,32 GHz	14,50 dBm	15,16 dBm	16,50 dBm	0,20 dB
31,82 GHz	14,50 dBm	15,38 dBm	16,50 dBm	0,20 dB
32,32 GHz	14,50 dBm	15,35 dBm	16,50 dBm	0,20 dB
32,82 GHz	14,50 dBm	14,92 dBm	16,50 dBm	0,20 dB
33,32 GHz	14,50 dBm	15,33 dBm	16,50 dBm	0,20 dB

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Serial No. 100560
 Material No. 1312.8000K43
 Calibration Mark 606118-D-K-15195-01-00-2021-07

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V1-07/Temp/Enq/2015-04

Incoming Results

Test Description	Lower Limit	Result Measured	Upper Limit	Uncertainty
15.3 Ext Mixer LO Level Acc. of 17 dBm nominal Power				
mode: upper sideband				
fc = 16,88 GHz	16,00 dBm	16,92 dBm	18,00 dBm	0,20 dB
17,38 GHz	16,00 dBm	16,83 dBm	18,00 dBm	0,20 dB
17,88 GHz	16,00 dBm	16,82 dBm	18,00 dBm	0,20 dB
18,38 GHz	16,00 dBm	17,14 dBm	18,00 dBm	0,20 dB
18,88 GHz	16,00 dBm	16,48 dBm	18,00 dBm	0,20 dB
19,38 GHz	16,00 dBm	17,10 dBm	18,00 dBm	0,20 dB
19,88 GHz	16,00 dBm	16,78 dBm	18,00 dBm	0,20 dB
20,38 GHz	16,00 dBm	16,48 dBm	18,00 dBm	0,20 dB
20,88 GHz	16,00 dBm	17,13 dBm	18,00 dBm	0,20 dB
21,38 GHz	16,00 dBm	16,05 dBm	18,00 dBm	0,20 dB
21,88 GHz	16,00 dBm	16,74 dBm	18,00 dBm	0,20 dB
22,38 GHz	16,00 dBm	16,41 dBm	18,00 dBm	0,20 dB
22,88 GHz	16,00 dBm	16,49 dBm	18,00 dBm	0,20 dB
23,38 GHz	16,00 dBm	16,42 dBm	18,00 dBm	0,20 dB
23,88 GHz	16,00 dBm	16,23 dBm	18,00 dBm	0,20 dB
24,38 GHz	16,00 dBm	16,42 dBm	18,00 dBm	0,20 dB
24,88 GHz	16,00 dBm	16,63 dBm	18,00 dBm	0,20 dB
25,38 GHz	16,00 dBm	15,95 dBm	18,00 dBm	0,20 dB
25,88 GHz	16,00 dBm	16,75 dBm	18,00 dBm	0,20 dB
26,38 GHz	16,00 dBm	16,05 dBm	18,00 dBm	0,20 dB
26,88 GHz	16,00 dBm	16,52 dBm	18,00 dBm	0,20 dB
mode: lower sideband				
fc = 23,82 GHz	16,00 dBm	16,28 dBm	18,00 dBm	0,20 dB
24,32 GHz	16,00 dBm	16,48 dBm	18,00 dBm	0,20 dB
24,82 GHz	16,00 dBm	16,22 dBm	18,00 dBm	0,20 dB
25,32 GHz	16,00 dBm	17,32 dBm	18,00 dBm	0,20 dB
25,82 GHz	16,00 dBm	16,66 dBm	18,00 dBm	0,20 dB
26,32 GHz	16,00 dBm	16,88 dBm	18,00 dBm	0,20 dB
26,82 GHz	16,00 dBm	17,11 dBm	18,00 dBm	0,20 dB
27,32 GHz	16,00 dBm	16,71 dBm	18,00 dBm	0,20 dB
27,82 GHz	16,00 dBm	17,04 dBm	18,00 dBm	0,20 dB
28,32 GHz	16,00 dBm	17,08 dBm	18,00 dBm	0,20 dB
28,82 GHz	16,00 dBm	16,76 dBm	18,00 dBm	0,20 dB
29,32 GHz	16,00 dBm	16,73 dBm	18,00 dBm	0,20 dB
29,82 GHz	16,00 dBm	16,80 dBm	18,00 dBm	0,20 dB
30,32 GHz	16,00 dBm	16,72 dBm	18,00 dBm	0,20 dB
30,82 GHz	16,00 dBm	17,51 dBm	18,00 dBm	0,20 dB
31,32 GHz	16,00 dBm	16,76 dBm	18,00 dBm	0,20 dB
31,82 GHz	16,00 dBm	17,04 dBm	18,00 dBm	0,20 dB
32,32 GHz	16,00 dBm	17,24 dBm	18,00 dBm	0,20 dB
32,82 GHz	16,00 dBm	16,50 dBm	18,00 dBm	0,20 dB
33,32 GHz	16,00 dBm	17,28 dBm	18,00 dBm	0,20 dB
15.4 Ext Mixer Level Display				
2-port-mixer	-1,00 dBm	0,61 dBm	1,00 dBm	0,20 dB
3-port-mixer	-1,00 dBm	0,54 dBm	1,00 dBm	0,20 dB

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