ROHDE&SCHWARZ

CALIBRATION CERTIFICATE

Kalibrierschein

Certificate Number
Zertifikatsnummer

1020A300773215

DAkkS Deutsche Akkreditierungsstelle D-K-15195-01-00

General Data

Item Gegenstand	SMB100B SIGNAL GEN. BASE UNIT		
Manufacturer Hersteller	ROHDE & SCHWARZ		
Type Typ	SMB100B		
Material Number Materialnummer	1422.1000K02	**Serial Number** Seriennummer	102254
Order Number Bestellnummer	8800067369 10, 312025498	**Asset Number** Inventarnummer	
Customer Auftraggeber	Exporta s.r.o. Patockova 1434/51 160 00 Praha 6 CZ		

Performance

Place and Date of Calibration Ort und Datum der Kalibrierung	87700 Memmingen, Rohde-und-Schwarz-Str. 1 2024-12-03
Statement of Compliance (Incoming) Konformitätsaussage (Anlieferung)	All measured values are within the data sheet specifications.
Statement of Compliance (Outgoing) Konformitätsaussage (Auslieferung)	All measured values are within the data sheet specifications.
Customers due Interval Kalibrierintervall des Kunden	
Extent of Calibration Document Umfang des Kalibrierdokuments	3 Pages Certificate 27 Pages Outgoing Results

Date of Issue Ausstellungsdatum	**Approval of the certificate by** Freigabe des Kalibrierscheins durch	
2024-12-03	Dr. Gerhard Rösel	Christian Feigl
	Laboratory Management Labormanagement	**Person in Charge** Bearbeiter

Calibration Mark
Kalibrierzeichen

300773215
D-K-15195-01-00
2024-12

Member of Deutscher Kalibrierdienst
Mitglied im Deutschen Kalibrierdienst

DKD

This calibration certificate documents the metrological 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. 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.

Dieser Kalibrierschein dokumentiert die metrologische Rückführbarkeit auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI). Die DAkkS ist Unterzeichner der multilateralen Übereinkommen der European cooperation 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.
Dieser Kalibrierschein darf nur vollständig 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.

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 measurement system consisting of a power sensor as well as a spectrum analyzer. Linearity was measured with a spectrum analyzer.
With option modulation function installed: Modulation quantities was measured using a signal analyzer. The calibrations and measurements follow the guideline VDI/VDE/DGQ/DKD 2622 Part 14.1 (2015-02).
The traceability is represented in the table Working Standards used.

Working Standards used

Item	Type	Serial Number	Calibration Certificate Number	Cal. Due
Detector Kit for UCS2010	ENV-DET	101523	0001A300735433	2025-08-31
Standard Frequency System	FREQSTD	100257	0001A1230250	2025-10-31
Phase Noise Analyzer 50GHz	FSWP50	101607	20A1188357	2025-08-31
Spectrum Analyzer 26.5 GHz	FSW26	101683	0001A300707886	2025-01-31
Spectrum Analyzer 67GHz	FSW67	101798	0001A300738414	2025-09-30
Average Power Sensor 8kHz-18GH	NRP18A	101451	0001A300725178	2025-06-30
Average Power Sensor 8kHz-18GH	NRP18A	101400	0001A300725176	2025-06-30
Thermal Power Sensor 18GHz	NRP18T	101321	0001A300719420	2025-05-31
Thermal Power Sensor	NRP40T	101249	0001A300755514	2026-01-31
Thermal Power Sensor	NRP67T	101254	0001A300725185	2025-06-30
RMS Peak Voltmeter DC-30 MHz	URE3	827527/030	0001A300739341	2025-09-30
SWR Bridge 40kHz - 4GHz 50 Ohm	ZRC	100091	0001A300725186	2025-06-30
Calibration Kit 40GHz	ZRP40	101567	0001A300756324	2026-01-31
Calibration Kit 50GHz	ZRP50	101465	0001A300756320	2026-01-31
Directional Coupler 2-18 GHz	773D	100002	0001A300734284	2025-08-31

Remarks

The instrument was not adjusted, therefore only outgoing results are available.

The certificate number formatted 0001A300773215 corresponds to format 1020A300773215, because of formal changes.

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

Comments on Measurement Results

The reported results apply only to those items specifically listed on this calibration certificate and have been tested for compliance with the specifications. The associated uncertainty of measurement has been taken into account if not otherwise stated.
The non-binary decision rule with guard band is used according to ILAC G8:09/2019 ‘Guidelines on Decision Rules and Statements of Conformity’. Pass is normally not marked. Conditional Pass is marked with UGB1, Conditional Fail with UGB2 and Fail with Fail.

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor (k=2) such that the coverage probability corresponds to approximately 95 %. It is consistent with the EA-4/02 M:2022.

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.

Outgoing Results

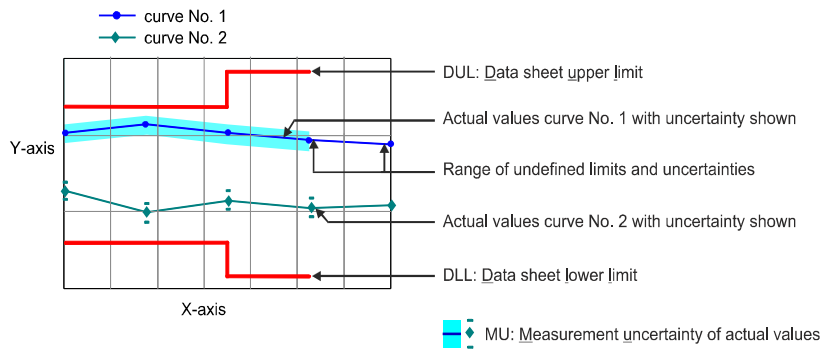
Designation:	**Signal Generator**
Type:	**SMB100B**
Material No.:	**1422.1000K02**
Serial No.:	**102254**
Certificate No.:	**1020A300773215**
Referring to Test Documentation:	**1422.1000.01-PB-5.00**

Test Department:	**3MES3**
Name:	**see certificate**
Date:	**2024-12-03**

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



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Software used for measurement			
Item	**Type**	**Version**	**Remark**
Suite	Setup	V12.49.07	Test Management Software G5
Test Program (503886)	Component	V05.07	

REFERENCE FREQUENCY

Internal Reference Frequency Error

after adjusting at calibration temperature

	Nominal	DL /Hz	Error /Hz	MU /Hz
Ref Out Frequency	10 MHz	± 1.000	+0.000	0.010

Ref Out Level (Std.)

Ref Source	Ref In Freq /MHz	Ref In Level /dBm	Ref Out Freq /MHz	Ref Out DLL /dBm	Ref Out DUL /dBm	Actual /dBm	{g} MU /dB
Int. 10 MHz	-	-	10.0	7.0	13.0	10.20	0.34
Ext.	10.0	0.0	10.0	7.0	13.0	10.34	0.34
Ext.	10.0	16.0	10.0	7.0	13.0	10.33	0.34

Synchronisation Test

Test if DUT is locked to Ref In signal:

Ref Source	Ref In /MHz	Ref In /dBm	Sync. BW	Ref In detune /ppm	Result	MU {c}
Ext.	10.0	0.0	Wide	0.0	PASS	
Ext.	10.0	16.0	Wide	0.0	PASS	
Ext.	10.0	8.0	Wide	+100.0	PASS	
Ext.	10.0	8.0	Wide	-100.0	PASS	

Frequency Setting Time

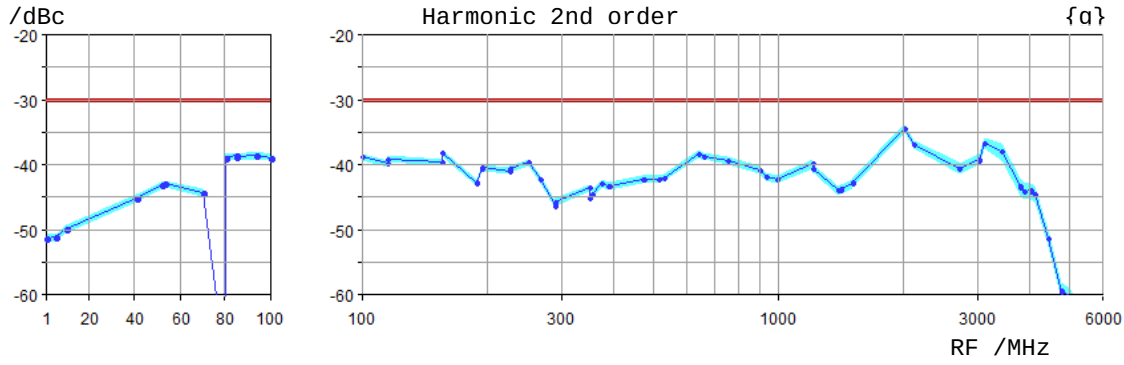
after remote control delimiter, GUI update stopped

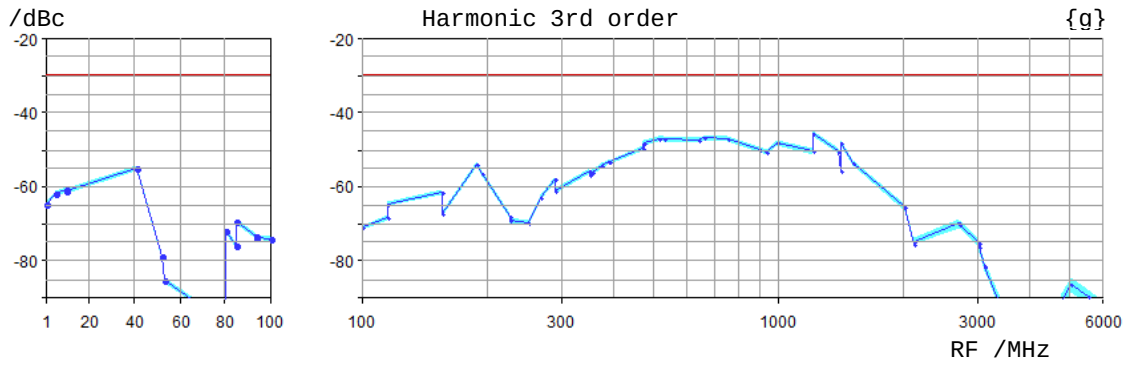
Mode	Start freq./MHz	Stop freq./MHz	DUL /ms	Actual /ms	MU {g} /ms
ALC AUTO (CW)	0.200	0.201	1.10	0.93	0.03
	0.201	0.200	1.10	0.91	0.03
	5.000	5.001	1.10	0.80	0.03
	5.001	5.000	1.10	0.86	0.03
	10.000	10.001	1.10	0.74	0.03
	10.001	10.000	1.10	0.76	0.03
	80.000	80.001	1.10	0.86	0.03
	80.001	80.000	1.10	0.76	0.03
	100.000	100.001	1.10	0.85	0.03
	100.001	100.000	1.10	0.84	0.03
	250.000	250.001	1.10	0.77	0.03
	250.001	250.000	1.10	0.72	0.03
	267.000	267.001	1.10	0.72	0.03
	267.001	267.000	1.10	0.75	0.03
	1400.000	1400.001	1.10	0.85	0.03
	1400.001	1400.000	1.10	0.82	0.03
	1500.000	1500.001	1.10	0.84	0.03
	1500.001	1500.000	1.10	0.77	0.03
	3000.000	3000.001	1.10	0.85	0.03
	3000.001	3000.000	1.10	0.82	0.03
	3780.000	3780.001	1.10	0.73	0.03
	3780.001	3780.000	1.10	0.70	0.03
	3876.000	3876.001	1.10	0.71	0.03
	3876.001	3876.000	1.10	0.68	0.03
	4100.000	4100.001	1.10	0.84	0.03
	4100.001	4100.000	1.10	0.80	0.03
	4760.000	4760.001	1.10	0.74	0.03
	4760.001	4760.000	1.10	0.72	0.03
	1500.001	1870.000	1.10	0.85	0.03
	1870.000	1500.001	1.10	0.84	0.03
	1870.001	2170.000	1.10	0.80	0.03
	2170.000	1870.001	1.10	0.80	0.03
	2170.001	2730.000	1.10	0.89	0.03
	2730.000	2170.001	1.10	0.84	0.03
	2730.001	3000.000	1.10	0.81	0.03
	3000.000	2730.001	1.10	0.81	0.03
	3000.001	3740.000	1.10	0.83	0.03
	3740.000	3000.001	1.10	0.81	0.03
	3740.001	4340.000	1.10	0.81	0.03
	4340.000	3740.001	1.10	0.83	0.03
	4340.001	5460.000	1.10	0.84	0.03
	5460.000	4340.001	1.10	0.80	0.03
	5460.001	6000.000	1.10	0.85	0.03
	6000.000	5460.001	1.10	0.83	0.03

SPECTRAL PURITY

Harmonics CW-Mode

RF-Level = 13.0 dBm

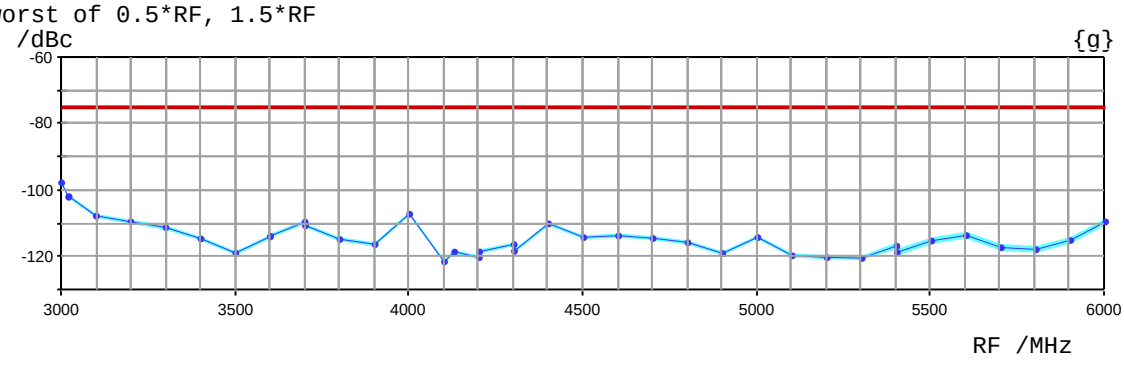




Subharmonics CW-Mode

RF-Level = 10.0 dBm

worst of 0.5*RF, 1.5*RF



Nonharmonics

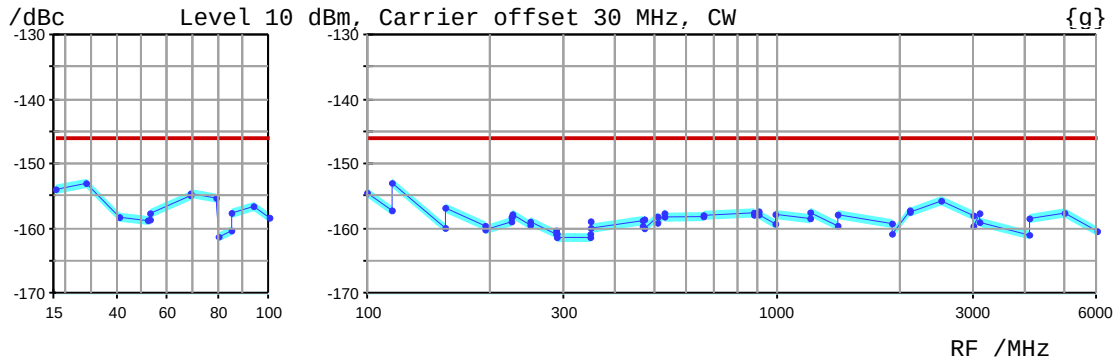
Systematic nonharmonics of synthesis:

RF /MHz	Level /dBm	Spurious at /MHz	DUL /dBc	Actual /dBc	{g} MU /dB
66.930000	10.0	70.88000	-80.0	-101.5	0.8
77.590000	10.0	86.25980	-80.0	-102.1	0.8
455.203520	10.0	455.23214	-80.0	-101.7	0.8
881.777000	10.0	882.05250	-76.0	-111.6	0.8
999.900000	10.0	1000.00000	-76.0	-98.6	0.8
999.900000	10.0	1000.10000	-76.0	-103.3	0.8
1076.561000	10.0	1076.57920	-76.0	-100.6	0.8
1137.503000	10.0	1137.53730	-76.0	-101.6	0.8
1157.803000	10.0	1157.82970	-76.0	-93.5	0.8
1264.292000	10.0	1264.35250	-76.0	-88.7	0.8
1291.929000	10.0	1292.08000	-76.0	-110.0	0.8
1302.607000	10.0	1302.63020	-76.0	-92.7	0.8
1343.016000	10.0	1343.09170	-76.0	-98.0	0.8
1414.262000	10.0	1414.43860	-76.0	-97.6	0.8
1424.408000	10.0	1424.51220	-76.0	-97.9	0.8
1434.603000	10.0	1434.70090	-76.0	-97.5	0.8
1499.900000	10.0	1500.30000	-76.0	-98.1	0.8
1500.100000	10.0	1500.30000	-70.0	-90.8	0.8
1500.100000	10.0	1500.50000	-70.0	-106.4	0.8
1571.500000	10.0	1571.59090	-70.0	-90.9	0.8
1675.765000	10.0	1675.79220	-70.0	-92.1	0.8
1828.140000	10.0	1828.16720	-70.0	-90.8	0.8
1999.900000	10.0	2000.00000	-70.0	-98.0	0.8
1999.900000	10.0	2000.10000	-70.0	-93.4	0.8
2000.100000	10.0	2000.20000	-70.0	-93.5	0.8
2000.100000	10.0	2000.30000	-70.0	-91.3	0.8
2153.144000	10.0	2153.17330	-70.0	-90.2	0.8
2168.957000	10.0	2169.16790	-70.0	-101.6	0.8
2274.980000	10.0	2275.00857	-70.0	-89.1	0.8
2405.150000	10.0	2405.52230	-70.0	-86.5	0.8
2574.265000	10.0	2574.54150	-70.0	-101.0	0.8
2660.913000	10.0	2660.94297	-70.0	-91.1	0.8
2828.451000	10.0	2828.63670	-70.0	-91.2	0.8
3486.464000	10.0	3486.54170	-64.0	-97.0	0.8
3527.057000	10.0	3527.15890	-64.0	-99.1	0.8
3999.900000	10.0	3999.95000	-64.0	-90.1	0.8
3999.900000	10.0	4000.00000	-64.0	-84.2	0.8
3999.900000	10.0	4000.30000	-64.0	-90.2	0.8
4000.100000	10.0	4000.15000	-64.0	-87.0	0.8
4000.100000	10.0	4000.20000	-64.0	-83.4	0.8
4000.100000	10.0	4000.50000	-64.0	-90.1	0.8
4120.921000	10.0	4121.29230	-64.0	-91.4	0.8
4297.343000	10.0	4297.47110	-64.0	-96.9	0.8
4337.933000	10.0	4338.19630	-64.0	-96.0	0.8
4378.336000	10.0	4378.45300	-64.0	-95.9	0.8
4418.937000	10.0	4418.98640	-64.0	-95.3	0.8
4631.205000	10.0	4631.23730	-64.0	-88.3	0.8
4999.900000	10.0	5000.00000	-64.0	-79.2	0.8
5000.100000	10.0	5000.20000	-64.0	-78.9	0.8
5376.196000	10.0	5376.21620	-64.0	-84.2	0.8
5524.955000	10.0	5524.98220	-64.0	-80.3	0.8
5710.228000	10.0	5710.73850	-64.0	-92.0	0.8
5999.900000	10.0	6000.00000	-64.0	-94.8	0.8
5999.900000	10.0	6000.10000	-64.0	-75.0	0.8

Non-systematic nonharmonics, CW-mode:
Scanned range: 10 kHz to 10 MHz carrier offset

RF /MHz	Level /dBm	Spurious at /MHz	DUL /dBc	Actual /dBc	{g} MU /dB
77.591000	10.0	68.908000	-80.0	-97.9	0.8
700.787000	10.0	700.813667	-80.0	-96.7	0.8
1571.500000	10.0	1571.409090	-70.0	-90.8	0.8
2579.693000	10.0	2579.720717	-70.0	-85.6	0.8
2762.520000	10.0	2762.543529	-70.0	-88.1	0.8
2803.138000	10.0	2803.153071	-70.0	-88.7	0.8
2935.758000	10.0	2935.579310	-70.0	-81.2	0.8
3437.509000	10.0	3437.537802	-64.0	-84.8	0.8
4509.337000	10.0	4509.364386	-64.0	-81.7	0.8
4712.546000	10.0	4712.641171	-64.0	-87.1	0.8
4753.130000	10.0	4753.143675	-64.0	-86.1	0.8
5240.570000	10.0	5240.467680	-64.0	-86.3	0.8
5443.738000	10.0	5443.709341	-64.0	-79.5	0.8
5524.955000	10.0	5524.981468	-64.0	-80.0	0.8
5606.287000	10.0	5606.308450	-64.0	-83.7	0.8
5871.400000	10.0	5871.458395	-64.0	-75.4	0.8

Wideband Noise



Residual AM

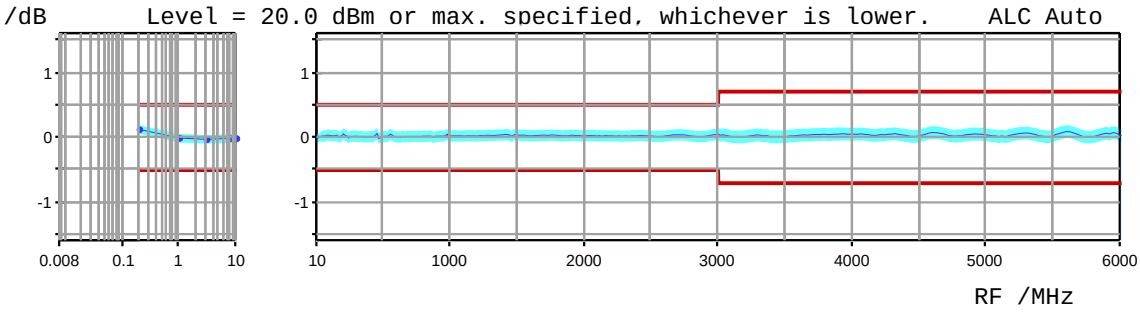
RMS value (20 Hz to 23 kHz)
Level = 12 dBm

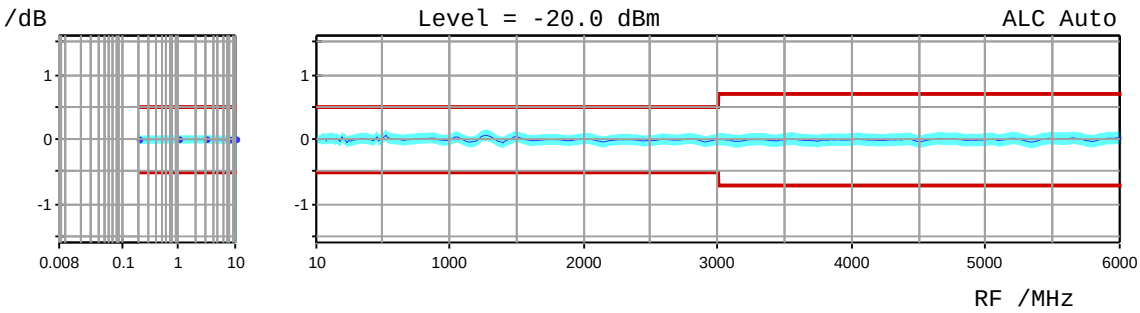
RF/MHz	DUL/%	Actual/%	MU
10	0.020	0.003	{a}
50	0.020	0.003	{a}
80	0.020	0.003	{a}
80.001	0.020	0.003	{a}
100	0.020	0.003	{a}
1000	0.020	0.003	{a}
1900	0.020	0.002	{a}
1901	0.020	0.002	{a}
2700	0.020	0.002	{a}
3000	0.020	0.002	{a}
3001	0.020	0.002	{a}
3600	0.020	0.002	{a}
3601	0.020	0.002	{a}
4100	0.020	0.002	{a}
4101	0.020	0.002	{a}
5400	0.020	0.003	{a}
6000	0.020	0.003	{a}

LEVEL

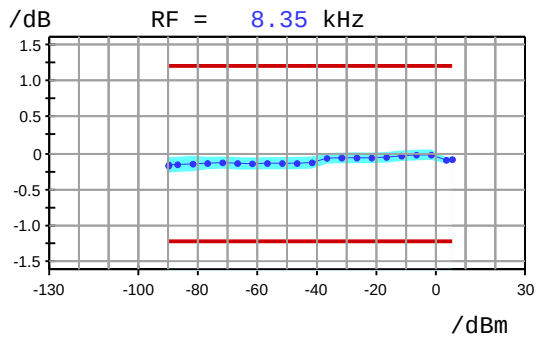
Level Accuracy

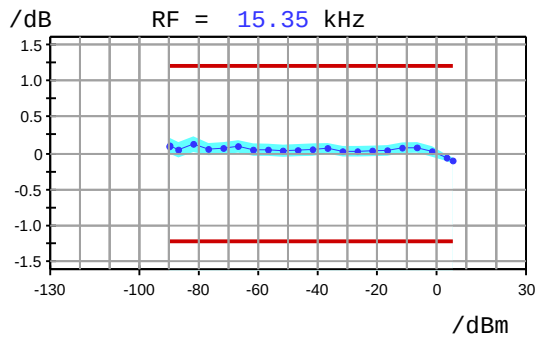
- Versus Frequency at Specific Level:
  CW-Mode:

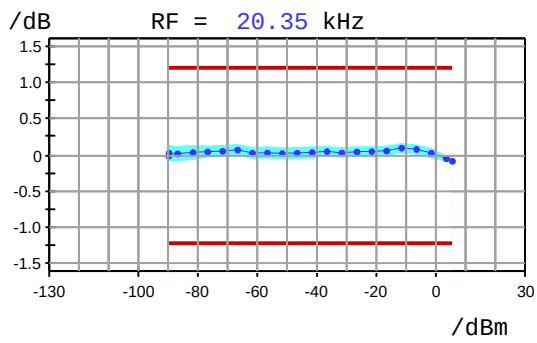


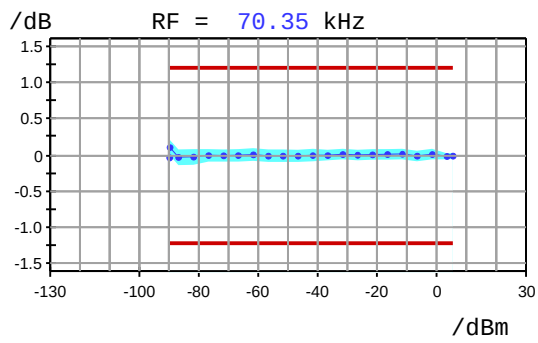


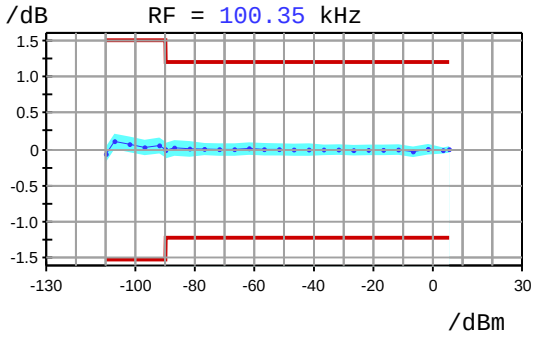
Level Linearity ALC Auto

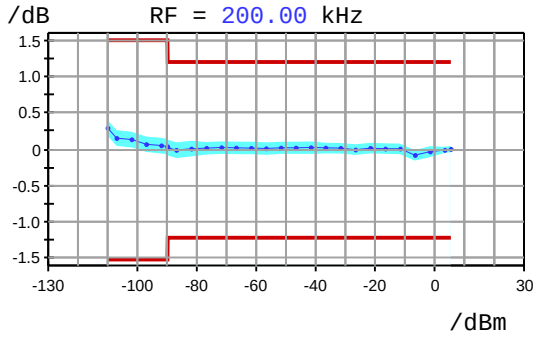


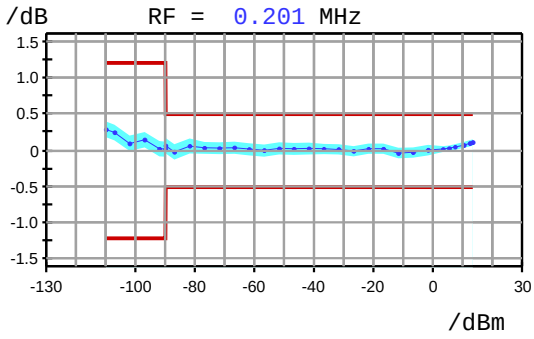


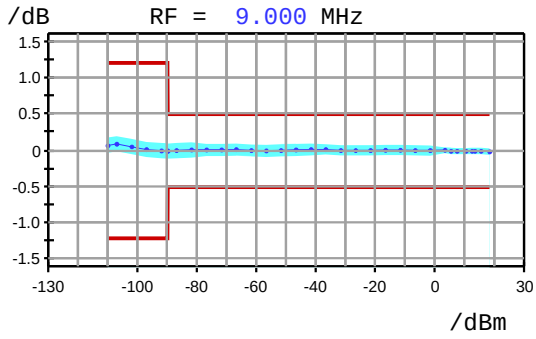


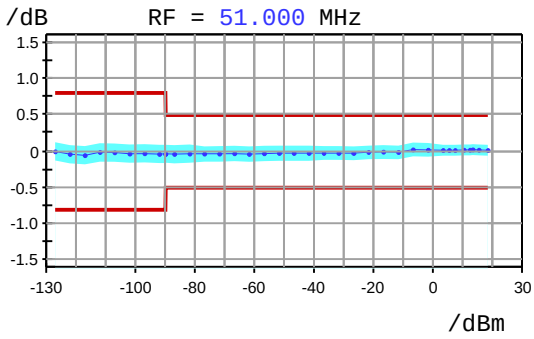


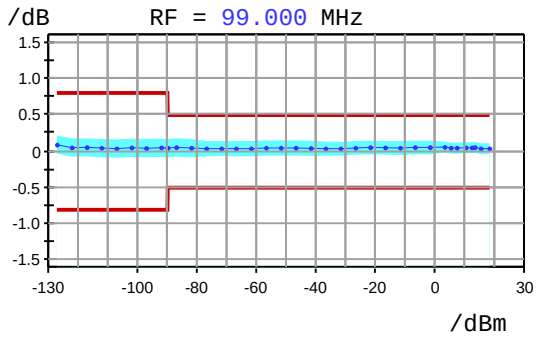

/dB
RF = 100.35 kHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

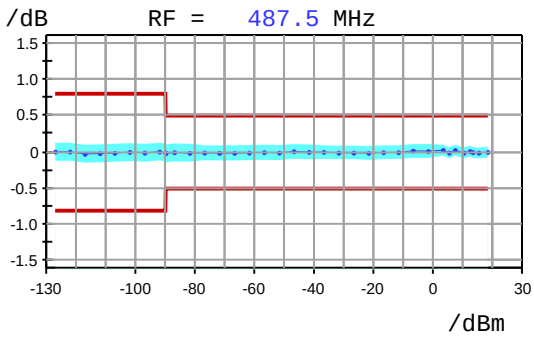

/dB
RF = 200.00 kHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

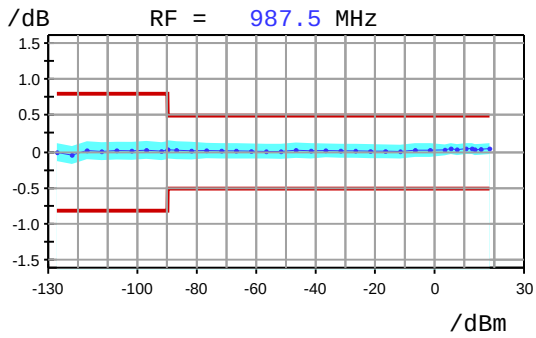

/dB
RF = 0.201 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

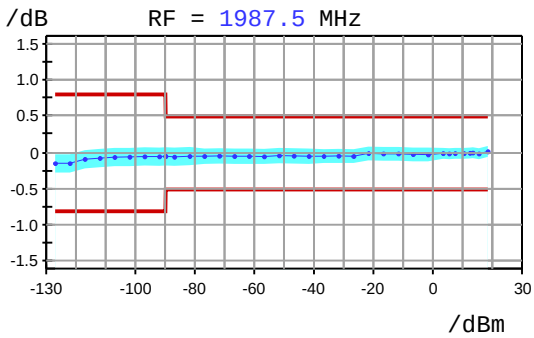

/dB
RF = 9.000 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

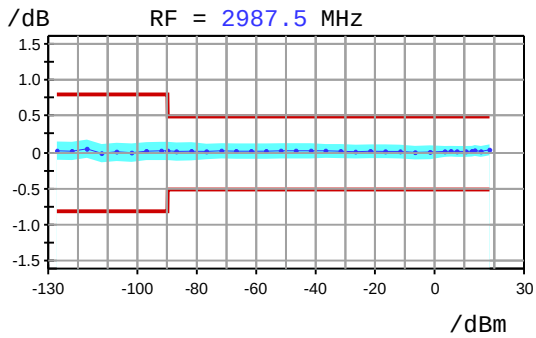

/dB
RF = 51.000 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

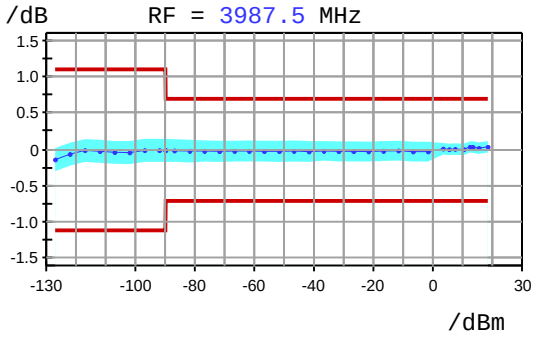

/dB
RF = 99.000 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

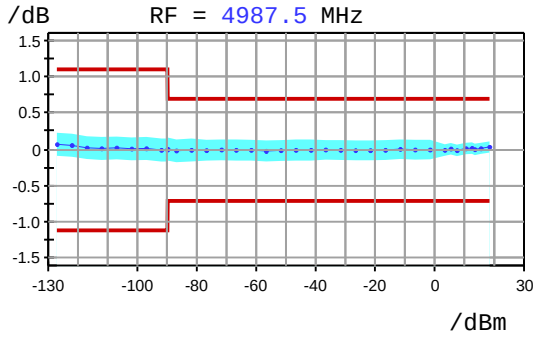

/dB
RF = 487.5 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

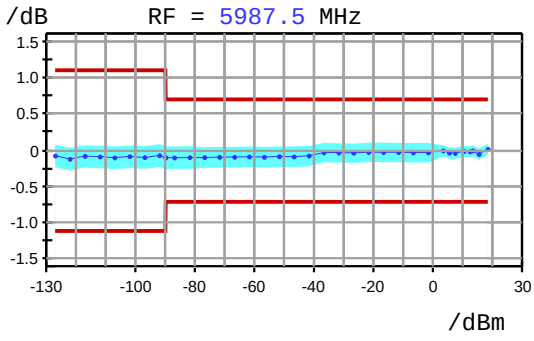

/dB
RF = 987.5 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm


/dB
RF = 1987.5 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

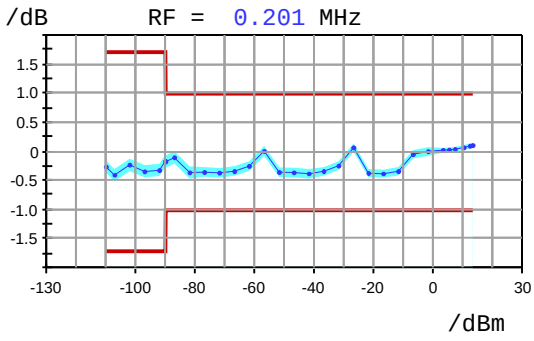

/dB
RF = 2987.5 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

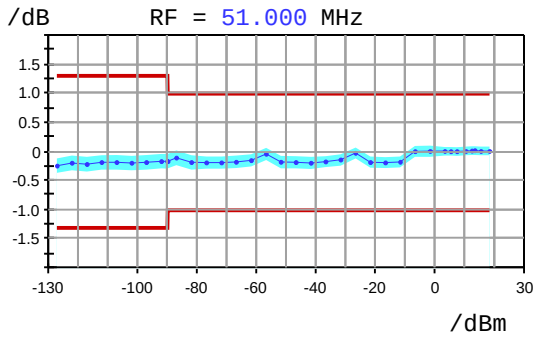


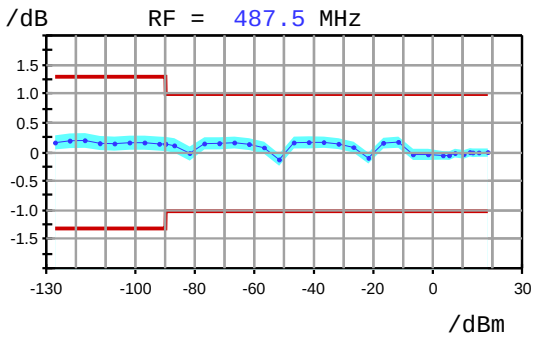


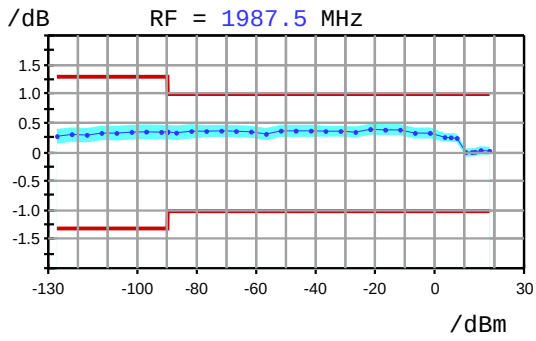


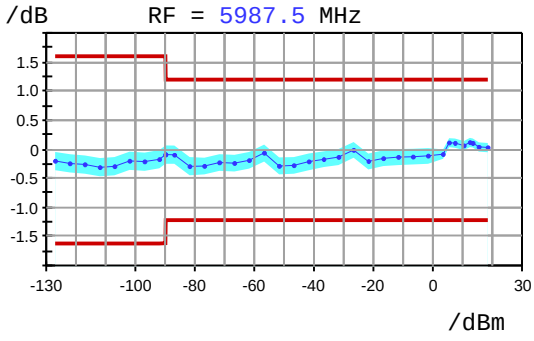
Level Linearity ALC Off (Table)



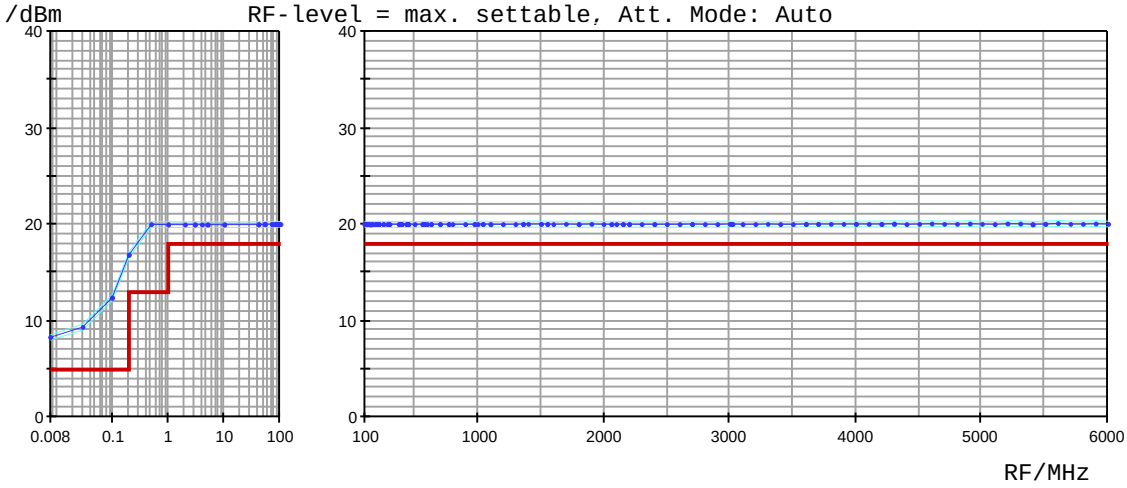






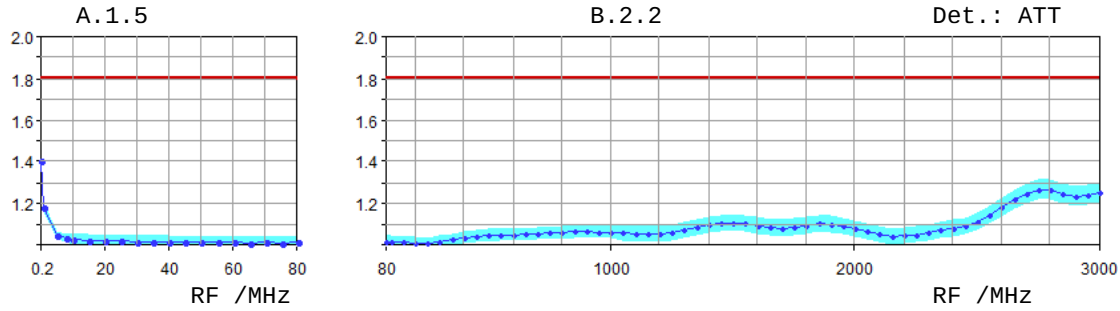


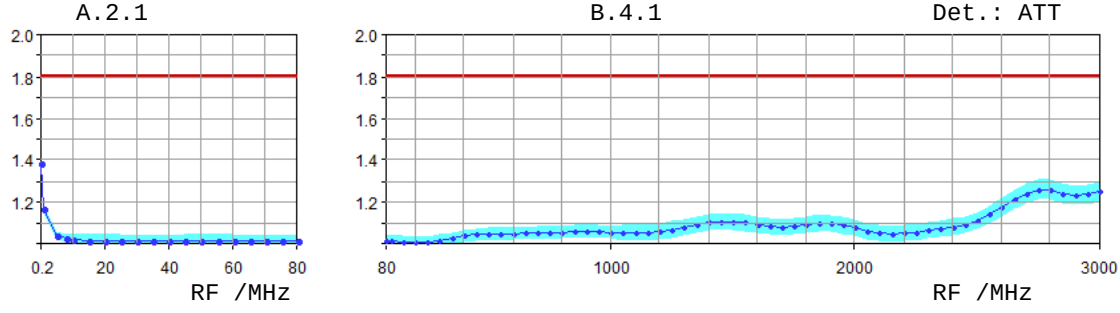
Maximum Level

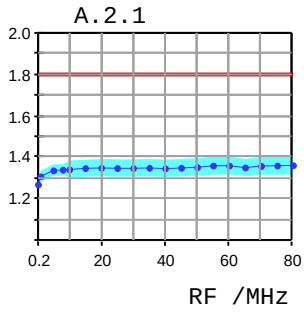


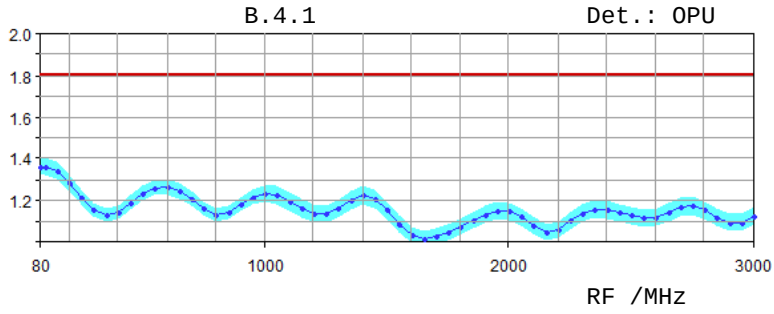
Output Impedance (VSWR)

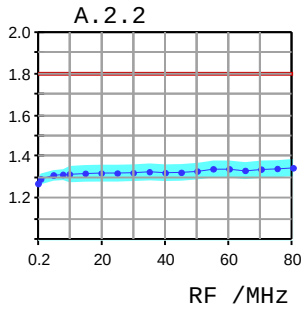
Tests with different settings of signal path through the instrument.
Frequency range up to 3 GHz:

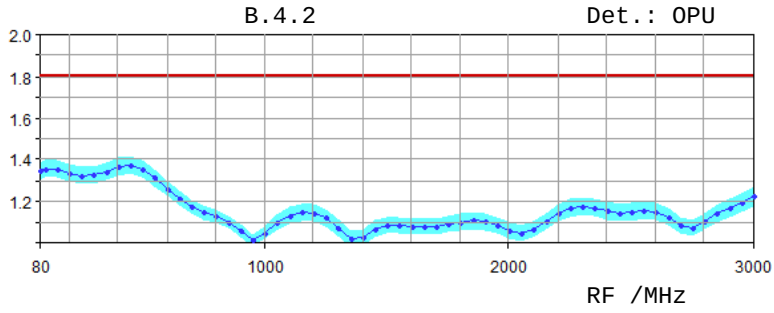


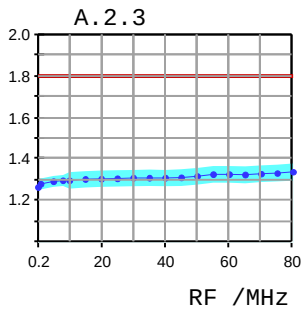


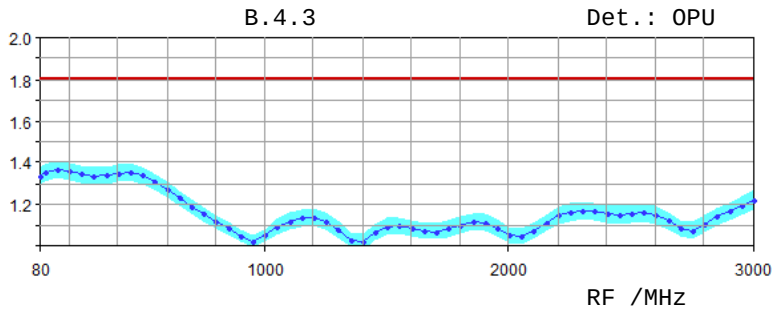


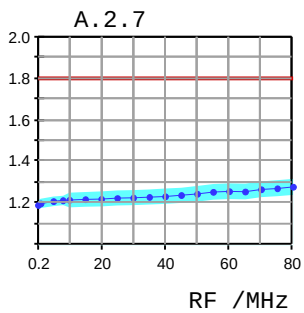


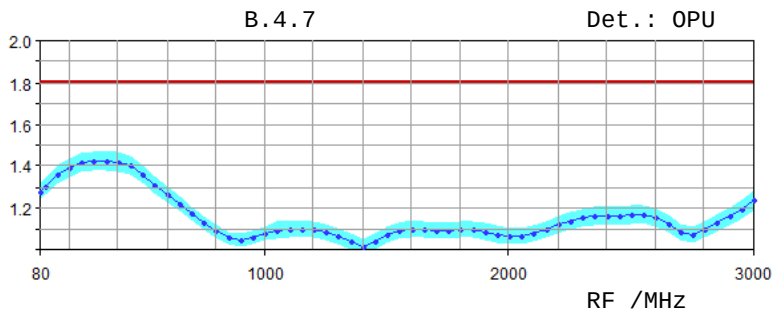




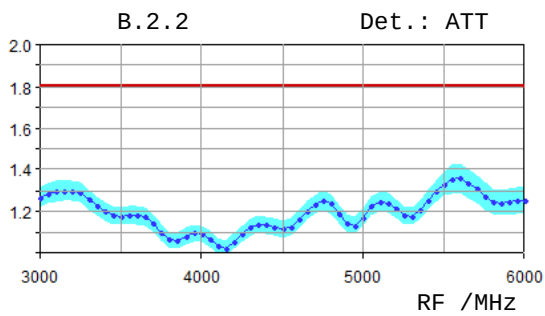


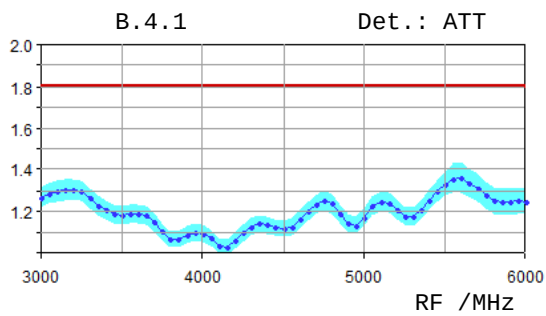


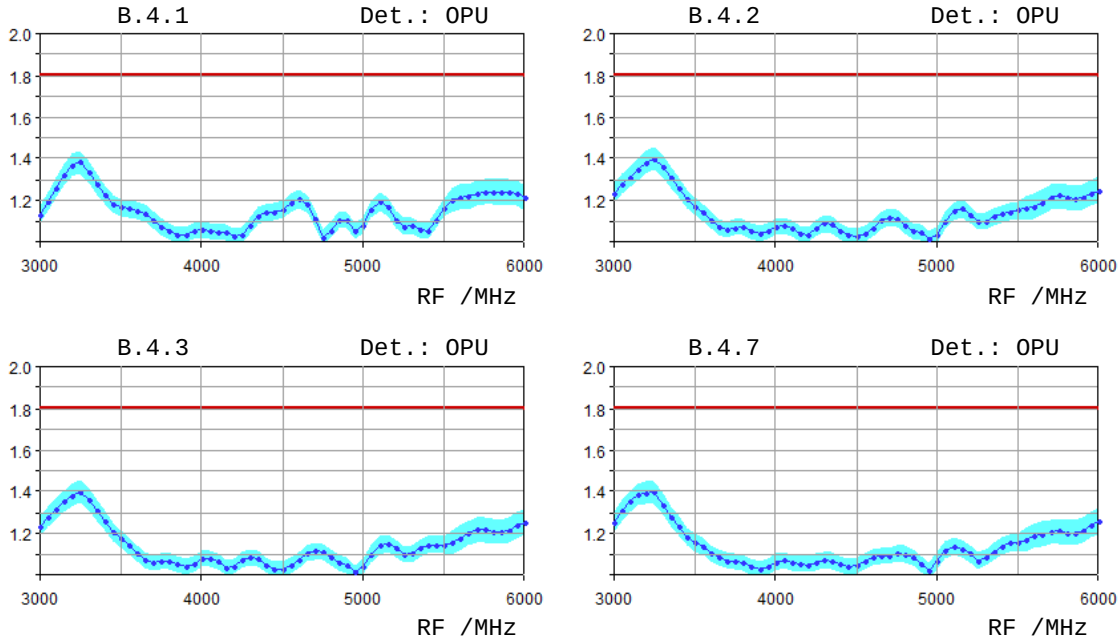




Frequency range 3 GHz to 6 GHz:







Level Setting Time

after remote control delimiter to < 0.1 dB deviation from final value

Mode	RF /MHz	Start level /dBm	Stop level /dBm	DUL /ms	Actual /ms	MU {g} /ms
ALC ON	10	-120.0	13.0	1.10	0.92	0.03
	10	-27.3	2.7	1.10	0.87	0.03
	10	2.7	-27.3	1.10	0.98	0.03
	30	-120.0	13.0	1.10	0.91	0.03
	30	-27.3	2.7	1.10	0.92	0.03
	30	2.7	-27.3	1.10	0.94	0.03
	375	-120.0	13.0	1.10	0.89	0.03
	375	-27.3	2.7	1.10	0.88	0.03
	375	2.7	-27.3	1.10	0.84	0.03
	1000	-120.0	13.0	1.10	0.84	0.03
	1000	-27.3	2.7	1.10	0.85	0.03
	1000	2.7	-27.3	1.10	0.89	0.03
	2000	-120.0	13.0	1.10	0.83	0.03
	2000	-27.3	2.7	1.10	0.94	0.03
	2000	2.7	-27.3	1.10	0.85	0.03
	3000	-120.0	13.0	1.10	0.92	0.03
	3000	-27.3	2.7	1.10	0.86	0.03
	3000	2.7	-27.3	1.10	0.96	0.03
	4500	-120.0	13.0	1.10	0.92	0.03
	4500	-27.3	2.7	1.10	0.85	0.03
	4500	2.7	-27.3	1.10	0.94	0.03
	6000	-120.0	13.0	1.10	0.85	0.03
	6000	-27.3	2.7	1.10	0.82	0.03
	6000	2.7	-27.3	1.10	0.81	0.03

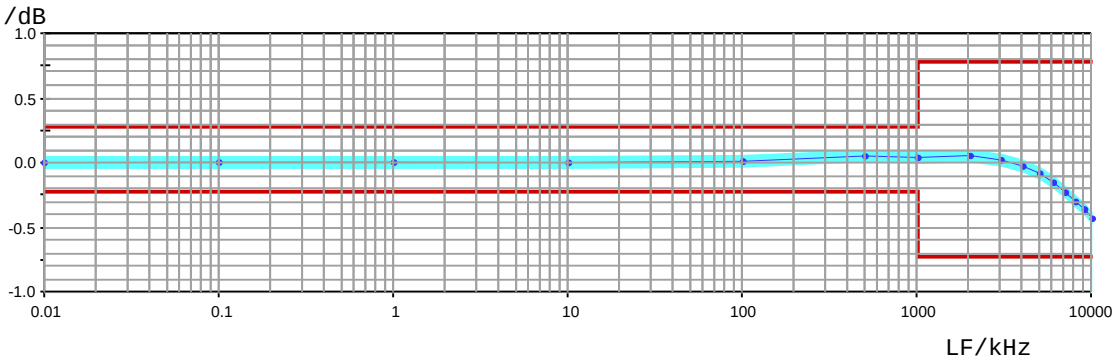
INTERNAL MODULATION GENERATOR

Output Voltage

Frequency = 1.0 kHz

Voltage /mV	DL /mV	Deviation /mV	MU /mV
3	1.03	+0.01	0.011
10	1.10	-0.03	0.036
30	1.30	-0.03	0.11
100	2.00	-0.10	0.35
300	4.00	-0.19	1.06
1000	11.00	-1.00	3.50
3000	31.00	-3.28	10.60
4000	41.00	-6.26	14.00

Frequency Response



Distortion

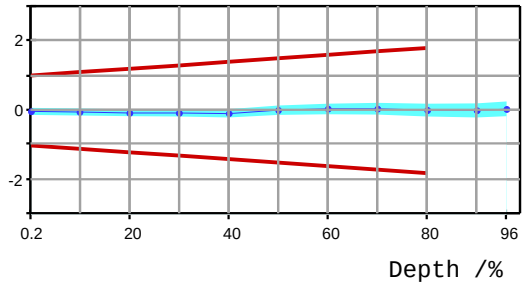
Frequency /kHz	DL /%	Actual /%	MU {g} /%
0.1	0.10	0.02	0.01
0.3	0.10	0.02	0.01
1.0	0.10	0.03	0.01
3.0	0.10	0.03	0.01
10.0	0.10	0.03	0.01
30.0	0.10	0.03	0.01
100.0	0.10	0.02	0.01

AMPLITUDE MODULATION

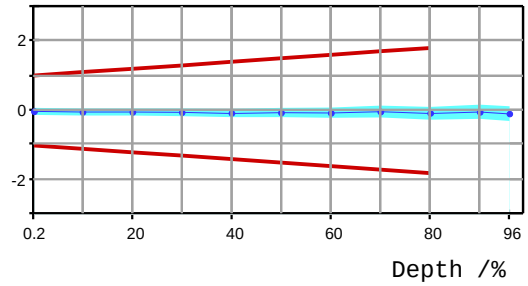
AM Depth Error

Setting Error vs Depth:
Level = 0 dBm, Source LF Generator 1, LF = 1 kHz

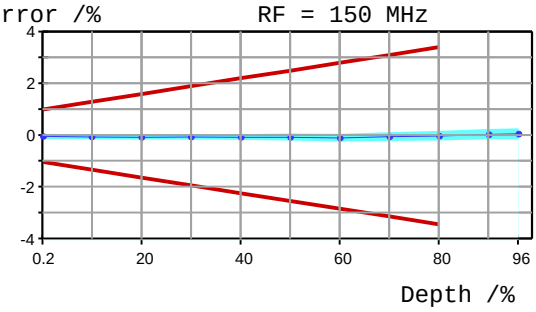
Error /% RF = 0.201 MHz



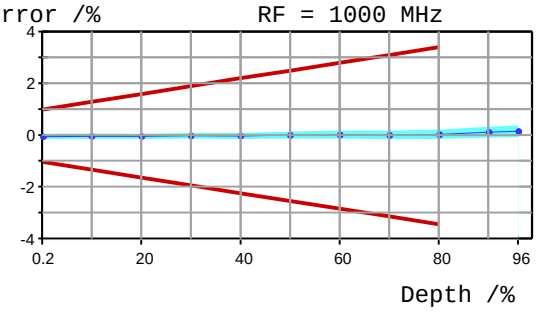
Error /% RF = 10 MHz



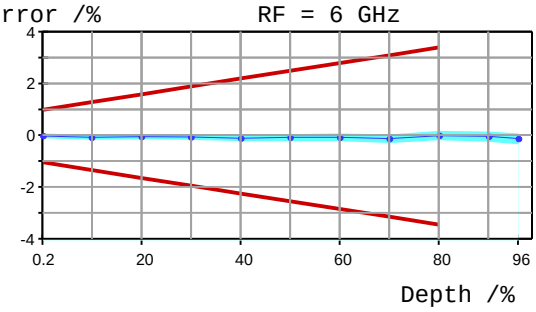
Error /% RF = 150 MHz



Error /% RF = 1000 MHz



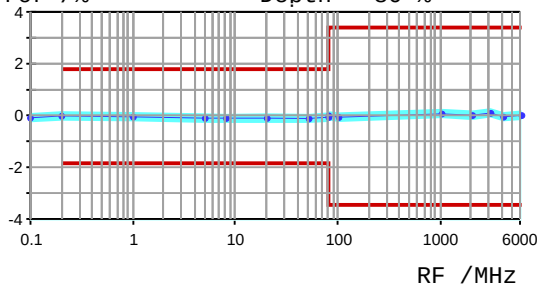
Error /% RF = 6 GHz



Source	AM Path	RF/MHz	Depth/%	DL/%	Error/%	MU/%
External	1	150	30.0	± 1.90	-0.07	0.11

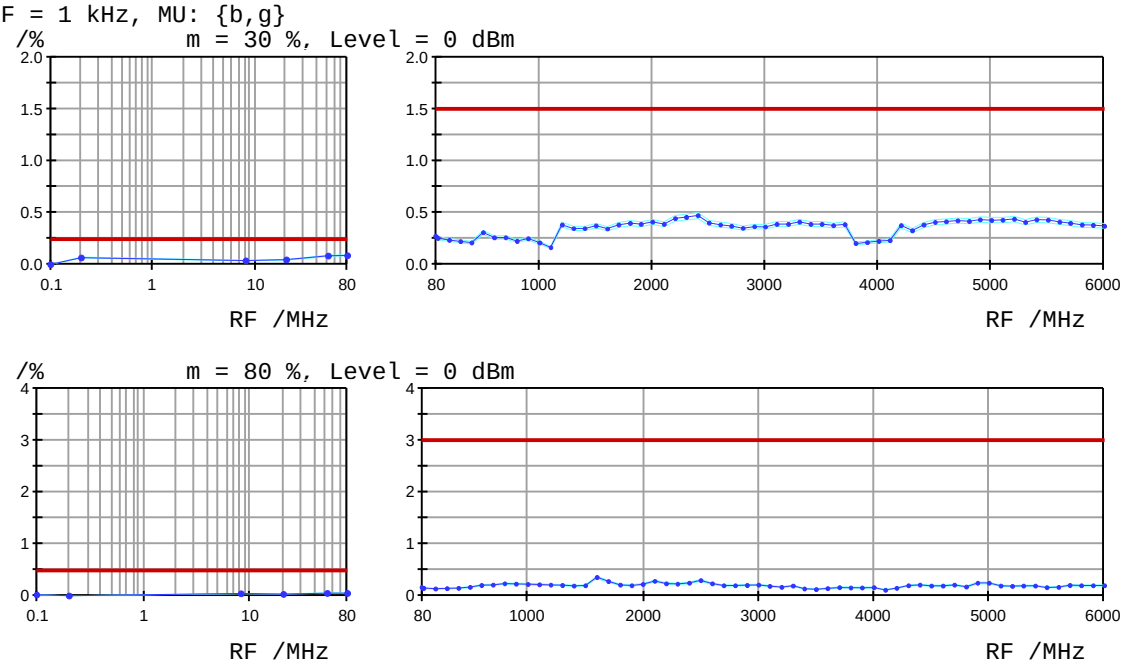
Setting Error vs RF:
Level = 0 dBm, Source LF Generator 1, LF = 1 kHz

Error /% Depth = 80 %



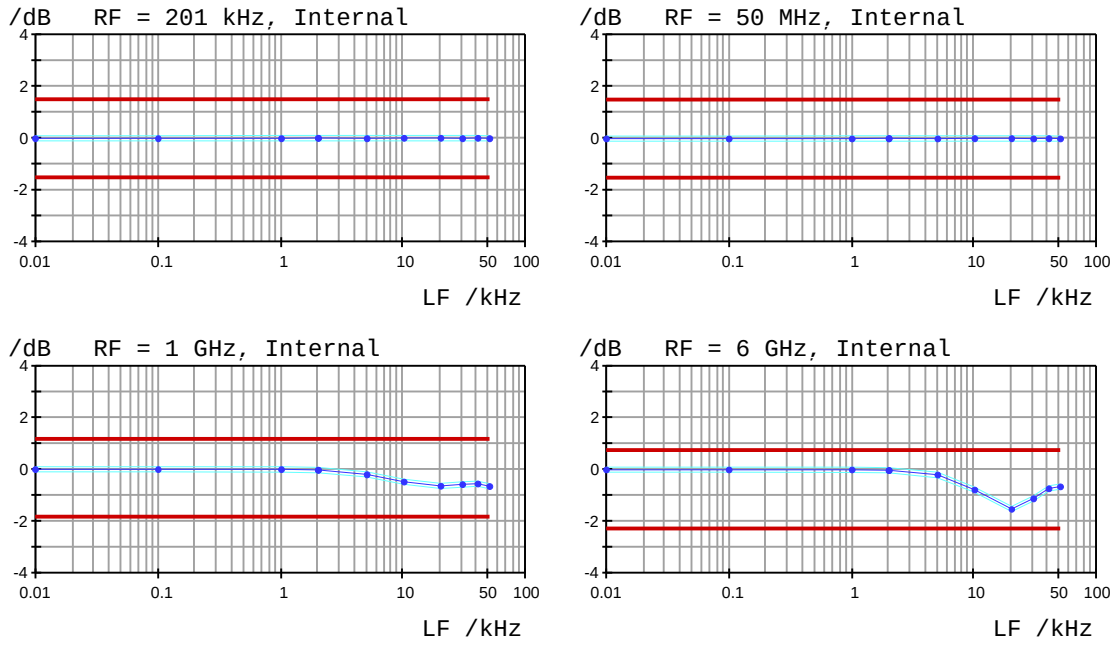
AM Distortion

LF = 1 kHz, MU: {b,g}



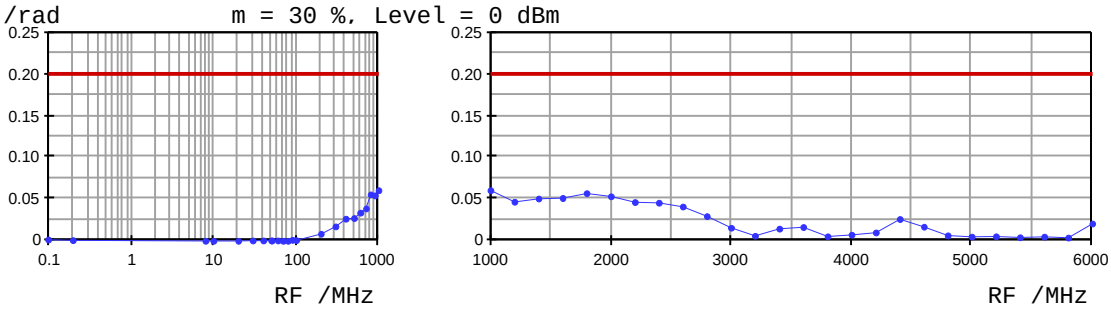
AM Frequency Response

RF-level = 0 dBm, Depth = 60%:



Synchronous PhiM with AM

LF = 1 kHz, MU: {a}



FREQUENCY MODULATION

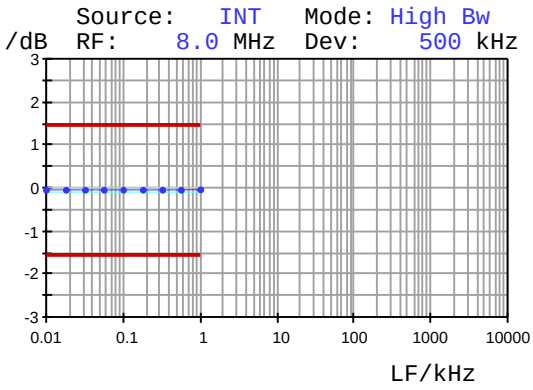
FM Setting Uncertainty

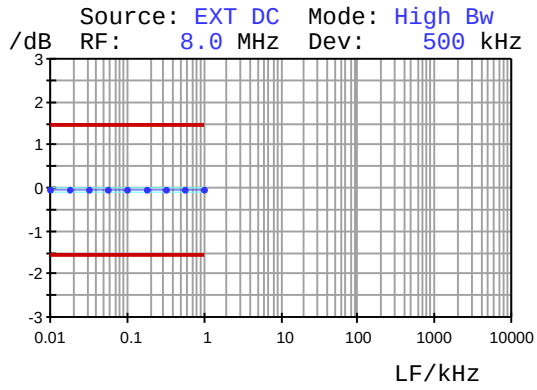
RF /MHz	LF /kHz	FM-Dev. /kHz	Mode	DL /kHz	Error /kHz	MU /kHz
FM Source Internal:						
8.0	2.0	2500.0	High BW	50.02	-7.13	10.00
250.0	2.0	2500.0	High BW	50.02	-7.16	10.00
250.1	2.0	1250.0	High BW	25.02	-3.53	5.00
750.1	2.0	5000.0	High BW	100.02	-14.27	20.00
1000.0	2.0	5000.0	High BW	100.02	-14.03	20.00
1500.0	2.0	5000.0	High BW	100.02	-14.18	20.00
3000.0	2.0	100.0	High BW	2.02	-0.31	0.40
6000.0	2.0	100.0	High BW	2.02	-0.31	0.40
8.0	2.0	50.0	Low Noise	1.02	-0.16	0.20
750.1	2.0	50.0	Low Noise	1.02	-0.16	0.20
1000.0	2.0	50.0	Low Noise	1.02	-0.15	0.20
1500.0	2.0	50.0	Low Noise	1.02	-0.16	0.20
3000.0	2.0	100.0	Low Noise	2.02	-0.31	0.40
6000.0	2.0	100.0	Low Noise	2.02	-0.31	0.40
FM Source External 1:						
1000.0	2.0	5000.0	High BW	150.02	-18.35	50.00

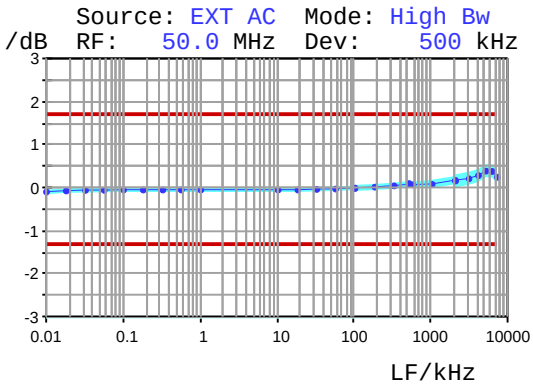
FM Distortion

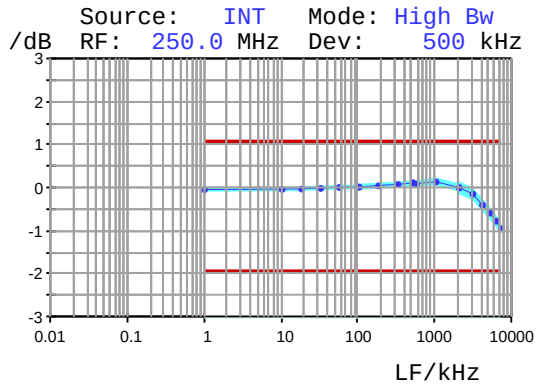
RF /MHz	LF /kHz	FM-Dev. /kHz	Mode	DUL /%	Actual /%	MU {g} /%
8.0	2.0	500.0	High BW	0.20	0.000	0.001
250.0	2.0	500.0	High BW	0.20	0.000	0.001
250.1	2.0	250.0	High BW	0.20	0.001	0.001
750.1	2.0	1000.0	High BW	0.20	0.000	0.001
1000.0	2.0	1000.0	High BW	0.20	0.000	0.001
1500.0	2.0	1000.0	High BW	0.20	0.000	0.001
3000.0	2.0	2000.0	High BW	0.20	0.000	0.001
6000.0	2.0	4000.0	High BW	0.20	0.001	0.001
8.0	2.0	500.0	Low Noise	0.20	0.000	0.001
750.1	2.0	100.0	Low Noise	0.20	0.002	0.001
1000.0	2.0	100.0	Low Noise	0.20	0.002	0.001
1500.0	2.0	100.0	Low Noise	0.20	0.002	0.001
3000.0	2.0	200.0	Low Noise	0.20	0.001	0.001
6000.0	2.0	400.0	Low Noise	0.20	0.000	0.001

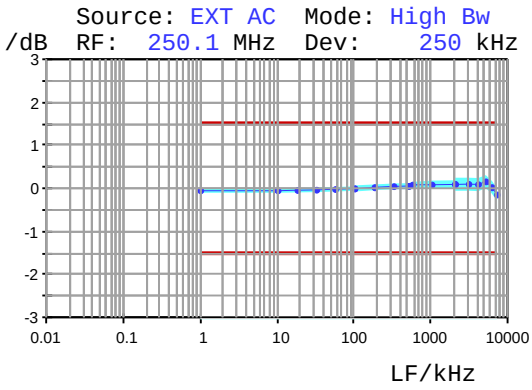
FM Frequency Response

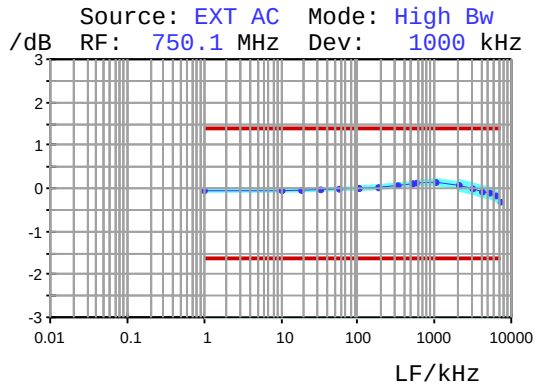


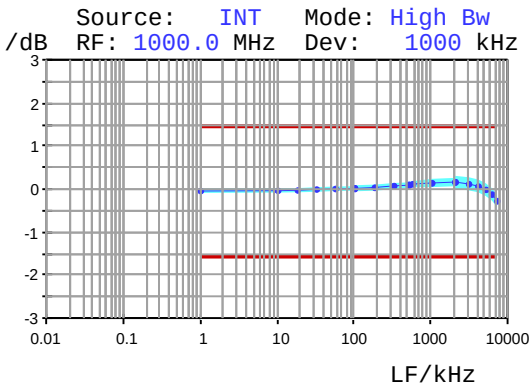


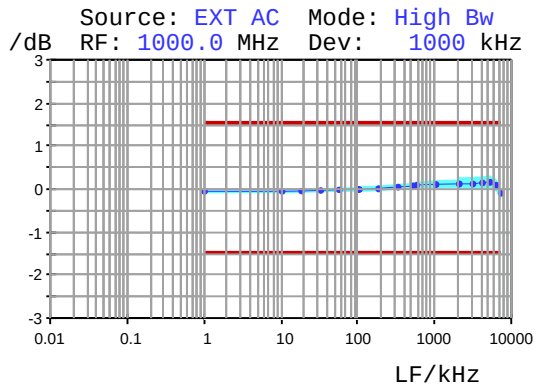




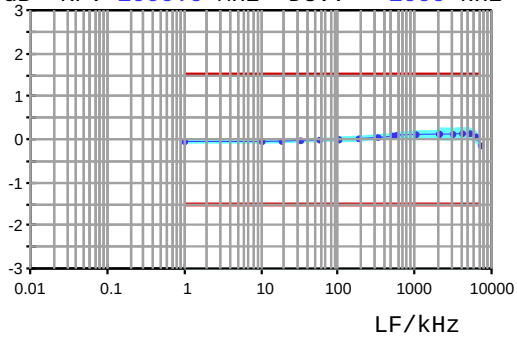




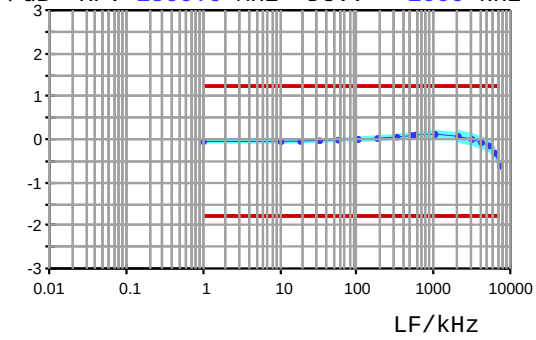




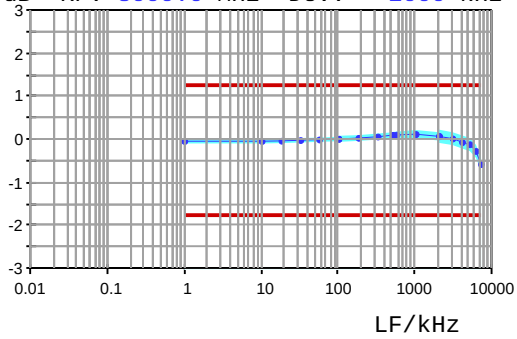
Source: EXT DC Mode: High Bw
/dB RF: 1000.0 MHz Dev: 1000 kHz



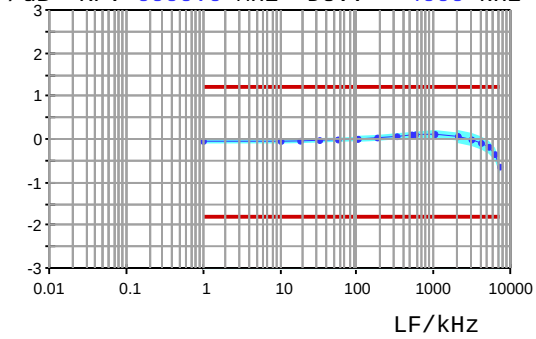
Source: EXT AC Mode: High Bw
/dB RF: 1500.0 MHz Dev: 1000 kHz



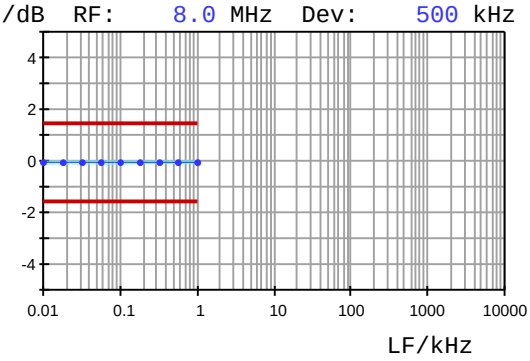
Source: EXT AC Mode: High Bw
/dB RF: 3000.0 MHz Dev: 2000 kHz



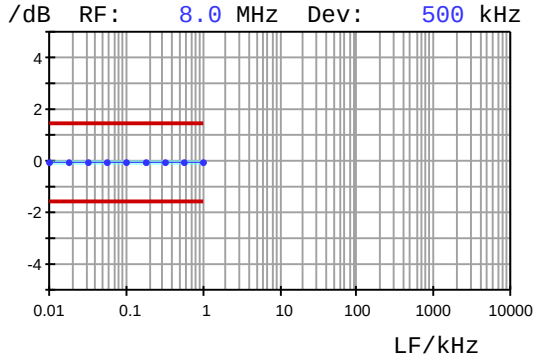
Source: EXT AC Mode: High Bw
/dB RF: 6000.0 MHz Dev: 4000 kHz



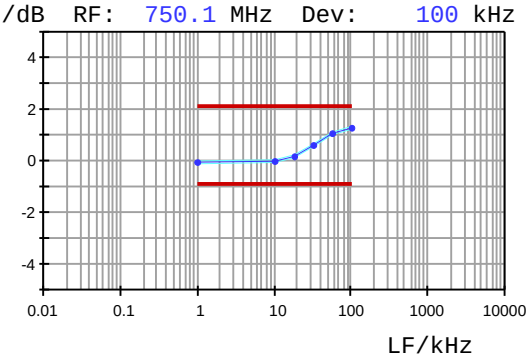
Source: INT Mode: Low Noise
/dB RF: 8.0 MHz Dev: 500 kHz



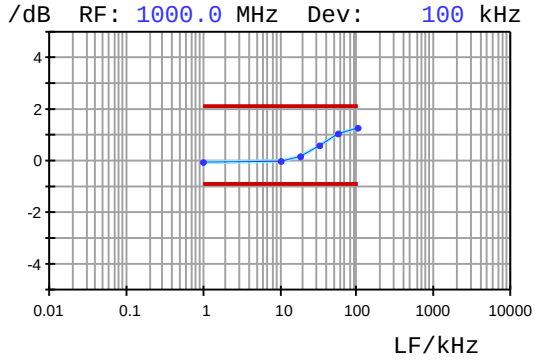
Source: EXT DC Mode: Low Noise
/dB RF: 8.0 MHz Dev: 500 kHz

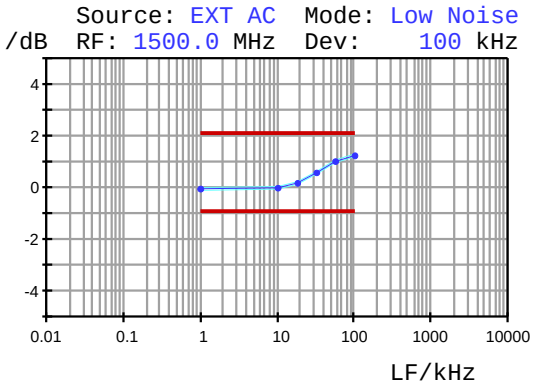


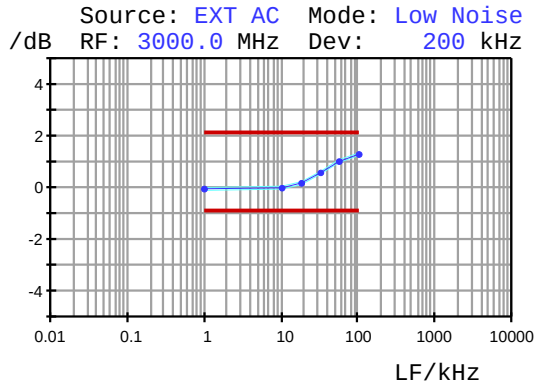
Source: EXT AC Mode: Low Noise
/dB RF: 750.1 MHz Dev: 100 kHz

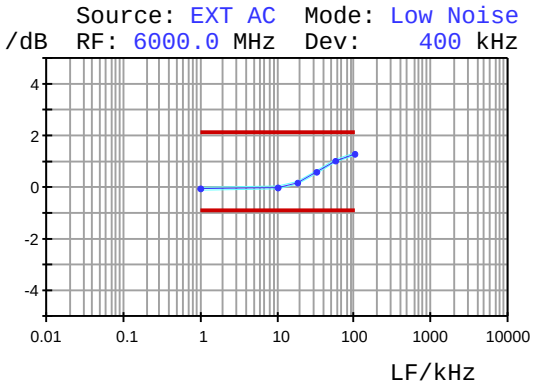


Source: EXT AC Mode: Low Noise
/dB RF: 1000.0 MHz Dev: 100 kHz









Synchronous AM with FM

Mode: High Bandwidth

RF/MHz	LF/kHz	Dev./kHz	DUL/%	Actual/%	MU
8.001	1.0	40.0	0.20	0.026	{a}
350.0	1.0	40.0	0.20	0.017	{a}
350.001	1.0	40.0	0.20	0.014	{a}
750.1	1.0	40.0	0.20	0.003	{a}
1000.0	1.0	40.0	0.20	0.012	{a}
1500.0	1.0	40.0	0.20	0.008	{a}
3000.0	1.0	40.0	0.20	0.011	{a}
6000.0	1.0	40.0	0.20	0.011	{a}

Carrier Frequency Offset with FM

RF = 1 GHz, ModFreq = 1 MHz

Mode	Dev./kHz	DL/kHz	Offset /kHz	MU/kHz
Internal	1000.0	2.000	-0.020	0.010
External, 50 R, AC	1000.0	2.000	+0.150	0.010
External, 50 R, DC	1000.0	2.000	-0.210	0.010
External, High, AC	1000.0	2.000	+0.100	0.010
External, High, DC	1000.0	2.000	-0.830	0.010

PHASE MODULATION

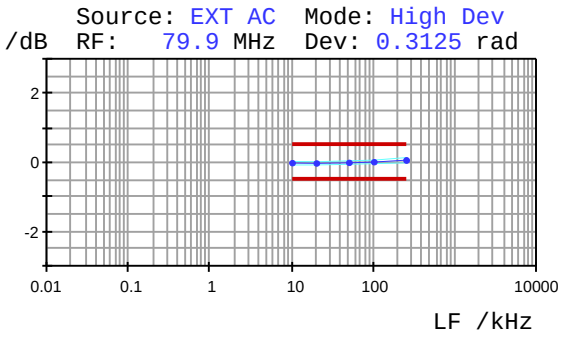
PhiM Setting Uncertainty

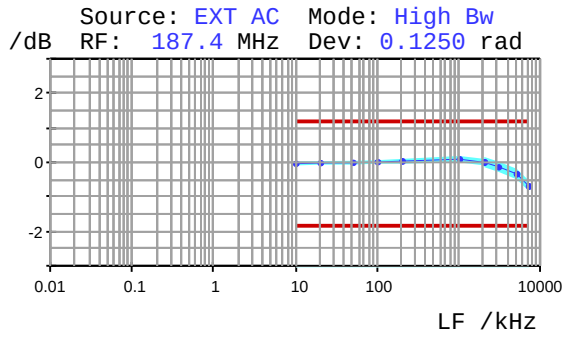
RF /MHz	LF /kHz	PhiM-Dev. /rad	Mode	DL /rad	Error /rad	MU /rad
PhiM Source Internal:						
8.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
350.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
350.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
750.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
1000.0	10.0	10.0	High Dev	0.2030	-0.0249	0.0101
1500.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
3000.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
3500.0	10.0	10.0	High Dev	0.2030	-0.0249	0.0101
4900.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
5400.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
6000.0	10.0	10.0	High Dev	0.2030	-0.0236	0.0101
500.0	10.0	0.001	High BW	0.0030	+0.0000	0.0001
500.0	10.0	0.01	High BW	0.0032	+0.0000	0.0001
500.0	10.0	0.1	High BW	0.0050	-0.0006	0.0002
500.0	10.0	0.5	High BW	0.0130	-0.0027	0.0006
8.0	10.0	0.0625	Low Noise	0.0043	-0.0002	0.0002
1000.0	10.0	0.125	Low Noise	0.0055	+0.0005	0.0002
1500.1	10.0	0.25	Low Noise	0.0080	+0.0007	0.0004
3000.1	10.0	0.5	Low Noise	0.0130	+0.0014	0.0006
6000.0	10.0	0.5	Low Noise	0.0130	+0.0017	0.0006
PhiM Source External:						
70.687	10.0	0.625	High BW	0.0218	-0.0018	0.0045
1000.0	10.0	0.125	Low Noise	0.0068	+0.0002	0.0010
3000.0	10.0	40.0	High Dev	1.2030	-0.1564	0.2801

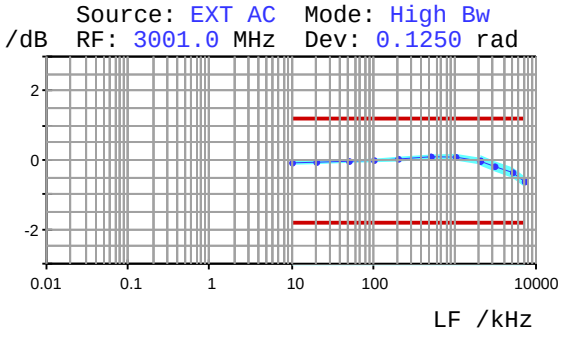
PhiM Distortion

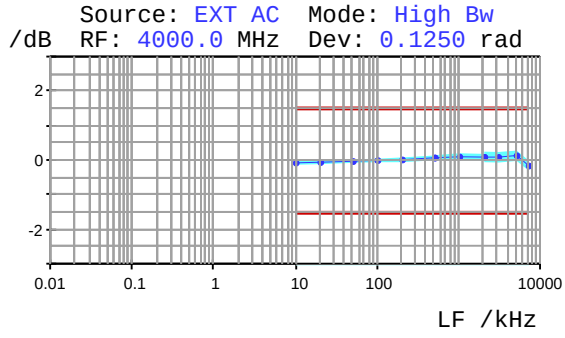
RF/MHz	LF/kHz	Dev./rad	Mode	DL/%	Actual/%	{g} MU/%
8.0	10.0	0.25	High BW	0.20	0.007	0.001
10.0	10.0	0.25	High BW	0.20	0.007	0.001
250.0	10.0	0.25	High BW	0.20	0.019	0.002
500.0	10.0	0.25	High BW	0.20	0.011	0.002
812.0	10.0	0.50	High BW	0.20	0.004	0.001
940.0	10.0	0.50	High BW	0.20	0.003	0.001
1067.0	10.0	0.50	High BW	0.20	0.004	0.001
1194.0	10.0	0.50	High BW	0.20	0.004	0.001
1321.0	10.0	0.50	High BW	0.20	0.003	0.001
1484.0	10.0	0.50	High BW	0.20	0.005	0.001
2200.0	10.0	1.0	High BW	0.20	0.003	0.001
4000.0	10.0	2.0	High BW	0.20	0.009	0.002
6000.0	10.0	2.0	High BW	0.20	0.020	0.002

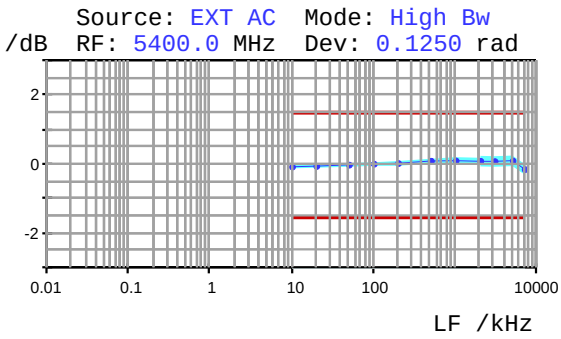
PhiM Frequency Response

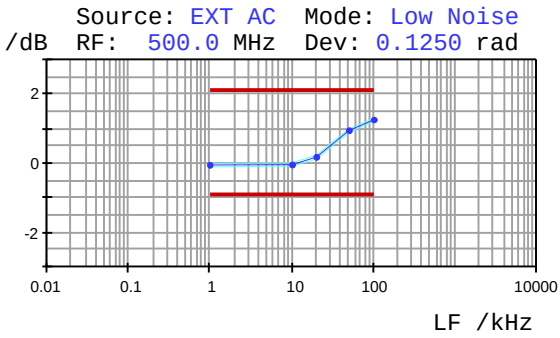








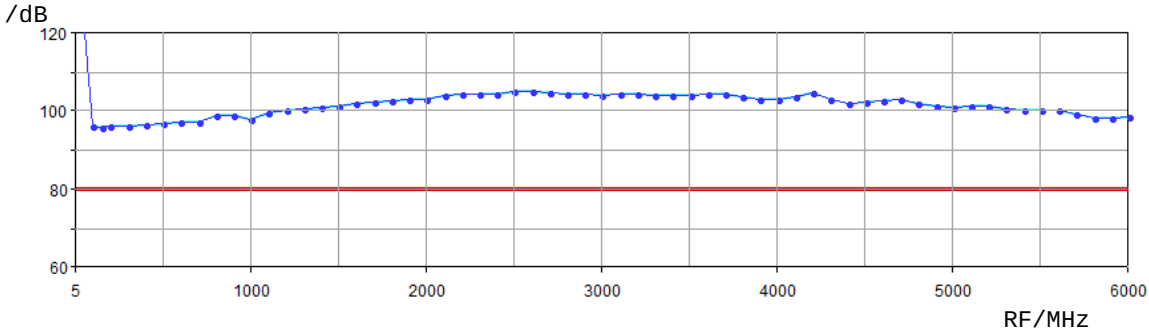




PULSE MODULATION

ON/OFF Ratio

RF-Level = 0 dBm



Dynamic Characteristics

The expanded uncertainty of the measurands risetime and falltime is 1 ns.
The characteristic overshoot is a test result.

Transition Type: Fast

RF /MHz	Risetime /ns	Falltime /ns	DUL /ns	Overshoot /%	DUL /%	Result	MU
700	5.9	2.2	15	0.3	10	PASS	{a}
1000	6.5	2.3	15	0.0	10	PASS	{a}
2000	5.7	2.3	15	0.0	10	PASS	{a}
3000	5.2	1.8	15	0.0	10	PASS	{a}
4000	5.7	2.2	15	0.1	10	PASS	{a}
5000	5.5	1.9	15	0.0	10	PASS	{a}
6000	6.9	2.0	15	0.0	10	PASS	{a}

Transition Type: Smoothed

RF /MHz	Risetime /ns	Falltime /ns	DUL /ns	Overshoot /%	DUL /%	Result	MU
700	50.3	13.7	200	0.2	10	PASS	{a}
1000	48.1	13.7	200	0.0	10	PASS	{a}
2000	44.0	13.6	200	0.0	10	PASS	{a}
3000	39.0	13.1	200	0.0	10	PASS	{a}
4000	49.9	16.4	200	0.0	10	PASS	{a}
5000	50.2	14.9	200	0.0	10	PASS	{a}
6000	53.8	14.6	200	0.0	10	PASS	{a}

Video Feedthrough

Modulation Signal: 100 kHz Square

Transition	RF /MHz	Level /dBm	DUL /mVpp	Actual /mVpp	MU
Fast	3250.0	+10.0	200	57.8	{e}
	4250.0	+10.0	200	45.2	{e}
	6000.0	+10.0	200	62.9	{e}
Smoothed	3250.0	+10.0	200	32.2	{e}
	4250.0	+10.0	200	24.7	{e}
	6000.0	+10.0	200	34.3	{e}

Functional test of Pulse Ext.

Test of Pulse Ext. connector	PASS

ROHDE&SCHWARZ

Calibration Certificate

Kalibrierschein

Certificate Number 1020-300773215

Zertifikatsnummer

Unit Data

Item
Gegenstand
SMB100B SIGNAL GEN. BASE UNIT

Manufacturer
Hersteller
ROHDE & SCHWARZ

Type
Typ
SMB100B

Material Number
Materialnummer
1422.1000K02

Serial Number
Seriennummer
102254

Asset Number
Inventarnummer

Order Data

Customer
Auftraggeber
Exporta s.r.o.
Patockova 1434/51
160 00 Praha 6
CZ

Order Number
Bestellnummer
8800067369 10, 312025498

Date of Receipt
Eingangsdatum
2024-11-27

Performance

Place and Date of Calibration
Ort und Datum der Kalibrierung
Standort Memmingen, 2024-12-03

Scope of Calibration
Umfang der Kalibrierung
Standard Calibration

Statement of Compliance (Incoming)
Konformitätsaussage (Anlieferung)
All measured values are within the data sheet specifications.

Statement of Compliance (Outgoing)
Konformitätsaussage (Auslieferung)
All measured values are within the data sheet specifications.

Extent of Calibration Documents
Umfang des Kalibrierdokuments
2 Pages Calibration Certificate
29 Pages Outgoing Results
29 Pages Incoming Results

This calibration certificate documents, that the named item is tested and measured against defined specifications.
Measurement results are located usually in the corresponding interval with a probability of approx. 95% (coverage factor k = 2).
Calibration is performed with test equipment and standards directly or indirectly traceable by means of approved calibration techniques to the PTB/DKD or other national / international standards, which realize the physical units of measurement according to the International System of Units (SI).
In all cases where no standards are available, measurements are referenced to standards of the R&S laboratories.
Principles and methods of calibration correspond and are conformant with EN ISO/IEC 17025, ANSI/NCSL Z540.1-1994 and ANSI/NCSL Z540.3-2006. The applied quality system is certified to EN ISO 9001.
This calibration certificate may not be reproduced other than in full.
Calibration certificates without signatures are not valid.
The user is obliged to have the object recalibrated at appropriate intervals.

Dieser Kalibrierschein dokumentiert, dass der genannte Gegenstand nach festgelegten Vorgaben geprüft und gemessen wurde. Die Messwerte lagen im Regelfall mit einer Wahrscheinlichkeit von annähernd 95% im zugeordneten Werteintervall (Erweiterte Messunsicherheit mit k = 2).
Die Kalibrierung erfolgte mit Messmitteln und Normalen, die direkt oder indirekt durch Ableitung mittels anerkannter Kalibriertechniken rückgeführt sind auf Normale der PTB/DKD oder anderer nationaler/internationaler Standards zur Darstellung der physikalischen Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI). Wenn keine Normale existieren, erfolgt die Rückführung auf Bezugsnormale der R&S-Laboratorien.
Grundsätze und Verfahren der Kalibrierung beziehen sich auf und entsprechen EN ISO/IEC 17025, ANSI/NCSL Z540.1-1994 und ANSI/NCSL Z540.3-2006.
Das angewandte Qualitätsmanagement-System ist zertifiziert nach EN ISO 9001.
Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Kalibrierscheine ohne Signatur sind ungültig.
Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

Rohde & Schwarz Messgerätebau GmbH

Date of Issue Ausstellungsdatum	**Laboratory Management** Laborleitung	**Person in Charge** Bearbeiter
2024-12-03	Michael Dill	Christian Feigl

Rohde & Schwarz Messgerätebau GmbH · Postfach 1652 D-87686 Memmingen · Rohde-und-Schwarz-Str. 1 D-87700 Memmingen
Telefon national: 08331/10-80; international: 0049 8331/10-80; Fax: 08331/10-811 24
Geschäftsführer: Michael Dill · Aufsichtsratsvorsitzender: Johann Kraus
Sitz der Gesellschaft: München · Registereintrag: Amtsgericht München HRB 1059

Calibration Method **see first page of Outgoing Results**
Kalibrieranweisung

Relative Humidity **20%-70%**
Relative Luftfeuchte

Ambient Temperature **(23 $^{+7}_{-3}$) °C**
Umgebungstemperatur

Working standards used (having a significant effect on the accuracy)
Verwendete Gebrauchsnormale (mit signifikantem Einfluss auf die Genauigkeit)

Item Gegenstand	**Type** Typ	**Serial Number** Seriennummer	**Calibration Certificate Number** Kalibrierscheinnummer	**Cal. Due** Kalibr. bis
Detector Kit for UCS2010	**ENV-DET**	**101523**	**0001A300735433**	**2025-08-31**
Standard Frequency System	**FREQSTD**	**100257**	**0001A1230250**	**2025-10-31**
Phase Noise Analyzer 50GHz	**FSWP50**	**101607**	**20A1188357**	**2025-08-31**
Spectrum Analyzer 26.5 GHz	**FSW26**	**101683**	**0001A300707886**	**2025-01-31**
Spectrum Analyzer 67GHz	**FSW67**	**101798**	**0001A300738414**	**2025-09-30**
Average Power Sensor 8kHz-18GH	**NRP18A**	**101451**	**0001A300725178**	**2025-06-30**
Average Power Sensor 8kHz-18GH	**NRP18A**	**101400**	**0001A300725176**	**2025-06-30**
Thermal Power Sensor 18GHz	**NRP18T**	**101321**	**0001A300719420**	**2025-05-31**
Thermal Power Sensor	**NRP40T**	**101249**	**0001A300755514**	**2026-01-31**
Thermal Power Sensor	**NRP67T**	**101254**	**0001A300725185**	**2025-06-30**
RMS Peak Voltmeter DC-30 MHz	**URE3**	**827527/030**	**0001A300739341**	**2025-09-30**
SWR Bridge 40kHz - 4GHz 50 Ohm	**ZRC**	**100091**	**0001A300725186**	**2025-06-30**
Calibration Kit 40GHz	**ZRP40**	**101567**	**0001A300756324**	**2026-01-31**
Calibration Kit 50GHz	**ZRP50**	**101465**	**0001A300756320**	**2026-01-31**
Directional Coupler 2-18 GHz	**773D**	**100002**	**0001A300734284**	**2025-08-31**

UGB1 **A compliance statement may be possible where a confidence level of less than 95 % is acceptable.**
Die Bestätigung der Konformität ist möglich, sofern ein Grad des Vertrauens von weniger als 95 % akzeptabel ist.

UGB2 **A non-compliance statement may be possible where a confidence level of less than 95 % is acceptable.**
Die Bestätigung der Nicht-Konformität ist möglich, sofern ein Grad des Vertrauens von weniger als 95 % akzeptabel ist.

Ref.: ILAC G8:09/2019 Guidelines on Decision Rules and Statements of Conformity

Notes
Anmerkungen

The certificate number formatted 0001-300773215 corresponds to format 1020-300773215, because of formal changes.

Installed options are included in calibration. Depending on installed options, numbers of pages of the record are not consecutive.

Outgoing Results

Designation:	**Signal Generator**
Type:	**SMB100B**
Material No.:	**1422.1000K02**
Serial No.:	**102254**
Certificate No.:	**1020-300773215**
Referring to Test Documentation:	**1422.1000.01-PB-5.00**

Test Department:	**3MES3**
Name:	**see certificate**
Date:	**2024-12-03**

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

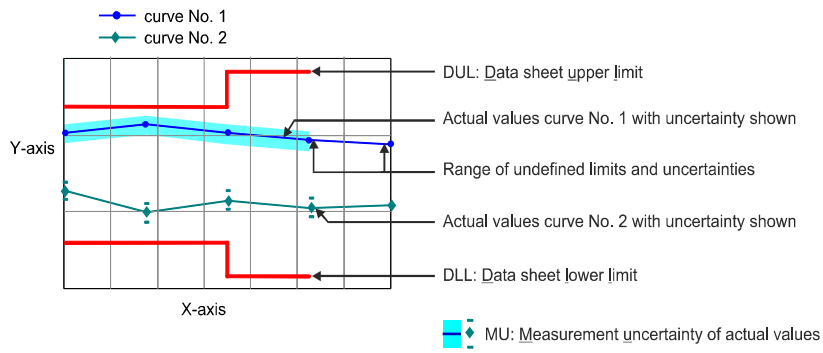


Table of contents

Software used for measurement			
Item	**Type**	**Version**	**Remark**
Suite	Setup	V12.49.07	Test Management Software G5
Test Program (503886)	Component	V05.07	

DUT Configuration

Firmware version: 5.10.121.41

Specifications: 05.05

REFERENCE FREQUENCY

Internal Reference Frequency Error

after adjusting at calibration temperature

	Nominal	DL /Hz	Error /Hz	MU /Hz
Ref Out Frequency	10 MHz	± 1.000	+0.000	0.010

Ref Out Level (Std.)

Ref Source	Ref In Freq /MHz	Ref In Level /dBm	Ref Out Freq /MHz	Ref Out DLL /dBm	Ref Out DUL /dBm	Actual /dBm	{g} MU /dB
Int. 10 MHz	-	-	10.0	7.0	13.0	10.20	0.34
Ext.	10.0	0.0	10.0	7.0	13.0	10.34	0.34
Ext.	10.0	16.0	10.0	7.0	13.0	10.33	0.34

Synchronisation Test

Test if DUT is locked to Ref In signal:

Ref Source	Ref In /MHz	Ref In /dBm	Sync. BW	Ref In detune /ppm	Result	MU {c}
Ext.	10.0	0.0	Wide	0.0	PASS	
Ext.	10.0	16.0	Wide	0.0	PASS	
Ext.	10.0	8.0	Wide	+100.0	PASS	
Ext.	10.0	8.0	Wide	-100.0	PASS	

Frequency Setting Time

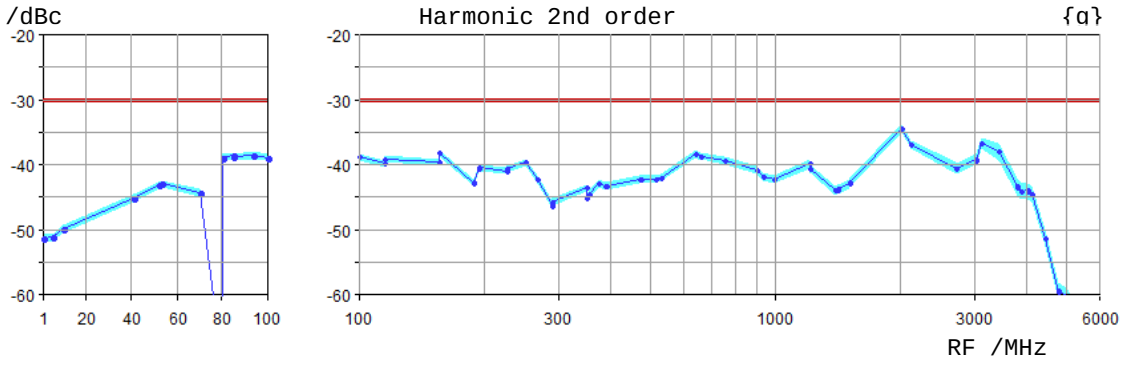
after remote control delimiter, GUI update stopped

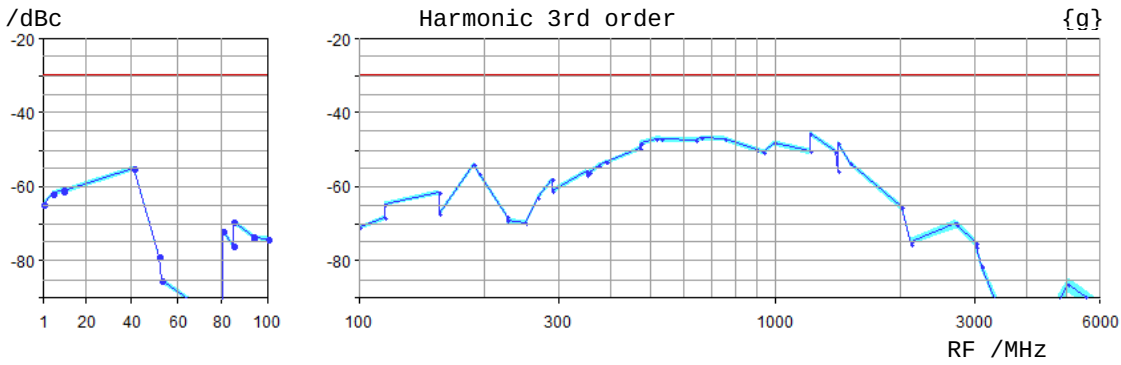
Mode	Start freq./MHz	Stop freq./MHz	DUL /ms	Actual /ms	MU {g} /ms
ALC AUTO (CW)	0.200	0.201	1.10	0.93	0.03
	0.201	0.200	1.10	0.91	0.03
	5.000	5.001	1.10	0.80	0.03
	5.001	5.000	1.10	0.86	0.03
	10.000	10.001	1.10	0.74	0.03
	10.001	10.000	1.10	0.76	0.03
	80.000	80.001	1.10	0.86	0.03
	80.001	80.000	1.10	0.76	0.03
	100.000	100.001	1.10	0.85	0.03
	100.001	100.000	1.10	0.84	0.03
	250.000	250.001	1.10	0.77	0.03
	250.001	250.000	1.10	0.72	0.03
	267.000	267.001	1.10	0.72	0.03
	267.001	267.000	1.10	0.75	0.03
	1400.000	1400.001	1.10	0.85	0.03
	1400.001	1400.000	1.10	0.82	0.03
	1500.000	1500.001	1.10	0.84	0.03
	1500.001	1500.000	1.10	0.77	0.03
	3000.000	3000.001	1.10	0.85	0.03
	3000.001	3000.000	1.10	0.82	0.03
	3780.000	3780.001	1.10	0.73	0.03
	3780.001	3780.000	1.10	0.70	0.03
	3876.000	3876.001	1.10	0.71	0.03
	3876.001	3876.000	1.10	0.68	0.03
	4100.000	4100.001	1.10	0.84	0.03
	4100.001	4100.000	1.10	0.80	0.03
	4760.000	4760.001	1.10	0.74	0.03
	4760.001	4760.000	1.10	0.72	0.03
	1500.001	1870.000	1.10	0.85	0.03
	1870.000	1500.001	1.10	0.84	0.03
	1870.001	2170.000	1.10	0.80	0.03
	2170.000	1870.001	1.10	0.80	0.03
	2170.001	2730.000	1.10	0.89	0.03
	2730.000	2170.001	1.10	0.84	0.03
	2730.001	3000.000	1.10	0.81	0.03
	3000.000	2730.001	1.10	0.81	0.03
	3000.001	3740.000	1.10	0.83	0.03
	3740.000	3000.001	1.10	0.81	0.03
	3740.001	4340.000	1.10	0.81	0.03
	4340.000	3740.001	1.10	0.83	0.03
	4340.001	5460.000	1.10	0.84	0.03
	5460.000	4340.001	1.10	0.80	0.03
	5460.001	6000.000	1.10	0.85	0.03
	6000.000	5460.001	1.10	0.83	0.03

SPECTRAL PURITY

Harmonics CW-Mode

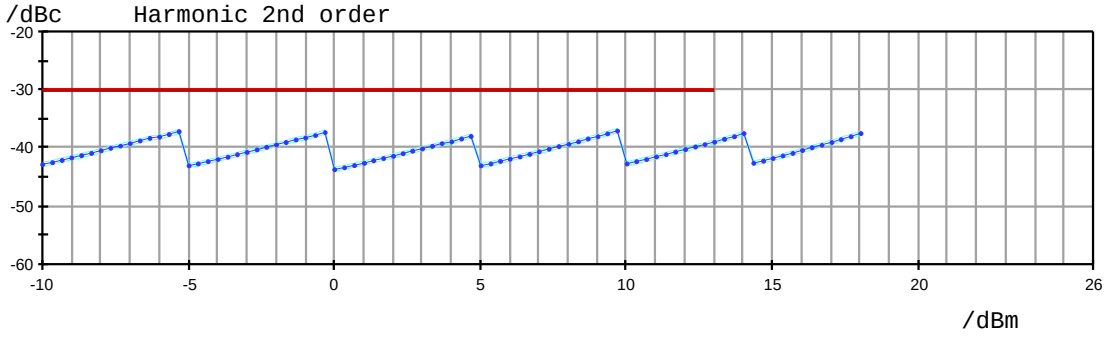
RF-Level = 13.0 dBm



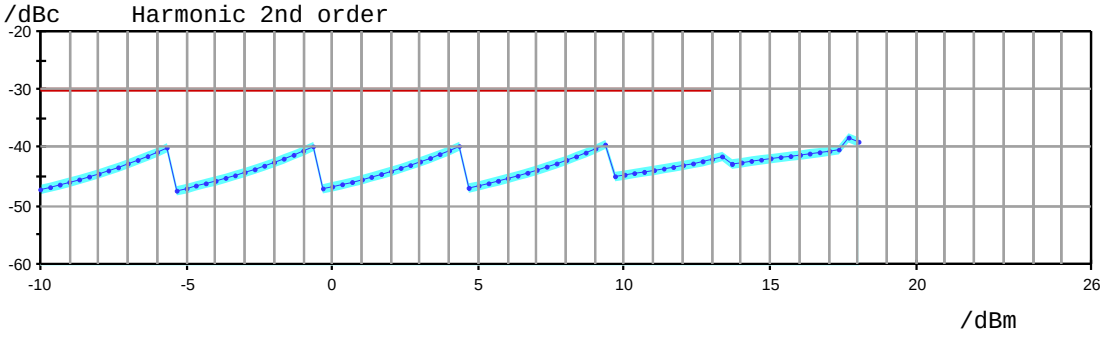


Harmonics vs Level

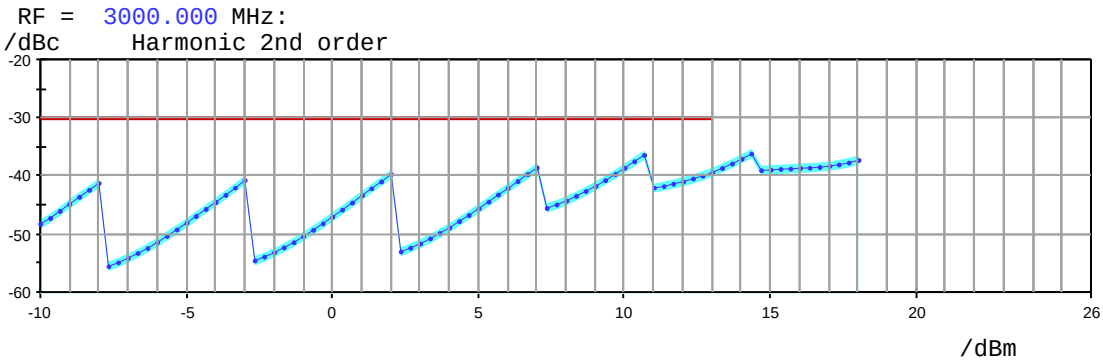
RF = 200.000 MHz:



RF = 1000.000 MHz:



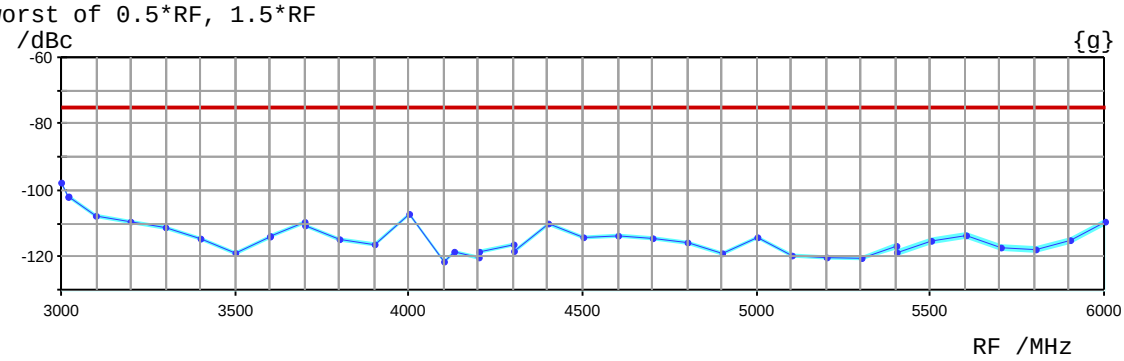
RF = 3000.000 MHz:



Subharmonics CW-Mode

RF-Level = 10.0 dBm

worst of 0.5*RF, 1.5*RF



Nonharmonics

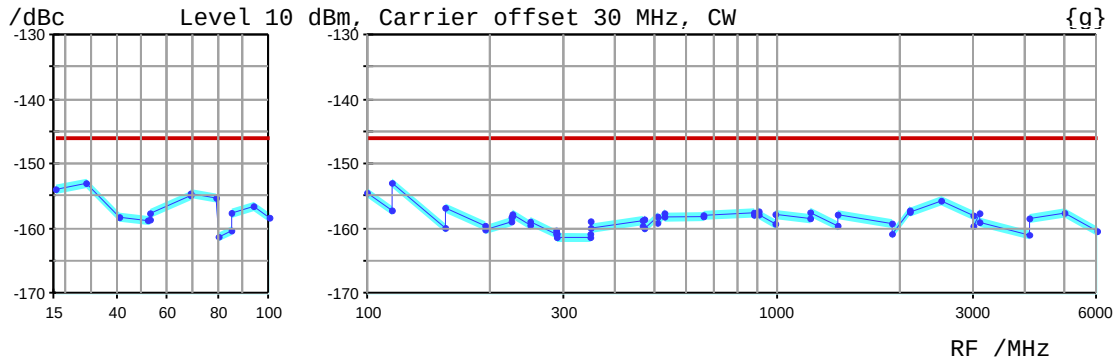
Systematic nonharmonics of synthesis:

RF /MHz	Level /dBm	Spurious at /MHz	DUL /dBc	Actual /dBc	{g} MU /dB
66.930000	10.0	70.88000	-80.0	-101.5	0.8
77.590000	10.0	86.25980	-80.0	-102.1	0.8
455.203520	10.0	455.23214	-80.0	-101.7	0.8
881.777000	10.0	882.05250	-76.0	-111.6	0.8
999.900000	10.0	1000.00000	-76.0	-98.6	0.8
999.900000	10.0	1000.10000	-76.0	-103.3	0.8
1076.561000	10.0	1076.57920	-76.0	-100.6	0.8
1137.503000	10.0	1137.53730	-76.0	-101.6	0.8
1157.803000	10.0	1157.82970	-76.0	-93.5	0.8
1264.292000	10.0	1264.35250	-76.0	-88.7	0.8
1291.929000	10.0	1292.08000	-76.0	-110.0	0.8
1302.607000	10.0	1302.63020	-76.0	-92.7	0.8
1343.016000	10.0	1343.09170	-76.0	-98.0	0.8
1414.262000	10.0	1414.43860	-76.0	-97.6	0.8
1424.408000	10.0	1424.51220	-76.0	-97.9	0.8
1434.603000	10.0	1434.70090	-76.0	-97.5	0.8
1499.900000	10.0	1500.30000	-76.0	-98.1	0.8
1500.100000	10.0	1500.30000	-70.0	-90.8	0.8
1500.100000	10.0	1500.50000	-70.0	-106.4	0.8
1571.500000	10.0	1571.59090	-70.0	-90.9	0.8
1675.765000	10.0	1675.79220	-70.0	-92.1	0.8
1828.140000	10.0	1828.16720	-70.0	-90.8	0.8
1999.900000	10.0	2000.00000	-70.0	-98.0	0.8
1999.900000	10.0	2000.10000	-70.0	-93.4	0.8
2000.100000	10.0	2000.20000	-70.0	-93.5	0.8
2000.100000	10.0	2000.30000	-70.0	-91.3	0.8
2153.144000	10.0	2153.17330	-70.0	-90.2	0.8
2168.957000	10.0	2169.16790	-70.0	-101.6	0.8
2274.980000	10.0	2275.00857	-70.0	-89.1	0.8
2405.150000	10.0	2405.52230	-70.0	-86.5	0.8
2574.265000	10.0	2574.54150	-70.0	-101.0	0.8
2660.913000	10.0	2660.94297	-70.0	-91.1	0.8
2828.451000	10.0	2828.63670	-70.0	-91.2	0.8
3486.464000	10.0	3486.54170	-64.0	-97.0	0.8
3527.057000	10.0	3527.15890	-64.0	-99.1	0.8
3999.900000	10.0	3999.95000	-64.0	-90.1	0.8
3999.900000	10.0	4000.00000	-64.0	-84.2	0.8
3999.900000	10.0	4000.30000	-64.0	-90.2	0.8
4000.100000	10.0	4000.15000	-64.0	-87.0	0.8
4000.100000	10.0	4000.20000	-64.0	-83.4	0.8
4000.100000	10.0	4000.50000	-64.0	-90.1	0.8
4120.921000	10.0	4121.29230	-64.0	-91.4	0.8
4297.343000	10.0	4297.47110	-64.0	-96.9	0.8
4337.933000	10.0	4338.19630	-64.0	-96.0	0.8
4378.336000	10.0	4378.45300	-64.0	-95.9	0.8
4418.937000	10.0	4418.98640	-64.0	-95.3	0.8
4631.205000	10.0	4631.23730	-64.0	-88.3	0.8
4999.900000	10.0	5000.00000	-64.0	-79.2	0.8
5000.100000	10.0	5000.20000	-64.0	-78.9	0.8
5376.196000	10.0	5376.21620	-64.0	-84.2	0.8
5524.955000	10.0	5524.98220	-64.0	-80.3	0.8
5710.228000	10.0	5710.73850	-64.0	-92.0	0.8
5999.900000	10.0	6000.00000	-64.0	-94.8	0.8
5999.900000	10.0	6000.10000	-64.0	-75.0	0.8

Non-systematic nonharmonics, CW-mode:
Scanned range: 10 kHz to 10 MHz carrier offset

RF /MHz	Level /dBm	Spurious at /MHz	DUL /dBc	Actual /dBc	{g} MU /dB
77.591000	10.0	68.908000	-80.0	-97.9	0.8
700.787000	10.0	700.813667	-80.0	-96.7	0.8
1571.500000	10.0	1571.409090	-70.0	-90.8	0.8
2579.693000	10.0	2579.720717	-70.0	-85.6	0.8
2762.520000	10.0	2762.543529	-70.0	-88.1	0.8
2803.138000	10.0	2803.153071	-70.0	-88.7	0.8
2935.758000	10.0	2935.579310	-70.0	-81.2	0.8
3437.509000	10.0	3437.537802	-64.0	-84.8	0.8
4509.337000	10.0	4509.364386	-64.0	-81.7	0.8
4712.546000	10.0	4712.641171	-64.0	-87.1	0.8
4753.130000	10.0	4753.143675	-64.0	-86.1	0.8
5240.570000	10.0	5240.467680	-64.0	-86.3	0.8
5443.738000	10.0	5443.709341	-64.0	-79.5	0.8
5524.955000	10.0	5524.981468	-64.0	-80.0	0.8
5606.287000	10.0	5606.308450	-64.0	-83.7	0.8
5871.400000	10.0	5871.458395	-64.0	-75.4	0.8

Wideband Noise



SSB Phase Noise

RF /MHz	Offset /kHz	DUL /dBc	Actual /dBc	MU {g} /dB
100	20.0	-142.0	-150.1	1.0
1000	20.0	-126.0	-133.7	1.0
2000	20.0	-120.0	-127.8	1.0
3000	20.0	-116.0	-124.5	1.0
4000	20.0	-114.0	-121.5	1.0
6000	20.0	-110.0	-118.6	1.0

Residual AM

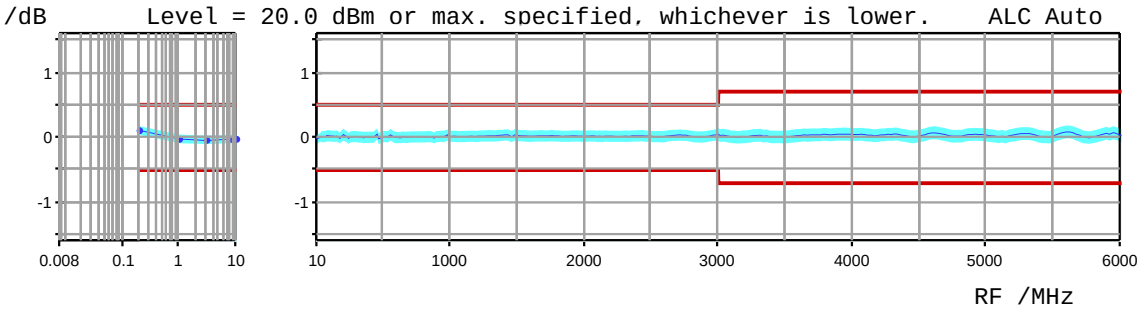
RMS value (20 Hz to 23 kHz)
Level = 12 dBm

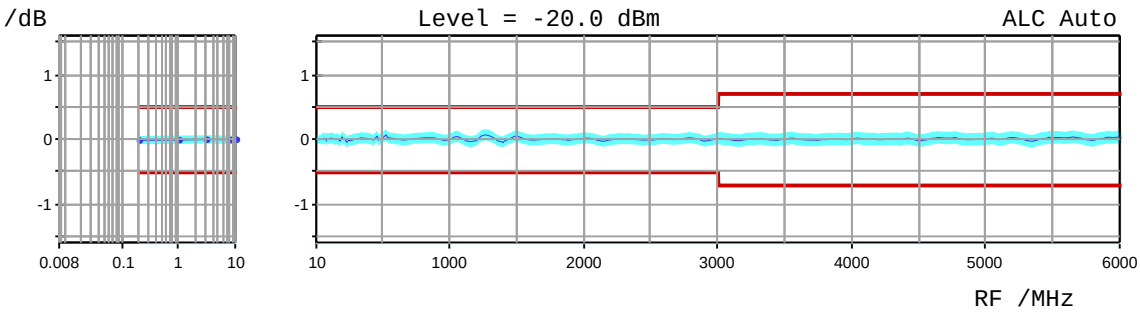
RF/MHz	DUL/%	Actual/%	MU
10	0.020	0.003	{a}
50	0.020	0.003	{a}
80	0.020	0.003	{a}
80.001	0.020	0.003	{a}
100	0.020	0.003	{a}
1000	0.020	0.003	{a}
1900	0.020	0.002	{a}
1901	0.020	0.002	{a}
2700	0.020	0.002	{a}
3000	0.020	0.002	{a}
3001	0.020	0.002	{a}
3600	0.020	0.002	{a}
3601	0.020	0.002	{a}
4100	0.020	0.002	{a}
4101	0.020	0.002	{a}
5400	0.020	0.003	{a}
6000	0.020	0.003	{a}

LEVEL

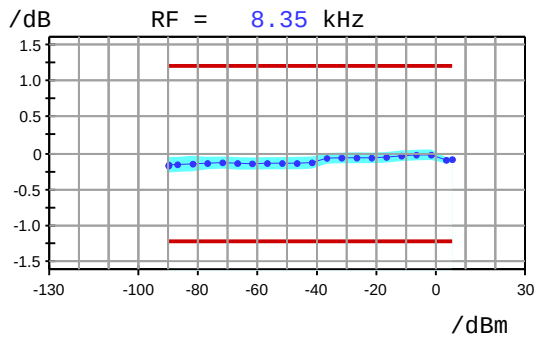
Level Accuracy

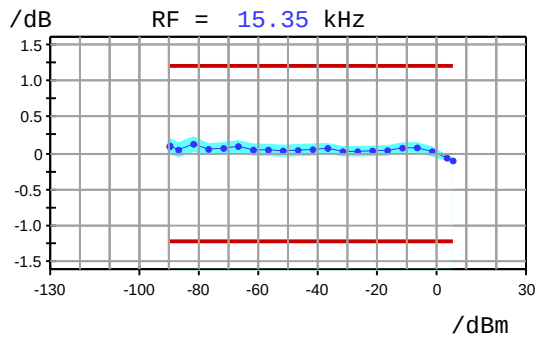
- Versus Frequency at Specific Level:
  CW-Mode:

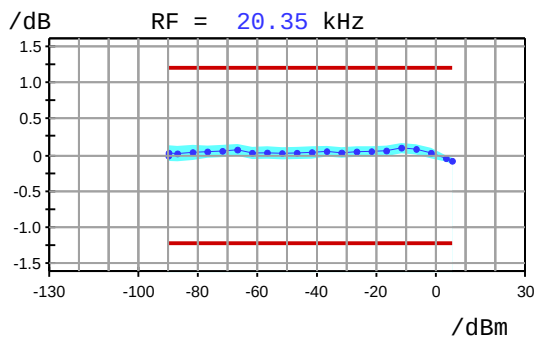


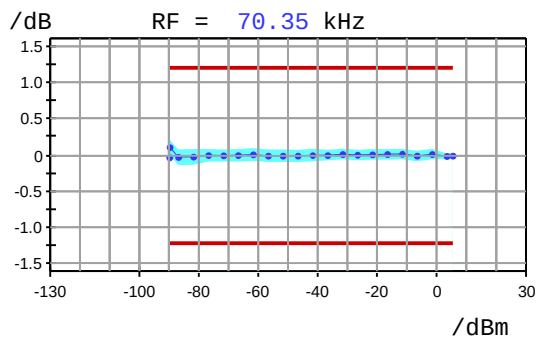


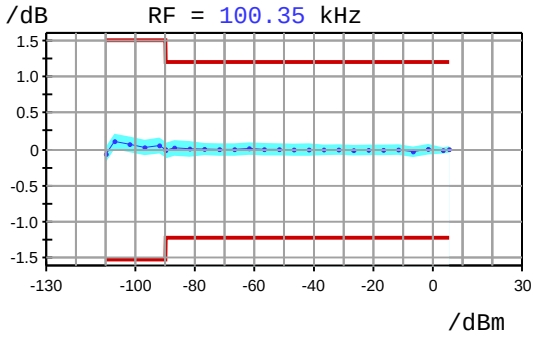
Level Linearity ALC Auto

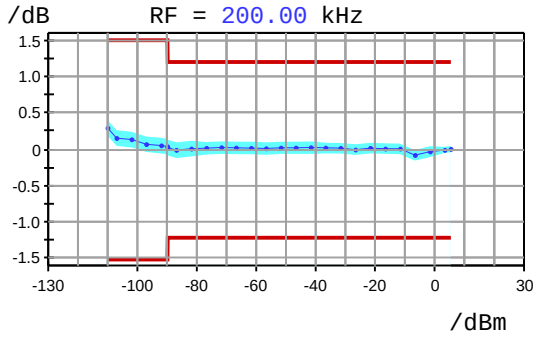


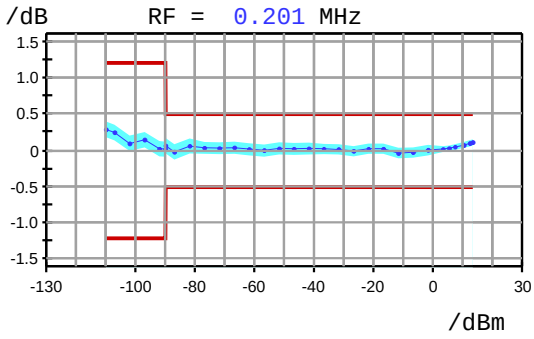


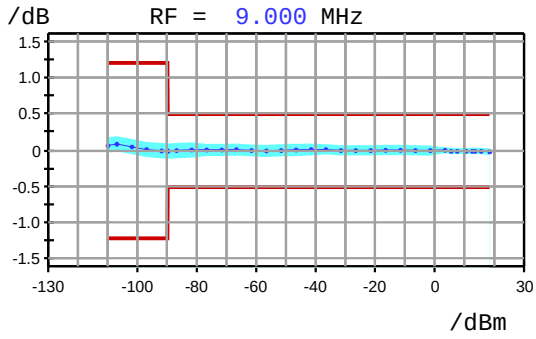


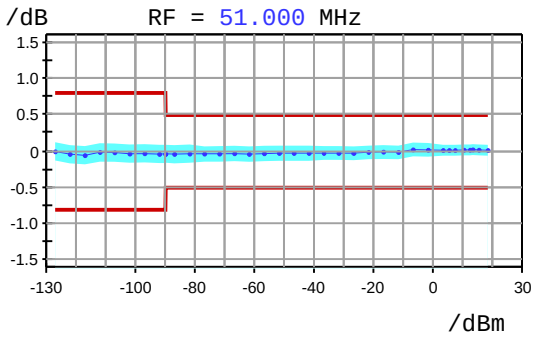


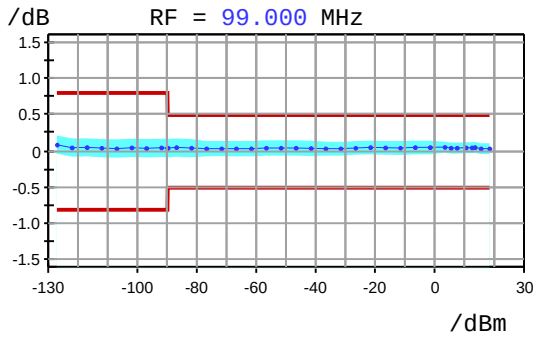

/dB
RF = 100.35 kHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

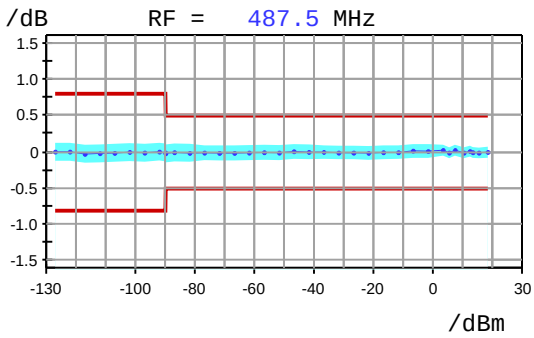

/dB
RF = 200.00 kHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

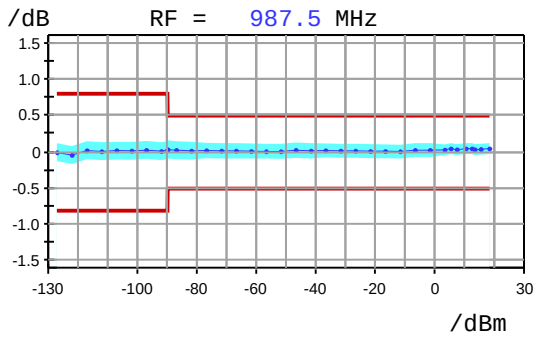

/dB
RF = 0.201 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

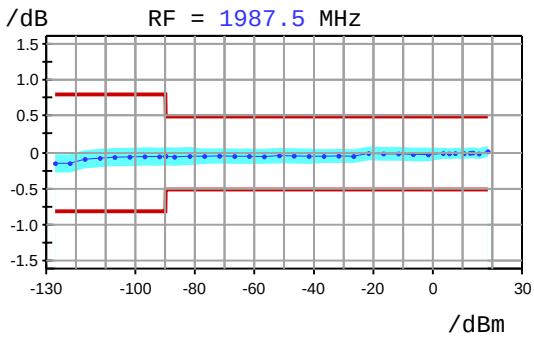

/dB
RF = 9.000 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

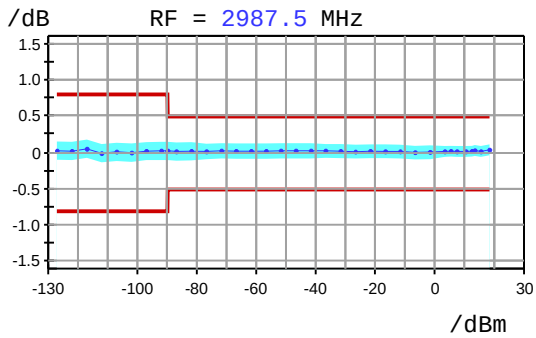

/dB
RF = 51.000 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

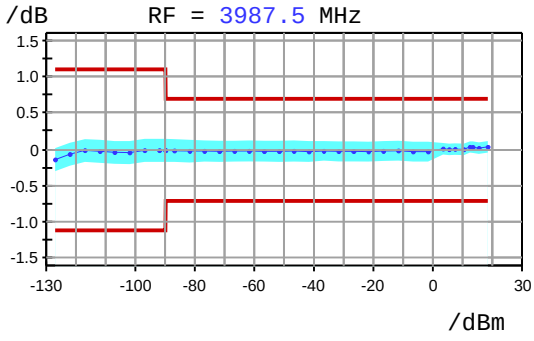

/dB
RF = 99.000 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

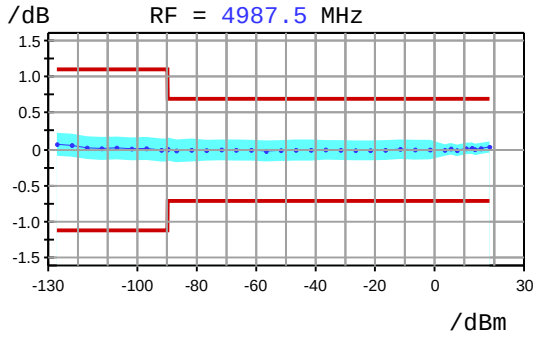

/dB
RF = 487.5 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

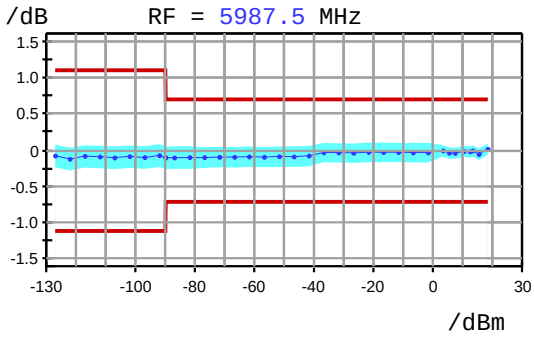

/dB
RF = 987.5 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm


/dB
RF = 1987.5 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

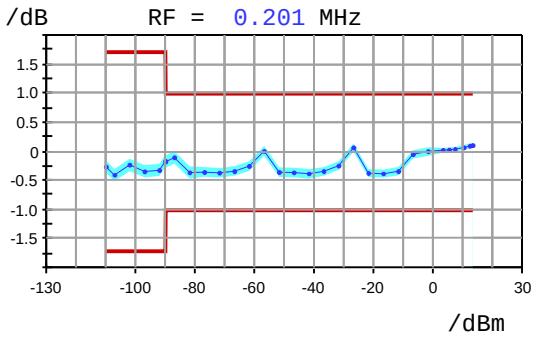

/dB
RF = 2987.5 MHz
1.5
1.0
0.5
0
-0.5
-1.0
-1.5
-130 -100 -80 -60 -40 -20 0 30
/dBm

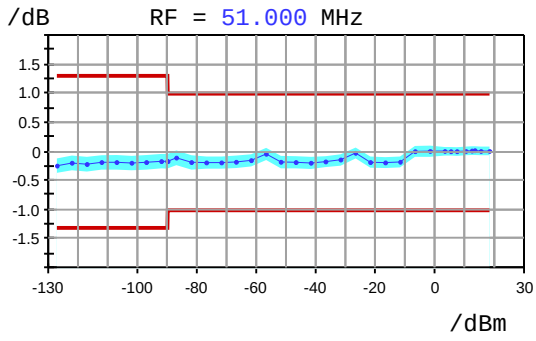


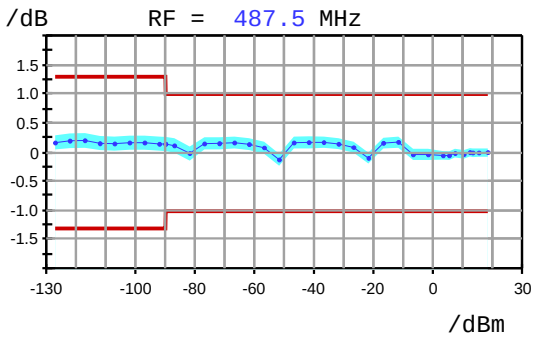


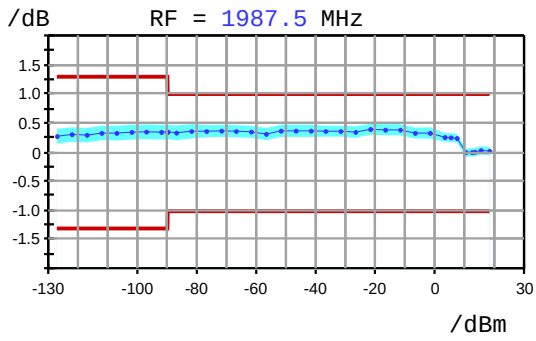


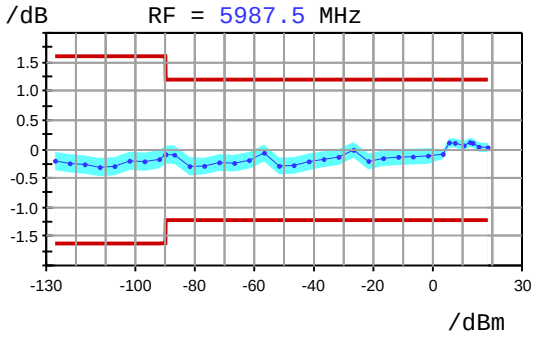
Level Linearity ALC Off (Table)



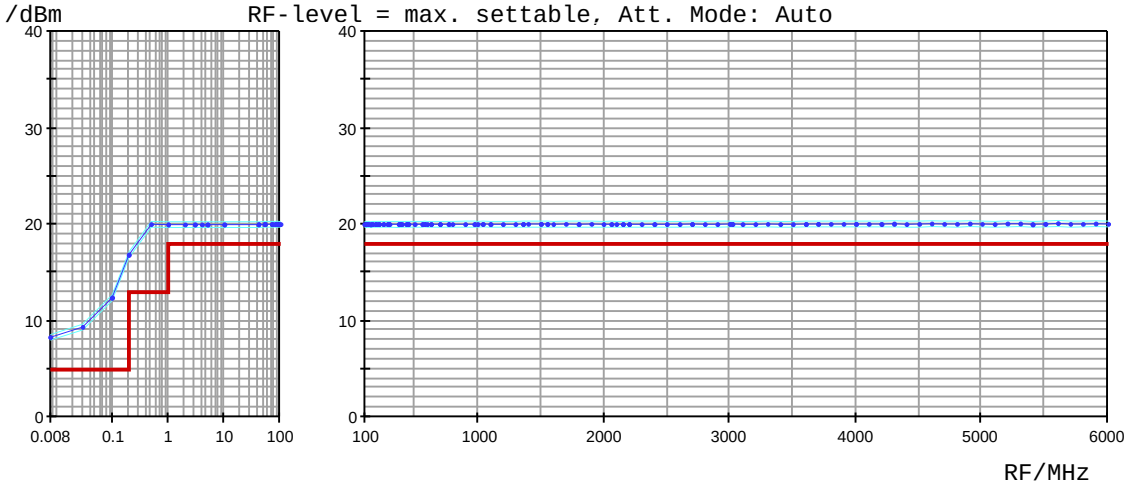






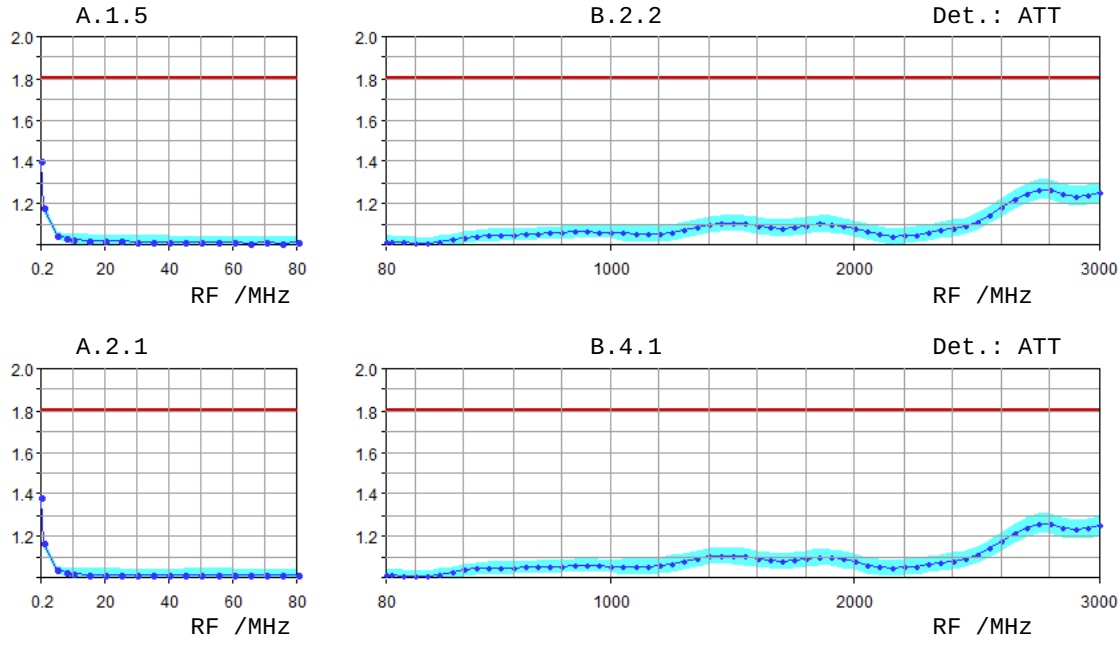


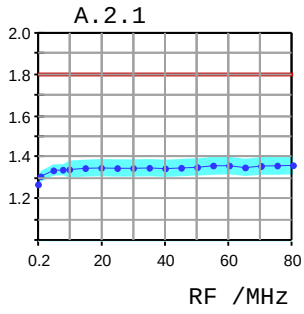
Maximum Level

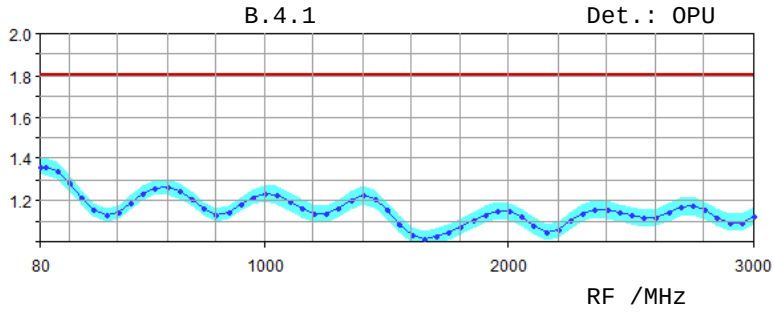


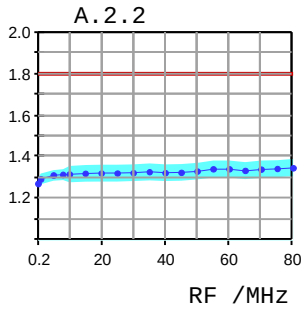
Output Impedance (VSWR)

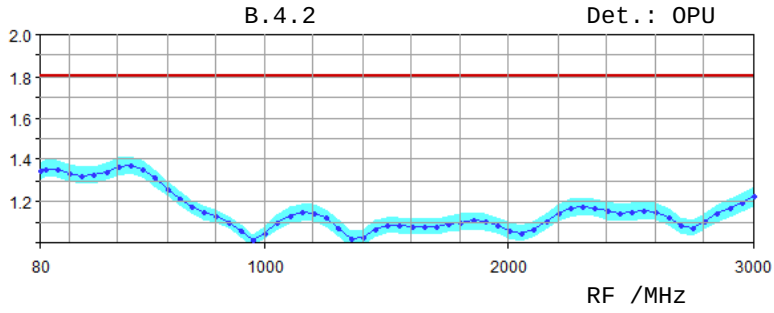
Tests with different settings of signal path through the instrument.
Frequency range up to 3 GHz:

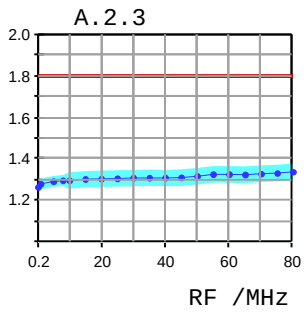


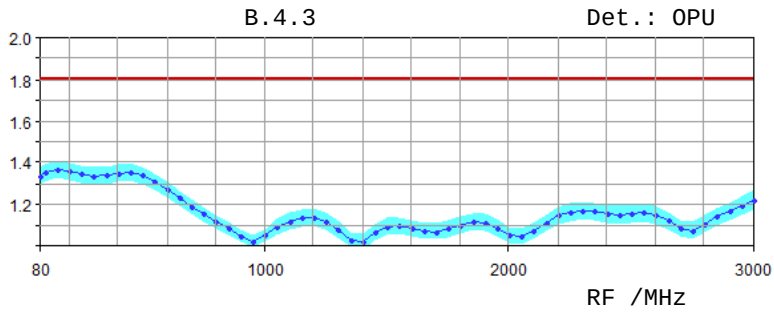


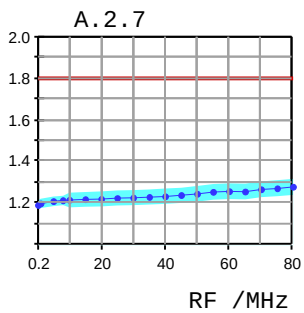


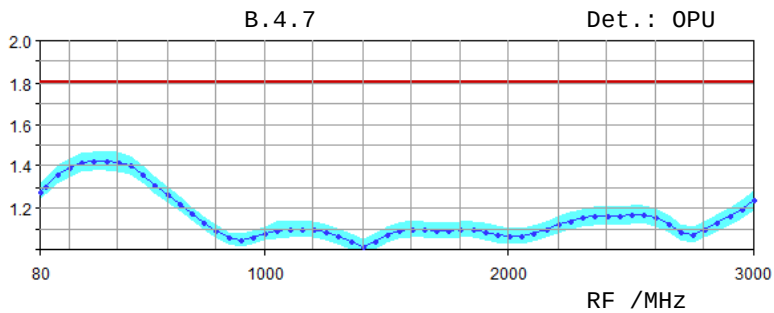




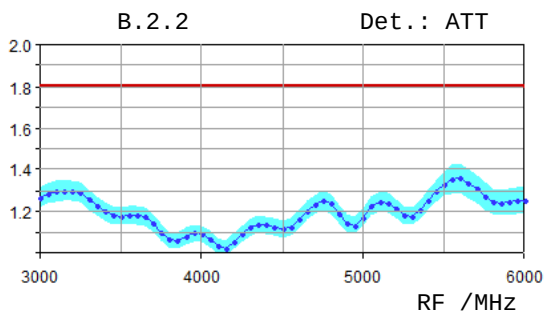


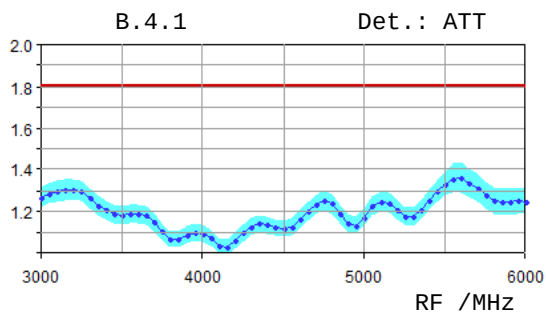


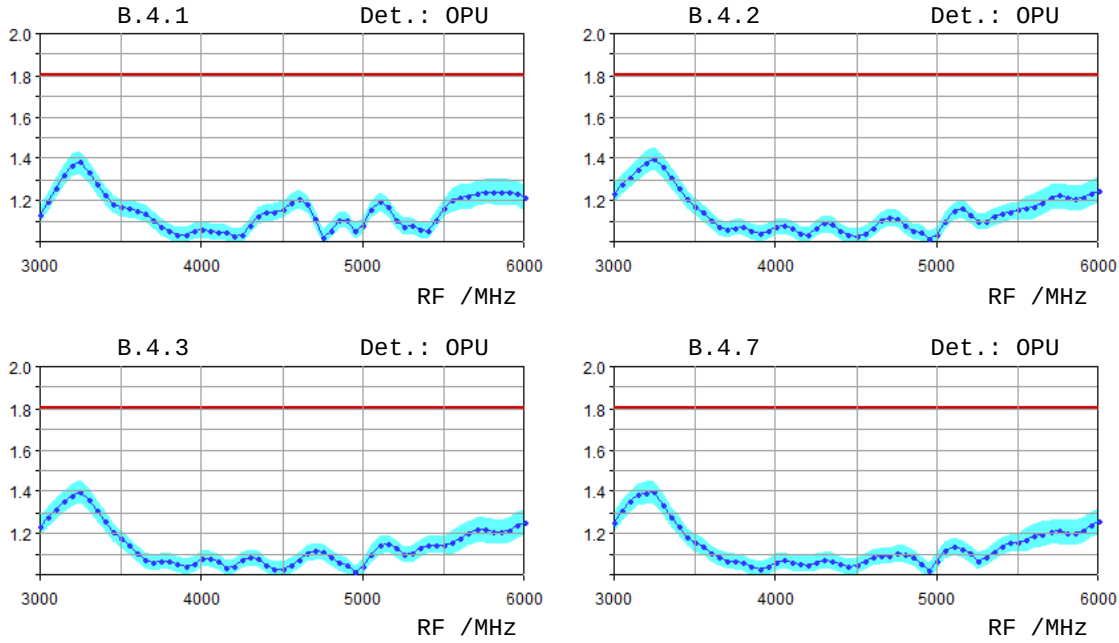




Frequency range 3 GHz to 6 GHz:







Level Setting Time

after remote control delimiter to < 0.1 dB deviation from final value

Mode	RF /MHz	Start level /dBm	Stop level /dBm	DUL /ms	Actual /ms	MU {g} /ms
ALC ON	10	-120.0	13.0	1.10	0.92	0.03
	10	-27.3	2.7	1.10	0.87	0.03
	10	2.7	-27.3	1.10	0.98	0.03
	30	-120.0	13.0	1.10	0.91	0.03
	30	-27.3	2.7	1.10	0.92	0.03
	30	2.7	-27.3	1.10	0.94	0.03
	375	-120.0	13.0	1.10	0.89	0.03
	375	-27.3	2.7	1.10	0.88	0.03
	375	2.7	-27.3	1.10	0.84	0.03
	1000	-120.0	13.0	1.10	0.84	0.03
	1000	-27.3	2.7	1.10	0.85	0.03
	1000	2.7	-27.3	1.10	0.89	0.03
	2000	-120.0	13.0	1.10	0.83	0.03
	2000	-27.3	2.7	1.10	0.94	0.03
	2000	2.7	-27.3	1.10	0.85	0.03
	3000	-120.0	13.0	1.10	0.92	0.03
	3000	-27.3	2.7	1.10	0.86	0.03
	3000	2.7	-27.3	1.10	0.96	0.03
	4500	-120.0	13.0	1.10	0.92	0.03
	4500	-27.3	2.7	1.10	0.85	0.03
	4500	2.7	-27.3	1.10	0.94	0.03
	6000	-120.0	13.0	1.10	0.85	0.03
	6000	-27.3	2.7	1.10	0.82	0.03
	6000	2.7	-27.3	1.10	0.81	0.03

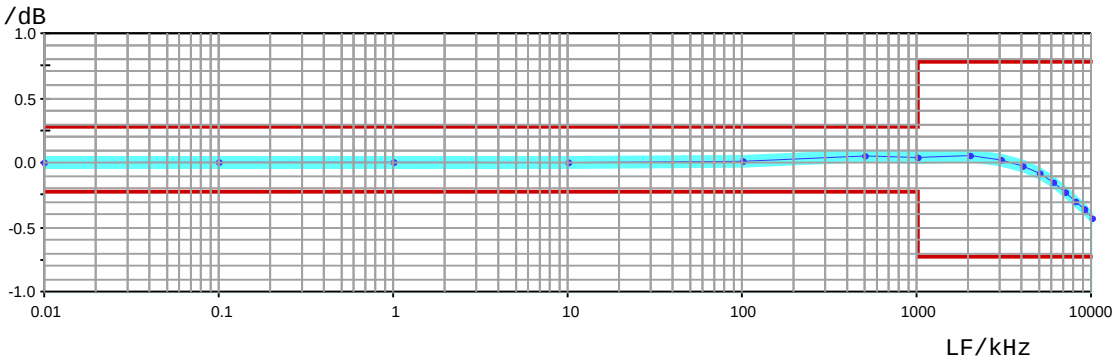
INTERNAL MODULATION GENERATOR

Output Voltage

Frequency = 1.0 kHz

Voltage /mV	DL /mV	Deviation /mV	MU /mV
3	1.03	+0.01	0.011
10	1.10	-0.03	0.036
30	1.30	-0.03	0.11
100	2.00	-0.10	0.35
300	4.00	-0.19	1.06
1000	11.00	-1.00	3.50
3000	31.00	-3.28	10.60
4000	41.00	-6.26	14.00

Frequency Response



Distortion

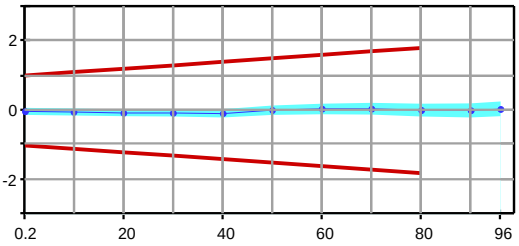
Frequency /kHz	DL /%	Actual /%	MU {g} /%
0.1	0.10	0.02	0.01
0.3	0.10	0.02	0.01
1.0	0.10	0.03	0.01
3.0	0.10	0.03	0.01
10.0	0.10	0.03	0.01
30.0	0.10	0.03	0.01
100.0	0.10	0.02	0.01

AMPLITUDE MODULATION

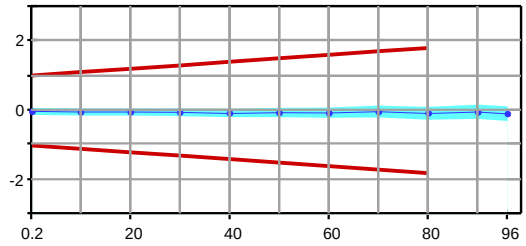
AM Depth Error

Setting Error vs Depth:
Level = 0 dBm, Source LF Generator 1, LF = 1 kHz

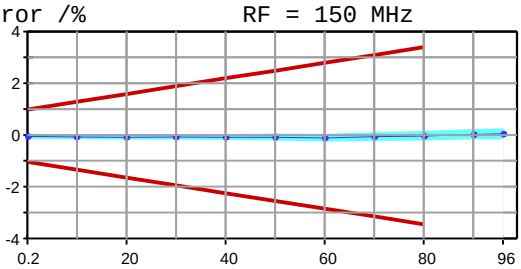
Error /% RF = 0.201 MHz



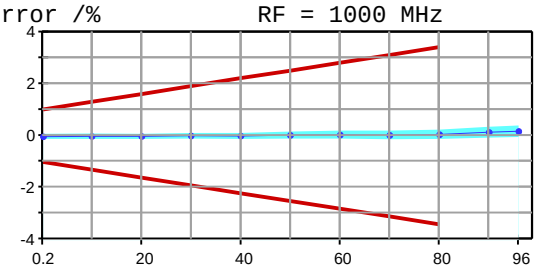
Error /% RF = 10 MHz



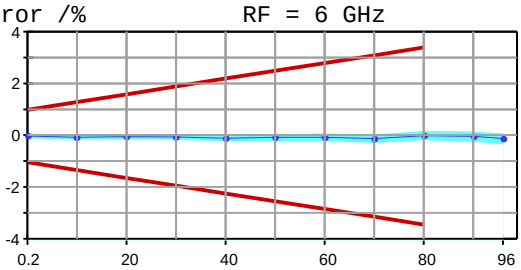
Error /% RF = 150 MHz



Error /% RF = 1000 MHz



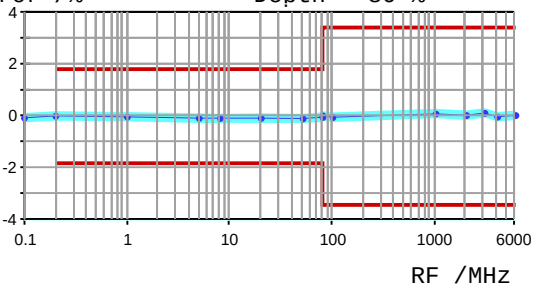
Error /% RF = 6 GHz



Source	AM Path	RF/MHz	Depth/%	DL/%	Error/%	MU/%
External	1	150	30.0	± 1.90	-0.07	0.11

Setting Error vs RF:
Level = 0 dBm, Source LF Generator 1, LF = 1 kHz

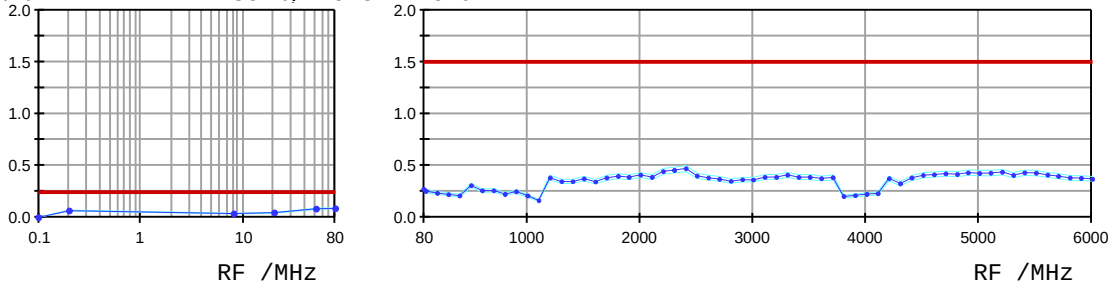
Error /% Depth = 80 %



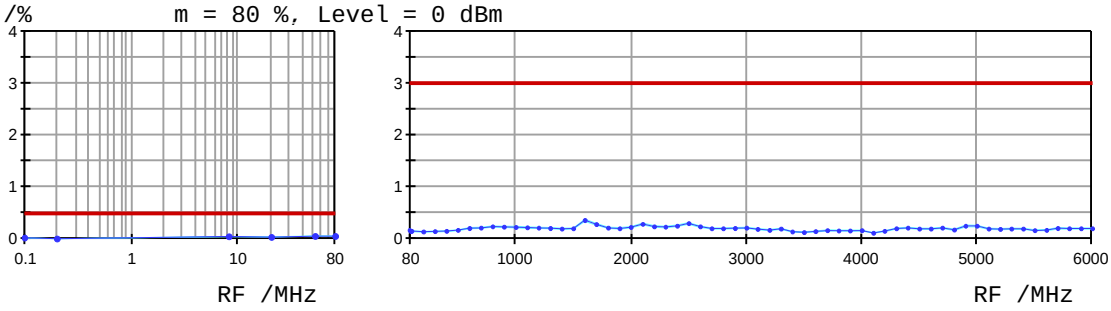
AM Distortion

LF = 1 kHz, MU: {b,g}

/% m = 30 %, Level = 0 dBm



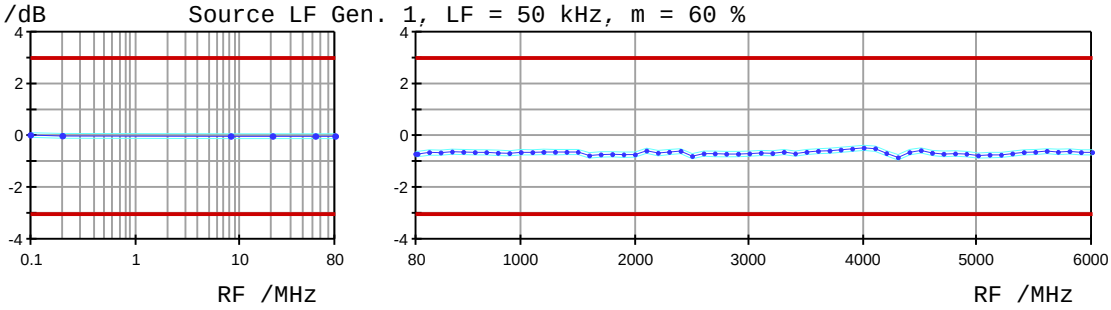
/% m = 80 %, Level = 0 dBm



AM Frequency Response vs RF

Level = 0 dBm

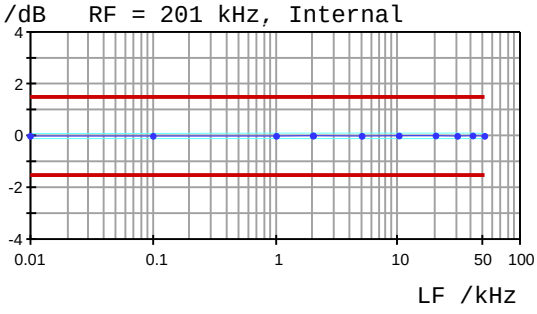
/dB Source LF Gen. 1, LF = 50 kHz, m = 60 %



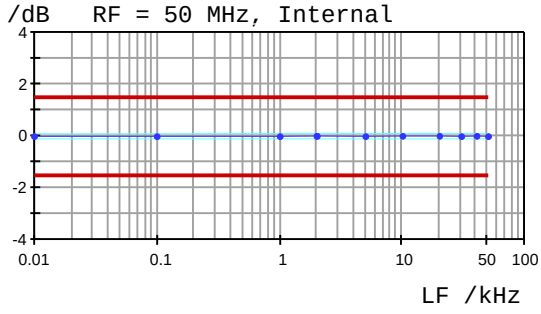
AM Frequency Response

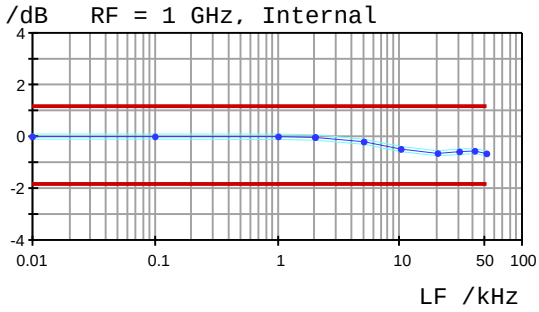
RF-level = 0 dBm, Depth = 60%:

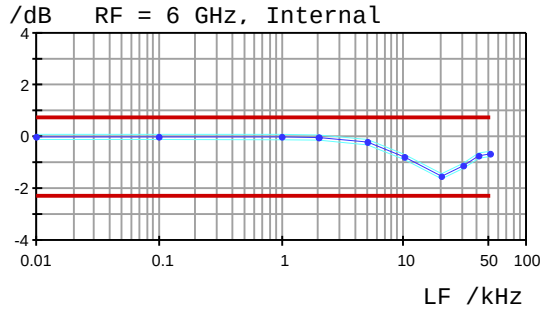
/dB RF = 201 kHz, Internal



/dB RF = 50 MHz, Internal

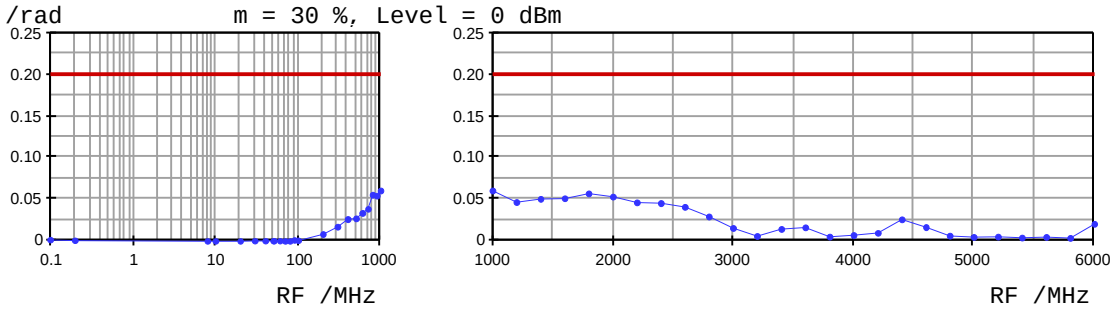






Synchronous PhiM with AM

LF = 1 kHz, MU: {a}



FREQUENCY MODULATION

FM Setting Uncertainty

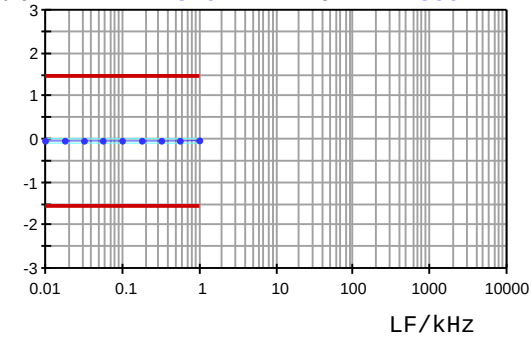
RF /MHz	LF /kHz	FM-Dev. /kHz	Mode	DL /kHz	Error /kHz	MU /kHz
FM Source Internal:						
8.0	2.0	2500.0	High BW	50.02	-7.13	10.00
250.0	2.0	2500.0	High BW	50.02	-7.16	10.00
250.1	2.0	1250.0	High BW	25.02	-3.53	5.00
750.1	2.0	5000.0	High BW	100.02	-14.27	20.00
1000.0	2.0	5000.0	High BW	100.02	-14.03	20.00
1500.0	2.0	5000.0	High BW	100.02	-14.18	20.00
3000.0	2.0	100.0	High BW	2.02	-0.31	0.40
6000.0	2.0	100.0	High BW	2.02	-0.31	0.40
8.0	2.0	50.0	Low Noise	1.02	-0.16	0.20
750.1	2.0	50.0	Low Noise	1.02	-0.16	0.20
1000.0	2.0	50.0	Low Noise	1.02	-0.15	0.20
1500.0	2.0	50.0	Low Noise	1.02	-0.16	0.20
3000.0	2.0	100.0	Low Noise	2.02	-0.31	0.40
6000.0	2.0	100.0	Low Noise	2.02	-0.31	0.40
FM Source External 1:						
1000.0	2.0	5000.0	High BW	150.02	-18.35	50.00

FM Distortion

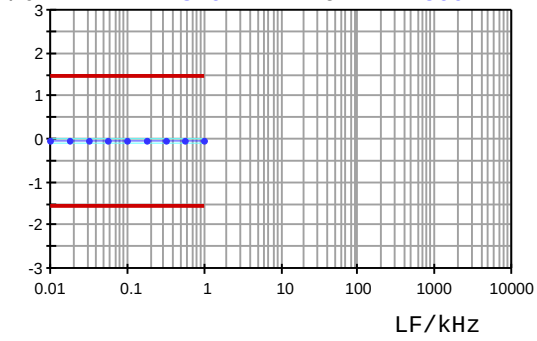
RF /MHz	LF /kHz	FM-Dev. /kHz	Mode	DUL /%	Actual /%	MU {g} /%
8.0	2.0	500.0	High BW	0.20	0.000	0.001
250.0	2.0	500.0	High BW	0.20	0.000	0.001
250.1	2.0	250.0	High BW	0.20	0.001	0.001
750.1	2.0	1000.0	High BW	0.20	0.000	0.001
1000.0	2.0	1000.0	High BW	0.20	0.000	0.001
1500.0	2.0	1000.0	High BW	0.20	0.000	0.001
3000.0	2.0	2000.0	High BW	0.20	0.000	0.001
6000.0	2.0	4000.0	High BW	0.20	0.001	0.001
8.0	2.0	500.0	Low Noise	0.20	0.000	0.001
750.1	2.0	100.0	Low Noise	0.20	0.002	0.001
1000.0	2.0	100.0	Low Noise	0.20	0.002	0.001
1500.0	2.0	100.0	Low Noise	0.20	0.002	0.001
3000.0	2.0	200.0	Low Noise	0.20	0.001	0.001
6000.0	2.0	400.0	Low Noise	0.20	0.000	0.001

FM Frequency Response

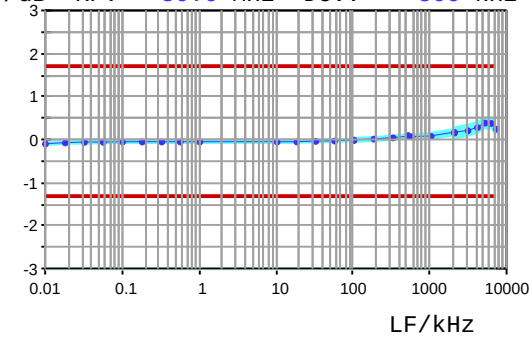
Source: INT Mode: High Bw
/dB RF: 8.0 MHz Dev: 500 kHz



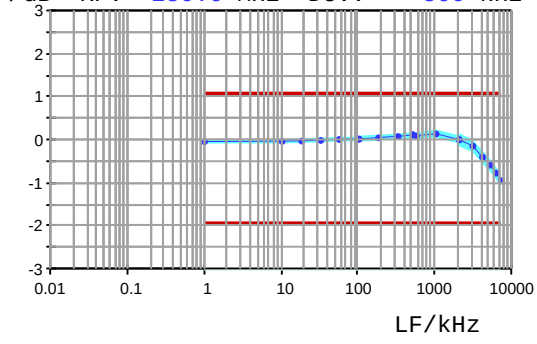
Source: EXT DC Mode: High Bw
/dB RF: 8.0 MHz Dev: 500 kHz



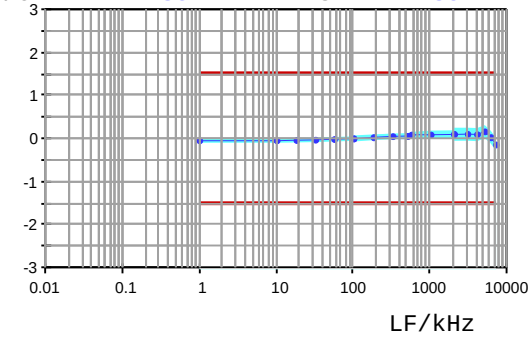
Source: EXT AC Mode: High Bw
/dB RF: 50.0 MHz Dev: 500 kHz



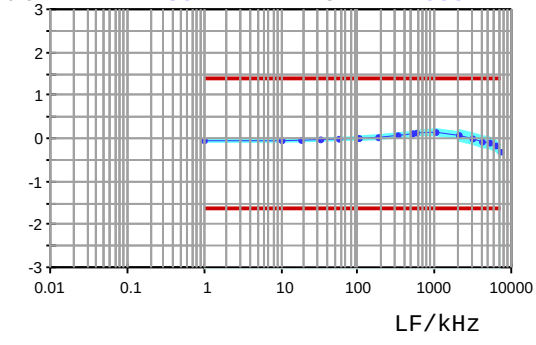
Source: INT Mode: High Bw
/dB RF: 250.0 MHz Dev: 500 kHz



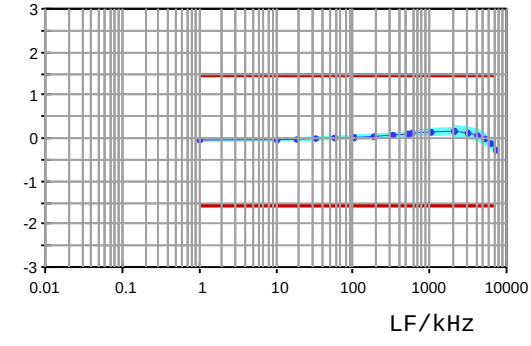
Source: EXT AC Mode: High Bw
/dB RF: 250.1 MHz Dev: 250 kHz



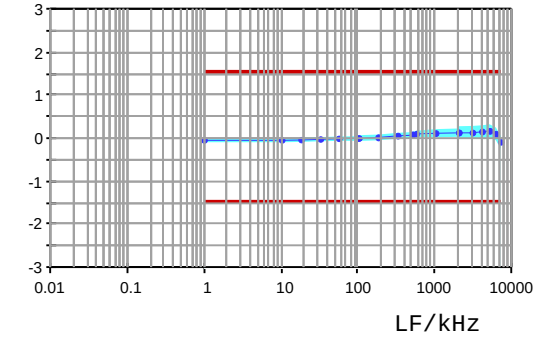
Source: EXT AC Mode: High Bw
/dB RF: 750.1 MHz Dev: 1000 kHz

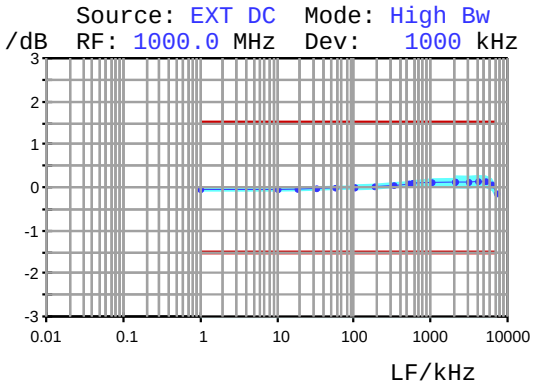


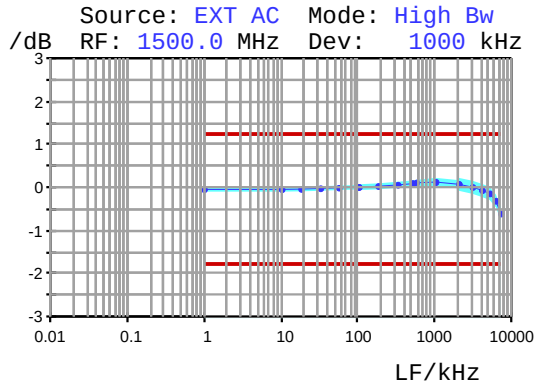
Source: INT Mode: High Bw
/dB RF: 1000.0 MHz Dev: 1000 kHz

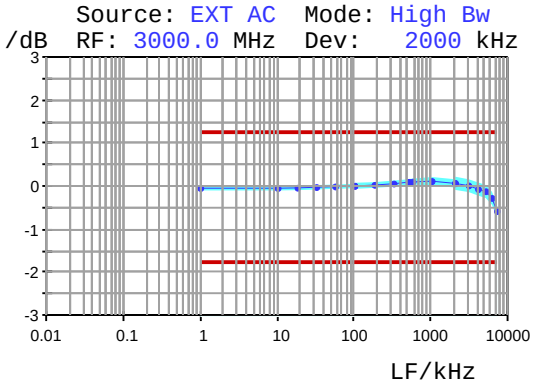


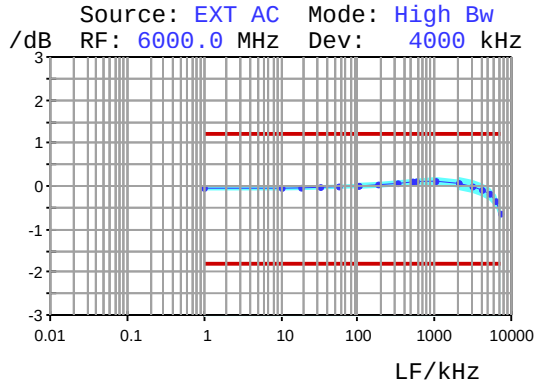
Source: EXT AC Mode: High Bw
/dB RF: 1000.0 MHz Dev: 1000 kHz

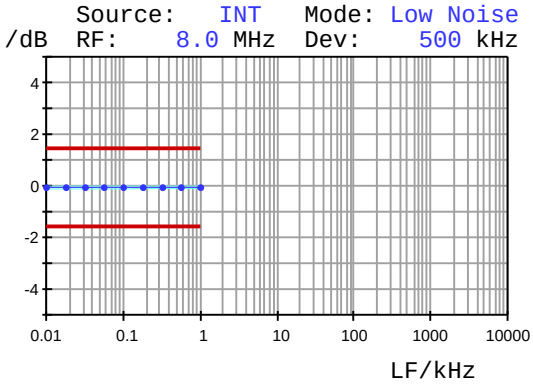


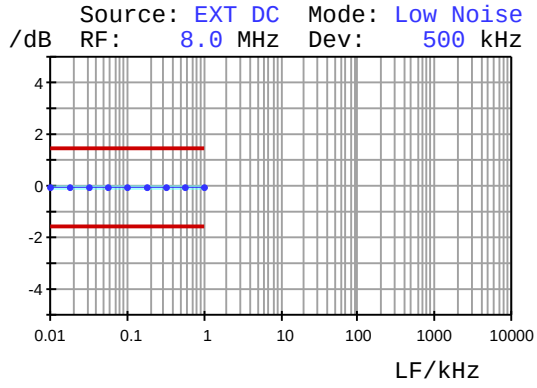

Source: EXT DC Mode: High Bw
/dB RF: 1000.0 MHz Dev: 1000 kHz
3
2
1
0
-1
-2
-3
0.01
0.1
1
10
100
1000
10000
LF/kHz

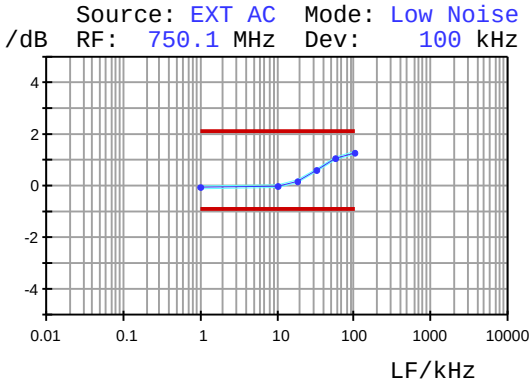

Source: EXT AC Mode: High Bw
/dB RF: 1500.0 MHz Dev: 1000 kHz
3
2
1
0
-1
-2
-3
0.01
0.1
1
10
100
1000
10000
LF/kHz

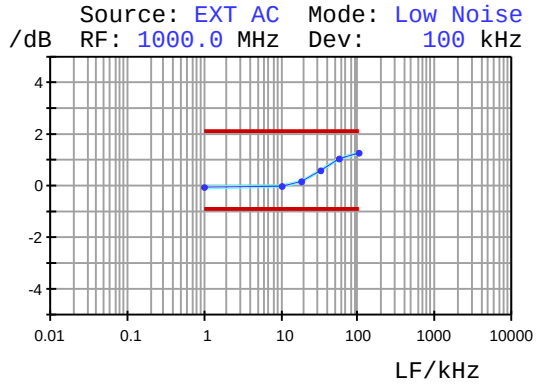

Source: EXT AC Mode: High Bw
/dB RF: 3000.0 MHz Dev: 2000 kHz
3
2
1
0
-1
-2
-3
0.01
0.1
1
10
100
1000
10000
LF/kHz

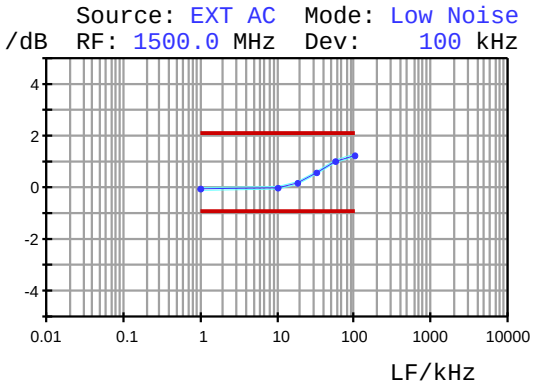

Source: EXT AC Mode: High Bw
/dB RF: 6000.0 MHz Dev: 4000 kHz
3
2
1
0
-1
-2
-3
0.01
0.1
1
10
100
1000
10000
LF/kHz

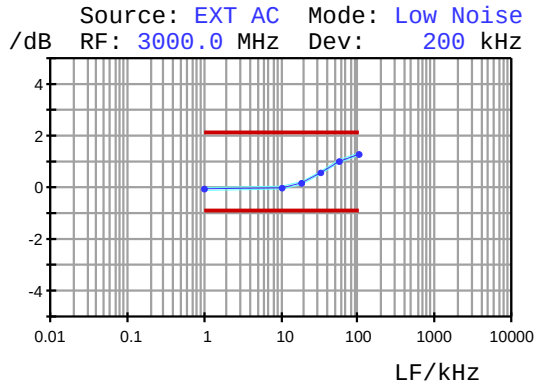

Source: INT Mode: Low Noise
/dB RF: 8.0 MHz Dev: 500 kHz
4
2
0
-2
-4
0.01
0.1
1
10
100
1000
10000
LF/kHz

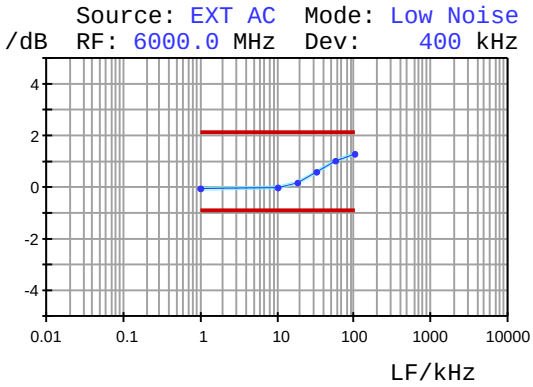

Source: EXT DC Mode: Low Noise
/dB RF: 8.0 MHz Dev: 500 kHz
4
2
0
-2
-4
0.01
0.1
1
10
100
1000
10000
LF/kHz


Source: EXT AC Mode: Low Noise
/dB RF: 750.1 MHz Dev: 100 kHz
4
2
0
-2
-4
0.01
0.1
1
10
100
1000
10000
LF/kHz


Source: EXT AC Mode: Low Noise
/dB RF: 1000.0 MHz Dev: 100 kHz
4
2
0
-2
-4
0.01
0.1
1
10
100
1000
10000
LF/kHz







Synchronous AM with FM

Mode: High Bandwidth

RF/MHz	LF/kHz	Dev./kHz	DUL/%	Actual/%	MU
8.001	1.0	40.0	0.20	0.026	{a}
350.0	1.0	40.0	0.20	0.017	{a}
350.001	1.0	40.0	0.20	0.014	{a}
750.1	1.0	40.0	0.20	0.003	{a}
1000.0	1.0	40.0	0.20	0.012	{a}
1500.0	1.0	40.0	0.20	0.008	{a}
3000.0	1.0	40.0	0.20	0.011	{a}
6000.0	1.0	40.0	0.20	0.011	{a}

Carrier Frequency Offset with FM

RF = 1 GHz, ModFreq = 1 MHz

Mode	Dev./kHz	DL/kHz	Offset /kHz	MU/kHz
Internal	1000.0	2.000	-0.020	0.010
External, 50 R, AC	1000.0	2.000	+0.150	0.010
External, 50 R, DC	1000.0	2.000	-0.210	0.010
External, High, AC	1000.0	2.000	+0.100	0.010
External, High, DC	1000.0	2.000	-0.830	0.010

PHASE MODULATION

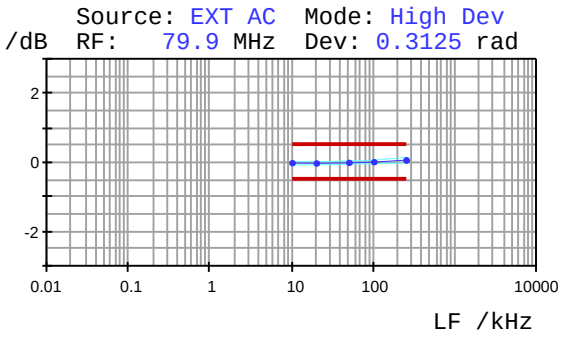
PhiM Setting Uncertainty

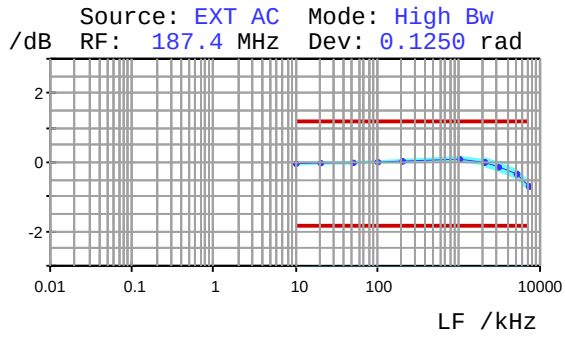
RF /MHz	LF /kHz	PhiM-Dev. /rad	Mode	DL /rad	Error /rad	MU /rad
PhiM Source Internal:						
8.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
350.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
350.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
750.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
1000.0	10.0	10.0	High Dev	0.2030	-0.0249	0.0101
1500.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
3000.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
3500.0	10.0	10.0	High Dev	0.2030	-0.0249	0.0101
4900.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
5400.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
6000.0	10.0	10.0	High Dev	0.2030	-0.0236	0.0101
500.0	10.0	0.001	High BW	0.0030	+0.0000	0.0001
500.0	10.0	0.01	High BW	0.0032	+0.0000	0.0001
500.0	10.0	0.1	High BW	0.0050	-0.0006	0.0002
500.0	10.0	0.5	High BW	0.0130	-0.0027	0.0006
8.0	10.0	0.0625	Low Noise	0.0043	-0.0002	0.0002
1000.0	10.0	0.125	Low Noise	0.0055	+0.0005	0.0002
1500.1	10.0	0.25	Low Noise	0.0080	+0.0007	0.0004
3000.1	10.0	0.5	Low Noise	0.0130	+0.0014	0.0006
6000.0	10.0	0.5	Low Noise	0.0130	+0.0017	0.0006
PhiM Source External:						
70.687	10.0	0.625	High BW	0.0218	-0.0018	0.0045
1000.0	10.0	0.125	Low Noise	0.0068	+0.0002	0.0010
3000.0	10.0	40.0	High Dev	1.2030	-0.1564	0.2801

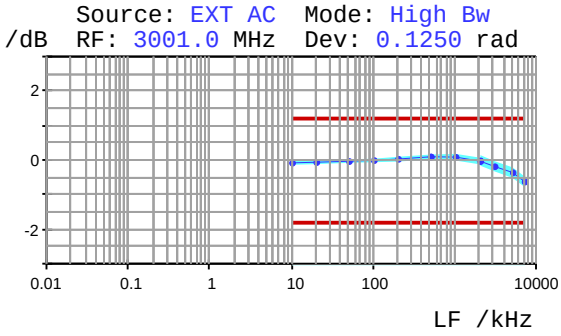
PhiM Distortion

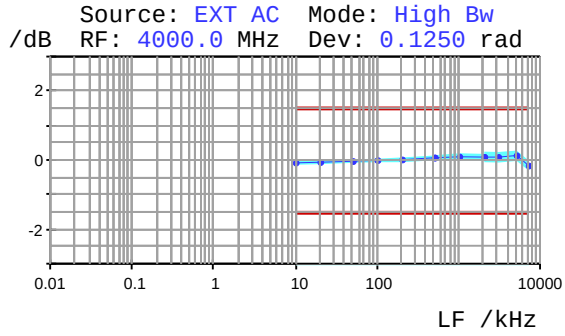
RF/MHz	LF/kHz	Dev./rad	Mode	DL/%	Actual/%	{g} MU/%
8.0	10.0	0.25	High BW	0.20	0.007	0.001
10.0	10.0	0.25	High BW	0.20	0.007	0.001
250.0	10.0	0.25	High BW	0.20	0.019	0.002
500.0	10.0	0.25	High BW	0.20	0.011	0.002
812.0	10.0	0.50	High BW	0.20	0.004	0.001
940.0	10.0	0.50	High BW	0.20	0.003	0.001
1067.0	10.0	0.50	High BW	0.20	0.004	0.001
1194.0	10.0	0.50	High BW	0.20	0.004	0.001
1321.0	10.0	0.50	High BW	0.20	0.003	0.001
1484.0	10.0	0.50	High BW	0.20	0.005	0.001
2200.0	10.0	1.0	High BW	0.20	0.003	0.001
4000.0	10.0	2.0	High BW	0.20	0.009	0.002
6000.0	10.0	2.0	High BW	0.20	0.020	0.002

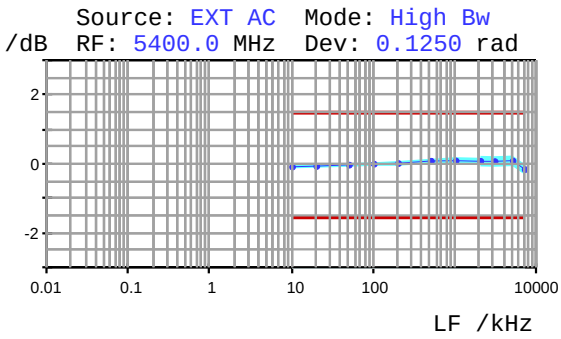
PhiM Frequency Response

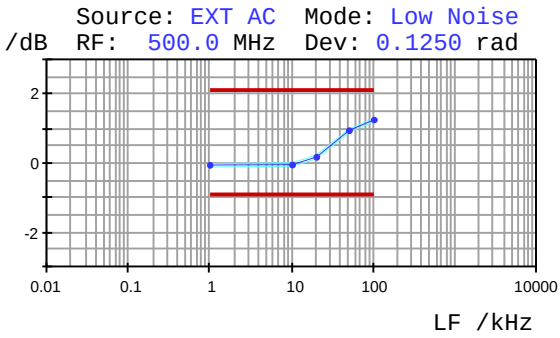








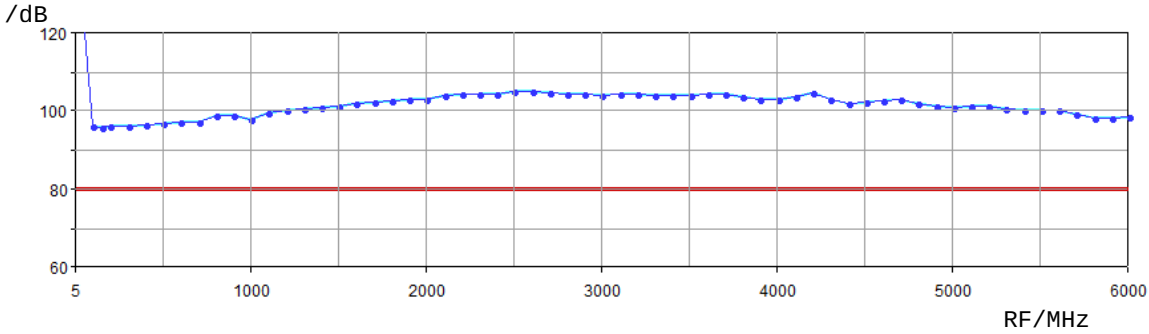




PULSE MODULATION

ON/OFF Ratio

RF-Level = 0 dBm



Dynamic Characteristics

The expanded uncertainty of the measurands risetime and falltime is 1 ns.
The characteristic overshoot is a test result.

Transition Type: Fast

RF /MHz	Risetime /ns	Falltime /ns	DUL /ns	Overshoot /%	DUL /%	Result	MU
700	5.9	2.2	15	0.3	10	PASS	{a}
1000	6.5	2.3	15	0.0	10	PASS	{a}
2000	5.7	2.3	15	0.0	10	PASS	{a}
3000	5.2	1.8	15	0.0	10	PASS	{a}
4000	5.7	2.2	15	0.1	10	PASS	{a}
5000	5.5	1.9	15	0.0	10	PASS	{a}
6000	6.9	2.0	15	0.0	10	PASS	{a}

Transition Type: Smoothed

RF /MHz	Risetime /ns	Falltime /ns	DUL /ns	Overshoot /%	DUL /%	Result	MU
700	50.3	13.7	200	0.2	10	PASS	{a}
1000	48.1	13.7	200	0.0	10	PASS	{a}
2000	44.0	13.6	200	0.0	10	PASS	{a}
3000	39.0	13.1	200	0.0	10	PASS	{a}
4000	49.9	16.4	200	0.0	10	PASS	{a}
5000	50.2	14.9	200	0.0	10	PASS	{a}
6000	53.8	14.6	200	0.0	10	PASS	{a}

Video Feedthrough

Modulation Signal: 100 kHz Square

Transition	RF /MHz	Level /dBm	DUL /mVpp	Actual /mVpp	MU
Fast	3250.0	+10.0	200	57.8	{e}
	4250.0	+10.0	200	45.2	{e}
	6000.0	+10.0	200	62.9	{e}
Smoothed	3250.0	+10.0	200	32.2	{e}
	4250.0	+10.0	200	24.7	{e}
	6000.0	+10.0	200	34.3	{e}

Functional test of Pulse Ext.

Test of Pulse Ext. connector	PASS

Incoming Results

Designation:	**Signal Generator**
Type:	**SMB100B**
Material No.:	**1422.1000K02**
Serial No.:	**102254**
Certificate No.:	**0001-300773215**
Referring to Test Documentation:	**1422.1000.01-PB-5.00**

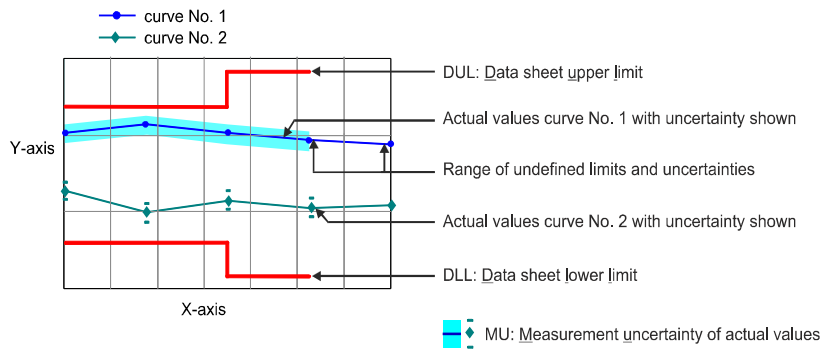
Test Department:	**3MES3**
Name:	**see certificate**
Date:	**2024-11-28**

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



Incoming Results

Table of contents

Incoming Results

Software used for measurement			
Item	**Type**	**Version**	**Remark**
Suite	Setup	V12.49.07	Test Management Software G5
Test Program (503886)	Component	V05.07	

DUT Configuration

Firmware version: 4.70.128.50

Specifications: 05.05

REFERENCE FREQUENCY

Internal Reference Frequency Error

	Nominal	DL /Hz	Error /Hz	MU /Hz
Ref Out Frequency	10 MHz	±38.500	-10.540	0.010

Ref Out Level (Std.)

Ref Source	Ref In Freq /MHz	Ref In Level /dBm	Ref Out Freq /MHz	Ref Out DLL /dBm	Ref Out DUL /dBm	Actual /dBm	{g} MU /dB
Int. 10 MHz	-	-	10.0	7.0	13.0	10.20	0.34
Ext.	10.0	0.0	10.0	7.0	13.0	10.34	0.34
Ext.	10.0	16.0	10.0	7.0	13.0	10.33	0.34

Synchronisation Test

Test if DUT is locked to Ref In signal:

Ref Source	Ref In /MHz	Ref In /dBm	Sync. BW	Ref In detune /ppm	Result	MU {c}
Ext.	10.0	0.0	Wide	0.0	PASS	
Ext.	10.0	16.0	Wide	0.0	PASS	
Ext.	10.0	8.0	Wide	+100.0	PASS	
Ext.	10.0	8.0	Wide	-100.0	PASS	

Frequency Setting Time

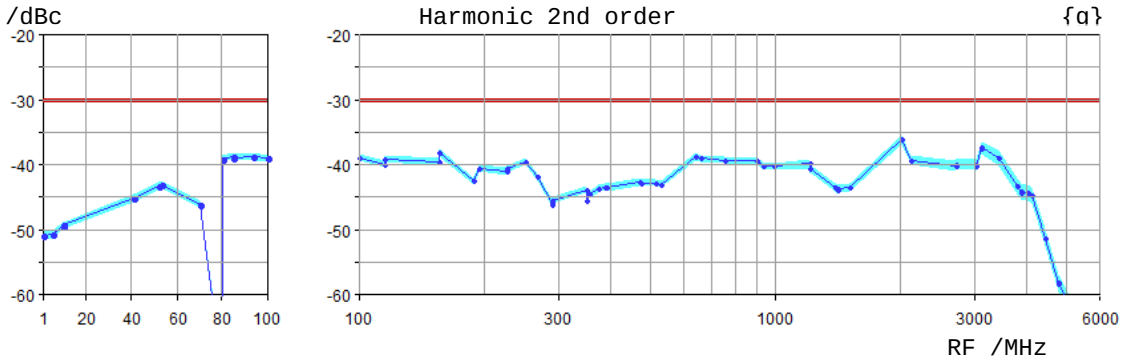
after remote control delimiter, GUI update stopped

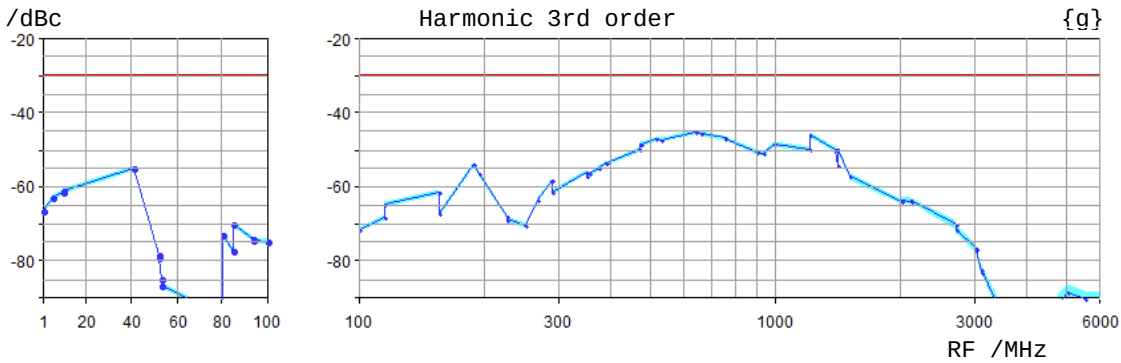
Mode	Start freq./MHz	Stop freq./MHz	DUL /ms	Actual /ms	MU {g} /ms
ALC AUTO (CW)	0.200	0.201	1.10	0.93	0.03
	0.201	0.200	1.10	0.91	0.03
	5.000	5.001	1.10	0.80	0.03
	5.001	5.000	1.10	0.86	0.03
	10.000	10.001	1.10	0.74	0.03
	10.001	10.000	1.10	0.76	0.03
	80.000	80.001	1.10	0.86	0.03
	80.001	80.000	1.10	0.76	0.03
	100.000	100.001	1.10	0.85	0.03
	100.001	100.000	1.10	0.84	0.03
	250.000	250.001	1.10	0.77	0.03
	250.001	250.000	1.10	0.72	0.03
	267.000	267.001	1.10	0.72	0.03
	267.001	267.000	1.10	0.75	0.03
	1400.000	1400.001	1.10	0.85	0.03
	1400.001	1400.000	1.10	0.82	0.03
	1500.000	1500.001	1.10	0.84	0.03
	1500.001	1500.000	1.10	0.77	0.03
	3000.000	3000.001	1.10	0.85	0.03
	3000.001	3000.000	1.10	0.82	0.03
	3780.000	3780.001	1.10	0.73	0.03
	3780.001	3780.000	1.10	0.70	0.03
	3876.000	3876.001	1.10	0.71	0.03
	3876.001	3876.000	1.10	0.68	0.03
	4100.000	4100.001	1.10	0.84	0.03
	4100.001	4100.000	1.10	0.80	0.03
	4760.000	4760.001	1.10	0.74	0.03
	4760.001	4760.000	1.10	0.72	0.03
	1500.001	1870.000	1.10	0.85	0.03
	1870.000	1500.001	1.10	0.84	0.03
	1870.001	2170.000	1.10	0.80	0.03
	2170.000	1870.001	1.10	0.80	0.03
	2170.001	2730.000	1.10	0.89	0.03
	2730.000	2170.001	1.10	0.84	0.03
	2730.001	3000.000	1.10	0.81	0.03
	3000.000	2730.001	1.10	0.81	0.03
	3000.001	3740.000	1.10	0.83	0.03
	3740.000	3000.001	1.10	0.81	0.03
	3740.001	4340.000	1.10	0.81	0.03
	4340.000	3740.001	1.10	0.83	0.03
	4340.001	5460.000	1.10	0.84	0.03
	5460.000	4340.001	1.10	0.80	0.03
	5460.001	6000.000	1.10	0.85	0.03
	6000.000	5460.001	1.10	0.83	0.03

SPECTRAL PURITY

Harmonics CW-Mode

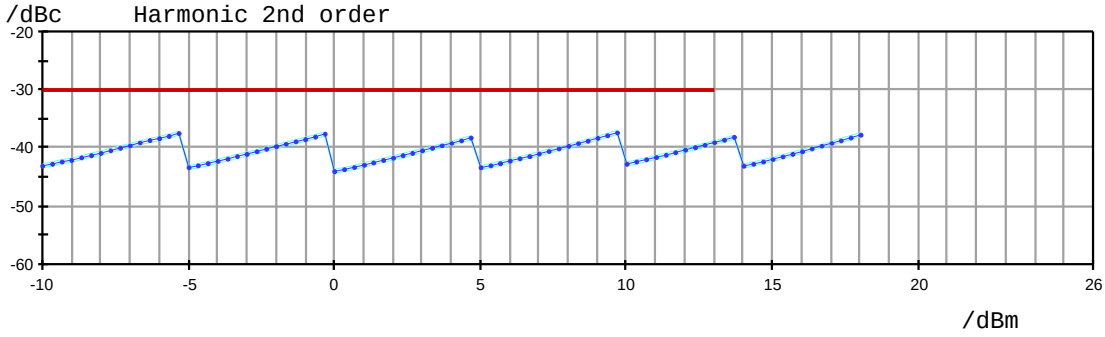
RF-Level = 13.0 dBm





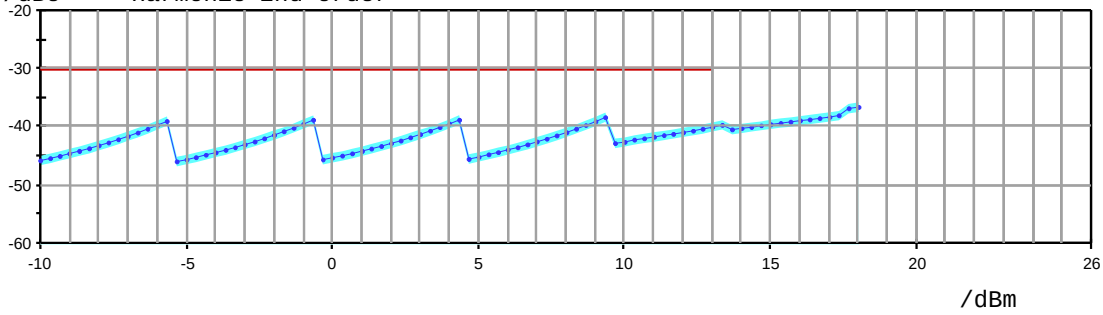
Harmonics vs Level

RF = 200.000 MHz:

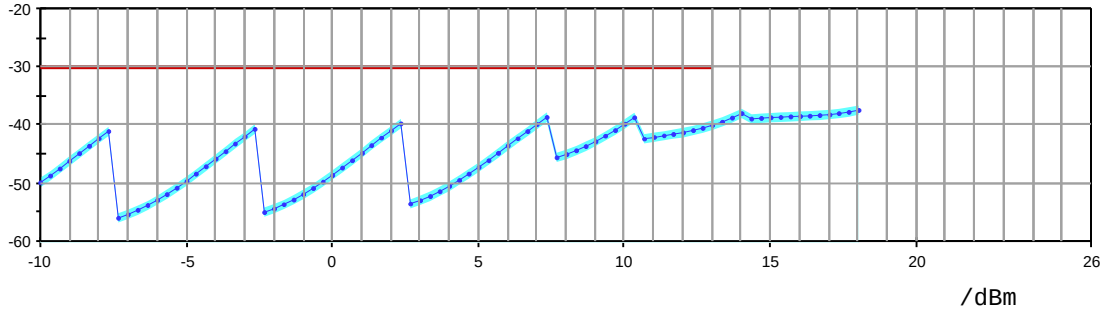


Incoming Results

RF = 1000.000 MHz:
/dBc Harmonic 2nd order



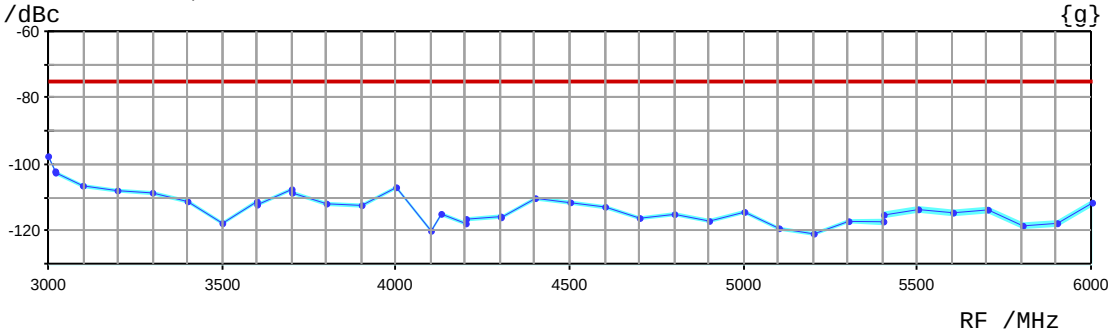
RF = 3000.000 MHz:
/dBc Harmonic 2nd order



Subharmonics CW-Mode

RF-Level = 10.0 dBm

worst of 0.5*RF, 1.5*RF
/dBc {g}



Incoming Results

Nonharmonics

Systematic nonharmonics of synthesis:

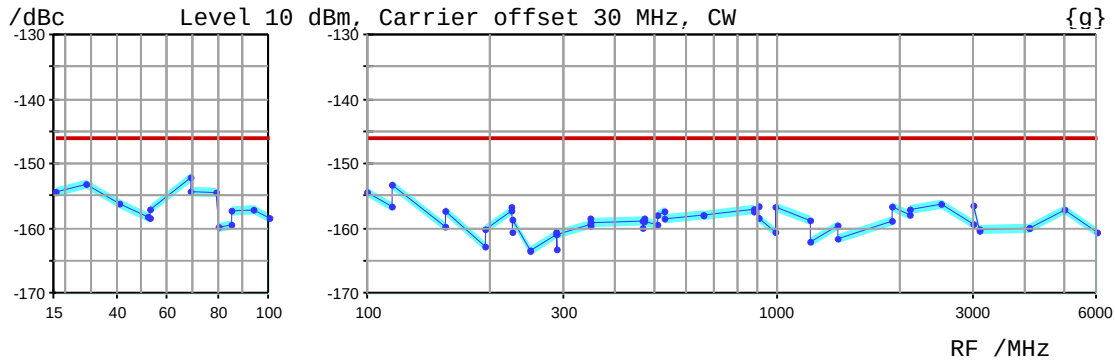
RF /MHz	Level /dBm	Spurious at /MHz	DUL /dBc	Actual /dBc	{g} MU /dB
66.930000	10.0	70.88000	-80.0	-101.5	0.8
77.590000	10.0	86.25980	-80.0	-102.4	0.8
455.203520	10.0	455.23214	-80.0	-102.5	0.8
881.777000	10.0	882.05250	-76.0	-111.7	0.8
999.900000	10.0	1000.00000	-76.0	-98.9	0.8
999.900000	10.0	1000.10000	-76.0	-99.6	0.8
1076.561000	10.0	1076.57920	-76.0	-100.3	0.8
1137.503000	10.0	1137.53730	-76.0	-100.5	0.8
1157.803000	10.0	1157.82970	-76.0	-94.3	0.8
1264.292000	10.0	1264.35250	-76.0	-88.8	0.8
1291.929000	10.0	1292.08000	-76.0	-109.1	0.8
1302.607000	10.0	1302.63020	-76.0	-92.5	0.8
1343.016000	10.0	1343.09170	-76.0	-97.2	0.8
1414.262000	10.0	1414.43860	-76.0	-97.4	0.8
1424.408000	10.0	1424.51220	-76.0	-97.2	0.8
1434.603000	10.0	1434.70090	-76.0	-97.5	0.8
1499.900000	10.0	1500.30000	-76.0	-97.7	0.8
1500.100000	10.0	1500.30000	-70.0	-92.3	0.8
1500.100000	10.0	1500.50000	-70.0	-105.0	0.8
1571.500000	10.0	1571.59090	-70.0	-91.1	0.8
1675.765000	10.0	1675.79220	-70.0	-92.2	0.8
1828.140000	10.0	1828.16720	-70.0	-89.9	0.8
1999.900000	10.0	2000.00000	-70.0	-95.4	0.8
1999.900000	10.0	2000.10000	-70.0	-93.3	0.8
2000.100000	10.0	2000.20000	-70.0	-94.4	0.8
2000.100000	10.0	2000.30000	-70.0	-91.2	0.8
2153.144000	10.0	2153.17330	-70.0	-89.8	0.8
2168.957000	10.0	2169.16790	-70.0	-101.2	0.8
2274.980000	10.0	2275.00857	-70.0	-89.8	0.8
2405.150000	10.0	2405.52230	-70.0	-86.4	0.8
2574.265000	10.0	2574.54150	-70.0	-102.0	0.8
2660.913000	10.0	2660.94297	-70.0	-91.0	0.8
2828.451000	10.0	2828.63670	-70.0	-90.9	0.8
3486.464000	10.0	3486.54170	-64.0	-98.4	0.8
3527.057000	10.0	3527.15890	-64.0	-99.6	0.8
3999.900000	10.0	3999.95000	-64.0	-86.5	0.8
3999.900000	10.0	4000.00000	-64.0	-84.1	0.8
3999.900000	10.0	4000.30000	-64.0	-89.8	0.8
4000.100000	10.0	4000.15000	-64.0	-87.3	0.8
4000.100000	10.0	4000.20000	-64.0	-83.5	0.8
4000.100000	10.0	4000.50000	-64.0	-89.5	0.8
4120.921000	10.0	4121.29230	-64.0	-91.5	0.8
4297.343000	10.0	4297.47110	-64.0	-96.2	0.8
4337.933000	10.0	4338.19630	-64.0	-97.8	0.8
4378.336000	10.0	4378.45300	-64.0	-95.2	0.8
4418.937000	10.0	4418.98640	-64.0	-97.5	0.8
4631.205000	10.0	4631.23730	-64.0	-86.8	0.8
4999.900000	10.0	5000.00000	-64.0	-79.2	0.8
5000.100000	10.0	5000.20000	-64.0	-79.0	0.8
5376.196000	10.0	5376.21620	-64.0	-84.5	0.8
5524.955000	10.0	5524.98220	-64.0	-81.1	0.8
5710.228000	10.0	5710.73850	-64.0	-95.3	0.8
5999.900000	10.0	6000.00000	-64.0	-92.7	0.8
5999.900000	10.0	6000.10000	-64.0	-74.8	0.8

Incoming Results

Non-systematic nonharmonics, CW-mode:
Scanned range: 10 kHz to 10 MHz carrier offset

RF /MHz	Level /dBm	Spurious at /MHz	DUL /dBc	Actual /dBc	{g} MU /dB
77.591000	10.0	68.908000	-80.0	-97.4	0.8
700.787000	10.0	700.813667	-80.0	-96.0	0.8
1571.500000	10.0	1571.409090	-70.0	-90.5	0.8
2579.693000	10.0	2579.665283	-70.0	-85.6	0.8
2762.520000	10.0	2762.543529	-70.0	-87.2	0.8
2803.138000	10.0	2803.153071	-70.0	-87.5	0.8
2935.758000	10.0	2935.936690	-70.0	-81.1	0.8
3437.509000	10.0	3437.537802	-64.0	-84.8	0.8
4509.337000	10.0	4509.364386	-64.0	-82.3	0.8
4712.546000	10.0	4712.450829	-64.0	-87.1	0.8
4753.130000	10.0	4753.143675	-64.0	-86.2	0.8
5240.570000	10.0	5240.672320	-64.0	-86.3	0.8
5443.738000	10.0	5443.709341	-64.0	-79.6	0.8
5524.955000	10.0	5524.981469	-64.0	-81.1	0.8
5606.287000	10.0	5606.308450	-64.0	-82.5	0.8
5871.400000	10.0	5871.341605	-64.0	-75.5	0.8

Wideband Noise



SSB Phase Noise

RF /MHz	Offset /kHz	DUL /dBc	Actual /dBc	MU {g} /dB
100	20.0	-142.0	-150.1	1.0
1000	20.0	-126.0	-133.5	1.0
2000	20.0	-120.0	-127.6	1.0
3000	20.0	-116.0	-124.6	1.0
4000	20.0	-114.0	-121.6	1.0
6000	20.0	-110.0	-118.7	1.0

Incoming Results

Residual AM

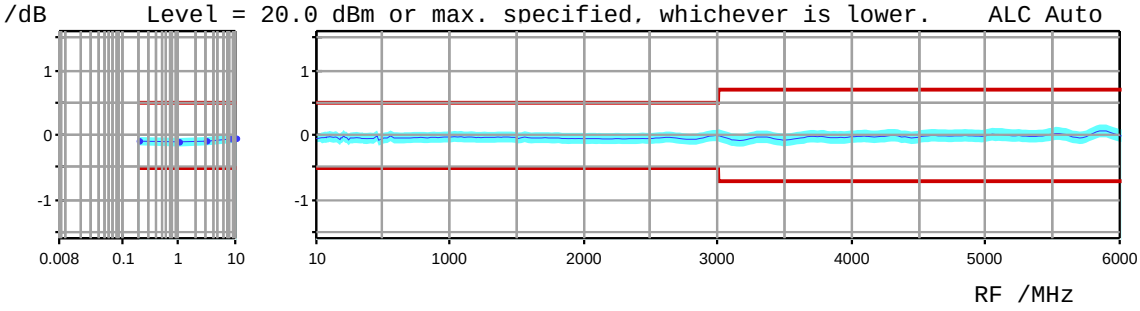
RMS value (20 Hz to 23 kHz)
Level = 12 dBm

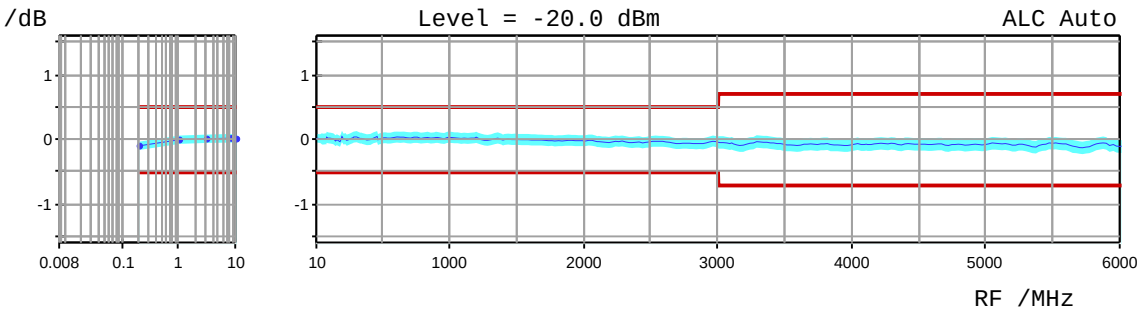
RF/MHz	DUL/%	Actual/%	MU
10	0.020	0.003	{a}
50	0.020	0.003	{a}
80	0.020	0.003	{a}
80.001	0.020	0.003	{a}
100	0.020	0.003	{a}
1000	0.020	0.003	{a}
1900	0.020	0.003	{a}
1901	0.020	0.002	{a}
2700	0.020	0.003	{a}
3000	0.020	0.003	{a}
3001	0.020	0.003	{a}
3600	0.020	0.003	{a}
3601	0.020	0.003	{a}
4100	0.020	0.002	{a}
4101	0.020	0.002	{a}
5400	0.020	0.003	{a}
6000	0.020	0.003	{a}

LEVEL

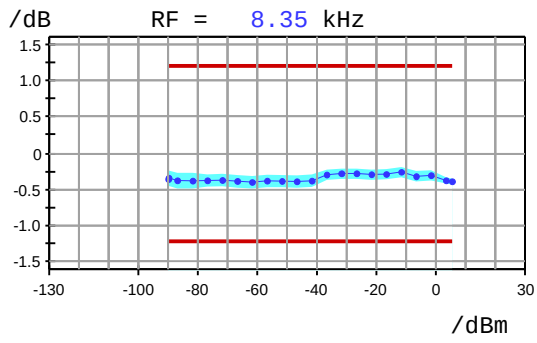
Level Accuracy

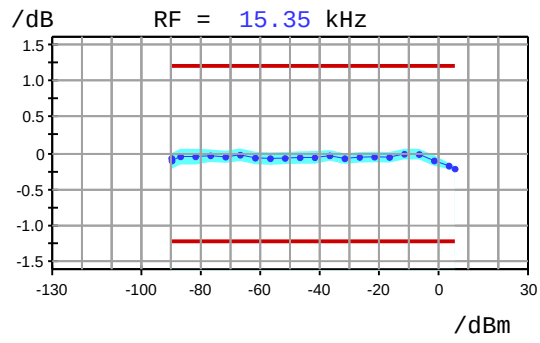
- Versus Frequency at Specific Level:
  CW-Mode:

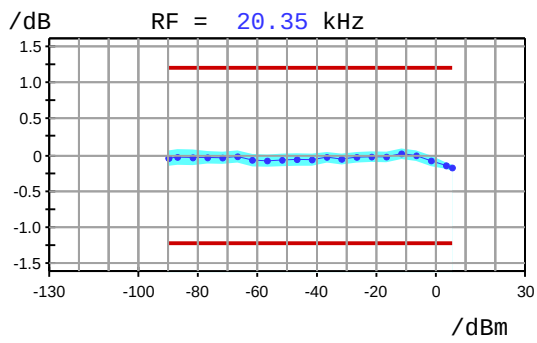


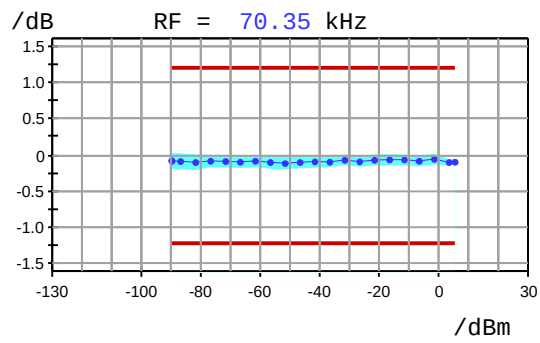


Level Linearity ALC Auto

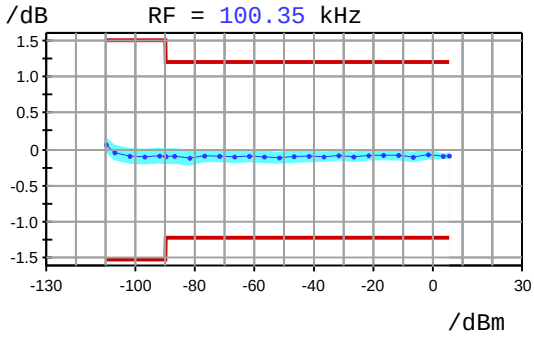


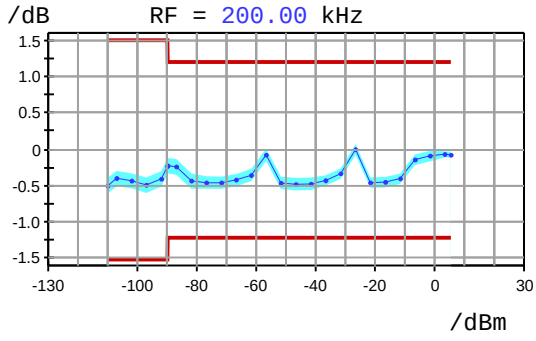


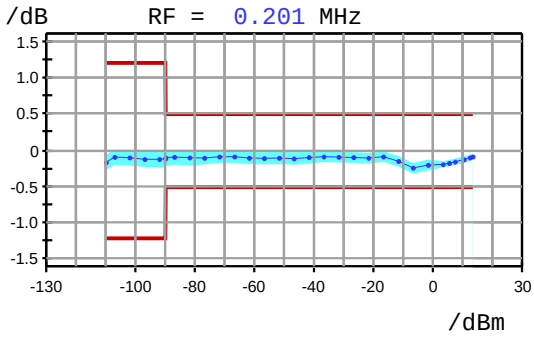


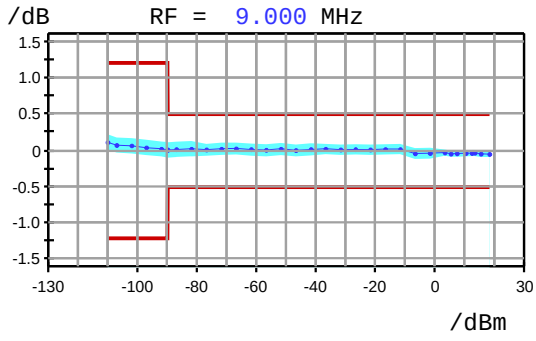


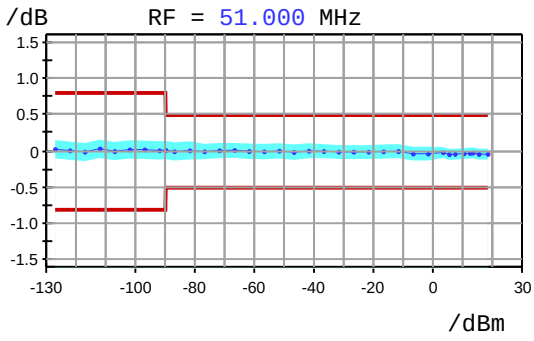
Incoming Results

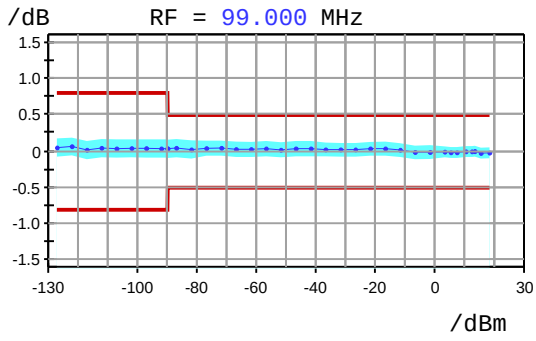


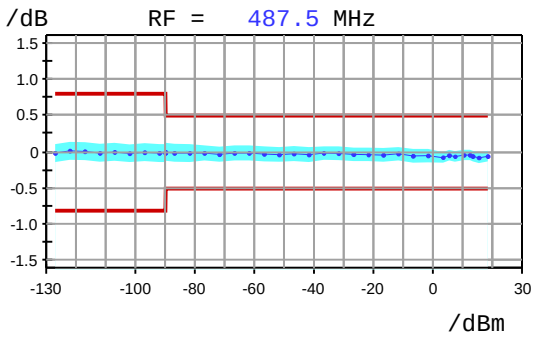


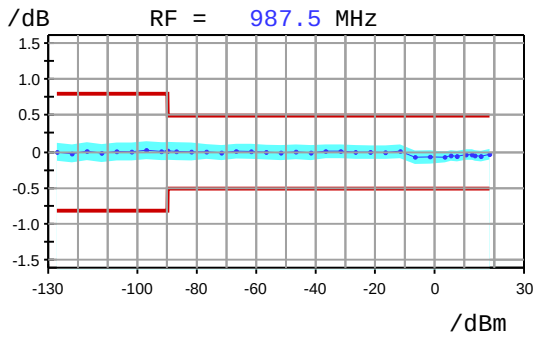


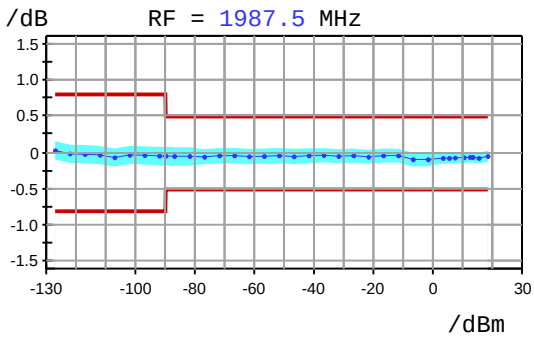


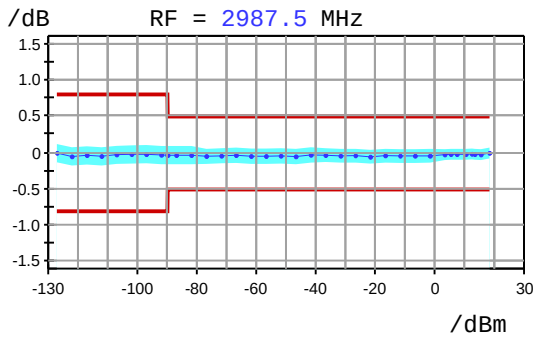




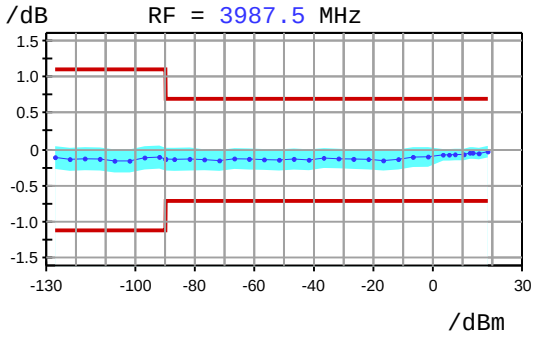


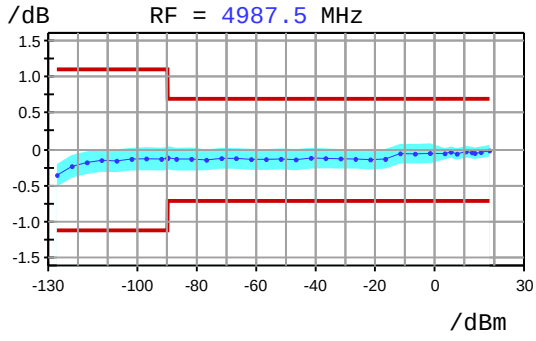


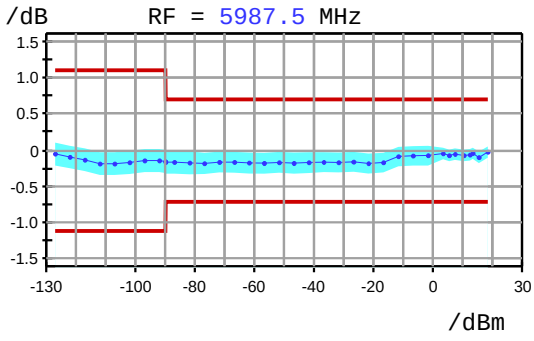




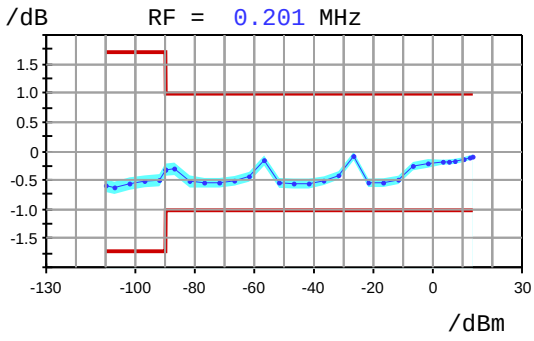
Incoming Results

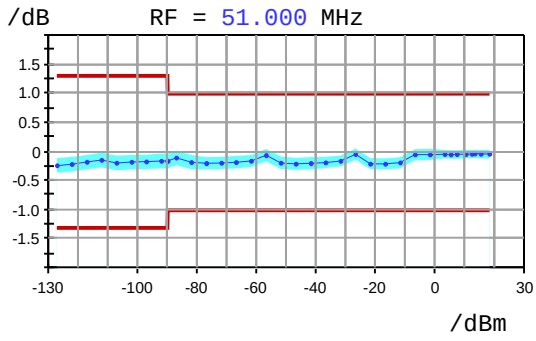


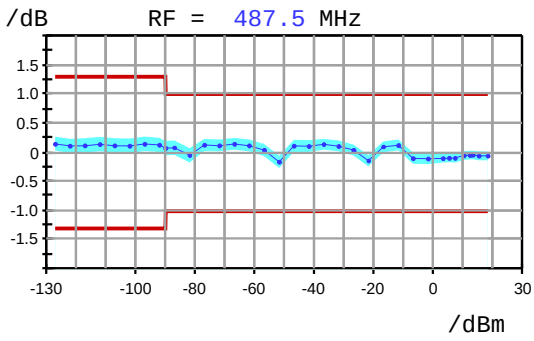


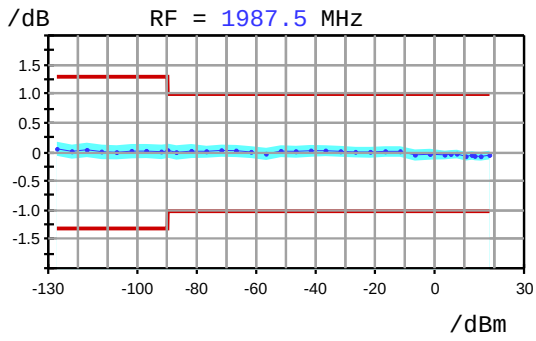


Level Linearity ALC Off (Table)

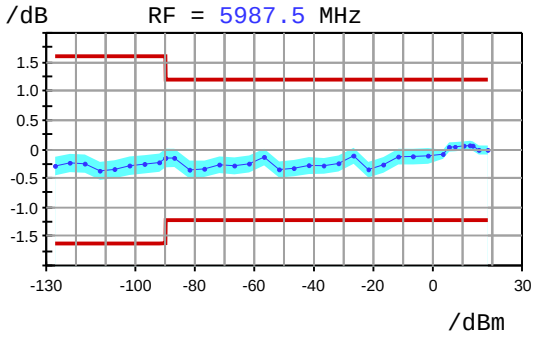




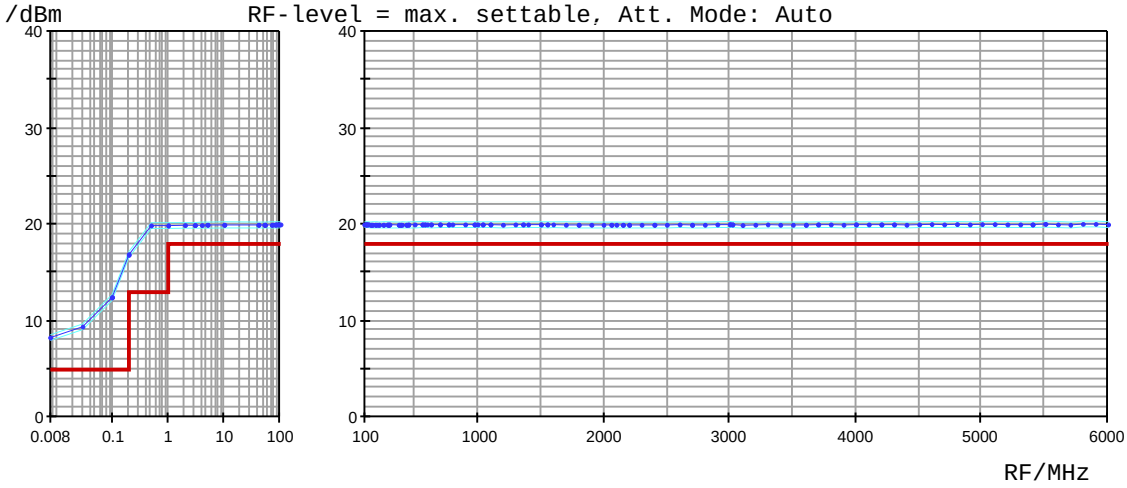




Incoming Results

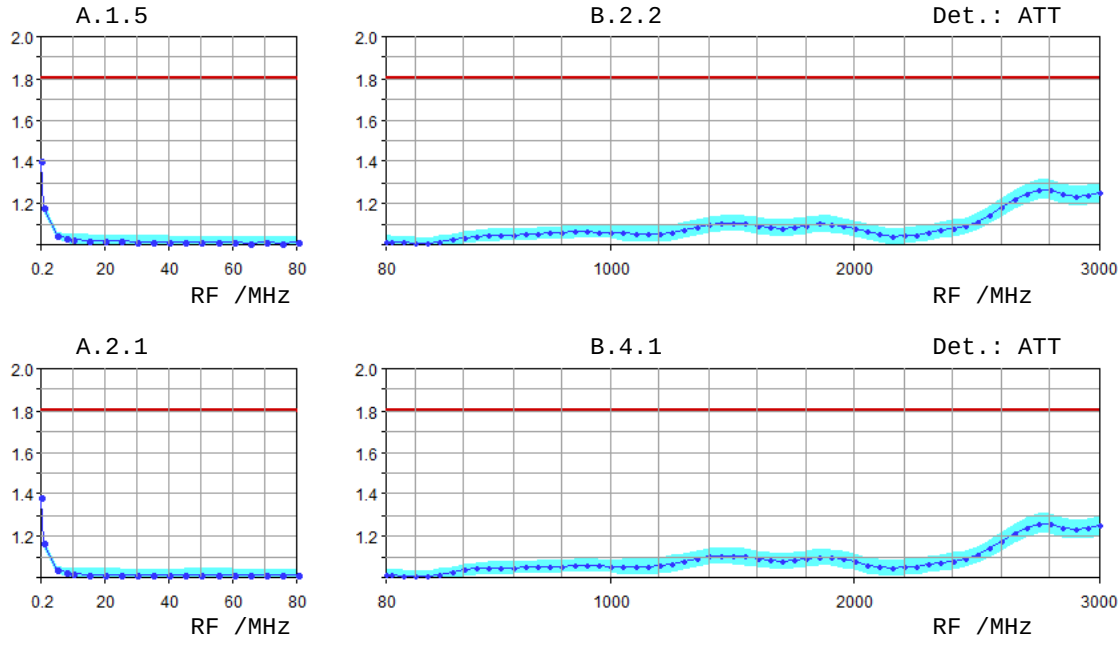


Maximum Level

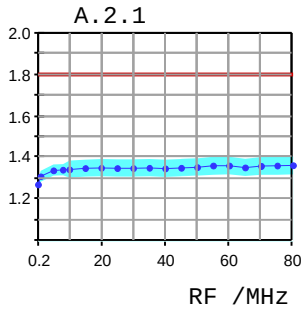


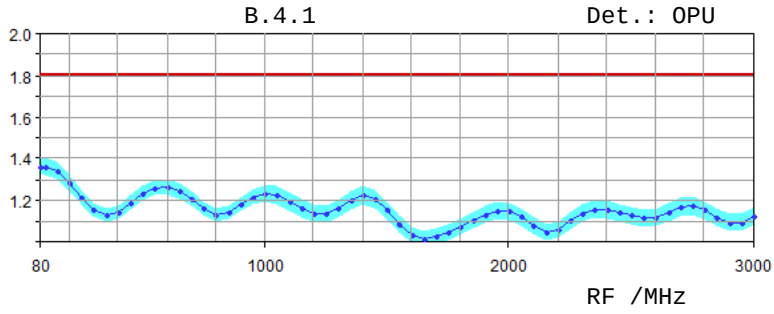
Output Impedance (VSWR)

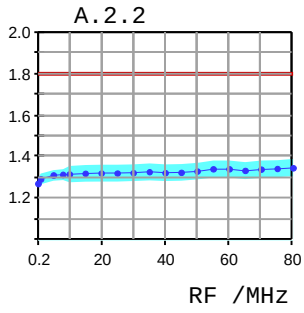
Tests with different settings of signal path through the instrument.
Frequency range up to 3 GHz:

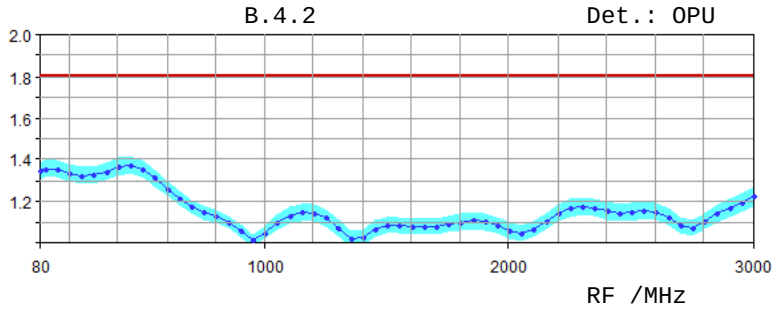


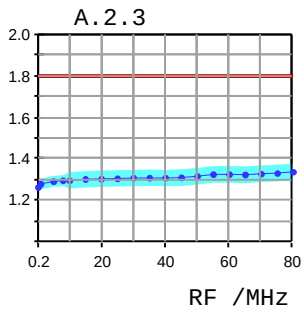
Incoming Results

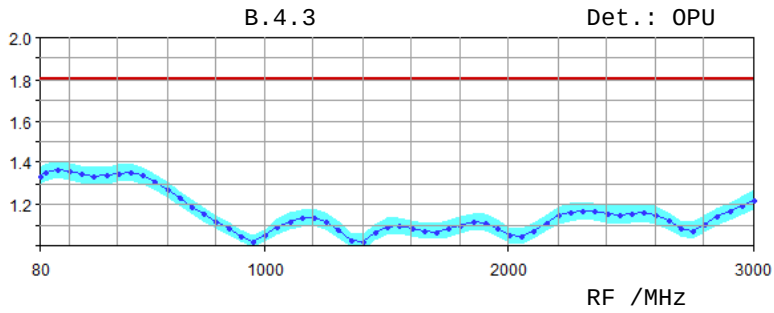


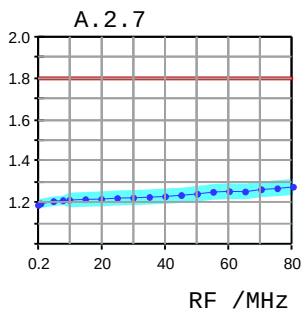


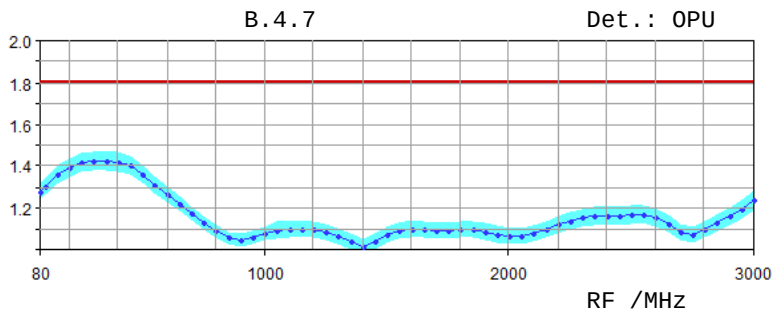




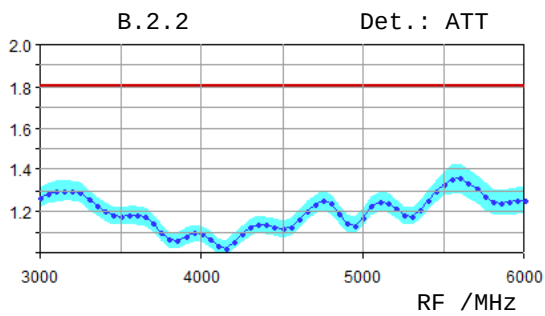


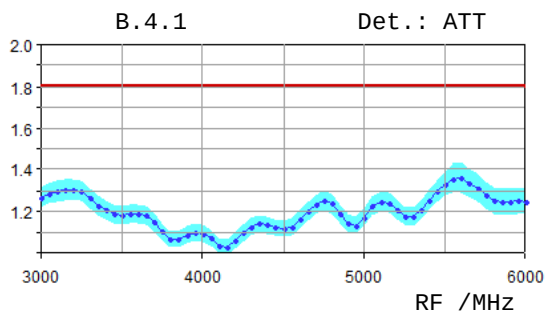




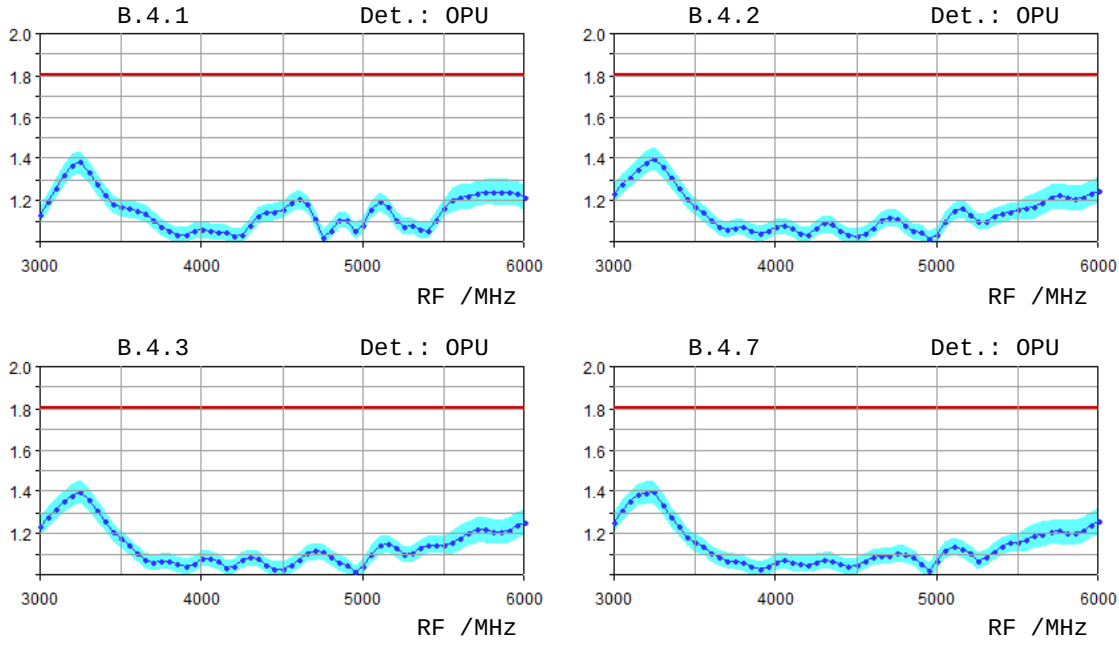


Frequency range 3 GHz to 6 GHz:





Incoming Results



Level Setting Time

after remote control delimiter to < 0.1 dB deviation from final value

Mode	RF /MHz	Start level /dBm	Stop level /dBm	DUL /ms	Actual /ms	MU {g} /ms
ALC ON	10	-120.0	13.0	1.00	0.78	0.03
	10	-27.3	2.7	1.00	0.80	0.03
	10	2.7	-27.3	1.00	0.78	0.03
	30	-120.0	13.0	1.00	0.82	0.03
	30	-27.3	2.7	1.00	0.77	0.03
	30	2.7	-27.3	1.00	0.80	0.03
	375	-120.0	13.0	1.00	0.65	0.02
	375	-27.3	2.7	1.00	0.72	0.03
	375	2.7	-27.3	1.00	0.67	0.02
	1000	-120.0	13.0	1.00	0.70	0.03
	1000	-27.3	2.7	1.00	0.75	0.03
	1000	2.7	-27.3	1.00	0.69	0.02
	2000	-120.0	13.0	1.00	0.69	0.02
	2000	-27.3	2.7	1.00	0.70	0.03
	2000	2.7	-27.3	1.00	0.69	0.02
	3000	-120.0	13.0	1.00	0.76	0.03
	3000	-27.3	2.7	1.00	0.72	0.03
	3000	2.7	-27.3	1.00	0.73	0.03
	4500	-120.0	13.0	1.00	0.74	0.03
	4500	-27.3	2.7	1.00	0.74	0.03
	4500	2.7	-27.3	1.00	0.68	0.02
	6000	-120.0	13.0	1.00	0.69	0.02
	6000	-27.3	2.7	1.00	0.70	0.02
	6000	2.7	-27.3	1.00	0.63	0.02

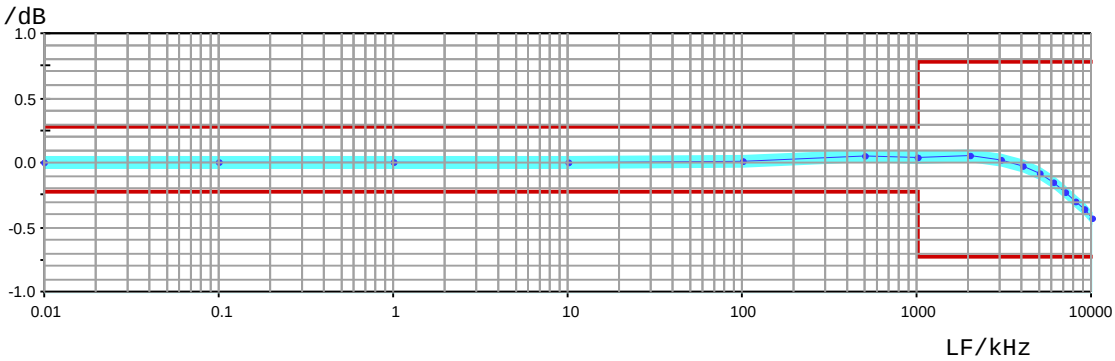
INTERNAL MODULATION GENERATOR

Output Voltage

Frequency = 1.0 kHz

Voltage /mV	DL /mV	Deviation /mV	MU /mV
3	1.03	+0.01	0.011
10	1.10	-0.03	0.036
30	1.30	-0.03	0.11
100	2.00	-0.10	0.35
300	4.00	-0.19	1.06
1000	11.00	-1.00	3.50
3000	31.00	-3.28	10.60
4000	41.00	-6.26	14.00

Frequency Response



Distortion

Frequency /kHz	DL /%	Actual /%	MU {g} /%
0.1	0.10	0.02	0.01
0.3	0.10	0.02	0.01
1.0	0.10	0.03	0.01
3.0	0.10	0.03	0.01
10.0	0.10	0.03	0.01
30.0	0.10	0.03	0.01
100.0	0.10	0.02	0.01

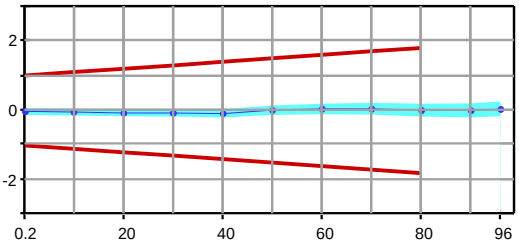
Incoming Results

AMPLITUDE MODULATION

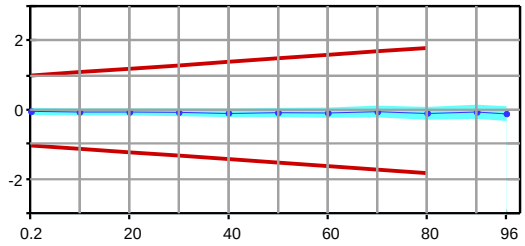
AM Depth Error

Setting Error vs Depth:
Level = 0 dBm, Source LF Generator 1, LF = 1 kHz

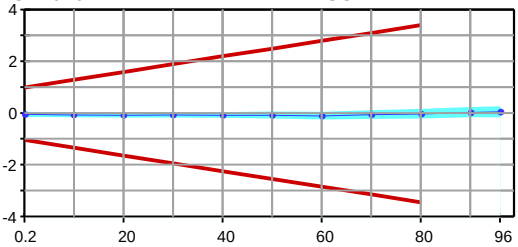
Error /% RF = 0.201 MHz



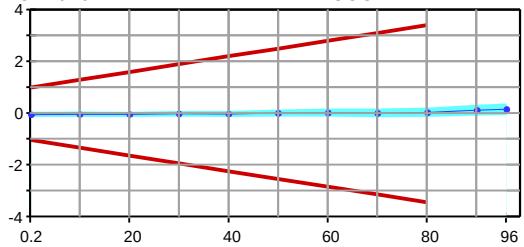
Error /% RF = 10 MHz



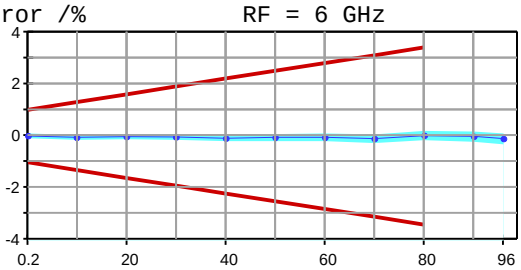
Error /% RF = 150 MHz



Error /% RF = 1000 MHz



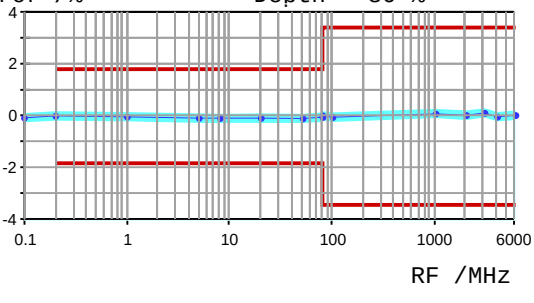
Error /% RF = 6 GHz



Source	AM Path	RF/MHz	Depth/%	DL/%	Error/%	MU/%
External	1	150	30.0	± 1.90	-0.07	0.11

Setting Error vs RF:
Level = 0 dBm, Source LF Generator 1, LF = 1 kHz

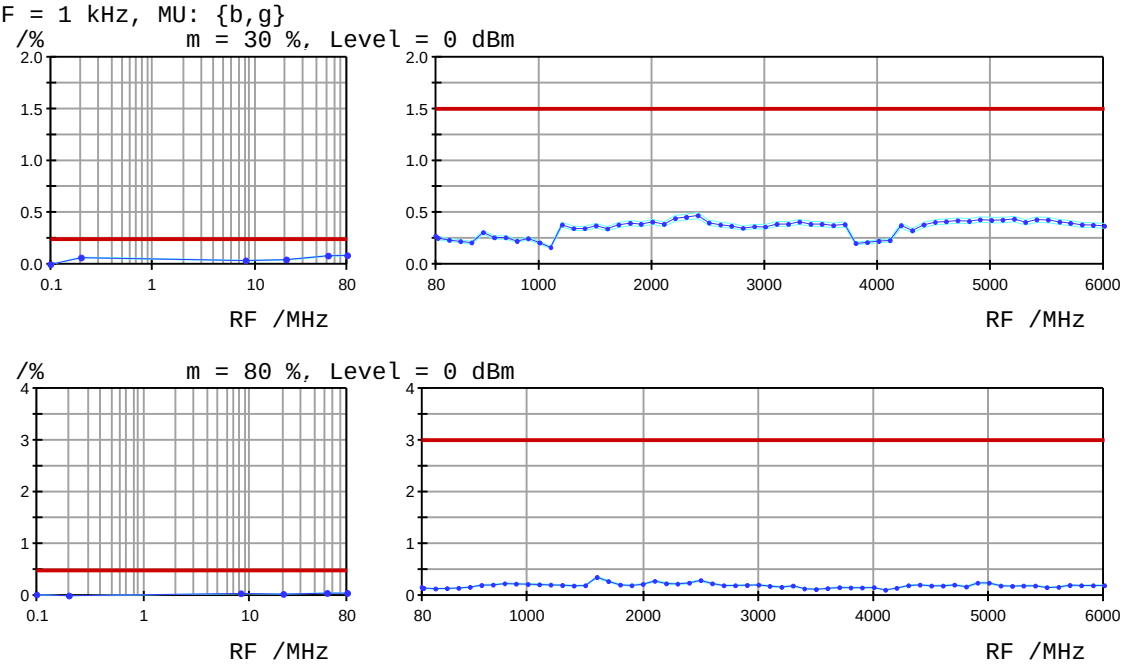
Error /% Depth = 80 %



Incoming Results

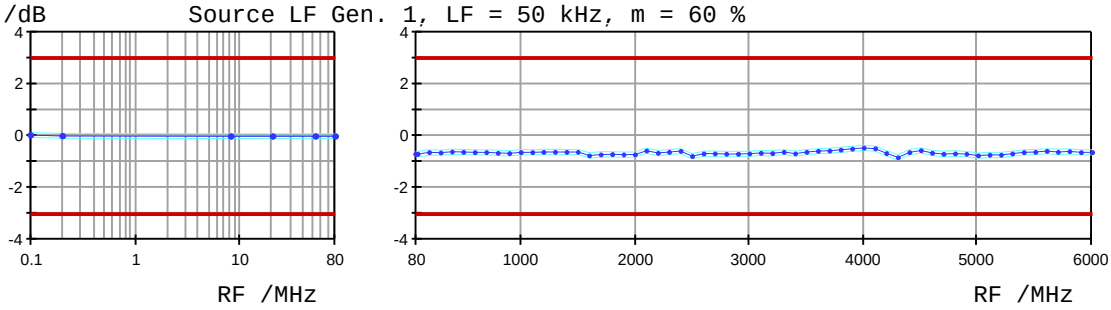
AM Distortion

LF = 1 kHz, MU: {b,g}



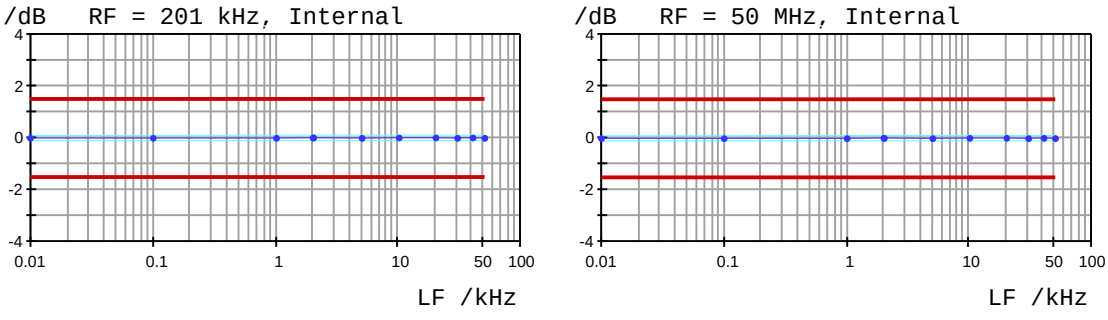
AM Frequency Response vs RF

Level = 0 dBm

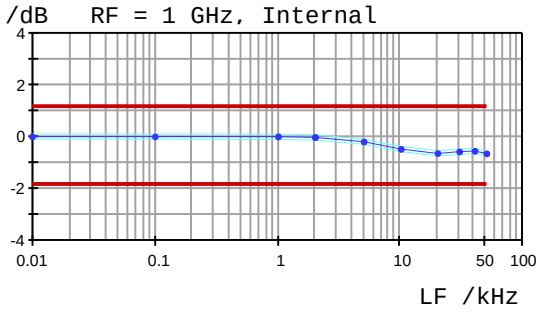


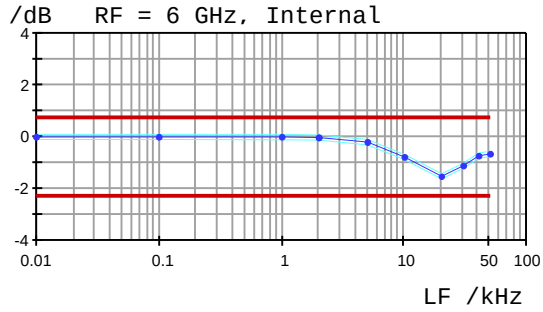
AM Frequency Response

RF-level = 0 dBm, Depth = 60%:



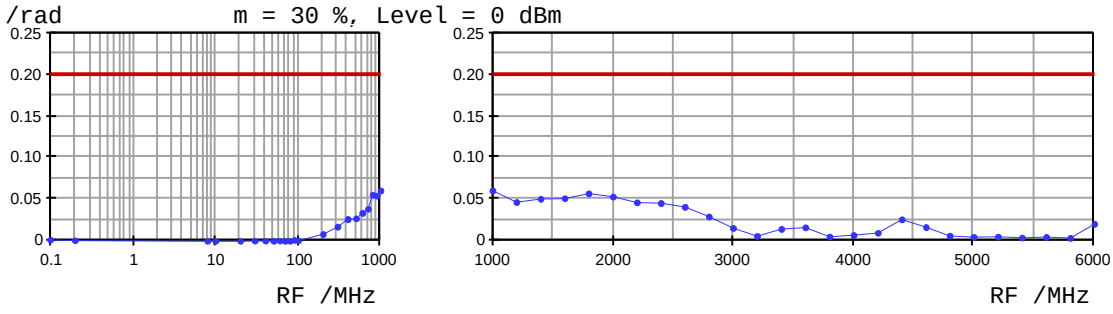
Incoming Results





Synchronous PhiM with AM

LF = 1 kHz, MU: {a}



Incoming Results

FREQUENCY MODULATION

FM Setting Uncertainty

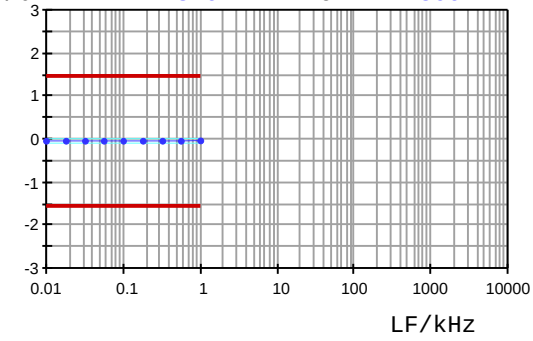
RF /MHz	LF /kHz	FM-Dev. /kHz	Mode	DL /kHz	Error /kHz	MU /kHz
FM Source Internal:						
8.0	2.0	2500.0	High BW	50.02	-7.13	10.00
250.0	2.0	2500.0	High BW	50.02	-7.16	10.00
250.1	2.0	1250.0	High BW	25.02	-3.53	5.00
750.1	2.0	5000.0	High BW	100.02	-14.27	20.00
1000.0	2.0	5000.0	High BW	100.02	-14.03	20.00
1500.0	2.0	5000.0	High BW	100.02	-14.18	20.00
3000.0	2.0	100.0	High BW	2.02	-0.31	0.40
6000.0	2.0	100.0	High BW	2.02	-0.31	0.40
8.0	2.0	50.0	Low Noise	1.02	-0.16	0.20
750.1	2.0	50.0	Low Noise	1.02	-0.16	0.20
1000.0	2.0	50.0	Low Noise	1.02	-0.15	0.20
1500.0	2.0	50.0	Low Noise	1.02	-0.16	0.20
3000.0	2.0	100.0	Low Noise	2.02	-0.31	0.40
6000.0	2.0	100.0	Low Noise	2.02	-0.31	0.40
FM Source External 1:						
1000.0	2.0	5000.0	High BW	150.02	-18.35	50.00

FM Distortion

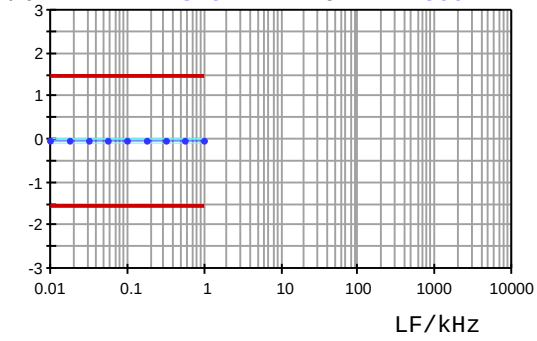
RF /MHz	LF /kHz	FM-Dev. /kHz	Mode	DUL /%	Actual /%	MU {g} /%
8.0	2.0	500.0	High BW	0.20	0.000	0.001
250.0	2.0	500.0	High BW	0.20	0.000	0.001
250.1	2.0	250.0	High BW	0.20	0.001	0.001
750.1	2.0	1000.0	High BW	0.20	0.000	0.001
1000.0	2.0	1000.0	High BW	0.20	0.000	0.001
1500.0	2.0	1000.0	High BW	0.20	0.000	0.001
3000.0	2.0	2000.0	High BW	0.20	0.000	0.001
6000.0	2.0	4000.0	High BW	0.20	0.001	0.001
8.0	2.0	500.0	Low Noise	0.20	0.000	0.001
750.1	2.0	100.0	Low Noise	0.20	0.002	0.001
1000.0	2.0	100.0	Low Noise	0.20	0.002	0.001
1500.0	2.0	100.0	Low Noise	0.20	0.002	0.001
3000.0	2.0	200.0	Low Noise	0.20	0.001	0.001
6000.0	2.0	400.0	Low Noise	0.20	0.000	0.001

FM Frequency Response

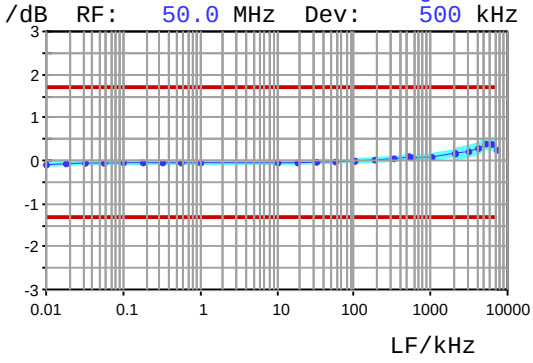
Source: INT Mode: High Bw
/dB RF: 8.0 MHz Dev: 500 kHz



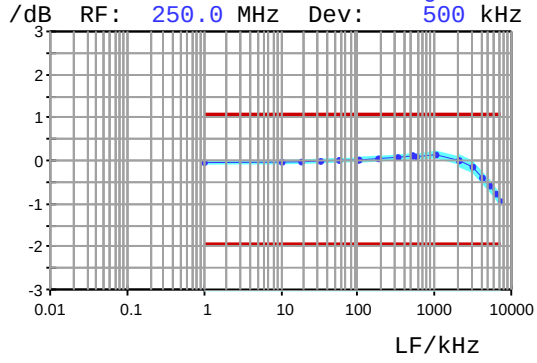
Source: EXT DC Mode: High Bw
/dB RF: 8.0 MHz Dev: 500 kHz



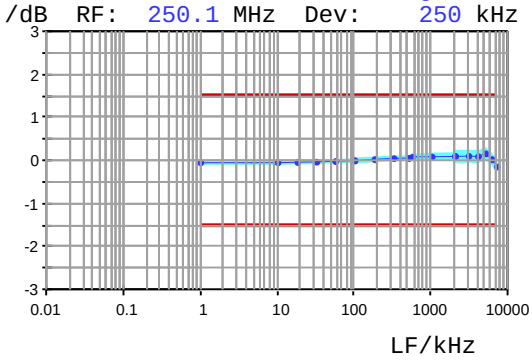
Source: EXT AC Mode: High Bw
/dB RF: 50.0 MHz Dev: 500 kHz



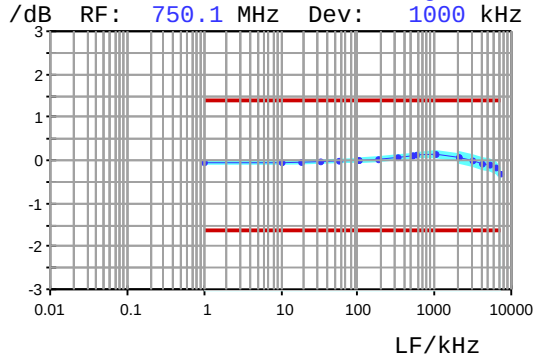
Source: INT Mode: High Bw
/dB RF: 250.0 MHz Dev: 500 kHz



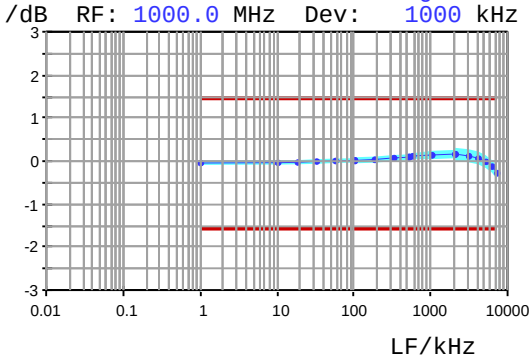
Source: EXT AC Mode: High Bw
/dB RF: 250.1 MHz Dev: 250 kHz



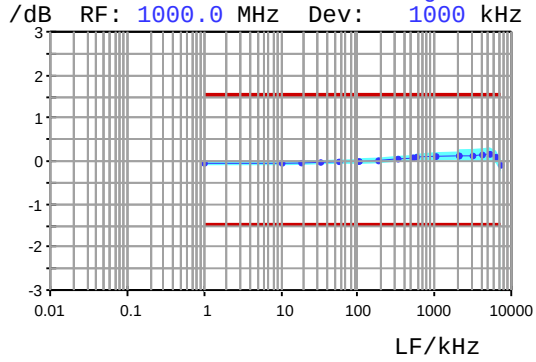
Source: EXT AC Mode: High Bw
/dB RF: 750.1 MHz Dev: 1000 kHz



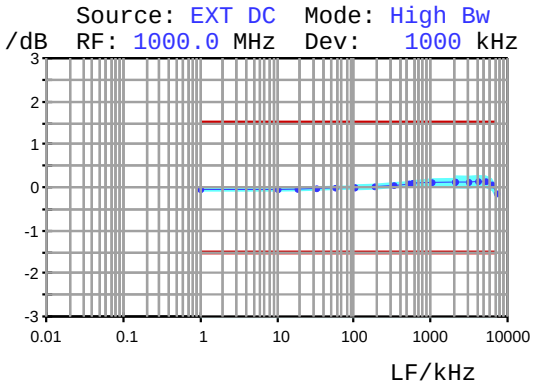
Source: INT Mode: High Bw
/dB RF: 1000.0 MHz Dev: 1000 kHz

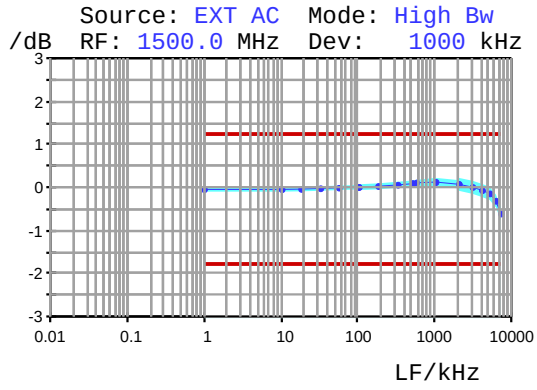


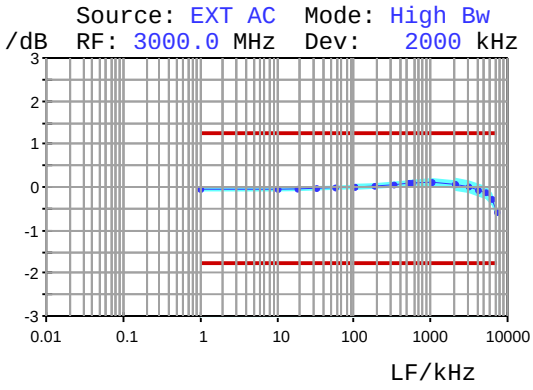
Source: EXT AC Mode: High Bw
/dB RF: 1000.0 MHz Dev: 1000 kHz

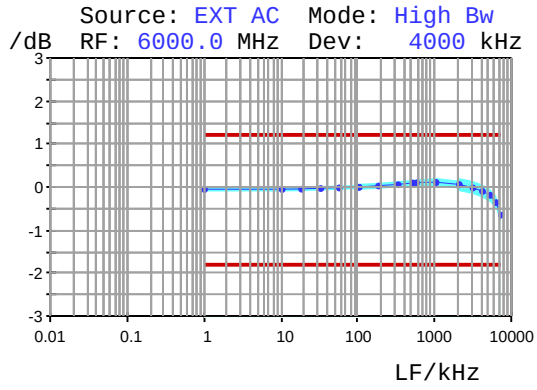


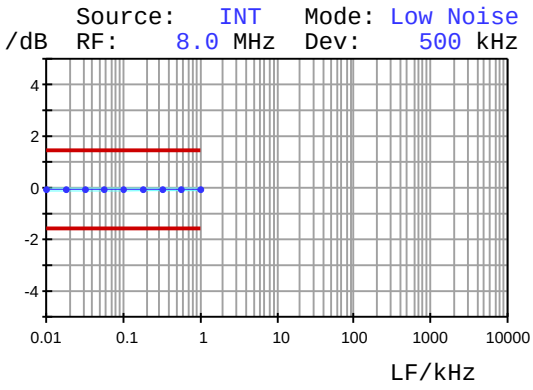
Incoming Results

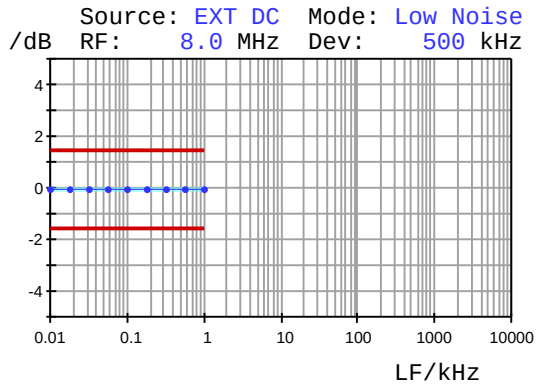


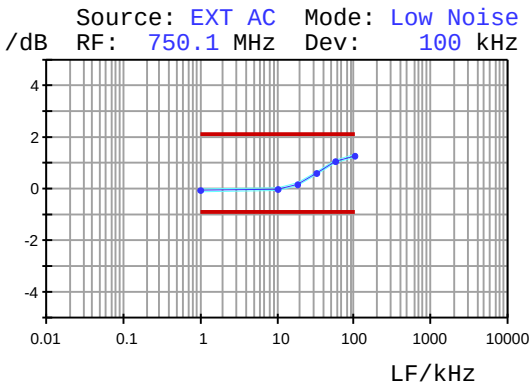


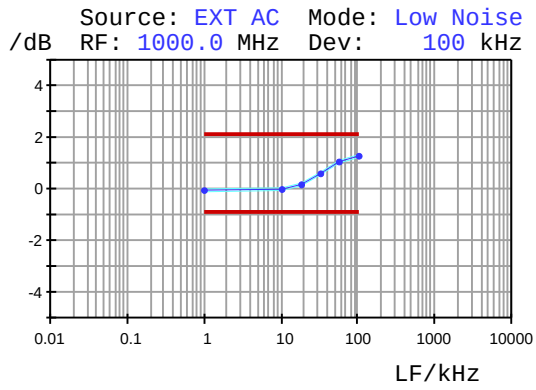




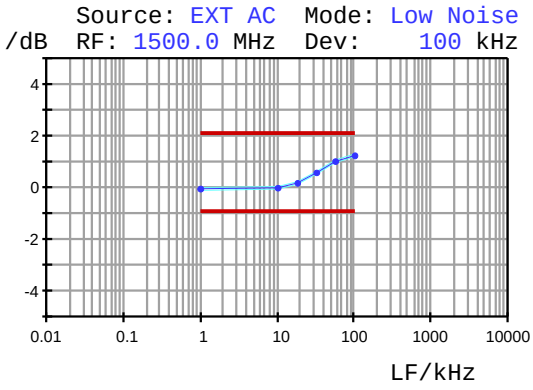


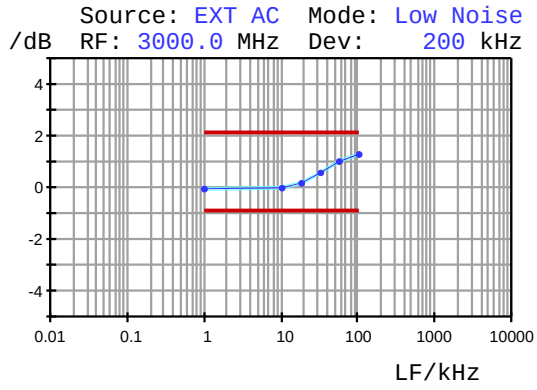


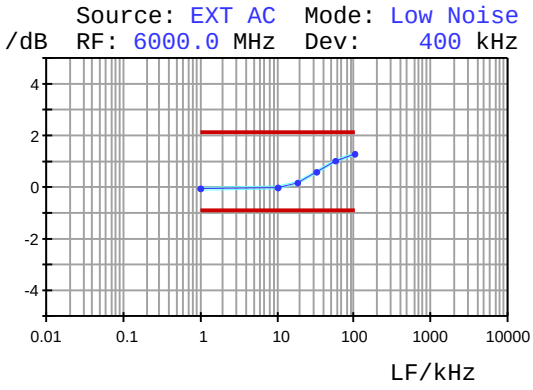




Incoming Results







Synchronous AM with FM

Mode: High Bandwidth

RF/MHz	LF/kHz	Dev./kHz	DUL/%	Actual/%	MU
8.001	1.0	40.0	0.20	0.026	{a}
350.0	1.0	40.0	0.20	0.017	{a}
350.001	1.0	40.0	0.20	0.014	{a}
750.1	1.0	40.0	0.20	0.003	{a}
1000.0	1.0	40.0	0.20	0.012	{a}
1500.0	1.0	40.0	0.20	0.008	{a}
3000.0	1.0	40.0	0.20	0.011	{a}
6000.0	1.0	40.0	0.20	0.011	{a}

Carrier Frequency Offset with FM

RF = 1 GHz, ModFreq = 1 MHz

Mode	Dev./kHz	DL/kHz	Offset /kHz	MU/kHz
Internal	1000.0	2.000	-0.020	0.010
External, 50 R, AC	1000.0	2.000	+0.150	0.010
External, 50 R, DC	1000.0	2.000	-0.210	0.010
External, High, AC	1000.0	2.000	+0.100	0.010
External, High, DC	1000.0	2.000	-0.830	0.010

Incoming Results

PHASE MODULATION

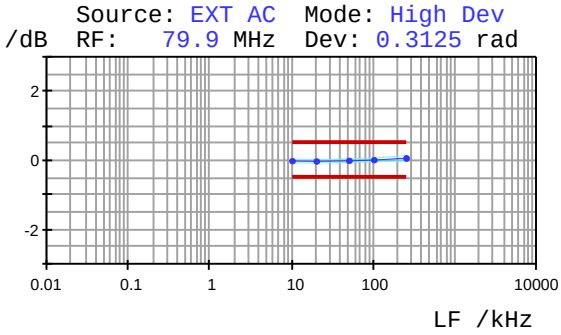
PhiM Setting Uncertainty

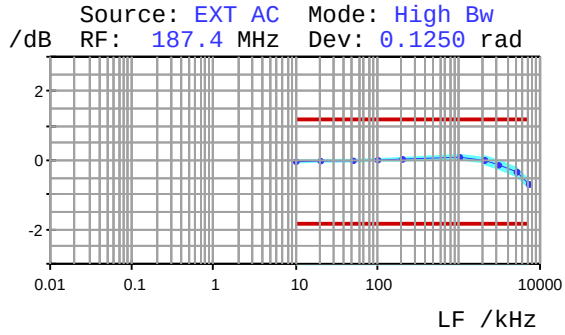
RF /MHz	LF /kHz	PhiM-Dev. /rad	Mode	DL /rad	Error /rad	MU /rad
PhiM Source Internal:						
8.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
350.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
350.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
750.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
1000.0	10.0	10.0	High Dev	0.2030	-0.0249	0.0101
1500.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
3000.1	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
3500.0	10.0	10.0	High Dev	0.2030	-0.0249	0.0101
4900.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
5400.0	10.0	10.0	High Dev	0.2030	-0.0244	0.0101
6000.0	10.0	10.0	High Dev	0.2030	-0.0236	0.0101
500.0	10.0	0.001	High BW	0.0030	+0.0000	0.0001
500.0	10.0	0.01	High BW	0.0032	+0.0000	0.0001
500.0	10.0	0.1	High BW	0.0050	-0.0006	0.0002
500.0	10.0	0.5	High BW	0.0130	-0.0027	0.0006
8.0	10.0	0.0625	Low Noise	0.0043	-0.0002	0.0002
1000.0	10.0	0.125	Low Noise	0.0055	+0.0005	0.0002
1500.1	10.0	0.25	Low Noise	0.0080	+0.0007	0.0004
3000.1	10.0	0.5	Low Noise	0.0130	+0.0014	0.0006
6000.0	10.0	0.5	Low Noise	0.0130	+0.0017	0.0006
PhiM Source External:						
70.687	10.0	0.625	High BW	0.0218	-0.0018	0.0045
1000.0	10.0	0.125	Low Noise	0.0068	+0.0002	0.0010
3000.0	10.0	40.0	High Dev	1.2030	-0.1564	0.2801

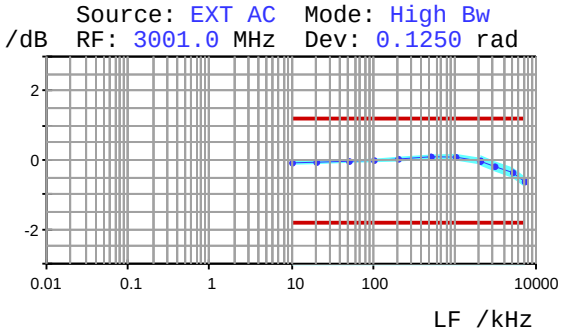
PhiM Distortion

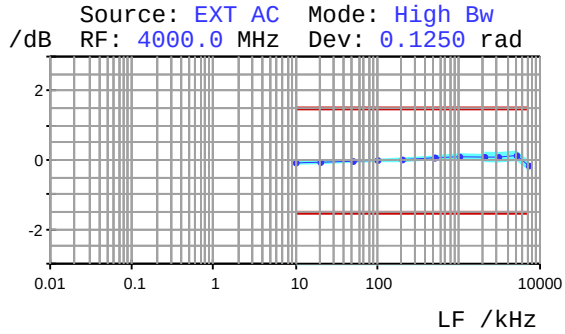
RF/MHz	LF/kHz	Dev./rad	Mode	DL/%	Actual/%	{g} MU/%
8.0	10.0	0.25	High BW	0.20	0.007	0.001
10.0	10.0	0.25	High BW	0.20	0.007	0.001
250.0	10.0	0.25	High BW	0.20	0.019	0.002
500.0	10.0	0.25	High BW	0.20	0.011	0.002
812.0	10.0	0.50	High BW	0.20	0.004	0.001
940.0	10.0	0.50	High BW	0.20	0.003	0.001
1067.0	10.0	0.50	High BW	0.20	0.004	0.001
1194.0	10.0	0.50	High BW	0.20	0.004	0.001
1321.0	10.0	0.50	High BW	0.20	0.003	0.001
1484.0	10.0	0.50	High BW	0.20	0.005	0.001
2200.0	10.0	1.0	High BW	0.20	0.003	0.001
4000.0	10.0	2.0	High BW	0.20	0.009	0.002
6000.0	10.0	2.0	High BW	0.20	0.020	0.002

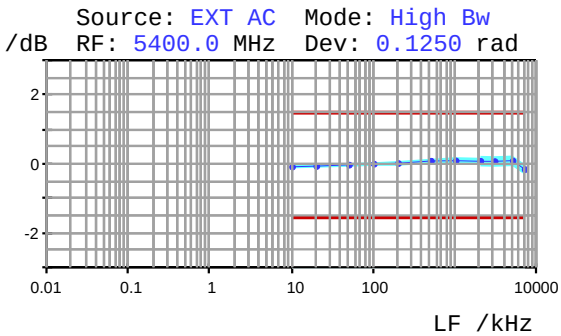
PhiM Frequency Response

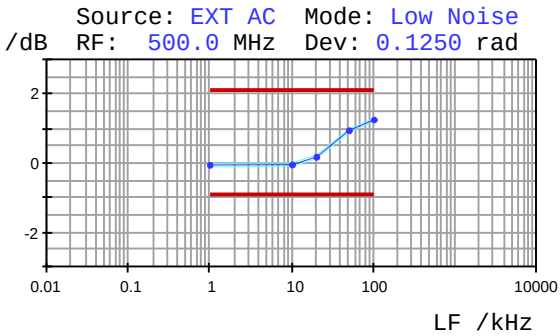










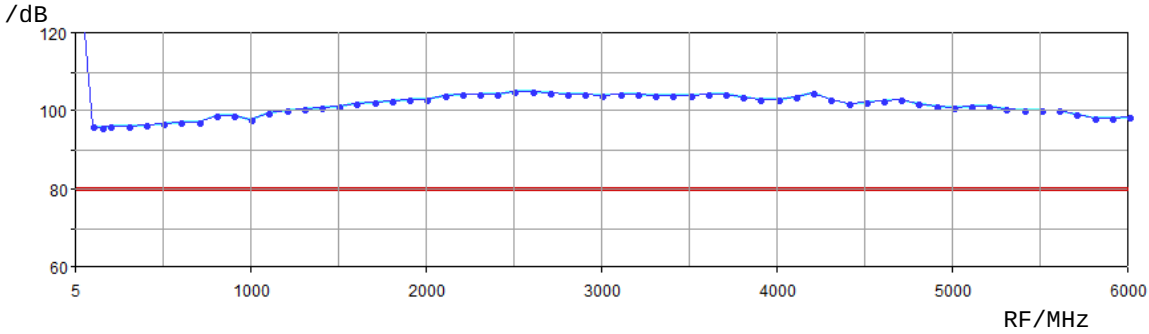


Incoming Results

PULSE MODULATION

ON/OFF Ratio

RF-Level = 0 dBm



Dynamic Characteristics

The expanded uncertainty of the measurands risetime and falltime is 1 ns.
The characteristic overshoot is a test result.

Transition Type: Fast

RF /MHz	Risetime /ns	Falltime /ns	DUL /ns	Overshoot /%	DUL /%	Result	MU
700	5.9	2.2	15	0.3	10	PASS	{a}
1000	6.5	2.3	15	0.0	10	PASS	{a}
2000	5.7	2.3	15	0.0	10	PASS	{a}
3000	5.2	1.8	15	0.0	10	PASS	{a}
4000	5.7	2.2	15	0.1	10	PASS	{a}
5000	5.5	1.9	15	0.0	10	PASS	{a}
6000	6.9	2.0	15	0.0	10	PASS	{a}

Transition Type: Smoothed

RF /MHz	Risetime /ns	Falltime /ns	DUL /ns	Overshoot /%	DUL /%	Result	MU
700	50.3	13.7	200	0.2	10	PASS	{a}
1000	48.1	13.7	200	0.0	10	PASS	{a}
2000	44.0	13.6	200	0.0	10	PASS	{a}
3000	39.0	13.1	200	0.0	10	PASS	{a}
4000	49.9	16.4	200	0.0	10	PASS	{a}
5000	50.2	14.9	200	0.0	10	PASS	{a}
6000	53.8	14.6	200	0.0	10	PASS	{a}

Video Feedthrough

Modulation Signal: 100 kHz Square

Transition	RF /MHz	Level /dBm	DUL /mVpp	Actual /mVpp	MU
Fast	3250.0	+10.0	200	57.8	{e}
	4250.0	+10.0	200	45.2	{e}
	6000.0	+10.0	200	62.9	{e}
Smoothed	3250.0	+10.0	200	32.2	{e}
	4250.0	+10.0	200	24.7	{e}
	6000.0	+10.0	200	34.3	{e}

Incoming Results

Functional test of Pulse Ext.

Test of Pulse Ext. connector	PASS