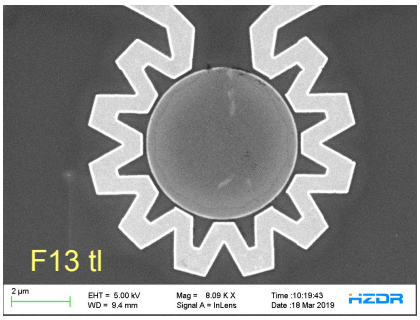
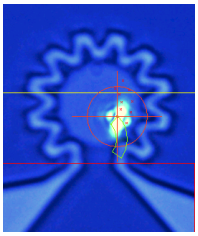
KS – i3MS_V1 – F13

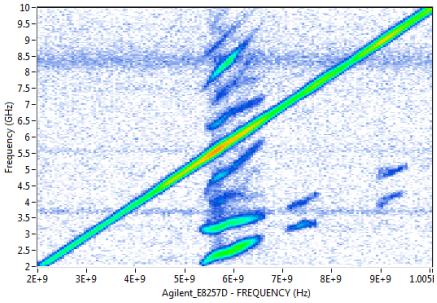
Operator: Katrin Schultheiß
Lab: BLS1, HZDR
Data stored: team/fwin/fwin-m/SAMPLES/i3MS/BLS/i3MS_V1/F13_top-left
Sample description: magnetic structures: $Ni_{80}Fe_{20}$(50)/Al(5), deposited by B. Scheumann
Antennas small parts: Cr(5)/Au(150); large parts: Ti(5)/Au(100)
(all thicknesses in nm)

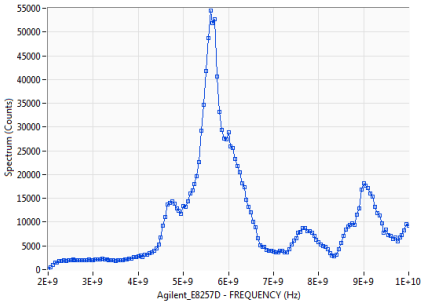


Measurement M1 – 2019-09-06

device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**RF sweep**
RF-freq (GHz):	2 – 10 GHz in 50 Mhz steps
RF-Power (dBm):	10 dBm
measurement position	2 positions in radial position
	5 positions in azimuthal direction (roughly 1/4 of disk)
external field (mT):	none - magnet not in setup
T-Factor:	1

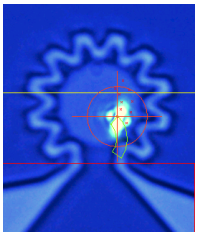


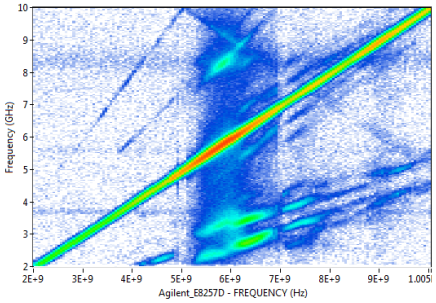


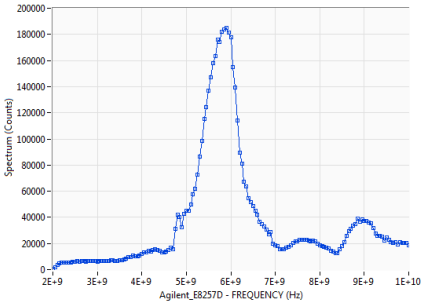


Measurement M2 – 2019-09-07

device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**RF sweep**
RF-freq (GHz):	2 – 10 GHz in 50 Mhz steps
RF-Power (dBm):	16 dBm
measurement position	2 positions in radial position
	5 positions in azimuthal direction (roughly 1/4 of disk)
external field (mT):	none - magnet not in setup
T-Factor:	1

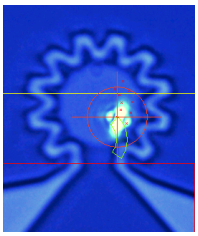


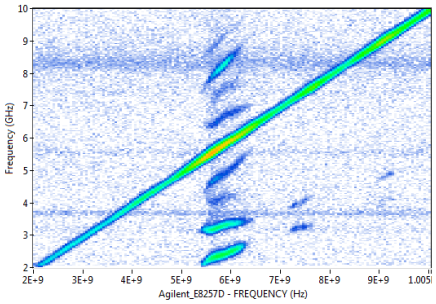


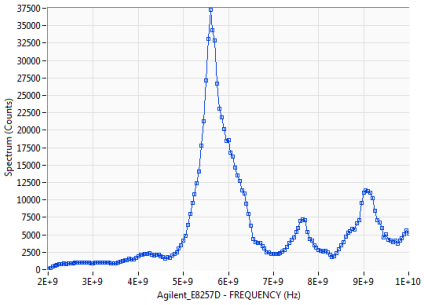


Measurement M3 – 2019-09-08

device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**RF sweep**
RF-freq (GHz):	2 – 10 GHz in 50 Mhz steps
RF-Power (dBm):	7 dBm
measurement position	2 positions in radial position 5 positions in azimuthal direction (roughly 1/4 of disk)
external field (mT):	none - magnet not in setup
T-Factor:	1



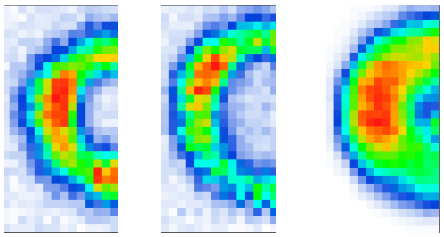




Measurement M4 – 2019-09-09

device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**2D map**
RF-freq (GHz):	5.5 GHz
RF-Power (dBm):	10 dBm
measurement position	5.482 µm in x (dim 2), 5.597 µm in y (dim 1), 28x28 points dim 2 only scanned half
external field (mT):	none - magnet not in setup

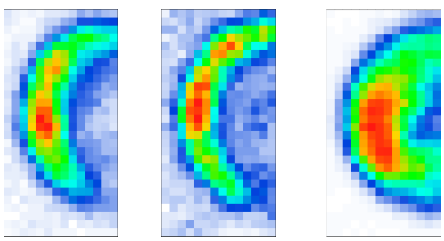
2.25 GHz 3.11 GHz 5.45 GHz



Measurement M5 – 2019-09-09

device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**2D map**
RF-freq (GHz):	6.4 GHz
RF-Power (dBm):	10 dBm
measurement position	5.482 µm in x (dim 2), 5.597 µm in y (dim 1), 28x28 points dim 2 only scanned half
external field (mT):	none - magnet not in setup

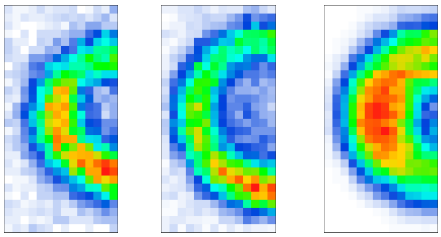
2.77 GHz 3.49 GHz 6.34 GHz



Measurement M6 – 2019-09-10

device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**2D map**
RF-freq (GHz):	6.1 GHz
RF-Power (dBm):	10 dBm
measurement position	5.482 µm in x (dim 2), 5.597 µm in y (dim 1), 28x28 points dim 2 only scanned half
external field (mT):	none - magnet not in setup

2.63 GHz 3.38 GHz 6.04 GHz



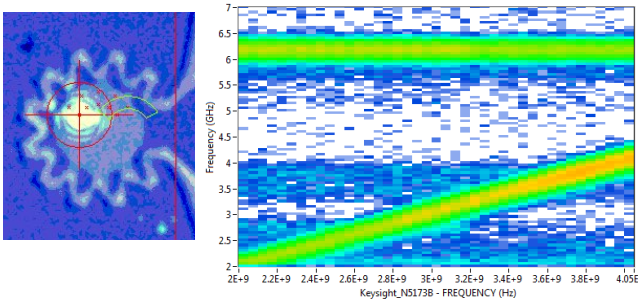
KS – i3MS_V1 – F13

Operator: Katrin Schultheiß
Lab: BLS1, HZDR
Data stored: team/fwin/fwin-m/SAMPLES/i3MS/BLS/i3MS_V1/F13_top-left_20190925
Sample description: magnetic structures: $Ni_{80}Fe_{20}$(50)/Al(5), deposited by B. Scheumann
Antennas small parts: Cr(5)/Au(150); large parts: Ti(5)/Au(100)
(all thicknesses in nm)

2 RF generators combined, applied to one pico probe

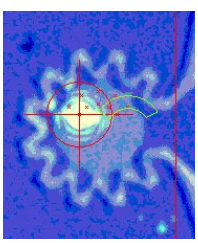
Measurement M01 – 2019-09-25

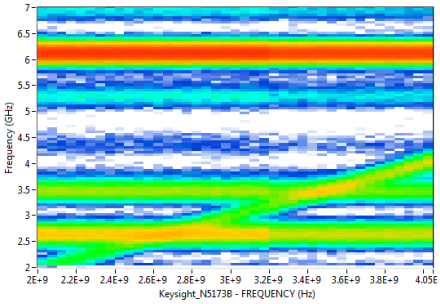
device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**RF sweep**
RF-freq 1 (GHz):	2 – 4 GHz in 50 Mhz steps
RF-Power 1 (dBm):	20 dBm
RF-freq 2 (GHz):	6.1 GHz
RF-Power 2 (dBm):	8 dBm
measurement position	2 positions in radial position (1.25 µm and 1.977 µm radius) 5 positions in azimuthal direction (roughly 1/4 of disk)
external field (mT):	none - magnet not in setup



Measurement M02 – 2019-09-26

device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**RF sweep**
RF-freq 1 (GHz):	2 – 4 GHz in 50 Mhz steps
RF-Power 1 (dBm):	14 dBm
RF-freq 2 (GHz):	6.1 GHz
RF-Power 2 (dBm):	14 dBm
measurement position	2 positions in radial position (1.25 µm and 1.977 µm radius) 5 positions in azimuthal direction (roughly 1/4 of disk)
external field (mT):	none - magnet not in setup





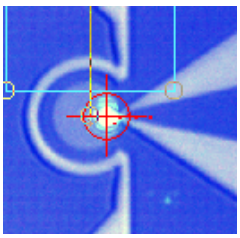
KS – i3MS_V1 – F1

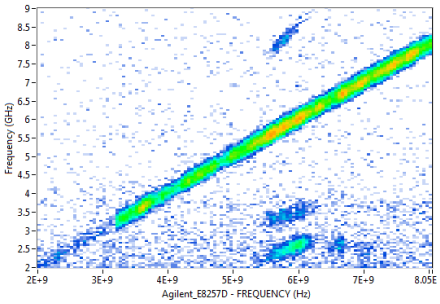
Operator: Katrin Schultheiß
Lab: BLS1, HZDR
Data stored: team/fwin/fwin-m/SAMPLES/i3MS/BLS/i3MS_V1/F1_right_20190930
Sample description: magnetic structures: $Ni_{80}Fe_{20}$(50)/Al(5), deposited by B. Scheumann
Antennas small parts: Cr(5)/Au(150); large parts: Ti(5)/Au(100)
(all thicknesses in nm)

2 RF generators: Agilent at point like RF source, Keysight at omega antenna around disk

Measurement M01 – 2019-09-25

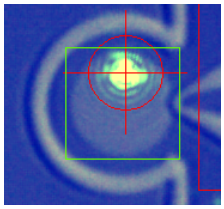
device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**RF sweep**
RF-freq Agilent (GHz):	2 – 8 GHz in 50 Mhz steps
RF-Power Agilent (dBm):	20 dBm
RF-freq Keysight (GHz):	-
RF-Power Keysight (dBm):	OFF
measurement position	on disk, right next to point-like source
external field (mT):	none - magnet not in setup

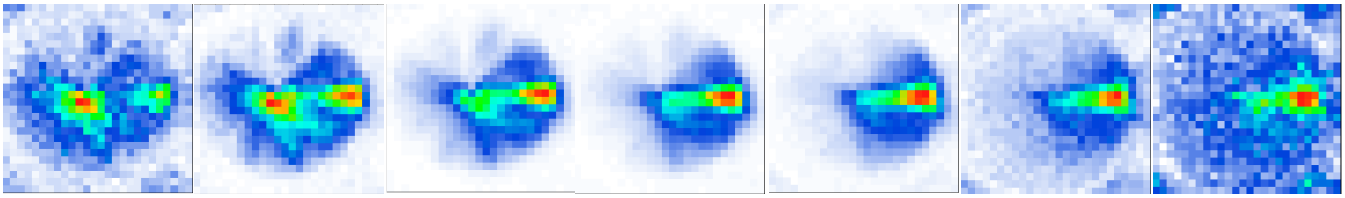




Measurement M02 – 2019-09-25

device:	F13, top left disk as seen in design file (bottom right in microscope image)
type:	**2D map**
RF-freq Agilent (GHz):	3.55 GHz
RF-Power Agilent (dBm):	20 dBm
RF-freq Keysight (GHz):	-
RF-Power Keysight (dBm):	OFF
measurement position	5.4 µm x 5.4 µm in 26x26 points
external field (mT):	none - magnet not in setup





3.2 GHz 3.3 GHz 3.4 GHz 3.5 GHz 3.6 GHz 3.7 GHz 3.8 GHz

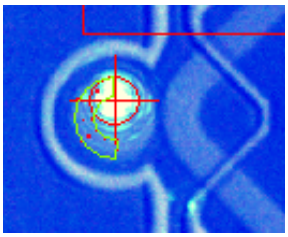
KS – i3MS_V1 – F12

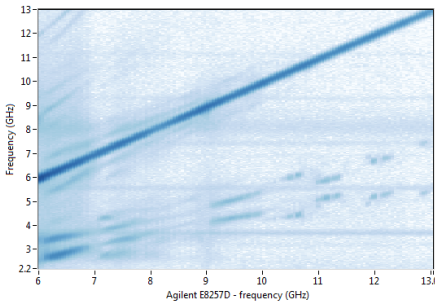
Operator: Katrin Schultheiß
Lab: BLS2, HZDR
Data stored: team/fwin/fwin-m/SAMPLES/i3MS/BLS/i3MS_V1/F12_left_20200220
Sample description: magnetic structures: $Ni_{80}Fe_{20}$(50)/Al(5), deposited by B. Scheumann
Antennas small parts: Cr(5)/Au(150); large parts: Ti(5)/Au(100)
(all thicknesses in nm)

2 RF generators: Agilent E8257D at omega antenna for disk, Agilent N5138A (Alina's) at stripe antenna for waveguide

Measurement M01 – 2020-02-20

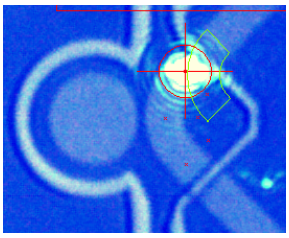
device:	F12, left disk as seen in design file
type:	**RF sweep disk, measured on disk**
RF-freq disk (GHz):	6 - 13 GHz
RF-Power disk (dBm):	20 dBm
RF-freq stripe (GHz):	-
RF-Power stripe (dBm):	OFF
measurement position	14 points on disk: 7 in azimuthal direction (180°) 2 in radial direction (1+2 of 3) r1 = 1.3445 µm, r2 = 2.44 µm
external field (mT):	none - magnet not in setup

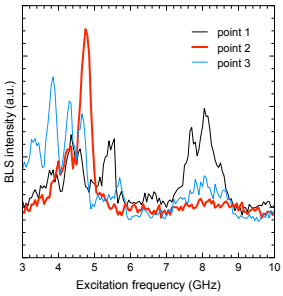




Measurement M02 – 2020-02-21

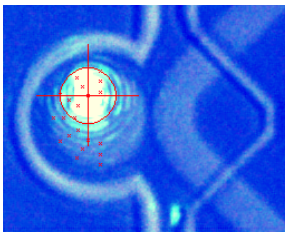
device:	F12, left disk as seen in design file
type:	**RF sweep stripe, measured on stripe**
RF-freq disk (GHz):	-
RF-Power disk (dBm):	OFF
RF-freq stripe (GHz):	3 to 10 GHz (wrong in file name and thatec: it's 6 to 13 there)
RF-Power stripe (dBm):	17 dBm (wrong in file name and thatec: it's 20 dBm there)
measurement position	3 points on stripe
external field (mT):	none - magnet not in setup

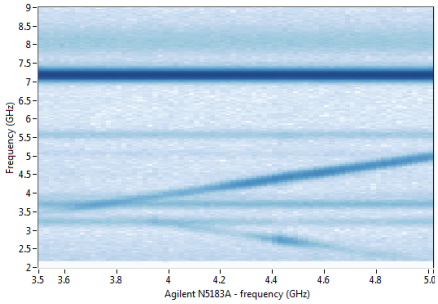




Measurement M03 – 2020-02-21

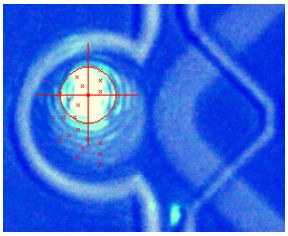
device:	F12, left disk as seen in design file
type:	**RF sweep stripe, disk fixed**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	12 dBm
RF-freq stripe (GHz):	3.5 to 5 GHz
RF-Power stripe (dBm):	17 dBm
measurement position	14 points on disk: 7 in azimuthal direction (180°) 2 in radial direction (1+2 of 3) r1 = 1.3445 µm, r2 = 2.44 µm
external field (mT):	none - magnet not in setup

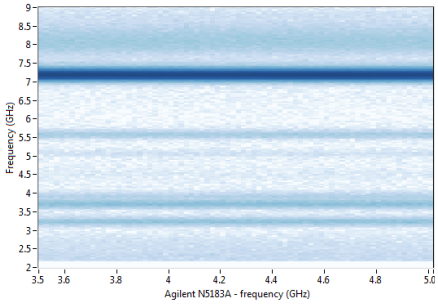




Measurement M04 – 2020-02-22

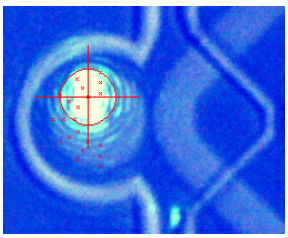
device:	F12, left disk as seen in design file
type:	**RF sweep stripe but off, disk fixed**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	12 dBm
RF-freq stripe (GHz):	3.5 to 5 GHz
RF-Power stripe (dBm):	OFF
measurement position	14 points on disk: 7 in azimuthal direction (180°) 2 in radial direction (1+2 of 3) r1 = 1.3445 µm, r2 = 2.44 µm
external field (mT):	none - magnet not in setup

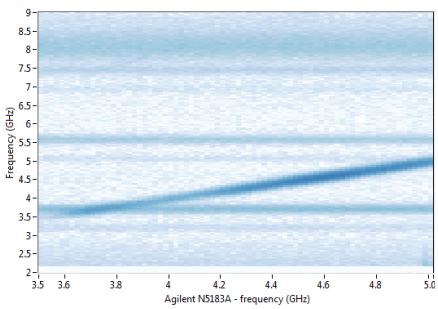


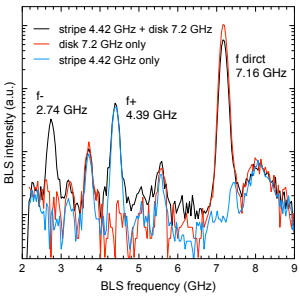


Measurement M05 – 2020-02-23

device:	F12, left disk as seen in design file
type:	**RF sweep stripe, disk off**
RF-freq disk (GHz):	-
RF-Power disk (dBm):	OFF
RF-freq stripe (GHz):	3.5 to 5 GHz
RF-Power stripe (dBm):	17 dBm
measurement position	14 points on disk: 7 in azimuthal direction (180°) 2 in radial direction (1+2 of 3) r1 = 1.3445 µm, r2 = 2.44 µm
external field (mT):	none - magnet not in setup



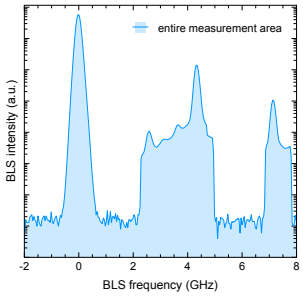


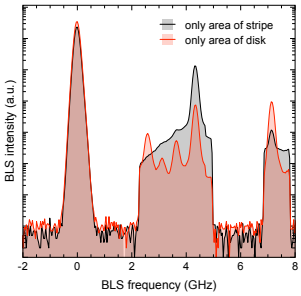


corrected frequencies:
f direct = 7.2 GHz
f- = 2.78 GHz
f+ = 4.43 GHz

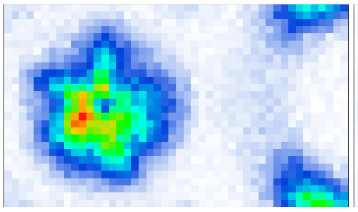
Measurement M06 – 2020-02-24

device:	F12, left disk as seen in design file
type:	**2D map**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	12 dBm
RF-freq stripe (GHz):	4.42 GHz
RF-Power stripe (dBm):	17 dBm
measurement position	2D area: 9.123 µm in x (dim2) in 46 steps 5.349 µm in y (dim1) in 28 steps

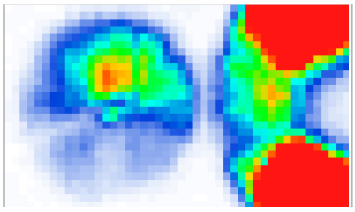




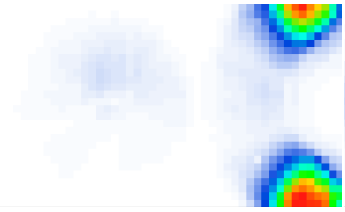
f-



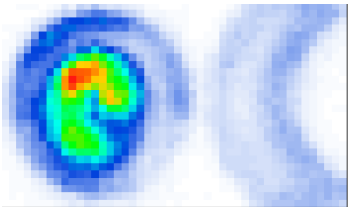
f+



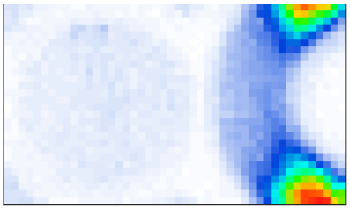
f+



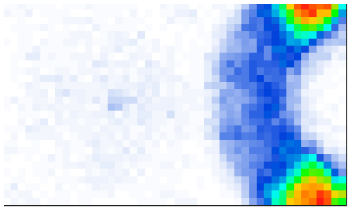
f direct



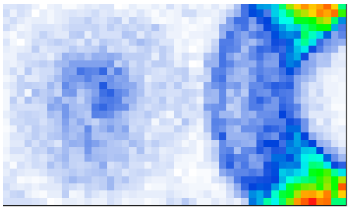
f- to f+



tail of f+



tail of f direct

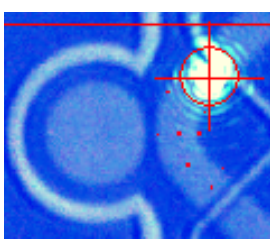


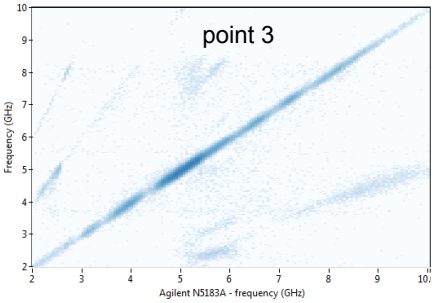
Saturation

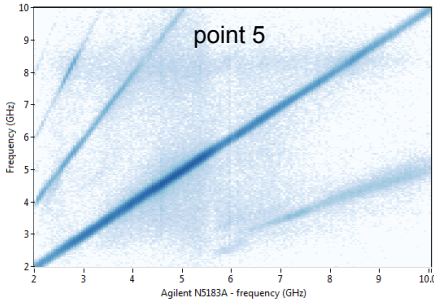
Since I am not sure about the magnetization configuration of the stripe, I decided to unmount the sample, saturate it with a field of 360 mT ‘along’ the stripe and then contact the sample.
RF generators are connected as before: Agilent E8257D at omega antenna for disk, Agilent N5138A (Alina’s) at stripe antenna for waveguide.
→ Repeat RF sweep in stripe to see if oscillations like in M02 are gone…

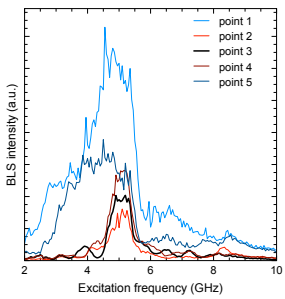
Measurement M07 – 2020-02-25

device:	F12, left disk as seen in design file
type:	**RF sweep stripe, measured on stripe**
RF-freq disk (GHz):	-
RF-Power disk (dBm):	OFF
RF-freq stripe (GHz):	2 to 10 GHz
RF-Power stripe (dBm):	17 dBm
measurement position	5 points on stripe: angular section: r_1 = 2.047µm, r_2 = 4.07µm, 124.7° 5 points in azimuthal direction (point 1 is on top in image) 3 points in radial direction, only scanned point 2 (center of stripe width)



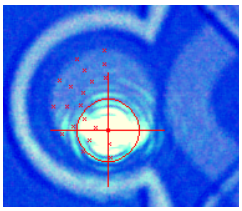


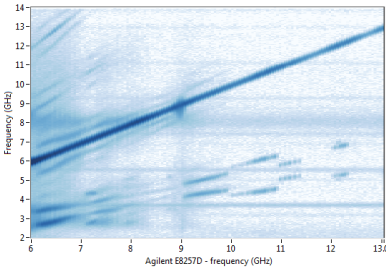




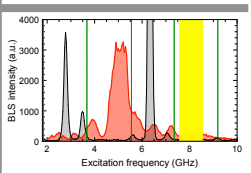
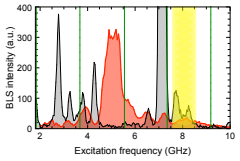
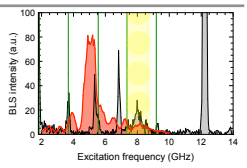
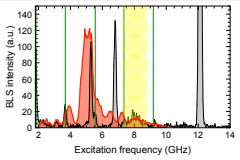
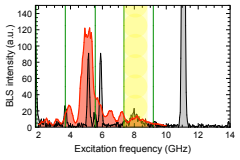
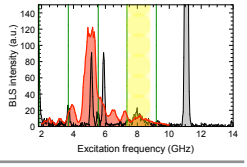
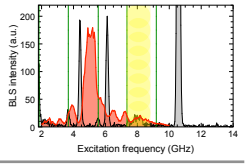
Measurement M08 – 2020-02-25

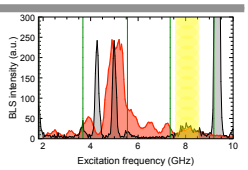
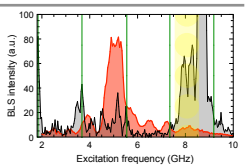
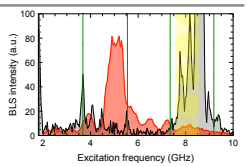
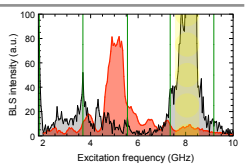
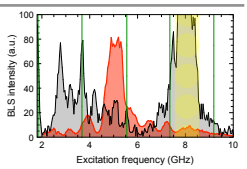
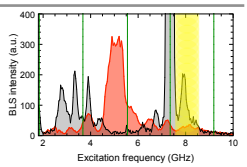
device: F12, left disk as seen in design file
type: **RF sweep disk, measured on disk**
RF-freq disk (GHz): 6 to 13 GHz
RF-Power disk (dBm): 20 dBm
RF-freq stripe (GHz): -
RF-Power stripe (dBm): OFF
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction





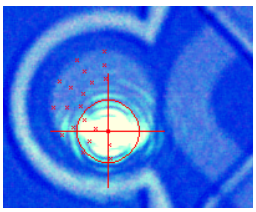
summary of the scattering processes with high enough intensities of the split modes:

f excitation (GHz)	f/2 (GHz)	f direct TFPDAS (GHz)	TFPDAS shift (MHz)	f- TFPDAS (GHz)	f- corrected (GHz)	∂f- (MHz)	f+ TFPDAS (GHz)	f+ corrected (GHz)	∂f+ (MHz)	BLS spectrum
6,4	3,2	6,3375	62,5	2,775	2,8375	-362,5	3,4875	3,55	350	
7,2	3,6	7,125	75	2,775	2,85	-750	4,275	4,35	750	
12,3	6,15	12,225	75	5,325	5,4	-750	6,825	6,9	750	
12,2	6,1	12,1125	87,5	5,2875	5,375	-725	6,7875	6,875	775	
11,15	5,575	11,0625	87,5	5,1375	5,225	-350	5,8875	5,975	400	
10,85	5,425	10,7625	87,5	4,4625	4,55	-875	6,225	6,3125	887,5	
10,65	5,325	10,575	75	4,3875	4,4625	-862,5	6,1125	6,1875	862,5	

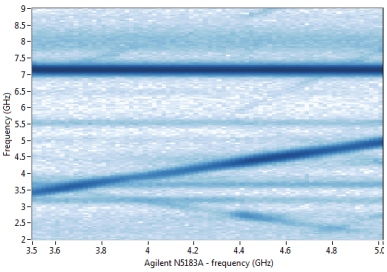
f excitation (GHz)	f/2 (GHz)	f direct TFPDAS (GHz)	TFPDAS shift (MHz)	f- TFPDAS (GHz)	f- corrected (GHz)	∂f- (MHz)	f+ TFPDAS (GHz)	f+ corrected (GHz)	∂f+ (MHz)	BLS spectrum
9,4	4,7	9,3375	62,5	4,275	4,3375	-362,5	4,9875	5,05	350	
8,75	4,375	8,6625	87,5	4,05	4,1375	-237,5	4,5375	4,625	250	
8,75	4,375	8,6625	87,5	3,4875	3,575	-800	5,175	5,2625	887,5	
8,66	4,33	8,5875	72,5	4,0875	4,16	-170	4,4625	4,535	205	
8,3	4,15	8,2125	87,5	3,675	3,7625	-387,5	4,3125	4,4	250	
8	4	7,9125	87,5	3,7125	3,8	-200	4,2	4,2875	287,5	
8	4	7,9125	87,5	2,775	2,8625	-1137,5	5,1	5,1875	1187,5	
8	4	7,9125	87,5	3,1875	3,275	-725	4,6125	4,7	700	
7,4	3,7	7,3125	87,5	3,375	3,4625	-237,5	3,9	3,9875	287,5	
7,4	3,7	7,3125	87,5	2,7375	2,825	-875	4,4625	4,55	850	

Measurement M09 – 2020-02-25

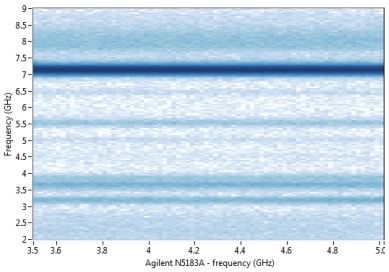
device:	F12, left disk as seen in design file
type:	**RF sweeps stripe, different combinations**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	12 dBm
RF-freq stripe (GHz):	3.5 to 5 GHz
RF-Power stripe (dBm):	17 dBm
COMBINATIONS:	disk on and stripe on, disk on and stripe off, disk off and stripe on
measurement position	14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
	3 points in radial direction (only measured 1+2), 7 in azimuthal direction



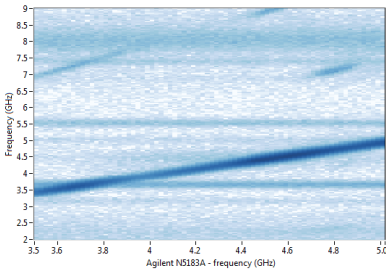
stripe on, disk on

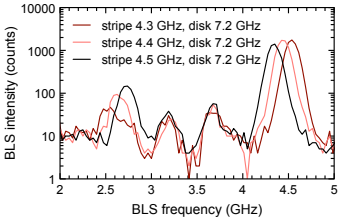


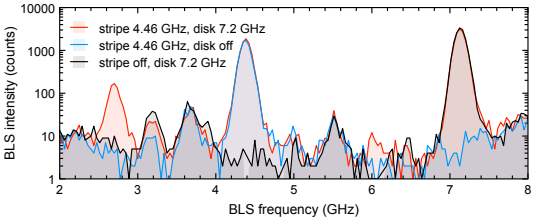
stripe off, disk on



stripe on, disk off

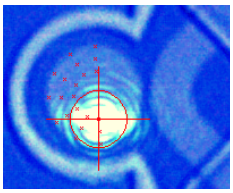




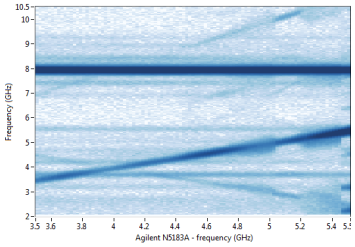


Measurement M10 – 2020-02-26

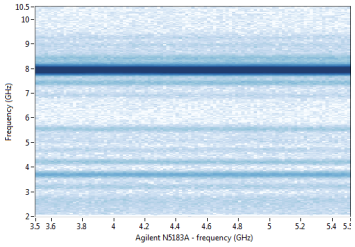
device:	F12, left disk as seen in design file
type:	**RF sweeps stripe, different combinations**
RF-freq disk (GHz):	8 GHz
RF-Power disk (dBm):	16 dBm
RF-freq stripe (GHz):	3.5 to 5.5 GHz
RF-Power stripe (dBm):	17 dBm
COMBINATIONS:	disk on and stripe on, disk on and stripe off, disk off and stripe on
measurement position	14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
	3 points in radial direction (only measured 1+2), 7 in azimuthal direction



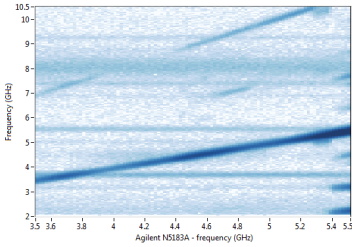
stripe on, disk on



stripe off, disk on

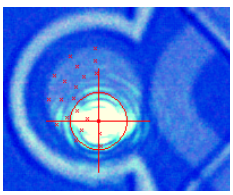


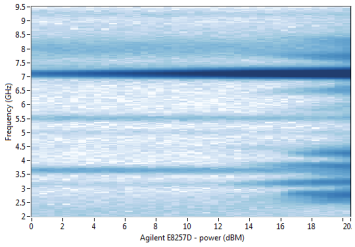
stripe on, disk off

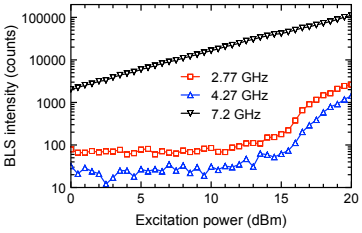


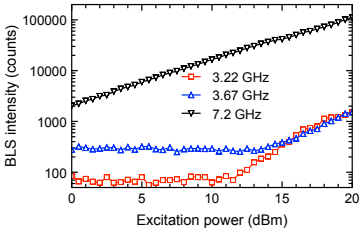
Measurement M11 – 2020-02-27

device:	F12, left disk as seen in design file
type:	**RF power sweep disk**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	0 to 20 dBm
RF-freq stripe (GHz):	-
RF-Power stripe (dBm):	OFF
measurement position	14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
	3 points in radial direction (only measured 1+2), 7 in azimuthal direction



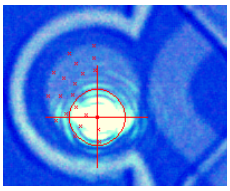


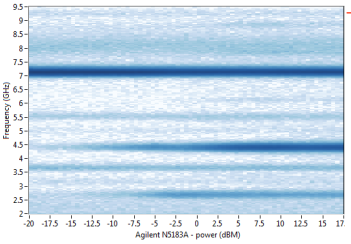


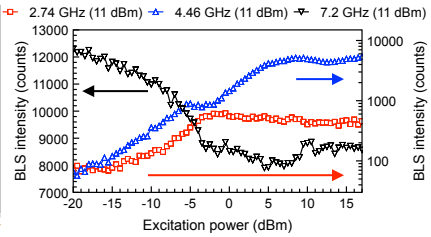


Measurement M12 – 2020-02-27

device:	F12, left disk as seen in design file
type:	**RF power sweep stripe**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	11 dBm
RF-freq stripe (GHz):	4.46 GHz
RF-Power stripe (dBm):	-20 to 17 dBm
measurement position	14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
	3 points in radial direction (only measured 1+2), 7 in azimuthal direction

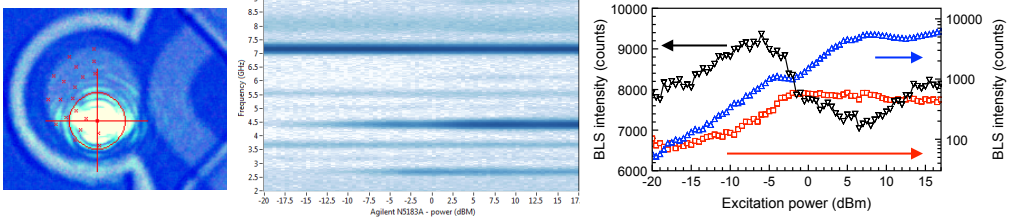






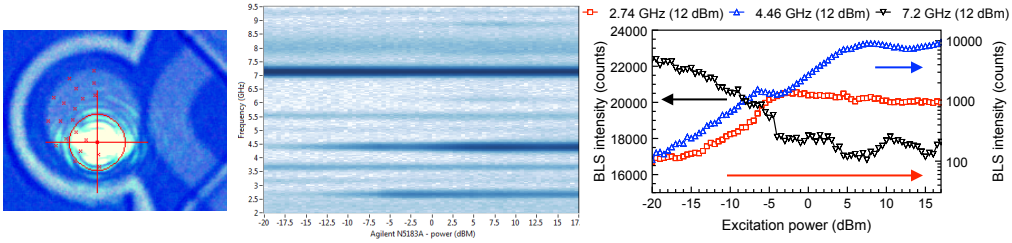
Measurement M13 – 2020-02-28

device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): 10 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction



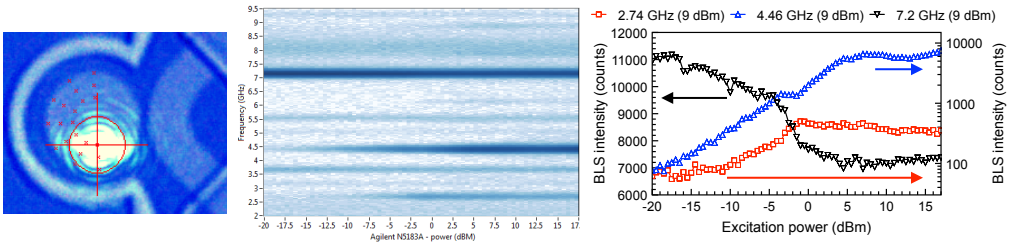
Measurement M14 – 2020-02-28

device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): 12 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction



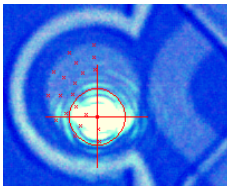
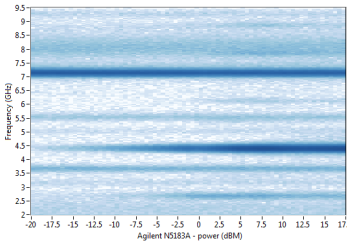
Measurement M15 – 2020-02-28

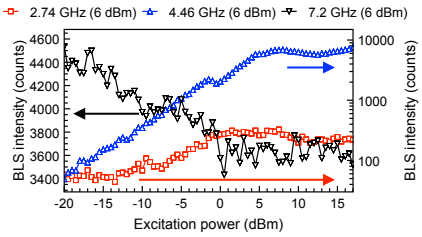
device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): 9 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction



Measurement M16 – 2020-02-29

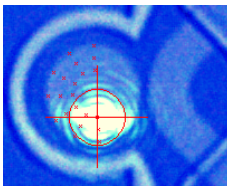
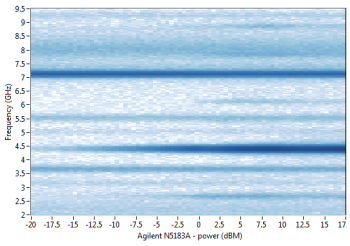
device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): 6 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction

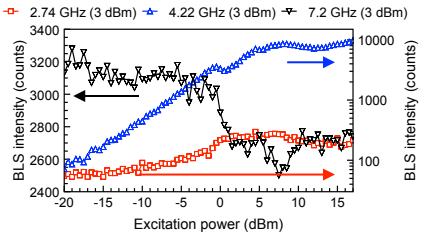





Measurement M17 – 2020-02-29

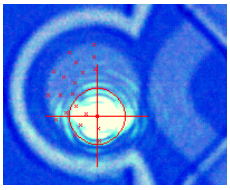
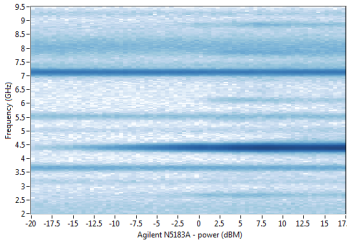
device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): 3 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction

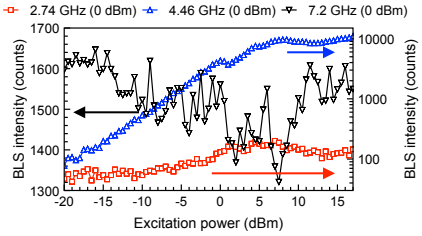





Measurement M18 – 2020-02-29

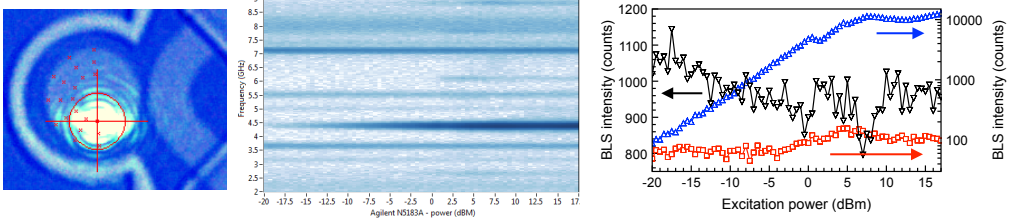
device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): 0 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction



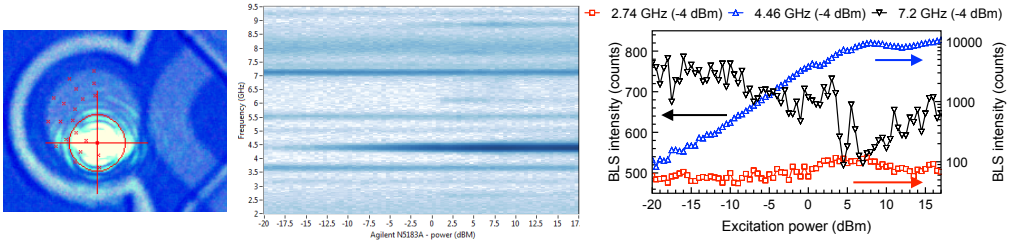
Measurement M19 – 2020-03-01

device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): -3 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction



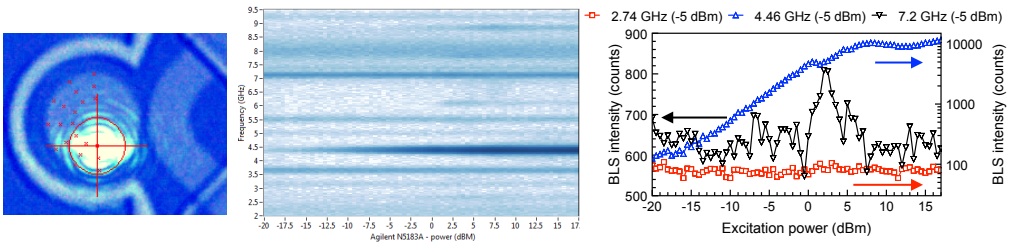
Measurement M20 – 2020-03-01

device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): -4 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction

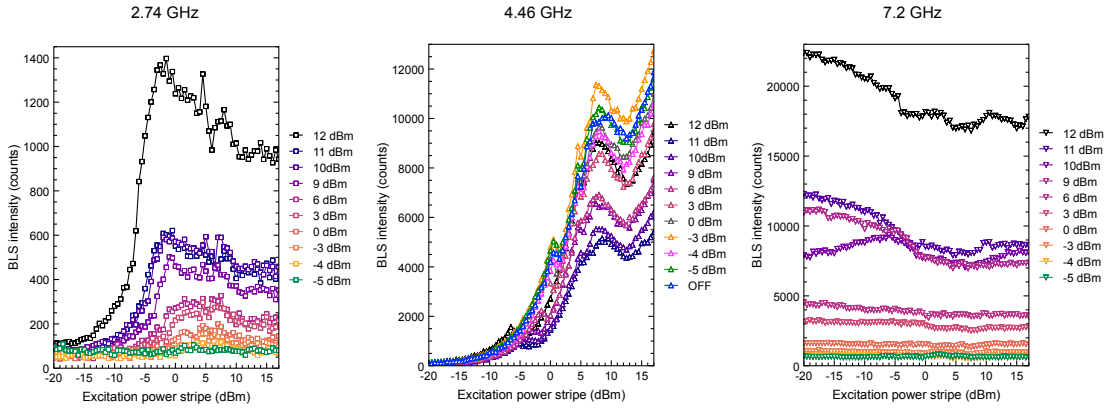


Measurement M21 – 2020-03-02

device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 7.2 GHz
RF-Power disk (dBm): -5 dBm
RF-freq stripe (GHz): 4.46 GHz
RF-Power stripe (dBm): -20 to 17 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction

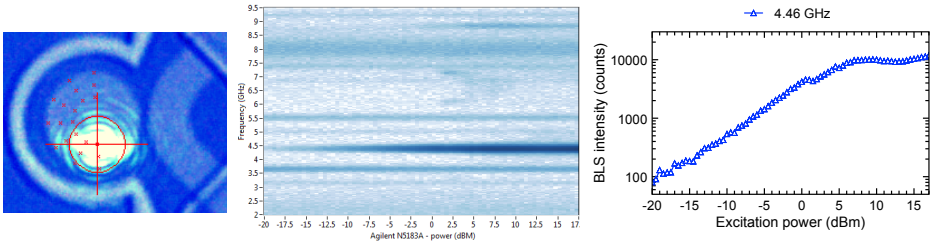


Comparison of power sweeps in stripe for different powers applied to the disk



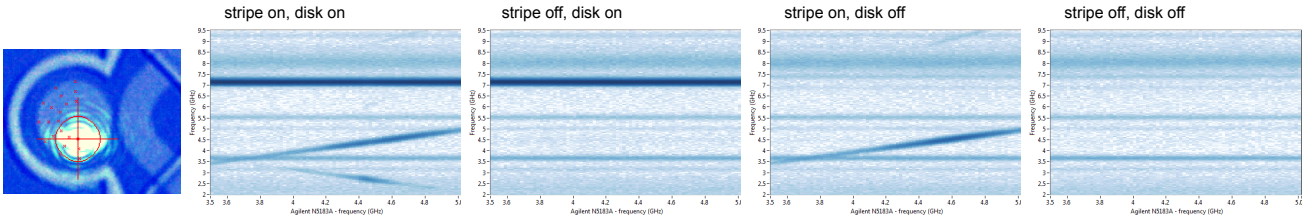
Measurement M22 – 2020-03-02

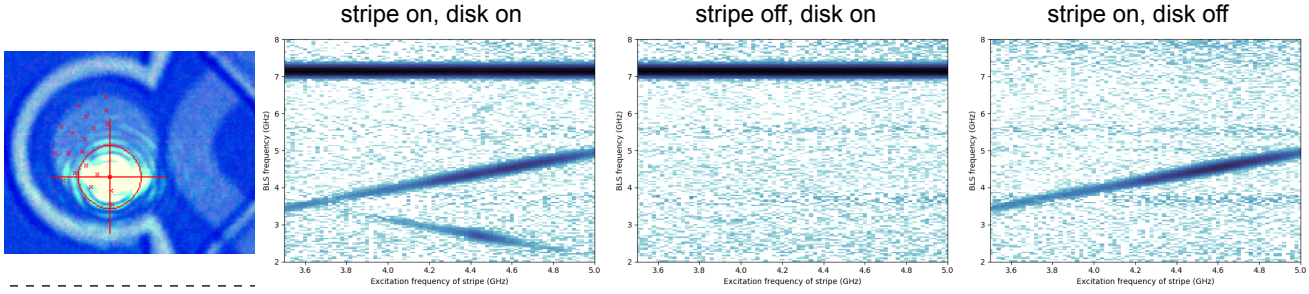
device:	F12, left disk as seen in design file
type:	**RF power sweep stripe**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	OFF
RF-freq stripe (GHz):	4.46 GHz
RF-Power stripe (dBm):	-20 to 17 dBm
measurement position	14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180° 3 points in radial direction (only measured 1+2), 7 in azimuthal direction



Measurement M23 – 2020-03-03

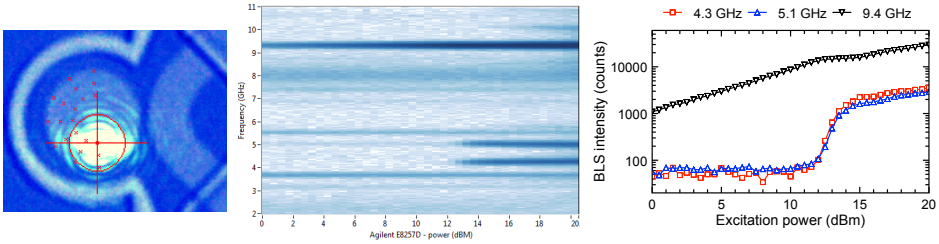
device:	F12, left disk as seen in design file
type:	**RF sweeps stripe, different combinations**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	11 dBm
RF-freq stripe (GHz):	3.5 to 5 GHz
RF-Power stripe (dBm):	-2 dBm
COMBINATIONS:	disk on and stripe on, disk on and stripe off, disk off and stripe on, both off
measurement position	14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180° 3 points in radial direction (only measured 1+2), 7 in azimuthal direction





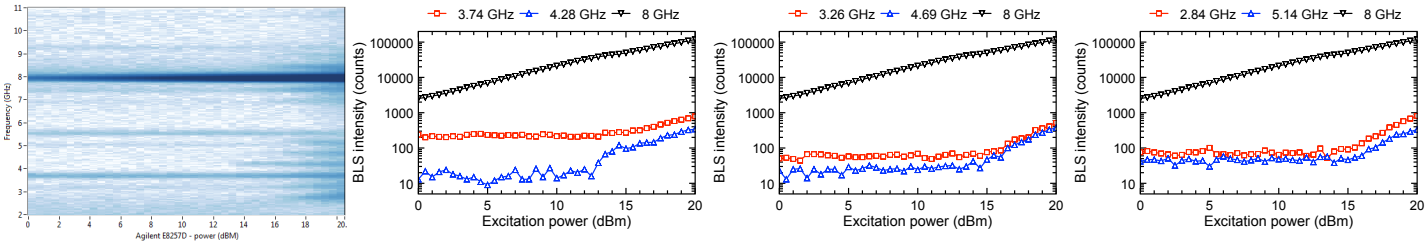
Measurement M24 – 2020-03-04

device: F12, left disk as seen in design file
type: **RF power sweep disk**
RF-freq disk (GHz): 9.4 GHz
RF-Power disk (dBm): 0 to 20 dBm
RF-freq stripe (GHz): -
RF-Power stripe (dBm): OFF
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction
careful: file name is wrong: M24_RFpower-sweep-disk_0to20dBm_9p4GHz_RF-disk_OFF_14points
→ should be RF-stripe_OFF



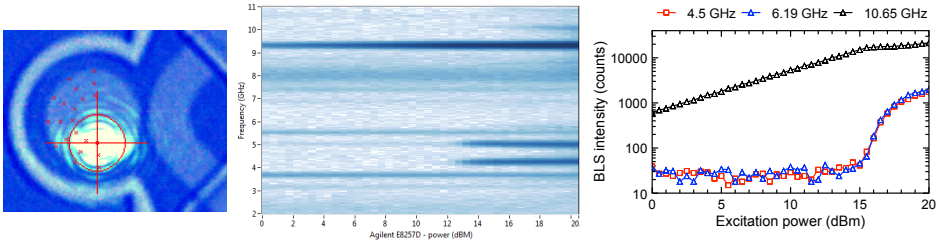
Measurement M25 – 2020-03-04

device: F12, left disk as seen in design file
type: **RF power sweep disk**
RF-freq disk (GHz): 8 GHz
RF-Power disk (dBm): 0 to 20 dBm
RF-freq stripe (GHz): -
RF-Power stripe (dBm): OFF
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction
careful: file name is wrong: M25_RFpower-sweep-disk_0to20dBm_8GHz_RF-disk_OFF_14points
→ should be RF-stripe_OFF



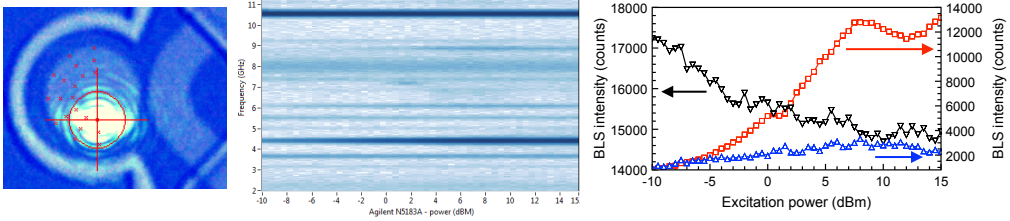
Measurement M26 – 2020-03-05

device: F12, left disk as seen in design file
type: **RF power sweep disk**
RF-freq disk (GHz): 10.65 GHz
RF-Power disk (dBm): 0 to 20 dBm
RF-freq stripe (GHz): -
RF-Power stripe (dBm): OFF
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction
careful: file name is wrong: M26_RFpower-sweep-disk_0to20dBm_10p65GHz_RF-disk_OFF_14points
→ should be RF-stripe_OFF



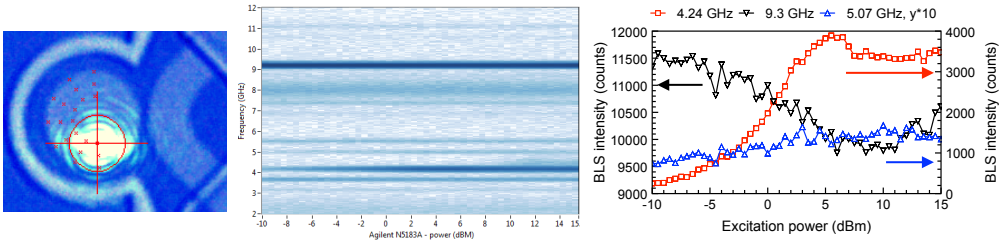
Measurement M27 – 2020-03-05

device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 10.65 GHz
RF-Power disk (dBm): 15 dBm
RF-freq stripe (GHz): 4.48 GHz
RF-Power stripe (dBm): -10 to 15 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction



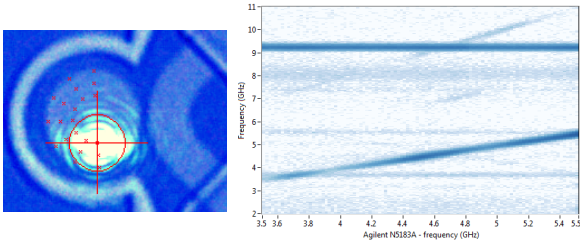
Measurement M28 – 2020-03-05

device: F12, left disk as seen in design file
type: **RF power sweep stripe**
RF-freq disk (GHz): 9.3 GHz
RF-Power disk (dBm): 10 dBm
RF-freq stripe (GHz): 4.24 GHz
RF-Power stripe (dBm): -10 to 15 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction



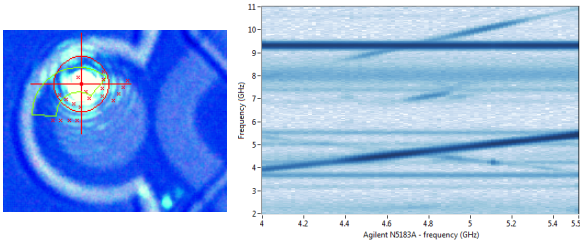
Measurement M29 – 2020-03-05

device: F12, left disk as seen in design file
type: **RF sweep stripe**
RF-freq disk (GHz): 9.3 GHz
RF-Power disk (dBm): 10 dBm
RF-freq stripe (GHz): 3.5 to 5.5 GHz CAREFUL: file name says 4p5to5p5GHz
RF-Power stripe (dBm): 10 dBm
measurement position 14 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180°
3 points in radial direction (only measured 1+2), 7 in azimuthal direction
stopped measurement since no (only very very weak) stimulated 3-magnon scattering is visible



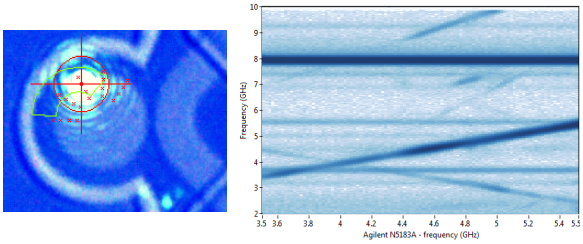
Measurement M30 – 2020-03-06

device:	F12, left disk as seen in design file
type:	**RF sweep stripe**
RF-freq disk (GHz):	9.4 GHz
RF-Power disk (dBm):	12 dBm
RF-freq stripe (GHz):	4 to 5.5 GHz
RF-Power stripe (dBm):	10 dBm
measurement position	15 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 128° more on top 4 points in radial direction (only measured 1-3), 5 in azimuthal direction



Measurement M31 – 2020-03-06

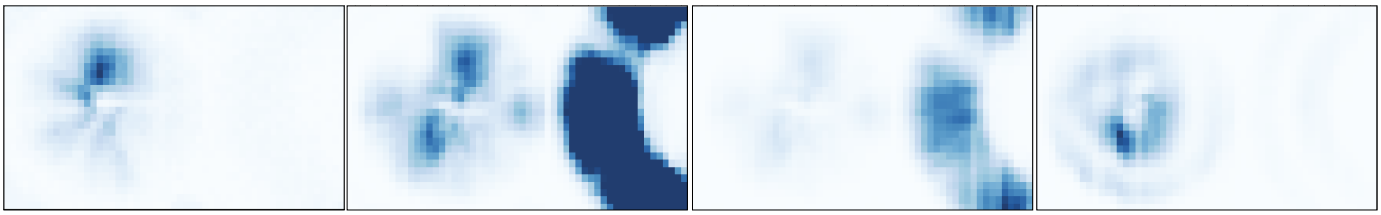
device:	F12, left disk as seen in design file
type:	**RF sweep stripe**
RF-freq disk (GHz):	8 GHz
RF-Power disk (dBm):	12 dBm
RF-freq stripe (GHz):	3.5 to 5.5 GHz
RF-Power stripe (dBm):	10 dBm
measurement position	15 points on disk: angular section: r_1 = 1.228µm, r_2 = 2.5µm, 128° more on top 4 points in radial direction (only measured 1-3), 5 in azimuthal direction



Measurement M32 – 2020-03-08

device:	F12, left disk as seen in design file
type:	**2D map**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	11 dBm
RF-freq stripe (GHz):	4.46 GHz
RF-Power stripe (dBm):	-2 dBm
measurement position	covering disk and part of stripe x: 9.006 µm in 55 points on dim2, y: 5.407 µm in 28 points on dim1

f- f+ f+ f direct

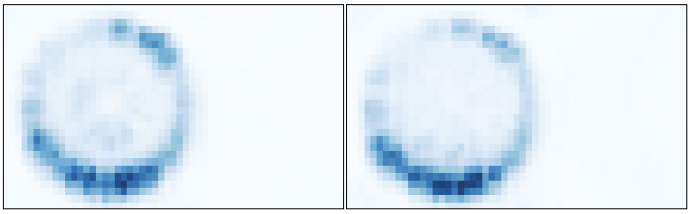


Measurement M33 – 2020-03-09

device:	F12, left disk as seen in design file
type:	**2D map**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	20 dBm
RF-freq stripe (GHz):	-
RF-Power stripe (dBm):	OFF
measurement position	covering disk and part of stripe x: 9.006 µm in 55 points on dim2, y: 5.407 µm in 28 points on dim1

f- f+ f direct

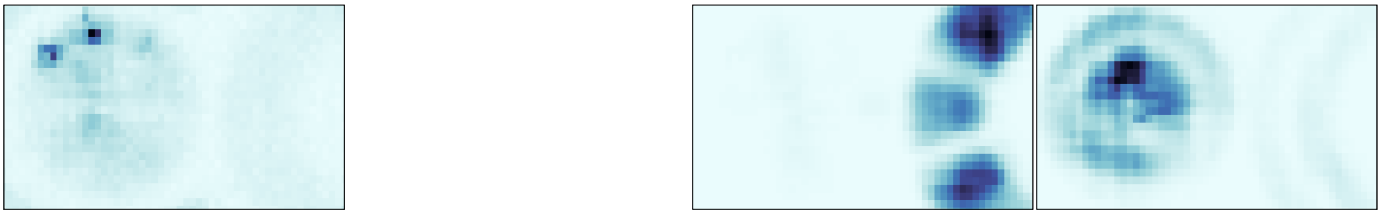
f2- f2+



Measurement M34 – 2020-03-10

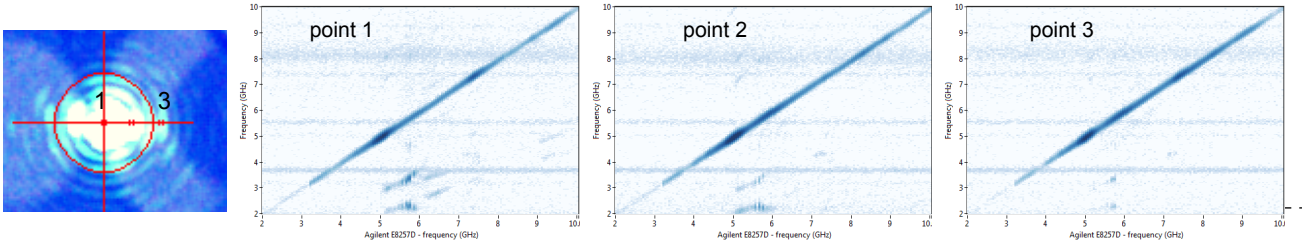
device:	F12, left disk as seen in design file
type:	**2D map**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	11 dBm
RF-freq stripe (GHz):	4.08 GHz
RF-Power stripe (dBm):	-2 dBm
measurement position	covering disk and part of stripe x: 9.006 µm in 55 points on dim2, y: 5.407 µm in 28 points on dim1

f- f+ f+ f direct



Measurement M35 – 2020-03-11

device:	F12, left disk as seen in design file
type:	**RF sweep disk**
RF-freq disk (GHz):	2 to 10 GHz
RF-Power disk (dBm):	20 dBm
RF-freq stripe (GHz):	-
RF-Power stripe (dBm):	OFF
measurement position	3 points across width of the stripe in the bend (1.7 µm between 1&3)



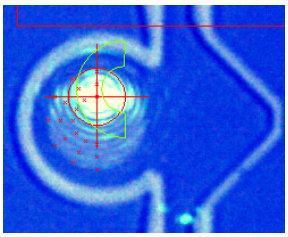
KS – i3MS_V1 – D12

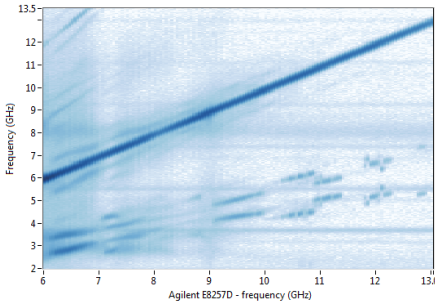
Operator: Katrin Schultheiß
Lab: BLS2, HZDR
Data stored: team/fwin/fwin-m/SAMPLES/i3MS/BLS/i3MS_V1/D12_left_20200312
Sample description: magnetic structures: $Ni_{80}Fe_{20}$(50)/Al(5), deposited by B. Scheumann
Antennas small parts: Cr(5)/Au(150); large parts: Ti(5)/Au(100)
(all thicknesses in nm)

2 RF generators: Agilent E8257D at omega antenna for disk, Agilent N5138A (Alina's) at stripe antenna for waveguide BUT NO waveguide (it was removed in lift-off)

Measurement M01 – 2020-03-12

device:	D12, left disk as seen in design file
type:	**RF sweep disk, measured on disk, stripe off**
RF-freq disk (GHz):	6 - 13 GHz
RF-Power disk (dBm):	20 dBm
RF-freq stripe (GHz):	-
RF-Power stripe (dBm):	OFF
14 points on disk:	angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180° 3 points in radial direction (only measured 1+2), 7 in azimuthal direction
external field (mT):	none - magnet not in setup

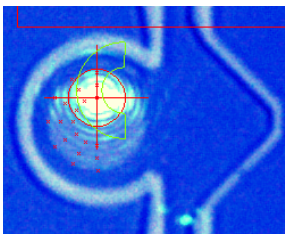


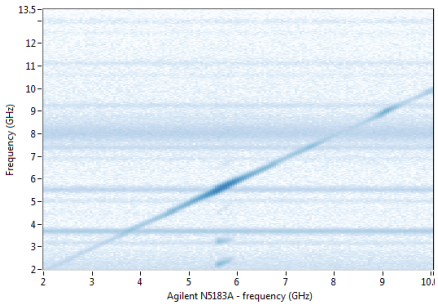


→ 3-magnon splitting is very efficient in this disk, as usual…

Measurement M02 – 2020-03-13

device:	D12, left disk as seen in design file
type:	**RF sweep stripe, measured on disk, disk off**
RF-freq disk (GHz):	-
RF-Power disk (dBm):	OFF
RF-freq stripe (GHz):	2 to 10 GHz
RF-Power stripe (dBm):	17 dBm
14 points on disk:	angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180° 3 points in radial direction (only measured 1+2), 7 in azimuthal direction
external field (mT):	none - magnet not in setup

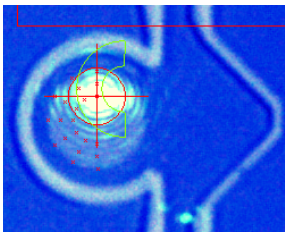


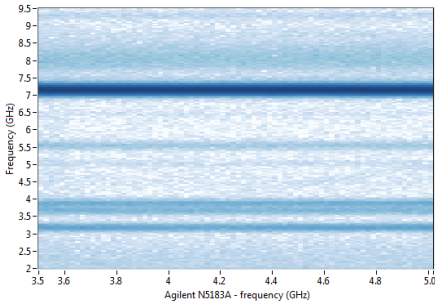


→ some RF field generated by the strip-line antenna directly couples to the disk

Measurement M03 – 2020-03-17

device:	D12, left disk as seen in design file
type:	**RF sweep stripe, measured on disk, disk fixed**
RF-freq disk (GHz):	7.2 GHz
RF-Power disk (dBm):	11 dBm
RF-freq stripe (GHz):	3.5 to 5 GHz
RF-Power stripe (dBm):	-2 dBm
14 points on disk:	angular section: r_1 = 1.228µm, r_2 = 2.5µm, 180° 3 points in radial direction (only measured 1+2), 7 in azimuthal direction
external field (mT):	none - magnet not in setup





→ no stimulated 3-magnon scattering!!