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1. Identification of test laboratory

Company name	SGS-TÜV Saarland Forster GmbH
Address	Saarbruecker Strasse 1 66706 Perl Germany
Laboratory accreditation	D-PL-12103-01-01 KBA-P-00029-98
Name for contact purposes	MR. Karl-Heinz Forster
Telephone	(+49)-6866-93200
Fax	(+49)-6866-93201
E-mail	info@emv-forster.de

Personel involved in this test report

Responsible for test report:	Mr K.-H. Forster
Responsible for testing:	Mr K.Cypher/ Mr.MSc M.Linder

Head of test laboratory: K.-H. Forster

Signature: Karl-Heinz Forster

2. Standards and requirements

Tests were performed according to:

MILSTD 285

NSA 65-6

EN50147-1

Test environmental

Semi-Anechoic Chamber

Temperature	21.0° C
Rel. humidity	51 %
Air pressure	1013 hPa

3. Interpretation and overview of test results

E. u. T.: Shielding Material

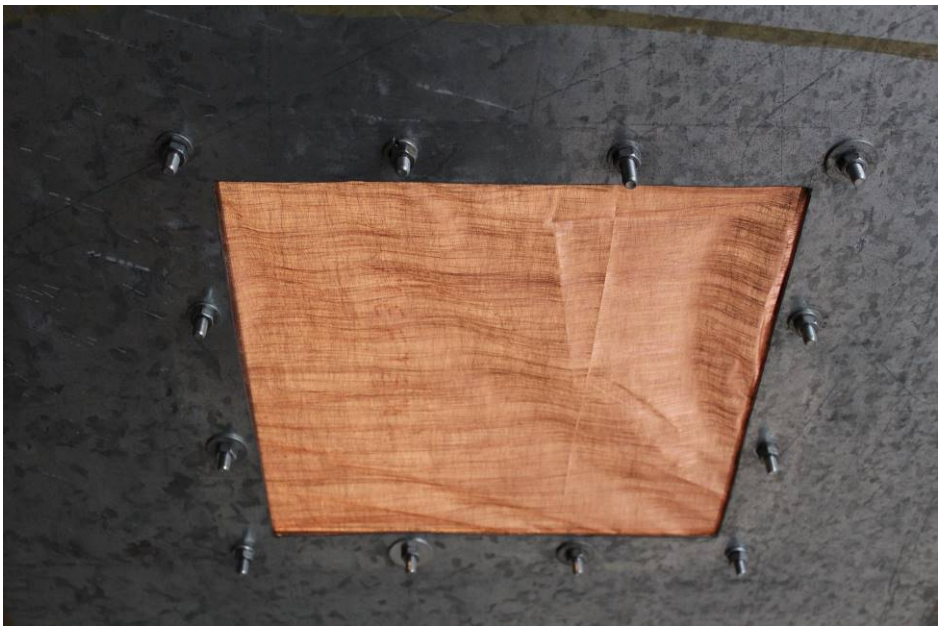
Test Sample Meftex

	Sample Meftex
Shield attenuation test 30MHz-20GHz	**Required by customer**

4. Test setup shield attenuation test

4.1. Mounting of samples

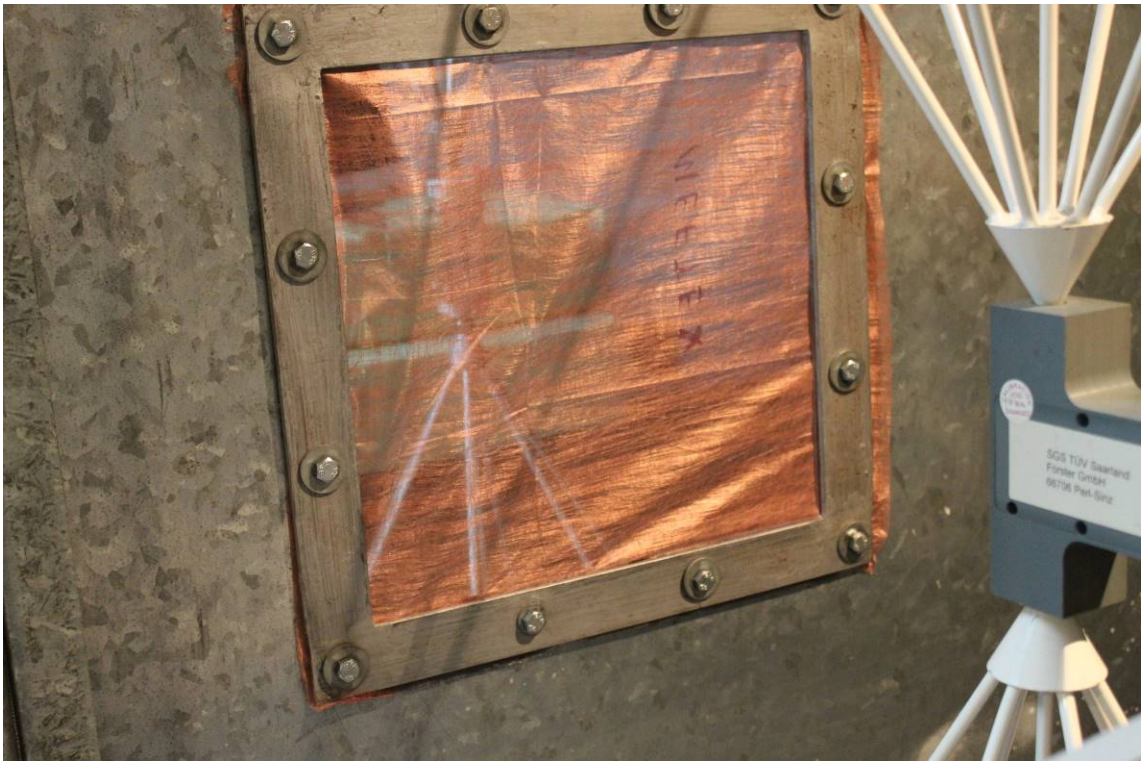
Outside chamber



Inside chamber

4.2. Test setup 30MHz-300MHz

Range 30M to 300MHz

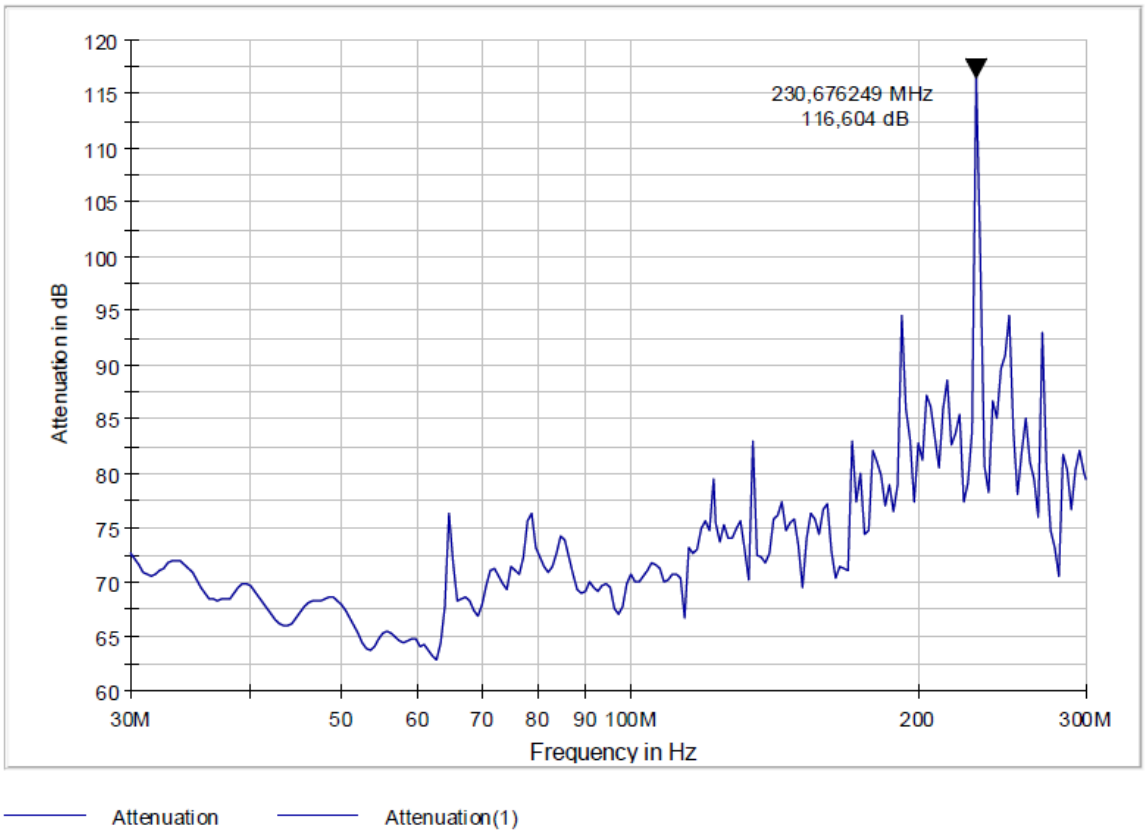


4.2.1 Test results attenuation of sample

Common Information

Signal Path:	<not used>
Correction Table:	Schirmdämpfung - Meftex - 30-300MHz (Cal. Date: 2020-01-03 11:05:21)
RF generator:	SML 03 (Modulation Off;10,0dBm)
Power Meter:	ESR 7 ("RF Input" = 1 DC;"No. of Repetitions" = 1;"Measurement Mode" = Single;"IF Ba)
Frequency Range:	30MHz - 300MHz, 1% LOG
DUT:	Sample 1
Environment Conditions:	20°C ; 52%
Test Site:	SR1
Comment:	--

Path Calibration Result



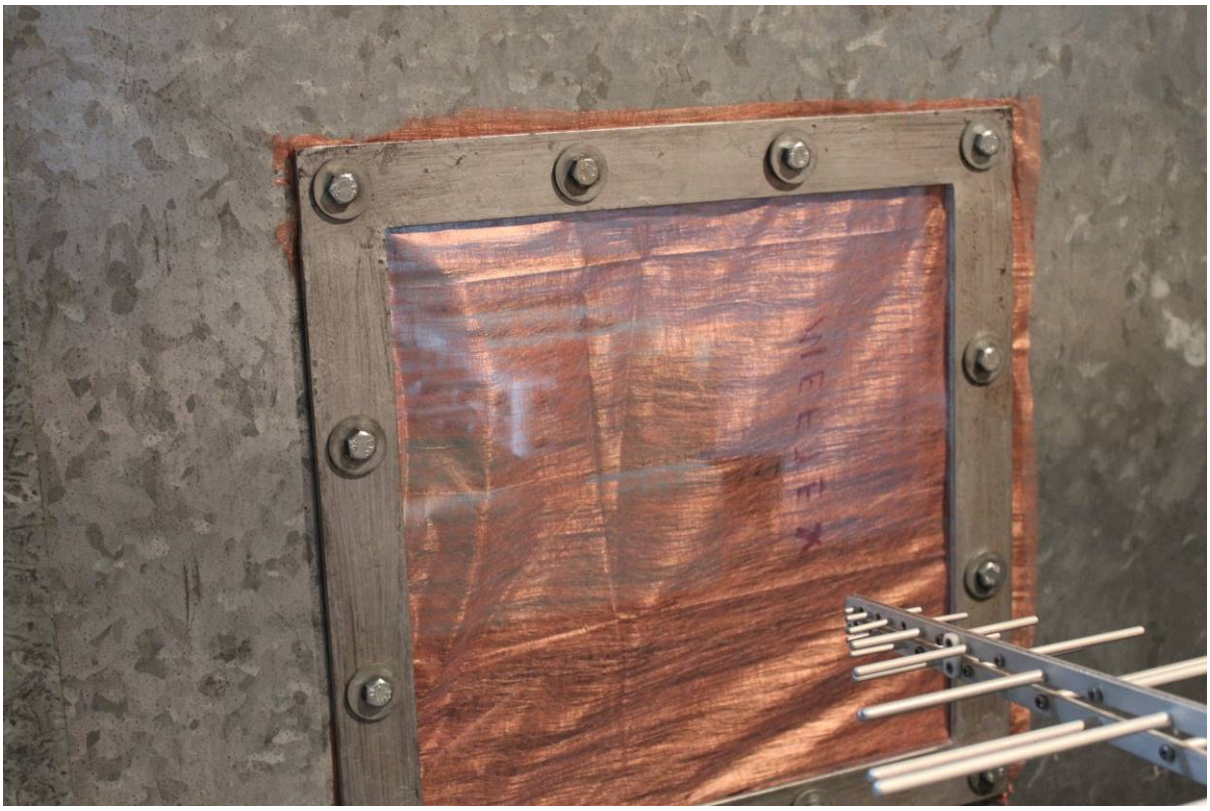
Schirmdämpfung - Meftex - 30-300MHz

Frequency (MHz)	Attenuation (dB)
30.000000	72.7
30.300000	72.1
30.603000	71.5
30.909030	71.0
31.218120	70.6
31.530302	70.5
31.845605	70.7
32.164061	71.0
32.485701	71.3
32.810558	71.7
33.138664	71.9
33.470050	72.0
33.804751	71.9
34.142798	71.6
34.484226	71.3
34.829069	70.9
35.177359	70.2
35.529133	69.5
35.884424	68.9
36.243269	68.5
36.605701	68.3
36.971758	68.2
37.341476	68.4
37.714891	68.4
38.092039	68.5
38.472960	69.0
38.857689	69.5
39.246266	69.8
39.638729	69.8
40.035116	69.6
40.435467	69.2
40.839822	68.6
41.248220	68.0
41.660703	67.5
42.077310	67.0
42.498083	66.5
42.923064	66.2
43.352294	66.0
43.785817	65.9
44.223675	66.2
44.665912	66.7
45.112571	67.2
45.563697	67.7
46.019334	68.1
46.479527	68.3
46.944322	68.3
47.413766	68.3
47.887903	68.4
48.366782	68.5
48.850450	68.5
49.338955	68.3
49.832344	67.9
50.330668	67.4
50.833974	66.7
51.342314	65.9
51.855737	65.2
52.374295	64.4
52.898038	63.8
53.427018	63.7
53.961288	64.1
54.500901	64.8
55.045910	65.3
55.596369	65.4
56.152333	65.2
56.713856	64.8
57.280995	64.6
57.853805	64.4
58.432343	64.5
59.016666	64.7
59.606833	64.7
60.202901	64.0
60.804930	64.2
61.412979	63.8
62.027109	63.1
62.647380	62.8
63.273854	64.5
63.906593	67.7
64.545659	76.3
65.191115	71.7
65.843026	68.2
66.501457	68.4
67.166471	68.6
67.838136	68.2
68.516517	67.4
69.201682	66.9
69.893699	67.8
70.592636	69.7
71.298562	71.0
72.011548	71.1
72.731664	70.5
73.458980	69.9
74.193570	69.3
74.935506	71.5
75.684861	71.1
76.441709	70.6
77.206127	72.3
77.978188	75.7
78.757970	76.3
79.545549	73.2
80.341005	72.3
81.144415	71.4
81.955859	70.9
82.775418	71.4
83.603172	72.6
84.439204	74.1
85.283596	73.9
86.136432	72.3
86.997796	70.8
87.867774	69.3
88.746452	68.9
89.633916	69.1
90.530255	70.1
91.435558	69.5
92.349913	69.2
93.273412	69.6
94.206147	69.8
95.148208	69.4
96.099690	67.6
97.060687	67.0
98.031294	67.7
99.011607	69.9
100.001723	70.7
101.001740	70.0
102.011758	70.0
103.031875	70.5
104.062194	71.0
105.102816	71.8
106.153844	71.6
107.215382	71.1
108.287536	70.1
109.370412	70.1
110.464116	70.7
111.568757	70.8
112.684444	70.4
113.811289	66.6
114.949402	73.1
116.098896	72.7
117.259885	73.0
118.432484	74.9
119.616808	75.6
120.812977	74.7
122.021106	79.4
123.241317	75.5
124.473731	73.7
125.718468	75.2
126.975652	74.0
128.245409	74.0
129.527863	74.9
130.823142	75.7
132.131373	72.9
133.452687	70.2
134.787214	82.9
136.135086	72.4
137.496437	72.3
138.871401	71.7
140.260115	72.6
141.662716	75.8
143.079343	76.2
144.510137	77.4
145.955238	74.7
147.414791	75.4
148.888939	75.7
150.377828	73.3
151.881606	69.4
153.400422	74.0
154.934426	76.3
156.483771	75.7
158.048608	74.4
159.629095	76.7
161.225385	77.2
162.837639	72.8
164.466016	70.4
166.110676	71.4
167.771783	71.1
169.449500	71.1
171.143995	83.0
172.855435	77.4
174.583990	80.1
176.329830	74.4
178.093128	74.8
179.874059	82.0
181.672800	81.1
183.489528	79.8
185.324423	77.0
187.177667	79.0
189.049444	76.4
190.939938	79.0
192.849338	94.5
194.777831	86.0
196.725610	83.1
198.692866	77.4
200.679794	82.8
202.686592	81.2
204.713458	87.2
206.760593	86.2
208.828199	83.3
210.916481	80.4
213.025645	85.9
215.155902	88.7
217.307461	82.6
219.480536	83.7

Frequency (MHz)	Attenuation (dB)
221.675341	85.5
223.892094	77.3
226.131015	79.1
228.392325	83.9
230.676249	116.6
232.983011	100.0
235.312841	80.7
237.665970	78.3
240.042629	86.7
242.443056	85.1
244.867486	89.7
247.316161	90.9
249.789323	94.6
252.287216	83.9
254.810088	78.0
257.358189	81.9
259.931771	85.2
262.531089	81.1
265.156399	79.5
267.807963	75.9
270.486043	93.0
273.190904	80.7
275.922813	74.7
278.682041	73.1
281.468861	70.5
284.283550	81.7
287.126385	80.3
289.997649	76.7
292.897626	80.3
295.826602	82.1
298.784868	80.2
300.000000	79.5

4.3. Test setup shield attenuation test 300MHz - 1GHz

Range 300MHz-1GHz

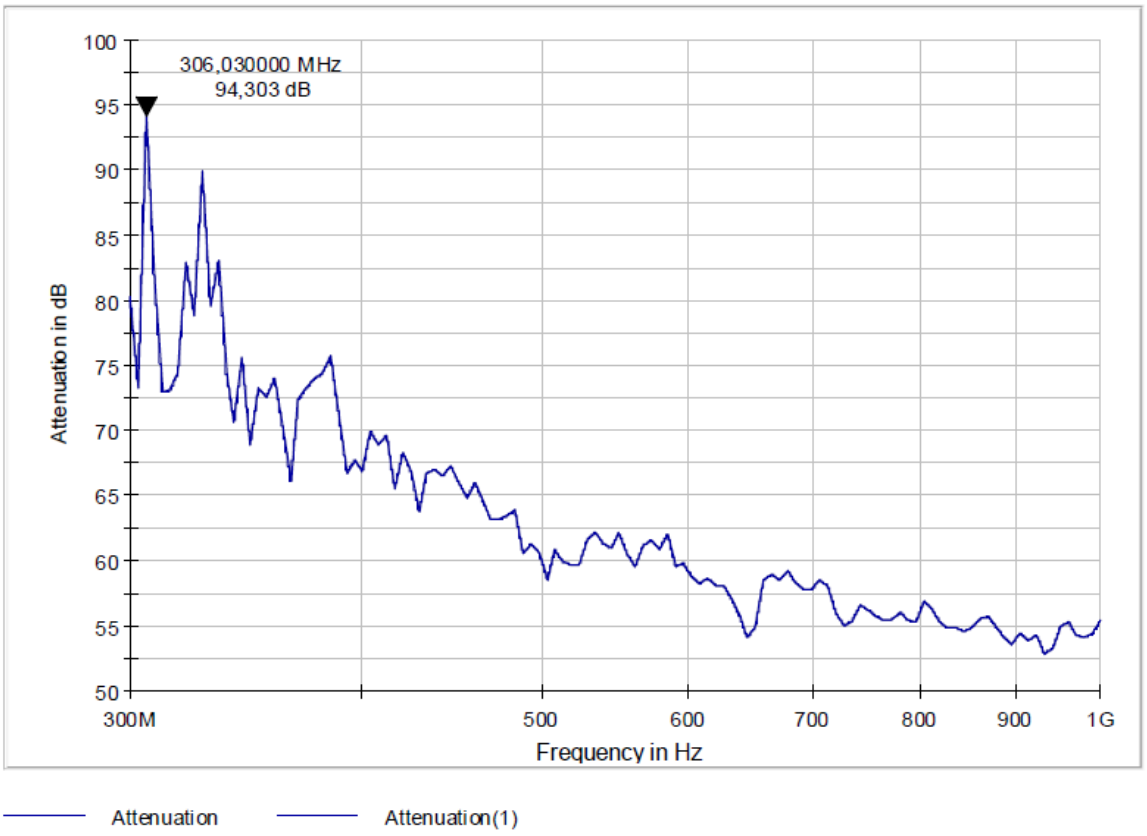


4.3.1 Test results attenuation of sample

Common Information

Signal Path:	<not used>
Correction Table:	Schirmdämpfung - Meftex - 300-1000MHz (Cal. Date: 2020-01-03 11:34:18)
RF generator:	SML 03 (Modulation Off;10,0dBm)
Power Meter:	ESR 7 ("RF Input" = 1 DC;"No. of Repetitions" = 1;"Measurement Mode" = Single;"IF Ba)
Frequency Range:	300MHz - 1GHz, 1% LOG
DUT:	Sample 1
Environment Conditions:	20°C ; 52%
Test Site:	SR1
Comment:	--

Path Calibration Result



Schirmdämpfung - Meftex - 300-1000MHz

Frequency (MHz)	Attenuation (dB)
300.000000	80.3
303.000000	73.2
306.030000	94.3
309.090300	81.5
312.181203	72.9
315.303015	73.1
318.456045	74.4
321.640606	83.0
324.857012	78.7
328.105582	89.9
331.386638	79.5
334.700504	83.0
338.047509	74.2
341.427984	70.7
344.842264	75.5
348.290687	68.9
351.773593	73.2
355.291329	72.6
358.844243	74.0
362.432685	70.2
366.057012	66.1
369.717582	72.3
373.414758	73.2
377.148906	73.9
380.920395	74.4
384.729599	75.7
388.576894	71.2
392.462663	66.7
396.387290	67.7
400.351163	66.9
404.354675	69.9
408.398221	68.9
412.482204	69.6
416.607026	65.5
420.773096	68.3
424.980827	66.8
429.230635	63.8
433.522941	66.7
437.858171	67.0
442.236753	66.5
446.659120	67.2
451.125711	65.9
455.636968	64.8
460.193338	66.0
464.795271	64.4
469.443224	63.2
474.137656	63.2
478.879033	63.4
483.667823	63.8
488.504502	60.5
493.389547	61.3
498.323442	60.6
503.306676	58.5
508.339743	60.8
513.423141	59.9
518.557372	59.7
523.742946	59.6
528.980375	61.6
534.270179	62.1
539.612881	61.3
545.009010	60.9
550.459100	62.1
555.963691	60.5
561.523328	59.5
567.138561	61.2
572.809946	61.6
578.538046	60.8
584.323426	62.0
590.166661	59.5
596.068327	59.8
602.029011	58.8
608.049301	58.2
614.129794	58.6
620.271092	58.1
626.473802	58.0
632.738541	57.0
639.065926	55.6
645.456585	54.1
651.911151	54.9
658.430263	58.5
665.014565	58.9
671.664711	58.5
678.381358	59.2
685.165171	58.2
692.016823	57.7
698.936991	57.8
705.926361	58.4
712.985625	58.1
720.115481	55.9
727.316636	55.0
734.589802	55.3
741.935700	56.6
749.355057	56.2
756.848608	55.7
764.417094	55.4
772.061265	55.4
779.781878	56.0
787.579696	55.4
795.455493	55.2
803.410048	56.9
811.444149	56.2
819.558590	55.3
827.754176	54.8
836.031718	54.8
844.392035	54.5
852.835956	54.9
861.364315	55.5
869.977958	55.6
878.677738	54.8
887.464515	54.1
896.339160	53.6
905.302552	54.5
914.355577	53.9
923.499133	54.3
932.734125	52.8
942.061466	53.2
951.482080	55.0
960.996901	55.3
970.606870	54.2
980.312939	54.0
990.116068	54.3
1000.000000	55.4

4.4. Test setup shield attenuation test 1GHz - 20GHz

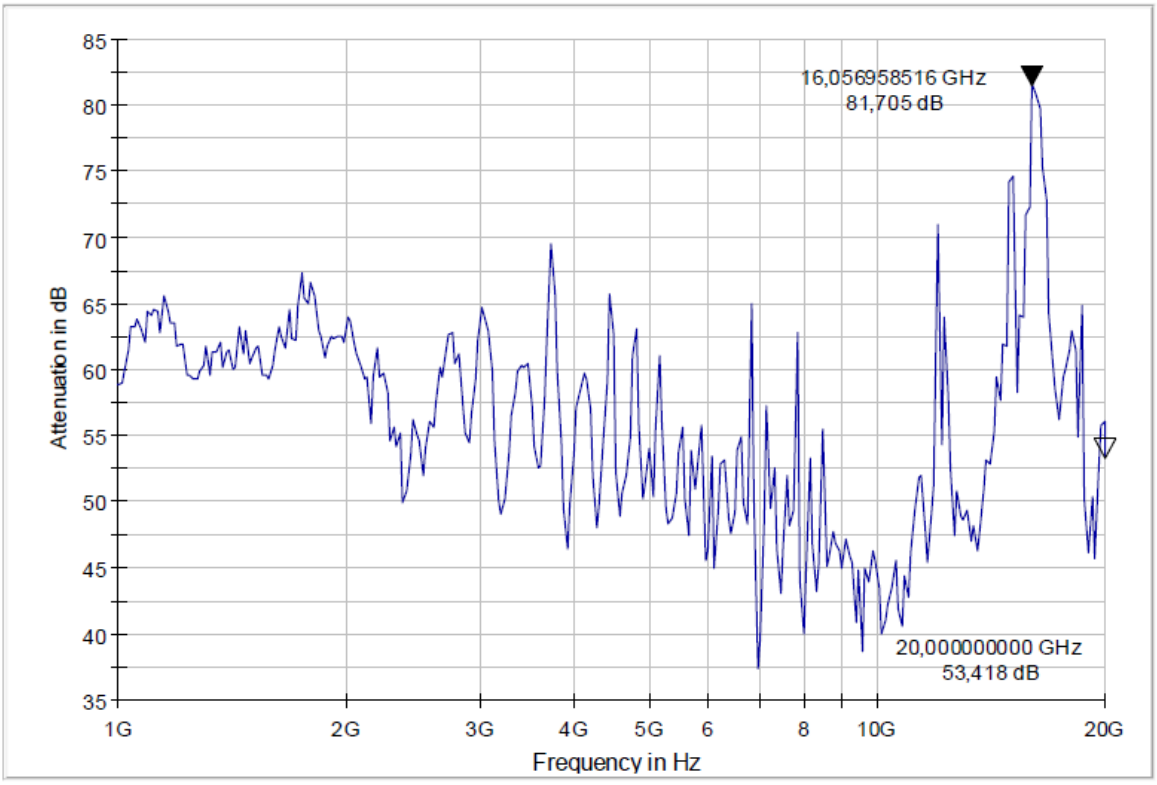
Range 1GHz-20GHz

4.4.1 Test results attenuation of sample

Common Information

Signal Path:	<not used>
Correction Table:	1000-20000MHz (Cal. Date: 2020-01-03 15:15:14)
RF generator:	SMR 20 (Modulation Off;10,0dBm)
Power Meter:	ESU 26 ("RF Input" = 1 DC;"No. of Repetitions" = 1;"Measurement Mode" = Single;"IF Ba)
Frequency Range:	1GHz - 20GHz, 1% LOG
DUT:	Sample 1
Environment Conditions:	20°C ; 52%
Test Site:	SR1
Comment:	--

Path Calibration Result



1000-20000MHz

Frequency (MHz)	Attenuation (dB)
1000.000000	58.8
1010.000000	59.0
1020.100000	59.8
1030.301000	61.4
1040.604010	63.2
1051.010050	63.2
1061.520151	63.8
1072.135352	63.1
1082.856706	62.1
1093.685273	64.4
1104.622125	64.0
1115.668347	64.6
1126.825030	64.4
1138.093280	62.7
1149.474213	65.5
1160.968955	64.4
1172.578645	63.5
1184.304431	63.6
1196.147476	61.7
1208.108950	61.9
1220.190040	61.9
1232.391940	59.5
1244.715860	59.6
1257.163018	59.3
1269.734649	59.3
1282.431995	59.9
1295.256315	60.3
1308.208878	61.7
1321.290967	59.5
1334.503877	61.2
1347.848915	61.3
1361.327404	62.0
1374.940679	60.1
1388.690085	61.4
1402.576986	61.5
1416.602756	60.0
1430.768784	60.1
1445.076471	63.3
1459.527236	61.2
1474.122509	62.9
1488.863734	60.4
1503.752371	60.9
1518.789895	61.6
1533.977794	61.7
1549.317572	59.5
1564.810747	59.6
1580.458855	59.3
1596.263443	60.3
1612.226078	61.4
1628.348338	63.2
1644.631822	62.5
1661.078140	61.6
1677.688921	64.5
1694.465811	62.3
1711.410469	62.2
1728.524573	64.8
1745.809819	67.3
1763.267917	65.4
1780.900597	64.9
1798.709603	66.6
1816.696699	65.5
1834.863666	63.0
1853.212302	62.5
1871.744425	60.9
1890.461869	61.8
1909.366488	62.5
1928.460153	62.3
1947.744755	62.5
1967.222202	62.5
1986.894424	62.1
2006.763368	64.0
2026.831002	63.7
2047.099312	61.9
2067.570305	61.2
2088.246008	60.2
2109.128468	59.3
2130.219753	59.4
2151.521951	56.0
2173.037170	59.4
2194.767542	61.6
2216.715217	59.5
2238.882369	59.7
2261.271193	58.2
2283.883905	54.6
2306.722744	55.7
2329.789971	54.2
2353.087871	55.2
2376.618750	49.9
2400.384937	50.8
2424.388787	53.6
2448.632675	56.2
2473.119001	55.0
2497.850191	54.5
2522.828693	52.0
2548.056980	54.1
2573.537550	56.1
2599.272926	55.6
2625.265655	57.5
2651.518311	60.2
2678.033494	59.4
2704.813829	61.5
2731.861968	62.6
2759.180587	62.7
2786.772393	60.4
2814.640117	61.2
2842.786518	57.1
2871.214384	55.1
2899.926527	54.5
2928.925793	56.6
2958.215051	59.3
2987.797201	62.1
3017.675173	64.6
3047.851925	63.5
3078.330444	62.9
3109.113749	59.9
3140.204886	54.5
3171.606935	50.0
3203.323004	49.1
3235.356234	50.2
3267.709797	53.7
3300.386895	56.5
3333.390764	58.2
3366.724671	59.8
3400.391918	60.4
3434.395837	60.1
3468.739795	60.5
3503.427193	57.3
3538.461465	54.2
3573.846080	52.5
3609.584541	52.6
3645.680386	57.9
3682.137190	62.2
3718.958562	69.5
3756.148148	65.7
3793.709629	59.8
3831.646725	54.5
3869.963193	49.5
3908.662824	46.4
3947.749453	49.8
3987.226947	53.6
4027.099217	57.1
4067.370209	58.4
4108.043911	59.7
4149.124350	59.3
4190.615594	56.9
4232.521750	52.0
4274.846967	48.1
4317.595437	49.7
4360.771391	54.6
4404.379105	59.2
4448.422896	65.8
4492.907125	62.6
4537.836196	52.3
4583.214558	48.8
4629.046704	50.6
4675.337171	51.9
4722.090543	54.9
4769.311448	61.0
4817.004562	63.0
4865.174608	55.7
4913.826354	50.2
4962.964618	51.4
5012.594264	54.0
5062.720206	50.4
5113.347409	55.5
5164.480883	61.0
5216.125691	56.0
5268.286948	49.4
5320.969818	48.4
5374.179516	48.8
5427.921311	50.6
5482.200524	53.8
5537.022530	55.7
5592.392755	50.2
5648.316682	47.4
5704.799849	53.9
5761.847848	50.9
5819.466326	52.5
5877.660989	55.8
5936.437599	45.5
5995.801975	46.2
6055.759995	53.5
6116.317595	44.9
6177.480771	49.4
6239.255579	52.9
6301.648135	53.1
6364.664616	48.8
6428.311262	47.5
6492.594375	49.1
6557.520318	53.9
6623.095522	54.9
6689.326477	49.9
6756.219742	48.4
6823.781939	65.0
6892.019758	50.5
6960.939956	37.3
7030.549355	39.6
7100.854849	48.8
7171.863398	57.2
7243.582032	49.4
7316.017852	52.6

Frequency (MHz)	Attenuation (dB)
7389.178030	46.5
7463.069811	43.0
7537.700509	46.5
7613.077514	51.9
7689.208289	48.1
7766.100372	49.3
7843.761376	62.8
7922.198989	44.0
8001.420979	40.0
8081.435189	44.8
8162.249541	53.2
8243.872036	46.7
8326.310757	43.1
8409.573864	45.1
8493.669603	55.5
8578.606299	45.0
8664.392362	45.9
8751.036286	47.7
8838.546648	46.9
8926.932115	46.3
9016.201436	44.9
9106.363450	47.1
9197.427085	45.8
9289.401356	45.3
9382.295369	40.9
9476.118323	44.8
9570.879506	38.6
9666.588301	45.0
9763.254184	43.9
9860.886726	46.3
9959.495593	45.6
10059.090549	43.5
10159.681455	40.0
10261.278269	41.1
10363.891052	42.2
10467.529963	43.5
10572.205262	45.5
10677.927315	41.8
10784.706588	40.5
10892.553654	44.4
11001.479190	42.8
11111.493982	46.1
11222.608922	49.4
11334.835011	51.8
11448.183361	52.0
11562.665195	47.8
11678.291847	45.4
11795.074766	49.2
11913.025513	51.2
12032.155768	71.0
12152.477326	54.3
12274.002099	63.9
12396.742120	57.9
12520.709541	52.6
12645.916637	47.5
12772.375803	50.7
12900.099561	48.9
13029.100557	48.6
13159.391562	49.3
13290.985478	47.0
13423.895333	48.1
13558.134286	46.2
13693.715629	47.7
13830.652785	50.9
13968.959313	53.2
14108.648906	52.9
14249.735395	55.4
14392.232749	59.4

Frequency (MHz)	Attenuation (dB)
14536.155077	57.6
14681.516628	61.9
14828.331794	61.8
14976.615112	74.2
15126.381263	74.6
15277.645076	58.3
15430.421526	64.1
15584.725742	64.0
15740.572999	71.7
15897.978729	72.3
16056.958516	81.7
16217.528101	80.8
16379.703382	79.8
16543.500416	75.3
16708.935420	72.9
16876.024775	64.3
17044.785022	60.4
17215.232873	58.5
17387.385201	56.2
17561.259053	59.5
17736.871644	59.9
17914.240360	61.5
18093.382764	62.9
18274.316592	61.5
18457.059757	54.9
18641.630355	64.8
18828.046659	50.3
19016.327125	46.2
19206.490396	50.3
19398.555300	45.7
19592.540853	52.7
19788.466262	55.7
19986.350925	56.1
20000.000000	53.4

5. List of test instruments

Shield attenuation test

INV #	Test equipment	Type	Manufacturer	S/N #
#A 220	Signal Generator	SML03	R&S	004/5746
#A27-1	RF-Coaxial-Cable (N-N/3)	PE302-72	Pasternack	1306
#A220	Signal Generator	SMR20,10M-20GHz	Rohde & Schwarz	834671/004
#A16	RF-Coaxial-Cable (N-N/3)	PE302-72	Pasternack	1307
#A 253	RF-Coaxial -Cable	16301	Astrolab	32061-3m
#A257	LogPerAntenna	UHALP9108A	Schwarzbeck	0756
#A258	Log PerAntenna	EM6950	Electro-Metrics	705
#A66	Biconical Antenna	BBA9160	Schwarzbeck	2315
#A67	Biconical Antenna	VHBC9133	Schwarzbeck	070
#A138	Double Ridge Horn Antenna	BBHA9120D	Schwarzbeck	9120D-374
#A 263	Double Ridge Horn Antenna	BBHA9120D	Schwarzbeck	9120D-1532
#A 133	RF Power Meter	4231	Boonton	86801

6. Photo E. u. T.

Sample size 600 x 400mm