Test results for Radiated emission 30 - 1000 MHz SA3-F	
Test item no(s) ref. cl. 1.2 ..... :	4
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

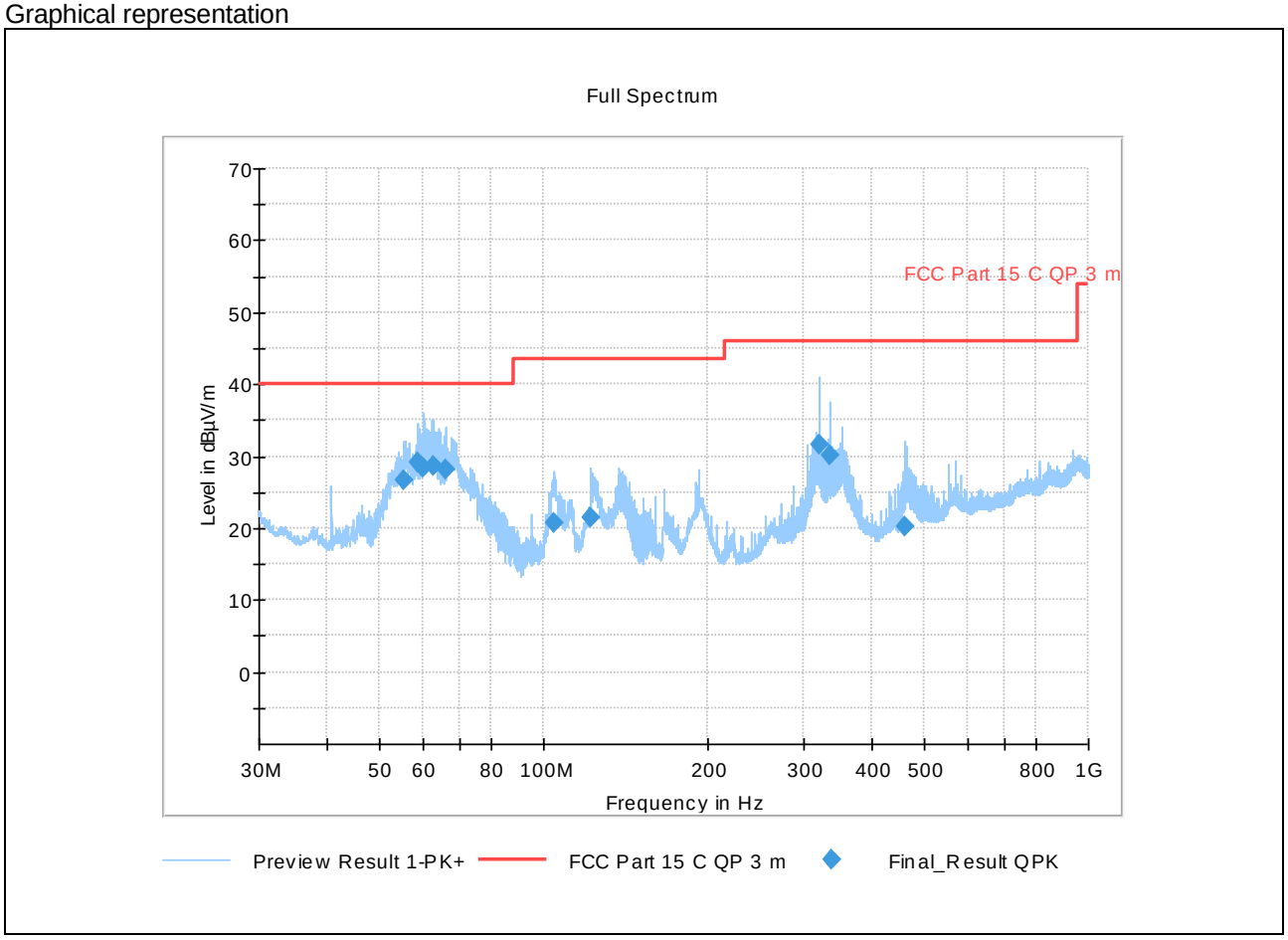
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
55.280000	26.69	40.00	13.31	15000.0	120.000	200.0	V	187.0	-8.0
58.730000	29.05	40.00	**10.95**	15000.0	120.000	155.0	V	65.0	-8.6
60.180000	28.51	40.00	11.49	15000.0	120.000	100.0	V	-121.0	-8.7
62.740000	28.56	40.00	11.44	15000.0	120.000	100.0	V	-126.0	-8.8
66.240000	28.16	40.00	11.84	15000.0	120.000	100.0	V	49.0	-8.8
104.180000	20.60	43.52	22.92	15000.0	120.000	200.0	V	131.0	-3.6
122.040000	21.39	43.52	22.14	15000.0	120.000	100.0	V	-111.0	-2.1
319.990000	31.73	46.02	14.29	15000.0	120.000	155.0	H	-89.0	1.0
336.000000	30.24	46.02	15.78	15000.0	120.000	200.0	H	89.0	1.8
461.050000	20.15	46.02	25.87	15000.0	120.000	219.0	H	-109.0	5.9

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 29.05 dBµV/m (field strength) = 37.65 dBµV (receiver reading) + -8.6 dB (Correction factor)

Graphical representation



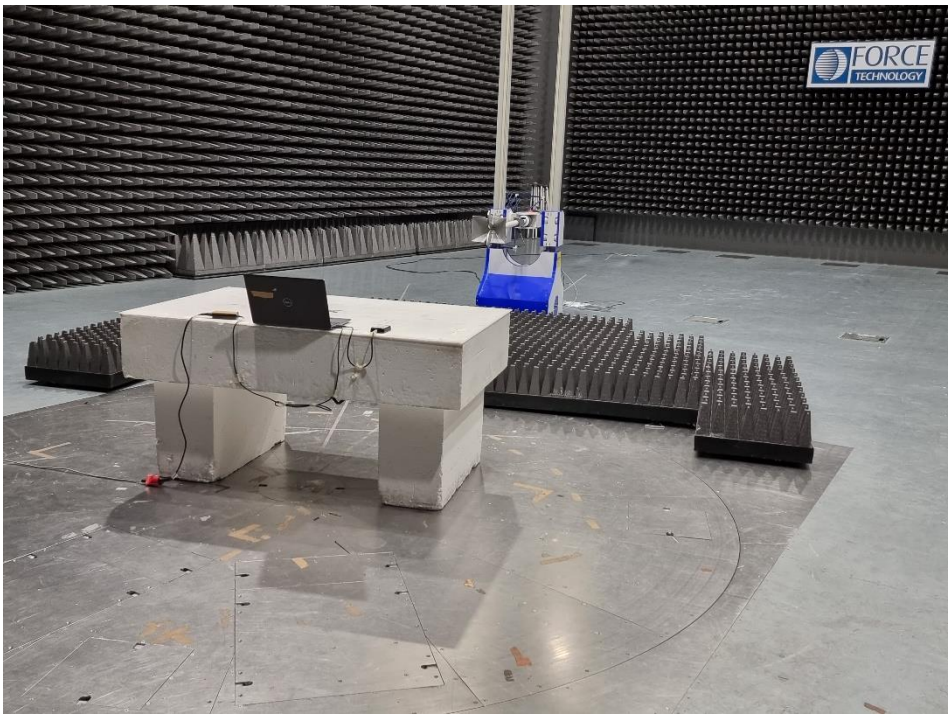
4.4 Measurement of radiated emission 1 – 12.75 GHz

Name..... :	Jesper Salvesen
Date..... :	2023-10-24
Rationale for verdict N/A ..... :	-

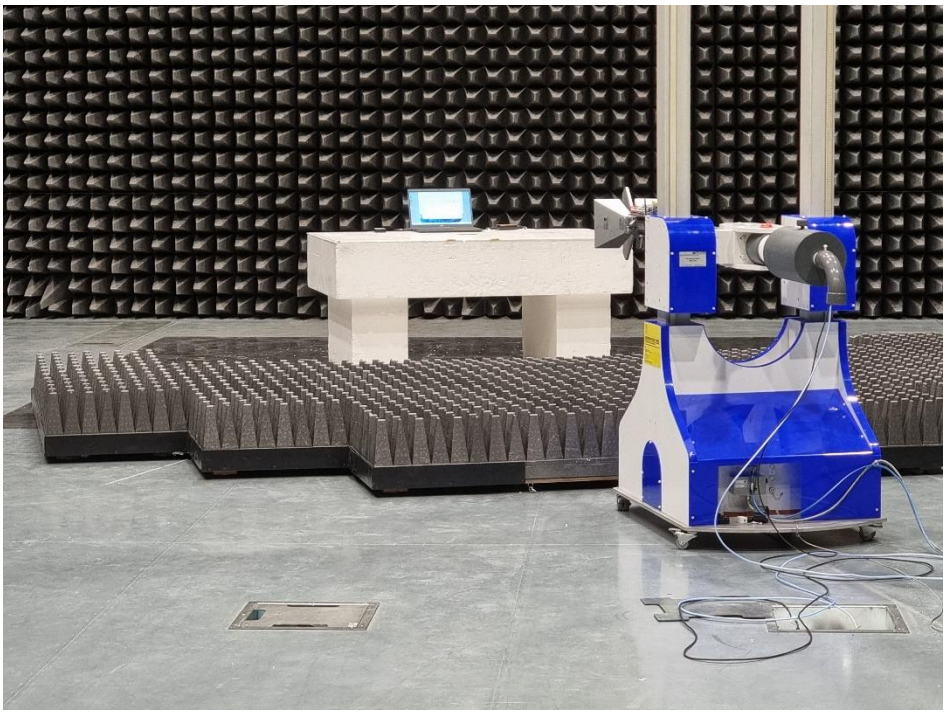
Test location (stand)..... :	Aarhus Room 1, Setup AEC2	
Applied limit class..... :	☒	Limit according to 47 CFR Part 15 B, Subpart 15.109 and ICES-003:2020)
	☐	Other:
Test setup description ..... :	☒	Equipment on a table 80 cm height
	☐	Equipment on the floor (isolated from ground plane)
	☐	Other (e.g., height of pallet):
Supplementary test setup description..... :	-	
Test method applied..... :	☒	SAC with measurement distance [m]: 3
	☐	FAR with measurement distance [m]:
Supplementary information ..... :	Measurements were made in semi-anechoic chamber that complies to CISPR 16. Preliminary (peak and average) measurements. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (peak and average detector above 1GHz) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. FCC part 15 B Class B limits are the same as Part 15 C limits (Plot)	

Photo 4.4.1 ..... :	Measurement of Radiated emission 1 – 12.75 GHz SA3-USB

a. High angle rear view of EUT on setup table



b. High angle front oblique view of EUT



Test results for Radiated emission 1 – 12.75 GHz SA3-USB	
Test item no(s) ref. cl. 1.2 ..... :	1
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	1

Tabulated Results summary

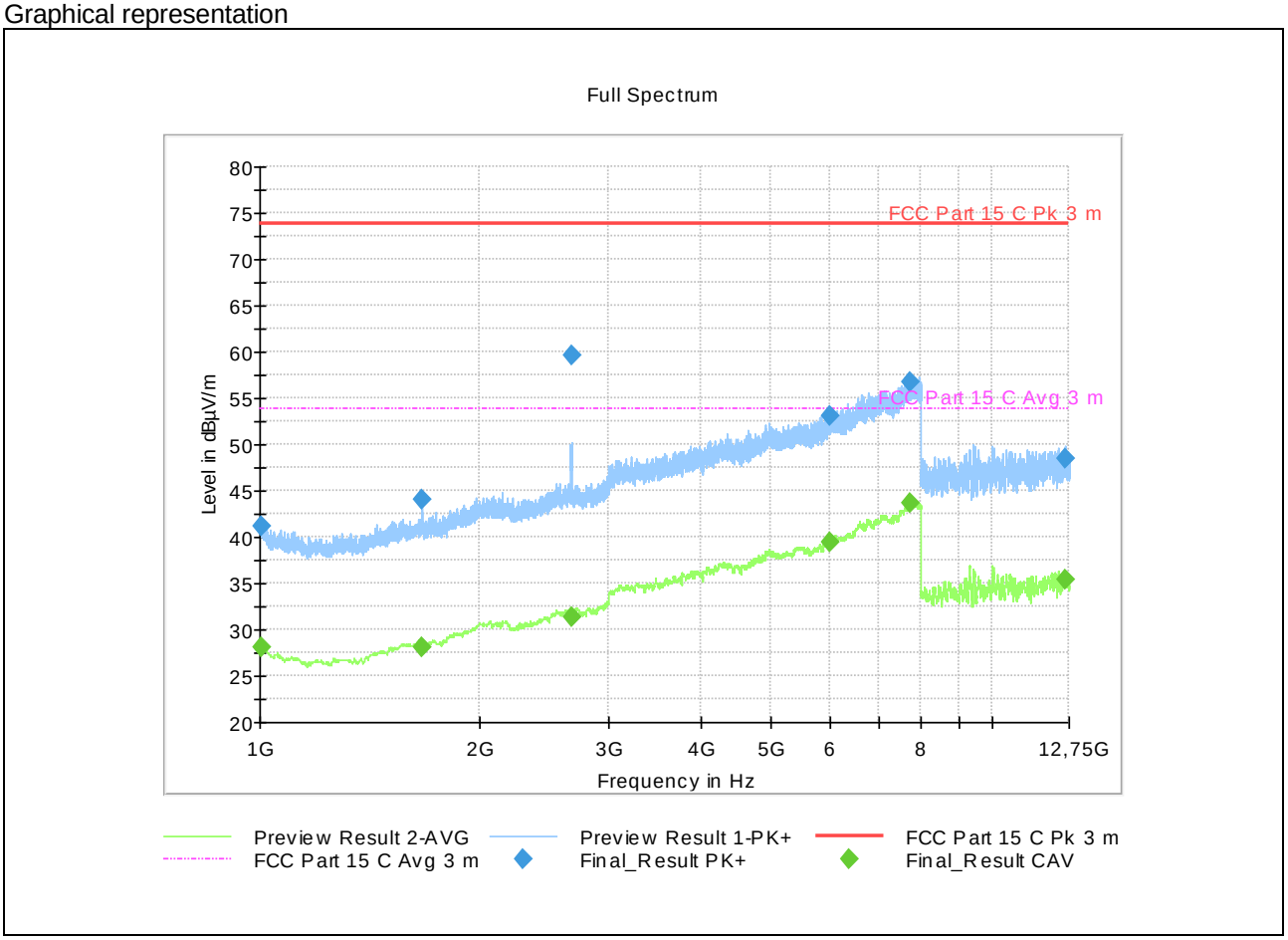
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1004.600000	---	27.98	53.90	25.92	2000.0	1000.000	107.0	H	-179.0	7.4
1004.600000	41.21	---	73.90	32.69	2000.0	1000.000	107.0	H	-179.0	7.4
1665.000000	---	28.08	53.90	25.82	2000.0	1000.000	219.0	V	179.0	8.8
1665.000000	43.96	---	73.90	29.94	2000.0	1000.000	219.0	V	179.0	8.8
2666.650000	---	31.28	53.90	22.62	2000.0	1000.000	100.0	V	176.0	14.8
2666.650000	59.58	---	73.90	**14.32**	2000.0	1000.000	100.0	V	176.0	14.8
6007.600000	---	39.33	53.90	14.57	1000.0	1000.000	230.0	H	139.0	28.8
6007.600000	53.08	---	73.90	20.82	1000.0	1000.000	230.0	H	139.0	28.8
7756.650000	56.69	---	73.90	17.21	1000.0	1000.000	257.0	H	165.0	34.3
7756.650000	---	43.66	53.90	**10.24**	1000.0	1000.000	257.0	H	165.0	34.3
12638.000000	48.47	---	73.90	25.43	1000.0	1000.000	224.0	H	-95.0	9.6
12638.000000	---	35.45	53.90	18.45	1000.0	1000.000	224.0	H	-95.0	9.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 59.58 dBµV/m (field strength) = 44.78 dBµV (receiver reading) + 14.8 dB (Correction factor)

Graphical representation



4.5 Measurement of frequency stability

Name ..... :	Peter Rosendal Overgaard / Jesper Salvesen
Date ..... :	2023-08-22 to 2023-08-24
Rationale for verdict N/A ..... :	-

Test location (stand) ..... :	Aarhus General EMC lab, climate chamber CTS T-40/350	
Applied limit ..... :	☒	±0.01 % of the operating frequency according to 47 CFR Part 15.225 and RSS-210:2019 Annex B.6(b)
	☐	Other:
Test setup description ..... :	☒	EUT place inside an environmental temperature chamber.
	☒	Relative Loop antenna measurement, distance < 10 cm.
	☐	Other (e.g., height of pallet):
Supplementary test setup description ..... :	The frequency tolerance of the carrier signal shall be maintained within ±0.01 % of the operating frequency over a temperature variation of −20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85 % to 115 % of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.	
Test method applied ..... :	☒	6.8.1 Frequency stability with respect to ambient
	☒	6.8.2 Frequency stability when varying supply voltage
	☐	Other:
Supplementary information ..... :	Ambient room temperature (+15 °C to +25 °C). EUT is switched OFF during temperature stabilization.	

Photo 4.5.1 .....:	Measurement of frequency stability

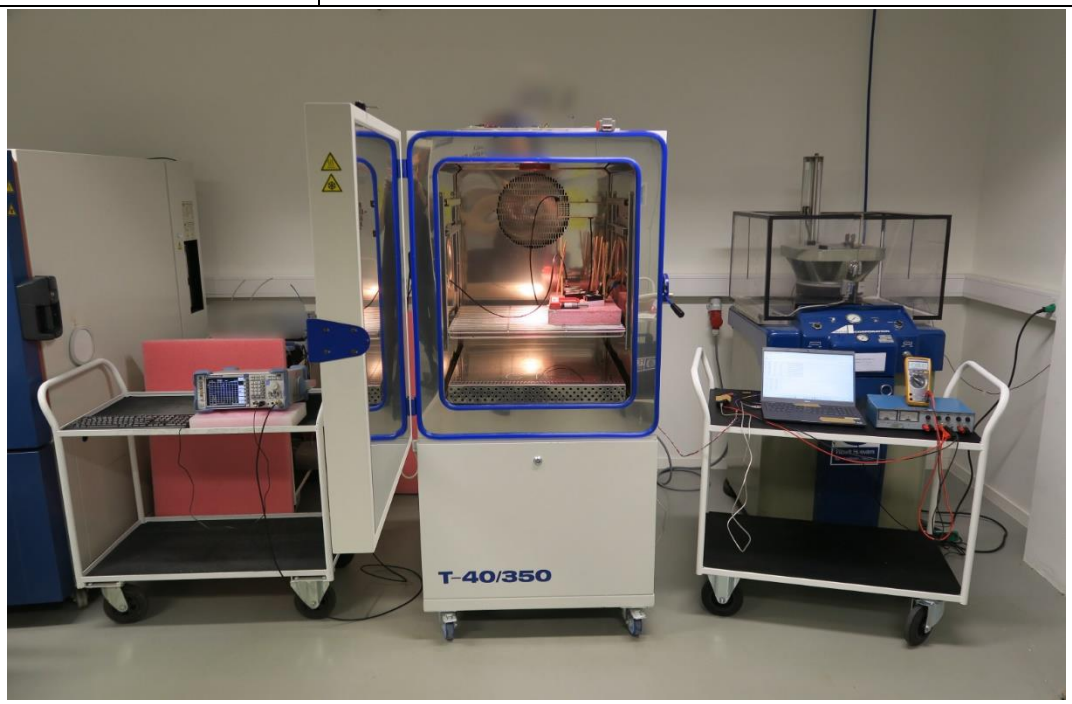


Photo 4.5.2 .....:	Measurement of frequency stability

Test results for frequency stability	
Test item no(s) ref. cl. 1.2 ..... :	1
Operating mode no(s) ref. cl. 1.7 :	2
Test setup no(s) ref. cl. 3.3 ..... :	1

Tabulated Results summary

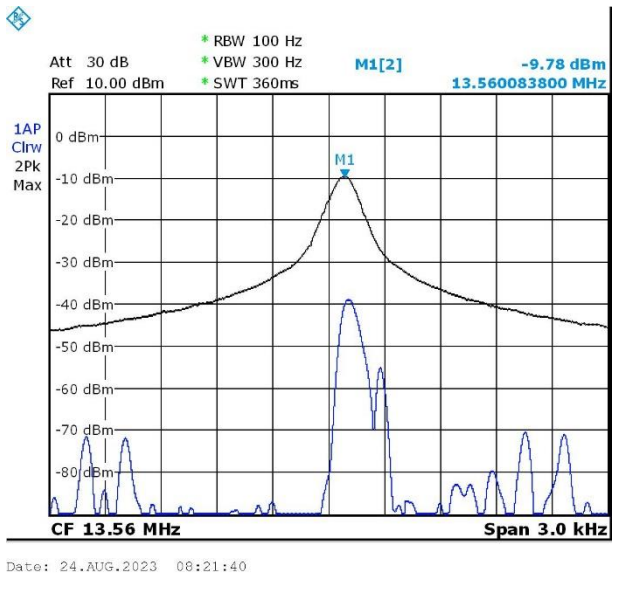
Operating frequency Measurement [MHz]	Frequency Drift [kHz]	Limit [kHz] Note 1	Temperature [°C]	Remarks
13,560084	0,104	±1.356	-20	Passed
13,560089	0,109	±1.356	-10	Passed
13,560078	0,098	±1.356	0	Passed
13,560008	0,028	±1.356	+10	Passed
13,559980	Reference Freq.	-	Ambient	Passed
13,559951	0,029	±1.356	+30	Passed
13,559904	0,076	±1.356	+40	Passed
13,559850	0,130	±1.356	+50	Passed
Note 1: The limit is ±0.01% of the operating frequency. Limit= ±0.0001*13.559434 MHz ~ ±1.356 kHz				

Operating frequency Measurement [MHz]	Frequency Drift [kHz]	Limit [kHz] Note 1	Supply voltage [VAC]	Remarks
13,559980	Reference Freq.	-	5V USB	Passed
Note 1: The limit is ±0.01% of the operating frequency. Limit= ±0.0001*13.559434 MHz ~ ±1.356 kHz				

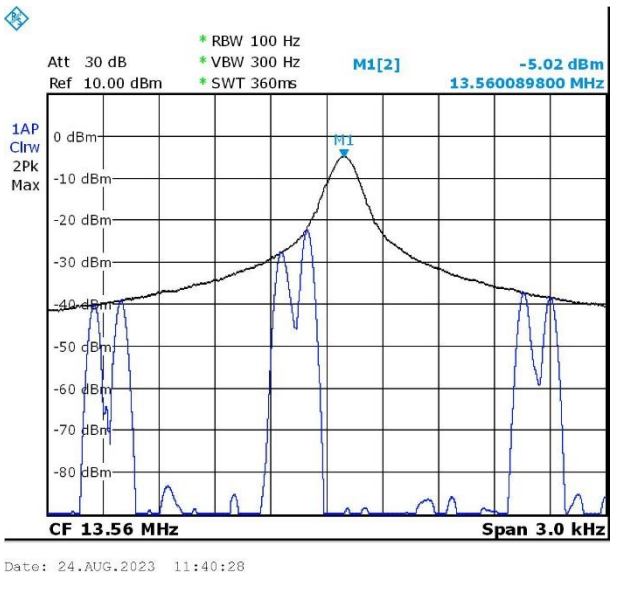
Graphical representation

Frequency stability with respect to ambient temperature

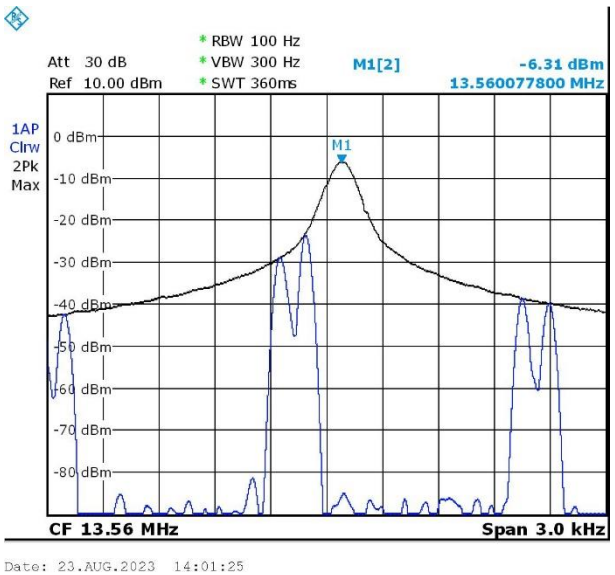
-20°C



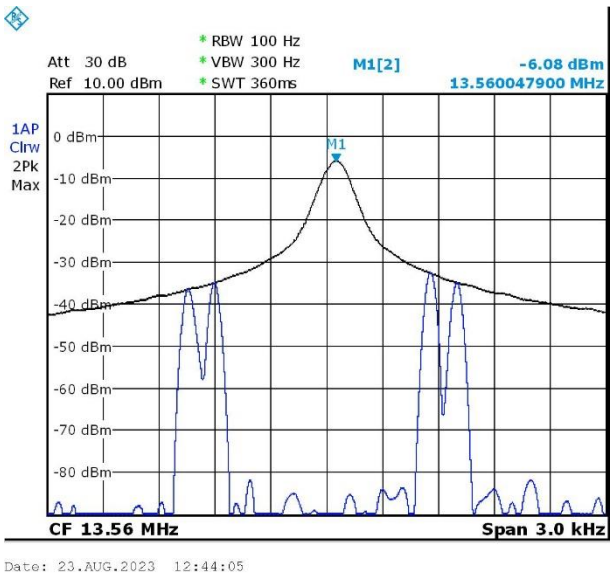
-10°C



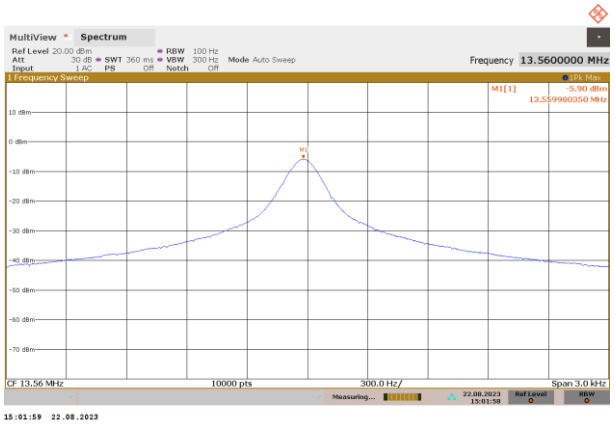
0 °C



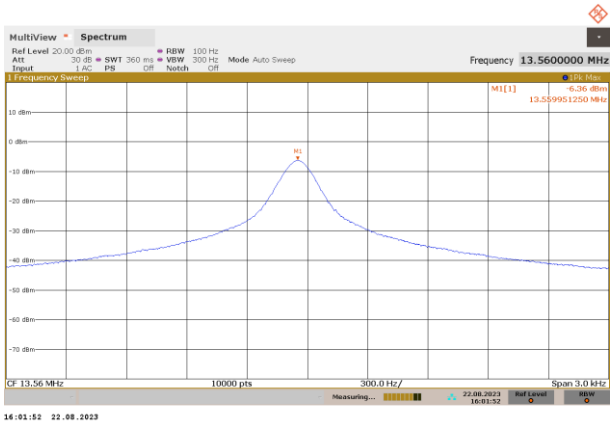
+10 °C



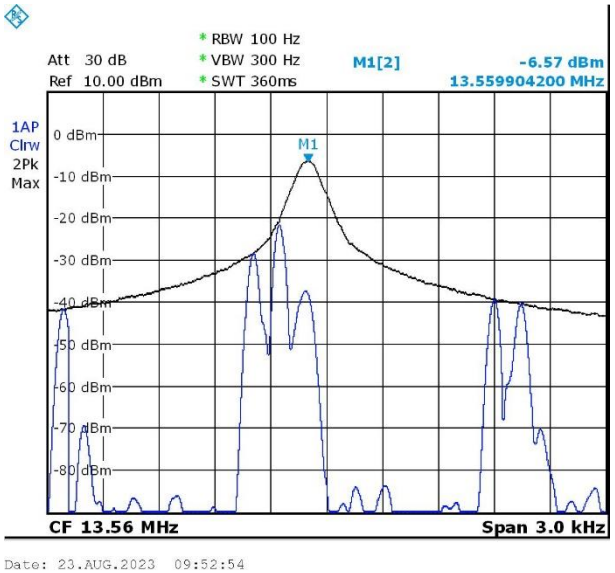
Ambient (+20 °C) 120 V 60 Hz



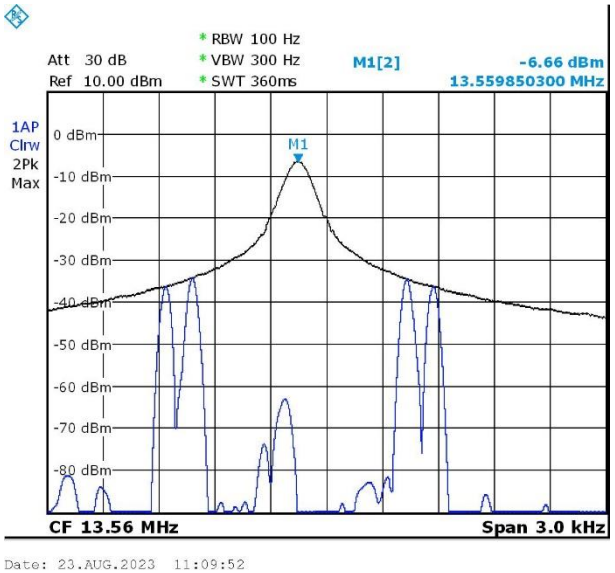
+30 °C



+40 °C



+50 °C



Test results for frequency stability	
Test item no(s) ref. cl. 1.2 ..... :	2
Operating mode no(s) ref. cl. 1.7 :	2
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

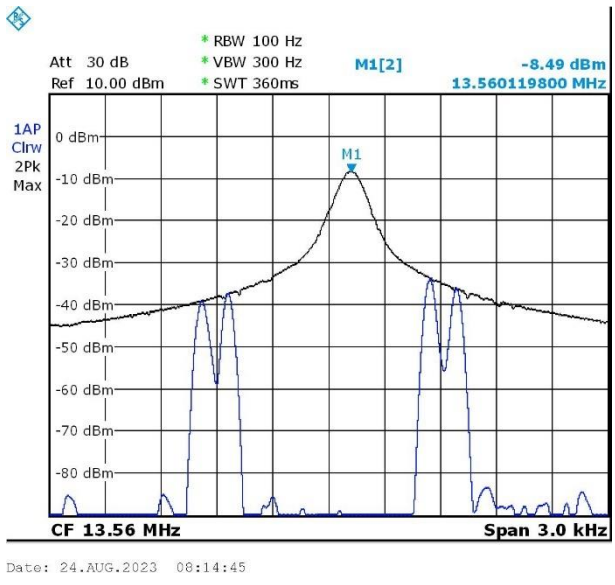
Operating frequency Measurement [MHz]	Frequency Drift [kHz]	Limit [kHz] Note 1	Temperature [°C]	Remarks
13,560120	0,112	±1.356	-20	Passed
13,560126	0,118	±1.356	-10	Passed
13,560108	0,100	±1.356	0	Passed
13,560090	0,082	±1.356	+10	Passed
13,560008	Reference Freq.	-	Ambient	Passed
13,559985	0,023	±1.356	+30	Passed
13,559928	0,080	±1.356	+40	Passed
13,559886	0,122	±1.356	+50	Passed
Note 1: The limit is ±0.01% of the operating frequency. Limit= ±0.0001*13.559434 MHz ~ ±1.356 kHz				

Operating frequency Measurement [MHz]	Frequency Drift [kHz]	Limit [kHz] Note 1	Supply voltage [VAC]	Remarks
13,560007	0,001	±1.356	48 VDC	Passed
13,560008	Reference Freq.	-	24 VDC	Passed
13,560006	0,001	±1.356	12 VDC	Passed
Note 1: The limit is ±0.01% of the operating frequency. Limit= ±0.0001*13.559434 MHz ~ ±1.356 kHz				

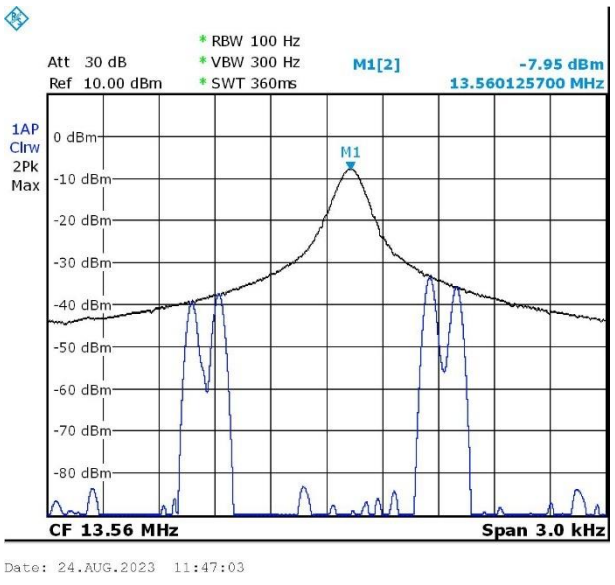
Graphical representation

Frequency stability with respect to ambient temperature

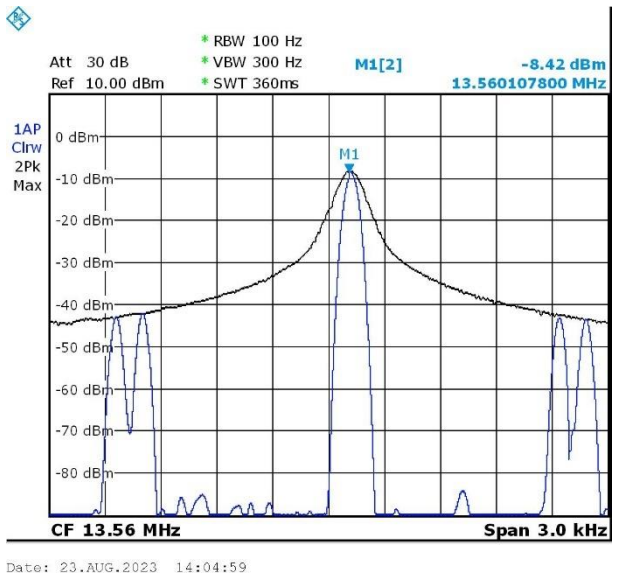
-20 °C



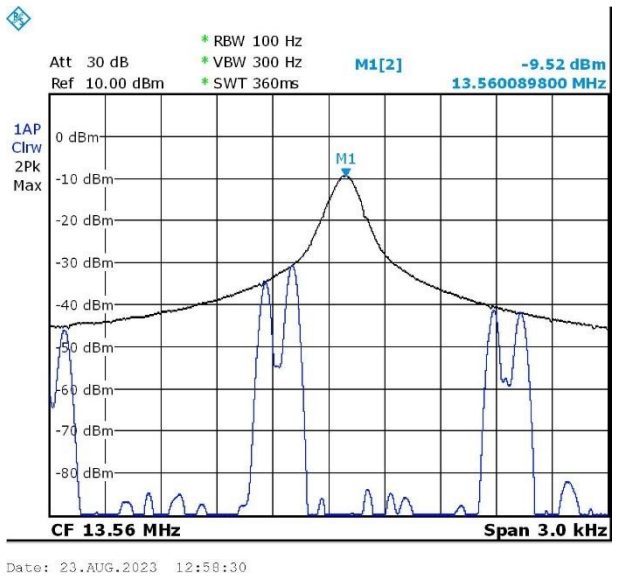
-10 °C



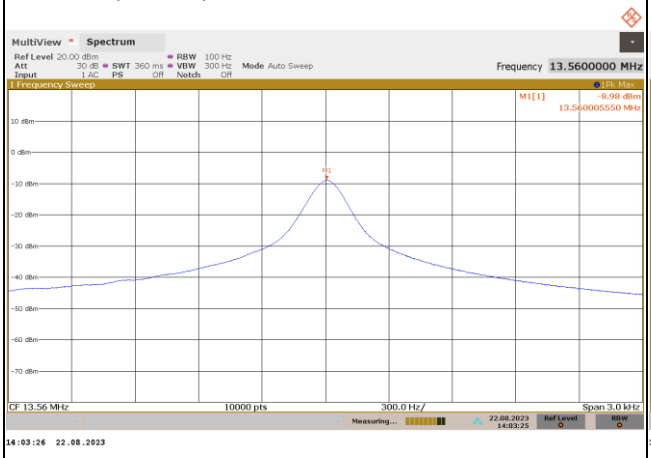
0 °C



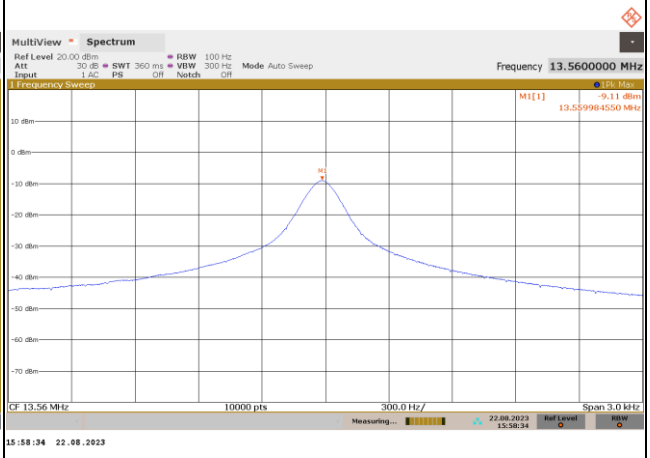
+10 °C



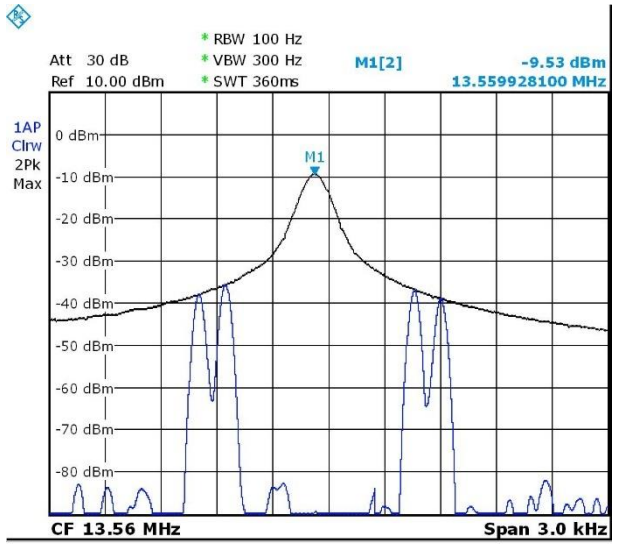
Ambient (+20 °C) 24 VDC



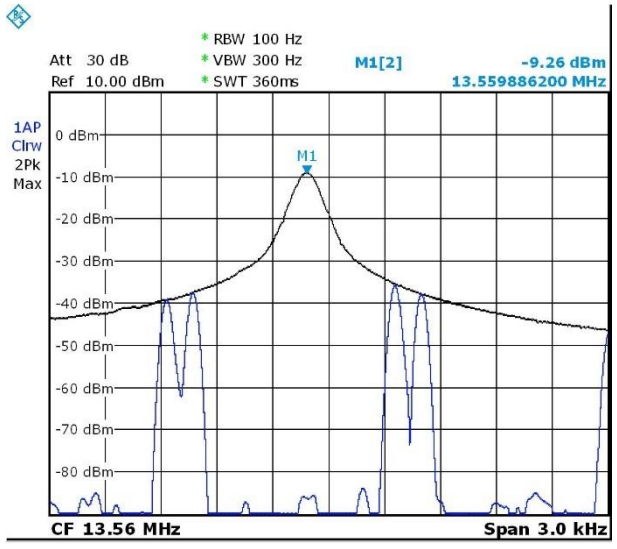
+30 °C

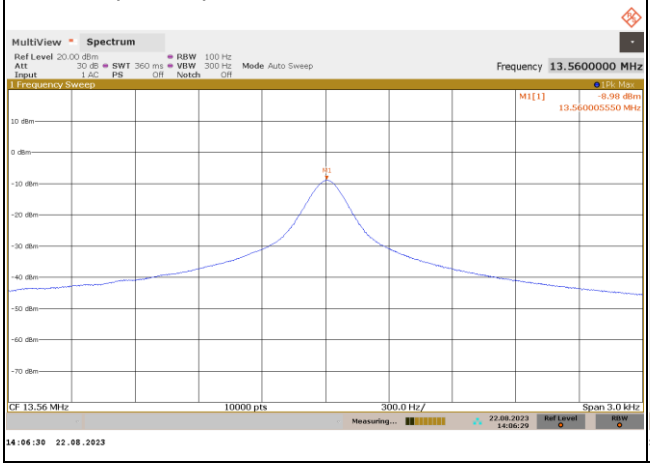
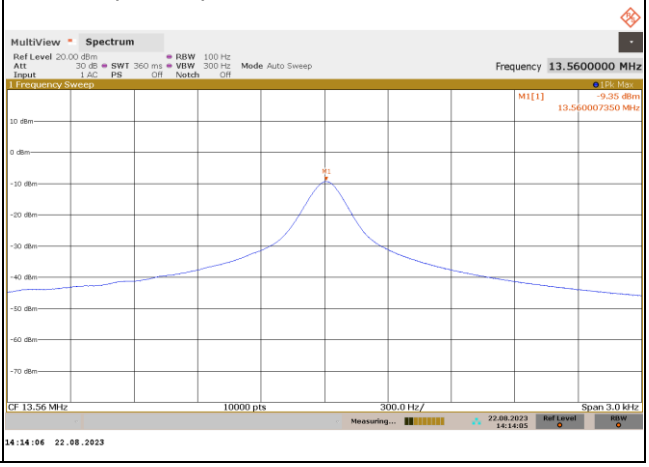


+40 °C



+50 °C



Frequency stability when varying supply voltage	
Ambient (+20 °C) 12 VDC	Ambient (+20 °C) 48 VDC
	

Test results for frequency stability	
Test item no(s) ref. cl. 1.2 ..... :	3
Operating mode no(s) ref. cl. 1.7 :	2
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

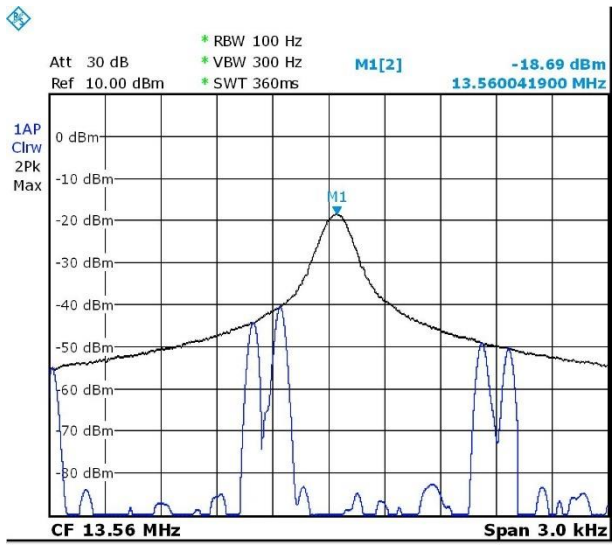
Operating frequency Measurement [MHz]	Frequency Drift [kHz]	Limit [kHz] Note 1	Temperature [°C]	Remarks
13,560042	0,081	±1.356	-20	Passed
13,560060	0,099	±1.356	-10	Passed
13,560054	0,093	±1.356	0	Passed
13,560030	0,069	±1.356	+10	Passed
13,559961	Reference Freq.	-	Ambient	Passed
13,559926	0,035	±1.356	+30	Passed
13,559880	0,081	±1.356	+40	Passed
13,559826	0,135	±1.356	+50	Passed
Note 1: The limit is ±0.01 % of the operating frequency. Limit= ±0.0001*13.559434 MHz ~ ±1.356 kHz				

Operating frequency Measurement [MHz]	Frequency Drift [kHz]	Limit [kHz] Note 1	Supply voltage [VAC]	Remarks
13,559953	0,008	±1.356	48 VDC	Passed
13,559961	Reference Freq.	-	24 VDC	Passed
13,559961	0,000	±1.356	12 VDC	Passed
Note 1: The limit is ±0.01 % of the operating frequency. Limit= ±0.0001*13.559434 MHz ~ ±1.356 kHz				

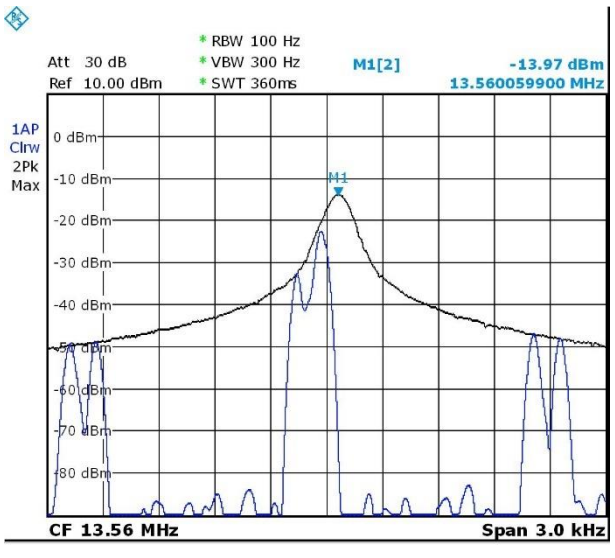
Graphical representation

Frequency stability with respect to ambient temperature

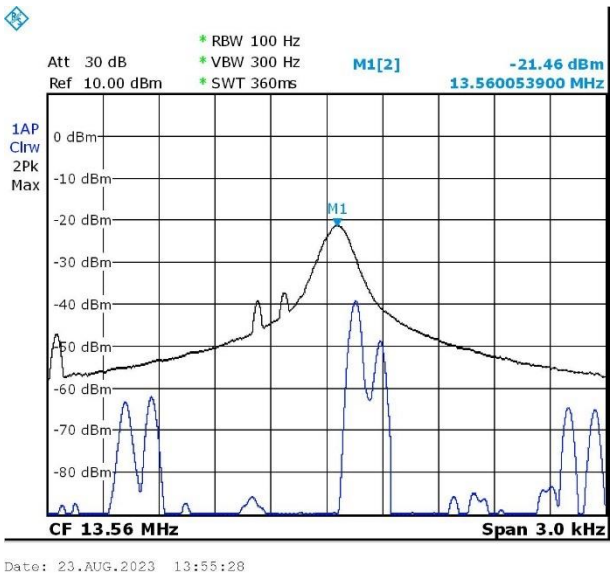
-20 °C



-10 °C

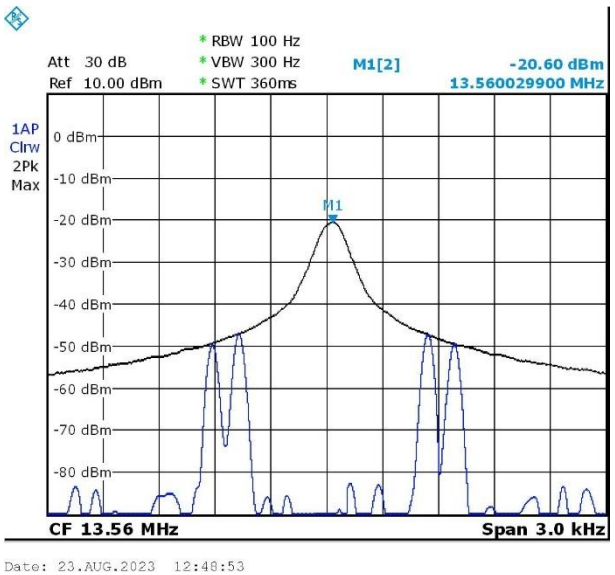


0 °C



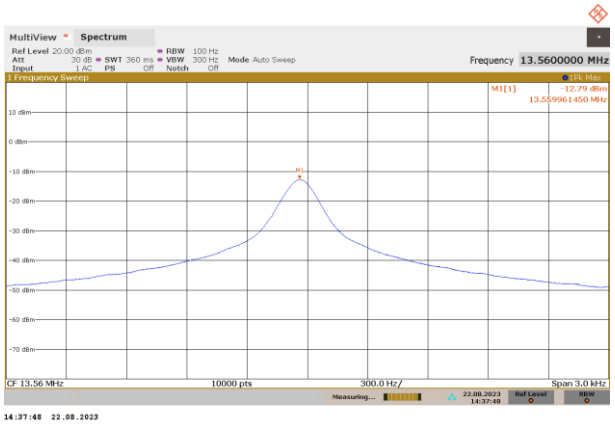
Date: 23.AUG.2023 13:55:28

+10 °C

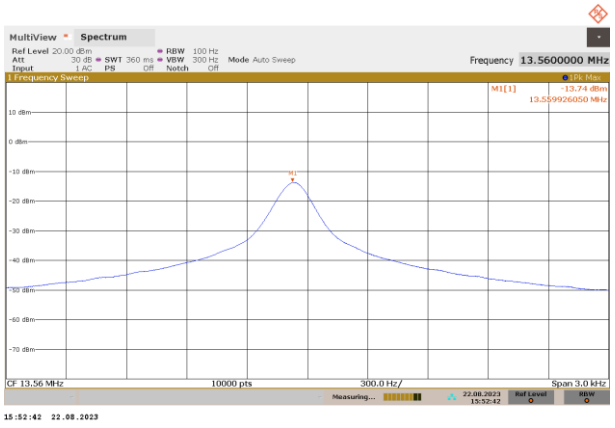


Date: 23.AUG.2023 12:48:53

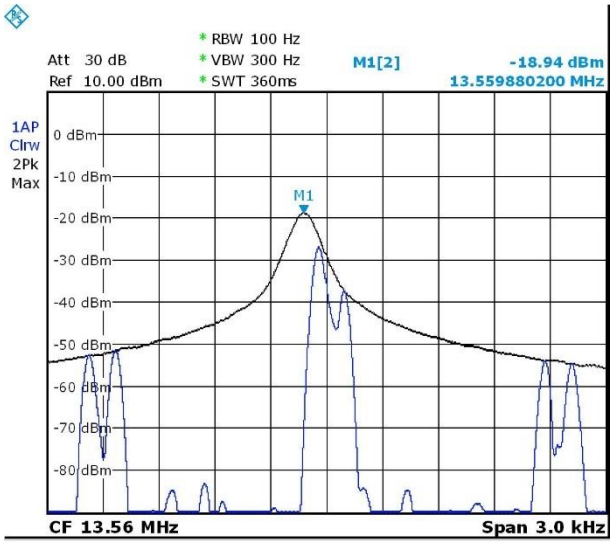
Ambient (+20 °C) 24 VDC



+30 °C

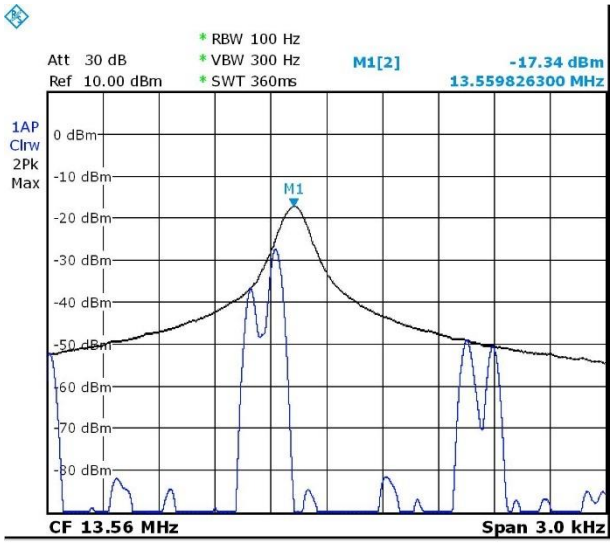


+40 °C

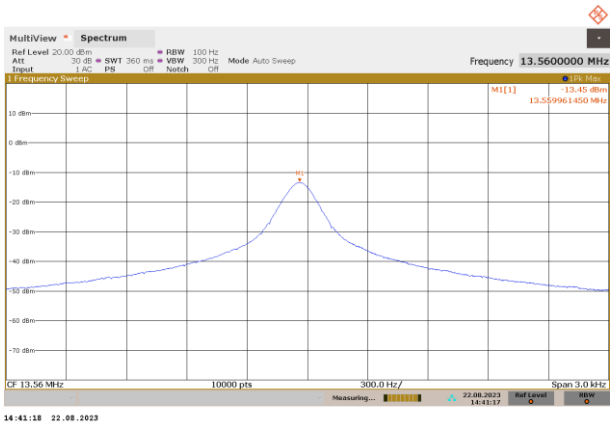
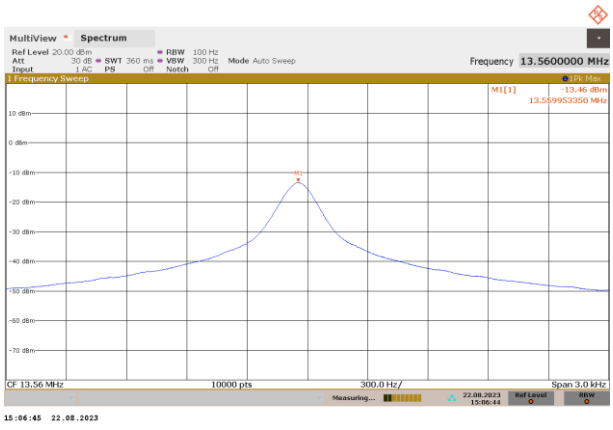


Date: 23.AUG.2023 10:07:28

+50 °C



Date: 23.AUG.2023 11:05:09

Frequency stability when varying supply voltage	
12 VDC	48 VDC
	

Test results for frequency stability	
Test item no(s) ref. cl. 1.2 ..... :	4
Operating mode no(s) ref. cl. 1.7 :	2
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

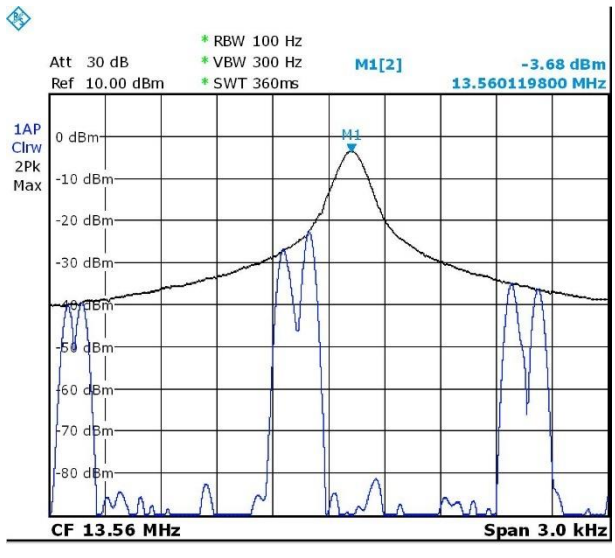
Operating frequency Measurement [MHz]	Frequency Drift [kHz]	Limit [kHz] Note 1	Temperature [°C]	Remarks
13,560120	0,081	±1.356	-20	Passed
13,560138	0,099	±1.356	-10	Passed
13,560126	0,087	±1.356	0	Passed
13,560102	0,063	±1.356	+10	Passed
13,560039	Reference Freq.	-	Ambient	Passed
13,560012	0,027	±1.356	+30	Passed
13,559970	0,069	±1.356	+40	Passed
13,559916	0,123	±1.356	+50	Passed
Note 1: The limit is ±0.01 % of the operating frequency. Limit= ±0.0001*13.559434 MHz ~ ±1.356 kHz				

Operating frequency Measurement [MHz]	Frequency Drift [kHz]	Limit [kHz] Note 1	Supply voltage [VAC]	Remarks
13,560043	0,004	±1.356	48 VDC	Passed
13,560039	Reference Freq.	-	24 VDC	Passed
13,560039	0,000	±1.356	12 VDC	Passed
Note 1: The limit is ±0.01 % of the operating frequency. Limit= ±0.0001*13.559434 MHz ~ ±1.356 kHz				

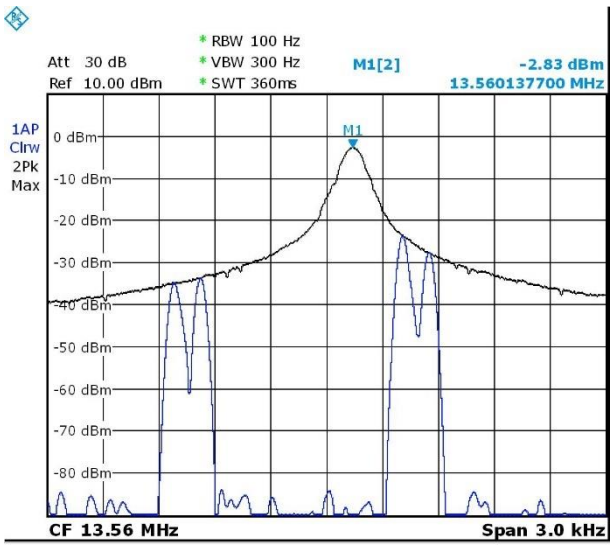
Graphical representation

Frequency stability with respect to ambient temperature

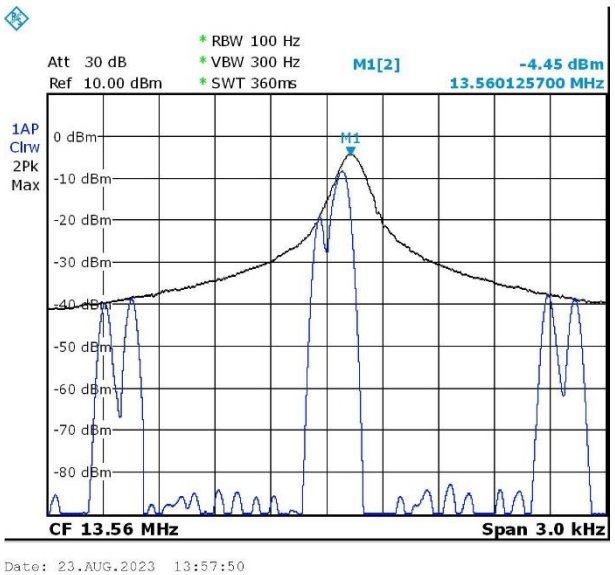
-20 °C



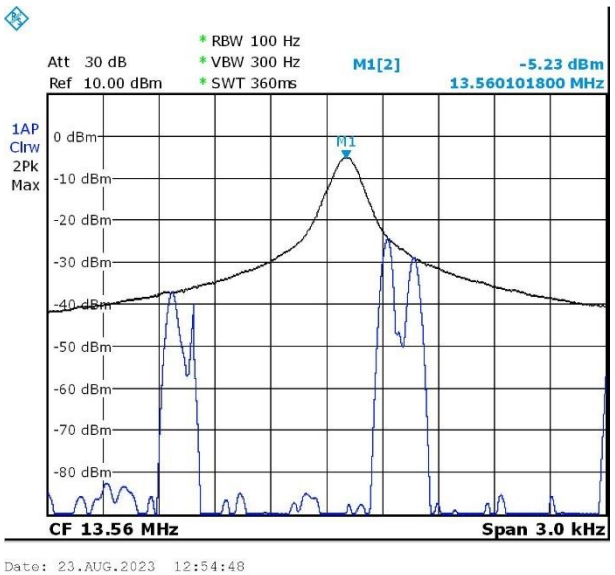
-10 °C



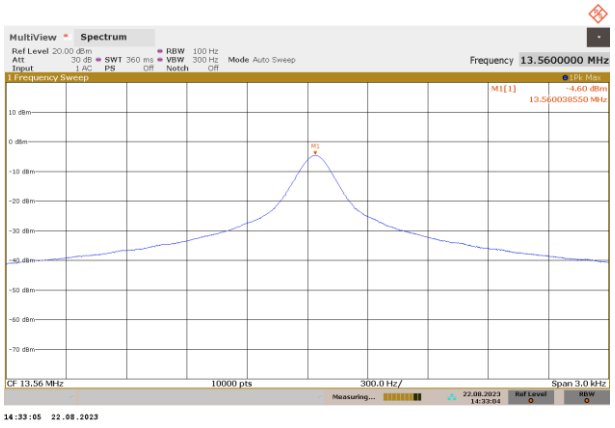
0 °C



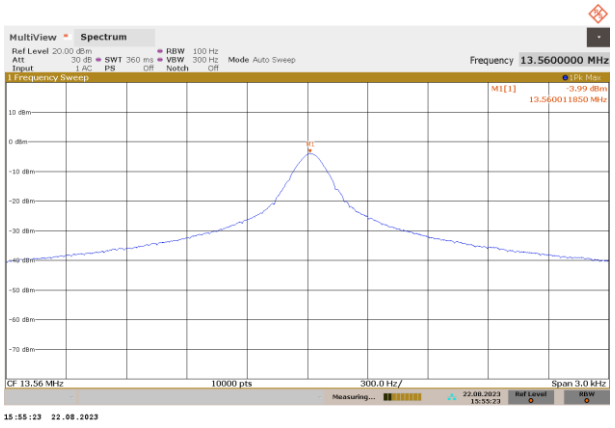
+10 °C



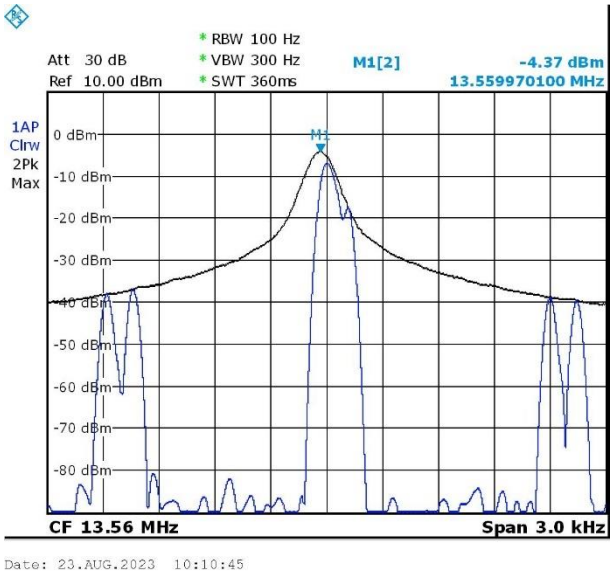
Ambient (+20 °C) 24 VDC



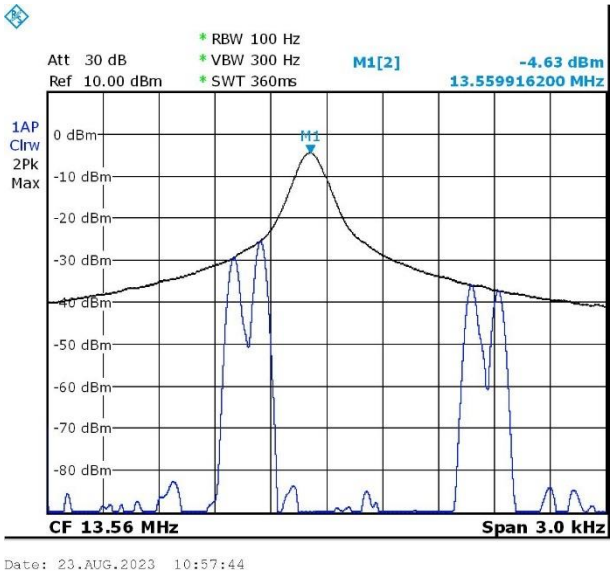
+30 °C

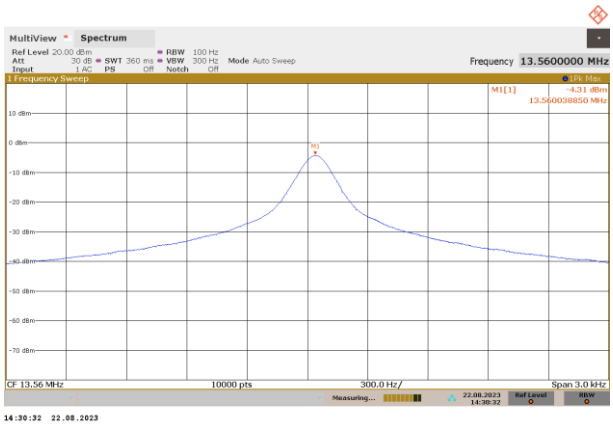
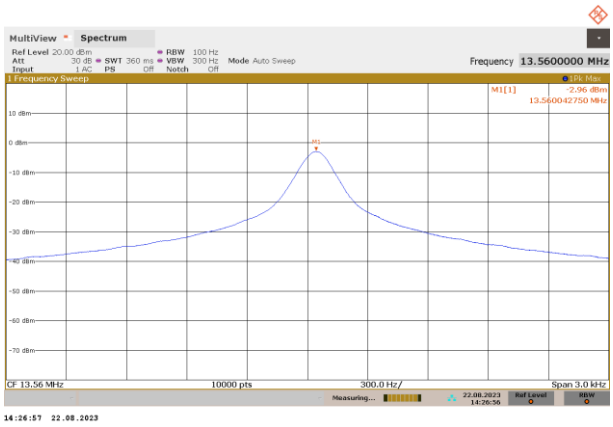


+40 °C



+50 °C



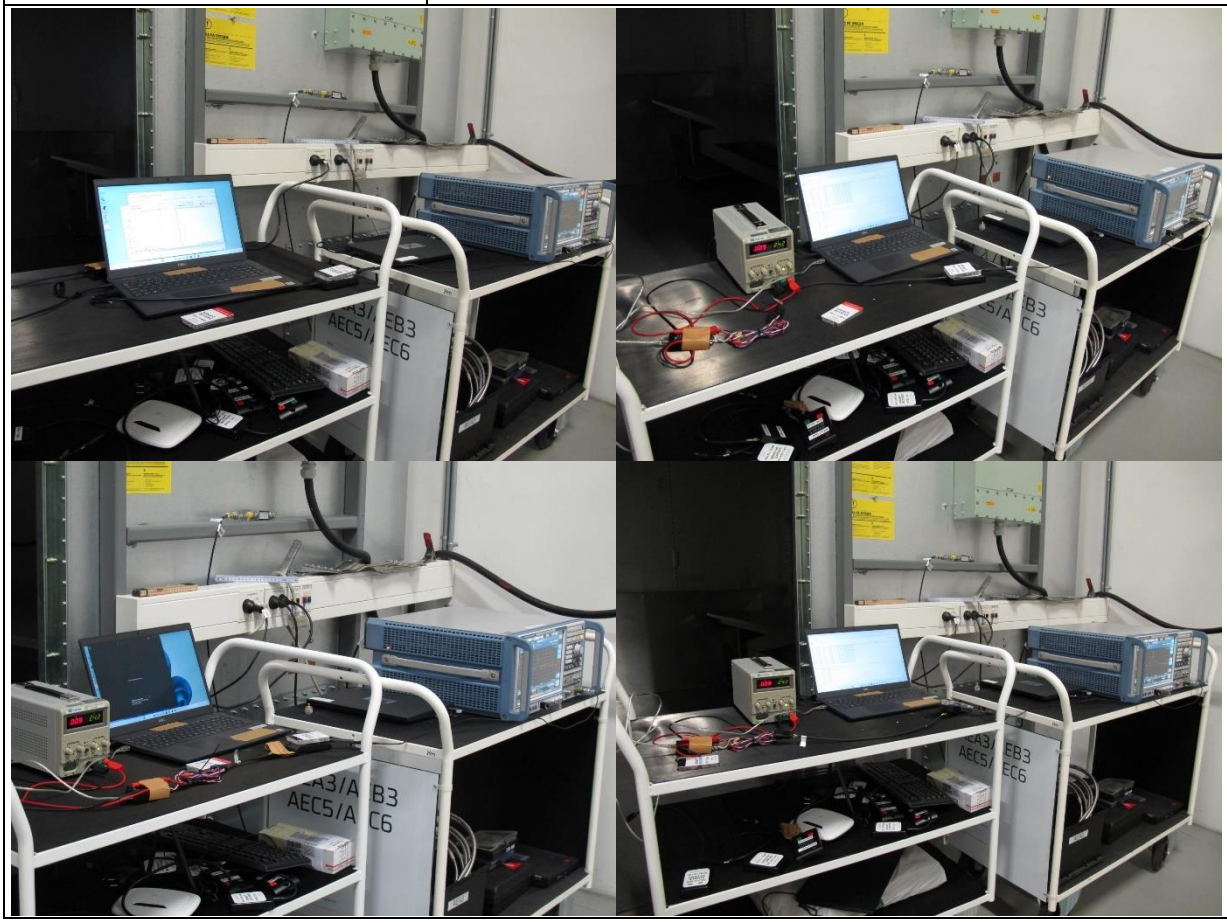
Frequency stability when varying supply voltage	
12 VDC	24 VDC
	

4.6 Measurement of occupied bandwidth

Name ..... :	Rasmus Brun Behnke
Date ..... :	2023-09-18
Rationale for verdict N/A ..... :	-

Test location (stand) ..... :	Aarhus Room 4 AEC3	
Applied limit ..... :	☐	6 dB bandwidth
	☒	20 dB bandwidth according to 47 CFR Part 15.215(c)
	☐	26 dB bandwidth
	☒	99% emission bandwidth according to RSS-Gen:2019 clause 6.7
Test setup description ..... :	☒	Relative Loop antenna measurement, distance < 10 cm.
	☐	Other:
Supplementary test setup description ..... :	A spectrum analyzer was used for the measurements, the video bandwidth was set to a value at least three times greater than the IF bandwidth of the measuring instrument to avoid the introduction of unwanted amplitude smoothing. Video filtering is not used during occupied bandwidth tests.	
Test method applied ..... :	☒	6.9.2 Occupied bandwidth—relative measurement procedure
	☒	6.9.3 Occupied bandwidth—power bandwidth (99 %) measurement procedure
	☐	Other:
Supplementary information ..... :	None	

Photo 4.6.1 ..... :	Measurement of occupied bandwidth



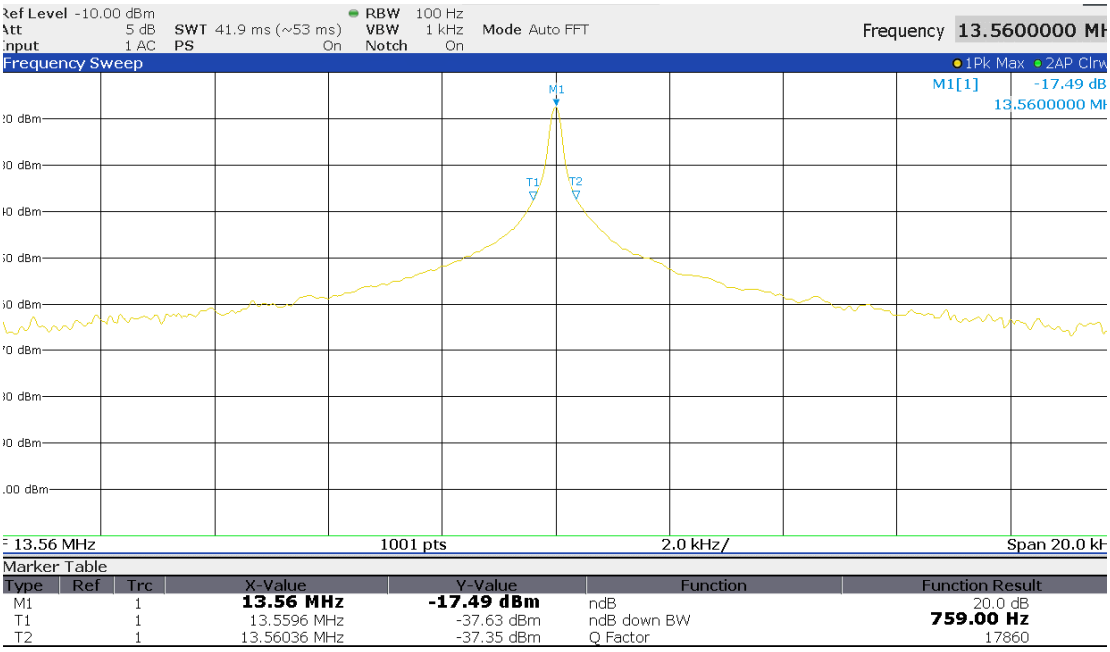
Test results for occupied bandwidth	
Test item no(s) ref. cl. 1.2 ..... :	1
Operating mode no(s) ref. cl. 1.7 :	2
Test setup no(s) ref. cl. 3.3 ..... :	1

Tabulated Results summary

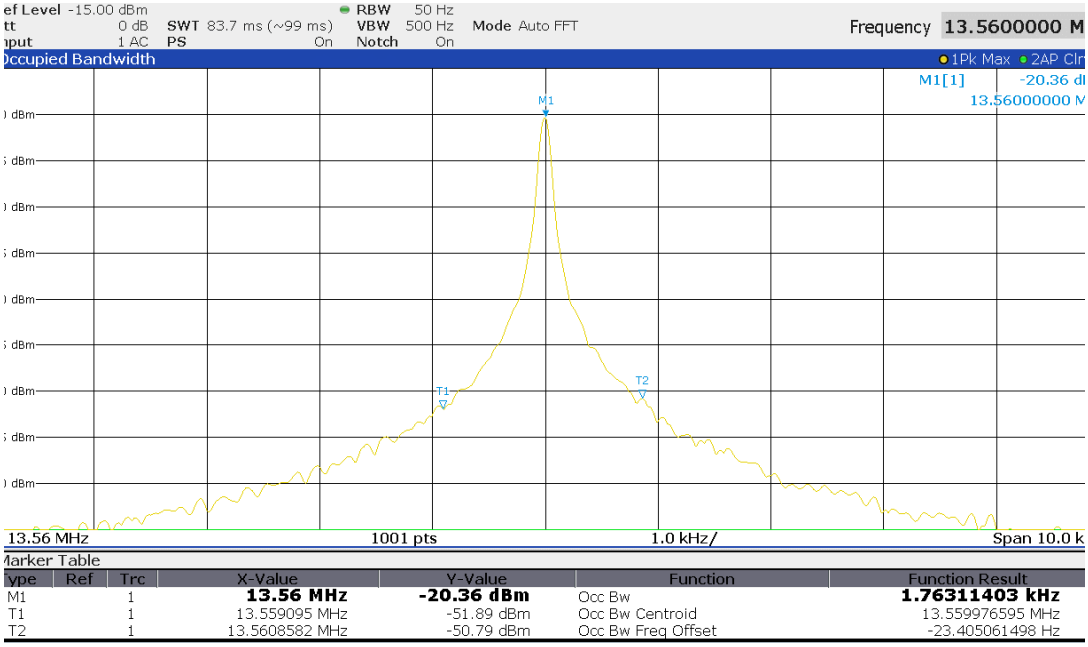
Operating frequency [MHz]	-20 dBc, Low frequency [MHz]		-20 dBc, High frequency [MHz]		99% power bandwidth [kHz]		Remarks
	Limit	Measurement	Limit	Measurement	Limit	Measurement	
13.56		13.5596		13.5604		1.76	Passed
Note 1: None							

Graphical representation

20 dBc bandwidth



99% power bandwidth



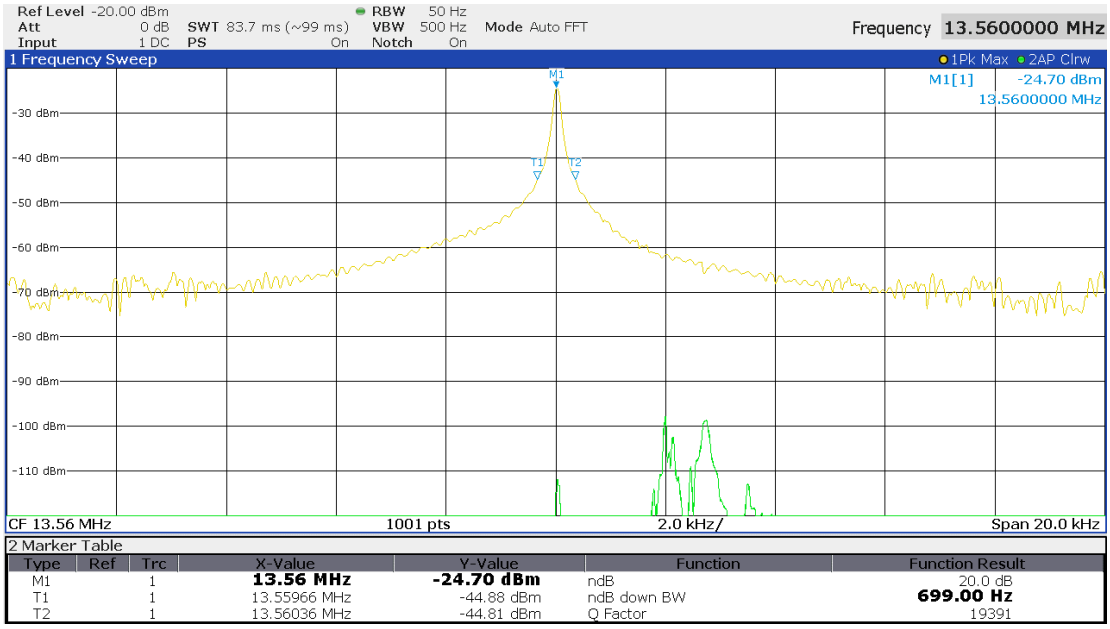
Test results for occupied bandwidth	
Test item no(s) ref. cl. 1.2 ..... :	2
Operating mode no(s) ref. cl. 1.7 :	2
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

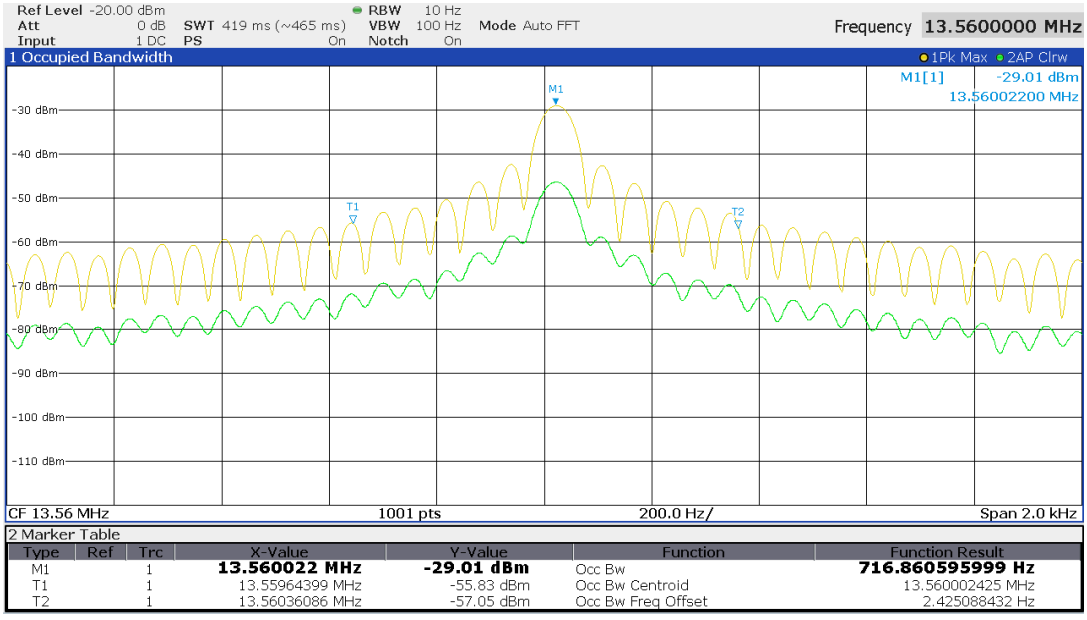
Operating frequency [MHz]	-20 dBc, Low frequency [MHz]		-20 dBc, High frequency [MHz]		99% power bandwidth [kHz]		Remarks
	Limit	Measurement	Limit	Measurement	Limit	Measurement	
13.56		13.560		13.560		0.72	Passed
Note 1: None							

Graphical representation

20 dBc bandwidth



99% power bandwidth



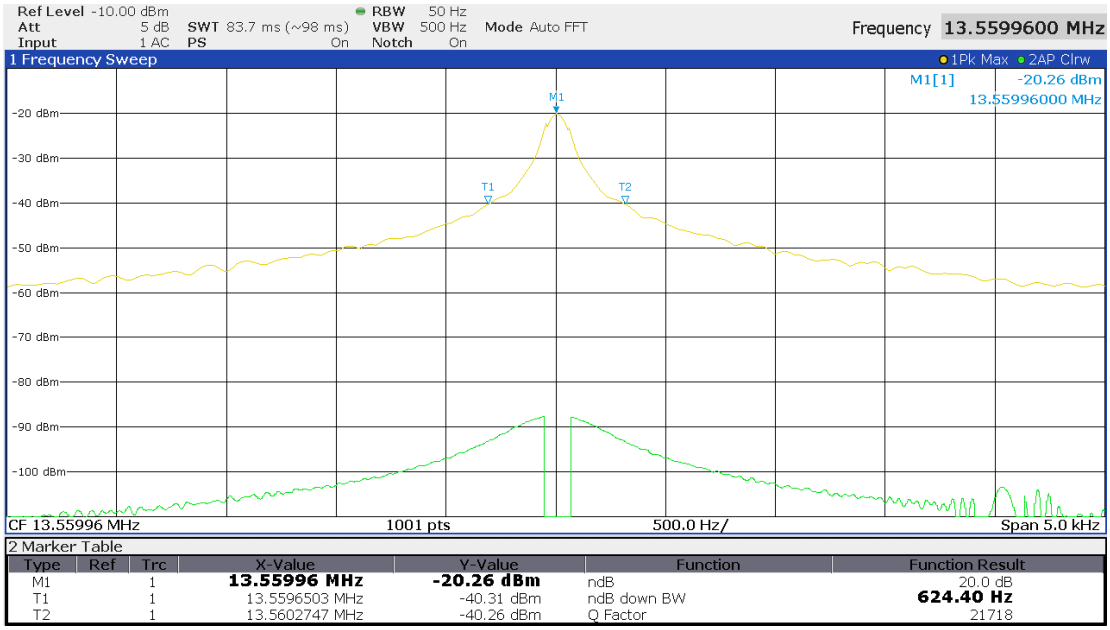
Test results for occupied bandwidth	
Test item no(s) ref. cl. 1.2 ..... :	3
Operating mode no(s) ref. cl. 1.7 :	2
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

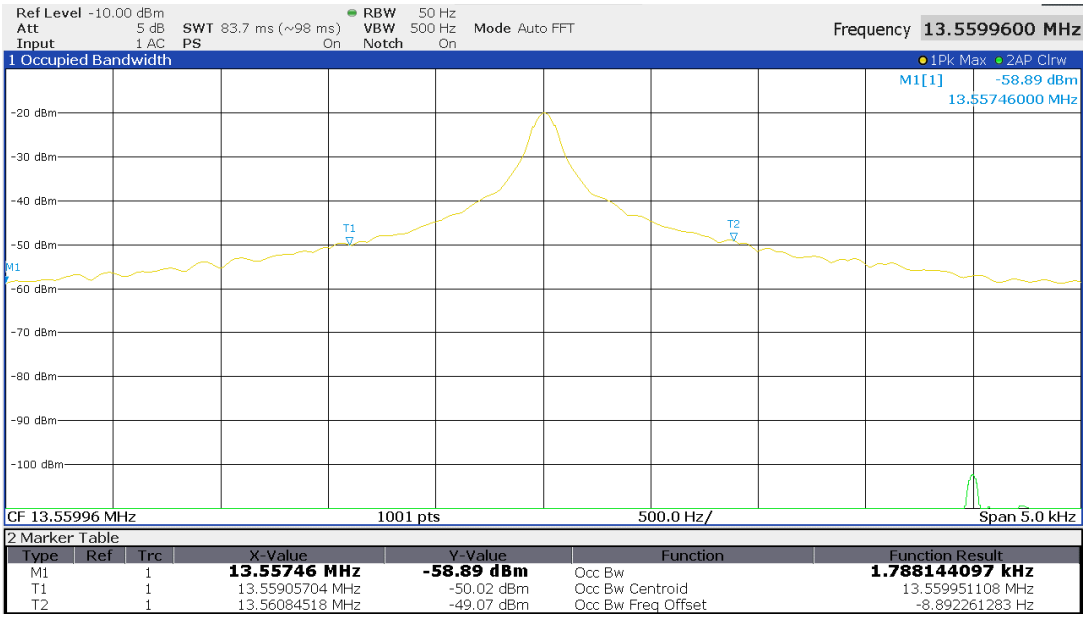
Operating frequency [MHz]	-20 dBc, Low frequency [MHz]		-20 dBc, High frequency [MHz]		99% power bandwidth [kHz]		Remarks
	Limit	Measurement	Limit	Measurement	Limit	Measurement	
13.56		13.56		13.56		1.79	Passed
Note 1: None							

Graphical representation

20 dBc bandwidth



99% power bandwidth



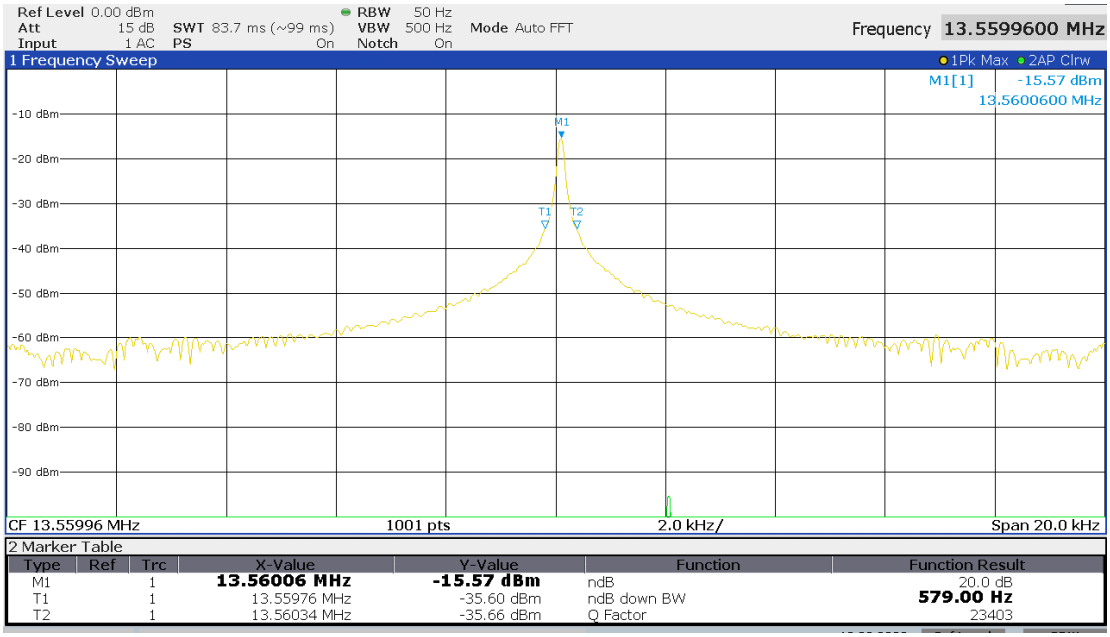
Test results for occupied bandwidth	
Test item no(s) ref. cl. 1.2 ..... :	4
Operating mode no(s) ref. cl. 1.7 :	2
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

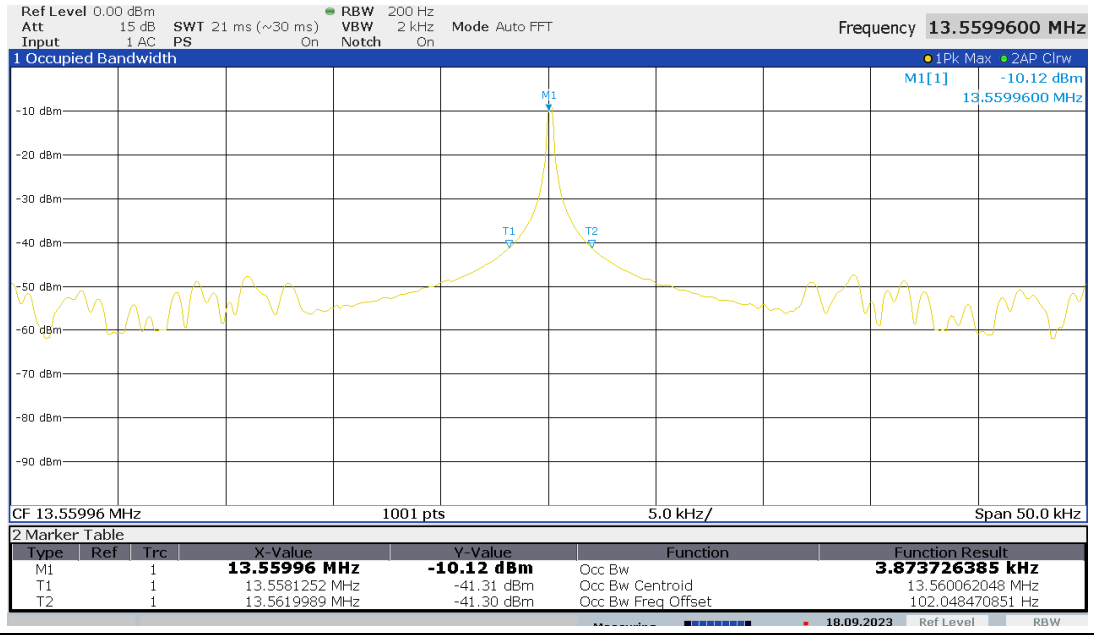
Operating frequency [MHz]	-20 dBc, Low frequency [MHz]		-20 dBc, High frequency [MHz]		99% power bandwidth [kHz]		Remarks
	Limit	Measurement	Limit	Measurement	Limit	Measurement	
13.56		13.56		13.56		3.87	Passed
Note 1: None							

Graphical representation

20 dBc bandwidth



99 % power bandwidth



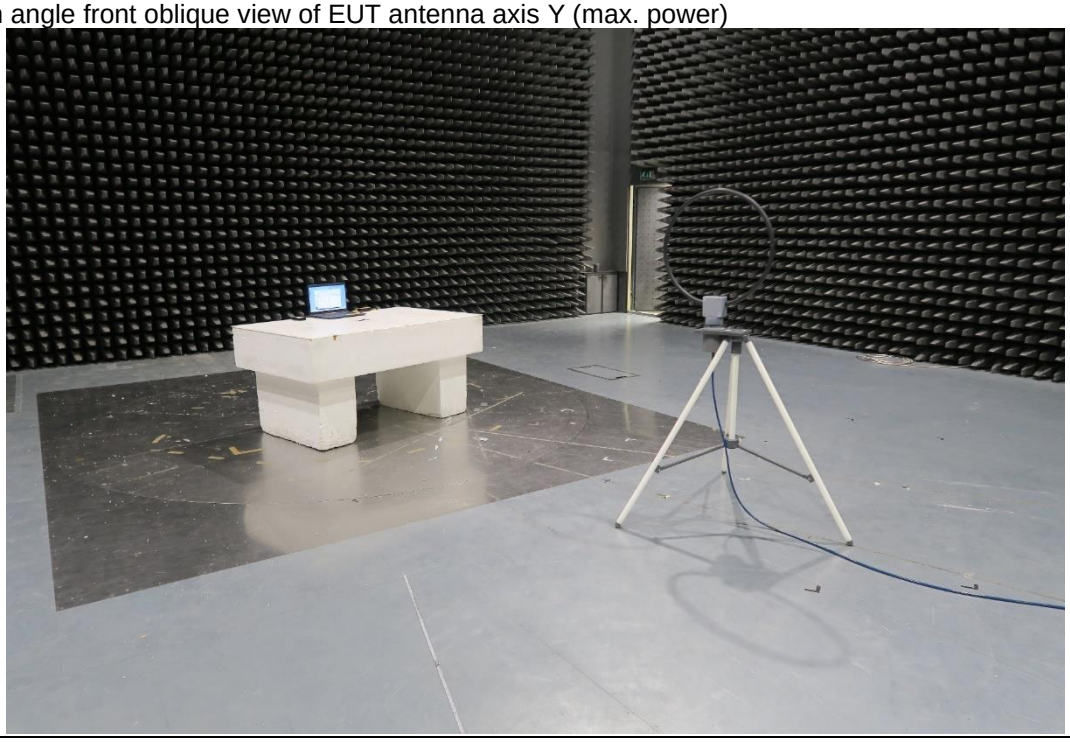
4.7 Measurement of band edge

Name..... :	Jesper Salvesen
Date..... :	2023-08-21
Rationale for verdict N/A ..... :	-

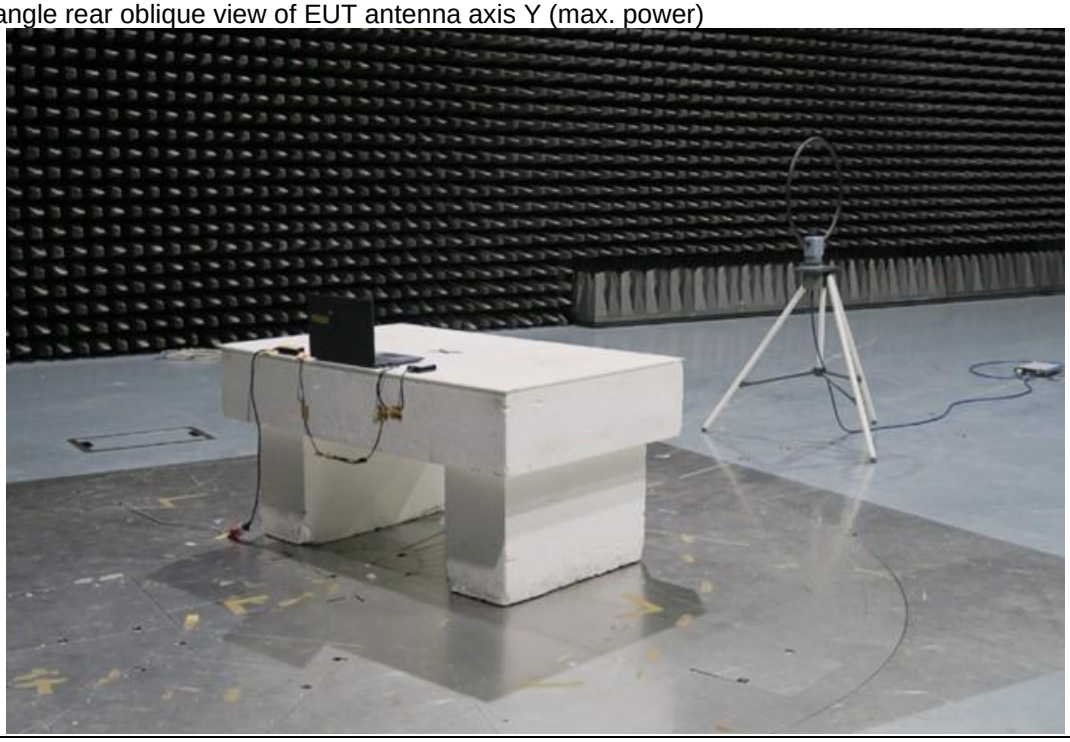
Test location (stand)..... :	Aarhus Room 1	
Applied limit class..... :	☒	Band edges according to 47 CFR Part 15.209, 15.225 and RSS-210:2019 Annex B.6
	☐	Other:
Test setup description ..... :	☒	Equipment on a table 80 cm height
	☐	Equipment on the floor (isolated from ground plane)
	☐	Other:
Supplementary test setup description..... :	Radiated measurement	
Test method applied..... :	☒	6.10.5 Restricted-band band-edge measurements
	☐	6.10.6 Marker-delta method
	☐	Other:
Supplementary information ..... :	-	

Photo 4.7.1 ..... :	Measurement of band edge SA3-USB

a. High angle front oblique view of EUT antenna axis Y (max. power)



b. High angle rear oblique view of EUT antenna axis Y (max. power)



Test results for band edge SA3-USB	
Test item no(s) ref. cl. 1.2 ..... :	1
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	1

Tabulated Results summary

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth	Corr. (dB)
13.110750	22.20	79.60	57.40	15000.0	9.000	100.0	-20.0	20.6
13.410000	22.29	79.60	57.31	15000.0	9.000	100.0	-20.0	20.6
13.554000	42.32	124.00	81.68	15000.0	9.000	100.0	-20.0	20.6
13.565250	44.68	124.00	79.32	15000.0	9.000	100.0	-20.0	20.6
13.709250	22.37	89.60	67.23	15000.0	9.000	100.0	-65.0	20.6
14.008500	22.42	79.60	**57.18**	15000.0	9.000	100.0	-20.0	20.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 22.42 dBµV/m (field strength) = 1.82 dBµV (receiver reading) + 20.6 dB (Correction factor)

Graphical representation

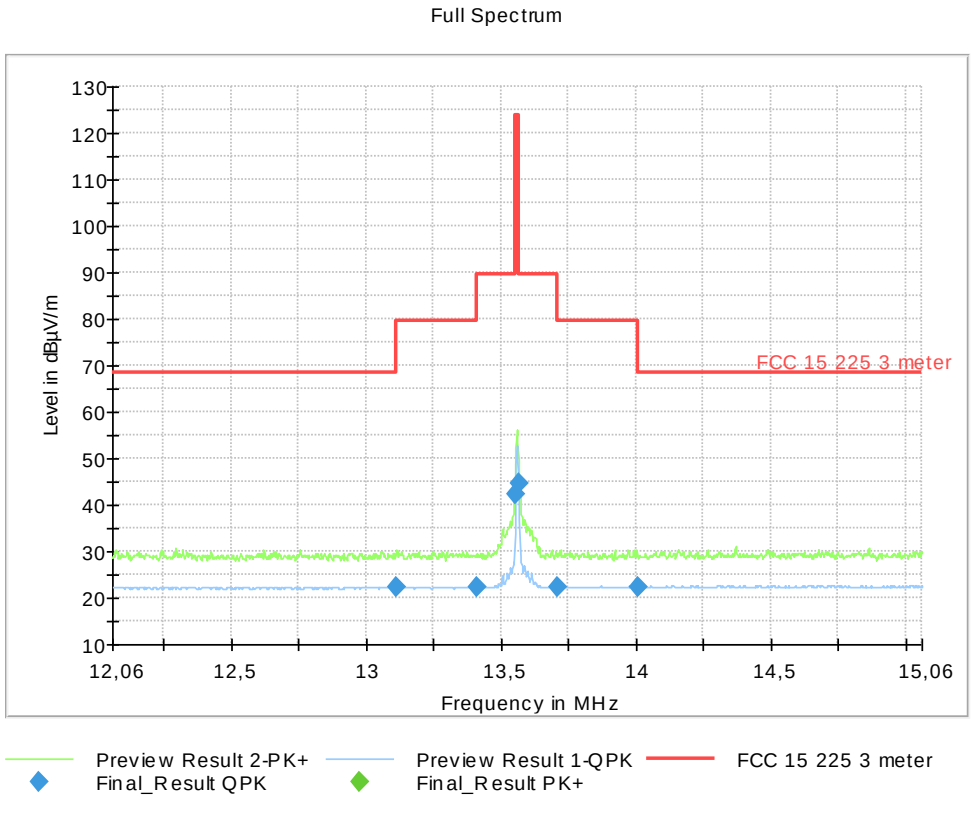
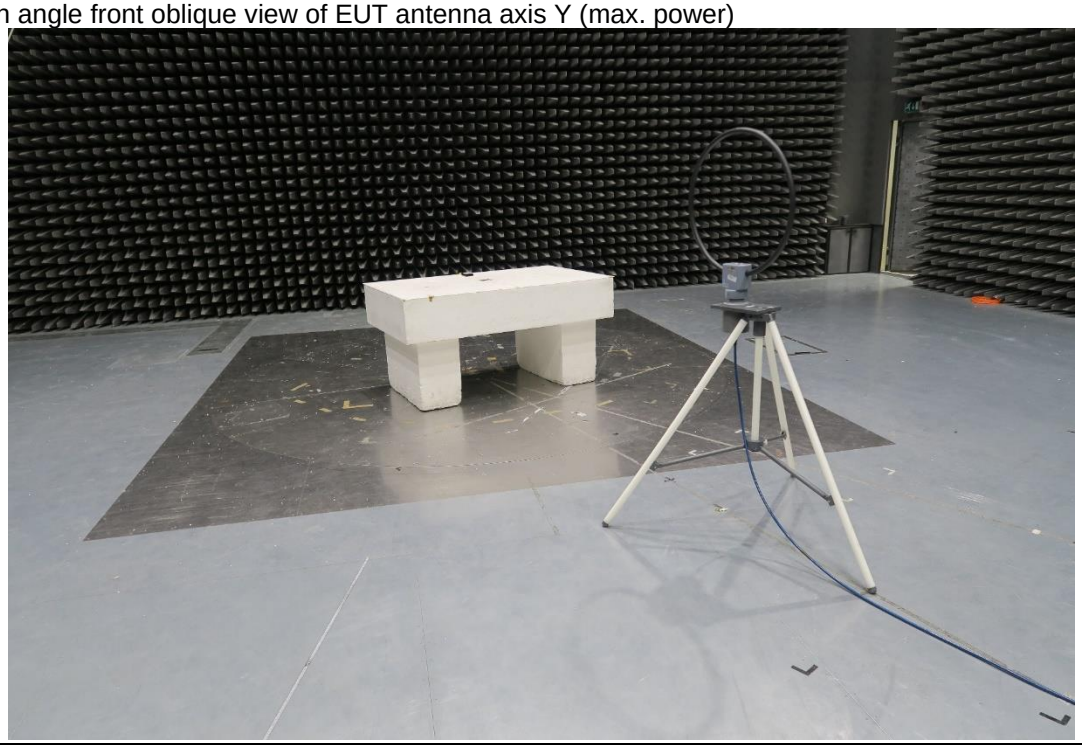
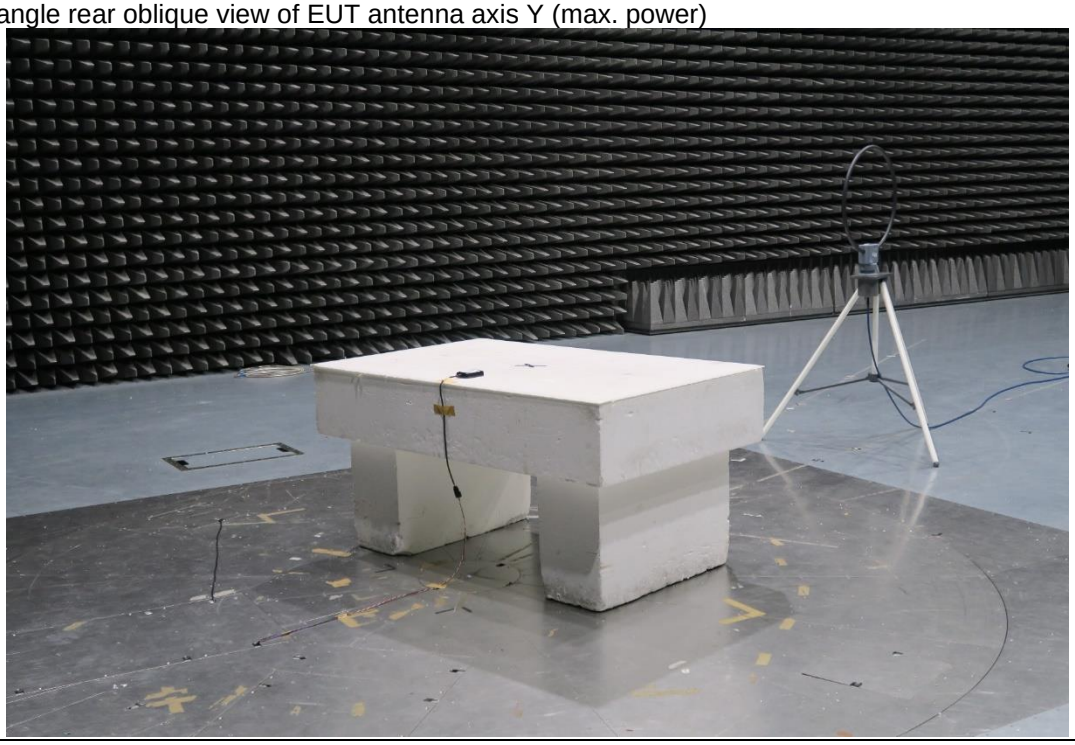


Photo 4.7.2 .....:	Measurement of band edge SA3-D

b. High angle front oblique view of EUT antenna axis Y (max. power)



b. High angle rear oblique view of EUT antenna axis Y (max. power)



Test results for band edge SA3-D	
Test item no(s) ref. cl. 1.2 ..... :	2
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth	Corr. (dB)
13.110750	22.09	79.60	57.51	15000.0	9.000	100.0	25.0	20.6
13.410000	22.09	79.60	57.51	15000.0	9.000	100.0	25.0	20.6
13.554000	44.14	124.00	79.86	15000.0	9.000	100.0	25.0	20.6
13.565250	46.71	124.00	77.29	15000.0	9.000	100.0	25.0	20.6
13.709250	22.29	89.60	67.31	15000.0	9.000	100.0	25.0	20.6
14.008500	22.11	79.60	**57.49**	15000.0	9.000	100.0	70.0	20.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 22.11 dBµV/m (field strength) = 1.51 dBµV (receiver reading) + 20.6 dB (Correction factor)

Graphical representation

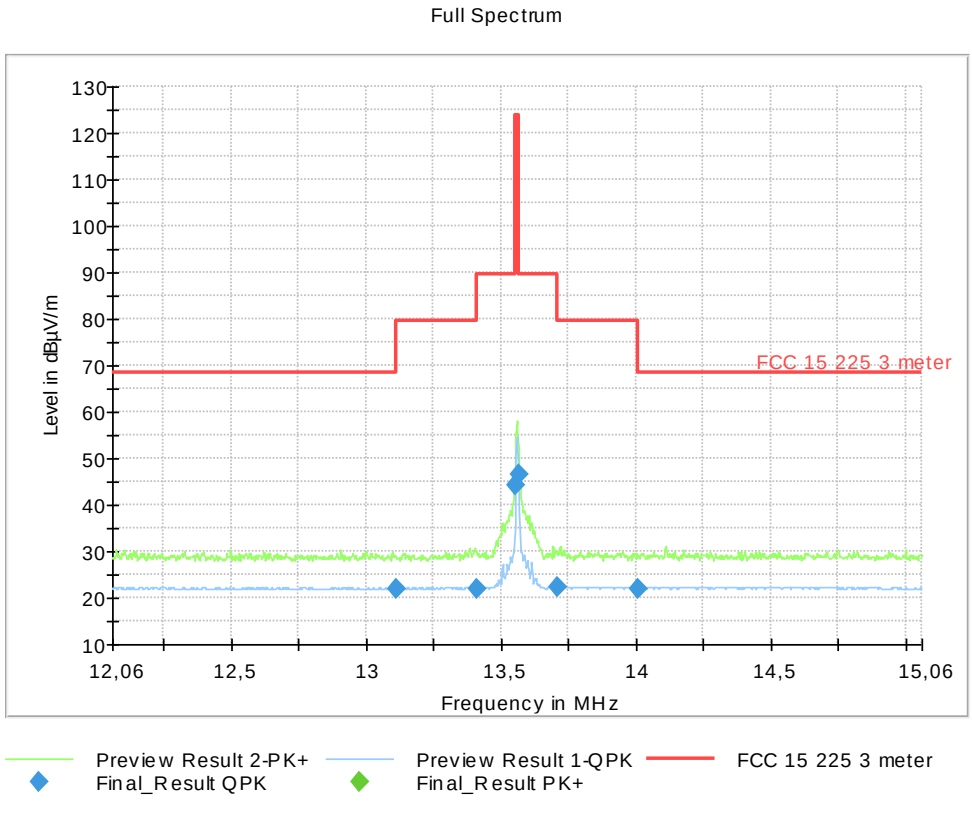
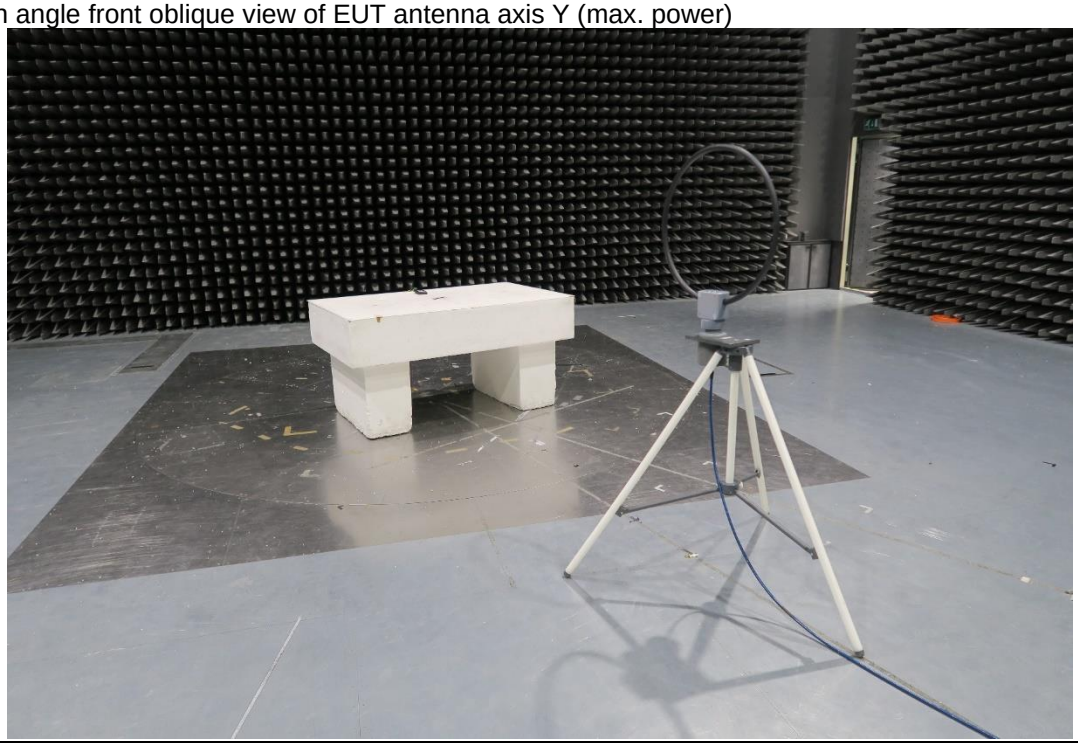
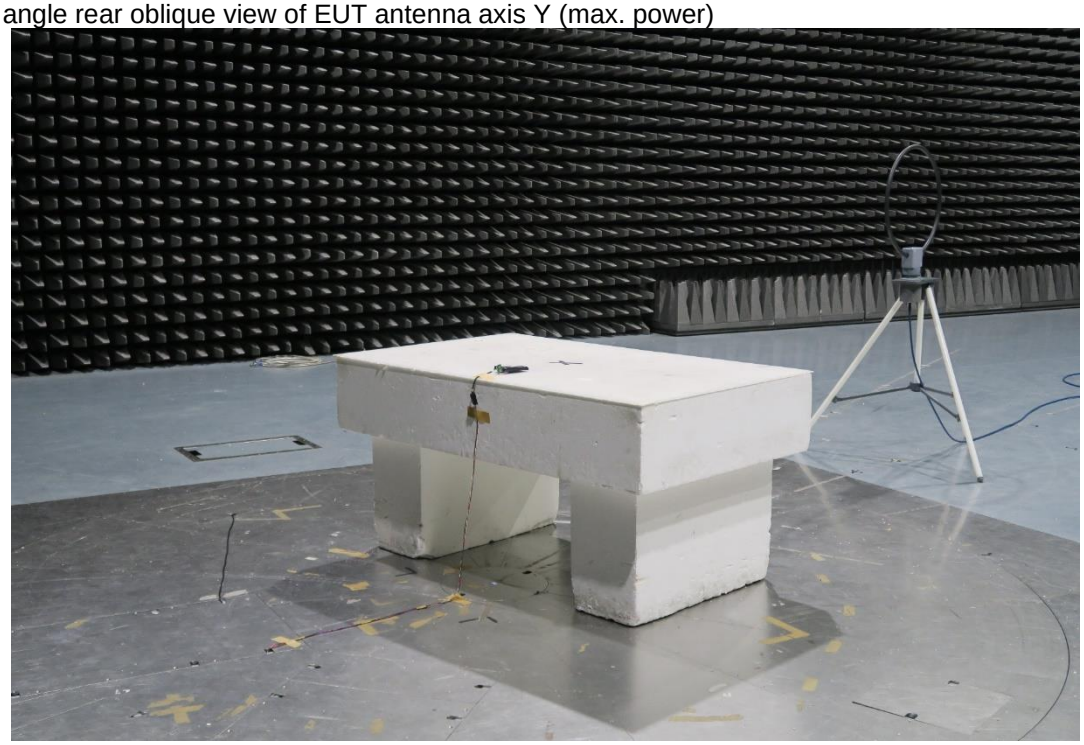


Photo 4.7.3 .....:	Measurement of band edge SA3-I

c. High angle front oblique view of EUT antenna axis Y (max. power)



b. High angle rear oblique view of EUT antenna axis Y (max. power)



Test results for band edge SA3-I	
Test item no(s) ref. cl. 1.2 ..... :	3
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth	Corr. (dB)
13.110750	22.03	79.60	57.57	15000.0	9.000	100.0	-20.0	20.6
13.410000	22.32	79.60	**57.28**	15000.0	9.000	100.0	25.0	20.6
13.554000	46.77	124.00	77.23	15000.0	9.000	100.0	25.0	20.6
13.565250	48.98	124.00	75.02	15000.0	9.000	100.0	25.0	20.6
13.709250	22.28	89.60	67.32	15000.0	9.000	100.0	-20.0	20.6
14.008500	22.23	79.60	57.37	15000.0	9.000	100.0	-20.0	20.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 22.32 dBµV/m (field strength) = 1.72 dBµV (receiver reading) + 20.6 dB (Correction factor)

Graphical representation

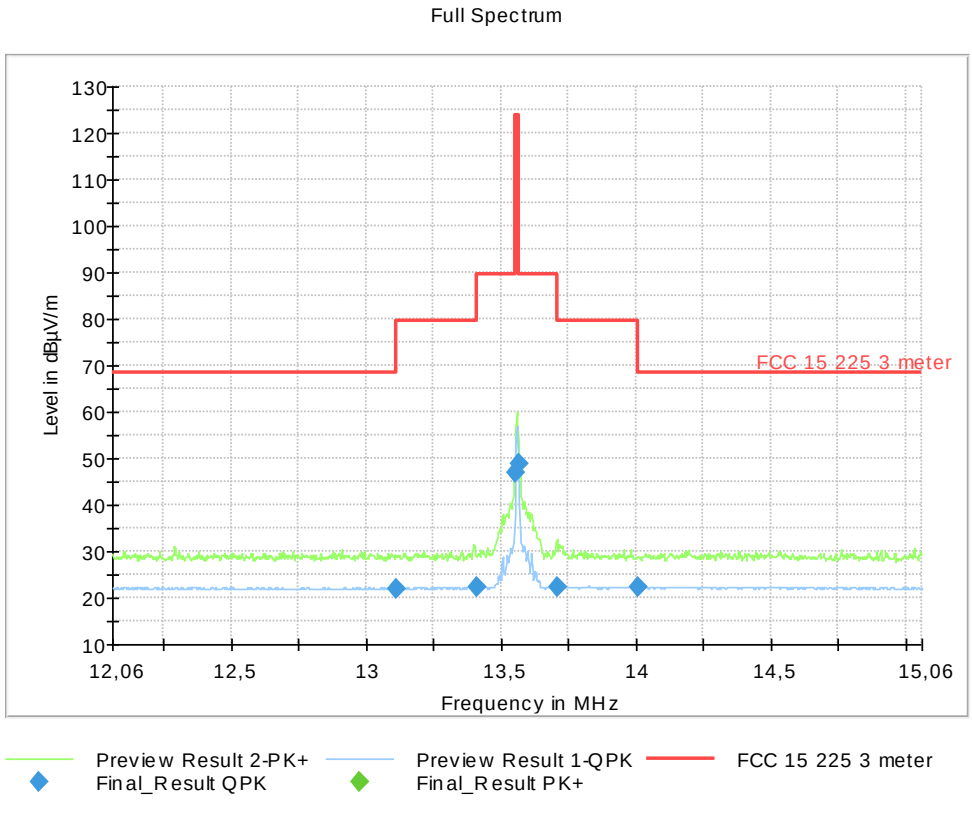
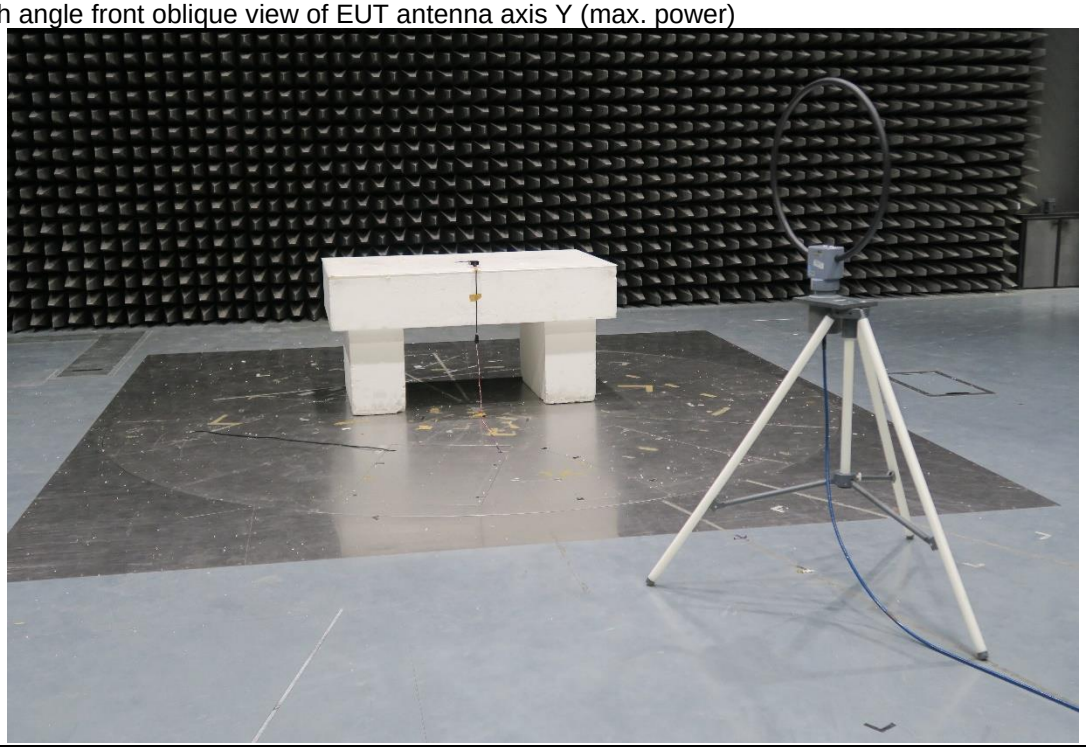
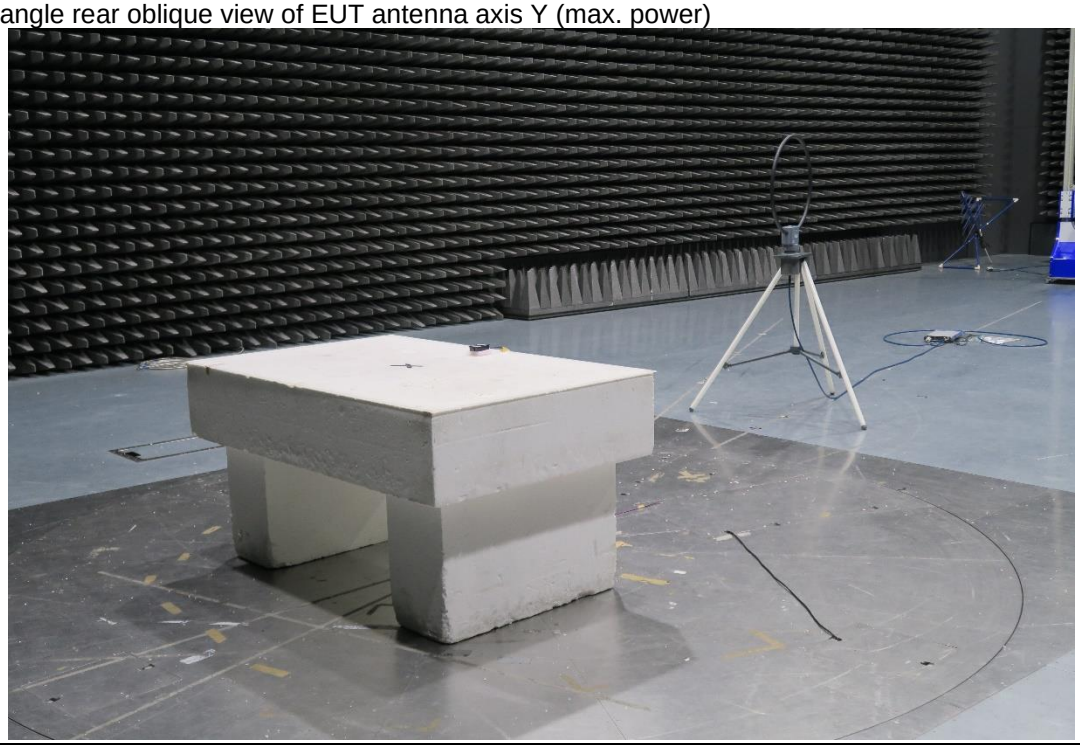


Photo 4.7.4 .....:	Measurement of band edge SA3-F

d. High angle front oblique view of EUT antenna axis Y (max. power)



b. High angle rear oblique view of EUT antenna axis Y (max. power)



Test results for band edge SA3-F	
Test item no(s) ref. cl. 1.2 ..... :	4
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

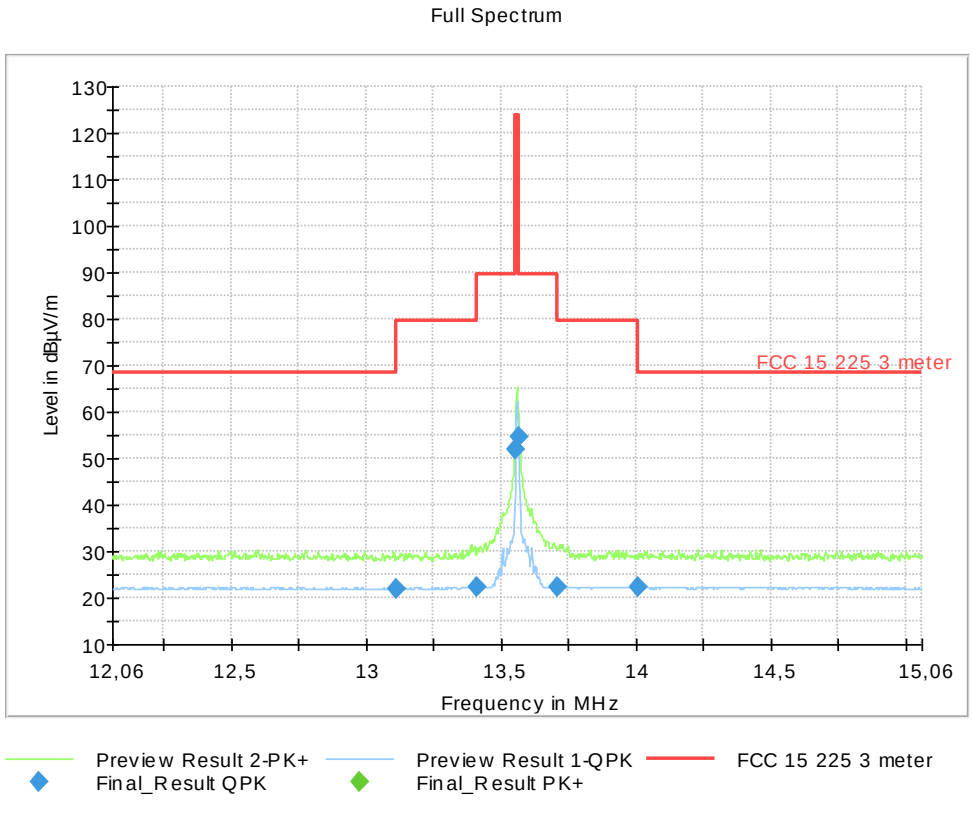
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth	Corr. (dB)
13.110750	22.01	79.60	57.59	15000.0	9.000	100.0	70.0	20.6
13.410000	22.22	79.60	**57.38**	15000.0	9.000	100.0	70.0	20.6
13.554000	51.77	124.00	72.23	15000.0	9.000	100.0	70.0	20.6
13.565250	54.45	124.00	69.55	15000.0	9.000	100.0	70.0	20.6
13.709250	22.48	89.60	67.12	15000.0	9.000	100.0	115.0	20.6
14.008500	22.15	79.60	57.45	15000.0	9.000	100.0	70.0	20.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 22.22 dBµV/m (field strength) = 1.62 dBµV (receiver reading) + 20.6 dB (Correction factor)

Graphical representation



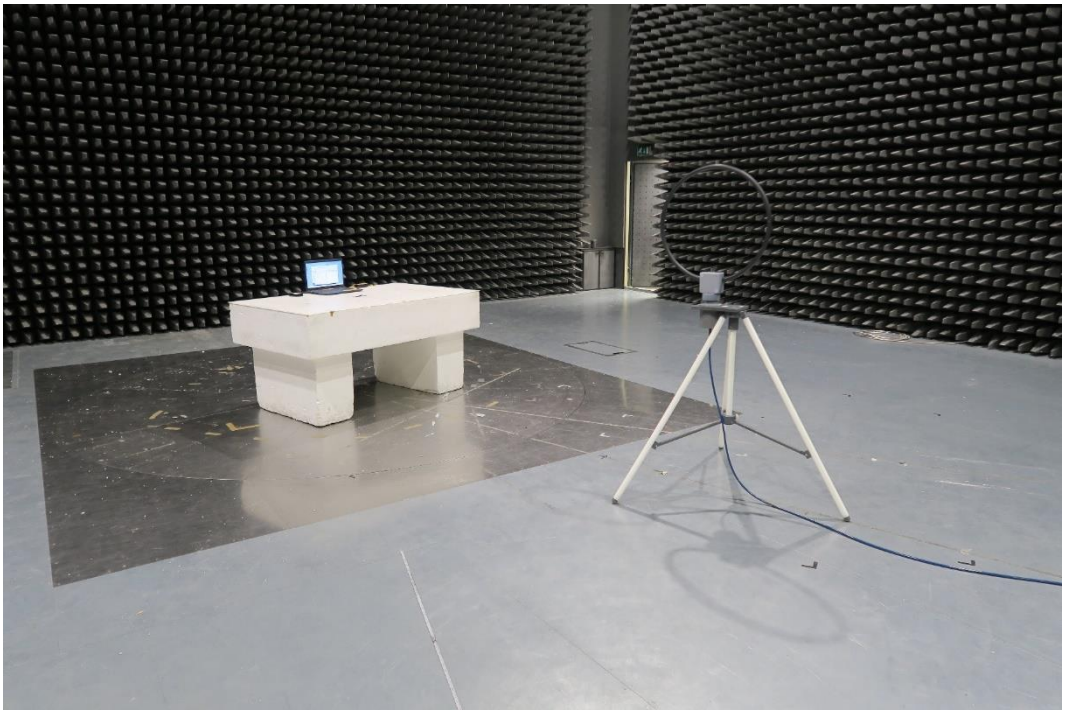
4.8 Measurement of field strength of fundamental

Name..... :	Jesper Salvesen
Date..... :	2023-08-09 and 2023-08-10
Rationale for verdict N/A ..... :	-

Test location (stand)..... :	Aarhus Room 1	
Applied limit class..... :	☒	Limit of field strength of fundamental according to 47 CFR Part 15.225 and RSS-210:2019 Annex B.6
	☐	Other:
Test setup description ..... :	☒	Equipment on a table 80 cm height
	☐	Equipment on the floor (isolated from ground plane)
	☐	Other:
Supplementary test setup description..... :	-	
Test method applied..... :	☒	Active loop antennas, as specified in ANSI C63.2 and/or CISPR 16-1-4:2010.
	☒	SAC with measurement distance [m]: 3
	☐	Other:
Supplementary information ..... :	Measurement with maximum power is presented below	

Photo 4.8.1 .....:	Measurement of field strength of fundamental SA3-USB

a. High angle front view of EUT on setup table, antenna axis Y (max. power)



b. High angle rear oblique view of EUT antenna axis Y (max. power)

Test results for field strength of fundamental SA3-USB	
Test item no(s) ref. cl. 1.2 ..... :	1
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	1

Tabulated Results summary

Y-axis (max. power)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth (deg)	Corr. (dB)
13.56	54.15	124.00	69.85	3000	100	100.0	-50	20.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 54.15 dBµV/m (field strength) = 33.55 dBµV (receiver reading) + 20.6 dB (Correction factor)

Graphical representation

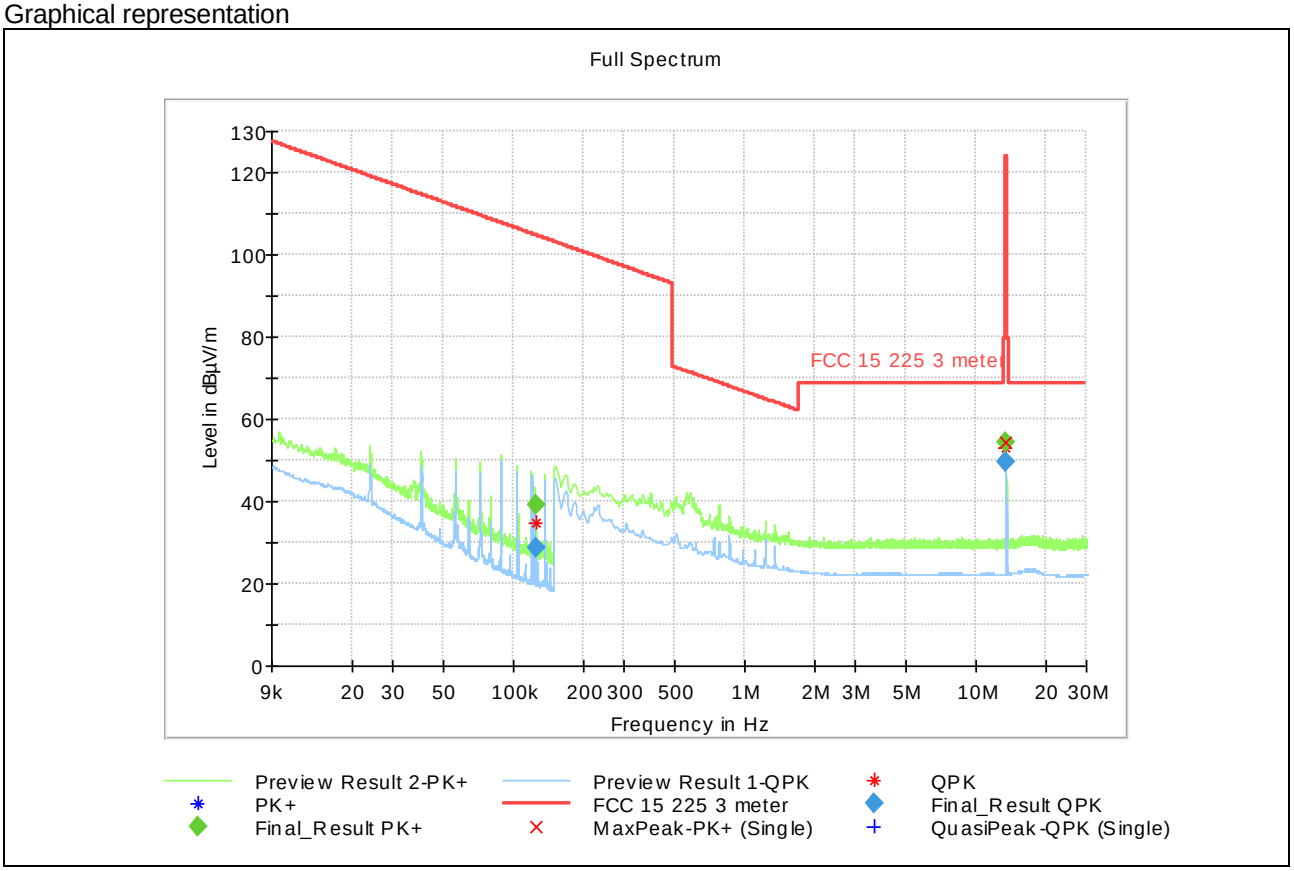
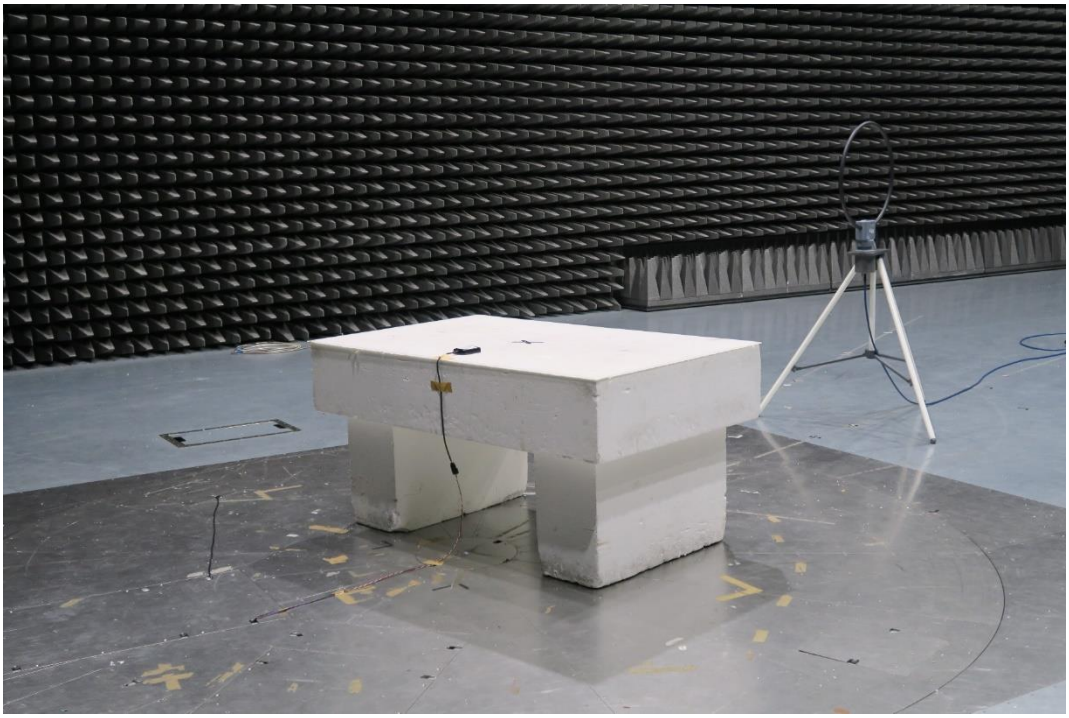


Photo 4.8.2 .....:	Measurement of field strength of fundamental SA3-D

a. High angle front view of EUT on setup table, antenna axis Y (max. power)

b. High angle rear oblique view of EUT antenna axis Y (max. power)



Test results for field strength of fundamental SA3-D	
Test item no(s) ref. cl. 1.2 ..... :	2
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

Y-axis (max. power)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth (deg)	Corr. (dB)
13.56	57.32	124.00	66.68	3000	100	100.0	57	20.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 57.32 dBµV/m (field strength) = 36.72 dBµV (receiver reading) + 20.6 dB (Correction factor)

Graphical representation

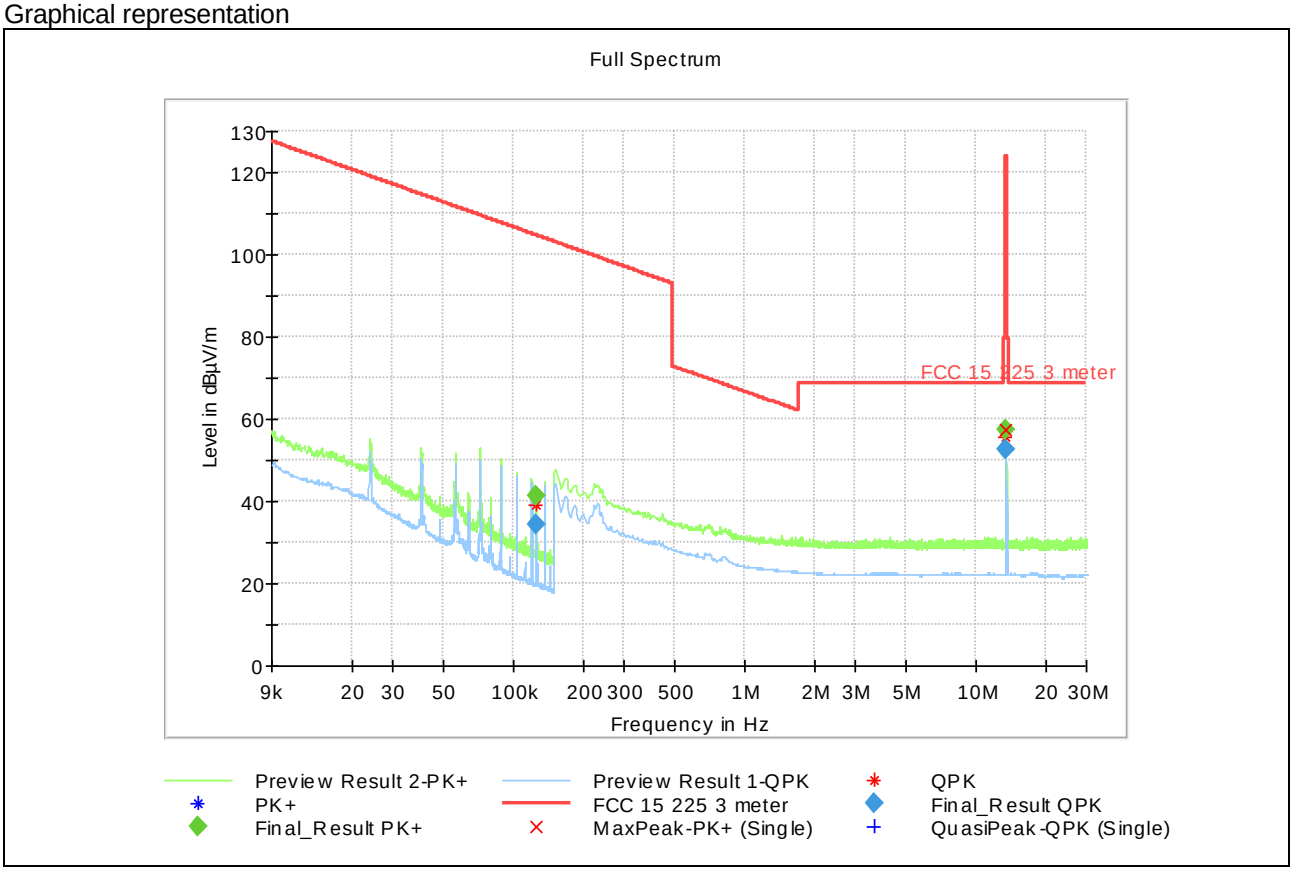
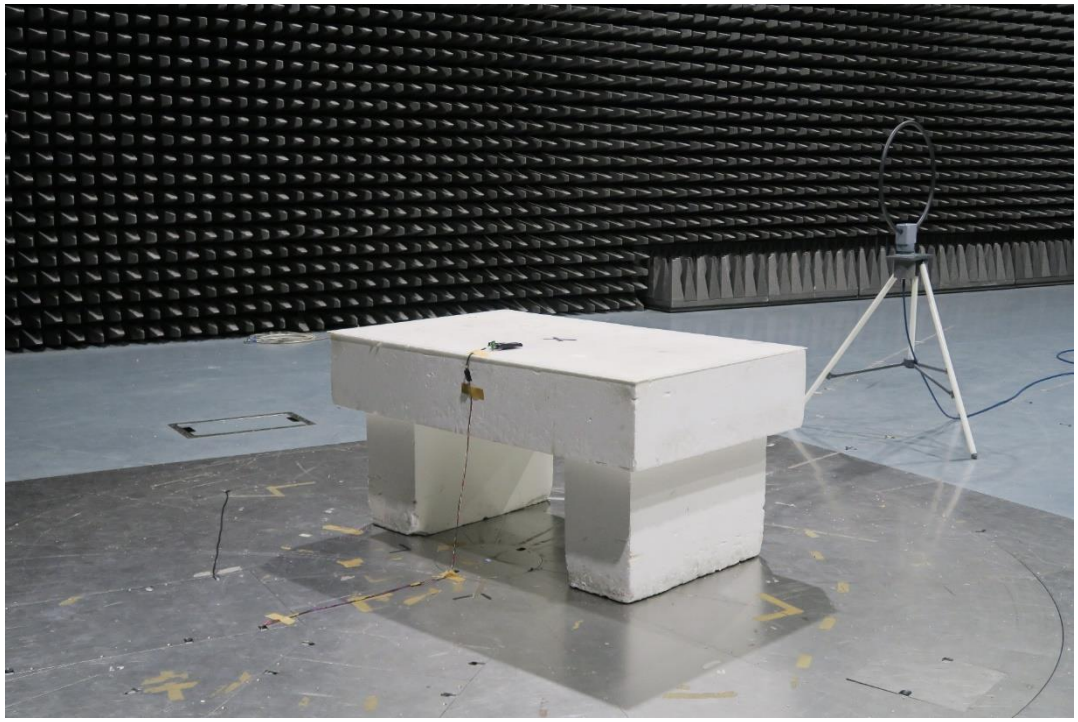


Photo 4.8.3 ..... :	Measurement of field strength of fundamental SA3-I

a. High angle front view of EUT on setup table, antenna axis Y (max. power)

b. High angle rear oblique view of EUT antenna axis Y (max. power)



Test results for field strength of fundamental SA3-I	
Test item no(s) ref. cl. 1.2 ..... :	3
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

Y-axis (max. power)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth (deg)	Corr. (dB)
13.56	59.56	124.00	64.44	3000	100	100.0	84	20.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 59.56 dBµV/m (field strength) = 38.96 dBµV (receiver reading) + 20.6 dB (Correction factor)

Graphical representation

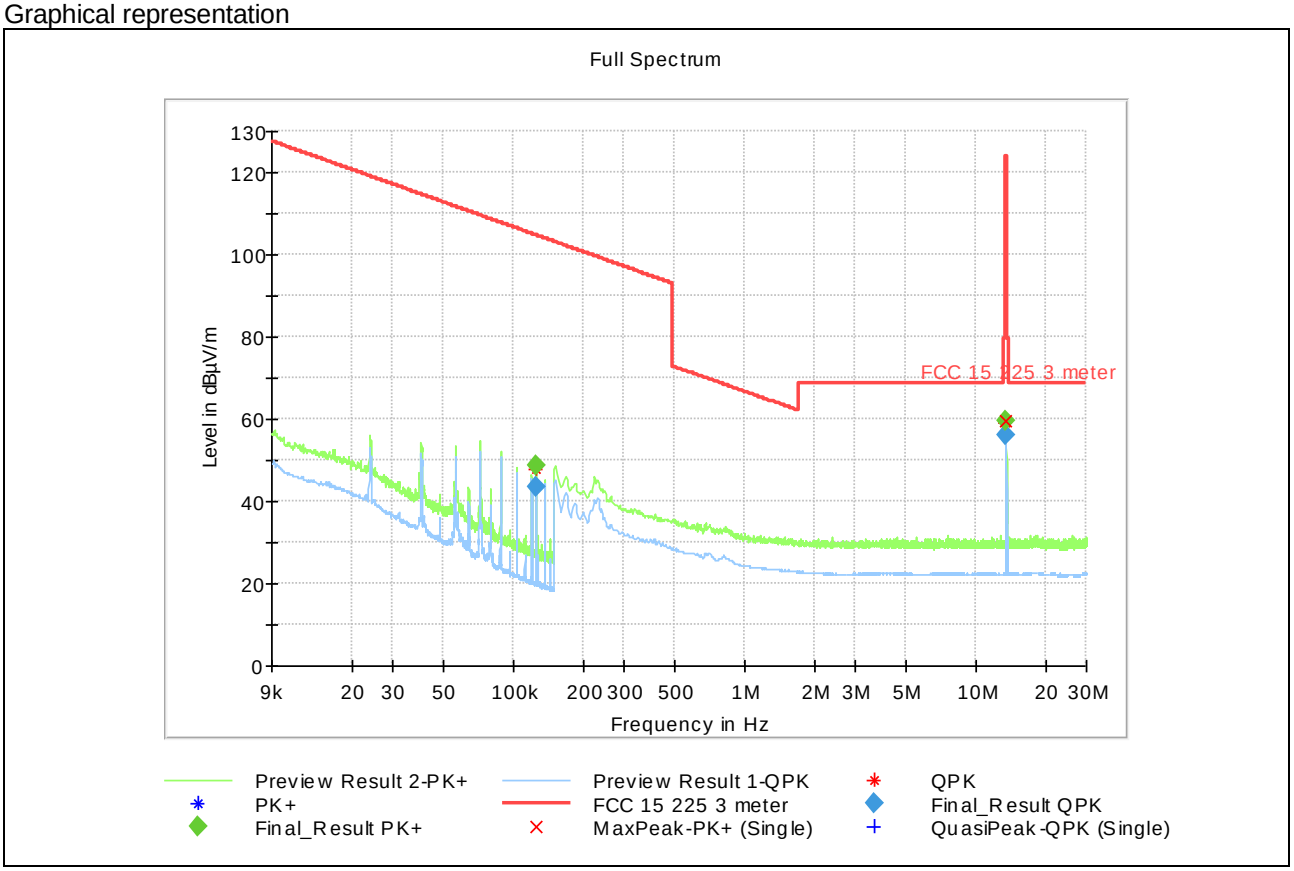
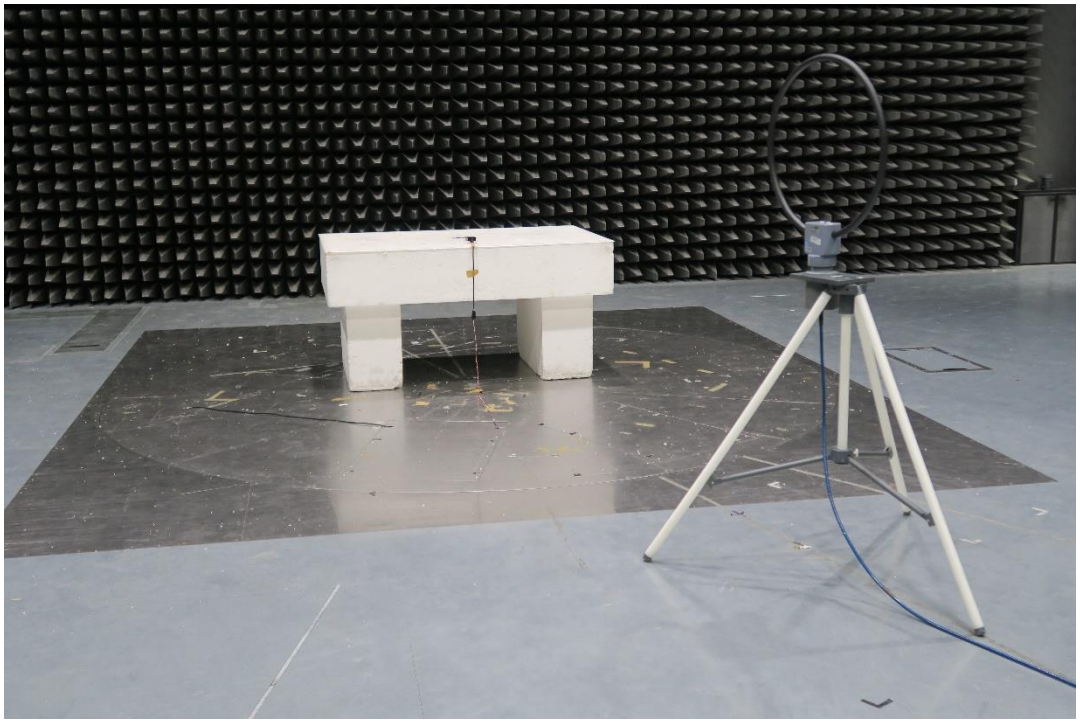
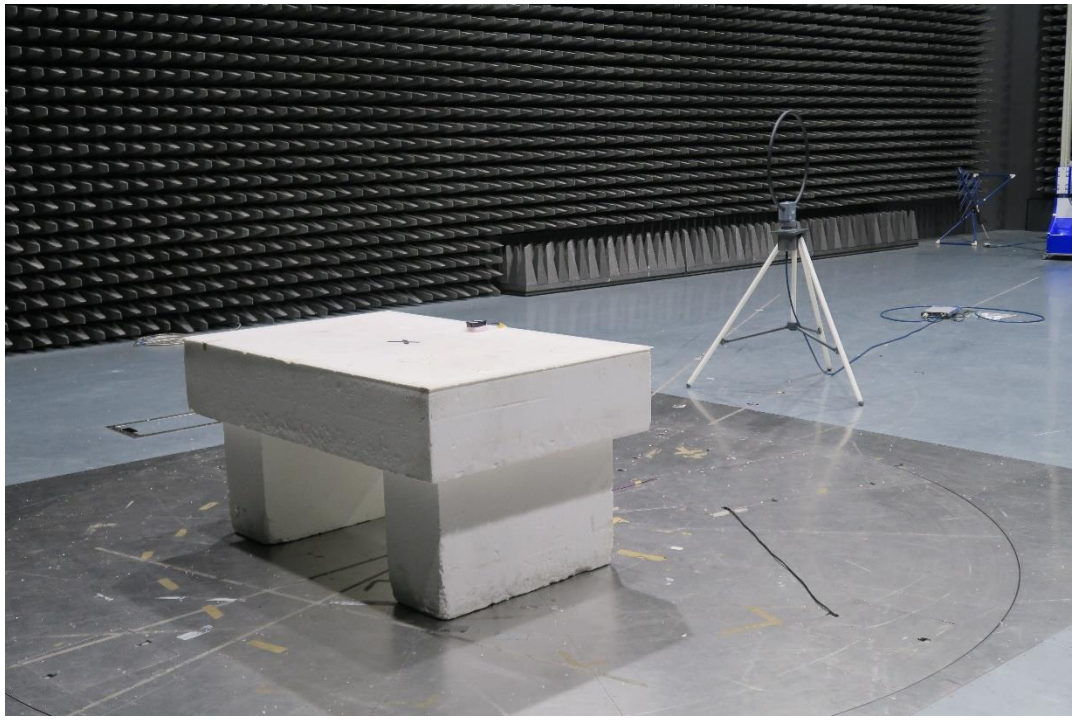


Photo 4.8.4 ..... :	Measurement of field strength of fundamental SA3-F

a. High angle front view of EUT on setup table, antenna axis Y (max. power)



b. High angle rear oblique view of EUT antenna axis Y (max. power)



Test results for field strength of fundamental SA3-F	
Test item no(s) ref. cl. 1.2 ..... :	4
Operating mode no(s) ref. cl. 1.7 :	1
Test setup no(s) ref. cl. 3.3 ..... :	2

Tabulated Results summary

Y-axis (max. power)

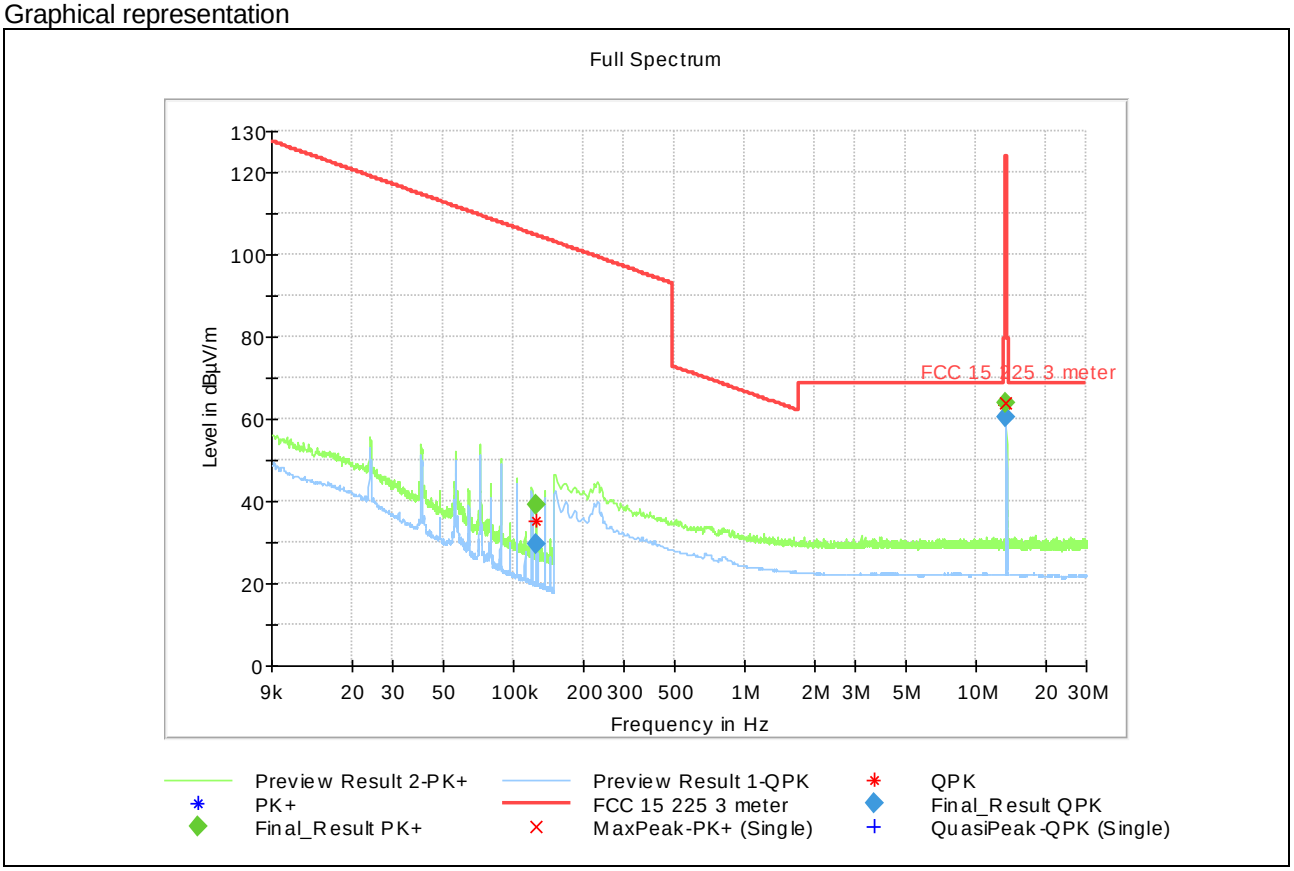
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Azimuth (deg)	Corr. (dB)
13.56	63.87	124.00	60.13	3000	100	100.0	39	20.6

The result is calculated by adjusting the receiver reading with the correction factor.
Correction factor (dB) = Antenna factor (dB) + Cable loss (dB) + Attenuation (dB) + Pre-amp gain (dB)

Tabulated Result terms:
Field strength = QuasiPeak (dBµV/m)
Correction factor = Corr. (dB)
Note: The test software state attenuation as a positive value and amplification as a negative value.

Sample calculation: 63.87 dBµV/m (field strength) = 43.27 dBµV (receiver reading) + 20.6 dB (Correction factor)

Graphical representation



5 Measurement instrumentation uncertainties and decision rule

5.1 Measurement uncertainty

Where relevant, the following measurement instrumentation uncertainty levels have been estimated for tests performed on the apparatus:

Test method	Calculated expanded uncertainty U_{Lab}		$U_{CISPR/ETSI}$
	Aarhus	Hørsholm	
AC power-line conducted emission (6.2)	2.68	2.68	3.4
Radiated emission below 30 MHz (6.4)	4.64	2.65	3.3
Radiated emission 30 - 1000 MHz (6.5)	5.72 / 5.56	6.15 / 4.9	6.3
Radiated emission above 1000 MHz (6.6)	4.2	4.9	5.2
Frequency stability (6.8)	0.3 Hz	0.3 Hz	±1 ppm
Occupied bandwidth, 20 dB (6.9)	1.7	1.7	±1.5
Band edge (6.10)	1.7	1.7	±1.5
Field strength of fundamental (6.4)	4.64	2.65	6.3
Environment measurements			
Temperature	<1°C	< 1°C	1°C

5.2 Decision rule

1) General

When reporting statement compliance (e.g., Pass / Fail) the following general decision rules are applied where relevant.

International guidelines for Decision rules are amongst other given in

· The BIMP JCGM 106 "Evaluation of measurement data – The role of measurement uncertainty in conformity assessment" section 8 and

· The attached ILAC G8 "Guidelines on Decision Rules and Statements of Conformity" section 4

· IEC Guide 115 "Application of measurement uncertainty to conformity assessment activities in the electrotechnical sector in the IECEE CB Scheme"

1.1) Other Decision rules

Other decision rules may be applied according to

· Customers own decision rules

· Applicable Directives, e.g., essential requirement of MDD

· Requirement of an authority

· Applicable Legislation

Such decision rules shall be agreed upon with the client in the quotation documents.

2) Decision Rule

A decision rule describes how measurement uncertainty is accounted for when stating conformity with a specified requirement.

Note: Decision rule may be referred to as criterion for compliance

ISO 17025 cl. 3.7

2.1) General Testing

The general approach for application of decision rules is given in the ILAC Guide 8.

The laboratories aim at applying standards, which include "guard banded" test limits. I.e., the applied test limit(s) inherent in the applicable test requirement includes concerns on measurement uncertainty in relation to the decision of compliance.

Specific decision rules may be given in the individual test procedures or standards.

Clients' acceptance of decision rules is agreed upon in per terms of delivery in the quotation documents.

Rationale for applicable decision rules for specific areas are given below.

2.2) Rules / Criteria for compliance - EMC Testing - Emission

The test standards for electromagnetic emission testing state use of "shared risk" for the decision of compliance. Given test limits take Measuring Uncertainty (MU) into account.

The laboratory reports as follows:

The test standards state, that the given requirement for compliance, i.e., test limits, include consideration of MU, in case the MU is within the allowed MU given in U_{CISPR}

1) If the MU is within the max U_{CISPR} any decision of compliance (P/F) shall not include the MU

2) If the MU exceed the max U_{CISPR} any decision of compliance (P/F) shall include the added MU.

Reporting

The measured value and its MU are reported. Compliance with requirement is reported based on the measured values.

6 List of test equipment

AC power-line conducted emission (6.2):

ID no.	Description	Manufacturer	Type no.	Last Calibration date	Calibration due date
49567	LISN	Rohde & Schwarz	ESH2-Z5	2023-01-03	2024-01-03
748	Measuring receiver	Rohde & Schwarz	ESW 8	2023-01-03	2024-01-03
D116	Puls Limiter	Rohde & Schwarz	ESH3-Z2	2023-01-09	2024-01-09
D021	6dB Attenuator	Bird	8302-060-BNC	2023-02-02	2024-02-02
D024	6dB Attenuator	Bird	8303-060-BNC	2023-01-09	2024-01-09
K044	Coaxial cable	Huber+Suhner	RG58C/U	2023-03-07	2024-03-07
K062	Coaxial cable	Huber+Suhner	RG58C/U	2023-03-07	2024-03-07
FT022 416	EMC32 Software	Rohde & Schwarz	V10.60.20	N/A	N/A

Radiated emission below 30 MHz (6.4), Band edge (6.10), Field strength of fundamental(6.4):

ID no.	Description	Manufacturer	Type no.	Last Calibration date	Calibration due date
855	Active Loop Antenna	Rohde & Schwarz	HFH2-Z2E	2023-01-20	2024-01-20
742	Measuring receiver	Rohde & Schwarz	ESW 26	2023-01-03	2024-01-03
K177	Coaxial cable	Huber+Suhner	Sucoflex 404	2023-07-23	2024-07-23
K180	Coaxial cable	Huber+Suhner	Sucoflex 404	2023-02-15	2024-02-15
K267	Coaxial cable	Huber+Suhner	Sucoflex 404	2023-03-07	2024-03-07
K222	Coaxial cable	Huber+Suhner	TL-8A-11N-11N-04000-51	2022-11-28	2023-11-28
K223	Coaxial cable	Huber+Suhner	TL-8A-11N-11N-04000-51	2022-11-28	2023-11-28

Radiated emission 30 - 1000 MHz (6.5):

ID no.	Description	Manufacturer	Type no.	Last Calibration date	Calibration due date
237	Bilog Antenna	Chase	CBL 6111 A	2022-08-23	2024-08-23
D161	4dB Attenuator	Huber+Suhner	6804_N-50-1/1_NE	2022-07-21	2024-07-21
742	Measuring receiver	Rohde & Schwarz	ESW 26	2023-01-03	2024-01-03
826	Pre-amplifier	Mini circuits	ZX60-4016E-S+	2023-02-02	2024-02-02
K169	Coaxial cable	Huber+Suhner	Sucoflex 104	2023-07-24	2024-07-23
K179	Coaxial cable	Huber+Suhner	Sucoflex 104	2023-02-15	2024-02-15
K267	Coaxial cable	Huber+Suhner	Sucoflex 404	2023-03-08	2024-03-07
FT019 810	EMC32 Software	Rohde & Schwarz	V10.60.20	N/A	N/A

Radiated emission 1 – 12.75 GHz (6.5):					
ID no.	**Description**	**Manufacturer**	**Type no.**	**Last Calibration date**	**Calibration due date**
645	Horn Antenna	Rohde & Schwarz	HF907	2022-06-29	2024-06-29
654	Pre-amplifier	Miteq	AFS4-00501800-40-20P-6	2023-02-02	2024-02-02
742	Measuring receiver	Rohde & Schwarz	ESW 26	2023-01-03	2024-01-03
K177	Coaxial cable	Huber+Suhner	Sucoflex 404	2023-07-24	2024-07-24
K180	Coaxial cable	Huber+Suhner	Sucoflex 404	2023-03-07	2024-03-07
K267	Coaxial cable	Huber+Suhner	Sucoflex 404	2023-03-07	2024-03-07
FT019810	EMC32 Software	Rohde & Schwarz	V10.60.20	N/A	N/A

Frequency stability (6.8), Occupied bandwidth, 20 dB (6.9):					
ID no.	**Description**	**Manufacturer**	**Type no.**	**Last Calibration date**	**Calibration due date**
748	Measuring receiver	Rohde & Schwarz	ESW 8	2023-01-03	2024-01-03
559	Spectrum Analyzer	Rohde & Schwarz	FSL6	2023-01-05	2024-01-05
K185	Coaxial cable	Huber+Suhner	RG223U	2023-03-07	2024-03-07
631	Temp/Humidity sensor	ELPRO	ECOLOG TH1	2023-01-27	2024-01-27
705	Temperature chamber	CTS	T-40/350	-	-
905	Sensor 150 kHz - 26 MHz	The Conformity Assessment Business	CABLSHF	2022-06-20	2024-06-20
FT022416	EMC32 Software	Rohde & Schwarz	V10.60.20	N/A	N/A