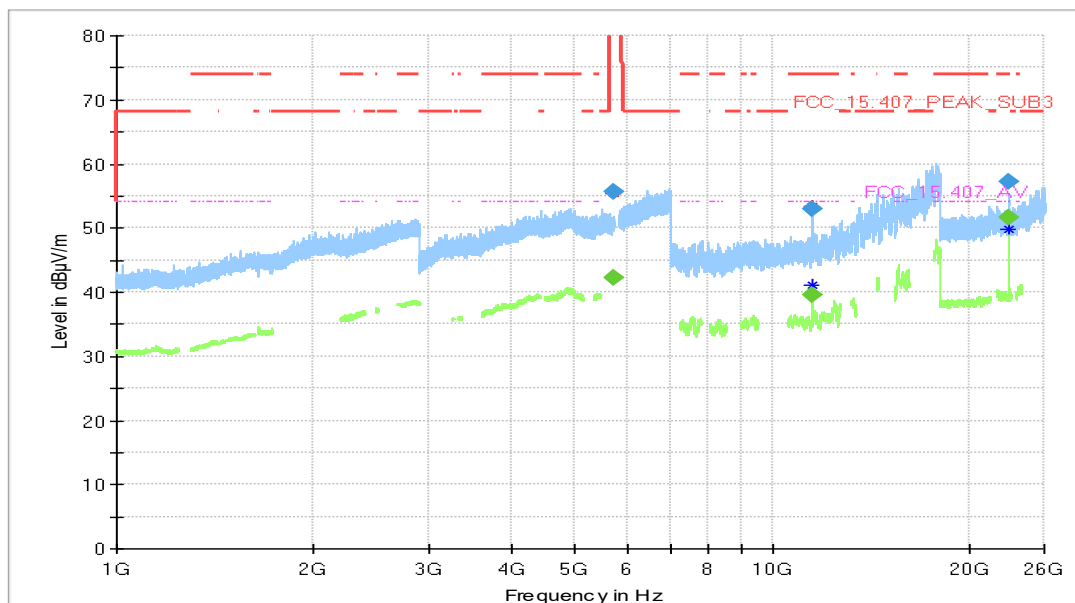
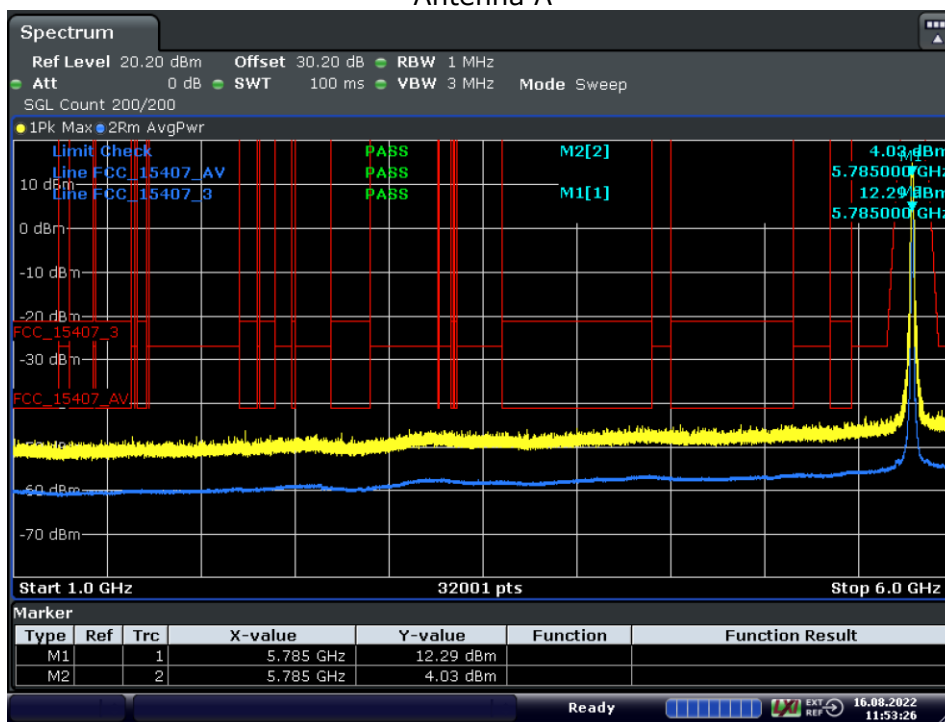


Radio Technology = WLAN a, Operating Frequency = low, Measurement range = 1GHz – 26GHz, Subband = U-NII-3
(S02_354_AB01)

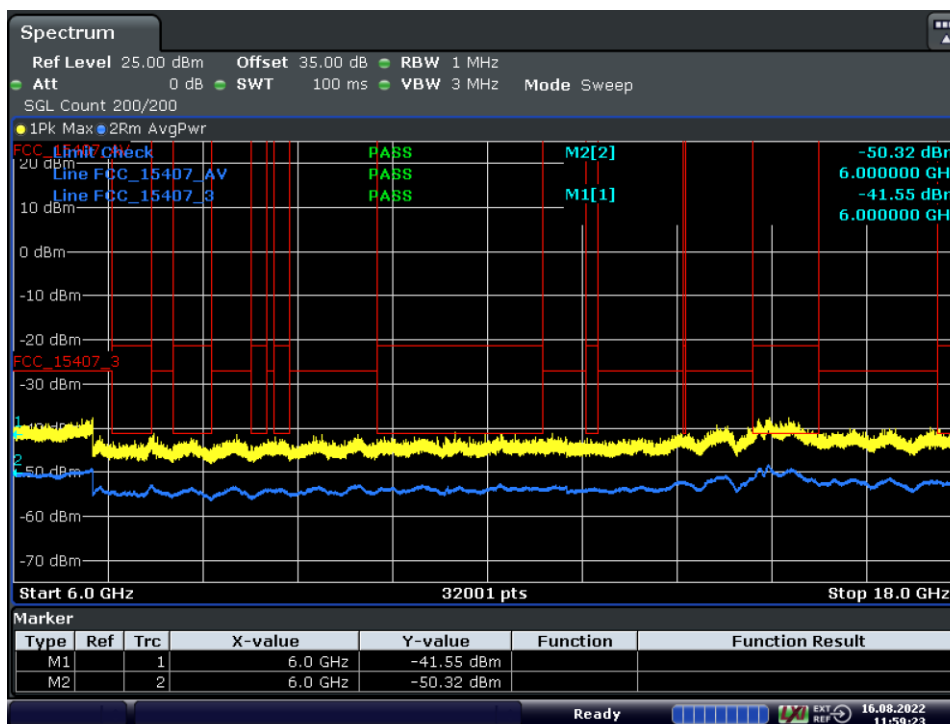


Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
5723.300	---	42.3	---	---	1000.0	1000.000	150.0	V	-45.0	15.0	14.2
5723.300	55.7	---	118.32	62.63	1000.0	1000.000	150.0	V	-45.0	15.0	14.2
11490.400	---	39.6	54.00	14.37	1000.0	1000.000	150.0	H	-46.0	88.0	-8.9
11490.400	53.0	---	74.00	21.04	1000.0	1000.000	150.0	H	-46.0	88.0	-8.9
22980.029	---	51.5	54.00	2.49	1000.0	1000.000	150.0	H	-54.0	88.0	19.7
22980.029	57.3	---	74.00	16.70	1000.0	1000.000	150.0	H	-54.0	88.0	19.7

Radio Technology = WLAN a, Operating Frequency = mid, Measurement range = 1GHz - 18GHz, Subband = U-NII-3 (S01_354_AA01)
Antenna A

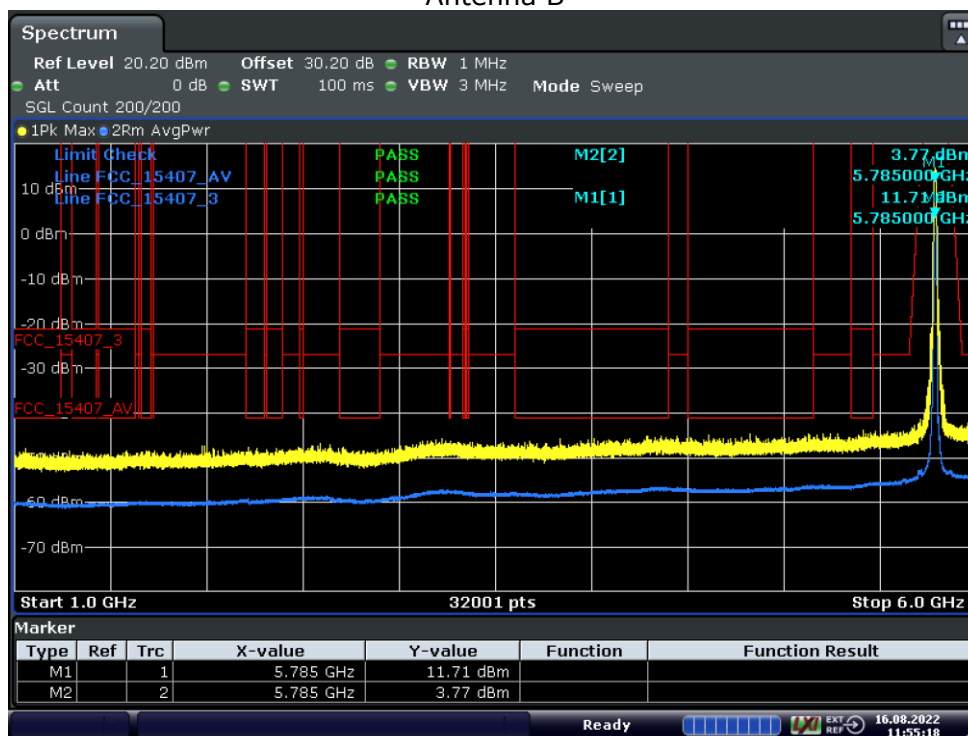


Date: 16.AUG.2022 11:53:26

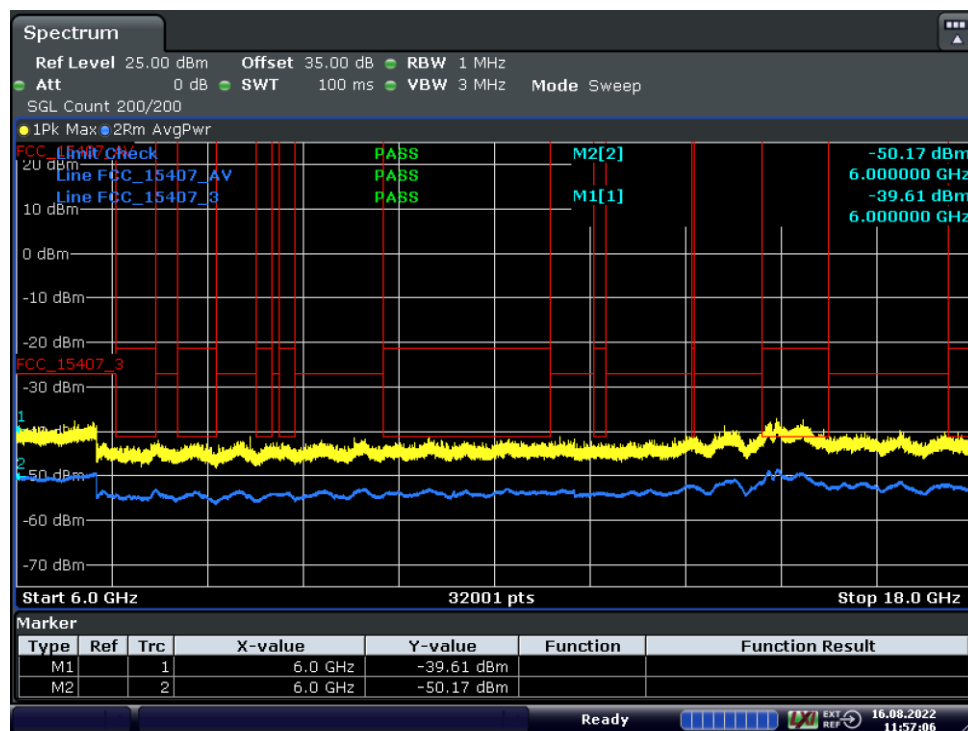


Date: 16.AUG.2022 11:59:23

Antenna B

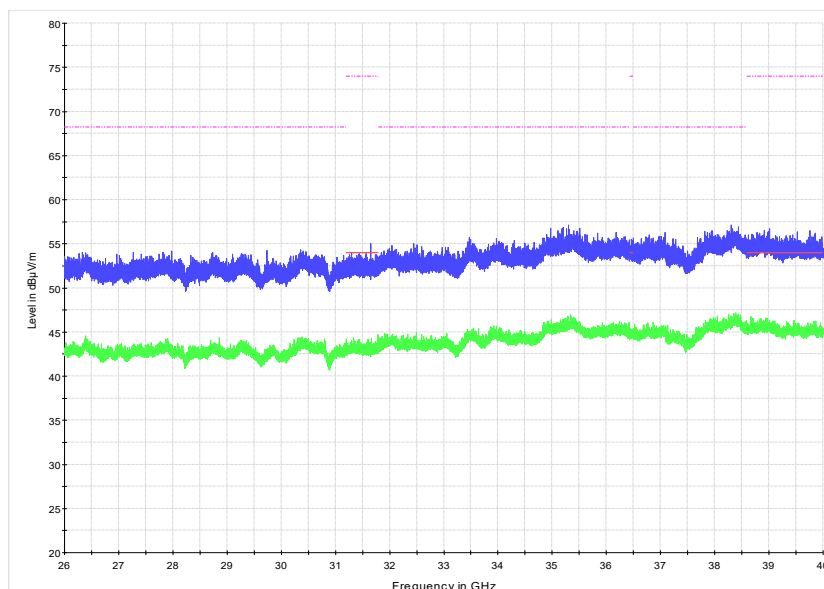


Date: 16.AUG.2022 11:55:18

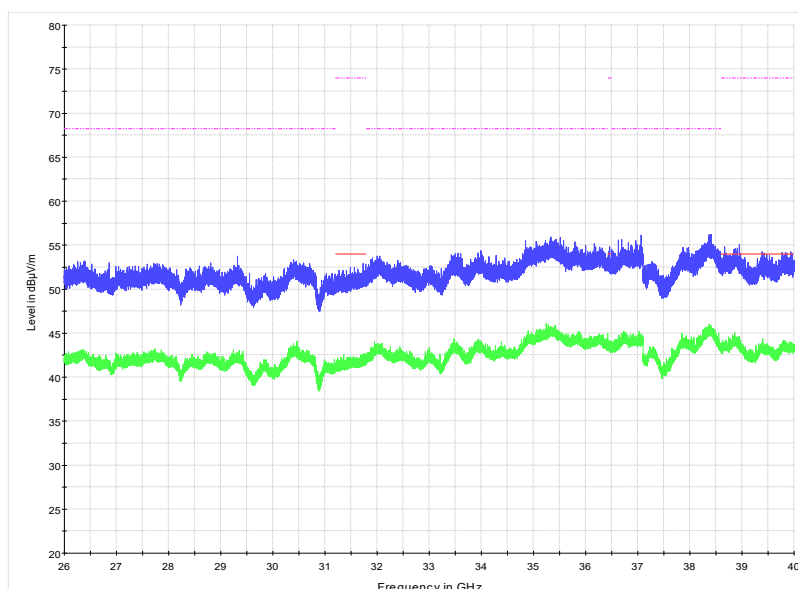


Date: 16.AUG.2022 11:57:06

Radio Technology = WLAN a, Operating Frequency = mid, Measurement range = 26GHz – 40GHz, Subband = U-NII-1
(S02_354_AB01)



Radio Technology = WLAN a, Operating Frequency = mid, Measurement range = 26GHz – 40GHz, Subband = U-NII-3
(S02_354_AB01)



5.3.5 TEST EQUIPMENT USED

- Radiated Emissions SAC H-Field
- Radiated Emissions FAR 5 GHz FCC
- Radiated Emissions SAC up to 1 GHz
- R&S TS8997
- Radio Lab

5.4 BAND EDGE

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10

5.4.1 TEST DESCRIPTION

Radiated Measurement with 50 Ohm termination at antenna ports

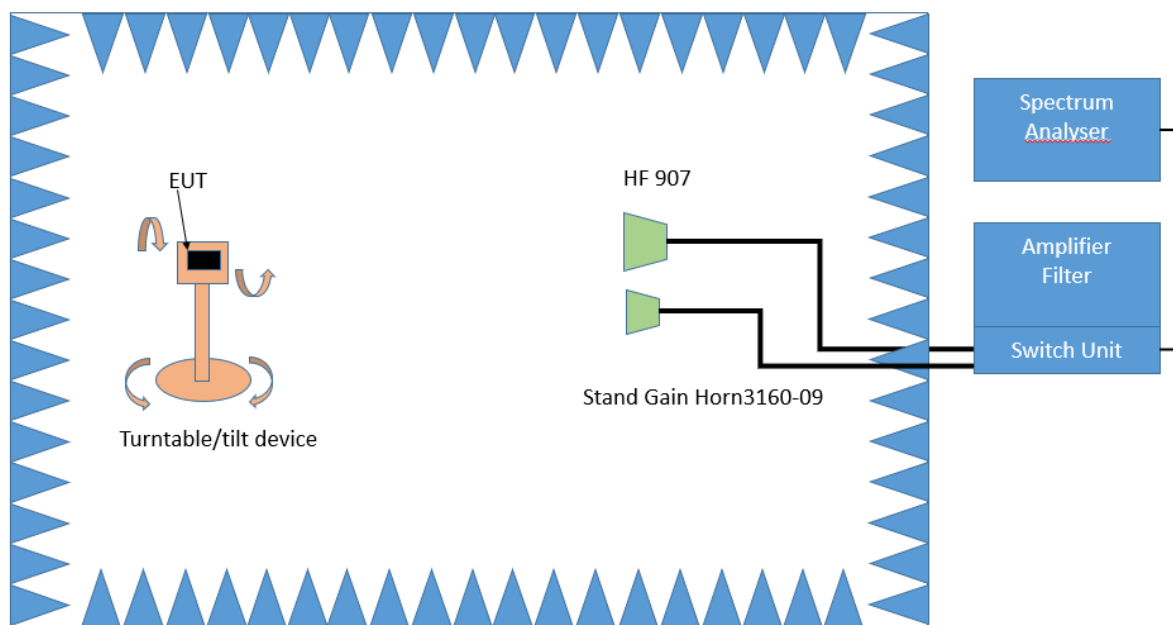
The test set-up was made in accordance to the general provisions of ANSI C63.10 in a typical installation configuration. The measurements were performed according the following sub-chapter of ANSI C63.10:

- Chapter 6.10.5

The Equipment Under Test (EUT) was set up on a non-conductive support (tilt device) at 1.5 m height in the fully-anechoic chamber.

All steps were performed with one height (1.5 m) of the receiving antenna only (procedure according ANSI C63.10, chapter 6.6.5).

3. Measurement above 1 GHz



Test Setup; Spurious Emission Radiated (FAC), 1 GHz-26.5 GHz

Step 1:

The EUT is turned during the preliminary measurement across the elevation axis, with a step size of 90 °.

The turn table step size (azimuth angle) for the preliminary measurement is 45 °.

Spectrum analyser settings:

- Detector: Peak, Average
- RBW = 1 MHz
- VBW = 3 MHz

Step 2:

The turn table azimuth will slowly vary by $\pm 22.5^\circ$.

The elevation angle will slowly vary by $\pm 45^\circ$

Spectrum analyser settings:

- Detector: Peak

Step 3:

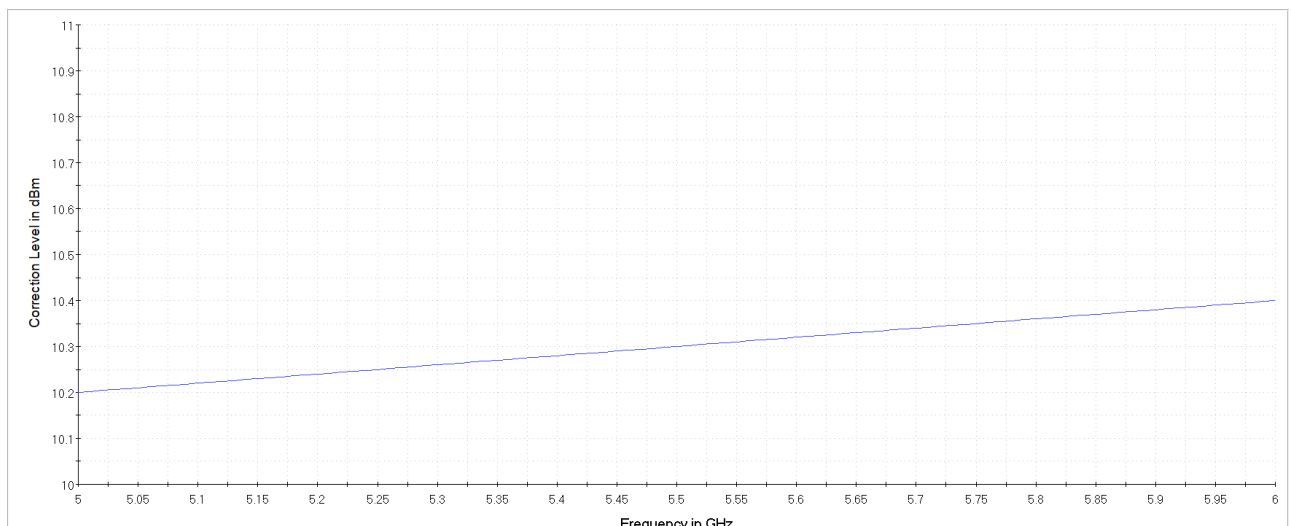
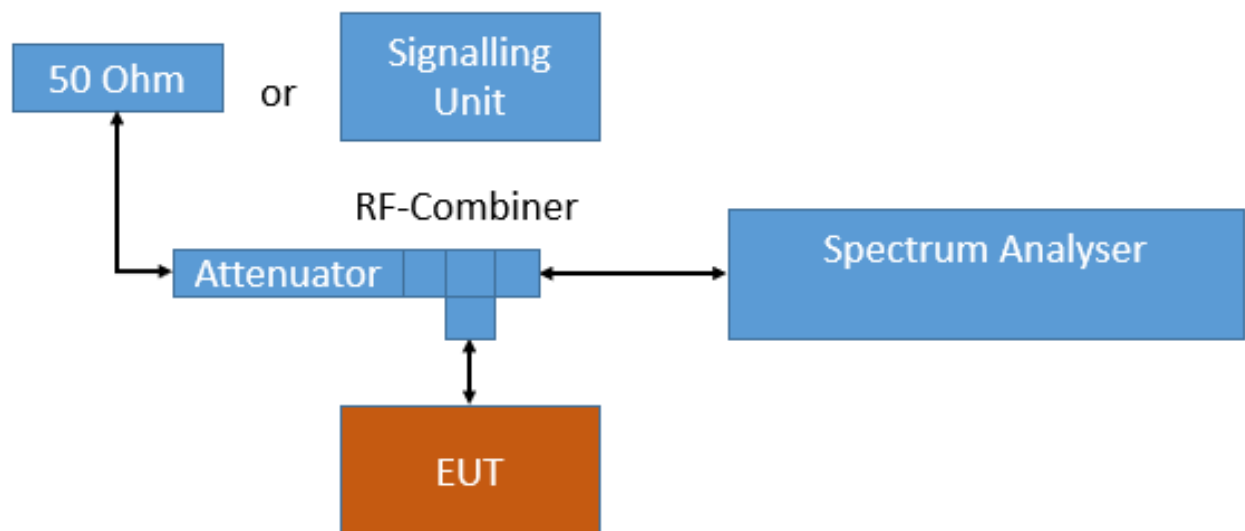
Spectrum analyser settings for step 3:

- Detector: Peak / CISPR Average
- Measured frequencies: in step 1 determined frequencies
- RBW = 1 MHz
- VBW = 3 MHz
- Measuring time: 1 s

Conducted Measurements at antenna ports

The Equipment Under Test (EUT) was set up to perform the spurious emissions measurements.

The EUT was connected to the test system as described in the block diagram below. The complete attenuation of the measurement path is known and considered.



Analyser settings:

- Frequency range: 5100 – 5400 MHz (U-NII band 1/2A)
 5430 – 5530 MHz (U-NII band 2C low BE)
 5655 – 5755 MHz (U-NII band 2C high BE)
 5611 – 5811 MHz (U-NII band 3 low BE)
 5765 – 5965 MHz (U-NII band 3 high BE)
- Resolution Bandwidth (RBW): 1000 kHz
- Video Bandwidth (VBW): 3000 kHz
- Trace: Maxhold, Average Power
- Sweeps: 10000
- Sweep Time: coupled
- Detector: Peak, RMS

For the conducted emissions in restricted bands the Value is measured in dBm and then converted to dBμV/m as given in KDB 558074:

1. Measure the conducted output power in dBm.
2. Add the maximum antenna gain in dBi. (Included in measurement result by offset)
3. Add the appropriate ground reflection factor (0 for measured range)
 6 dB for frequencies ≤ 30 MHz;
 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive; and
 0 dB for frequencies > 1000 MHz).
4. Convert the resultant EIRP level to an equivalent electric field strength level using the following relationship:
 $E = \text{EIRP} - 20 \log D + 104.8$
 Where E is the electric field strength in dBμV/m,
 EIRP is the equivalent isotropically radiated power in dBm
 D is the specified measurement distance in m

Value [dBμV/m] = Measured value [dBm] (including gain and ground reflection factor) – 20 log D + 104.8

5.4.2 TEST REQUIREMENTS / LIMITS

A) FCC

FCC Part 15 Subpart E, §15.407 (b)(1)

For transmitters operating in the 5150–5250 MHz band:

Limit: –27 dBm/MHz EIRP outside of the band 5150–5350 MHz.

FCC Part 15 Subpart E, §15.407 (b)(2)

For transmitters operating in the 5250–5350 MHz band:

Limit: –27 dBm/MHz EIRP outside of the band 5150–5350 MHz.

FCC Part 15 Subpart E, §15.407 (b)(3)

For transmitters operating in the 5470–5725 MHz band:

Limit: –27 dBm/MHz EIRP outside of the band 5470–5725 MHz.

FCC Part 15 Subpart E, §15.407 (b)(4)

For transmitters operating in the 5725–5850 MHz band:

Limit: –27 dBm/MHz at 75 MHz or more above or below the band edge
increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge
increasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edge
increasing linearly to 27 dBm/MHz at the band edge.

FCC Part 15 Subpart E, §15.407 (b) (5)

For transmitters operating within the 5.925–7.125 GHz band:

Limit: –27 dBm/MHz EIRP outside of the band 5.925–7.125 GHz.

FCC Part 15 Subpart E, §15.407 (b) (6)

For transmitters operating within the 5.925–7.125 GHz bands:

Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

B) IC

Different frequency bands and limits apply, as compared to the FCC requirements.

RSS-247, 6.2.1.2, Emissions outside the band 5150–5250 MHz, indoor operation only:

Limit: –27 dBm/MHz EIRP outside of the band 5150–5250 MHz.

RSS-247, 6.2.2.2, Emissions outside the band 5250–5350 MHz:

Limit: –27 dBm/MHz EIRP outside of the band 5250–5350 MHz.

RSS-247, 6.2.3.2, Emissions outside the bands 5470–5600 MHz and 5650–5725 MHz:

Limit: –27 dBm/MHz EIRP outside of the band 5470–5725 MHz.

However, devices with bandwidth overlapping the band edge of 5725 MHz can meet the emission limit of –27 dBm/MHz e.i.r.p. at 5850 MHz instead of 5725 MHz.

Note: No operation is permitted for the frequency range 5600–5650 MHz.

RSS-247, 6.2.4.2, Emissions outside the band 5725-5850 MHz:

- 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
- 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
- 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
- 27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

C) FCC & IC

For band edges connected to a restricted band, the limits are specified in Section 15.209(a)

FCC Part 15, Subpart C, §15.209, Radiated Emission Limits

Frequency in MHz	Limit (μV/m)	Measurement distance (m)	Limits (dBμV/m)
0.009 – 0.49	2400/F(kHz)@300m	3	(48.5 – 13.8)@300m
0.49 – 1.705	24000/F(kHz)@30m	3	(33.8 – 23.0)@30m
1.705 – 30	30@30m	3	29.5@30m

The measured values are corrected with an inverse linear distance extrapolation factor (40 dB/decade) according FCC 15.31 (2).

Frequency in MHz	Limit (μV/m)	Measurement distance (m)	Limits (dBμV/m)
30 – 88	100@3m	3	40.0@3m
88 – 216	150@3m	3	43.5@3m
216 – 960	200@3m	3	46.0@3m
960 – 26000	500@3m	3	54.0@3m
26000 – 40000	500@3m	1	54.0@3m

The measured values above 26 GHz are corrected with an inverse linear distance extrapolation factor (20 dB/decade).

§15.35(b) ..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

Used conversion factor: $\text{Limit (dB}\mu\text{V/m)} = 20 \log (\text{Limit } (\mu\text{V/m})/1\mu\text{V/m})$

5.4.3 TEST PROTOCOL

Ambient temperature: 24–30 °C
 Air Pressure: 990–1026 hPa
 Humidity: 30–40 %

WLAN a-Mode; 20 MHz; 6 Mbit/s
 Applied duty cycle correction (AV): 0 dB

Variant	Measurement Method	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin [dB]	Limit Type
354	Radiated	5180	5150	55.6	PEAK	1000	74	18.4	BE-RB
354	Radiated	5180	5150	42.0	AV	1000	54	12.0	BE-RB
354 Ant. A	Conducted	5180	5150	64.7	PEAK	1000	74	9.3	BE-RB
354 Ant. A	Conducted	5180	5150	46.3	AV	1000	54	7.7	BE-RB
354 Ant. B	Conducted	5180	5150	63.8	PEAK	1000	74	10.2	BE-RB
354 Ant. B	Conducted	5180	5150	48.8	AV	1000	54	5.2	BE-RB
354 Ant. A	Conducted	5200	5150	60.2	PEAK	1000	74	13.8	BE-RB
354 Ant. A	Conducted	5200	5150	45.5	AV	1000	54	8.5	BE-RB
354 Ant. B	Conducted	5200	5150	60.3	PEAK	1000	74	13.7	BE-RB
354 Ant. B	Conducted	5200	5150	46.7	AV	1000	54	7.3	BE-RB
354 Ant. A	Conducted	5300	5350	49.9	PEAK	1000	74	24.1	BE-RB
354 Ant. A	Conducted	5300	5350	38.5	AV	1000	54	15.5	BE-RB
354 Ant. B	Conducted	5300	5350	49.3	PEAK	1000	74	24.7	BE-RB
354 Ant. B	Conducted	5300	5350	38.4	AV	1000	54	15.6	BE-RB
354 Ant. A	Conducted	5320	5350	63.8	PEAK	1000	74	10.2	BE-RB
354 Ant. A	Conducted	5320	5350	45.8	AV	1000	54	8.2	BE-RB
354 Ant. B	Conducted	5320	5350	65.1	PEAK	1000	74	8.9	BE-RB
354 Ant. B	Conducted	5320	5350	48.3	AV	1000	54	5.7	BE-RB
354	Radiated	5320	5350	54.7	PEAK	1000	74	19.3	BE-RB
354	Radiated	5320	5350	41.9	AV	1000	54	12.1	BE-RB
354 Ant. A	Conducted	5500	5460	56.1	PEAK	1000	74	17.9	BE-RB
354 Ant. A	Conducted	5500	5460	40.7	AV	1000	54	13.3	BE-RB
354 Ant. B	Conducted	5500	5460	58.7	PEAK	1000	74	15.3	BE-RB
354 Ant. B	Conducted	5500	5460	41.4	AV	1000	54	12.6	BE-RB
354 Ant. A	Conducted	5500	5470	58.9	PEAK	1000	68.2	9.3	BE-UE
354 Ant. B	Conducted	5500	5470	62.6	PEAK	1000	68.2	5.6	BE-UE
354	Radiated	5500	5460	55.5	PEAK	1000	74	18.5	BE-RB
354	Radiated	5500	5460	42.3	AV	1000	54	11.7	BE-RB
354	Radiated	5500	5470	55.5	PEAK	1000	68.2	12.7	BE-UE
354 Ant. A	Conducted	5520	5460	60.4	PEAK	1000	74	13.6	BE-RB
354 Ant. A	Conducted	5520	5460	41.7	AV	1000	54	12.3	BE-RB
354 Ant. B	Conducted	5520	5460	61.1	PEAK	1000	74	12.9	BE-RB
354 Ant. B	Conducted	5520	5460	44.8	AV	1000	54	9.2	BE-RB
354 Ant. A	Conducted	5520	5470	60.5	PEAK	1000	68.2	7.7	BE-UE
354 Ant. B	Conducted	5680	5725	61.5	PEAK	1000	68.2	6.7	BE-UE
354	Radiated	5700	5725	55.6	PEAK	1000	68.2	12.6	BE-UE
354 Ant. A	Conducted	5700	5725	63.3	PEAK	1000	68.2	4.9	BE-UE
354 Ant. B	Conducted	5700	5725	63.5	PEAK	1000	68.2	4.7	BE-UE
354 Ant. A	Conducted	5745	5650	49.9	PEAK	1000	65.2	15.3	BE-UE
354 Ant. B	Conducted	5745	5650	50.7	PEAK	1000	65.2	14.5	BE-UE
354 Ant. A	Conducted	5745	5725	74.4	PEAK	1000	122.2	47.8	BE-UE
354 Ant. B	Conducted	5745	5725	75.4	PEAK	1000	122.2	46.8	BE-UE
354	Radiated	5745	5725	55.7	PEAK	1000	122.2	66.5	BE-UE
354 Ant. A	Conducted	5825	5850	70.6	PEAK	1000	122.2	51.6	BE-UE
354 Ant. B	Conducted	5825	5850	75.9	PEAK	1000	122.2	46.3	BE-UE
354	Radiated	5825	5850	56.3	PEAK	1000	122.2	65.9	BE-UE
354 Ant. A	Conducted	5825	5925	51.3	PEAK	1000	65.2	13.9	BE-UE
354 Ant. B	Conducted	5825	5925	50.7	PEAK	1000	65.2	14.5	BE-UE

WLAN n-Mode; 20 MHz; MCS8; MIMO
Applied duty cycle correction (AV): 0 dB

Variant	Measurement Method	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin [dB]	Limit Type
354 Ant. A	Conducted	5180	5150	59.0	PEAK	1000	74	15.0	BE-RB
354 Ant. A	Conducted	5180	5150	42.0	AV	1000	54	12.0	BE-RB
354 Ant. B	Conducted	5180	5150	60.5	PEAK	1000	74	13.5	BE-RB
354 Ant. B	Conducted	5180	5150	43.6	AV	1000	54	10.4	BE-RB
354 Ant. A	Conducted	5200	5150	56.7	PEAK	1000	74	17.3	BE-RB
354 Ant. A	Conducted	5200	5150	42.6	AV	1000	54	11.4	BE-RB
354 Ant. B	Conducted	5200	5150	57.5	PEAK	1000	74	16.5	BE-RB
354 Ant. B	Conducted	5200	5150	44.2	AV	1000	54	9.8	BE-RB
354 Ant. A	Conducted	5300	5350	55.9	PEAK	1000	74	18.1	BE-RB
354 Ant. A	Conducted	5300	5350	42.3	AV	1000	54	11.7	BE-RB
354 Ant. B	Conducted	5300	5350	58.7	PEAK	1000	74	15.3	BE-RB
354 Ant. B	Conducted	5300	5150	43.1	AV	1000	54	10.9	BE-RB
354 Ant. A	Conducted	5320	5350	62.1	PEAK	1000	74	11.9	BE-RB
354 Ant. A	Conducted	5320	5350	42.2	AV	1000	54	11.8	BE-RB
354 Ant. B	Conducted	5320	5350	62.9	PEAK	1000	74	11.1	BE-RB
354 Ant. B	Conducted	5320	5350	42.7	AV	1000	54	11.3	BE-RB
354 Ant. A	Conducted	5500	5460	55.2	PEAK	1000	74	18.8	BE-RB
354 Ant. A	Conducted	5500	5460	40.6	AV	1000	54	13.4	BE-RB
354 Ant. B	Conducted	5500	5460	58.1	PEAK	1000	74	15.9	BE-RB
354 Ant. B	Conducted	5500	5460	40.6	AV	1000	54	13.4	BE-RB
354 Ant. A	Conducted	5500	5470	57.0	PEAK	1000	68.2	11.2	BE-UE
354 Ant. B	Conducted	5500	5470	60.7	PEAK	1000	68.2	7.5	BE-UE
354 Ant. A	Conducted	5520	5460	53.5	PEAK	1000	74	20.5	BE-RB
354 Ant. A	Conducted	5520	5460	40.5	AV	1000	54	13.5	BE-RB
354 Ant. B	Conducted	5520	5460	57.8	PEAK	1000	74	16.2	BE-RB
354 Ant. B	Conducted	5520	5460	41.7	AV	1000	54	12.3	BE-RB
354 Ant. A	Conducted	5520	5470	58.7	PEAK	1000	68.2	9.5	BE-UE
354 Ant. B	Conducted	5520	5725	60.6	PEAK	1000	68.2	7.6	BE-UE
354 Ant. A	Conducted	5680	5725	56.4	PEAK	1000	74	17.6	BE-RB
354 Ant. A	Conducted	5680	5725	41.4	AV	1000	54	12.6	BE-RB
354 Ant. B	Conducted	5680	5725	59.5	PEAK	1000	74	14.5	BE-RB
354 Ant. B	Conducted	5680	5725	41.6	AV	1000	54	12.4	BE-RB
354 Ant. A	Conducted	5700	5725	61.9	PEAK	1000	74	12.1	BE-RB
354 Ant. A	Conducted	5700	5725	42.6	AV	1000	54	11.4	BE-RB
354 Ant. B	Conducted	5700	5725	63.8	PEAK	1000	74	10.2	BE-RB
354 Ant. B	Conducted	5700	5725	43.9	AV	1000	54	10.1	BE-RB
354 Ant. A	Conducted	5745	5650	50.7	PEAK	1000	65.2	14.5	BE-UE
354 Ant. B	Conducted	5745	5650	50.1	PEAK	1000	65.2	15.1	BE-UE
354 Ant. A	Conducted	5745	5725	73.3	PEAK	1000	122.2	48.9	BE-UE
354 Ant. B	Conducted	5745	5725	72.6	PEAK	1000	122.2	49.6	BE-UE
354 Ant. A	Conducted	5825	5850	50.4	PEAK	1000	65.2	14.8	BE-UE
354 Ant. B	Conducted	5825	5850	50.7	PEAK	1000	65.2	14.5	BE-UE
354 Ant. A	Conducted	5825	5925	67.1	PEAK	1000	122.2	55.1	BE-UE
354 Ant. B	Conducted	5825	5925	77.2	PEAK	1000	122.2	45.0	BE-UE

WLAN ac-Mode; 80 MHz; MCS0; SISO
Applied duty cycle correction (AV): 0 dB

Variant	Measurement Method	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin [dB]	Limit Type
354 Ant. A	Conducted	5775	5650	59.2	PEAK	1000	65.2	6.0	BE-UE
354 Ant. B	Conducted	5775	5650	59.7	PEAK	1000	65.2	5.5	BE-UE
354 Ant. A	Conducted	5775	5725	69.1	PEAK	1000	122.2	53.1	BE-UE
354 Ant. B	Conducted	5775	5725	69.5	PEAK	1000	122.2	52.7	BE-UE
354 Ant. A	Conducted	5775	5850	66.1	PEAK	1000	122.2	56.1	BE-UE
354 Ant. B	Conducted	5775	5850	66.9	PEAK	1000	122.2	55.3	BE-UE
354 Ant. A	Conducted	5775	5925	54.2	PEAK	1000	65.2	11.0	BE-UE
354 Ant. B	Conducted	5775	5925	54.4	PEAK	1000	65.2	10.8	BE-UE

WLAN ac-Mode; 80 MHz; MCS0; MIMO
Applied duty cycle correction (AV): 0 dB

Variant	Measurement Method	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin [dB]	Limit Type
354 Ant. A	Conducted	5775	5650	60.1	PEAK	1000	65.2	5.1	BE-UE
354 Ant. B	Conducted	5775	5650	57.8	PEAK	1000	65.2	7.4	BE-UE
354 Ant. A	Conducted	5775	5725	69.5	PEAK	1000	122.2	52.7	BE-UE
354 Ant. B	Conducted	5775	5725	71.1	PEAK	1000	122.2	51.1	BE-UE
354 Ant. A	Conducted	5775	5850	66.8	PEAK	1000	122.2	55.4	BE-UE
354 Ant. B	Conducted	5775	5850	67.1	PEAK	1000	122.2	55.1	BE-UE
354 Ant. A	Conducted	5775	5925	58.0	PEAK	1000	65.2	7.2	BE-UE
354 Ant. B	Conducted	5775	5925	56.9	PEAK	1000	65.2	8.3	BE-UE

WLAN ax-Mode; 40 MHz; MCS0; SISO
Applied duty cycle correction (AV): 0 dB

Variant	Measurement Method	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin [dB]	Limit Type
354 Ant. A	Conducted	5745	5650	50.6	PEAK	1000	65.2	14.6	BE-UE
354 Ant. B	Conducted	5745	5650	61.0	PEAK	1000	65.2	4.2	BE-UE
354 Ant. A	Conducted	5745	5725	71.7	PEAK	1000	122.2	50.5	BE-UE
354 Ant. B	Conducted	5745	5725	85.5	PEAK	1000	122.2	36.7	BE-UE
354 Ant. A	Conducted	5745	5850	51.8	PEAK	1000	65.2	13.4	BE-UE
354 Ant. B	Conducted	5745	5850	63.4	PEAK	1000	65.2	1.8	BE-UE
354 Ant. A	Conducted	5745	5925	50.1	PEAK	1000	122.2	72.1	BE-UE
354 Ant. B	Conducted	5745	5925	51.5	PEAK	1000	122.2	70.7	BE-UE

WLAN ax-Mode; 80 MHz; MCS0; SISO
Applied duty cycle correction (AV): 0 dB

Variant	Measurement Method	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin [dB]	Limit Type
354 Ant. A	Conducted	5775	5650	55.9	PEAK	1000	65.2	9.3	BE-UE
354 Ant. B	Conducted	5775	5650	57.0	PEAK	1000	65.2	8.2	BE-UE
354 Ant. A	Conducted	5775	5725	67.6	PEAK	1000	122.2	54.6	BE-UE
354 Ant. B	Conducted	5775	5725	66.1	PEAK	1000	122.2	56.1	BE-UE
354 Ant. A	Conducted	5775	5850	64.1	PEAK	1000	122.2	58.1	BE-UE
354 Ant. B	Conducted	5775	5850	65.5	PEAK	1000	122.2	56.7	BE-UE
354 Ant. A	Conducted	5775	5925	52.5	PEAK	1000	65.2	12.7	BE-UE
354 Ant. B	Conducted	5775	5925	55.6	PEAK	1000	65.2	9.6	BE-UE

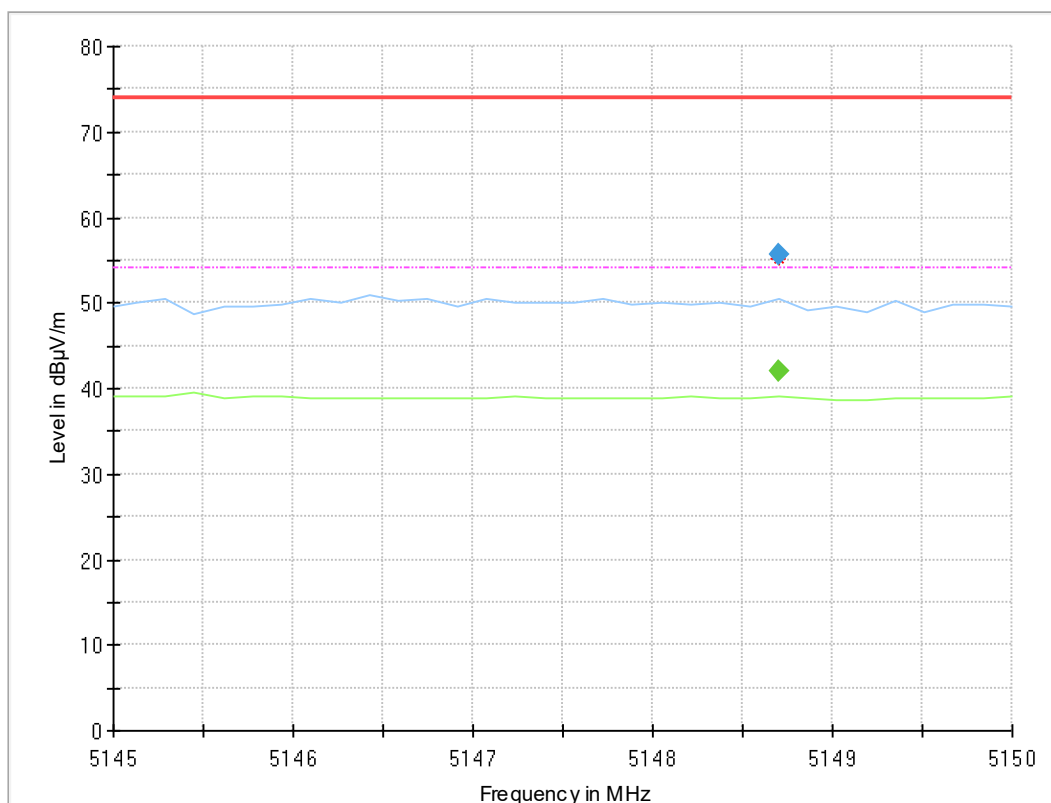
WLAN ax-Mode; 80 MHz; MCS0; MIMO
 Applied duty cycle correction (AV): 0 dB

Variant	Measurement Method	Ch. Center Freq. [MHz]	Band Edge Freq. [MHz]	Spurious Level [dBμV/m]	Detector	RBW [kHz]	Limit [dBμV/m]	Margin [dB]	Limit Type
354 Ant. A	Conducted	5775	5650	57.6	PEAK	1000	65.2	7.6	BE-UE
354 Ant. B	Conducted	5775	5650	60.0	PEAK	1000	65.2	5.2	BE-UE
354 Ant. A	Conducted	5775	5725	68.5	PEAK	1000	122.2	53.7	BE-UE
354 Ant. B	Conducted	5775	5725	67.3	PEAK	1000	122.2	54.9	BE-UE
354 Ant. A	Conducted	5775	5850	64.4	PEAK	1000	122.2	57.8	BE-UE
354 Ant. B	Conducted	5775	5850	64.9	PEAK	1000	122.2	57.3	BE-UE
354 Ant. A	Conducted	5775	5925	53.8	PEAK	1000	65.2	11.4	BE-UE
354 Ant. B	Conducted	5775	5925	53.1	PEAK	1000	65.2	12.1	BE-UE

Remark: Please see next sub-clause for the measurement plot.

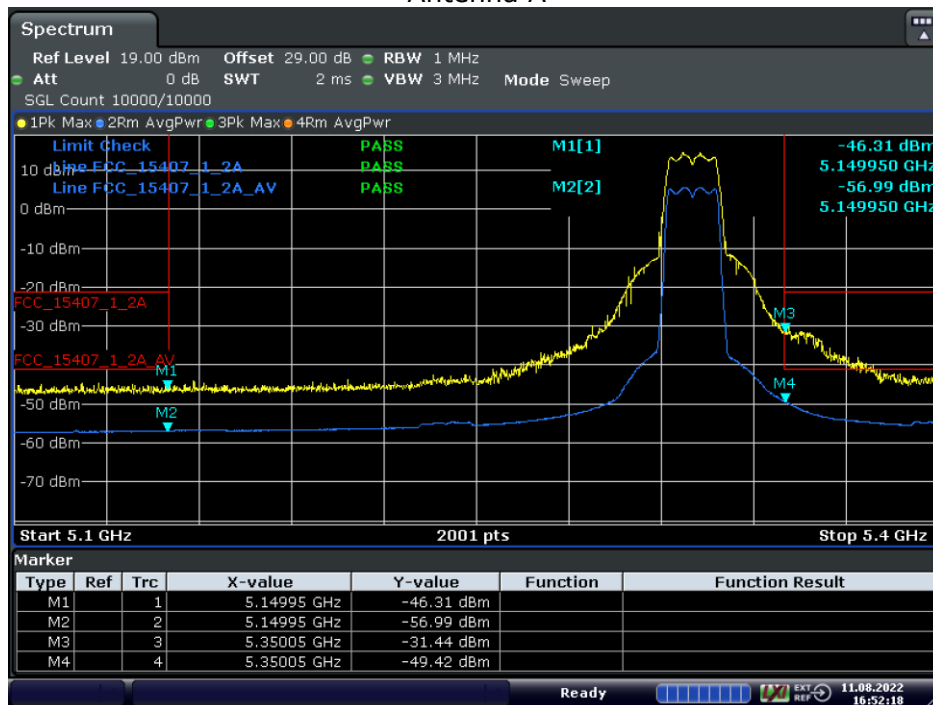
5.4.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

Radio Technology = WLAN a, Operating Frequency = low, Subband = U-NII-1
(S02_354_AB01)



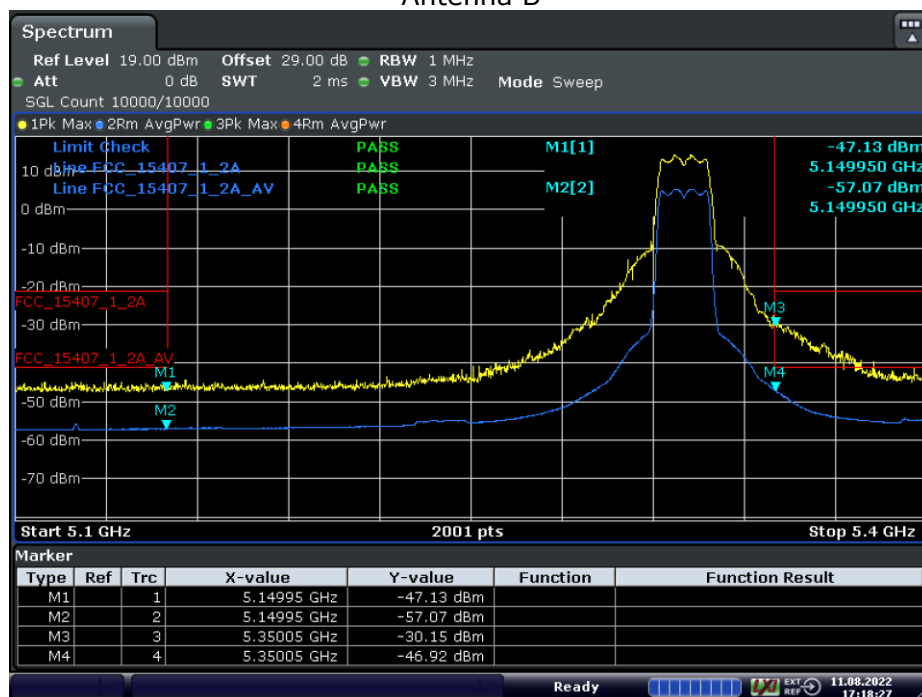
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
5148.700	55.6	---	74.00	18.38	1000.0	1000.000	150.0	H	101.0	0.0	13.5
5148.700	---	42.0	54.00	11.95	1000.0	1000.000	150.0	H	101.0	0.0	13.5

Radio Technology = WLAN a, Operating Frequency = high, Subband = U-NII-1
(S01_354_AA01)
Antenna A



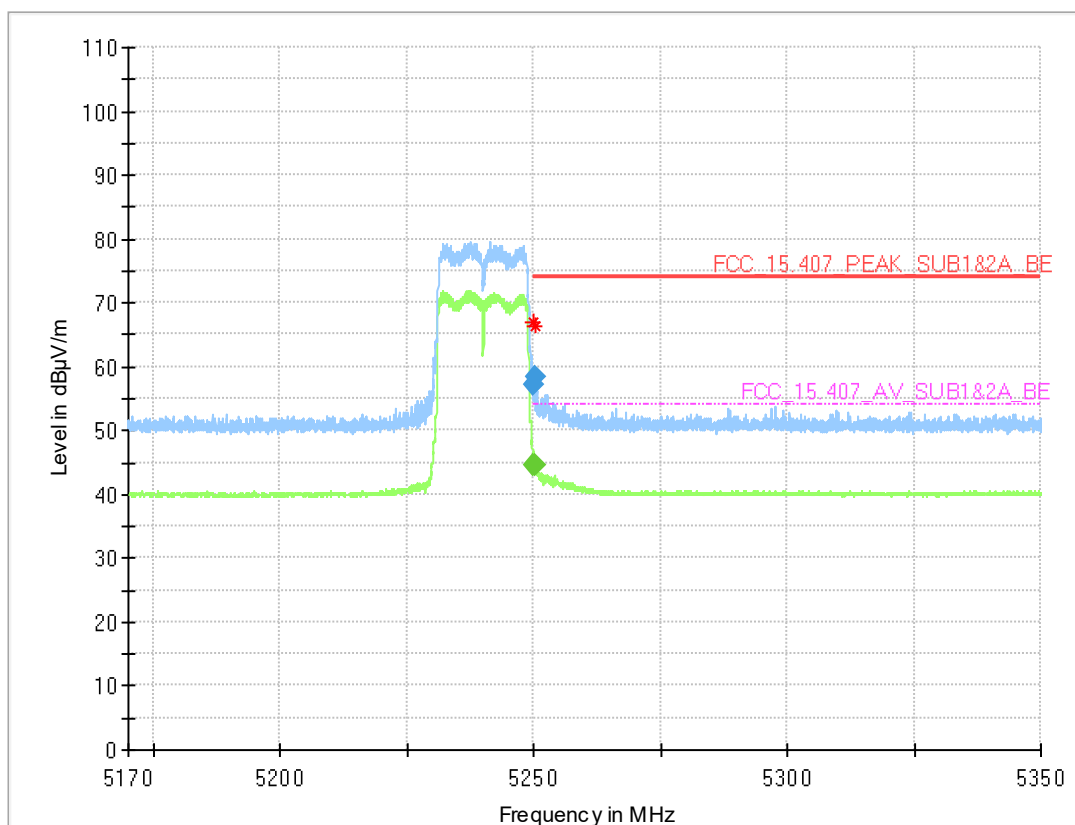
Date: 11.AUG.2022 16:52:19

Antenna B



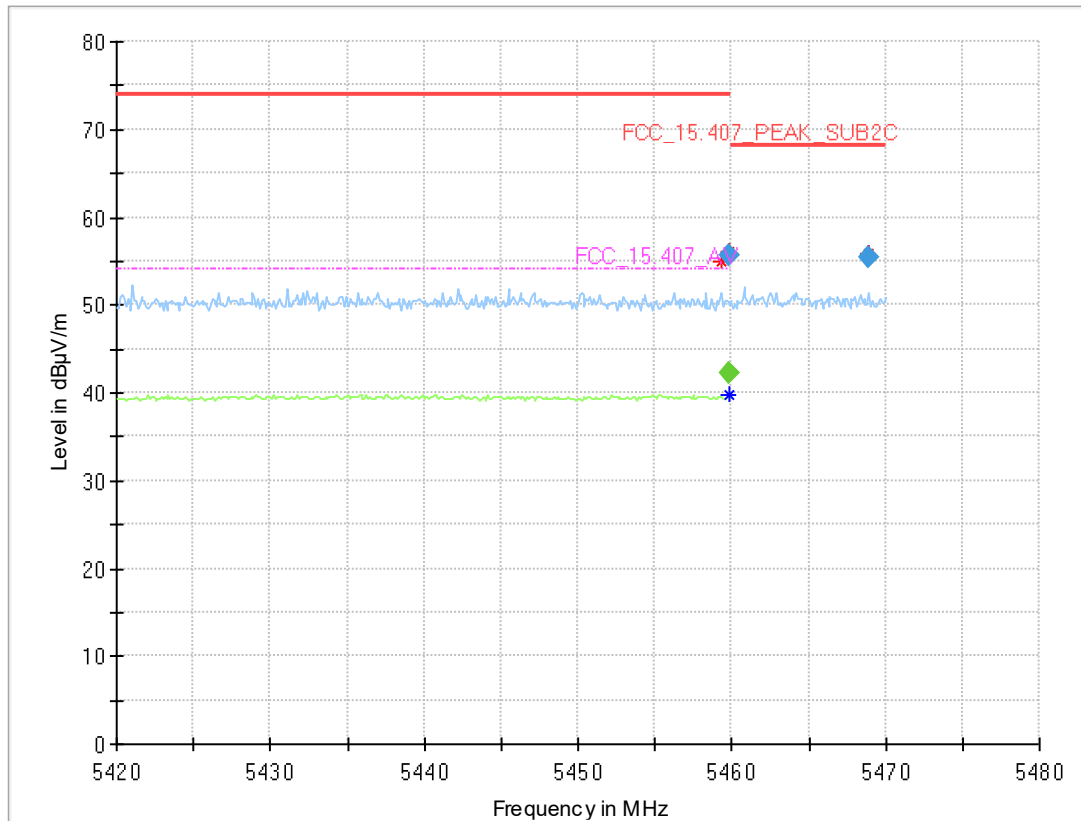
Date: 11.AUG.2022 17:18:28

Radio Technology = WLAN a, Operating Frequency = high, Subband = U-NII-1
(S02_354_AB01)



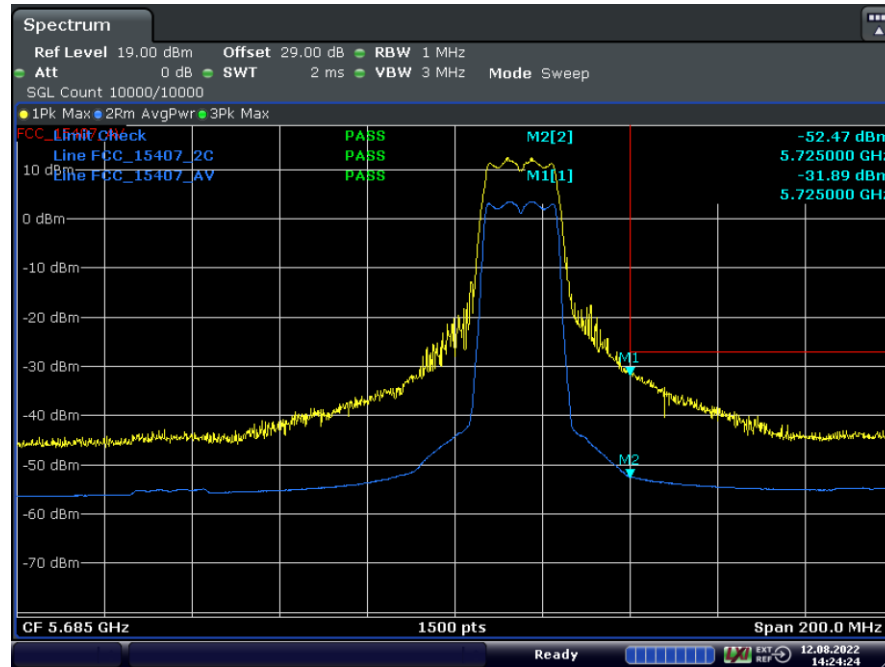
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
5250.010	---	44.5	54.00	9.46	1000.0	200.000	150.0	H	136.0	92.0	13.6
5250.010	57.2	---	74.00	16.78	1000.0	200.000	150.0	H	136.0	92.0	13.6
5250.160	---	44.4	54.00	9.56	1000.0	200.000	150.0	H	139.0	88.0	13.6
5250.160	58.3	---	74.00	15.74	1000.0	200.000	150.0	H	139.0	88.0	13.6

Radio Technology = WLAN a, Operating Frequency = low, Subband = U-NII-2C
(S02_354_AB01)



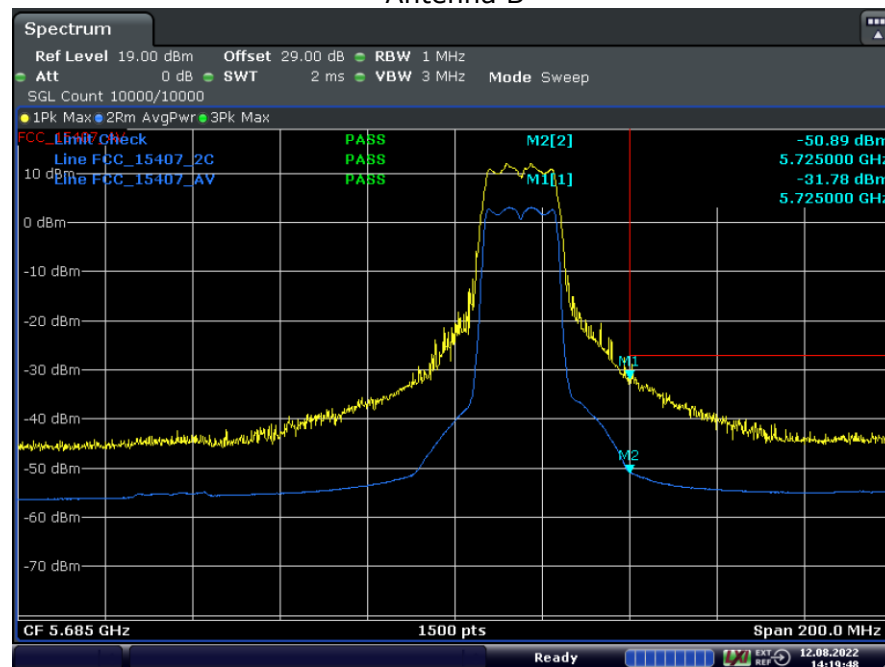
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
5459.780	55.5	---	74.00	18.47	1000.0	1000.000	150.0	V	3.0	91.0	14.5
5459.780	---	42.3	54.00	11.72	1000.0	1000.000	150.0	V	3.0	91.0	14.5
5468.900	55.5	---	68.20	12.70	1000.0	1000.000	150.0	V	-40.0	15.0	14.5

Radio Technology = WLAN a, Operating Frequency = high, Subband = U-NII-2C
(S01_354_AA01)
Antenna A



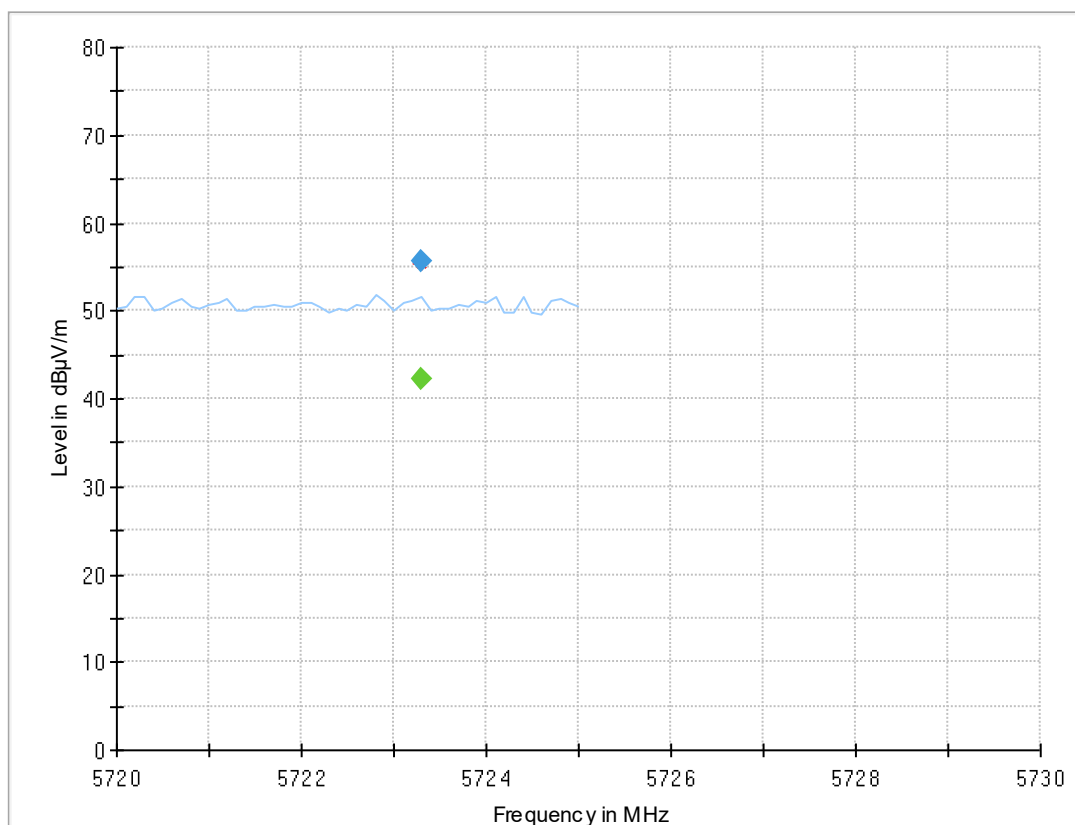
Date: 12.AUG.2022 14:24:25

Antenna B



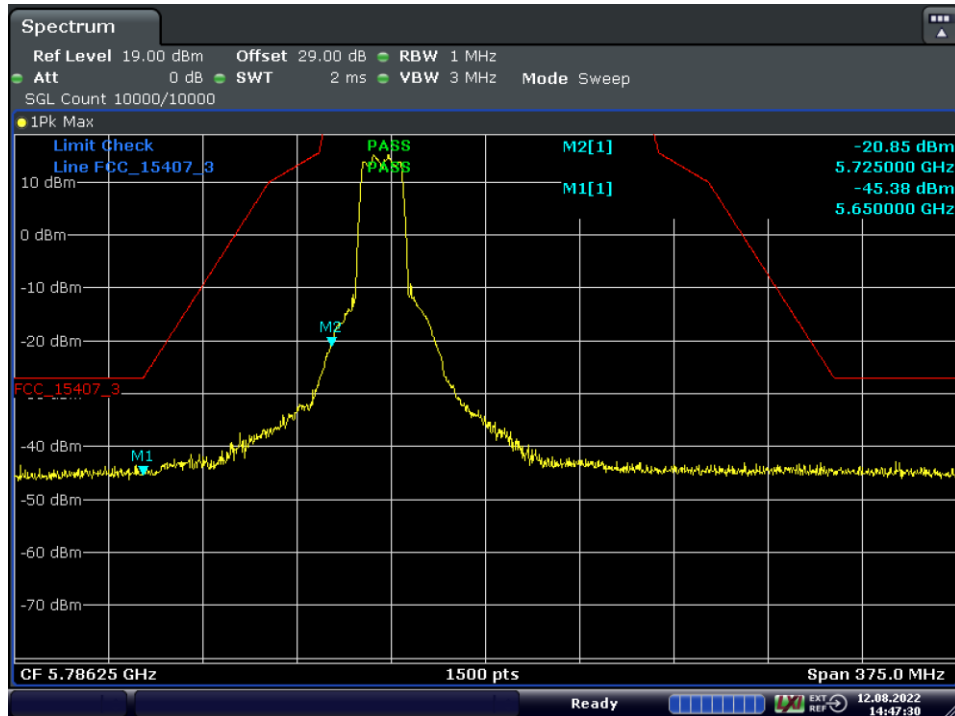
Date: 12.AUG.2022 14:19:49

Radio Technology = WLAN a, Operating Frequency = low, Subband = U-NII-3
(S02_354_AB01)



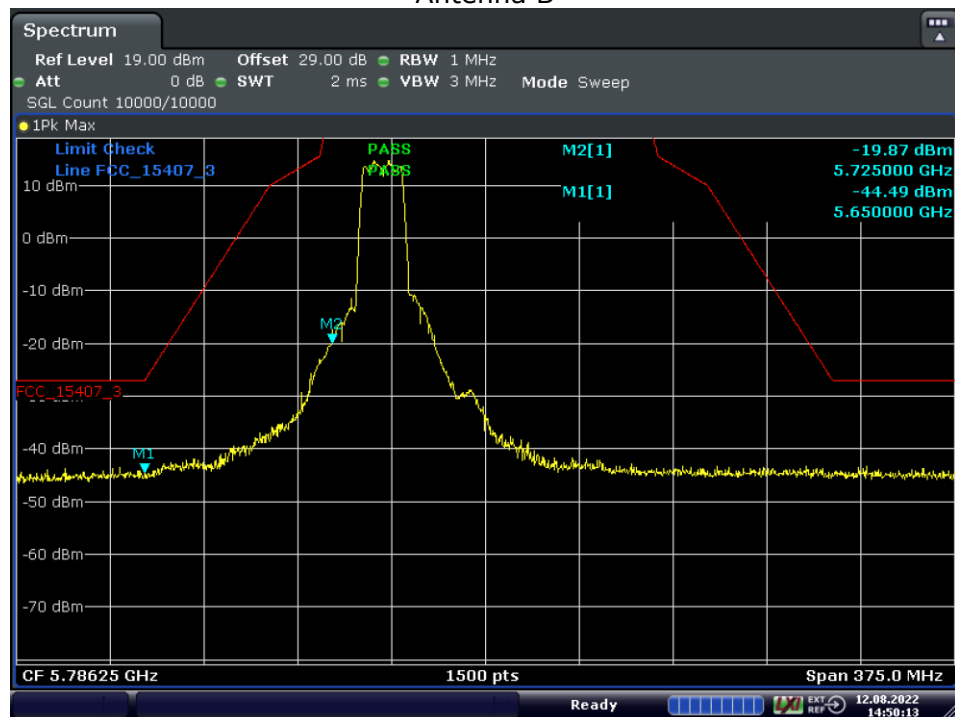
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
5723.300	---	42.3	---	---	1000.0	1000.000	150.0	V	-45.0	15.0	14.2
5723.300	55.7	---	118.32	62.63	1000.0	1000.000	150.0	V	-45.0	15.0	14.2

Radio Technology = WLAN a, Operating Frequency = low, Subband = U-NII-3
(S01_354_AA01)
Antenna A



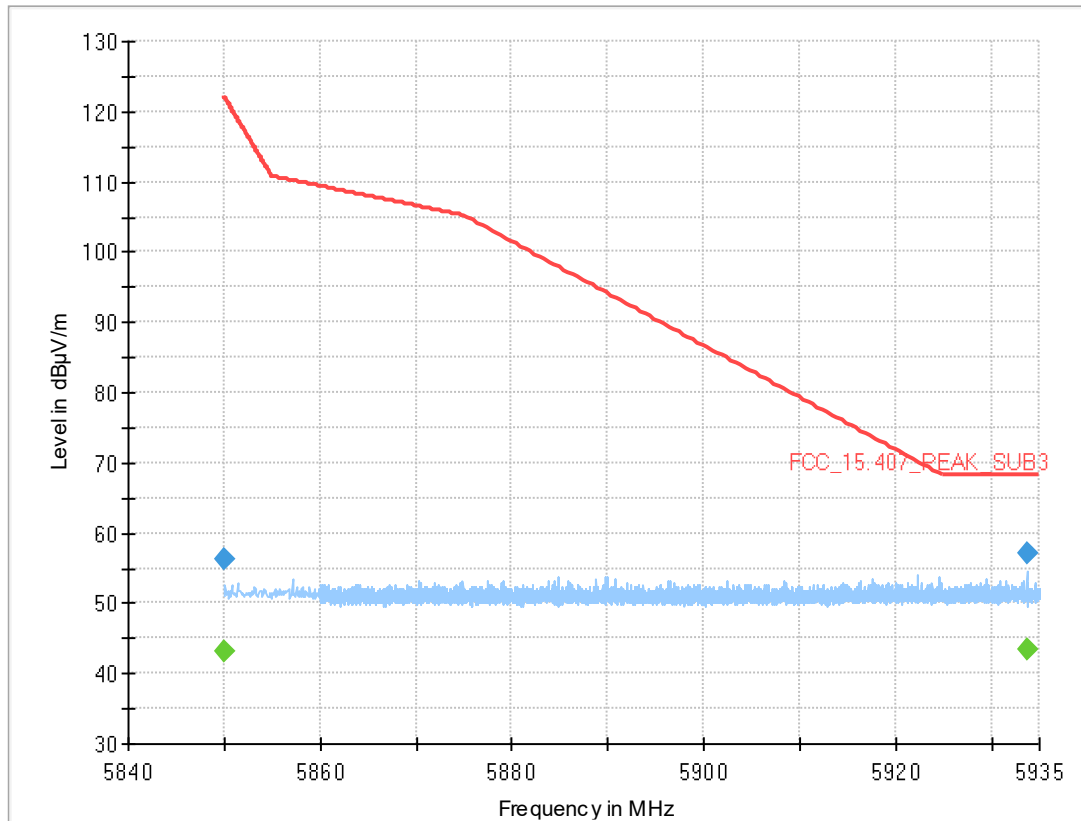
Date: 12.AUG.2022 14:47:31

Antenna B



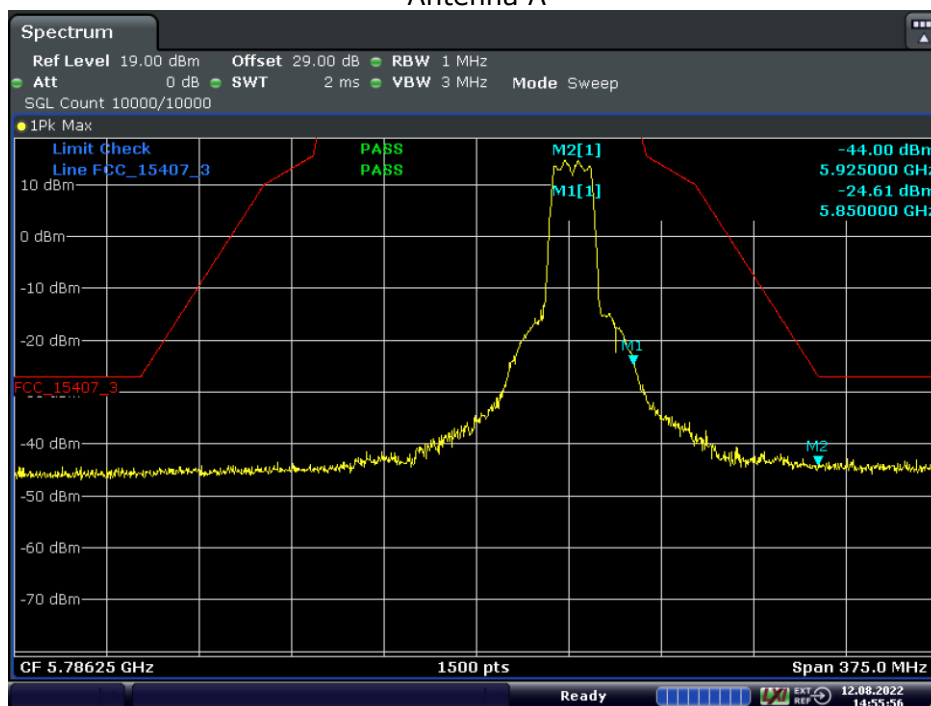
Date: 12.AUG.2022 14:50:13

Radio Technology = WLAN a, Operating Frequency = high, Subband = U-NII-3
(S02_354_AB01)



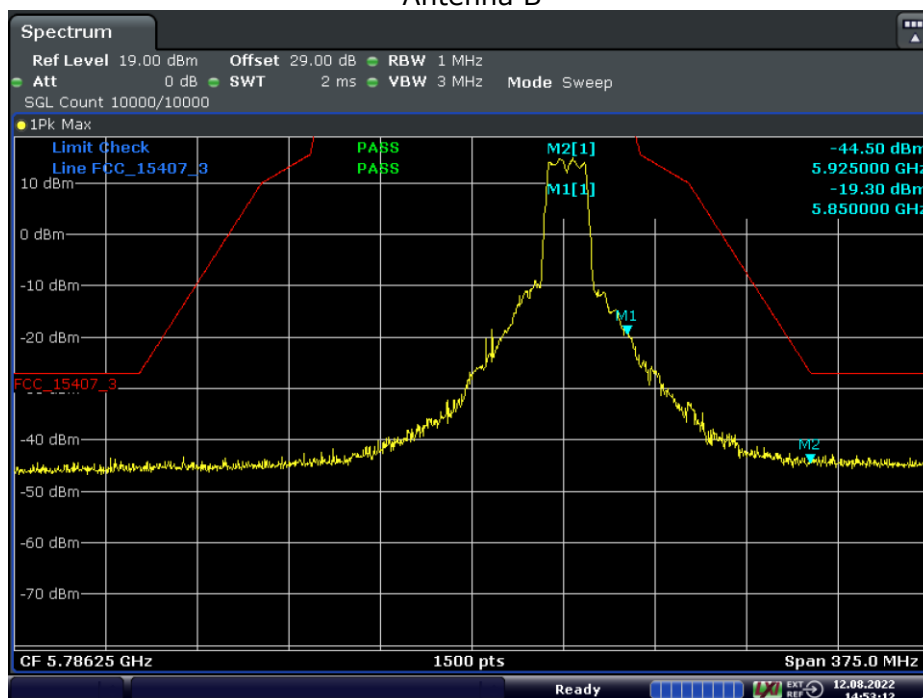
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
5850.100	---	43.2	---	---	1000.0	1000.000	150.0	H	-99.0	15.0	14.9
5850.100	56.3	---	121.97	65.69	1000.0	1000.000	150.0	H	-99.0	15.0	14.9
5933.673	---	43.3	---	---	1000.0	1000.000	150.0	H	-1.0	11.0	15.0
5933.673	57.1	---	68.20	11.08	1000.0	1000.000	150.0	H	-1.0	11.0	15.0

Radio Technology = WLAN a, Operating Frequency = high, Subband = U-NII-3
(S01_354_AA01)
Antenna A



Date: 12.AUG.2022 14:55:57

Antenna B



Date: 12.AUG.2022 14:53:12

Radio Technology = WLAN n 20 MHz MIMO, Operating Frequency = low, Subband = U-NII-1
(S01_354_AA01)
Antenna A



Date: 12.AUG.2022 15:56:57

Antenna B



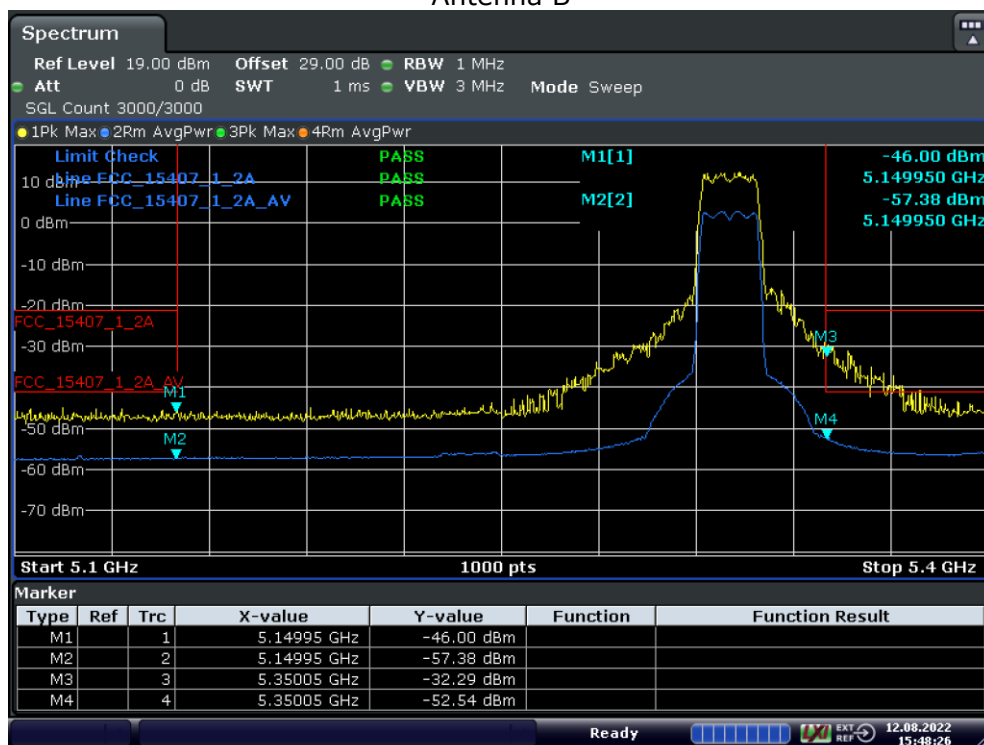
Date: 12.AUG.2022 15:54:59

Radio Technology = WLAN n 20 MHz MIMO, Operating Frequency = high, Subband = U-NII-1
(S01_354_AA01)
Antenna A



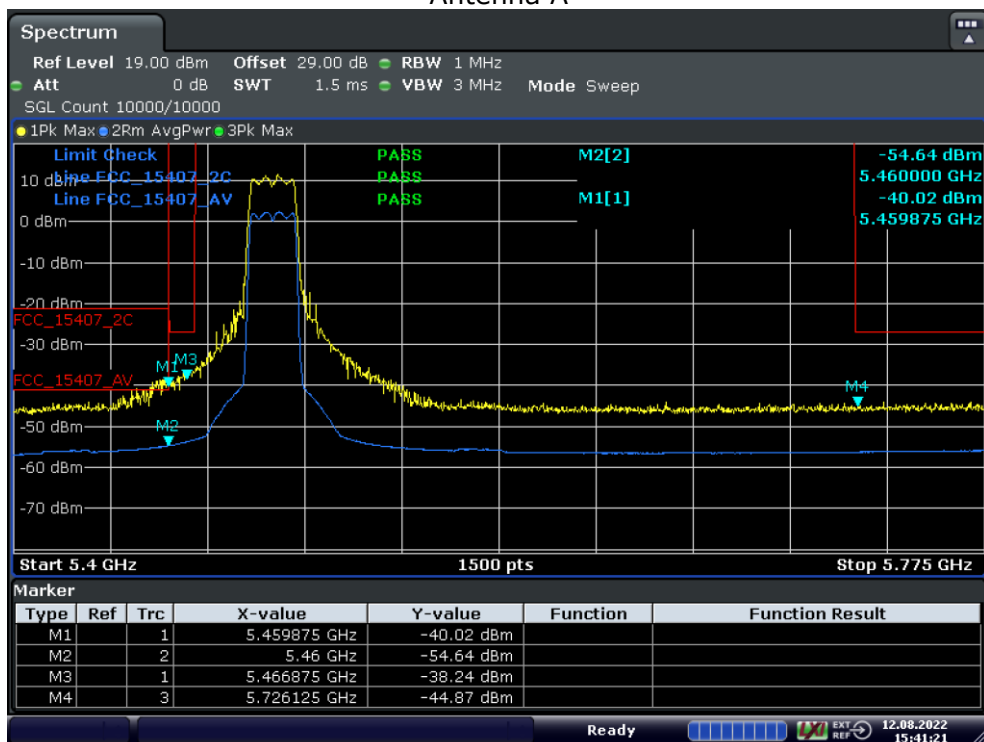
Date: 12.AUG.2022 15:47:09

Antenna B



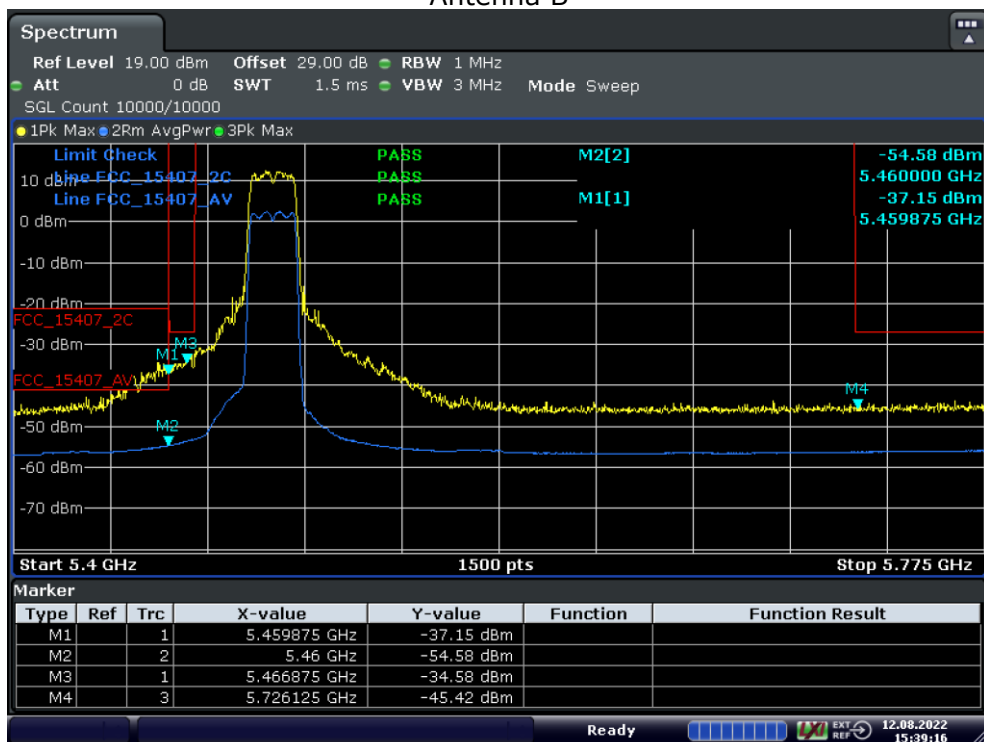
Date: 12.AUG.2022 15:48:26

Radio Technology = WLAN n 20 MHz MIMO, Operating Frequency = low, Subband = U-NII-2C
(S01_354_AA01)
Antenna A



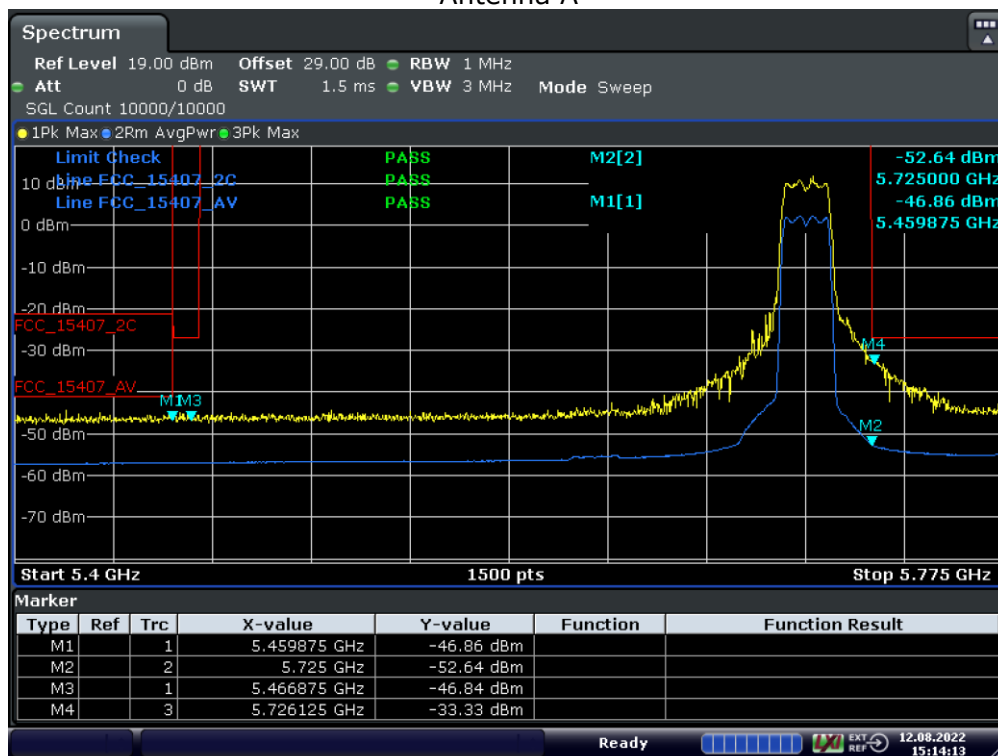
Date: 12.AUG.2022 15:41:21

Antenna B



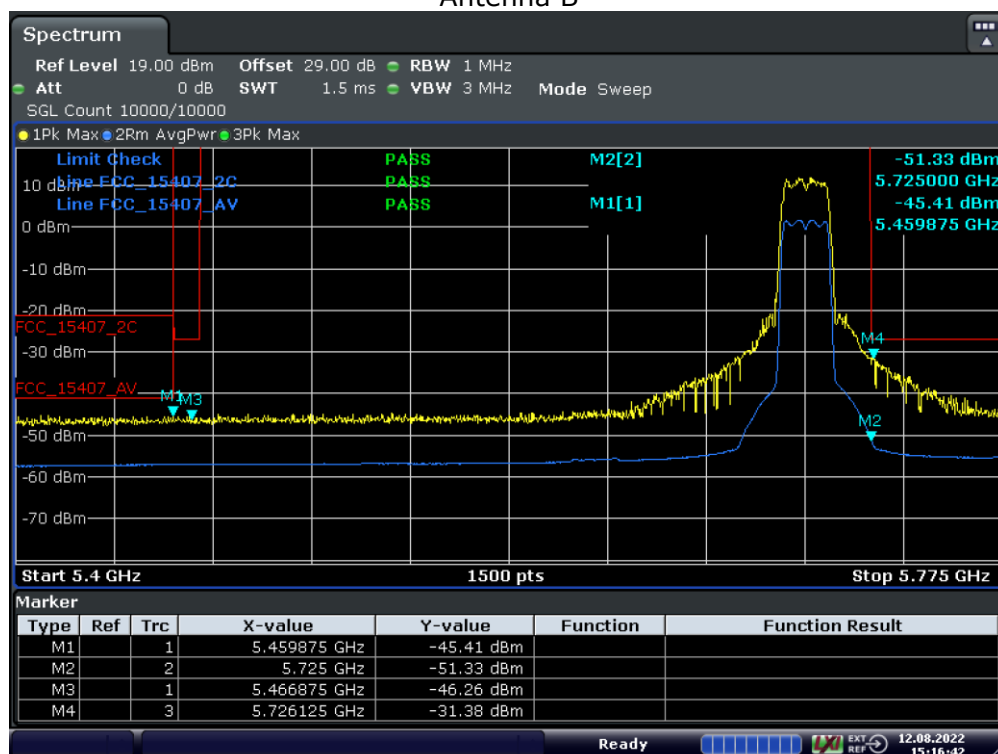
Date: 12.AUG.2022 15:39:17

Radio Technology = WLAN n 20 MHz MIMO, Operating Frequency = high, Subband = U-NII-2C
(S01_354_AA01)
Antenna A



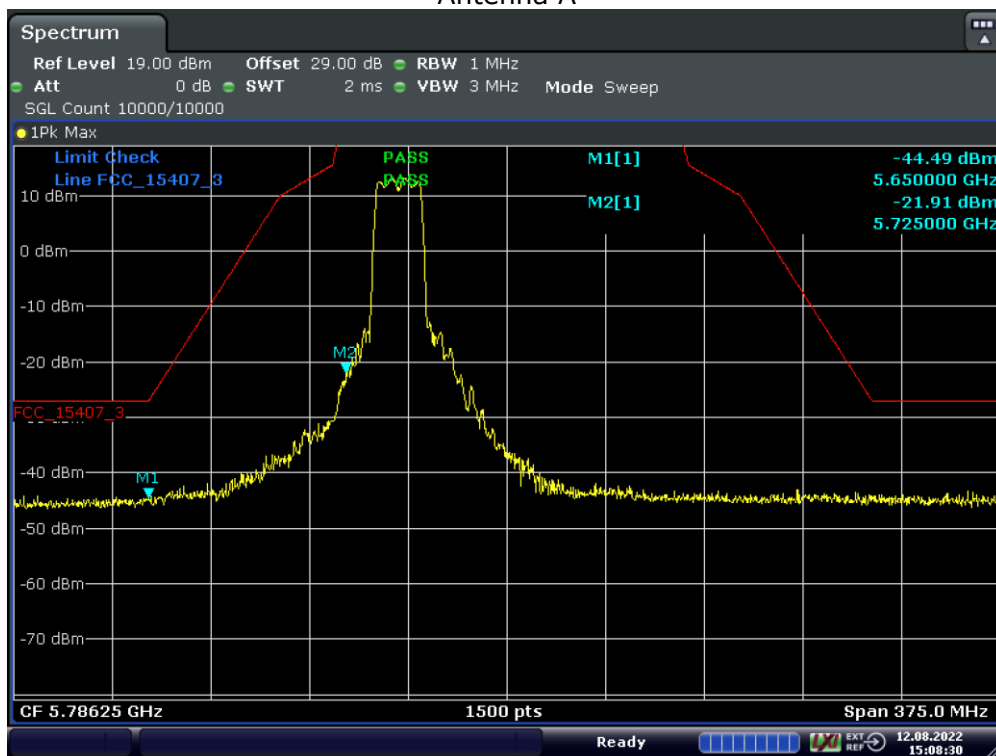
Date: 12.AUG.2022 15:14:13

Antenna B



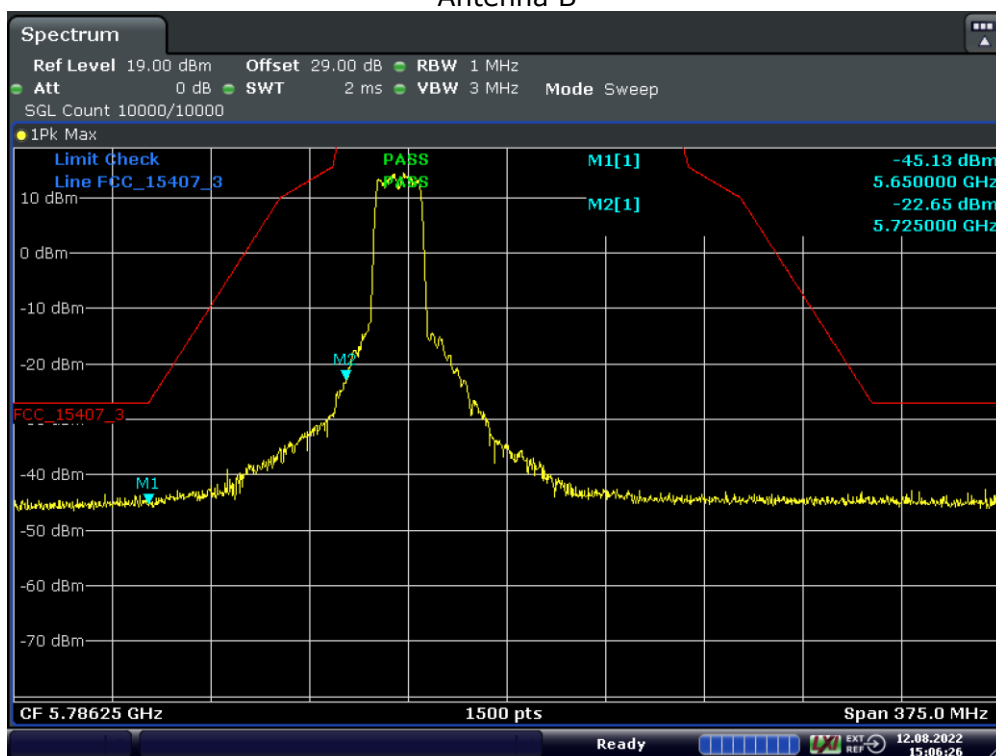
Date: 12.AUG.2022 15:16:42

Radio Technology = WLAN n 20 MHz MIMO, Operating Frequency = low, Subband = U-NII-3
(S01_354_AA01)
Antenna A



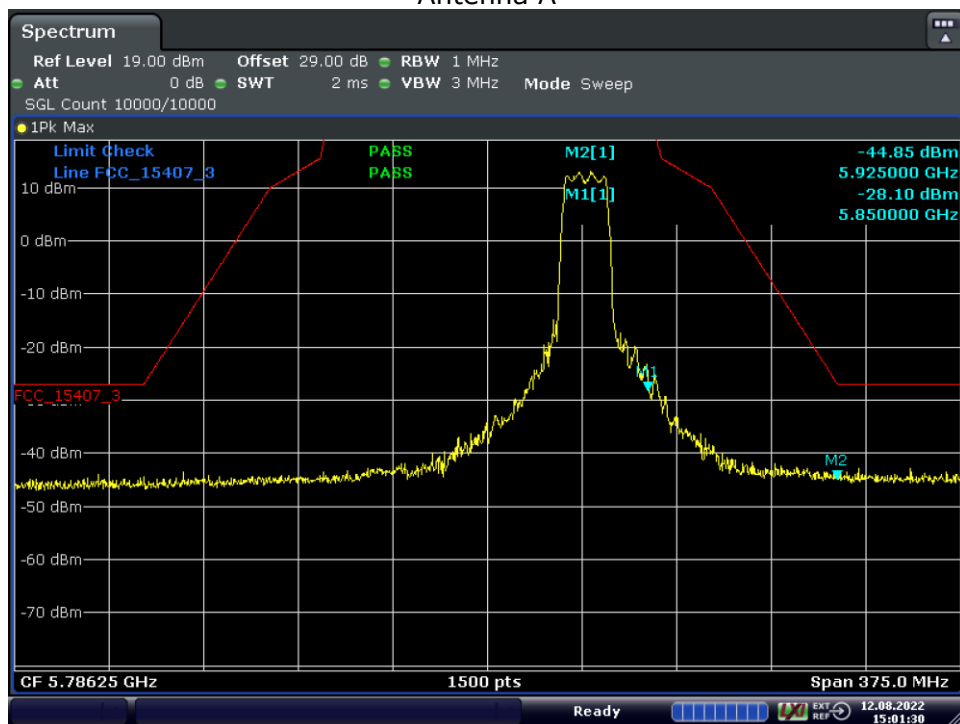
Date: 12.AUG.2022 15:08:30

Antenna B



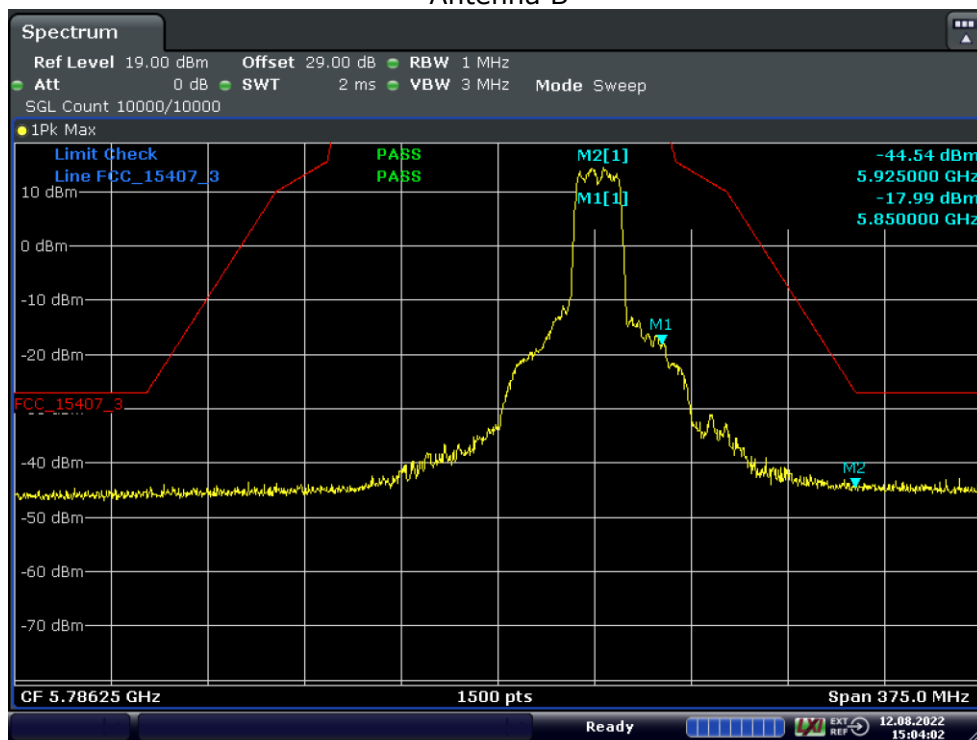
Date: 12.AUG.2022 15:06:26

Radio Technology = WLAN n 20 MHz MIMO, Operating Frequency = high, Subband = U-NII-3
(S01_354_AA01)
Antenna A



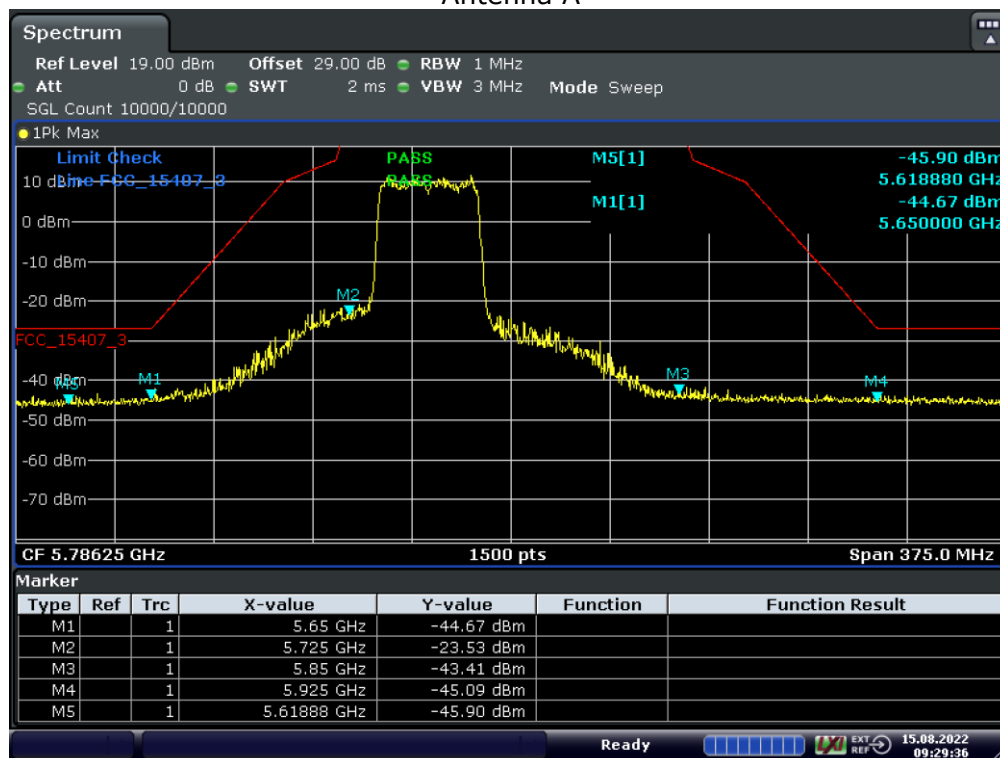
Date: 12.AUG.2022 15:01:30

Antenna B



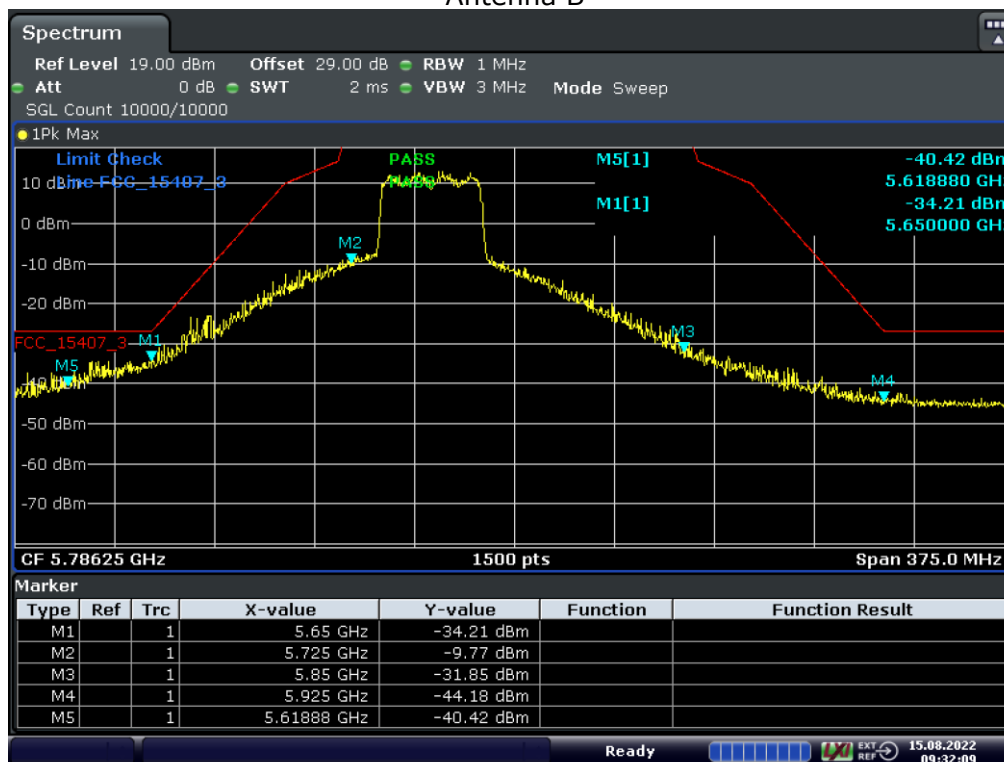
Date: 12.AUG.2022 15:04:03

Radio Technology = WLAN ax 40 MHz MIMO, Operating Frequency = low, Subband = U-NII-3
(S01_354_AA01)
Antenna A



Date: 15.AUG.2022 09:29:36

Antenna B



Date: 15.AUG.2022 09:32:09

Radio Technology = WLAN ax 80 MHz MIMO, Operating Frequency = low, Subband = U-NII-3
(S01_354_AA01)
Antenna A



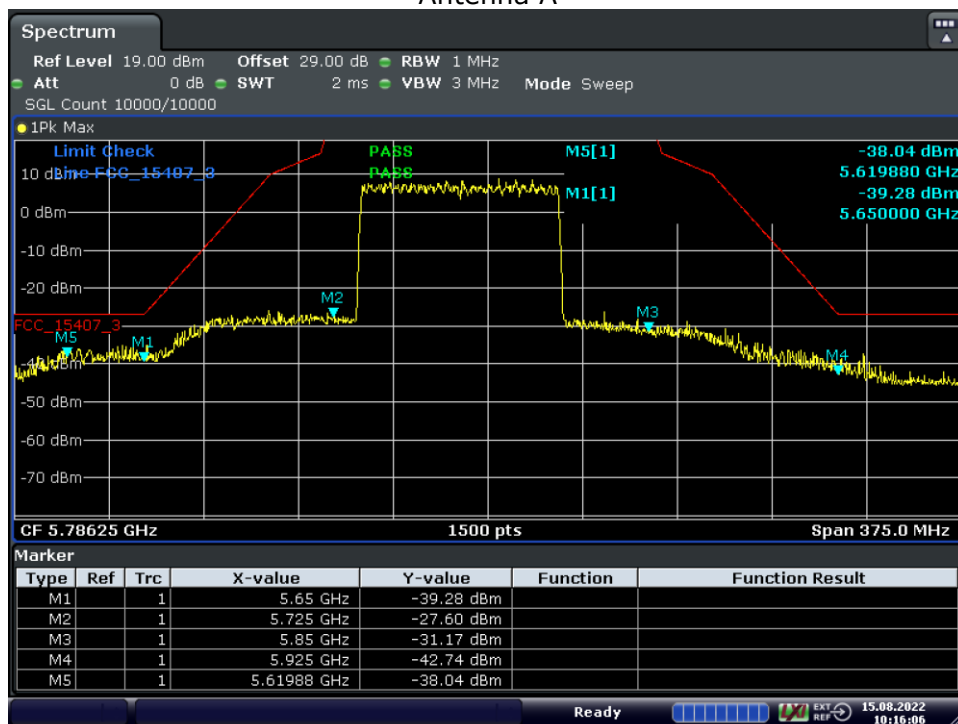
Date: 15.AUG.2022 10:08:45

Antenna B



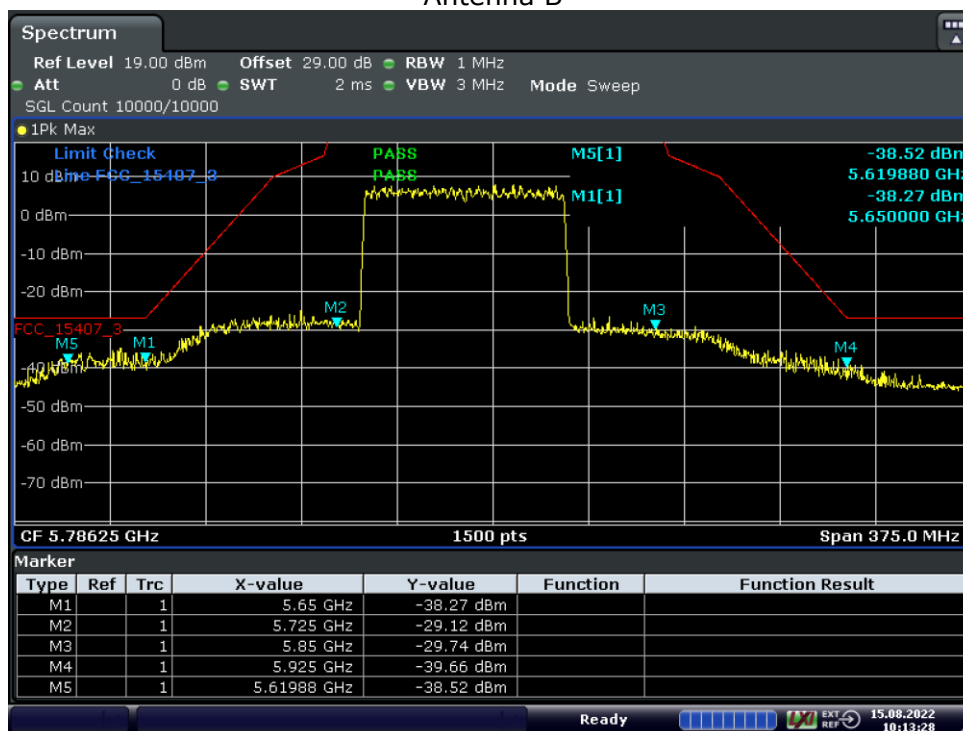
Date: 15.AUG.2022 10:05:47

Radio Technology = WLAN ax 80 MHz SISO, Operating Frequency = low, Subband = U-NII-3
(S01_354_AA01)
Antenna A



Date: 15.AUG.2022 10:16:07

Antenna B



Date: 15.AUG.2022 10:13:29

Radio Technology = WLAN ac 80 MHz MIMO, Operating Frequency = low, Subband = U-NII-3
(S01_354_AA01)
Antenna A



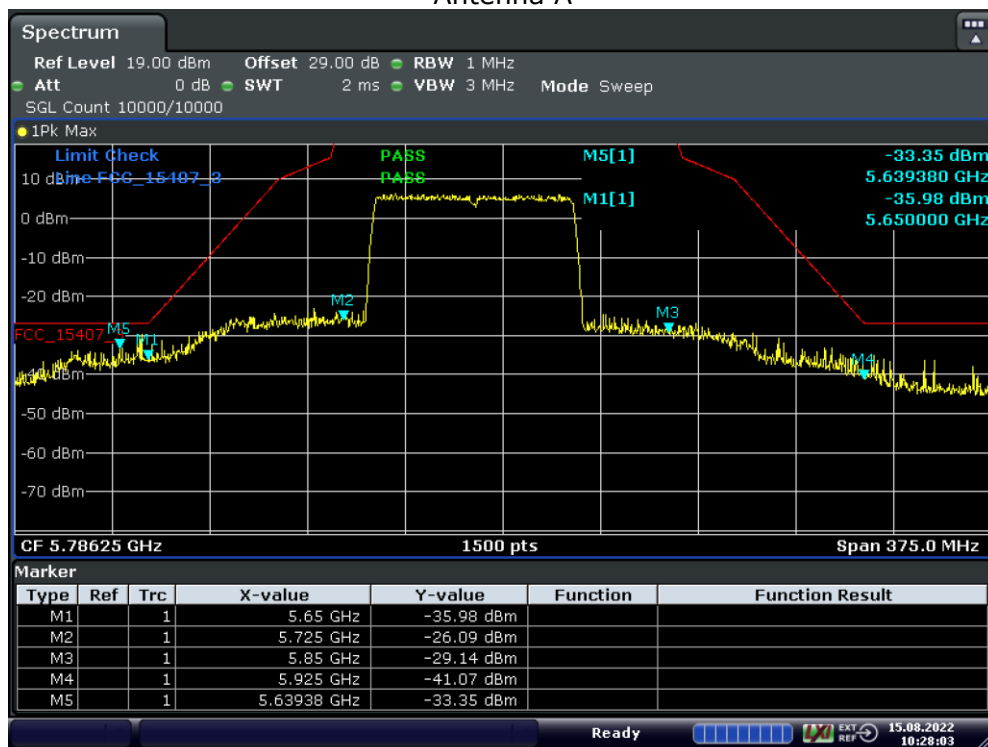
Date: 15.AUG.2022 10:18:33

Antenna B



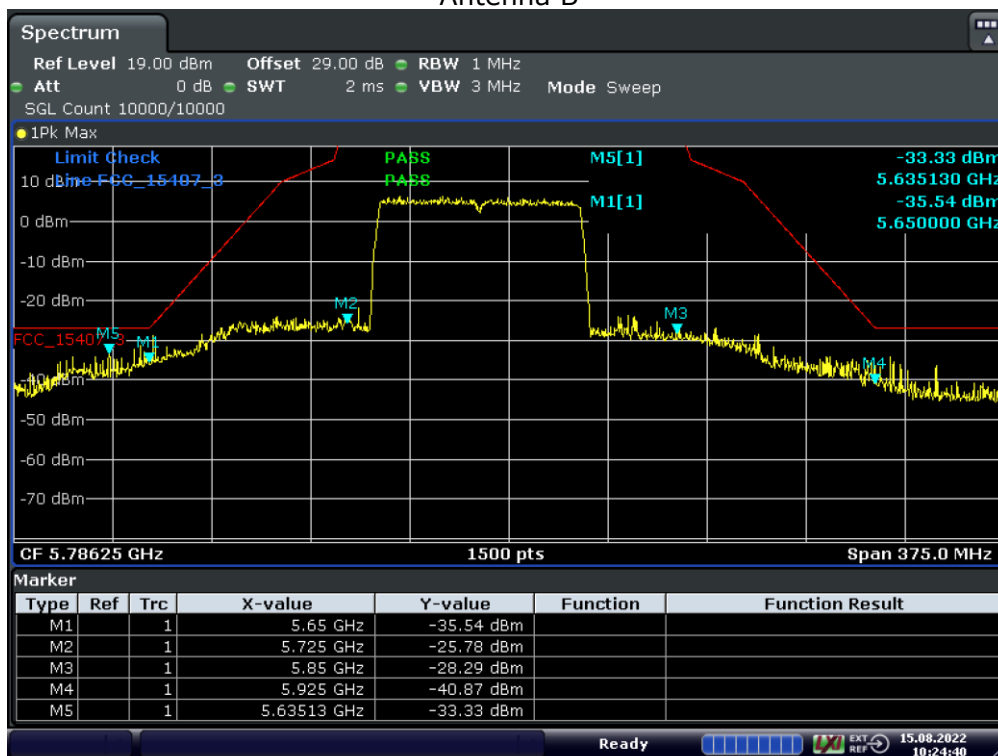
Date: 15.AUG.2022 10:21:03

Radio Technology = WLAN ac 80 MHz SISO, Operating Frequency = low, Subband = U-NII-3
(S01_354_AA01)
Antenna A



Date: 15.AUG.2022 10:28:04

Antenna B



Date: 15.AUG.2022 10:24:41

5.4.5 TEST EQUIPMENT USED

- Radiated Emissions FAR 5 GHz FCC
- R&S TS8997
- Radio Lab

6 TEST EQUIPMENT

- 1 Conducted Emissions FCC
Conducted Emissions AC Mains for FCC standards

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
1.1	MFS	Rubidium Frequency Normal MFS	Datum GmbH	002	2021-11	2022-11
1.2	Opus10 TPR (8253.00)	T/P Logger 13	Lufft Mess- und Regeltechnik GmbH	13936	2021-10	2023-10
1.3	Chroma 6404	AC Source	Chroma ATE INC.	64040001304		
1.4	Shielded Room 02	Shielded Room 4m x 3m	Frankonia Germany EMC Solution GmbH	-		
1.5	ESH3-Z5	Two-Line V-Network (EUT)	Rohde & Schwarz GmbH & Co. KG	829996/002	2021-08	2023-08
1.6	ESR 7	EMI Receiver / Spectrum Analyzer	Rohde & Schwarz	101424	2021-01	2023-01
1.7	Opus10 THI (8152.00)	T/H Logger 02	Lufft Mess- und Regeltechnik GmbH	7489	2021-10	2023-10

- 2 R&S TS8997
2.4 and 5 GHz Bands Conducted Test Lab

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
2.1	MFS	Rubidium Frequency Normal MFS	Datum GmbH	002	2021-11	2022-11
2.2	Opus10 TPR (8253.00)	T/P Logger 13	Lufft Mess- und Regeltechnik GmbH	13936	2021-10	2023-10
2.3	SMB100A	Signal Generator 9 kHz - 6 GHz	Rohde & Schwarz	107695	2021-06	2024-06
2.4	NGSM 32/10	Power Supply	Rohde & Schwarz GmbH & Co. KG	3456	2022-01	2024-01
2.5	FSW43	Signal analyser	Rohde & Schwarz GmbH & Co. KG	102013	2021-06	2023-06
2.6	Opus10 THI (8152.00)	T/H Logger 14	Lufft Mess- und Regeltechnik GmbH	13993	2021-08	2023-08
2.7	SMBV100A	Vector Signal Generator 9 kHz - 6 GHz	Rohde & Schwarz	259291	2019-11	2022-11
2.8	OSP120	Contains Power Meter and Switching Unit OSP-B157W8	Rohde & Schwarz	101158	2021-08	2024-08

3 Radiated Emissions FAR 5 GHz FCC
Radiated Emissions Tests for 5 GHz bands in a fully anechoic room

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
3.1	Opus10 TPR (8253.00)	T/P Logger 13	Lufft Mess- und Regeltechnik GmbH	13936	2021-10	2023-10
3.2	AMF-7D00101800-30-10P-R	Broadband Amplifier 100 MHz - 18 GHz	Miteq			
3.3	Anechoic Chamber 03	FAR, 8.80m x 4.60m x 4.05m (l x w x h)	Albatross Projects	P26971-647-001-PRB	2021-04	2023-04
3.4	Fluke 177	Digital Multimeter 03 (Multimeter)	Fluke Europe B.V.	86670383	2022-06	2024-06
3.5	JS4-18002600-32-5P	Broadband Amplifier 18 GHz - 26 GHz	Miteq	849785		
3.6	FSW 43	Spectrum Analyzer	Rohde & Schwarz	103779	2021-06	2023-06
3.7	EP 1200/B, NA/B1	AC Source, Amplifier with integrated variable Oscillator	Spitzenberger & Spies GmbH & Co. KG	B6278		
3.8	3160-09	Standard Gain / Pyramidal Horn Antenna 26.5 GHz	EMCO Elektronik GmbH	00083069		
3.9	WHKX 7.0/18G-8SS	High Pass Filter	Wainwright Instruments GmbH	09		
3.10	TT 1.5 WI	Turn Table	Maturo GmbH	-		
3.11	3160-10	Standard Gain / Pyramidal Horn Antenna 40 GHz	EMCO Elektronik GmbH	00086675		
3.12	Opus 20 THI (8120.00)	ThermoHygro Datalogger	Lufft Mess- und Regeltechnik GmbH	115.0318.0802.033	2020-10	2022-10
3.13	TD1.5-10kg	EUT Tilt Device (Rohacell)	Maturo GmbH	TD1.5-10kg/024/3790709		
3.14	PAS 2.5 - 10 kg	Antenna Mast	Maturo GmbH	-		
3.15	AFS42-00101800-25-S-42	Broadband Amplifier 25 MHz - 18 GHz	Miteq	2035324		
3.16	HF 907	Double-ridged horn	Rohde & Schwarz	102444	2021-09	2024-09

4 Radiated Emissions SAC H-Field
Radiated emission tests in the H-Field in a semi anechoic room

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
4.1	Opus10 TPR (8253.00)	T/P Logger 13	Lufft Mess- und Regeltechnik GmbH	13936	2021-10	2023-10
4.2	ESW44	EMI Receiver / Spectrum Analyzer	Rohde & Schwarz GmbH & Co. KG	101603	2022-01	2024-01
4.3	Anechoic Chamber 01	SAC/FAR, 10.58 m x 6.38 m x 6.00 m	Frankonia	none		
4.4	Opus10 THI (8152.00)	T/H Logger 10	Lufft Mess- und Regeltechnik GmbH	12488	2021-08	2023-08
4.5	EP 1200/B, NA/B1	AC Source, Amplifier with integrated variable Oscillator	Spitzenberger & Spies GmbH & Co. KG	B6278		
4.6	DS 420S	Turn Table 2 m diameter	HD GmbH	420/573/99		
4.7	HFH2-Z2	Loop Antenna + 3 Axis Tripod	Rohde & Schwarz GmbH & Co. KG	829324/006	2021-01	2024-01

5 Radiated Emissions SAC up to 1 GHz
Radiated emission tests up to 1 GHz in a semi anechoic room

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
5.1	Opus10 TPR (8253.00)	T/P Logger 13	Lufft Mess- und Regeltechnik GmbH	13936	2021-10	2023-10
5.2	ESW44	EMI Receiver / Spectrum Analyzer	Rohde & Schwarz GmbH & Co. KG	101603	2022-01	2024-01
5.3	Anechoic Chamber 01	SAC/FAR, 10.58 m x 6.38 m x 6.00 m	Frankonia	none		
5.4	HL 562 ULTRALOG	Biconical-log-per antenna (30 MHz - 3 GHz) with HL 562E biconicals	Rohde & Schwarz GmbH & Co. KG	830547/003	2021-09	2024-09
5.5	Opus10 THI (8152.00)	T/H Logger 10	Lufft Mess- und Regeltechnik GmbH	12488	2021-08	2023-08
5.6	EP 1200/B, NA/B1	AC Source, Amplifier with integrated variable Oscillator	Spitzenberger & Spies GmbH & Co. KG	B6278		
5.7	DS 420S	Turn Table 2 m diameter	HD GmbH	420/573/99		
5.8	AM 4.0	Antenna Mast 4 m	Maturo GmbH	AM4.0/180/1192 0513		

6 Radio Lab
 Conducted Radio Test Lab

Ref.No.	Device Name	Description	Manufacturer	Serial Number	Last Calibration	Calibration Due
6.1	MFS	Rubidium Frequency Normal MFS	Datum GmbH	002	2021-11	2022-11
6.2	FSV30	Signal Analyzer 10 Hz - 30 GHz	Rohde & Schwarz	103005	2022-06	2024-06
6.3	Opus10 THI (8152.00)	T/H Logger 03	Lufft Mess- und Regeltechnik GmbH	7482	2021-09	2023-09

The calibration interval is the time interval between "Last Calibration" and "Calibration Due"

7 ANTENNA FACTORS, CABLE LOSS AND SAMPLE CALCULATIONS

This chapter contains the antenna factors with their corresponding path loss of the used measurement path for all antennas as well as the insertion loss of the LISN.

7.1 LISN R&S ESH3-Z5 (150 KHZ – 30 MHZ)

Frequency		Corr.	LISN insertion loss ESH3- Z5	cable loss (incl. 10 dB atten- uator)
MHz		dB	dB	dB
0.15		10.1	0.1	10.0
5		10.3	0.1	10.2
7		10.5	0.2	10.3
10		10.5	0.2	10.3
12		10.7	0.3	10.4
14		10.7	0.3	10.4
16		10.8	0.4	10.4
18		10.9	0.4	10.5
20		10.9	0.4	10.5
22		11.1	0.5	10.6
24		11.1	0.5	10.6
26		11.2	0.5	10.7
28		11.2	0.5	10.7
30		11.3	0.5	10.8

Sample calculation

$$U_{\text{LISN}} (\text{dB } \mu\text{V}) = U (\text{dB } \mu\text{V}) + \text{Corr. (dB)}$$

U = Receiver reading

LISN Insertion loss = Voltage Division Factor of LISN

Corr. = sum of single correction factors of used LISN, cables, switch units (if used)

Linear interpolation will be used for frequencies in between the values in the table.

7.2 ANTENNA R&S HFH2-Z2 (9 KHZ – 30 MHZ)

Frequency	AF	Corr.	cable loss 1	cable loss 2	cable loss 3	cable loss 4	distance corr.	d _{Limit}	d _{used}
MHz	dB (1/m)	dB	(inside chamber)	(outside chamber)	(switch unit)	(to receiver)	(-40 dB/decade)	(meas. distance (limit))	(meas. distance (used))
			dB	dB	dB	dB	dB	m	m
0.009	20.50	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.01	20.45	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.015	20.37	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.02	20.36	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.025	20.38	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.03	20.32	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.05	20.35	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.08	20.30	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.1	20.20	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.2	20.17	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.3	20.14	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.49	20.12	-79.6	0.1	0.1	0.1	0.1	-80	300	3
0.490001	20.12	-39.6	0.1	0.1	0.1	0.1	-40	30	3
0.5	20.11	-39.6	0.1	0.1	0.1	0.1	-40	30	3
0.8	20.10	-39.6	0.1	0.1	0.1	0.1	-40	30	3
1	20.09	-39.6	0.1	0.1	0.1	0.1	-40	30	3
2	20.08	-39.6	0.1	0.1	0.1	0.1	-40	30	3
3	20.06	-39.6	0.1	0.1	0.1	0.1	-40	30	3
4	20.05	-39.5	0.2	0.1	0.1	0.1	-40	30	3
5	20.05	-39.5	0.2	0.1	0.1	0.1	-40	30	3
6	20.02	-39.5	0.2	0.1	0.1	0.1	-40	30	3
8	19.95	-39.5	0.2	0.1	0.1	0.1	-40	30	3
10	19.83	-39.4	0.2	0.1	0.2	0.1	-40	30	3
12	19.71	-39.4	0.2	0.1	0.2	0.1	-40	30	3
14	19.54	-39.4	0.2	0.1	0.2	0.1	-40	30	3
16	19.53	-39.3	0.3	0.1	0.2	0.1	-40	30	3
18	19.50	-39.3	0.3	0.1	0.2	0.1	-40	30	3
20	19.57	-39.3	0.3	0.1	0.2	0.1	-40	30	3
22	19.61	-39.3	0.3	0.1	0.2	0.1	-40	30	3
24	19.61	-39.3	0.3	0.1	0.2	0.1	-40	30	3
26	19.54	-39.3	0.3	0.1	0.2	0.1	-40	30	3
28	19.46	-39.2	0.3	0.1	0.3	0.1	-40	30	3
30	19.73	-39.1	0.4	0.1	0.3	0.1	-40	30	3

Sample calculation

$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + AF \text{ (dB 1/m)} + Corr. \text{ (dB)}$

U = Receiver reading

AF = Antenna factor

Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)

distance correction = $-40 * \text{LOG} (d_{\text{Limit}} / d_{\text{used}})$

Linear interpolation will be used for frequencies in between the values in the table.

Table shows an extract of values

7.3 ANTENNA R&S HL562 (30 MHZ – 1 GHZ)

($d_{\text{Limit}} = 3 \text{ m}$)

Frequency	AF R&S HL562	Corr.
MHz	dB (1/m)	dB
30	18.6	0.6
50	6.0	0.9
100	9.7	1.2
150	7.9	1.6
200	7.6	1.9
250	9.5	2.1
300	11.0	2.3
350	12.4	2.6
400	13.6	2.9
450	14.7	3.1
500	15.6	3.2
550	16.3	3.5
600	17.2	3.5
650	18.1	3.6
700	18.5	3.6
750	19.1	4.1
800	19.6	4.1
850	20.1	4.4
900	20.8	4.7
950	21.1	4.8
1000	21.6	4.9

cable loss 1 (inside chamber)	cable loss 2 (outside chamber)	cable loss 3 (switch unit)	cable loss 4 (to receiver)	distance corr. (-20 dB/ decade)	d_{Limit} (meas. distance (limit))	d_{used} (meas. distance (used))
dB	dB	dB	dB	dB	m	m
0.29	0.04	0.23	0.02	0.0	3	3
0.39	0.09	0.32	0.08	0.0	3	3
0.56	0.14	0.47	0.08	0.0	3	3
0.73	0.20	0.59	0.12	0.0	3	3
0.84	0.21	0.70	0.11	0.0	3	3
0.98	0.24	0.80	0.13	0.0	3	3
1.04	0.26	0.89	0.15	0.0	3	3
1.18	0.31	0.96	0.13	0.0	3	3
1.28	0.35	1.03	0.19	0.0	3	3
1.39	0.38	1.11	0.22	0.0	3	3
1.44	0.39	1.20	0.19	0.0	3	3
1.55	0.46	1.24	0.23	0.0	3	3
1.59	0.43	1.29	0.23	0.0	3	3
1.67	0.34	1.35	0.22	0.0	3	3
1.67	0.42	1.41	0.15	0.0	3	3
1.87	0.54	1.46	0.25	0.0	3	3
1.90	0.46	1.51	0.25	0.0	3	3
1.99	0.60	1.56	0.27	0.0	3	3
2.14	0.60	1.63	0.29	0.0	3	3
2.22	0.60	1.66	0.33	0.0	3	3
2.23	0.61	1.71	0.30	0.0	3	3

($d_{\text{Limit}} = 10 \text{ m}$)

30	18.6	-9.9
50	6.0	-9.6
100	9.7	-9.2
150	7.9	-8.8
200	7.6	-8.6
250	9.5	-8.3
300	11.0	-8.1
350	12.4	-7.9
400	13.6	-7.6
450	14.7	-7.4
500	15.6	-7.2
550	16.3	-7.0
600	17.2	-6.9
650	18.1	-6.9
700	18.5	-6.8
750	19.1	-6.3
800	19.6	-6.3
850	20.1	-6.0
900	20.8	-5.8
950	21.1	-5.6
1000	21.6	-5.6

0.29	0.04	0.23	0.02	-10.5	10	3
0.39	0.09	0.32	0.08	-10.5	10	3
0.56	0.14	0.47	0.08	-10.5	10	3
0.73	0.20	0.59	0.12	-10.5	10	3
0.84	0.21	0.70	0.11	-10.5	10	3
0.98	0.24	0.80	0.13	-10.5	10	3
1.04	0.26	0.89	0.15	-10.5	10	3
1.18	0.31	0.96	0.13	-10.5	10	3
1.28	0.35	1.03	0.19	-10.5	10	3
1.39	0.38	1.11	0.22	-10.5	10	3
1.44	0.39	1.20	0.19	-10.5	10	3
1.55	0.46	1.24	0.23	-10.5	10	3
1.59	0.43	1.29	0.23	-10.5	10	3
1.67	0.34	1.35	0.22	-10.5	10	3
1.67	0.42	1.41	0.15	-10.5	10	3
1.87	0.54	1.46	0.25	-10.5	10	3
1.90	0.46	1.51	0.25	-10.5	10	3
1.99	0.60	1.56	0.27	-10.5	10	3
2.14	0.60	1.63	0.29	-10.5	10	3
2.22	0.60	1.66	0.33	-10.5	10	3
2.23	0.61	1.71	0.30	-10.5	10	3

Sample calculation

$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + \text{AF (dB 1/m)} + \text{Corr. (dB)}$
 U = Receiver reading
 AF = Antenna factor
 Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)
 distance correction = $-20 * \text{LOG} (d_{\text{Limit}} / d_{\text{used}})$
 Linear interpolation will be used for frequencies in between the values in the table.
 Tables show an extract of values.

7.4 ANTENNA R&S HF907 (1 GHZ – 18 GHZ)

Frequency	AF R&S HF907	Corr.
MHz	dB (1/m)	dB
1000	24.4	-19.4
2000	28.5	-17.4
3000	31.0	-16.1
4000	33.1	-14.7
5000	34.4	-13.7
6000	34.7	-12.7
7000	35.6	-11.0

cable loss 1 (relay + cable inside chamber)	cable loss 2 (outside chamber)	cable loss 3 (switch unit, atten- uator & pre-amp)	cable loss 4 (to receiver)		
dB	dB	dB	dB		
0.99	0.31	-21.51	0.79		
1.44	0.44	-20.63	1.38		
1.87	0.53	-19.85	1.33		
2.41	0.67	-19.13	1.31		
2.78	0.86	-18.71	1.40		
2.74	0.90	-17.83	1.47		
2.82	0.86	-16.19	1.46		

Frequency	AF R&S HF907	Corr.
MHz	dB (1/m)	dB
3000	31.0	-23.4
4000	33.1	-23.3
5000	34.4	-21.7
6000	34.7	-21.2
7000	35.6	-19.8

cable loss 1 (relay inside chamber)	cable loss 2 (inside chamber)	cable loss 3 (outside chamber)	cable loss 4 (switch unit, atten- uator & pre-amp)	cable loss 5 (to receiver)	used for FCC 15.247
dB	dB	dB	dB	dB	
0.47	1.87	0.53	-27.58	1.33	
0.56	2.41	0.67	-28.23	1.31	
0.61	2.78	0.86	-27.35	1.40	
0.58	2.74	0.90	-26.89	1.47	
0.66	2.82	0.86	-25.58	1.46	

Frequency	AF R&S HF907	Corr.
MHz	dB (1/m)	dB
7000	35.6	-57.3
8000	36.3	-56.3
9000	37.1	-55.3
10000	37.5	-56.2
11000	37.5	-55.3
12000	37.6	-53.7
13000	38.2	-53.5
14000	39.9	-56.3
15000	40.9	-54.1
16000	41.3	-54.1
17000	42.8	-54.4
18000	44.2	-54.7

cable loss 1 (relay inside chamber)	cable loss 2 (High Pass)	cable loss 3 (pre- amp)	cable loss 4 (inside chamber)	cable loss 5 (outside chamber)	cable loss 6 (to receiver)
dB	dB	dB	dB	dB	dB
0.56	1.28	-62.72	2.66	0.94	1.46
0.69	0.71	-61.49	2.84	1.00	1.53
0.68	0.65	-60.80	3.06	1.09	1.60
0.70	0.54	-61.91	3.28	1.20	1.67
0.80	0.61	-61.40	3.43	1.27	1.70
0.84	0.42	-59.70	3.53	1.26	1.73
0.83	0.44	-59.81	3.75	1.32	1.83
0.91	0.53	-63.03	3.91	1.40	1.77
0.98	0.54	-61.05	4.02	1.44	1.83
1.23	0.49	-61.51	4.17	1.51	1.85
1.36	0.76	-62.36	4.34	1.53	2.00
1.70	0.53	-62.88	4.41	1.55	1.91

Sample calculation

$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + AF \text{ (dB 1/m)} + Corr. \text{ (dB)}$

U = Receiver reading

AF = Antenna factor

Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)

Linear interpolation will be used for frequencies in between the values in the table.

Tables show an extract of values.

7.5 ANTENNA EMCO 3160-09 (18 GHZ – 26.5 GHZ)

Frequency	AF EMCO 3160-09	Corr.	cable loss 1 (inside chamber)	cable loss 2 (pre- amp)	cable loss 3 (inside chamber)	cable loss 4 (switch unit)	cable loss 5 (to receiver)
MHz	dB (1/m)	dB	dB	dB	dB	dB	dB
18000	40.2	-23.5	0.72	-35.85	6.20	2.81	2.65
18500	40.2	-23.2	0.69	-35.71	6.46	2.76	2.59
19000	40.2	-22.0	0.76	-35.44	6.69	3.15	2.79
19500	40.3	-21.3	0.74	-35.07	7.04	3.11	2.91
20000	40.3	-20.3	0.72	-34.49	7.30	3.07	3.05
20500	40.3	-19.9	0.78	-34.46	7.48	3.12	3.15
21000	40.3	-19.1	0.87	-34.07	7.61	3.20	3.33
21500	40.3	-19.1	0.90	-33.96	7.47	3.28	3.19
22000	40.3	-18.7	0.89	-33.57	7.34	3.35	3.28
22500	40.4	-19.0	0.87	-33.66	7.06	3.75	2.94
23000	40.4	-19.5	0.88	-33.75	6.92	3.77	2.70
23500	40.4	-19.3	0.90	-33.35	6.99	3.52	2.66
24000	40.4	-19.8	0.88	-33.99	6.88	3.88	2.58
24500	40.4	-19.5	0.91	-33.89	7.01	3.93	2.51
25000	40.4	-19.3	0.88	-33.00	6.72	3.96	2.14
25500	40.5	-20.4	0.89	-34.07	6.90	3.66	2.22
26000	40.5	-21.3	0.86	-35.11	7.02	3.69	2.28
26500	40.5	-21.1	0.90	-35.20	7.15	3.91	2.36

Sample calculation

$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + AF \text{ (dB 1/m)} + Corr. \text{ (dB)}$

U = Receiver reading

AF = Antenna factor

Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)

Linear interpolation will be used for frequencies in between the values in the table.

Table shows an extract of values.

7.6 ANTENNA EMCO 3160-10 (26.5 GHZ – 40 GHZ)

Frequency GHz	AF EMCO 3160-10 dB (1/m)	Corr. dB	cable loss 1 (inside chamber) dB	cable loss 2 (outside chamber) dB	cable loss 3 (switch unit) dB	cable loss 4 (to receiver) dB	distance corr. (-20 dB/ decade) dB	d _{Limit} (meas. distance (limit) m	d _{used} (meas. distance (used) m
26.5	43.4	-11.2	4.4				-9.5	3	1.0
27.0	43.4	-11.2	4.4				-9.5	3	1.0
28.0	43.4	-11.1	4.5				-9.5	3	1.0
29.0	43.5	-11.0	4.6				-9.5	3	1.0
30.0	43.5	-10.9	4.7				-9.5	3	1.0
31.0	43.5	-10.8	4.7				-9.5	3	1.0
32.0	43.5	-10.7	4.8				-9.5	3	1.0
33.0	43.6	-10.7	4.9				-9.5	3	1.0
34.0	43.6	-10.6	5.0				-9.5	3	1.0
35.0	43.6	-10.5	5.1				-9.5	3	1.0
36.0	43.6	-10.4	5.1				-9.5	3	1.0
37.0	43.7	-10.3	5.2				-9.5	3	1.0
38.0	43.7	-10.2	5.3				-9.5	3	1.0
39.0	43.7	-10.2	5.4				-9.5	3	1.0
40.0	43.8	-10.1	5.5				-9.5	3	1.0

Sample calculation

$E \text{ (dB } \mu\text{V/m)} = U \text{ (dB } \mu\text{V)} + AF \text{ (dB 1/m)} + Corr. \text{ (dB)}$

U = Receiver reading

AF = Antenna factor

Corr. = sum of single correction factors of used cables, switch unit, distance correction, amplifier (if applicable)

Linear interpolation will be used for frequencies in between the values in the table.

distance correction = $-20 * \text{LOG} (d_{\text{Limit}} / d_{\text{used}})$

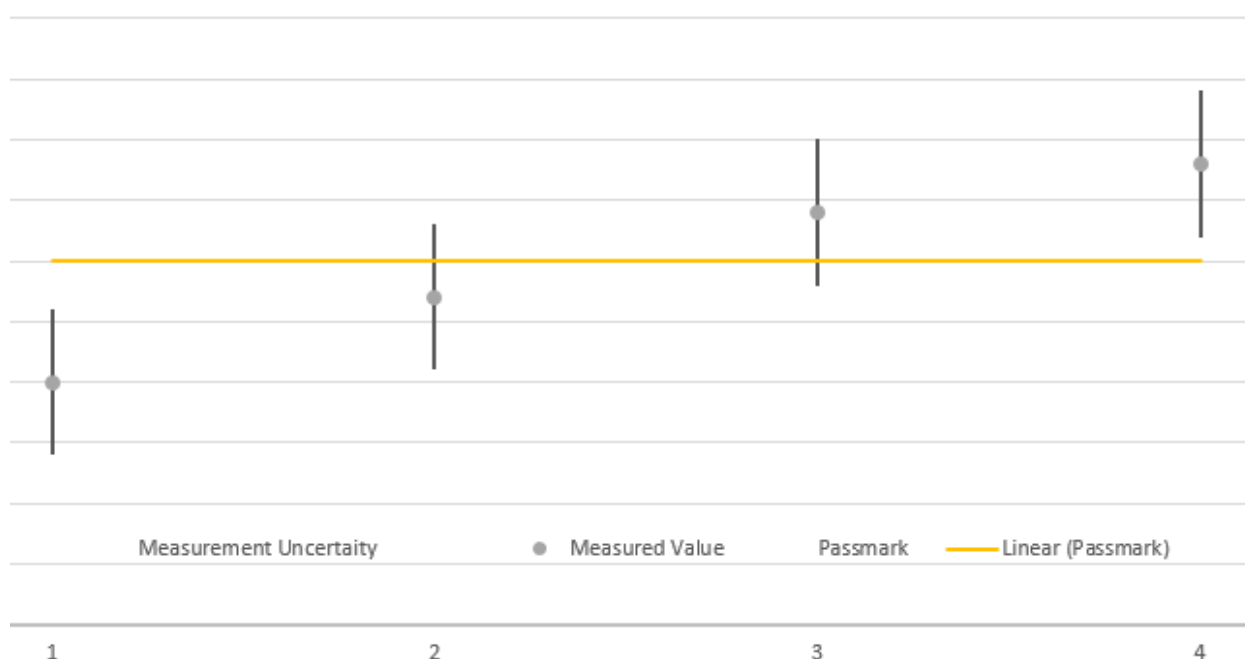
Linear interpolation will be used for frequencies in between the values in the table.

Table shows an extract of values.

8 MEASUREMENT UNCERTAINTIES

Test Case	Parameter	Uncertainty
AC Power Line	Power	± 3.4 dB
Field Strength of spurious radiation	Power	± 5.5 dB
6 dB / 26 dB / 99% Bandwidth	Power Frequency	± 2.9 dB ± 11.2 kHz
Conducted Output Power	Power	± 2.2 dB
Band Edge Compliance	Power Frequency	± 2.2 dB ± 11.2 kHz
Frequency Stability	Frequency	± 25 Hz
Power Spectral Density	Power	± 2.2 dB

The measurement uncertainties for all parameters are calculated with an expansion factor (coverage factor) $k = 1.96$. This means, that the true value is in the corresponding interval with a probability of 95 %.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so called shared risk principle.

9 PHOTO REPORT

Please see separate photo report.