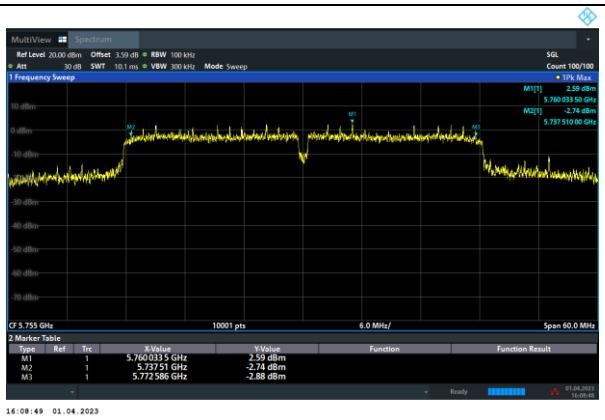
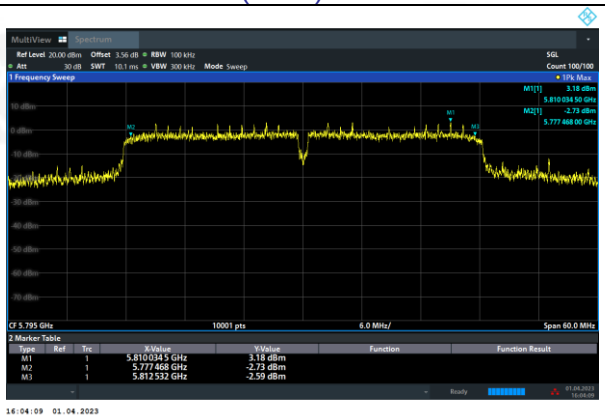
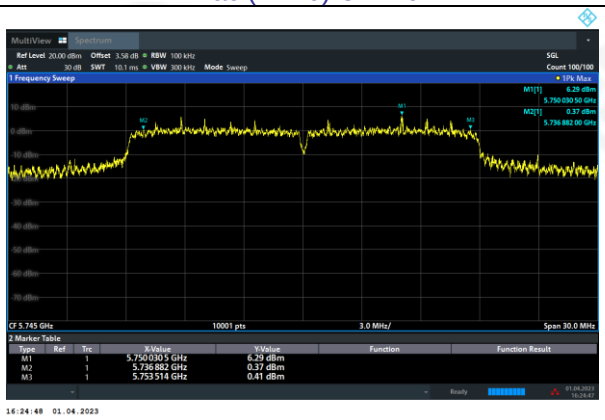
11n (HT40) CH151



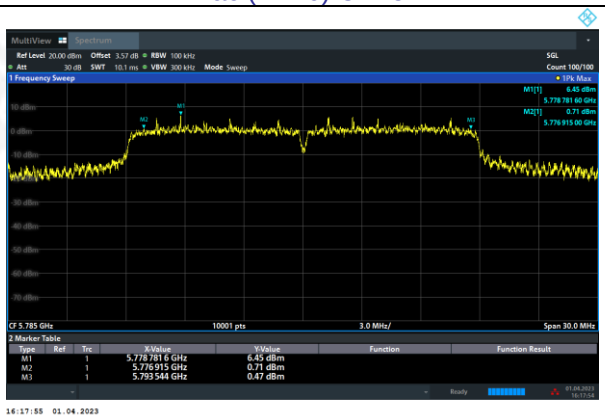
11n (HT40) CH159



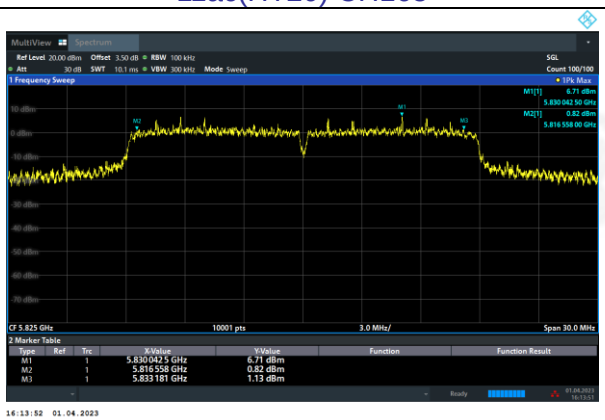
11ac (HT20) CH149



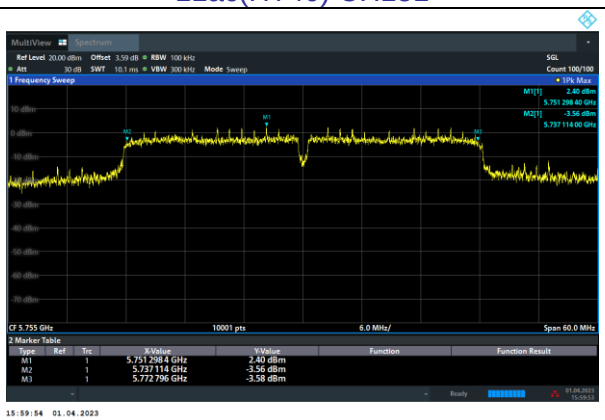
11ac (HT20) CH157



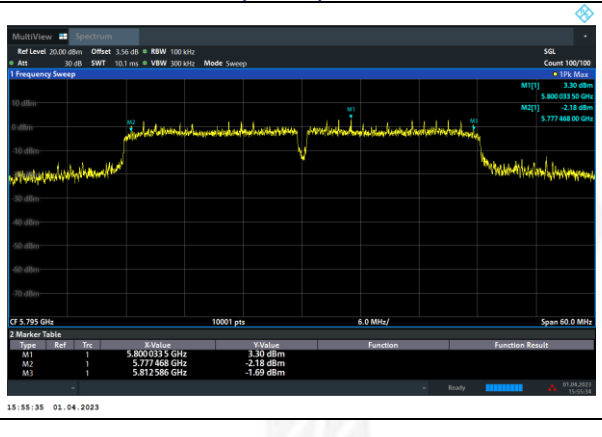
11ac(HT20) CH165



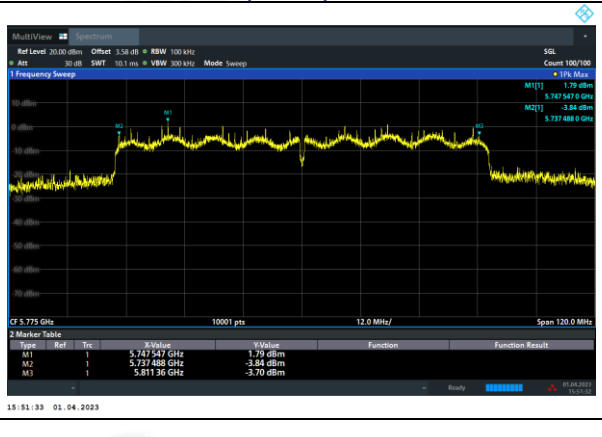
11ac(HT40) CH151



11ac(HT40) CH159



11ac (HT80) CH155



8.MAXIMUM CONDUCTED OUTPUT POWER

8.1 PPLIED PROCEDURES / LIMIT

According to FCC §15.407
The maximum conduced output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5725~5850	1W

8.2 TEST PROCEDURE

The EUT was directly connected to the Power meter

1. Device Configuration
If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).
a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.
b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

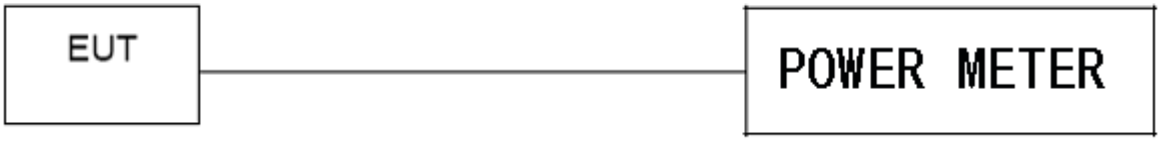
2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)
Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.1 However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).
a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:
• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).
• Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.
(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.
(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.
b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(ii) Set RBW = 1 MHz.
(iii) Set VBW ≥ 3 MHz.
(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(v) Sweep time = auto.
(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".
(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULTS

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1012 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-1 802.11a/n20/n40/ac20/ac40/ac80		

Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
a	5180	Ant1	12.76	24	Pass
a	5200	Ant1	13.21	24	Pass
a	5240	Ant1	14.83	24	Pass
n20	5180	Ant1	11.87	24	Pass
n20	5200	Ant1	12.92	24	Pass
n20	5240	Ant1	14.42	24	Pass
n40	5190	Ant1	11.84	24	Pass
n40	5230	Ant1	12.09	24	Pass
ac20	5180	Ant1	13.19	24	Pass
ac20	5200	Ant1	13.27	24	Pass
ac20	5240	Ant1	14.8	24	Pass
ac40	5190	Ant1	10.96	24	Pass
ac40	5230	Ant1	11.5	24	Pass
ac80	5210	Ant1	11.96	24	Pass

Note：The Duty Cycle Factor is compensated in the Tolal Power.

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1012 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-3 802.11a/n20/n40/ac20/ac40/ac80		

Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
a	5745	Ant1	15.27	30	Pass
a	5785	Ant1	16.24	30	Pass
a	5825	Ant1	16.48	30	Pass
n20	5745	Ant1	15.7	30	Pass
n20	5785	Ant1	16.08	30	Pass
n20	5825	Ant1	16.67	30	Pass
n40	5755	Ant1	15.29	30	Pass
n40	5795	Ant1	16.06	30	Pass
ac20	5745	Ant1	15.65	30	Pass
ac20	5785	Ant1	15.96	30	Pass
ac20	5825	Ant1	16.3	30	Pass
ac40	5755	Ant1	15.37	30	Pass
ac40	5795	Ant1	16.09	30	Pass
ac80	5775	Ant1	16.85	30	Pass

Note：The Duty Cycle Factor is compensated in the Tolal Power.

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1012 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 2 U-NII-1 802.11a/n20/n40/ac20/ac40/ac80		

Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
a	5180	Ant2	10.61	24	Pass
a	5200	Ant2	10.88	24	Pass
a	5240	Ant2	11.81	24	Pass
n20	5180	Ant2	10.32	24	Pass
n20	5200	Ant2	10.34	24	Pass
n20	5240	Ant2	11.83	24	Pass
n40	5190	Ant2	10.96	24	Pass
n40	5230	Ant2	12.31	24	Pass
ac20	5180	Ant2	11.7	24	Pass
ac20	5200	Ant2	11.6	24	Pass
ac20	5240	Ant2	12.55	24	Pass
ac40	5190	Ant2	10.1	24	Pass
ac40	5230	Ant2	12.42	24	Pass
ac80	5210	Ant1	12.87	24	Pass

Note：The Duty Cycle Factor is compensated in the Tolal Power.

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1012 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 2 U-NII-3 802.11a/n20/n40/ac20/ac40/ac80		

Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
a	5745	Ant2	15.92	30	Pass
a	5785	Ant2	16.42	30	Pass
a	5825	Ant2	16.75	30	Pass
n20	5745	Ant2	15.89	30	Pass
n20	5785	Ant2	16.41	30	Pass
n20	5825	Ant2	16.76	30	Pass
n40	5755	Ant2	15.07	30	Pass
n40	5795	Ant2	16.11	30	Pass
ac20	5745	Ant2	15.82	30	Pass
ac20	5785	Ant2	16.44	30	Pass
ac20	5825	Ant2	16.74	30	Pass
ac40	5755	Ant2	15.46	30	Pass
ac40	5795	Ant2	16.22	30	Pass
ac80	5775	Ant2	16.06	30	Pass

Note：The Duty Cycle Factor is compensated in the Tolal Power.

9.CONDUCTED BAND EDGE

9.1 CONFORMANCE LIMIT

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) All emissions shall be limited to a level of −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, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

9.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP

9.5 EUT OPERATION CONDITIONS

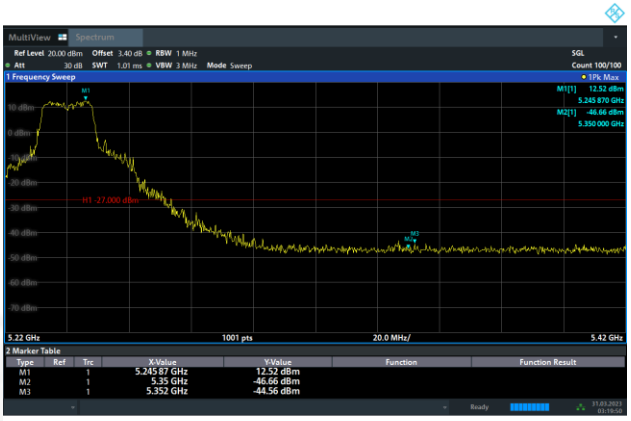
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-1 802.11a/n20/n40/ac20/ac40/ac80		

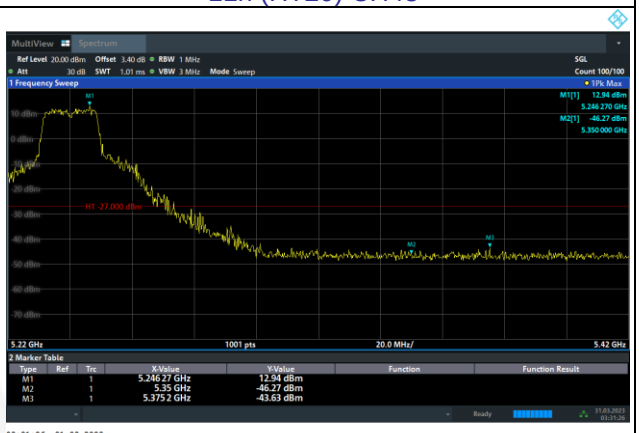
11a CH36

11a CH48



11n (HT20) CH36

11n (HT20) CH48



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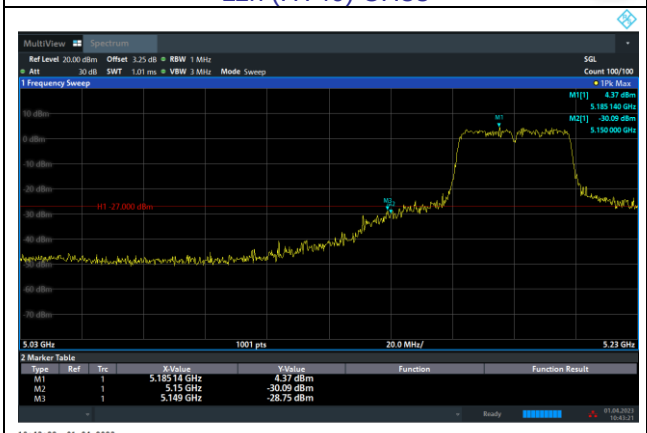

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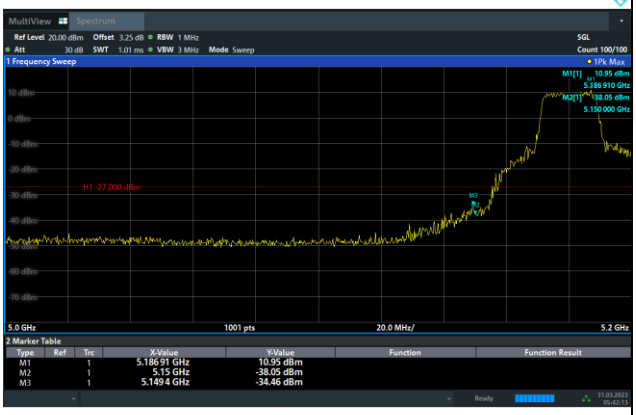	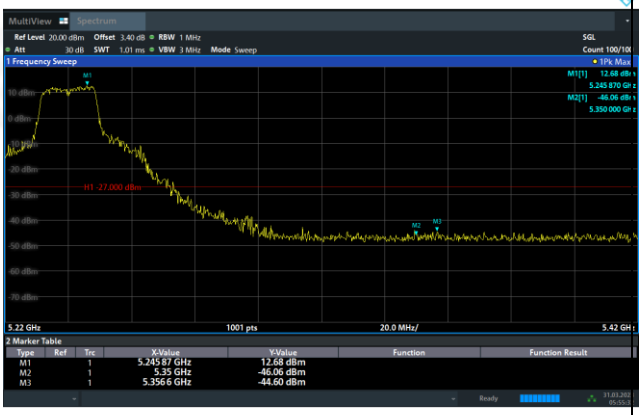
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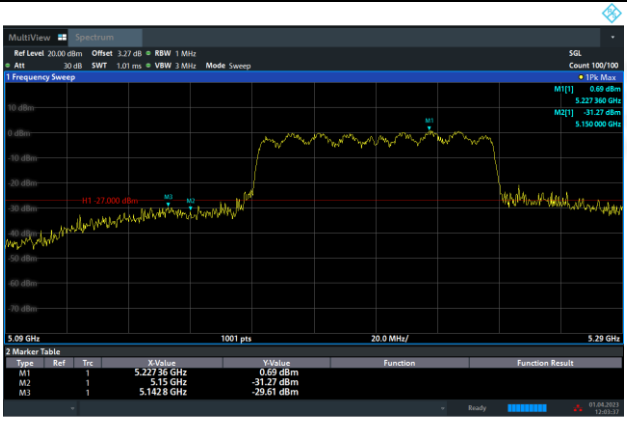
11ac (HT80) CH42	
	
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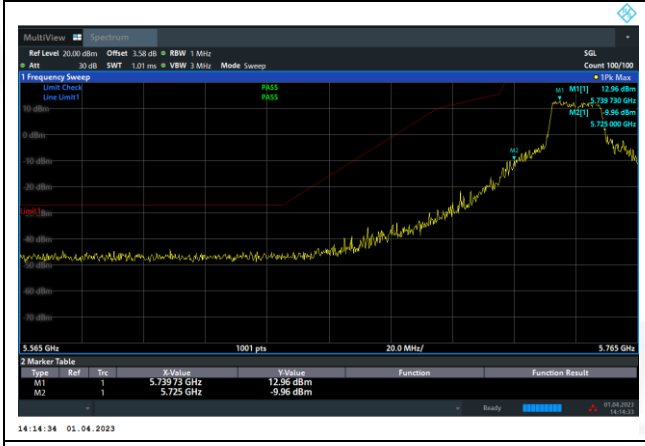
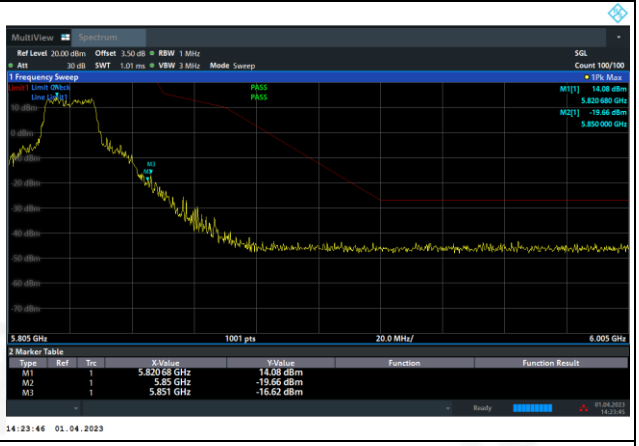
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-3 802.11a/n20/n40/ac20/ac40/ac80		

11a CH149



11a CH165



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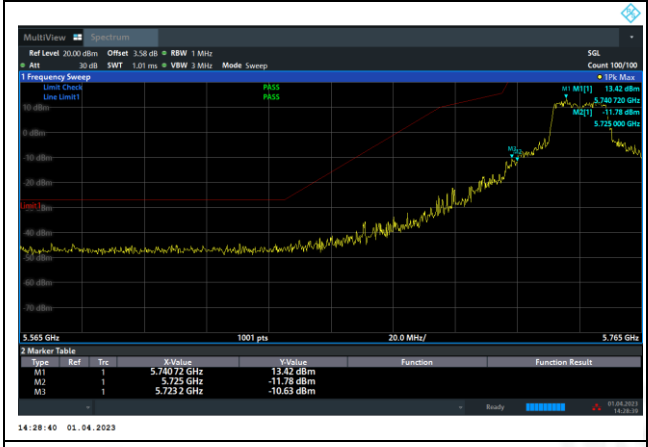

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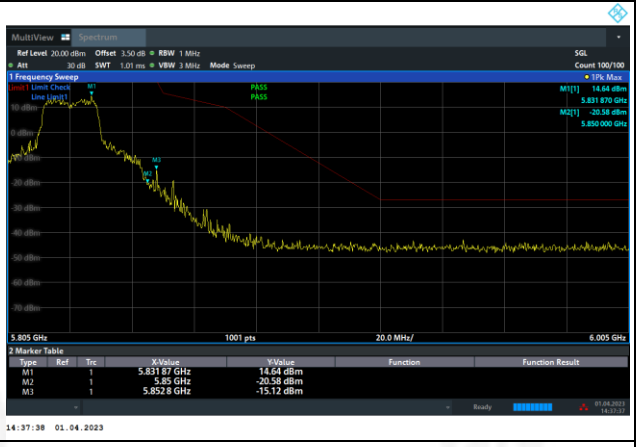

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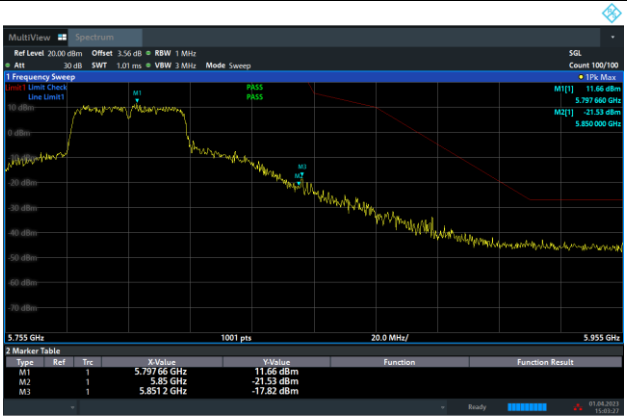
11n (HT40) CH159



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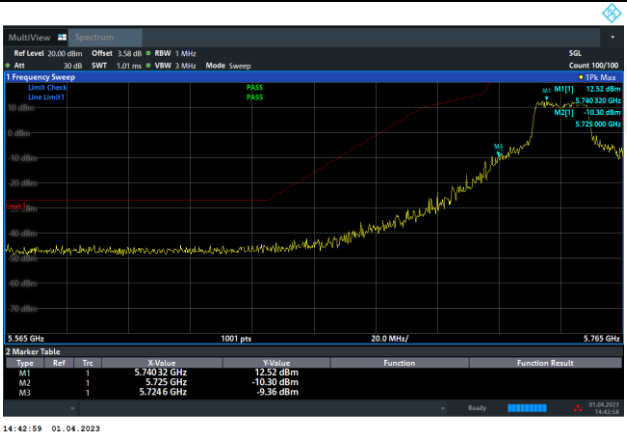
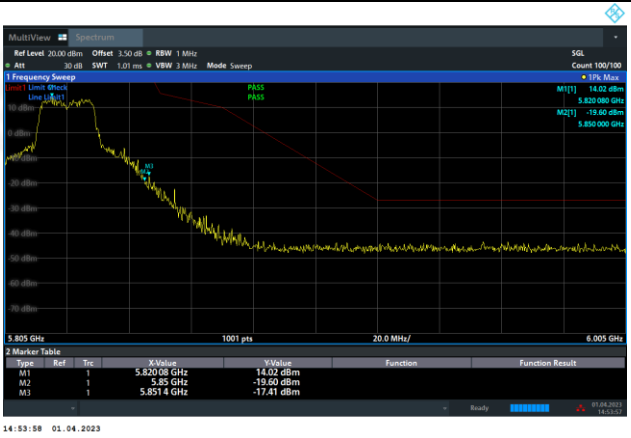
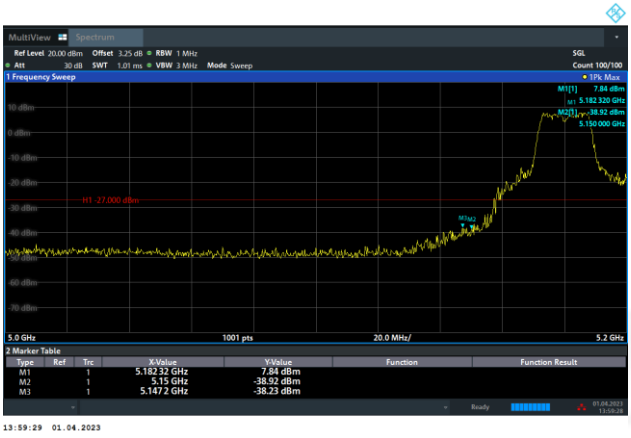
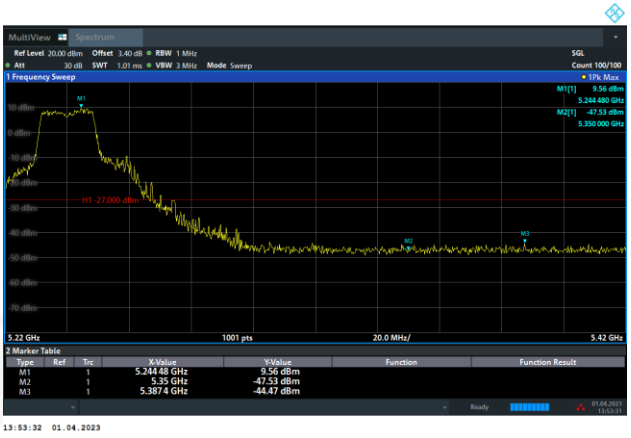
	
11ac(HT40) CH151	11ac(HT40) CH159
11ac (HT80) CH155	/
	/

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 2 U-NII-1 802.11a/n20/n40/ac20/ac40/ac80		

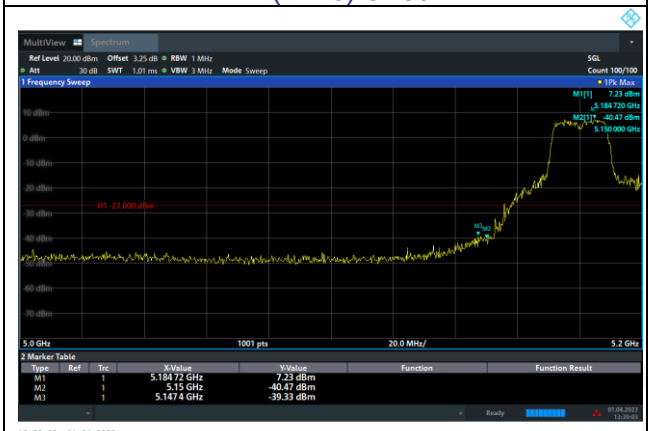
11a CH36



11a CH48

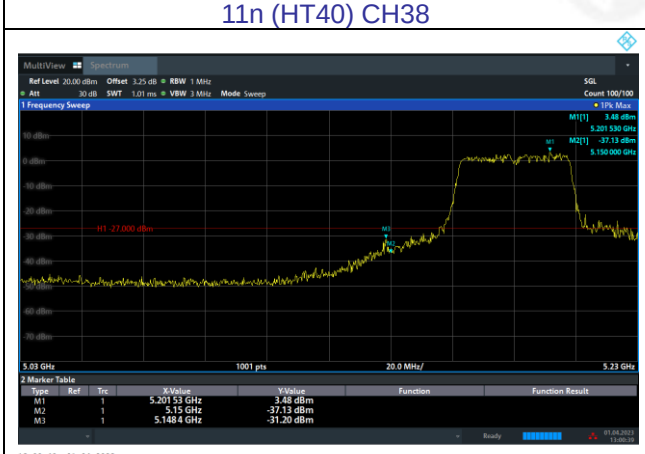


11n (HT20) CH36

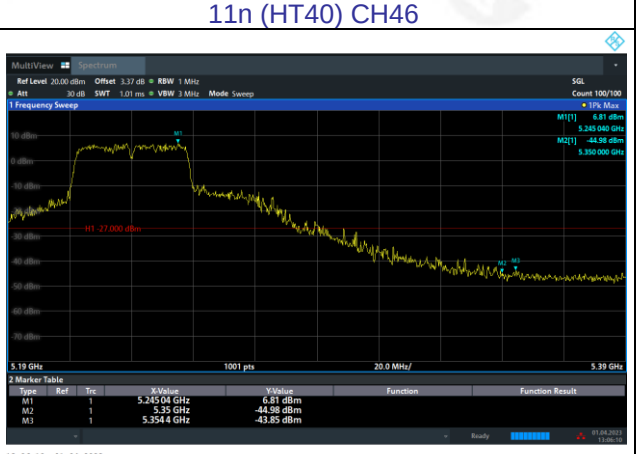


11n (HT20) CH48

11n (HT40) CH38



11n (HT40) CH46



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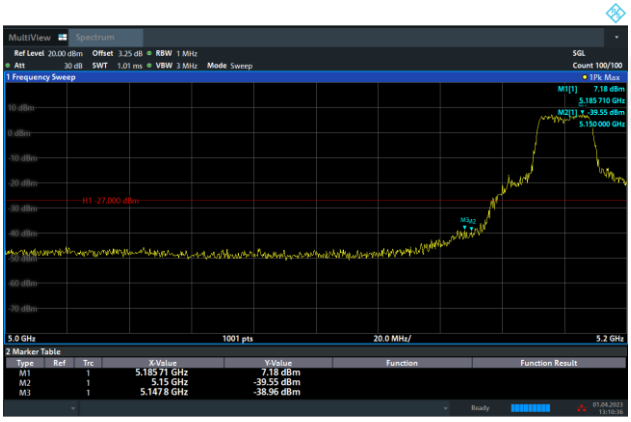	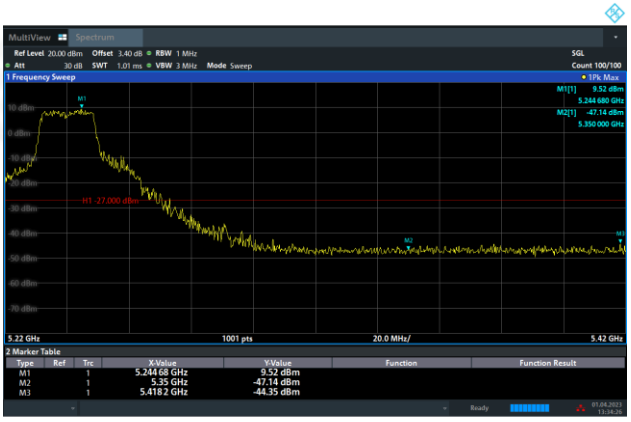
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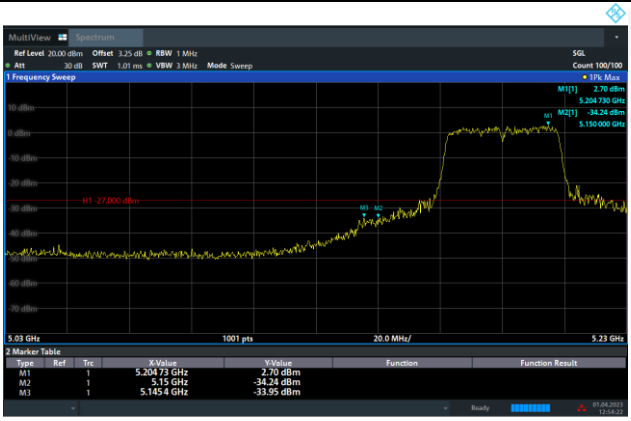
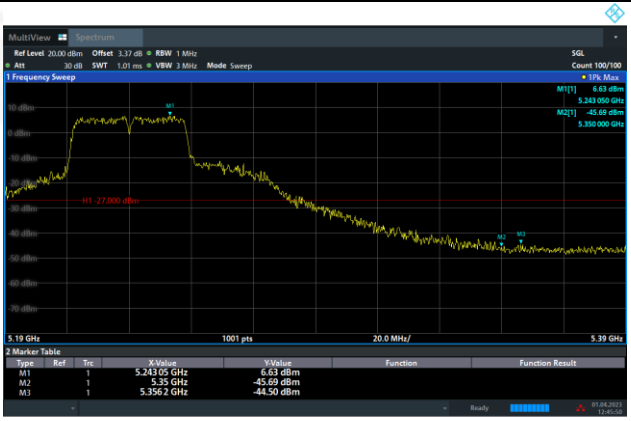
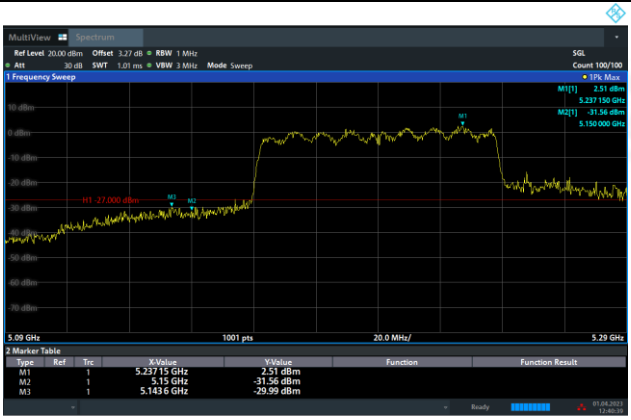
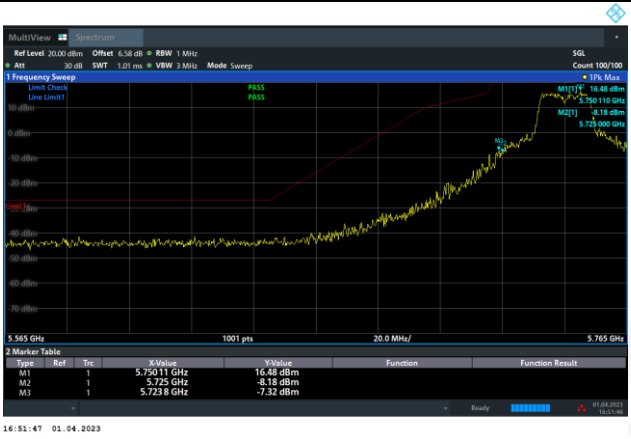
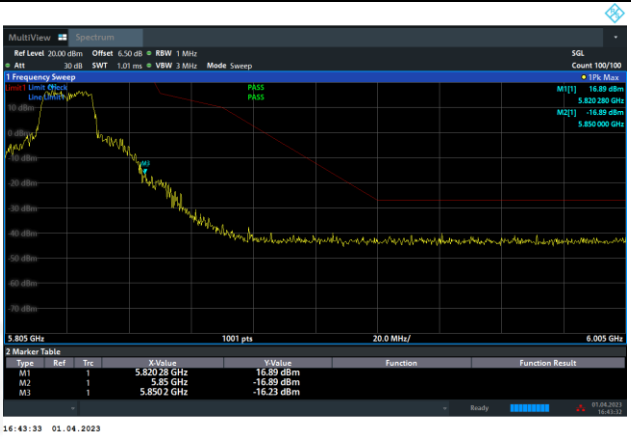
	
12:54:23 01.04.2023	12:45:50 01.04.2023
11ac (HT80) CH42	**/**
	/
12:40:40 01.04.2023	

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 2 U-NII-3 802.11a/n20/n40/ac20/ac40/ac80		

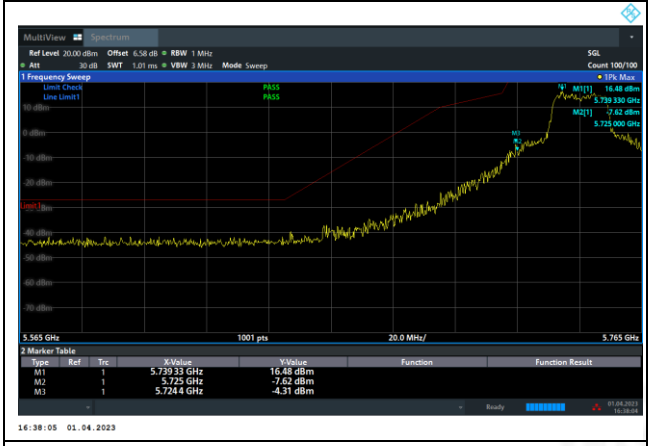
11a CH149



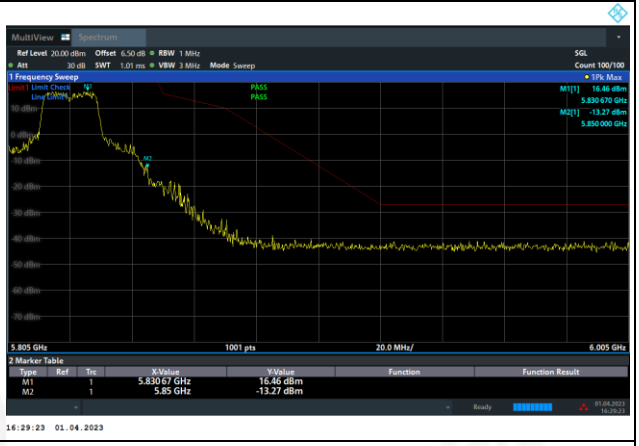
11a CH165



11n(HT20) CH149



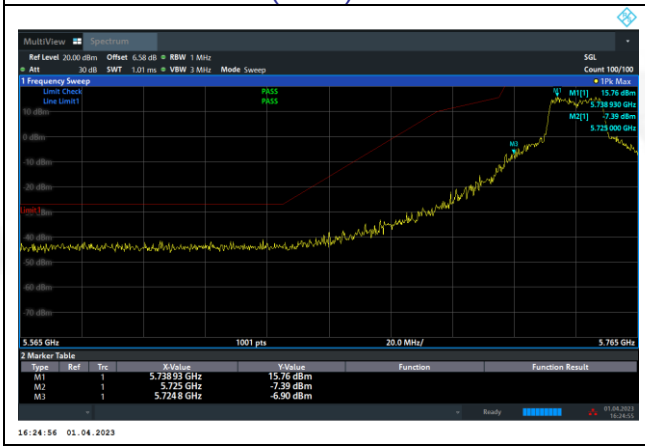
11n(HT20) CH165



11n (HT40) CH151

11n (HT40) CH159

11ac (HT20) CH149



11ac(HT20) CH165

11ac(HT40) CH151

11ac(HT40) CH159

11ac (HT80) CH155

10.SPURIOUS RF CONDUCTED EMISSIONS

10.1 CONFORMANCE LIMIT

Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	All emissions shall be limited to a level of -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, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

10.2 MEASURING INSTRUMENTS

The Measuring equipment is listed in the section 6.3 of this test report.

10.3 TEST SETUP

10.4 TEST PROCEDURE

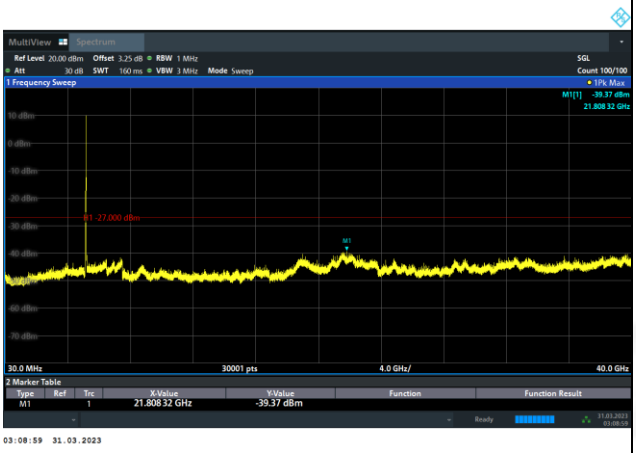
The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=1MHz and VBW= 3MHz to measure the peak field strength, and measure frequency range from 30MHz to 26.5GHz.

10.5 TEST RESULTS

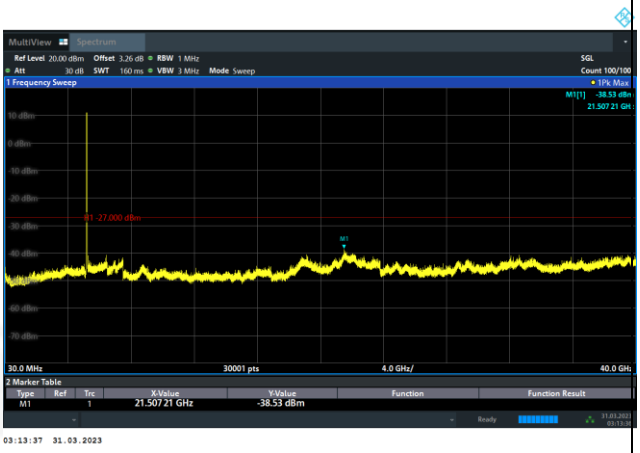
Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. And above 26.5GHz of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data.

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1012 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-1 802.11a/n20/n40/ac20/ac40/ac80		

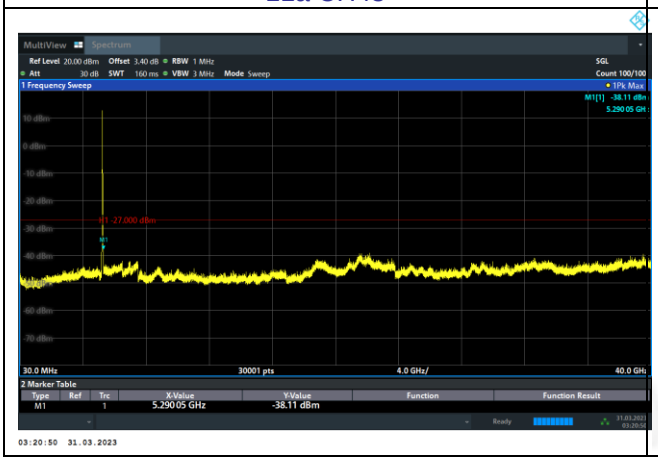
11a CH36



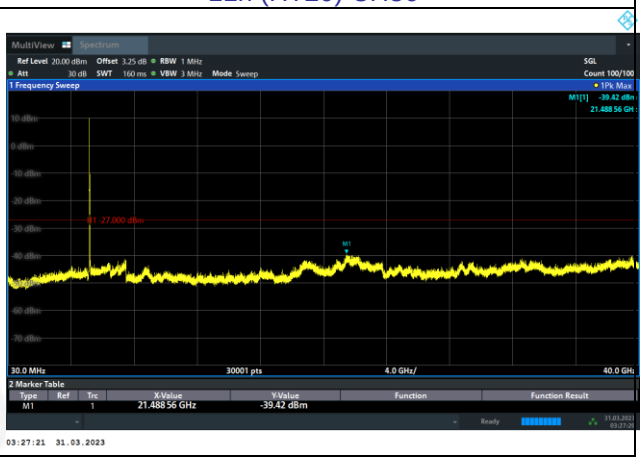
11a CH40



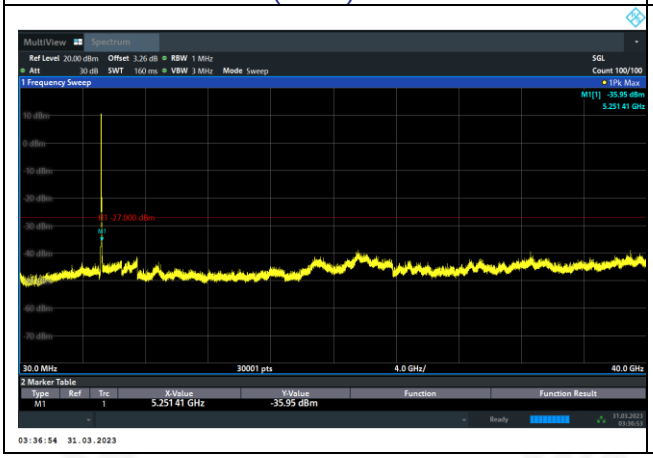
11a CH48



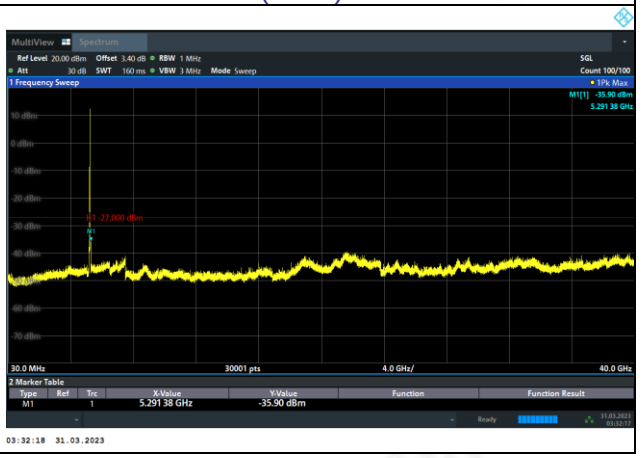
11n (HT20) CH36

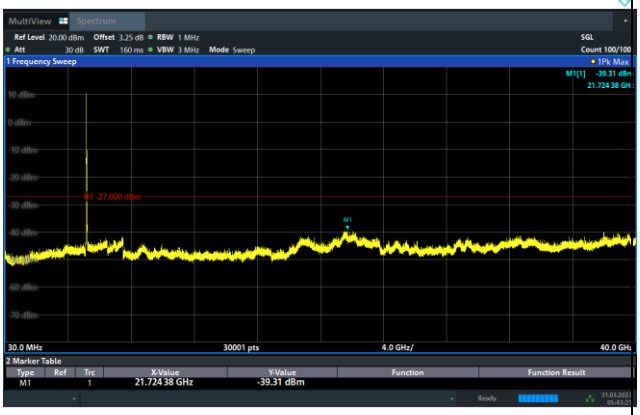
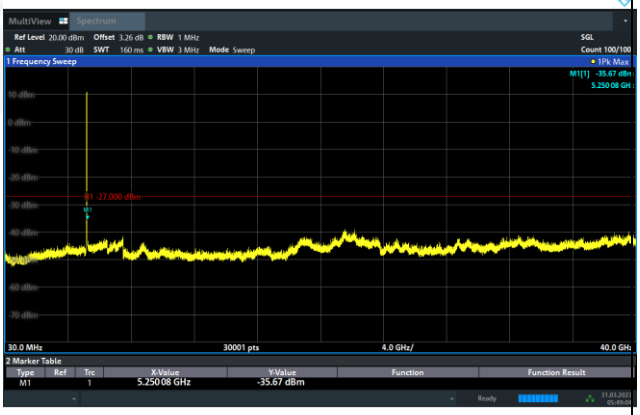
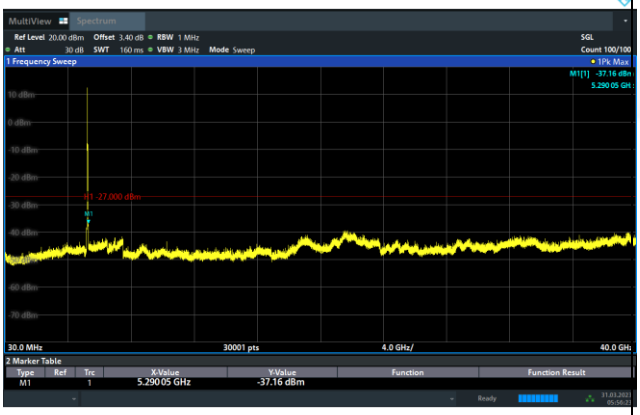
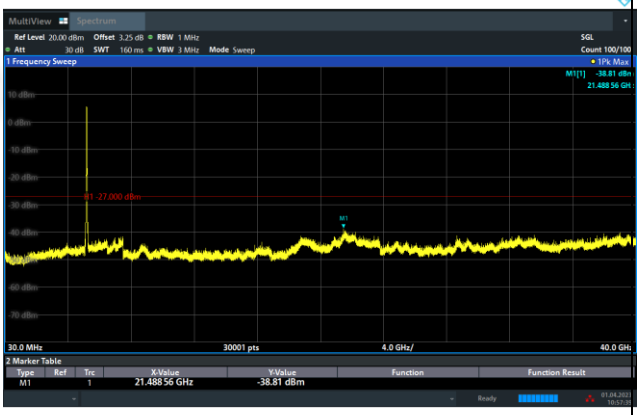


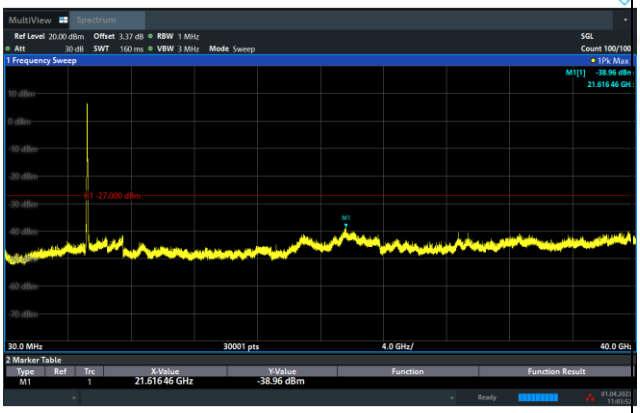
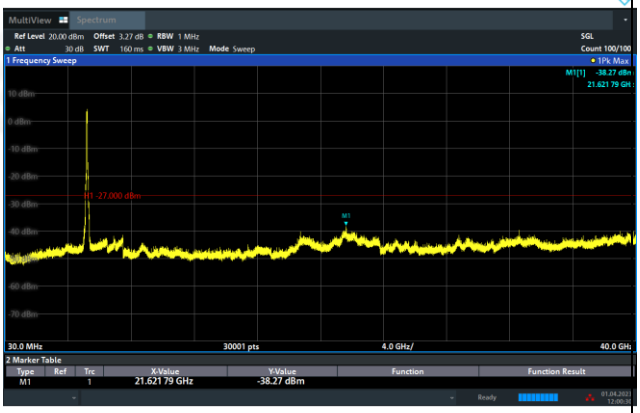
11n (HT20) CH40



11n (HT20) CH48

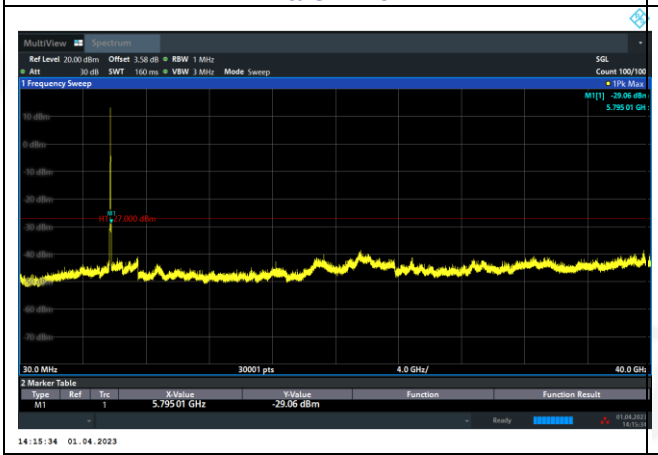


11n (HT40) CH38	11n (HT40) CH46
06:05:56 31.03.2023	10:50:45 01.04.2023
11ac (HT20) CH36	**11ac (HT20) CH40**
	
05:43:22 31.03.2023	05:49:04 31.03.2023
11ac (HT20) CH48	**11ac (HT40) CH38**
	
05:56:24 31.03.2023	10:57:39 01.04.2023

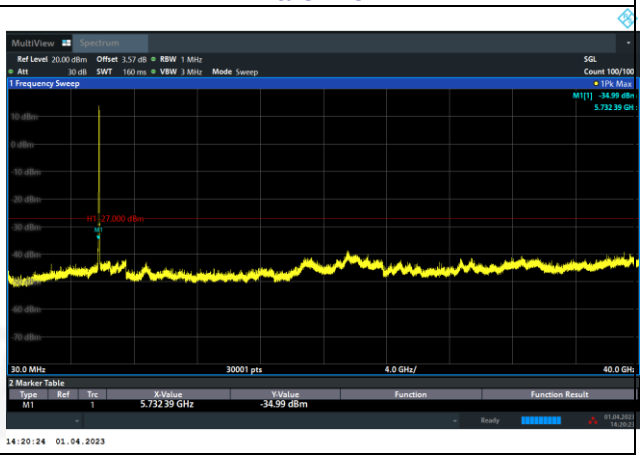
11ac (HT40) CH46	11ac (HT80) CH42
	

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-3 802.11a/n20/n40/ac20/ac40/ac80		

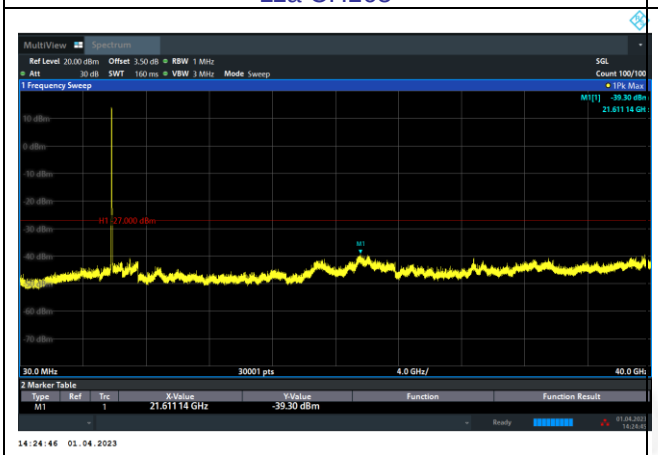
11a CH149



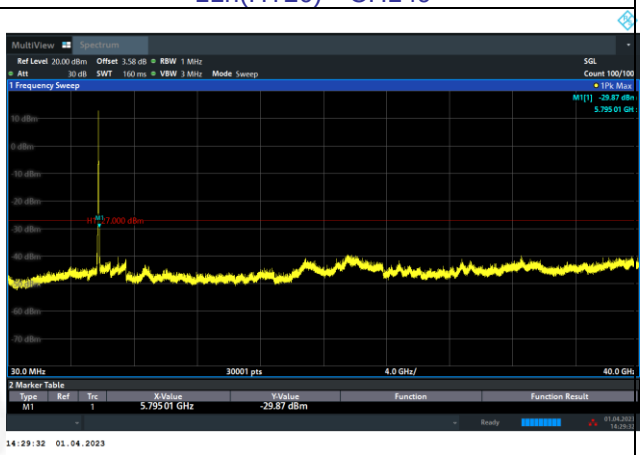
11a CH157



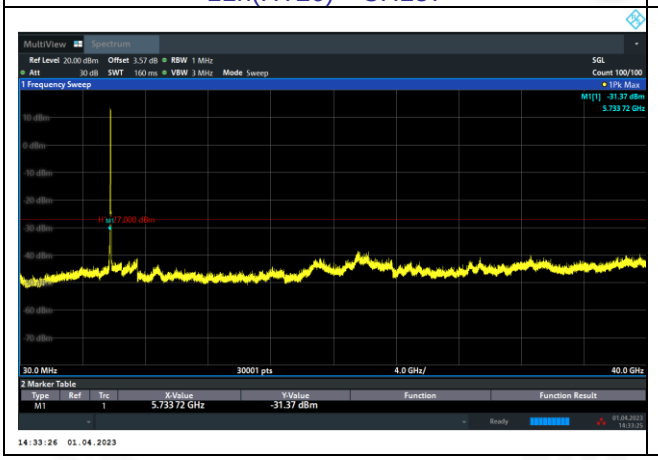
11a CH165



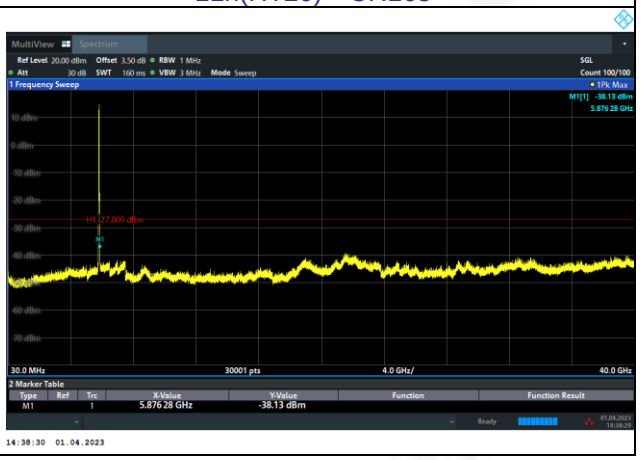
11n(HT20) CH149



11n(HT20) CH157

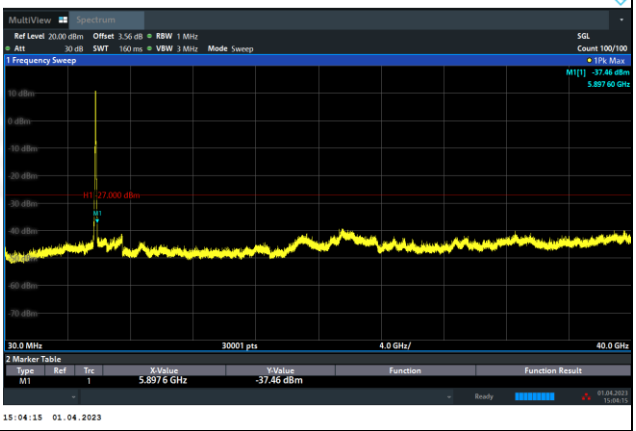


11n(HT20) CH165

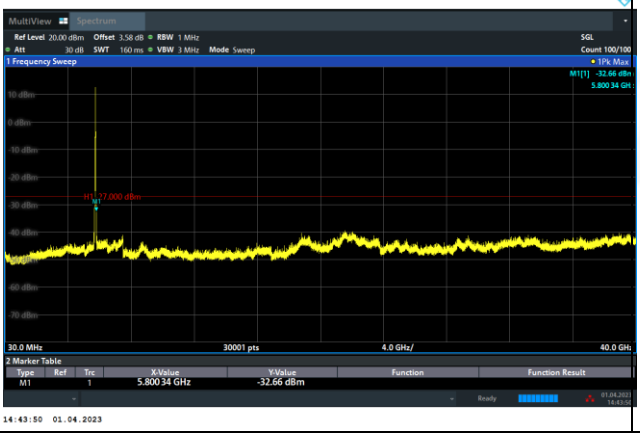


11n (HT40) CH151	11n (HT40) CH159

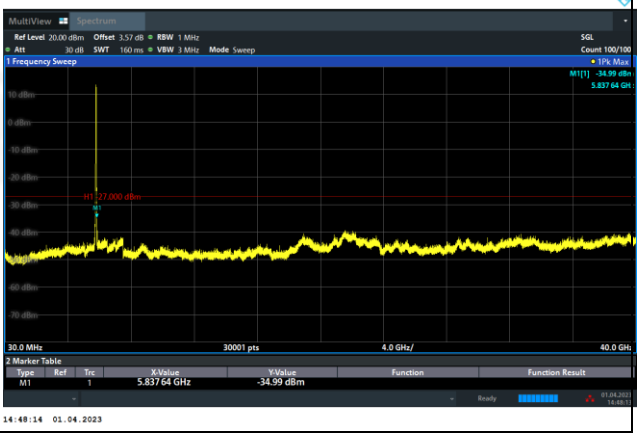
11ac (HT20) CH149



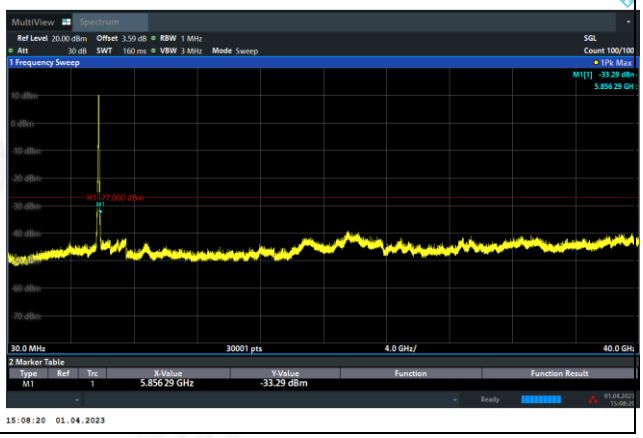
11ac (HT20) CH157

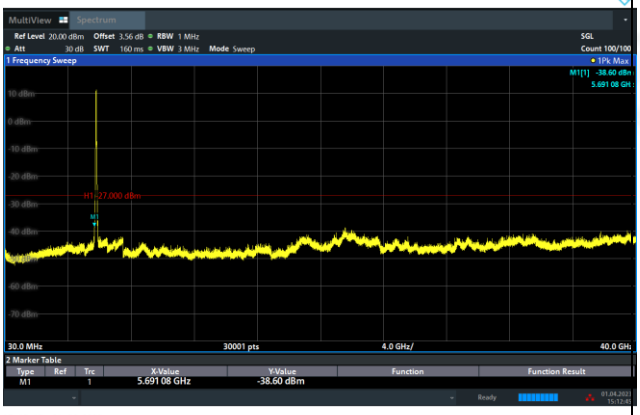
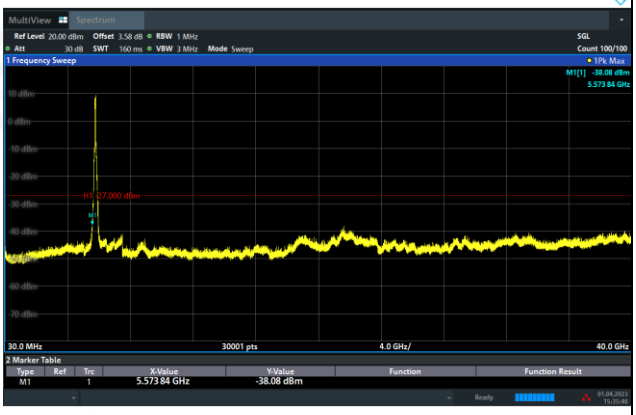


11ac(HT20) CH165



11ac(HT40) CH151



11ac(HT40) CH159	11ac (HT80) CH155
	

Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
a	5745	Ant1	5650	-47.26	3	-44.26	Peak	-27	Pass
a	5745	Ant1	5650	-56.79	3	-53.79	Average	-27	Pass
a	5745	Ant1	5700	-32.3	3	-29.3	Peak	10	Pass
a	5745	Ant1	5700	-46.19	3	-43.19	Average	10	Pass
a	5745	Ant1	5720	-17.94	3	-14.94	Peak	15.6	Pass
a	5745	Ant1	5720	-32.05	3	-29.05	Average	15.6	Pass
a	5745	Ant1	5725	-10.41	3	-7.41	Peak	27	Pass
a	5745	Ant1	5725	-24.75	3	-21.75	Average	27	Pass
a	5825	Ant1	5850	-21.26	3	-18.26	Peak	27	Pass
a	5825	Ant1	5850	-36.63	3	-33.63	Average	27	Pass
a	5825	Ant1	5855	-24.69	3	-21.69	Peak	15.6	Pass
a	5825	Ant1	5855	-41.65	3	-38.65	Average	15.6	Pass
a	5825	Ant1	5875	-39.46	3	-36.46	Peak	10	Pass
a	5825	Ant1	5875	-54.86	3	-51.86	Average	10	Pass
a	5825	Ant1	5925	-46.84	3	-43.84	Peak	-27	Pass
a	5825	Ant1	5925	-56.33	3	-53.33	Average	-27	Pass
n20	5745	Ant1	5650	-45.29	3	-42.29	Peak	-27	Pass
n20	5745	Ant1	5650	-56.7	3	-53.7	Average	-27	Pass
n20	5745	Ant1	5700	-33.27	3	-30.27	Peak	10	Pass
n20	5745	Ant1	5700	-44.99	3	-41.99	Average	10	Pass
n20	5745	Ant1	5720	-16.06	3	-13.06	Peak	15.6	Pass
n20	5745	Ant1	5720	-30.35	3	-27.35	Average	15.6	Pass
n20	5745	Ant1	5725	-11.7	3	-8.7	Peak	27	Pass
n20	5745	Ant1	5725	-23.09	3	-20.09	Average	27	Pass
n20	5825	Ant1	5850	-20.55	3	-17.55	Peak	27	Pass
n20	5825	Ant1	5850	-33.73	3	-30.73	Average	27	Pass
n20	5825	Ant1	5855	-22.28	3	-19.28	Peak	15.6	Pass
n20	5825	Ant1	5855	-40.06	3	-37.06	Average	15.6	Pass
n20	5825	Ant1	5875	-41.04	3	-38.04	Peak	10	Pass
n20	5825	Ant1	5875	-54.1	3	-51.1	Average	10	Pass
n20	5825	Ant1	5925	-46.36	3	-43.36	Peak	-27	Pass
n20	5825	Ant1	5925	-56.16	3	-53.16	Average	-27	Pass
n40	5755	Ant1	5650	-41.73	3	-38.73	Peak	-27	Pass
n40	5755	Ant1	5650	-51.39	3	-48.39	Average	-27	Pass
n40	5755	Ant1	5700	-22.03	3	-19.03	Peak	10	Pass
n40	5755	Ant1	5700	-35.54	3	-32.54	Average	10	Pass
n40	5755	Ant1	5720	-12.76	3	-9.76	Peak	15.6	Pass
n40	5755	Ant1	5720	-22.92	3	-19.92	Average	15.6	Pass
n40	5755	Ant1	5725	-10.59	3	-7.59	Peak	27	Pass
n40	5755	Ant1	5725	-20.84	3	-17.84	Average	27	Pass
n40	5795	Ant1	5850	-21.44	3	-18.44	Peak	27	Pass
n40	5795	Ant1	5850	-35.37	3	-32.37	Average	27	Pass
n40	5795	Ant1	5855	-24.83	3	-21.83	Peak	15.6	Pass
n40	5795	Ant1	5855	-38.13	3	-35.13	Average	15.6	Pass
n40	5795	Ant1	5875	-32.07	3	-29.07	Peak	10	Pass
n40	5795	Ant1	5875	-47.43	3	-44.43	Average	10	Pass
n40	5795	Ant1	5925	-45.81	3	-42.81	Peak	-27	Pass
n40	5795	Ant1	5925	-55.28	3	-52.28	Average	-27	Pass
ac20	5745	Ant1	5650	-46.88	3	-43.88	Peak	-27	Pass
ac20	5745	Ant1	5650	-56.8	3	-53.8	Average	-27	Pass
ac20	5745	Ant1	5700	-28.47	3	-25.47	Peak	10	Pass

ac20	5745	Ant1	5700	-45.46	3	-42.46	Average	10	Pass
ac20	5745	Ant1	5720	-17.59	3	-14.59	Peak	15.6	Pass
ac20	5745	Ant1	5720	-30.46	3	-27.46	Average	15.6	Pass
ac20	5745	Ant1	5725	-11.19	3	-8.19	Peak	27	Pass
ac20	5745	Ant1	5725	-23.21	3	-20.21	Average	27	Pass
ac20	5825	Ant1	5850	-18.65	3	-15.65	Peak	27	Pass
ac20	5825	Ant1	5850	-33.93	3	-30.93	Average	27	Pass
ac20	5825	Ant1	5855	-28.4	3	-25.4	Peak	15.6	Pass
ac20	5825	Ant1	5855	-40.7	3	-37.7	Average	15.6	Pass
ac20	5825	Ant1	5875	-39.12	3	-36.12	Peak	10	Pass
ac20	5825	Ant1	5875	-54.52	3	-51.52	Average	10	Pass
ac20	5825	Ant1	5925	-46.9	3	-43.9	Peak	-27	Pass
ac20	5825	Ant1	5925	-56.37	3	-53.37	Average	-27	Pass
ac40	5755	Ant1	5650	-38.47	3	-35.47	Peak	-27	Pass
ac40	5755	Ant1	5650	-51.45	3	-48.45	Average	-27	Pass
ac40	5755	Ant1	5700	-22.09	3	-19.09	Peak	10	Pass
ac40	5755	Ant1	5700	-35.45	3	-32.45	Average	10	Pass
ac40	5755	Ant1	5720	-12.24	3	-9.24	Peak	15.6	Pass
ac40	5755	Ant1	5720	-23.22	3	-20.22	Average	15.6	Pass
ac40	5755	Ant1	5725	-11.04	3	-8.04	Peak	27	Pass
ac40	5755	Ant1	5725	-20.85	3	-17.85	Average	27	Pass
ac40	5795	Ant1	5850	-20.41	3	-17.41	Peak	27	Pass
ac40	5795	Ant1	5850	-35.15	3	-32.15	Average	27	Pass
ac40	5795	Ant1	5855	-26.16	3	-23.16	Peak	15.6	Pass
ac40	5795	Ant1	5855	-37.22	3	-34.22	Average	15.6	Pass
ac40	5795	Ant1	5875	-33.48	3	-30.48	Peak	10	Pass
ac40	5795	Ant1	5875	-47.3	3	-44.3	Average	10	Pass
ac40	5795	Ant1	5925	-45.59	3	-42.59	Peak	-27	Pass
ac40	5795	Ant1	5925	-55.1	3	-52.1	Average	-27	Pass
ac80	5775	Ant1	5650	-29.24	3	-26.24	Peak	-27	Pass
ac80	5775	Ant1	5650	-41.92	3	-38.92	Average	-27	Pass
ac80	5775	Ant1	5700	-12.44	3	-9.44	Peak	10	Pass
ac80	5775	Ant1	5700	-27.58	3	-24.58	Average	10	Pass
ac80	5775	Ant1	5720	-13.78	3	-10.78	Peak	15.6	Pass
ac80	5775	Ant1	5720	-23.91	3	-20.91	Average	15.6	Pass
ac80	5775	Ant1	5725	-12.48	3	-9.48	Peak	27	Pass
ac80	5775	Ant1	5725	-23.96	3	-20.96	Average	27	Pass

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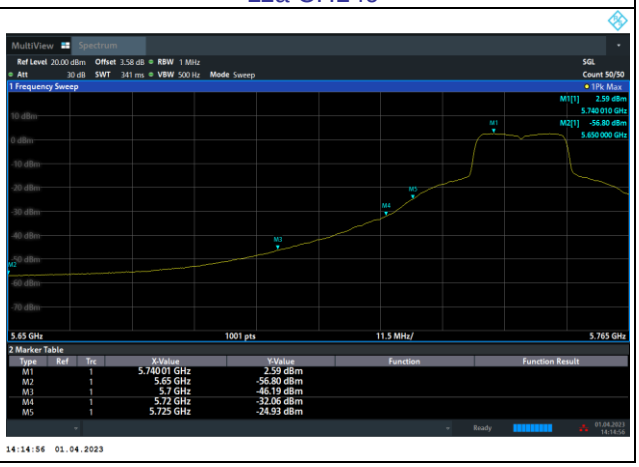
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