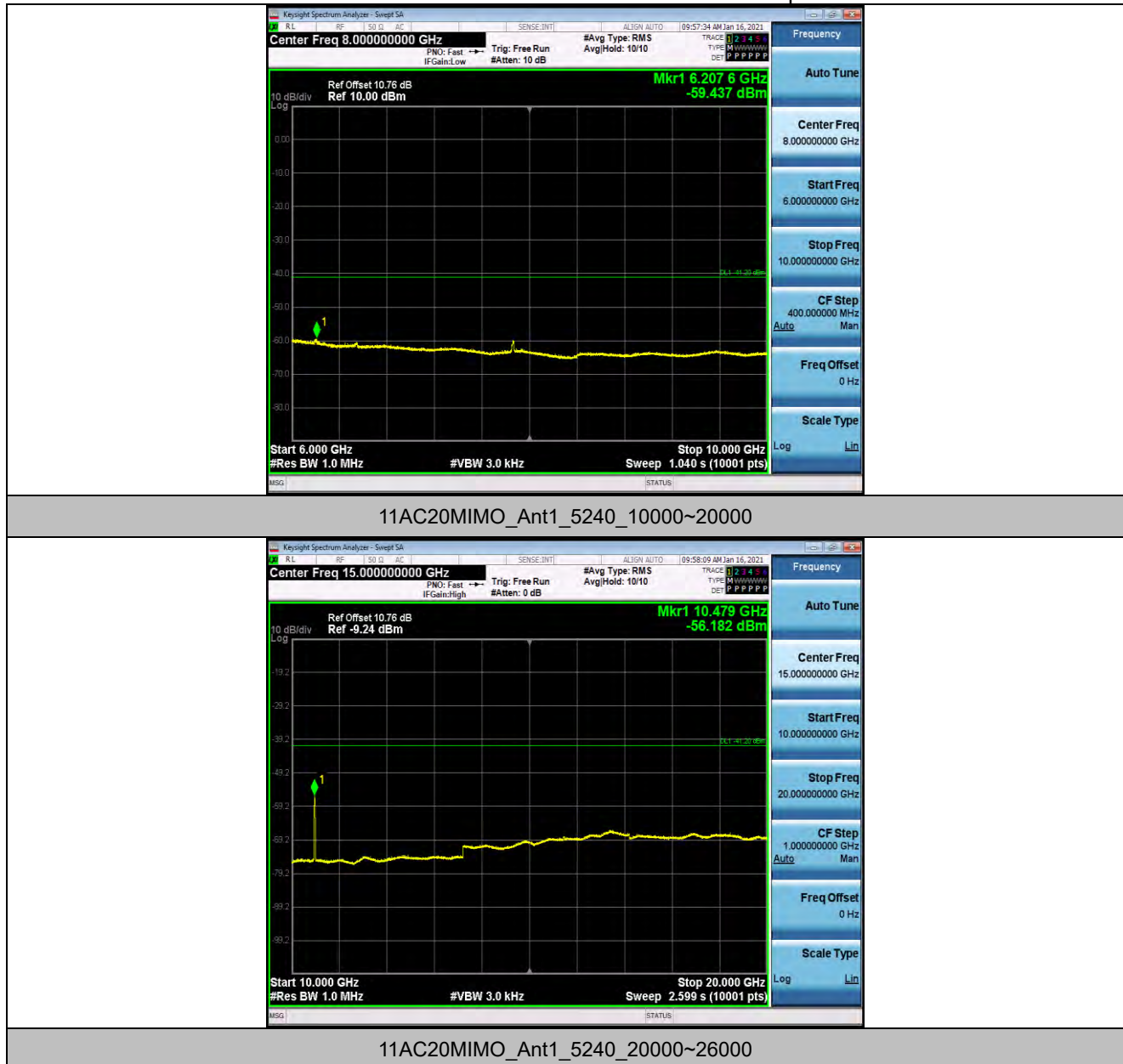




11AC20MIMO_Ant1_5240_1000~6000



11AC20MIMO_Ant1_5240_6000~10000

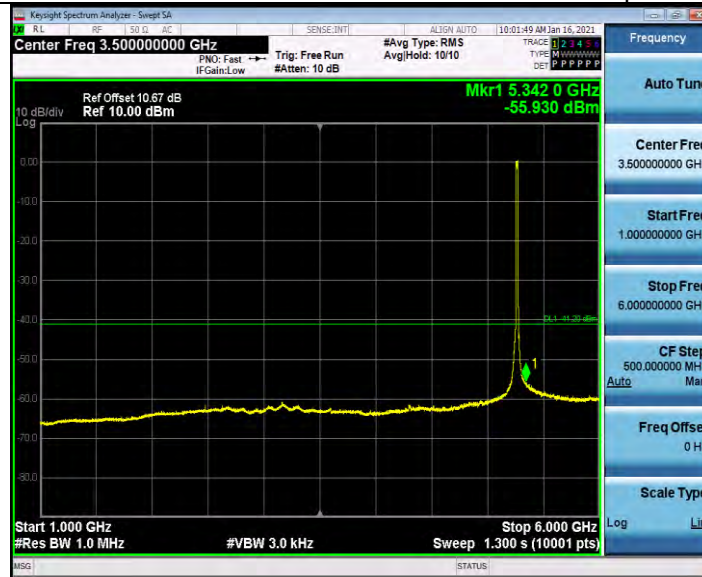




11AC20MIMO_Ant1_5260_30~1000



11AC20MIMO_Ant1_5260_1000~6000



11AC20MIMO_Ant1_5260_6000~10000



11AC20MIMO_Ant1_5260_10000~20000



11AC20MIMO_Ant1_5260_20000~26000



11AC20MIMO_Ant1_5280_30~1000



11AC20MIMO_Ant1_5280_1000~6000



11AC20MIMO_Ant1_5280_6000~10000



11AC20MIMO_Ant1_5280_10000~20000



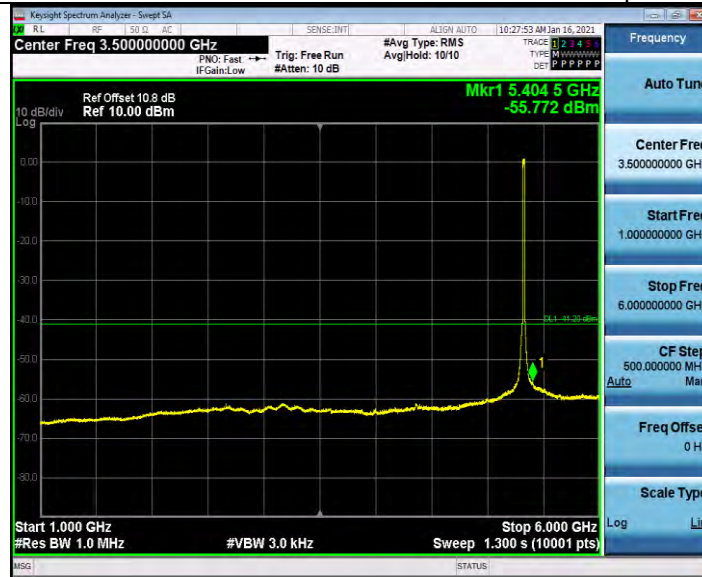
11AC20MIMO_Ant1_5280_20000~26000



11AC20MIMO_Ant1_5320_30~1000



11AC20MIMO_Ant1_5320_1000~6000



11AC20MIMO_Ant1_5320_6000~10000



11AC20MIMO_Ant1_5320_10000~20000



11AC20MIMO_Ant1_5320_20000~26000



11AC20MIMO_Ant1_5500_30~1000



11AC20MIMO_Ant1_5500_1000~6000



11AC20MIMO_Ant1_5500_6000~10000



11AC20MIMO_Ant1_5500_10000~20000



11AC20MIMO_Ant1_5500_20000~26000



11AC20MIMO_Ant1_5580_30~1000



11AC20MIMO_Ant1_5580_1000~6000



11AC20MIMO_Ant1_5580_6000~10000



11AC20MIMO_Ant1_5580_10000~20000



11AC20MIMO_Ant1_5580_20000~26000



11AC20MIMO_Ant1_5700_30~1000



11AC20MIMO_Ant1_5700_1000~6000



11AC20MIMO_Ant1_5700_6000~10000



11AC20MIMO_Ant1_5700_10000~20000



11AC20MIMO_Ant1_5700_20000~26000



11AC20MIMO_Ant1_5745_30~5650



11AC20MIMO_Ant1_5745_5925~40000



11AC20MIMO_Ant1_5785_30~5650



11AC20MIMO_Ant1_5785_5925~40000



11AC20MIMO_Ant1_5825_30~5650



11AC20MIMO_Ant1_5825_5925~40000



11AC40MIMO_Ant1_5190_30~1000



11AC40MIMO_Ant1_5190_1000~6000



11AC40MIMO_Ant1_5190_6000~10000



11AC40MIMO_Ant1_5190_10000~20000



11AC40MIMO_Ant1_5190_20000~26000



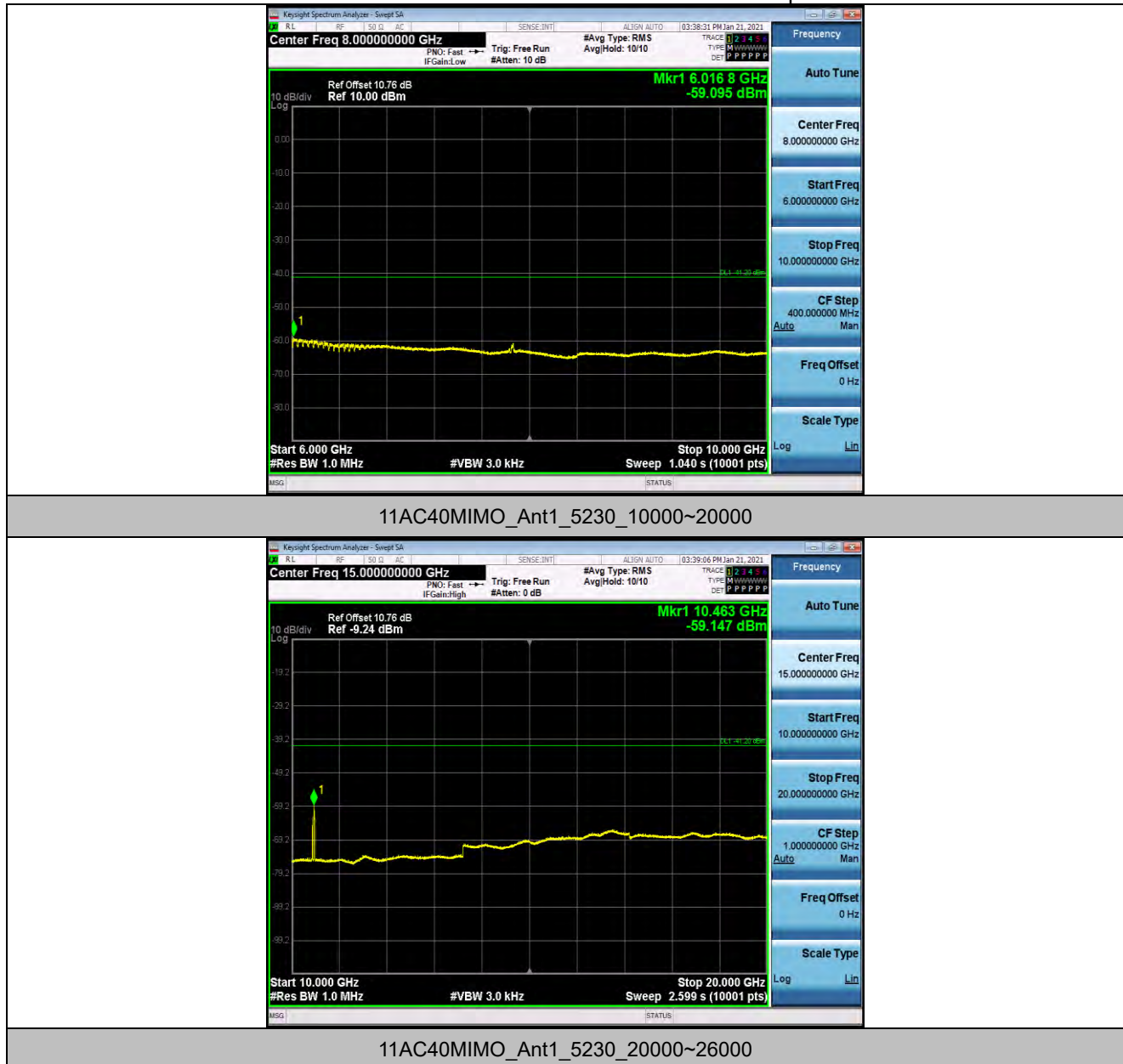
11AC40MIMO_Ant1_5230_30~1000



11AC40MIMO_Ant1_5230_1000~6000



11AC40MIMO_Ant1_5230_6000~10000

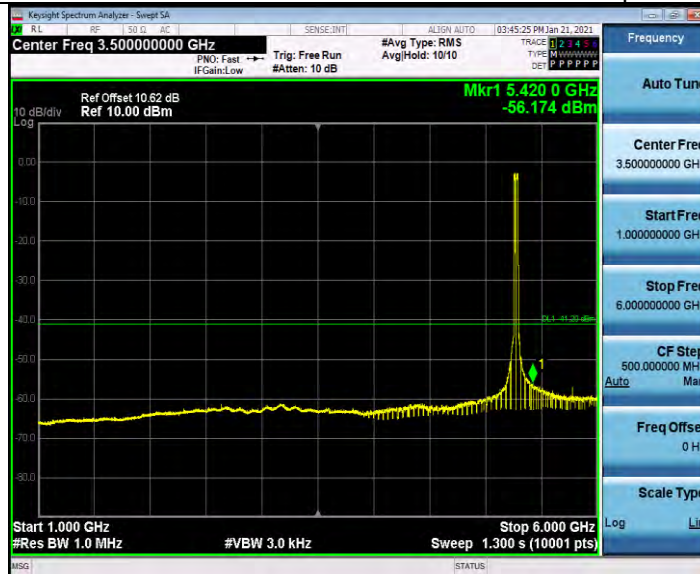




11AC40MIMO_Ant1_5270_30~1000



11AC40MIMO_Ant1_5270_1000~6000



11AC40MIMO_Ant1_5270_6000~10000



11AC40MIMO_Ant1_5270_10000~20000



11AC40MIMO_Ant1_5270_20000~26000



11AC40MIMO_Ant1_5310_30~1000



11AC40MIMO_Ant1_5310_1000~6000



11AC40MIMO_Ant1_5310_6000~10000



11AC40MIMO_Ant1_5310_10000~20000



11AC40MIMO_Ant1_5310_20000~26000



11AC40MIMO_Ant1_5510_30~1000



11AC40MIMO_Ant1_5510_1000~6000



11AC40MIMO_Ant1_5510_6000~10000



11AC40MIMO_Ant1_5510_10000~20000



11AC40MIMO_Ant1_5510_20000~26000



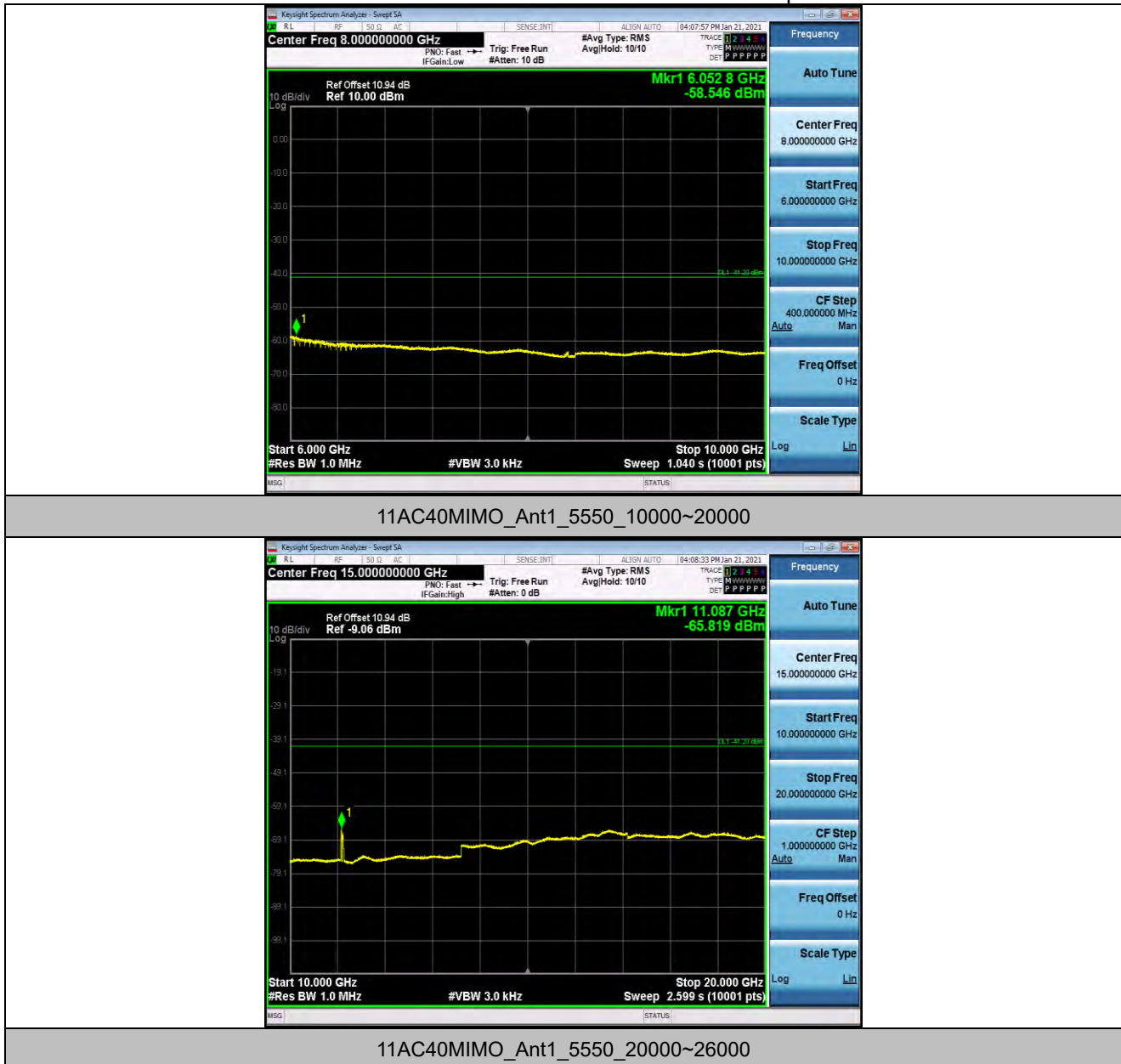
11AC40MIMO_Ant1_5550_30~1000



11AC40MIMO_Ant1_5550_1000~6000



11AC40MIMO_Ant1_5550_6000~10000





11AC40MIMO_Ant1_5670_30~1000



11AC40MIMO_Ant1_5670_1000~6000



11AC40MIMO_Ant1_5670_6000~10000



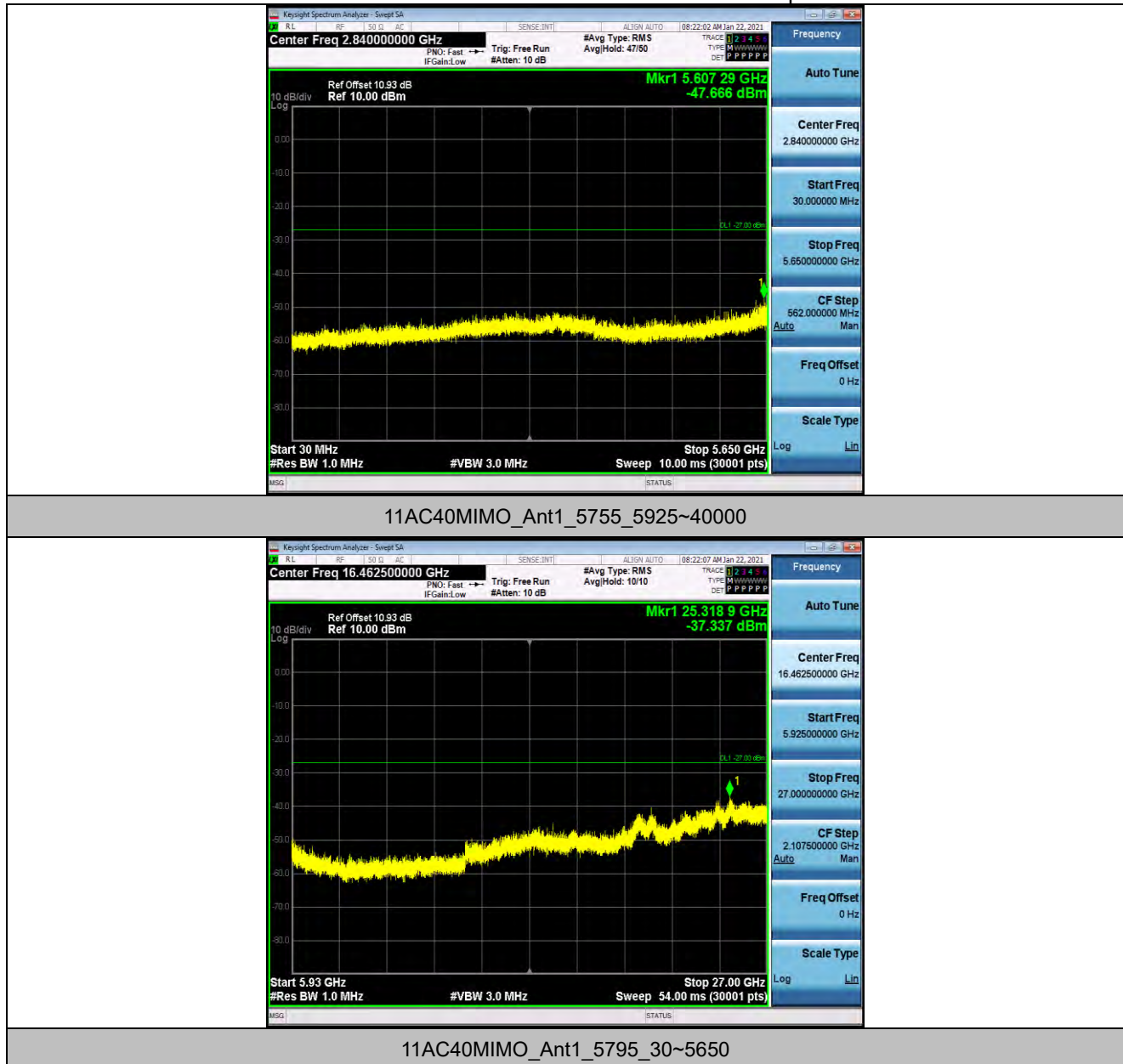
11AC40MIMO_Ant1_5670_10000~20000



11AC40MIMO_Ant1_5670_20000~26000



11AC40MIMO_Ant1_5755_30~5650





11AC40MIMO_Ant1_5795_5925~40000



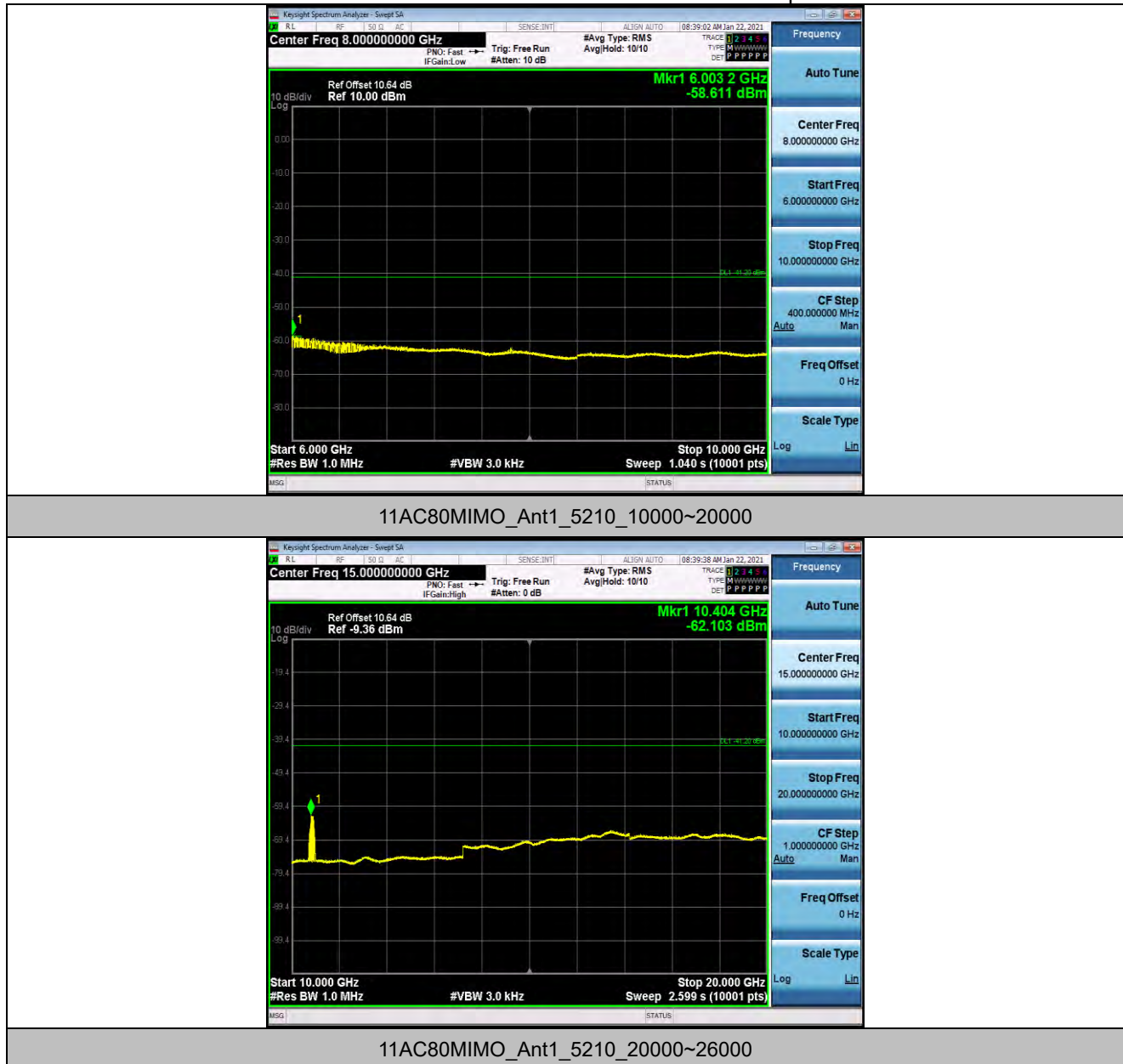
11AC80MIMO_Ant1_5210_30~1000



11AC80MIMO_Ant1_5210_1000~6000



11AC80MIMO_Ant1_5210_6000~10000

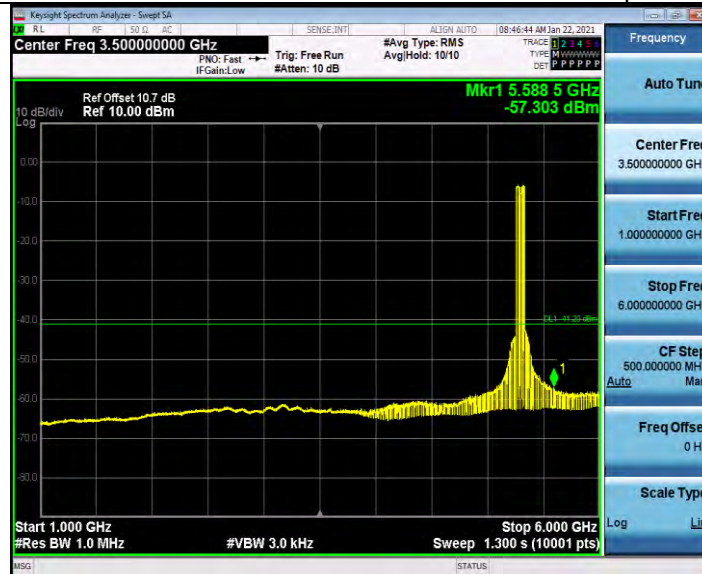




11AC80MIMO_Ant1_5290_30~1000



11AC80MIMO_Ant1_5290_1000~6000



11AC80MIMO_Ant1_5290_6000~10000



11AC80MIMO_Ant1_5290_10000~20000



11AC80MIMO_Ant1_5290_20000~26000



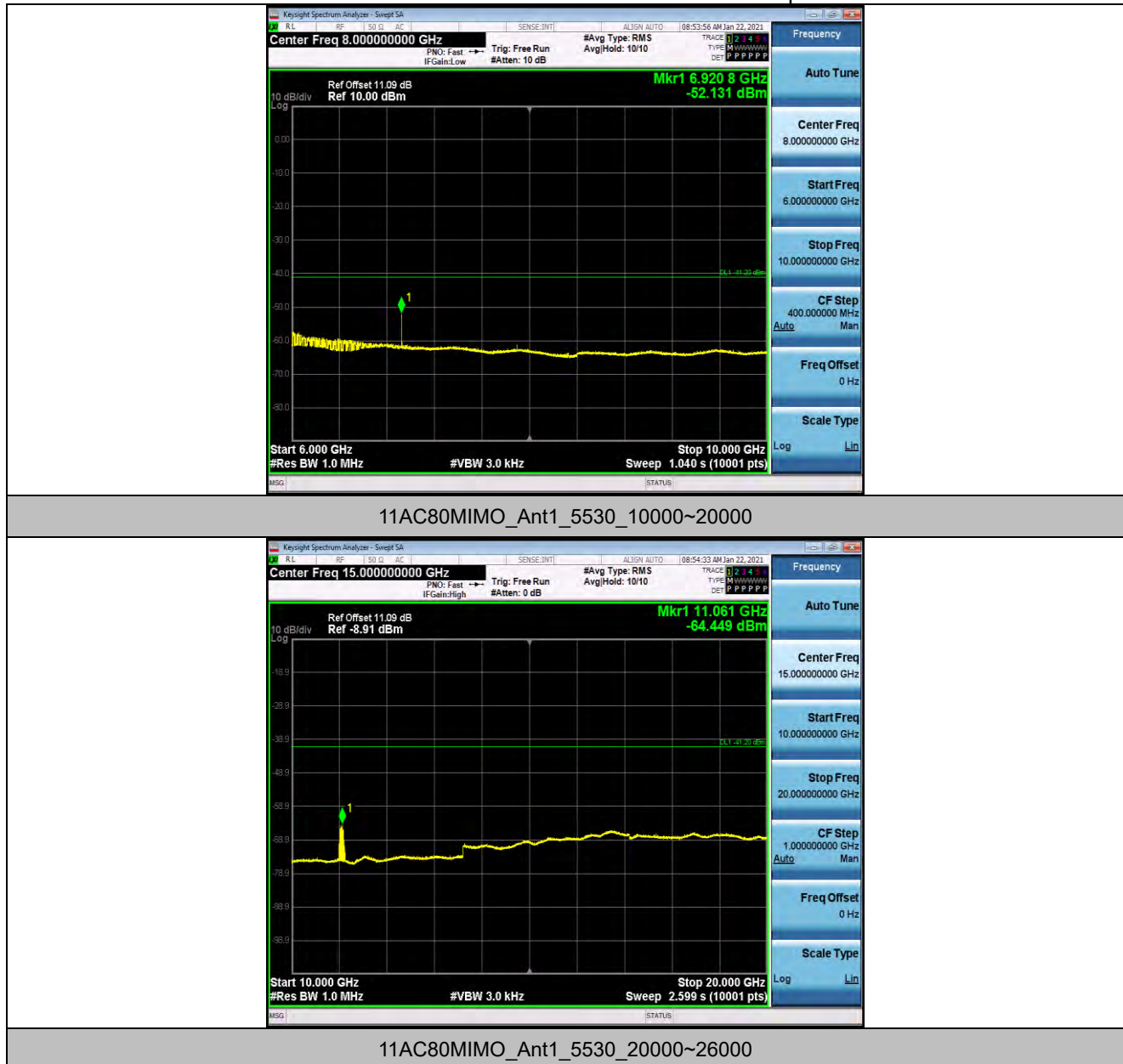
11AC80MIMO_Ant1_5530_30~1000



11AC80MIMO_Ant1_5530_1000~6000



11AC80MIMO_Ant1_5530_6000~10000





11AC80MIMO_Ant1_5610_30~1000



11AC80MIMO_Ant1_5610_1000~6000



11AC80MIMO_Ant1_5610_6000~10000



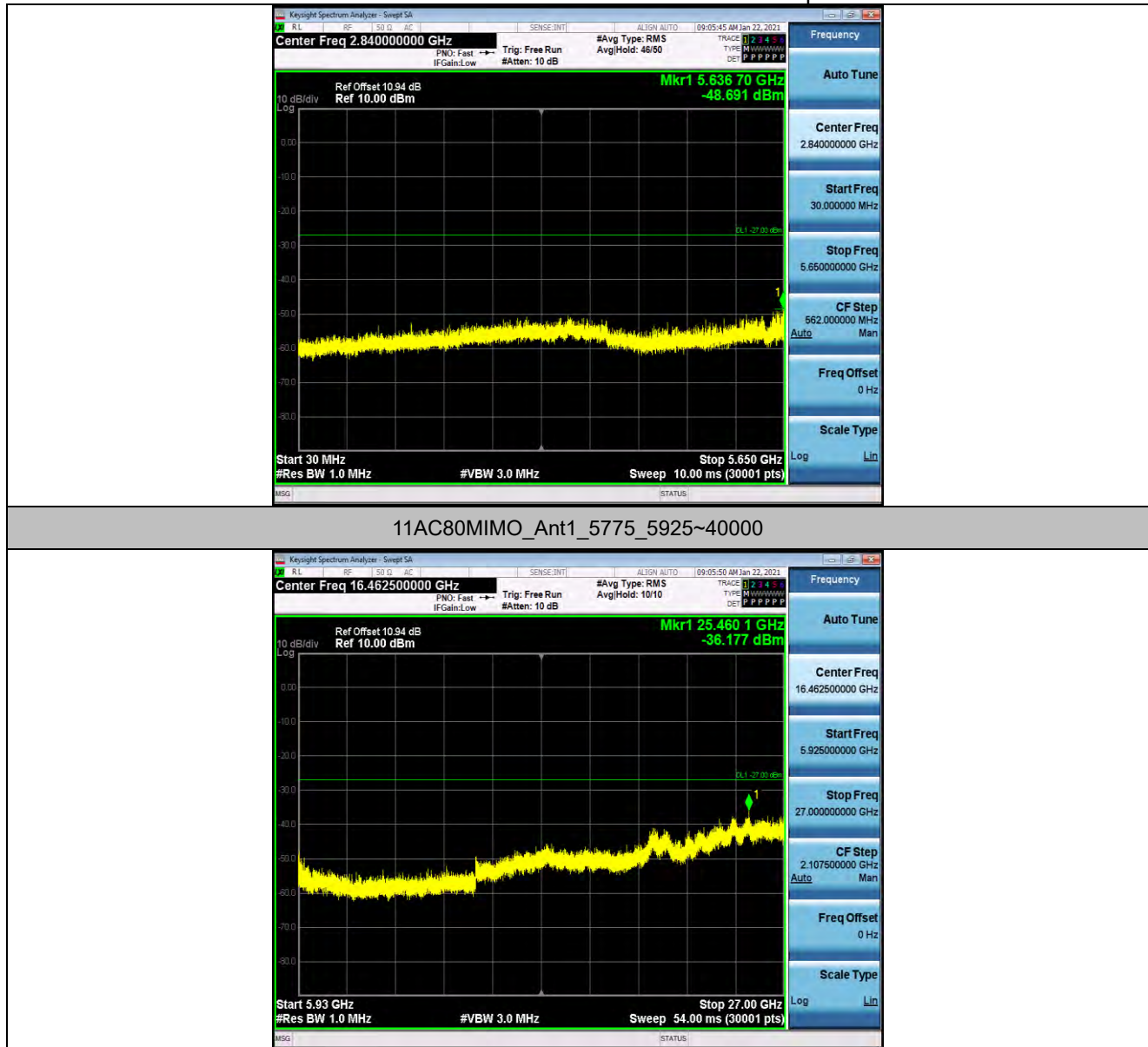
11AC80MIMO_Ant1_5610_10000~20000



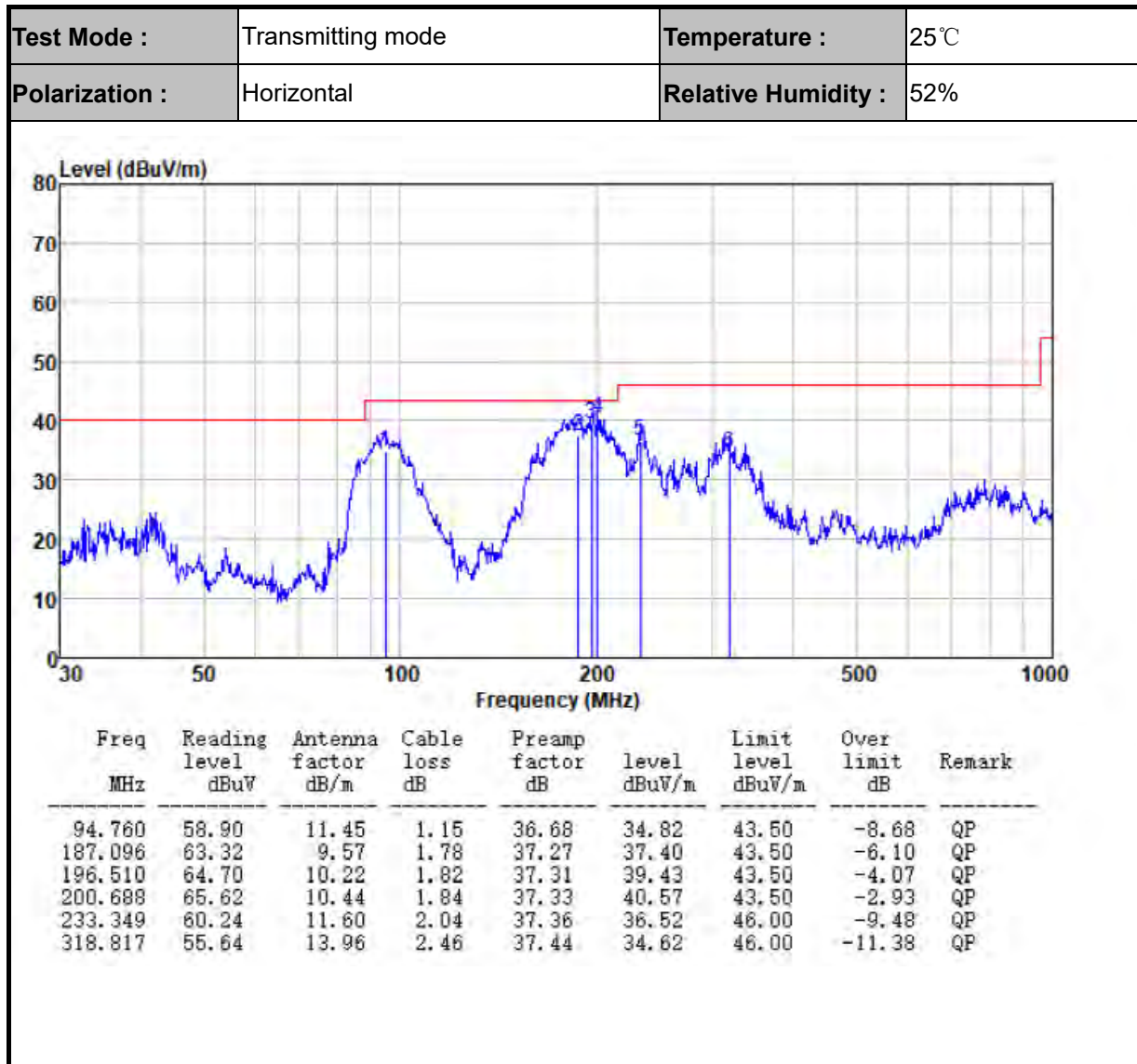
11AC80MIMO_Ant1_5610_20000~26000

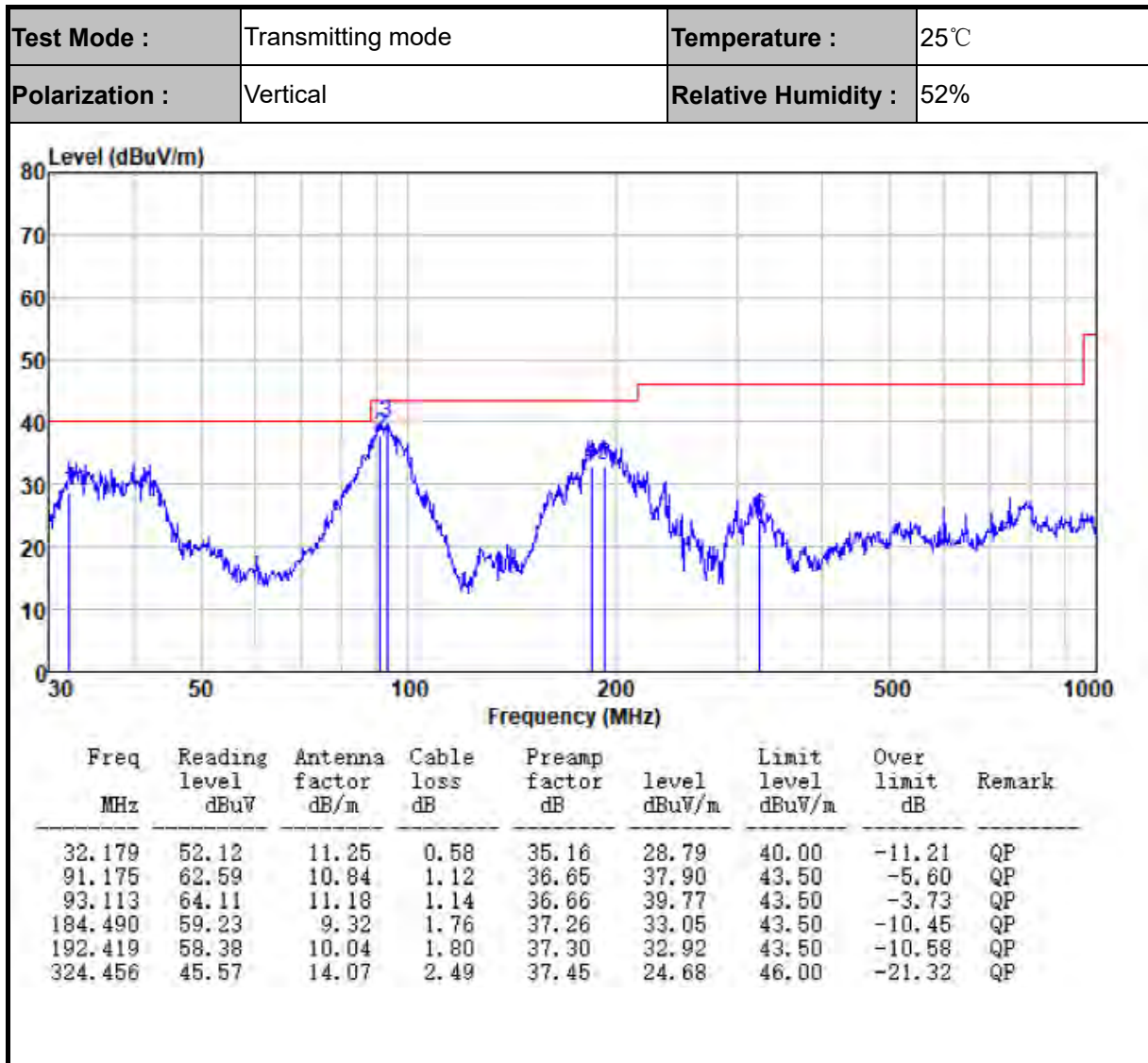


11AC80MIMO_Ant1_5775_30~5650



4.4.6 Test Result of Radiated Spurious Emission (30MHz ~ 1GHz)





4.5 AC Conducted Emission Measurement

4.5.1 Limit of AC Conducted Emission

FCC §15.207

IC RSS-GEN 8.8

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

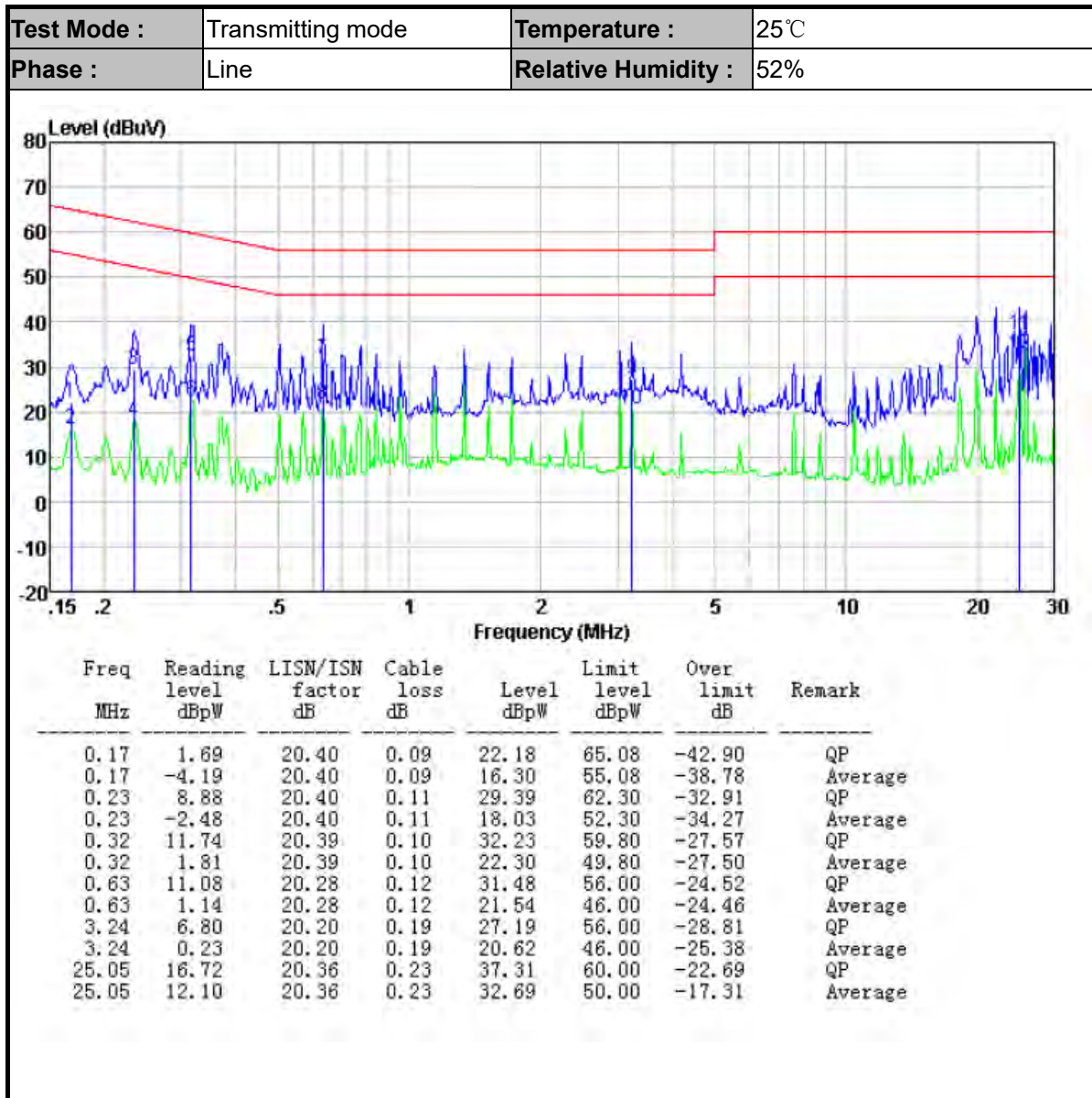
Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

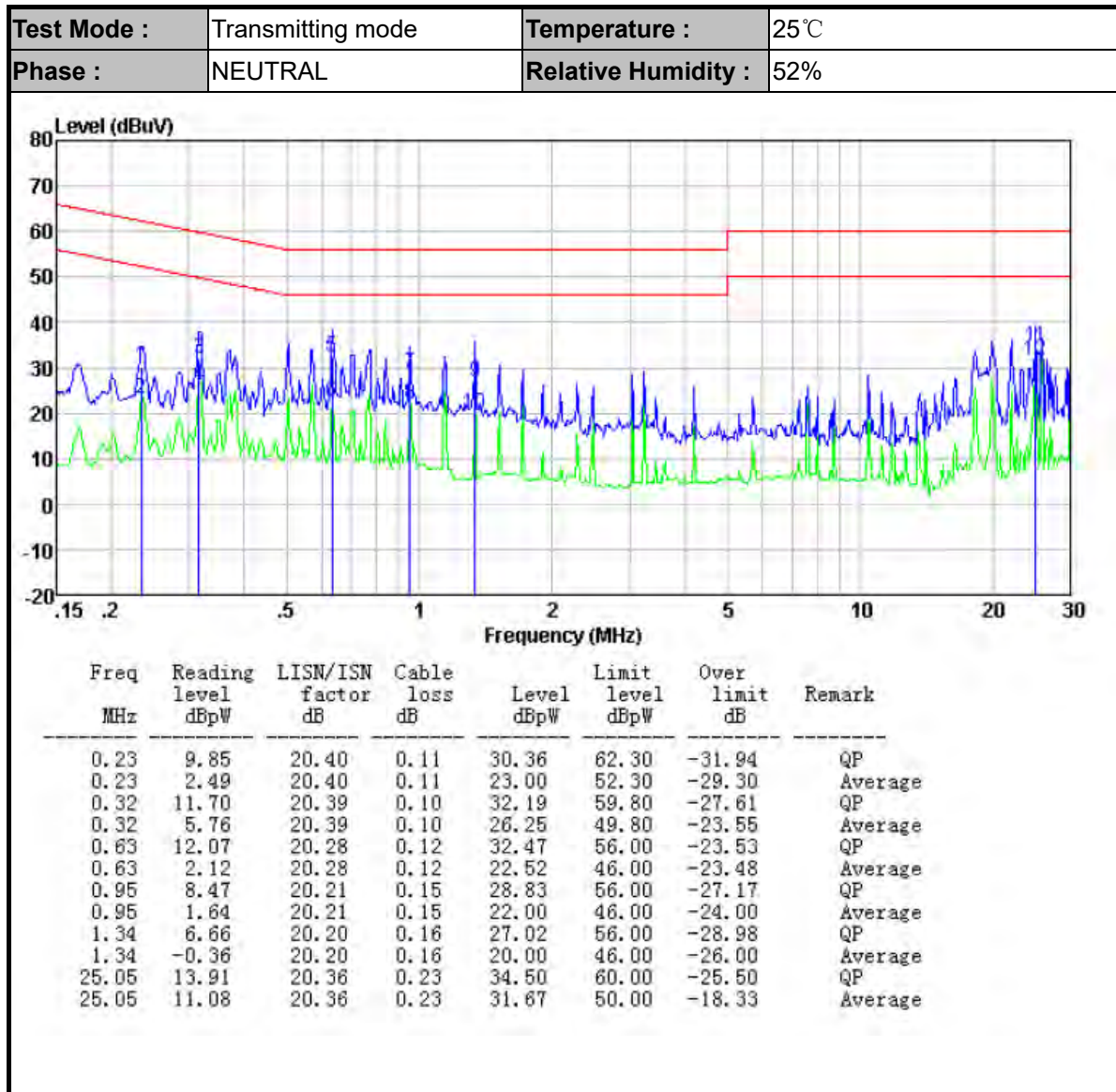
*Decreases with the logarithm of the frequency.

4.5.2 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

4.5.3 Test Result of AC Conducted Emission





4.6 Frequency Stability Measurement

4.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

4.6.2 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

4.6.3 Test Result of Frequency Stability

Refer to Appendix D of this test report.

4.7 Automatically Discontinue Transmission

4.7.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

4.7.2 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

4.8 Antenna Requirements

4.8.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.8.2 Antenna Connected Construction

An embedded-in antenna design is used.

4.8.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5 List of Measuring Equipment

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 25 2020	June. 24 2021
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2020	June. 24 2021
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2020	June. 24 2021
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2020	June. 24 2021
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2020	June. 24 2021
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2020	June. 24 2021
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2020	June. 24 2021
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2020	June. 24 2021
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2020	June. 24 2021
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2020	June. 24 2021
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2020	June. 24 2021
15	Band filter	Amindeon	82346	GTS219	June. 25 2020	June. 24 2021
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2020	June. 24 2021
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2020	June. 24 2021
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2020	June. 24 2021
19	Splitter	Agilent	11636B	GTS237	June. 25 2020	June. 24 2021
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2020	June. 24 2021
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2020	Oct. 17 2021
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2020	Oct. 17 2021
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2020	Oct. 17 2021
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2020	June. 24 2021

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 25 2020	June. 24 2021
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 25 2020	June. 24 2021
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 25 2020	June. 24 2021
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 25 2020	June. 24 2021
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 25 2020	June. 24 2021

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 25 2020	June. 24 2021
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 25 2020	June. 24 2021
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 25 2020	June. 24 2021
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 25 2020	June. 24 2021
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 25 2020	June. 24 2021
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 25 2020	June. 24 2021
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 25 2020	June. 24 2021

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 25 2020	June. 24 2021
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2020	June. 24 2021

6 Uncertainty of Evaluation

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.67dB
Radiated emissions	30MHz ~ 1GMHz	5.05dB
	1GHz ~ 18GHz	5.06 dB
	18GHz ~ 40GHz	3.65dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Appendix A1: Emission Bandwidth

Test Result

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	19.640	5170.280	5189.920	---	PASS
		5200	19.800	5190.040	5209.840	---	PASS
		5240	19.840	5230.040	5249.880	---	PASS
		5260	19.640	5250.120	5269.760	---	PASS
		5280	19.560	5270.160	5289.720	---	PASS
		5320	19.480	5310.240	5329.720	---	PASS
		5500	19.720	5490.120	5509.840	---	PASS
		5580	19.640	5570.080	5589.720	---	PASS
		5700	19.720	5690.120	5709.840	---	PASS
		5745	19.840	5735.160	5755.000	---	PASS
		5785	19.720	5775.280	5795.000	---	PASS
		5825	19.800	5815.240	5835.040	---	PASS
11N20 MIMO	Ant1	5180	20.160	5169.920	5190.080	---	PASS
		5200	20.080	5189.960	5210.040	---	PASS
		5240	20.080	5229.920	5250.000	---	PASS
		5260	20.000	5250.040	5270.040	---	PASS
		5280	19.920	5270.040	5289.960	---	PASS
		5320	19.920	5310.000	5329.920	---	PASS
		5500	20.160	5489.920	5510.080	---	PASS
		5580	20.040	5569.920	5589.960	---	PASS
		5700	20.040	5690.000	5710.040	---	PASS
		5745	20.160	5735.040	5755.200	---	PASS
		5785	20.040	5775.040	5795.080	---	PASS
		5825	20.280	5814.800	5835.080	---	PASS
11N40 MIMO	Ant1	5190	40.480	5169.920	5210.400	---	PASS
		5230	40.320	5209.920	5250.240	---	PASS
		5270	40.240	5249.840	5290.080	---	PASS
		5310	40.560	5289.680	5330.240	---	PASS
		5510	40.560	5489.840	5530.400	---	PASS
		5550	41.200	5529.520	5570.720	---	PASS
		5670	40.640	5649.680	5690.320	---	PASS

		5755	40.160	5734.840	5775.000	---	PASS
		5795	40.800	5774.520	5815.320	---	PASS
11AC20 MIMO	Ant1	5180	20.120	5169.920	5190.040	---	PASS
		5200	19.880	5190.080	5209.960	---	PASS
		5240	20.000	5230.040	5250.040	---	PASS
		5260	19.960	5250.040	5270.000	---	PASS
		5280	20.040	5269.960	5290.000	---	PASS
		5320	20.200	5309.920	5330.120	---	PASS
		5500	20.000	5490.000	5510.000	---	PASS
		5580	20.040	5570.000	5590.040	---	PASS
		5700	20.160	5690.000	5710.160	---	PASS
		5745	19.960	5735.040	5755.000	---	PASS
		5785	19.960	5775.000	5794.960	---	PASS
		5825	20.080	5815.000	5835.080	---	PASS
11AC40 MIMO	Ant1	5190	40.160	5169.840	5210.000	---	PASS
		5230	40.080	5209.920	5250.000	---	PASS
		5270	40.240	5250.000	5290.240	---	PASS
		5310	40.480	5289.600	5330.080	---	PASS
		5510	39.920	5490.320	5530.240	---	PASS
		5550	40.400	5529.760	5570.160	---	PASS
		5670	40.240	5650.000	5690.240	---	PASS
		5755	40.160	5734.920	5775.080	---	PASS
		5795	40.560	5774.760	5815.320	---	PASS
11AC80 MIMO	Ant1	5210	81.280	5169.360	5250.640	---	PASS
		5290	80.960	5249.360	5330.320	---	PASS
		5530	81.280	5489.520	5570.800	---	PASS
		5610	81.280	5569.520	5650.800	---	PASS
		5775	81.280	5734.520	5815.800	---	PASS

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant2	5180	19.800	5170.040	5189.840	---	PASS
	Ant2	5200	19.560	5190.200	5209.760	---	PASS
	Ant2	5240	19.800	5230.120	5249.920	---	PASS
	Ant2	5260	19.680	5250.160	5269.840	---	PASS
	Ant2	5280	19.760	5270.040	5289.800	---	PASS
	Ant2	5320	19.640	5310.200	5329.840	---	PASS

	Ant2	5500	19.720	5490.120	5509.840	---	PASS
	Ant2	5580	19.880	5570.120	5590.000	---	PASS
	Ant2	5700	19.600	5690.320	5709.920	---	PASS
	Ant2	5745	19.520	5735.080	5754.600	---	PASS
	Ant2	5785	19.880	5775.080	5794.960	---	PASS
	Ant2	5825	19.920	5815.120	5835.040	---	PASS
11N20MIMO	Ant2	5180	20.080	5170.000	5190.080	---	PASS
	Ant2	5200	20.040	5190.000	5210.040	---	PASS
	Ant2	5240	20.000	5230.040	5250.040	---	PASS
	Ant2	5260	19.960	5250.040	5270.000	---	PASS
	Ant2	5280	20.200	5269.920	5290.120	---	PASS
	Ant2	5320	20.280	5309.880	5330.160	---	PASS
	Ant2	5500	20.120	5489.920	5510.040	---	PASS
	Ant2	5580	20.240	5569.960	5590.200	---	PASS
	Ant2	5700	20.000	5689.960	5709.960	---	PASS
	Ant2	5745	20.280	5734.920	5755.200	---	PASS
	Ant2	5785	20.000	5775.040	5795.040	---	PASS
	Ant2	5825	20.280	5814.760	5835.040	---	PASS
11N40MIMO	Ant2	5190	80.000	5150.000	5230.000	---	PASS
	Ant2	5230	40.560	5209.840	5250.400	---	PASS
	Ant2	5270	40.560	5249.680	5290.240	---	PASS
	Ant2	5310	40.160	5289.840	5330.000	---	PASS
	Ant2	5510	40.400	5489.680	5530.080	---	PASS
	Ant2	5550	40.720	5529.440	5570.160	---	PASS
	Ant2	5670	40.560	5649.840	5690.400	---	PASS
	Ant2	5755	40.480	5734.600	5775.080	---	PASS
	Ant2	5795	40.560	5774.680	5815.240	---	PASS
11AC20MIMO	Ant2	5180	20.080	5169.960	5190.040	---	PASS
	Ant2	5200	20.080	5189.920	5210.000	---	PASS
	Ant2	5240	20.080	5229.920	5250.000	---	PASS
	Ant2	5260	20.080	5249.880	5269.960	---	PASS
	Ant2	5280	20.120	5270.000	5290.120	---	PASS
	Ant2	5320	20.120	5309.960	5330.080	---	PASS
	Ant2	5500	20.160	5489.840	5510.000	---	PASS
	Ant2	5580	20.120	5569.920	5590.040	---	PASS
	Ant2	5700	20.000	5690.080	5710.080	---	PASS

	Ant2	5745	20.240	5735.000	5755.240	---	PASS
	Ant2	5785	20.160	5774.920	5795.080	---	PASS
	Ant2	5825	20.080	5815.000	5835.080	---	PASS
11AC40MIMO	Ant2	5190	40.320	5170.000	5210.320	---	PASS
	Ant2	5230	40.800	5209.520	5250.320	---	PASS
	Ant2	5270	39.920	5250.160	5290.080	---	PASS
	Ant2	5310	40.640	5289.600	5330.240	---	PASS
	Ant2	5510	40.560	5489.840	5530.400	---	PASS
	Ant2	5550	40.480	5529.680	5570.160	---	PASS
	Ant2	5670	40.880	5649.760	5690.640	---	PASS
	Ant2	5755	40.480	5734.760	5775.240	---	PASS
	Ant2	5795	40.720	5774.520	5815.240	---	PASS
11AC80MIMO	Ant2	5210	80.960	5169.520	5250.480	---	PASS
	Ant2	5290	81.600	5249.360	5330.960	---	PASS
	Ant2	5530	81.600	5489.360	5570.960	---	PASS
	Ant2	5610	81.280	5569.360	5650.640	---	PASS
	Ant2	5775	81.120	5734.520	5815.640	---	PASS

Test Graphs

11A_Ant1_5180



11A_Ant1_5200



11A_Ant1_5240





11A_Ant1_5320



11A_Ant1_5500



11A_Ant1_5580



11A_Ant1_5700