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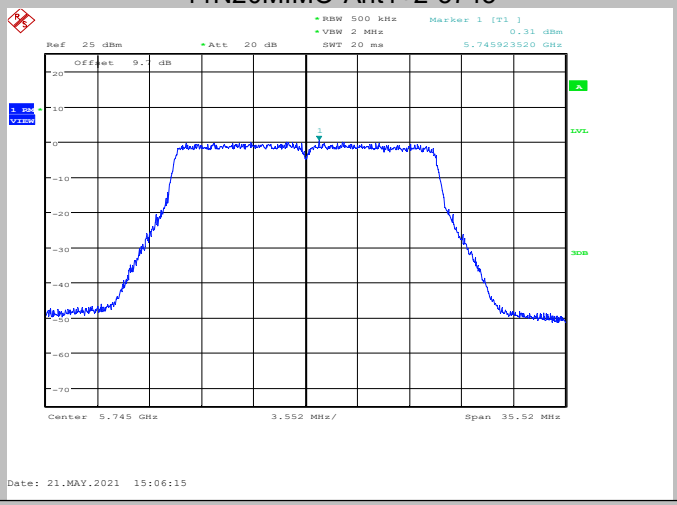
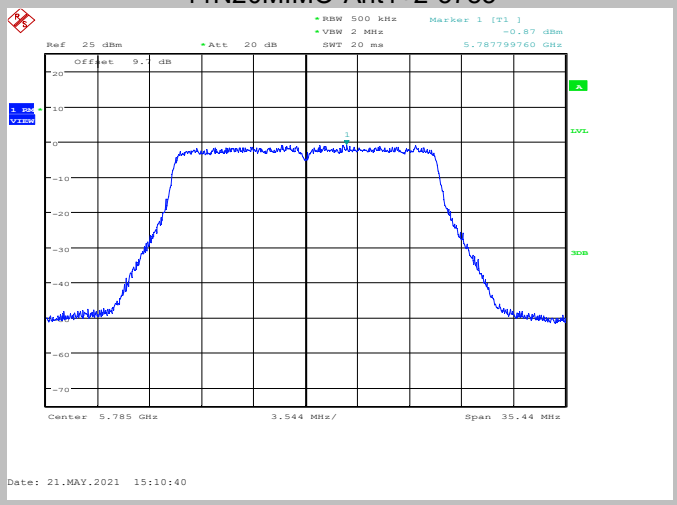
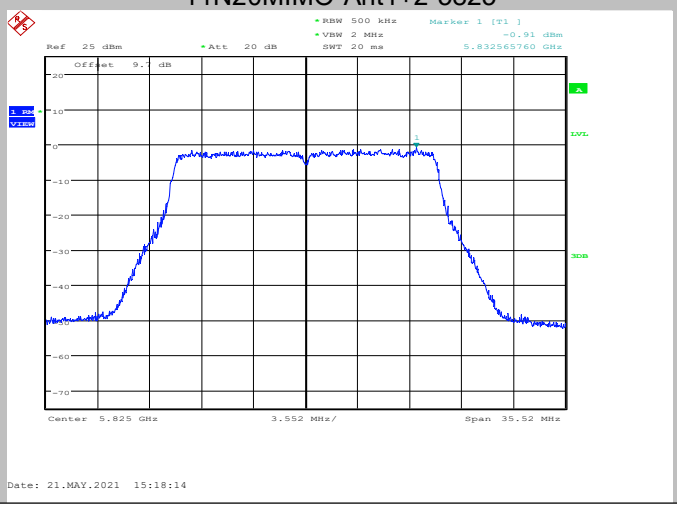


11N20MIMO-Ant1+2-5785



11N20MIMO-Ant1+2-5825



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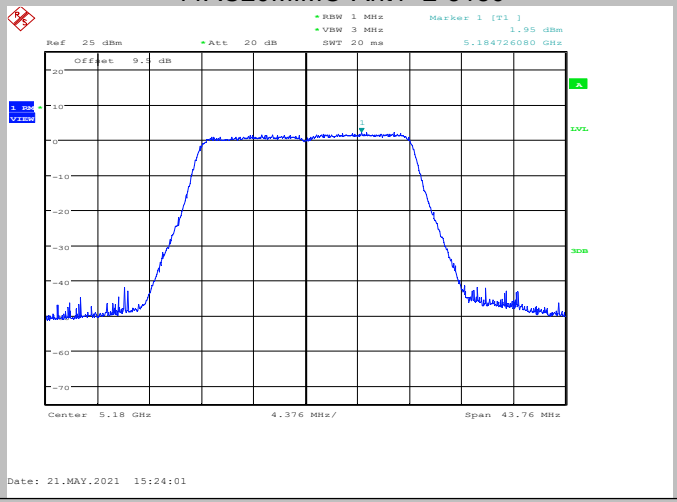

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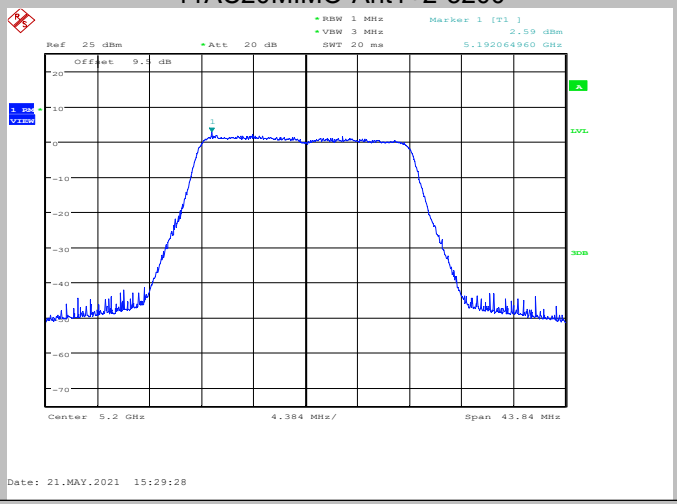

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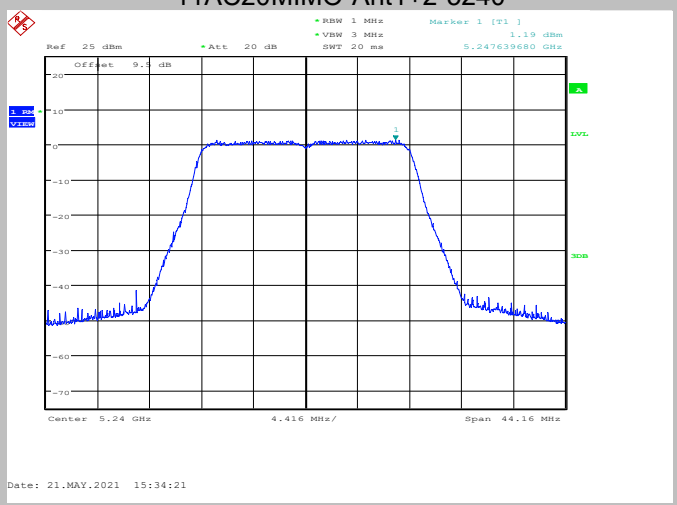

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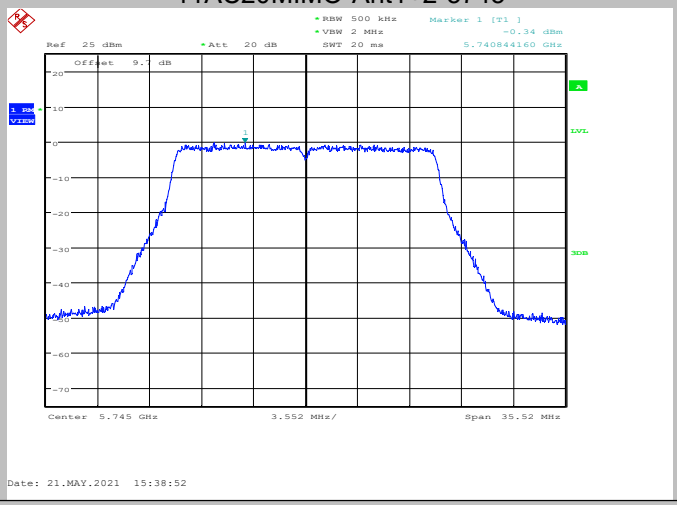

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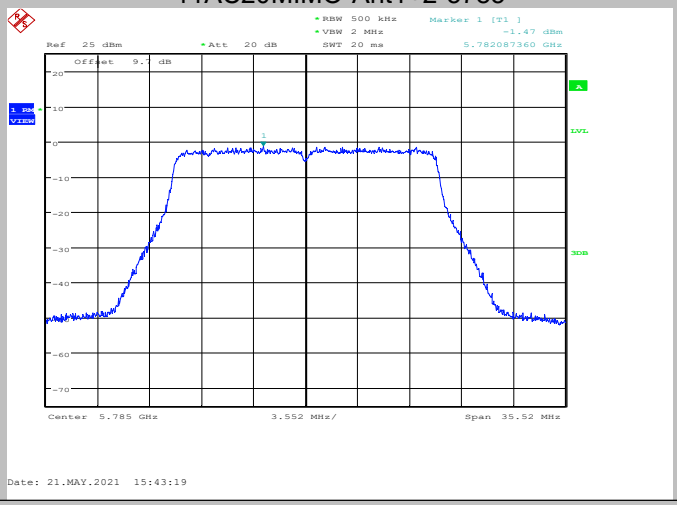

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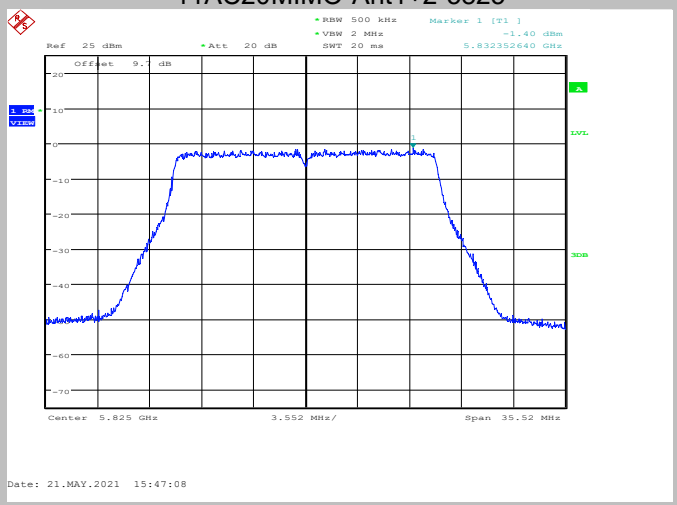

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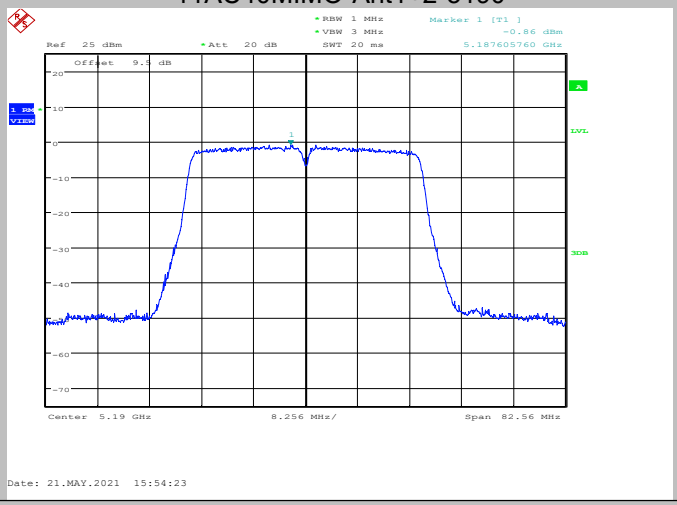

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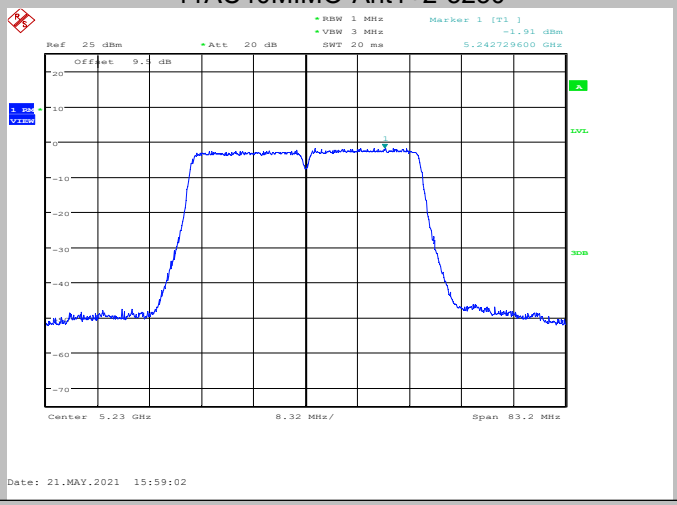

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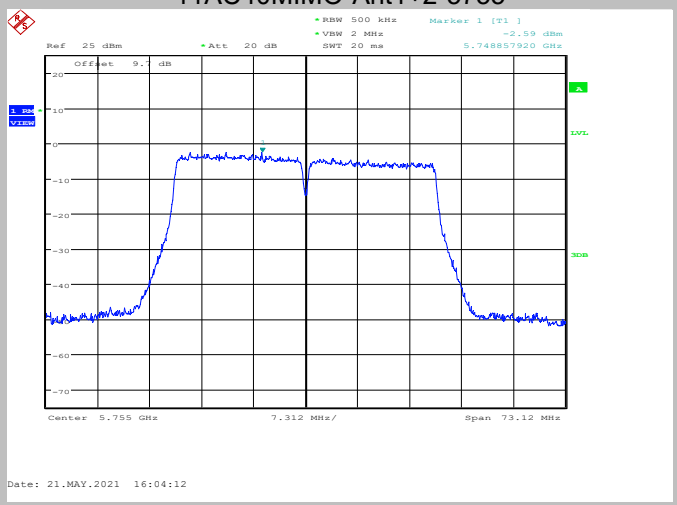

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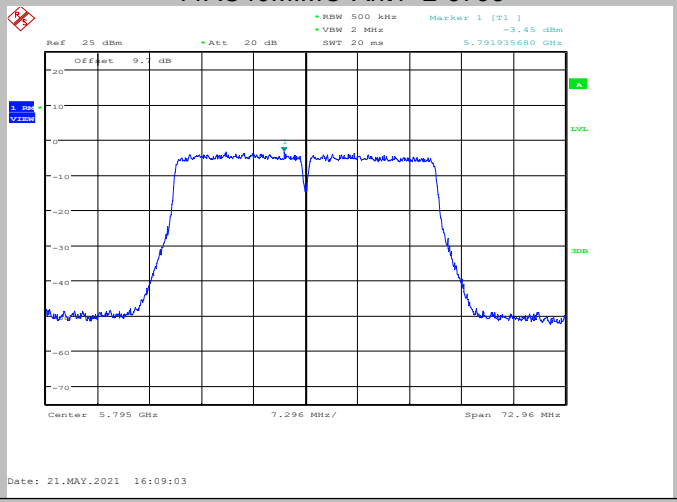

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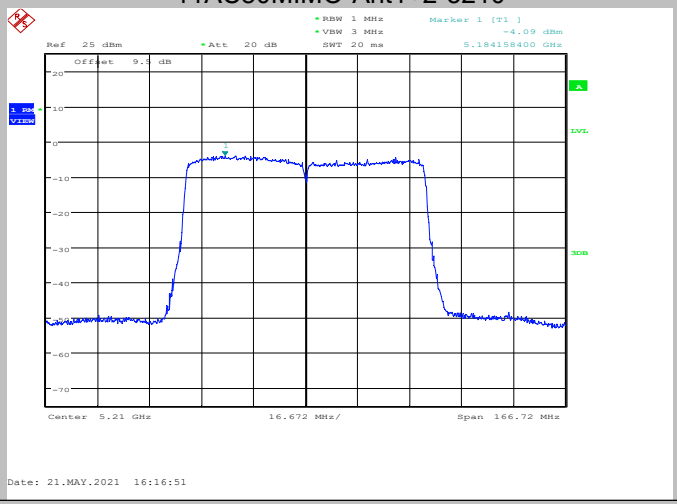

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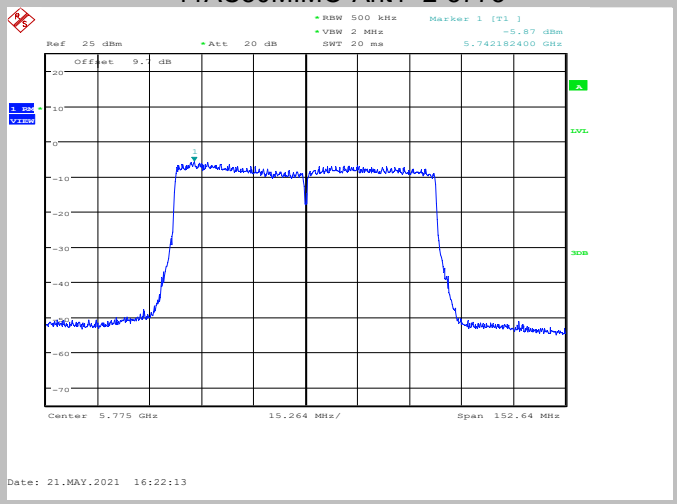


Appendix D): Band Edge Measurements

Result Table

Test Mode	Antenna	Channel	Max.Level [dBm]	Verdict
11A	Ant1	5180	-42.83	PASS
11A	Ant2	5180	-48.62	PASS
11A	Ant1	5240	-50.61	PASS
11A	Ant2	5240	-49.89	PASS

Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			Below 5715	5715-5725	
11A	Ant1	5745	-47.19	-40.41	PASS
11A	Ant2	5745	-49.2	-49.28	PASS

Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			5850-5860	Above 5860	
11A	Ant1	5825	-42.51	-49.15	PASS
11A	Ant2	5825	-50.21	-49.96	PASS

Test Mode	Antenna	Channel	Max.Level [dBm]	Verdict
11N20SISO	Ant1	5180	-49.95	PASS
11N20SISO	Ant2	5180	-47.94	PASS
11N20SISO	Ant1	5240	-49.85	PASS
11N20SISO	Ant2	5240	-50.13	PASS

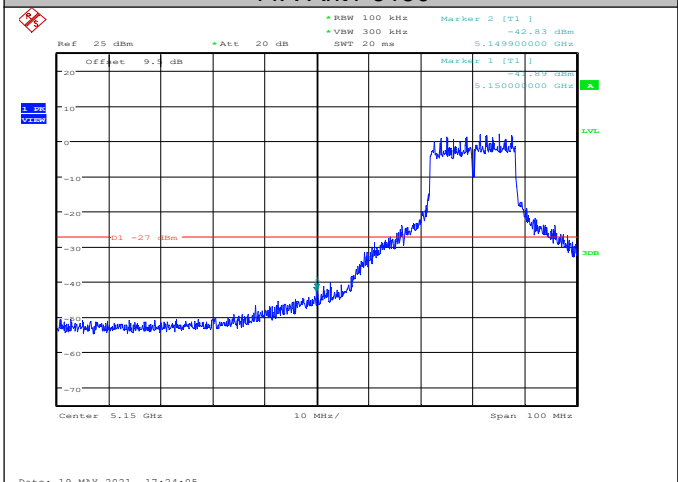
Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			Below 5715	5715-5725	
11N20SISO	Ant1	5745	-49.4	-49.74	PASS
11N20SISO	Ant2	5745	-48.98	-48.5	PASS

Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
			5850-5860	Above 5860	
11N20SISO	Ant1	5825	-51.49	-50.41	PASS
11N20SISO	Ant2	5825	-50.28	-50.75	PASS

Test Mode	Antenna	Channel	Max.Level [dBm]		Verdict
11AC20SISO	Ant1	5180	-49.74		PASS
11AC20SISO	Ant2	5180	-48.26		PASS
11AC20SISO	Ant1	5240	-50.53		PASS
11AC20SISO	Ant2	5240	-50.38		PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			Below 5715	**5715-5725**	
11AC20SISO	Ant1	5745	-50.72	-50.33	PASS
11AC20SISO	Ant2	5745	-49.49	-48.15	PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			5850-5860	**Above 5860**	
11AC20SISO	Ant1	5825	-51.49	-50.32	PASS
11AC20SISO	Ant2	5825	-50.74	-49.25	PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
11AC40SISO	Ant1	5190	-53.98		PASS
11AC40SISO	Ant2	5190	-52.56		PASS
11AC40SISO	Ant1	5230	-55.44		PASS
11AC40SISO	Ant2	5230	-54.29		PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			Below 5715	**5715-5725**	
11AC40SISO	Ant1	5755	-49.44	-50.97	PASS
11AC40SISO	Ant2	5755	-49.21	-47.89	PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			5850-5860	**Above 5860**	
11AC40SISO	Ant1	5795	-50.77	-49.99	PASS
11AC40SISO	Ant2	5795	-51.08	-50.21	PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
11AC80SISO	Ant1	5210	-48.99		PASS
11AC80SISO	Ant2	5210	-49.28		PASS
Test Mode	**Antenna**	**Channel**	**Max.Level [dBm]**		**Verdict**
			Below 5715	**5715-5725**	
11AC80SISO	Ant1	5775	-50.91	-49.61	PASS
11AC80SISO	Ant2	5775	-50.12	-49.2	PASS

Test Graph

11A-Ant1-5180



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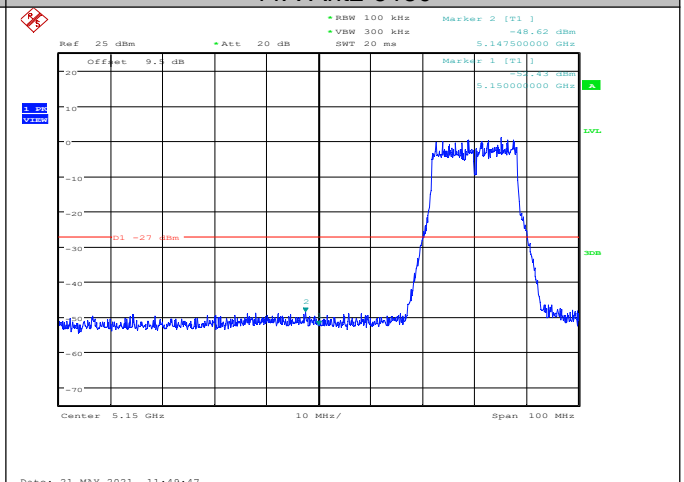
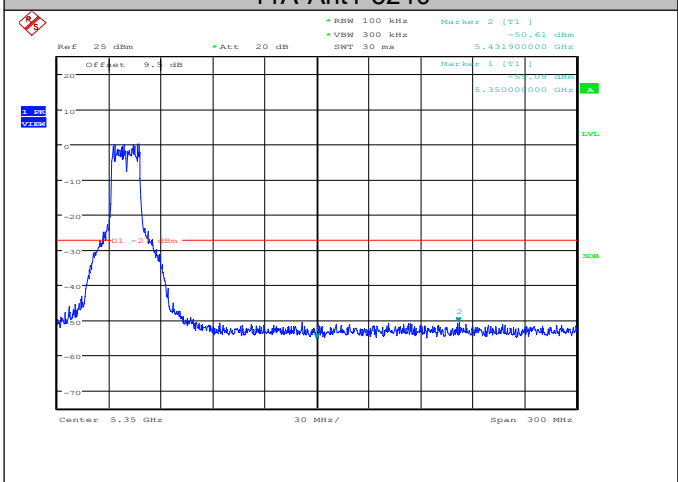


11A-Ant1-5240



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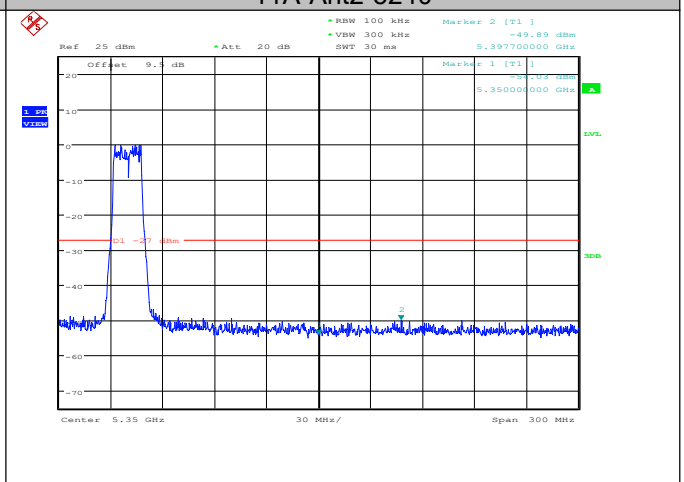
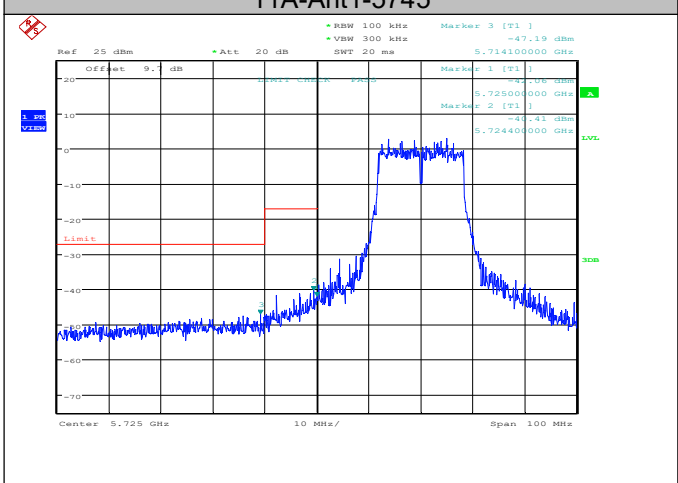


11A-Ant1-5745



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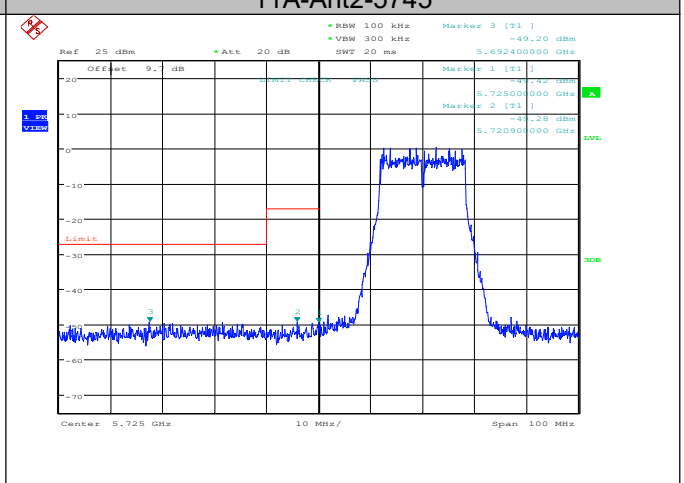

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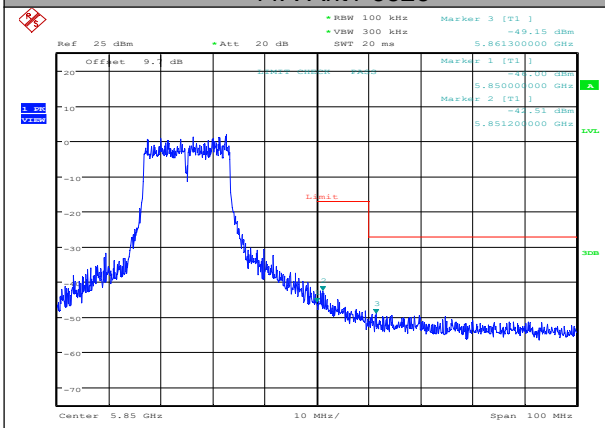

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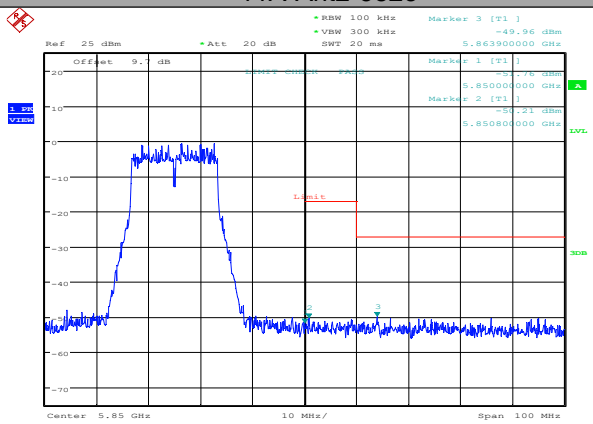

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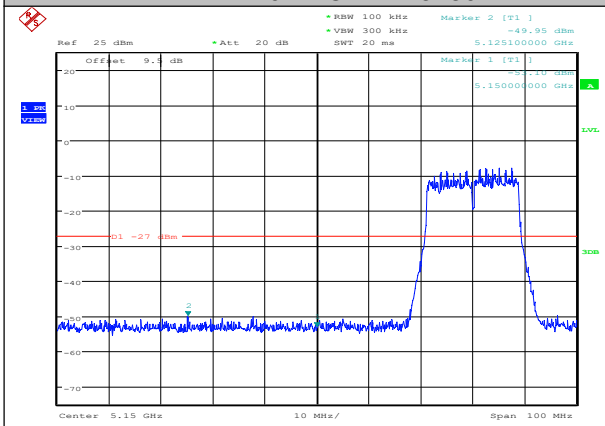

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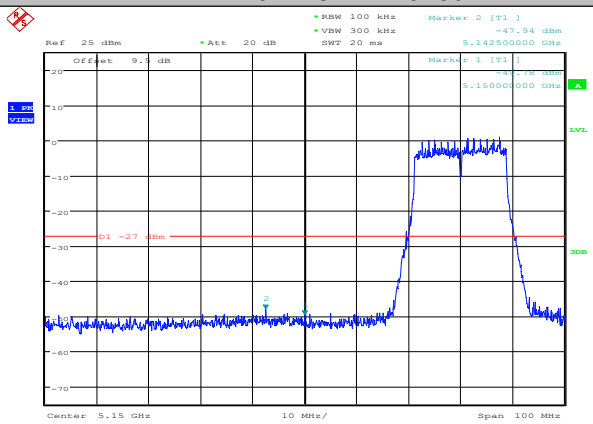

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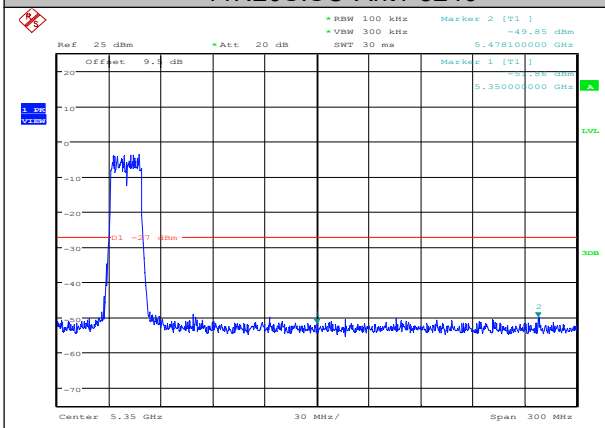

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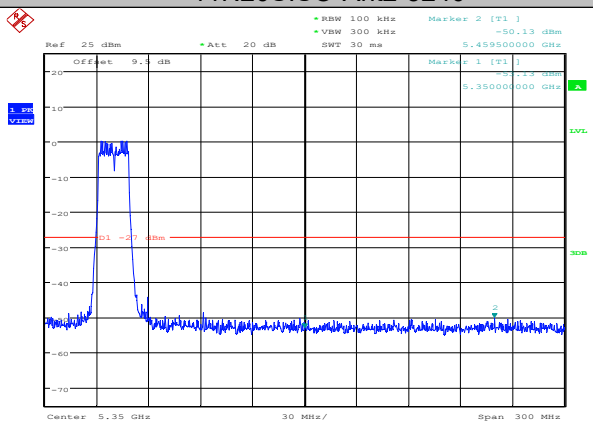

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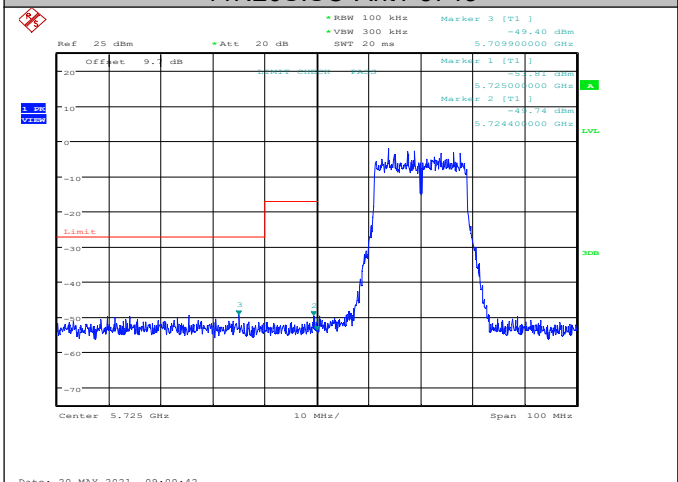

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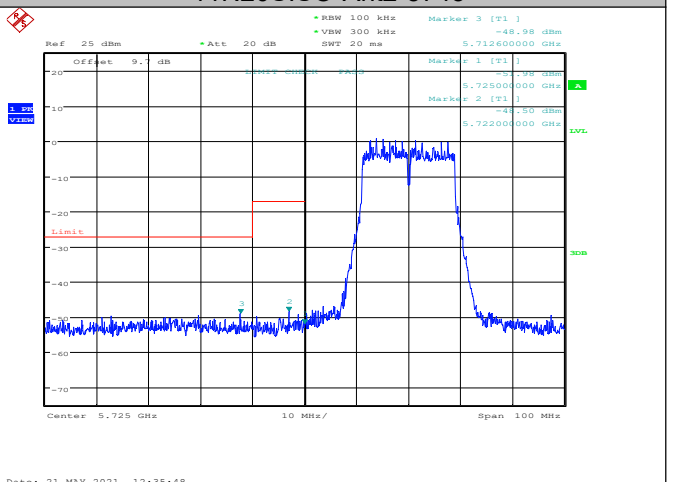

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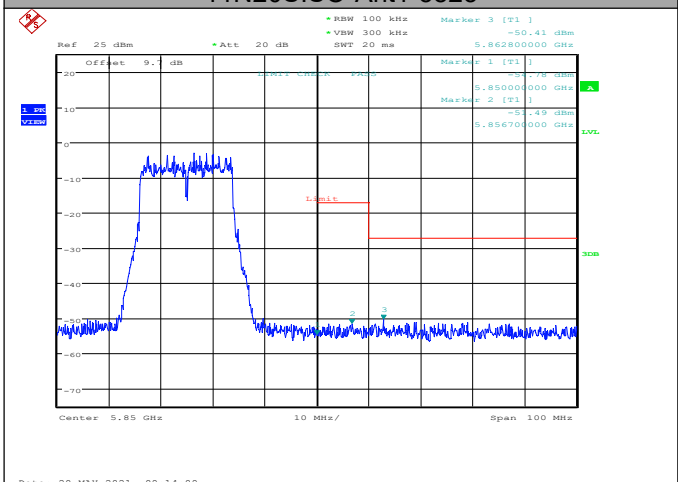

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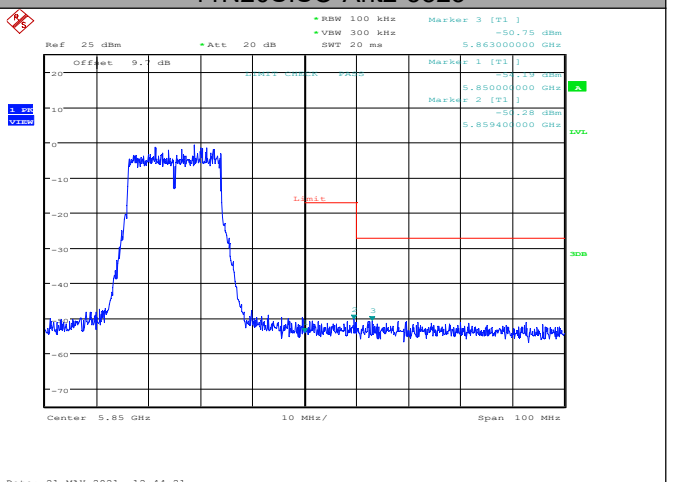

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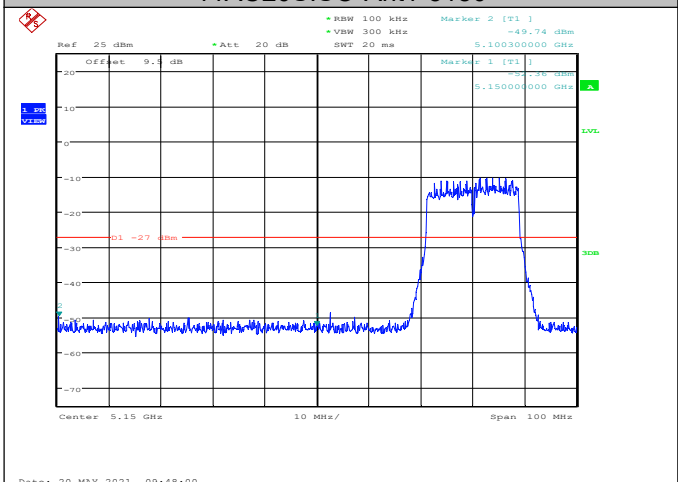

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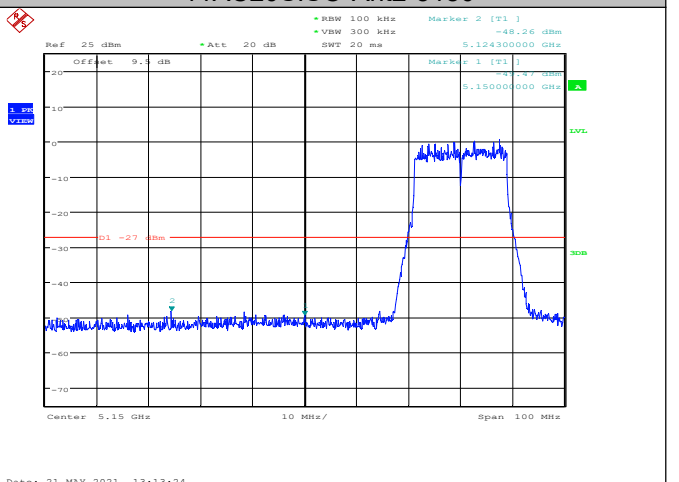

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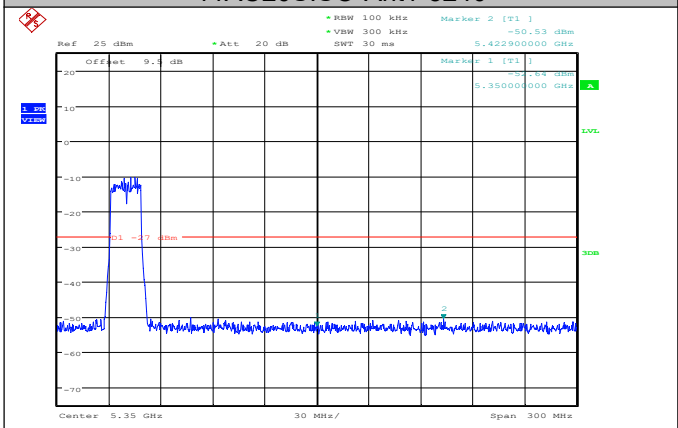

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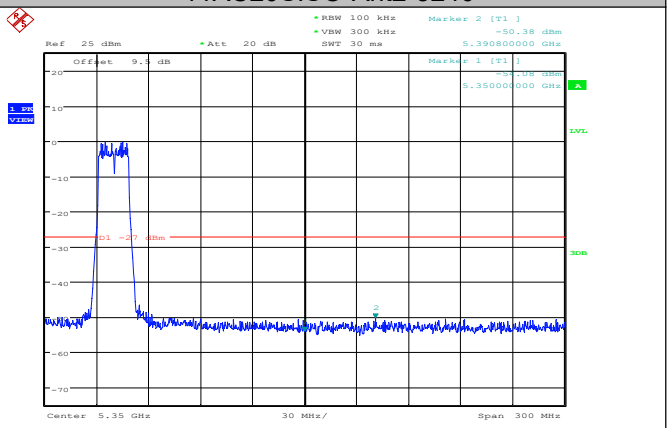

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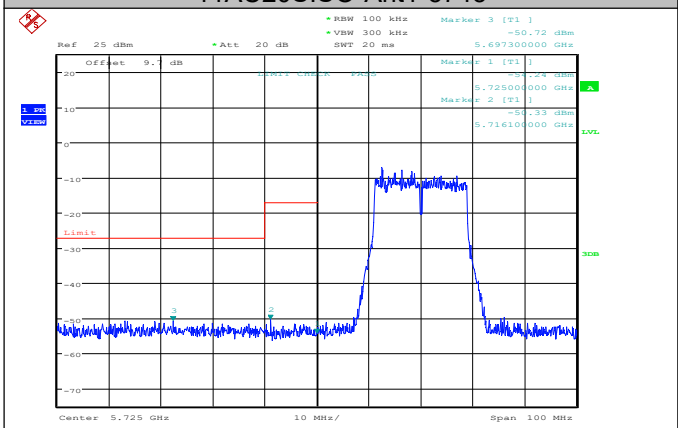

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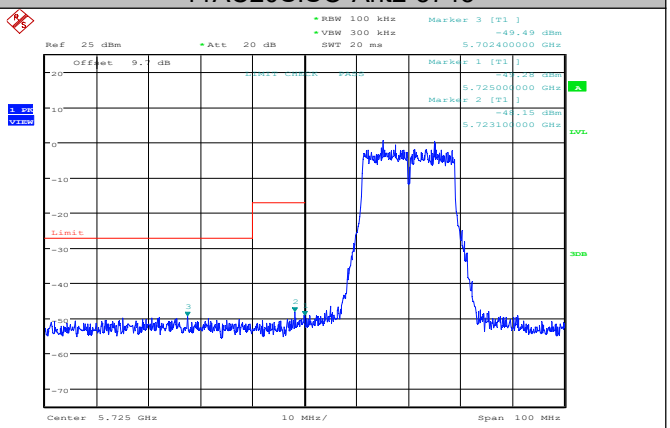

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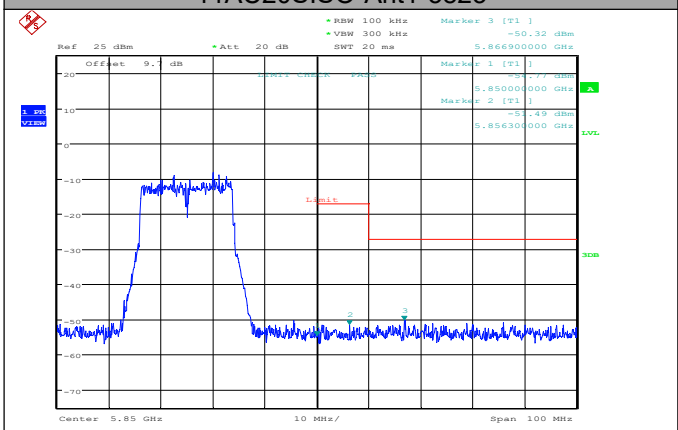
11AC20SISO-Ant1-5825



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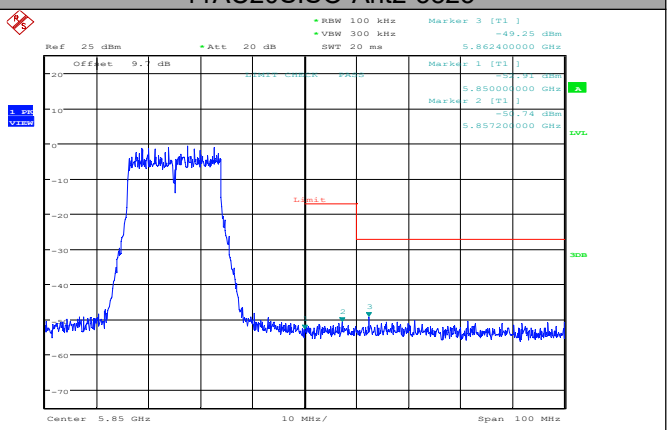
11AC20SISO-Ant2-5825



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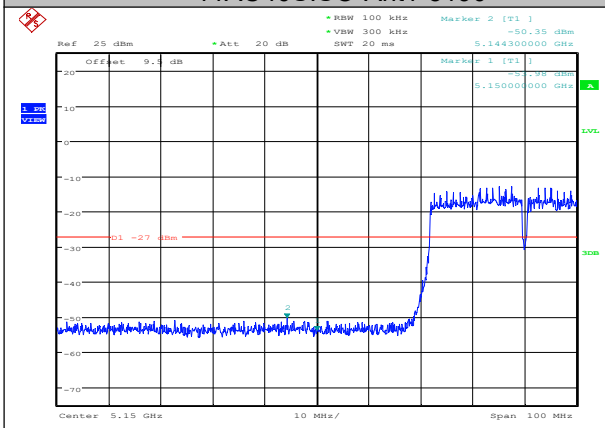
11AC40SISO-Ant1-5190



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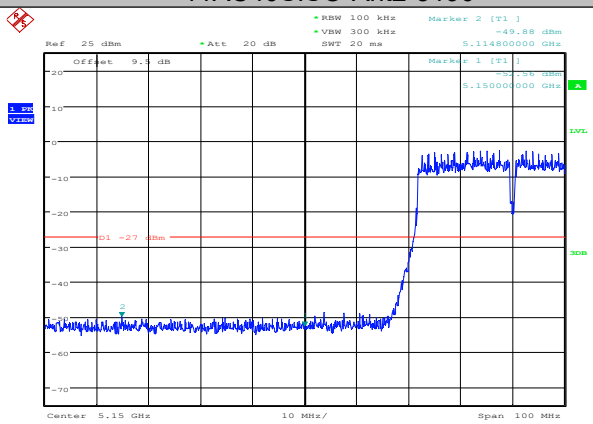
11AC40SISO-Ant2-5190



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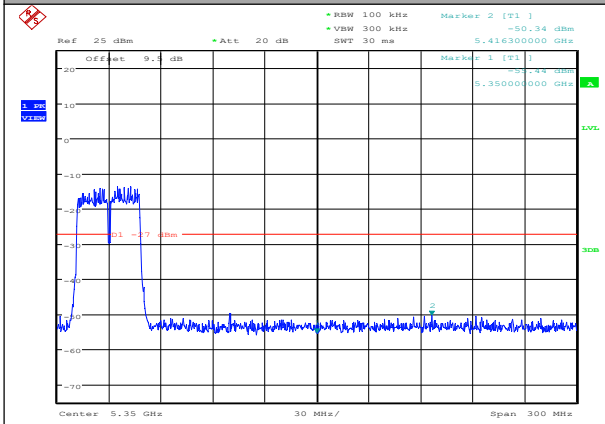
11AC40SISO-Ant1-5230



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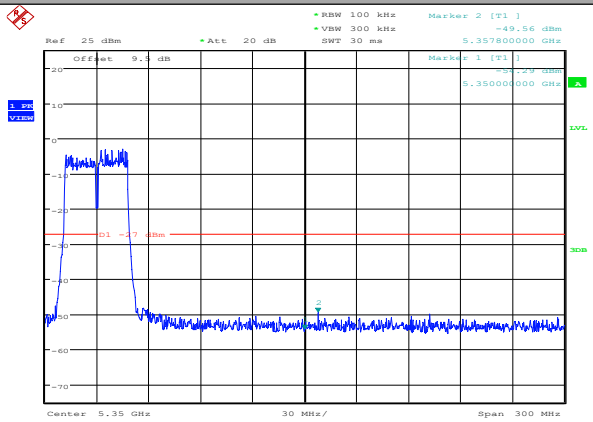
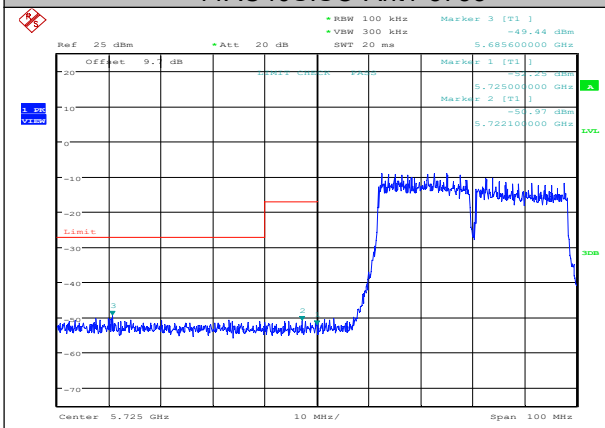


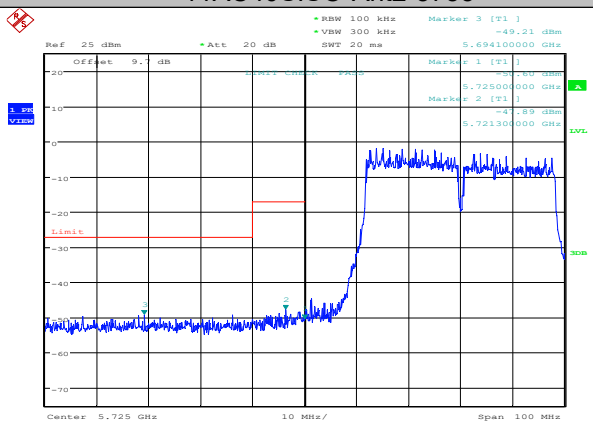
Date: 21.MAY.2021 13:49:12

11AC40SISO-Ant1-5755



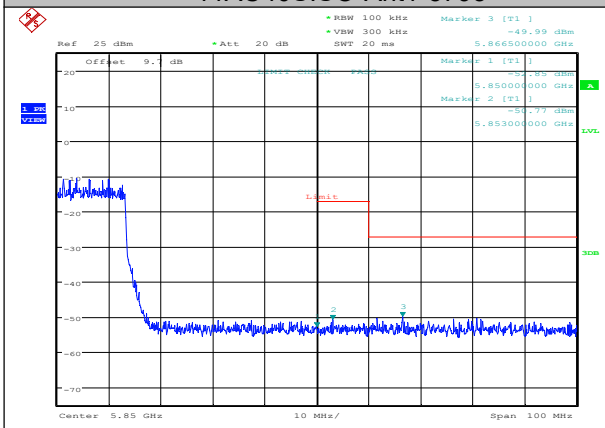
Date: 20.MAY.2021 12:14:25

11AC40SISO-Ant2-5755



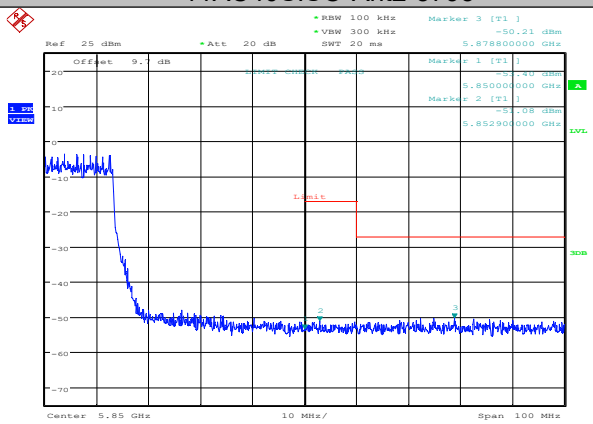
Date: 21.MAY.2021 13:55:38

11AC40SISO-Ant1-5795



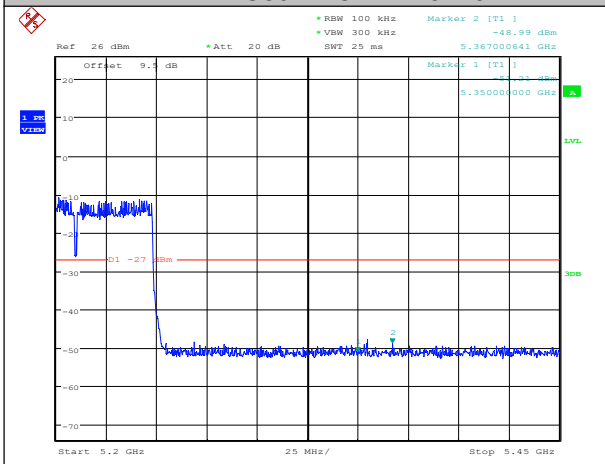
Date: 20.MAY.2021 12:19:34

11AC40SISO-Ant2-5795



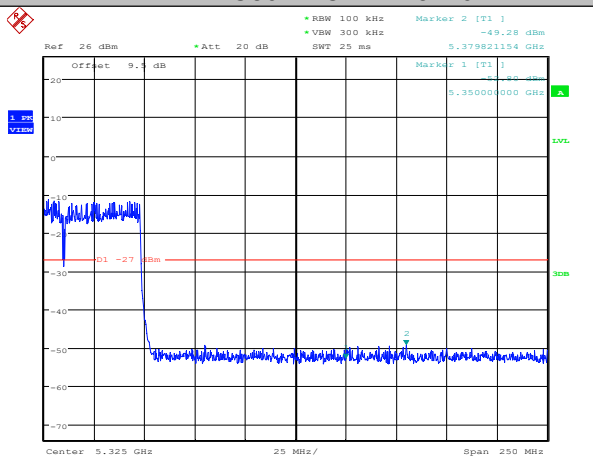
Date: 21.MAY.2021 14:12:01

11AC80SISO-Ant1-5210



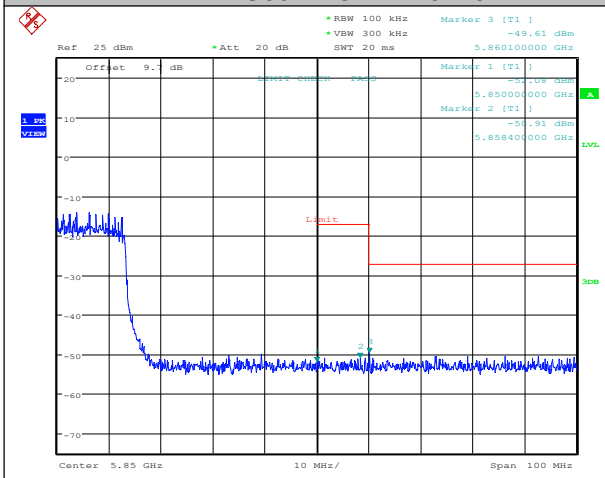
Date: 26.MAY.2021 11:58:35

11AC80SISO-Ant2-5210



Date: 26.MAY.2021 11:59:43

11AC80SISO-Ant1-5775



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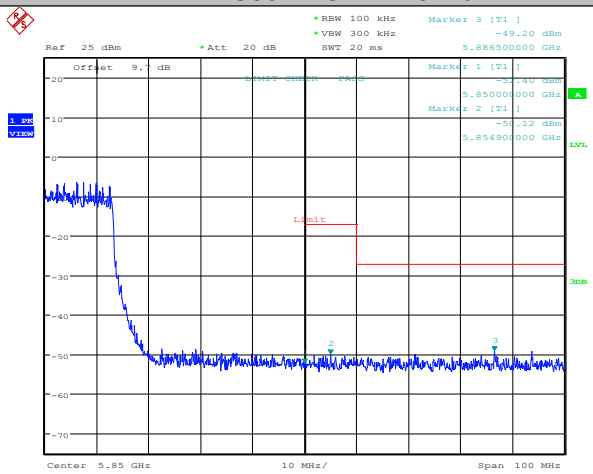


Date: 21.MAY.2021 14:27:11

Appendix D): Frequency Stability

Frequency Error vs. Voltage(The test transmitted signal is within 5150-5250MHz and within 5725-5850MHz):

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11A	Ant1	5180	TN	VL	5180.1	19.305019	PASS
			TN	VN	5180.1	19.305019	PASS
			TN	VH	5180.04	7.722008	PASS
11A	Ant1	5200	TN	VL	5200.08	15.384615	PASS
			TN	VN	5200.1	19.230769	PASS
			TN	VH	5200.04	7.692308	PASS
11A	Ant1	5240	TN	VL	5240.06	11.450382	PASS
			TN	VN	5240.08	15.267176	PASS
			TN	VH	5240.08	15.267176	PASS
11A	Ant1	5745	TN	VL	5745.04	6.962576	PASS
			TN	VN	5745.06	10.443864	PASS
			TN	VH	5745.06	10.443864	PASS
11A	Ant1	5785	TN	VL	5785.02	3.457217	PASS
			TN	VN	5785.08	13.828868	PASS
			TN	VH	5785.08	13.828868	PASS
11A	Ant1	5825	TN	VL	5825.06	10.300429	PASS
			TN	VN	5825	0	PASS
			TN	VH	5825.08	13.733906	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11A	Ant2	5180	TN	VL	5180.04	7.722008	PASS
			TN	VN	5184.44	15.444015	PASS
			TN	VH	5179.98	-3.861004	PASS
11A	Ant2	5200	TN	VL	5200.02	3.846154	PASS
			TN	VN	5200	0	PASS
			TN	VH	5200.08	15.384615	PASS
11A	Ant2	5240	TN	VL	5239.98	-3.816794	PASS
			TN	VN	5240.08	15.267176	PASS
			TN	VH	5239.96	-7.633588	PASS
11A	Ant2	5745	TN	VL	5745	0	PASS
			TN	VN	5745.04	6.962576	PASS
			TN	VH	5745.06	10.443864	PASS
11A	Ant2	5785	TN	VL	5785.1	17.286085	PASS
			TN	VN	5785.1	17.286085	PASS
			TN	VH	5785.08	13.828868	PASS
11A	Ant2	5825	TN	VL	5824.98	-3.433476	PASS
			TN	VN	5824.94	-10.300429	PASS
			TN	VH	5824.98	-3.433476	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N20	Ant1	5180	TN	VL	5180.06	11.583012	PASS
			TN	VN	5180.02	3.861004	PASS
			TN	VH	5179.98	-3.861004	PASS
11N20	Ant1	5200	TN	VL	5200.02	3.846154	PASS
			TN	VN	5200.06	11.538462	PASS
			TN	VH	5199.98	-3.846154	PASS
11N20	Ant1	5240	TN	VL	5240.02	3.816794	PASS
			TN	VN	5240.04	7.633588	PASS
			TN	VH	5240.08	15.267176	PASS
11N20	Ant1	5745	TN	VL	5745	0	PASS
			TN	VN	5744.94	0	PASS
			TN	VH	5745.02	3.481288	PASS
11N20	Ant1	5785	TN	VL	5785.02	3.457217	PASS
			TN	VN	5785.08	13.828868	PASS
			TN	VH	5785.04	6.914434	PASS
11N20	Ant1	5825	TN	VL	5824.98	-3.433476	PASS
			TN	VN	5825	0	PASS
			TN	VH	5824.94	-10.300429	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N20	Ant2	5180	TN	VL	5180	0	PASS
			TN	VN	5179.96	-7.722008	PASS
			TN	VH	5180.04	7.722008	PASS
11N20	Ant2	5200	TN	VL	5200.1	19.230769	PASS
			TN	VN	5200	0	PASS
			TN	VH	5200.08	15.384615	PASS
11N20	Ant2	5240	TN	VL	5239.96	-7.633588	PASS
			TN	VN	5240.02	3.816794	PASS
			TN	VH	5240.08	15.267176	PASS
11N20	Ant2	5745	TN	VL	5745.1	17.40644	PASS
			TN	VN	5745.06	6.962576	PASS

			TN	VH	5745.06	0	PASS
11N20	Ant2	5785	TN	VL	5785.06	10.371651	PASS
			TN	VN	5785.06	10.371651	PASS
			TN	VH	5785.1	17.286085	PASS
11N20	Ant2	5825	TN	VL	5825	0	PASS
			TN	VN	5825.06	10.300429	PASS
			TN	VH	5825.02	3.433476	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N40	Ant1	5190	TN	VL	5190.04	7.707129	PASS
			TN	VN	5190.04	7.707129	PASS
			TN	VH	5190.04	7.707129	PASS
11N40	Ant1	5230	TN	VL	5230.08	15.296367	PASS
			TN	VN	5230	0	PASS
			TN	VH	5230.08	15.296367	PASS
			TN	VH	5230.08	15.296367	PASS
11N40	Ant1	5755	TN	VL	5755.08	13.900956	PASS
			TN	VN	5755.08	13.900956	PASS
			TN	VH	5755.08	13.900956	PASS
11N40	Ant1	5795	TN	VL	5795	0	PASS
			TN	VN	5795.08	13.805004	PASS
			TN	VH	5795.04	6.902502	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N40	Ant2	5190	TN	VL	5188.88	15.414258	PASS
			TN	VN	5173.84	7.707129	PASS
			TN	VH	5187.84	7.707129	PASS
11N40	Ant2	5230	TN	VL	5270.08	15.180266	PASS
			TN	VN	5269.96	-7.590133	PASS
			TN	VH	5244.88	-7648184	PASS
11N40	Ant2	5755	TN	VL	5755.08	13.900956	PASS
			TN	VN	5755	0	PASS
			TN	VH	5755.04	6.950478	PASS
11N40	Ant2	5795	TN	VL	5795.02	7.207207	PASS
			TN	VN	5795.05	7.207207	PASS

			TN	VH	5795.04	7.207207	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC20	Ant1	5180	TN	VL	5180.02	3.861004	PASS
			TN	VN	5179.9	-19.305019	PASS
			TN	VH	5180.1	19.305019	PASS
11AC20	Ant1	5200	TN	VL	5199.96	-7.692308	PASS
			TN	VN	5200.04	7.692308	PASS
			TN	VH	5200.04	7.692308	PASS
11AC20	Ant1	5240	TN	VL	5240.08	15.267176	PASS
			TN	VN	5240.02	3.816794	PASS
			TN	VH	5240.1	19.083969	PASS
11AC20	Ant1	5745	TN	VL	5745.06	10.443864	PASS
			TN	VN	5745.06	6.962576	PASS
			TN	VH	5745.06	17.40644	PASS
11AC20	Ant1	5785	TN	VL	5785.1	17.286085	PASS
			TN	VN	5785.04	6.914434	PASS
			TN	VH	5785.02	3.457217	PASS
11AC20	Ant1	5825	TN	VL	5825.02	3.433476	PASS
			TN	VN	5824.98	-3.433476	PASS
			TN	VH	5825.04	6.866953	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC20	Ant2	5180	TN	VL	5180.02	3.861004	PASS
			TN	VN	5180.02	3.861004	PASS
			TN	VH	5180	0	PASS
11AC20	Ant2	5200	TN	VL	5199.92	-15.384615	PASS
			TN	VN	5200.02	3.846154	PASS
			TN	VH	5200.1	19.230769	PASS
11AC20	Ant2	5240	TN	VL	5239.96	-7.633588	PASS
			TN	VN	5239.98	-3.816794	PASS
			TN	VH	5240.08	15.267176	PASS
11AC20	Ant2	5745	TN	VL	5745	0	PASS

			TN	VN	5745.08	13.925152	PASS
			TN	VH	5744.9	-17.40644	PASS
11AC20	Ant2	5785	TN	VL	5785.08	13.828868	PASS
			TN	VN	5784.98	-3.457217	PASS
			TN	VH	5785.04	6.914434	PASS
11AC20	Ant2	5825	TN	VL	5825.02	3.433476	PASS
			TN	VN	5825.08	13.733906	PASS
			TN	VH	5825.08	13.733906	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC40	Ant1	5190	TN	VL	5190.04	7.707129	PASS
			TN	VN	5189.96	-7.707129	PASS
			TN	VH	5190.04	7.707129	PASS
11AC40	Ant1	5230	TN	VL	5230.08	15.296367	PASS
			TN	VN	5230	0	PASS
			TN	VH	5229.92	-15.296367	PASS
11AC40	Ant1	5755	TN	VL	5755.04	6.950478	PASS
			TN	VN	5755.08	13.900956	PASS
			TN	VH	5755.08	13.900956	PASS
11AC40	Ant1	5795	TN	VL	5795.04	6.902502	PASS
			TN	VN	5795.04	6.902502	PASS
			TN	VH	5794.92	-13.805004	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC40	Ant2	5190	TN	VL	5190.08	15.414258	PASS
			TN	VN	5190	0	PASS
			TN	VH	5190.08	15.414258	PASS
11AC40	Ant2	5230	TN	VL	5230.08	15.296367	PASS
			TN	VN	5230.08	15.296367	PASS
			TN	VH	5230.04	7.648184	PASS
11AC40	Ant2	5755	TN	VL	5755	0	PASS
			TN	VN	5755.08	13.900956	PASS
			TN	VH	5755.08	13.900956	PASS

11AC40	Ant2	5795	TN	VL	5795.04	6.902502	PASS
			TN	VN	5795.08	13.805004	PASS
			TN	VH	5795.04	6.902502	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC80	Ant1	5210	TN	VL	5210	0	PASS
			TN	VN	5210	0	PASS
			TN	VH	5210.08	15.355086	PASS
11AC80	Ant1	5775	TN	VL	5775.08	13.852814	PASS
			TN	VN	5775	0	PASS
			TN	VH	5775	0	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC80	Ant2	5210	TN	VL	5210.08	15.355086	PASS
			TN	VN	5210.08	15.355086	PASS
			TN	VH	5210.08	15.355086	PASS
11AC80	Ant2	5775	TN	VL	5775.08	13.852814	PASS
			TN	VN	5775.08	13.852814	PASS
			TN	VH	5775	0	PASS

Frequency Error vs. Temperature:

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11A	Ant1	5180	50	VN	5180.06	11.583012	PASS
			40	VN	5180.02	3.861004	PASS
			30	VN	5180.04	7.722008	PASS
			20	VN	5180.1	19.305019	PASS
			10	VN	5180.02	3.861004	PASS
			0	VN	5180	0	PASS
			-10	VN	5180.02	3.861004	PASS
			-20	VN	5180	0	PASS
			-30	VN	5179.98	-3.861004	PASS
11A	Ant1	5200	50	VN	5200.08	15.384615	PASS
			40	VN	5199.98	-3.846154	PASS
			30	VN	5200.1	19.230769	PASS
			20	VN	5200.04	7.692308	PASS
			10	VN	5200.04	7.692308	PASS
			0	VN	5200.08	15.384615	PASS
			-10	VN	5200.08	15.384615	PASS
			-20	VN	5200.08	15.384615	PASS
			-30	VN	5200.08	15.384615	PASS
11A	Ant1	5240	50	VN	5240	0	PASS
			40	VN	5240	0	PASS
			30	VN	5240.02	3.816794	PASS
			20	VN	5239.92	-15.267176	PASS
			10	VN	5240.06	11.450382	PASS
			0	VN	5239.96	-7.633588	PASS
			-10	VN	5239.96	-7.633588	PASS
			-20	VN	5240	0	PASS
			-30	VN	5239.94	-11.450382	PASS
11A	Ant1	5745	50	VN	5745.06	10.443864	PASS
			40	VN	5745.06	10.443864	PASS
			30	VN	5745.06	10.443864	PASS

			20	VN	5745.1	17.40644	PASS
			10	VN	5745.1	17.40644	PASS
			0	VN	5745.08	13.925152	PASS
			-10	VN	5745.08	13.925152	PASS
			-20	VN	5745.1	17.40644	PASS
			-30	VN	5745.06	10.443864	PASS
11A	Ant1	5785	50	VN	5785.04	6.914434	PASS
			40	VN	5785.1	17.286085	PASS
			30	VN	5785.02	3.457217	PASS
			20	VN	5785.06	10.371651	PASS
			10	VN	5784.96	-6.914434	PASS
			0	VN	5785.02	3.457217	PASS
			-10	VN	5785.08	13.828868	PASS
			-20	VN	5785	0	PASS
			-30	VN	5785.04	6.914434	PASS
11A	Ant1	5825	50	VN	5825.04	6.866953	PASS
			40	VN	5825.1	17.167382	PASS
			30	VN	5825.08	13.733906	PASS
			20	VN	5825.04	6.866953	PASS
			10	VN	5824.98	-3.433476	PASS
			0	VN	5825.02	3.433476	PASS
			-10	VN	5825.02	3.433476	PASS
			-20	VN	5825.06	10.300429	PASS
			-30	VN	5825.02	3.433476	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11A	Ant2	5180	50	VN	5180.08	15.444015	PASS
			40	VN	5180.04	7.722008	PASS
			30	VN	5179.9	-19.305019	PASS
			20	VN	5180.04	7.722008	PASS
			10	VN	5180.08	15.444015	PASS
			0	VN	5180.04	7.722008	PASS
			-10	VN	5180.04	7.722008	PASS
			-20	VN	5180.04	7.722008	PASS

			-30	VN	5180.06	11.583012	PASS
11A	Ant2	5200	50	VN	5194.56	11.583012	PASS
			40	VN	5193.68	7.722008	PASS
			30	VN	5194.12	7.722008	PASS
			20	VN	5193.64	0	PASS
			10	VN	5193.52	3.3861004	PASS
			0	VN	5193.68	0	PASS
			-10	VN	5194.92	11.583012	PASS
			-20	VN	5194.04	19.305019	PASS
			-30	VN	5193.56	11.583012	PASS
11A	Ant2	5240	50	VN	5240.04	3.846154	PASS
			40	VN	5240.08	3.84615	PASS
			30	VN	5240.02	0	PASS
			20	VN	5239.08	3.846154	PASS
			10	VN	5240.04	7.692308	PASS
			0	VN	5240.08	-7.692308	PASS
			-10	VN	5240.02	-7.692308	PASS
			-20	VN	5239.98	19.230769	PASS
			-30	VN	5239.98	-3.846154	PASS
11A	Ant2	5745	50	VN	5745.02	3.481288	PASS
			40	VN	5745	0	PASS
			30	VN	5744.98	-3.481288	PASS
			20	VN	5745.1	17.40644	PASS
			10	VN	5745.04	6.962576	PASS
			0	VN	5745.1	17.40644	PASS
			-10	VN	5745	0	PASS
			-20	VN	5744.96	-6.962576	PASS
			-30	VN	5745	0	PASS
11A	Ant2	5785	50	VN	5785.02	3.457217	PASS
			40	VN	5785.06	10.371651	PASS
			30	VN	5785.06	10.371651	PASS
			20	VN	5785.04	6.914434	PASS
			10	VN	5785.08	13.828868	PASS
			0	VN	5785	0	PASS

			-10	VN	5785.06	10.371651	PASS
			-20	VN	5785.02	3.457217	PASS
			-30	VN	5785.02	3.457217	PASS
11A	Ant2	5825	50	VN	5825.06	10.300429	PASS
			40	VN	5825.08	13.733906	PASS
			30	VN	5825.08	13.733906	PASS
			20	VN	5825.08	13.733906	PASS
			10	VN	5825.06	10.300429	PASS
			0	VN	5825.02	3.433476	PASS
			-10	VN	5825.1	17.167382	PASS
			-20	VN	5825.02	3.433476	PASS
			-30	VN	5825.04	6.866953	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N20	Ant1	5180	50	VN	5180	0	PASS
			40	VN	5180.08	15.444015	PASS
			30	VN	5180.04	7.722008	PASS
			20	VN	5180.08	15.444015	PASS
			10	VN	5180.02	3.861004	PASS
			0	VN	5180	0	PASS
			-10	VN	5180.06	11.583012	PASS
			-20	VN	5179.98	-3.861004	PASS
			-30	VN	5180.08	15.444015	PASS
11N20	Ant1	5200	50	VN	5200.04	7.692308	PASS
			40	VN	5200	0	PASS
			30	VN	5200.02	3.846154	PASS
			20	VN	5200.1	19.230769	PASS
			10	VN	5200.1	19.230769	PASS
			0	VN	5199.98	-3.846154	PASS
			-10	VN	5200.06	11.538462	PASS
			-20	VN	5199.94	-11.538462	PASS
			-30	VN	5200.08	15.384615	PASS
11N20	Ant1	5240	50	VN	5240.1	19.083969	PASS
			40	VN	5240.08	15.267176	PASS

			30	VN	5240.06	11.450382	PASS
			20	VN	5240.08	15.267176	PASS
			10	VN	5240.08	15.267176	PASS
			0	VN	5240.08	15.267176	PASS
			-10	VN	5240.02	3.816794	PASS
			-20	VN	5239.98	-3.816794	PASS
			-30	VN	5239.98	-3.816794	PASS
11N20	Ant1	5745	50	VN	5744.98	-3.481288	PASS
			40	VN	5744.98	-3.481288	PASS
			30	VN	5745.04	6.962576	PASS
			20	VN	5745.02	3.481288	PASS
			10	VN	5745.08	13.925152	PASS
			0	VN	5745.02	3.481288	PASS
			-10	VN	5745.04	6.962576	PASS
			-20	VN	5745.06	10.443864	PASS
			-30	VN	5745.04	6.962576	PASS
11N20	Ant1	5785	50	VN	5785.02	3.457217	PASS
			40	VN	5785	0	PASS
			30	VN	5784.98	-3.457217	PASS
			20	VN	5785.04	6.914434	PASS
			10	VN	5785.04	6.914434	PASS
			0	VN	5785.02	3.457217	PASS
			-10	VN	5785.02	3.457217	PASS
			-20	VN	5785.06	10.371651	PASS
			-30	VN	5785	0	PASS
11N20	Ant1	5825	50	VN	5825.06	10.300429	PASS
			40	VN	5824.94	-10.300429	PASS
			30	VN	5825.02	3.433476	PASS
			20	VN	5824.96	-6.866953	PASS
			10	VN	5825.06	10.300429	PASS
			0	VN	5825.06	10.300429	PASS
			-10	VN	5825.06	10.300429	PASS
			-20	VN	5825	0	PASS
			-30	VN	5825.02	3.433476	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N20	Ant2	5180	50	VN	5180.06	0	PASS
			40	VN	5180	7.518797	PASS
			30	VN	5180.02	3.759398	PASS
			20	VN	5180	-3.759398	PASS
			10	VN	5180.04	0	PASS
			0	VN	5180.06	7.518797	PASS
			-10	VN	5180.02	-15.037594	PASS
			-20	VN	5180.1	-3.759398	PASS
			-30	VN	5180.02	15.037594	PASS
11N20	Ant2	5200	50	VN	5200	-7.168459	PASS
			40	VN	5200	3.584229	PASS
			30	VN	5199.96	0	PASS
			20	VN	5200.02	-3.584229	PASS
			10	VN	5200.02	-7.168459	PASS
			0	VN	5200	-3.584229	PASS
			-10	VN	5200	3.584229	PASS
			-20	VN	5199.98	-3.584229	PASS
			-30	VN	5200.02	-14.336918	PASS
11N20	Ant2	5240	50	VN	5240.04	0	PASS
			40	VN	5240.08	0	PASS
			30	VN	5239.98	-7.692308	PASS
			20	VN	5240.08	3.846154	PASS
			10	VN	5240.06	3.846154	PASS
			0	VN	5239.98	0	PASS
			-10	VN	5240.1	0	PASS
			-20	VN	5240.06	-3.846154	PASS
			-30	VN	5239.98	3.846154	PASS
11N20	Ant2	5745	50	VN	5745.08	-3.802281	PASS
			40	VN	5744.98	-7.604563	PASS
			30	VN	5745.09	11.406844	PASS
			20	VN	5744.98	11.406844	PASS

			10	VN	5744.097	0	PASS
			0	VN	5745.08	-7.604563	PASS
			-10	VN	5745.03	3.802281	PASS
			-20	VN	5745.06	3.802281	PASS
			-30	VN	5749.96	3.802281	PASS
11N20	Ant2	5785	50	VN	5785.02	11.583012	PASS
			40	VN	5785.05	0	PASS
			30	VN	5784.01	3.861004	PASS
			20	VN	5785.04	0	PASS
			10	VN	5785.04	7.722008	PASS
			0	VN	5785.02	11.583012	PASS
			-10	VN	5785.02	3.861004	PASS
			-20	VN	5785.06	19.305019	PASS
			-30	VN	5785.06	3.861004	PASS
11N20	Ant2	5825	50	VN	5824.98	7.633588	PASS
			40	VN	5825.04	15.267176	PASS
			30	VN	5825.09	-3.816794	PASS
			20	VN	5824.98	15.267176	PASS
			10	VN	5825.08	11.450382	PASS
			0	VN	5825.03	-3.816794	PASS
			-10	VN	5825.06	19.083969	PASS
			-20	VN	5825.04	11.450382	PASS
			-30	VN	5825.02	-3.816794	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N40	Ant1	5190	50	VN	5190.04	7.707129	PASS
			40	VN	5190.08	15.414258	PASS
			30	VN	5190.04	7.707129	PASS
			20	VN	5190.04	7.707129	PASS
			10	VN	5190.04	7.707129	PASS
			0	VN	5190.08	15.414258	PASS
			-10	VN	5190.04	7.707129	PASS
			-20	VN	5190.04	7.707129	PASS
			-30	VN	5190.04	7.707129	PASS

11N40	Ant1	5230	50	VN	5230.04	7.648184	PASS
			40	VN	5230.04	7.648184	PASS
			30	VN	5230.04	7.648184	PASS
			20	VN	5230.08	15.296367	PASS
			10	VN	5230.08	15.296367	PASS
			0	VN	5230.08	15.296367	PASS
			-10	VN	5230.04	7.648184	PASS
			-20	VN	5230.04	7.648184	PASS
			-30	VN	5229.96	-7.648184	PASS
11N40	Ant1	5755	50	VN	5755.04	6.950478	PASS
			40	VN	5755.08	13.900956	PASS
			30	VN	5754.96	-6.950478	PASS
			20	VN	5755.08	13.900956	PASS
			10	VN	5754.96	-6.950478	PASS
			0	VN	5755.08	13.900956	PASS
			-10	VN	5755.08	13.900956	PASS
			-20	VN	5755.08	13.900956	PASS
			-30	VN	5755.08	13.900956	PASS
11N40	Ant1	5795	50	VN	5795.08	13.805004	PASS
			40	VN	5795.04	6.902502	PASS
			30	VN	5795.04	6.902502	PASS
			20	VN	5795.08	13.805004	PASS
			10	VN	5795.04	6.902502	PASS
			0	VN	5795.04	6.902502	PASS
			-10	VN	5795	0	PASS
			-20	VN	5795.04	6.902502	PASS
			-30	VN	5795.04	6.902502	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11N40	Ant2	5190	50	VN	5190.08	15.414258	PASS
			40	VN	5190	0	PASS
			30	VN	5190.04	7.707129	PASS
			20	VN	5189.92	-15.414258	PASS
			10	VN	5190.04	7.707129	PASS

			0	VN	5190.08	15.414258	PASS
			-10	VN	5189.96	-7.707129	PASS
			-20	VN	5190.04	7.707129	PASS
			-30	VN	5189.96	-7.707129	PASS
11N40	Ant2	5230	50	VN	5230.08	15.296367	PASS
			40	VN	5230.04	7.648184	PASS
			30	VN	5229.96	-7.648184	PASS
			20	VN	5230.08	15.296367	PASS
			10	VN	5230.08	15.296367	PASS
			0	VN	5230.08	15.296367	PASS
			-10	VN	5230	0	PASS
			-20	VN	5230.04	7.648184	PASS
			-30	VN	5230.04	7.648184	PASS
11N40	Ant2	5755	50	VN	5755.08	13.900956	PASS
			40	VN	5755.04	6.950478	PASS
			30	VN	5755.08	13.900956	PASS
			20	VN	5755.04	6.950478	PASS
			10	VN	5755.08	13.900956	PASS
			0	VN	5755.08	13.900956	PASS
			-10	VN	5755.08	13.900956	PASS
			-20	VN	5755.08	13.900956	PASS
			-30	VN	5755	0	PASS
11N40	Ant2	5795	50	VN	5795.04	6.902502	PASS
			40	VN	5795	0	PASS
			30	VN	5795.08	13.805004	PASS
			20	VN	5795.08	13.805004	PASS
			10	VN	5795.08	13.805004	PASS
			0	VN	5794.96	-6.902502	PASS
			-10	VN	5795.04	6.902502	PASS
			-20	VN	5795	0	PASS
			-30	VN	5795.08	13.805004	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC20	Ant1	5180	50	VN	5180.02	3.861004	PASS
			40	VN	5179.98	-3.861004	PASS
			30	VN	5179.98	-3.861004	PASS
			20	VN	5180.02	3.861004	PASS
			10	VN	5180.08	15.444015	PASS
			0	VN	5180	0	PASS
			-10	VN	5180.02	3.861004	PASS
			-20	VN	5180.04	7.722008	PASS
			-30	VN	5179.98	-3.861004	PASS
11AC20	Ant1	5200	50	VN	5200.1	19.230769	PASS
			40	VN	5199.98	-3.846154	PASS
			30	VN	5200	0	PASS
			20	VN	5200.04	7.692308	PASS
			10	VN	5200.1	19.230769	PASS
			0	VN	5200.1	19.230769	PASS
			-10	VN	5200.04	7.692308	PASS
			-20	VN	5200.02	3.846154	PASS
			-30	VN	5200.06	11.538462	PASS
11AC20	Ant1	5240	50	VN	5240.08	15.267176	PASS
			40	VN	5240.02	3.816794	PASS
			30	VN	5240.06	11.450382	PASS
			20	VN	5240.06	11.450382	PASS
			10	VN	5239.98	-3.816794	PASS
			0	VN	5240.06	11.450382	PASS
			-10	VN	5240.08	15.267176	PASS
			-20	VN	5240	0	PASS
			-30	VN	5240.02	3.816794	PASS
11AC20	Ant1	5745	50	VN	5745.02	3.481288	PASS
			40	VN	5745	0	PASS
			30	VN	5745.08	13.925152	PASS

			20	VN	5745.02	3.481288	PASS
			10	VN	5745.08	13.925152	PASS
			0	VN	5745.06	10.443864	PASS
			-10	VN	5745	0	PASS
			-20	VN	5745.1	17.40644	PASS
			-30	VN	5745.06	10.443864	PASS
11AC20	Ant1	5785	50	VN	5785.06	10.371651	PASS
			40	VN	5785.08	13.828868	PASS
			30	VN	5785	0	PASS
			20	VN	5785.02	3.457217	PASS
			10	VN	5785.06	10.371651	PASS
			0	VN	5785.04	6.914434	PASS
			-10	VN	5785.06	10.371651	PASS
			-20	VN	5785.02	3.457217	PASS
			-30	VN	5785.02	3.457217	PASS
11AC20	Ant1	5825	50	VN	5825.1	17.167382	PASS
			40	VN	5825	0	PASS
			30	VN	5825.04	6.866953	PASS
			20	VN	5825	0	PASS
			10	VN	5825.02	3.433476	PASS
			0	VN	5824.98	-3.433476	PASS
			-10	VN	5825.06	10.300429	PASS
			-20	VN	5825.08	13.733906	PASS
			-30	VN	5825.04	6.866953	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC20	Ant2	5180	50	VN	5180.02	3.861004	PASS
			40	VN	5179.98	-3.861004	PASS
			30	VN	5180.04	7.722008	PASS
			20	VN	5180.04	7.722008	PASS
			10	VN	5179.98	-3.861004	PASS
			0	VN	5180	0	PASS
			-10	VN	5179.98	-3.861004	PASS
			-20	VN	5179.98	-3.861004	PASS
			-30	VN	5180	0	PASS
11AC20	Ant2	5200	50	VN	5200.02	3.846154	PASS
			40	VN	5200	0	PASS
			30	VN	5200.02	3.846154	PASS
			20	VN	5200.04	7.692308	PASS
			10	VN	5200.02	3.846154	PASS
			0	VN	5200.04	7.692308	PASS
			-10	VN	5200	0	PASS
			-20	VN	5200.1	19.230769	PASS
			-30	VN	5200.1	19.230769	PASS
11AC20	Ant2	5240	50	VN	5240	0	PASS
			40	VN	5240	0	PASS
			30	VN	5240.02	3.816794	PASS
			20	VN	5240.04	7.633588	PASS
			10	VN	5240.04	7.633588	PASS
			0	VN	5240.02	3.816794	PASS
			-10	VN	5239.96	-7.633588	PASS
			-20	VN	5240.1	19.083969	PASS
			-30	VN	5240.06	11.450382	PASS
11AC20	Ant2	5745	50	VN	5745.04	6.962576	PASS
			40	VN	5745.02	3.481288	PASS
			30	VN	5745.06	10.443864	PASS

			20	VN	5745	0	PASS
			10	VN	5745.04	6.962576	PASS
			0	VN	5745.06	10.443864	PASS
			-10	VN	5745.02	3.481288	PASS
			-20	VN	5745.04	6.962576	PASS
			-30	VN	5745	0	PASS
11AC20	Ant2	5785	50	VN	5785.08	13.828868	PASS
			40	VN	5784.98	-3.457217	PASS
			30	VN	5785.04	6.914434	PASS
			20	VN	5785.04	6.914434	PASS
			10	VN	5785.08	13.828868	PASS
			0	VN	5785.08	13.828868	PASS
			-10	VN	5785.1	17.286085	PASS
			-20	VN	5785.04	6.914434	PASS
			-30	VN	5785	0	PASS
11AC20	Ant2	5825	50	VN	5825	0	PASS
			40	VN	5825.02	3.433476	PASS
			30	VN	5825.06	10.300429	PASS
			20	VN	5825.08	13.733906	PASS
			10	VN	5825	0	PASS
			0	VN	5825.04	6.866953	PASS
			-10	VN	5825.1	17.167382	PASS
			-20	VN	5825.04	6.866953	PASS
			-30	VN	5825.04	6.866953	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC40	Ant1	5190	50	VN	5190.08	15.414258	PASS
			40	VN	5190.08	7.707129	PASS
			30	VN	5190.04	7.707129	PASS
			20	VN	5190.04	7.707129	PASS
			10	VN	5190	0	PASS
			0	VN	5190.04	7.707129	PASS
			-10	VN	5189.96	15.414258	PASS
			-20	VN	5190.08	15.414258	PASS

			-30	VN	5190.08	-7.707129	PASS
11AC40	Ant1	5230	50	VN	5230.08	15.296367	PASS
			40	VN	5230.04	7.648184	PASS
			30	VN	5230.08	15.296367	PASS
			20	VN	5230.04	7.648184	PASS
			10	VN	5230.04	7.648184	PASS
			0	VN	5230.04	7.648184	PASS
			-10	VN	5230.04	7.648184	PASS
			-20	VN	5229.96	-7.648184	PASS
			-30	VN	5230	0	PASS
11AC40	Ant1	5755	50	VN	5755.08	13.900956	PASS
			40	VN	5755.08	13.900956	PASS
			30	VN	5755.08	13.900956	PASS
			20	VN	5755.04	6.950478	PASS
			10	VN	5755.08	13.900956	PASS
			0	VN	5755.08	13.900956	PASS
			-10	VN	5755.08	13.900956	PASS
			-20	VN	5755.04	6.950478	PASS
			-30	VN	5755.08	13.900956	PASS
11AC40	Ant1	5795	50	VN	5795.04	6.902502	PASS
			40	VN	5795	0	PASS
			30	VN	5795.04	6.902502	PASS
			20	VN	5795	0	PASS
			10	VN	5795	0	PASS
			0	VN	5795.04	6.902502	PASS
			-10	VN	5795.04	6.902502	PASS
			-20	VN	5795	0	PASS
			-30	VN	5795	0	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC40	Ant2	5190	50	VN	5190	0	PASS
			40	VN	5190	7.707129	PASS
			30	VN	5190.04	7.707129	PASS
			20	VN	5189.96	-7.707129	PASS

			10	VN	5190.08	15.414258	PASS
			0	VN	5190	0	PASS
			-10	VN	5190.08	15.414258	PASS
			-20	VN	5190.08	15.414258	PASS
			-30	VN	5190.08	15.414258	PASS
11AC40	Ant2	5230	50	VN	5230.04	7.648184	PASS
			40	VN	5230.04	7.648184	PASS
			30	VN	5230	0	PASS
			20	VN	5230.04	7.648184	PASS
			10	VN	5230.04	7.648184	PASS
			0	VN	5230.08	15.296367	PASS
			-10	VN	5232.32	7.648184	PASS
			-20	VN	5230	0	PASS
			-30	VN	5230	0	PASS
11AC40	Ant2	5755	50	VN	5755.08	13.900956	PASS
			40	VN	5755	0	PASS
			30	VN	5754.96	-6.950478	PASS
			20	VN	5755.08	13.900956	PASS
			10	VN	5755	0	PASS
			0	VN	5755.08	13.900956	PASS
			-10	VN	5755.08	13.900956	PASS
			-20	VN	5755.08	13.900956	PASS
			-30	VN	5755.08	13.900956	PASS
11AC40	Ant2	5795	50	VN	5795.08	13.805004	PASS
			40	VN	5795.04	6.902502	PASS
			30	VN	5795.08	13.805004	PASS
			20	VN	5795.08	13.805004	PASS
			10	VN	5795.08	13.805004	PASS
			0	VN	5795.08	13.805004	PASS
			-10	VN	5795.08	13.805004	PASS
			-20	VN	5795.08	13.805004	PASS
			-30	VN	5795.08	13.805004	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC80	Ant1	5210	50	VN	5210	0	PASS
			40	VN	5209.92	-15.355086	PASS
			30	VN	5210	0	PASS
			20	VN	5210.08	15.355086	PASS
			10	VN	5210	0	PASS
			0	VN	5210.08	15.355086	PASS
			-10	VN	5210	0	PASS
			-20	VN	5210	0	PASS
			-30	VN	5210	0	PASS
11AC80	Ant1	5775	50	VN	5775.08	13.852814	PASS
			40	VN	5775.08	13.852814	PASS
			30	VN	5775.08	13.852814	PASS
			20	VN	5775.08	13.852814	PASS
			10	VN	5775	0	PASS
			0	VN	5775.08	13.852814	PASS
			-10	VN	5775	0	PASS
			-20	VN	5775.08	13.852814	PASS
			-30	VN	5775.08	13.852814	PASS

Test Mode	Antenna	Channel	Temp.	Volt.	Freq.Error(MHz)	Freq.vs.rated(ppm)	Verdict
11AC80	Ant2	5210	50	VN	5210.08	15.355086	PASS
			40	VN	5210	0	PASS
			30	VN	5210.08	15.355086	PASS
			20	VN	5210	0	PASS
			10	VN	5210	0	PASS
			0	VN	5209.92	-15.355086	PASS
			-10	VN	5210	15.355086	PASS
			-20	VN	5210	0	PASS
			-30	VN	5210.08	0	PASS
11AC80	Ant2	5775	50	VN	5775.08	13.852814	PASS
			40	VN	5801.72	13.852814	PASS
			30	VN	5775.08	13.852814	PASS
			20	VN	5775.08	13.852814	PASS
			10	VN	5775.08	13.852814	PASS
			0	VN	5775.08	13.852814	PASS
			-10	VN	5775.08	13.852814	PASS
			-20	VN	5775.08	13.852814	PASS
			-30	VN	5775.08	13.852814	PASS

Appendix E): Antenna Requirement

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.407(a)(1) (2) requirement:

The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is a internal antenna. The best case gain of the Antenna Gain 1: 5G Antenna gain:2dBi ;Antenna Gain 2:5G Antenna gain:3dBi ;

Appendix F): Operation in the absence of information to the transmit

15.407(c) requirement: 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 signal ling 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 a description of how this requirement is met.
Operation in the absence of information to the transmit
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 ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (manufacturer declare)

Appendix G): AC Power Line Conducted Emission

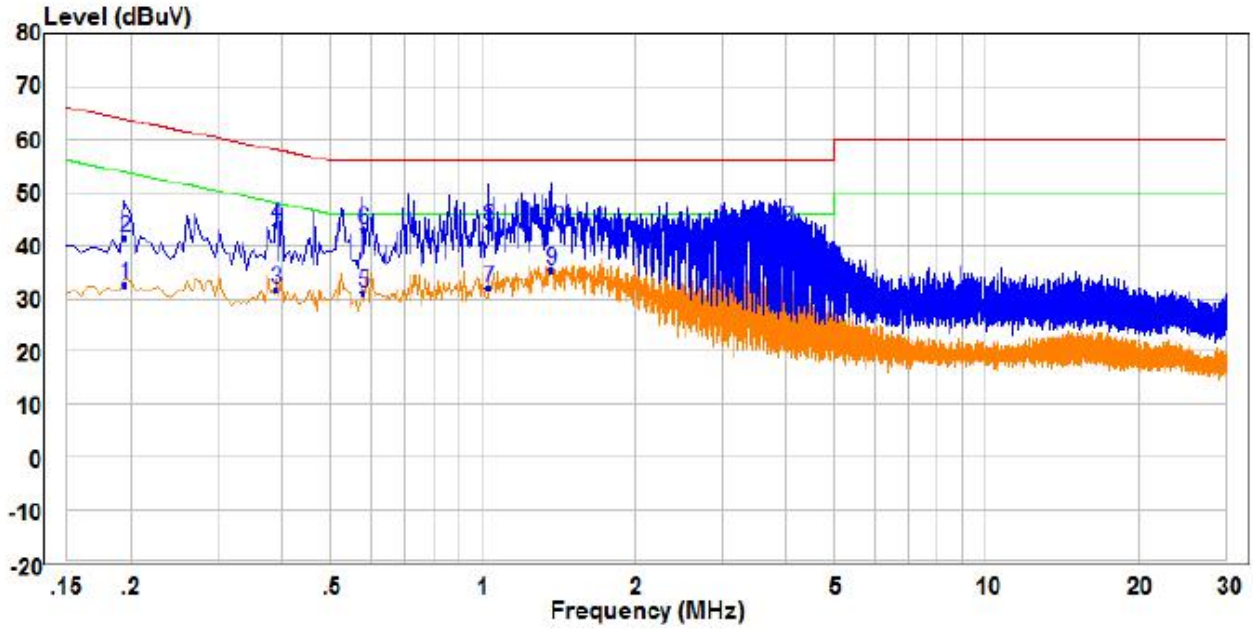
<table>
<tr><td>Test Procedure:</td><td>Test frequency range :150KHz-30MHz
1)The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBμV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.
NOTE : The lower limit is applicable at the transition frequency</td></tr>
</table>

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

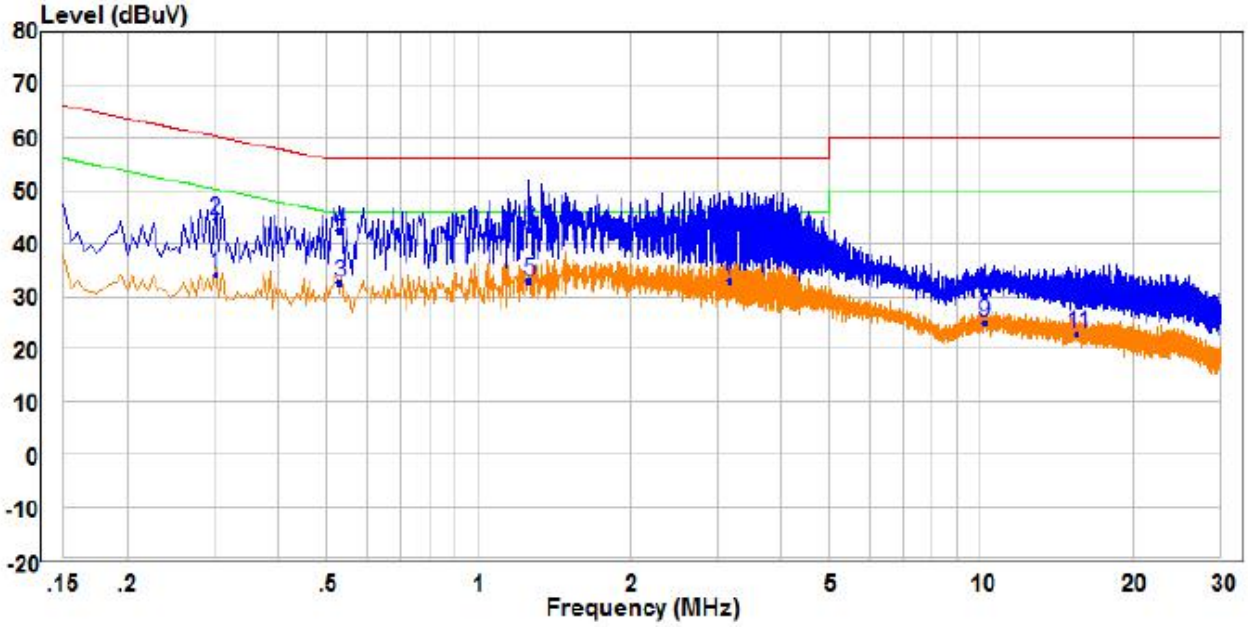
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.195	22.97	9.49	32.46	53.82	-21.36	Average	Line
2		0.195	31.99	9.49	41.48	63.82	-22.34	QP	Line
3		0.390	22.23	9.51	31.74	48.06	-16.32	Average	Line
4		0.390	34.34	9.51	43.85	58.06	-14.21	QP	Line
5		0.580	21.29	9.67	30.96	46.00	-15.04	Average	Line
6		0.580	33.25	9.67	42.92	56.00	-13.08	QP	Line
7		1.030	22.50	9.53	32.03	46.00	-13.97	Average	Line
8	QP	1.030	34.07	9.53	43.60	56.00	-12.40	QP	Line
9	PP	1.370	25.66	9.53	35.19	46.00	-10.81	Average	Line
10		1.370	33.74	9.53	43.27	56.00	-12.73	QP	Line
11		3.880	18.64	9.66	28.30	46.00	-17.70	Average	Line
12		3.880	33.44	9.66	43.10	56.00	-12.90	QP	Line

Neutral line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.300	24.61	9.48	34.09	50.24	-16.15	Average	Neutral
2		0.300	34.85	9.48	44.33	60.24	-15.91	QP	Neutral
3		0.530	22.97	9.63	32.60	46.00	-13.40	Average	Neutral
4		0.530	32.62	9.63	42.25	56.00	-13.75	QP	Neutral
5	AV	1.265	23.29	9.71	33.00	46.00	-13.00	Average	Neutral
6		1.265	32.93	9.71	42.64	56.00	-13.36	QP	Neutral
7		3.170	23.15	9.75	32.90	46.00	-13.10	Average	Neutral
8	PP	3.170	33.57	9.75	43.32	56.00	-12.68	QP	Neutral
9		10.165	14.94	9.95	24.89	50.00	-25.11	Average	Neutral
10		10.165	20.31	9.95	30.26	60.00	-29.74	QP	Neutral
11		15.530	12.86	9.93	22.79	50.00	-27.21	Average	Neutral
12		15.530	18.68	9.93	28.61	60.00	-31.39	QP	Neutral

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. The 6Mbps of rate of 802.11A_5240 is the worst case, only the worst data recorded in the report.

Appendix H): Restricted bands around fundamental frequency (Radiated Emission)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel , the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
j. Repeat above procedures until all frequencies measured was complete.

Limit:

Frequency	Limit (dBμV/m @3cm)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test plot as follows:

Worse case mode:		802.11a(6Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	53.99	-3.63	50.36	74	-23.64	peak	H
5150.00	42.81	-3.63	39.18	54	-14.82	AVG	H
5150.00	55.58	-3.63	51.95	74	-22.05	peak	V
5150.00	42.97	-3.63	39.34	54	-14.66	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	53.92	-3.59	50.33	74	-23.67	peak	H
5350.00	43.16	-3.59	39.57	54	-14.43	AVG	H
5350.00	56.21	-3.59	52.62	74	-21.38	peak	V
5350.00	44.68	-3.59	41.09	54	-12.91	AVG	V

Worse case mode:		802.11a(6Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	56.12	-3.46	52.66	68.2	-15.54	peak	H
5738.38	96.10	-3.44	92.66	122.2	-29.54	peak	H
5650	58.59	-3.46	55.13	68.2	-13.07	peak	V
5742.65	97.85	-3.44	94.41	122.2	-27.79	peak	V

Worse case mode:		802.11a(6Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5824.10	97.59	-3.42	94.17	122.2	-28.03	peak	H
5925	56.41	-3.41	53.00	68.2	-15.20	peak	H
5827.03	96.95	-3.42	93.53	122.2	-28.67	peak	V
5925	58.06	-3.41	54.65	68.2	-13.55	peak	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	58.93	-3.63	50.28	74	-23.72	peak	H
5150.00	44.56	-3.63	40.60	54	-13.40	AVG	H
5150.00	59.65	-3.63	51.92	74	-22.08	peak	V
5150.00	46.6	-3.63	41.49	54	-12.51	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	54.62	-3.59	51.03	74	-22.97	peak	H
5350.00	43.37	-3.59	39.78	54	-14.22	AVG	H
5350.00	55.78	-3.59	52.19	74	-21.81	peak	V
5350.00	44.62	-3.59	41.03	54	-12.97	AVG	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	57.44	-3.46	53.98	68.2	-14.22	peak	H
5738.25	97.20	-3.44	93.76	122.2	-28.44	peak	H
5650	55.75	-3.46	52.29	68.2	-15.91	peak	V
5742.95	96.44	-3.44	93.00	122.2	-29.20	peak	V

Worse case mode:		802.11n(HT20)(6.5Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5823.48	98.52	-3.42	95.10	122.2	-27.10	peak	H
5925	57.03	-3.41	53.62	68.2	-14.58	peak	H
5820.43	98.37	-3.42	94.95	122.2	-27.25	peak	V
5925	57.78	-3.41	54.37	68.2	-13.83	peak	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		36	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	54.20	-3.63	50.57	74	-23.43	peak	H
5150.00	45.21	-3.63	41.58	54	-12.42	AVG	H
5150.00	54.70	-3.63	51.07	74	-22.93	peak	V
5150.00	44.54	-3.63	40.91	54	-13.09	AVG	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		48	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	56.22	-3.59	52.63	74	-21.37	peak	H
5350.00	43.52	-3.59	39.93	54	-14.07	AVG	H
5350.00	54.77	-3.59	51.18	74	-22.82	peak	V
5350.00	43.64	-3.59	40.05	54	-13.95	AVG	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		149	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	57.58	-3.46	54.12	68.2	-14.08	peak	H
5738.69	97.98	-3.44	94.54	122.2	-27.66	peak	H
5650	55.81	-3.46	52.35	68.2	-15.85	peak	V
5743.37	98.49	-3.44	95.05	122.2	-27.15	peak	V

Worse case mode:		802.11ac(HT20)(6.5Mbps)		Test channel:		165	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5820.70	96.40	-3.42	92.98	122.2	-29.22	peak	H
5925	56.85	-3.41	53.44	68.2	-14.76	peak	H
5827.28	97.23	-3.42	93.81	122.2	-28.39	peak	V
5925	57.74	-3.41	54.33	68.2	-13.87	peak	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		38	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	55.40	-3.63	51.77	74	-22.23	peak	H
5150.00	44.43	-3.63	40.80	54	-13.20	AVG	H
5150.00	56.51	-3.63	52.88	74	-21.12	peak	V
5150.00	42.86	-3.63	39.23	54	-14.77	AVG	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		46	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5350.00	55.67	-3.59	52.08	74	-21.92	peak	H
5350.00	43.95	-3.59	40.36	54	-13.64	AVG	H
5350.00	56.18	-3.59	52.59	74	-21.41	peak	V
5350.00	45.13	-3.59	41.54	54	-12.46	AVG	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		151	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	58.56	-3.46	55.10	68.2	-13.10	peak	H
5750.13	98.59	-3.44	95.15	122.2	-27.05	peak	H
5650	56.03	-3.46	52.57	68.2	-15.63	peak	V
5751.61	98.14	-3.44	94.70	122.2	-27.50	peak	V

Worse case mode:		802.11ac(VHT40)(13.5Mbps)		Test channel:		159	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5793.85	97.95	-3.42	94.53	122.2	-27.67	peak	H
5925	58.35	-3.41	54.94	68.2	-13.26	peak	H
5794.14	96.62	-3.42	93.20	122.2	-29.00	peak	V
5925	57.95	-3.41	54.54	68.2	-13.66	peak	V

Worse case mode:		802.11ac(VHT80)(29.3Mbps)		Test channel:		42	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5150.00	56.23	-3.63	52.60	74	-21.40	peak	H
5150.00	45.08	-3.63	41.45	54	-12.55	AVG	H
5150.00	55.25	-3.63	51.62	74	-22.38	peak	V
5150.00	42.67	-3.63	39.04	54	-14.96	AVG	V
5350.00	55.31	-3.59	51.72	74	-22.28	peak	H
5350.00	44.69	-3.59	41.10	54	-12.90	AVG	H
5350.00	54.62	-3.59	51.03	74	-22.97	peak	V
5350.00	43.24	-3.59	39.65	54	-14.35	AVG	V

Worse case mode:		802.11ac(VHT80)(29.3Mbps)		Test channel:		155	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5650	56.33	-3.46	52.87	68.2	-15.33	peak	H
5773.45	96.39	-3.44	92.95	122.2	-29.25	peak	H
5925	58.54	-3.46	55.08	68.2	-13.12	peak	H
5650	55.63	-3.41	52.22	68.2	-15.98	peak	V
5774.91	96.80	-3.42	93.38	122.2	-28.82	peak	V
5925	56.52	-3.41	53.11	68.2	-15.09	peak	V

Note:
1) Through Pre-scan transmitting mode with all kind of modulation and data rate, find the 6Mbps is the worst case of 802.11a; MCS0 is the worst case of 802.11n(20M)(40M); MCS0 is the worst case of 802.11ac(20M)(40M)(80M); and then Only the worst case is recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading - Correct Factor
Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix I): Radiated Spurious Emissions

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre)
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.
j. Repeat above procedures until all frequencies measured was complete.

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBμV/cm)	Remark	Measurement distance (cm)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

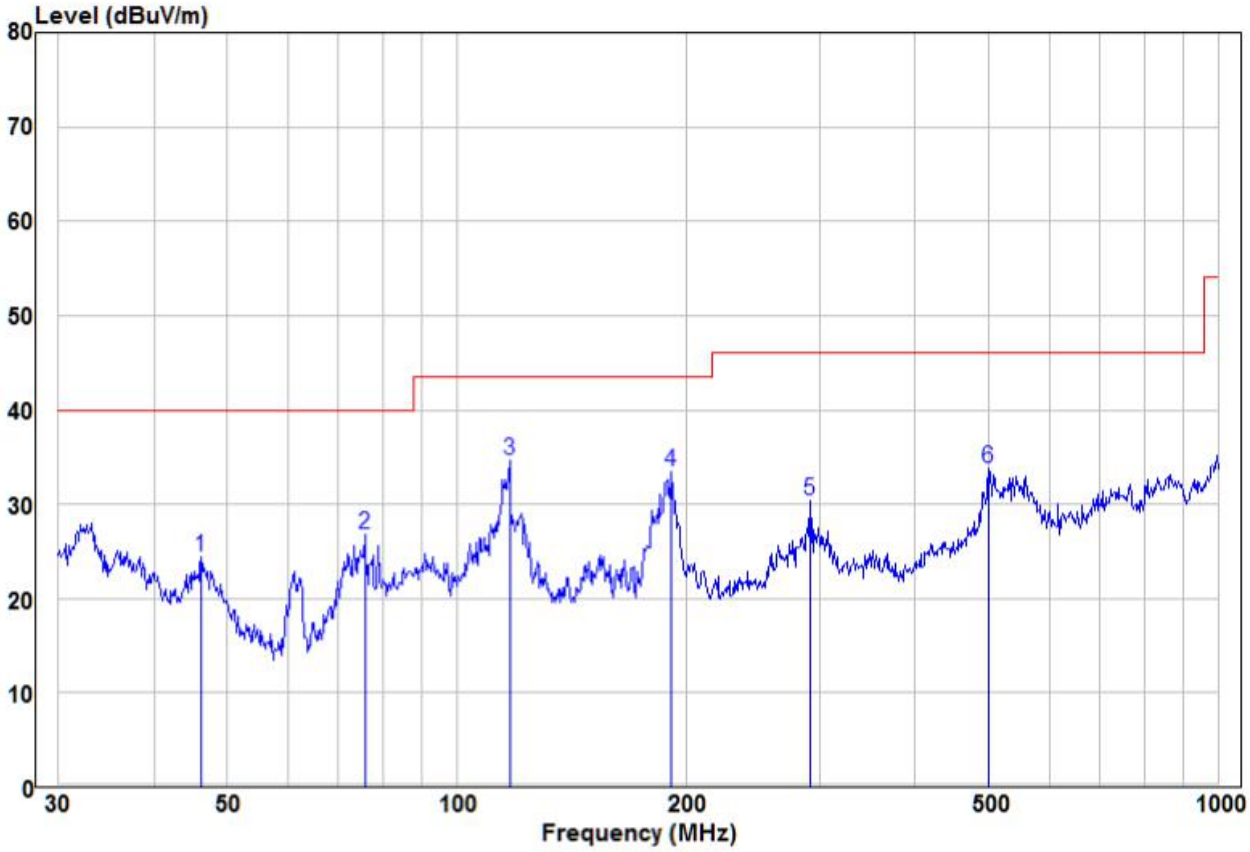
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test result: PASS

Test Data:

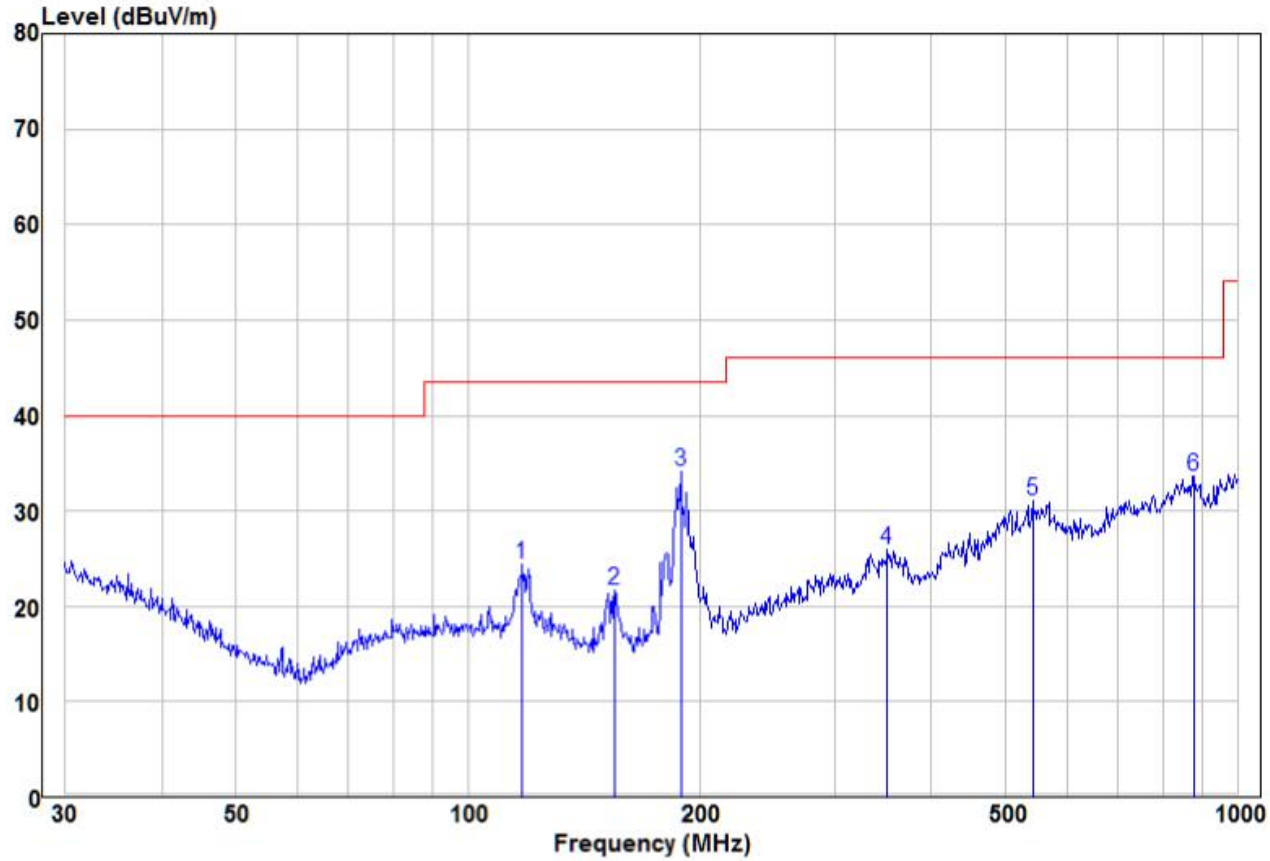
Radiated Emission below 1GHz

30MHz~1GHz		
Test mode:	Transmitting	Vertical



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		46.18	14.49	9.89	24.38	40.00	-15.62	Peak	VERTICAL
2		75.71	17.75	9.08	26.83	40.00	-13.17	Peak	VERTICAL
3	pp	117.36	24.08	10.56	34.64	43.50	-8.86	Peak	VERTICAL
4		191.75	25.38	8.06	33.44	43.50	-10.06	Peak	VERTICAL
5		291.04	16.91	13.43	30.34	46.00	-15.66	Peak	VERTICAL
6		499.42	15.52	18.26	33.78	46.00	-12.22	Peak	VERTICAL

Test mode:	Transmitting	Horizontal



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		117.77	13.79	10.58	24.37	43.50	-19.13	Peak	HORIZONTAL
2		155.36	13.53	8.10	21.63	43.50	-21.87	Peak	HORIZONTAL
3	pp	189.07	26.16	8.00	34.16	43.50	-9.34	Peak	HORIZONTAL
4		350.48	10.90	14.96	25.86	46.00	-20.14	Peak	HORIZONTAL
5		541.37	12.42	18.71	31.13	46.00	-14.87	Peak	HORIZONTAL
6		878.32	9.74	23.93	33.67	46.00	-12.33	Peak	HORIZONTAL

Transmitter Emission above 1GHz

Test mode:	802.11a(6Mbps)			Test channel:		48	
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
10480	49.20	2.31	51.51	74	-22.49	peak	H
10480	38.41	2.31	40.72	54	-13.28	AVG	H
15720	46.68	3.79	50.47	74	-23.53	peak	H
15720	35.86	3.79	39.65	54	-14.35	AVG	H
10480	49.44	2.31	51.75	74	-22.25	peak	V
10480	38.61	2.31	40.92	54	-13.08	AVG	V
15720	47.36	3.79	51.15	74	-22.85	peak	V
15720	37.75	3.79	41.54	54	-12.46	AVG	V

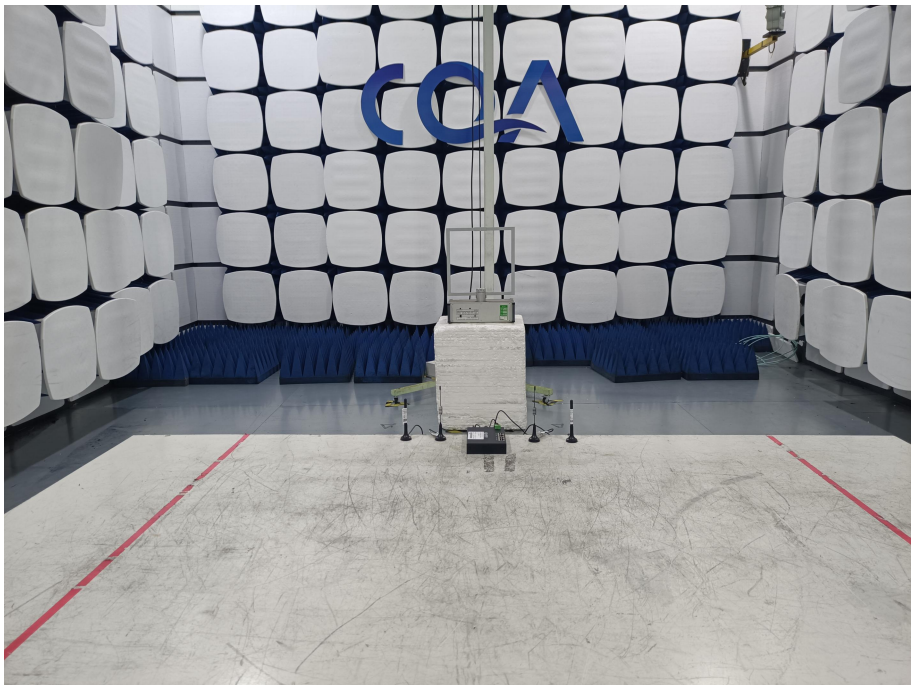
Remark:

1) The 6Mbps of rate of 802.11a at 48 channel is the worst case, only the worst data recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
3) Scan from 9kHz to 40GHz,The disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

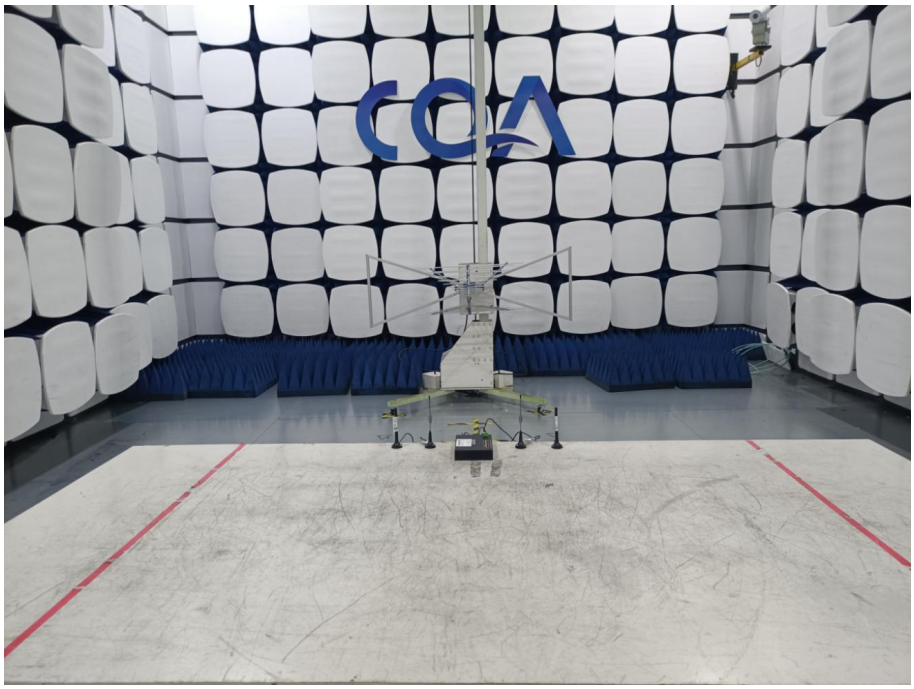
8 Photographs - EUT Test Setup

8.1 Radiated Spurious Emission

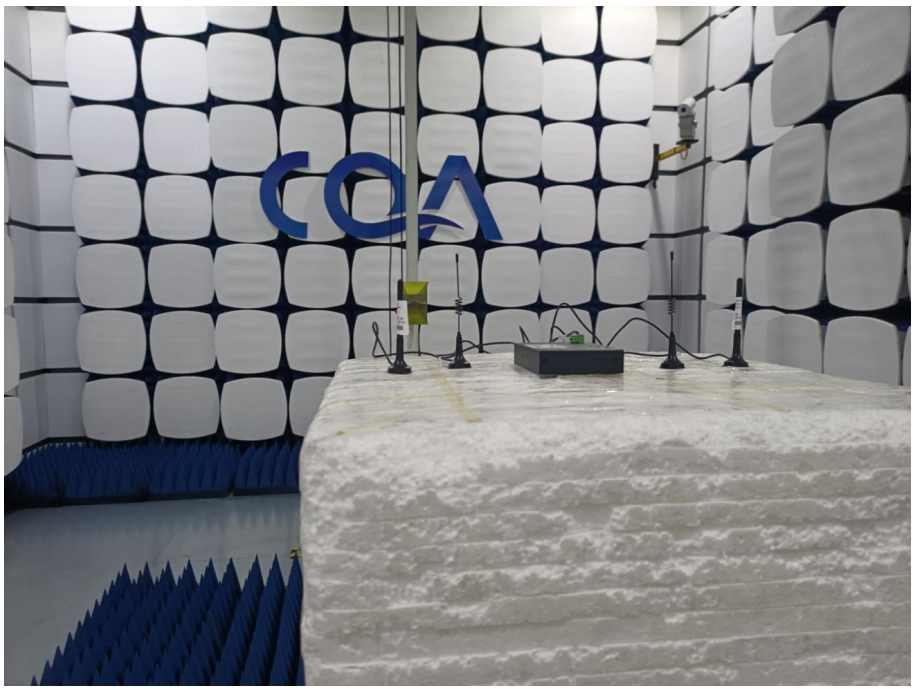
9kHz~30MHz:



30MHz~1GHz:



Above 1GHz:

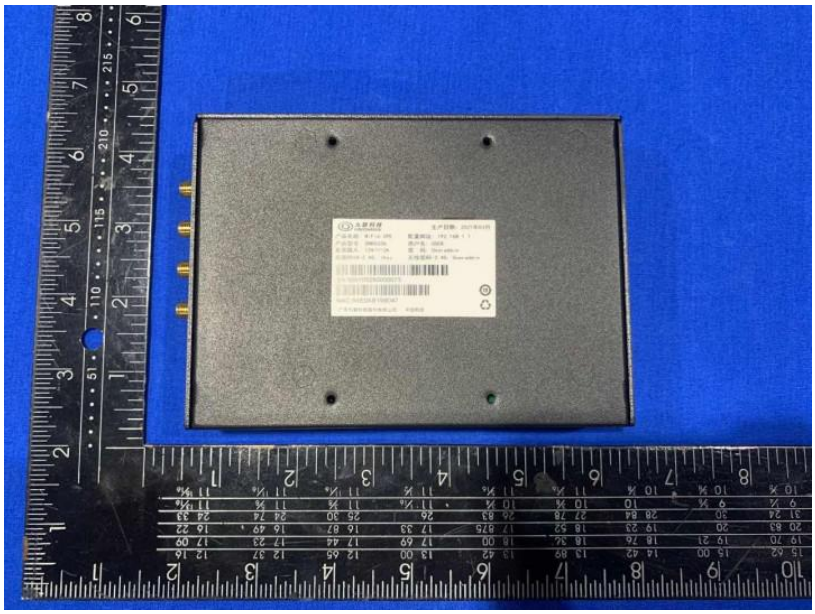


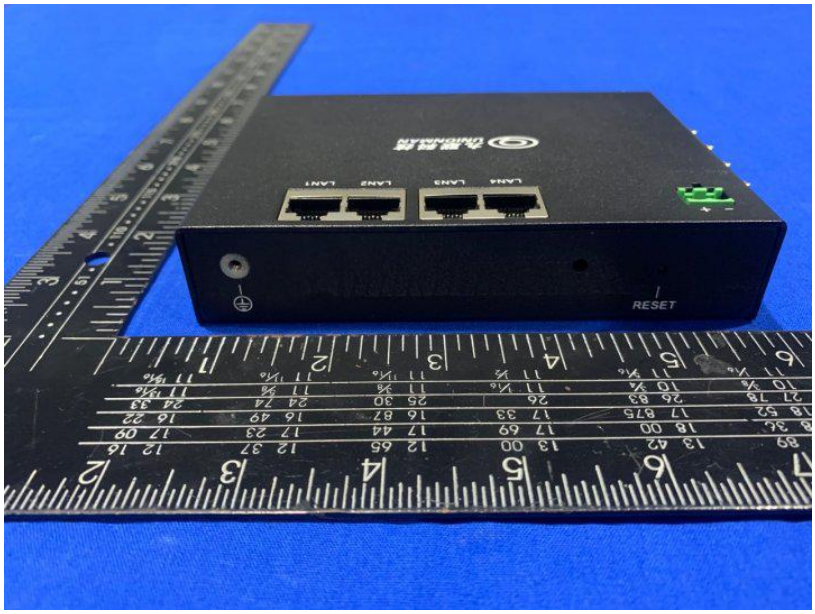
8.2 Conducted Emission

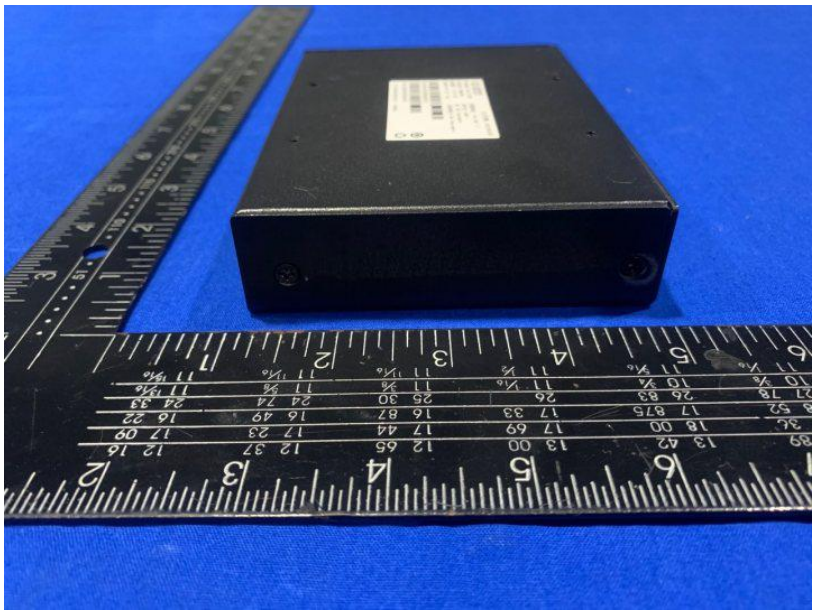
9 Photographs - EUT Constructional Details

Test model No.:

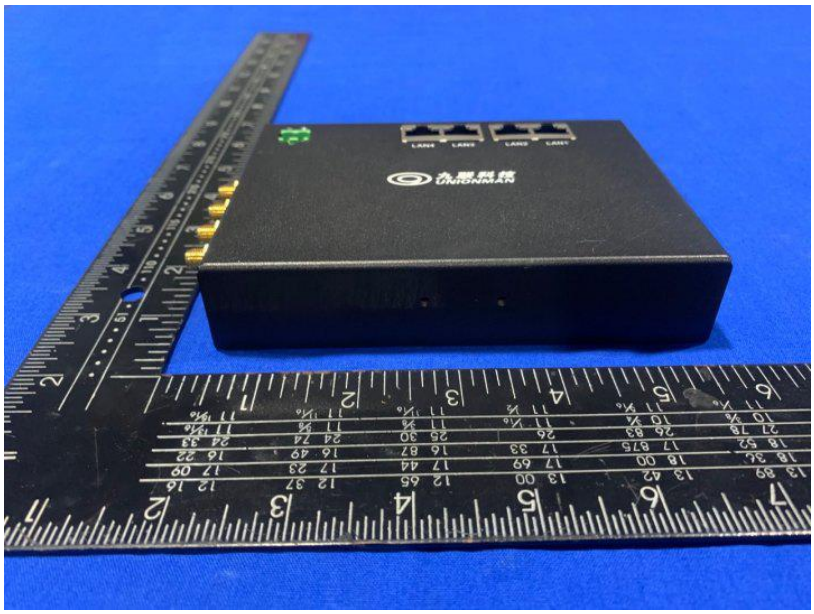
LAN4
LAN3
LAN2
LAN1
九联科技
UNIONMAN

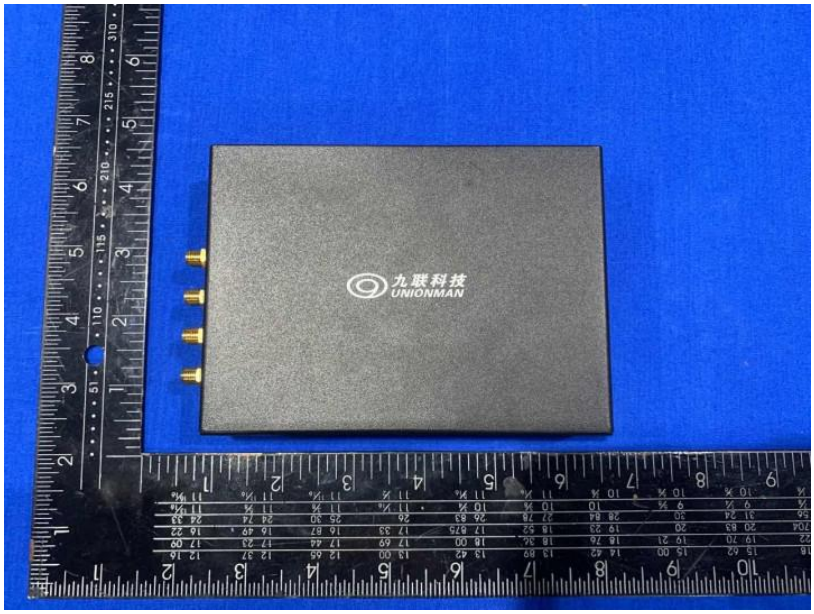


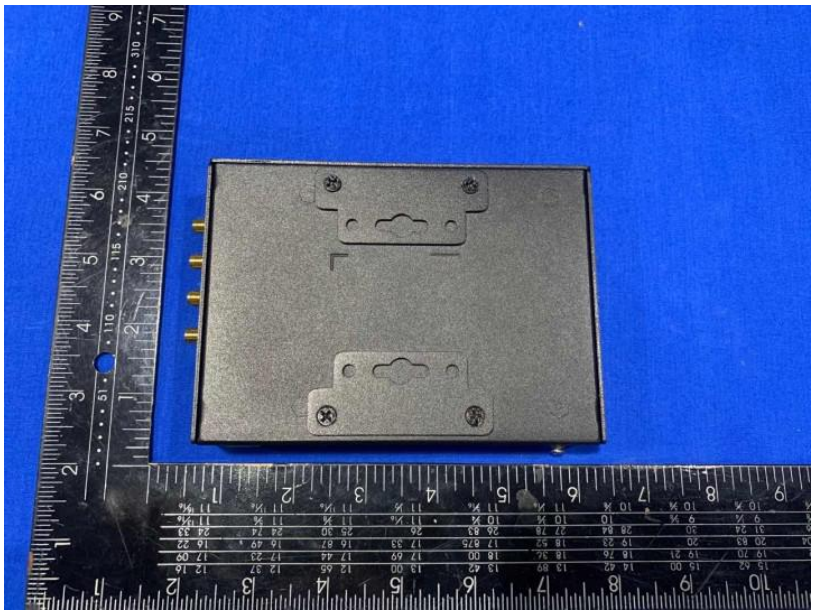

RESET



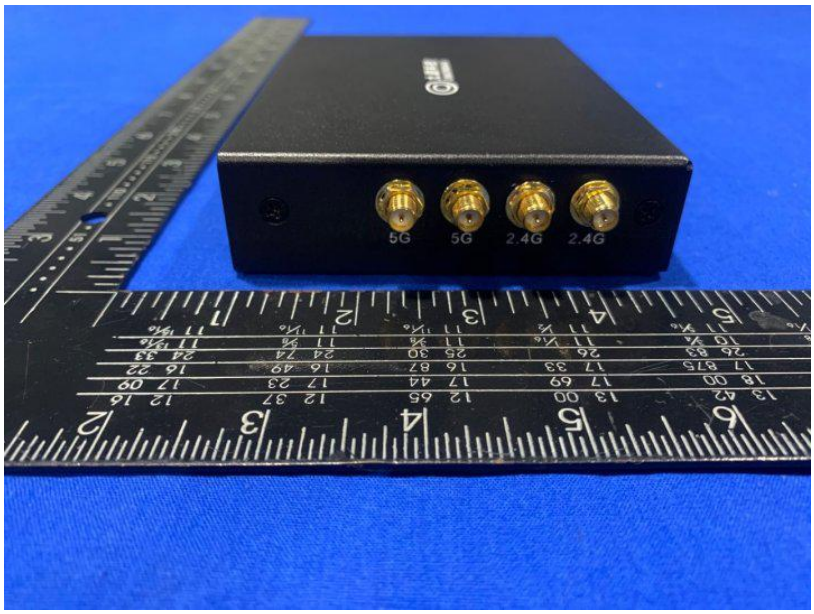
5G
5G
2.4G
2.4G

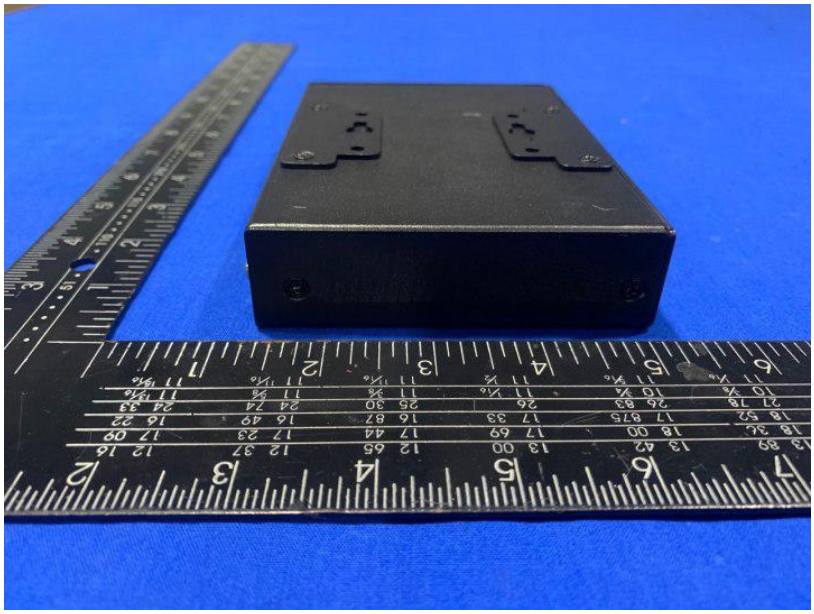


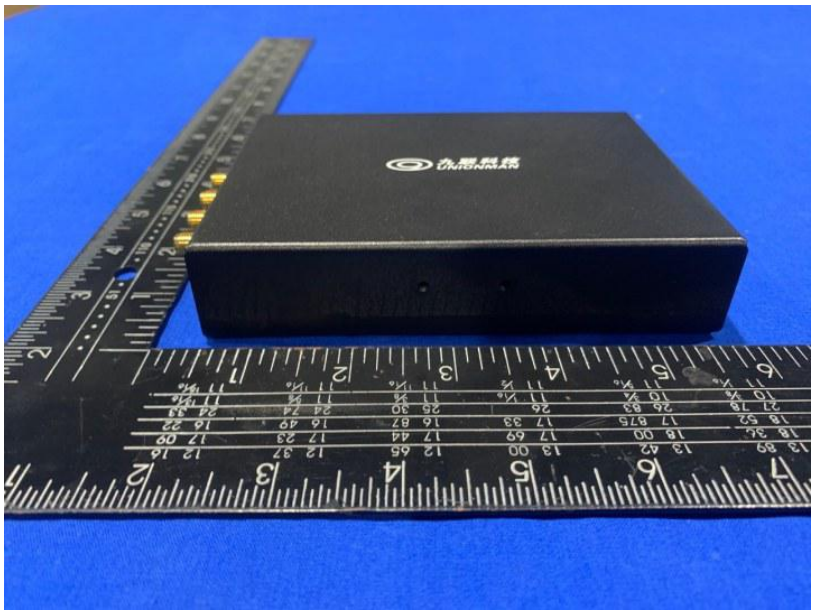

九联科技
UNIONMAN

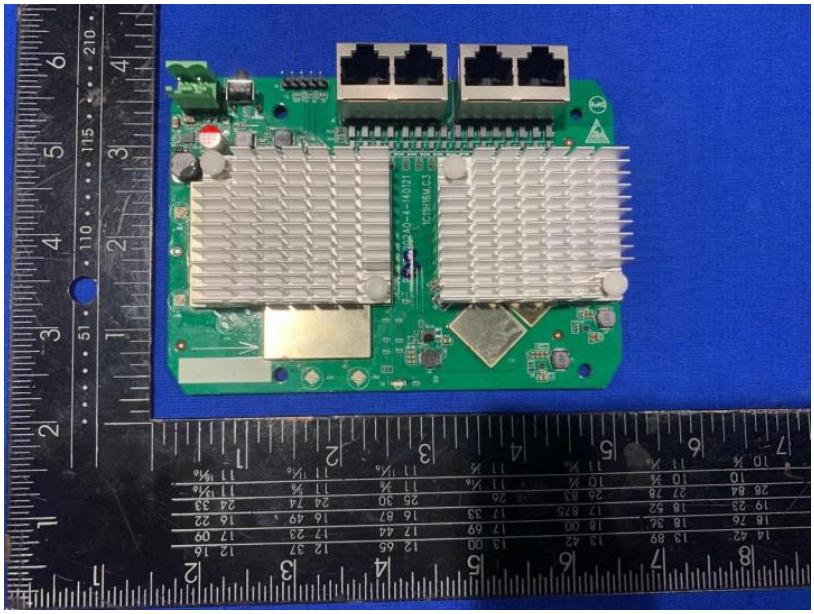


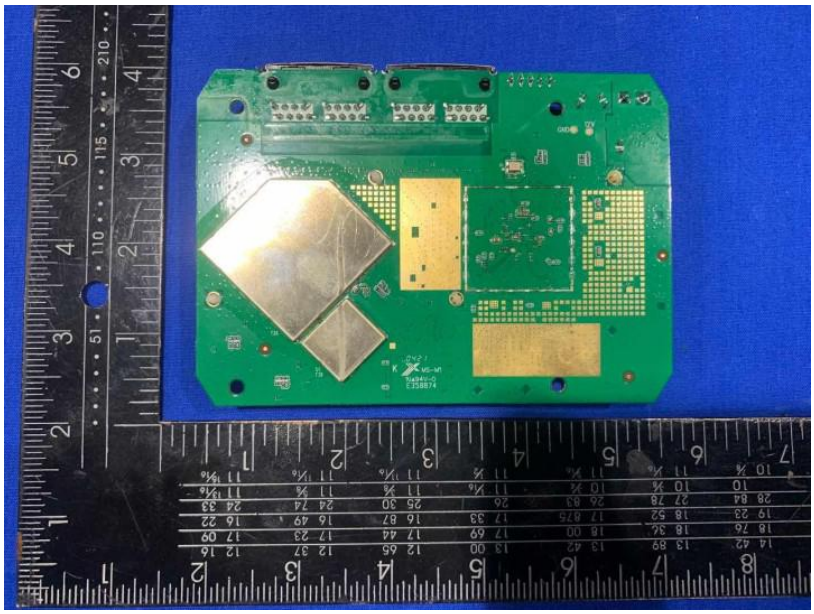
LAN1
LAN2
LAN3
LAN4
RESET

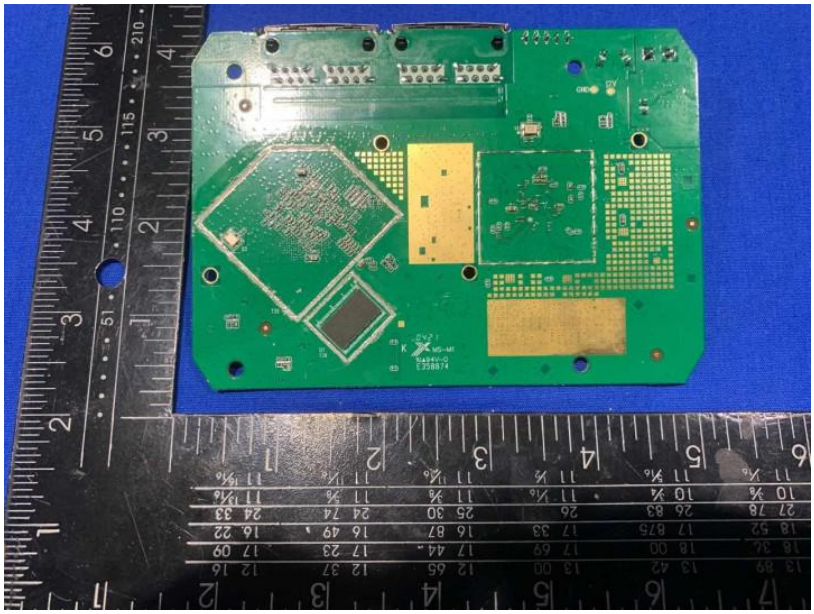

5G
5G
2.4G
2.4G

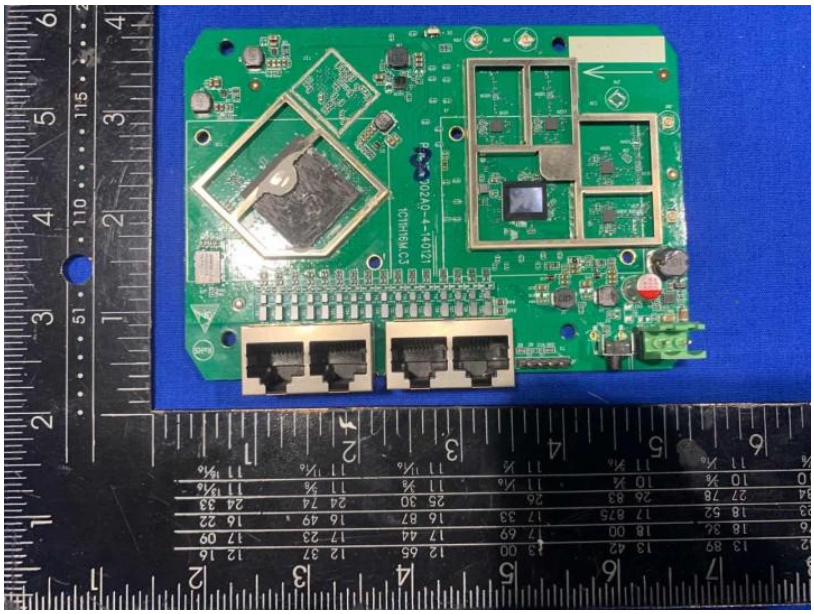




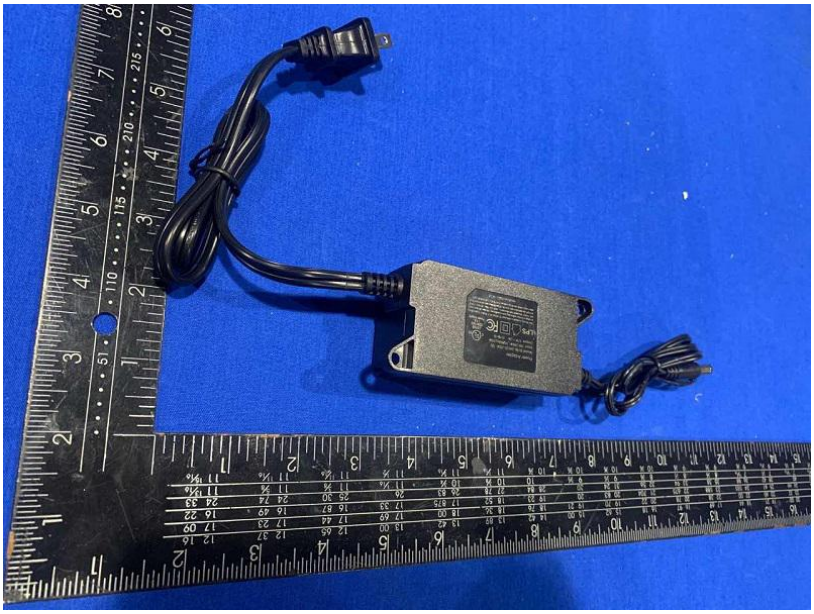








2.4G
Antenna 1
2.4G
Antenna 2
5G
Antenna 1
5G
Antenna 2



THE END