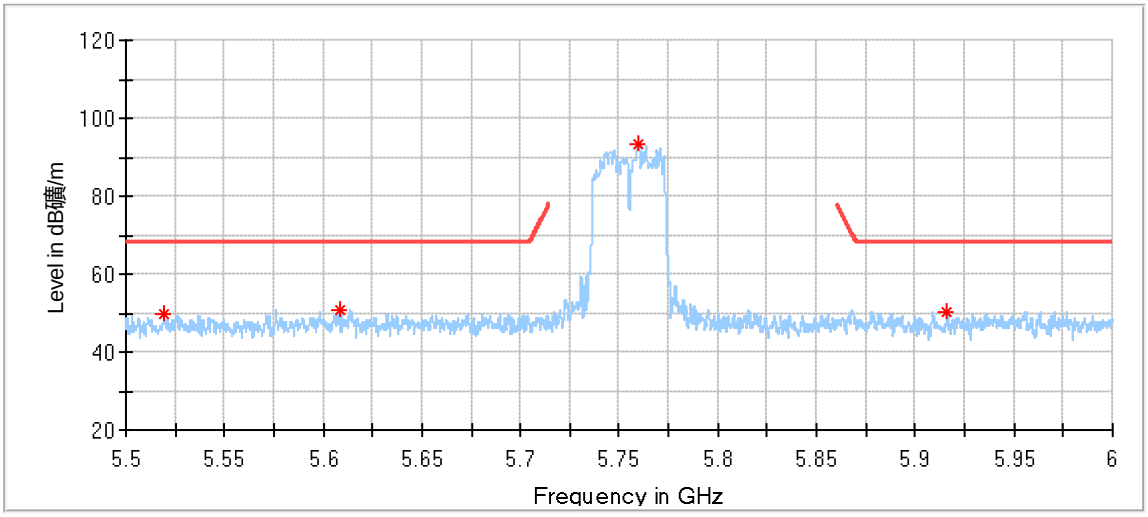
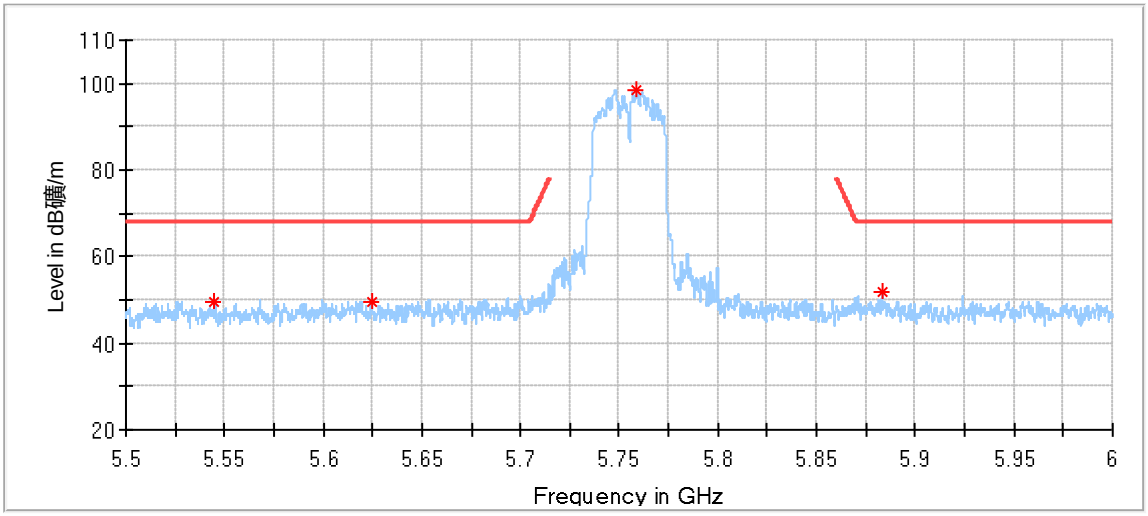
MiMo_11ac40_5755MHz:

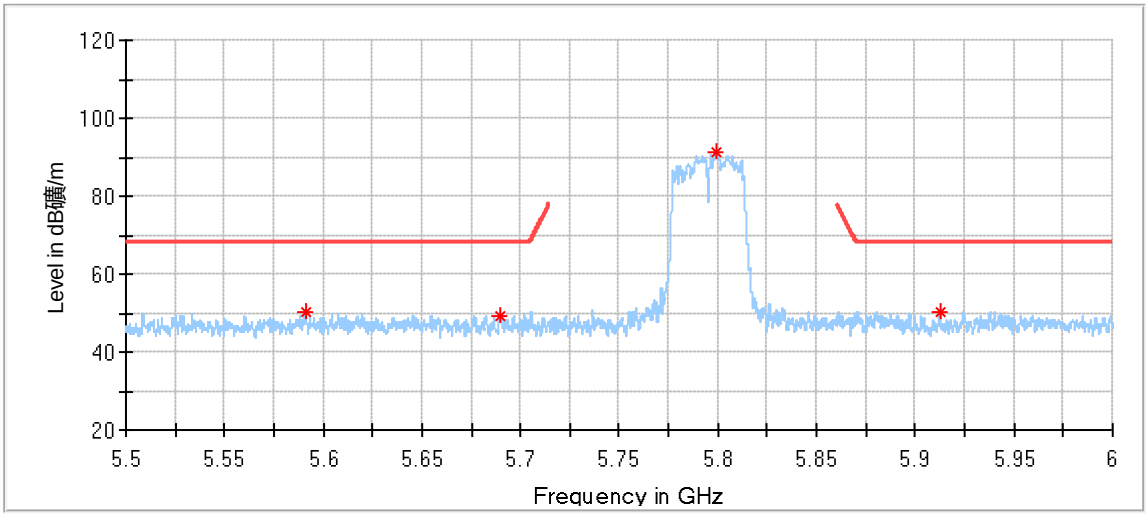


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5519.041667	49.79	68.20	18.41	150.0	H	318.0	6.86
5608.250000	50.66	68.20	17.54	150.0	H	318.0	7.13
5759.541667	93.44	---	---	150.0	H	304.0	7.24
5916.041667	50.36	68.20	17.84	150.0	H	333.0	7.98

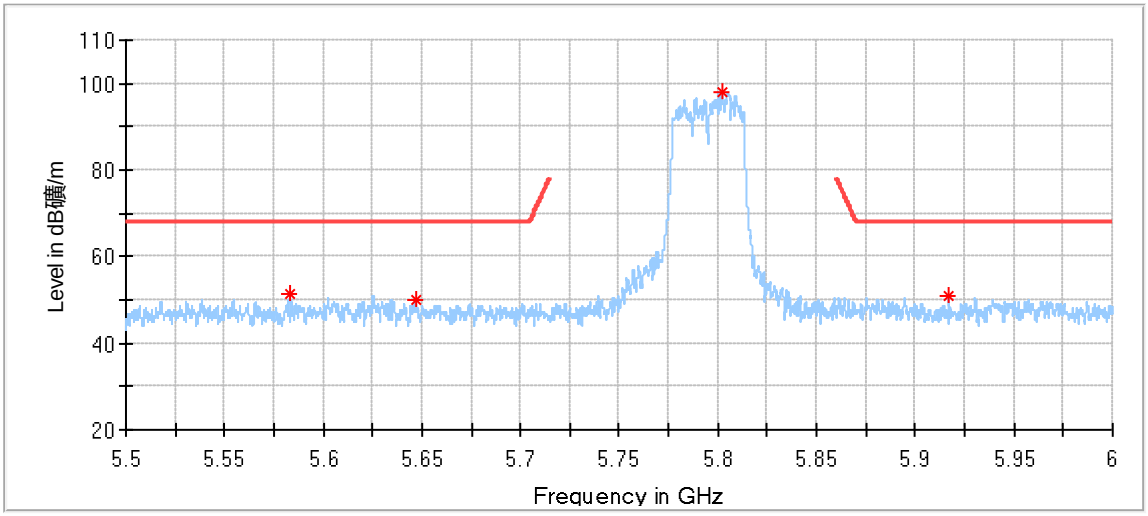


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5545.083333	49.37	68.20	18.83	150.0	V	14.0	6.98
5624.416667	49.58	68.20	18.62	150.0	V	180.0	7.17
5758.750000	98.55	---	---	150.0	V	115.0	7.24
5883.208333	51.94	68.20	16.26	150.0	V	130.0	8.04

MiMo_11ac40_5795MHz:

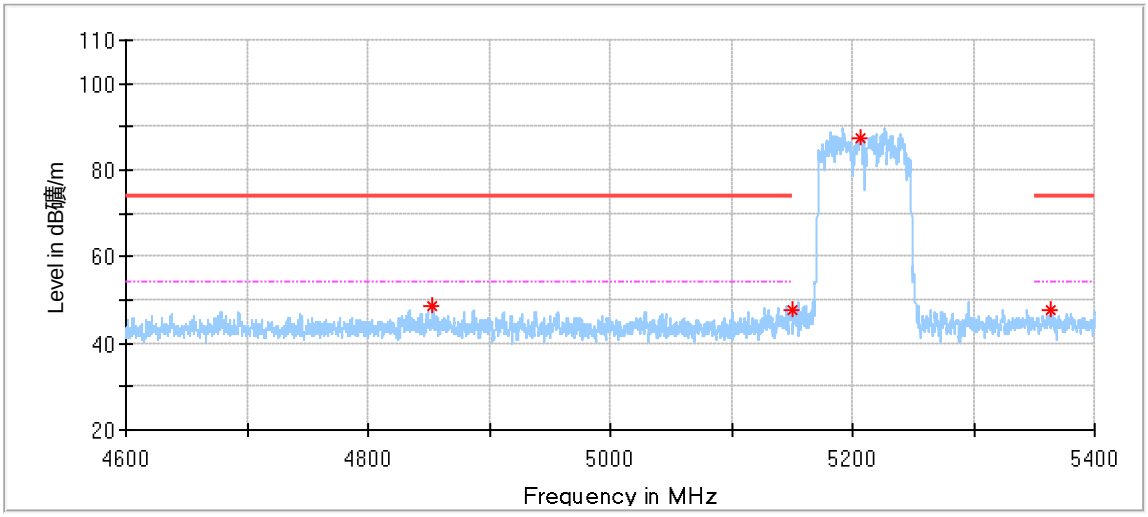


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5591.166667	50.35	68.20	17.85	150.0	H	159.0	7.08
5689.541667	49.24	68.20	18.96	150.0	H	256.0	7.31
5799.625000	91.12	---	---	150.0	H	293.0	7.47
5912.458333	50.39	68.20	17.81	150.0	H	8.0	7.99

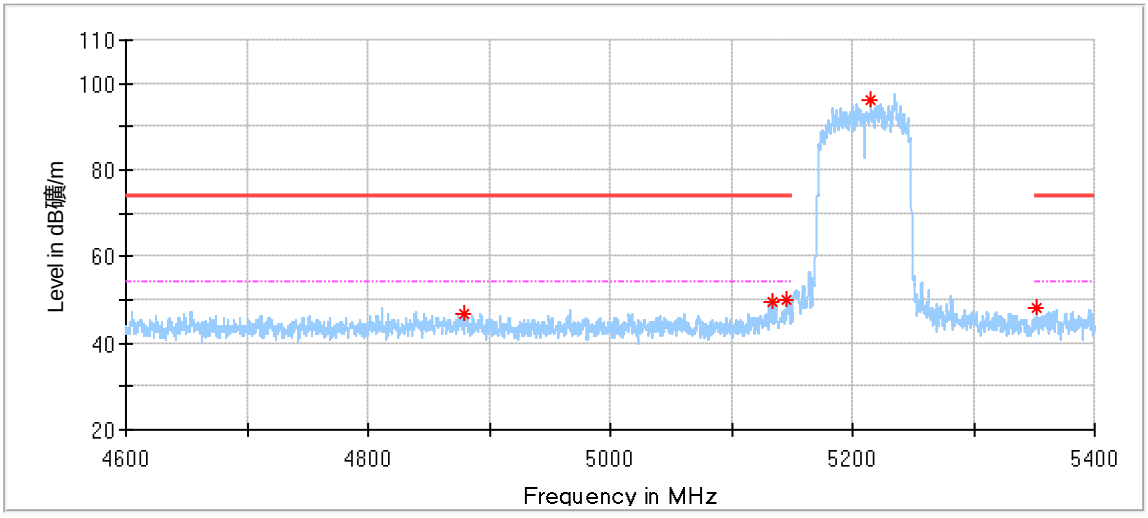


Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5583.333333	51.27	68.20	16.94	150.0	V	56.0	7.07
5646.583333	49.89	68.20	18.31	150.0	V	260.0	7.22
5802.166667	98.09	---	---	150.0	V	56.0	7.49
5916.791667	50.97	68.20	17.23	150.0	V	85.0	7.98

MiMo_11ac80_5210MHz:



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4853.600000	48.82	74.00	25.18	150.0	H	80.0	3.35
5149.733333	47.78	74.00	26.22	150.0	H	227.0	4.22
5206.666667	87.35	---	---	150.0	H	249.0	4.19
5363.533333	47.61	74.00	26.39	150.0	H	22.0	4.45



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4878.666667	46.80	74.00	27.20	150.0	V	78.0	3.40
5133.266667	49.44	74.00	24.56	150.0	V	20.0	4.06
5145.266667	50.12	74.00	23.88	150.0	V	196.0	4.18
5214.800000	96.08	---	---	150.0	V	64.0	4.17
5352.266667	48.14	74.00	25.86	150.0	V	9.0	4.43

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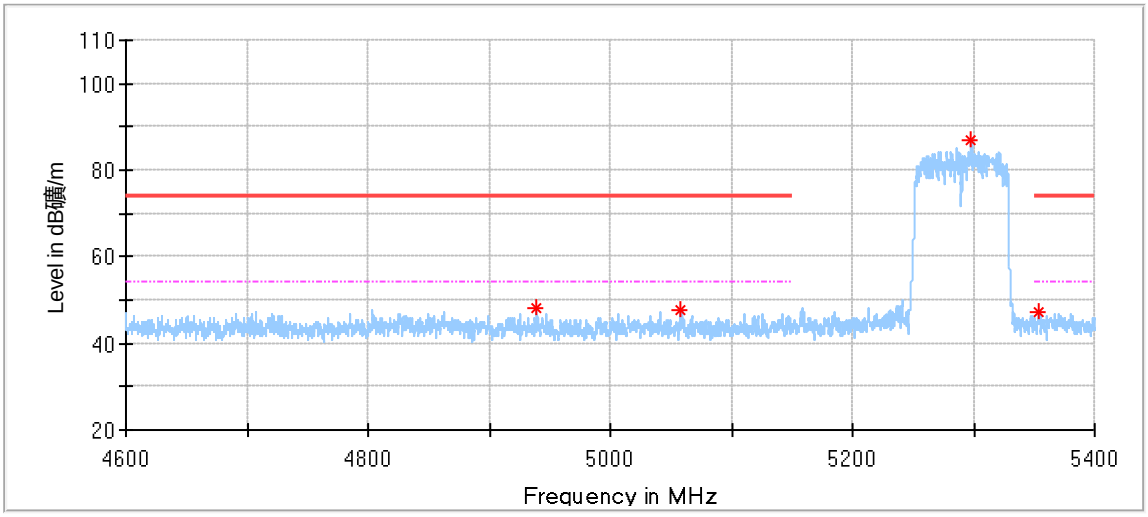
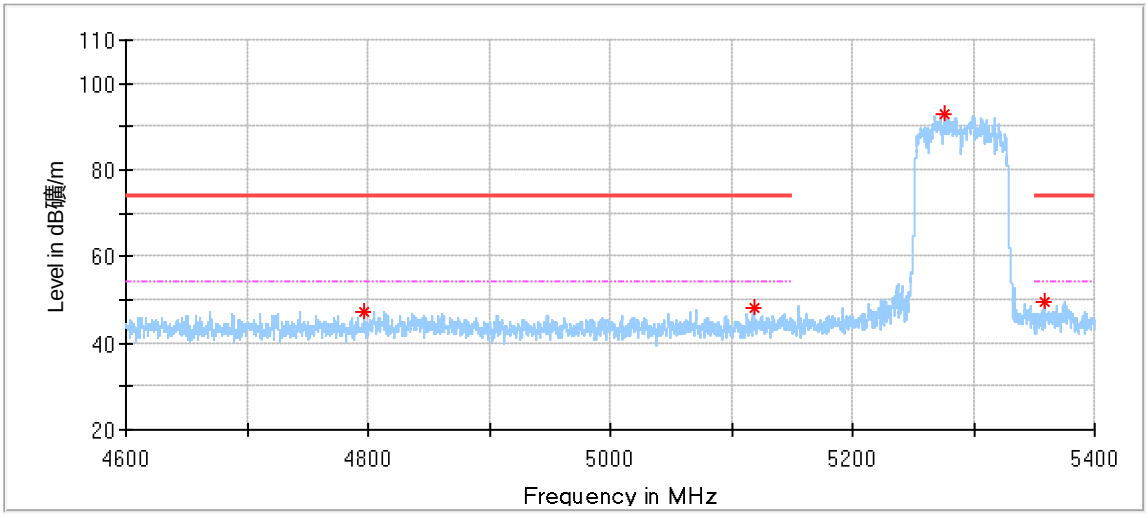
MiMo_11ac80_5290MHz:



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4939.400000	47.96	74.00	26.04	150.0	H	0.0	3.42
5057.400000	47.88	74.00	26.12	150.0	H	39.0	3.50
5298.266667	86.94	---	---	150.0	H	260.0	4.27
5353.933333	47.44	74.00	26.56	150.0	H	186.0	4.43



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4796.400000	47.37	74.00	26.63	150.0	V	233.0	3.08
5118.333333	48.22	74.00	25.78	150.0	V	196.0	3.91
5276.800000	92.75	---	---	150.0	V	71.0	4.07
5358.533333	49.38	74.00	24.62	150.0	V	357.0	4.44

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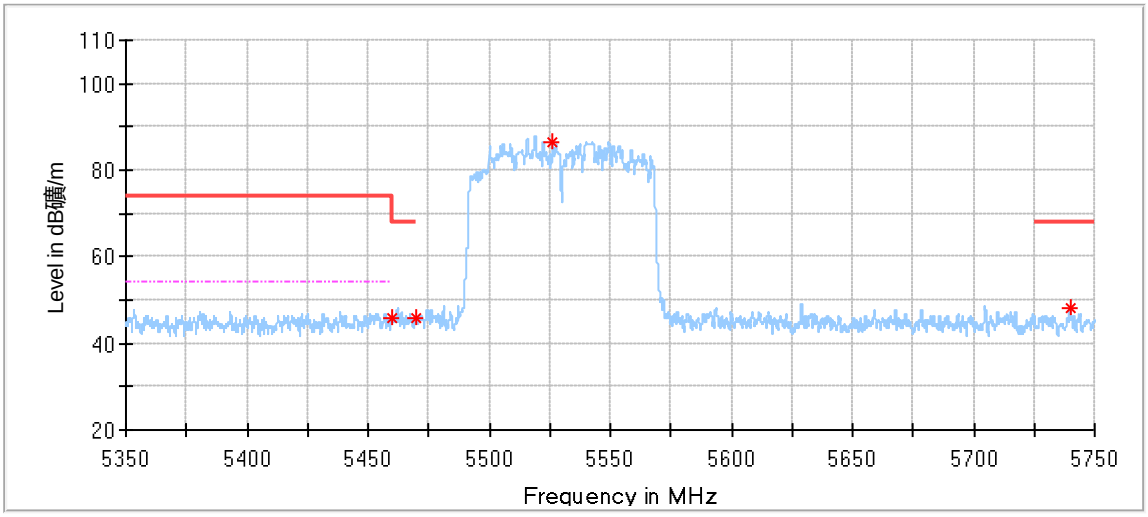
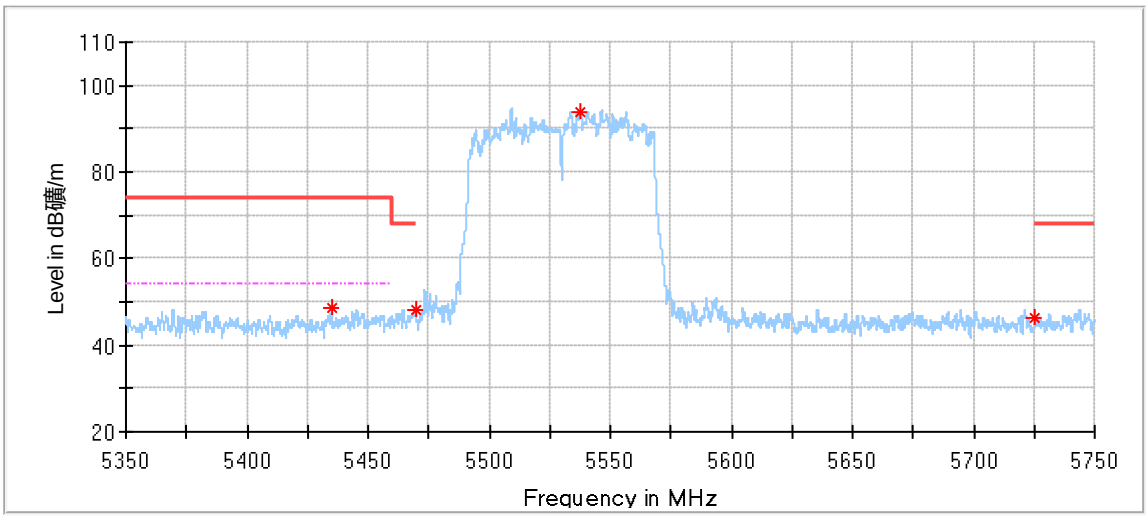
MiMo_11ac80_5530MHz:



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5459.700000	45.64	74.00	28.36	150.0	H	276.0	4.84
5469.700000	45.99	68.20	22.21	150.0	H	11.0	4.85
5526.133333	86.31	---	---	150.0	H	122.0	4.73
5739.800000	48.10	68.20	20.10	150.0	H	122.0	5.03



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5434.966667	48.58	74.00	25.42	150.0	V	0.0	4.80
5469.466667	48.38	68.20	19.82	150.0	V	13.0	4.85
5537.566667	93.73	---	---	150.0	V	242.0	4.72
5725.400000	46.25	68.20	21.95	150.0	V	225.0	4.97

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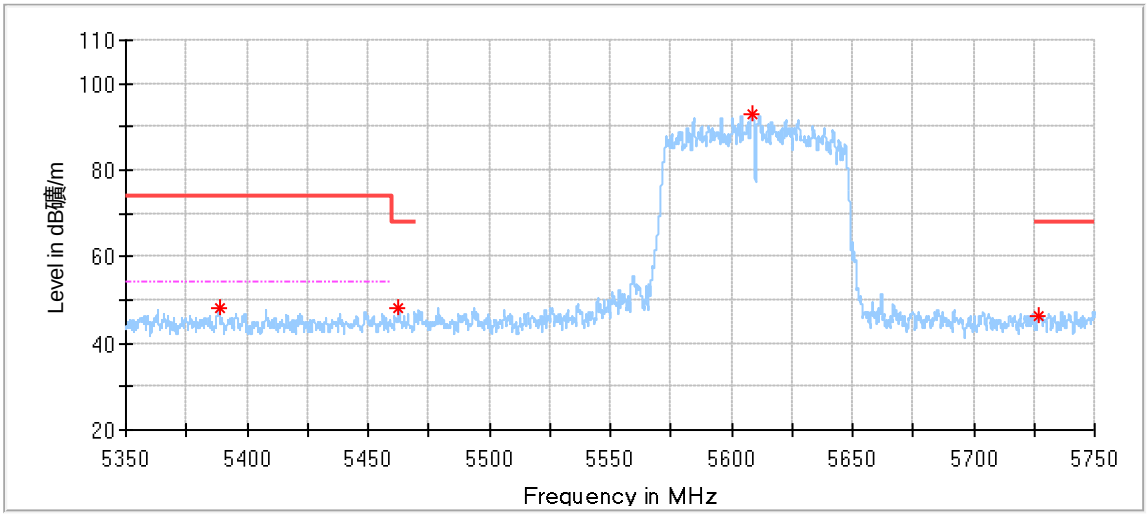
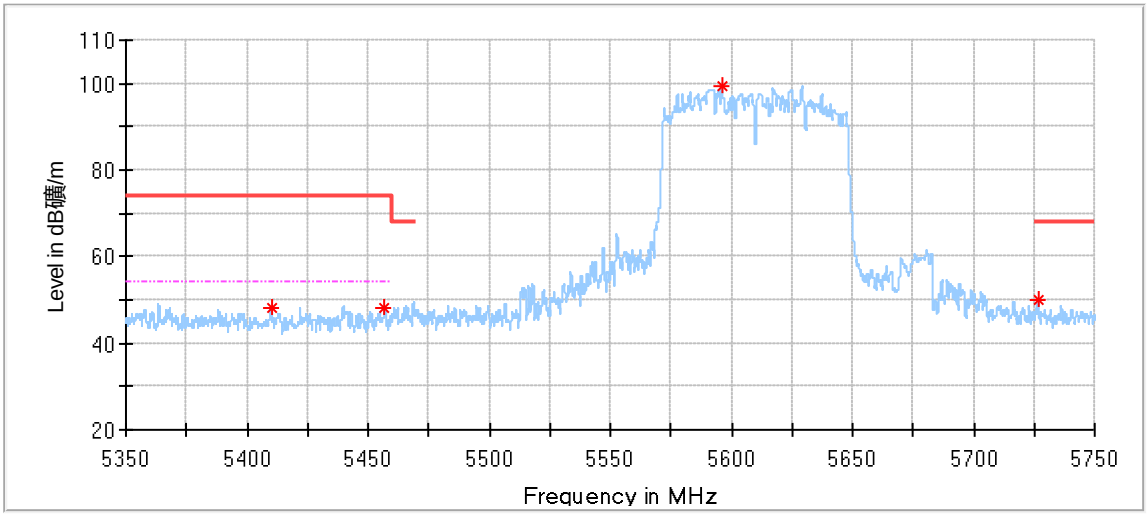
MiMo_11ac80_5610MHz:



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5388.633333	48.16	74.00	25.84	150.0	H	87.0	4.59
5462.766667	48.05	68.20	20.15	150.0	H	276.0	4.84
5608.333333	92.95	---	---	150.0	H	276.0	4.95
5726.633333	46.15	68.20	22.05	150.0	H	106.0	4.97



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5410.000000	47.93	74.00	26.07	150.0	V	182.0	4.72
5457.000000	48.33	74.00	25.67	150.0	V	312.0	4.83
5595.933333	99.43	---	---	150.0	V	326.0	5.01
5726.666667	49.78	68.20	18.42	150.0	V	0.0	4.97

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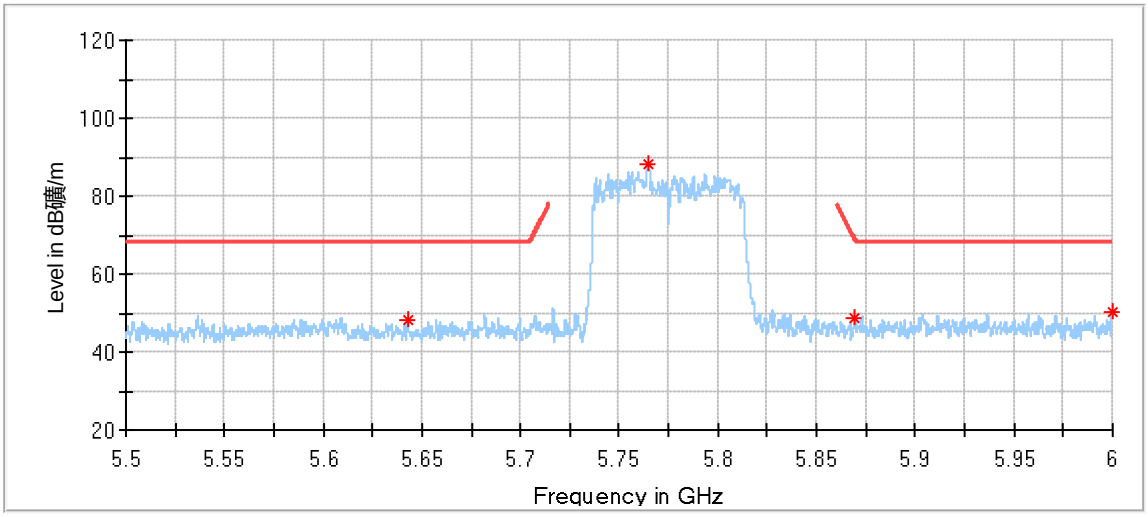
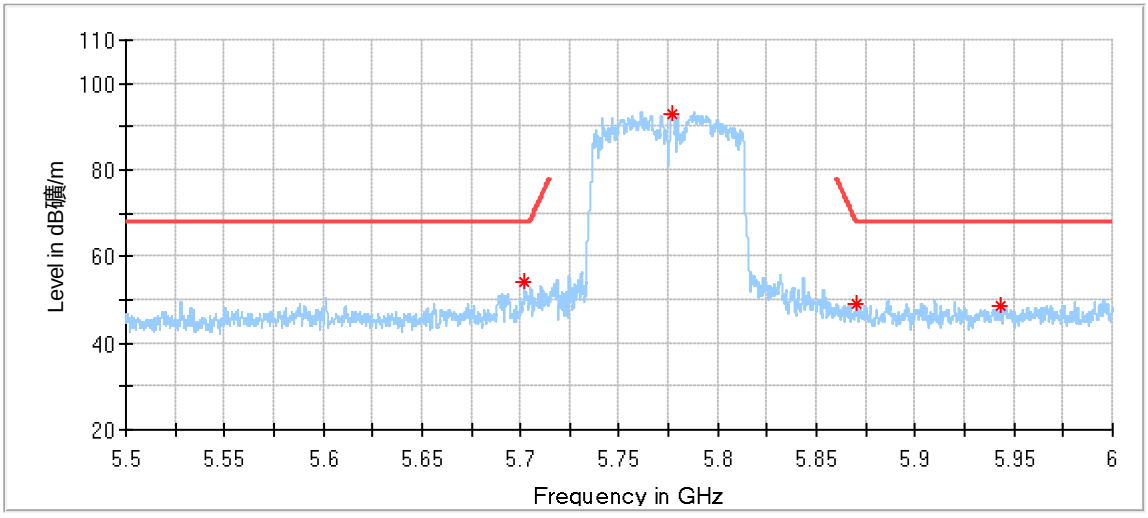
MiMo_11ac80_5775MHz:



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5642.666667	48.38	68.20	19.82	150.0	H	352.0	4.80
5764.833333	88.33	---	---	150.0	H	101.0	5.14
5869.375000	48.92	68.83	19.90	150.0	H	239.0	5.68
5999.666667	50.27	68.20	17.93	150.0	H	10.0	6.10



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5701.916667	54.01	68.20	14.19	150.0	V	102.0	4.87
5776.583333	92.97	---	---	150.0	V	117.0	5.18
5870.333333	49.15	68.20	19.05	150.0	V	355.0	5.68
5943.416667	48.64	68.20	19.56	150.0	V	159.0	5.78

Remark:
1, Corrected Amplitude = Read level + Corrector factor
Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain
Below 1GHz: Corrector factor = Antenna Factor + Cable Loss
2, “*” means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.
3, We test all modes and only the worst case (802.11a_SISO_Ant1, 802.11N40_MIMO, 802.11AC80_MIMO modulation) recorded in the report.

4, Testing is carried out with frequency rang 9KHz to 40GHz, which below 30MHz and data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 30dB below the permissible limits or the field strength is too small to be measured.
5, According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

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9.6 Duty Cycle

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Use the following spectrum analyzer settings:
   Span = 0, RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
3. Allow the trace to stabilize. Mark the OFF time and ON time. and the duty cycle is $T_{on} / T_{on}+T_{off}$
4. Repeat above procedures until all frequencies measured were complete.

Test Mode	Antenna	Channel (MHz)	Duty Cycle [%]
11A	Ant1	5180	80.03
		5200	80.03
		5240	80.04
		5260	80.03
		5280	80.04
		5320	80.03
		5500	80.03
		5580	80.03
		5700	80.04
		5720	80.04
		5745	80.08
		5785	80.04
		5825	80.03
11N20	Ant1	5180	78.89
		5200	78.91
		5240	78.91
		5260	78.89
		5280	78.89
		5320	78.91
		5500	78.89
		5580	78.91
		5700	78.89
		5720	78.89
		5745	78.89
		5785	78.89
		5825	78.89
11N40	Ant1	5190	64.73
		5230	64.73
		5270	64.73
		5310	64.73
		5510	64.76
		5550	64.73
		5670	64.73
		5710	64.73
		5755	64.73
		5795	64.73
11AC20	Ant1	5180	78.93
		5200	78.93
		5240	78.93
		5260	78.93
		5280	78.93
		5320	78.94
		5500	78.94
		5580	78.93
		5700	78.93
		5720	78.93
		5745	78.93

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		5785	78.94
		5825	78.94
11AC40	Ant1	5190	64.82
		5230	64.91
		5270	64.86
		5310	64.82
		5510	64.82
		5550	64.82
		5670	64.91
		5710	64.86
		5755	64.82
		5795	64.82
11AC80	Ant1	5210	47.17
		5290	47.10
		5530	47.10
		5610	47.10
		5690	47.10
		5775	47.10

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9.7 Frequencies Stability

Test Method

1. The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set Centre Frequency of the channel under test.
3. Set Detector PEAK
4. Set RBW: 10KHz, VBW: 3RBW
5. Set Span: Encompass the entire emissions bandwidth (EBW) of the signal.
6. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
User manual temperature is 0℃ to +45℃, normal Temperature is +25℃.

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.

Test Results (All conditions and all modes were performed, only list Worst-Case in the report)

Remark: NV is normal Voltage: 5.0Vdc, HV is High Voltage: 5.75Vdc, LV is Low Voltage: 4.25Vdc, NT is normal Temperature: +25℃.

Limit: It is required that that the emissions are maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

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Voltage								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11AC20 SISO	Ant1	5180	NV	NT	5000	0.965251	20	PASS
			LV	NT	5000	0.965251	20	PASS
			HV	NT	5000	0.965251	20	PASS
		5200	NV	NT	6000	1.153846	20	PASS
			LV	NT	6000	1.153846	20	PASS
			HV	NT	6000	1.153846	20	PASS
		5240	NV	NT	6000	1.145038	20	PASS
			LV	NT	6000	1.145038	20	PASS
			HV	NT	6000	1.145038	20	PASS
		5260	NV	NT	6000	1.140684	20	PASS
			LV	NT	6000	1.140684	20	PASS
			HV	NT	7000	1.330798	20	PASS
		5280	NV	NT	12000	2.272727	20	PASS
			LV	NT	14000	2.651515	20	PASS
			HV	NT	15000	2.840909	20	PASS
		5320	NV	NT	14000	2.631579	20	PASS
			LV	NT	16000	3.007519	20	PASS
			HV	NT	17000	3.195489	20	PASS
		5500	NV	NT	12000	2.181818	20	PASS
			LV	NT	11000	2.000000	20	PASS
			HV	NT	10000	1.818182	20	PASS
		5580	NV	NT	8000	1.433692	20	PASS
			LV	NT	8000	1.433692	20	PASS
			HV	NT	8000	1.433692	20	PASS
		5700	NV	NT	8000	1.403509	20	PASS
			LV	NT	8000	1.403509	20	PASS
			HV	NT	8000	1.403509	20	PASS
		5720	NV	NT	7000	1.223776	20	PASS
			LV	NT	6000	1.048951	20	PASS
			HV	NT	6000	1.048951	20	PASS
		5745	NV	NT	7000	1.218451	20	PASS
			LV	NT	7000	1.218451	20	PASS
			HV	NT	7000	1.218451	20	PASS
		5785	NV	NT	7000	1.210026	20	PASS
			LV	NT	7000	1.210026	20	PASS
			HV	NT	7000	1.210026	20	PASS
		5825	NV	NT	7000	1.201717	20	PASS
			LV	NT	7000	1.201717	20	PASS
			HV	NT	7000	1.201717	20	PASS
11AC40 SISO	Ant1	5190	NV	NT	7000	1.348748	20	PASS
			LV	NT	6000	1.156069	20	PASS
			HV	NT	6000	1.156069	20	PASS
		5230	NV	NT	7000	1.338432	20	PASS
			LV	NT	6000	1.147228	20	PASS
			HV	NT	6000	1.147228	20	PASS
		5270	NV	NT	7000	1.328273	20	PASS
			LV	NT	6000	1.13852	20	PASS
			HV	NT	6000	1.13852	20	PASS
		5310	NV	NT	7000	1.318267	20	PASS
			LV	NT	6000	1.129944	20	PASS
			HV	NT	6000	1.129944	20	PASS
		5510	NV	NT	7000	1.270417	20	PASS
			LV	NT	6000	1.088929	20	PASS
			HV	NT	6000	1.088929	20	PASS
		5550	NV	NT	7000	1.261261	20	PASS
			LV	NT	7000	1.261261	20	PASS
			HV	NT	6000	1.081081	20	PASS
		5670	NV	NT	7000	1.234568	20	PASS
			LV	NT	7000	1.234568	20	PASS

			HV	NT	7000	1.234568	20	PASS
		5710	NV	NT	8000	1.401051	20	PASS
			LV	NT	7000	1.225919	20	PASS
			HV	NT	7000	1.225919	20	PASS
		5755	NV	NT	8000	1.390096	20	PASS
			LV	NT	7000	1.216334	20	PASS
			HV	NT	7000	1.216334	20	PASS
		5795	NV	NT	7000	1.207938	20	PASS
			LV	NT	7000	1.207938	20	PASS
			HV	NT	7000	1.207938	20	PASS
11AC80 SISO	Ant1	5210	NV	NT	7000	1.34357	20	PASS
			LV	NT	6000	1.151631	20	PASS
			HV	NT	6000	1.151631	20	PASS
		5290	NV	NT	7000	1.323251	20	PASS
			LV	NT	6000	1.134216	20	PASS
			HV	NT	6000	1.134216	20	PASS
		5530	NV	NT	7000	1.265823	20	PASS
			LV	NT	6000	1.084991	20	PASS
			HV	NT	6000	1.084991	20	PASS
		5610	NV	NT	8000	1.426025	20	PASS
			LV	NT	7000	1.247772	20	PASS
			HV	NT	6000	1.069519	20	PASS
		5690	NV	NT	7000	1.230228	20	PASS
			LV	NT	7000	1.230228	20	PASS
			HV	NT	6000	1.054482	20	PASS
		5775	NV	NT	8000	1.385281	20	PASS
			LV	NT	7000	1.212121	20	PASS
			HV	NT	7000	1.212121	20	PASS

Temperature								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11AC20 SISO	Ant2	5180	NV	-30	6000	1.158301	20	PASS
			NV	-20	6000	1.158301	20	PASS
			NV	-10	6000	1.158301	20	PASS
			NV	0	6000	1.158301	20	PASS
			NV	10	6000	1.158301	20	PASS
			NV	20	6000	1.158301	20	PASS
			NV	30	6000	1.158301	20	PASS
			NV	40	6000	1.158301	20	PASS
			NV	50	6000	1.158301	20	PASS
		5200	NV	-30	6000	1.153846	20	PASS
			NV	-20	6000	1.153846	20	PASS
			NV	-10	6000	1.153846	20	PASS
			NV	0	6000	1.153846	20	PASS
			NV	10	6000	1.153846	20	PASS
			NV	20	6000	1.153846	20	PASS
			NV	30	6000	1.153846	20	PASS
			NV	40	6000	1.153846	20	PASS
			NV	50	6000	1.153846	20	PASS
		5240	NV	-30	6000	1.145038	20	PASS
			NV	-20	6000	1.145038	20	PASS
			NV	-10	6000	1.145038	20	PASS
			NV	0	6000	1.145038	20	PASS
			NV	10	6000	1.145038	20	PASS
			NV	20	6000	1.145038	20	PASS
			NV	30	6000	1.145038	20	PASS
			NV	40	6000	1.145038	20	PASS
			NV	50	6000	1.145038	20	PASS
		5260	NV	-30	6000	1.140684	20	PASS
			NV	-20	6000	1.140684	20	PASS
			NV	-10	6000	1.140684	20	PASS
			NV	0	6000	1.140684	20	PASS

			NV	10	6000	1.140684	20	PASS
			NV	20	6000	1.140684	20	PASS
			NV	30	6000	1.140684	20	PASS
			NV	40	6000	1.140684	20	PASS
			NV	50	6000	1.140684	20	PASS
		5280	NV	-30	6000	1.136364	20	PASS
			NV	-20	6000	1.136364	20	PASS
			NV	-10	6000	1.136364	20	PASS
			NV	0	6000	1.136364	20	PASS
			NV	10	6000	1.136364	20	PASS
			NV	20	6000	1.136364	20	PASS
			NV	30	6000	1.136364	20	PASS
			NV	40	6000	1.136364	20	PASS
			NV	50	6000	1.136364	20	PASS
		5320	NV	-30	6000	1.12782	20	PASS
			NV	-20	6000	1.12782	20	PASS
			NV	-10	6000	1.12782	20	PASS
			NV	0	6000	1.12782	20	PASS
			NV	10	6000	1.12782	20	PASS
			NV	20	6000	1.12782	20	PASS
			NV	30	6000	1.12782	20	PASS
			NV	40	6000	1.12782	20	PASS
			NV	50	6000	1.12782	20	PASS
		5500	NV	-30	6000	1.090909	20	PASS
			NV	-20	6000	1.090909	20	PASS
			NV	-10	6000	1.090909	20	PASS
			NV	0	6000	1.090909	20	PASS
			NV	10	6000	1.090909	20	PASS
			NV	20	6000	1.090909	20	PASS
			NV	30	6000	1.090909	20	PASS
			NV	40	6000	1.090909	20	PASS
			NV	50	6000	1.090909	20	PASS
		5580	NV	-30	6000	1.075269	20	PASS
			NV	-20	6000	1.075269	20	PASS
			NV	-10	6000	1.075269	20	PASS
			NV	0	6000	1.075269	20	PASS
			NV	10	6000	1.075269	20	PASS
			NV	20	6000	1.075269	20	PASS
			NV	30	6000	1.075269	20	PASS
			NV	40	6000	1.075269	20	PASS
			NV	50	6000	1.075269	20	PASS
		5700	NV	-30	6000	1.052632	20	PASS
			NV	-20	6000	1.052632	20	PASS
			NV	-10	6000	1.052632	20	PASS
			NV	0	6000	1.052632	20	PASS
			NV	10	6000	1.052632	20	PASS
			NV	20	7000	1.22807	20	PASS
			NV	30	6000	1.052632	20	PASS
			NV	40	7000	1.22807	20	PASS
			NV	50	6000	1.052632	20	PASS
		5720	NV	-30	7000	1.223776	20	PASS
			NV	-20	7000	1.223776	20	PASS
			NV	-10	6000	1.048951	20	PASS
			NV	0	7000	1.223776	20	PASS
			NV	10	7000	1.223776	20	PASS
			NV	20	7000	1.223776	20	PASS
			NV	30	7000	1.223776	20	PASS
			NV	40	6000	1.048951	20	PASS
			NV	50	7000	1.223776	20	PASS
		5745	NV	-30	7000	1.218451	20	PASS
			NV	-20	7000	1.218451	20	PASS
			NV	-10	7000	1.218451	20	PASS
			NV	0	7000	1.218451	20	PASS
			NV	10	7000	1.218451	20	PASS

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			NV	20	7000	1.218451	20	PASS
			NV	30	6000	1.044386	20	PASS
			NV	40	7000	1.218451	20	PASS
			NV	50	7000	1.218451	20	PASS
		5785	NV	-30	6000	1.037165	20	PASS
			NV	-20	7000	1.210026	20	PASS
			NV	-10	6000	1.037165	20	PASS
			NV	0	7000	1.210026	20	PASS
			NV	10	7000	1.210026	20	PASS
			NV	20	6000	1.037165	20	PASS
			NV	30	7000	1.210026	20	PASS
			NV	40	7000	1.210026	20	PASS
			NV	50	7000	1.210026	20	PASS
		5825	NV	-30	7000	1.201717	20	PASS
			NV	-20	7000	1.201717	20	PASS
			NV	-10	7000	1.201717	20	PASS
			NV	0	7000	1.201717	20	PASS
			NV	10	7000	1.201717	20	PASS
			NV	20	7000	1.201717	20	PASS
			NV	30	7000	1.201717	20	PASS
			NV	40	7000	1.201717	20	PASS
			NV	50	7000	1.201717	20	PASS
11AC40 SISO	Ant2	5190	NV	-30	6000	1.156069	20	PASS
			NV	-20	6000	1.156069	20	PASS
			NV	-10	6000	1.156069	20	PASS
			NV	0	6000	1.156069	20	PASS
			NV	10	6000	1.156069	20	PASS
			NV	20	6000	1.156069	20	PASS
			NV	30	6000	1.156069	20	PASS
			NV	40	6000	1.156069	20	PASS
			NV	50	6000	1.156069	20	PASS
		5230	NV	-30	6000	1.147228	20	PASS
			NV	-20	6000	1.147228	20	PASS
			NV	-10	6000	1.147228	20	PASS
			NV	0	6000	1.147228	20	PASS
			NV	10	6000	1.147228	20	PASS
			NV	20	6000	1.147228	20	PASS
			NV	30	6000	1.147228	20	PASS
			NV	40	6000	1.147228	20	PASS
			NV	50	6000	1.147228	20	PASS
		5270	NV	-30	6000	1.13852	20	PASS
			NV	-20	6000	1.13852	20	PASS
			NV	-10	6000	1.13852	20	PASS
			NV	0	6000	1.13852	20	PASS
			NV	10	6000	1.13852	20	PASS
			NV	20	6000	1.13852	20	PASS
			NV	30	6000	1.13852	20	PASS
			NV	40	6000	1.13852	20	PASS
			NV	50	6000	1.13852	20	PASS
		5310	NV	-30	6000	1.129944	20	PASS
			NV	-20	6000	1.129944	20	PASS
			NV	-10	6000	1.129944	20	PASS
			NV	0	6000	1.129944	20	PASS
			NV	10	6000	1.129944	20	PASS
			NV	20	6000	1.129944	20	PASS
			NV	30	6000	1.129944	20	PASS
			NV	40	6000	1.129944	20	PASS
			NV	50	6000	1.129944	20	PASS
		5510	NV	-30	6000	1.088929	20	PASS
			NV	-20	6000	1.088929	20	PASS
			NV	-10	6000	1.088929	20	PASS
			NV	0	6000	1.088929	20	PASS
			NV	10	6000	1.088929	20	PASS
			NV	20	6000	1.088929	20	PASS

			NV	30	6000	1.088929	20	PASS
			NV	40	6000	1.088929	20	PASS
			NV	50	6000	1.088929	20	PASS
		5550	NV	-30	6000	1.081081	20	PASS
			NV	-20	6000	1.081081	20	PASS
			NV	-10	6000	1.081081	20	PASS
			NV	0	6000	1.081081	20	PASS
			NV	10	6000	1.081081	20	PASS
			NV	20	6000	1.081081	20	PASS
			NV	30	6000	1.081081	20	PASS
			NV	40	6000	1.081081	20	PASS
			NV	50	6000	1.081081	20	PASS
		5670	NV	-30	6000	1.058201	20	PASS
			NV	-20	6000	1.058201	20	PASS
			NV	-10	6000	1.058201	20	PASS
			NV	0	6000	1.058201	20	PASS
			NV	10	7000	1.234568	20	PASS
			NV	20	6000	1.058201	20	PASS
			NV	30	6000	1.058201	20	PASS
			NV	40	6000	1.058201	20	PASS
			NV	50	6000	1.058201	20	PASS
		5710	NV	-30	6000	1.050788	20	PASS
			NV	-20	6000	1.050788	20	PASS
			NV	-10	7000	1.225919	20	PASS
			NV	0	6000	1.050788	20	PASS
			NV	10	6000	1.050788	20	PASS
			NV	20	6000	1.050788	20	PASS
			NV	30	7000	1.225919	20	PASS
			NV	40	6000	1.050788	20	PASS
			NV	50	7000	1.225919	20	PASS
		5755	NV	-30	6000	1.042572	20	PASS
			NV	-20	6000	1.042572	20	PASS
			NV	-10	6000	1.042572	20	PASS
			NV	0	6000	1.042572	20	PASS
			NV	10	7000	1.216334	20	PASS
			NV	20	7000	1.216334	20	PASS
			NV	30	6000	1.042572	20	PASS
			NV	40	7000	1.216334	20	PASS
			NV	50	6000	1.042572	20	PASS
		5795	NV	-30	6000	1.035375	20	PASS
			NV	-20	6000	1.035375	20	PASS
			NV	-10	6000	1.035375	20	PASS
			NV	0	6000	1.035375	20	PASS
			NV	10	7000	1.207938	20	PASS
			NV	20	6000	1.035375	20	PASS
			NV	30	6000	1.035375	20	PASS
			NV	40	6000	1.035375	20	PASS
			NV	50	7000	1.207938	20	PASS
11AC80 SISO	Ant2	5210	NV	-30	5000	0.959693	20	PASS
			NV	-20	5000	0.959693	20	PASS
			NV	-10	5000	0.959693	20	PASS
			NV	0	5000	0.959693	20	PASS
			NV	10	5000	0.959693	20	PASS
			NV	20	5000	0.959693	20	PASS
			NV	30	5000	0.959693	20	PASS
			NV	40	5000	0.959693	20	PASS
			NV	50	5000	0.959693	20	PASS
		5290	NV	-30	6000	1.134216	20	PASS
			NV	-20	6000	1.134216	20	PASS
			NV	-10	5000	0.94518	20	PASS
			NV	0	6000	1.134216	20	PASS
			NV	10	6000	1.134216	20	PASS
			NV	20	6000	1.134216	20	PASS
			NV	30	5000	0.94518	20	PASS

			NV	40	6000	1.134216	20	PASS
			NV	50	6000	1.134216	20	PASS
		5530	NV	-30	6000	1.084991	20	PASS
			NV	-20	6000	1.084991	20	PASS
			NV	-10	6000	1.084991	20	PASS
			NV	0	6000	1.084991	20	PASS
			NV	10	6000	1.084991	20	PASS
			NV	20	6000	1.084991	20	PASS
			NV	30	6000	1.084991	20	PASS
			NV	40	6000	1.084991	20	PASS
			NV	50	6000	1.084991	20	PASS
		5610	NV	-30	6000	1.069519	20	PASS
			NV	-20	6000	1.069519	20	PASS
			NV	-10	6000	1.069519	20	PASS
			NV	0	6000	1.069519	20	PASS
			NV	10	6000	1.069519	20	PASS
			NV	20	6000	1.069519	20	PASS
			NV	30	6000	1.069519	20	PASS
			NV	40	6000	1.069519	20	PASS
			NV	50	6000	1.069519	20	PASS
		5690	NV	-30	6000	1.054482	20	PASS
			NV	-20	6000	1.054482	20	PASS
			NV	-10	6000	1.054482	20	PASS
			NV	0	6000	1.054482	20	PASS
			NV	10	6000	1.054482	20	PASS
			NV	20	6000	1.054482	20	PASS
			NV	30	6000	1.054482	20	PASS
			NV	40	6000	1.054482	20	PASS
			NV	50	6000	1.054482	20	PASS
		5775	NV	-30	6000	1.038961	20	PASS
			NV	-20	6000	1.038961	20	PASS
			NV	-10	6000	1.038961	20	PASS
			NV	0	6000	1.038961	20	PASS
			NV	10	6000	1.038961	20	PASS
			NV	20	6000	1.038961	20	PASS
			NV	30	6000	1.038961	20	PASS
			NV	40	6000	1.038961	20	PASS
			NV	50	6000	1.038961	20	PASS

Remark 1: LV = 85% of the nominal supply voltage, HV =115% of the nominal supply voltage
Remark 2: we test all frequencies which specified in section 8 and only show these representative frequencies.

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9.8 Dynamic Frequency Selection (DFS)

Mode of Operation:

Parameters of EUT	
Frequency	5250-5350MHz 5470-5600MHz 5650-5725MHz
Operational Mode	☐Master ☒Client without Radar Detection ☐Client with Radar Detection
Modulation	OFDM
Channel Bandwidth	20MHz, 40MHz, 80MHz

Working Modes and required Test Items

The manufacturer shall whether the EUT is capable of operating as a master and a client. If the EUT is capable of operating in more than one operating mode then each operating mode shall be tested separately.

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

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Requirement:
Per KDB 905462 D02 v02 the following are the requirements for client Devices:
a) A Client Device will not transmit before having received appropriate control signals from a Master Device.
b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.
c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.
d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.
e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear**.**

Table 3: DFS Response Requirement Values

Parameter	**Value**
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

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DFS Detection Thresholds Values

Table 4 below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating In-Service Monitoring.

Table 4: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

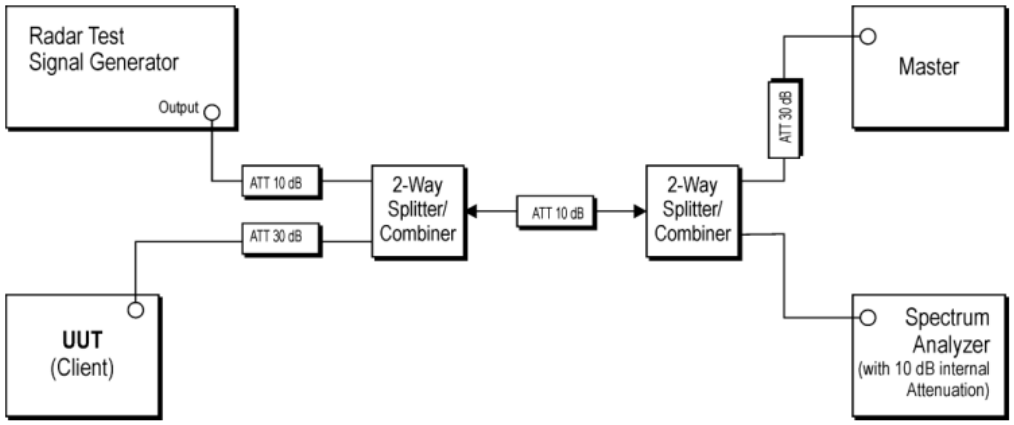
Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. **Note 2:** Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. **Note3:** EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

Test Procedure

The FCC KDB 905462 D02 v02 describes a radiated test setup and a conducted test setup. A conducted test setup was used for this testing. Figure 1 shows the typical test setup. One channel selected between 5260 and 5350 MHz is chosen for the testing.

Figure 1. Test Setup for DFS

Setup for client with injection at the master.



Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period.

Block Diagram of test setup test procedure.

(1) The Radar Pulse generator is setup to provide a pulse at frequency that the master and client are operating, A type 0 radar pulse is used for the testing.
(2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -62dBm at the antenna of the master device.
(3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
(4) The Client Device (EUT) is set up per the diagram in Figure 1 and communications between the Master device and the Client is established.
(5) Iperf software is used to properly load the test channel.
(6) The real ime spectrum analyzer is set to record a 16sec window to any transmissions occurring up to and after 10sec.

(7) The system is again setup and the monitoring time is shortened in order to capture the Channel Closing Transmission Time. This time is measured to ensure that the Client ceases transmission within 200ms and the aggregate of emissions occurring after 200ms up to 10 sec do not exceed 60ms.
(Note: the channel may be different since the Master and Client have changed channels due to the detection of e initial radar pulse.)

(8) After the initial radar burst the channel is monitored for 30 minutes to ensure no transmissions or beacons occur. A second monitoring setup is used to verify that the Master and Client have both moved to different channels.

Test Result

Clause	Test Parameter	Remarks	Pass/Fail
15.407	DFS Detection Threshold	Not Applicable	N/A
15.407	Channel Availability Check time	Not Applicable	N/A
15.407	Channel Move time	Applicable	Pass
15.407	Channel Closing Transmission time	Applicable	Pass
15.407	Non-occupancy Period	Not Applicable	N/A
15.407	Uniform Spreading	Not Applicable	N/A
15.407	U-NII Detection Bandwidth	Not Applicable	N/A

Test Mode	Channel [MHz]	CCT [ms]	Limit [ms]	CMT [ms]	Limit [ms]	Verdict
11A	5280	5.16	60	428.71	10000	PASS
	5500	8.17	60	448.06	10000	PASS
11N40SISO	5510	8.6	60	506.54	10000	PASS
11AC80SISO	5290	6.02	60	454.08	10000	PASS
	5530	5.16	60	418.82	10000	PASS

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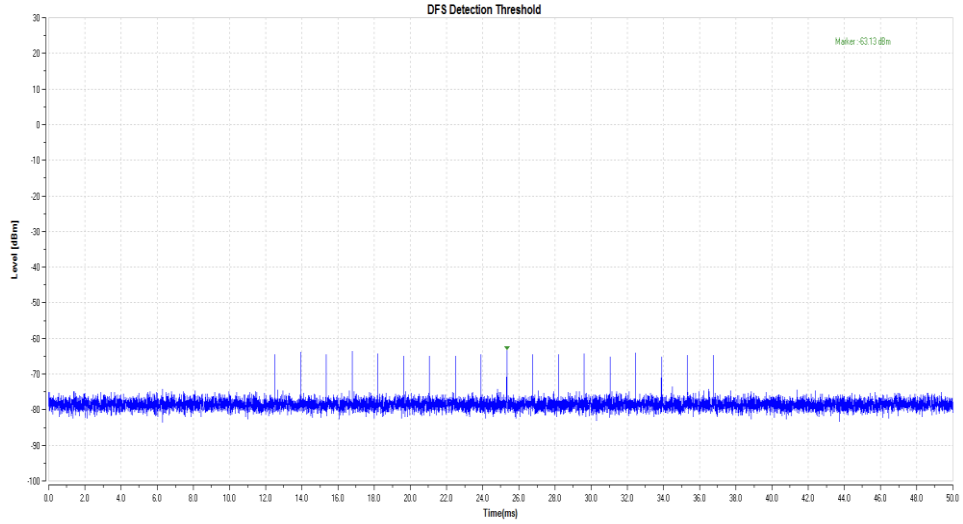
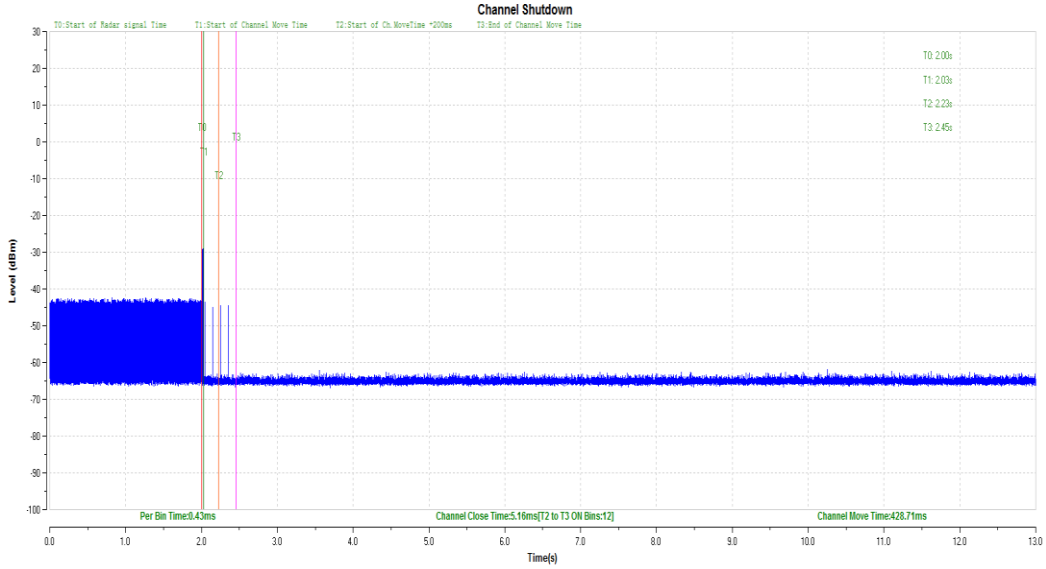
Test Graphs:

11A_5280_Type0



11A_5280



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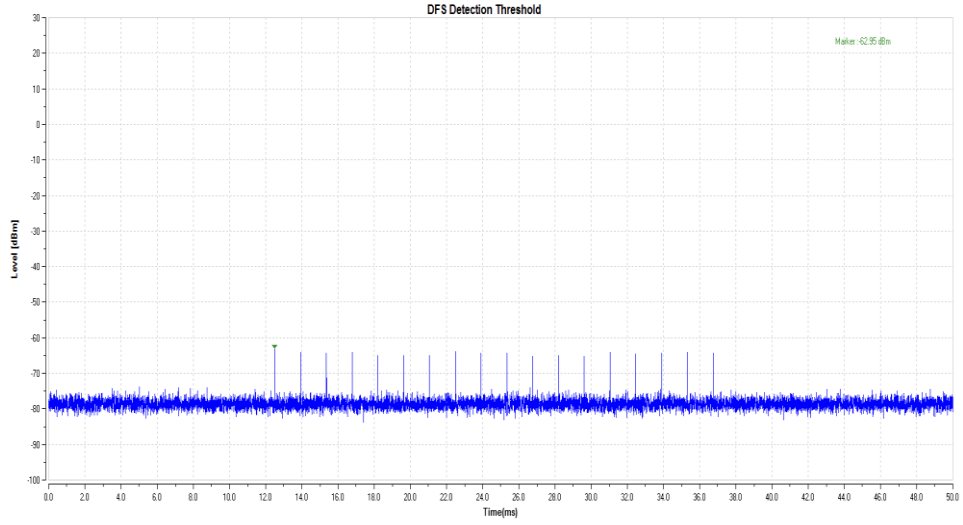

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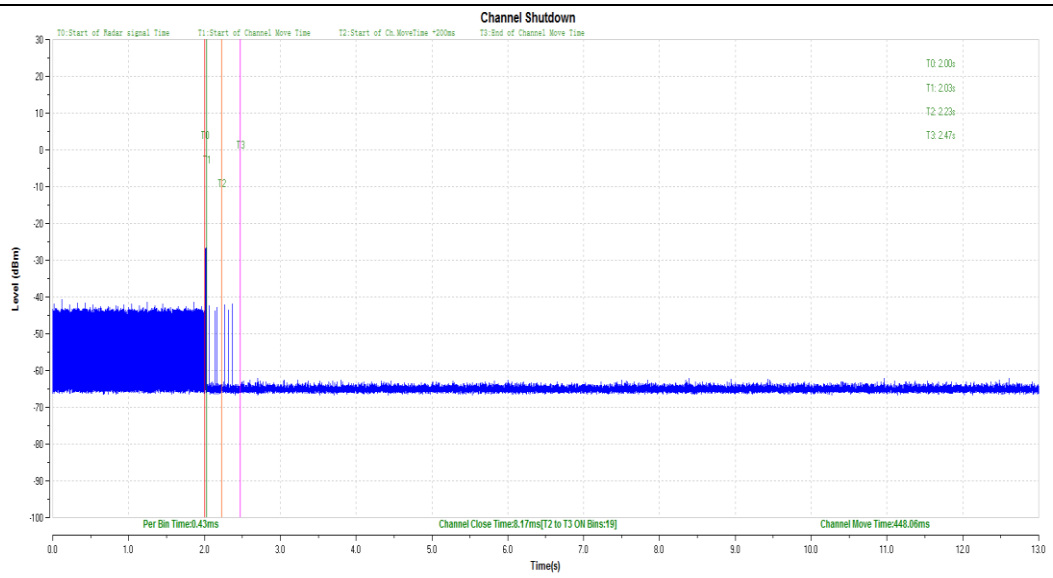

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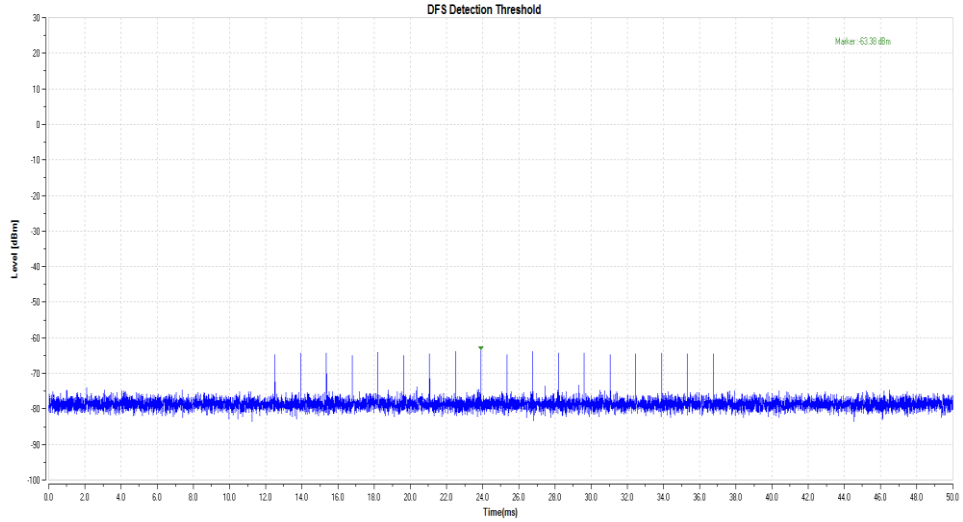

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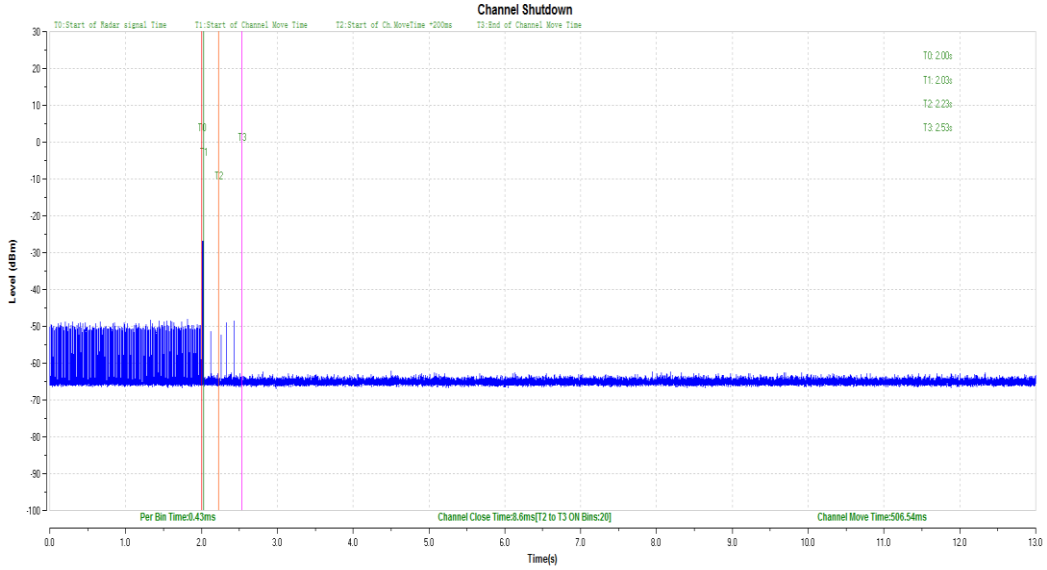

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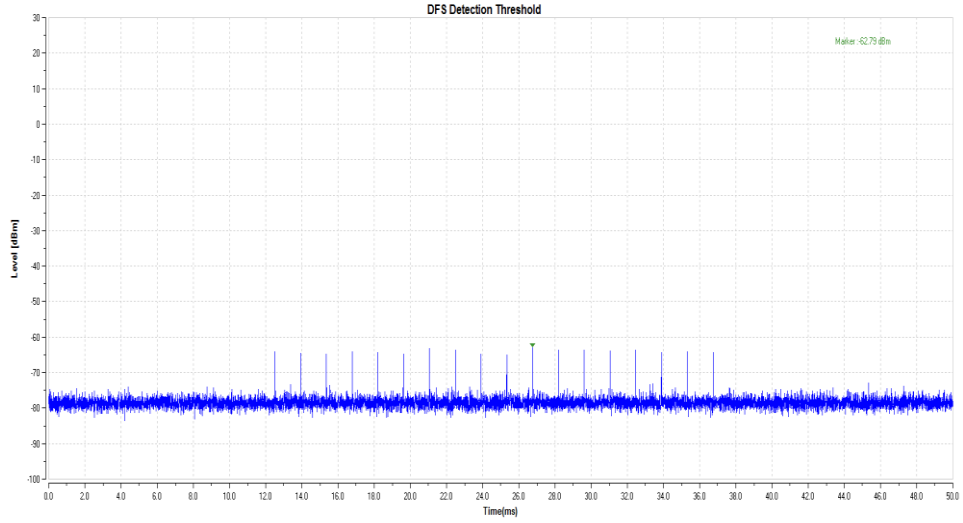

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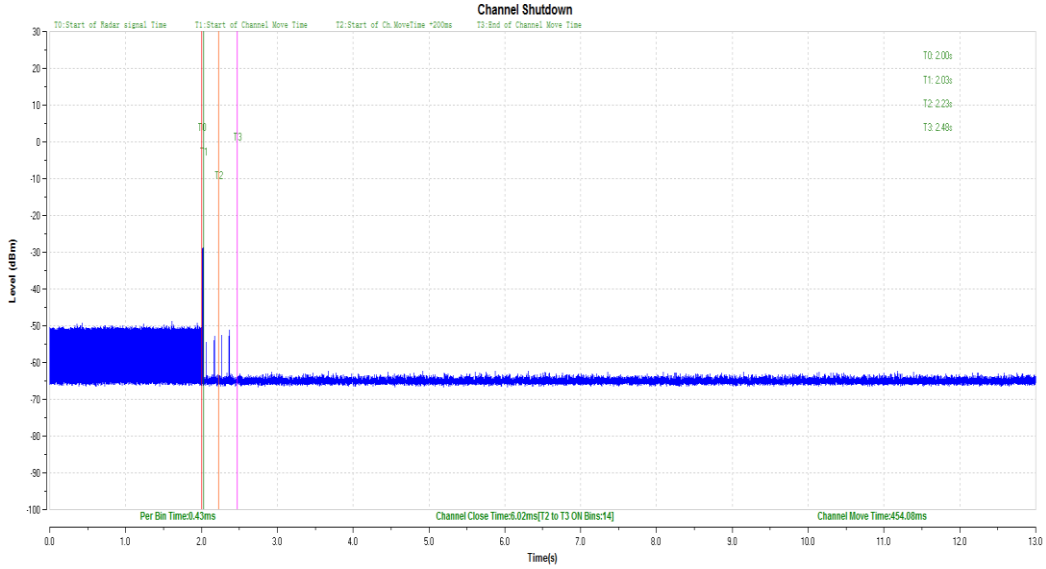

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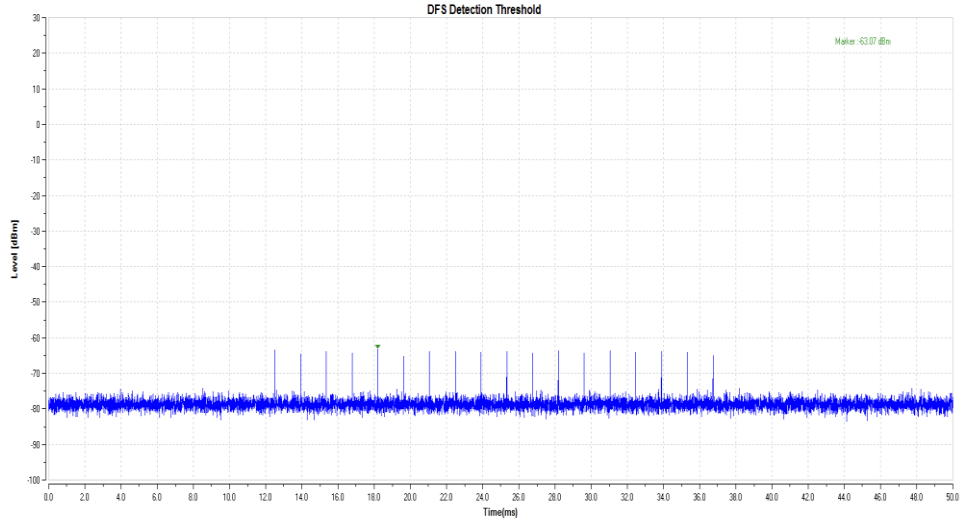

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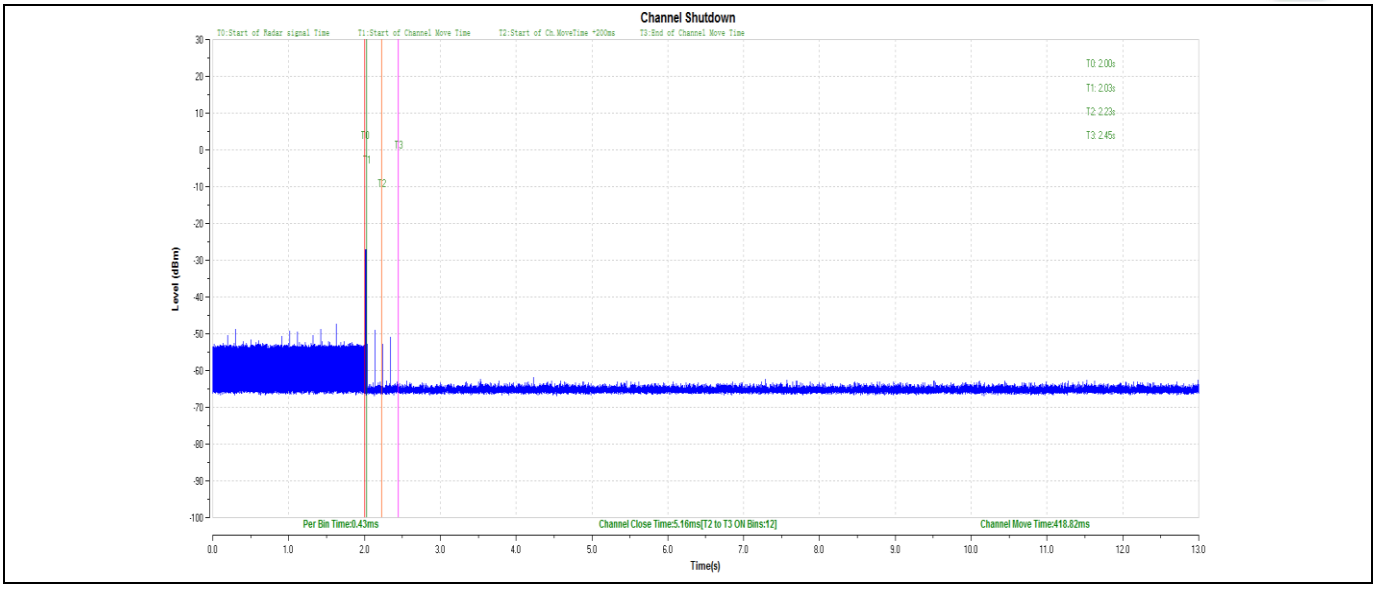

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10 Test Equipment List

Radiated Emission 1# Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 7	68-4-74-19-001	102176	1	2024-5-20
Loop Antenna	Rohde & Schwarz	HFH2-Z2	68-4-80-14-006	100398	1	2024-8-7
3m Semi-anechoic chamber	TDK	SAC-3 #1	68-4-90-14-001	----	3	2024-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-14-001-A10	Version10.35.02	N/A	N/A

Radiated Emission 2# Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	68-4-74-14-002	101269	1	2024-5-20
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9162	68-4-80-19-003	284	1	2024-3-5
Wave Guide Antenna	ETS	3117	68-4-80-19-001	00218954	1	2024-4-26
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-001	100745	1	2024-5-19
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-002	100746	1	2024-5-19
Sideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	68-4-80-14-008	12827	1	2024-7-11
Pre-amplifier	Rohde & Schwarz	SCU 40A	68-4-29-14-002	100432	1	2024-8-1
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-002	15542	1	2024-5-19
3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	2	2024-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version10.35.02	N/A	N/A

Conducted Emission 2# Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	68-4-74-19-002	102590	1	2024-5-19
LISN	Rohde & Schwarz	ENV216	68-4-87-19-001	102472	1	2024-5-20
Attenuator	Shanghai Huaxiang	TS2-26-3	68-4-81-16-003	080928189	1	2024-5-19
Test software	Rohde & Schwarz	EMC32	68-4-90-19-005-A01	Version10.35.02	N/A	N/A
Shielding Room	TDK	CSR #2	68-4-90-19-005	----	3	2025-10-15

Conducted RF Test System

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
Signal Analyzer	Rohde & Schwarz	FSV40	68-4-74-14-004	101030	1	2024-5-19
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157W	68-4-93-14-003	101226/100929	1	2024-5-20
Power Splitter	Weinschel	1580	68-4-85-14-001	SC319	1	2024-5-20
10dB Attenuator	Weinschel	4M-10	68-4-81-14-003	43152	1	2024-5-19
10dB Attenuator	R&S	DNF	68-4-81-14-004	DNF-001	1	2024-5-19
10dB Attenuator	R&S	DNF	68-4-81-14-005	DNF-002	1	2024-5-19
10dB Attenuator	R&S	DNF	68-4-81-14-006	DNF-003	1	2024-5-19
10dB Attenuator	R&S	DNF	68-4-81-14-007	DNF-004	1	2024-5-19
Test software	Tonscend	System for BT/WIFI	68-4-74-14-006-A13	Version 2.6.77.0518	N/A	N/A
Shielding Room	TDK	TS8997	68-4-90-19-003	----	3	2025-10-15

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11 System Measurement Uncertainly

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Conducted Emission in new shielding room (68-4-90-19-005) 150kHz-30MHz (for test using AMN ENV216)	3.15dB
Uncertainty for Radiated Emission in 3m chamber (68-4-90-14-001) 9kHz-30MHz	4.70dB
Uncertainty for Radiated Emission in 3m chamber (68-4-90-14-001) 30MHz-1000MHz	Horizontal: 4.63dB; Vertical: 4.78dB;
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 1000MHz-18000MHz	Horizontal: 5.38dB; Vertical: 5.38dB;
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 18GHz-40GHz	Horizontal: 5.29dB; Vertical: 5.29dB;
Uncertainty for Conducted RF test with TS 8997	RF Power Conducted: 1.31dB Frequency test involved: 0.6×10^{-8} or 1%

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2021, clause 4.4.3 and 4.5.1.

THE END

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