4.3 Peak Power Spectral Density

4.3.1 Measurement procedure

[FCC 15.407(a), KDB 789033 D02, Section F]

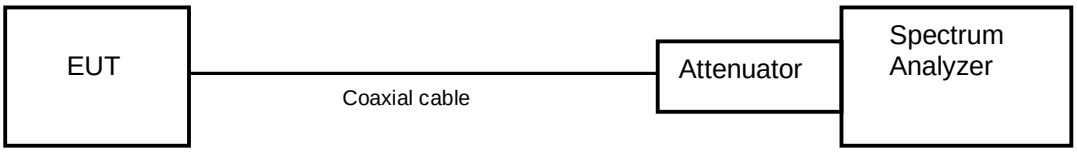
The peak power spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=1 MHz, VBW=3 MHz, Span=25 MHz/50 MHz/100 MHz, Sweep=Auto, Detector=RMS, Trace mode=Averaging

The EUT was set to operate with following conditions.
- 5.2 GHz Band, 5.3 GHz Band, 5.6 GHz Band, 5.8 GHz Band

The test mode of EUT is as follows.
- Tx mode

- Test configuration



4.3.2 Limit

(1) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

(3) For the 5.725-5.85 GHz bands, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirection applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Japan

4.3.3 DIRECTIONAL ANTENNA GAIN

Tx chains are uncorrelated for power and correlated for PSD due to the device supporting OFDMA in all MIMO modes. The directional gains are as follows:

Band	Chain 0 Gain (dBi)	Chain 1 Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)	Correlated Chains Directional Gain (dBi)
5.2 GHz Band	2.2	0.6	1.47	4.45
5.3 GHz Band	2.2	0.6	1.47	4.45
5.6 GHz Band	3.2	1.9	2.60	5.58

<Peak Power Spectral Density Limit Calculation[Chain 0]>

Band	Limit (dBm)	Antenna Gain (dBi)	Determined Limit (dBm)
5.2 GHz Band	11	2.2	13.2 dBm/MHz
5.3 GHz Band	11	2.2	13.2 dBm/MHz
5.6 GHz Band	11	3.2	14.2 dBm/MHz

<Peak Power Spectral Density Limit Calculation[Chain 1]>

Band	Limit (dBm)	Antenna Gain (dBi)	Determined Limit (dBm)
5.2 GHz Band	11	0.6	11.6 dBm/MHz
5.3 GHz Band	11	0.6	11.6 dBm/MHz
5.6 GHz Band	11	1.9	12.9 dBm/MHz

<Peak Power Spectral Density Limit Calculation[Chain 0+1]>

Band	Limit (dBm)	Antenna Gain (dBi)	Determined Limit (dBm)
5.2 GHz Band	11	4.45	15.4 dBm/MHz
5.3 GHz Band	11	4.45	15.4 dBm/MHz
5.6 GHz Band	11	5.58	16.6 dBm/MHz

Japan

4.3.4 Measurement result

Date : 25-July-2023
Temperature : 24.1 [˚C]
Humidity : 51.1 [%] Test engineer :
Test place : Shielded room No.4 Kazunori Saito

[Chain 0]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE20 26-Tones	36	5180	7.084	5.088	5.106	0.996	0	7.084
	40	5200	5.701					5.701
	48	5240	7.184					7.184
	52	5260	6.518	5.088	5.106	0.996	0	6.518
	56	5280	5.565					5.565
	64	5320	7.696					7.696
	100	5500	7.792	5.088	5.106	0.996	0	7.792
	116	5580	6.074					6.074
	140	5700	6.773					6.773
	144	5720	6.300					6.300

[Chain 0]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE20 52-Tones	36	5180	4.294	5.076	5.094	0.996	0	4.294
	40	5200	3.966					3.966
	48	5240	4.499					4.499
	52	5260	3.773	5.076	5.094	0.996	0	3.773
	56	5280	3.843					3.843
	64	5320	4.548					4.548
	100	5500	5.019	5.076	5.094	0.996	0	5.019
	116	5580	4.363					4.363
	140	5700	3.687					3.687
	144	5720	3.469					3.469

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

[Chain 0]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE20 106-Tones	36	5180	1.002	4.764	4.782	0.996	0	1.002
	40	5200	1.341					1.341
	48	5240	1.635					1.635
	52	5260	1.208	4.764	4.782	0.996	0	1.208
	56	5280	1.166					1.166
	64	5320	1.745					1.745
	100	5500	2.032	4.764	4.782	0.996	0	2.032
	116	5580	1.718					1.718
	140	5700	0.937					0.937
	144	5720	0.292					0.292

[Chain 0]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE20 242-Tones	36	5180	-2.237	4.668	4.686	0.996	0	-2.237
	40	5200	-2.148					-2.148
	48	5240	-2.269					-2.269
	52	5260	-2.376	4.668	4.686	0.996	0	-2.376
	56	5280	-2.022					-2.022
	64	5320	-2.026					-2.026
	100	5500	-1.159	4.668	4.686	0.996	0	-1.159
	116	5580	-1.448					-1.448
	140	5700	-2.647					-2.647
	144	5720	-2.597					-2.597

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

[Chain 0]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE40 484-Tones	38	5190	-5.098	4.662	4.686	0.995	0	-5.098
	46	5230	-5.089					-5.089
	54	5270	-5.174	4.662	4.686	0.995	0	-5.174
	62	5310	-4.942					-4.942
	102	5510	-4.563	4.662	4.686	0.995	0	-4.563
	110	5550	-4.410					-4.410
	134	5670	-5.473					-5.473
	142	5710	-5.786					-5.786

[Chain 0]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE80 996-Tones	42	5210	-7.881	4.728	4.746	0.996	0	-7.881
	58	5290	-7.685	4.728	4.746	0.996	0	-7.685
	106	5530	-7.278	4.728	4.746	0.996	0	-7.278
	122	5610	-7.898	4.728	4.746	0.996	0	-7.898
	138	5690	-8.672	4.728	4.746	0.996	0	-8.672

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

[Chain 1]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE20 26-Tones	36	5180	9.040	5.088	5.106	0.996	0	9.040
	40	5200	8.090					8.090
	48	5240	9.325					9.325
	52	5260	8.804	5.088	5.106	0.996	0	8.804
	56	5280	7.425					7.425
	64	5320	9.398					9.398
	100	5500	8.570	5.088	5.106	0.996	0	8.570
	116	5580	6.638					6.638
	140	5700	7.585					7.585
	144	5720	7.369					7.369

[Chain 1]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE20 52-Tones	36	5180	6.274	5.076	5.094	0.996	0	6.274
	40	5200	6.137					6.137
	48	5240	5.940					5.940
	52	5260	6.030	5.076	5.094	0.996	0	6.030
	56	5280	5.580					5.580
	64	5320	6.038					6.038
	100	5500	5.739	5.076	5.094	0.996	0	5.739
	116	5580	5.146					5.146
	140	5700	4.752					4.752
	144	5720	4.619					4.619

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

[Chain 1]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE20 106-Tones	36	5180	3.362	4.764	4.782	0.996	0	3.362
	40	5200	3.080					3.080
	48	5240	3.288					3.288
	52	5260	3.029	4.764	4.782	0.996	0	3.029
	56	5280	3.050					3.050
	64	5320	3.519					3.519
	100	5500	2.771	4.764	4.782	0.996	0	2.771
	116	5580	2.230					2.230
	140	5700	1.942					1.942
	144	5720	1.715					1.715

[Chain 1]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE20 242-Tones	36	5180	0.307	4.668	4.686	0.996	0	0.307
	40	5200	-0.331					-0.331
	48	5240	-0.429					-0.429
	52	5260	-0.435	4.668	4.686	0.996	0	-0.435
	56	5280	-0.160					-0.160
	64	5320	-0.022					-0.022
	100	5500	-0.591	4.668	4.686	0.996	0	-0.591
	116	5580	-0.988					-0.988
	140	5700	-1.374					-1.374
	144	5720	-1.466					-1.466

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

[Chain 1]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE40 484-Tones	38	5190	-2.920	4.662	4.686	0.995	0	-2.920
	46	5230	-3.419					-3.419
	54	5270	-3.334	4.662	4.686	0.995	0	-3.334
	62	5310	-3.083					-3.083
	102	5510	-3.539	4.662	4.686	0.995	0	-3.539
	110	5550	-3.902					-3.902
	134	5670	-4.473					-4.473
	142	5710	-4.525					-4.525

[Chain 1]

Mode	Channel	Frequency (MHz)	Reading (dBm)	Duty Cycle			DCF (dB)	Test Result (dBm)
				On Time(ms)	On+Off Time(ms)	X		
802.11ax HE80 996-Tones	42	5210	-6.135	4.728	4.746	0.996	0	-6.135
	58	5290	-5.851	4.728	4.746	0.996	0	-5.851
	106	5530	-6.930	4.728	4.746	0.996	0	-6.930
	122	5610	-7.361	4.728	4.746	0.996	0	-7.361
	138	5690	-7.672	4.728	4.746	0.996	0	-7.672

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

[Chain 0+1]

Mode	Channel	Frequency (MHz)	Test Result (dBm)		Total Test Result (dBm)
			Chain 0	Chain 1	
802.11ax HE20 26-Tones	36	5180	7.084	9.040	11.182
	40	5200	5.701	8.090	10.068
	58	5240	7.184	9.325	11.395
	52	5260	6.518	8.804	10.820
	56	5280	5.565	7.425	9.604
	64	5320	7.696	9.398	11.640
	100	5500	7.792	8.570	11.209
	116	5580	6.074	6.638	9.375
	140	5700	6.773	7.585	10.208
	144	5720	6.300	7.369	9.878

[Chain 0+1]

Mode	Channel	Frequency (MHz)	Test Result (dBm)		Total Test Result (dBm)
			Chain 0	Chain 1	
802.11ax HE20 52-Tones	36	5180	4.294	6.274	8.406
	40	5200	3.966	6.137	8.196
	58	5240	4.499	5.940	8.289
	52	5260	3.773	6.030	8.057
	56	5280	3.843	5.580	7.808
	64	5320	4.548	6.038	8.367
	100	5500	5.019	5.739	8.404
	116	5580	4.363	5.146	7.782
	140	5700	3.687	4.752	7.262
	144	5720	3.469	4.619	7.092

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

[Chain 0+1]

Mode	Channel	Frequency (MHz)	Test Result (dBm)		Total Test Result (dBm)
			Chain 0	Chain 1	
802.11ax HE20 106-Tones	36	5180	1.002	3.362	5.351
	40	5200	1.341	3.080	5.307
	58	5240	1.635	3.288	5.550
	52	5260	1.208	3.029	5.224
	56	5280	1.166	3.050	5.220
	64	5320	1.745	3.519	5.732
	100	5500	2.032	2.771	5.427
	116	5580	1.718	2.230	4.992
	140	5700	0.937	1.942	4.479
	144	5720	0.292	1.715	4.072

[Chain 0+1]

Mode	Channel	Frequency (MHz)	Test Result (dBm)		Total Test Result (dBm)
			Chain 0	Chain 1	
802.11ax HE20 242-Tones	36	5180	-2.237	0.307	2.229
	40	5200	-2.148	-0.331	1.865
	58	5240	-2.269	-0.429	1.758
	52	5260	-2.376	-0.435	1.712
	56	5280	-2.022	-0.160	2.018
	64	5320	-2.026	-0.022	2.101
	100	5500	-1.159	-0.591	2.145
	116	5580	-1.448	-0.988	1.798
	140	5700	-2.647	-1.374	1.046
	144	5720	-2.597	-1.466	1.016

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

[Chain 0+1]

Mode	Channel	Frequency (MHz)	Test Result (dBm)		Total Test Result (dBm)
			Chain 0	Chain 1	
802.11ax HE40 484-Tones	38	5190	-5.098	-2.920	-0.864
	46	5230	-5.089	-3.419	-1.164
	54	5270	-5.174	-3.334	-1.147
	62	5310	-4.942	-3.083	-0.903
	102	5510	-4.563	-3.539	-1.011
	110	5550	-4.410	-3.902	-1.138
	134	5670	-5.473	-4.473	-1.934
	142	5710	-5.786	-4.525	-2.100

[Chain 0+1]

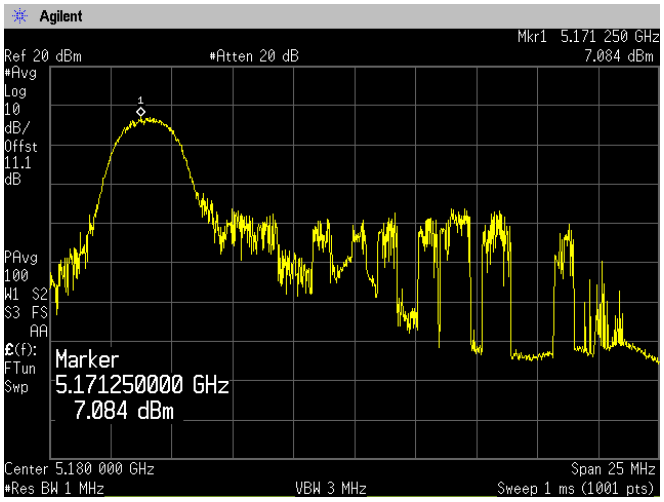
Mode	Channel	Frequency (MHz)	Test Result (dBm)		Total Test Result (dBm)
			Chain 0	Chain 1	
802.11ax HE80 996-Tones	42	5210	-7.881	-6.135	-3.911
	58	5290	-7.685	-5.851	-3.662
	106	5530	-7.278	-6.930	-4.090
	122	5610	-7.898	-7.361	-4.611
	138	5690	-8.672	-7.672	-5.133

Note 1: X = On time / (On + Off time), DCF=10log (1/x)
Note 2: Test Result = Reading + DCF

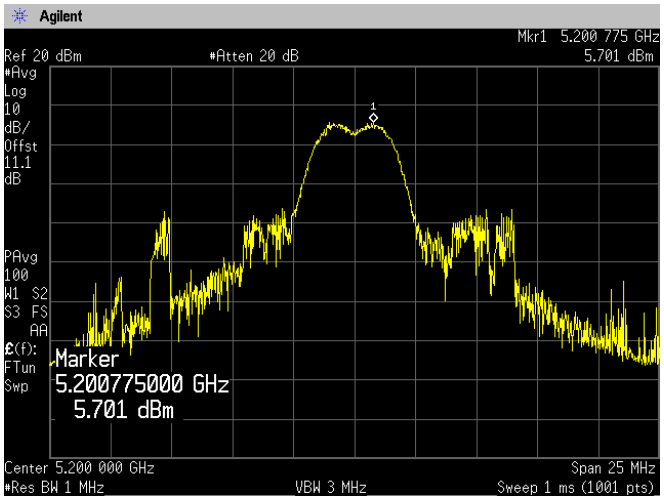
Japan

4.3.5 Trace data

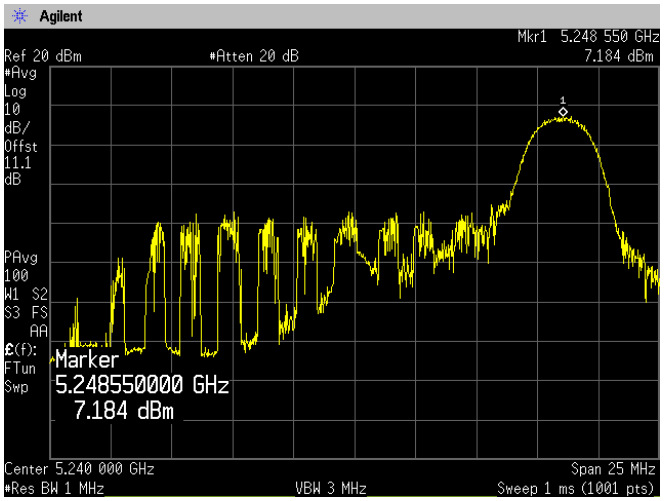
[IEEE802.11ax_HE20_26-Tones]
(5.2 GHz Band)
Channel: 36[Chain 0]



Channel: 40[Chain 0]

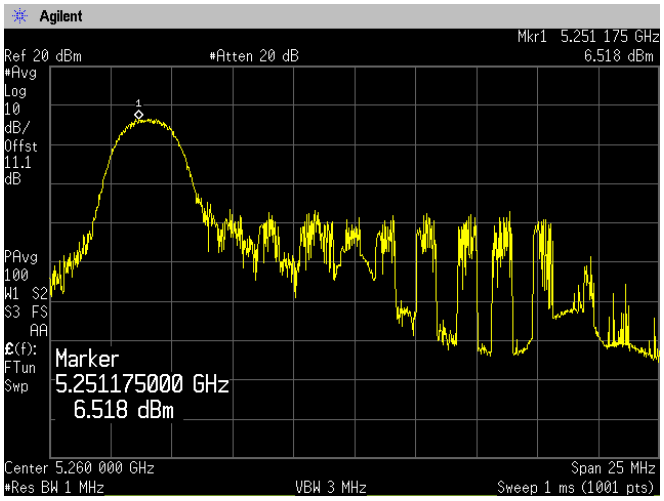


Channel: 48[Chain 0]

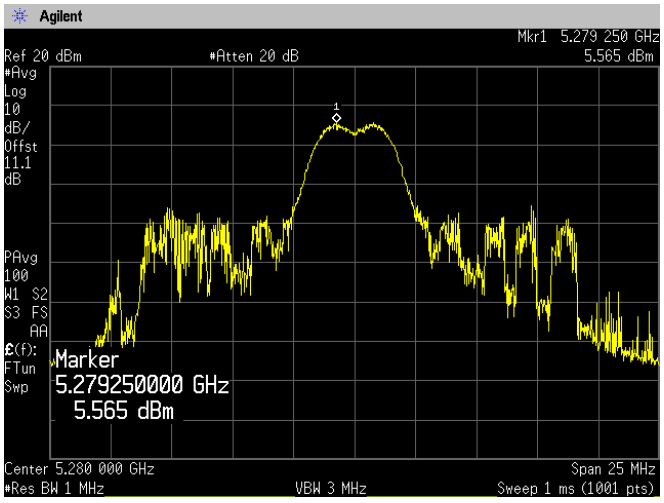


Japan

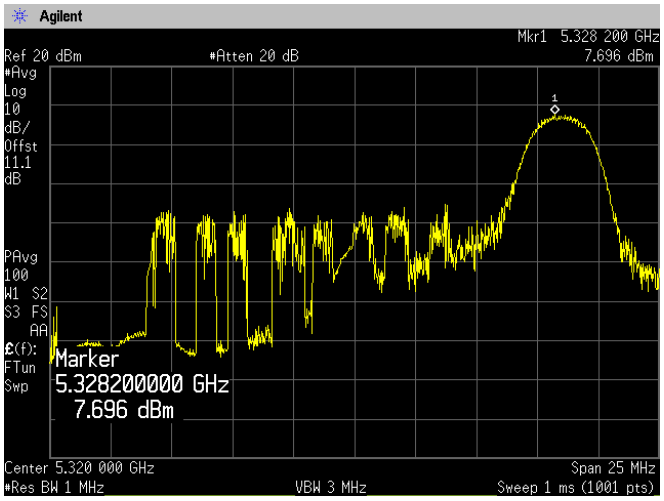
(5.3 GHz Band)
Channel: 52[Chain 0]



Channel: 56[Chain 0]

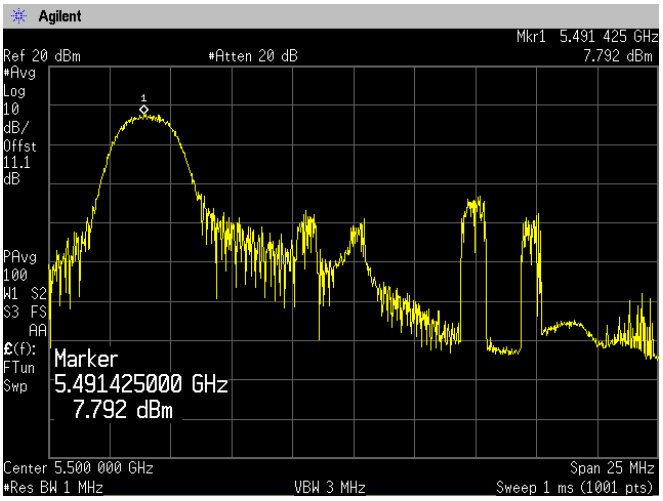


Channel: 64[Chain 0]

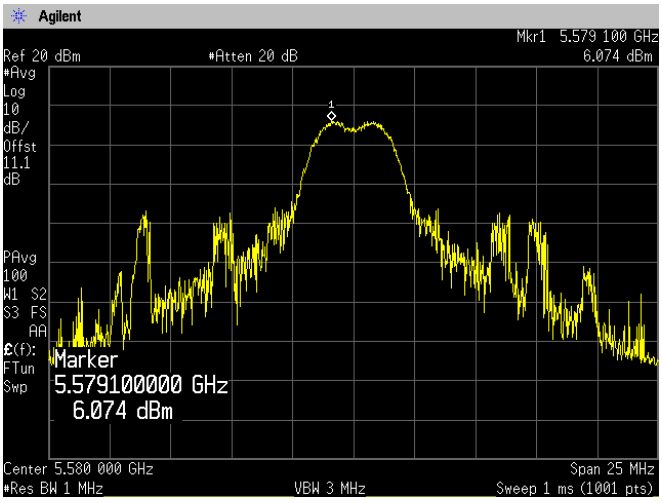


Japan

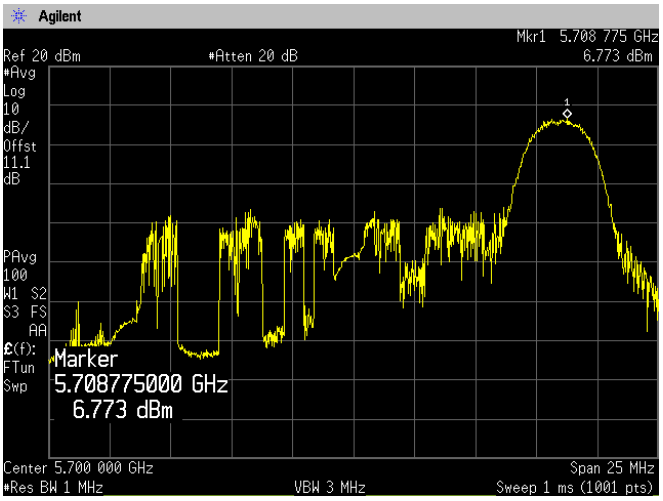
(5.6 GHz Band)
Channel: 100[Chain 0]



Channel: 116[Chain 0]

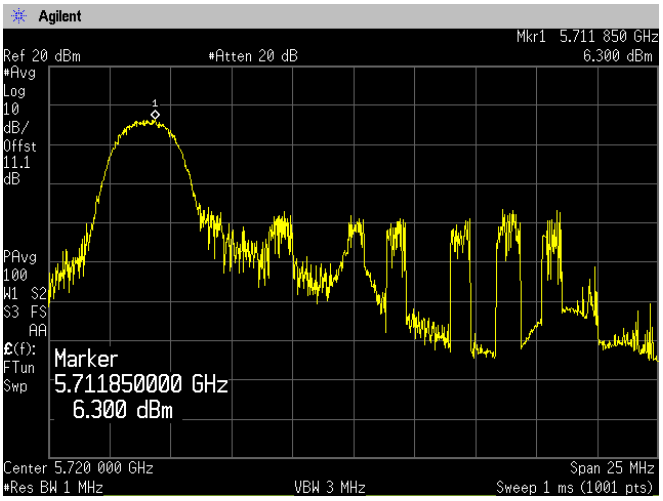


Channel: 140[Chain 0]



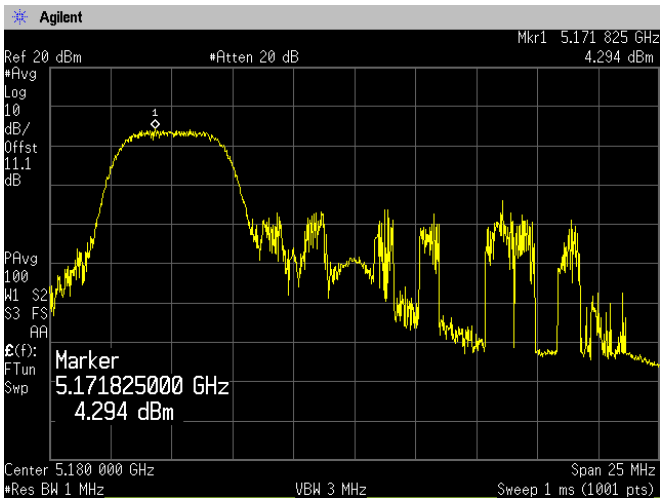
Japan

(5.6 GHz Band)
Channel: 144[Chain 0]

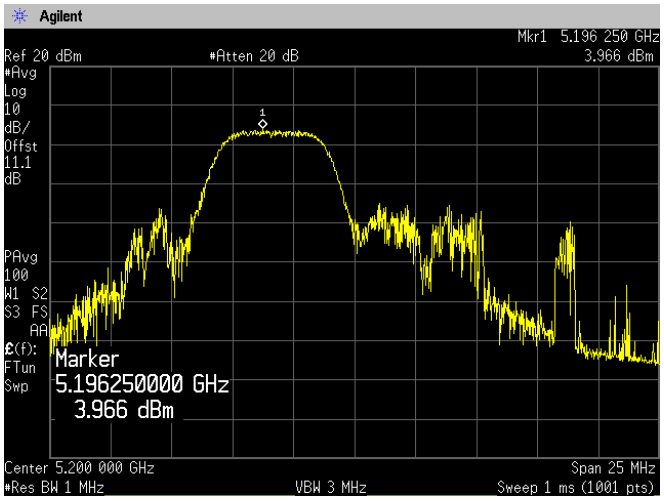


Japan

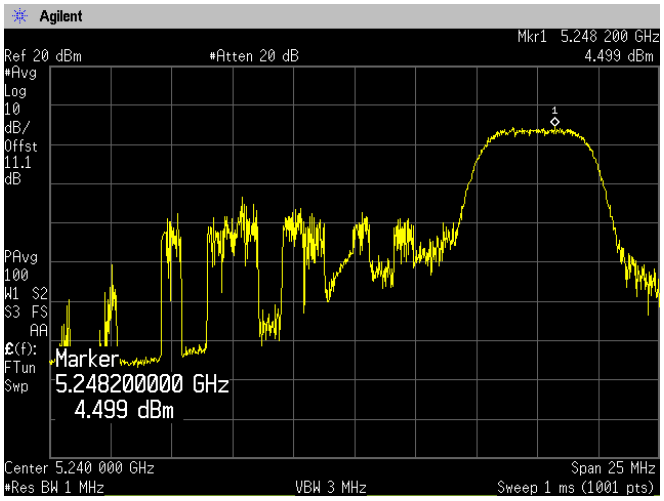
[IEEE802.11ax_HE20_52-Tones]
(5.2 GHz Band)
Channel: 36[Chain 0]



Channel: 40[Chain 0]

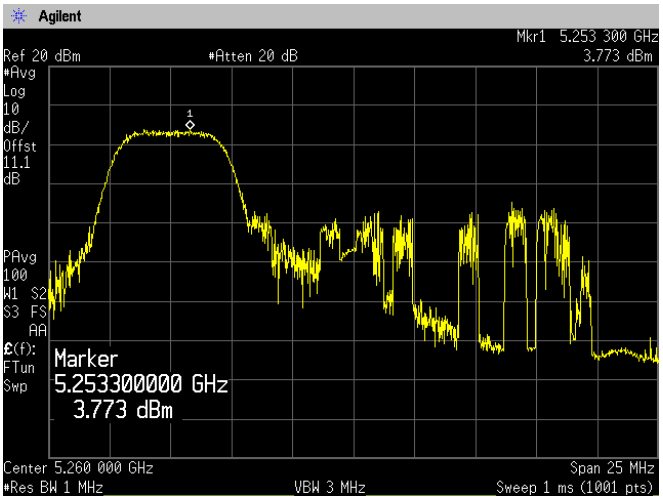


Channel: 48[Chain 0]

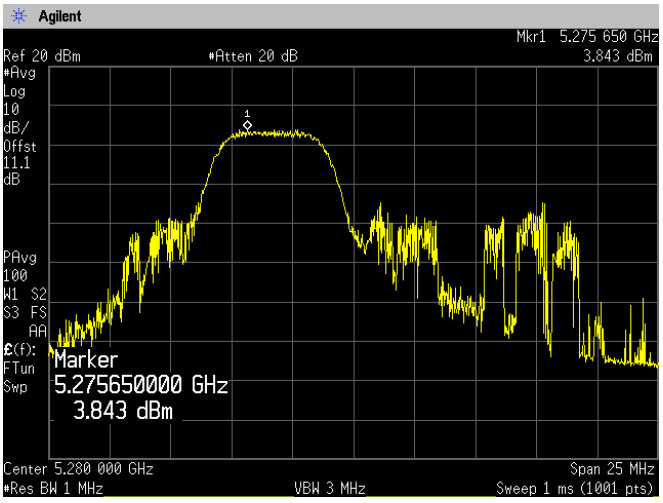


Japan

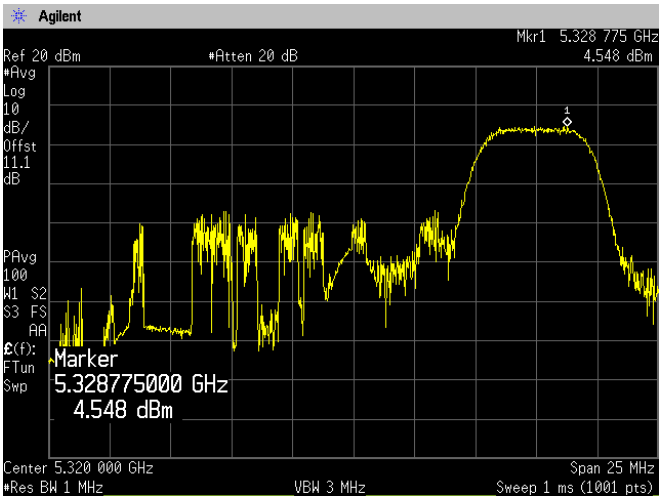
(5.3 GHz Band)
Channel: 52[Chain 0]



Channel: 56[Chain 0]

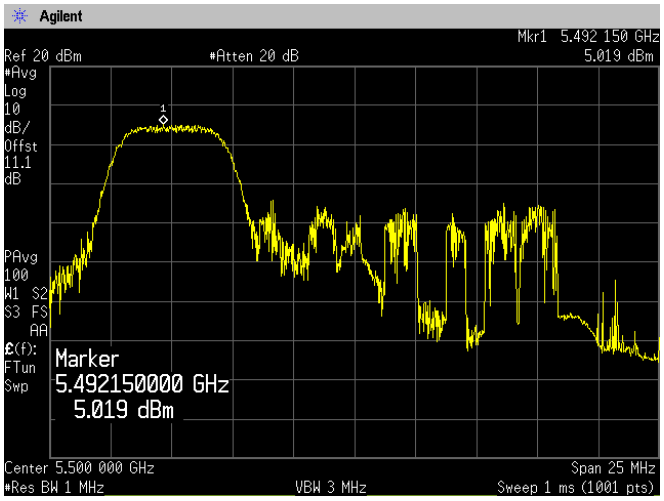


Channel: 64[Chain 0]

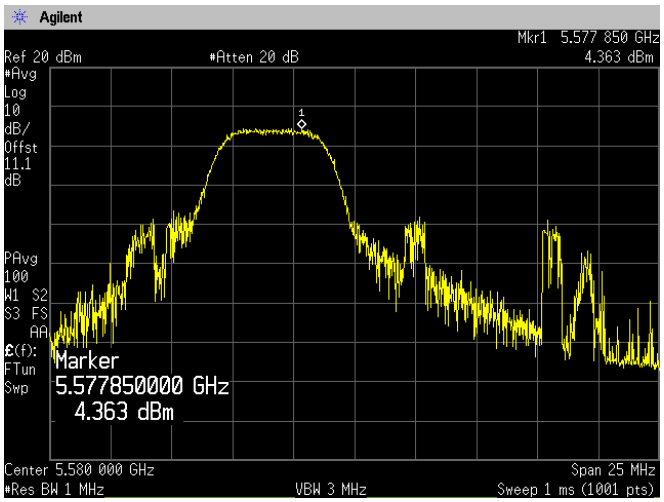


Japan

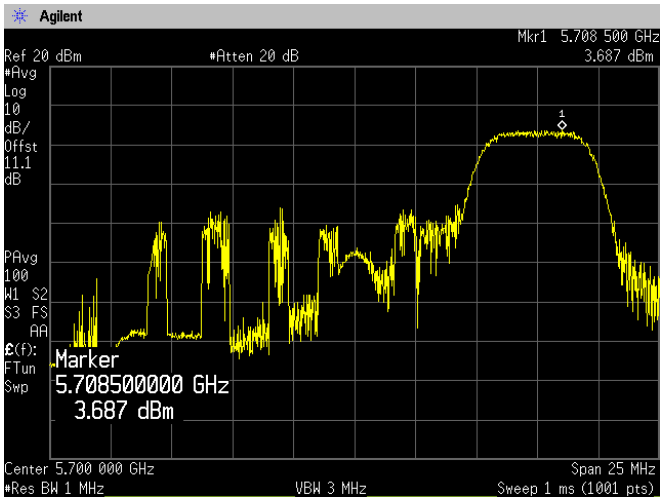
(5.6 GHz Band)
Channel: 100[Chain 0]



Channel: 116[Chain 0]

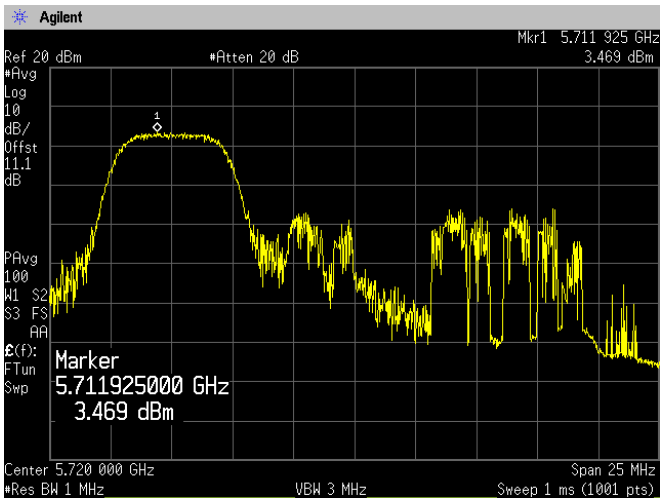


Channel: 140[Chain 0]



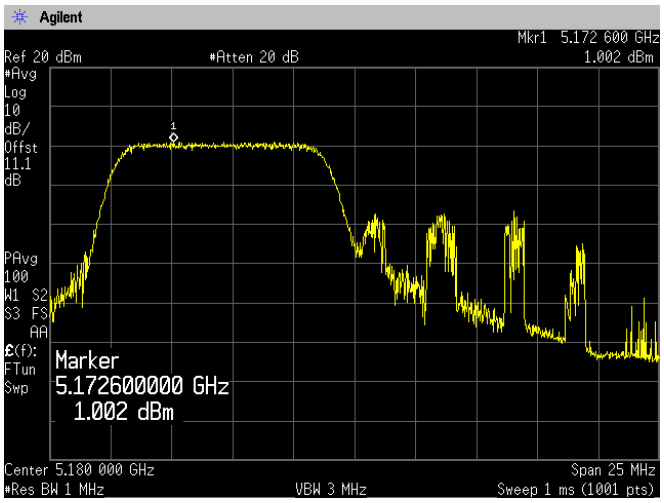
Japan

(5.6 GHz Band)
Channel: 144[Chain 0]

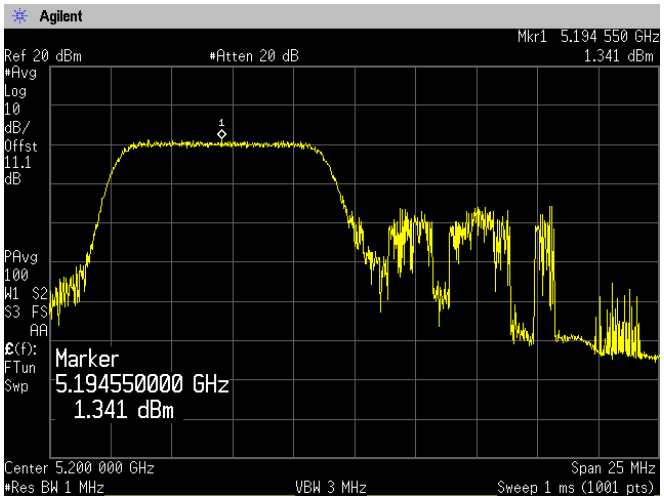


Japan

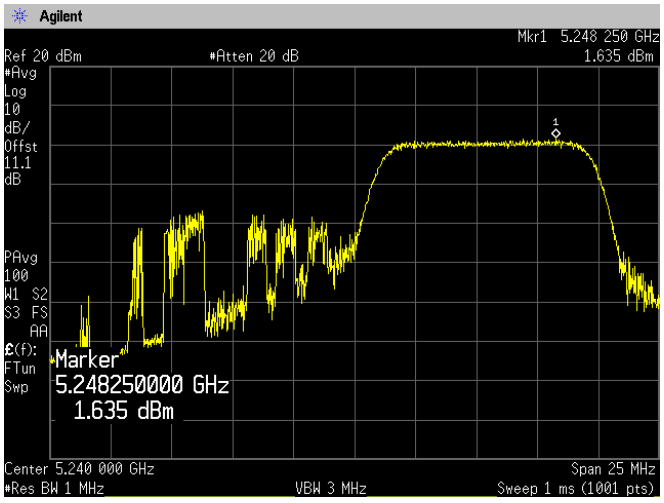
[IEEE802.11ax_HE20_106-Tones]
(5.2 GHz Band)
Channel: 36[Chain 0]



Channel: 40[Chain 0]

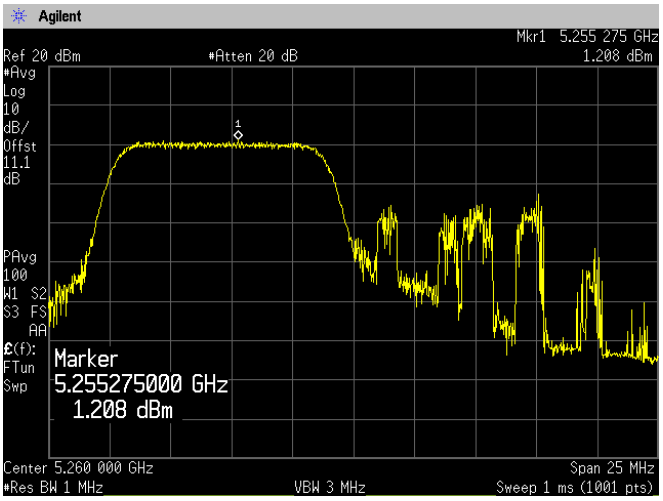


Channel: 48[Chain 0]

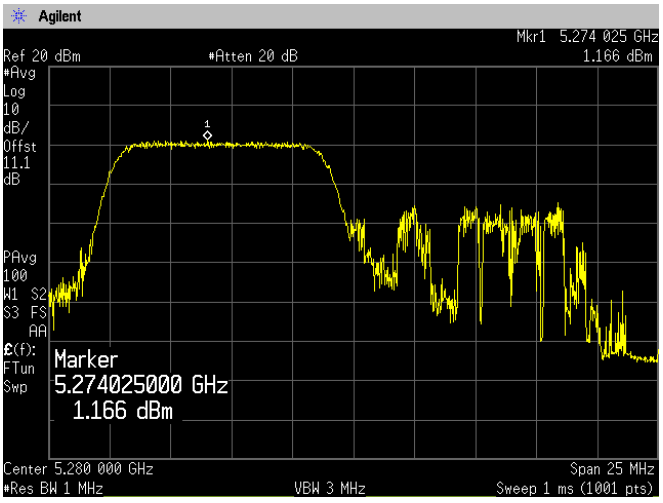


Japan

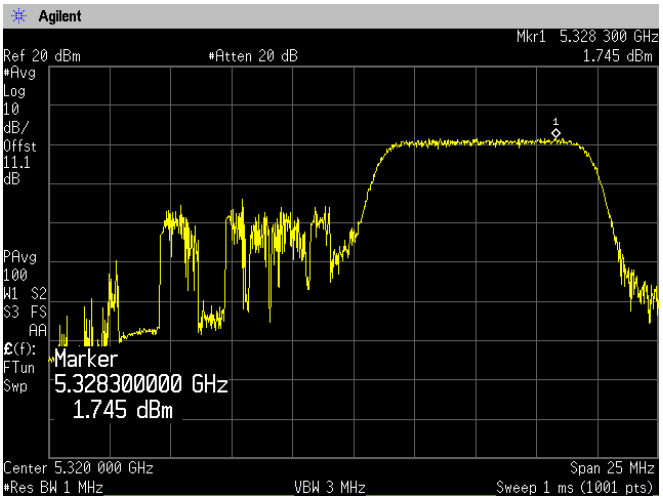
(5.3 GHz Band)
Channel: 52[Chain 0]



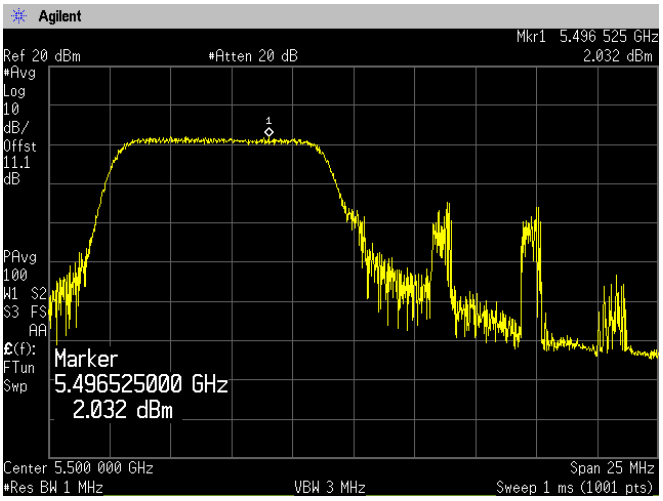
Channel: 56[Chain 0]



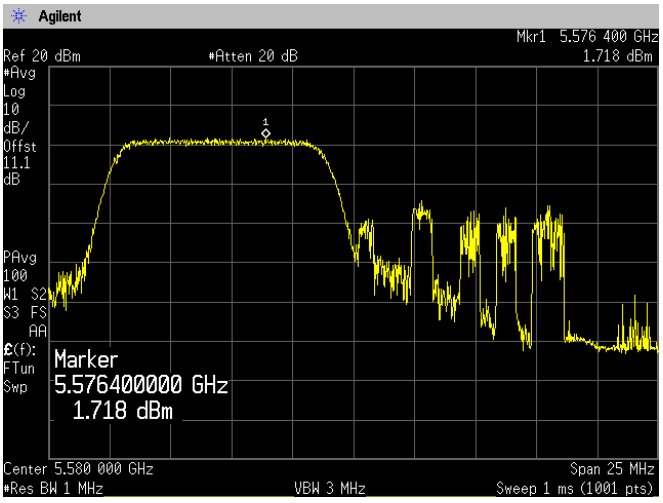
Channel: 64[Chain 0]



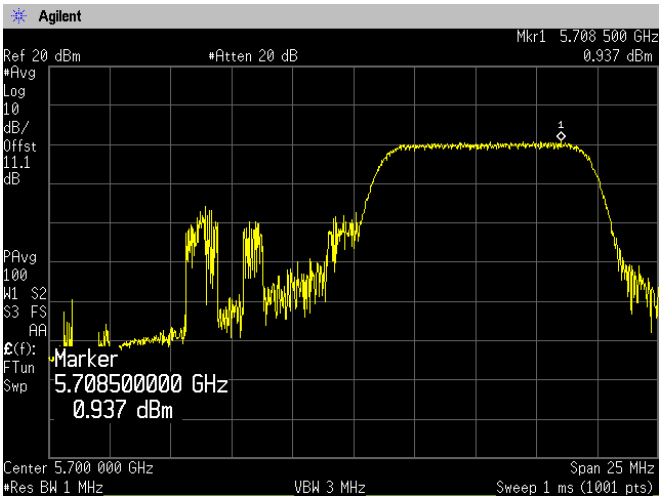
(5.6 GHz Band)
Channel: 100[Chain 0]



Channel: 116[Chain 0]

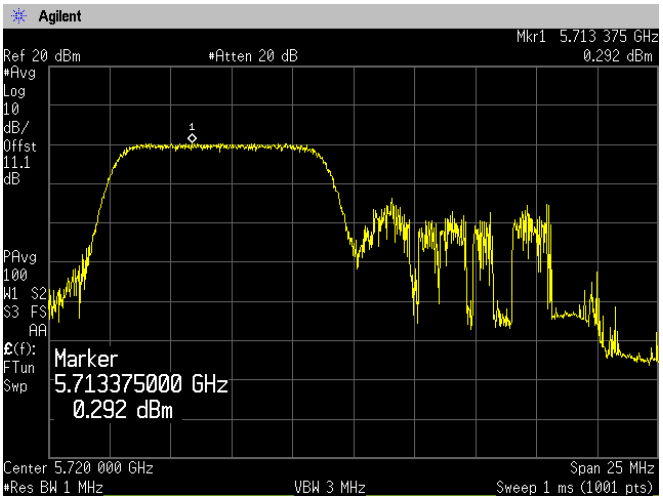


Channel: 140[Chain 0]



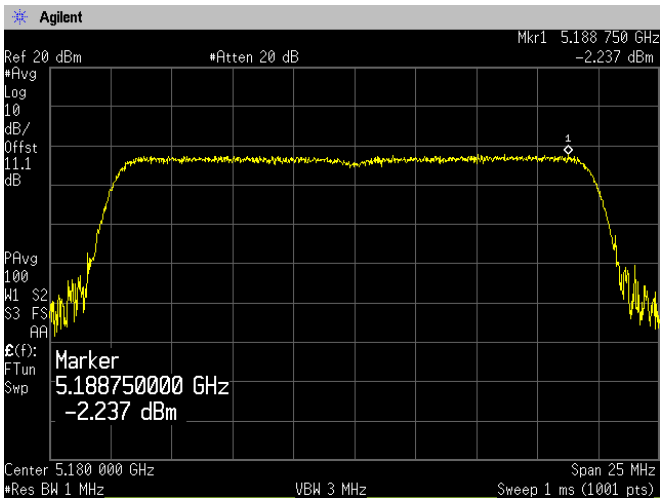
Japan

(5.6 GHz Band)
Channel: 144[Chain 0]

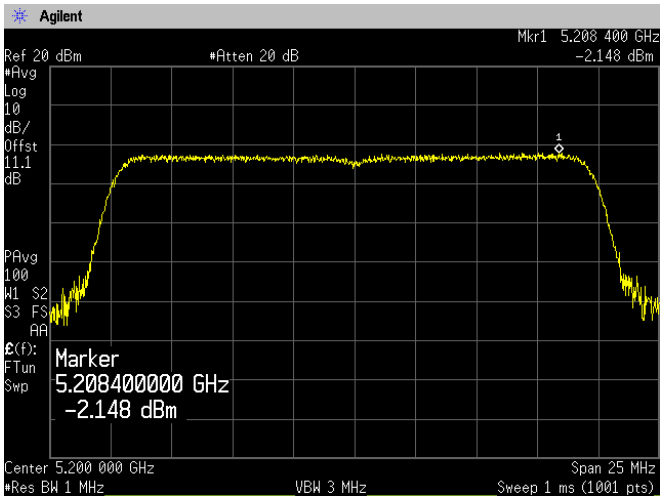


Japan

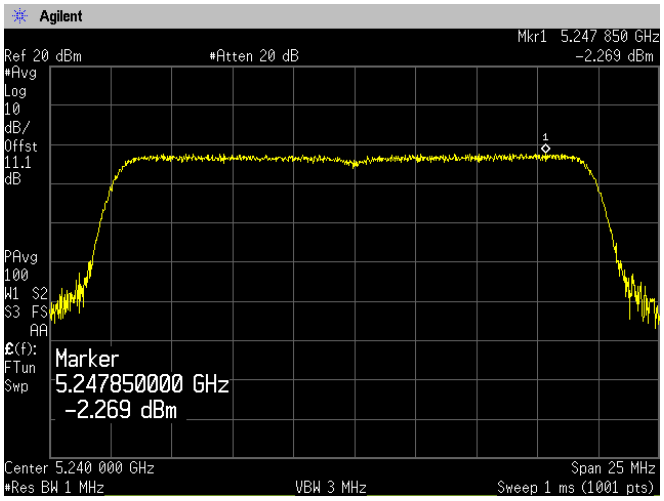
[IEEE802.11ax_HE20_242-Tones]
(5.2 GHz Band)
Channel: 36[Chain 0]



Channel: 40[Chain 0]

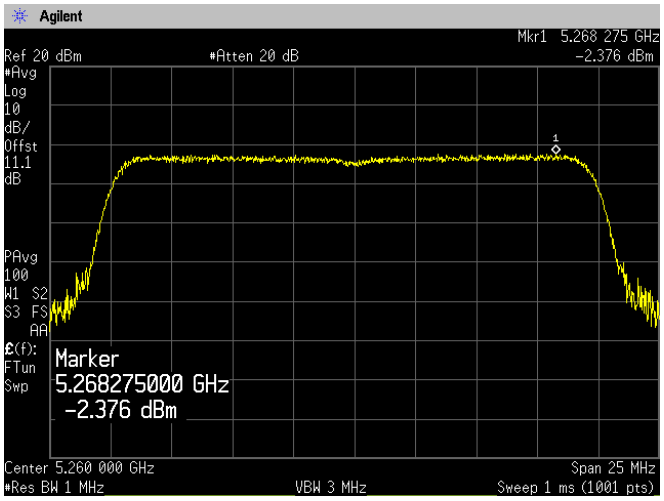


Channel: 48[Chain 0]

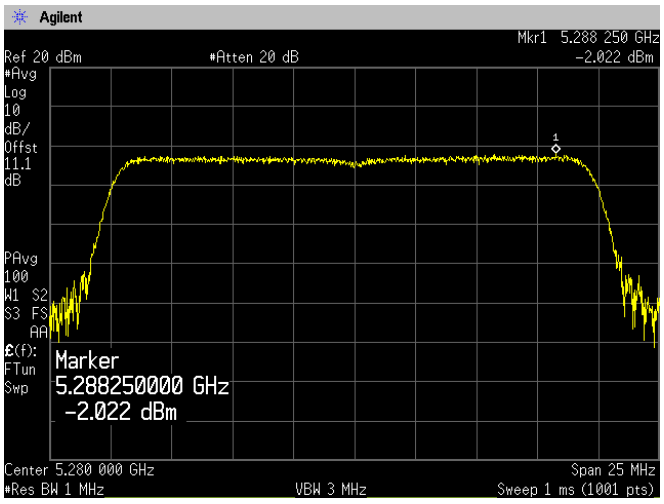


Japan

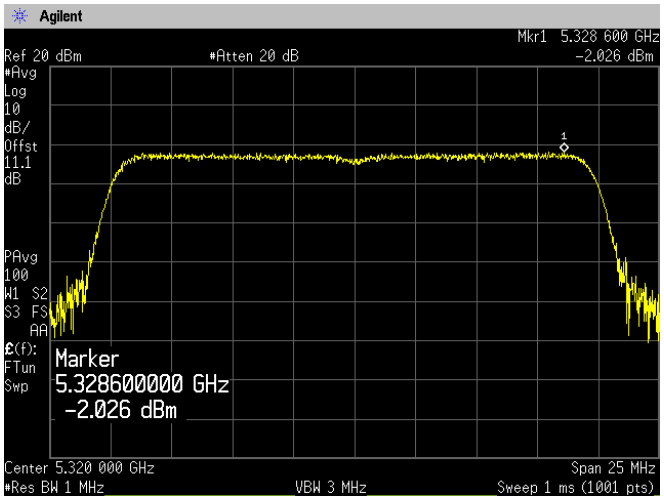
(5.3 GHz Band)
Channel: 52[Chain 0]



Channel: 56[Chain 0]

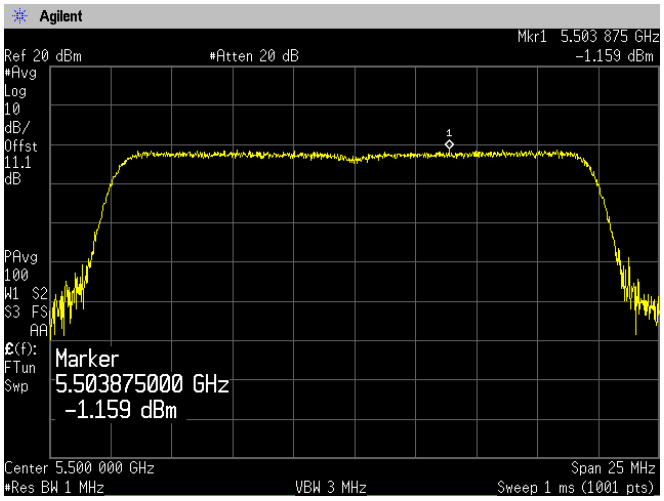


Channel: 64[Chain 0]

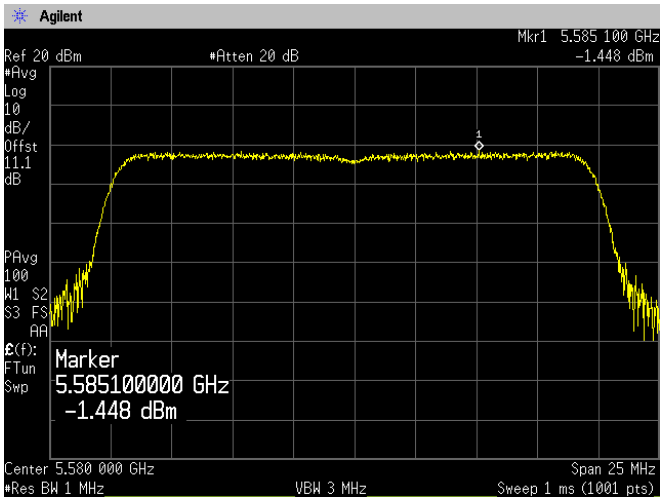


Japan

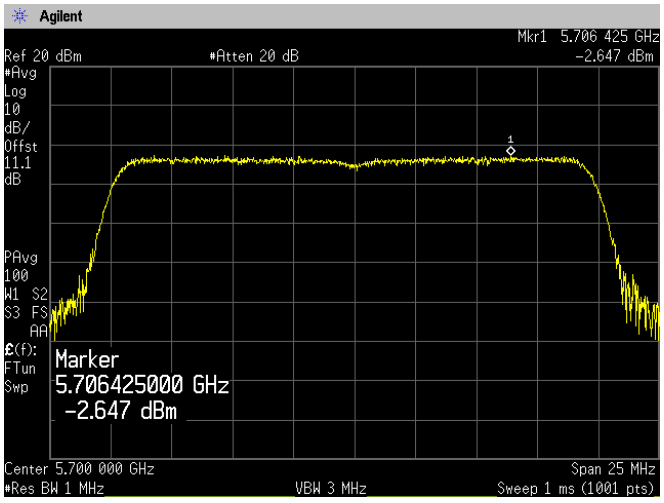
(5.6 GHz Band)
Channel: 100[Chain 0]



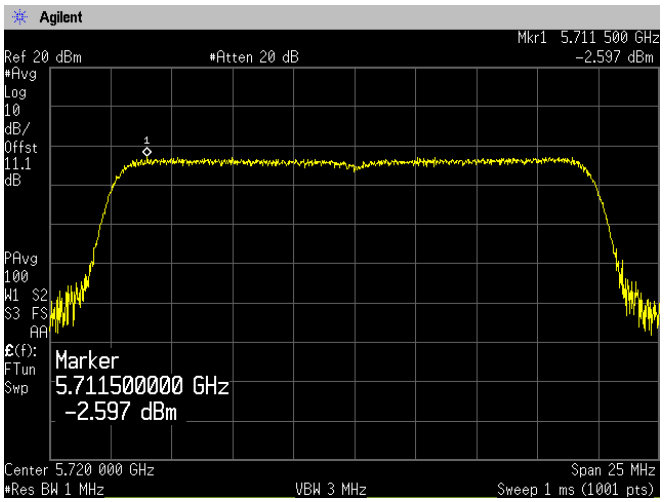
Channel: 116[Chain 0]



Channel: 140[Chain 0]

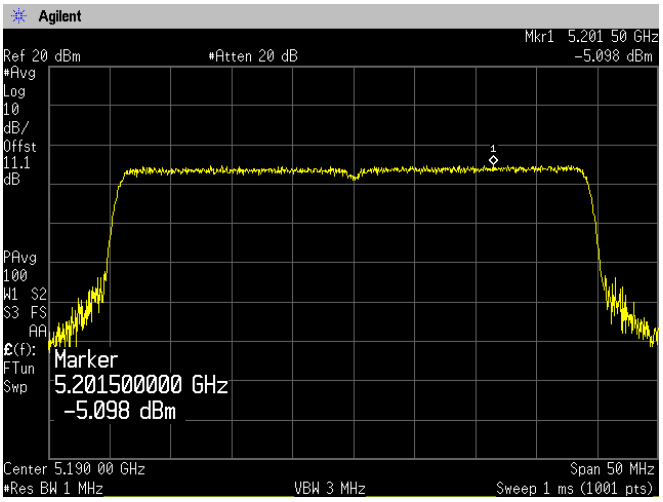


(5.6 GHz Band)
Channel: 144[Chain 0]

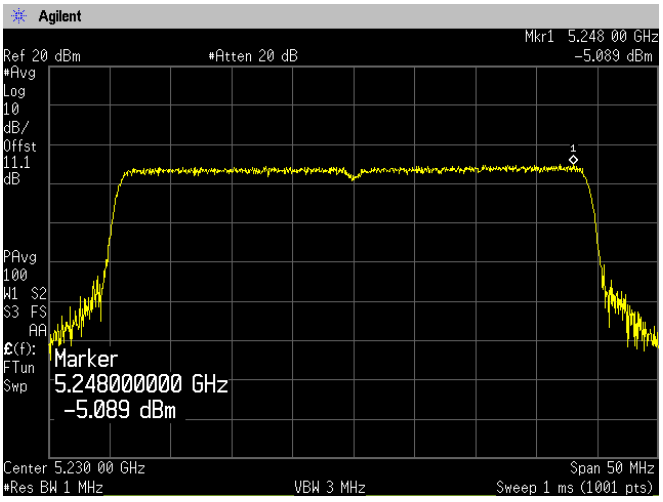


Japan

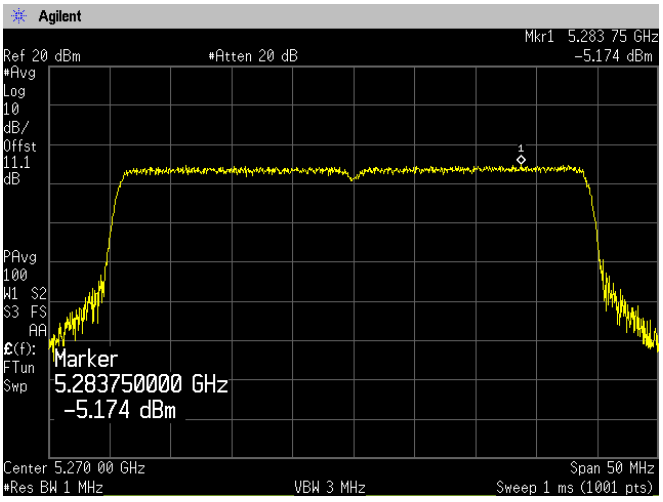
[IEEE802.11ax_HE40_484-Tones]
(5.2 GHz Band)
Channel: 38[Chain 0]



(5.2 GHz Band)
Channel: 46[Chain 0]

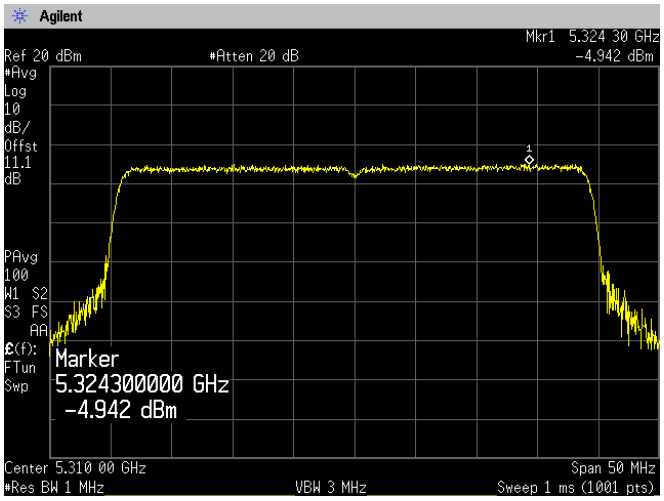


(5.3 GHz Band)
Channel: 54[Chain 0]

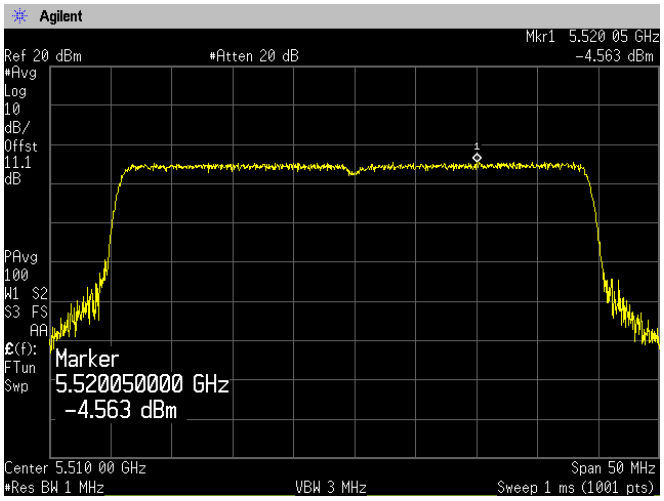


Japan

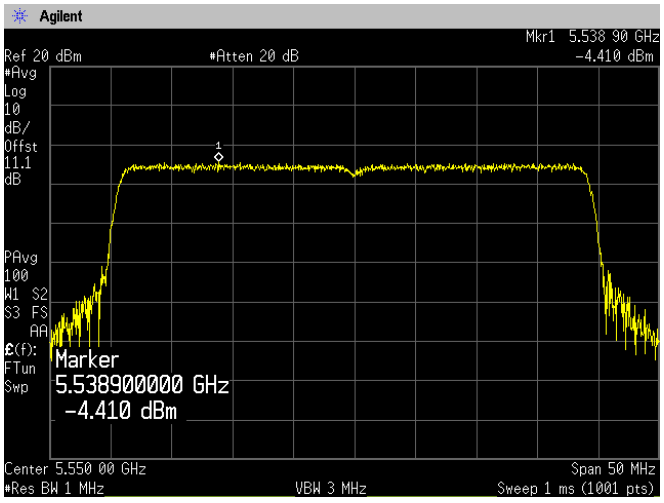
(5.3 GHz Band)
Channel: 62[Chain 0]



(5.6 GHz Band)
Channel: 102[Chain 0]

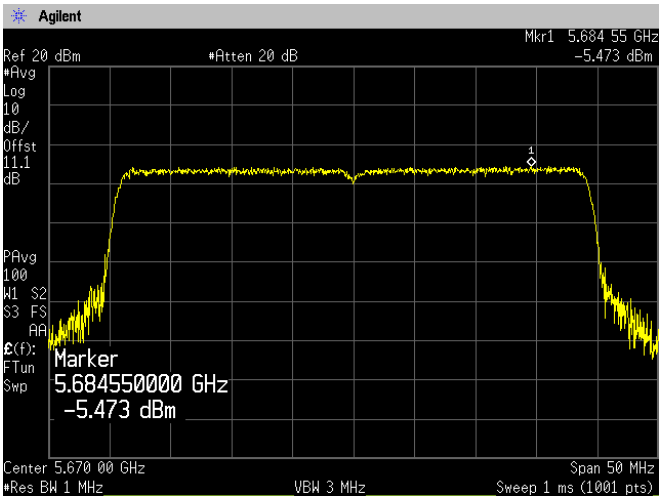


Channel: 110[Chain 0]

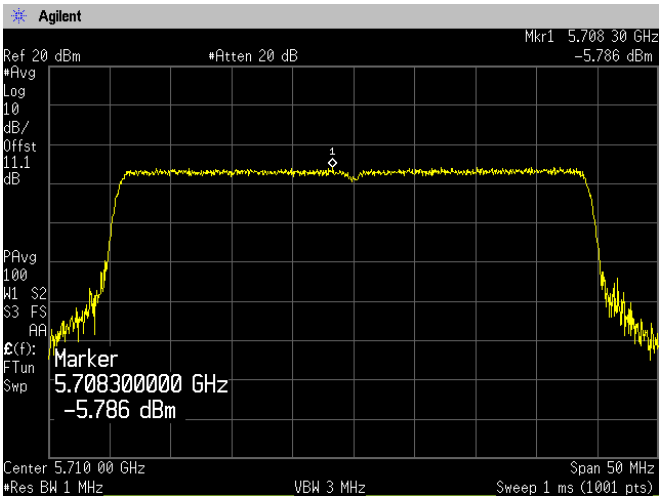


Japan

(5.6 GHz Band)
Channel: 134[Chain 0]

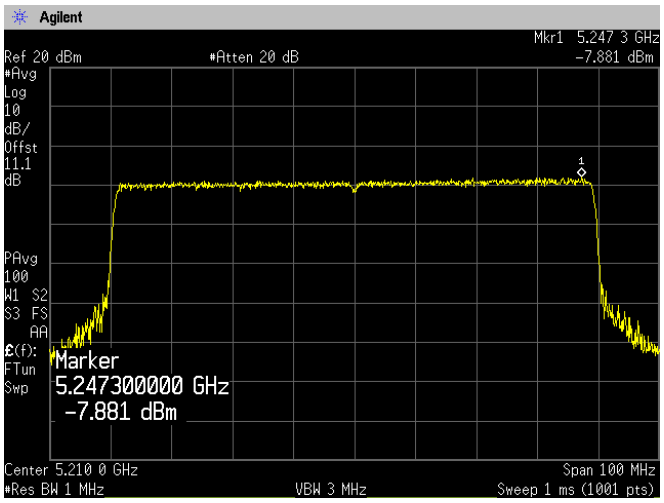


(5.6 GHz Band)
Channel: 142[Chain 0]

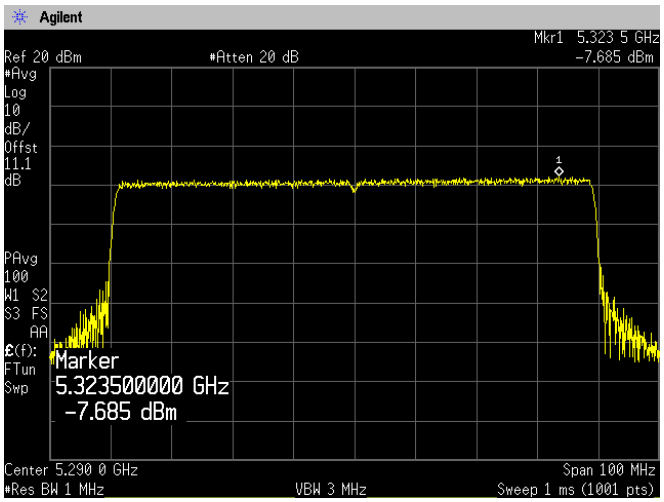


Japan

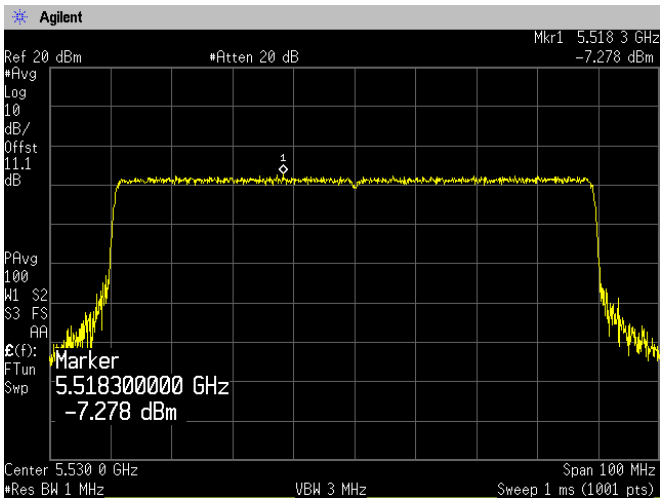
[IEEE802.11ax_HE80_996-Tones]
(5.2 GHz Band)
Channel: 42[Chain 0]



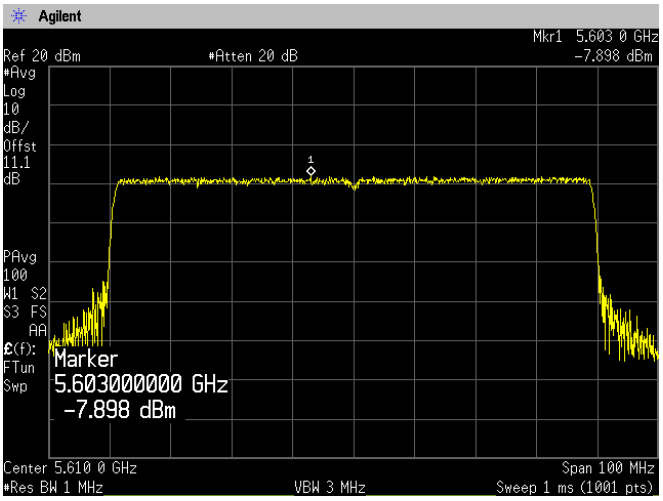
(5.3GHz Band)
Channel: 58[Chain 0]



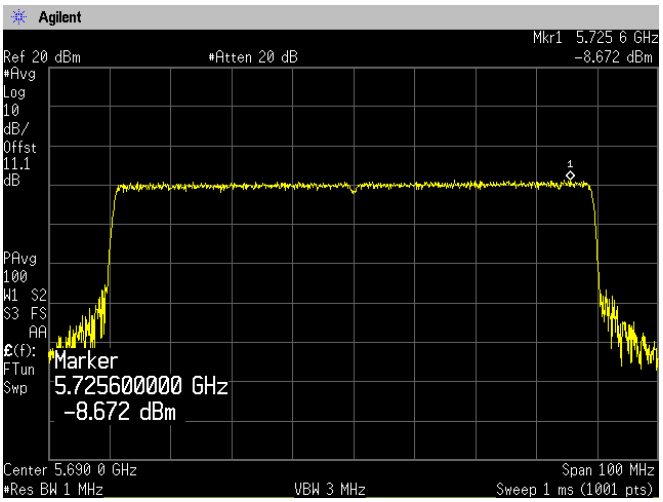
(5.6GHz Band)
Channel: 106[Chain 0]



(5.6GHz Band)
Channel: 122[Chain 0]

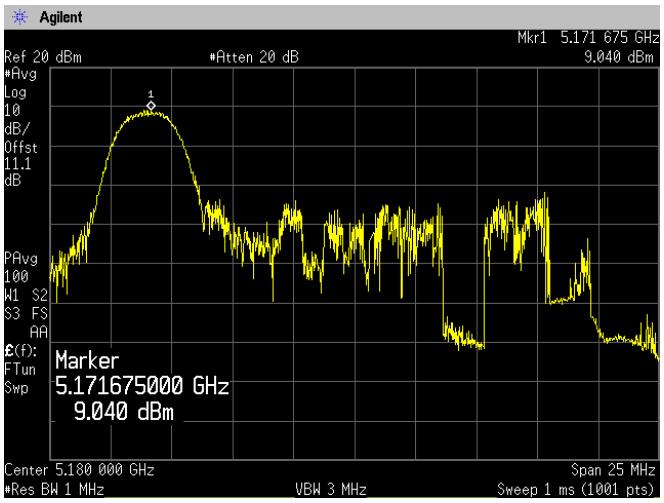


Channel: 138[Chain 0]

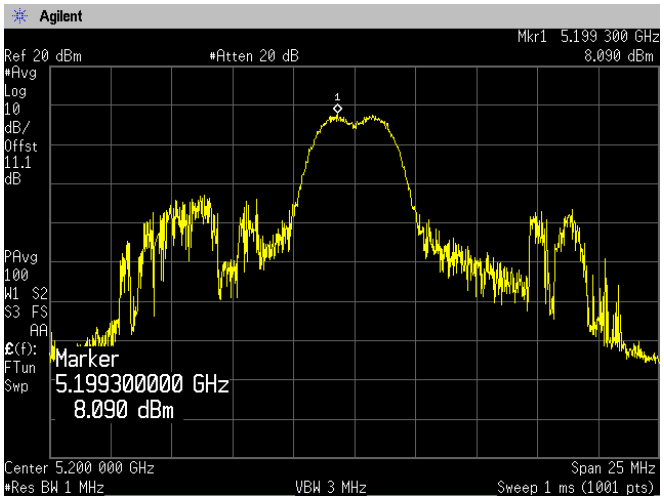


Japan

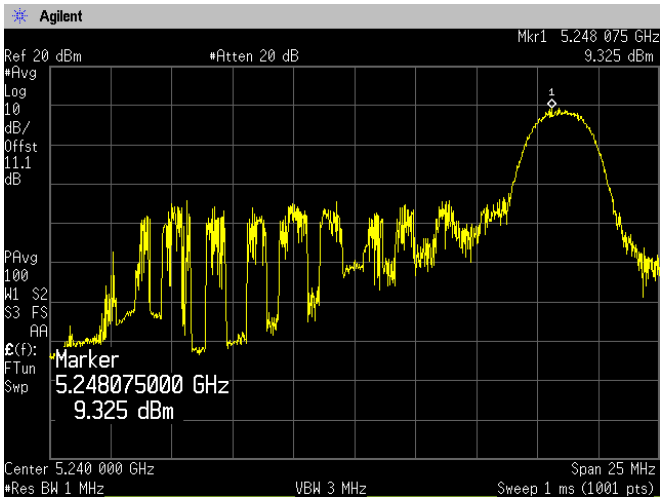
[IEEE802.11ax_HE20_26-Tones]
(5.2 GHz Band)
Channel: 36[Chain 1]



Channel: 40[Chain 1]

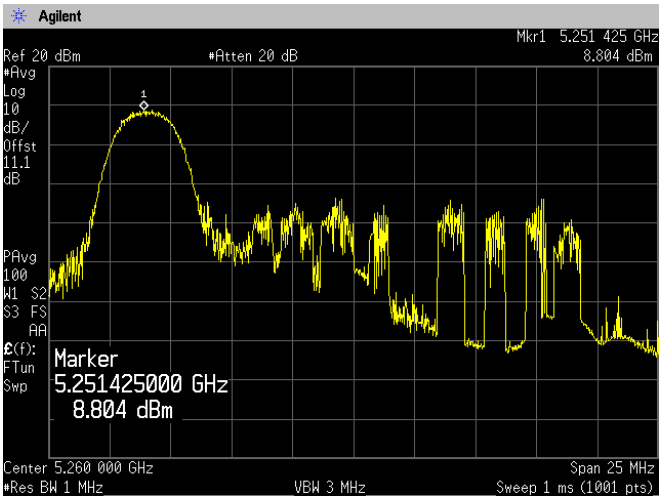


Channel: 48[Chain 1]

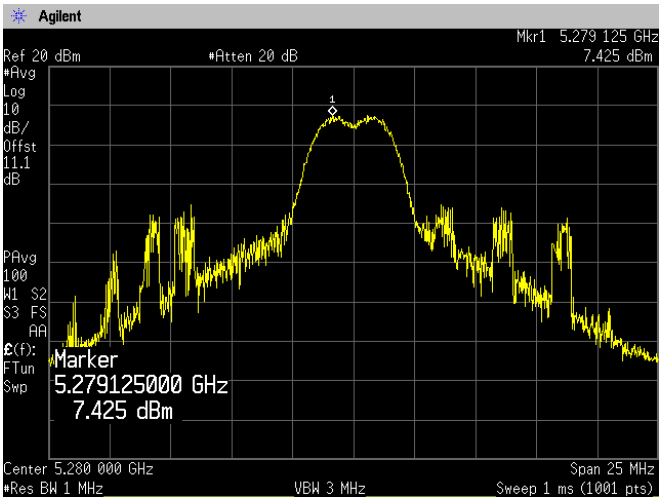


Japan

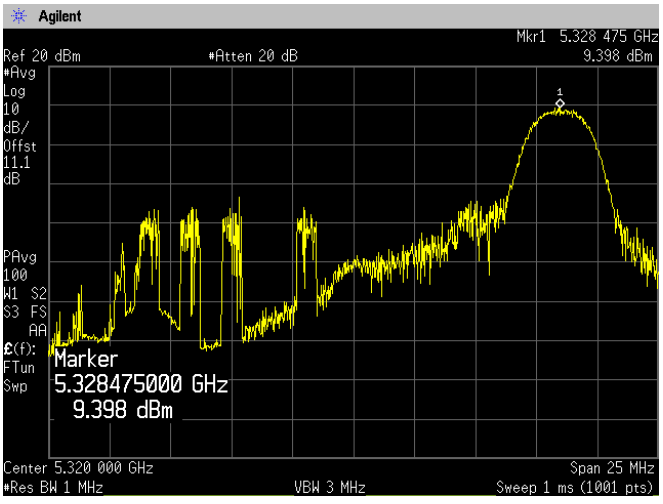
(5.3 GHz Band)
Channel: 52[Chain 1]



Channel: 56[Chain 1]

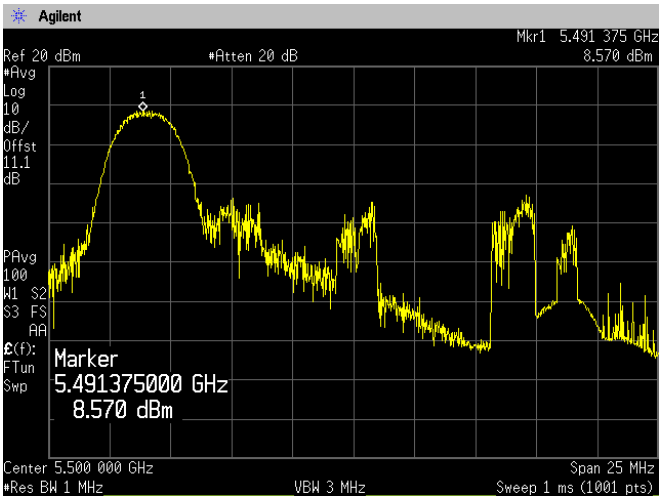


Channel: 64[Chain 1]

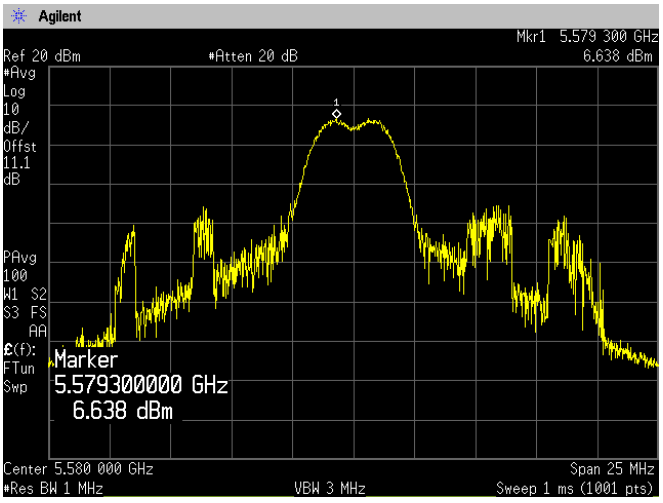


Japan

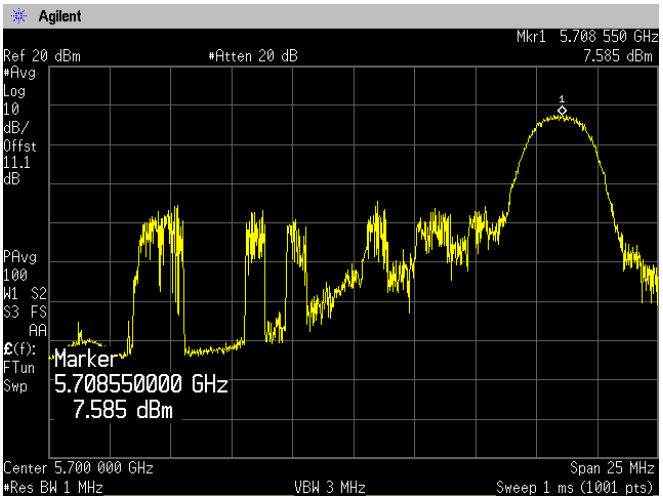
(5.6 GHz Band)
Channel: 100[Chain 1]



Channel: 116[Chain 1]

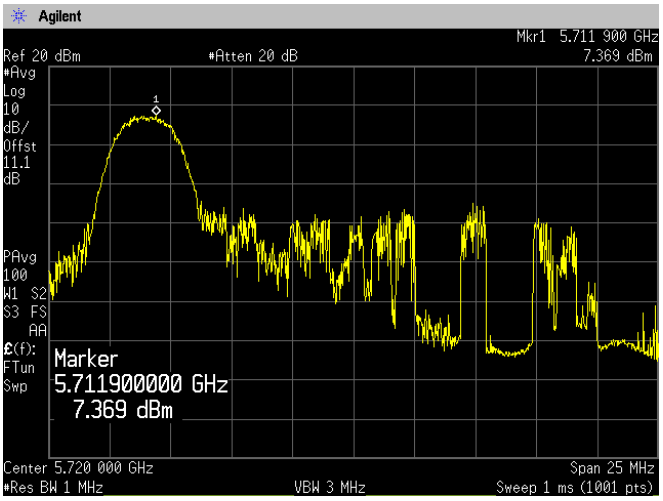


Channel: 140[Chain 1]



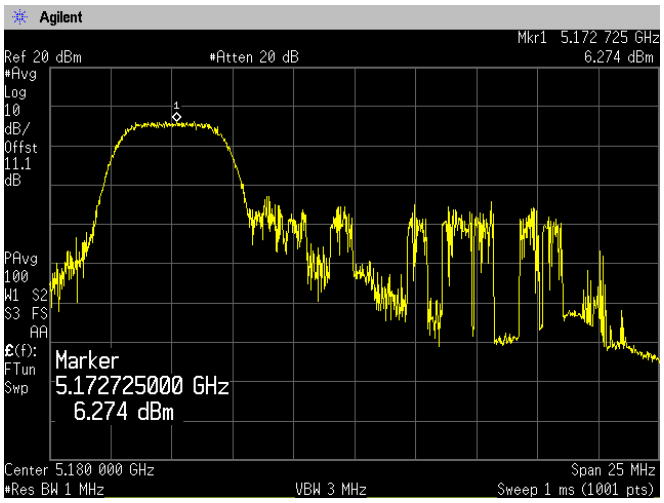
Japan

(5.6 GHz Band)
Channel: 144[Chain 1]

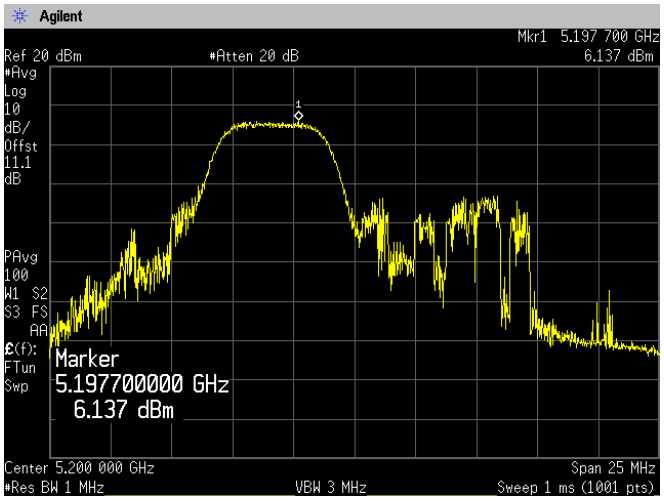


Japan

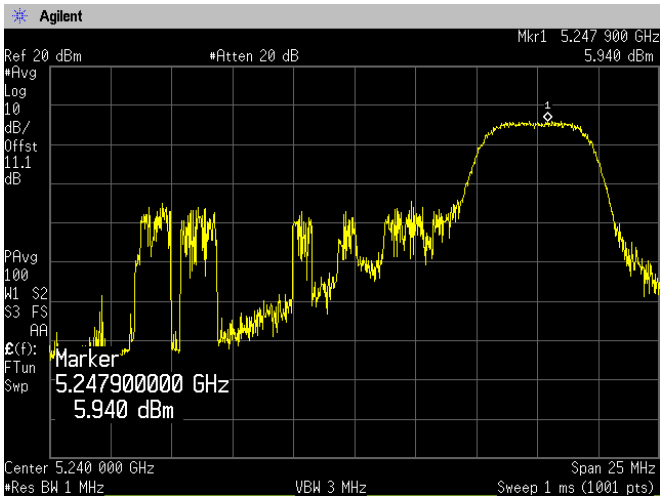
[IEEE802.11ax_HE20_52-Tones]
(5.2 GHz Band)
Channel: 36[Chain 1]



Channel: 40[Chain 1]

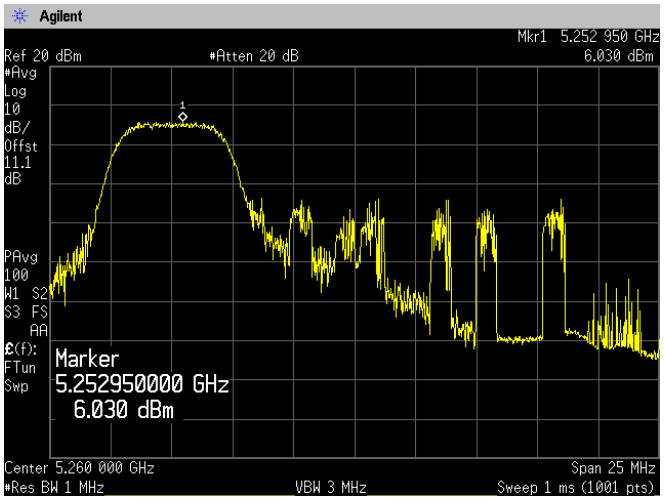


Channel: 48[Chain 1]

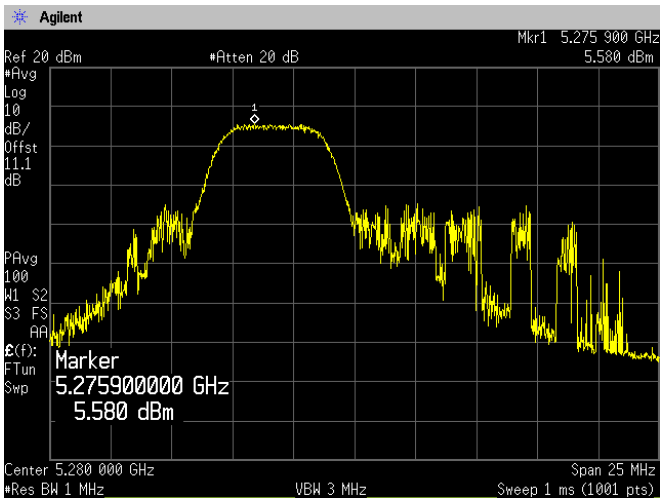


Japan

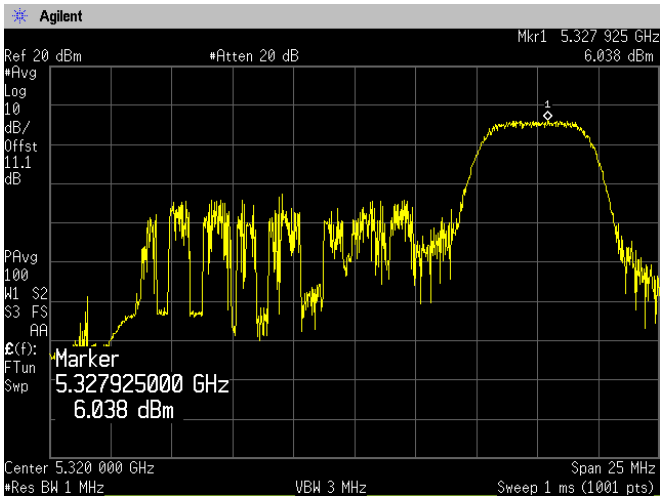
(5.3 GHz Band)
Channel: 52[Chain 1]



Channel: 56[Chain 1]

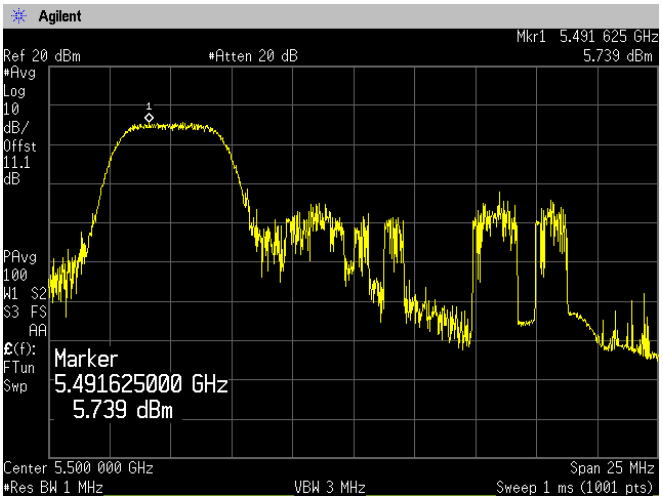


Channel: 64[Chain 1]

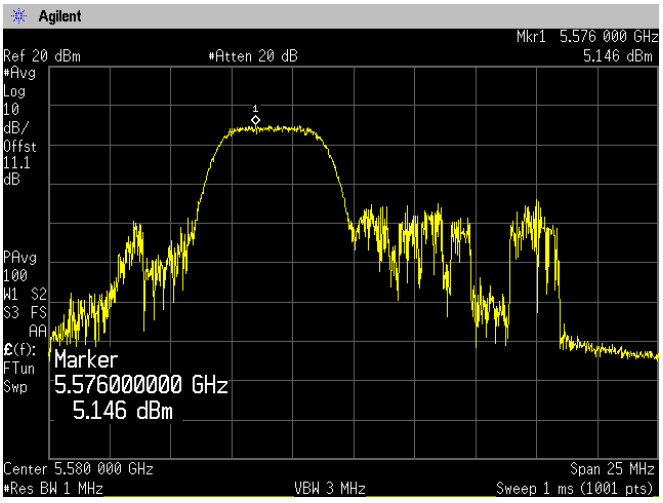


Japan

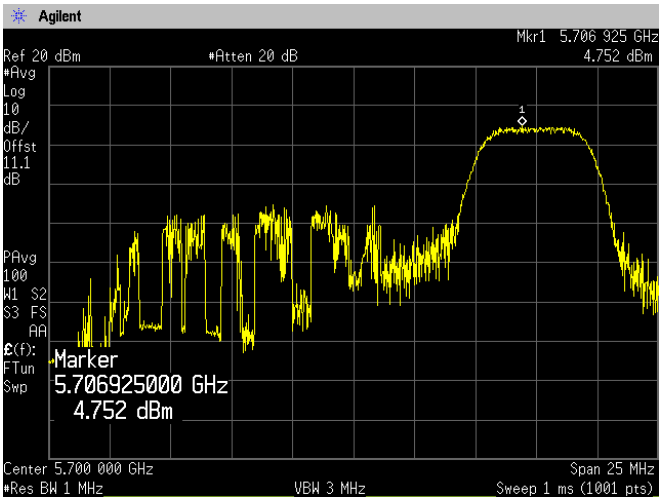
(5.6 GHz Band)
Channel: 100[Chain 1]



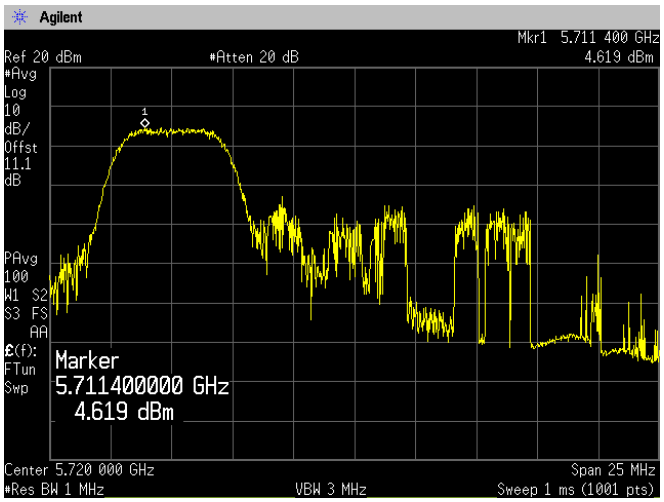
Channel: 116[Chain 1]



Channel: 140[Chain 1]

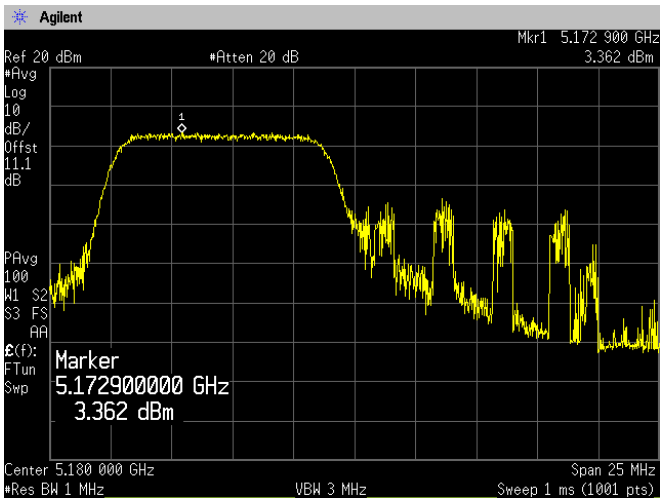


(5.6 GHz Band)
Channel: 144[Chain 1]

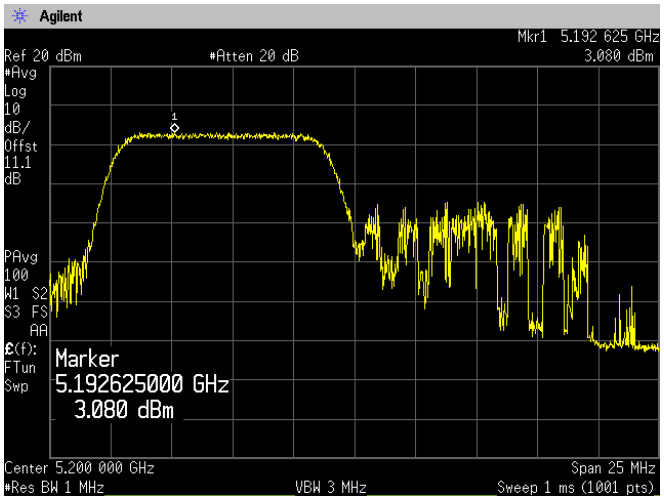


Japan

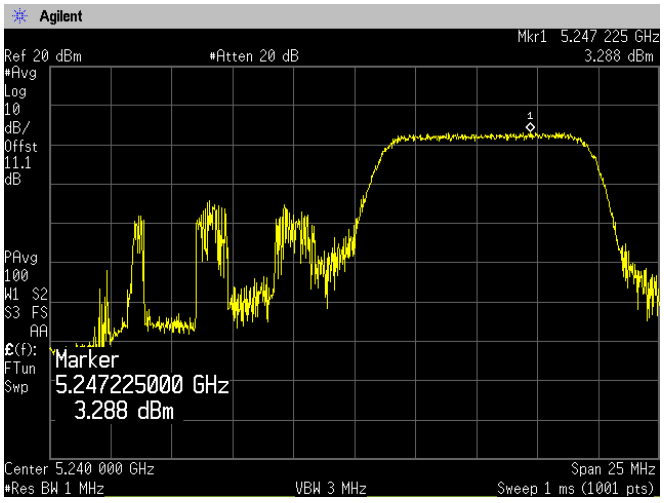
[IEEE802.11ax_HE20_106-Tones]
(5.2 GHz Band)
Channel: 36[Chain 1]



Channel: 40[Chain 1]

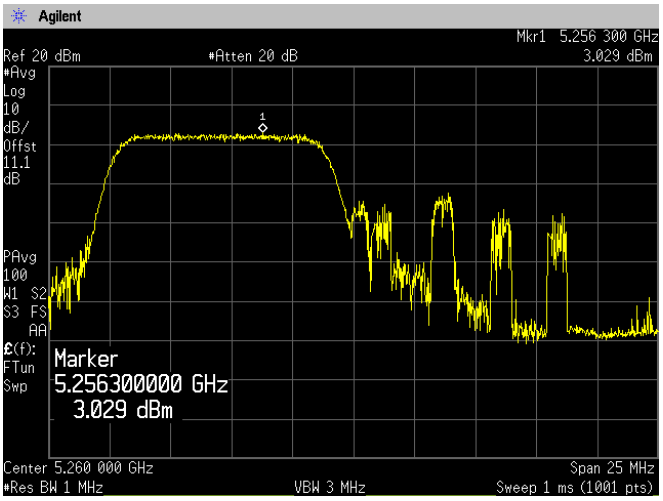


Channel: 48[Chain 1]

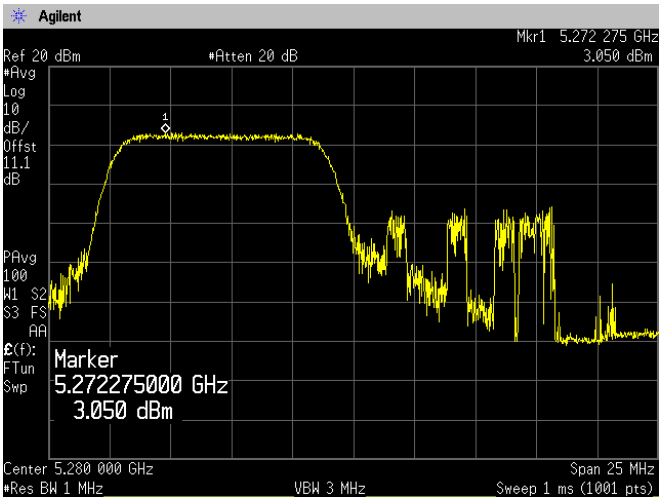


Japan

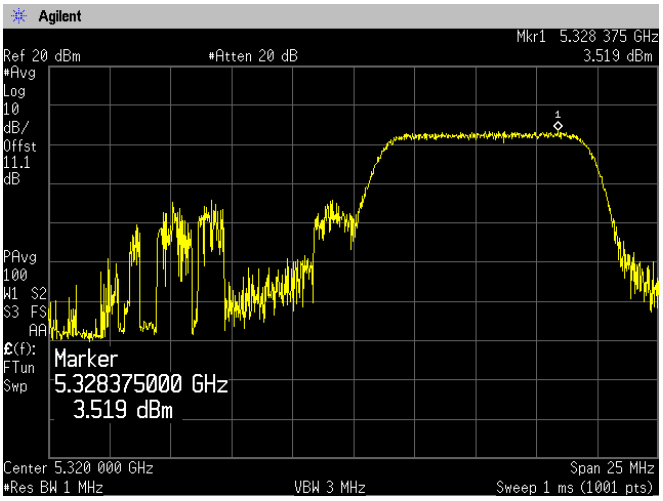
(5.3 GHz Band)
Channel: 52[Chain 1]



Channel: 56[Chain 1]

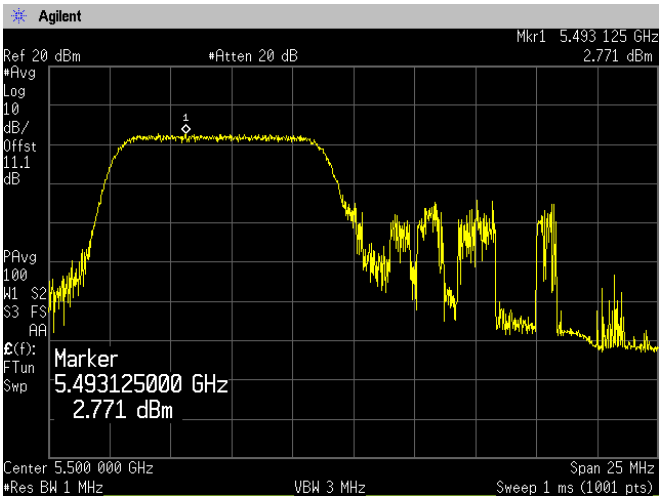


Channel: 64[Chain 1]

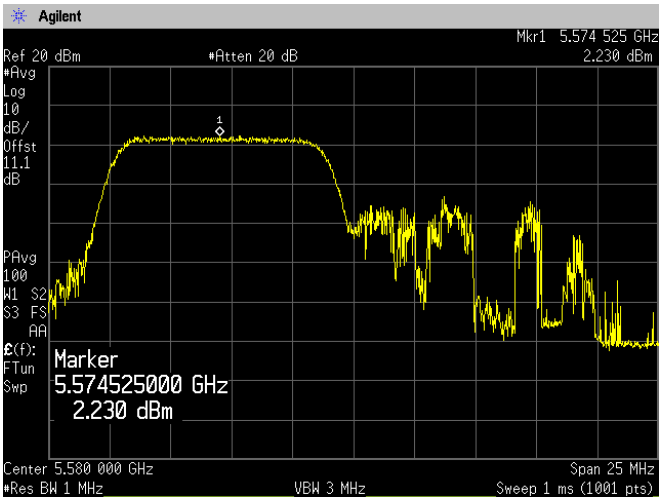


Japan

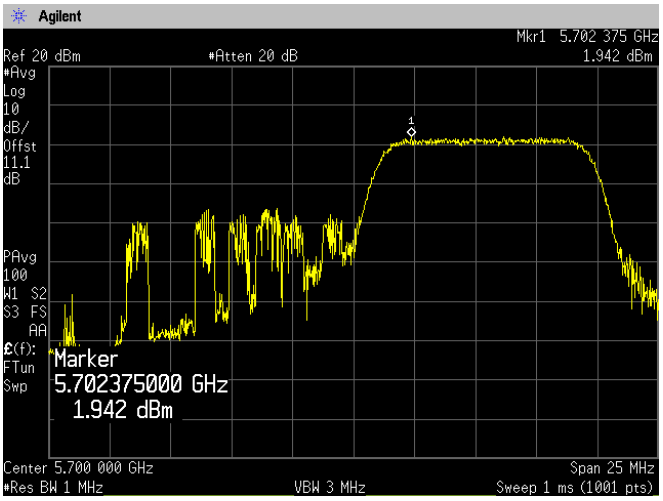
(5.6 GHz Band)
Channel: 100[Chain 1]



Channel: 116[Chain 1]

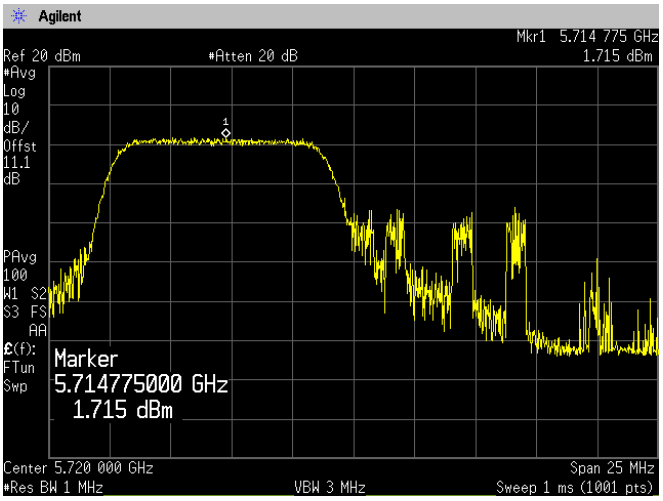


Channel: 140[Chain 1]



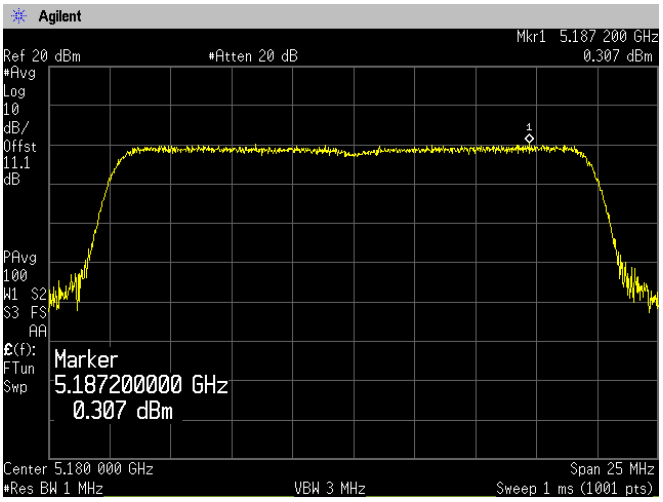
Japan

(5.6 GHz Band)
Channel: 144[Chain 1]

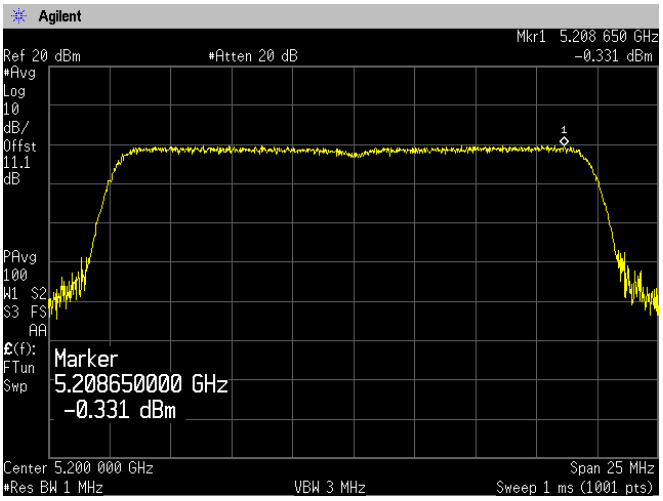


Japan

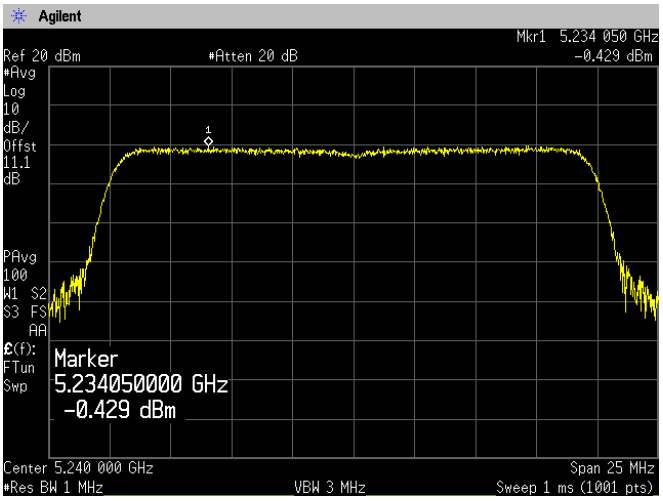
[IEEE802.11ax_HE20_242-Tones]
(5.2 GHz Band)
Channel: 36[Chain 1]



Channel: 40[Chain 1]

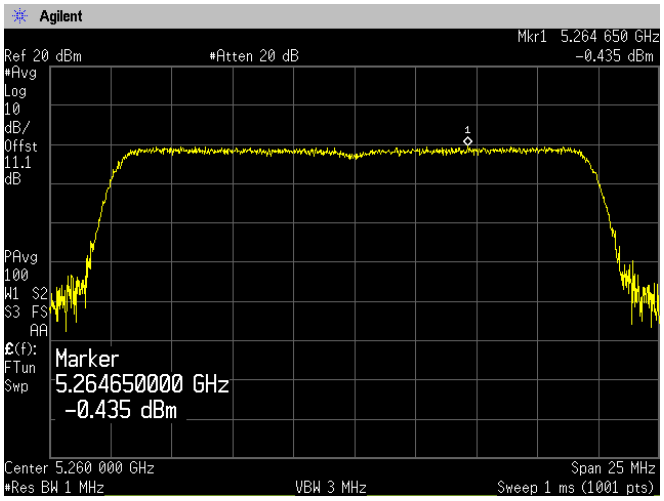


Channel: 48[Chain 1]

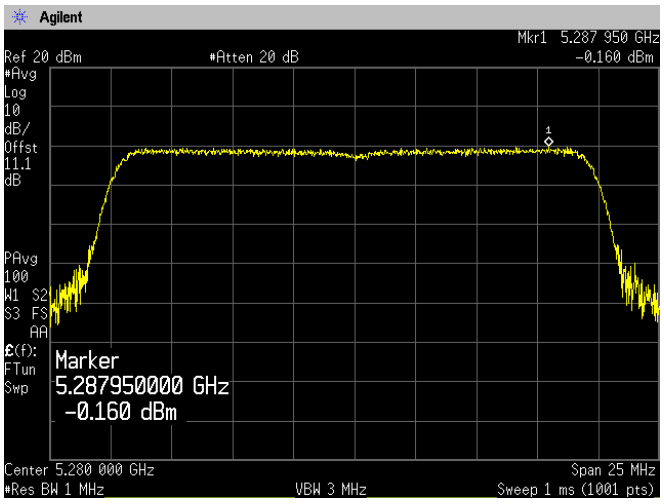


Japan

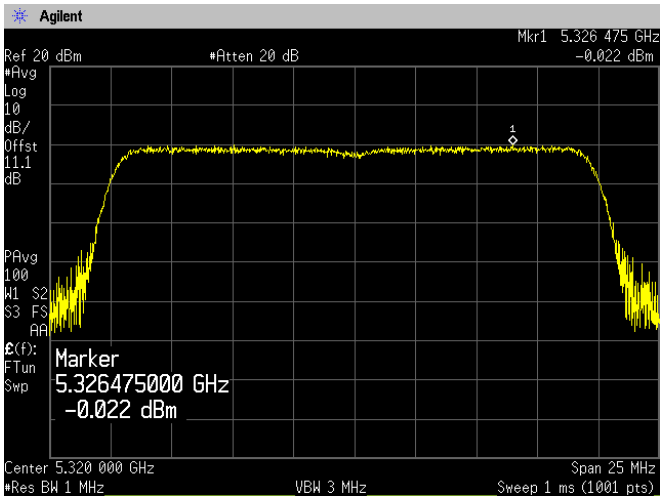
(5.3 GHz Band)
Channel: 52[Chain 1]



Channel: 56[Chain 1]

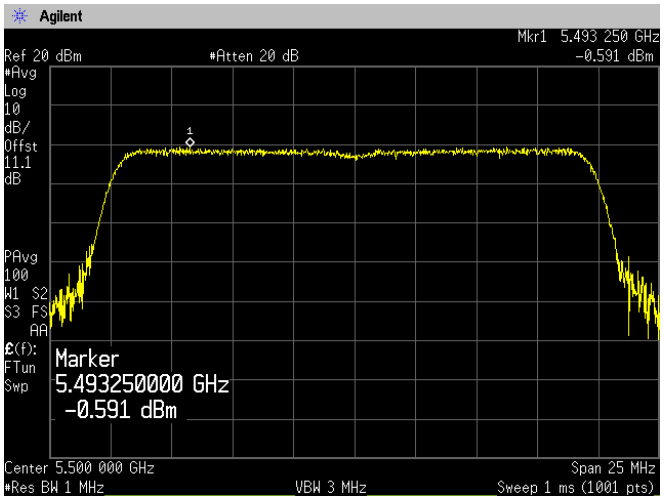


Channel: 64[Chain 1]

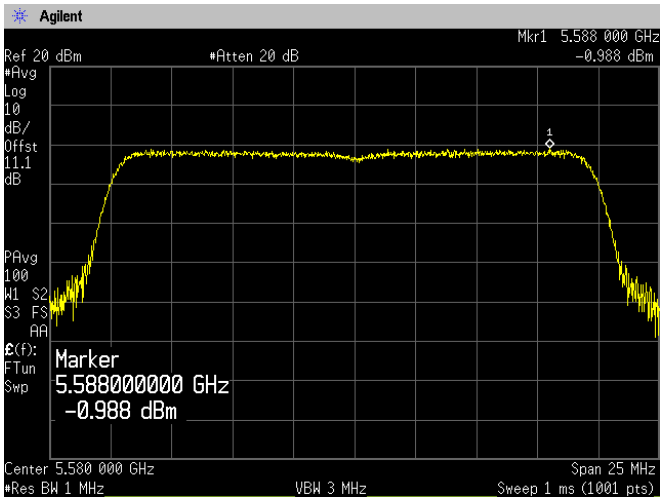


Japan

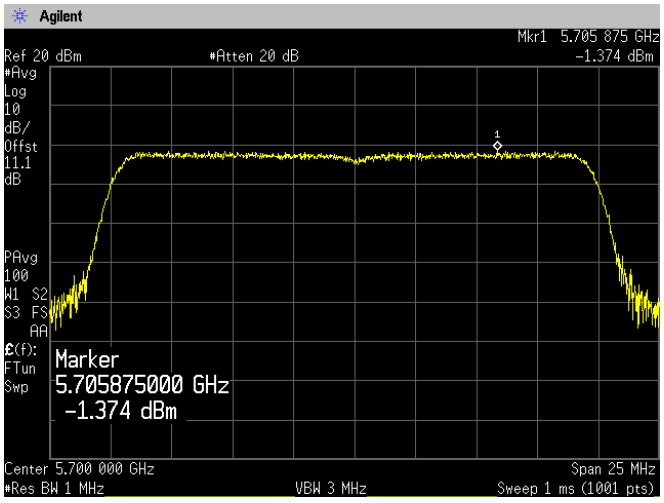
(5.6 GHz Band)
Channel: 100[Chain 1]



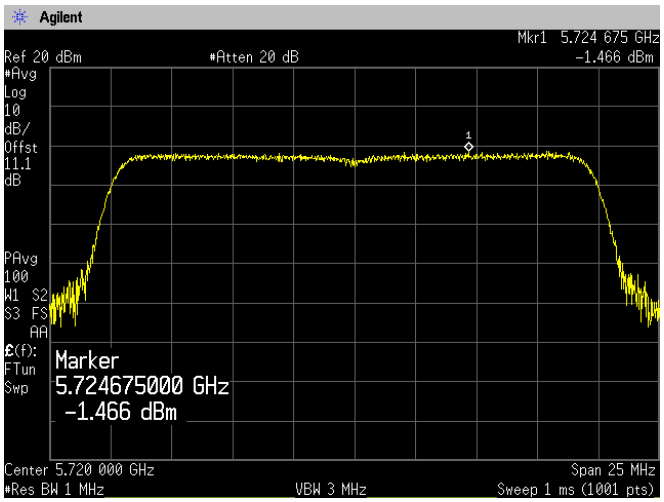
Channel: 116[Chain 1]



Channel: 140[Chain 1]

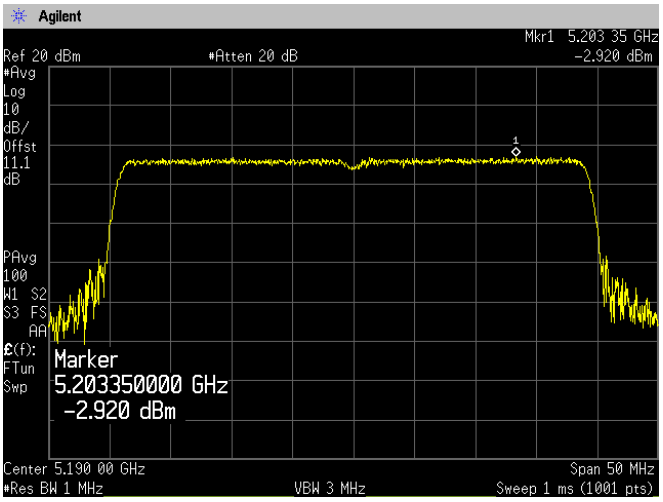


(5.6 GHz Band)
Channel: 144[Chain 1]

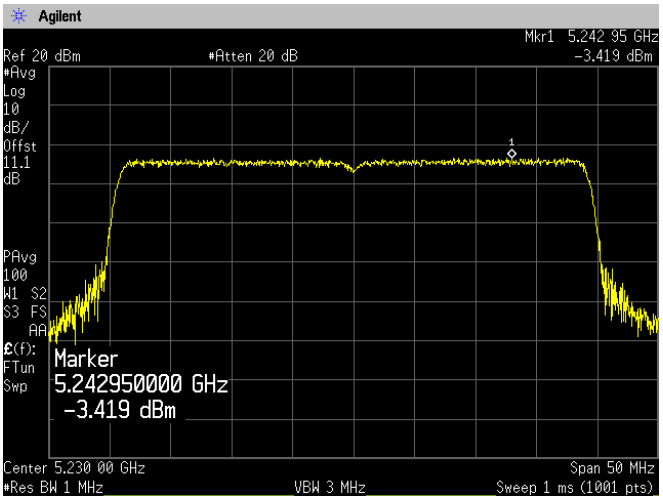


Japan

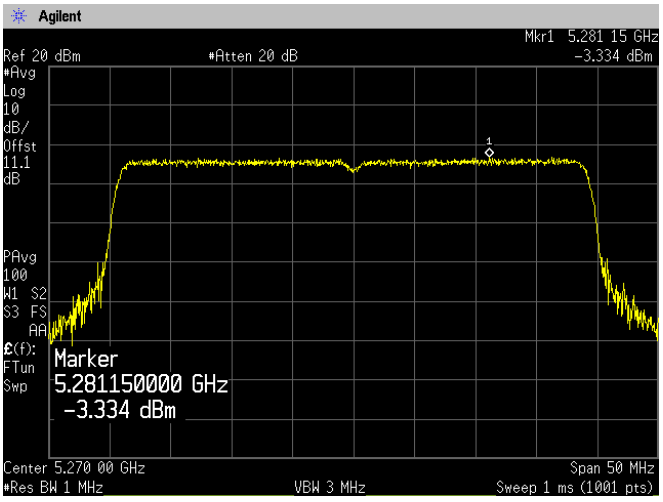
[IEEE802.11ax_HE40_484-Tones]
(5.2 GHz Band)
Channel: 38[Chain 1]



(5.2 GHz Band)
Channel: 46[Chain 1]

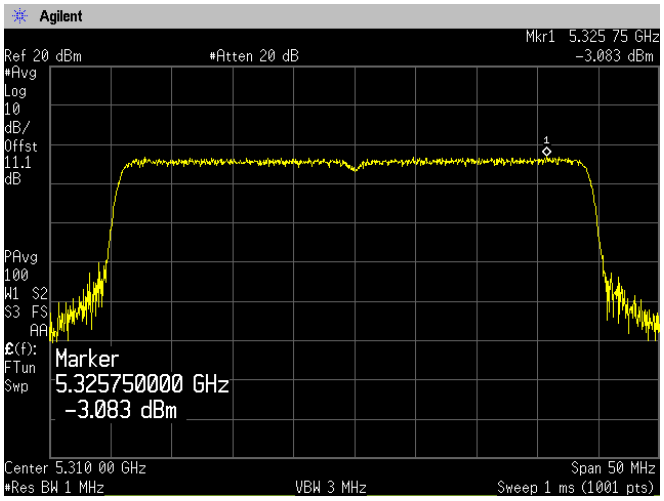


(5.3 GHz Band)
Channel: 54[Chain 1]

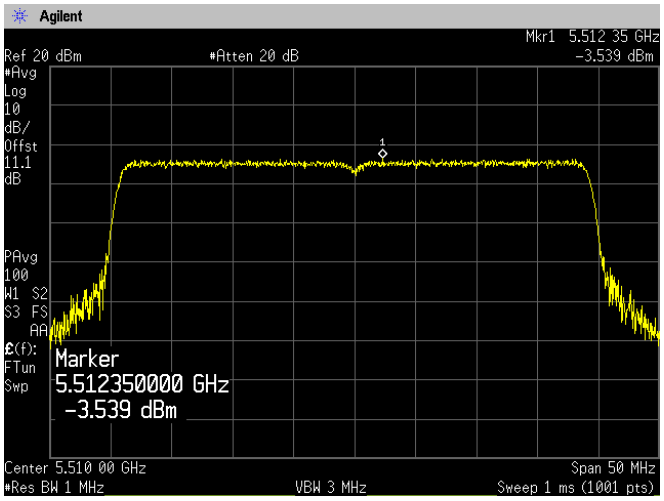


Japan

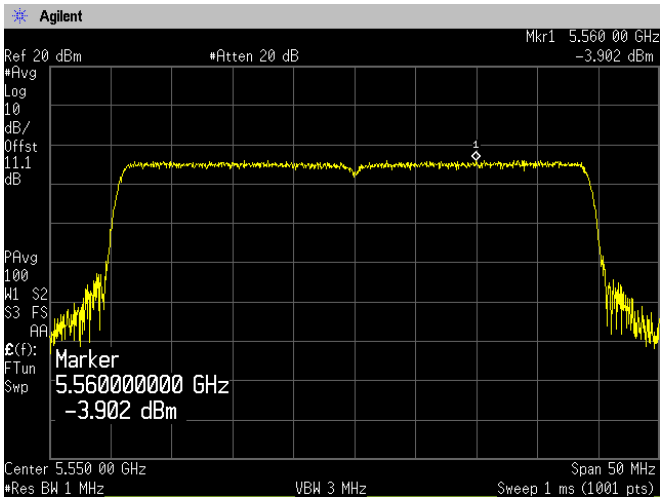
(5.3 GHz Band)
Channel: 62[Chain 1]



(5.6 GHz Band)
Channel: 102[Chain 1]

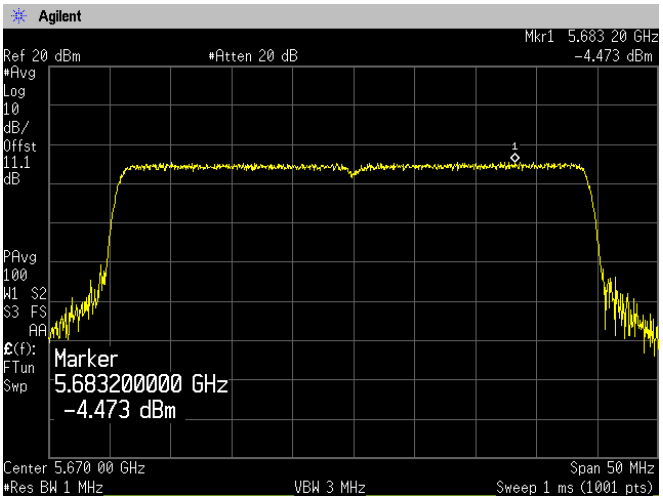


Channel: 110[Chain 1]

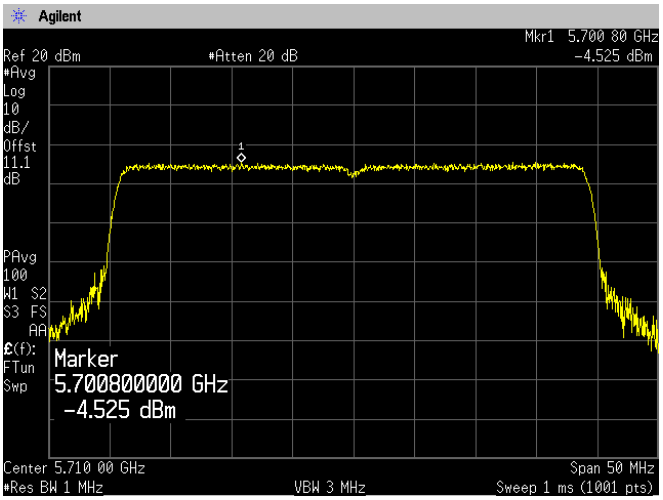


Japan

(5.6 GHz Band)
Channel: 134[Chain 1]

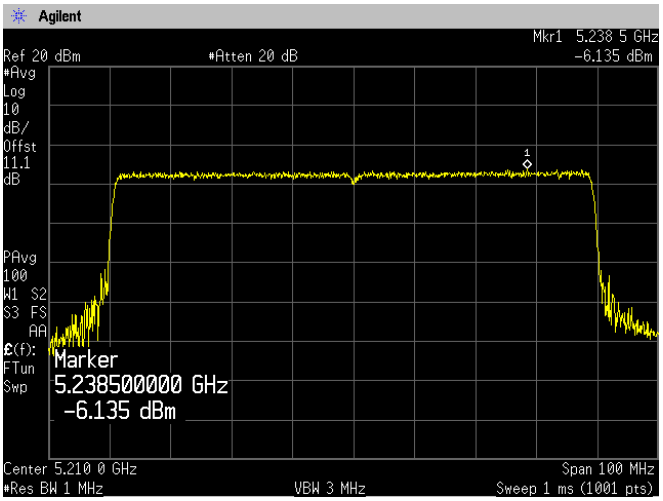


(5.6 GHz Band)
Channel: 142[Chain 1]

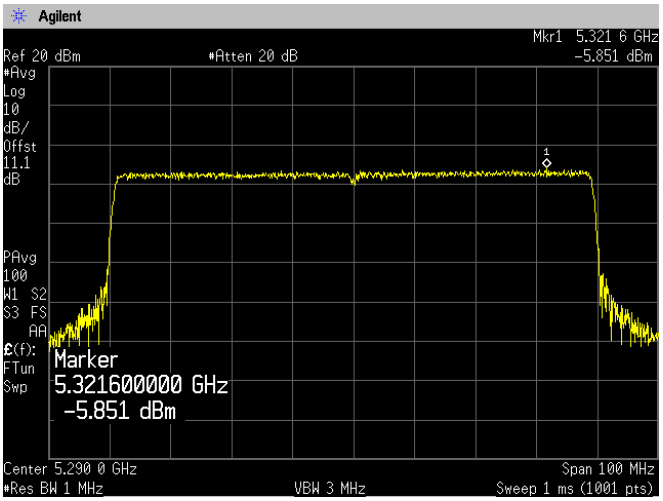


Japan

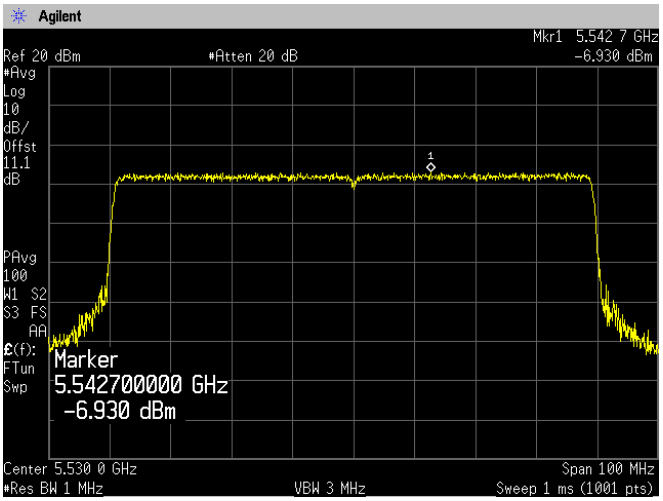
[IEEE802.11ax_HE80_996-Tones]
(5.2 GHz Band)
Channel: 42[Chain 1]



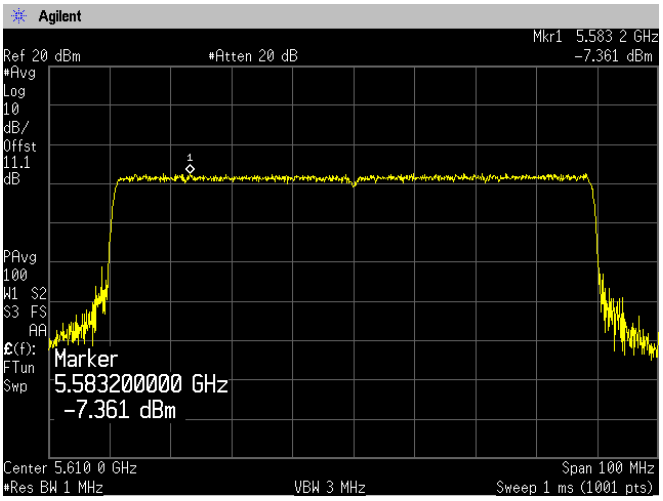
(5.3GHz Band)
Channel: 58[Chain 1]



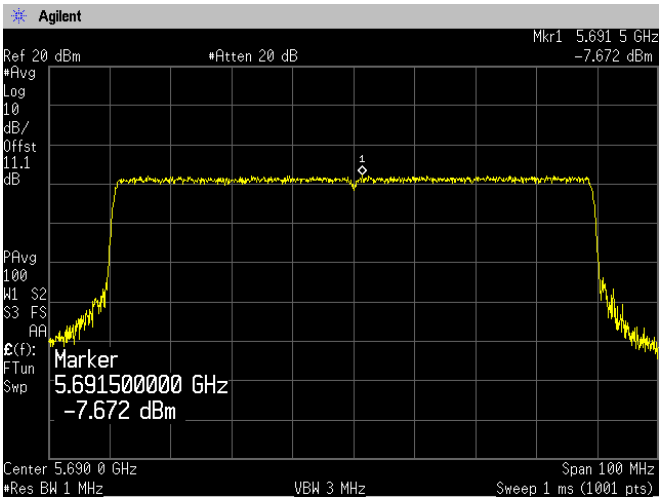
(5.6GHz Band)
Channel: 106[Chain 1]



(5.6GHz Band)
Channel: 122[Chain 1]



Channel: 138[Chain 1]



4.4 Radiated Emissions (Restricted Bands of Operation)

4.4.1 Measurement procedure

[FCC 15.407(b), 15.205, 15.209, KDB 789033 D02, Section G.4, 5, 6.c) Method AD]

Test was applied by following conditions.

Test method	:	ANSI C63.10
Frequency range	:	9 kHz to 40 GHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	Styrofoam table / (W) 1.0 × (D) 1.0 ×(H) 0.8 m (below 1 GHz) Styrofoam table / (W) 0.6 × (D) 0.6 ×(H) 1.5 m (above 1 GHz)
Antenna distance	:	3m
Test receiver setting		Below 1 GHz
- Detector	:	Quasi-peak
- Bandwidth	:	120 kHz
Spectrum analyzer setting		Above 1 GHz
- Peak	:	RBW=1 MHz, VBW=3 MHz, Span=0 Hz, Sweep=auto, Detector=Peak Trace mode=Max hold
- Average	:	RBW=1 MHz, VBW=3 MHz, Span=0 Hz, Sweep=auto, Detector=RMS Trace mode=Averaging (300 counts)

Radiated emission measurements are performed at 3m distance with the broadband antenna (Loop antenna, Biconical antenna, Log periodic antenna, Double ridged guide antenna and Bload-band horn Antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1m to 4m and stopped at height producing the maximum emission. As for the Loop antenna, it is positioned with its plane vertical, and the center of the Loop antenna is 1m above the ground plane.

The EUT is Placed on a turntable, which is 0.8m (below 1 GHz) and 1.5m (above 1 GHz) above ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. The test results represent the worst case emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation. Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.

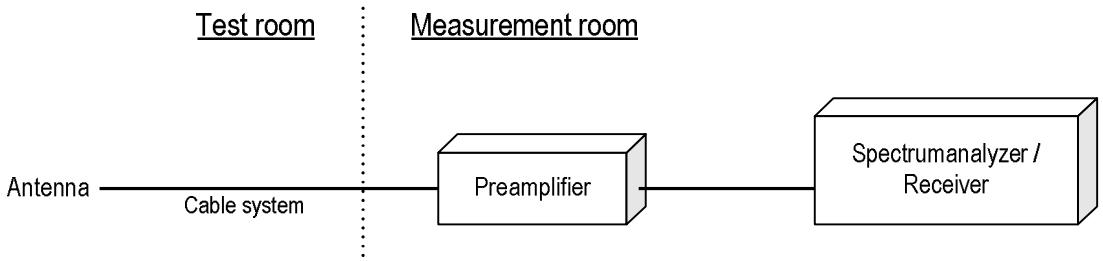
The EUT was set to operate with following conditions.

- 5.2 GHz Band, 5.3 GHz Band, 5.6 GHz Band

The test mode of EUT is as follows.

- Tx mode, Rx mode

- Test configuration



Duty cycle result

Mode	Band	On Time(ms)	On+Off Time(ms)	Duty Cycle (%)	DCF (dB)
802.11ax 20MHz RU: 26-4	W52	5.088	5.106	99.6	0.000
	W53	5.088	5.106	99.6	0.000
	W56	5.088	5.106	99.6	0.000
802.11ax 20MHz RU: 52-38	W52	5.076	5.094	99.6	0.000
	W53	5.076	5.094	99.6	0.000
	W56	5.076	5.094	99.6	0.000
802.11ax 20MHz RU: 106-53	W52	4.764	4.782	99.6	0.000
	W53	4.764	4.782	99.6	0.000
	W56	4.764	4.782	99.6	0.000
802.11ax 20MHz RU: 242-61	W52	4.668	4.686	99.6	0.000
	W53	4.668	4.686	99.6	0.000
	W56	4.668	4.686	99.6	0.000
802.11ax 40MHz RU: 484-65	W52	4.662	4.686	99.5	0.000
	W53	4.662	4.686	99.5	0.000
	W56	4.662	4.686	99.5	0.000
802.11ax 80MHz RU: 996-67	W52	4.728	4.746	99.6	0.000
	W53	4.728	4.746	99.6	0.000
	W56	4.728	4.746	99.6	0.000

Note: DCF = 10log(1/x)

4.4.2 Calculation method

[150 kHz to 25 GHz]
Emission level = Reading + (Ant. factor + Cable system loss - Amp. Gain)
Margin = Limit - Emission level

Example:
Detector: Peak
Limit @ 5147.0 MHz: 74.0 dBuV/m (Peak Limit)
S.A Reading = 40.9 dBuV Cable system loss = 16.4 dB
Result = 40.9 + 16.4 = 57.3 dBuV/m
Margin = 74.0 - 57.3 = 16.7 dB

4.4.3 Limit

(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725GHz band: all emissions outside of the 5.47 5-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.

Frequency [MHz]	Field strength		Distance [m]
	[uV/m]	[dBuV/m]	
0.009-0.490	2400 / F [kHz]	20logE [uV/m]	300
0.490-1.705	24000 / F [kHz]	20logE [uV/m]	30
1.705-30	30	29.5	30
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Note:
1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition modulation.

Japan

4.4.4 Test data

Date	:	19-July-2023			
Temperature	:	23.3 [˚C]			
Humidity	:	72.1 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Chiaki Kanno

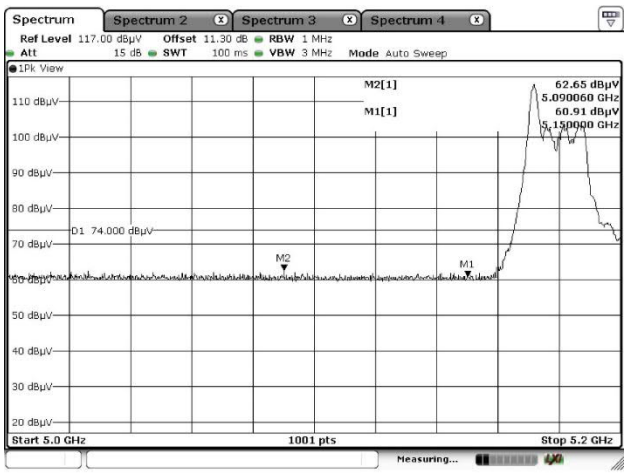
Date	:	20-July-2023			
Temperature	:	23.8 [˚C]			
Humidity	:	67.6 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Chiaki Kanno

Date	:	21-July-2023			
Temperature	:	24.1 [˚C]			
Humidity	:	70.1 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Chiaki Kanno

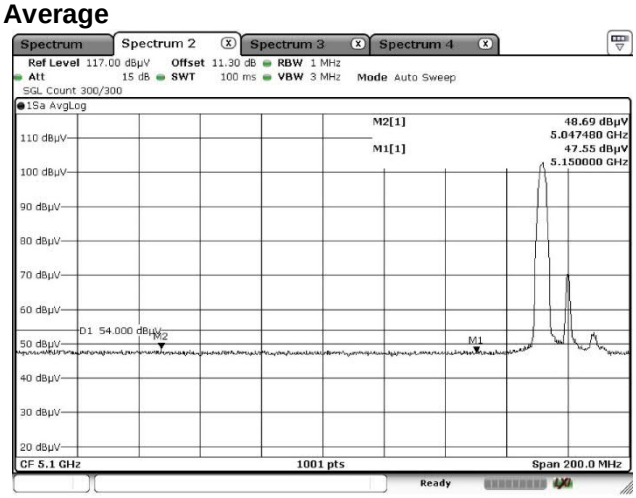
4.4.4.1 Restricted Bandedge

[IEEE802.11ax_HE20_26-Tones]

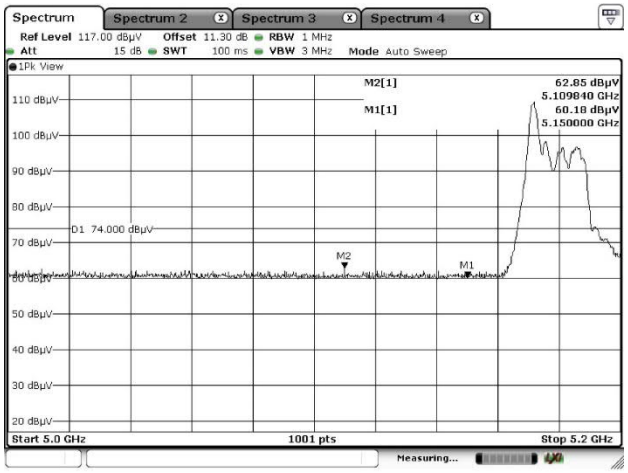
5.2 GHz Band, Channel Low
Horizontal
Peak



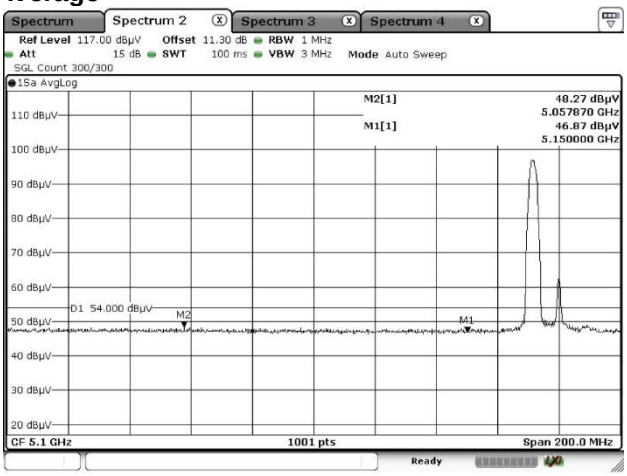
Average



Vertical
Peak

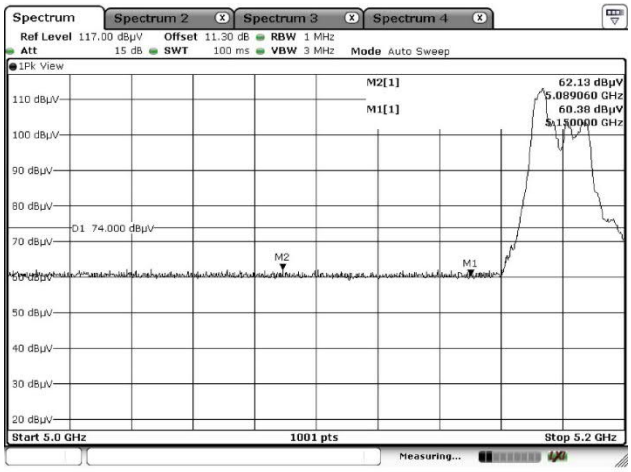


Average

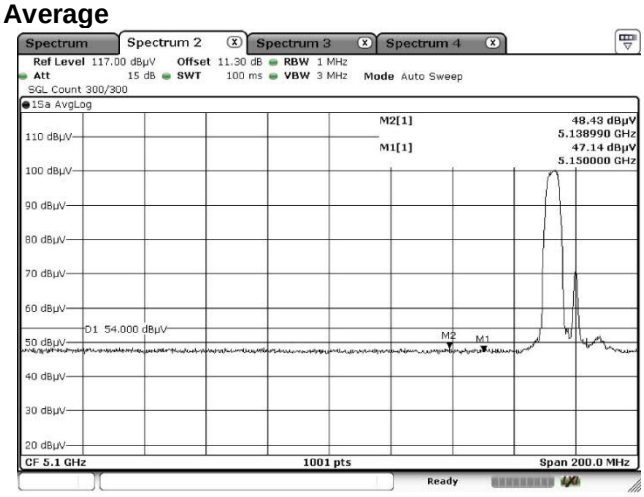


[IEEE802.11ax_HE20_52-Tones]

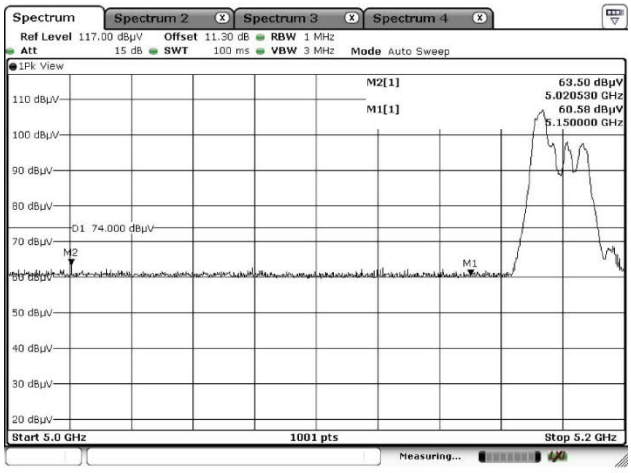
5.2 GHz Band, Channel Low
Horizontal
Peak



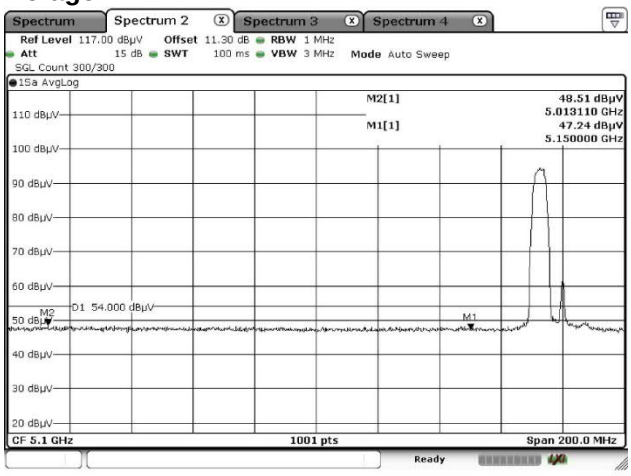
Average



Vertical
Peak

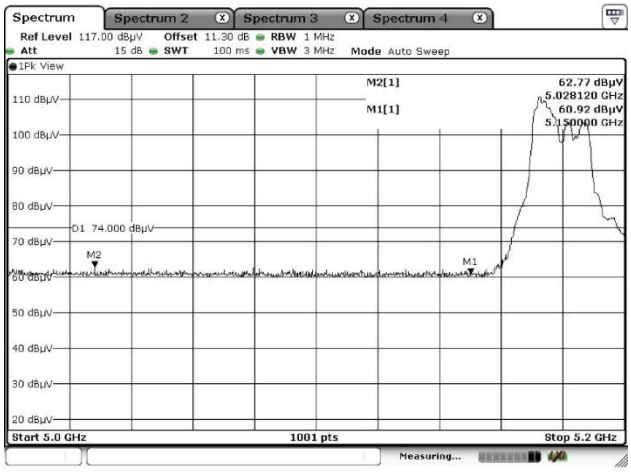


Average

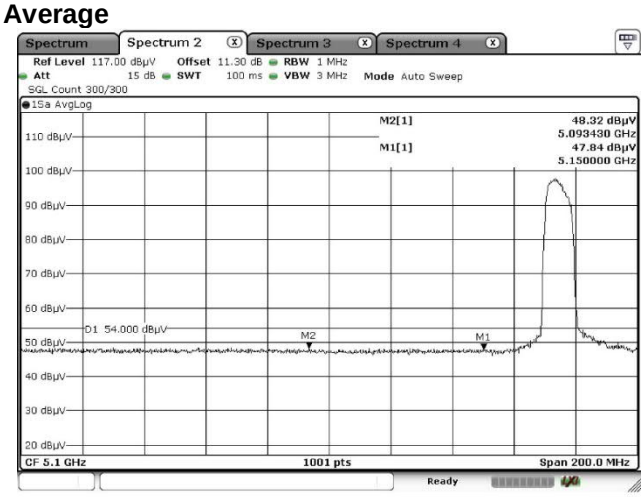


[IEEE802.11ax_HE20_106-Tones]

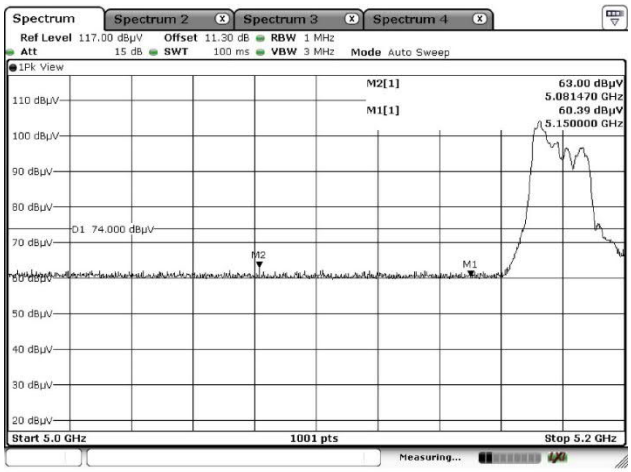
5.2 GHz Band, Channel Low
Horizontal
Peak



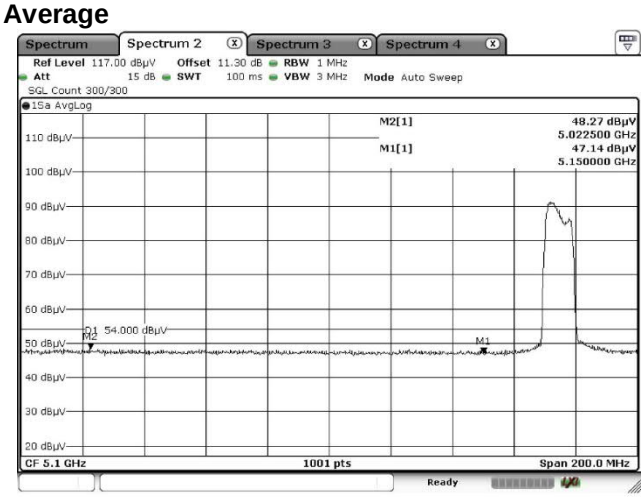
Average



Vertical
Peak

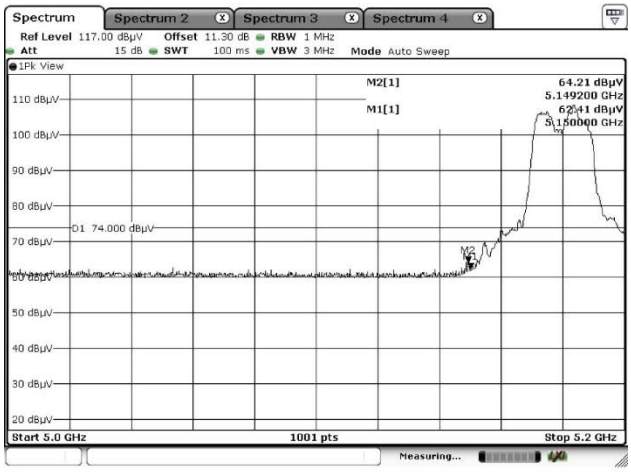


Average

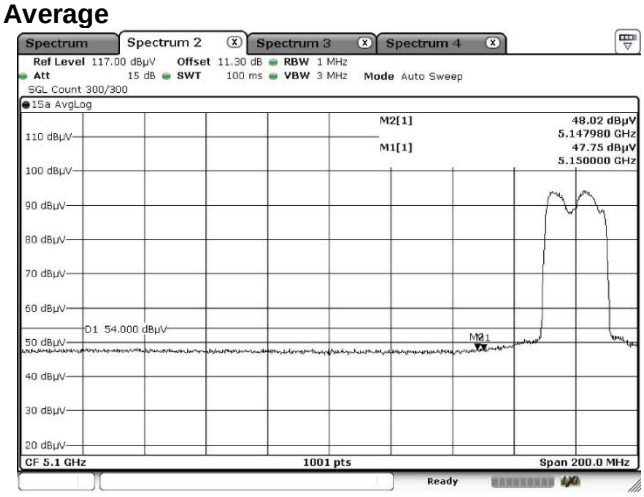


[IEEE802.11ax_HE20_242-Tones]

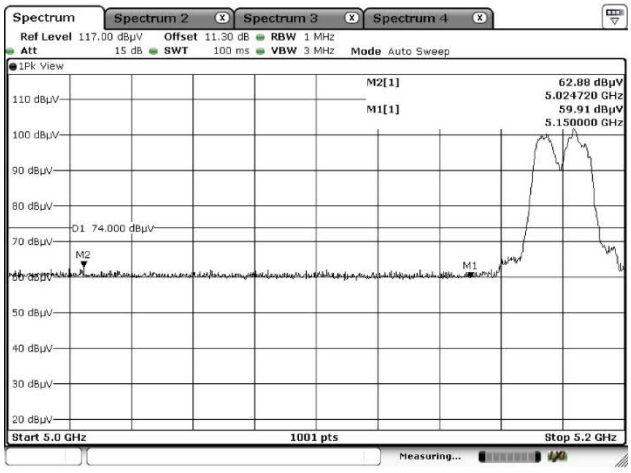
5.2 GHz Band, Channel Low
Horizontal
Peak



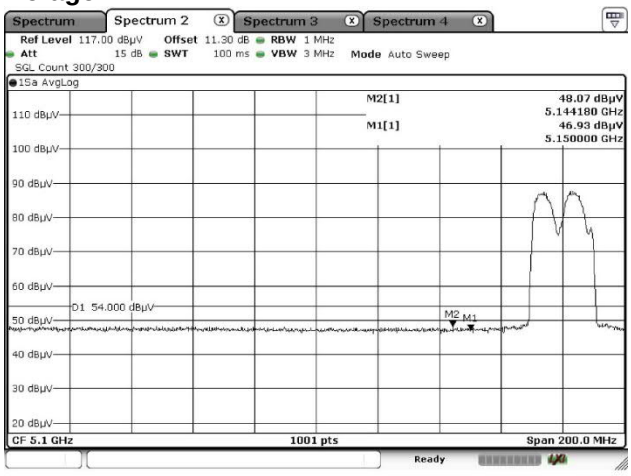
Average



Vertical
Peak

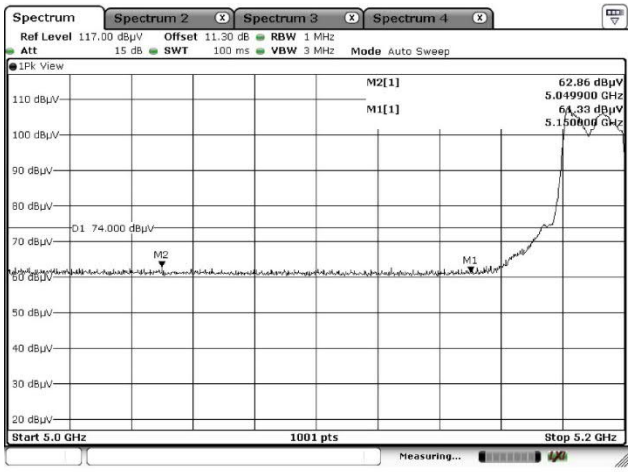


Average

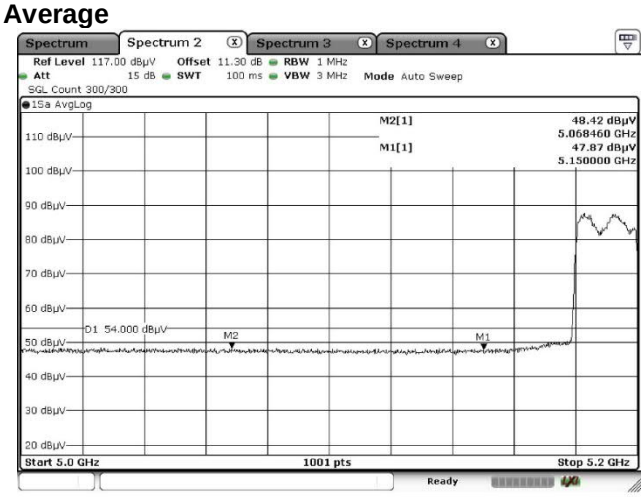


[IEEE802.11ax_HE40_484-Tones]

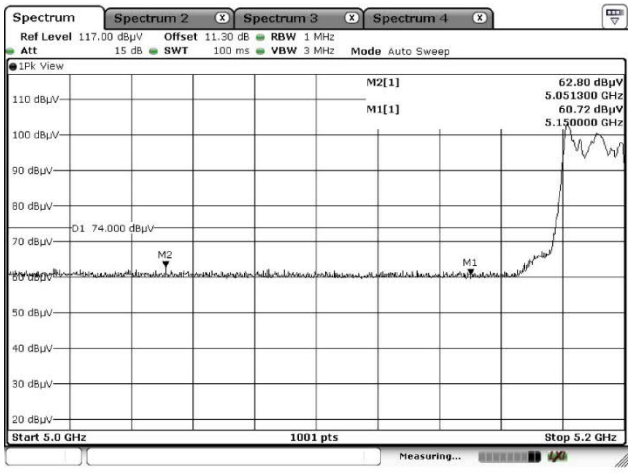
5.2 GHz Band, Channel Low
Horizontal
Peak



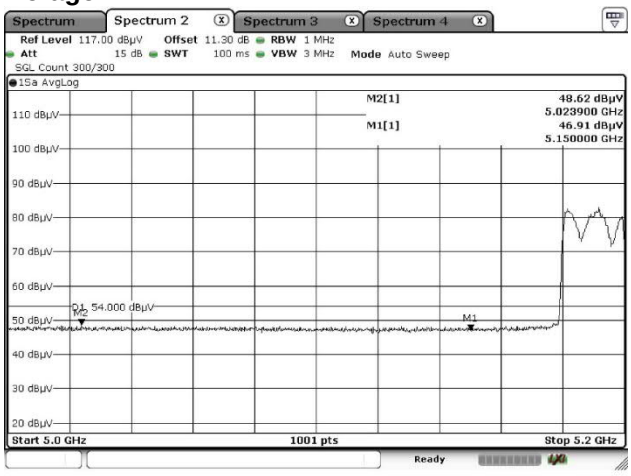
Average



Vertical
Peak

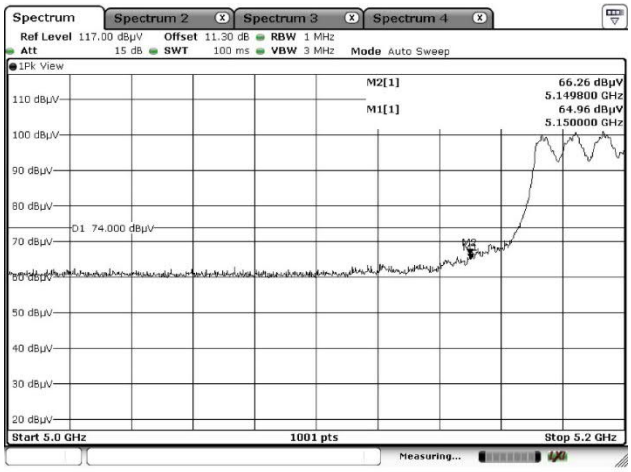


Average

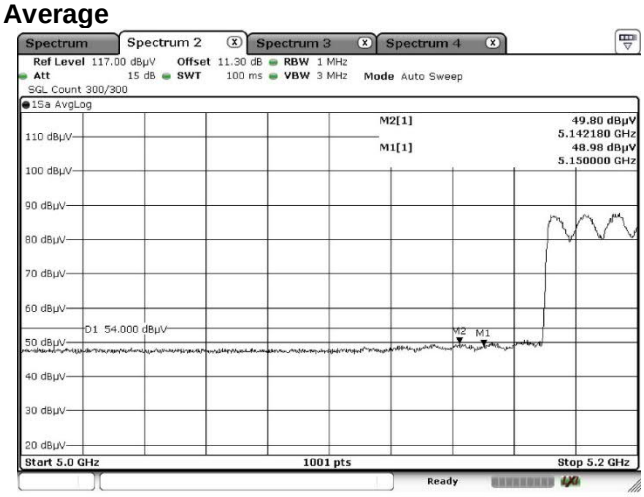


[IEEE802.11ax_HE80_996-Tones]

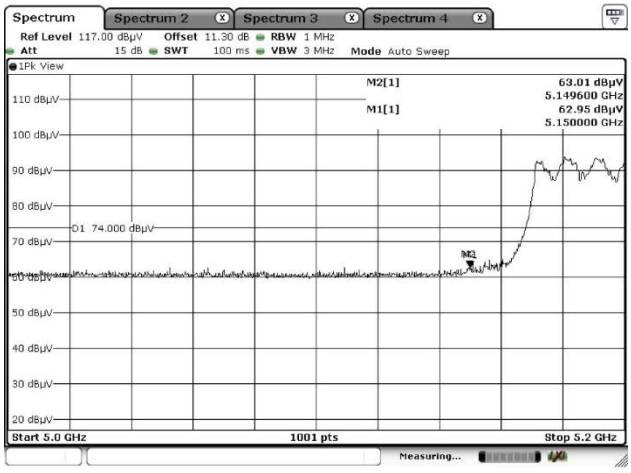
5.2 GHz Band, Channel Low
Horizontal
Peak



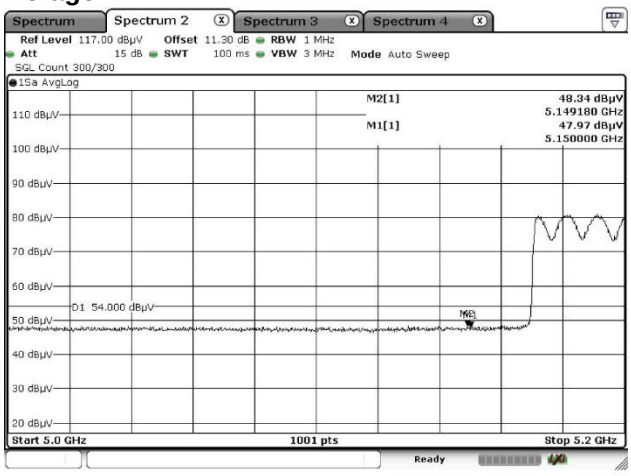
Average



Vertical
Peak

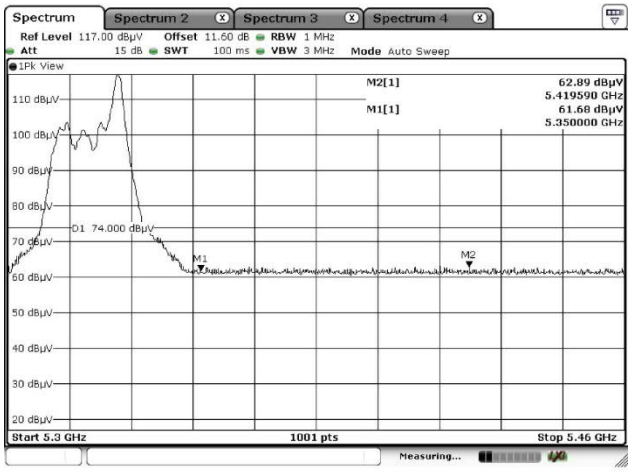


Average

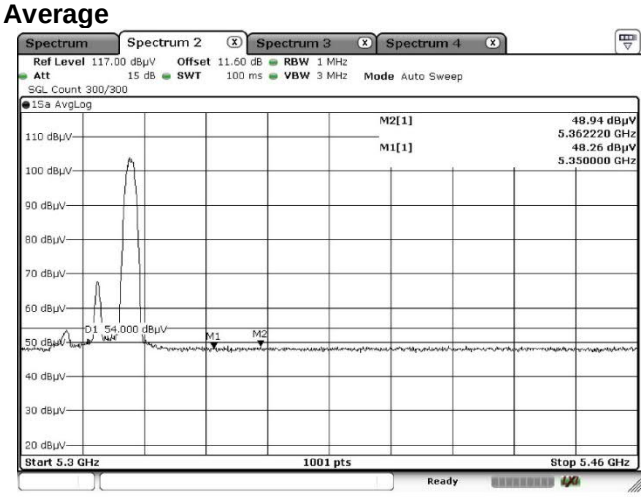


[IEEE802.11ax_HE20_26-Tones]

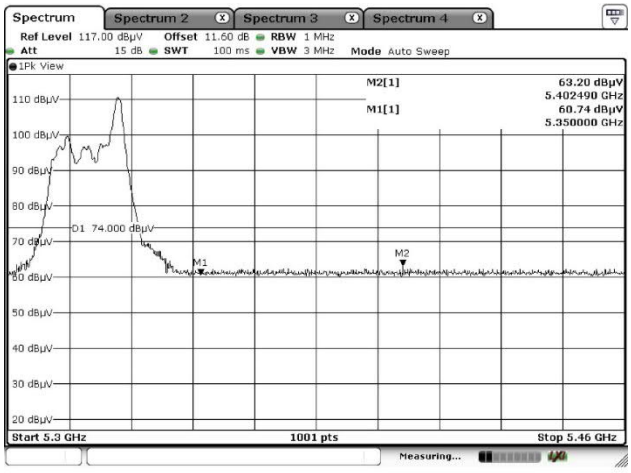
5.3 GHz Band, Channel High
Horizontal
Peak



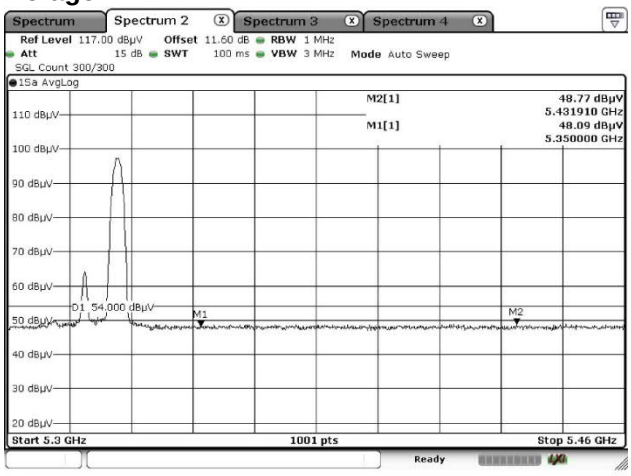
Average



Vertical
Peak

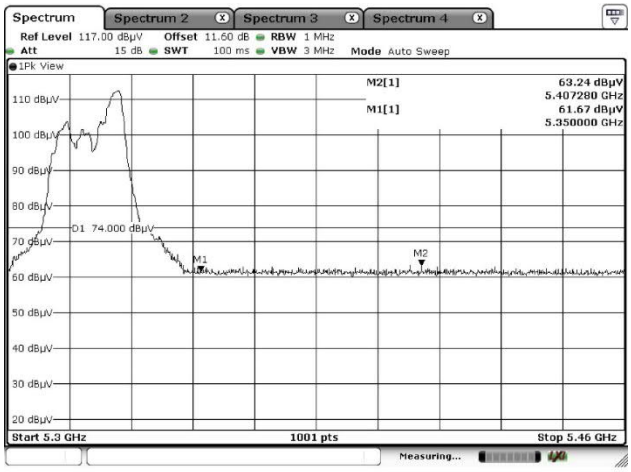


Average

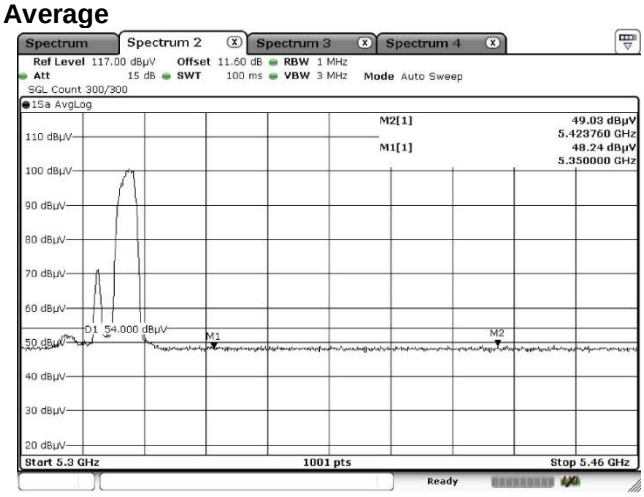


[IEEE802.11ax_HE20_52-Tones]

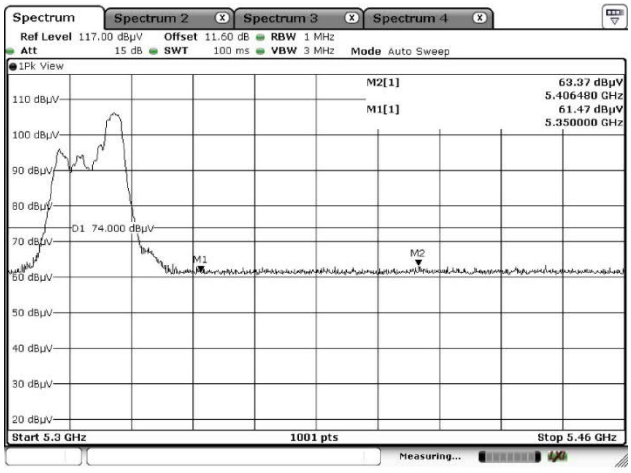
5.3 GHz Band, Channel High
Horizontal
Peak



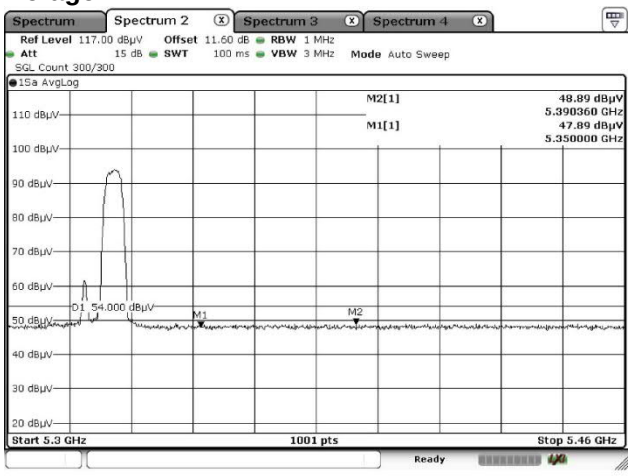
Average



Vertical
Peak

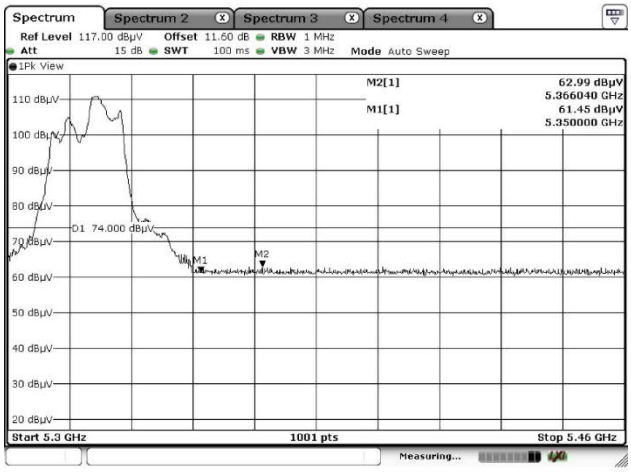


Average

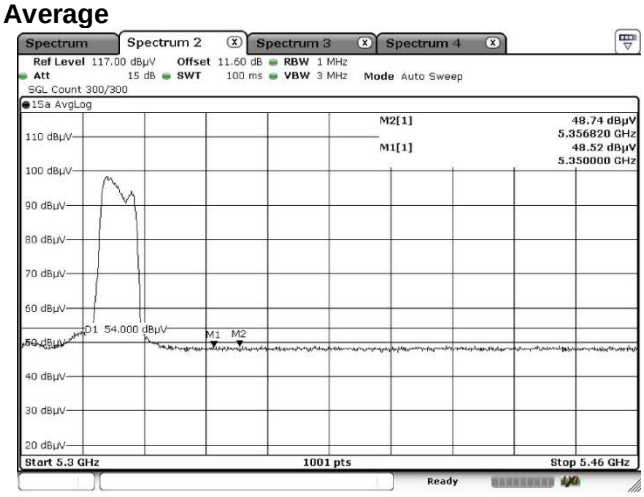


[IEEE802.11ax_HE20_106-Tones]

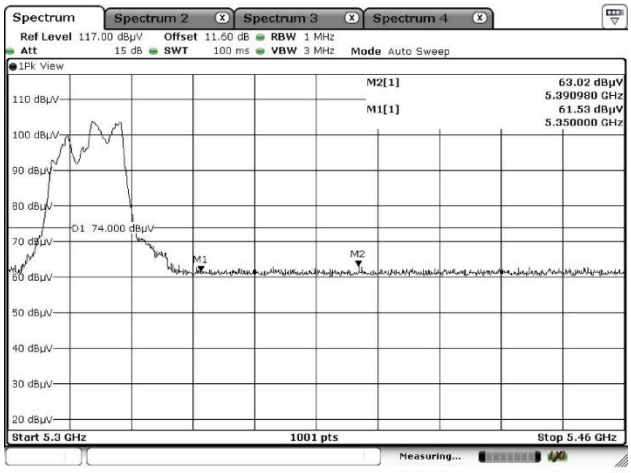
5.3 GHz Band, Channel High
Horizontal
Peak



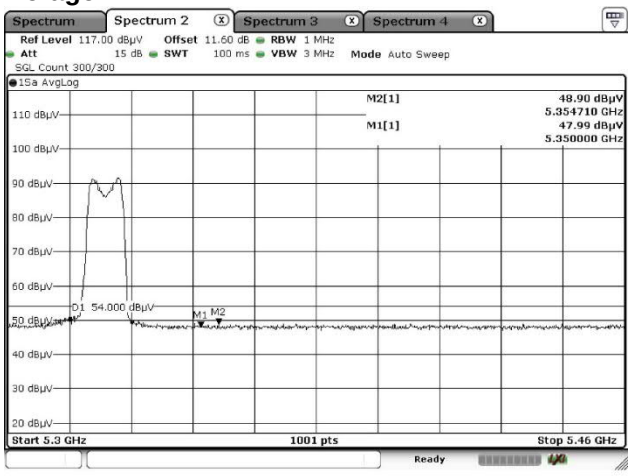
Average



Vertical
Peak

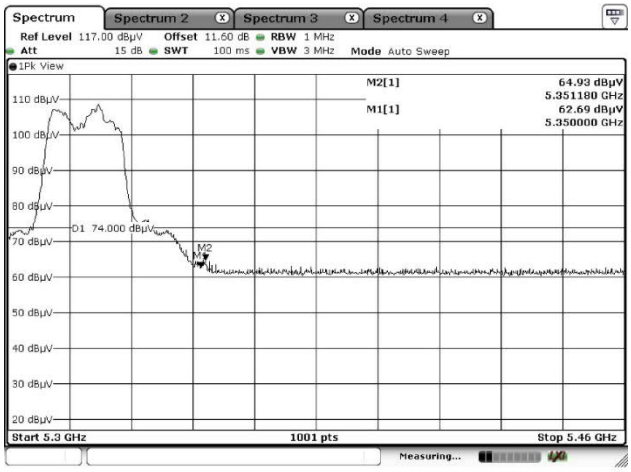


Average

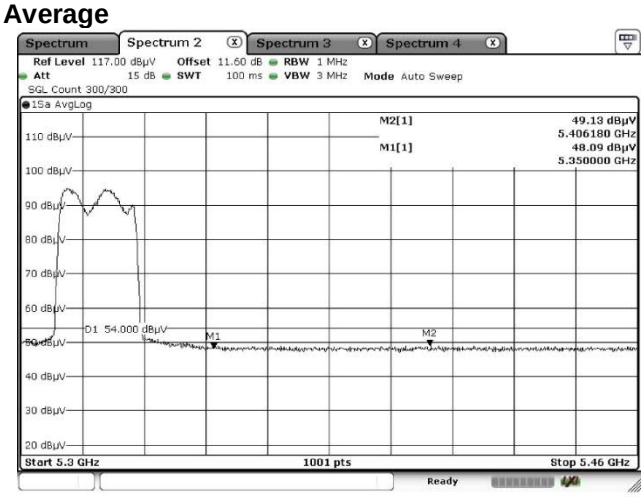


[IEEE802.11ax_HE20_242-Tones]

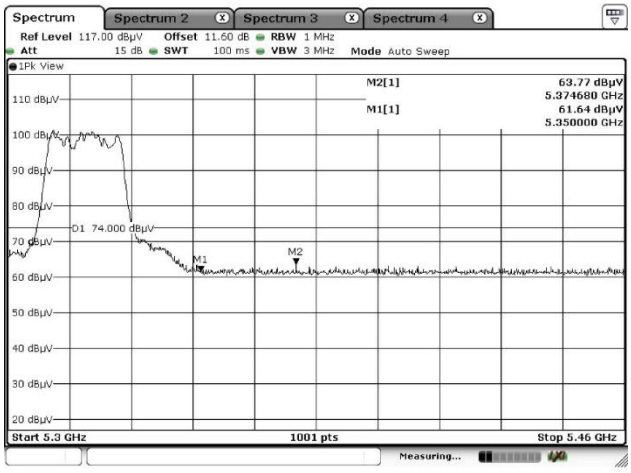
5.3 GHz Band, Channel High
Horizontal
Peak



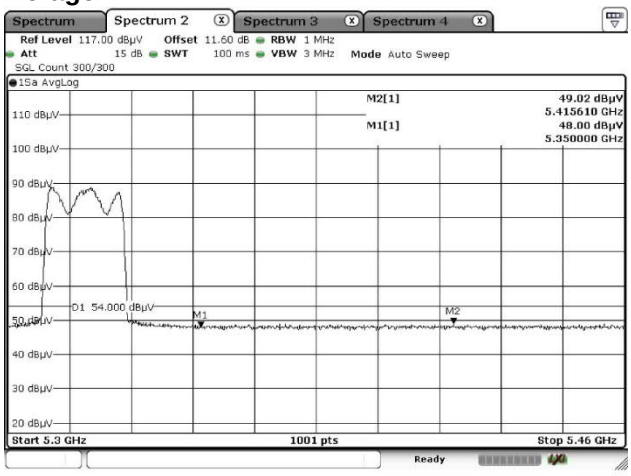
Average



Vertical
Peak



Average

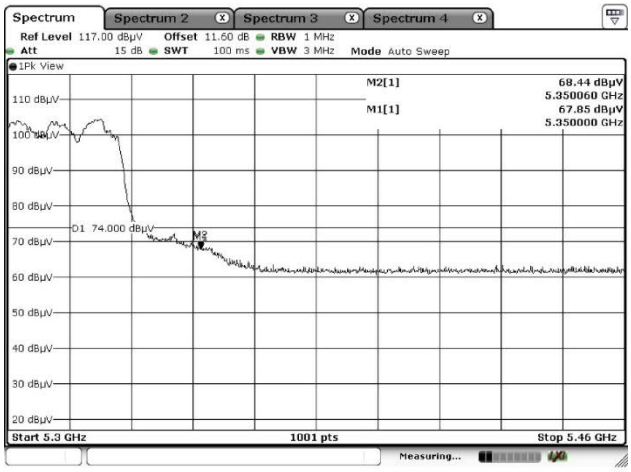


[IEEE802.11ax_HE40_484-Tones]

5.3 GHz Band, Channel High

Horizontal

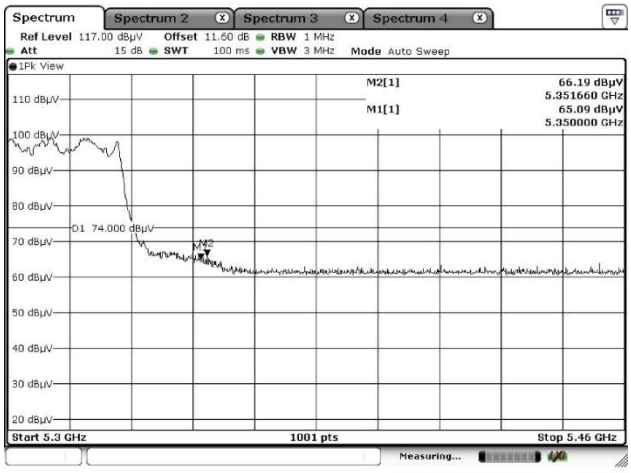
Peak



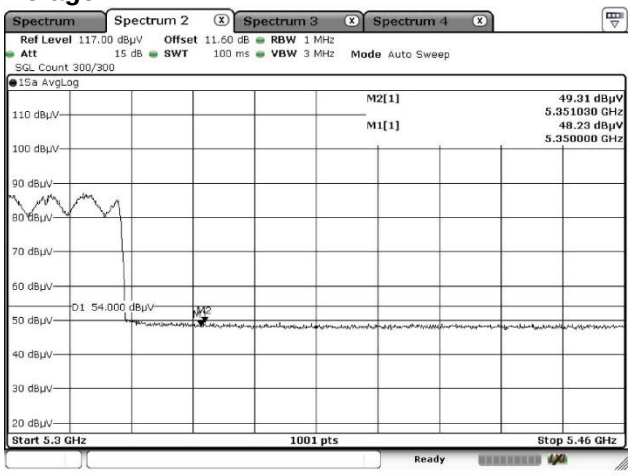
Average

Vertical

Peak

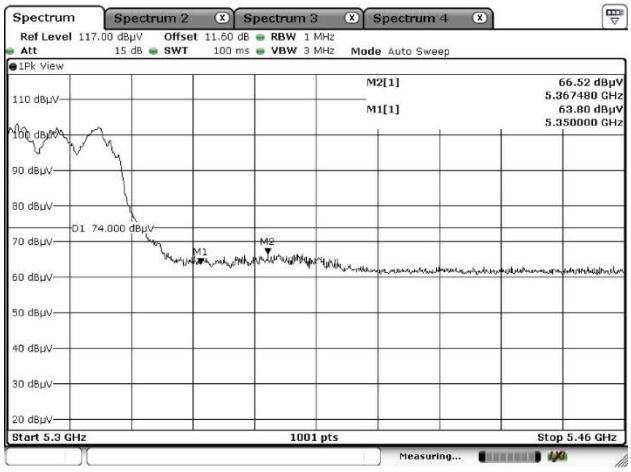


Average

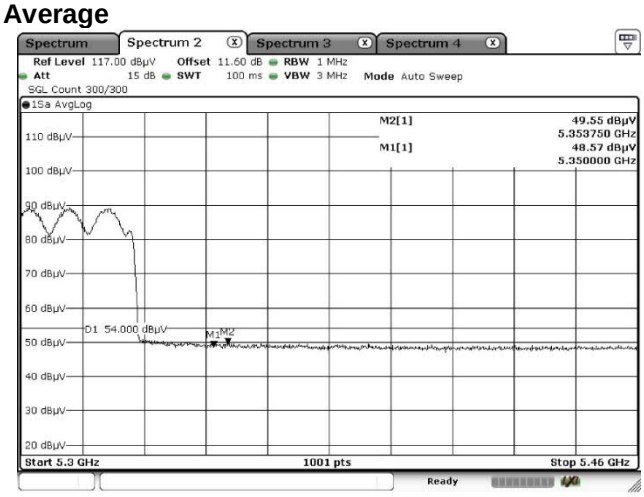


[IEEE802.11ax_HE80_996-Tones]

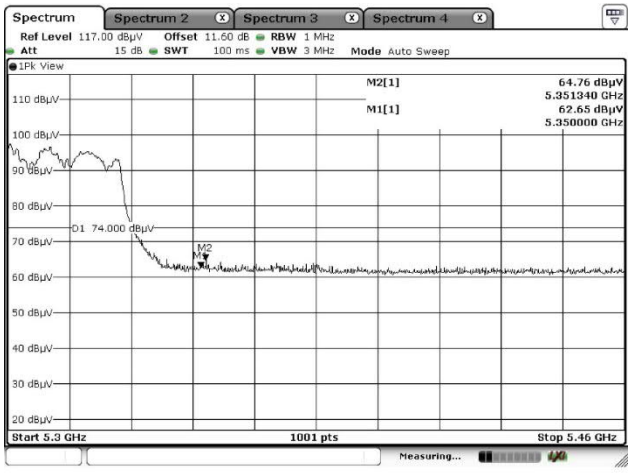
5.3 GHz Band, Channel High
Horizontal
Peak



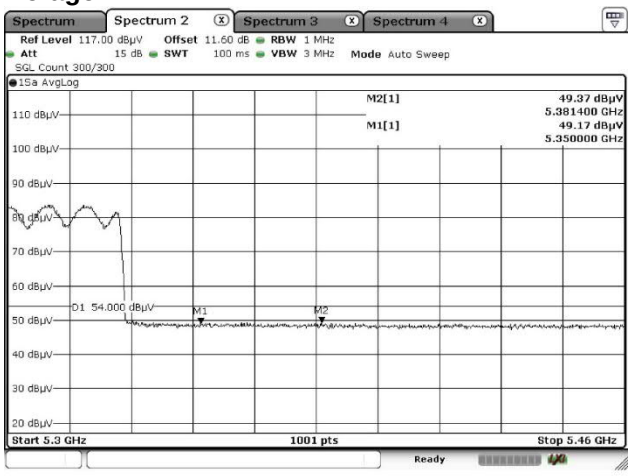
Average



Vertical
Peak

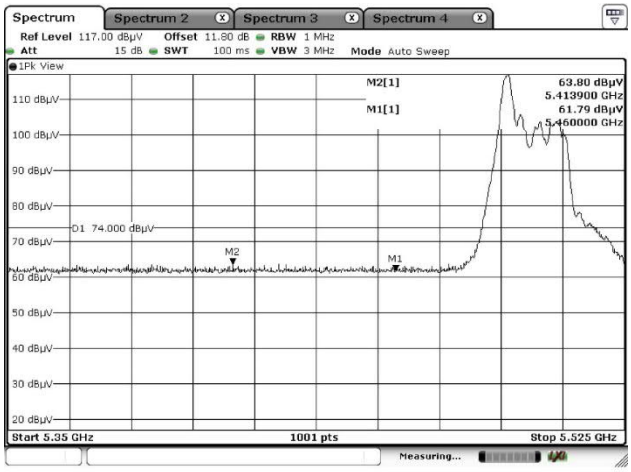


Average

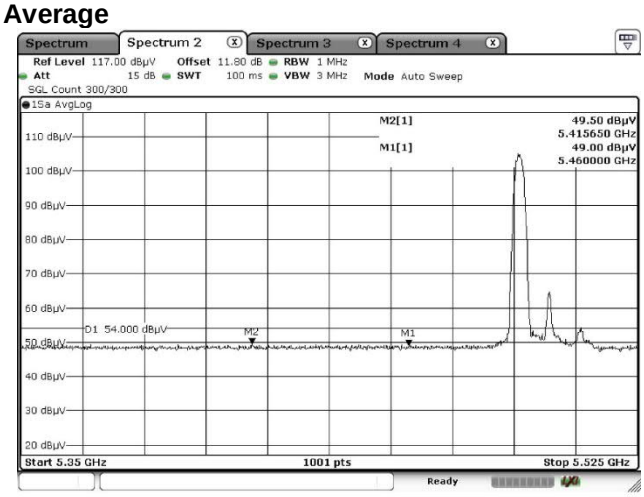


[IEEE802.11ax_HE20_26-Tones]

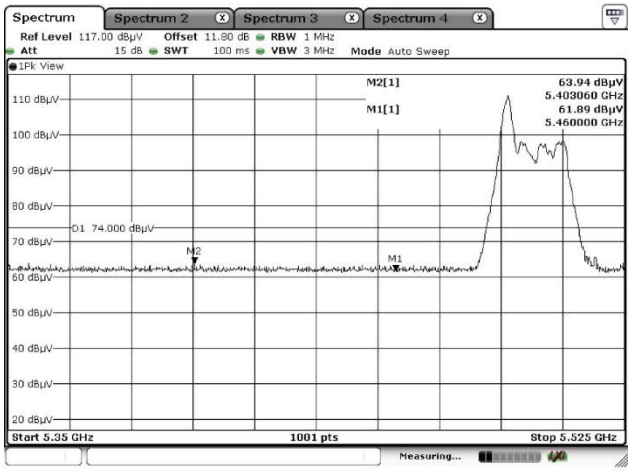
5.6 GHz Band, Channel Low
Horizontal
Peak



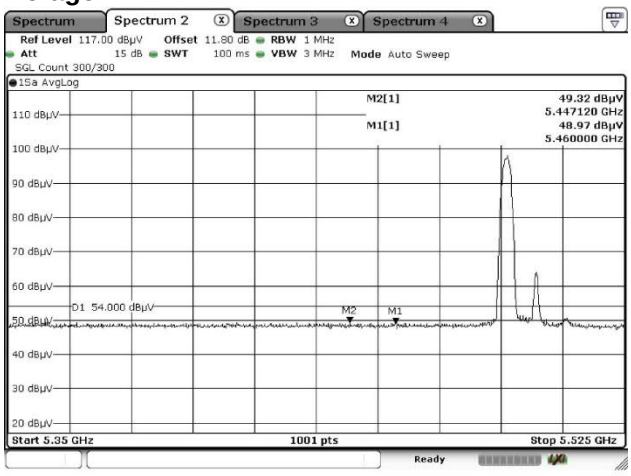
Average



Vertical
Peak

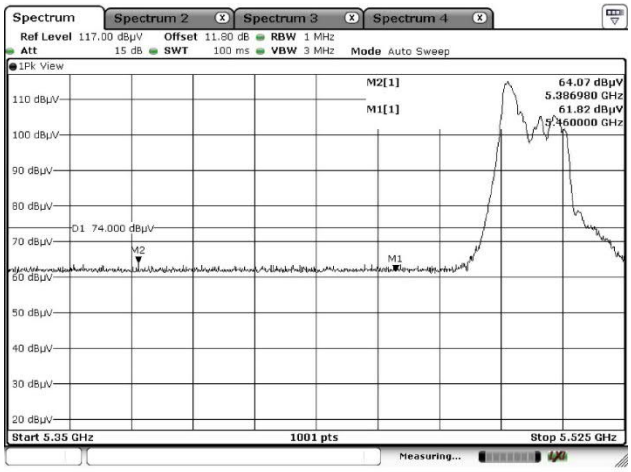


Average

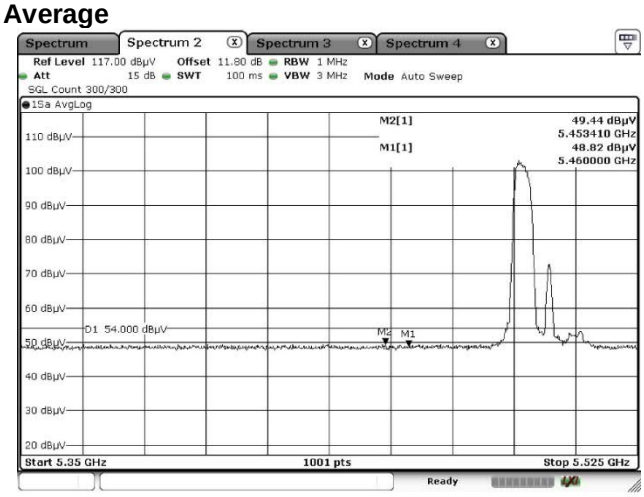


[IEEE802.11ax_HE20_52-Tones]

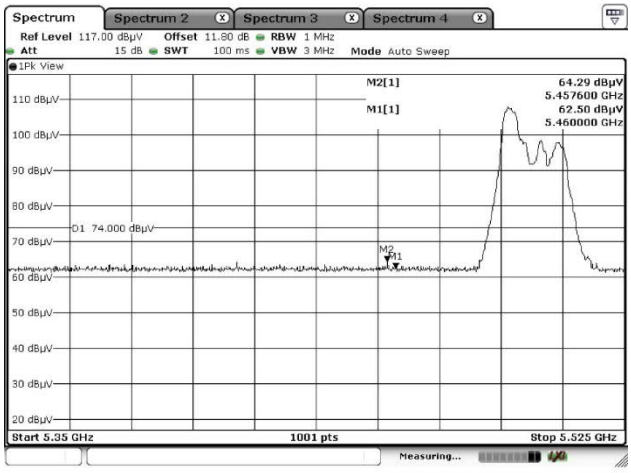
5.6 GHz Band, Channel Low
Horizontal
Peak



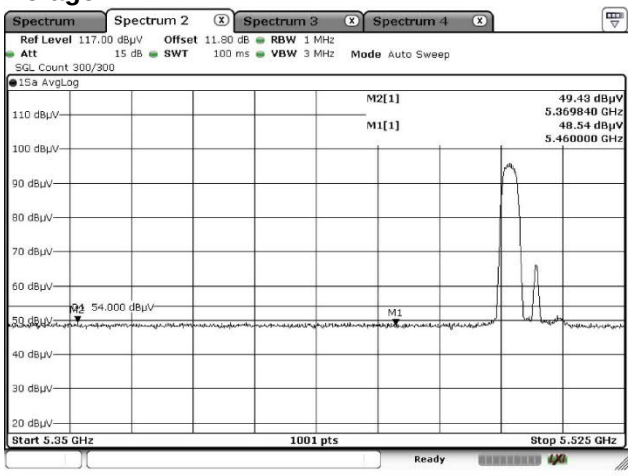
Average



Vertical
Peak



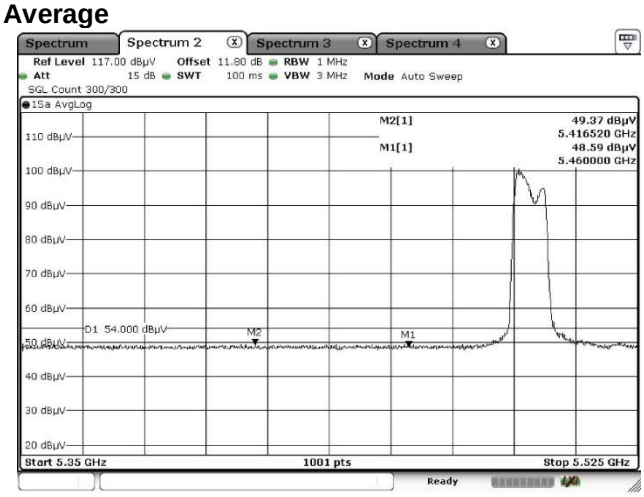
Average



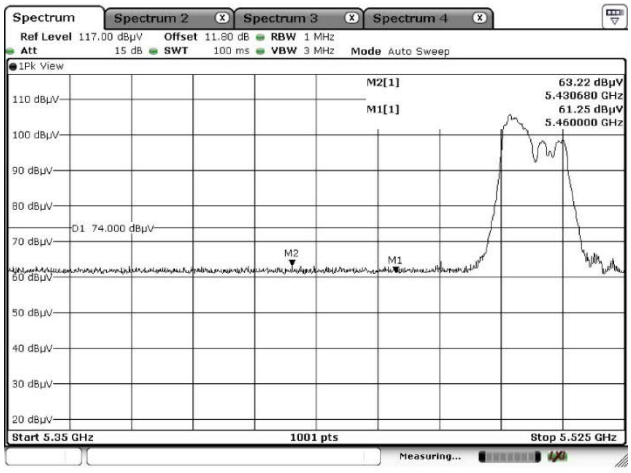
[IEEE802.11ax_HE20_106-Tones]

5.6 GHz Band, Channel Low
Horizontal
Peak

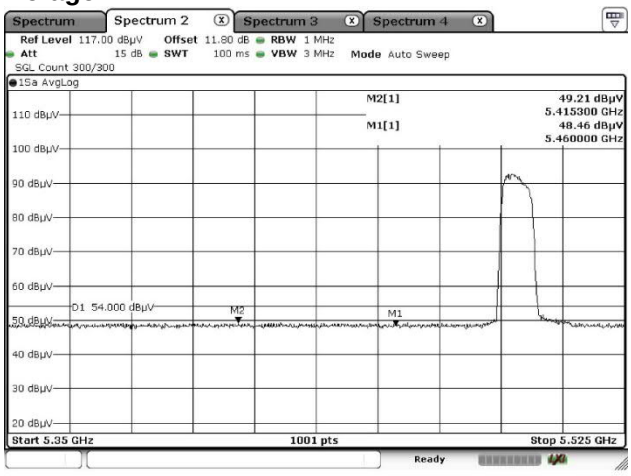
Average



Vertical
Peak

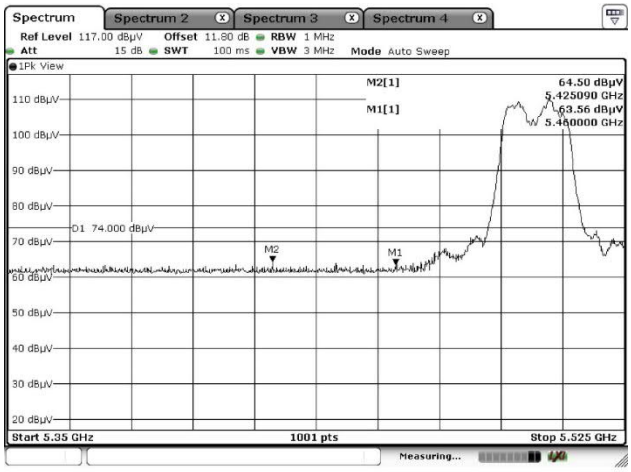


Average

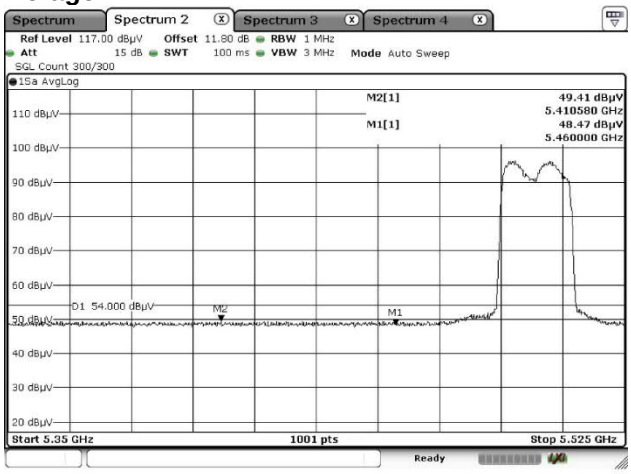


[IEEE802.11ax_HE20_242-Tones]

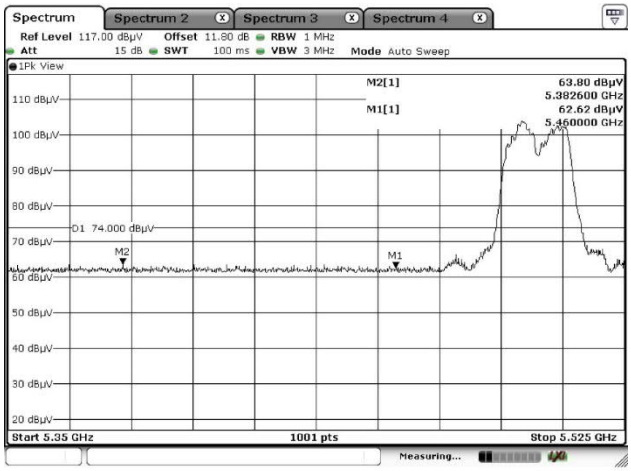
5.6 GHz Band, Channel Low
Horizontal
Peak



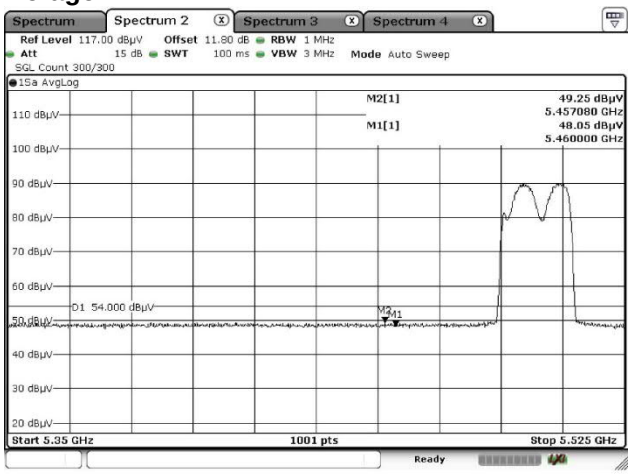
Average



Vertical
Peak

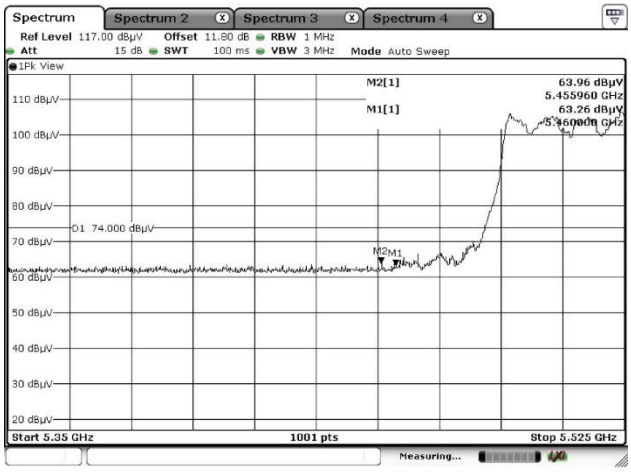


Average

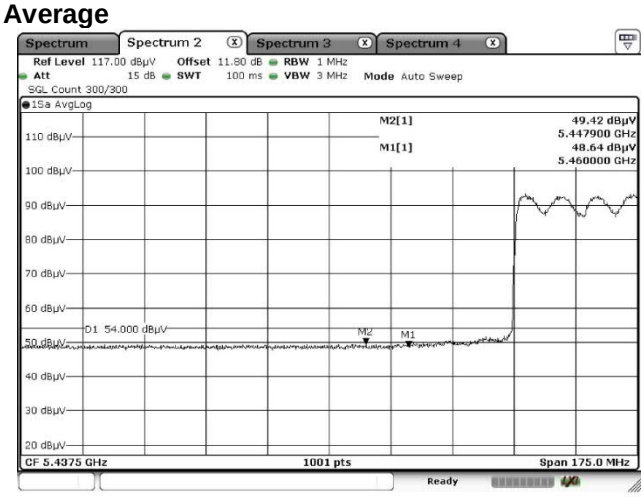


[IEEE802.11ax_HE40_484-Tones]

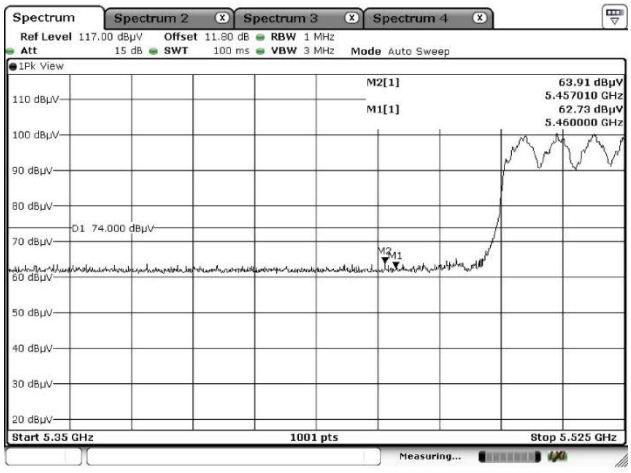
5.6 GHz Band, Channel Low
Horizontal
Peak



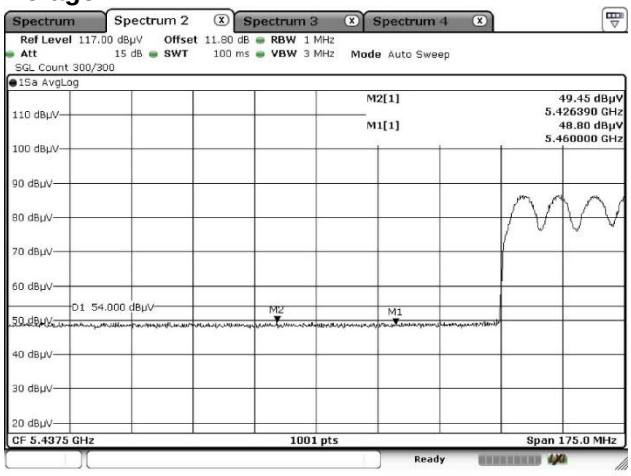
Average



Vertical
Peak

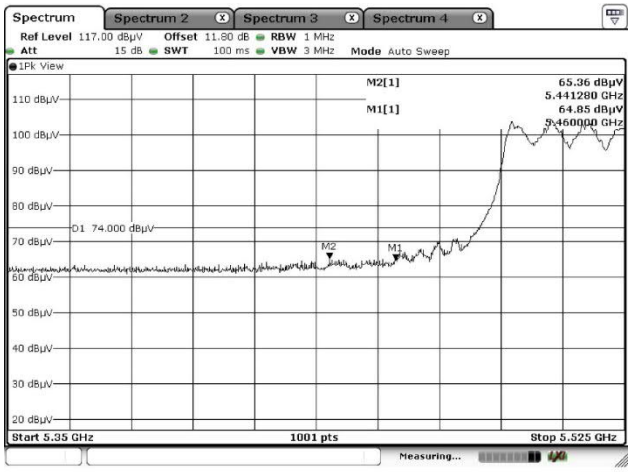


Average

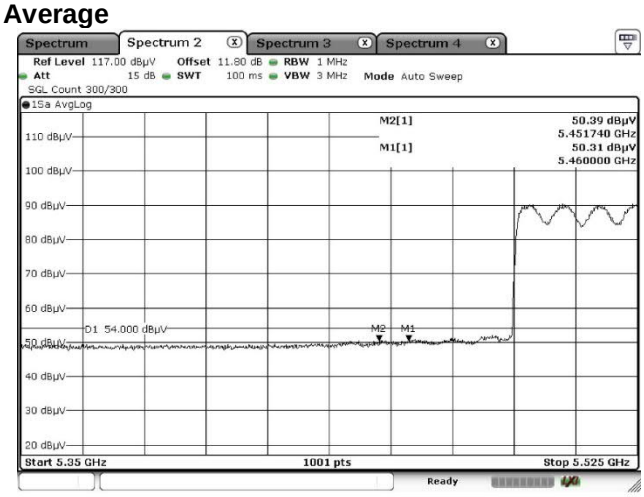


[IEEE802.11ax_HE80_996-Tones]

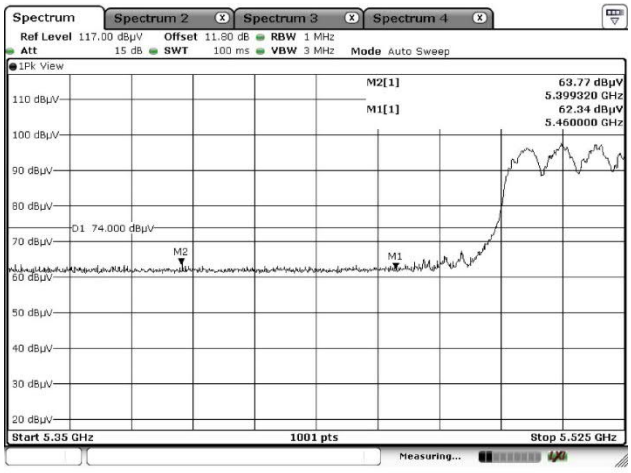
5.6 GHz Band, Channel Low
Horizontal
Peak



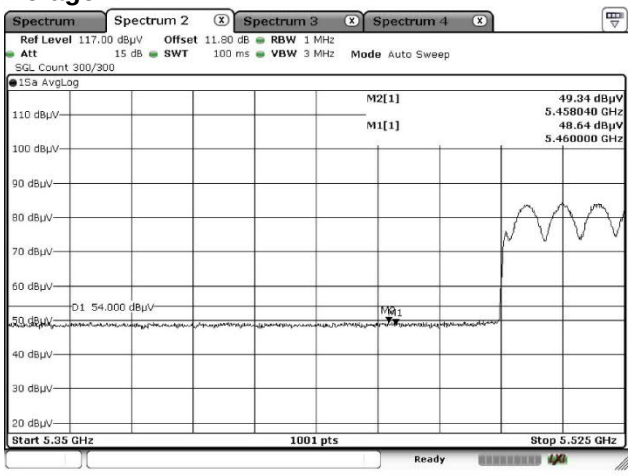
Average



Vertical
Peak



Average

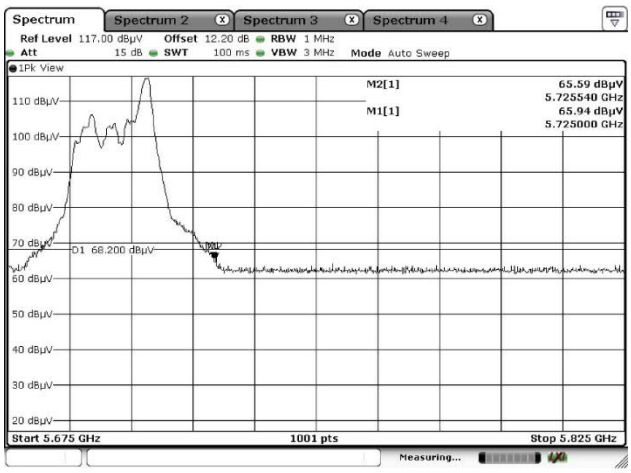


Japan

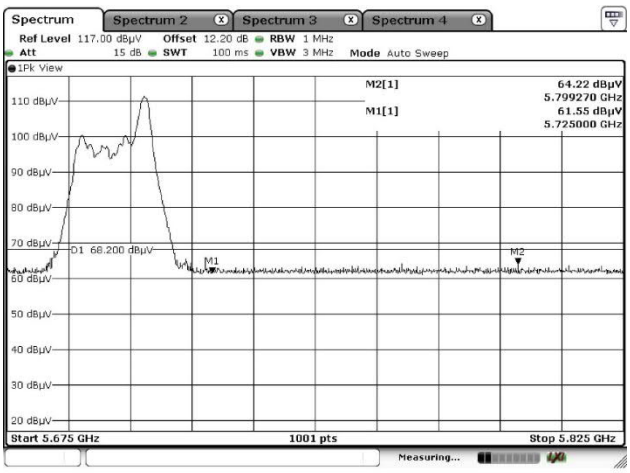
4.4.4.2 Non-Restricted Bandedge

[IEEE802.11ax_HE20_26-Tones]

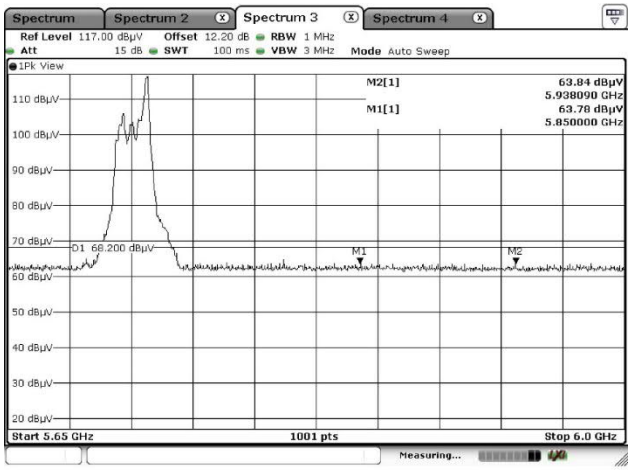
5.6 GHz Band, Channel High (140)
Peak
Horizontal



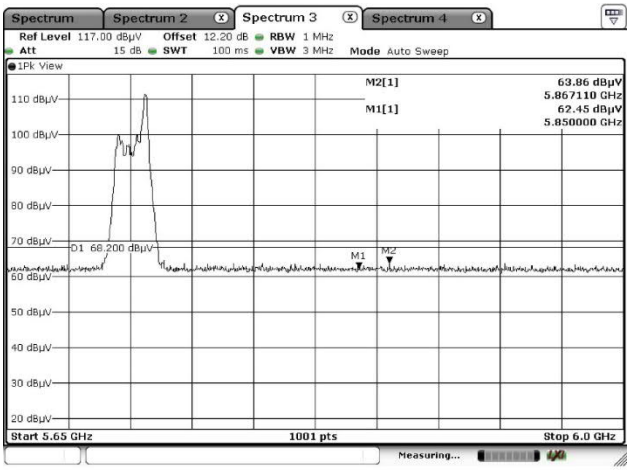
Vertical



5.6 GHz Band, Channel High (144)
Peak
Horizontal

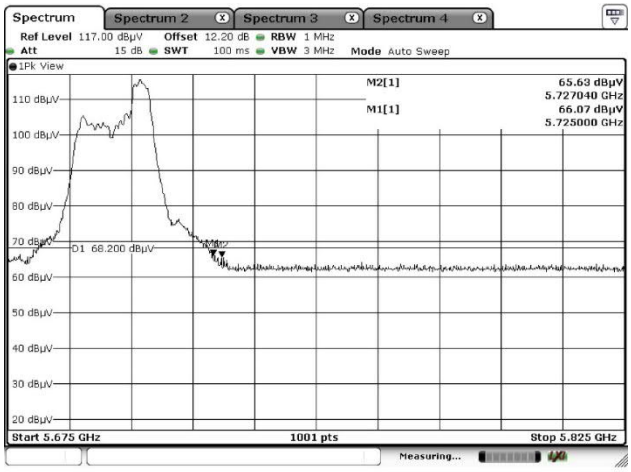


Vertical

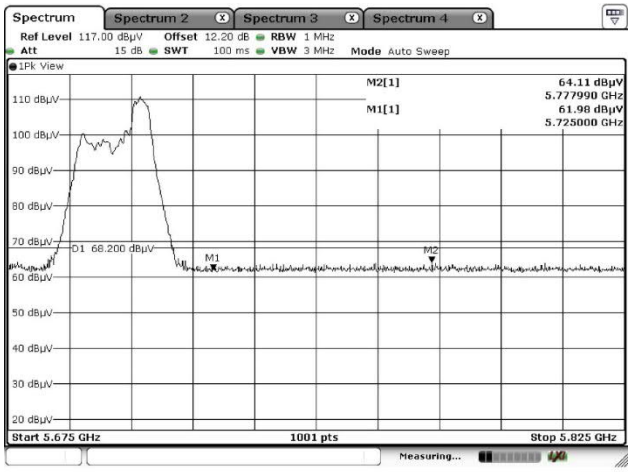


[IEEE802.11ax_HE20_52-Tones]

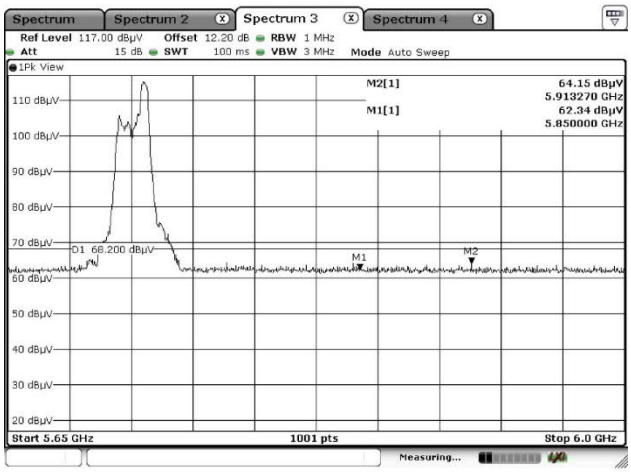
5.6 GHz Band, Channel High (140)
Peak
Horizontal



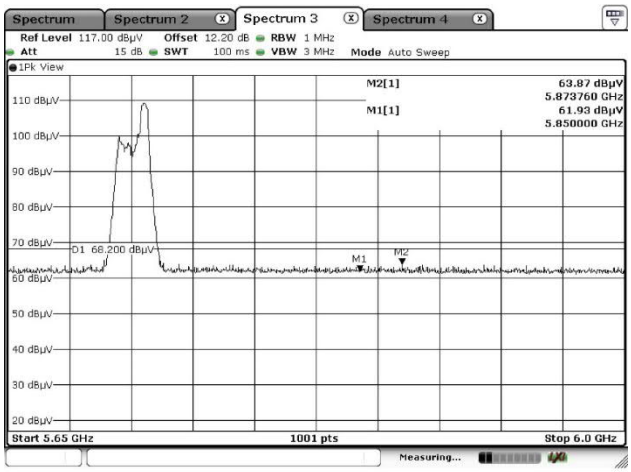
Vertical



5.6 GHz Band, Channel High (144)
Peak
Horizontal

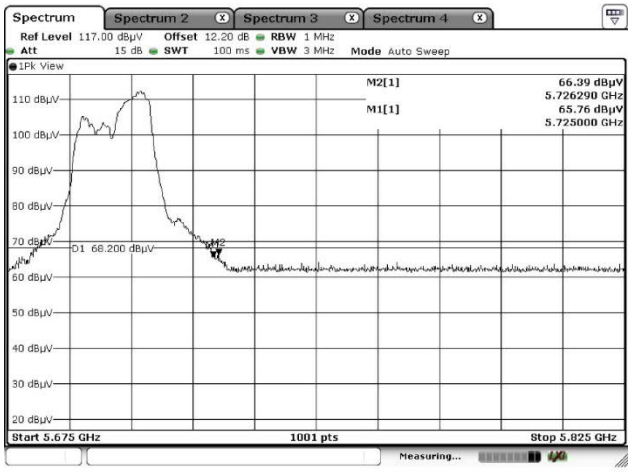


Vertical

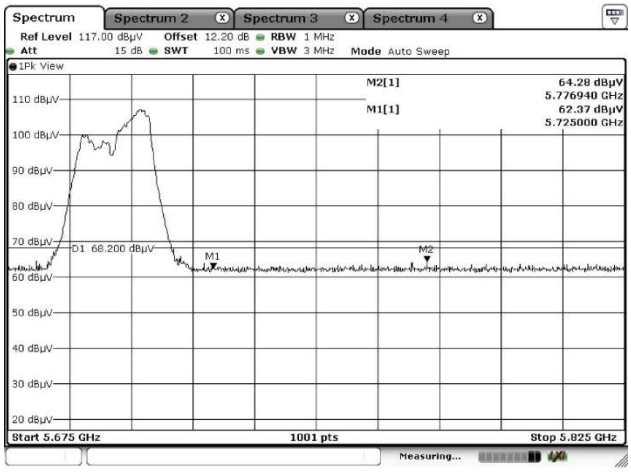


[IEEE802.11ax_HE20_106-Tones]

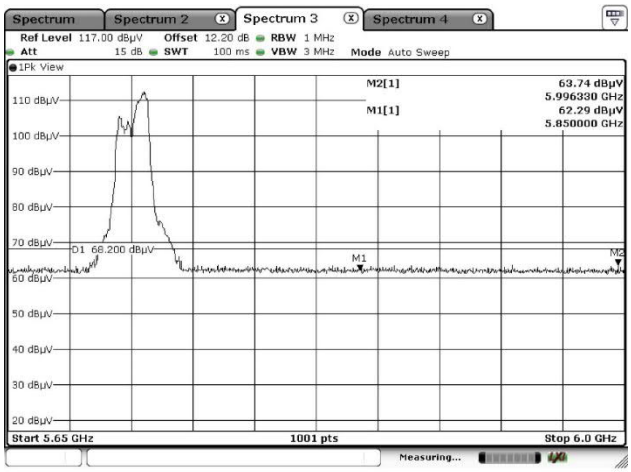
5.6 GHz Band, Channel High (140)
Peak
Horizontal



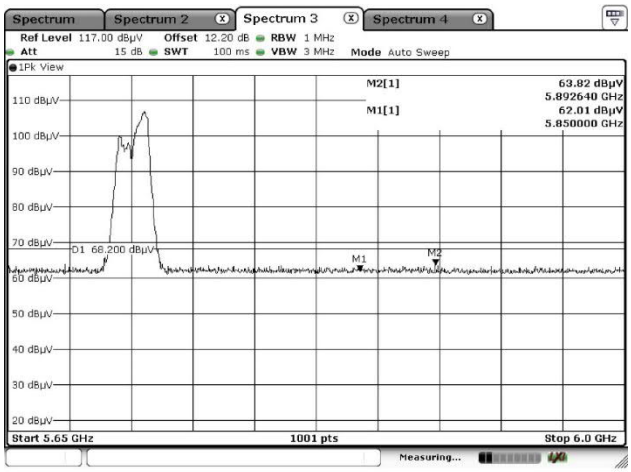
Vertical



5.6 GHz Band, Channel High (144)
Peak
Horizontal

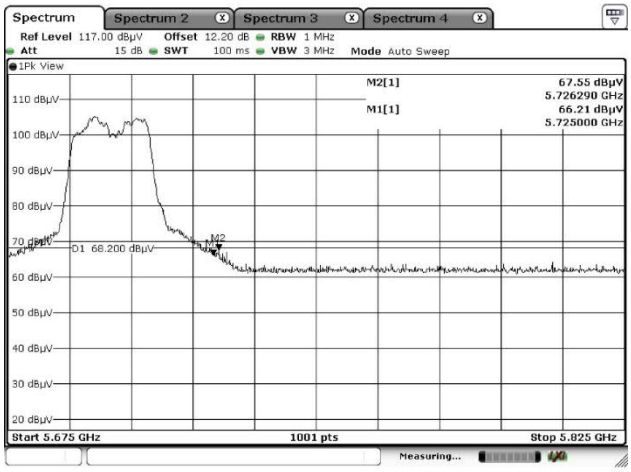


Vertical

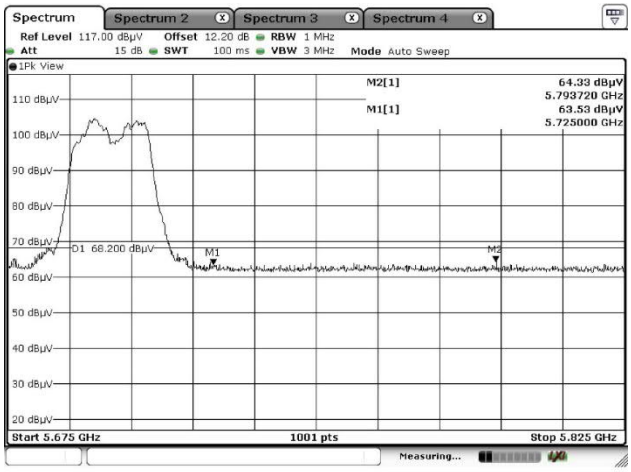


[IEEE802.11ax_HE20_242-Tones]

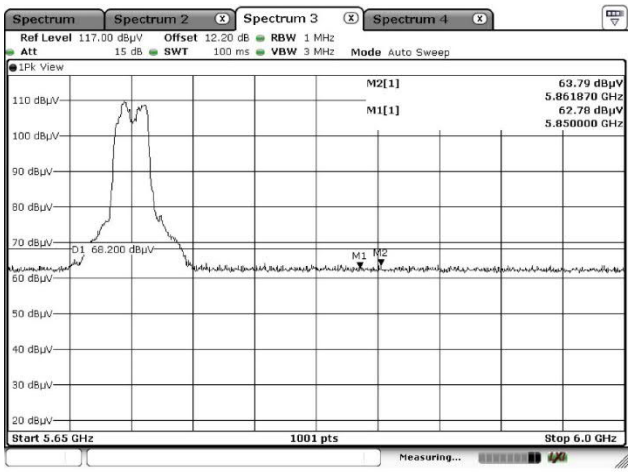
5.6 GHz Band, Channel High (140)
Peak
Horizontal



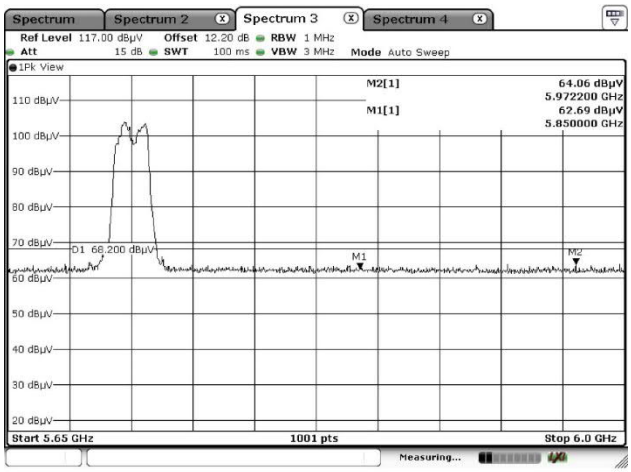
Vertical



5.6 GHz Band, Channel High (144)
Peak
Horizontal



Vertical



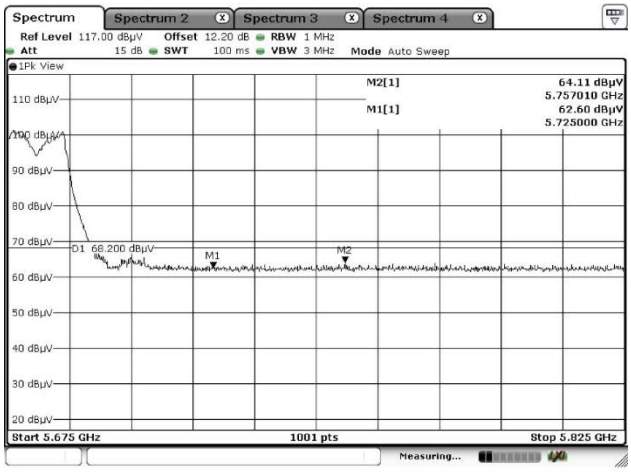
Japan

[IEEE802.11ax_HE40_484-Tones]

5.6 GHz Band, Channel High (134)
Peak

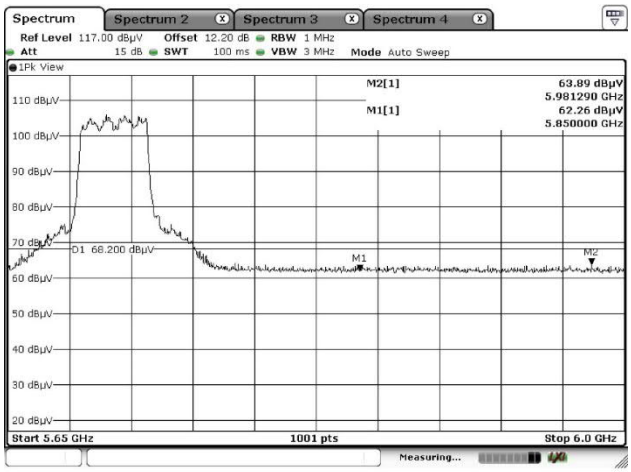
Horizontal

Vertical

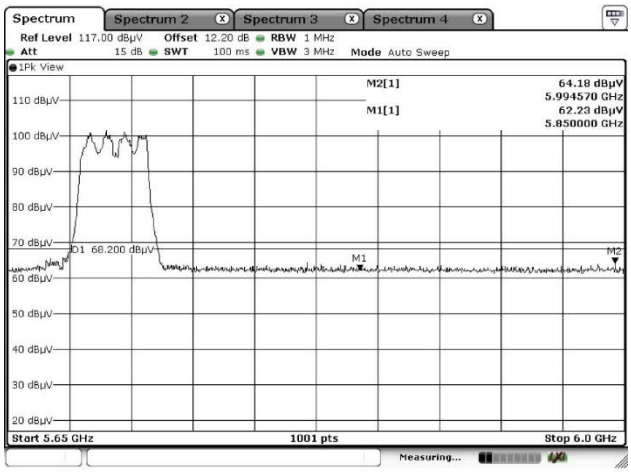


5.6 GHz Band, Channel High (142)
Peak

Horizontal



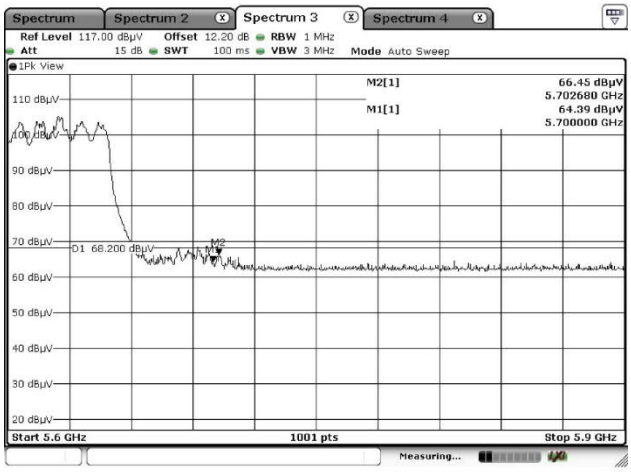
Vertical



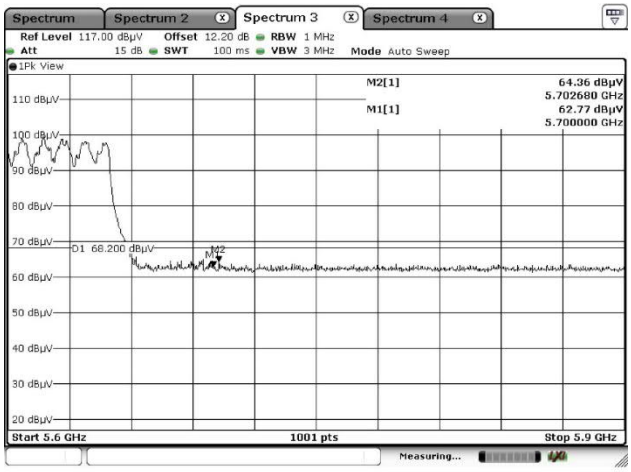
Japan

[IEEE802.11ax_HE80_996-Tones]

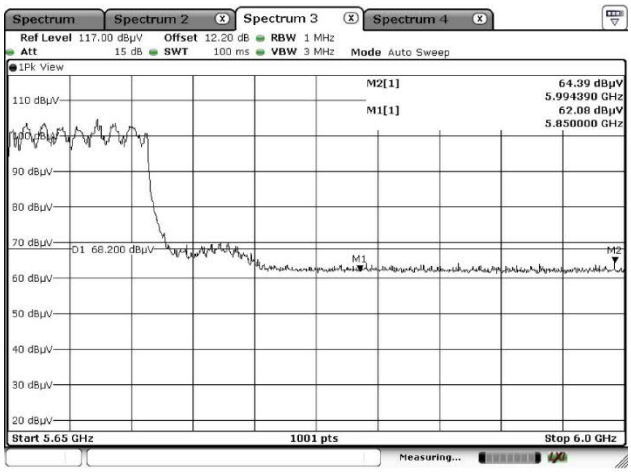
5.6 GHz Band, Channel High (122)
Peak
Horizontal



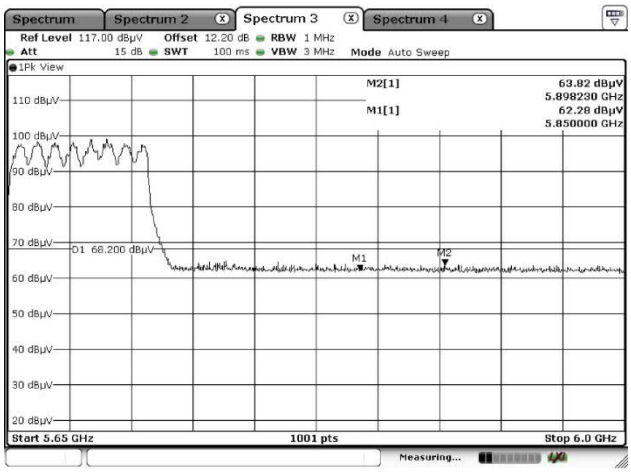
Vertical



5.6 GHz Band, Channel High (138)
Peak
Horizontal



Vertical



Japan

4.4.4.3 Radiated Emissions

Date	:	15-July-2023			
Temperature	:	23.7 [˚C]			
Humidity	:	75.9 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Chiaki Kanno

Date	:	18-July-2023			
Temperature	:	23.3 [˚C]			
Humidity	:	74.3 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Chiaki Kanno

Date	:	19-July-2023			
Temperature	:	23.7 [˚C]			
Humidity	:	76.0 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Tadahiro Seino

[IEEE802.11ax]
(5.2 GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBµV)	C.F (dB)	DCF (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ax (HE20)	36	5180	10343.00	H	PK	46.0	12.0		58.0	68.2	10.2
			10343.00	V	PK	45.9	12.0		57.9	68.2	10.3
	40	5200	10400.00	H	PK	45.9	12.0		57.9	68.2	10.3
			10400.00	V	PK	45.6	12.0		57.6	68.2	10.6
	48	5240	10498.30	H	PK	45.2	12.3		57.5	68.2	10.7
			10498.34	V	PK	45.1	12.3		57.4	68.2	10.8

(5.3 GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBµV)	C.F (dB)	DCF (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ax (HE20)	52	5260	10504.40	H	PK	44.7	12.3		57.0	68.2	11.2
			10502.60	V	PK	44.8	12.3		57.1	68.2	11.1
	56	5280	10560.00	H	PK	44.7	12.3		57.0	68.2	11.2
			10560.00	V	PK	44.5	12.3		56.8	68.2	11.4
	64	5320	10657.70	H	PK	45.4	12.5		57.9	74.0	16.1
			10657.70	H	AV	32.9	12.5	0.000	45.4	54.0	8.6
			10657.70	V	PK	45.6	12.5		58.1	74.0	15.9
			10657.70	V	AV	32.8	12.5	0.000	45.3	54.0	8.7

(5.6 GHz Band)

Mode	Channel	Frequency (MHz)	Frequency (MHz)	ANT H/V	Detector PK/AV	Reading (dBµV)	C.F (dB)	DCF (dB)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
802.11ax (HE20)	100	5500	5461.70	H	PK	50.1	11.7		61.8	68.2	6.4
			5466.90	V	PK	50.0	11.7		61.7	68.2	6.5
			10982.50	H	PK	45.2	12.9		58.1	74.0	15.9
			10982.50	H	AV	32.9	12.9	0.000	45.8	54.0	8.2
			10982.50	V	PK	45.6	12.9		58.5	74.0	15.5
			10982.50	V	AV	32.9	12.9	0.000	45.8	54.0	8.2
	116	5580	11160.00	H	PK	46.2	13.1		59.3	74.0	14.7
			11160.00	H	AV	33.3	13.1	0.000	46.4	54.0	7.6
			11160.00	V	PK	46.0	13.1		59.1	74.0	14.9
			11160.00	V	AV	33.3	13.1	0.000	46.4	54.0	7.6
	140	5700	11417.00	H	PK	45.3	13.3		58.6	74.0	15.4
			11417.00	H	AV	32.9	13.3	0.000	46.2	54.0	7.8
			11417.00	V	PK	45.2	13.3		58.5	74.0	15.5
			11417.00	V	AV	32.9	13.3	0.000	46.2	54.0	7.8
	144	5720	11458.24	H	PK	45.9	13.3		59.2	74.0	14.8
			11458.24	H	AV	33.3	13.3	0.000	46.6	54.0	7.4
			11458.24	V	PK	45.7	13.3		59.0	74.0	15.0
			11458.24	V	AV	33.2	13.3	0.000	46.5	54.0	7.5

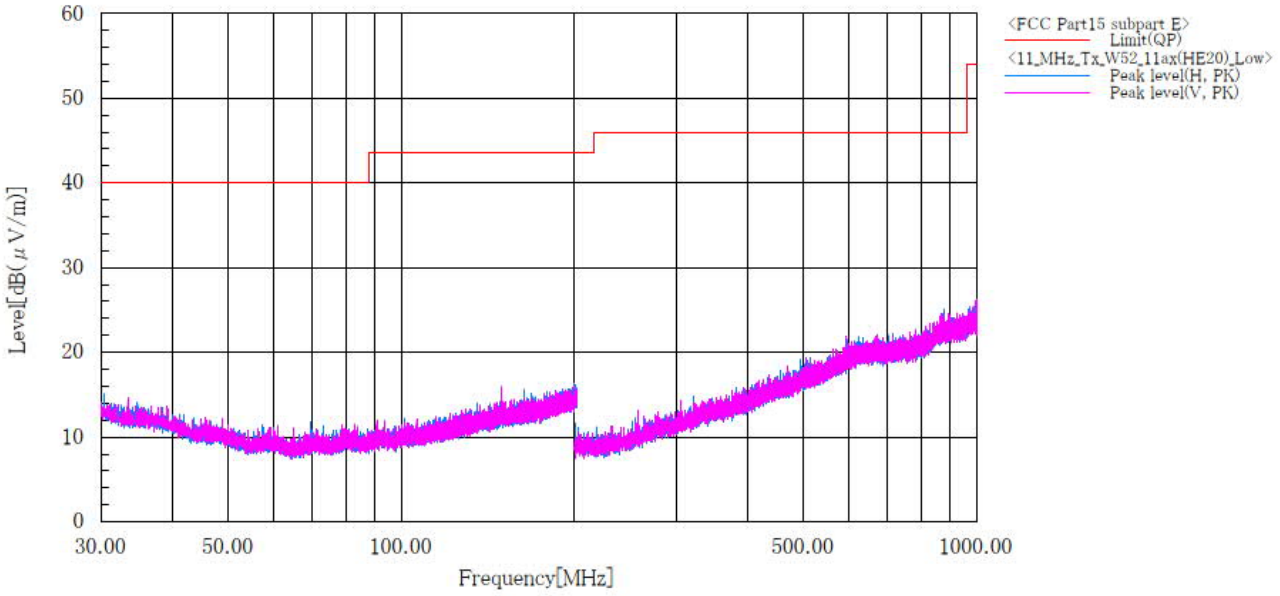
Note:
1. Emission Level (Margin) = Limit - [Reading + C.F (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 30 MHz to 1000 MHz at the 3 meters distance.
3. No emission was detected in the receive mode.

4.4.4.4 Measurement chart

Transmission mode

[11ax]
5.2 GHz Band / Channel Low
BELOW 1GHz(Worst)

Company name	: KYOCERA Corporation	Sheet No.	: 11
EUT	: Mobile Phone	Standard	: FCC Part15 subpart E
Model No.	: EB1157	Operator	: T.Seino
Serial No.	: N/A	Temp,Hum,Atm	: 23.7 [° C], 76.0 [%]
Test mode	: WLAN_W52_11ax(HE20)_Tx	Note1	: CH:36(5180MHz), 2SS, Chain:Both

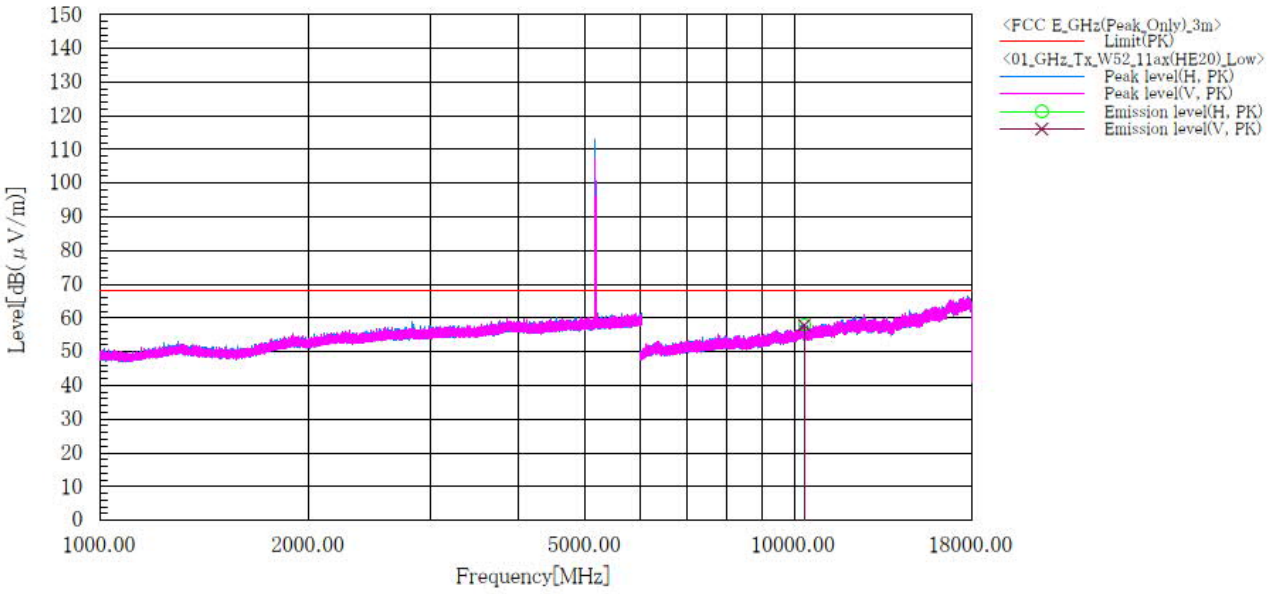


Final Result

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11ax]
5.2 GHz Band / Channel Low
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.7 [° C], 75.9 [%]
Serial No.	: N/A	Note1	: Ch:36(5180MHz), RU:26T, Index:0
Test mode	: WLAN_W52_11ax_Tx_Ch:Low	Note2	: 2SS, Chain:Both



Final Result

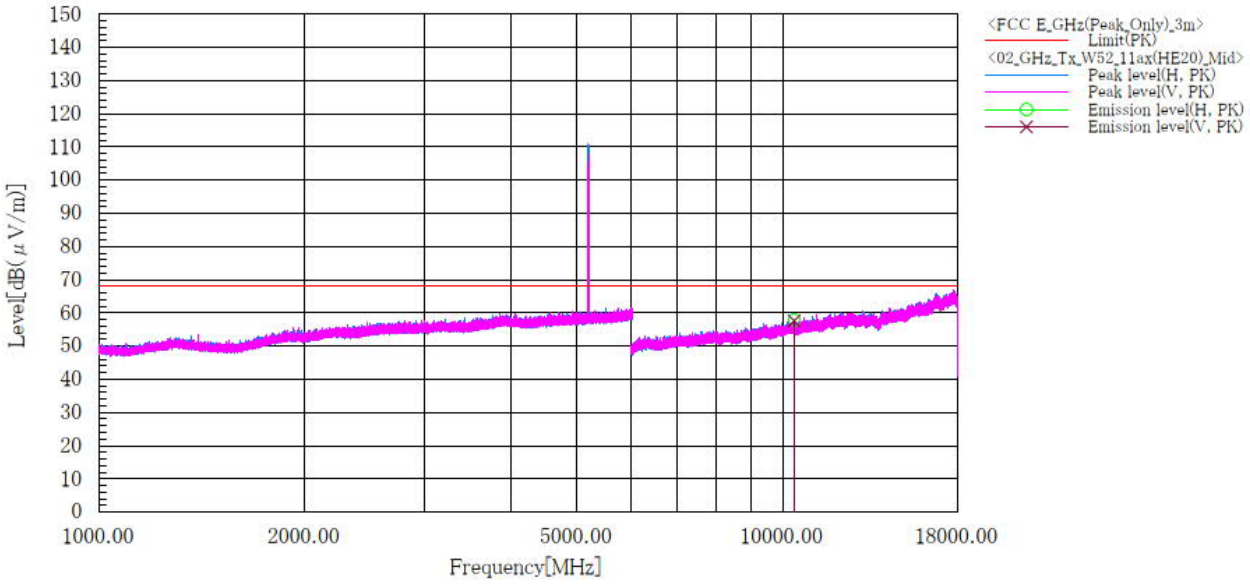
No.	Frequency [MHz]	Pol	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	10343.800	H	46.0	12.0	58.0	68.2	10.2	100.0	244.0	
2	10343.800	V	45.9	12.0	57.9	68.2	10.3	100.0	266.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

Japan

[11ax]
5.2 GHz Band / Channel Middle
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.7 [° C], 75.9 [%]
Serial No.	: N/A	Note1	: Ch:40(5200MHz), RU:26T, Index:4
Test mode	: WLAN_W52_11ax_Tx_Ch:Mid	Note2	: 2SS, Chain:Both



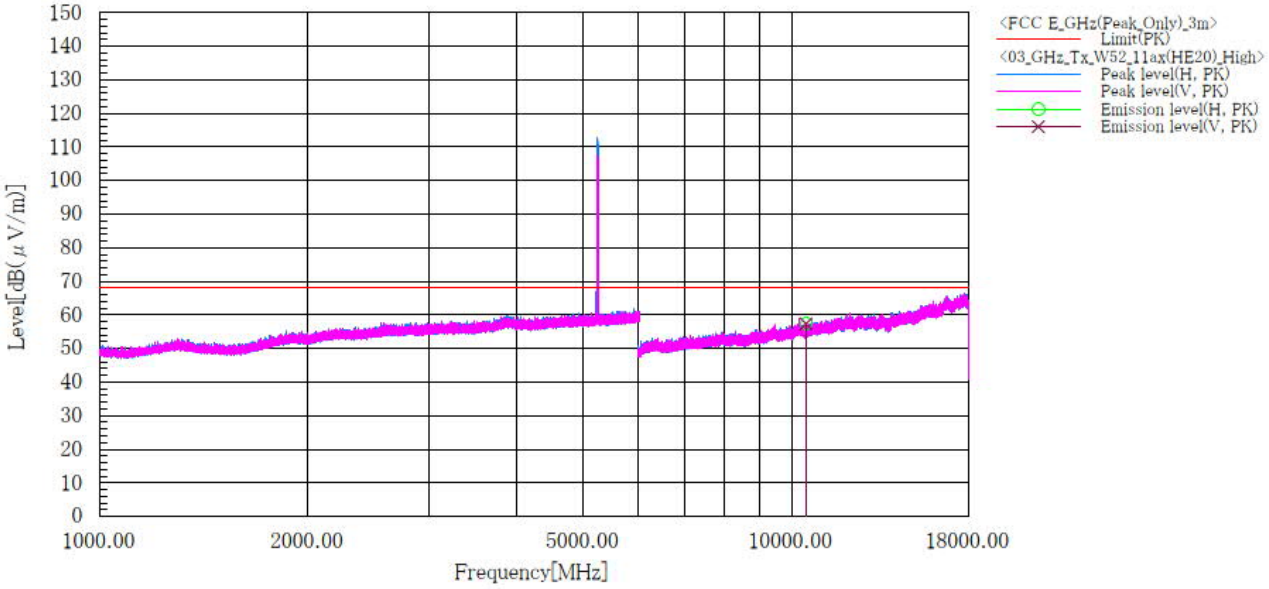
Final Result

No.	Frequency [MHz]	Pol	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	10400.000	H	45.9	12.0	57.9	68.2	10.3	100.0	267.0	
2	10400.000	V	45.6	12.0	57.6	68.2	10.6	100.0	263.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11ax]
5.2 GHz Band / Channel High
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.7 [° C], 75.9 [%]
Serial No.	: N/A	Note1	: Ch:48(5240MHz), RU:26T, Index:8
Test mode	: WLAN_W52_11ax_Tx_Ch:High	Note2	: 2SS, Chain:Both



Final Result

No.	Frequency [MHz]	Pol	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	10498.300	H	45.2	12.3	57.5	68.2	10.7	100.0	2.0	
2	10498.338	V	45.1	12.3	57.4	68.2	10.8	100.0	253.0	

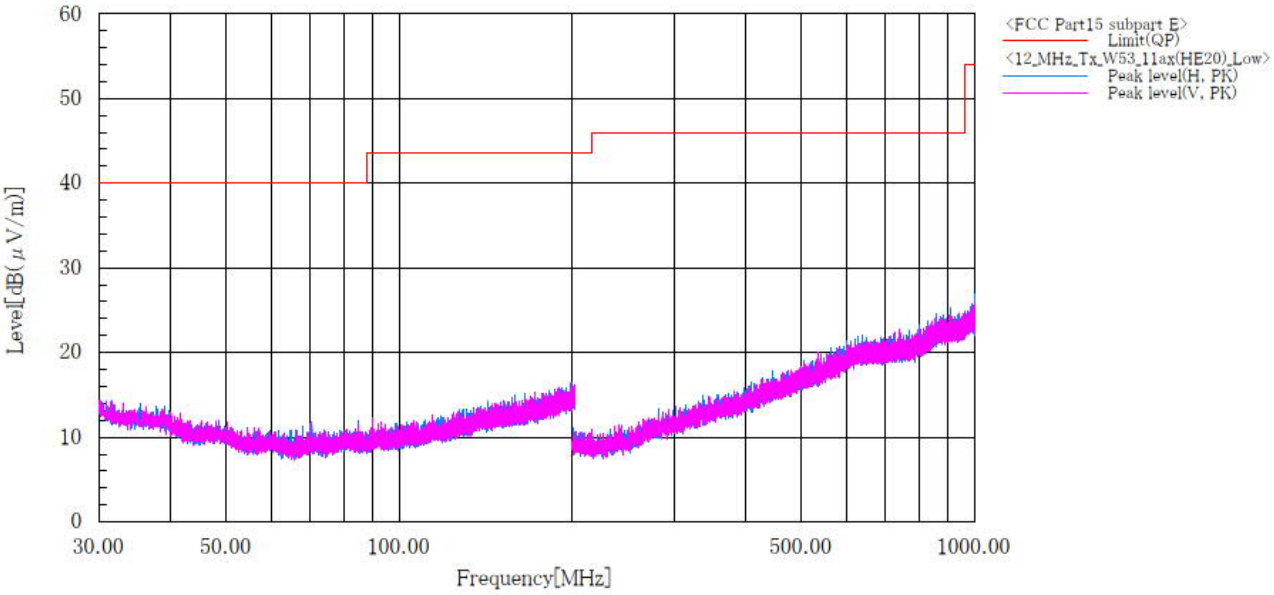
*

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

Japan

[11ax]
5.3 GHz Band / Channel Low
BELOW 1GHz

Company name	: KYOCERA Corporation	Sheet No.	: 12
EUT	: Mobile Phone	Standard	: FCC Part15 subpart E
Model No.	: EB1157	Operator	: T.Seino
Serial No.	: N/A	Temp,Hum,Atm	: 23.7 [° C], 76.0 [%]
Test mode	: WLAN_W53_11ax(HE20)_Tx	Note1	: CH:52(5260MHz), 2SS, Chain:Both

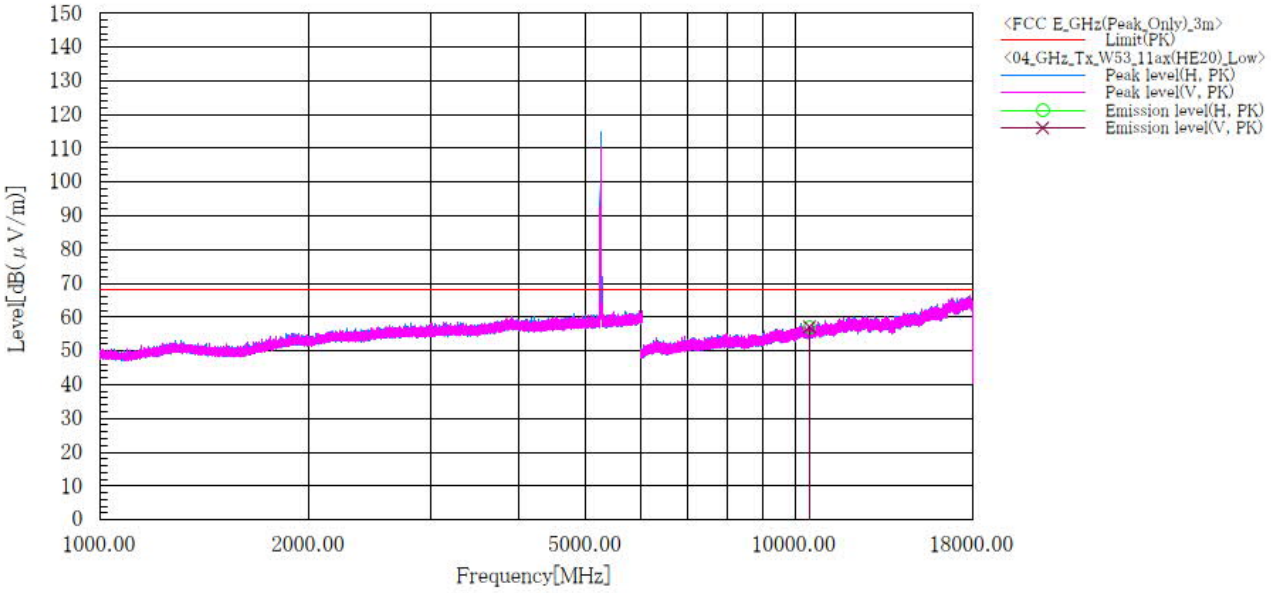


Final Result

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11ax]
5.3 GHz Band / Channel Low
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.3 [° C], 74.3 [%]
Serial No.	: N/A	Note1	: Ch:52(5260MHz), RU:26T, Index:0
Test mode	: WLAN_W53_11ax(HE20)_Tx_Ch:Low	Note2	: 2SS, Chain:Both



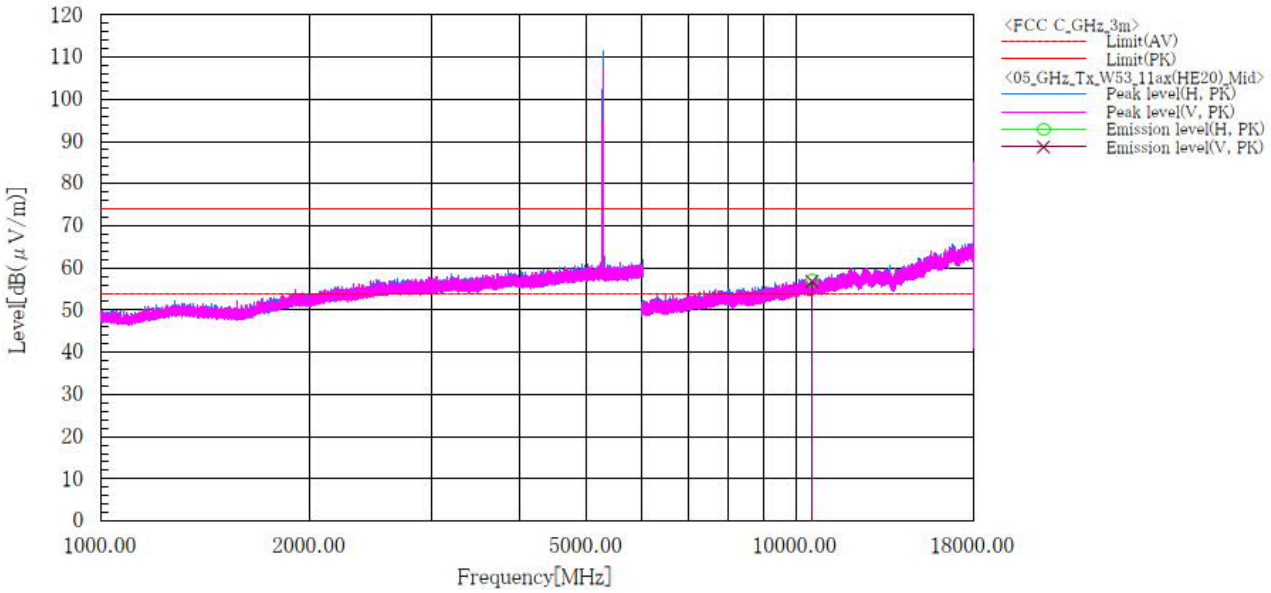
Final Result

No.	Frequency [MHz]	Pol	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	10504.400	H	44.7	12.3	57.0	68.2	11.2	100.0	137.0	
2	10502.600	V	44.8	12.3	57.1	68.2	11.1	100.0	262.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11ax]
5.3 GHz Band / Channel Middle
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart C
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.3 [° C], 74.3 [%]
Serial No.	: N/A	Note1	: Ch:56(5280MHz), RU:26T, Index:4
Test mode	: WLAN_W53_11ax(HE20)_Tx_Ch:Mid	Note2	: 2SS, Chain:Both



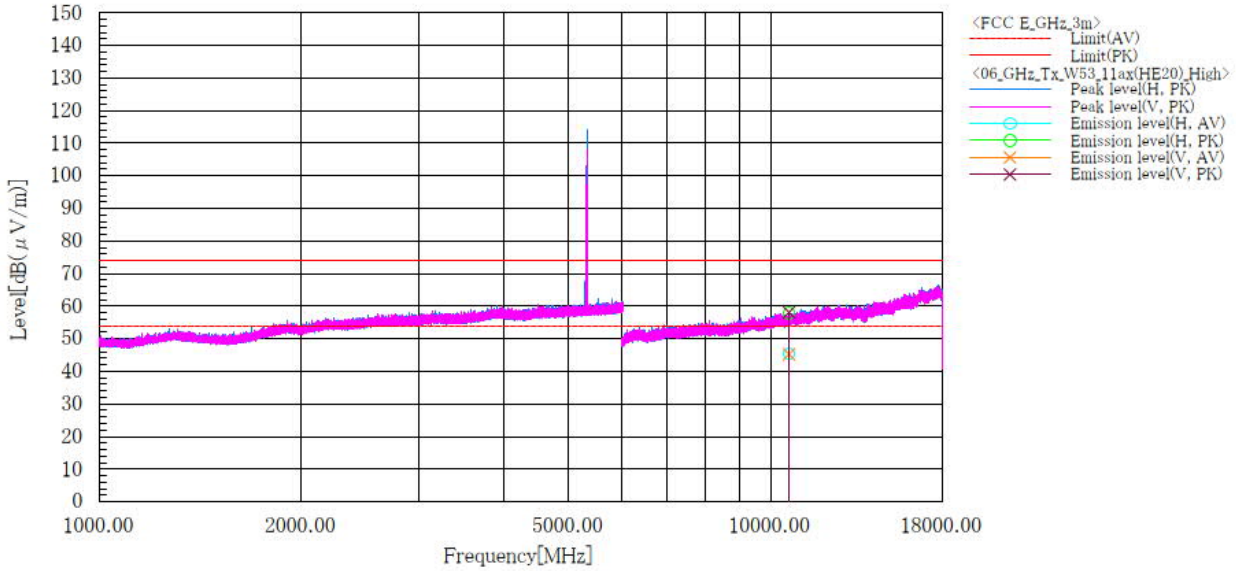
Final Result

No.	Frequency [MHz]	Pol	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin PK [dB]	Height [cm]	Angle [deg]	Remark
1	10560.000	H	44.7	12.3	57.0	68.2	11.2	100.0	267.0	
2	10560.000	V	44.5	12.3	56.8	68.2	11.4	100.0	255.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11ax]
5.3 GHz Band / Channel High
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.3 [° C], 74.3 [%]
Serial No.	: N/A	Note1	: Ch:64(5320MHz), RU:26T, Index:8
Test mode	: WLAN_W53_11ax(HE20)_Tx_Ch:High	Note2	: 2SS, Chain:Both



Final Result

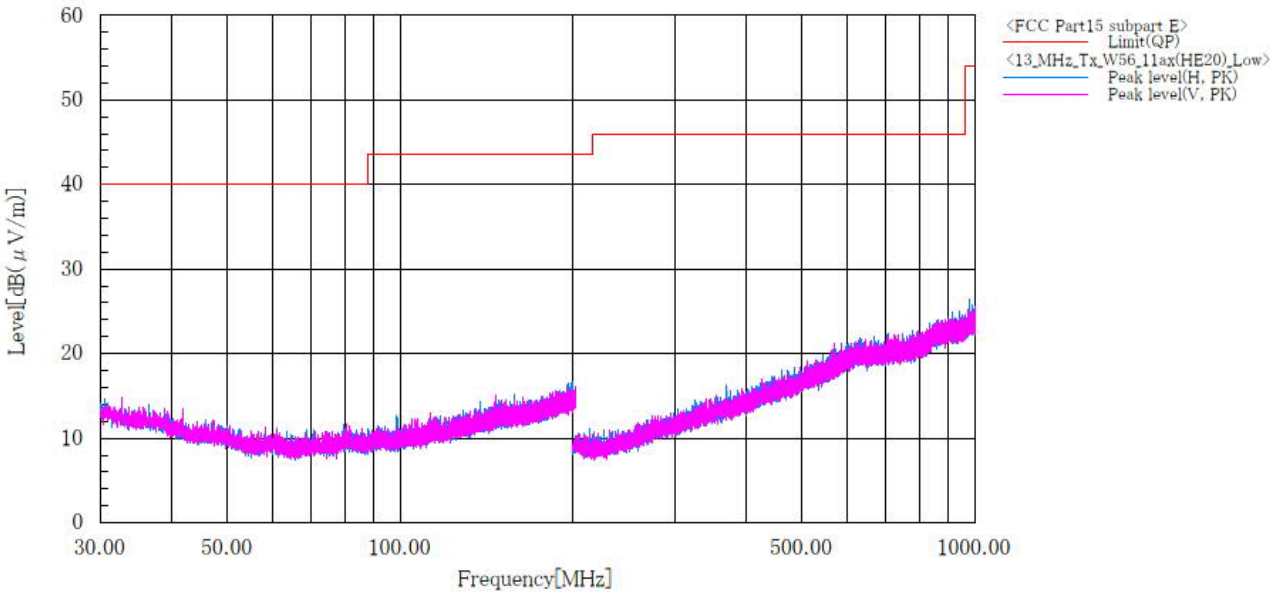
No.	Frequency	Pol	Reading AV	Reading PK	c.f	Result AV	Result PK	Limit AV	Limit PK	Margin AV	Margin PK	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[deg]
1	10657.700	H	32.9	45.4	12.5	45.4	57.9	54.0	74.0	8.6	16.1	100.0	280.0
2	10657.700	V	32.8	45.6	12.5	45.3	58.1	54.0	74.0	8.7	15.9	177.0	287.0

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

Japan

[11ax]
5.6 GHz Band / Channel Low
BELOW 1GHz(Worst)

Company name	: KYOCERA Corporation	Sheet No.	: 13
EUT	: Mobile Phone	Standard	: FCC Part15 subpart E
Model No.	: EB1157	Operator	: T.Seino
Serial No.	: N/A	Temp,Hum,Atm	: 23.7 [° C], 76.0 [%]
Test mode	: WLAN_W56_11ax(HE20)_Tx	Note1	: CH:100(5500MHz), 2SS, Chain:Both

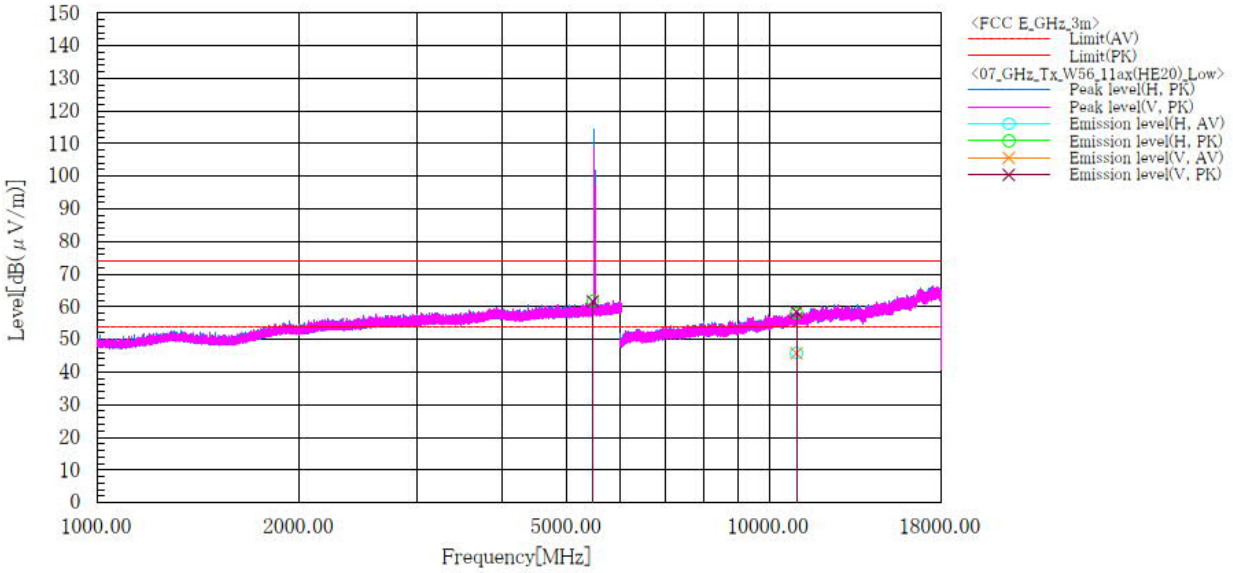


Final Result

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11ax]
5.6 GHz Band / Channel Low
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.3 [° C], 74.3 [%]
Serial No.	: N/A	Note1	: Ch:100(5500MHz), RU:26T, Index:0
Test mode	: WLAN_W56_11ax(HE20)_Tx_Ch:Low	Note2	: 2SS, Chain:Both



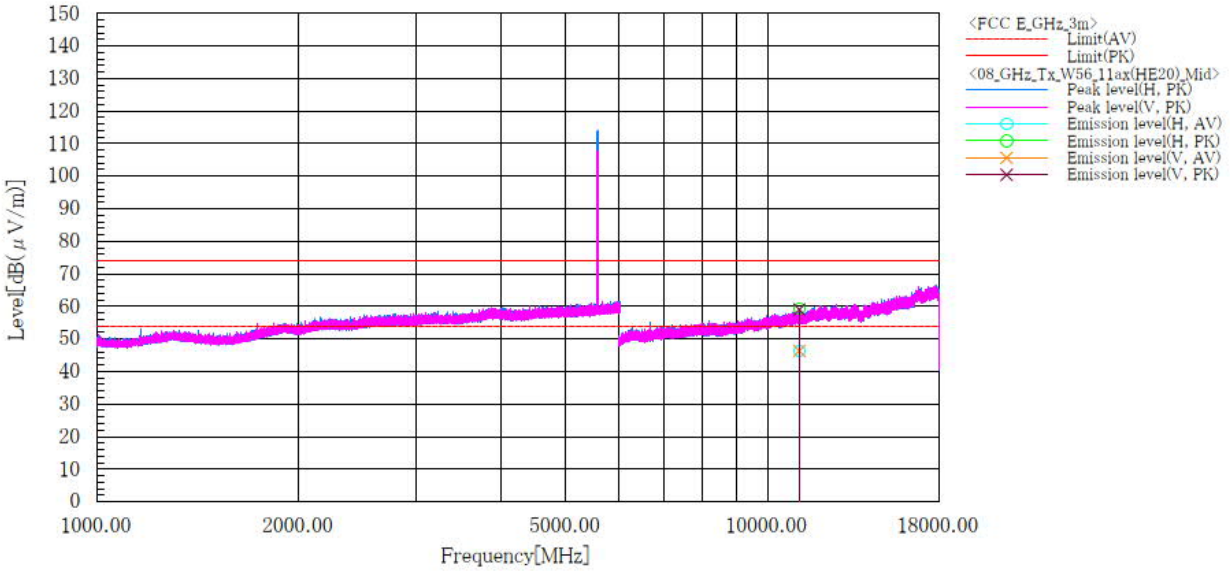
Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1	5461.700	H	---------	50.1	11.7	----------	61.8	----------	68.2	--------	6.4	100.0	133.0
2	5466.900	V	---------	50.0	11.7	----------	61.7	----------	68.2	--------	6.5	100.0	261.0
3	10982.500	H	32.9	45.2	12.9	45.8	58.1	54.0	74.0	8.2	15.9	100.0	136.0
4	10982.500	V	32.9	45.6	12.9	45.8	58.5	54.0	74.0	8.2	15.5	100.0	261.0

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11ax]
5.6 GHz Band / Channel Middle
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.3 [° C], 74.3 [%]
Serial No.	: N/A	Note1	: Ch:116(5580MHz), RU:26T, Index:4
Test mode	: WLAN_W56_11ax(HE20)_Tx_Ch:Mid	Note2	: 2SS, Chain:Both



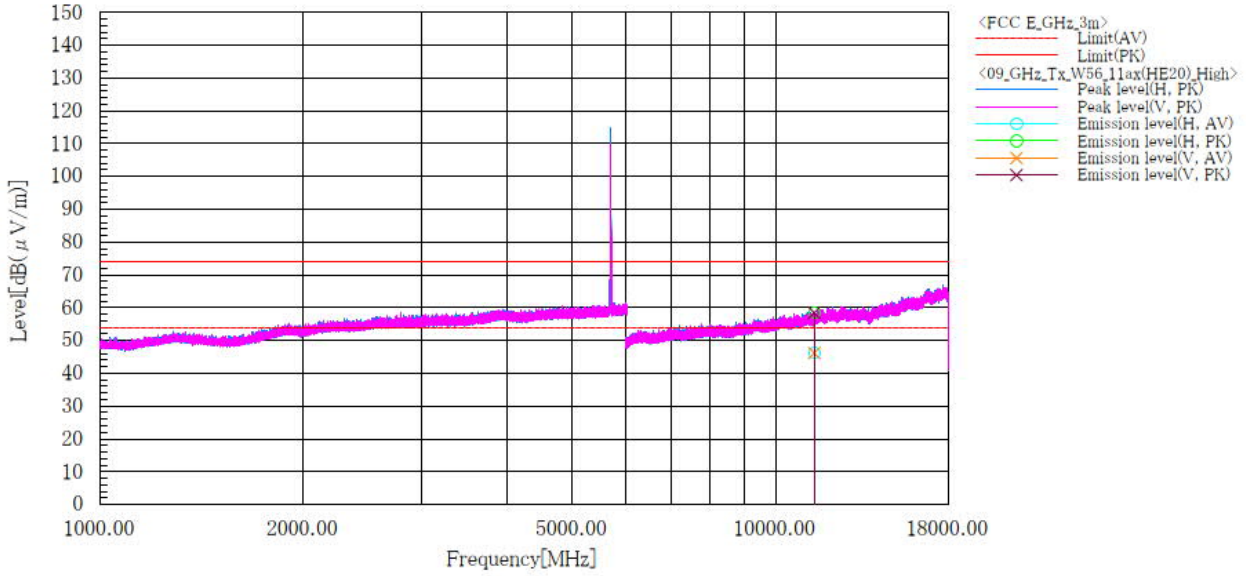
Final Result

No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1	11160.000	H	33.3	46.2	13.1	46.4	59.3	54.0	74.0	7.6	14.7	100.0	258.0
2	11160.000	V	33.3	46.0	13.1	46.4	59.1	54.0	74.0	7.6	14.9	100.0	166.0

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

[11ax]
5.6 GHz Band / Channel High
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.3 [° C], 74.3 [%]
Serial No.	: N/A	Note1	: Ch:140(5700MHz), RU:26T, Index:8
Test mode	: WLAN_W56_11ax(HE20)_Tx_Ch:High	Note2	: 2SS, Chain:Both



Final Result

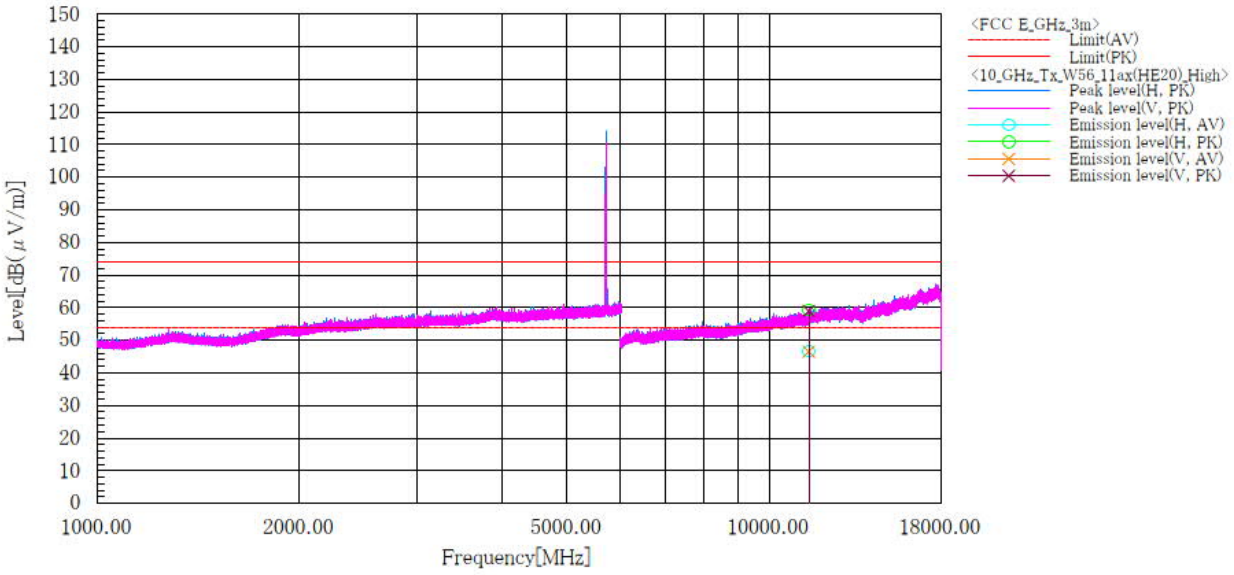
No.	Frequency [MHz]	Pol	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [deg]
1	11417.600	H	32.9	45.3	13.3	46.2	58.6	54.0	74.0	7.8	15.4	100.0	259.0
2	11417.600	V	32.9	45.2	13.3	46.2	58.5	54.0	74.0	7.8	15.5	100.0	169.0

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

Japan

[11ax]
5.6 GHz Band / Channel High
ABOVE 1GHz

Company name	: KYOCERACorporation	Standard	: FCC Part.15 subpart E
EUT	: MobilePhone	Operator	: C.Kanno
Model No.	: EB1157	Temp,Hum,Atm	: 23.3 [° C], 74.3 [%]
Serial No.	: N/A	Note1	: Ch:144(5720MHz), RU:26T, Index:8
Test mode	: WLAN_W56_11ax(HE20)_Tx_Ch:High	Note2	: 2SS, Chain:Both



Final Result

No.	Frequency	Pol	Reading AV	Reading PK	c.f	Result AV	Result PK	Limit AV	Limit PK	Margin AV	Margin PK	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[deg]
1	11458.242	H	33.3	45.9	13.3	46.6	59.2	54.0	74.0	7.4	14.8	100.0	259.0
2	11458.242	V	33.2	45.7	13.3	46.5	59.0	54.0	74.0	7.5	15.0	100.0	153.0

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 40GHz at the 3 meters distance.

Japan

4.5 Frequency Stability

4.5.1 Measurement procedure

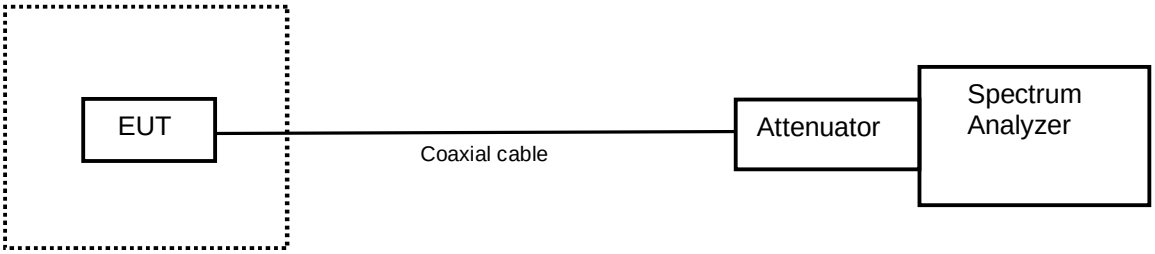
[FCC 15.407(g)]

The EUT was placed of an inside of a constant temperature chamber as the temperature in the chamber was varied between -30˚C and +60˚C. The temperature was incremented by 10˚C intervals and the unit was allowed to stabilize at each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channels center frequency was recorded.

The EUT was set to operate with following conditions.
- 5.2 GHz Band, 5.3 GHz Band, 5.6 GHz Band, 5.8 GHz Band

The test mode of EUT is as follows.
- Tx mode

- Test configuration



Constant Temperature Chamber

4.5.2 Limit

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.

Japan

4.5.3 Measurement result

Date	:	28-July-2023		
Temperature	:	24.0 [˚C]		
Humidity	:	52.2 [%]	Test engineer	:
Test place	:	Shielded room No.4		Kazunori Saito

Japan

[IEEE802.11a]
Channel: 36 (5180 MHz) [Chain 0]

Power Supply [V]	Temperature [ºC]	Measurements Frequency (startup) [Hz]	Frequency Tolerance (startup) [ppm]	Measurements Frequency (2mins) [Hz]	Frequency Tolerance (2mins) [ppm]	Measurements Frequency (5mins) [Hz]	Frequency Tolerance (5mins) [ppm]	Measurements Frequency (10mins) [Hz]	Frequency Tolerance (10mins) [ppm]
3.87	25(Ref.)	5180001621	0.00000000	5179988577	-2.51814593	5179996182	-1.04999967	5180000373	-0.24098718
	60	5179974214	-5.29092499	5179966489	-6.78223726	5179967926	-6.50482422	5179965971	-6.88223723
	50	5179967201	-6.64478557	5179965787	-6.91775845	5179964282	-7.20829890	5179964705	-7.12663870
	40	5179985990	-3.01756662	5179982170	-3.75501813	5179980491	-4.07914930	5179985281	-3.15443917
	30	5179990703	-2.10772135	5179991984	-1.86042413	5179988987	-2.43899538	5179985748	-3.06428476
	20	5179960173	-8.00154190	5180008266	1.28281813	5180006545	0.95057885	5180003075	0.28069489
	10	5180000562	-0.20450882	5179998695	-0.56486469	5179996254	-1.03610006	5179992913	-1.68108056
	0	5180016479	2.86833887	5180018558	3.26969010	5180012154	2.03339705	5180018313	3.22239281
	-10	5180000020	-0.30901902	5180012179	2.03822330	5180019853	3.51969002	5180021988	3.93185205
	-20	5180020003	3.54864754	5180020114	3.57007610	5180019120	3.37818427	5180016762	2.92297206
	-30	5180011406	1.88899555	5180018498	3.25810709	5180013947	2.37953593	5180011297	1.86795308
3.48	25	5179977076	-4.73841551	5179995569	-1.16833940	5179999466	-0.41593829	5179997685	-0.75984532
4.26	25	5179995648	-1.15308844	5180001194	-0.08243241	5180000863	-0.14625864	5179995808	-1.12220042

Frequency Tolerance (ppm) = Measurements Frequency (Hz) – Reference Frequency (Hz) / Reference Frequency (Hz) x 1000000

Channel: 64 (5320 MHz) [Chain 0]

Power Supply [V]	Temperature [ºC]	Measurements Frequency (startup) [Hz]	Frequency Tolerance (startup) [ppm]	Measurements Frequency (2mins) [Hz]	Frequency Tolerance (2mins) [ppm]	Measurements Frequency (5mins) [Hz]	Frequency Tolerance (5mins) [ppm]	Measurements Frequency (10mins) [Hz]	Frequency Tolerance (10mins) [ppm]
3.87	25(Ref.)	5319993558	0.00000000	5319991066	-0.46842162	5319989241	-0.81146715	5319991919	-0.30808308
	60	5319952552	-7.70790407	5319955717	-7.11297854	5319958822	-6.52933121	5319959696	-6.36504530
	50	5319975315	-3.42913949	5319961237	-6.07538330	5319960473	-6.21899249	5319958073	-6.67012086
	40	5319977139	-3.08628193	5319977453	-3.02725930	5319978761	-2.78139435	5319973070	-3.85113248
	30	5319983865	-1.82199469	5319985886	-1.44210701	5319978776	-2.77857479	5319982531	-2.07274687
	20	5319998986	1.02030199	5320005681	2.27876216	5319996247	0.50545174	5319995452	0.35601547
	10	5319994343	0.14755657	5319993305	-0.04755645	5319995914	0.44285768	5319996318	0.51879762
	0	5320003722	1.91052863	5320010325	3.15169555	5320009462	2.98947730	5320008901	2.88402605
	-10	5320013471	3.74304965	5320009814	3.05564280	5320012774	3.61203445	5320011592	3.38985373
	-20	5320009730	3.03985331	5320010929	3.26522952	5320011374	3.34887624	5320011876	3.44323725
	-30	5319995825	0.42612834	5319999682	1.15105252	5320001398	1.47368600	5319999530	1.12258313
3.48	25	5319996594	0.57067738	5319994234	0.12706782	5319990182	-0.63458723	5319988752	-0.90338455
4.26	25	5319991610	-0.36616586	5319994767	0.22725591	5319990790	-0.52030138	5319986652	-1.29812187

Frequency Tolerance (ppm) = Measurements Frequency (Hz) – Reference Frequency (Hz) / Reference Frequency (Hz) x 1000000

Japan

Channel: 144 (5720 MHz) [Chain 0]

Power Supply [V]	Temperature [ºC]	Measurements Frequency (startup) [Hz]	Frequency Tolerance (startup) [ppm]	Measurements Frequency (2mins) [Hz]	Frequency Tolerance (2mins) [ppm]	Measurements Frequency (5mins) [Hz]	Frequency Tolerance (5mins) [ppm]	Measurements Frequency (10mins) [Hz]	Frequency Tolerance (10mins) [ppm]
3.87	25(Ref.)	5720000636	0.00000000	5720005425	0.83728015	5720004388	0.65598647	5720010923	1.79846886
	60	5719969185	-5.49838348	5719970980	-5.18457233	5719971101	-5.16341848	5719971089	-5.16551638
	50	5719979443	-3.70502704	5719971227	-5.14139051	5719972235	-4.96516676	5719973758	-4.69890804
	40	5719991054	-1.67513216	5719992665	-1.39348883	5719997719	-0.50992250	5719997437	-0.55922319
	30	5720000614	-0.00379213	5720002835	0.38448300	5720000163	-0.08266118	5720004839	0.73483261
	20	5720007770	1.24724514	5720013139	2.18588140	5720019484	3.29514701	5720015396	2.58046178
	10	5720019244	3.25318897	5720016242	2.72836386	5720020302	3.43815399	5720014874	2.48920305
	0	5720032577	5.58413277	5720025022	4.26332872	5720033439	5.73483205	5720031495	5.39497195
	-10	5720036630	6.29269913	5720028936	4.94759438	5720037715	6.48238442	5720038560	6.63011168
	-20	5720036363	6.24602081	5720034259	5.87818868	5720033758	5.79060128	5720039603	6.81245431
	-30	5720027643	4.72154545	5720025837	4.40581122	5720028127	4.80616083	5720028887	4.93902795
3.48	25	5720011879	1.96560170	5720005037	0.76944799	5720010299	1.68937796	5720006817	1.08063677
4.26	25	5720009640	1.57416818	5719996381	-0.74383855	5720007070	1.12486753	5720010533	1.73028705

Frequency Tolerance (ppm) = Measurements Frequency (Hz) – Reference Frequency (Hz) / Reference Frequency (Hz) x 1000000

[IEEE802.11a]
Channel: 36 (5180 MHz) [Chain 1]

Power Supply [V]	Temperature [ºC]	Measurements Frequency (startup) [Hz]	Frequency Tolerance (startup) [ppm]	Measurements Frequency (2mins) [Hz]	Frequency Tolerance (2mins) [ppm]	Measurements Frequency (5mins) [Hz]	Frequency Tolerance (5mins) [ppm]	Measurements Frequency (10mins) [Hz]	Frequency Tolerance (10mins) [ppm]
3.87	25(Ref.)	5179999486	0.00000000	5180004464	0.96104566	5180003793	0.83150896	5180002005	0.48633518
	60	5179974932	-4.74011321	5179975984	-4.53702439	5179980866	-3.59455325	5179975035	-4.72022904
	50	5179973471	-5.02215957	5179966505	-6.36694735	5179973351	-5.04532560	5179967936	-6.09069250
	40	5179937761	-11.91598265	5179989578	-1.91269980	5179993066	-1.23934066	5179989863	-1.85768049
	30	5179985889	-2.62486204	5179998802	-0.13200465	5179997636	-0.35710119	5179997384	-0.40574985
	20	5180012858	2.58150914	5180010255	2.07899943	5180011362	2.29270602	5180001055	0.30293748
	10	5180018778	3.72436639	5180016237	3.23382580	5180019920	3.94482974	5180015504	3.09232000
	0	5180015503	3.09212695	5180013306	2.66799563	5180016216	3.22977175	5180022140	4.37340121
	-10	5180078935	15.33768801	5180049749	9.70332452	5180022332	4.41046685	5180027422	5.39309243
	-20	5180034289	6.71876823	5180025362	4.99540899	5180024492	4.82745531	5180029716	5.83594961
	-30	5180003724	0.81818850	5180013417	2.68942421	5180016538	3.29193392	5180010066	2.04251294
3.48	25	5180010545	2.13498400	5180003491	0.77320780	5180005033	1.07089123	5180008317	1.70486812
4.26	25	5179998622	-0.16675368	5179994910	-0.88335607	5180003231	0.72301474	5180000026	0.10435850

Frequency Tolerance (ppm) = Measurements Frequency (Hz) – Reference Frequency (Hz) / Reference Frequency (Hz) x 1000000

Japan

Channel: 64 (5320 MHz) [Chain 1]

Power Supply [V]	Temperature [ºC]	Measurements Frequency (startup) [Hz]	Frequency Tolerance (startup) [ppm]	Measurements Frequency (2mins) [Hz]	Frequency Tolerance (2mins) [ppm]	Measurements Frequency (5mins) [Hz]	Frequency Tolerance (5mins) [ppm]	Measurements Frequency (10mins) [Hz]	Frequency Tolerance (10mins) [ppm]
3.87	25(Ref.)	5319993100	0.00000000	5320008128	2.82481569	5319997459	0.81936196	5319996770	0.68985052
	60	5319999619	1.22534990	5320017038	4.49962990	5320170466	33.33951693	5320174443	34.08707429
	50	5319962788	-5.69775175	5319968156	-4.68872789	5319964233	-5.42613486	5319956209	-6.93440749
	40	5320036128	8.08798041	5319984654	-1.58759604	5319981720	-2.13910052	5319982615	-1.97086722
	30	5319988763	-0.81522662	5320000023	1.30126879	5319989172	-0.73834682	5319994396	0.24360934
	20	5320006965	2.60620639	5320007686	2.74173288	5319999808	1.26096179	5320004589	2.15958927
	10	5320009575	3.09680853	5320010975	3.35996676	5320006935	2.60056728	5320005061	2.24831119
	0	5320012681	3.68064387	5320013917	3.91297500	5320021039	5.25169854	5320018522	4.77857763
	-10	5320026564	6.29023372	5320020448	5.14060817	5320024324	5.86918054	5320022886	5.59887944
	-20	5320041587	9.11410957	5320022239	5.47726274	5320022853	5.59267643	5320025074	6.01015817
	-30	5320003352	1.92707017	5320000012	1.29930300	5320000014	1.29954849	5320011708	3.49774890
3.48	25	5319990052	-0.57293307	5320005890	2.40413846	5319999634	1.22810892	5320000007	1.29834454
4.26	25	5319998546	1.02368554	5319998603	1.03439984	5320009431	3.06974082	5319999458	1.19514779

Frequency Tolerance (ppm) = Measurements Frequency (Hz) – Reference Frequency (Hz) / Reference Frequency (Hz) x 1000000

Channel: 144 (5720 MHz) [Chain 1]

Power Supply [V]	Temperature [ºC]	Measurements Frequency (startup) [Hz]	Frequency Tolerance (startup) [ppm]	Measurements Frequency (2mins) [Hz]	Frequency Tolerance (2mins) [ppm]	Measurements Frequency (5mins) [Hz]	Frequency Tolerance (5mins) [ppm]	Measurements Frequency (10mins) [Hz]	Frequency Tolerance (10mins) [ppm]
3.87	25(Ref.)	5719983742	0.00000000	5719997526	2.40979706	5719987004	0.57028134	5719986932	0.55769389
	60	5719960362	-4.08742421	5719957116	-4.65490834	5719959270	-4.27833384	5719956117	-4.82955918
	50	5719958053	-4.49109668	5719958814	-4.35805434	5719951531	-5.63130971	5719957678	-4.55665631
	40	5719983826	0.01468536	5719982573	-0.20437121	5719983721	-0.00367134	5719985781	0.35646954
	30	5719983021	-0.12604931	5719986494	0.48112025	5719985150	0.24615455	5719981082	-0.46503629
	20	5719991759	1.40157741	5720005612	3.82343744	5719993774	1.75385114	5720001277	3.06556815
	10	5719997522	2.40909776	5719997178	2.34895773	5720001212	3.05420449	5719998256	2.53741980
	0	5720013124	5.13672789	5720014183	5.32186827	5720011669	4.88235653	5720007573	4.16627058
	-10	5720018244	6.03183533	5720016479	5.72326802	5720017273	5.86207960	5720015677	5.58305783
	-20	5720016266	5.68603015	5720019020	6.16750005	5720017826	5.95875820	5720018055	5.99879327
	-30	5719996318	2.19860765	5720004462	3.62238792	5720011032	4.77099258	5720013306	5.16854616
3.48	25	5720030357	8.14949869	5719990087	1.10926889	5719994077	1.80682332	5719999982	2.83924671
4.26	25	5719985793	0.35856745	5719995190	2.00140429	5719996097	2.15997117	5719988265	0.79073651

Frequency Tolerance (ppm) = Measurements Frequency (Hz) – Reference Frequency (Hz) / Reference Frequency (Hz) x 1000000

Japan

4.6 AC Power Line Conducted Emissions

4.6.1 Measurement procedure

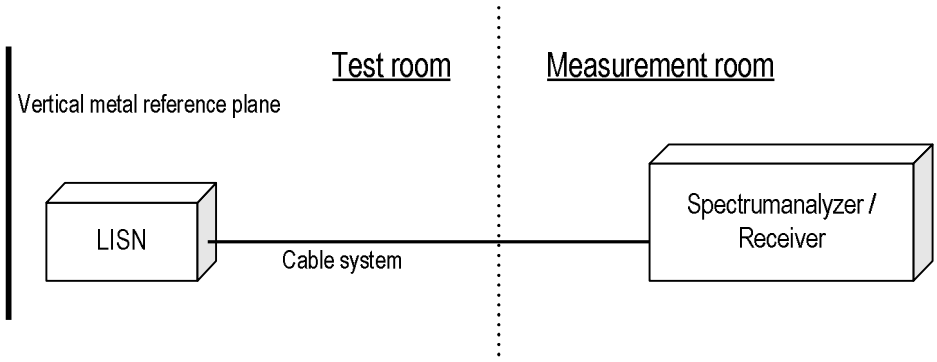
[FCC 15.207]

Test was applied by following conditions.

Test method	:	ANSI C63.10
Frequency range	:	0.15 MHz to 30 MHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	FRP table / (W) 2.0 × (D) 1.0 × (H) 0.8 m
Vertical Metal Reference Plane	:	(W) 2.0 × (H) 2.0 m, 0.4 m away from EUT
Test receiver setting		
- Detector	:	Quasi-peak, Average
- Bandwidth	:	9 kHz

EUT and peripherals are connected to 50Ω/50μH Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.
LISN for peripheral is terminated in 50Ω.
EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration



4.6.2 Calculation method

Emission level = Reading + (LISN. factor + Cable system loss)
Margin = Limit – Emission level

Japan

4.6.3 Limit

Frequency [MHz]	Limit	
	QP [dBuV]	AV [dBuV]
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

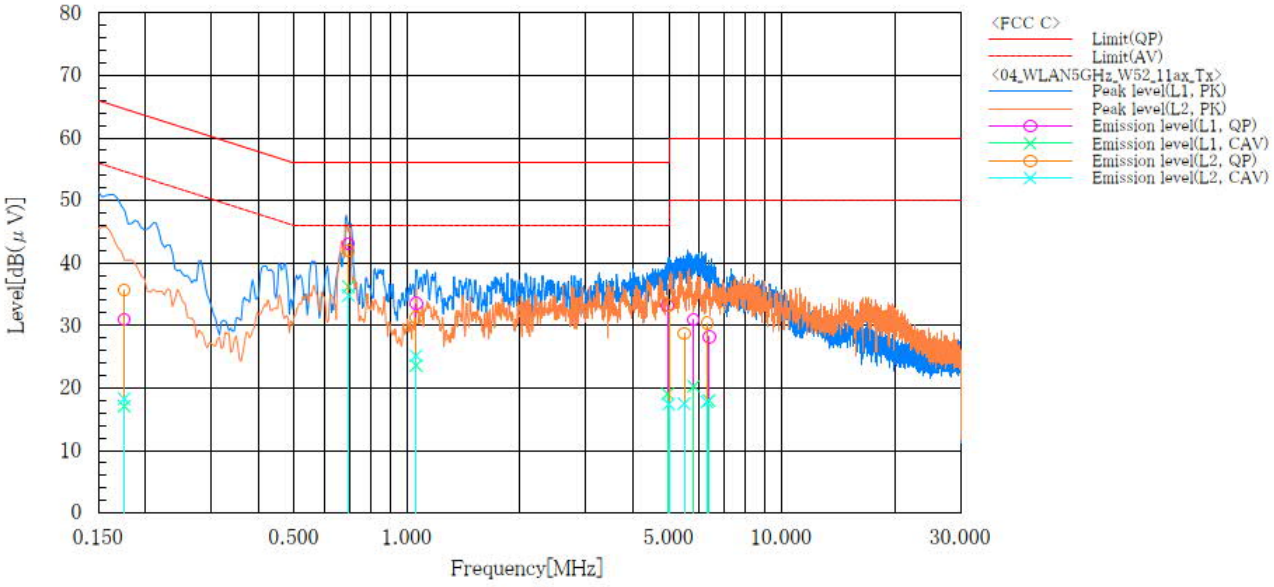
*: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

4.6.4 Test data

Date : 19-July-2023
Temperature : 24.1 [˚C]
Humidity : 75.8 [%] Test engineer : Tadahiro Seino
Test place : 3m Semi-anechoic chamber

[5.2 GHz Band]

Company name	: KYOCERA Corporation	Standard	: FCC Part 15 subpart E
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1157	Temp,Hum,Atm	: 24.1 [° C], 75.8 [%]
Serial No.	: N/A	Note1	: CH:36_5180MHz, RU:26T, Index:0
Test mode	: WLAN5GHz_11ax(HE20)_W52_Tx	Note2	: 2SS, Chain:Both



Final Result

--- L1 ---

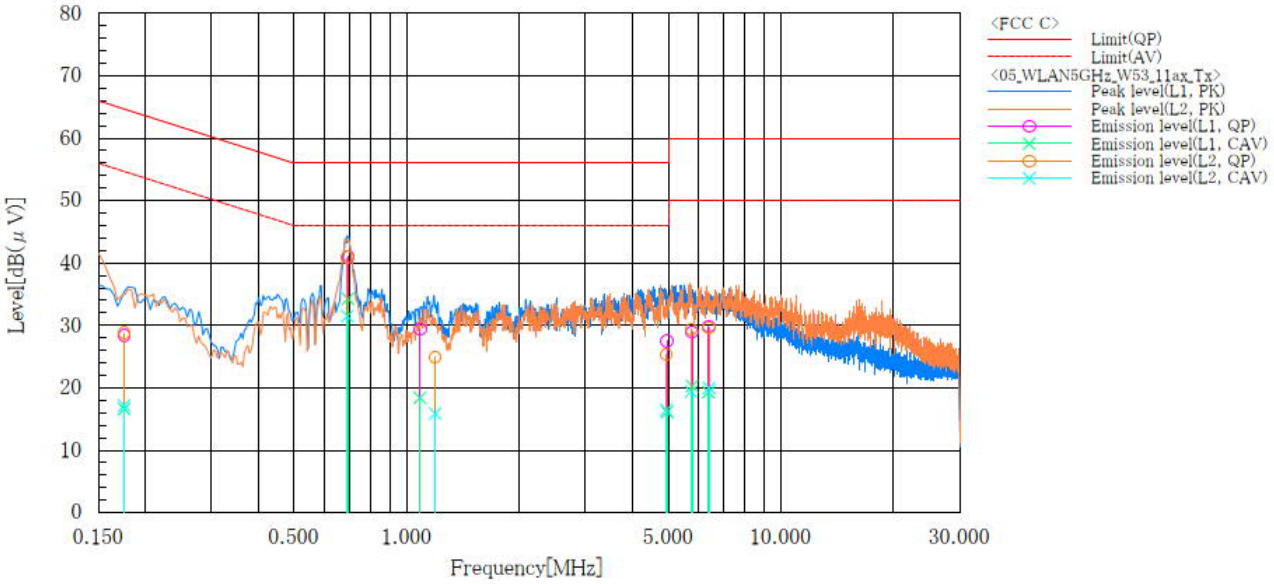
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.176	20.5	6.6	10.5	31.0	17.1	64.7	54.7	33.7	37.6
2	0.698	32.8	25.9	10.3	43.1	36.2	56.0	46.0	12.9	9.8
3	1.058	23.1	13.2	10.4	33.5	23.6	56.0	46.0	22.5	22.4
4	4.964	22.5	8.4	10.7	33.2	19.1	56.0	46.0	22.8	26.9
5	5.821	20.2	9.6	10.7	30.9	20.3	60.0	50.0	29.1	29.7
6	6.397	17.4	7.2	10.8	28.2	18.0	60.0	50.0	31.8	32.0

--- L2 ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.176	25.2	7.8	10.5	35.7	18.3	64.7	54.7	29.0	36.4
2	0.698	31.6	24.5	10.3	41.9	34.8	56.0	46.0	14.1	11.2
3	1.058	21.0	14.9	10.3	31.3	25.2	56.0	46.0	24.7	20.8
4	4.994	22.5	6.7	10.7	33.2	17.4	56.0	46.0	22.8	28.6
5	5.488	18.0	6.8	10.7	28.7	17.5	60.0	50.0	31.3	32.5
6	6.315	19.6	7.0	10.8	30.4	17.8	60.0	50.0	29.6	32.2

[5.3 GHz Band]

Company name	: KYOCERA Corporation	Standard	: FCC Part 15 subpart E
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1157	Temp,Hum,Atm	: 24.1 [° C], 75.8 [%]
Serial No.	: N/A	Note1	: CH:52_5260MHz, RU:26T, Index:0
Test mode	: WLAN5GHz_11ax(HE20)_W53_Tx	Note2	: 2SS, Chain:Both



Final Result

--- L1 ---

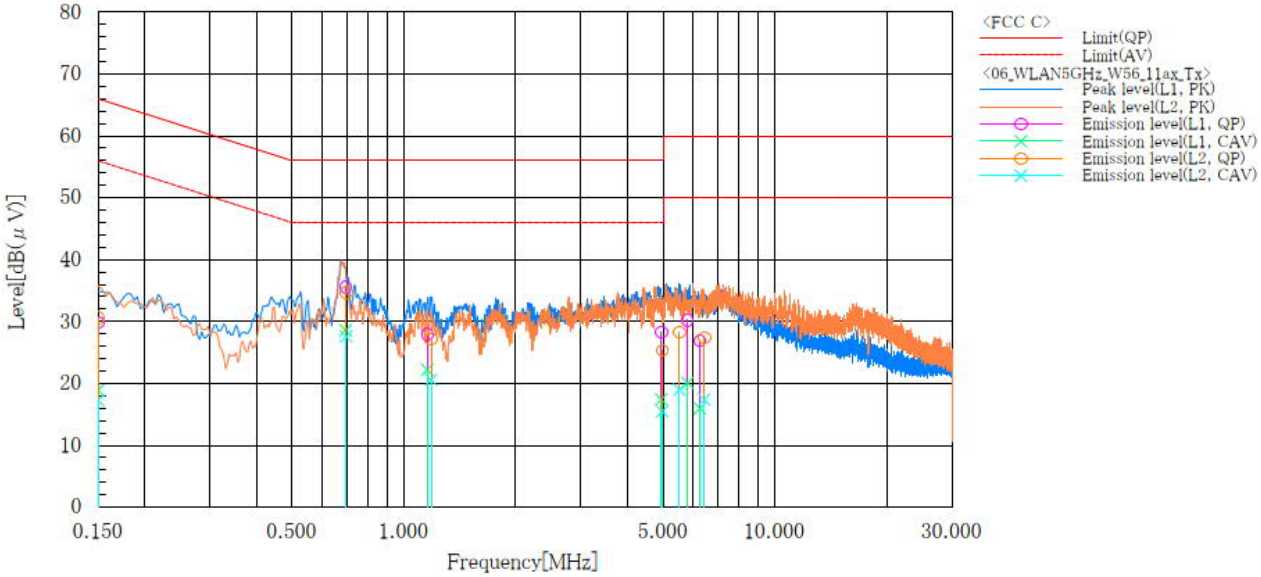
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.176	17.9	6.1	10.5	28.4	16.6	64.7	54.7	36.3	38.1
2	0.697	30.7	24.0	10.3	41.0	34.3	56.0	46.0	15.0	11.7
3	1.086	19.0	8.0	10.4	29.4	18.4	56.0	46.0	26.6	27.6
4	4.961	16.8	5.4	10.7	27.5	16.1	56.0	46.0	28.5	29.9
5	5.780	18.2	9.6	10.7	28.9	20.3	60.0	50.0	31.1	29.7
6	6.397	19.1	8.5	10.8	29.9	19.3	60.0	50.0	30.1	30.7

--- L2 ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.176	18.3	6.7	10.5	28.8	17.2	64.7	54.7	35.9	37.5
2	0.693	30.6	21.2	10.3	40.9	31.5	56.0	46.0	15.1	14.5
3	1.192	14.5	5.5	10.4	24.9	15.9	56.0	46.0	31.1	30.1
4	4.934	14.6	5.8	10.7	25.3	16.5	56.0	46.0	30.7	29.5
5	5.755	18.7	8.7	10.7	29.4	19.4	60.0	50.0	30.6	30.6
6	6.421	18.8	9.2	10.8	29.6	20.0	60.0	50.0	30.4	30.0

[5.6 GHz Band]

Company name	: KYOCERA Corporation	Standard	: FCC Part 15 subpart E
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1157	Temp,Hum,Atm	: 24.1 [° C], 75.8 [%]
Serial No.	: N/A	Note1	: CH:100_5500MHz, RU:26T, Index:0
Test mode	: WLAN5GHz_11ax(HE20)_W56_Tx	Note2	: 2SS, Chain:Both



Final Result

--- L1 ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.150	19.4	8.4	10.5	29.9	18.9	66.0	56.0	36.1	37.1
2	0.697	25.3	18.3	10.3	35.6	28.6	56.0	46.0	20.4	17.4
3	1.157	17.5	11.8	10.4	27.9	22.2	56.0	46.0	28.1	23.8
4	4.946	17.6	6.7	10.7	28.3	17.4	56.0	46.0	27.7	28.6
5	5.819	19.5	9.4	10.7	30.2	20.1	60.0	50.0	29.8	29.9
6	6.284	16.1	5.2	10.8	26.9	16.0	60.0	50.0	33.1	34.0

--- L2 ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.150	20.1	6.8	10.5	30.6	17.3	66.0	56.0	35.4	38.7
2	0.699	24.4	17.3	10.3	34.7	27.6	56.0	46.0	21.3	18.4
3	1.184	16.8	10.2	10.4	27.2	20.6	56.0	46.0	28.8	25.4
4	4.978	14.6	4.8	10.7	25.3	15.5	56.0	46.0	30.7	30.5
5	5.528	17.6	8.3	10.7	28.3	19.0	60.0	50.0	31.7	31.0
6	6.461	16.6	6.6	10.8	27.4	17.4	60.0	50.0	32.6	32.6

Japan

4.7 Duty Cycle

4.7.1 Measurement procedure

[ANSI C63.10, Section 12.2, KDB 789033 D02, Section B, Zero-Span Spectrum Analyzer Method]

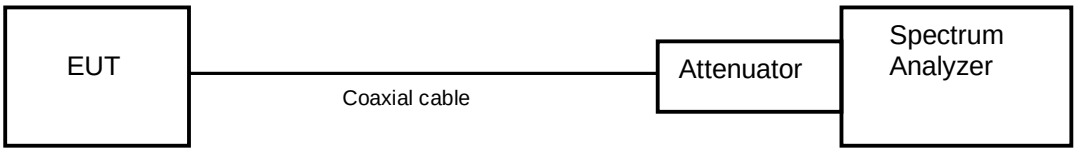
The duty cycle is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=8 MHz, VBW=8 MHz, Span=0 Hz, Sweep=Auto, Detector=Peak, Trace mode=Single

The EUT was set to operate with following conditions.
- 5.2 GHz Band, 5.3 GHz Band, 5.6 GHz Band, 5.8 GHz Band

The test mode of EUT is as follows.
- Tx mode

- Test configuration



4.7.2 Limit

None

4.7.3 Measurement result

Date	:	19-July-2023		
Temperature	:	23.3 [˚C]		
Humidity	:	59.6 [%]	Test engineer	:
Test place	:	Shielded room No.4		Kazunori Saito

Mode	Channel	Frequency (MHz)	Duty Cycle				DCF (dB) 10log(1/x)	DCF (dB) 20log(1/x)
			On Time(ms)	On+Off Time(ms)	X	1/T		
802.11ax HE20 26-Tones	36	5180	5.088	5.106	0.996	196.5	0	0
	40	5200						
	48	5240						
	52	5260	5.088	5.106	0.996	196.5	0	0
	56	5280						
	64	5320						
	100	5500	5.088	5.106	0.996	196.5	0	0
	116	5580						
	140	5700						
	144	5720						

Note: X = On time / (On + Off time)

Mode	Channel	Frequency (MHz)	Duty Cycle				DCF (dB) 10log(1/x)	DCF (dB) 20log(1/x)
			On Time(ms)	On+Off Time(ms)	X	1/T		
802.11ax HE20 52-Tones	36	5180	5.076	5.094	0.996	197.0	0	0
	40	5200						
	48	5240						
	52	5260	5.076	5.094	0.996	197.0	0	0
	56	5280						
	64	5320						
	100	5500	5.076	5.094	0.996	197.0	0	0
	116	5580						
	140	5700						
	144	5720						

Note: X = On time / (On + Off time)

Mode	Channel	Frequency (MHz)	Duty Cycle				DCF (dB) 10log(1/x)	DCF (dB) 20log(1/x)
			On Time(ms)	On+Off Time(ms)	X	1/T		
802.11ax HE20 106-Tones	36	5180	4.764	4.782	0.996	209.9	0	0
	40	5200						
	48	5240						
	52	5260	4.764	4.782	0.996	209.9	0	0
	56	5280						
	64	5320						
	100	5500	4.764	4.782	0.996	209.9	0	0
	116	5580						
	140	5700						
	144	5720						

Note: X = On time / (On + Off time)

Mode	Channel	Frequency (MHz)	Duty Cycle				DCF (dB) 10log(1/x)	DCF (dB) 20log(1/x)
			On Time(ms)	On+Off Time(ms)	X	1/T		
802.11ax HE20 242-Tones	36	5180	4.668	4.686	0.996	214.2	0	0
	40	5200						
	48	5240						
	52	5260	4.668	4.686	0.996	214.2	0	0
	56	5280						
	64	5320						
	100	5500	4.668	4.686	0.996	214.2	0	0
	116	5580						
	140	5700						
	144	5720						

Note: X = On time / (On + Off time)

Mode	Channel	Frequency (MHz)	Duty Cycle				DCF (dB) 10log(1/x)	DCF (dB) 20log(1/x)
			On Time(ms)	On+Off Time(ms)	X	1/T		
802.11ax HE40 484-Tones	38	5190	4.662	4.686	0.995	214.5	0	0
	46	5230						
	54	5270	4.662	4.686	0.995	214.5	0	0
	62	5310						
	102	5510	4.662	4.686	0.995	214.5	0	0
	110	5550						
	134	5670						
	142	5710						

Note: X = On time / (On + Off time)

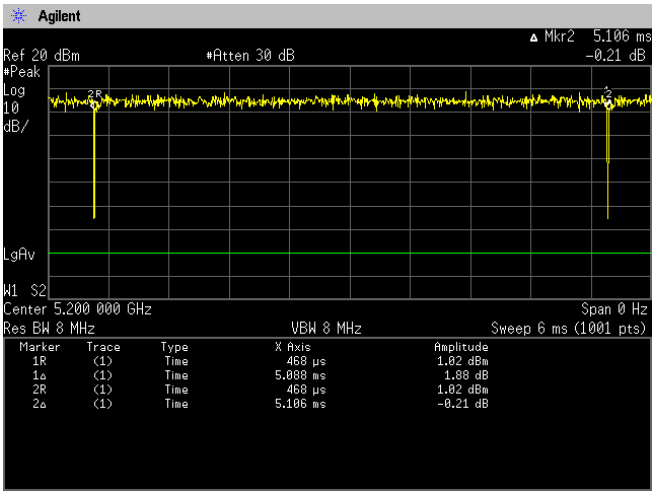
Mode	Channel	Frequency (MHz)	Duty Cycle				DCF (dB) 10log(1/x)	DCF (dB) 20log(1/x)
			On Time(ms)	On+Off Time(ms)	X	1/T		
802.11ax HE80 996-Tones	42	5210	4.728	4.746	0.996	211.5	0	0
	58	5290	4.728	4.746	0.996	211.5	0	0
	106	5530	4.728	4.746	0.996	211.5	0	0
	121	5610	4.728	4.746	0.996	211.5	0	0
	138	5690	4.728	4.746	0.996	211.5	0	0

Note: X = On time / (On + Off time)

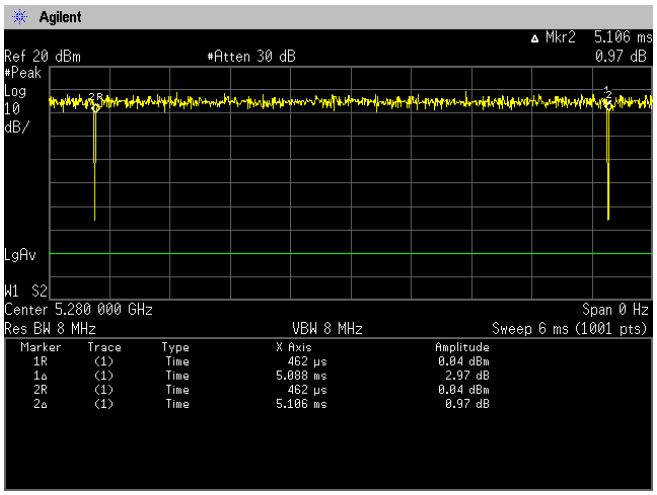
Japan

4.7.4 Trace data

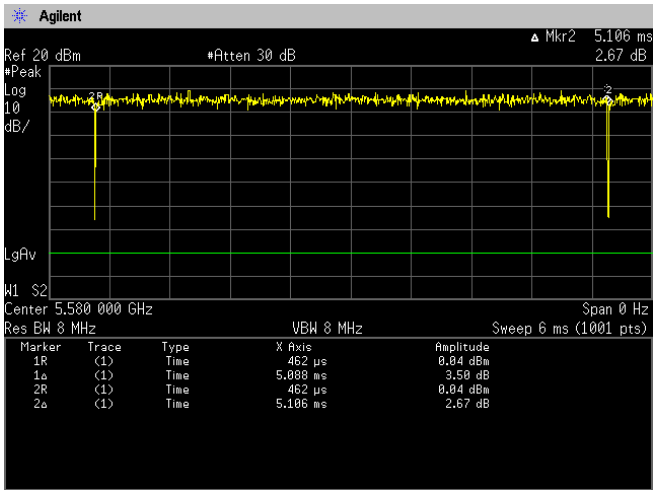
[IEEE802.11ax_HE20_26-Tones]
(5.2 GHz Band)
Channel: 40



(5.3 GHz Band)
Channel: 56

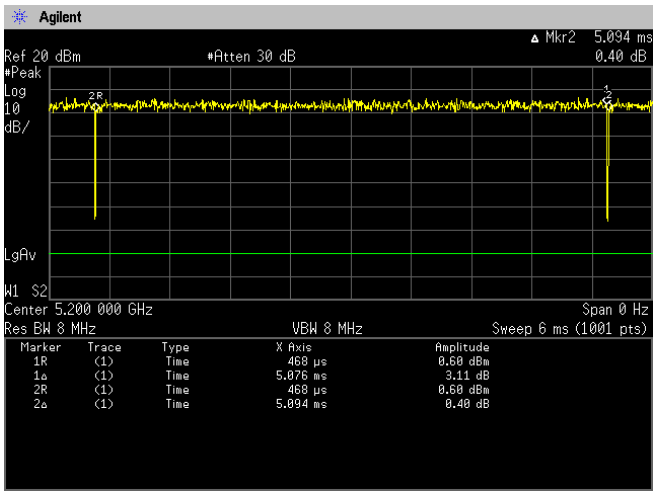


(5.6 GHz Band)
Channel: 116

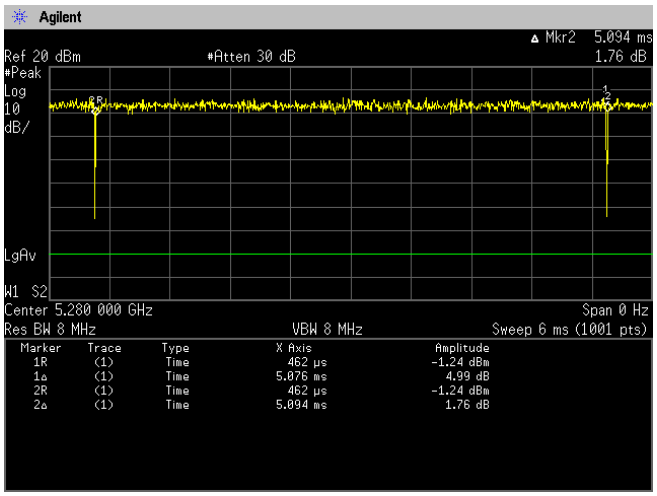


Japan

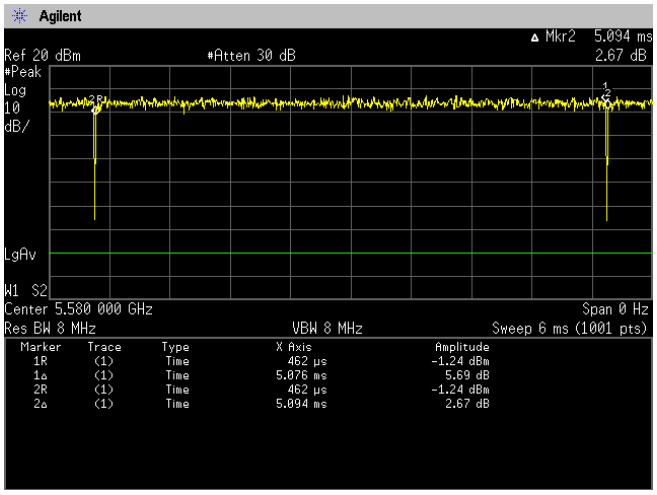
[IEEE802.11ax_HE20_52-Tones]
(5.2 GHz Band)
Channel: 40



(5.3 GHz Band)
Channel: 56

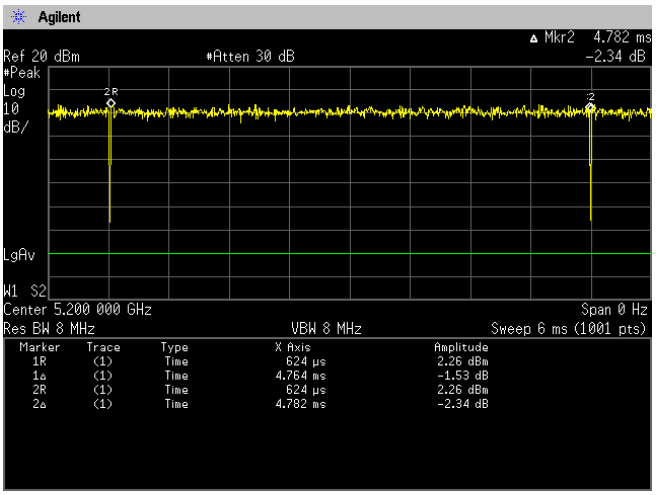


(5.6 GHz Band)
Channel: 116

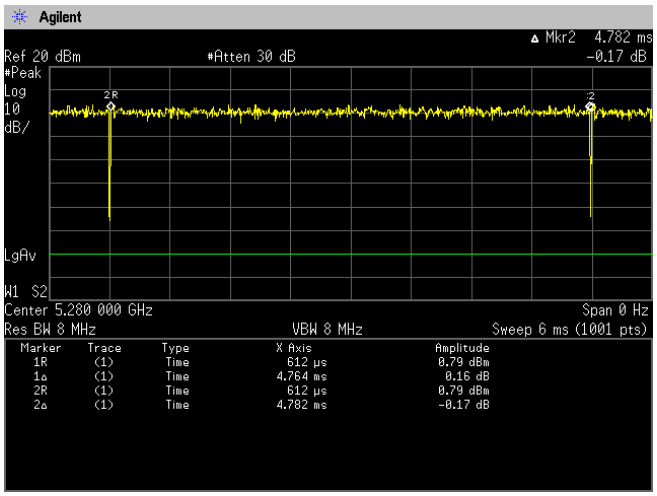


Japan

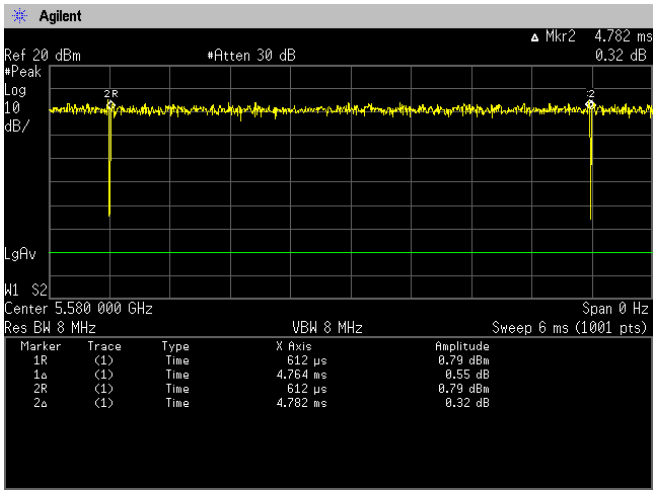
[IEEE802.11ax_HE20_106-Tones]
(5.2 GHz Band)
Channel: 40



(5.3 GHz Band)
Channel: 56

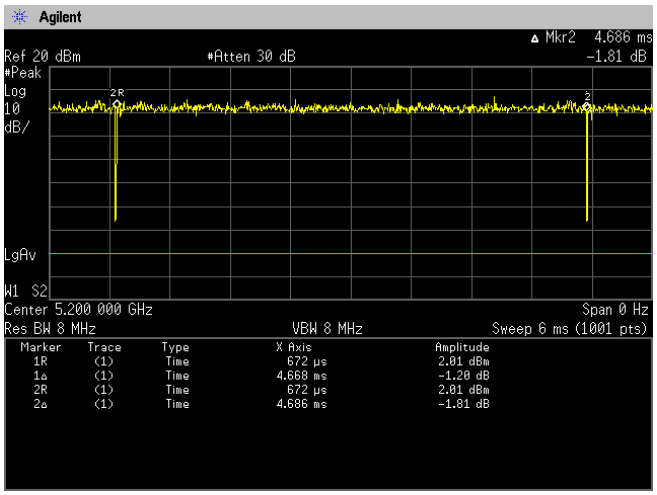


(5.6 GHz Band)
Channel: 116

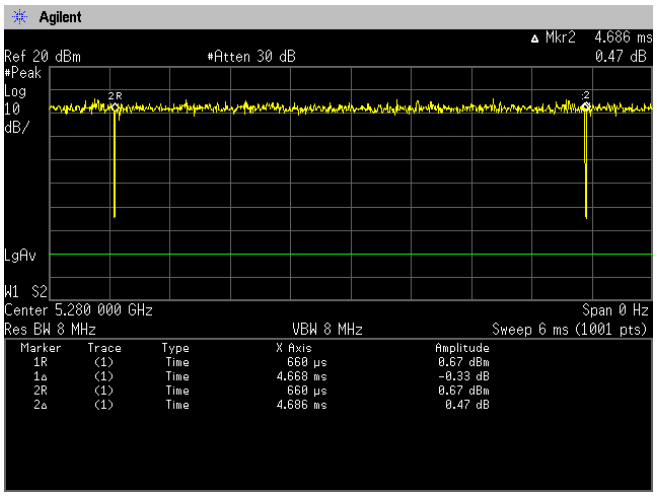


Japan

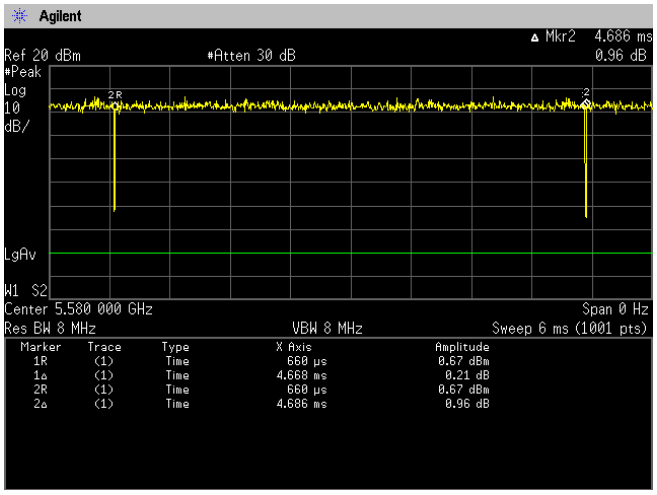
[IEEE802.11ax_HE20_242-Tones]
(5.2 GHz Band)
Channel: 40



(5.3 GHz Band)
Channel: 56

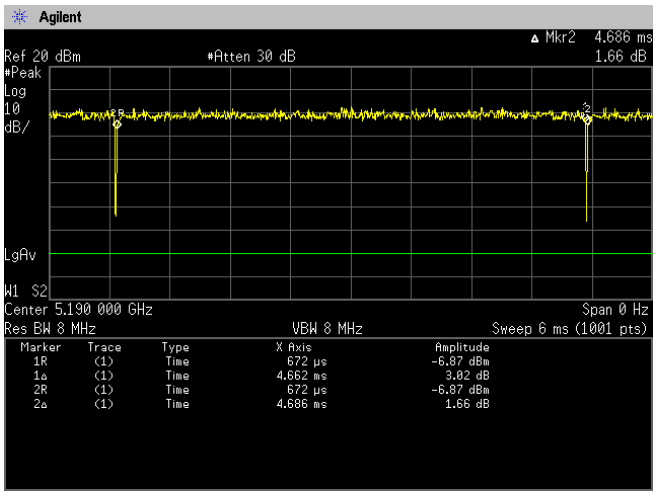


(5.6 GHz Band)
Channel: 116

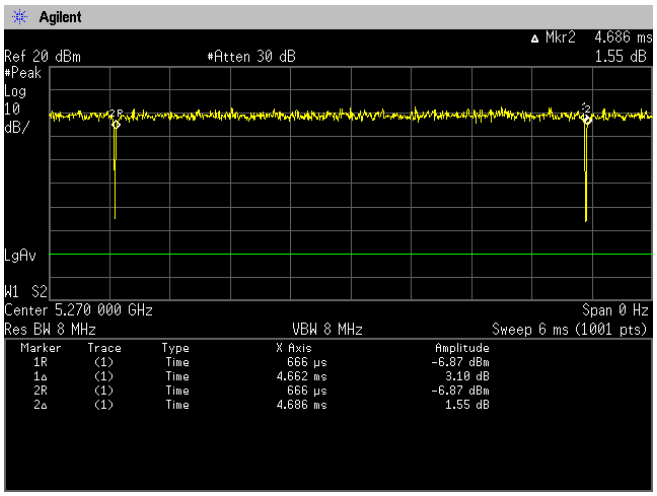


Japan

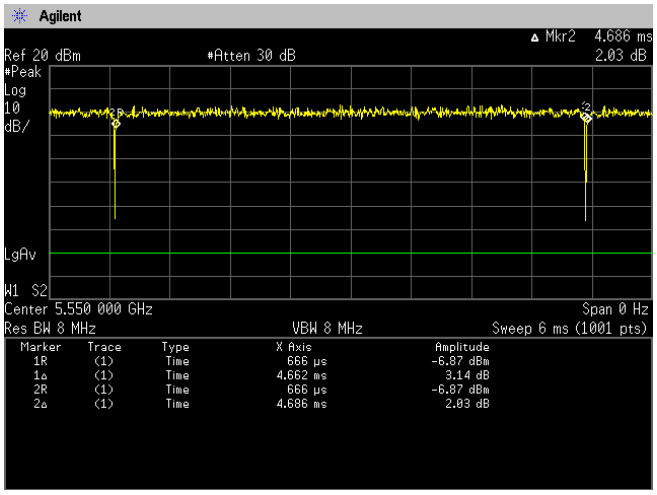
[IEEE802.11ax_HE40_484-Tones]
(5.2 GHz Band)
Channel: 38



(5.3 GHz Band)
Channel: 54

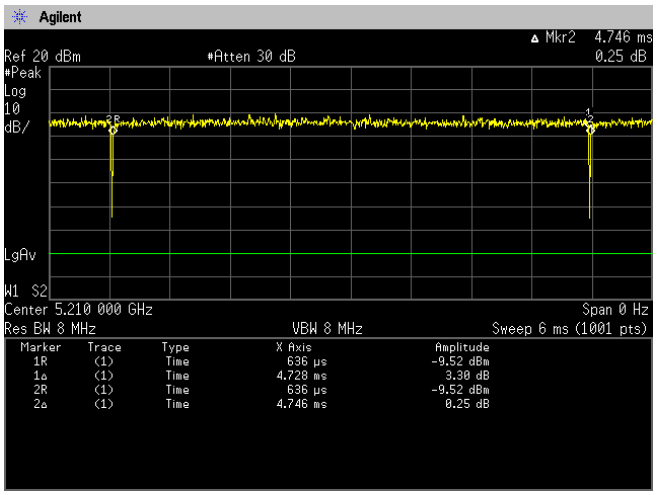


(5.6 GHz Band)
Channel: 110

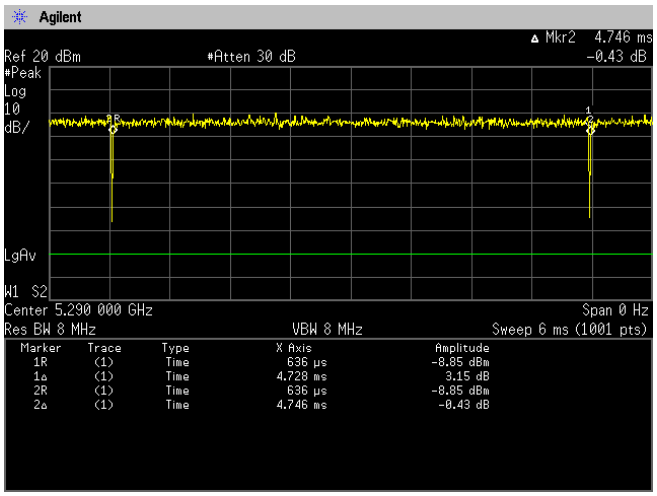


Japan

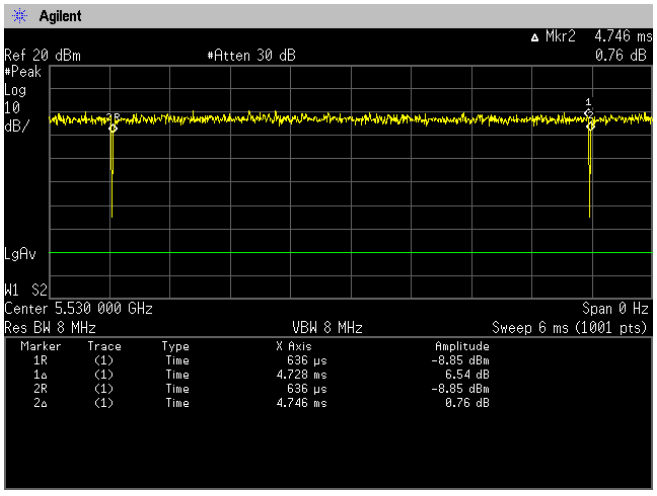
[IEEE802.11ax_HE80_996-Tones]
(5.2 GHz Band)
Channel: 42



(5.3 GHz Band)
Channel: 58

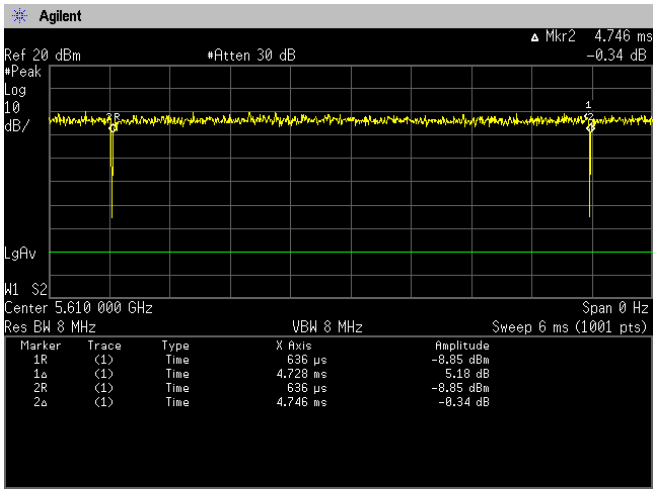


(5.6 GHz Band)
Channel: 106

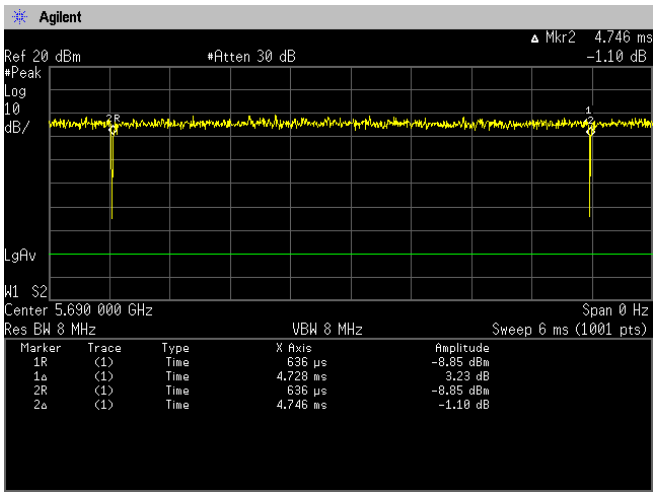


Japan

(5.6 GHz Band)
Channel: 122



Channel: 138



Japan

5 Antenna requirement

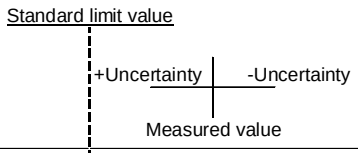
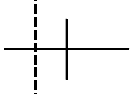
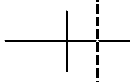
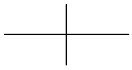
According to FCC section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
The antenna is a special antenna mounted inside of the EUT. Therefore, the EUT complies with the antenna requirement of FCC section 15.203.

Japan

6 Measurement uncertainty

Expanded uncertainties stated are calculated with a coverage Factor k=2.
Please note that these results are not taken into account when measurement uncertainty considerations contained in ETSI TR 100 028 Parts 1 and 2 determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission, AMN (9 kHz – 150 kHz)	±3.7 dB
Conducted emission, AMN (150 kHz – 30 MHz)	±3.3 dB
Radiated emission (9kHz – 30 MHz)	±3.8 dB
Radiated emission (30 MHz – 1000 MHz)	±5.4 dB
Radiated emission (1 GHz – 6 GHz)	±4.6 dB
Radiated emission (6 GHz – 18 GHz)	±4.7 dB
Radiated emission (18 GHz – 40 GHz)	±6.4 dB
Radio Frequency	$\pm 1.3 * 10^{-8}$
RF power, conducted	±0.7 dB
Adjacent channel power	±1.5 dB
Temperature	±0.6 °C
Humidity	±1.2 %
Voltage (DC)	±0.4 %
Voltage (AC, <10kHz)	±0.2 %

Judge	Measured value and standard limit value
PASS	**Case1**  Even if it takes uncertainty into consideration, a standard limit value is fulfilled.
	Case2  Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.
FAIL	**Case3**  Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.
	Case4  Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.

Japan

7 Laboratory Information

Testing was performed and the report was issued at:

TÜV SÜD Japan Ltd. Yonezawa Testing Center

Address: 5-4149-7 Hachimanpara, Yonezawa-shi, Yamagata, 992-1128 Japan
Phone: +81-238-28-2881

Accreditation and Registration
A2LA
Certificate #3686.03

VLAC
Accreditation No.: VLAC-013

BSMI
Laboratory Code: SL2-IN-E-6018, SL2-A1-E-6018

Innovation, Science and Economic Development Canada
ISED#: 4224A

VCCI Council
Registration number: A-0166

Japan

Appendix A. Test Equipment

Antenna port conducted test

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	30-Sep-2023	05-Sep-2022
Attenuator	Weinschel	56-10	J4180	31-Jul-2024	19-Jul-2023
Micro wave cable	Junkosha Inc.	MWX221/1m	N/A(S400)	31-Mar-2024	16-Mar-2023
Low temperature and humidity chamber	Espec	PL1KP	14007261	30-Sep-2023	02-Sep-2022

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI receiver	ROHDE&SCHWARZ	ESW44	103171	30-Sep-2023	20-Sep-2022
Spectrum analyzer	ROHDE&SCHWARZ	FSV40	101731	31-Jul-2023	19-Jul-2022
Preamplifier	SONOMA	310	372170	30-Sep-2023	28-Sep-2022
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	100515	30-Apr-2024	21-Apr-2023
Attenuator	TOYO Connector	NA-PJ-6	N/A(S507)	31-Mar-2024	15-Mar-2023
Biconical antenna	Schwarzbeck	VHBB9124/BBA9106	1145	30-Jun-2023	28-Jun-2022
Log periodic antenna	Schwarzbeck	VUSLP9111B	346	30-Nov-2023	16-Nov-2022
Attenuator	TOYO Connector	NA-PJ-6/6dB	N/A(S541)	30-Sep-2023	28-Sep-2022
Attenuator	TAMAGAWA.ELEC	CFA-10/3dB	N/A(S503)	31-Jul-2023	14-Jul-2022
Preamplifier	TSJ	MLA-100M18-B02-40	1929118	31-Dec-2023	22-Dec-2022
Attenuator	AEROFLEX	26A-10	081217-08	31-Dec-2023	19-Dec-2022
Double ridged guide antenna	ETS LINDGREN	3117	00052315	30-Jun-2024	22-Jun-2023
Attenuator	HUBER+SUHNER	6803.17.B	N/A(2340)	31-Dec-2023	22-Dec-2022
Double ridged guide antenna	A.H.Systems Inc.	SAS-574	469	31-Aug-2023	19-Aug-2022
Preamplifier	TSJ	MLA-1840-B03-35	1240332	31-Aug-2023	19-Aug-2022
Notch Filter	Micro-Tronics	BRM50702	G433	30-Sep-2023	28-Sep-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/9m	800690/4	31-Oct-2023	26-Oct-2022
		SUCOFLEX104/1m	my24610/4	31-Dec-2023	19-Dec-2022
		SUCOFLEX104/9m	2001099/4	31-Dec-2023	22-Dec-2022
		SUCOFLEX104/1m	MY32976/4	31-Dec-2023	22-Dec-2022
		SUCOFLEX104/2m	SN MY28404/4	31-Dec-2023	19-Dec-2022
		SUCOFLEX104/7m	41625/6	31-Dec-2023	22-Dec-2022
PC	DELL	OPTIPLEX9010	00186-228-073-851	N/A	N/A
Software	TOYO Technica	ES10/RE-AJ	Ver.2021.10.001	N/A	N/A
Absorber	RIKEN	PFP30	N/A	N/A	N/A
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-NSA)	31-May-2024	28-May-2023
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-SVSWR)	31-May-2024	28-May-2023

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI receiver	ROHDE&SCHWARZ	ESW44	103171	30-Sep-2023	20-Sep-2022
Attenuator	HUBER+SUHNER	6810.01.A	N/A (S411)	31-Dec-2023	20-Dec-2022
Line impedance stabilization network	Kyoritsu Electrical Works, Ltd.	TNW-407F2	12-17-110-2	30-Jun-2024	22-Jun-2023
Microwave cable	HUBER+SUHNER	SUCOFLEX104/5m	MY33601/4	31-Oct-2023	27-Oct-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/2m	MY37268/4	31-Oct-2023	27-Oct-2022
Coaxial cable	HUBER+SUHNER	RG214/U/10m	N/A (S194)	31-Dec-2023	22-Dec-2022
PC	DELL	OPTIPLEX9010	00186-228-073-851	N/A	N/A
Software	TOYO Technica	ES10/RE-AJ	Ver.2021.10.001	N/A	N/A

*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.