

A.3 MAXIMUM POWER SPECTRAL DENSITY

Test Date	2023/10/24 ~ 26	Temp./Hum.	24 ~ 25°C/57 ~ 64%
Cable Loss	1.60dB	Tested By	Sam Chang
Test Voltage	AC 120V 60Hz (Via AC Adapter)		

A.3.1 Power Spectral Density Result

● OFDM Modulation

Test SKU: SKU #1 (With INPAQ ANT)

Modulation Type	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz)		Duty Cycle Factor (dB) 10log(1/X)	Directional Gain (dBi) ^{Note3}	Total Power Spectral Density (dBm/1 MHz) ^{Note2}	Limit (dBm/MHz)		
			AUX	Main						
802.11ax-HE20	5	5955	-11.063	-11.047	N/A	2.61	-5.435	-1		
		6175	-11.040	-11.096		2.61	-5.448			
		6415	-10.974	-10.665		2.61	-5.196			
	6	6435	-10.781	-10.959		2.60	-5.259			
		6475	-11.035	-11.885		2.60	-5.829			
		6515	-10.742	-11.540		2.60	-5.512			
	7	6535	-11.988	-11.675		2.41	-6.408			
		6695	-12.509	-12.916		2.41	-7.287			
		6855	-12.595	-12.981		2.41	-7.363			
	8	6875	-12.450	-12.940		2.21	-7.468			
		6995	-11.941	-12.123		2.21	-6.811			
		7115	-14.527	-15.401		2.21	-9.722			
802.11ax-HE40	5	5965	-10.310	-11.315	N/A	2.61	-5.163	-1		
		6165	-10.520	-11.305		2.61	-5.274			
		6405	-10.564	-10.964		2.61	-5.139			
	6	6445	-10.053	-10.941		2.60	-4.864			
		6485	-10.218	-10.793		2.60	-4.886			
	7	6525	-10.363	-10.838		2.41	-5.174			
		6685	-11.692	-12.059		2.41	-6.451			
	8	6845	-11.788	-12.422		2.41	-6.673			
		6885	-11.718	-12.145		2.21	-6.706			
		7005	-11.203	-11.195		2.21	-5.979			
			7085	-10.951		-11.544	2.21		-6.017	

Note: 1. All results have been included cable loss [Please refer to KDB 662911 E 2) c)]

2. According to KDB 662911 D01 E)2)a), Total Power Spectral Density (dBm/1MHz) = Sum to individual PSD (dBm/1MHz) + Duty Cycle Factor (dB) when duty cycle is less than 98%. + Directional Gain.

3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi

Directional gain:

5925~6425MHz: Directional gain = $10 \log[(10^{3.3/10} + 10^{1.8/10})/2]$ = 2.61dBi

6425~6525MHz: Directional gain = $10 \log[(10^{2.7/10} + 10^{2.5/10})/2]$ = 2.60dBi

6525~6875MHz: Directional gain = $10 \log[(10^{1.3/10} + 10^{3.3/10})/2]$ = 2.41dBi

6875~7125MHz: Directional gain = $10 \log[(10^{1.4/10} + 10^{2.9/10})/2]$ = 2.21dBi

The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

Modulation Type	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz)		Duty Cycle Factor (dB) 10log(1/X)	Directional Gain (dBi) ^{Note3}	Total Power Spectral Density (dBm/1 MHz) ^{Note2}	Limit (dBm/MHz)
			AUX	Main				
802.11ax-HE80	5	5985	-10.298	-10.520	N/A	2.61	-4.787	-1
		6145	-10.004	-10.874		2.61	-4.797	
		6385	-10.237	-10.637		2.61	-4.812	
	6	6465	-10.314	-10.561		2.60	-4.825	
		6545	-10.322	-10.325		2.60	-4.713	
	7	6625	-11.106	-11.332		2.41	-5.797	
		6705	-11.335	-11.560		2.41	-6.026	
		6785	-11.284	-11.554		2.41	-5.997	
	8	6865	-11.205	-11.897		2.21	-6.317	
		6945	-10.978	-11.372		2.21	-5.950	
		7025	-11.266	-11.280		2.21	-6.053	
	802.11ax-HE160	5	6025	-10.217		-10.908	N/A	
6185			-10.201	-10.898	2.61	-4.915		
6345			-10.486	-10.919	2.61	-5.077		
6		6505	-9.953	-10.815	2.60	-4.752		
		6665	-10.918	-11.257	2.41	-5.664		
7		6825	-11.321	-11.722	2.41	-6.097		
		6985	-11.000	-11.292	2.21	-5.923		

Note: 1. All results have been included cable loss [Please refer to KDB 662911 E 2) c)]

2. According to KDB 662911 D01 E)2)a), Total Power Spectral Density (dBm/1MHz) = Sum to individual PSD (dBm/1MHz) + Duty Cycle Factor (dB) when duty cycle is less than 98%. + Directional Gain.

3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

$$\text{Directional gain} = 10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{\text{ANT}}] \text{ dBi}$$

Directional gain:

$$5925\sim6425\text{MHz: Directional gain} = 10 \log[(10^{3.3/10} + 10^{1.8/10})/2] = 2.61\text{dBi}$$

$$6425\sim6525\text{MHz: Directional gain} = 10 \log[(10^{2.7/10} + 10^{2.5/10})/2] = 2.60\text{dBi}$$

$$6525\sim6875\text{MHz: Directional gain} = 10 \log[(10^{1.3/10} + 10^{3.3/10})/2] = 2.41\text{dBi}$$

$$6875\sim7125\text{MHz: Directional gain} = 10 \log[(10^{1.4/10} + 10^{2.9/10})/2] = 2.21\text{dBi}$$

The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

Test SKU: SKU #1 (With LUXSHARE-ICT ANT)

Modulation Type	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz)		Duty Cycle Factor (dB) 10log(1/X)	Directional Gain (dBi) ^{Note3}	Total Power Spectral Density (dBm/1 MHz) ^{Note 2}	Limit (dBm/MHz)
			AUX	Main				
802.11ax-HE20	5	5955	-11.063	-11.047	N/A	4.94	-3.105	-1
		6175	-11.040	-11.096		3.06	-4.998	
		6415	-10.974	-10.665		1.47	-6.336	
	6	6435	-10.781	-10.959		1.47	-6.389	
		6475	-11.035	-11.885		0.23	-8.199	
		6515	-10.742	-11.540		0.23	-7.882	
	7	6535	-11.988	-11.675		0.23	-8.588	
		6695	-12.509	-12.916		-0.34	-10.037	
		6855	-12.595	-12.981		-0.40	-10.173	
	8	6875	-12.450	-12.940		-0.57	-10.248	
		6995	-11.941	-12.123		-0.74	-9.761	
		7115	-14.527	-15.401		-2.42	-14.352	
802.11ax-HE40	5	5965	-10.310	-11.315	N/A	4.94	-2.833	-1
		6165	-10.520	-11.305		3.08	-4.804	
		6405	-10.564	-10.964		1.47	-6.279	
	6	6445	-10.053	-10.941		1.47	-5.994	
		6485	-10.218	-10.793		0.23	-7.256	
		6525	-10.363	-10.838		0.23	-7.354	
	7	6685	-11.692	-12.059		-0.34	-9.201	
		6845	-11.788	-12.422		-0.40	-9.483	
		6885	-11.718	-12.145		-0.57	-9.486	
	8	7005	-11.203	-11.195		-0.74	-8.929	
		7085	-10.951	-11.544		-2.42	-10.647	

Note: 1. All results have been included cable loss [Please refer to KDB 662911 E 2) c)]

2. According to KDB 662911 D01 E)2)a), Total Power Spectral Density (dBm/1MHz) = Sum to individual PSD (dBm/1MHz) + Duty Cycle Factor (dB) when duty cycle is less than 98%. + Directional Gain.

3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

$$\text{Directional gain} = 10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{\text{ANT}}] \text{ dBi}$$

Directional gain:

$$5925\text{MHz: Directional gain} = 10 \log[(10^{3.389/10} + 10^{6.086/10})/2] = 4.94\text{dBi}$$

$$6025\text{MHz: Directional gain} = 10 \log[(10^{3.399/10} + 10^{4.882/10})/2] = 4.17\text{dBi}$$

$$6125\text{MHz: Directional gain} = 10 \log[(10^{1.503/10} + 10^{4.233/10})/2] = 3.08\text{dBi}$$

$$6225\text{MHz: Directional gain} = 10 \log[(10^{1.311/10} + 10^{4.310/10})/2] = 3.06\text{dBi}$$

$$6325\text{MHz: Directional gain} = 10 \log[(10^{-0.913/10} + 10^{3.824/10})/2] = 2.07\text{dBi}$$

$$6425\text{MHz: Directional gain} = 10 \log[(10^{-0.235/10} + 10^{2.696/10})/2] = 1.47\text{dBi}$$

$$6525\text{MHz: Directional gain} = 10 \log[(10^{-0.526/10} + 10^{0.877/10})/2] = 0.23\text{dBi}$$

$$6625\text{MHz: Directional gain} = 10 \log[(10^{-0.481/10} + 10^{-0.490/10})/2] = -0.49\text{dBi}$$

$$6725\text{MHz: Directional gain} = 10 \log[(10^{0.278/10} + 10^{-1.049/10})/2] = -0.34\text{dBi}$$

$$6825\text{MHz: Directional gain} = 10 \log[(10^{0.716/10} + 10^{-1.896/10})/2] = -0.40\text{dBi}$$

$$6925\text{MHz: Directional gain} = 10 \log[(10^{0.701/10} + 10^{-2.361/10})/2] = -0.57\text{dBi}$$

$$7025\text{MHz: Directional gain} = 10 \log[(10^{0.087/10} + 10^{-1.759/10})/2] = -0.74\text{dBi}$$

$$7125\text{MHz: Directional gain} = 10 \log[(10^{-1.074/10} + 10^{-4.391/10})/2] = -2.42\text{dBi}$$

The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

Modulation Type	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz)		Duty Cycle Factor (dB) 10log(1/X)	Directional Gain (dBi) ^{Note3}	Total Power Spectral Density (dBm/1 MHz) ^{Note2}	Limit (dBm/MHz)
			AUX	Main				
802.11ax-HE80	5	5985	-10.298	-10.520	N/A	4.17	-3.227	-1
		6145	-10.004	-10.874		3.08	-4.327	
		6385	-10.237	-10.637		1.47	-5.952	
	6	6465	-10.314	-10.561		1.47	-5.955	
		6545	-10.322	-10.325		0.23	-7.083	
	7	6625	-11.106	-11.332		-0.49	-8.697	
		6705	-11.335	-11.560		-0.34	-8.776	
		6785	-11.284	-11.554		-0.40	-8.807	
	8	6865	-11.205	-11.897		-0.40	-8.927	
		6945	-10.978	-11.372		-0.57	-8.730	
		7025	-11.266	-11.280		-0.74	-9.003	
	802.11ax-HE160	5	6025	-10.217		-10.908	N/A	
6185			-10.201	-10.898	3.06	-4.465		
6345			-10.486	-10.919	2.07	-5.617		
6		6505	-9.953	-10.815	0.23	-7.122		
		6665	-10.918	-11.257	-0.49	-8.564		
7		6825	-11.321	-11.722	-0.40	-8.907		
		6985	-11.000	-11.292	-0.74	-8.873		

Note: 1. All results have been included cable loss [Please refer to KDB 662911 E 2) c)]

2. According to KDB 662911 D01 E)2)a), Total Power Spectral Density (dBm/1MHz) = Sum to individual PSD (dBm/1MHz) + Duty Cycle Factor (dB) when duty cycle is less than 98%. + Directional Gain.

3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

$$\text{Directional gain} = 10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{\text{ANT}}] \text{ dBi}$$

Directional gain:

$$5925\text{MHz: Directional gain} = 10 \log[(10^{3.389/10} + 10^{6.086/10})/2] = 4.94\text{dBi}$$

$$6025\text{MHz: Directional gain} = 10 \log[(10^{3.399/10} + 10^{4.882/10})/2] = 4.17\text{dBi}$$

$$6125\text{MHz: Directional gain} = 10 \log[(10^{1.503/10} + 10^{4.233/10})/2] = 3.08\text{dBi}$$

$$6225\text{MHz: Directional gain} = 10 \log[(10^{1.311/10} + 10^{4.310/10})/2] = 3.06\text{dBi}$$

$$6325\text{MHz: Directional gain} = 10 \log[(10^{-0.913/10} + 10^{3.824/10})/2] = 2.07\text{dBi}$$

$$6425\text{MHz: Directional gain} = 10 \log[(10^{-0.235/10} + 10^{2.696/10})/2] = 1.47\text{dBi}$$

$$6525\text{MHz: Directional gain} = 10 \log[(10^{-0.526/10} + 10^{0.877/10})/2] = 0.23\text{dBi}$$

$$6625\text{MHz: Directional gain} = 10 \log[(10^{-0.481/10} + 10^{-0.490/10})/2] = -0.49\text{dBi}$$

$$6725\text{MHz: Directional gain} = 10 \log[(10^{0.278/10} + 10^{-1.049/10})/2] = -0.34\text{dBi}$$

$$6825\text{MHz: Directional gain} = 10 \log[(10^{0.716/10} + 10^{-1.896/10})/2] = -0.40\text{dBi}$$

$$6925\text{MHz: Directional gain} = 10 \log[(10^{0.701/10} + 10^{-2.361/10})/2] = -0.57\text{dBi}$$

$$7025\text{MHz: Directional gain} = 10 \log[(10^{0.087/10} + 10^{-1.759/10})/2] = -0.74\text{dBi}$$

$$7125\text{MHz: Directional gain} = 10 \log[(10^{-1.074/10} + 10^{-4.391/10})/2] = -2.42\text{dBi}$$

The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

● OFDMA Modulation

Test SKU: SKU #1 (With INPAQ ANT)

Tones	RU Index	Modulation Type	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz)		Duty Cycle Factor (dB) 10log(1/X)	Directional Gain (dBi) Note3	Total Power Spectral Density (dBm/1 MHz) Note 2	Limit (dBm/MHz)
					AUX	Main				
26T	18	802.11ax-HE80	5	5985	-9.965	-9.628	N/A	2.61	-4.173	-1
52T	39	802.11ax-HE20	5	5955	-10.024	-9.813	N/A	2.61	-4.297	
106T	53	802.11ax-HE40	5	5965	-10.335	-10.058	N/A	2.61	-4.574	
242T	62	802.11ax-HE160	5	6025	-10.478	-10.533	N/A	2.61	-4.885	
484T	S66	802.11ax-HE160	5	6025	-10.402	-10.535	N/A	2.61	-4.848	
996T	67	802.11ax-HE80	5	6385	-10.074	-10.234	N/A	2.61	-4.533	

Note: 1. All results have been included cable loss [Please refer to KDB 662911 E 2) c)]
 2. According to KDB 662911 D01 E)2)a), Total Power Spectral Density (dBm/1MHz) = Sum to individual PSD (dBm/1MHz) + Duty Cycle Factor (dB) when duty cycle is less than 98%. + Directional Gain.
 3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
 Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi
 Directional gain:
 5925~6425MHz: Directional gain = $10 \log[(10^{3.3/10} + 10^{1.8/10})/2] = 2.61$ dBi
 6425~6525MHz: Directional gain = $10 \log[(10^{2.7/10} + 10^{2.5/10})/2] = 2.60$ dBi
 6525~6875MHz: Directional gain = $10 \log[(10^{1.3/10} + 10^{3.3/10})/2] = 2.41$ dBi
 6875~7125MHz: Directional gain = $10 \log[(10^{1.4/10} + 10^{2.9/10})/2] = 2.21$ dBi
 The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

Test SKU: SKU #1 (With LUXSHARE-ICT ANT)

Tones	RU Index	Modulation Type	U-NII Band	Centre Frequency (MHz)	Power Spectral Density (dBm/MHz)		Duty Cycle Factor (dB) 10log(1/X)	Directional Gain (dBi) Note3	Total Power Spectral Density (dBm/1 MHz) Note 2	Limit (dBm/MHz)
					AUX	Main				
26T	4	802.11ax-HE20	5	5955	-9.913	-9.849	N/A	4.94	-1.931	-1
52T	39	802.11ax-HE20	5	5955	-10.024	-9.813	N/A	4.94	-1.967	
106T	53	802.11ax-HE40	5	5965	-10.335	-10.058	N/A	4.94	-2.244	
242T	61	802.11ax-HE20	5	5955	-10.507	-10.465	N/A	4.94	-2.536	
484T	65	802.11ax-HE40	5	5965	-10.117	-10.036	N/A	4.94	-2.126	
996T	67	802.11ax-HE80	5	5985	-10.000	-9.756	N/A	4.94	-1.926	

Note: 1. All results have been included cable loss [Please refer to KDB 662911 E 2) c)]
 2. According to KDB 662911 D01 E)2)a), Total Power Spectral Density (dBm/1MHz) = Sum to individual PSD (dBm/1MHz) + Duty Cycle Factor (dB) when duty cycle is less than 98%. + Directional Gain.
 3. According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then
 Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi
 Directional gain:
 5925MHz: Directional gain = $10 \log[(10^{3.389/10} + 10^{6.086/10})/2] = 4.94$ dBi
 6025MHz: Directional gain = $10 \log[(10^{3.399/10} + 10^{4.882/10})/2] = 4.17$ dBi
 6125MHz: Directional gain = $10 \log[(10^{1.503/10} + 10^{4.233/10})/2] = 3.08$ dBi
 6225MHz: Directional gain = $10 \log[(10^{1.311/10} + 10^{4.310/10})/2] = 3.06$ dBi
 6325MHz: Directional gain = $10 \log[(10^{-0.913/10} + 10^{3.824/10})/2] = 2.07$ dBi
 6425MHz: Directional gain = $10 \log[(10^{-0.235/10} + 10^{2.696/10})/2] = 1.47$ dBi
 6525MHz: Directional gain = $10 \log[(10^{-0.526/10} + 10^{0.877/10})/2] = 0.23$ dBi
 6625MHz: Directional gain = $10 \log[(10^{-0.481/10} + 10^{-0.490/10})/2] = -0.49$ dBi
 6725MHz: Directional gain = $10 \log[(10^{0.278/10} + 10^{-1.049/10})/2] = -0.34$ dBi
 6825MHz: Directional gain = $10 \log[(10^{0.716/10} + 10^{-1.896/10})/2] = -0.40$ dBi
 6925MHz: Directional gain = $10 \log[(10^{0.701/10} + 10^{-2.361/10})/2] = -0.57$ dBi
 7025MHz: Directional gain = $10 \log[(10^{0.087/10} + 10^{-1.759/10})/2] = -0.74$ dBi
 7125MHz: Directional gain = $10 \log[(10^{-1.074/10} + 10^{-4.391/10})/2] = -2.42$ dBi
 The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).

A.3.2 Measurement Plots

- OFDM Modulation



























