

## Appendix A

### RF Test Data for 2.4G WIFI (Conducted Measurement)

**Product Name: CPE**  
**Trade Mark: ESPRESSObin-Ultra**  
**Test Model: ESPRESSObin-Ultra**

#### Environmental Conditions

Temperature:	22.6 ° C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhuo Zhuo
Supervised by:	Tom.Liu

#### A.1 Duty Cycle

##### Antenna 0

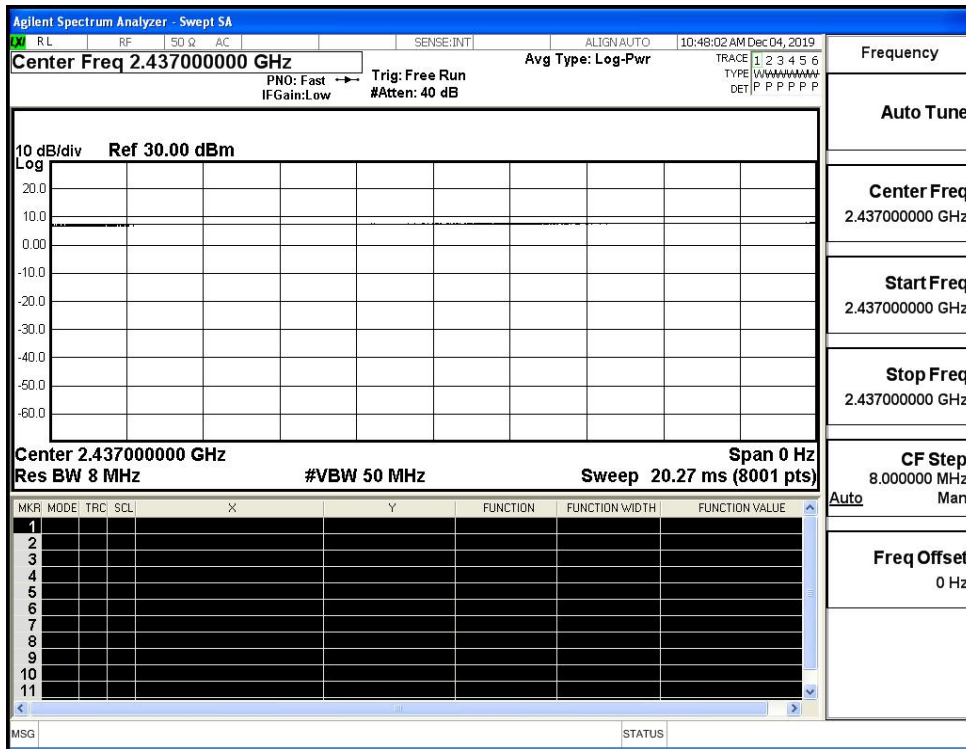
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant0	100	PASS
11G	2437	Ant0	100	PASS
11N20SISO	2437	Ant0	100	PASS
11N40SISO	2437	Ant0	100	PASS

##### Antenna 1

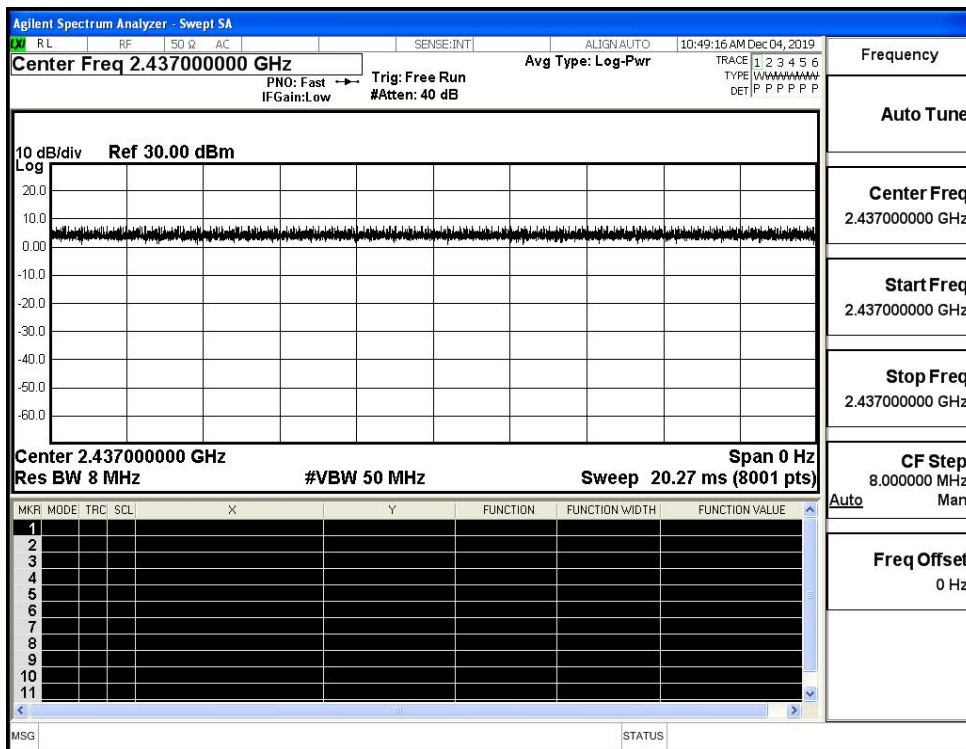
#### A.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant1	100	PASS
11G	2437	Ant1	100	PASS
11N20SISO	2437	Ant1	100	PASS
11N40SISO	2437	Ant1	100	PASS

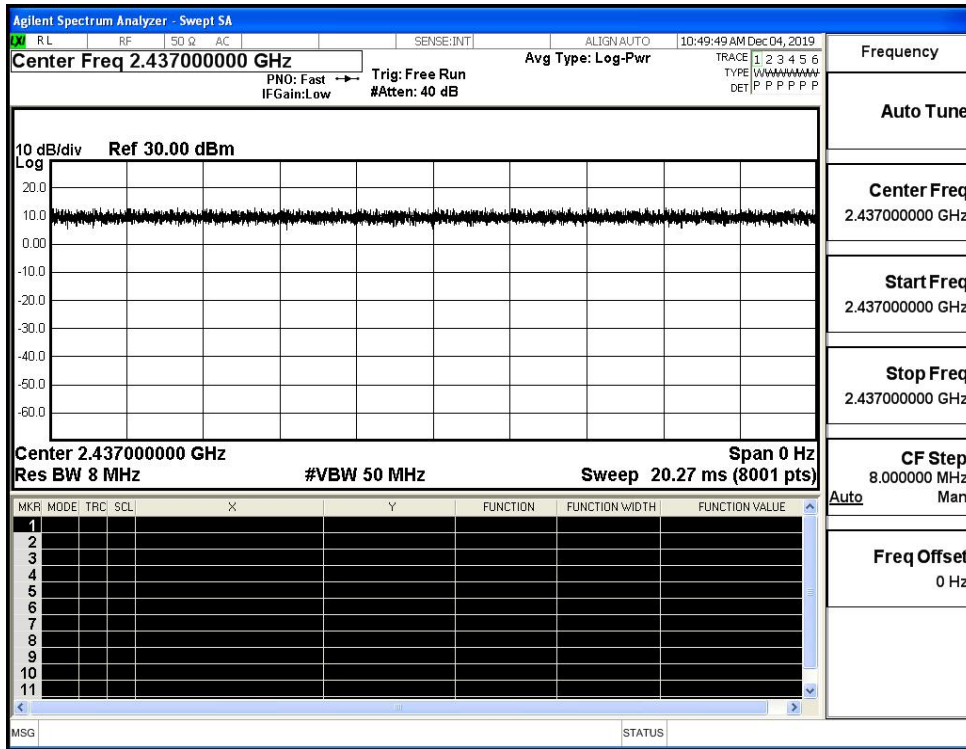
Duty Cycle\_11B\_2437\_Ant0



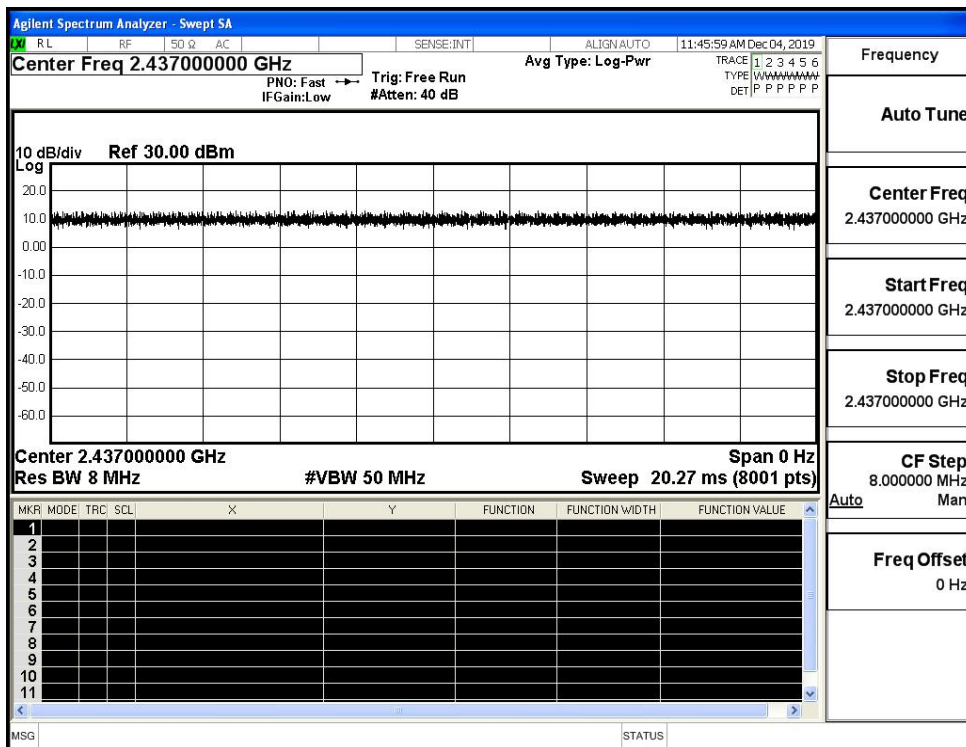
Duty Cycle\_11G\_2437\_Ant0



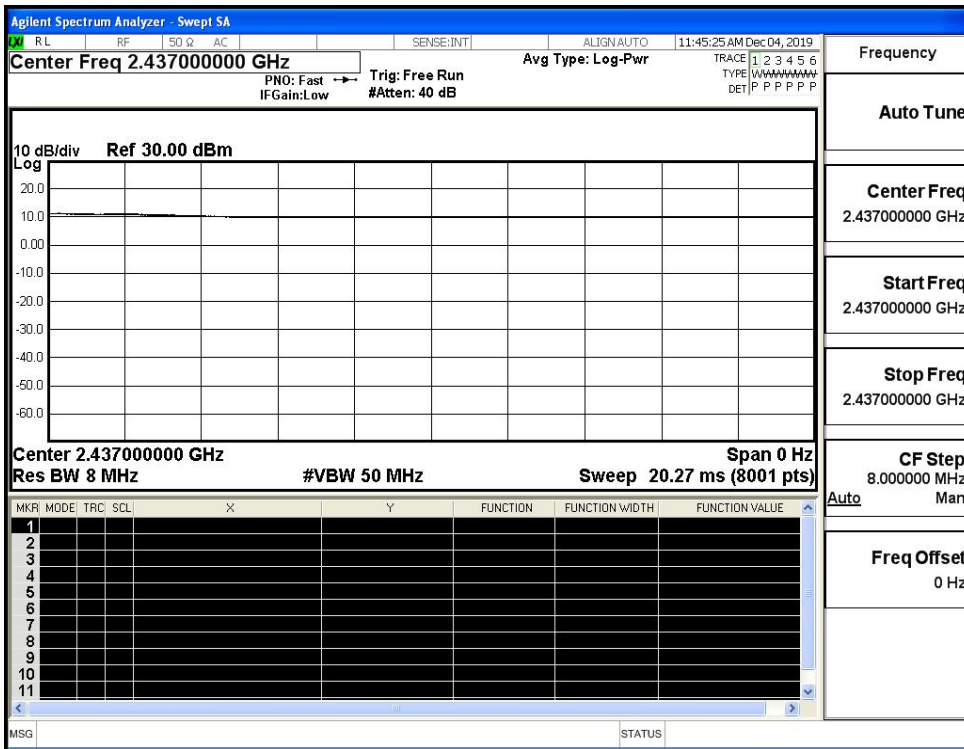
Duty Cycle\_11N20SISO\_2437\_Ant0



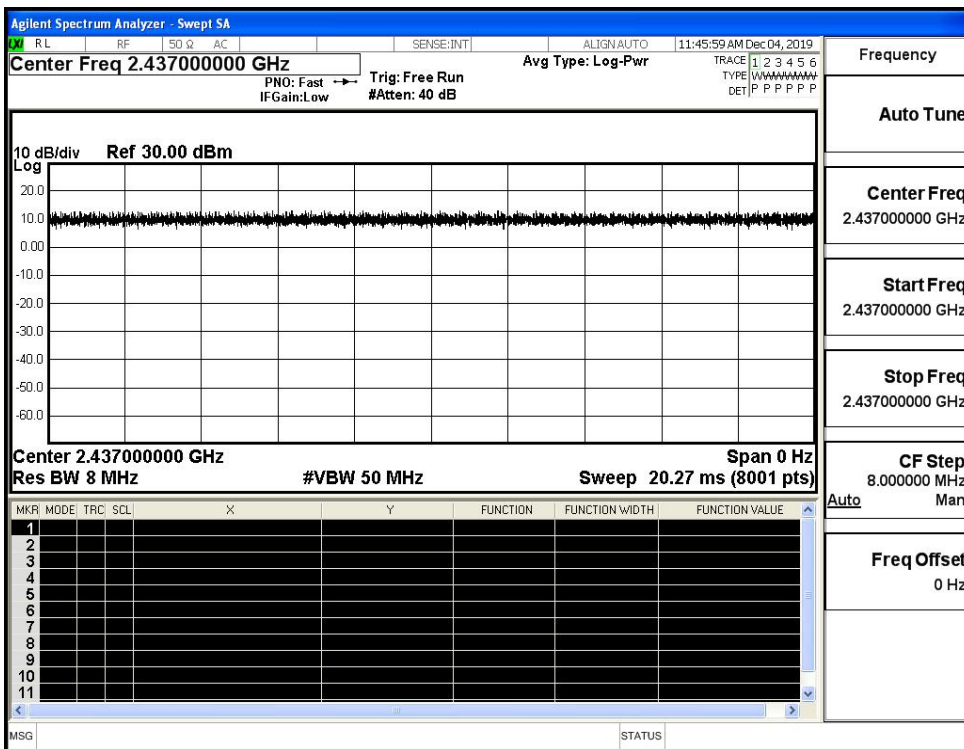
Duty Cycle\_11N40SISO\_2437\_Ant0



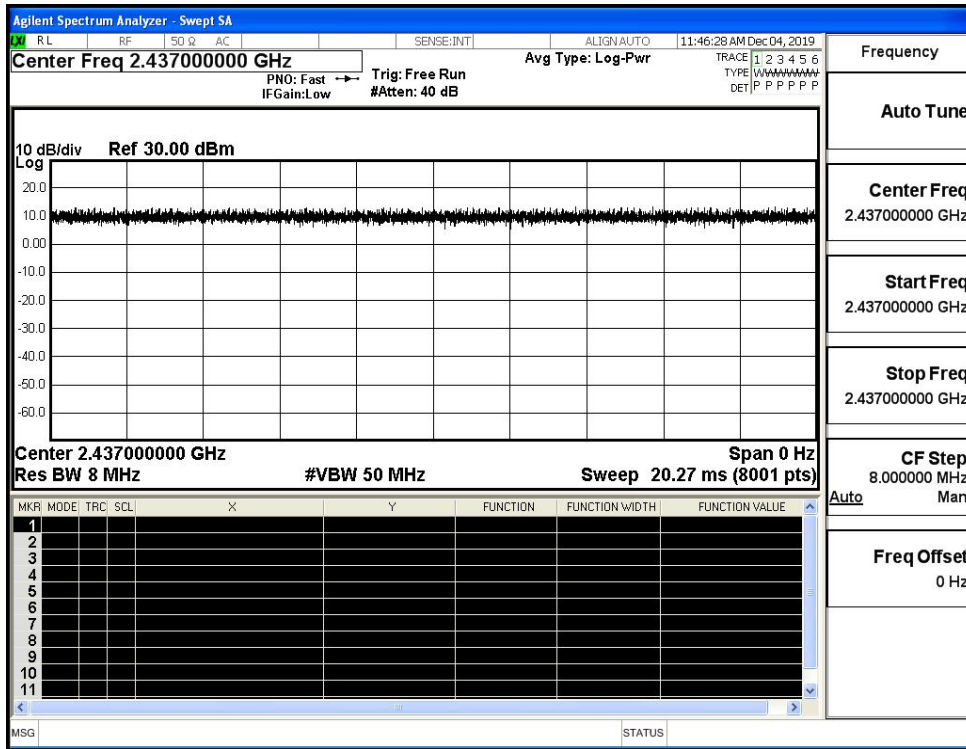
Duty Cycle\_11B\_2437\_Ant1



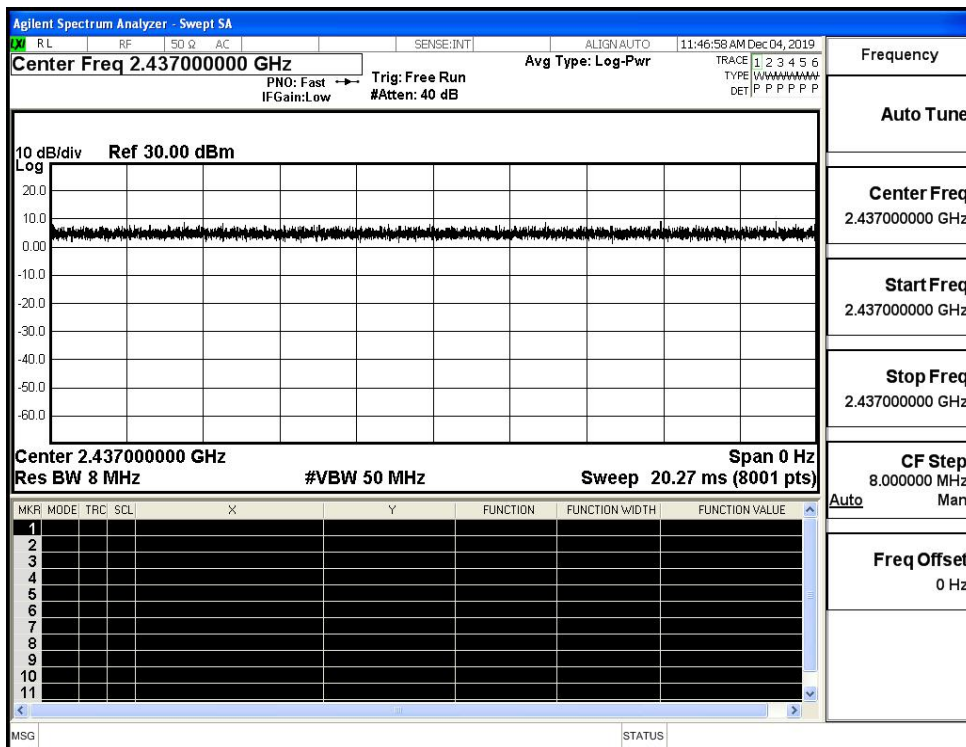
Duty Cycle\_11G\_2437\_Ant1



Duty Cycle\_11N20SISO\_2437\_Ant1



Duty Cycle\_11N40SISO\_2437\_Ant1



## A.2 Maximum Conducted Output Power

### Antenna 0

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	11.09	30	PASS
	MCH	16.19	30	PASS
	HCH	16.00	30	PASS
11G	LCH	16.35	30	PASS
	MCH	16.48	30	PASS
	HCH	16.32	30	PASS
11N20SISO	LCH	16.63	30	PASS
	MCH	16.74	30	PASS
	HCH	16.59	30	PASS
11N40SISO	LCH	16.69	30	PASS
	MCH	16.76	30	PASS
	HCH	16.7	30	PASS

### Antenna 1

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	11.1	30	PASS
	MCH	11.27	30	PASS
	HCH	11.13	30	PASS
11G	LCH	16.33	30	PASS
	MCH	16.43	30	PASS
	HCH	16.32	30	PASS
11N20SISO	LCH	16.6	30	PASS
	MCH	16.75	30	PASS
	HCH	16.59	30	PASS
11N40SISO	LCH	16.71	30	PASS
	MCH	16.76	30	PASS
	HCH	16.74	30	PASS

**ANT0+ANT1:**

Mode	Channel	Meas.Level [dBm]			Limit [dBm]	Verdict
		Ant0	Ant1	Sum		
11N20MIMO	LCH	15.92	15.14	18.56	30	PASS
	MCH	15.28	15.52	18.41	30	PASS
	HCH	15.15	15.62	18.40	30	PASS
11N40MIMO	LCH	15.82	15.74	18.79	30	PASS
	MCH	15.18	15.25	18.23	30	PASS
	HCH	15.62	15.92	18.78	30	PASS

### A.3 Maximum Power Spectral Density

#### Antenna 0

Mode	Channel	Meas.Level [dBm/30KHz]	Convert Factor	Meas.Level [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-4.200	-10	-14.200	8	PASS
	MCH	0.164	-10	-9.836	8	PASS
	HCH	0.578	-10	-9.422	8	PASS
11G	LCH	-7.700	-10	-17.700	8	PASS
	MCH	-7.763	-10	-17.763	8	PASS
	HCH	-7.529	-10	-17.529	8	PASS
11N20SISO	LCH	-6.925	-10	-16.925	8	PASS
	MCH	-7.190	-10	-17.190	8	PASS
	HCH	-7.423	-10	-17.423	8	PASS
11N40SISO	LCH	-10.401	-10	-20.401	8	PASS
	MCH	-9.603	-10	-19.603	8	PASS
	HCH	-10.104	-10	-20.104	8	PASS

#### Antenna 1

Mode	Channel	Meas.Level [dBm/30KHz]	Convert Factor	Meas.Level [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-4.289	-10	-14.289	8	PASS
	MCH	-5.219	-10	-15.219	8	PASS
	HCH	-5.465	-10	-15.465	8	PASS
11G	LCH	-7.395	-10	-17.395	8	PASS
	MCH	-6.206	-10	-16.206	8	PASS
	HCH	-6.320	-10	-16.320	8	PASS
11N20SISO	LCH	-7.170	-10	-17.170	8	PASS
	MCH	-7.143	-10	-17.143	8	PASS
	HCH	-7.265	-10	-17.265	8	PASS
11N40SISO	LCH	-10.428	-10	-20.428	8	PASS
	MCH	-10.657	-10	-20.657	8	PASS
	HCH	-10.633	-10	-20.633	8	PASS

\*\*\*Note: The Convert Factor =  $10 \cdot \log(3\text{KHz}/30\text{KHz}) = -10$

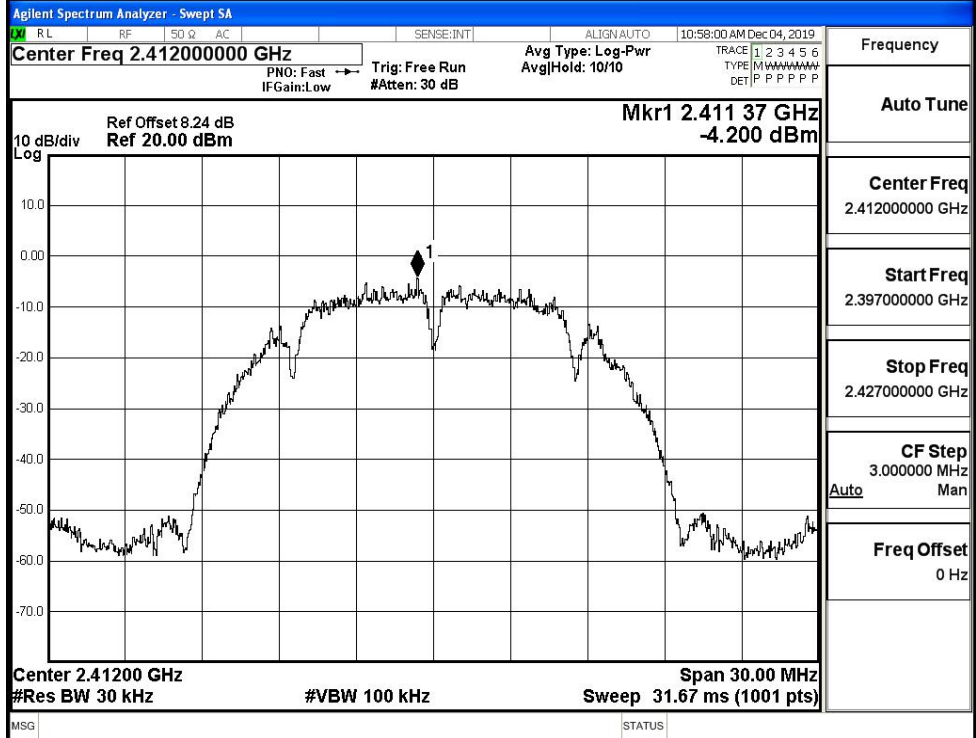


**ANT0+ANT1:**

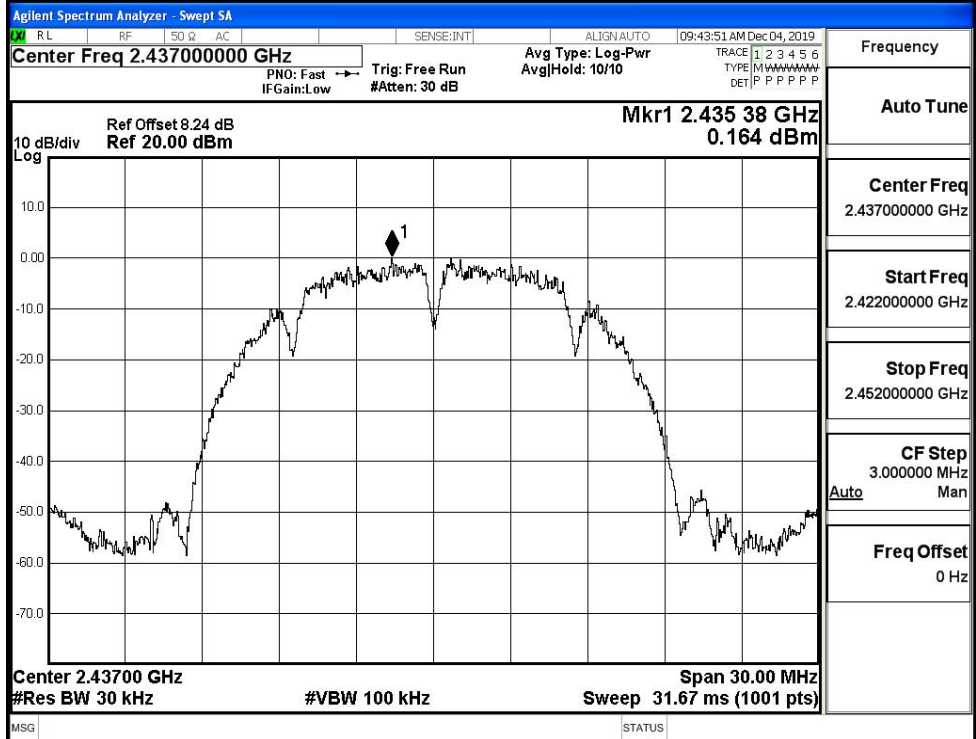
Mode	Channel	Meas.Level [dBm/3KHz]			Limit [dBm/3KHz]	Verdict
		Ant0	Ant1	Sum		
11N20MIMO	LCH	-16.925	-17.170	-14.04	8	PASS
	MCH	-17.190	-17.143	-14.16	8	PASS
	HCH	-17.423	-17.265	-14.33	8	PASS
11N40MIMO	LCH	-20.401	-20.428	-17.40	8	PASS
	MCH	-19.603	-20.657	-17.09	8	PASS
	HCH	-20.104	-20.633	-17.35	8	PASS

Test Graphs(Antenna 0)

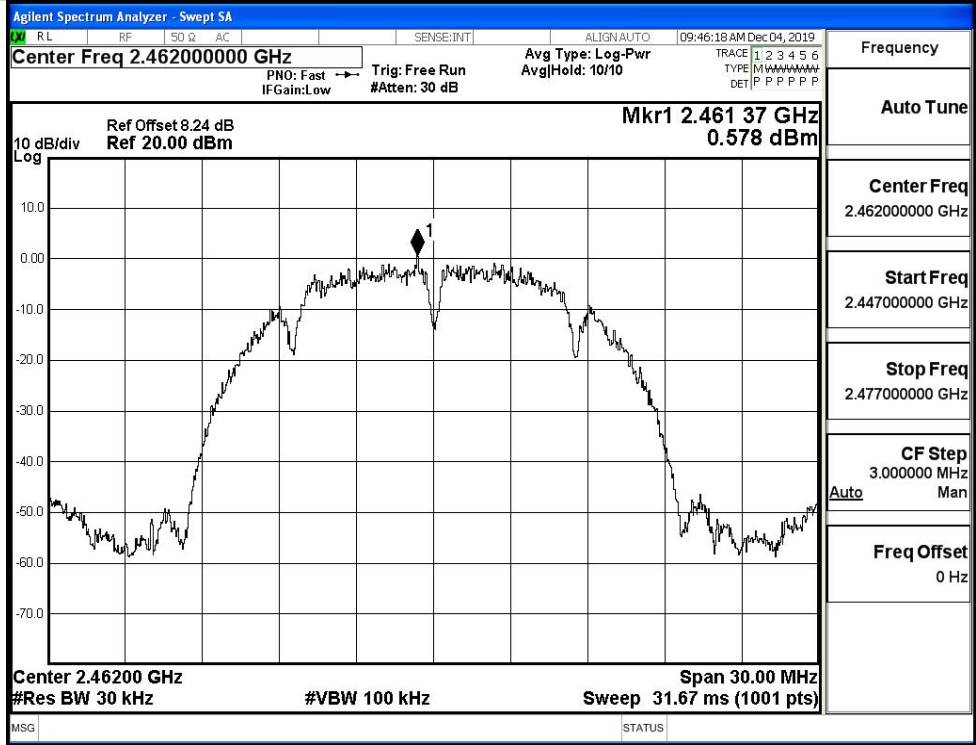
11B/LCH



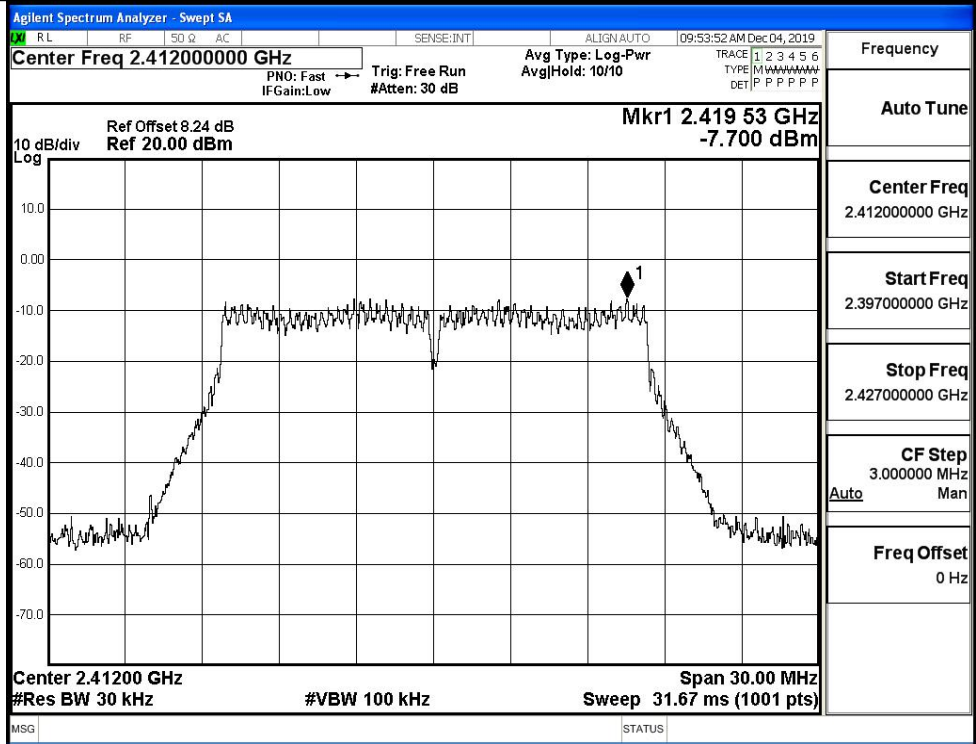
11B/MCH



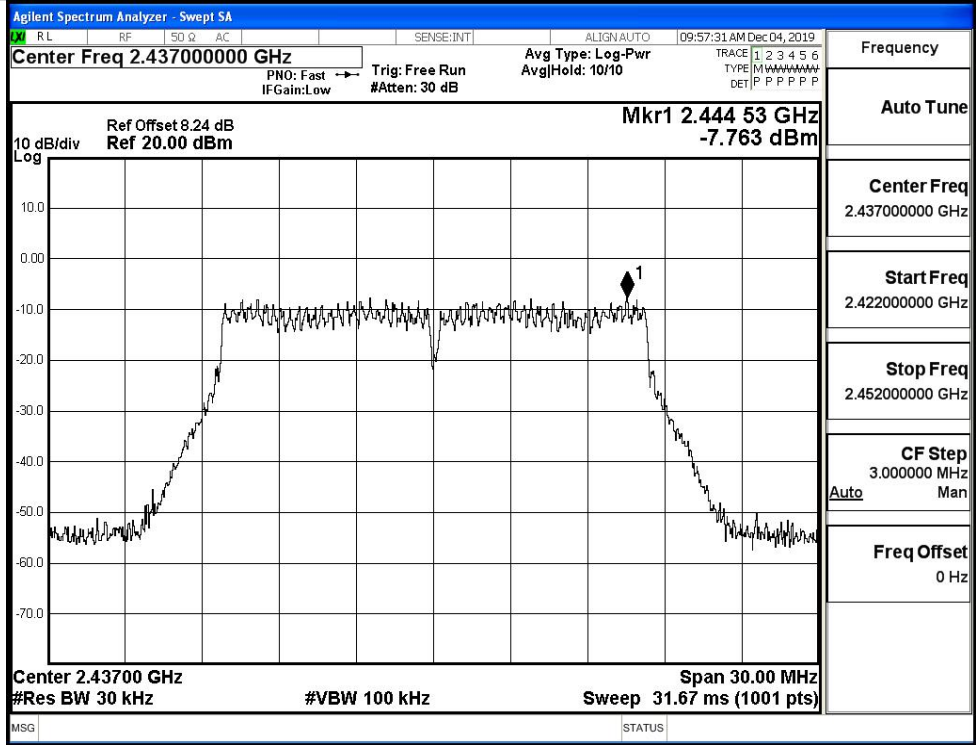
11B/HCH



11G/LCH

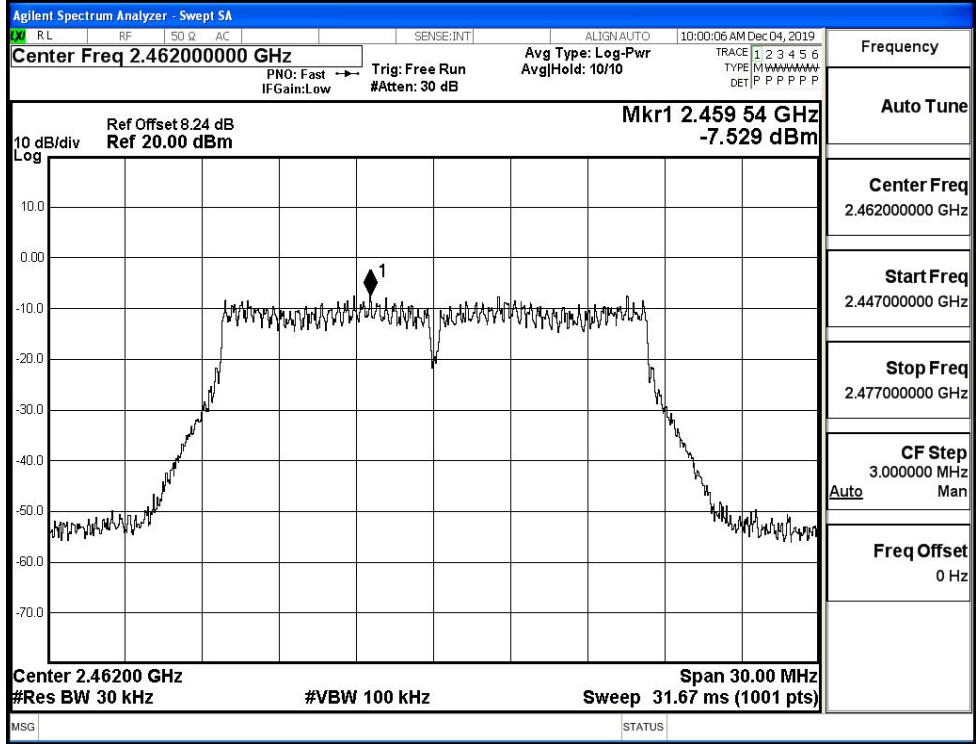


11G/MCH



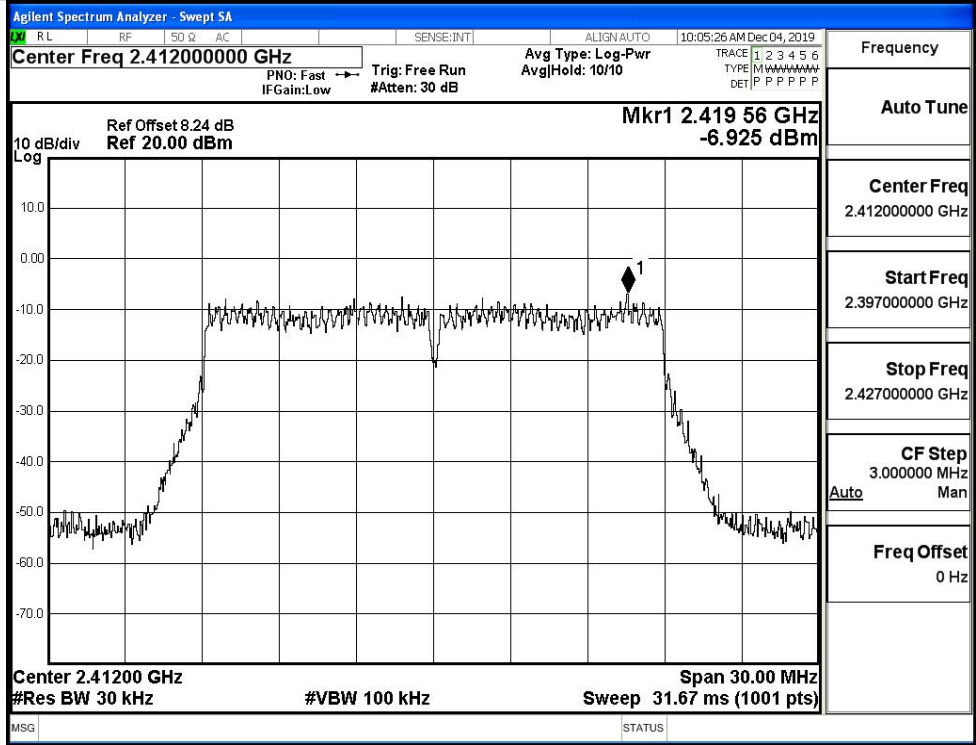
Frequency
Auto Tune
Center Freq 2.43700000 GHz
Start Freq 2.42200000 GHz
Stop Freq 2.45200000 GHz
CF Step 3.000000 MHz Auto Man
Freq Offset 0 Hz

11G/HCH

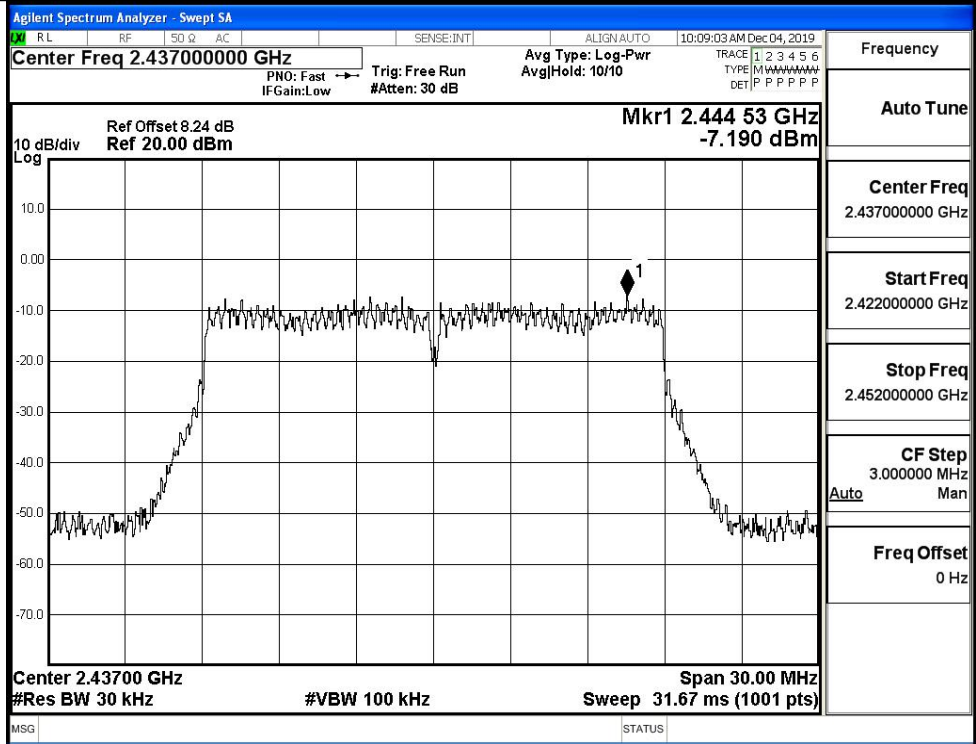


Frequency
Auto Tune
Center Freq 2.46200000 GHz
Start Freq 2.44700000 GHz
Stop Freq 2.47700000 GHz
CF Step 3.000000 MHz Auto Man
Freq Offset 0 Hz

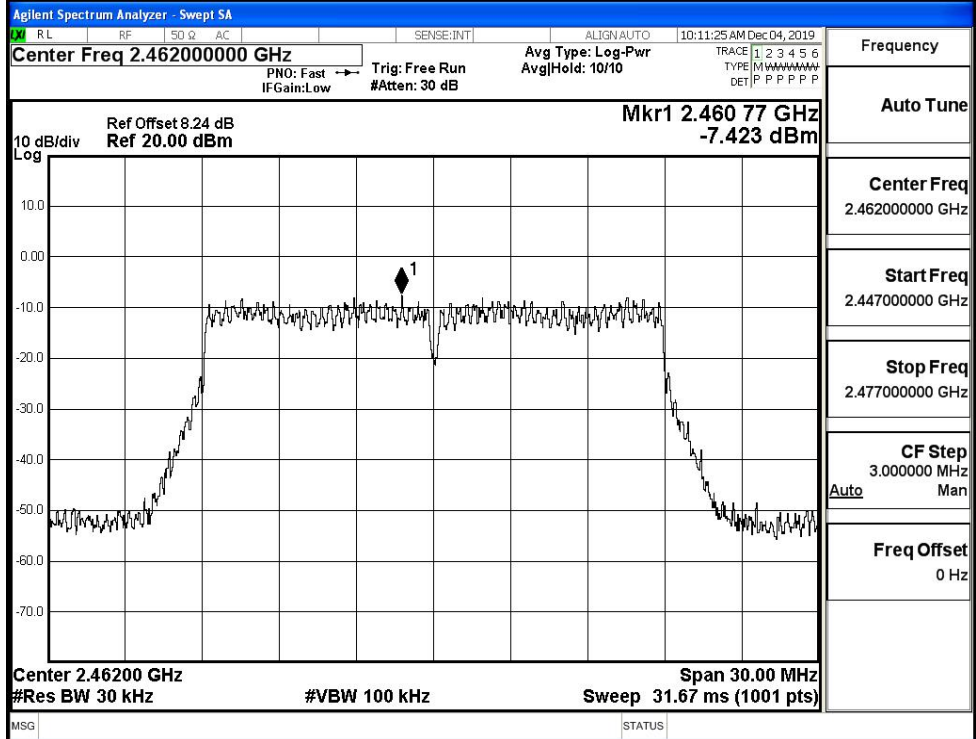
11N20SISO/LCH



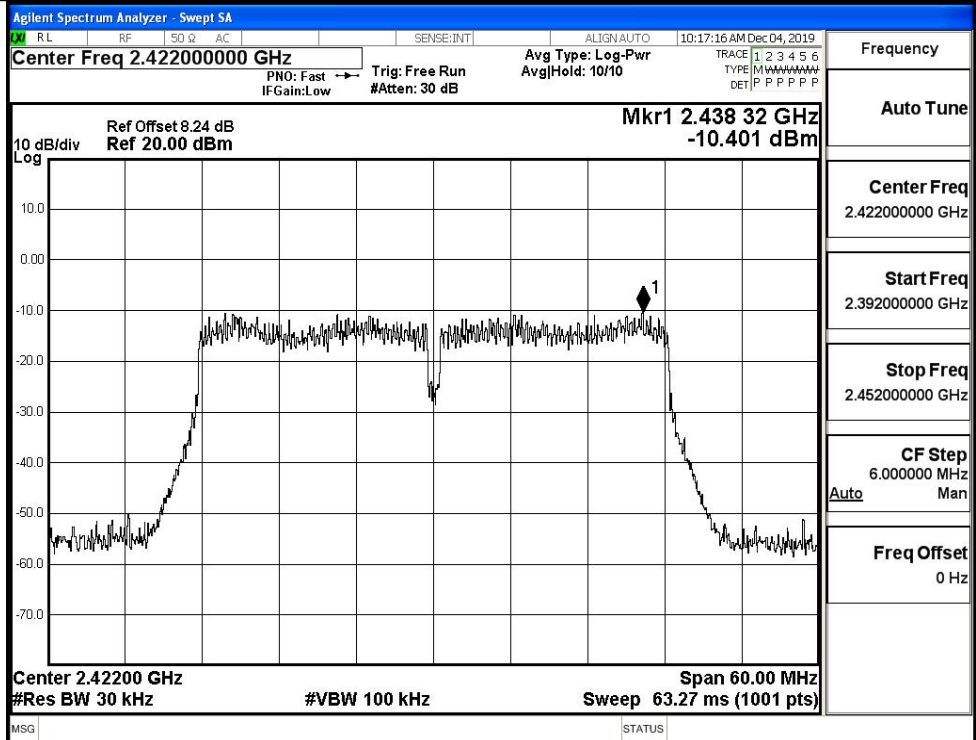
11N20SISO/MCH



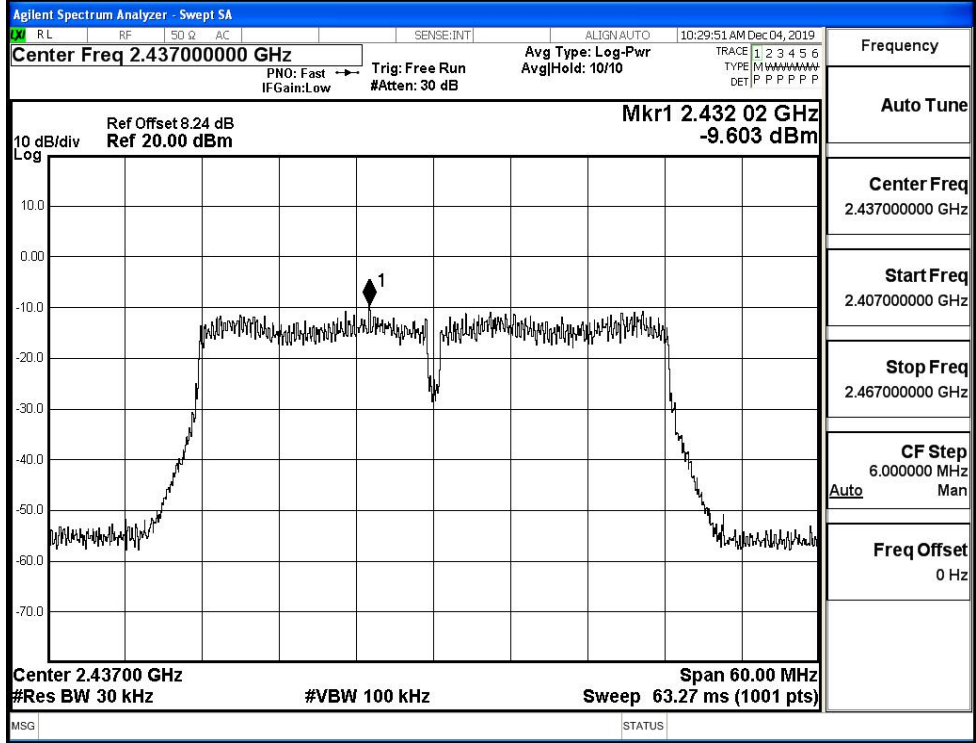
11N20SISO/HCH



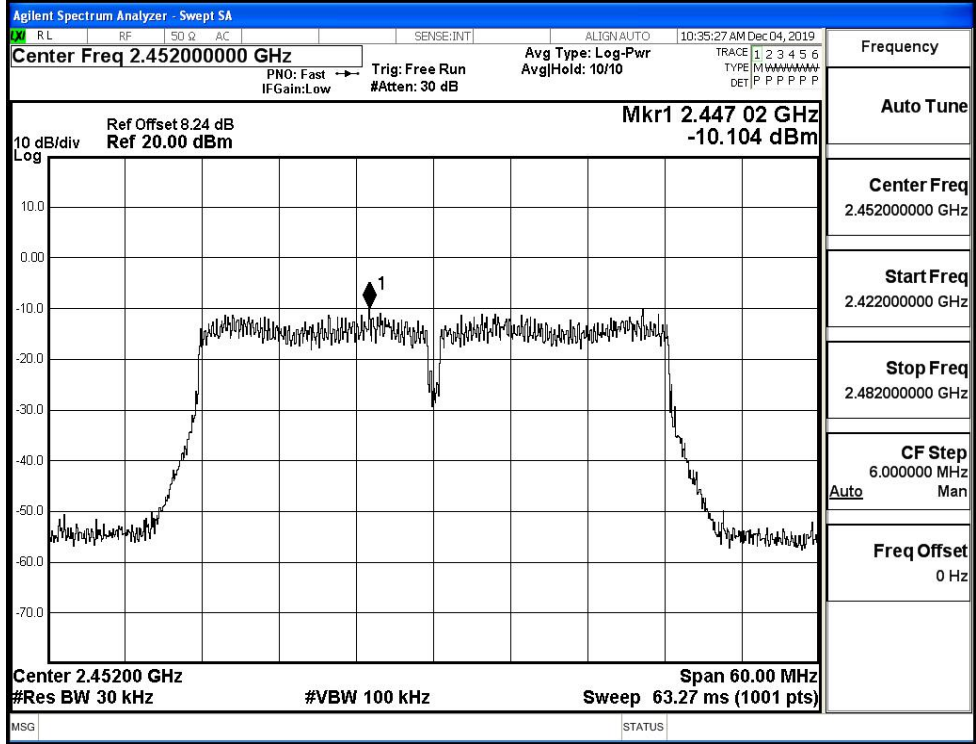
11N40SISO/LCH



11N40SISO/MCH

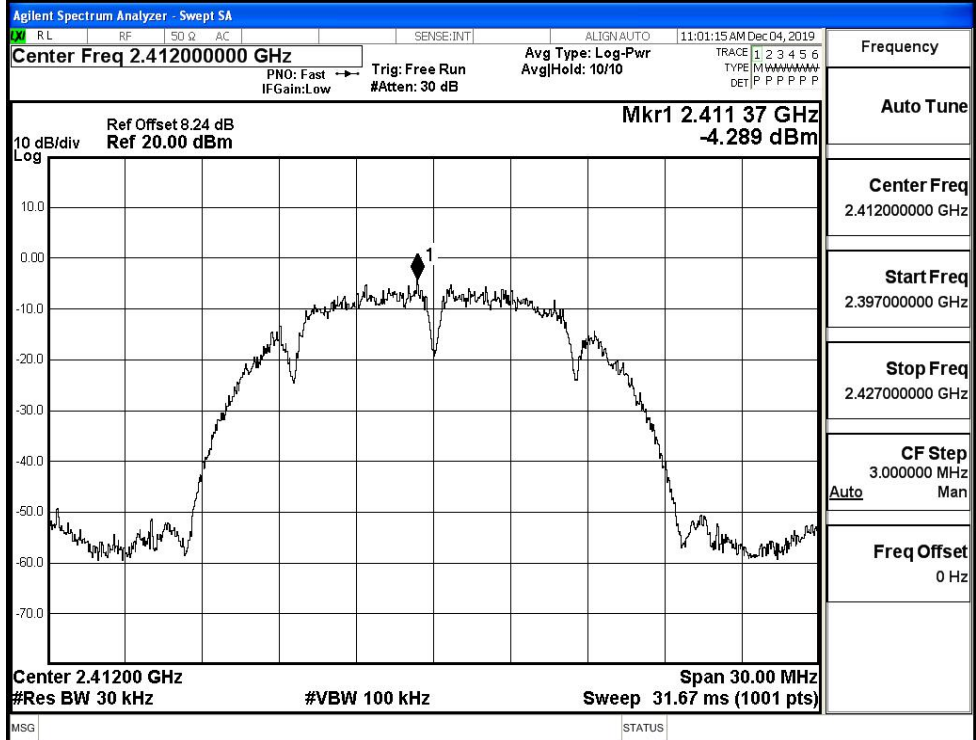


11N40SISO/HCH

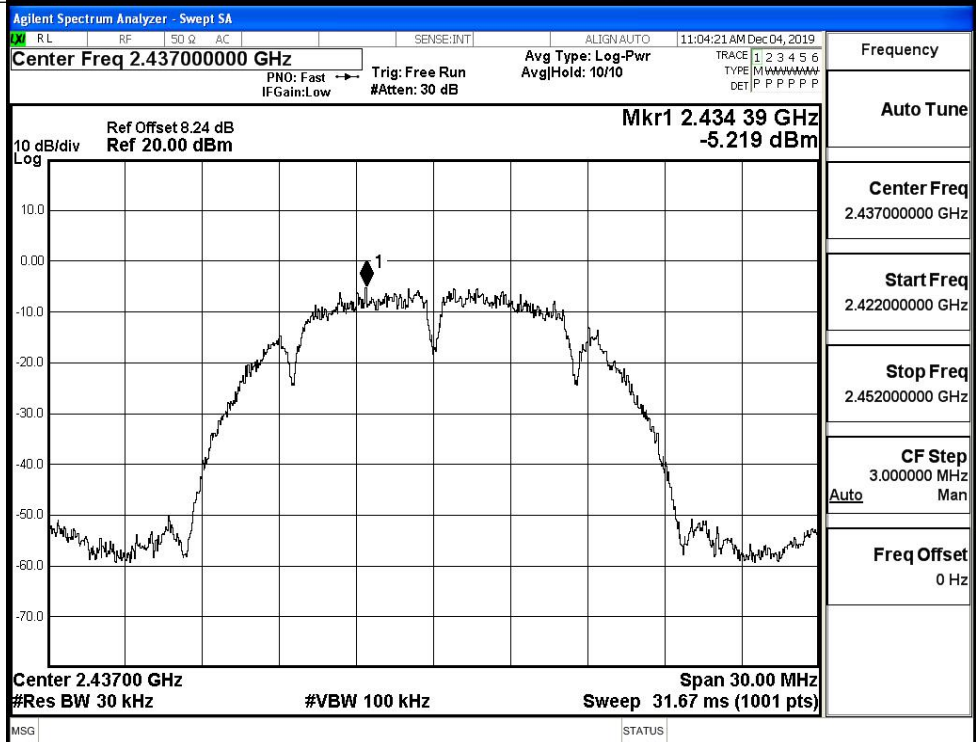


Test Graphs(Antenna 1)

11B/LCH

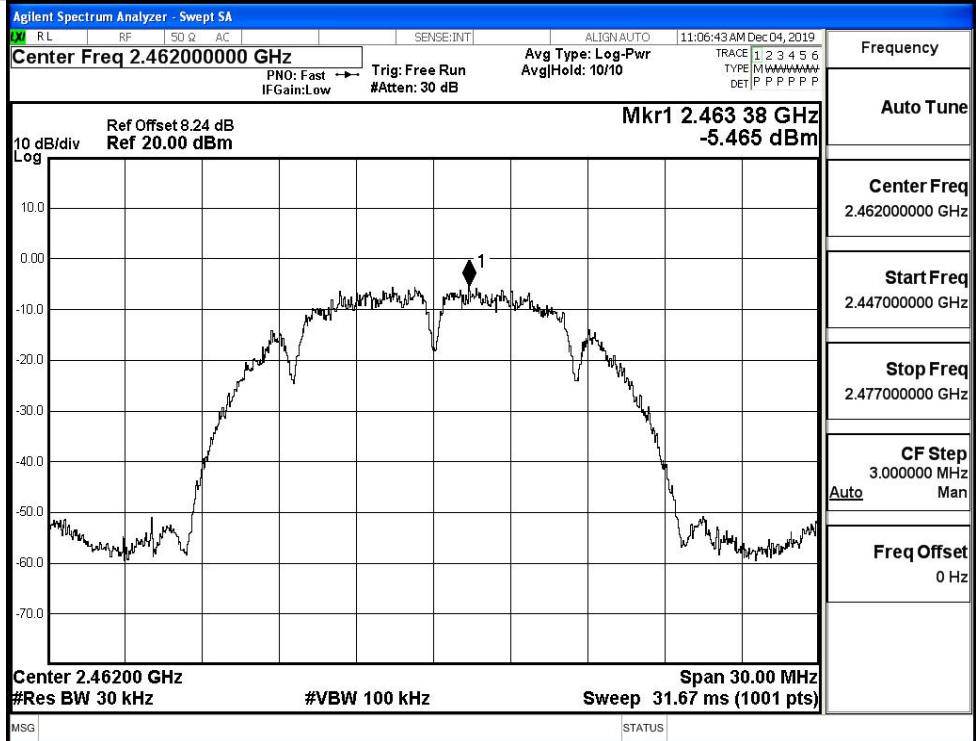


11B/MCH



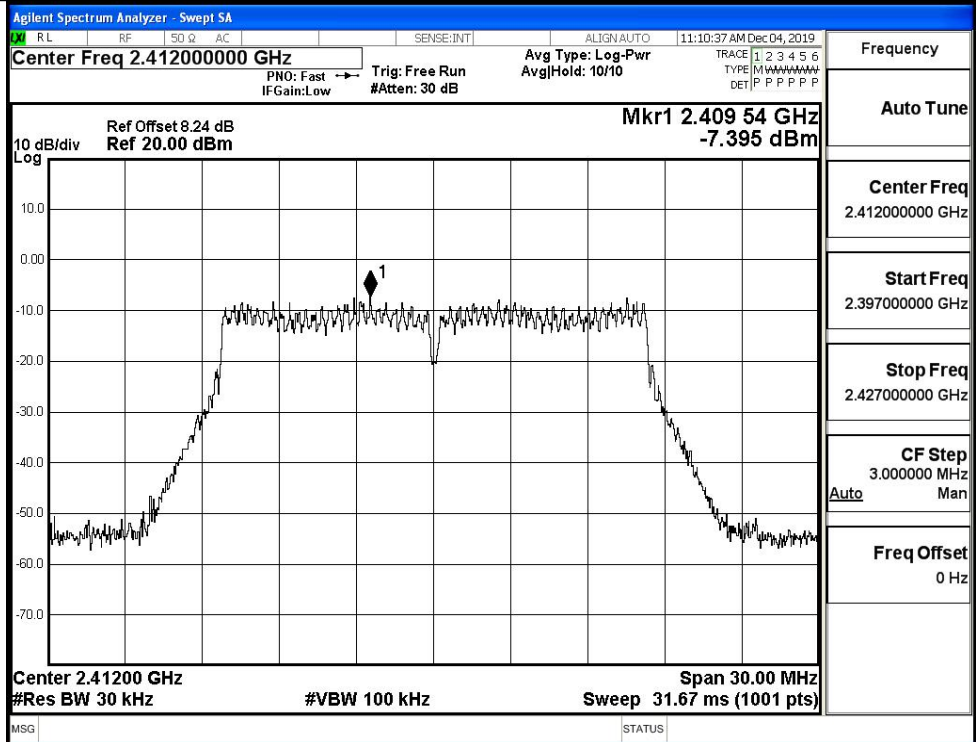


11B/HCH



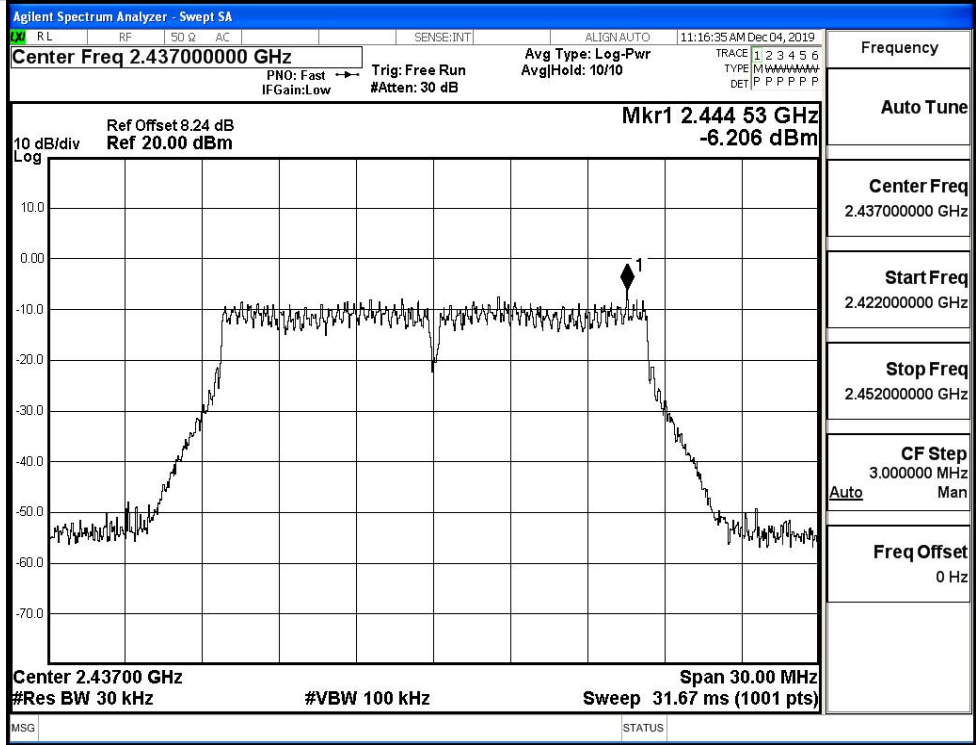
Frequency
Auto Tune
Center Freq 2.46200000 GHz
Start Freq 2.447000000 GHz
Stop Freq 2.477000000 GHz
CF Step 3.000000 MHz Auto Man
Freq Offset 0 Hz

11G/LCH



Frequency
Auto Tune
Center Freq 2.412000000 GHz
Start Freq 2.397000000 GHz
Stop Freq 2.427000000 GHz
CF Step 3.000000 MHz Auto Man
Freq Offset 0 Hz

11G/MCH



11G/HCH

