



Appendix for test report



1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	33.04	31.21	38.5	PASS
		MCH	33.03	31.2	38.5	PASS
		HCH	33.03	31.2	38.5	PASS
	GSM/TM2	LCH	26.64	24.81	38.5	PASS
		MCH	26.62	24.79	38.5	PASS
		HCH	26.67	24.84	38.5	PASS
Test Band	Test Mode	Test Channel	Measured[dBm]	EIRP [dBm]	Limit [dBm]	Verdict
PCS1900	GSM/TM1	LCH	30.56	30.59	33	PASS
		MCH	30.54	30.57	33	PASS
		HCH	30.50	30.53	33	PASS
	GSM/TM2	LCH	25.53	25.56	33	PASS
		MCH	25.72	25.75	33	PASS
		HCH	25.82	25.85	33	PASS

Note1:

a, For getting the ERP (Efficient Radiated Power) or EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP = Signal Generator Level

Note2:

$$\text{SET Span} = 1.5 * \text{OBW}$$

SET RBW = 1% of the OBW, not to exceed 1MHz

$$\text{SET VBW} \geq 3 * \text{RBW}$$

SET Sweep time = auto - couple.

Detector: RMS



2Appendix_B: Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM850	GSM/TM1	LCH	1.74	13	PASS
		MCH	1.81	13	PASS
		HCH	1.98	13	PASS
	GSM/TM2	LCH	4.88	13	PASS
		MCH	4.82	13	PASS
		HCH	4.80	13	PASS
PCS1900	GSM/TM1	LCH	2.03	13	PASS
		MCH	1.89	13	PASS
		HCH	1.86	13	PASS
	GSM/TM2	LCH	5.05	13	PASS
		MCH	4.97	13	PASS
		HCH	4.94	13	PASS

3Appendix_C: Modulation Characteristics

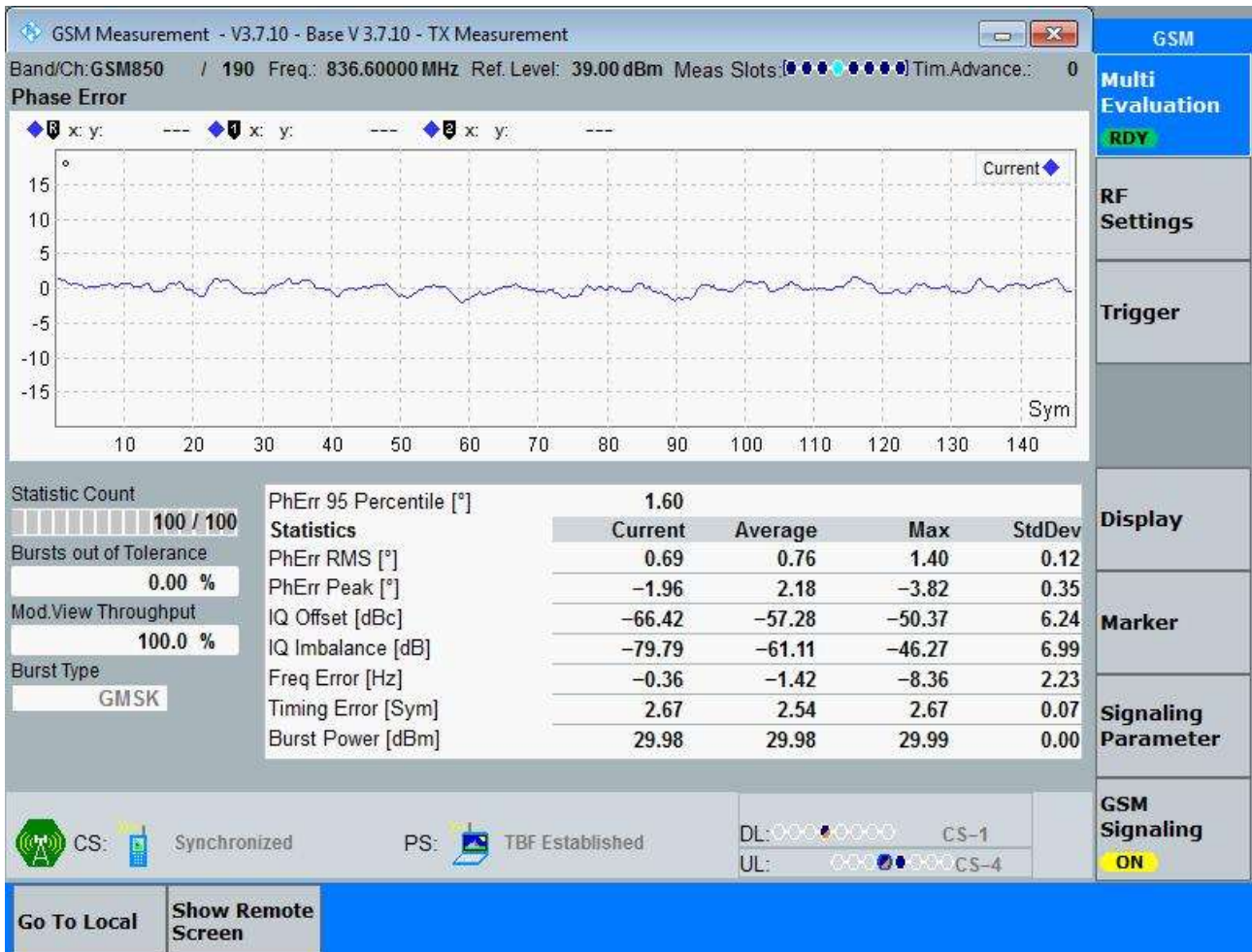
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

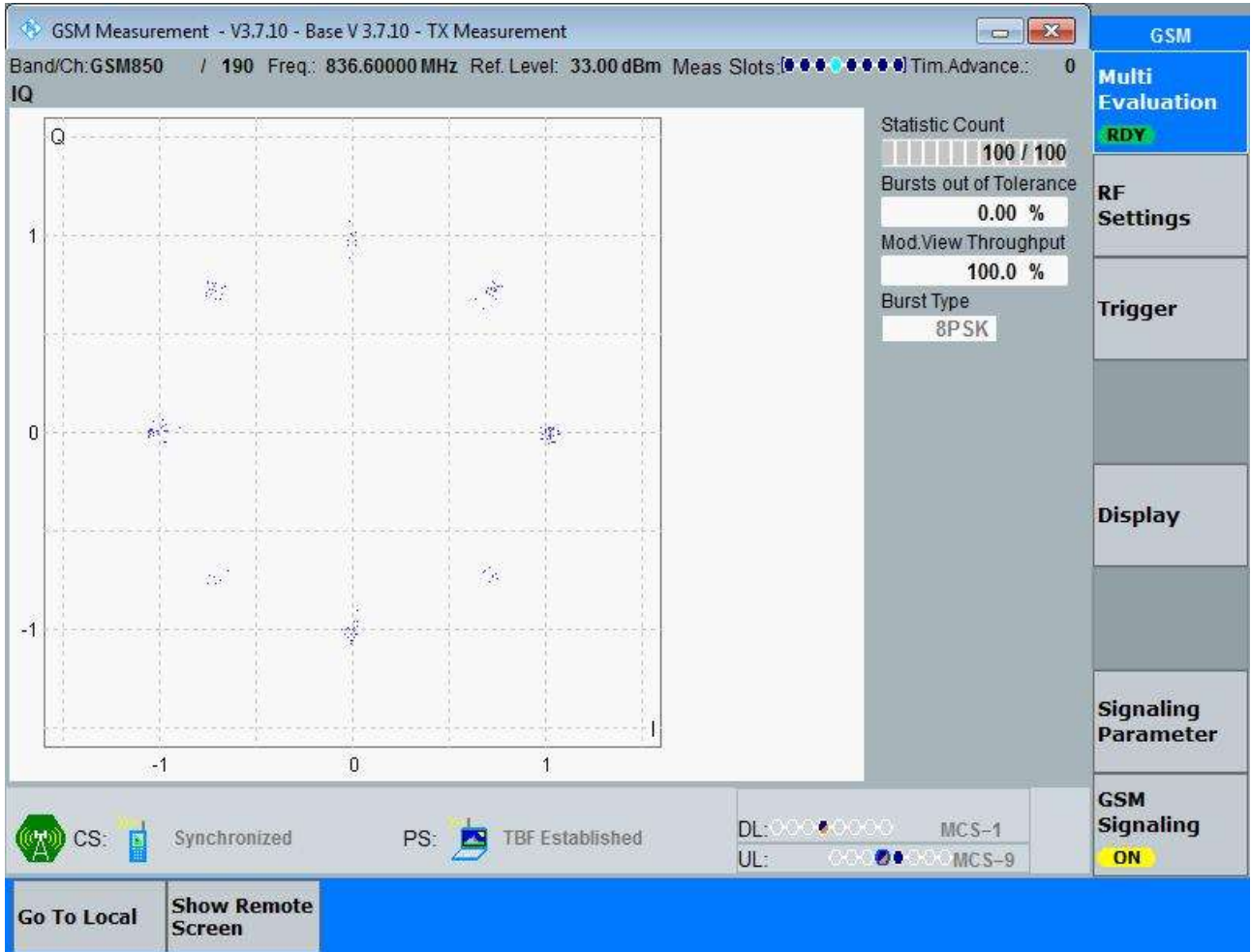
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

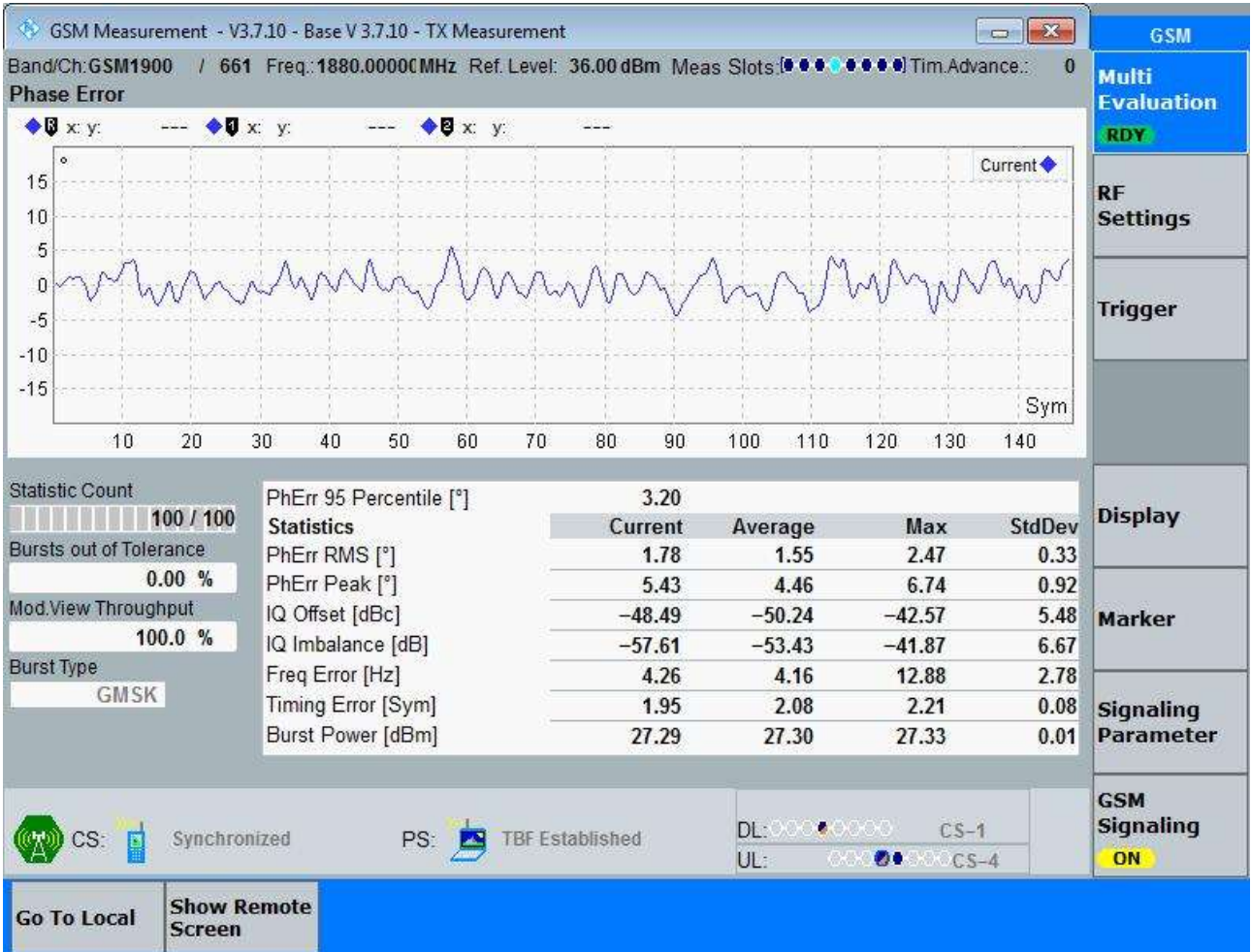
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = PCS1900

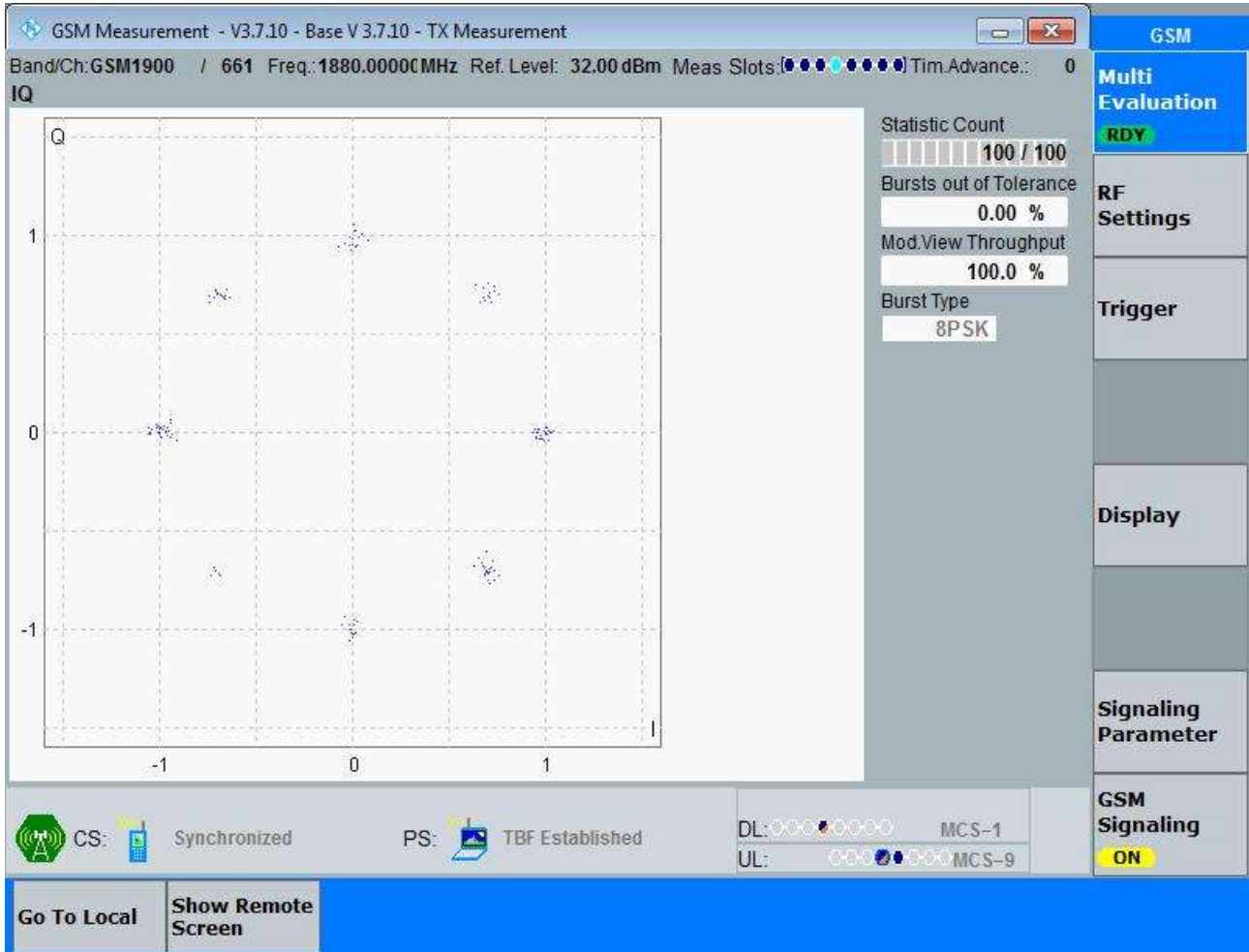
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH





4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	246.91	318.7	Pass
		MCH	247.52	315.2	Pass
		HCH	246.22	321.1	Pass
	GSM/TM2	LCH	244.46	317.8	Pass
		MCH	250.68	320.9	Pass
		HCH	248.56	318.2	Pass
PCS1900	GSM/TM1	LCH	251.94	317.3	Pass
		MCH	249.64	322.9	Pass
		HCH	246.63	317.4	Pass
	GSM/TM2	LCH	248.45	320.3	Pass
		MCH	246.61	309.3	Pass
		HCH	249.35	318.4	Pass

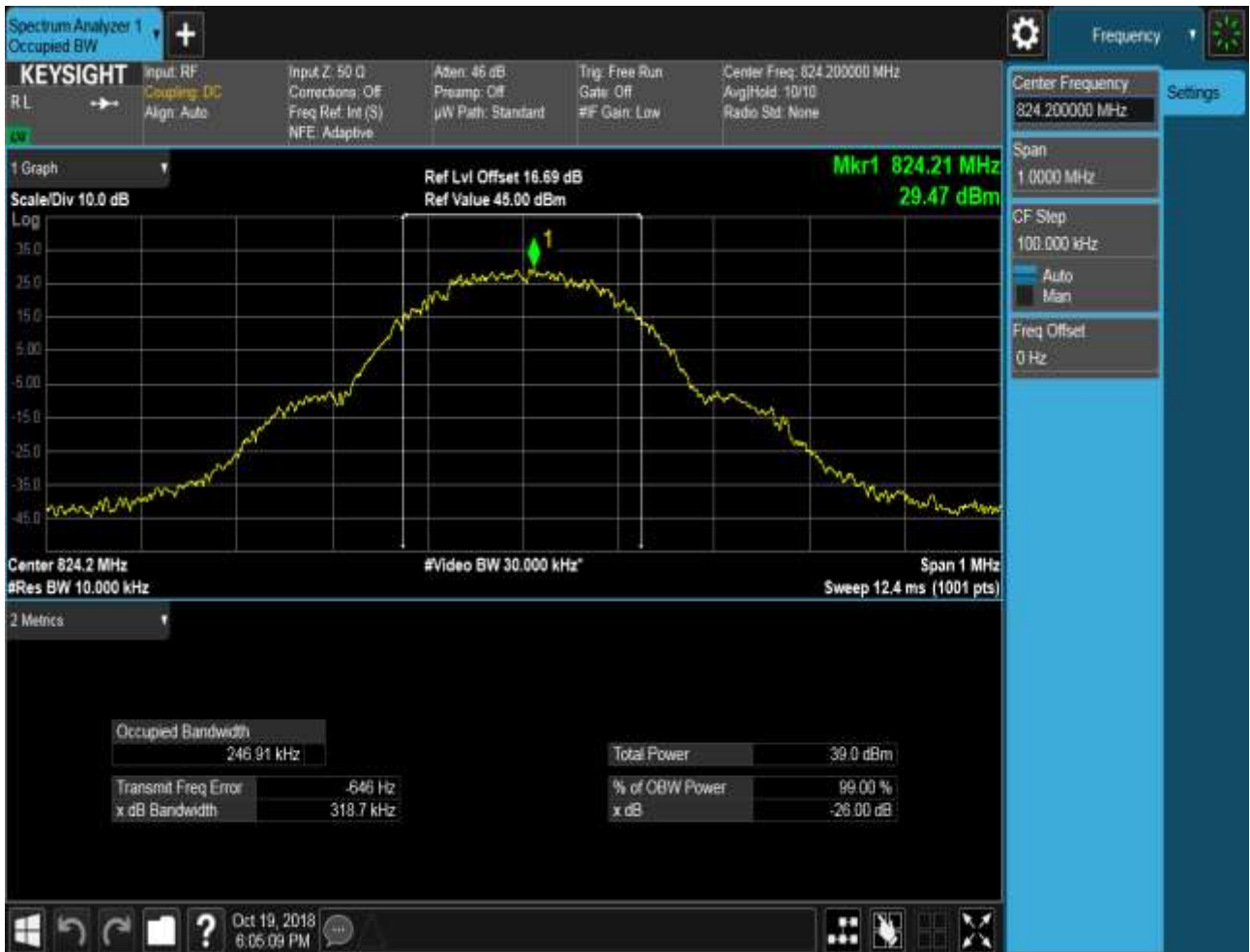
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

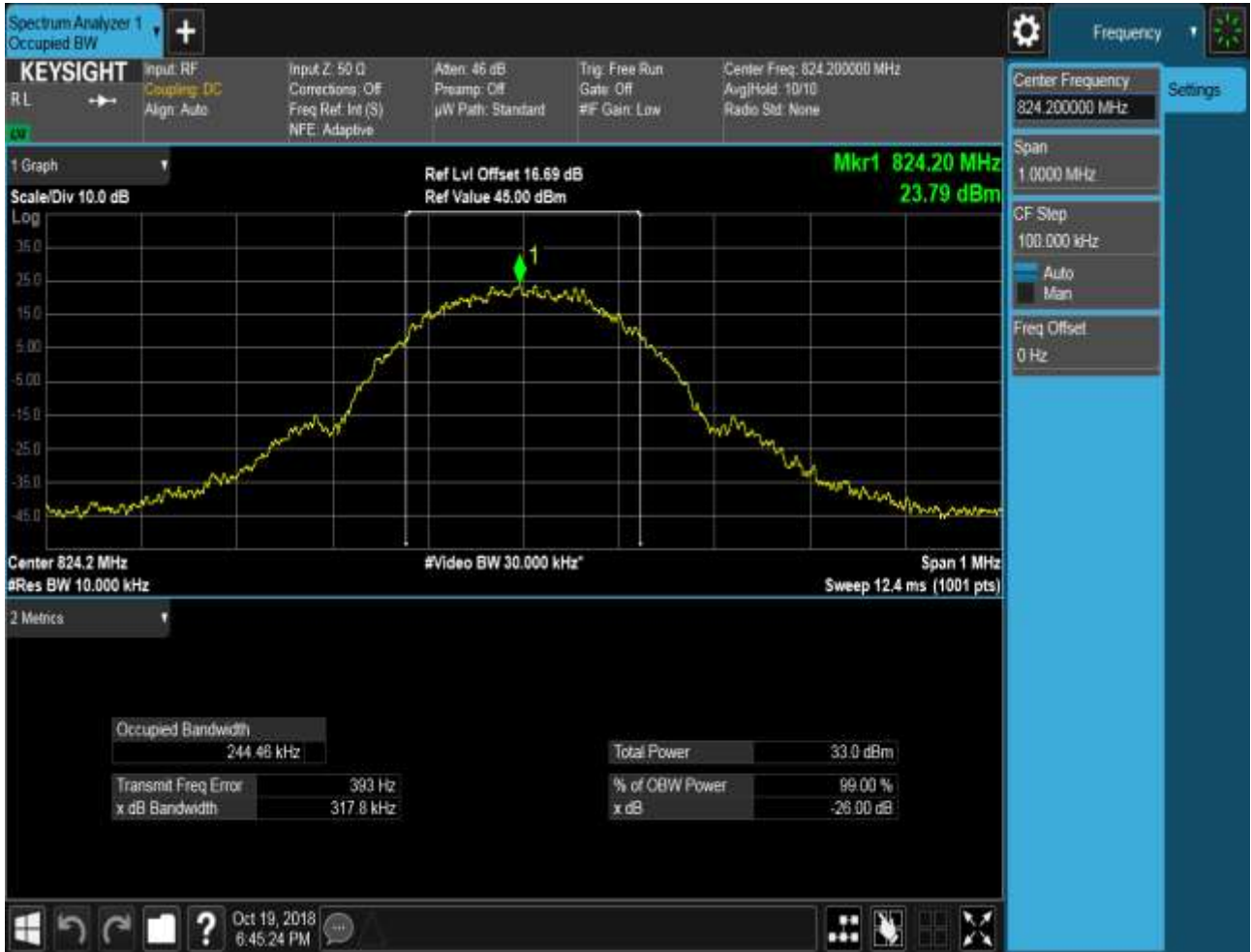


4.1.1.1.3 Test Channel = HCH



4.1.1.2 Test Mode = GSM/TM2

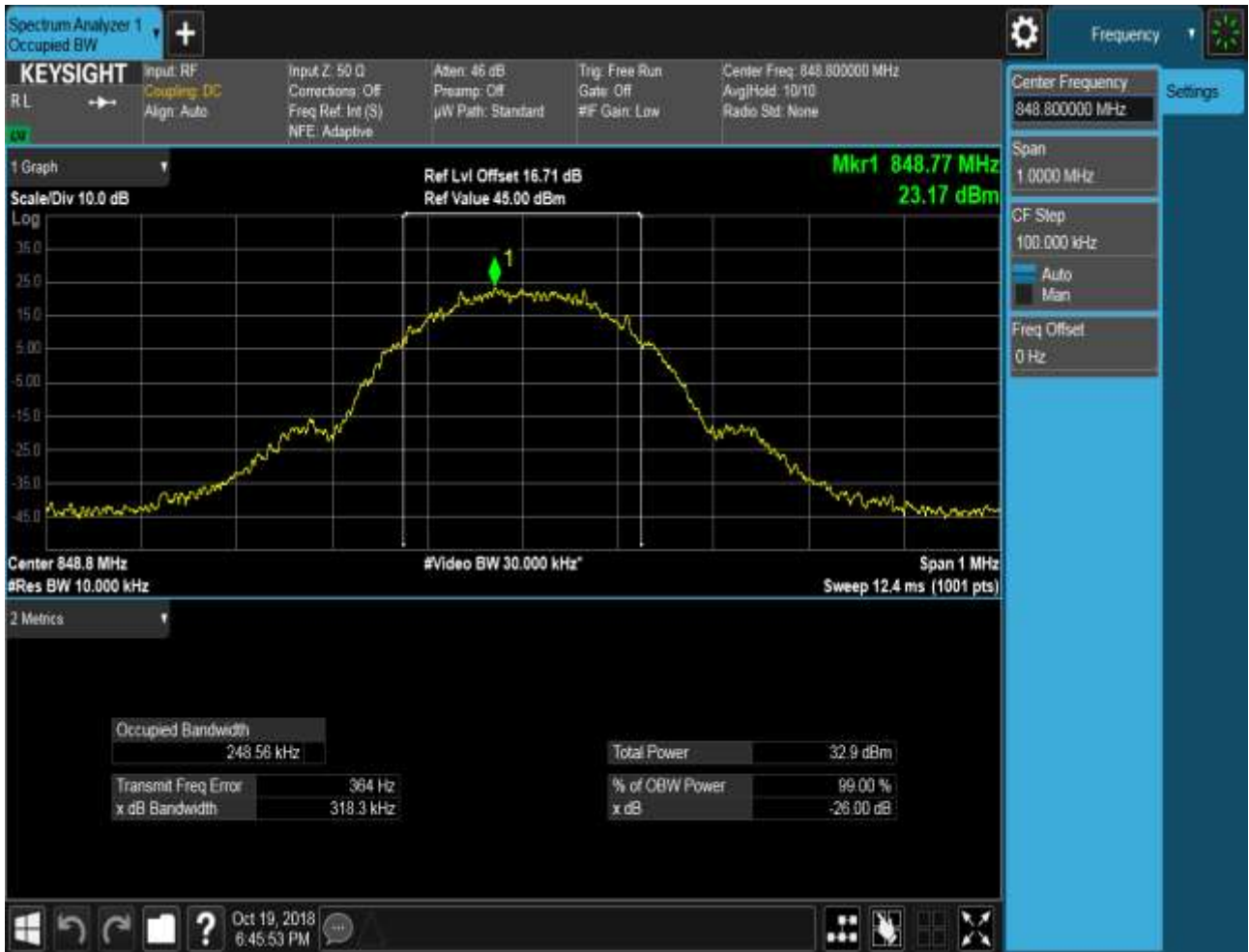
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



4.1.1.2.3 Test Channel = HCH



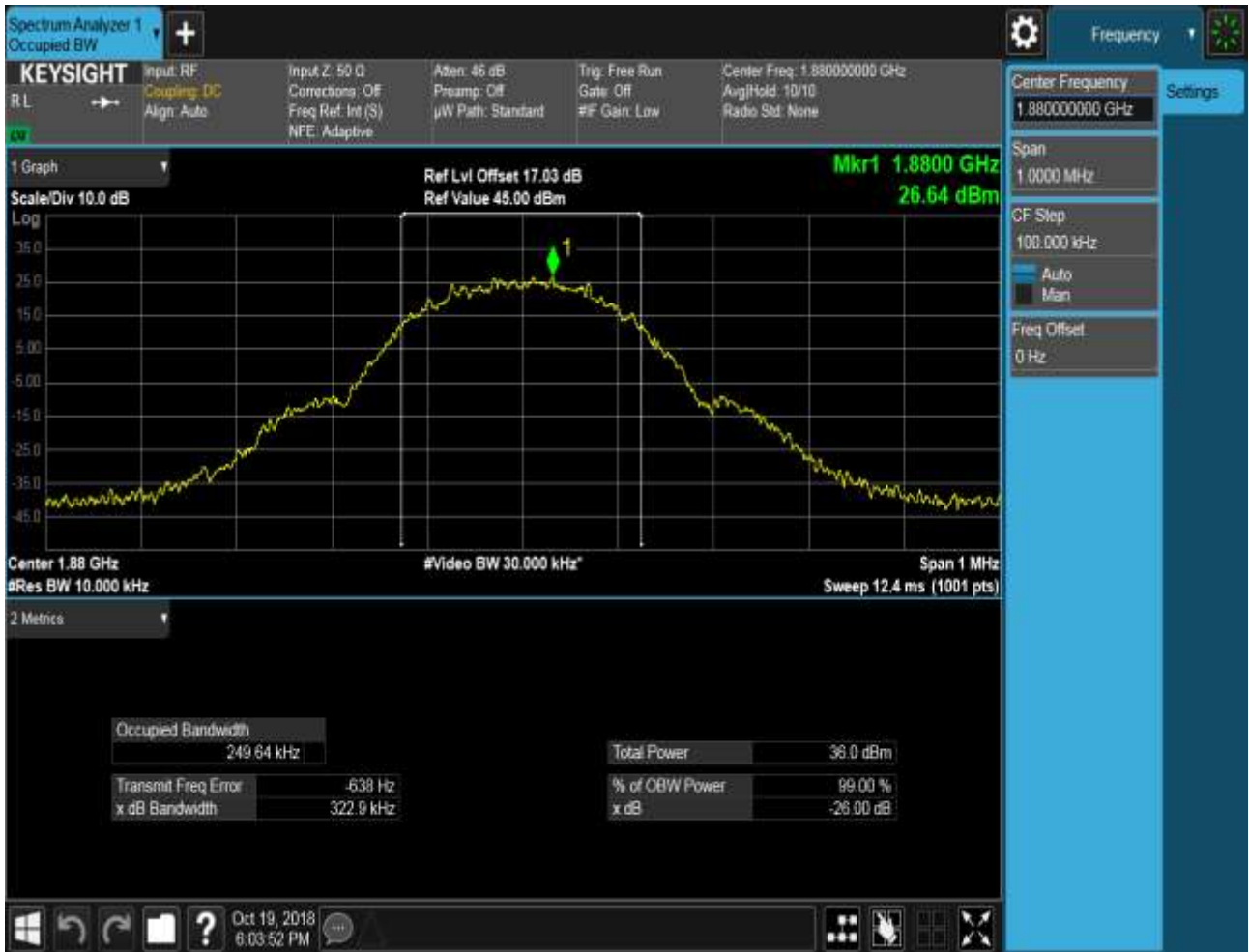
4.1.2 Test Band = PCS1900

4.1.2.1 Test Mode = GSM/TM1

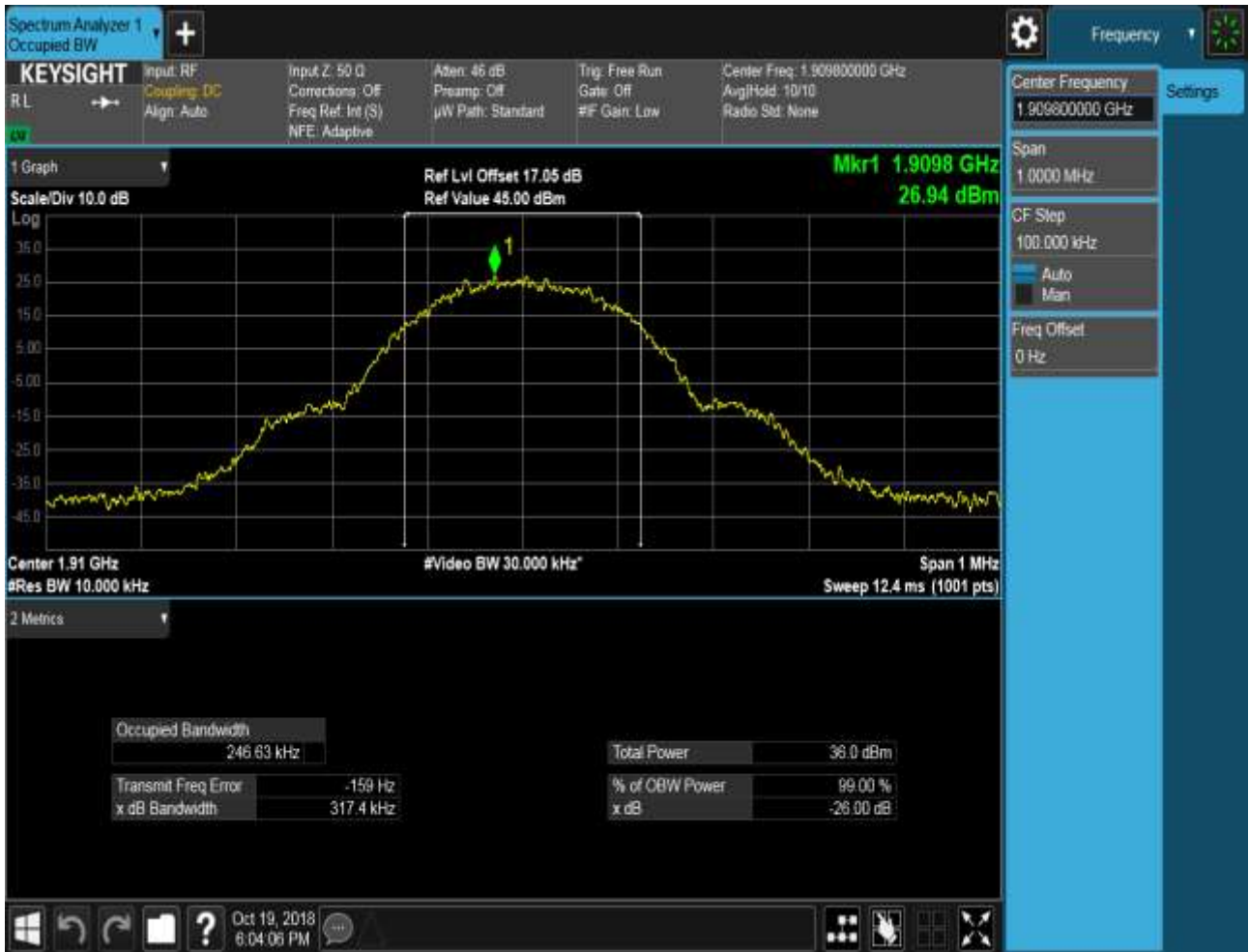
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

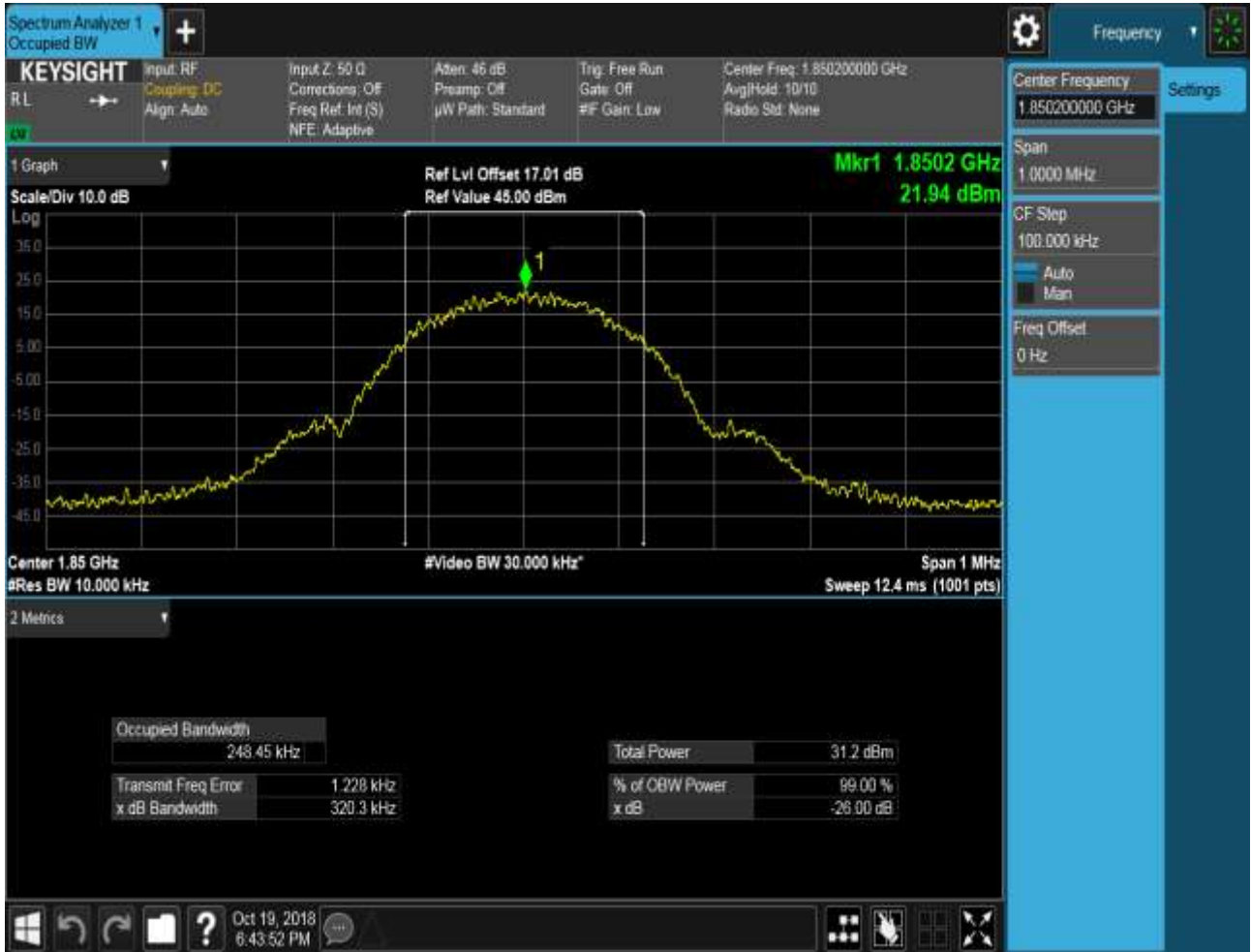


4.1.2.1.3 Test Channel = HCH

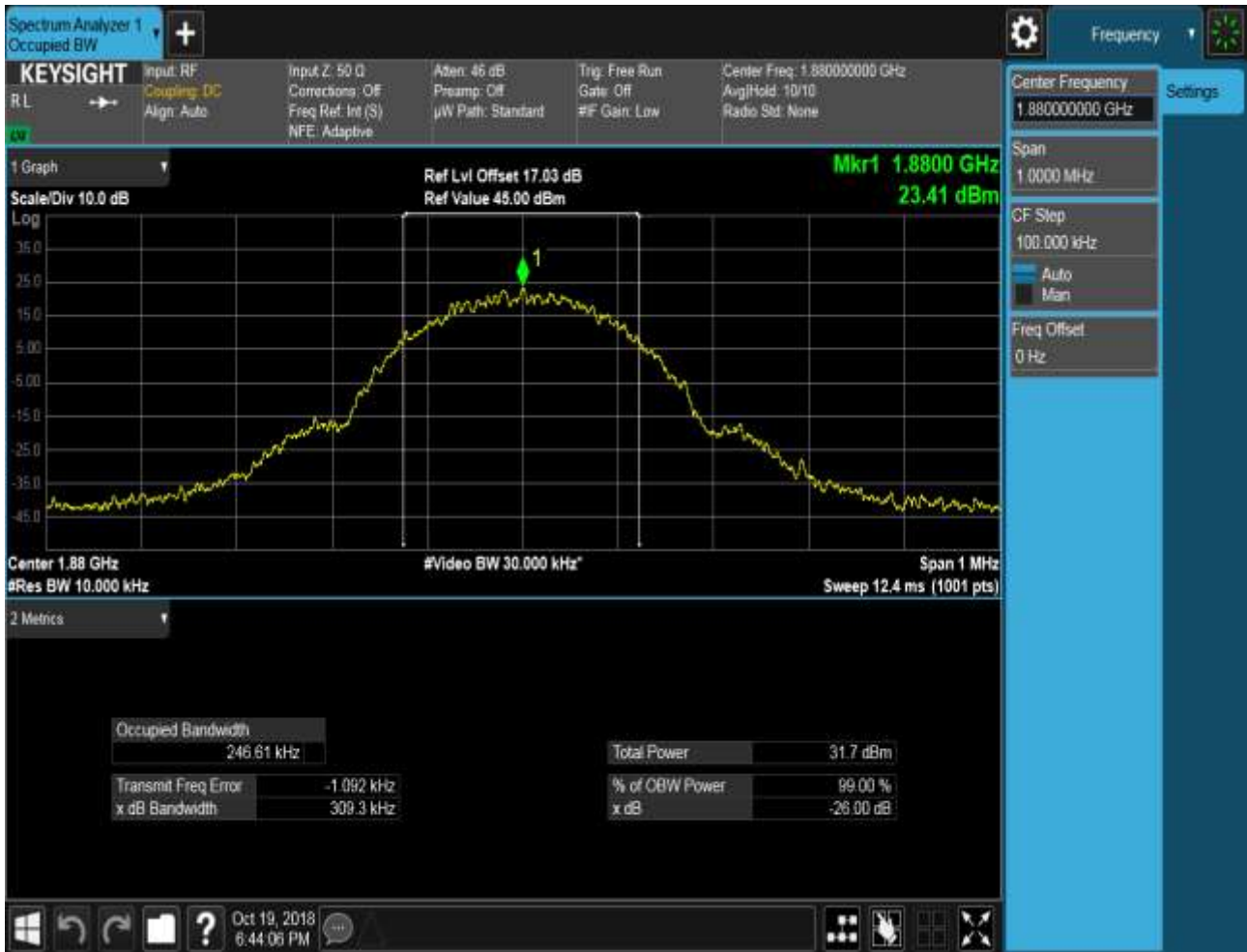


4.1.2.2 Test Mode = GSM/TM2

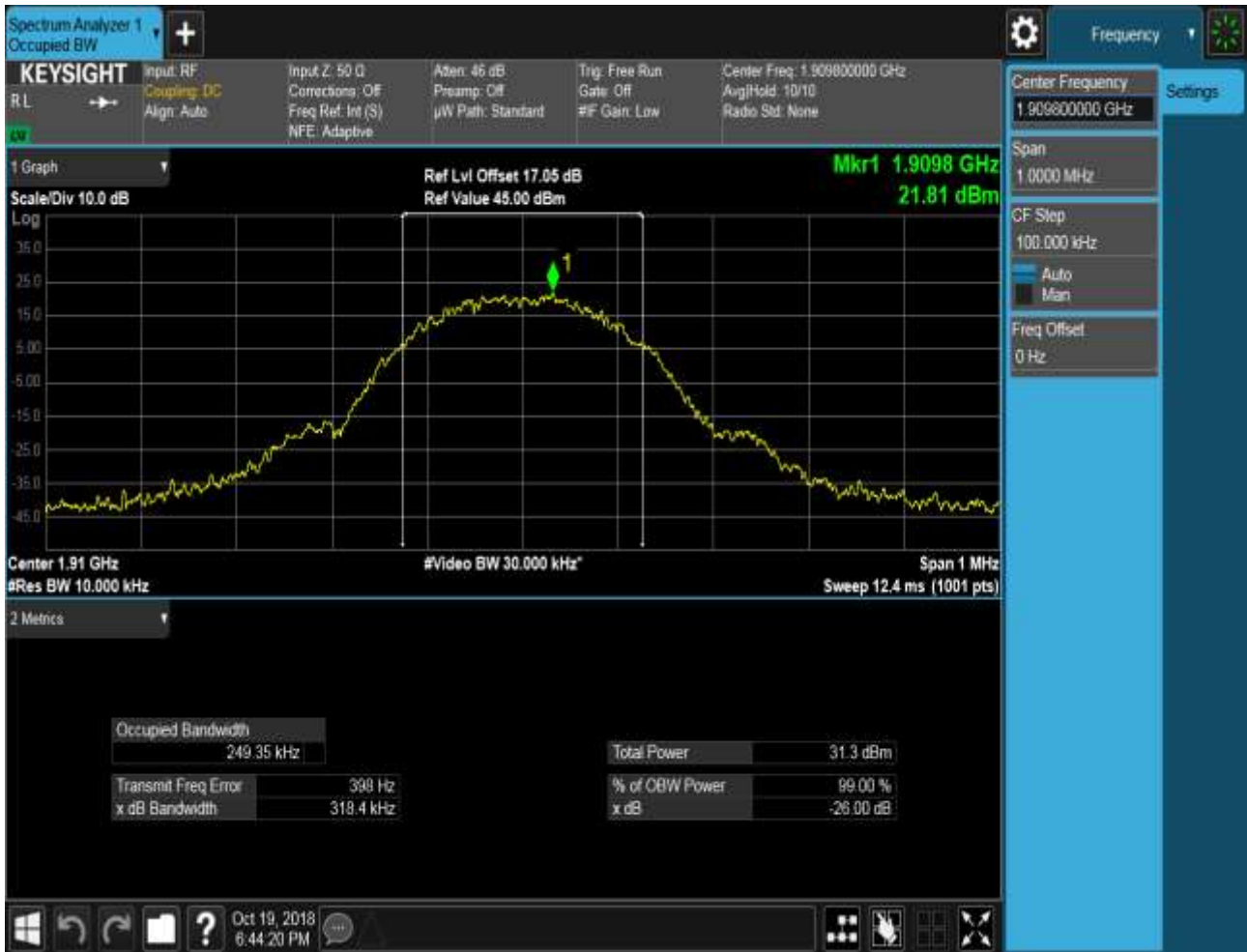
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

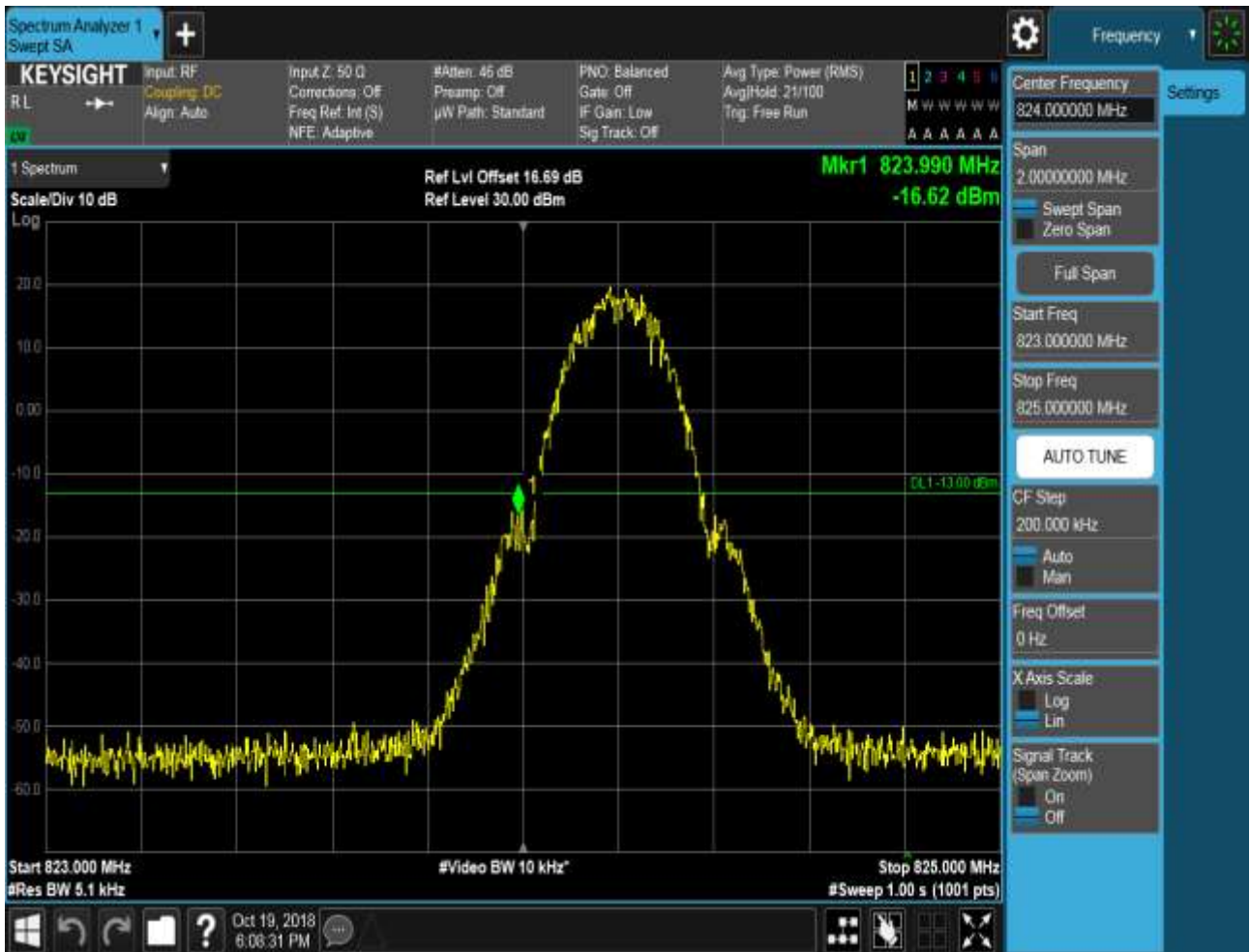
Part I - Test Plots

5.1 For GSM

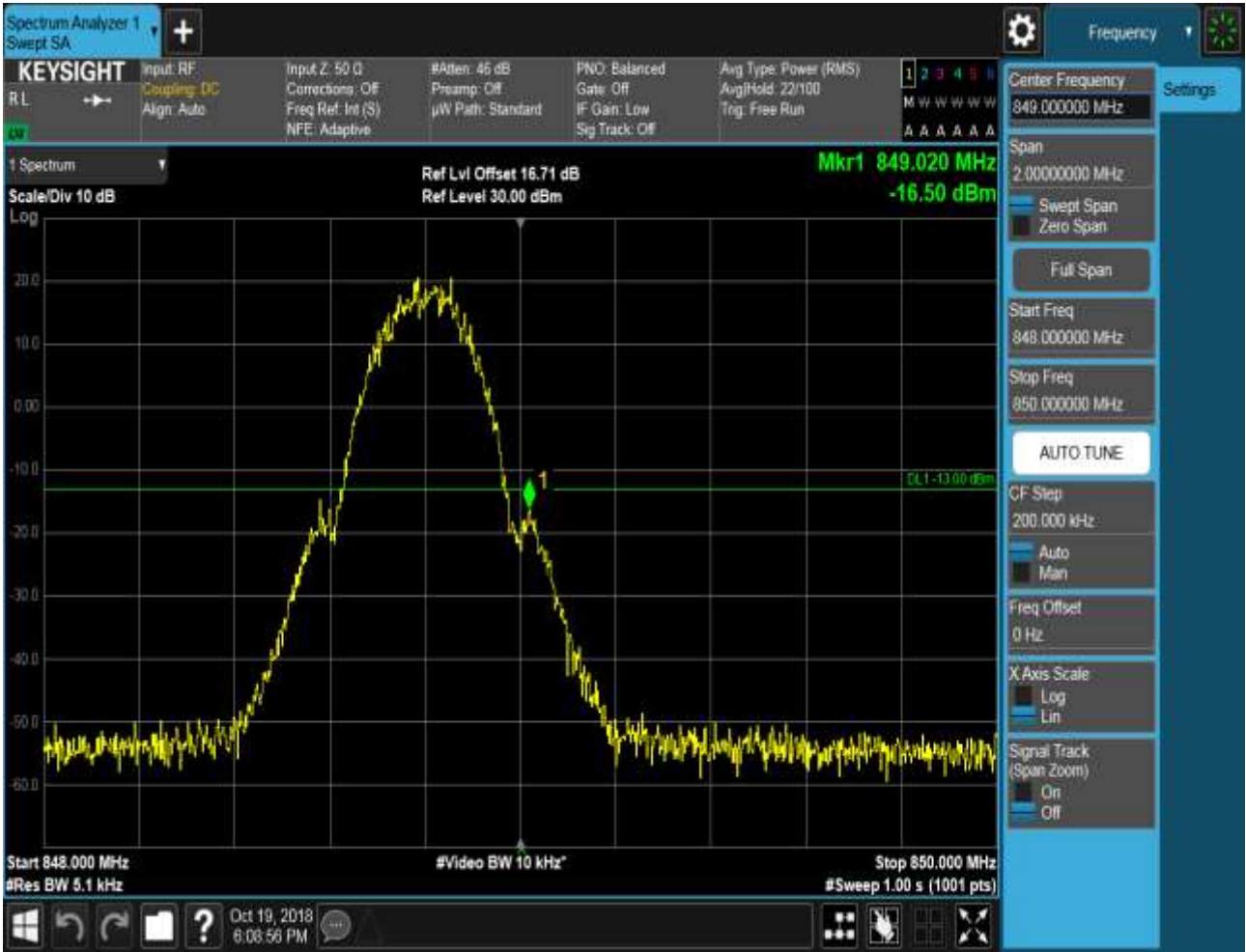
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

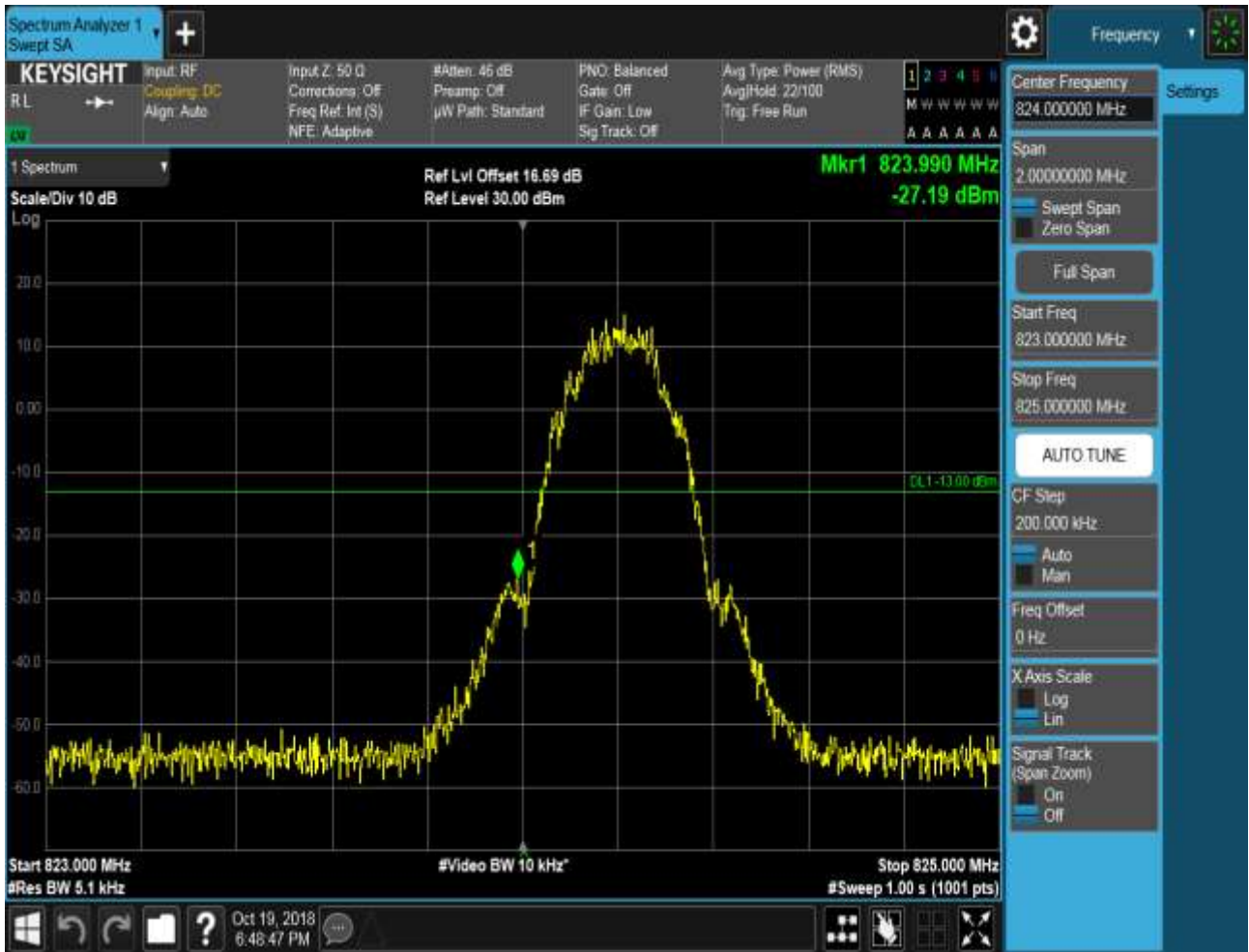


5.1.1.1.2 Test Channel = HCH

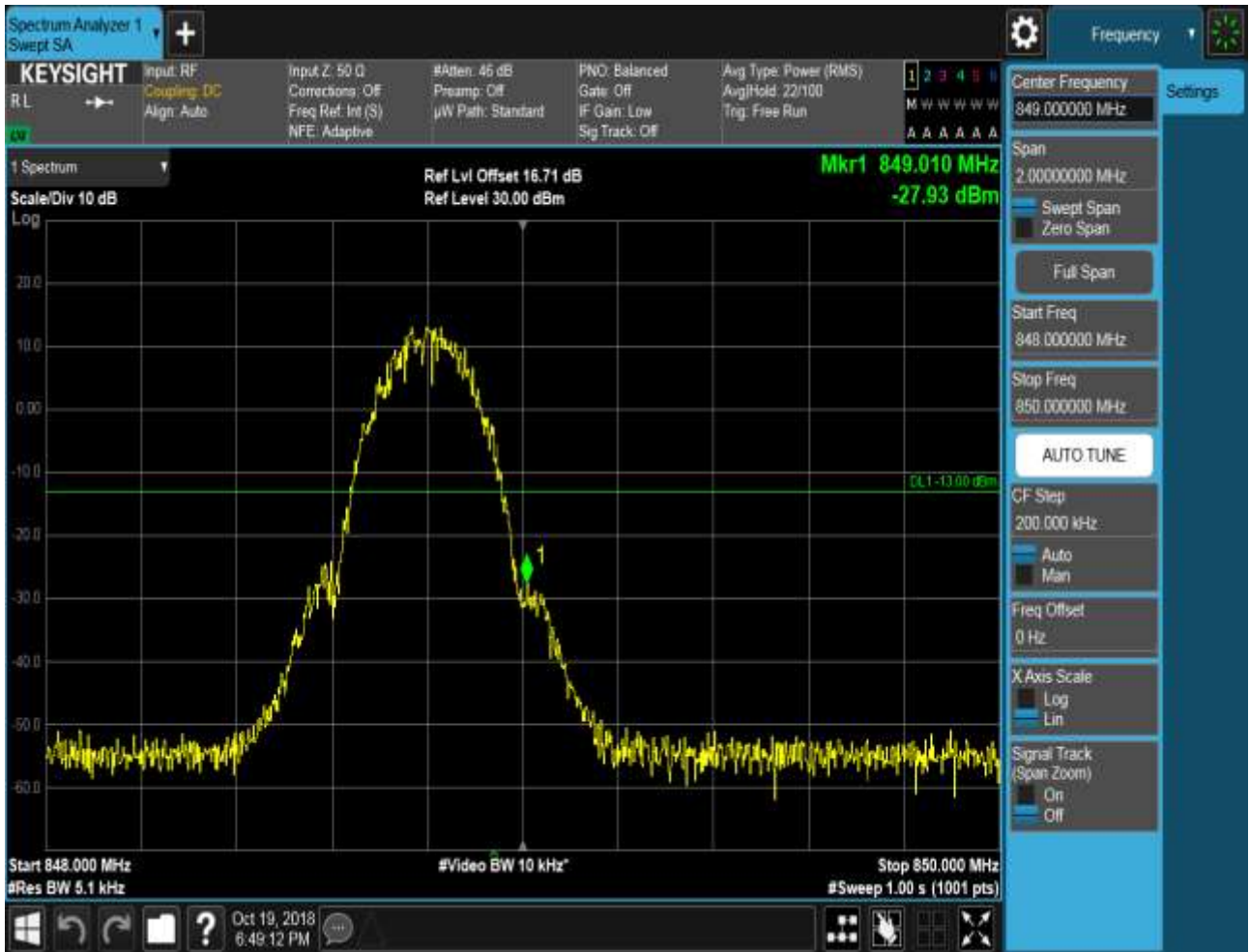


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



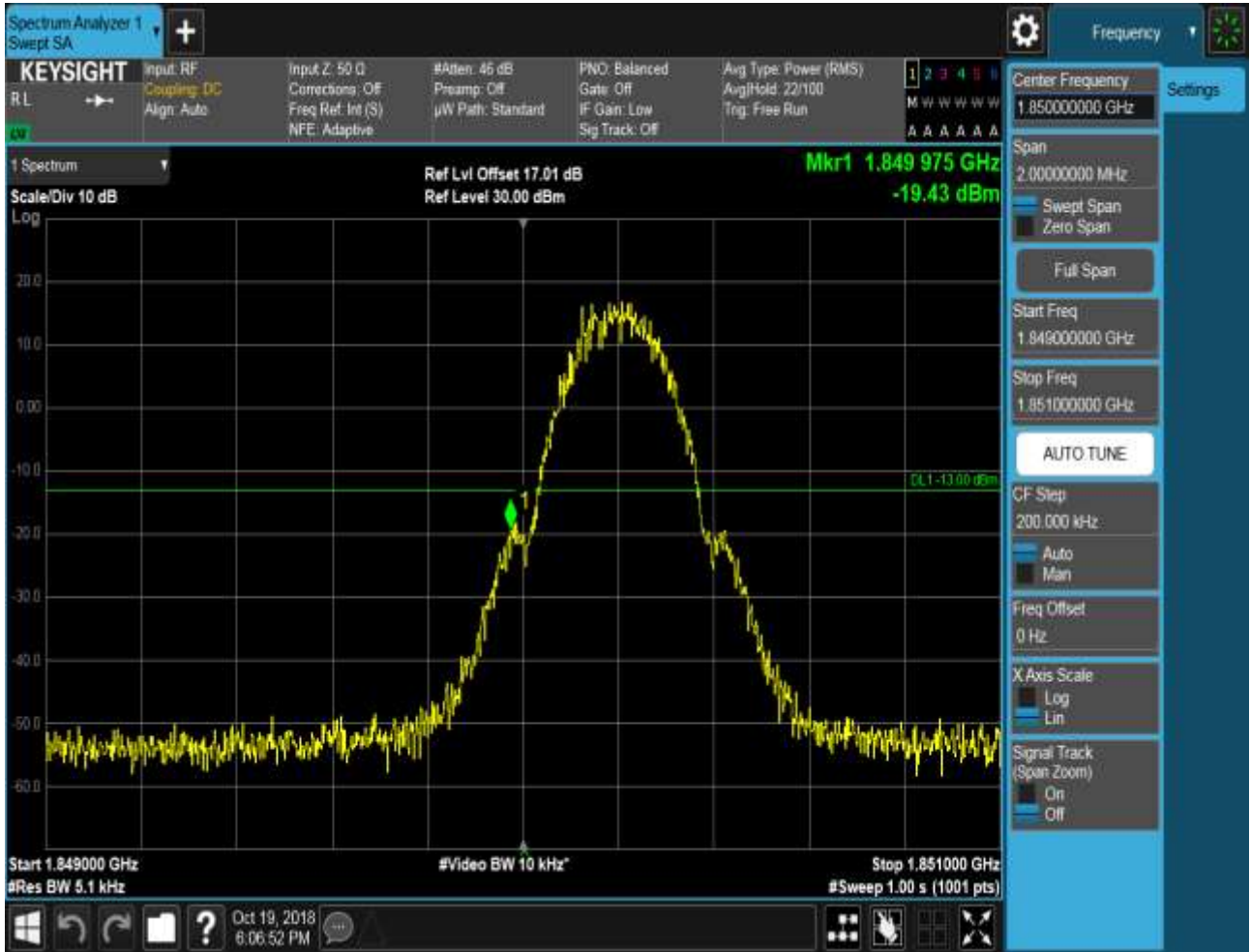
5.1.1.2.2 Test Channel = HCH



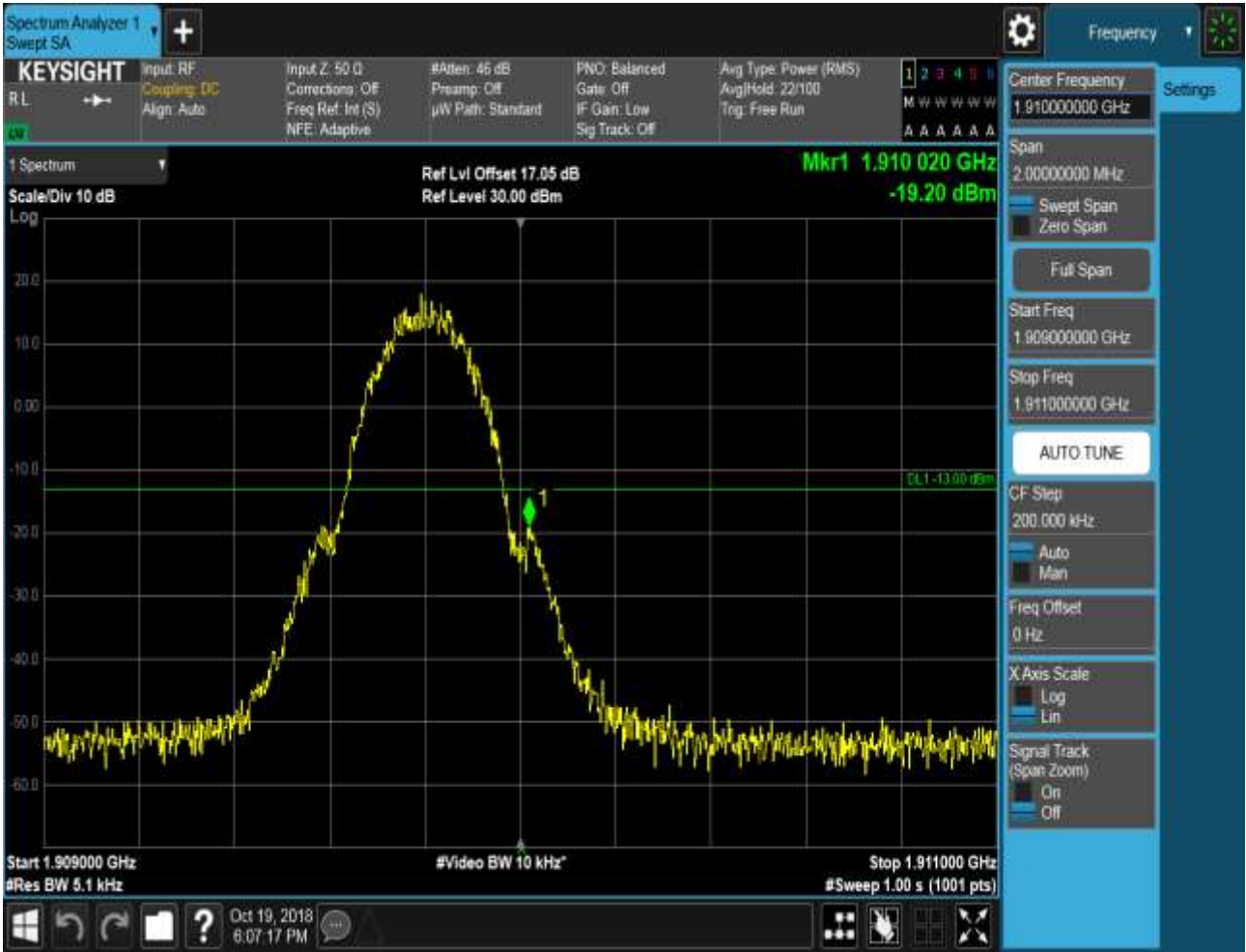
5.1.2 Test Band = PCS1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

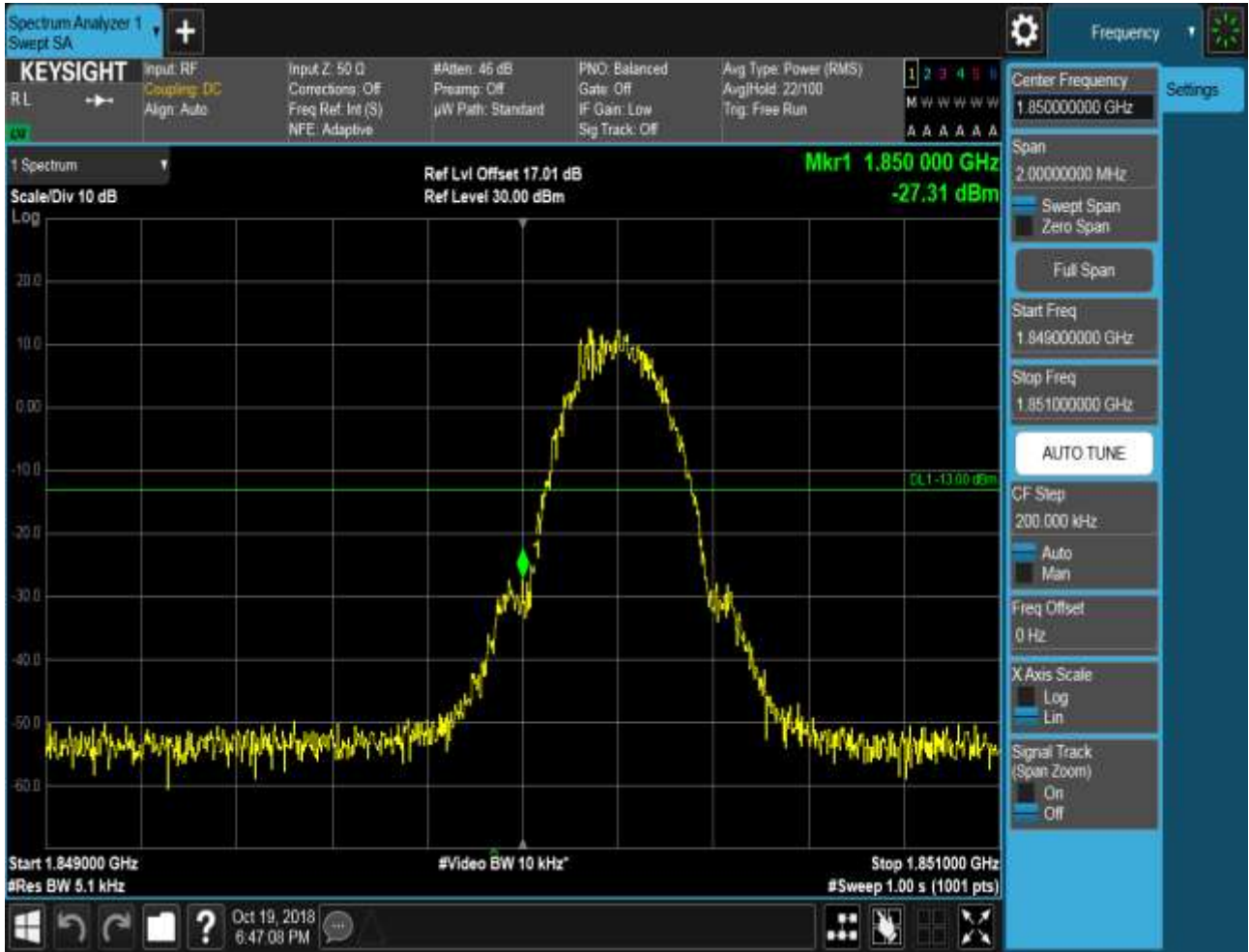


5.1.2.1.2 Test Channel = HCH

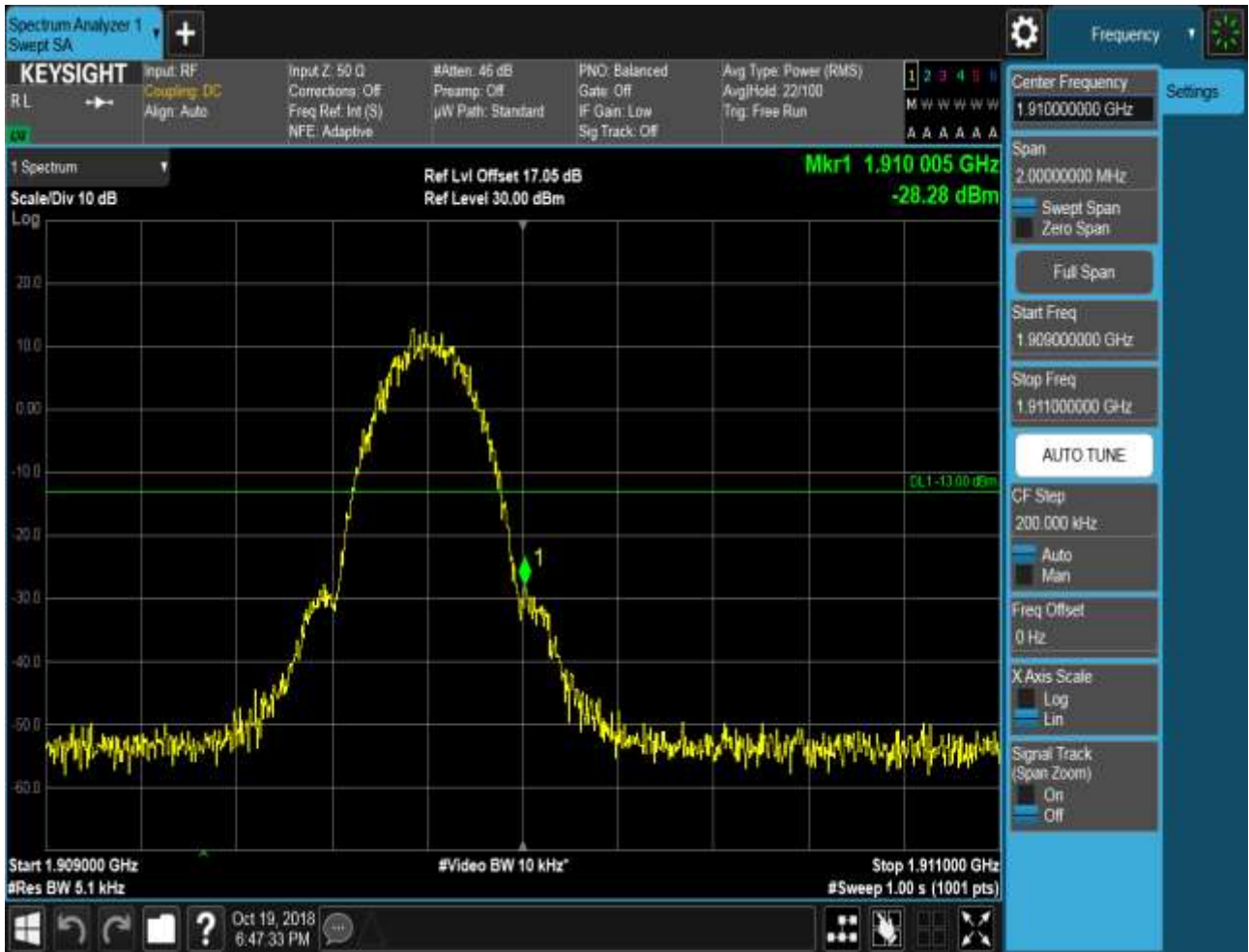


5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



5.1.2.2.2 Test Channel = HCH



6Appendix_F: Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of $< RBW/2$ so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = $k * (Span / RBW)$ " with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

Part I - Test Plots

6.1 For GSM

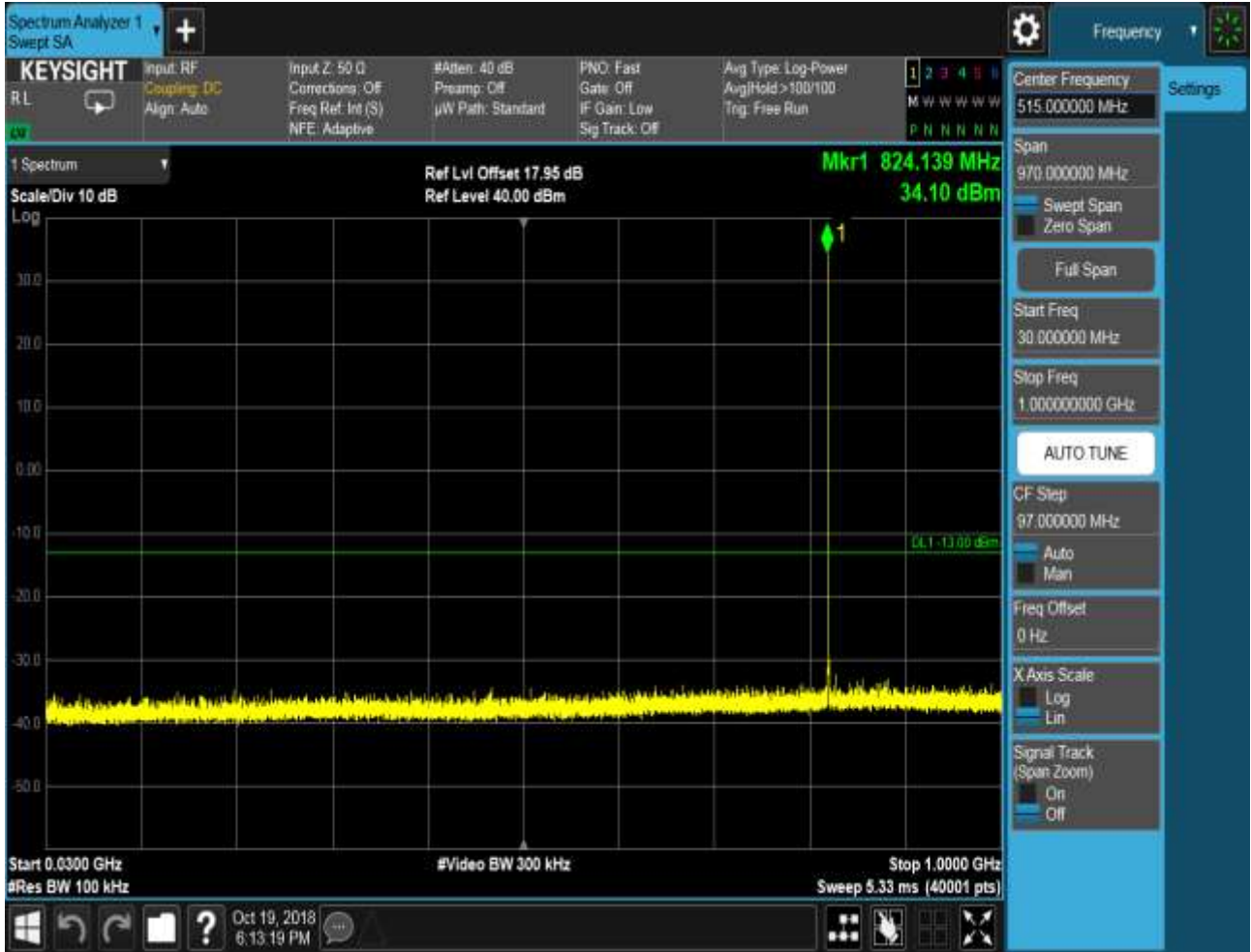
6.1.1 Test Band = GSM850

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH









6.1.1.1.2 Test Channel = MCH

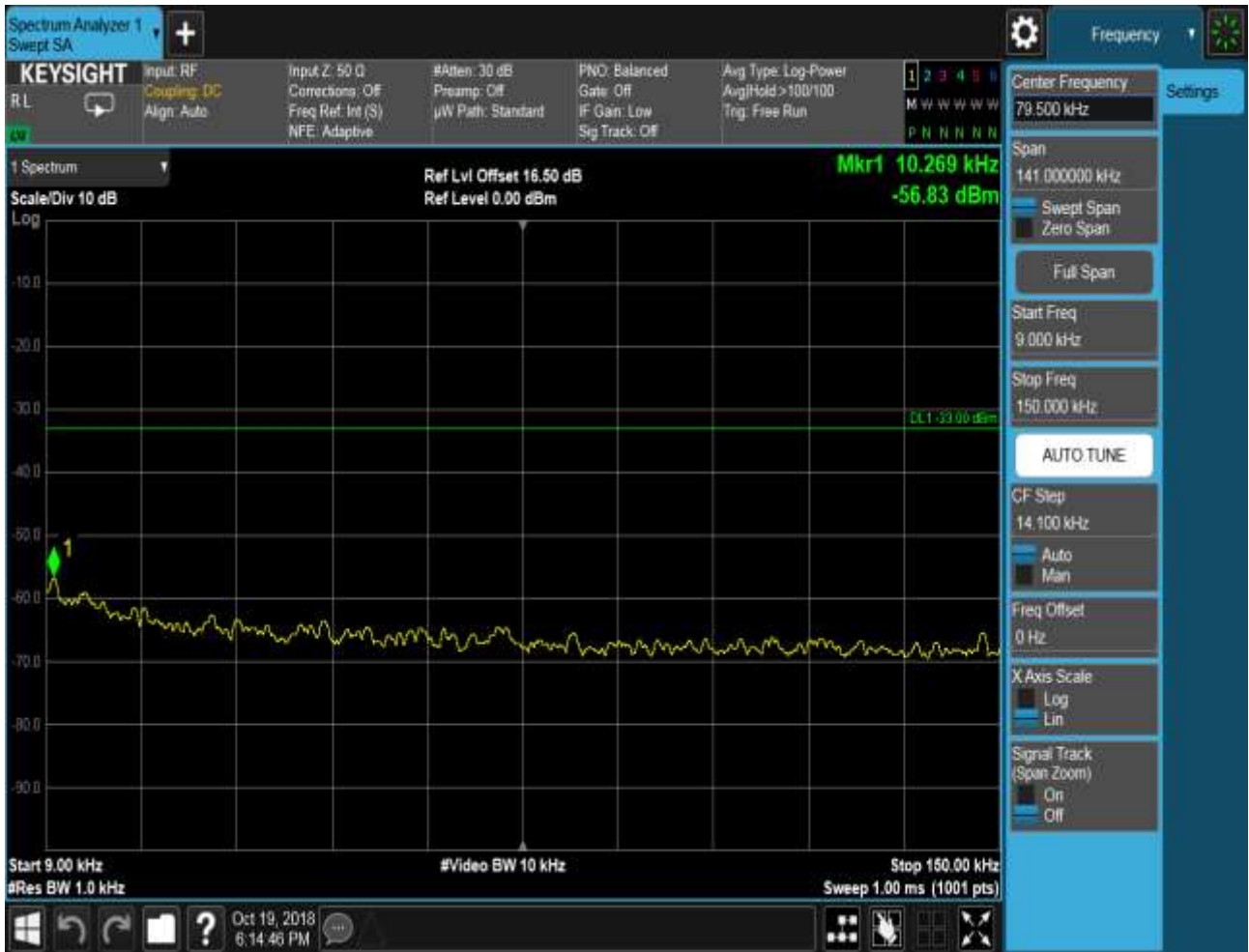




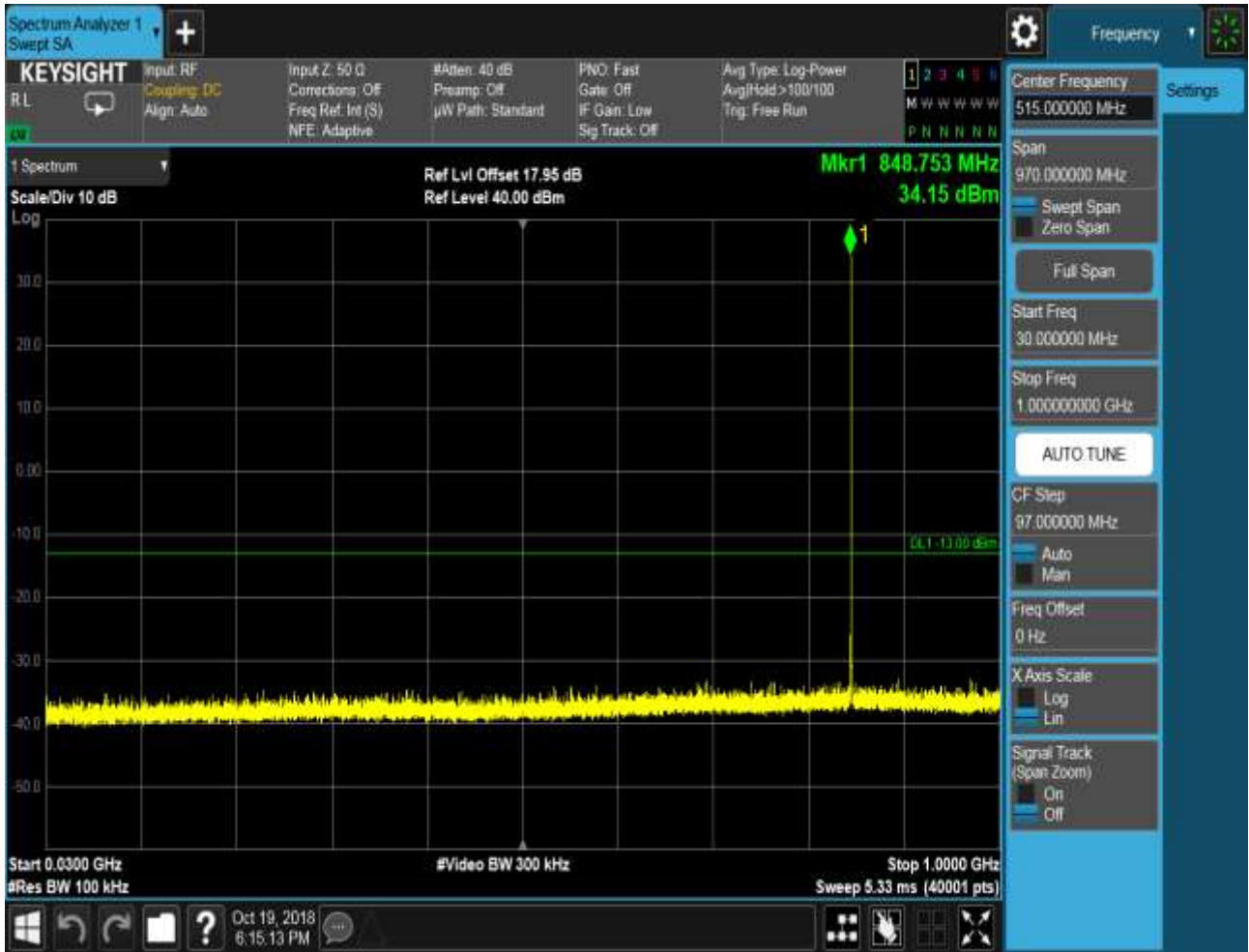




6.1.1.1.3 Test Channel = HCH





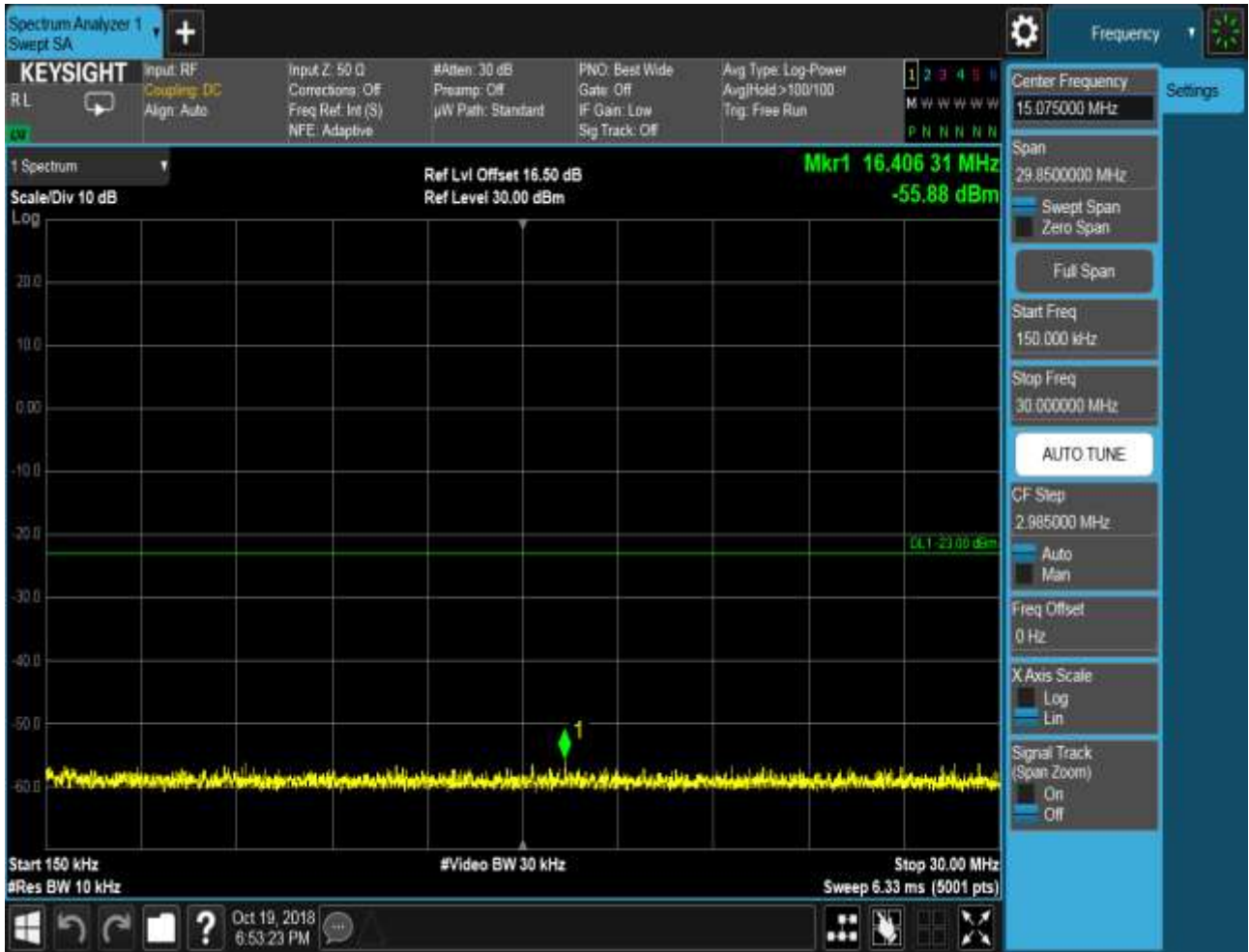




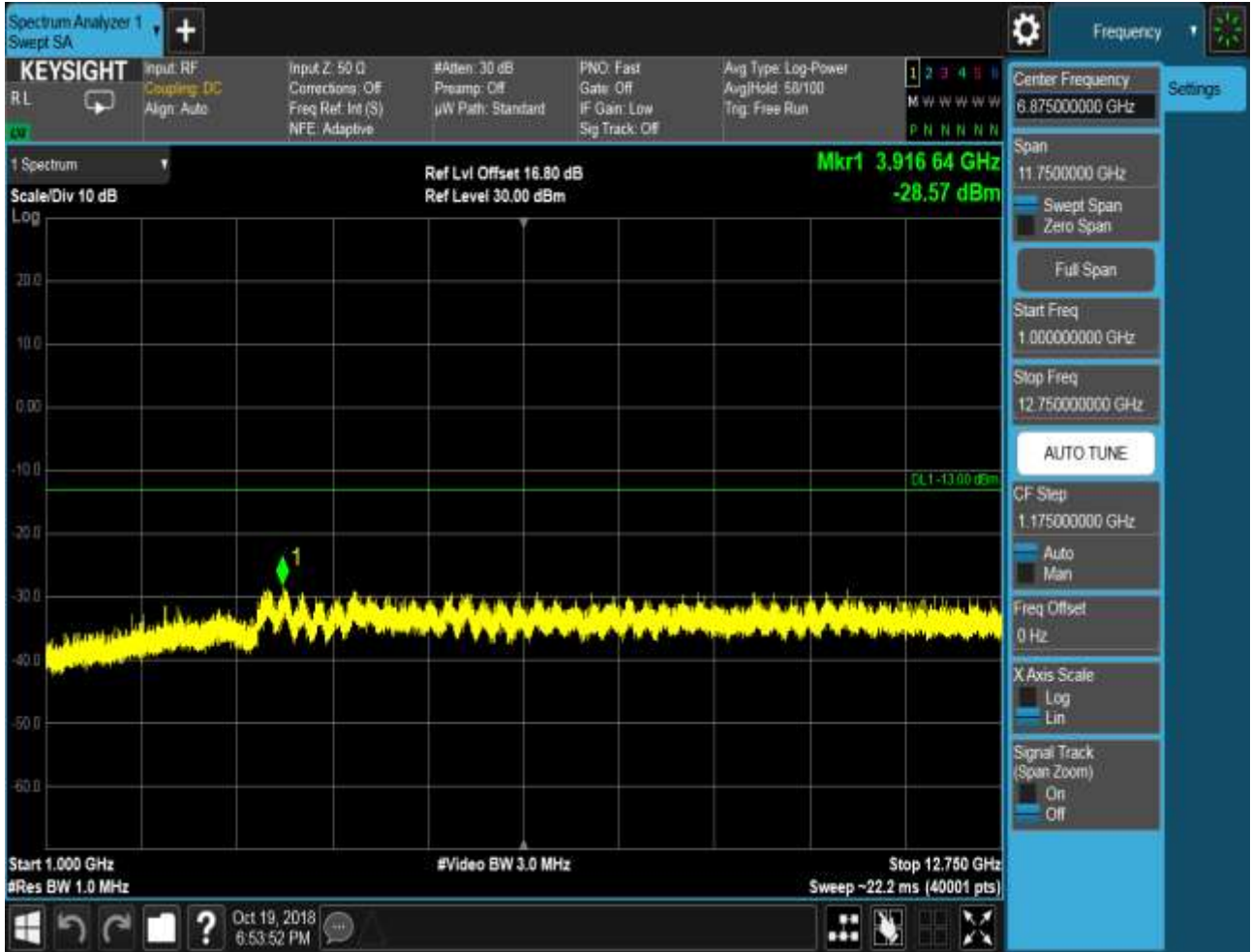
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH









6.1.1.2.2 Test Channel = MCH





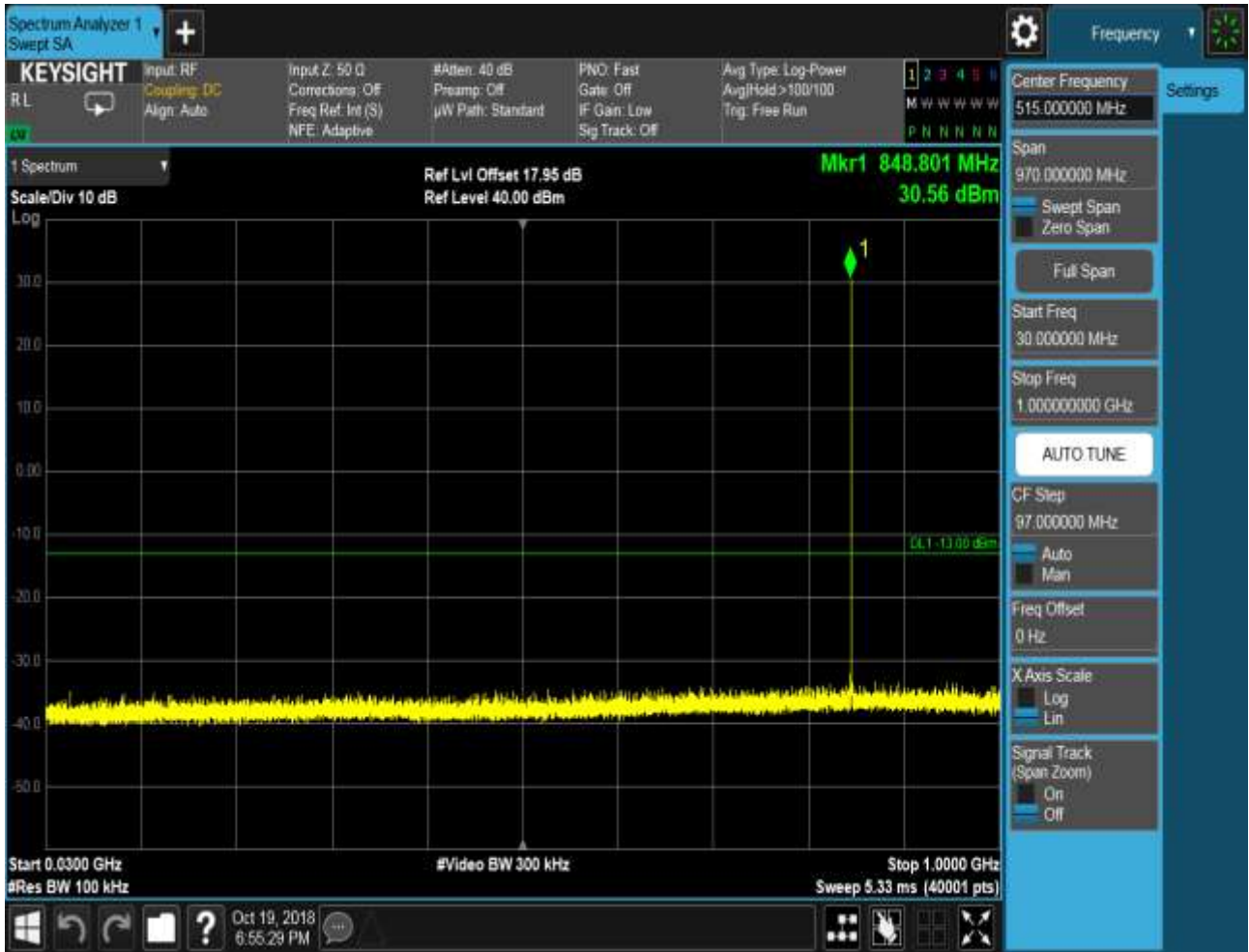




6.1.1.2.3 Test Channel = HCH









6.1.2 Test Band = PCS1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH







6.1.2.1.2 Test Channel = MCH

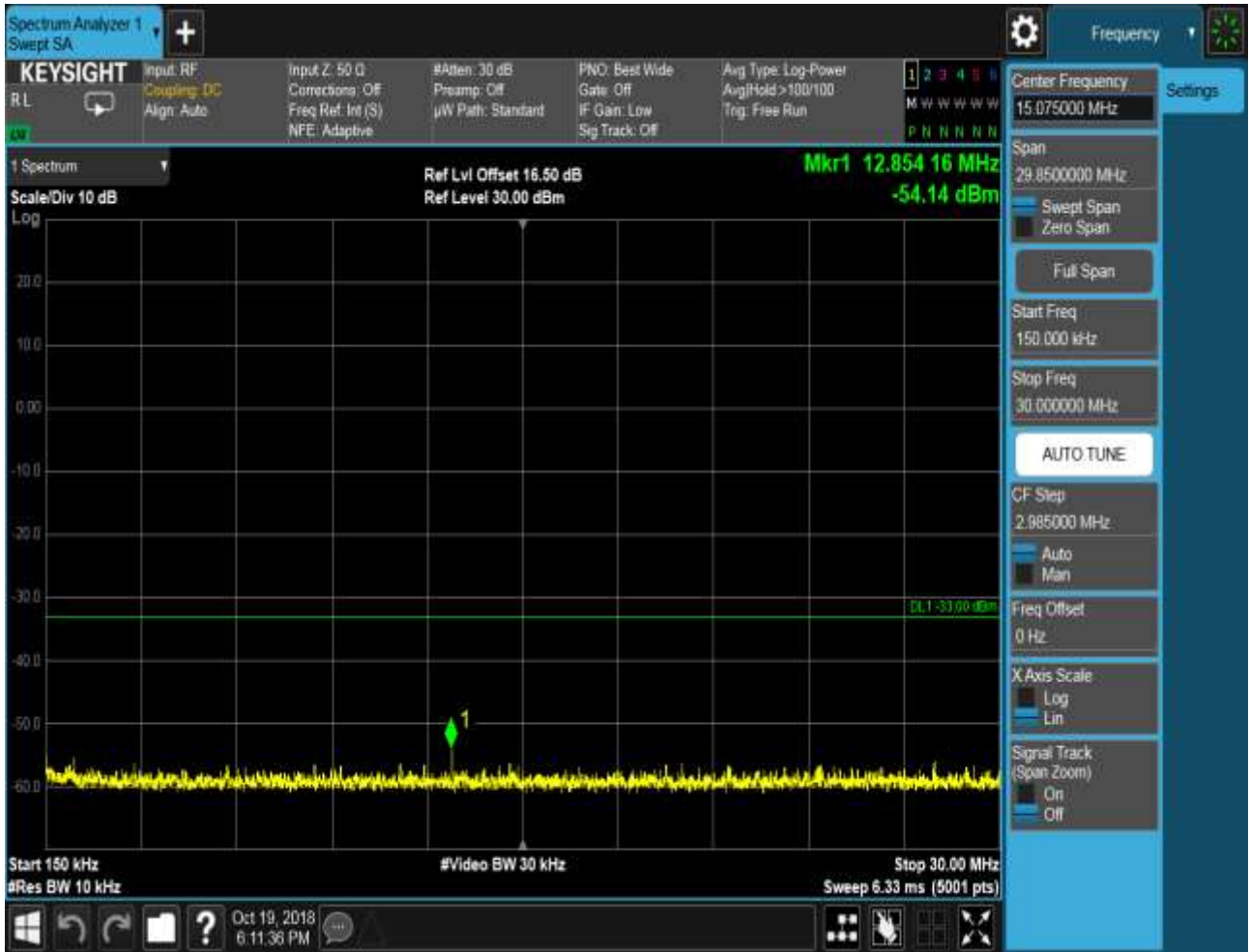






6.1.2.1.3 Test Channel = HCH







6.1.2.2 Test Mode = GSM/TM2

6.1.2.2.1 Test Channel = LCH







6.1.2.2.2 Test Channel = MCH







6.1.2.2.3 Test Channel = HCH







8Appendix_G: Frequency Stability

8.1 For GSM

8.1.1Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM850	GSM/TM1	LCH	TN	VL	-4.33	-0.00525	PASS
				VN	-5.17	-0.00627	PASS
				VH	0.32	0.00039	PASS
		MCH	TN	VL	2.97	0.00355	PASS
				VN	-2.84	-0.00339	PASS
				VH	-4.78	-0.00571	PASS
		HCH	TN	VL	9.10	0.01072	PASS
				VN	-3.55	-0.00418	PASS
				VH	-4.13	-0.00487	PASS
	GSM/TM2	LCH	TN	VL	-2.10	-0.00255	PASS
				VN	2.26	0.00274	PASS
				VH	16.92	0.02053	PASS
		MCH	TN	VL	3.36	0.00402	PASS
				VN	-4.91	-0.00587	PASS
				VH	5.46	0.00653	PASS
		HCH	TN	VL	5.46	0.00643	PASS
				VN	5.81	0.00684	PASS
				VH	11.04	0.01301	PASS
PCS1900	GSM/TM1	LCH	TN	VL	-6.20	-0.00335	PASS
				VN	-11.04	-0.00597	PASS
				VH	-6.84	-0.0037	PASS
		MCH	TN	VL	-5.94	-0.00316	PASS
				VN	-1.81	-0.00096	PASS
				VH	-2.84	-0.00151	PASS
		HCH	TN	VL	-2.91	-0.00152	PASS
				VN	-4.00	-0.00209	PASS
				VH	-4.78	-0.0025	PASS
	GSM/TM2	LCH	TN	VL	-14.72	-0.00796	PASS
				VN	-1.00	-0.00054	PASS
				VH	-14.53	-0.00785	PASS
		MCH	TN	VL	-9.14	-0.00486	PASS
				VN	-13.66	-0.00727	PASS
				VH	-4.84	-0.00257	PASS



Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		HCH	TN	VL	-14.46	-0.00757	PASS
				VN	-7.85	-0.00411	PASS
				VH	-7.01	-0.00367	PASS

8.1.2 Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM850	GSM/TM1	LCH	VN	-30	-6.01	-0.00729	PASS
				-20	-4.91	-0.00596	PASS
				-10	-7.75	-0.0094	PASS
				0	-4.97	-0.00603	PASS
				10	-3.81	-0.00462	PASS
				20	-4.52	-0.00548	PASS
				30	-6.26	-0.0076	PASS
				40	-8.20	-0.00995	PASS
		50	-7.62	-0.00925	PASS		
		MCH	VN	-30	-2.84	-0.00339	PASS
				-20	-2.45	-0.00293	PASS
				-10	-8.20	-0.0098	PASS
				0	-4.39	-0.00525	PASS
				10	-5.10	-0.0061	PASS
				20	-4.65	-0.00556	PASS
				30	-4.78	-0.00571	PASS
				40	-3.62	-0.00433	PASS
		50	-5.75	-0.00687	PASS		
		HCH	VN	-30	-5.62	-0.00662	PASS
				-20	-5.36	-0.00631	PASS
				-10	6.52	0.00768	PASS
				0	-0.90	-0.00106	PASS
				10	0.00	0	PASS
				20	-2.97	-0.0035	PASS
	30			0.52	0.00061	PASS	
	40			1.42	0.00167	PASS	
	50	-1.16	-0.00137	PASS			
	GSM/TM2	LCH	VN	-30	-7.07	-0.00858	PASS
				-20	-13.92	-0.01689	PASS
				-10	-0.10	-0.00012	PASS
				0	-10.56	-0.01281	PASS
				10	-5.33	-0.00647	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict						
				20	-7.88	-0.00956	PASS						
				30	-8.91	-0.01081	PASS						
				40	-10.23	-0.01241	PASS						
				50	-8.04	-0.00975	PASS						
		MCH	VN			-30	-6.17	-0.00738	PASS				
						-20	3.62	0.00433	PASS				
						-10	-2.42	-0.00289	PASS				
						0	1.32	0.00158	PASS				
						10	1.16	0.00139	PASS				
						20	-7.01	-0.00838	PASS				
						30	-14.66	-0.01752	PASS				
						40	-3.62	-0.00433	PASS				
						50	1.19	0.00142	PASS				
						HCH	VN			-30	1.58	0.00186	PASS
										-20	-7.14	-0.00841	PASS
										-10	-10.49	-0.01236	PASS
		0	-6.07	-0.00715	PASS								
		10	-1.84	-0.00217	PASS								
		20	0.55	0.00065	PASS								
		30	2.26	0.00266	PASS								
		40	-1.81	-0.00213	PASS								
		PCS1900	GSM/TM1	LCH	VN	-30	-6.07	-0.00328	PASS				
						-20	-9.23	-0.00499	PASS				
						-10	-3.81	-0.00206	PASS				
0	-6.72					-0.00363	PASS						
10	-1.23					-0.00066	PASS						
20	-9.69					-0.00524	PASS						
30	-7.55					-0.00408	PASS						
40	-3.23					-0.00175	PASS						
50	-4.52					-0.00244	PASS						
MCH	VN							-30	0.13	0.00007	PASS		
								-20	-0.77	-0.00041	PASS		
								-10	-2.00	-0.00106	PASS		
				0	-5.23			-0.00278	PASS				
				10	-2.13			-0.00113	PASS				
				20	-2.45			-0.0013	PASS				
				30	-5.17			-0.00275	PASS				
				40	-1.81			-0.00096	PASS				



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		HCH	VN	50	-8.01	-0.00426	PASS
				-30	-3.42	-0.00179	PASS
				-20	-9.43	-0.00494	PASS
				-10	-5.55	-0.00291	PASS
				0	-4.13	-0.00216	PASS
				10	-10.85	-0.00568	PASS
				20	-3.68	-0.00193	PASS
				30	-6.72	-0.00352	PASS
				40	-10.14	-0.00531	PASS
				50	-9.56	-0.00501	PASS
	GSM/TM2	LCH	VN	-30	-0.03	-0.00002	PASS
				-20	-7.85	-0.00424	PASS
				-10	5.91	0.00319	PASS
				0	-12.72	-0.00687	PASS
				10	-17.05	-0.00922	PASS
				20	-2.87	-0.00155	PASS
				30	2.26	0.00122	PASS
				40	-4.16	-0.00225	PASS
				50	-3.33	-0.0018	PASS
				MCH	VN	-30	8.43
		-20	-16.18			-0.00861	PASS
		-10	-3.65			-0.00194	PASS
		0	-10.78			-0.00573	PASS
		10	-6.26			-0.00333	PASS
		20	-1.81			-0.00096	PASS
		30	-16.37			-0.00871	PASS
		40	-8.62			-0.00459	PASS
		50	-4.04			-0.00215	PASS
		HCH	VN			-30	-9.17
				-20	-11.66	-0.00611	PASS
				-10	-19.27	-0.01009	PASS
				0	-23.44	-0.01227	PASS
				10	-14.40	-0.00754	PASS
				20	-7.23	-0.00379	PASS
				30	-4.91	-0.00257	PASS
				40	-18.02	-0.00944	PASS
				50	-10.23	-0.00536	PASS

END