



Appendix for test report



1 Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.67	22.04	38.5	PASS
		MCH	24.64	22.05	38.5	PASS
		HCH	24.74	21.99	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	24.26	22.09	30	PASS
		MCH	24.27	21.94	30	PASS
		HCH	24.24	21.96	30	PASS
WCDMA1900	UMTS/TM1	LCH	24.23	24.57	33	PASS
		MCH	24.12	24.54	33	PASS
		HCH	24.07	24.43	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
WCDMA850	UMTS/TM1	LCH	2.76	13	PASS
		MCH	2.68	13	PASS
		HCH	2.69	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.09	13	PASS
		MCH	2.64	13	PASS
		HCH	3.01	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.7	13	PASS
		MCH	3.01	13	PASS
		HCH	2.5	13	PASS

3Appendix_C: Modulation Characteristics

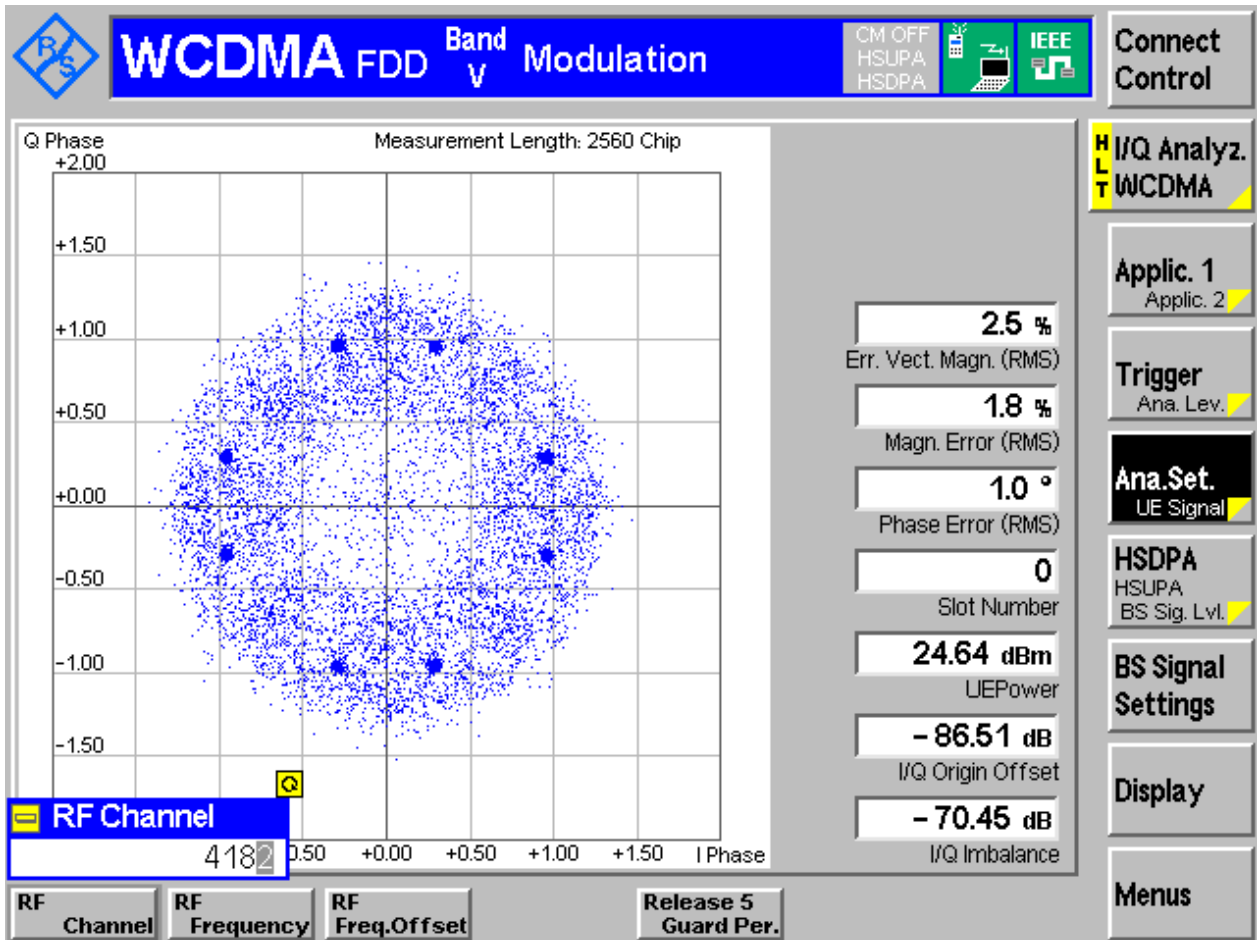
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA850

3.1.1.1 Test Mode = UMTS/TM1

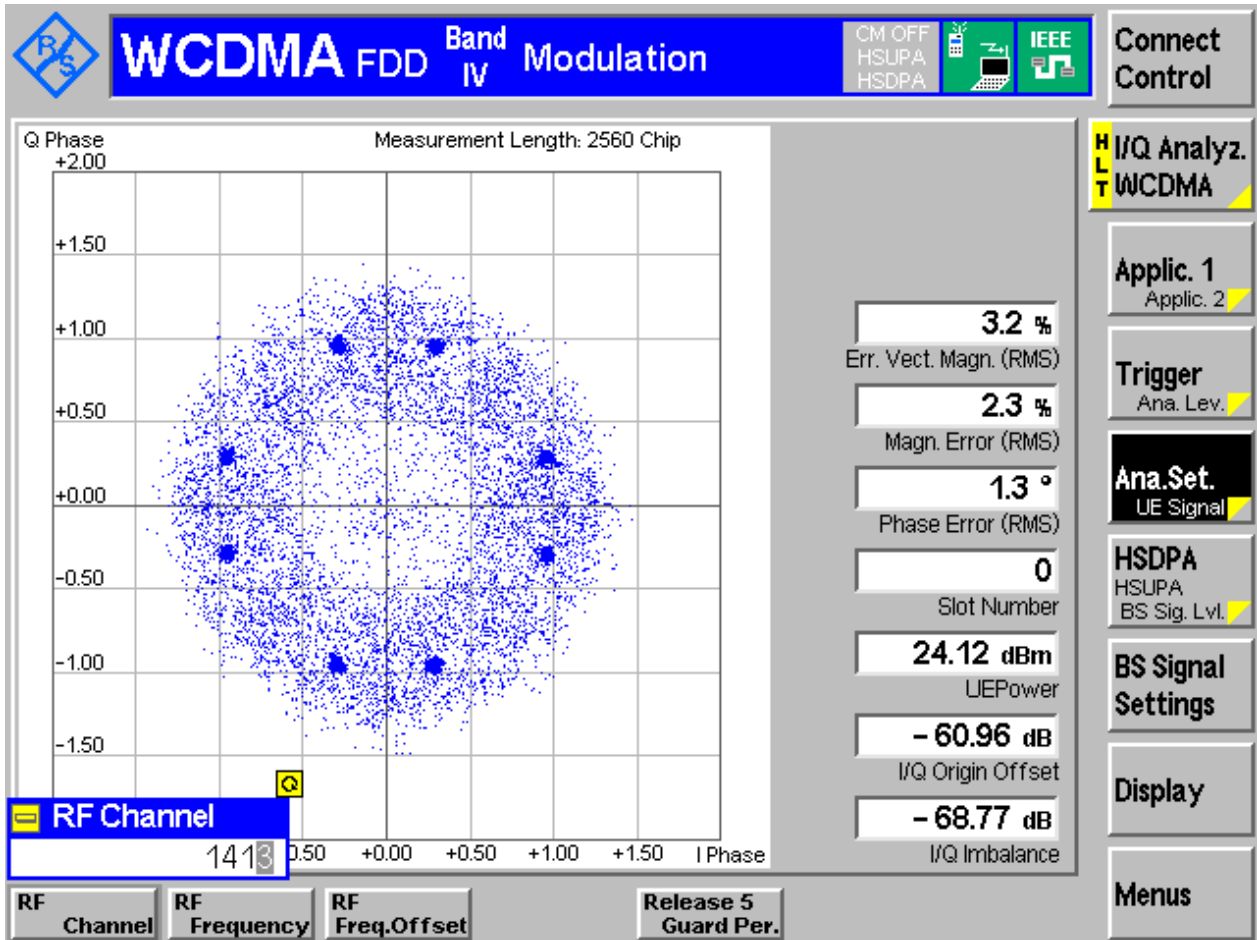
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

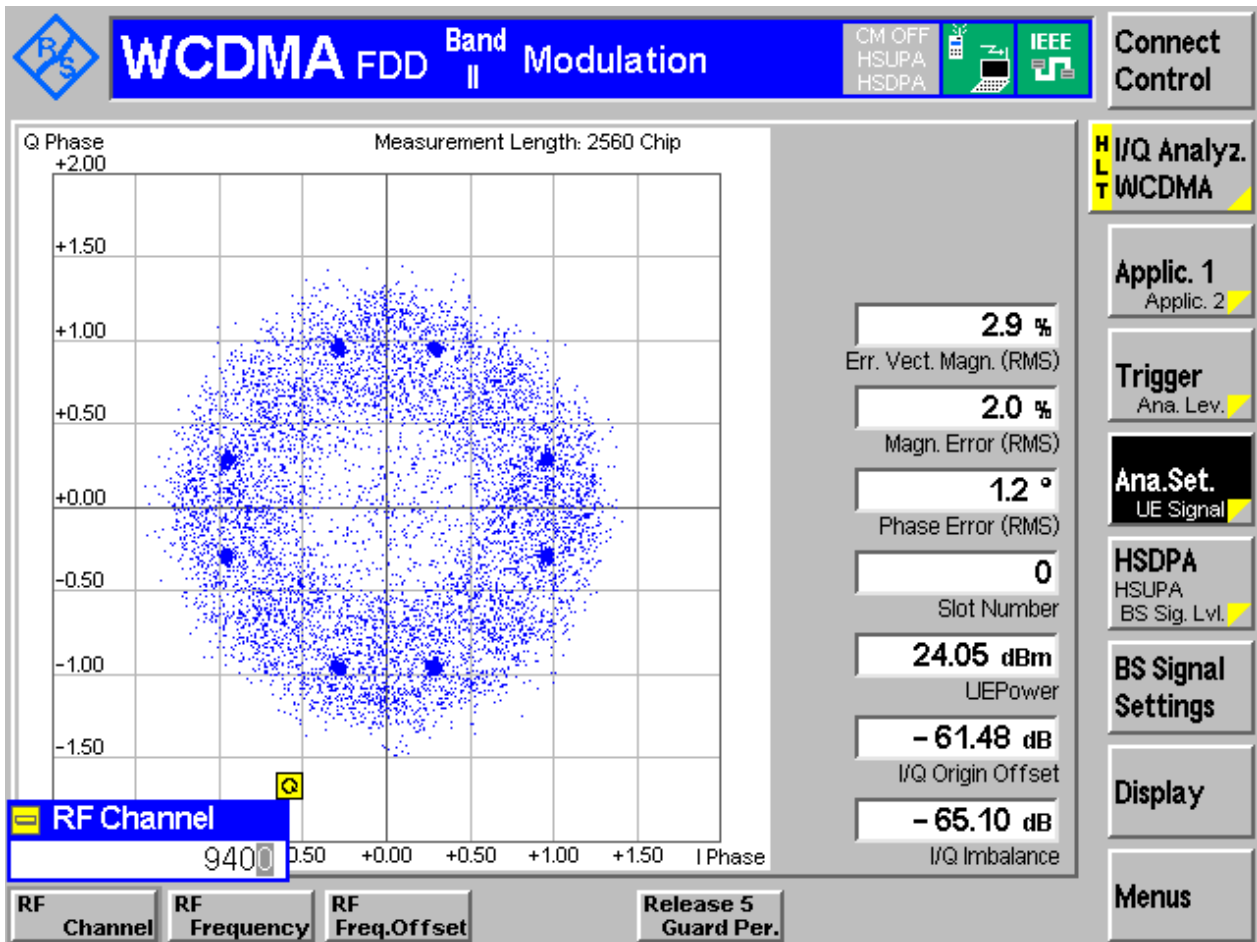
3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA1900

3.1.3.1 Test Mode = UMTS/TM1

3.1.3.1.1 Test Channel = MCH



4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.17	4.72	Pass
		MCH	4.16	4.72	Pass
		HCH	4.16	4.71	Pass
WCDMA1700	UMTS/TM1	LCH	4.17	4.72	Pass
		MCH	4.17	4.73	Pass
		HCH	4.17	4.71	Pass
WCDMA1900	UMTS/TM1	LCH	4.17	4.72	Pass
		MCH	4.17	4.74	Pass
		HCH	4.18	4.75	Pass



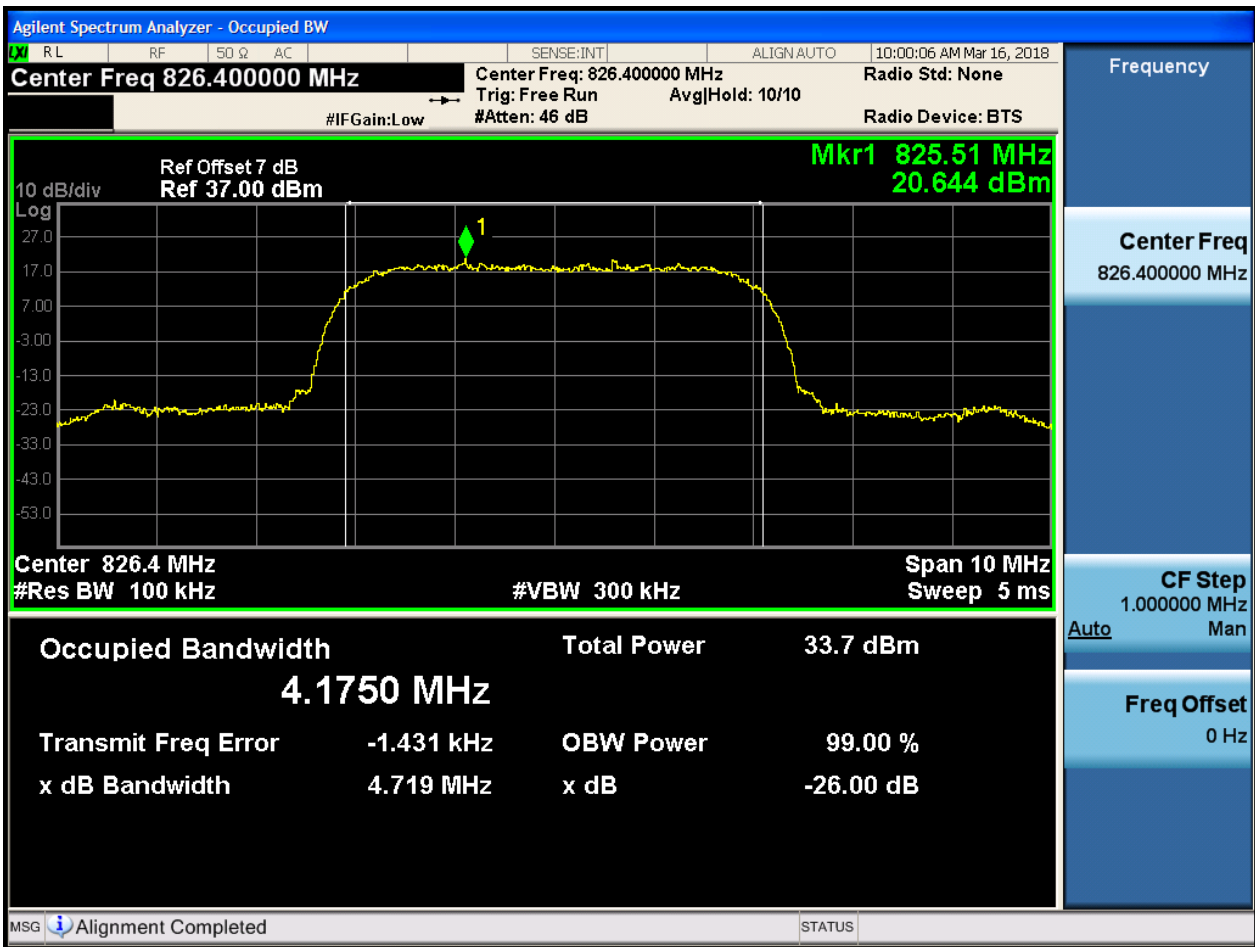
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

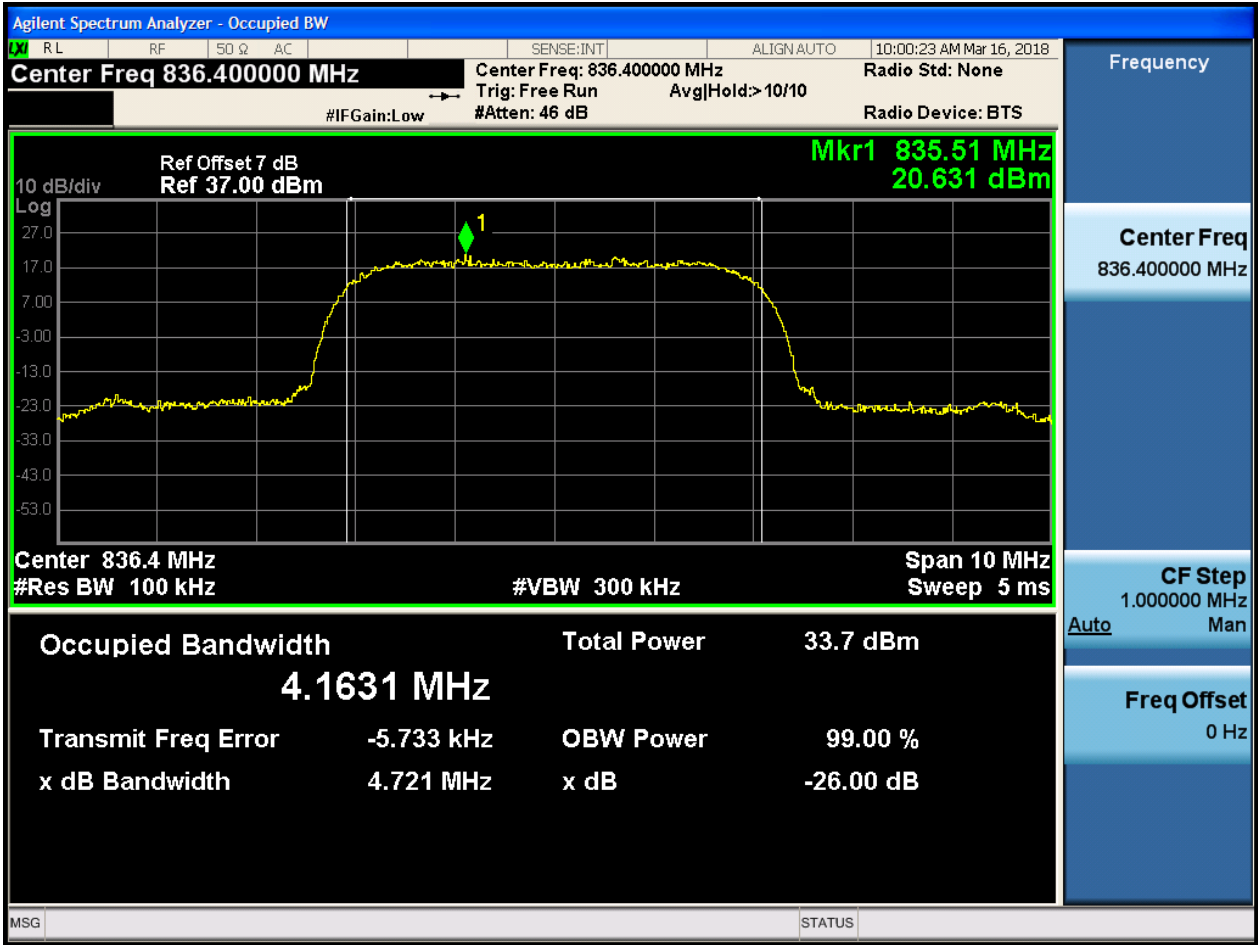
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



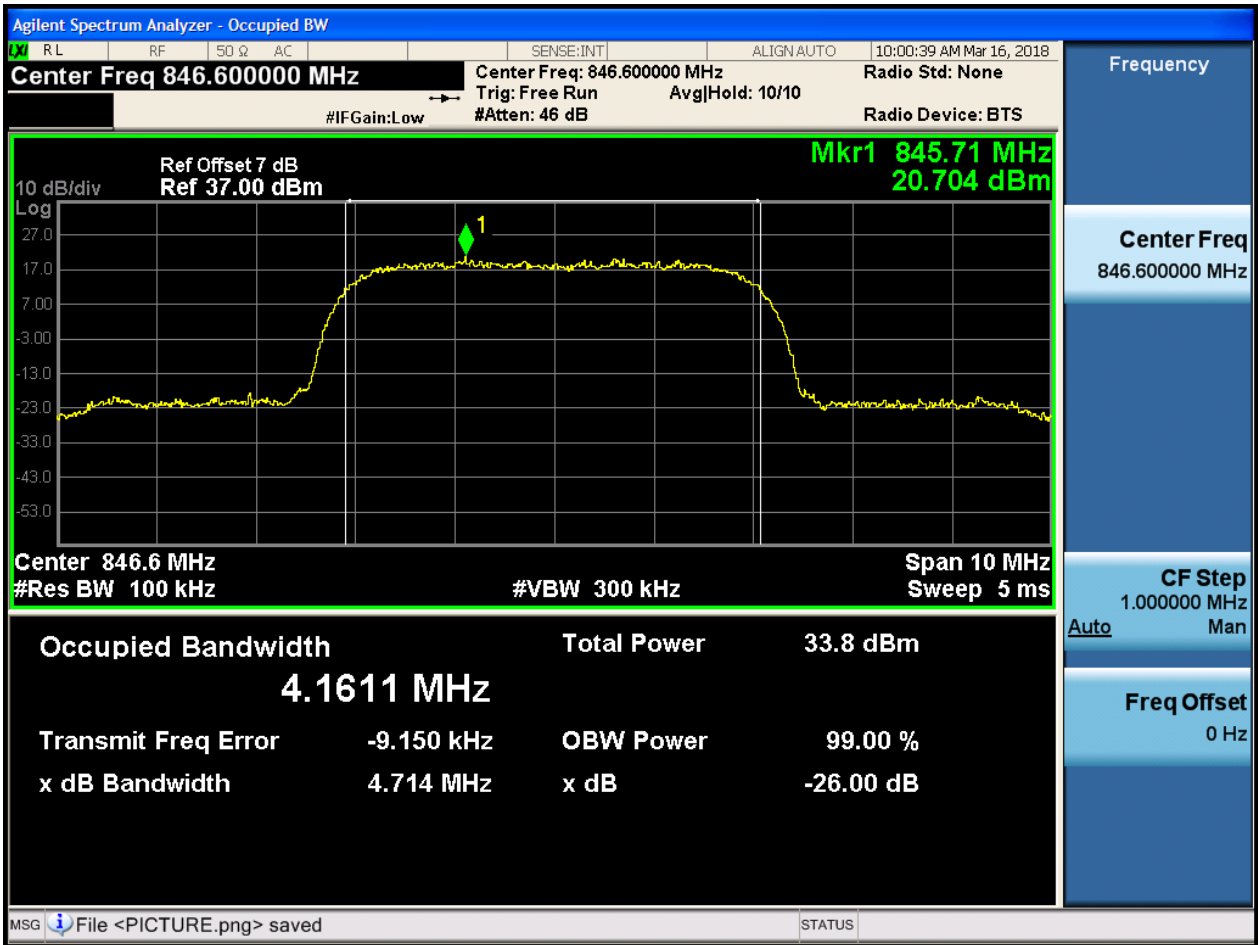


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

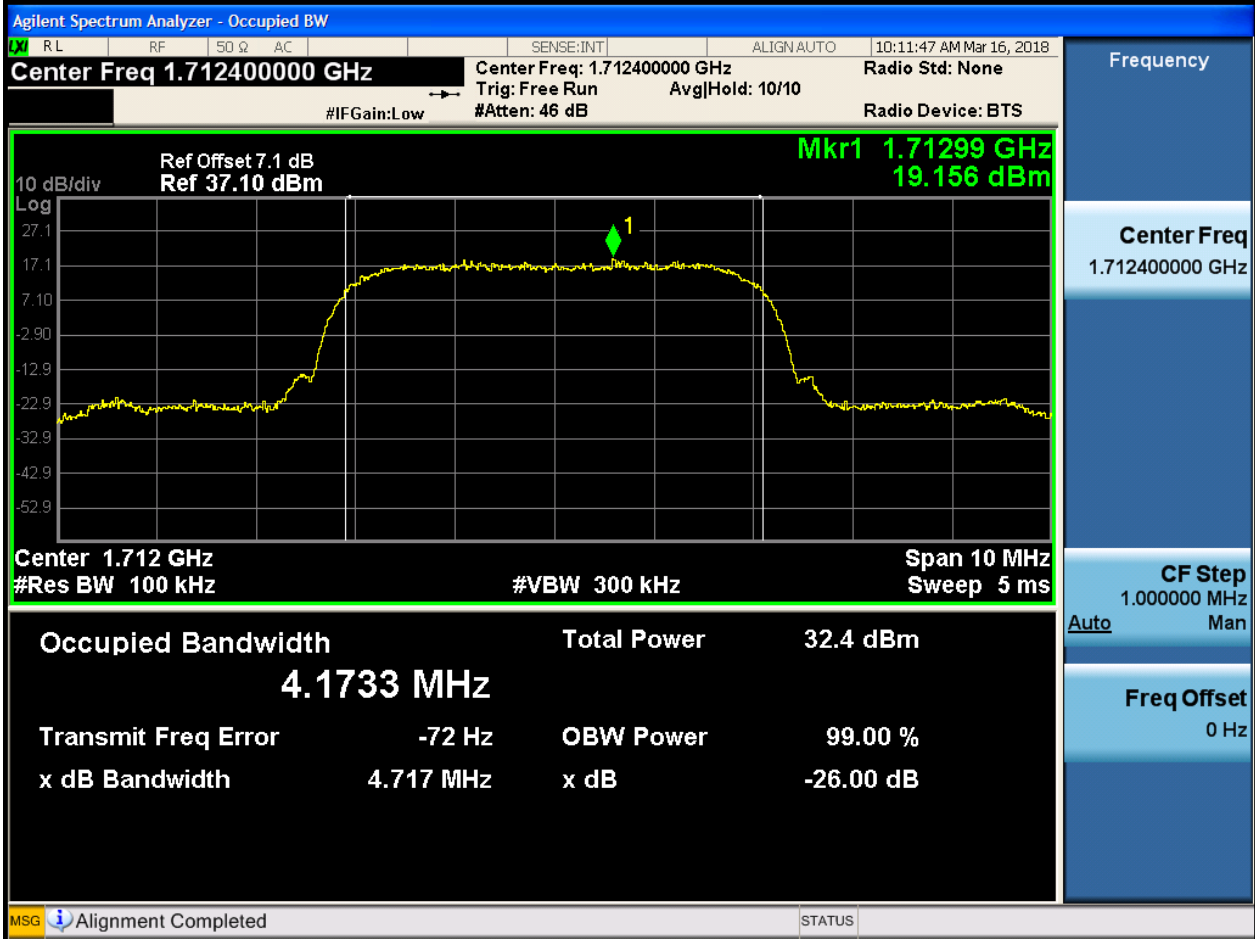




4.1.2 Test Band = WCDMA1700

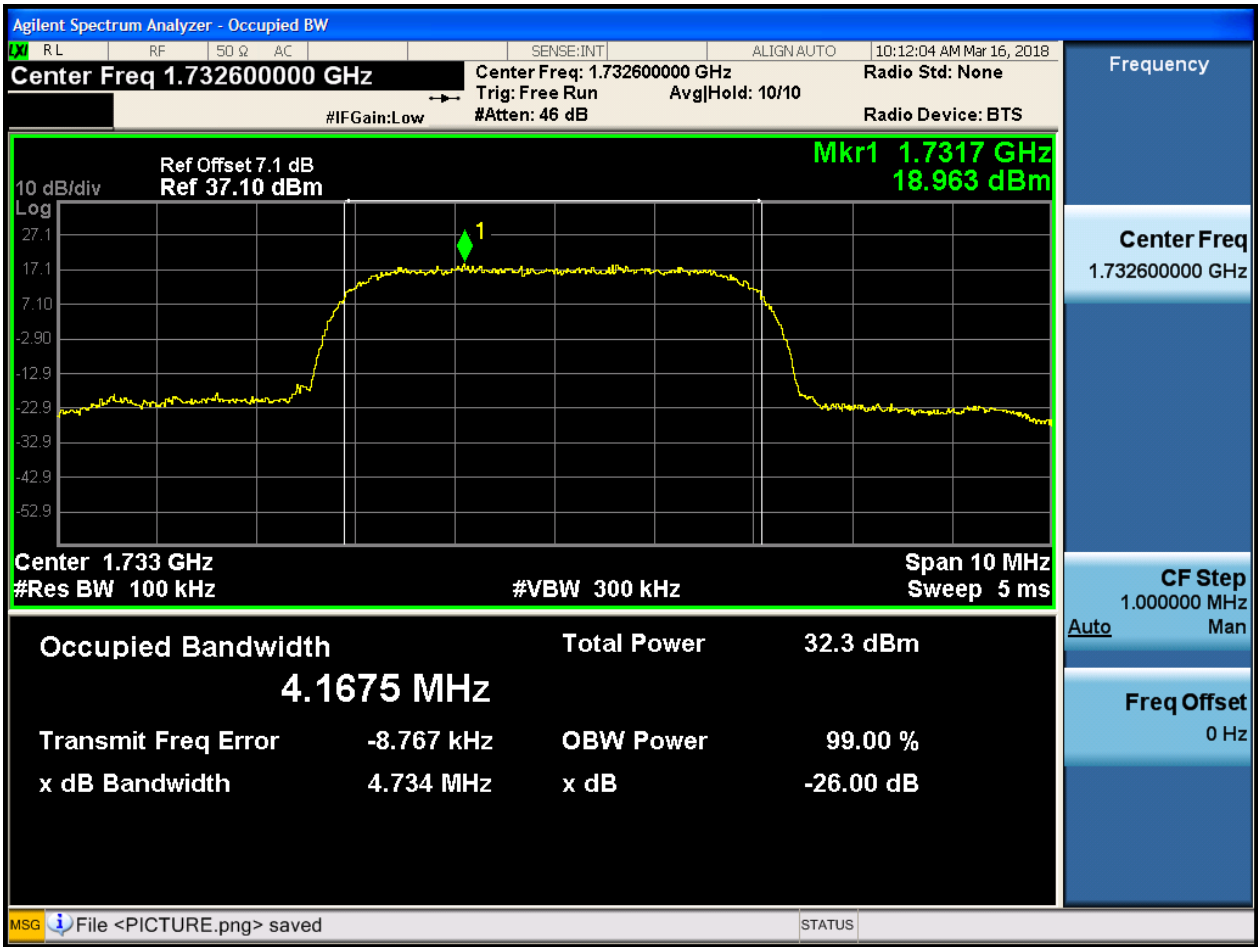
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



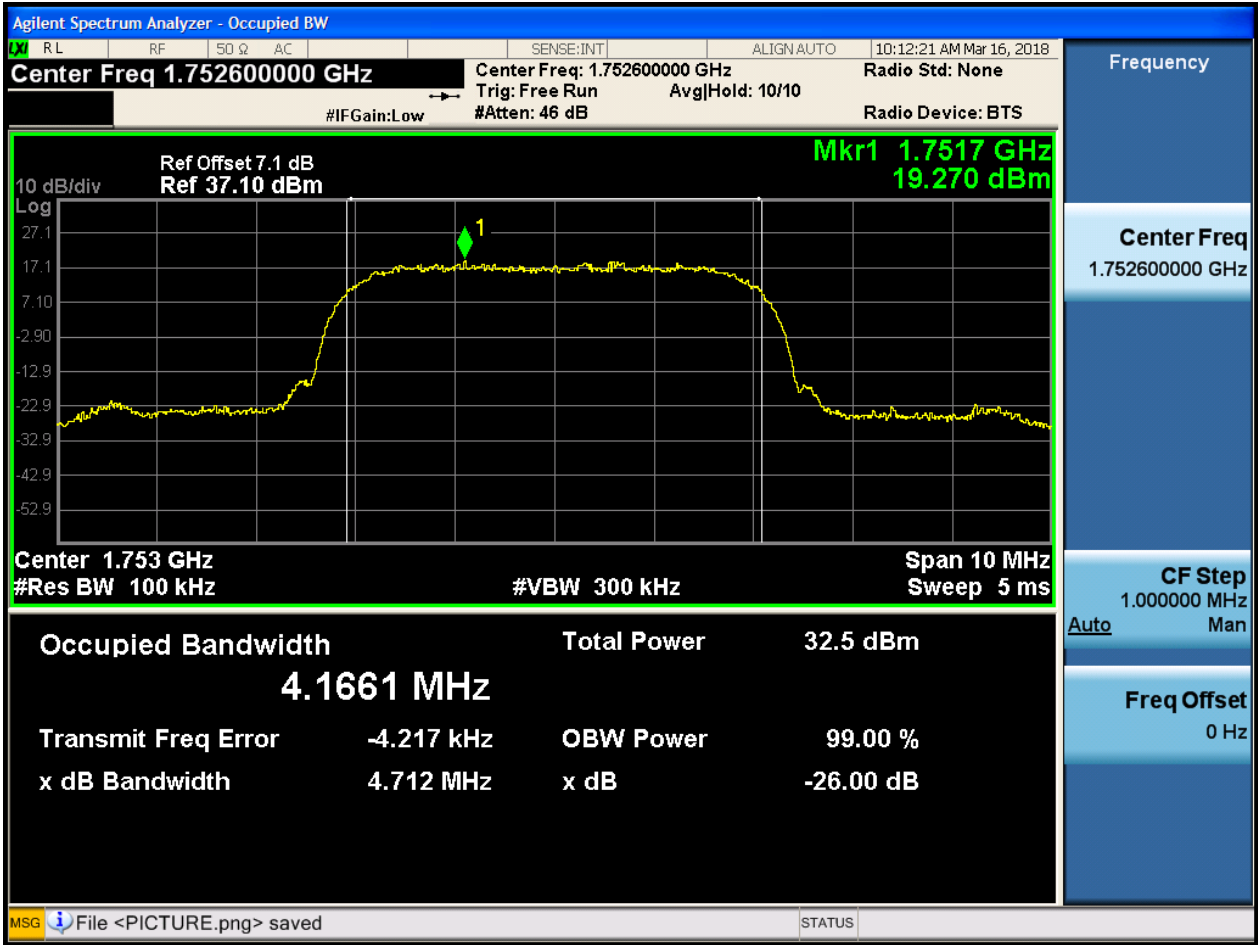


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

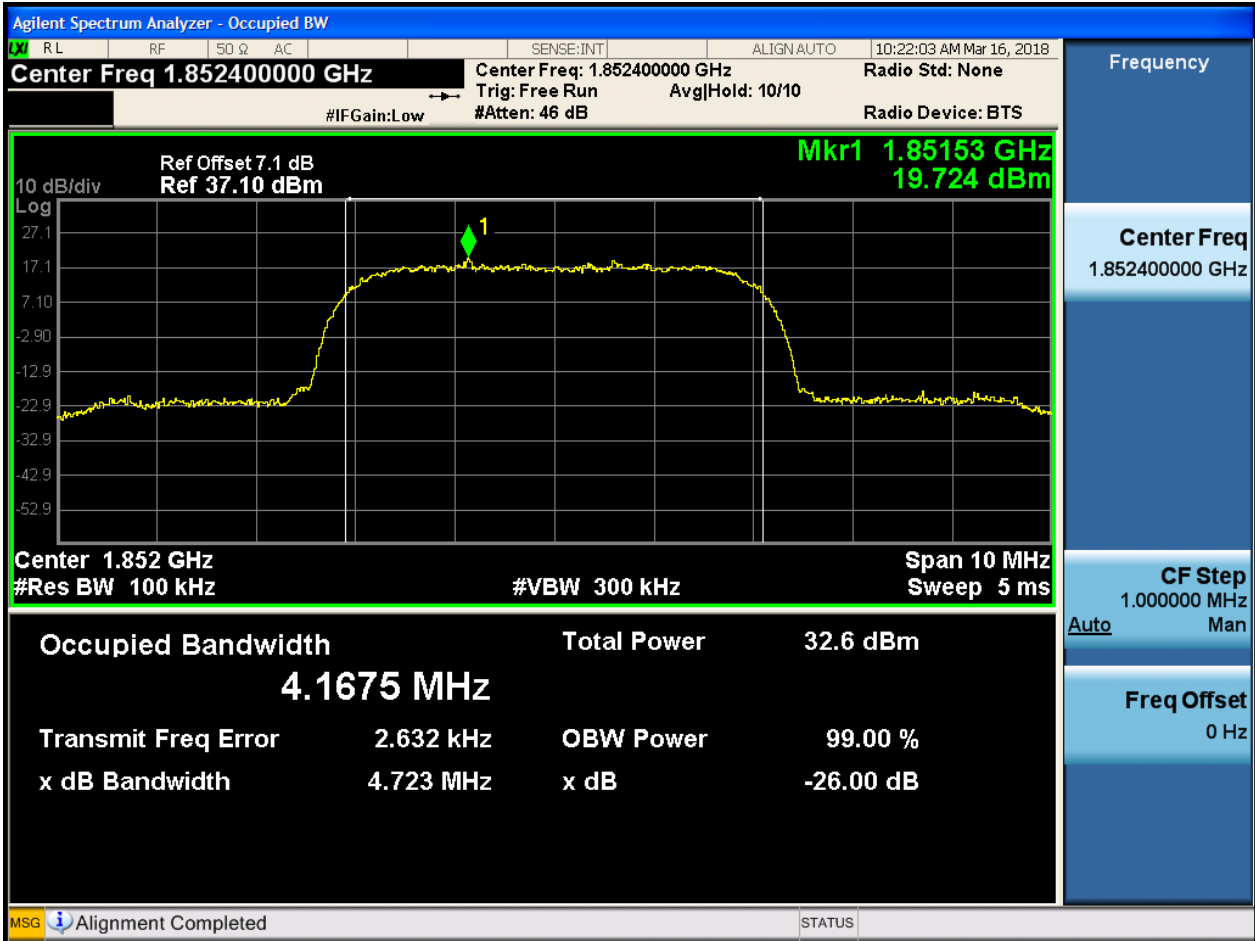




4.1.3 Test Band = WCDMA1900

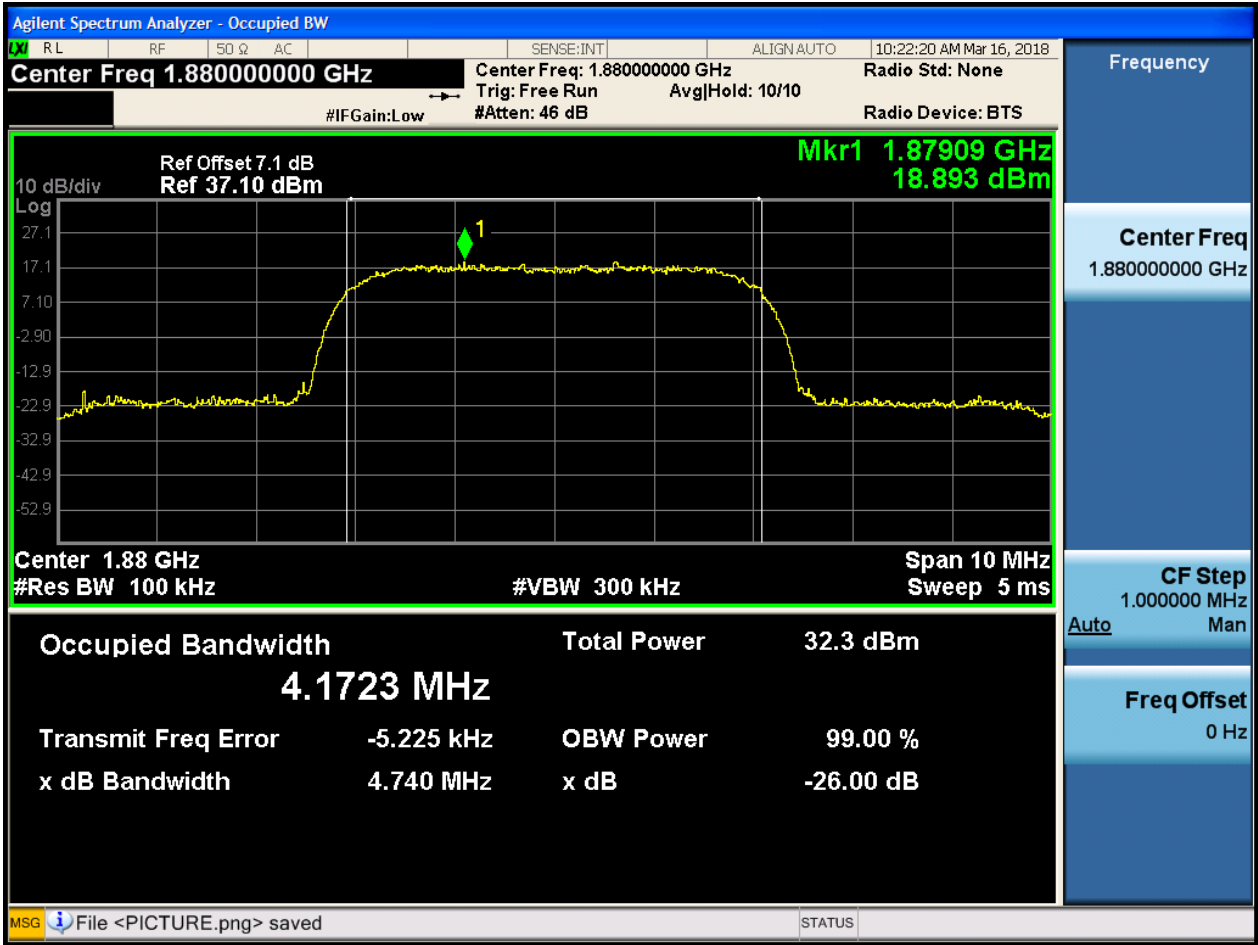
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



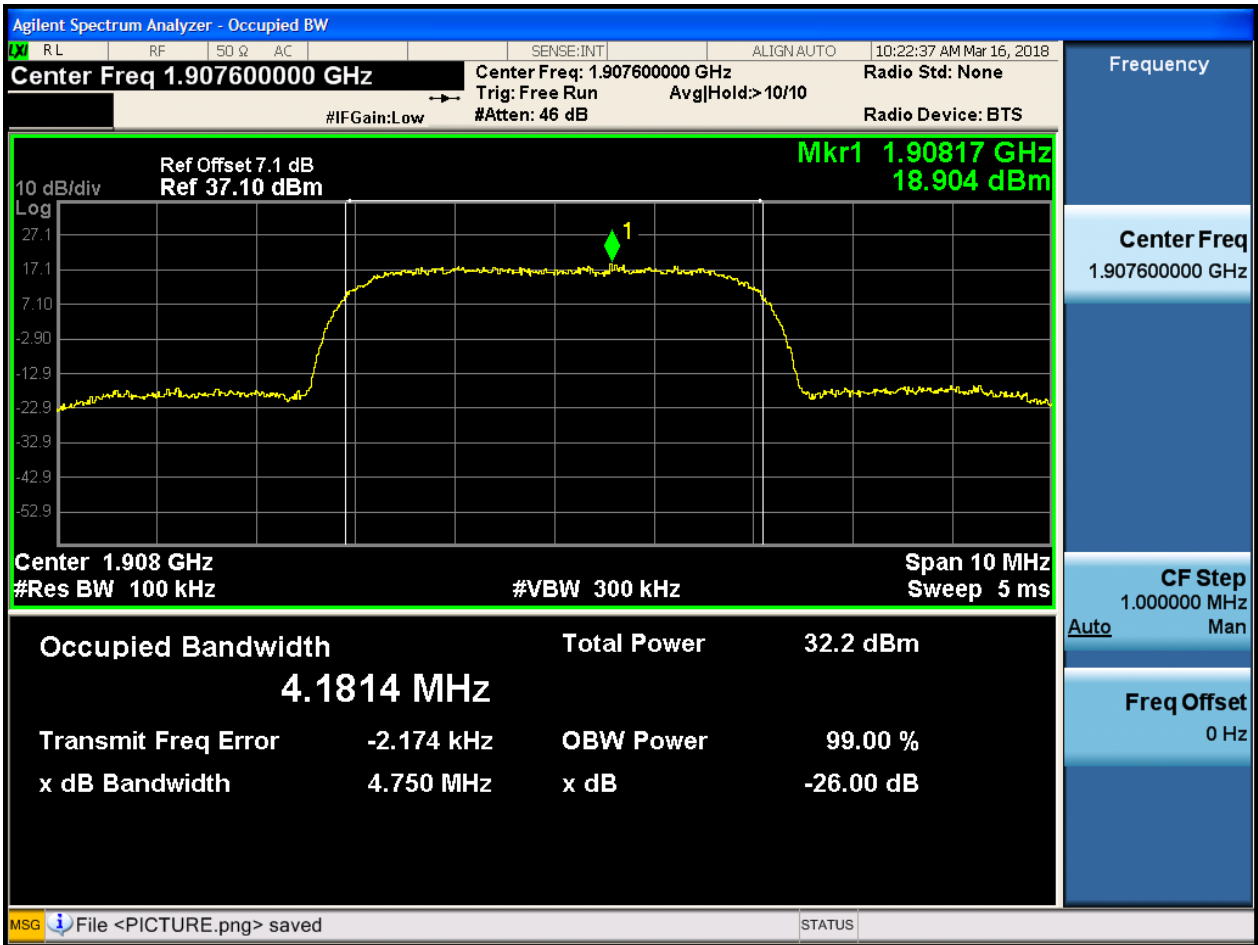


4.1.3.1.2 Test Channel = MCH





4.1.3.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

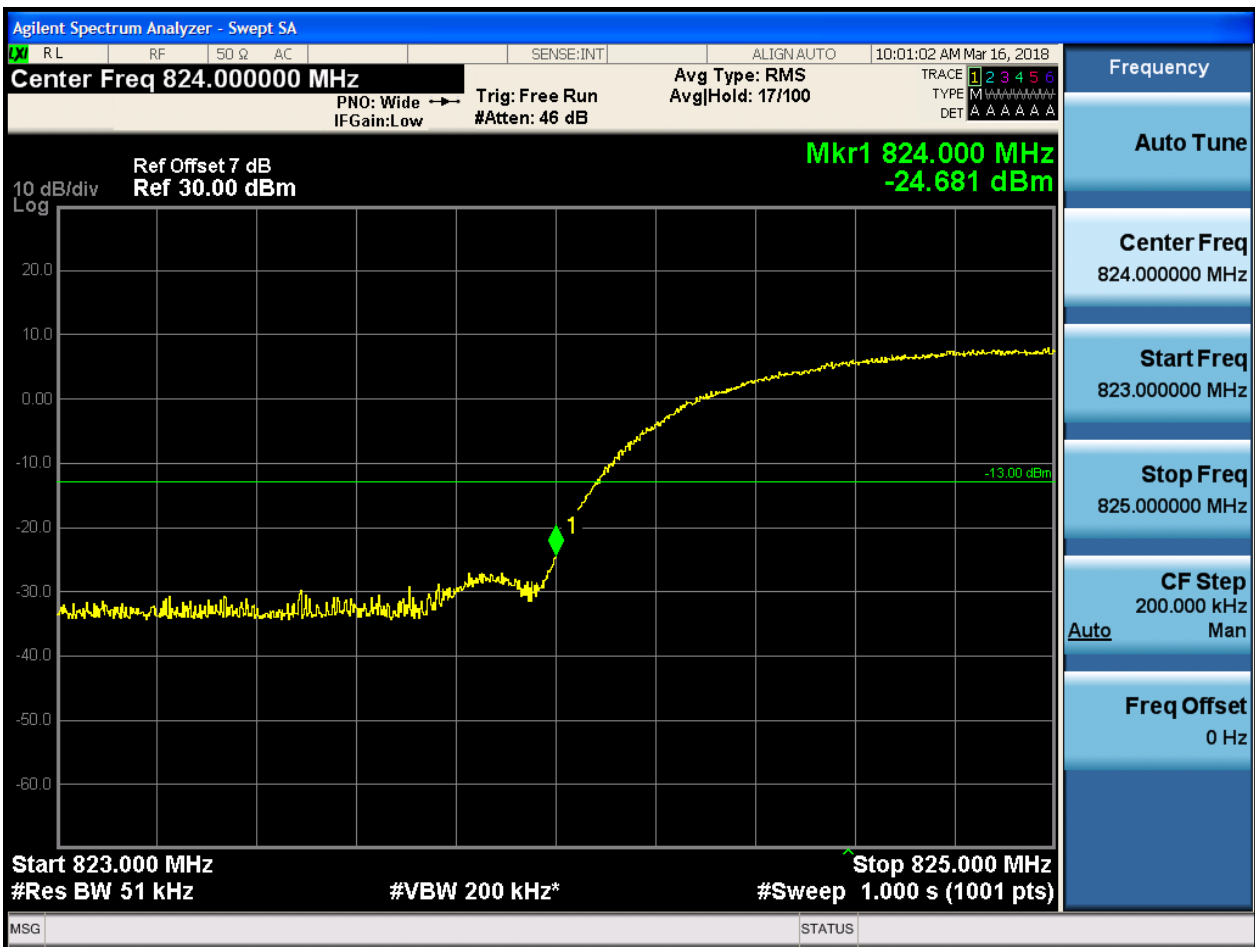
Part I - Test Plots

5.1 For UMTS

5.1.1 Test Band = WCDMA850

5.1.1.1 Test Mode = UMTS/TM1

5.1.1.1.1 Test Channel = LCH





5.1.1.1.2 Test Channel = HCH

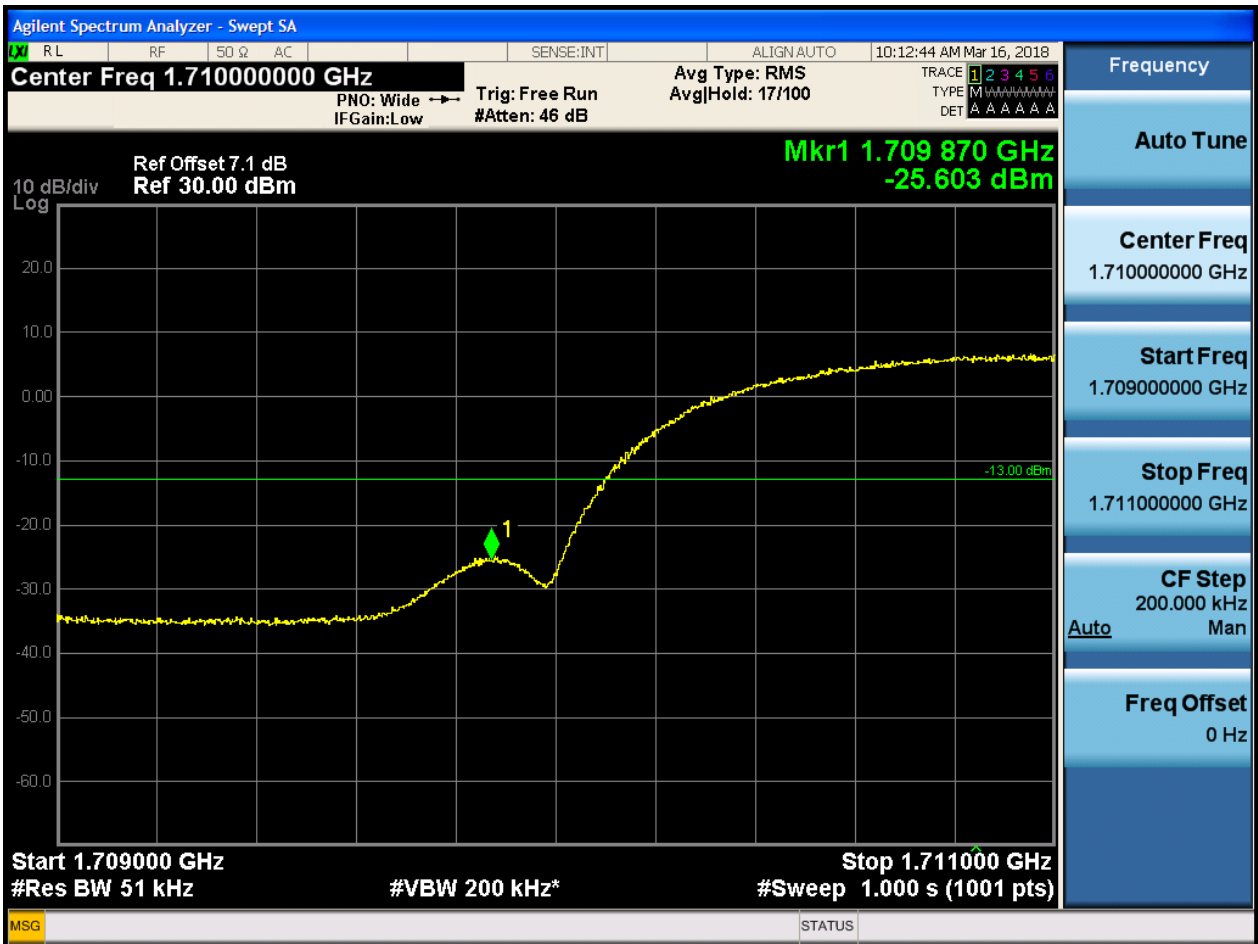




5.1.2 Test Band = WCDMA1700

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



5.1.2.1.2 Test Channel = HCH

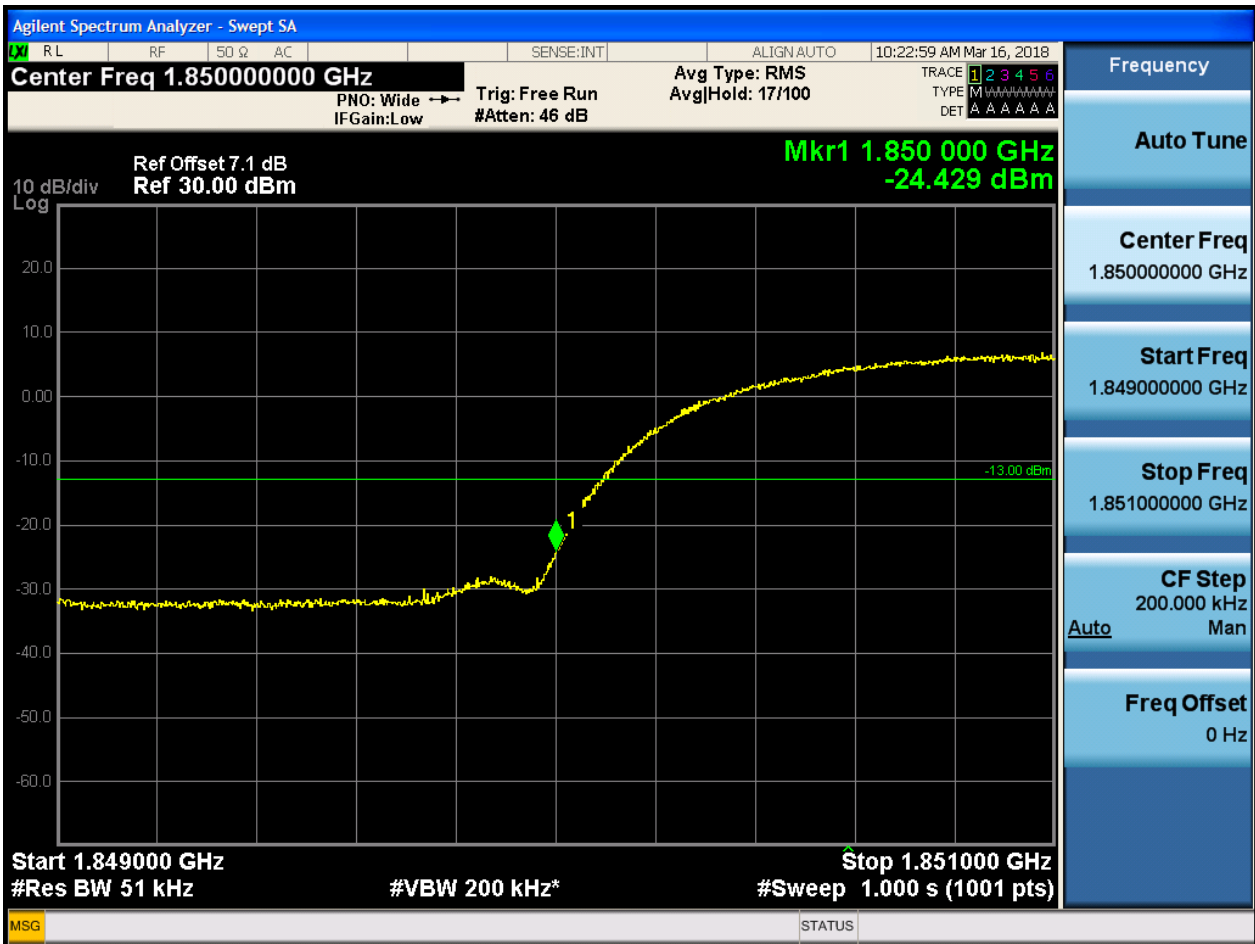




5.1.3 Test Band = WCDMA1900

5.1.3.1 Test Mode = UMTS/TM1

5.1.3.1.1 Test Channel = LCH





5.1.3.1.2 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.

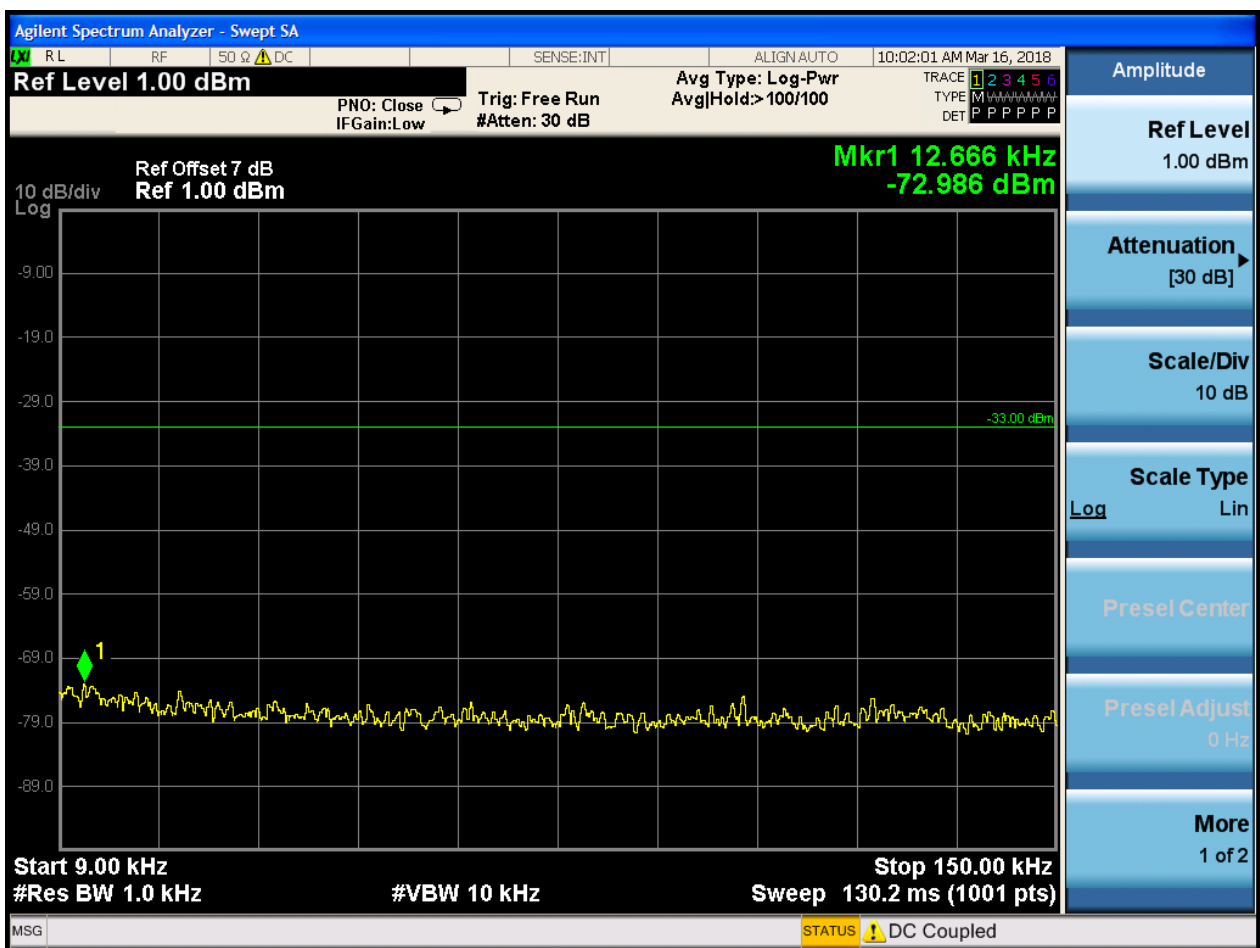
Part I - Test Plots

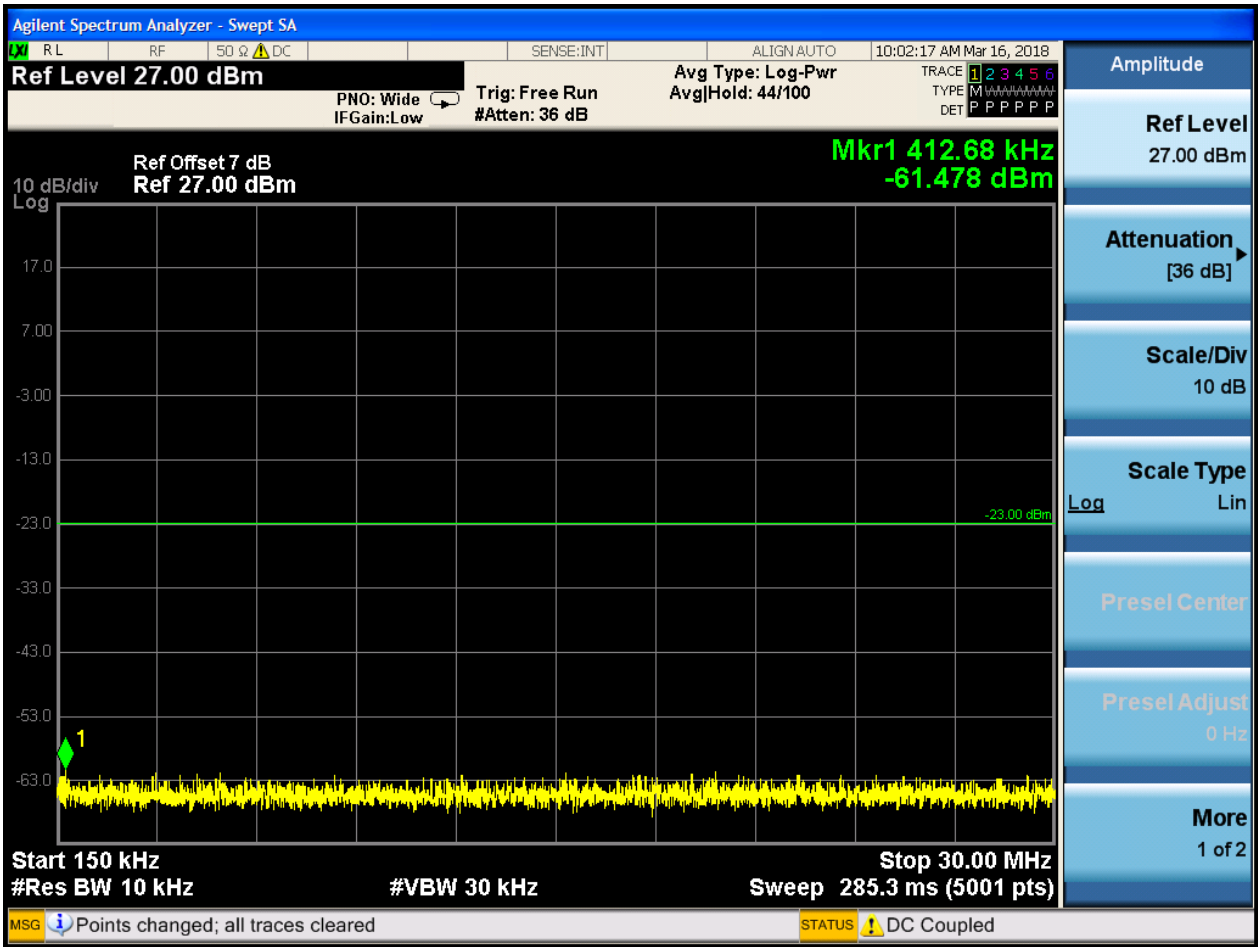
6.1 For UMTS

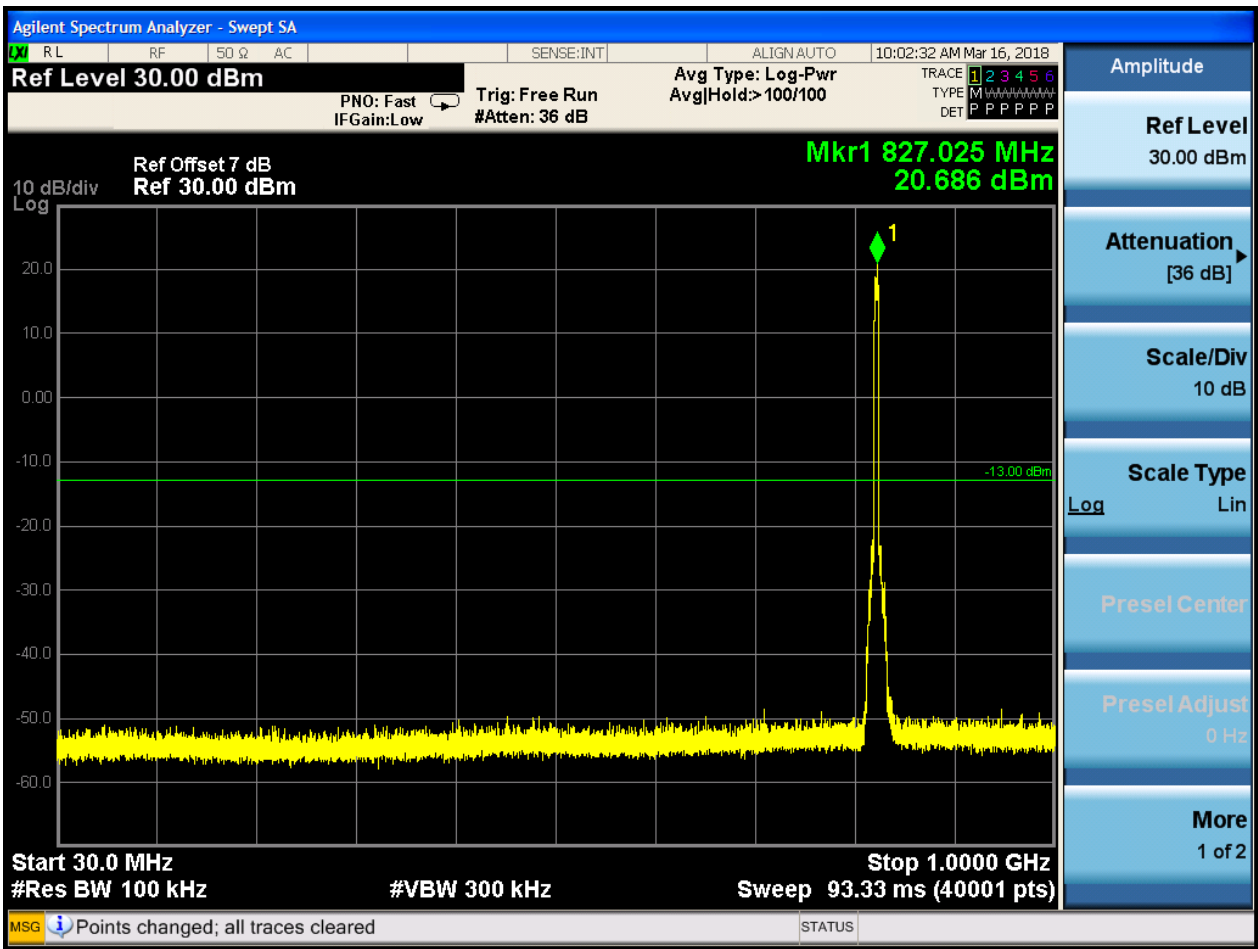
6.1.1 Test Band = WCDMA850

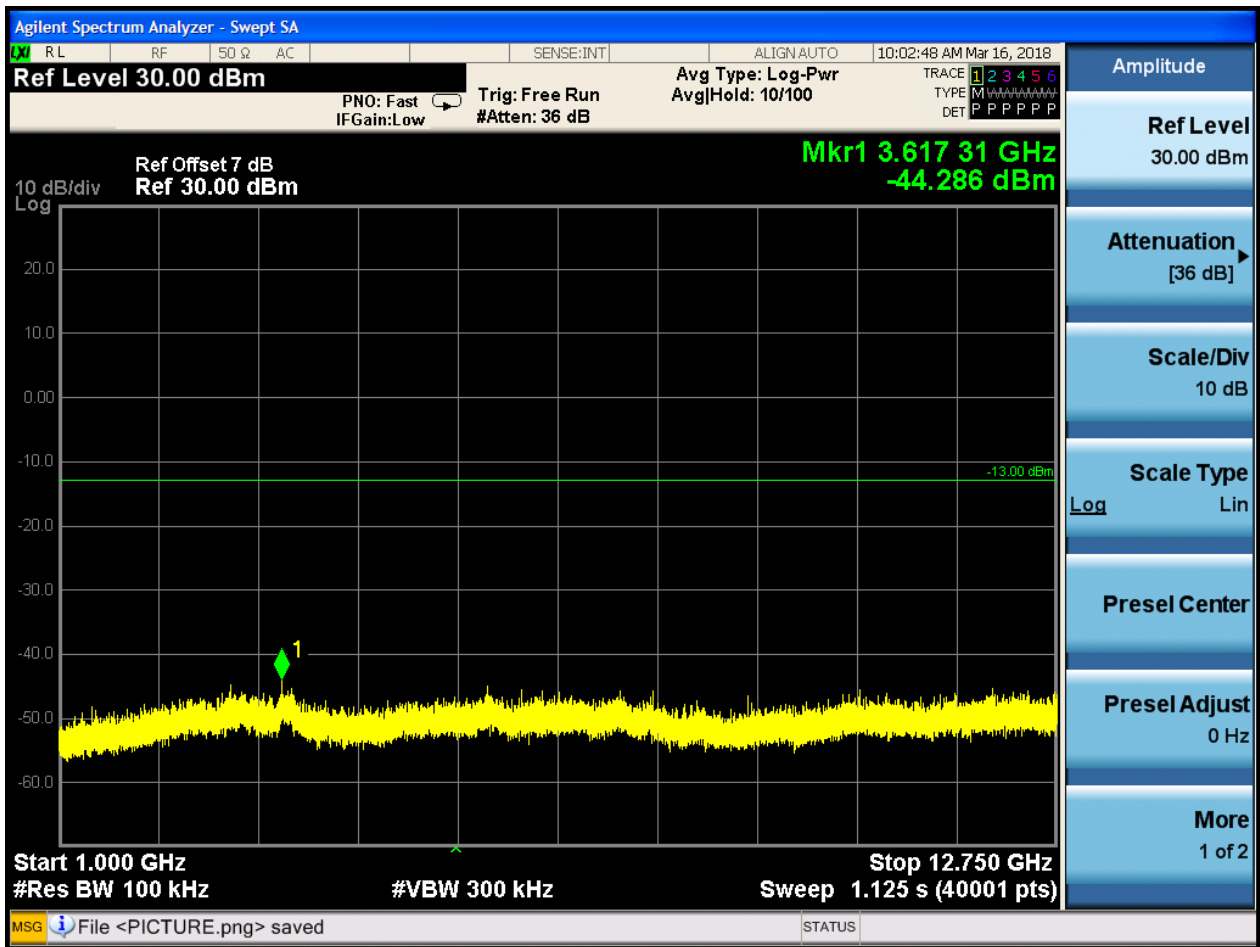
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH

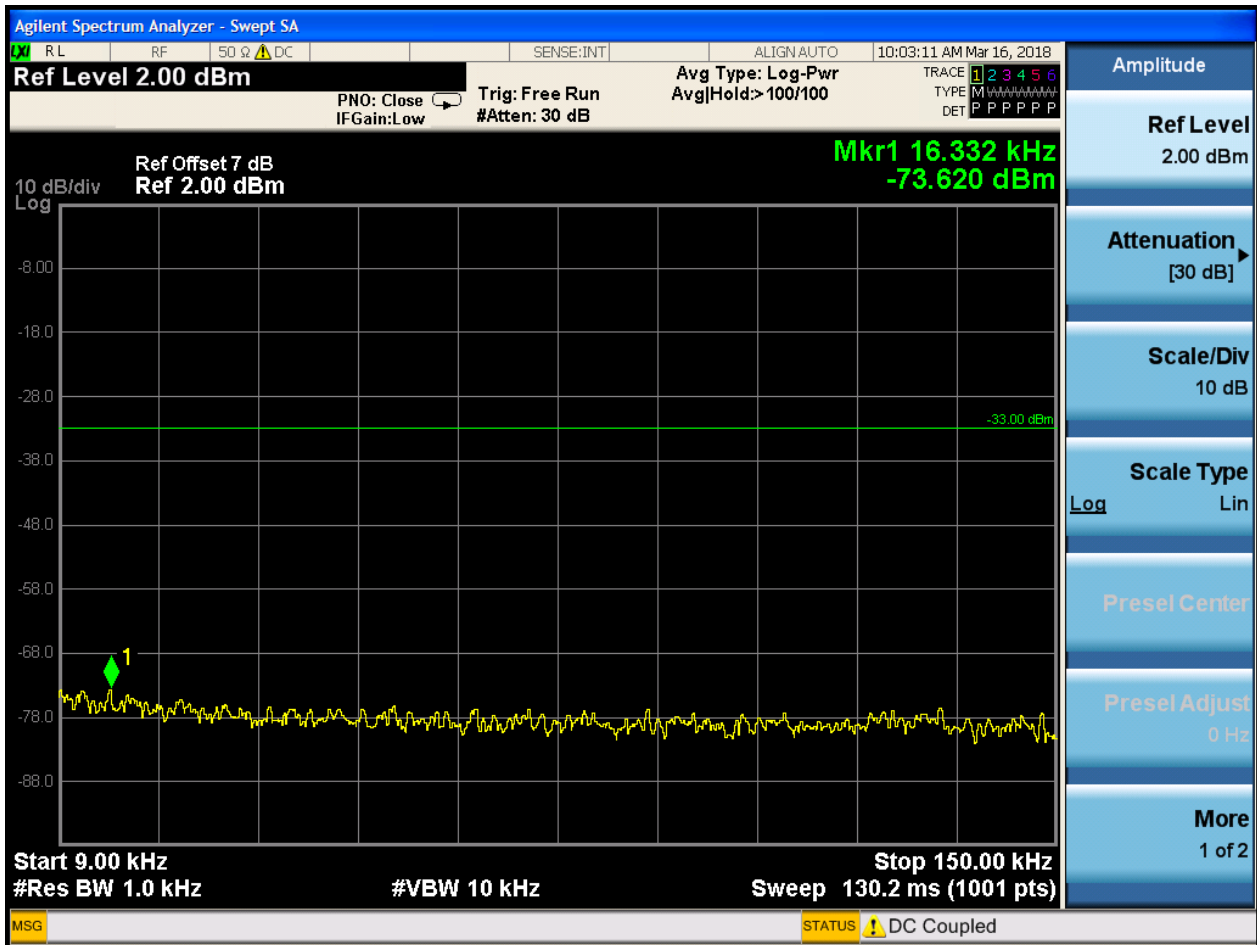


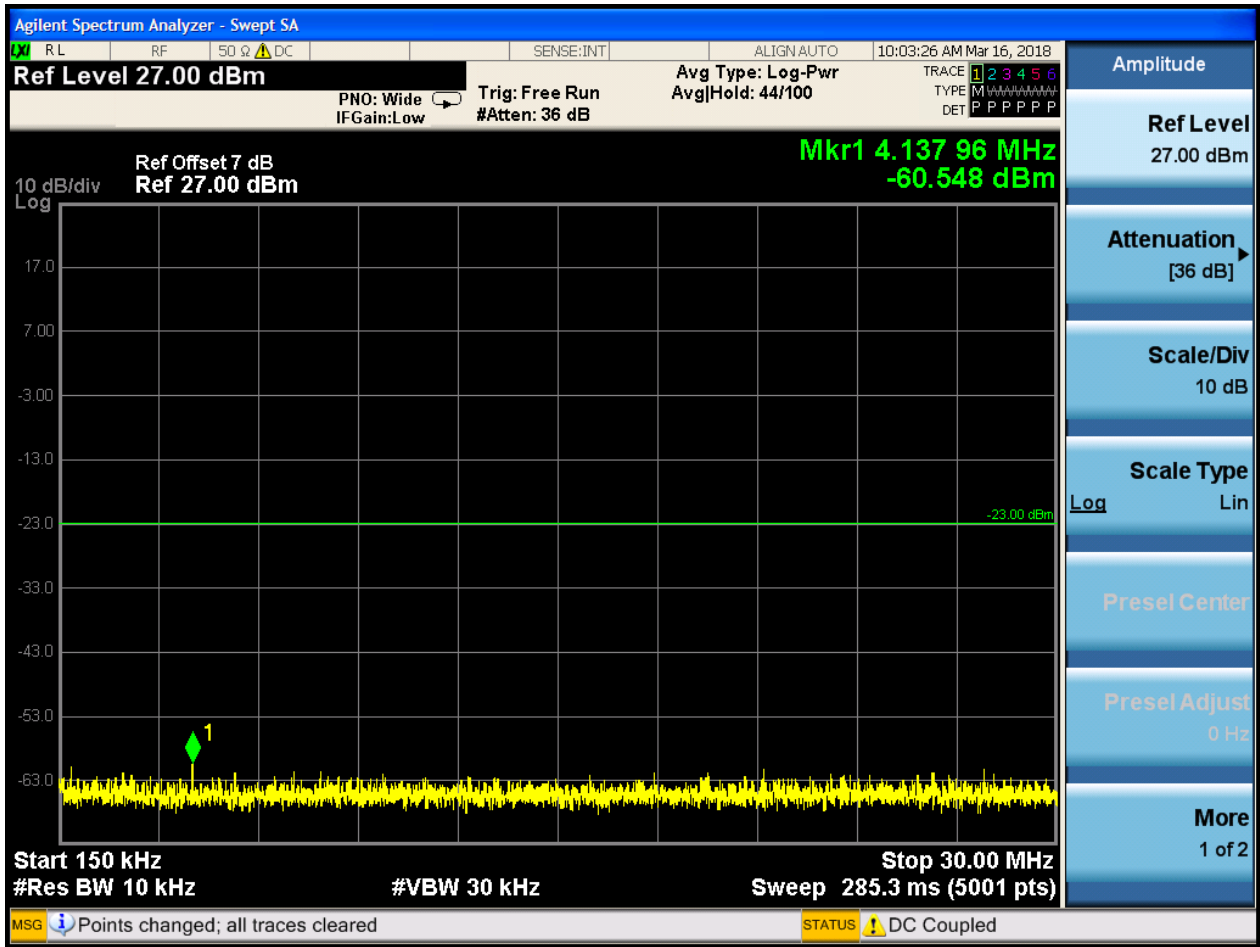


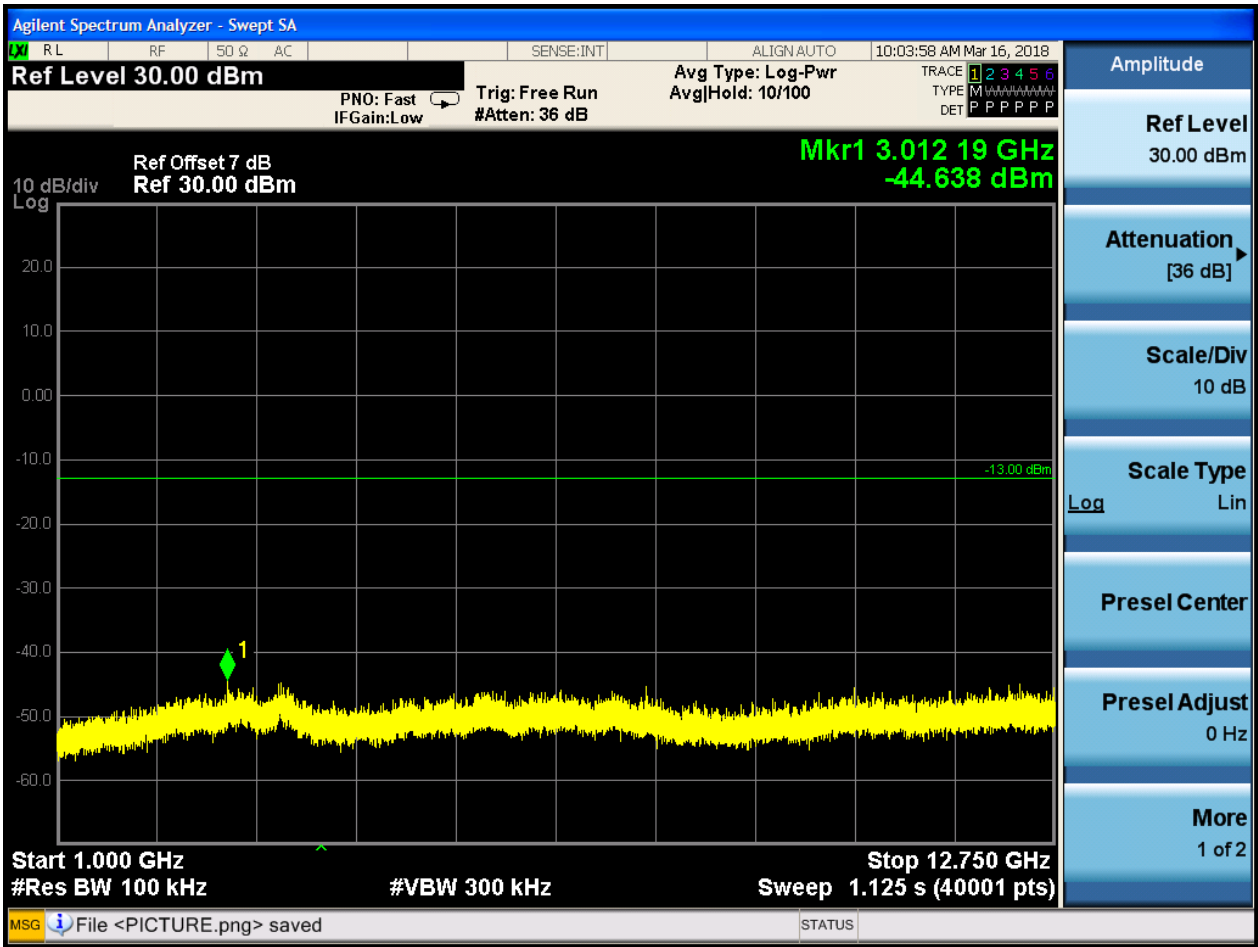




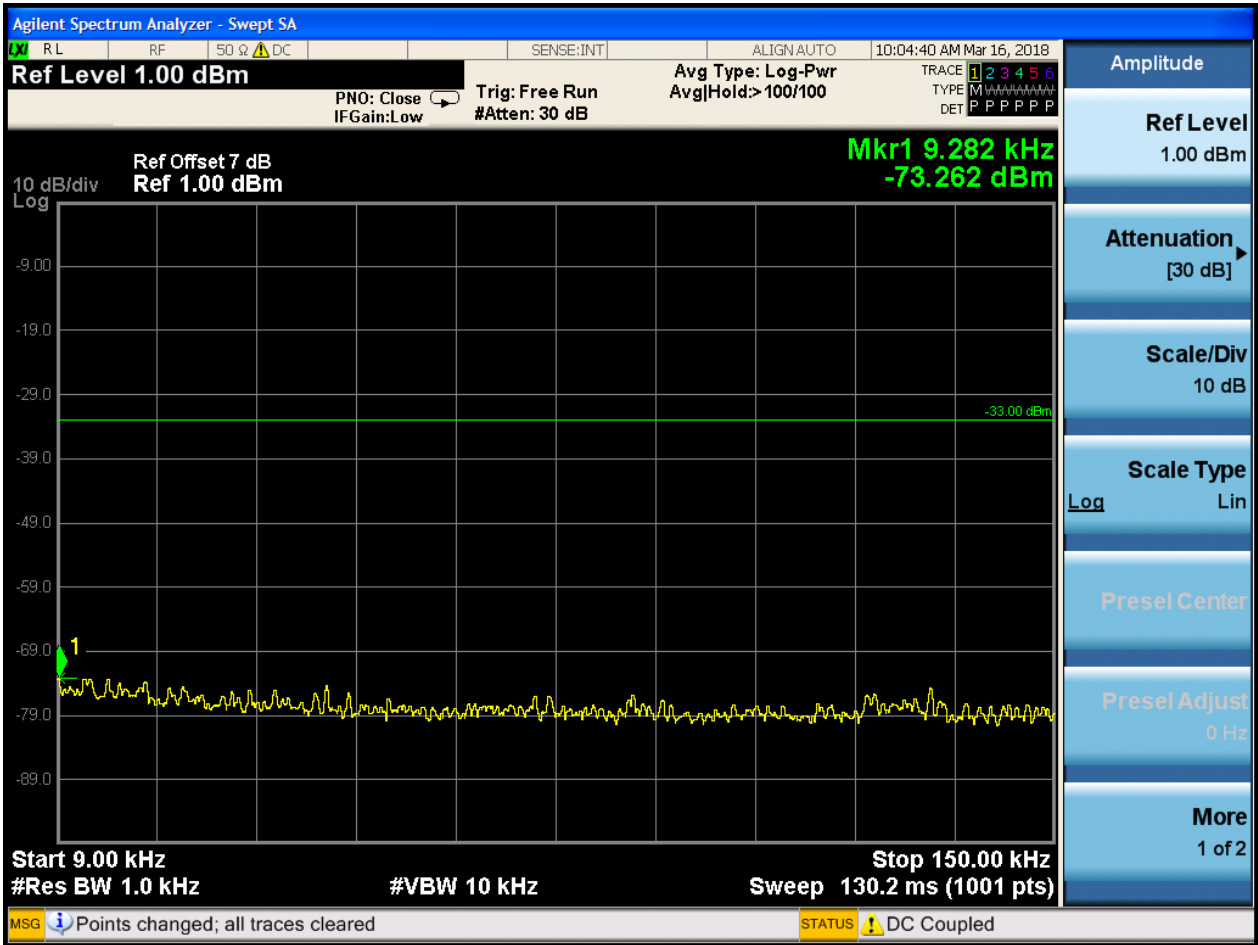
6.1.1.1.2 Test Channel = MCH

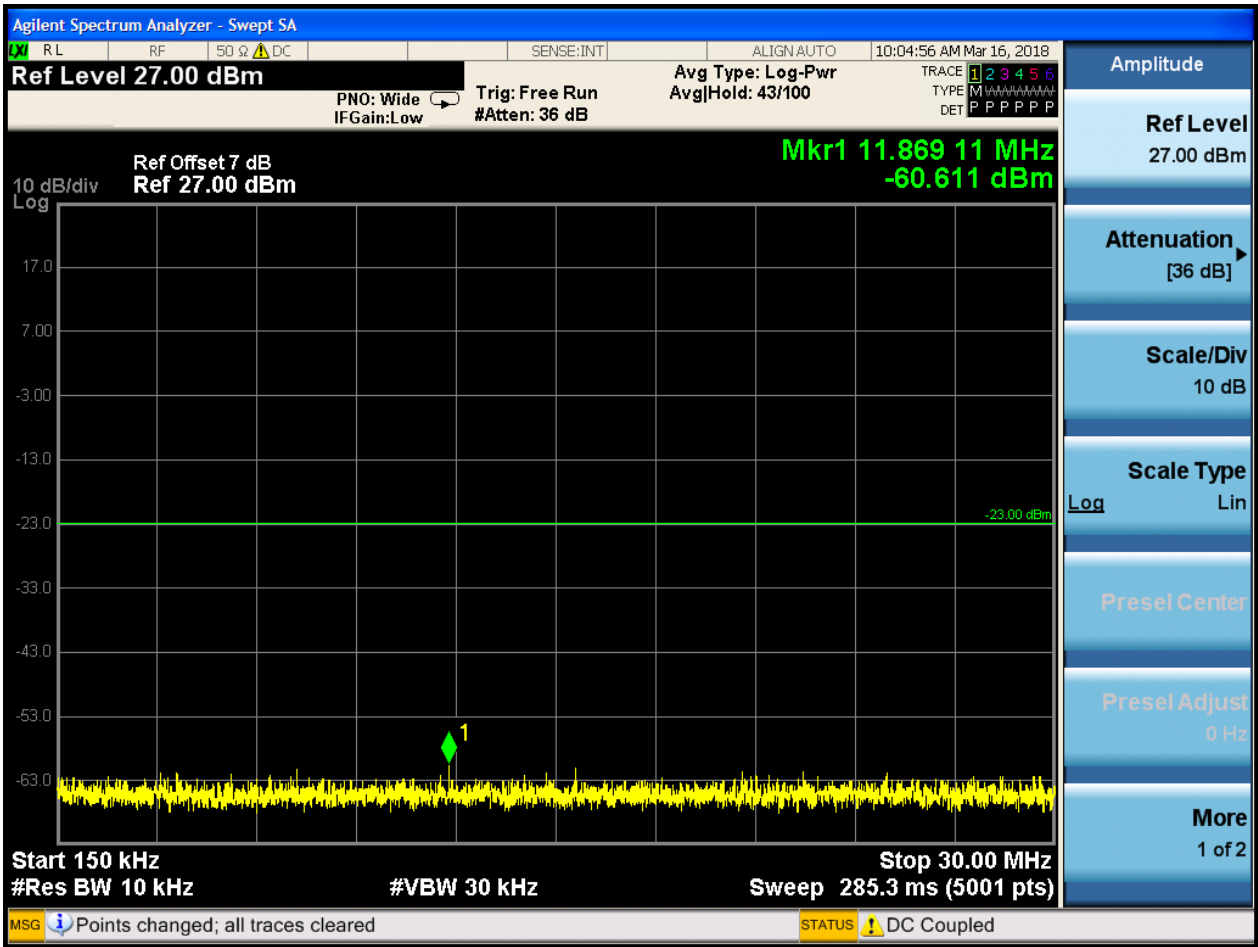


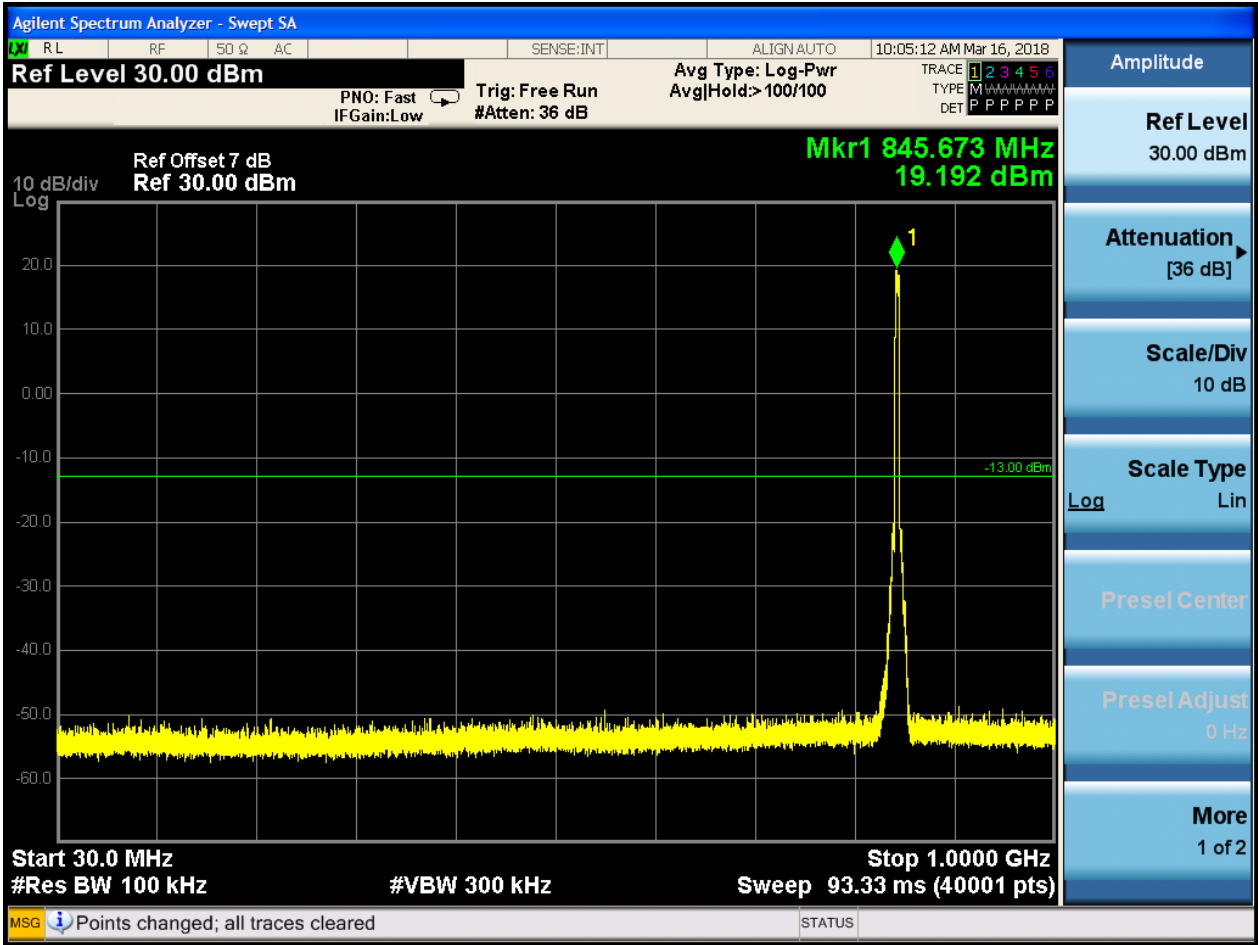


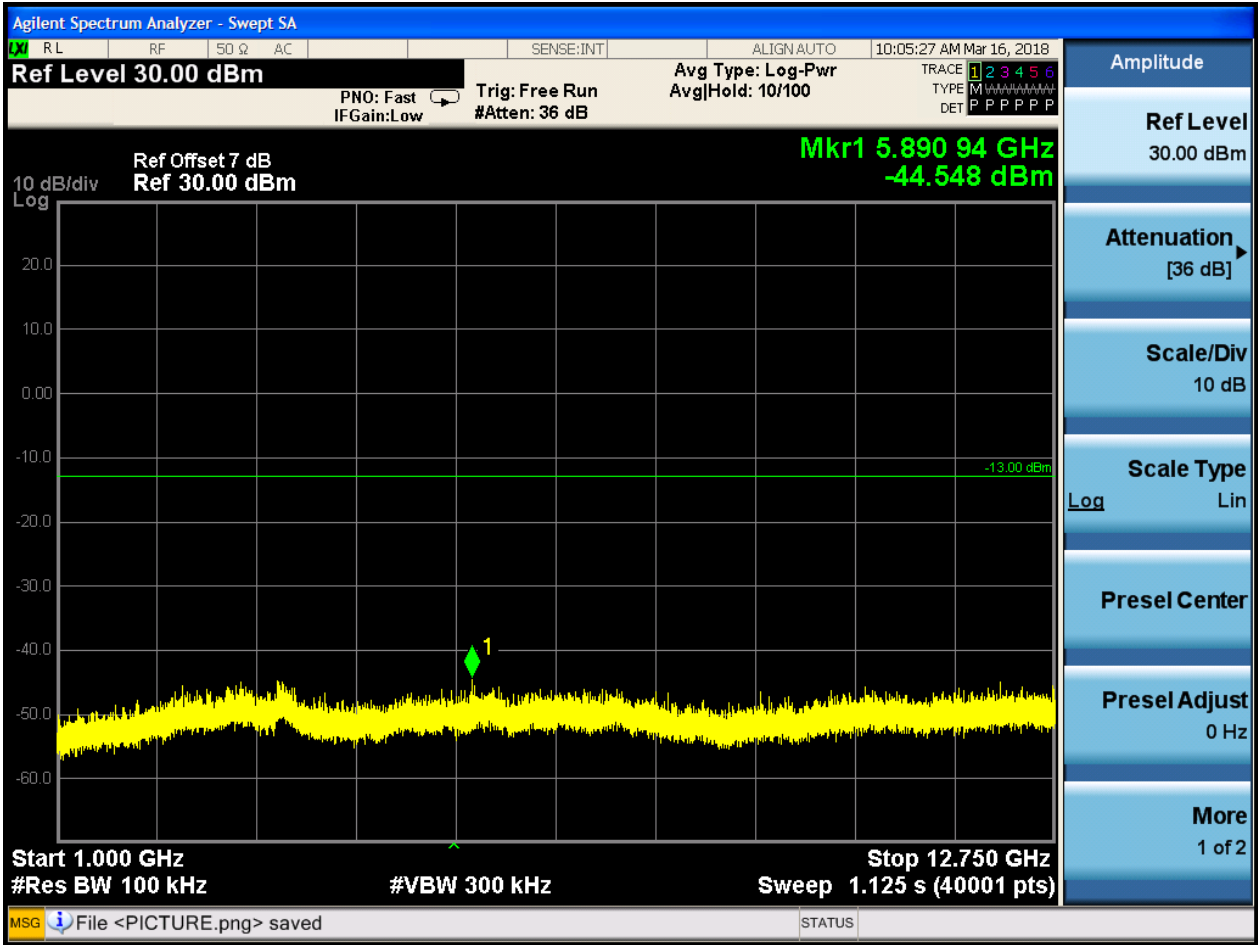


6.1.1.1.3 Test Channel = HCH







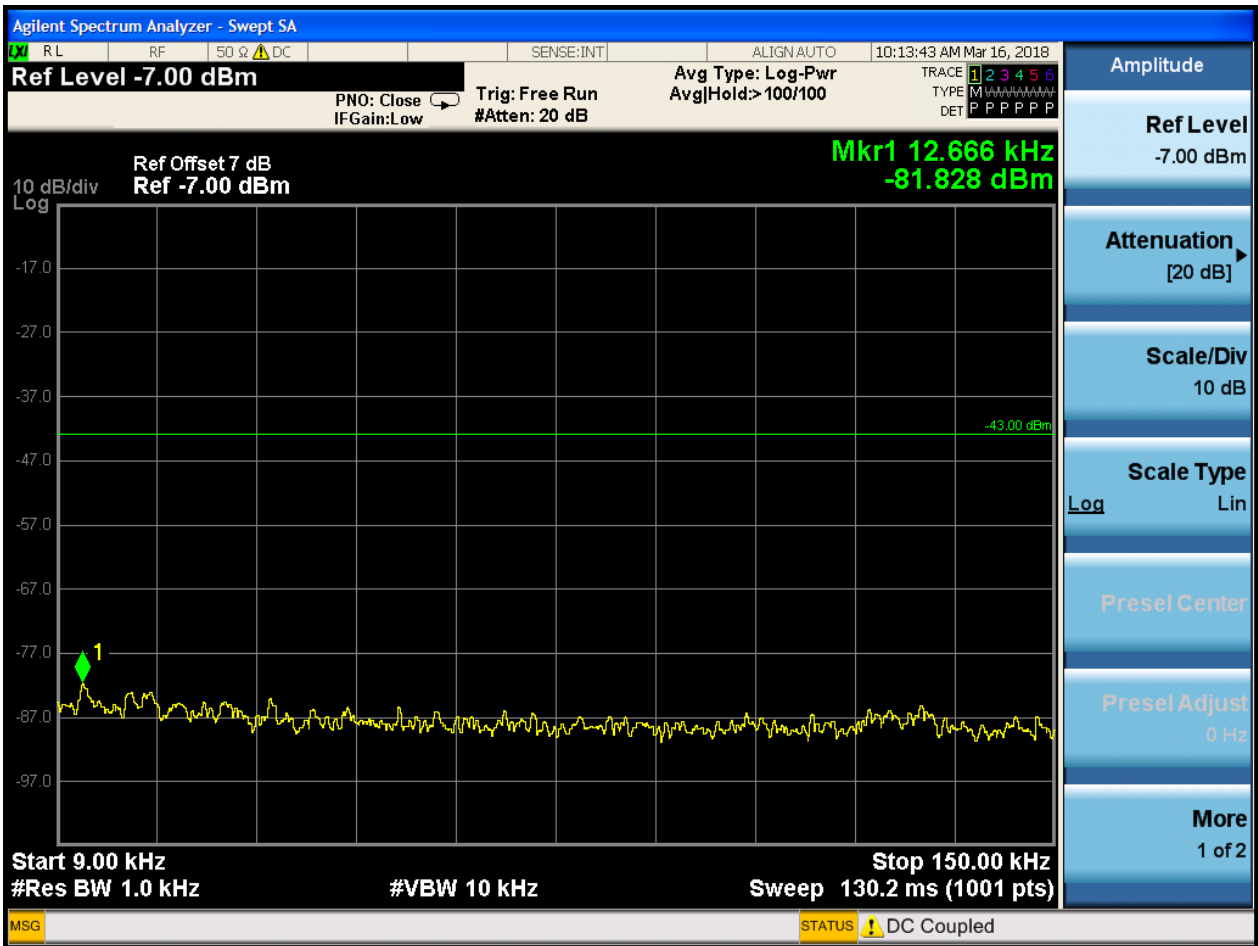


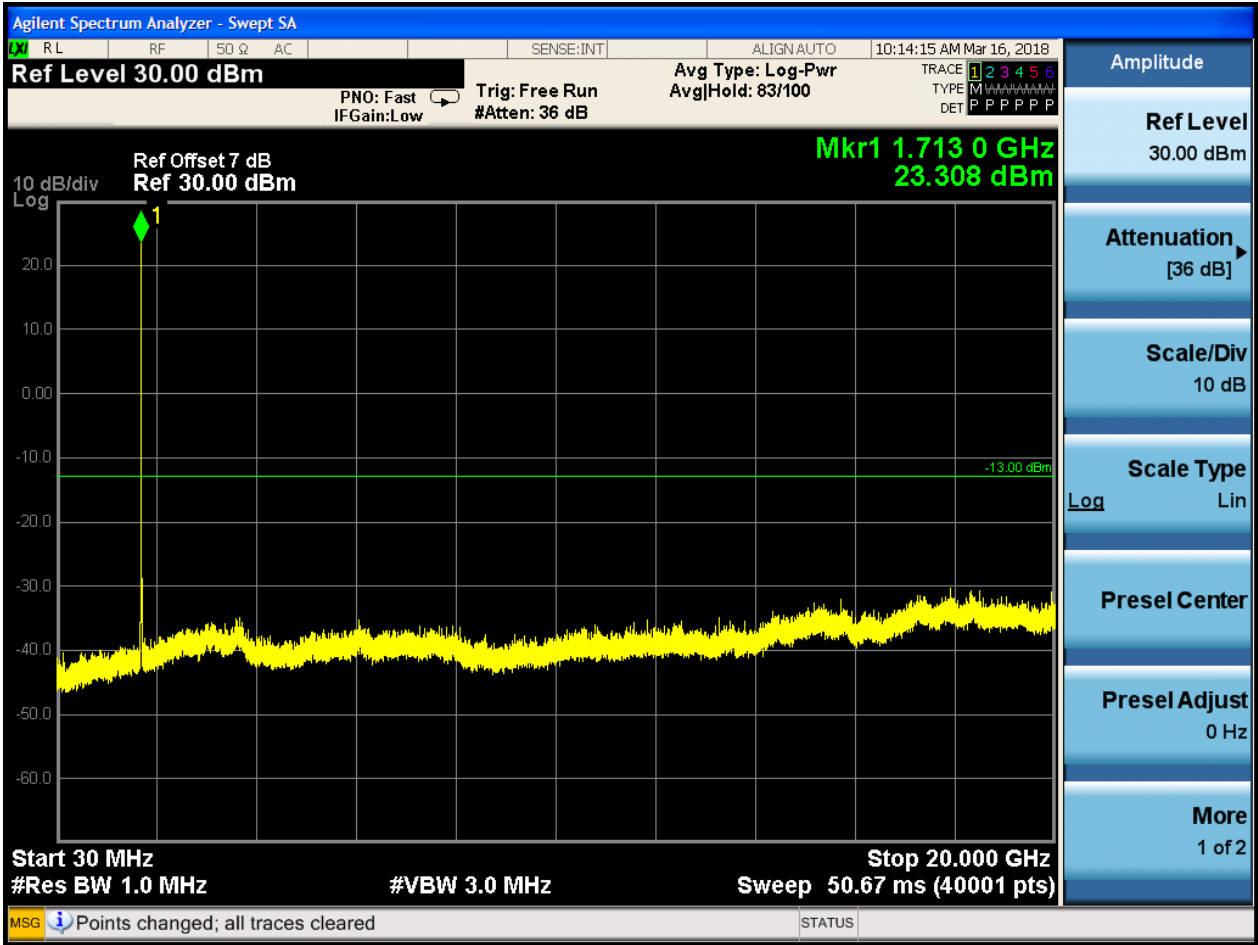


6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

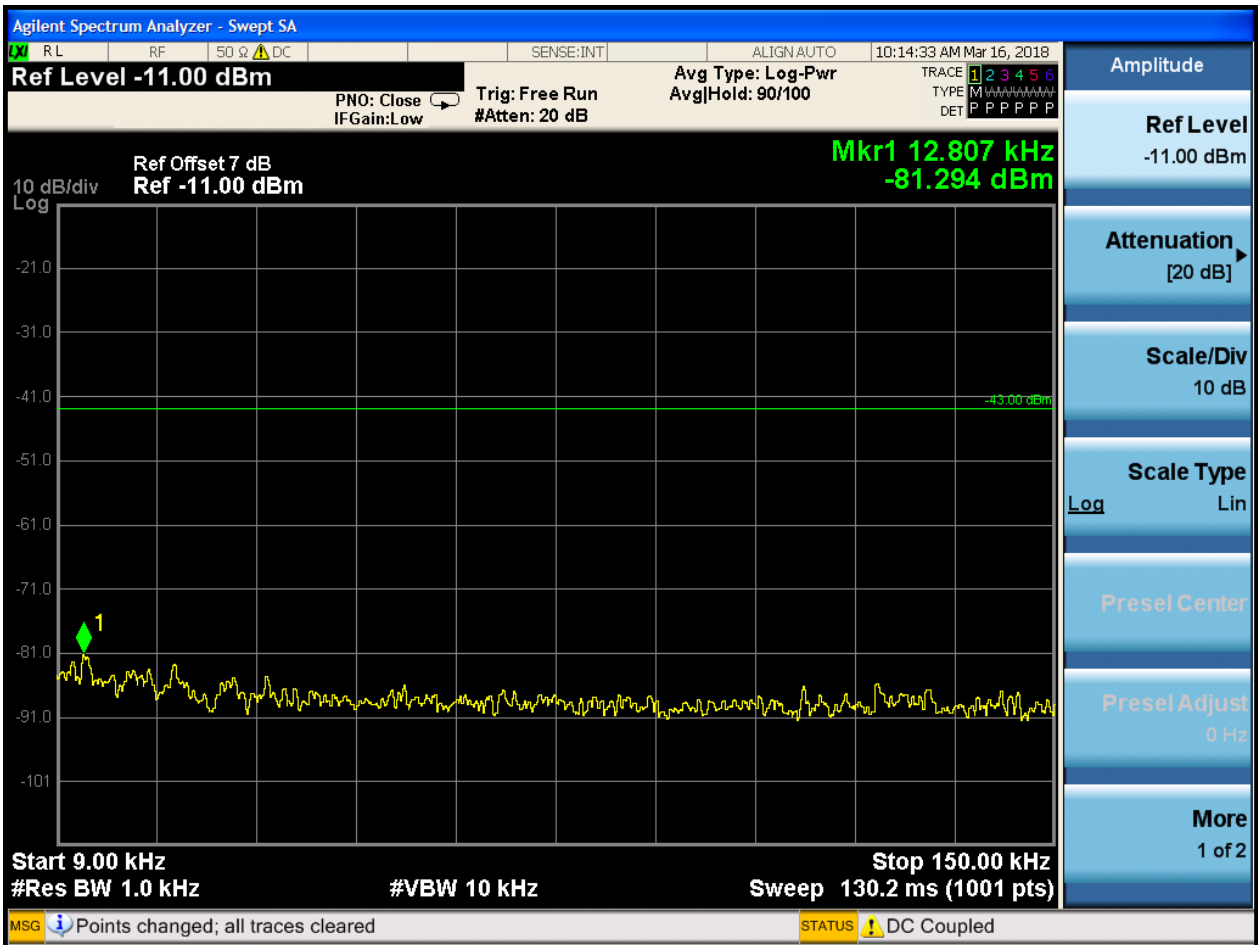
6.1.2.1.1 Test Channel = LCH

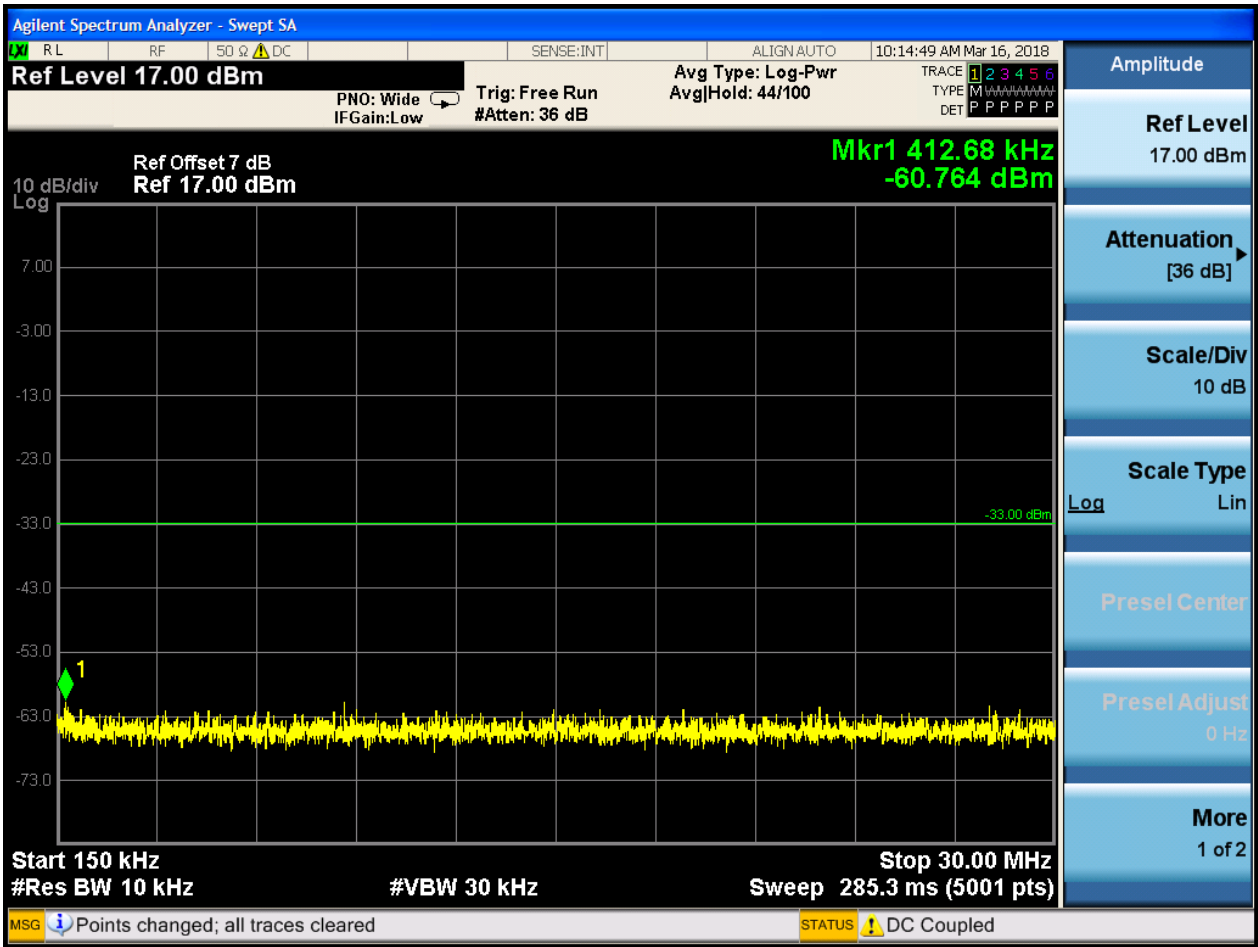






6.1.2.1.2 Test Channel = MCH

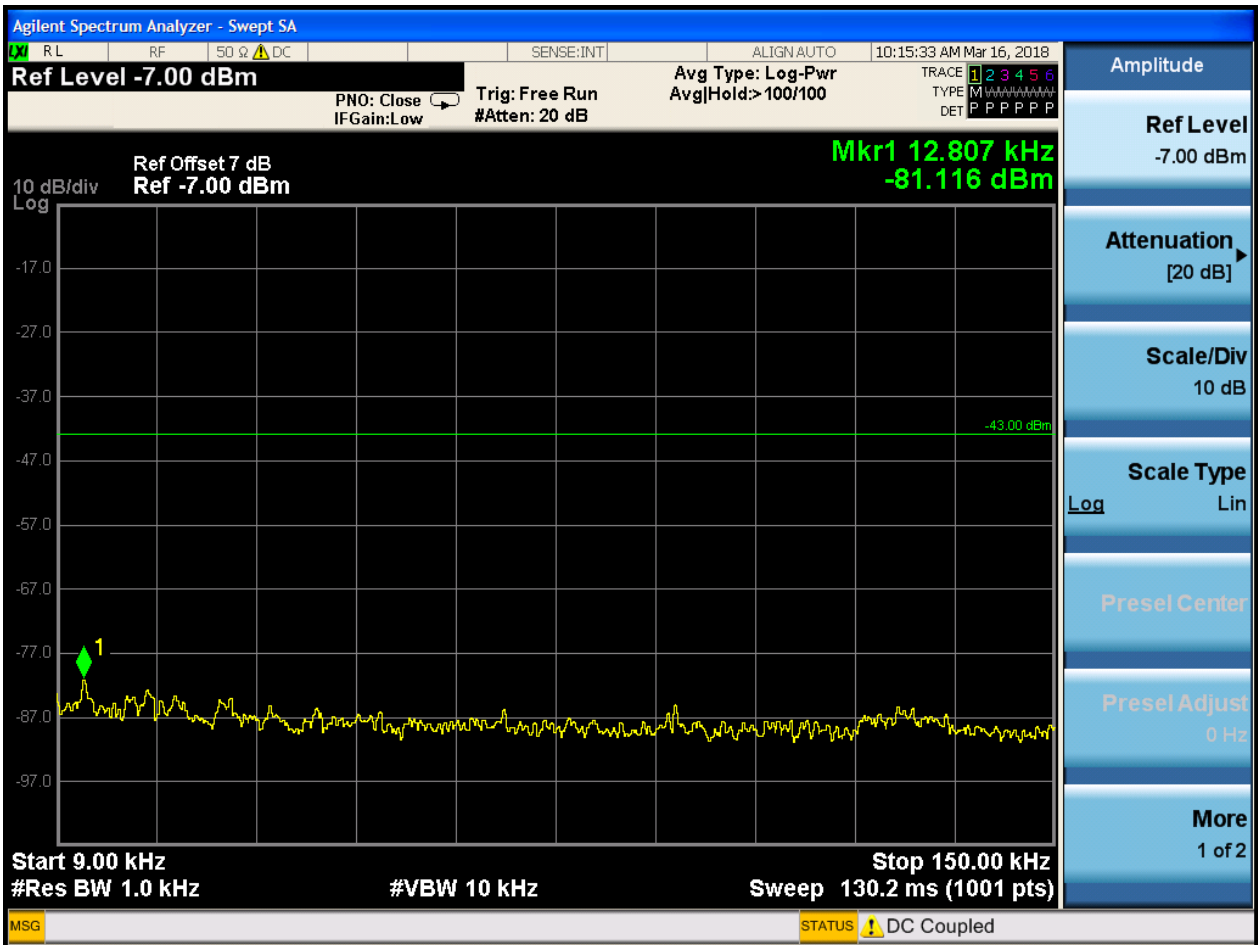


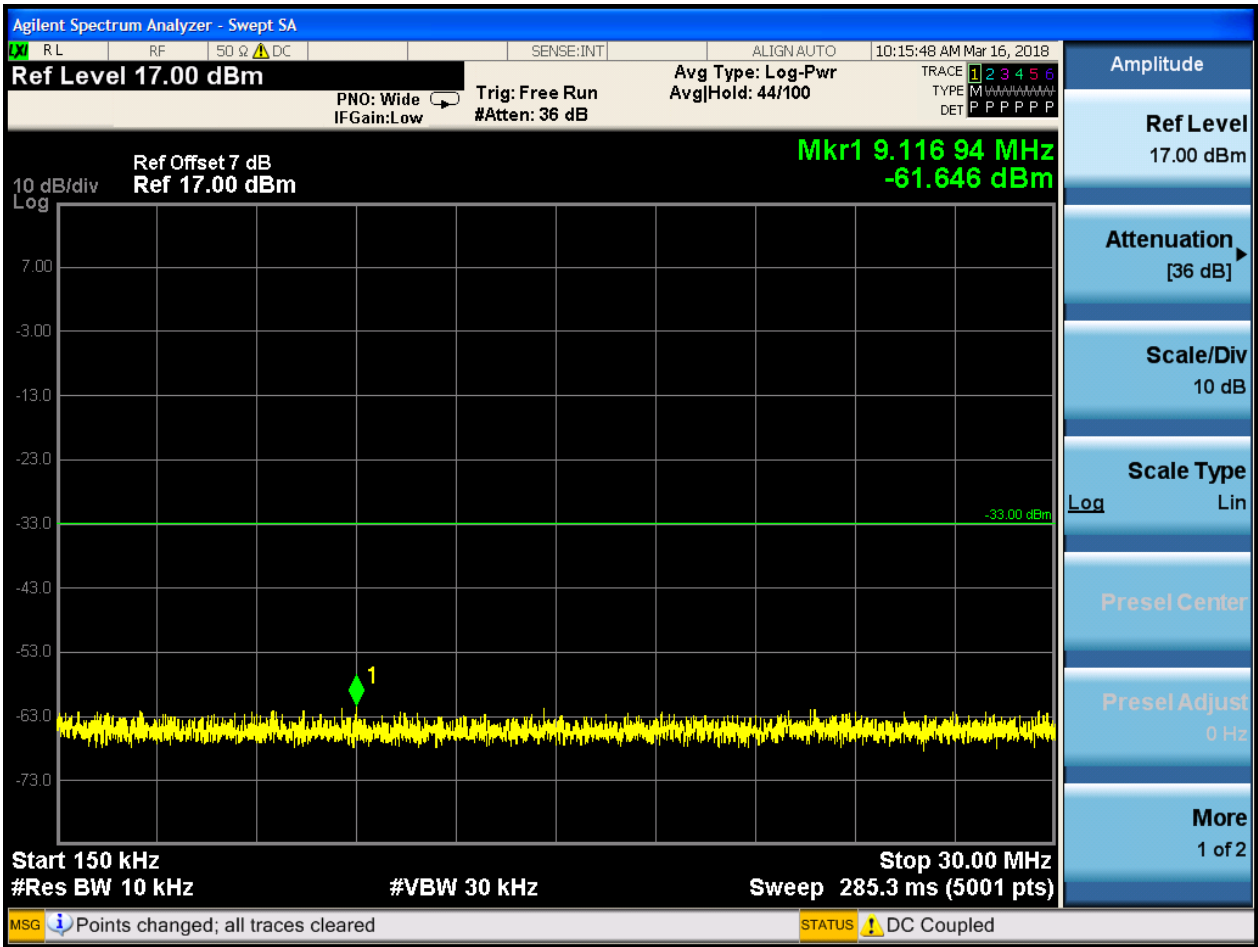


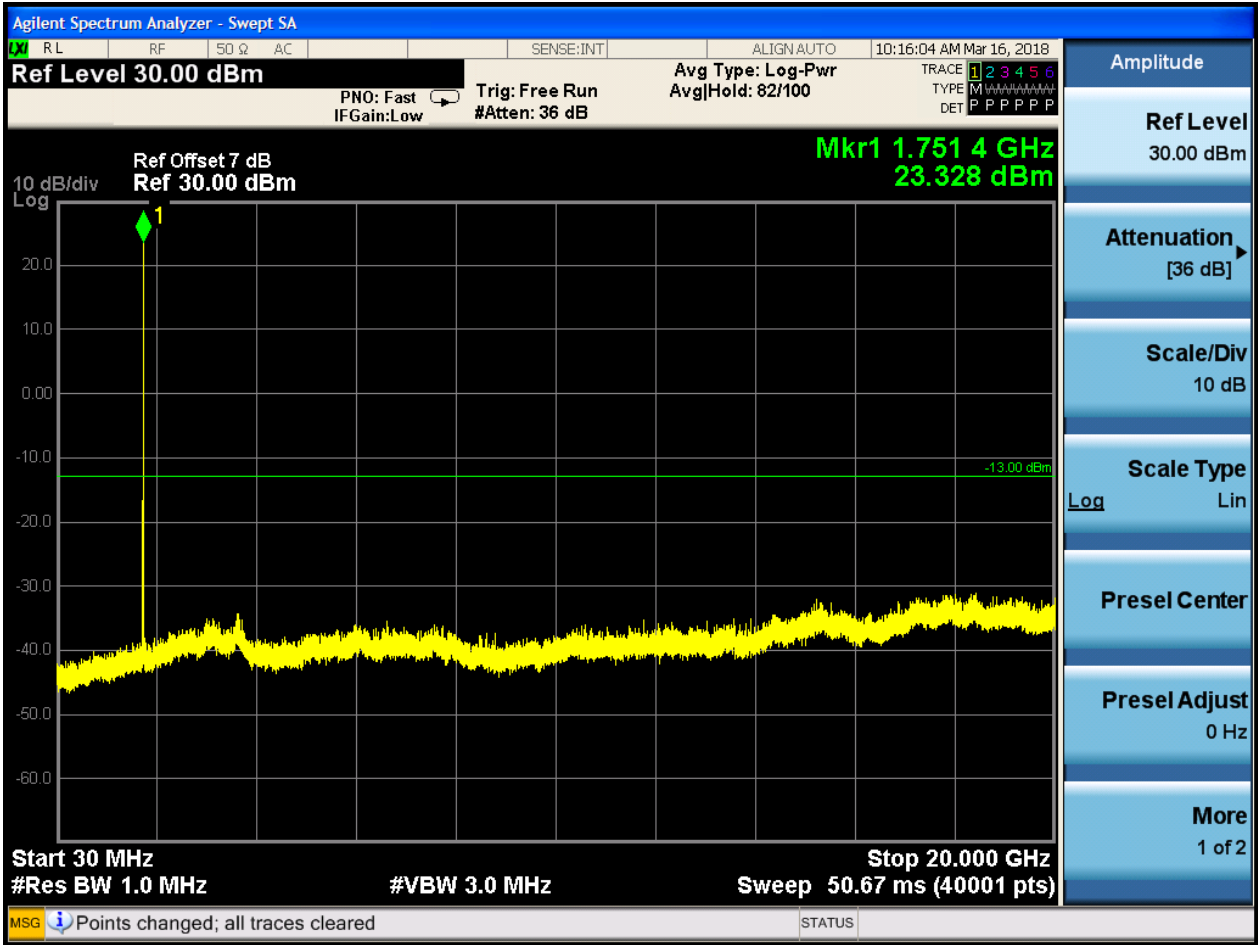




6.1.2.1.3 Test Channel = HCH





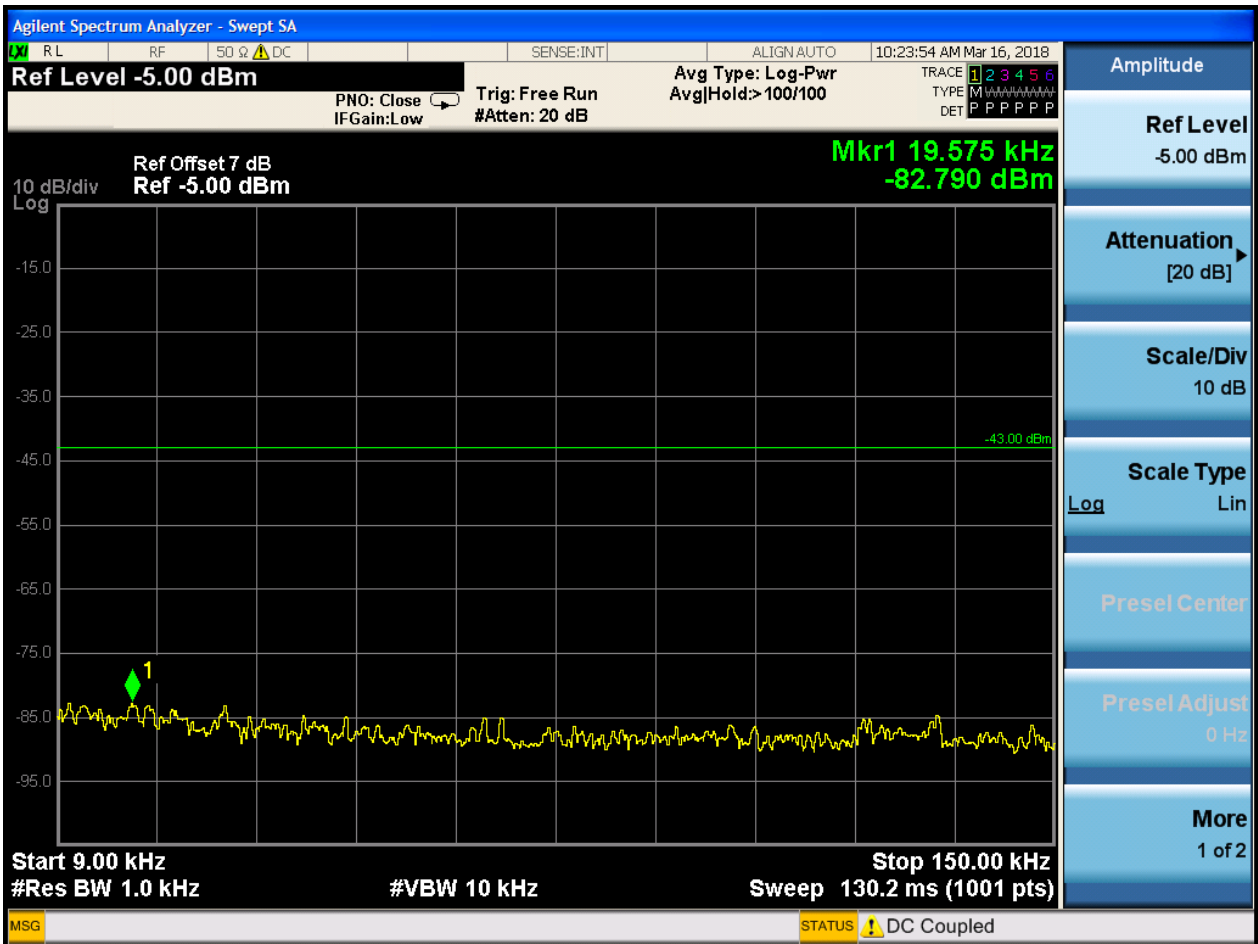


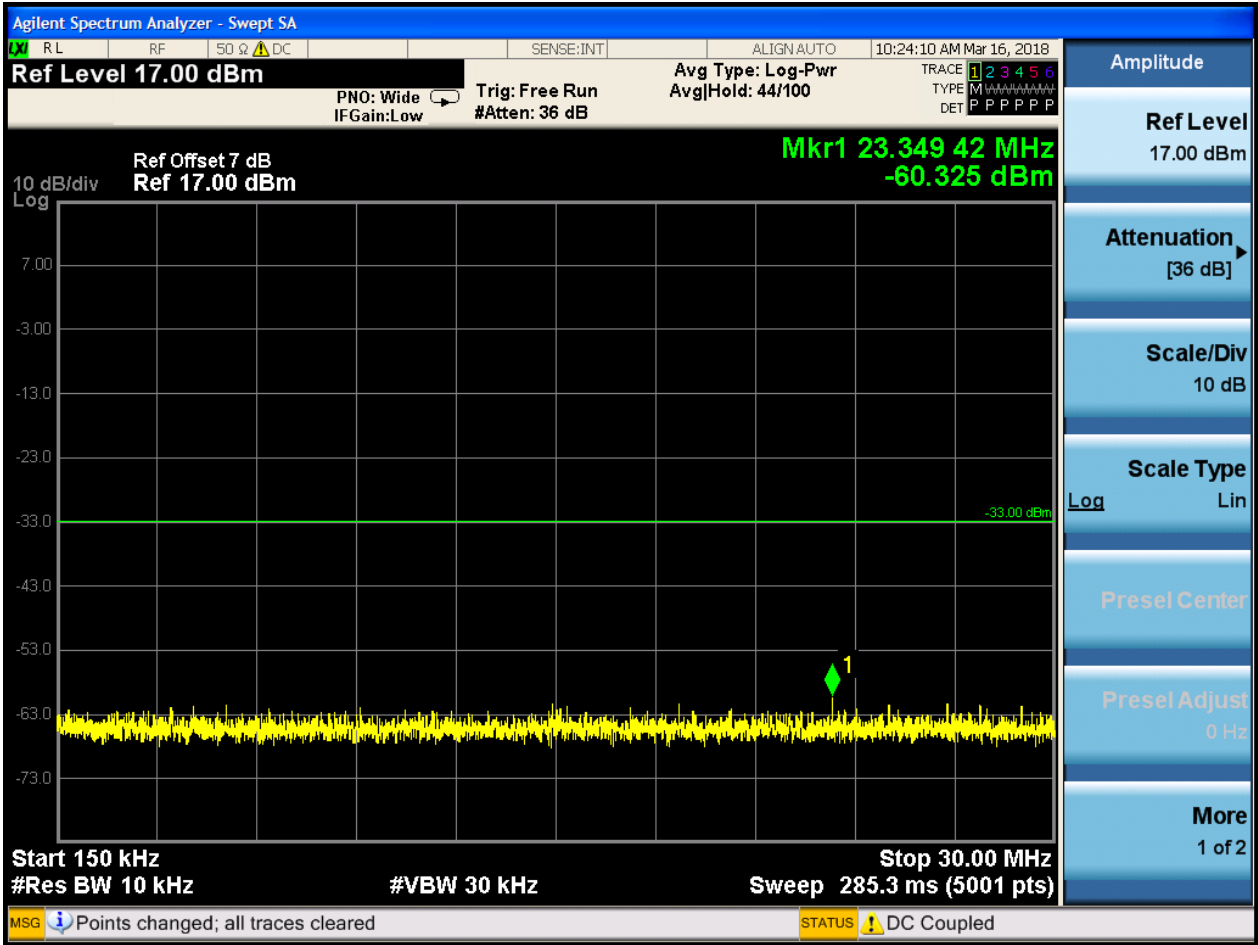


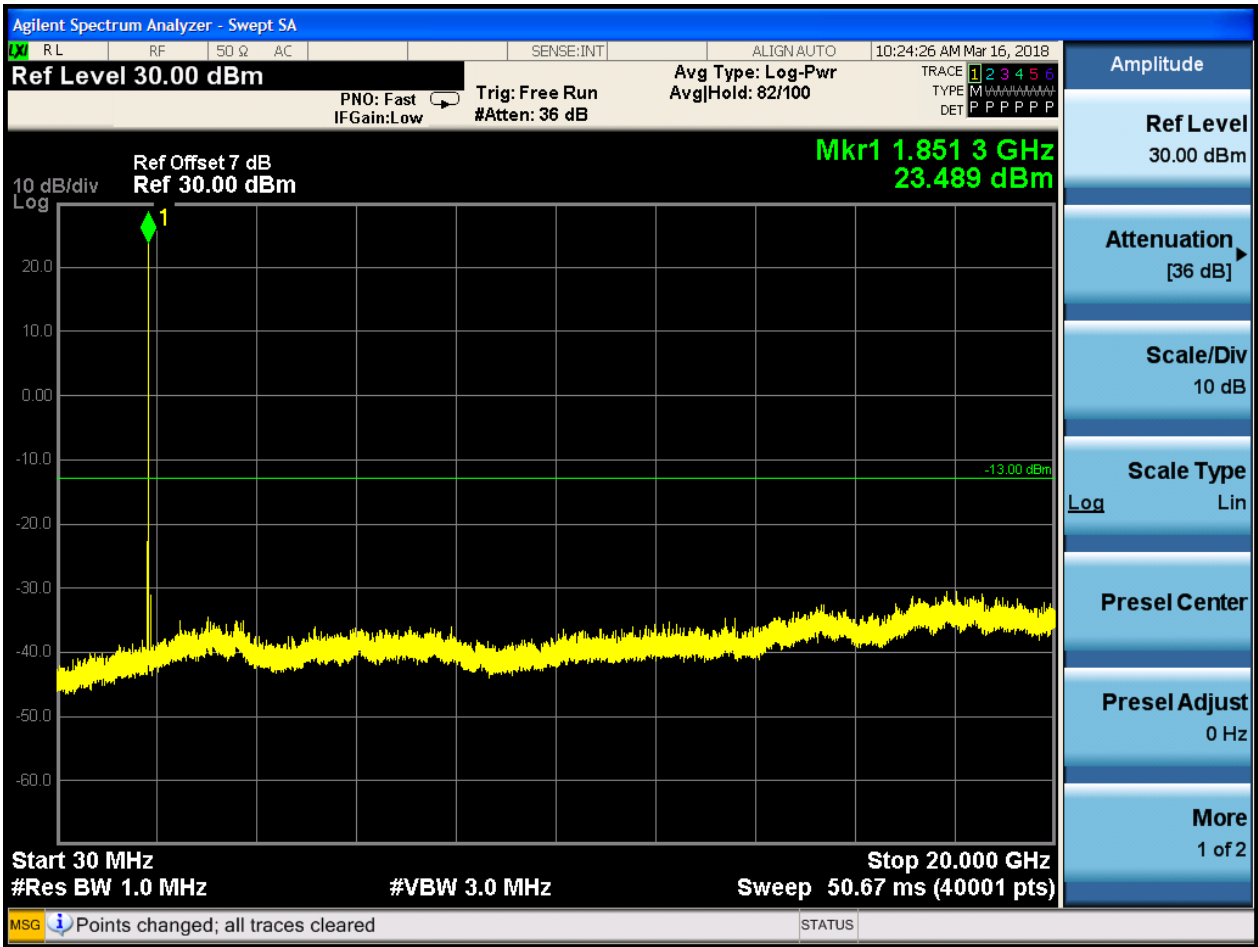
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

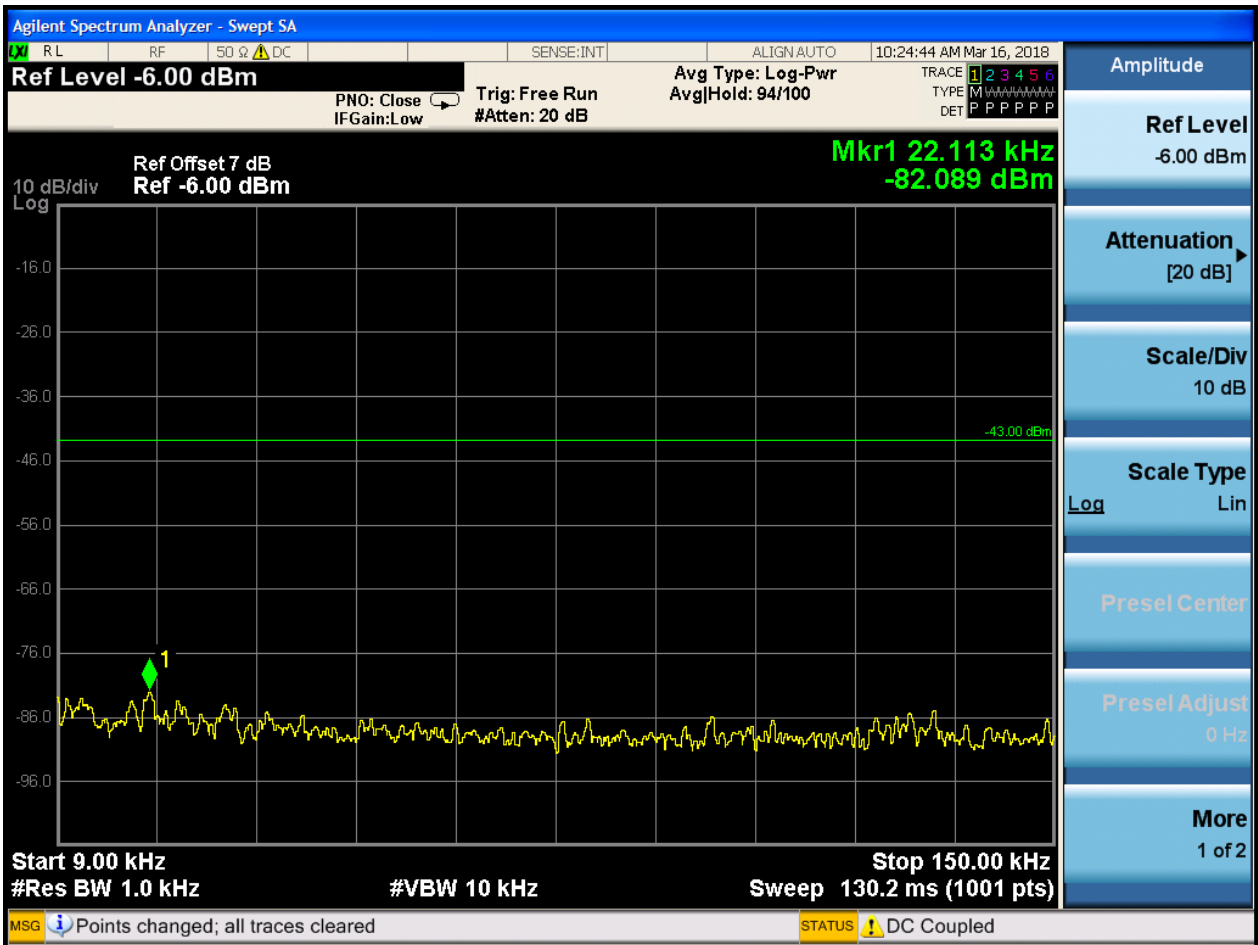


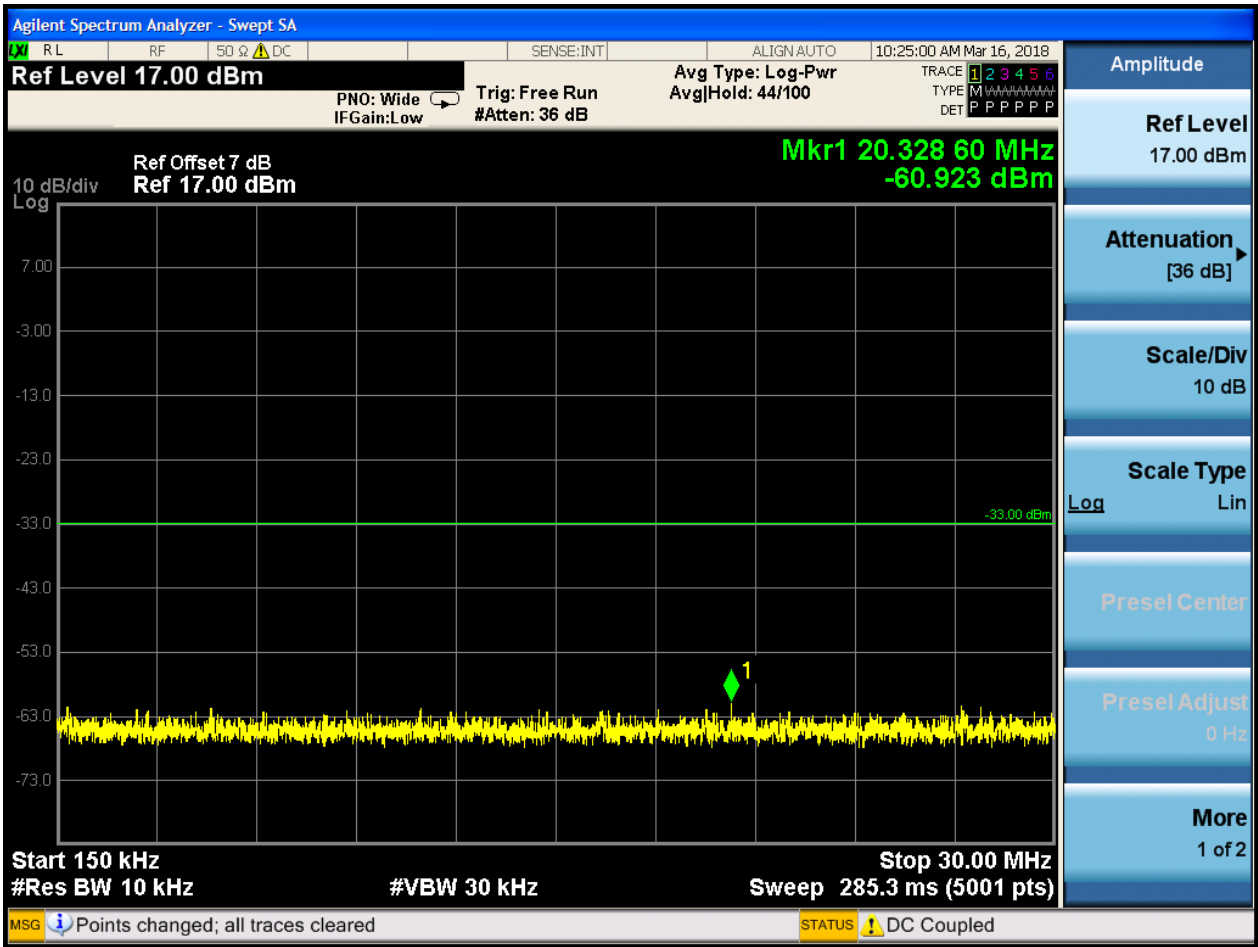






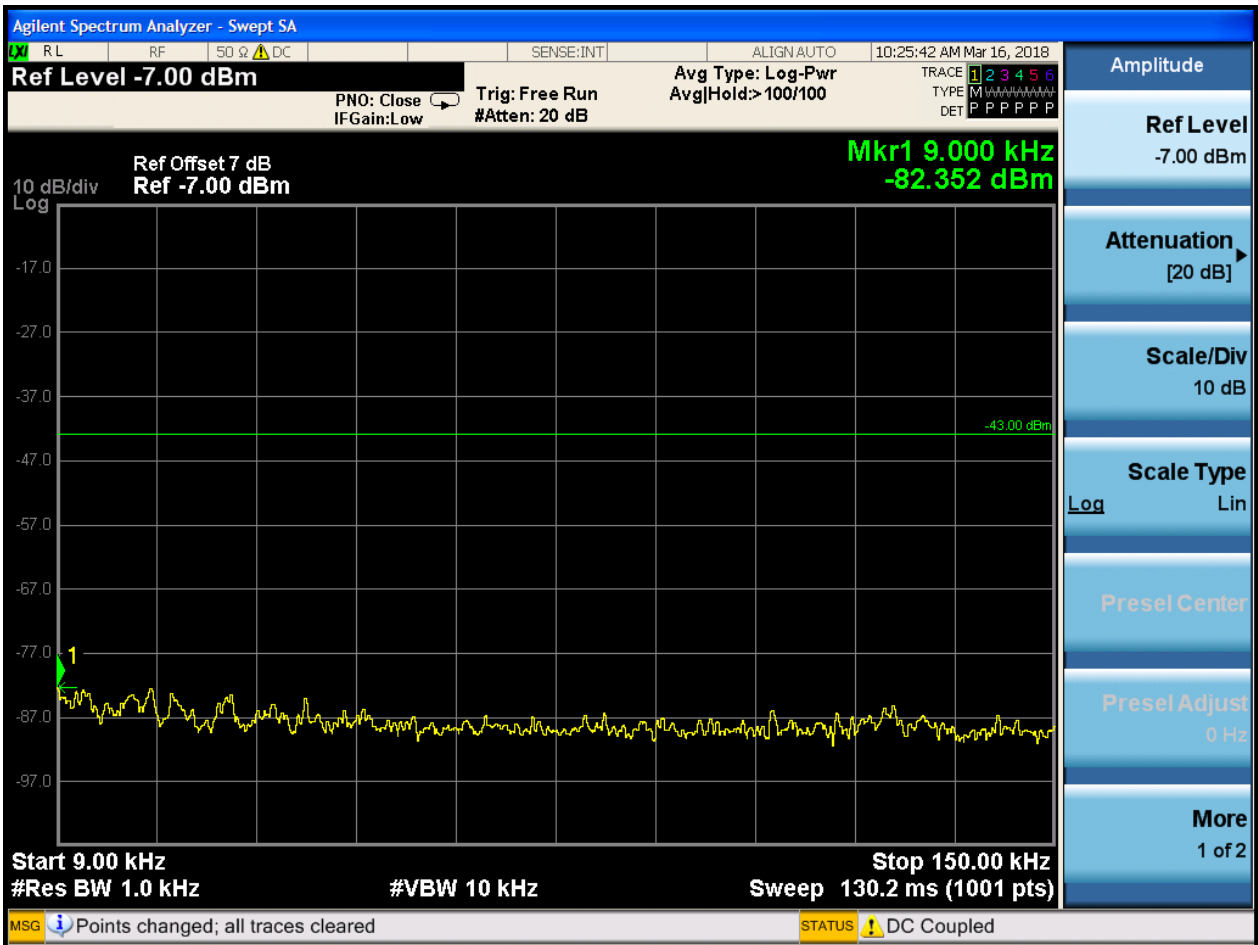
6.1.3.1.2 Test Channel = MCH

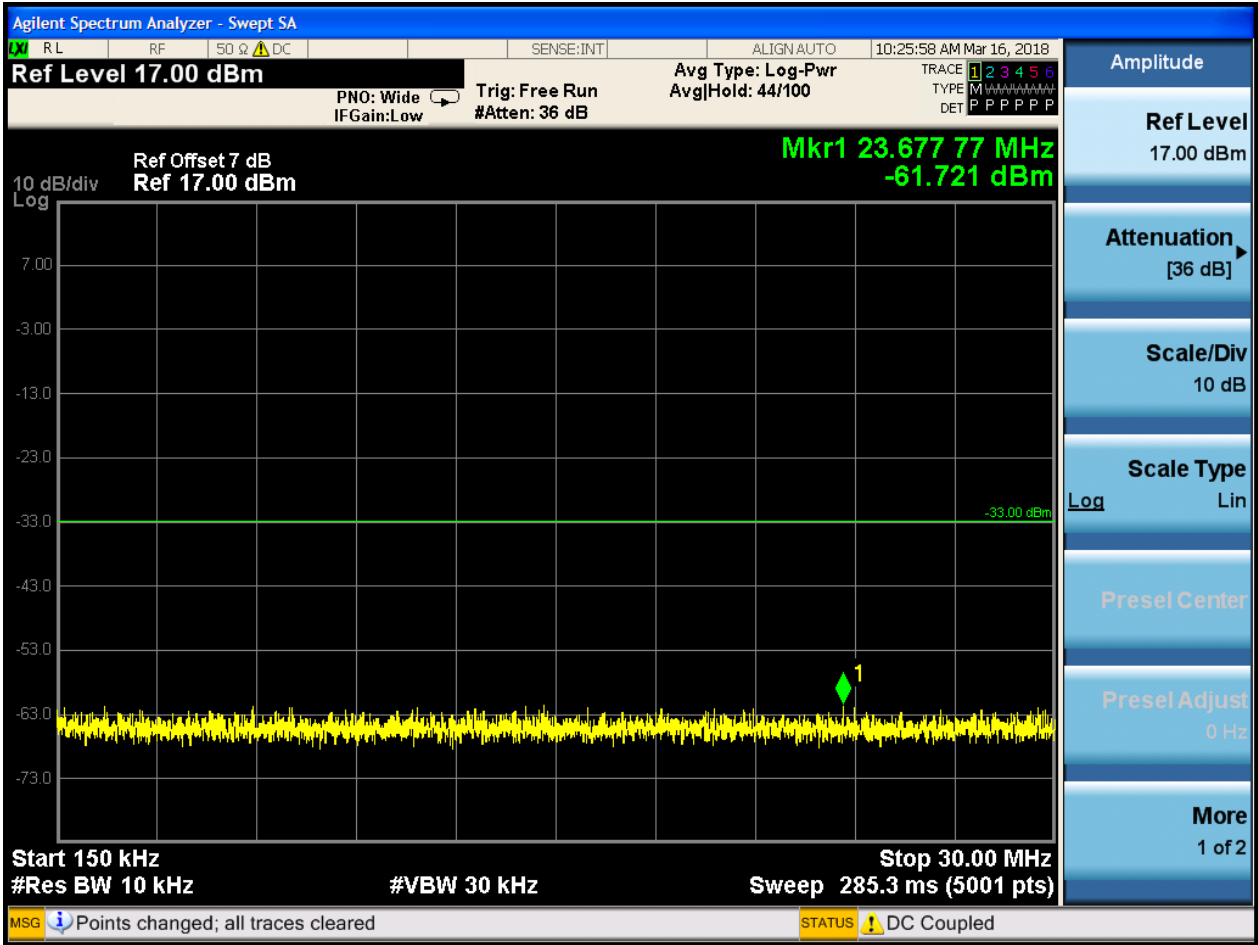


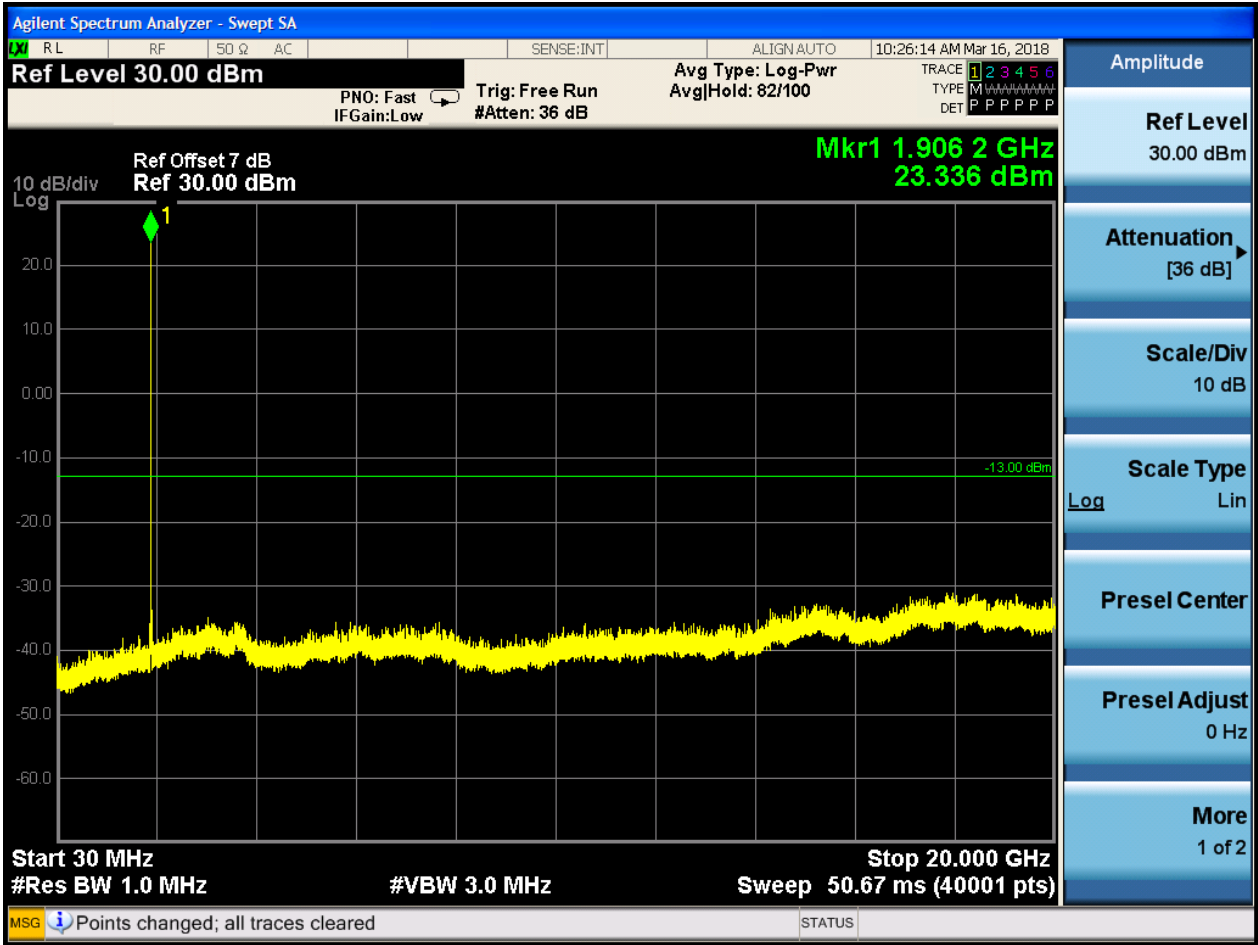




6.1.3.1.3 Test Channel = HCH









7Appendix_G: Field Strength of Spurious Radiation

Note: We tested all modes, but the data presented below is the worst case.

9kHz~150kHz, RBW = 200Hz, VBW = 600 Hz, Detector: PK

150kHz~30MHz, RBW = 9kHz, VBW = 30k Hz, Detector: PK

30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

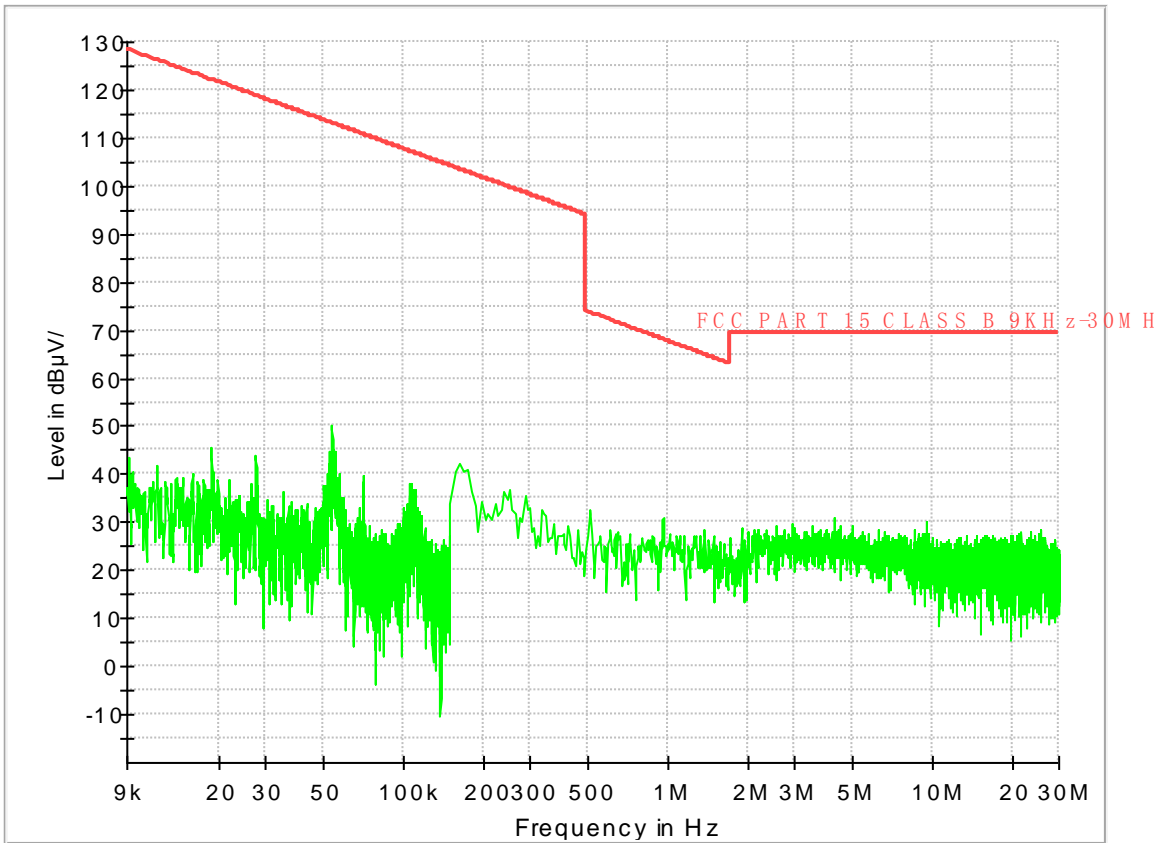
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

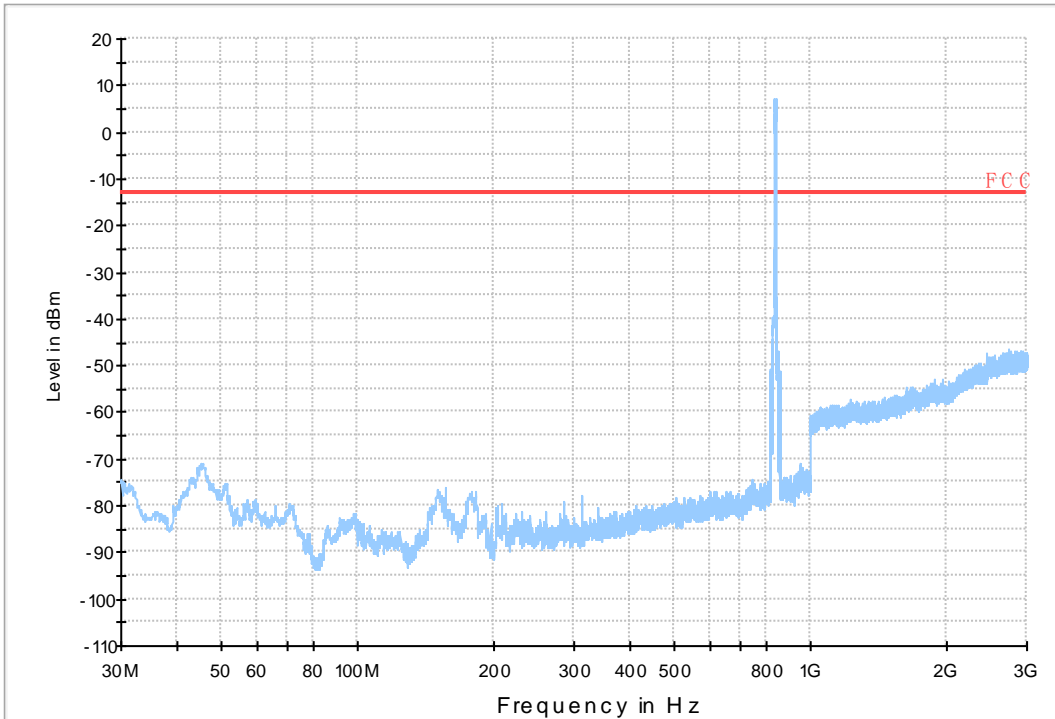
7.1 For UMTS

7.1.1 Test Band = WCDMA850

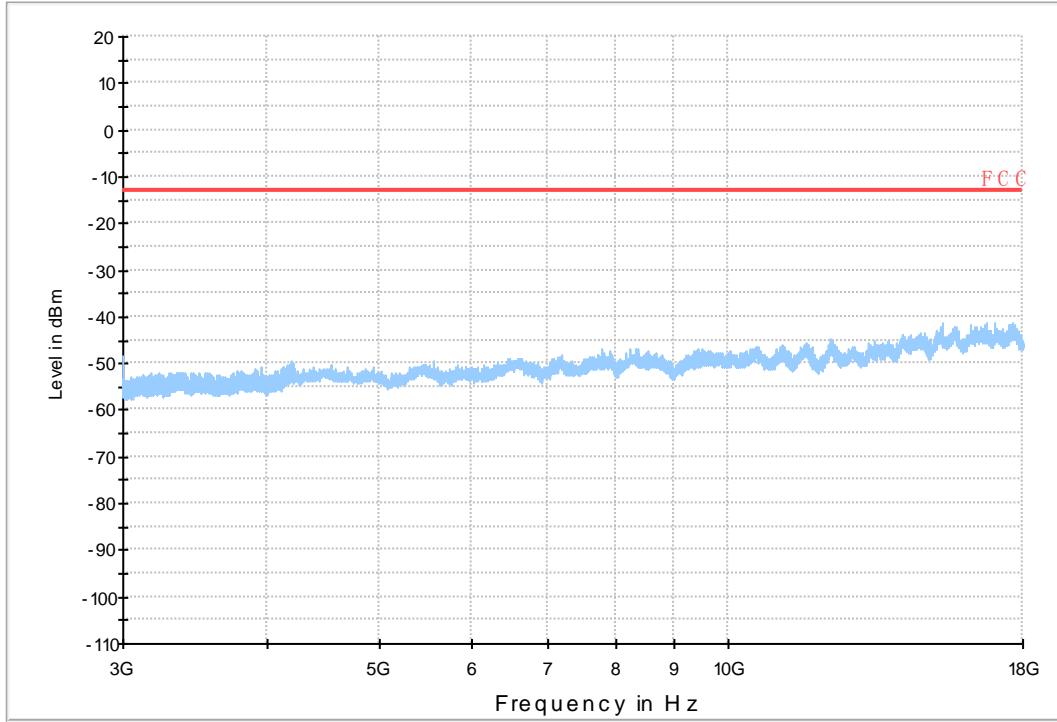
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

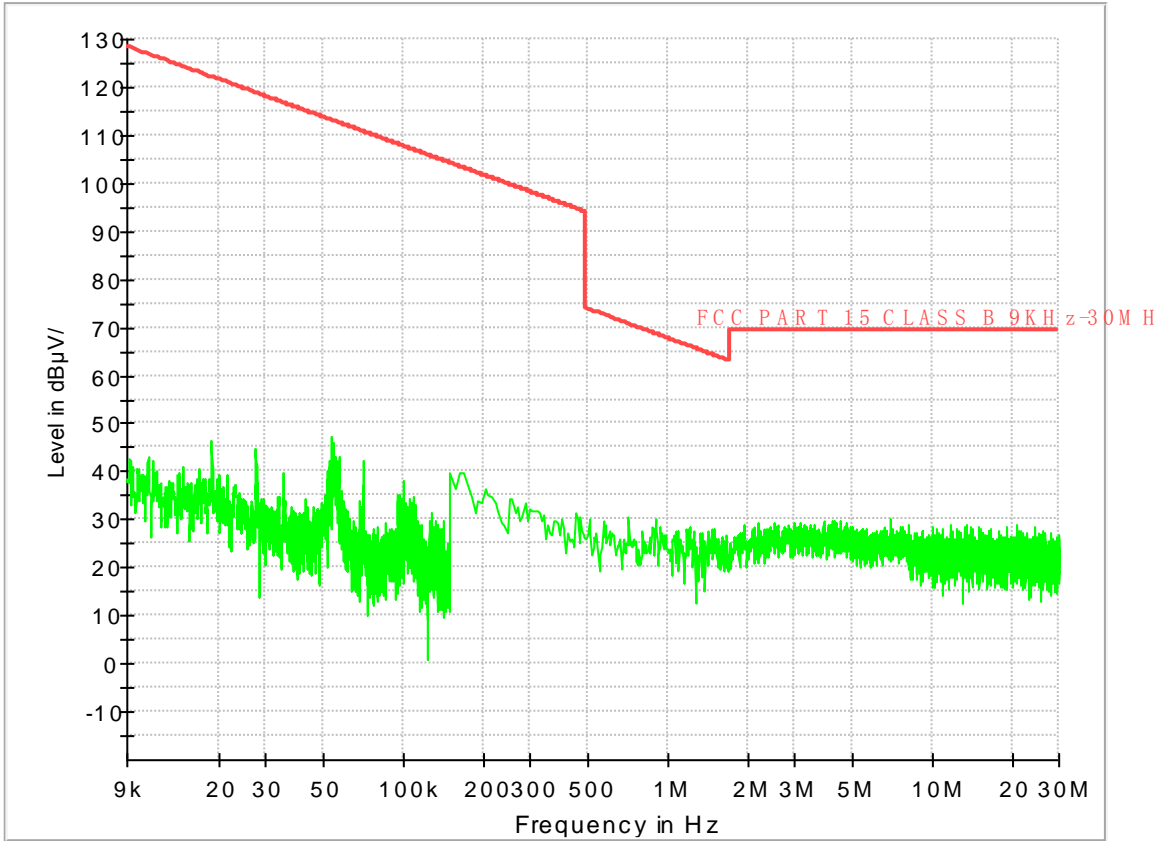


Copy of FCC PART22 W CDMA850_H

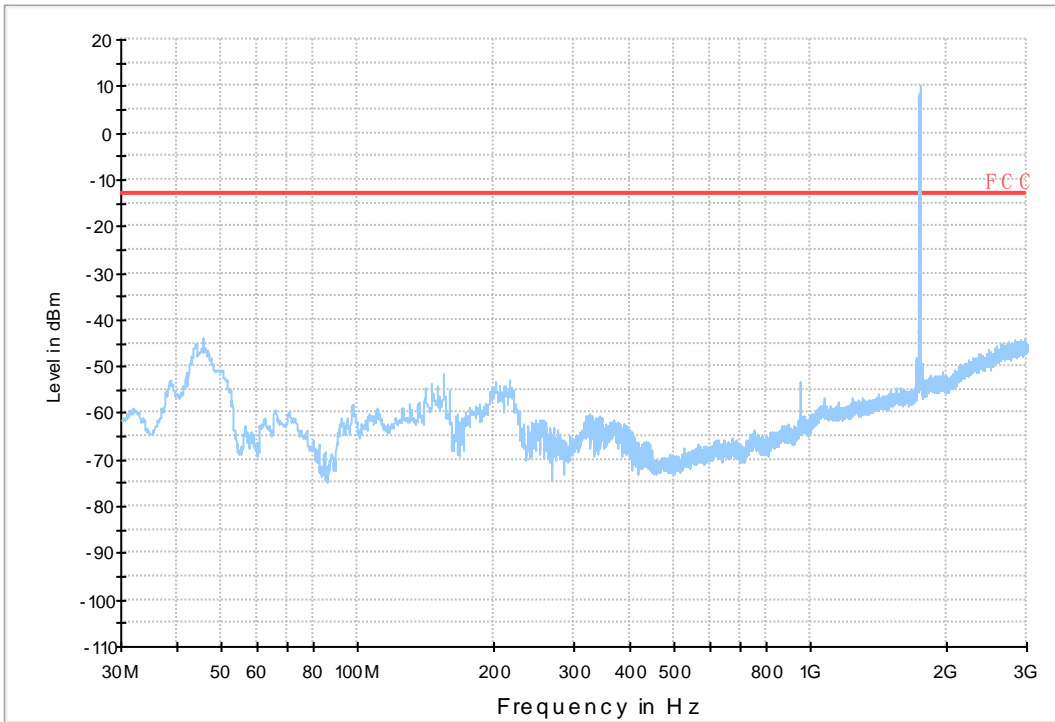


7.1.2 Test Band = WCDMA1700

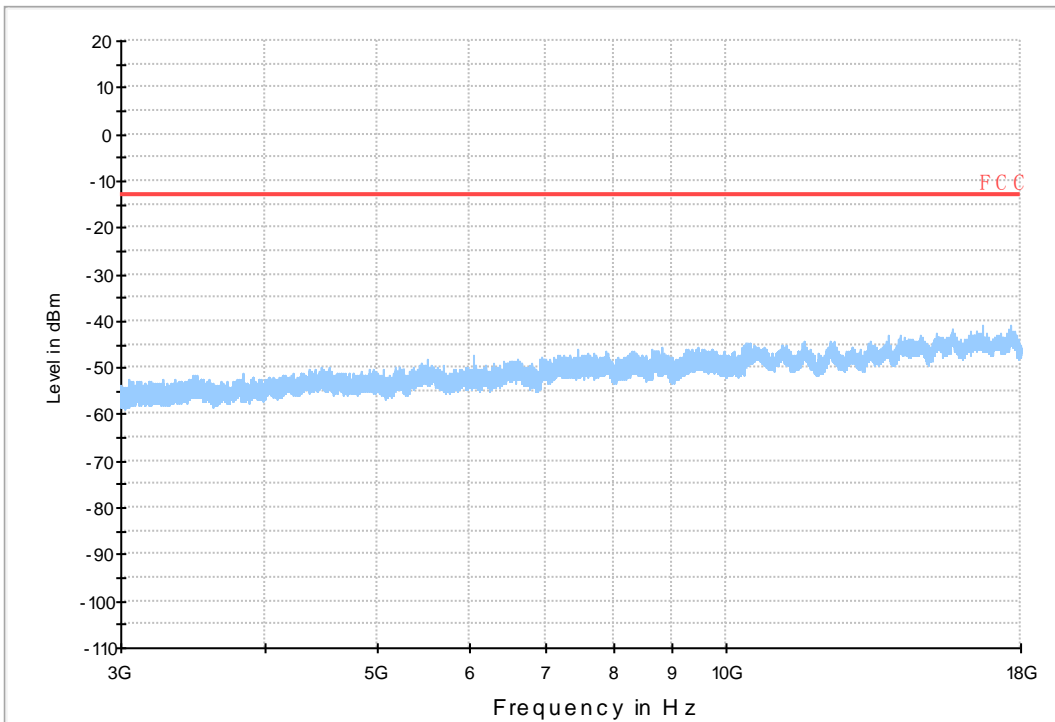
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

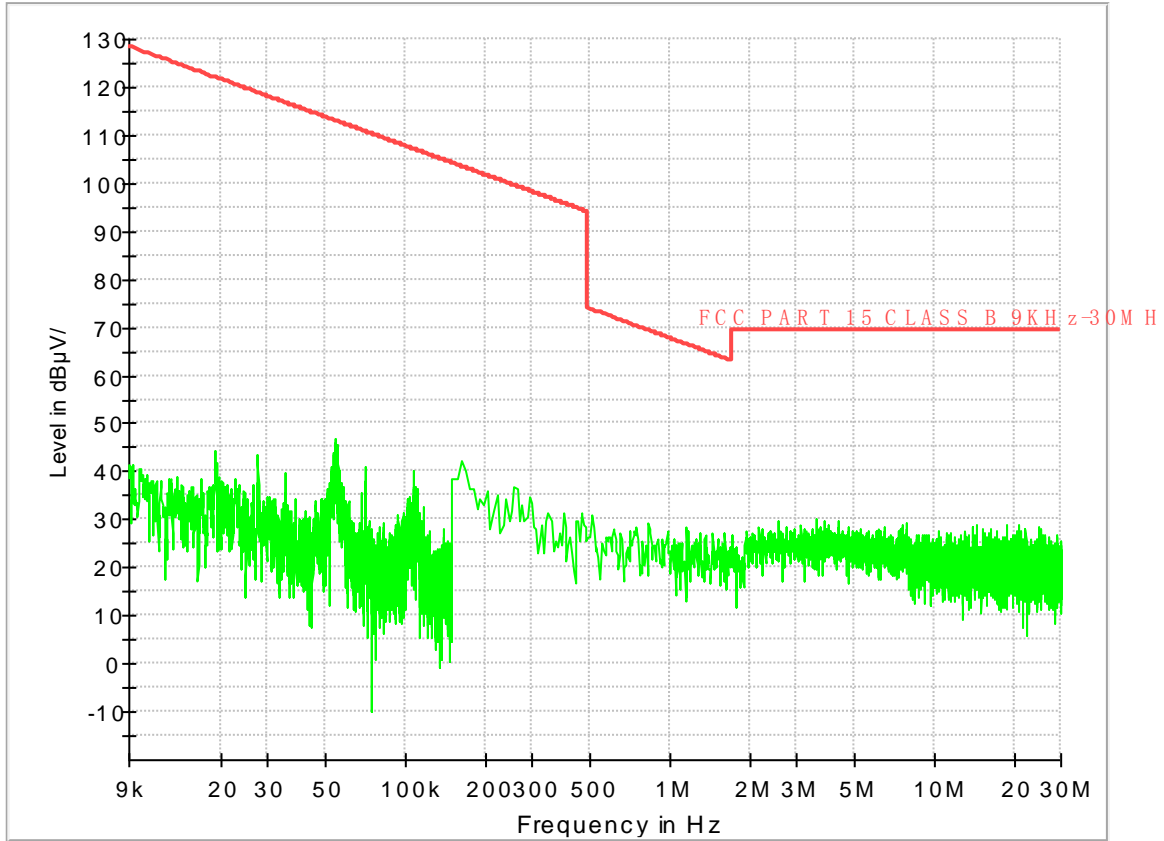


Copy of FCC PART27 W CDMA1700_H

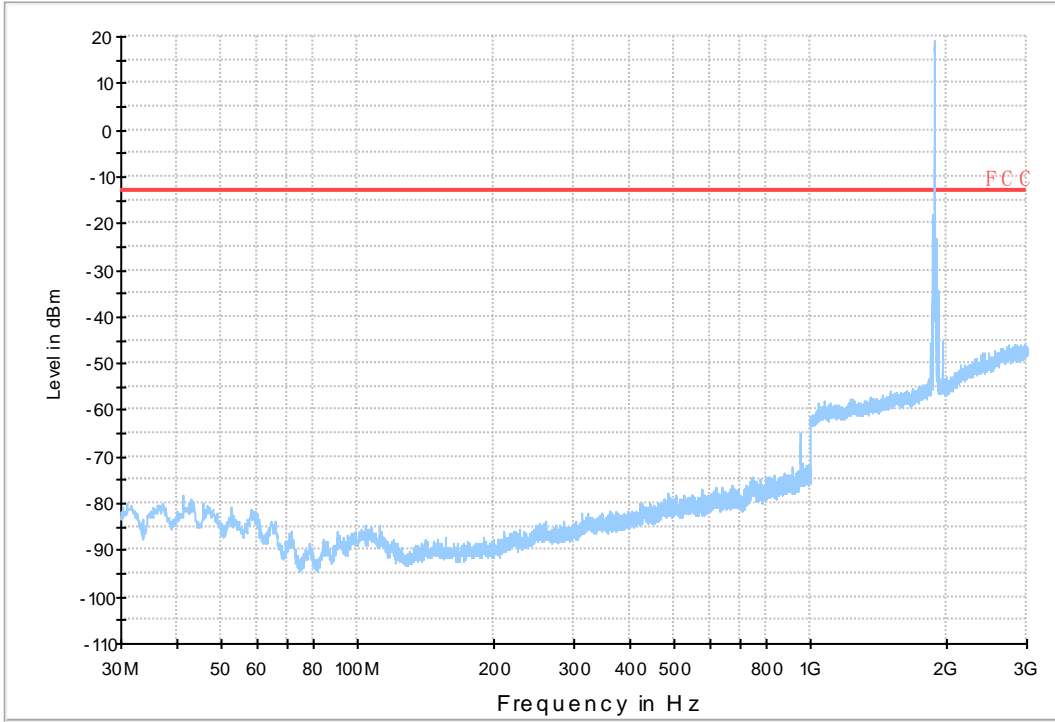


7.1.3 Test Band = WCDMA1900

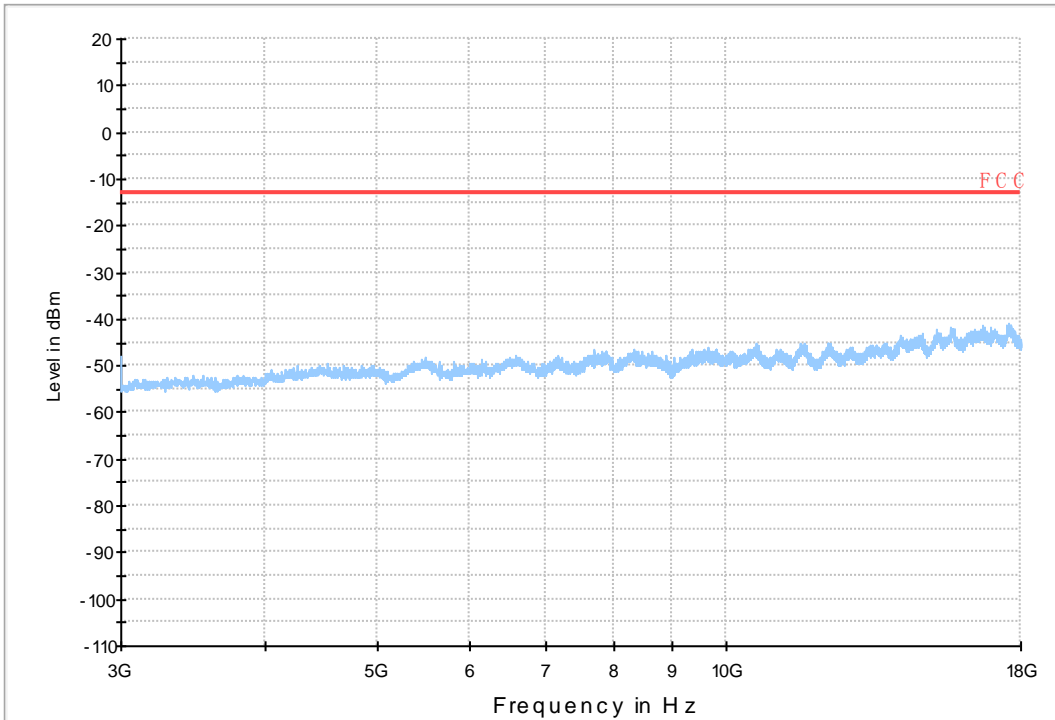
7.1.3.1 Test Mode = UMTS/TM1



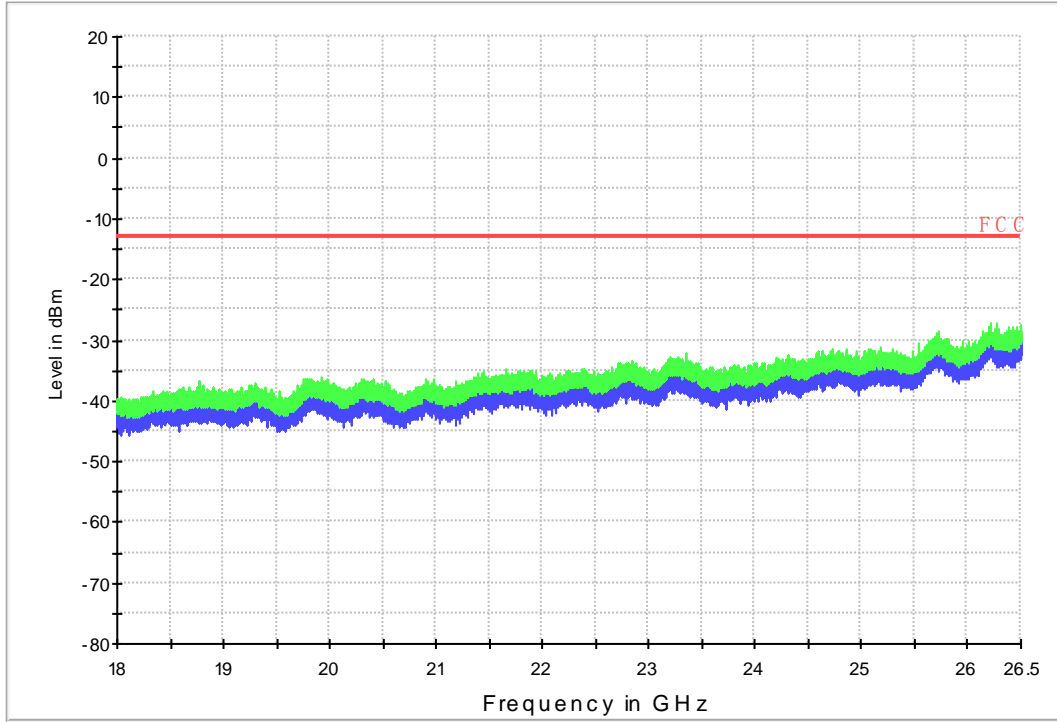
Copy of FCC PART24 W CDMA1900_L



Copy of FCC PART24 W CDMA1900_H



18G~26.5G RSE-TX-DIRECTOR ABOVE 1.5G PK



8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1 Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA850	UMTS/TM1	LCH	TN	VL	-6.97	-0.00843	PASS
				VN	-6.65	-0.00805	PASS
				VH	-10.15	-0.01228	PASS
		MCH	TN	VL	-11.86	-0.01418	PASS
				VN	-14.21	-0.01699	PASS
				VH	-10.50	-0.01255	PASS
		HCH	TN	VL	-0.49	-0.00058	PASS
				VN	-8.65	-0.01022	PASS
				VH	-7.69	-0.00908	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-6.45	-0.00377	PASS
				VN	-14.82	-0.00865	PASS
				VH	-14.71	-0.00859	PASS
		MCH	TN	VL	-22.98	-0.01326	PASS
				VN	-25.36	-0.01464	PASS
				VH	-16.33	-0.00943	PASS
		HCH	TN	VL	0.55	0.00031	PASS
				VN	-9.46	-0.0054	PASS
				VH	5.33	0.00304	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-0.98	-0.00053	PASS
				VN	-7.93	-0.00428	PASS
				VH	-3.10	-0.00167	PASS
		MCH	TN	VL	-1.60	-0.00085	PASS
				VN	-8.32	-0.00443	PASS
				VH	-8.04	-0.00428	PASS
		HCH	TN	VL	-5.75	-0.00301	PASS
				VN	-8.79	-0.00461	PASS
				VH	-0.46	-0.00024	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	
WCDMA850	UMTS/TM1	LCH	VN	-30	-4.90	-0.0059 3	PASS	
				-20	-14.43	-0.01746	PASS	
				-10	-15.38	-0.01861	PASS	
				0	-10.74	-0.013	PASS	
				10	-12.47	-0.01509	PASS	
				20	-11.54	-0.01396	PASS	
				30	-10.99	-0.0133	PASS	
				40	-16.27	-0.01969	PASS	
				50	-7.54	-0.00912	PASS	
		MCH	VN	VN	-30	-4.71	-0.00563	PASS
					-20	-2.15	-0.00257	PASS
					-10	-10.06	-0.01203	PASS
					0	-11.34	-0.01356	PASS
					10	-9.31	-0.01113	PASS
					20	-11.31	-0.01352	PASS
					30	-15.50	-0.01853	PASS
					40	-5.34	-0.00638	PASS
					50	-10.91	-0.01304	PASS
		HCH	VN	VN	-30	-9.64	-0.01139	PASS
					-20	-12.62	-0.01491	PASS
					-10	-12.36	-0.0146	PASS
					0	-13.00	-0.01536	PASS
					10	-8.80	-0.01039	PASS
					20	-9.81	-0.01159	PASS
					30	-11.87	-0.01402	PASS
					40	-9.29	-0.01097	PASS
					50	-11.73	-0.01386	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	-5.95	-0.00347	PASS	
				-20	-12.24	-0.00715	PASS	
				-10	-18.77	-0.01096	PASS	
				0	-7.45	-0.00435	PASS	
				10	-17.65	-0.01031	PASS	
				20	-15.55	-0.00908	PASS	
				30	2.01	0.00117	PASS	
				40	-12.07	-0.00705	PASS	
				50	-1.11	-0.00065	PASS	
		MCH	VN	-30	-15.84	-0.00914	PASS	



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-20	-14.39	-0.00831	PASS
				-10	-11.83	-0.00683	PASS
				0	-3.02	-0.00174	PASS
				10	-4.10	-0.00237	PASS
				20	-21.18	-0.01222	PASS
				30	-5.63	-0.00325	PASS
				40	-5.95	-0.00343	PASS
				50	-0.12	-0.00007	PASS
		HCH	VN	-30	-3.45	-0.00197	PASS
				-20	-2.14	-0.00122	PASS
				-10	-2.11	-0.0012	PASS
				0	-5.28	-0.00301	PASS
				10	-14.19	-0.0081	PASS
				20	-19.64	-0.01121	PASS
				30	2.96	0.00169	PASS
				40	-9.58	-0.00547	PASS
				50	-13.08	-0.00746	PASS
				WCDMA1900	UMTS/TM1	LCH	VN
-20	-12.94	-0.00699	PASS				
-10	-15.21	-0.00821	PASS				
0	-11.75	-0.00634	PASS				
10	-9.23	-0.00498	PASS				
20	-11.28	-0.00609	PASS				
30	-14.13	-0.00763	PASS				
40	-20.26	-0.01094	PASS				
50	-11.02	-0.00595	PASS				
MCH	VN	-30	-2.43			-0.00129	PASS
		-20	-9.25			-0.00492	PASS
		-10	-7.08			-0.00377	PASS
		0	-6.44			-0.00343	PASS
		10	-8.74			-0.00465	PASS
		20	-8.41			-0.00447	PASS
		30	-4.38			-0.00233	PASS
		40	-6.12			-0.00326	PASS
		50	-2.41			-0.00128	PASS
HCH	VN	-30	-12.76			-0.00669	PASS
		-20	-12.45			-0.00653	PASS
		-10	-14.59			-0.00765	PASS
		0	-11.80			-0.00619	PASS
		10	-7.66			-0.00402	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	-10.67	-0.00559	PASS
				30	-11.72	-0.00614	PASS
				40	-14.01	-0.00734	PASS
				50	-16.53	-0.00867	PASS

END