



Appendix for test report

1Appendix_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	24.21	20.26	38.5	PASS
		MCH	24.37	20.42	38.5	PASS
		HCH	24.36	20.41	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	23.52	21.32	33	PASS
		MCH	23.44	21.24	33	PASS
		HCH	23.44	21.24	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:

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

$$\text{SET RBW} = 1\% \text{ of the OBW, not to exceed } 1\text{MHz}$$

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

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
WCDMA1900	UMTS/TM1	LCH	3.23	13	PASS
		MCH	3.32	13	PASS
		HCH	3.26	13	PASS
WCDMA850	UMTS/TM1	LCH	3.25	13	PASS
		MCH	3.22	13	PASS
		HCH	3.25	13	PASS

3Appendix_C: Modulation Characteristics

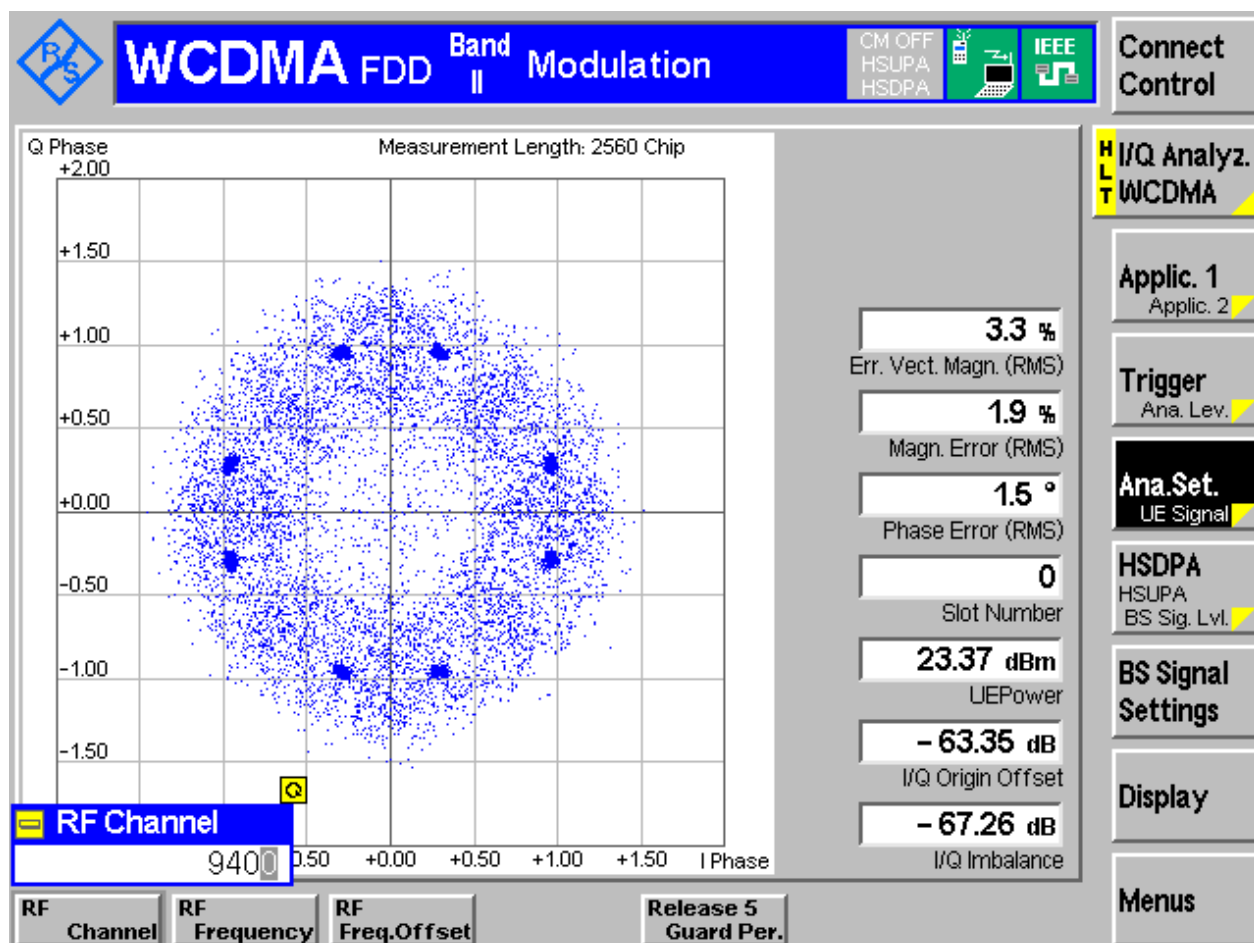
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1900

3.1.1.1 Test Mode = UMTS/TM1

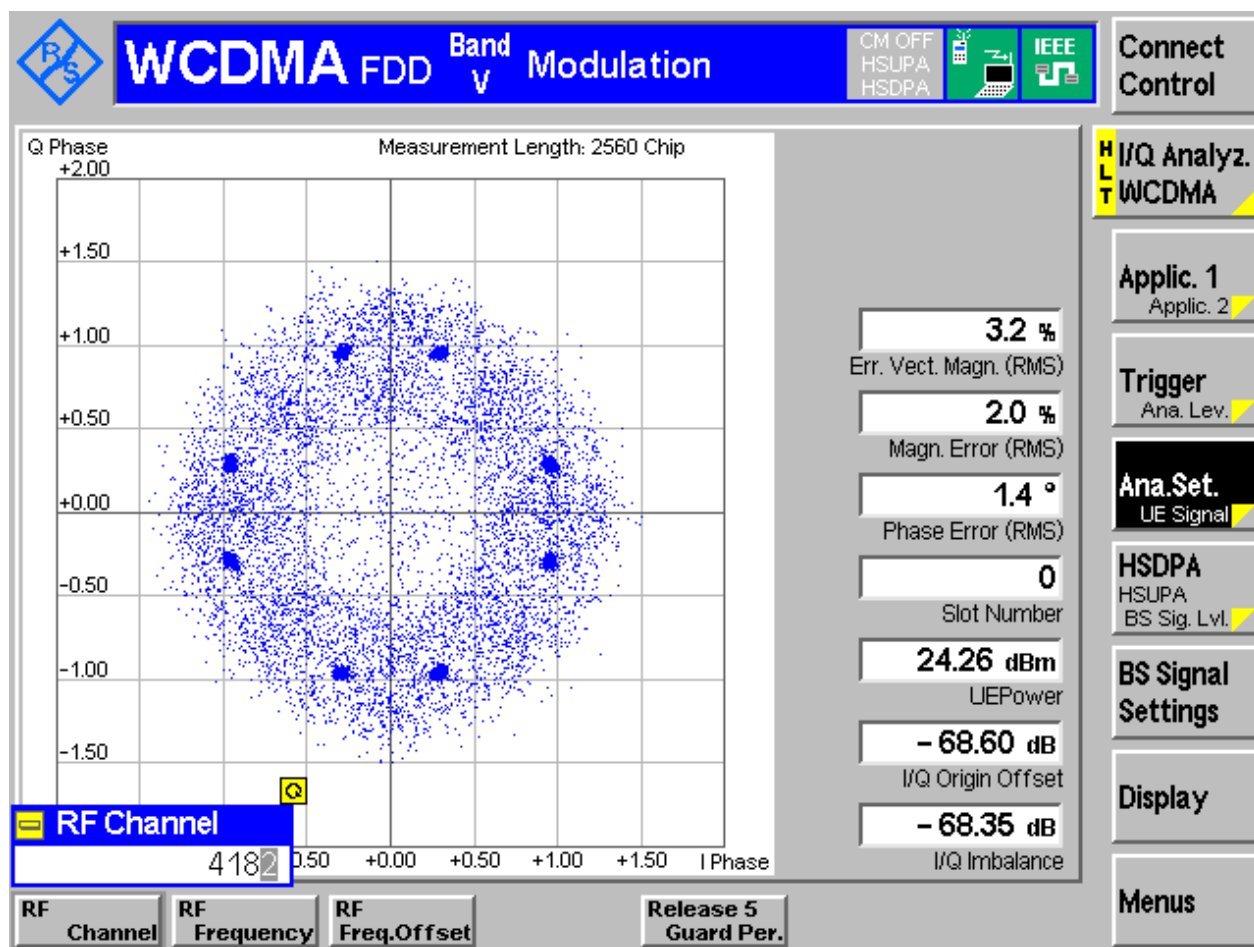
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA850

3.1.2.1 Test Mode = UMTS/TM1

3.1.2.1.1 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	4.13	4.72	Pass
		MCH	4.13	4.70	Pass
		HCH	4.12	4.70	Pass
WCDMA1900	UMTS/TM1	LCH	4.13	4.71	Pass
		MCH	4.14	4.70	Pass
		HCH	4.13	4.71	Pass

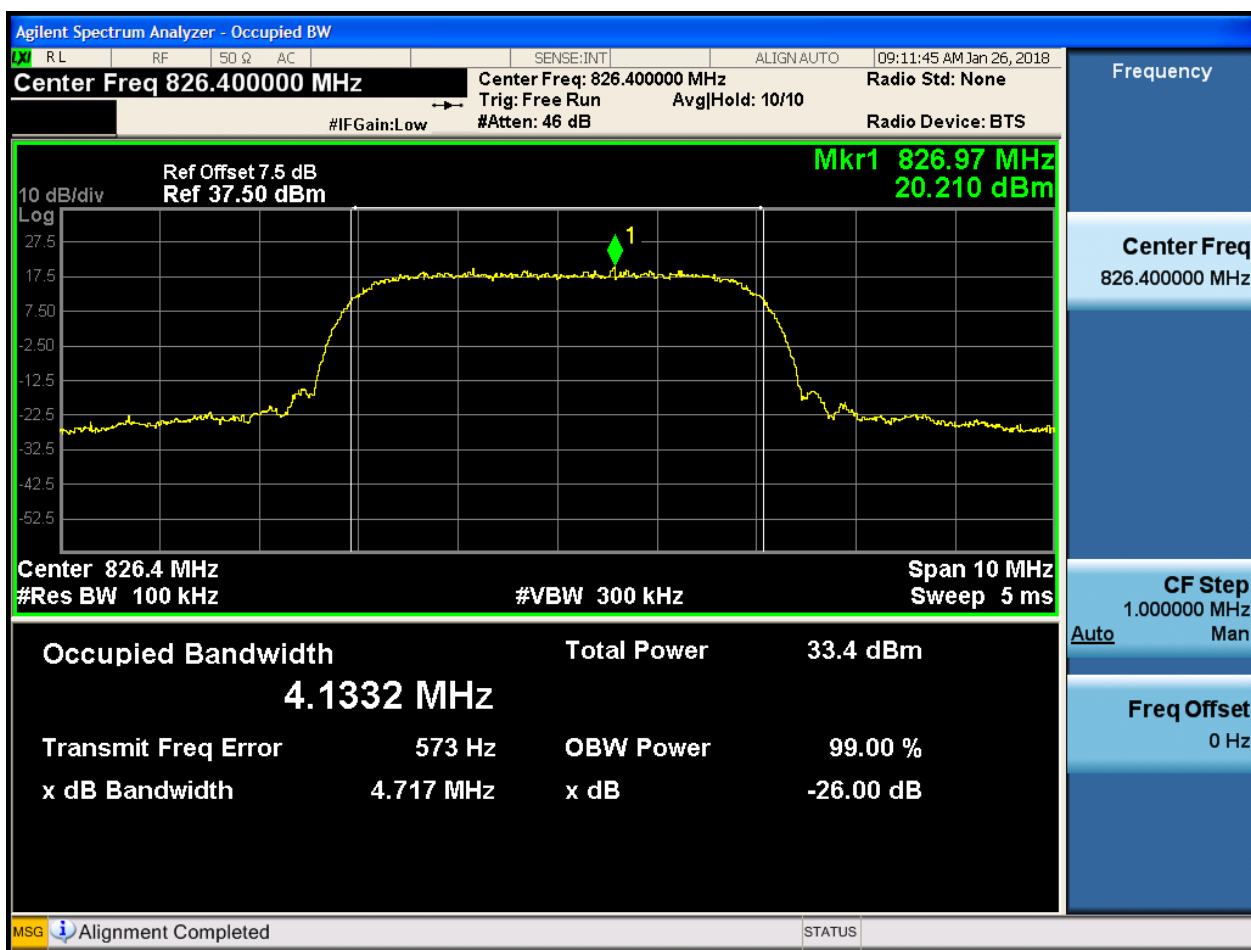
Part II - Test Plots

4.1 For UMTS

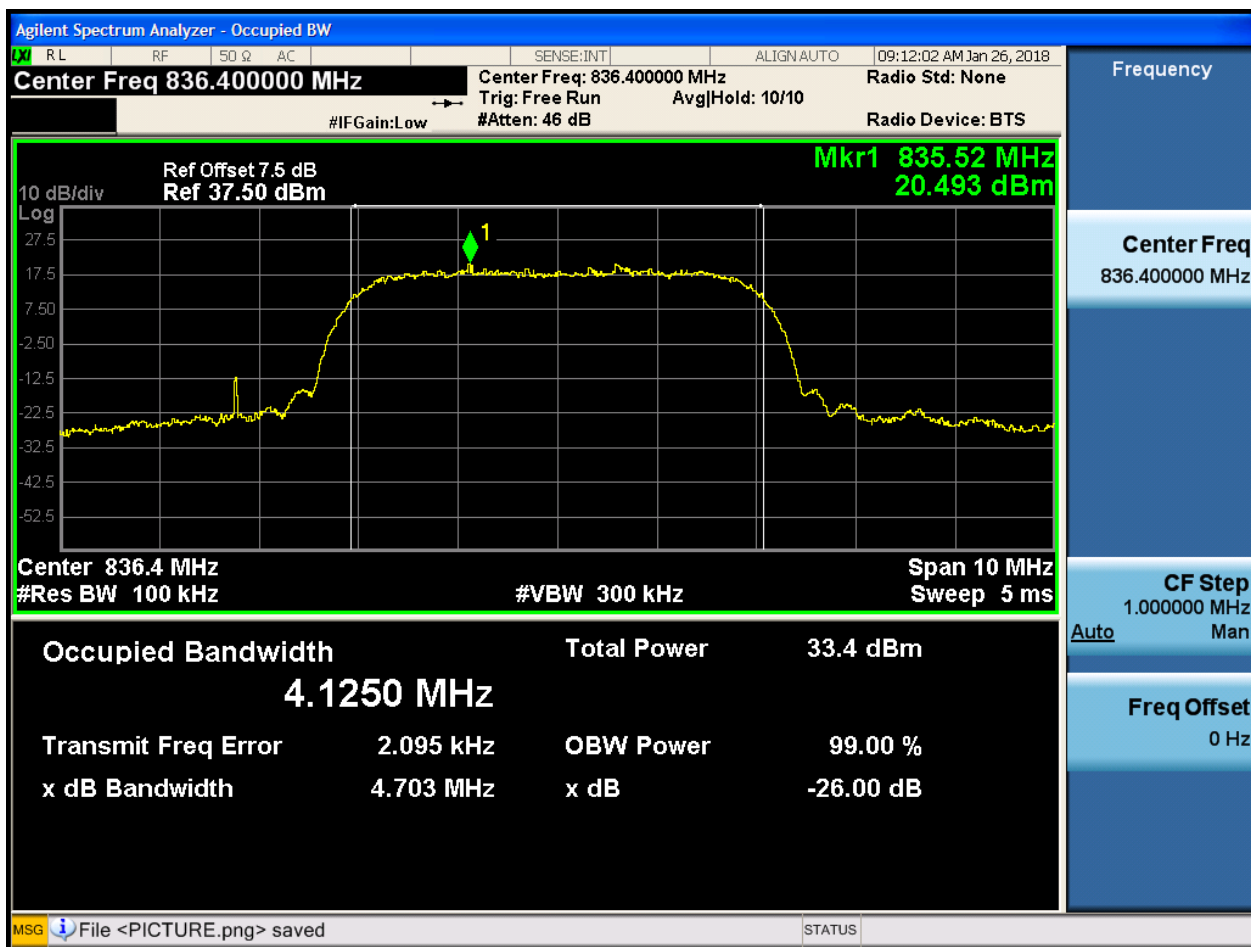
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4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH

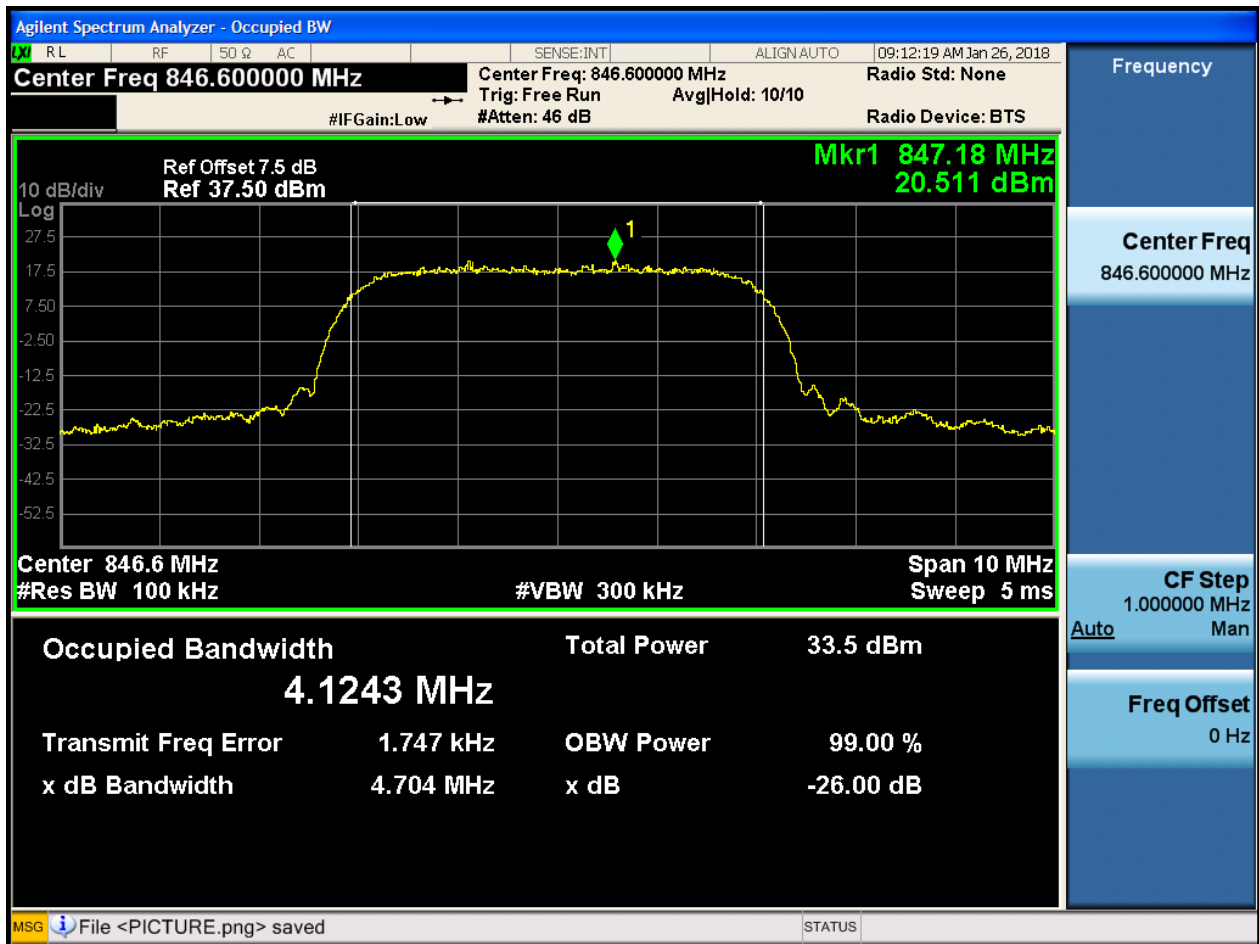


4.1.1.1.2 Test Channel = MCH





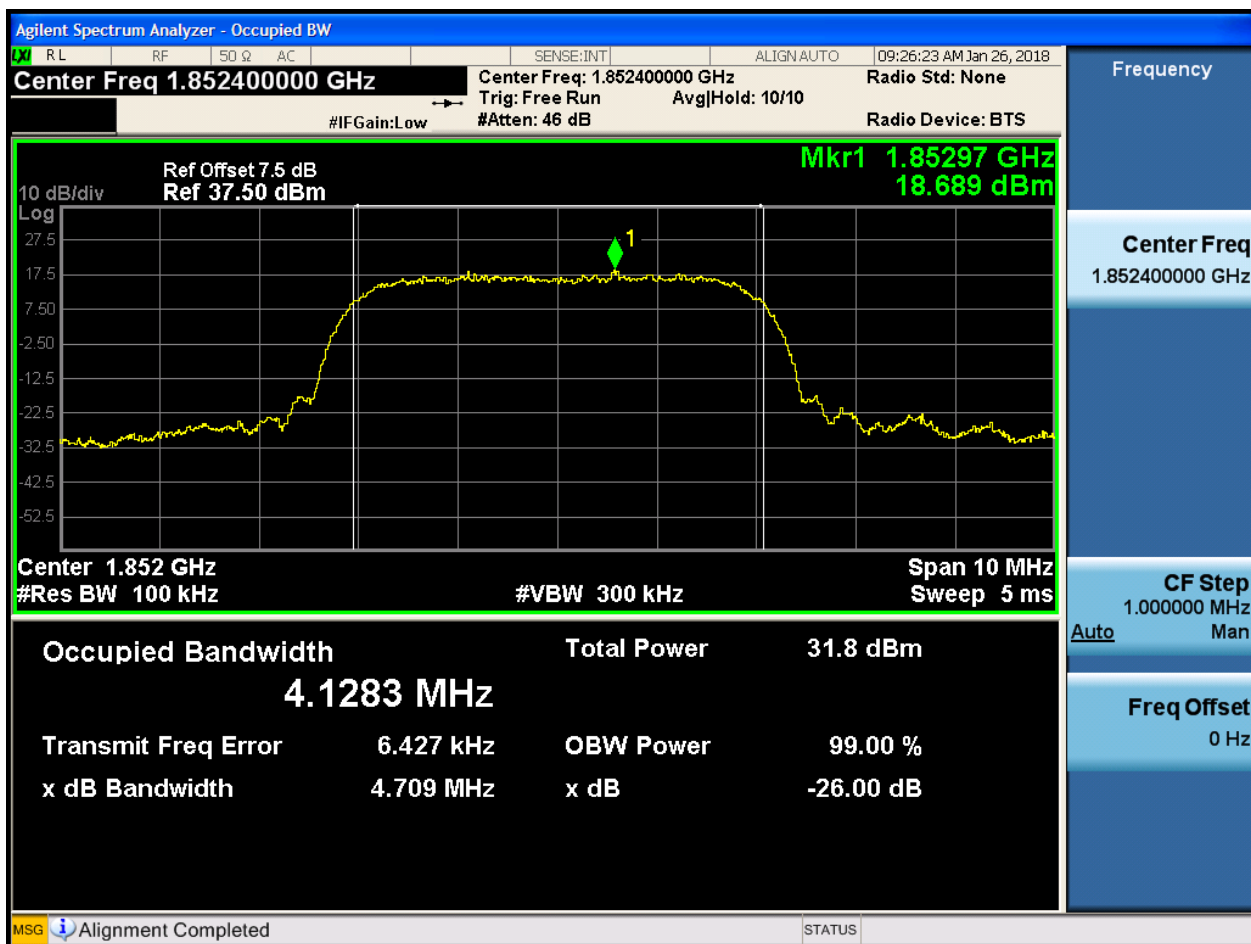
4.1.1.1.3 Test Channel = HCH



4.1.2 Test Band = WCDMA1900

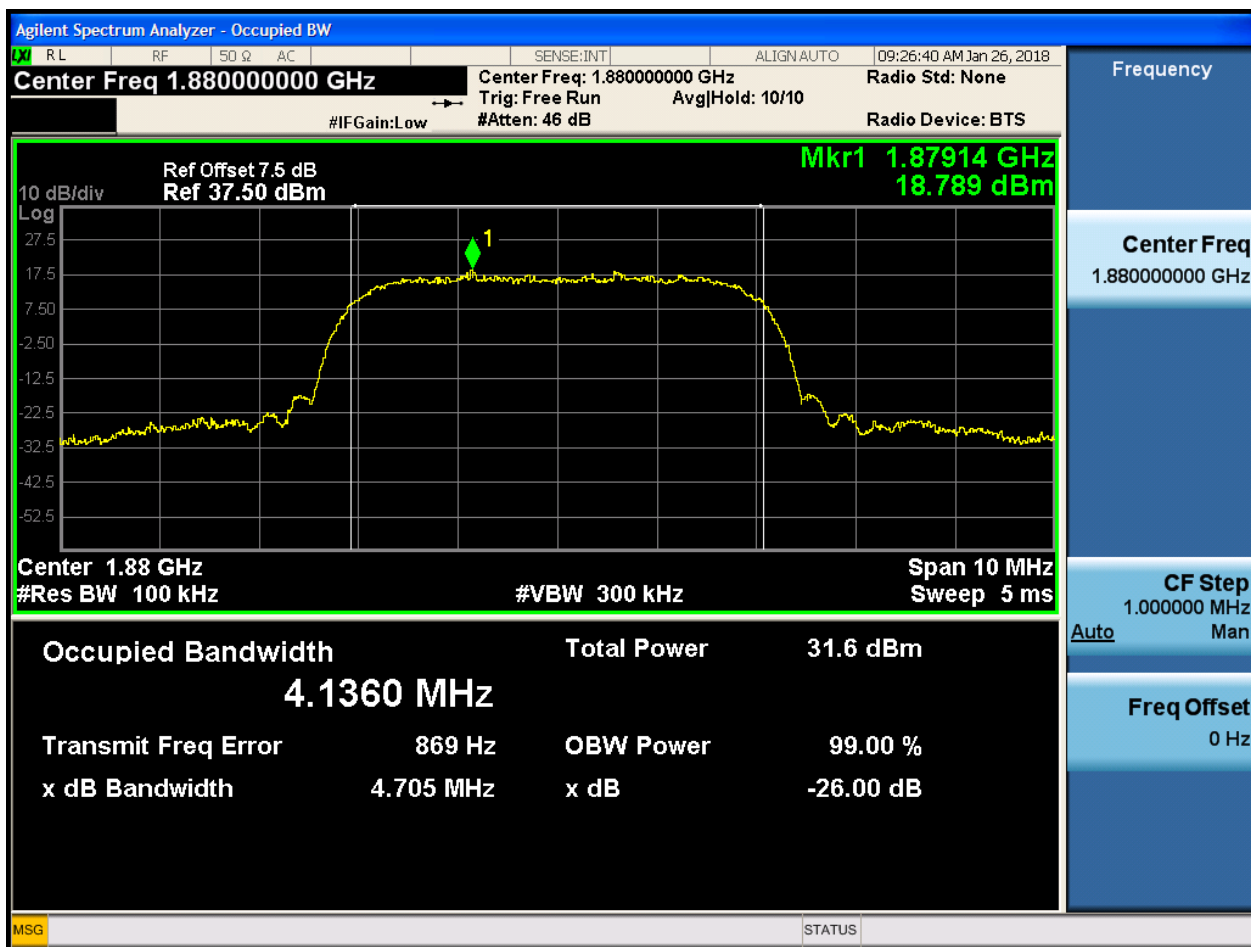
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH





4.1.2.1.2 Test Channel = MCH





Agilent Spectrum Analyzer - Occupied BW

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 09:26:57 AM Jan 26, 2018

Center Freq 1.907600000 GHz Center Freq: 1.907600000 GHz Radio Std: None
 Trig: Free Run Avg/Hold: 10/10
 #IFGain: Low #Atten: 46 dB Radio Device: BTS

10 dB/div Ref Offset 7.5 dB Mkr1 1.90672 GHz
 Log Ref 37.50 dBm 18.791 dBm

Center 1.908 GHz Span 10 MHz
 #Res BW 100 kHz #VBW 300 kHz Sweep 5 ms

Occupied Bandwidth		Total Power	
4.1252 MHz		31.7 dBm	
Transmit Freq Error	-3.298 kHz	OBW Power	99.00 %
x dB Bandwidth	4.708 MHz	x dB	-26.00 dB

MSG File <PICTURE.png> saved STATUS

Frequency

Center Freq
1.907600000 GHz

CF Step
1.000000 MHz
Auto Man

Freq Offset
0 Hz

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 = WCDMA1900

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



5.1.2.1.2 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.

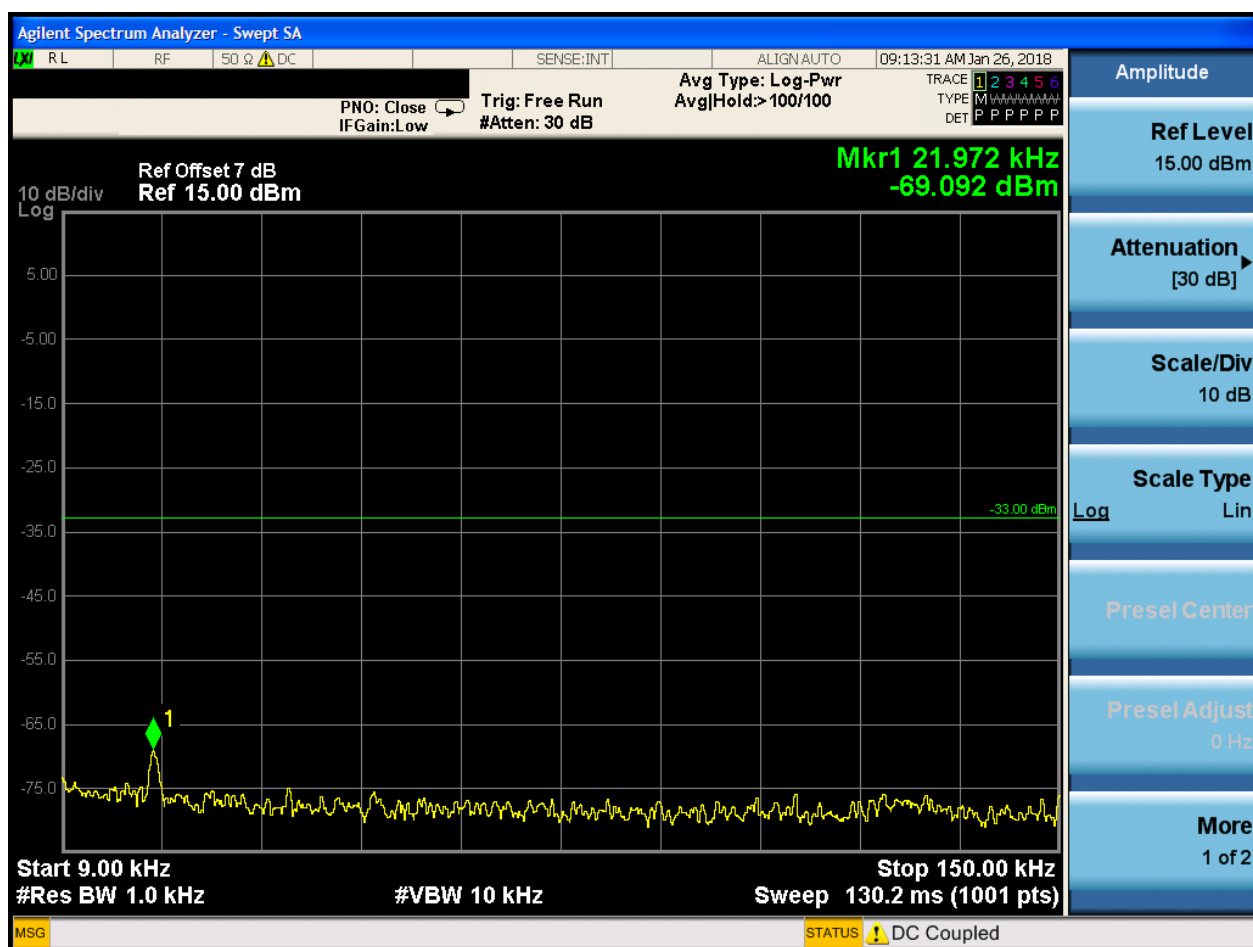
Part I - Test Plots

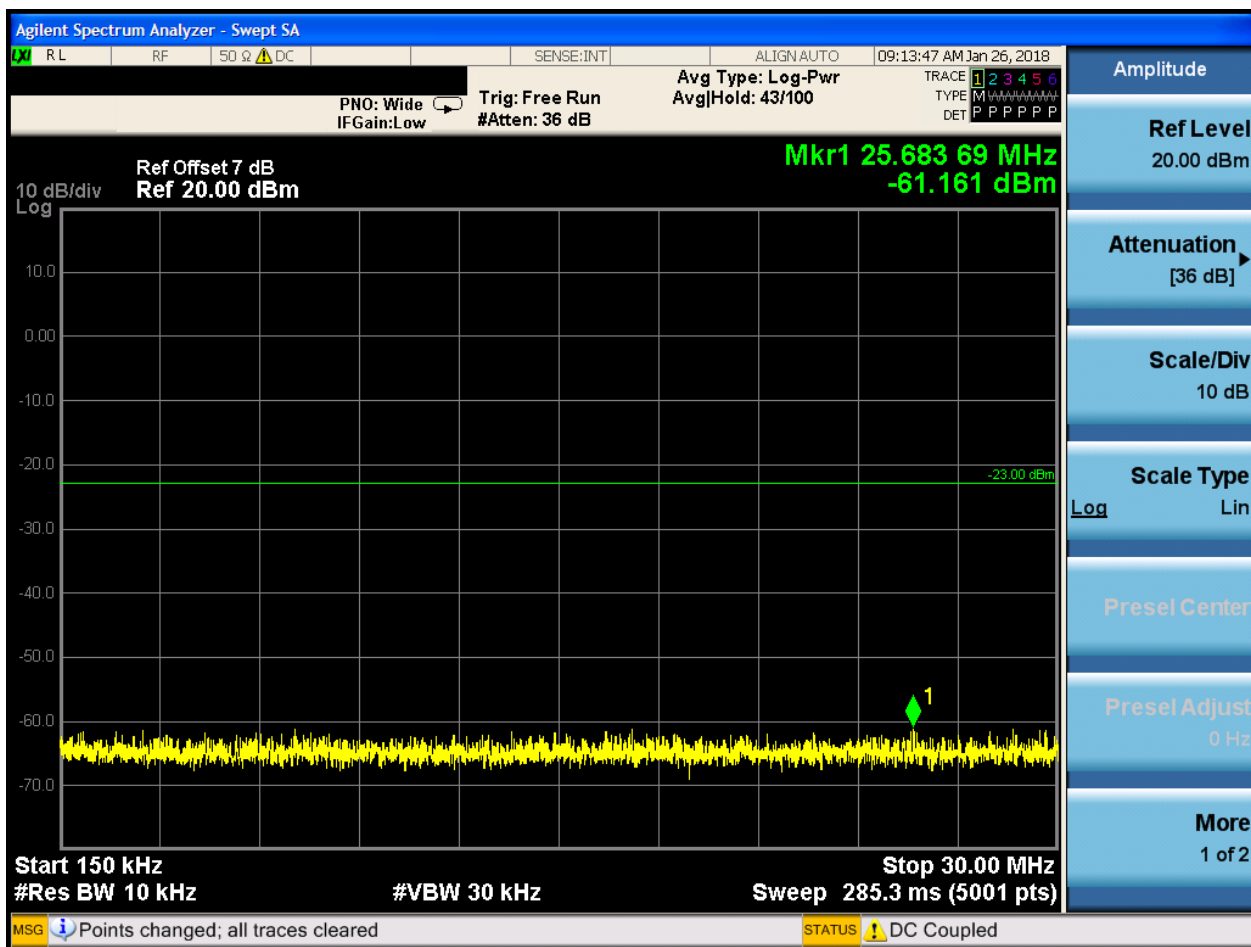
6.1 For UMTS

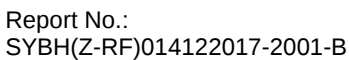
6.1.1 Test Band = WCDMA850

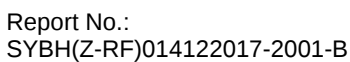
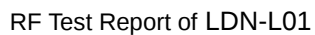
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH

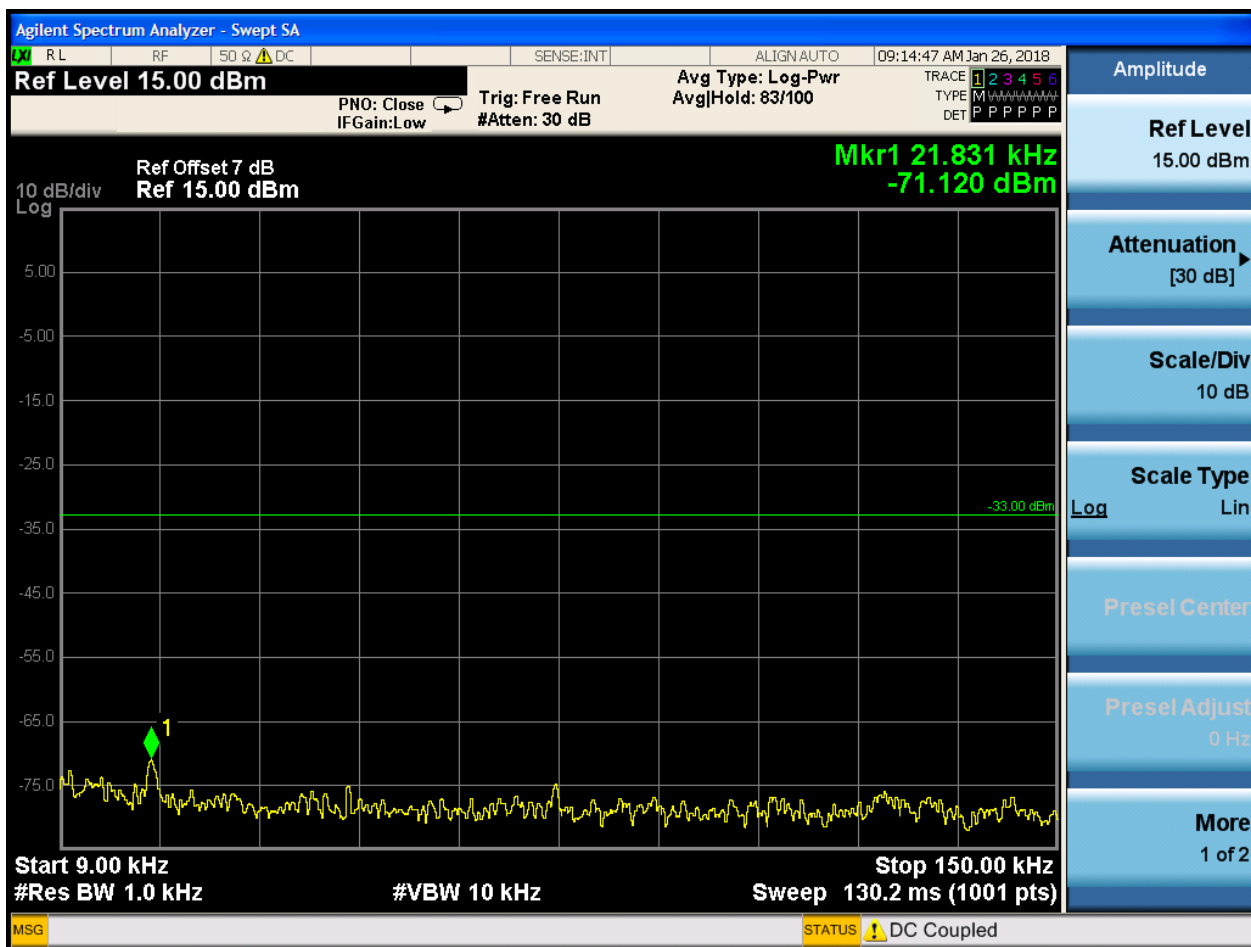


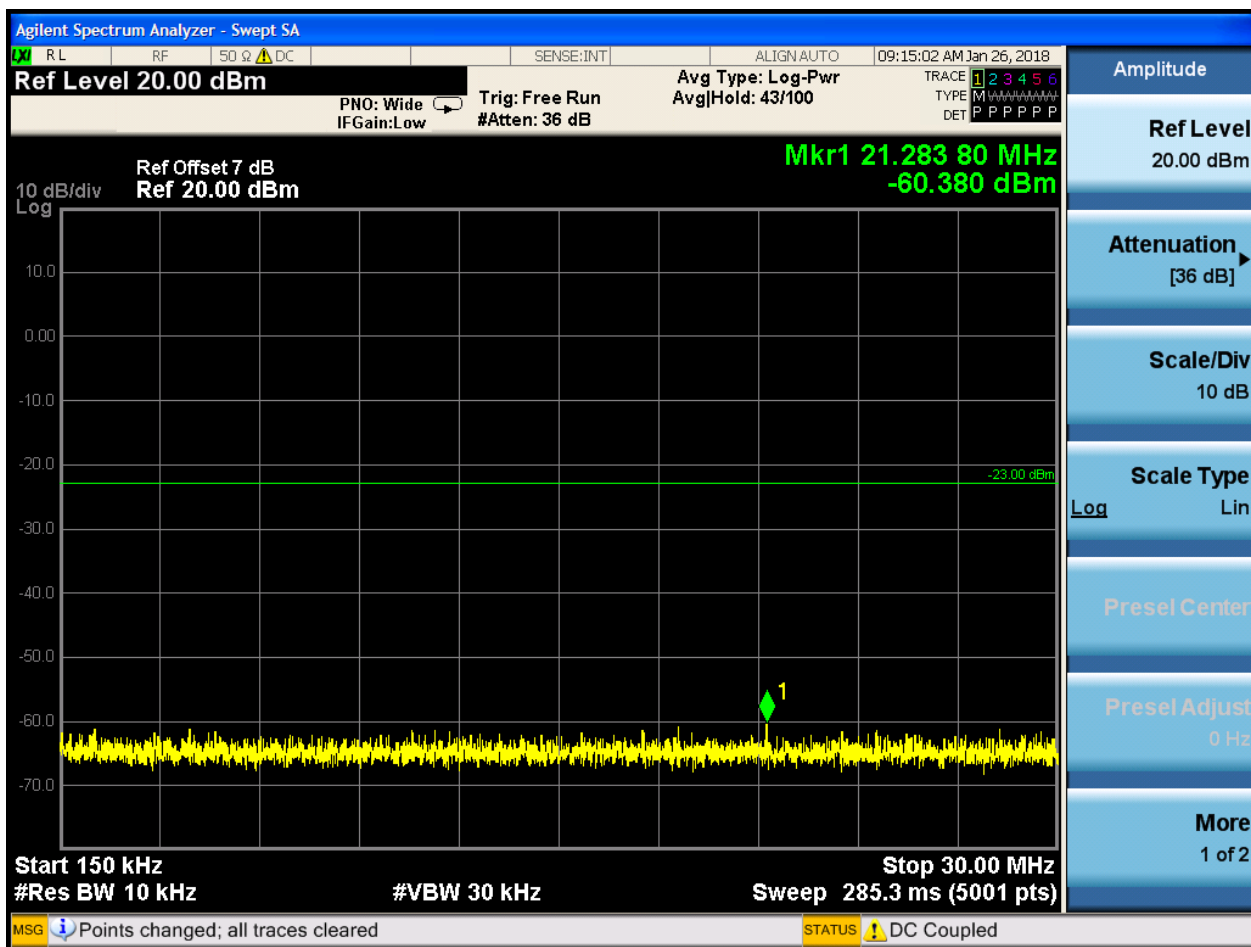


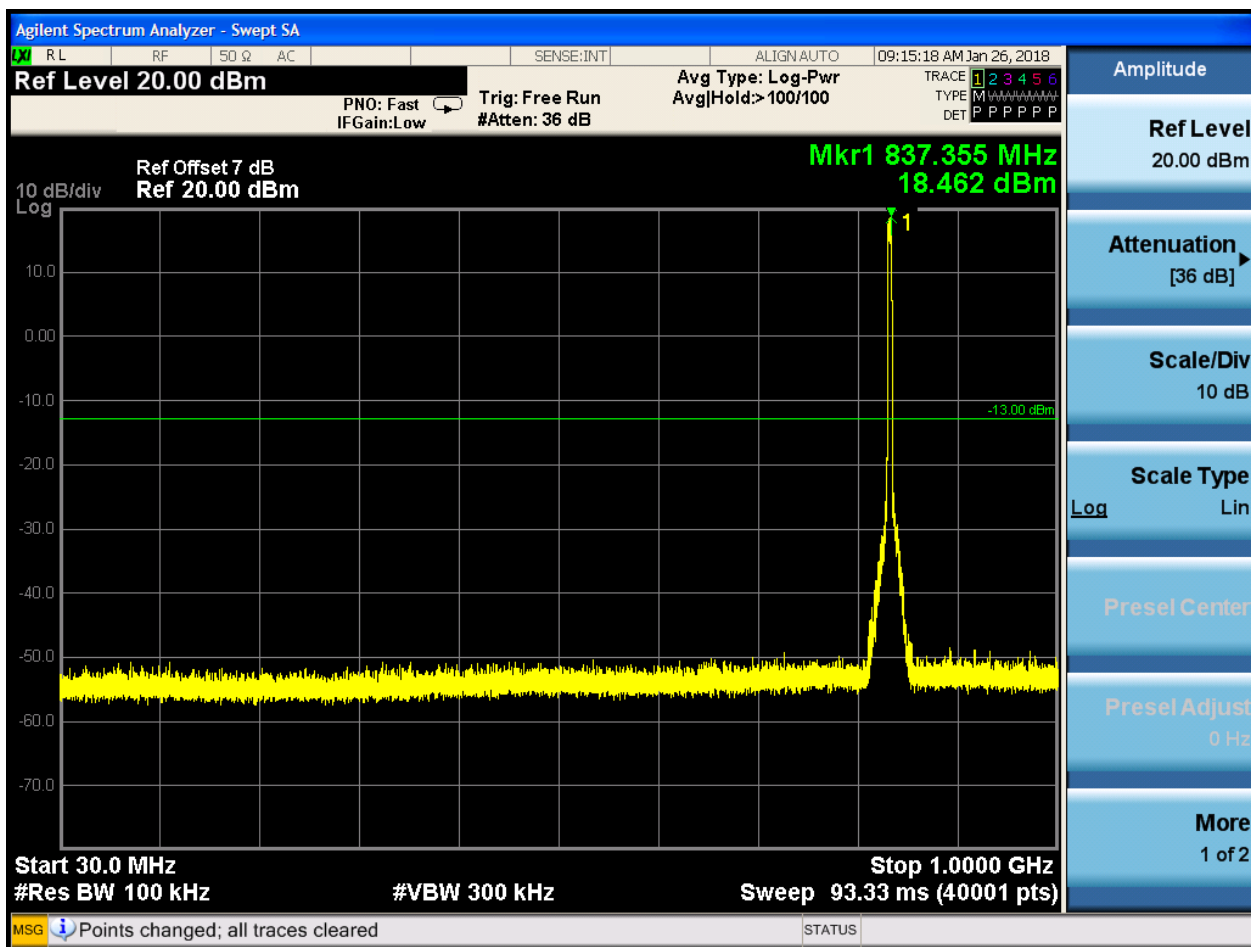


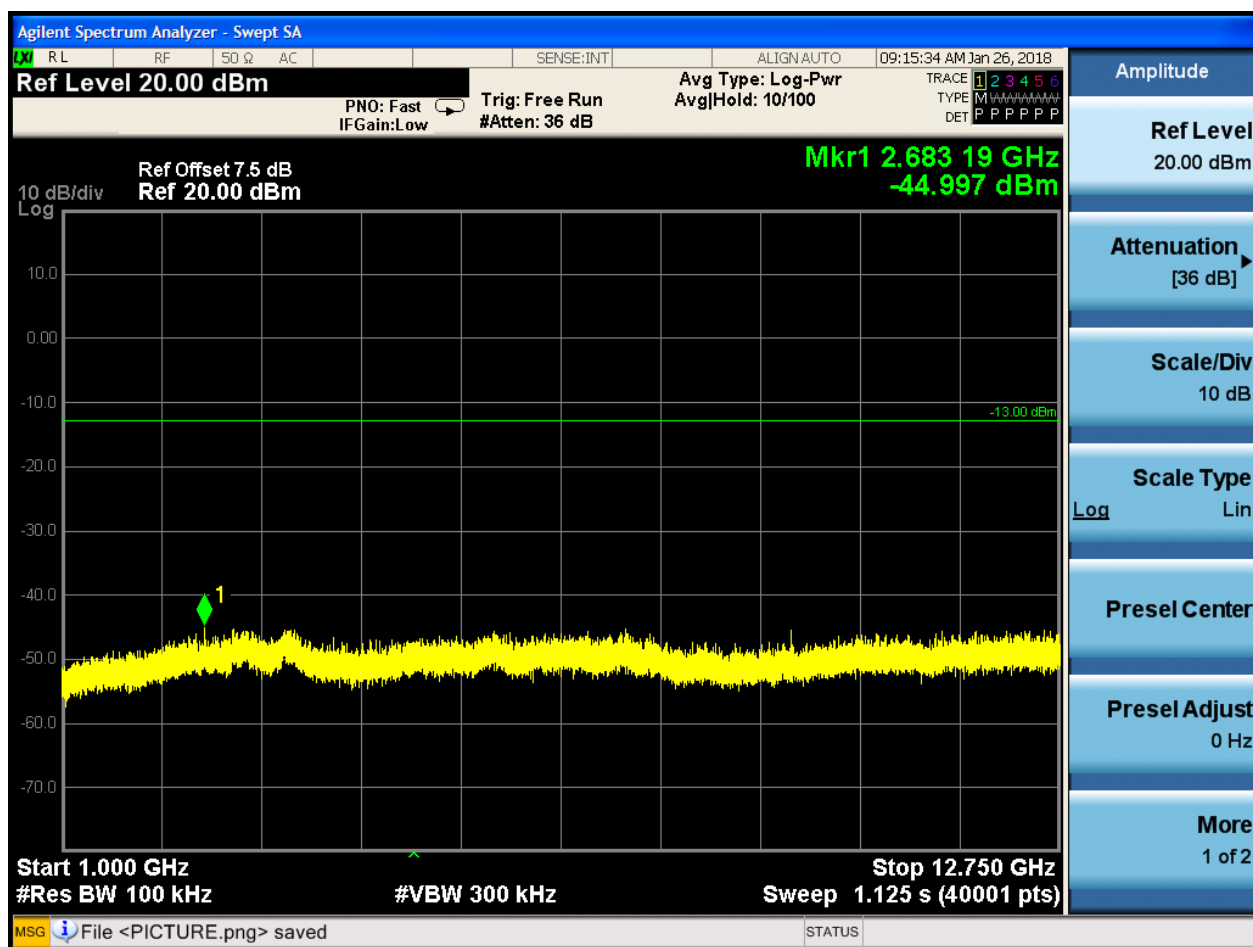


6.1.1.1.2 Test Channel = MCH



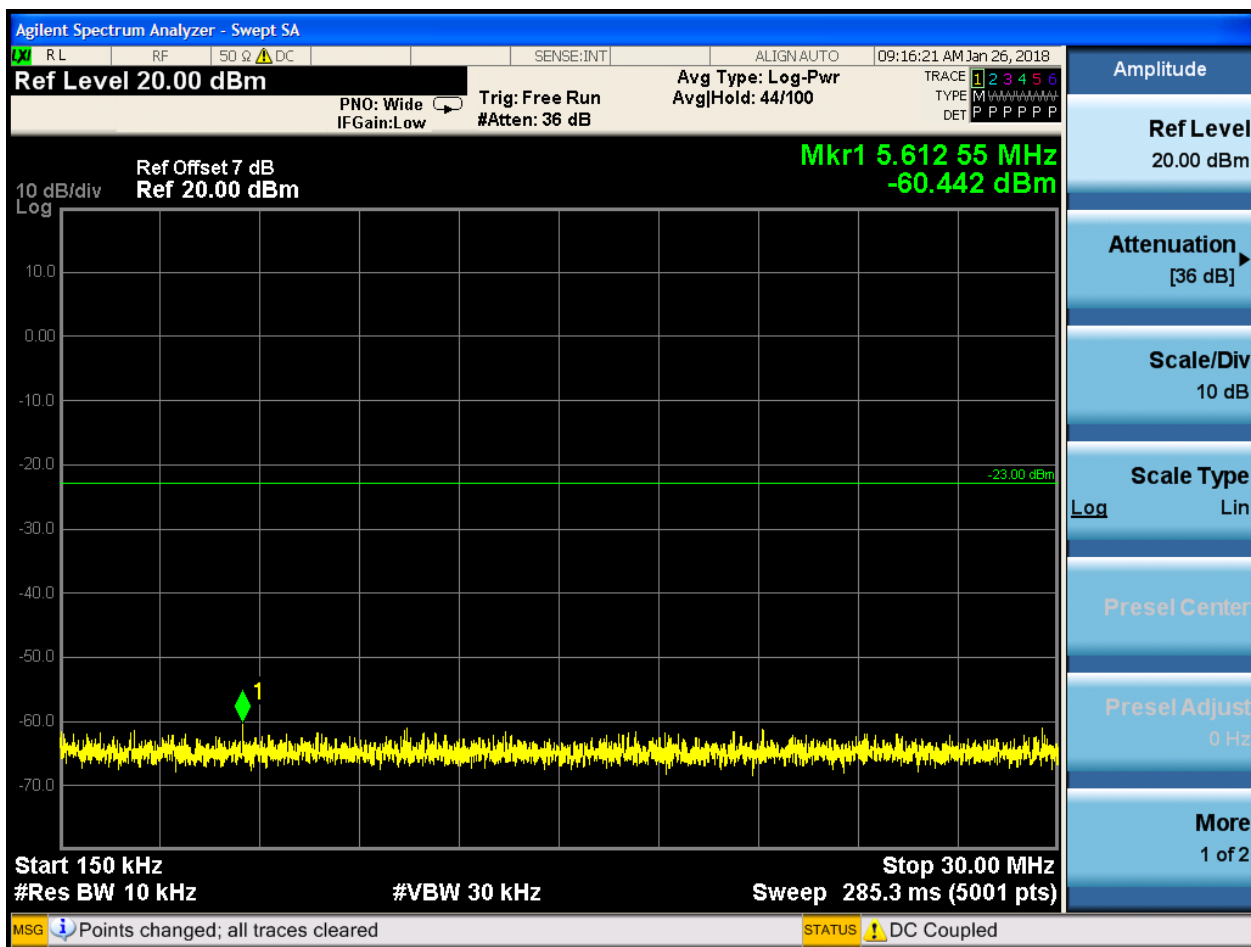


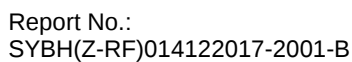
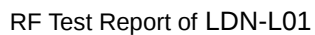


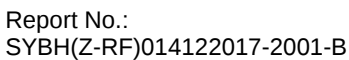


6.1.1.1.3 Test Channel = HCH





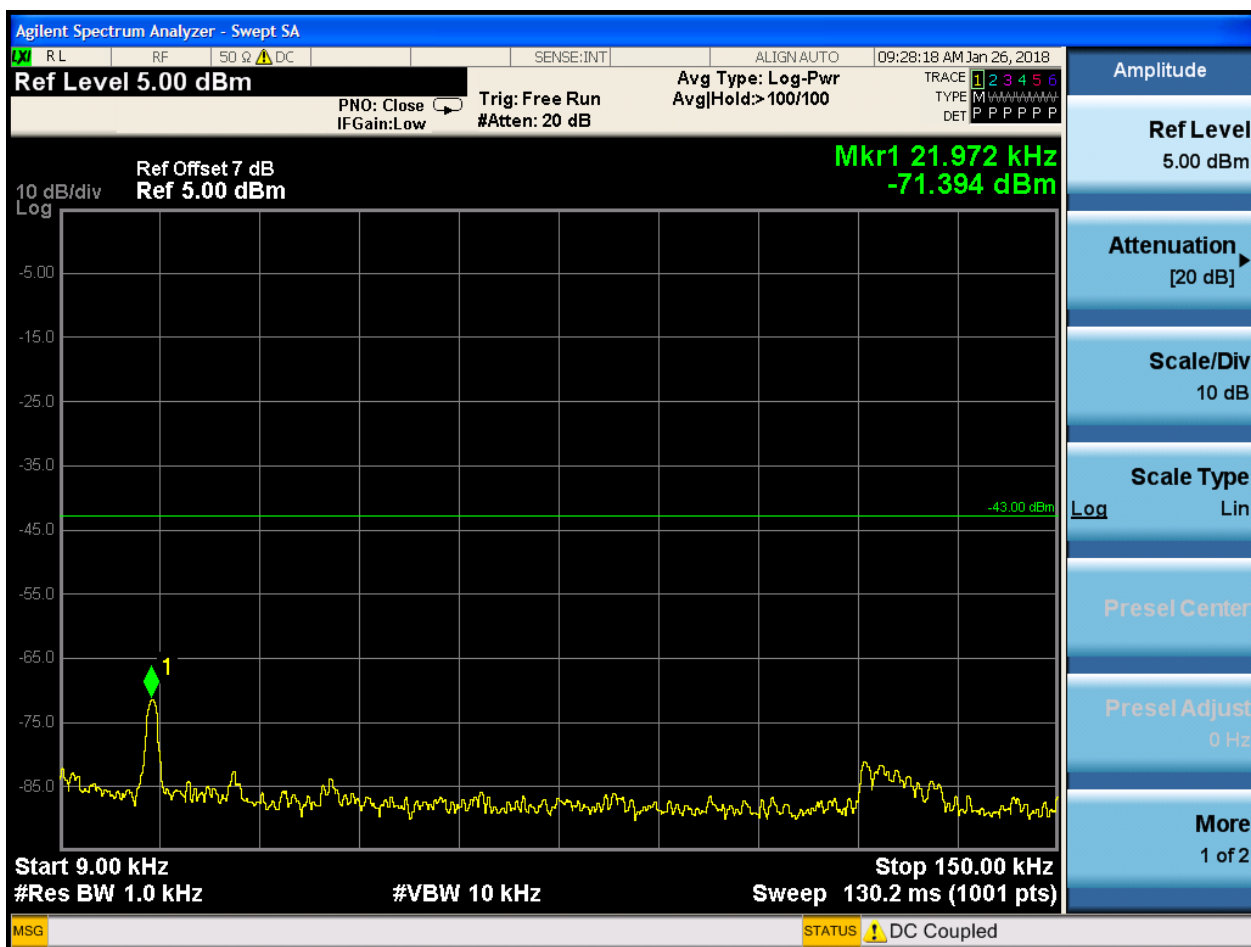


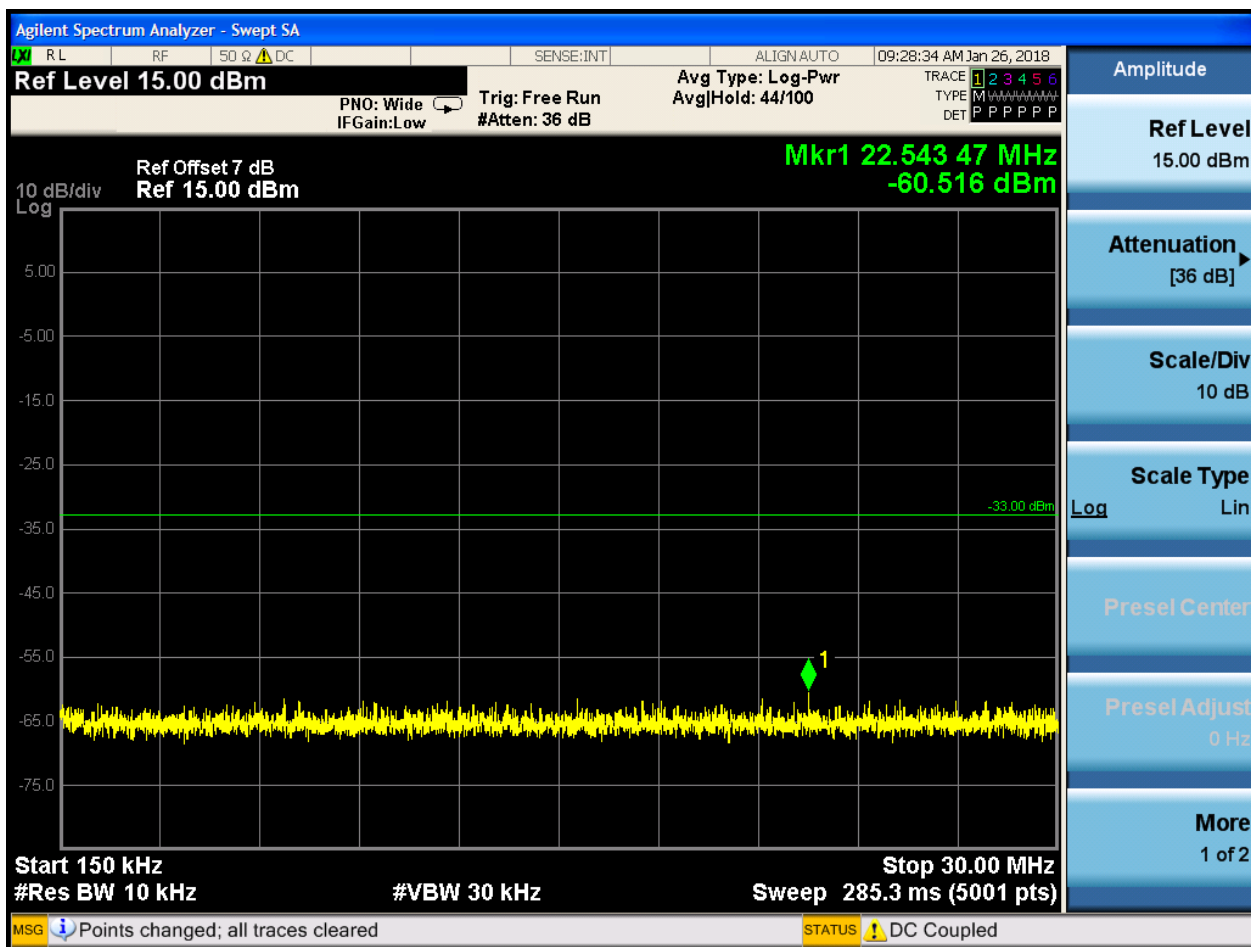
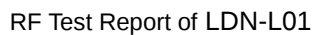


6.1.2 Test Band = WCDMA1900

6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH

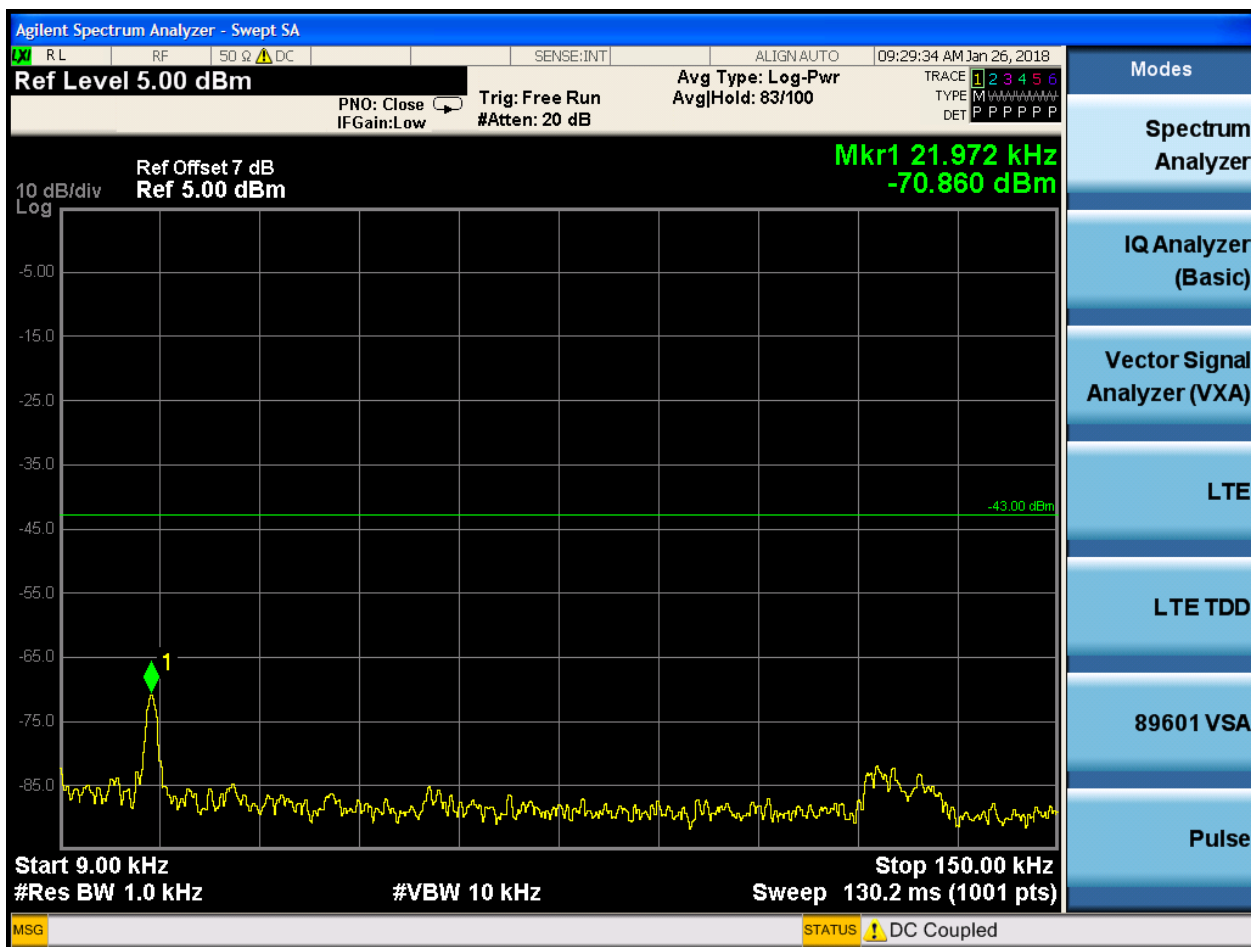


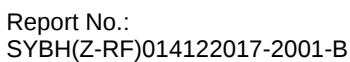
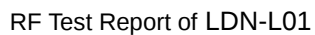






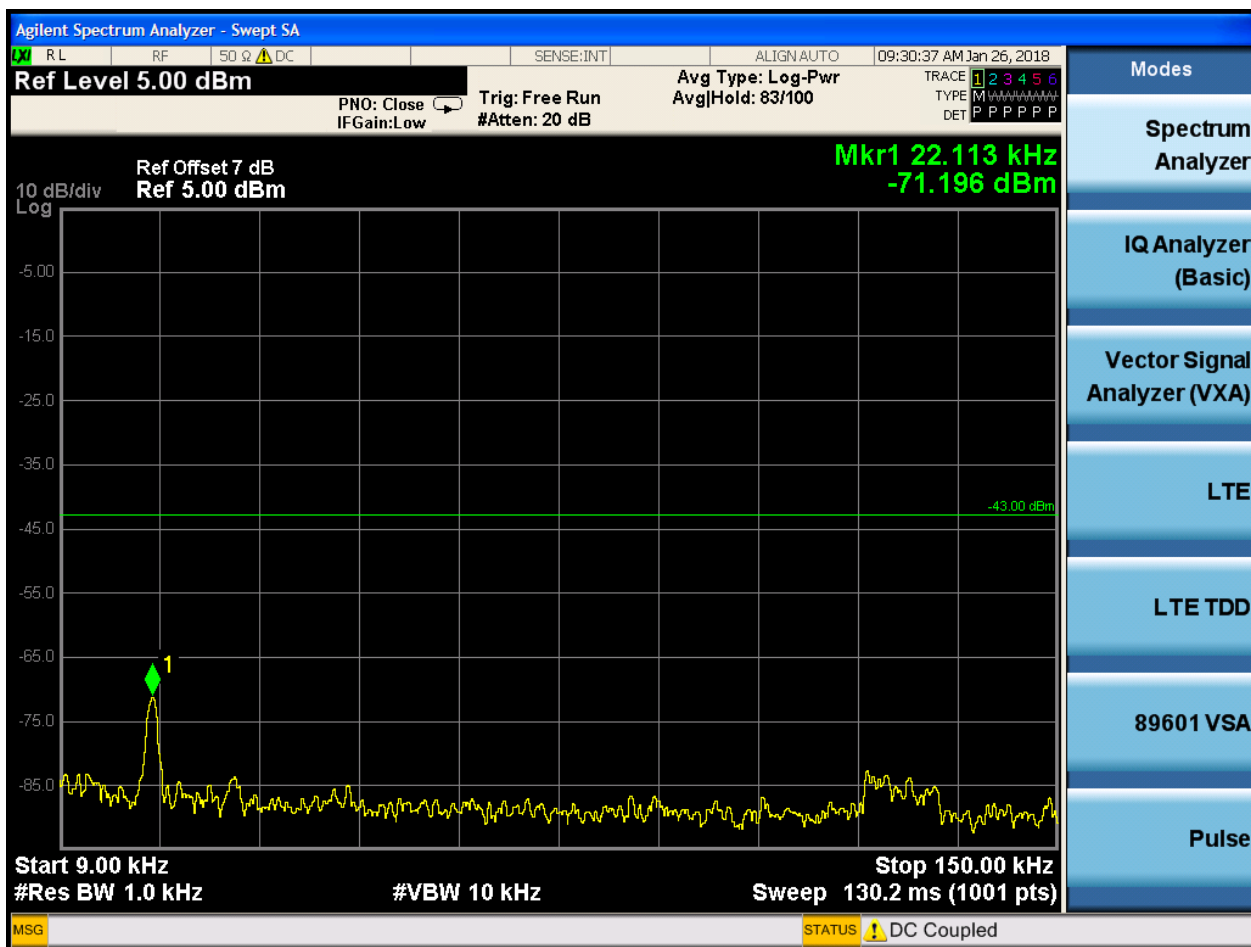
6.1.2.1.2 Test Channel = MCH

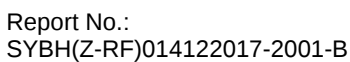


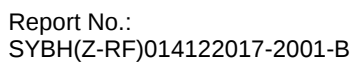
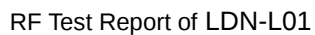




6.1.2.1.3 Test Channel = HCH







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

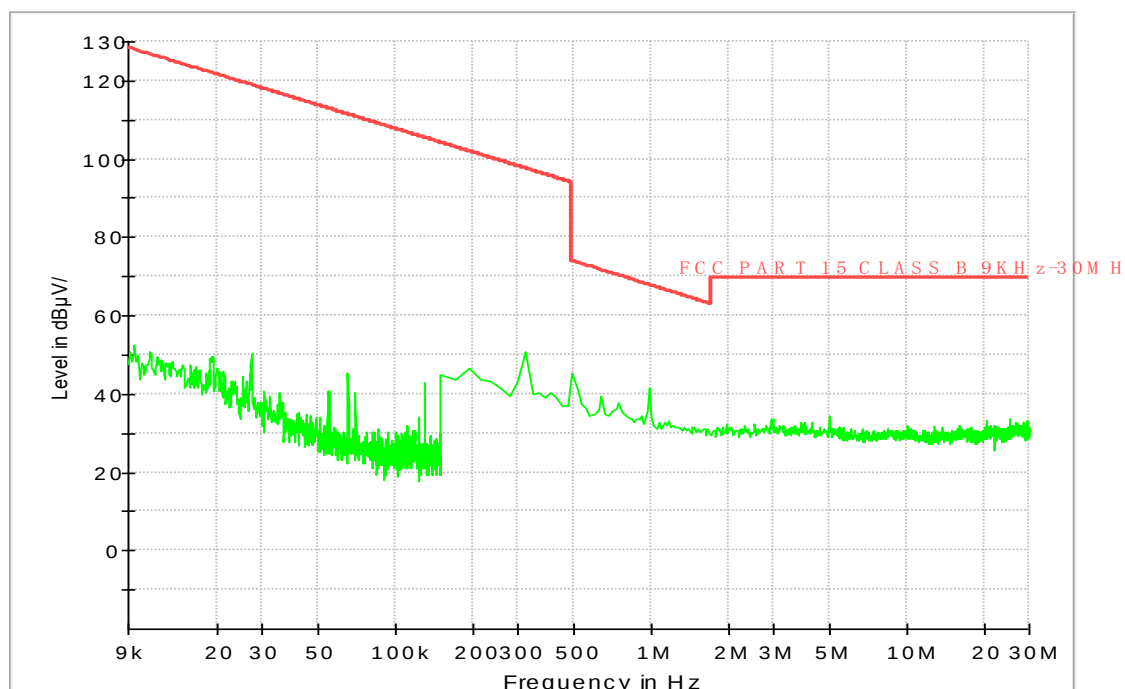
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

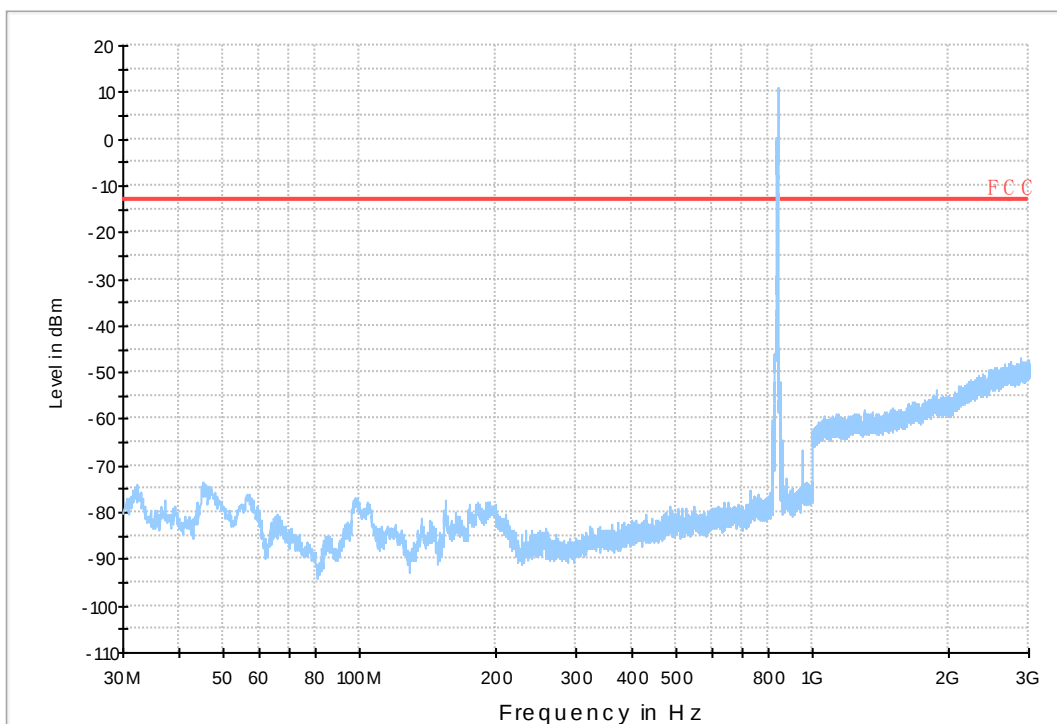
7.1 For UMTS

7.1.1 Test Band = WCDMA850

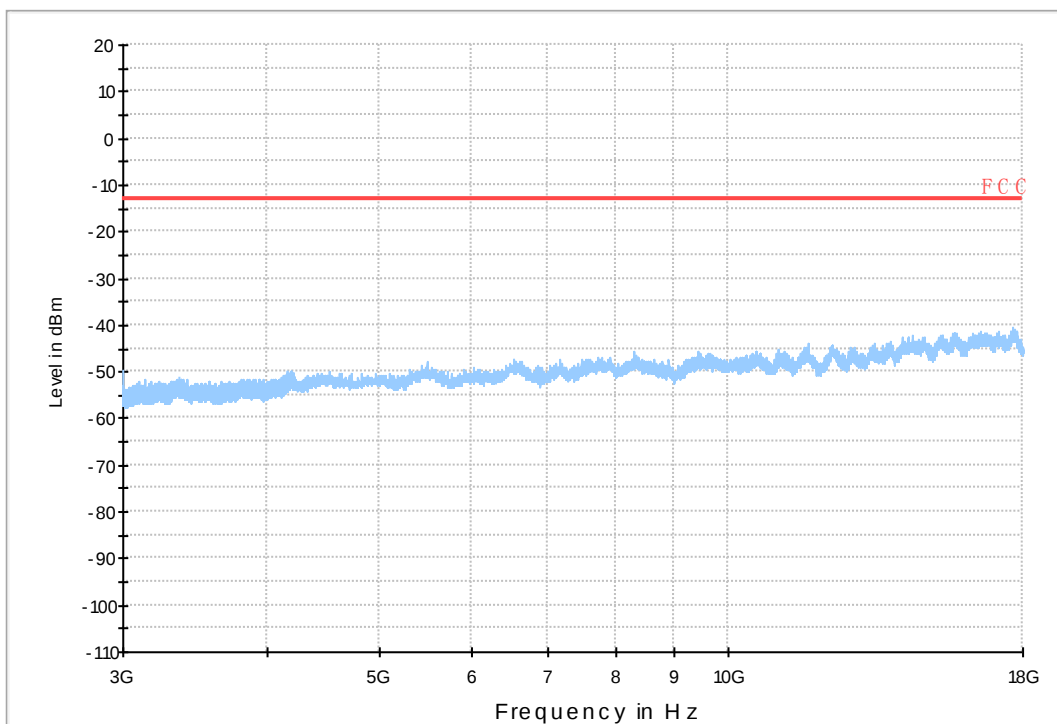
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

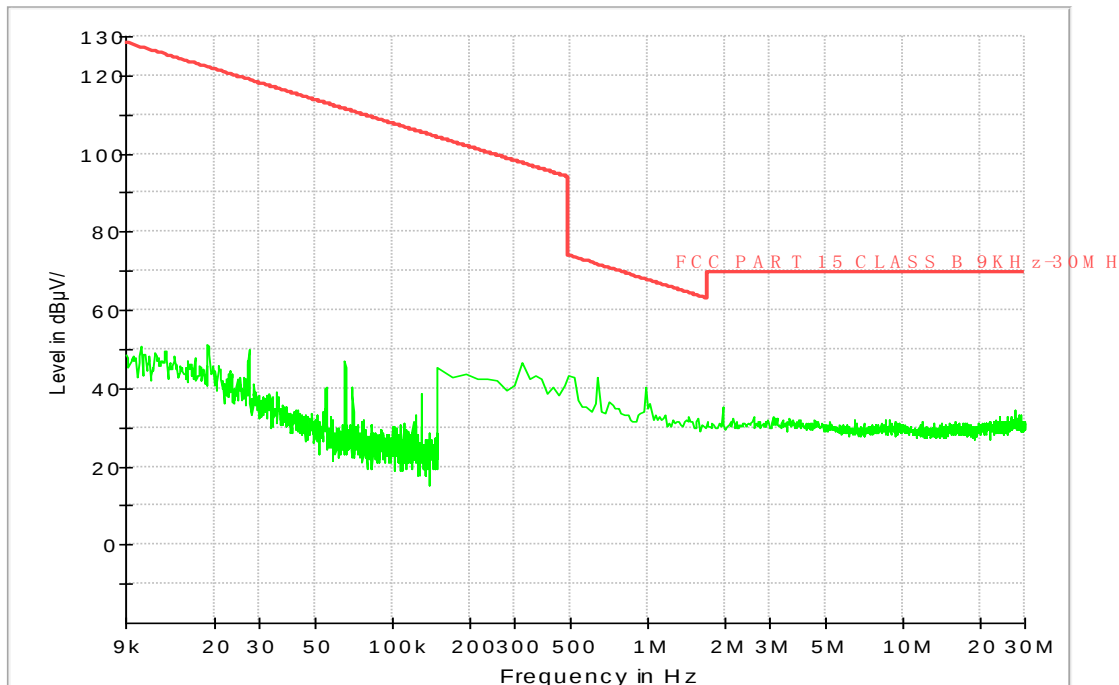


Copy of FCC PART22 W CDMA850_H

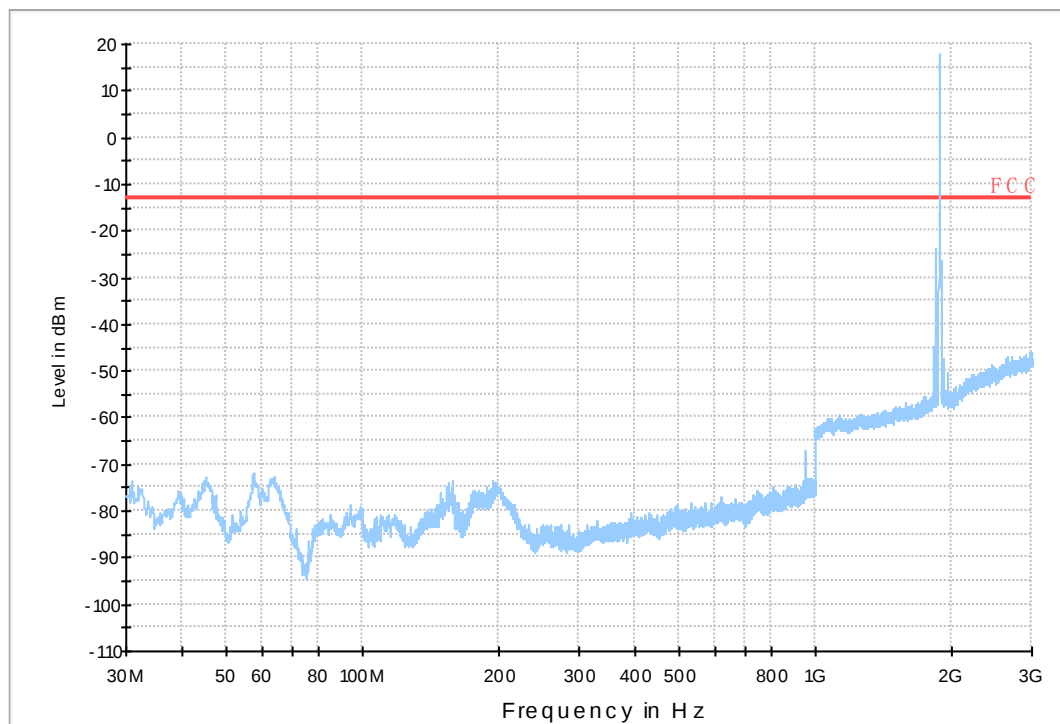


7.1.2 Test Band = WCDMA1900

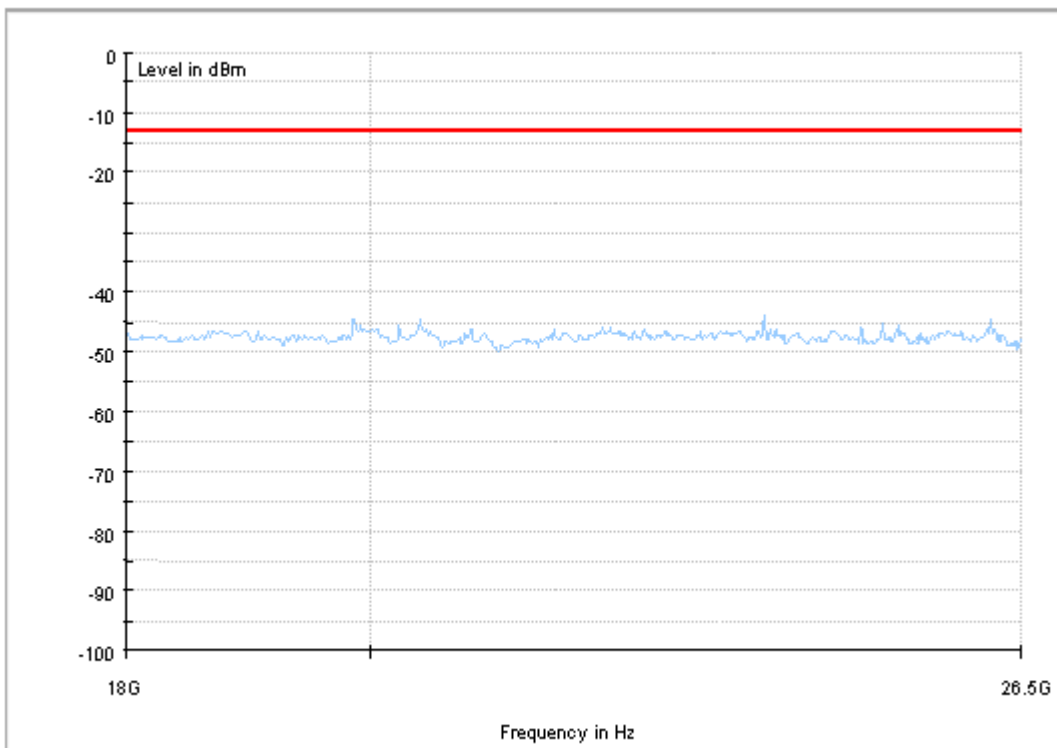
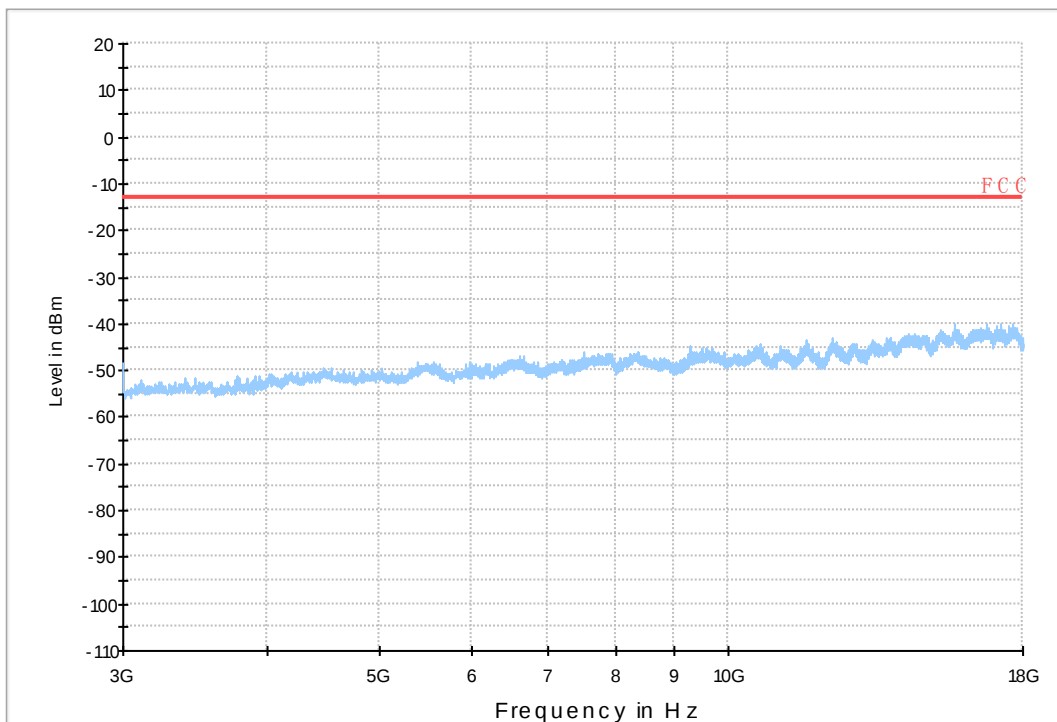
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART24 W CDMA1900_L



Copy of FCC PART24 W CDMA1900_H



8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1Frequency 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	0.24	0.00029	PASS
				VN	0.58	0.0007	PASS
				VH	2.09	0.00253	PASS
		MCH	TN	VL	0.84	0.001	PASS
				VN	-3.25	-0.00389	PASS
				VH	-3.05	-0.00365	PASS
		HCH	TN	VL	-0.14	-0.00017	PASS
				VN	-1.31	-0.00155	PASS
				VH	0.63	0.00074	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-0.38	-0.00021	PASS
				VN	2.44	0.00132	PASS
				VH	1.74	0.00094	PASS
		MCH	TN	VL	-3.10	-0.00165	PASS
				VN	-0.02	-0.00001	PASS
				VH	-0.96	-0.00051	PASS
		HCH	TN	VL	-4.78	-0.00251	PASS
				VN	-6.48	-0.0034	PASS
				VH	-2.91	-0.00153	PASS

8.1.2Frequency 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	0.17	0.00021	PASS
				-20	-1.68	-0.00203	PASS
				-10	1.25	0.00151	PASS
				0	3.28	0.00397	PASS
				10	1.16	0.0014	PASS
				20	0.96	0.00116	PASS
				30	0.58	0.0007	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				40	1.40	0.00169	PASS
				50	-2.06	-0.00249	PASS
		MCH	VN	-30	-1.40	-0.00167	PASS
				-20	-2.52	-0.00301	PASS
				-10	-0.38	-0.00045	PASS
				0	-1.05	-0.00126	PASS
				10	0.75	0.0009	PASS
				20	-1.85	-0.00221	PASS
				30	1.65	0.00197	PASS
				40	-0.05	-0.00006	PASS
				50	1.14	0.00136	PASS
		HCH	VN	-30	-7.10	-0.00839	PASS
				-20	-1.50	-0.00177	PASS
				-10	-5.66	-0.00669	PASS
				0	-1.86	-0.0022	PASS
				10	-1.85	-0.00219	PASS
				20	-1.36	-0.00161	PASS
				30	-1.40	-0.00165	PASS
				40	-3.69	-0.00436	PASS
				50	0.06	0.00007	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	1.07	0.00058	PASS
				-20	1.24	0.00067	PASS
				-10	4.56	0.00246	PASS
				0	3.07	0.00166	PASS
				10	1.21	0.00065	PASS
				20	2.38	0.00128	PASS
				30	1.63	0.00088	PASS
				40	0.81	0.00044	PASS
				50	3.98	0.00215	PASS
		MCH	VN	-30	-3.40	-0.00181	PASS
				-20	0.20	0.00011	PASS
				-10	0.05	0.00003	PASS
				0	0.08	0.00004	PASS
				10	-3.30	-0.00176	PASS
				20	0.29	0.00015	PASS
				30	-2.33	-0.00124	PASS
				40	-1.83	-0.00097	PASS
				50	-3.19	-0.0017	PASS
		HCH	VN	-30	-4.14	-0.00217	PASS
				-20	-8.82	-0.00462	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-10	-7.29	-0.00382	PASS
				0	-6.67	-0.0035	PASS
				10	-4.09	-0.00214	PASS
				20	-5.80	-0.00304	PASS
				30	-3.97	-0.00208	PASS
				40	-1.68	-0.00088	PASS
				50	-6.73	-0.00353	PASS

END