Appendix B

WCDMA Band 2&4&5

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1 Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	EIRP[dB]	Limit[dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	23.16	22.36	33	PASS
		MCH	23.04	22.24	33	PASS
		HCH	23.12	22.32	33	PASS
WCDMA1700	UMTS/TM1	LCH	22.72	21.72	30	PASS
		MCH	22.88	21.88	30	PASS
		HCH	22.99	21.99	30	PASS

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

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBi]

b: SGP=Signal Generator Level
c: RBW > emission bandwidth, VBW > 3 x RBW.
Detector: RMS

Test Band	Test Mode	Test Channel	Measured[dB]	ERP[dB]	Limit[dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	21.86	20.86	38.45	PASS
		MCH	21.96	20.96	38.45	PASS
		HCH	21.87	20.87	38.45	PASS

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

ERP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBd]

b: SGP=Signal Generator Level
c: RBW > emission bandwidth, VBW > 3 x RBW.
Detector: RMS

2 Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA1900	UMTS/TM1	LCH	2.14	13	PASS
		MCH	2.46	13	PASS
		HCH	2.29	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.06	13	PASS
		MCH	2.81	13	PASS
		HCH	2.29	13	PASS
WCDMA850	UMTS/TM1	LCH	2.90	13	PASS
		MCH	3.07	13	PASS
		HCH	3.19	13	PASS

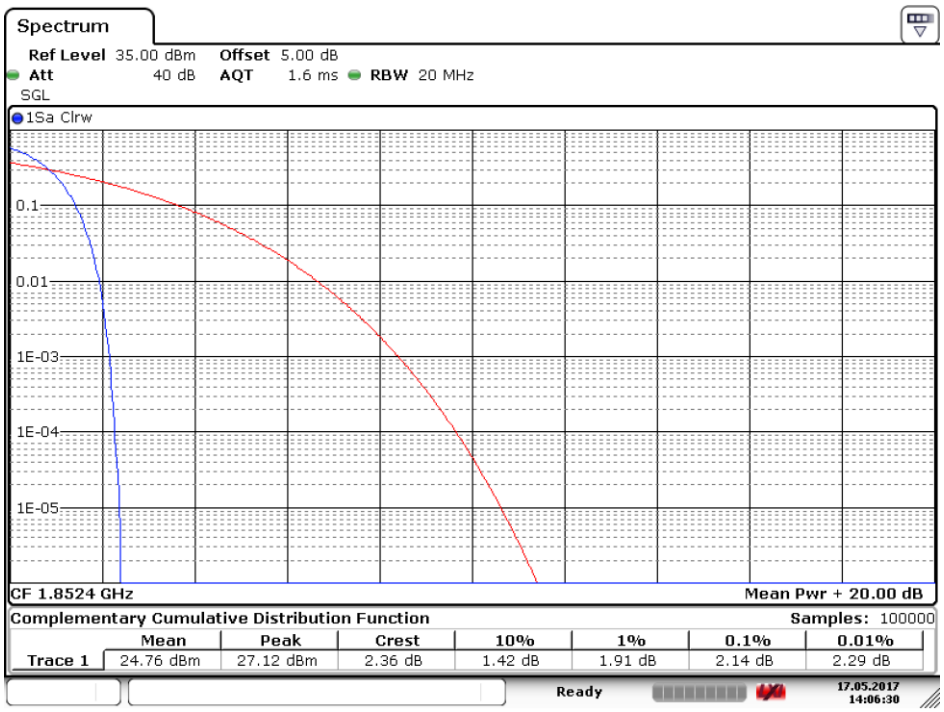
Part II - Test Plots

2.1 For WCDMA

2.1.1 Test Band = WCDMA 1900

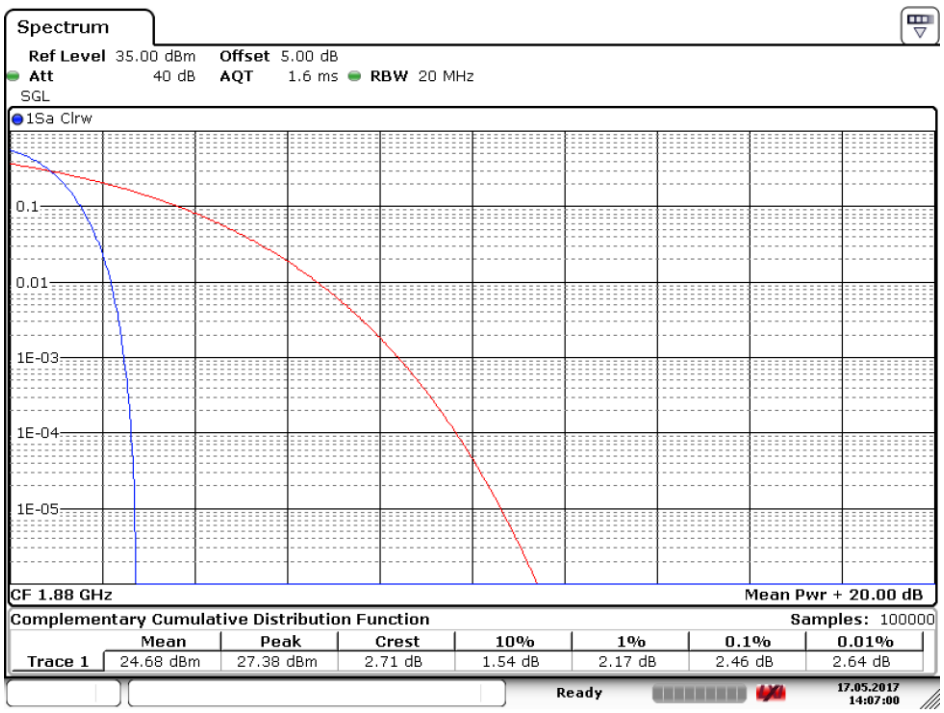
2.1.1.1 Test Mode = UMTS/TM1

2.1.1.1.1 Test Channel = LCH



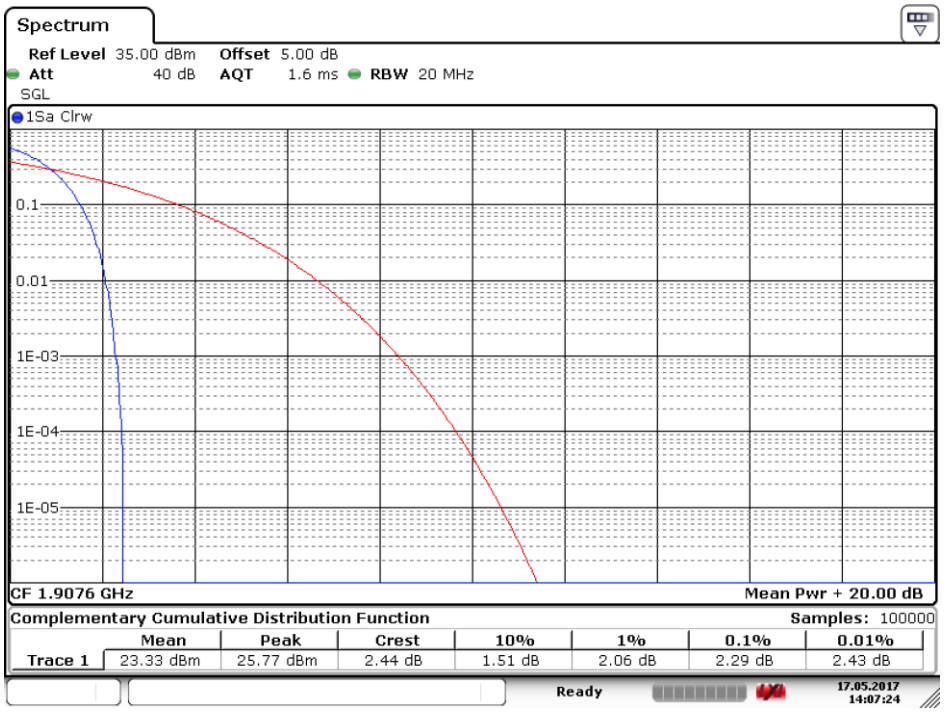
Date: 17.MAY.2017 14:06:31

2.1.1.1.2 Test Channel = MCH



Date: 17.MAY.2017 14:07:01

2.1.1.1.3 Test Channel = HCH

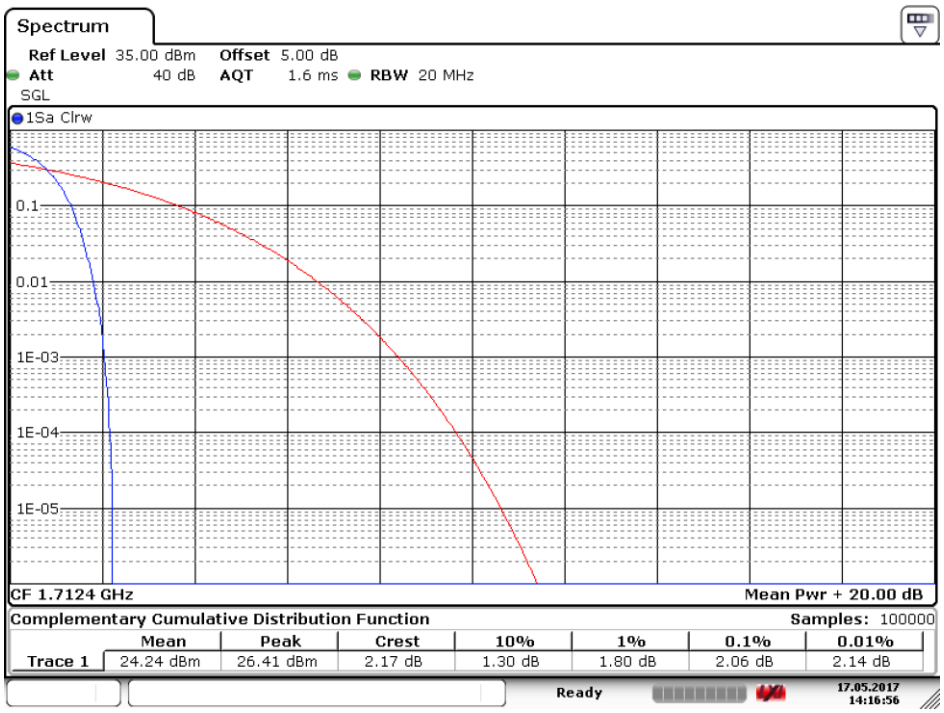


Date: 17.MAY.2017 14:07:24

2.1.2 Test Band = WCDMA 1700

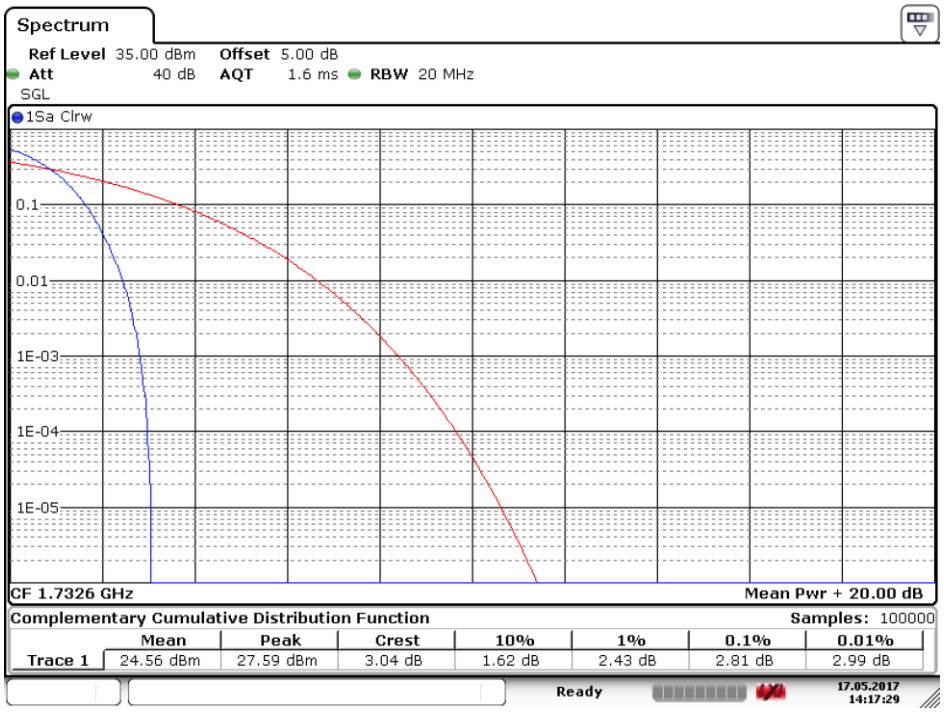
2.1.2.1 Test Mode = UMTS/TM1

2.1.2.1.1 Test Channel = LCH



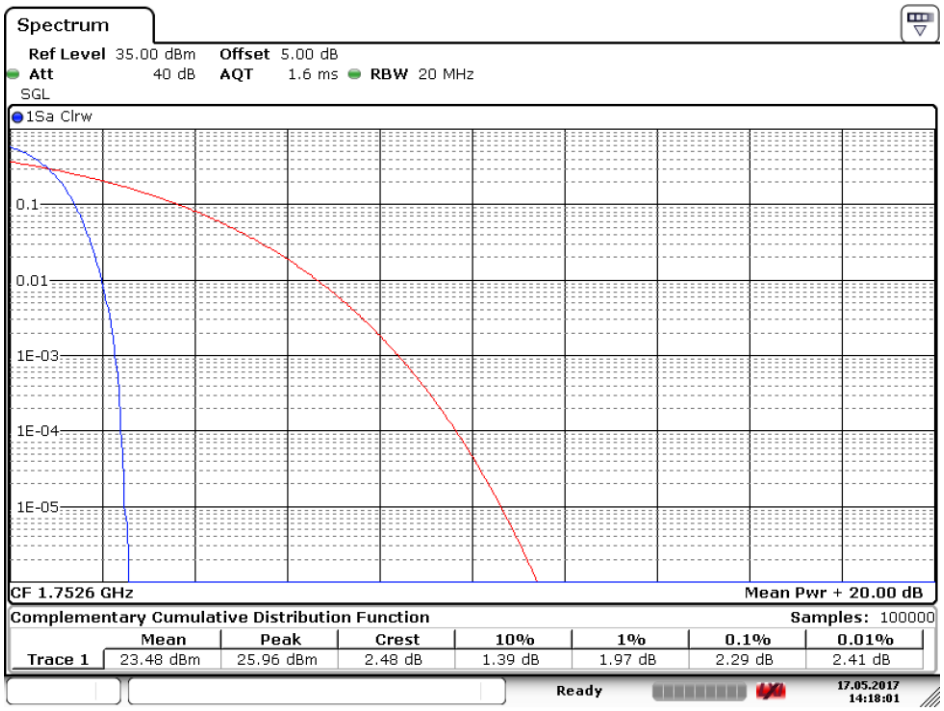
Date: 17.MAY.2017 14:16:57

2.1.2.1.2 Test Channel = MCH



Date: 17.MAY.2017 14:17:29

2.1.2.1.3 Test Channel = HCH

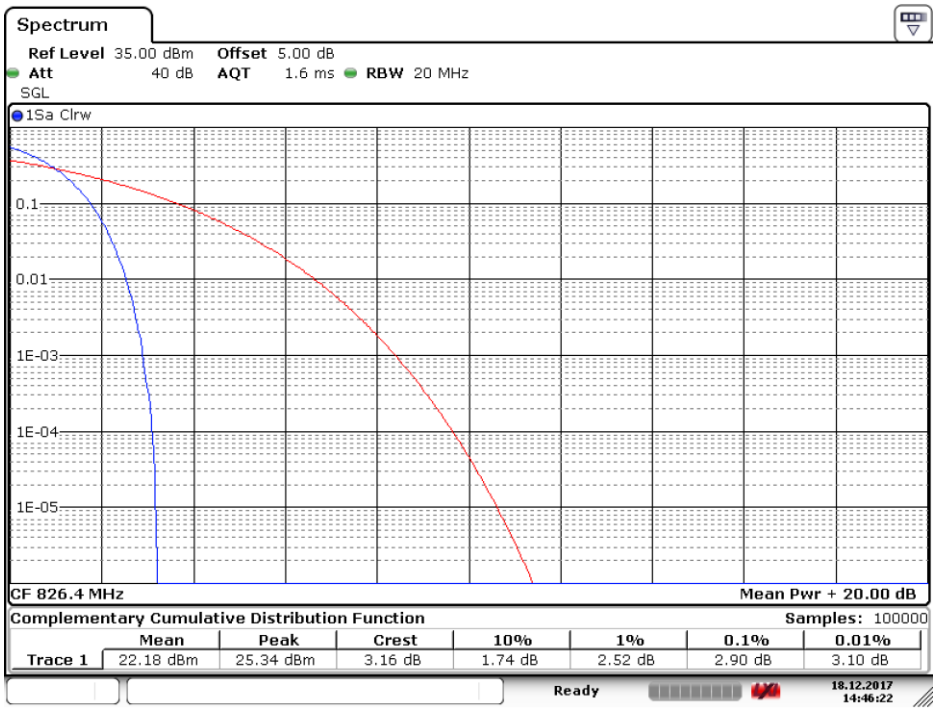


Date: 17.MAY.2017 14:18:02

2.1.3 Test Band = WCDMA 850

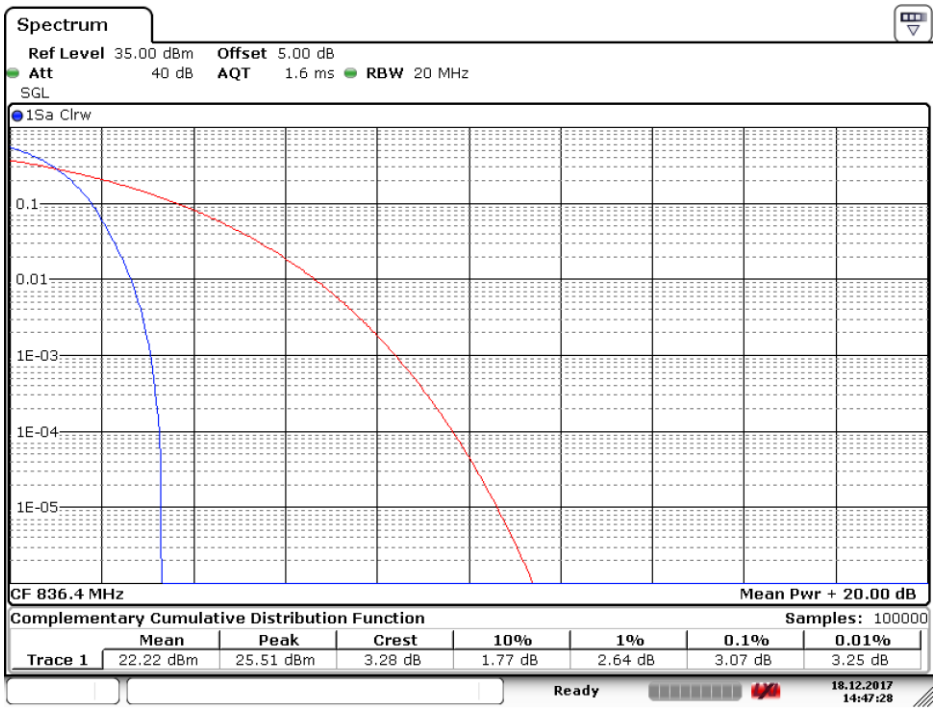
2.1.3.1 Test Mode = UMTS/TM1

2.1.3.1.1 Test Channel = LCH



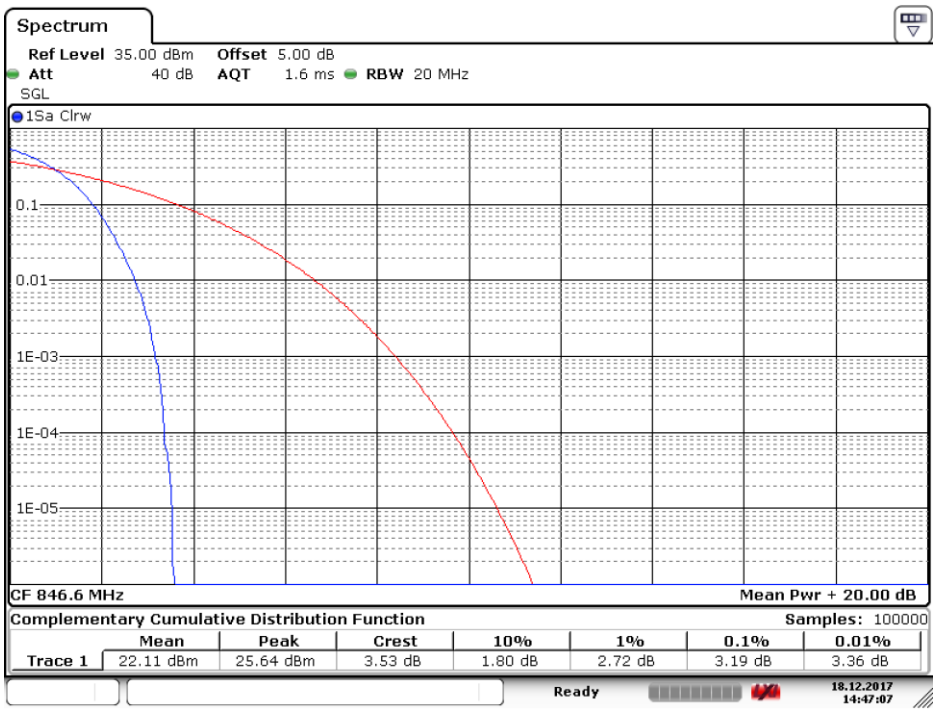
Date: 18.DEC.2017 14:46:22

2.1.3.1.2 Test Channel = MCH



Date: 18.DEC.2017 14:47:28

2.1.3.1.3 Test Channel = HCH



Date: 18.DEC.2017 14:47:08

3 Modulation Characteristics

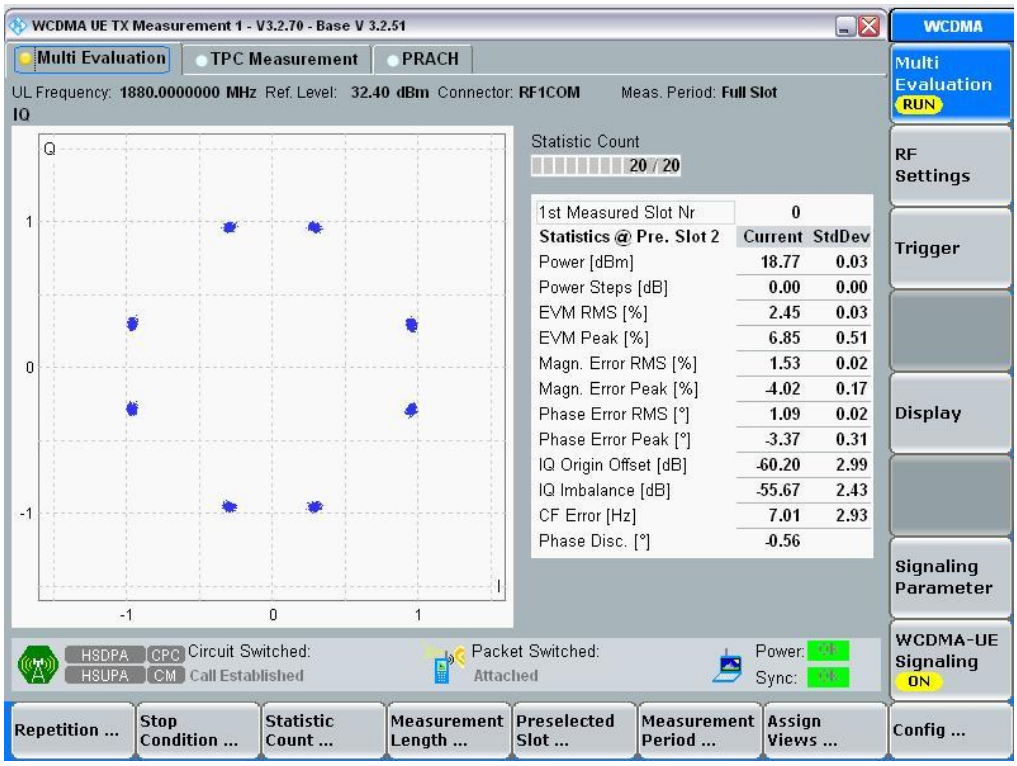
Part I - Test Plots

3.1 For WCDMA

3.1.1 Test Band = WCDMA 1900

3.1.1.1 Test Mode = UMTS/TM1

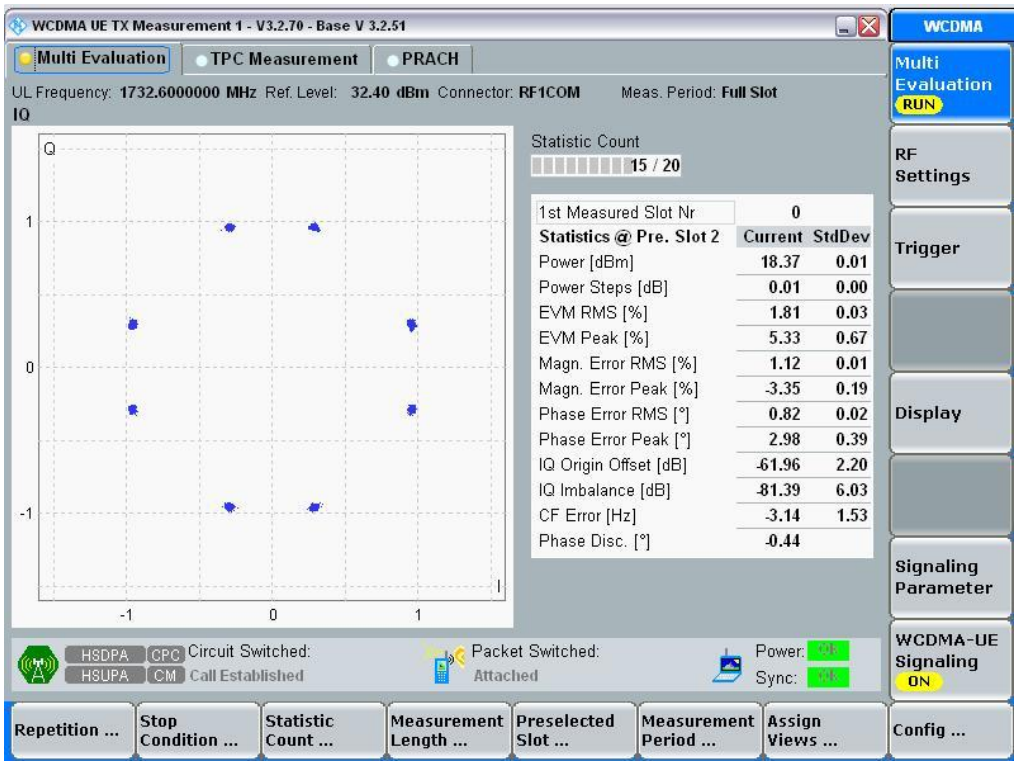
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA 1700

3.1.2.1 Test Mode = UMTS /TM1

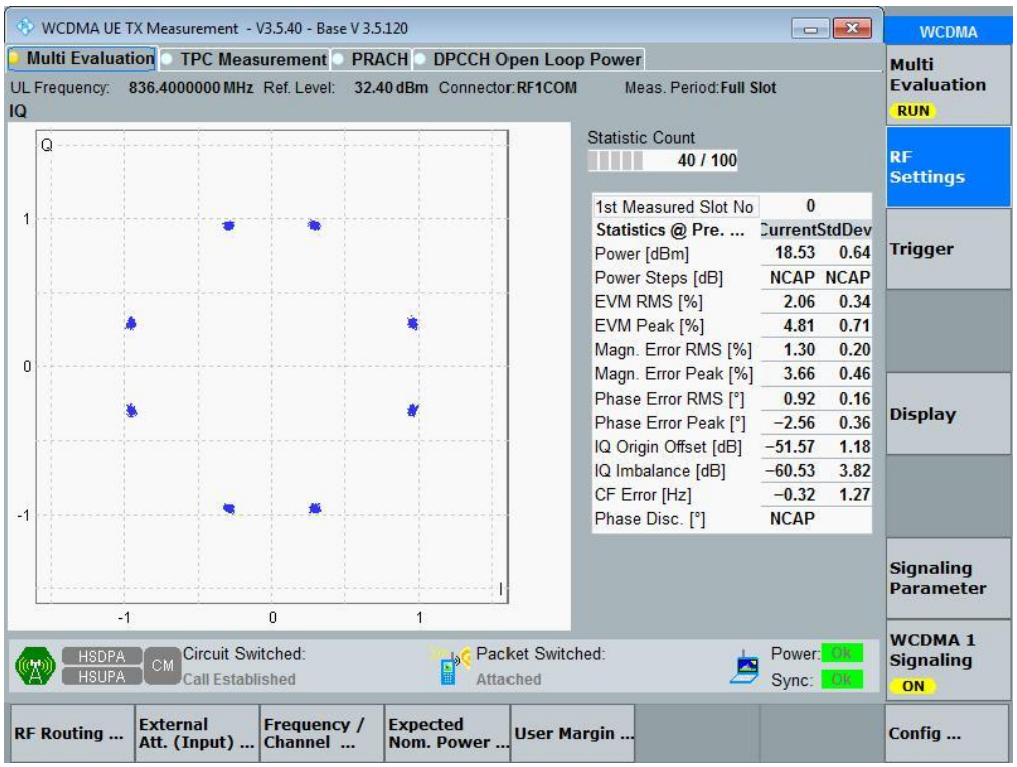
3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA 850

3.1.3.1 Test Mode = UMTS /TM1

3.1.3.1.1 Test Channel = MCH



4 Bandwidth

Part I - Test Results

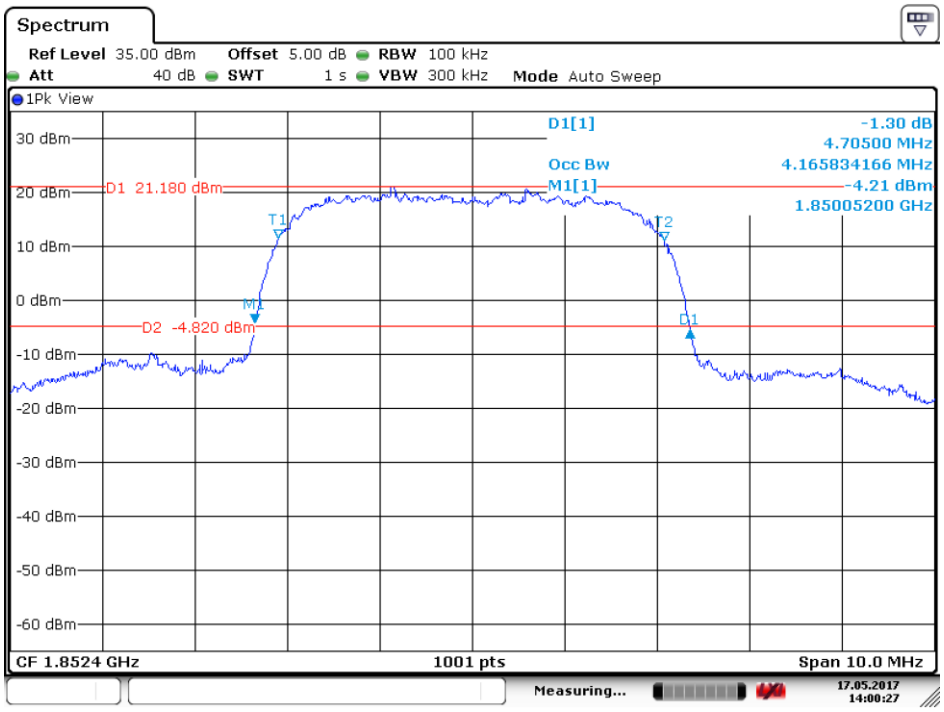
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA1900	UMTS/TM1	LCH	4.17	4.71	PASS
		MCH	4.17	4.70	PASS
		HCH	4.17	4.71	PASS
WCDMA1700	UMTS/TM1	LCH	4.19	4.72	PASS
		MCH	4.15	4.68	PASS
		HCH	4.17	4.71	PASS
WCDMA850	UMTS/TM1	LCH	4.14	4.64	PASS
		MCH	4.14	4.64	PASS
		HCH	4,16	4.66	PASS

4.1 For WCDMA

4.1.1 Test Band = WCDMA 1900

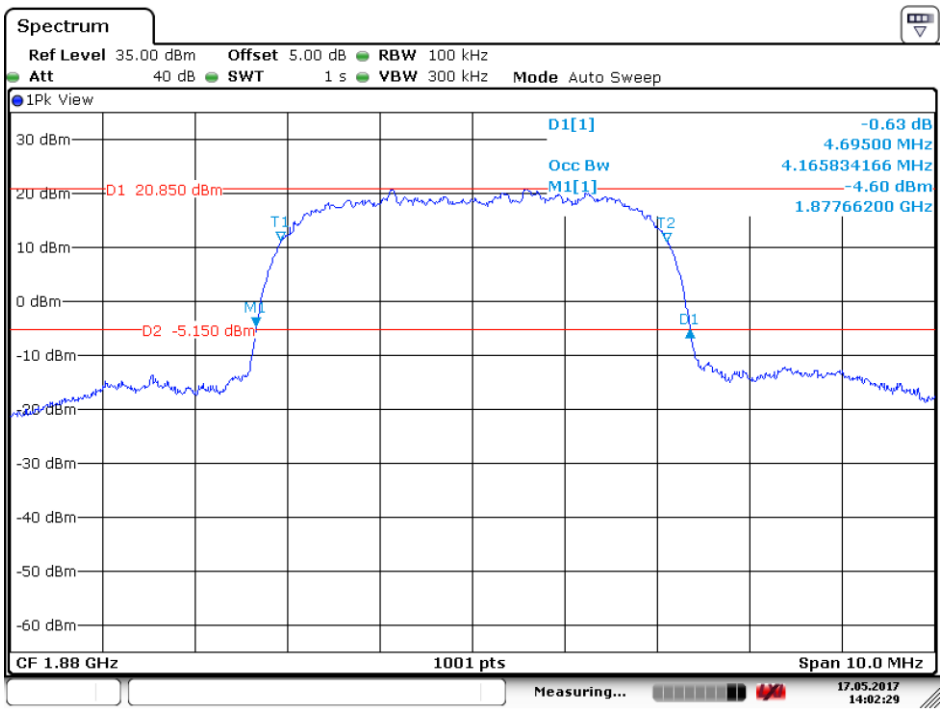
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



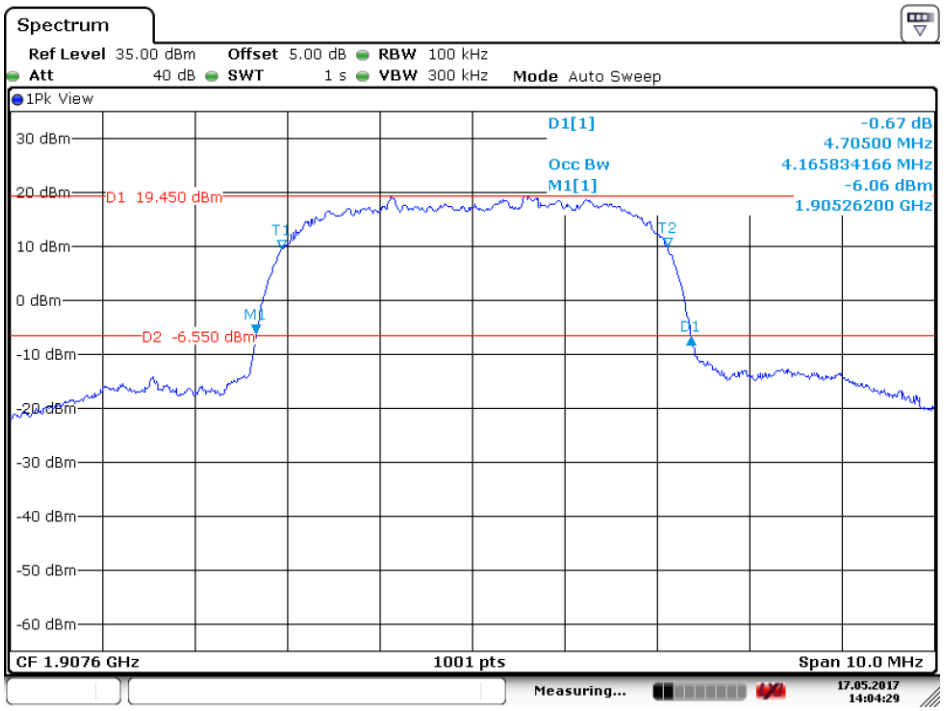
Date: 17.MAY.2017 14:00:27

4.1.1.1.2 Test Channel = MCH



Date: 17.MAY.2017 14:02:30

4.1.1.1.3 Test Channel = HCH

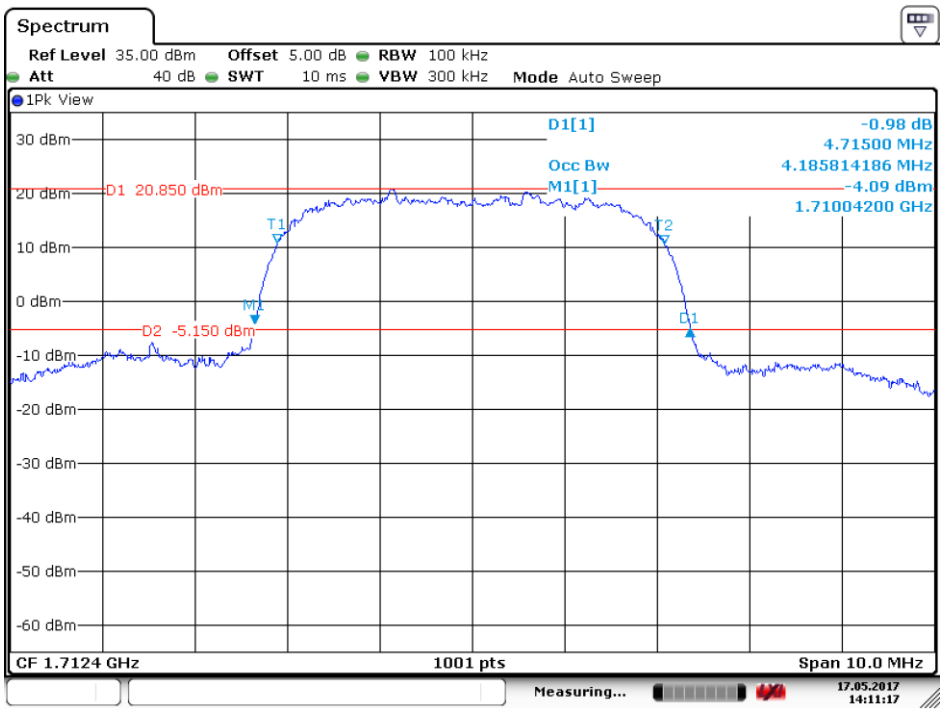


Date: 17.MAY.2017 14:04:29

4.1.2 Test Band = WCDMA 1700

4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



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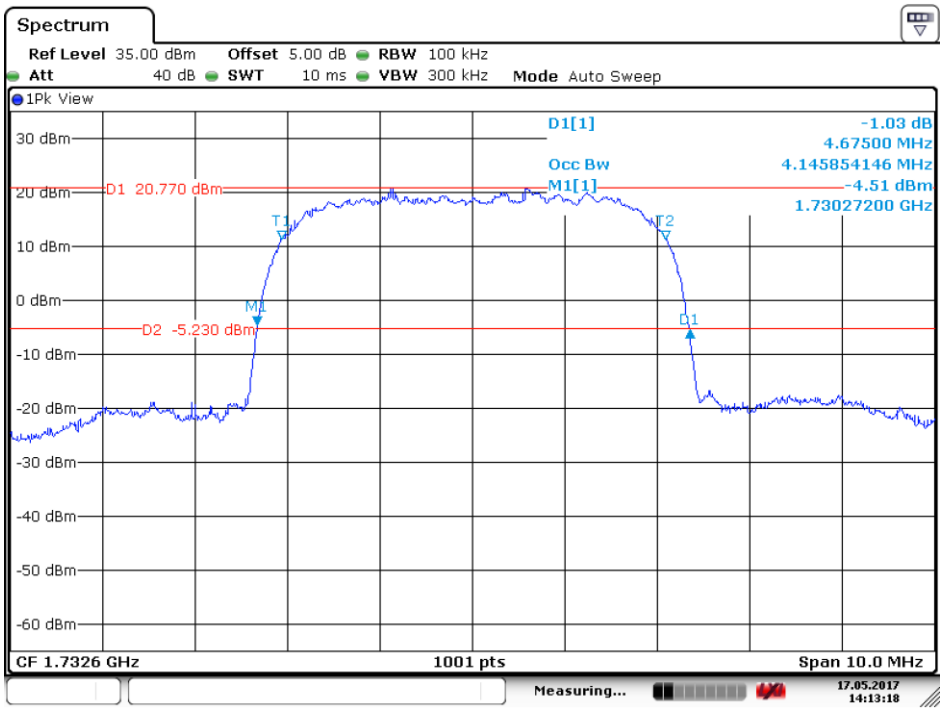
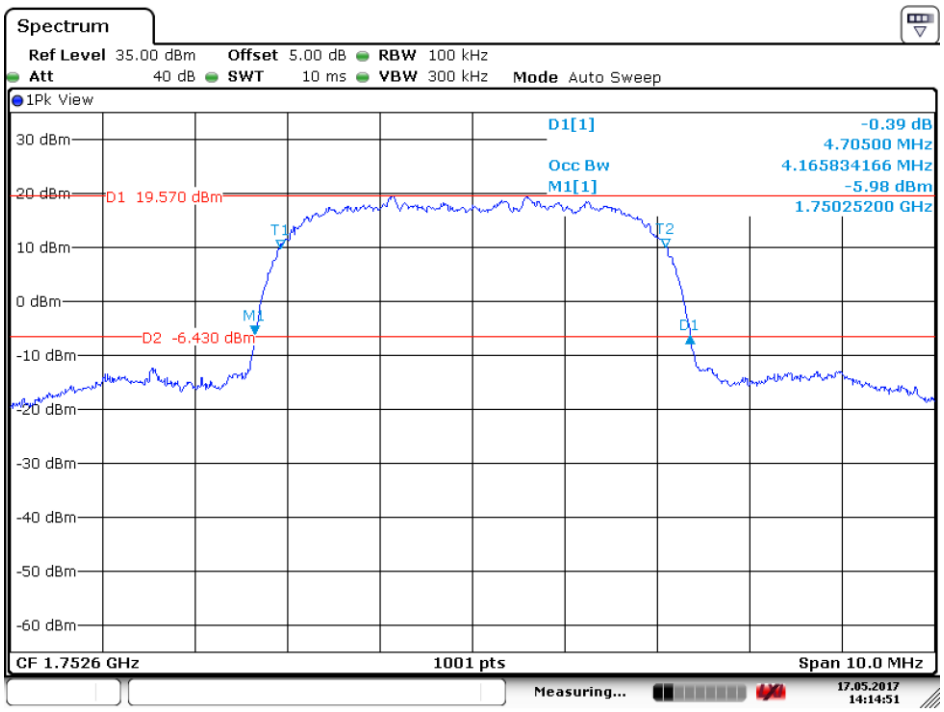
4.1.2.1.2 Test Channel = MCH



Date: 17.MAY.2017 14:13:19

4.1.2.1.3 Test Channel = HCH

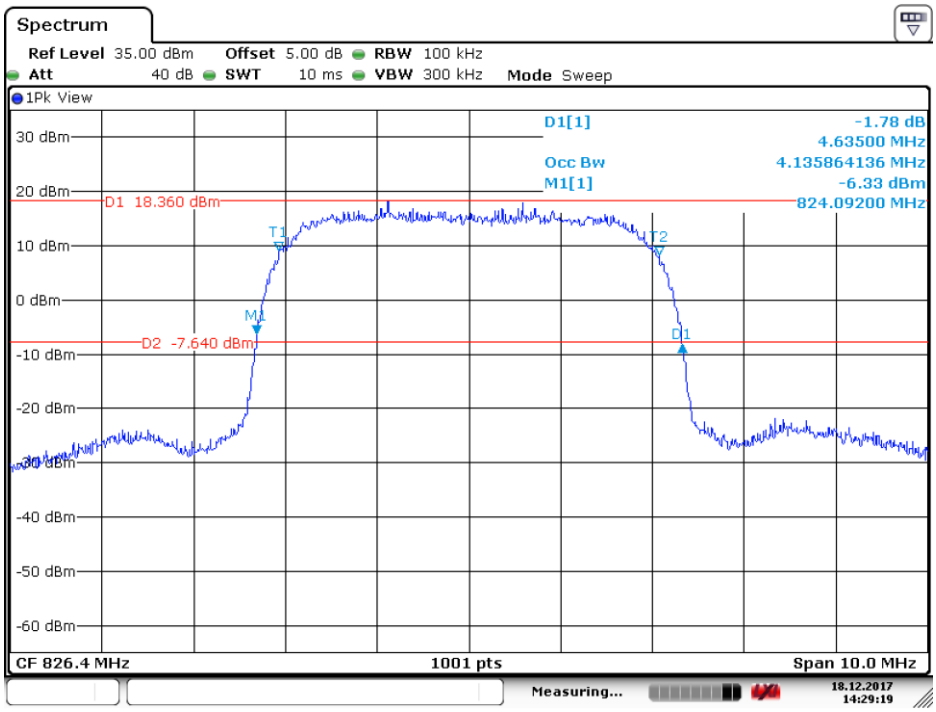


Date: 17.MAY.2017 14:14:51

4.1.3 Test Band = WCDMA 850

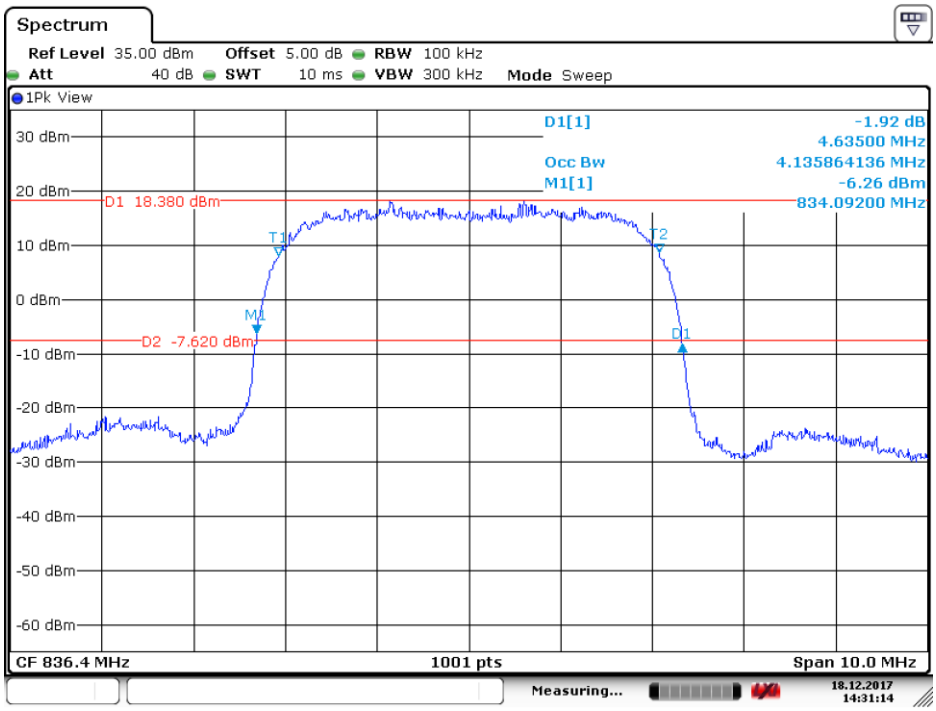
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



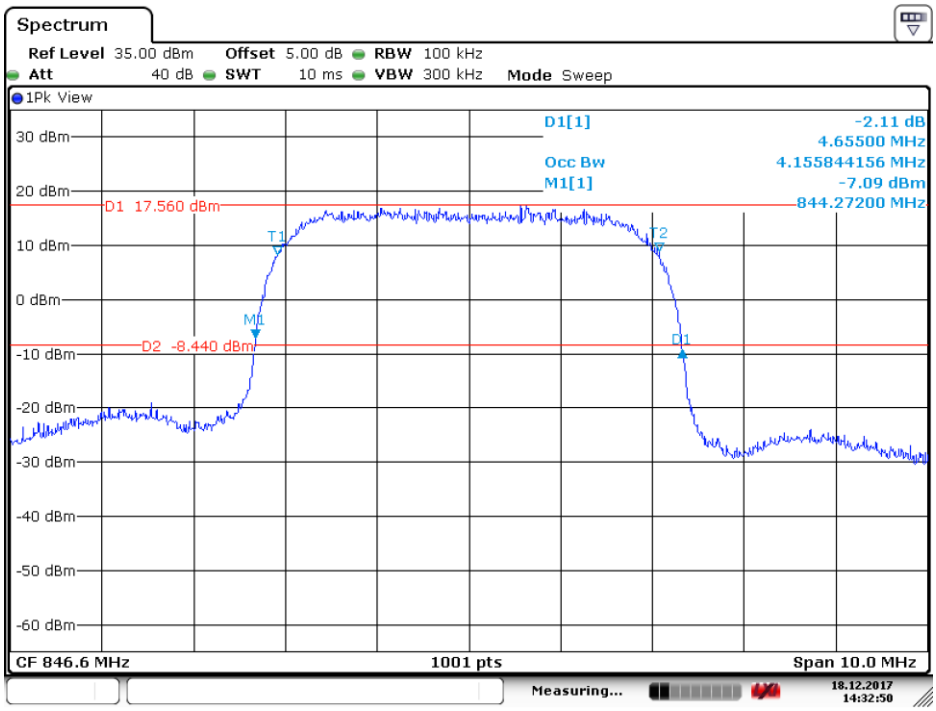
Date: 18.DEC.2017 14:29:19

4.1.3.1.2 Test Channel = MCH



Date: 18.DEC.2017 14:31:15

4.1.3.1.3 Test Channel = HCH



Date: 18.DEC.2017 14:32:50

5 Band Edges Compliance

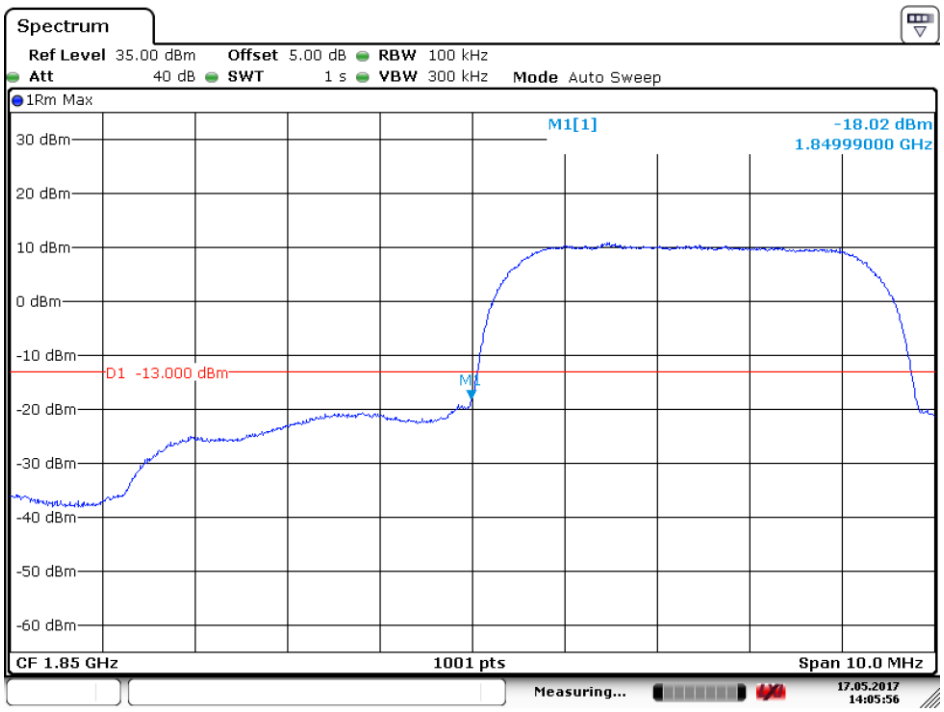
Part I - Test Plots

5.1 For WCDMA

5.1.1 Test Band = WCDMA 1900

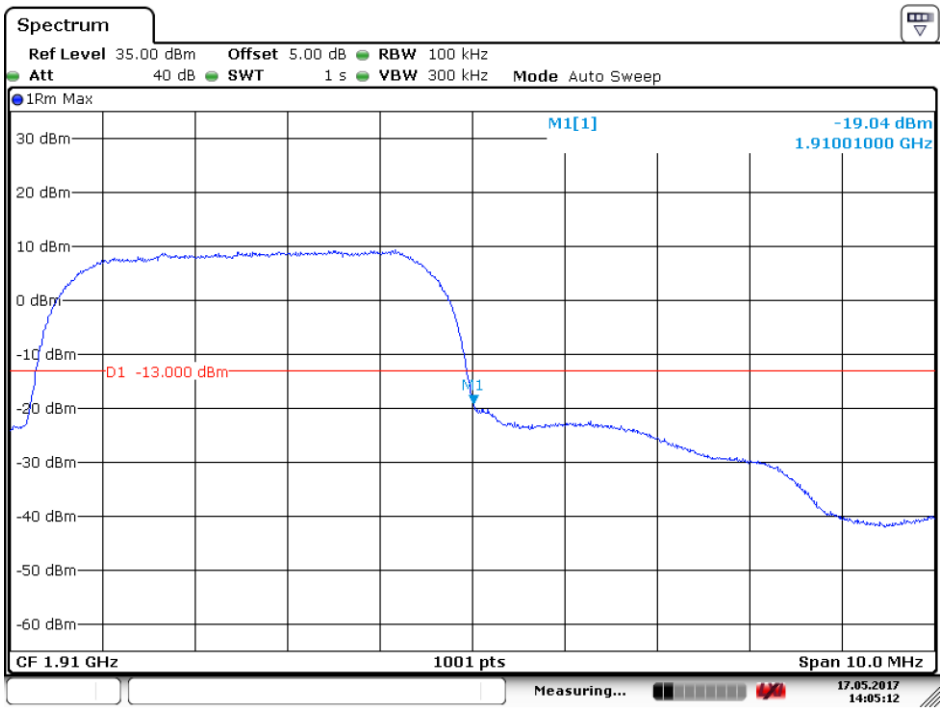
5.1.1.1 Test Mode = UMTS/TM1

5.1.1.1.1 Test Channel = LCH



Date: 17.MAY.2017 14:05:56

5.1.1.1.2 Test Channel = HCH

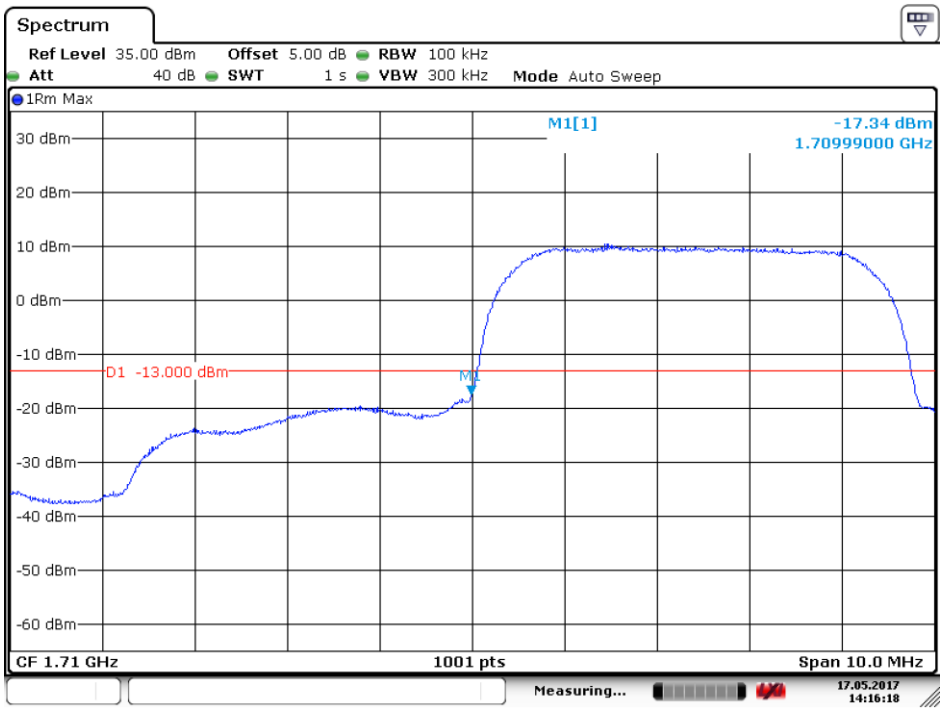


Date: 17.MAY.2017 14:05:13

5.1.2 Test Band = WCDMA 1700

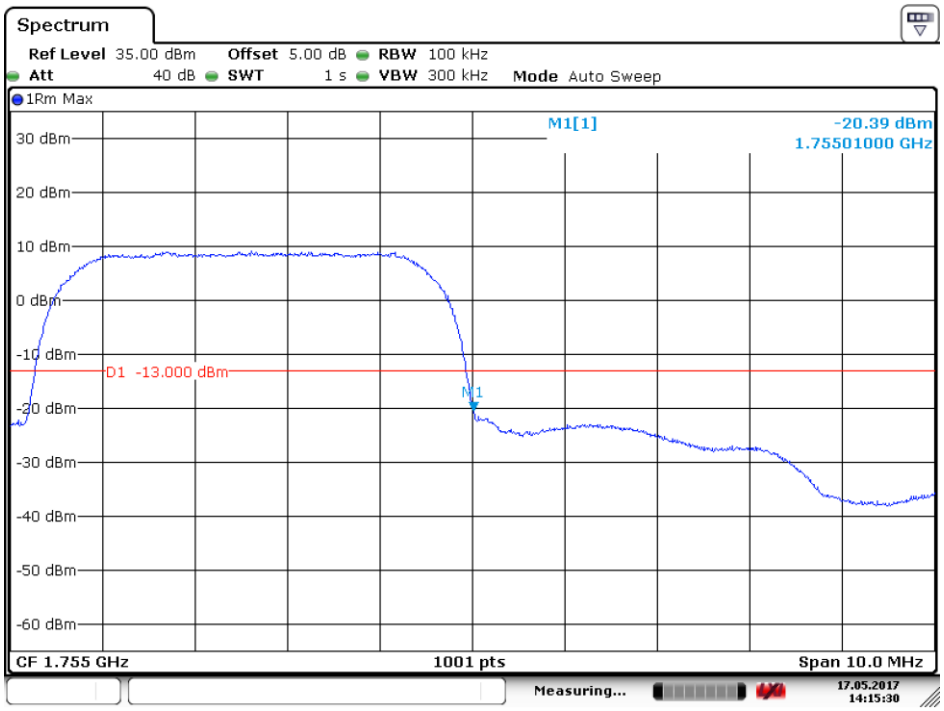
5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



Date: 17.MAY.2017 14:16:19

5.1.2.1.2 Test Channel = HCH

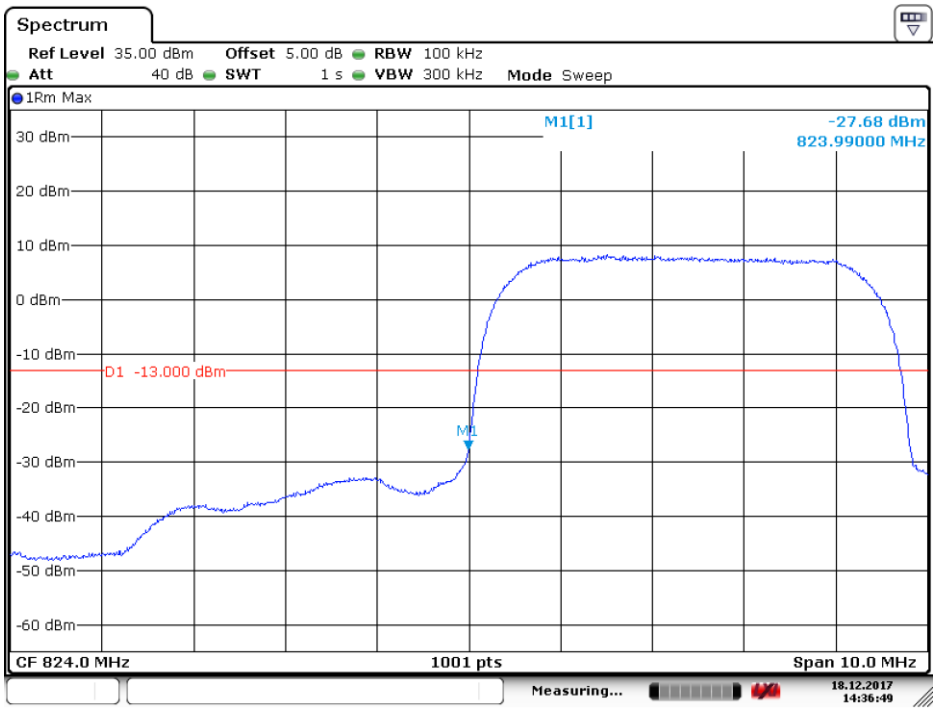


Date: 17.MAY.2017 14:15:31

5.1.3 Test Band = WCDMA 850

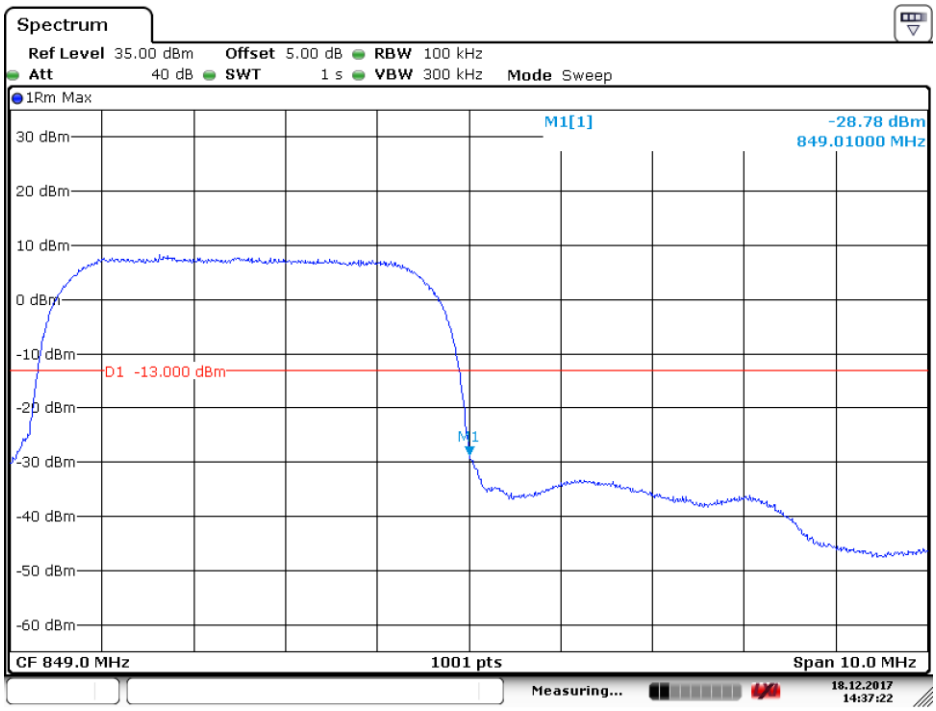
5.1.3.1 Test Mode = UMTS/TM1

5.1.3.1.1 Test Channel = LCH



Date: 18.DEC.2017 14:36:49

5.1.3.1.2 Test Channel = HCH



Date: 18.DEC.2017 14:37:23

6 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.

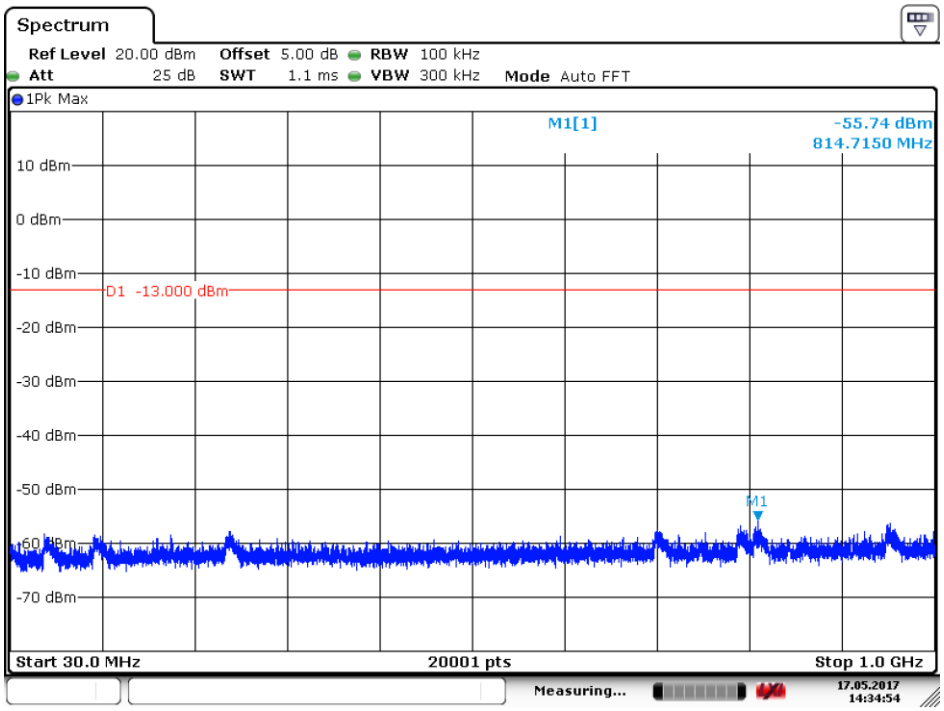
Part I - Test Plots

6.1 For WCDMA

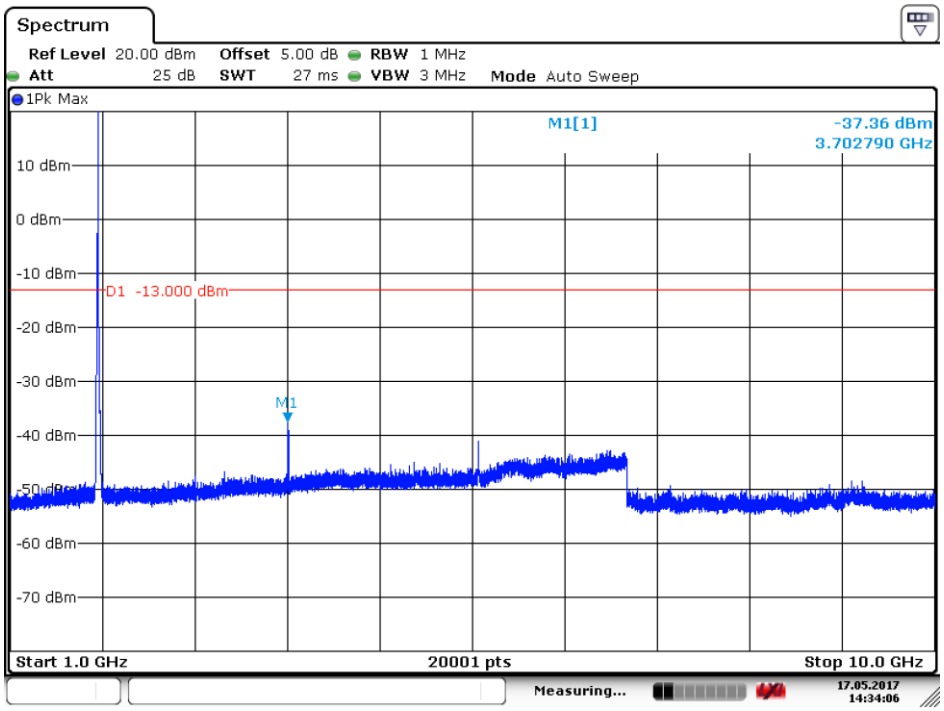
6.1.1 Test Band = WCDMA 1900

6.1.1.1 Test Mode = UMTS/TM1

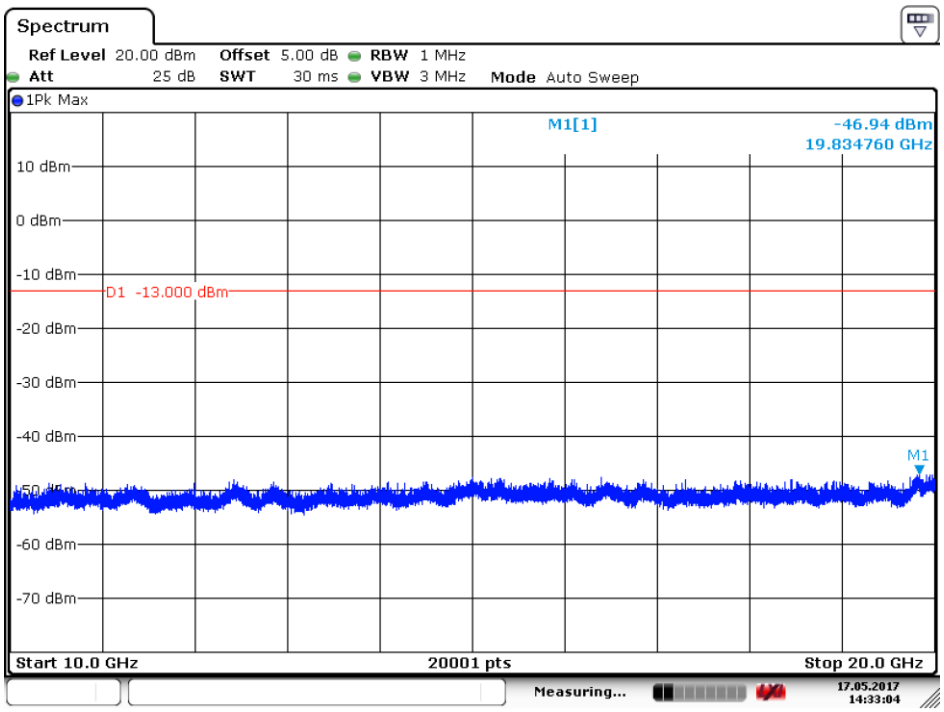
6.1.1.1.1 Test Channel = LCH



Date: 17.MAY.2017 14:34:55

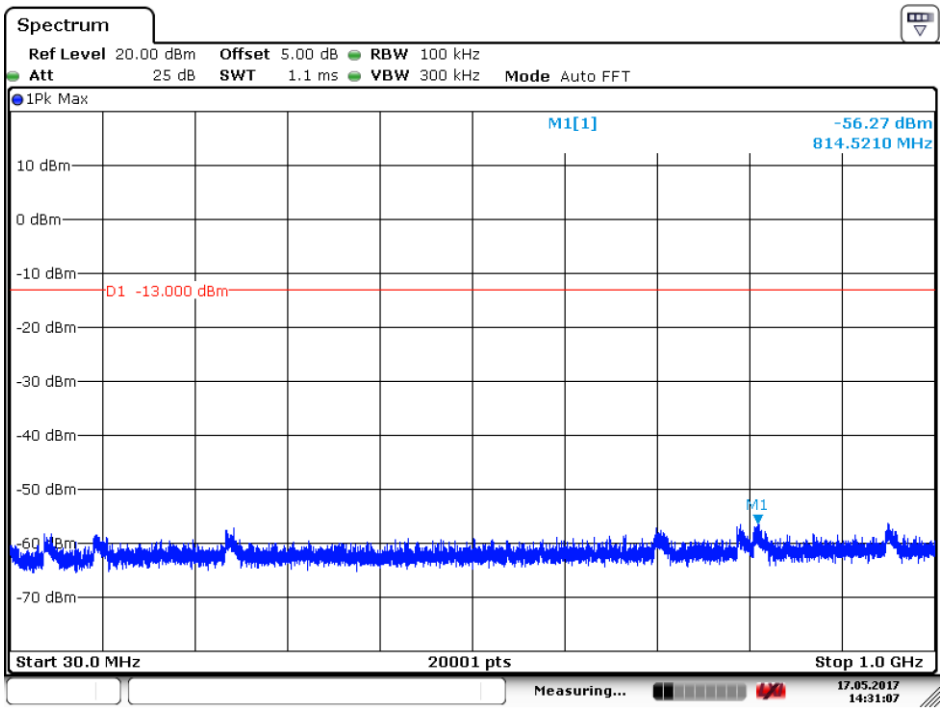


Date: 17.MAY.2017 14:34:06

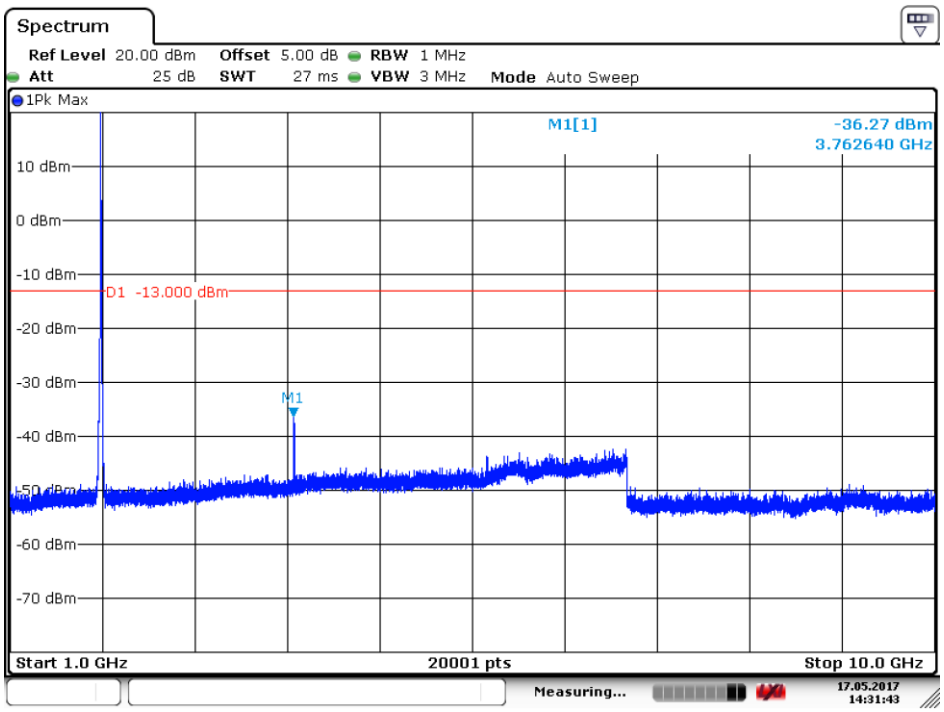


Date: 17.MAY.2017 14:33:04

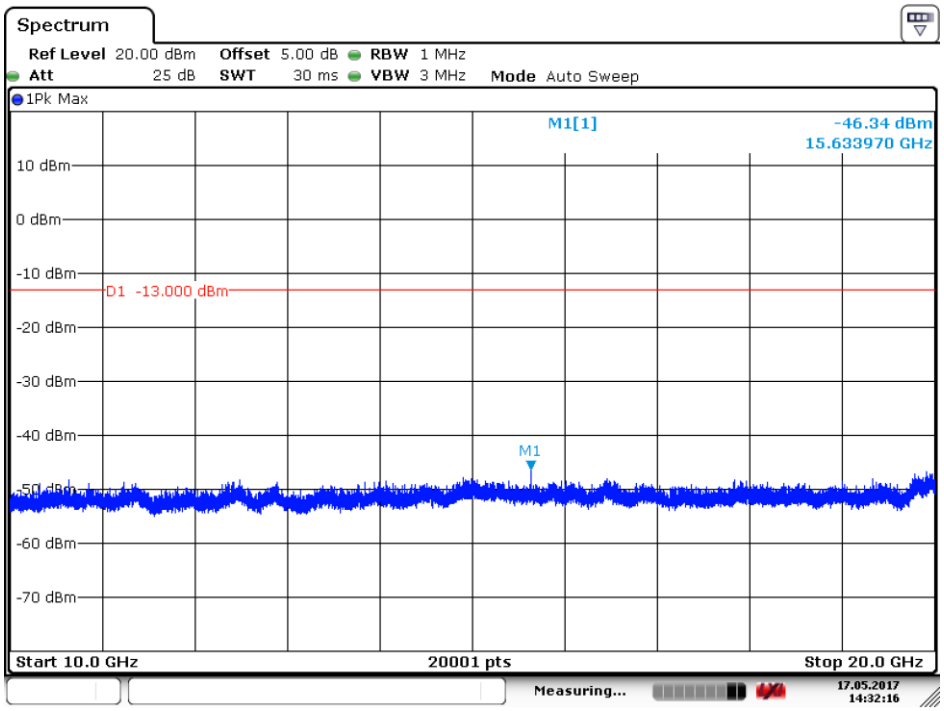
6.1.1.1.2 Test Channel = MCH



Date: 17.MAY.2017 14:31:08

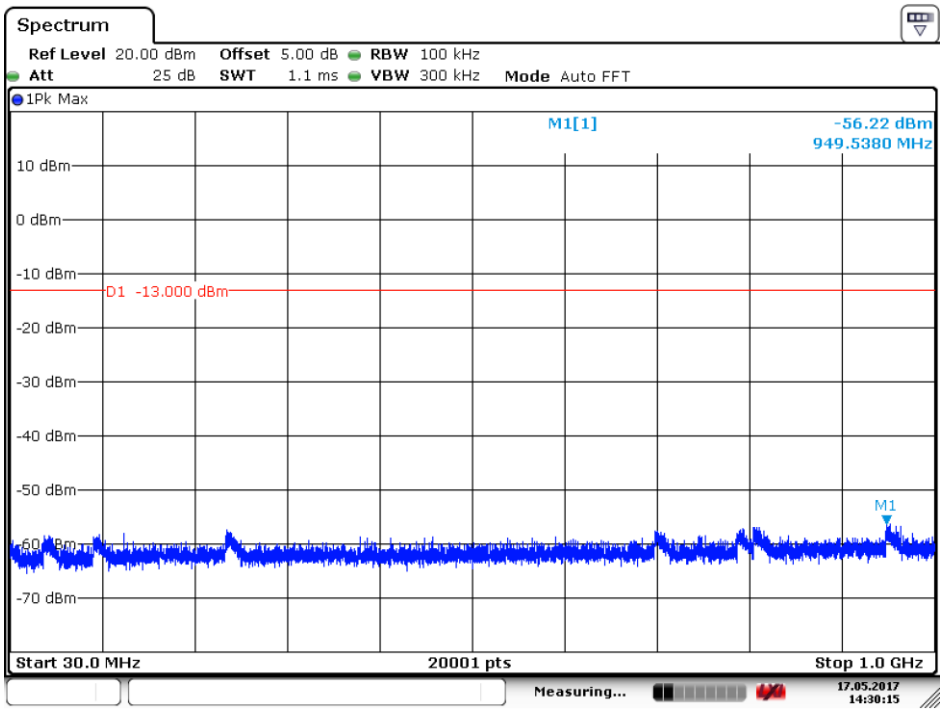


Date: 17.MAY.2017 14:31:43

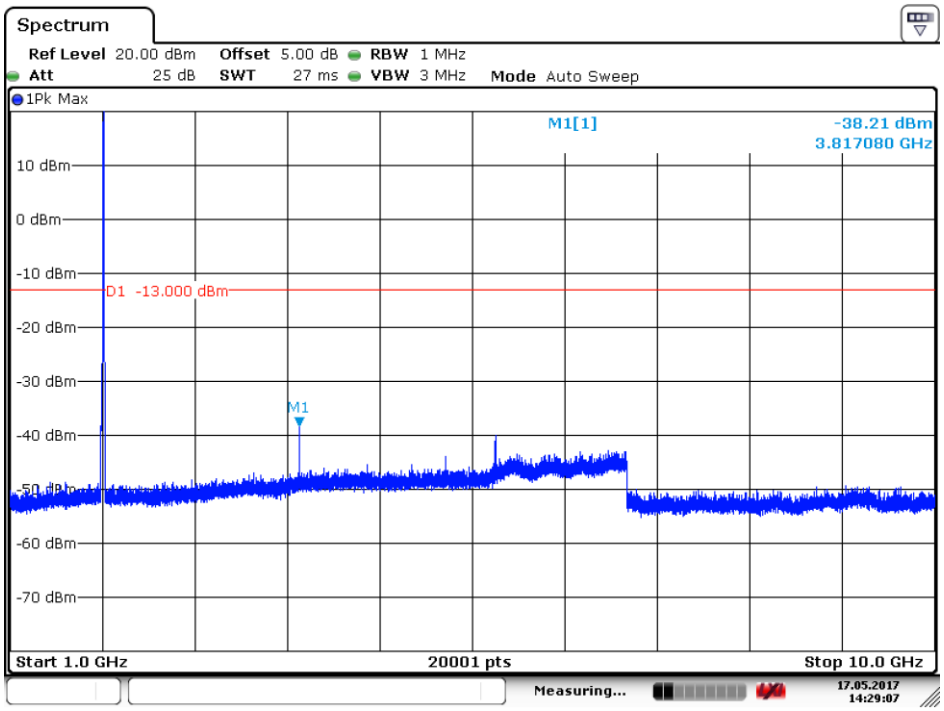


Date: 17.MAY.2017 14:32:16

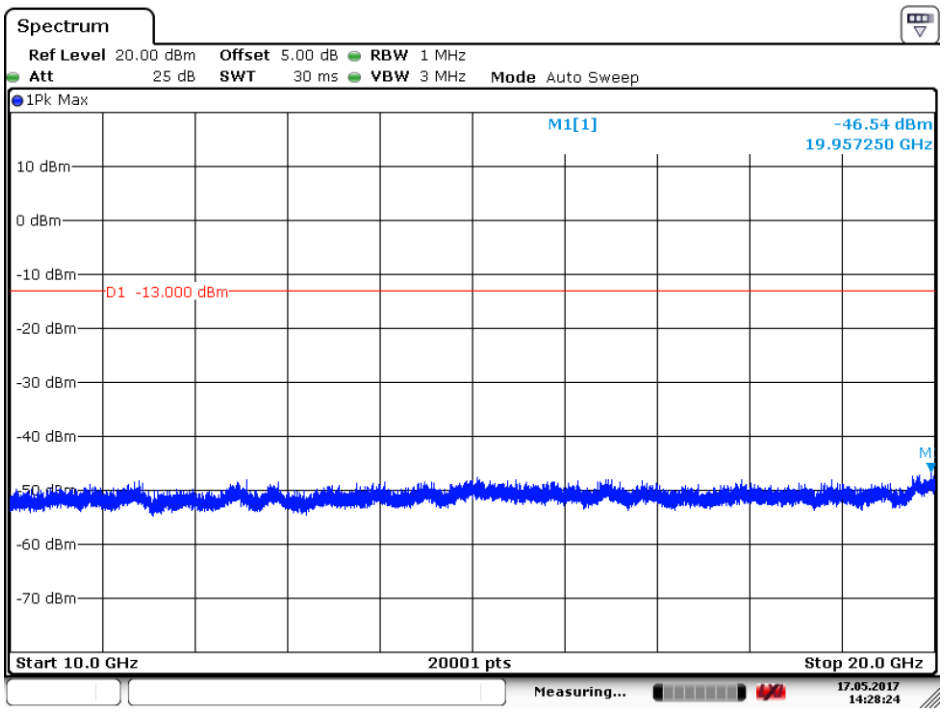
6.1.1.1.3 Test Channel = HCH



Date: 17.MAY.2017 14:30:16



Date: 17.MAY.2017 14:29:07

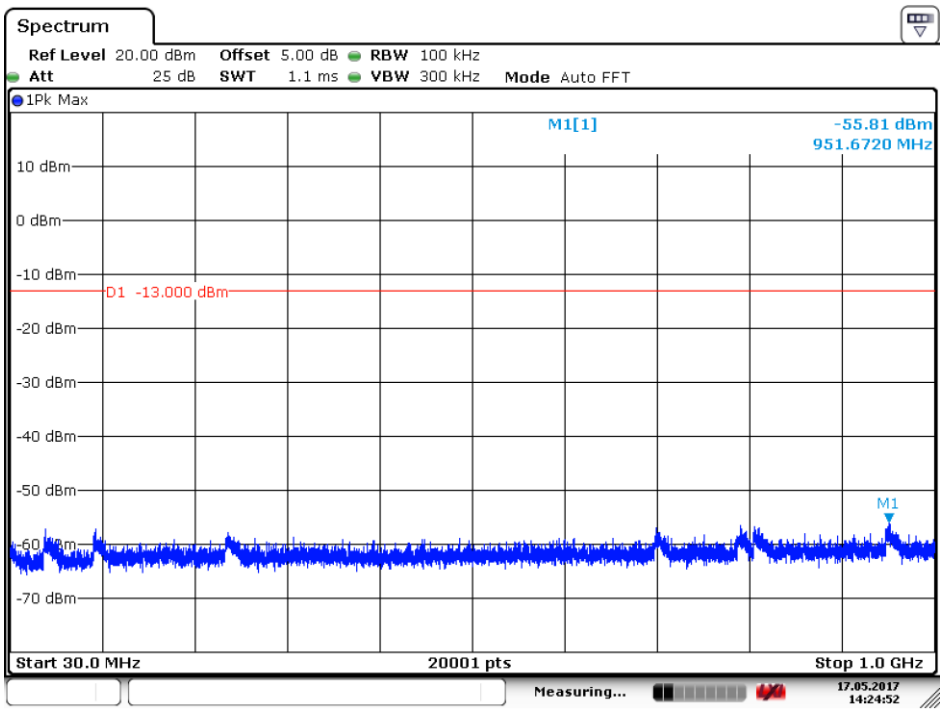


Date: 17.MAY.2017 14:28:24

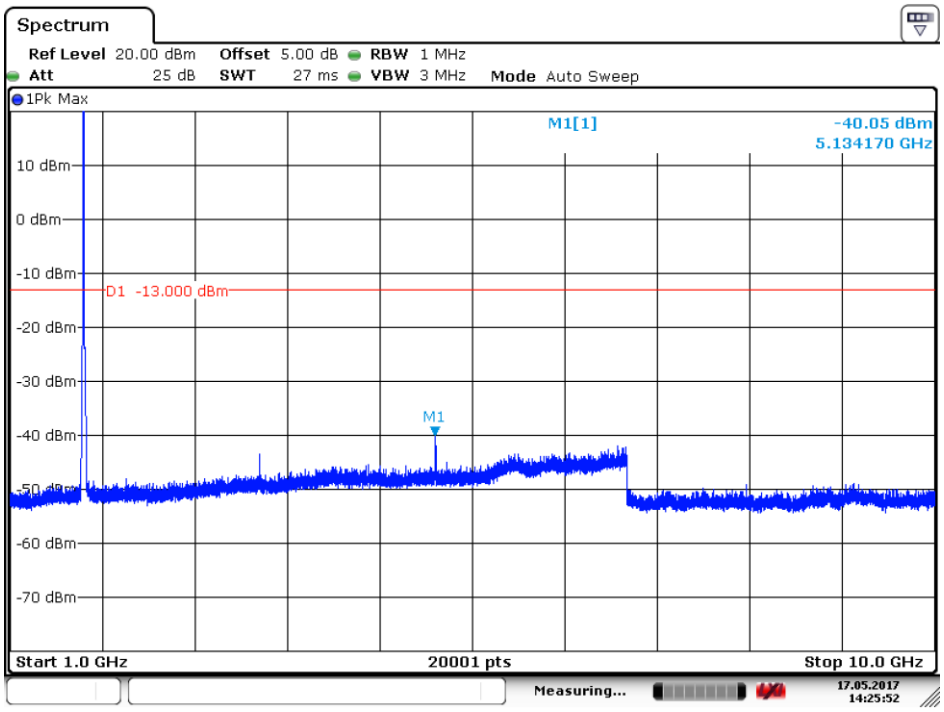
6.1.2 Test Band = WCDMA 1700

6.1.2.1 Test Mode = UMTS/TM1

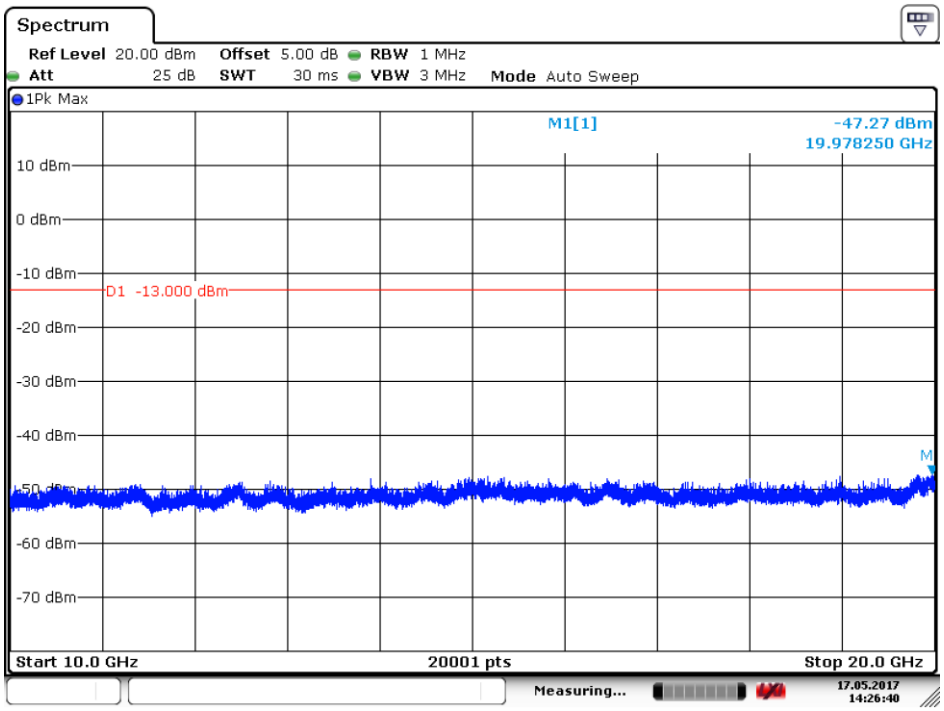
6.1.2.1.1 Test Channel = LCH



Date: 17.MAY.2017 14:24:52

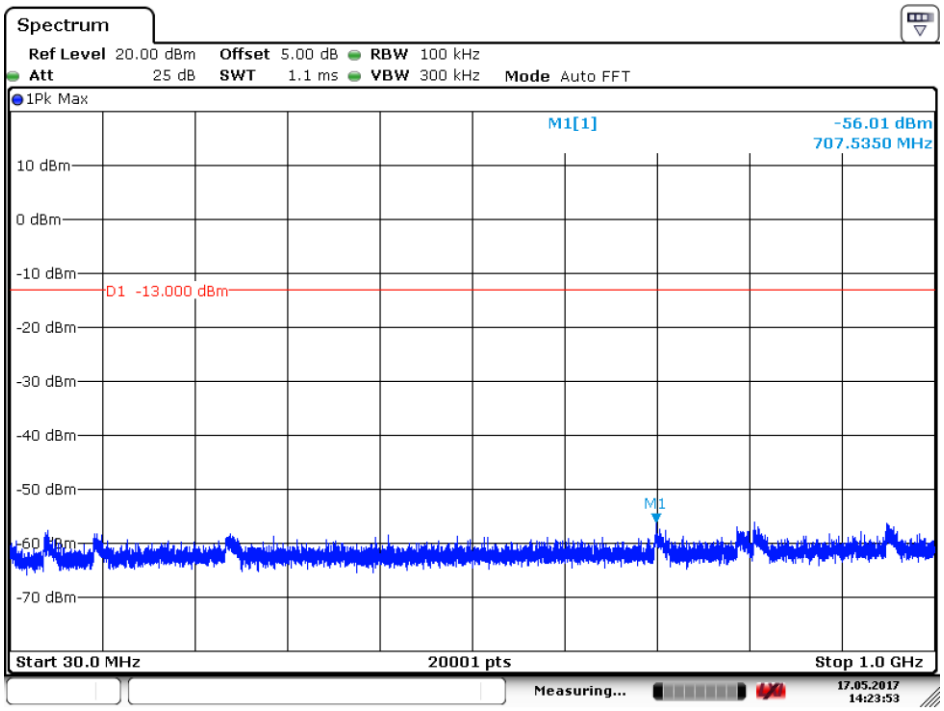


Date: 17.MAY.2017 14:25:53

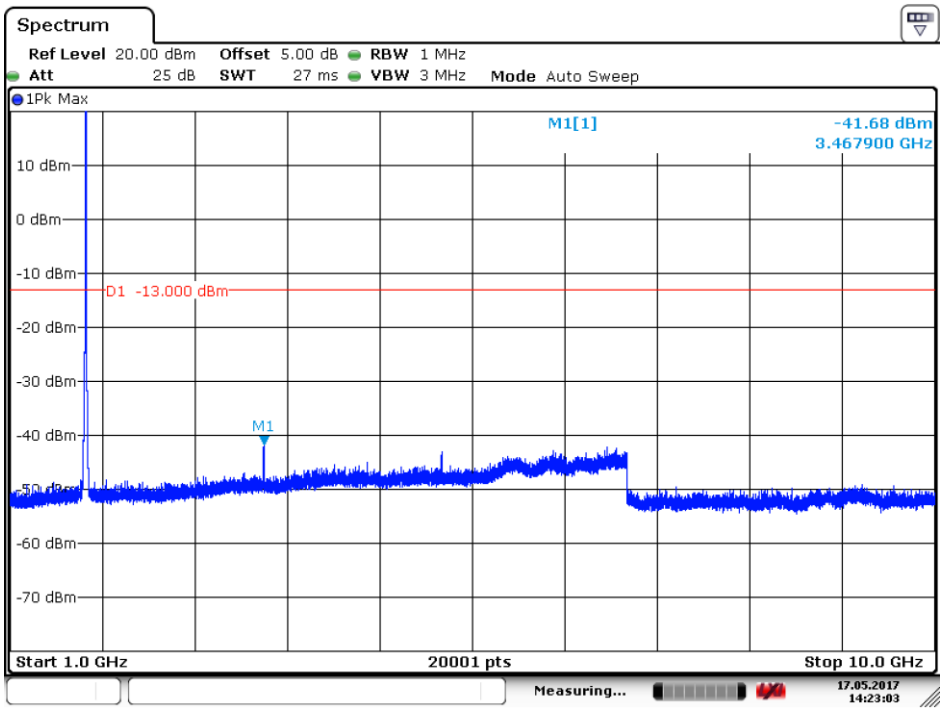


Date: 17.MAY.2017 14:26:41

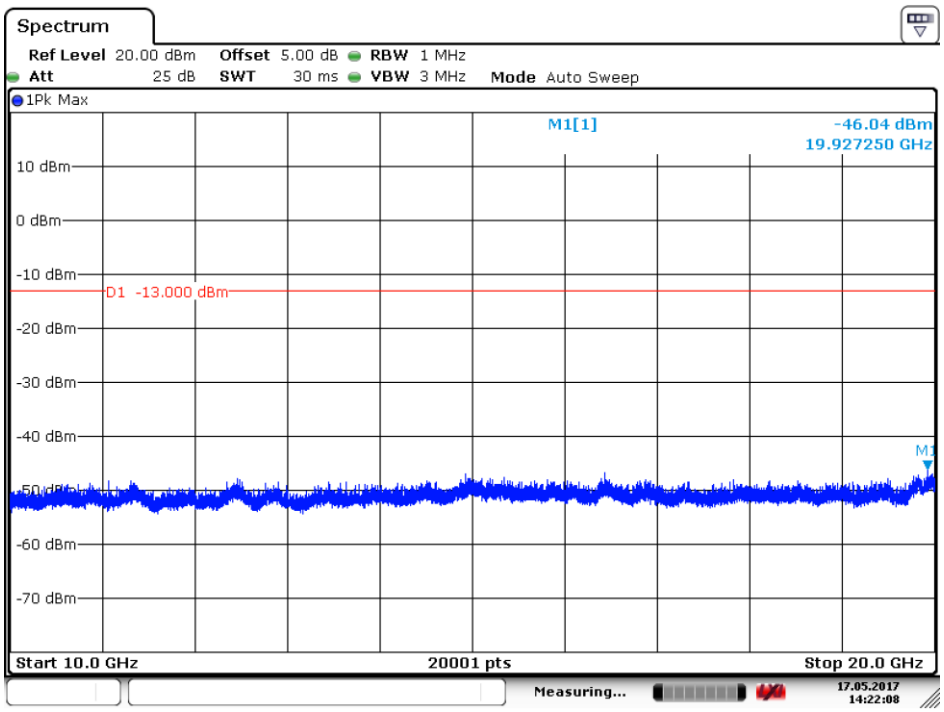
6.1.2.1.2 Test Channel = MCH



Date: 17.MAY.2017 14:23:54

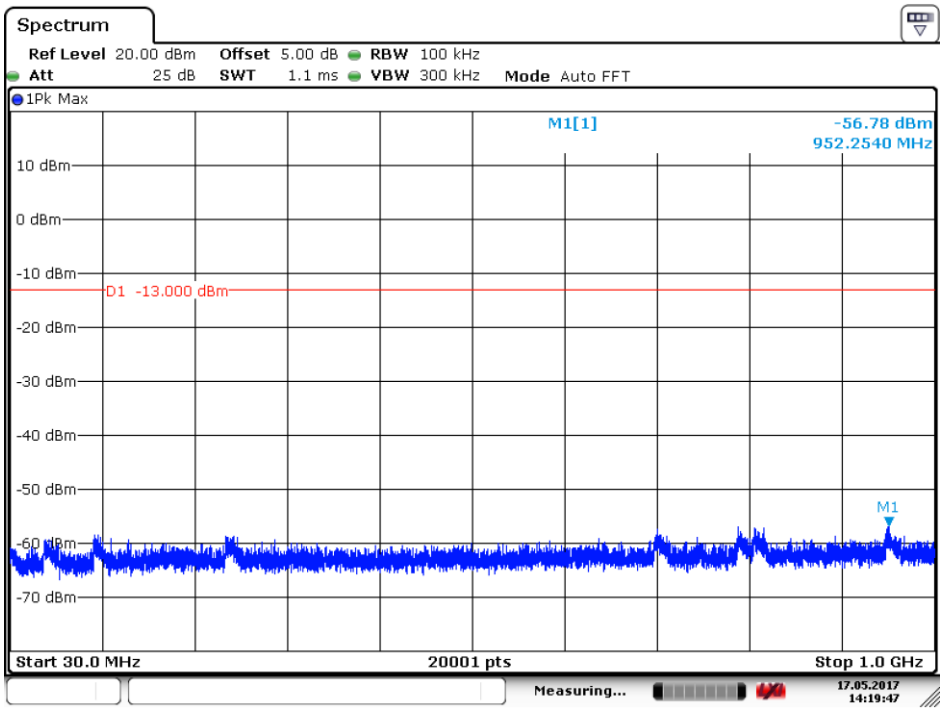


Date: 17.MAY.2017 14:23:04

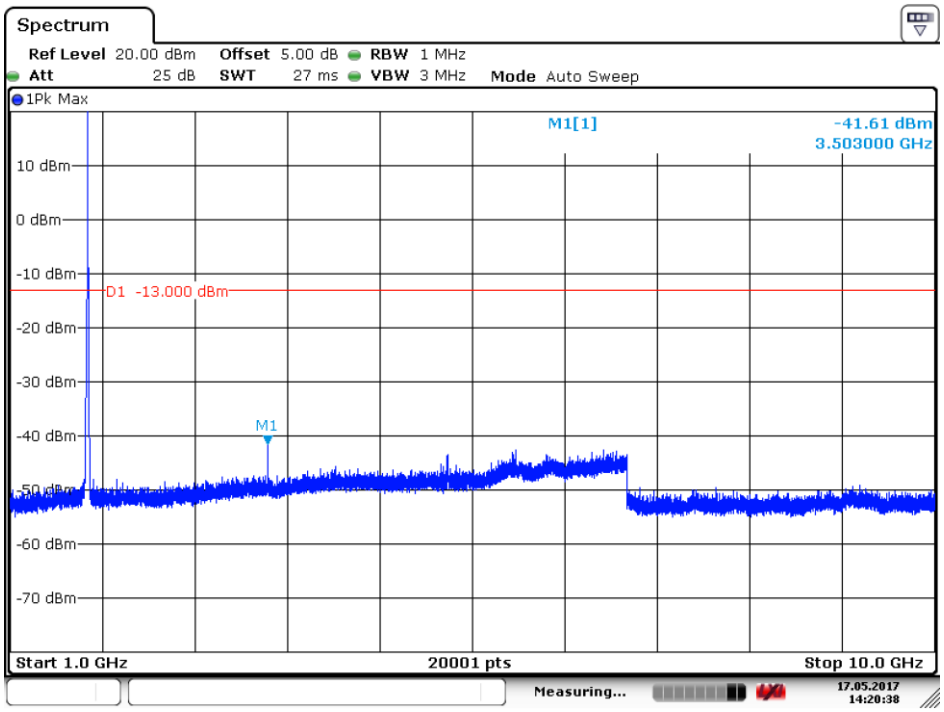


Date: 17.MAY.2017 14:22:08

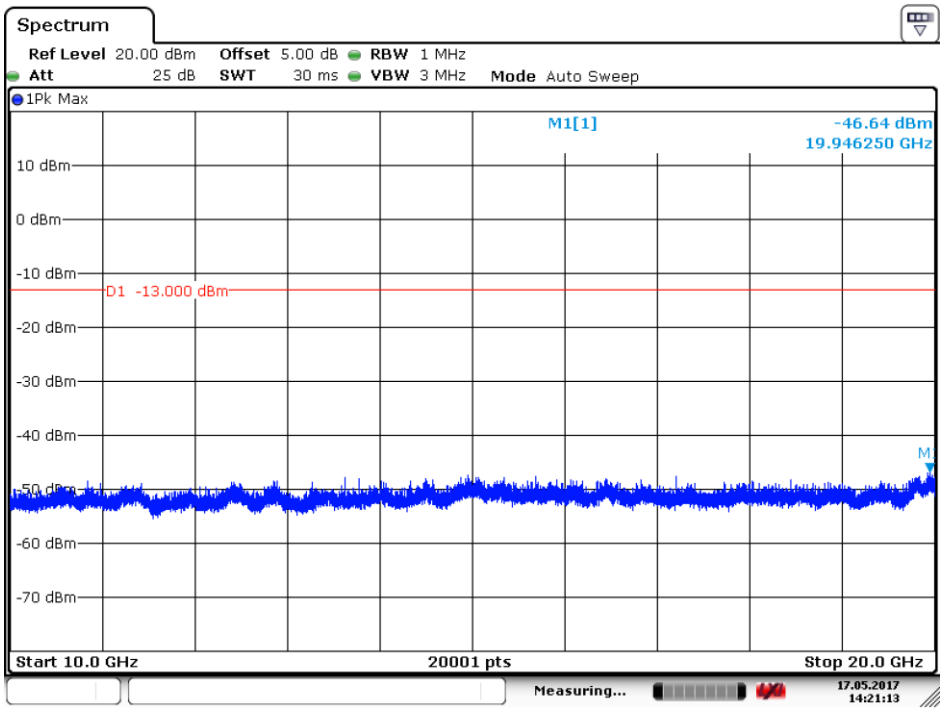
6.1.2.1.3 Test Channel = HCH



Date: 17.MAY.2017 14:19:48



Date: 17.MAY.2017 14:20:39

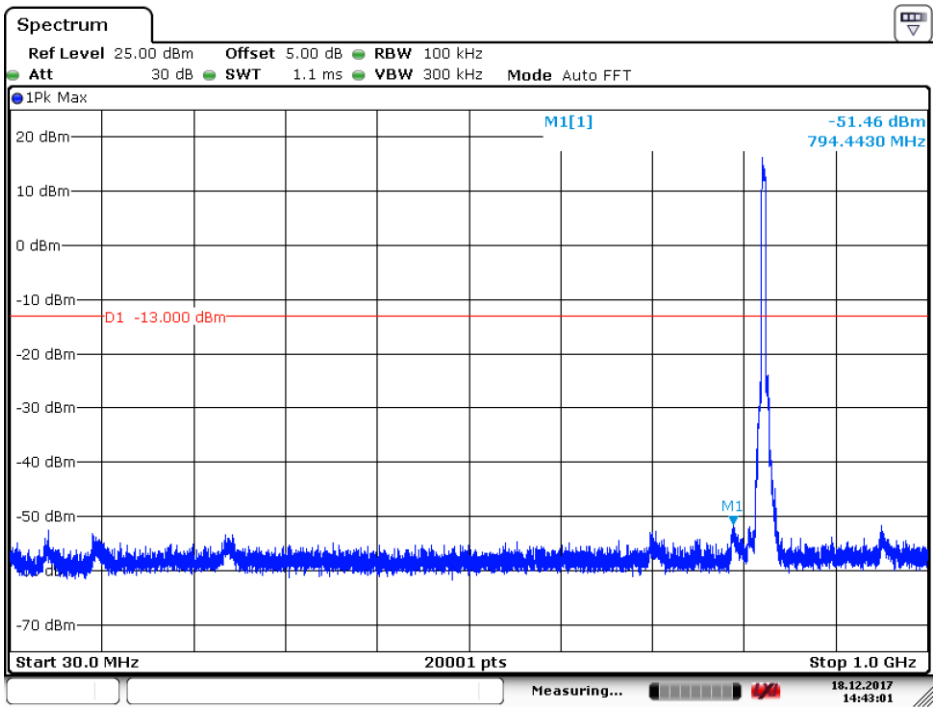


Date: 17.MAY.2017 14:21:13

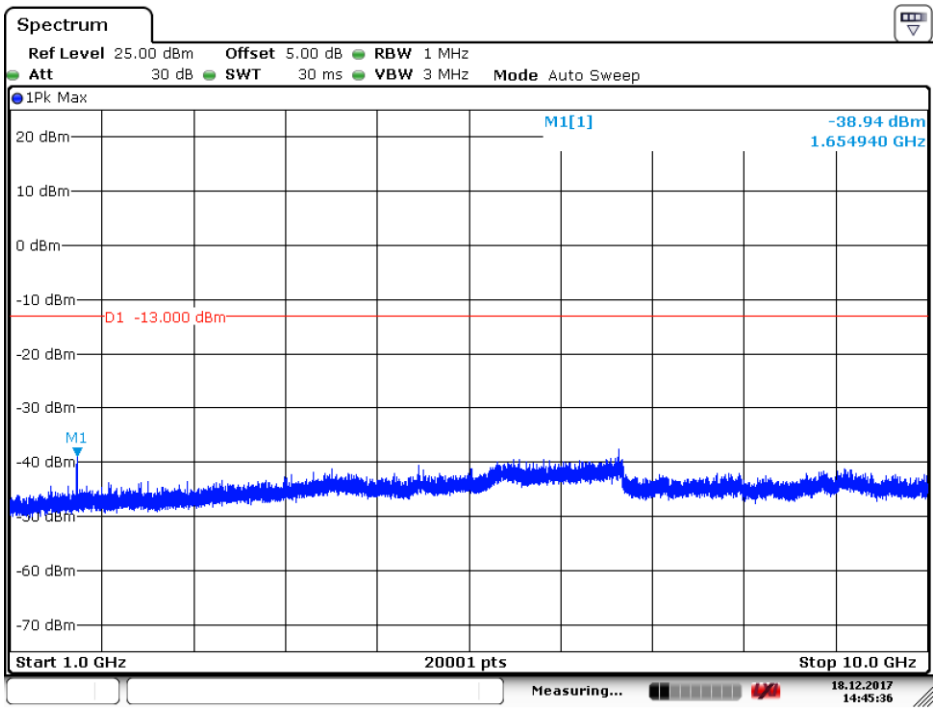
6.1.3 Test Band = WCDMA 850

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

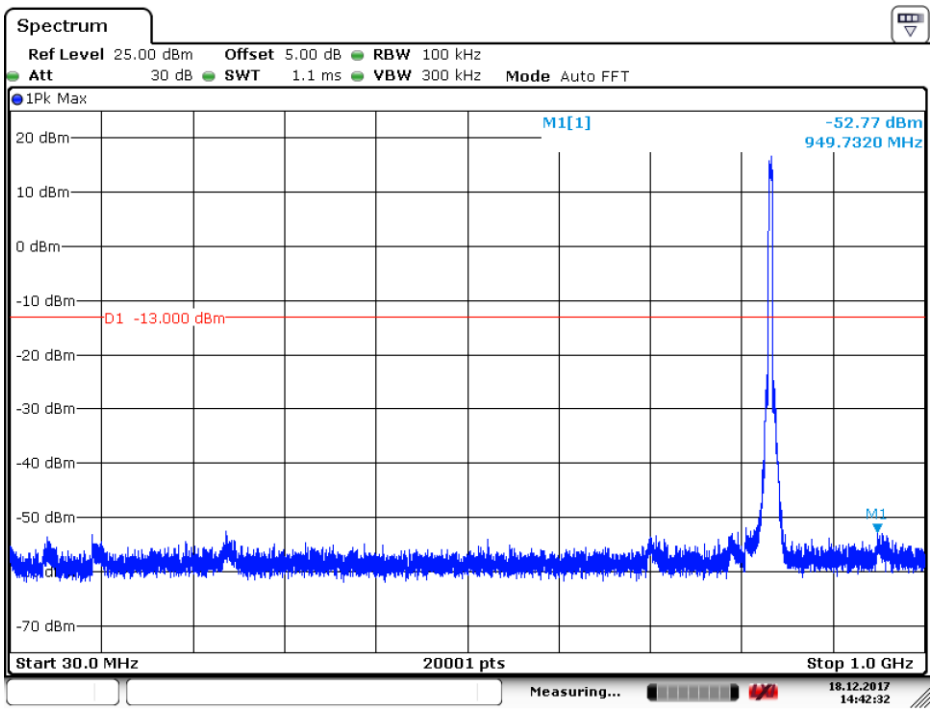


Date: 18.DEC.2017 14:43:01

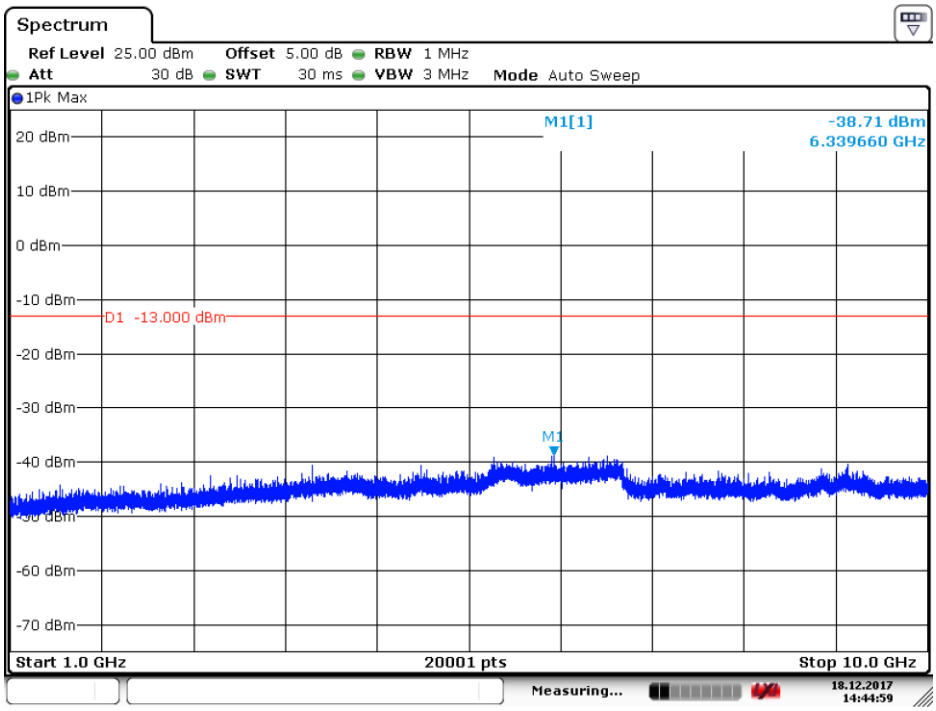


Date: 18.DEC.2017 14:45:36

6.1.3.1.2 Test Channel = MCH

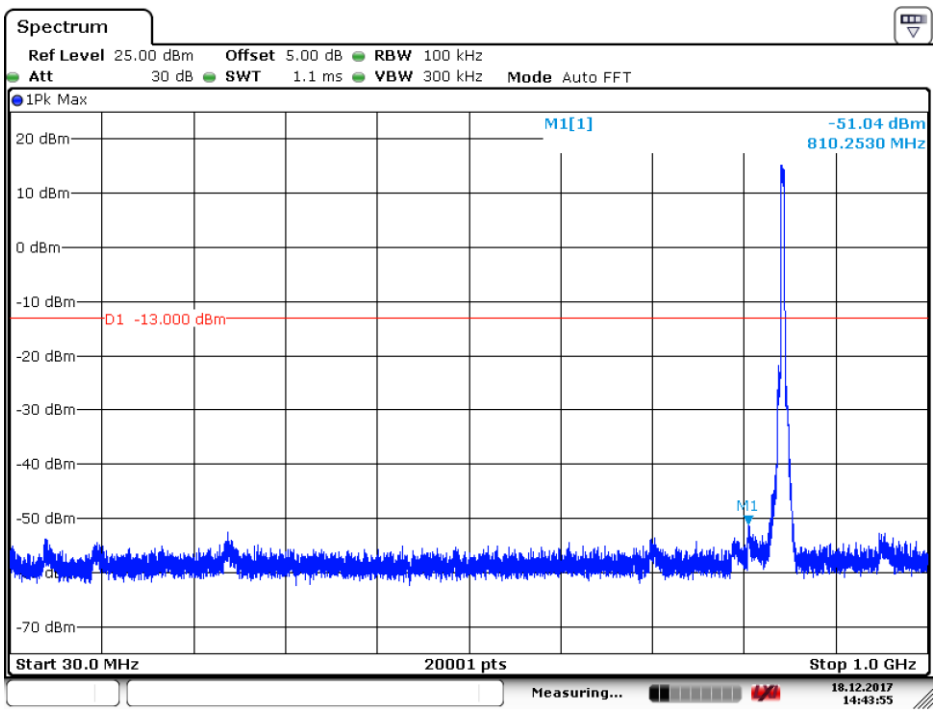


Date: 18.DEC.2017 14:42:32

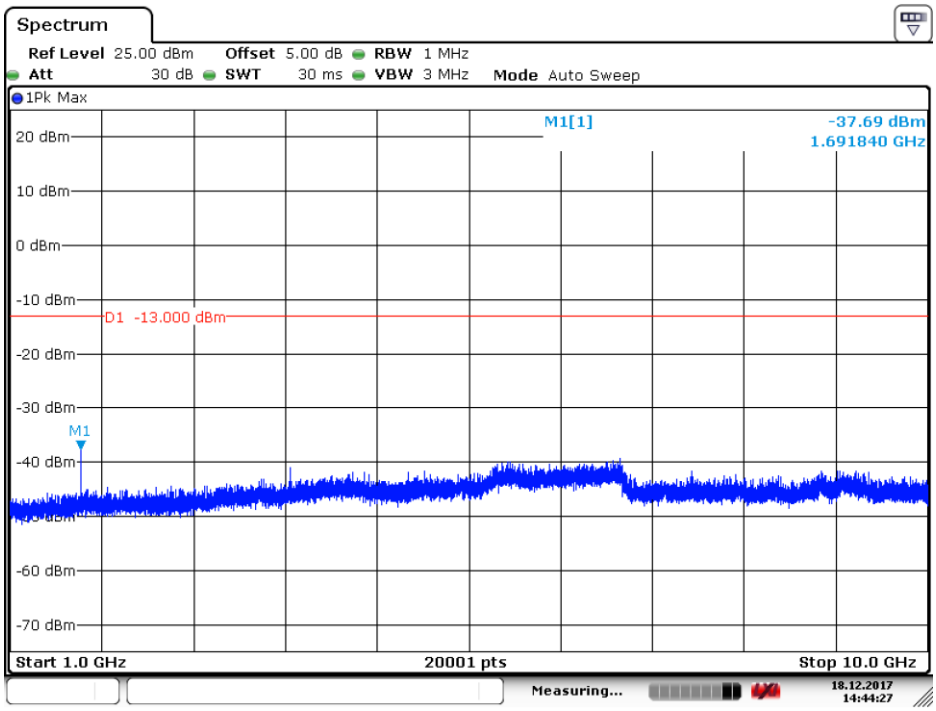


Date: 18.DEC.2017 14:44:59

6.1.3.1.3 Test Channel = HCH



Date: 18.DEC.2017 14:43:55



Date: 18.DEC.2017 14:44:27

7 Field Strength of Spurious Radiation

Part I - Test Plots

7.1 For WCDMA

7.1.1 Test Band = WCDMA 1900

7.1.1.1 Test Mode = UMTS/TM1

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
73.900000	-62.12	-13.00	49.12	Vertical
165.450000	-63.19	-13.00	50.19	Vertical
316.900000	-65.49	-13.00	52.49	Vertical
1254.000000	-48.50	-13.00	35.50	Vertical
3702.487500	-55.11	-13.00	42.11	Vertical
7955.437500	-51.51	-13.00	38.51	Vertical
63.150000	-68.46	-13.00	55.46	Horizontal
163.600000	-61.94	-13.00	48.94	Horizontal
1200.000000	-49.71	-13.00	36.71	Horizontal
2889.500000	-44.44	-13.00	31.44	Horizontal
3706.875000	-50.63	-13.00	37.63	Horizontal
7846.725000	-51.63	-13.00	38.63	Horizontal

7.1.2 Test Band = WCDMAband 1700

7.1.2.1 Test Mode = UMTS/TM1

7.1.2.1.1 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
40.000000	-59.22	-13.00	46.22	Vertical
165.450000	-59.95	-13.00	46.95	Vertical
775.966667	-62.76	-13.00	49.76	Vertical
1285.500000	-48.91	-13.00	35.91	Vertical
2822.000000	-44.58	-13.00	31.58	Vertical
6604.575000	-53.10	-13.00	40.10	Vertical
73.700000	-67.35	-13.00	54.35	Horizontal
167.650000	-60.45	-13.00	47.45	Horizontal
426.400000	-66.18	-13.00	53.18	Horizontal
2800.500000	-44.98	-13.00	31.98	Horizontal
6050.287500	-53.09	-13.00	40.09	Horizontal
11899.312500	-51.19	-13.00	38.19	Horizontal

7.1.3 Test Band = WCDMAband 850

7.1.3.1 Test Mode = UMTS/TM1

7.1.3.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
40.000000	-72.81	-13.00	59.81	Vertical
74.700000	-74.20	-13.00	61.20	Vertical
167.200000	-71.69	-13.00	58.69	Vertical
1651.000000	-55.16	-13.00	42.16	Vertical
4306.987500	-66.87	-13.00	53.87	Vertical
7990.537500	-63.87	-13.00	50.87	Vertical
62.550000	-77.39	-13.00	64.39	Horizontal
166.600000	-70.98	-13.00	57.98	Horizontal
193.850000	-75.96	-13.00	62.96	Horizontal
1651.000000	-52.91	-13.00	39.91	Horizontal
4296.750000	-66.89	-13.00	53.89	Horizontal
7916.925000	-64.07	-13.00	51.07	Horizontal

7.1.3.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
40.250000	-73.44	-13.00	60.44	Vertical
74.650000	-75.26	-13.00	62.26	Vertical
165.650000	-73.73	-13.00	60.73	Vertical
1674.500000	-55.08	-13.00	42.08	Vertical
2882.000000	-57.19	-13.00	44.19	Vertical
7237.837500	-64.72	-13.00	51.72	Vertical
55.900000	-77.37	-13.00	64.37	Horizontal
104.300000	-80.40	-13.00	67.40	Horizontal
167.100000	-71.20	-13.00	58.20	Horizontal
1671.000000	-52.35	-13.00	39.35	Horizontal
4896.862500	-66.87	-13.00	53.87	Horizontal
7924.725000	-63.91	-13.00	50.91	Horizontal

7.1.3.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
40.350000	-73.09	-13.00	60.09	Vertical
166.050000	-70.85	-13.00	57.85	Vertical
330.100000	-74.25	-13.00	61.25	Vertical
1691.500000	-54.55	-13.00	41.55	Vertical
4096.387500	-67.67	-13.00	54.67	Vertical
7963.725000	-63.67	-13.00	50.67	Vertical
56.900000	-78.07	-13.00	65.07	Horizontal
166.700000	-71.18	-13.00	58.18	Horizontal
193.800000	-75.74	-13.00	62.74	Horizontal
1692.000000	-53.20	-13.00	40.20	Horizontal
4294.312500	-66.86	-13.00	53.86	Horizontal
7709.737500	-64.60	-13.00	51.60	Horizontal

NOTE:

1) The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

8 Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 1900	UMTS/TM1	LCH	TN	VL	2.29	0.00124	PASS
				VN	-3.35	-0.00181	PASS
				VH	4.52	0.00244	PASS
		MCH	TN	VL	1.23	0.00065	PASS
				VN	6.75	0.00359	PASS
				VH	-5.35	-0.00285	PASS
		HCH	TN	VL	2.55	0.00134	PASS
				VN	-3.64	-0.00191	PASS
				VH	-1.72	-0.00090	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 1700	UMTS/TM1	LCH	TN	VL	-3.37	-0.00197	PASS
				VN	-3.45	-0.00201	PASS
				VH	2.34	0.00137	PASS
		MCH	TN	VL	-5.86	-0.00338	PASS
				VN	1.83	0.00106	PASS
				VH	-2.63	-0.00152	PASS
		HCH	TN	VL	1.77	0.00101	PASS
				VN	-4.62	-0.00264	PASS
				VH	2.88	0.00164	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 850	UMTS/TM1	LCH	TN	VL	-3.34	-0.00404	PASS
				VN	-3.42	-0.00414	PASS
				VH	2.36	0.00286	PASS
		MCH	TN	VL	-5.81	-0.00695	PASS
				VN	1.36	0.00163	PASS
				VH	-2.47	-0.00295	PASS
		HCH	TN	VL	1.74	0.00206	PASS
				VN	-4.68	-0.00553	PASS
				VH	2.87	0.00339	PASS

8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 1900	UMTS/TM1	LCH	VN	-30	-4.78	-0.00258	PASS
				-20	1.62	0.00087	PASS
				-10	2.46	0.00133	PASS
				0	-2.65	-0.00143	PASS
				10	1.53	0.00083	PASS
				20	-4.87	-0.00263	PASS
				30	1.63	0.00088	PASS
				40	-2.08	-0.00112	PASS
				50	-6.22	-0.00336	PASS
		MCH	VN	-30	-3.87	-0.00206	PASS
				-20	-5.22	-0.00278	PASS
				-10	-0.36	-0.00019	PASS
				0	-3.32	-0.00177	PASS
				10	1.76	0.00094	PASS
				20	2.74	0.00146	PASS
				30	1.67	0.00089	PASS
				40	4.12	0.00219	PASS
				50	-4.37	-0.00232	PASS
		HCH	VN	-30	-4.12	-0.00216	PASS
				-20	3.62	0.00190	PASS
				-10	2.56	0.00134	PASS
				0	-5.37	-0.00282	PASS
				10	1.52	0.00080	PASS
				20	-2.75	-0.00144	PASS
				30	3.62	0.00190	PASS
				40	-1.23	-0.00064	PASS
				50	-4.68	-0.00245	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 1700	UMTS/TM1	LCH	VN	-30	-3.46	-0.00202	PASS
				-20	-4.42	-0.00258	PASS
				-10	1.68	0.00098	PASS
				0	-3.55	-0.00207	PASS
				10	-0.68	-0.00040	PASS
				20	1.18	0.00069	PASS
				30	-3.24	-0.00189	PASS
				40	-5.71	-0.00333	PASS
				50	-4.84	-0.00283	PASS
		MCH	VN	-30	-4.32	-0.00249	PASS
				-20	1.87	0.00108	PASS
				-10	-2.43	-0.00140	PASS
				0	4.94	0.00285	PASS
				10	-3.65	-0.00211	PASS
				20	-6.89	-0.00398	PASS
				30	-3.77	-0.00218	PASS
				40	-8.23	-0.00475	PASS
				50	-5.71	-0.00330	PASS
		HCH	VN	-30	-3.25	-0.00185	PASS
				-20	3.43	0.00196	PASS
				-10	1.65	0.00094	PASS
				0	-0.77	-0.00044	PASS
				10	-3.38	-0.00193	PASS
				20	-4.86	-0.00277	PASS
				30	1.31	0.00075	PASS
				40	-2.72	-0.00155	PASS
				50	-4.34	-0.00248	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 850	UMTS/TM1	LCH	VN	-30	-3.63	-0.00439	PASS
				-20	-4.28	-0.00518	PASS
				-10	1.78	0.00215	PASS
				0	-3.85	-0.00466	PASS
				10	-0.68	-0.00082	PASS
				20	1.38	0.00167	PASS
				30	-3.64	-0.00440	PASS
				40	-5.21	-0.00630	PASS
				50	-4.54	-0.00549	PASS
		MCH	VN	-30	-4.12	-0.00493	PASS
				-20	1.67	0.00200	PASS
				-10	-2.73	-0.00326	PASS
				0	4.34	0.00519	PASS
				10	-3.75	-0.00448	PASS
				20	-6.39	-0.00764	PASS
				30	-3.67	-0.00439	PASS
				40	-8.63	-0.01032	PASS
				50	-5.31	-0.00635	PASS
		HCH	VN	-30	-3.65	-0.00431	PASS
				-20	3.73	0.00441	PASS
				-10	1.65	0.00195	PASS
				0	-0.37	-0.00044	PASS
				10	-3.88	-0.00458	PASS
				20	-4.86	-0.00574	PASS
				30	1.61	0.00190	PASS
				40	-2.72	-0.00321	PASS
				50	-4.74	-0.00560	PASS

The End