



# 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	24.15	19.90	38.5	PASS
		MCH	24.15	19.90	38.5	PASS
		HCH	24.08	19.83	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	23.24	20.94	30	PASS
		MCH	23.35	21.05	30	PASS
		HCH	23.33	21.03	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.48	22.08	33	PASS
		MCH	23.57	22.17	33	PASS
		HCH	23.39	21.99	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
WCDMA850	UMTS/TM1	LCH	2.750	13	PASS
		MCH	3.170	13	PASS
		HCH	2.760	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.380	13	PASS
		MCH	2.380	13	PASS
		HCH	3.110	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.500	13	PASS
		MCH	2.680	13	PASS
		HCH	2.790	13	PASS



### 3Appendix\_C: Modulation Characteristics

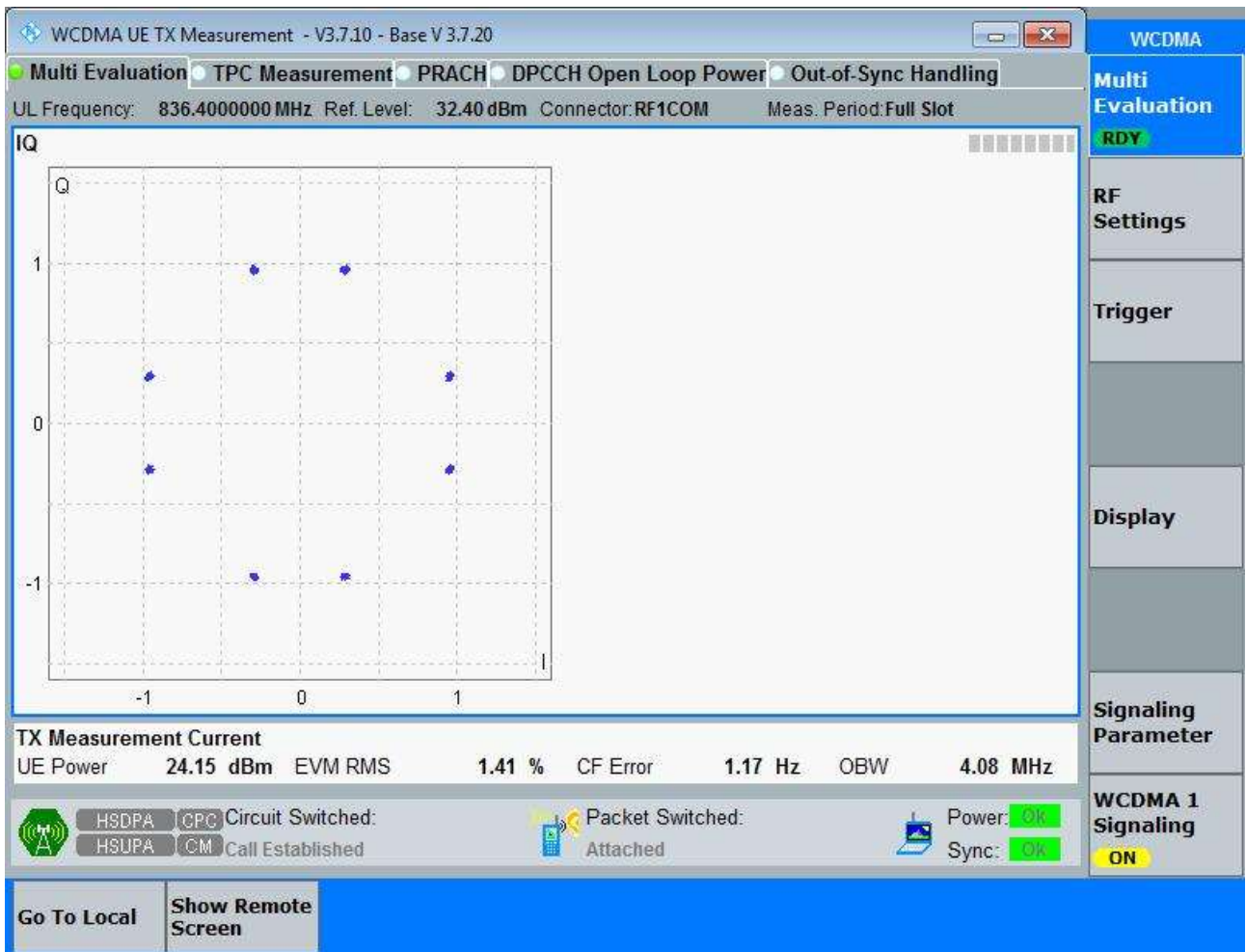
#### Part I - Test Plots

##### 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

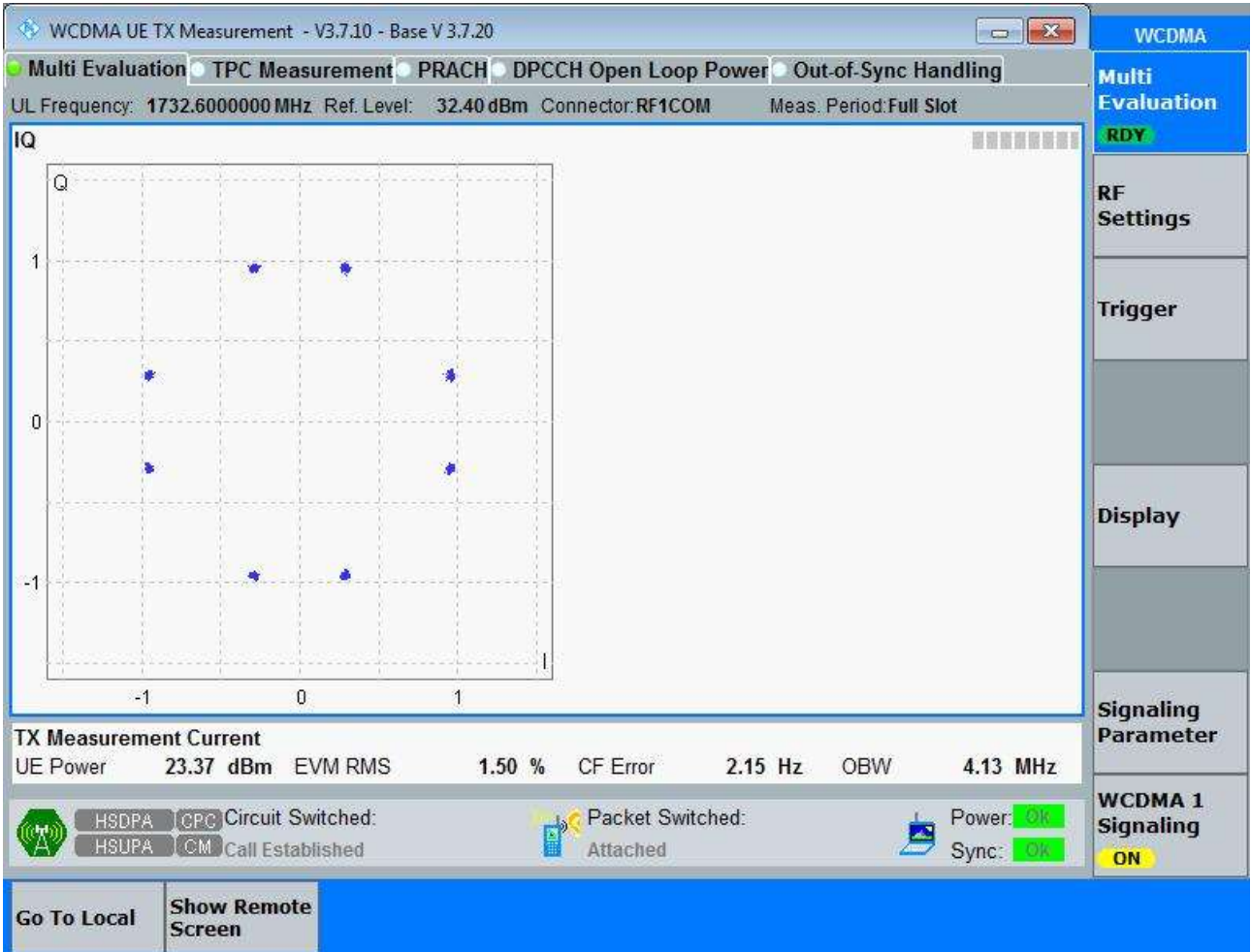




### 3.1.2 Test Band = WCDMA1700

#### 3.1.2.1 Test Mode = UMTS/TM1

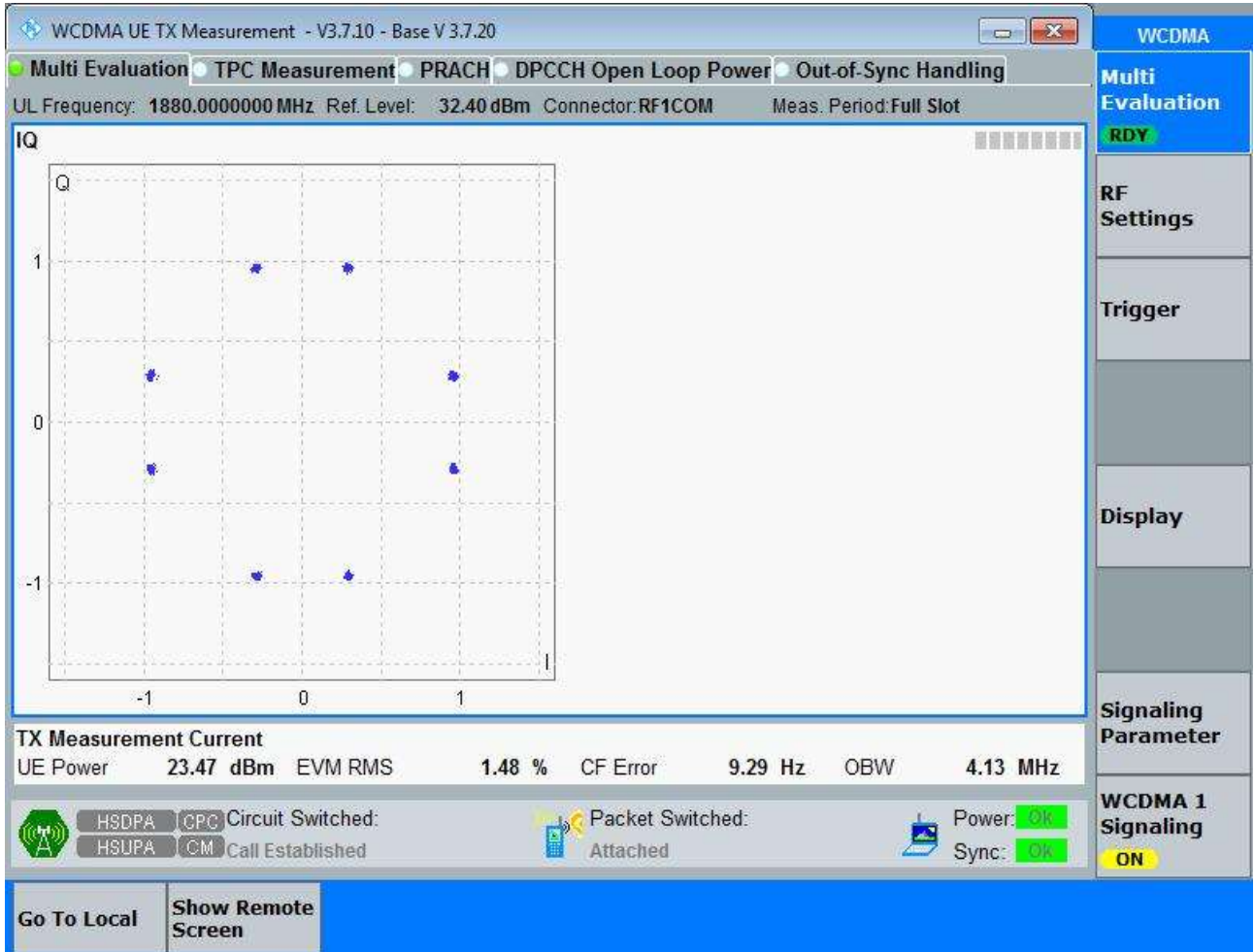
##### 3.1.2.1.1 Test Channel = MCH



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	4.16	4.72	Pass
		MCH	4.18	4.71	Pass
		HCH	4.17	4.71	Pass
WCDMA1700	UMTS/TM1	LCH	4.17	4.70	Pass
		MCH	4.18	4.72	Pass
		HCH	4.17	4.73	Pass
WCDMA1900	UMTS/TM1	LCH	4.17	4.70	Pass
		MCH	4.18	4.71	Pass
		HCH	4.17	4.71	Pass

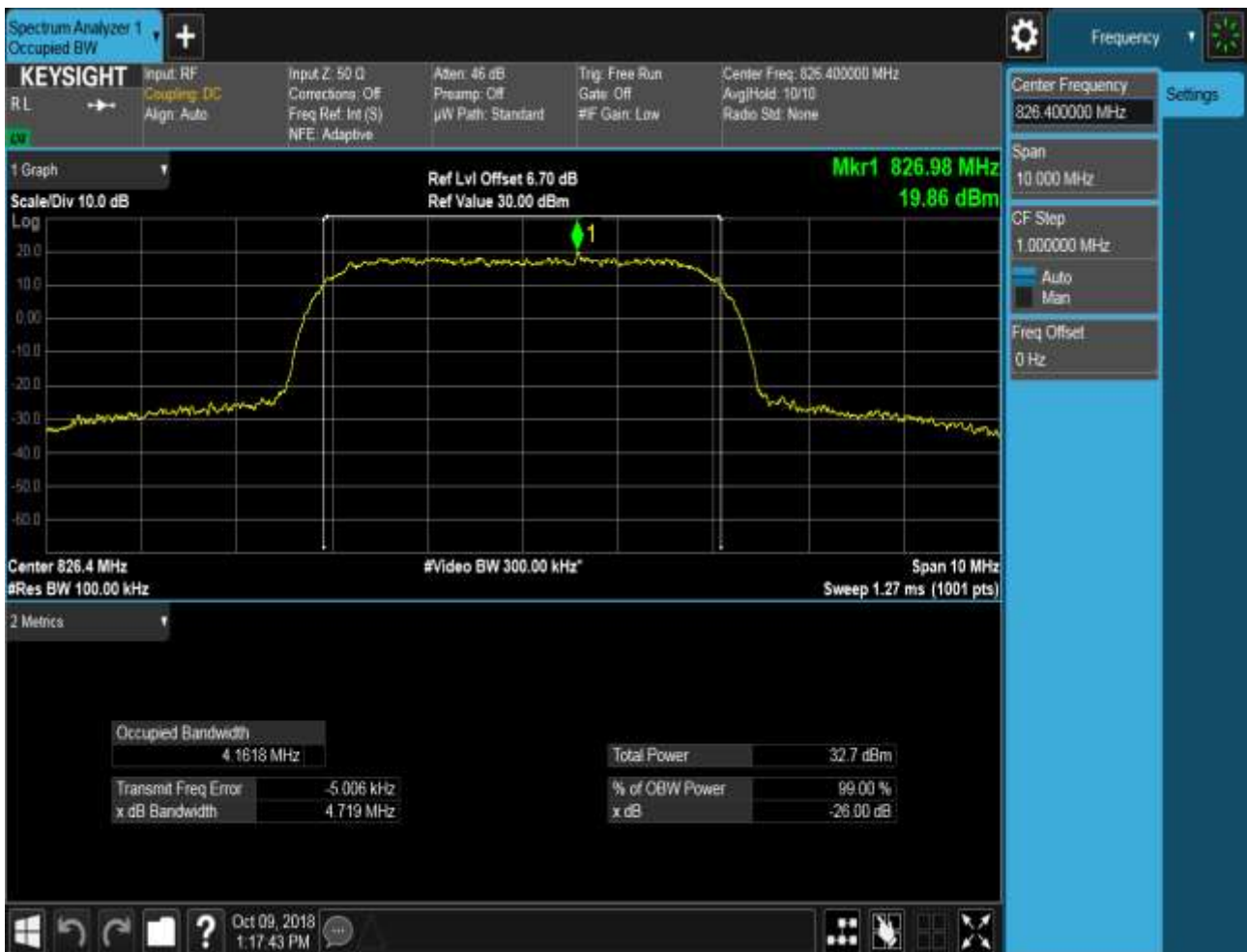
## Part II - Test Plots

### 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



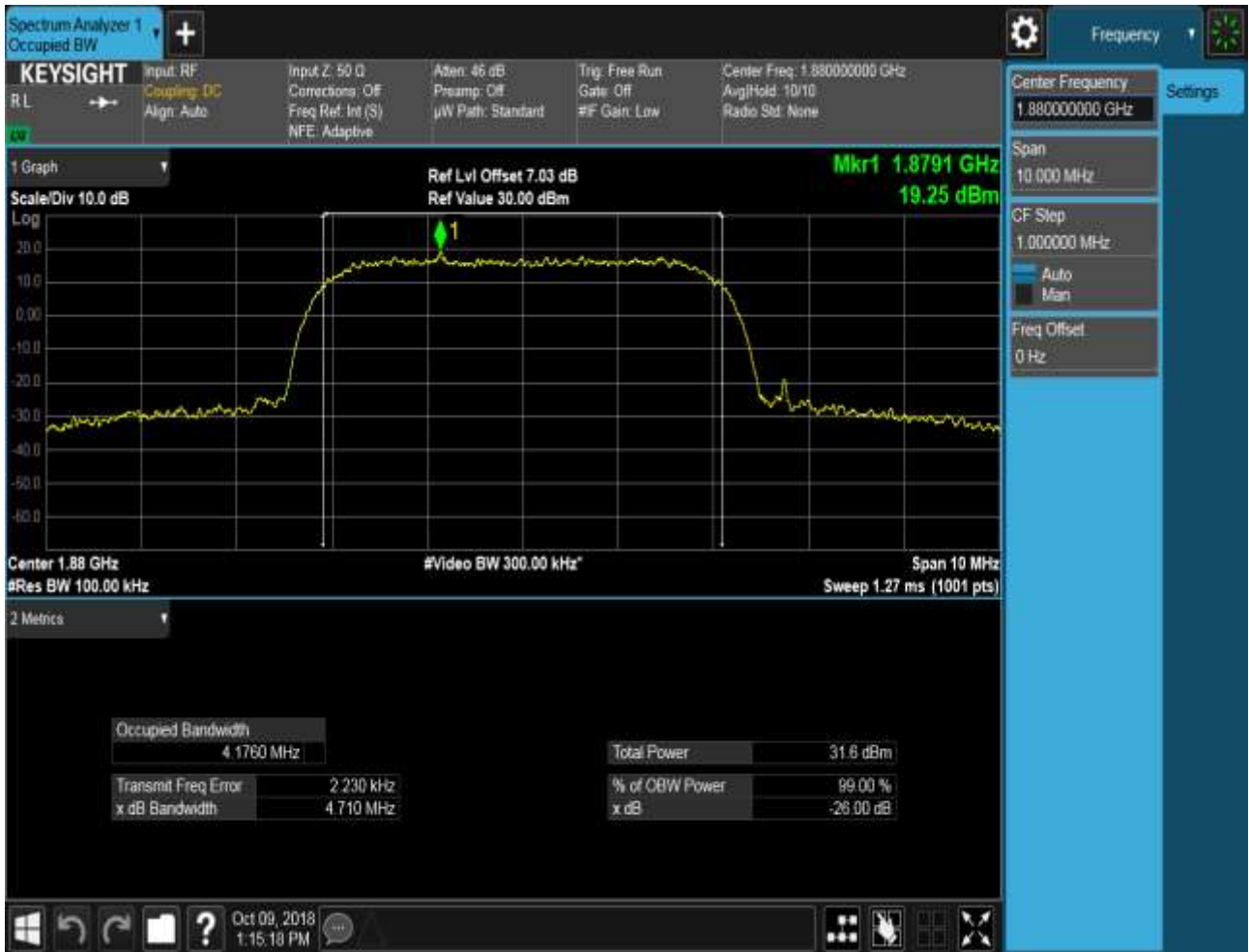
### 4.1.3 Test Band = WCDMA1900

#### 4.1.3.1 Test Mode = UMTS/TM1

##### 4.1.3.1.1 Test Channel = LCH

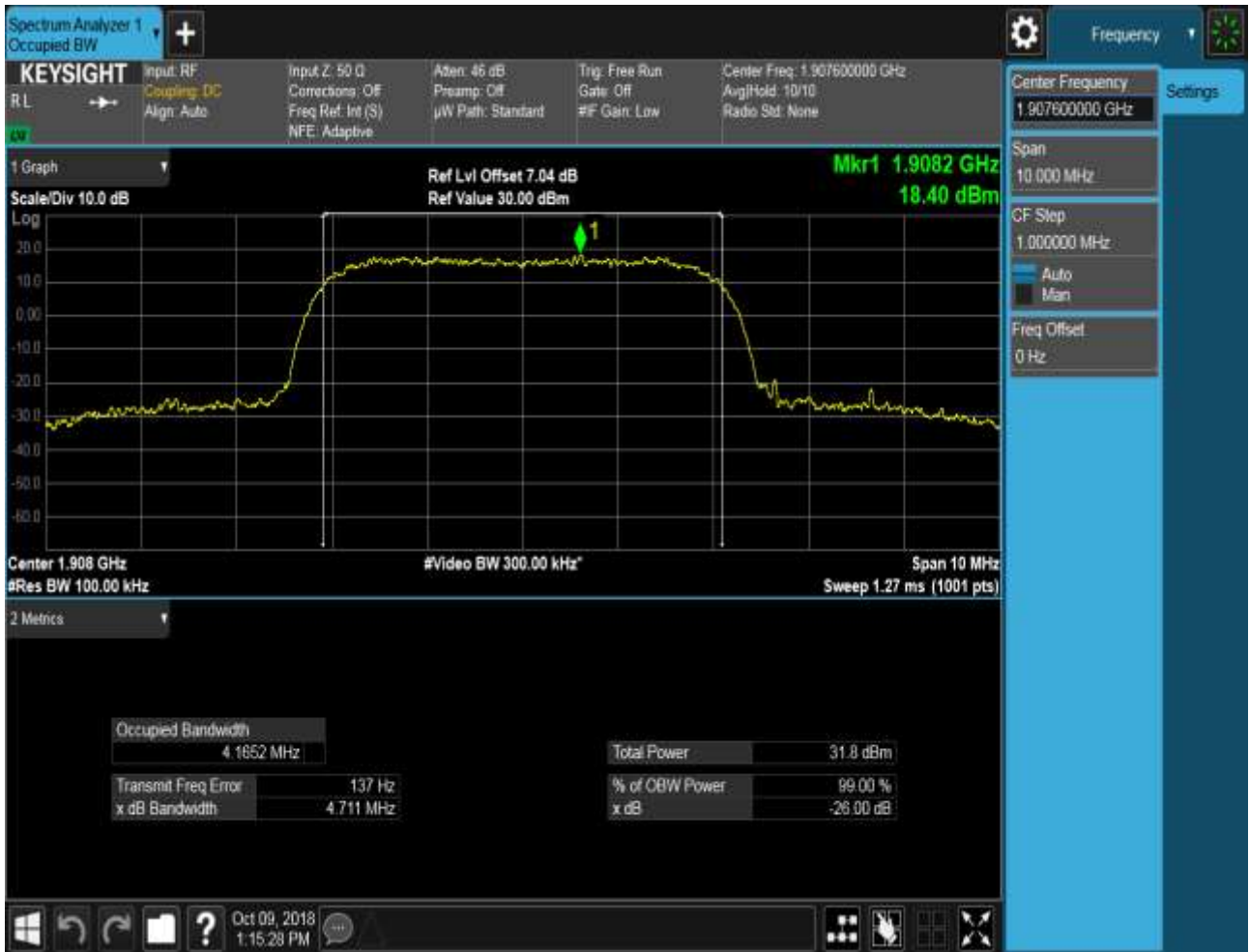


4.1.3.1.2 Test Channel = MCH





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

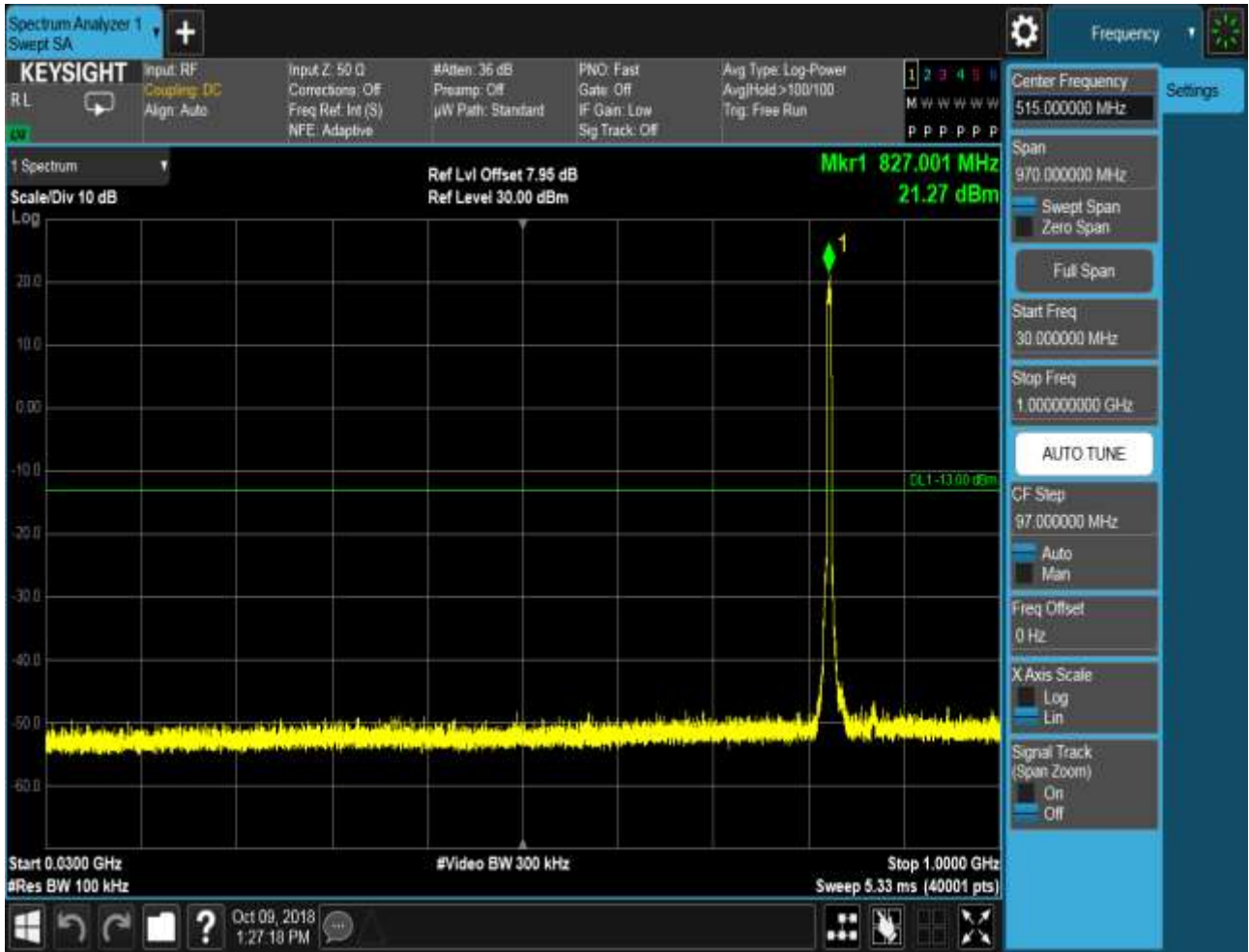
##### 6.1.1.1 Test Mode = UMTS/TM1

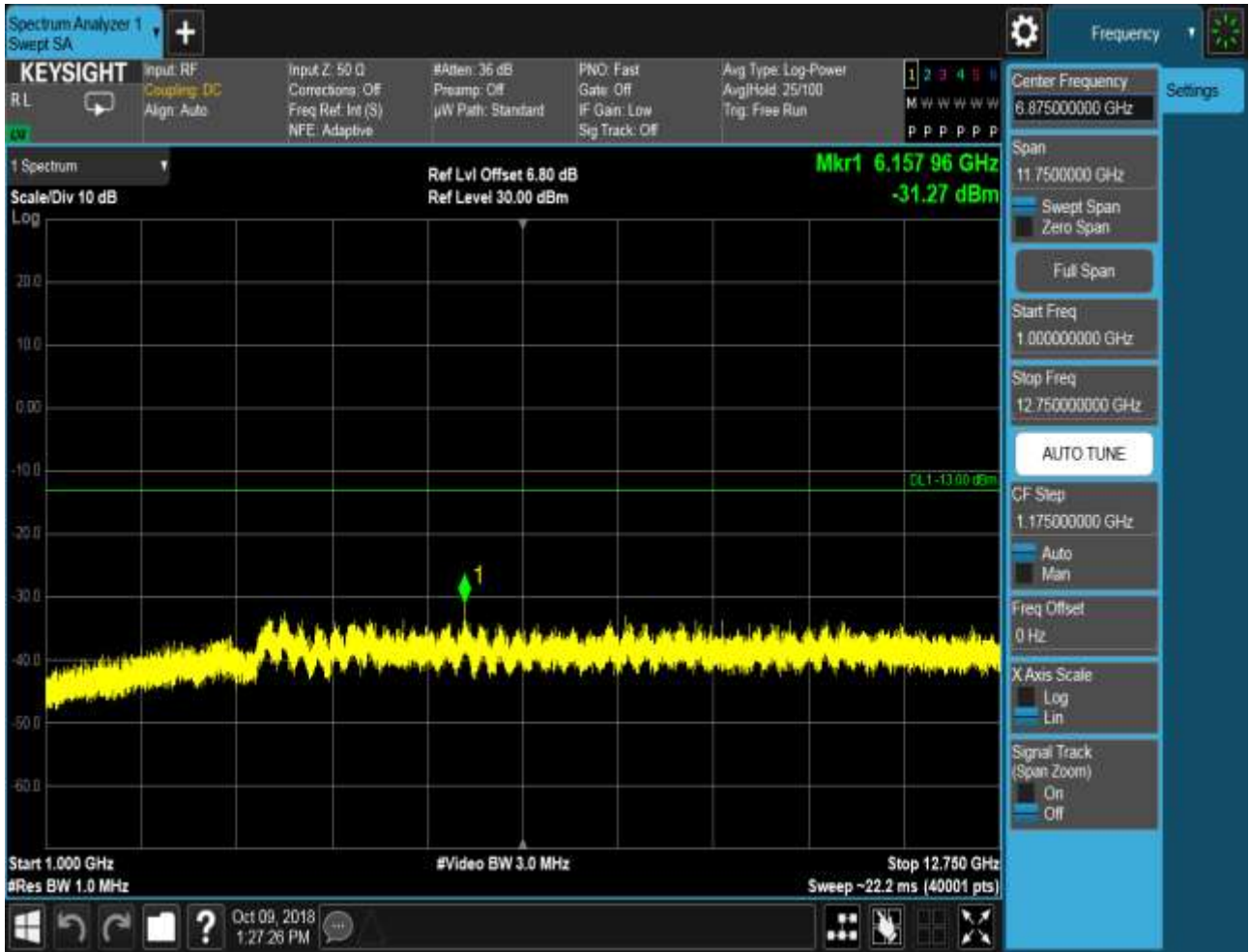
##### 6.1.1.1.1 Test Channel = LCH











### 6.1.1.1.2 Test Channel = MCH









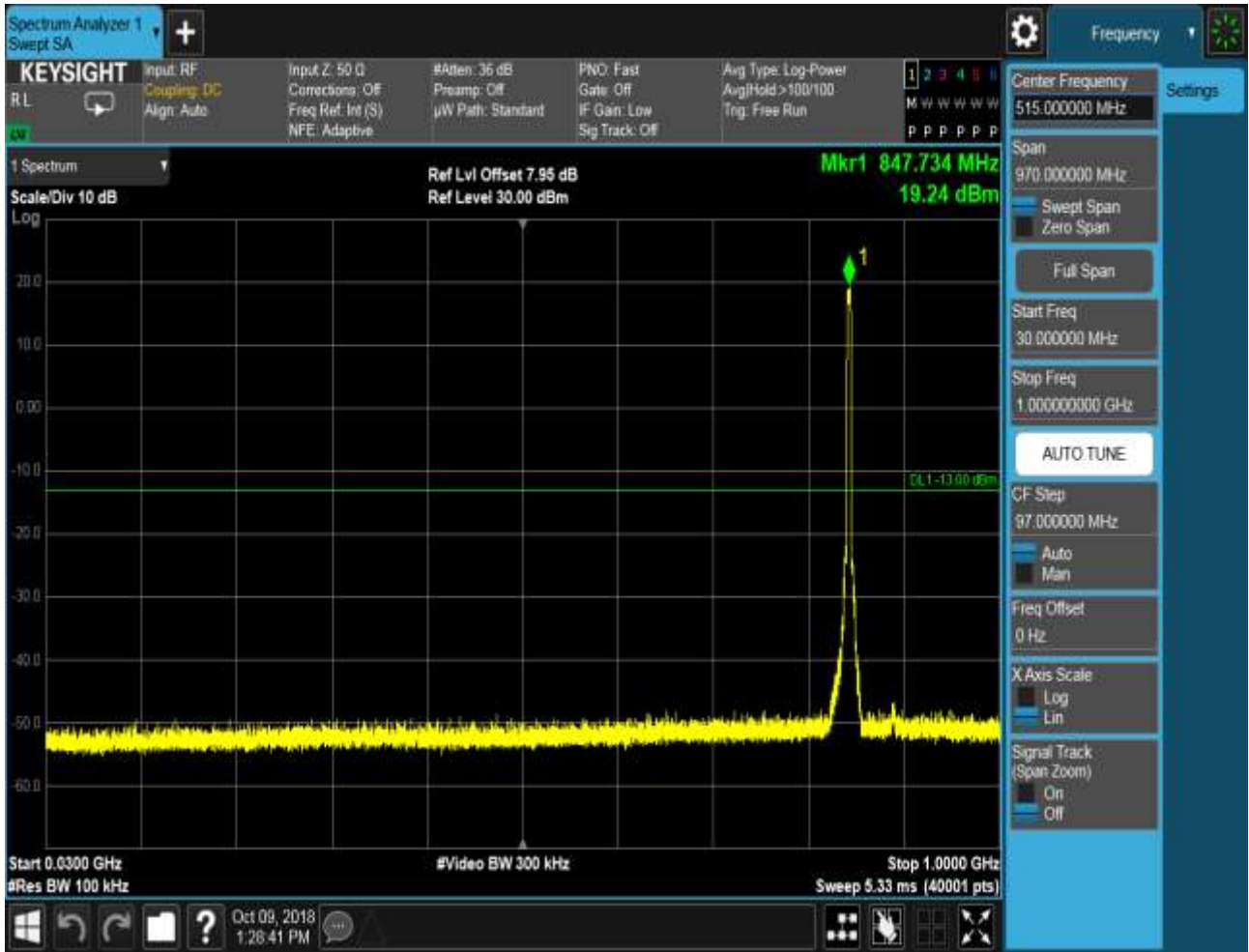


### 6.1.1.1.3 Test Channel = HCH











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







## 8Appendix\_G: 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	-3.52621	-0.00427	PASS
				VN	0.22173	0.00027	PASS
				VH	-1.74522	-0.00211	PASS
		MCH	TN	VL	-1.20163	-0.00144	PASS
				VN	0.37193	0.00044	PASS
				VH	-1.30177	-0.00156	PASS
		HCH	TN	VL	1.80960	0.00214	PASS
				VN	-0.12159	-0.00014	PASS
				VH	2.54631	0.00301	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	4.58479	0.00268	PASS
				VN	0.12875	0.00008	PASS
				VH	1.25170	0.00073	PASS
		MCH	TN	VL	2.23160	0.00129	PASS
				VN	-1.20163	-0.00069	PASS
				VH	0.57220	0.00033	PASS
		HCH	TN	VL	1.10149	0.00063	PASS
				VN	-3.03268	-0.00173	PASS
				VH	-2.32458	-0.00133	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	3.47614	0.00188	PASS
				VN	3.14712	0.00170	PASS
				VH	-2.96831	-0.00160	PASS
		MCH	TN	VL	0.11444	0.00006	PASS
				VN	-2.13862	-0.00114	PASS
				VH	-3.21150	-0.00171	PASS
		HCH	TN	VL	4.63486	0.00188	PASS
				VN	5.02825	0.00170	PASS
				VH	3.02553	-0.00160	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	1.70231	0.00206	PASS
				-20	1.91688	0.00232	PASS
				-10	-1.64509	-0.00199	PASS
				0	0.20742	0.00025	PASS
				10	2.04563	0.00248	PASS
				20	0.22173	0.00027	PASS
				30	0.22173	0.00027	PASS
				40	-2.28167	-0.00276	PASS
				50	-3.89814	-0.00472	PASS
		MCH	VN	-30	3.73364	0.00446	PASS
				-20	5.35011	0.00640	PASS
				-10	-0.05007	-0.00006	PASS
				0	0.85115	0.00102	PASS
				10	3.54052	0.00423	PASS
				20	0.37193	0.00044	PASS
				30	0.82970	0.00099	PASS
				40	-4.85659	-0.00581	PASS
				50	4.84943	0.00580	PASS
		HCH	VN	-30	5.62191	0.00664	PASS
				-20	3.12567	0.00369	PASS
				-10	-0.11444	-0.00014	PASS
				0	1.48773	0.00176	PASS
				10	3.47614	0.00411	PASS
				20	-0.12159	-0.00014	PASS
				30	-0.25034	-0.00030	PASS
				40	-6.30140	-0.00744	PASS
				50	2.93255	0.00346	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	-4.40597	-0.00257	PASS
				-20	-1.00136	-0.00058	PASS
				-10	4.06980	0.00238	PASS
				0	0.69380	0.00041	PASS
				10	4.24147	0.00248	PASS
				20	0.12875	0.00008	PASS
				30	5.09262	0.00297	PASS
				40	2.33173	0.00136	PASS
				50	2.61068	0.00152	PASS
		MCH	VN	-30	-1.23739	-0.00071	PASS
				-20	-3.45469	-0.00199	PASS





Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict				
				-10	0.50783	0.00029	PASS				
				0	-1.12295	-0.00065	PASS				
				10	2.24590	0.00130	PASS				
				20	-1.20163	-0.00069	PASS				
				30	-0.36478	-0.00021	PASS				
				40	-2.41756	-0.00140	PASS				
				50	2.52485	0.00146	PASS				
		HCH	VN	-30	-2.66790	-0.00152	PASS				
				-20	-3.51191	-0.00200	PASS				
				-10	0.70810	0.00040	PASS				
				0	-1.50204	-0.00086	PASS				
				10	2.33889	0.00133	PASS				
				20	-3.03268	-0.00173	PASS				
				30	0.52214	0.00030	PASS				
				40	-3.26157	-0.00186	PASS				
				50	0.66519	0.00038	PASS				
				WCDMA1900	UMTS/TM1	LCH	VN	-30	-0.89407	-0.00048	PASS
								-20	0.79393	0.00043	PASS
-10	4.33445	0.00234	PASS								
0	3.71933	0.00201	PASS								
10	1.29461	0.00070	PASS								
20	3.14712	0.00170	PASS								
30	1.50919	0.00081	PASS								
40	2.55346	0.00138	PASS								
50	4.11272	0.00222	PASS								
MCH	VN	-30	-0.09298			-0.00005	PASS				
		-20	-2.20299			-0.00117	PASS				
		-10	5.19991			0.00277	PASS				
		0	4.04120			0.00215	PASS				
		10	3.21150			0.00171	PASS				
		20	-2.13862			-0.00114	PASS				
		30	6.50167			0.00346	PASS				
		40	-1.91688			-0.00102	PASS				
		50	-0.21458			-0.00011	PASS				
HCH	VN	-30	3.46184			0.00181	PASS				
		-20	5.04255			0.00264	PASS				
		-10	0.68665			0.00036	PASS				
		0	-2.16723			-0.00114	PASS				
		10	-2.00987			-0.00105	PASS				
		20	5.02825			0.00264	PASS				



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				30	-0.38624	-0.00020	PASS
				40	-0.36478	-0.00019	PASS
				50	-0.17166	-0.00009	PASS

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END