



Appendix G

Frequency Stability

According to FCC Part 2.1055& Part 27 Subpart C&L



Frequency Error vs. Temperature:

NOTE: All relevant operation modes have been tested, and the worst case data is included in this report.

Table 1 Measurement Results CDMA&EVDO

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	VN	-30 °C	17	0.00981	---	±2.5	Pass
			-20 °C	-20	-0.01154	---	±2.5	Pass
			-10 °C	19	0.01097	---	±2.5	Pass
			0 °C	11	0.00635	---	±2.5	Pass
			10 °C	-19	-0.01097	---	±2.5	Pass
			20 °C	17	0.00981	---	±2.5	Pass
			30 °C	21	0.01212	---	±2.5	Pass
			40 °C	-22	-0.0127	---	±2.5	Pass
TM 3	M	VN	50 °C	13	0.00750	---	±2.5	Pass
			-30 °C	17	0.00981	---	±2.5	Pass
			-20 °C	10	0.00577	---	±2.5	Pass
			-10 °C	-22	-0.0127	---	±2.5	Pass
			0 °C	-16	-0.00924	---	±2.5	Pass
			10 °C	15	0.00866	---	±2.5	Pass
			20 °C	11	0.00635	---	±2.5	Pass
			30 °C	-21	-0.01212	---	±2.5	Pass
Subtype 0	M	VN	40 °C	14	0.00808	---	±2.5	Pass
			50 °C	-22	-0.0127	---	±2.5	Pass
			-30 °C	10	0.00577	---	±2.5	Pass
			-20 °C	-18	-0.01039	---	±2.5	Pass
			-10 °C	17	0.00981	---	±2.5	Pass
			0 °C	-23	-0.01328	---	±2.5	Pass
			10 °C	16	0.00924	---	±2.5	Pass
			20 °C	13	0.00750	---	±2.5	Pass
Subtype 2	M	VN	30 °C	-17	-0.00981	---	±2.5	Pass
			40 °C	12	0.00693	---	±2.5	Pass
			50 °C	-17	-0.00981	---	±2.5	Pass
			-30 °C	18	0.01039	---	±2.5	Pass
			-20 °C	17	0.00981	---	±2.5	Pass
			-10 °C	-20	-0.01154	---	±2.5	Pass
			0 °C	15	0.00866	---	±2.5	Pass



Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
			10 °C	14	0.00808	---	±2.5	Pass
			20 °C	-16	-0.00924	---	±2.5	Pass
			30 °C	19	0.01097	---	±2.5	Pass
			40 °C	9	0.00520	---	±2.5	Pass
			50 °C	11	0.00635	---	±2.5	Pass

Table 2 Measurement Results (LTE) BAND 4

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 4(5M)	M	VN	-30 °C	13	0.00750	---	±2.5	Pass
			-20 °C	-14	-0.00808	---	±2.5	Pass
			-10 °C	18	0.01039	---	±2.5	Pass
			0 °C	-10	-0.00577	---	±2.5	Pass
			10 °C	15	0.00866	---	±2.5	Pass
			20 °C	14	0.00808	---	±2.5	Pass
			30 °C	-10	-0.00577	---	±2.5	Pass
			40 °C	17	0.00981	---	±2.5	Pass
			50 °C	23	0.01328	---	±2.5	Pass
TM 4(10M)	M	VN	-30 °C	15	0.00866	---	±2.5	Pass
			-20 °C	-11	-0.00635	---	±2.5	Pass
			-10 °C	19	0.01098	---	±2.5	Pass
			0 °C	17	0.00981	---	±2.5	Pass
			10 °C	20	0.01154	---	±2.5	Pass
			20 °C	-10	-0.00577	---	±2.5	Pass
			30 °C	18	0.01039	---	±2.5	Pass
			40 °C	15	0.00866	---	±2.5	Pass
			50 °C	-14	-0.00808	---	±2.5	Pass



Table 3 Measurement Results (LTE) BAND 12

Test Mode	RF Ch.	Volt.	Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 4(1.4M)	M	VN	-30 °C	15	0.02120	---	±2.5	Pass
			-20 °C	-13	-0.01837	---	±2.5	Pass
			-10 °C	23	0.03251	---	±2.5	Pass
			0 °C	20	0.02827	---	±2.5	Pass
			10 °C	-10	-0.01413	---	±2.5	Pass
			20 °C	-16	-0.02261	---	±2.5	Pass
			30 °C	17	0.02403	---	±2.5	Pass
			40 °C	16	0.02262	---	±2.5	Pass
			50 °C	-9	-0.01272	---	±2.5	Pass
TM 4(3M)	M	VN	-30 °C	-17	-0.02403	---	±2.5	Pass
			-20 °C	-13	-0.01837	---	±2.5	Pass
			-10 °C	20	0.02827	---	±2.5	Pass
			0 °C	19	0.02686	---	±2.5	Pass
			10 °C	18	0.02544	---	±2.5	Pass
			20 °C	20	0.02827	---	±2.5	Pass
			30 °C	22	0.03110	---	±2.5	Pass
			40 °C	19	0.02686	---	±2.5	Pass
			50 °C	-10	-0.01413	---	±2.5	Pass
TM 4(5M)	M	VN	-30 °C	15	0.02120	---	±2.5	Pass
			-20 °C	-12	-0.01696	---	±2.5	Pass
			-10 °C	20	0.02827	---	±2.5	Pass
			0 °C	-9	-0.01272	---	±2.5	Pass
			10 °C	17	0.02403	---	±2.5	Pass
			20 °C	15	0.02120	---	±2.5	Pass
			30 °C	-8	-0.01131	---	±2.5	Pass
			40 °C	19	0.02686	---	±2.5	Pass
			50 °C	25	0.03534	---	±2.5	Pass
TM 4(10M)	M	VN	-30 °C	17	0.02403	---	±2.5	Pass
			-20 °C	-9	-0.01272	---	±2.5	Pass
			-10 °C	21	0.02968	---	±2.5	Pass
			0 °C	19	0.02686	---	±2.5	Pass
			10 °C	25	0.03534	---	±2.5	Pass
			20 °C	-14	-0.01979	---	±2.5	Pass
			30 °C	20	0.02827	---	±2.5	Pass
			40 °C	17	0.02403	---	±2.5	Pass
			50 °C	-12	-0.01696	---	±2.5	Pass



Frequency Error vs. Voltage:

Table 4 Measurement Results CDMA&EVDO

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM 1	M	TN	VL	-18	-0.01039	---	±2.5	Pass
			VN	21	0.01212	---	±2.5	Pass
			VH	-14	-0.00808	---	±2.5	Pass
TM 3	M	TN	VL	22	0.01270	---	±2.5	Pass
			VN	-18	-0.01039	---	±2.5	Pass
			VH	21	0.01212	---	±2.5	Pass
Subtype 0	M	TN	VL	23	0.01328	---	±2.5	Pass
			VN	17	0.00981	---	±2.5	Pass
			VH	19	0.01097	---	±2.5	Pass
Subtype 2	M	TN	VL	20	0.01154	---	±2.5	Pass
			VN	-15	-0.00866	---	±2.5	Pass
			VH	18	0.01039	---	±2.5	Pass

Table 5 Measurement Results (LTE) BAND 4

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM4(5M)	M	TN	VL	-20	-0.01154	---	±2.5	Pass
			VN	18	0.01039	---	±2.5	Pass
			VH	20	0.01154	---	±2.5	Pass
TM4(10M)	M	TN	VL	22	0.01270	---	±2.5	Pass
			VN	-18	-0.01039	---	±2.5	Pass
			VH	16	0.00924	---	±2.5	Pass



Table 6 Measurement Results (LTE) BAND 12

Test Mode	RF Ch.	Temp.	Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Limit [ppm]	Verdict
TM4(1.4M)	M	TN	VL	20	0.02827	---	±2.5	Pass
			VN	-19	-0.02686	---	±2.5	Pass
			VH	17	0.02403	---	±2.5	Pass
TM4(3M)	M	TN	VL	15	0.02120	---	±2.5	Pass
			VN	-21	-0.02968	---	±2.5	Pass
			VH	16	0.02262	---	±2.5	Pass
TM4(5M)	M	TN	VL	-23	-0.03251	---	±2.5	Pass
			VN	12	0.01696	---	±2.5	Pass
			VH	13	0.01838	---	±2.5	Pass
TM4(10M)	M	TN	VL	17	0.02403	---	±2.5	Pass
			VN	-20	-0.02827	---	±2.5	Pass
			VH	11	0.01555	---	±2.5	Pass

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