

Frequency stability vs. temperature &Frequency stability vs. voltage Compliance

FCC Part 22H

LTE Band 5, TN/VN

Mode	Test Channel (MHz)	Frequency Error		Limit (ppm)	Verdict
		(Hz)	(ppm)		
10MHz_Middle_QPSK_50@0	836.5	27.9	0.033	±2.5	Pass
10MHz_Middle_16QAM_50@0	836.5	9.6	0.011	±2.5	Pass

LTE Band 5, TH/VH

Mode	Test Channel (MHz)	Frequency Error		Limit (ppm)	Verdict
		(Hz)	(ppm)		
10MHz_Middle_QPSK_50@0	836.5	-1.1	-0.001	±2.5	Pass
10MHz_Middle_16QAM_50@0	836.5	20.2	0.024	±2.5	Pass

LTE Band 5, TL/VL

Mode	Test Channel (MHz)	Frequency Error		Limit (ppm)	Verdict
		(Hz)	(ppm)		
10MHz_Middle_QPSK_50@0	836.5	8.5	0.010	±2.5	Pass
10MHz_Middle_16QAM_50@0	836.5	31.5	0.038	±2.5	Pass

LTE Band 5, TN/VH

Mode	Test Channel (MHz)	Frequency Error		Limit (ppm)	Verdict
		(Hz)	(ppm)		
10MHz_Middle_QPSK_50@0	836.5	21.7	0.026	±2.5	Pass
10MHz_Middle_16QAM_50@0	836.5	42.5	0.051	±2.5	Pass

LTE Band 5, TN/VL

Mode	Test Channel (MHz)	Frequency Error		Limit (ppm)	Verdict
		(Hz)	(ppm)		
10MHz_Middle_QPSK_50@0	836.5	28.6	0.034	±2.5	Pass
10MHz_Middle_16QAM_50@0	836.5	6.2	0.007	±2.5	Pass

Note:
Frequency Error (ppm)=Frequency Error (MHz)/Test Channel(MHz)*10⁶
TN: 20°C; T1: -30°C; T2: -20°C; T3: -10°C; T4: 0°C; T5: 10°C; T6: 30°C; T7: 40°C; T8: 50°C.
VN: Normal Voltage; VL: Low Voltage; VH: High Voltage.

FCC Part 24E

LTE Band 2, TN/VN

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1851.069	1869.051	1850 ~ 1910	Pass
20MHz_Low_16QAM_100@0	1851.069	1868.991	1850 ~ 1910	Pass
20MHz_High_QPSK_100@0	1891.069	1908.991	1850 ~ 1910	Pass
20MHz_High_16QAM_100@0	1891.069	1908.991	1850 ~ 1910	Pass

LTE Band 2, TH/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1851.069	1868.991	1850 ~ 1910	Pass
20MHz_Low_16QAM_100@0	1851.069	1868.991	1850 ~ 1910	Pass
20MHz_High_QPSK_100@0	1891.069	1908.991	1850 ~ 1910	Pass
20MHz_High_16QAM_100@0	1891.069	1908.991	1850 ~ 1910	Pass

LTE Band 2, TL/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1851.069	1868.991	1850 ~ 1910	Pass
20MHz_Low_16QAM_100@0	1851.129	1869.051	1850 ~ 1910	Pass
20MHz_High_QPSK_100@0	1891.069	1908.991	1850 ~ 1910	Pass
20MHz_High_16QAM_100@0	1891.069	1908.991	1850 ~ 1910	Pass

LTE Band 2, TN/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1851.069	1868.991	1850 ~ 1910	Pass
20MHz_Low_16QAM_100@0	1851.069	1868.991	1850 ~ 1910	Pass
20MHz_High_QPSK_100@0	1891.069	1908.991	1850 ~ 1910	Pass
20MHz_High_16QAM_100@0	1891.069	1908.991	1850 ~ 1910	Pass

LTE Band 2, TN/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1851.129	1868.991	1850 ~ 1910	Pass
20MHz_Low_16QAM_100@0	1851.129	1868.991	1850 ~ 1910	Pass
20MHz_High_QPSK_100@0	1891.069	1908.991	1850 ~ 1910	Pass
20MHz_High_16QAM_100@0	1891.069	1908.991	1850 ~ 1910	Pass

Note:
TN: 20°C; T1: -30°C; T2: -20°C; T3: -10°C; T4: 0°C; T5: 10°C; T6: 30°C; T7: 40°C; T8: 50°C.
VN: Normal Voltage; VL: Low Voltage; VH: High Voltage.

FCC Part 27

LTE Band 4, TN/VN

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.129	1728.991	1710 ~ 1755	Pass
20MHz_Low_16QAM_100@0	1711.069	1728.991	1710 ~ 1755	Pass
20MHz_High_QPSK_100@0	1736.129	1753.991	1710 ~ 1755	Pass
20MHz_High_16QAM_100@0	1736.069	1753.991	1710 ~ 1755	Pass

LTE Band 4, TH/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.129	1729.051	1710 ~ 1755	Pass
20MHz_Low_16QAM_100@0	1711.129	1728.991	1710 ~ 1755	Pass
20MHz_High_QPSK_100@0	1736.069	1753.991	1710 ~ 1755	Pass
20MHz_High_16QAM_100@0	1736.129	1753.991	1710 ~ 1755	Pass

LTE Band 4, TL/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.129	1728.991	1710 ~ 1755	Pass
20MHz_Low_16QAM_100@0	1711.129	1728.991	1710 ~ 1755	Pass
20MHz_High_QPSK_100@0	1736.069	1753.991	1710 ~ 1755	Pass
20MHz_High_16QAM_100@0	1736.129	1753.991	1710 ~ 1755	Pass

LTE Band 4, TN/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.069	1728.991	1710 ~ 1755	Pass
20MHz_Low_16QAM_100@0	1711.069	1729.051	1710 ~ 1755	Pass
20MHz_High_QPSK_100@0	1736.069	1753.991	1710 ~ 1755	Pass
20MHz_High_16QAM_100@0	1736.129	1753.991	1710 ~ 1755	Pass

LTE Band 4, TN/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.069	1729.051	1710 ~ 1755	Pass
20MHz_Low_16QAM_100@0	1711.129	1728.991	1710 ~ 1755	Pass
20MHz_High_QPSK_100@0	1736.129	1753.991	1710 ~ 1755	Pass
20MHz_High_16QAM_100@0	1736.069	1753.991	1710 ~ 1755	Pass

LTE Band 12, TN/VN

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	699.564	708.496	699 ~ 716	Pass
10MHz_Low_16QAM_50@0	699.534	708.496	699 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.466	699 ~ 716	Pass
10MHz_High_16QAM_50@0	706.534	715.466	699 ~ 716	Pass

LTE Band 12, TH/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	699.534	708.496	699 ~ 716	Pass
10MHz_Low_16QAM_50@0	699.534	708.496	699 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.496	699 ~ 716	Pass
10MHz_High_16QAM_50@0	706.534	715.466	699 ~ 716	Pass

LTE Band 12, TL/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	699.534	708.466	699 ~ 716	Pass
10MHz_Low_16QAM_50@0	699.534	708.496	699 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.466	699 ~ 716	Pass
10MHz_High_16QAM_50@0	706.534	715.466	699 ~ 716	Pass

LTE Band 12, TN/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	699.534	708.496	699 ~ 716	Pass
10MHz_Low_16QAM_50@0	699.534	708.496	699 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.496	699 ~ 716	Pass

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_High_16QAM_50@0	706.534	715.466	699 ~ 716	Pass

LTE Band 12, TN/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	699.564	708.496	699 ~ 716	Pass
10MHz_Low_16QAM_50@0	699.534	708.496	699 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.466	699 ~ 716	Pass
10MHz_High_16QAM_50@0	706.534	715.466	699 ~ 716	Pass

LTE Band 13, TN/VN

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Middle_QPSK_50@0	777.534	786.466	777 ~ 787	Pass
10MHz_Middle_16QAM_50@0	777.534	786.466	777 ~ 787	Pass

LTE Band 13, TH/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Middle_QPSK_50@0	777.534	786.496	777 ~ 787	Pass
10MHz_Middle_16QAM_50@0	777.534	786.496	777 ~ 787	Pass

LTE Band 13, TL/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Middle_QPSK_50@0	777.534	786.496	777 ~ 787	Pass
10MHz_Middle_16QAM_50@0	777.534	786.496	777 ~ 787	Pass

LTE Band 13, TN/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Middle_QPSK_50@0	777.504	786.496	777 ~ 787	Pass
10MHz_Middle_16QAM_50@0	777.534	786.466	777 ~ 787	Pass

LTE Band 13, TN/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Middle_QPSK_50@0	777.534	786.466	777 ~ 787	Pass
10MHz_Middle_16QAM_50@0	777.534	786.496	777 ~ 787	Pass

LTE Band 17, TN/VN

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_Low_16QAM_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.466	704 ~ 716	Pass
10MHz_High_16QAM_50@0	706.534	715.466	704 ~ 716	Pass

LTE Band 17, TH/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_Low_16QAM_50@0	704.534	713.496	704 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.496	704 ~ 716	Pass
10MHz_High_16QAM_50@0	706.534	715.496	704 ~ 716	Pass

LTE Band 17, TL/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_Low_16QAM_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.466	704 ~ 716	Pass
10MHz_High_16QAM_50@0	706.504	715.466	704 ~ 716	Pass

LTE Band 17, TN/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_Low_16QAM_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.466	704 ~ 716	Pass
10MHz_High_16QAM_50@0	706.534	715.466	704 ~ 716	Pass

LTE Band 17, TN/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
10MHz_Low_QPSK_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_Low_16QAM_50@0	704.534	713.466	704 ~ 716	Pass
10MHz_High_QPSK_50@0	706.534	715.496	704 ~ 716	Pass
10MHz_High_16QAM_50@0	706.504	715.466	704 ~ 716	Pass

LTE Band 66, TN/VN

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.129	1729.051	1710 ~ 1780	Pass
20MHz_Low_16QAM_100@0	1711.129	1728.991	1710 ~ 1780	Pass
20MHz_High_QPSK_100@0	1761.069	1778.991	1710 ~ 1780	Pass
20MHz_High_16QAM_100@0	1761.069	1778.991	1710 ~ 1780	Pass

LTE Band 66, TH/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.129	1728.991	1710 ~ 1780	Pass
20MHz_Low_16QAM_100@0	1711.129	1728.991	1710 ~ 1780	Pass
20MHz_High_QPSK_100@0	1761.009	1778.931	1710 ~ 1780	Pass
20MHz_High_16QAM_100@0	1761.069	1779.051	1710 ~ 1780	Pass

LTE Band 66, TL/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.129	1728.991	1710 ~ 1780	Pass
20MHz_Low_16QAM_100@0	1711.129	1729.051	1710 ~ 1780	Pass
20MHz_High_QPSK_100@0	1761.069	1778.991	1710 ~ 1780	Pass
20MHz_High_16QAM_100@0	1761.069	1778.991	1710 ~ 1780	Pass

LTE Band 66, TN/VH

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.129	1729.051	1710 ~ 1780	Pass
20MHz_Low_16QAM_100@0	1711.129	1728.991	1710 ~ 1780	Pass
20MHz_High_QPSK_100@0	1761.069	1778.991	1710 ~ 1780	Pass

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_High_16QAM_100@0	1761.069	1778.991	1710 ~ 1780	Pass

LTE Band 66, TN/VL

Mode	F_L (MHz)	F_H (MHz)	Limit (MHz)	Verdict
20MHz_Low_QPSK_100@0	1711.129	1729.051	1710 ~ 1780	Pass
20MHz_Low_16QAM_100@0	1711.129	1728.991	1710 ~ 1780	Pass
20MHz_High_QPSK_100@0	1761.069	1778.991	1710 ~ 1780	Pass
20MHz_High_16QAM_100@0	1761.069	1778.991	1710 ~ 1780	Pass

Note:
TN: 20°C; T1: -30°C; T2: -20°C; T3: -10°C; T4: 0°C; T5: 10°C; T6: 30°C; T7: 40°C; T8: 50°C.
VN: Normal Voltage; VL: Low Voltage; VH: High Voltage.

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