

8 Frequency Stability

Test result: Pass

8.1 Limit

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

8.2 Measurement Procedure

Temperature Variation

The EUT was tested over the temperature range -30°C to +50°C in 10°C steps with -48 VDC Power Supply. At each temperature step, the Base Station was configured to transmit at maximum power on the middle channel of the operating band.

Voltage Variation

The EUT was tested at the supplied voltages varied from 85 to 115 percent of the nominal values of -48 VDC. At +20°C, the Base Station was configured to transmit at maximum power on the middle channel of the frequency block.

TEST REPORT

8.3 Measurement result

LTE-1C 60W with Filter Unit

Frequency Error – Temperature Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Frequency Stability (Hz)		
				Channel Position B	Channel Position M	Channel Position T
B	3MHz	64QAM	-30	-	0.21	-
			-20	-	0.2	-
			-10	-	-0.11	-
			0	-	0.19	-
			10	-	0.03	-
			20	-	0.04	-
			30	-	-0.68	-
			40	-	0.86	-
			50	-	0.04	-

Frequency Error – Voltage Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Supply Voltage (V)	Frequency Stability (Hz)		
					Channel Position B	Channel Position M	Channel Position T
B	3MHz	64QAM	20	-40.8	-	-0.07	-
				-48.0	-	0.04	-
				-55.2	-	-0.38	-

TEST REPORT

NB-IoT-IB-1C 60W with Filter Unit

Frequency Error – Temperature Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Frequency Stability (Hz)		
				Channel Position B	Channel Position M	Channel Position T
B	3MHz	QPSK	-30	-	0.33	-
			-20	-	-0.14	-
			-10	-	0.04	-
			0	-	0.27	-
			10	-	0.25	-
			20	-	0.07	-
			30	-	-0.22	-
			40	-	0.26	-
			50	-	0.16	-

Frequency Error – Voltage Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Supply Voltage (V)	Frequency Stability (Hz)		
					Channel Position B	Channel Position M	Channel Position T
B	3MHz	QPSK	20	-40.8	-	-0.20	-
				-48.0	-	0.07	-
				-55.2	-	-0.53	-

TEST REPORT

NB-IoT-SA-1C 20W with Filter Unit

Frequency Error – Temperature Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Frequency Stability (Hz)		
				Channel Position B	Channel Position M	Channel Position T
B	3MHz	64QAM	-30	-1.26	1.95	-0.79
			-20	0.74	1.31	0.67
			-10	-0.71	0.17	-1.25
			0	1.95	0.07	-0.56
			10	0.52	-0.78	0.42
			20	0.30	-2.95	-0.93
			30	0.95	0.31	0.12
			40	-0.58	1.01	-0.26
			50	1.16	0.33	-0.89

Frequency Error – Voltage Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Supply Voltage (V)	Frequency Stability (Hz)		
					Channel Position B	Channel Position M	Channel Position T
B	3MHz	64QAM	20	-40.8	-0.46	-0.36	-0.42
				-48.0	0.30	-2.95	-0.93
				-55.2	-0.95	-1.33	-1.13

TEST REPORT

LTE-1C 40W without Filter Unit

Frequency Error – Temperature Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Frequency Stability (Hz)		
				Channel Position B	Channel Position M	Channel Position T
B	3MHz	64QAM	-30	-	0.26	-
			-20	-	0.02	-
			-10	-	0.35	-
			0	-	0.43	-
			10	-	0.21	-
			20	-	0.29	-
			30	-	-0.09	-
			40	-	0.03	-
			50	-	-0.31	-

Frequency Error – Voltage Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Supply Voltage (V)	Frequency Stability (Hz)		
					Channel Position B	Channel Position M	Channel Position T
B	3MHz	64QAM	20	-40.8	-	-0.11	-
				-48.0	-	0.29	-
				-55.2	-	-.26	-

TEST REPORT

NB-IoT-IB-1C 40W without Filter Unit

Frequency Error – Temperature Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Frequency Stability (Hz)		
				Channel Position B	Channel Position M	Channel Position T
B	3MHz	QPSK	-30	-	0.53	-
			-20	-	-0.49	-
			-10	-	0.80	-
			0	-	-0.56	-
			10	-	0.03	-
			20	-	-0.16	-
			30	-	0.45	-
			40	-	0.01	-
			50	-	0.51	-

Frequency Error – Voltage Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Supply Voltage (V)	Frequency Stability (Hz)		
					Channel Position B	Channel Position M	Channel Position T
B	3MHz	QPSK	20	-40.8	-	0.27	-
				-48.0	-	-0.16	-
				-55.2	-	0.12	-

TEST REPORT

NB-IoT-SA-1C 20W without Filter Unit

Frequency Error – Temperature Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Frequency Stability (Hz)		
				Channel Position B	Channel Position M	Channel Position T
B	3MHz	64QAM	-30	0.67	-2.19	-0.11
			-20	-0.69	-0.02	2.42
			-10	-1.67	1.70	-0.82
			0	0.68	2.10	0.49
			10	-0.94	0.01	-0.75
			20	-0.35	-0.47	-0.42
			30	-0.92	2.35	-0.22
			40	0.57	1.60	1.08
			50	1.36	0.35	2.20

Frequency Error – Voltage Variation

Antenna Port	Channel Bandwidth	Modulation	Temperature (°C)	Supply Voltage (V)	Frequency Stability (Hz)		
					Channel Position B	Channel Position M	Channel Position T
B	3MHz	64QAM	20	-40.8	1.67	1.95	1.90
				-48.0	-0.35	-0.47	-0.42
				-55.2	1.78	1.60	1.54

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