Appendix A-GSM

Test Information:

Sample No.:	31JY-2	**Test Date:**	2025/05/27~2025/05/28
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Len Lin	**Test Result:**	Pass

Environmental Conditions:

Temperature: (°C)	25.2~25.5	**Relative Humidity: (%)**	53~59	**ATM Pressure: (kPa)**	100.2

RF Output Power

FCC Part 22H

GSM 850, Normal

Mode	Average Conducted Power (dBm)	ERP (dBm)	Limit (dBm)	Verdict
GSM_Low	33.90	27.19	38.45	Pass
GSM_Middle	33.85	27.14	38.45	Pass
GSM_High	33.84	27.13	38.45	Pass
GPRS_Low_Slot1	33.90	27.19	38.45	Pass
GPRS_Low_Slot2	32.09	25.38	38.45	Pass
GPRS_Low_Slot3	30.26	23.55	38.45	Pass
GPRS_Low_Slot4	28.44	21.73	38.45	Pass
GPRS_Middle_Slot1	33.87	27.16	38.45	Pass
GPRS_Middle_Slot2	31.96	25.25	38.45	Pass
GPRS_Middle_Slot3	30.23	23.52	38.45	Pass
GPRS_Middle_Slot4	28.41	21.70	38.45	Pass
GPRS_High_Slot1	33.84	27.13	38.45	Pass
GPRS_High_Slot2	31.91	25.20	38.45	Pass
GPRS_High_Slot3	30.18	23.47	38.45	Pass
GPRS_High_Slot4	28.35	21.64	38.45	Pass

Note:

ERP = Average Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)

Antenna Gain(dBd) = Antenna Gain(dBi) - 2.15

GSM 850:

1.Antenna Gain = -3.56dBi;

2.Cable Loss = 1dB.

FCC Part 24E

GSM 1900, Normal

Mode	Average Conducted Power (dBm)	EIRP (dBm)	Limit (dBm)	Verdict
GSM_Low	29.56	29.41	33	Pass
GSM_Middle	29.85	29.70	33	Pass
GSM_High	29.90	29.75	33	Pass
GPRS_Low_Slot1	29.56	29.41	33	Pass
GPRS_Low_Slot2	27.33	27.18	33	Pass
GPRS_Low_Slot3	25.73	25.58	33	Pass
GPRS_Low_Slot4	23.74	23.59	33	Pass
GPRS_Middle_Slot1	29.87	29.72	33	Pass
GPRS_Middle_Slot2	27.76	27.61	33	Pass
GPRS_Middle_Slot3	26.19	26.04	33	Pass
GPRS_Middle_Slot4	24.22	24.07	33	Pass
GPRS_High_Slot1	29.91	29.76	33	Pass
GPRS_High_Slot2	27.99	27.84	33	Pass
GPRS_High_Slot3	26.45	26.30	33	Pass
GPRS_High_Slot4	24.51	24.36	33	Pass

Note:

EIRP = Average Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)

GSM 1900:

1.Antenna Gain = 0.85dBi;

2.Cable Loss = 1dB.

Peak-to-average Ratio(PAR)

FCC Part 22H

GSM 850, Normal

Mode	Result (dB)	Limit (dB)
GSM_Low	0.32	13
GSM_Middle	0.23	13
GSM_High	0.29	13
GPRS_Low_GMSK	0.26	13
GPRS_Middle_GMSK	0.26	13
GPRS_High_GMSK	0.23	13

FCC Part 24E

GSM 1900, Normal

Mode	Result (dB)	Limit (dB)
GSM_Low	0.41	13
GSM_Middle	0.43	13
GSM_High	0.43	13
GPRS_Low_GMSK	0.41	13
GPRS_Middle_GMSK	0.38	13
GPRS_High_GMSK	0.43	13

Occupied Bandwidth

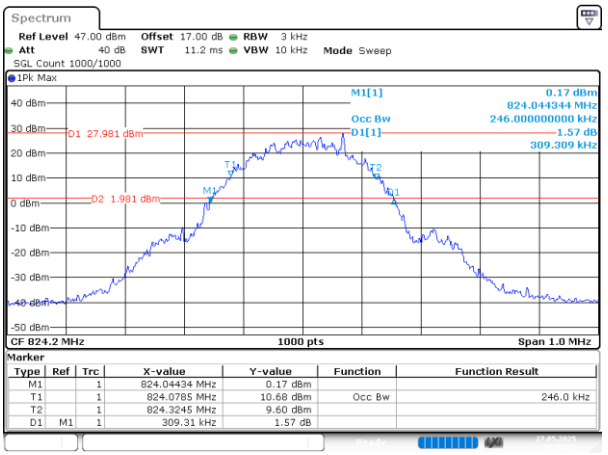
FCC Part 22H

GSM 850, Normal

Mode	99% OBW (MHz)	26dB BW (MHz)
GSM_Low	0.246	0.309
GSM_Middle	0.240	0.308
GSM_High	0.240	0.311
GPRS_Low_GMSK	0.241	0.314
GPRS_Middle_GMSK	0.244	0.319
GPRS_High_GMSK	0.242	0.316

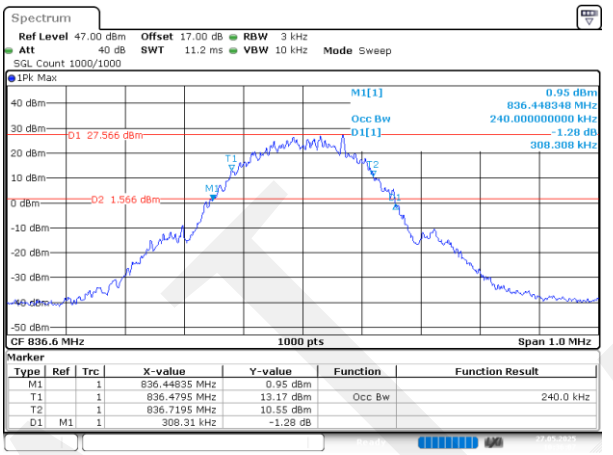
GSM 850, Normal

GSM_Low



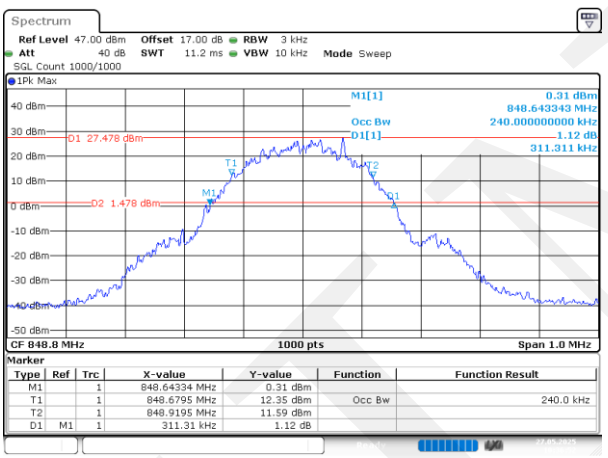
ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:35:24

GSM_Middle



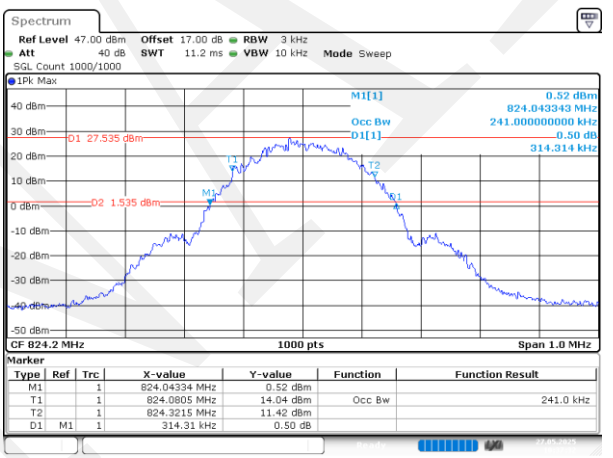
ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:36:07

GSM_High



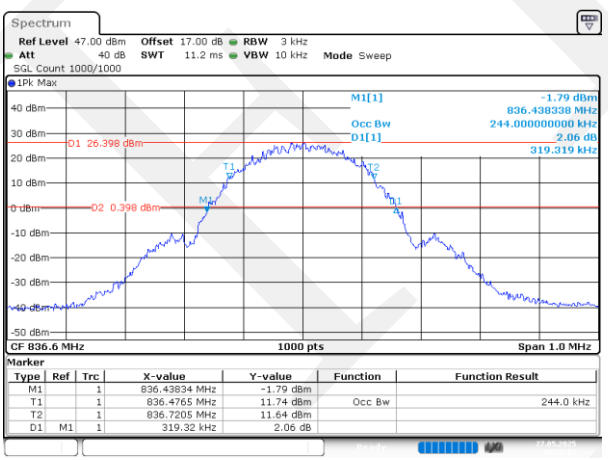
ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:36:53

GPRS_Low_GMSK



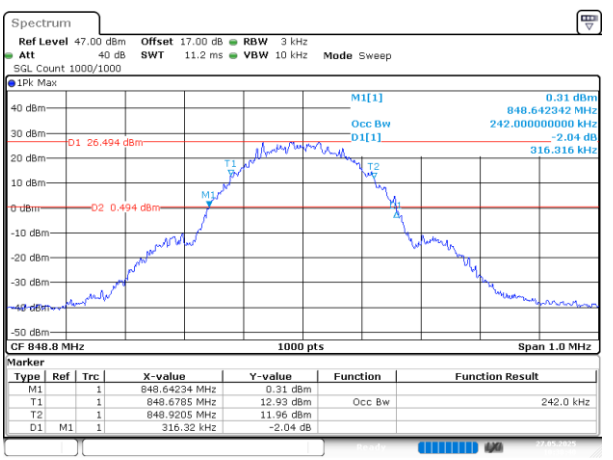
ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:37:32

GPRS_Middle_GMSK



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:38:07

GPRS_High_GMSK



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:38:40

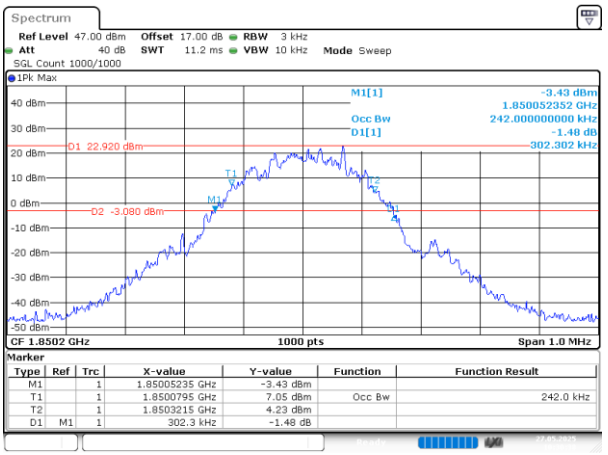
FCC Part 24E

GSM 1900, Normal

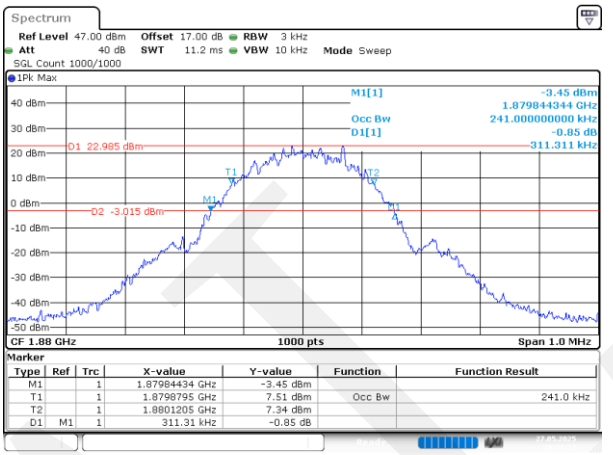
Mode	99% OBW (MHz)	26dB BW (MHz)
GSM_Low	0.242	0.302
GSM_Middle	0.241	0.311
GSM_High	0.246	0.310
GPRS_Low_GMSK	0.242	0.313
GPRS_Middle_GMSK	0.245	0.320
GPRS_High_GMSK	0.245	0.315

GSM 1900, Normal

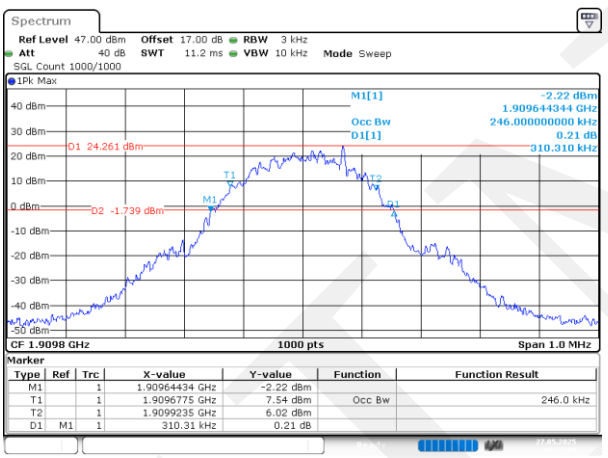
GSM_Low



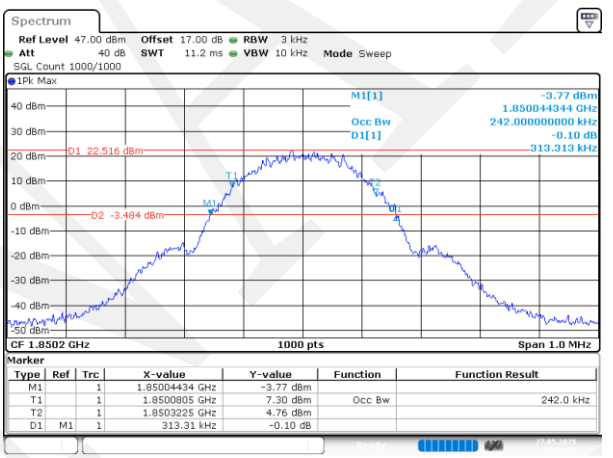
GSM_Middle



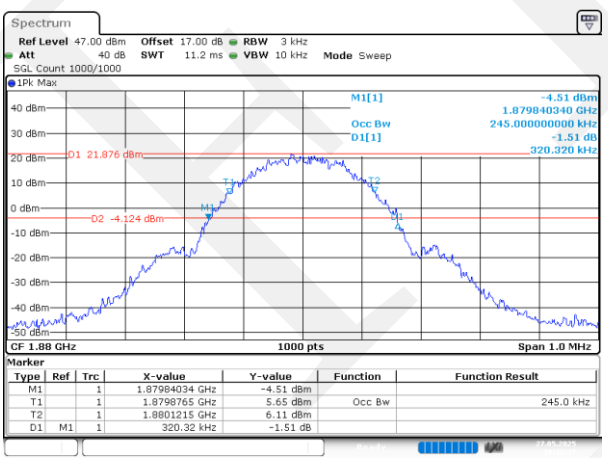
GSM_High



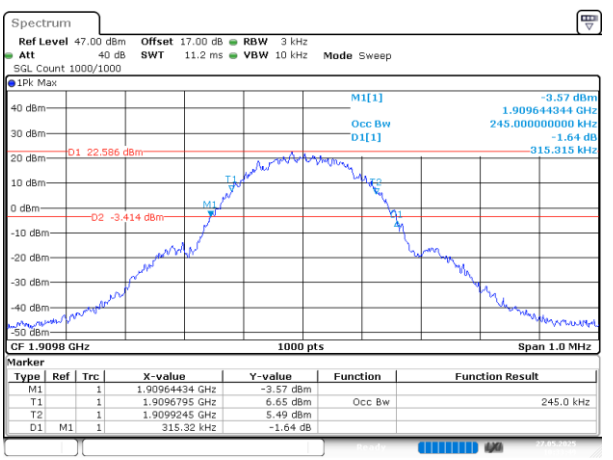
GPRS_Low_GMSK



GPRS_Middle_GMSK



GPRS_High_GMSK



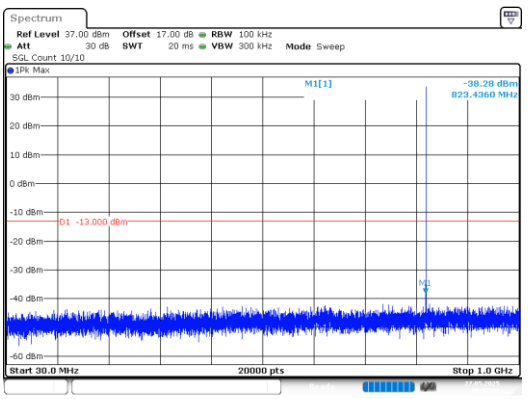
Spurious Emissions at Antenna Terminal

FCC Part 22H

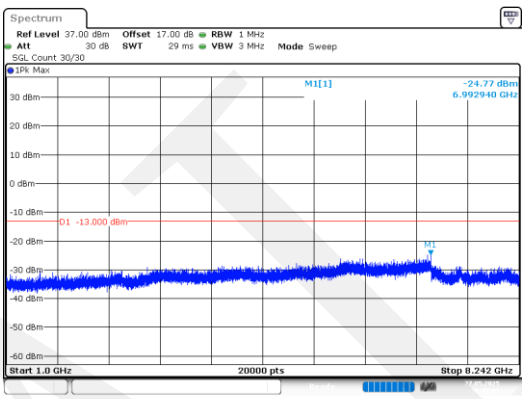
GSM 850, Normal

GSM_Low

Below 1G

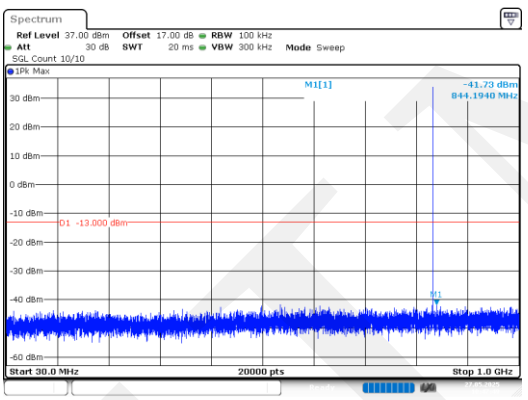


Above 1G

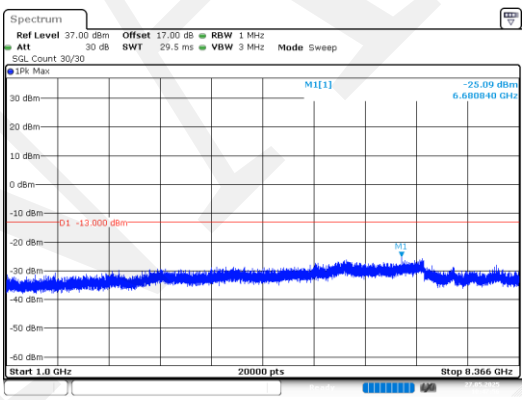


GSM_Middle

Below 1G

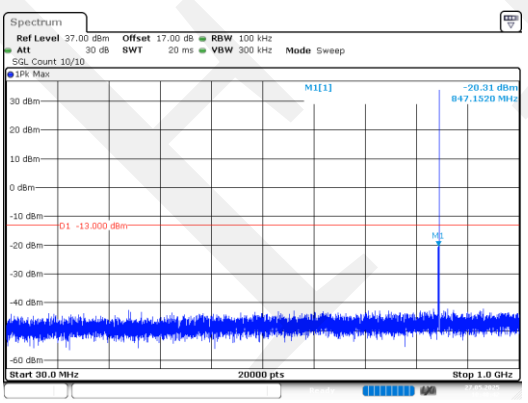


Above 1G

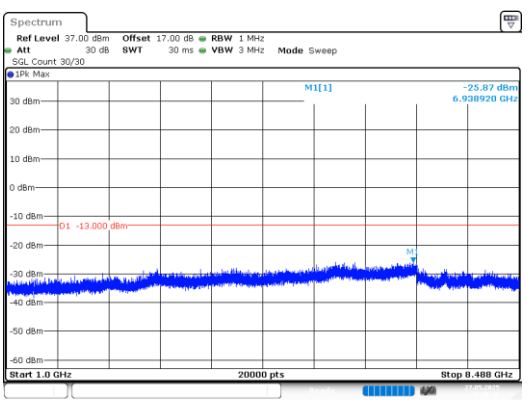


GSM_High

Below 1G

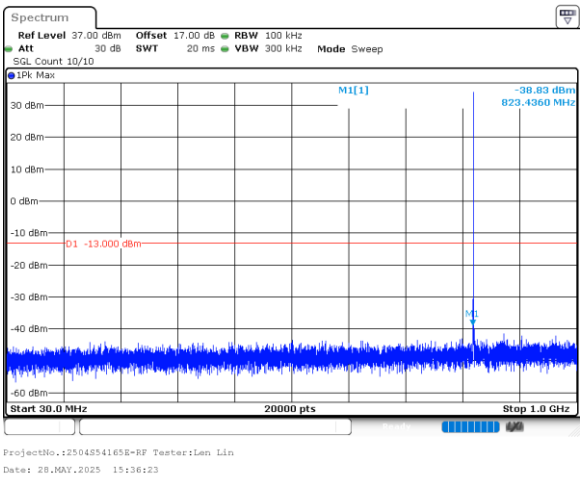


Above 1G



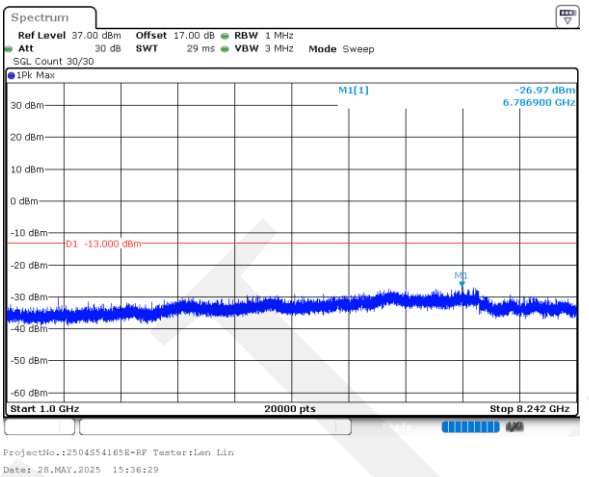
GPRS_Low_GMSK

Below 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 28.MAY.2025 15:36:23

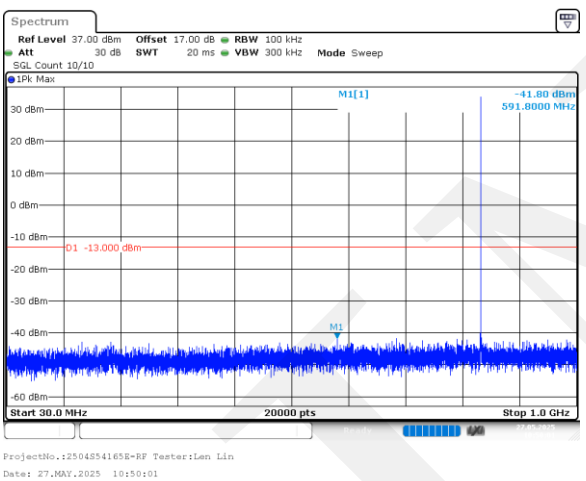
Above 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 28.MAY.2025 15:36:29

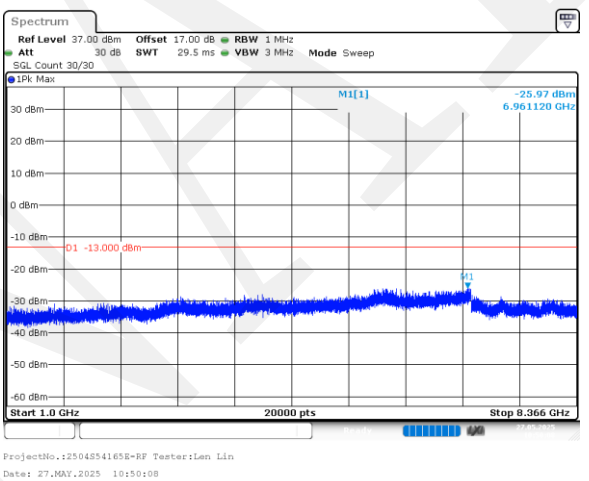
GPRS_Middle_GMSK

Below 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:50:01

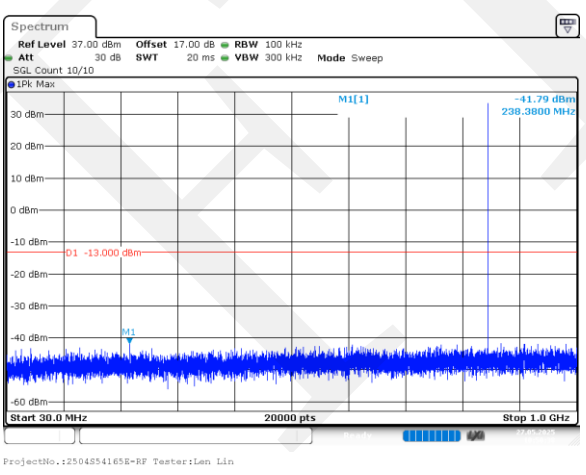
Above 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:50:08

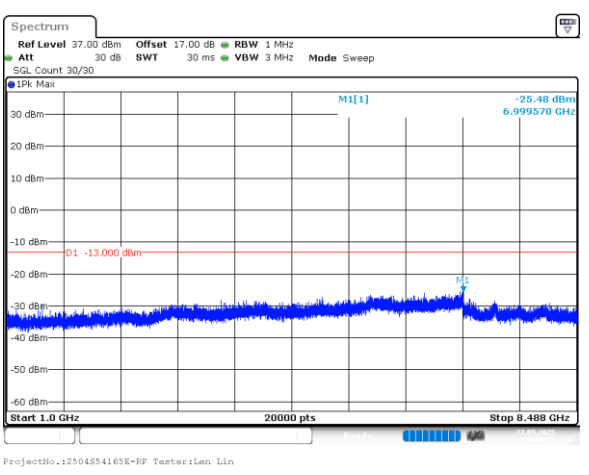
GPRS_High_GMSK

Below 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:50:38

Above 1G



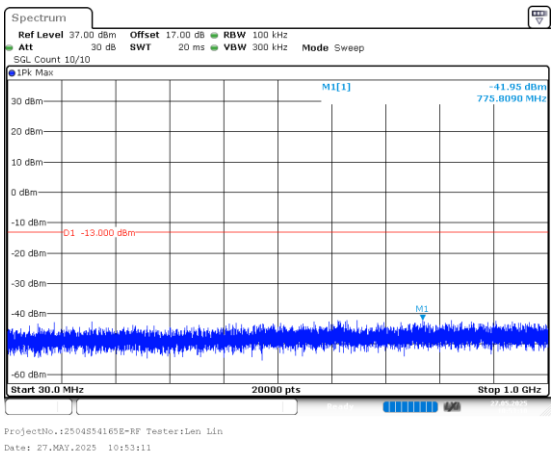
ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:50:45

FCC Part 24E

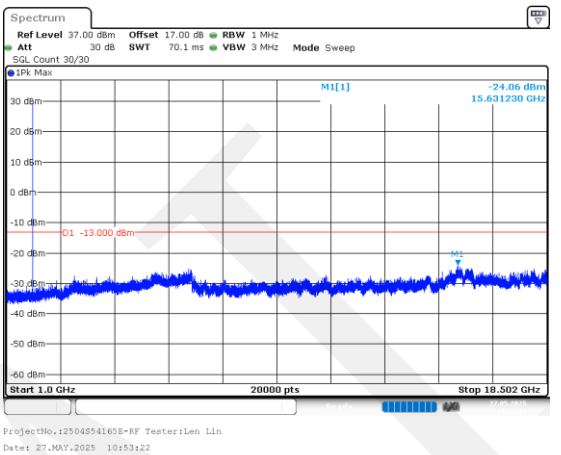
GSM 1900, Normal

GSM_Low

Below 1G

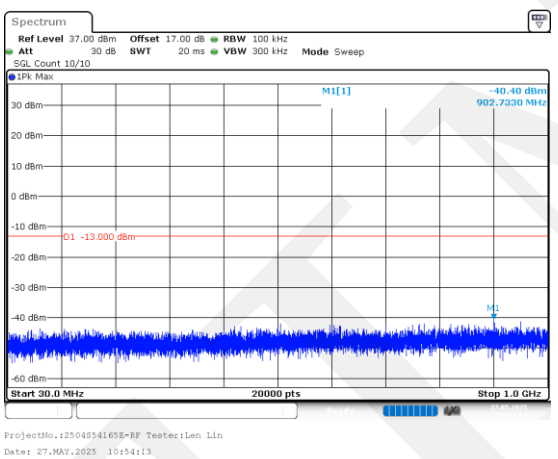


Above 1G

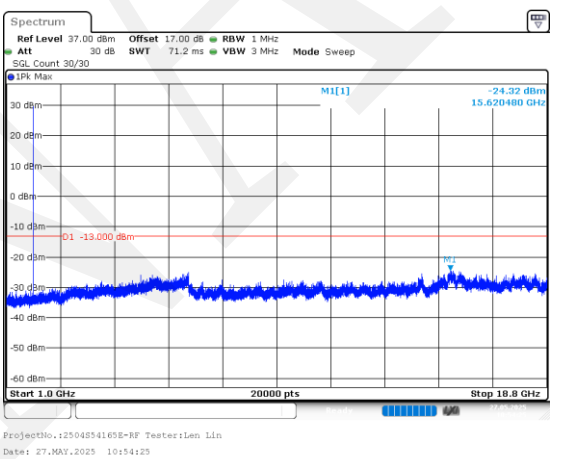


GSM_Middle

Below 1G

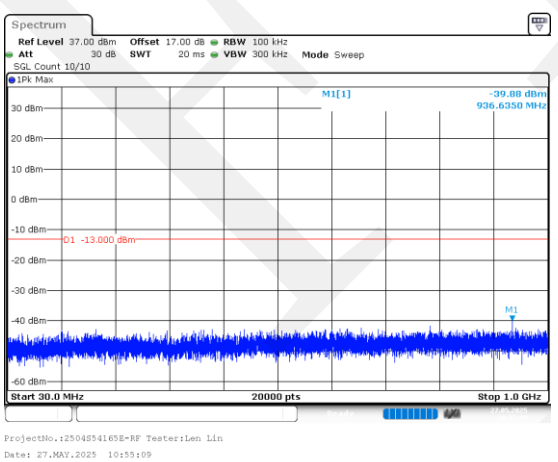


Above 1G

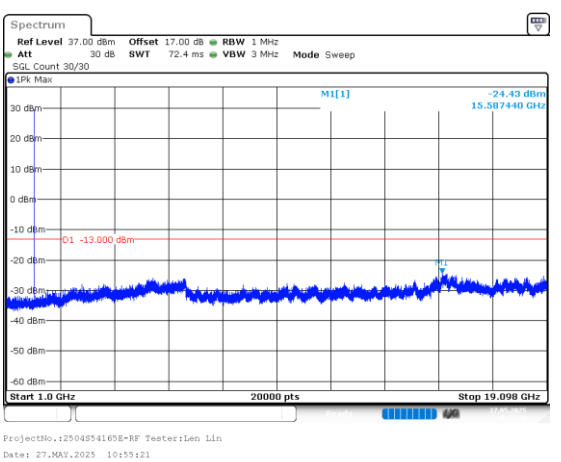


GSM_High

Below 1G

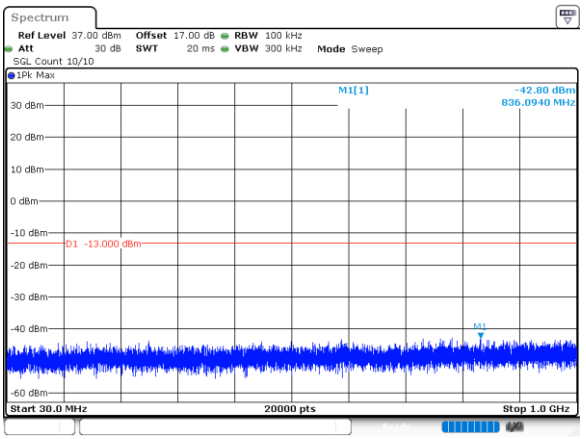


Above 1G



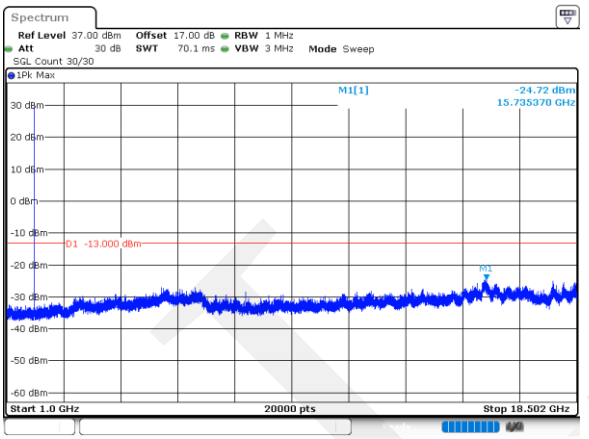
GPRS_Low_GMSK

Below 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 28.MAY.2025 15:38:27

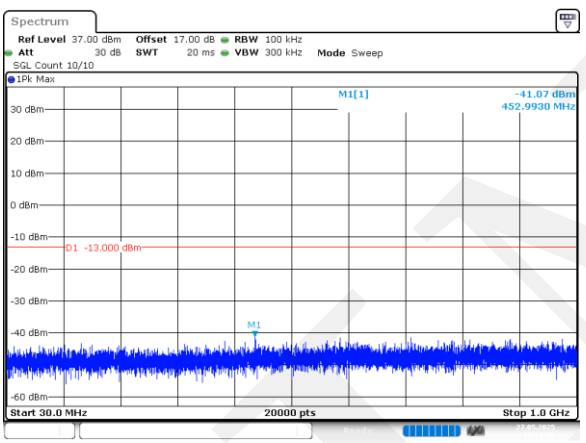
Above 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 28.MAY.2025 15:38:38

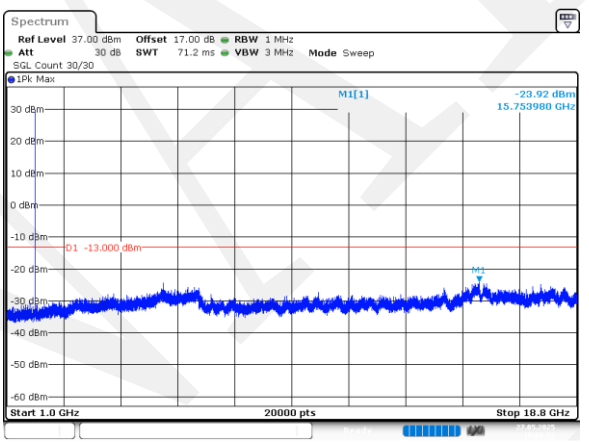
GPRS_Middle_GMSK

Below 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:56:41

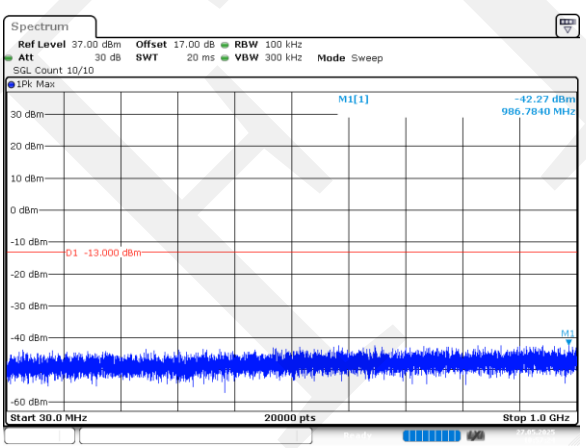
Above 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:56:53

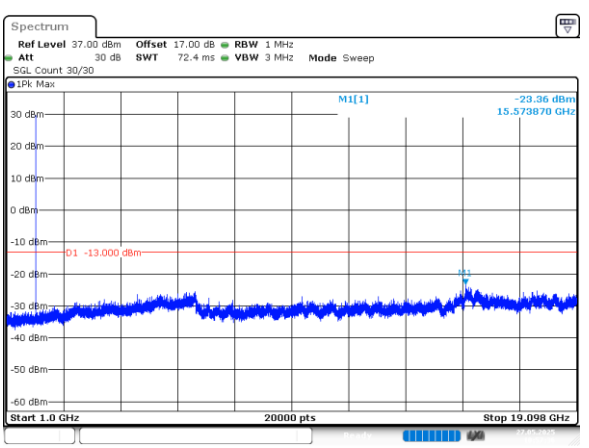
GPRS_High_GMSK

Below 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:57:24

Above 1G



ProjectNo.:2504S54165E-RF Tester:Len Lin
Date: 27.MAY.2025 10:57:36

Out of band emission,Band Edge

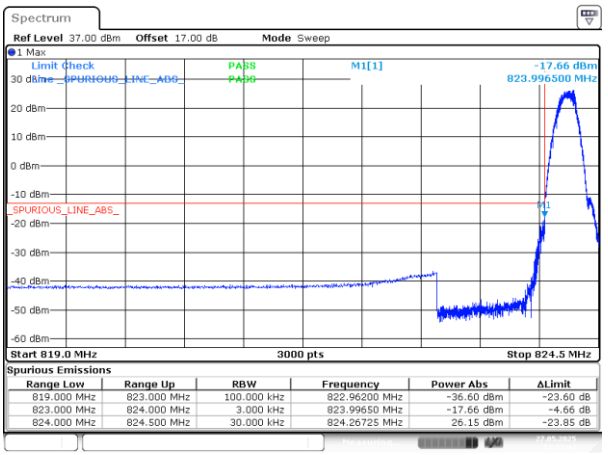
FCC Part 22H

GSM 850, Normal

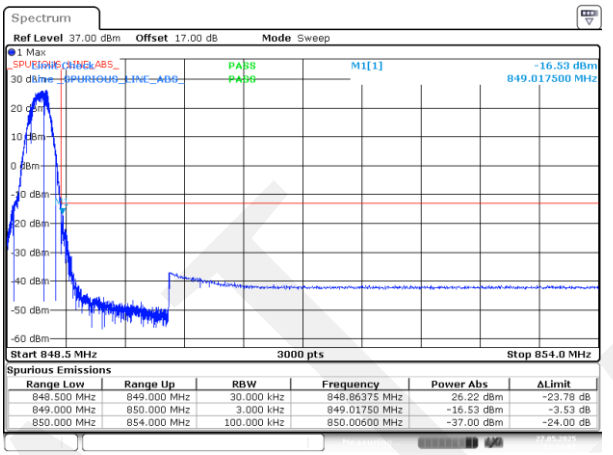
Mode	Result (dBm)	Limit	Verdict
GSM_Low	-17.66	See Graphs	Pass
GSM_High	-16.53	See Graphs	Pass
GPRS_Low_GMSK	-19.22	See Graphs	Pass
GPRS_High_GMSK	-17.83	See Graphs	Pass

GSM 850, Normal

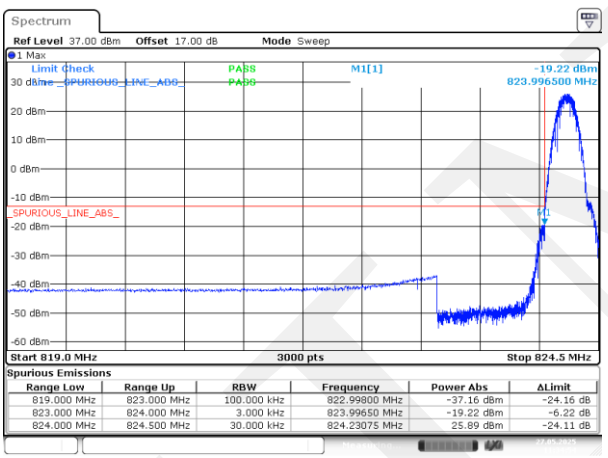
GSM_Low



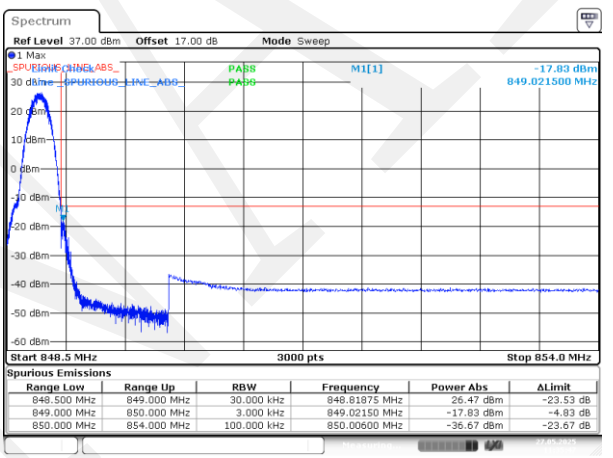
GSM_High



GPRS_Low_GMSK



GPRS_High_GMSK



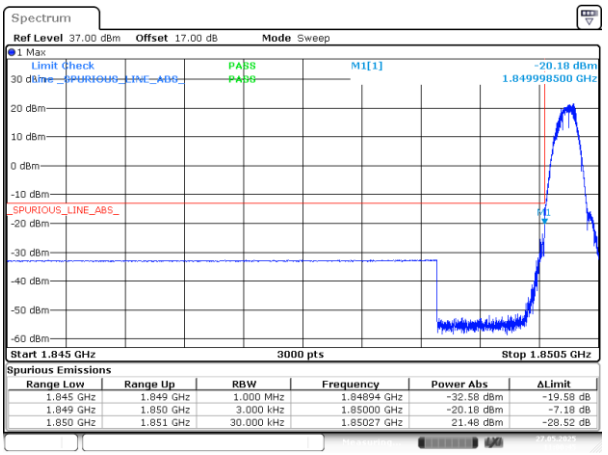
FCC Part 24E

GSM 1900, Normal

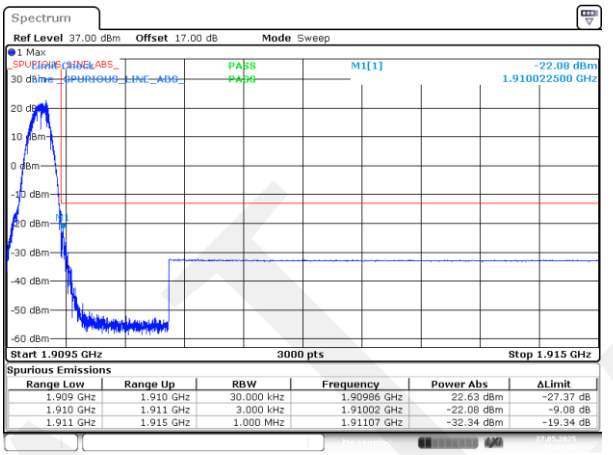
Mode	Result (dBm)	Limit	Verdict
GSM_Low	-20.18	See Graphs	Pass
GSM_High	-22.08	See Graphs	Pass
GPRS_Low_GMSK	-21.71	See Graphs	Pass
GPRS_High_GMSK	-22.56	See Graphs	Pass

GSM 1900, Normal

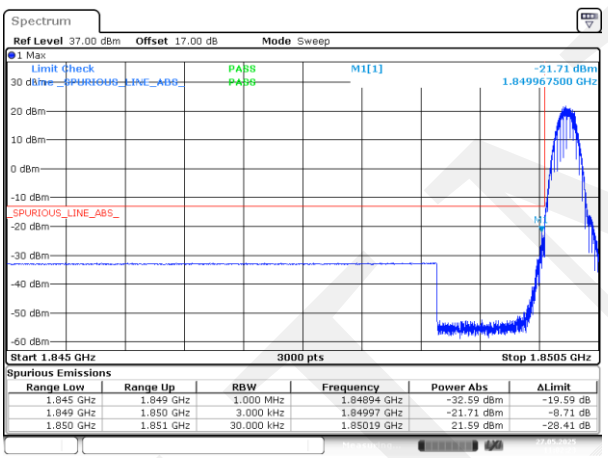
GSM_Low



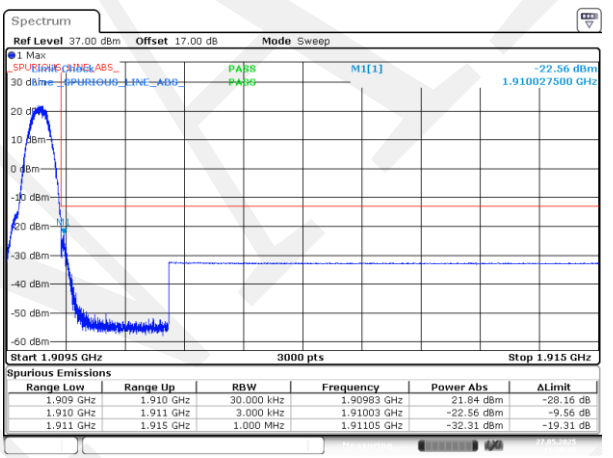
GSM_High



GPRS_Low_GMSK



GPRS_High_GMSK



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

FCC Part 22H

GSM 850

Mode	Test Channel (MHz)	Frequency Error		Limit (ppm)	Verdict
		(Hz)	(ppm)		
GSM_Middle_TN/VN	836.6	-31.1	-0.0371	±2.5	Pass
GSM_Middle_TH/VH	836.6	-14.0	-0.0167	±2.5	Pass
GSM_Middle_TL/VL	836.6	-24.5	-0.0293	±2.5	Pass
GSM_Middle_TN/VH	836.6	-15.5	-0.0186	±2.5	Pass
GSM_Middle_TN/VL	836.6	-25.5	-0.0305	±2.5	Pass
GPRS_Middle_GMSK_TN/VN	836.6	-15.8	-0.0188	±2.5	Pass
GPRS_Middle_GMSK_TH/VH	836.6	-15.0	-0.0179	±2.5	Pass
GPRS_Middle_GMSK_TL/VL	836.6	-14.1	-0.0169	±2.5	Pass
GPRS_Middle_GMSK_TN/VH	836.6	-9.3	-0.0112	±2.5	Pass
GPRS_Middle_GMSK_TN/VL	836.6	-17.9	-0.0214	±2.5	Pass

Note:

Frequency Error (ppm)=Frequency Error (MHz)/Test Channel(MHz)*10^6

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

GSM 1900

Mode	Result (MHz)	Limit (MHz)	Verdict
GSM_Low_TN/VN	1850.080	1850	Pass
GSM_Low_TH/VH	1850.078	1850	Pass
GSM_Low_TL/VL	1850.078	1850	Pass
GSM_Low_TN/VH	1850.081	1850	Pass
GSM_Low_TN/VL	1850.079	1850	Pass
GSM_High_TN/VN	1909.921	1910	Pass
GSM_High_TH/VH	1909.917	1910	Pass
GSM_High_TL/VL	1909.921	1910	Pass
GSM_High_TN/VH	1909.921	1910	Pass
GSM_High_TN/VL	1909.921	1910	Pass
GPRS_Low_GMSK_TN/VN	1850.080	1850	Pass
GPRS_Low_GMSK_TH/VH	1850.080	1850	Pass
GPRS_Low_GMSK_TL/VL	1850.081	1850	Pass
GPRS_Low_GMSK_TN/VH	1850.080	1850	Pass
GPRS_Low_GMSK_TN/VL	1850.082	1850	Pass
GPRS_High_GMSK_TN/VN	1909.924	1910	Pass
GPRS_High_GMSK_TH/VH	1909.921	1910	Pass
GPRS_High_GMSK_TL/VL	1909.923	1910	Pass
GPRS_High_GMSK_TN/VH	1909.924	1910	Pass
GPRS_High_GMSK_TN/VL	1909.921	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.

***** END *****