

Appendix A-GSM

Test Information:

Sample No.:	31OF-3	Test Date:	2025/06/16~2025/08/04
Test Site:	RF	Test Mode:	Transmitting
Tester:	Benny Li	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.0~26.3	Relative Humidity: (%)	47	ATM Pressure: (kPa)	99.3~99.7
----------------------	-----------	------------------------------	----	------------------------	-----------

RF Output Power

FCC Part 22H

GSM 850, Normal

Mode	Average Conducted Power (dBm)	ERP (dBm)	Limit (dBm)	Verdict
GSM_Low	33.13	29.42	38.45	Pass
GSM_Middle	33.12	29.41	38.45	Pass
GSM_High	33.03	29.32	38.45	Pass
GPRS_Low_Slot1	33.14	29.43	38.45	Pass
GPRS_Low_Slot2	32.38	28.67	38.45	Pass
GPRS_Low_Slot3	30.61	26.90	38.45	Pass
GPRS_Low_Slot4	29.53	25.82	38.45	Pass
GPRS_Middle_Slot1	33.18	29.47	38.45	Pass
GPRS_Middle_Slot2	32.41	28.70	38.45	Pass
GPRS_Middle_Slot3	30.64	26.93	38.45	Pass
GPRS_Middle_Slot4	29.53	25.82	38.45	Pass
GPRS_High_Slot1	33.08	29.37	38.45	Pass
GPRS_High_Slot2	32.32	28.61	38.45	Pass
GPRS_High_Slot3	30.53	26.82	38.45	Pass
GPRS_High_Slot4	29.41	25.70	38.45	Pass
EDGE_Low_Slot1	26.34	22.63	38.45	Pass
EDGE_Low_Slot2	25.23	21.52	38.45	Pass
EDGE_Low_Slot3	23.05	19.34	38.45	Pass
EDGE_Low_Slot4	22.01	18.30	38.45	Pass
EDGE_Middle_Slot1	26.37	22.66	38.45	Pass
EDGE_Middle_Slot2	25.27	21.56	38.45	Pass
EDGE_Middle_Slot3	23.04	19.33	38.45	Pass
EDGE_Middle_Slot4	21.96	18.25	38.45	Pass
EDGE_High_Slot1	26.29	22.58	38.45	Pass
EDGE_High_Slot2	25.13	21.42	38.45	Pass
EDGE_High_Slot3	22.98	19.27	38.45	Pass
EDGE_High_Slot4	21.92	18.21	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 = -1.56dBi;

2.Cable Loss = 0dB.

FCC Part 24E

GSM 1900, Normal

Mode	Average Conducted Power (dBm)	EIRP (dBm)	Limit (dBm)	Verdict
GSM_Low	29.44	28.24	33	Pass
GSM_Middle	29.44	28.24	33	Pass
GSM_High	29.47	28.27	33	Pass
GPRS_Low_Slot1	29.44	28.24	33	Pass
GPRS_Low_Slot2	28.53	27.33	33	Pass
GPRS_Low_Slot3	26.61	25.41	33	Pass
GPRS_Low_Slot4	25.58	24.38	33	Pass
GPRS_Middle_Slot1	29.46	28.26	33	Pass
GPRS_Middle_Slot2	28.57	27.37	33	Pass
GPRS_Middle_Slot3	26.63	25.43	33	Pass
GPRS_Middle_Slot4	25.57	24.37	33	Pass
GPRS_High_Slot1	29.48	28.28	33	Pass
GPRS_High_Slot2	28.61	27.41	33	Pass
GPRS_High_Slot3	26.68	25.48	33	Pass
GPRS_High_Slot4	25.62	24.42	33	Pass
EDGE_Low_Slot1	24.66	23.46	33	Pass
EDGE_Low_Slot2	23.53	22.33	33	Pass
EDGE_Low_Slot3	21.21	20.01	33	Pass
EDGE_Low_Slot4	20.09	18.89	33	Pass
EDGE_Middle_Slot1	24.60	23.40	33	Pass
EDGE_Middle_Slot2	23.37	22.17	33	Pass
EDGE_Middle_Slot3	21.20	20.00	33	Pass
EDGE_Middle_Slot4	20.08	18.88	33	Pass
EDGE_High_Slot1	24.60	23.40	33	Pass
EDGE_High_Slot2	23.37	22.17	33	Pass
EDGE_High_Slot3	21.24	20.04	33	Pass
EDGE_High_Slot4	20.07	18.87	33	Pass

Note:

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

GSM 1900:

- 1.Antenna Gain = -1.2dBi;
- 2.Cable Loss = 0dB.

Peak-to-average Ratio(PAR)

FCC Part 22H

GSM 850, Normal

Mode	Result (dB)	Limit (dB)
GSM_Low	0.23	13
GSM_Middle	0.29	13
GSM_High	0.29	13
GPRS_Low_GMSK	0.23	13
GPRS_Middle_GMSK	0.29	13
GPRS_High_GMSK	0.26	13
EDGE_Low_8PSK	7.71	13
EDGE_Middle_8PSK	4.46	13
EDGE_High_8PSK	4.55	13

FCC Part 24E

GSM 1900, Normal

Mode	Result (dB)	Limit (dB)
GSM_Low	0.26	13
GSM_Middle	0.29	13
GSM_High	0.29	13
GPRS_Low_GMSK	0.29	13
GPRS_Middle_GMSK	0.29	13
GPRS_High_GMSK	0.29	13
EDGE_Low_8PSK	3.25	13
EDGE_Middle_8PSK	3.59	13
EDGE_High_8PSK	3.83	13

Occupied Bandwidth

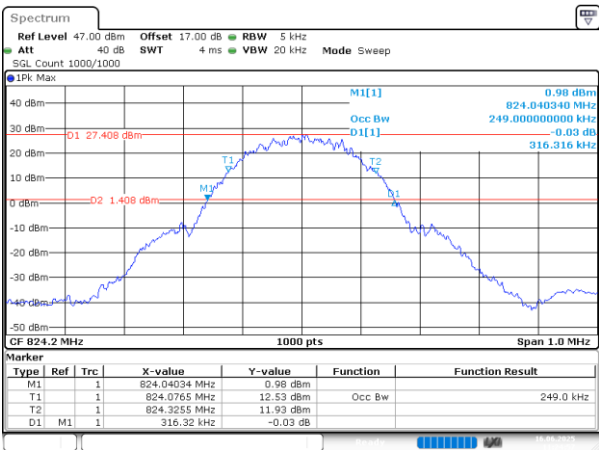
FCC Part 22H

GSM 850, Normal

Mode	99% OBW (MHz)	26dB BW (MHz)
GSM_Low	0.249	0.316
GSM_Middle	0.246	0.318
GSM_High	0.244	0.315
GPRS_Low_GMSK	0.242	0.317
GPRS_Middle_GMSK	0.242	0.313
GPRS_High_GMSK	0.244	0.314
EDGE_Low_8PSK	0.249	0.311
EDGE_Middle_8PSK	0.249	0.321
EDGE_High_8PSK	0.240	0.308

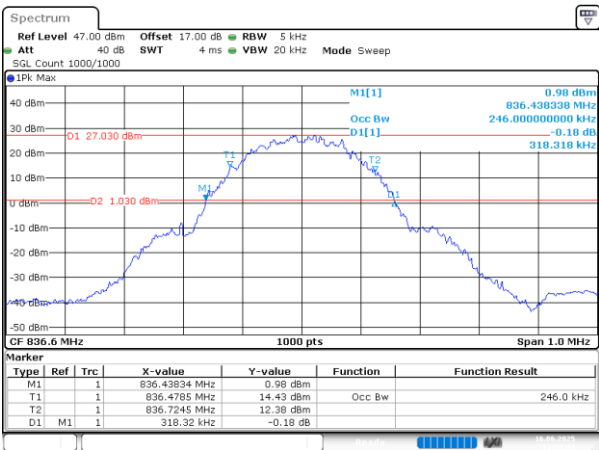
GSM 850, Normal

GSM_Low



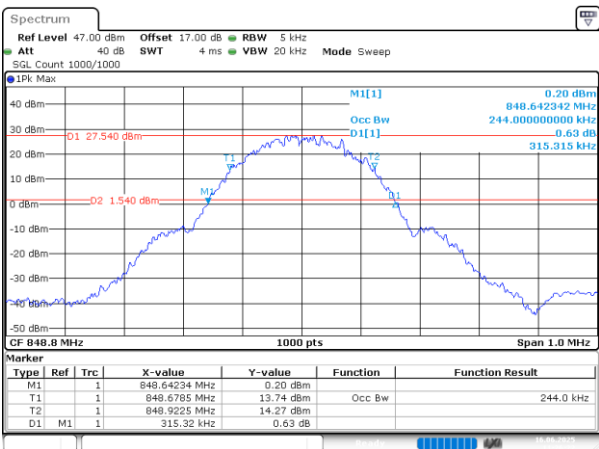
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:24:56

GSM_Middle



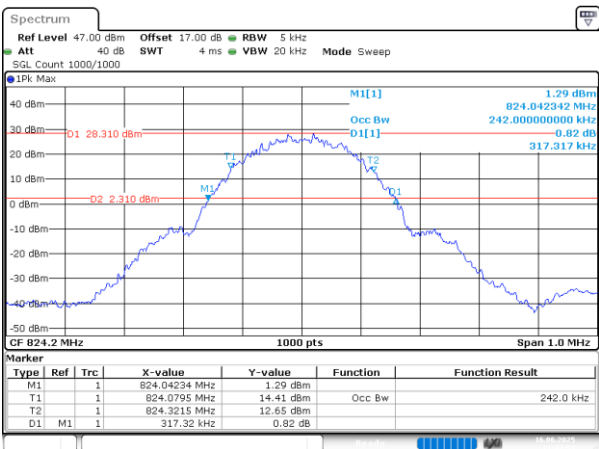
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:25:41

GSM_High



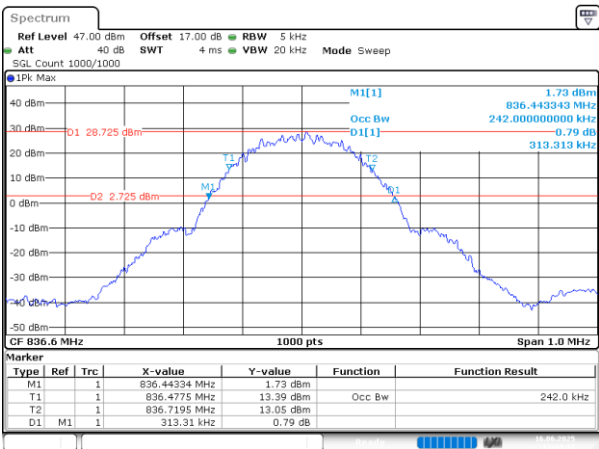
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:26:22

GPRS_Low_GMSK



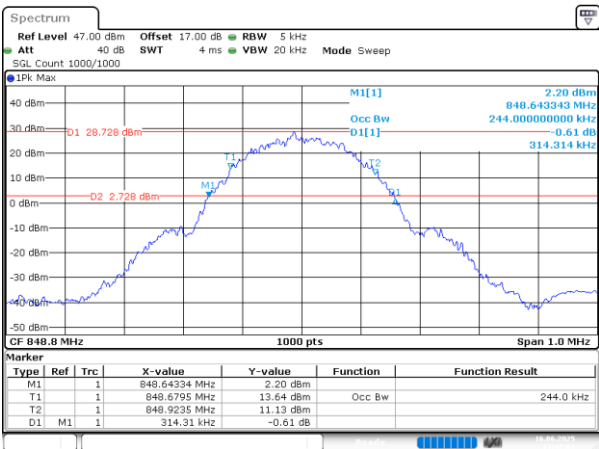
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:42:52

GPRS_Middle_GMSK



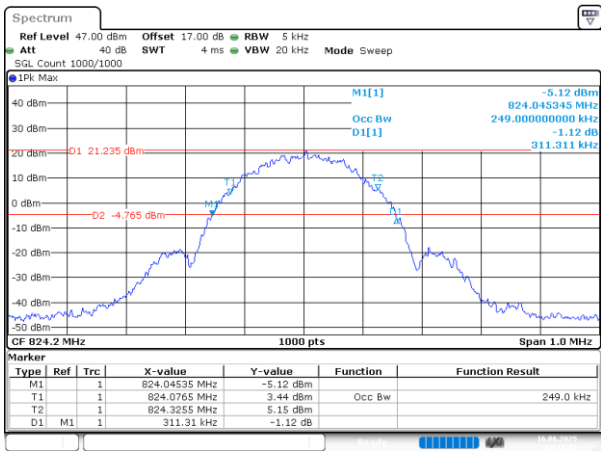
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:44:17

GPRS_High_GMSK



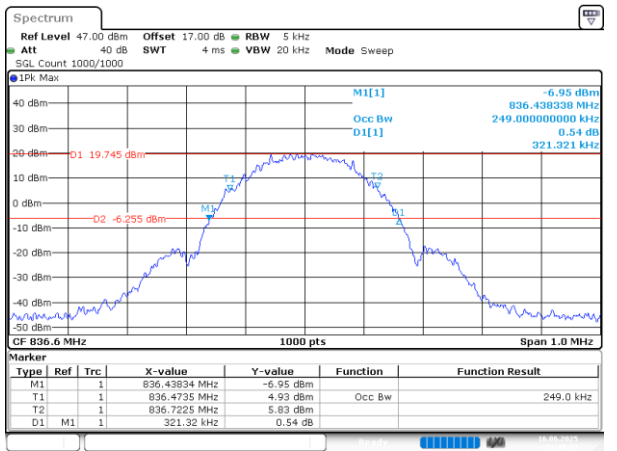
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:47:00

EDGE_Low_8PSK



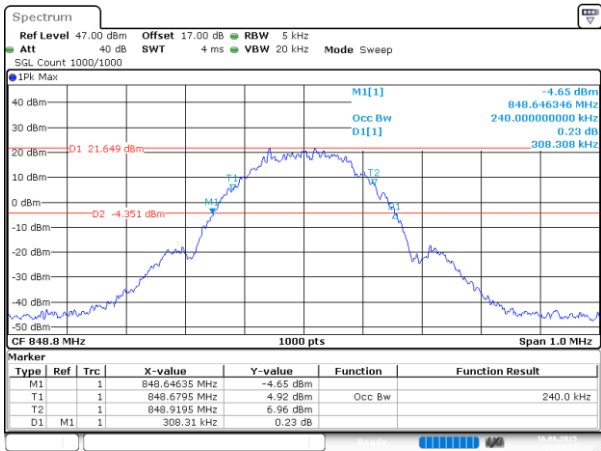
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:47:41

EDGE_Middle_8PSK



ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:48:43

EDGE_High_8PSK



ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:49:22

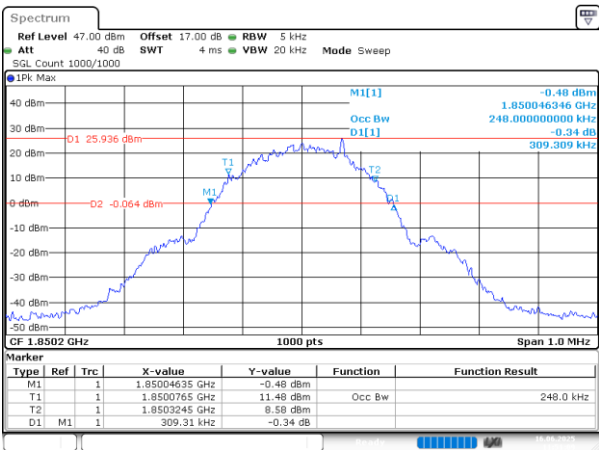
FCC Part 24E

GSM 1900, Normal

Mode	99% OBW (MHz)	26dB BW (MHz)
GSM_Low	0.248	0.309
GSM_Middle	0.245	0.314
GSM_High	0.243	0.302
GPRS_Low_GMSK	0.240	0.309
GPRS_Middle_GMSK	0.244	0.316
GPRS_High_GMSK	0.246	0.315
EDGE_Low_8PSK	0.249	0.313
EDGE_Middle_8PSK	0.245	0.316
EDGE_High_8PSK	0.247	0.313

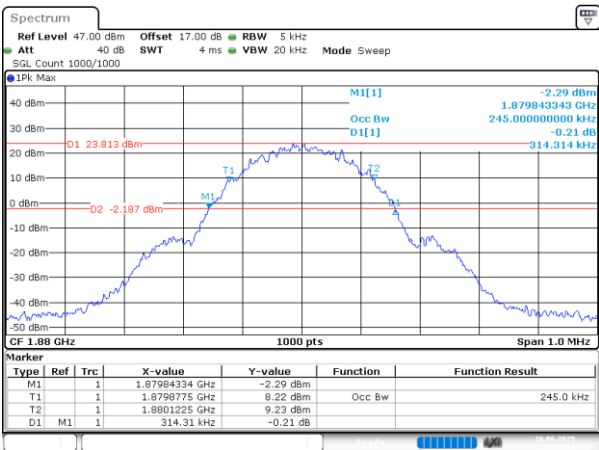
GSM 1900, Normal

GSM_Low



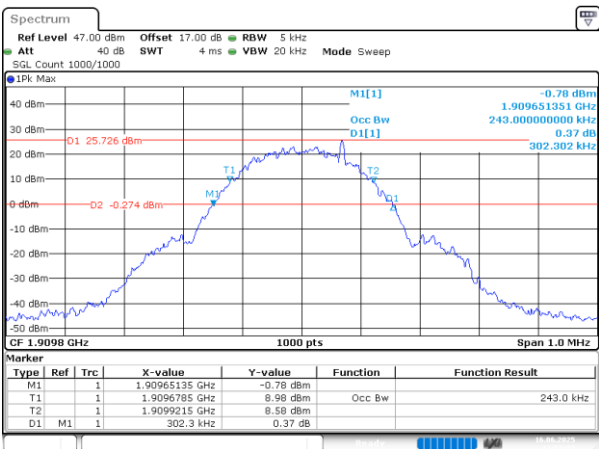
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:51:09

GSM_Middle



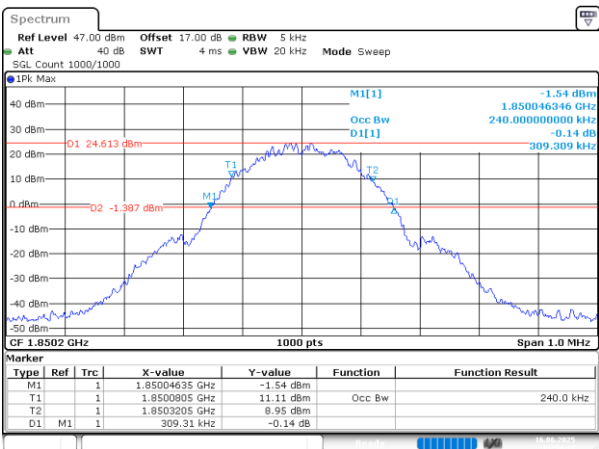
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:52:41

GSM_High



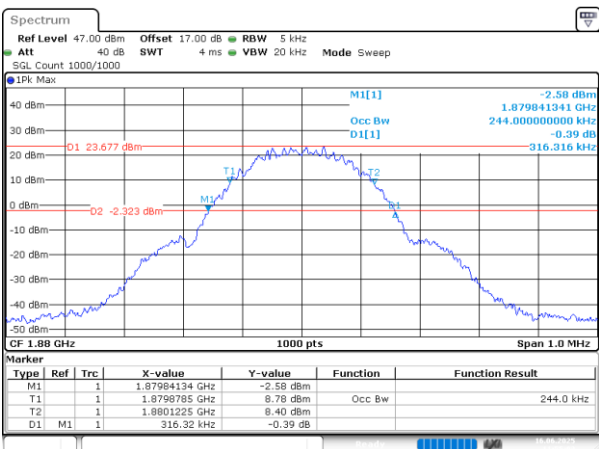
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:53:32

GPRS_Low_GMSK



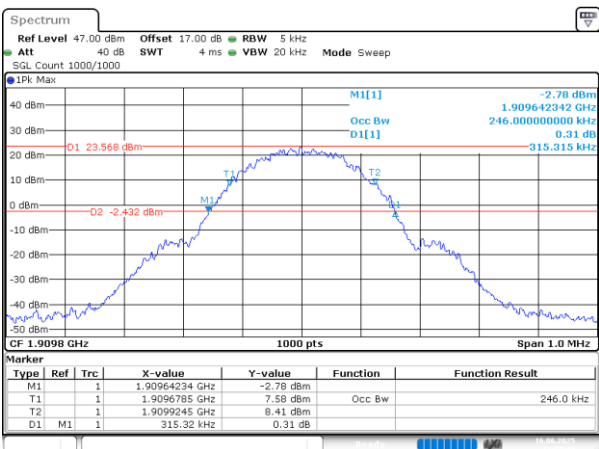
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:54:11

GPRS_Middle_GMSK



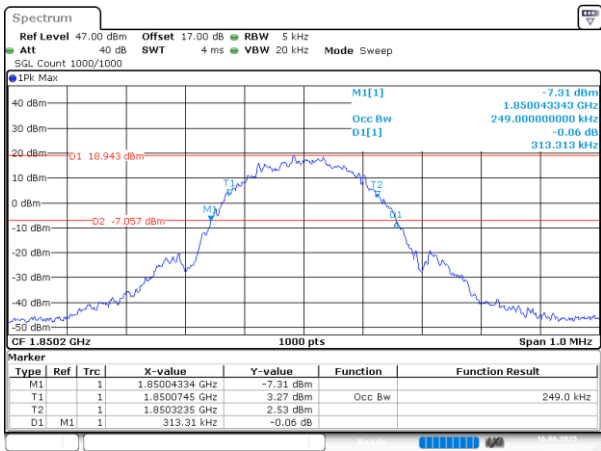
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:55:03

GPRS_High_GMSK



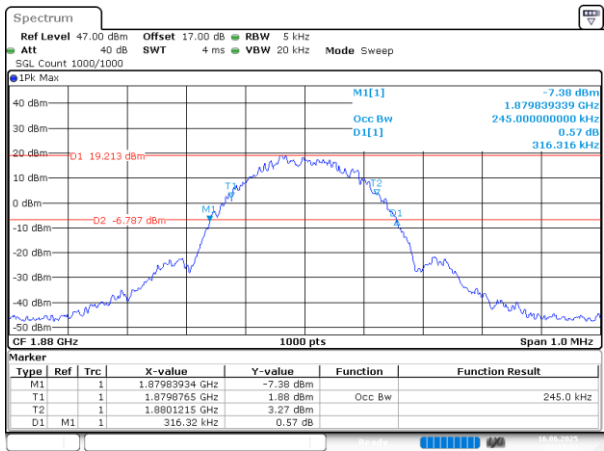
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:55:43

EDGE_Low_8PSK



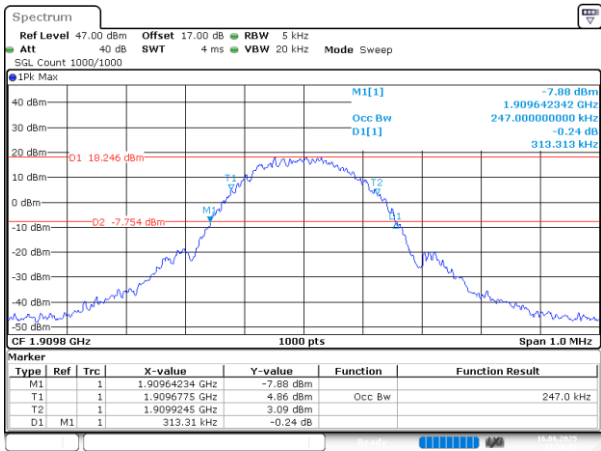
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:56:45

EDGE_Middle_8PSK



ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:57:34

EDGE_High_8PSK



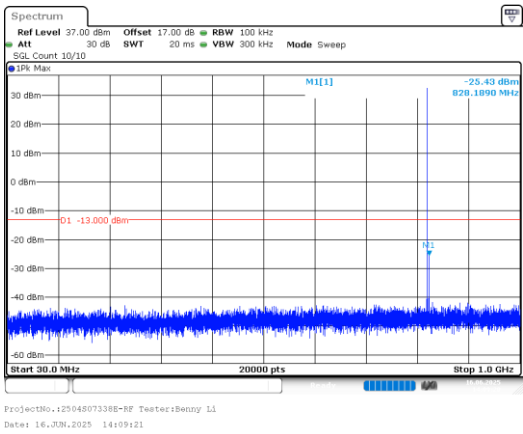
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 11:58:20

Spurious Emissions at Antenna Terminal

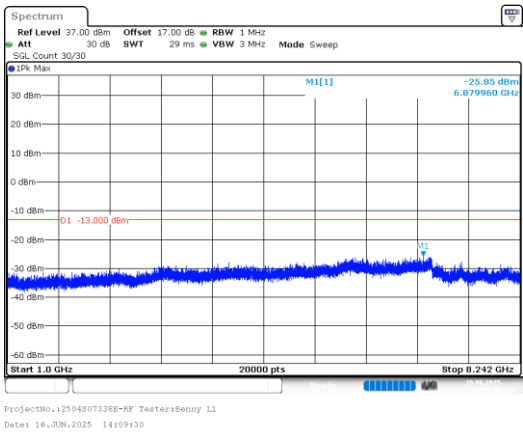
FCC Part 22H
GSM 850, Normal

GSM_Low

Below 1G

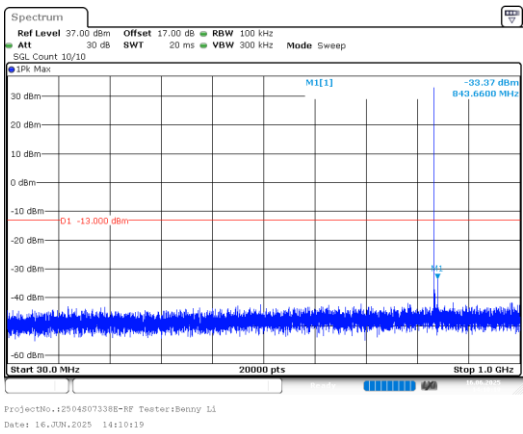


Above 1G

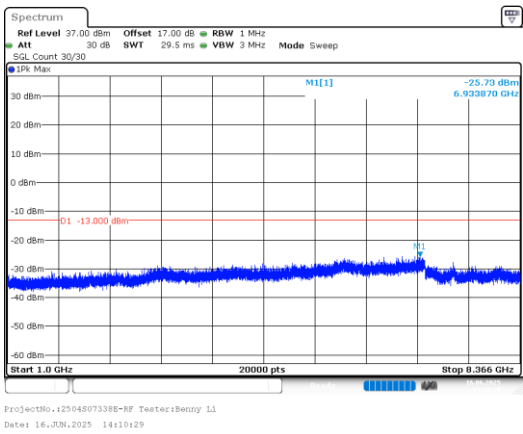


GSM_Middle

Below 1G

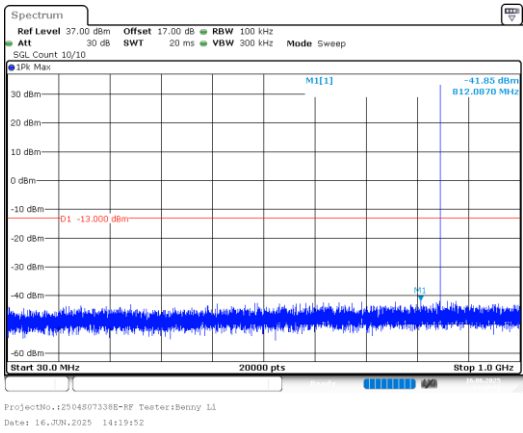


Above 1G

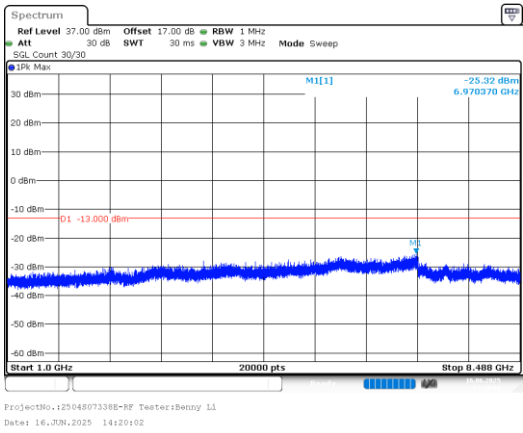


GSM_High

Below 1G



Above 1G

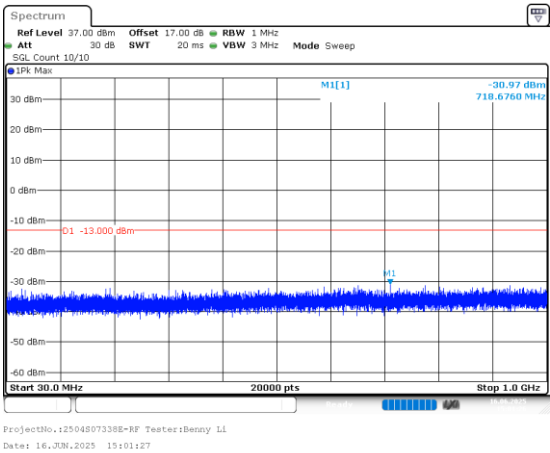


FCC Part 24E

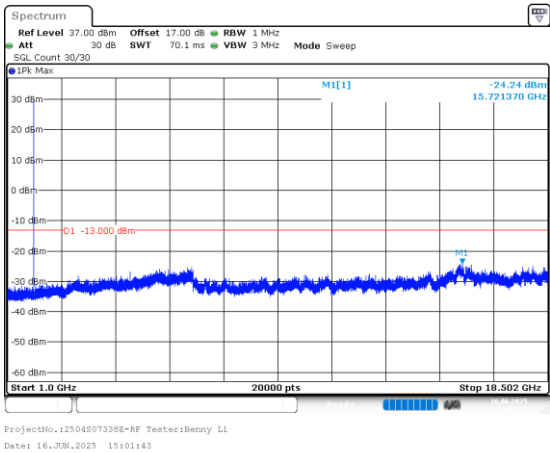
GSM 1900, Normal

GSM_Low

Below 1G

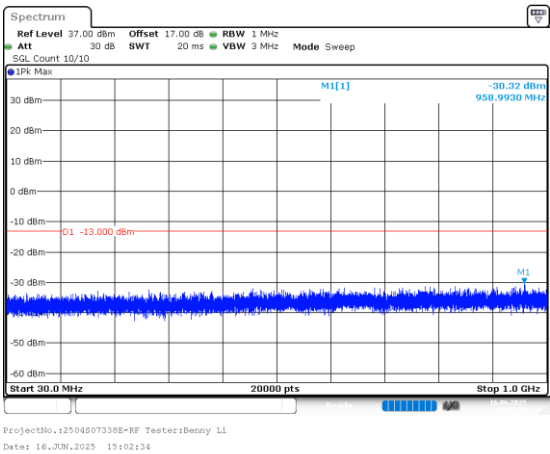


Above 1G

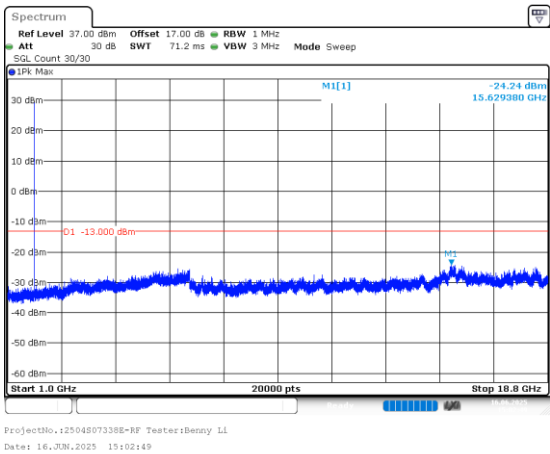


GSM_Middle

Below 1G

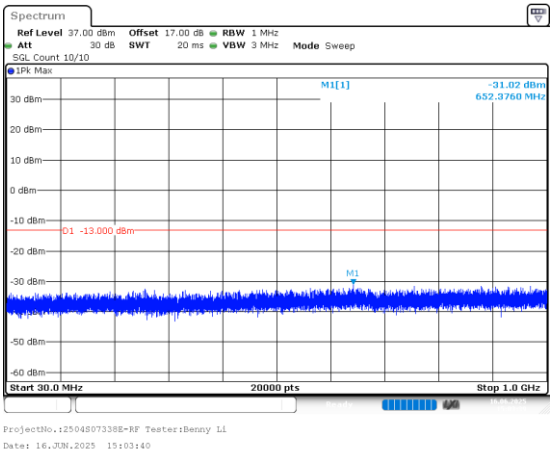


Above 1G

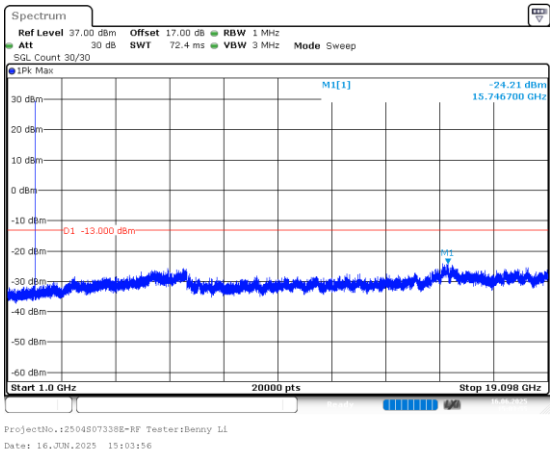


GSM_High

Below 1G



Above 1G

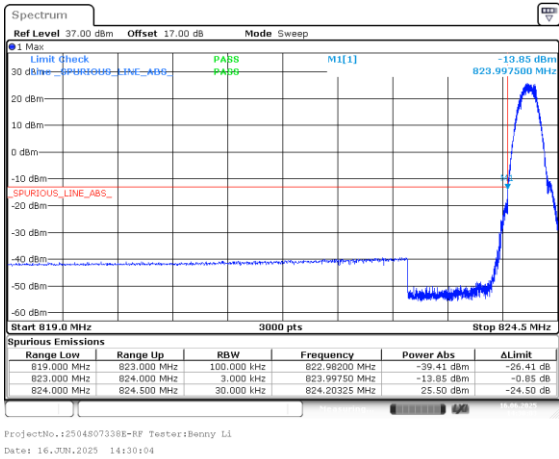


Out of band emission,Band Edge

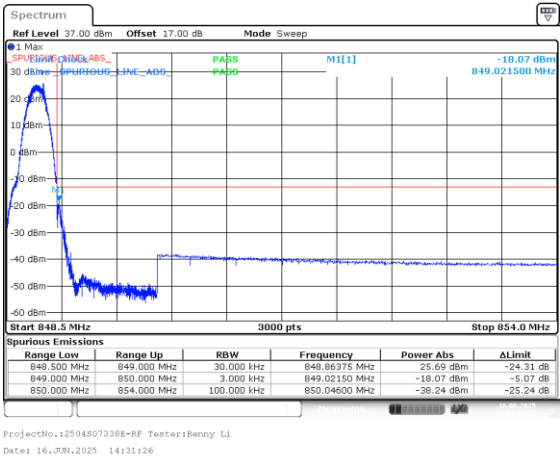
FCC Part 22H

GSM 850, Normal

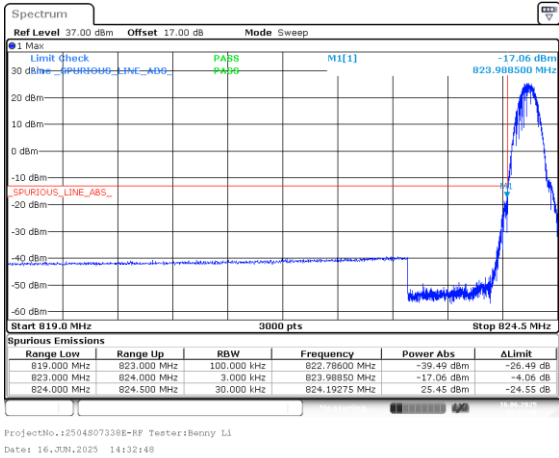
GSM_Low



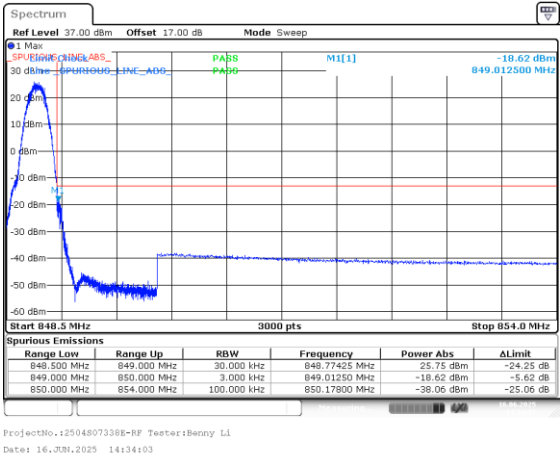
GSM_High



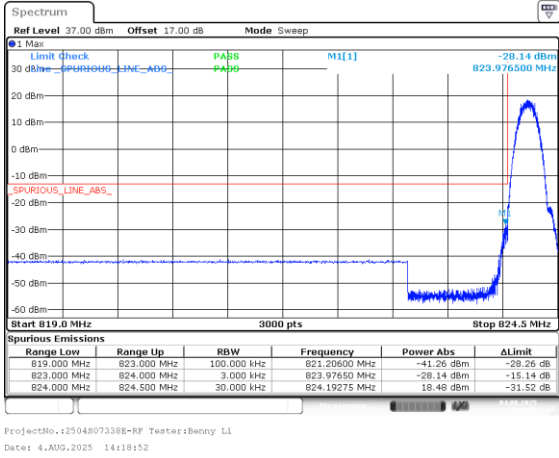
GPRS_Low_GMSK



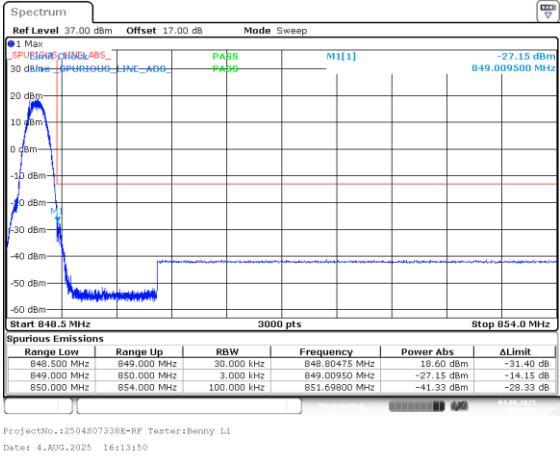
GPRS_High_GMSK



EDGE_Low_8PSK



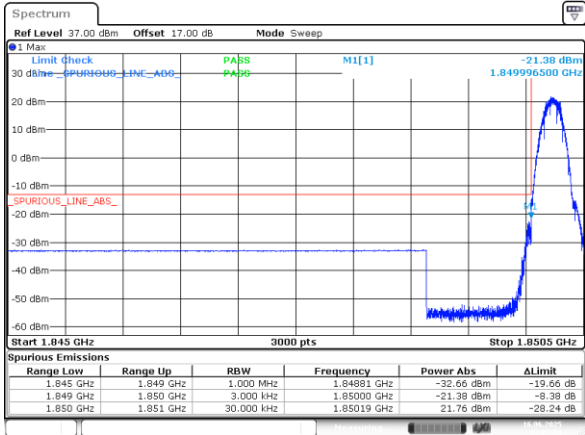
EDGE_High_8PSK



FCC Part 24E

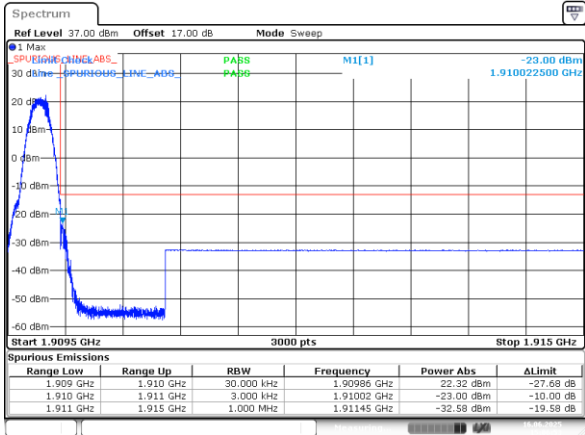
GSM 1900, Normal

GSM_Low



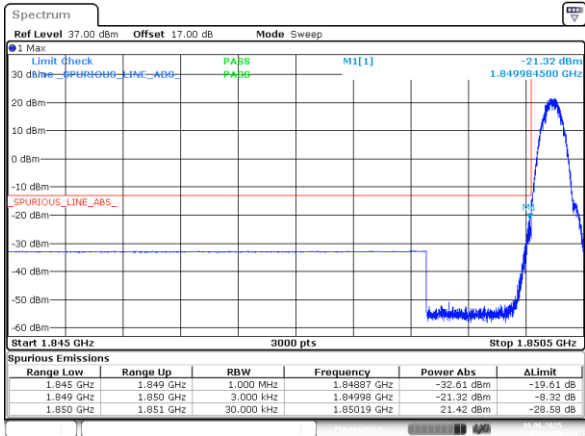
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 15:05:11

GSM_High



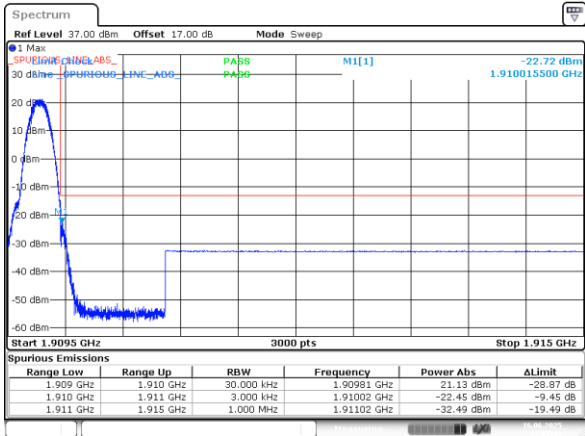
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 15:06:53

GPRS_Low_GMSK



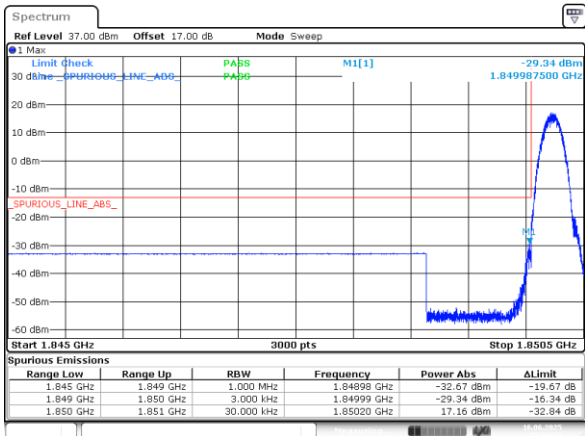
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 15:08:06

GPRS_High_GMSK



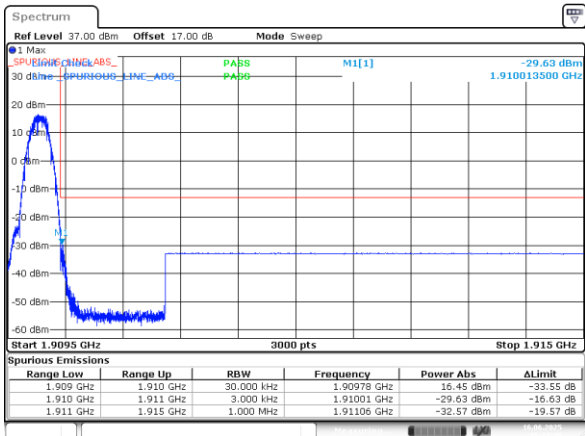
ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 15:09:19

EDGE_Low_8PSK



ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 15:10:29

EDGE_High_8PSK



ProjectNo.:2504S07338E-RF Tester:Benny Li
Date: 16.JUN.2025 15:11:37

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	6.7	0.0080	±2.5	Pass
GSM_Middle_T1/VN	836.6	5.7	0.0068	±2.5	Pass
GSM_Middle_T2/VN	836.6	6.0	0.0071	±2.5	Pass
GSM_Middle_T3/VN	836.6	7.0	0.0084	±2.5	Pass
GSM_Middle_T4/VN	836.6	5.9	0.0071	±2.5	Pass
GSM_Middle_T5/VN	836.6	5.8	0.0069	±2.5	Pass
GSM_Middle_T6/VN	836.6	6.3	0.0076	±2.5	Pass
GSM_Middle_T7/VN	836.6	7.5	0.0090	±2.5	Pass
GSM_Middle_T8/VN	836.6	5.3	0.0063	±2.5	Pass
GSM_Middle_TN/VH	836.6	6.3	0.0075	±2.5	Pass
GSM_Middle_TN/VL	836.6	5.7	0.0068	±2.5	Pass
GPRS_Middle_GMSK_TN/VN	836.6	4.9	0.0059	±2.5	Pass
GPRS_Middle_GMSK_T1/VN	836.6	7.9	0.0094	±2.5	Pass
GPRS_Middle_GMSK_T2/VN	836.6	6.3	0.0075	±2.5	Pass
GPRS_Middle_GMSK_T3/VN	836.6	4.8	0.0057	±2.5	Pass
GPRS_Middle_GMSK_T4/VN	836.6	6.3	0.0075	±2.5	Pass
GPRS_Middle_GMSK_T5/VN	836.6	5.7	0.0068	±2.5	Pass
GPRS_Middle_GMSK_T6/VN	836.6	7.9	0.0094	±2.5	Pass
GPRS_Middle_GMSK_T7/VN	836.6	5.6	0.0067	±2.5	Pass
GPRS_Middle_GMSK_T8/VN	836.6	5.5	0.0066	±2.5	Pass
GPRS_Middle_GMSK_TN/VH	836.6	3.9	0.0046	±2.5	Pass
GPRS_Middle_GMSK_TN/VL	836.6	5.9	0.0071	±2.5	Pass
EDGE_Middle_8PSK_TN/VN	836.6	5.2	0.0063	±2.5	Pass
EDGE_Middle_8PSK_T1/VN	836.6	5.6	0.0067	±2.5	Pass
EDGE_Middle_8PSK_T2/VN	836.6	6.0	0.0072	±2.5	Pass
EDGE_Middle_8PSK_T3/VN	836.6	3.5	0.0042	±2.5	Pass
EDGE_Middle_8PSK_T4/VN	836.6	4.5	0.0054	±2.5	Pass
EDGE_Middle_8PSK_T5/VN	836.6	5.9	0.0071	±2.5	Pass
EDGE_Middle_8PSK_T6/VN	836.6	6.0	0.0072	±2.5	Pass
EDGE_Middle_8PSK_T7/VN	836.6	4.8	0.0057	±2.5	Pass
EDGE_Middle_8PSK_T8/VN	836.6	4.2	0.0050	±2.5	Pass

Mode	Test Channel (MHz)	Frequency Error		Limit (ppm)	Verdict
		(Hz)	(ppm)		
EDGE_Middle_8PSK_TN/VH	836.6	5.4	0.0064	±2.5	Pass
EDGE_Middle_8PSK_TN/VL	836.6	4.6	0.0054	±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

GSM 1900

Mode	Result (MHz)	Limit (MHz)	Verdict
GSM_Low_TN/VN	1850.078	1850	Pass
GSM_Low_T1/VN	1850.077	1850	Pass
GSM_Low_T2/VN	1850.079	1850	Pass
GSM_Low_T3/VN	1850.078	1850	Pass
GSM_Low_T4/VN	1850.081	1850	Pass
GSM_Low_T5/VN	1850.080	1850	Pass
GSM_Low_T6/VN	1850.073	1850	Pass
GSM_Low_T7/VN	1850.077	1850	Pass
GSM_Low_T8/VN	1850.078	1850	Pass
GSM_Low_TN/VH	1850.076	1850	Pass
GSM_Low_TN/VL	1850.077	1850	Pass
GSM_High_TN/VN	1909.921	1910	Pass
GSM_High_T1/VN	1909.923	1910	Pass
GSM_High_T2/VN	1909.924	1910	Pass
GSM_High_T3/VN	1909.921	1910	Pass
GSM_High_T4/VN	1909.925	1910	Pass
GSM_High_T5/VN	1909.923	1910	Pass
GSM_High_T6/VN	1909.921	1910	Pass
GSM_High_T7/VN	1909.924	1910	Pass
GSM_High_T8/VN	1909.922	1910	Pass
GSM_High_TN/VH	1909.925	1910	Pass
GSM_High_TN/VL	1909.921	1910	Pass
GPRS_Low_GMSK_TN/VN	1850.078	1850	Pass
GPRS_Low_GMSK_T1/VN	1850.082	1850	Pass
GPRS_Low_GMSK_T2/VN	1850.077	1850	Pass
GPRS_Low_GMSK_T3/VN	1850.080	1850	Pass
GPRS_Low_GMSK_T4/VN	1850.077	1850	Pass
GPRS_Low_GMSK_T5/VN	1850.075	1850	Pass
GPRS_Low_GMSK_T6/VN	1850.078	1850	Pass
GPRS_Low_GMSK_T7/VN	1850.080	1850	Pass

Mode	Result (MHz)	Limit (MHz)	Verdict
GPRS_Low_GMSK_T8/VN	1850.080	1850	Pass
GPRS_Low_GMSK_TN/VH	1850.079	1850	Pass
GPRS_Low_GMSK_TN/VL	1850.078	1850	Pass
GPRS_High_GMSK_TN/VN	1909.921	1910	Pass
GPRS_High_GMSK_T1/VN	1909.921	1910	Pass
GPRS_High_GMSK_T2/VN	1909.920	1910	Pass
GPRS_High_GMSK_T3/VN	1909.923	1910	Pass
GPRS_High_GMSK_T4/VN	1909.925	1910	Pass
GPRS_High_GMSK_T5/VN	1909.924	1910	Pass
GPRS_High_GMSK_T6/VN	1909.925	1910	Pass
GPRS_High_GMSK_T7/VN	1909.924	1910	Pass
GPRS_High_GMSK_T8/VN	1909.922	1910	Pass
GPRS_High_GMSK_TN/VH	1909.923	1910	Pass
GPRS_High_GMSK_TN/VL	1909.922	1910	Pass
EDGE_Low_8PSK_TN/VN	1850.075	1850	Pass
EDGE_Low_8PSK_T1/VN	1850.079	1850	Pass
EDGE_Low_8PSK_T2/VN	1850.076	1850	Pass
EDGE_Low_8PSK_T3/VN	1850.075	1850	Pass
EDGE_Low_8PSK_T4/VN	1850.075	1850	Pass
EDGE_Low_8PSK_T5/VN	1850.080	1850	Pass
EDGE_Low_8PSK_T6/VN	1850.076	1850	Pass
EDGE_Low_8PSK_T7/VN	1850.079	1850	Pass
EDGE_Low_8PSK_T8/VN	1850.079	1850	Pass
EDGE_Low_8PSK_TN/VH	1850.078	1850	Pass
EDGE_Low_8PSK_TN/VL	1850.075	1850	Pass
EDGE_High_8PSK_TN/VN	1909.922	1910	Pass
EDGE_High_8PSK_T1/VN	1909.927	1910	Pass
EDGE_High_8PSK_T2/VN	1909.927	1910	Pass
EDGE_High_8PSK_T3/VN	1909.922	1910	Pass
EDGE_High_8PSK_T4/VN	1909.924	1910	Pass
EDGE_High_8PSK_T5/VN	1909.925	1910	Pass
EDGE_High_8PSK_T6/VN	1909.924	1910	Pass
EDGE_High_8PSK_T7/VN	1909.926	1910	Pass
EDGE_High_8PSK_T8/VN	1909.923	1910	Pass

Mode	Result (MHz)	Limit (MHz)	Verdict
EDGE_High_8PSK_TN/VH	1909.927	1910	Pass
EDGE_High_8PSK_TN/VL	1909.923	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 *****