

Appendix A

Test Information:

Serial No.:	2N1N-3	Test Date:	2024/07/21~2024/07/22
Test Site:	RF	Test Mode:	Transmitting
Tester:	Karl Liang	Test Result:	Pass

Environmental Conditions:

Temperature: (℃):	27.9~28	Relative Humidity: (%)	63~64	ATM Pressure: (kPa)	100.2~100.8
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Micro-Coax	Coaxial Cable	UFB205A	323308-024	2024/01/02	2025/01/01
Mini-Circuits	Coaxial Power Splitters & Combiner	ZFRSC-183-S+	SF448201614	2024/02/25	2025/02/24
R&S	Wideband Radio Communication Tester	CMW500	144976	2023/10/18	2024/10/17
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2023/10/18	2024/10/17
TDK-Lambda	DC Power Supply	Z+60-14	F-08-EM038-1	N/A	N/A
All-sun	Clamp Meter	EM305A	8348897	2023/08/03	2024/08/02
R&S	Spectrum Analyzer	FSV40	101461	2023/11/27	2024/11/26

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

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

FCC Part 22H

GSM 850

Mode	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
GSM_Middle_TN/VN	5.7	0.007	±2.5	Pass
GSM_Middle_T1/VN	5.2	0.006	±2.5	Pass
GSM_Middle_T2/VN	5.5	0.007	±2.5	Pass
GSM_Middle_T3/VN	5.6	0.007	±2.5	Pass
GSM_Middle_T4/VN	6.4	0.008	±2.5	Pass
GSM_Middle_T5/VN	5.7	0.007	±2.5	Pass
GSM_Middle_T6/VN	7.3	0.009	±2.5	Pass
GSM_Middle_T7/VN	3.4	0.004	±2.5	Pass
GSM_Middle_T8/VN	4.5	0.005	±2.5	Pass
GSM_Middle_TN/VH	6.1	0.007	±2.5	Pass
GSM_Middle_TN/VL	6.0	0.007	±2.5	Pass
EDGE_Middle_Solt 1_ TN/VN	4.3	0.005	±2.5	Pass
EDGE_Middle_Solt 1_ T1/VN	5.1	0.006	±2.5	Pass
EDGE_Middle_Solt 1_ T2/VN	4.4	0.005	±2.5	Pass
EDGE_Middle_Solt 1_ T3/VN	6.0	0.007	±2.5	Pass
EDGE_Middle_Solt 1_ T4/VN	3.9	0.005	±2.5	Pass
EDGE_Middle_Solt 1_ T5/VN	3.5	0.004	±2.5	Pass
EDGE_Middle_Solt 1_ T6/VN	7.1	0.008	±2.5	Pass
EDGE_Middle_Solt 1_ T7/VN	5.2	0.006	±2.5	Pass
EDGE_Middle_Solt 1_ T8/VN	3.9	0.005	±2.5	Pass
EDGE_Middle_Solt 1_ TN/VH	4.0	0.005	±2.5	Pass
EDGE_Middle_Solt 1_ TN/VL	4.8	0.006	±2.5	Pass

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

FCC Part 24E

GSM 1900

Mode	Value (MHz)	Limit (MHz)	Result
GSM_Low_TN/VN	1850.075	1850	Pass
GSM_Low_T1/VN	1850.079	1850	Pass
GSM_Low_T2/VN	1850.080	1850	Pass
GSM_Low_T3/VN	1850.078	1850	Pass
GSM_Low_T4/VN	1850.079	1850	Pass
GSM_Low_T5/VN	1850.079	1850	Pass
GSM_Low_T6/VN	1850.079	1850	Pass
GSM_Low_T7/VN	1850.079	1850	Pass
GSM_Low_T8/VN	1850.080	1850	Pass
GSM_Low_TN/VH	1850.081	1850	Pass
GSM_Low_TN/VL	1850.080	1850	Pass
GSM_High_TN/VN	1909.924	1910	Pass
GSM_High_T1/VN	1909.924	1910	Pass
GSM_High_T2/VN	1909.923	1910	Pass
GSM_High_T3/VN	1909.924	1910	Pass
GSM_High_T4/VN	1909.920	1910	Pass
GSM_High_T5/VN	1909.924	1910	Pass
GSM_High_T6/VN	1909.928	1910	Pass
GSM_High_T7/VN	1909.927	1910	Pass
GSM_High_T8/VN	1909.924	1910	Pass
GSM_High_TN/VH	1909.924	1910	Pass
GSM_High_TN/VL	1909.927	1910	Pass
EDGE_Low_Solt1_TN/VN	1850.068	1850	Pass
EDGE_Low_Solt1_T1/VN	1850.077	1850	Pass
EDGE_Low_Solt1_T2/VN	1850.077	1850	Pass
EDGE_Low_Solt1_T3/VN	1850.078	1850	Pass
EDGE_Low_Solt1_T4/VN	1850.073	1850	Pass
EDGE_Low_Solt1_T5/VN	1850.079	1850	Pass
EDGE_Low_Solt1_T6/VN	1850.073	1850	Pass
EDGE_Low_Solt1_T7/VN	1850.075	1850	Pass
EDGE_Low_Solt1_T8/VN	1850.071	1850	Pass

Mode	Value (MHz)	Limit (MHz)	Result
EDGE_Low_Solt1_TN/VH	1850.077	1850	Pass
EDGE_Low_Solt1_TN/VL	1850.073	1850	Pass
EDGE_High_Solt1_TN/VN	1909.926	1910	Pass
EDGE_High_Solt1_T1/VN	1909.929	1910	Pass
EDGE_High_Solt1_T2/VN	1909.926	1910	Pass
EDGE_High_Solt1_T3/VN	1909.930	1910	Pass
EDGE_High_Solt1_T4/VN	1909.927	1910	Pass
EDGE_High_Solt1_T5/VN	1909.923	1910	Pass
EDGE_High_Solt1_T6/VN	1909.926	1910	Pass
EDGE_High_Solt1_T7/VN	1909.926	1910	Pass
EDGE_High_Solt1_T8/VN	1909.924	1910	Pass
EDGE_High_Solt1_TN/VH	1909.927	1910	Pass
EDGE_High_Solt1_TN/VL	1909.930	1910	Pass

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

Occupied Bandwidth

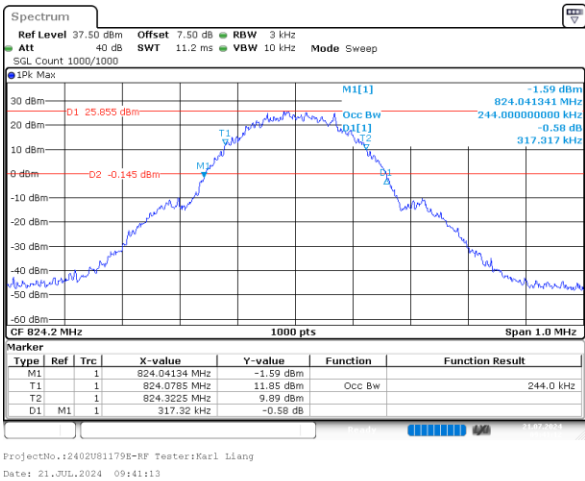
FCC Part 22H

GSM 850 , Normal

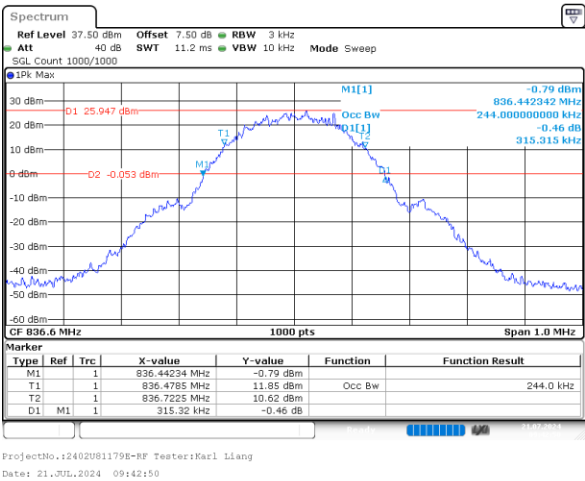
Mode	99% OBW (MHz)	EBW (MHz)
GSM_Low	0.244	0.317
GSM_Middle	0.244	0.315
GSM_High	0.243	0.313
EDGE_Low_Solt1	0.250	0.315
EDGE_Middle_Solt1	0.252	0.320
EDGE_High_Solt1	0.250	0.317

GSM 850 , Normal

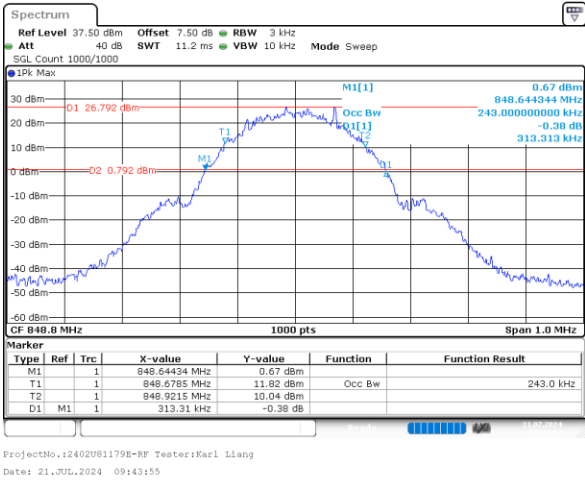
GSM_Low 0.244MHz



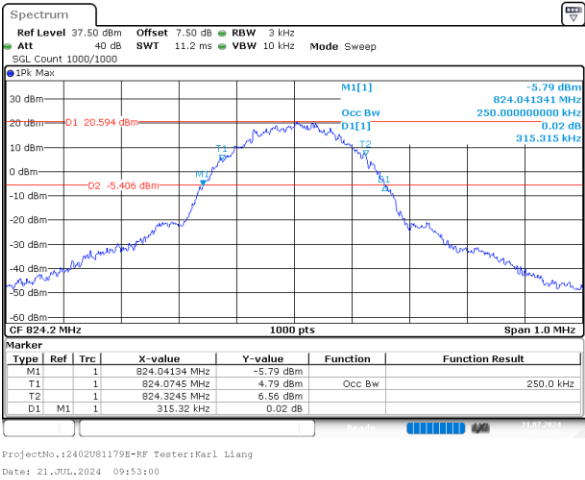
GSM_Middle 0.244MHz



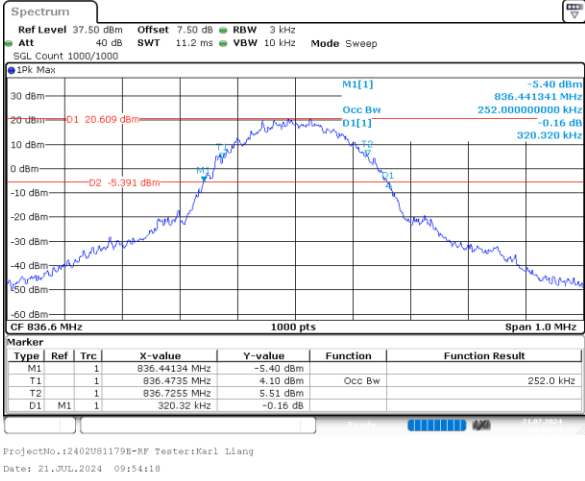
GSM_High 0.243MHz



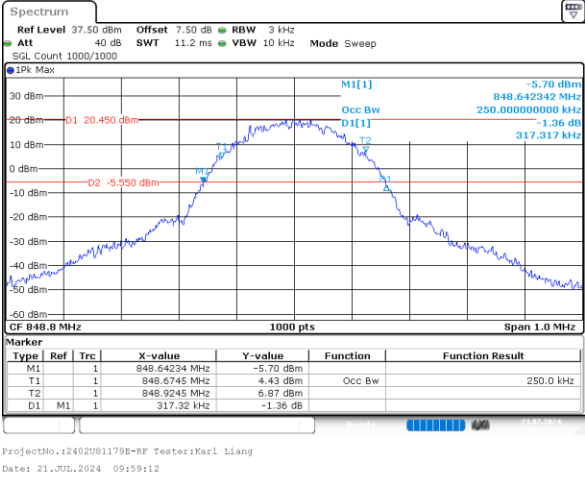
EDGE_Low_Solt1 0.250MHz



EDGE_Middle_Solt1 0.252MHz



EDGE_High_Solt1 0.250MHz



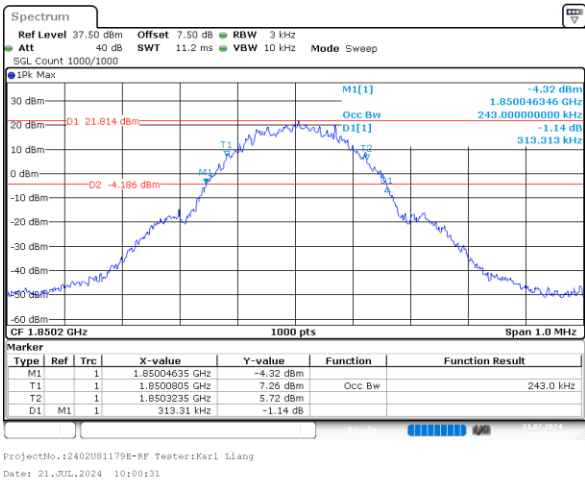
FCC Part 24E

GSM 1900 , Normal

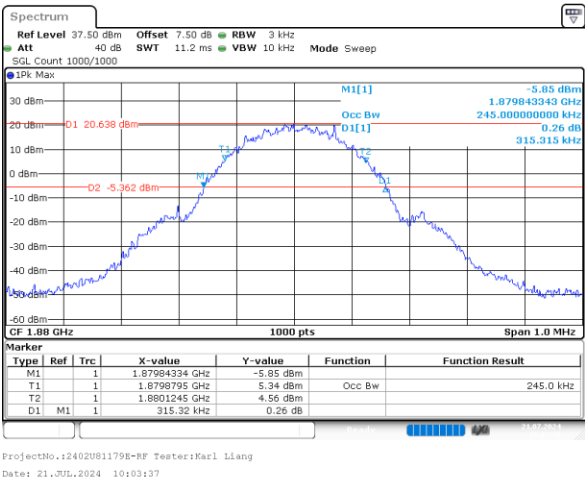
Mode	99% OBW (MHz)	EBW (MHz)
GSM_Low	0.243	0.313
GSM_Middle	0.245	0.315
GSM_High	0.244	0.314
EDGE_Low_Solt1	0.255	0.321
EDGE_Middle_Solt1	0.254	0.331
EDGE_High_Solt1	0.251	0.322

GSM 1900 , Normal

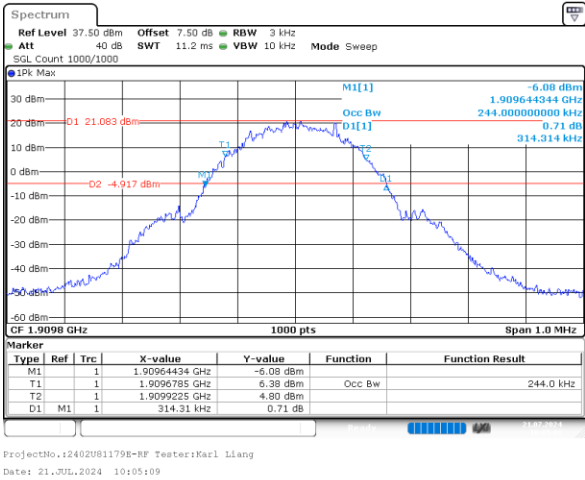
GSM_Low 0.243MHz



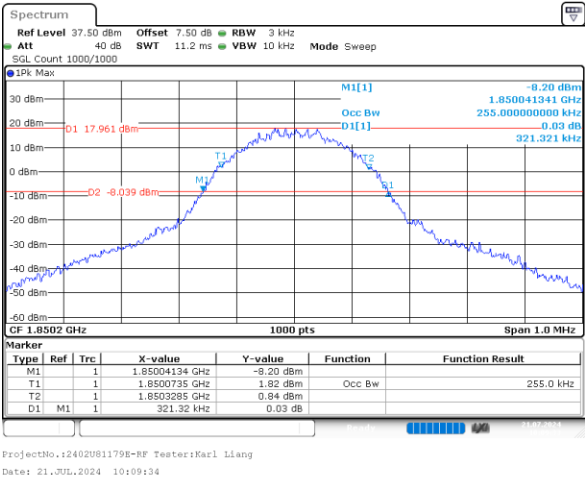
GSM_Middle 0.245MHz



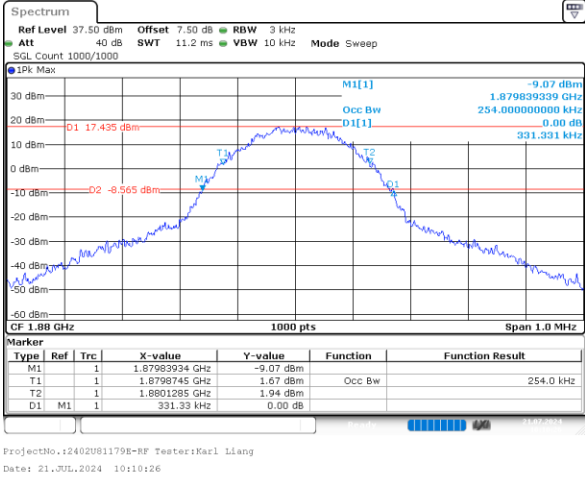
GSM_High 0.244MHz



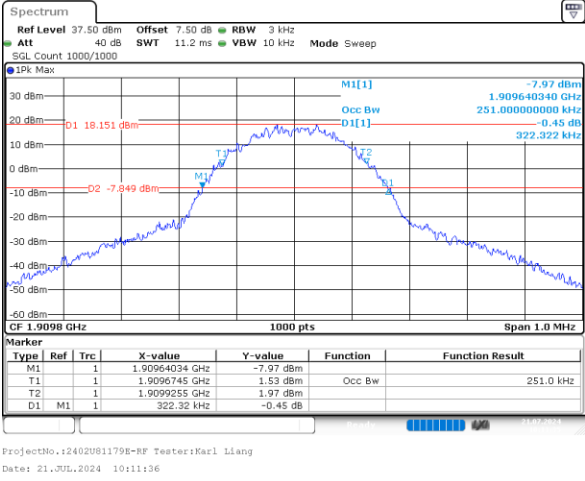
EDGE_Low_Solt1 0.255MHz



EDGE_Middle_Solt1 0.254MHz



EDGE_High_Solt1 0.251MHz



RF Output Power

FCC Part 22H

GSM 850 , Normal

Mode	Conducted Power (dBm)	ERP (dBm)	Limit(dBm)	Result
GSM_Low	32.67	27.330	38.45	Pass
GSM_Middle	32.67	27.330	38.45	Pass
GSM_High	32.57	27.230	38.45	Pass
GPRS_Low_Solt1	32.68	27.340	38.45	Pass
GPRS_Low_Solt2	31.83	26.490	38.45	Pass
GPRS_Low_Solt3	29.89	24.550	38.45	Pass
GPRS_Low_Solt4	28.86	23.520	38.45	Pass
GPRS_Middle_Solt1	32.66	27.320	38.45	Pass
GPRS_Middle_Solt2	31.84	26.500	38.45	Pass
GPRS_Middle_Solt3	30.03	24.690	38.45	Pass
GPRS_Middle_Solt4	29.00	23.660	38.45	Pass
GPRS_High_Solt1	32.57	27.230	38.45	Pass
GPRS_High_Solt2	31.78	26.440	38.45	Pass
GPRS_High_Solt3	30.00	24.660	38.45	Pass
GPRS_High_Solt4	29.00	23.660	38.45	Pass
EDGE_Low_Solt 1	27.73	22.390	38.45	Pass
EDGE_Low_Solt 2	26.75	21.410	38.45	Pass
EDGE_Low_Solt 3	24.87	19.530	38.45	Pass
EDGE_Low_Solt 4	24.61	19.270	38.45	Pass
EDGE_Middle_Solt 1	28.80	23.460	38.45	Pass
EDGE_Middle_Solt 2	27.76	22.420	38.45	Pass
EDGE_Middle_Solt 3	25.80	20.460	38.45	Pass
EDGE_Middle_Solt 4	24.64	19.300	38.45	Pass
EDGE_High_Solt1	28.82	23.480	38.45	Pass
EDGE_High_Solt2	27.77	22.430	38.45	Pass
EDGE_High_Solt3	25.84	20.500	38.45	Pass
EDGE_High_Solt4	24.66	19.320	38.45	Pass

Note:

ERP = Conducted Power(dBm) - Lc(dB) + G_T(dBd)

G_T(dBd) = G_T(dBi) - 2.15

1.Ant Gain = -3.19dBi;

2.C_L = signal attenuation in the connecting cable between the transmitter and antenna in 0dB

FCC Part 24E

GSM 1900 , Normal

Mode	Conducted Power (dBm)	EIRP (dBm)	Limit(dBm)	Result
GSM_Low	30.24	32.150	33	Pass
GSM_Middle	30.15	32.060	33	Pass
GSM_High	30.13	32.040	33	Pass
GPRS_Low_Solt1	30.24	32.150	33	Pass
GPRS_Low_Solt2	29.68	31.590	33	Pass
GPRS_Low_Solt3	28.01	29.920	33	Pass
GPRS_Low_Solt4	26.81	28.720	33	Pass
GPRS_Middle_Solt1	30.16	32.070	33	Pass
GPRS_Middle_Solt2	29.58	31.490	33	Pass
GPRS_Middle_Solt3	27.87	29.780	33	Pass
GPRS_Middle_Solt4	26.66	28.570	33	Pass
GPRS_High_Solt1	30.14	32.050	33	Pass
GPRS_High_Solt2	29.58	31.490	33	Pass
GPRS_High_Solt3	27.89	29.800	33	Pass
GPRS_High_Solt4	26.64	28.550	33	Pass
EDGE_Low_Solt 1	27.91	29.820	33	Pass
EDGE_Low_Solt 2	26.89	28.800	33	Pass
EDGE_Low_Solt 3	25.02	26.930	33	Pass
EDGE_Low_Solt 4	23.75	25.660	33	Pass
EDGE_Middle_Solt 1	27.81	29.720	33	Pass
EDGE_Middle_Solt 2	26.83	28.740	33	Pass
EDGE_Middle_Solt 3	24.82	26.730	33	Pass
EDGE_Middle_Solt 4	23.64	25.550	33	Pass
EDGE_High_Solt1	27.81	29.720	33	Pass
EDGE_High_Solt2	26.81	28.720	33	Pass
EDGE_High_Solt3	24.79	26.700	33	Pass
EDGE_High_Solt4	23.58	25.490	33	Pass

Note:

$EIRP = \text{Conducted Power(dBm)} - L_C(\text{dB}) + G_T(\text{dBd})$

1.Ant Gain = 1.91dBi;

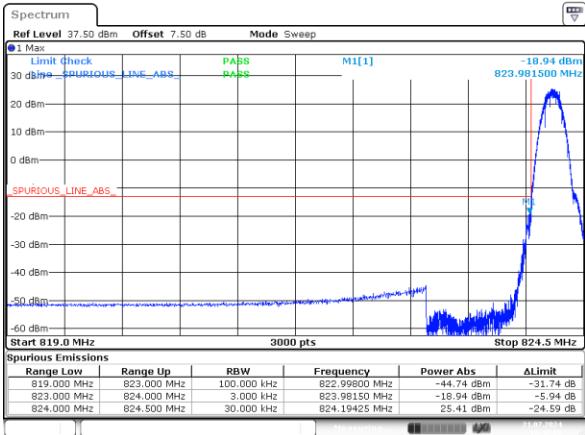
2.C_L = signal attenuation in the connecting cable between the transmitter and antenna in 0dB

Out of band emission,Band Edge

FCC Part 22H

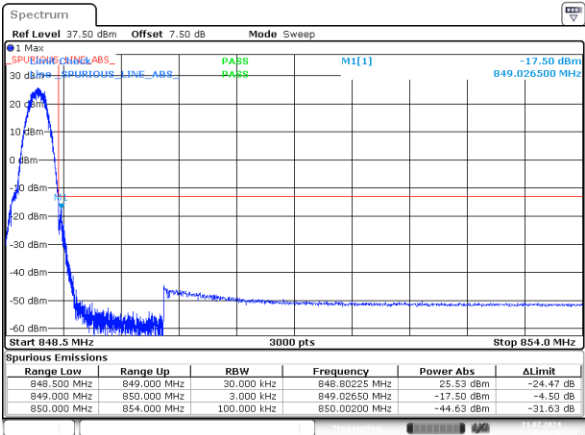
GSM 850 , Normal

GSM_Low -18.94dBm



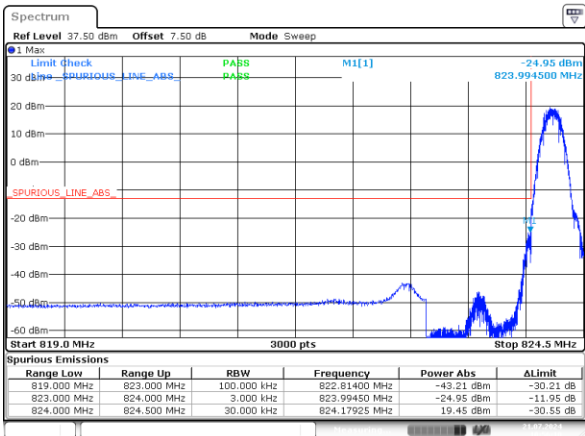
ProjectNo.:2402U81179E-RF Tester:Karl Liang
Date: 21.JUL.2024 10:40:09

GSM_High -17.50dBm



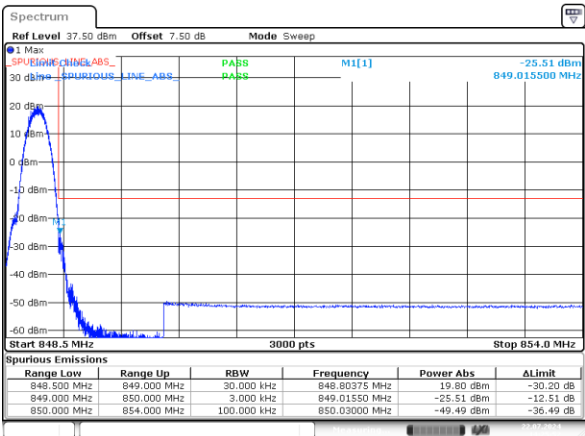
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Date: 21.JUL.2024 10:41:47

EDGE_Low_Solt1 -24.95dBm



ProjectNo.:2402U81179E-RF Tester:Karl Liang
Date: 21.JUL.2024 10:56:11

EDGE_High_Solt1 -25.51dBm

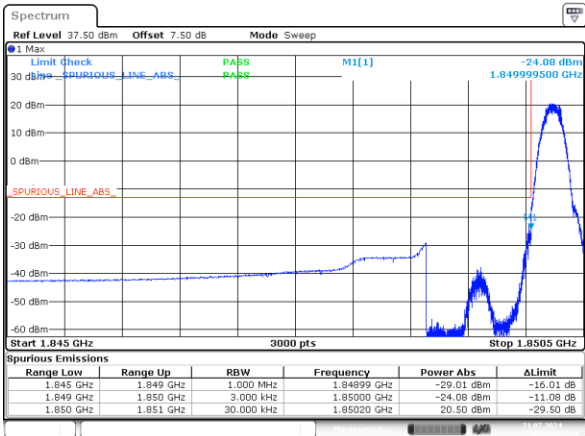


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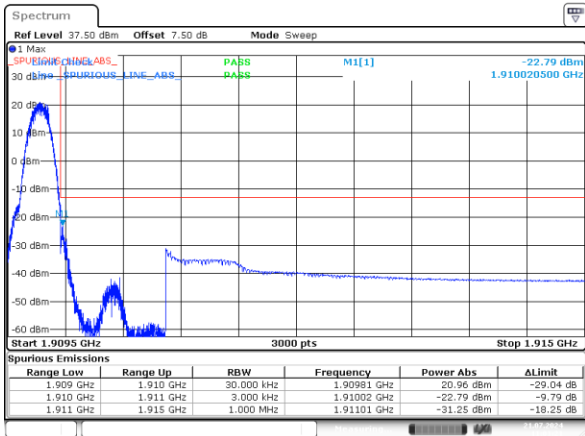
FCC Part 24E

GSM 1900 , Normal

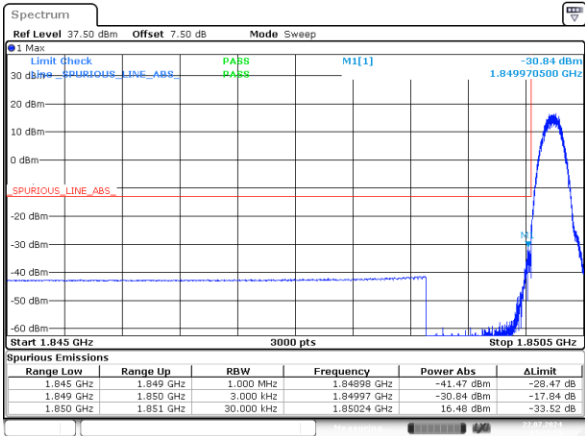
GSM_Low -24.08dBm



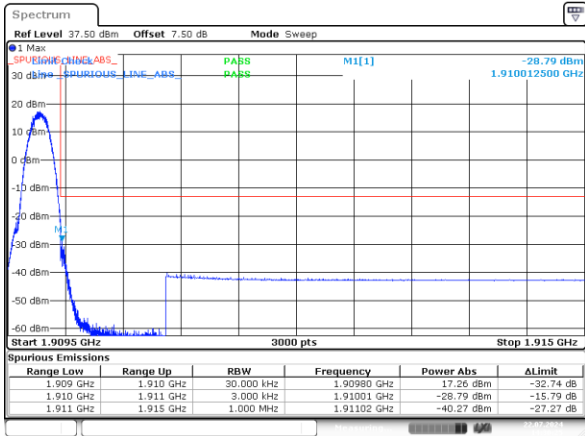
GSM_High -22.79dBm



EDGE_Low_Solt1 -30.84dBm



EDGE_High_Solt1 -28.79dBm



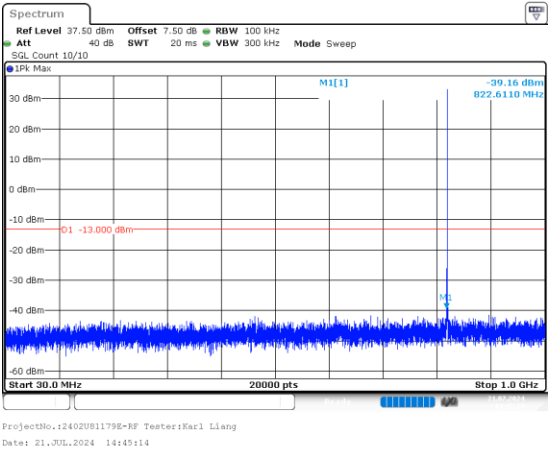
Spurious Emissions at Antenna Terminal

FCC Part 22H

GSM 850 , Normal

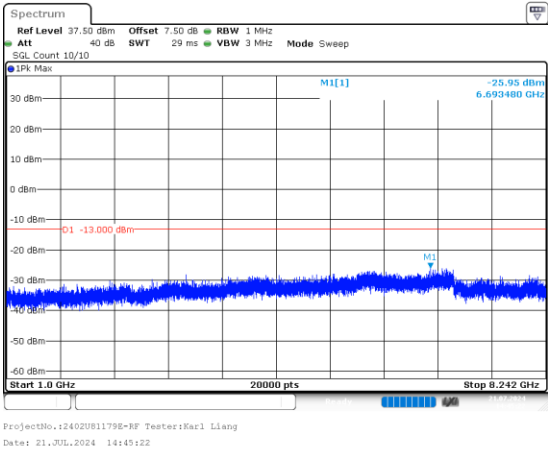
GSM_Low

Below 1G



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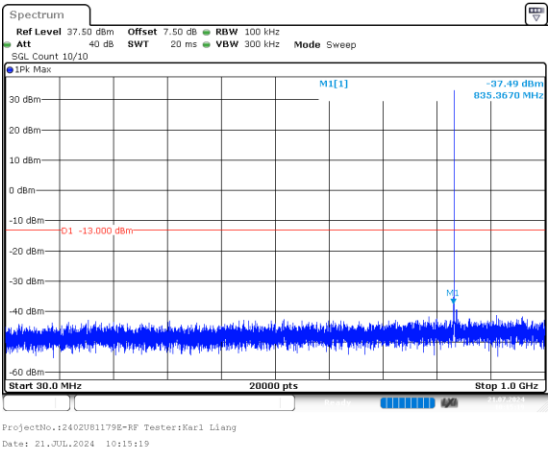
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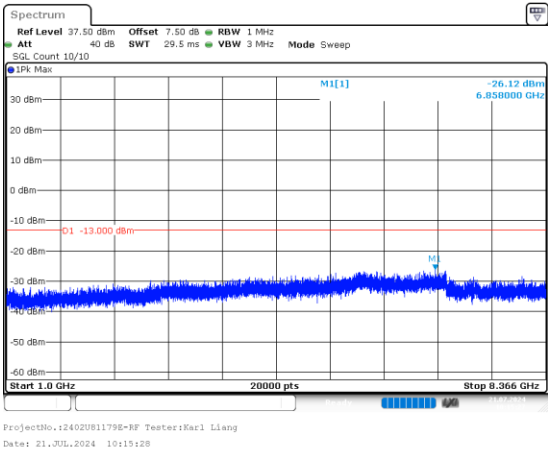
GSM_Middle

Below 1G



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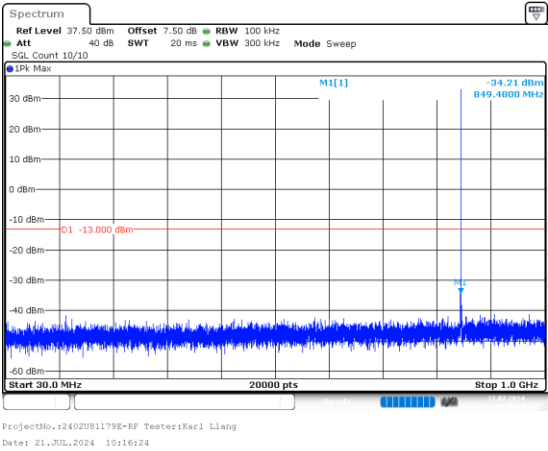
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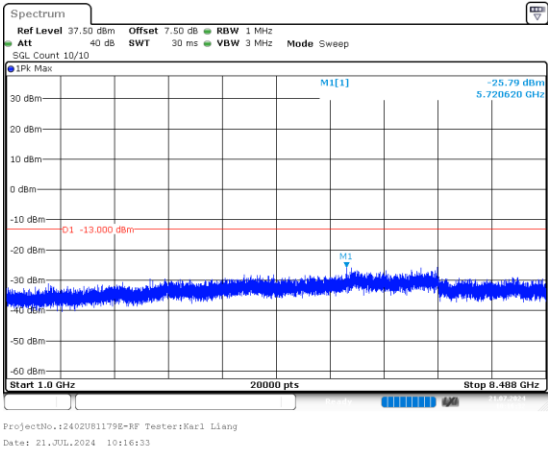
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Date: 21.JUL.2024 10:15:28

GSM_High

Below 1G

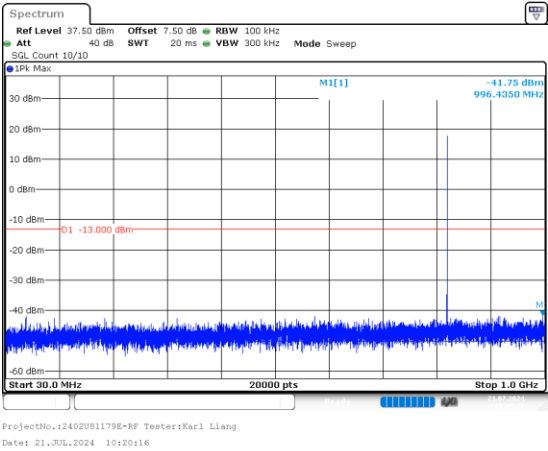


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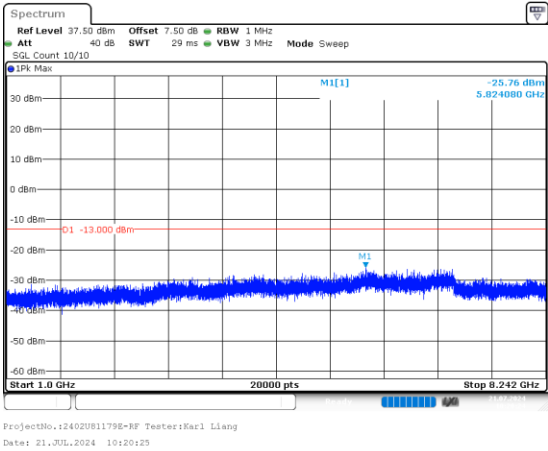


EDGE_Low_Solt1

Below 1G

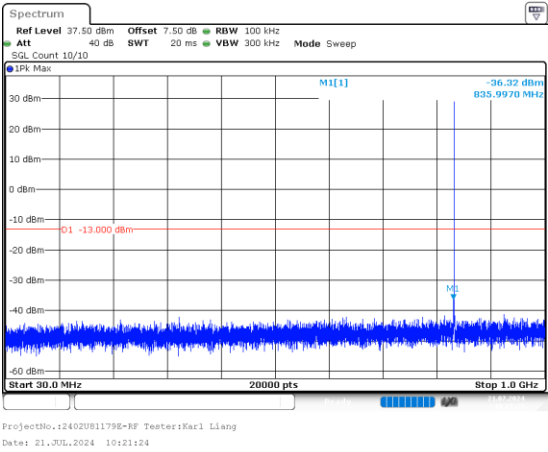


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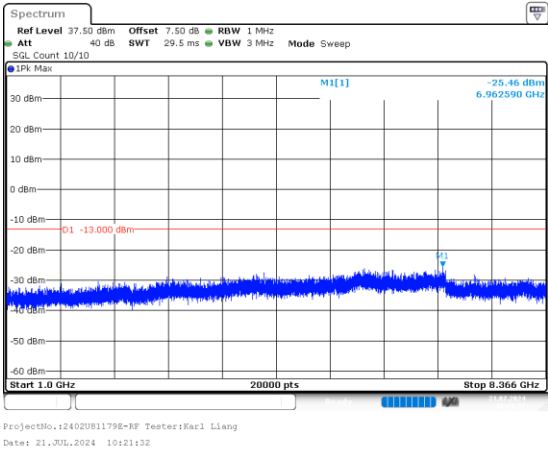


EDGE_Middle_Solt1

Below 1G

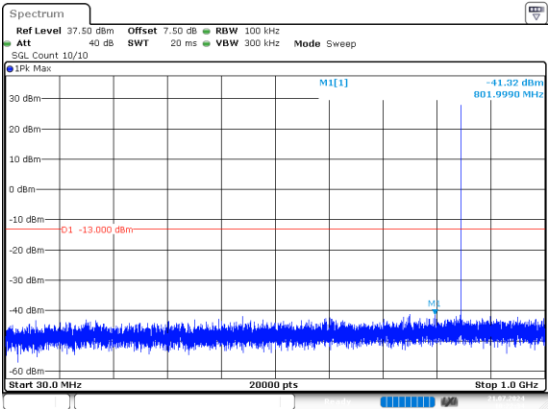


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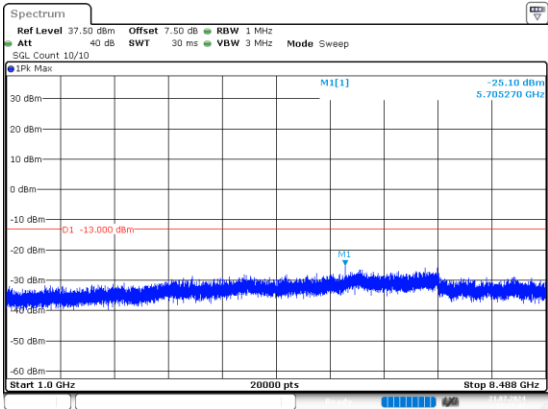
EDGE_High_Solt1

Below 1G



ProjectNo.:2402U81179E-RF Tester:Karl Liang
Date: 21.JUL.2024 10:22:35

Above 1G



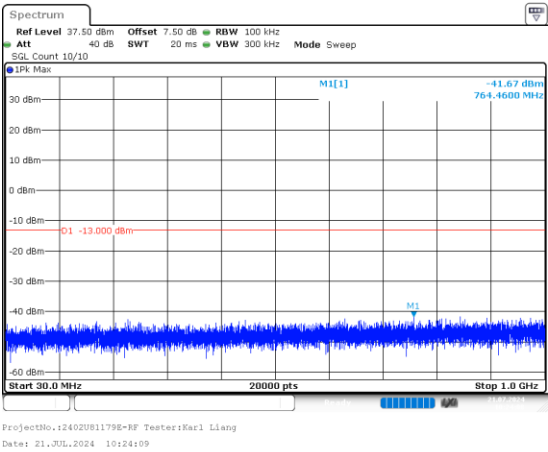
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Date: 21.JUL.2024 10:22:43

FCC Part 24E

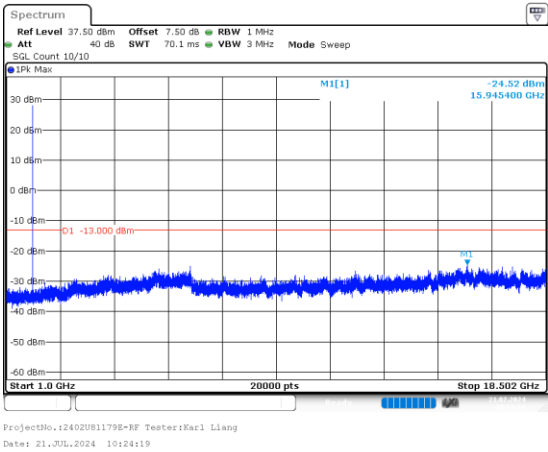
GSM 1900 , Normal

GSM_Low

Below 1G

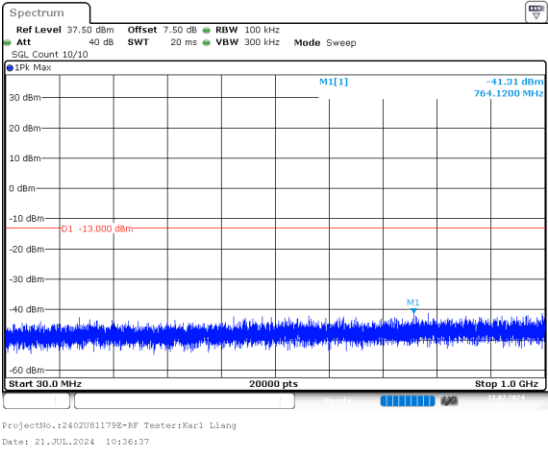


Above 1G

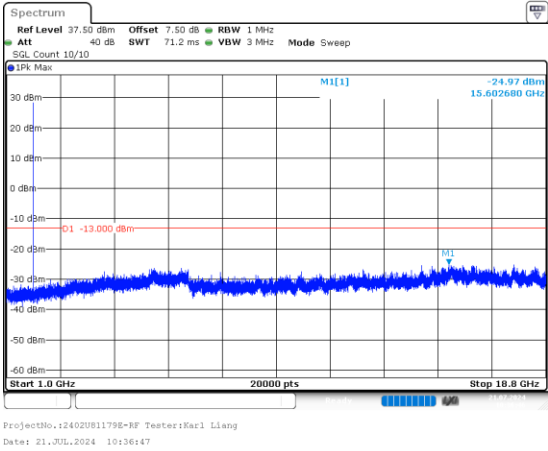


GSM_Middle

Below 1G

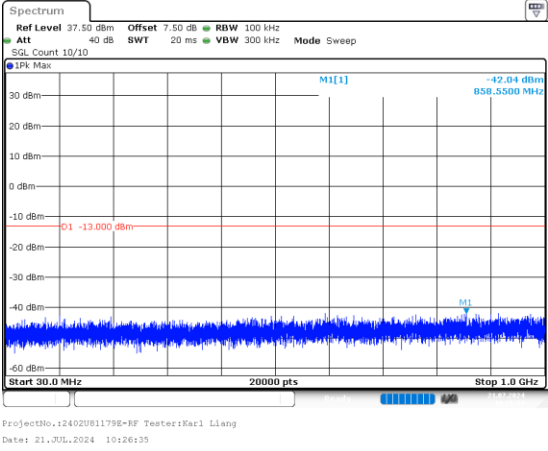


Above 1G

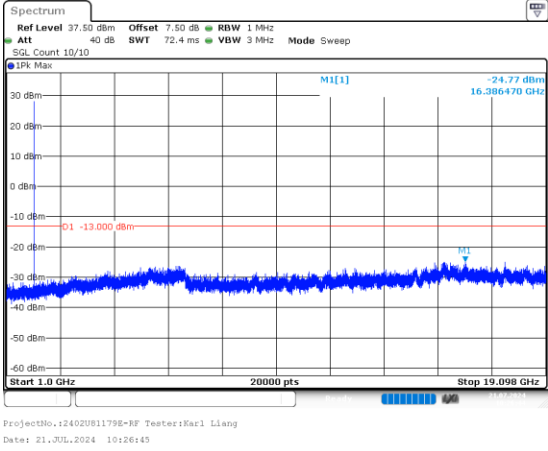


GSM_High

Below 1G

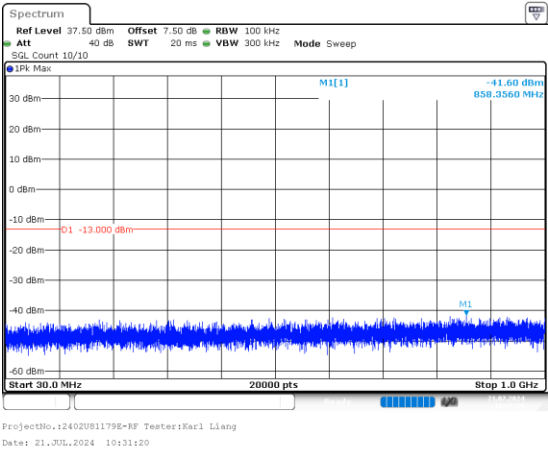


Above 1G

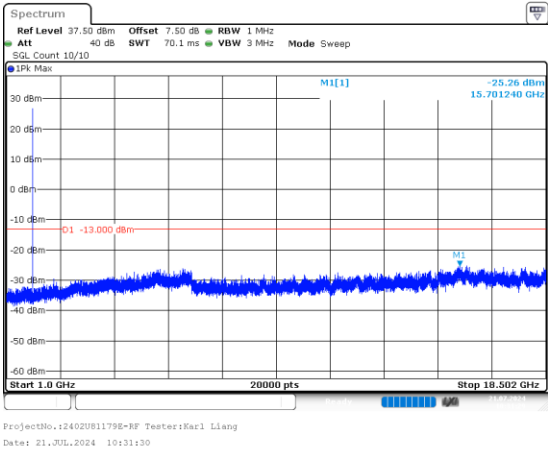


EDGE_Low_Solt1

Below 1G

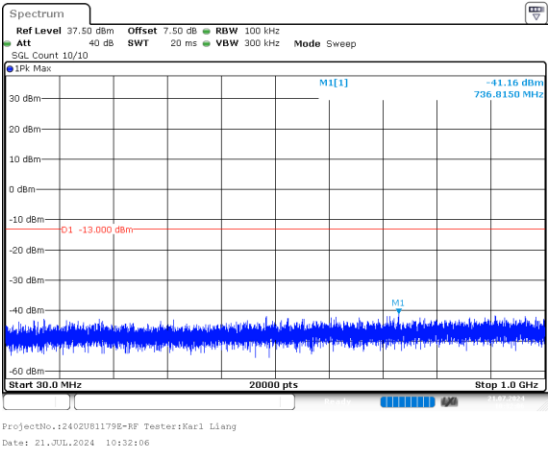


Above 1G

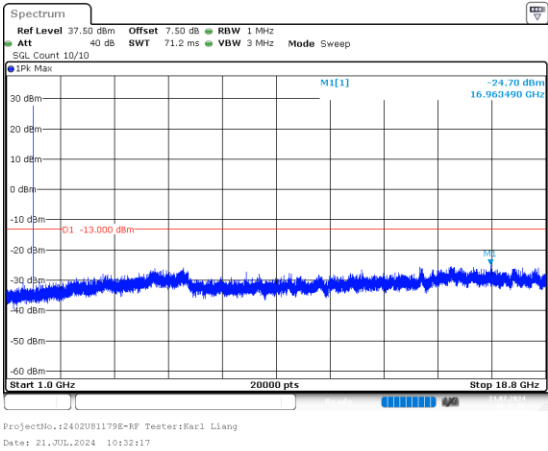


EDGE_Middle_Solt1

Below 1G

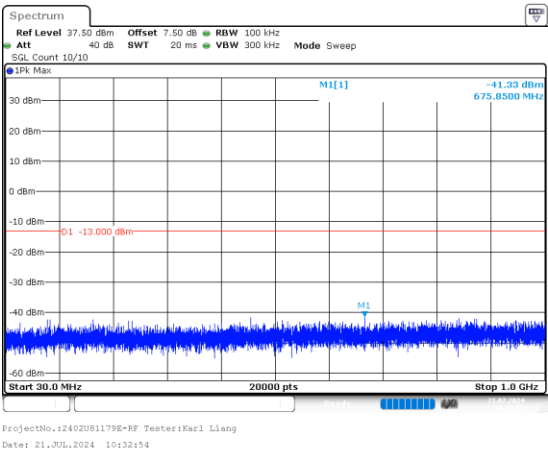


Above 1G



EDGE_High_Solt1

Below 1G



Above 1G

