

Test Information:

Serial No.:	2MPD-1	Test Date:	2024/07/24
Test Site:	RF	Test Mode:	Transmitting
Tester:	Karl Liang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C):	27.8	Relative Humidity: (%)	57	ATM Pressure: (kPa)	99.9
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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	1.8	0.002	±2.5	Pass
GSM_Middle_T1/VN	5.3	0.006	±2.5	Pass
GSM_Middle_T2/VN	6.4	0.008	±2.5	Pass
GSM_Middle_T3/VN	0.6	0.001	±2.5	Pass
GSM_Middle_T4/VN	2.8	0.003	±2.5	Pass
GSM_Middle_T5/VN	0.0	0.000	±2.5	Pass
GSM_Middle_T6/VN	4.3	0.005	±2.5	Pass
GSM_Middle_T7/VN	4.8	0.006	±2.5	Pass
GSM_Middle_T8/VN	4.1	0.005	±2.5	Pass
GSM_Middle_TN/VH	4.1	0.005	±2.5	Pass
GSM_Middle_TN/VL	0.1	0.000	±2.5	Pass
EDGE_Middle_Solt 1_ TN/VN	6.2	0.007	±2.5	Pass
EDGE_Middle_Solt 1_ T1/VN	-1.2	-0.001	±2.5	Pass
EDGE_Middle_Solt 1_ T2/VN	2.9	0.004	±2.5	Pass
EDGE_Middle_Solt 1_ T3/VN	5.2	0.006	±2.5	Pass
EDGE_Middle_Solt 1_ T4/VN	0.8	0.001	±2.5	Pass
EDGE_Middle_Solt 1_ T5/VN	-2.4	-0.003	±2.5	Pass
EDGE_Middle_Solt 1_ T6/VN	6.6	0.008	±2.5	Pass
EDGE_Middle_Solt 1_ T7/VN	-0.2	0.000	±2.5	Pass
EDGE_Middle_Solt 1_ T8/VN	0.3	0.000	±2.5	Pass
EDGE_Middle_Solt 1_ TN/VH	5.7	0.007	±2.5	Pass
EDGE_Middle_Solt 1_ TN/VL	2.7	0.003	±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	1850.082	1850	Pass
GSM_Low_T1/VN	1850.079	1850	Pass
GSM_Low_T2/VN	1850.080	1850	Pass
GSM_Low_T3/VN	1850.081	1850	Pass
GSM_Low_T4/VN	1850.079	1850	Pass
GSM_Low_T5/VN	1850.080	1850	Pass
GSM_Low_T6/VN	1850.079	1850	Pass
GSM_Low_T7/VN	1850.078	1850	Pass
GSM_Low_T8/VN	1850.081	1850	Pass
GSM_Low_TN/VH	1850.078	1850	Pass
GSM_Low_TN/VL	1850.080	1850	Pass
GSM_High_TN/VN	1909.929	1910	Pass
GSM_High_T1/VN	1909.923	1910	Pass
GSM_High_T2/VN	1909.922	1910	Pass
GSM_High_T3/VN	1909.924	1910	Pass
GSM_High_T4/VN	1909.929	1910	Pass
GSM_High_T5/VN	1909.924	1910	Pass
GSM_High_T6/VN	1909.923	1910	Pass
GSM_High_T7/VN	1909.927	1910	Pass
GSM_High_T8/VN	1909.926	1910	Pass
GSM_High_TN/VH	1909.924	1910	Pass
GSM_High_TN/VL	1909.922	1910	Pass
EDGE_Low_Solt1_TN/VN	1850.068	1850	Pass
EDGE_Low_Solt1_T1/VN	1850.065	1850	Pass
EDGE_Low_Solt1_T2/VN	1850.067	1850	Pass
EDGE_Low_Solt1_T3/VN	1850.071	1850	Pass
EDGE_Low_Solt1_T4/VN	1850.069	1850	Pass
EDGE_Low_Solt1_T5/VN	1850.075	1850	Pass
EDGE_Low_Solt1_T6/VN	1850.074	1850	Pass
EDGE_Low_Solt1_T7/VN	1850.074	1850	Pass
EDGE_Low_Solt1_T8/VN	1850.072	1850	Pass

Mode	Value (MHz)	Limit (MHz)	Result
EDGE_Low_Solt1_TN/VH	1850.077	1850	Pass
EDGE_Low_Solt1_TN/VL	1850.071	1850	Pass
EDGE_High_Solt1_TN/VN	1909.929	1910	Pass
EDGE_High_Solt1_T1/VN	1909.926	1910	Pass
EDGE_High_Solt1_T2/VN	1909.927	1910	Pass
EDGE_High_Solt1_T3/VN	1909.924	1910	Pass
EDGE_High_Solt1_T4/VN	1909.930	1910	Pass
EDGE_High_Solt1_T5/VN	1909.925	1910	Pass
EDGE_High_Solt1_T6/VN	1909.929	1910	Pass
EDGE_High_Solt1_T7/VN	1909.924	1910	Pass
EDGE_High_Solt1_T8/VN	1909.923	1910	Pass
EDGE_High_Solt1_TN/VH	1909.929	1910	Pass
EDGE_High_Solt1_TN/VL	1909.923	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

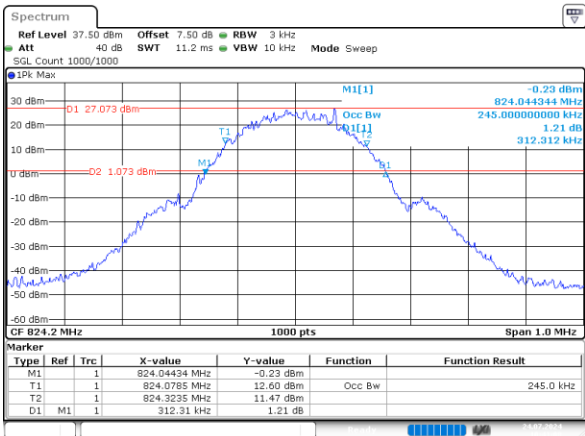
FCC Part 22H

GSM 850 , Normal

Mode	99% OBW (MHz)	EBW (MHz)
GSM_Low	0.245	0.312
GSM_Middle	0.247	0.316
GSM_High	0.246	0.311
EDGE_Low_Solt1	0.244	0.319
EDGE_Middle_Solt1	0.245	0.319
EDGE_High_Solt1	0.247	0.315

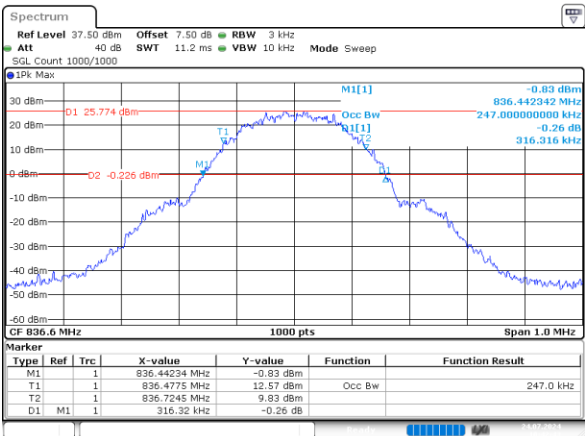
GSM 850 , Normal

GSM_Low 0.245MHz



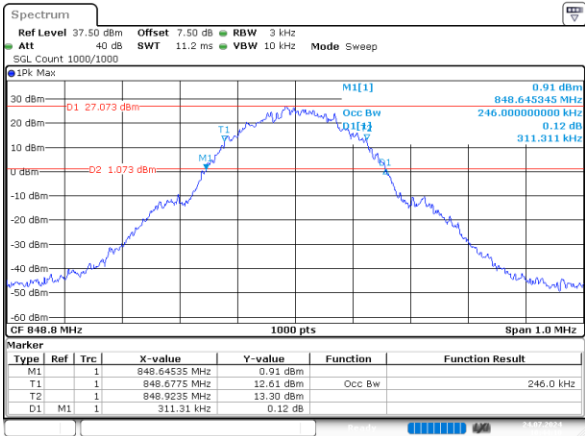
ProjectNo.:2402U40702E-RF Tester:Karl Liang
 Date: 24.JUL.2024 10:41:08

GSM_Middle 0.247MHz



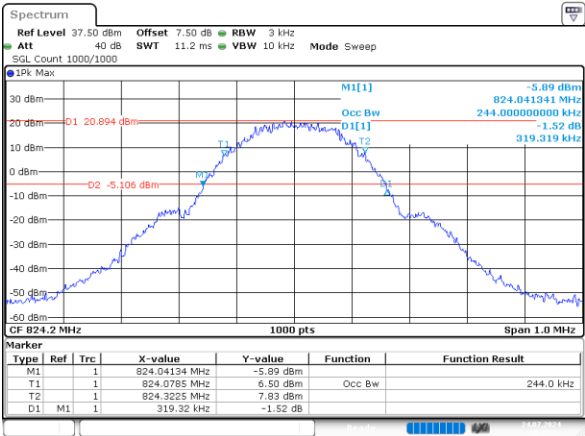
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GSM_High 0.246MHz



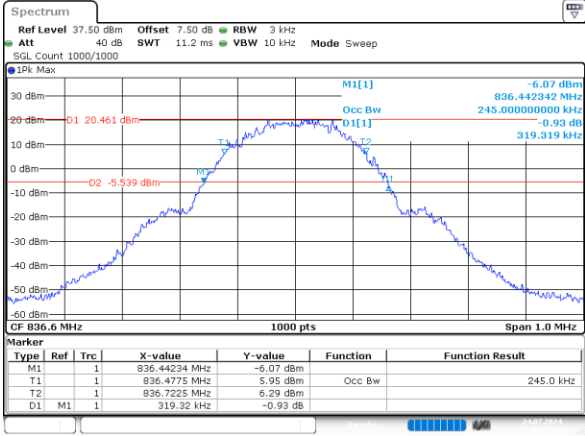
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EDGE_Low_Solt1 0.244MHz



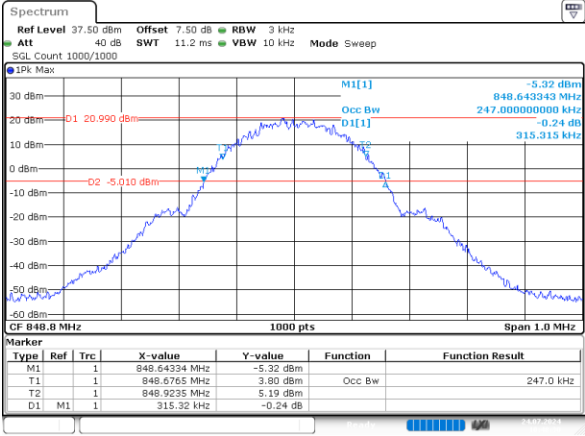
ProjectNo.:2402U40702E-RF Tester:Karl Liang
 Date: 24.JUL.2024 10:45:52

EDGE_Middle_Solt1 0.245MHz



ProjectNo.:2402U40702E-RF Tester:Karl Liang
 Date: 24.JUL.2024 10:47:04

EDGE_High_Solt1 0.247MHz



ProjectNo.:2402U40702E-RF Tester:Karl Liang
 Date: 24.JUL.2024 10:48:30

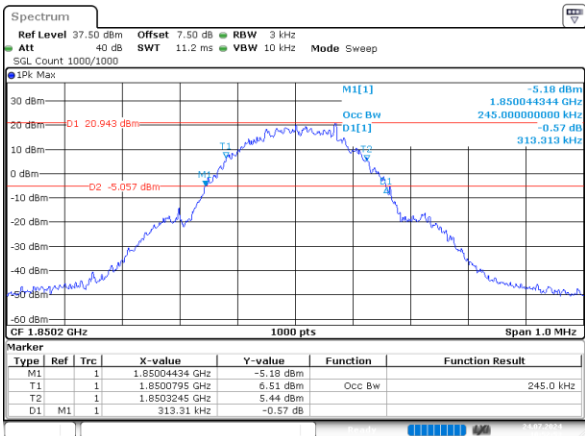
FCC Part 24E

GSM 1900 , Normal

Mode	99% OBW (MHz)	EBW (MHz)
GSM_Low	0.245	0.313
GSM_Middle	0.242	0.310
GSM_High	0.243	0.315
EDGE_Low_Solt1	0.245	0.312
EDGE_Middle_Solt1	0.244	0.316
EDGE_High_Solt1	0.246	0.313

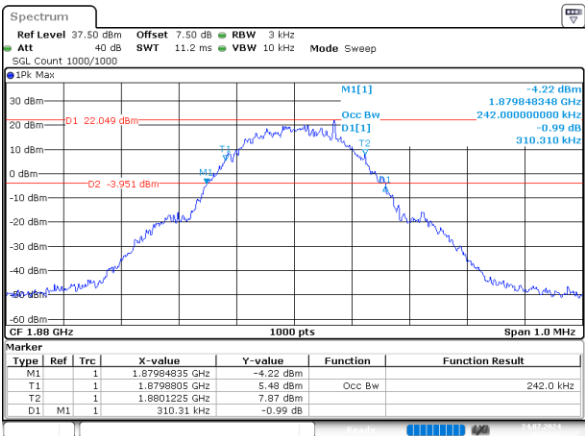
GSM 1900 , Normal

GSM_Low 0.245MHz



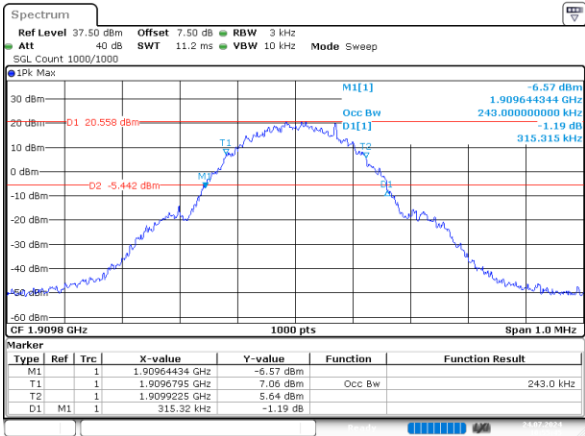
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GSM_Middle 0.242MHz



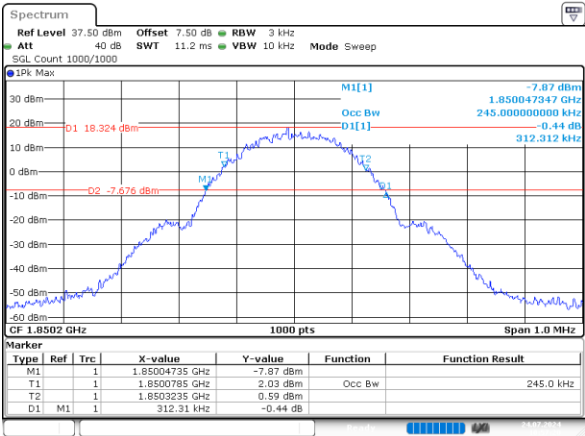
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GSM_High 0.243MHz



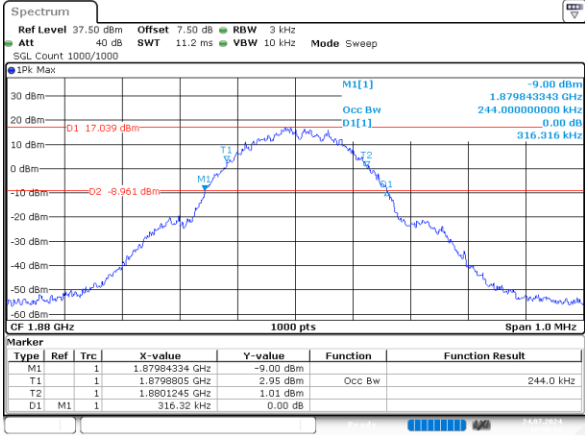
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EDGE_Low_Solt1 0.245MHz



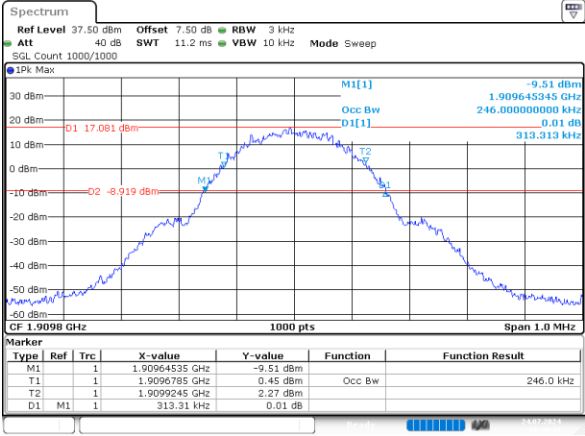
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 Date: 24.JUL.2024 10:57:20

EDGE_Middle_Solt1 0.244MHz



ProjectNo.:2402U40702E-RF Tester:Karl Liang
 Date: 24.JUL.2024 10:58:12

EDGE_High_Solt1 0.246MHz



ProjectNo.:2402U40702E-RF Tester:Karl Liang
 Date: 24.JUL.2024 10:59:19

RF Output Power

FCC Part 22H

GSM 850 , Normal

Mode	Conducted Power (dBm)	ERP (dBm)	Limit(dBm)	Result
GSM_Low	33.88	29.320	38.45	Pass
GSM_Middle	33.82	29.260	38.45	Pass
GSM_High	33.69	29.130	38.45	Pass
GPRS_Low_Solt1	33.87	29.310	38.45	Pass
GPRS_Low_Solt2	33.27	28.710	38.45	Pass
GPRS_Low_Solt3	31.66	27.100	38.45	Pass
GPRS_Low_Solt4	30.72	26.160	38.45	Pass
GPRS_Middle_Solt1	33.83	29.270	38.45	Pass
GPRS_Middle_Solt2	33.22	28.660	38.45	Pass
GPRS_Middle_Solt3	31.61	27.050	38.45	Pass
GPRS_Middle_Solt4	30.64	26.080	38.45	Pass
GPRS_High_Solt1	33.71	29.150	38.45	Pass
GPRS_High_Solt2	33.06	28.500	38.45	Pass
GPRS_High_Solt3	31.45	26.890	38.45	Pass
GPRS_High_Solt4	30.48	25.920	38.45	Pass
EDGE_Low_Solt 1	25.84	21.280	38.45	Pass
EDGE_Low_Solt 2	24.74	20.180	38.45	Pass
EDGE_Low_Solt 3	22.70	18.140	38.45	Pass
EDGE_Low_Solt 4	21.80	17.240	38.45	Pass
EDGE_Middle_Solt 1	25.93	21.370	38.45	Pass
EDGE_Middle_Solt 2	24.90	20.340	38.45	Pass
EDGE_Middle_Solt 3	22.88	18.320	38.45	Pass
EDGE_Middle_Solt 4	21.97	17.410	38.45	Pass
EDGE_High_Solt1	26.01	21.450	38.45	Pass
EDGE_High_Solt2	24.98	20.420	38.45	Pass
EDGE_High_Solt3	22.95	18.390	38.45	Pass
EDGE_High_Solt4	21.92	17.360	38.45	Pass

Note:
ERP = Conducted Power(dBm) - Lc(dB) + G_T(dBd)
G_T(dBd) = G_T(dBi) - 2.15
1.Ant Gain = -2.31dBi;

2.C_L = signal attenuation in the connecting cable between the transmitter and antenna in 0.1dB

FCC Part 24E

GSM 1900 , Normal

Mode	Conducted Power (dBm)	EIRP (dBm)	Limit(dBm)	Result
GSM_Low	30.73	29.920	33	Pass
GSM_Middle	30.80	29.990	33	Pass
GSM_High	30.72	29.910	33	Pass
GPRS_Low_Solt1	30.73	29.920	33	Pass
GPRS_Low_Solt2	30.21	29.400	33	Pass
GPRS_Low_Solt3	28.71	27.900	33	Pass
GPRS_Low_Solt4	27.75	26.940	33	Pass
GPRS_Middle_Solt1	30.79	29.980	33	Pass
GPRS_Middle_Solt2	30.17	29.360	33	Pass
GPRS_Middle_Solt3	28.49	27.680	33	Pass
GPRS_Middle_Solt4	27.48	26.670	33	Pass
GPRS_High_Solt1	30.71	29.900	33	Pass
GPRS_High_Solt2	29.96	29.150	33	Pass
GPRS_High_Solt3	28.09	27.280	33	Pass
GPRS_High_Solt4	26.97	26.160	33	Pass
EDGE_Low_Solt 1	28.07	27.260	33	Pass
EDGE_Low_Solt 2	27.33	26.520	33	Pass
EDGE_Low_Solt 3	25.83	25.020	33	Pass
EDGE_Low_Solt 4	24.77	23.960	33	Pass
EDGE_Middle_Solt 1	27.43	26.620	33	Pass
EDGE_Middle_Solt 2	26.62	25.810	33	Pass
EDGE_Middle_Solt 3	24.93	24.120	33	Pass
EDGE_Middle_Solt 4	23.89	23.080	33	Pass
EDGE_High_Solt1	26.73	25.920	33	Pass
EDGE_High_Solt2	25.88	25.070	33	Pass
EDGE_High_Solt3	23.99	23.180	33	Pass
EDGE_High_Solt4	22.84	22.030	33	Pass

Note:

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

1.Ant Gain = -0.61dBi;

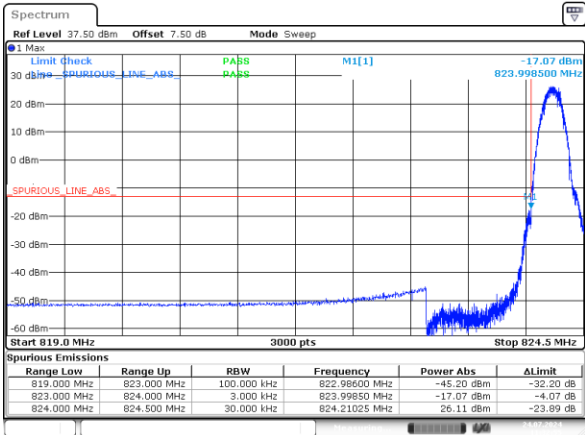
2.C_L = signal attenuation in the connecting cable between the transmitter and antenna in 0.2dB

Out of band emission,Band Edge

FCC Part 22H

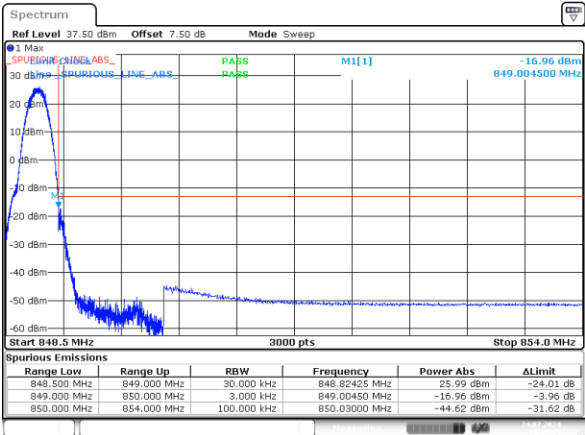
GSM 850 , Normal

GSM_Low -17.07dBm



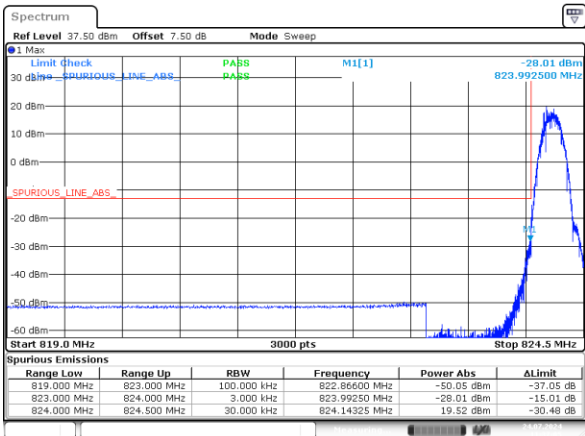
ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:32:54

GSM_High -16.96dBm



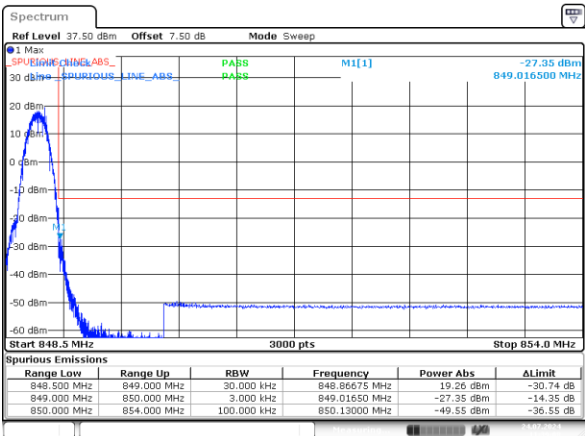
ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:35:29

EDGE_Low_Solt1 -28.01dBm



ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:37:05

EDGE_High_Solt1 -27.35dBm

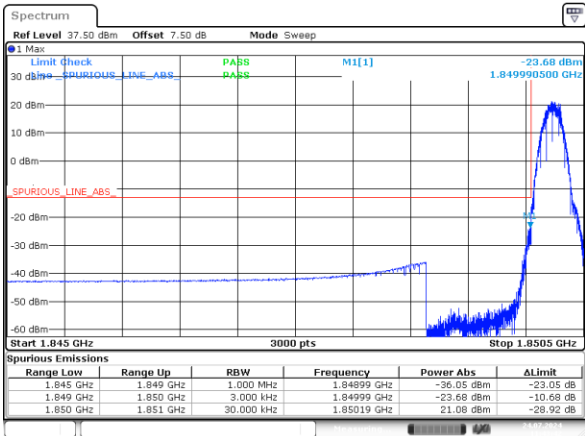


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Date: 24.JUL.2024 11:39:08

FCC Part 24E

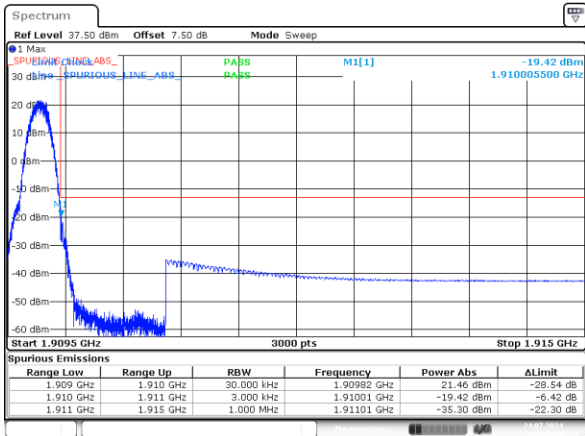
GSM 1900 , Normal

GSM_Low -23.68dBm



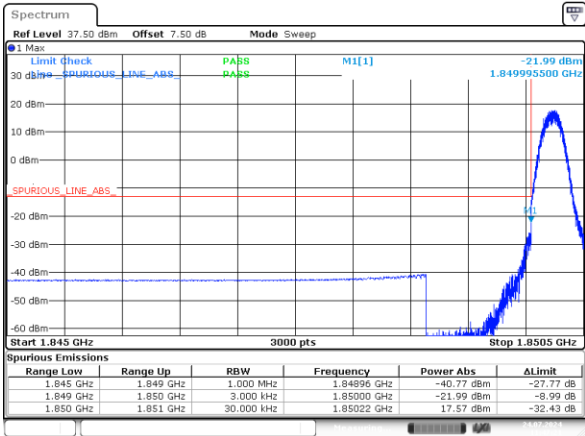
ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:43:42

GSM_High -19.42dBm



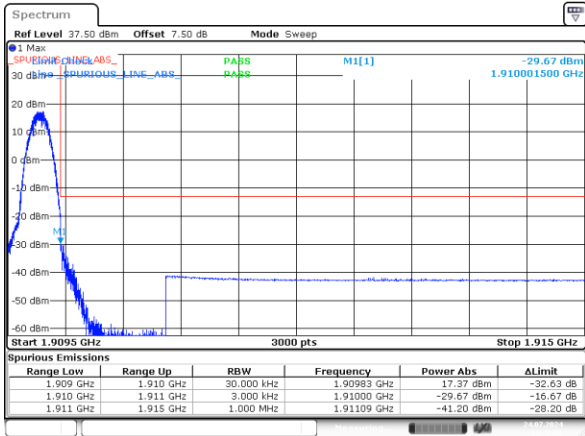
ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:45:14

EDGE_Low_Solt1 -21.99dBm



ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:47:21

EDGE_High_Solt1 -29.67dBm



ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:48:25

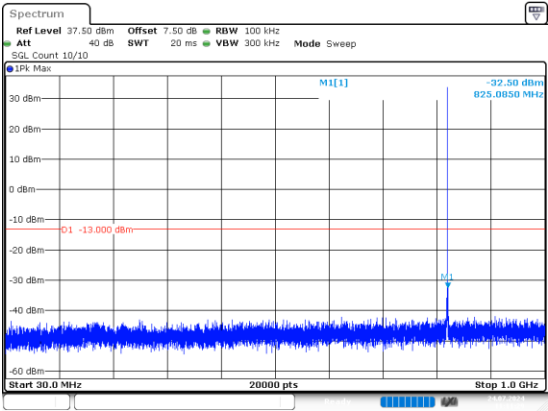
Spurious Emissions at Antenna Terminal

FCC Part 22H

GSM 850 , Normal

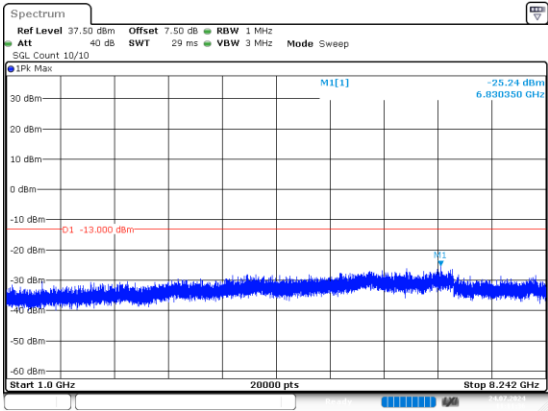
GSM_Low

Below 1G



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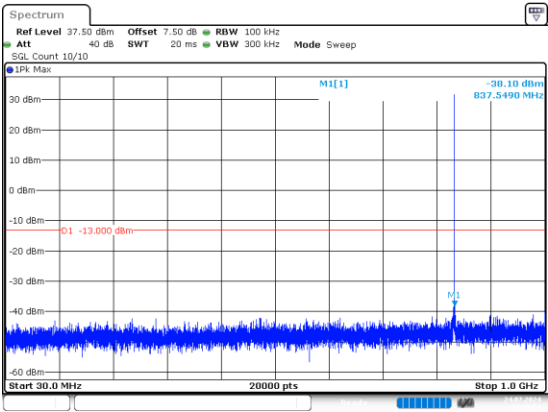
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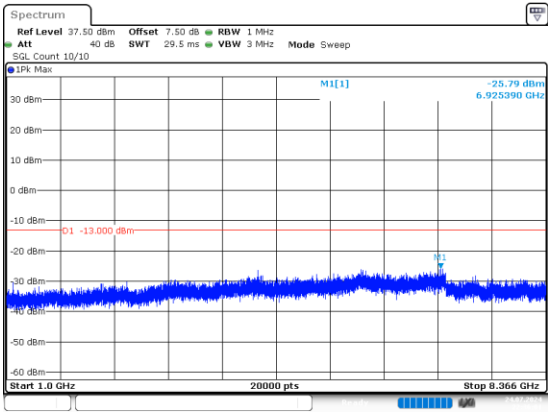
GSM_Middle

Below 1G



ProjectNo.:2402U40702E-RF Tester:Karl Liang
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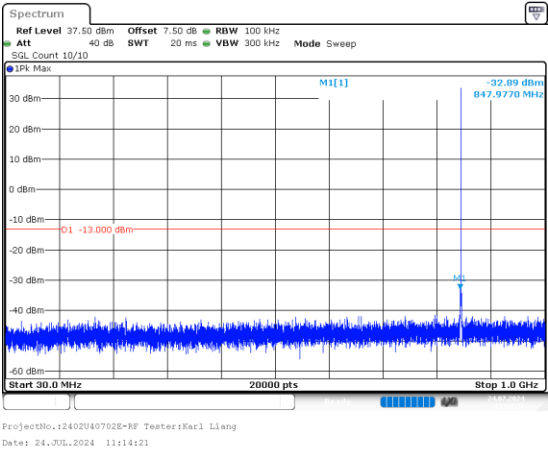
Above 1G



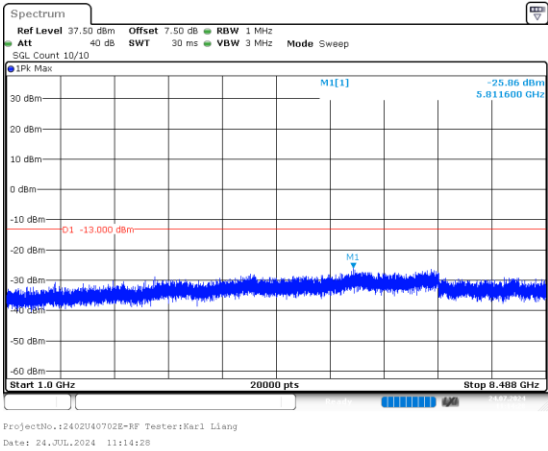
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Date: 24.JUL.2024 22:36:02

GSM_High

Below 1G

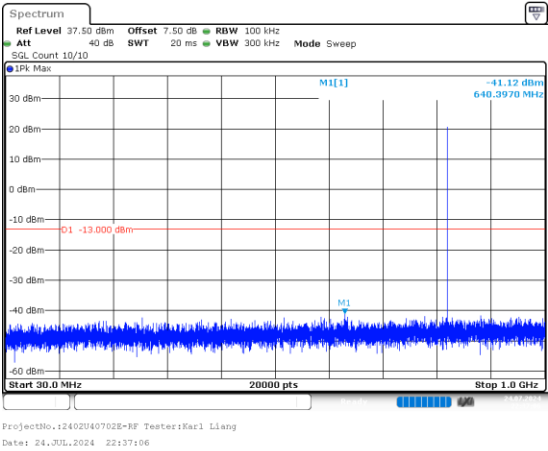


Above 1G

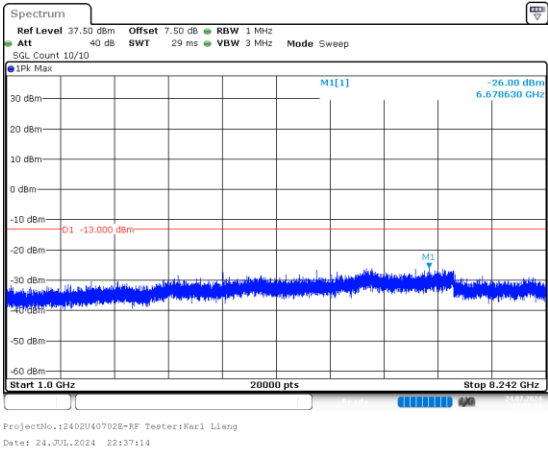


EDGE_Low_Solt1

Below 1G

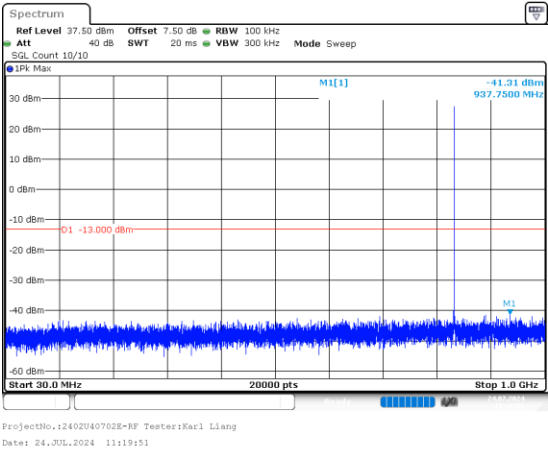


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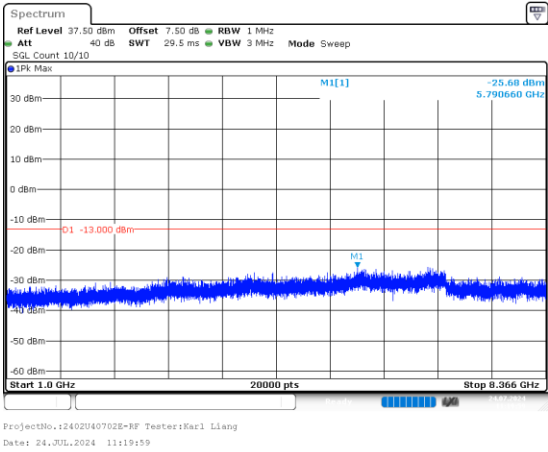


EDGE_Middle_Solt1

Below 1G

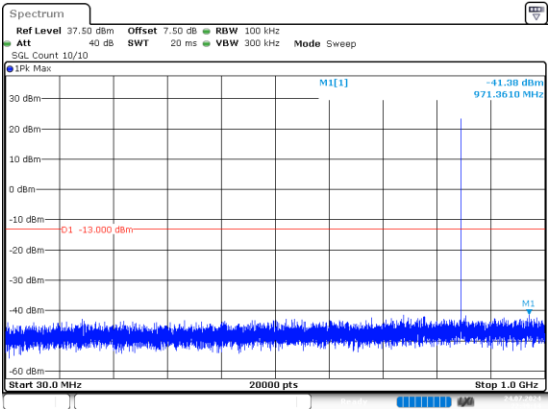


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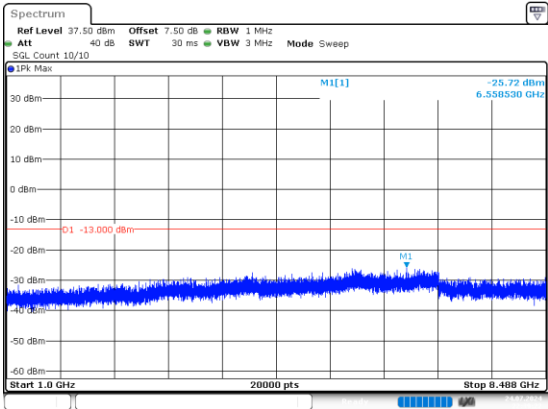
EDGE_High_Solt1

Below 1G



ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 22:39:14

Above 1G



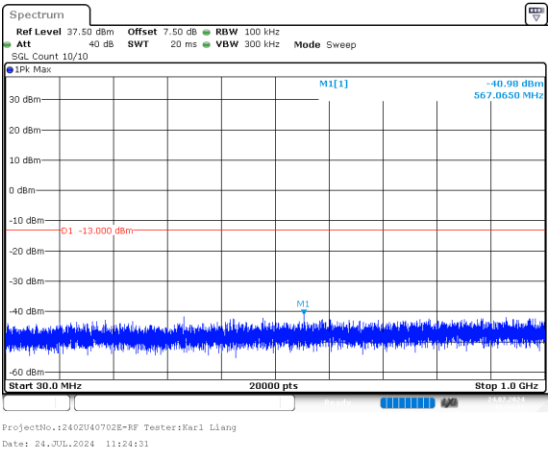
ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 22:39:22

FCC Part 24E

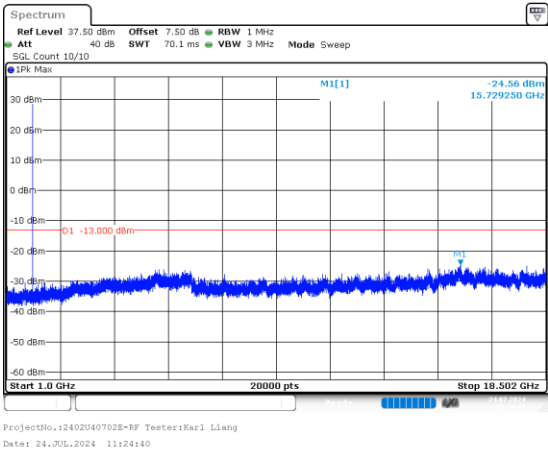
GSM 1900 , Normal

GSM_Low

Below 1G

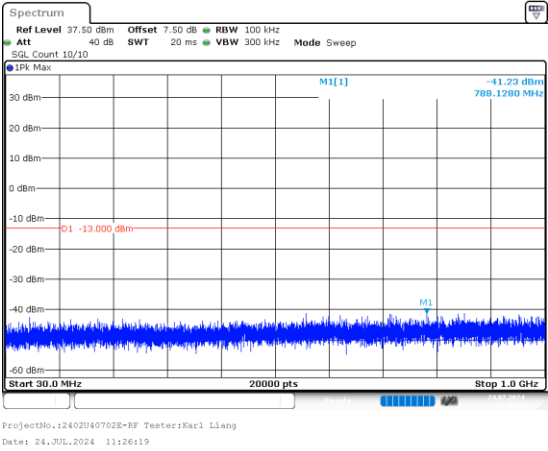


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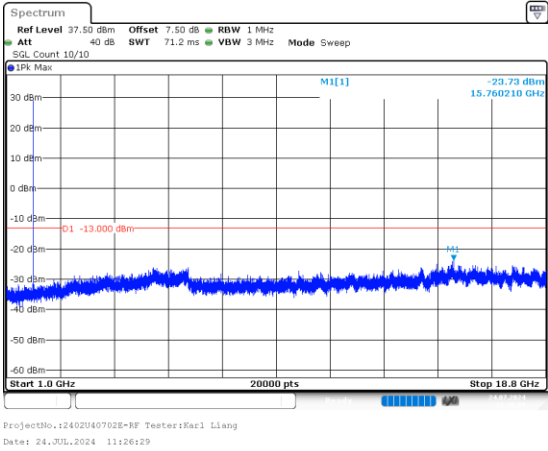


GSM_Middle

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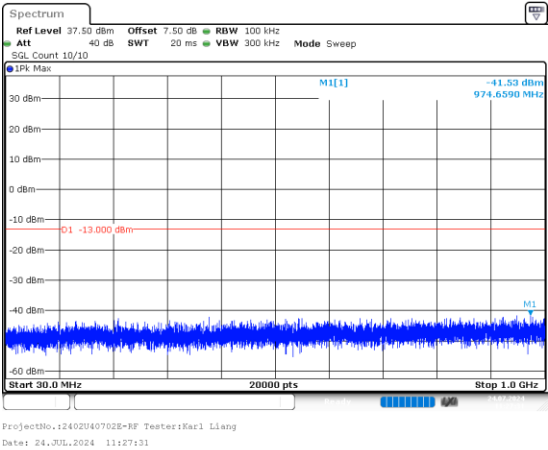


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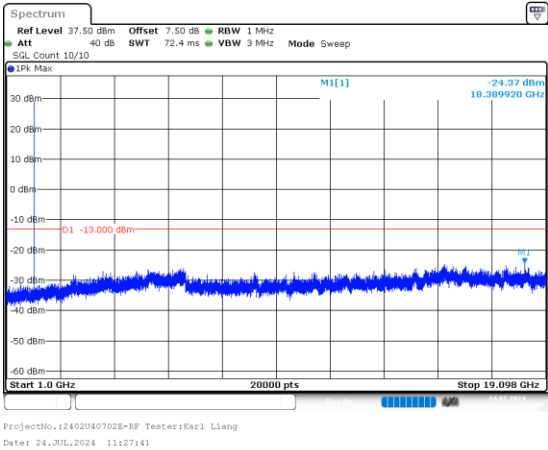


GSM_High

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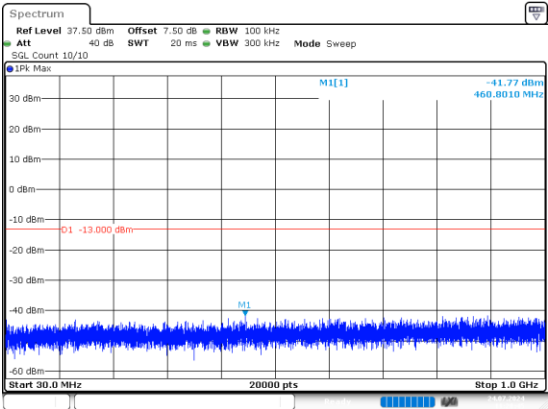


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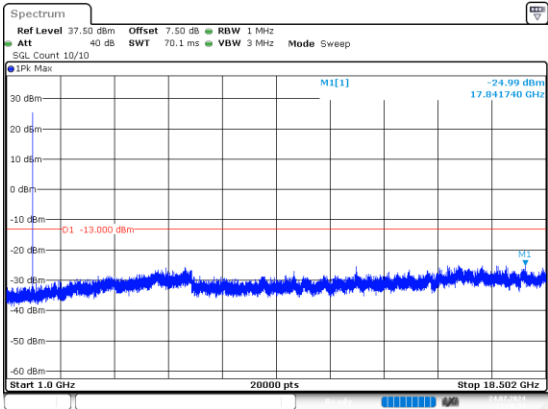
EDGE_Low_Solt1

Below 1G



ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:28:45

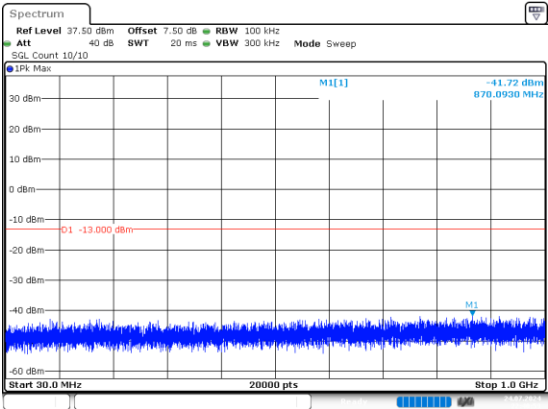
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ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 11:28:54

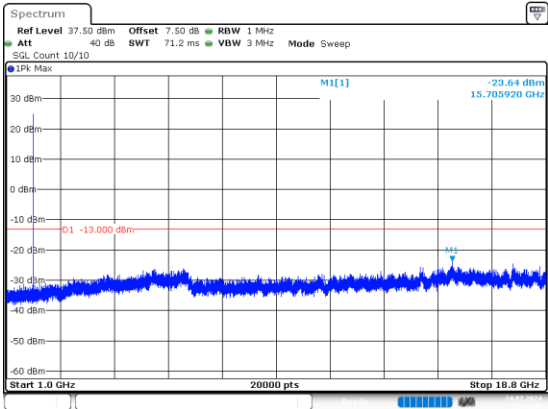
EDGE_Middle_Solt1

Below 1G



ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 22:40:53

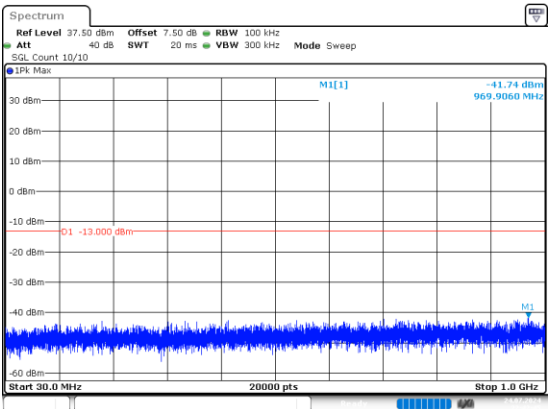
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ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 22:41:03

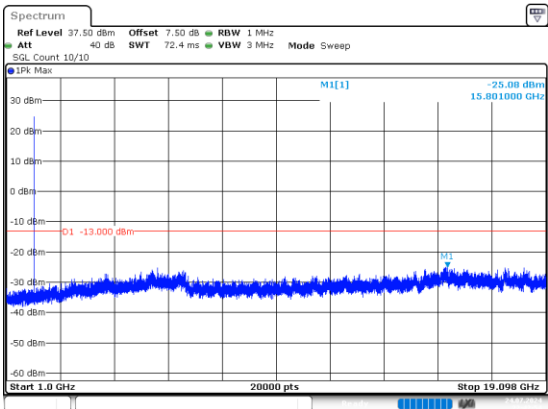
EDGE_High_Solt1

Below 1G



ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 22:42:45

Above 1G



ProjectNo.:2402U40702E-RF Tester:Karl Liang
Date: 24.JUL.2024 22:42:54