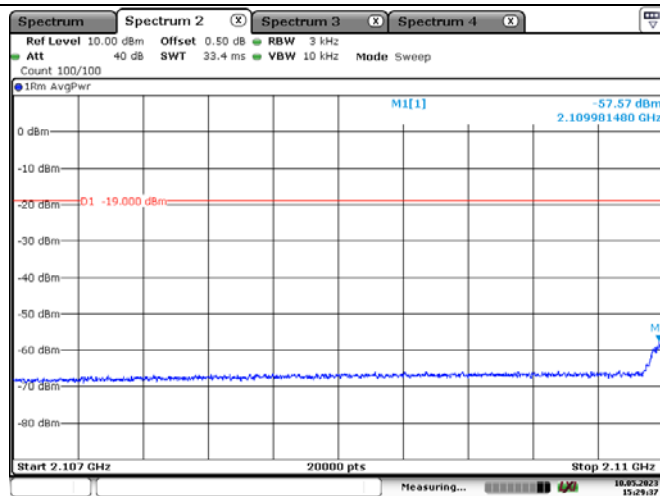


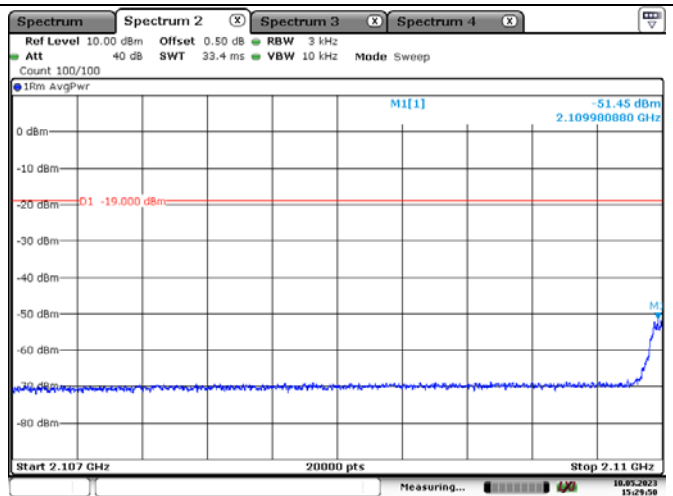
AWS-1 Band Downlink

Left Side-GSM-Pre AGC



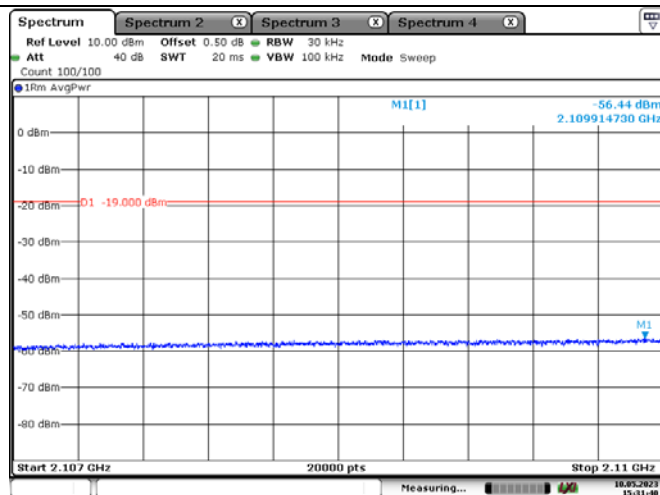
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Left Side-GSM-Above AGC



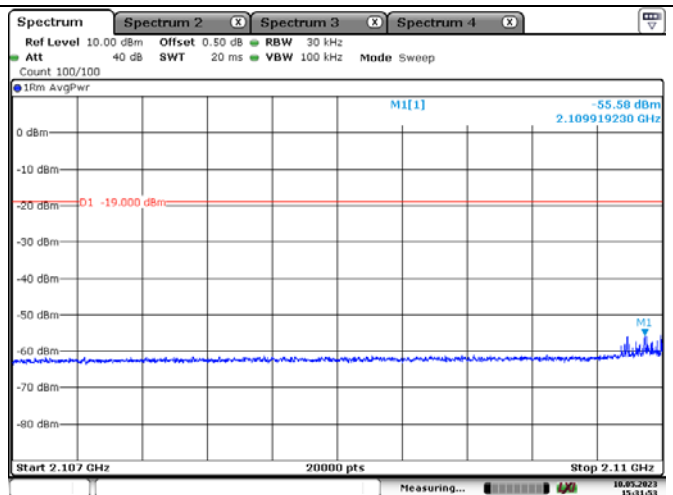
Date: 10.MAY.2023 15:29:51

Left Side-CDMA-Pre AGC



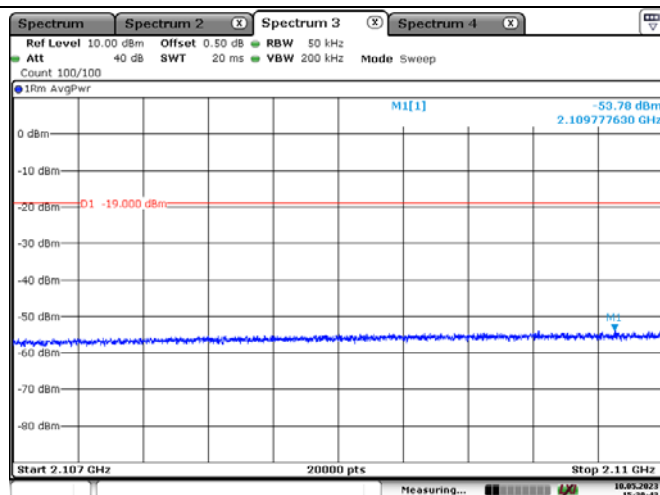
Date: 10.MAY.2023 15:31:40

Left Side-CDMA-Above AGC



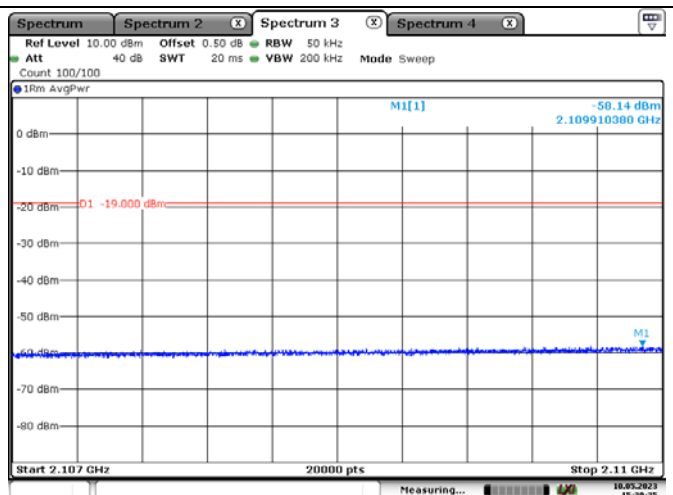
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Left Side-WCDMA-Pre AGC



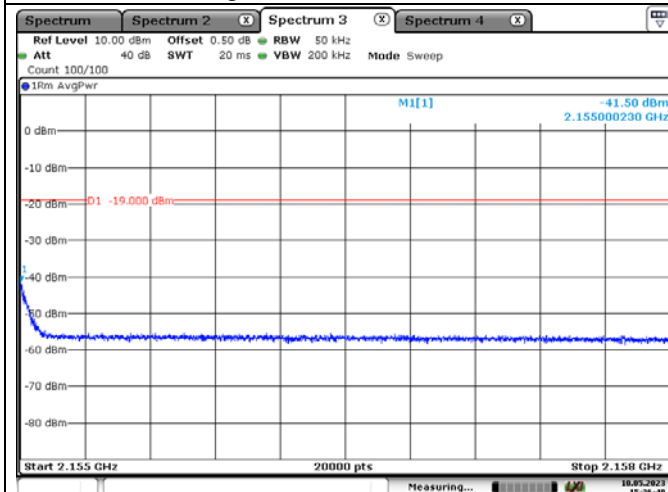
Date: 10.MAY.2023 15:30:43

Left Side-WCDMA-Above AGC



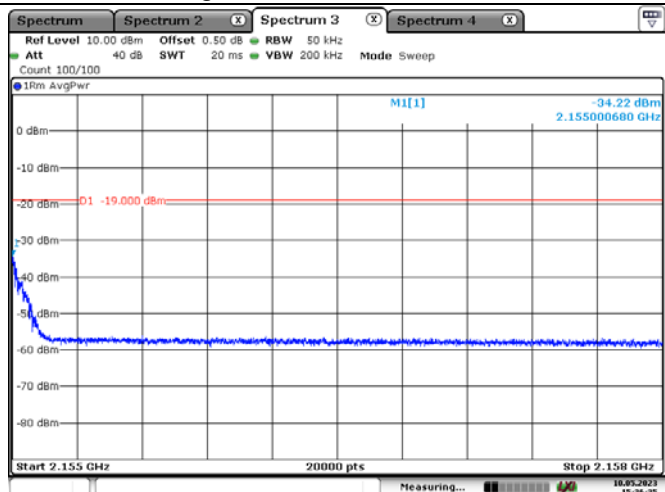
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Right Side-GSM-Pre AGC



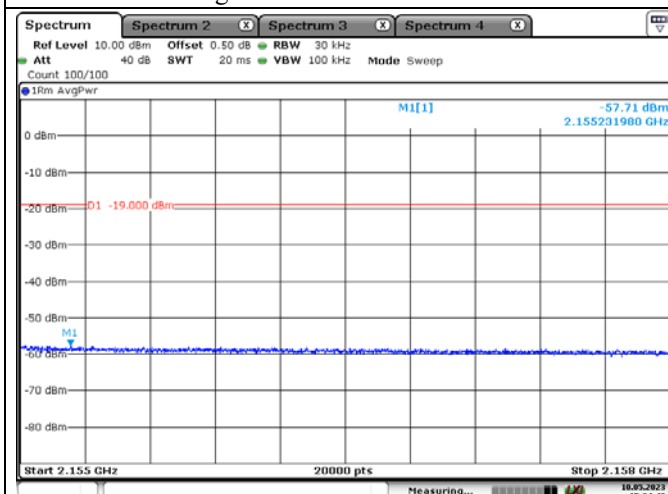
Date: 10.MAY.2023 15:36:48

Right Side-GSM-Above AGC



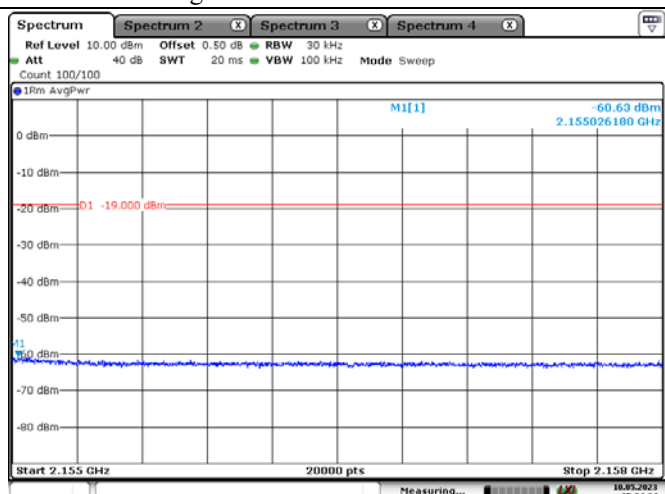
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Right Side-CDMA-Pre AGC



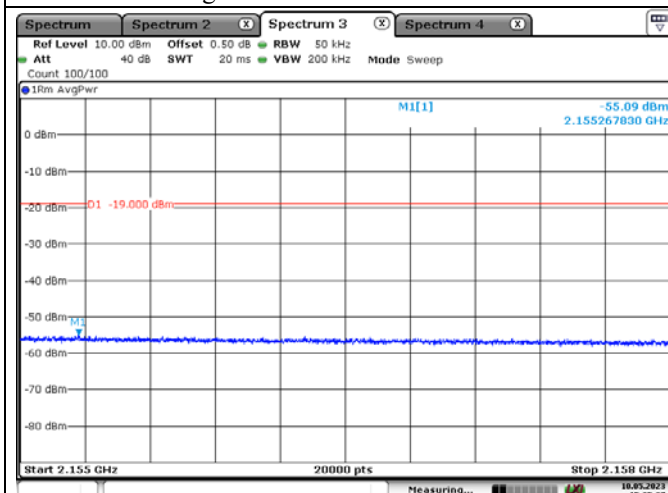
Date: 10.MAY.2023 15:34:49

Right Side-CDMA-Above AGC



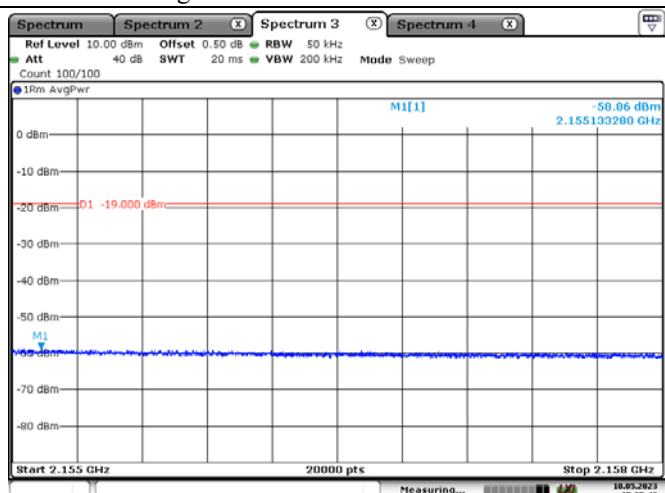
Date: 10.MAY.2023 15:34:34

Right Side-WCDMA-Pre AGC



Date: 10.MAY.2023 15:35:28

Right Side-WCDMA-Above AGC

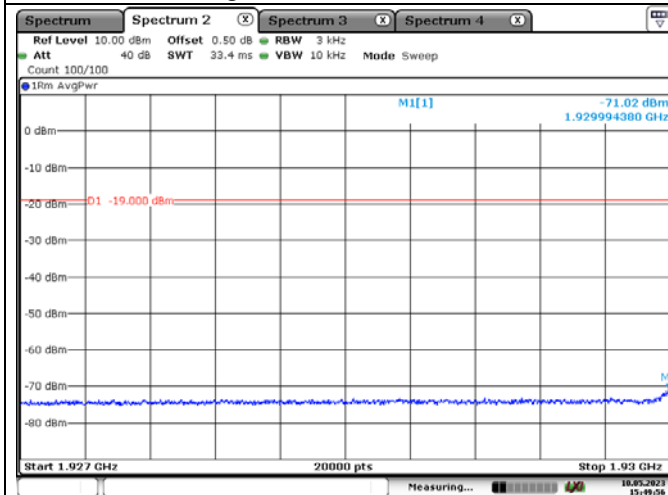


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PCS Band Downlink

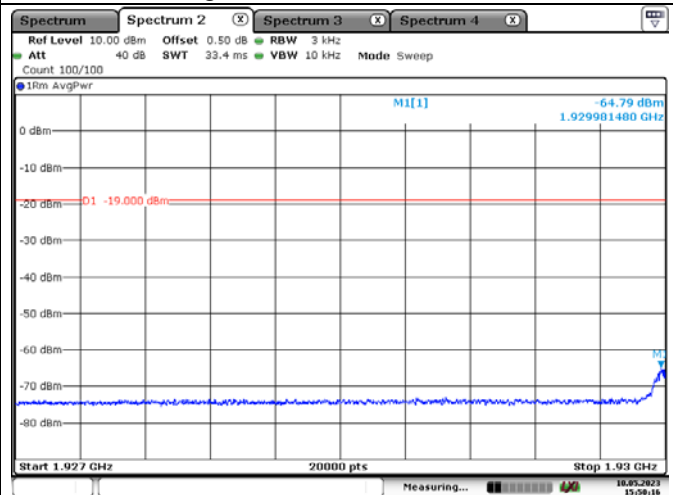


Right Side-GSM-Pre AGC



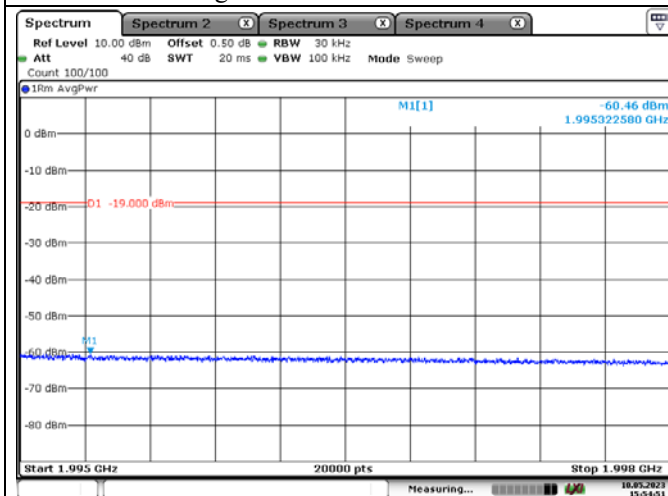
Date: 10.MAY.2023 15:49:57

Right Side-GSM-Above AGC



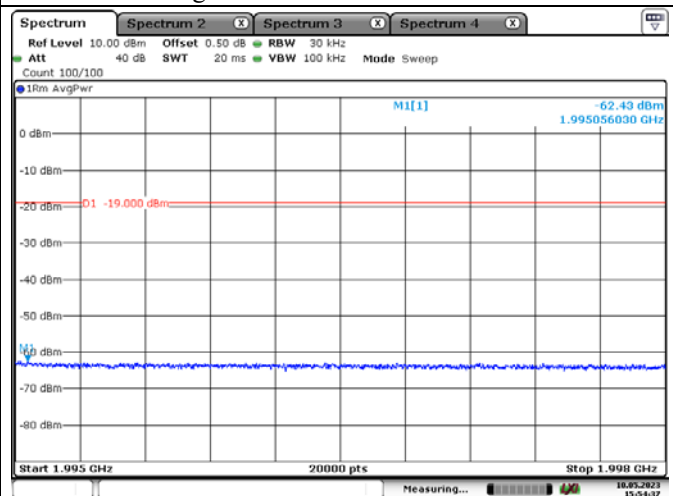
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Right Side-CDMA-Pre AGC



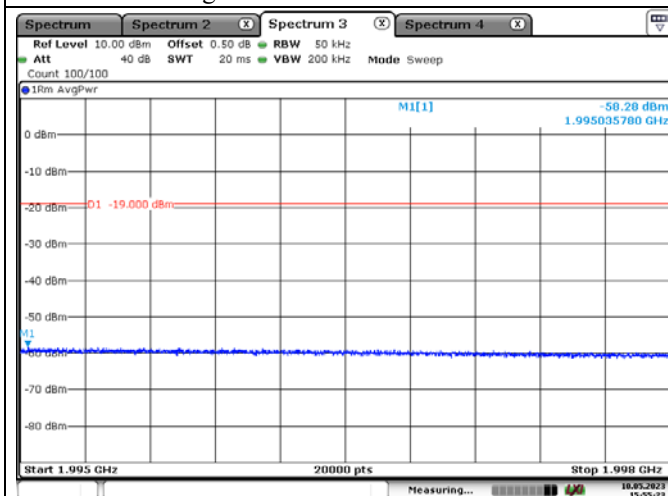
Date: 10.MAY.2023 15:54:52

Right Side-CDMA-Above AGC



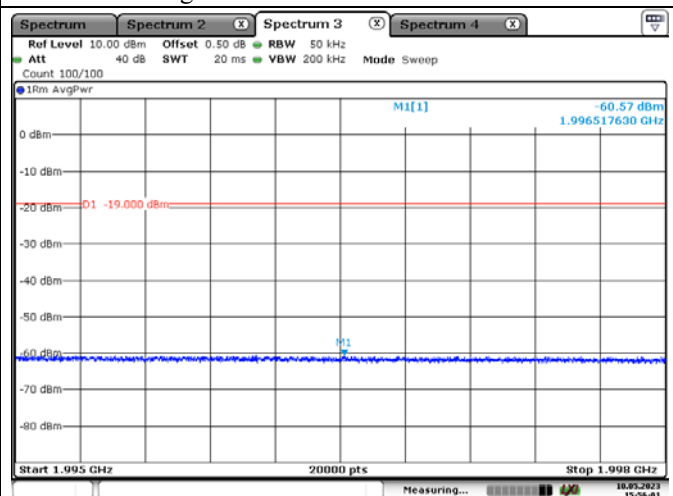
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Right Side-WCDMA-Pre AGC



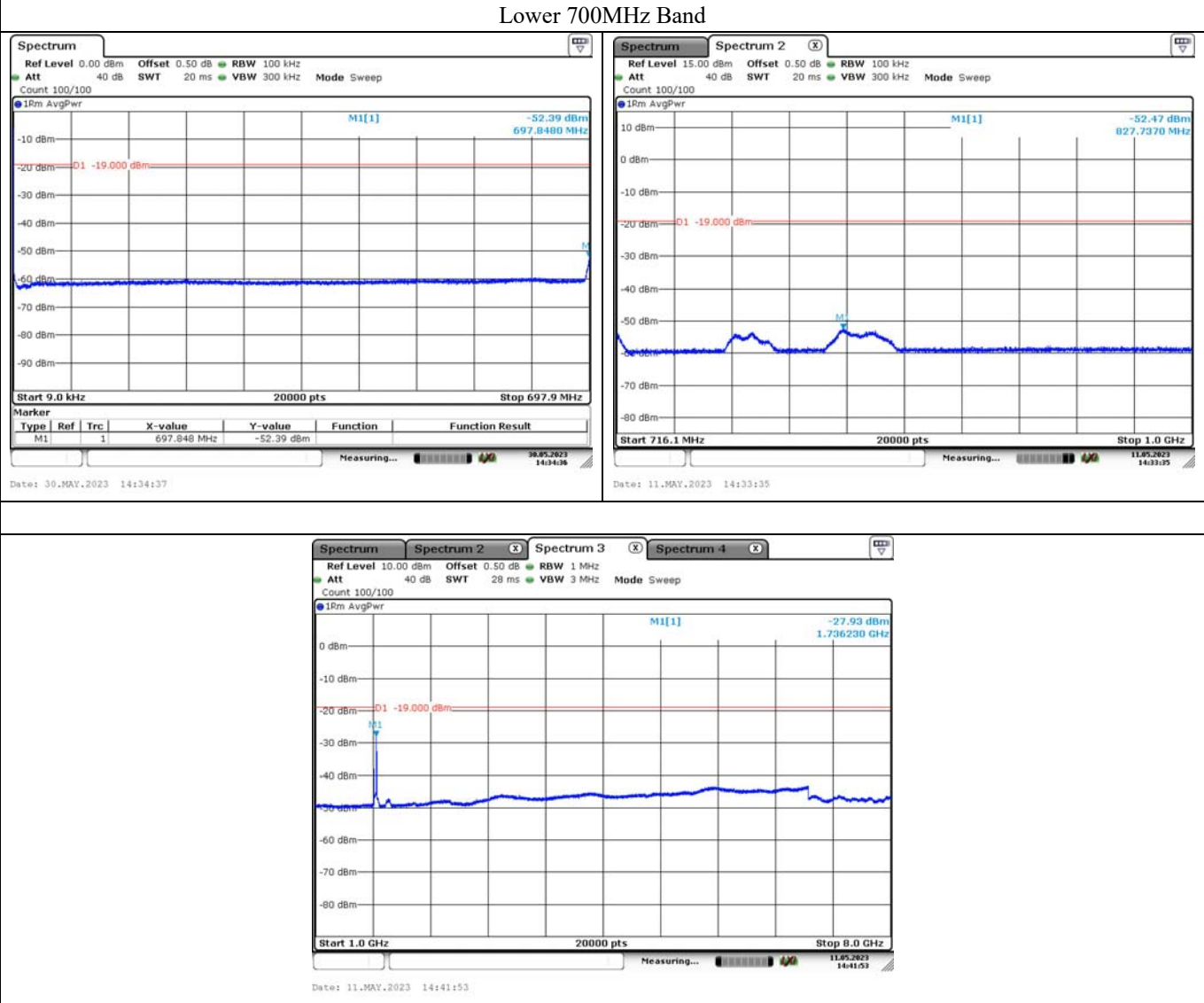
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Right Side-WCDMA-Above AGC

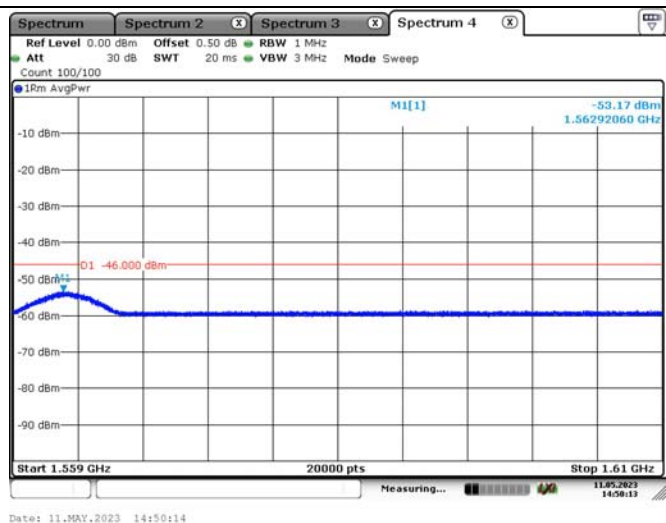
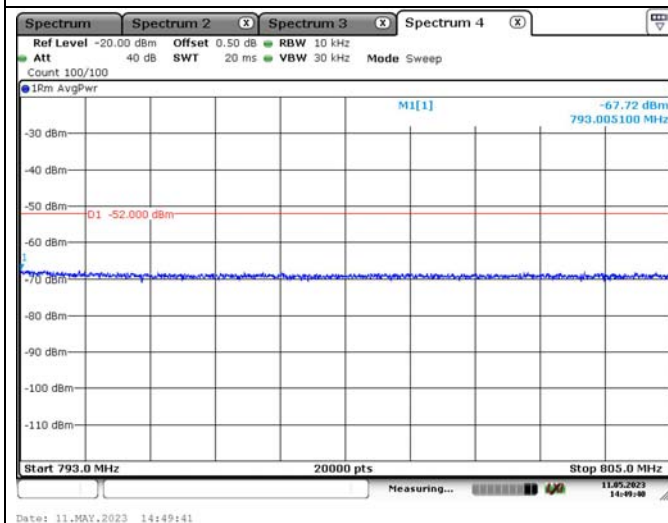
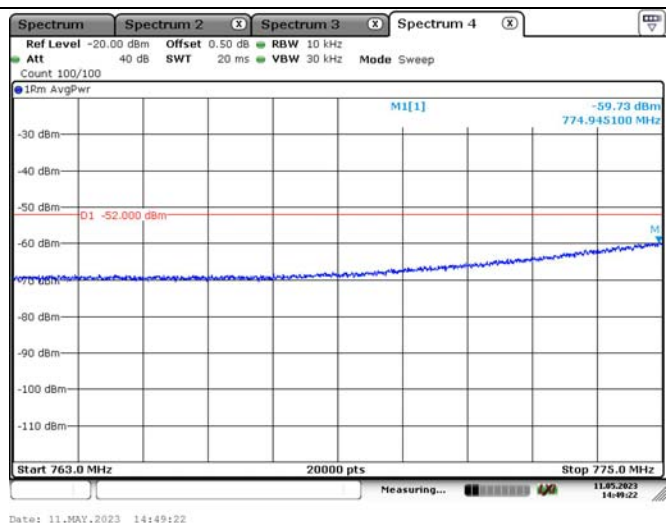
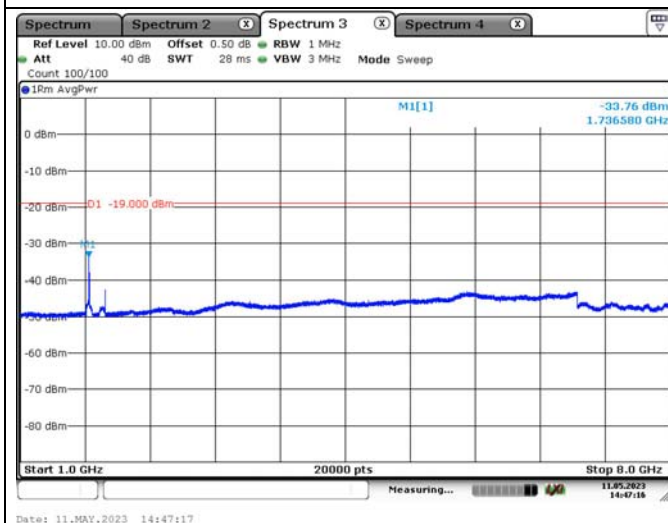
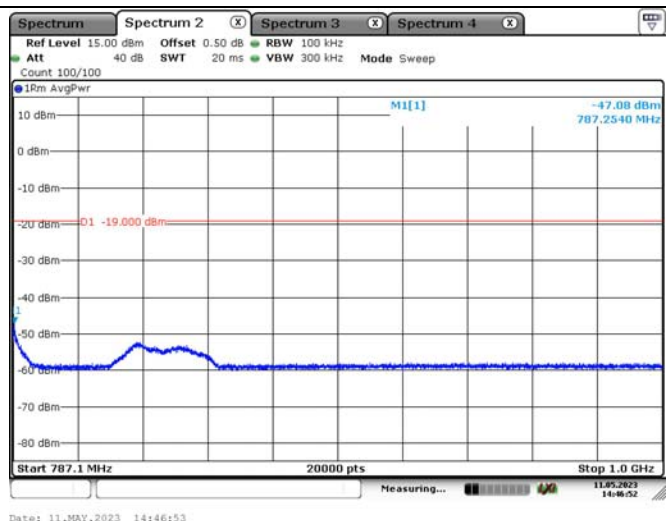
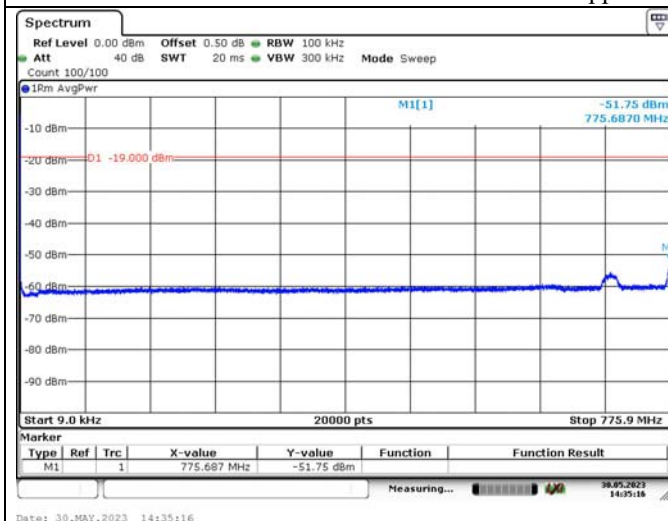


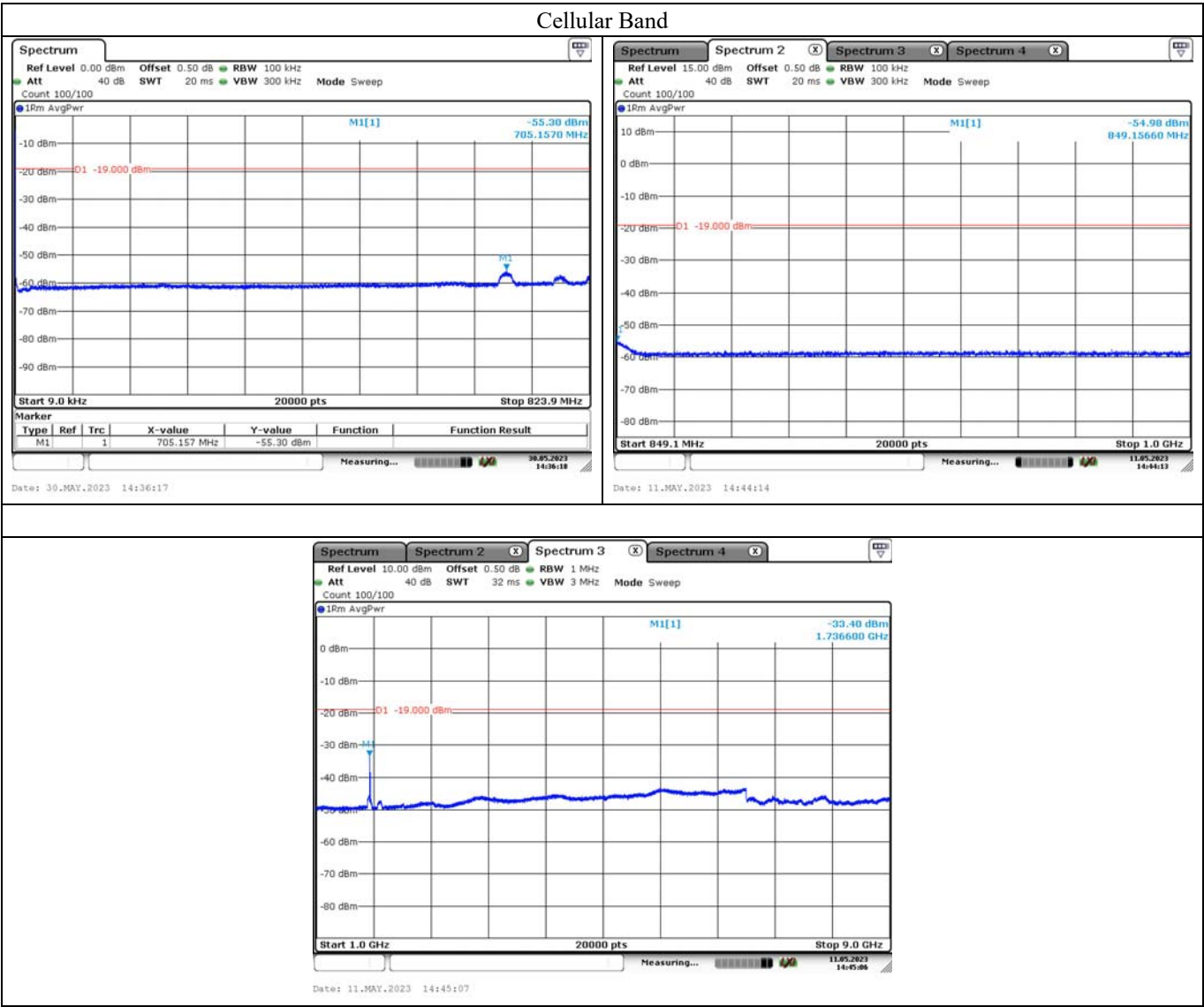
Date: 10.MAY.2023 15:56:01

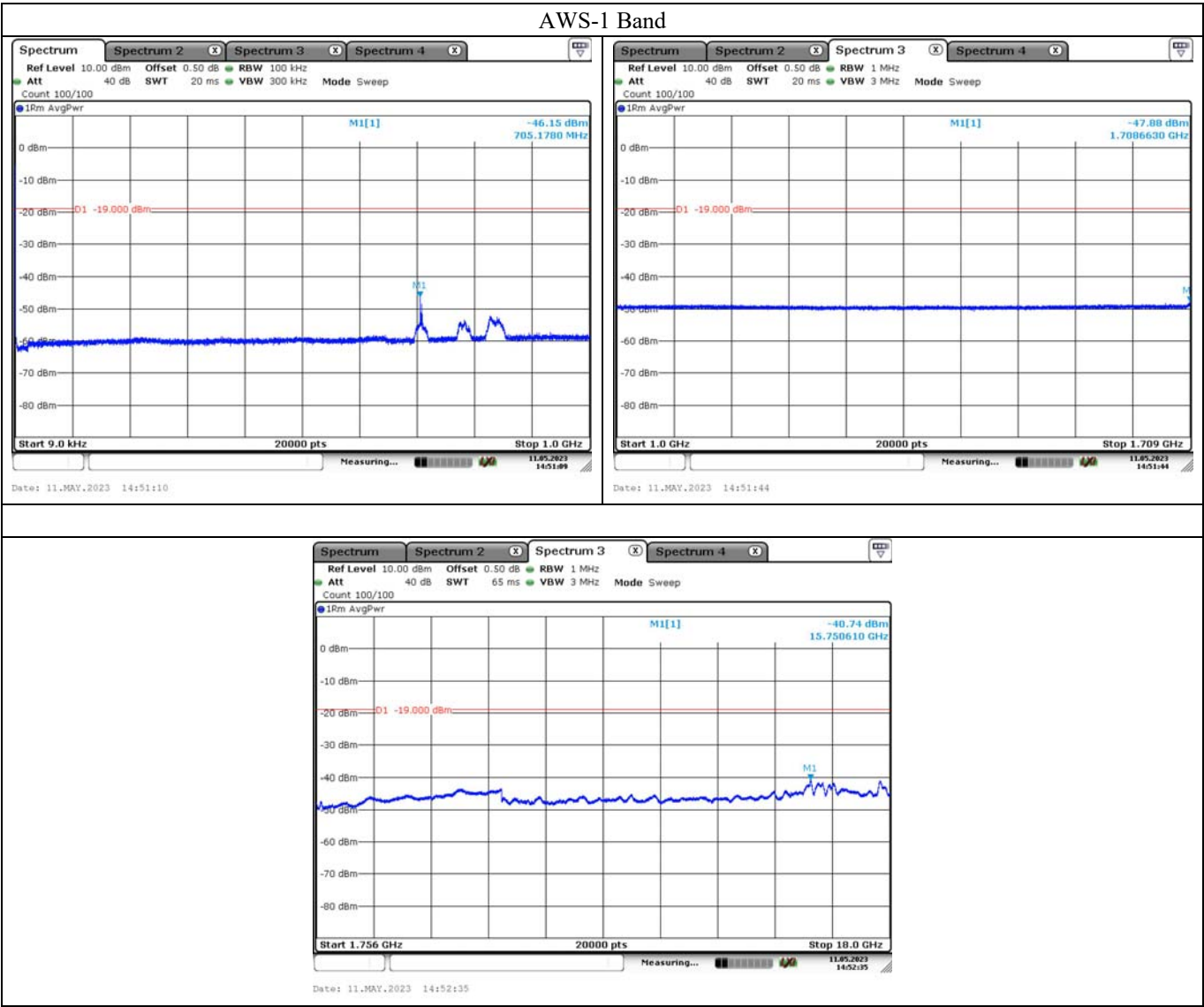
4.6 Spurious Emissions at Antenna Terminals:
Uplink

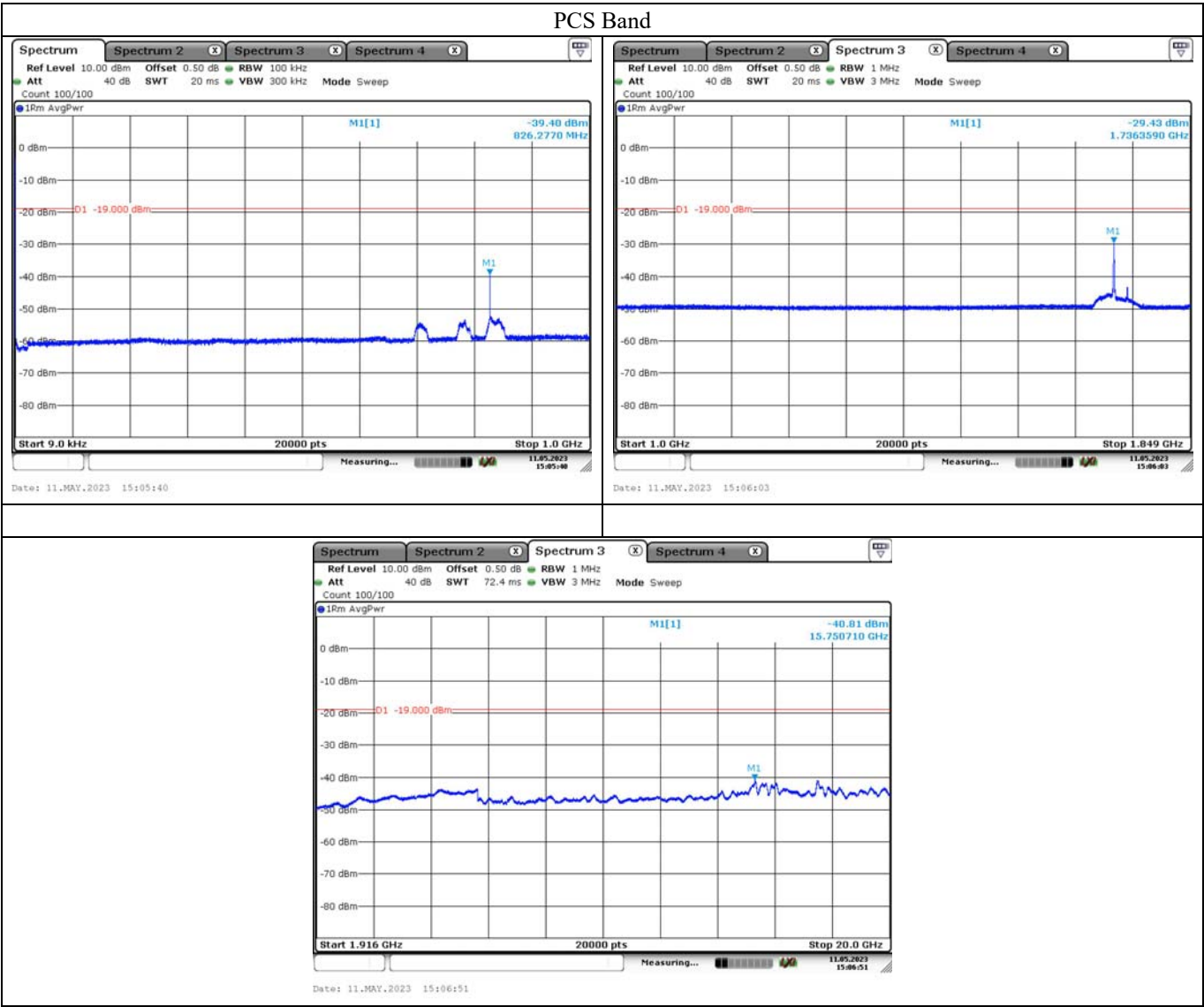


Upper 700MHz Band

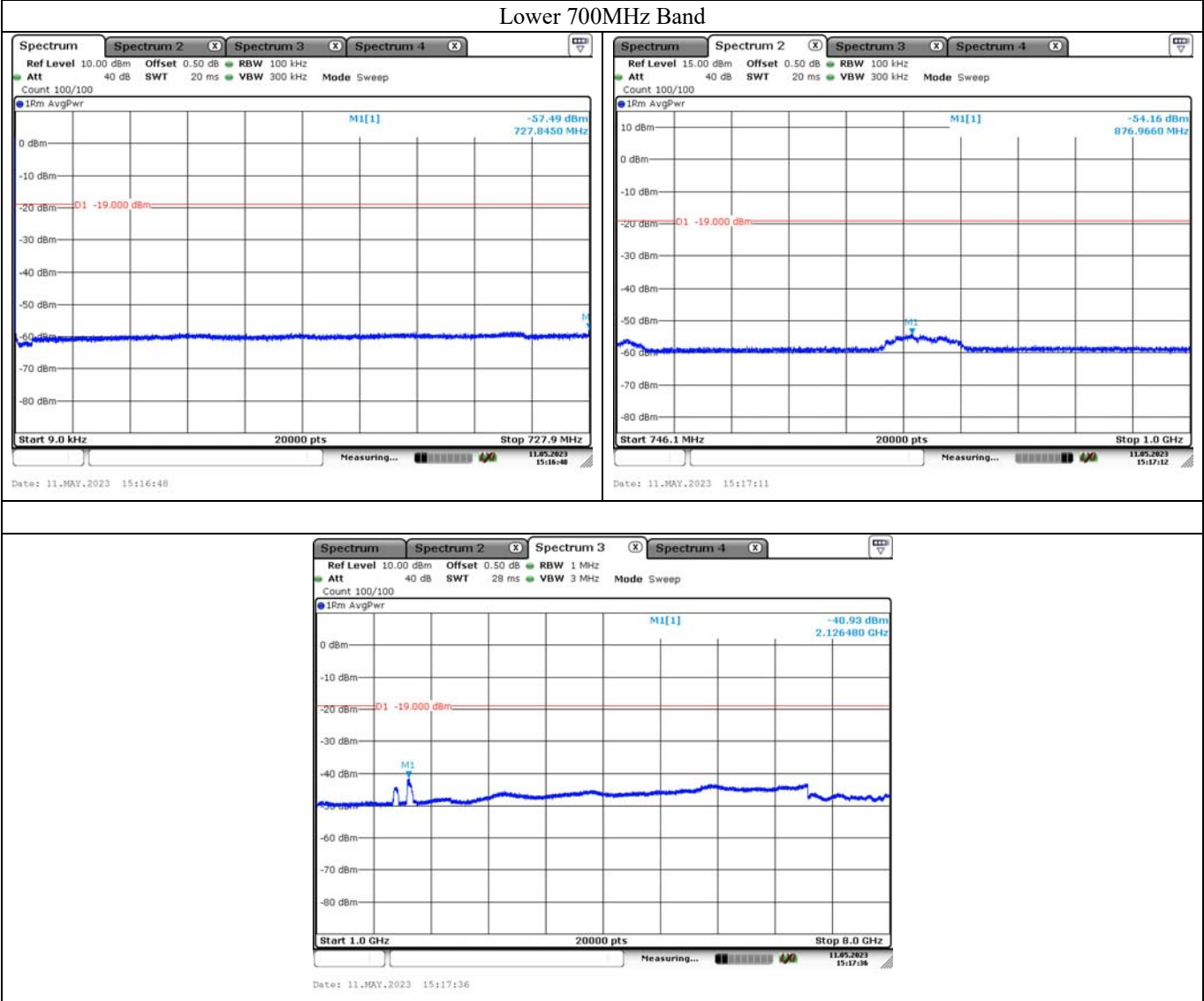




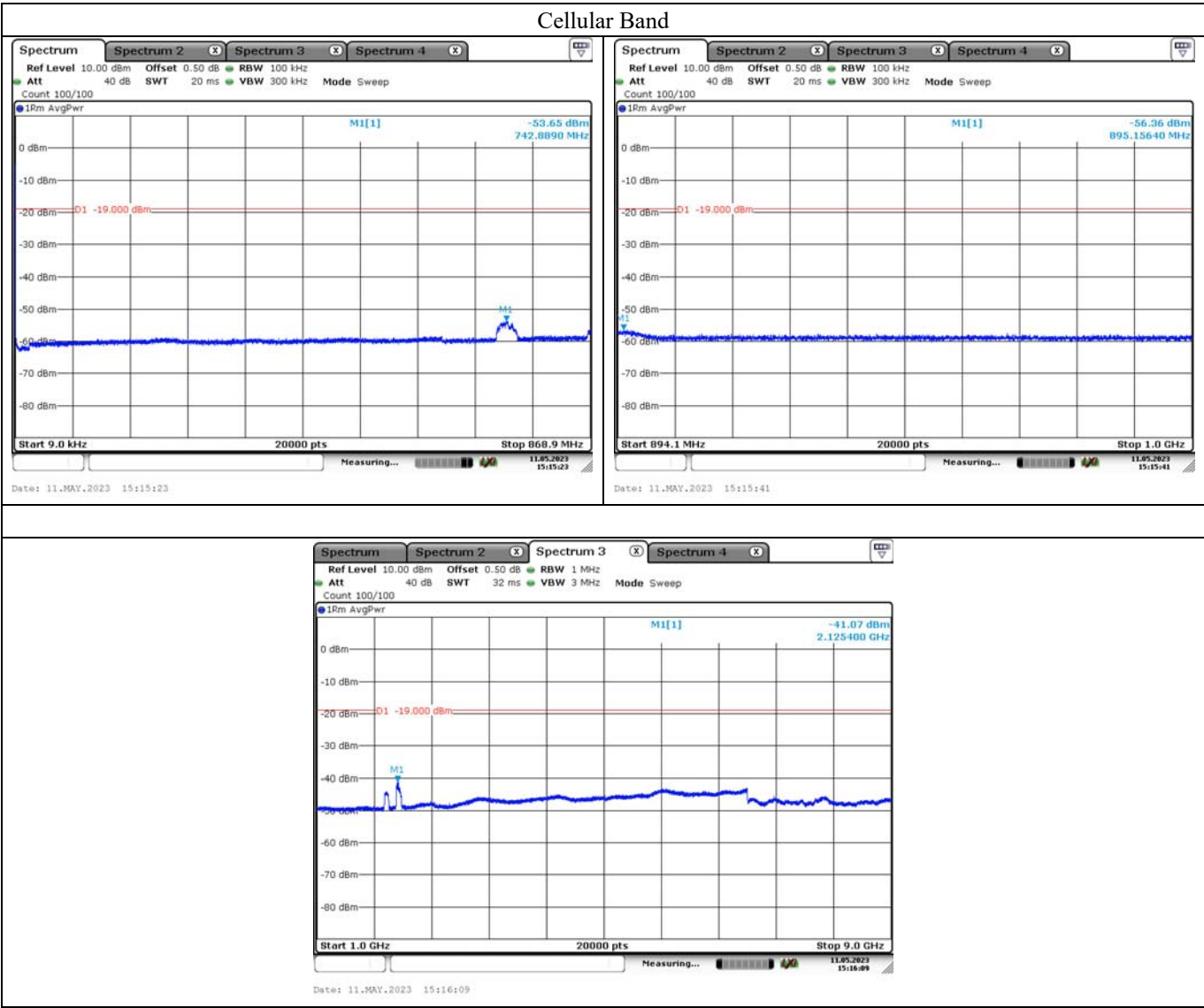




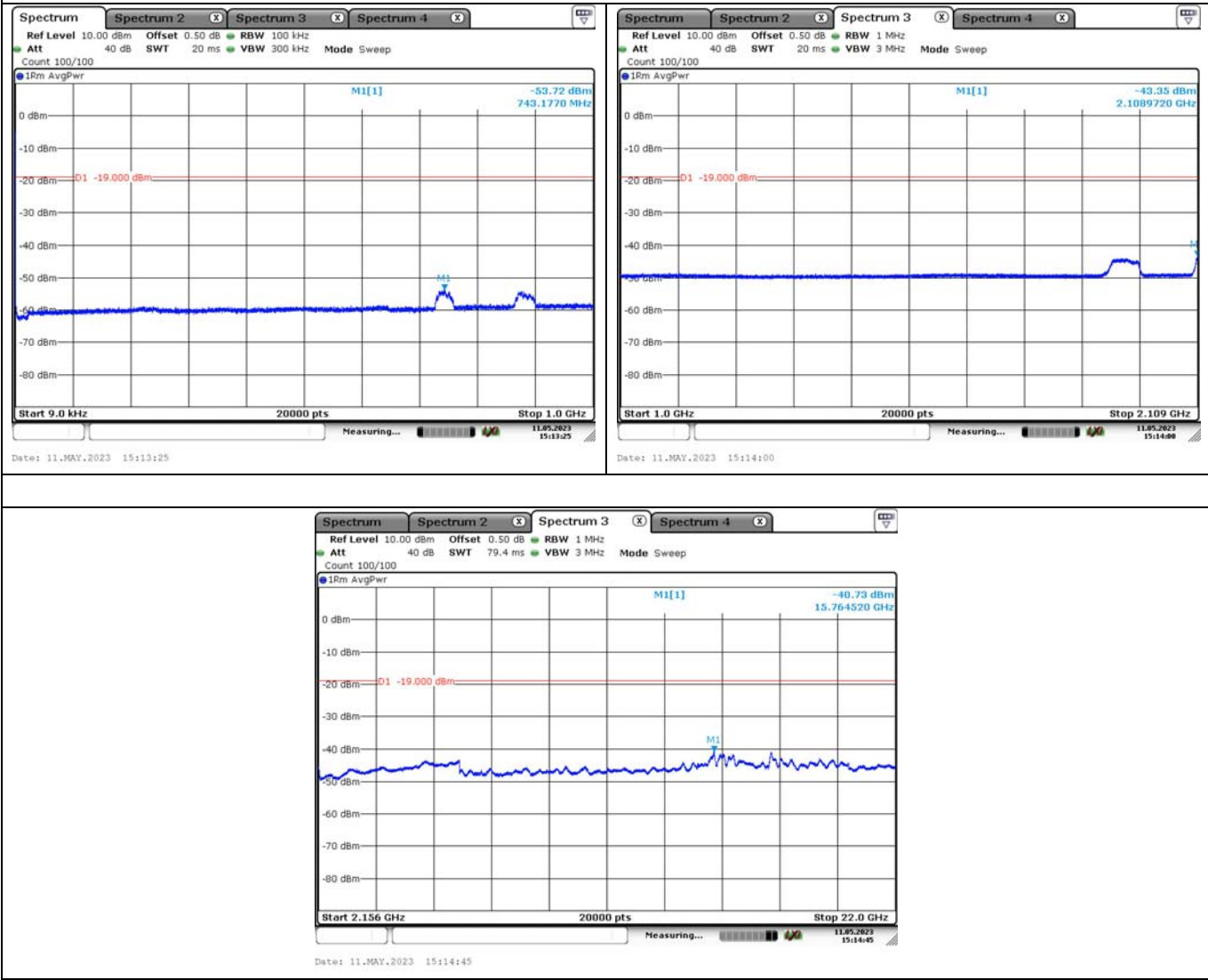
Downlink

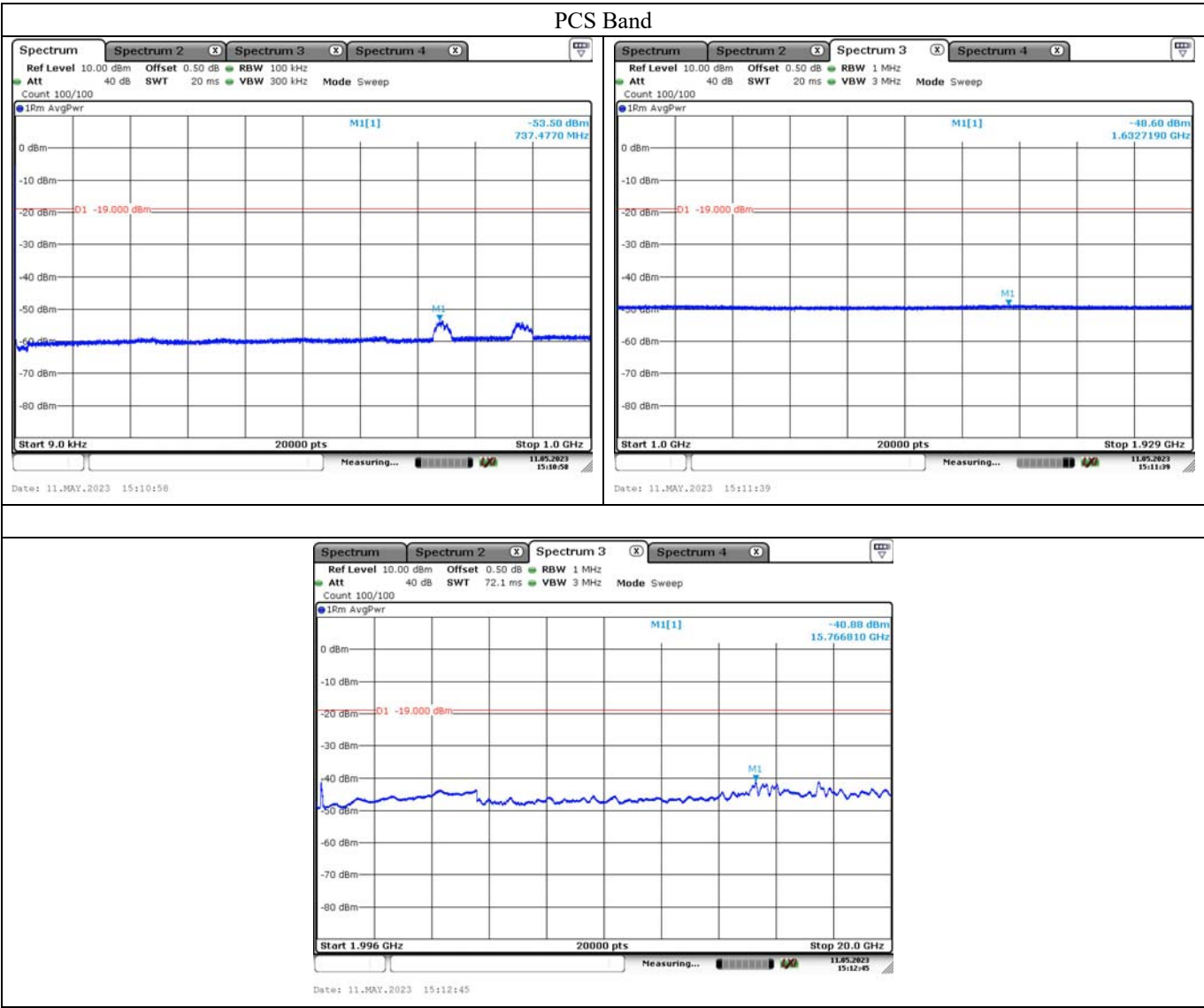


Cellular Band



AWS-1 Band

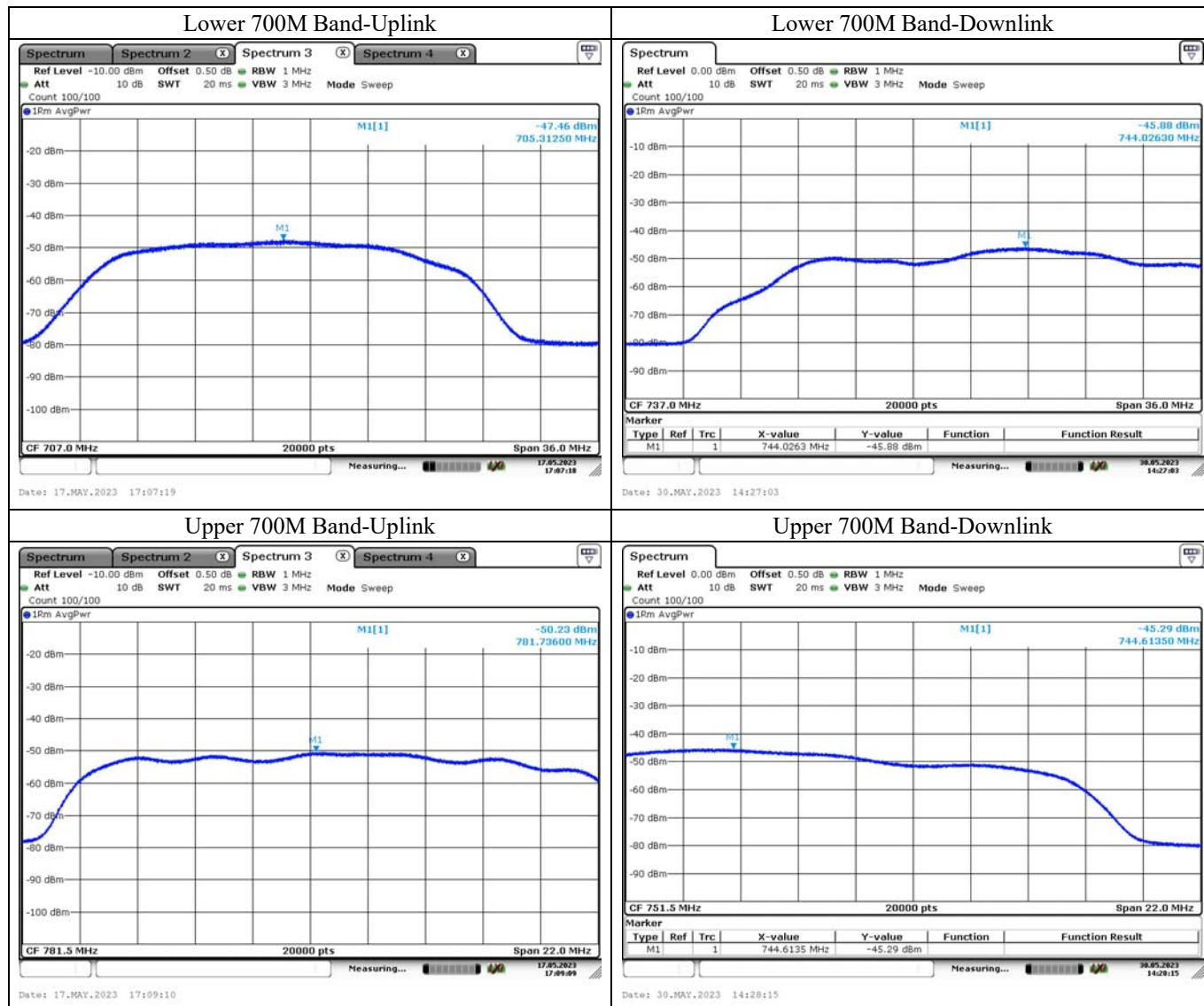




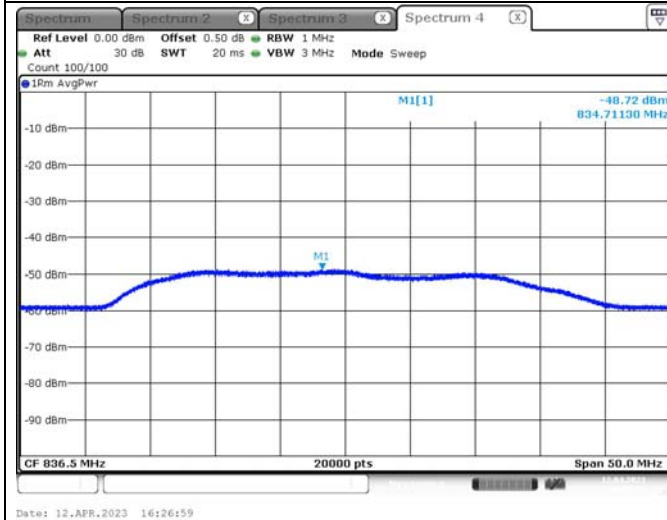
4.7 Noise Limits:

Operation Band	Uplink Noise (dBm/MHz)	Downlink Noise (dBm/MHz)	Limit (dBm/MHz)
Lower 700MHz	-47.46	-45.88	-45.51
Upper 700MHz	-50.23	-45.29	-44.64
Cellular	-48.72	-52.88	-44.05
AWS-1	-41.42	-47.78	-37.73
PCS	-44.43	-42.16	-37.01

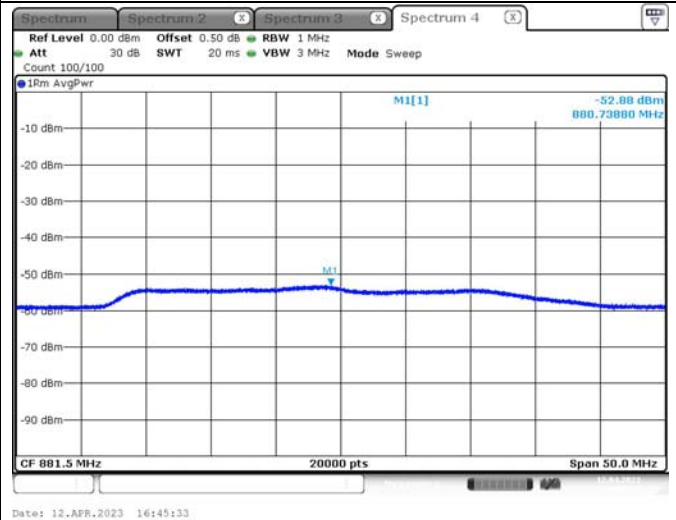
Note: Fixed booster maximum noise power shall not exceed $-102.5 \text{ dBm/MHz} + 20 \text{ Log}_{10}(\text{Frequency})$, where Frequency is the uplink mid-band frequency of the supported spectrum bands in MHz.



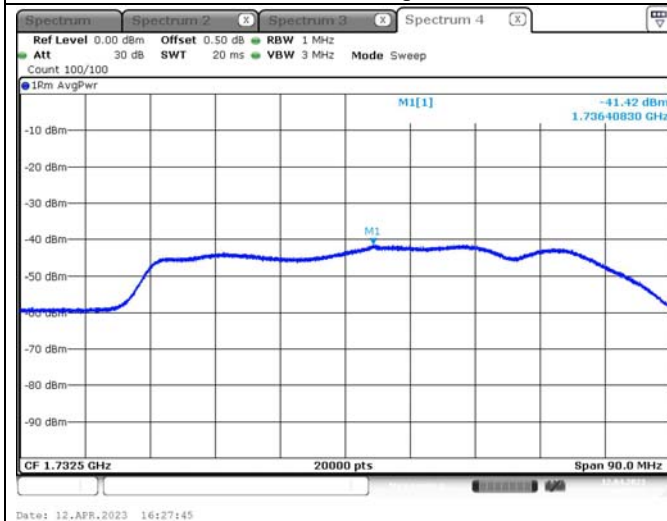
Cellular Band-Uplink



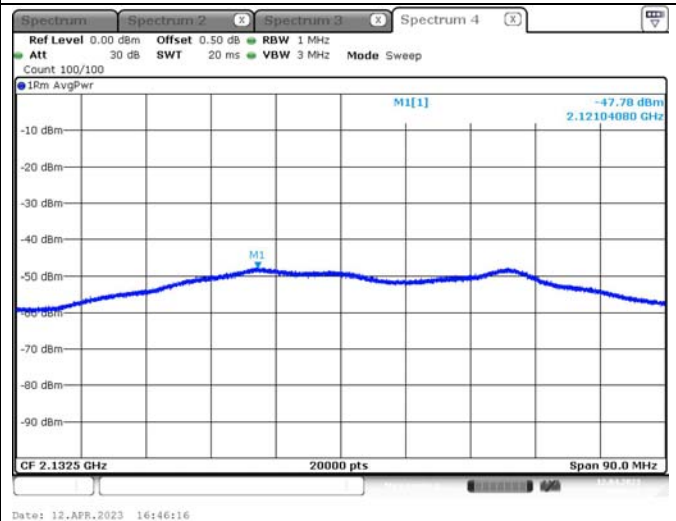
Cellular Band-Downlink



AWS-1 Band-Uplink



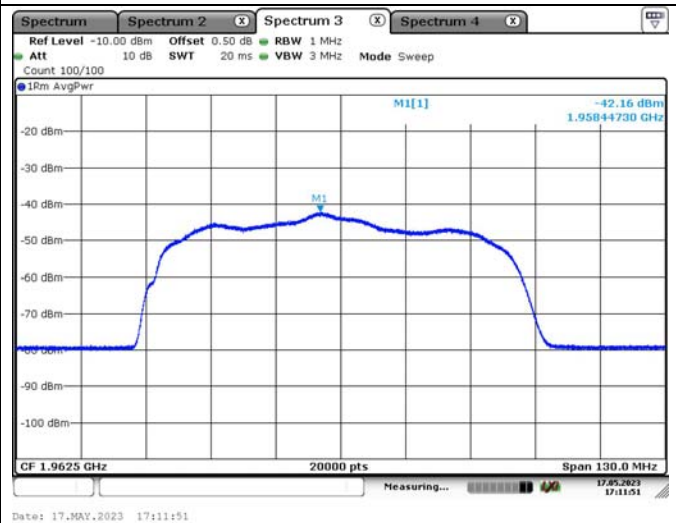
AWS-1 Band-Downlink



PCS Band-Uplink



PCS Band-Downlink



Variable Uplink Noise Limit:

Lower 700

RSSI	Noise	Limit
dBm	dBm	dBm
-90.00	-54.0	-45.51
-80.00	-54.1	-45.51
-70.00	-55.7	-45.51
-60.00	-55.4	-45.51
-57.49	-56.4	-45.51
-50.00	-58.4	-53.00
-40.00	-68.0	-63.00
-33.00	-72.8	-70.00
-30.00	-73.5	-70.00
-20.00	-73.5	-70.00

Upper 700

RSSI	Noise	Limit
dBm	dBm	dBm
-90.00	-49.0	-44.64
-80.00	-50.4	-44.64
-70.00	-51.6	-44.64
-60.00	-56.0	-44.64
-58.36	-57.1	-44.64
-50.00	-57.9	-53.00
-40.00	-65.7	-63.00
-33.00	-72.1	-70.00
-30.00	-73.3	-70.00
-20.00	-73.4	-70.00

Cellular

RSSI	Noise	Limit
dBm	dBm	dBm
-90.00	-49.8	-44.05
-80.00	-52.0	-44.05
-70.00	-52.1	-44.05
-60.00	-55.5	-44.05
-58.95	-57.6	-44.05
-50.00	-60.8	-53.00
-40.00	-65.7	-63.00
-33.00	-72.3	-70.00
-30.00	-73.2	-70.00
-20.00	-73.2	-70.00

AWS-1

RSSI	Noise	Limit
dBm	dBm	dBm
-90.00	-42.8	-37.73
-80.00	-45.9	-37.73
-70.00	-50.6	-37.73
-65.27	-54.1	-37.73
-60.00	-58.6	-43.00
-50.00	-60.9	-53.00
-40.00	-66.8	-63.00
-33.00	-73.4	-70.00
-30.00	-73.4	-70.00
-20.00	-73.4	-70.00

PCS

RSSI	Noise	Limit
dBm	dBm	dBm
-90.00	-43.7	-37.02
-80.00	-46.7	-37.02
-70.00	-51.6	-37.02
-65.98	-55.4	-37.02
-60.00	-57.1	-43.00
-50.00	-62.7	-53.00
-40.00	-65.8	-63.00
-33.00	-72.6	-70.00
-30.00	-73.4	-70.00
-20.00	-73.5	-70.00

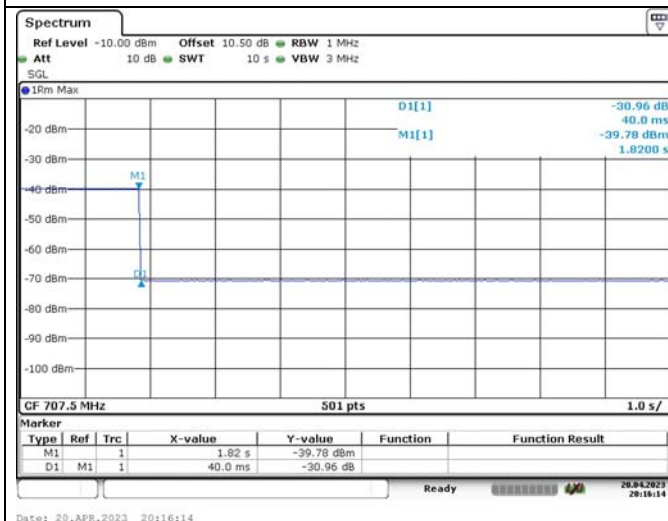
Note:

According to KDB 935210 D03 Signal Booster Measurements v04r04 Annex D, the Variable uplink Noise limit is $-103 \text{ dBm/MHz} - \text{RSSI in RSSI-Dependent Region}$, out of RSSI-Dependent Region, it is $-102.5 \text{ dBm/MHz} + 20 \text{ Log}_{10}(\text{Frequency})$, where Frequency is the uplink mid-band frequency of the supported spectrum bands in MHz..

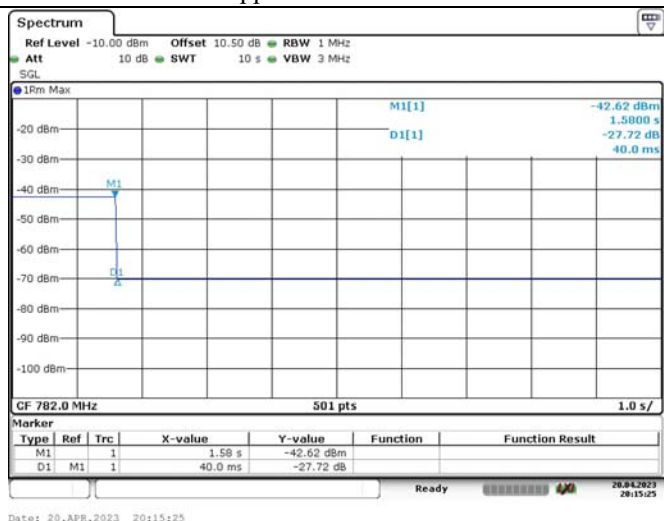
Variable Uplink Noise Timing:

Operating Band	Measured Value	Limit
	s	s
Lower 700MHz	0.04	3
Upper 700MHz	0.04	3
Cellular	0.04	3
AWS-1	0.06	3
PCS	0.04	3

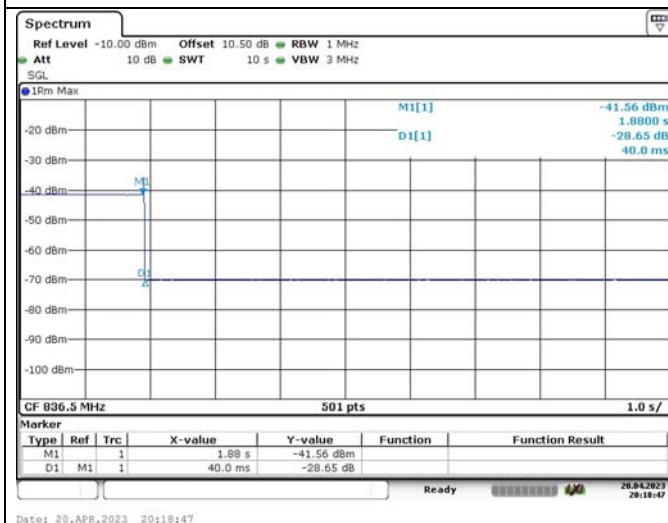
Lower 700MHz Band



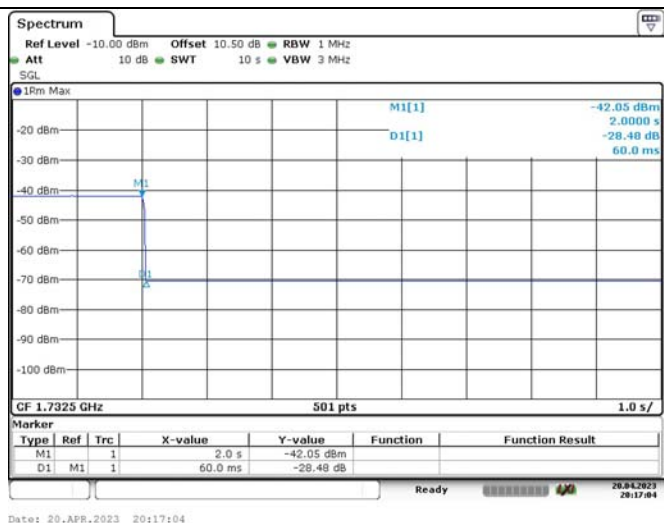
Upper 700MHz Band



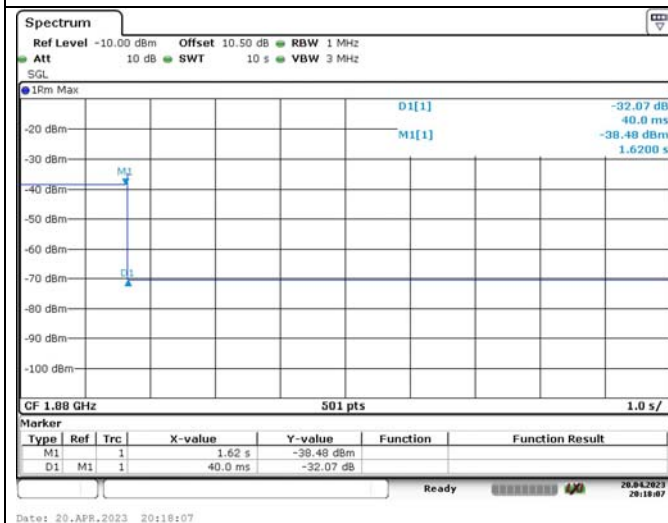
Cellular Band



AWS-1 Band



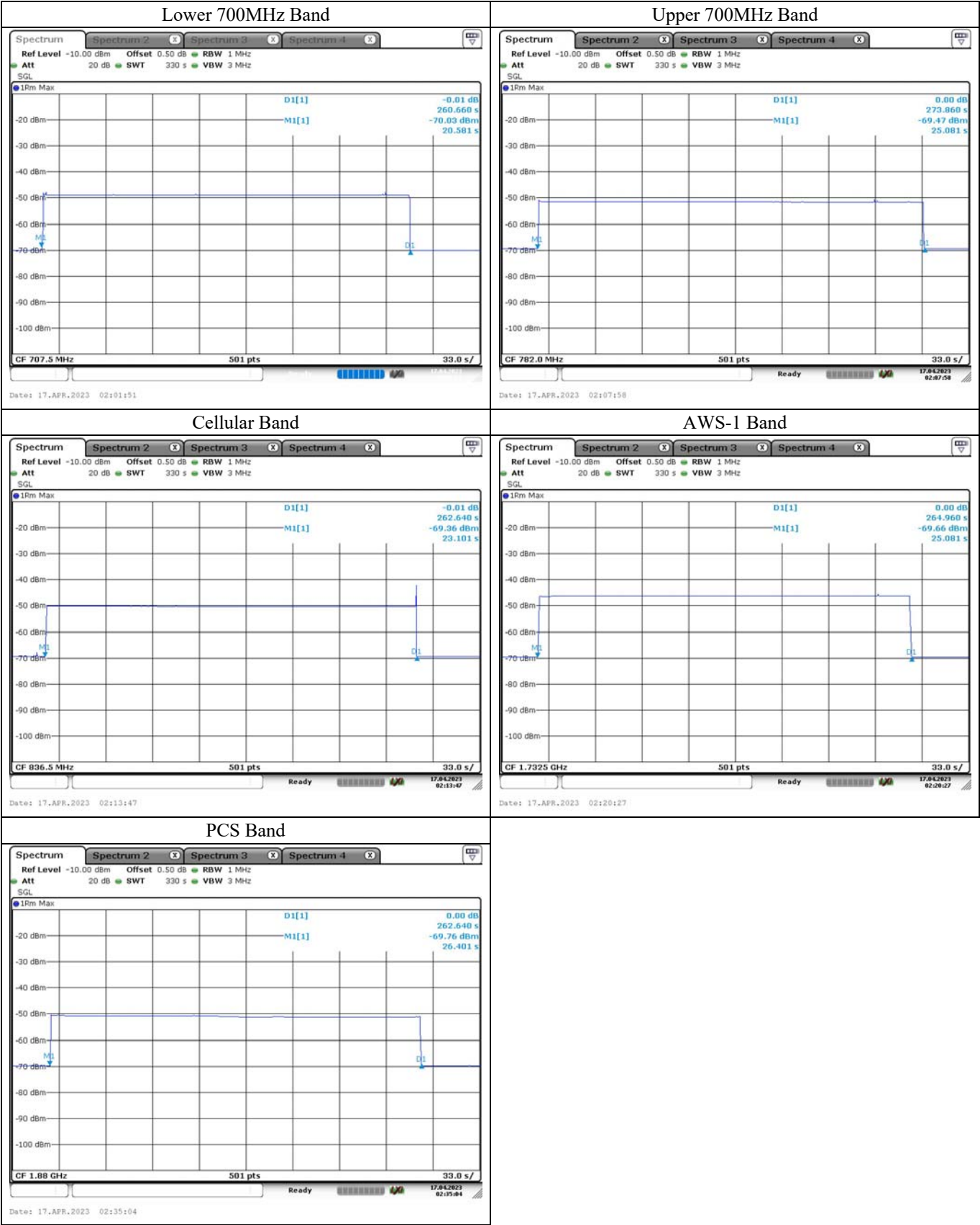
PCS Band



4.8 Uplink Inactivity:

Operation Band	Measured value	Limit
	s	s
Lower 700MHz	260.66	300
Upper 700MHz	273.86	
Cellular	262.64	
AWS-1	264.96	
PCS	262.64	

Note: When the consumer booster is not serving an active device connection after 5 minutes the uplink noise power not exceed -70 dBm/MHz.



4.9 Variable Booster Gain:

MSCL Calculation:

Operation Bands	Frequency	Distance	Path Loss	Inside Antenna Gain	Inside Cable Loss	MSCL
	MHz	m	dB	(dBi)	(dB)	
Lower 700MHz	707	1.0	29.49	6.2	/	23.29
Upper 700MHz	781.5	1.0	30.36	6.2	/	24.16
Cellular	836.5	1.0	30.95	6.2	/	24.75
AWS-1	1732.5	1.0	37.27	7.8	/	29.47
PCS	1882.5	1.0	37.99	8.7	/	29.29

Note:

Path loss=20logf+20logd-27.5

f = frequency in MHz

d = separation distance in meters, please refer to the user manual

MSCL= Path loss - Mobile Antenna Gain(0dBi)+Indoor Cable Loss - Indoor Antenna Gain

The Inside Cable Loss was including in the inside Antenna Gain

The Minimum MSCL was calculated and used according to the manufacturer's specification.

Variable Booster Gain:

Operation Bands	RSSI dBm	P _{in} dBm	P _{out} dBm	MSCL dB	Measured Value dB	Limit dB	Margin dB
Lower 700MHz	-80	-43.8	9.7	23.29	53.5	69.29	15.79
	-70	-43.8	9.6	23.29	53.4	59.29	5.89
	-66	-43.8	9.4	23.29	53.2	55.29	2.09
	-60	-43.8	4.8	23.29	48.6	49.29	0.69
	-58	-43.8	3.2	23.29	47	47.29	0.29
	-56	-43.8	0.8	23.29	44.6	45.29	0.69
Upper 700MHz	-80	-41.8	9.8	24.16	51.6	70.16	18.56
	-70	-41.8	9.6	24.16	51.4	60.16	8.76
	-66	-41.8	9.5	24.16	51.3	56.16	4.86
	-60	-41.8	5.2	24.16	47	50.16	3.16
	-58	-41.8	4.2	24.16	46	48.16	2.16
	-56	-41.8	0.7	24.16	42.5	46.16	3.66
Cellular	-80	-40.7	9.5	24.75	50.2	70.75	20.55
	-70	-40.7	9.4	24.75	50.1	60.75	10.65
	-60	-40.7	8.7	24.75	49.4	50.75	1.35
	-58	-40.7	4.3	24.75	45	48.75	3.75
	-57	-40.7	2.1	24.75	42.8	47.75	4.95
	-56	-40.7	0.8	24.75	41.5	46.75	5.25
AWS-1	-80	-48.8	9.6	29.47	58.4	75.47	17.07
	-70	-48.8	8.8	29.47	57.6	65.47	7.87
	-66	-48.8	7.4	29.47	56.2	61.47	5.27
	-60	-48.8	5.4	29.47	54.2	55.47	1.27
	-59	-48.8	4.5	29.47	53.3	54.47	1.17
	-61	-48.8	2.4	29.47	51.2	56.47	5.27
PCS	-80	-34.9	12.1	29.29	47	75.29	28.29
	-70	-34.9	10.5	29.29	45.4	65.29	19.89
	-66	-34.9	7.5	29.29	42.4	61.29	18.89
	-60	-34.9	6.8	29.29	41.7	55.29	13.59
	-59	-34.9	4.6	29.29	39.5	54.29	14.79
	-58	-34.9	2.4	29.29	37.3	53.29	15.99

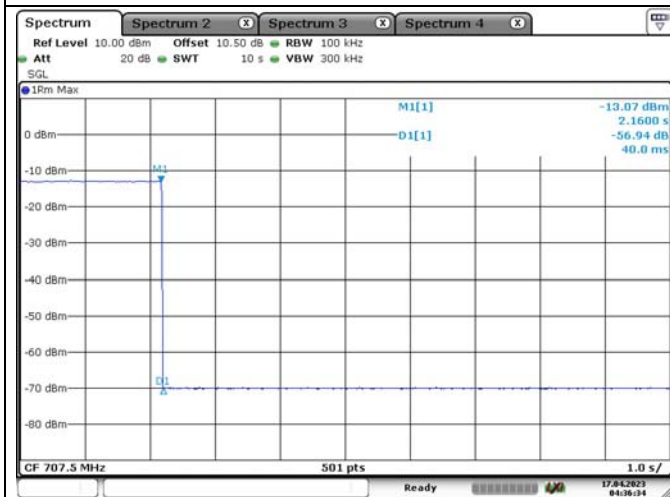
Note: According to KDB 935210 D03 Signal Booster Measurements v04r04 Annex D

Variable booster gain Limit: -34 dB - RSSI + MSCL.

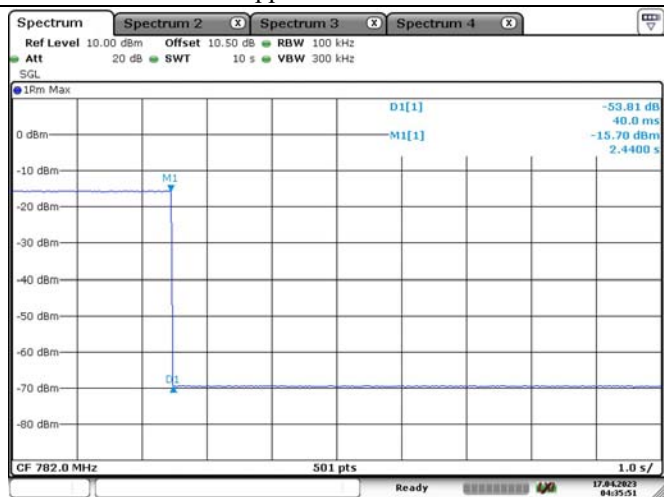
Variable Gain Timing:

Operation Band	Measured Value (s)	Limit (s)
Lower 700MHz	0.04	3
Upper 700MHz	0.04	3
Cellular	0.04	3
AWS-1	0.02	3
PCS	0.02	3
Note: The uplink noise decreases to the specified level within 3 seconds for fixed devices.		

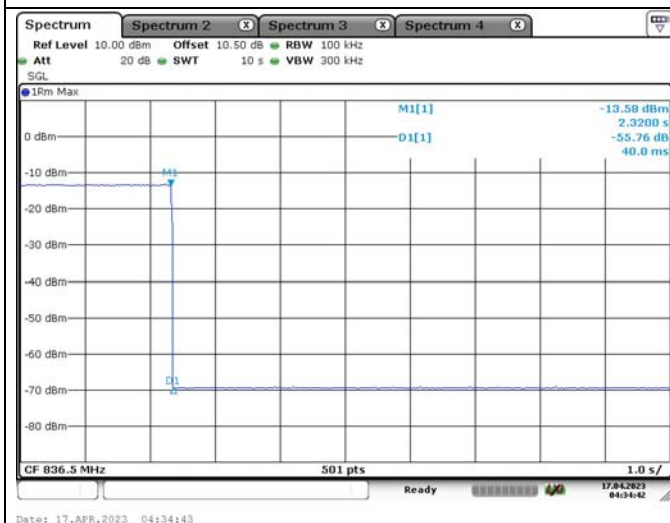
Lower 700M Band



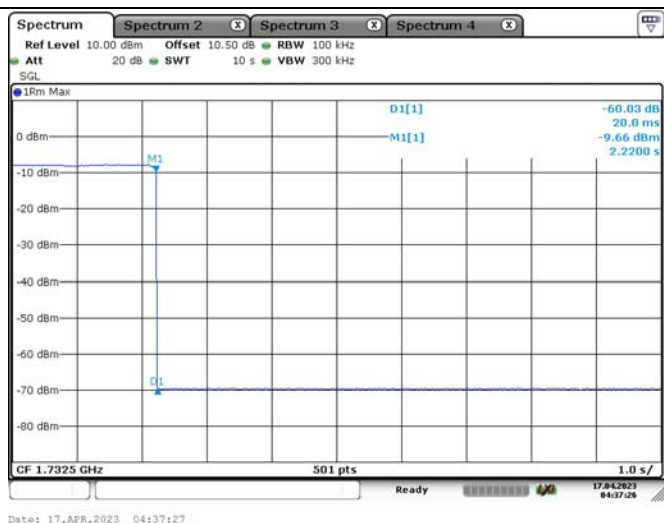
Upper 700M Band



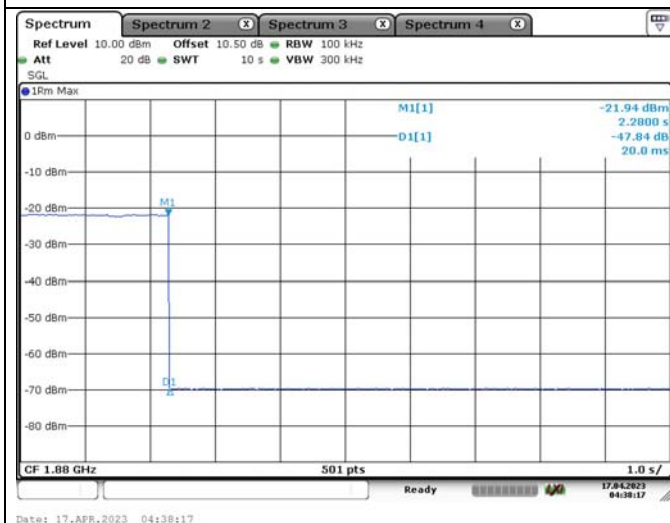
Cellular Band



AWS-1 Band

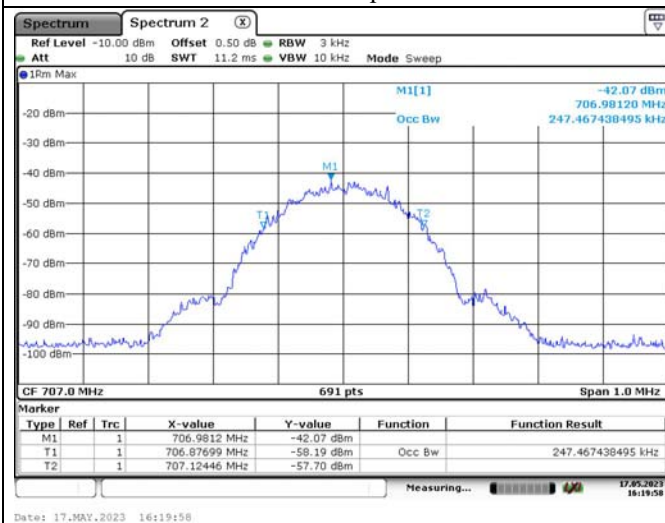
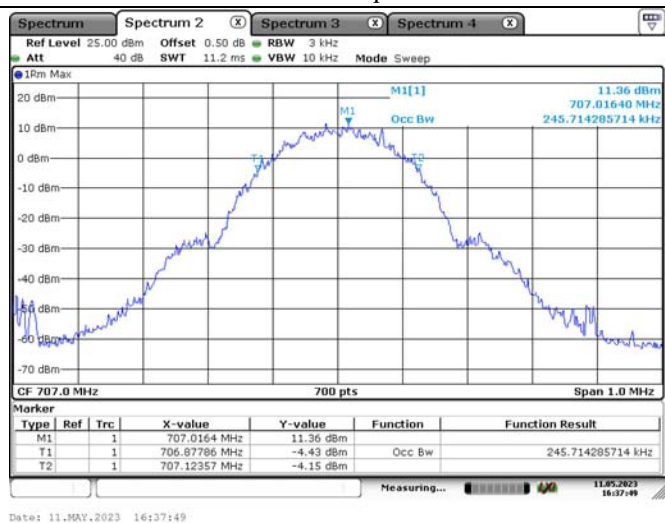
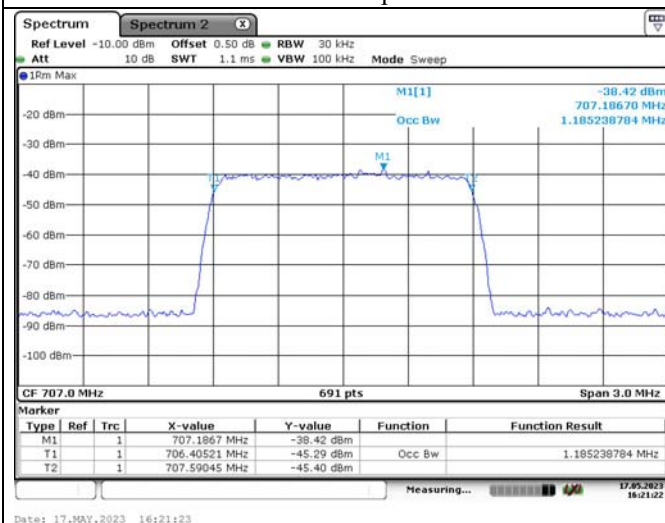
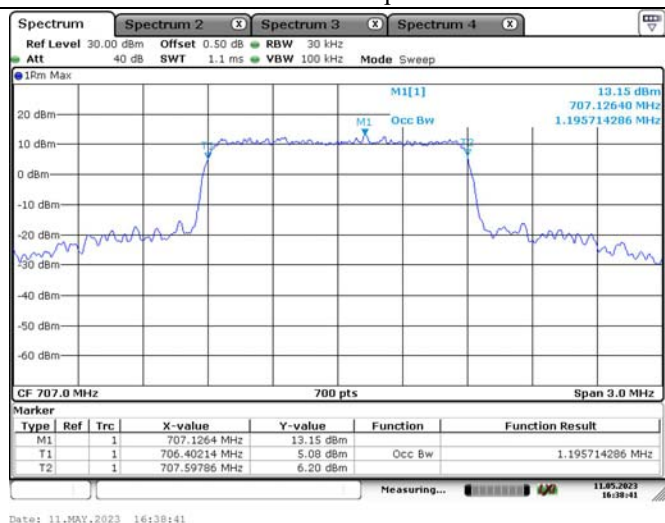
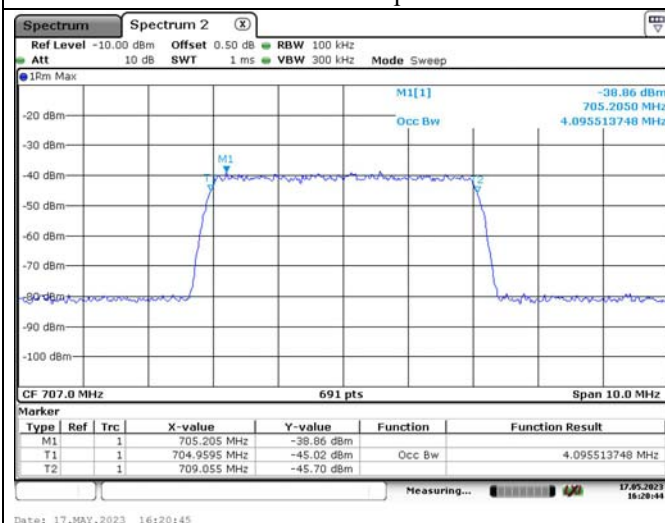
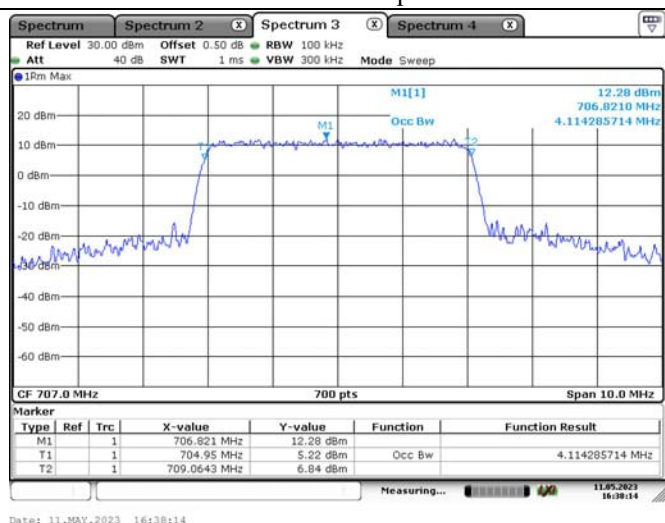


PCS Band

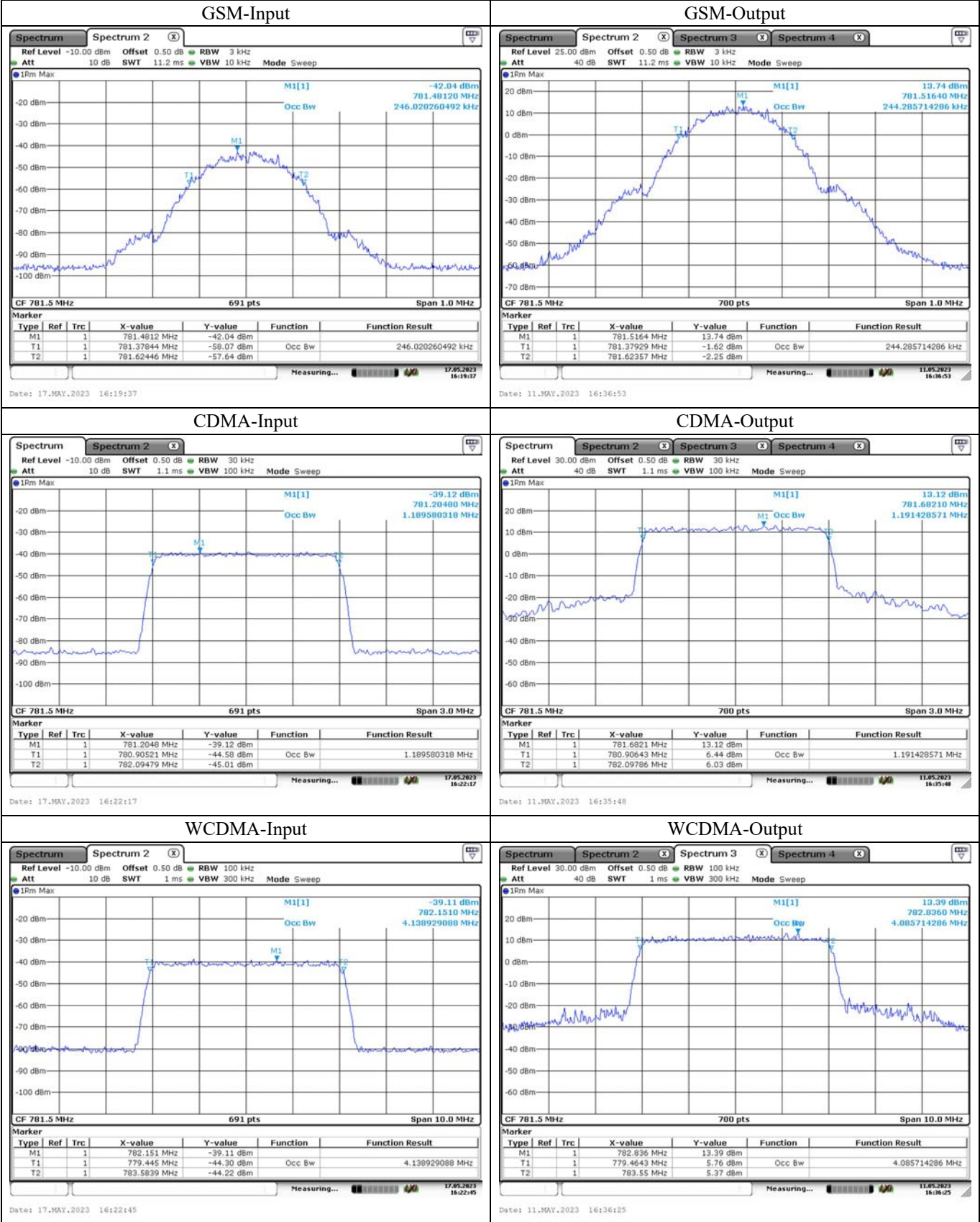


4.10 Occupied Bandwidth:

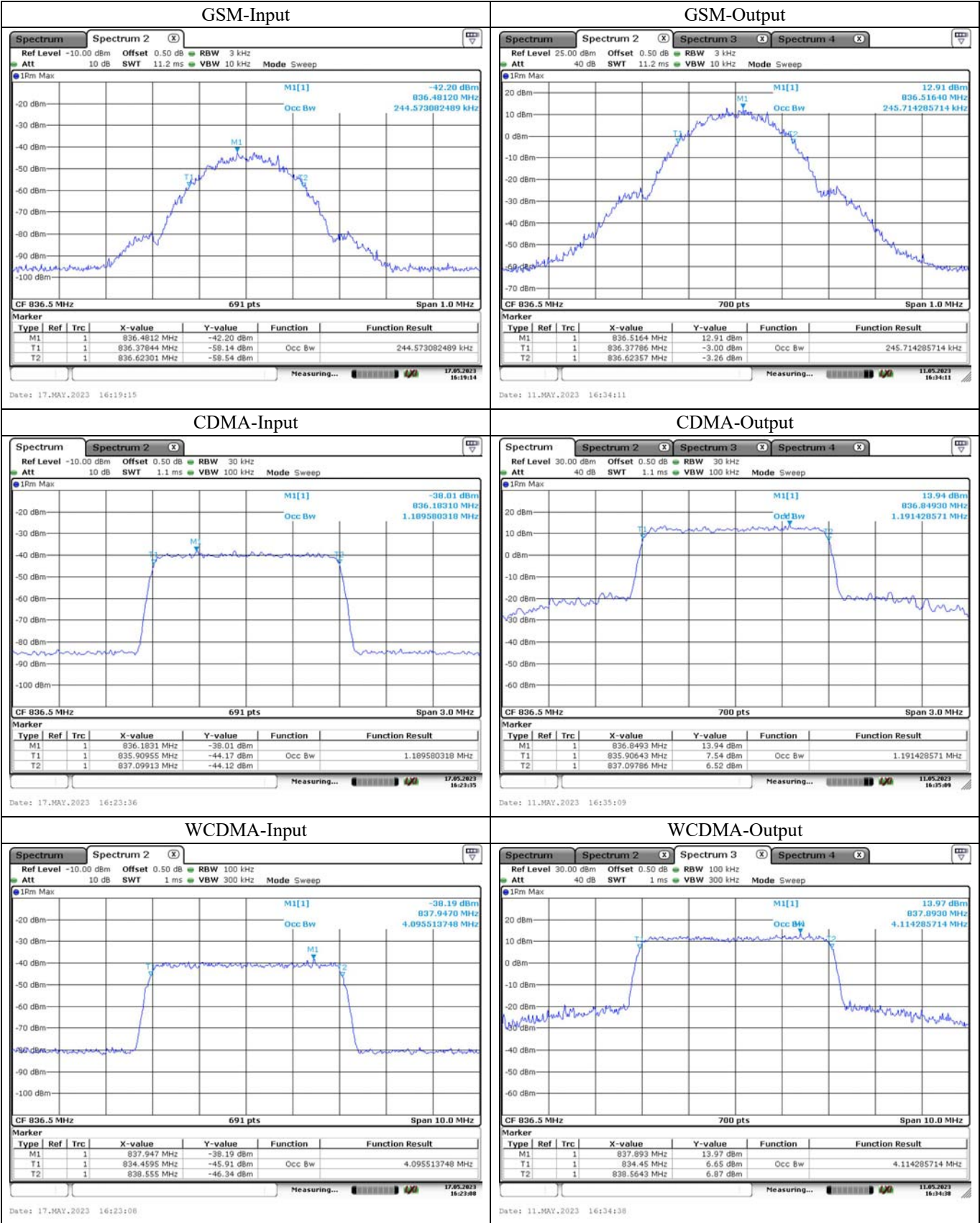
Mode	Operation Band	Signal Type	Input	Output
			MHz	MHz
Uplink	Lower 700MHz	GSM	0.247	0.246
		CDMA	1.185	1.196
		WCDMA	4.096	4.114
	Upper 700MHz	GSM	0.246	0.244
		CDMA	1.190	1.191
		WCDMA	4.139	4.086
	Cellular	GSM	0.245	0.246
		CDMA	1.190	1.191
		WCDMA	4.096	4.114
	AWS-1	GSM	0.245	0.246
		CDMA	1.185	1.217
		WCDMA	4.096	4.186
Downlink	Lower 700MHz	GSM	0.247	0.246
		CDMA	1.190	1.187
		WCDMA	4.139	4.129
	Upper 700MHz	GSM	0.246	0.246
		CDMA	1.190	1.183
		WCDMA	4.124	4.100
	Cellular	GSM	0.247	0.246
		CDMA	1.194	1.179
		WCDMA	4.139	4.086
	AWS-1	GSM	0.247	0.247
		CDMA	1.190	1.191
		WCDMA	4.139	4.100
	PCS	GSM	0.247	0.246
		CDMA	1.190	1.187
		WCDMA	4.124	4.114

**Uplink:
Lower 700M Band****GSM-Input****GSM-Output****CDMA-Input****CDMA-Output****WCDMA-Input****WCDMA-Output**

Upper 700M Band

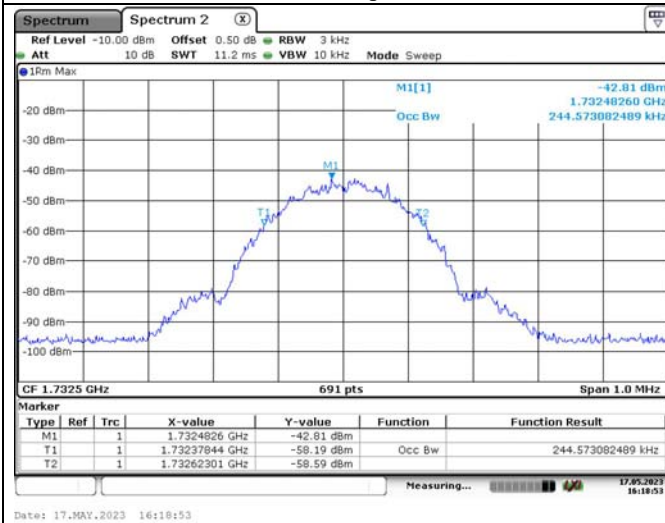


Cellular Band

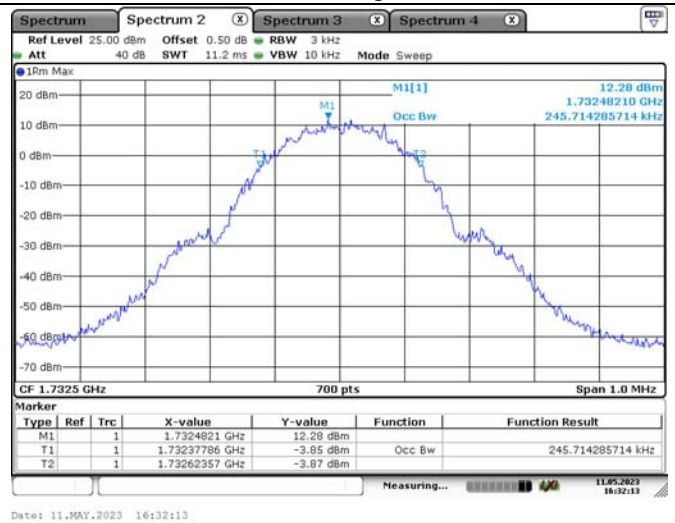


AWS-1 Band

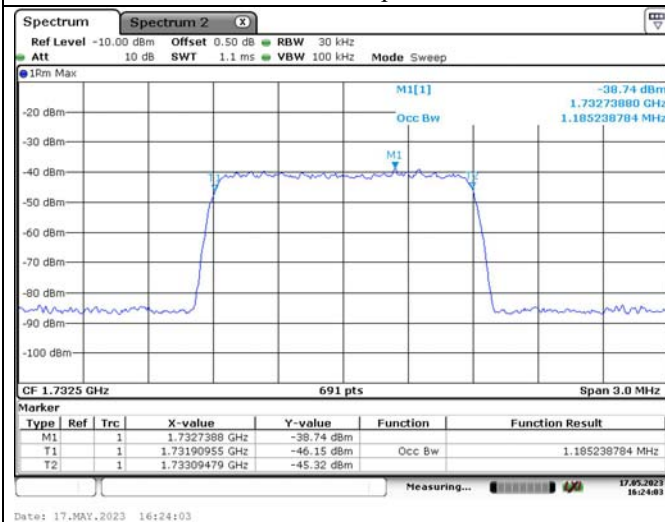
GSM-Input



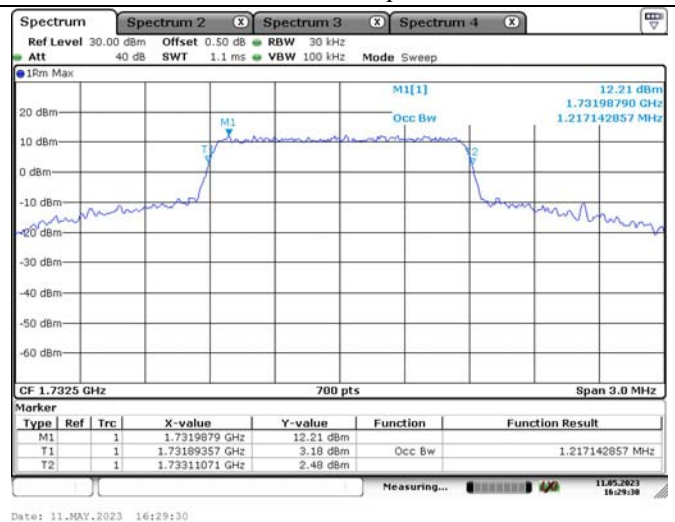
GSM-Output



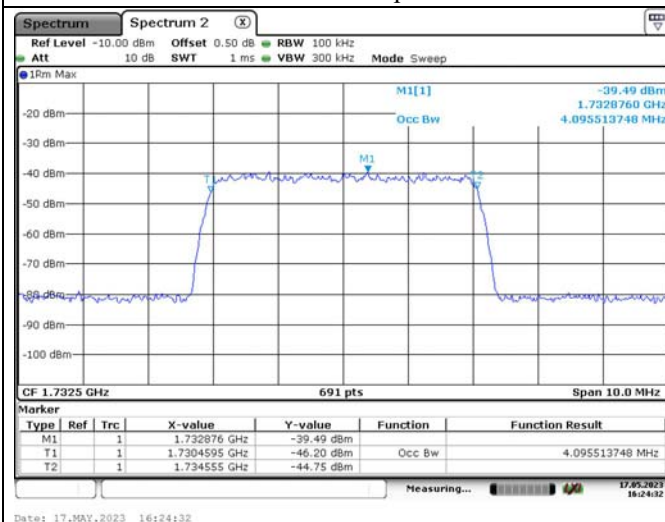
CDMA-Input



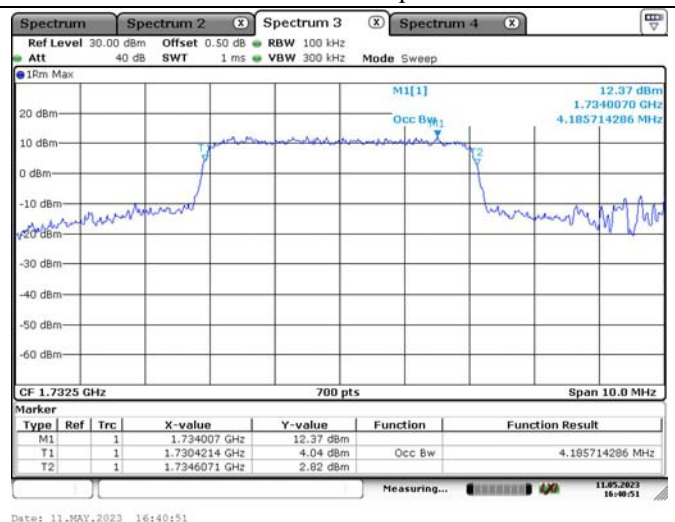
CDMA-Output



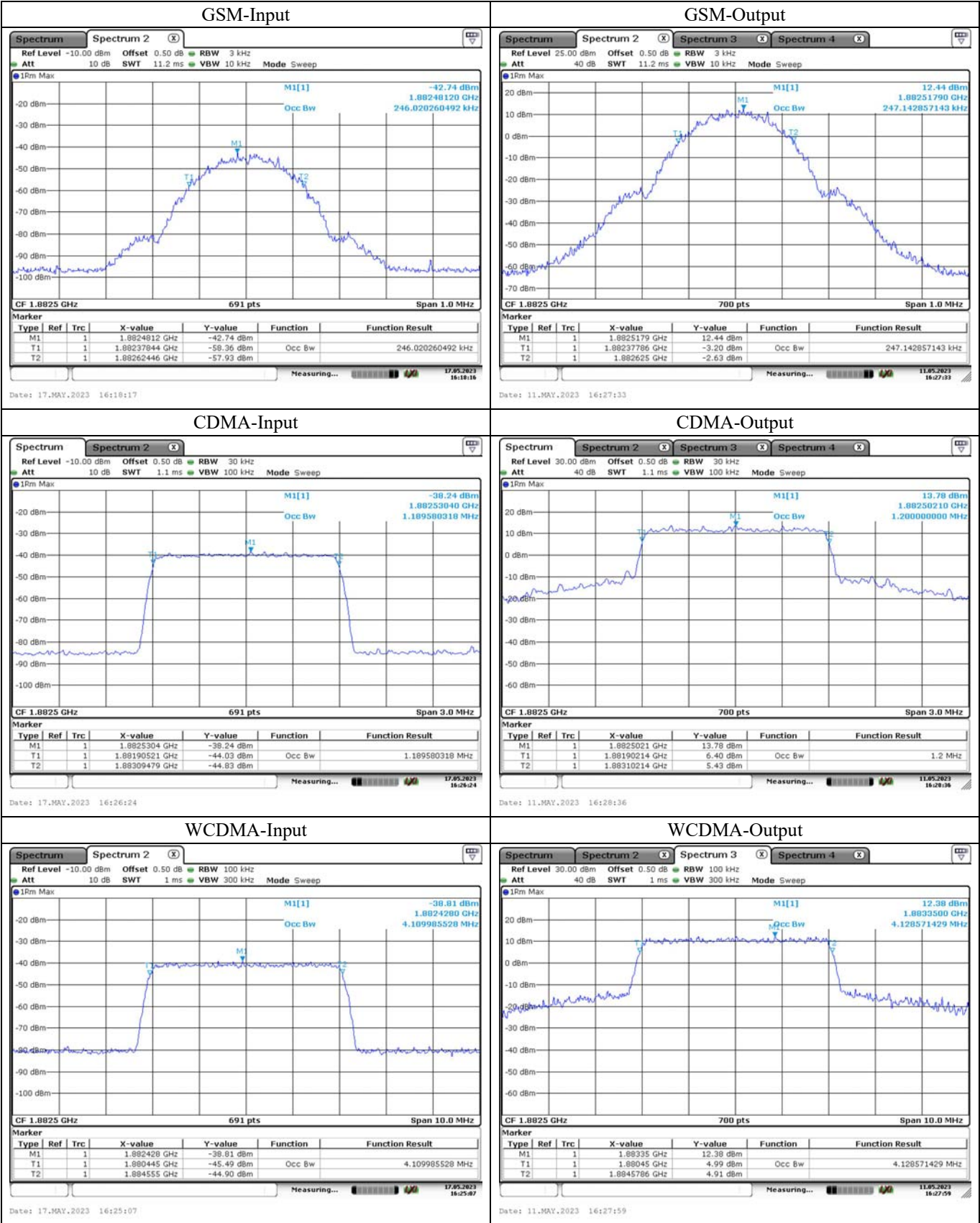
WCDMA-Input

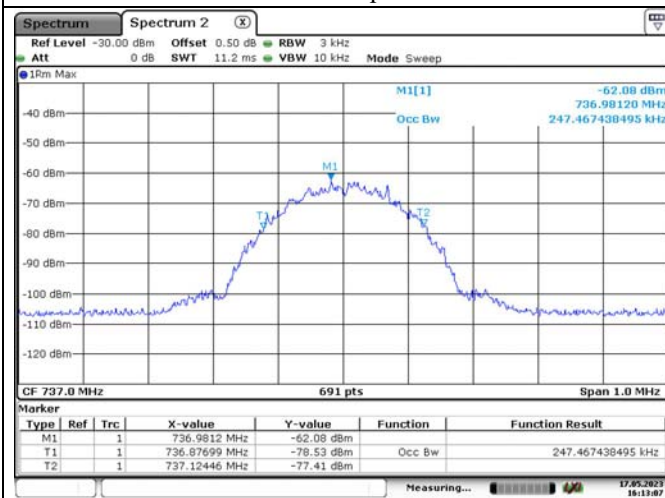


WCDMA-Output

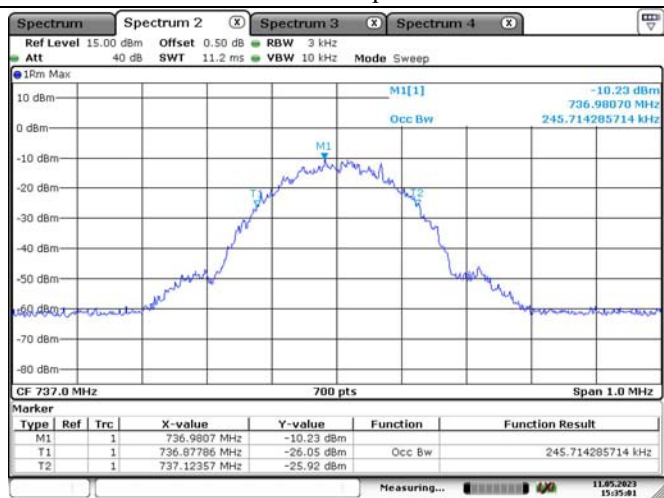


PCS Band

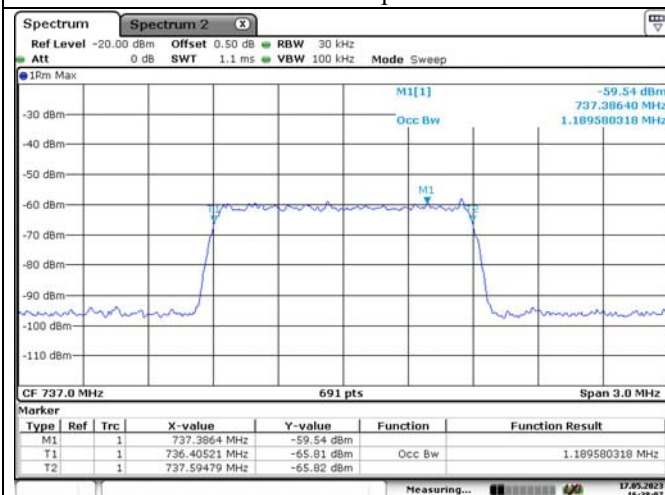


**Downlink:
Lower 700M Band****GSM-Input**

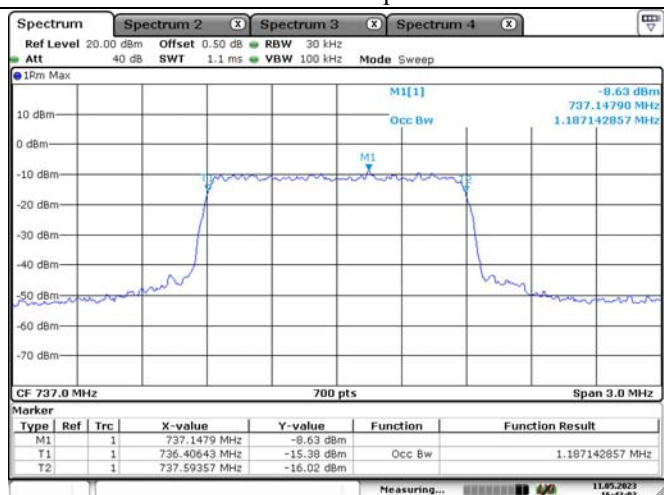
Date: 17.MAY.2023 16:13:08

GSM-Output

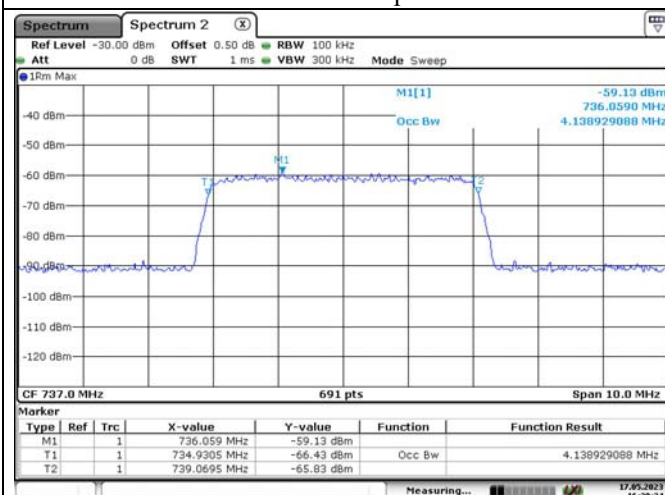
Date: 11.MAY.2023 15:35:01

CDMA-Input

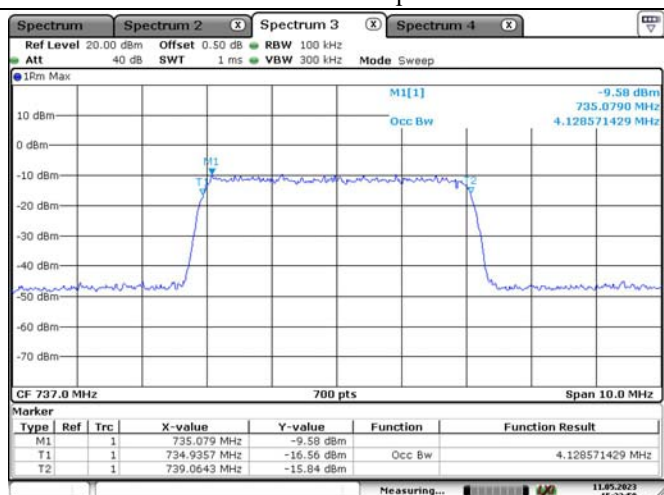
Date: 17.MAY.2023 16:38:07

CDMA-Output

Date: 11.MAY.2023 16:43:03

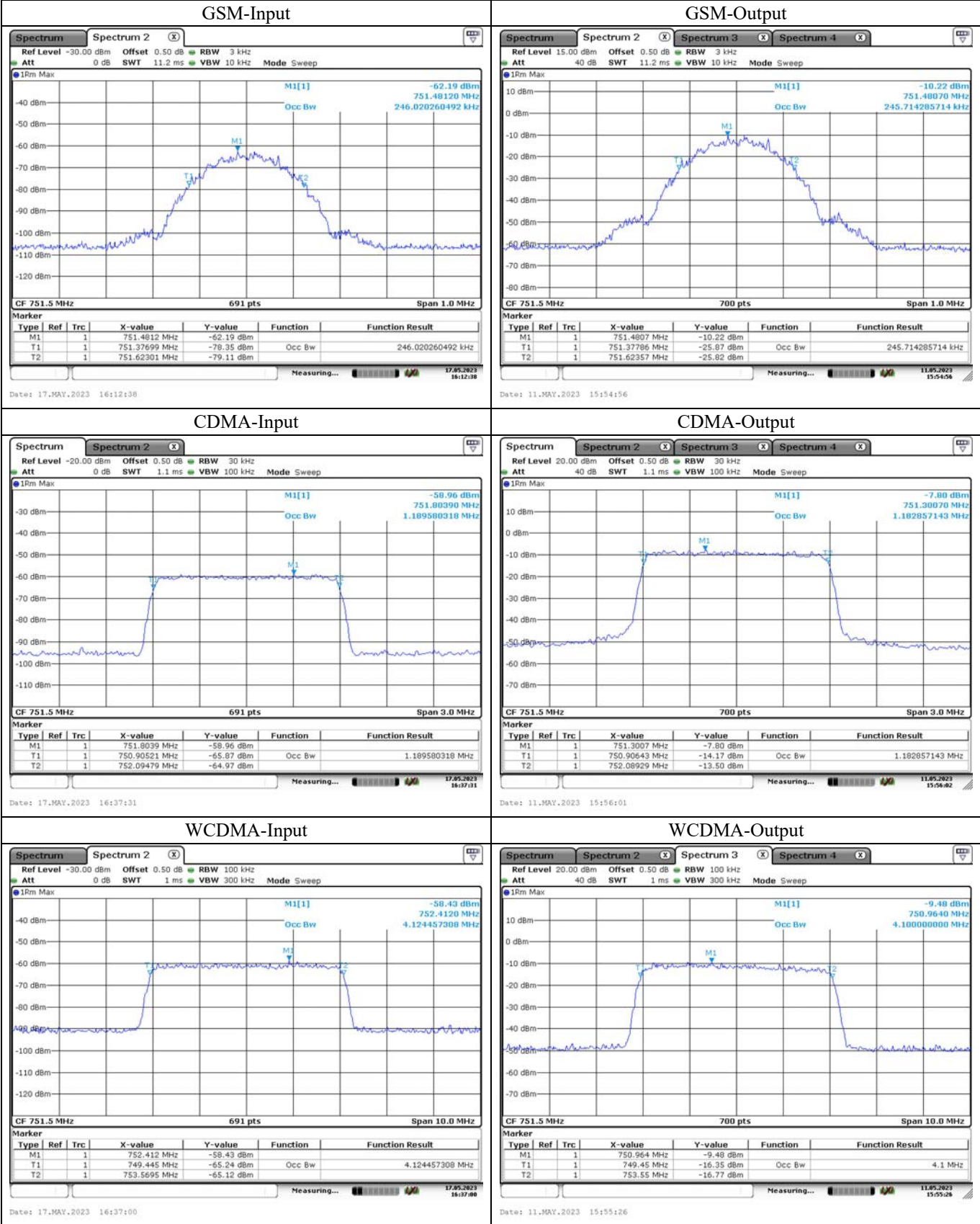
WCDMA-Input

Date: 17.MAY.2023 16:38:34

WCDMA-Output

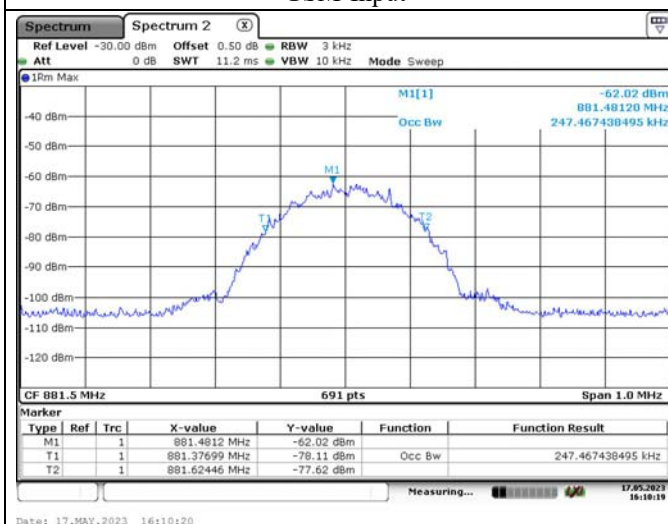
Date: 11.MAY.2023 15:32:58

Upper 700M Band



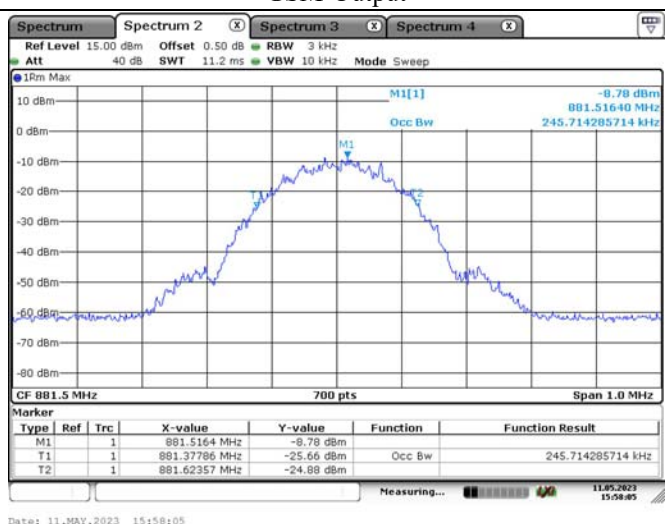
Cellular Band

GSM-Input



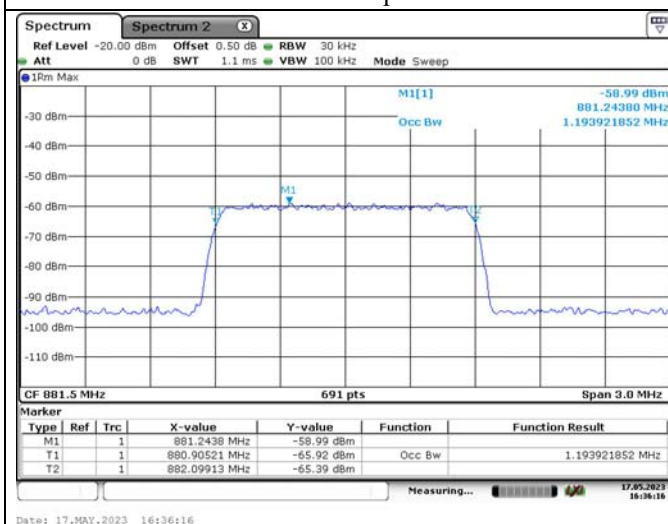
Date: 17.MAY.2023 16:10:20

GSM-Output



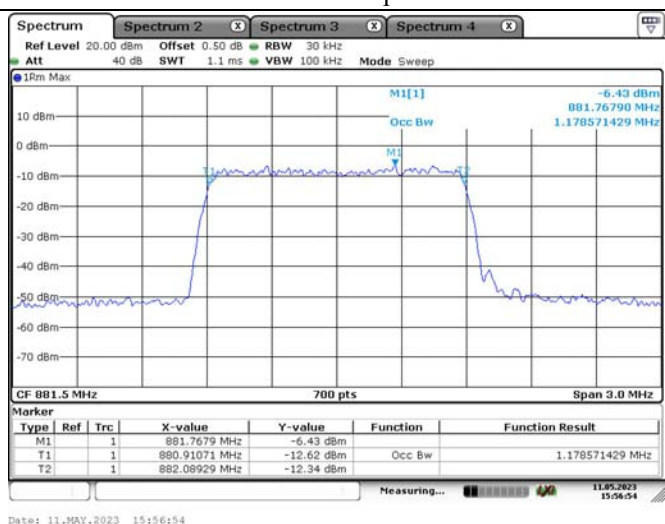
Date: 11.MAY.2023 15:58:05

CDMA-Input



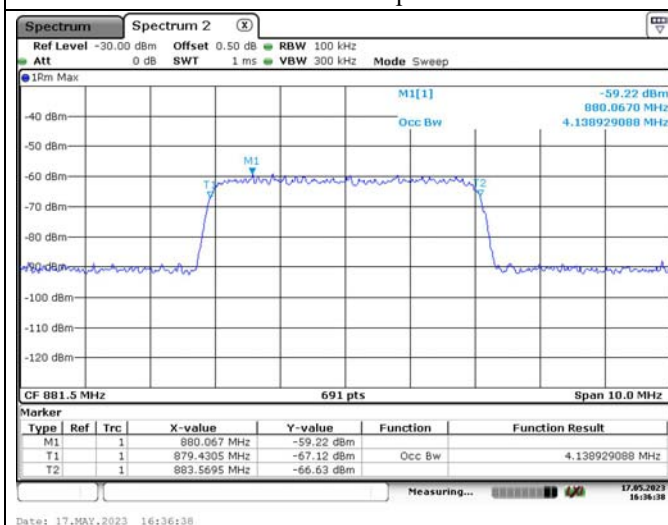
Date: 17.MAY.2023 16:16:16

CDMA-Output



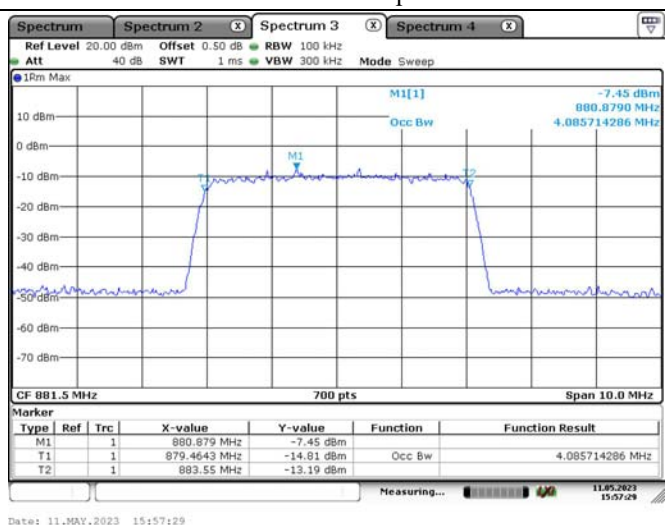
Date: 11.MAY.2023 15:56:54

WCDMA-Input



Date: 17.MAY.2023 16:36:38

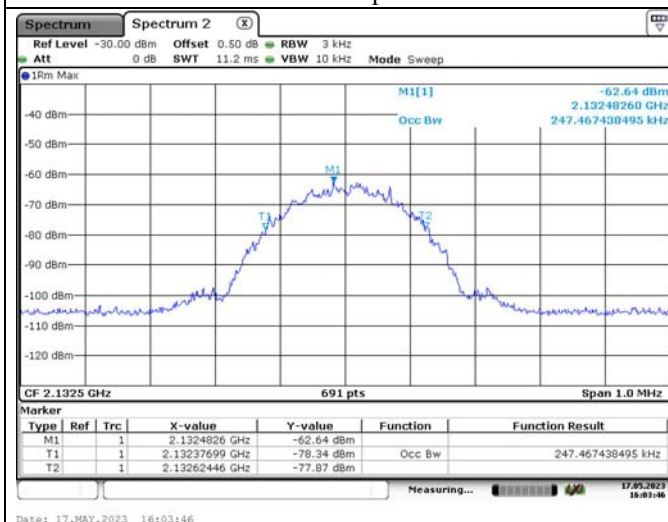
WCDMA-Output



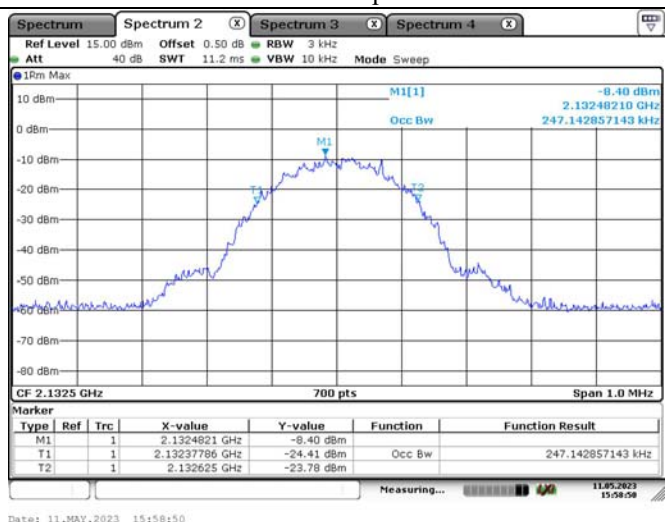
Date: 11.MAY.2023 15:57:29

AWS-1 Band

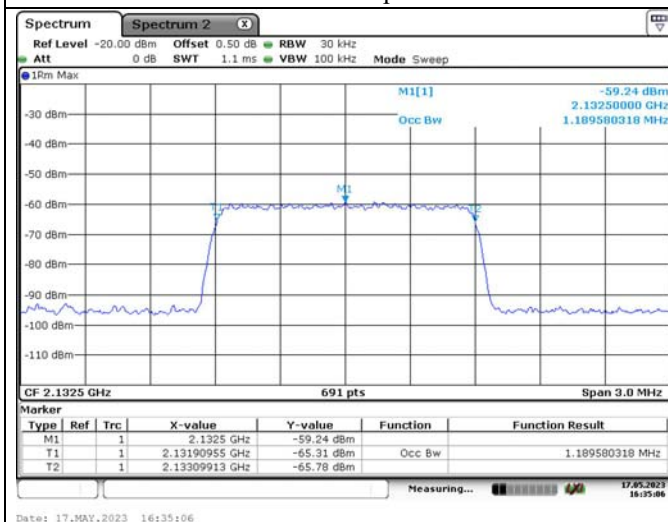
GSM-Input



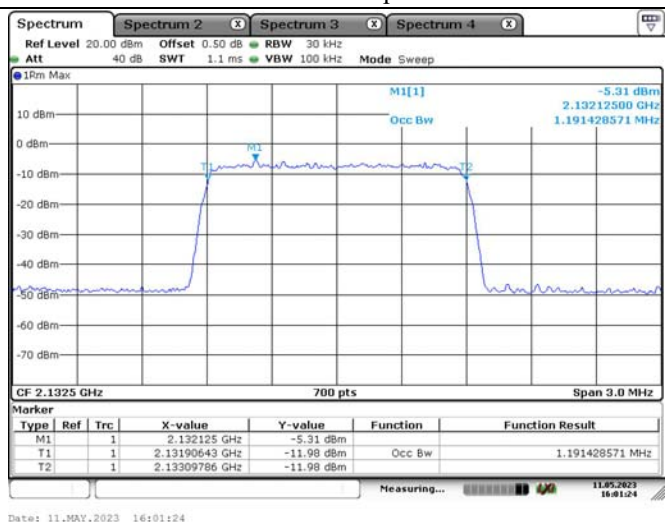
GSM-Output



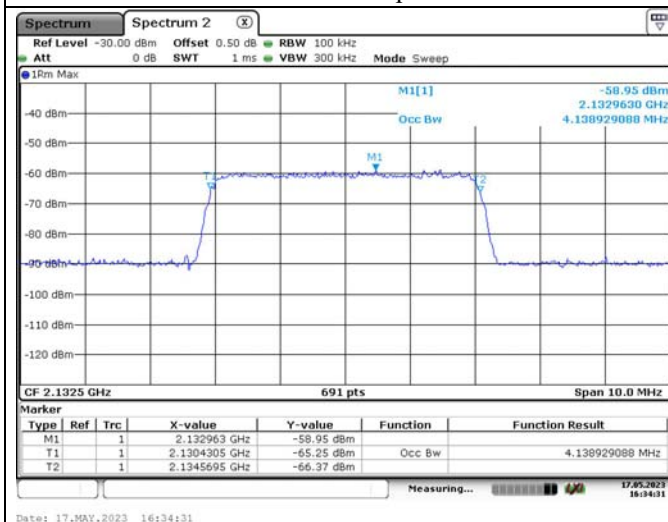
CDMA-Input



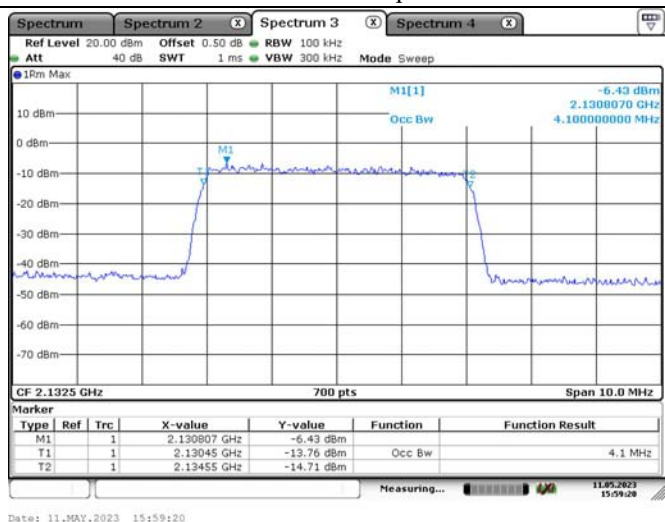
CDMA-Output



WCDMA-Input

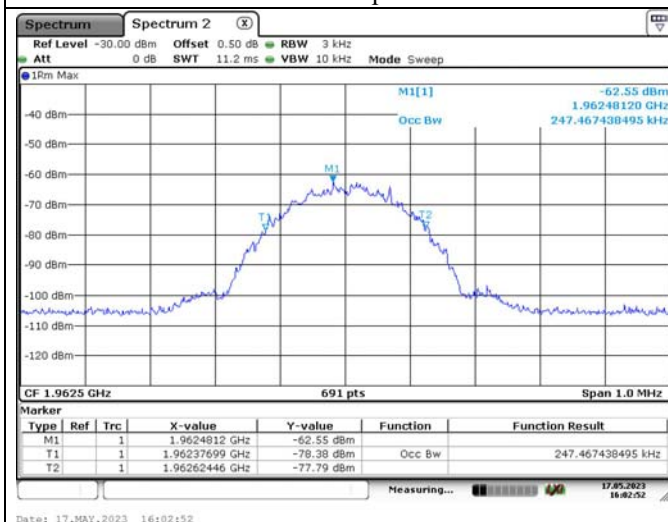


WCDMA-Output



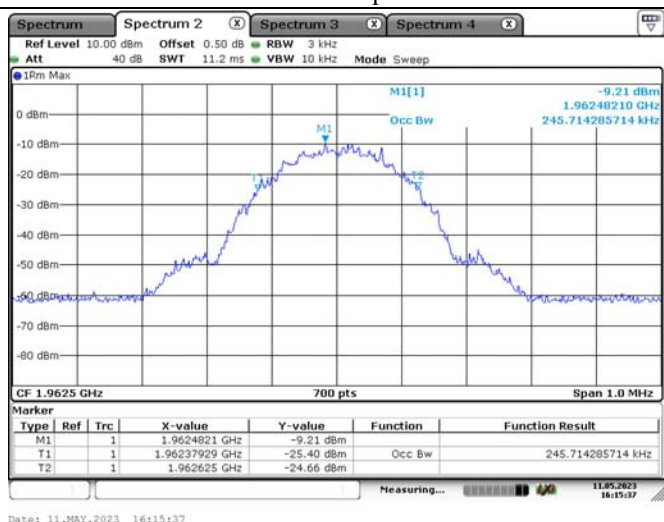
PCS Band

GSM-Input



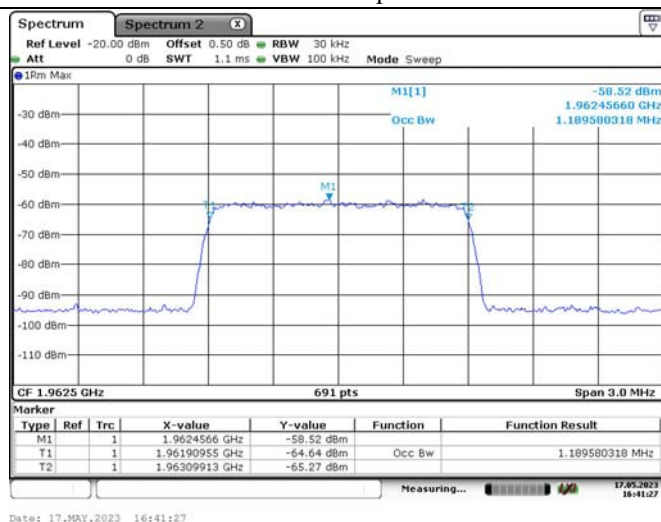
Date: 17.MAY.2023 16:02:52

GSM-Output



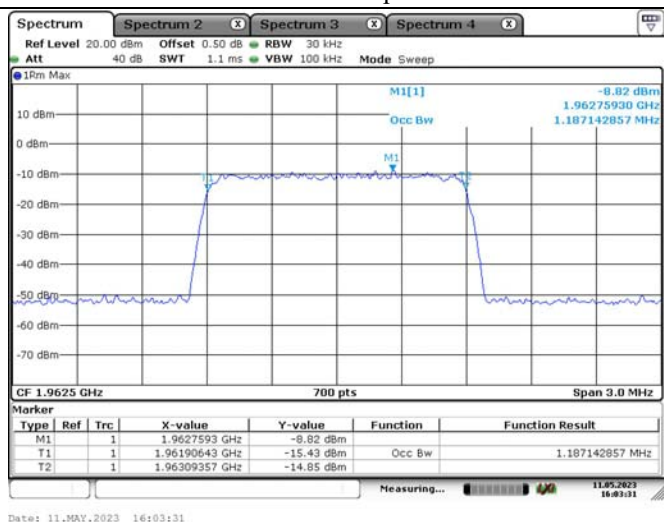
Date: 11.MAY.2023 16:15:37

CDMA-Input



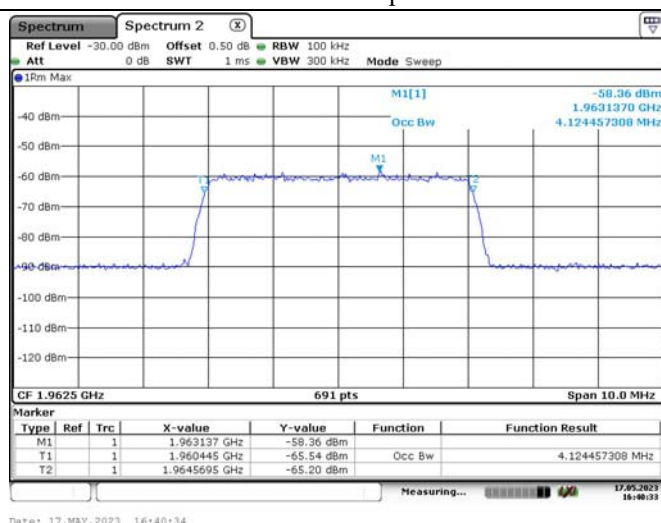
Date: 17.MAY.2023 16:01:27

CDMA-Output



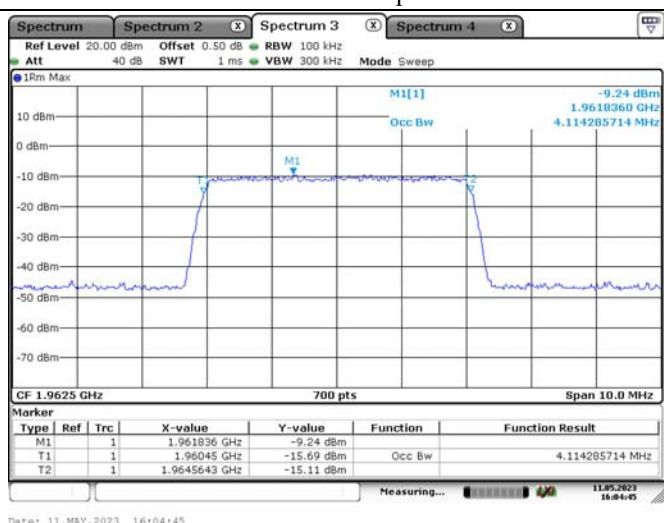
Date: 11.MAY.2023 16:03:31

WCDMA-Input



Date: 17.MAY.2023 16:40:34

WCDMA-Output



Date: 11.MAY.2023 16:04:05

4.11 Oscillation Detection:**Oscillation Restart Time:**

Mode	Operation Bands	Detection Time (s)		Power level	Between restart time (s)		Number of restart	
		Reading	Limit	dBm	Reading	Limit	Reading	Limit
Uplink	Lower 700MHz	0.297	<0.3	23.67	60.03	≥60	2	≤5
	Upper 700MHz	0.296		20.47	60.23		2	
	Cellular	0.293		25.14	60.53		2	
	AWS-1	0.275		21.71	66.40		2	
	PCS	0.295		25.94	60.33		2	
Downlink	Lower 700MHz	0.036	<1	14.49	60.50		2	
	Upper 700MHz	0.036		9.49	62.00		2	
	Cellular	0.710		9.99	62.20		2	
	AWS-1	0.116		13.74	65.20		2	
	PCS	0.116		14.29	60.40		2	

Oscillation Mitigation or Shutdown:

Mode	Operation Band	Max gain	Isolation	Difference	Limit
		dB	dB	dB	dB
Uplink	Lower 700MHz	58.8	+5	10.09	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12
	Upper 700MHz	56.08	+5	9.38	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12
	Cellular	55.69	+5	8.34	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12

Mode	Operation Band	Max gain dB	Isolation dB	Difference dB	Limit dB
Uplink	AWS-1	63.49	+5	8.81	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12
	PCS	51.96	+5	8.18	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12
Downlink	Lower 700MHz	58.75	+5	8.94	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12
	Upper 700MHz	54.93	+5	10.1	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12
	Cellular	57.24	+5	9.39	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12

Mode	Operation Band	Max gain dB	Isolation dB	Difference dB	Limit dB
Downlink	AWS-1	64.2	+5	10.16	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
	PCS	54.76	-5	/	12
			+5	9.72	12
			+4	/	12
			+3	/	12
			+2	/	12
			+1	/	12
			+0	/	12
			-1	/	12
			-2	/	12
			-3	/	12
			-4	/	12
			-5	/	12

Note: "/" means that booster is shut down.

Oscillation Restart Time:

