

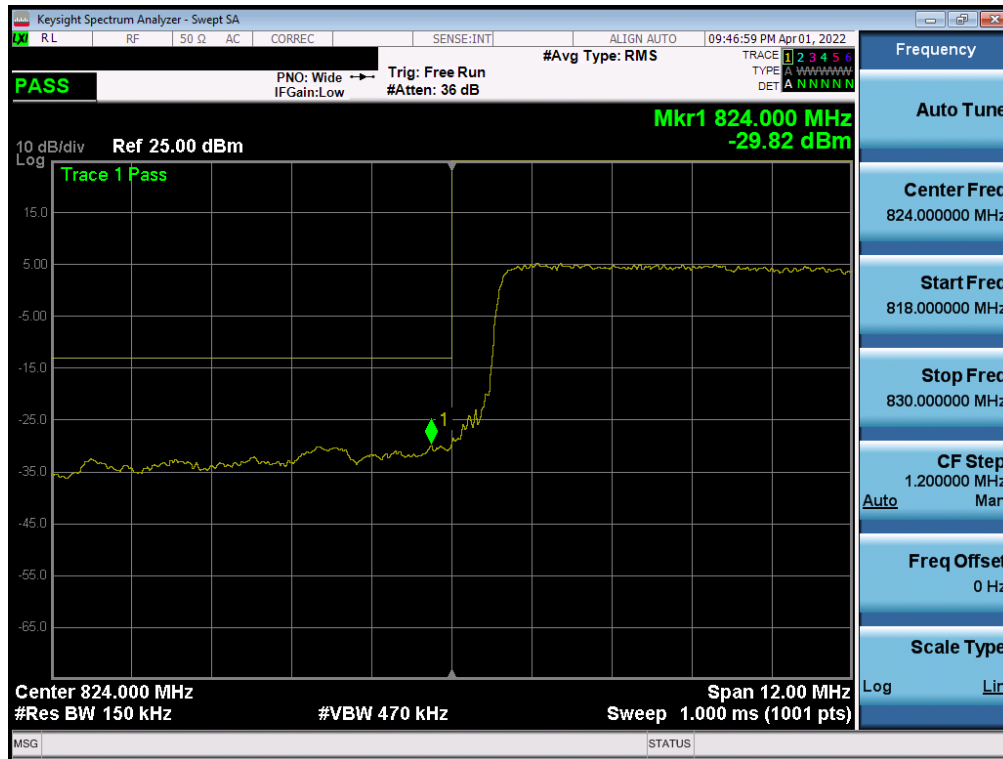
Test Notes

1. Per 22.917(b) and RSS-132(5.5), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

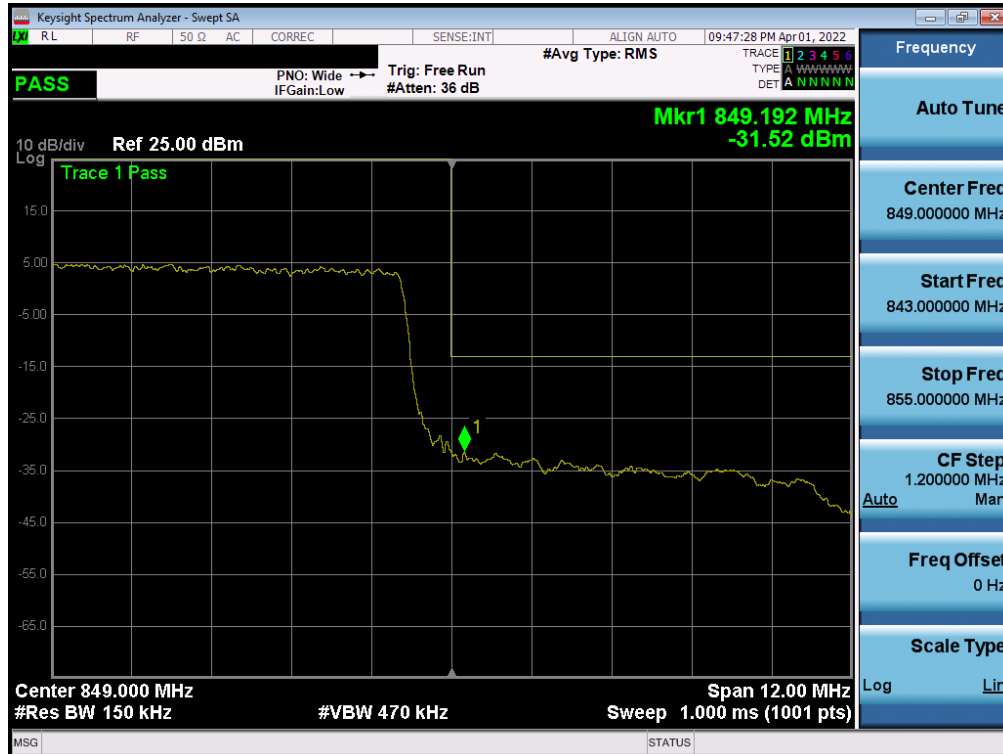
FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 26/5



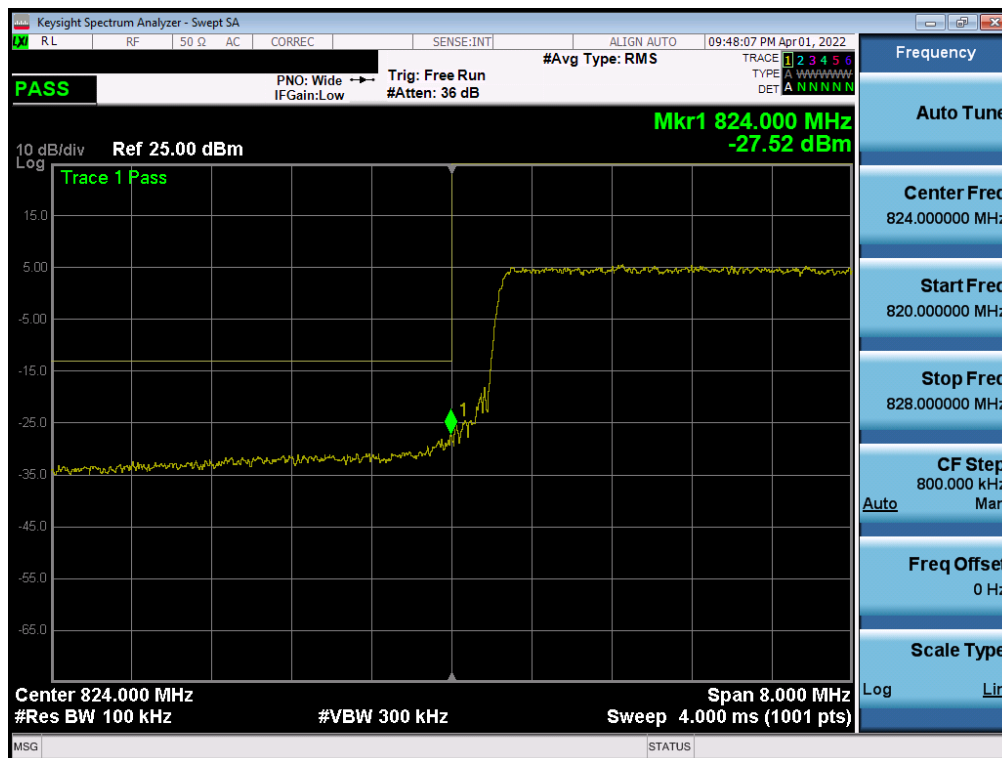
Plot 7-62. Lower Band Edge Plot (LTE Band 26 - 15MHz QPSK – Full RB)



Plot 7-63. Upper Band Edge Plot (LTE Band 26 - 15MHz QPSK – Full RB)

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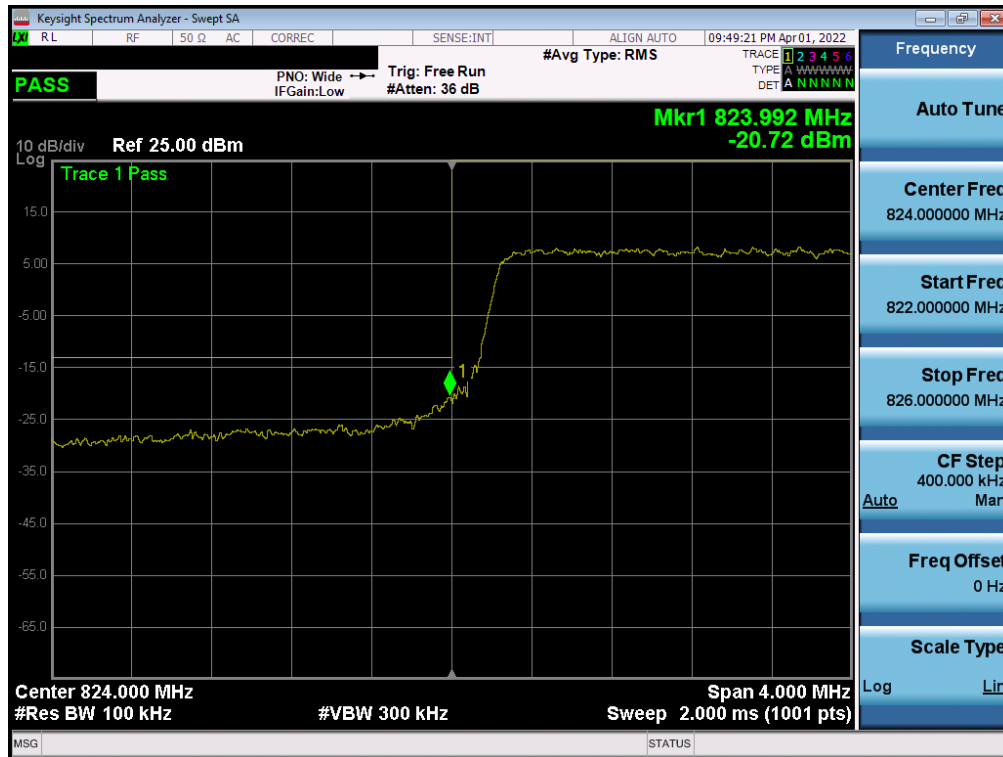


Plot 7-64. Lower Band Edge Plot (LTE Band 26/5 - 10MHz QPSK – Full RB)

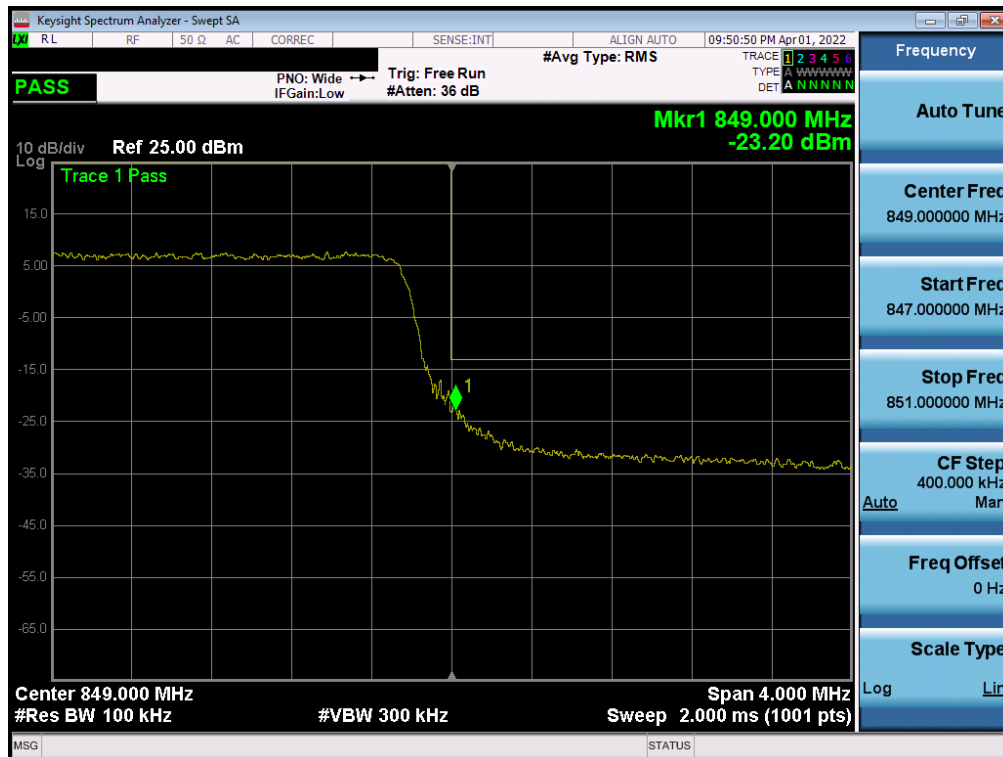


Plot 7-65. Upper Band Edge Plot (LTE Band 26/5 - 10MHz QPSK – Full RB)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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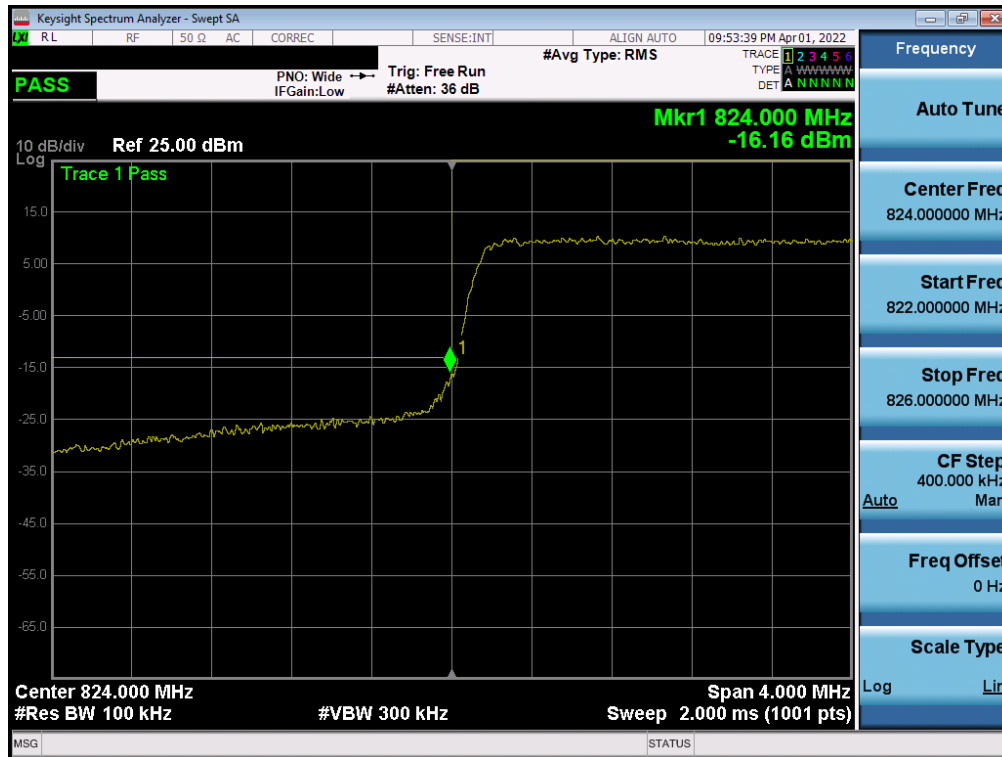


Plot 7-66. Lower Band Edge Plot (LTE Band 26/5 - 5MHz QPSK - Full RB)

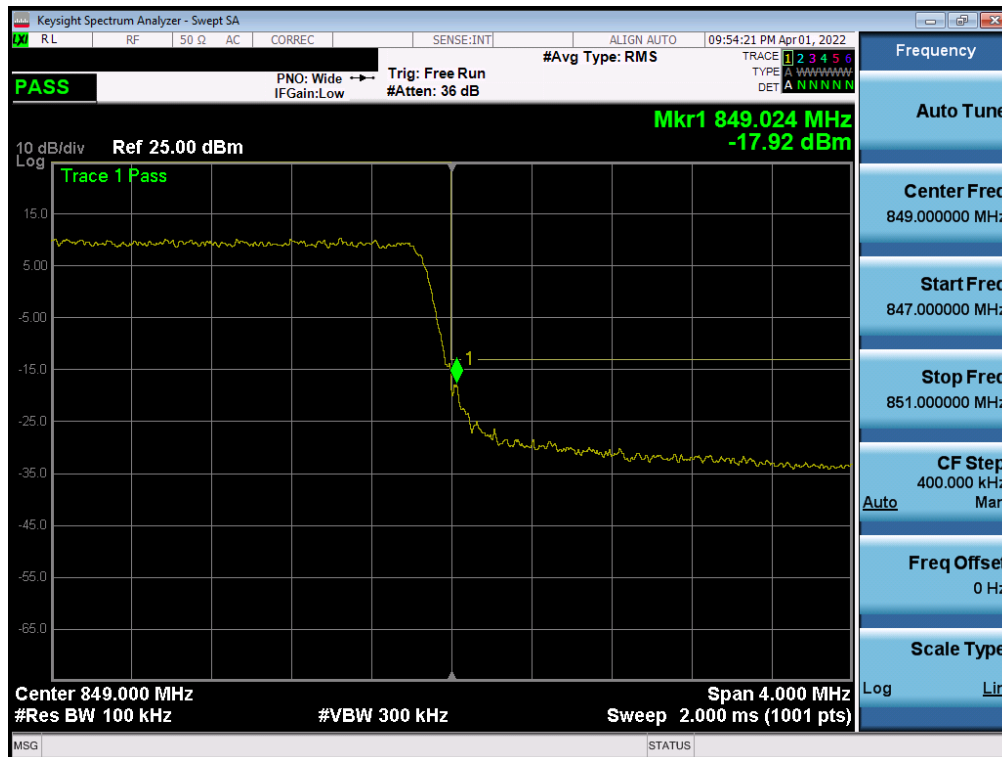


Plot 7-67. Upper Band Edge Plot (LTE Band 26/5 - 5MHz QPSK - Full RB)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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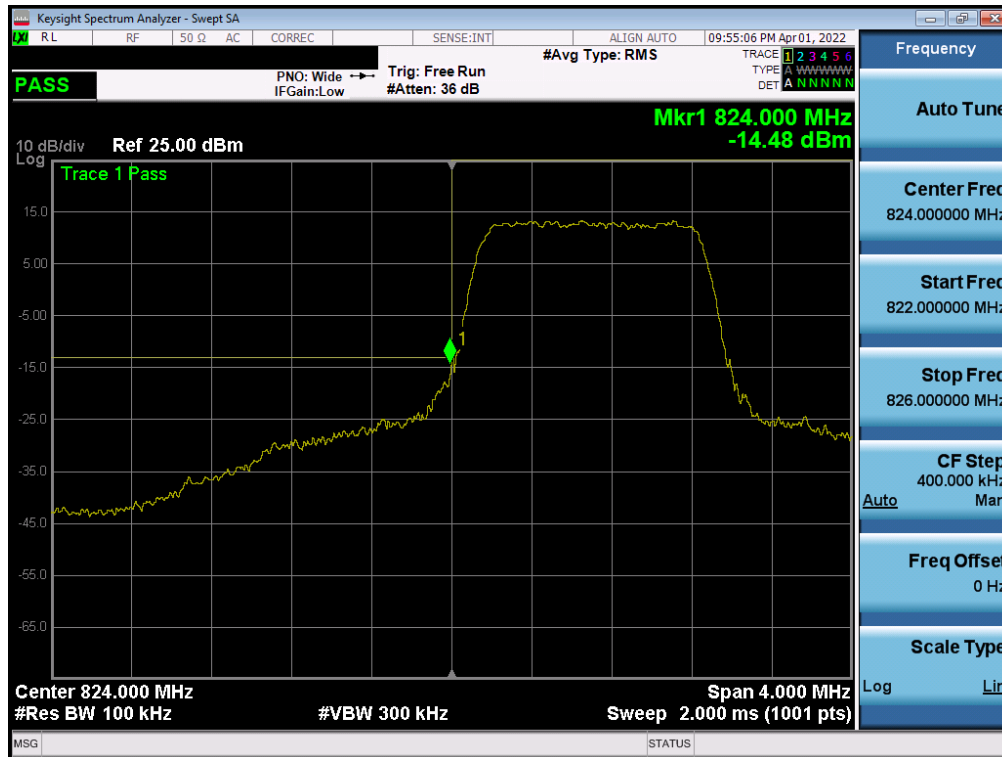
Plot 7-68. Lower Band Edge Plot (LTE Band 26/5 - 3MHz QPSK – Full RB)



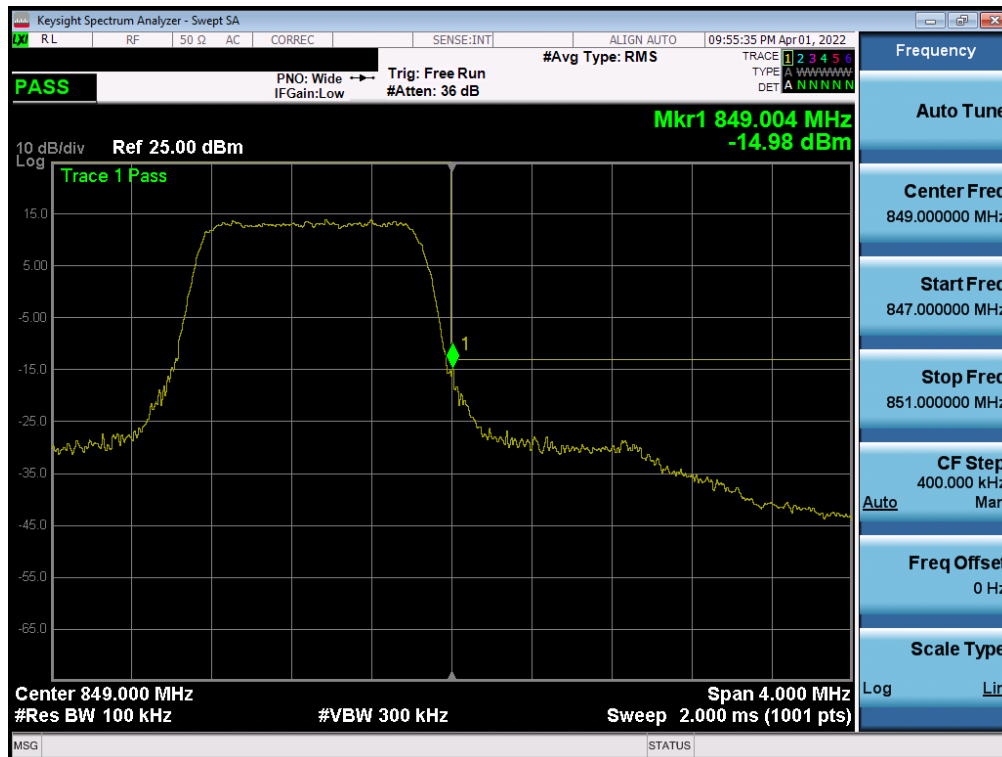
Plot 7-69. Upper Band Edge Plot (LTE Band 26/5 - 3MHz QPSK – Full RB)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-70. Lower Band Edge Plot (LTE Band 26/5 - 1.4MHz QPSK - Full RB)

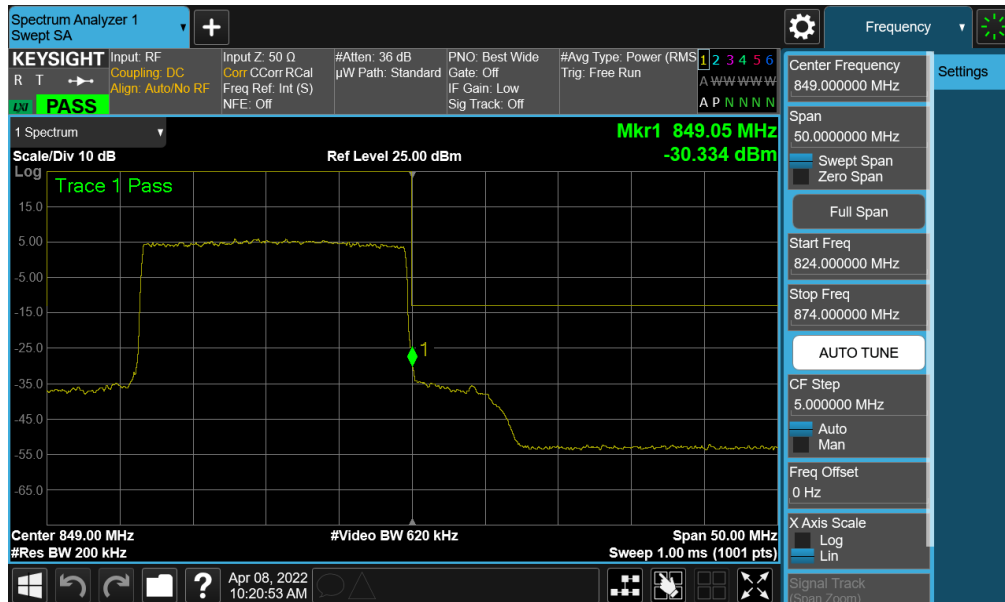
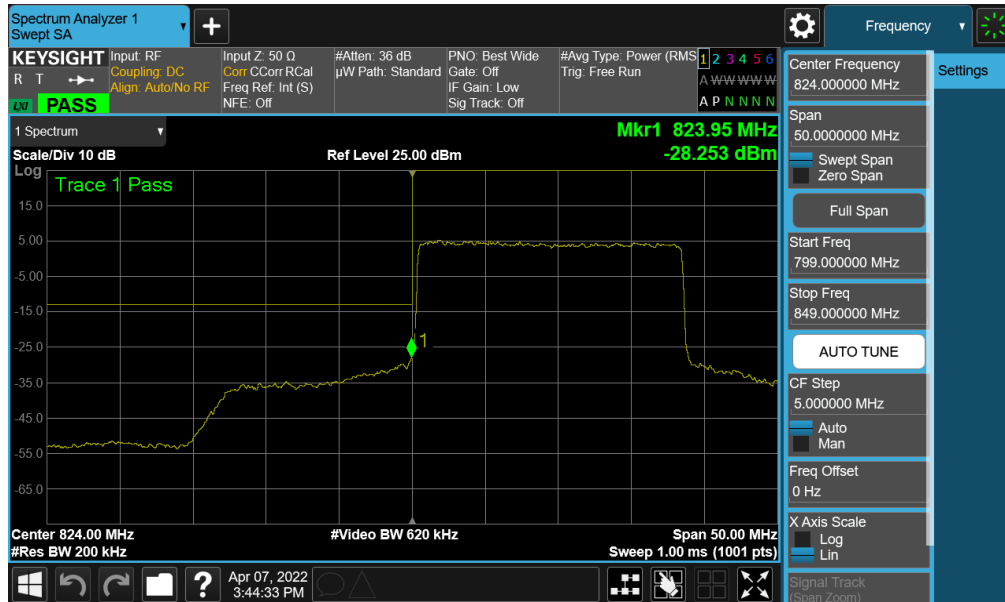


Plot 7-71. Upper Band Edge Plot (LTE Band 26/5 - 1.4MHz QPSK - Full RB)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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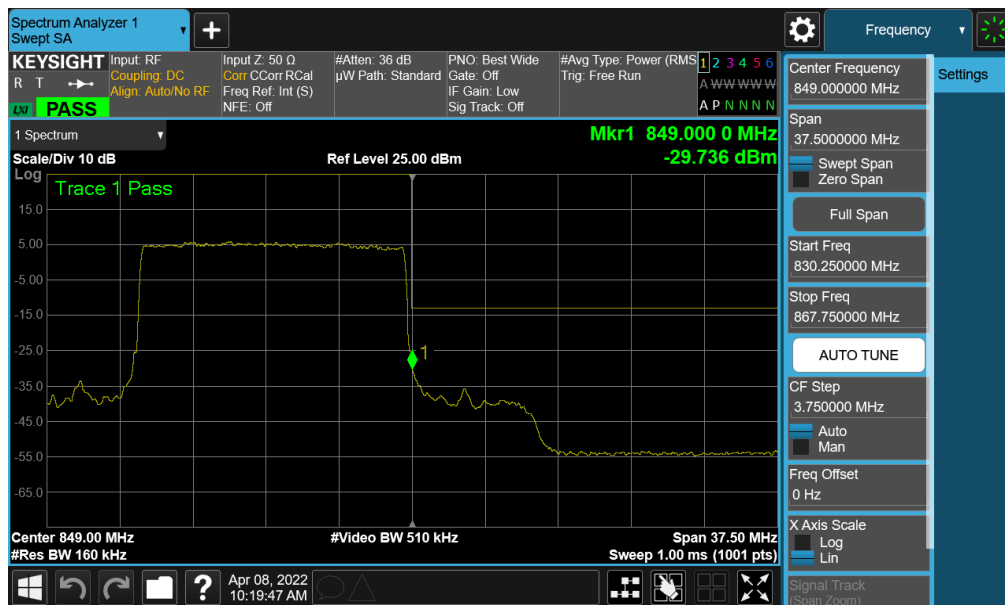
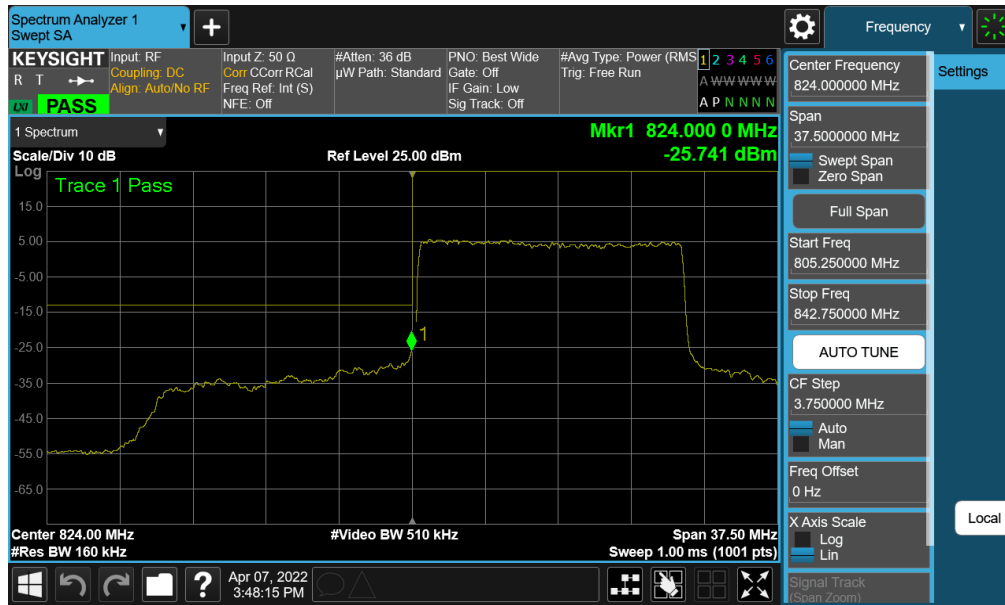
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NR Band n5



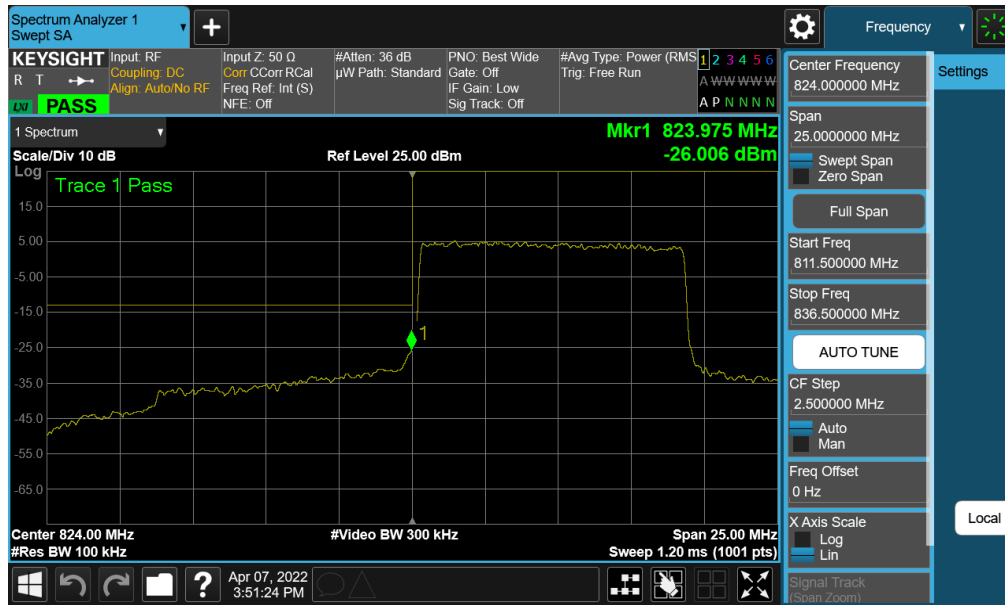
FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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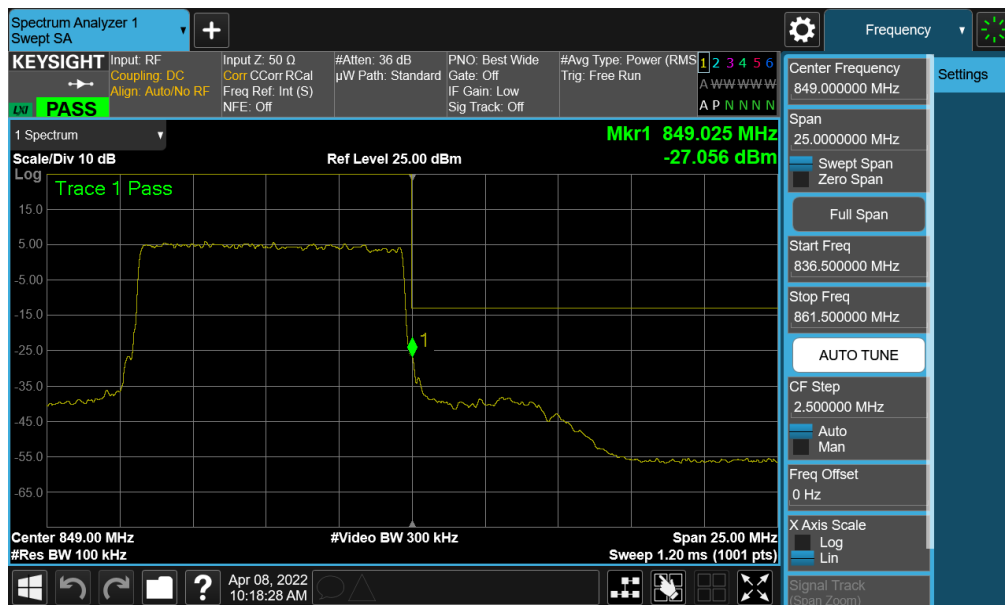


FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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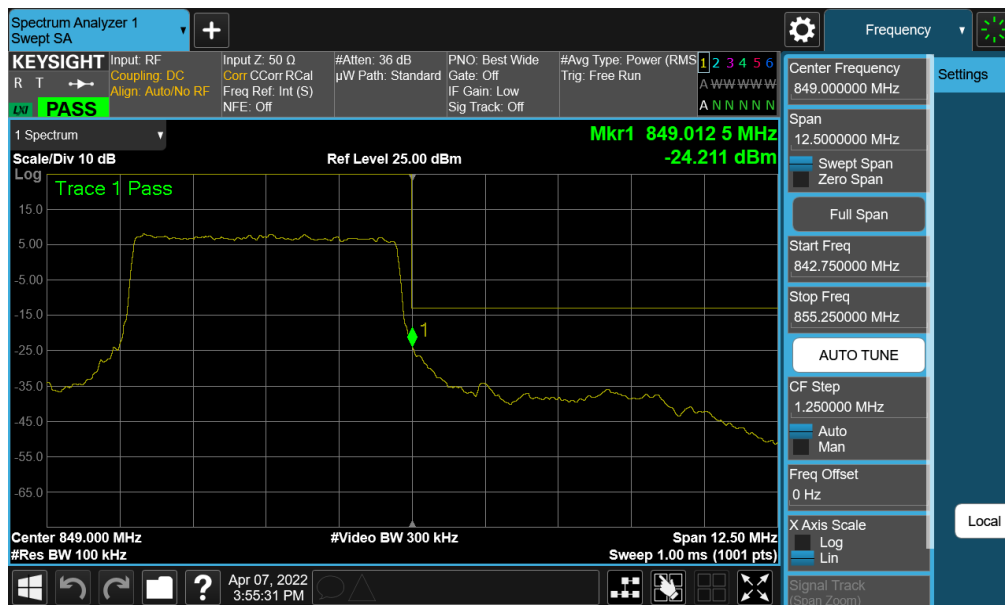
Plot 7-76. Lower Band Edge Plot (NR Band n5 – 10.0MHz - Full RB)



Plot 7-77. Upper Band Edge Plot (NR Band n5 – 10.0MHz - Full RB)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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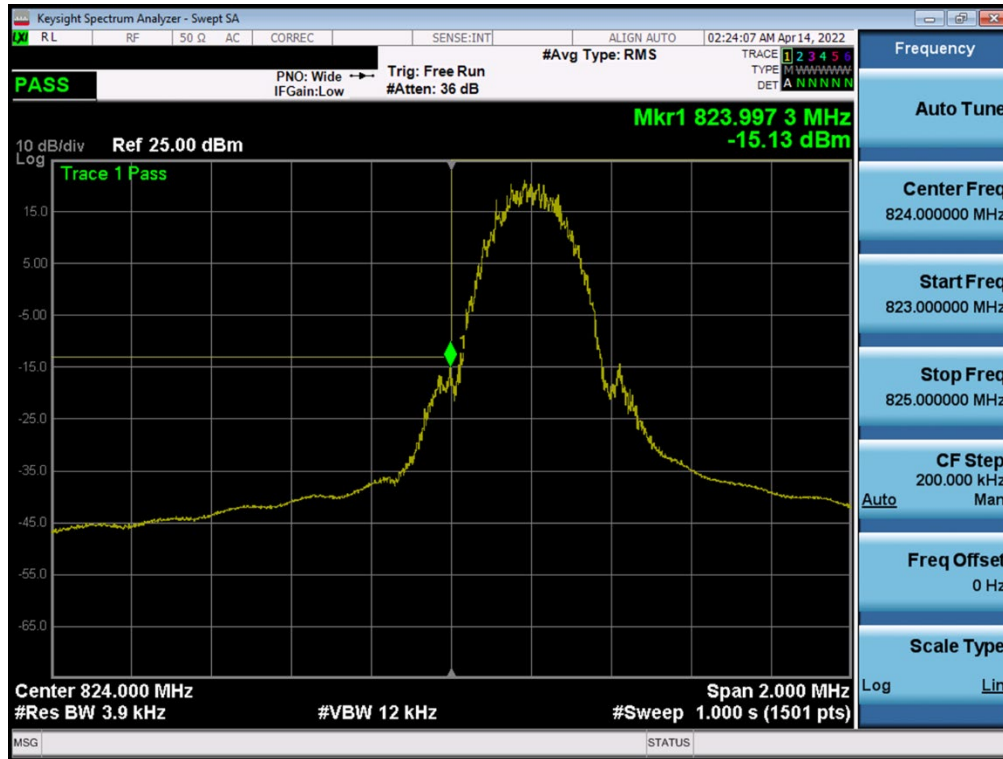
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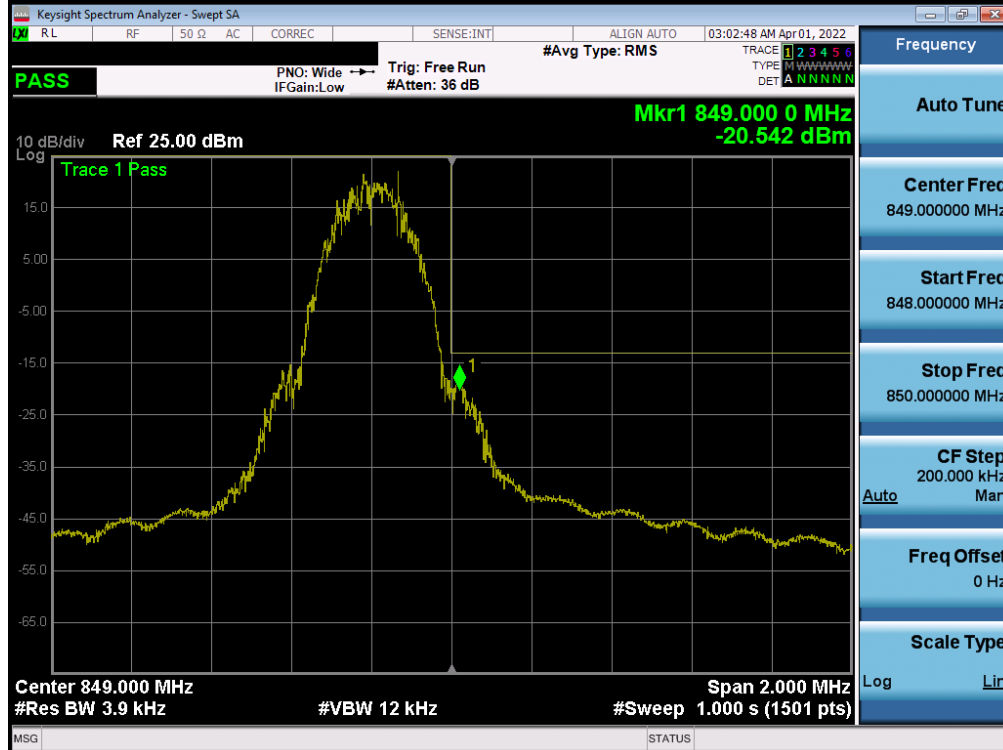
FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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GSM/GPRS Cell



Plot 7-80. Lower Band Edge Plot (GPRS Cell – Ch. 128)



Plot 7-81. Upper Band Edge Plot (GPRS Cell – Ch. 251)

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WCDMA Cell



Plot 7-82. Lower Band Edge Plot (WCDMA Cell – Ch. 4132)



Plot 7-83. Upper Band Edge Plot (WCDMA Cell – Ch. 4233)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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7.5 Uplink Carrier Aggregation and EN-DC

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple.
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

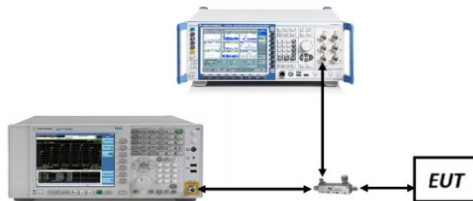


Figure 7-4. Test Instrument & Measurement Setup

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Test Notes

1. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation with both carriers set to transmit using 1RB.
2. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

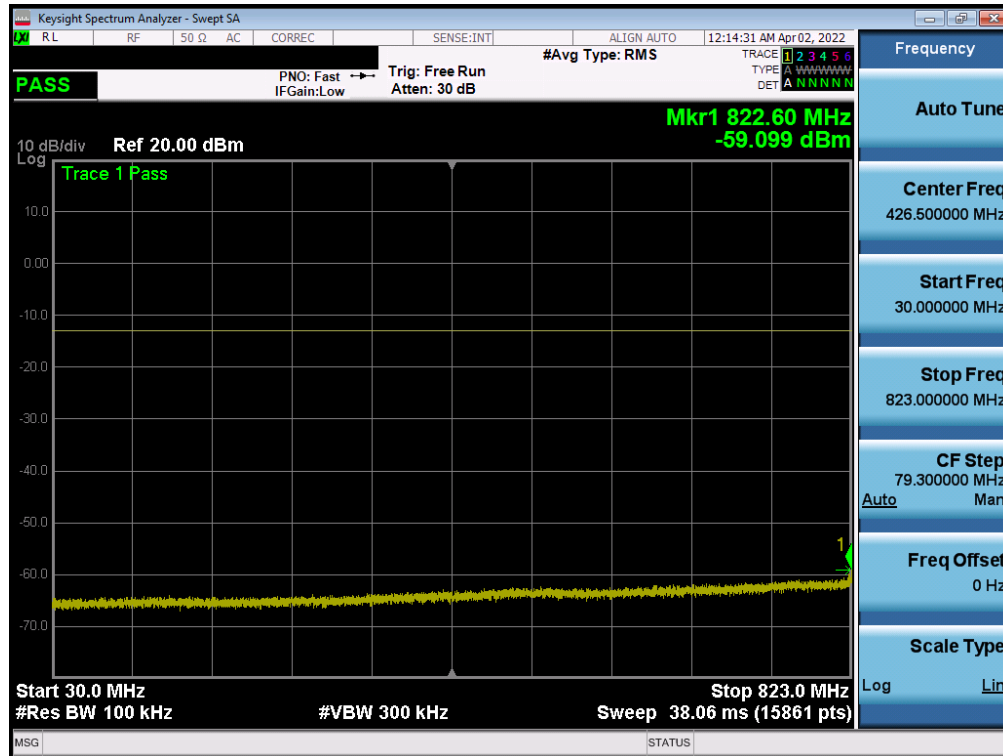
FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Uplink CA configuration 5B

Power State	Band	Bandwidth (PCC + SCC)	PCC					SCC					ULCA Tx. Power [dBm]
			Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	
Max	LTE B5	10MHz + 10MHz	QPSK	20450	829.0	1	49	QPSK	20549	838.9	1	0	24.78
				20475	831.5	1	49		20574	841.4	1	0	24.54
				20600	844.0	1	0		20501	834.1	1	49	24.76
			QPSK	20450	829	50	0	QPSK	20549	838.9	50	0	22.69
			16-QAM	20450	829	50	0	16-QAM	20549	838.9	50	0	21.78
			64-QAM	20450	829	50	0	64-QAM	20549	838.9	50	0	21.68
			256-QAM	20450	829	50	0	256-QAM	20549	838.9	50	0	19.69

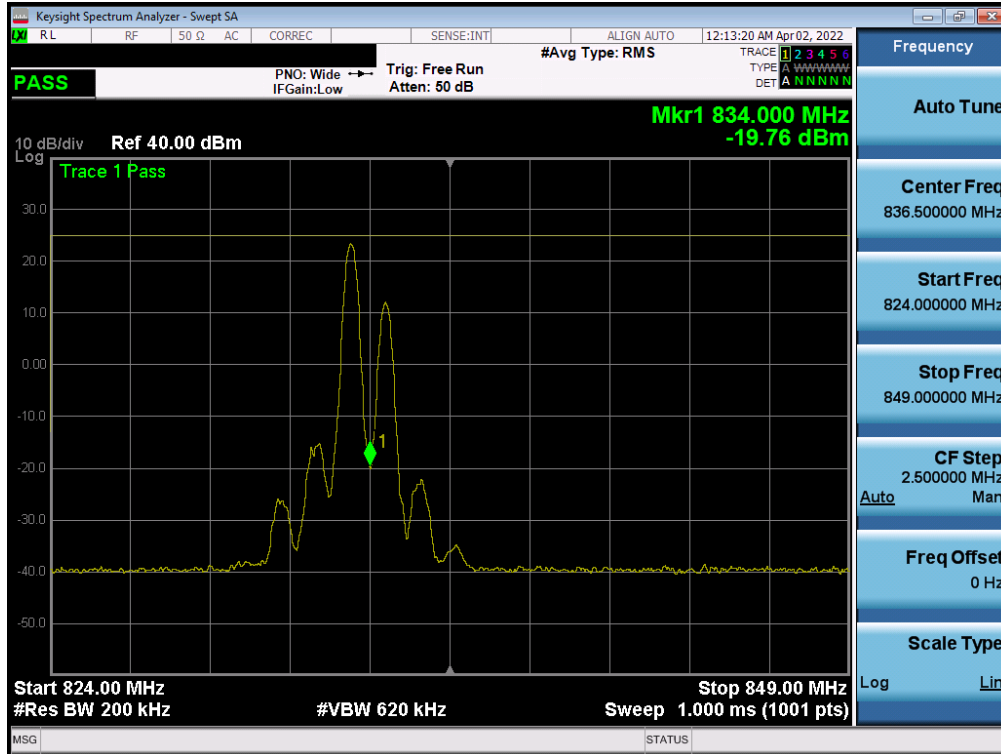
Table 7-2. Conducted Powers (ULCA LTE Band 5)



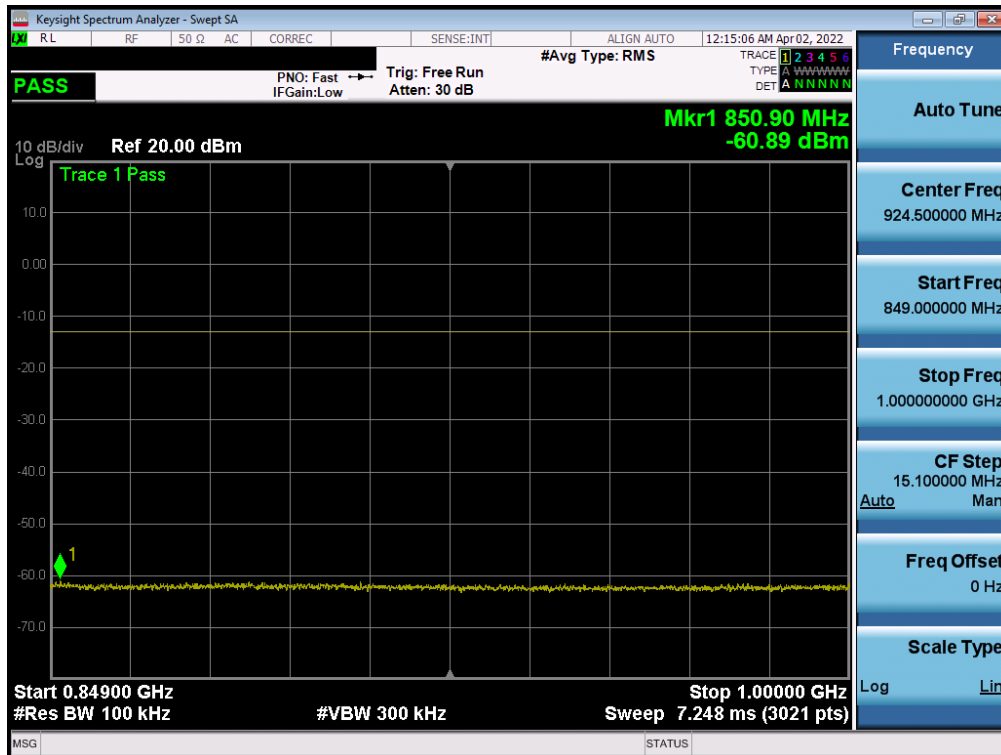
Plot 7-84. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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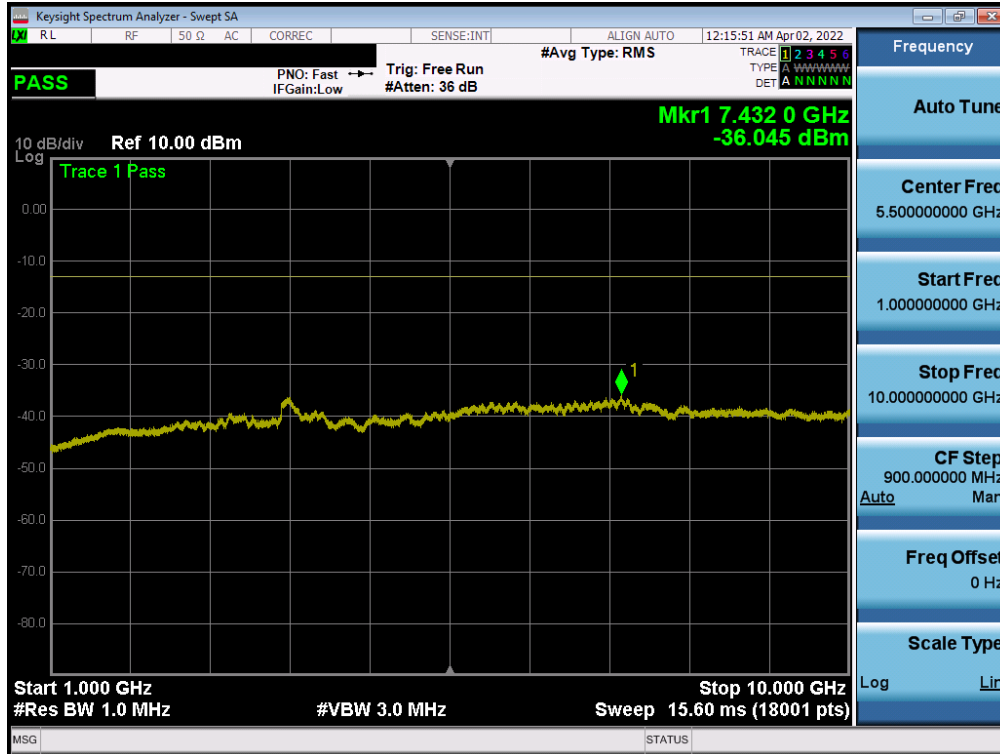


Plot 7-85. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

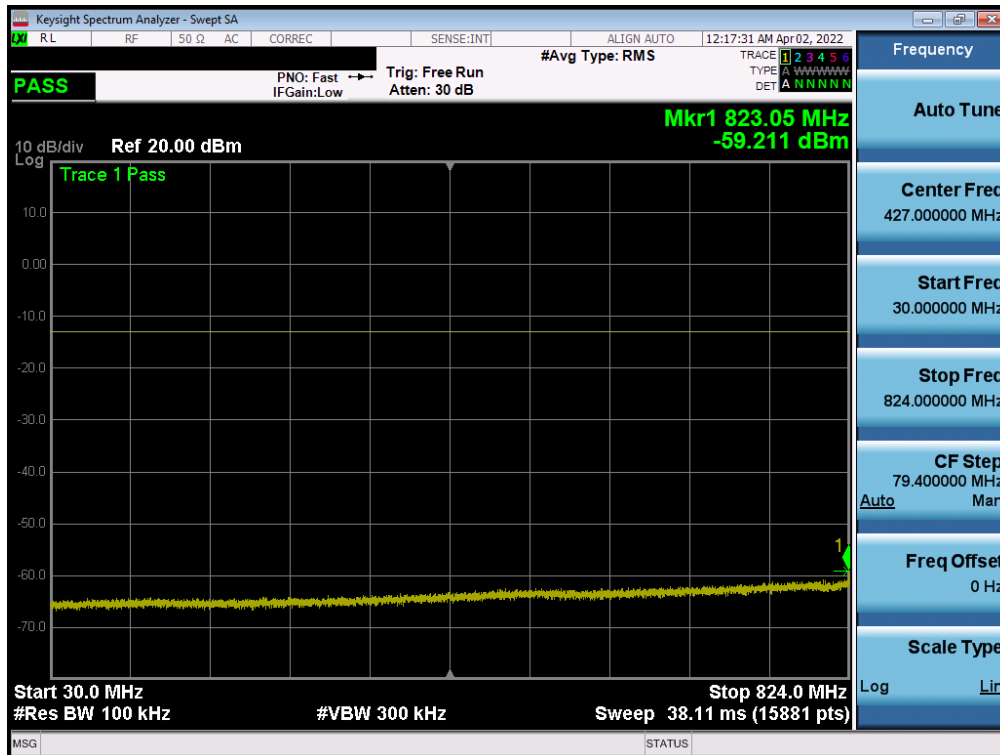


Plot 7-86. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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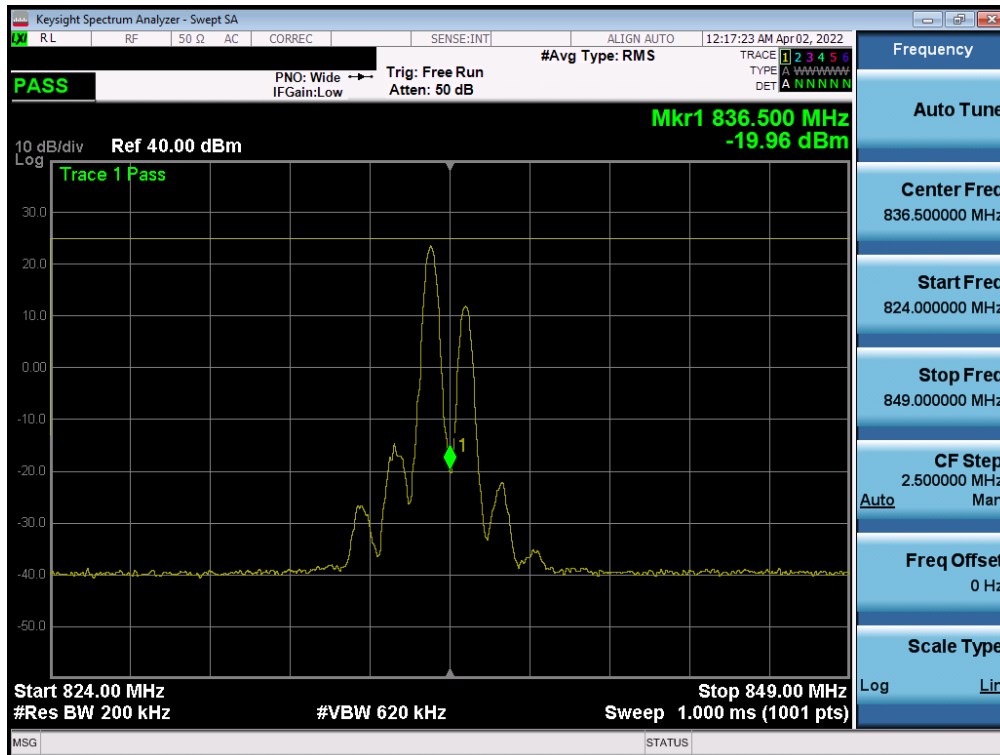


Plot 7-87. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Low Channel)

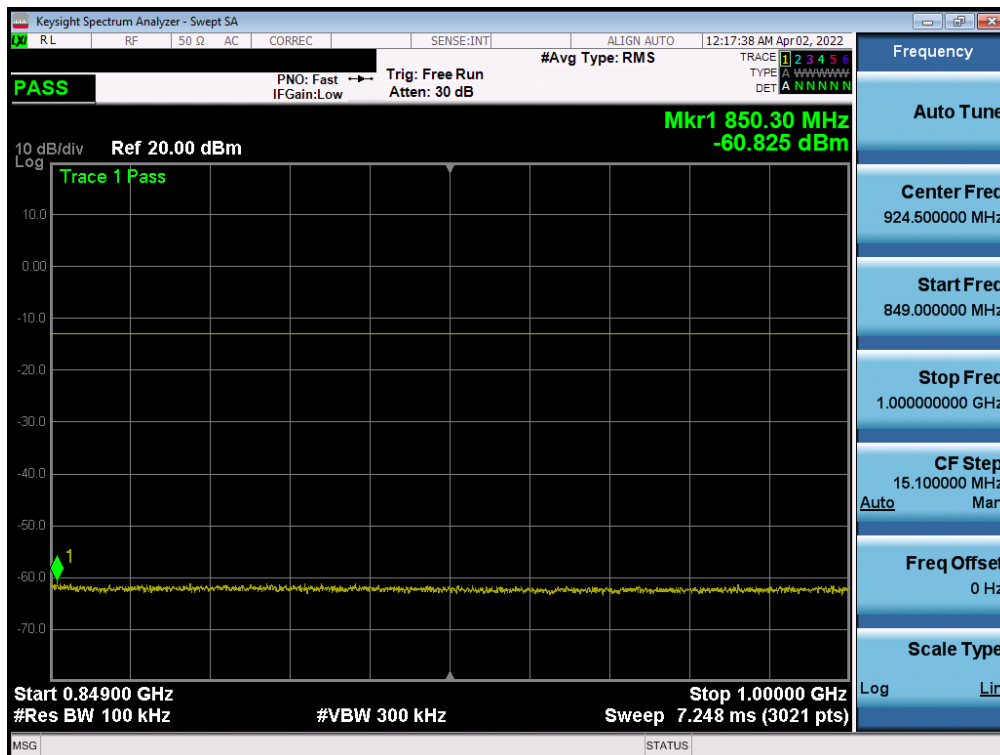


Plot 7-88. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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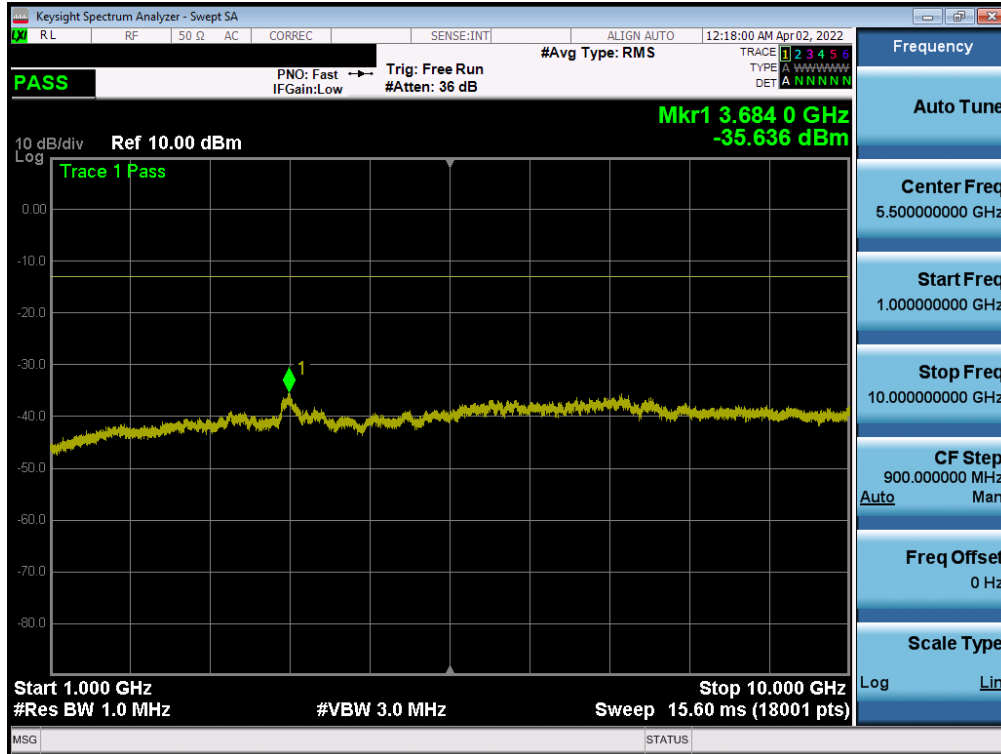


Plot 7-89. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

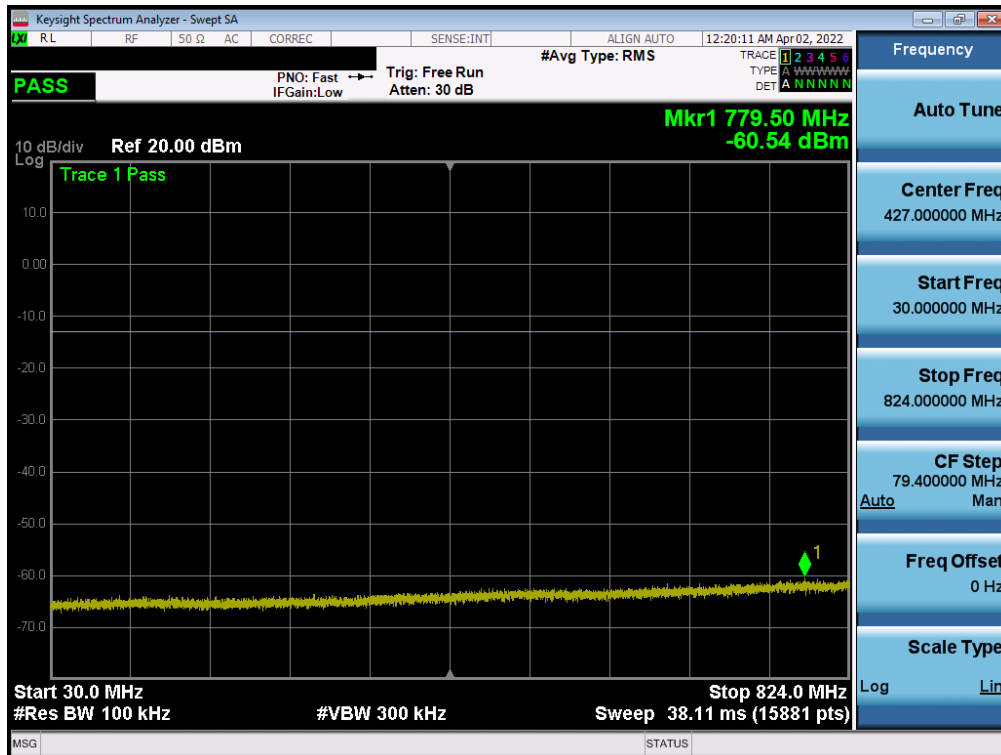


Plot 7-90. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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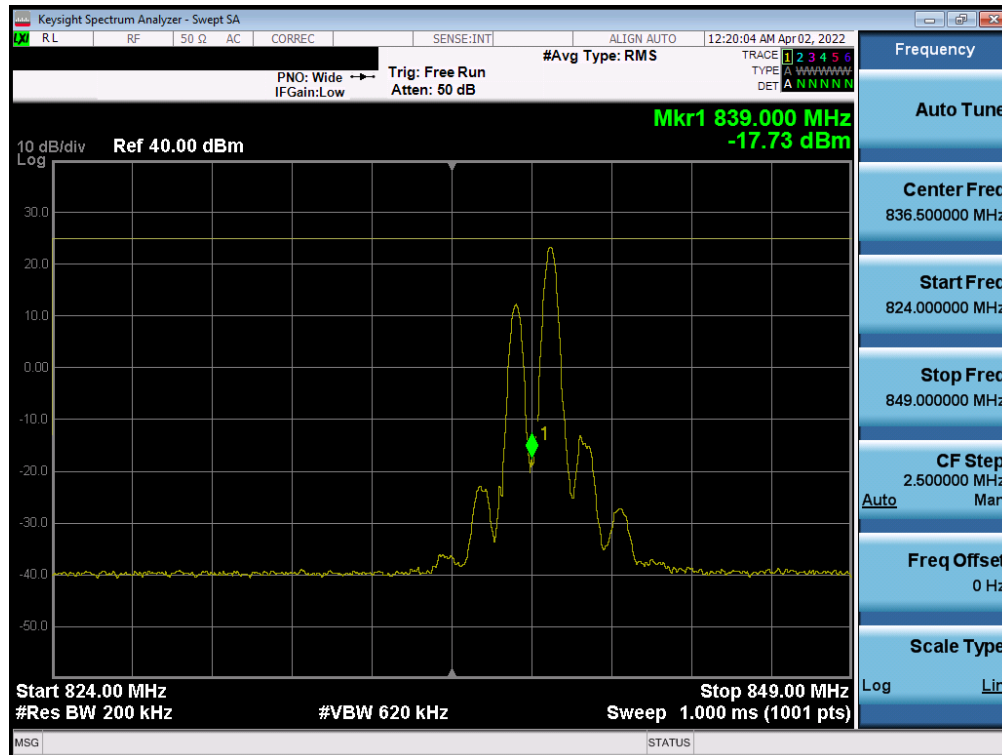


Plot 7-91. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

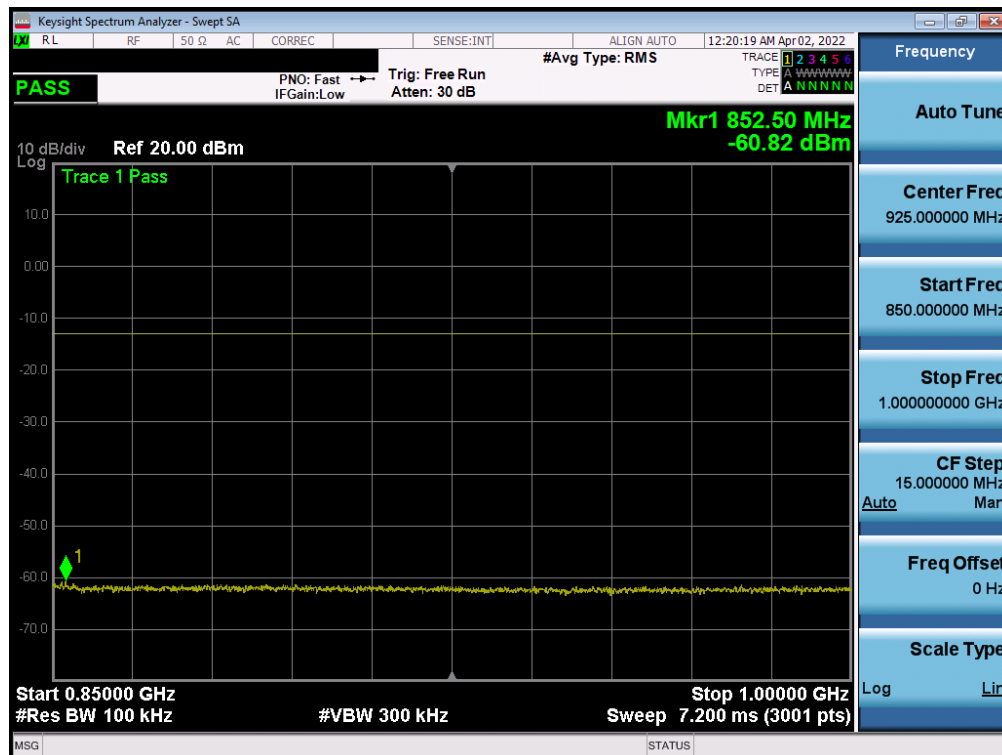


Plot 7-92. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/0 SCC 1/49 – High Channel)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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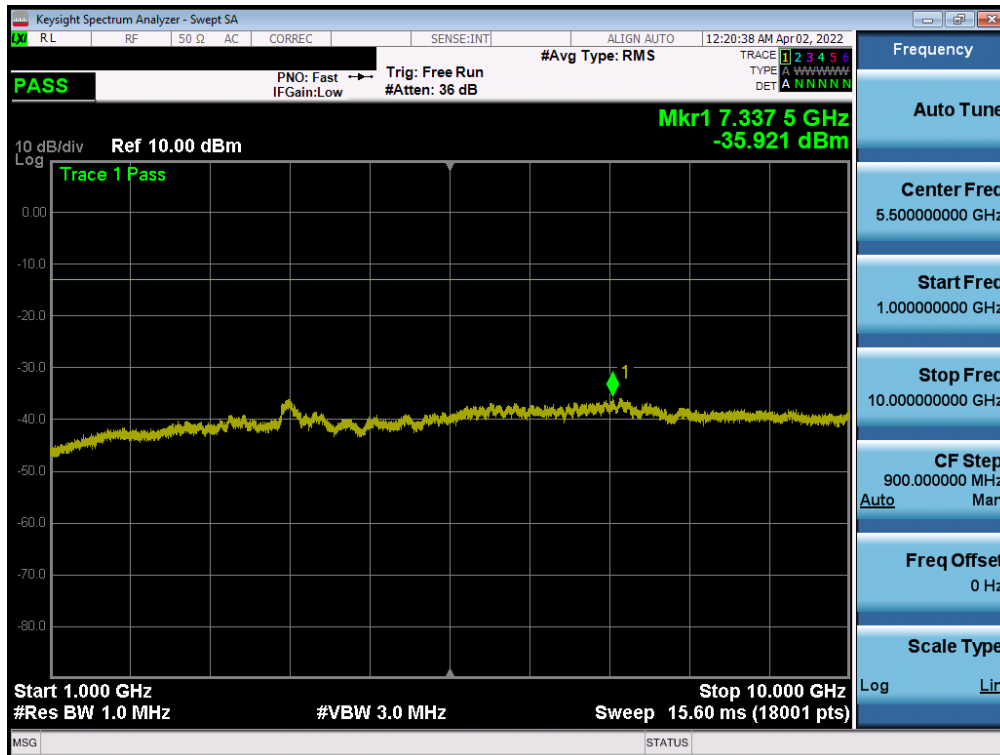


Plot 7-93. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/0 SCC 1/49 – High Channel)

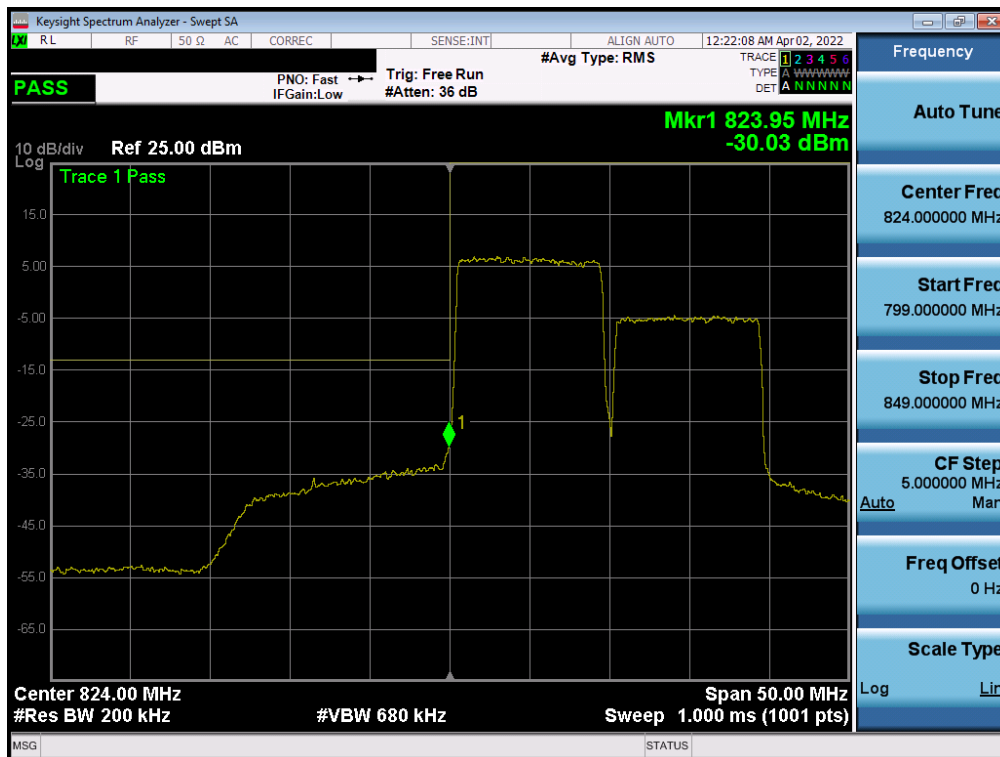


Plot 7-94. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/0 SCC 1/49 – High Channel)

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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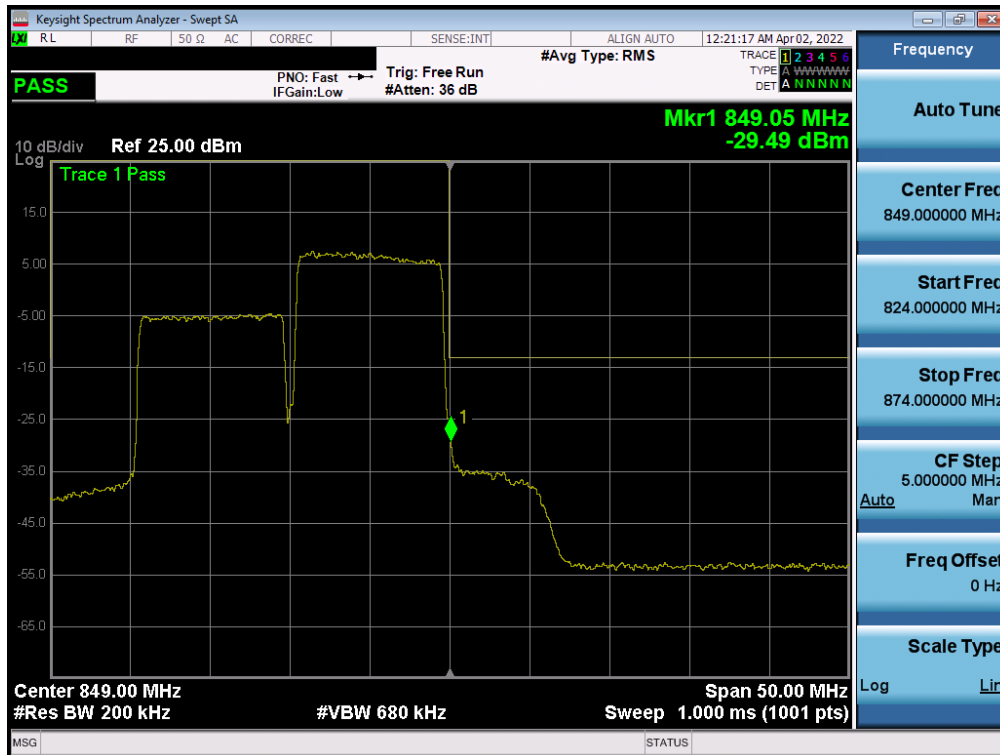
Plot 7-95. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/0 SCC 1/49 – High Channel)



Plot 7-96. Lower Band Edge Plot (Band 5 – QPSK – PCC:10 MHz SCC:10 MHz – Full RB)

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Plot 7-97. Upper Band Edge Plot (Band 5 – QPSK – PCC:10 MHz SCC:10 MHz – Full RB)

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EN-DC configuration

NR (SCS 15kHz)						LTE						NR	LTE	EN-DC
NR Band	NR Bandwidth [MHz]	NR Channel	NR Frequency [MHz]	Mod.	NR RB# / Offset	LTE Band	LTE Bandwidth [MHz]	LTE Channel	LTE Frequency [MHz]	Mod.	LTE RB# / Offset	Conducted Power [dBm]	Conducted Power [dBm]	Total Tx. Power [dBm]
n5	20	Mid	836.5	QPSK	100/0	B66	20	Mid	1745	QPSK	100/0	22.88	21.41	25.22
				QPSK	100/0					QPSK	1/50	21.73	22.87	25.35
				QPSK	1/53					QPSK	100/0	23.12	21.48	25.39
				QPSK	1/53					QPSK	1/50	21.91	22.86	25.42
				16Q	1/53					16Q	1/50	21.55	22.91	25.29

Table 7-3. Conducted Max Powers (EN-DC Combo n5 – B66)

NR (SCS 15kHz)						LTE						NR	LTE	EN-DC
NR Band	NR Bandwidth [MHz]	NR Channel	NR Frequency [MHz]	Mod.	NR RB# / Offset	LTE Band	LTE Bandwidth [MHz]	LTE Channel	LTE Frequency [MHz]	Mod.	LTE RB# / Offset	Conducted Power [dBm]	Conducted Power [dBm]	Total Tx. Power [dBm]
n5	20	Mid	836.5	QPSK	100/0	B30	10	Mid	2310	QPSK	50/0	22.93	19.92	24.69
				QPSK	100/0					QPSK	1/25	22.81	21.78	25.34
				QPSK	1/53					QPSK	50/0	23.92	19.95	25.38
				QPSK	1/53					QPSK	1/25	22.68	21.82	25.28
				16Q	1/53					16Q	50/0	23.12	19.90	24.81

Table 7-4. Conducted Max Powers (EN-DC Combo n5 – B30)

NR (SCS 15kHz)						LTE						NR	LTE	EN-DC
NR Band	NR Bandwidth [MHz]	NR Channel	NR Frequency [MHz]	Mod.	NR RB# / Offset	LTE Band	LTE Bandwidth [MHz]	LTE Channel	LTE Frequency [MHz]	Mod.	LTE RB# / Offset	Conducted Power [dBm]	Conducted Power [dBm]	Total Tx. Power [dBm]
n5	20	Mid	836.5	QPSK	100/0	B48	20	Mid	3625	QPSK	100/0	22.77	22.36	25.58
				QPSK	100/0					QPSK	1/50	22.59	23.15	25.89
				QPSK	1/53					QPSK	100/0	22.79	22.40	25.61
				QPSK	1/53					QPSK	1/50	22.56	23.04	25.82
				16Q	100/0					16Q	1/50	21.78	23.02	25.45

Table 7-5. Conducted Max Powers (EN-DC Combo n5 – B48)

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7.6 Radiated Power (ERP)

Test Overview

Effective Radiated Power (ERP) measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 – Section 5.2.4.4

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration.
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize.

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

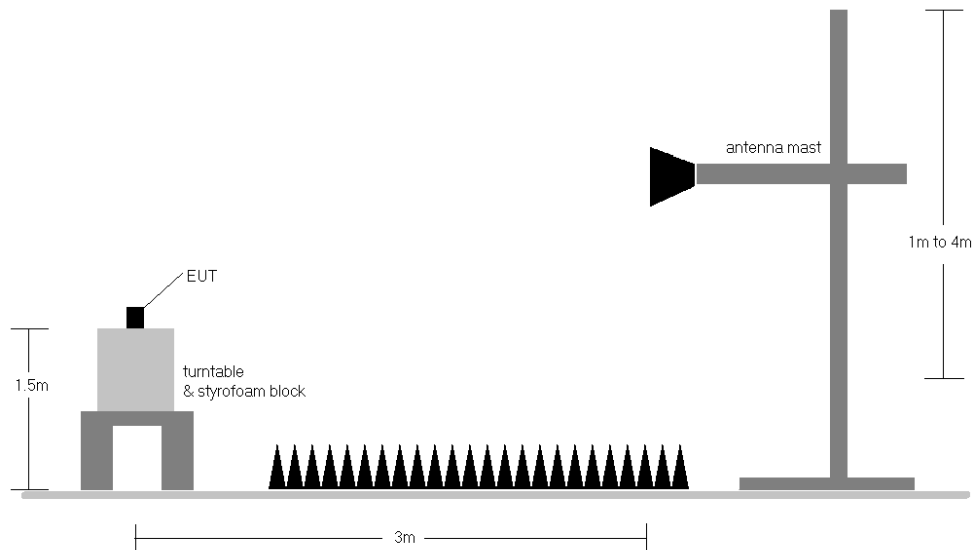


Figure 7-5. Radiated Test Setup < 1GHz

Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest powers are reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 3) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst-case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 4) This unit was tested with its standard battery.
- 5) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
15MHz (Band 26 only)	QPSK	831.5	V	152	252	1.29	1 / 37	19.77	18.91	0.078	38.45	-19.54	21.06	0.128	40.61	-19.55
	QPSK	836.5	V	157	229	1.31	1 / 37	19.11	18.27	0.067	38.45	-20.18	20.42	0.110	40.61	-20.19
	QPSK	841.5	V	133	282	1.33	1 / 37	19.71	18.89	0.078	38.45	-19.56	21.04	0.127	40.61	-19.56
	16-QAM	841.5	V	133	282	1.33	1 / 37	18.93	18.11	0.065	38.45	-20.34	20.26	0.106	40.61	-20.34
10 MHz	QPSK	829.0	V	152	252	1.27	1 / 49	20.01	19.14	0.082	38.45	-19.31	21.29	0.134	40.61	-19.32
	QPSK	836.5	V	157	229	1.31	1 / 25	19.25	18.41	0.069	38.45	-20.04	20.56	0.114	40.61	-20.05
	QPSK	844.0	V	133	282	1.35	1 / 25	19.87	19.06	0.081	38.45	-19.39	21.21	0.132	40.61	-19.39
	16-QAM	844.0	V	133	282	1.35	1 / 49	19.15	18.34	0.068	38.45	-20.11	20.49	0.112	40.61	-20.11
5 MHz	QPSK	826.5	V	152	252	1.26	1 / 12	19.92	19.04	0.080	38.45	-19.41	21.19	0.131	40.61	-19.42
	QPSK	836.5	V	157	229	1.31	1 / 12	19.37	18.53	0.071	38.45	-19.92	20.68	0.117	40.61	-19.93
	QPSK	846.5	V	133	282	1.36	1 / 12	19.83	19.03	0.080	38.45	-19.42	21.18	0.131	40.61	-19.42
	16-QAM	826.5	V	152	252	1.26	1 / 0	19.20	18.32	0.068	38.45	-20.13	20.47	0.111	40.61	-20.14
3 MHz	QPSK	825.5	V	152	252	1.26	1 / 7	19.78	18.89	0.077	38.45	-19.56	21.04	0.127	40.61	-19.57
	QPSK	836.5	V	157	229	1.31	1 / 7	19.44	18.60	0.072	38.45	-19.85	20.75	0.119	40.61	-19.86
	QPSK	847.5	V	133	282	1.36	1 / 14	19.74	18.95	0.079	38.45	-19.50	21.10	0.129	40.61	-19.50
	16-QAM	847.5	V	133	282	1.36	1 / 7	18.97	18.18	0.066	38.45	-20.27	20.33	0.108	40.61	-20.27
1.4 MHz	QPSK	824.7	V	152	252	1.25	1 / 5	19.79	18.90	0.078	38.45	-19.55	21.05	0.127	40.61	-19.56
	QPSK	836.5	V	157	229	1.31	1 / 3	19.13	18.29	0.067	38.45	-20.16	20.44	0.111	40.61	-20.17
	QPSK	848.3	V	133	282	1.37	1 / 3	19.69	18.90	0.078	38.45	-19.55	21.05	0.127	40.61	-19.55
	16-QAM	824.7	V	152	252	1.25	1 / 0	18.97	18.08	0.064	38.45	-20.37	20.23	0.105	40.61	-20.38
10 MHz	QPSK (Opposite Pol.)	829.0	H	223	286	1.29	1 / 25	17.65	16.79	0.048	38.45	-21.66	18.94	0.078	40.61	-21.67
	QPSK (WCP)	829.0	V	133	339	1.27	1 / 25	18.98	18.12	0.065	38.45	-20.33	20.27	0.106	40.61	-20.34
10 MHz	QPSK (Half Open)	829.0	V	143	291	1.27	1 / 49	17.25	16.38	0.043	38.45	-22.07	18.53	0.071	40.61	-22.08

Table 7-6. ERP Data (LTE Band 26/5) – OPEN

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	π/2 BPSK	834.0	V	143	238	6.15	1 / 53	13.00	17.00	0.050	38.45	-21.45	19.15	0.082	40.61	-21.45
	π/2 BPSK	836.5	V	263	252	6.18	1 / 104	13.13	17.16	0.052	38.45	-21.29	19.31	0.085	40.61	-21.30
	π/2 BPSK	839.0	V	261	249	6.30	1 / 104	13.35	17.50	0.056	38.45	-20.95	19.65	0.092	40.61	-20.95
	QPSK	834.0	V	143	238	6.15	1 / 53	13.02	17.02	0.050	38.45	-21.43	19.17	0.083	40.61	-21.43
	QPSK	836.5	V	263	252	6.18	1 / 104	13.48	17.51	0.056	38.45	-20.94	19.66	0.092	40.61	-20.95
	QPSK	839.0	V	261	249	6.30	1 / 104	13.40	17.55	0.057	38.45	-20.90	19.70	0.093	40.61	-20.90
15 MHz	16-QAM	839.0	V	261	249	6.30	1 / 104	12.37	16.52	0.045	38.45	-21.93	18.67	0.074	40.61	-21.93
	π/2 BPSK	831.5	V	143	238	1.29	1 / 39	17.77	16.90	0.049	38.45	-21.55	19.05	0.080	40.61	-21.55
	π/2 BPSK	836.5	V	263	252	1.31	1 / 58	17.88	17.04	0.051	38.45	-21.41	19.19	0.083	40.61	-21.41
	π/2 BPSK	841.5	V	261	249	1.33	1 / 39	18.12	17.30	0.054	38.45	-21.15	19.45	0.088	40.61	-21.15
	QPSK	831.5	V	143	238	1.29	1 / 58	17.72	16.85	0.048	38.45	-21.60	19.00	0.079	40.61	-21.61
	QPSK	836.5	V	263	252	1.31	1 / 39	18.26	17.42	0.055	38.45	-21.03	19.57	0.091	40.61	-21.03
10 MHz	QPSK	841.5	V	261	249	1.33	1 / 58	18.36	17.55	0.057	38.45	-20.90	19.70	0.093	40.61	-20.91
	16-QAM	841.5	V	261	249	1.33	1 / 20	17.34	16.52	0.045	38.45	-21.93	18.67	0.074	40.61	-21.93
	π/2 BPSK	829.0	V	143	238	6.10	1 / 26	12.75	16.70	0.047	38.45	-21.75	18.85	0.077	40.61	-21.75
	π/2 BPSK	836.5	V	263	252	6.18	1 / 38	12.82	16.84	0.048	38.45	-21.61	18.99	0.079	40.61	-21.61
	π/2 BPSK	844.0	V	261	249	6.36	1 / 38	13.02	17.23	0.053	38.45	-21.22	19.38	0.087	40.61	-21.23
	QPSK	829.0	V	143	238	6.10	1 / 38	12.62	16.57	0.045	38.45	-21.88	18.72	0.074	40.61	-21.89
5 MHz	QPSK	836.5	V	263	252	6.18	1 / 26	13.22	17.25	0.053	38.45	-21.20	19.40	0.087	40.61	-21.21
	QPSK	844.0	V	261	249	6.36	1 / 38	13.21	17.41	0.055	38.45	-21.04	19.56	0.090	40.61	-21.04
	16-QAM	844.0	V	261	249	6.36	1 / 26	12.27	16.48	0.044	38.45	-21.97	18.63	0.073	40.61	-21.98
	π/2 BPSK	829.0	V	143	238	6.07	1 / 18	12.78	16.71	0.047	38.45	-21.74	18.86	0.077	40.61	-21.75
	π/2 BPSK	836.5	V	263	252	6.18	1 / 12	12.95	16.98	0.050	38.45	-21.47	19.13	0.082	40.61	-21.48
	π/2 BPSK	844.0	V	261	249	6.38	1 / 18	13.06	17.29	0.054	38.45	-21.16	19.44	0.088	40.61	-21.17
20 MHz	QPSK	829.0	V	143	238	6.07	1 / 6	12.70	16.63	0.046	38.45	-21.82	18.78	0.075	40.61	-21.83
	QPSK	836.5	V	263	252	6.18	1 / 6	13.34	17.36	0.055	38.45	-21.09	19.51	0.089	40.61	-21.09
	QPSK	844.0	V	261	249	6.38	1 / 12	13.06	17.29	0.054	38.45	-21.16	19.44	0.088	40.61	-21.17
	16-QAM	844.0	V	261	249	6.38	1 / 12	12.17	16.40	0.044	38.45	-22.05	18.55	0.072	40.61	-22.06
20 MHz	QPSK (CP-OFDM)	839.0	V	261	246	6.30	1 / 79	11.87	16.02	0.040	38.45	-22.43	18.17	0.066	40.61	-22.43
	QPSK (Opposite Pol.)	839.0	H	113	296	6.80	1 / 53	11.60	16.25	0.042	38.45	-22.20	18.40	0.069	40.61	-22.20
20 MHz	QPSK (WCP)	839.0	V	112	262	6.30	1 / 53	9.01	13.16	0.021	38.45	-25.29	15.31	0.034	40.61	-25.29
	QPSK (Half Open)	839.0	H	112	207	6.80	1 / 53	12.77	17.42	0.055	38.45	-21.03	19.57	0.091	40.61	-21.03

Table 7-7. ERP Data (NR Band n5) – OPEN

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	V	153	288	27.81	1.25	26.91	0.491	38.45	-11.54	29.06	0.805	40.61	-11.55
836.60	GPRS850	V	124	282	26.84	1.31	26.00	0.398	38.45	-12.45	28.15	0.653	40.61	-12.46
848.80	GPRS850	V	137	261	26.58	1.37	25.80	0.380	38.45	-12.65	27.95	0.624	40.61	-12.66
824.20	GPRS850 (Opposite Pol.)	H	400	283	24.28	1.25	23.38	0.218	38.45	-15.07	25.53	0.357	40.61	-15.08
824.20	EDGE850	V	153	288	20.46	1.25	19.56	0.090	38.45	-18.89	21.71	0.148	40.61	-18.90
824.20	GPRS850 (WCP)	V	155	276	26.19	1.25	25.29	0.338	38.45	-13.16	27.44	0.555	40.61	-13.17
824.20	GPRS850 (Half Open)	V	129	317	26.80	1.25	25.90	0.389	38.45	-12.55	28.05	0.638	40.61	-12.56

Table 7-8. ERP Data (GPRS Cell) – OPEN

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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	V	140	305	19.27	1.26	18.38	0.069	38.45	-20.07	20.53	0.113	40.61	-20.08
836.60	WCDMA850	V	138	310	19.49	1.31	18.65	0.073	38.45	-19.80	20.80	0.120	40.61	-19.81
846.60	WCDMA850	V	141	308	17.49	1.36	16.70	0.047	38.45	-21.75	18.85	0.077	40.61	-21.76
836.60	WCDMA850 (Opposite Pol.)	H	400	272	16.25	1.31	15.41	0.035	38.45	-23.04	17.56	0.057	40.61	-23.05
836.60	WCDMA850 (WCP)	V	134	314	17.24	1.31	16.40	0.044	38.45	-22.05	18.55	0.072	40.61	-22.06
836.60	WCDMA850 (Half Open)	V	136	303	16.39	1.31	15.55	0.036	38.45	-22.90	17.70	0.059	40.61	-22.91

Table 7-9. ERP Data (WCDMA Cell) – OPEN

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7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 – Section 5.5.4

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

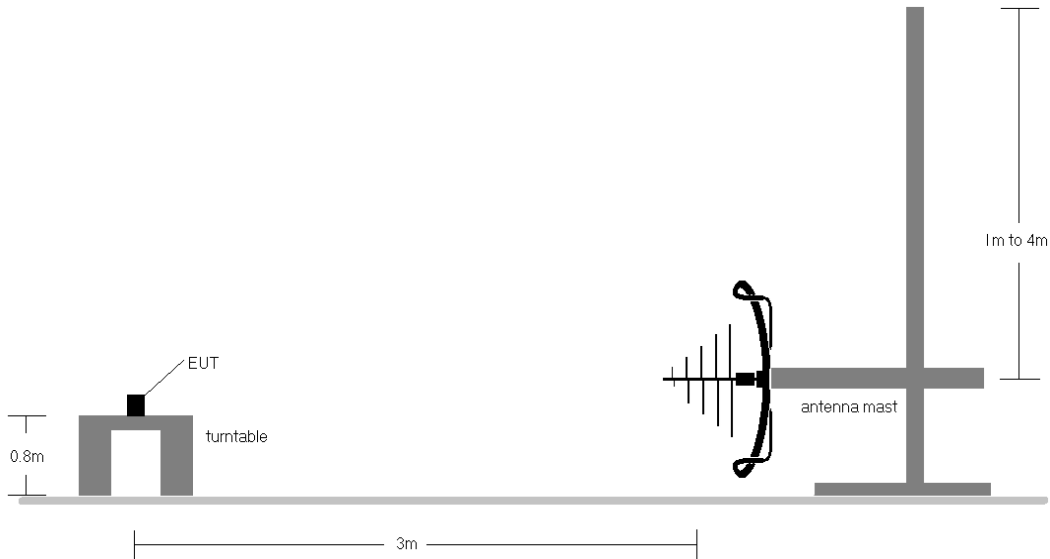


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

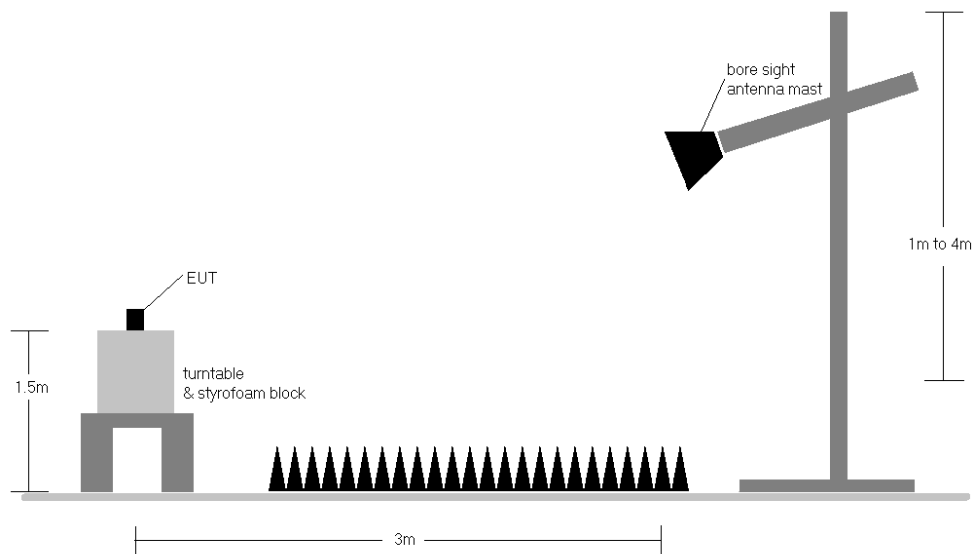


Figure 7-7. Test Instrument & Measurement Setup > 1GHz

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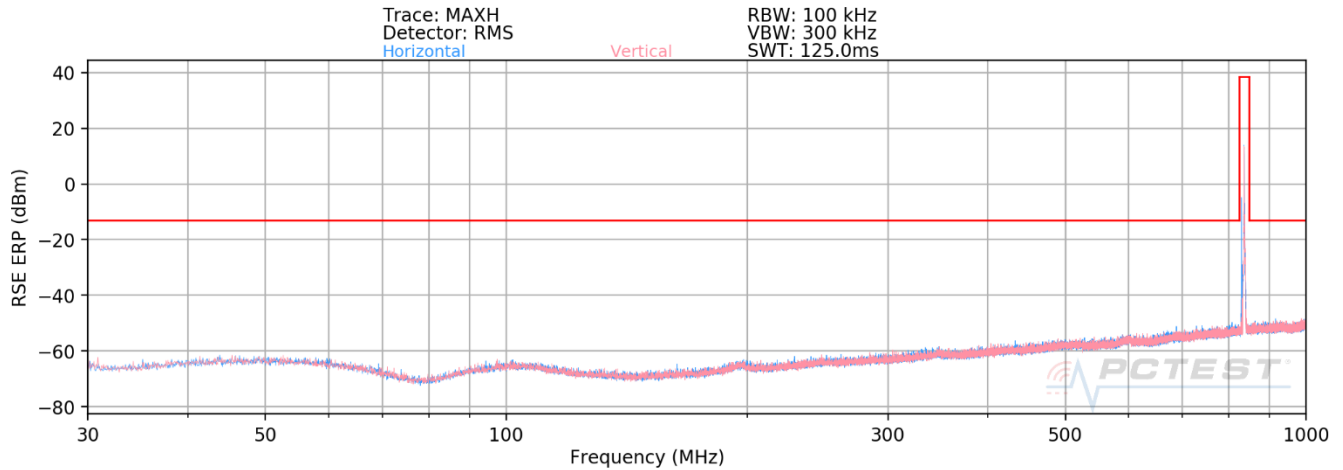
Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
 - a) $E(\text{dB}\mu\text{V/m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - b) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V/m}) + 20\log D - 104.8$; where D is the measurement distance in meters.
- 2) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are reported in GPRS mode while transmitting with one slot active.
- 3) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest powers are reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 4) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst-case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 5) This unit was tested with its standard battery.
- 6) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 7) Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
- 8) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 9) ULCA spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device.
- 10) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.
- 11) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device are subject to the rules under which the NR carrier operates. Spurious emissions caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

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LTE Band 26/5

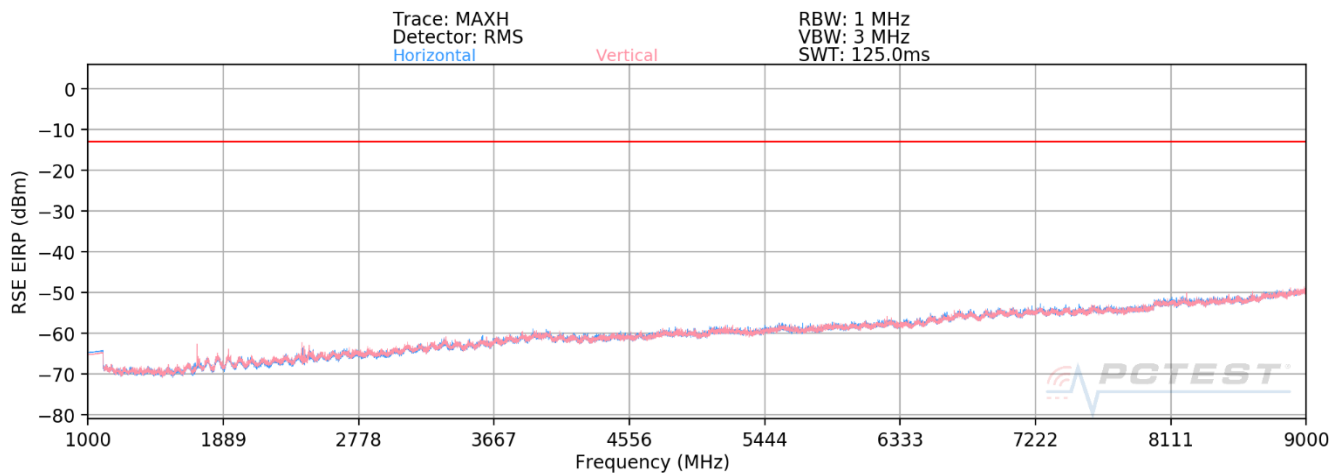


Plot 7-98. Radiated Spurious Plot Below 1GHz (LTE Band 26/5) – CLOSE

Bandwidth (MHz):	10
Frequency (MHz):	836.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
849.83	H	-	-	-93.85	24.43	37.58	-57.68	-13.00	-44.68

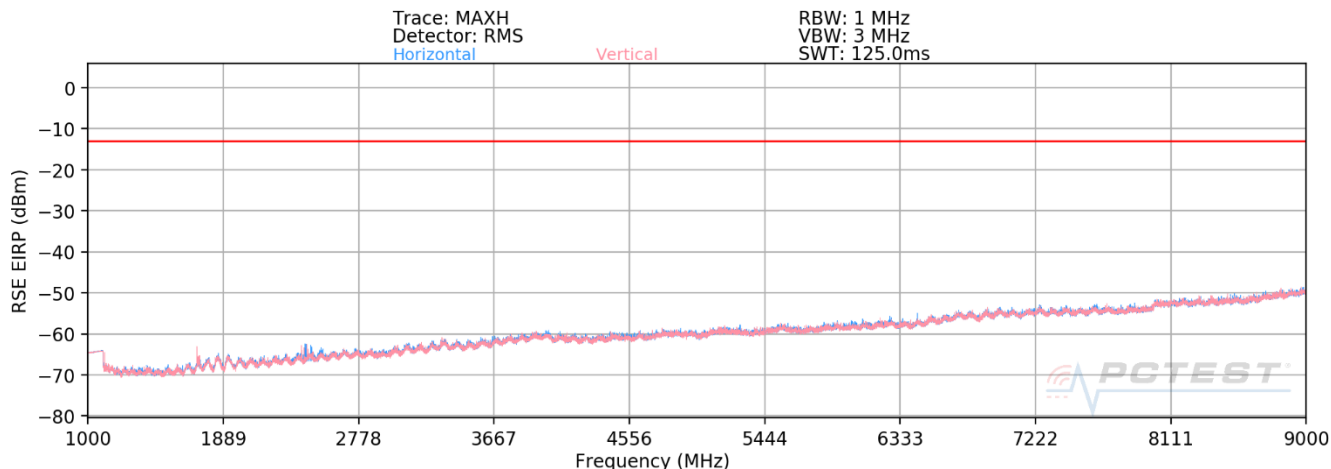
Table 7-10. Radiated Spurious Data (LTE Band 26/5) – CLOSE



Plot 7-99. Radiated Spurious Plot Above 1GHz (LTE Band 26/5) – CLOSE

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Plot 7-100. Radiated Spurious Plot Above 1GHz (LTE Band 26/5) – OPEN

Bandwidth (MHz):	10
Frequency (MHz):	829
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1658.00	V	115	338	-74.11	-6.65	26.24	-69.02	-13.00	-56.02
2487.00	V	-	-	-77.98	-4.07	24.95	-70.31	-13.00	-57.31
3316.00	V	-	-	-78.11	-0.69	28.20	-67.06	-13.00	-54.06
4145.00	V	-	-	-78.95	1.35	29.40	-65.86	-13.00	-52.86

Table 7-11. Radiated Spurious Data (LTE Band 26/5 – Low Channel) – CLOSE

Bandwidth (MHz):	10
Frequency (MHz):	836.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.00	V	132	0	-73.38	-6.93	26.69	-68.57	-13.00	-55.57
2509.50	V	-	-	-76.65	-4.25	26.10	-69.16	-13.00	-56.16
3346.00	V	-	-	-77.98	-0.84	28.18	-67.08	-13.00	-54.08
4182.50	V	-	-	-77.12	0.99	30.87	-64.39	-13.00	-51.39

Table 7-12. Radiated Spurious Data (LTE Band 26/5 – Mid Channel) – CLOSE

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Bandwidth (MHz):	10
Frequency (MHz):	844
RB / Offset:	1 / 25

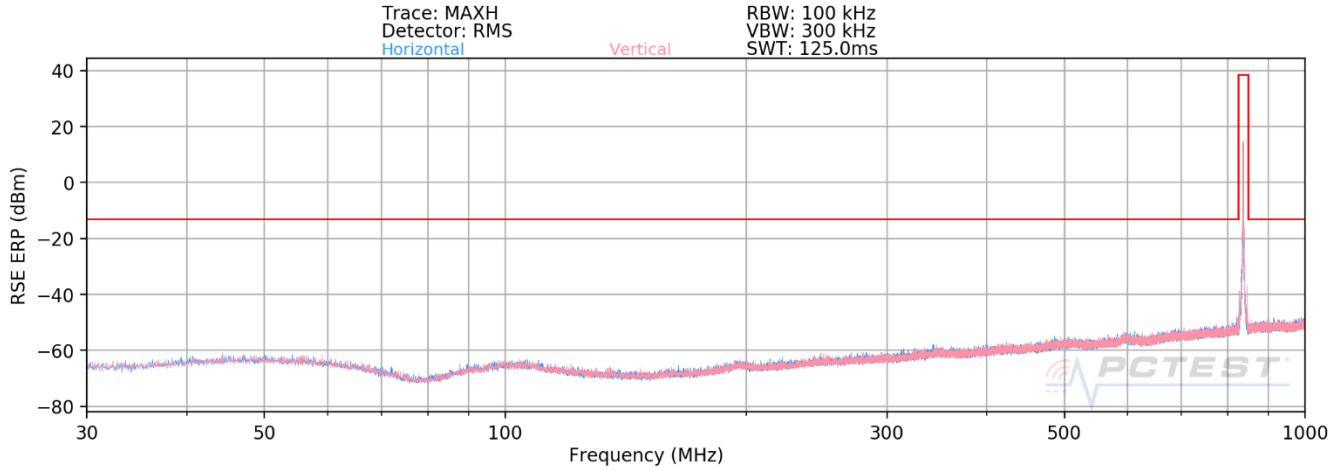
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1688.00	V	128	358	-74.05	-7.35	25.60	-69.66	-13.00	-56.66
2532.00	V	-	-	-77.12	-4.22	25.66	-69.60	-13.00	-56.60
3376.00	V	-	-	-78.28	-0.84	27.88	-67.38	-13.00	-54.38
4220.00	V	-	-	-78.31	0.98	29.67	-65.59	-13.00	-52.59

Table 7-13. Radiated Spurious Data (LTE Band 26/5 – High Channel) – CLOSE

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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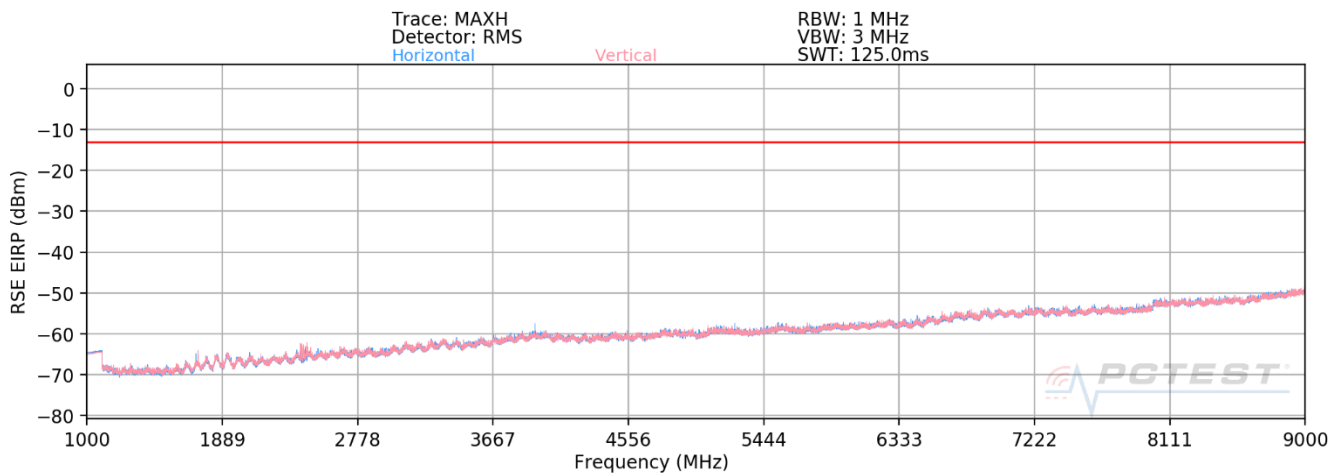


Plot 7-101. Radiated Spurious Plot Below 1GHz (ULCA LTE Band 5) – OPEN

PCC Bandwidth (MHz):	10
PCC Frequency (MHz):	831.5
PCC RB / Offset:	1 / 49
SCC Bandwidth (MHz):	10
SCC Frequency (MHz):	841.4
SCC RB / Offset:	1 / 0

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
850.10	V	-	-	-97.92	24.43	33.51	-61.75	-13.00	-48.75

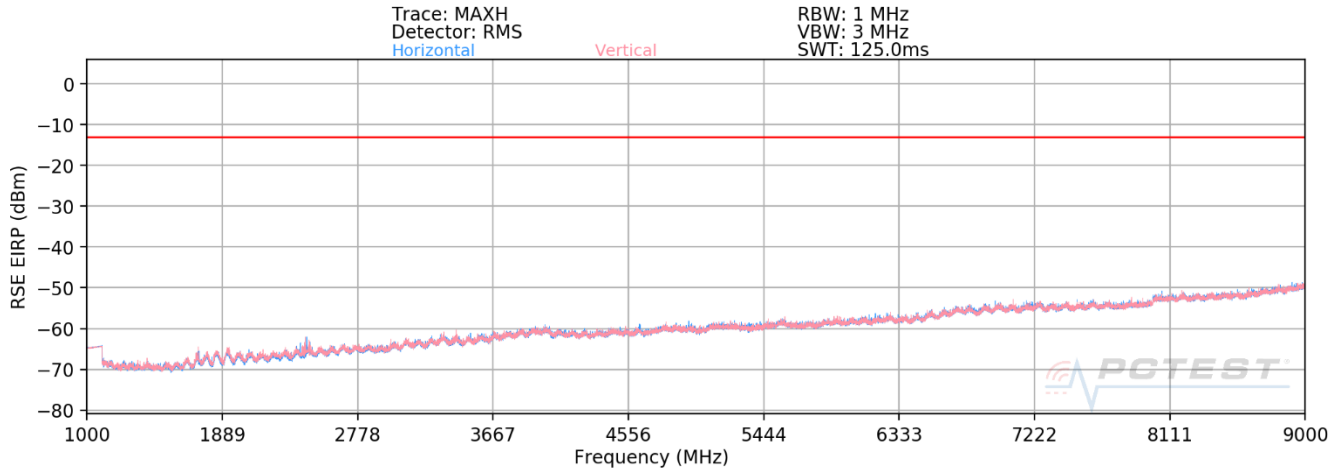
Table 7-14. Radiated Spurious Data (ULCA LTE Band 5) – OPEN



Plot 7-102. Radiated Spurious Plot Above 1GHz (ULCA LTE Band 5) – OPEN

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-103. Radiated Spurious Plot Above 1GHz (ULCA LTE Band 5) – HALF OPEN

PCC Bandwidth (MHz):	10
PCC Frequency (MHz):	829.0
PCC RB / Offset:	1 / 49
SCC Bandwidth (MHz):	10
SCC Frequency (MHz):	838.9
SCC RB / Offset:	1 / 0

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1658.00	H	-	-	-75.99	-6.88	24.13	-71.13	-13.00	-58.13
2487.00	H	-	-	-77.48	-3.82	25.70	-69.56	-13.00	-56.56
3316.00	H	-	-	-77.10	-0.18	29.72	-65.54	-13.00	-52.54

Table 7-15. Radiated Spurious Data (ULCA LTE Band 5 – Low Channel) – OPEN

PCC Bandwidth (MHz):	10
PCC Frequency (MHz):	831.5
PCC RB / Offset:	1 / 49
SCC Bandwidth (MHz):	10
SCC Frequency (MHz):	841.4
SCC RB / Offset:	1 / 0

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1663.00	H	-	-	-76.78	-6.75	23.47	-71.79	-13.00	-58.79
2494.50	H	-	-	-77.76	-3.86	25.38	-69.87	-13.00	-56.87
3326.00	H	-	-	-77.24	-0.23	29.53	-65.73	-13.00	-52.73

Table 7-16. Radiated Spurious Data (ULCA LTE Band 5 – Mid Channel) – OPEN

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT			Approved by: Technical Manager
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PCC Bandwidth (MHz):	10
PCC Frequency (MHz):	844.0
PCC RB / Offset:	1 / 0
SCC Bandwidth (MHz):	10
SCC Frequency (MHz):	834.1
SCC RB / Offset:	1 / 49

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1688.00	H	-	-	-76.58	-7.41	23.01	-72.25	-13.00	-59.25
2532.00	H	-	-	-76.48	-3.98	26.54	-68.72	-13.00	-55.72
3376.00	H	-	-	-76.97	-0.49	29.54	-65.71	-13.00	-52.71

Table 7-17. Radiated Spurious Data (ULCA LTE Band 5 – High Channel) – OPEN

FCC ID: A3LSMF721U	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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