

8 FCC Part 2.1049(c)(1): Occupied Bandwidth; Part 90.210 Authorized Bandwidth; Part 74.462: Authorized Bandwidth and Emissions; Part 80.205: Bandwidths; §80.211: Emission Limitations; ISED RSS-119 5.5: Channel Bandwidth, Authorized Bandwidth, Occupied Bandwidth and Spectrum Masks

Occupied Bandwidth - Compliance with the Emission Masks

8.1 Test Procedure

ANSI C63.26-2015, section 5.4

Device with digital modulation: Modulated to its maximum extent using a pseudo-random data sequence.

Part 90.210 Authorized Bandwidth

Applicable Emission Masks		
Frequency Band (MHz)	Mask for Equipment With Audio Low Pass Filter	Mask for Equipment Without Audio Low Pass Filter
Below 25 ¹	A or B.....	A or C
25–50.....	B.....	C
72–76.....	B.....	C
150–174 ²	B, D, or E.....	C, D, or E
150 Paging-only	B.....	C
220–222	F.....	F
421–512 ²	B, D, or E.....	C, D, or E
450 Paging-only	B.....	G
806–809/851–854	B.....	H
809–824/854–869 ^{3 5}	B.....	G
896–901/935–940	I.....	J
902–928	K.....	K
929–930	B.....	G
4940–4990 MHz	L or M.....	L or M
5850–5925 ⁴		
All other bands	B.....	C

¹ Equipment using single sideband J3E emission must meet the requirements of Emission Mask A. Equipment using other emissions must meet the requirements of Emission Mask B or C, as applicable.

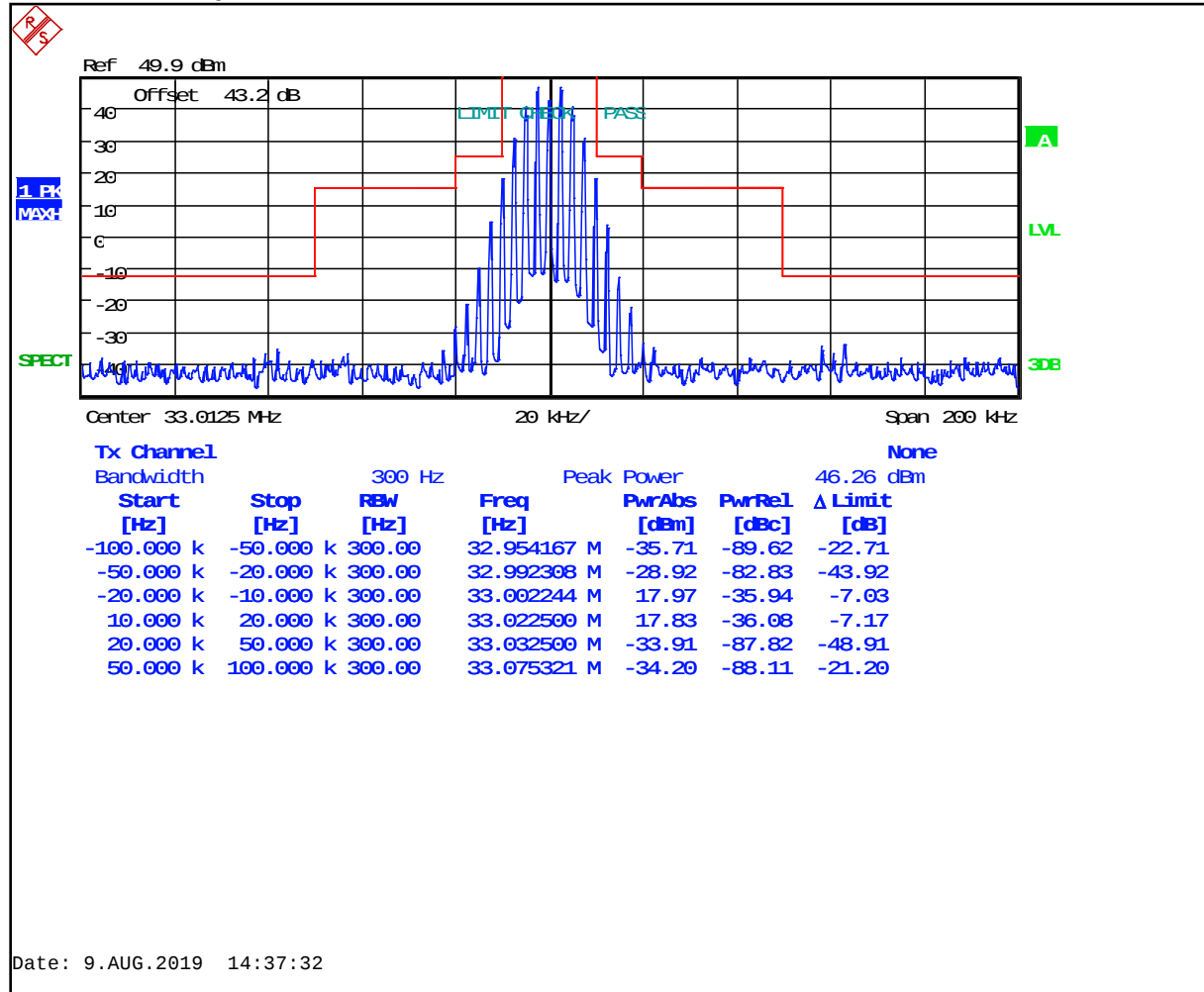
² Equipment designed to operate with a 25 kHz channel bandwidth must meet the requirements of Emission Mask B or C, as applicable. Equipment designed to operate with a 12.5 kHz channel bandwidth must meet the requirements of Emission Mask D, and equipment designed to operate with a 6.25 kHz channel bandwidth must meet the requirements of Emission Mask E.

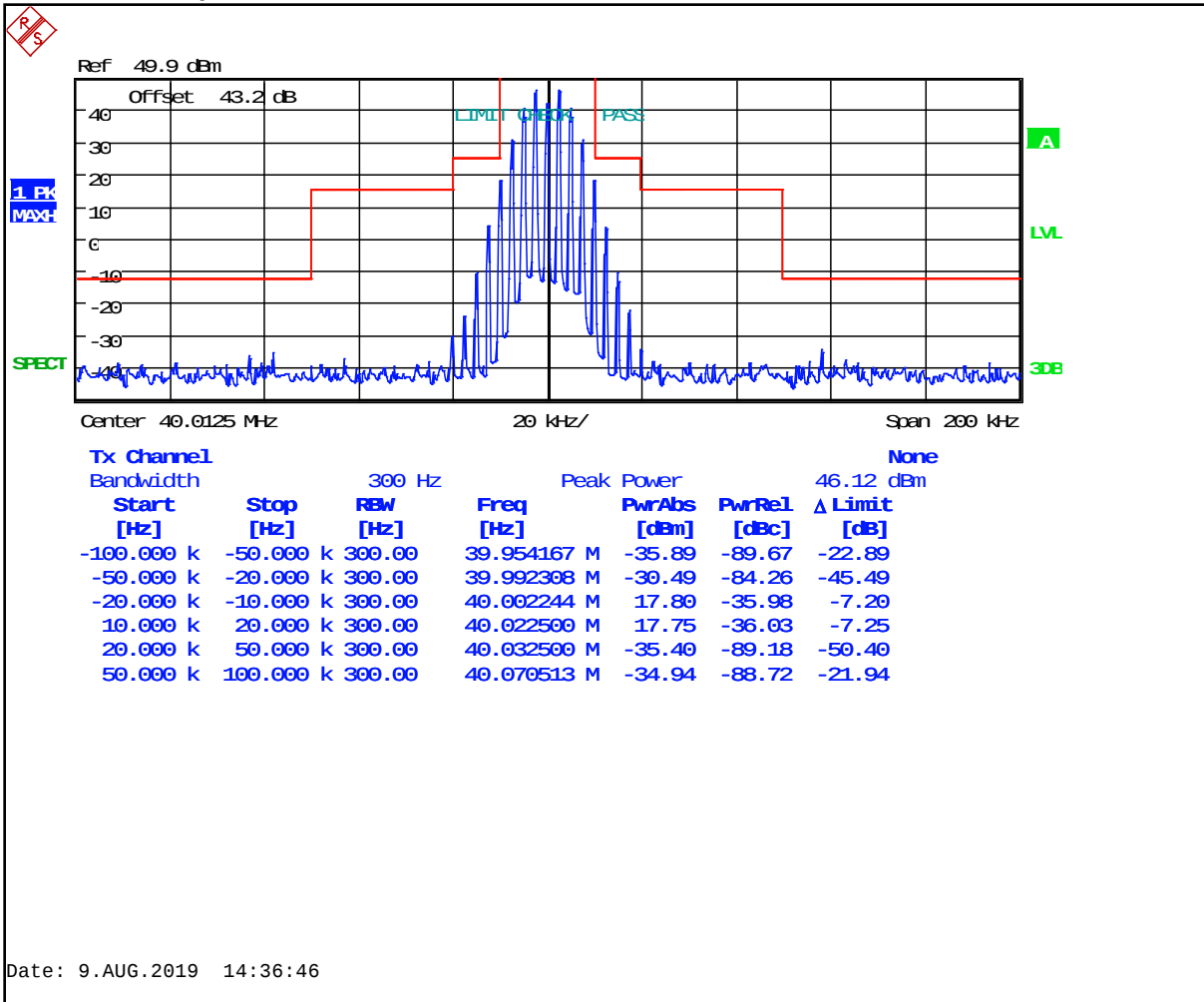
³ Equipment used in this licensed to EA or non-EA systems shall comply with the emission mask provisions of §90.691.

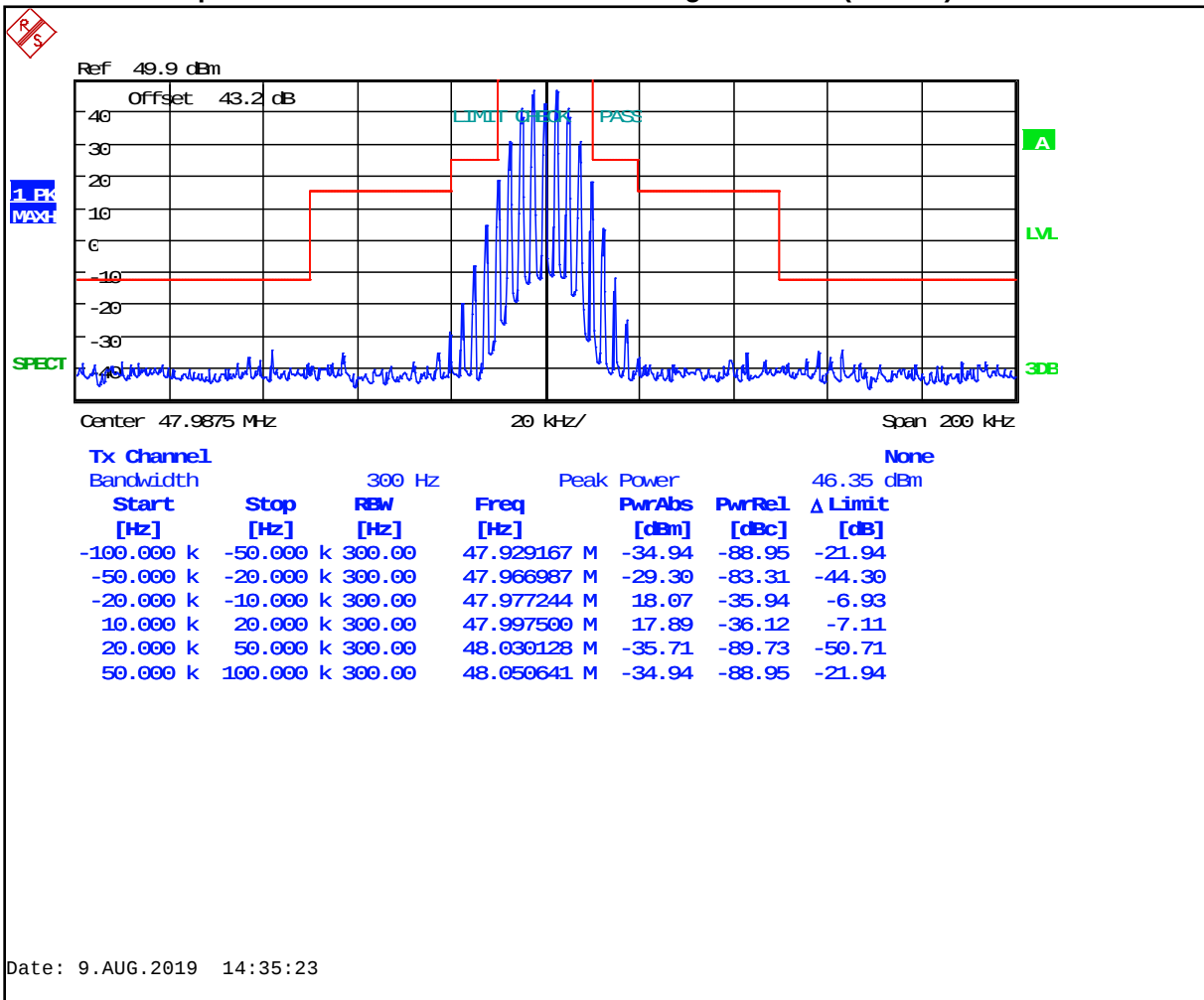
⁴ DSRCS Roadside Unit equipment in the 5850–5925 MHz band is governed under subpart M of this part.

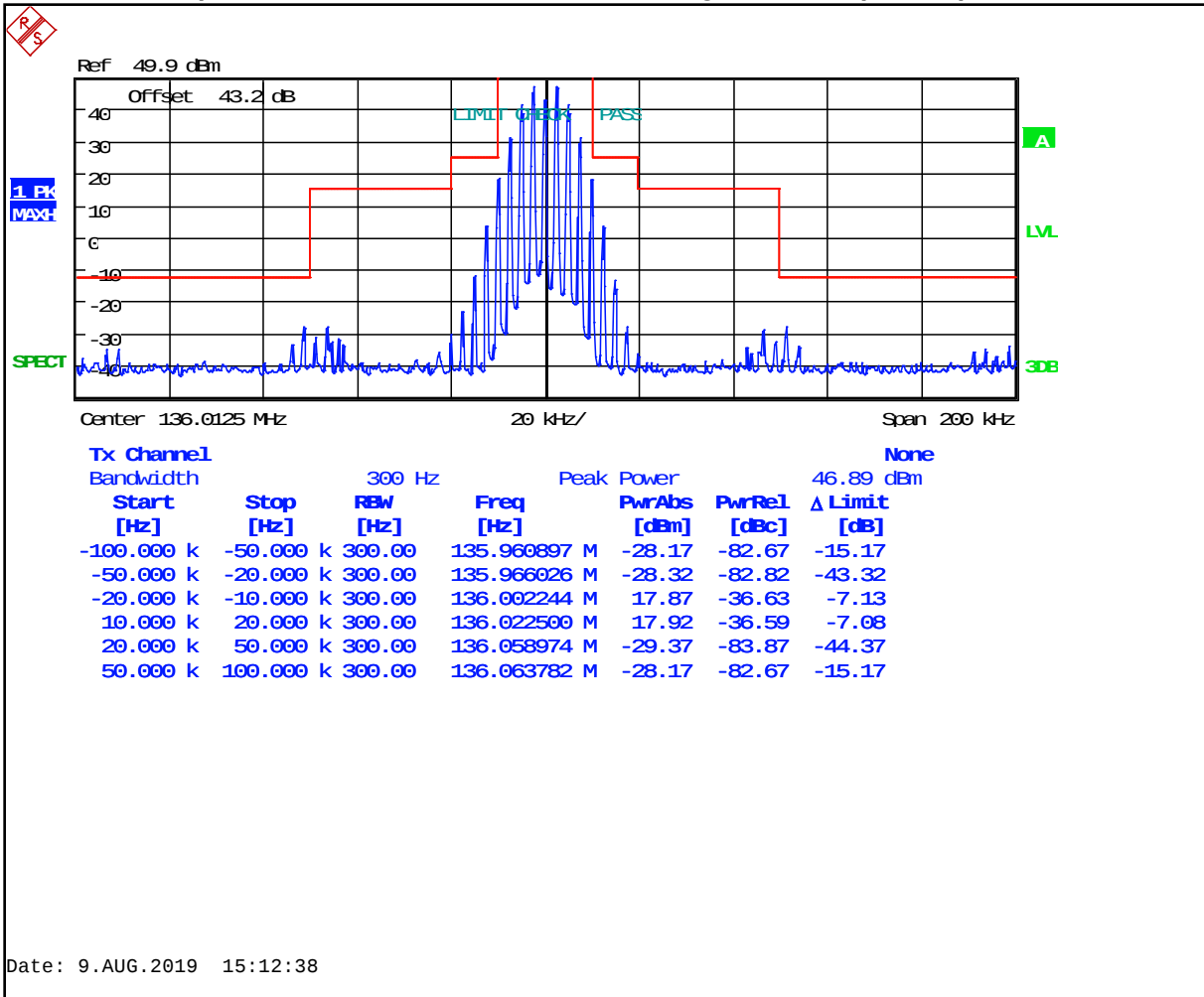
⁵ Equipment may alternatively meet the Adjacent Channel Power limits of §90.221.

Applicable IC Emission Masks					
Frequency Band (MHz)	Related SRSP for Channeling Plan and ERP	Channel Bandwidth (kHz)	Authorized Bandwidth (kHz)	Masks for Equipment With Audio Filter	Masks for Equipment Without Audio Filter
138-144, 148-149.9, 150.05-174	SRSP-500	30	20	B	C
		15	11.25	D	D
		7.5	6	E	E
406.1-430, 450-470	SRSP-501	25	20 22	B Y	C (G for paging systems) Y
		12.5	11.25	D	D
		6.25	6	E	E
806-821/851-866, 821-824/866-869	SRSP-502	25	20 22	B Y	G Y
		12.5	11.25	D	D
		6.25	6	E	E

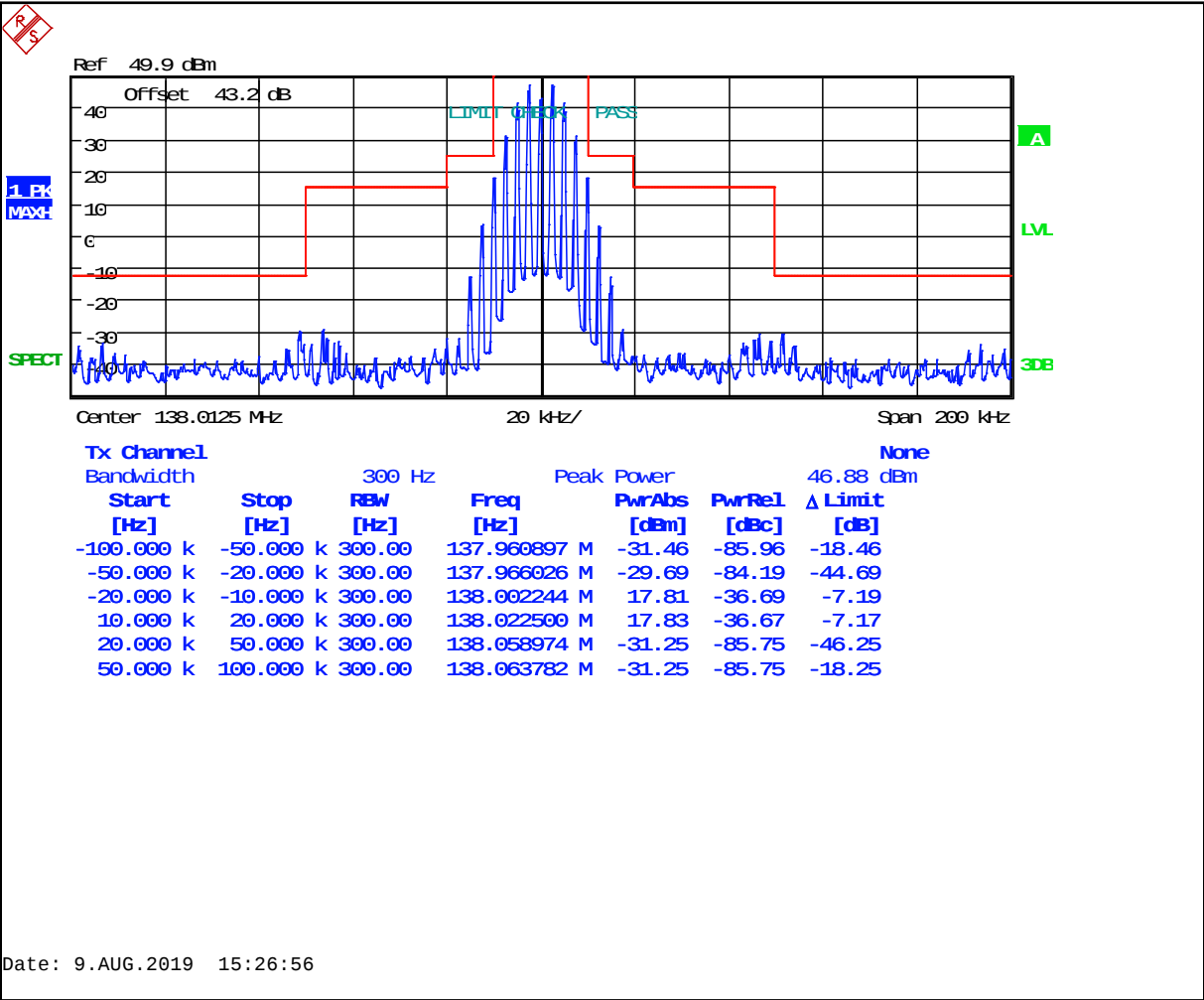




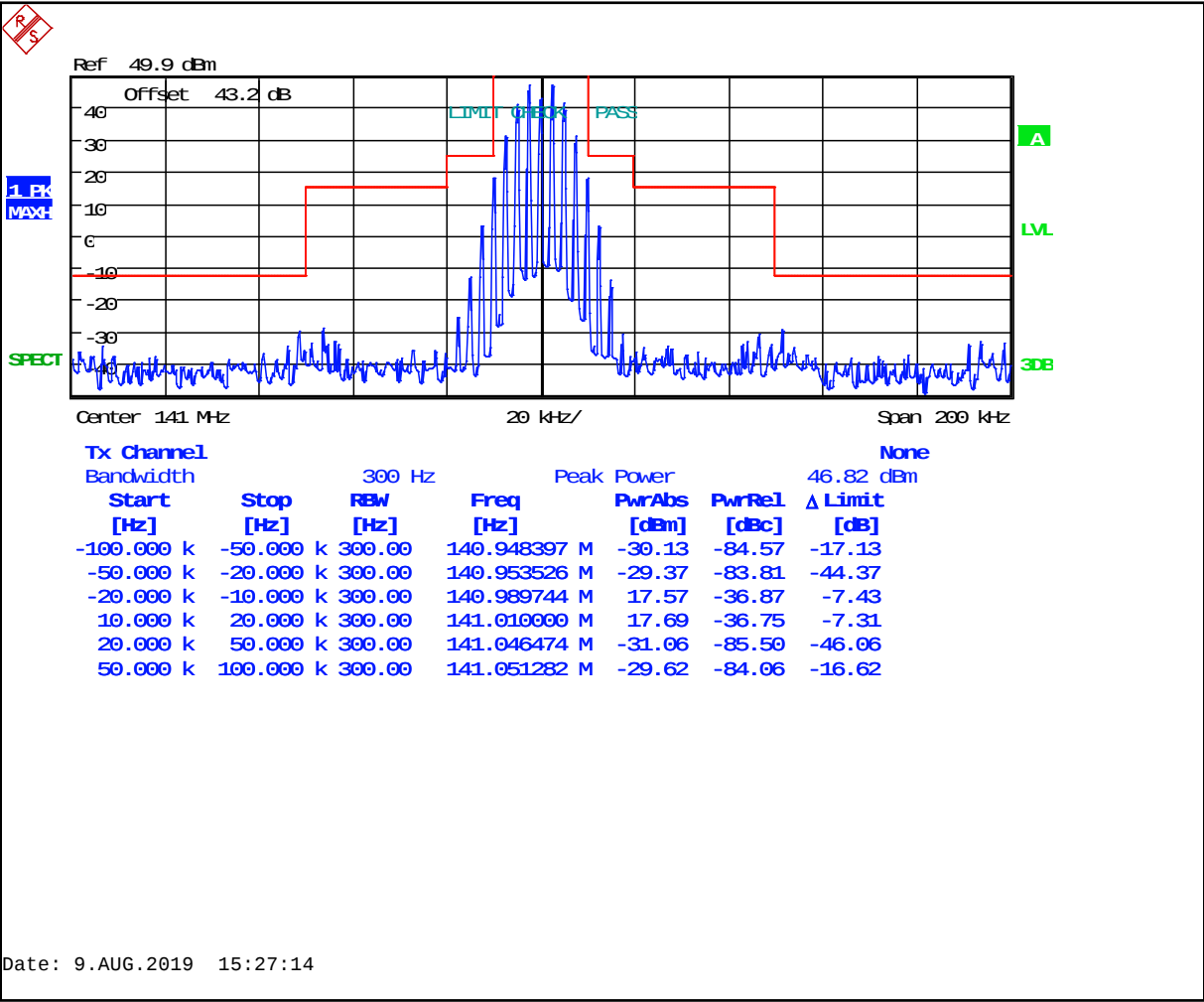




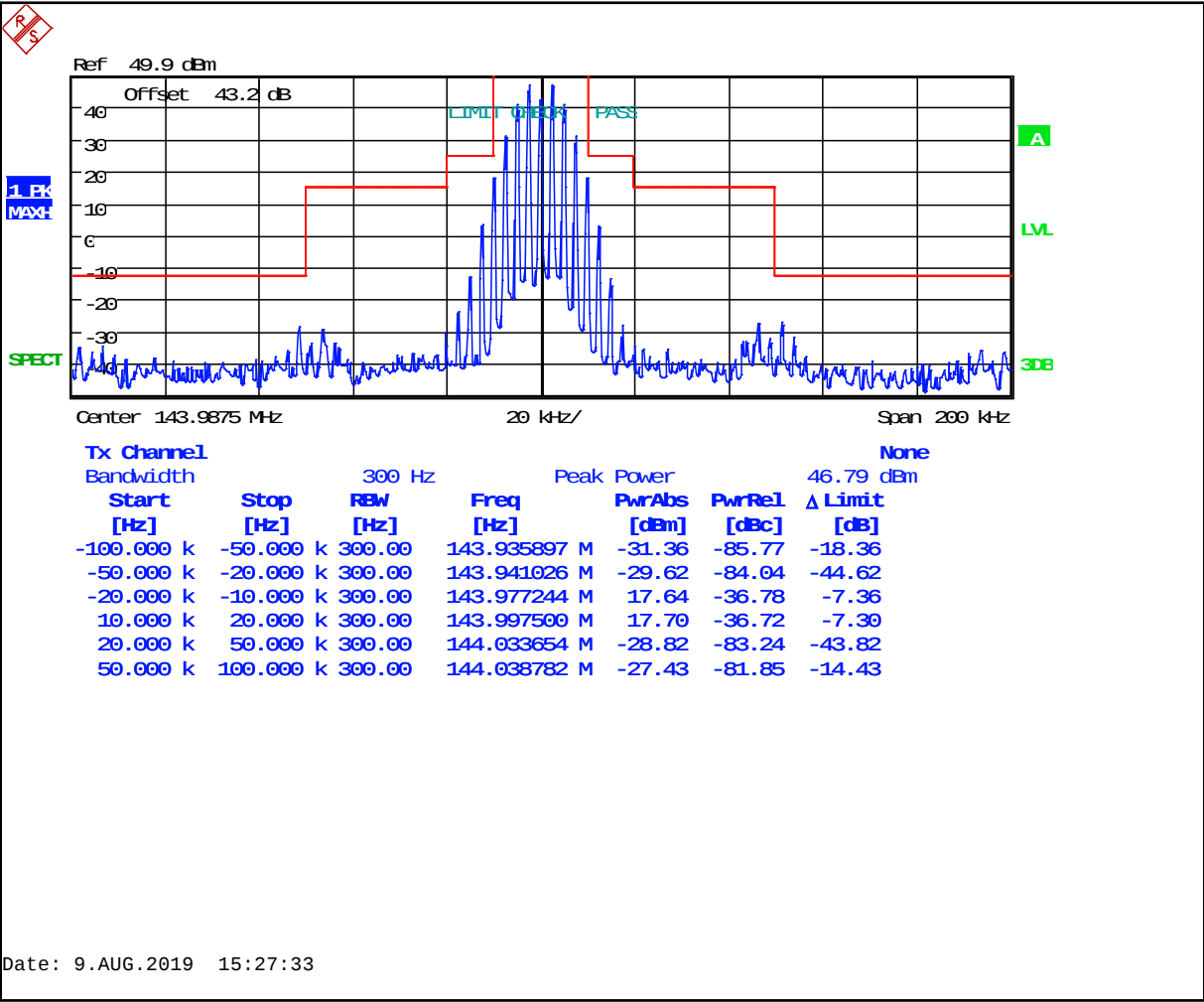
Plot 8-5: Occupied Bandwidth – 138.0125 MHz – Analog Wideband (Mask B)



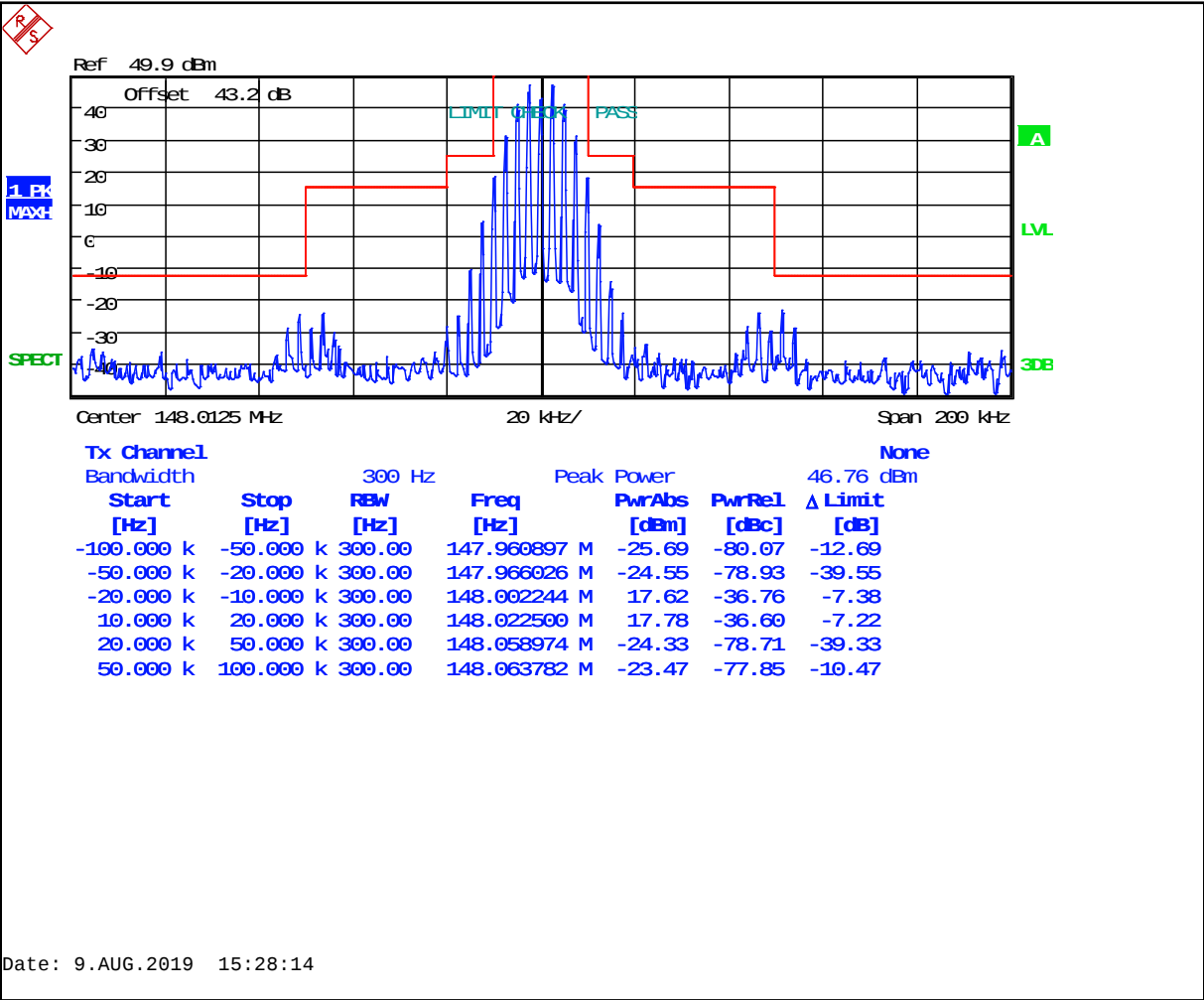
Plot 8-6: Occupied Bandwidth – 141.0000 MHz – Analog Wideband (Mask B)

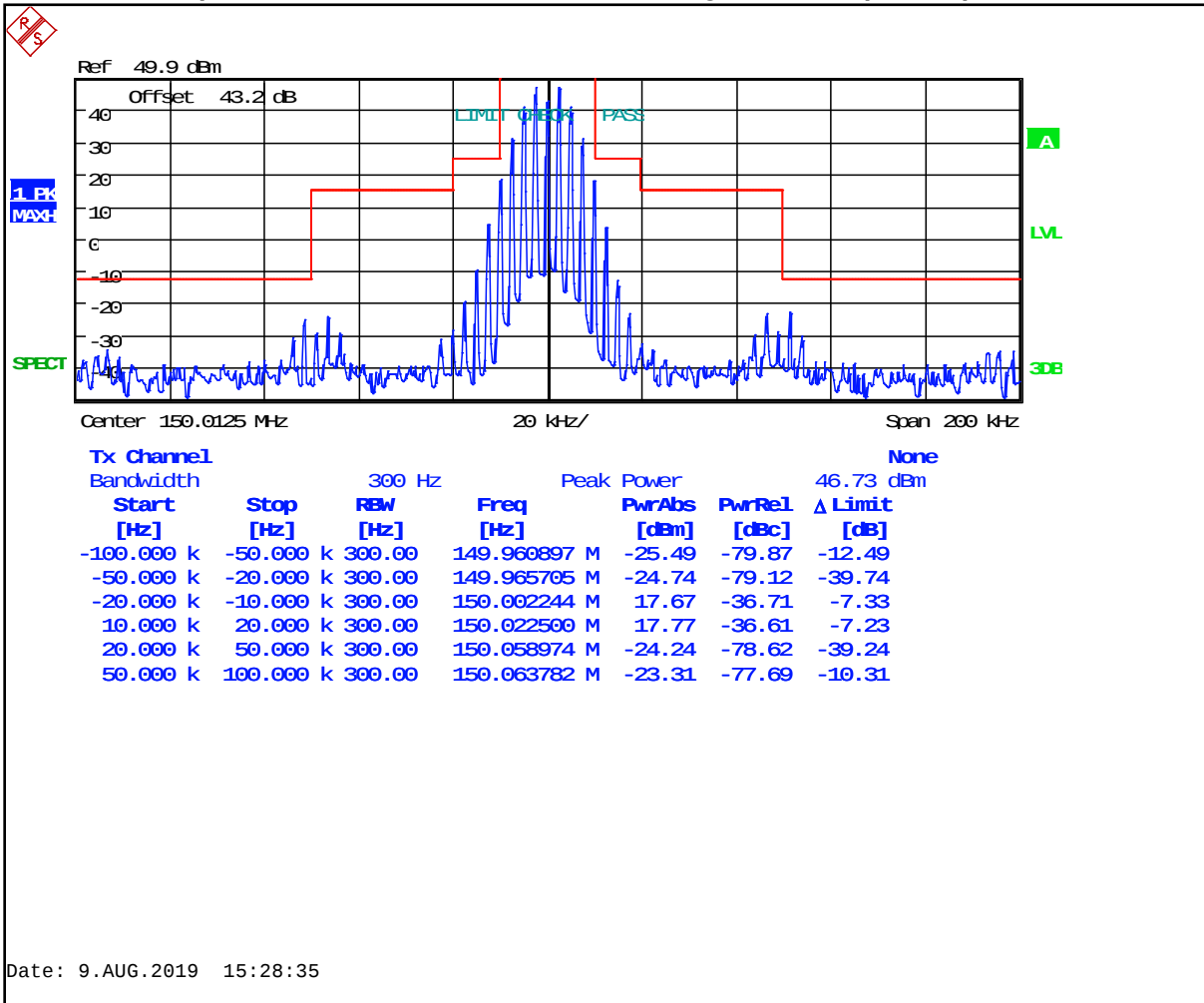


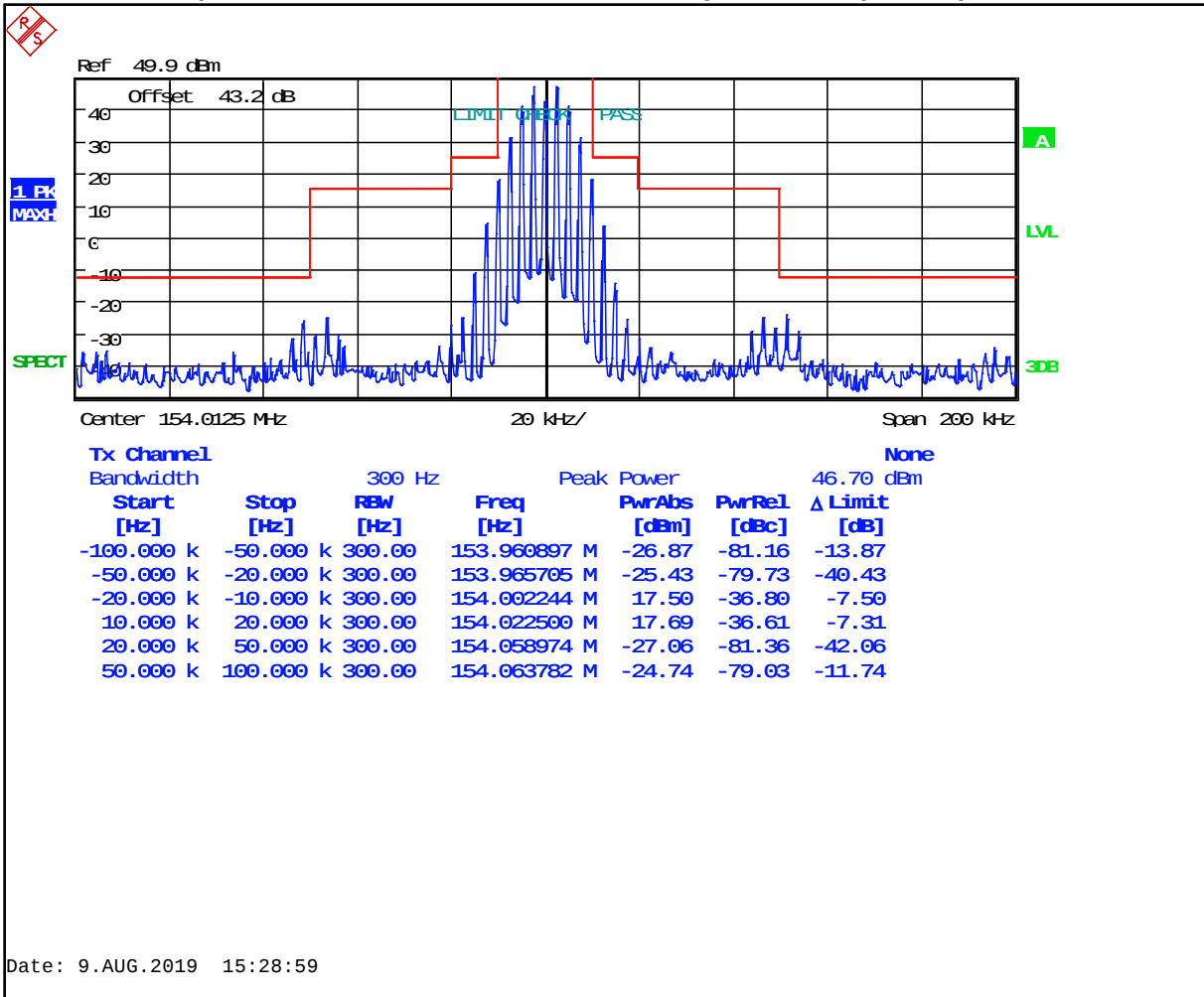
Plot 8-7: Occupied Bandwidth – 143.9875 MHz – Analog Wideband (Mask B)



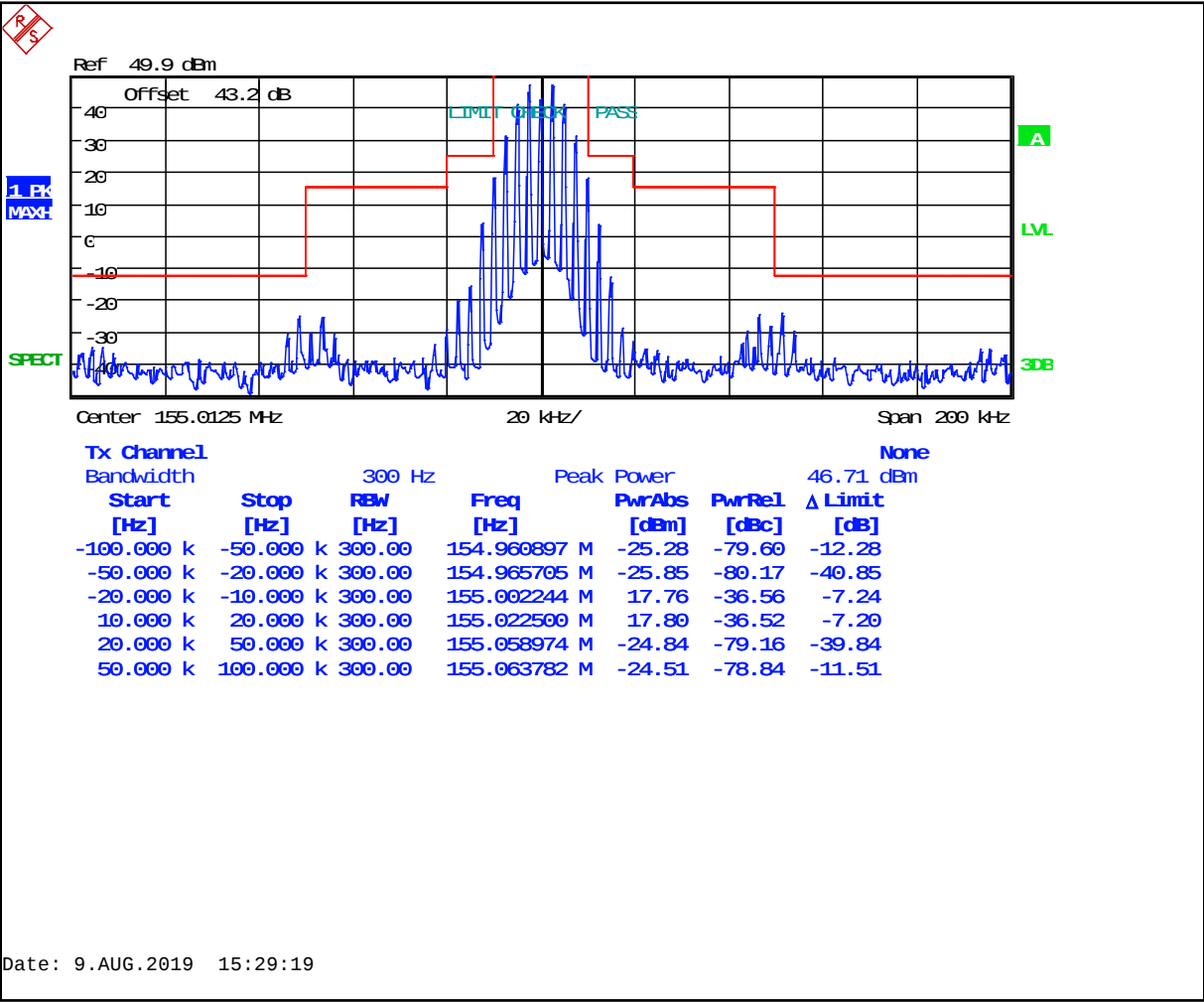
Plot 8-8: Occupied Bandwidth – 148.0125 MHz – Analog Wideband (Mask B)

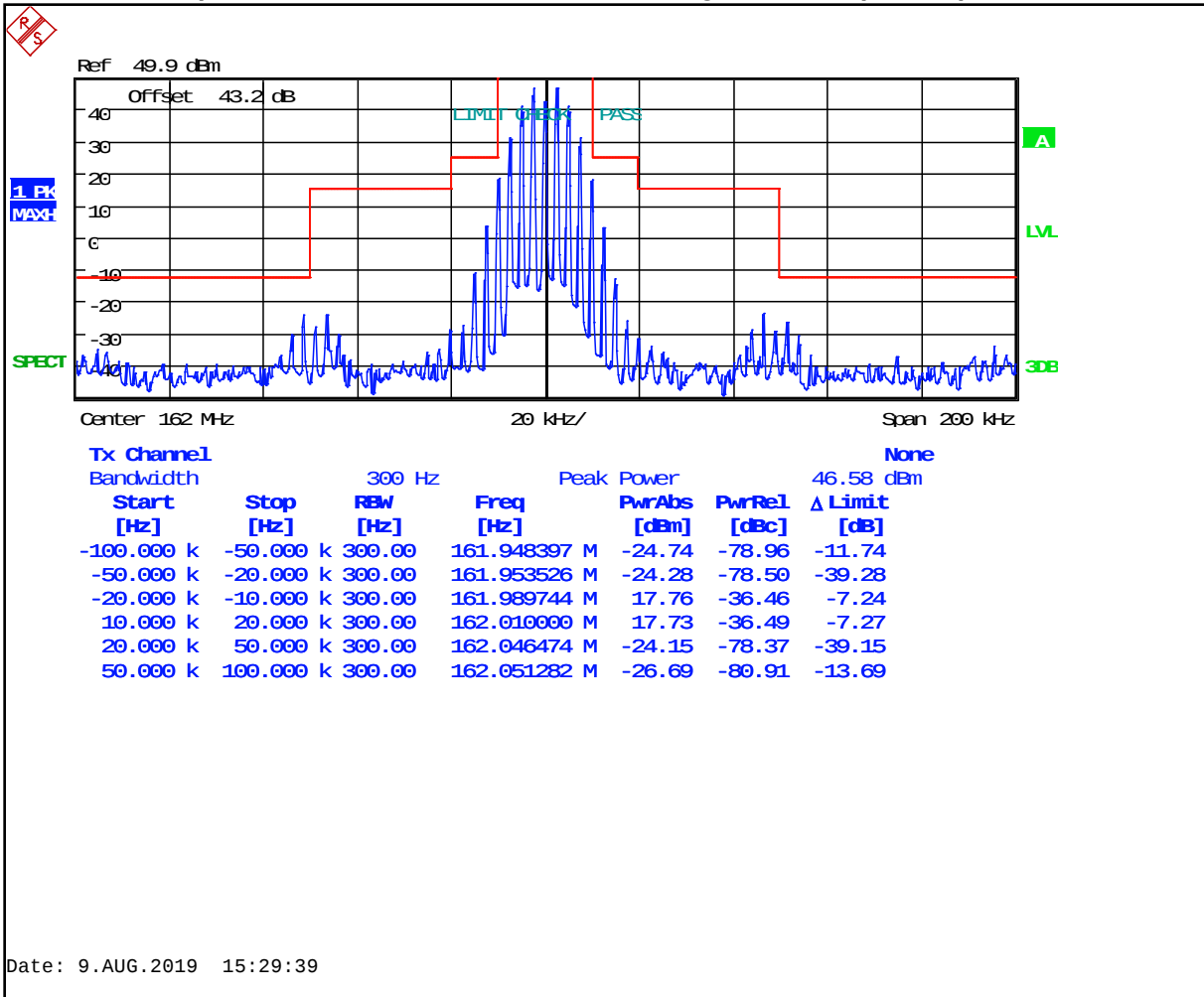




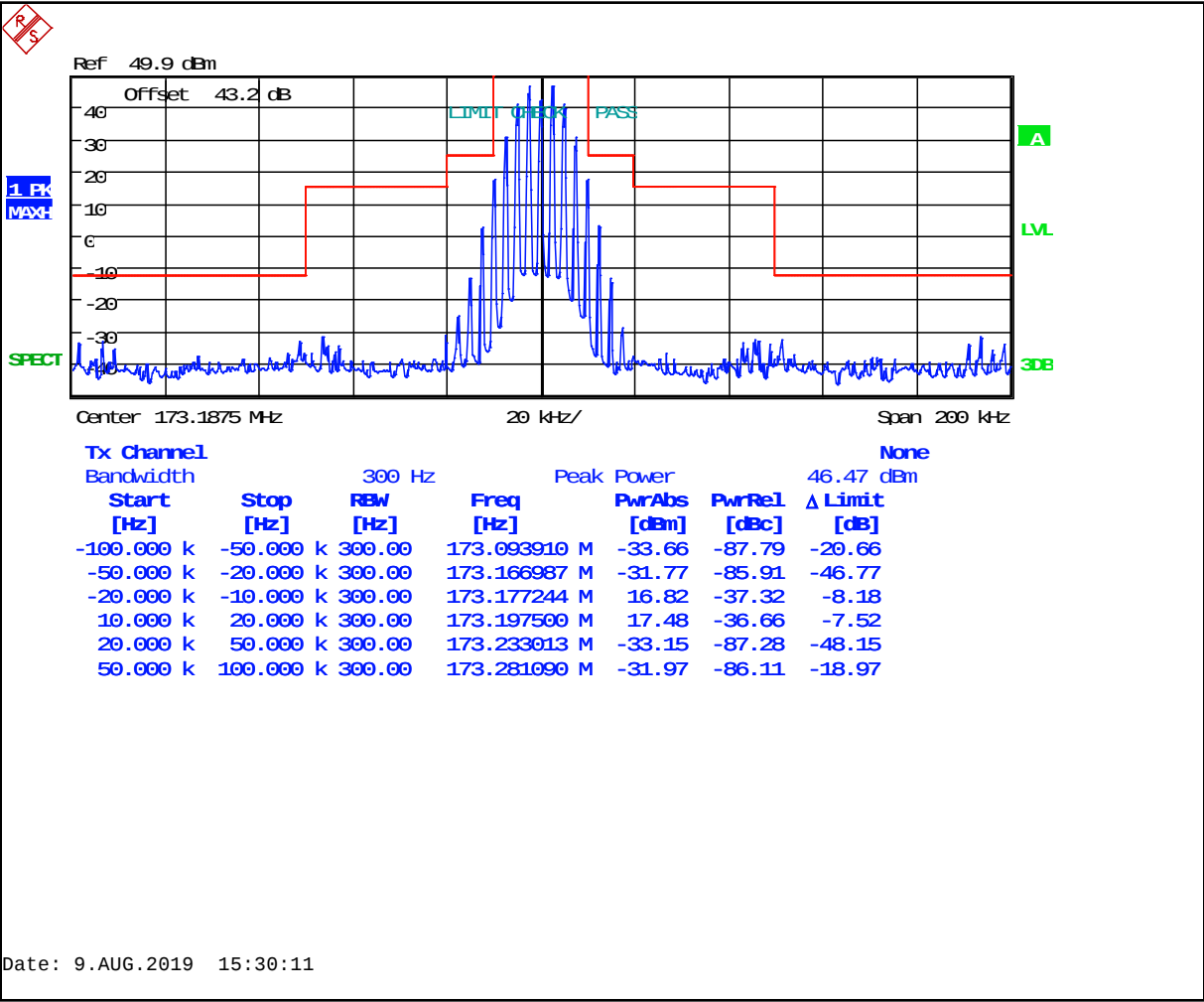


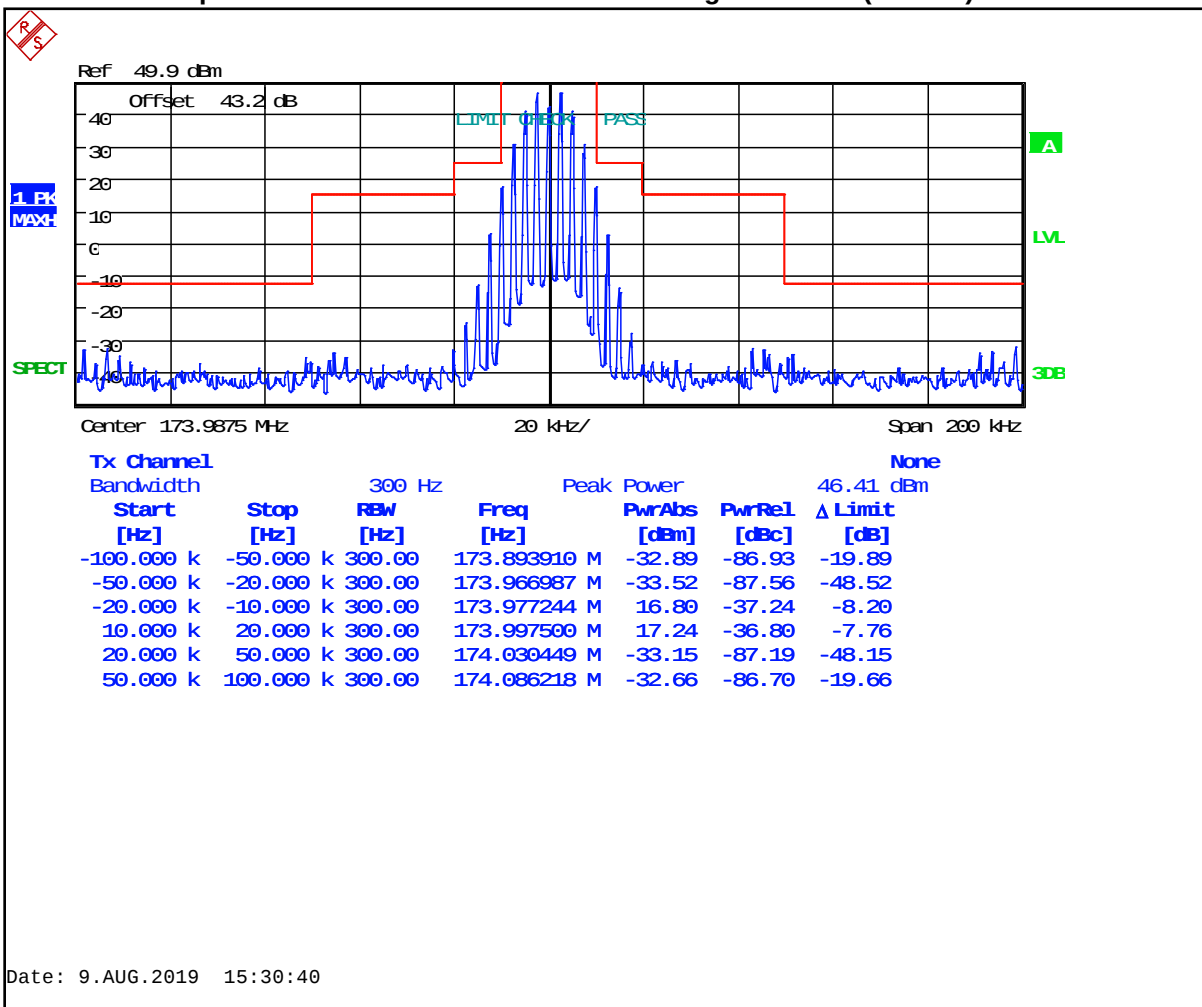
Plot 8-11: Occupied Bandwidth – 155.0125 MHz – Analog Wideband (Mask B)

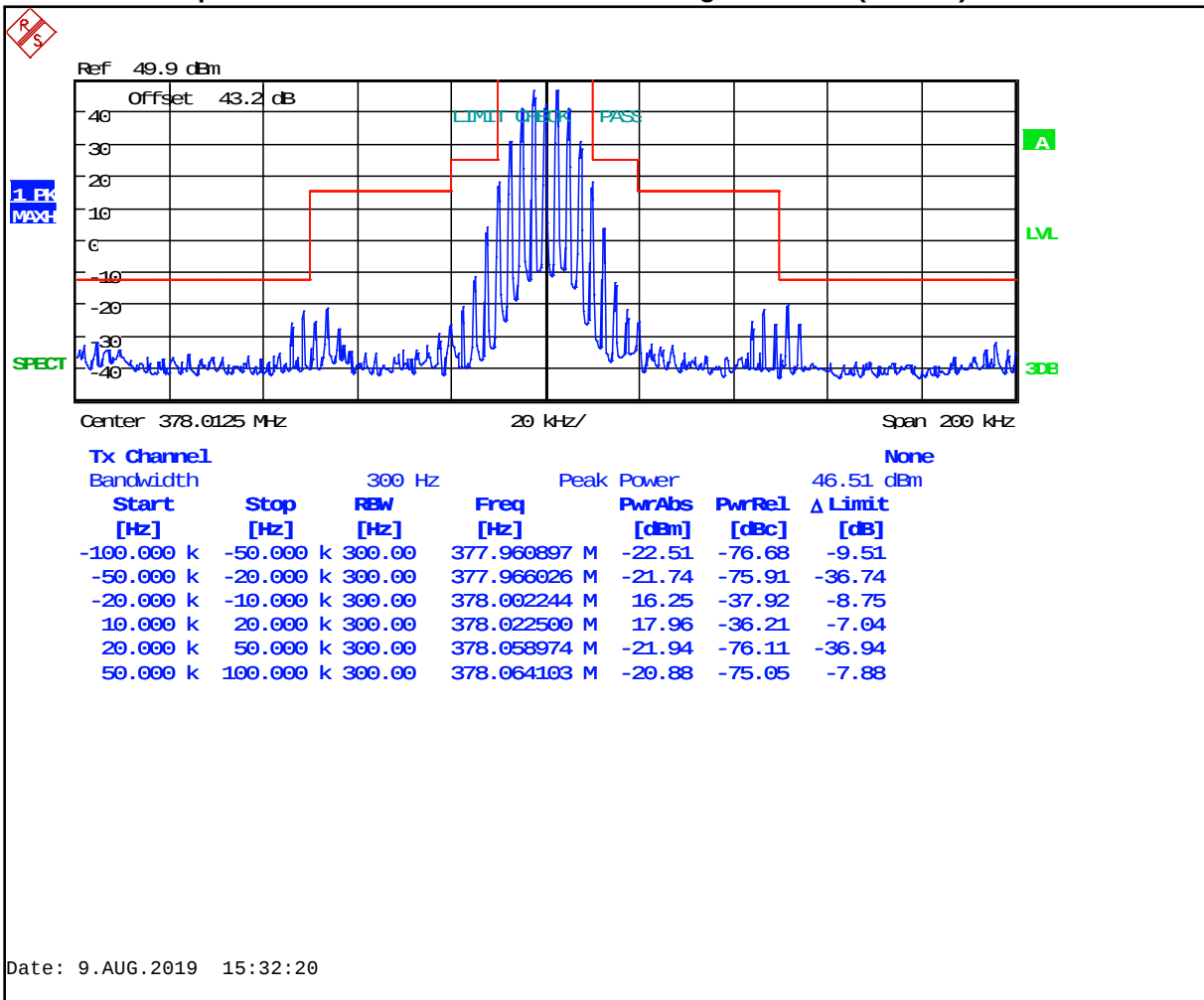


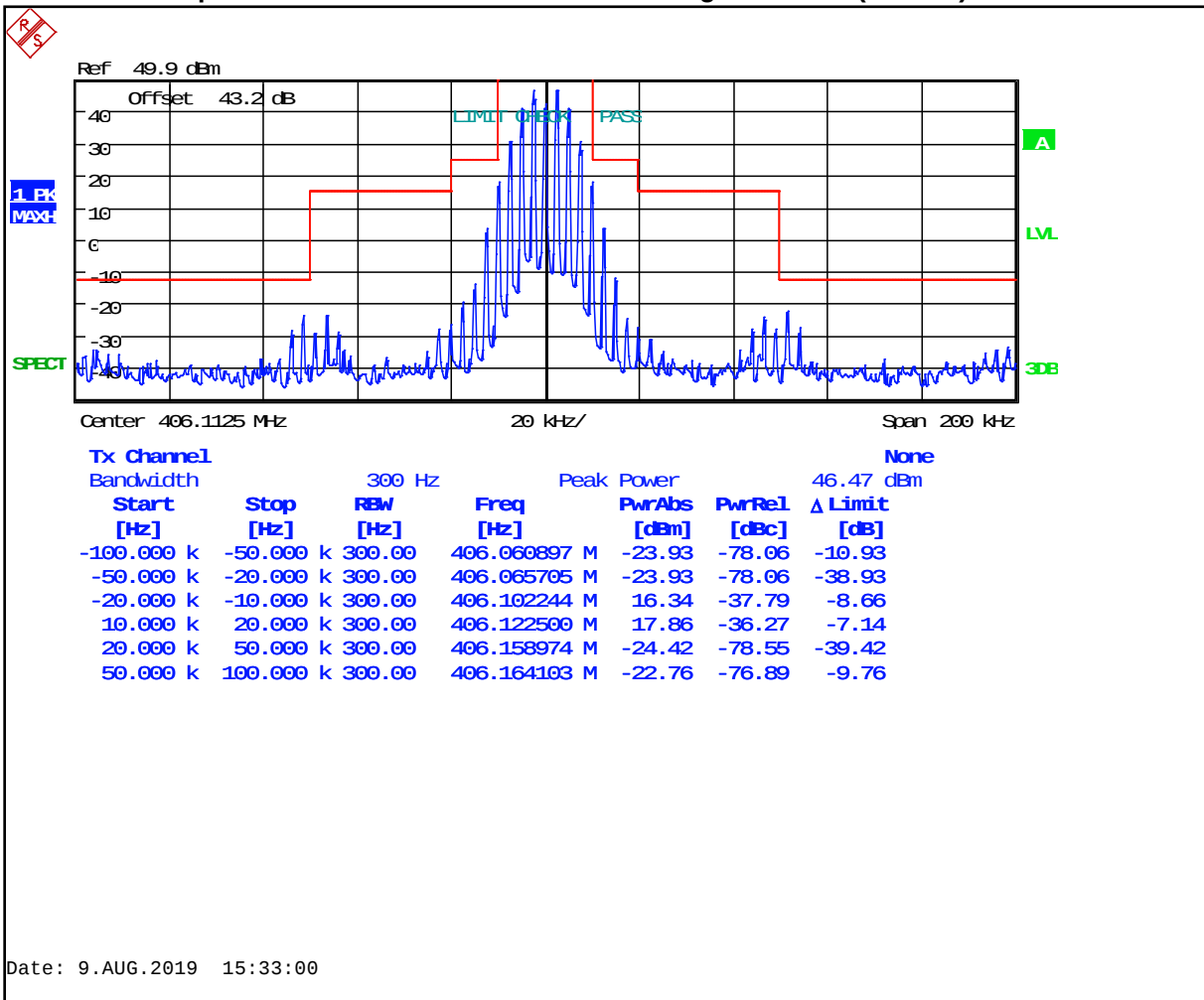


Plot 8-13: Occupied Bandwidth – 173.1875 MHz – Analog Wideband (Mask B)

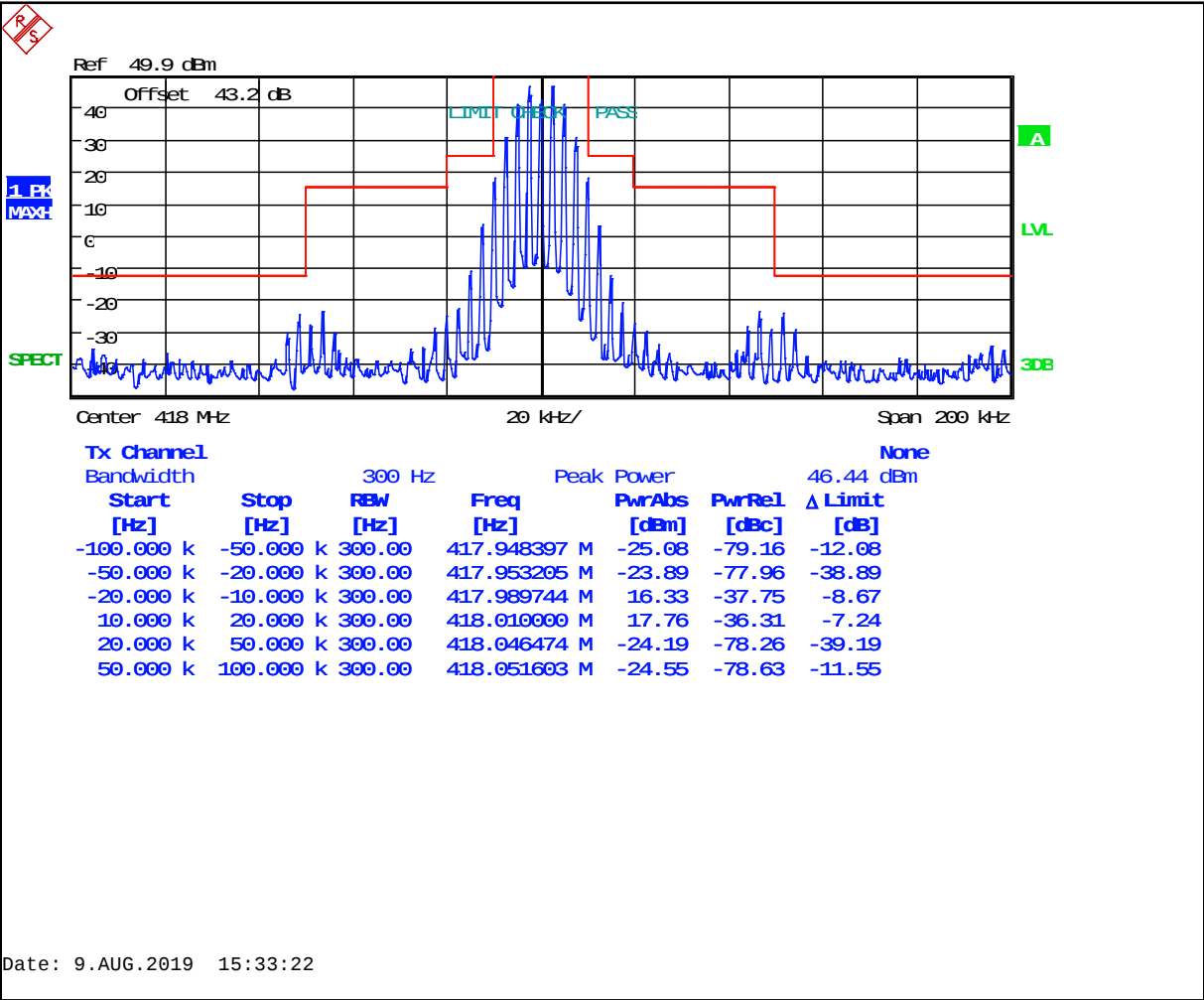




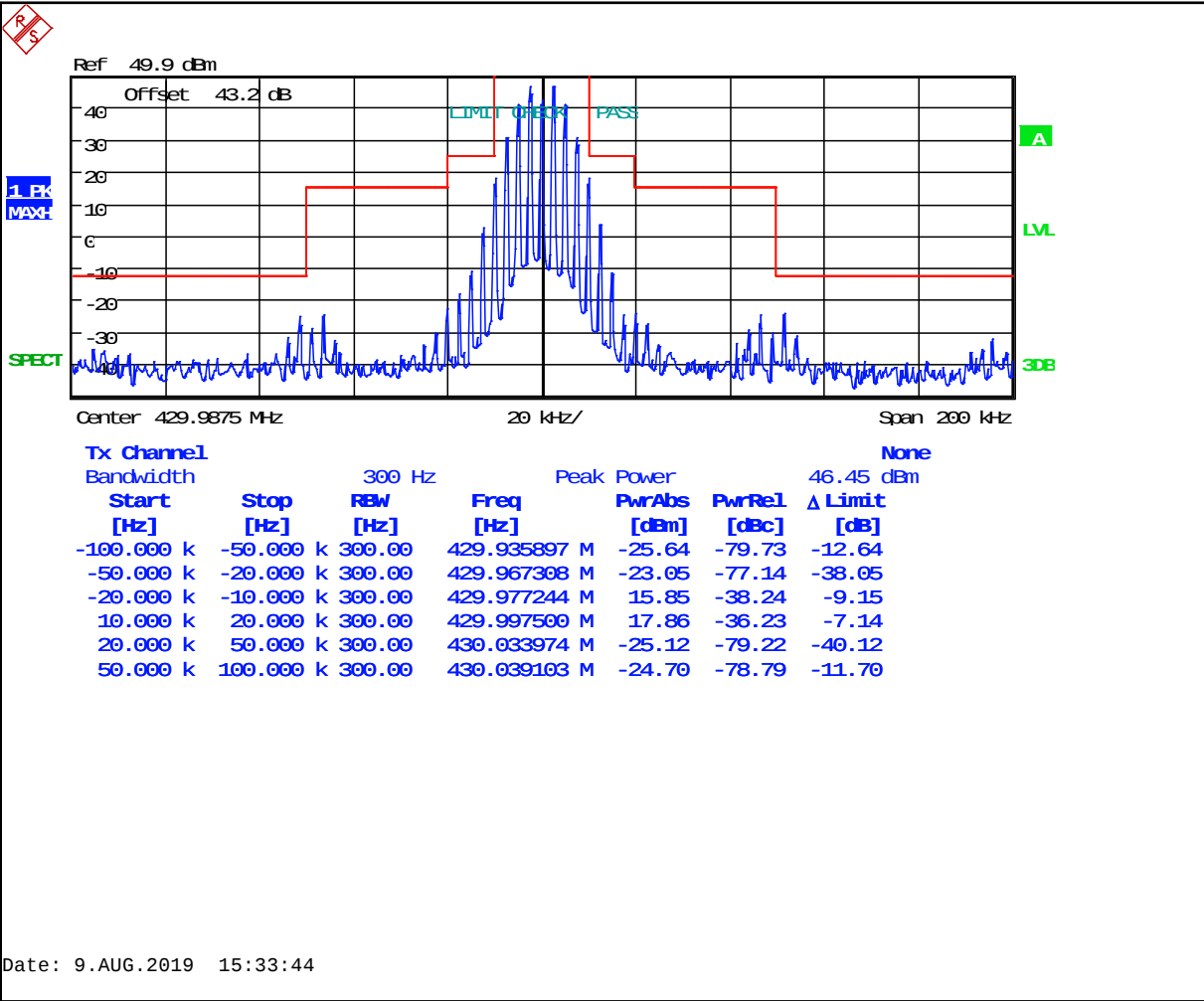




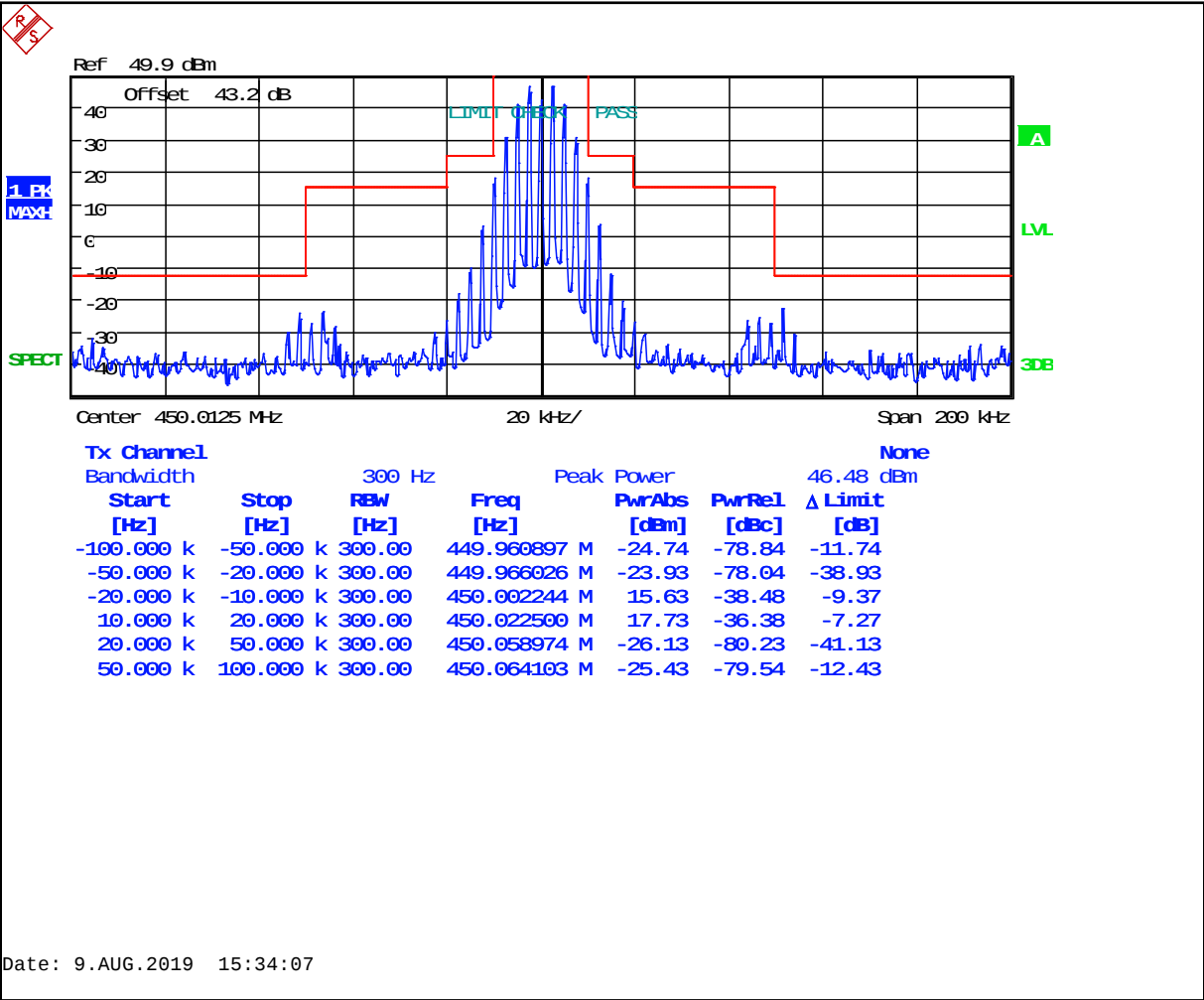
Plot 8-17: Occupied Bandwidth – 418.0000 MHz – Analog Wideband (Mask B)



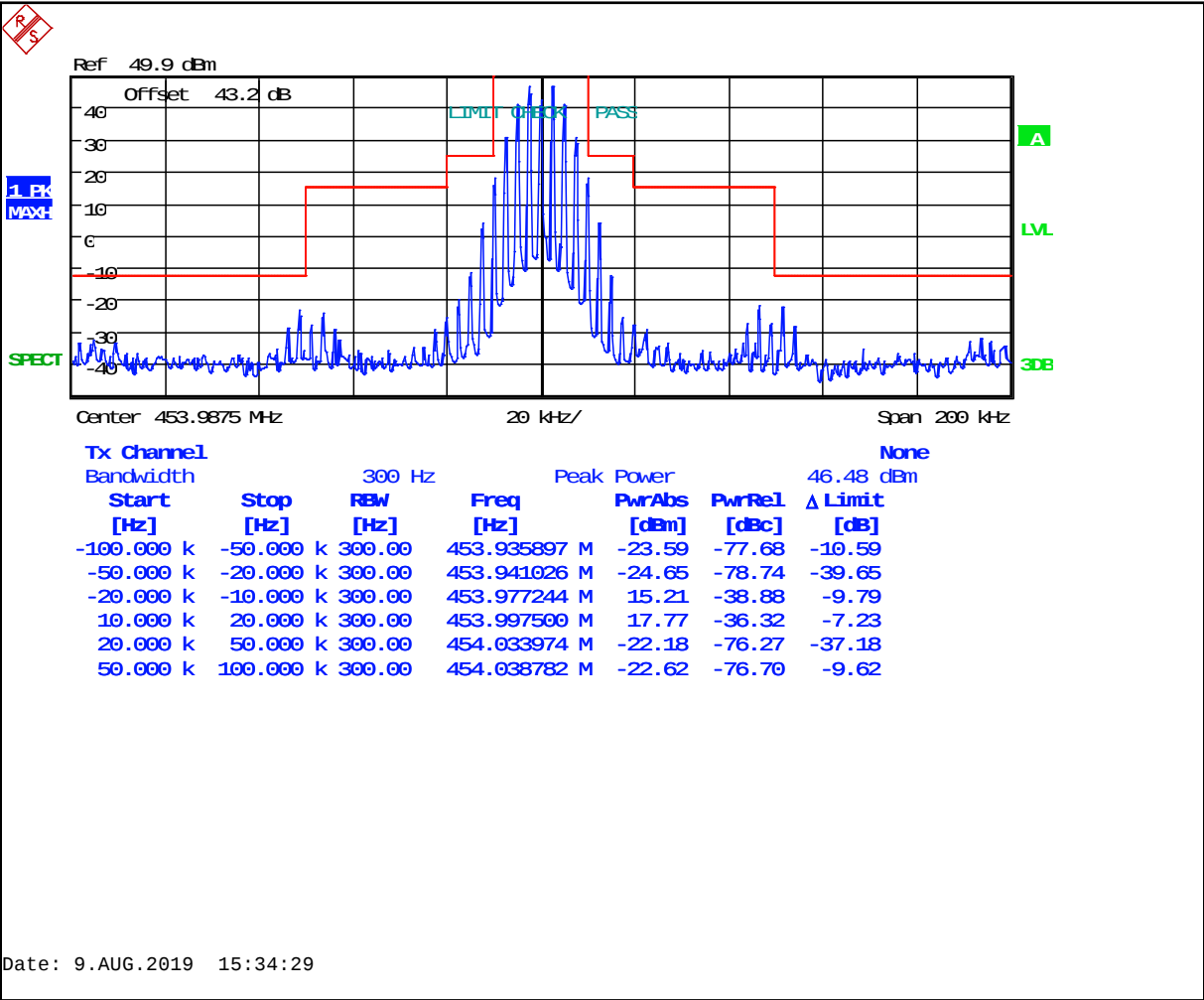
Plot 8-18: Occupied Bandwidth – 429.9875 MHz – Analog Wideband (Mask B)



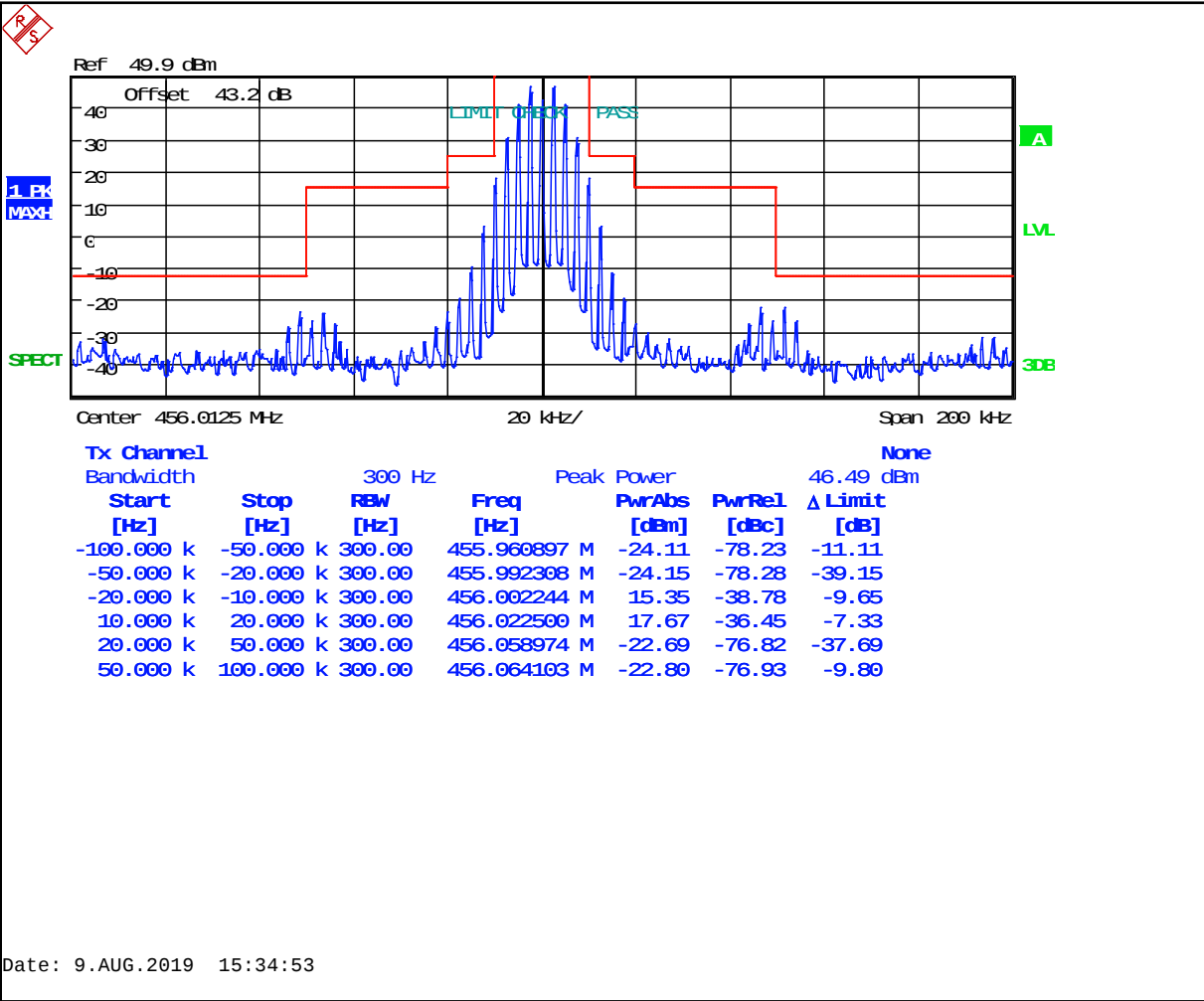
Plot 8-19: Occupied Bandwidth – 450.0125 MHz – Analog Wideband (Mask B)

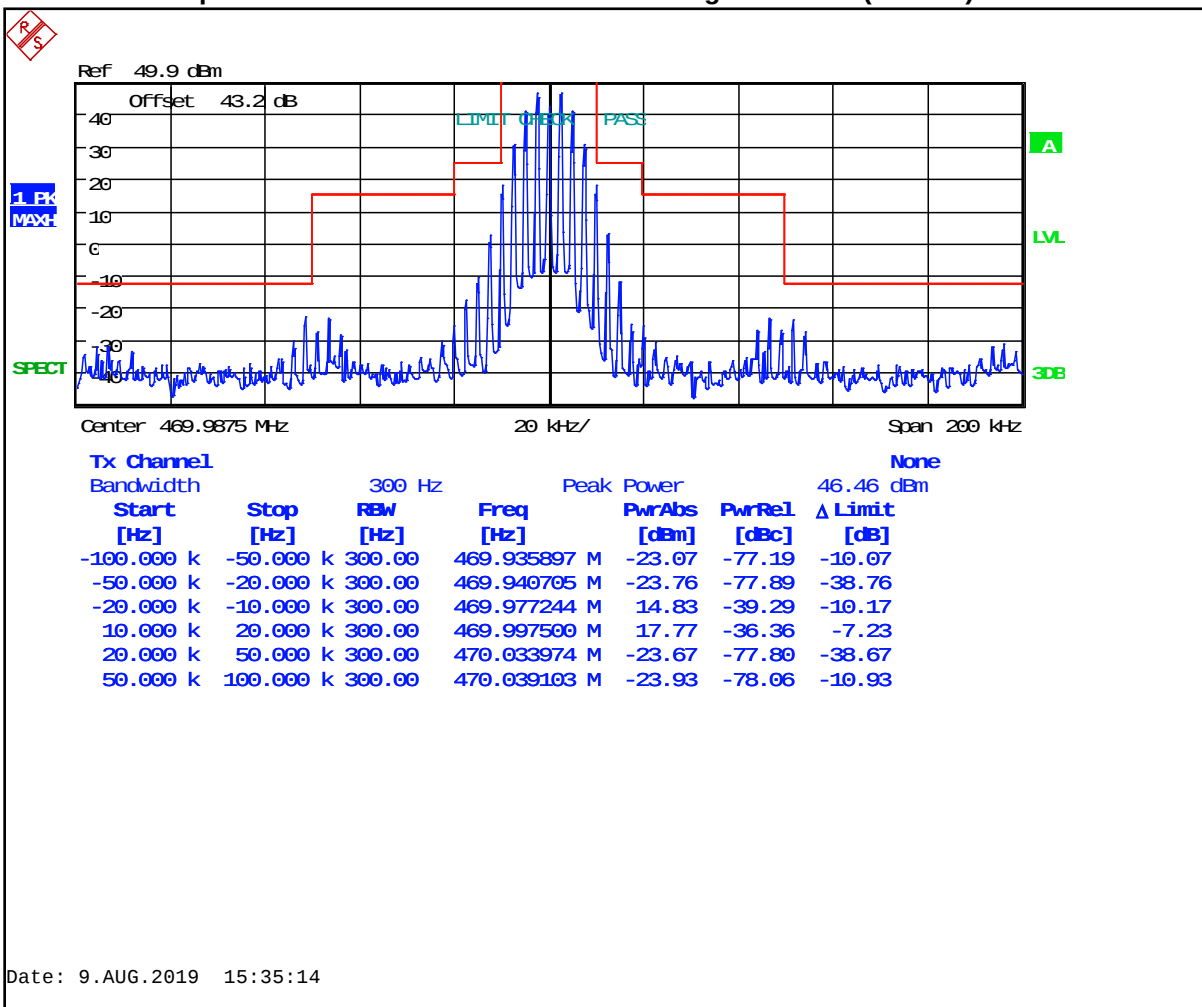


Plot 8-20: Occupied Bandwidth – 453.9875 MHz – Analog Wideband (Mask B)



Plot 8-21: Occupied Bandwidth – 456.0125 MHz – Analog Wideband (Mask B)





Ref 49.9 dBm
Offset 43.2 dB

1 Pk
MAX

LIMIT (PEAK) PASS

A

LVL

SPECT

30B

Center 511.9875 MHz 20 kHz/ Span 200 kHz

Tx Channel

Bandwidth 300 Hz Peak Power 46.46 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	Δ Limit [dB]
-100.000 k	-50.000 k	300.00	511.935897 M	-23.03	-77.14	-10.03
-50.000 k	-20.000 k	300.00	511.967308 M	-22.63	-76.74	-37.63
-20.000 k	-10.000 k	300.00	511.977244 M	14.97	-39.14	-10.03
10.000 k	20.000 k	300.00	511.997500 M	17.83	-36.28	-7.17
20.000 k	50.000 k	300.00	512.033974 M	-22.58	-76.69	-37.58
50.000 k	100.000 k	300.00	512.039103 M	-22.08	-76.19	-9.08

Ref 49.9 dBm
Offset 43.2 dB

1. Pk MAX

LIMIT OVER PASS

A

LVL

SPECT

30B

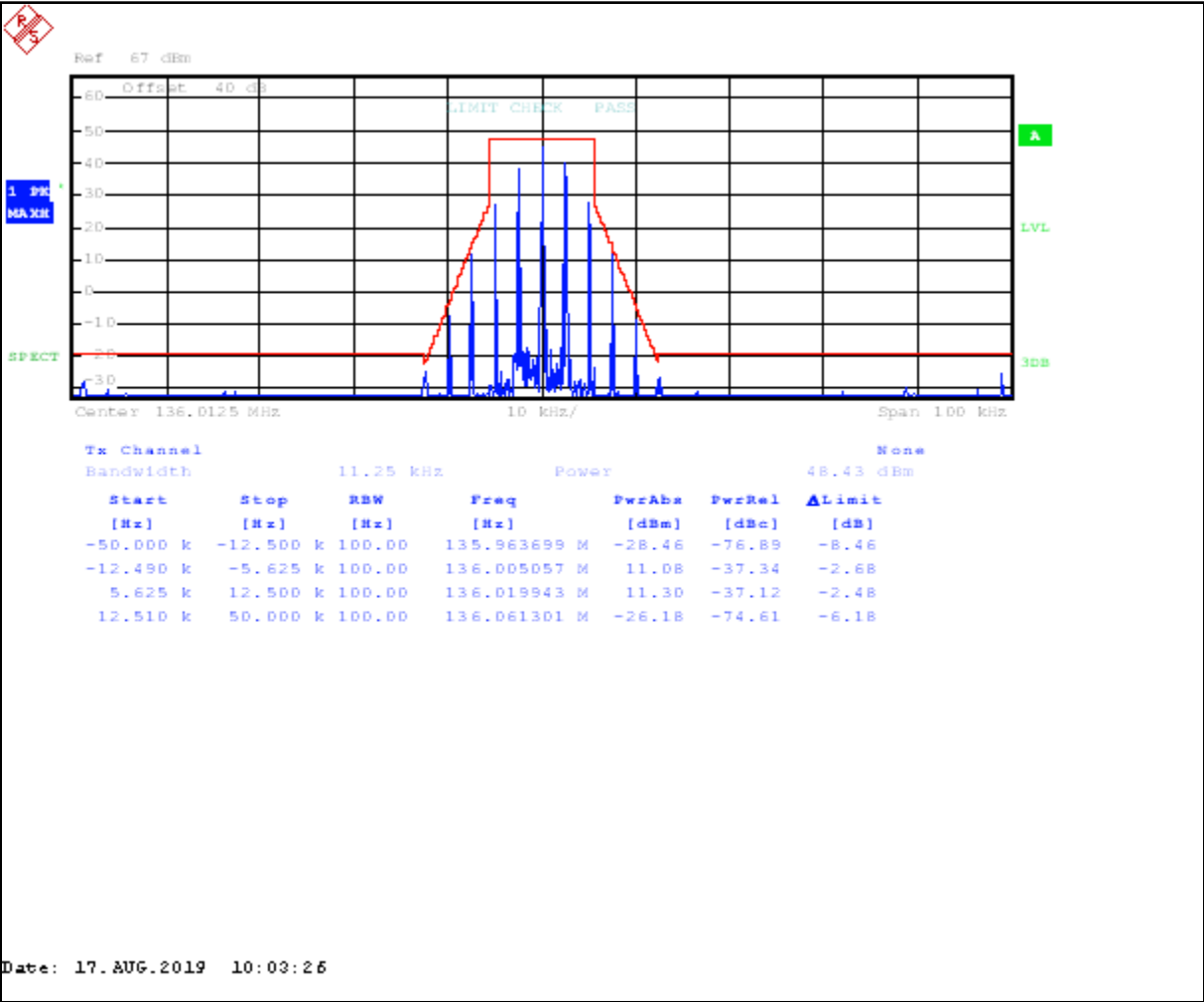
Center 519.9875 MHz 20 kHz/ Span 200 kHz

Tx Channel

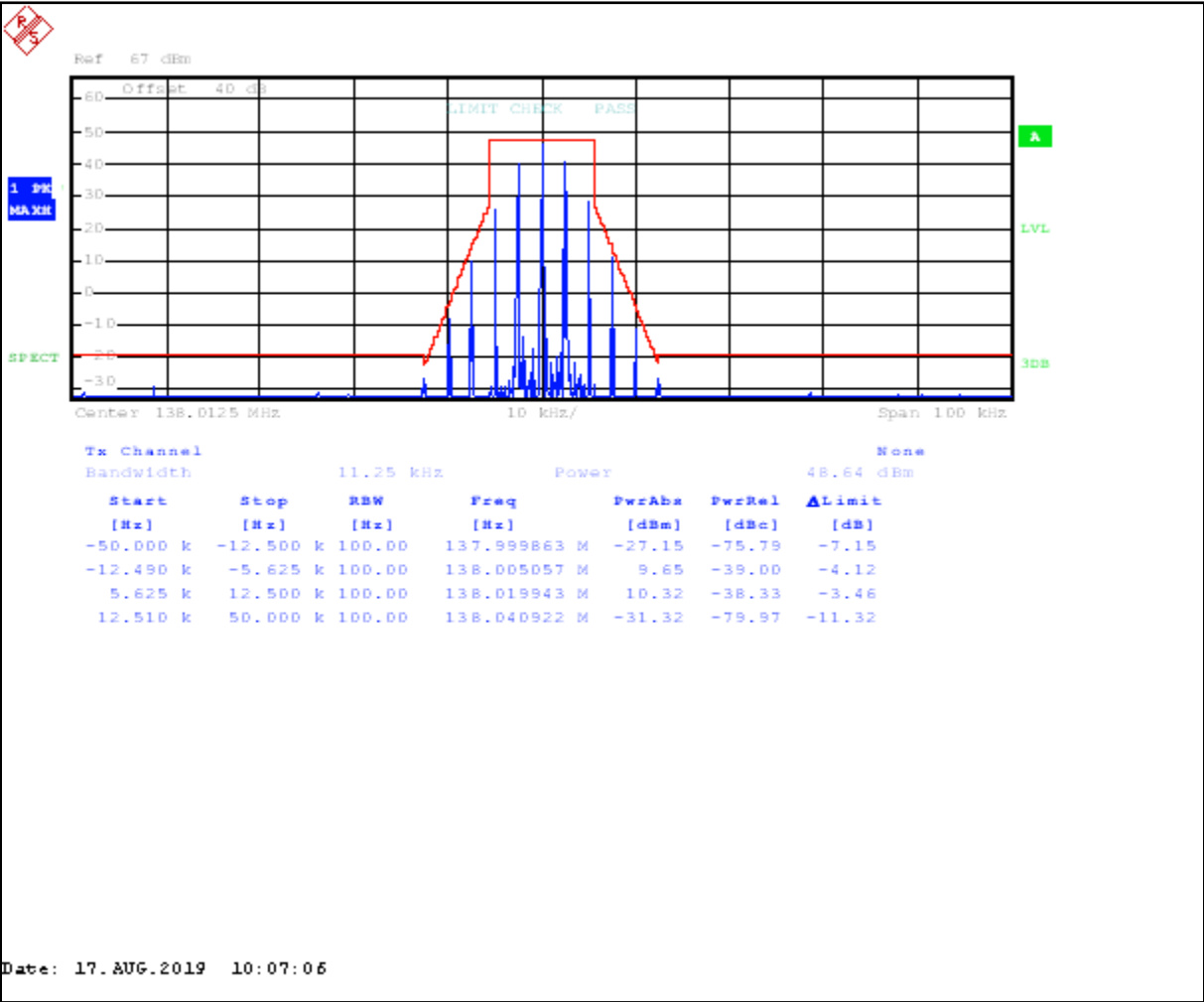
Bandwidth 300 Hz Peak Power 46.52 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dbc]	Δ Limit [dB]
-100.000 k	-50.000 k	300.00	519.935897 M	-17.15	-71.33	-4.15
-50.000 k	-20.000 k	300.00	519.940705 M	-18.37	-72.55	-33.37
-20.000 k	-10.000 k	300.00	519.977244 M	14.95	-39.23	-10.05
10.000 k	20.000 k	300.00	519.997500 M	18.07	-36.11	-6.93
20.000 k	50.000 k	300.00	520.033974 M	-16.82	-71.00	-31.82
50.000 k	100.000 k	300.00	520.039103 M	-17.25	-71.43	-4.25

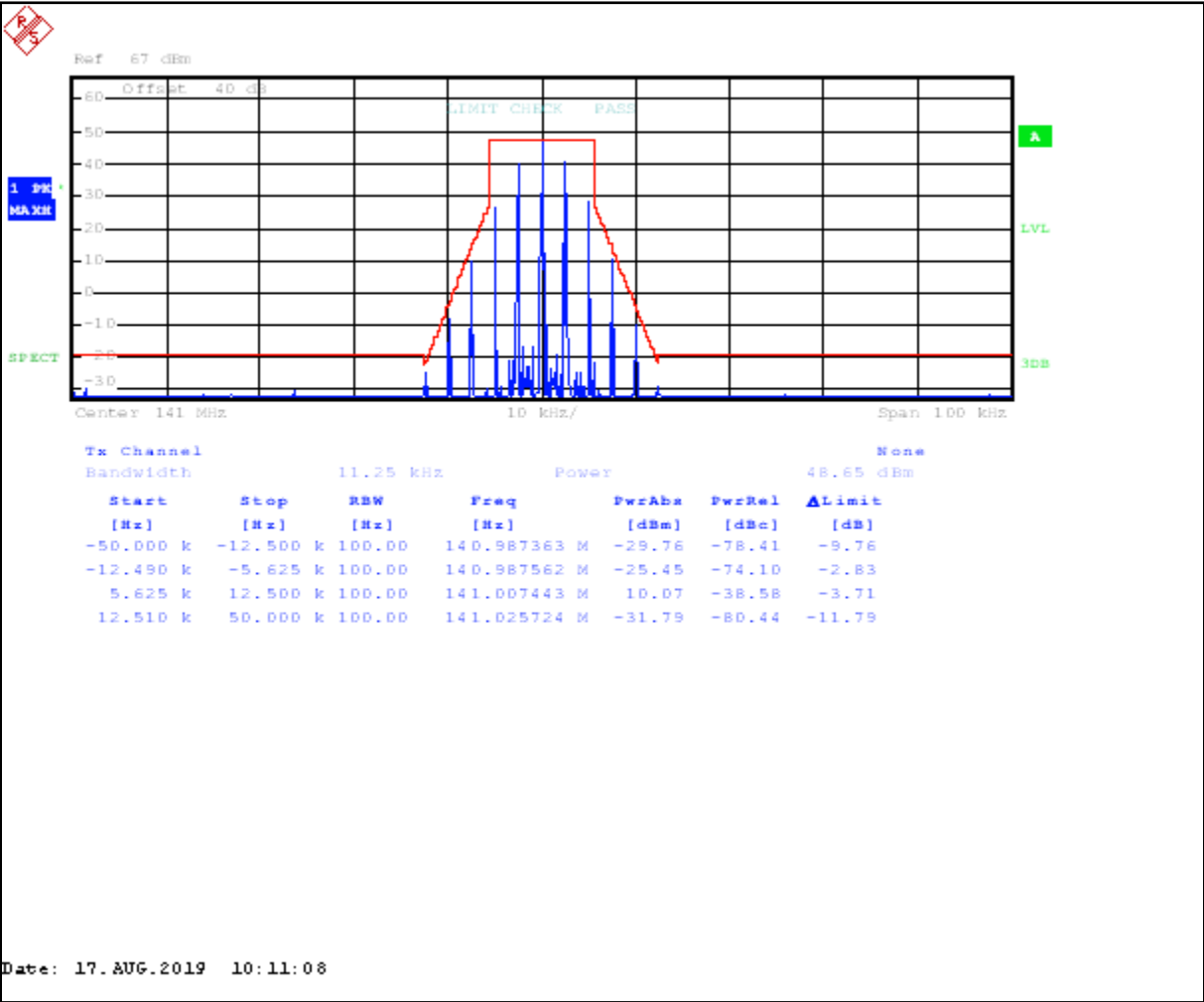
Plot 8-25: Occupied Bandwidth – 136.0125 MHz – Analog Narrowband (Mask D)



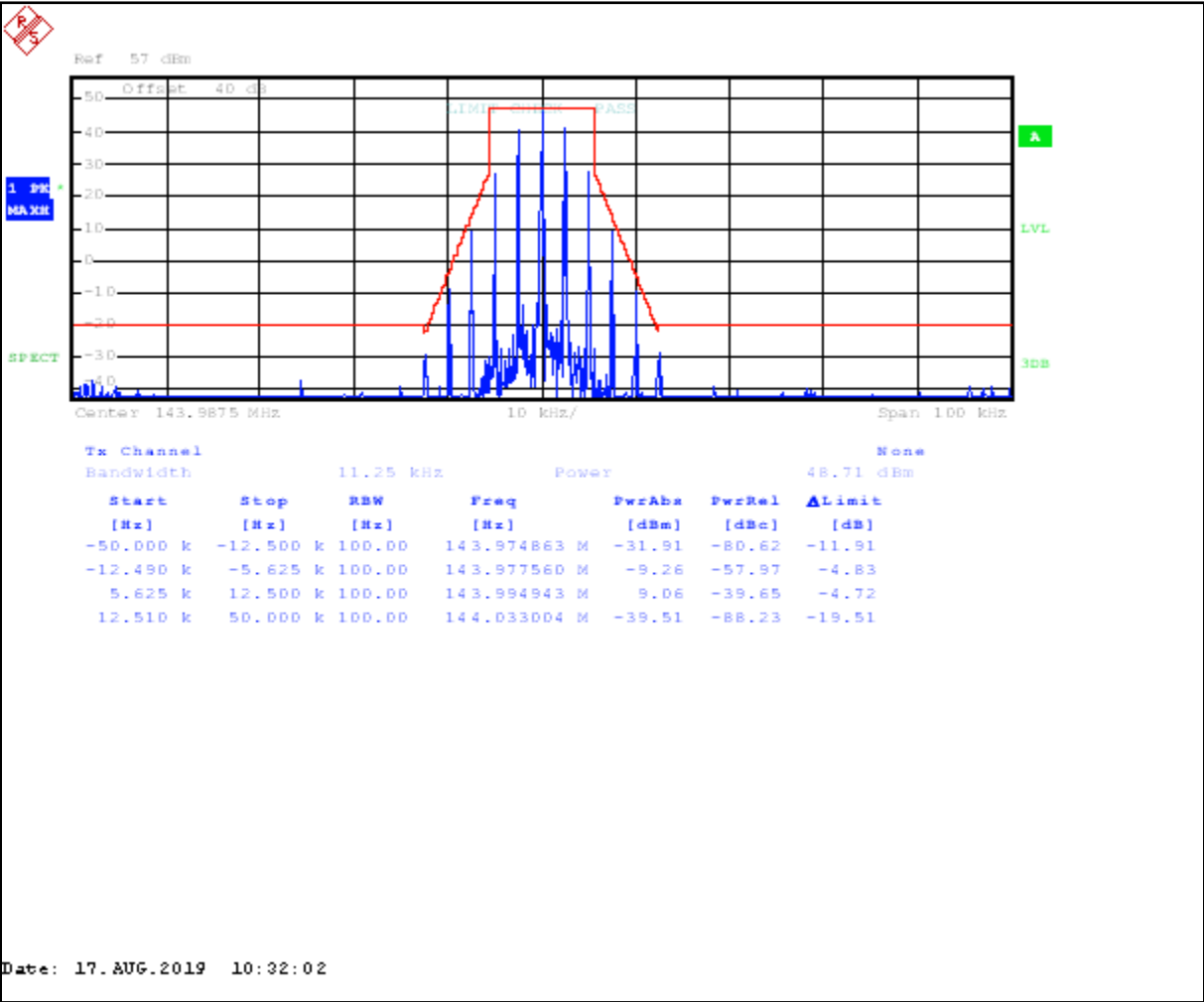
Plot 8-26: Occupied Bandwidth – 138.0125 MHz – Analog Narrowband (Mask D)



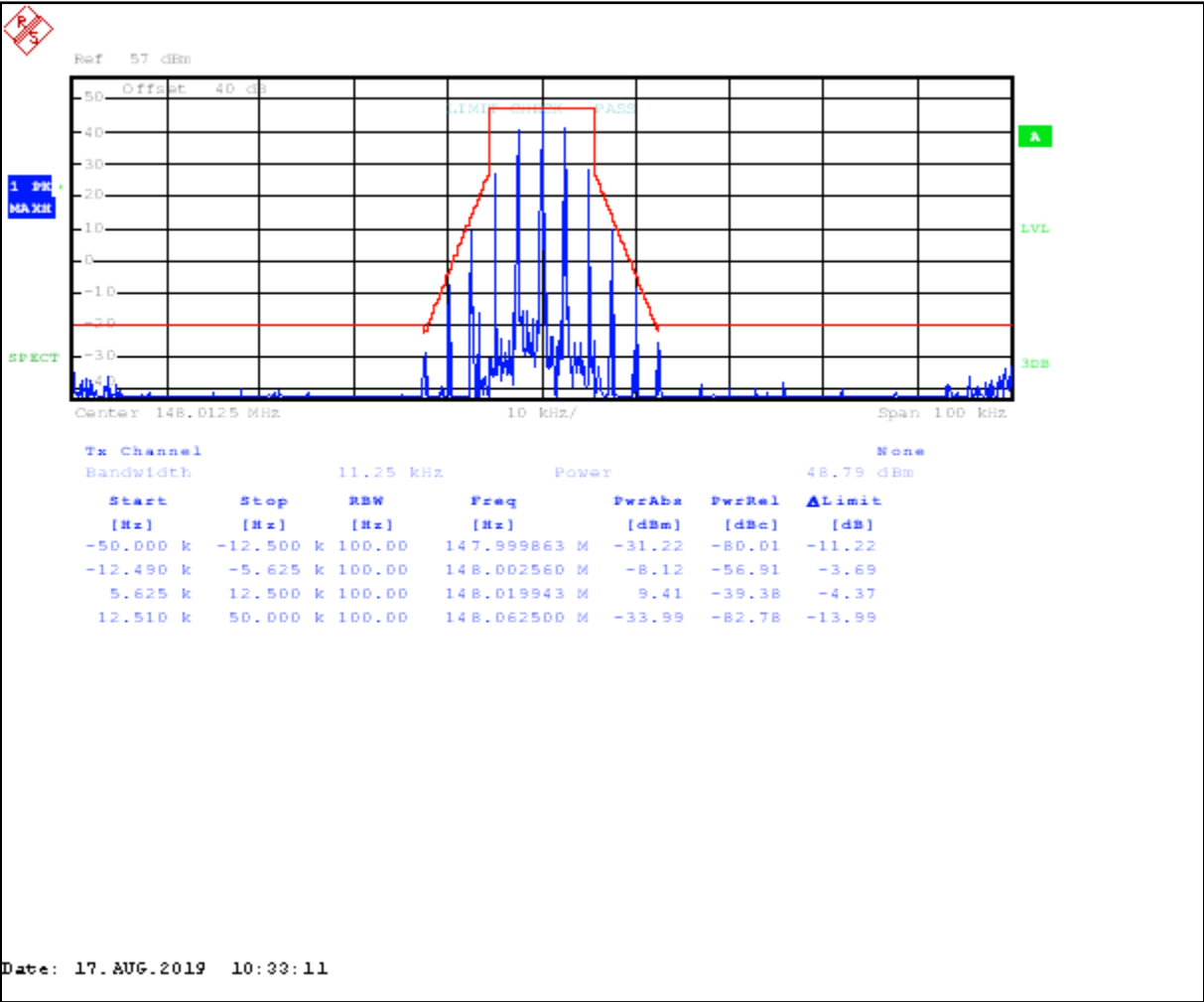
Plot 8-27: Occupied Bandwidth – 141.0000 MHz – Analog Narrowband (Mask D)



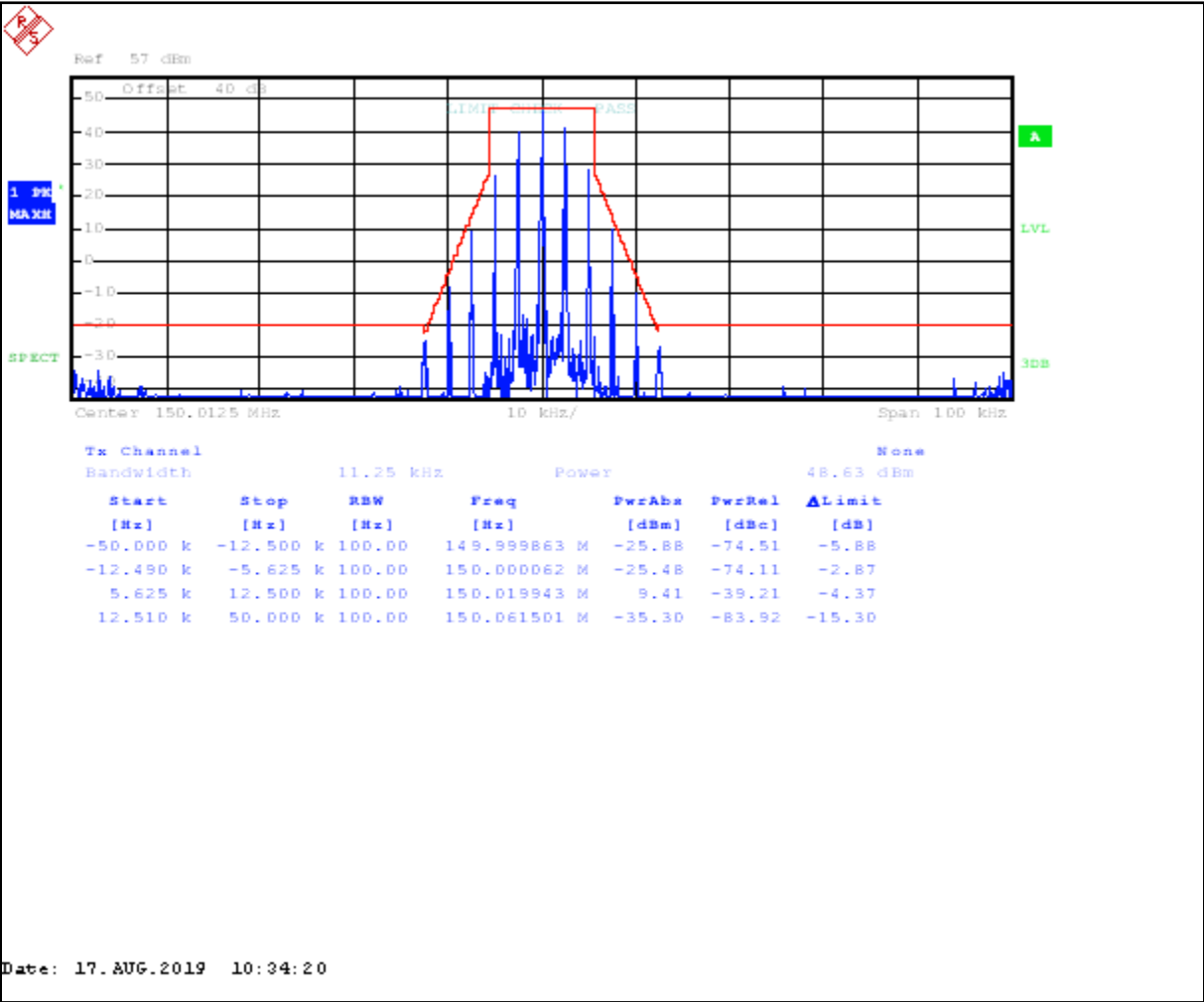
Plot 8-28: Occupied Bandwidth – 143.9875 MHz – Analog Narrowband (Mask D)



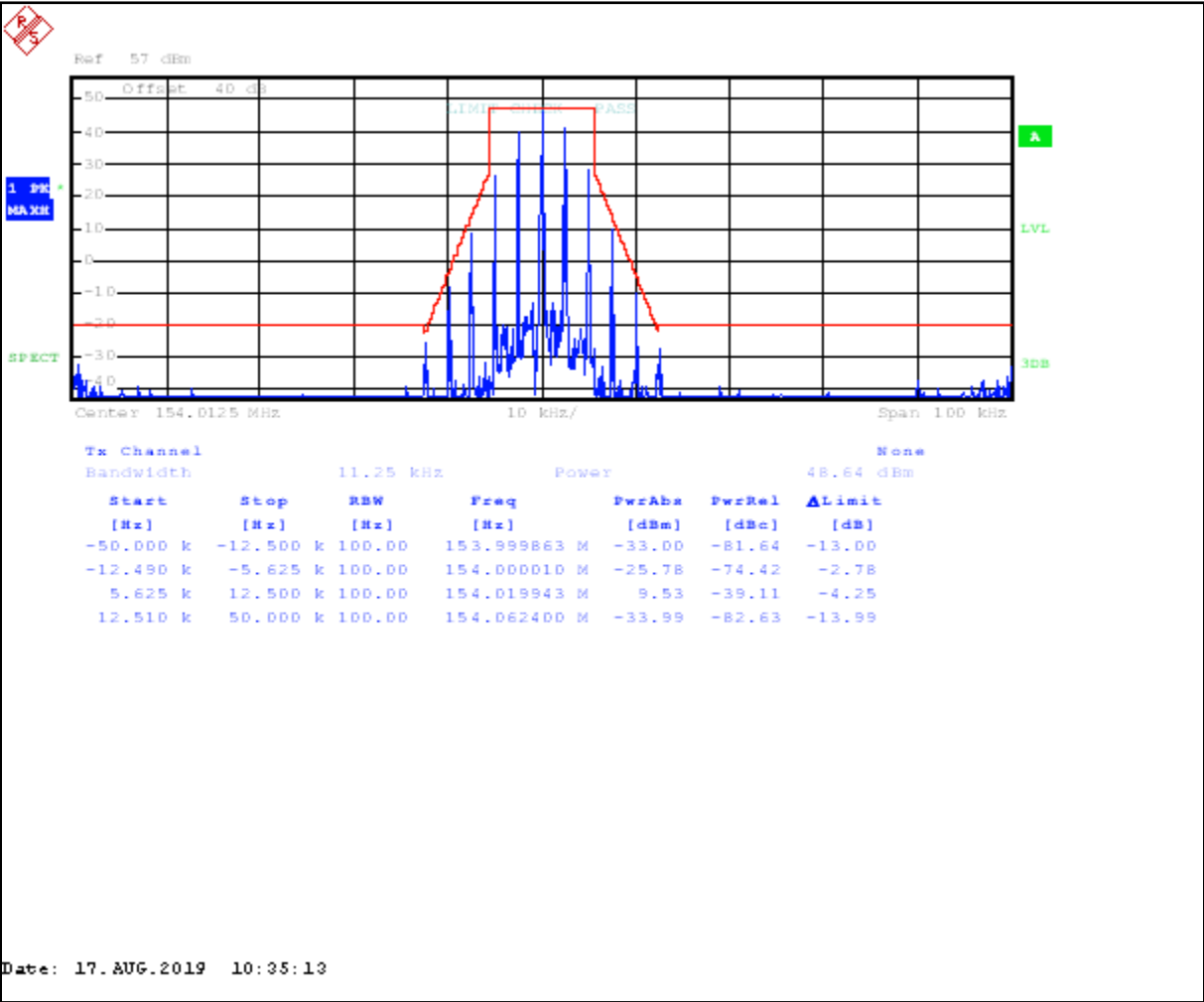
Plot 8-29: Occupied Bandwidth – 148.0125 MHz – Analog Narrowband (Mask D)



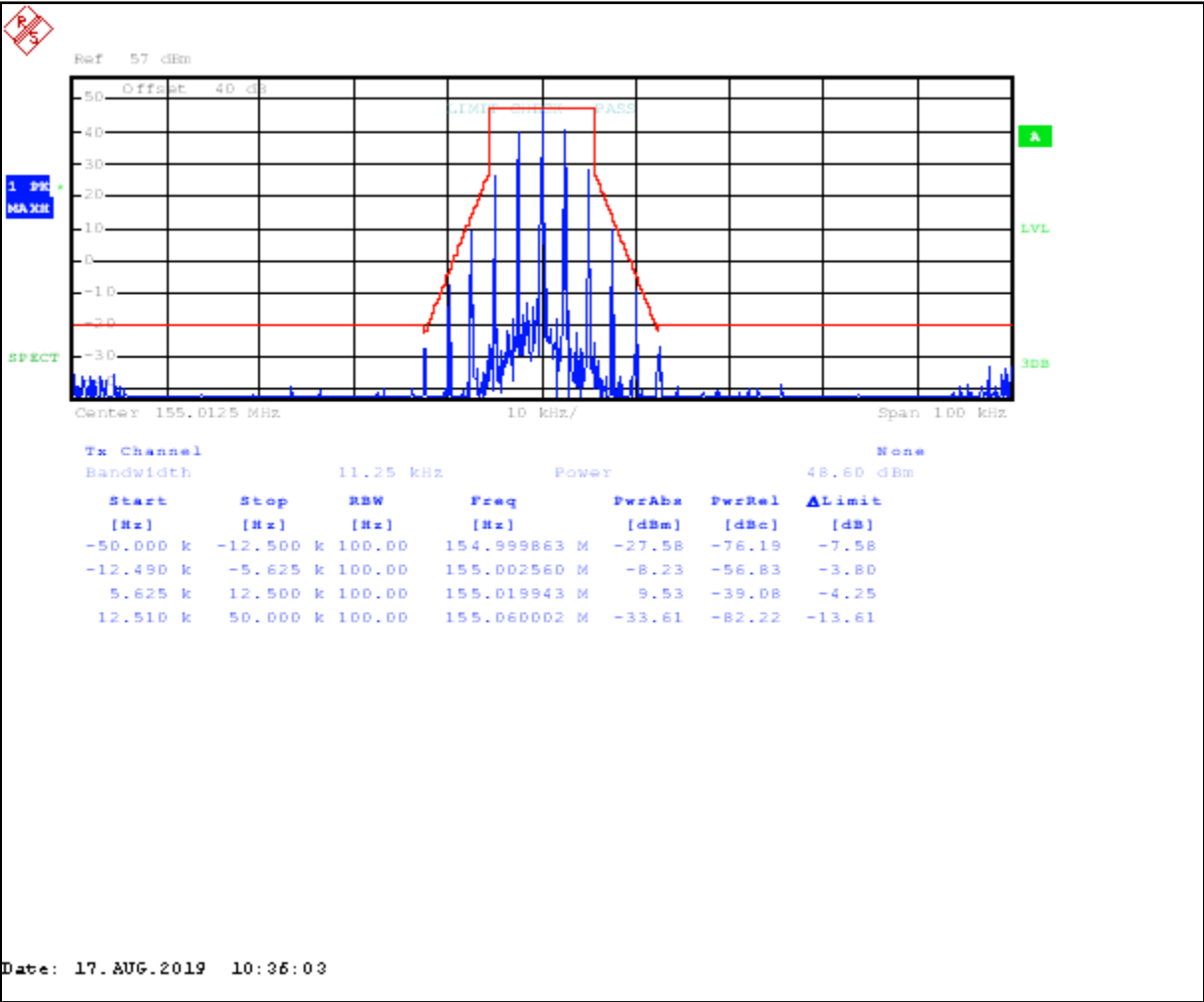
Plot 8-30: Occupied Bandwidth – 150.0125 MHz – Analog Narrowband (Mask D)



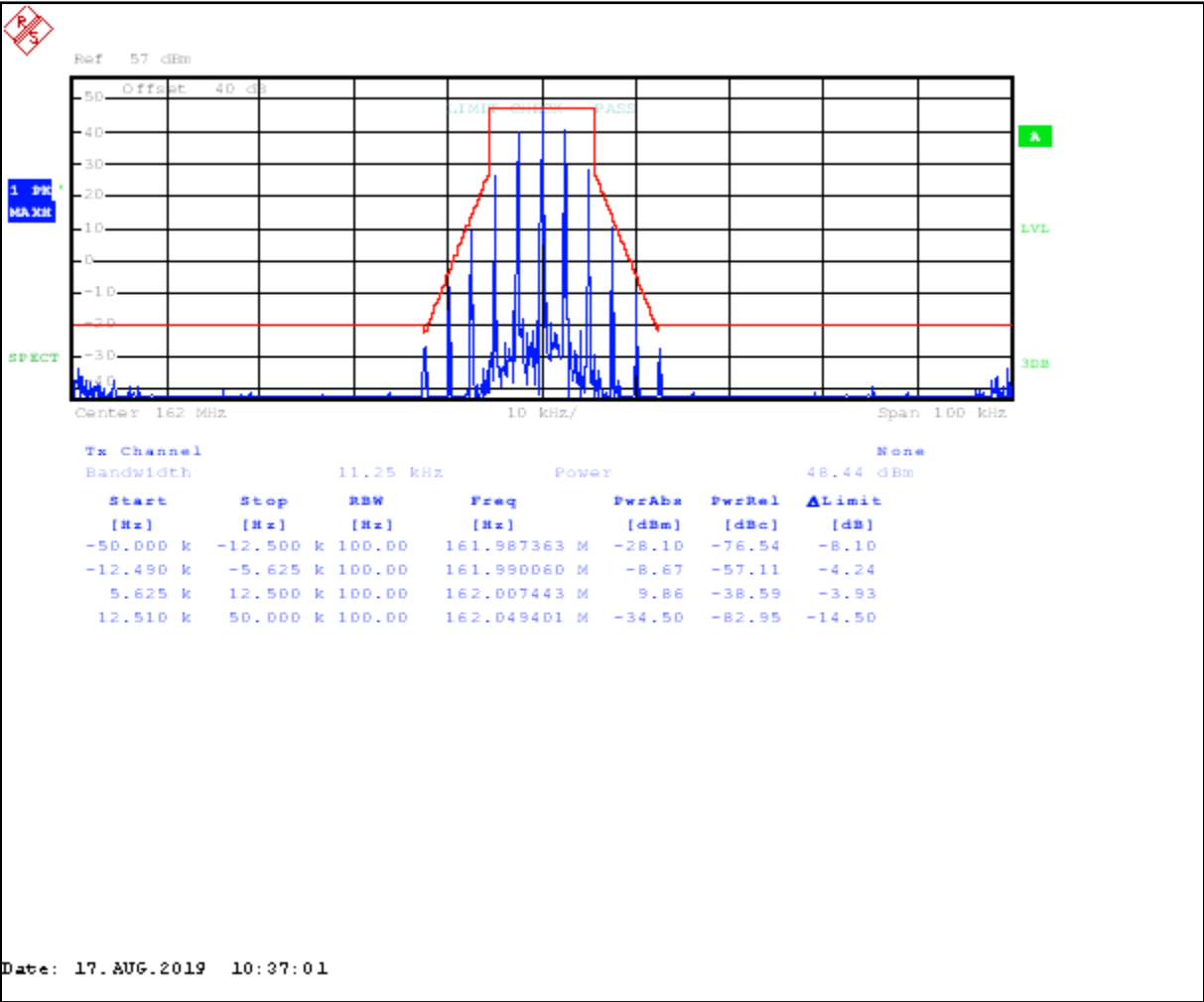
Plot 8-31: Occupied Bandwidth – 154.0125 MHz – Analog Narrowband (Mask D)



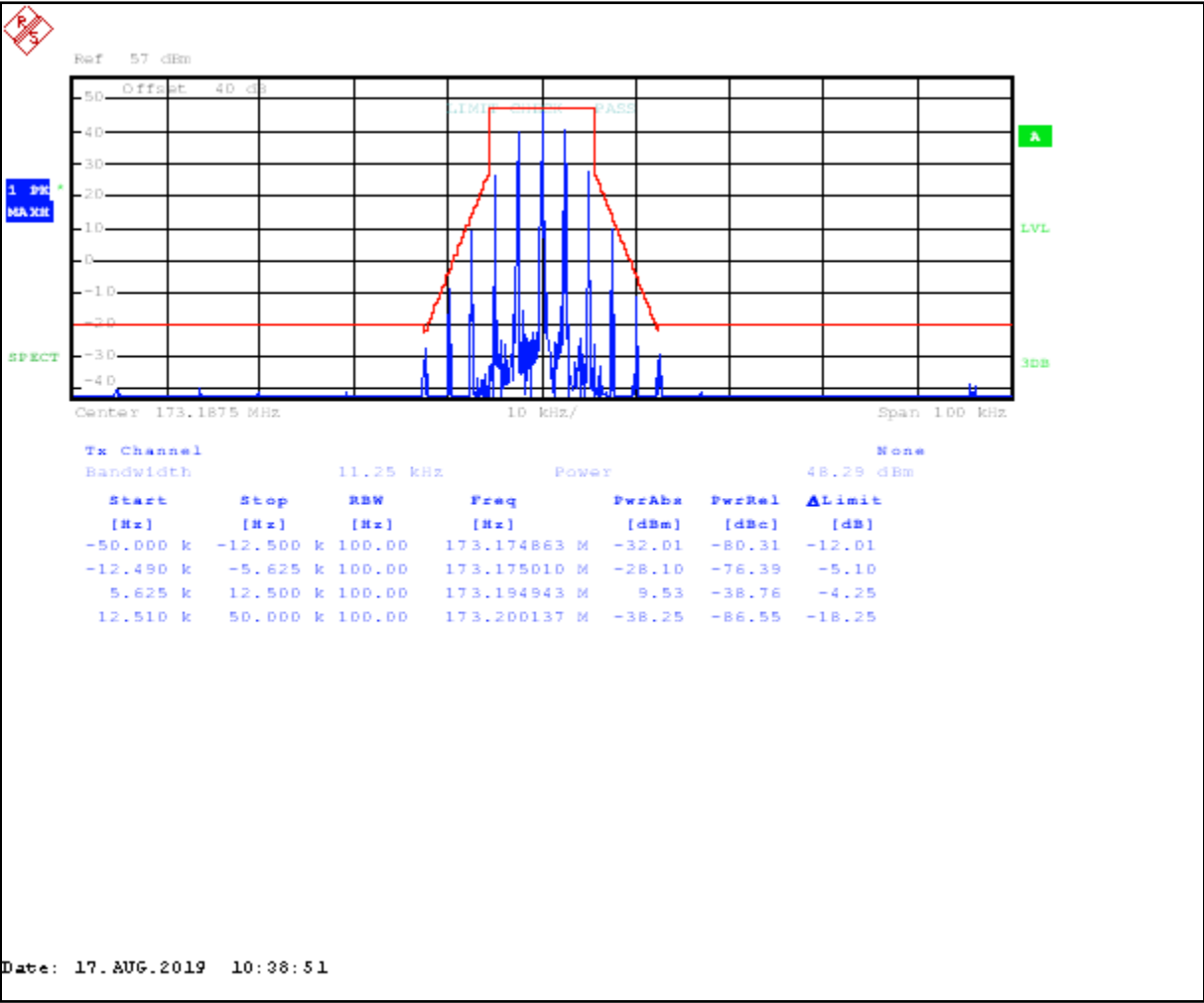
Plot 8-32: Occupied Bandwidth – 155.0125 MHz – Analog Narrowband (Mask D)



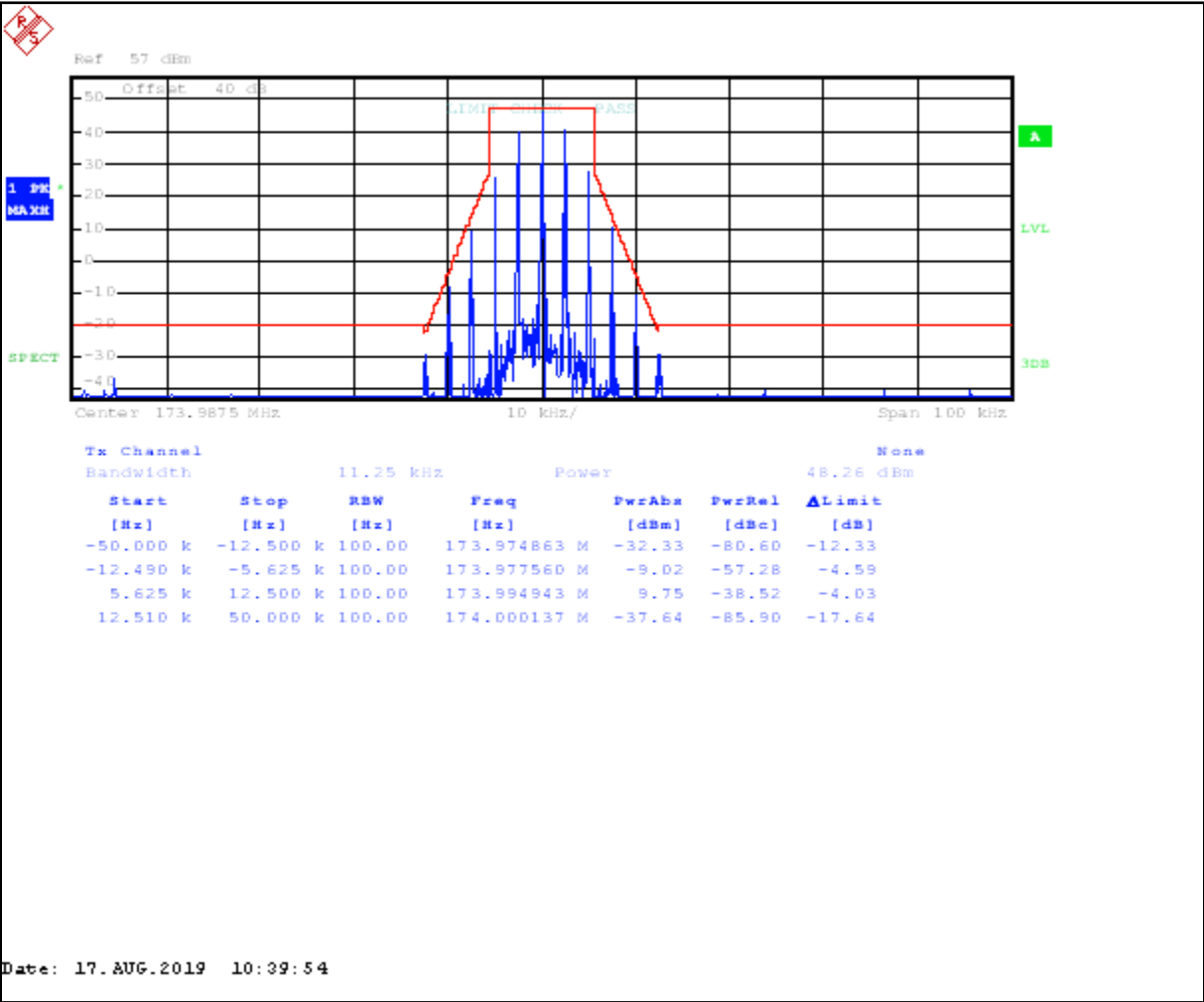
Plot 8-33: Occupied Bandwidth – 162.0000 MHz – Analog Narrowband (Mask D)



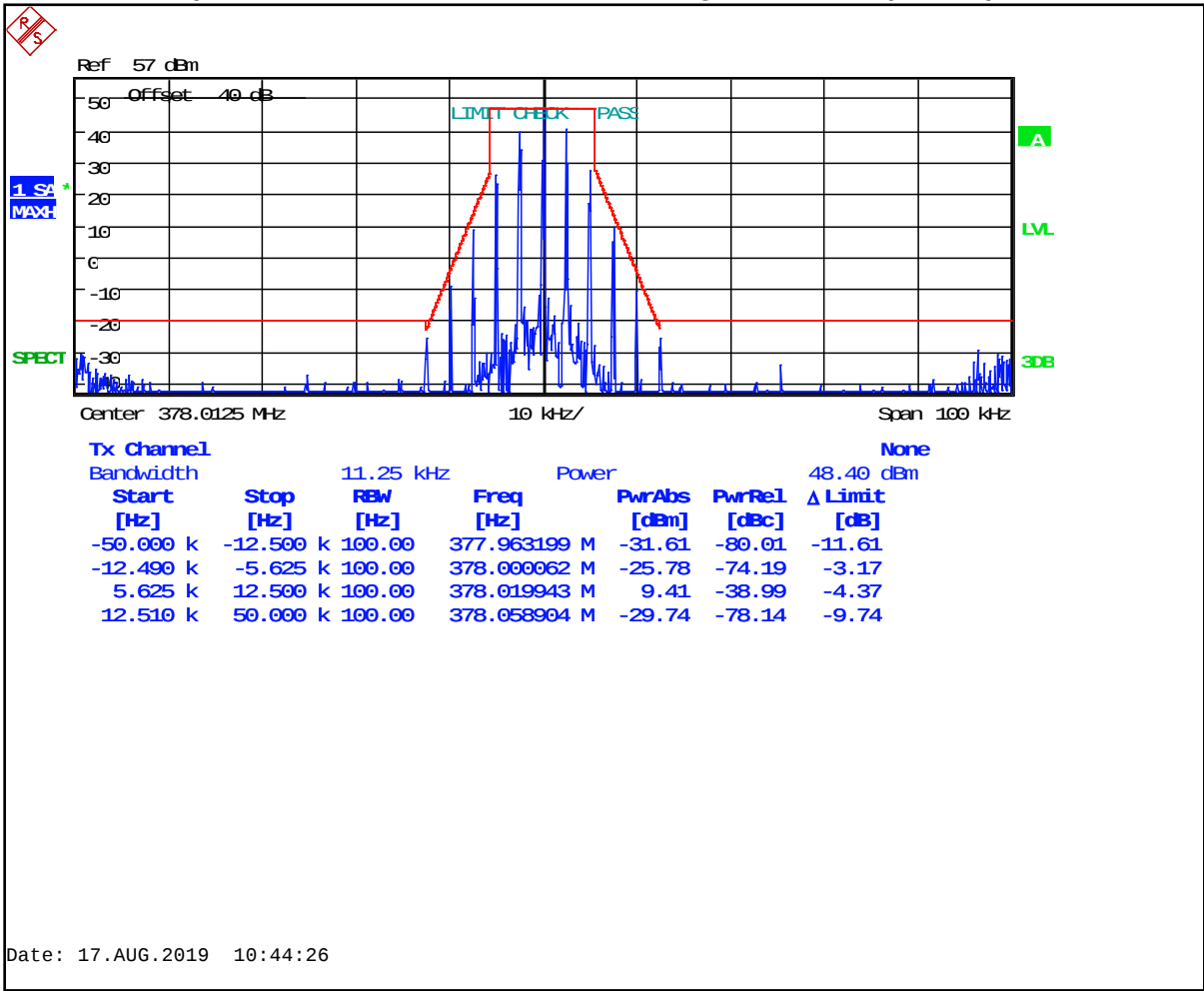
Plot 8-34: Occupied Bandwidth – 173.1875 MHz – Analog Narrowband (Mask D)



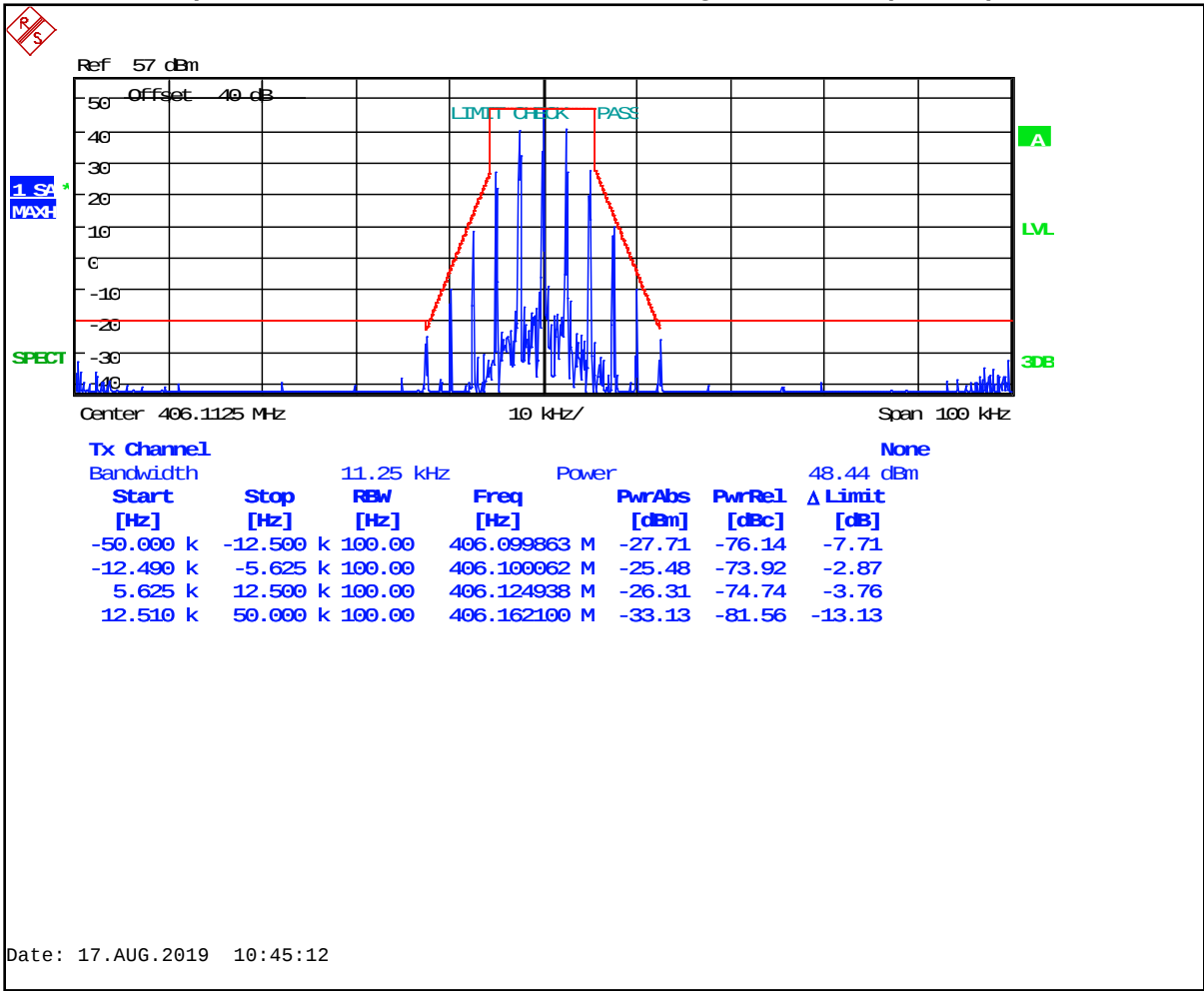
Plot 8-35: Occupied Bandwidth – 173.9875 MHz – Analog Narrowband (Mask D)



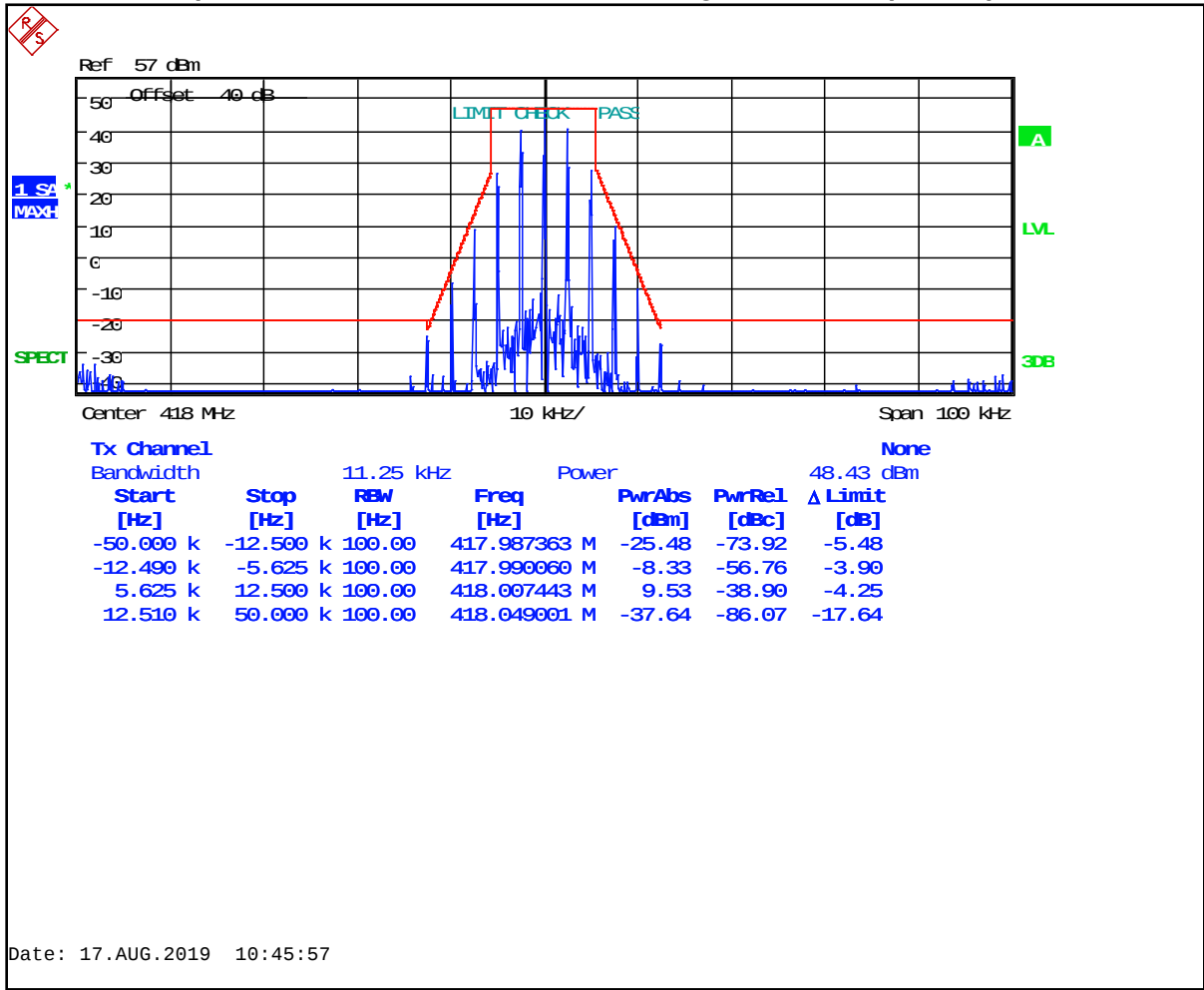
Plot 8-36: Occupied Bandwidth – 378.0125 MHz – Analog Narrowband (Mask D)



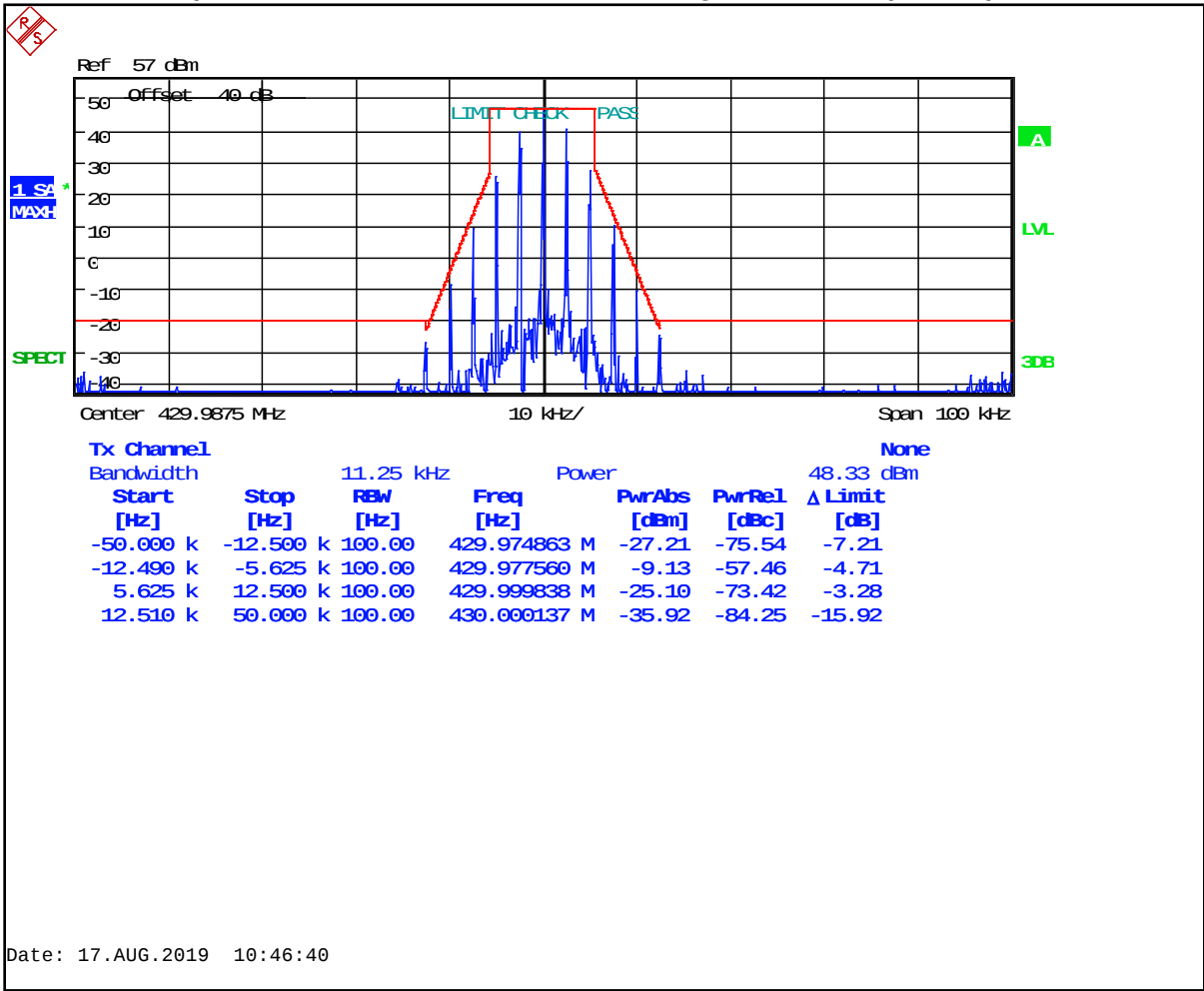
Plot 8-37: Occupied Bandwidth – 406.1125 MHz – Analog Narrowband (Mask D)



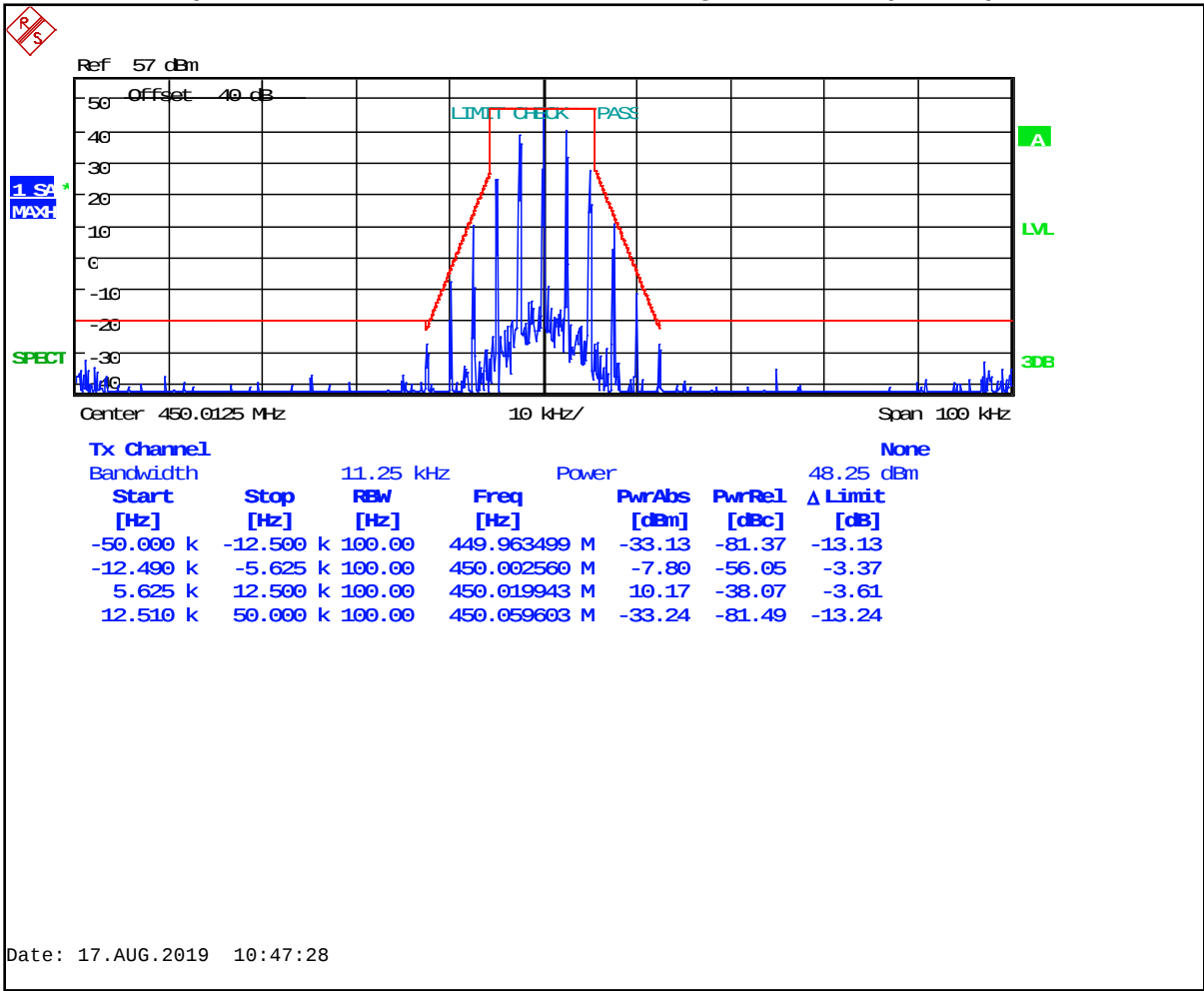
Plot 8-38: Occupied Bandwidth – 418.0000 MHz – Analog Narrowband (Mask D)



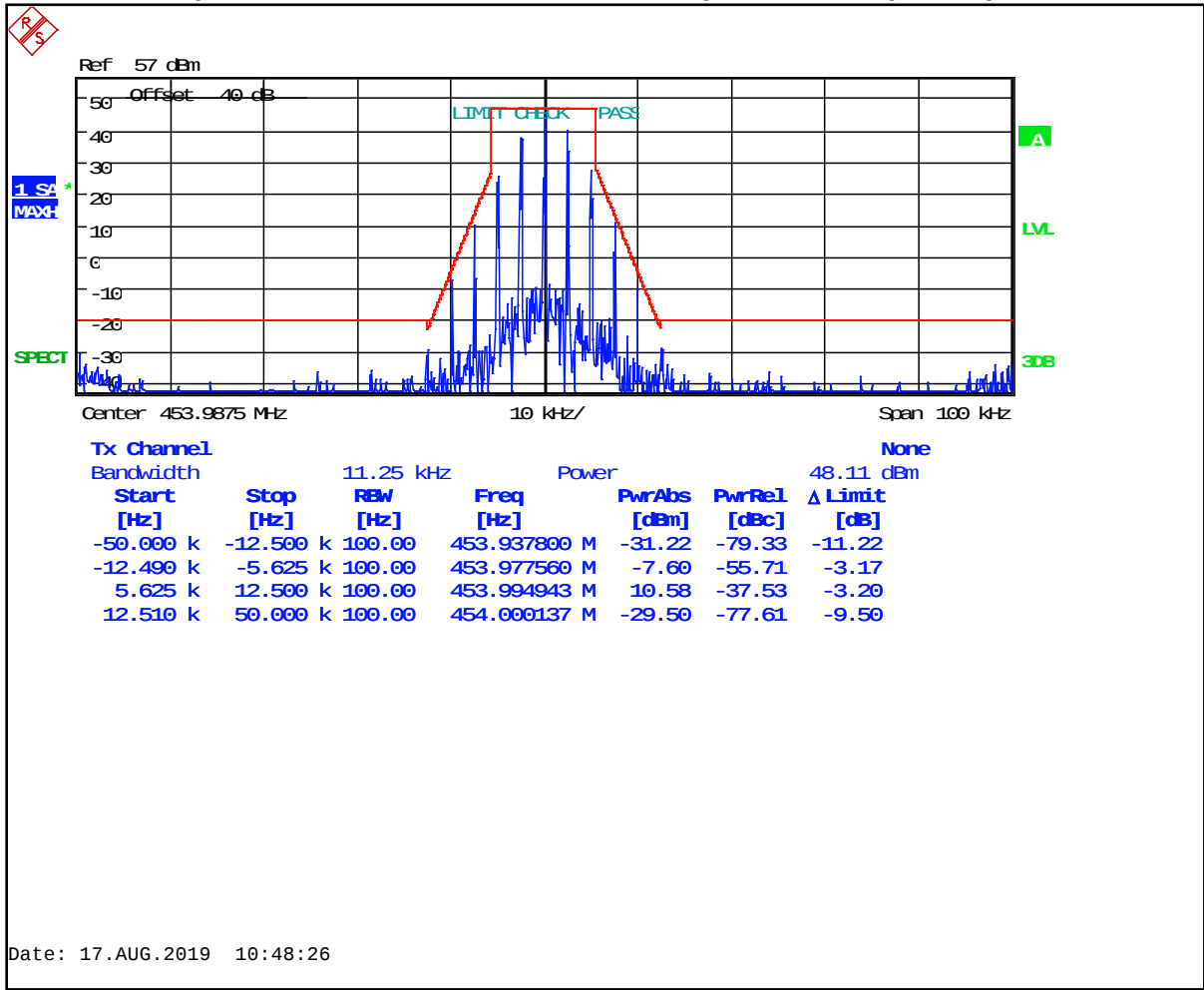
Plot 8-39: Occupied Bandwidth – 429.9875 MHz – Analog Narrowband (Mask D)



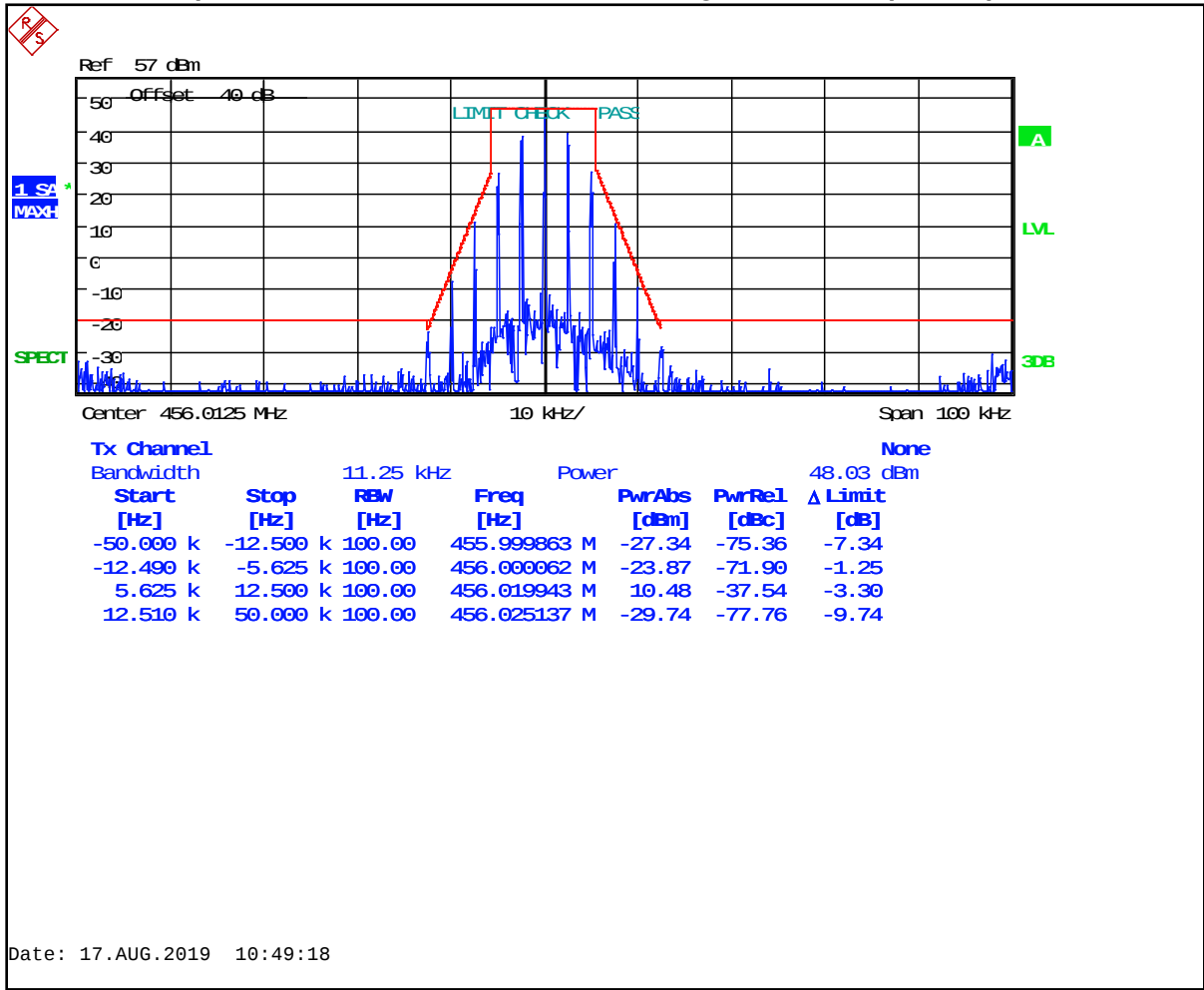
Plot 8-40: Occupied Bandwidth – 450.0125 MHz – Analog Narrowband (Mask D)



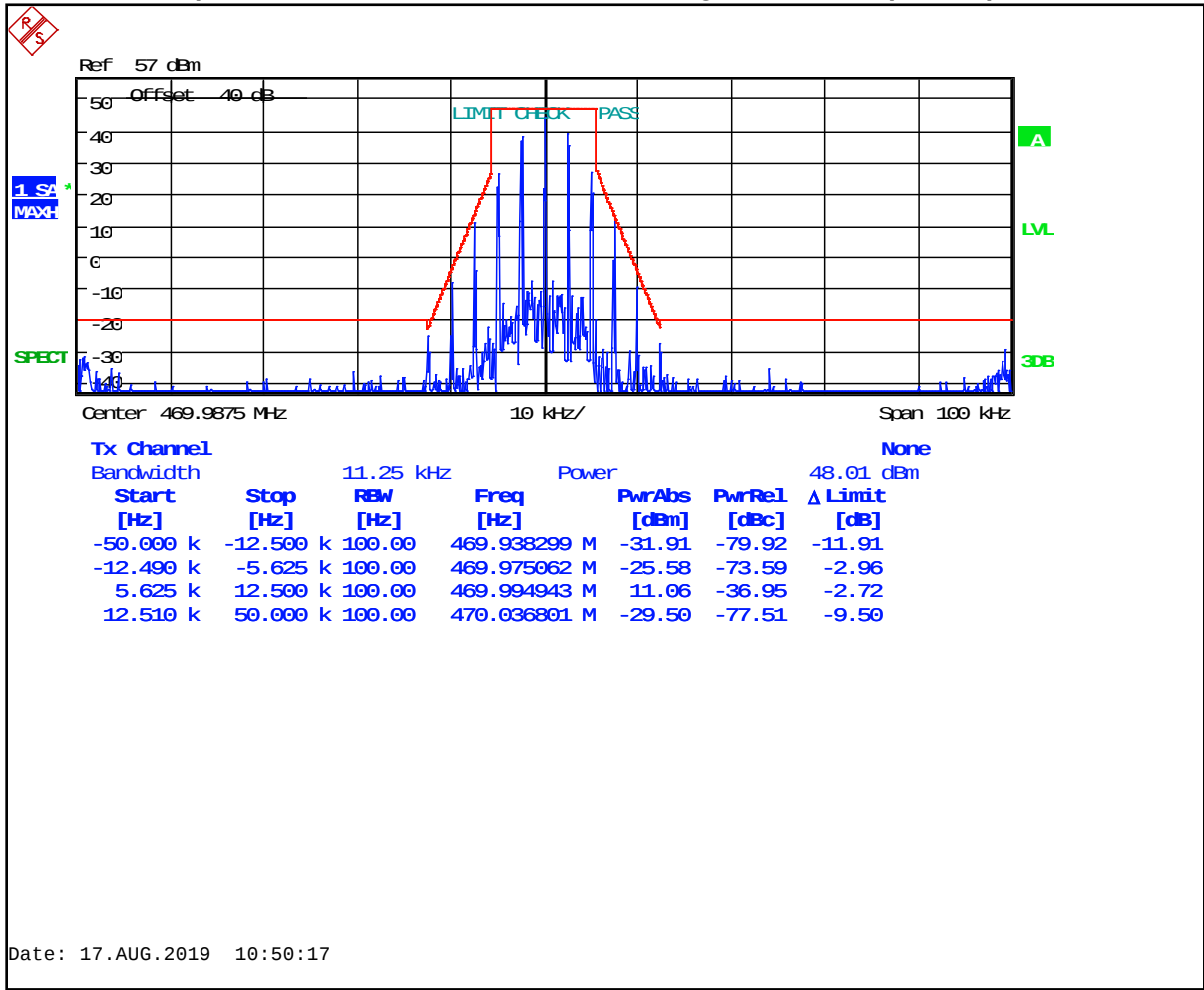
Plot 8-41: Occupied Bandwidth – 453.9875 MHz – Analog Narrowband (Mask D)



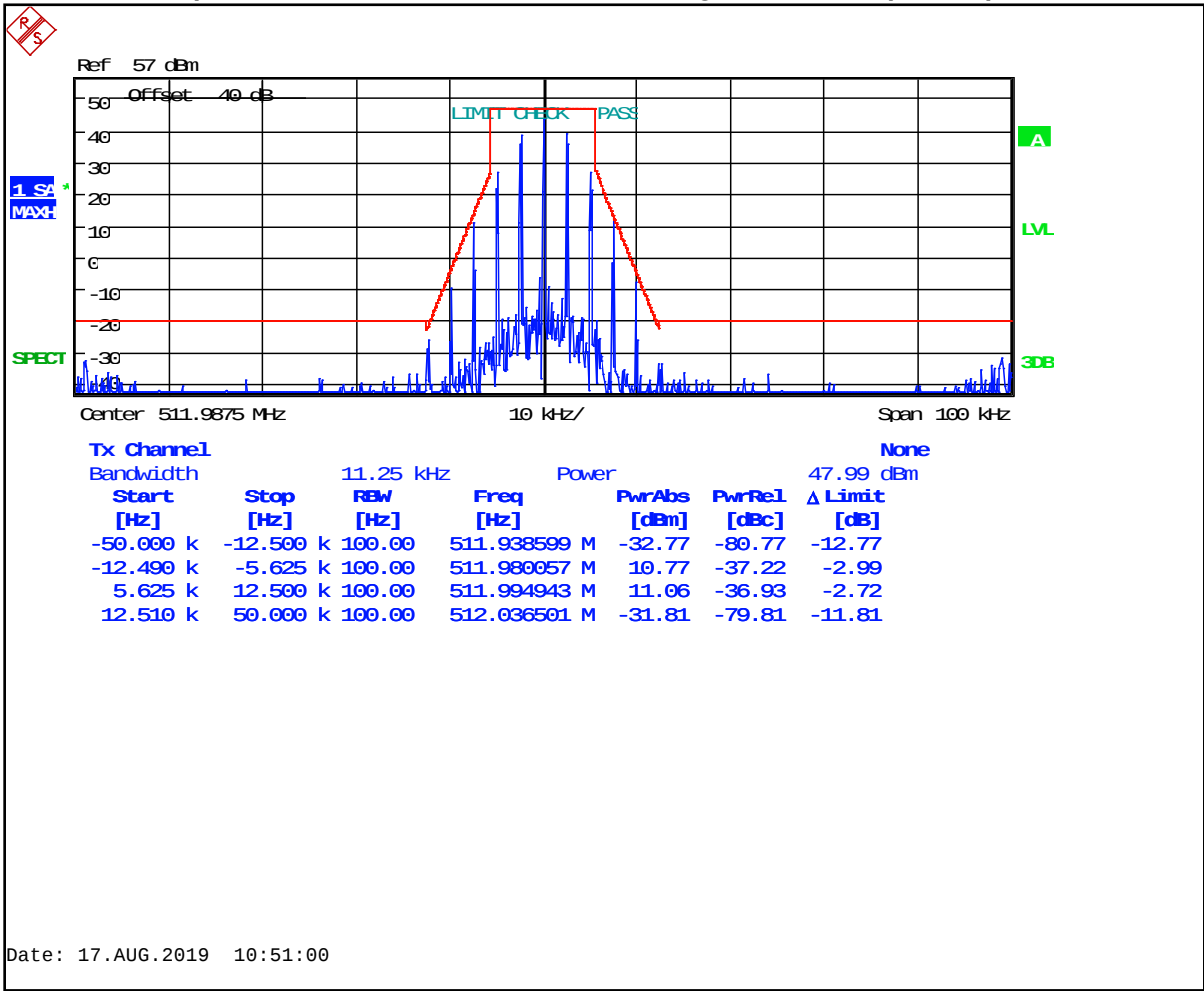
Plot 8-42: Occupied Bandwidth – 456.0125 MHz – Analog Narrowband (Mask D)



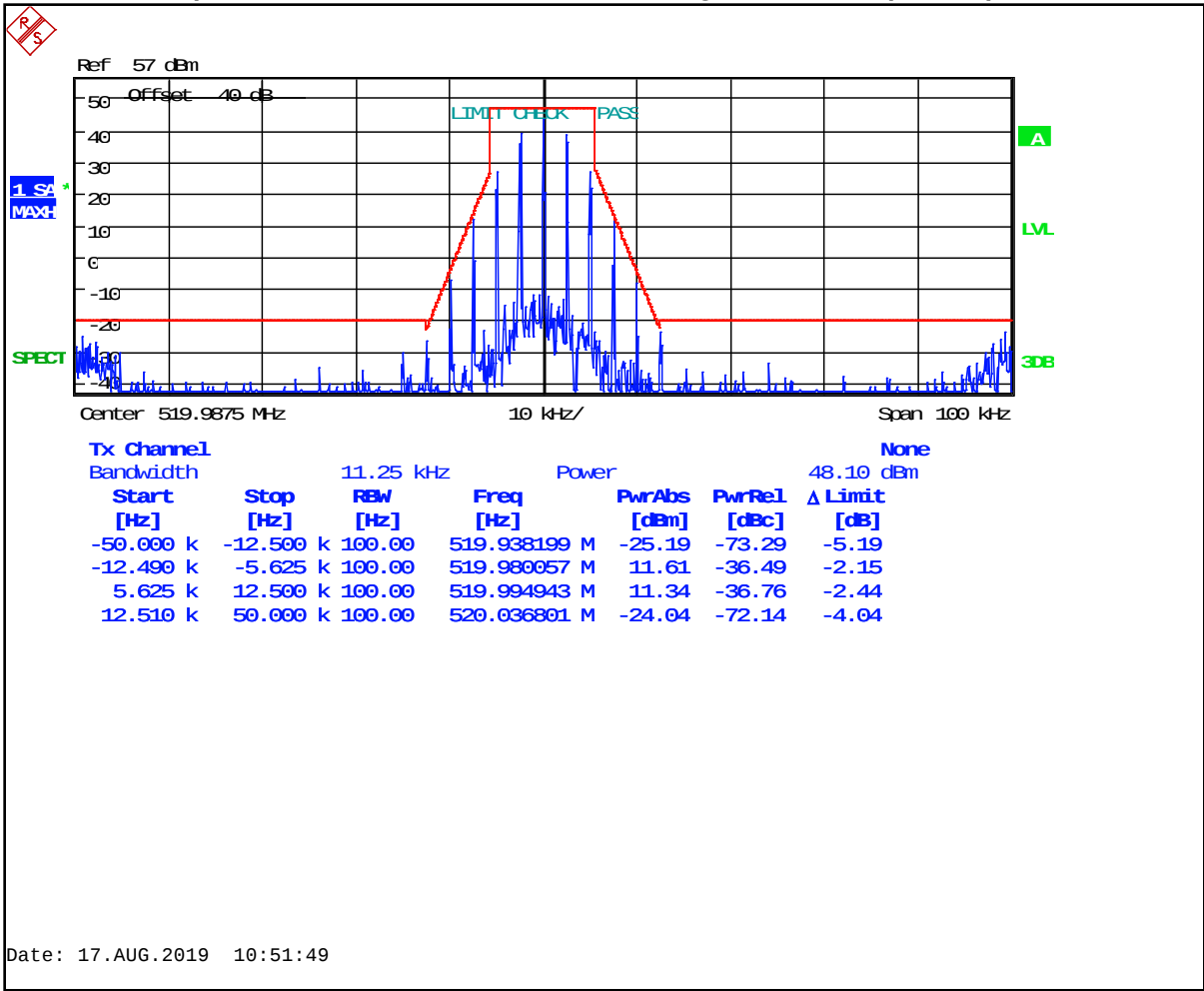
Plot 8-43: Occupied Bandwidth – 469.9875 MHz – Analog Narrowband (Mask D)



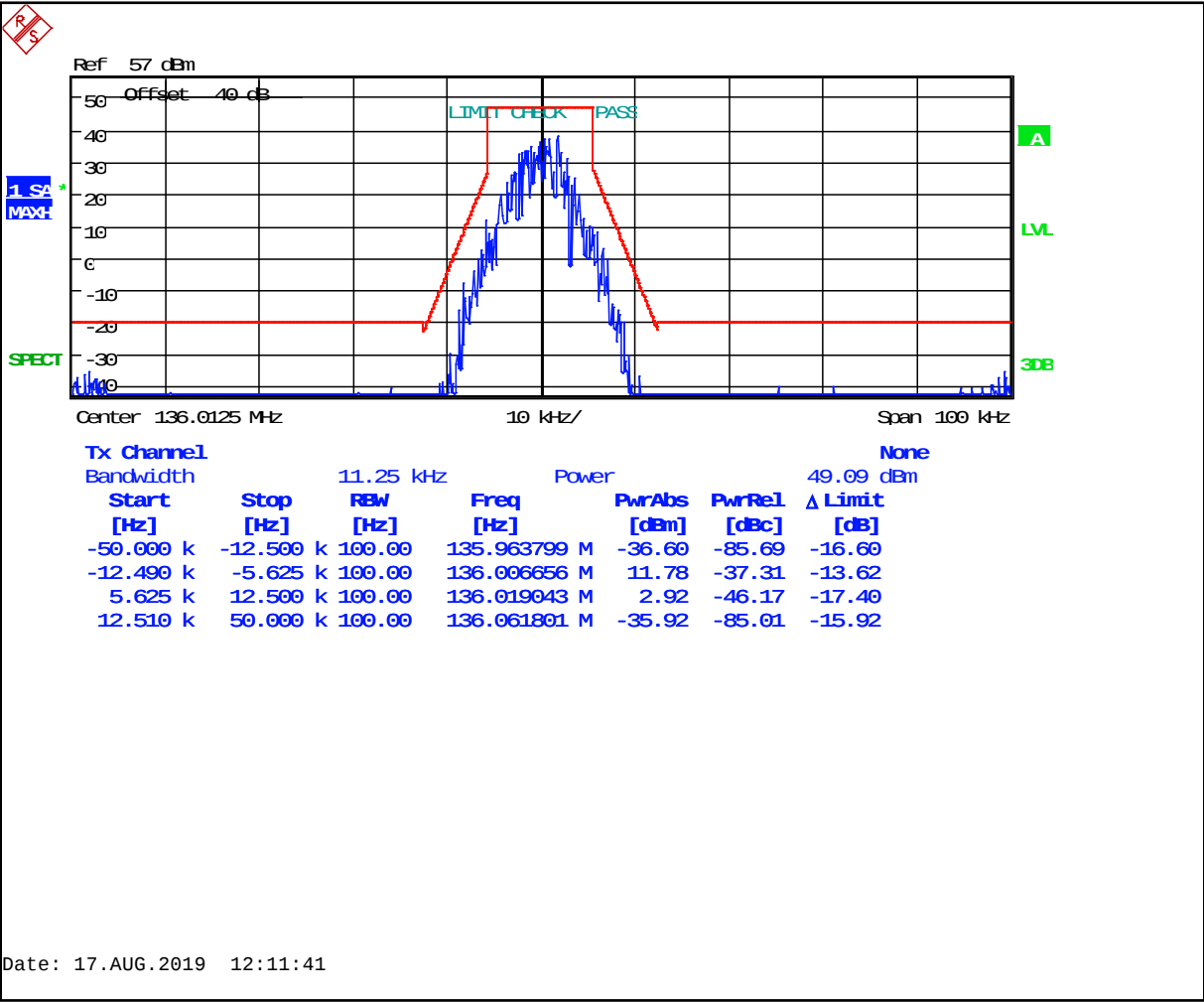
Plot 8-44: Occupied Bandwidth – 511.9875 MHz – Analog Narrowband (Mask D)



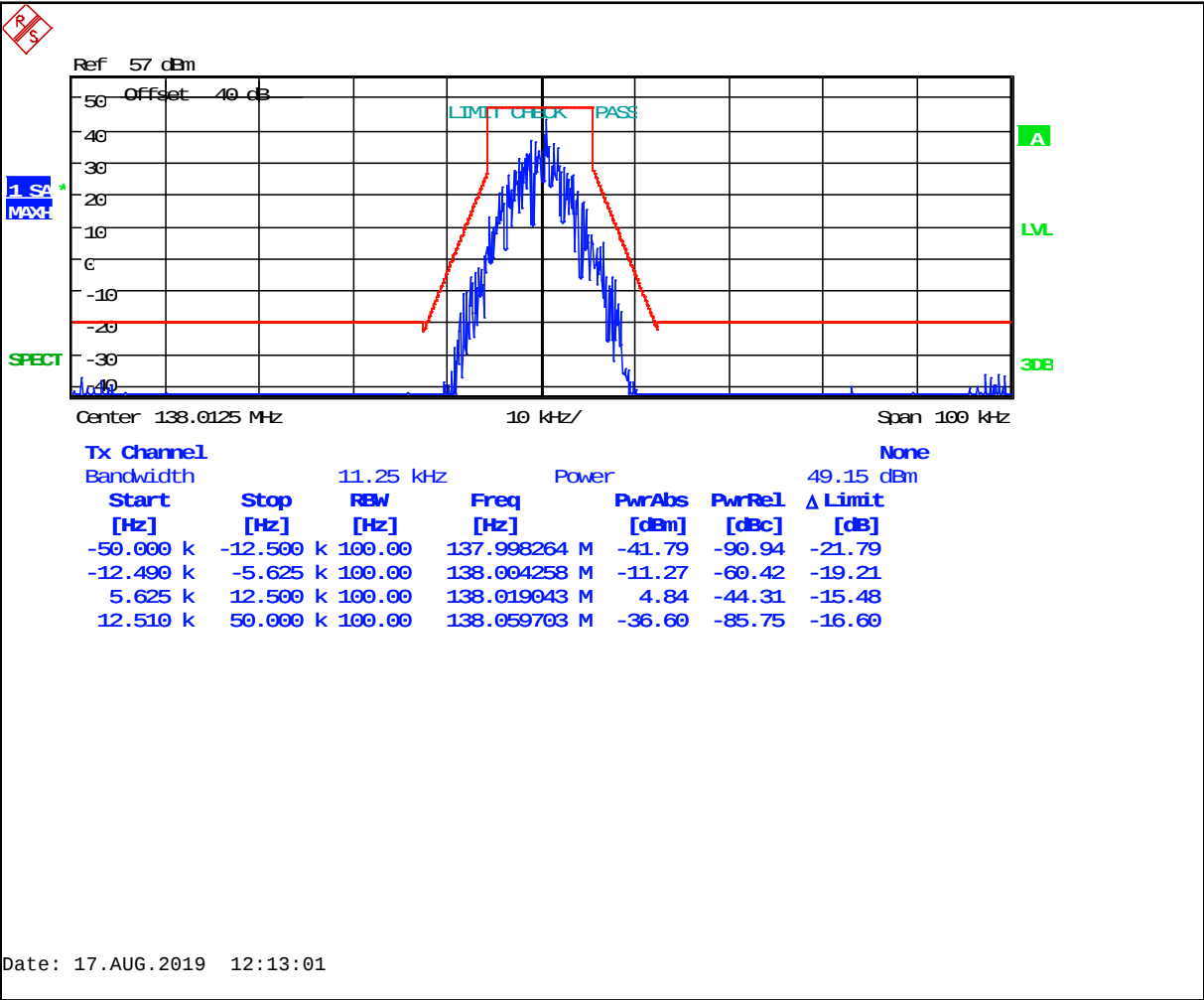
Plot 8-45: Occupied Bandwidth – 519.9875 MHz – Analog Narrowband (Mask D)

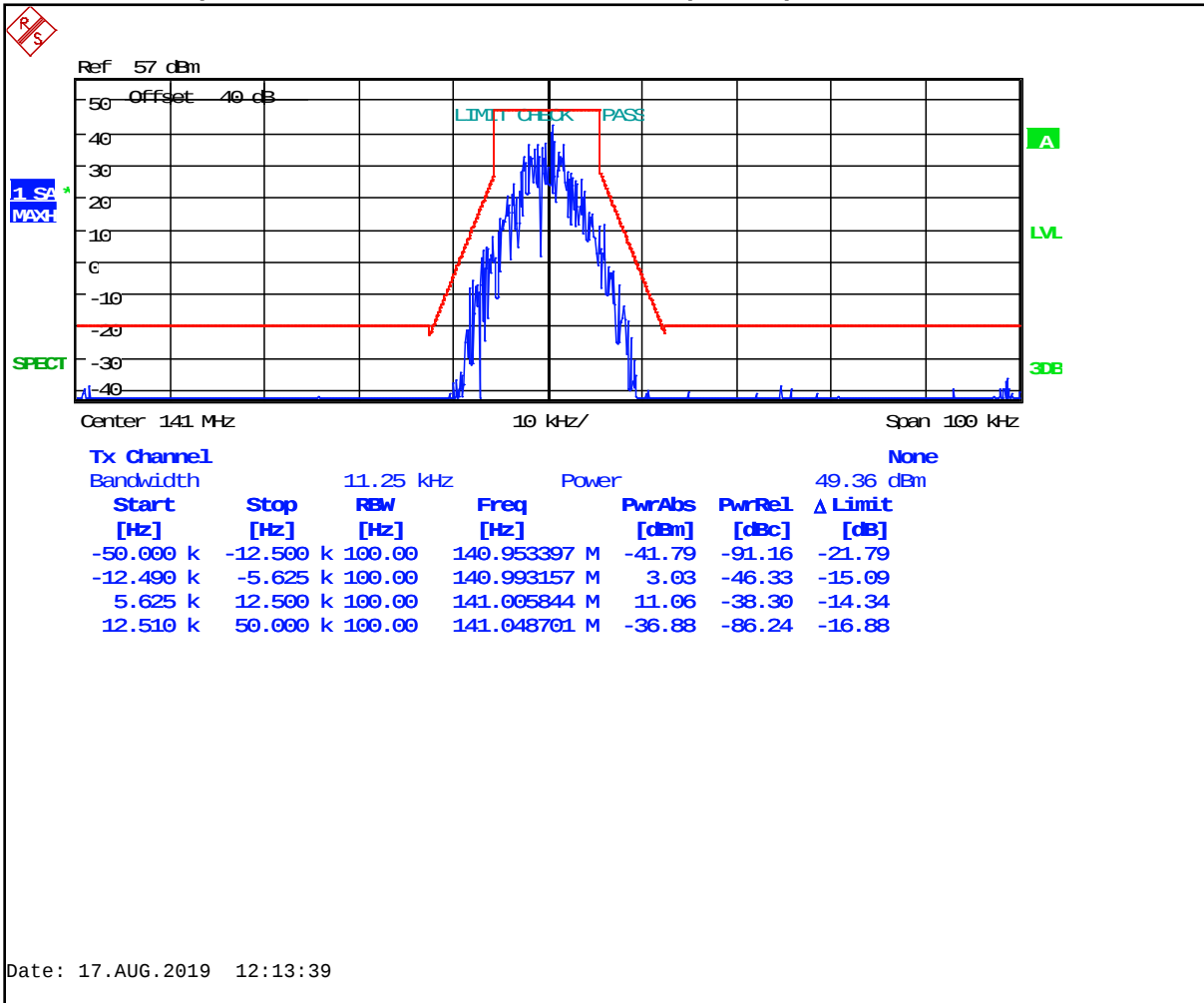


Plot 8-46: Occupied Bandwidth – 136.0125 MHz – P25 (Mask D)

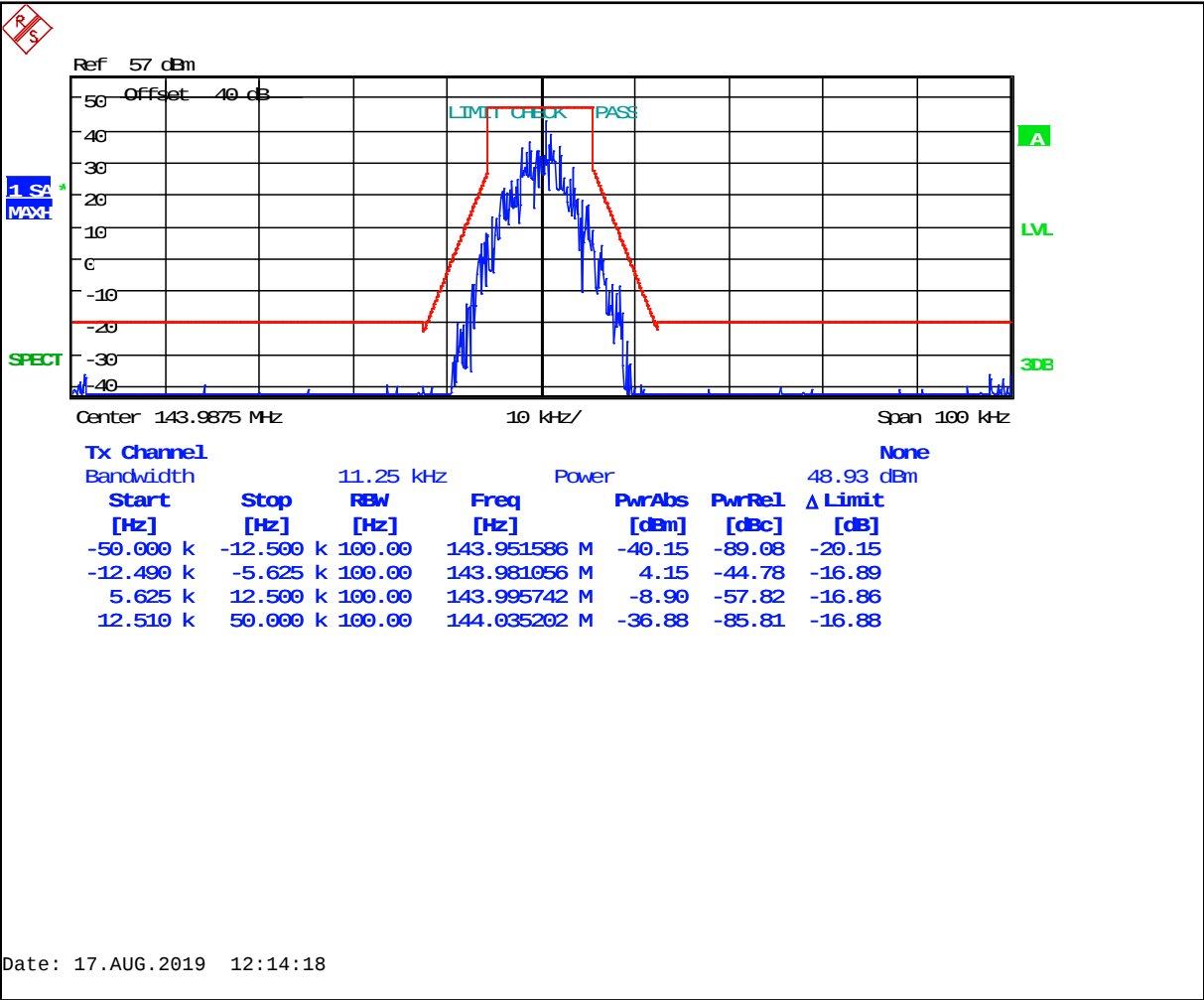


Plot 8-47: Occupied Bandwidth – 138.0125 MHz – P25 (Mask D)

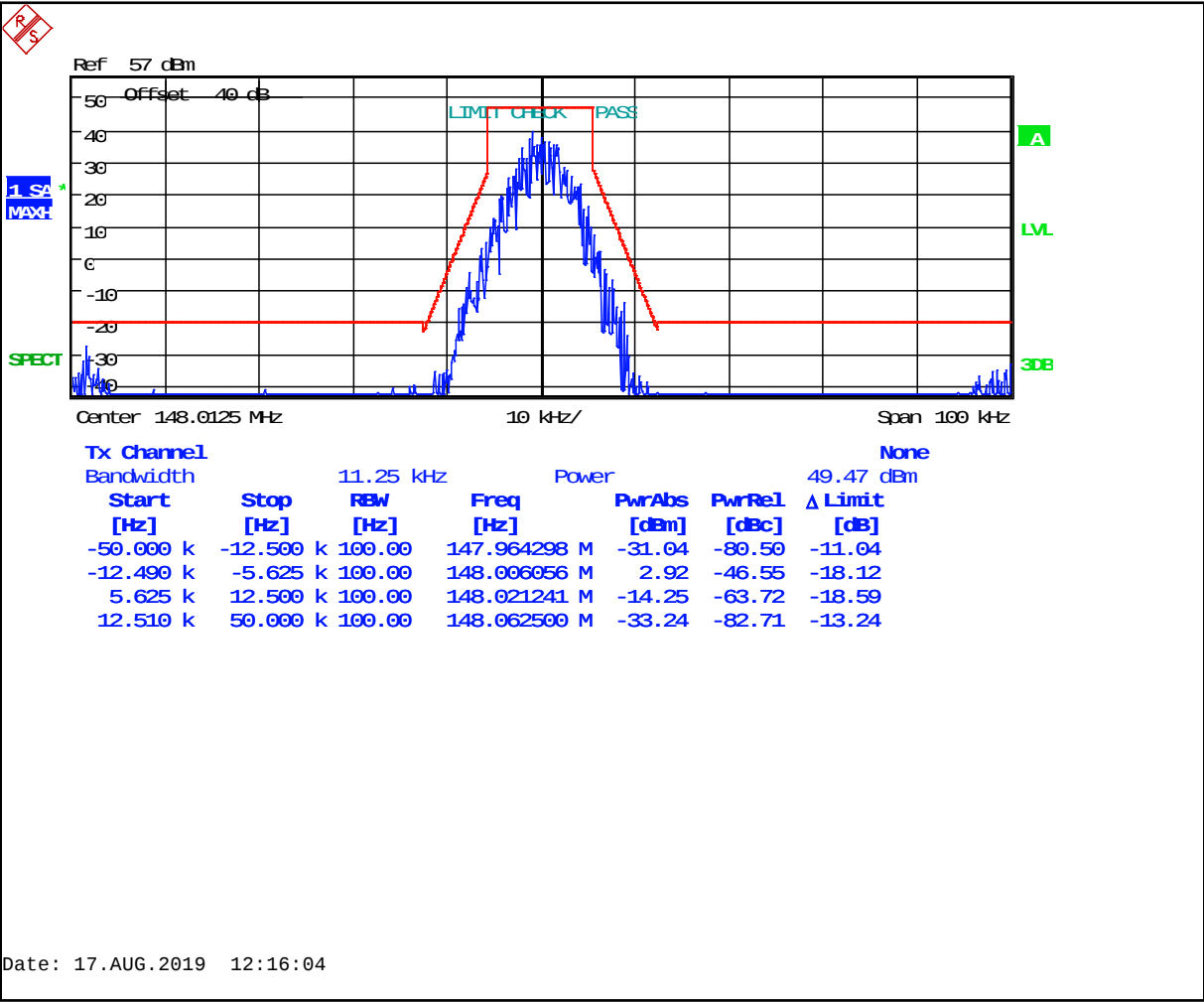




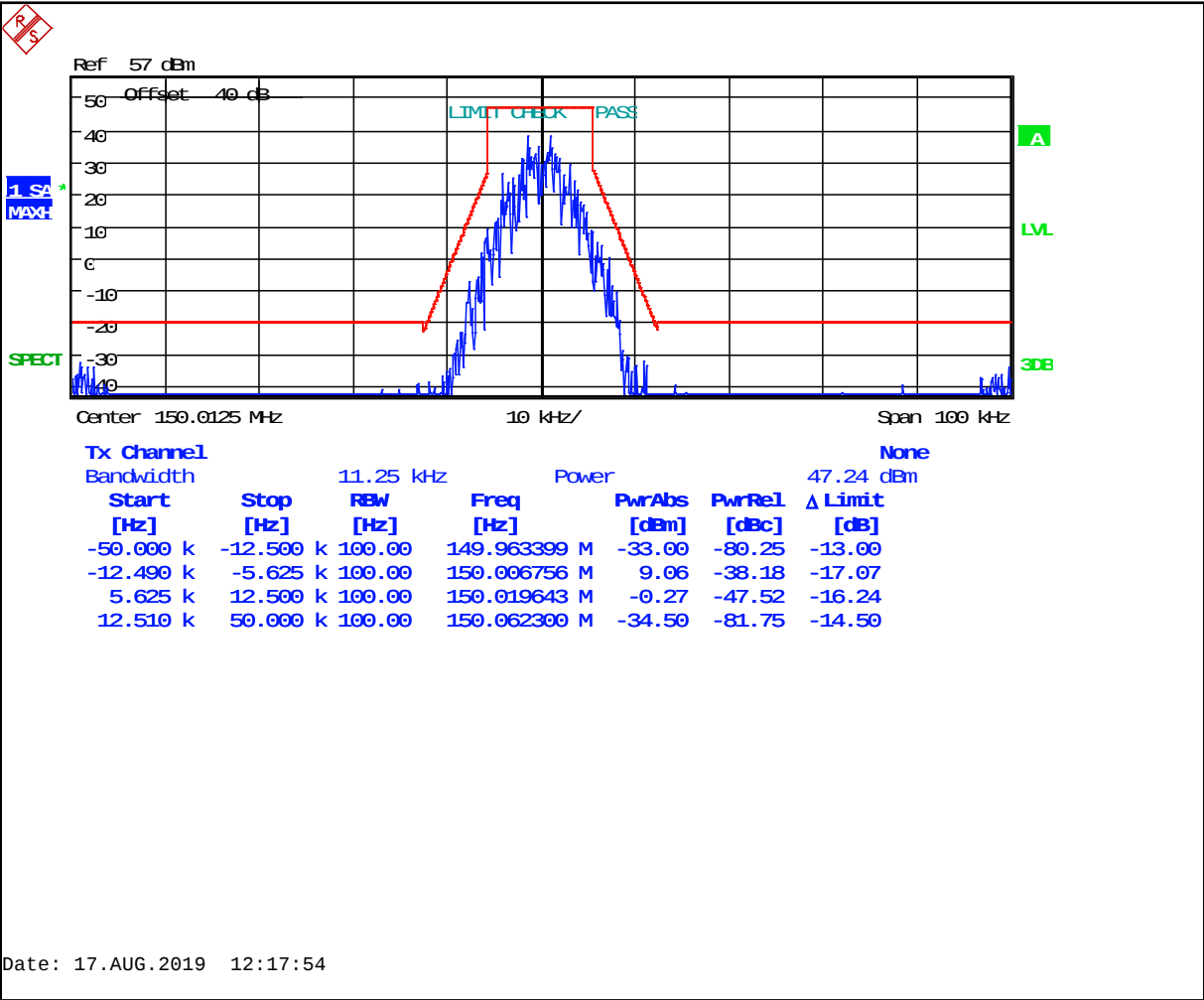
Plot 8-49: Occupied Bandwidth – 143.9875 MHz – P25 (Mask D)



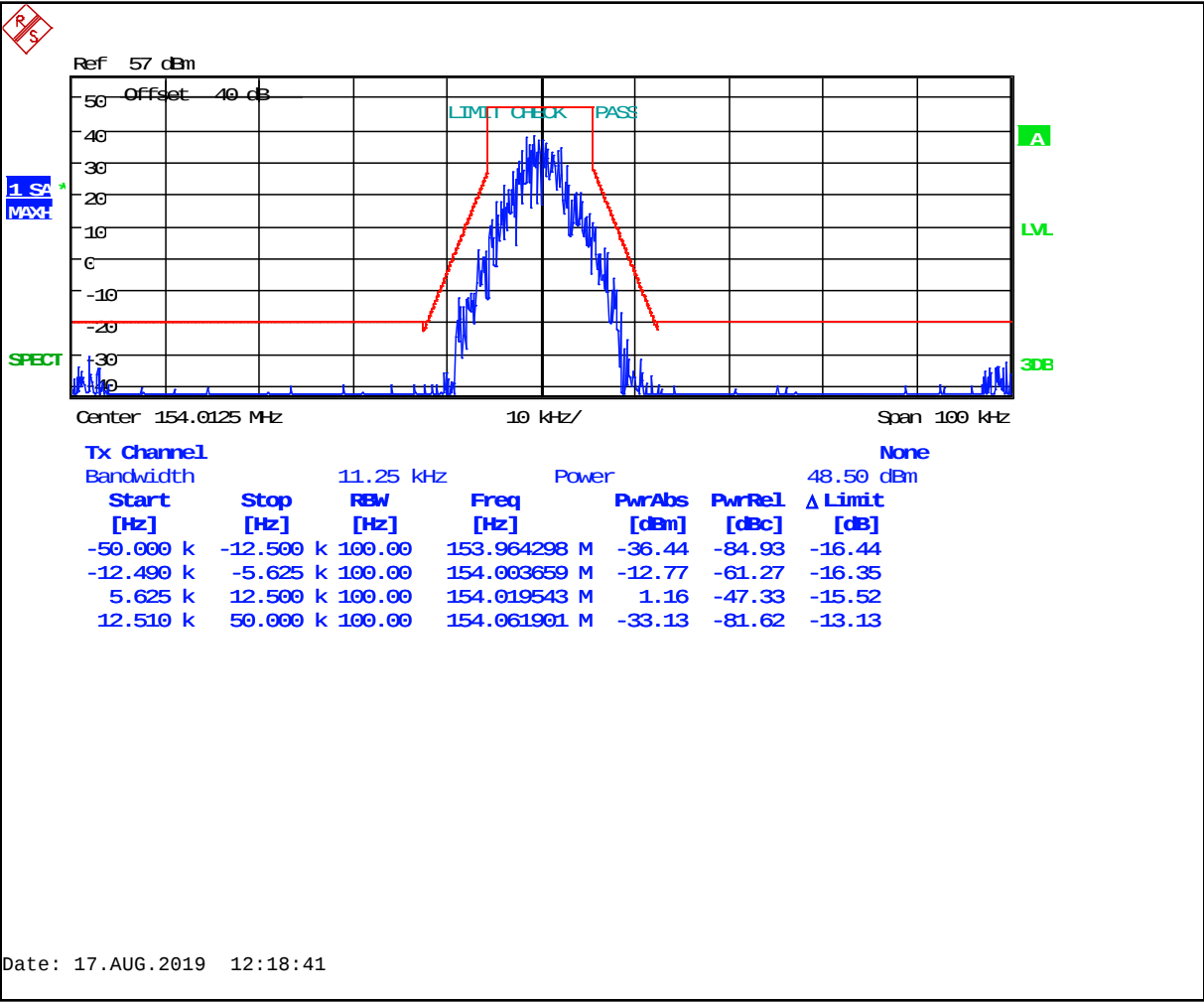
Plot 8-50: Occupied Bandwidth – 148.0125 MHz – P25 (Mask D)



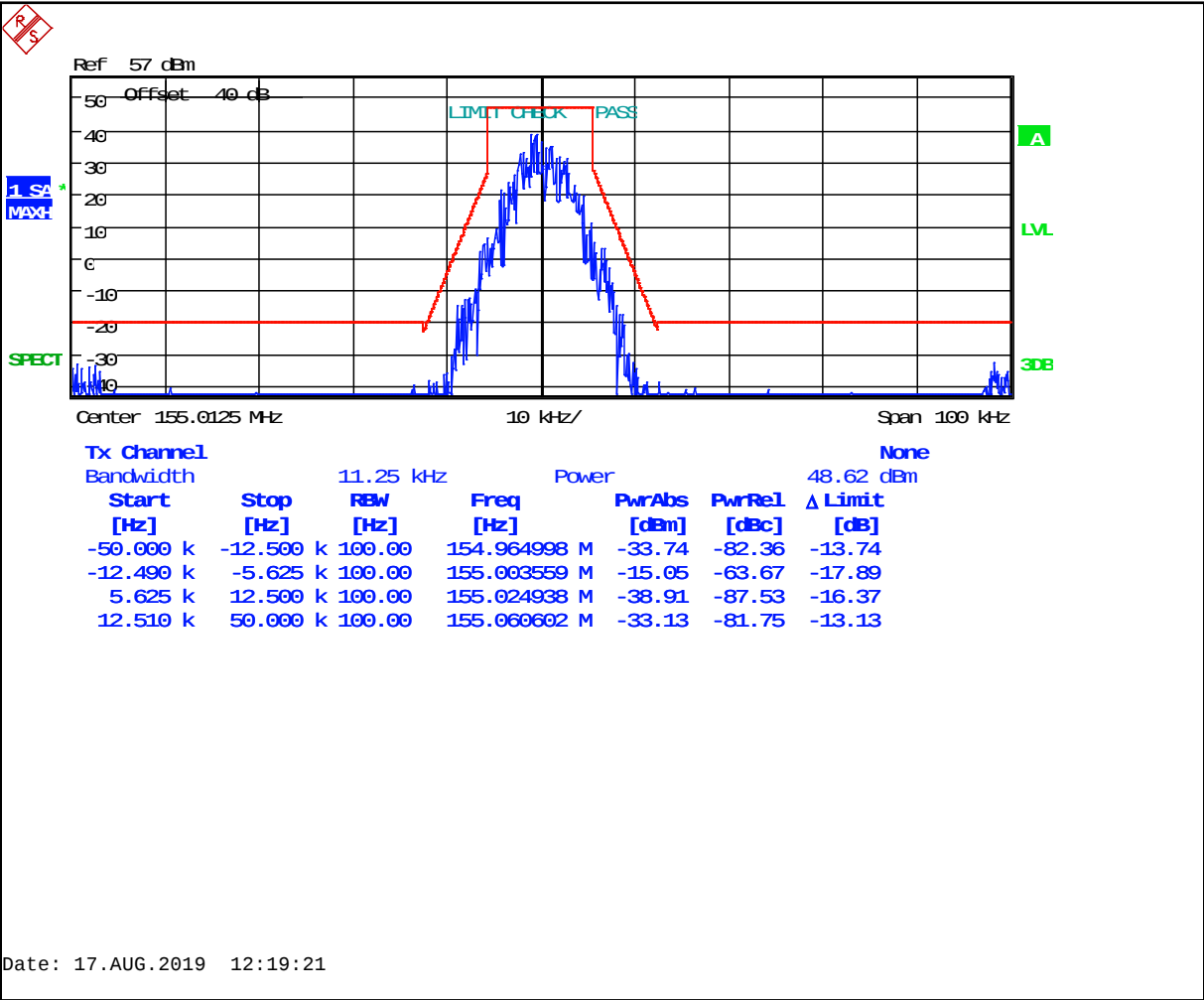
Plot 8-51: Occupied Bandwidth – 150.0125 MHz – P25 (Mask D)

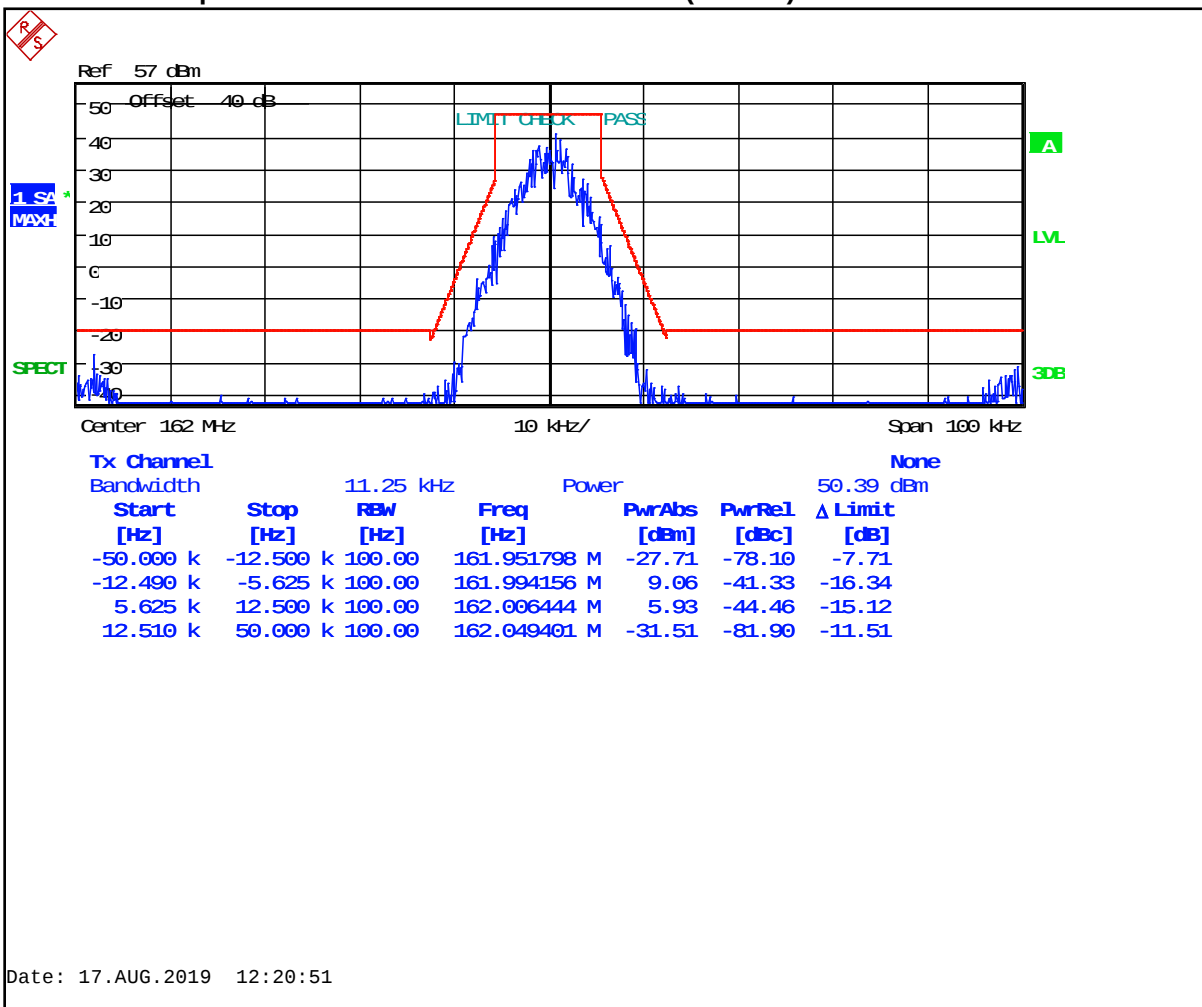


Plot 8-52: Occupied Bandwidth – 154.0125 MHz – P25 (Mask D)

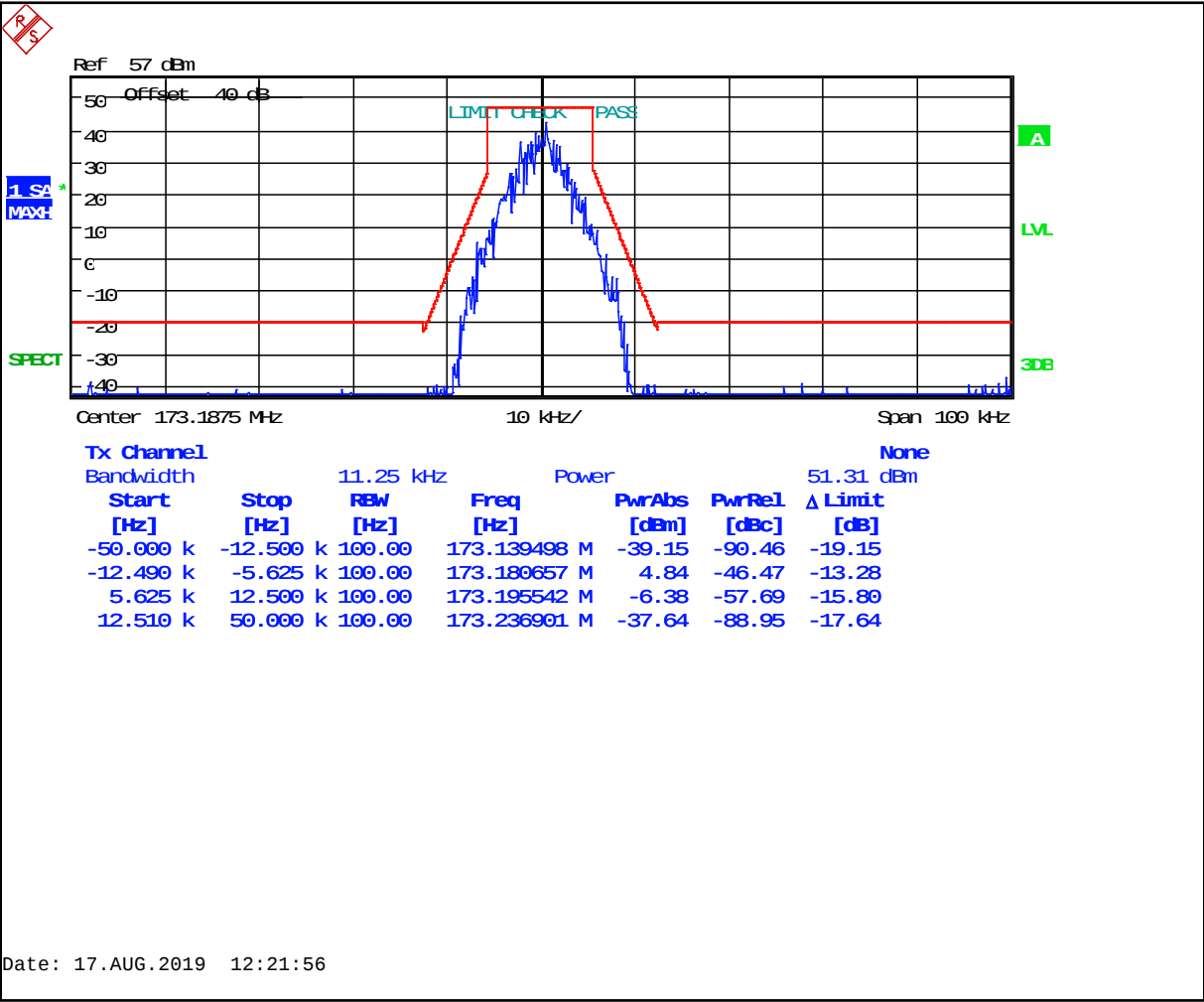


Plot 8-53: Occupied Bandwidth – 155.0125 MHz – P25 (Mask D)

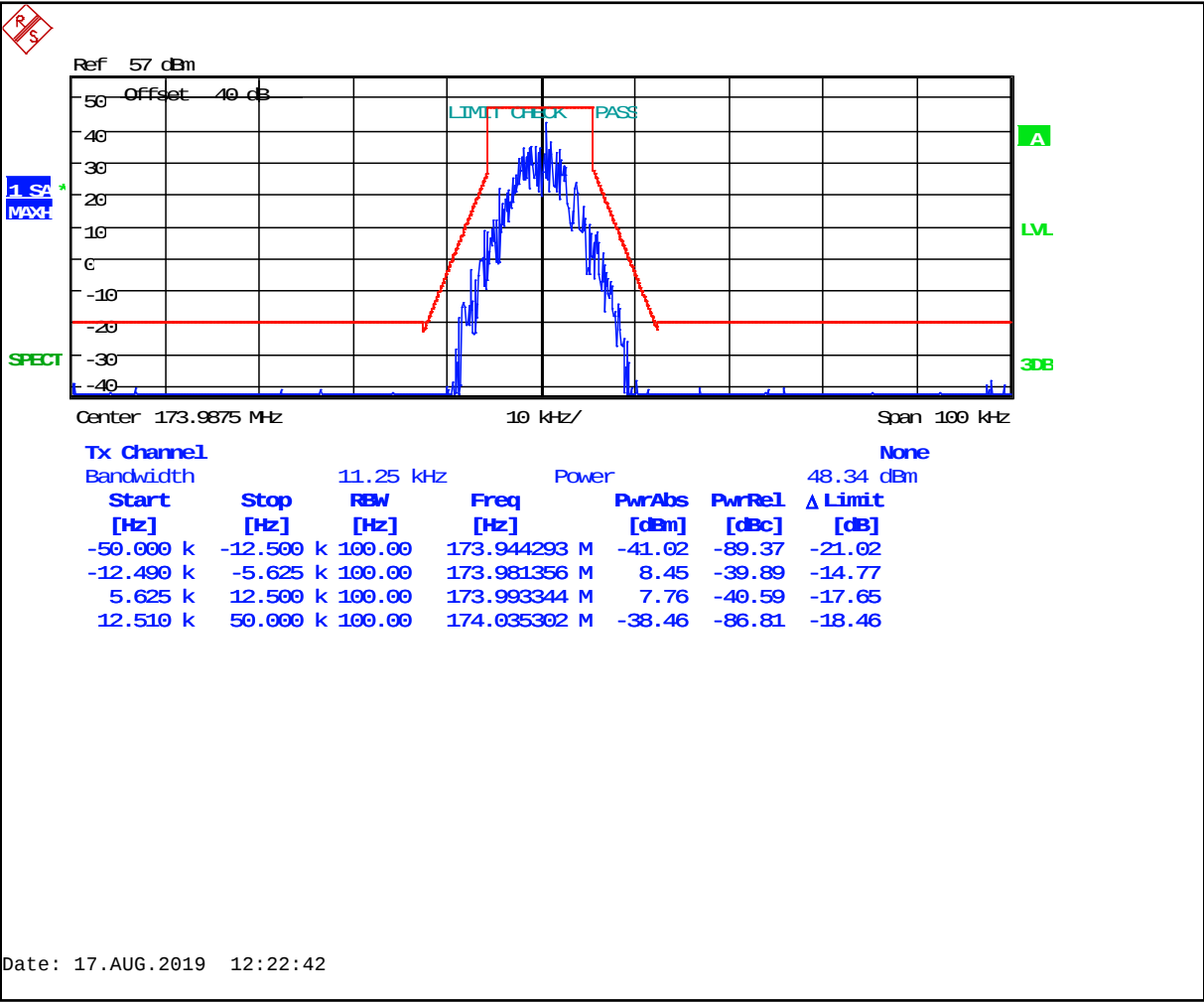




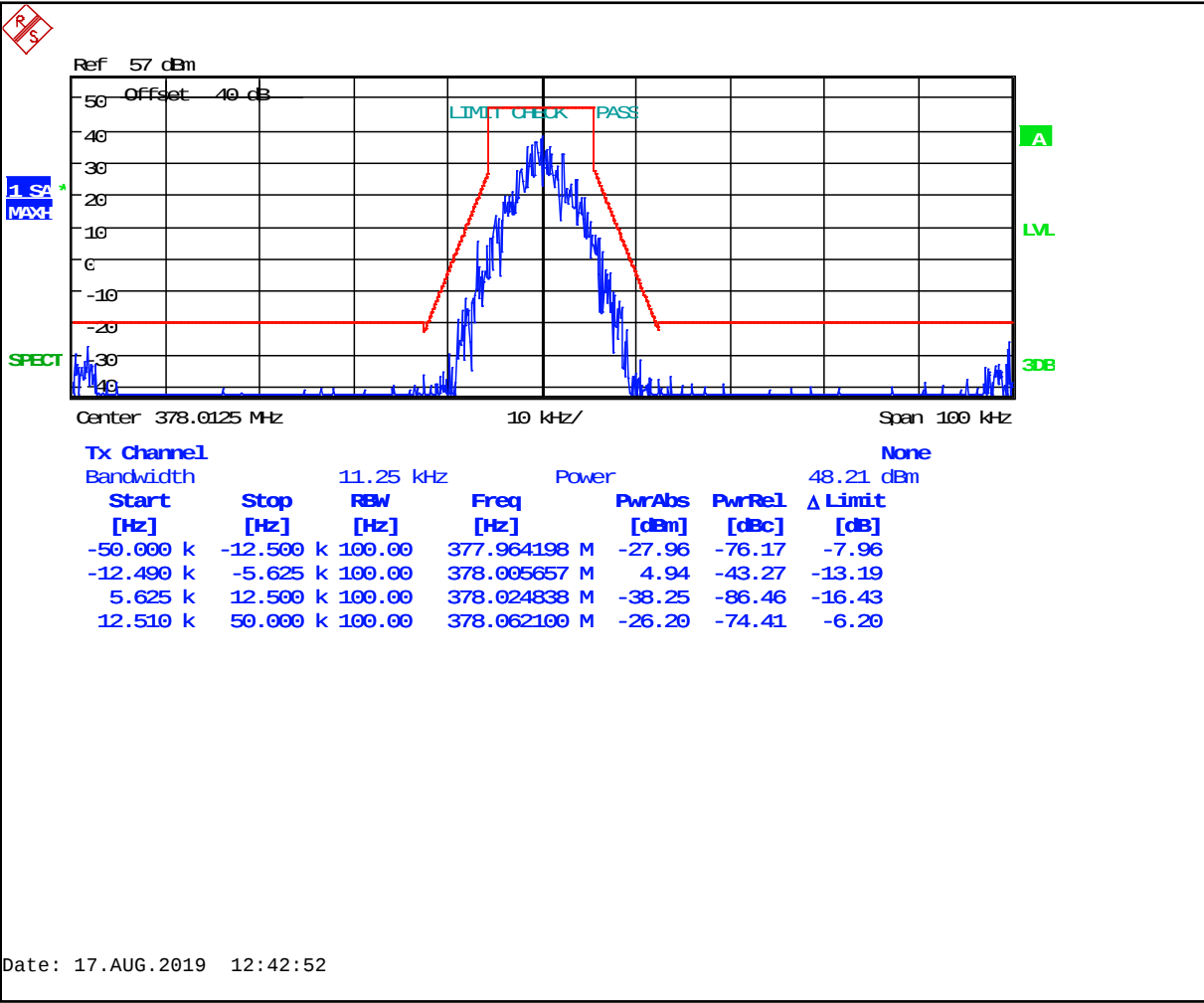
Plot 8-55: Occupied Bandwidth – 173.1875 MHz – P25 (Mask D)



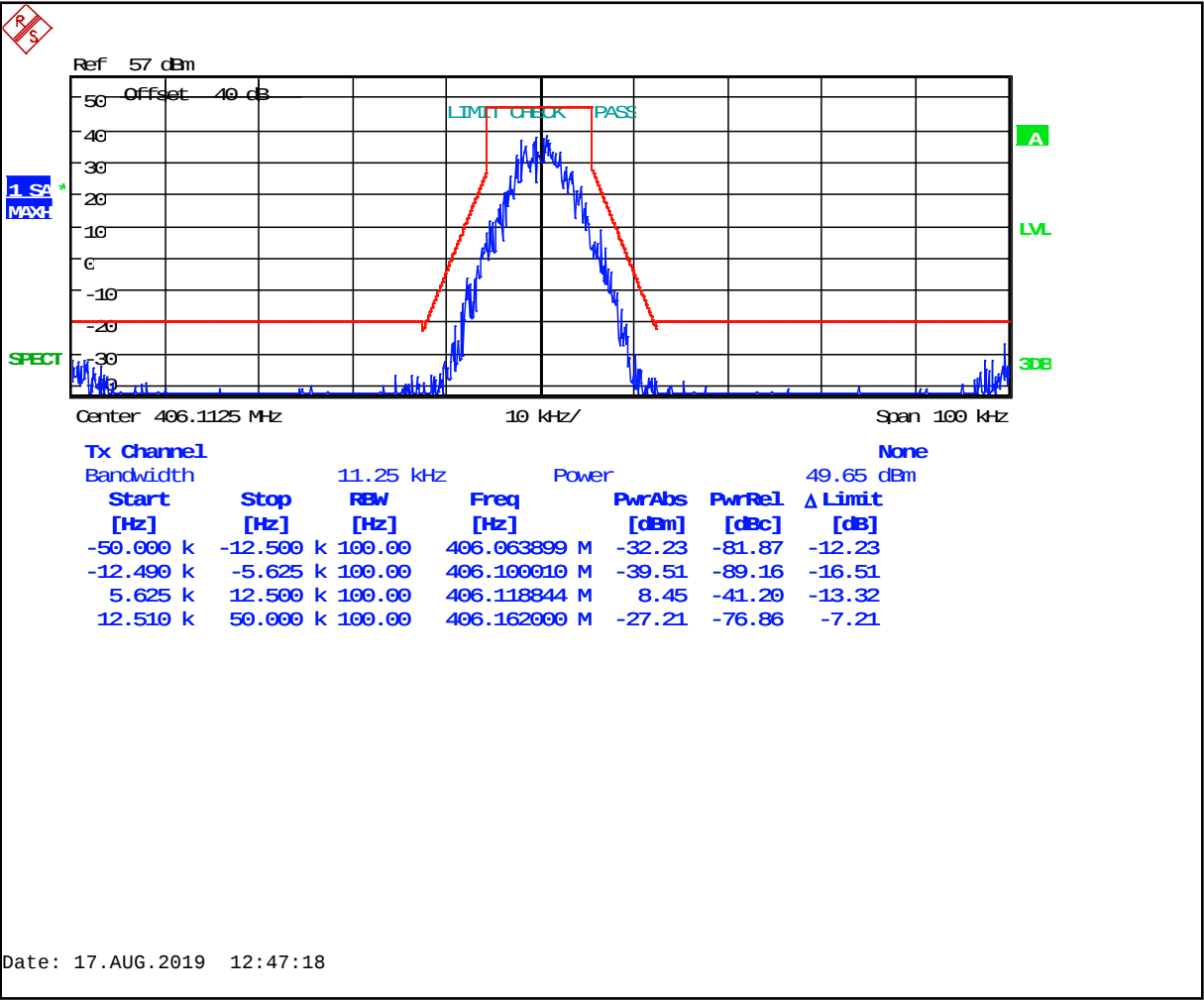
Plot 8-56: Occupied Bandwidth – 173.9875 MHz – P25 (Mask D)



Plot 8-57: Occupied Bandwidth – 378.0125 MHz – P25 (Mask D)



Plot 8-58: Occupied Bandwidth – 406.1125 MHz – P25 (Mask D)



Ref 57 dBm

Offset 40 dB

LIMIT CHECK PASS

1 SA MAX

SPECT

Center 418 MHz

10 kHz/

Span 100 kHz

Tx Channel

Bandwidth 11.25 kHz

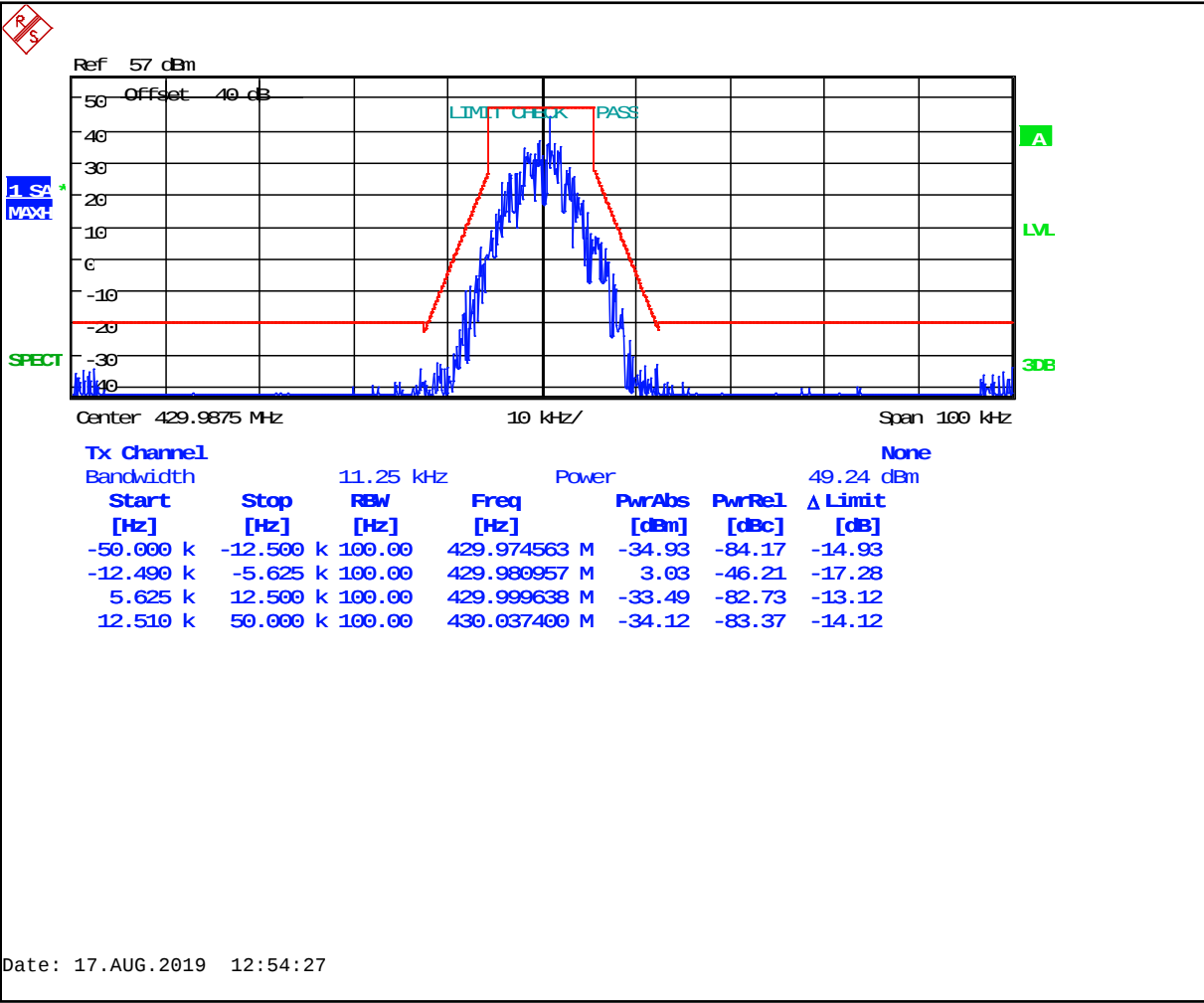
Power

None

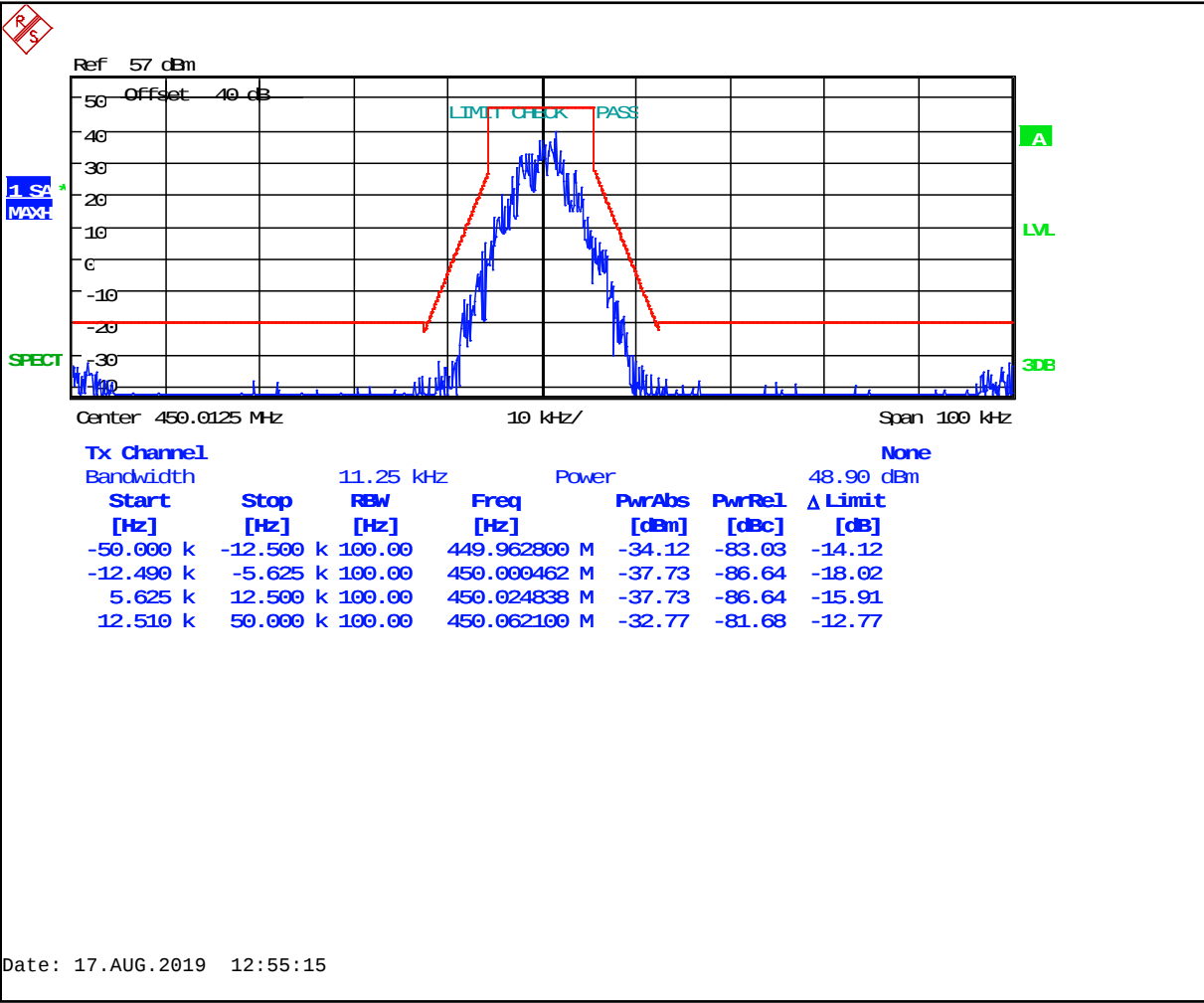
50.18 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	Δ Limit [dB]
-50.000 k	-12.500 k	100.00	417.950799 M	-33.61	-83.79	-13.61
-12.490 k	-5.625 k	100.00	417.993457 M	5.22	-44.95	-15.09
5.625 k	12.500 k	100.00	418.012338 M	-37.44	-87.62	-15.62
12.510 k	50.000 k	100.00	418.047802 M	-31.12	-81.30	-11.12

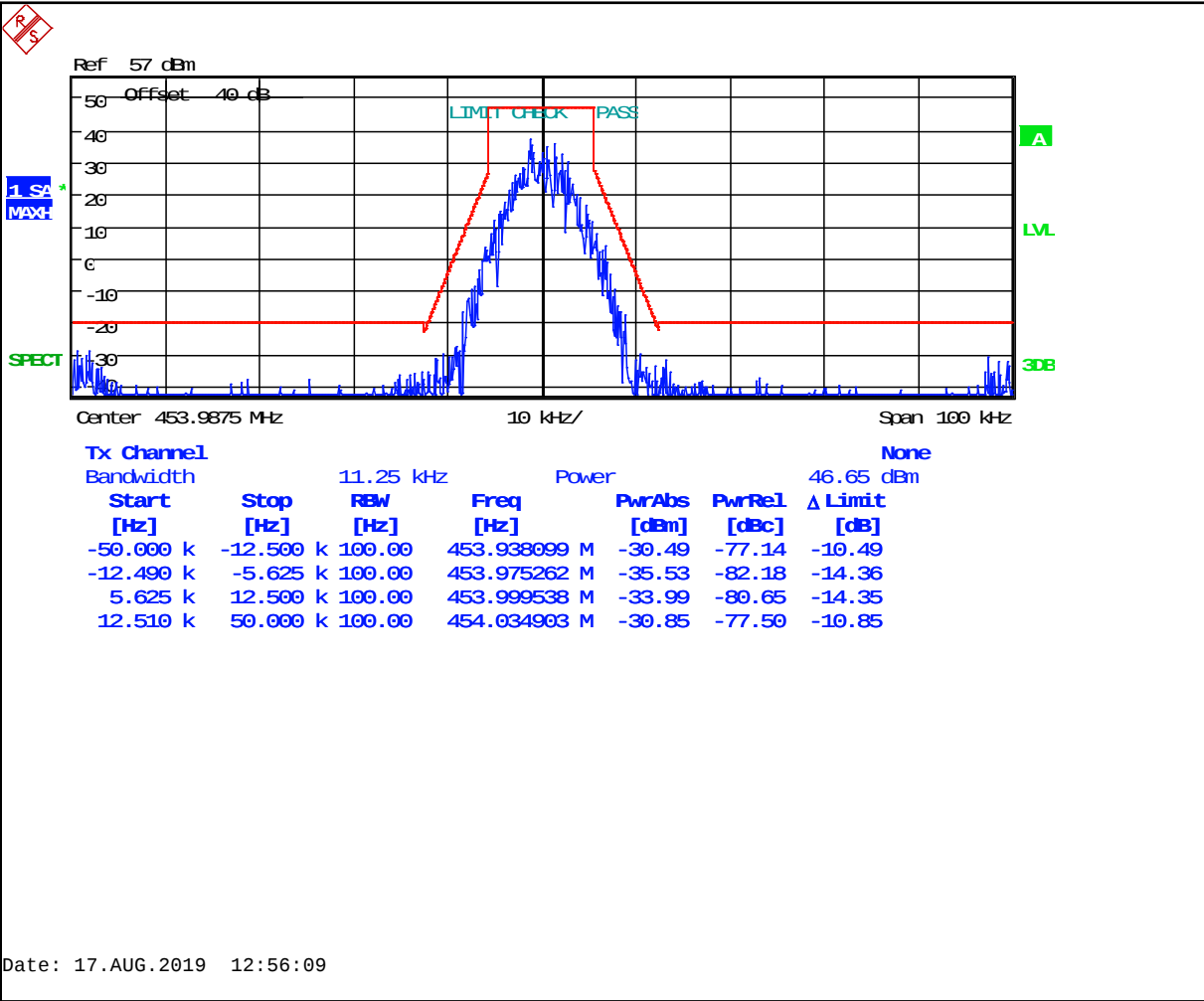
Plot 8-60: Occupied Bandwidth – 429.9875 MHz – P25 (Mask D)



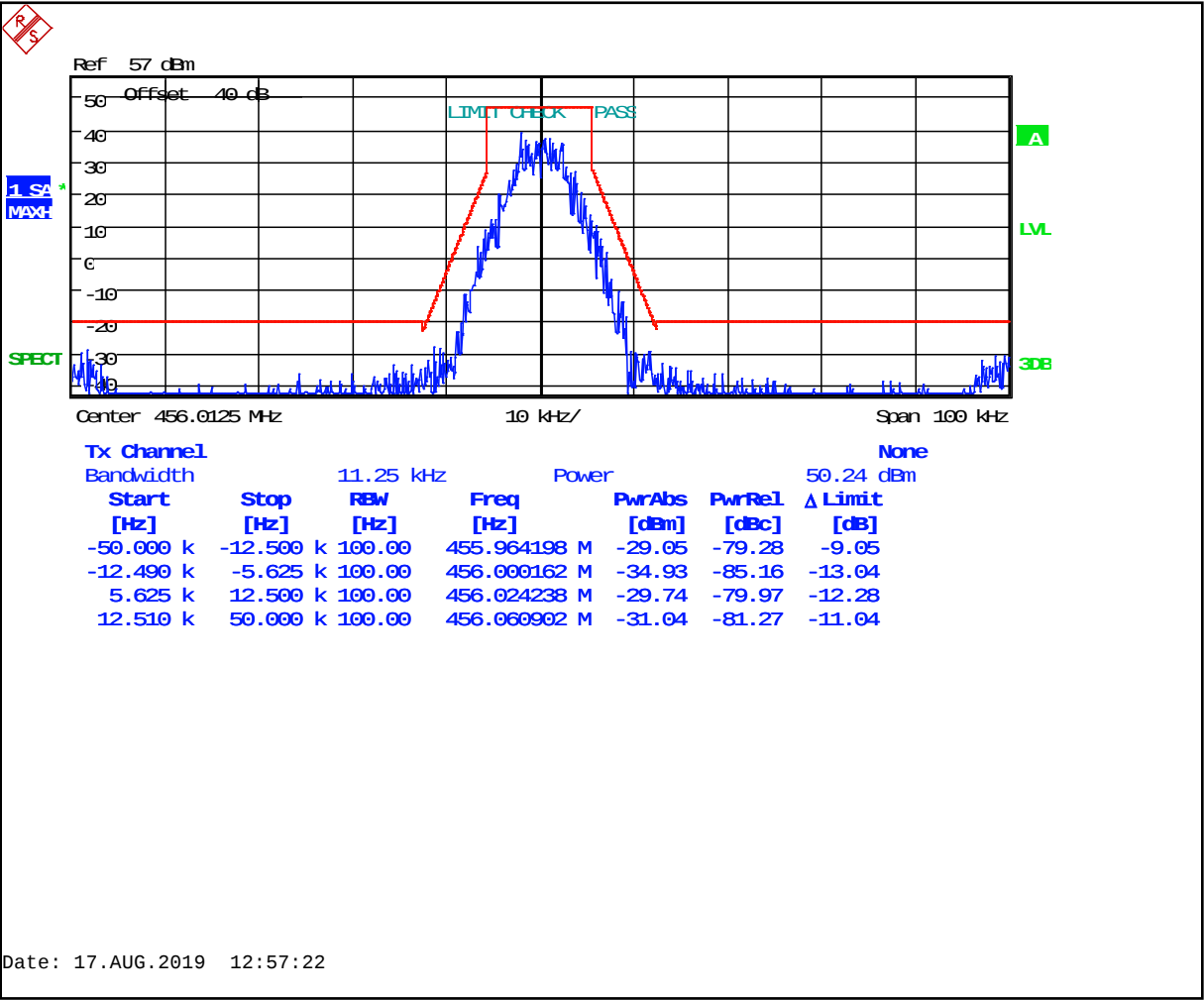
Plot 8-61: Occupied Bandwidth – 450.0125 MHz – P25 (Mask D)

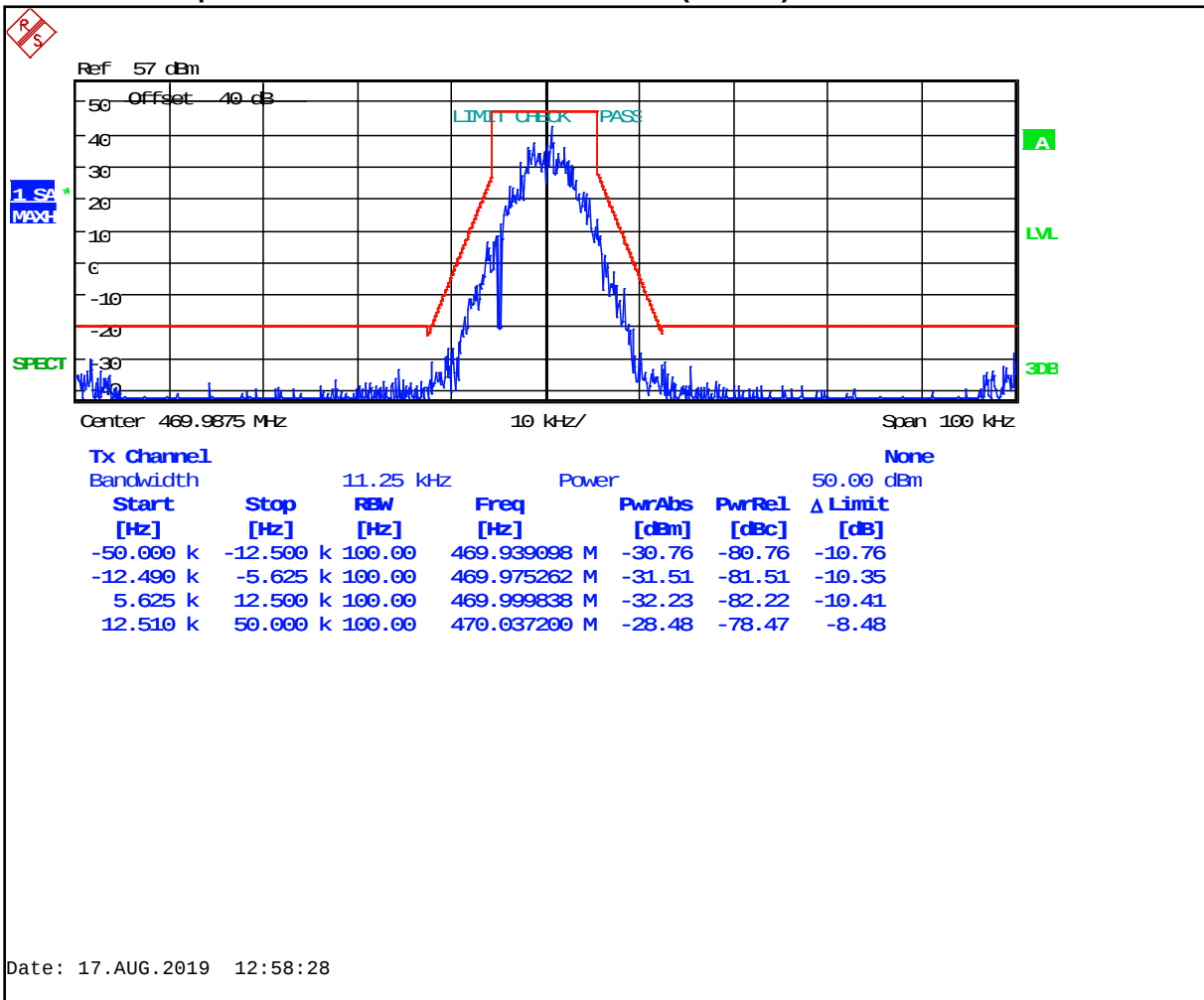


Plot 8-62: Occupied Bandwidth – 453.9875 MHz – P25 (Mask D)

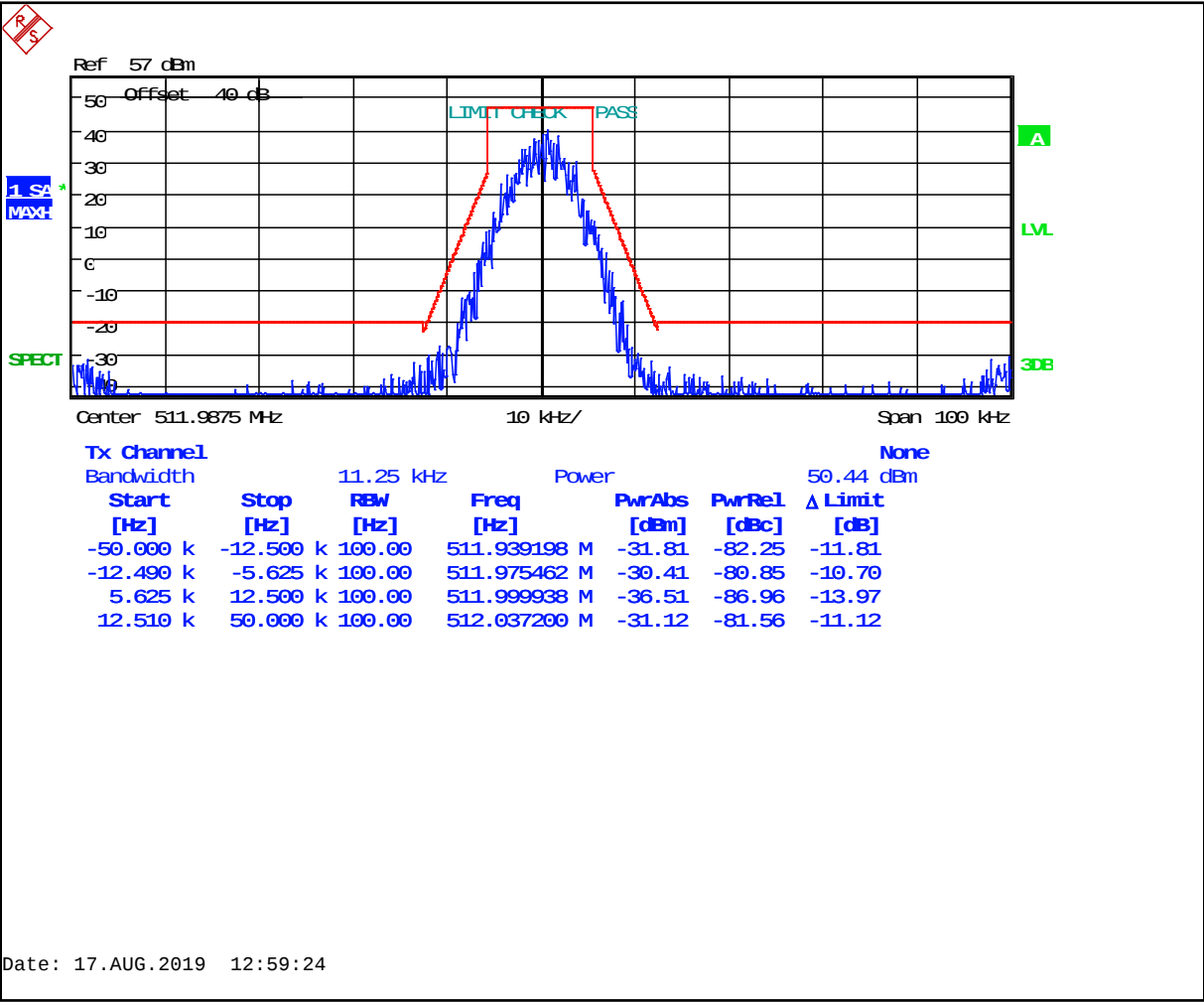


Plot 8-63: Occupied Bandwidth – 456.0125 MHz – P25 (Mask D)

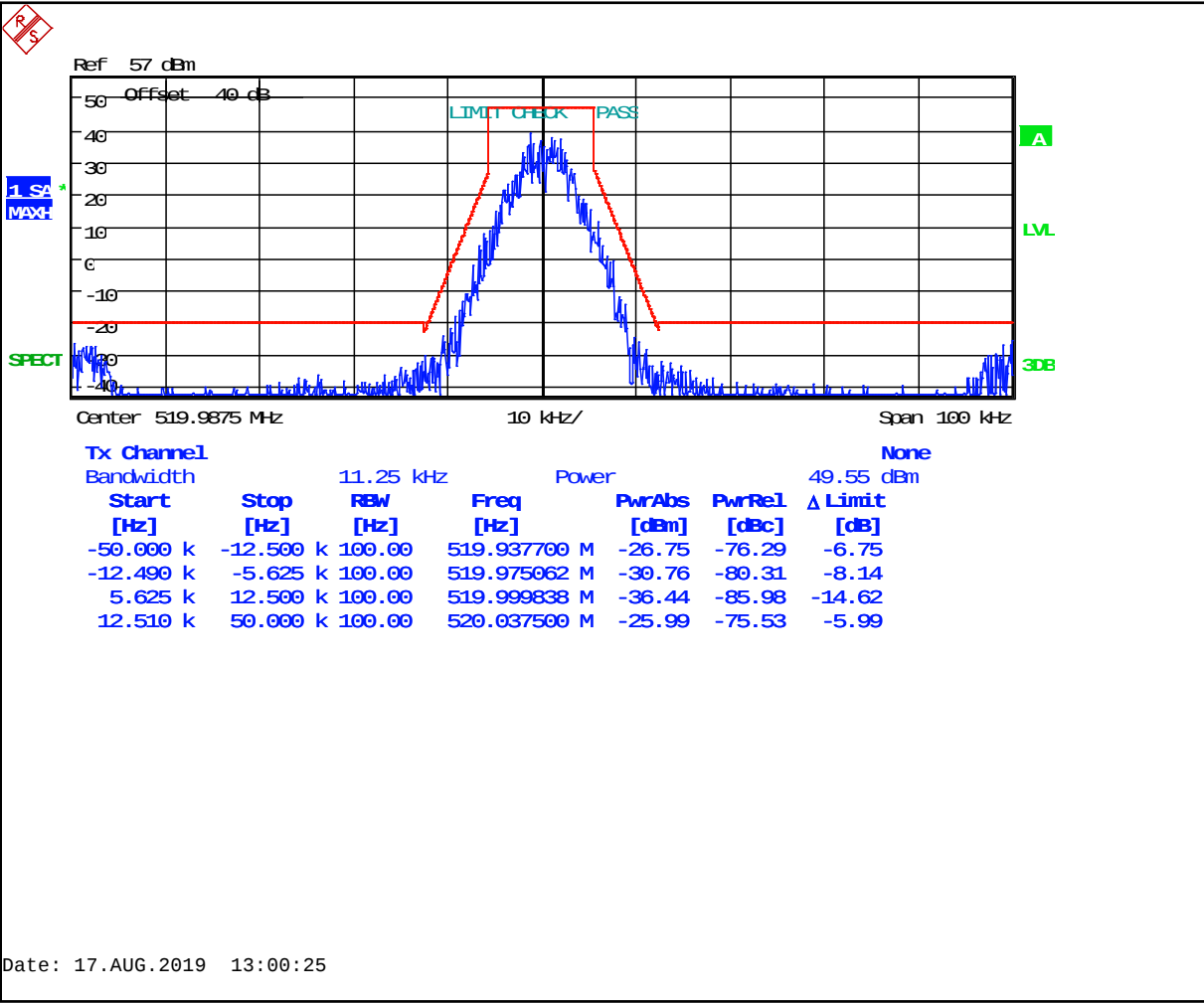


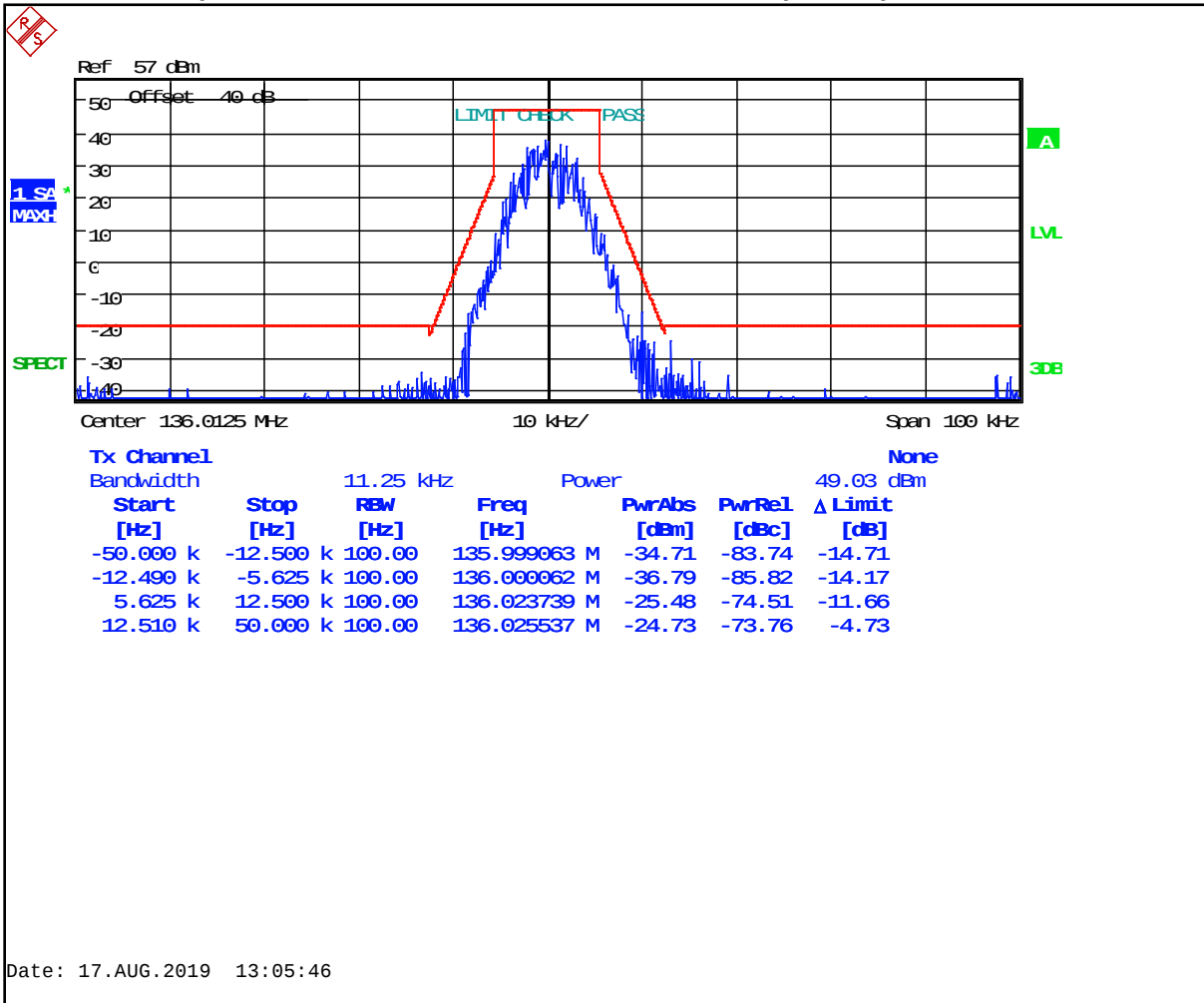


Plot 8-65: Occupied Bandwidth – 511.9875 MHz – P25 (Mask D)

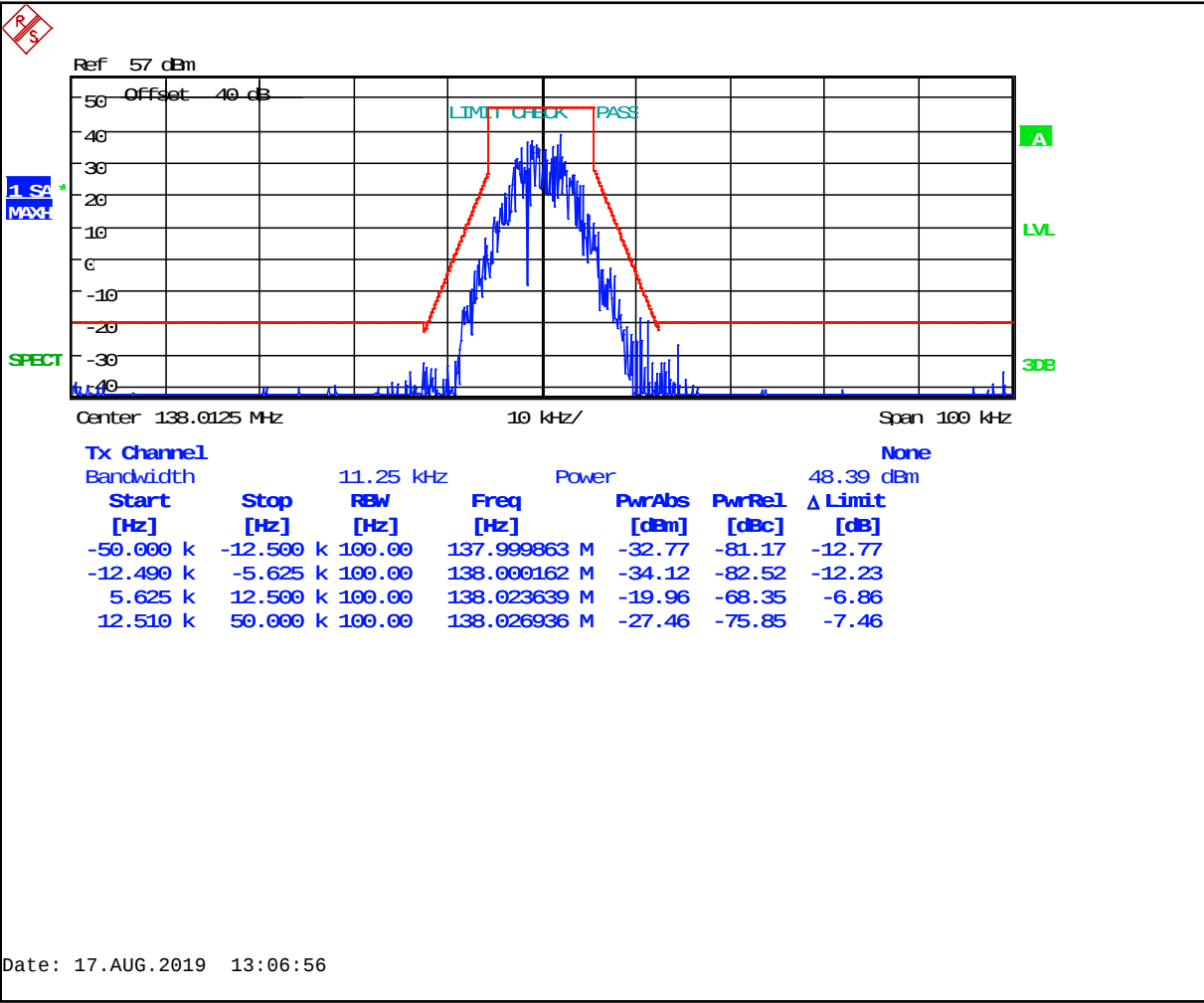


Plot 8-66: Occupied Bandwidth – 519.9875 MHz – P25 (Mask D)

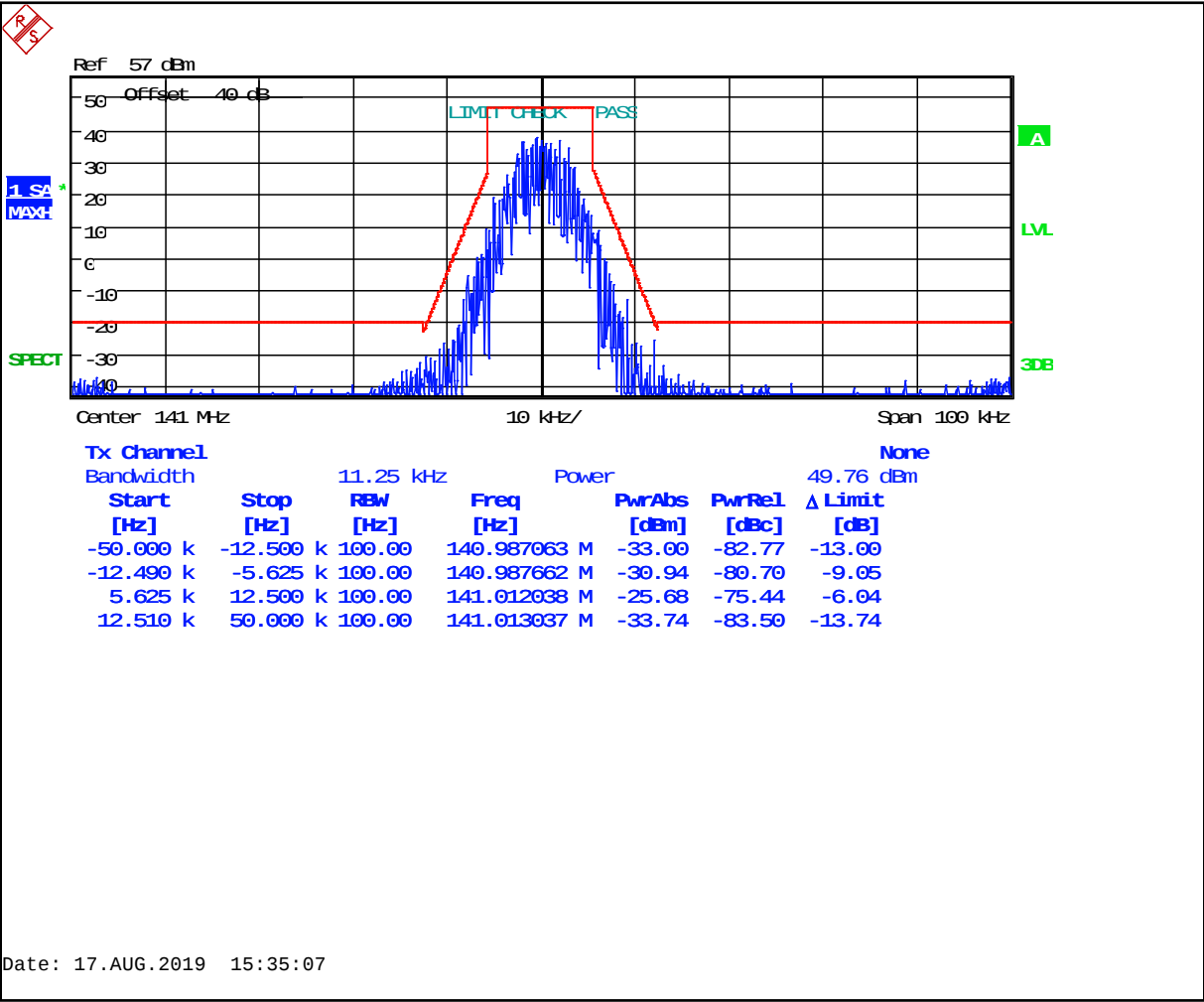


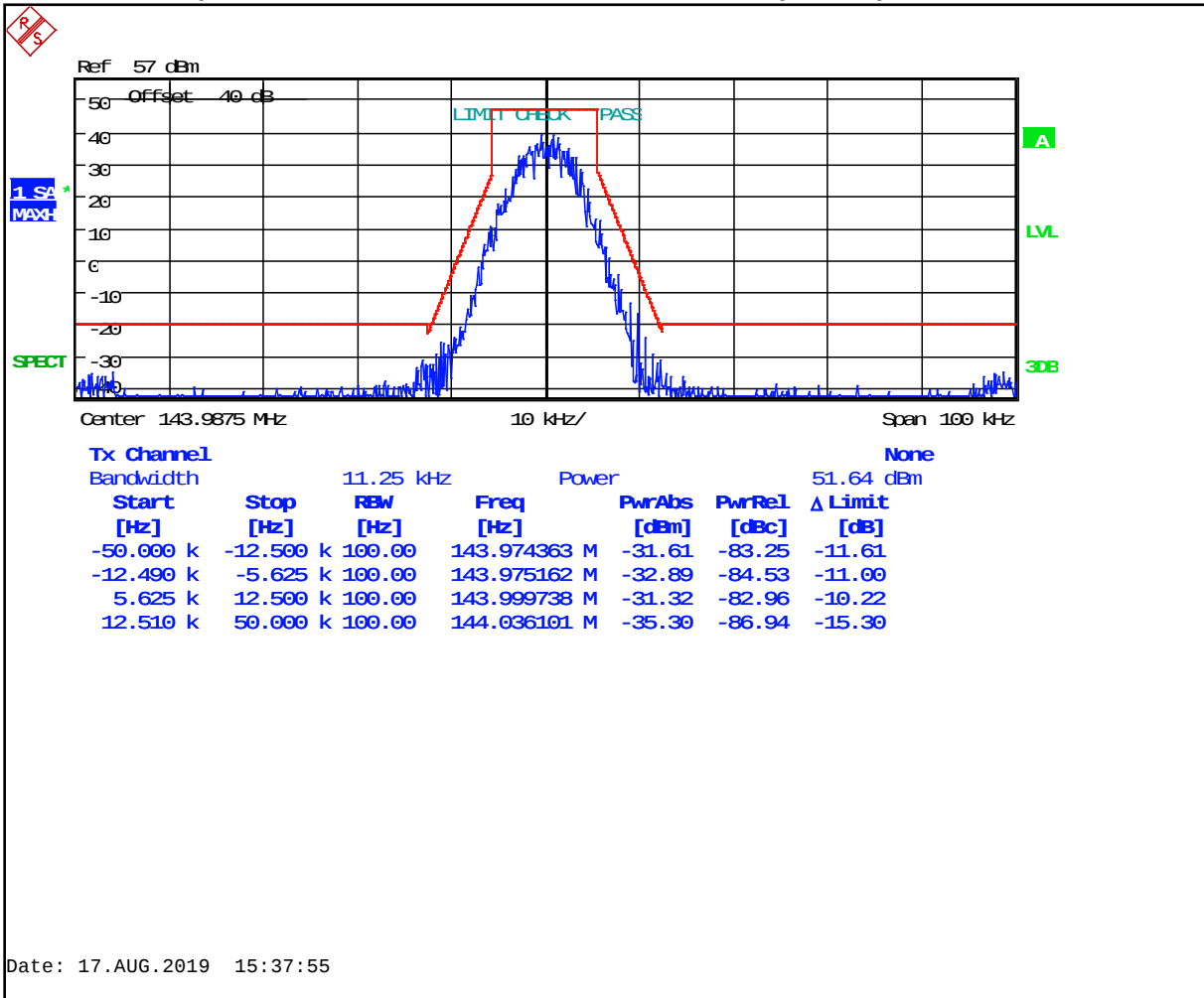


Plot 8-68: Occupied Bandwidth – 138.0125 MHz – CPM TDMA (Mask D)

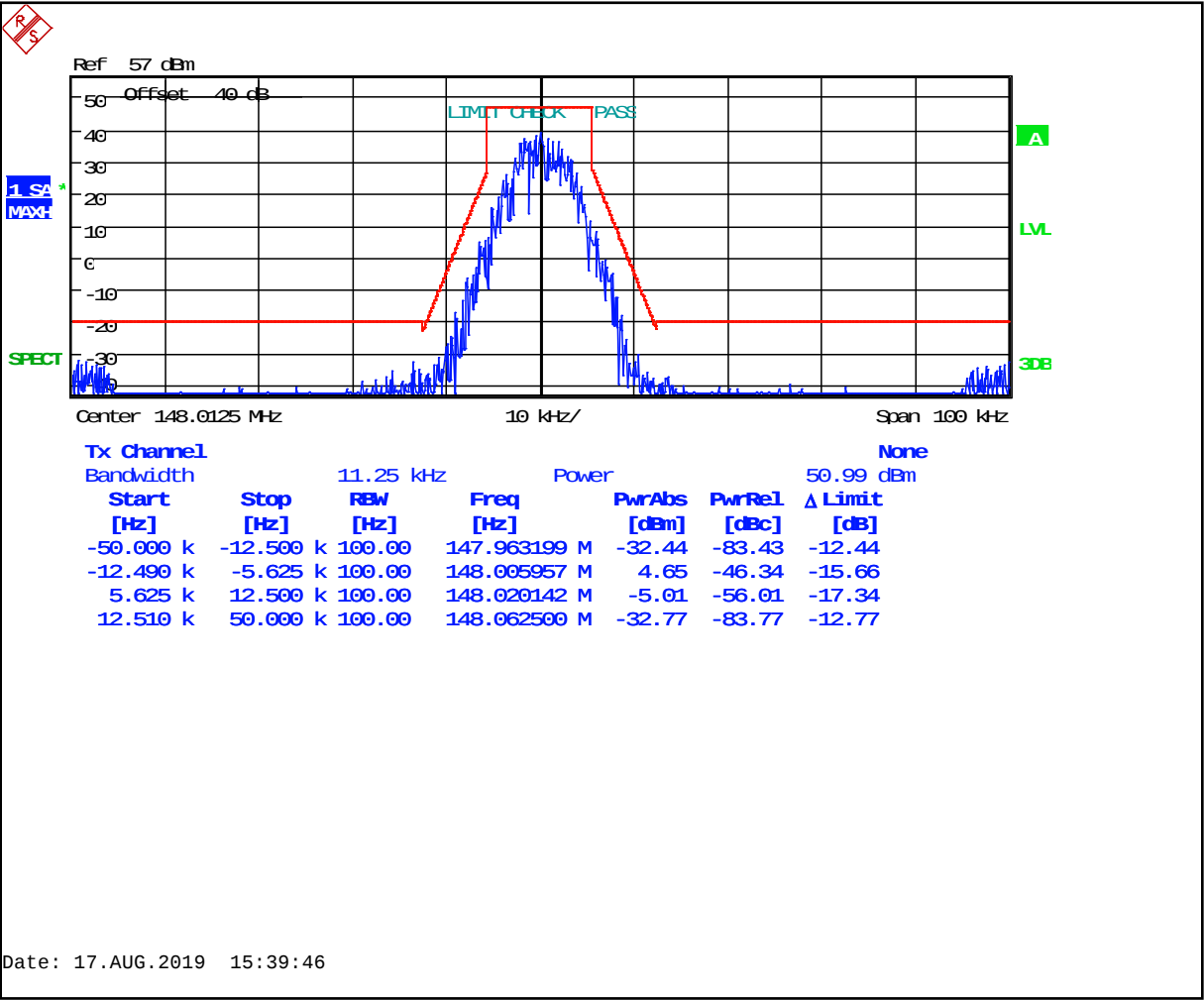


Plot 8-69: Occupied Bandwidth – 141.0000 MHz – CPM TDMA (Mask D)

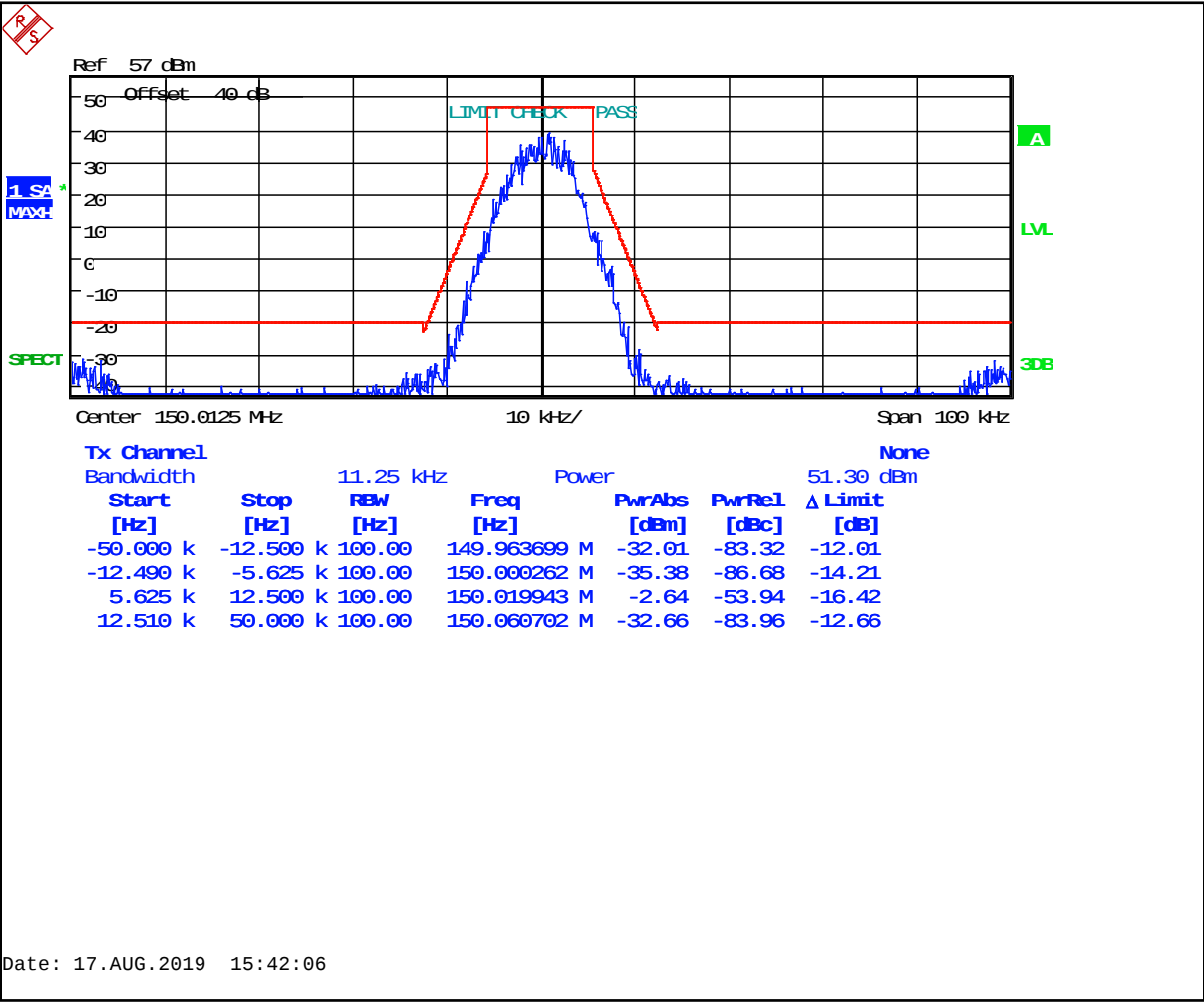


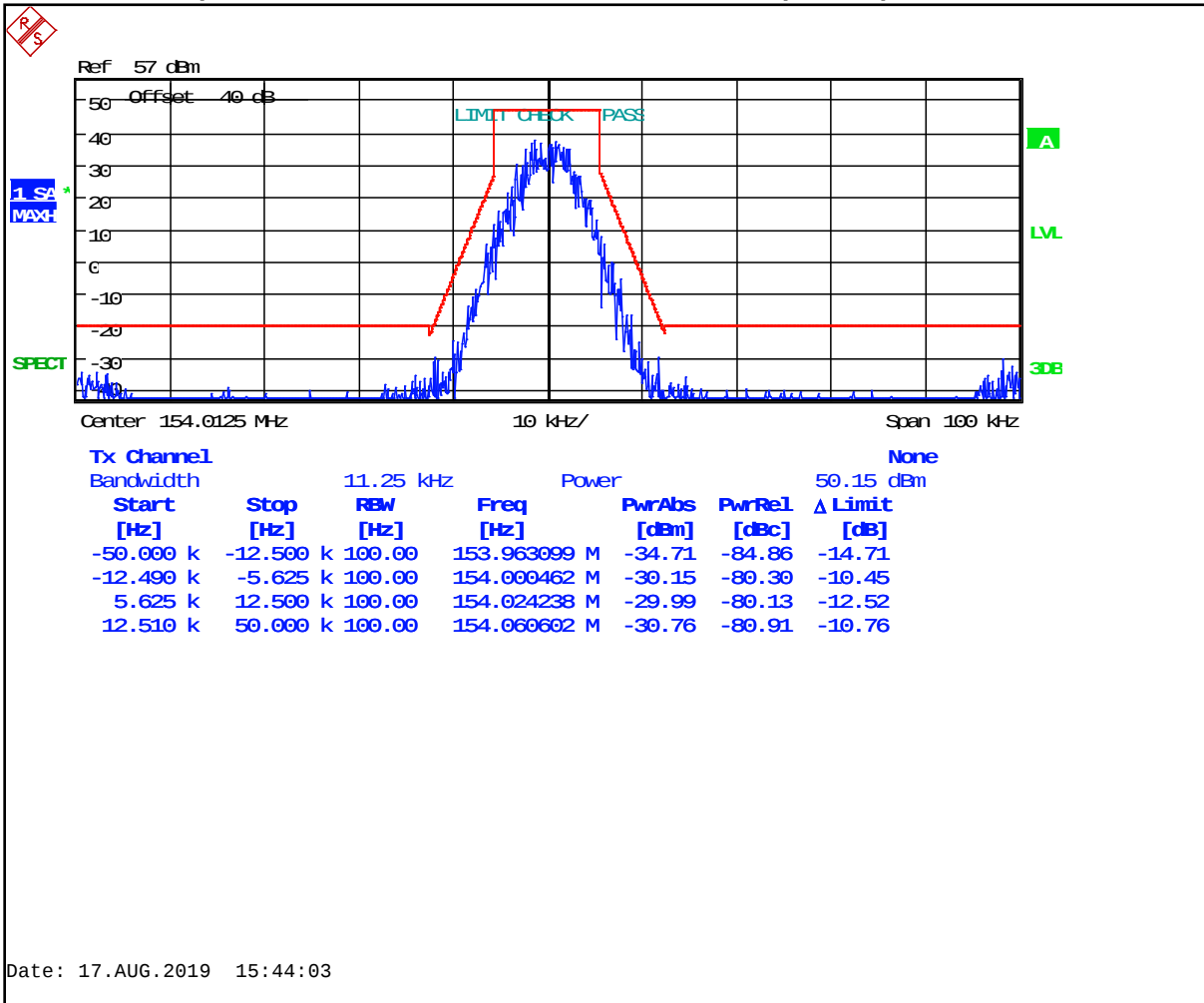


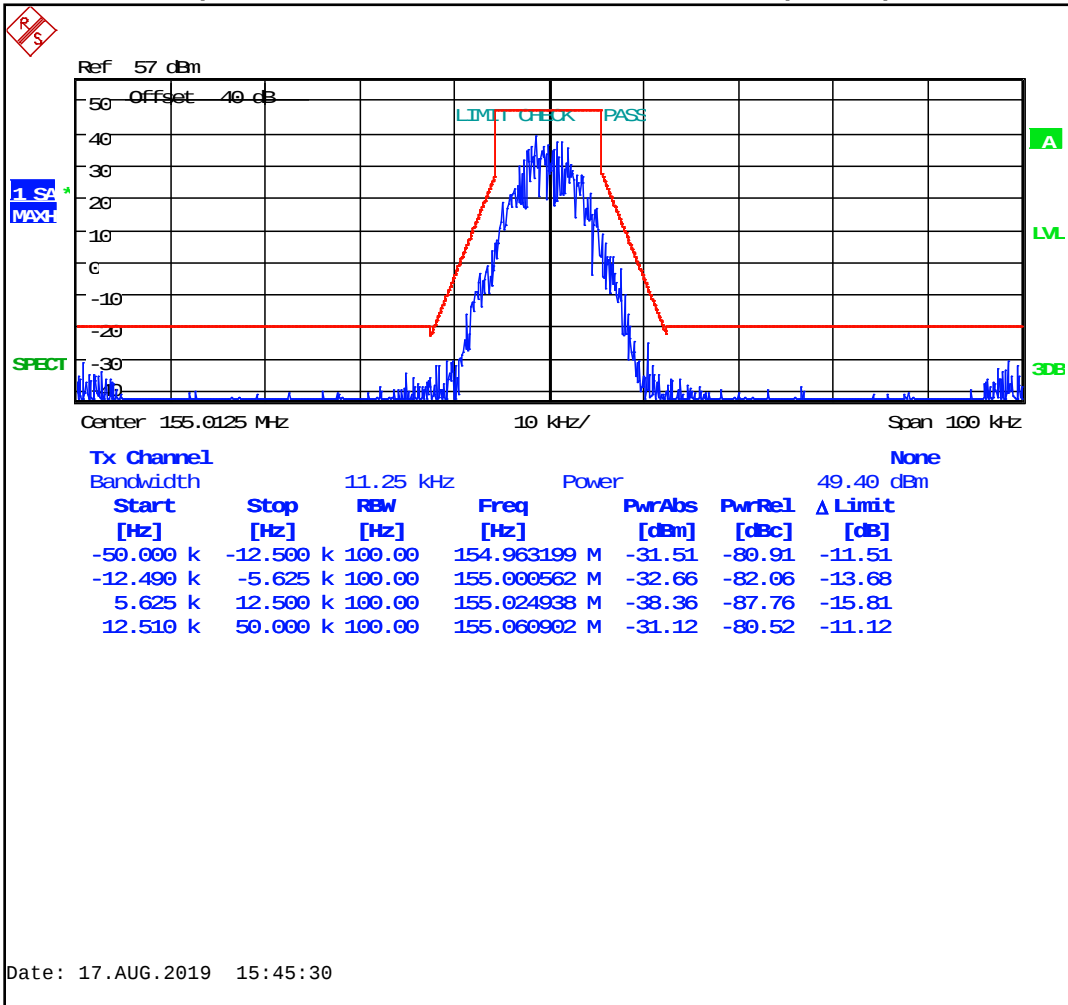
Plot 8-71: Occupied Bandwidth – 148.0125 MHz – CPM TDMA (Mask D)

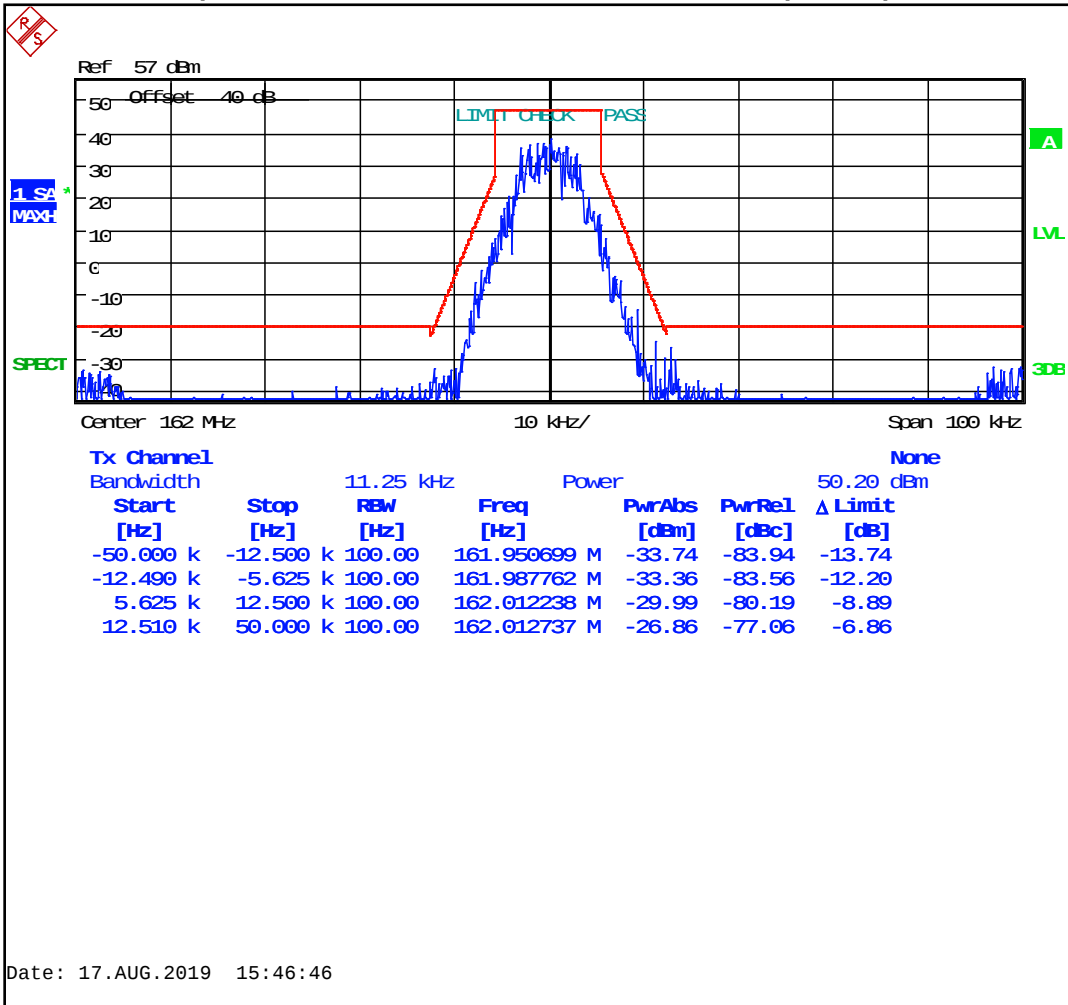


Plot 8-72: Occupied Bandwidth – 150.0125 MHz – CPM TDMA (Mask D)

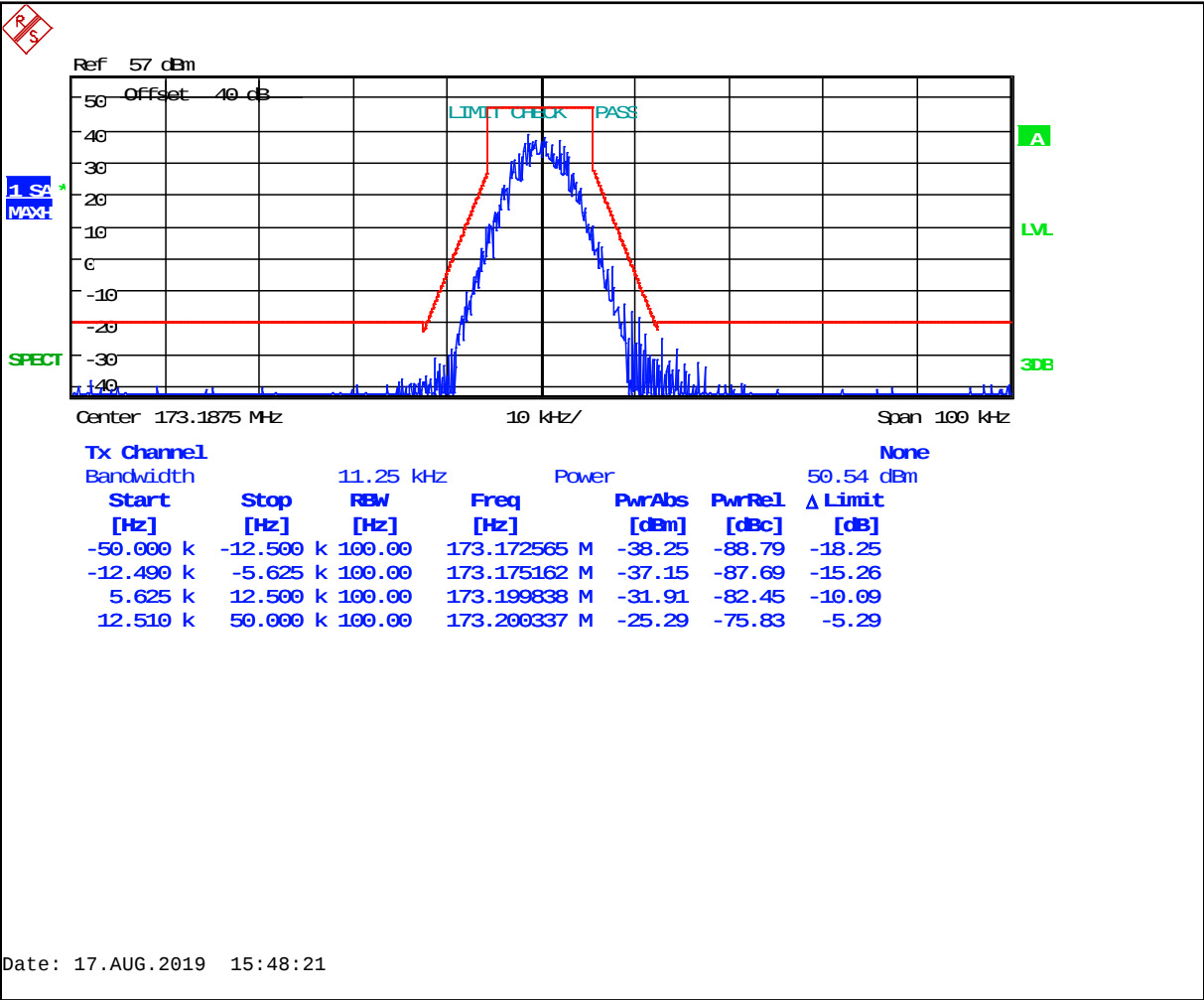




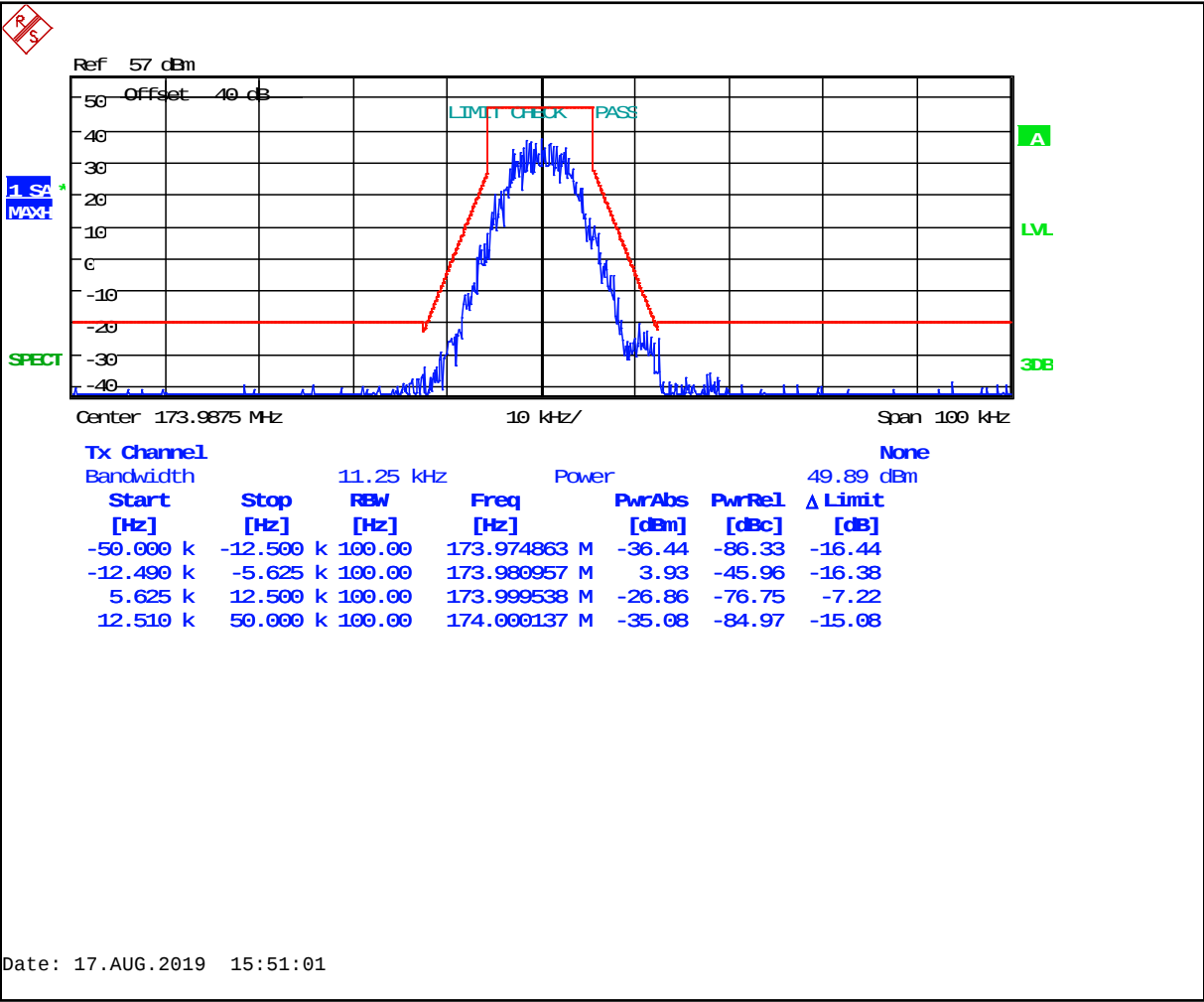




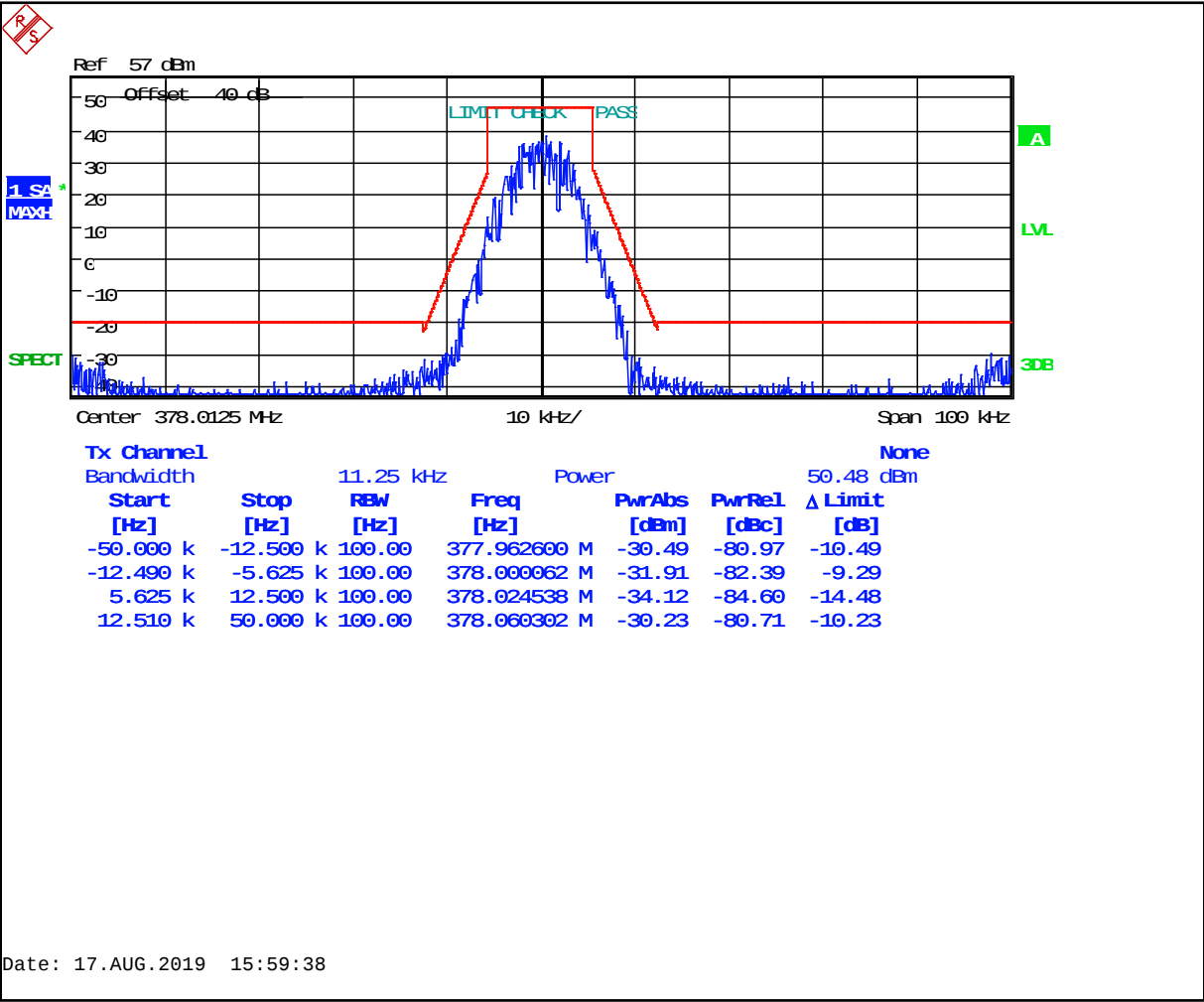
Plot 8-76: Occupied Bandwidth – 173.1875 MHz – CPM TDMA (Mask D)

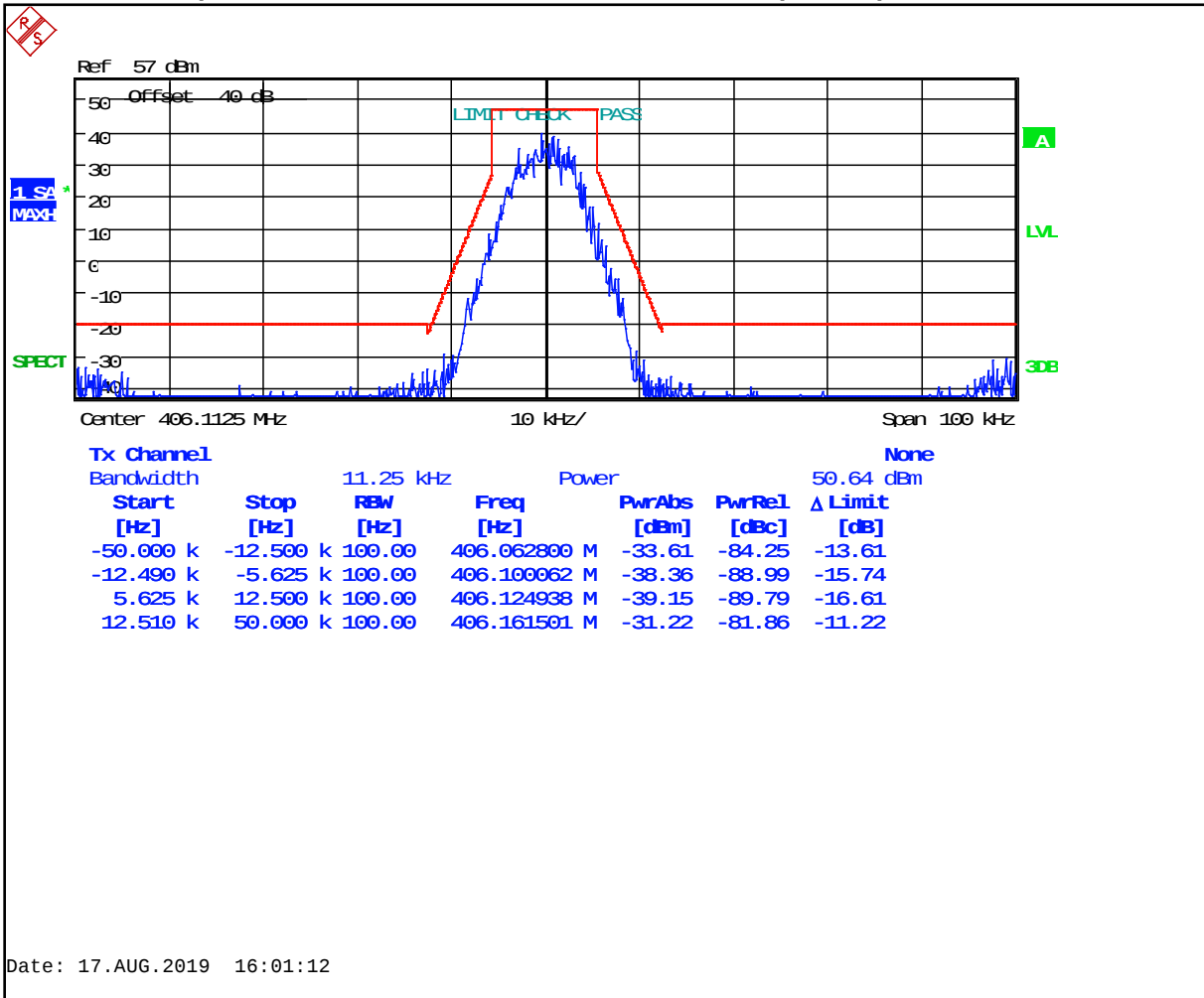


Plot 8-77: Occupied Bandwidth – 173.9875 MHz – CPM TDMA (Mask D)

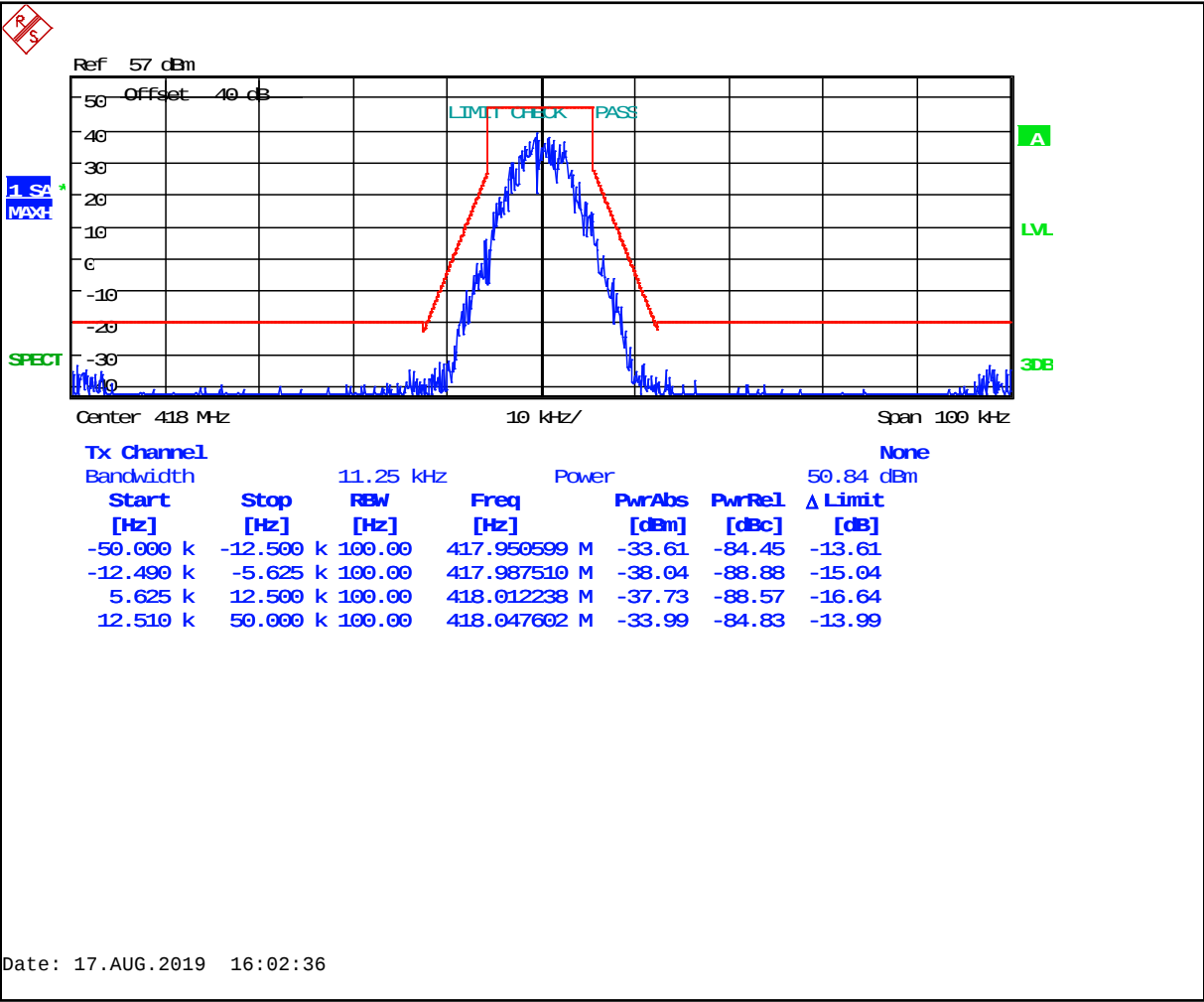


Plot 8-78: Occupied Bandwidth – 378.0125 MHz – CPM TDMA (Mask D)

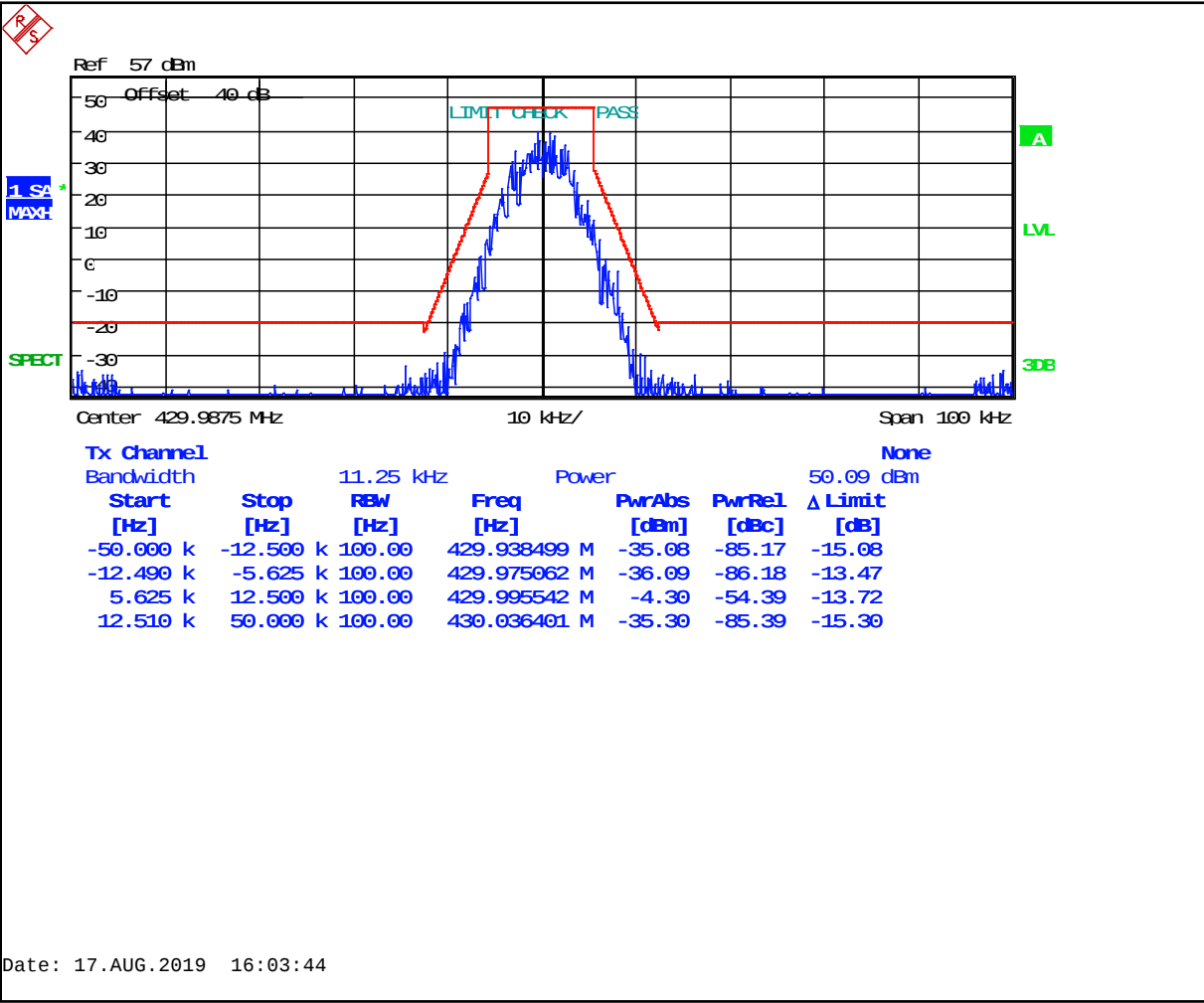




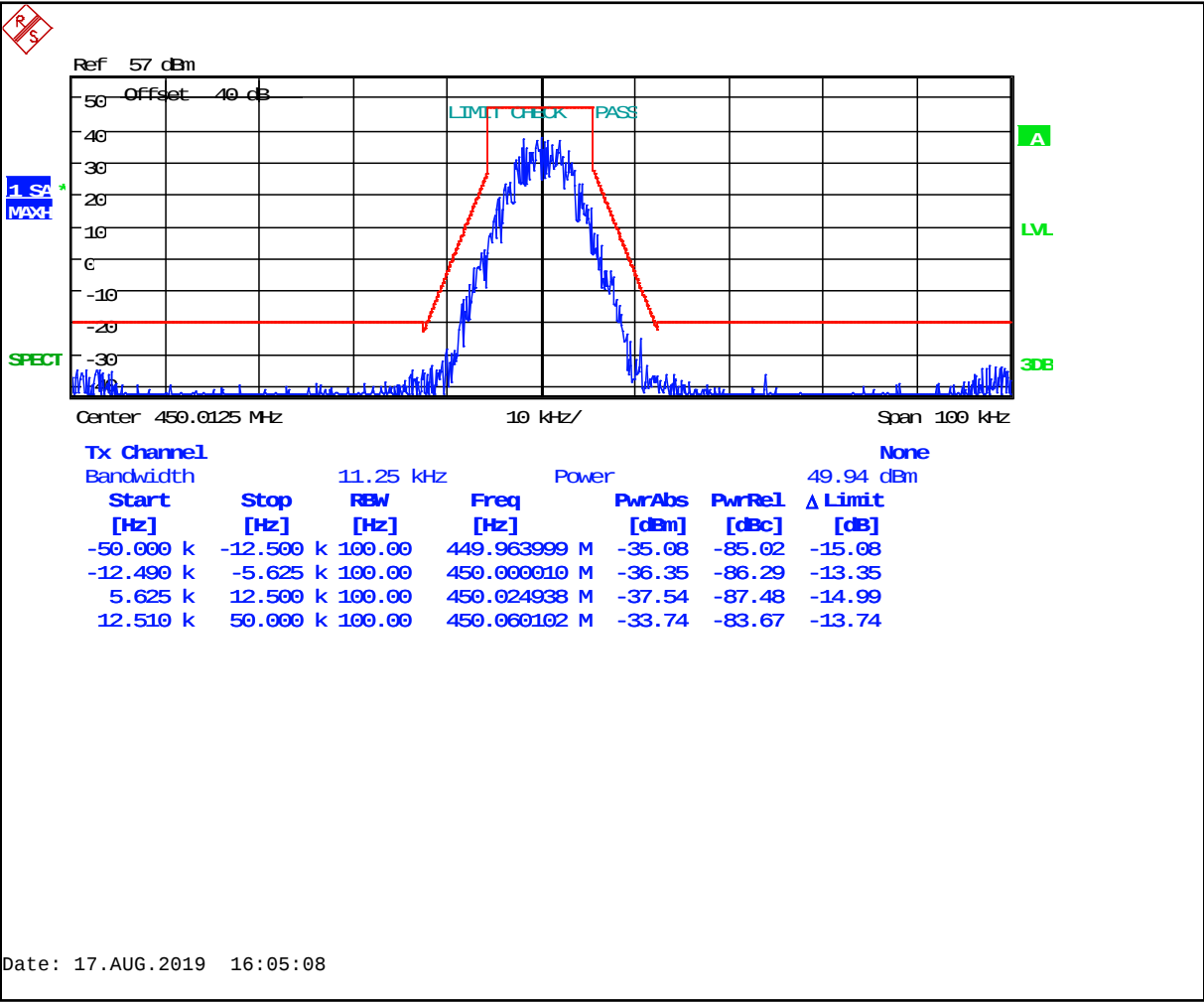
Plot 8-80: Occupied Bandwidth – 418.0000 MHz – CPM TDMA (Mask D)



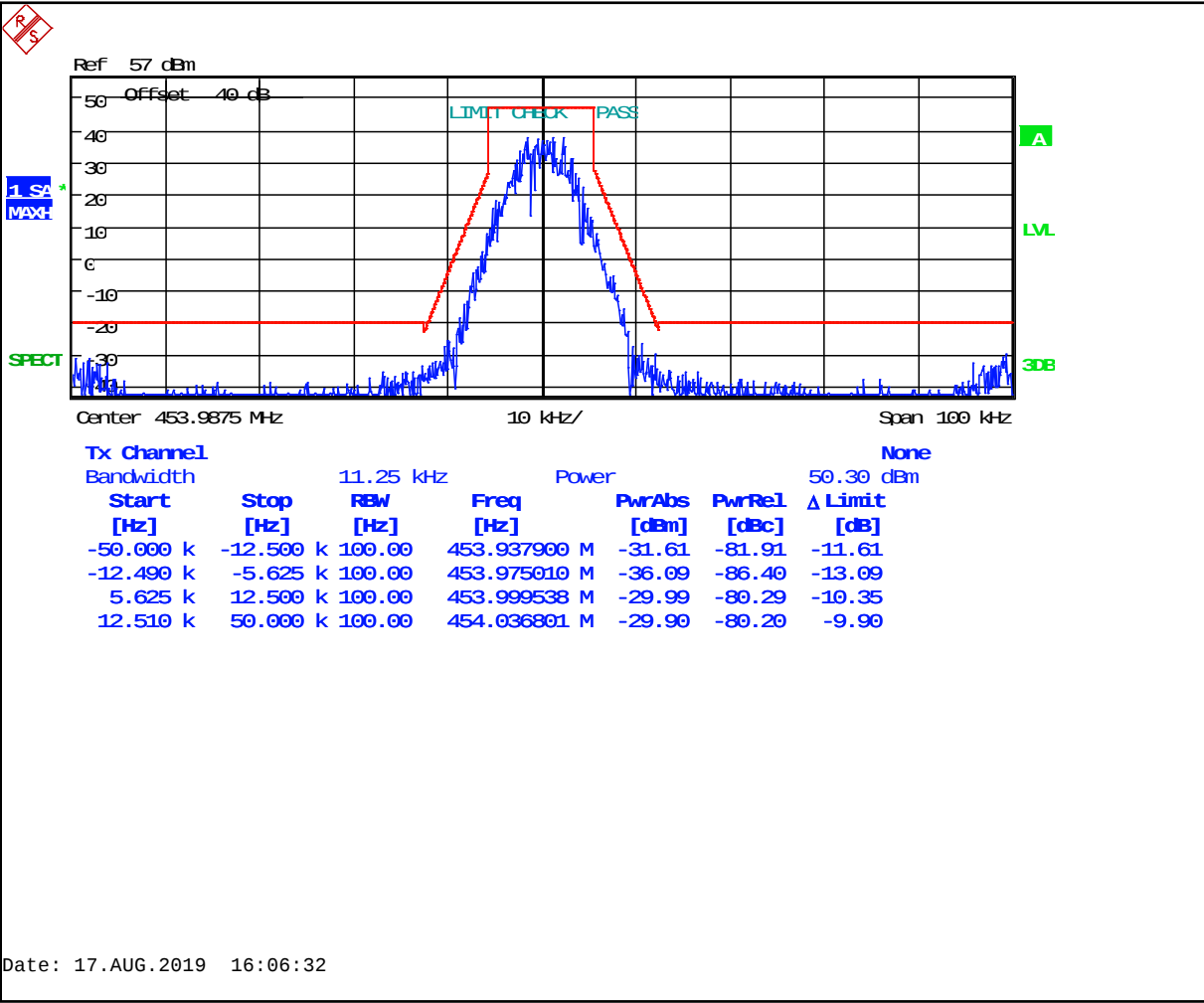
Plot 8-81: Occupied Bandwidth – 429.9875 MHz – CPM TDMA (Mask D)

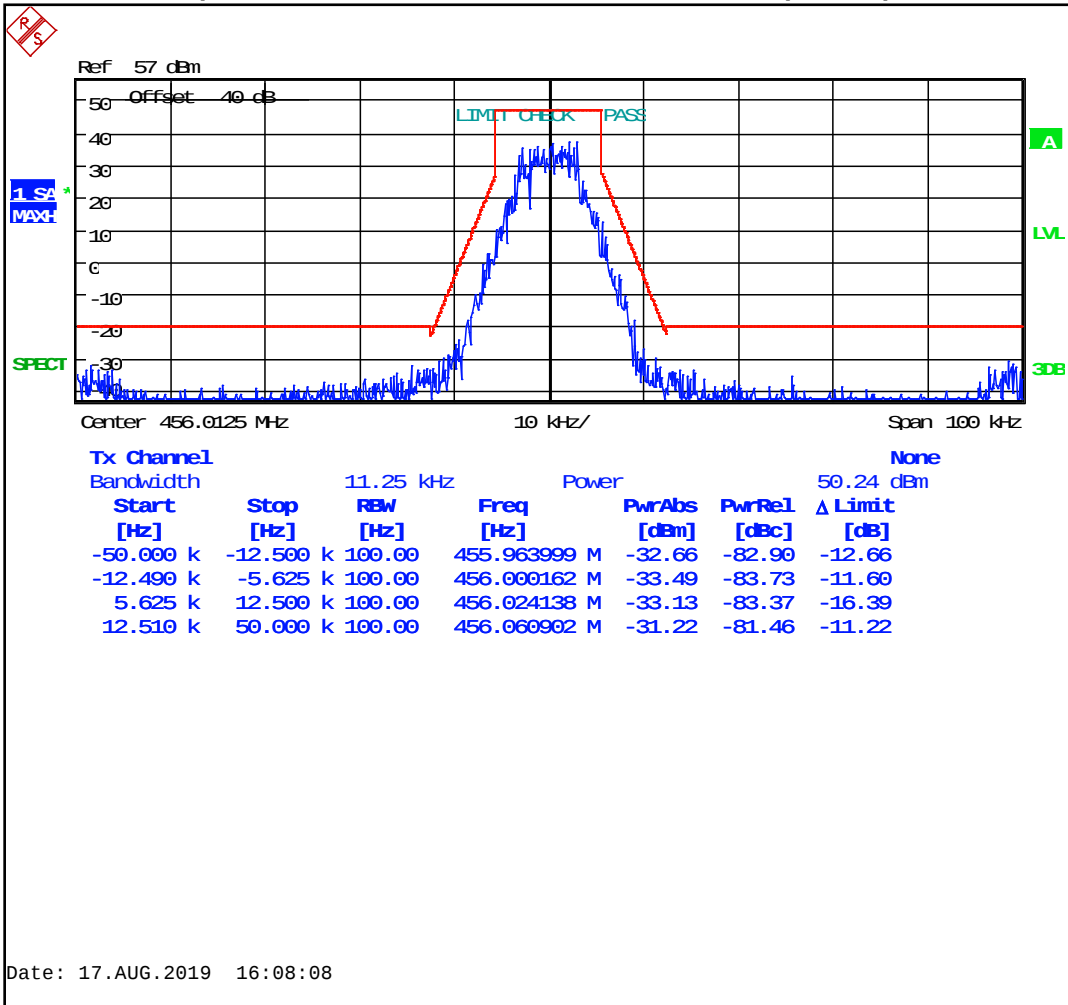


Plot 8-82: Occupied Bandwidth – 450.0125 MHz – CPM TDMA (Mask D)



Plot 8-83: Occupied Bandwidth – 453.9875 MHz – CPM TDMA (Mask D)





Ref 57 dBm

Offset 40 dB

LIMIT CHECK PASS

1 SA MAX

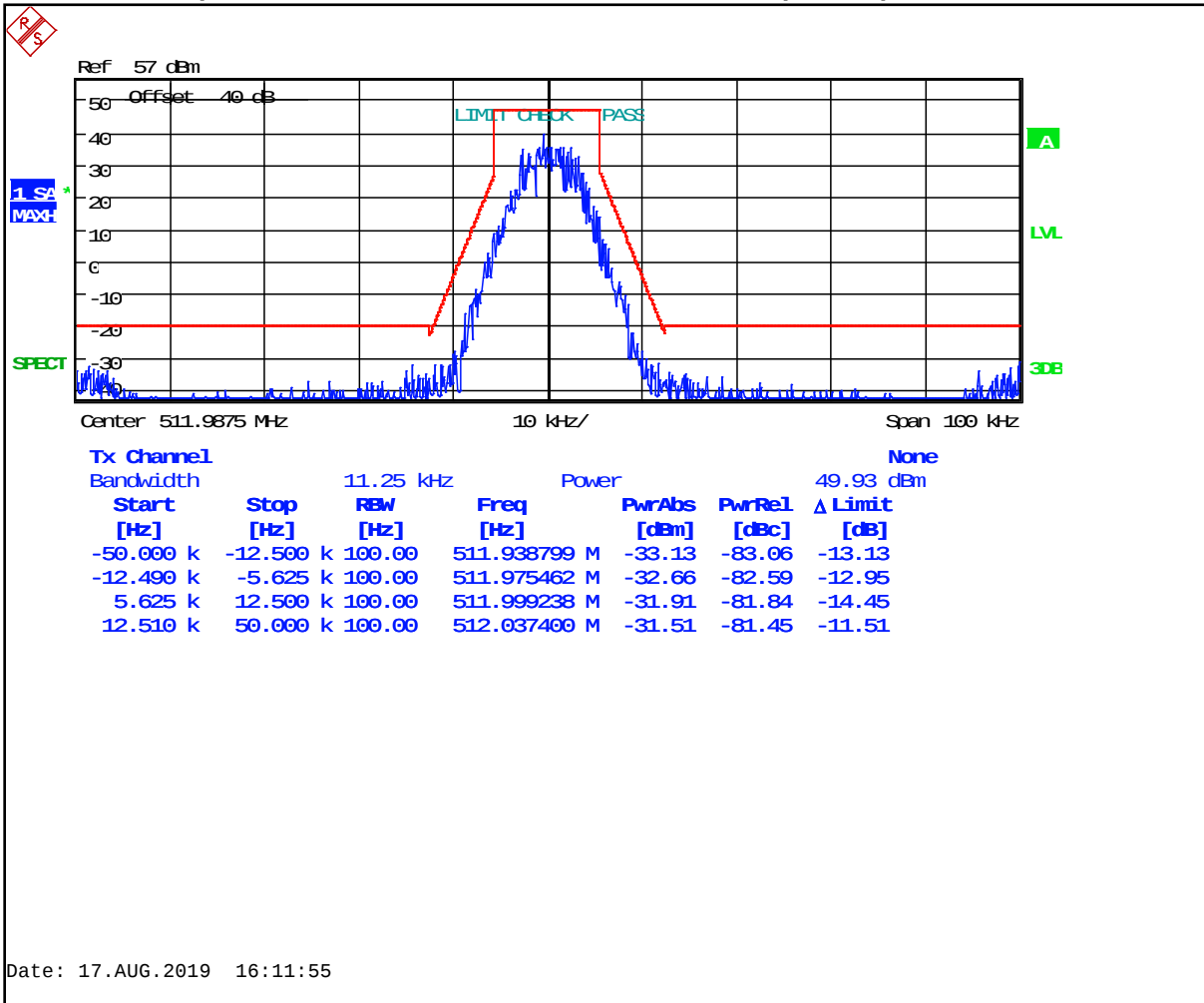
SPECT

Center 469.9875 MHz 10 kHz/ Span 100 kHz

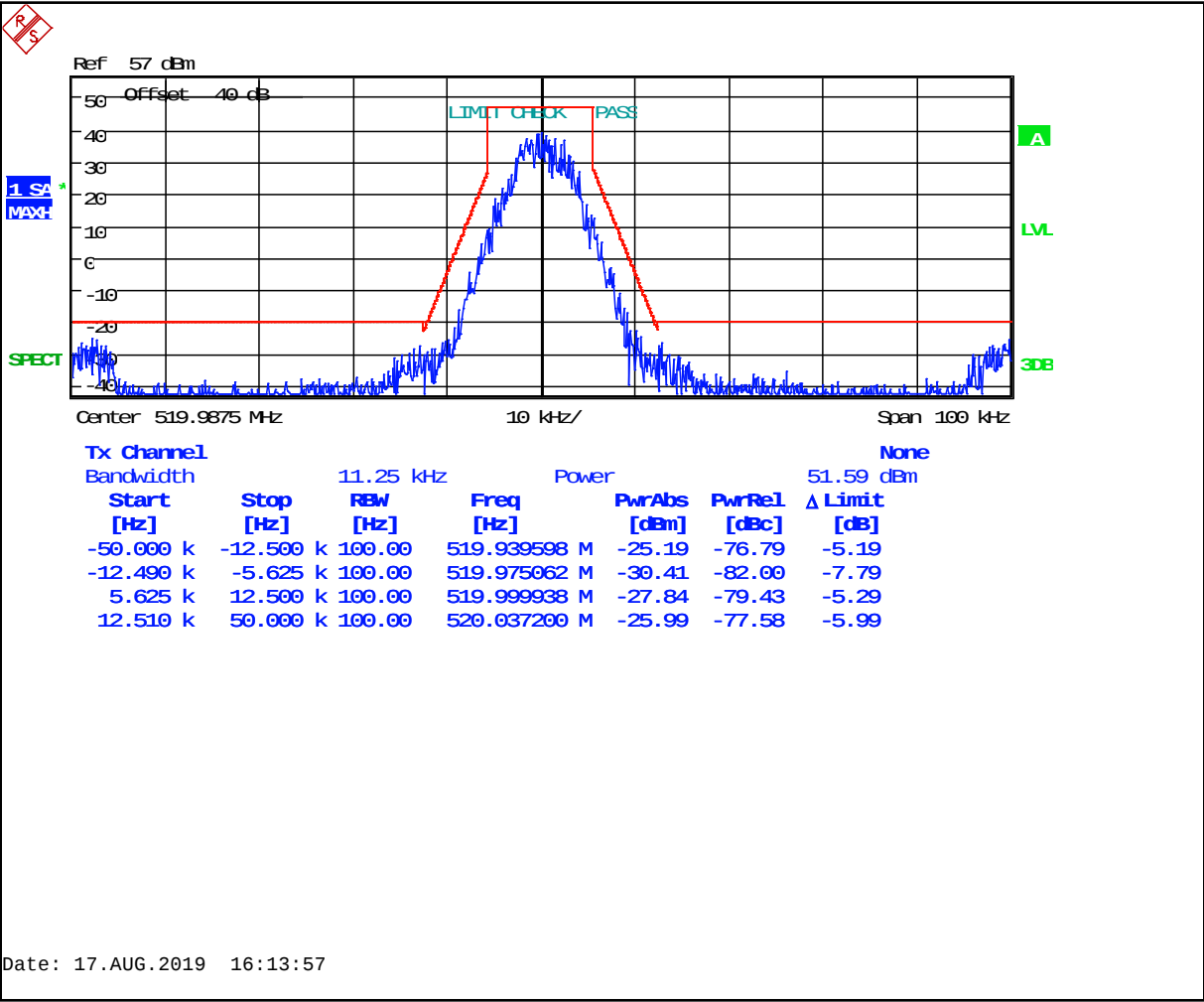
Tx Channel

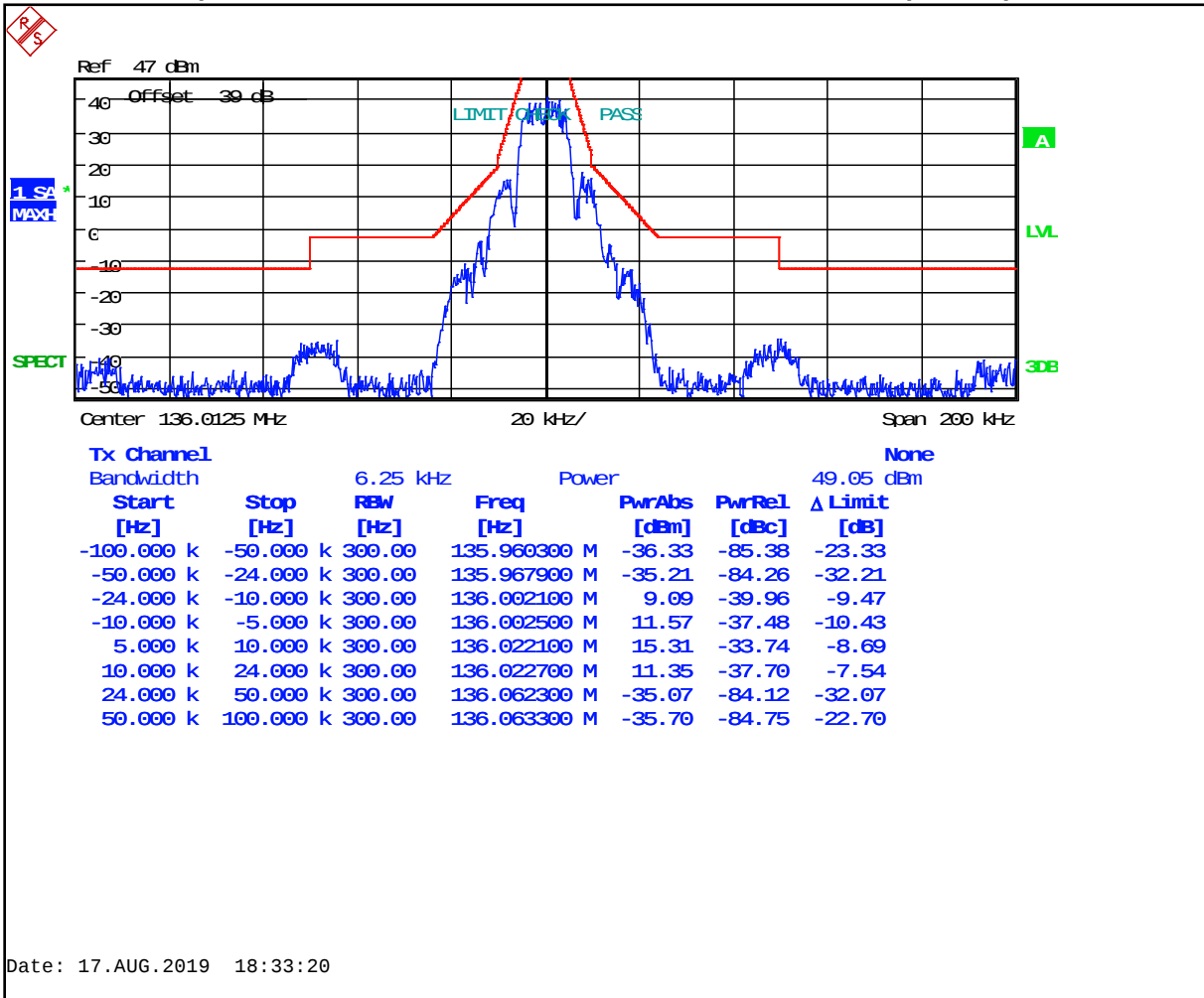
Bandwidth 11.25 kHz Power 51.34 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	Δ Limit [dB]
-50.000 k	-12.500 k	100.00	469.938199 M	-31.51	-82.85	-11.51
-12.490 k	-5.625 k	100.00	469.975362 M	-33.49	-84.83	-13.05
5.625 k	12.500 k	100.00	469.999738 M	-33.87	-85.21	-12.77
12.510 k	50.000 k	100.00	470.036701 M	-31.12	-82.46	-11.12

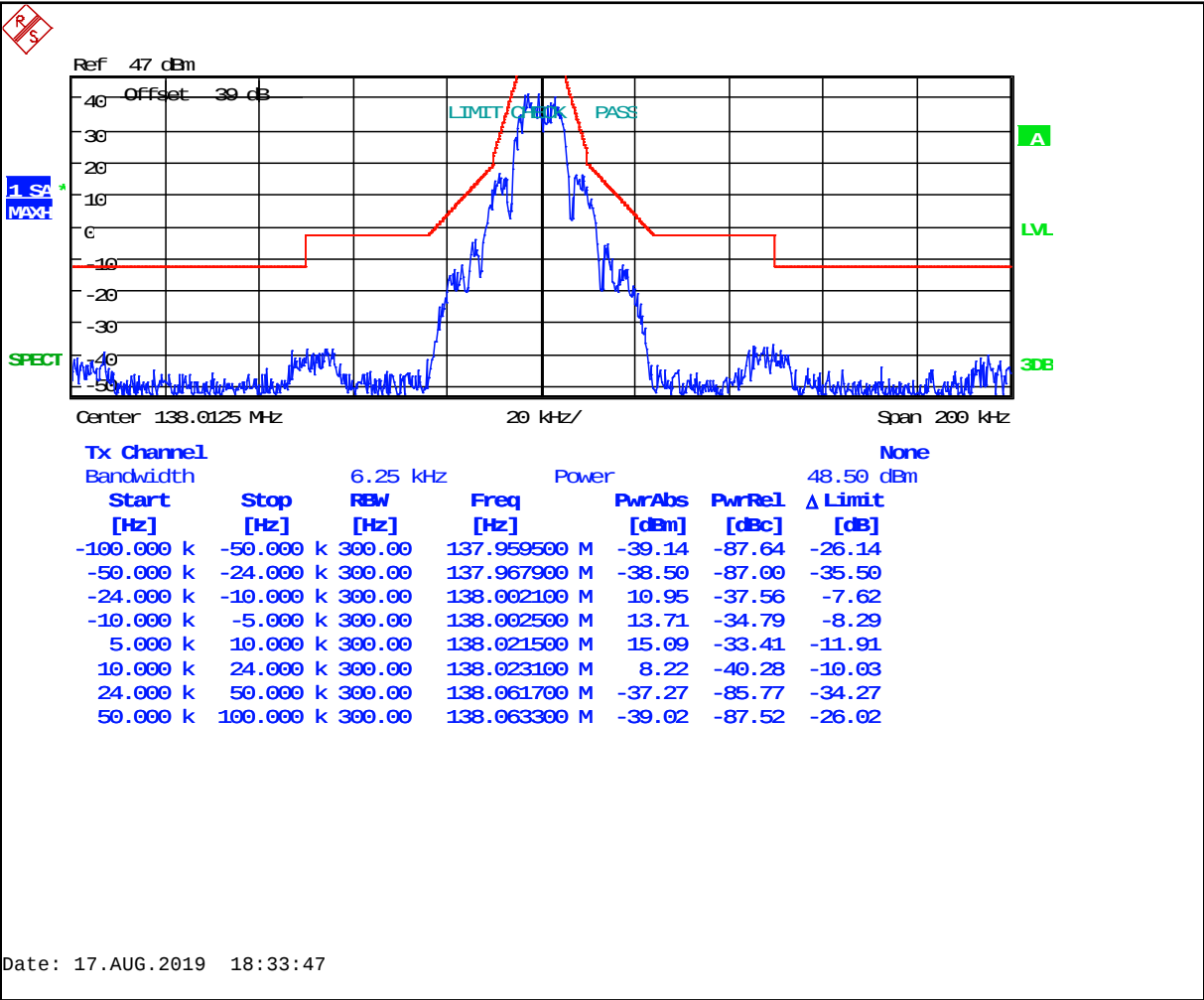


Plot 8-87: Occupied Bandwidth – 519.9875 MHz – CPM TDMA (Mask D)

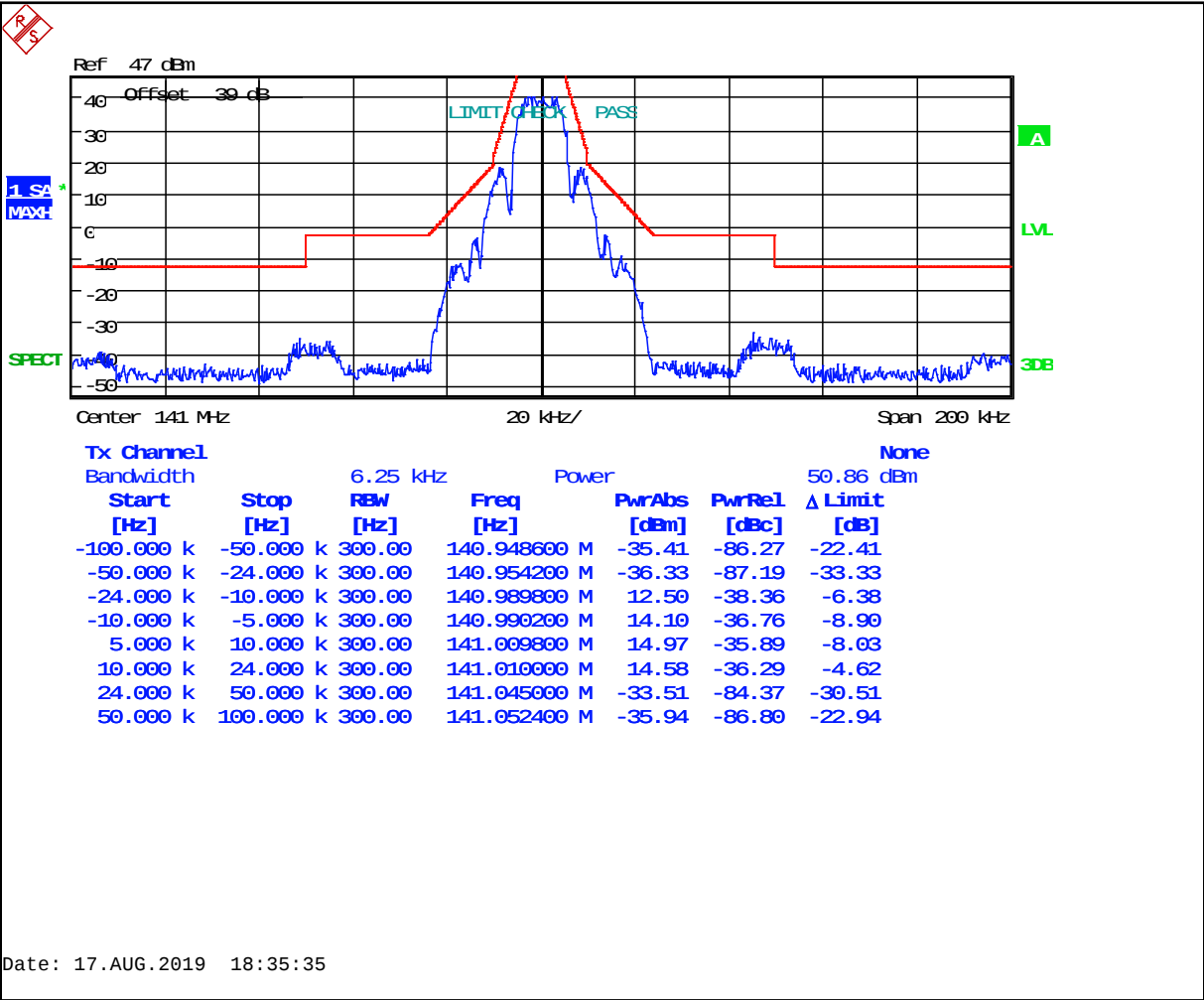




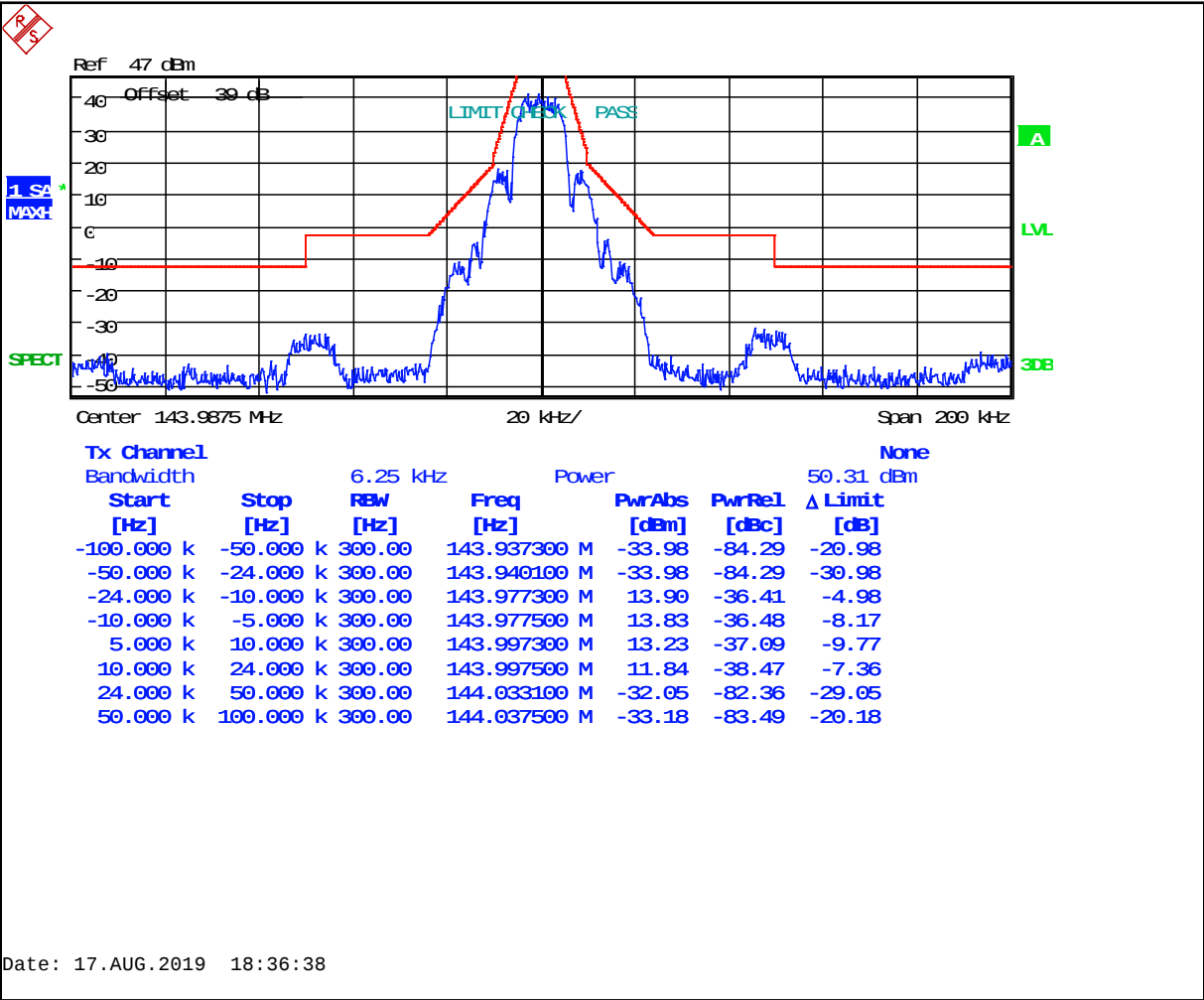
Plot 8-89: Occupied Bandwidth – 138.0125 MHz – 2-Level FSK 9600 WB (Mask C)



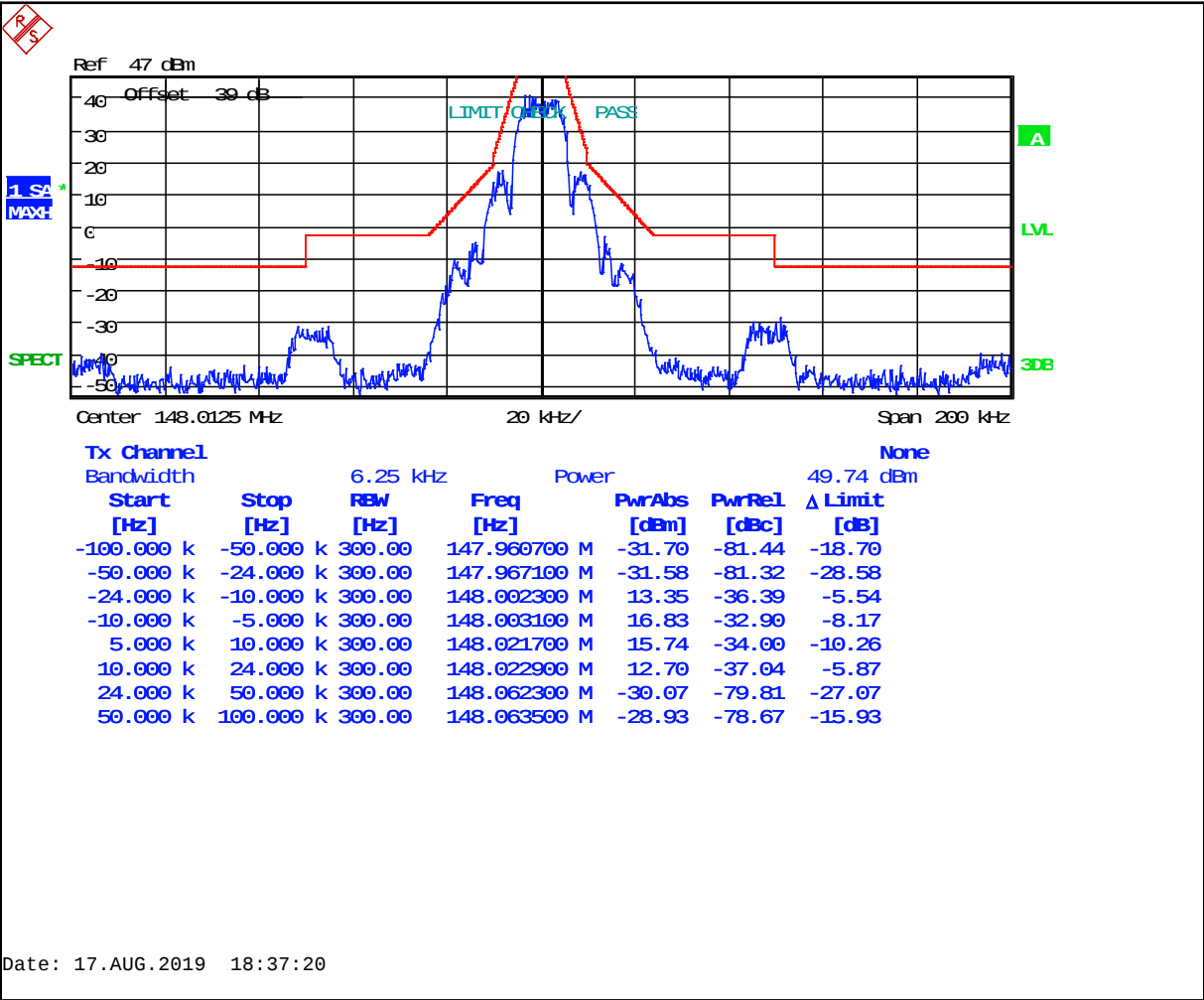
Plot 8-90: Occupied Bandwidth – 141.0000 MHz – 2-Level FSK 9600 WB (Mask C)



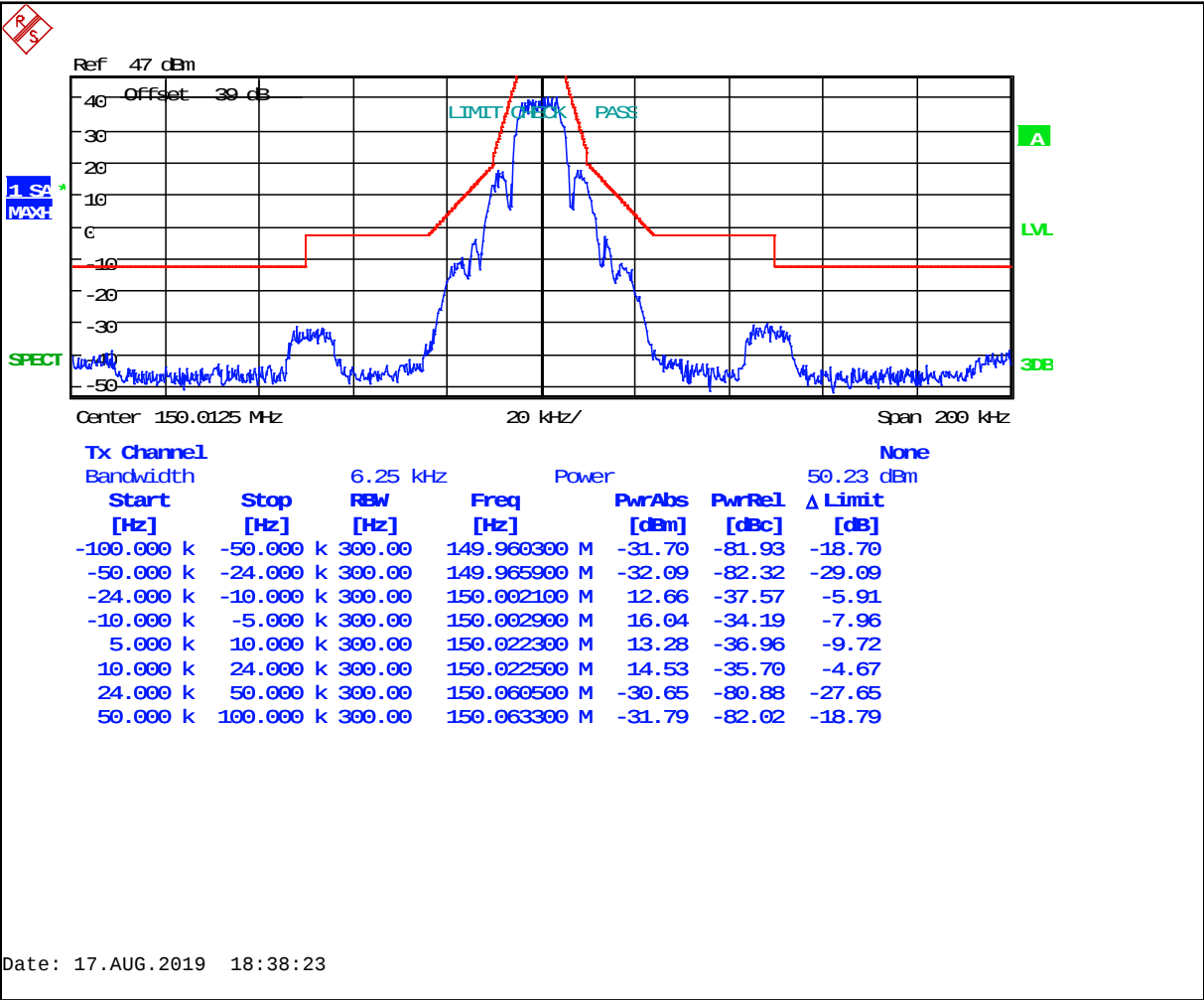
Plot 8-91: Occupied Bandwidth – 143.9875 MHz – 2-Level FSK 9600 WB (Mask C)



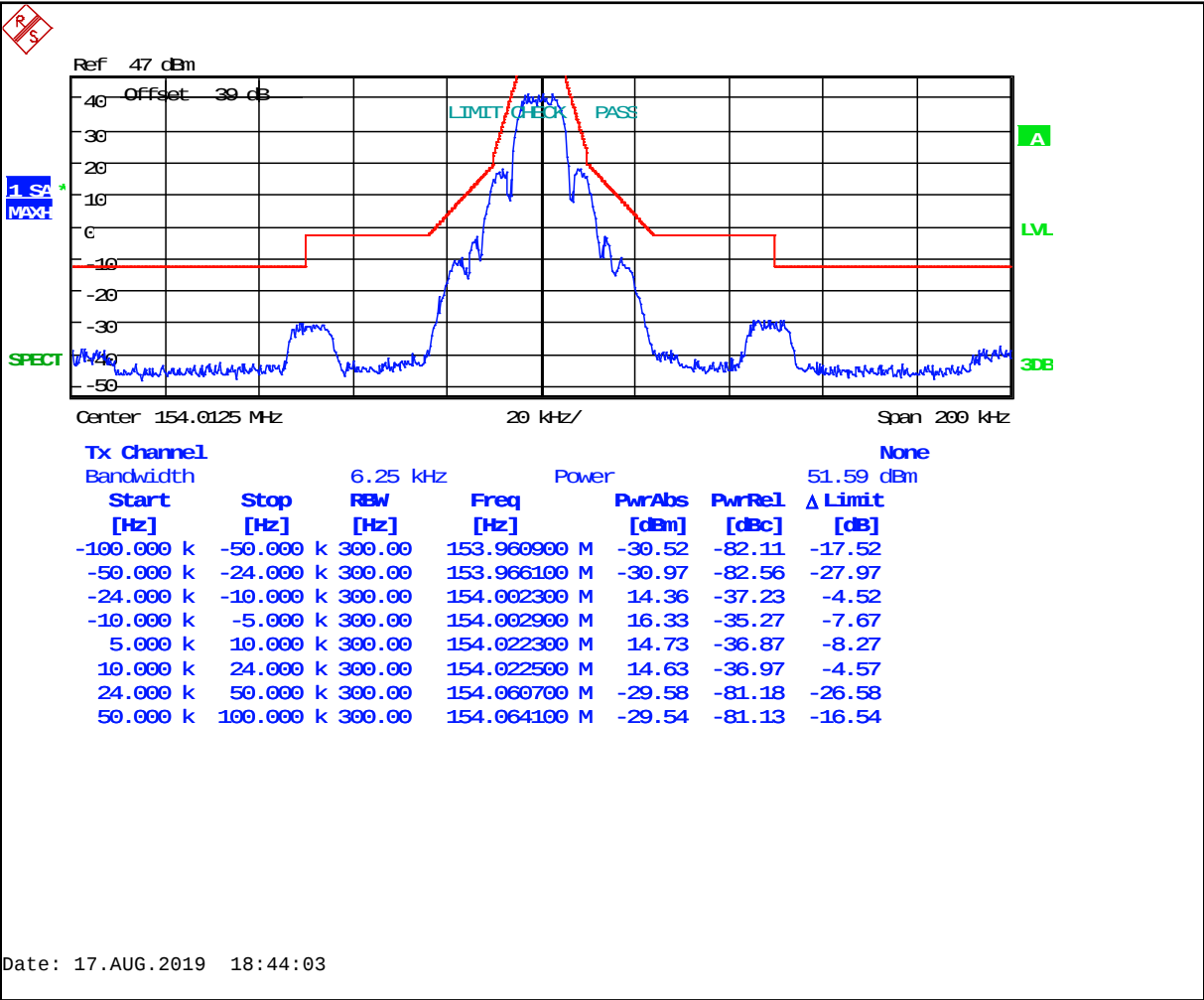
Plot 8-92: Occupied Bandwidth – 148.0125 MHz – 2-Level FSK 9600 WB (Mask C)



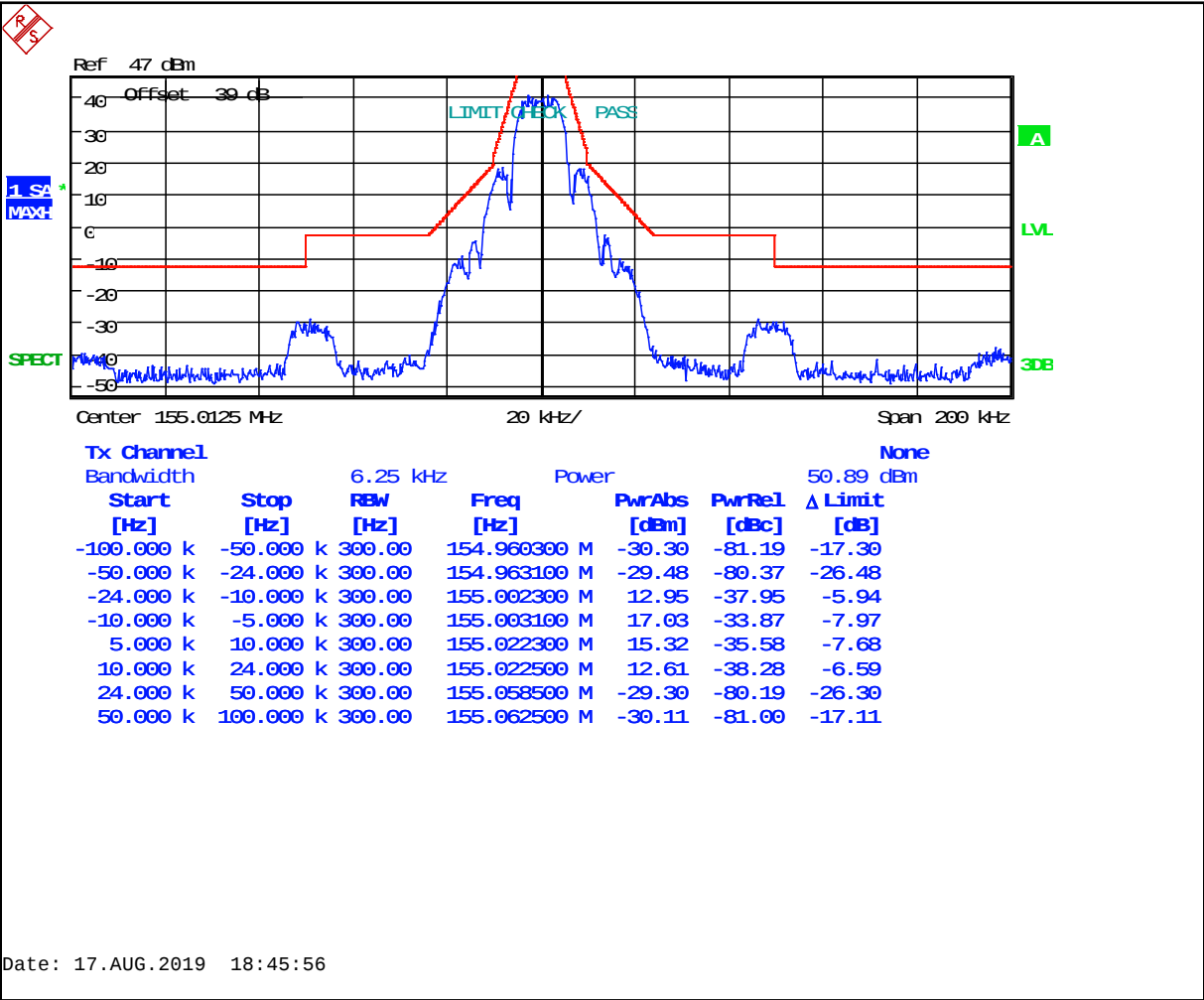
Plot 8-93: Occupied Bandwidth – 150.0125 MHz – 2-Level FSK 9600 WB (Mask C)



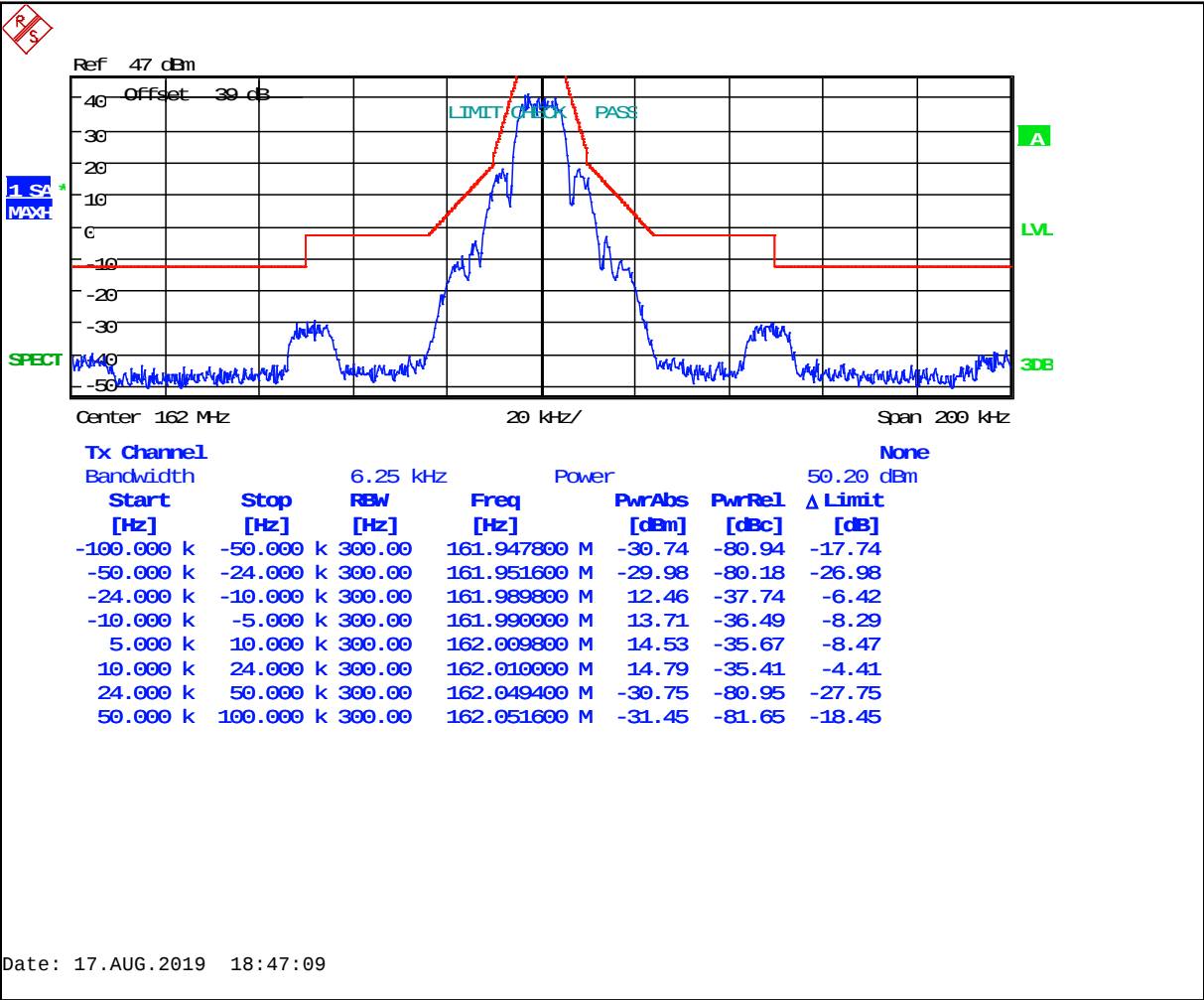
Plot 8-94: Occupied Bandwidth – 154.0125 MHz – 2-Level FSK 9600 WB (Mask C)



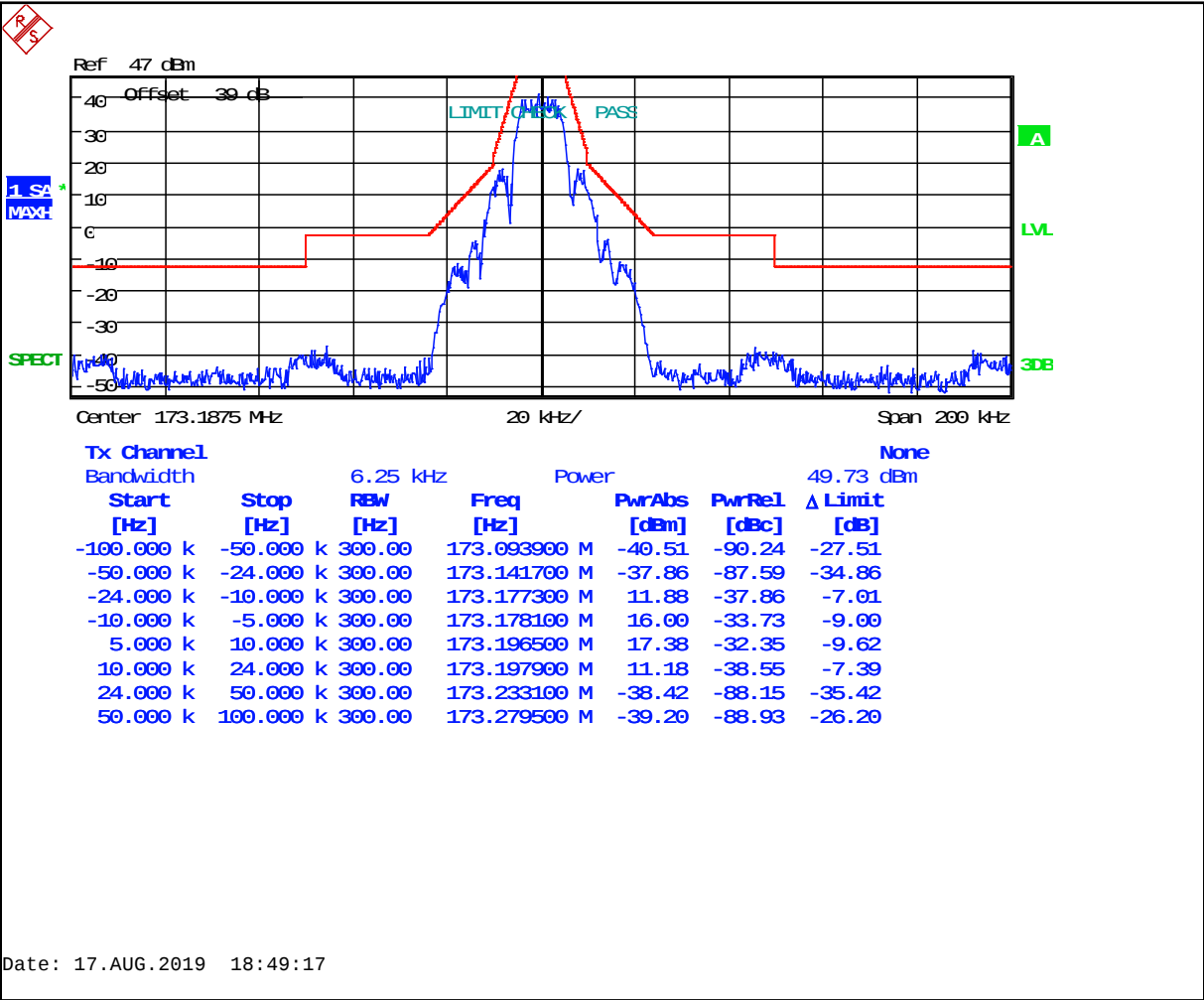
Plot 8-95: Occupied Bandwidth – 155.0125 MHz – 2-Level FSK 9600 WB (Mask C)

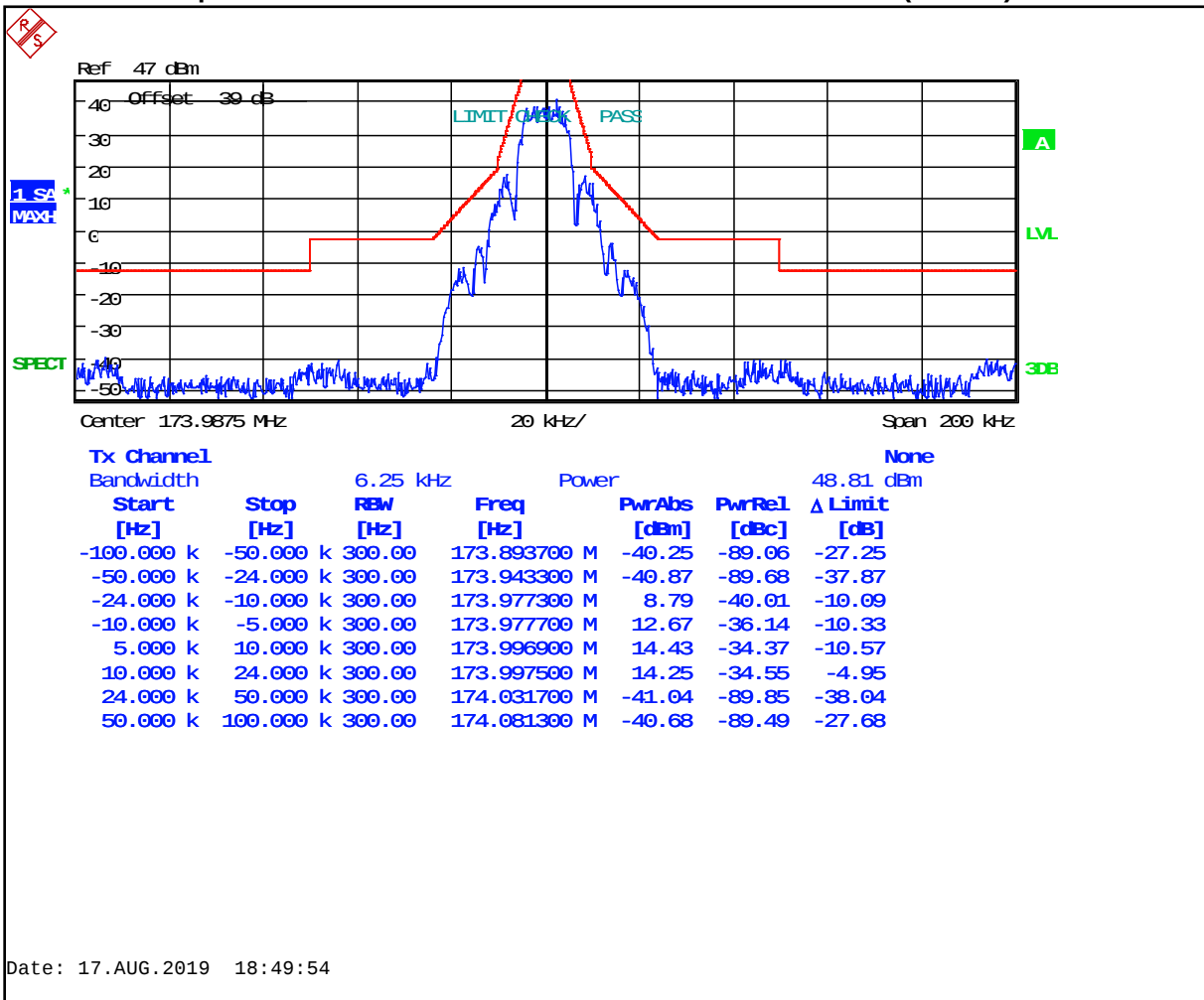


Plot 8-96: Occupied Bandwidth – 162.0000 MHz – 2-Level FSK 9600 WB (Mask C)

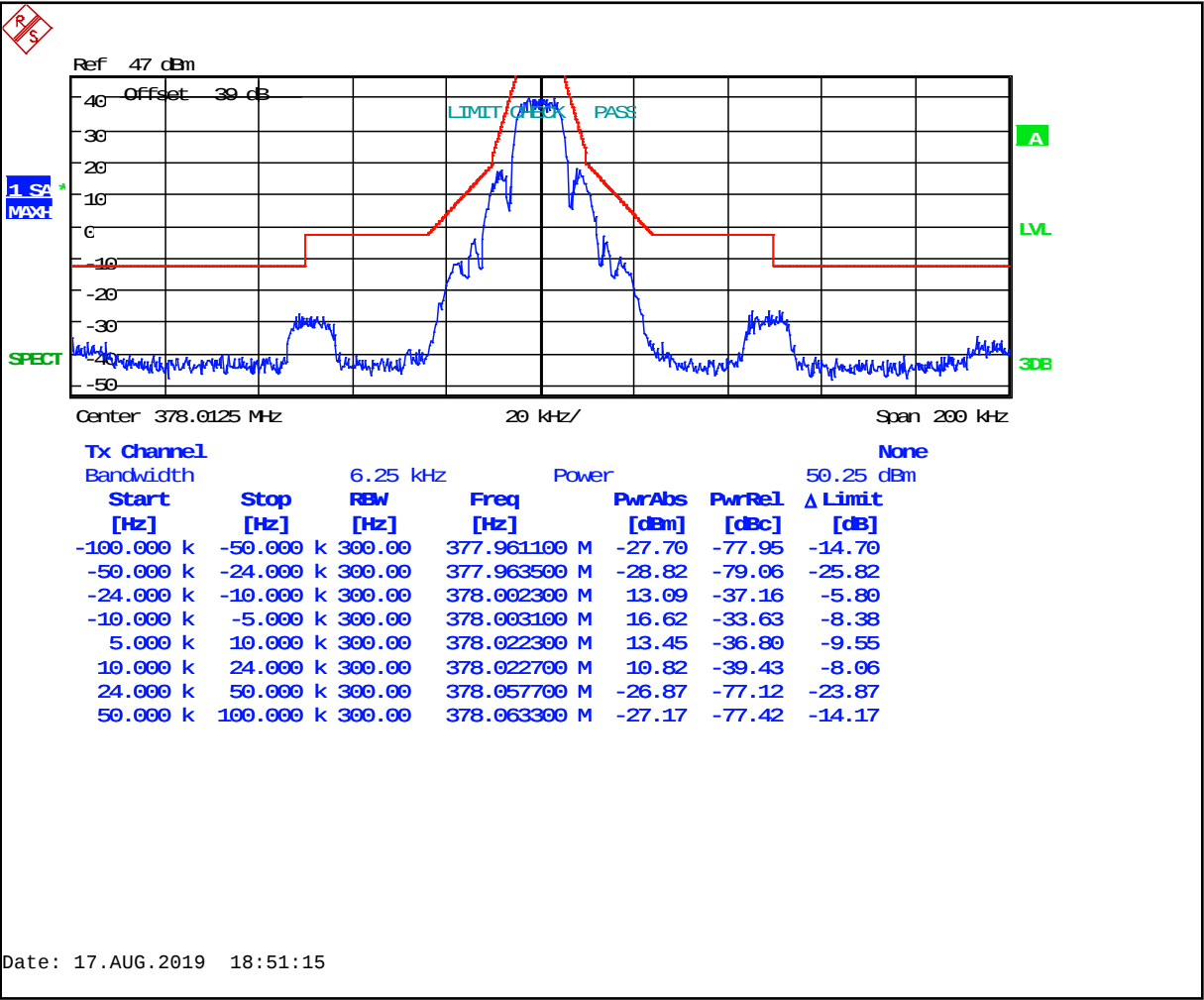


Plot 8-97: Occupied Bandwidth – 173.1875 MHz – 2-Level FSK 9600 WB (Mask C)

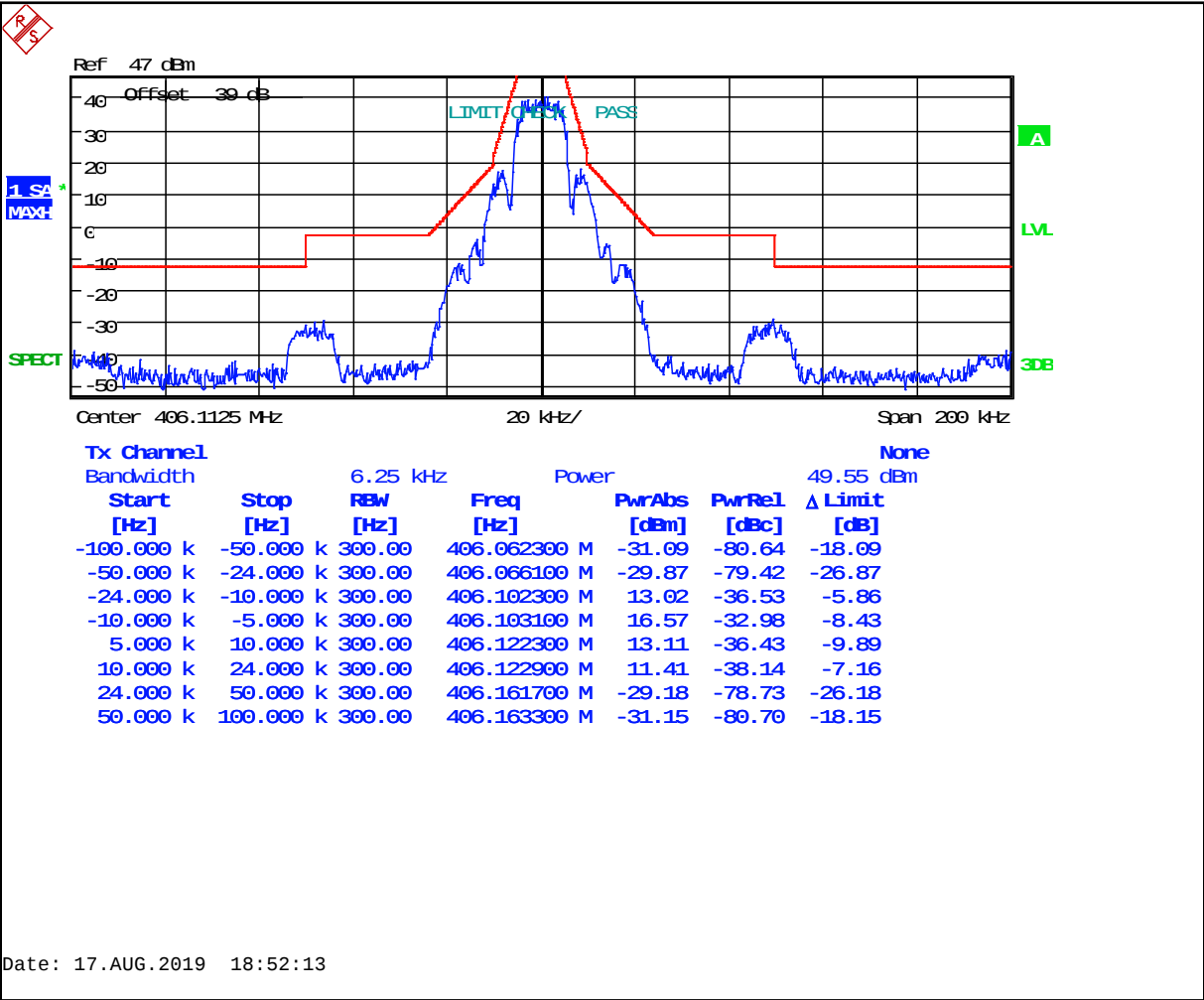




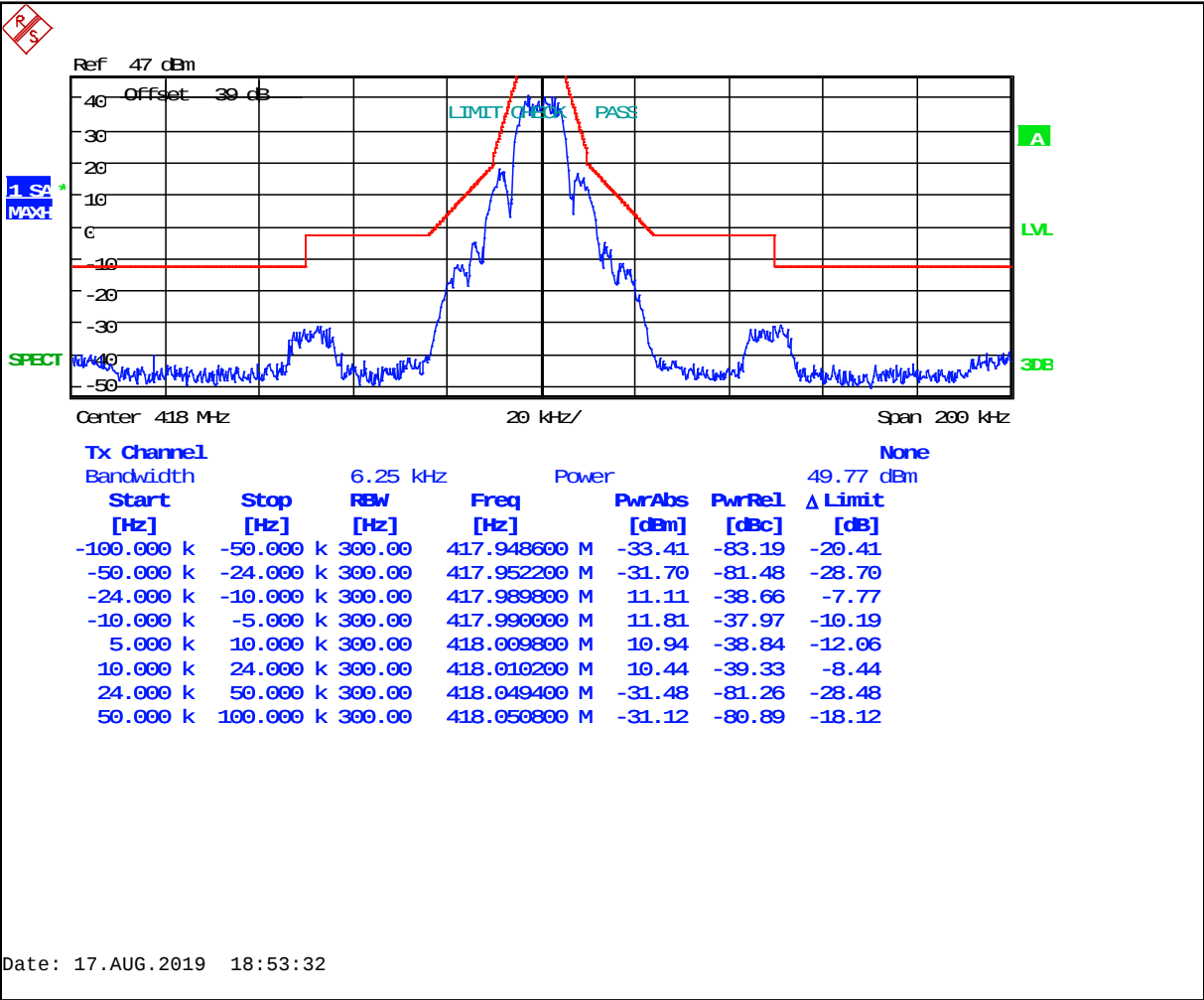
Plot 8-99: Occupied Bandwidth – 378.0125 MHz – 2-Level FSK 9600 WB (Mask C)



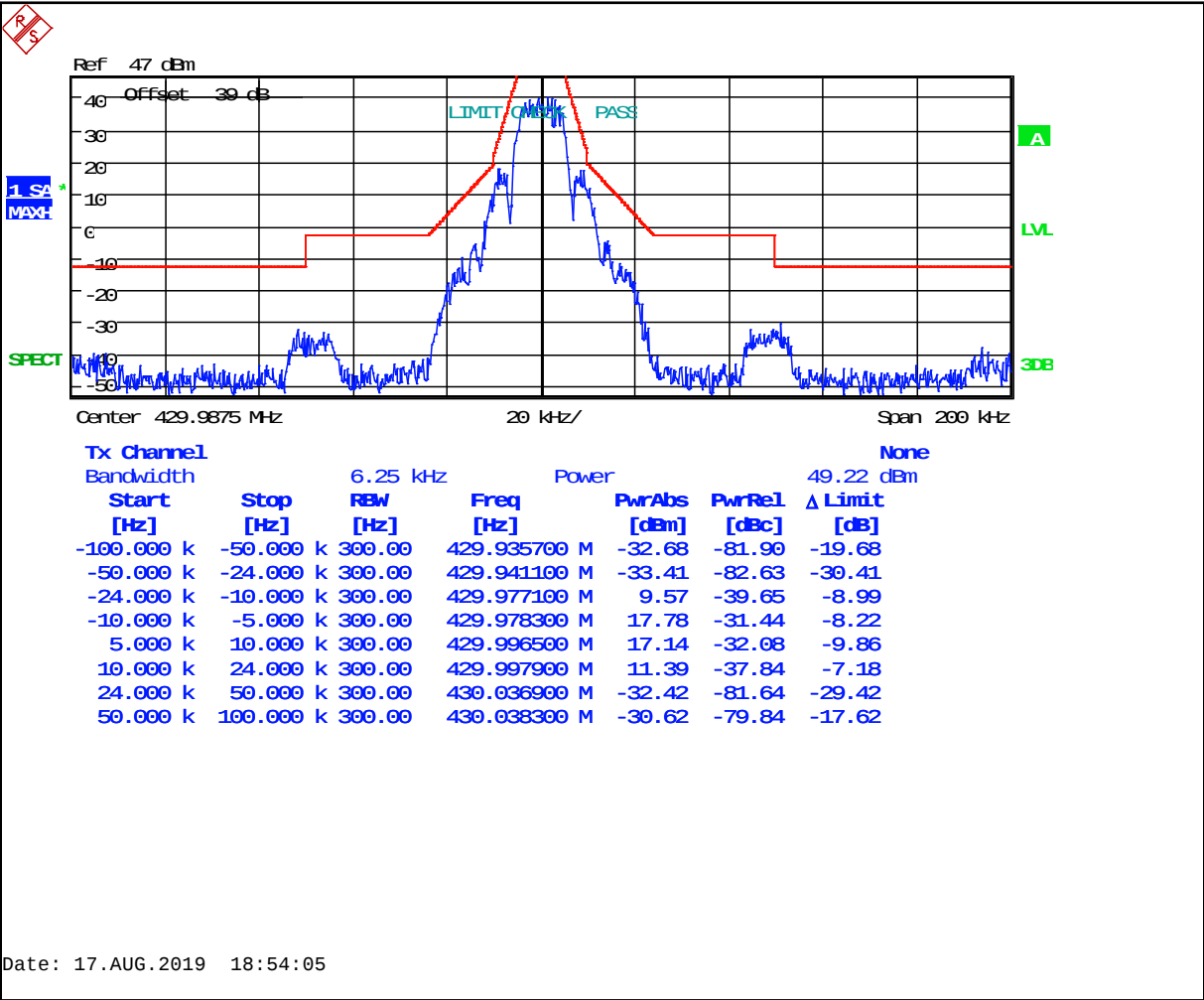
Plot 8-100: Occupied Bandwidth – 406.1125 MHz – 2-Level FSK 9600 WB (Mask C)



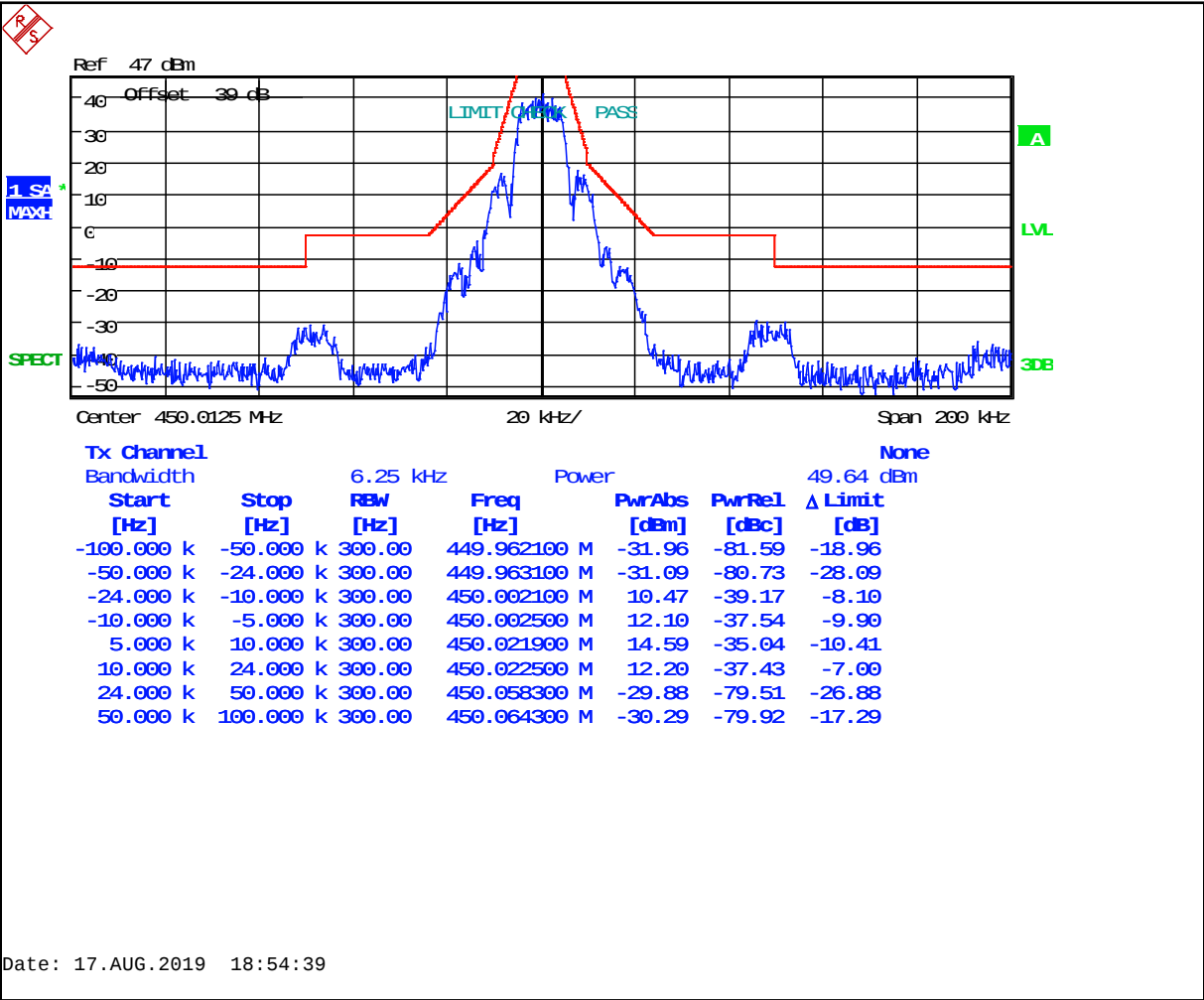
Plot 8-101: Occupied Bandwidth – 418.0000 MHz – 2-Level FSK 9600 WB (Mask C)



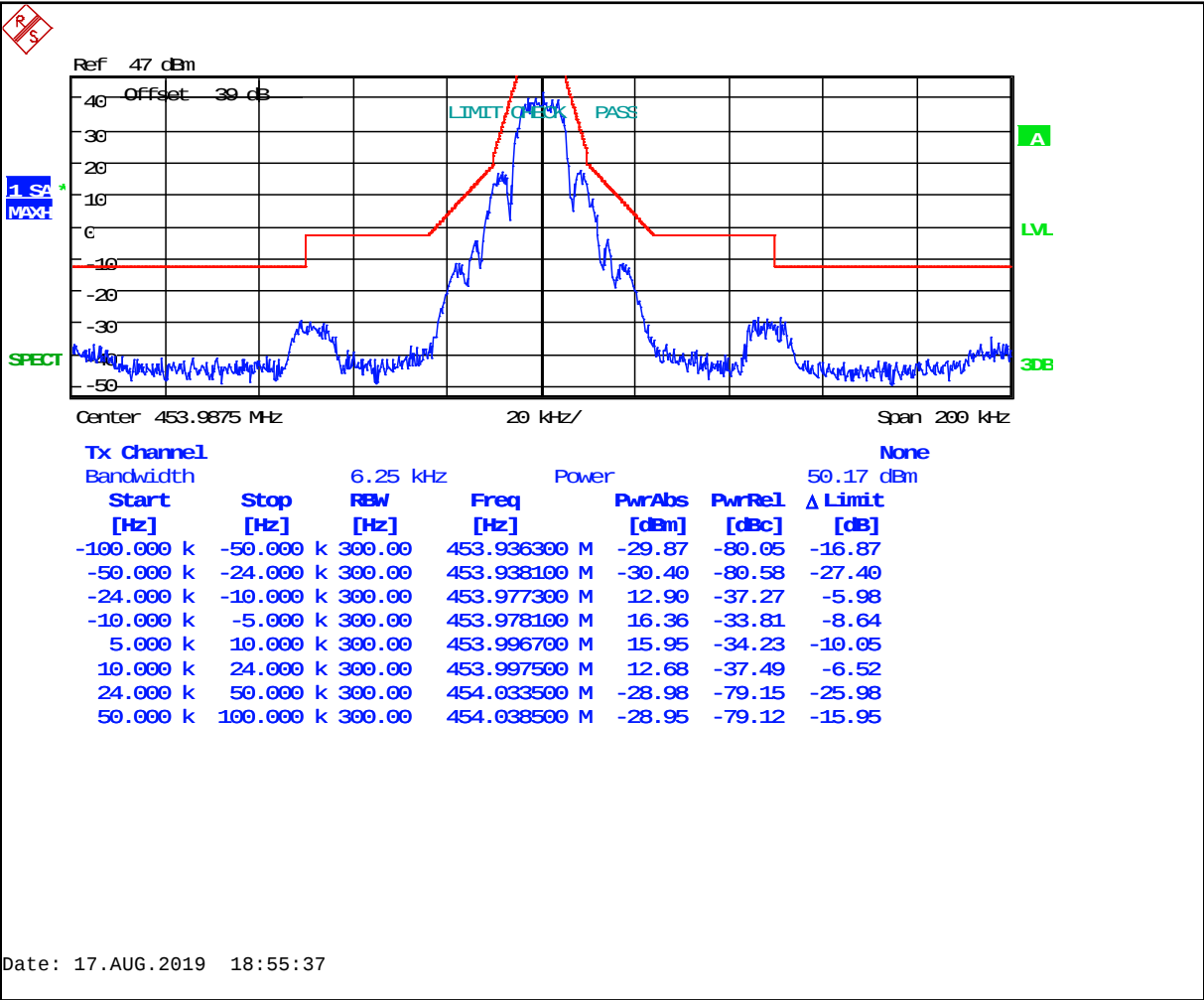
Plot 8-102: Occupied Bandwidth – 429.9875 MHz – 2-Level FSK 9600 WB (Mask C)



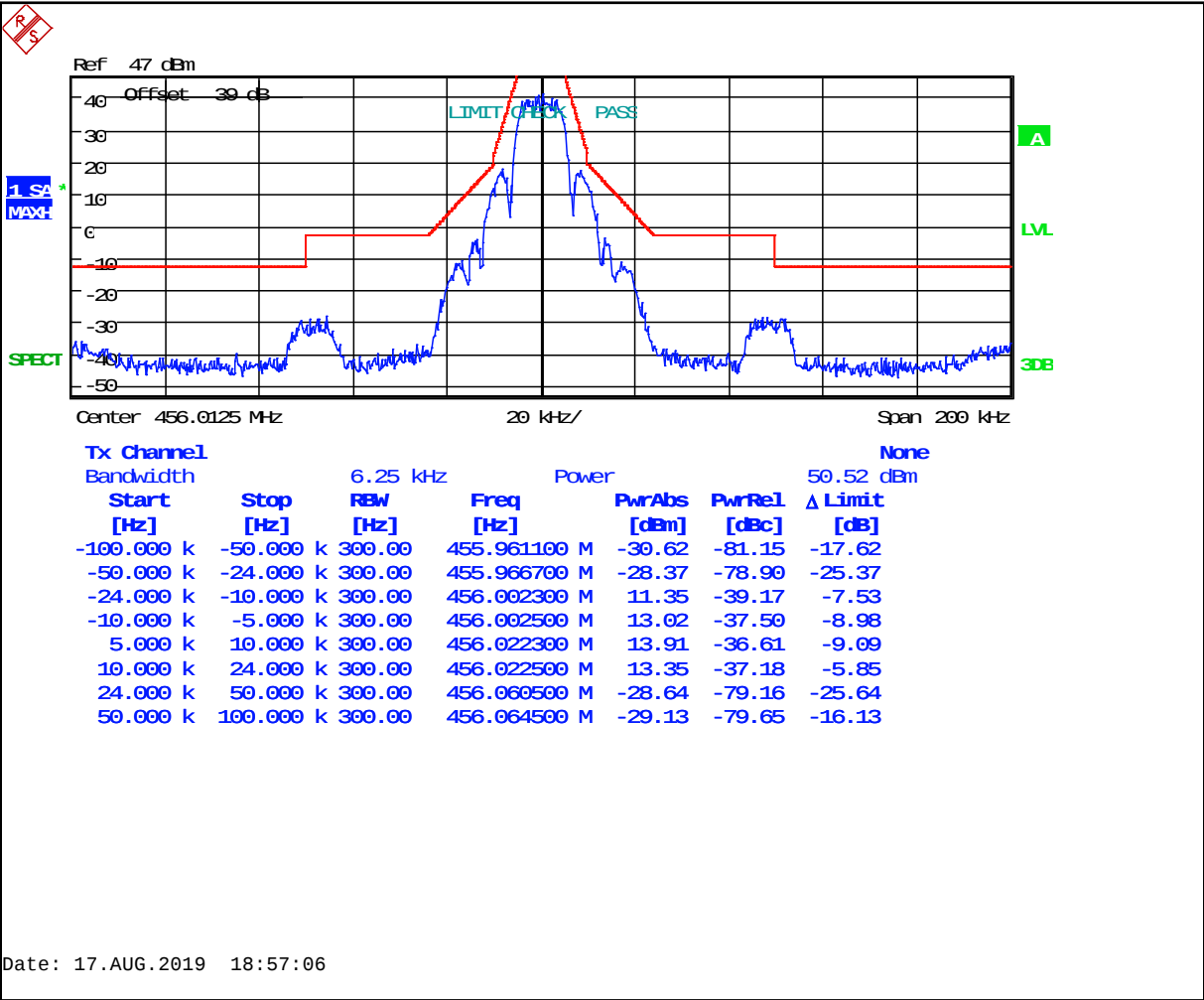
Plot 8-103: Occupied Bandwidth – 450.0125 MHz – 2-Level FSK 9600 WB (Mask C)



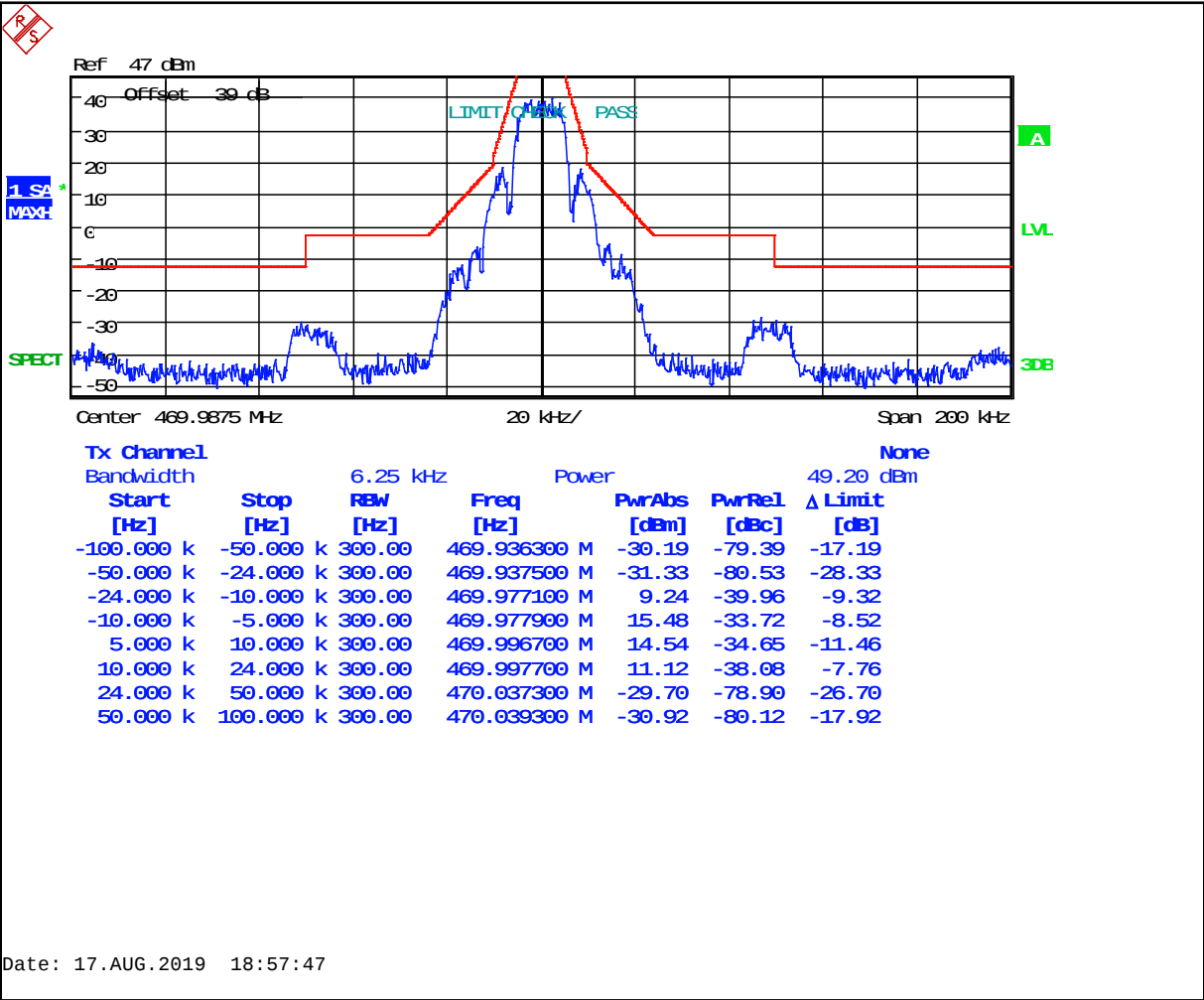
Plot 8-104: Occupied Bandwidth – 453.9875 MHz – 2-Level FSK 9600 WB (Mask C)



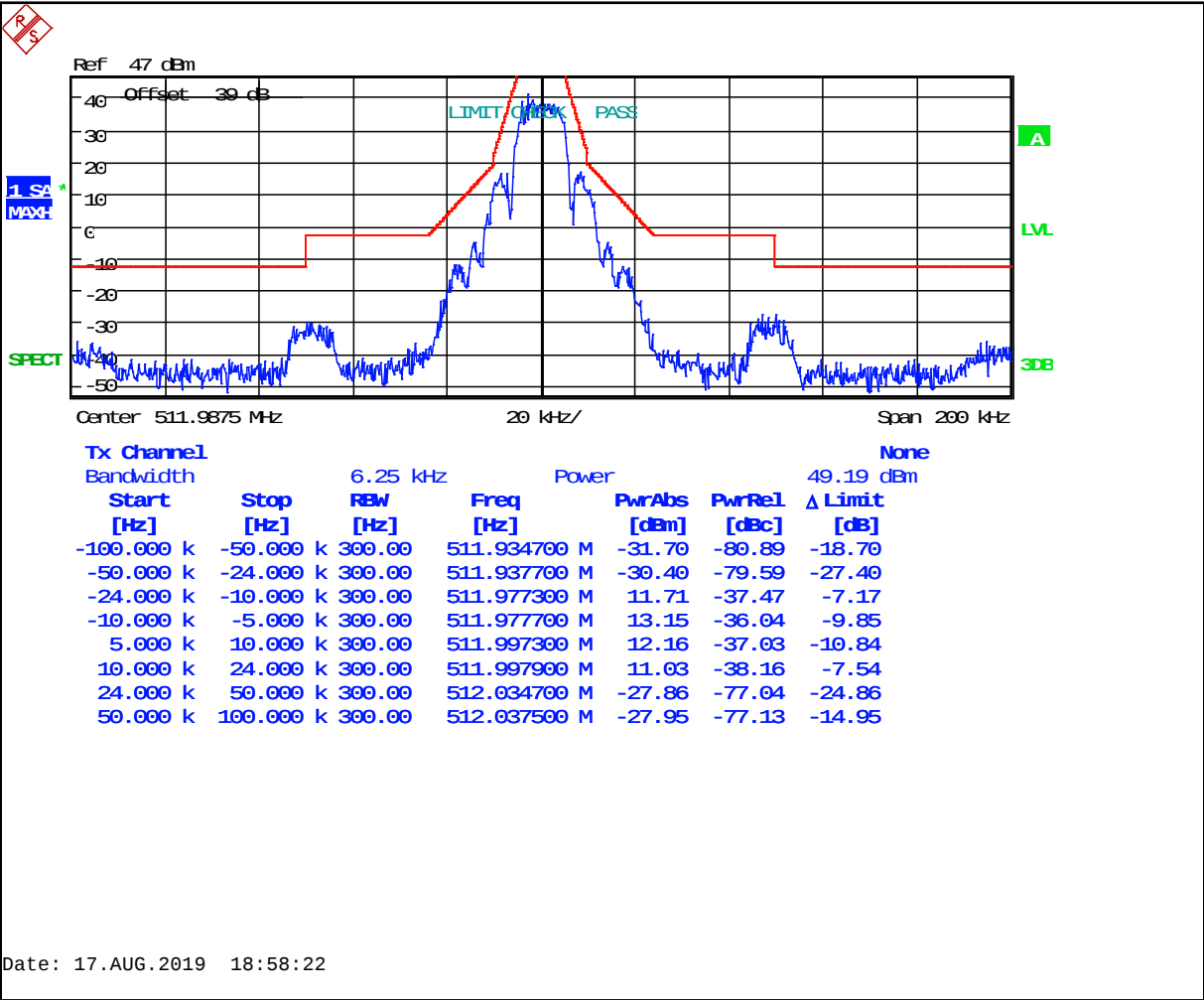
Plot 8-105: Occupied Bandwidth – 456.0125 MHz – 2-Level FSK 9600 WB (Mask C)



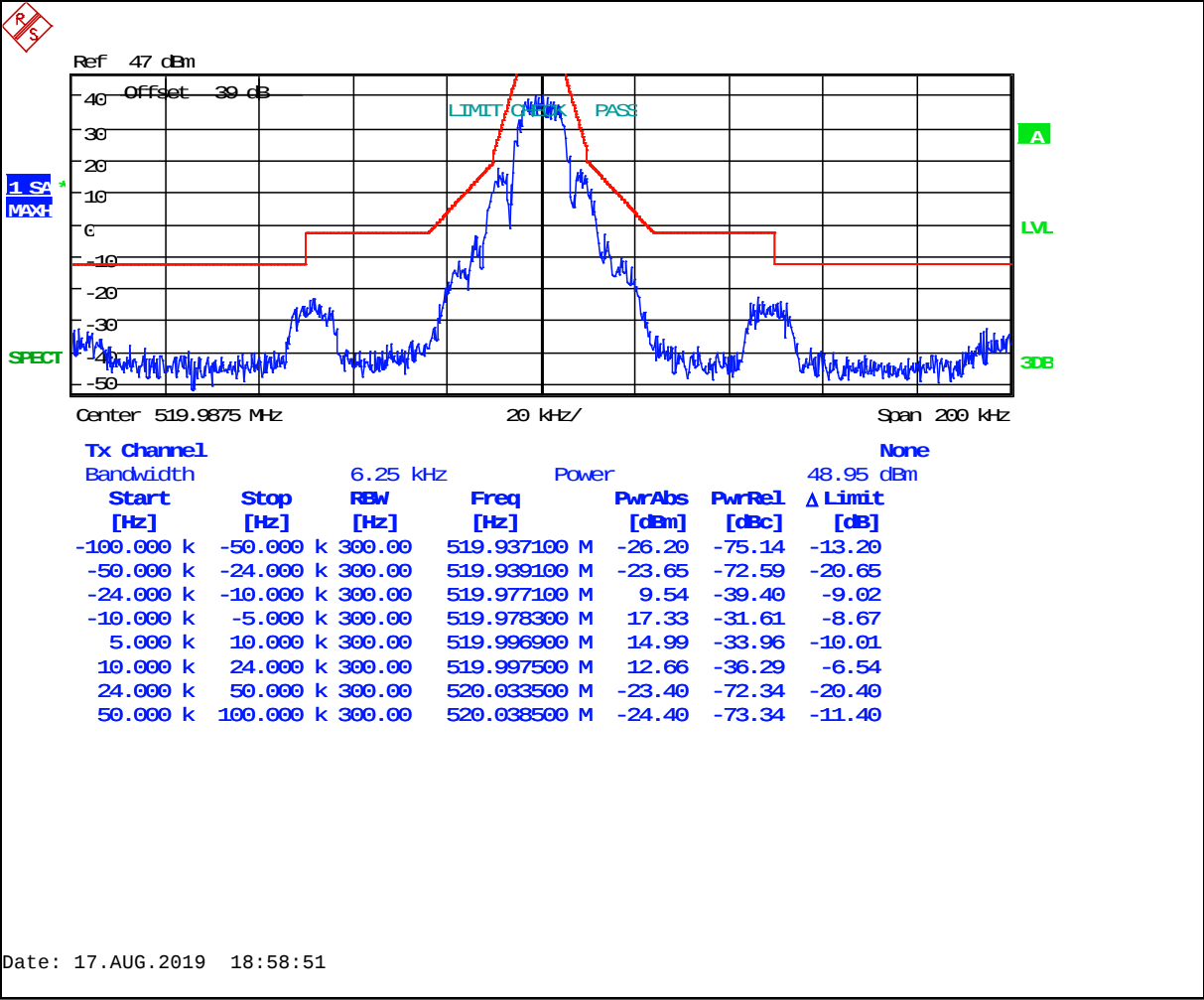
Plot 8-106: Occupied Bandwidth – 469.9875 MHz – 2-Level FSK 9600 WB (Mask C)



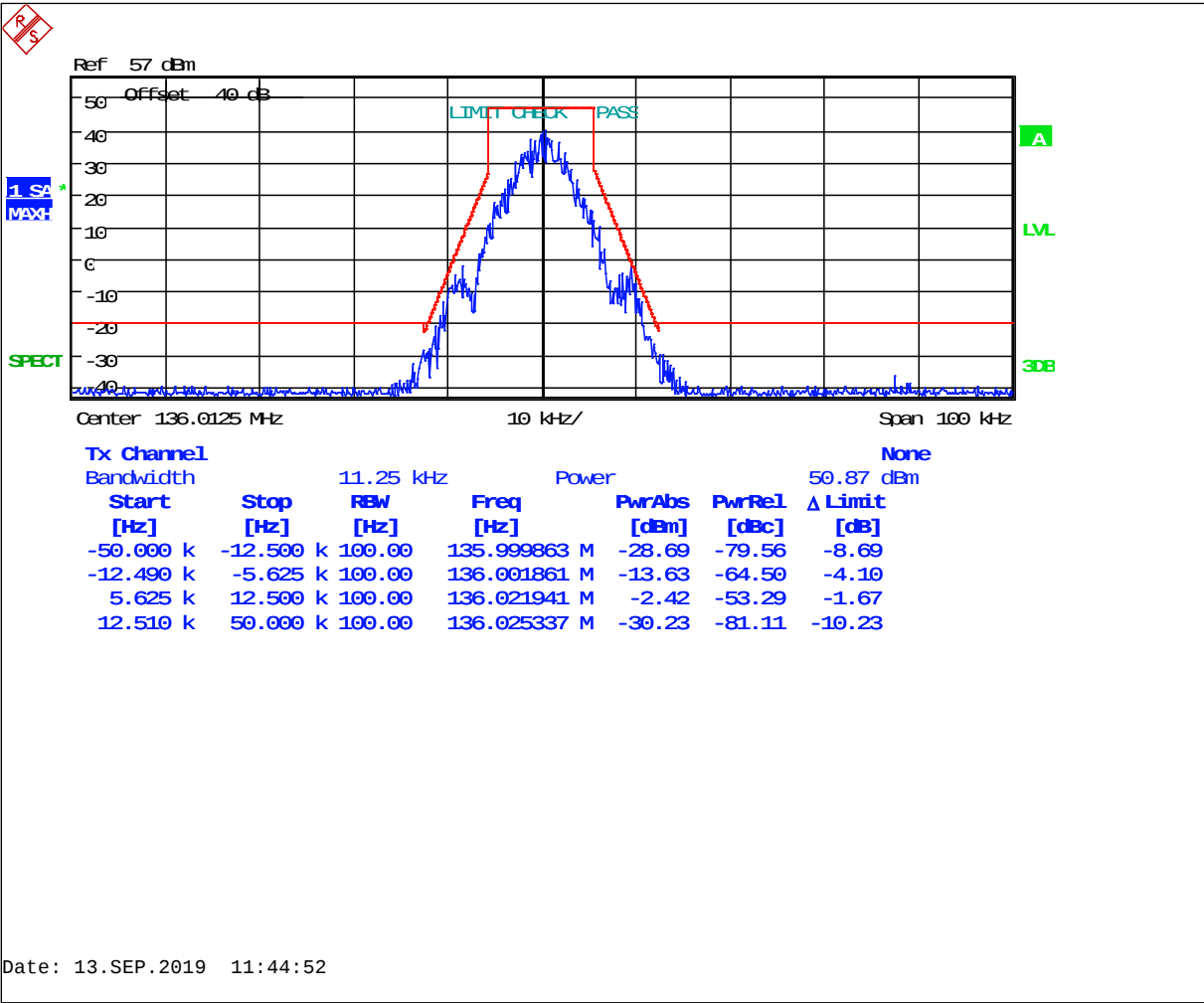
Plot 8-107: Occupied Bandwidth – 511.9875 MHz – 2-Level FSK 9600 WB (Mask C)



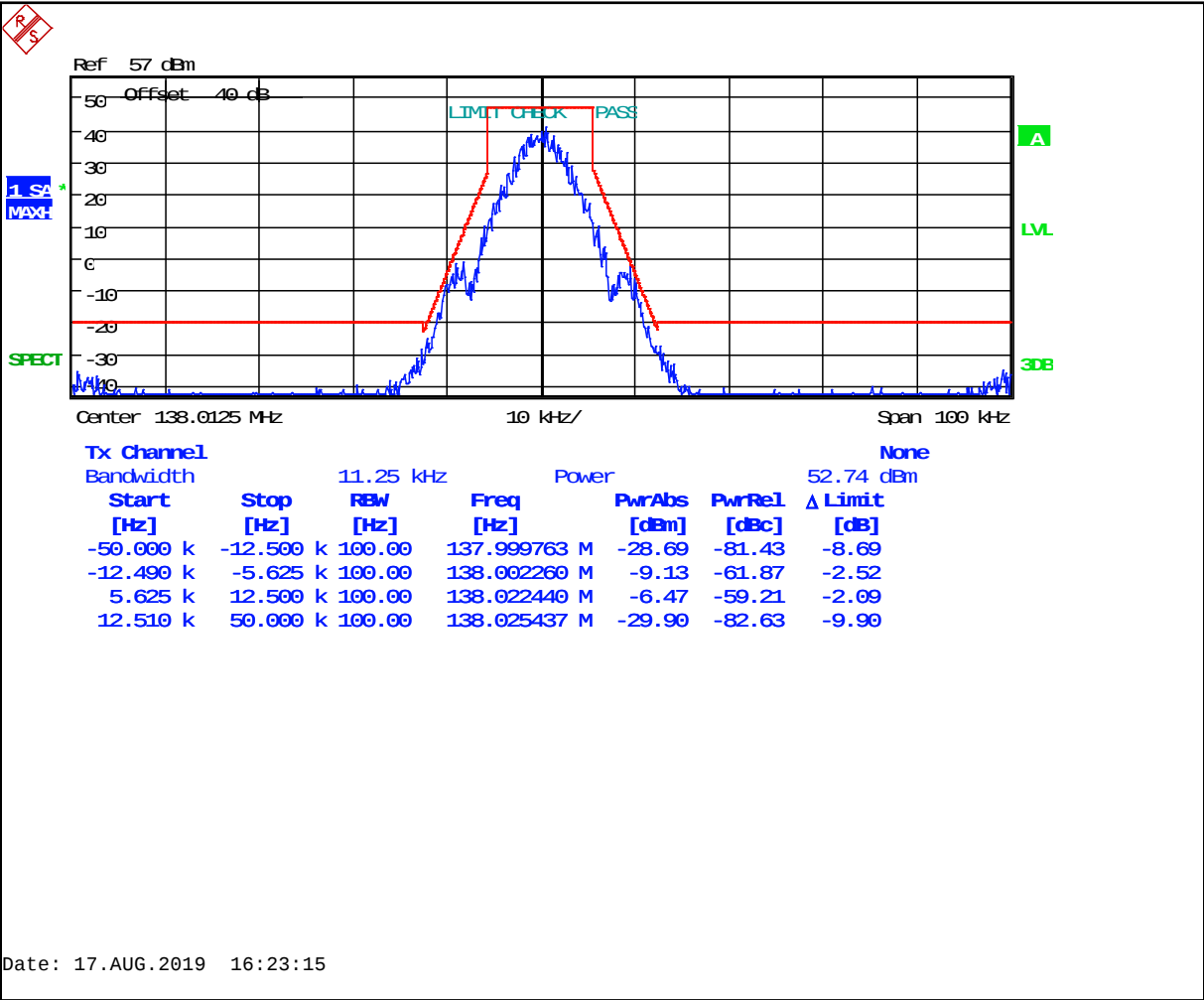
Plot 8-108: Occupied Bandwidth – 519.9875 MHz – 2-Level FSK 9600 WB (Mask C)



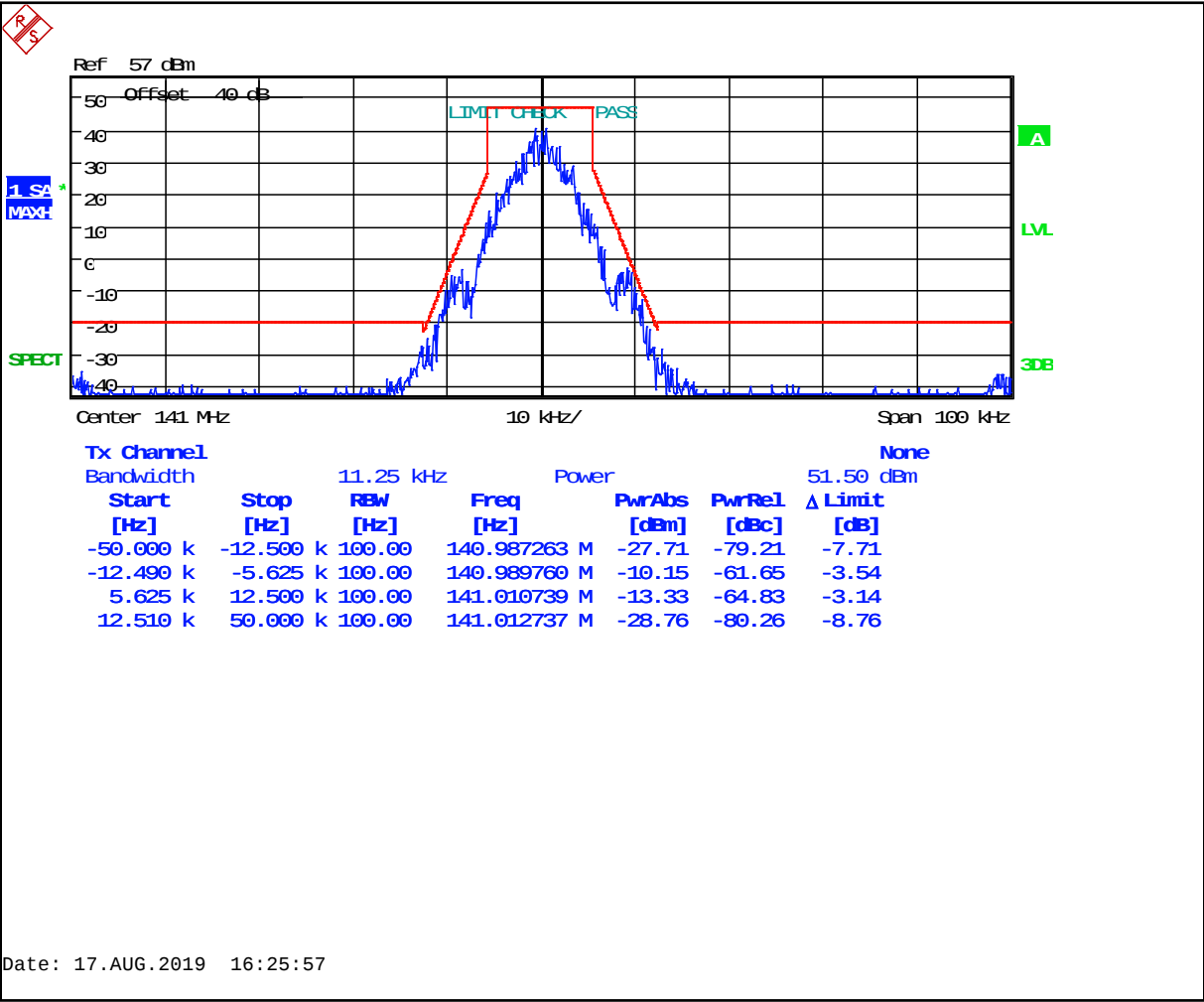
Plot 8-109: Occupied Bandwidth – 136.0125 MHz – 2-Level FSK 9600 NB (Mask D)



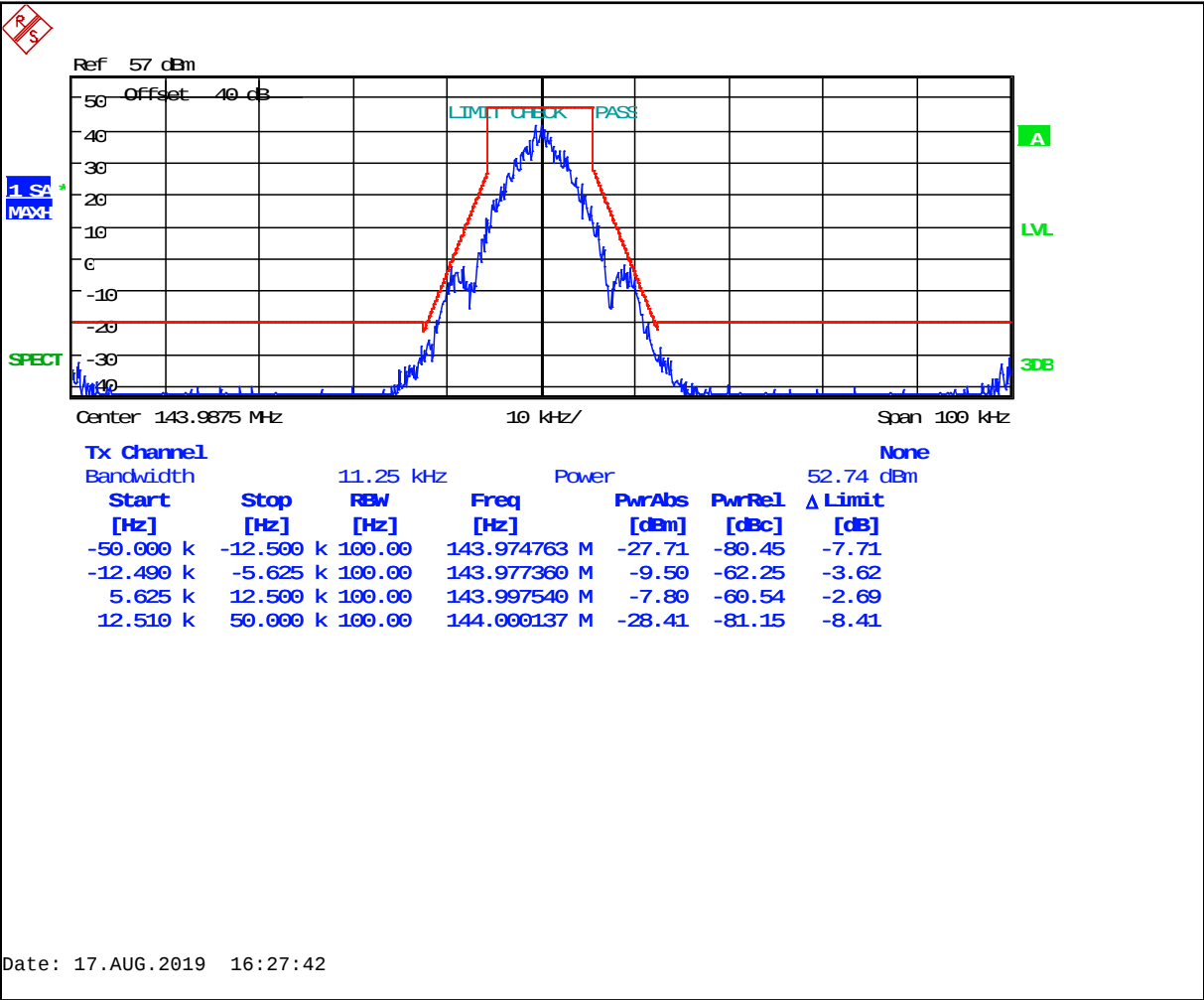
Plot 8-110: Occupied Bandwidth – 138.0125 MHz – 2-Level FSK 9600 NB (Mask D)



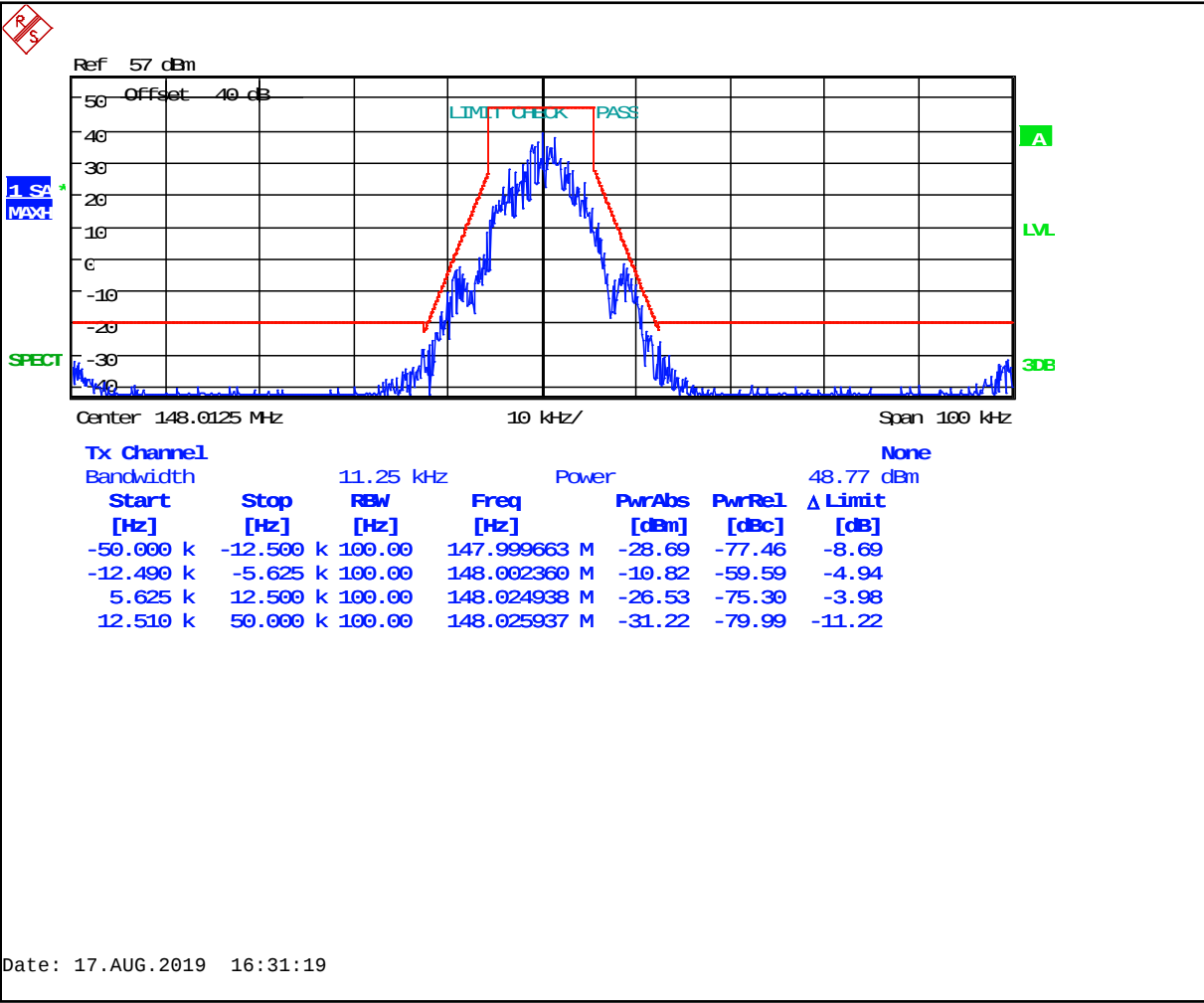
Plot 8-111: Occupied Bandwidth – 141.0000 MHz – 2-Level FSK 9600 NB (Mask D)



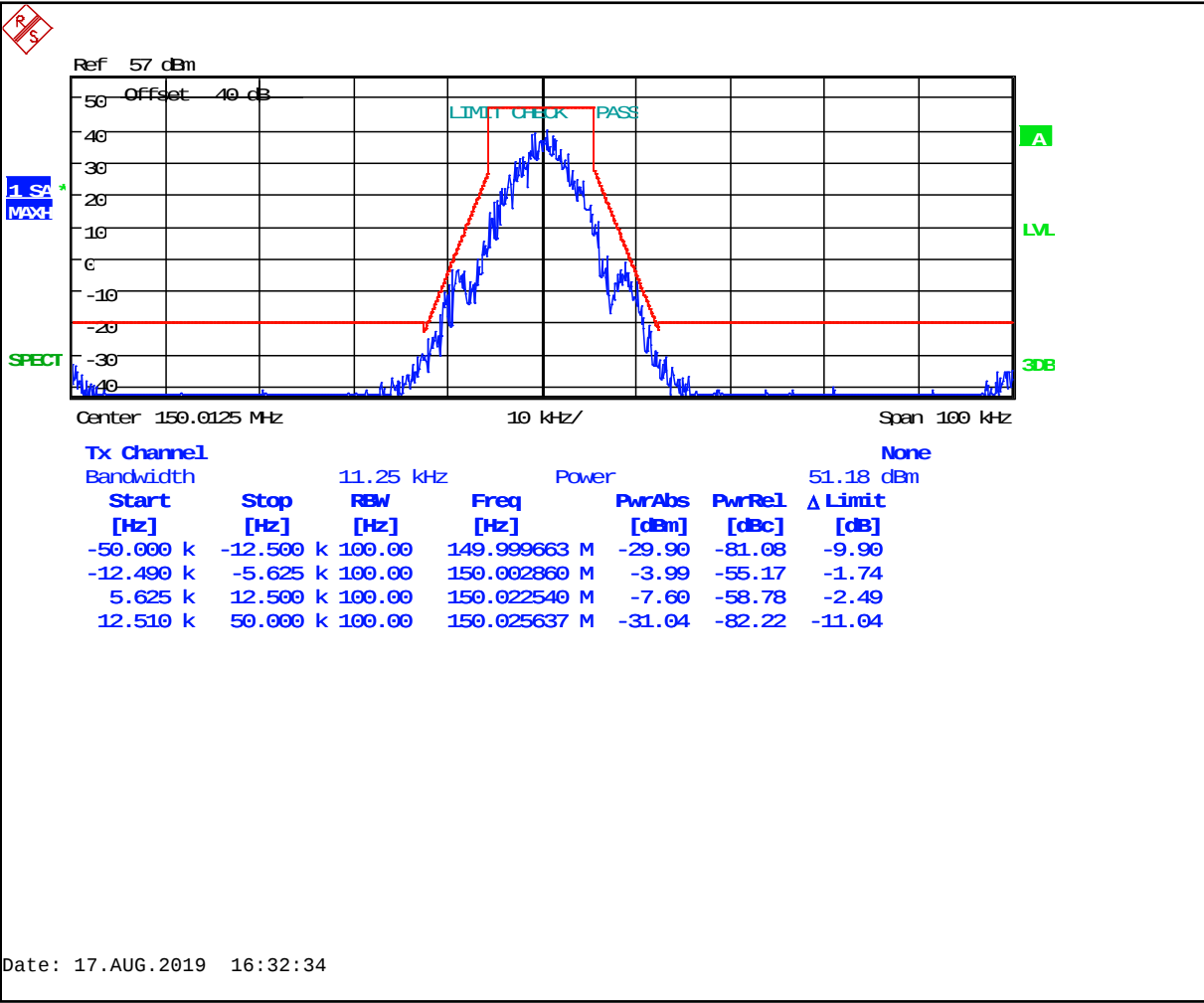
Plot 8-112: Occupied Bandwidth – 143.9875 MHz – 2-Level FSK 9600 NB (Mask D)



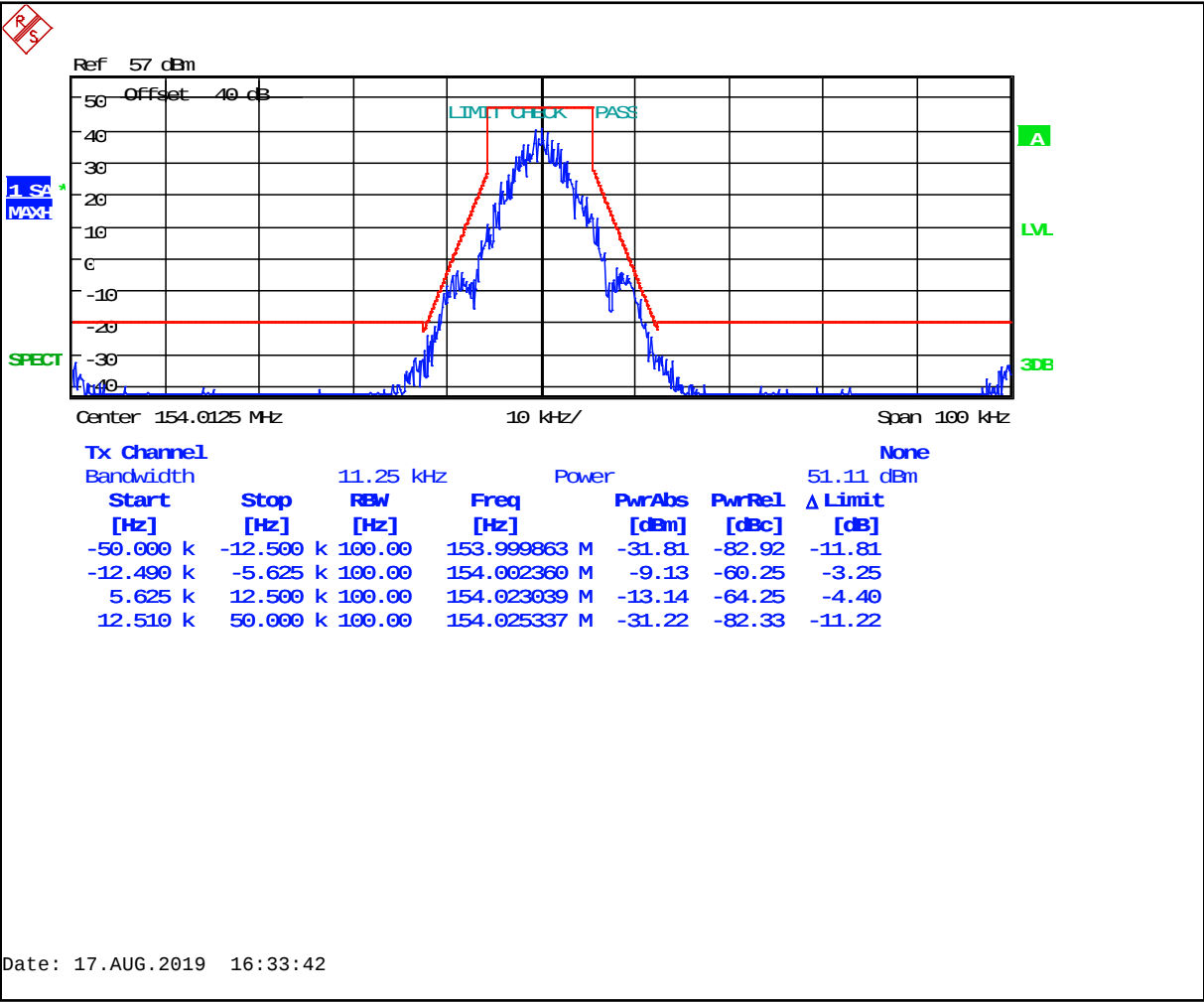
Plot 8-113: Occupied Bandwidth – 148.0125 MHz – 2-Level FSK 9600 NB (Mask D)



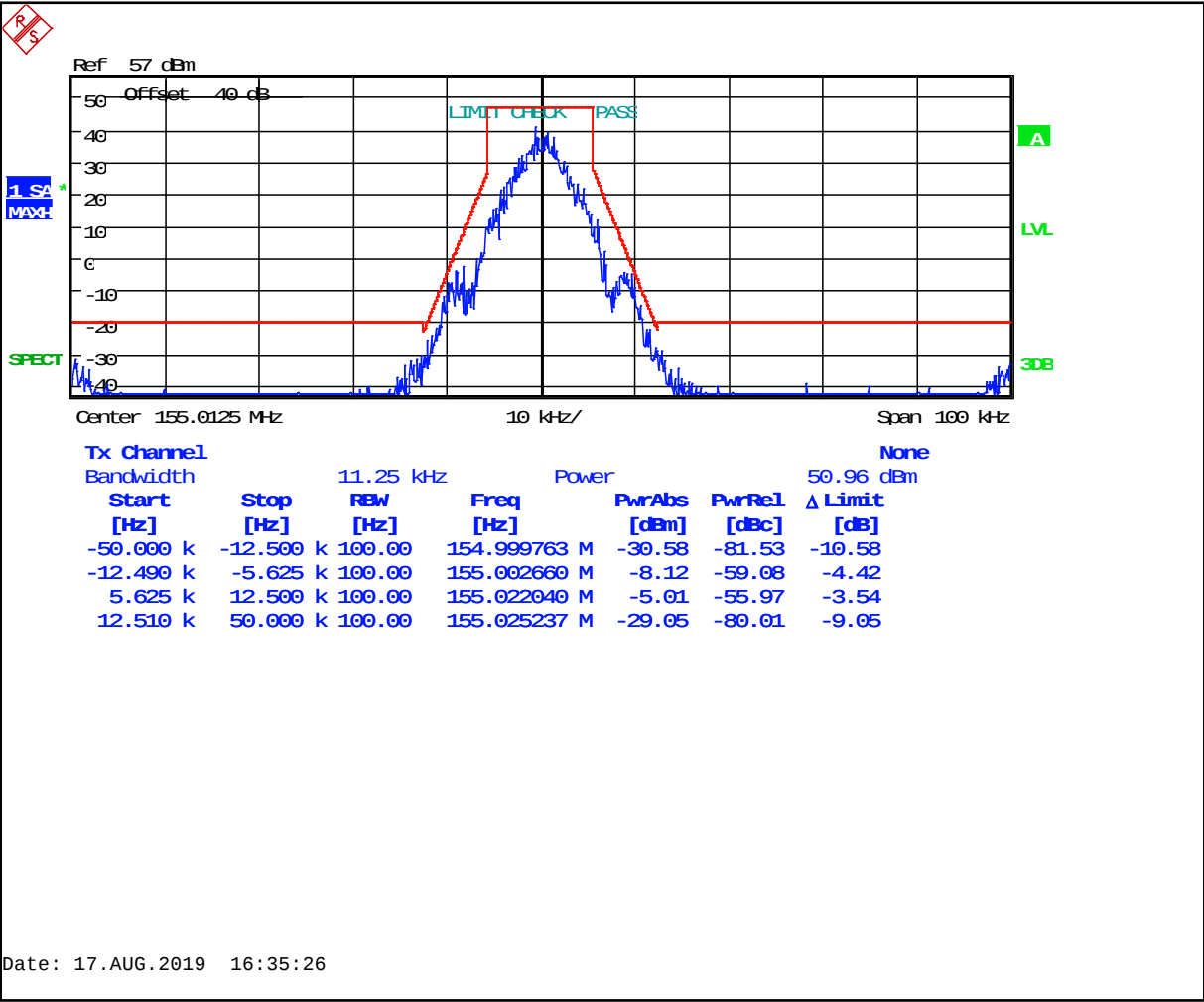
Plot 8-114: Occupied Bandwidth – 150.0125 MHz – 2-Level FSK 9600 NB (Mask D)



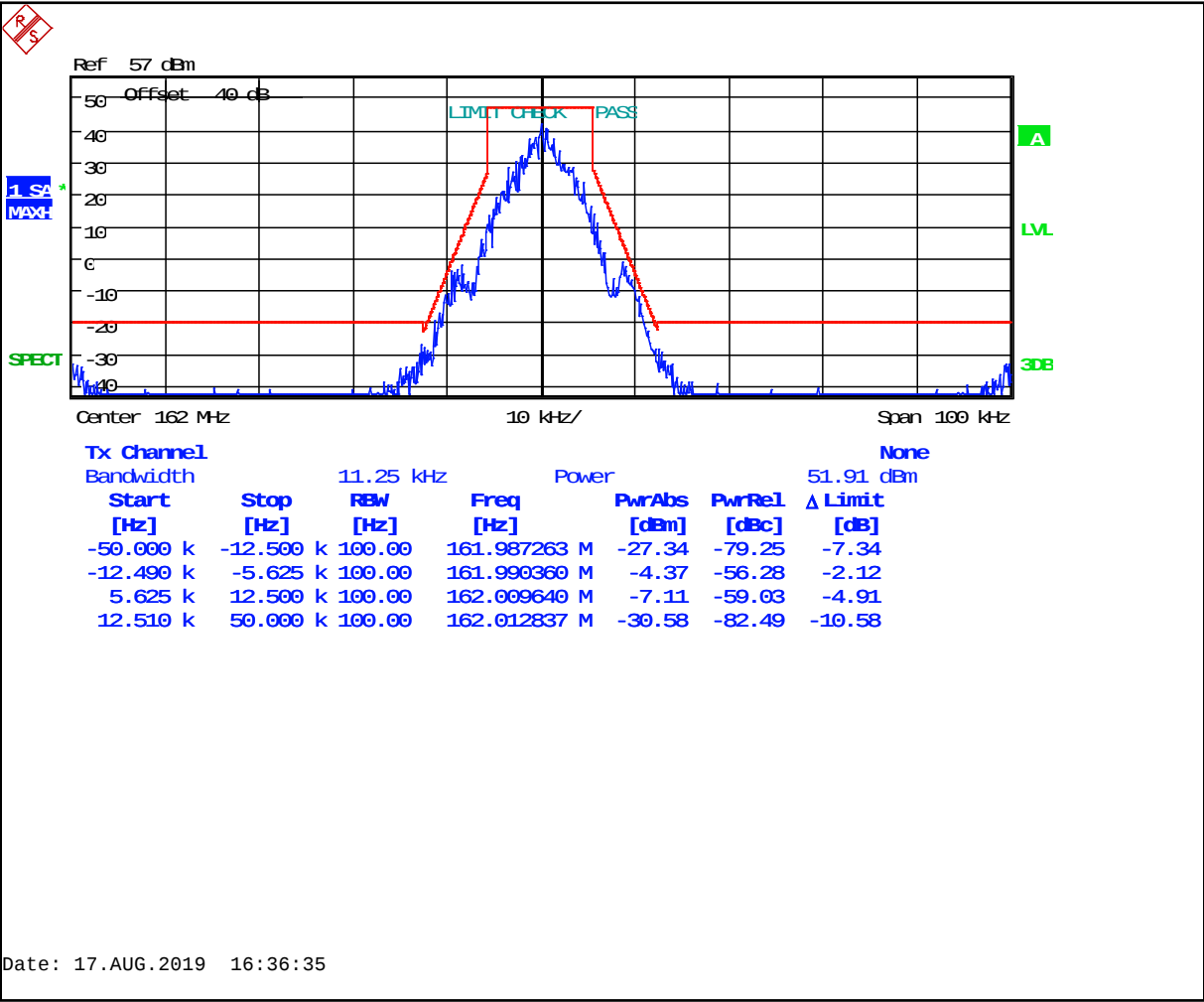
Plot 8-115: Occupied Bandwidth – 154.0125 MHz – 2-Level FSK 9600 NB (Mask D)



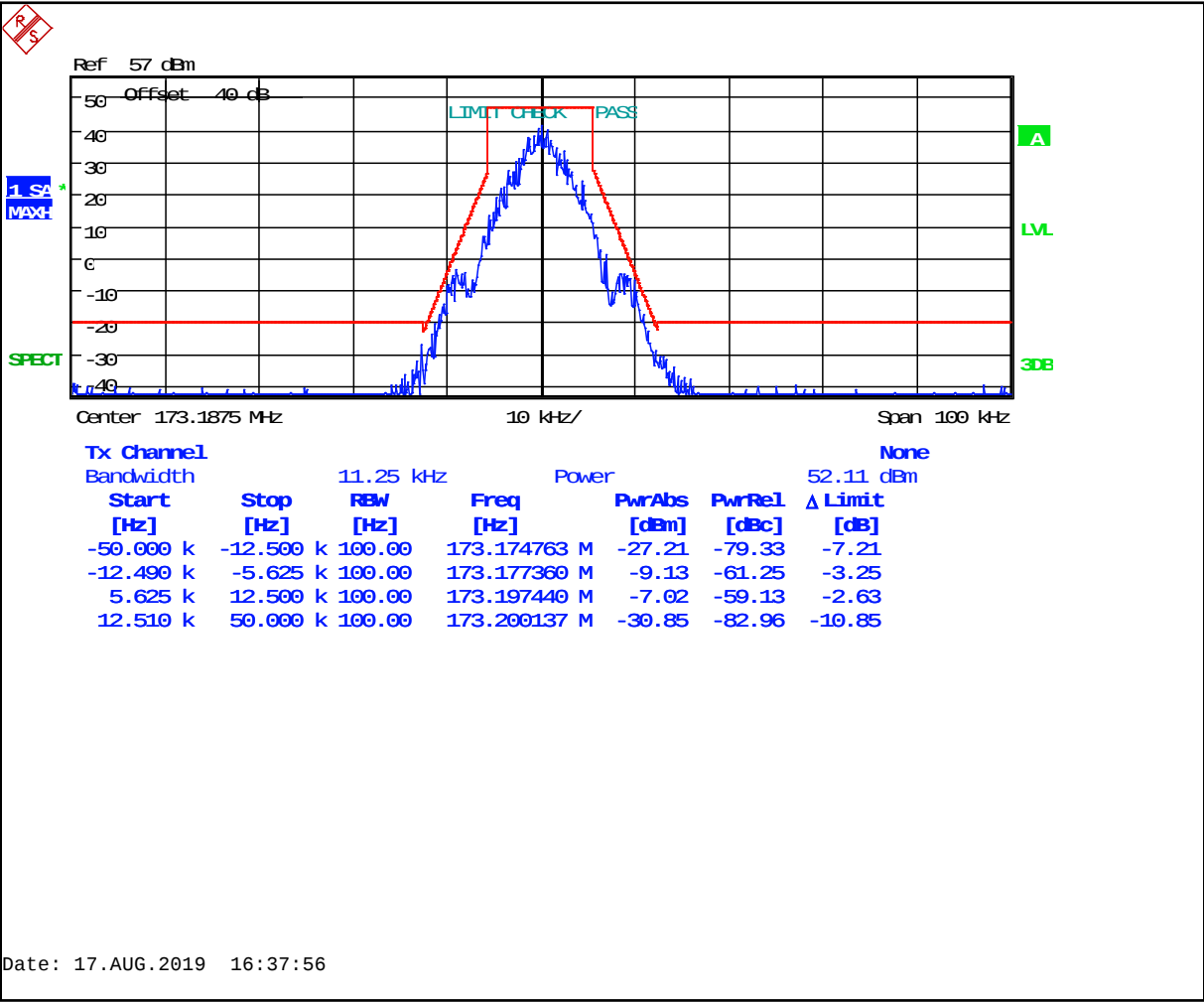
Plot 8-116: Occupied Bandwidth – 155.0125 MHz – 2-Level FSK 9600 NB (Mask D)



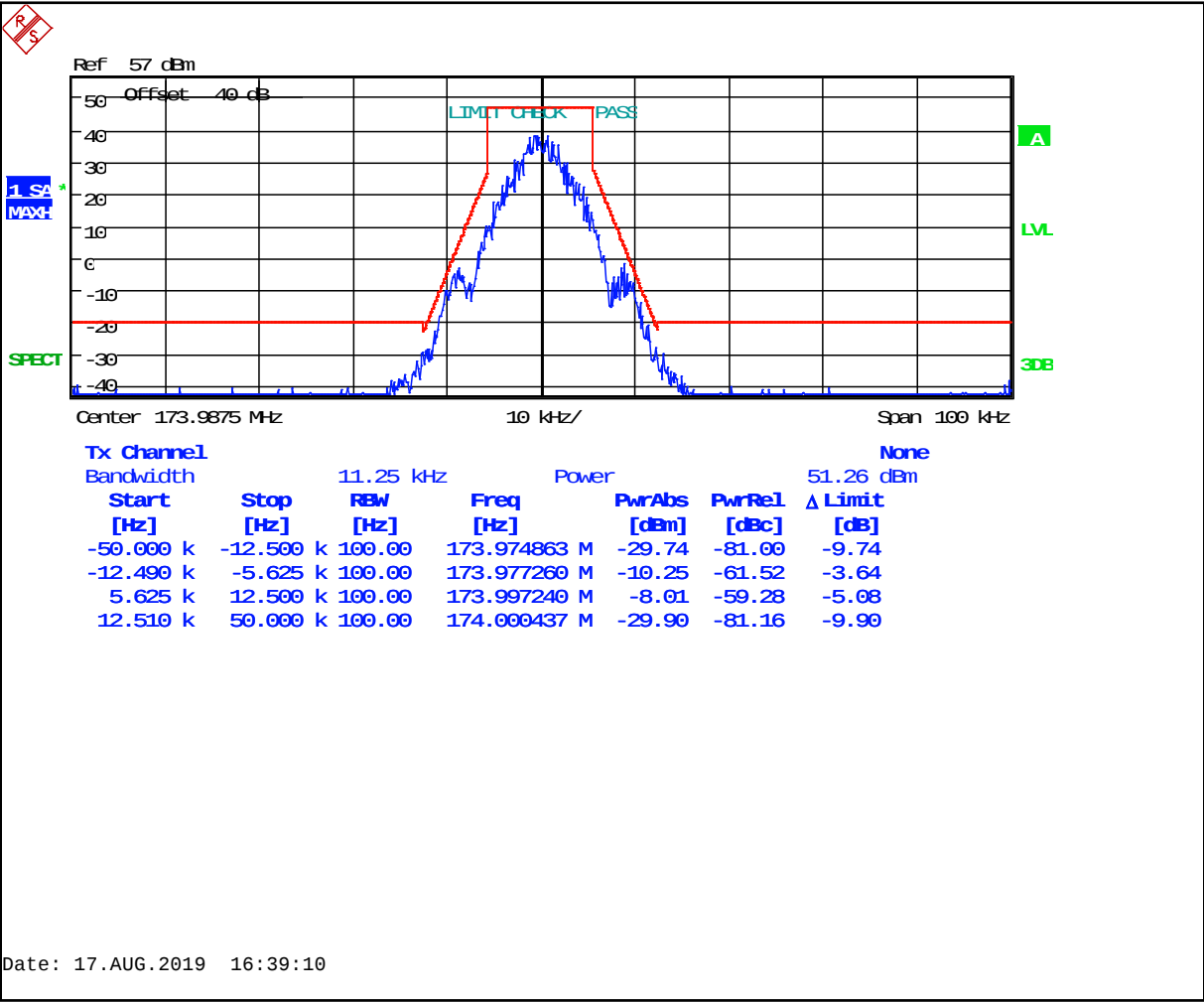
Plot 8-117: Occupied Bandwidth – 162.0000 MHz – 2-Level FSK 9600 NB (Mask D)



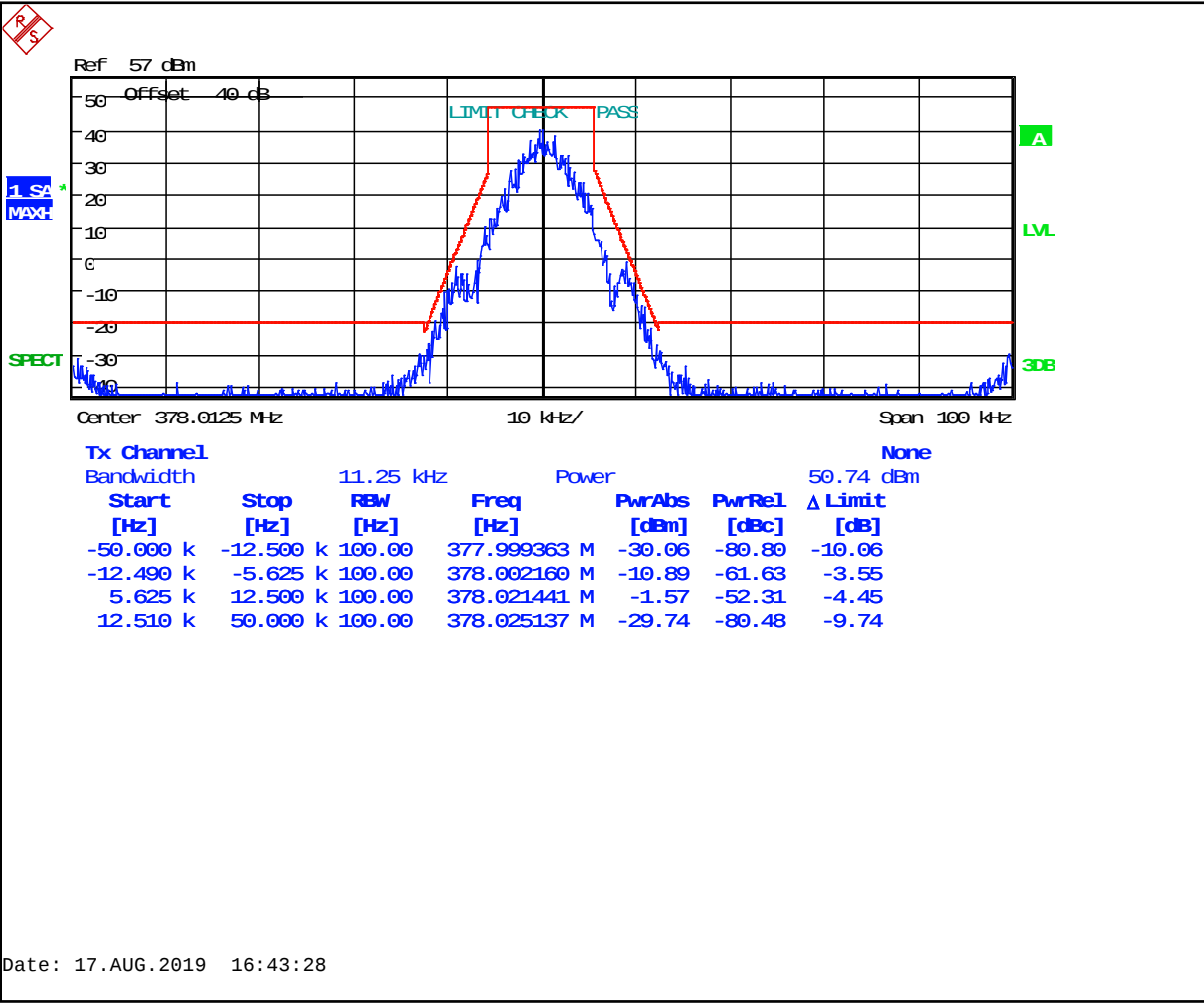
Plot 8-118: Occupied Bandwidth – 173.1875 MHz – 2-Level FSK 9600 NB (Mask D)



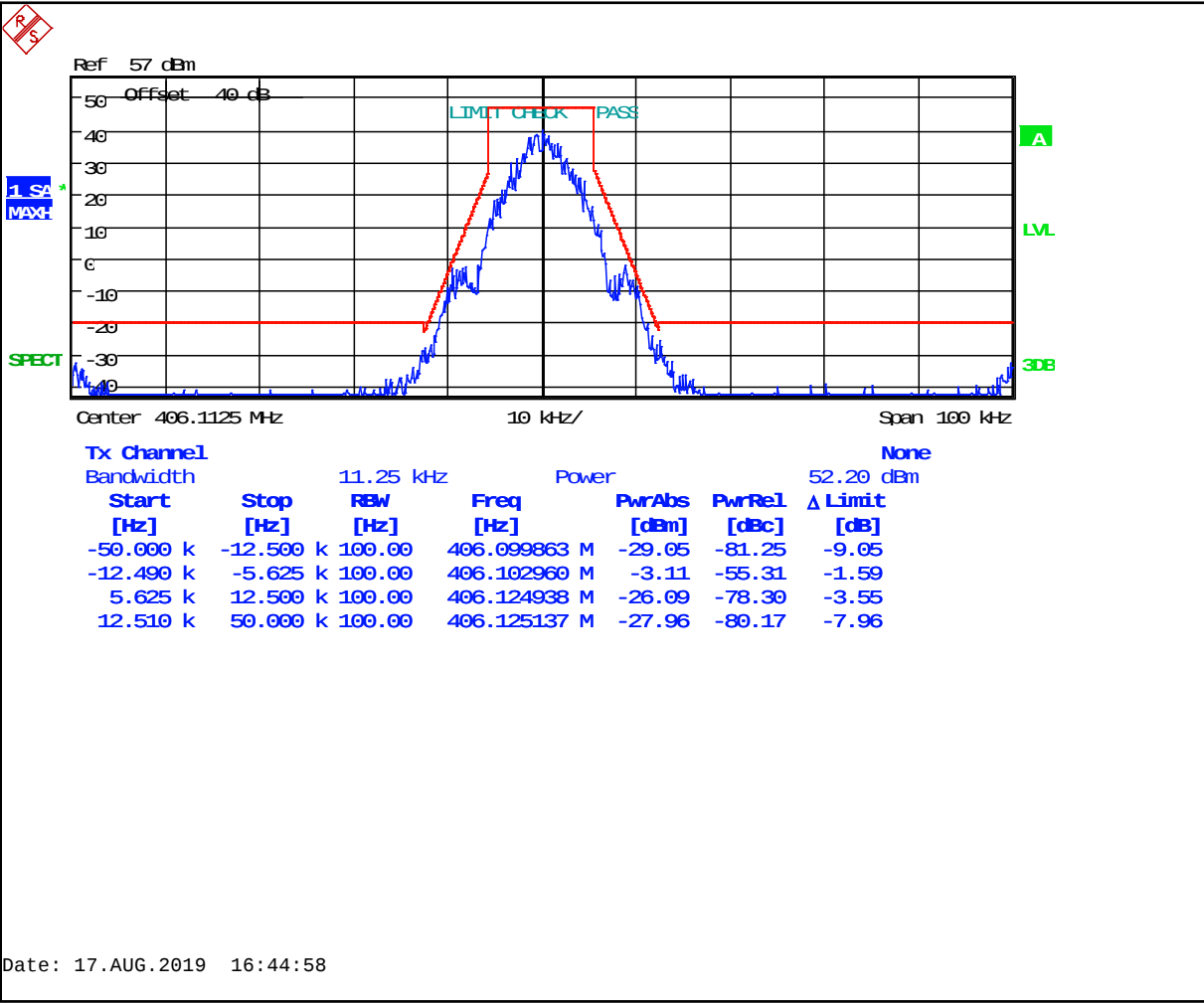
Plot 8-119: Occupied Bandwidth – 173.9875 MHz – 2-Level FSK 9600 NB (Mask D)



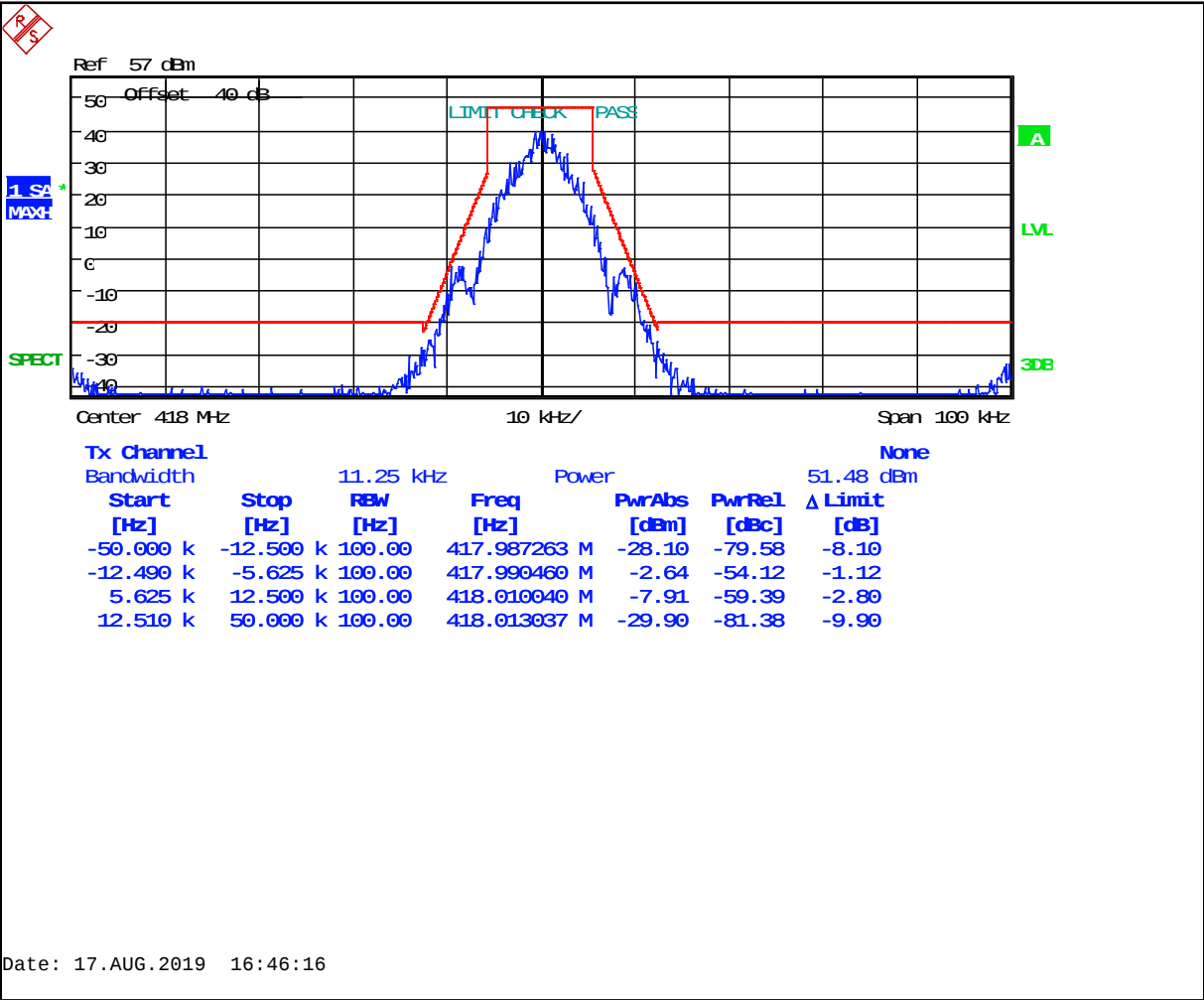
Plot 8-120: Occupied Bandwidth – 378.0125 MHz – 2-Level FSK 9600 NB (Mask D)



Plot 8-121: Occupied Bandwidth – 406.1125 MHz – 2-Level FSK 9600 NB (Mask D)



Plot 8-122: Occupied Bandwidth – 418.0000 MHz – 2-Level FSK 9600 NB (Mask D)



Ref: 57 dBm

Offset: 40 dB

LIMIT CHECK PASS

1 SA MAX

SPECT

Center: 429.9875 MHz

10 kHz/

Span: 100 kHz

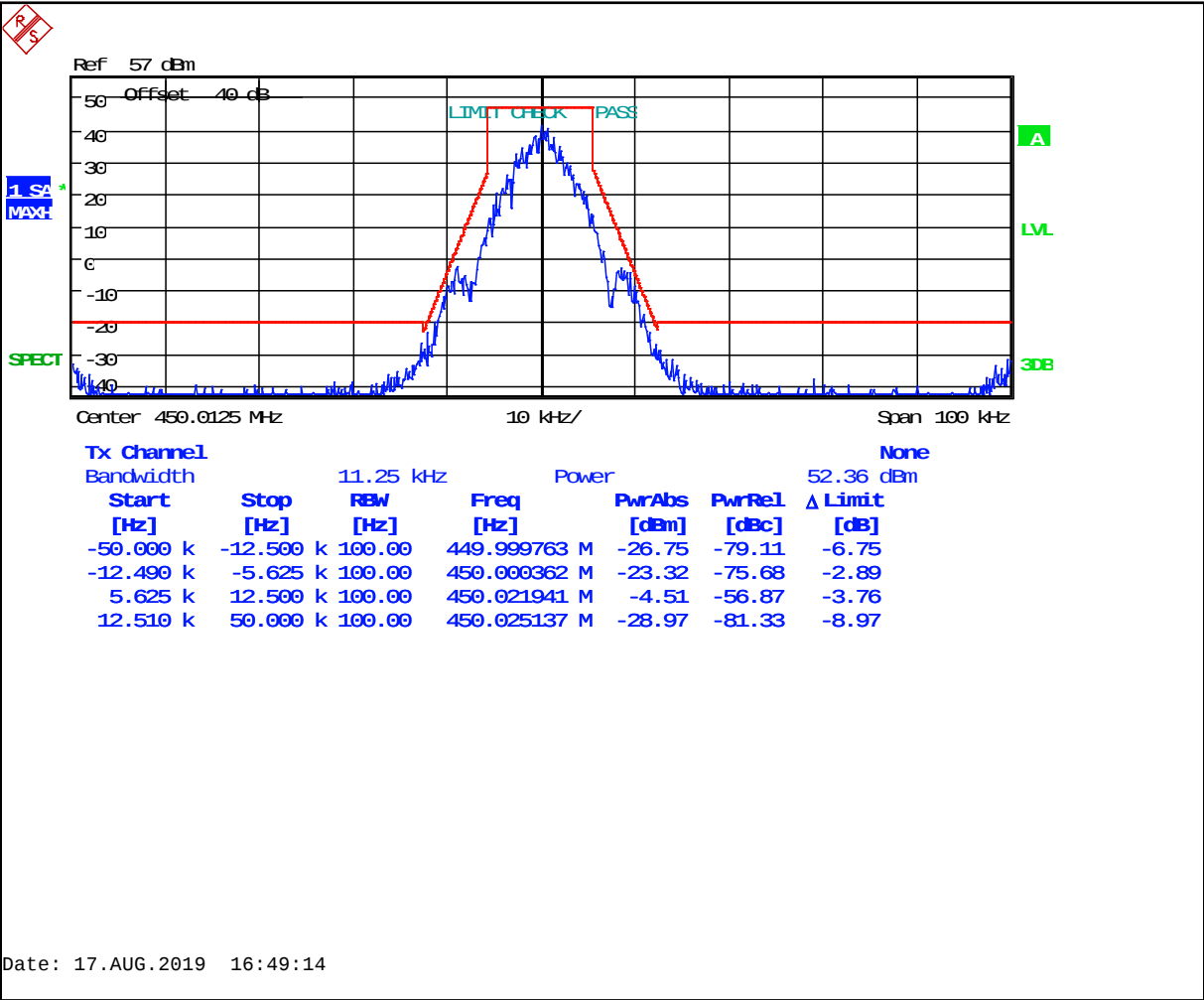
Tx Channel

Bandwidth: 11.25 kHz

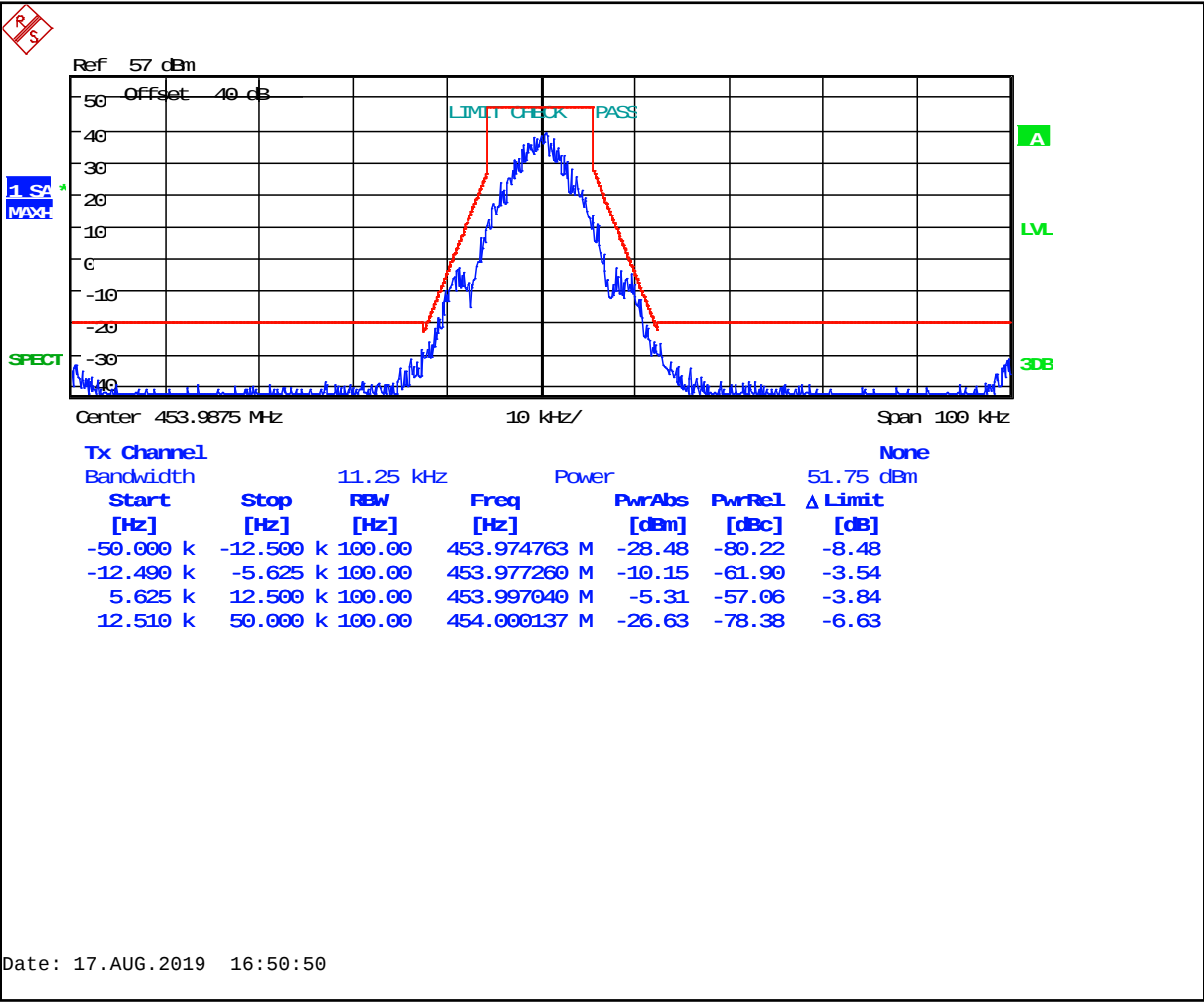
Power: 51.74 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	Δ Limit [dB]
-50.000 k	-12.500 k	100.00	429.974863 M	-29.05	-80.79	-9.05
-12.490 k	-5.625 k	100.00	429.977360 M	-8.12	-59.86	-2.24
5.625 k	12.500 k	100.00	429.998339 M	-14.92	-66.66	-4.00
12.510 k	50.000 k	100.00	430.000137 M	-30.06	-81.81	-10.06

Plot 8-124: Occupied Bandwidth – 450.0125 MHz – 2-Level FSK 9600 NB (Mask D)



Plot 8-125: Occupied Bandwidth – 453.9875 MHz – 2-Level FSK 9600 NB (Mask D)



Ref 57 dBm

Offset 40 dB

LIMIT CHECK PASS

1 SA MAX

SPECT

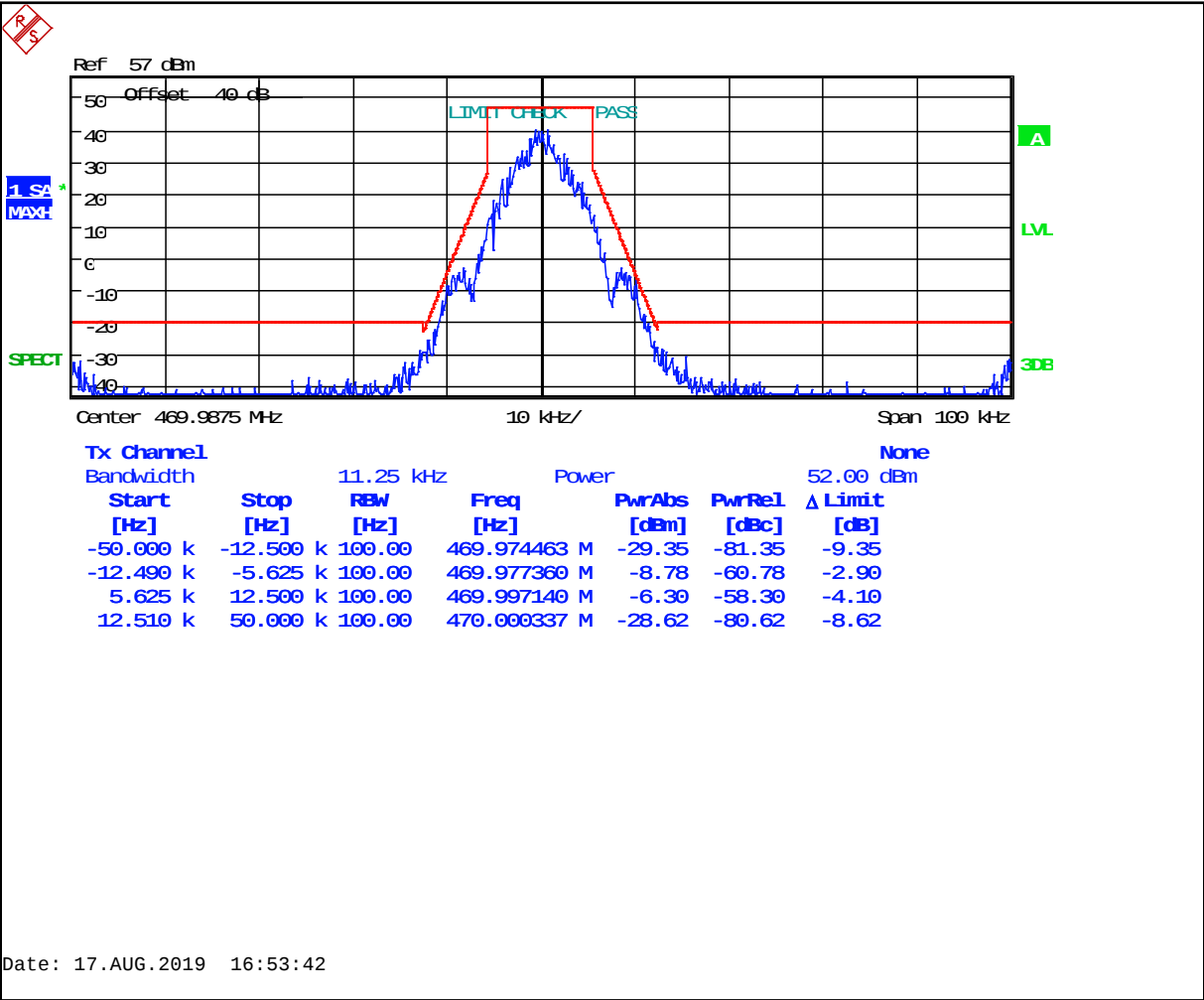
Center 456.0125 MHz

10 kHz/

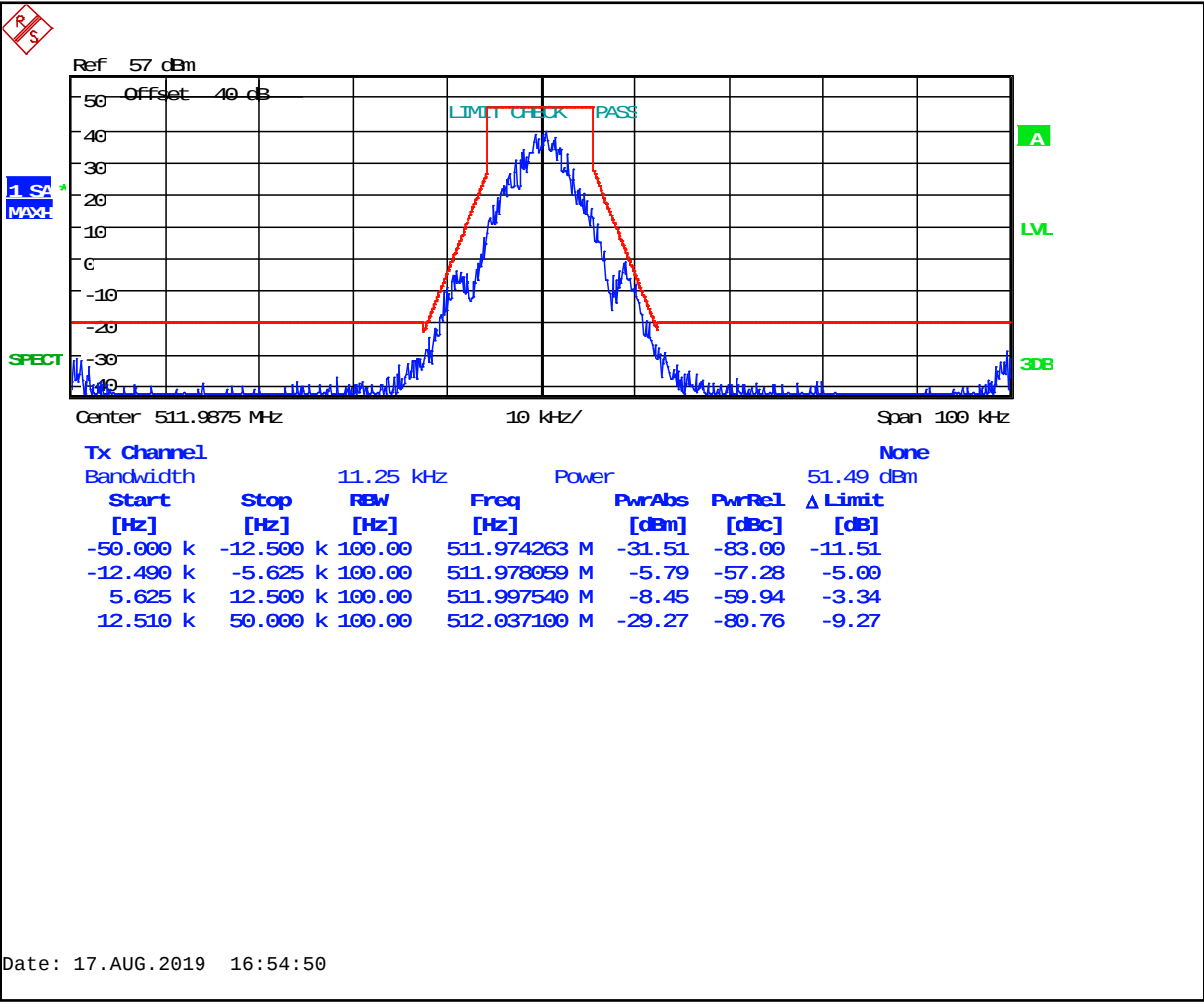
Span 100 kHz

Tx Channel				None		
Bandwidth		11.25 kHz	Power		51.16 dBm	
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	Δ Limit [dB]
-50.000 k	-12.500 k	100.00	455.999463 M	-31.41	-82.58	-11.41
-12.490 k	-5.625 k	100.00	456.002660 M	-8.55	-59.71	-4.85
5.625 k	12.500 k	100.00	456.021941 M	-2.30	-53.47	-1.55
12.510 k	50.000 k	100.00	456.025737 M	-31.81	-82.97	-11.81

Plot 8-127: Occupied Bandwidth – 469.9875 MHz – 2-Level FSK 9600 NB (Mask D)



Plot 8-128: Occupied Bandwidth – 511.9875 MHz – 2-Level FSK 9600 NB (Mask D)



Ref 57 dBm

Offset 40 dB

LIMIT CHECK PASS

1 SA MAX

SPECT

Center 519.9875 MHz 10 kHz/ Span 100 kHz

Tx Channel

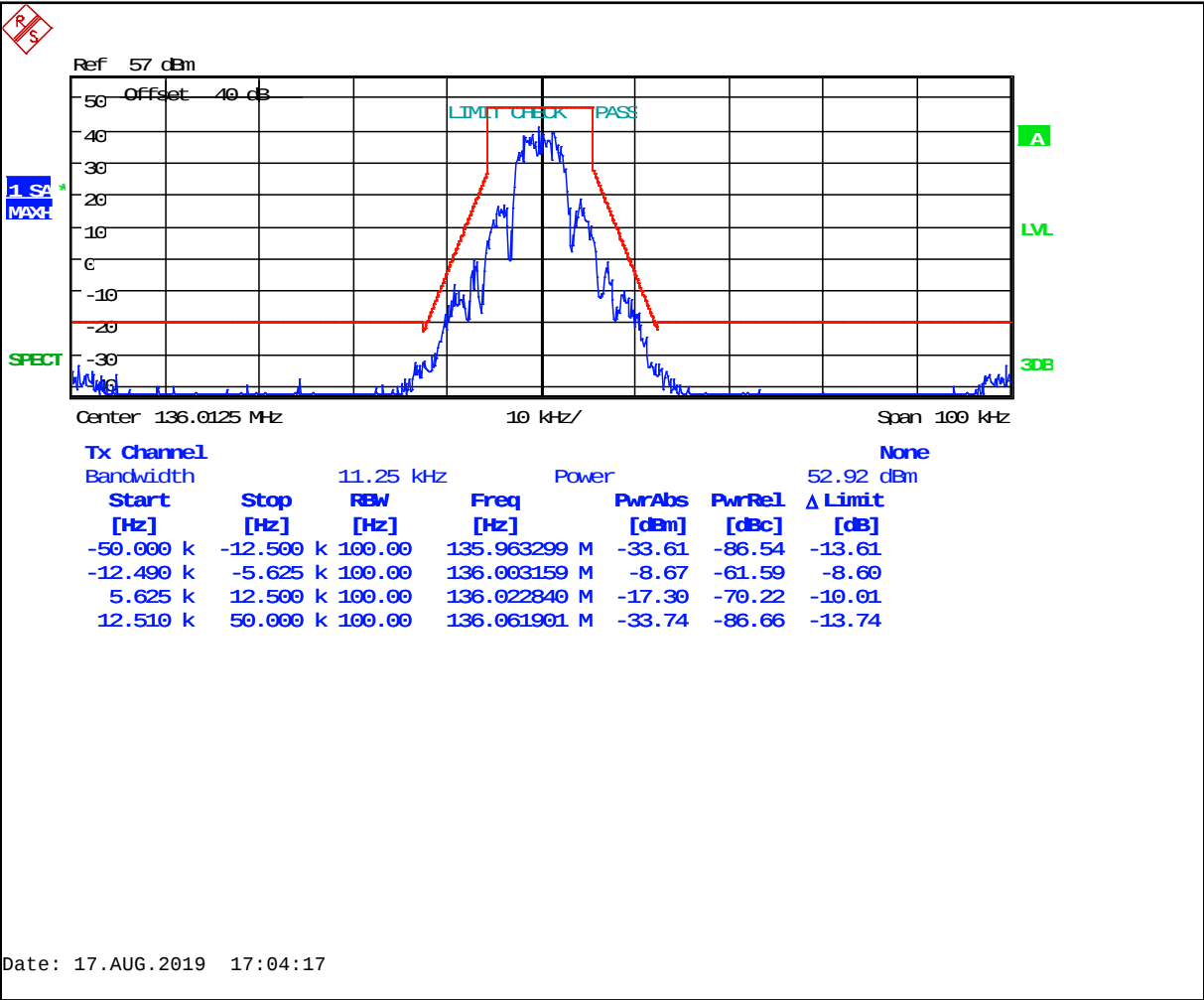
Bandwidth 11.25 kHz Power 50.96 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	Δ Limit [dB]
-50.000 k	-12.500 k	100.00	519.937500 M	-25.29	-76.25	-5.29
-12.490 k	-5.625 k	100.00	519.977360 M	-8.78	-59.74	-2.90
5.625 k	12.500 k	100.00	519.998339 M	-14.58	-65.54	-3.66
12.510 k	50.000 k	100.00	520.000137 M	-25.01	-75.97	-5.01

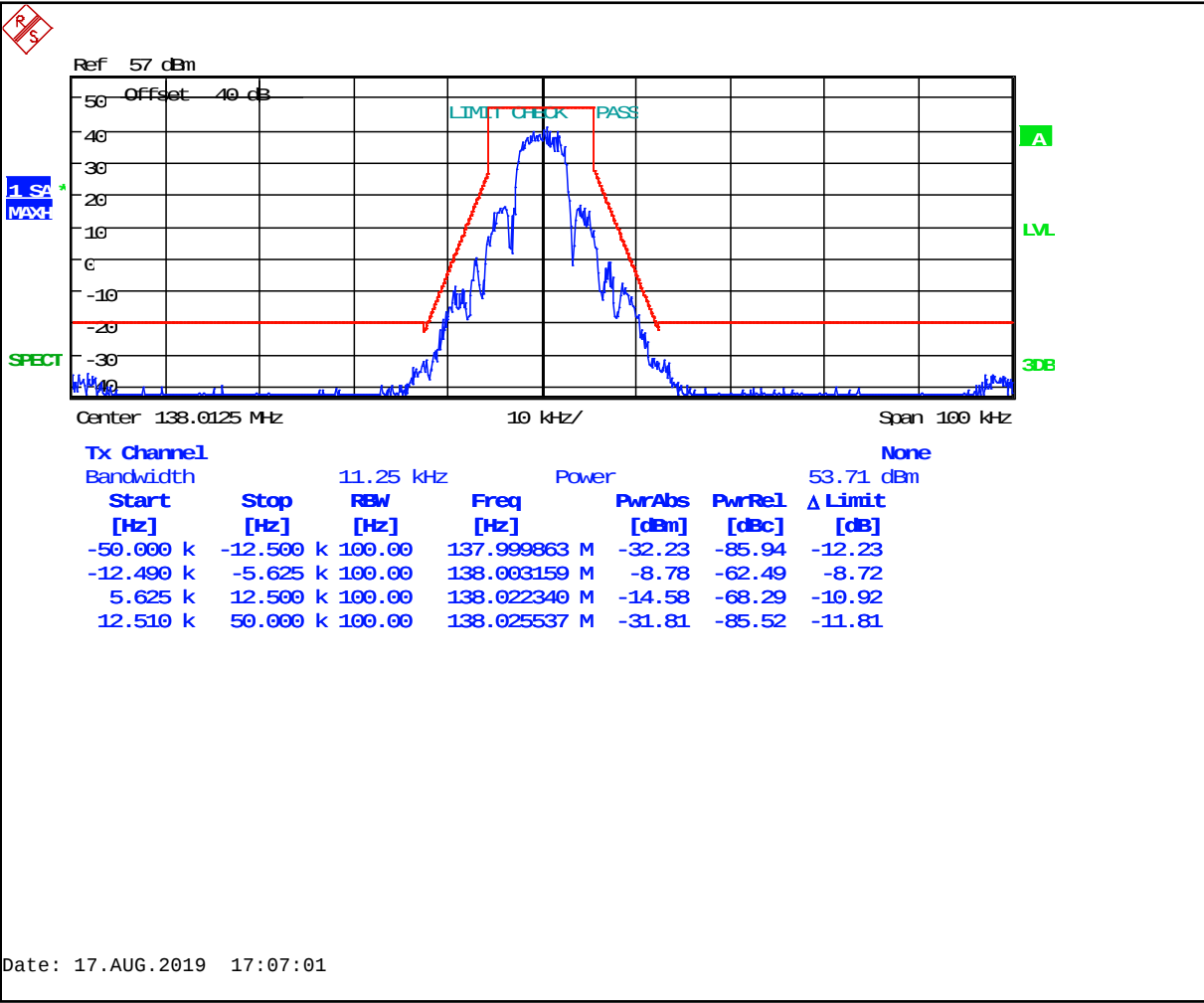
None

Date: 17.AUG.2019 16:56:18

Plot 8-130: Occupied Bandwidth – 136.0125 MHz – 2-level FSK 4800 (Mask D)



Plot 8-131: Occupied Bandwidth – 138.0125 MHz – 2-level FSK 4800 (Mask D)



Plot 8-132: Occupied Bandwidth – 141.0000 MHz – 2-level FSK 4800 (Mask D)

