FCC RF Test Report (WLAN 5GHz)

Report No.:	RF191209E01-1
FCC ID:	RSE-FGA5330
Equipment Name:	Gateway
Trade Name:	Technicolor
Model Number:	FGA5330
Product Code:	FGA5330TCH2
Received Date:	Dec. 09, 2020
Test Date:	Jan. 09 to Feb. 22, 2020
Issued Date:	Apr. 17, 2020
Applicant:	Technicolor Delivery Technologies Belgium
Address:	Prins Boudewinnlaan 47 Edegem B-2650 Belgium
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Testing Laboratory
2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF191209E01-1	Original release.	Apr. 17, 2020

1 Certificate of Conformity

Equipment Name:	Gateway
Trade Name:	Technicolor
Test Model:	FGA5330
Product Code:	FGA5330TCH2
Sample Status:	Product Unit
Applicant:	Technicolor Delivery Technologies Belgium
Test Date:	Jan. 09 to Feb. 22, 2020
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Apr. 17, 2020

Claire Kuan / Specialist

Approved by : _____ , **Date:** Apr. 17, 2020

Clark Lin / Technical Manager

2 Summary of Test Results

Applied Standard: 47 CFR FCC Part 15 Subpart E					
Report Clause	**Ref. Std. Clause**	**Description**	**Measured**	**Limit**	**Result**
3.9	15.203	Antenna Requirements	-	-	PASS
4.1	15.407(b)(6)	AC Power Conducted Emissions	Margin is -25.80dB at 0.32578MHz.	-	PASS
4.2	-	99% Occupied Bandwidth & 26dB Bandwidth	**5150-5250MHz:** 11ax (20M):19.57 MHz 11ax (40M):38.4 MHz 11ax (80M):77.28 MHz **5725-5850MHz:** 11ax (20M):19.68 MHz 11ax (40M):38.4 MHz 11ax (80M):77.76 MHz 26dB Bandwidth **5150-5250MHz:** 11ax (20M):40.84 MHz 11ax (40M):73.71 MHz 11ax (80M):83.2 MHz	-	-
4.3	15.407(e)	6dB bandwidth for U-NII-3	**5725-5850MHz:** 11ax (20M):18.8 MHz 11ax (40M):37.19 MHz 11ax (80M):75.56 MHz	≥500kHz	PASS

Applied Standard: 47 CFR FCC Part 15 Subpart E					
Report Clause	**Ref. Std. Clause**	**Description**	**Measured**	**Limit**	**Result**
4.4	15.407 (a)(1/2/3)	Maximum Conducted Output Power	**5150-5250MHz:** **11ax (20M):** 1S4T CDD: 29.72 dBm 1S4T TxBF: 29.65 dBm 2S4T TxBF: 29.63 dBm 3S4T TxBF: 29.66 dBm **11ax (40M):** 1S4T CDD: 29.62 dBm 1S4T TxBF: 29.63 dBm 2S4T TxBF: 29.40 dBm 3S4T TxBF: 29.46 dBm **11ax (80M):** 1S4T CDD: 24.13 dBm 1S4T TxBF: 24.07 dBm 2S4T TxBF: 21.81 dBm 3S4T TxBF: 22.60 dBm **5725-5850MHz:** **11ax (20M):** 1S4T CDD: 29.73 dBm 1S4T TxBF: 29.69 dBm 2S4T TxBF: 29.71 dBm 3S4T TxBF: 29.74 dBm **11ax (40M):** 1S4T CDD: 29.64 dBm 1S4T TxBF: 29.63 dBm 2S4T TxBF: 29.57 dBm 3S4T TxBF: 29.59 dBm **11ax (80M):** 1S4T CDD: 29.64 dBm 1S4T TxBF: 29.11 dBm 2S4T TxBF: 29.57 dBm 3S4T TxBF: 29.63 dBm	Power [dBm] 5150-5250MHz:30 5725-5850MHz:30	PASS

Applied Standard: 47 CFR FCC Part 15 Subpart E					
Report Clause	**Ref. Std. Clause**	**Description**	**Measured**	**Limit**	**Result**
4.5	15.407 (a)(1/2/3)	Power Spectral Density	**5150-5250MHz:** [dBm/MHz] **11ax (20M):** 1S4T CDD: 15.58 1S4T TxBF: 15.86 2S4T TxBF: 15.59 3S4T TxBF: 15.66 **11ax (40M):** 1S4T CDD: 12.83 1S4T TxBF: 13.34 2S4T TxBF: 12.82 3S4T TxBF: 12.81 **11ax (80M):** 1S4T CDD: 5.04 1S4T TxBF: 4.90 2S4T TxBF: 2.52 3S4T TxBF: 3.64 **5725-5850MHz:** [dBm/500kHz] **11ax (20M):** 1S4T CDD: 8.51 1S4T TxBF: 8.62 2S4T TxBF: 8.62 3S4T TxBF: 8.87 **11ax (40M):** 1S4T CDD: 5.51 1S4T TxBF: 5.69 2S4T TxBF: 5.64 3S4T TxBF: 5.83 **11ax (80M):** 1S4T CDD: 2.59 1S4T TxBF: 2.35 2S4T TxBF: 2.52 3S4T TxBF: 2.80	5150-5250MHz: 17 [dBm/MHz] 5725-5850MHz: 30 [dBm/500kHz]	PASS
4.6	15.407 (b)(1/2/3/4/6)	Radiated Emissions	Margin is -14.3dB at 17475.00MHz.	-	PASS
		Band Edge	Margin is -0.1dB at 5150.00MHz	-	PASS
4.7	15.407(g)	Frequency Stability	-	Signal shall remain in-band	PASS

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.8 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.0 dB
	30MHz ~ 1GHz	5.1 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.2 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 Basic Description of Equipment Under Test (WLAN 5GHz)

Items	Description			
Equipment Name	Gateway			
Trade Name	Technicolor			
Model Number	FGA5330			
Product Code	FGA5330TCH2			
FCC ID	RSE-FGA5330			
Power Type	From power adapter			
Antenna	Refer section 3.10			
EUT Stage	■	Product Unit	☐	Pre-Sample
Operating Band and Conducted Output Power	**U-NII-1** 5150~5250MHz		■	IEEE 802.11ax (20MHz): 1S4T CDD: 29.72 dBm 1S4T TxBF: 29.65 dBm 2S4T TxBF: 29.63 dBm 3S4T TxBF: 29.66 dBm
			■	IEEE 802.11ax (40MHz): 1S4T CDD: 29.62 dBm 1S4T TxBF: 29.63 dBm 2S4T TxBF: 29.40 dBm 3S4T TxBF: 29.46 dBm
			■	IEEE 802.11ax (80MHz): 1S4T CDD: 24.13 dBm 1S4T TxBF: 24.07 dBm 2S4T TxBF: 21.81 dBm 3S4T TxBF: 22.60 dBm
	U-NII-2A 5250~5350MHz		☐	IEEE 802.11ax (20MHz):
			☐	IEEE 802.11ax (40MHz):
			☐	IEEE 802.11ax (80MHz):
	U-NII-2C 5470~ 5725 MHz		☐	IEEE 802.11ax (20MHz):
			☐	IEEE 802.11ax (40MHz):
			☐	IEEE 802.11ax (80MHz):
	U-NII-3 5725~ 5850 MHz		■	IEEE 802.11ax (20MHz): 1S4T CDD: 29.73 dBm 1S4T TxBF: 29.69 dBm 2S4T TxBF: 29.71 dBm 3S4T TxBF: 29.74 dBm
			■	IEEE 802.11ax (40MHz): 1S4T CDD: 29.64 dBm 1S4T TxBF: 29.63 dBm 2S4T TxBF: 29.57 dBm 3S4T TxBF: 29.59 dBm
			■	IEEE 802.11ax (80MHz): 1S4T CDD: 29.64 dBm

				1S4T TxBF: 29.11 dBm 2S4T TxBF: 29.57 dBm 3S4T TxBF: 29.63 dBm
Product Type	For IEEE 802.11a: WLAN(4TX, 4RX) For IEEE 802.11n: WLAN(4TX, 4RX) For IEEE 802.11ac: WLAN (4TX, 4RX) For IEEE 802.11ax: WLAN (4TX, 4RX)			
Nominal Bandwidth	20MHz / 40MHz / 80MHz			
Modulation	802.11a: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11n: (BPSK / QPSK / 16QAM / 64QAM) 802.11ac: (BPSK / QPSK / 16QAM / 64QAM/ 256QAM) 802.11ax: (BPSK / QPSK / 16QAM / 64QAM/ 256QAM/ 1024QAM)			
Data Rate (Mbps)	11a mode : OFDM (6/9/12/18/24/36/48/54) 11n(20MHz) mode : MCS0~MCS31 11n(40MHz) mode : MCS0~MCS31 11ac(20MHz) mode : MCS0~MCS9 for NSS1~NSS4 See the below table 11ac(40MHz) mode : MCS0~MCS9 for NSS1~NSS4 See the below table 11ac(80MHz) mode : MCS0~MCS9 for NSS1~NSS4 See the below table 11ax(20MHz) mode : MCS0~MCS11 for NSS1~NSS4 See the below table 11ax(40MHz) mode : MCS0~MCS11 for NSS1~NSS4 See the below table 11ax(80MHz) mode : MCS0~MCS11 for NSS1~NSS4 See the below table			
TPC Function	■	With TPC	☐	Without TPC
Beam forming Function	■	With Beam forming	☐	Without Beam forming
DFS Operating Mode(s)	■	Master	☐	Slave without radar detection
DFS Function	☐	5250~5350MHz		
	☐	5470~5725MHz		
	☐	5600~5650MHz		
Off Channel CAC Feature Implemented	■	No		
Ad-hoc/Hotspot Mode	■	No Ad-hoc/Hotspot operation in 5150 - 5350 MHz and 5470 - 5725 MHz.		
User Access Restrictions	■	DFS controls (hardware or software) related to radar detection are NOT accessible to the user.		
I/O Ports	LAN 1G Port x 3 LAN 10G Port x 1 WAN Port x 1 USB 3.0 Port x 1 SFP Port x1 FXS Port x 1			
Hardware Version	LAB2A			
Software Version	19.4.0146-2809002-20191218052751-4850d0484027485160796c5b1652d62267f14fc9			

802.11n Data Rate spec

Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11n 20MHz Nss=1	MCS0	6.5	7.2	11n 40MHz Nss=1	MCS0	13.5	15
	MCS1	13	14.4		MCS1	27	30
	MCS2	19.5	21.7		MCS2	40.5	45
	MCS3	26	28.9		MCS3	54	60
	MCS4	39	43.3		MCS4	81	90
	MCS5	52	57.8		MCS5	108	120
	MCS6	58.5	65		MCS6	121.5	135
	MCS7	65	72.2		MCS7	135	150
11n 20MHz Nss=2	MCS8	13	14.4	11n 40MHz Nss=2	MCS8	27	30
	MCS9	26	28.9		MCS9	54	60
	MCS10	39	43.3		MCS10	81	90
	MCS11	52	57.8		MCS11	108	120
	MCS12	78	86.7		MCS12	162	180
	MCS13	104	115.6		MCS13	216	240
	MCS14	117	130		MCS14	243	270
	MCS15	130	144.4		MCS15	270	300
11n 20MHz Nss=3	MCS16	19.5	21.7	11n 40MHz Nss=3	MCS16	40.5	45
	MCS17	39	43.3		MCS17	81	90
	MCS18	58.5	65		MCS18	121.5	135
	MCS19	78	86.7		MCS19	162	180
	MCS20	117	130		MCS20	243	270
	MCS21	156	173.3		MCS21	324	360
	MCS22	175.5	195		MCS22	364.5	405
	MCS23	195	216.7		MCS23	405	450
11n 20MHz Nss=4	MCS24	26	28.9	11n 40MHz Nss=3	MCS24	54	60
	MCS25	52	57.8		MCS25	108	120
	MCS26	78	86.7		MCS26	162	180
	MCS27	104	115.6		MCS27	216	240
	MCS28	156	173.3		MCS28	324	360
	MCS29	208	231.1		MCS29	432	480
	MCS30	234	260		MCS30	486	540
	MCS31	260	288.9		MCS31	540	600

802.11ac Data Rate spec

Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11ac 20MHz NSS = 1	MCS0	6.5	7.2	11ac 40MHz NSS = 1	MCS0	13.5	15.0	11ac 80MHz NSS = 1	MCS0	29.3	32.5
	MCS1	13.0	14.4		MCS1	27	30.0		MCS1	58.5	65.0
	MCS2	19.5	21.7		MCS2	40.5	45.0		MCS2	87.8	97.5
	MCS3	26	28.9		MCS3	54	60.0		MCS3	117.0	130.0
	MCS4	39	43.3		MCS4	81	90.0		MCS4	175.5	195.0
	MCS5	52	57.8		MCS5	108	120.0		MCS5	234.0	260.0
	MCS6	58.5	65		MCS6	121.5	135.0		MCS6	263.3	292.5
	MCS7	65	72.2		MCS7	135.0	150.0		MCS7	292.5	325.0
	MCS8	78	86.7		MCS8	162.0	180.0		MCS8	351.0	390.0
	MCS9	Note	Note		MCS9	180.0	200.0		MCS9	390.0	433.3
Note: MCS 9 is invalid due to mod(NCBPS/NES, DR) not being equal to 0.											

Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11ac 20MHz NSS = 2	MCS0	13.0	14.4	11ac 40MHz NSS = 2	MCS0	27.0	30.0	11ac 80MHz NSS = 2	MCS0	58.5	65.0
	MCS1	26.0	28.9		MCS1	54.0	60.0		MCS1	117.0	130.0
	MCS2	39.0	43.3		MCS2	81.0	90.0		MCS2	175.5	195.0
	MCS3	52.0	57.8		MCS3	108.-0	120.0		MCS3	234.0	260.0
	MCS4	78.0	86.7		MCS4	162.0	180.0		MCS4	351.0	390.0
	MCS5	104.0	115.6		MCS5	216.0	240.0		MCS5	468.0	520.0
	MCS6	117.0	130.0		MCS6	243.0	270.0		MCS6	526.5	585.0
	MCS7	130.0	144.4		MCS7	270.0	300.0		MCS7	585.0	650.0
	MCS8	156.0	173.3		MCS8	324.0	360.0		MCS8	702.0	780.0
	MCS9	Note	Note		MCS9	360.0	400.0		MCS9	780.0	866.7
Note: MCS 9 is invalid due to mod(NCBPS/NES, DR) not being equal to 0.											

Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11ac 20MHz NSS = 3	MCS0	19.5	21.7	11ac 40MHz NSS = 3	MCS0	40.5	45.0	11ac 80MHz NSS = 3	MCS0	87.8	97.5
	MCS1	39.0	43.3		MCS1	81.0	90.0		MCS1	175.5	195.0
	MCS2	58.5	65.0		MCS2	121.5	135.0		MCS2	263.3	292.5
	MCS3	78.0	86.7		MCS3	162.0	180.0		MCS3	351.0	190.0
	MCS4	117.0	130		MCS4	243.0	270.0		MCS4	526.5	585.0
	MCS5	156.0	173.3		MCS5	324.0	360.0		MCS5	702.0	780.0
	MCS6	175.5	195.0		MCS6	364.5	405.0		MCS6	Note	Note
	MCS7	195.0	216.7		MCS7	405.0	450.0		MCS7	877.5	975.0
	MCS8	234.0	260.0		MCS8	486.0	540.0		MCS8	1053.0	1170.0
	MCS9	260.0	228.9		MCS9	540.0	600.0		MCS9	1170.0	1300.0
Note: MCS 9 is invalid due to mod(NCBPS/NES, DR) not being equal to 0.											

Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)		Standard	Index	Data Rate (Mbps)	
		LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)			LGI (800ns)	SGI (400ns)
11ac 20MHz NSS = 4	MCS0	26.0	28.9	11ac 40MHz NSS = 4	MCS0	54.0	60.0	11ac 80MHz NSS = 4	MCS0	117.0	130.0
	MCS1	52.0	57.8		MCS1	108.0	120.0		MCS1	234.0	260.0
	MCS2	78.0	86.7		MCS2	162.0	180.0		MCS2	351.0	390.0
	MCS3	104.0	115.6		MCS3	216.0	240.0		MCS3	468.0	520.0
	MCS4	156.0	173.3		MCS4	324.0	360.0		MCS4	702.0	780.0
	MCS5	208.0	231.1		MCS5	432.0	480.0		MCS5	936.0	1040.0
	MCS6	234.0	260.0		MCS6	486.0	540.0		MCS6	1053.0	1170.0
	MCS7	260.0	288.9		MCS7	540.0	600.0		MCS7	1170.0	1300.0
	MCS8	312.0	346.7		MCS8	648.0	720.0		MCS8	1404.0	1560.0
	MCS9	Note	Note		MCS9	720.0	800.0		MCS9	1560.0	1733.3
Note: MCS 9 is invalid due to mod(NCBPS/NES, DR) not being equal to 0.											

802.11ax Data Rate spec

Standard	Index	Data Rate (Mbps)			Standard	Index	Data Rate (Mbps)			Standard	Index	Data Rate (Mbps)		
		SGI (0.8us)	MGI (1.6us)	LGI (3.2us)			SGI (0.8us)	MGI (1.6us)	LGI (3.2us)			SGI (0.8us)	MGI (1.6us)	LGI (3.2us)
11ax 20MH NSS=1	MCS0	8.6	8.1	7.3	11ax 40MHz NSS=1	MCS0	17.2	16.3	14.6	11ax 80MHz NSS=1	MCS0	36	34	30.6
	MCS1	17.2	16.3	14.6		MCS1	34.4	32.5	29.3		MCS1	72.1	68.1	61.3
	MCS2	25.8	24.4	21.9		MCS2	51.6	48.8	43.9		MCS2	108.1	102.1	91.9
	MCS3	34.4	32.5	29.3		MCS3	68.8	65	58.5		MCS3	144.1	136.1	122.5
	MCS4	51.6	48.8	43.9		MCS4	103.2	97.5	87.8		MCS4	216.2	204.2	183.8
	MCS5	68.8	65	58.5		MCS5	137.6	130	117		MCS5	288.2	272.2	245
	MCS6	77.4	73.1	65.8		MCS6	154.9	146.3	131.6		MCS6	324.3	306.3	275.6
	MCS7	86	81.3	73.1		MCS7	172.1	162.5	146.3		MCS7	360.3	340.3	306.3
	MCS8	103.2	97.5	87.8		MCS8	206.5	195	175.5		MCS8	432.4	408.3	367.5
	MCS9	114.7	108.3	97.5		MCS9	229.4	216.7	195		MCS9	480.4	453.7	408.3
	MCS10	129	121.9	109.7		MCS10	258.1	243.8	219.4		MCS10	540.4	510.4	459.4
	MCS11	143.4	135.4	121.9		MCS11	286.8	270.8	243.8		MCS11	600.5	567.1	510.4

Standard	Index	Data Rate (Mbps)			Standard	Index	Data Rate (Mbps)			Standard	Index	Data Rate (Mbps)		
		SGI (0.8us)	MGI (1.6us)	LGI (3.2us)			SGI (0.8us)	MGI (1.6us)	LGI (3.2us)			SGI (0.8us)	MGI (1.6us)	LGI (3.2us)
11ax 20MHz NSS=2	MCS0	17.2	16.3	14.6	11ax 40MHz NSS=2	MCS0	34.4	32.5	29.3	11ax 80MHz NSS=2	MCS0	72.1	68.1	61.3
	MCS1	34.4	32.5	29.3		MCS1	68.8	65	58.5		MCS1	144.1	136.1	122.5
	MCS2	51.6	48.8	43.9		MCS2	103.2	97.5	87.8		MCS2	216.2	204.2	183.8
	MCS3	68.8	65	58.5		MCS3	137.6	130	117		MCS3	288.2	272.2	245
	MCS4	103.2	97.5	87.8		MCS4	206.5	195	175.5		MCS4	432.4	408.3	367.5
	MCS5	137.6	130	117		MCS5	275.3	260	234		MCS5	576.5	544.4	490
	MCS6	154.9	146.3	131.6		MCS6	309.7	292.5	263.3		MCS6	648.5	612.5	551.3
	MCS7	172.1	162.5	146.3		MCS7	344.1	325	292.5		MCS7	720.6	680.6	612.5
	MCS8	206.5	195	175.5		MCS8	412.`9	390	351		MCS8	864.7	816.7	735
	MCS9	229.4	216.7	195		MCS9	458.8	433.3	390		MCS9	960.8	907.4	816.7
	MCS10	258.1	243.8	219.4		MCS10	516.2	487.5	438.8		MCS10	1080.9	1020.8	918.8
	MCS11	286.8	270.8	243.8		MCS11	573.5	541.7	487.5		MCS11	1201	1134.3	1020.8

Standard	Index	Data Rate (Mbps)			Standard	Index	Data Rate (Mbps)			Standard	Index	Data Rate (Mbps)		
		SGI (0.8us)	MGI (1.6us)	LGI (3.2us)			SGI (0.8us)	MGI (1.6us)	LGI (3.2us)			SGI (0.8us)	MGI (1.6us)	LGI (3.2us)
11ax 20MHz NSS=3	MCS0	25.8	24.4	21.9	11ax 40MHz NSS=3	MCS0	51.6	48.8	43.9	11ax 80MHz NSS=3	MCS0	108.1	102.1	91.9
	MCS1	51.6	48.8	43.9		MCS1	103.2	97.5	87.8		MCS1	216.2	204.2	183.8
	MCS2	77.4	73.1	65.8		MCS2	154.9	146.3	131.6		MCS2	324.3	306.3	275.6
	MCS3	103.2	97.5	87.8		MCS3	206.5	195	175.5		MCS3	432.4	408.3	367.5
	MCS4	154.9	146.3	131.6		MCS4	309.7	292.5	263.3		MCS4	648.5	612.5	551.3
	MCS5	206.5	195	175.5		MCS5	412.9	390	351		MCS5	864.7	816.7	735
	MCS6	232.3	219.4	197.4		MCS6	464.6	438.8	394.9		MCS6	972.8	918.8	826.9
	MCS7	258.1	243.8	219.4		MCS7	516.2	487.5	438.8		MCS7	1080.9	1020.8	918.8
	MCS8	309.7	292.5	263.3		MCS8	619.4	585	526.5		MCS8	1297.1	1225	1102.5
	MCS9	344.1	325	292.5		MCS9	688.2	650	585		MCS9	1441.2	1361.1	1225
	MCS10	387.1	365.6	329.1		MCS10	774.3	731.3	658.1		MCS10	1621.3	1531.3	1378.1
	MCS11	430.1	406.3	365.6		MCS11	860.3	812.5	731.3		MCS11	1801.5	1701.4	1531.3

Standard	Index	Data Rate (Mbps)			Standard	Index	Data Rate (Mbps)			Standard	Index	Data Rate (Mbps)		
		SGI (0.8us)	MGI (1.6us)	LGI (3.2us)			SGI (0.8us)	MGI (1.6us)	LGI (3.2us)			SGI (0.8us)	MGI (1.6us)	LGI (3.2us)
11ax 20MHz NSS=4	MCS0	34.4	32.5	29.3	11ax 40MHz NSS=4	MCS0	68.8	65	58.5	11ax 80MHz NSS=4	MCS0	144.1	136.1	122.5
	MCS1	68.8	65	58.5		MCS1	137.6	130	117		MCS1	288.2	272.2	245
	MCS2	103.2	97.5	87.8		MCS2	206.5	195	175.5		MCS2	432.4	408.3	367.5
	MCS3	137.6	130	117		MCS3	275.3	260	234		MCS3	576.5	544.4	490
	MCS4	206.5	195	175.5		MCS4	412.9	390	351		MCS4	864.7	816.7	735
	MCS5	275.3	260	234		MCS5	550.6	520	468		MCS5	1152.9	1088.9	980
	MCS6	309.7	292.5	263.3		MCS6	619.4	585	526.5		MCS6	1297.1	1225	1102.5
	MCS7	344.1	325	292.5		MCS7	688.2	650	585		MCS7	1441.2	1361.1	1225
	MCS8	412.9	390	351		MCS8	825.9	780	702		MCS8	1729.4	1633.3	1470
	MCS9	458.8	433.3	390		MCS9	917.6	866.7	780		MCS9	1921.6	1814.8	1633.3
	MCS10	516.2	487.5	438.8		MCS10	1032.4	975	877.5		MCS10	2161.8	2041.7	1837.5
	MCS11	573.5	541.7	487.5		MCS11	1147.1	1083.3	975		MCS11	2401.9	2268.5	2041.7

3.2 Accessories

Power supply:

Brand	HONOR
Model	ADS-36FKJ-12 12036EPCU
P/N	6261489A
ID	01
Input Power	100-240Vac, 50/60Hz, Max.1.0A
Output Power	12Vdc, 3.0A
Power Line	1.8m power cable without core attached on adapter

3.3 Feature of Equipment under Test

Please refer to user manual.

3.4 Information Provided by the Manufacturer

Interface Availability:

Interface / Model	DC Power	Ethernet LAN 10Gbps	Ethernet LAN 1000Mbps	Ethernet WAN 1000Mbps	SFP 10Gbps	USB 3. 0	FXS	WLAN IEEE 802.11ax (2.4G+ 5GHz)4X4
FGA5330	12Vdc 3A	●(1 port)	●(3 port)	●(1 port)	●(1 port)	●(1 port)	●(1 port)	●

●: Equipped
○: Not Equipped

3.5 General Description of Applied Standards and references

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

Test standard:

FCC Part 15, Subpart E (15.407)
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

References Test Guidance:

KDB 789033 D02 General UNII Test Procedure New Rules v02r01, 12/14/2017
KDB 662911 D01 Multiple Transmitter Output v02r01, 12/14/2017

All test items have been performed as a reference to the above KDB test guidance.

3.6 Cabling Attached to the Equipment

Cable and Interconnection

Interface	Cable type	Cable length delivered with the modem	"Real life" Cable length that can be attached to this type of interface	Cable length to be used for testing	Internal/ external connection
LAN1, WAN	UTP Cat 5	2 meter	> 10 meter	Two 10 meter cables;	Internal
10G-LAN	UTP Cat 6	2 meter	> 10 meter	10 meter cables;	Internal
SFP	Optical	2 meter	> 10 meter	10 meter cables;	External
FXS	UTP Cat 3	2 meter	> 10 meter	1 meter flat cable	Internal
USB	STP	NA	NA	NA	Internal
AC power	UTP	1.8 meter	>10 meter	1.8 meter	External

3.7 Transmit Operating Mode

For 5150~5250MHz & 5725~5850MHz

Transmit Operating Mode							Transmit Muitiple Antennas					
■	Operating mode 1 (single antenna)						■	1TX				
■	Operating mode 2 (muitiple antenna, no beam forming)						■	2TX	■	3TX	■	4TX
■	Operating mode 3 (muitiple antenna, with beam forming)						■	2TX	■	3TX	■	4TX
■	802.11a	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		
■	802.11n (20MHz)	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		
■	802.11n (40MHz)	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		
■	802.11ac (20MHz)	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		
■	802.11ac (40MHz)	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		
■	802.11ac (80MHz)	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		
■	802.11ax (20MHz)	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		
■	802.11ax (40MHz)	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		
■	802.11ax (80MHz)	Operating mode	■	1TX	■	2TX	■	3TX	■	4TX		

For IEEE802.11a, 6Mbps~54Mbps: 1 Stream 4TX
For IEEE802.11n,
MCS0~MCS7: 1 Stream 1TX, 1 Stream 2TX, 1 Stream 3TX, 1 Stream 4TX
MCS8~MCS15: 2 Stream 2TX; 2 Stream 3TX; 2 Stream 4TX
MCS16~MCS23: 3 Stream 3TX; 3 Stream 4TX
MCS24~MCS31: 4 Stream 4TX;
For IEEE802.11ac 20MHz
Nss1MCS0~Nss1MCS8: 1 Stream 1TX, 1 Stream 2TX, 1 Stream 3TX, 1 Stream 4TX
Nss2MCS0~Nss2MCS9: 2 Stream 2TX; 2 Stream 3TX; 2 Stream 4TX
Nss3MCS0~Nss3MCS9: 3 Stream 3TX; 3 Stream 4TX
Nss4MCS0~Nss4MCS8: 4 Stream 4TX
For IEEE802.11ac 40/80MHz
Nss1MCS0~Nss1MCS9: 1 Stream 1TX, 1 Stream 2TX, 1 Stream 3TX, 1 Stream 4TX
Nss2MCS0~Nss2MCS9: 2 Stream 2TX; 2 Stream 3TX; 2 Stream 4TX
Nss3MCS0~Nss3MCS9: 3 Stream 3TX; 3 Stream 4TX
Nss4MCS0~Nss4MCS9: 4 Stream 4TX
For IEEE802.11ax 20/40/80MHz
Nss1MCS0~Nss1MCS11: 1 Stream 1TX, 1 Stream 2TX, 1 Stream 4TX, 1 Stream 4TX
Nss2MCS0~Nss2MCS11: 2 Stream 2TX; 2 Stream 3TX; 2 Stream 4TX
Nss3MCS0~Nss3MCS11: 3 Stream 3TX; 3 Stream 4TX
Nss4MCS0~Nss4MCS11: 4 Stream 4TX

3.8 Antenna Requirements

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

3.9 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
2G-1	WHA YU	C107-511586-A	PCB PIFA	I-pex
2G-2	WHA YU	C107-511589-A	PCB PIFA	I-pex
2G-3	WHA YU	C107-511587-A	PCB PIFA	I-pex
2G-4	WHA YU	C107-511588-A	PCB PIFA	I-pex
5G-1	WHA YU	C107-511590-A	PCB Loop	I-pex
5G-2	WHA YU	C107-511591-A	PCB Dipole	I-pex
5G-3	WHA YU	C107-511592-A	PCB Dipole	I-pex
5G-4	WHA YU	C107-511593-A	PCB Dipole	I-pex

Antenna & Bandwidth

Antenna	1st (TX)			2nd (TX)			3rd (TX)			4th (TX)		
Bandwidth Mode	20 MHz	40 MHz	80 MHz	20 MHz	40 MHz	80 MHz	20 MHz	40 MHz	80 MHz	20 MHz	40 MHz	80 MHz
802.11a	V	X	X	V	X	X	V	X	X	V	X	X
802.11n	V	V	X	V	V	X	V	V	X	V	V	X
802.11ac	V	V	V	V	V	V	V	V	V	V	V	V
802.11ax	V	V	V	V	V	V	V	V	V	V	V	V

Frequency	Maximum Gain (dBi) for CDD mode					
	CDD mode (1 Stream 4 TX) for Power Gain			CDD mode (1 Stream 4 TX) for PSD Gain		
	20 MHz	20 MHz	20 MHz	20 MHz	20 MHz	20 MHz
5180MHz	2.85	-	-	6.07	-	-
5190MHz	-	2.83	-	-	6.03	-
5200MHz	2.53	-	-	6.12	-	-
5210MHz	-	-	2.64	-	-	5.83
5230MHz	-	2.5	-	-	6.08	-
5240MHz	2.64	-	-	5.83	-	-
5745MHz	3.20	-	-	6.39	-	-
5755MHz	-	4.18	-	-	7.26	-
5775MHz	-	-	3.62	-	-	6.39
5785MHz	4.05	-	-	5.96	-	-
5795MHz	-	2.94	-	-	6.00	-
5825MHz	3.78	-	-	5.83	-	-

Note:

1. Antenna Gain refer to “FGA5330_Antenna Test Report V1.18.pdf” files
2. Maximum Correlated Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi
3. Maximum Uncorrelated Directional Gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}) / N_{ANT}]$ dBi

Frequency	Maximum Gain (dBi) for TxBF mode		
	TxBF mode (1 Stream 4 TX) for Power Gain & PSD Gain		
	20 MHz	40 MHz	80MHz
5180MHz	6.07	-	-
5190MHz	-	6.03	-
5200MHz	6.12	-	-
5210MHz	-	-	5.83
5230MHz	-	6.08	-
5240MHz	5.83	-	-
5745MHz	5.91	-	-
5755MHz	-	7.26	-
5775MHz	-	-	6.39
5785MHz	5.96	-	-
5795MHz	-	6.00	-
5825MHz	5.83	-	-

Note:

1. Antenna Gain refer to “FGA5330_Antenna Test Report V1.18.pdf” files
2. Maximum Correlated Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi
3. Maximum Uncorrelated Directional Gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}) / N_{ANT}]$ dBi

Frequency	Maximum Gain (dBi) for TXBF mode		
	TXBF mode (2 Stream 4 TX) Power Gain & PSD Gain		
	20 MHz	40 MHz	80MHz
5180MHz	4.44	-	-
5190MHz	-	4.60	-
5200MHz	4.66	-	-
5210MHz	-	-	4.36
5230MHz	-	4.63	-
5240MHz	4.36	-	-
5745MHz	4.27	-	-
5755MHz	-	5.7	-
5775MHz	-	-	4.87
5785MHz	4.40	-	-
5795MHz	-	4.11	-
5825MHz	4.58	-	-

Note:

1. Antenna Gain refer to “FGA5330_Antenna Test Report V1.18.pdf” files
2. Maximum Correlated Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi
3. Maximum Uncorrelated Directional Gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}) / N_{ANT}]$ dBi

Frequency	Maximum Gain (dBi) for TXBF mode		
	TXBF mode (3 Stream 4 TX) Power Gain & PSD Gain		
	20 MHz	40 MHz	80MHz
5180MHz	2.51	-	-
5190MHz	-	2.33	-
5200MHz	2.39	-	-
5210MHz	-	-	2.25
5230MHz	-	2.51	-
5240MHz	2.25	-	-
5745MHz	2.51	-	-
5755MHz	-	3.42	-
5775MHz	-	-	2.65
5785MHz	2.50	-	-
5795MHz	-	1.92	-
5825MHz	2.38	-	-

Note:

1. Antenna Gain refer to “FGA5330_Antenna Test Report V1.18.pdf” files
2. Maximum Correlated Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi
3. Maximum Uncorrelated Directional Gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10}) / N_{ANT}]$ dBi

3.10 Table for Carrier Frequency

9 channels are provided for Bandwidth 20MHz:

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz	36	5180 MHz	44	5220 MHz
	40	5200 MHz	48	5240 MHz
5725~5850 MHz	149	5745 MHz	161	5805 MHz
	153	5765 MHz	165	5825 MHz
	157	5785 MHz	-	-

4 channels are provided for Bandwidth 40MHz:

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz	38	5190 MHz	46	5230 MHz
5725~5850 MHz	151	5755 MHz	159	5795 MHz

2 channels are provided for Bandwidth 80MHz:

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz	42	5210 MHz	-	-
5725~5850 MHz	155	5775 MHz	-	-

3.11 Table for Test Modes

Test Items	Mode	Note	Channel	Data Rate	Antenna
AC Power Conducted Emissions	11ax(20MHz)	OFDM/BPSK	165	-	1+2+3+4
Occupied Bandwidth & 26dB Bandwidth	11ax(20MHz)	OFDM/BPSK	36/40/48	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(40MHz)		38/46	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(80MHz)		42	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
6dB bandwidth (for U-NII-3)	11ax(20MHz)	OFDM/BPSK	149/157/165	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(40MHz)		151/159	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(80MHz)		155	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4

				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4

Test Items	Mode	Note	Channel	Data Rate	Antenna
Maximum Conducted Output Power (Average)	11ax(20MHz)	OFDM/BPSK	36/40/48 149/157/165	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(40MHz)		38/46 151/159	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(80MHz)		42 155	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
Power Spectral Density	11ax(20MHz)	OFDM/BPSK	36/40/48 149/157/165	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(40MHz)		38/46 151/159	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(80MHz)		42 155	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4

Test Items	Mode	Note	Channel	Data Rate	Antenna
Unwanted Emission in the restricted bands Above 1GHz (Radiated)	11ax(20MHz)	OFDM/BPSK	36/40/48 149/157/165	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(40MHz)		38/46 151/159	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(80MHz)		42 155	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
Unwanted Emission out of the restricted bands Above 1GHz (Radiated)	11ax(20MHz)	OFDM/BPSK	36/40/48 149/157/165	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(40MHz)		38/46 151/159	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4
	11ax(80MHz)		42 155	Nss1 MCS0 (1S4T CDD)	1+2+3+4
				Nss1 MCS0 (1S4T TxBF)	1+2+3+4
				Nss1 MCS0 (2S4T TxBF)	1+2+3+4
				Nss2 MCS0 (3S4T TxBF)	1+2+3+4

Radiated Emissions Below 1GHz(Radiated)	11ax(20MHz)	OFDM/BPSK	149	-	1+2+3+4
Frequency Stability	20MHz	Un-modulation	36/40/48 149/157/165	-	1, 2, 3, 4
	40MHz		38/46 151/159	-	1, 2, 3, 4
	80MHz		42 155	-	1, 2, 3, 4

Note:

1. The device with multiple operating mode, measurements on the middle channel were tested to determine the worst case mode. (Each modulation family were tested in band edge, spurious emission and in band PSD after investigate worst case mode)
2. Base on txcore command, the 11a default mode is 1S4T CDD, the 802.11ax 20MHz/40MHz/80MHz default mode are 1S4T CDD,1S4T TxBF, 2S4T TxBF, 3S4T TxBF; the SDM mode covered by the CDD mode with the same setting.
   wl -i wl1 txcore
   txcore enabled bitmap (Nsts {4..1}) 0x0f 0x0f 0x0f 0x0f
   txcore mask OFDM 0x0f CCK 0x0f

3.12 Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

The Power Setting Parameter					
Test Software Version	19.4.0146-2809002-20191218052751-4850d0484027485160796c5b1652d62267f14fc9				
Worst Modulation Mode	**Number of Transmit Chains (NTX)**	**Frequency (MHz)**	**Maximum Output Power(dBm)**	**Power Setting**	**Data Rate / MCS**
802.11ax 20MHz (CDD)	1 stream 4TX	5180	27.62	20.5	Nss1MCS0 (8.6)
802.11ax 20MHz (CDD)	1 stream 4TX	5200	29.72	22.5	Nss1MCS0 (8.6)
802.11ax 20MHz (CDD)	1 stream 4TX	5240	29.70	22.5	Nss1MCS0 (8.6)
802.11ax 20MHz (CDD)	1 stream 4TX	5745	29.73	23	Nss1MCS0 (8.6)
802.11ax 20MHz (CDD)	1 stream 4TX	5785	29.72	23	Nss1MCS0 (8.6)
802.11ax 20MHz (CDD)	1 stream 4TX	5825	29.72	23	Nss1MCS0 (8.6)
802.11ax 20MHz (TxBF)	1 stream 4TX	5180	27.61	20.5	Nss1MCS0 (8.6)
802.11ax 20MHz (TxBF)	1 stream 4TX	5200	29.65	22.5	Nss1MCS0 (8.6)
802.11ax 20MHz (TxBF)	1 stream 4TX	5240	29.65	22.5	Nss1MCS0 (8.6)
802.11ax 20MHz (TxBF)	1 stream 4TX	5745	29.67	23	Nss1MCS0 (8.6)
802.11ax 20MHz (TxBF)	1 stream 4TX	5785	29.69	23	Nss1MCS0 (8.6)
802.11ax 20MHz (TxBF)	1 stream 4TX	5825	29.67	23	Nss1MCS0 (8.6)
802.11ax 20MHz (TxBF)	2 stream 4TX	5180	28.08	21	Nss2MCS0 (17.2)
802.11ax 20MHz (TxBF)	2 stream 4TX	5200	29.62	22.5	Nss2MCS0 (17.2)
802.11ax 20MHz (TxBF)	2 stream 4TX	5240	29.63	22.5	Nss2MCS0 (17.2)
802.11ax 20MHz (TxBF)	2 stream 4TX	5745	29.68	23	Nss2MCS0 (17.2)
802.11ax 20MHz (TxBF)	2 stream 4TX	5785	29.71	23	Nss2MCS0 (17.2)
802.11ax 20MHz (TxBF)	2 stream 4TX	5825	29.63	23	Nss2MCS0 (17.2)
802.11ax 20MHz (TxBF)	3 stream 4TX	5180	27.57	20.5	Nss3MCS0 (25.8)
802.11ax 20MHz (TxBF)	3 stream 4TX	5200	29.66	22.5	Nss3MCS0 (25.8)
802.11ax 20MHz (TxBF)	3 stream 4TX	5240	29.66	22.5	Nss3MCS0 (25.8)
802.11ax 20MHz (TxBF)	3 stream 4TX	5745	29.72	23	Nss3MCS0 (25.8)
802.11ax 20MHz (TxBF)	3 stream 4TX	5785	29.74	23	Nss3MCS0 (25.8)
802.11ax 20MHz (TxBF)	3 stream 4TX	5825	29.68	23	Nss3MCS0 (25.8)
802.11ax 40MHz (CDD)	1 stream 4TX	5190	25.15	18.25	Nss1MCS0 (17.2)
802.11ax 40MHz (CDD)	1 stream 4TX	5230	29.62	22.75	Nss1MCS0 (17.2)
802.11ax 40MHz (CDD)	1 stream 4TX	5755	29.64	22.75	Nss1MCS0 (17.2)
802.11ax 40MHz (CDD)	1 stream 4TX	5795	29.60	22.75	Nss1MCS0 (17.2)
802.11ax 40MHz (TxBF)	1 stream 4TX	5190	24.18	17	Nss1MCS0 (17.2)
802.11ax 40MHz (TxBF)	1 stream 4TX	5230	29.63	22.75	Nss1MCS0 (17.2)
802.11ax 40MHz (TxBF)	1 stream 4TX	5755	28.65	22.75	Nss1MCS0 (17.2)
802.11ax 40MHz (TxBF)	1 stream 4TX	5795	29.63	22.75	Nss1MCS0 (17.2)
802.11ax 40MHz (TxBF)	2 stream 4TX	5190	22.67	15.5	Nss2MCS0 (34.4)
802.11ax 40MHz (TxBF)	2 stream 4TX	5230	29.40	22.5	Nss2MCS0 (34.4)
802.11ax 40MHz (TxBF)	2 stream 4TX	5755	29.57	22.75	Nss2MCS0 (34.4)
802.11ax 40MHz (TxBF)	2 stream 4TX	5795	29.54	22.75	Nss2MCS0 (34.4)

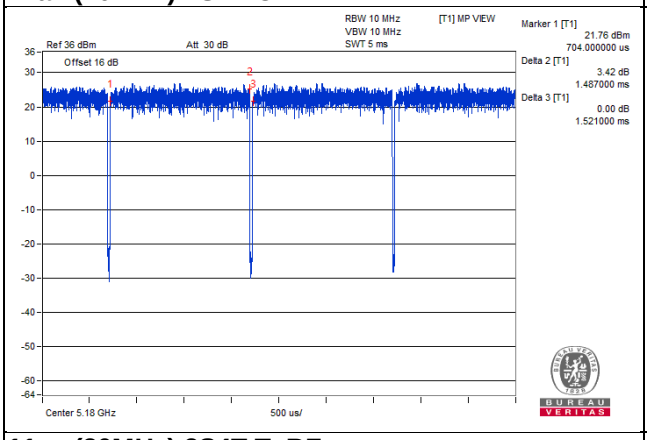
Worst Modulation Mode	Number of Transmit Chains (NTX)	Frequency (MHz)	Maximum Output Power(dBm)	Power Setting	Data Rate / MCS
802.11ax 40MHz (TxBF)	3 stream 4TX	5190	23.38	16.25	Nss3MCS0 (51.6)
802.11ax 40MHz (TxBF)	3 stream 4TX	5230	29.46	22.5	Nss3MCS0 (51.6)
802.11ax 40MHz (TxBF)	3 stream 4TX	5755	29.59	22.75	Nss3MCS0 (51.6)
802.11ax 40MHz (TxBF)	3 stream 4TX	5795	29.58	22.75	Nss3MCS0 (51.6)
802.11ax 80MHz (CDD)	1 stream 4TX	5210	24.13	17	Nss1MCS0 (36)
802.11ax 80MHz (CDD)	1 stream 4TX	5775	29.64	22.75	Nss1MCS0 (36)
802.11ax 80MHz (TxBF)	1 stream 4TX	5210	24.07	17	Nss1MCS0 (36)
802.11ax 80MHz (TxBF)	1 stream 4TX	5775	29.11	22.25	Nss1MCS0 (36)
802.11ax 80MHz (TxBF)	2 stream 4TX	5210	21.81	14.75	Nss2MCS0 (72.1)
802.11ax 80MHz (TxBF)	2 stream 4TX	5775	29.57	22.75	Nss2MCS0 (72.1)
802.11ax 80MHz (TxBF)	3 stream 4TX	5210	22.60	15.5	Nss3MCS0 (108.1)
802.11ax 80MHz (TxBF)	3 stream 4TX	5775	29.63	22.75	Nss3MCS0 (108.1)

3.13 On Time and Duty Cycle

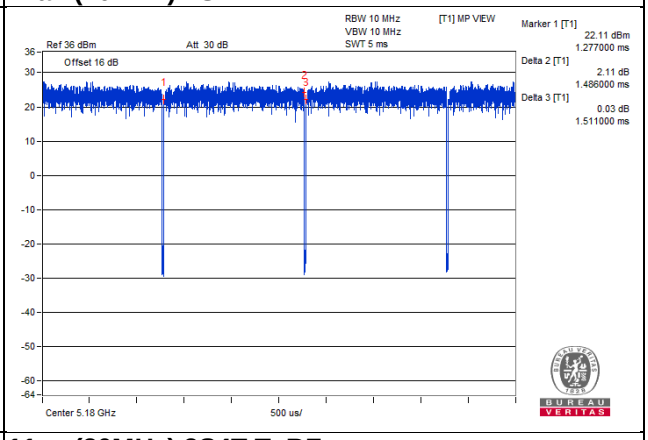
Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
11ax (20MHz) 1S4T CDD	1.487	1.521	97.8	0.1	3
11ax (20MHz) 1S4T TxBF	1.486	1.511	98.3	0	0.01
11ax (20MHz) 2S4T TxBF	0.778	0.812	95.8	0.19	3
11ax (20MHz) 3S4T TxBF	0.556	0.588	94.6	0.24	3
11ax (40MHz) 1S4T CDD	1.703	1.734	98.2	0	0.01
11ax (40MHz) 1S4T TxBF	1.702	1.732	98.3	0	0.01
11ax (40MHz) 2S4T TxBF	0.421	0.444	94.8	0.23	3
11ax (40MHz) 3S4T TxBF	0.317	0.342	92.7	0.33	10
11ax (80MHz) 1S4T CDD	0.4	0.423	94.6	0.24	3
11ax (80MHz) 1S4T TxBF	0.4	0.424	94.3	0.25	3
11ax (80MHz) 2S4T TxBF	0.238	0.26	91.5	0.38	10
11ax (80MHz) 3S4T TxBF	0.195	0.215	90.7	0.42	10

Note:
1. Power measurement using sweep trigger and gating of the power meter, duty factor is not required.
2. Duty cycle > 98%, duty factor is not required.

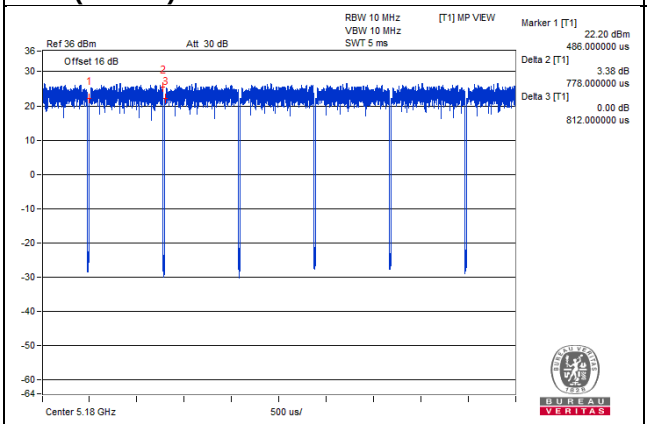
11ax (20MHz) 1S4T CDD



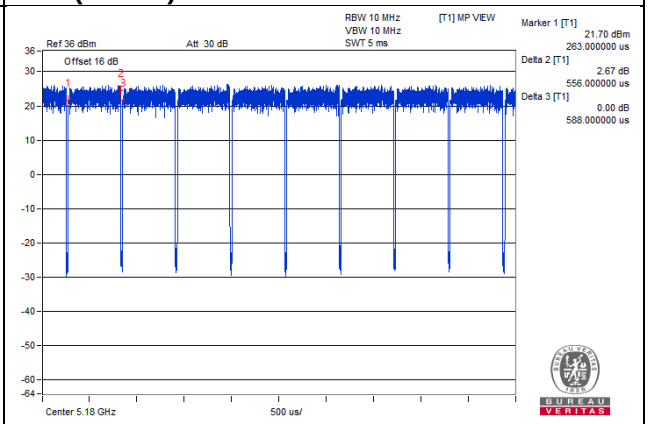
11ax (20MHz) 1S4T TxBF



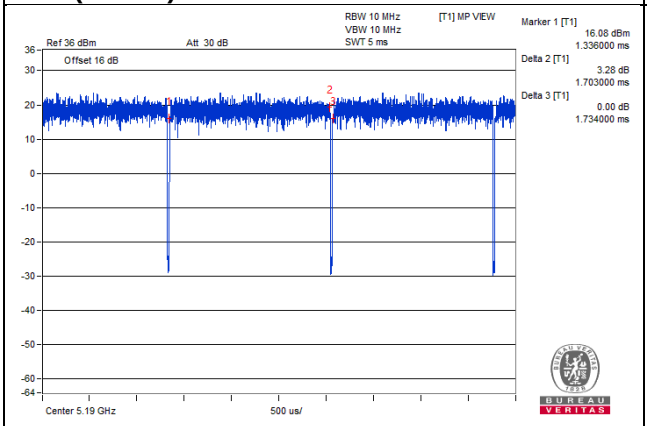
11ax (20MHz) 2S4T TxBF



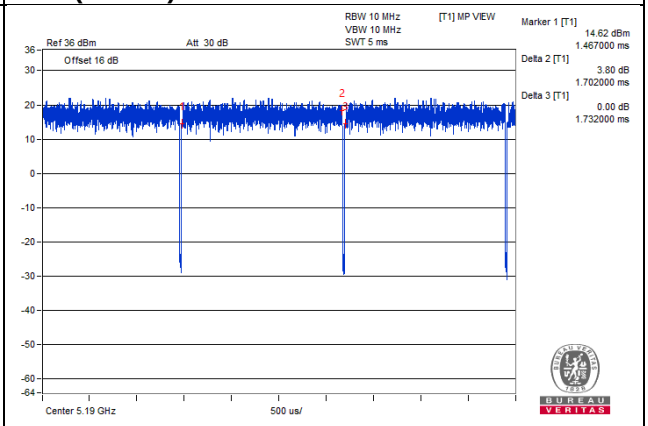
11ax (20MHz) 3S4T TxBF



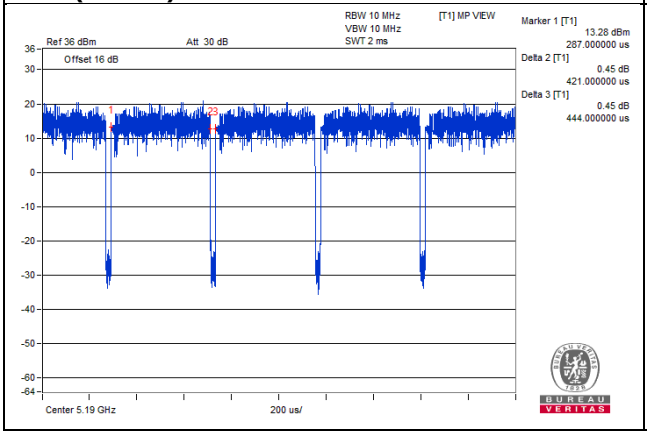
11ax (40MHz) 1S4T CDD



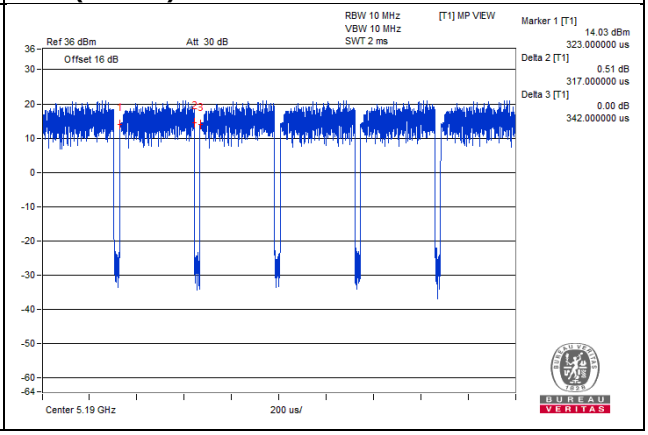
11ax (40MHz) 1S4T TxBF



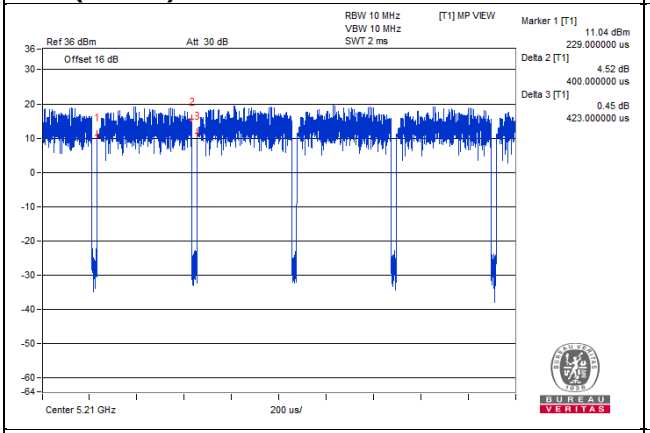
11ax (40MHz) 2S4T TxBF



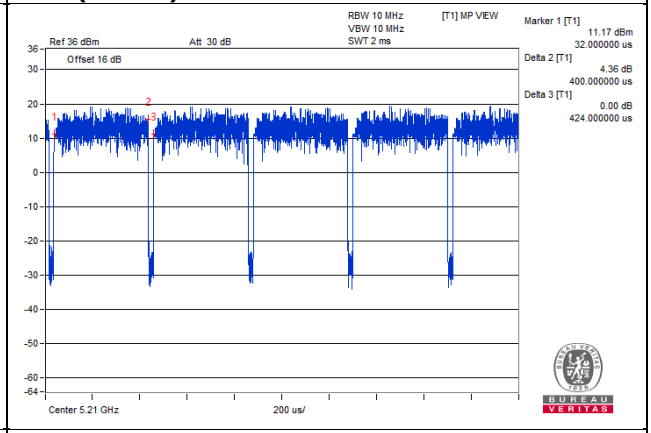
11ax (40MHz) 3S4T TxBF



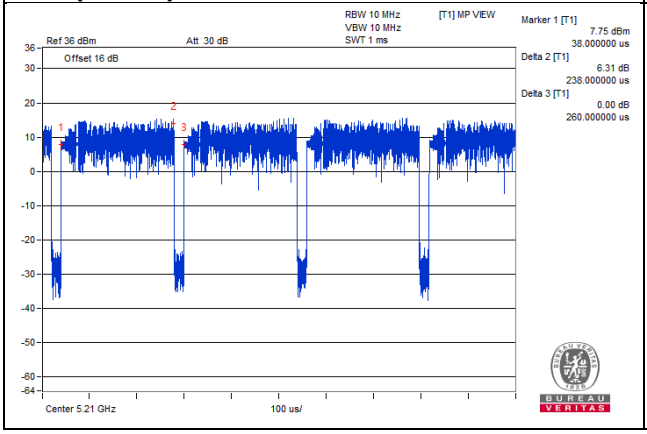
11ax (80MHz) 1S4T CDD



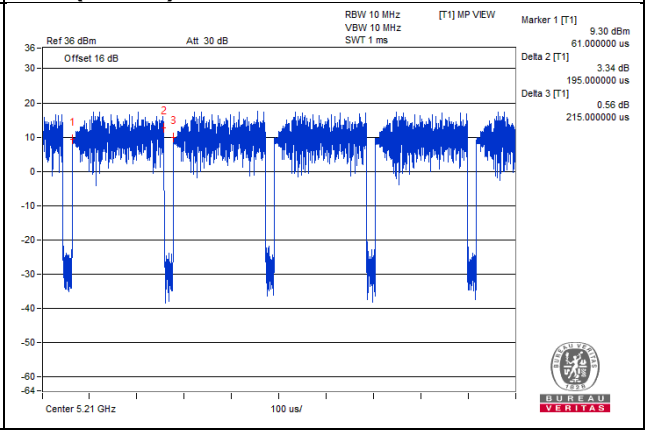
11ax (80MHz) 1S4T TxBF



11ax (80MHz) 2S4T TxBF



11ax (80MHz) 3S4T TxBF



3.14 Testing Location Information

Test Site Location				
Address	(1) E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.			
TEL	886-3-6668565			
FAX	886-3-6668323			
Test Site No.	**Site Category**	**Location**	**IC Reg. No.**	**VCCI Reg. No**
Conduction 1	Conduction	Hsinchu	-	-
Chamber 3	966 Chamber	Hsinchu	-	-
Oven 2	Oven	Hsinchu	-	-

3.15 EUT Diagram and Support Equipment

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

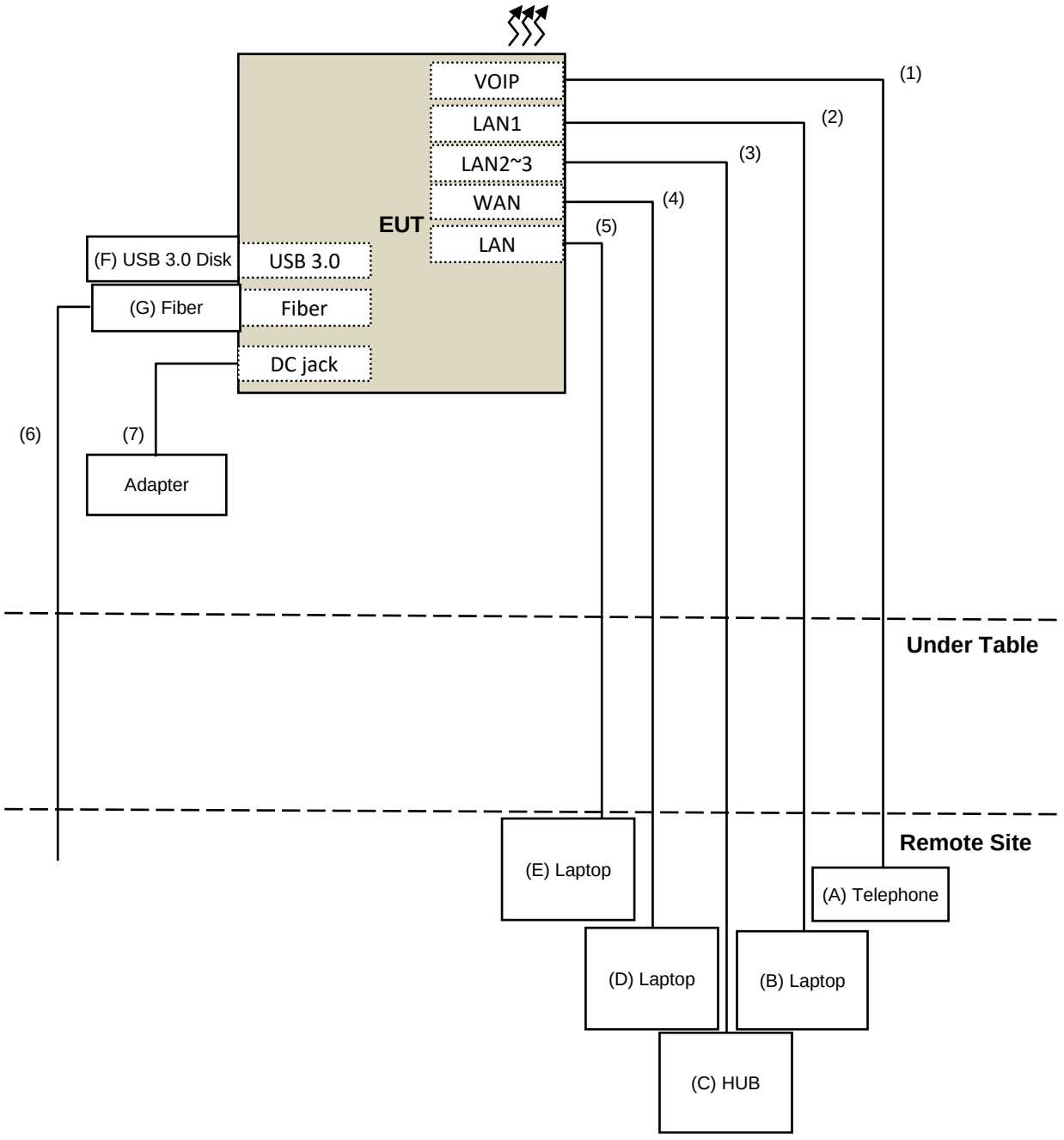
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Telephone	Romeo	TE-812	97280903	NA	Provided by Lab
B.	Laptop	DELL	PP27L	7YLB32S	FCC DoC	Provided by Lab
C.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC	Provided by Lab
D.	Laptop	DELL	E5430	GM1SKV1	FCC DoC	Provided by Lab
E.	Laptop	DELL	E5430	DM1SKV1	FCC DoC	Provided by Lab
F.	USB Disk	Sandisk	NA	NA	NA	Provided by Lab
G.	Fiber	RoHS	GFLT210	JHCG94200152	NA	Supplied by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-11 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab (for RF Setup)
3.	RJ-45 Cable	2	10	No	0	Provided by Lab
4.	RJ-45 Cable	1	10	No	0	Provided by Lab
5.	RJ-45 Cable	1	10	No	0	Provided by Lab
6.	Fiber cable	1	10	No	0	Provided by Lab
7.	DC Cable	1	1.8	No	0	Supplied by client

EUT Diagram


VOIP
LAN1
LAN2~3
WAN
LAN
EUT
USB 3.0
Fiber
DC jack
(F) USB 3.0 Disk
(G) Fiber
(1)
(2)
(3)
(4)
(5)
(6)
(7)
Adapter
Under Table
Remote Site
(E) Laptop
(A) Telephone
(D) Laptop
(B) Laptop
(C) HUB

4 Test Types and Results

4.1 AC Power Conducted Emissions Measurement

4.1.1 Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

4.1.2 Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver

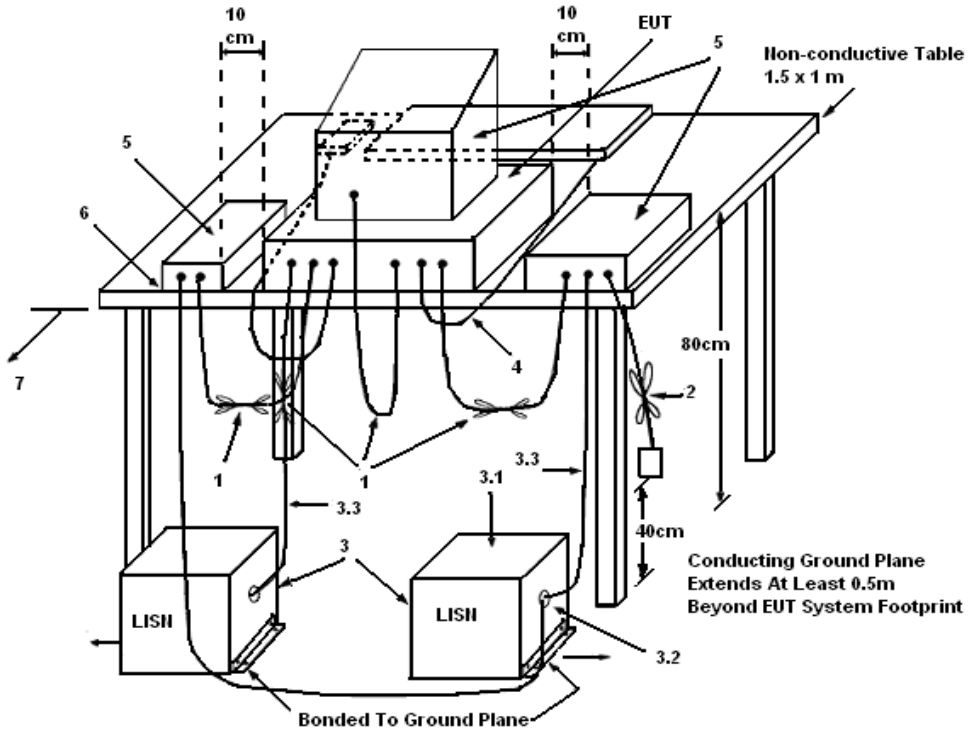
Receiver Parameters	**Setting**
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.1.3 Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4 Test Setup Layout

Test Setup



1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
2. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3. EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.
4. All other equipment powered from additional LISN(s).
5. Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
8. Non-EUT components of EUT system being tested.
9. Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
10. Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5 Test Deviation

There are no deviations with the original standard.

4.1.6 EUT Operating during Test

The EUT was programmed to be in continuously transmitting mode.

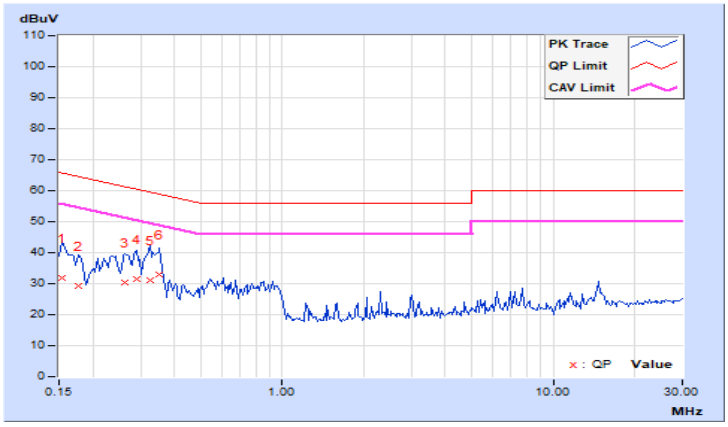
4.1.7 Test Results of AC Power Conducted Emissions

Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Kevin Ko		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15391	9.99	21.79	0.57	31.78	10.56	65.79	55.79	-34.01	-45.23
2	0.17734	9.99	19.35	-7.06	29.34	2.93	64.61	54.61	-35.27	-51.68
3	0.26328	9.99	20.41	-7.84	30.40	2.15	61.33	51.33	-30.93	-49.18
4	0.29063	9.99	21.67	-6.51	31.66	3.48	60.51	50.51	-28.85	-47.03
5	0.32578	10.00	20.98	-8.28	30.98	1.72	59.56	49.56	-28.58	-47.84
6	**0.35313**	**10.00**	**23.09**	**-6.46**	**33.09**	**3.54**	**58.89**	**48.89**	**-25.80**	**-45.35**

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

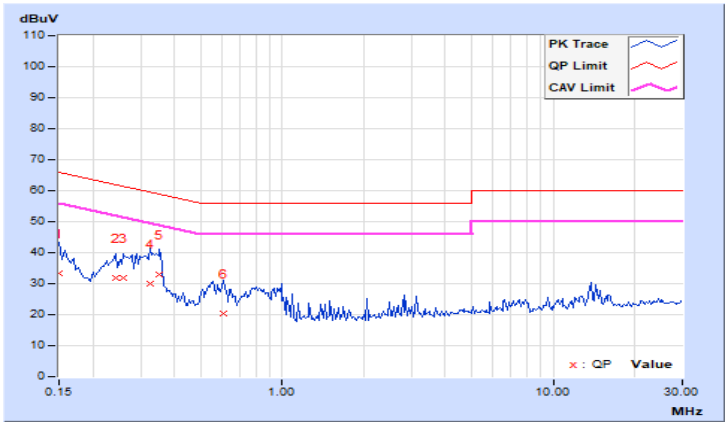


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Kevin Ko		

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15000	9.99	23.29	-1.64	33.28	8.35	66.00	56.00	-32.72	-47.65
2	0.24375	9.99	21.71	-6.79	31.70	3.20	61.97	51.97	-30.27	-48.77
3	0.25938	10.00	21.72	-4.89	31.72	5.11	61.45	51.45	-29.73	-46.34
4	0.32578	10.00	20.00	-6.15	30.00	3.85	59.56	49.56	-29.56	-45.71
5	0.35313	10.01	23.01	-5.67	33.02	4.34	58.89	48.89	-25.87	-44.55
6	0.60703	10.02	10.25	-12.34	20.27	-2.32	56.00	46.00	-35.73	-48.32

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



4.2 Occupied Bandwidth and 26dB Bandwidth Measurement

4.2.1 Measuring Instruments and Setting

The following table is the setting of the Spectrum Analyzer.

99% Occupied Bandwidth	
Spectrum Parameter	**Setting**
Attenuation	Auto
Span Frequency	1.5 times to 5.0 times the OBW
RBW	1% to 5% of the anticipated emission bandwidth
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max hold
Sweep Time	Auto
26dB Bandwidth	
Spectrum Parameter	**Setting**
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RBW	Approximately 1% of the emission bandwidth.
VBW	> RBW
Detector	Peak
Trace	Max hold
Sweep Time	Auto

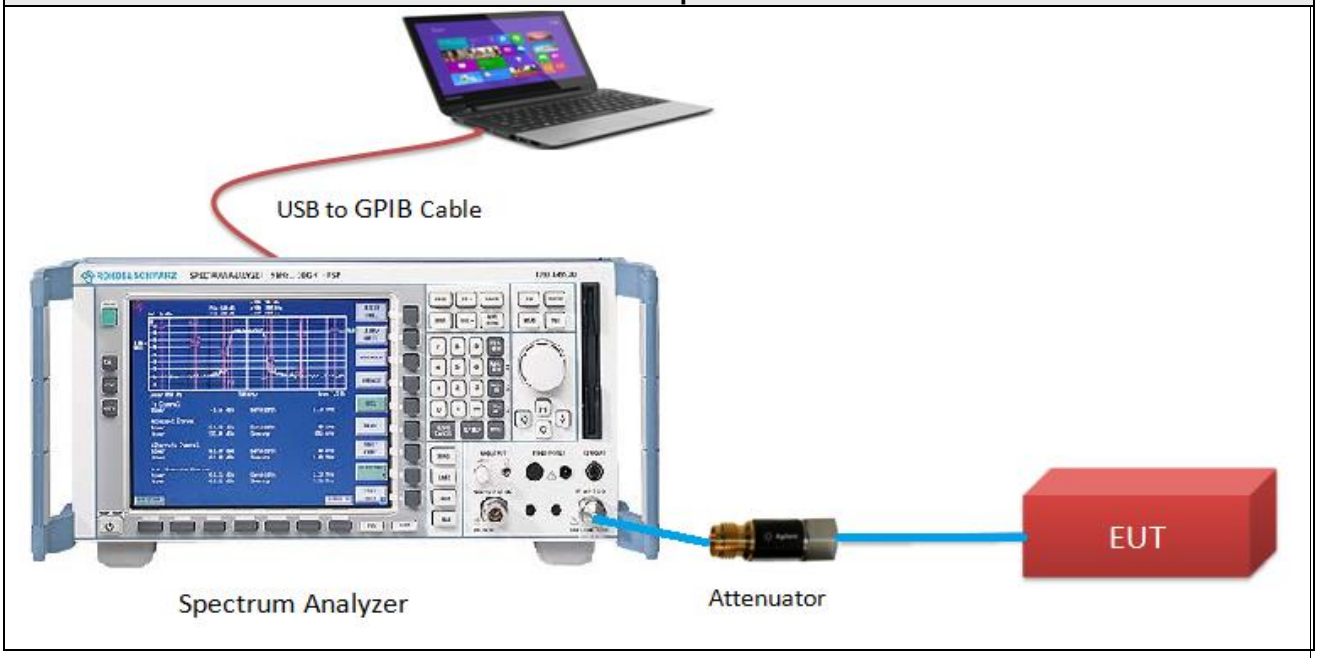
4.2.2 Test Procedure

1 The transmitter output (antenna port) was connected to the spectrum analyzer.

2 Test was performed in accordance with Measurement of Digital Transmission Systems Operating under 789033 D02 General U-NII Test Procedures New Rules v02r01, in section “Emission bandwidth (C)(1)” & "99 Percent Occupied Bandwidth"(D). 12/14/2017.

3 When measuring Emission bandwidth with multiple antenna systems, add every result of the values by mathematic formula.

4.2.3 Test Setup Layout

Setup


4.2.4 Test Deviation

There are no deviations with the original standard.

4.2.5 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

4.2.6 Test Results

Temperature	25°C	Humidity	60%
Test Engineer	Jyunchun Lin		

1S4T CDD

11ax (20MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
36	5180	21.98	21.64	21.75	23.12
40	5200	38.28	23.4	26.75	39.31
48	5240	37.83	22.87	23.59	40.84
149	5745	37.47	23.1	23.2	37.58
157	5785	37.64	23.1	23.3	40.63
165	5825	36.29	23.46	23.23	41.22

11ax (40MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
38	5190	41.68	41.7	41.38	41.49
46	5230	69	60.48	60.71	73.71
151	5755	64.34	48.19	58.75	66.08
159	5795	67.27	60.77	58.14	71.26

11ax (80MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
42	5210	83.01	82.79	83.2	82.67
155	5775	144.03	91.9	83.06	150.14

1S4T TxBF

11ax (20MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
36	5180	21.96	21.7	22.32	22.92
40	5200	37.53	23.41	26.73	37.19
48	5240	29.87	22.3	25.7	34.61
149	5745	38.77	22.95	23.25	40.62
157	5785	37.18	23.11	26.97	36.27
165	5825	33.29	23.01	25.97	38.85

11ax (40MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
38	5190	41.46	41.63	41.37	41.44
46	5230	64.12	57.83	63.19	61.13
151	5755	62.09	58.43	58.79	64.72
159	5795	64.19	58.46	58.89	62.19

11ax (80MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
42	5210	82.92	82.99	83.02	82.72
155	5775	99.59	83.37	82.92	90.58

2S4T TxBF

11ax (20MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
36	5180	22.11	22.71	22.09	21.65
40	5200	28.38	24.34	22.82	28.37
48	5240	29.47	21.77	22.04	38.53
149	5745	39.26	22.6	22.37	38.86
157	5785	36.49	24.86	24.67	41.97
165	5825	29.77	22.61	23.31	37.52

11ax (40MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
38	5190	41.33	41.21	41.34	41.48
46	5230	61.71	49.65	42.05	59.02
151	5755	69.82	44.52	41.53	70.37
159	5795	69.47	54.49	41.53	70.34

11ax (80MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
42	5210	82	82.46	82.63	82.57
155	5775	127.51	99.92	82.57	143.37

3S4T TxBF

11ax (20MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
36	5180	21.92	21.73	21.68	22.11
40	5200	28.65	23.77	22.53	37.87
48	5240	32.63	26.57	23.79	27.66
149	5745	34.57	22.19	21.75	36.07
157	5785	33.07	22.9	21.71	27.8
165	5825	32.48	24.9	21.69	36.55

11ax (40MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
38	5190	41.36	41.03	41.17	41.35
46	5230	61.02	48.72	54.58	64.8
151	5755	68.23	50.69	54.15	60.33
159	5795	67.45	53.66	51.65	64.96

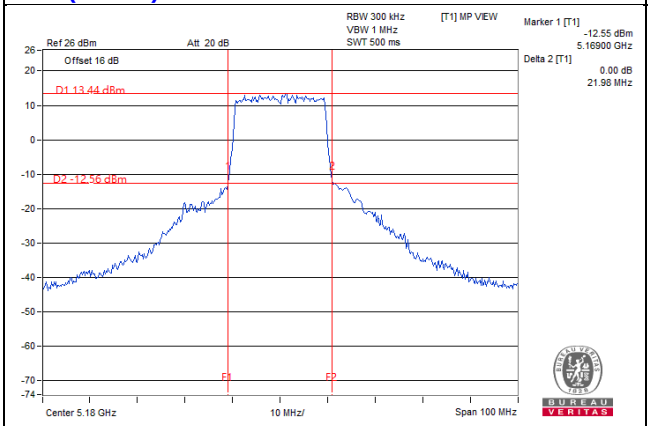
11ax (80MHz)

CHANNEL	FREQUENCY (MHz)	26dB Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
42	5210	82.33	82.96	82.59	82.36
155	5775	149.5	83.81	91.06	150.71

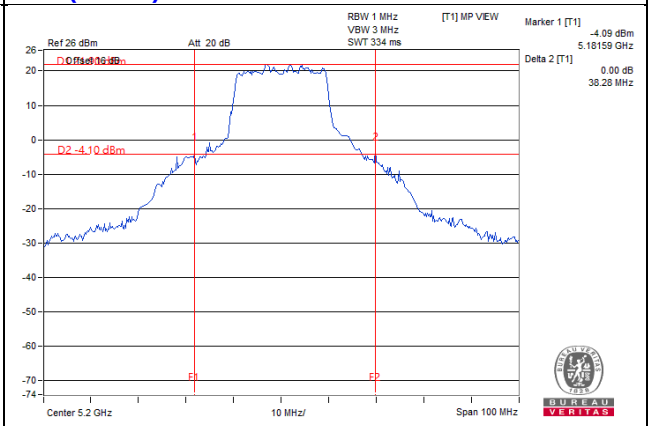
1S4T CDD

26dB BANDWIDTH SPECTRUM PLOT

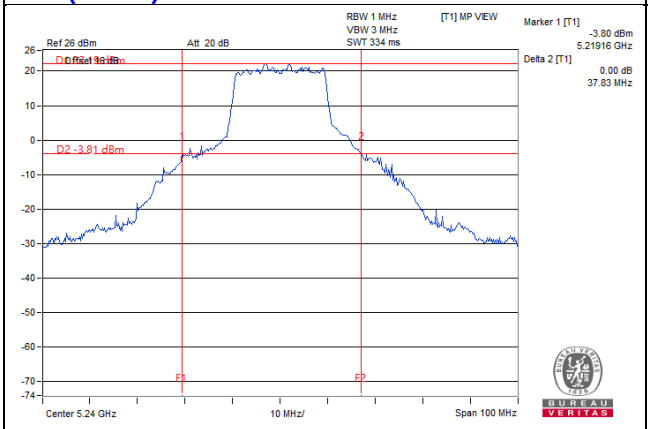
11ax (20MHz) CH36 Ant1



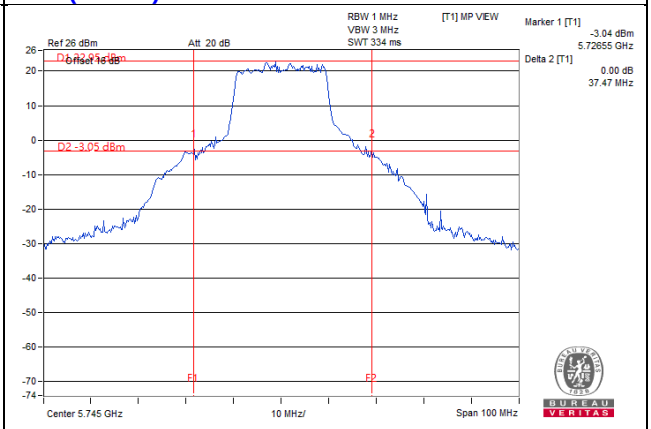
11ax (20MHz) CH40 Ant1



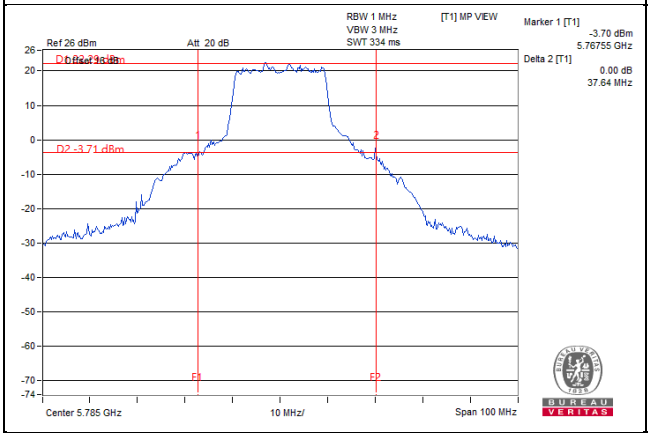
11ax (20MHz) CH48 Ant1



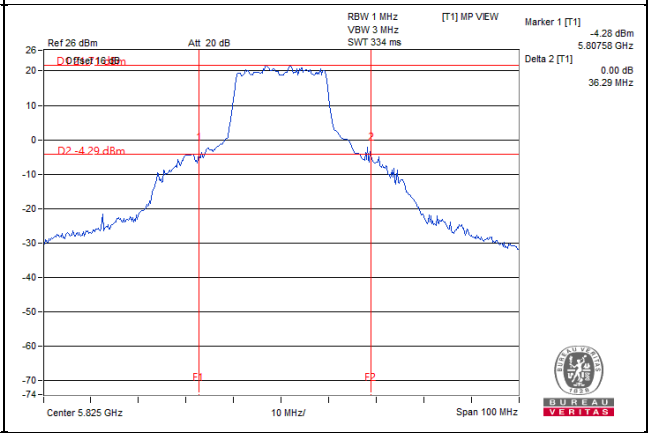
11ax (20MHz) CH149 Ant1



11ax (20MHz) CH157 Ant1

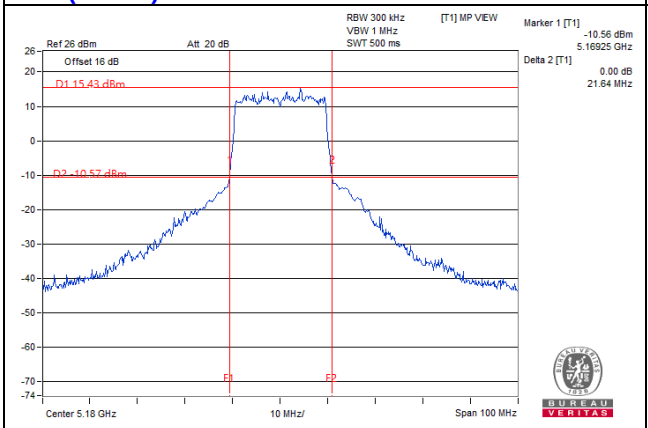


11ax (20MHz) CH165 Ant1

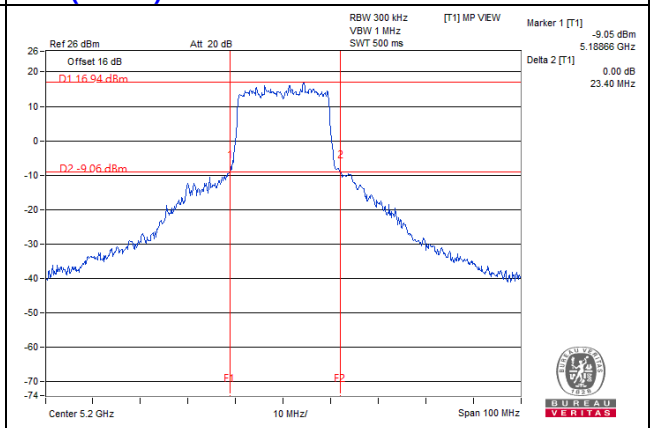


26dB BANDWIDTH SPECTRUM PLOT

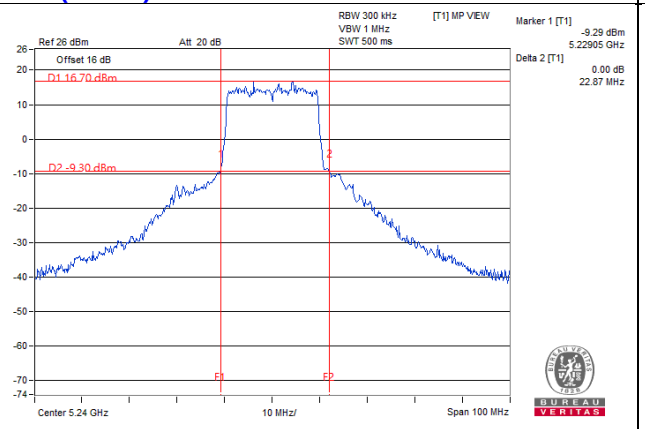
11ax (20MHz) CH36 Ant2



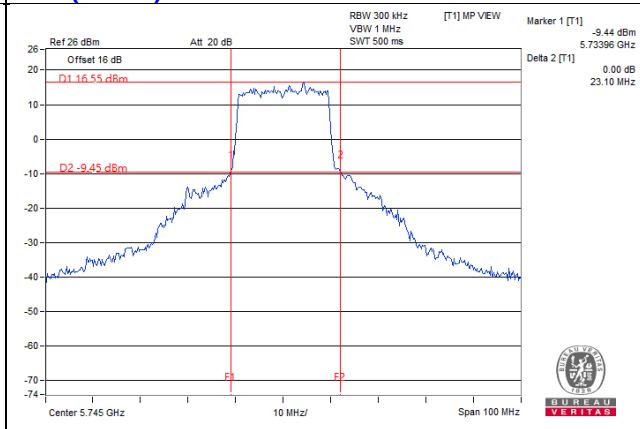
11ax (20MHz) CH40 Ant2



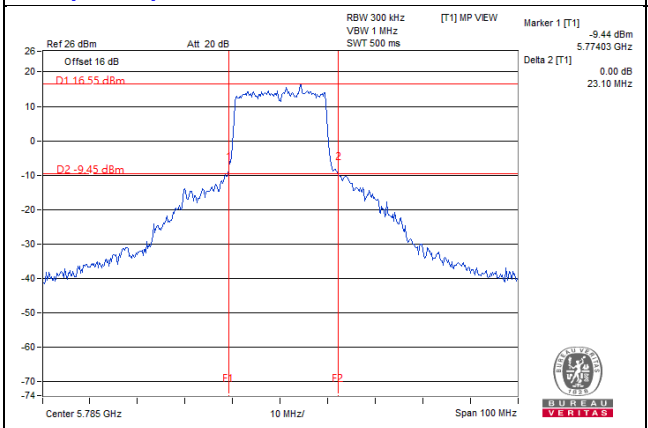
11ax (20MHz) CH48 Ant2



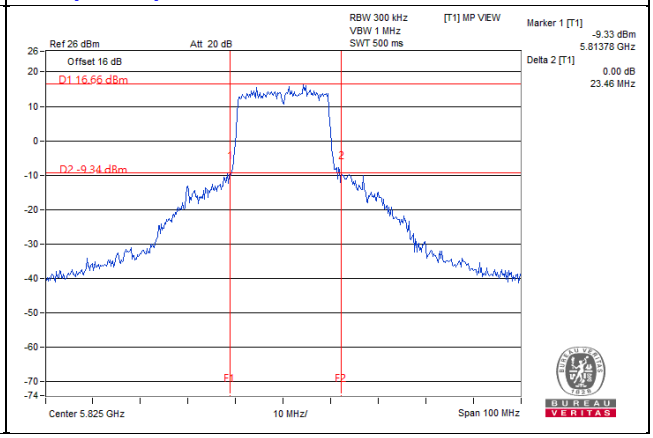
11ax (20MHz) CH149 Ant2



11ax (20MHz) CH157 Ant2

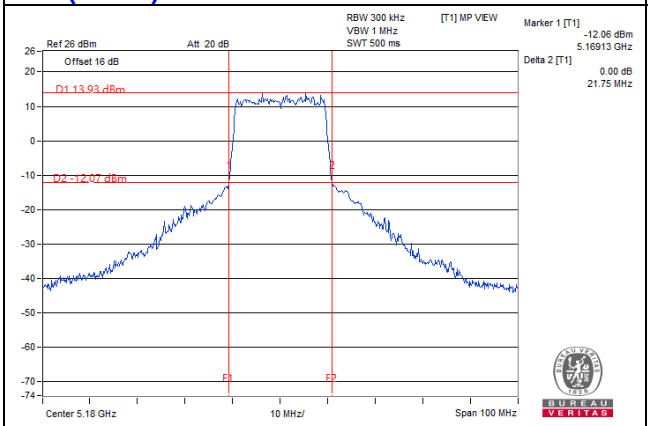


11ax (20MHz) CH165 Ant2

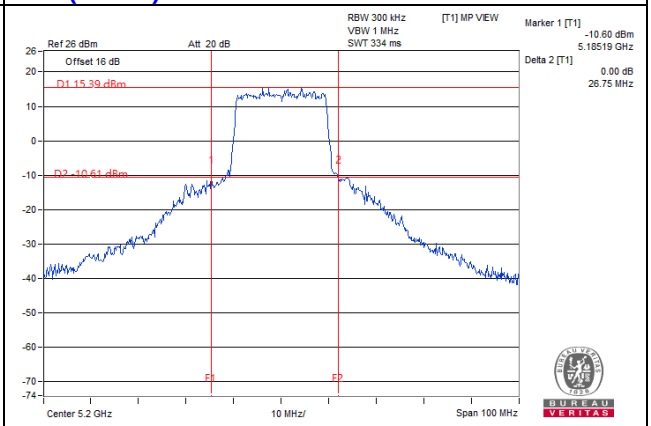


26dB BANDWIDTH SPECTRUM PLOT

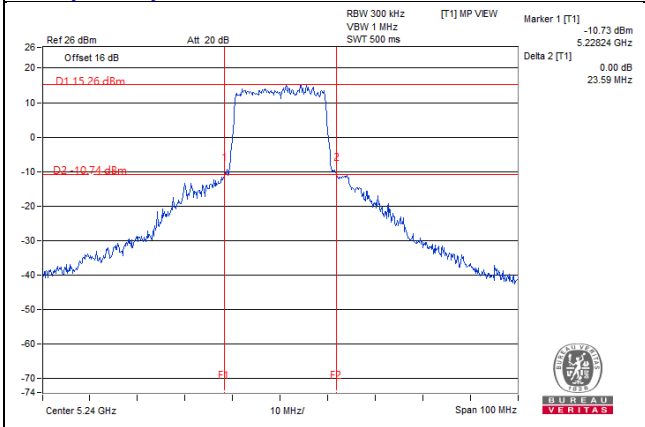
11ax (20MHz) CH36 Ant3



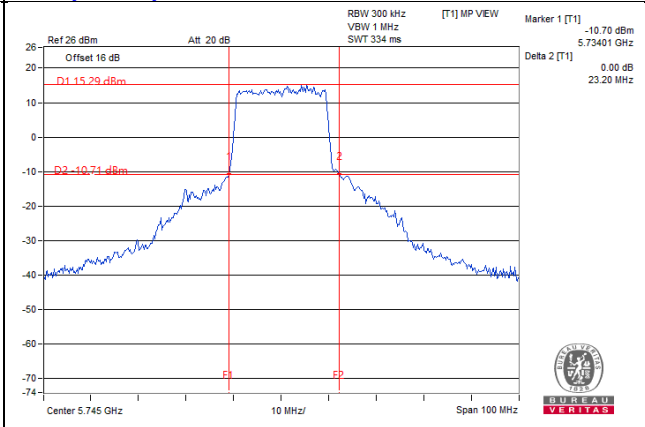
11ax (20MHz) CH40 Ant3



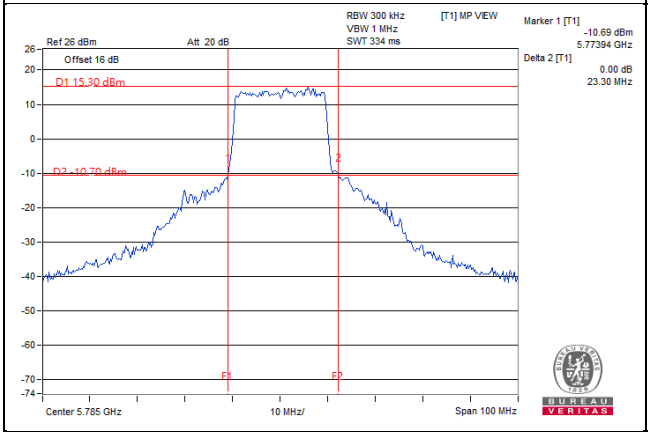
11ax (20MHz) CH48 Ant3



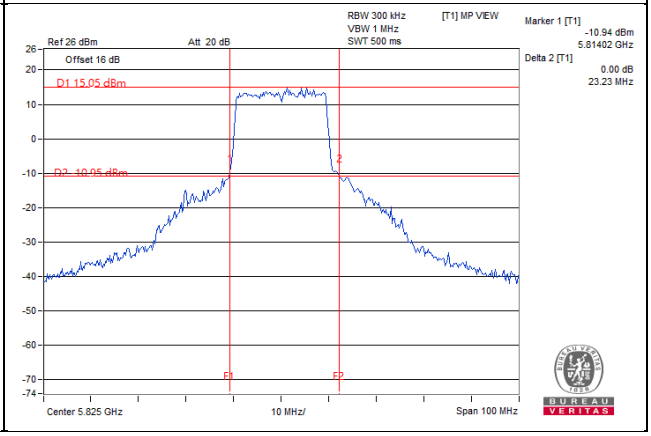
11ax (20MHz) CH149 Ant3



11ax (20MHz) CH157 Ant3

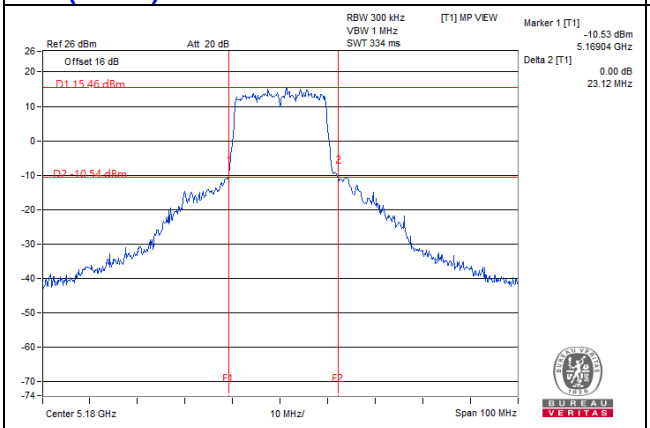


11ax (20MHz) CH165 Ant3

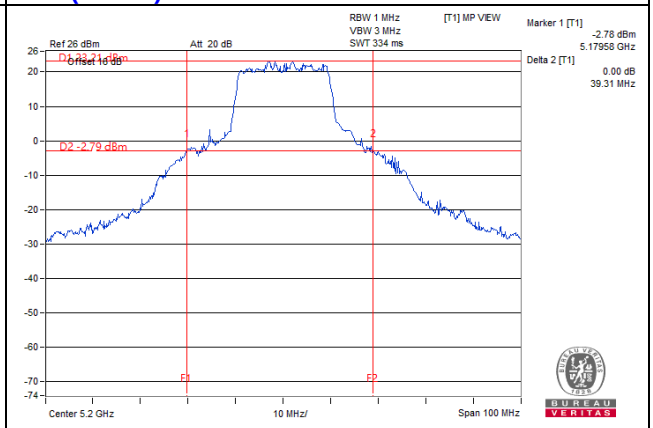


26dB BANDWIDTH SPECTRUM PLOT

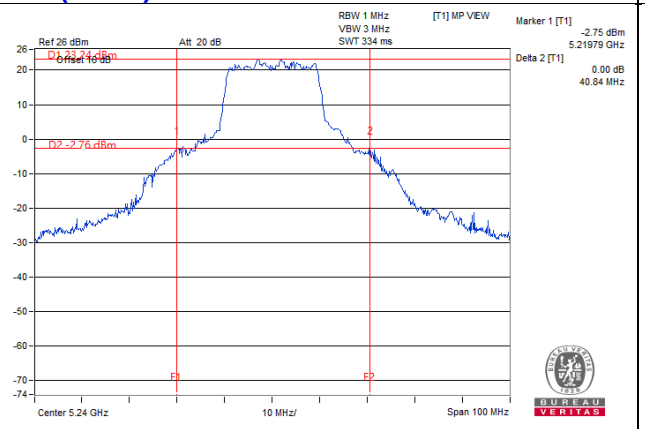
11ax (20MHz) CH36 Ant4



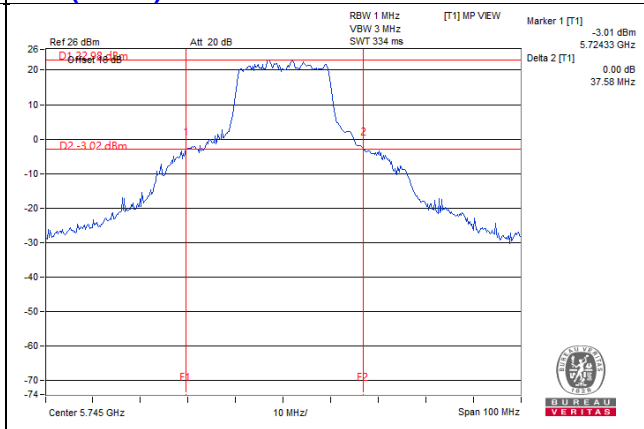
11ax (20MHz) CH40 Ant4



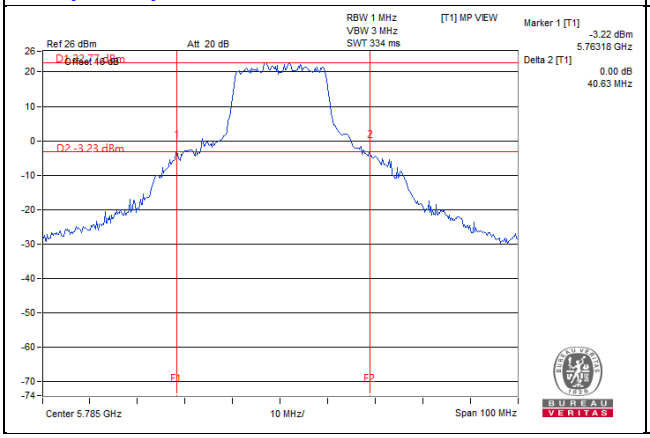
11ax (20MHz) CH48 Ant4



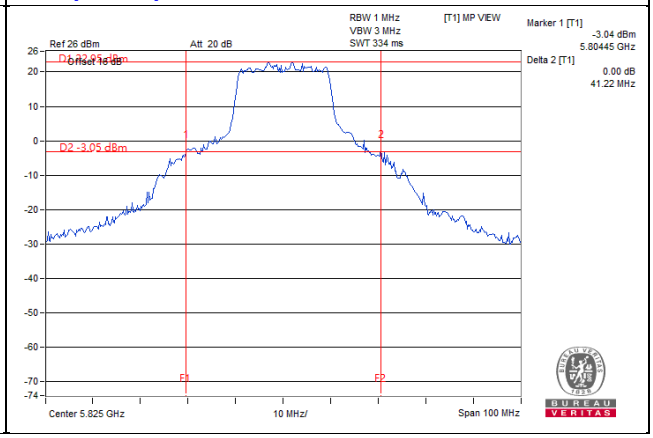
11ax (20MHz) CH149 Ant4



11ax (20MHz) CH157 Ant4

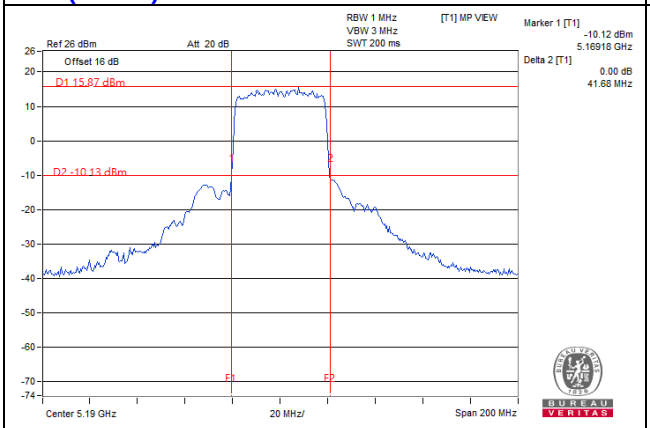


11ax (20MHz) CH165 Ant4

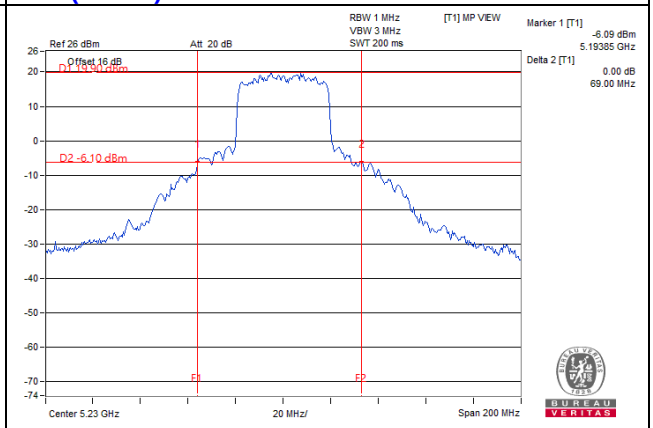


26dB BANDWIDTH SPECTRUM PLOT

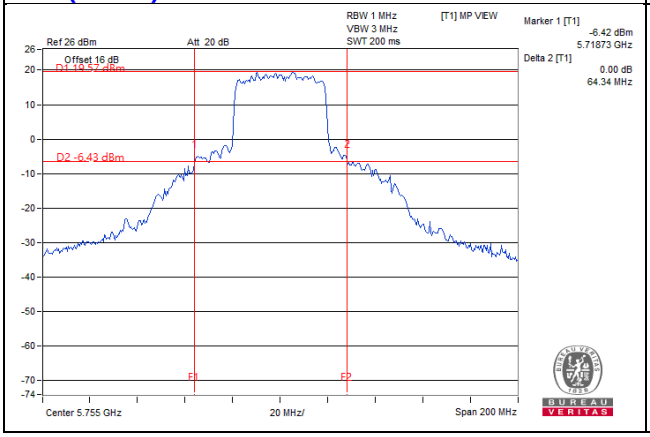
11ax (40MHz) CH38 Ant1



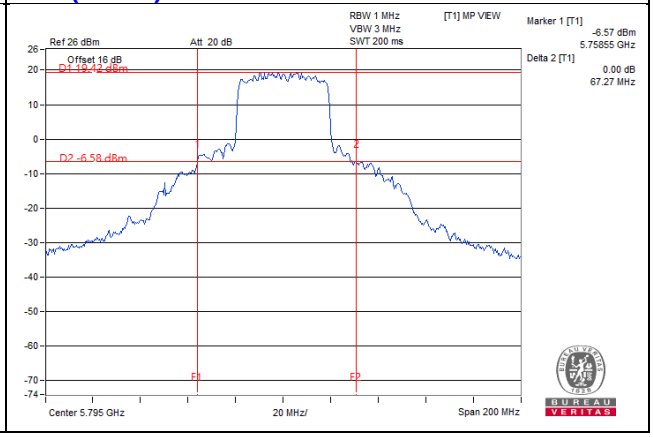
11ax (40MHz) CH46 Ant1



11ax (40MHz) CH151 Ant1

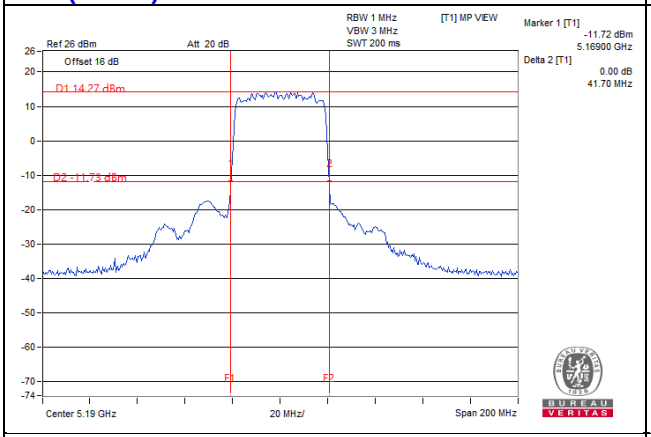


11ax (40MHz) CH159 Ant1

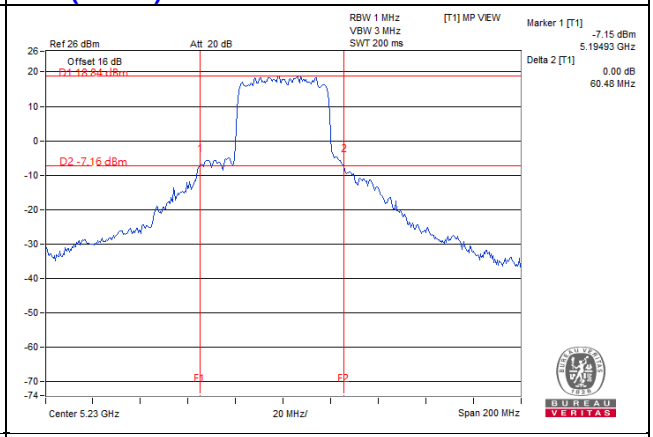


26dB BANDWIDTH SPECTRUM PLOT

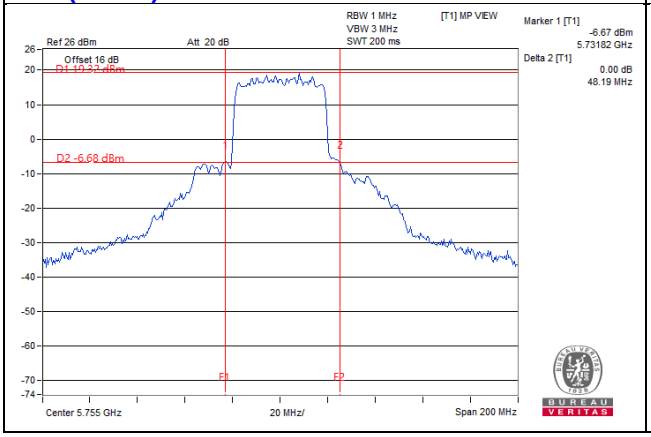
11ax (40MHz) CH38 Ant2



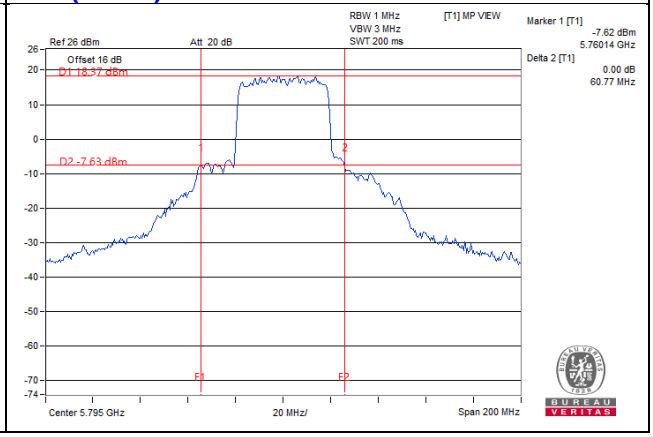
11ax (40MHz) CH46 Ant2



11ax (40MHz) CH151 Ant2

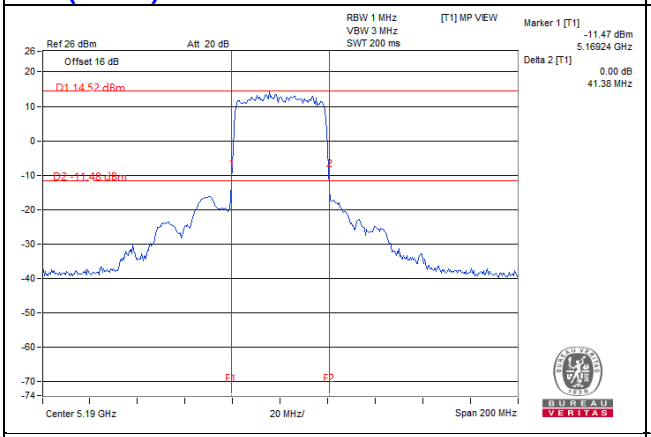


11ax (40MHz) CH159 Ant2

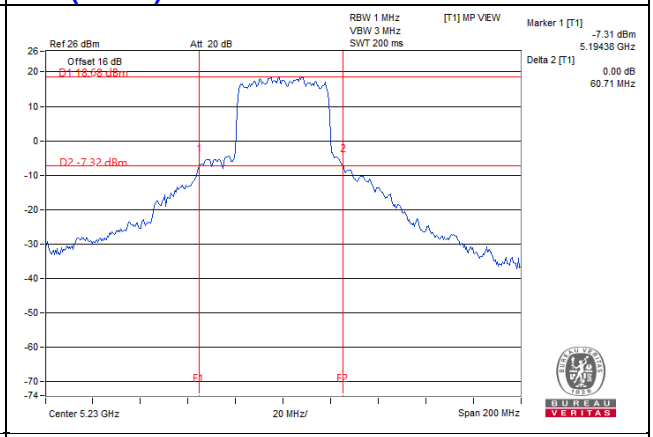


26dB BANDWIDTH SPECTRUM PLOT

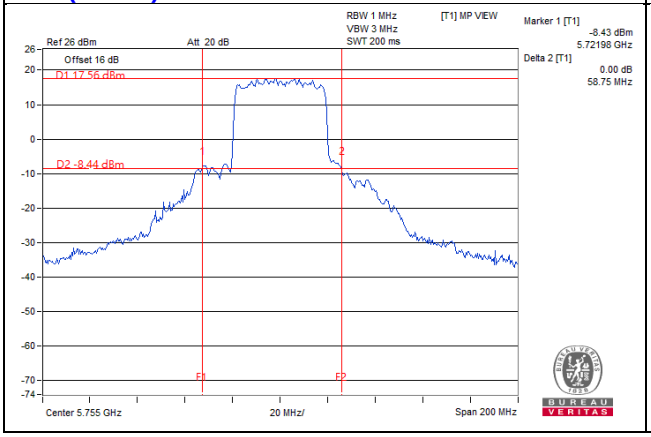
11ax (40MHz) CH38 Ant3



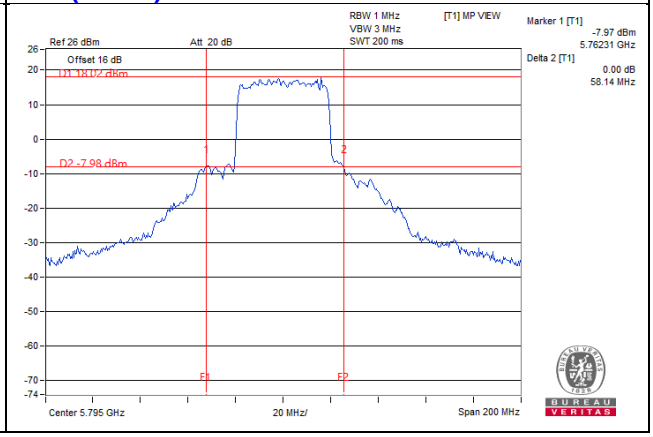
11ax (40MHz) CH46 Ant3



11ax (40MHz) CH151 Ant3

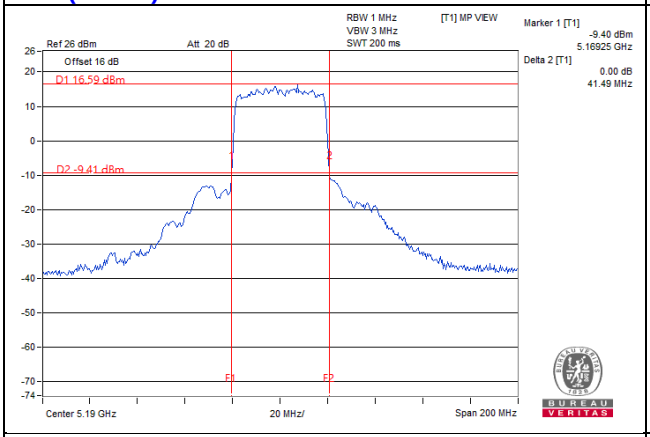


11ax (40MHz) CH159 Ant3

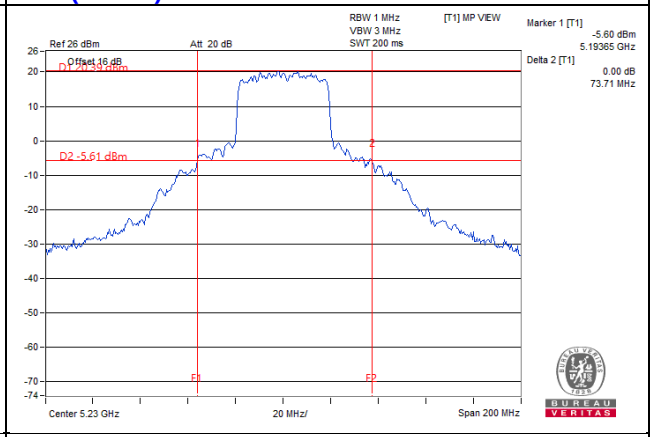


26dB BANDWIDTH SPECTRUM PLOT

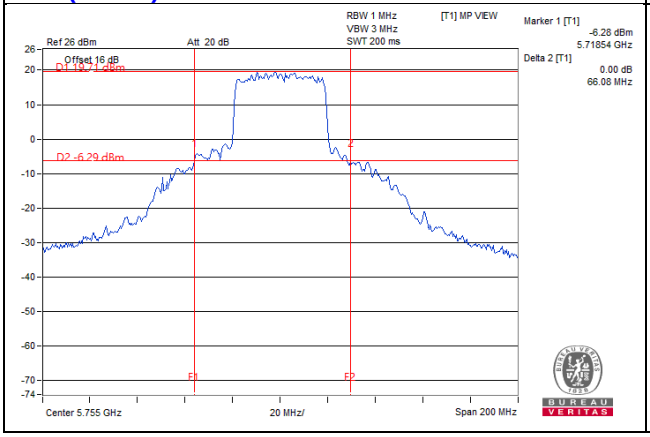
11ax (40MHz) CH38 Ant4



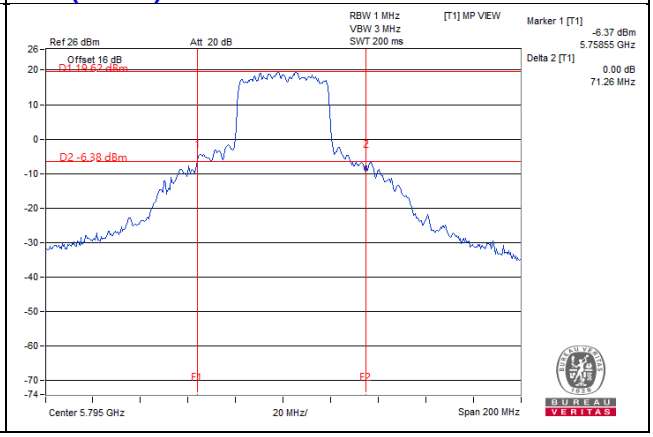
11ax (40MHz) CH46 Ant4



11ax (40MHz) CH151 Ant4

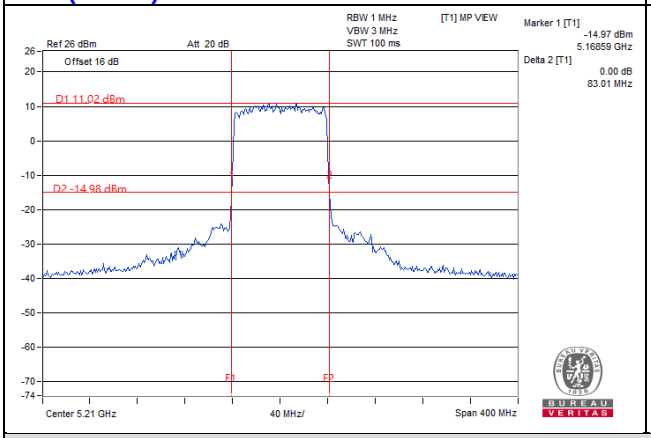


11ax (40MHz) CH159 Ant4

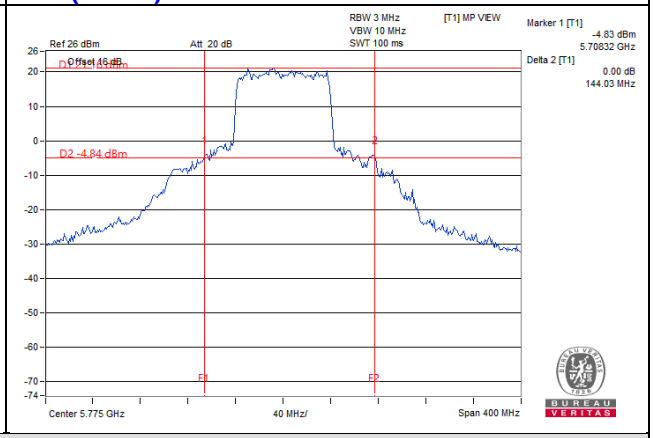


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant1

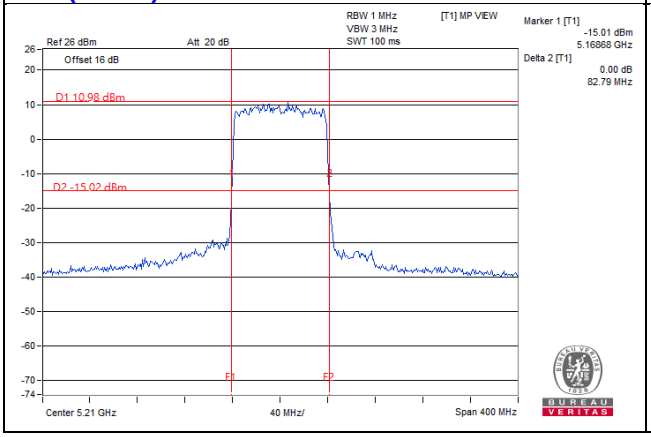


11ax (80MHz) CH155 Ant1

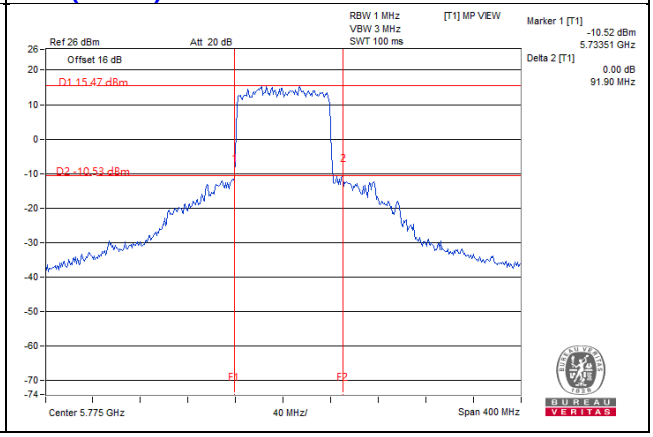


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant2

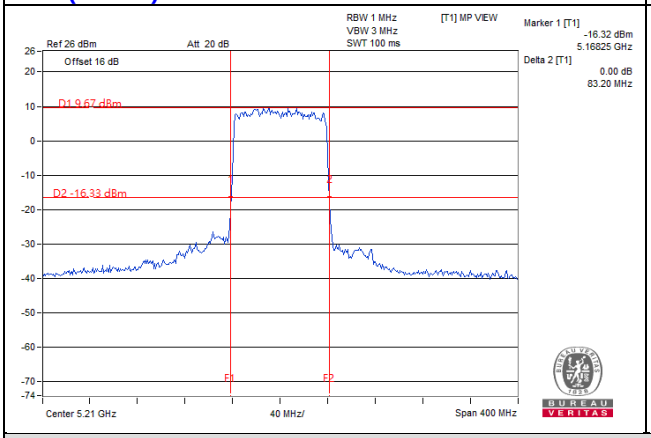


11ax (80MHz) CH155 Ant2

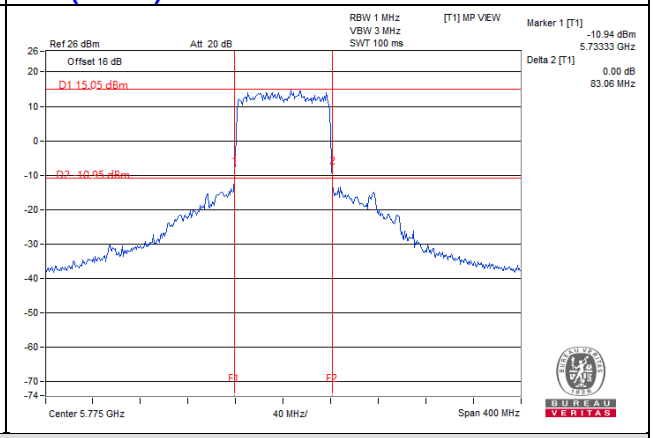


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant3

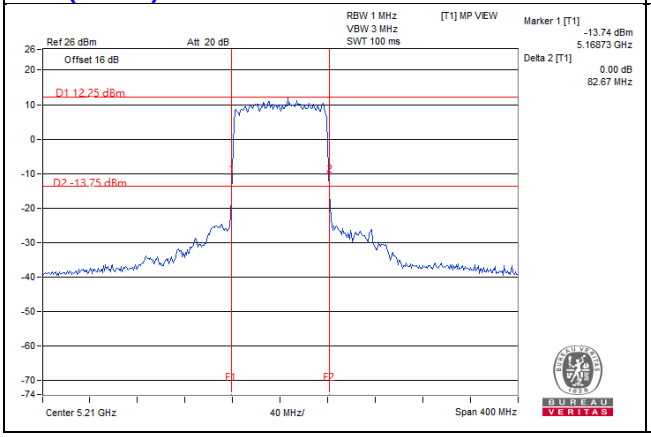


11ax (80MHz) CH155 Ant3

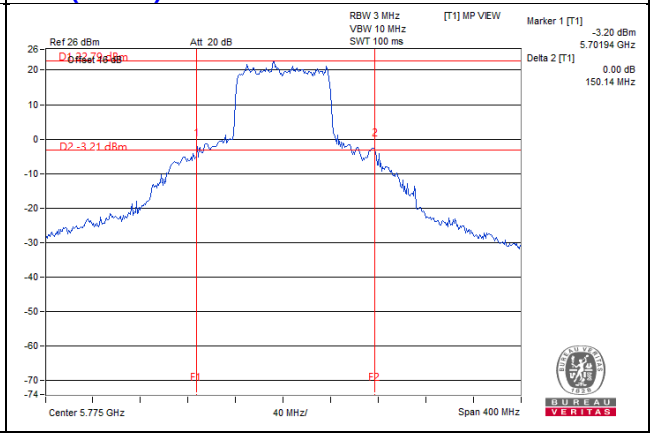


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant4



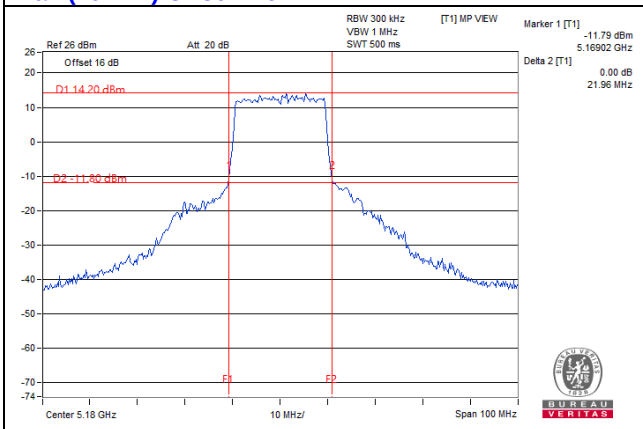
11ax (80MHz) CH155 Ant4



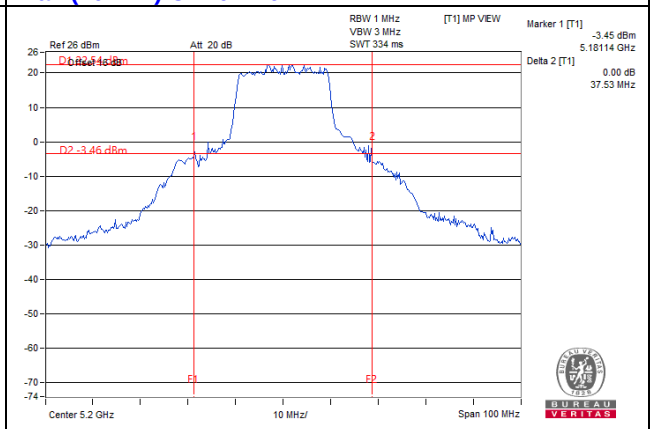
1S4T TxBF

26dB BANDWIDTH SPECTRUM PLOT

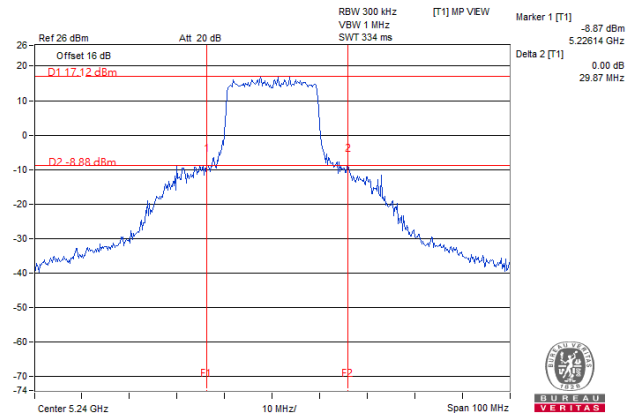
11ax (20MHz) CH36 Ant1



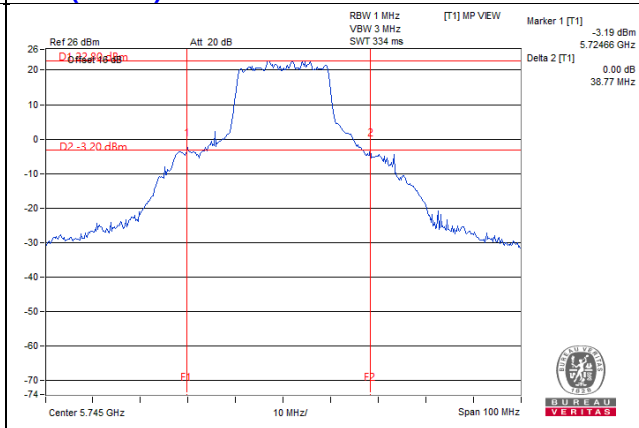
11ax (20MHz) CH40 Ant1



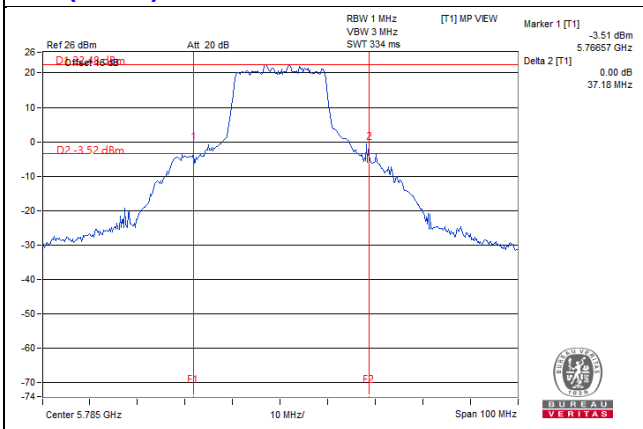
11ax (20MHz) CH48 Ant1



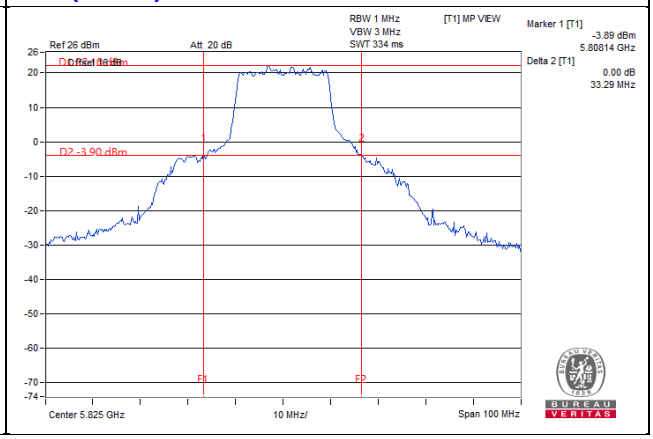
11ax (20MHz) CH149 Ant1



11ax (20MHz) CH157 Ant1

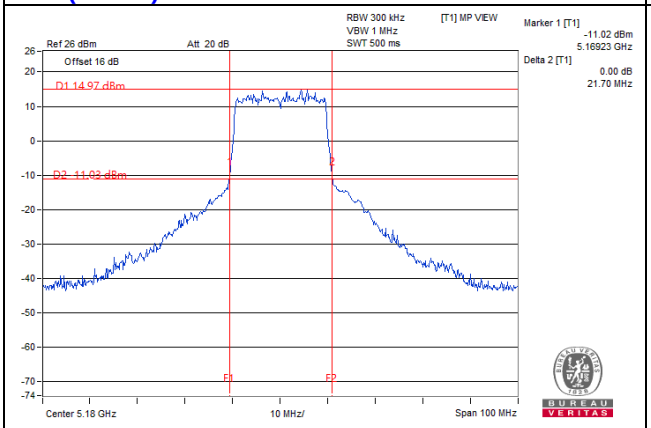


11ax (20MHz) CH165 Ant1

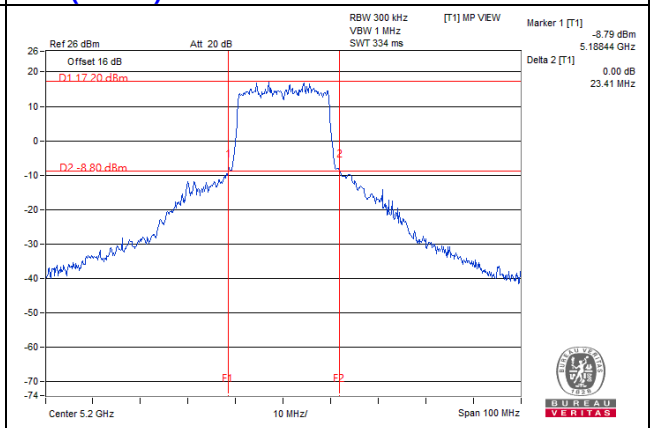


26dB BANDWIDTH SPECTRUM PLOT

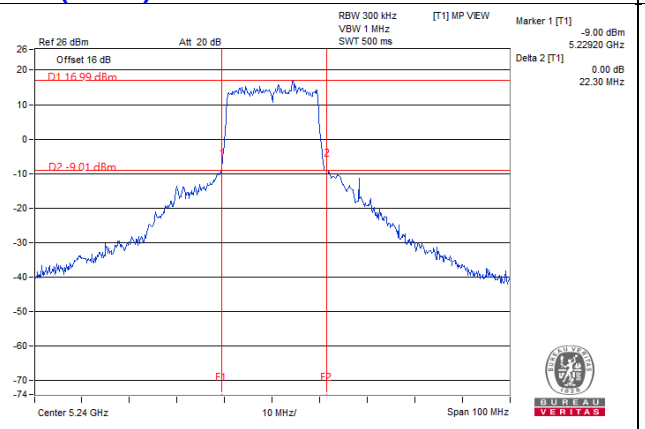
11ax (20MHz) CH36 Ant2



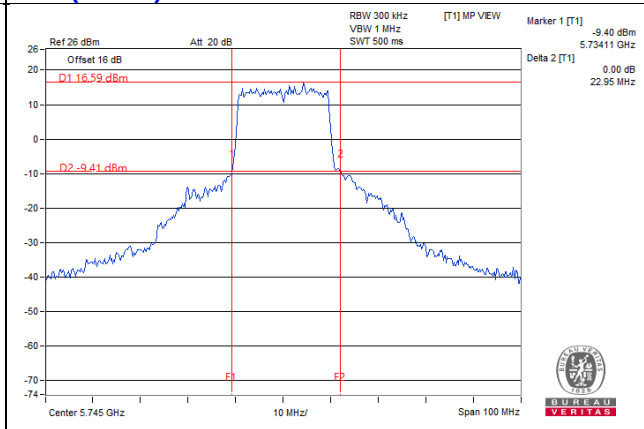
11ax (20MHz) CH40 Ant2



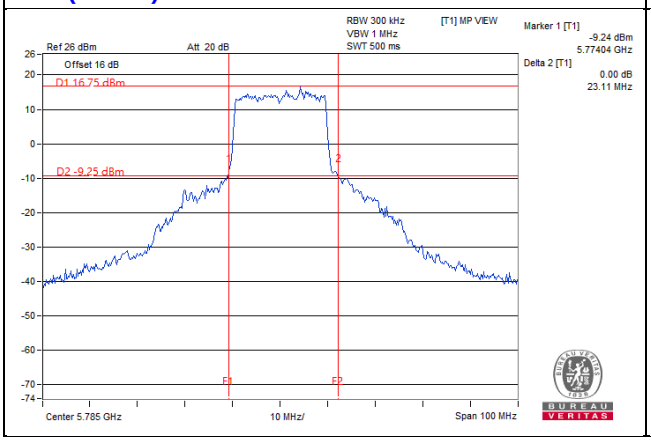
11ax (20MHz) CH48 Ant2



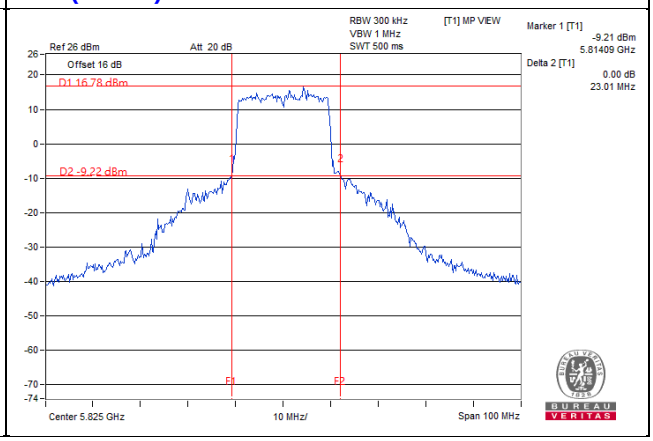
11ax (20MHz) CH149 Ant2



11ax (20MHz) CH157 Ant2

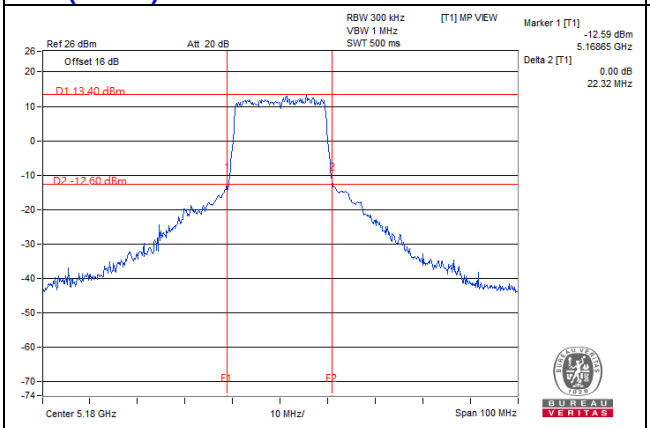


11ax (20MHz) CH165 Ant2

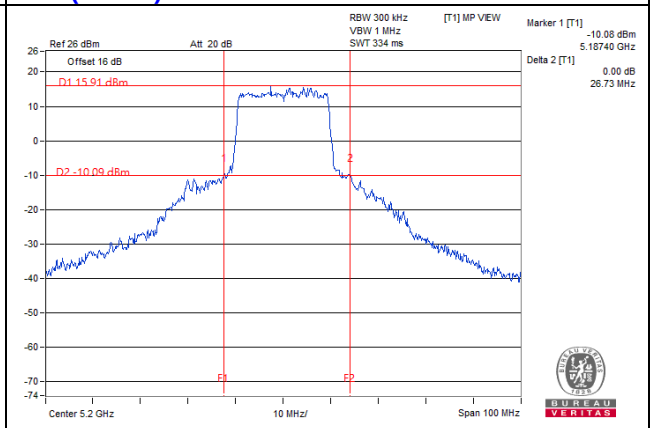


26dB BANDWIDTH SPECTRUM PLOT

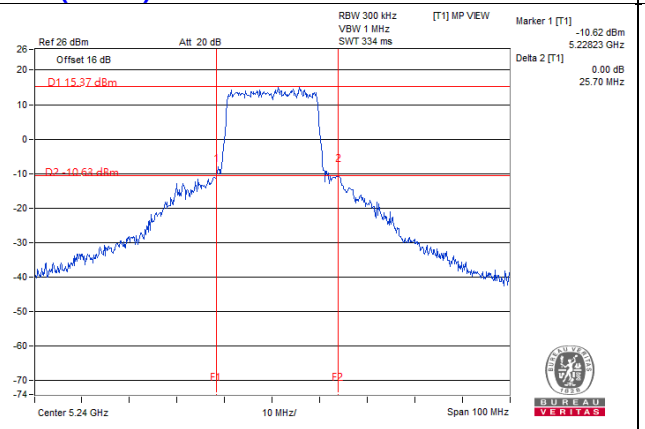
11ax (20MHz) CH36 Ant3



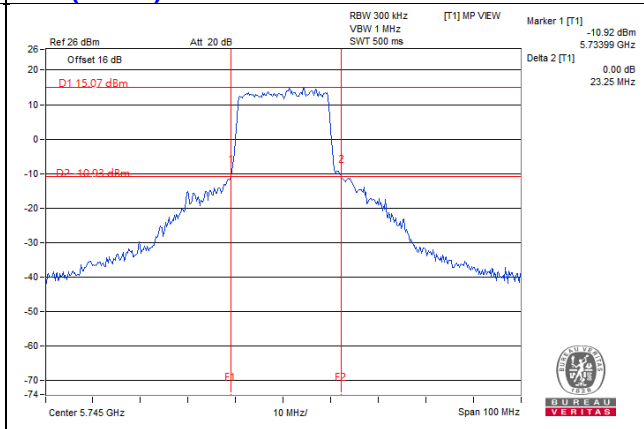
11ax (20MHz) CH40 Ant3



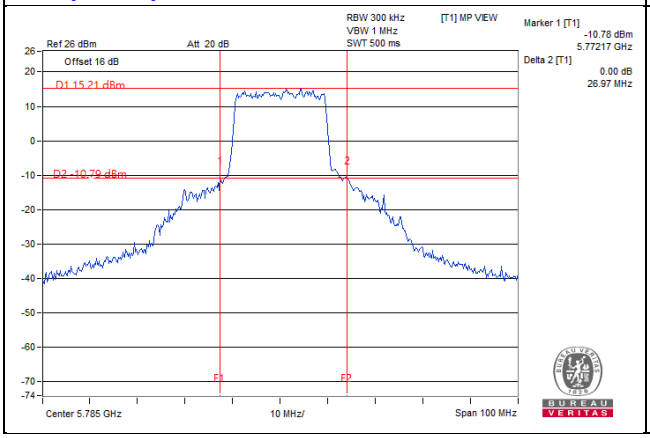
11ax (20MHz) CH48 Ant3



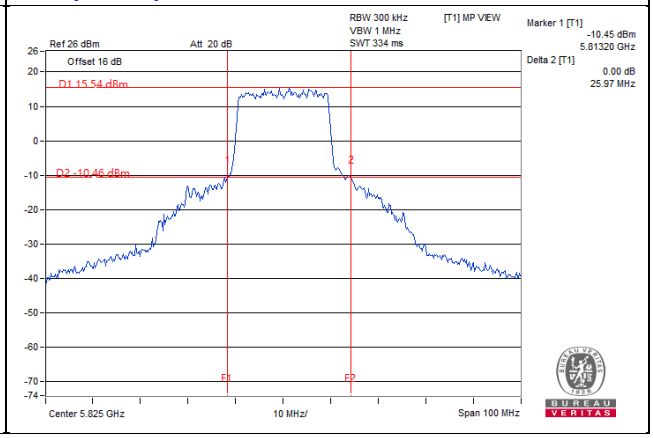
11ax (20MHz) CH149 Ant3



11ax (20MHz) CH157 Ant3

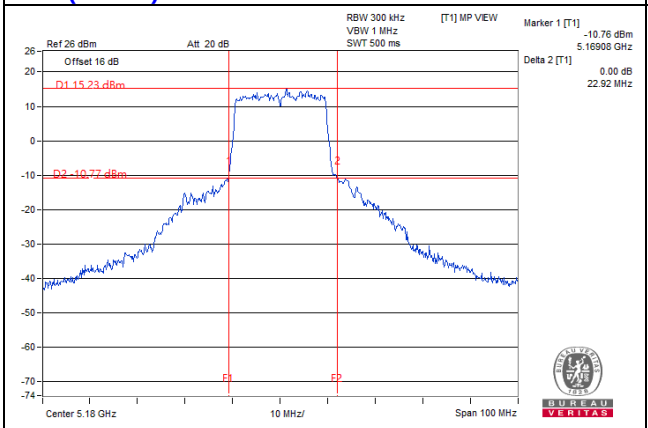


11ax (20MHz) CH165 Ant3

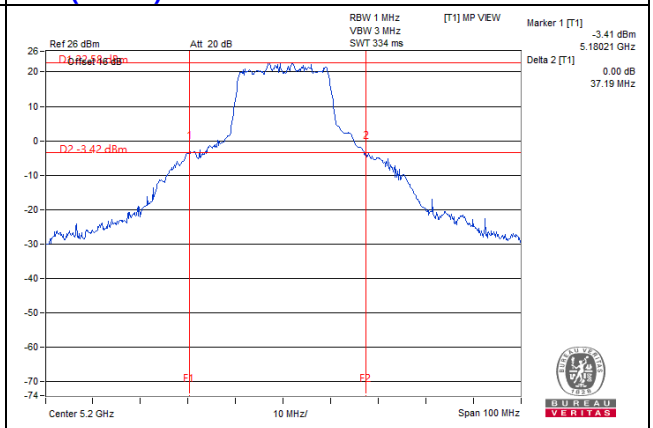


26dB BANDWIDTH SPECTRUM PLOT

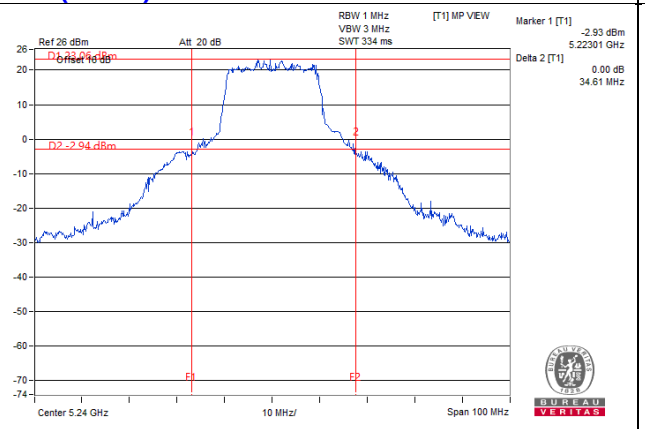
11ax (20MHz) CH36 Ant4



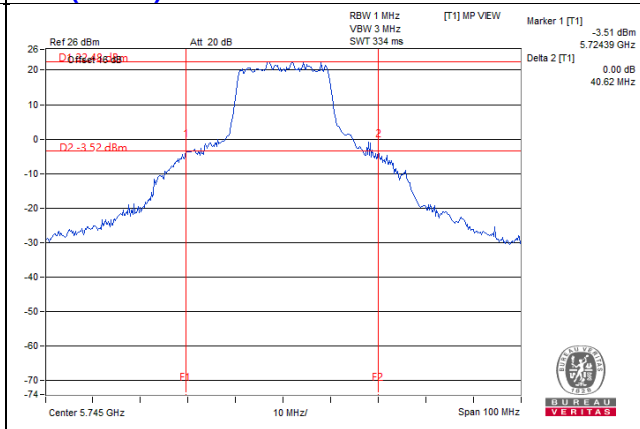
11ax (20MHz) CH40 Ant4



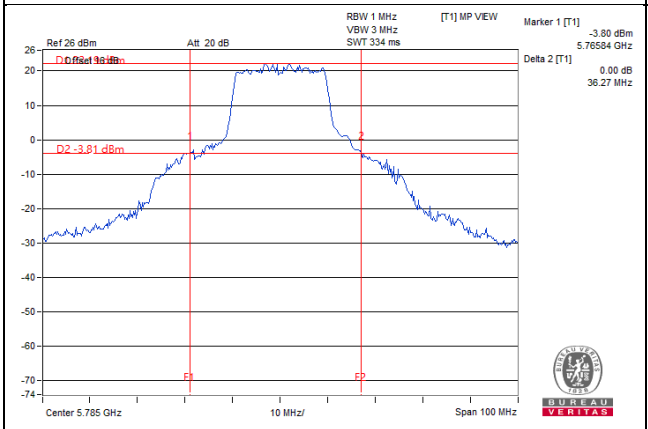
11ax (20MHz) CH48 Ant4



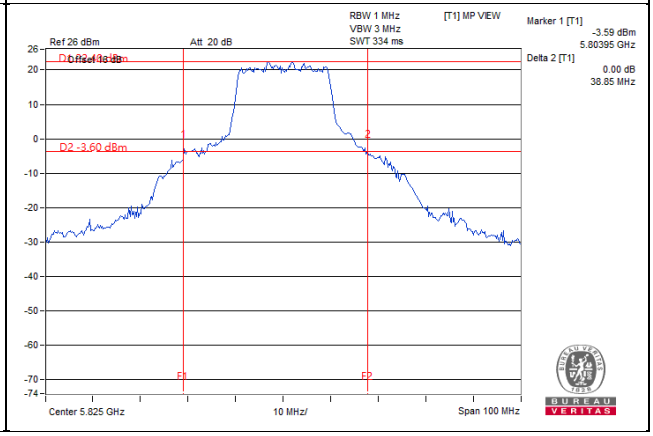
11ax (20MHz) CH149 Ant4



11ax (20MHz) CH157 Ant4

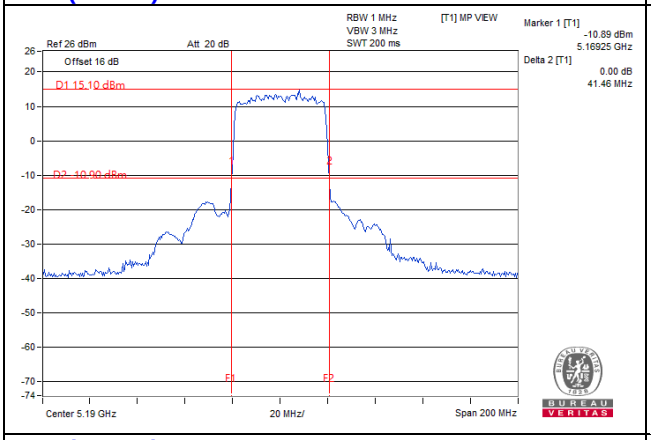


11ax (20MHz) CH165 Ant4

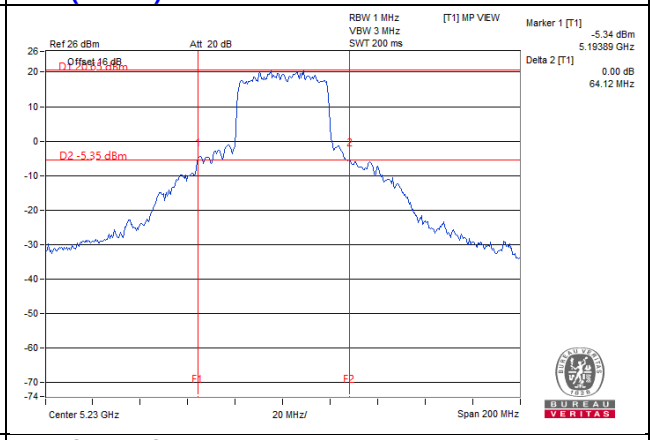


26dB BANDWIDTH SPECTRUM PLOT

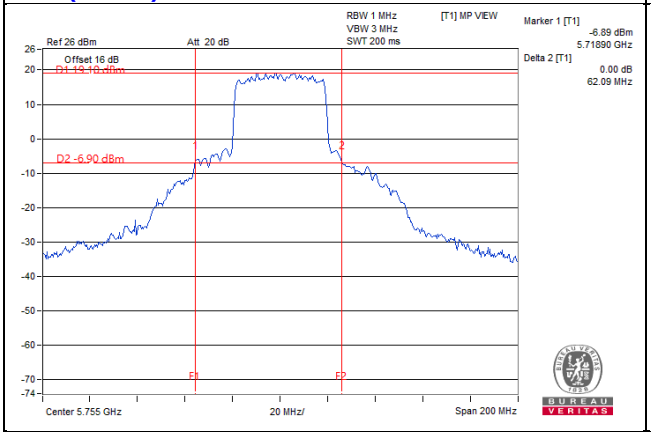
11ax (40MHz) CH38 Ant1



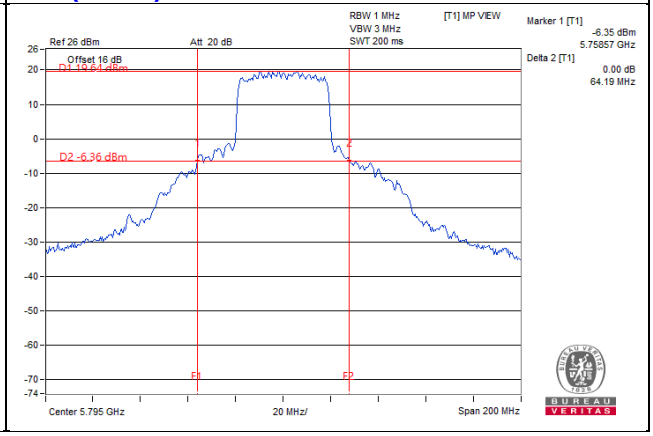
11ax (40MHz) CH46 Ant1



11ax (40MHz) CH151 Ant1

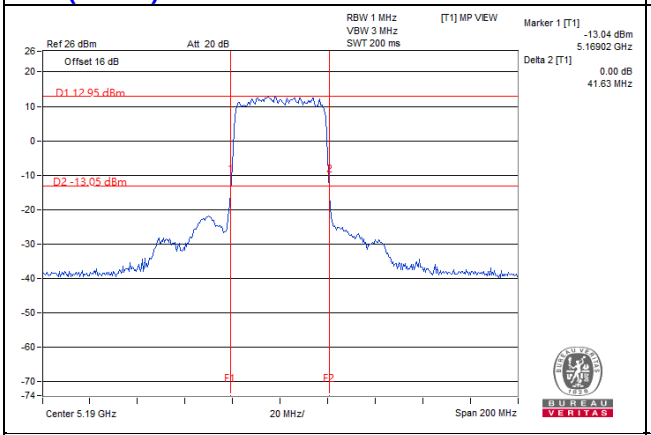


11ax (40MHz) CH159 Ant1

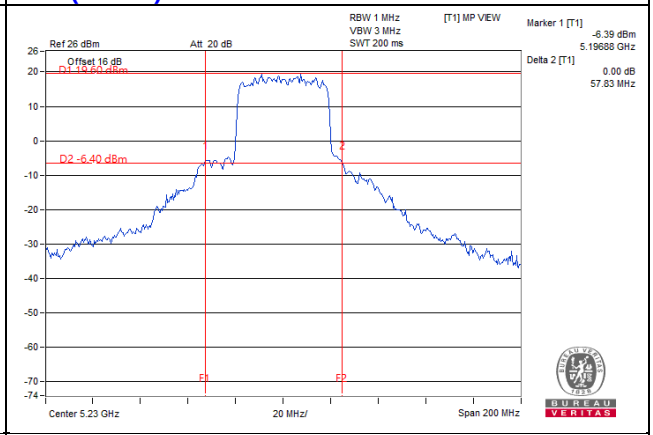


26dB BANDWIDTH SPECTRUM PLOT

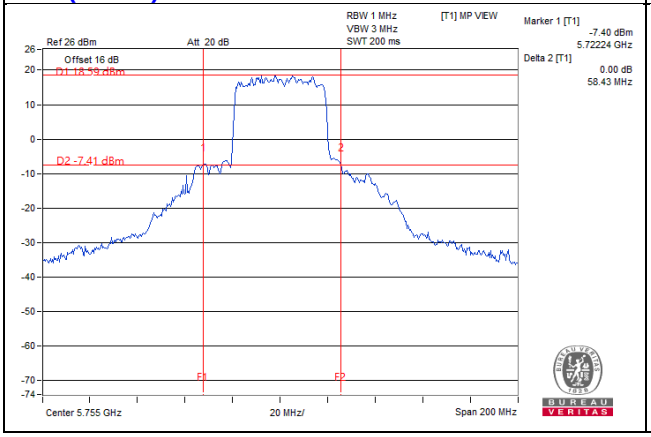
11ax (40MHz) CH38 Ant2



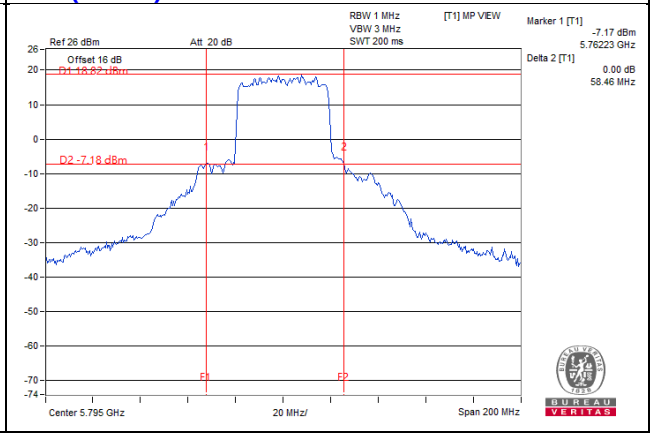
11ax (40MHz) CH46 Ant2



11ax (40MHz) CH151 Ant2

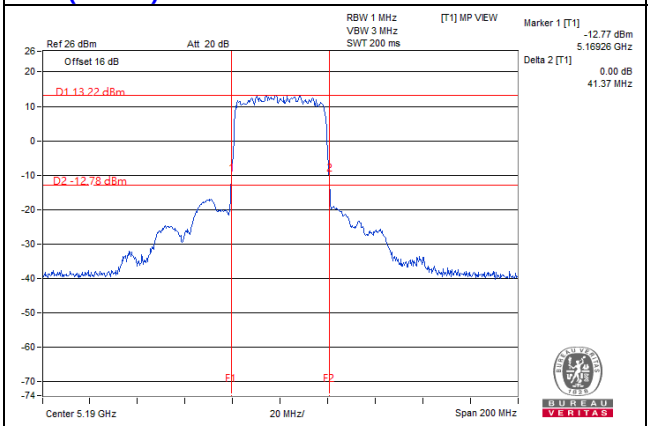


11ax (40MHz) CH159 Ant2

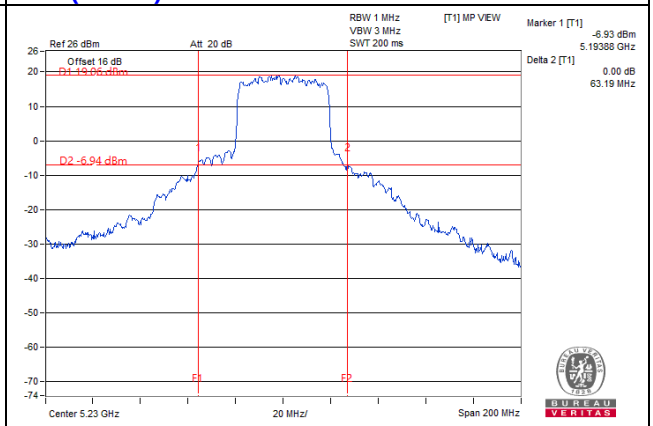


26dB BANDWIDTH SPECTRUM PLOT

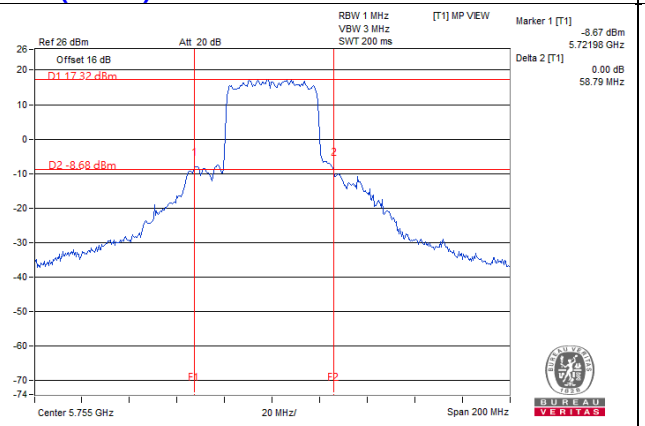
11ax (40MHz) CH38 Ant3



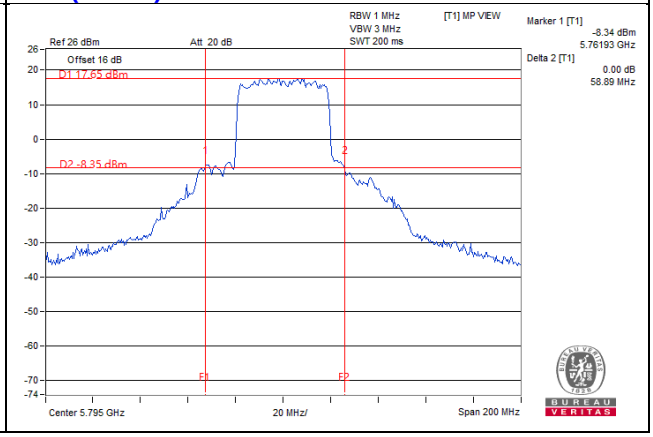
11ax (40MHz) CH46 Ant3



11ax (40MHz) CH151 Ant3

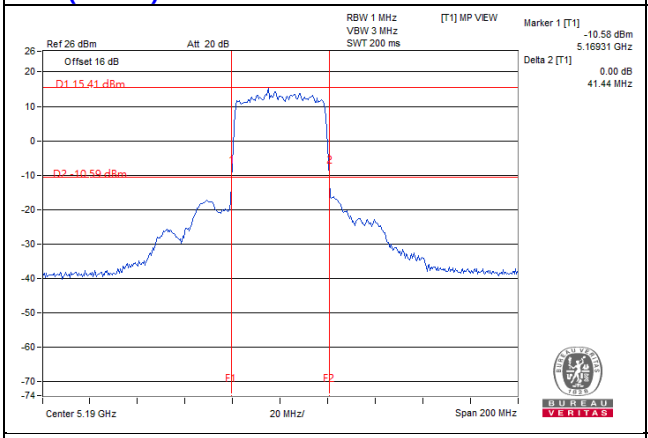


11ax (40MHz) CH159 Ant3

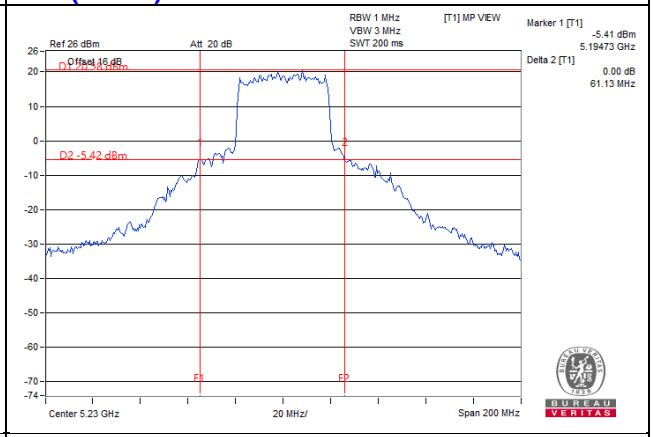


26dB BANDWIDTH SPECTRUM PLOT

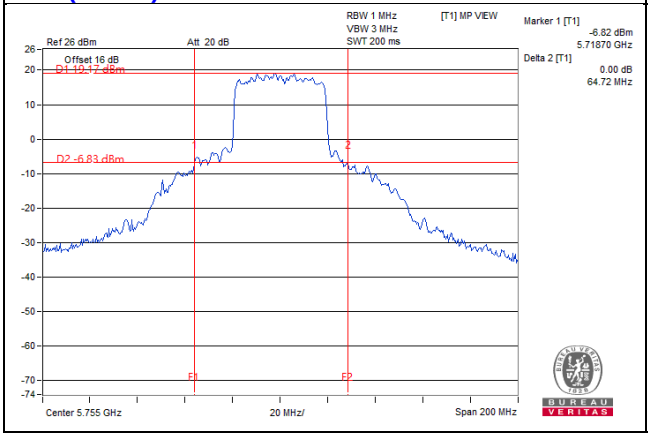
11ax (40MHz) CH38 Ant4



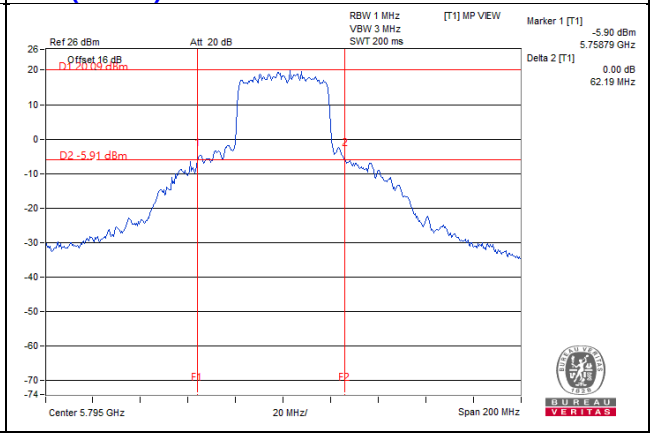
11ax (40MHz) CH46 Ant4



11ax (40MHz) CH151 Ant4

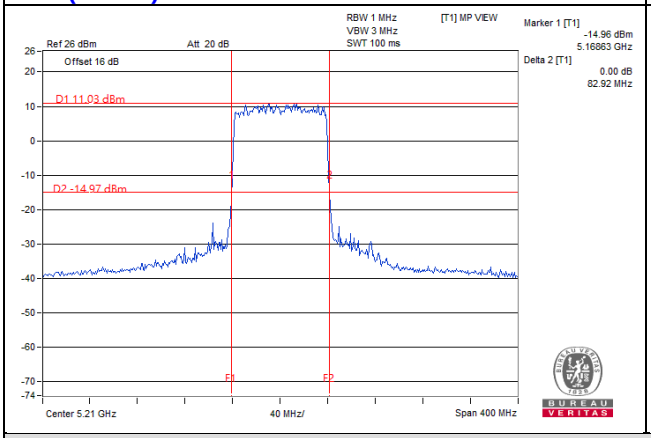


11ax (40MHz) CH159 Ant4

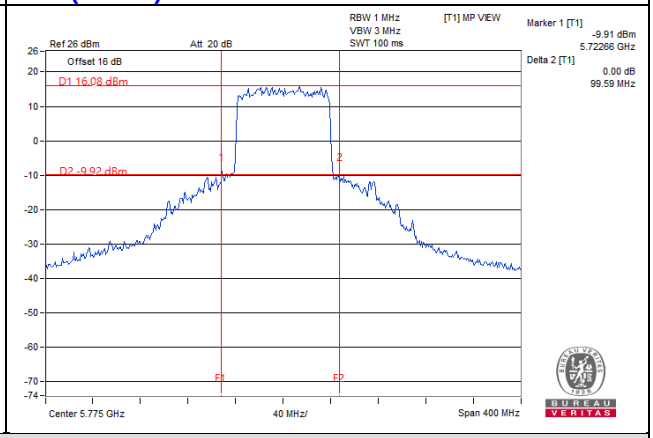


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant1

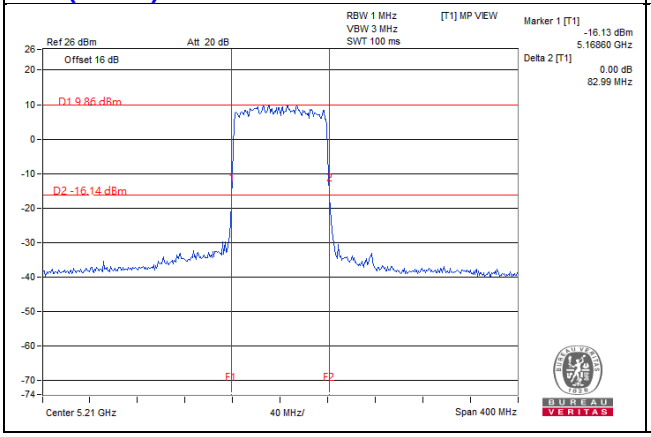


11ax (80MHz) CH155 Ant1

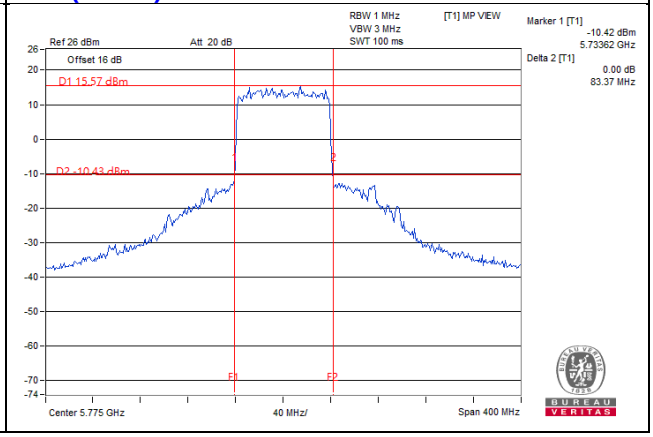


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant2

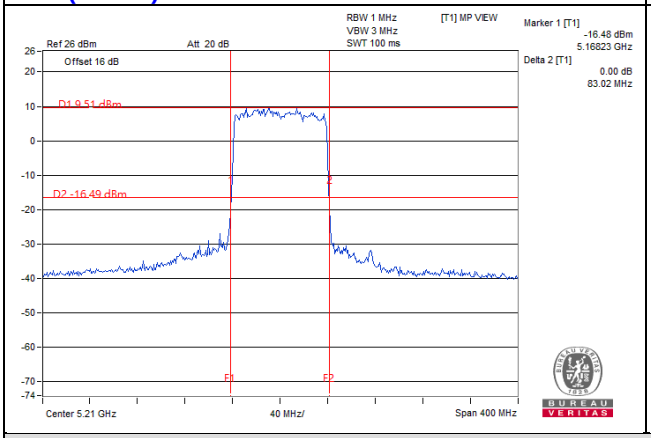


11ax (80MHz) CH155 Ant2

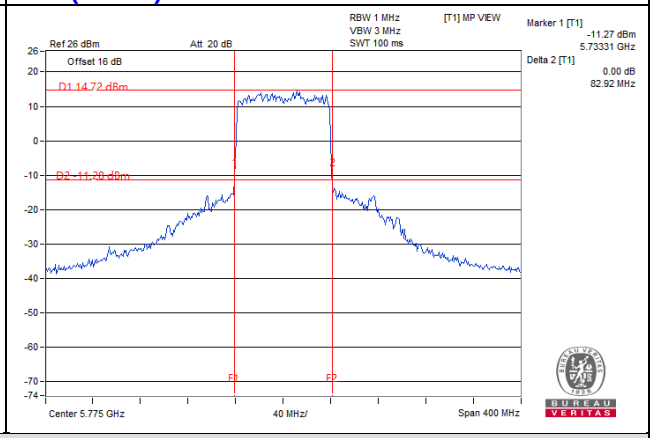


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant3

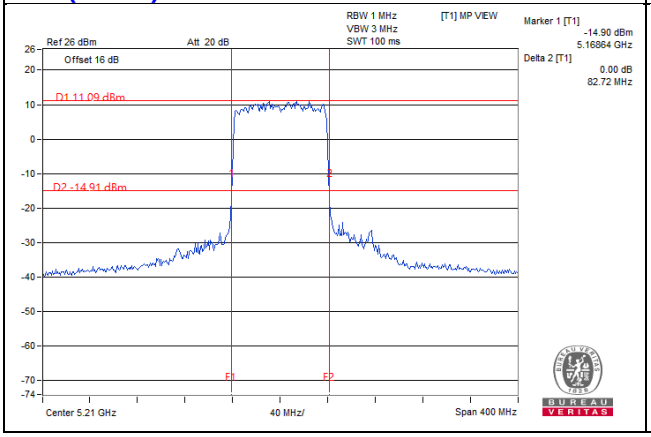


11ax (80MHz) CH155 Ant3

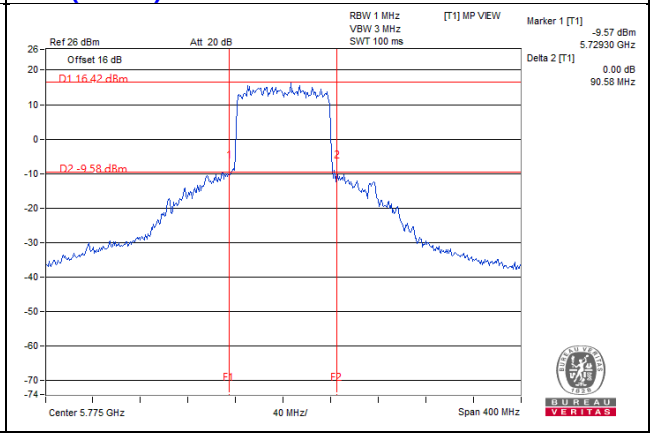


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant4



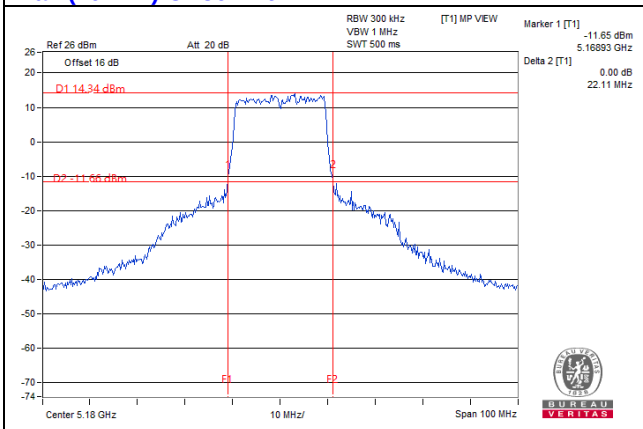
11ax (80MHz) CH155 Ant4



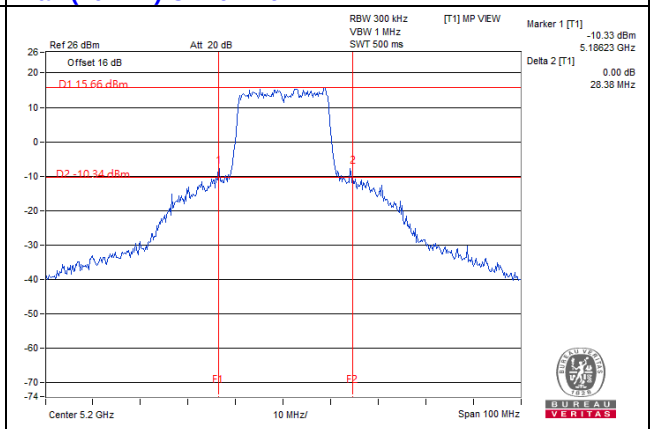
2S4T TxBF

26dB BANDWIDTH SPECTRUM PLOT

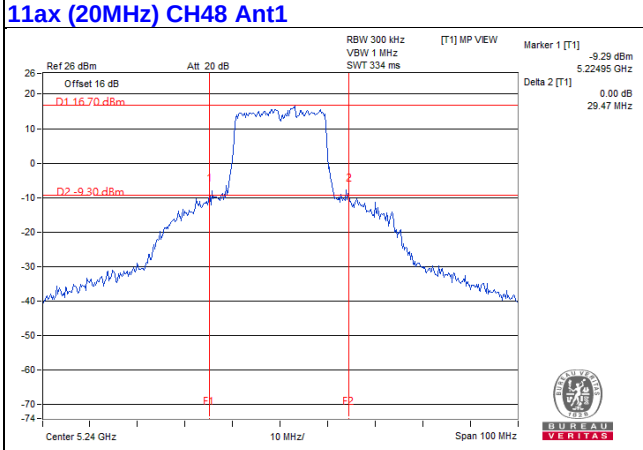
11ax (20MHz) CH36 Ant1



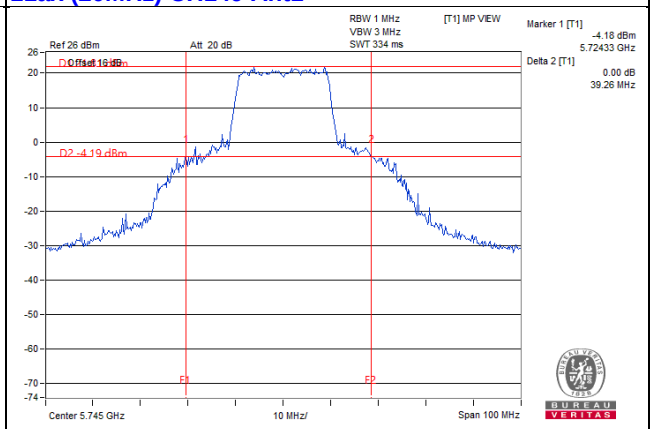
11ax (20MHz) CH40 Ant1



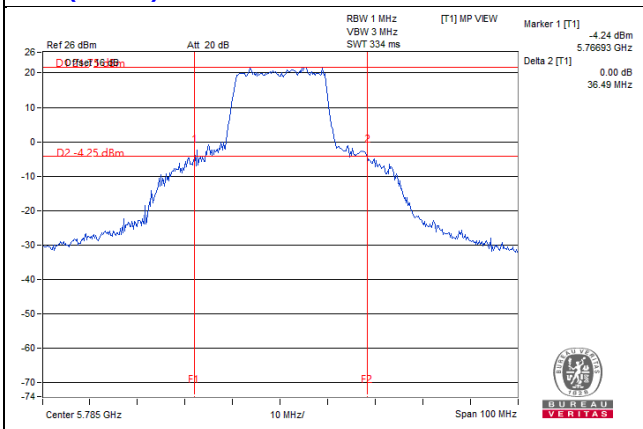
11ax (20MHz) CH48 Ant1



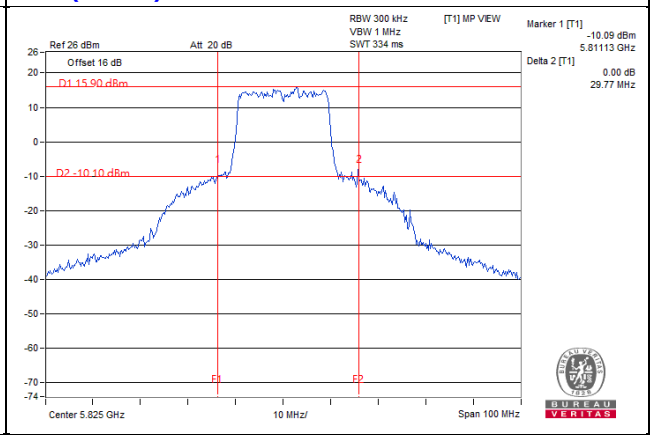
11ax (20MHz) CH149 Ant1



11ax (20MHz) CH157 Ant1

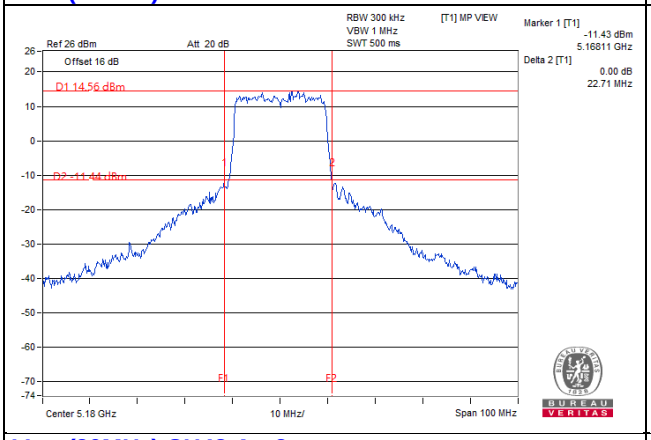


11ax (20MHz) CH165 Ant1

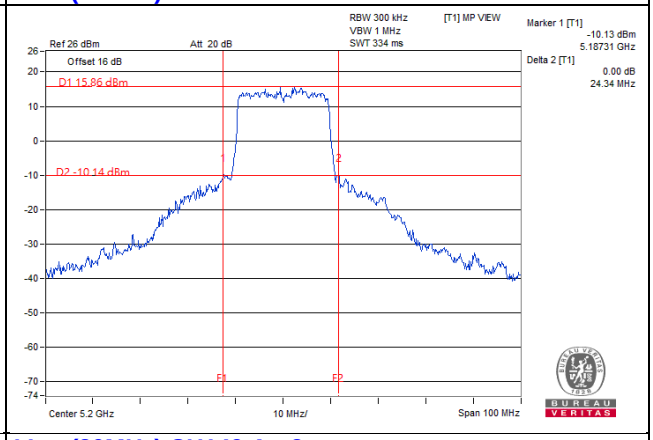


26dB BANDWIDTH SPECTRUM PLOT

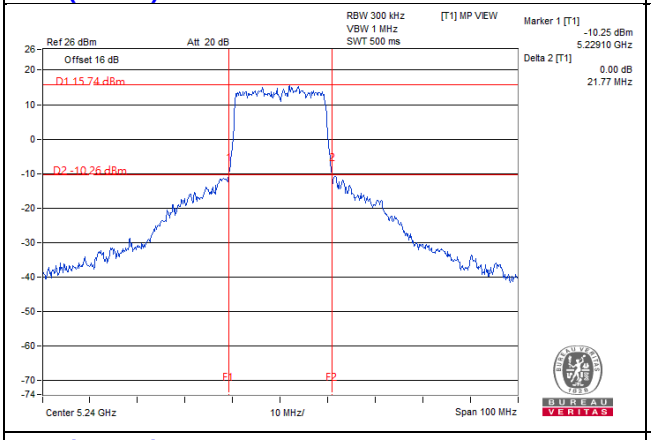
11ax (20MHz) CH36 Ant2



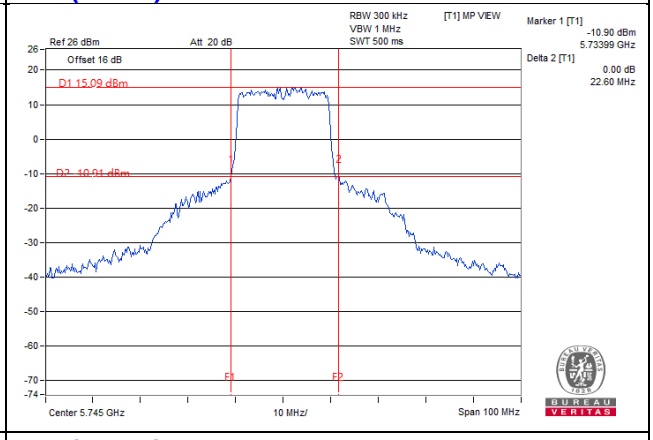
11ax (20MHz) CH40 Ant2



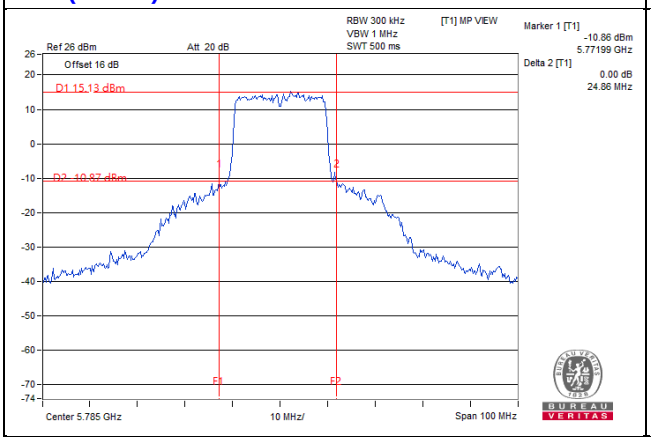
11ax (20MHz) CH48 Ant2



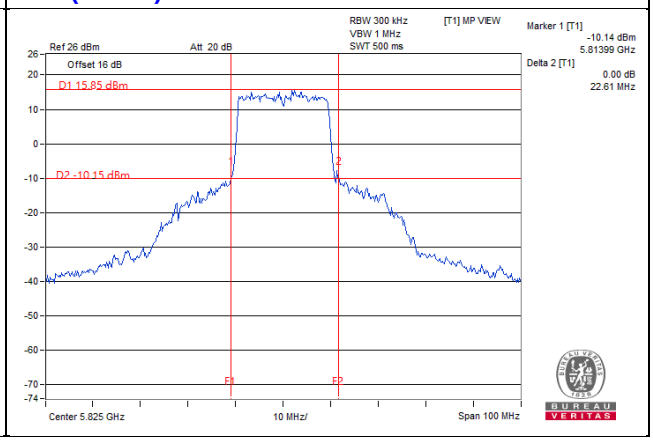
11ax (20MHz) CH149 Ant2



11ax (20MHz) CH157 Ant2

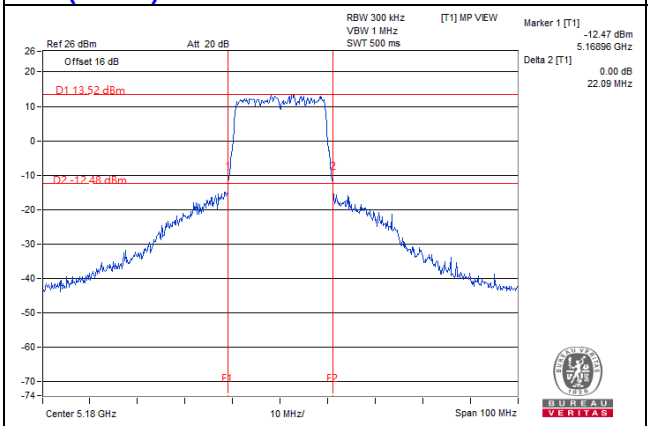


11ax (20MHz) CH165 Ant2

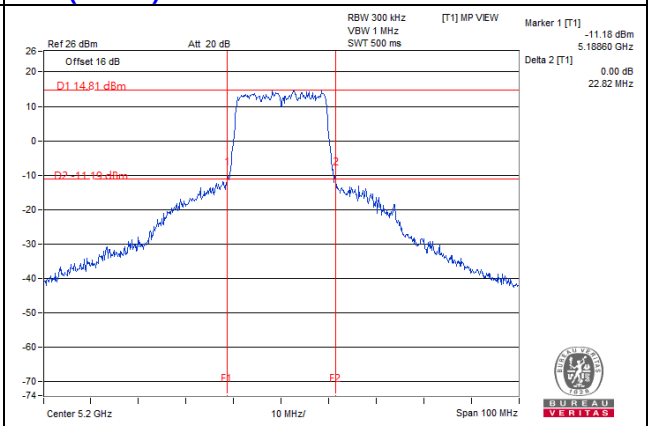


26dB BANDWIDTH SPECTRUM PLOT

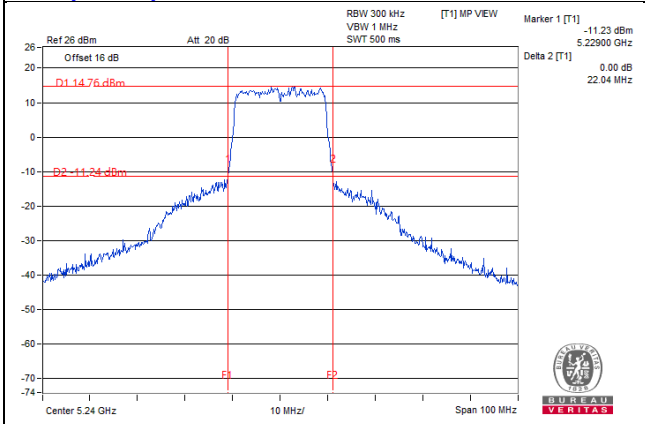
11ax (20MHz) CH36 Ant3



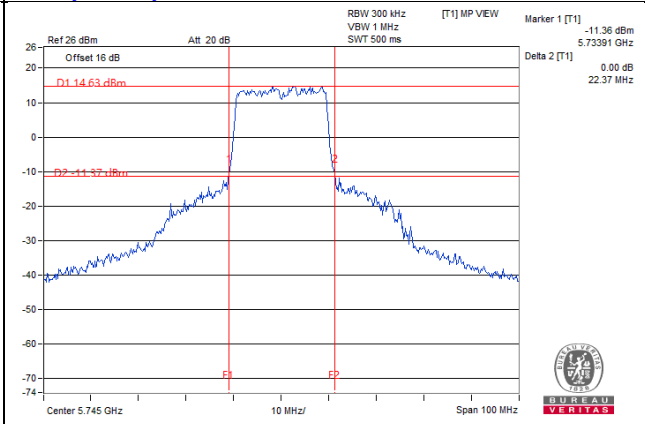
11ax (20MHz) CH40 Ant3



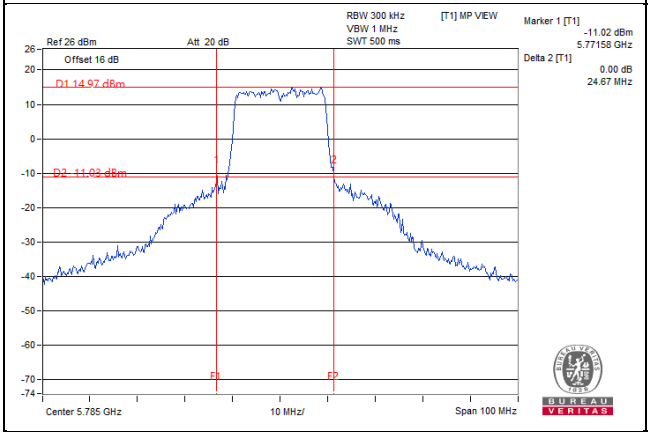
11ax (20MHz) CH48 Ant3



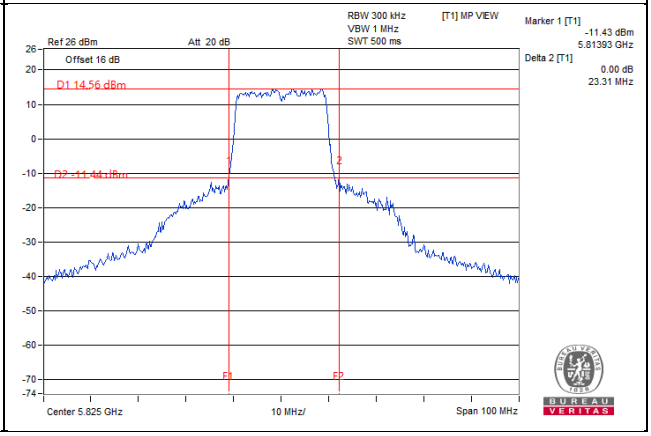
11ax (20MHz) CH149 Ant3



11ax (20MHz) CH157 Ant3

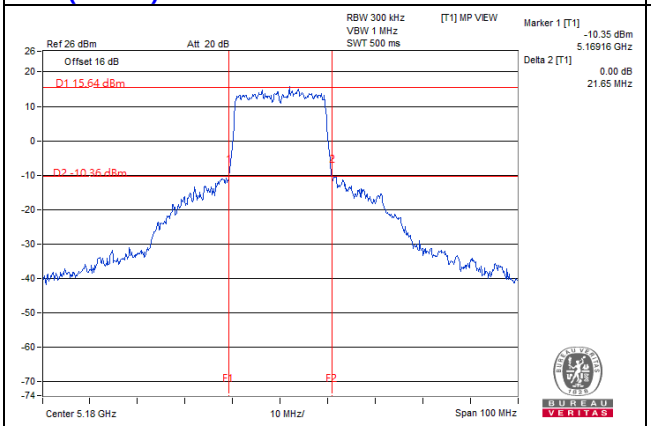


11ax (20MHz) CH165 Ant3

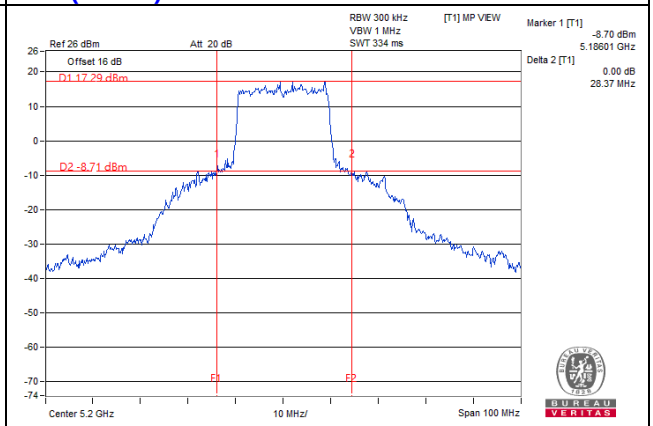


26dB BANDWIDTH SPECTRUM PLOT

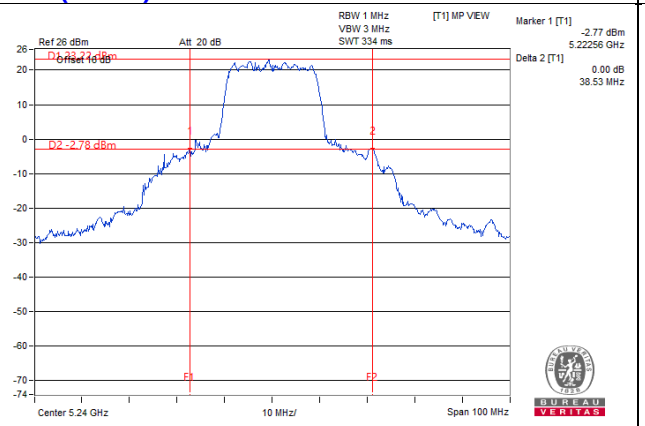
11ax (20MHz) CH36 Ant4



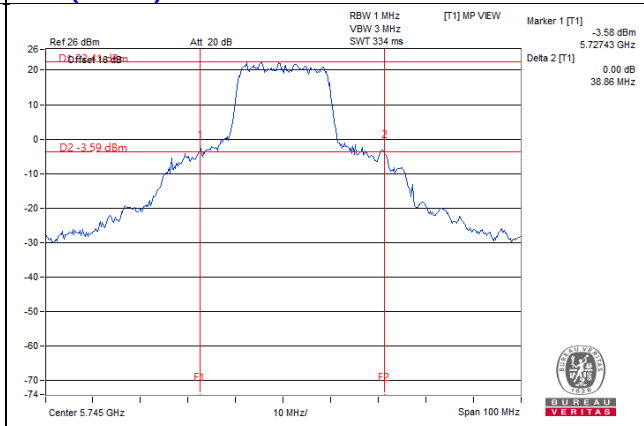
11ax (20MHz) CH40 Ant4



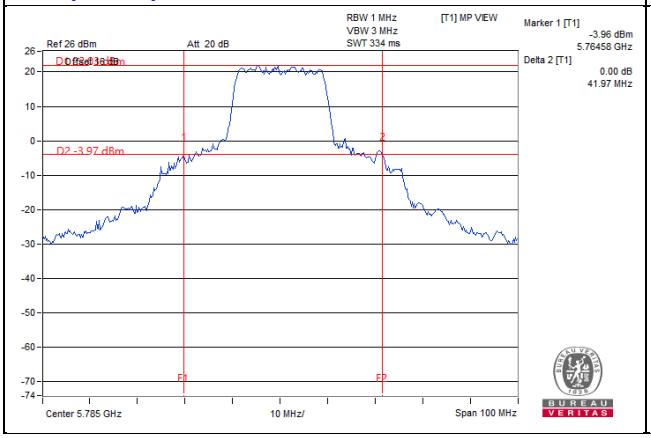
11ax (20MHz) CH48 Ant4



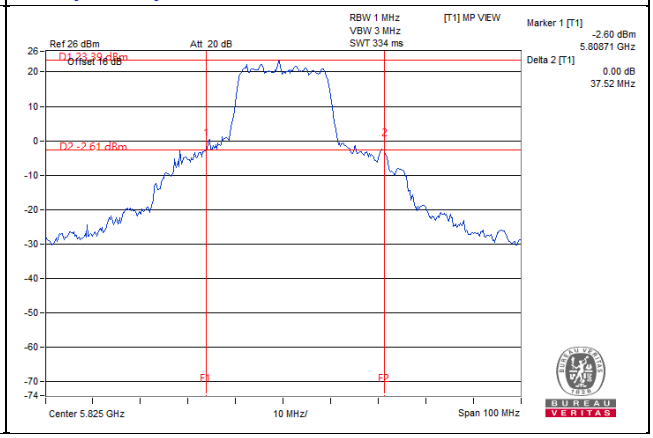
11ax (20MHz) CH149 Ant4



11ax (20MHz) CH157 Ant4

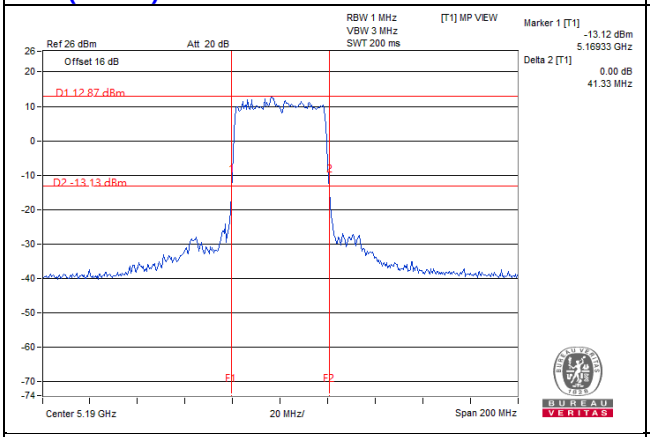


11ax (20MHz) CH165 Ant4

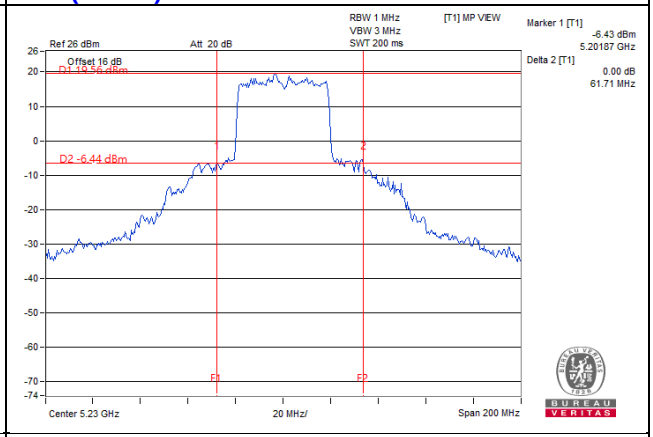


26dB BANDWIDTH SPECTRUM PLOT

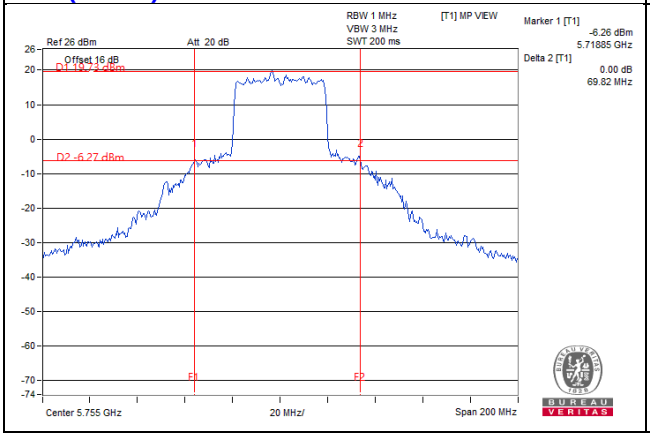
11ax (40MHz) CH38 Ant1



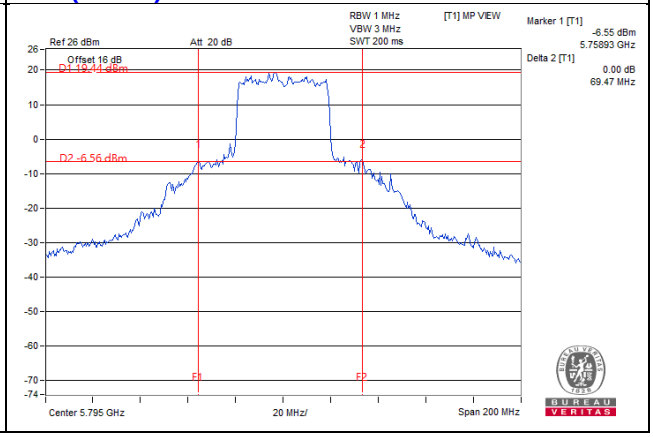
11ax (40MHz) CH46 Ant1



11ax (40MHz) CH151 Ant1

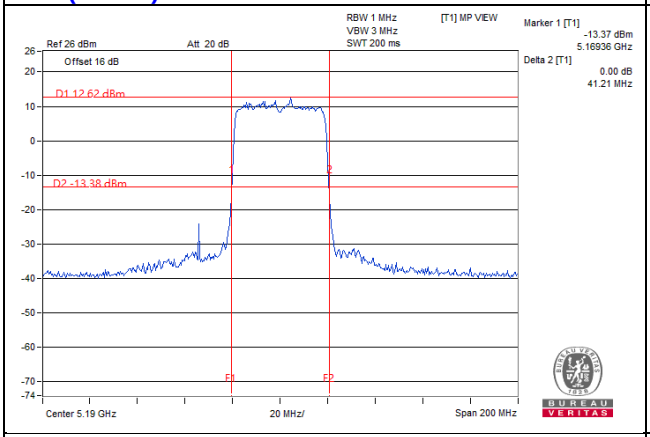


11ax (40MHz) CH159 Ant1

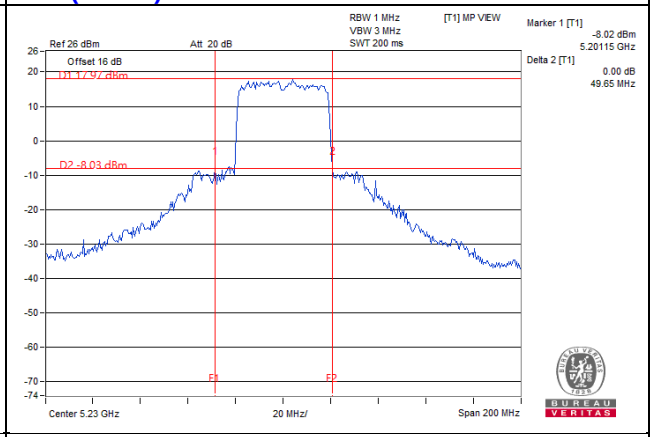


26dB BANDWIDTH SPECTRUM PLOT

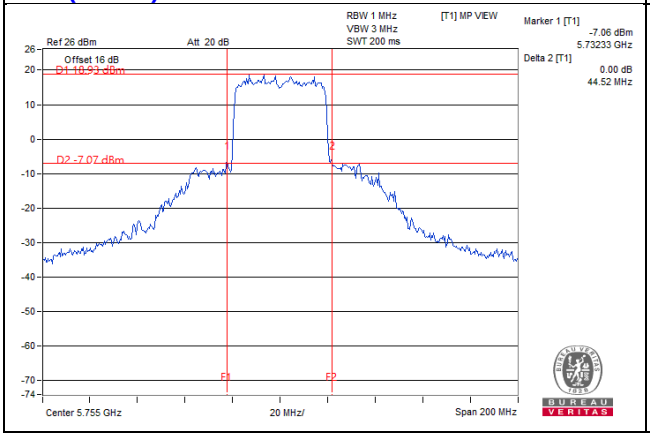
11ax (40MHz) CH38 Ant2



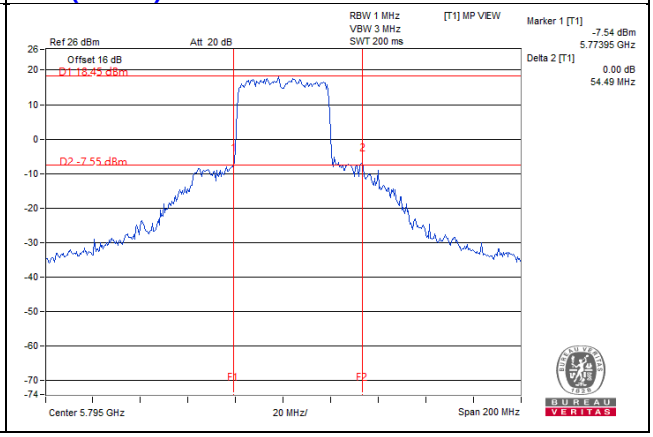
11ax (40MHz) CH46 Ant2



11ax (40MHz) CH151 Ant2

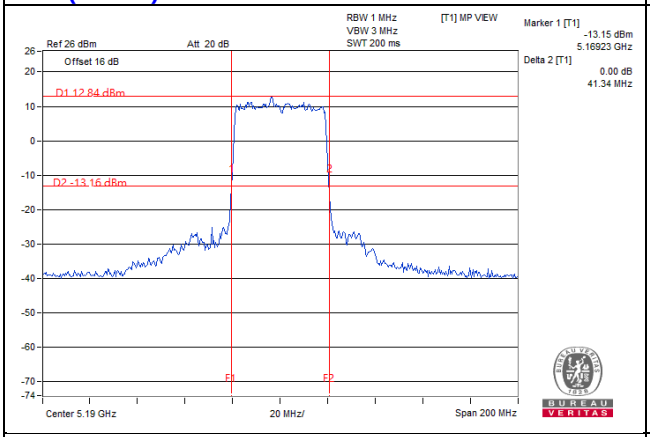


11ax (40MHz) CH159 Ant2

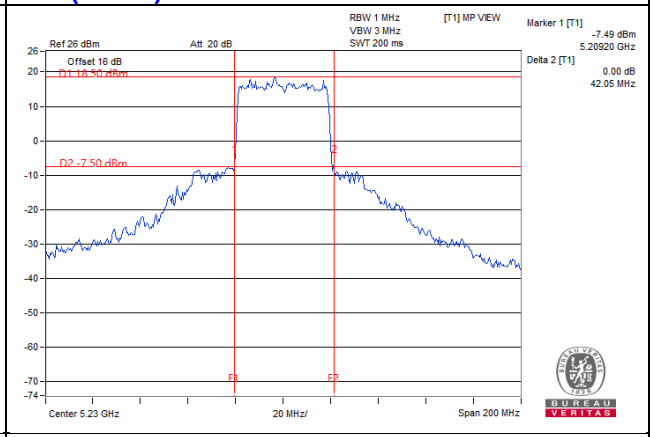


26dB BANDWIDTH SPECTRUM PLOT

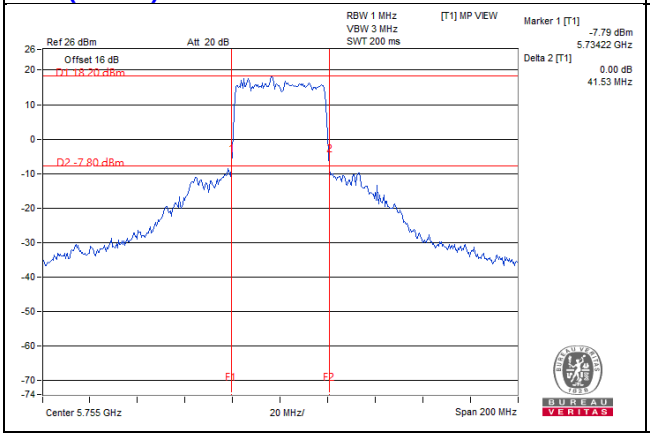
11ax (40MHz) CH38 Ant3



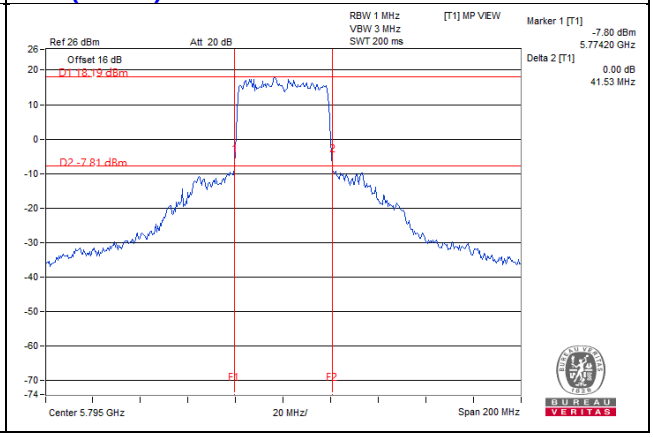
11ax (40MHz) CH46 Ant3



11ax (40MHz) CH151 Ant3

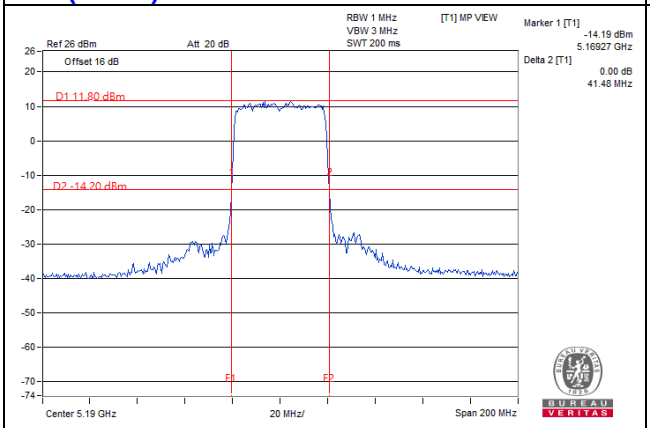


11ax (40MHz) CH159 Ant3

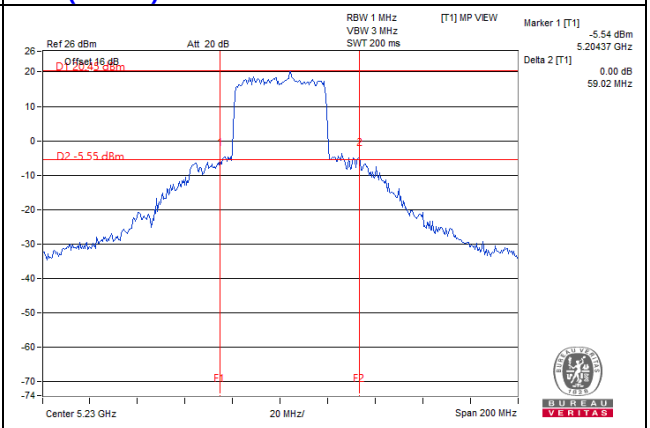


26dB BANDWIDTH SPECTRUM PLOT

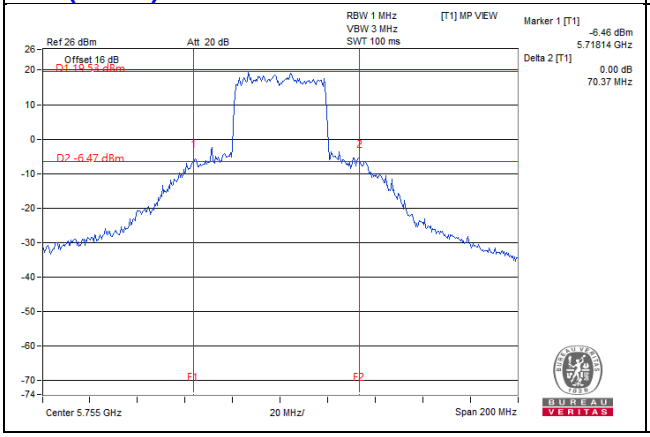
11ax (40MHz) CH38 Ant4



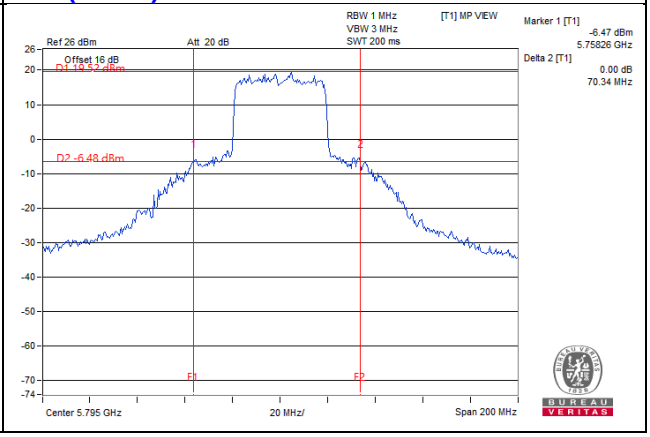
11ax (40MHz) CH46 Ant4



11ax (40MHz) CH151 Ant4

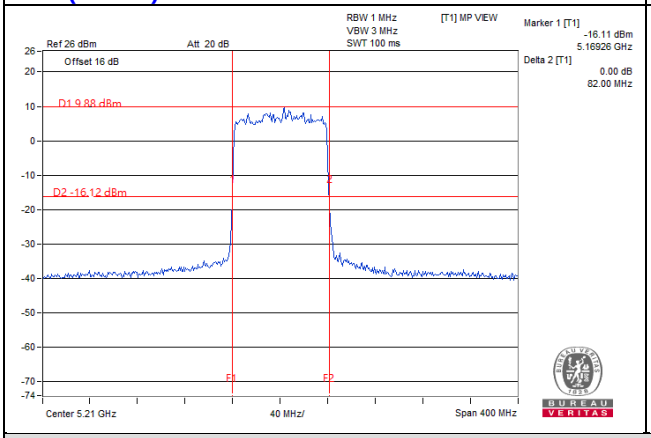


11ax (40MHz) CH159 Ant4

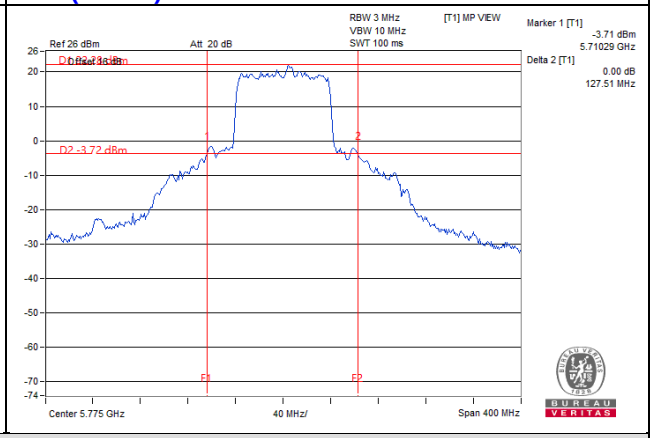


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant1

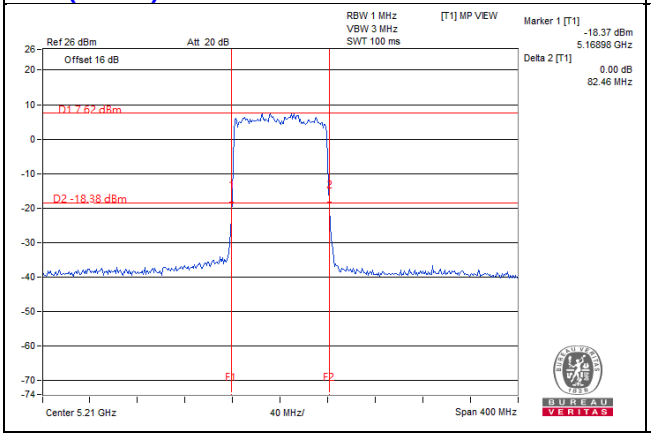


11ax (80MHz) CH155 Ant1

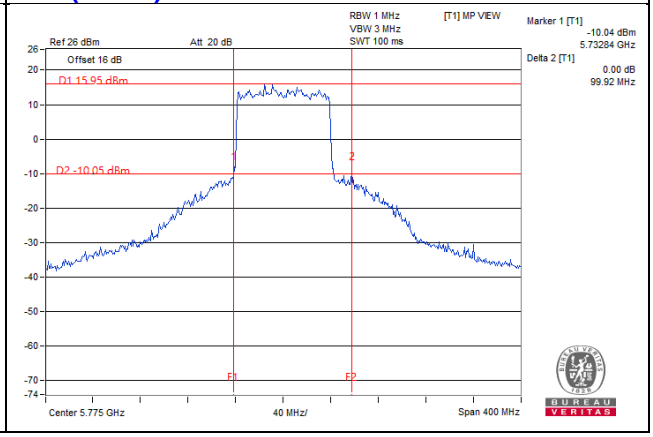


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant2

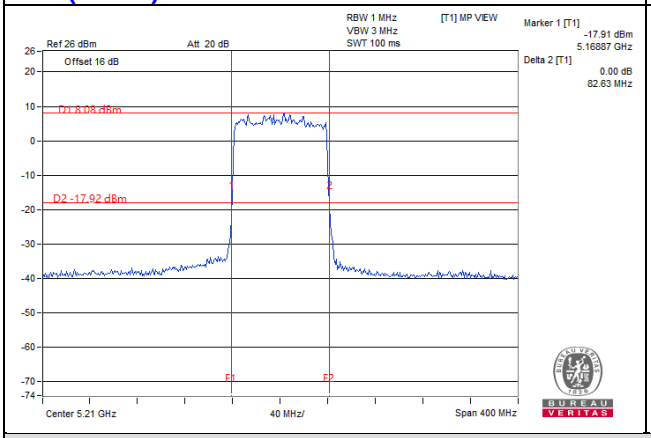


11ax (80MHz) CH155 Ant2

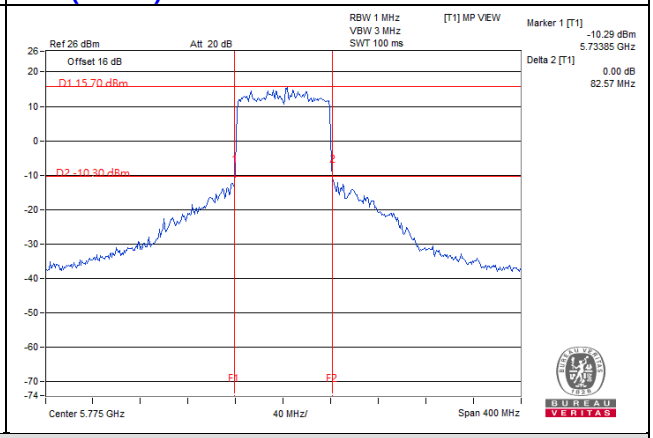


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant3

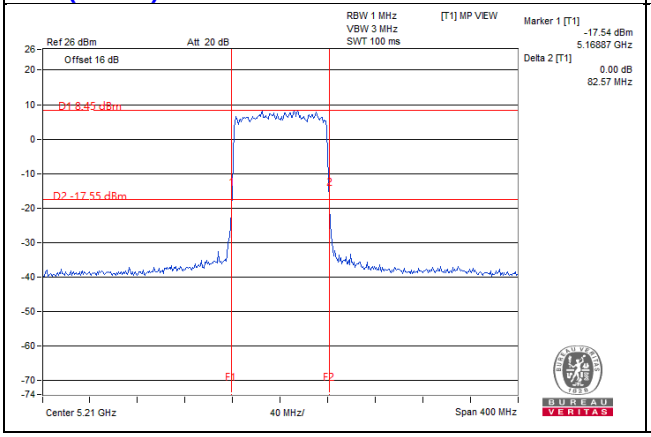


11ax (80MHz) CH155 Ant3

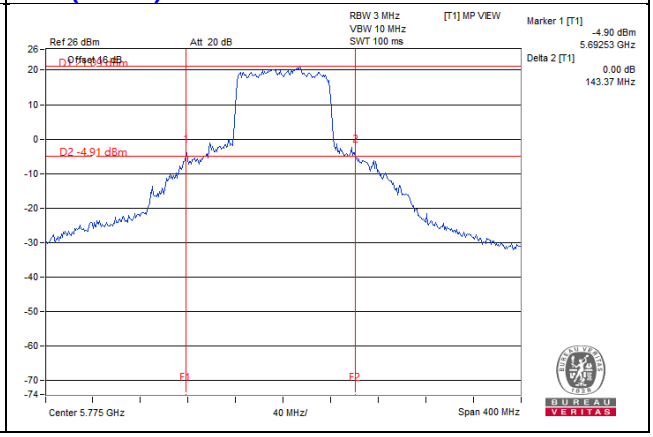


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant4



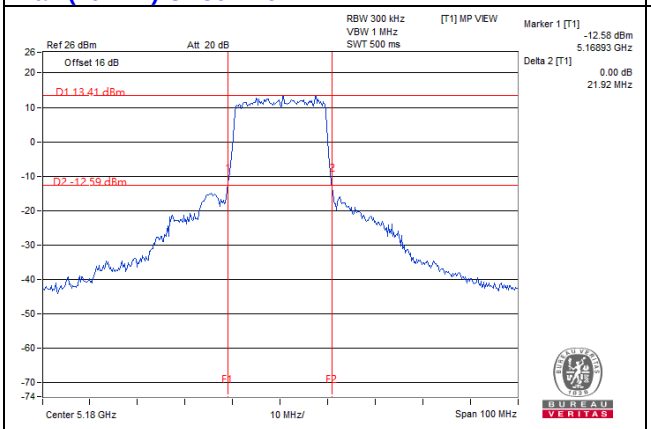
11ax (80MHz) CH155 Ant4



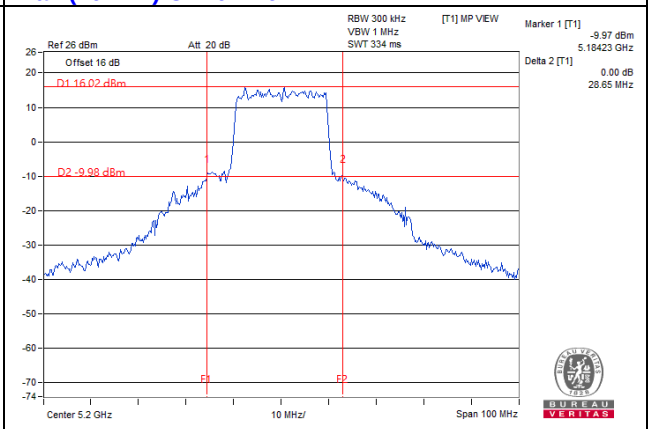
3S4T TxBF

26dB BANDWIDTH SPECTRUM PLOT

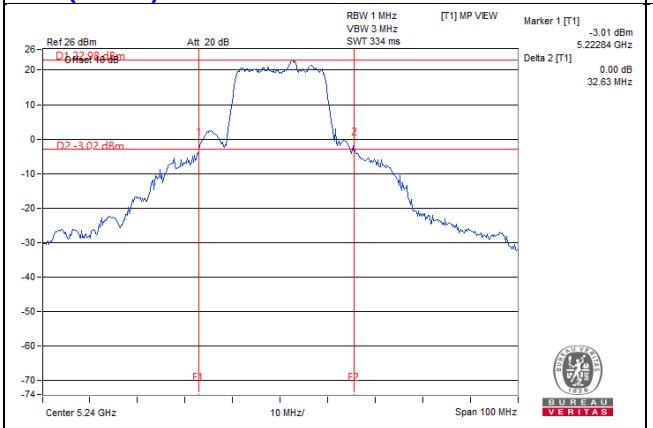
11ax (20MHz) CH36 Ant1



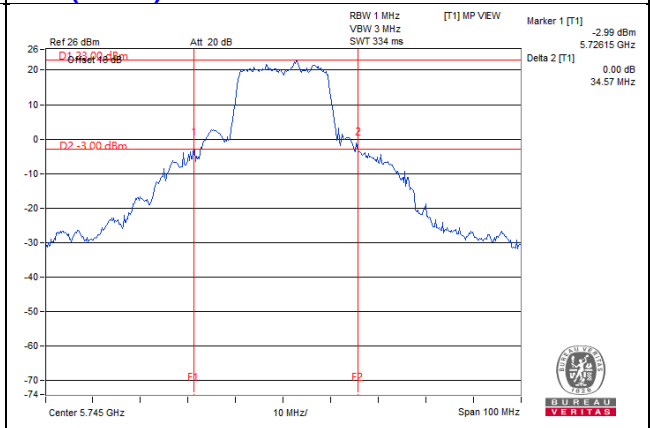
11ax (20MHz) CH40 Ant1



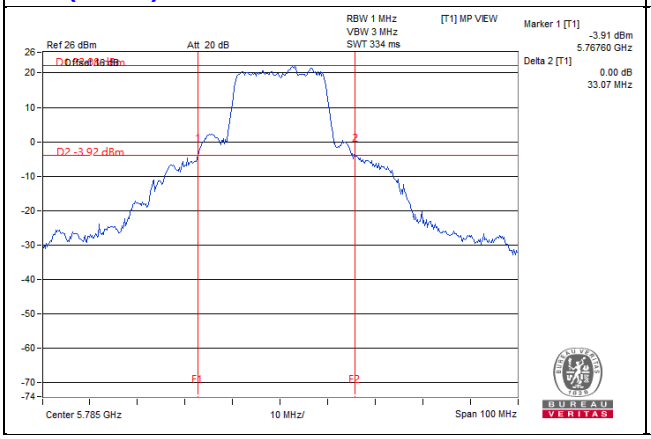
11ax (20MHz) CH48 Ant1



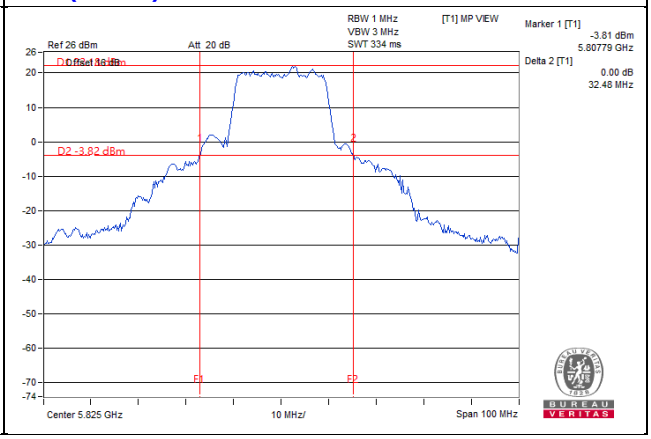
11ax (20MHz) CH149 Ant1



11ax (20MHz) CH157 Ant1

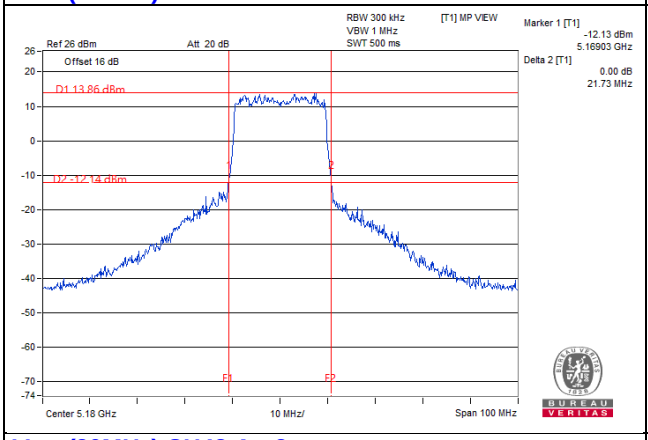


11ax (20MHz) CH165 Ant1

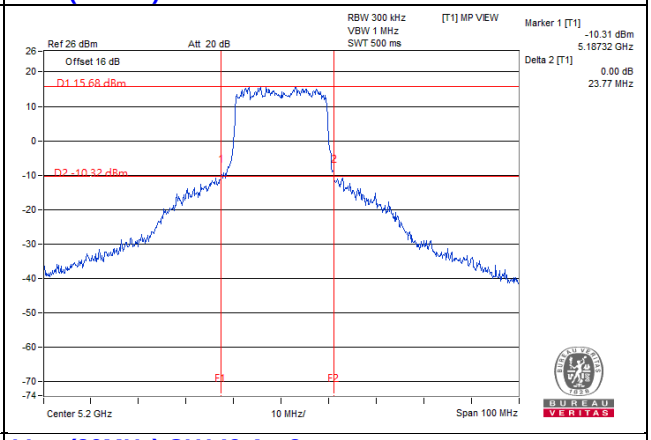


26dB BANDWIDTH SPECTRUM PLOT

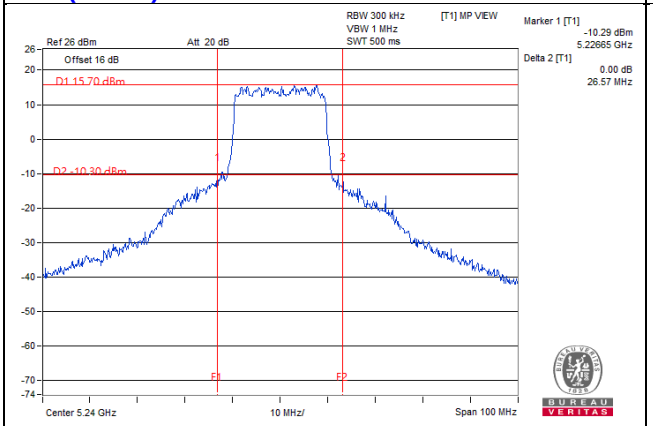
11ax (20MHz) CH36 Ant2



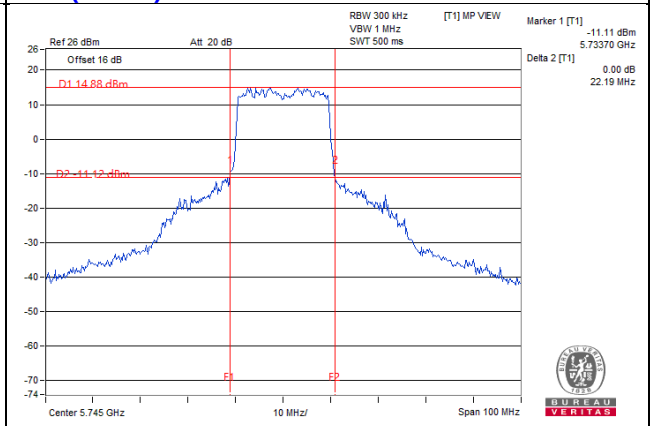
11ax (20MHz) CH40 Ant2



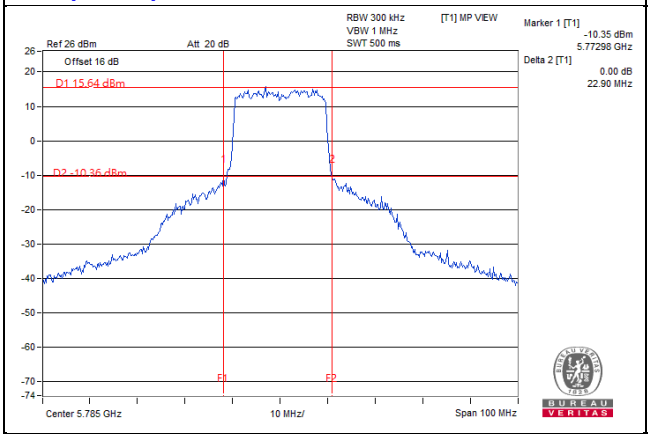
11ax (20MHz) CH48 Ant2



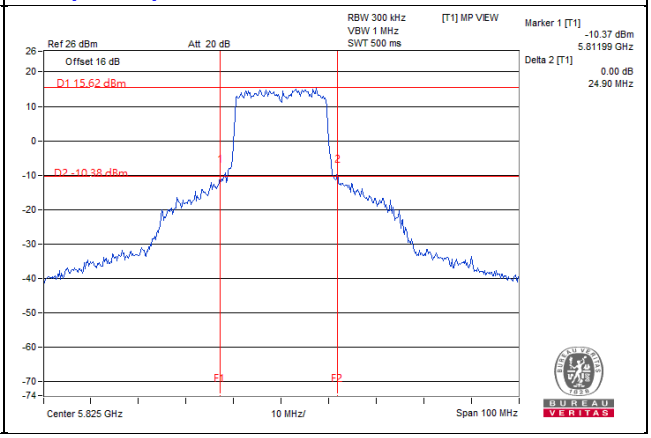
11ax (20MHz) CH149 Ant2



11ax (20MHz) CH157 Ant2

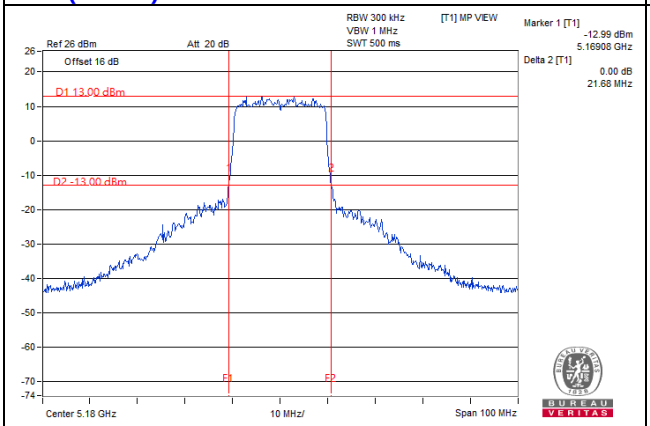


11ax (20MHz) CH165 Ant2

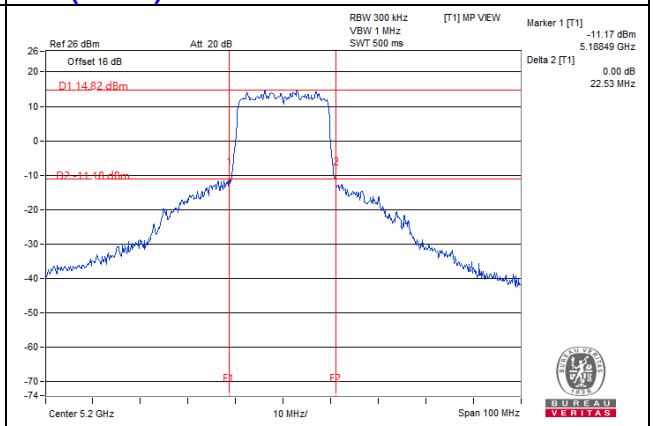


26dB BANDWIDTH SPECTRUM PLOT

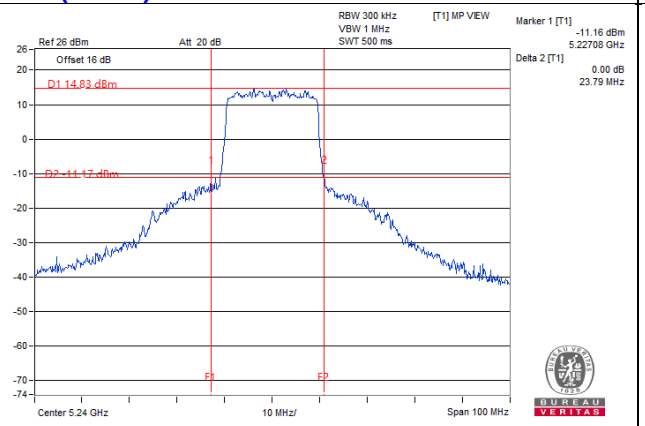
11ax (20MHz) CH36 Ant3



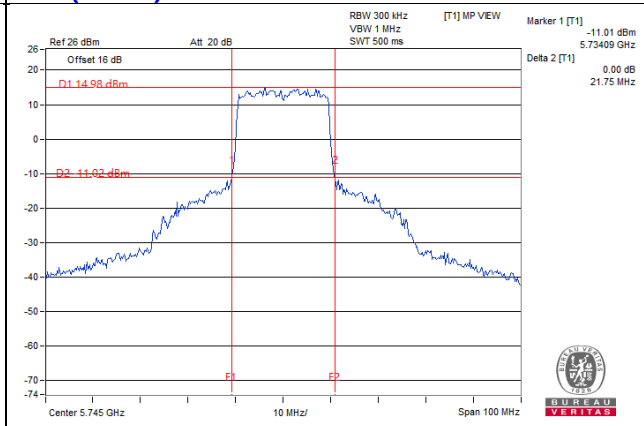
11ax (20MHz) CH40 Ant3



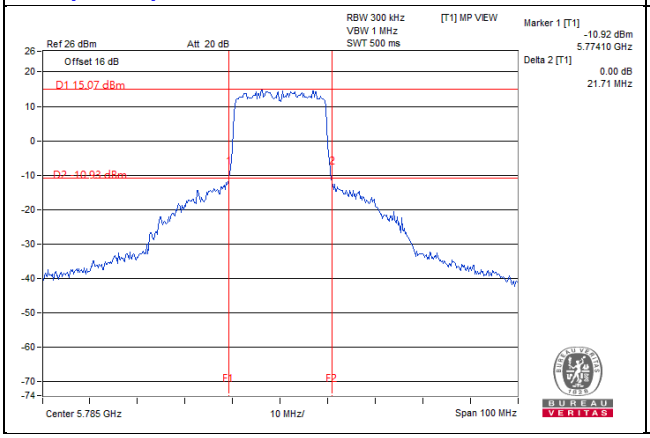
11ax (20MHz) CH48 Ant3



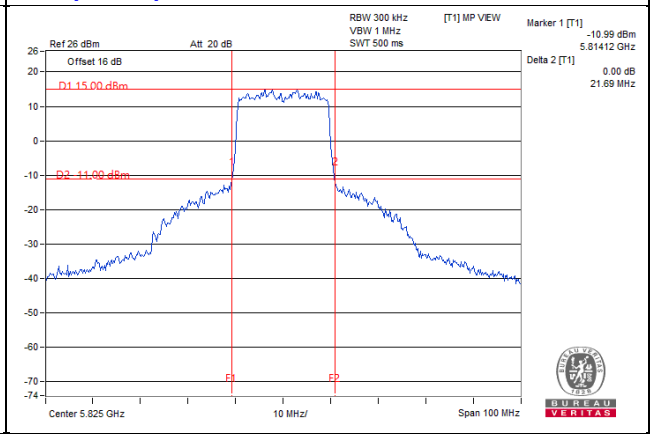
11ax (20MHz) CH149 Ant3



11ax (20MHz) CH157 Ant3

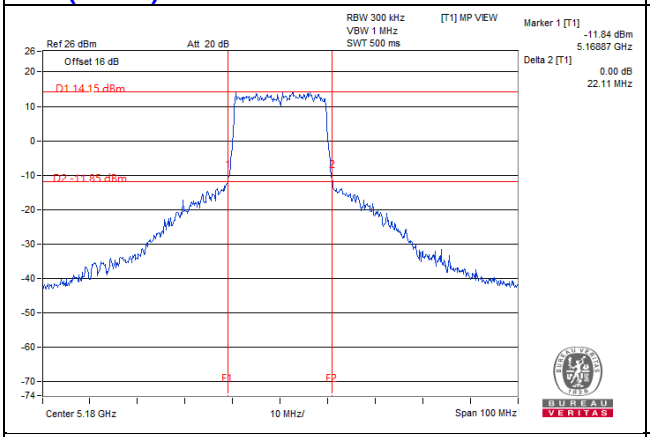


11ax (20MHz) CH165 Ant3

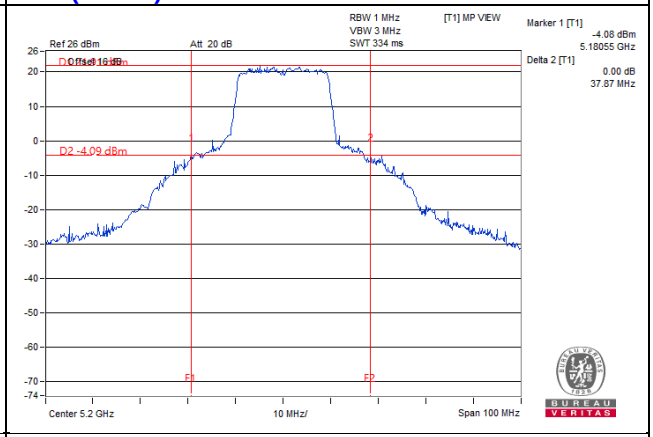


26dB BANDWIDTH SPECTRUM PLOT

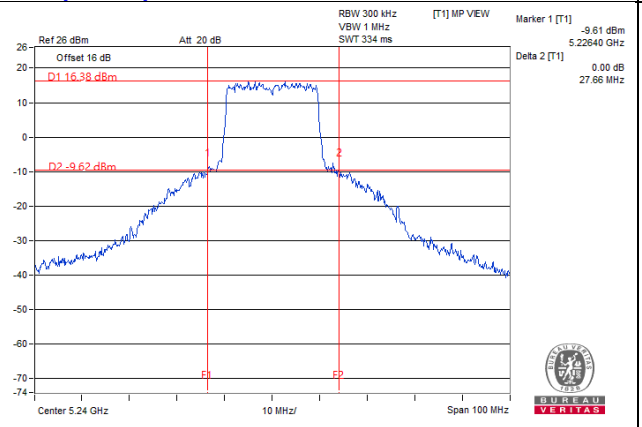
11ax (20MHz) CH36 Ant4



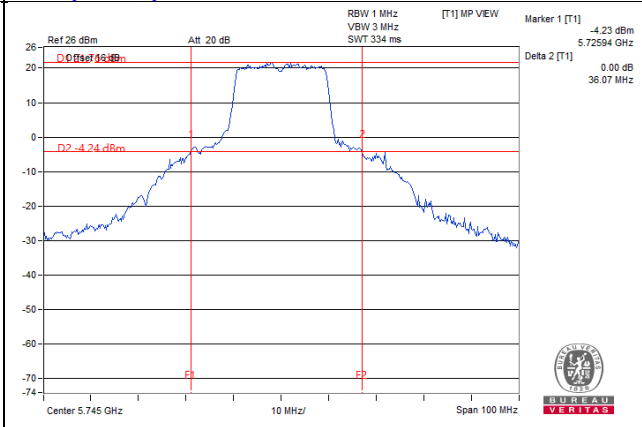
11ax (20MHz) CH40 Ant4



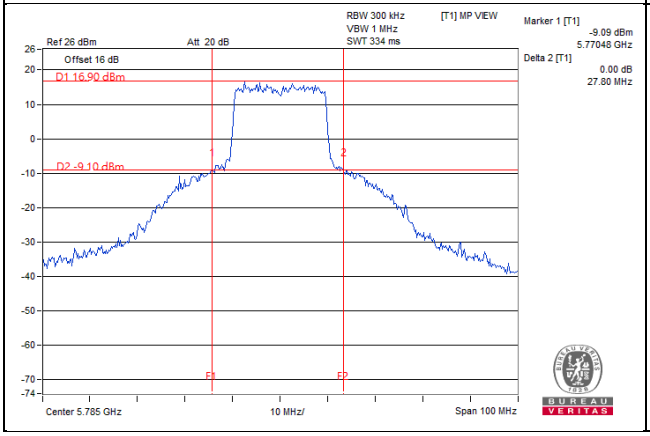
11ax (20MHz) CH48 Ant4



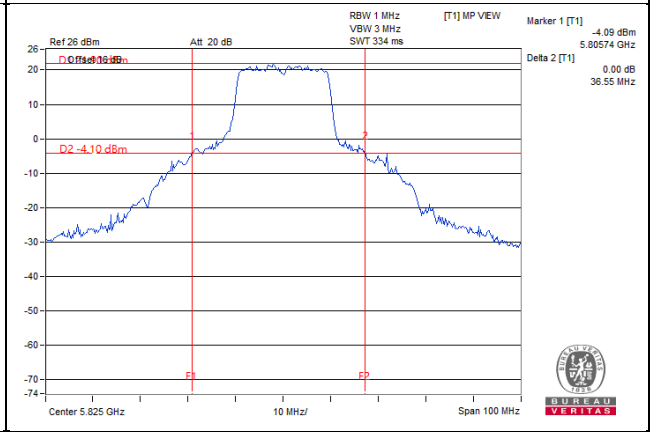
11ax (20MHz) CH149 Ant4



11ax (20MHz) CH157 Ant4

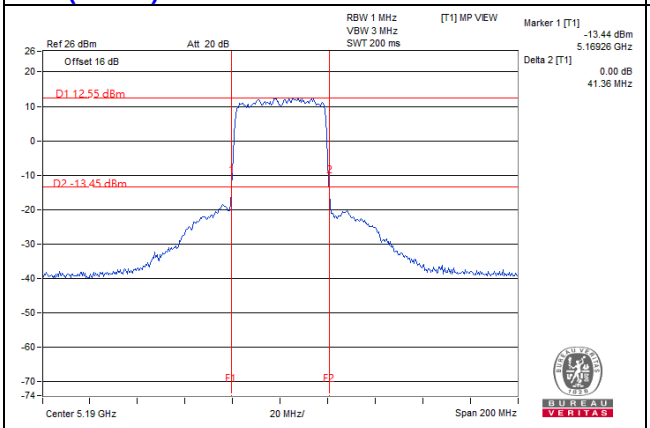


11ax (20MHz) CH165 Ant4

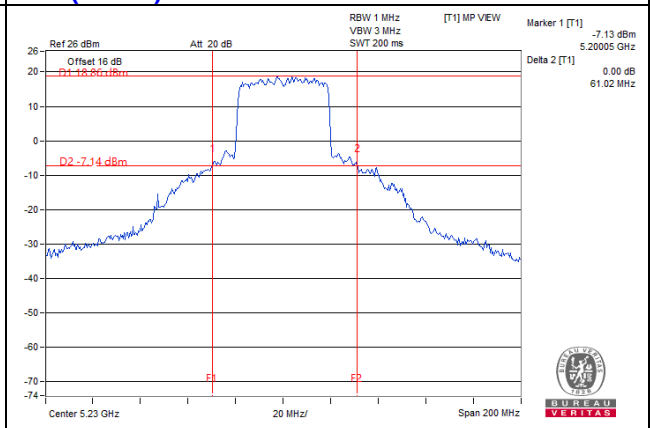


26dB BANDWIDTH SPECTRUM PLOT

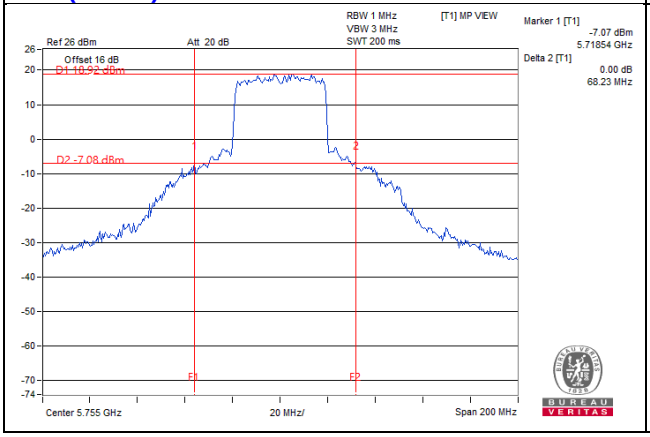
11ax (40MHz) CH38 Ant1



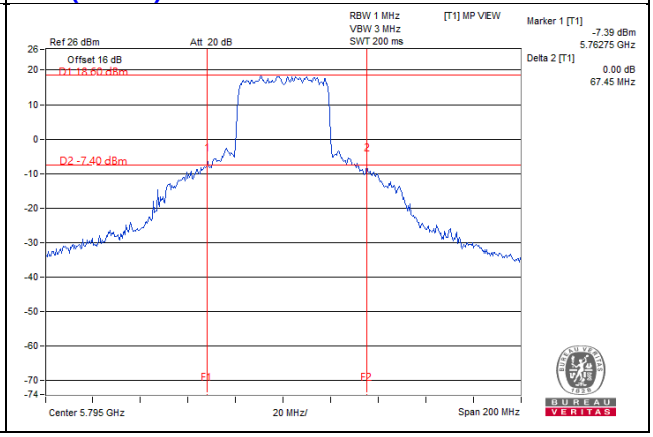
11ax (40MHz) CH46 Ant1



11ax (40MHz) CH151 Ant1

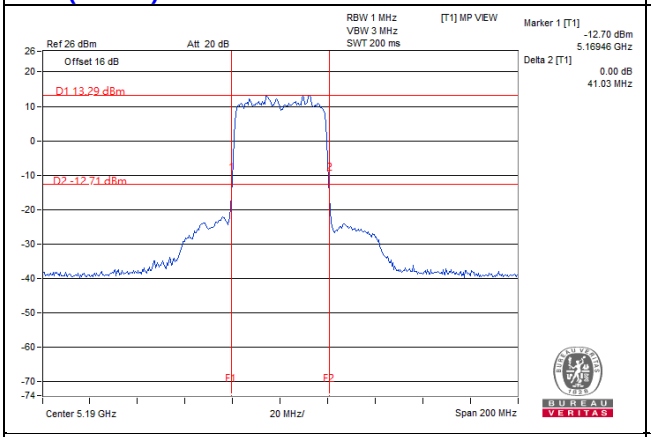


11ax (40MHz) CH159 Ant1

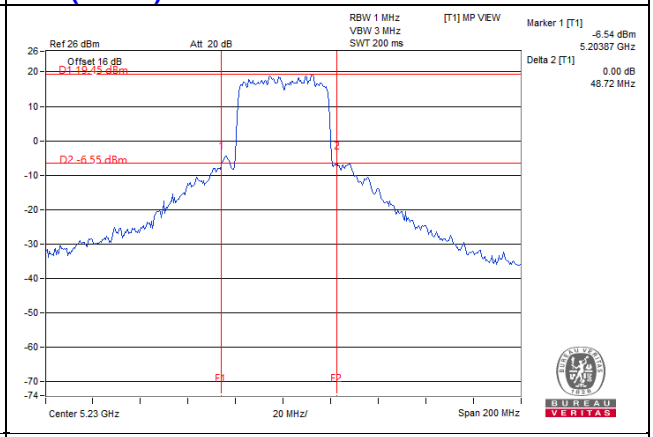


26dB BANDWIDTH SPECTRUM PLOT

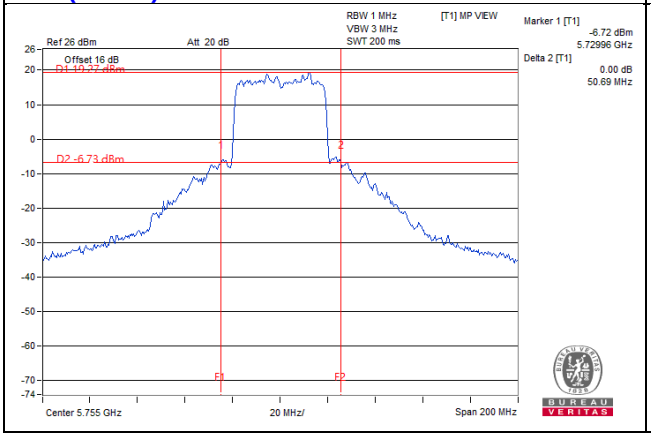
11ax (40MHz) CH38 Ant2



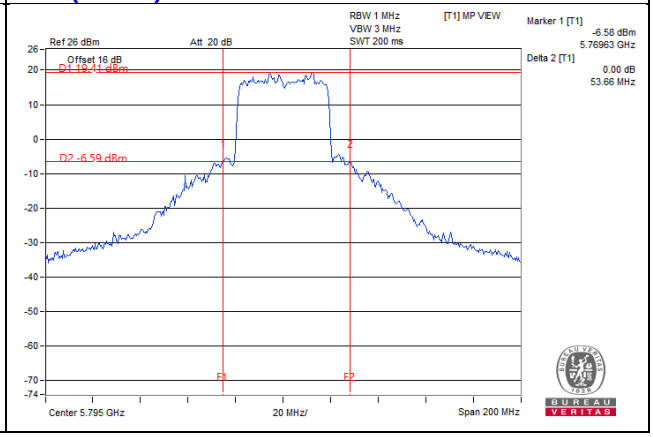
11ax (40MHz) CH46 Ant2



11ax (40MHz) CH151 Ant2

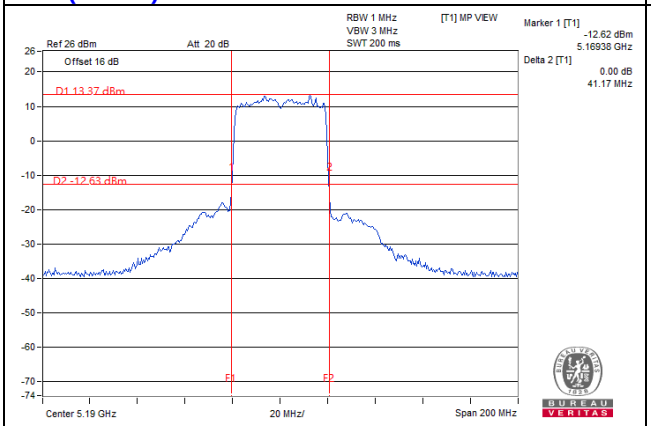


11ax (40MHz) CH159 Ant2

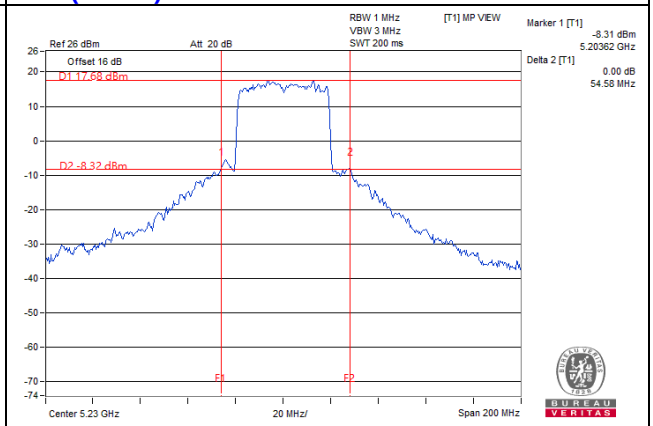


26dB BANDWIDTH SPECTRUM PLOT

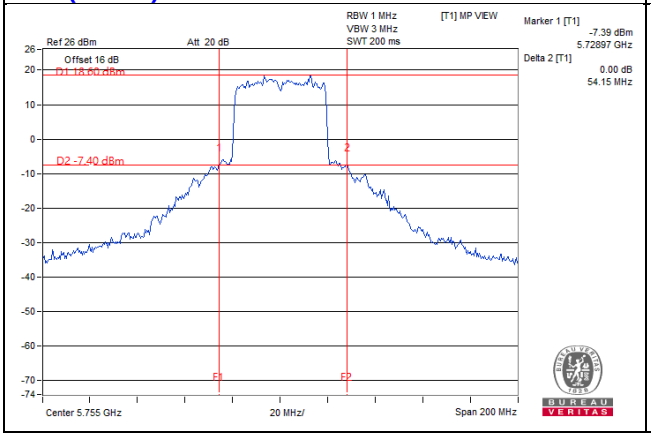
11ax (40MHz) CH38 Ant3



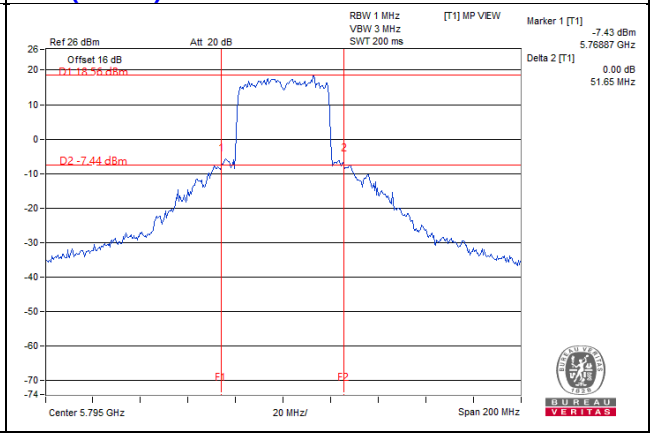
11ax (40MHz) CH46 Ant3



11ax (40MHz) CH151 Ant3

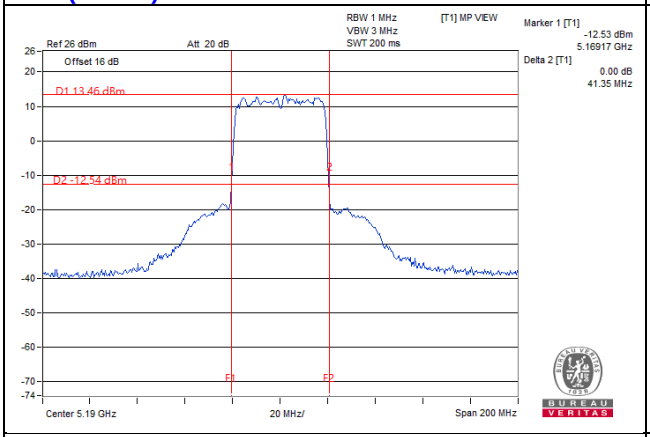


11ax (40MHz) CH159 Ant3

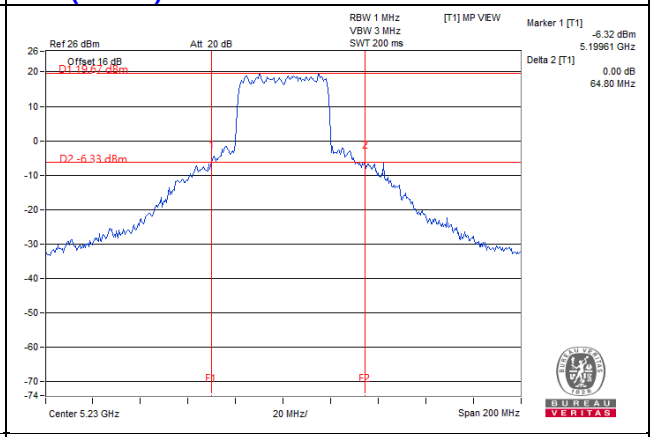


26dB BANDWIDTH SPECTRUM PLOT

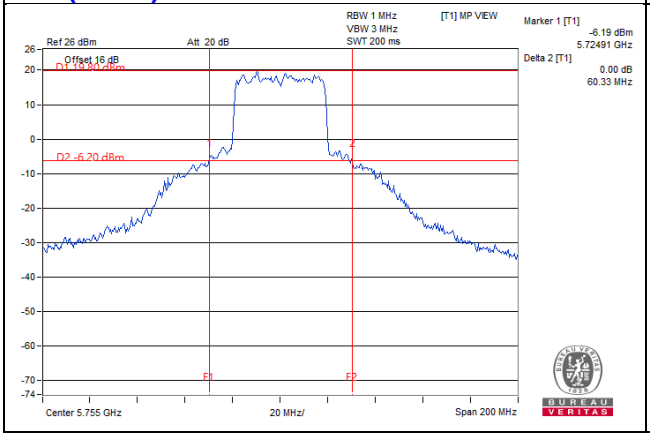
11ax (40MHz) CH38 Ant4



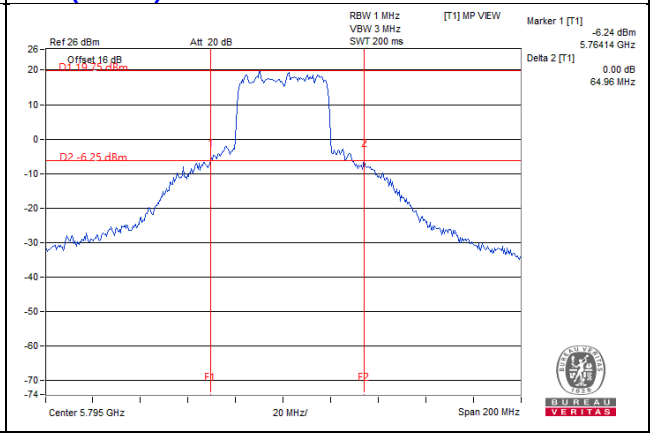
11ax (40MHz) CH46 Ant4



11ax (40MHz) CH151 Ant4

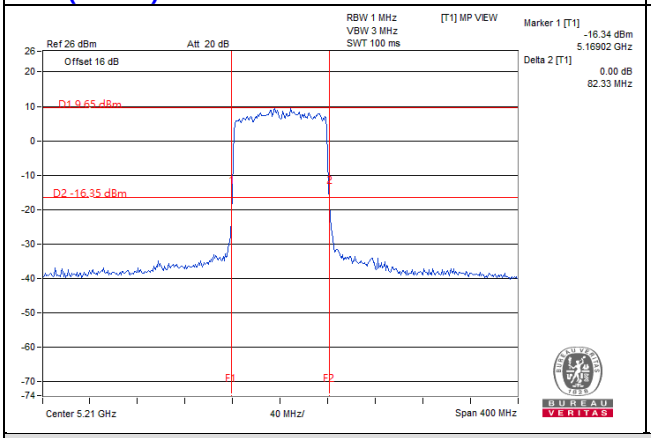


11ax (40MHz) CH159 Ant4

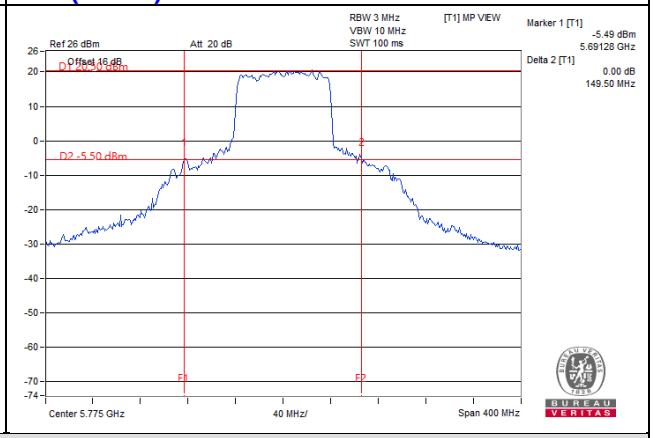


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant1

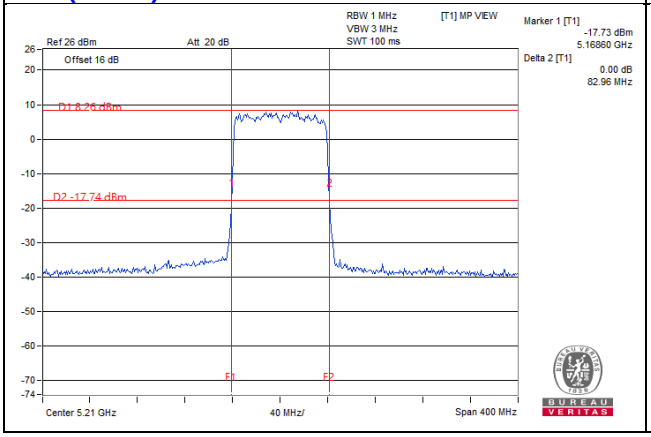


11ax (80MHz) CH155 Ant1

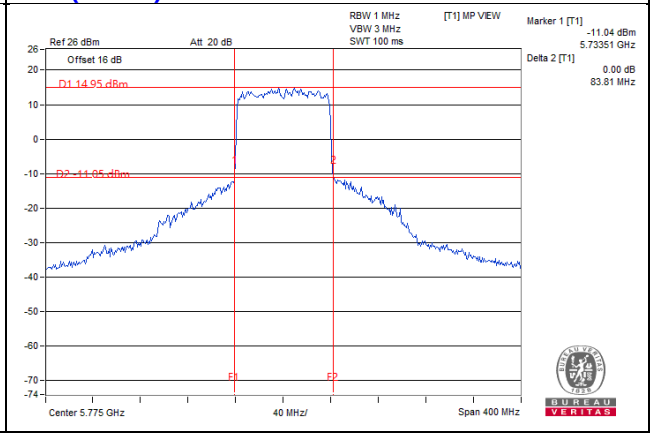


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant2

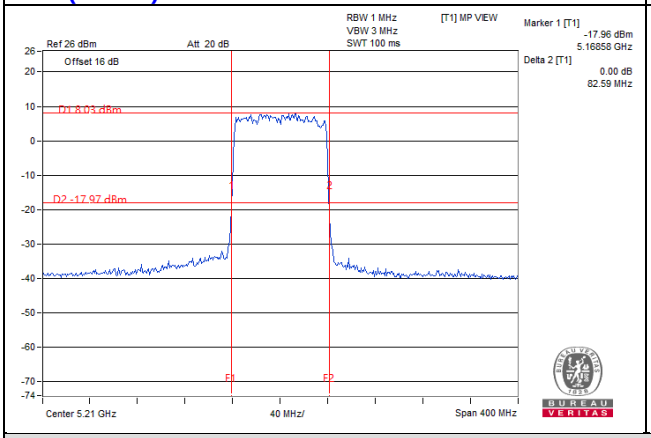


11ax (80MHz) CH155 Ant2

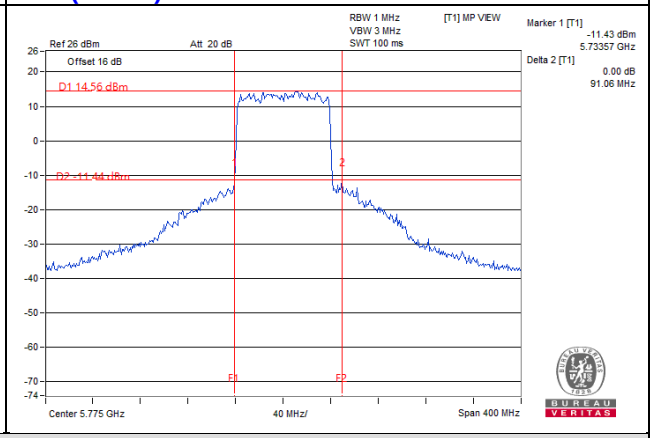


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant3

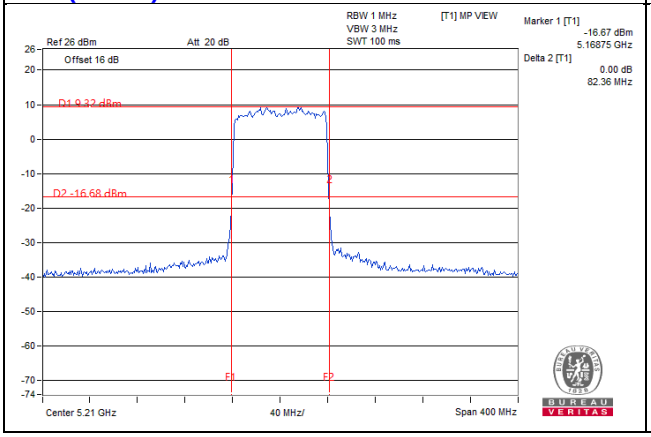


11ax (80MHz) CH155 Ant3

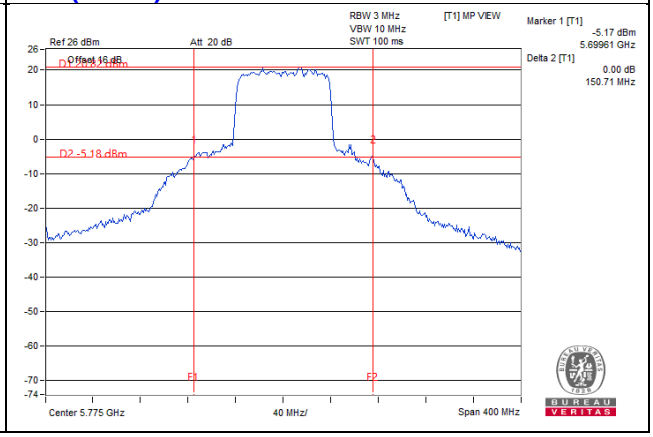


26dB BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant4



11ax (80MHz) CH155 Ant4



1S4T CDD

11ax (20MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
36	5180	19.08	19.14	19.22	19.3
40	5200	19.32	19.22	19.22	19.48
48	5240	19.32	19.22	19.3	19.57
149	5745	19.44	19.2	19.2	19.56
157	5785	19.44	19.2	19.2	19.68
165	5825	19.44	19.2	19.32	19.68

11ax (40MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
38	5190	37.92	37.68	37.92	37.92
46	5230	38.16	38.16	38.16	38.4
151	5755	38.4	38.16	38.16	38.4
159	5795	38.16	37.92	38.16	38.16

11ax (80MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
42	5210	76.8	77.28	77.28	76.8
155	5775	77.76	77.28	77.76	77.76

1S4T TxBF

11ax (20MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
36	5180	19.2	19.22	19.22	19.3
40	5200	19.32	19.22	19.3	19.48
48	5240	19.44	19.22	19.22	19.39
149	5745	19.32	19.2	19.2	19.44
157	5785	19.32	19.2	19.32	19.56
165	5825	19.32	19.2	19.44	19.44

11ax (40MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
38	5190	37.92	37.68	37.91	37.68
46	5230	38.16	38.16	38.26	38.4
151	5755	38.16	38.16	37.92	38.16
159	5795	38.16	38.16	38.16	38.4

11ax (80MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
42	5210	77.28	77.28	77.28	76.8
155	5775	77.76	77.28	77.76	77.76

2S4T TxBF

11ax (20MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
36	5180	19.08	19.22	19.22	19.22
40	5200	19.32	19.22	19.22	19.3
48	5240	19.32	19.14	19.22	19.3
149	5745	19.32	19.2	19.2	19.44
157	5785	19.32	19.2	19.2	19.44
165	5825	19.2	19.2	19.2	19.32

11ax (40MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
38	5190	37.92	37.68	37.92	37.68
46	5230	38.16	38.16	38.16	38.4
151	5755	38.4	38.16	38.16	38.16
159	5795	38.4	38.16	38.16	38.4

11ax (80MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
42	5210	76.8	77.28	77.28	76.8
155	5775	77.76	77.76	77.28	77.76

3S4T TxBF

11ax (20MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
36	5180	19.32	19.13	19.13	19.22
40	5200	19.32	19.13	19.13	19.39
48	5240	19.32	19.13	19.13	19.39
149	5745	19.56	19.08	19.2	19.44
157	5785	19.32	19.2	19.2	19.56
165	5825	19.32	19.2	19.2	19.32

11ax (40MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
38	5190	37.92	37.68	37.92	37.68
46	5230	38.16	37.92	38.16	38.16
151	5755	38.16	37.92	38.16	38.4
159	5795	38.16	37.92	38.16	38.4

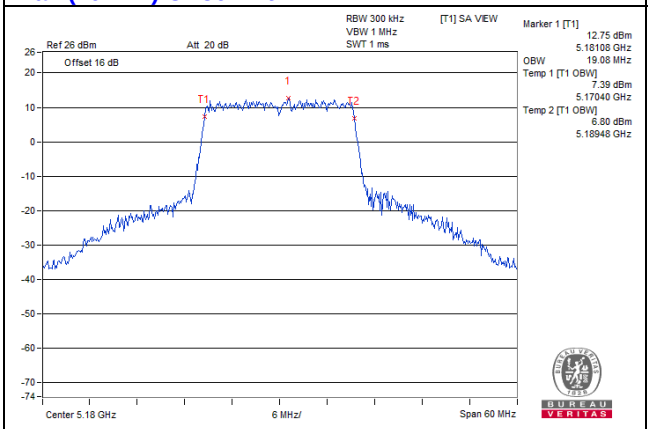
11ax (80MHz)

CHANNEL	FREQUENCY (MHz)	99% Occupied Bandwidth (MHz)			
		ANT 1	ANT 2	ANT 3	ANT 4
42	5210	76.8	77.28	76.8	77.28
155	5775	77.28	77.28	76.8	77.76

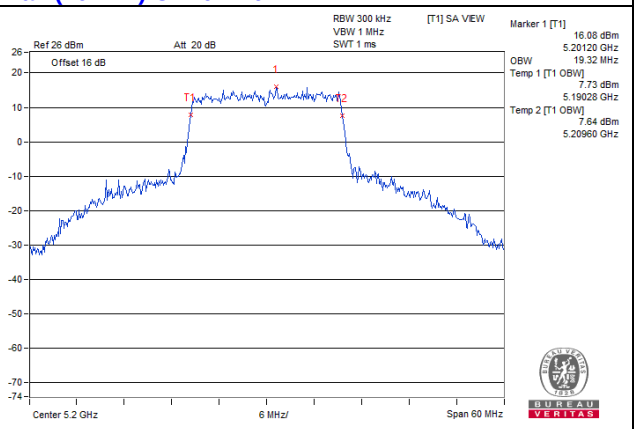
1S4T CDD

99% OCCUPIED BANDWIDTH SPECTRUM PLOT

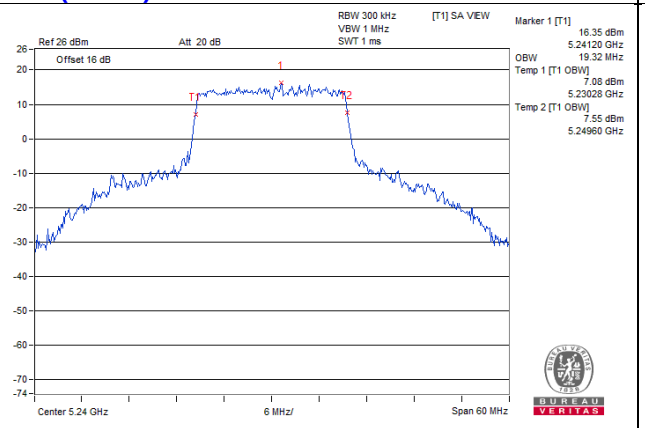
11ax (20MHz) CH36 Ant1



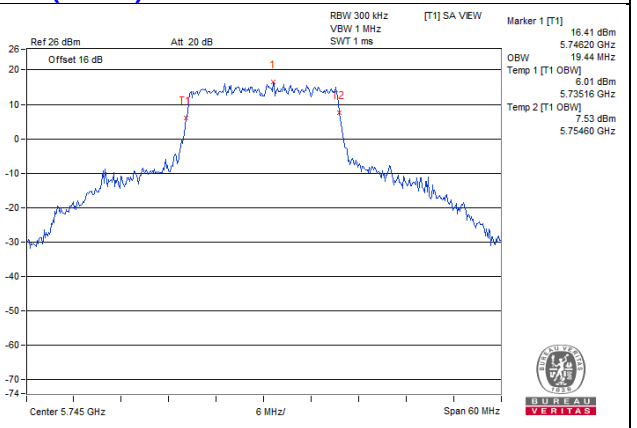
11ax (20MHz) CH40 Ant1



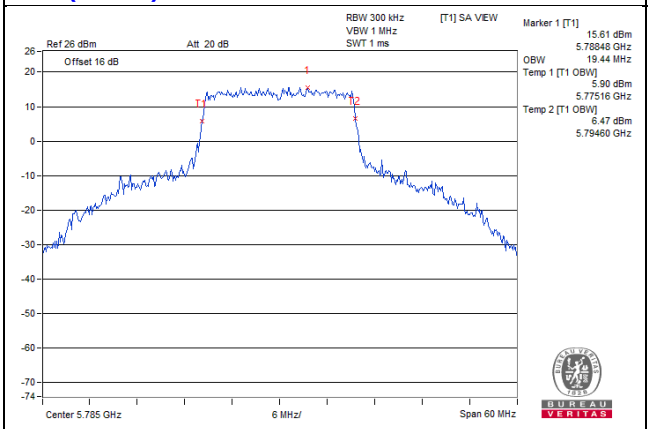
11ax (20MHz) CH48 Ant1



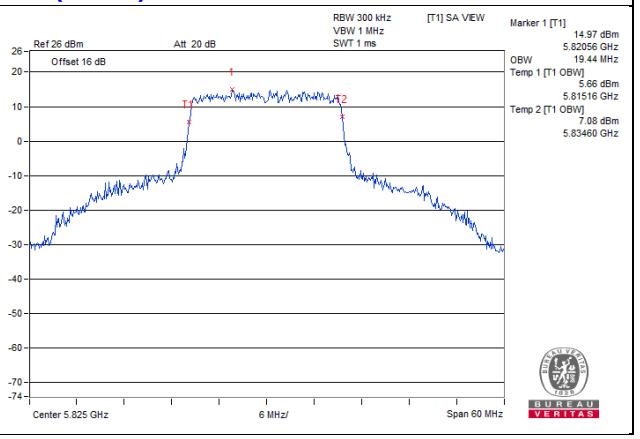
11ax (20MHz) CH149 Ant1



11ax (20MHz) CH157 Ant1

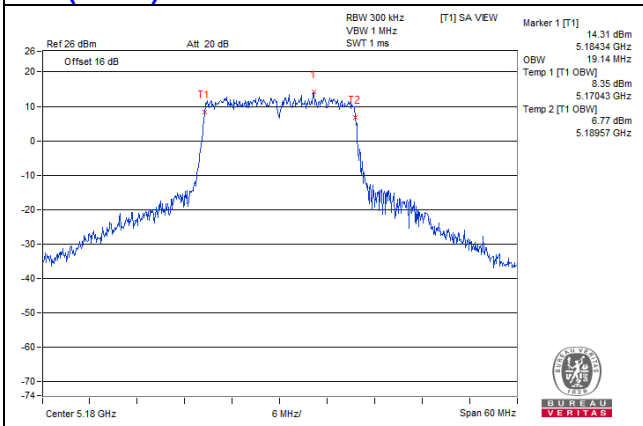


11ax (20MHz) CH165 Ant1

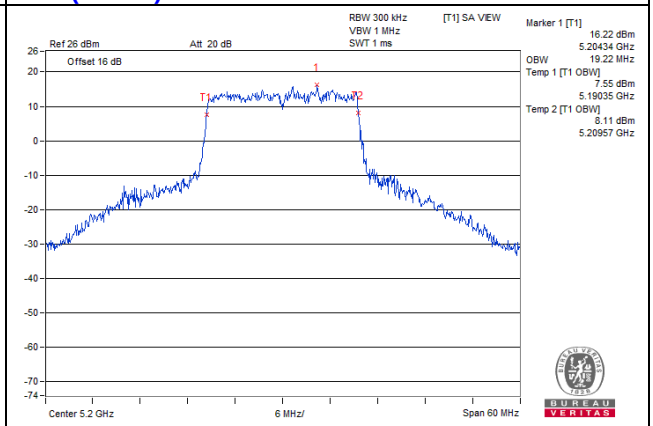


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

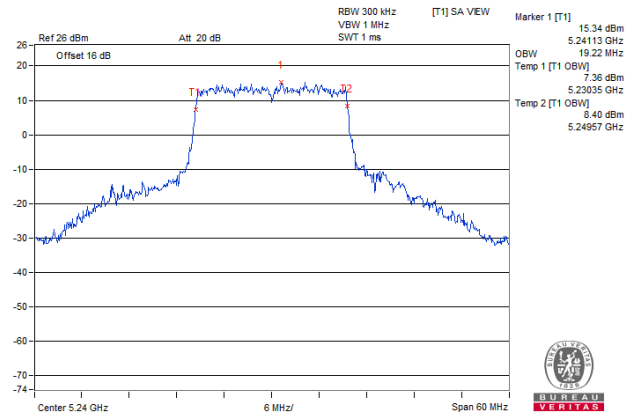
11ax (20MHz) CH36 Ant2



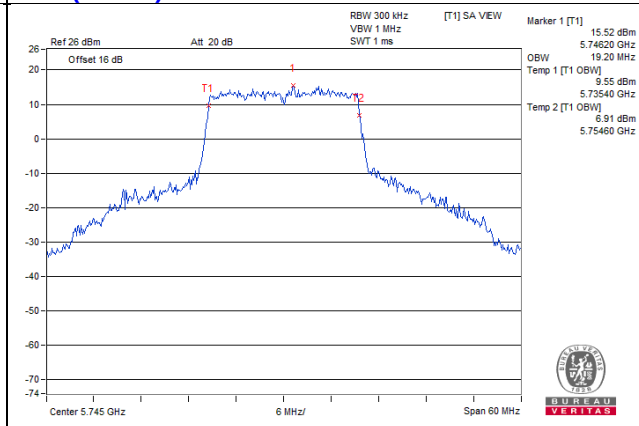
11ax (20MHz) CH40 Ant2



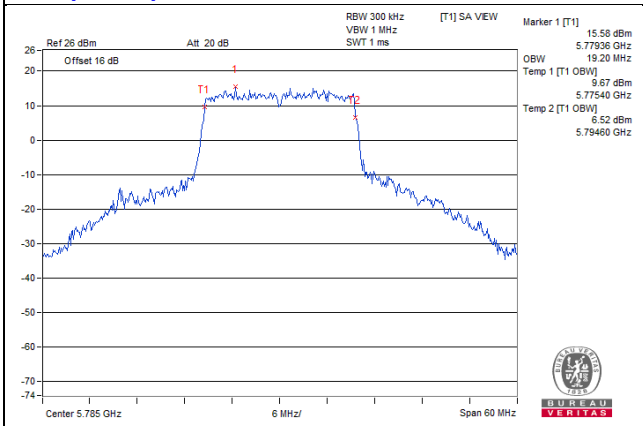
11ax (20MHz) CH48 Ant2



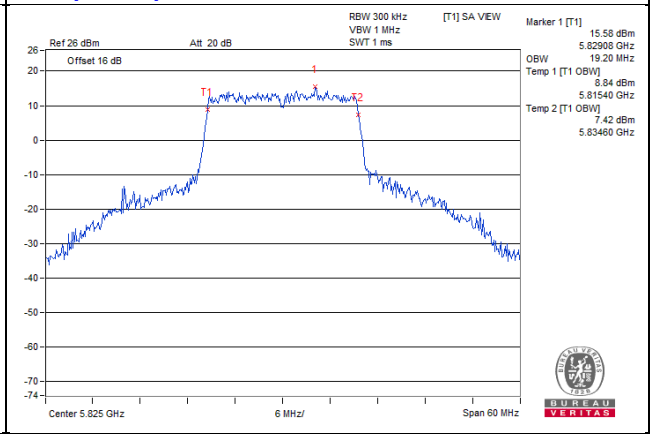
11ax (20MHz) CH149 Ant2



11ax (20MHz) CH157 Ant2

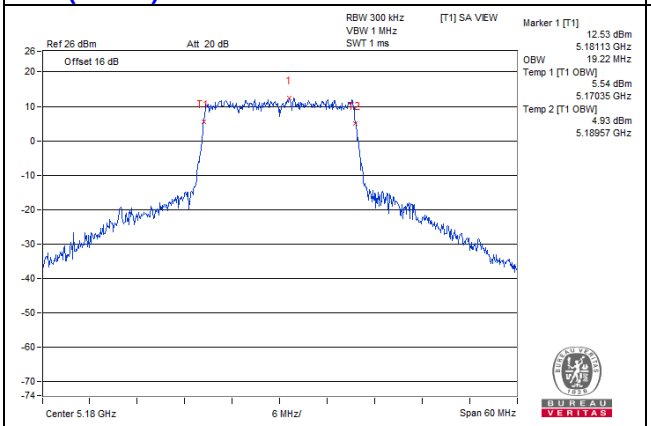


11ax (20MHz) CH165 Ant2

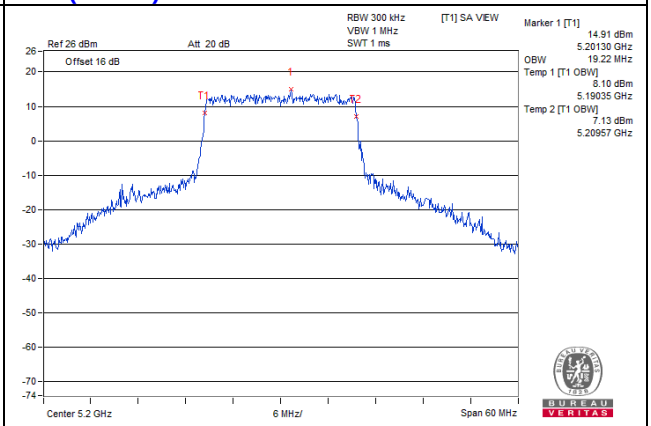


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

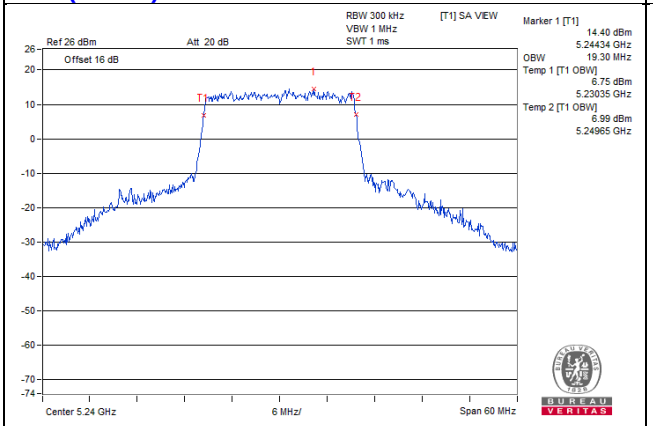
11ax (20MHz) CH36 Ant3



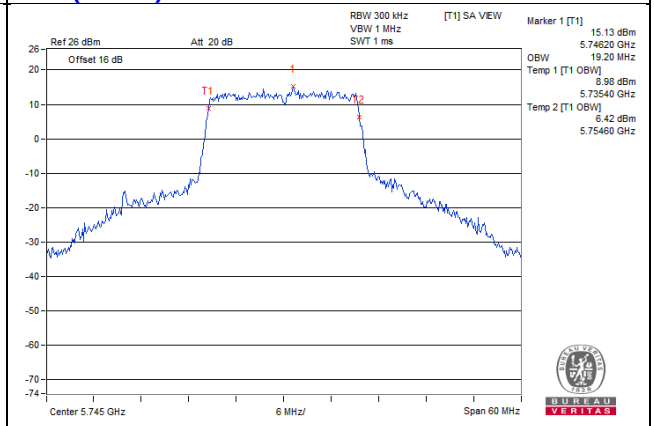
11ax (20MHz) CH40 Ant3



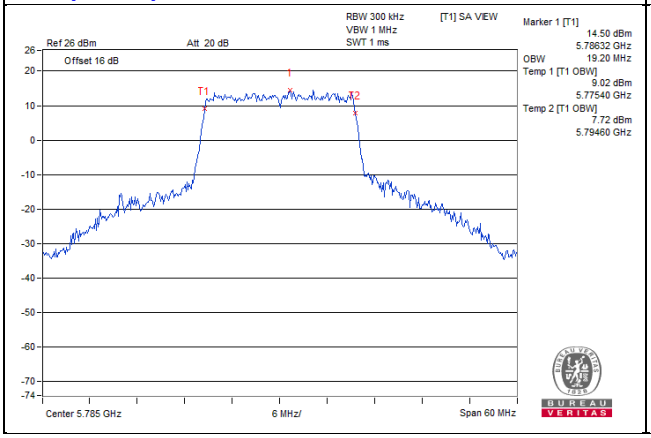
11ax (20MHz) CH48 Ant3



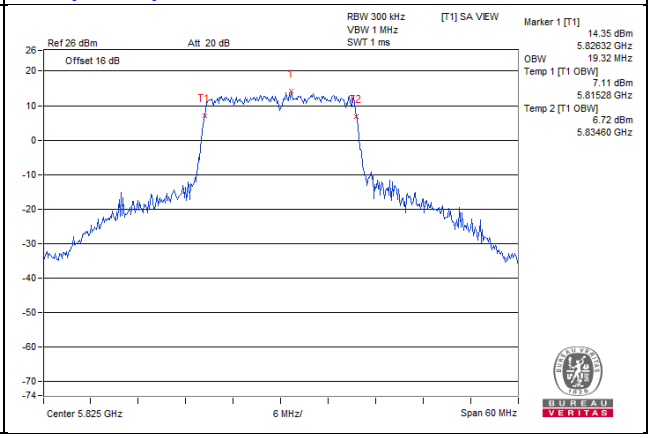
11ax (20MHz) CH149 Ant3



11ax (20MHz) CH157 Ant3

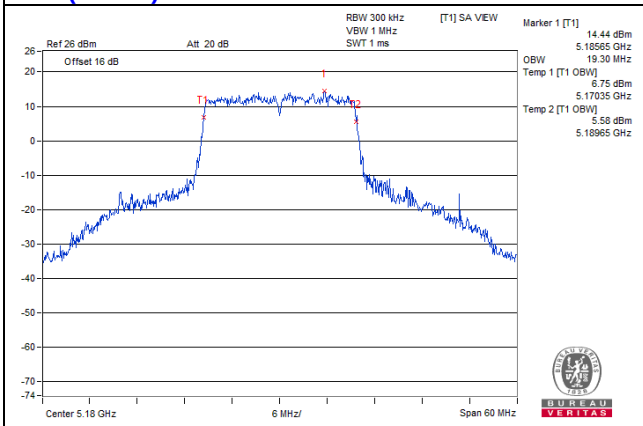


11ax (20MHz) CH165 Ant3

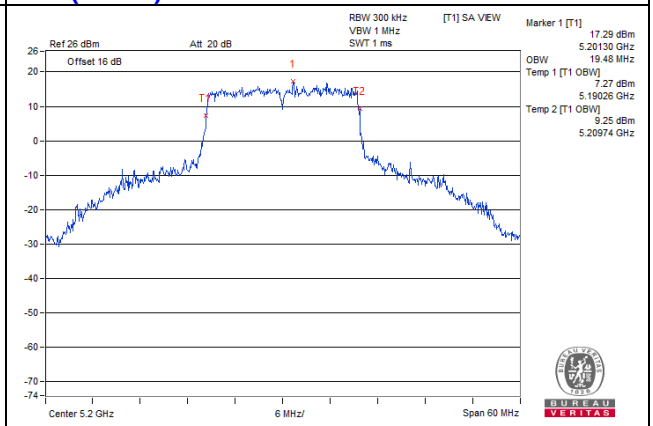


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

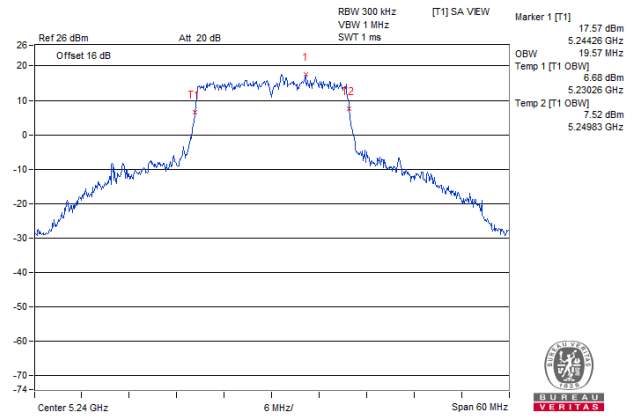
11ax (20MHz) CH36 Ant4



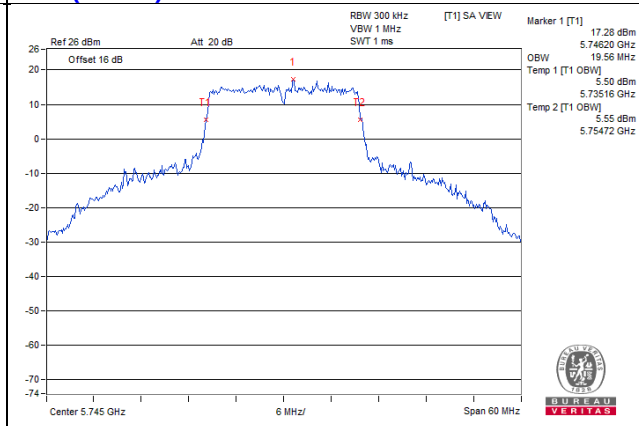
11ax (20MHz) CH40 Ant4



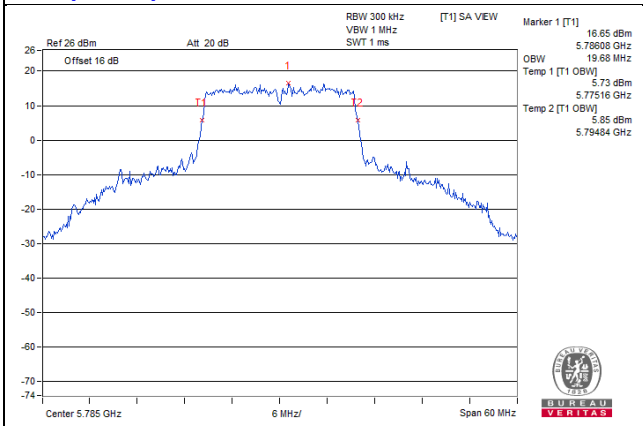
11ax (20MHz) CH48 Ant4



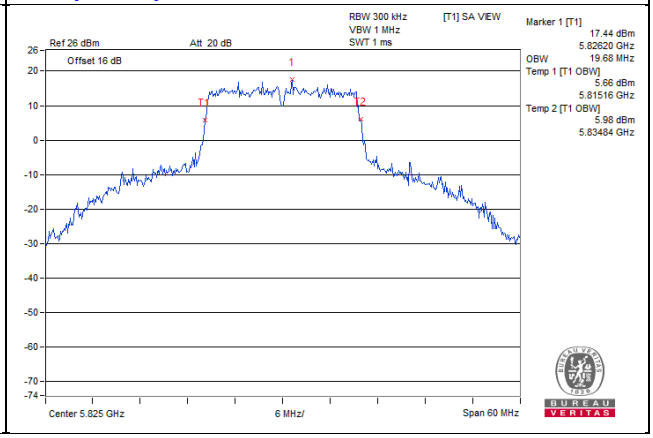
11ax (20MHz) CH149 Ant4



11ax (20MHz) CH157 Ant4

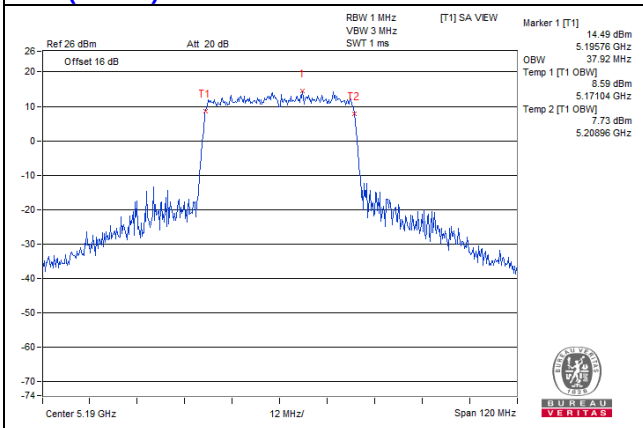


11ax (20MHz) CH165 Ant4

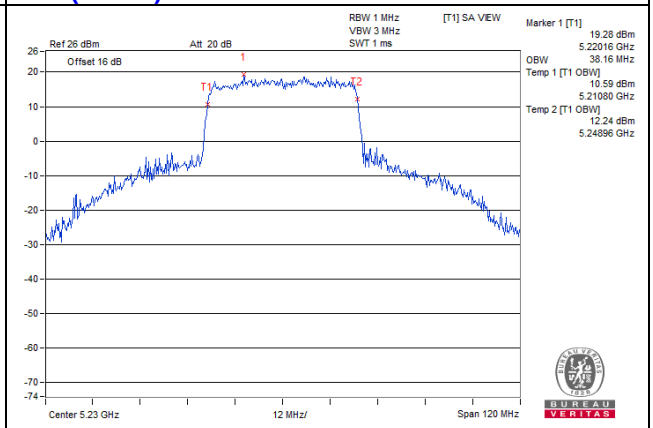


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

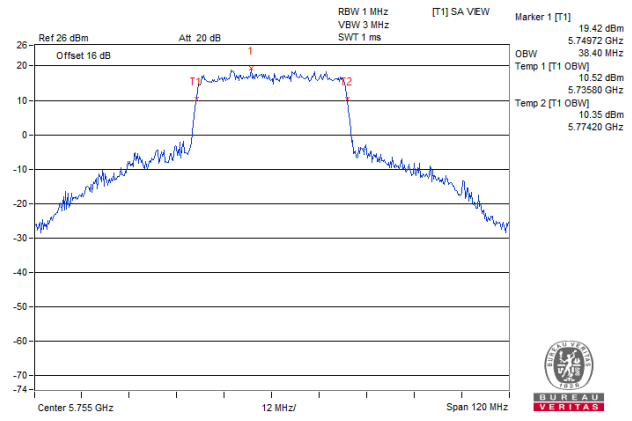
11ax (40MHz) CH38 Ant1



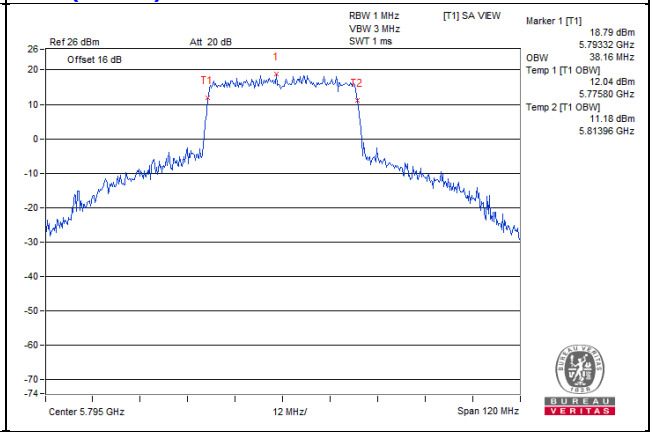
11ax (40MHz) CH46 Ant1



11ax (40MHz) CH151 Ant1

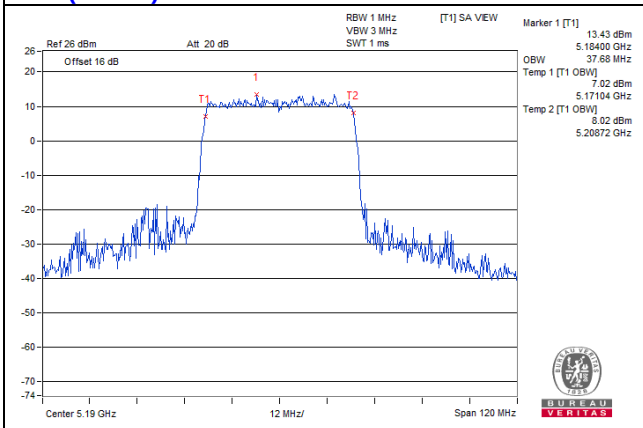


11ax (40MHz) CH159 Ant1

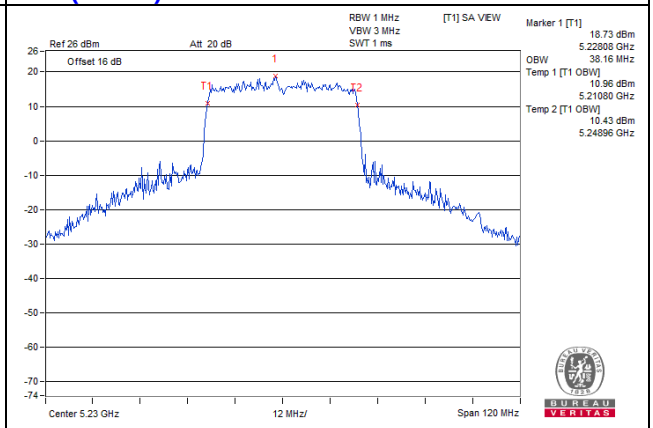


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

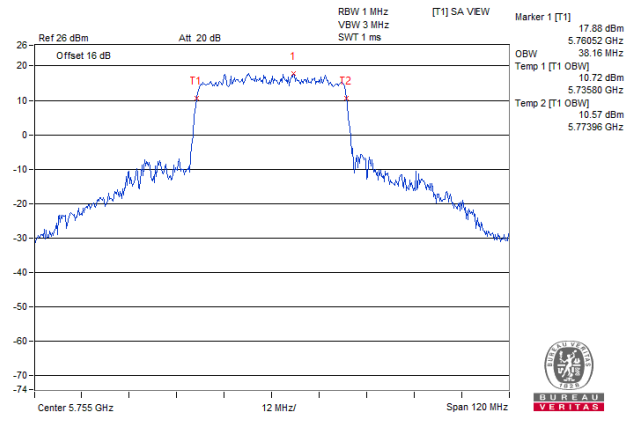
11ax (40MHz) CH38 Ant2



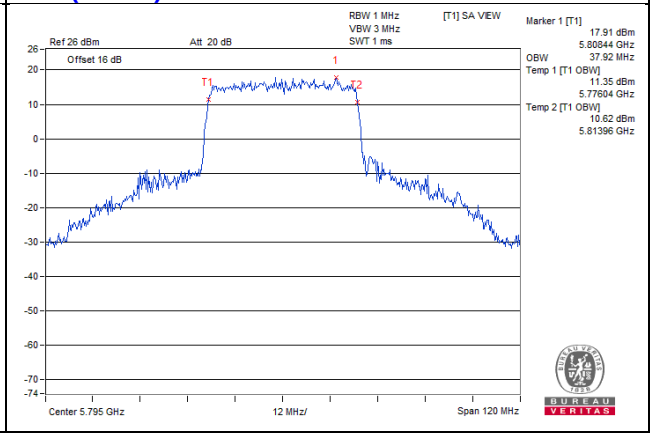
11ax (40MHz) CH46 Ant2



11ax (40MHz) CH151 Ant2

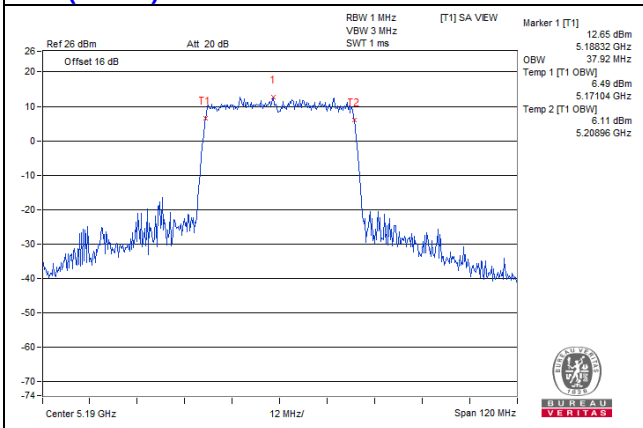


11ax (40MHz) CH159 Ant2

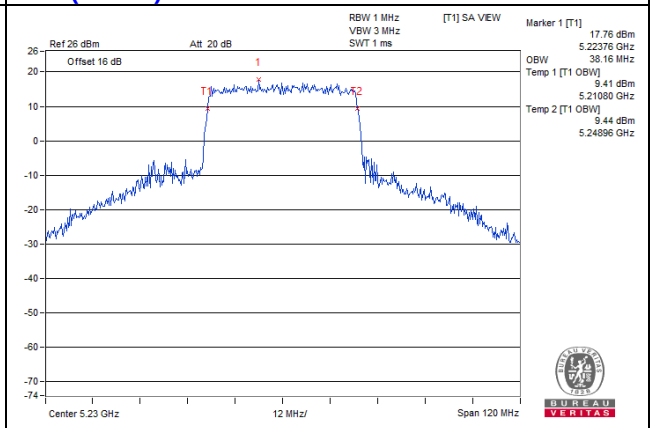


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

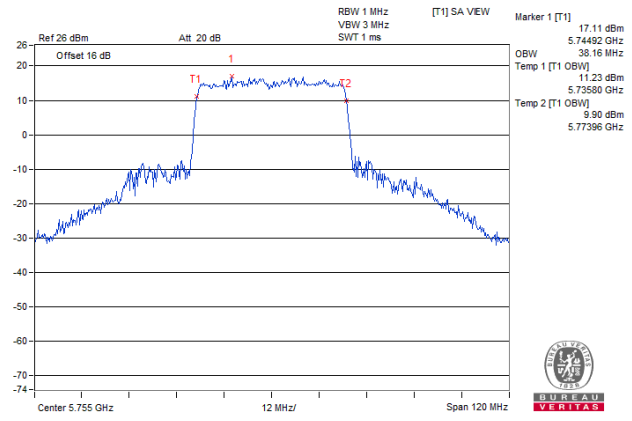
11ax (40MHz) CH38 Ant3



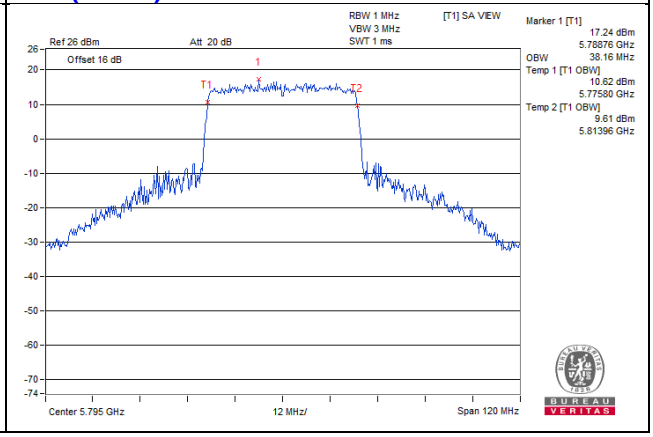
11ax (40MHz) CH46 Ant3



11ax (40MHz) CH151 Ant3

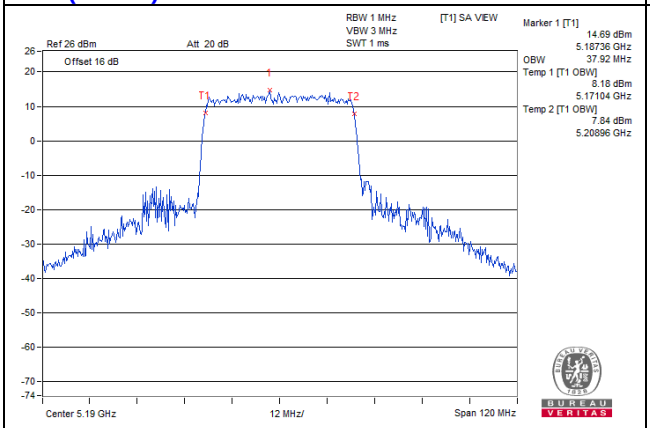


11ax (40MHz) CH159 Ant3

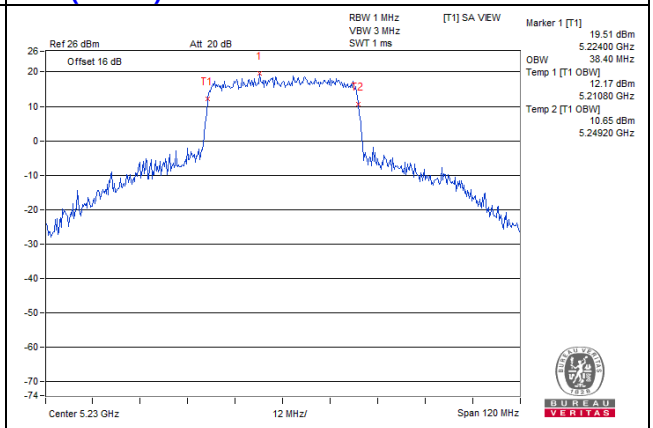


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

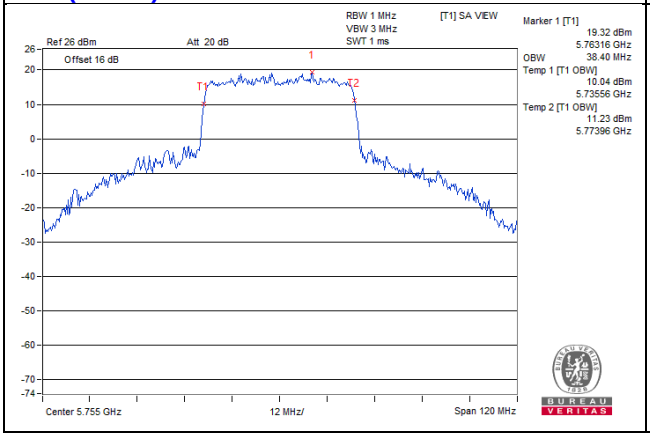
11ax (40MHz) CH38 Ant4



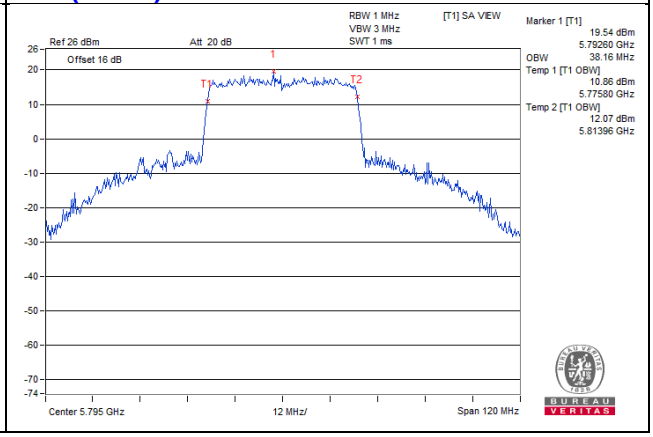
11ax (40MHz) CH46 Ant4



11ax (40MHz) CH151 Ant4

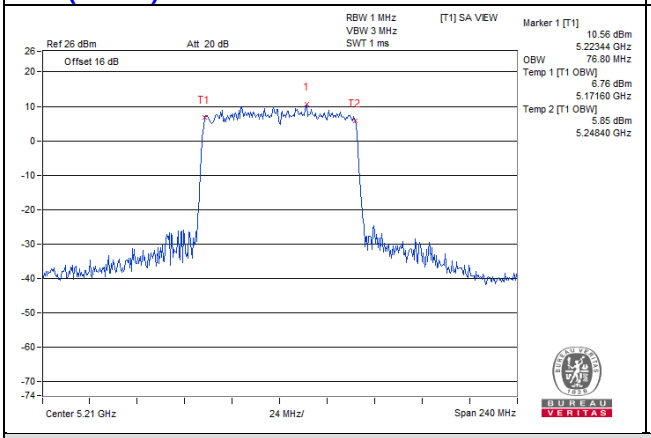


11ax (40MHz) CH159 Ant4

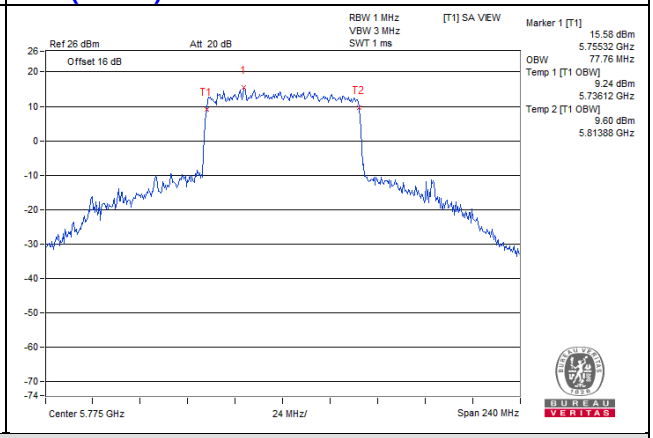


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant1

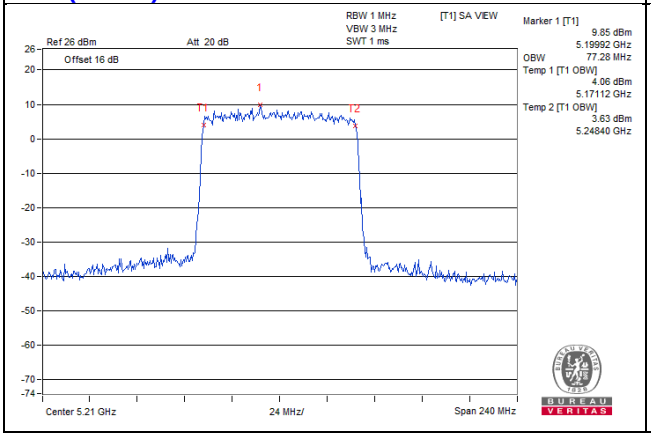


11ax (80MHz) CH155 Ant1

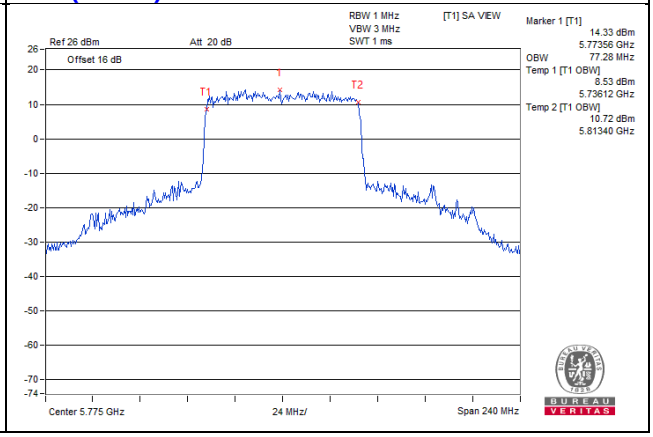


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant2

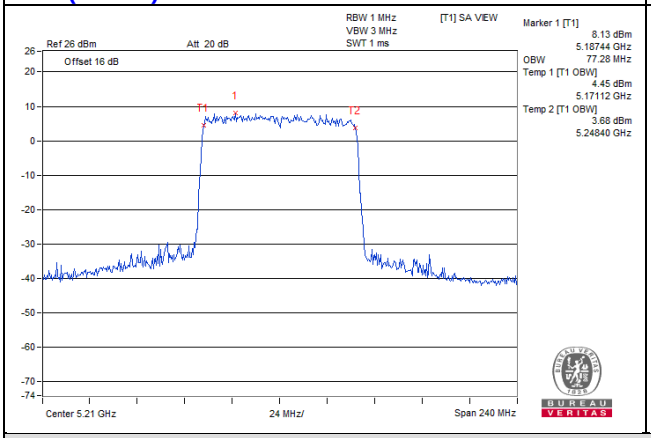


11ax (80MHz) CH155 Ant2

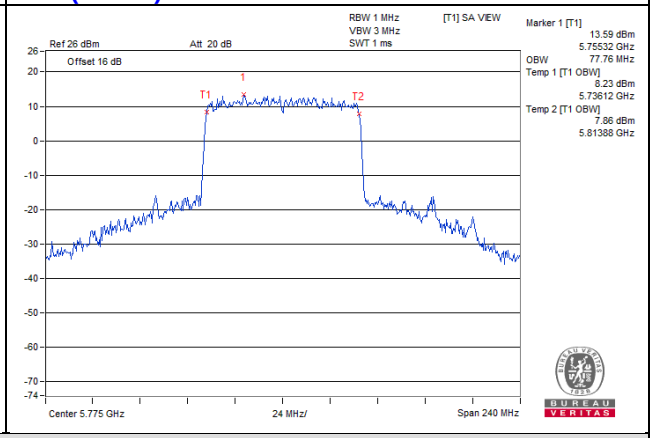


99% OCCUPIED BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant3

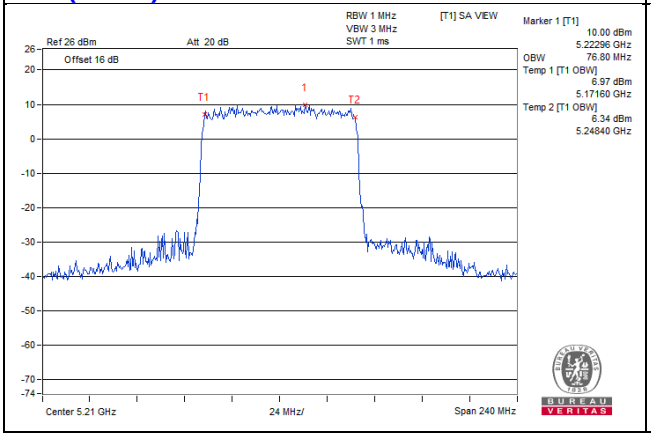


11ax (80MHz) CH155 Ant3



99% OCCUPIED BANDWIDTH SPECTRUM PLOT

11ax (80MHz) CH42 Ant4



11ax (80MHz) CH155 Ant4