

MPT-HC/XP Summary of FCC Regulatory Compliance

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07	12/17/13	Adding L6 60MHz and update channel efficiency rules	Al Holland	Duane Mortensen
06	11/8/13	Adding 11GHz XPIC configurations	Al Holland	Duane Mortensen
05		Adding L6 XP configurations	Al Holland	Duane Mortensen
04		Adding L6 and 38GHz configurations	Al Holland	Duane Mortensen
03	5/1/12	Added profiles	Al Holland	Duane Mortensen
02	9/21/11	L6 and 38GHz	Al Holland	Duane Mortensen
01	8/17/11	11, -18 and 23GHz	Al Holland	Duane Mortensen
ED	DATE	CHANGE NOTE	APPRAISAL AUTHORITY	ORIGINATOR

9500MPR
MPT-HC/XP Summary of
FCC Regulatory Compliance

ED	06	3DB200010094QZZZA_07	3DB 20001 0094 QZZZA	1 / 299
		ECCN: 5E991 HTS: 4901.99.0060		

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1.0 SCOPE

This document covers all verified configurations of the MPT-HC and MPT-XP and contains all relevant data to show compliance to FCC part 101 rules. From a regulatory perspective there are minor differences between the MPT-XP and MPT-HC. The MPT-XP uses the MPT-HC as the base transceiver and adds a power amplifier booster at the output of the MPT-XP. Regulatory information on the MPT-XP focuses on emissions compliance and accuracy of the transmit power. The MPT-XP has no impact on frequency accuracy, efficiency or occupied bandwidth.

1.1 DESCRIPTION OF DOCUMENT:

This document summarizes all relevant data measured to demonstrate compliance of the MPT-HC and MPT-XP products offered by Alcatel-Lucent. This document draws data from various test programs as configurations are released, to summarize the relevant data for the full family of products from Lower 6GHz to 38GHz in one document.

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1.1.1 CONFIGURATION DEFINITION OF HARDWARE:

Table 1a: MPT-HC/XP Hardware Configuration						
General Frequency Band	Transceiver or DBOX	Part Number	Frequency Band		Output power (dBm)	
			Transmitter (MHz)	Receiver (MHz)		
L6GHz 252.04 MHz	Transceiver	3DB20441BB	5930-6049	6182-6302	+23 to +26	
	Transceiver	3DB20443BB	6182-6302	5930-6049	+23 to +26	
	Transceiver	3DB20442BB	6048-6168	6301-6420	+23 to +26	
	Transceiver	3DB20444BB	6301-6420	6048-6168	+23 to +26	
	Transceiver	3DB20800BB	5929.96-6168	6168-6420.04	+23 to +26	
	Transceiver	3DB20802BB	6168-6420.04	5929.96-6168	+23 to +26	
	Transceiver	3DB20760BA	5929.96-6168	6182-6420.04	+32 to +30	
	Transceiver	3DB20761BA	6182-6420.04	5929.96-6168	+32 to +30	
	DBOX	3DB20756BA	5929.96-6050.00	6182.00-6302.04	N/A	
	DBOX	3DB20756BA	6182.00-6302.04	5929.96-6050.00	N/A	
U6GHz 160MHz	DBOX	3DB20756BB	6032.96-6168.00	6285.00-6420.04	N/A	
	DBOX	3DB20756BB	6285.00-6420.04	6032.96-6168.00	N/A	
	DBOX	3DB20756BC	5988.96-6124.00	6241.00-6376.04	N/A	
	DBOX	3DB20756BC	6241.00-6376.04	5988.96-6124.00	N/A	
	DBOX	3DB20804BA	6420-6775	6710-7115	+26 to +23	
	DBOX	3DB20806BA	6710-7115	6420-6775	+26 to +23	
	11GHz 490/500 MHz	DBOX	3DB20371BA	10695-10955	11205-11485	+21 to +23
		DBOX	3DB20547BA	11205-11485	10695-10955	+21 to +23
		DBOX	3DB20546BA	10935-11205	11445-11705	+21 to +23
		DBOX	3DB20548BA	11445-11705	10935-11205	+21 to +23
DBOX		3DB20371BB/BC	10709-10961	11199-11451	+23 to +21	
11GHz 490 MHz	DBOX	3DB20547BB/BC	11199-11451	10709-10961	+23 to +21	
	DBOX	3DB20546BB/BC	10940-11200	11430-11690	+23 to +21	
	DBOX	3DB20548BB/BC	11430-11690	10940-11200	+23 to +21	
	DBOX	3DB20371BB/BC	10700-10730	11200-11230	+23 to +21	
	DBOX	3DB20547BB/BC	11200-11230	10700-10730	+23 to +21	
11GHz 500 MHz	DBOX	3DB20546BB/BC	11170-11200	11670-11700	+23 to +21	
	DBOX	3DB20548BB/BC	11670-11700	11170-11200	+23 to +21	
	DBOX	3DB20548BB/BC	11670-11700	11170-11200	+23 to +21	

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Table 1a continued: MPT-HC/XP Hardware Configuration

General Frequency Band	Transceiver or DBOX	Part Number	Frequency Band		Output power (dBm)
			Transmitter (MHz)	Receiver (MHz)	
18GHz 1560 MHz		3DB20432BA	17700-18140	19260-19700	+18 to +22
		3DB20433BA	19260-19700	17700-18140	+18 to +22
		3DB20473BA	21198-21819	22400-23019	+18 to +20
23GHz 1200 MHz		3DB20475BA	22400-23019	21198-21819	+18 to +20
		3DB20474BA	21781-22400	22981-23600	+18 to +20
		3DB20476BA	22981-23600	21781-22400	+18 to +20
38GHz 700 MHz		3DB20379BA	38600-38950	39300-39650	+13 to +18
		3DB20563BA	39300-39650	38600-38950	+13 to +18
		3DB20562BA	38950-39300	39650-40000	+13 to +18
		3DB20564BA	39650-40000	38950-39300	+13 to +18

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Table 1b: MPT-HC/XP Modulation & Bandwidth Configurations

Frequency band	Channel configurations verified [QAM and bandwidth]													
	10 MHz					30 MHz								
	4	8	16	32	64	128	256	4	8	16	32	64	128	256
L6GHz 252.04MHz	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
U6GHz 160MHz	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
11GHz 490/500 MHz	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
18GHz 1560 MHz	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
23GHz 1200 MHz	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
38GHz 700 MHz	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	40 MHz					50 MHz								
L6GHz 252.04MHz	N	N	N	N	N	N	N	N	N	N	N	N	N	N
U6GHz 160MHz	N	N	N	N	N	N	N	N	N	N	N	N	N	N
11GHz 490/500 MHz	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N
18GHz 1560 MHz	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
23GHz 1200 MHz	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
38GHz 700 MHz	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	60 MHz													
L6GHz 252.04MHz	Y	N	Y	Y	Y	Y	Y							
U6GHz 160MHz	N	N	N	N	N	N	N							
11GHz 490/500 MHz	N	N	N	N	N	N	N							
18GHz 1560 MHz	N	N	N	N	N	N	N							
23GHz 1200 MHz	N	N	N	N	N	N	N							
38GHz 700 MHz	N	N	N	N	N	N	N							

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1.1.2 STATUS OF MPT-HC/XP VERIFICATION PROGRESS:

The MPT-HC/XP is currently being released as frequencies and modulation configurations are developed. This document will be updated as configurations and frequencies are released. Table 1 defines the configurations verified to date.

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1.1.3 SUMMARY OF REGULATORY REQUIREMENTS:

In general three regulatory bodies define the requirements for fixed point to point radios in North America: FCC, Industry Canada and NTIA. A summary of the minimum set of requirements governed by the FCC can be found below:

FCC data required *:

Payload Efficiency: Clause 101.141 [Microwave modulation]
Measurement 2.1047 [Modulation characteristics]

Section 1.2.1

Clause 101.109 [Bandwidth]

Clause 101.141 [Microwave modulation]

Measurement 2.1049 [Occupied Bandwidth]

Section 1.2.2

Clause 101.113 [Transmit power limitations]

Measurement 2.1046 [RF power output]

Section 1.2.3

Clause 101.107 [Frequency Tolerance]

Measurement 2.1055 [Frequency stability]

Section 1.2.4

Clause 101.111 [Emission limitations]

Measurement 2.1051 [Spurious Emission at antenna terminal]

Section 1.2.5

Clause 101.111 [Emission limitations]

Measurement 2.1051 [Spurious Emission at antenna terminal]

Section 1.2.6

* August, 2013

All measurements were done on hardware reflecting the configurations defined in Table 1

All radio configurations in Table 1 have been confirmed to meet all requirements of the FCC rules found in CFR 47, Part 101, Subpart C (August 2013). All data relevant to the rules can be found in the sections of this document as indicated in above. All data was pulled from the test reports associated with the various releases and represents the minimum data needed to verify compliance with the rules. The full test reports are archived under configuration management within Alcatel-Lucent. As the radio is operating under Part 101 rules, the radio does not need to comply with Part 15 rules [i.e. unintended emissions].

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1.2 RELEVANT DATA

1.2.1 PAYLOAD EFFICIENCY

§ 101.141 Microwave Modulation:

Below 25.25GHz:

3) (i) The payload capacity of equipment shall meet the following minimum efficiency standards:

Frequency Range MHz	Emission bandwidth MHz	
	<=5 MHz (Bits/Sec/Hz)	>5 MHz and <= 20 (Bits/Sec/Hz)
3,700-10,550 MHz	2.4	4.4
10,550-13,250 MHz	2.4	4.4
		>20 MHz (Bits/Sec/Hz)
		4.4
		3.0

Outside the above bands:

The bit rate, in bits per second, must be equal to or greater than the bandwidth specified by the emission designator in Hertz (e.g., to be acceptable, equipment transmitting at a 20 Mb/s rate must not require a bandwidth of greater than 20 MHz), except the bandwidth used to calculate the minimum rate may not include any authorized guard band.

Channel bandwidth

- 5.0 MHz
- 10.0 MHz
- 20.0 MHz
- 30.0 MHz
- 40.0 MHz
- 50.0 MHz

Minimum capacity

- 5 Mbps
- 10 Mbps
- 20 Mbps
- 30 Mbps
- 40 Mbps
- 50 Mbps

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Table 2
MPT-HC/XP Payload Efficiency [L6GHz and U6GHz]

General		Payload Efficiency Clause 101.141.2.1047			
Frequency Band	BW (MHz)	QAM Mod (n)	Radio Capacity (Mbps)	Requirement Met? (Yes/No)	
L6GHz 252.04MHz	10	4	14.029	Adaptive modulation only *	
		16	28.278	Adaptive modulation only *	
		32	35.237	Adaptive modulation only *	
		64	44.739	yes	
	30	128	52.697	44	yes
		256	60.305	44	yes
		4	43.857	132	Adaptive modulation only *
		16	87.455	132	Adaptive modulation only *
	60	32	108.758	132	Adaptive modulation only *
		64	138.024	132	yes
		128	162.884	132	yes
		256	185.373	132	yes
U6GHz 160 MHz	10	128	298.65	176	yes
		256	338.83	176	yes
		4	14.029	44	Adaptive modulation only *
		8	21.136	44	Adaptive modulation only *
	30	16	28.278	44	Adaptive modulation only *
		32	35.237	44	Adaptive modulation only *
		64	44.739	44	yes
		128	52.697	44	yes
	60	256	60.305	44	yes
		4	43.857	132	Adaptive modulation only *
		8	65.629	132	Adaptive modulation only *
		16	87.455	132	Adaptive modulation only *
30	32	108.758	132	Adaptive modulation only *	
	64	138.024	132	yes	
	128	162.884	132	yes	
	256	185.373	132	yes	

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Table 3
MPT-HC Payload Efficiency [11GHz]

General		Payload Efficiency Clause 101.141.2.1047			
Frequency Band	BW (MHz)	QAM Mod (n)	Radio Capacity (Mbps)	Requirement Met? (Yes/No)	
11 GHz 490/500 MHz	10	4	14.029	Adaptive modulation only *	
		8	21.136	Adaptive modulation only *	
		16	28.278	Adaptive modulation only *	
		32	35.237	Adaptive modulation only *	
	30	64	44.739	44	yes
		128	52.697	44	yes
		256	60.305	44	yes
		4	43.857	90	Adaptive modulation only *
	40	8	65.629	90	Adaptive modulation only *
		16	87.455	90	Adaptive modulation only *
		32	108.758	90	Yes
		64	138.024	90	Yes
60	128	162.884	90	Yes	
	256	185.373	90	Yes	
	4	59.487	120	Adaptive modulation only *	
	8	88.811	120	Adaptive modulation only *	
80	16	118.513	120	Adaptive modulation only *	
	32	147.366	120	yes	
	64	186.976	120	yes	
	128	220.631	120	yes	
100	256	251.096	120	yes	

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Table 4
MPT-HC Payload Efficiency [18 and 23GHz]

General		Payload Efficiency Clause 101.141, 2.1.047			
Frequency Band	BW (MHz)	QAM Mod (n)	Radio Capacity (Mbps)	Requirement (Mbps)	Requirement Met? (yes/no)
18GHz and 23GHz	10	4	14,029	10	yes
		8	21,136	10	yes
		16	28,278	10	yes
		32	35,237	10	Yes
		64	44,739	10	Yes
		128	52,697	10	Yes
	30	256	60,305	10	Yes
		4	43,857	30	Yes
		8	65,629	30	yes
		16	87,455	30	yes
		32	108,758	30	yes
		64	138,024	30	Yes
40	128	162,884	30	yes	
	256	185,373	30	yes	
	4	59,487	40	yes	
	8	88,811	40	yes	
	16	118,513	40	yes	
	32	147,366	40	Yes	
50	64	186,976	40	Yes	
	128	220,631	40	Yes	
	256	251,096	40	Yes	
	4	74,592	50	Yes	
	8	111,290	50	Yes	
	16	148,492	50	yes	
	32	184,609	50	yes	
	64	234,225	50	yes	
	128	276,371	50	Yes	
	256	314,463	50	yes	

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Table 5
MPT-HC Payload Efficiency [38 GHz]

General		Payload Efficiency Clause 101.141, 2.1.047			
Frequency Band	BW (MHz)	QAM Mod (n)	Radio Capacity (Mbps)	Requirement (Mbps)	Requirement Met? (yes/no)
38GHz 700 MHz	10	32	35,237	none	N/A
		64	44,739	none	N/A
		128	52,697	none	N/A
		256	60,305	none	N/A
		4	43,857	none	N/A
		16	87,455	none	N/A
	30	32	108,758	none	N/A
		64	138,024	none	N/A
		128	162,884	none	N/A
		256	185,373	none	N/A
		4	59,487	none	N/A
		16	118,513	none	N/A
40	32	147,366	none	N/A	
	64	186,976	none	N/A	
	128	220,631	none	N/A	
	256	251,096	none	N/A	
	4	74,592	none	N/A	
	16	148,492	none	N/A	
50	32	184,609	none	N/A	
	64	234,225	none	N/A	
	128	276,371	none	N/A	
	256	314,463	none	N/A	

Adaptive modulation only* Links that use equipment capable of adjusting modulation must be designed using generally accepted multipath fading and rain fading models to meet the specified capacity and loading requirements at least 99.95% of the time, in the aggregate of both directions in a two-way link.

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1.2.2 OCCUPIED BANDWIDTH

§ 101.109 Bandwidth.

(c) The maximum bandwidth which will be authorized per frequency assigned is set out in the table that follows. Regardless of the maximum authorized bandwidth specified for each frequency band, the Commission reserves the right to issue a license for less than the maximum bandwidth if it appears that a lesser bandwidth would be sufficient to support an applicant's intended communications.

Frequency band (MHz) Maximum authorized bandwidth *

- 5,925 to 6,425 60 MHz
- 6,425 to 6,525 25 MHz
- 6,525 to 6,875 30 MHz
- 6,875 to 7,125 25 MHz
- 5 MHz
- 10,550 to 10,680 80 MHz
- 10,700 to 11,700 500 MHz
- 12,200 to 12,700 500 MHz
- 12,700 to 13,150 50 MHz
- 13,200 to 13,250 25 MHz
- 17,700 to 18,140 220 MHz
- 18,140 to 18,142 2 MHz
- 18,142 to 18,580 6 MHz
- 18,580 to 18,820 20 MHz
- 18,820 to 18,920 10 MHz
- 18,920 to 19,160 20 MHz
- 19,160 to 19,260 10 MHz
- 19,260 to 19,700 220 MHz
- 21,200 to 23,600 50 MHz
- 24,250 to 25,250 40 MHz
- 27,500 to 28,350 850 MHz
- 29,100 to 29,250 150 MHz
- 31,000 to 31,075 75 MHz
- 31,075 to 31,225 150 MHz
- 31,225 to 31,300 75 MHz
- 38,600 to 40,000 50 MHz
- 71,000 to 76,000 5000 MHz
- 81,000 to 86,000 5000 MHz
- 92,000 to 95,000

* Wider bandwidths can be waived by concatenating 2 or more channels together.

The purpose of this test is to show that the full channel bandwidth is required to carry the modulated signal. The maximum bandwidth is set by the emissions mask requirements. This data is captured to show that the radio is not able to fit into the next lower channel bandwidth. Below are the tables of occupied bandwidth for all radio capacities and frequencies. Occupied bandwidth is set by the digital filters, which is independent of the RF frequency, therefore the occupied bandwidth is not affected by the different ODU frequencies for any given bandwidth/modulation configuration. It is also not affected by any given radio channel of the ODU. All data has been captured within the test plans under the relevant releases.

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**Table 6
MPT-HC/XP Occupied Bandwidth [L6GHz and U6GHz]**

General		Occupied Bandwidth	Requirement	Full channel	
		Clause 101.109, Clause 101.141	Clause 101.109, Clause 101.141	Clause 101.109, Clause 101.141	
Frequency Band	BW (MHz)	QAM Mod (n)	99% occupied bandwidth (MHz)	Requirement (MHz)	Required? (yes/no)
L6GHz 252.04MHz	10	4	8.8	10	yes
		16	8.8	10	yes
		32	8.8	10	yes
		64	8.8	10	yes
		128	8.8	10	yes
		256	8.8	10	yes
	30	4	27.3	30	yes
		16	27.3	30	yes
		32	27.3	30	yes
		64	27.3	30	yes
		128	27.3	30	yes
		256	27.3	30	yes
60	128	49.9	60	yes	
	256	49.9	60	yes	
	10	4	8.8	10	yes
		8	8.8	10	yes
		16	8.8	10	yes
		32	8.8	10	yes
64		8.8	10	yes	
128		8.8	10	yes	
U6GHz 160 MHz	256	8.8	10	yes	
	4	27.3	30	yes	
	8	27.3	30	yes	
	16	27.3	30	yes	
	32	27.3	30	yes	
	64	27.3	30	yes	
128	27.3	30	yes		
256	27.3	30	yes		

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Table 7
MPT-HC Occupied Bandwidth 11GHz

General		Occupied Bandwidth		Clause 101.109, Clause 101.141 2.1049		
Frequency Band	BW (MHz)	QAM Mod (n)	99% occupied bandwidth (MHz)	Requirement (MHz)	Full channel required? (yes/no)	
11GHz 490/500 MHz	10	4	8.8	10	yes	
		8	8.8	10	yes	
		16	8.8	10	yes	
		32	8.8	10	yes	
		64	8.8	10	yes	
		128	8.8	10	yes	
	256	8.8	10	yes		
	30	4	27.3	30	30	yes
		8	27.3	30	30	yes
		16	27.3	30	30	yes
		32	27.3	30	30	yes
		64	27.3	30	30	yes
128		27.3	30	30	yes	
40	4	36.7	40	40	yes	
	8	36.7	40	40	yes	
	16	36.7	40	40	yes	
	32	36.7	40	40	yes	
	64	36.7	40	40	yes	
	128	36.7	40	40	yes	
256	36.7	40	40	yes		

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Table 8
MPT-HC Occupied Bandwidth [18 and 23GHz]

General		Occupied Bandwidth		Clause 101.109, Clause 101.141 2.1049		
Frequency Band	BW (MHz)	QAM Mod (n)	99% occupied bandwidth (MHz)	Requirement (MHz)	Full channel required? (yes/no)	
18GHz and 23GHz	10	4	8.8	10	yes	
		8	8.8	10	yes	
		16	8.8	10	yes	
		32	8.8	10	yes	
		64	8.8	10	yes	
		128	8.8	10	yes	
	256	8.8	10	yes		
	30	4	27.3	30	30	yes
		8	27.3	30	30	yes
		16	27.3	30	30	yes
		32	27.3	30	30	yes
		64	27.3	30	30	yes
128		27.3	30	30	yes	
40	4	36.7	40	40	yes	
	8	36.7	40	40	yes	
	16	36.7	40	40	yes	
	32	36.7	40	40	yes	
	64	36.7	40	40	yes	
	128	36.7	40	40	yes	
50	4	46.0	50	50	yes	
	8	46.0	50	50	yes	
	16	46.0	50	50	yes	
	32	46.0	50	50	yes	
	64	46.0	50	50	yes	
	128	46.0	50	50	yes	
256	46.0	50	50	yes		

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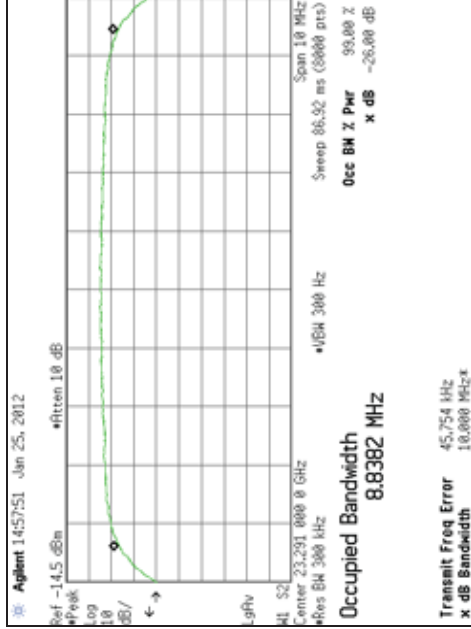
Table 9
MPT-HC Occupied Bandwidth [38GHz]

General		Occupied Bandwidth	Requirement	Full channel required? (yes/no)	
Frequency Band	BW (MHz)	QAM Mod (n)	99% occupied bandwidth (MHz)	Clause 101.109, Clause 101.141 2.1049	
38GHz 700 MHz	10	32	8.82	10	Yes
		64	8.82	10	Yes
		128	8.82	10	Yes
		256	8.83	10	Yes
		4	27.5	30	Yes
		16	27.5	30	Yes
	30	32	27.5	30	Yes
		64	27.4	30	Yes
		128	27.4	30	Yes
		256	27.4	30	Yes
		4	37.2	40	Yes
		16	37.1	40	Yes
40	32	37.1	40	Yes	
	64	37.1	40	Yes	
	128	37.1	40	Yes	
	256	37.0	40	Yes	
	4	46.5	50	Yes	
	16	46.4	50	Yes	
50	32	46.4	50	Yes	
	64	46.4	50	Yes	
	128	46.4	50	Yes	
	256	46.3	50	Yes	

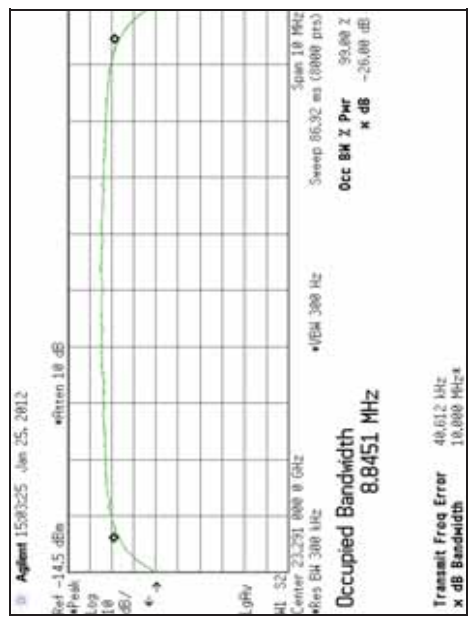
A representative plot for each modulation bandwidth is shown in the series of plots below. Since the occupied bandwidth is a function of the digital filtering, and not affected by the RF circuitry, only a representative plot for each configuration is shown here to demonstrate the actual measurement process and catalog the evidence of conformity. Full sets of plots are archived under the relevant test plans of the given releases.

ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	19 / 299
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10MHz 4QAM

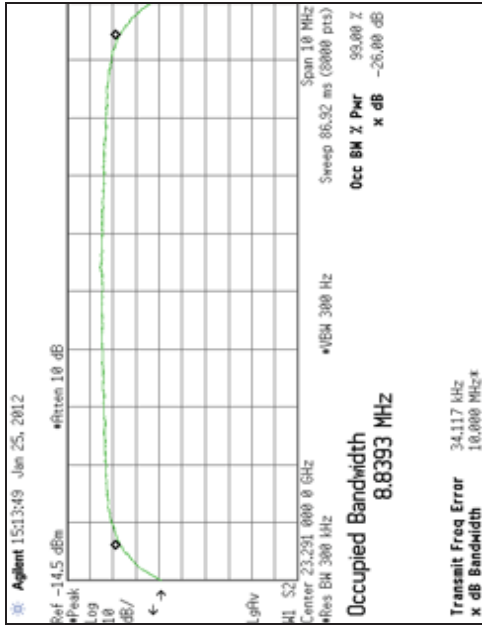


10MHz 8QAM

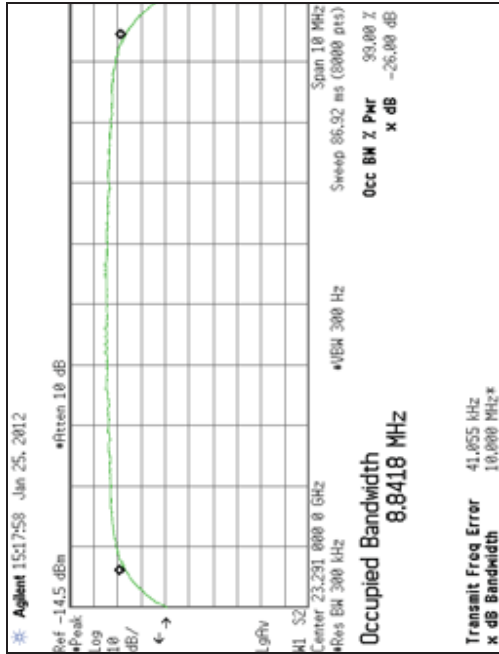


ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	20 / 299
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10MHz 16QAM



10MHz 32QAM



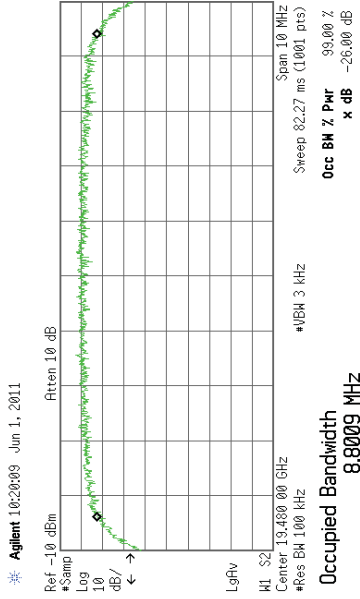
ED 06

ECCN: 5E991
HTS: 4901.99.0050

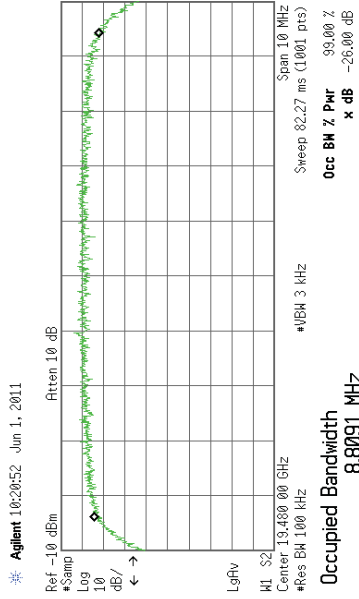
3DB 200010094 QZZA

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10MHz 64QAM



10MHz 128 QAM



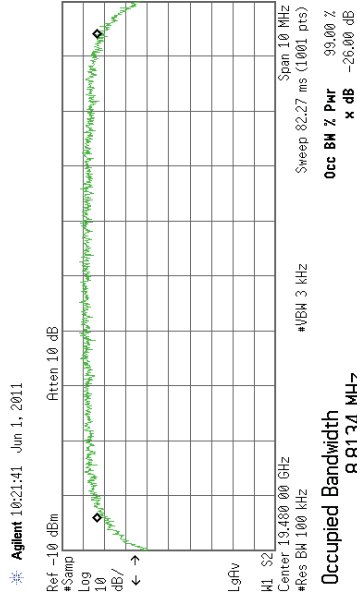
ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

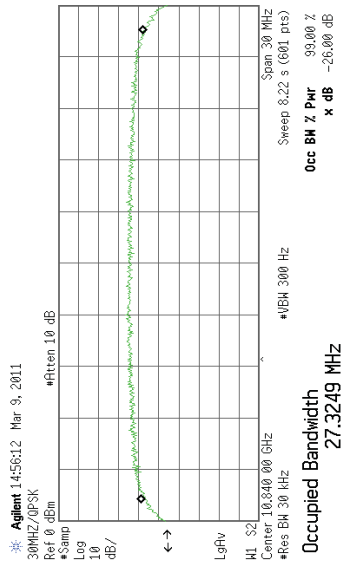
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10MHz 256 QAM



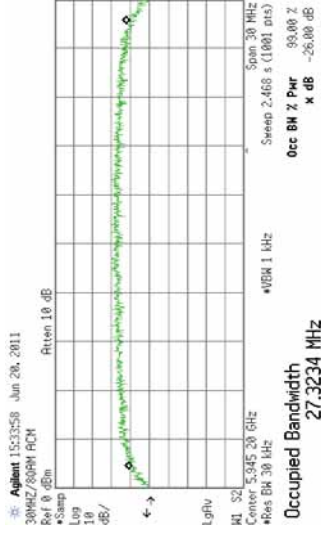
Transmit Freq Error 3.501 kHz
 x dB Bandwidth 3.582 MHz*

30MHz 4 QAM



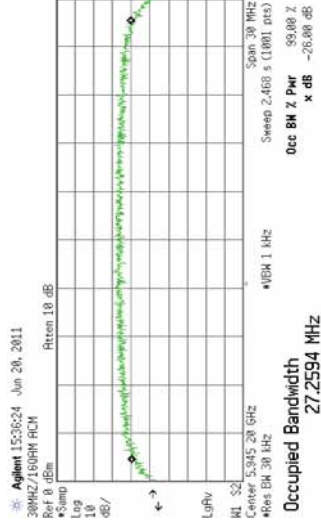
Transmit Freq Error -49.763 kHz
 x dB Bandwidth 30.000 MHz*

30MHz 8 QAM



Transmit Freq Error 85.695 kHz
 x dB Bandwidth 30.000 MHz*

30MHz 16 QAM

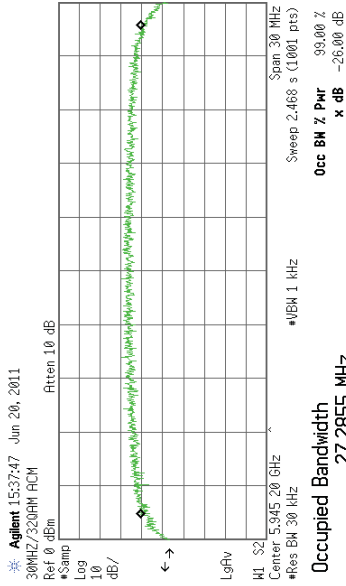


Transmit Freq Error 29.975 kHz
 x dB Bandwidth 30.000 MHz*

ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	24 / 299
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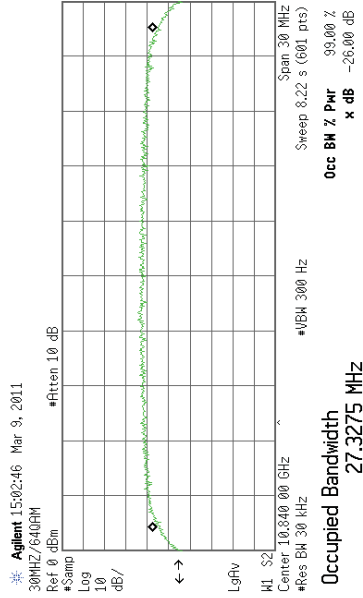
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	23 / 299
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30MHz 32 QAM



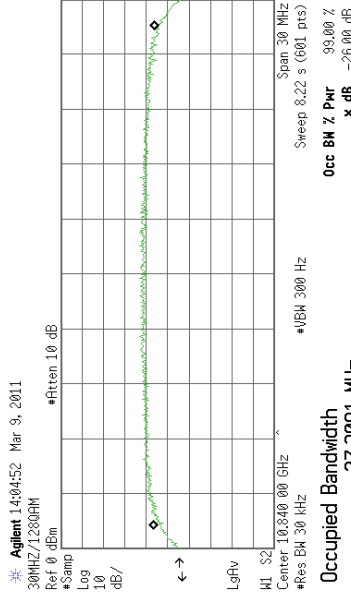
Transmit Freq Error 87.403 kHz
 x dB Bandwidth 30.000 MHz*

30MHz 64 QAM



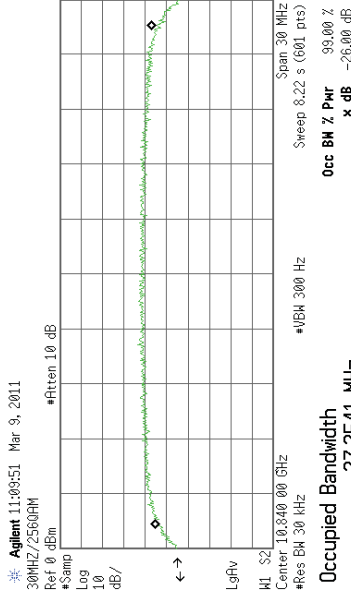
Transmit Freq Error -46.305 kHz
 x dB Bandwidth 30.000 MHz*

30MHz 128 QAM



Transmit Freq Error -32.792 kHz
 x dB Bandwidth 30.000 MHz*

30MHz 256 QAM



Transmit Freq Error -25.630 kHz
 x dB Bandwidth 30.000 MHz*

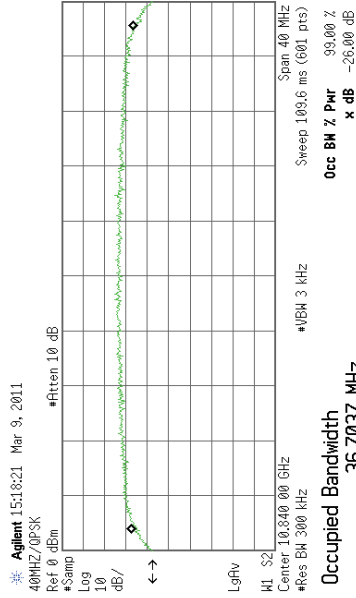
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	26 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	25 / 299
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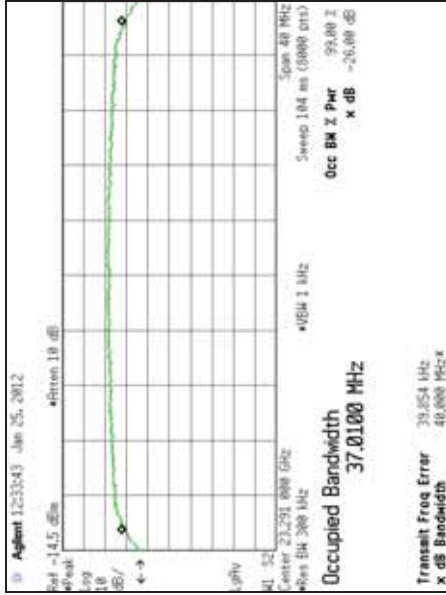
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40MHz 4 QAM

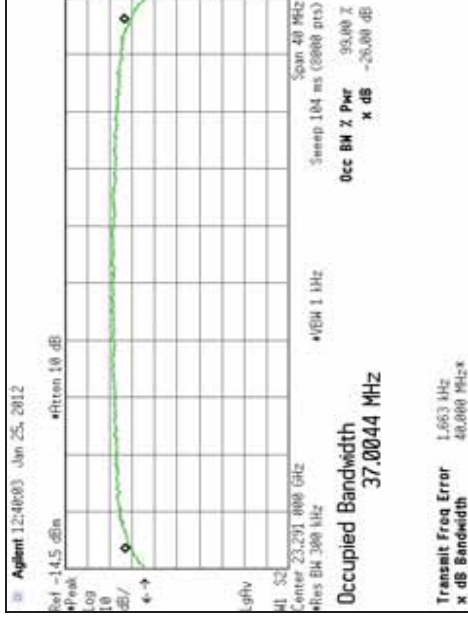


40MHz 8 QAM

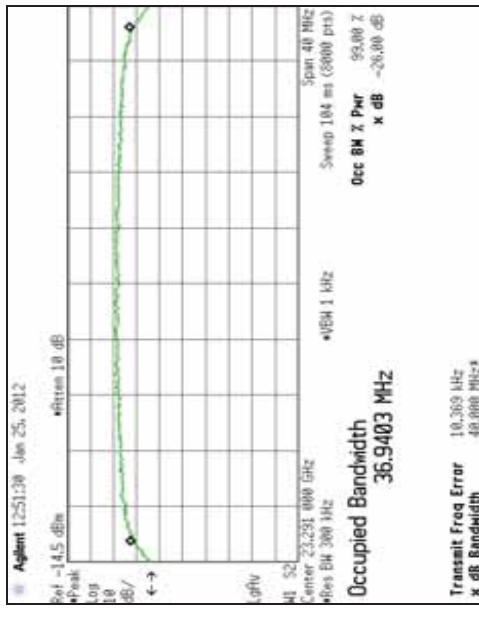


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40MHz 16 QAM



40MHz 32 QAM



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 HTS: 4901.99.0050

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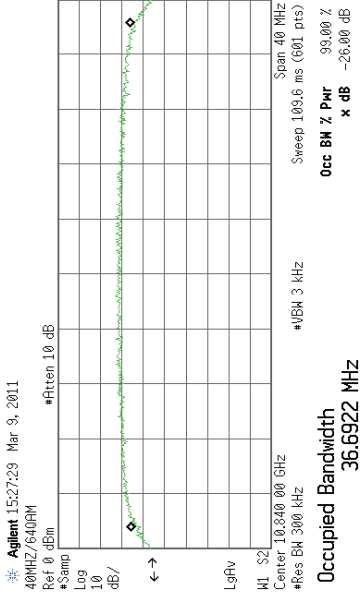
ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

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40MHz 64 QAM



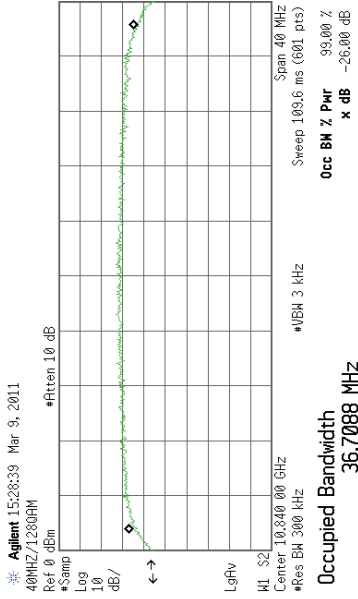
Transmit Freq Error -26.850 kHz
x dB Bandwidth 40.000 MHz*

Occupied Bandwidth 36.6922 MHz

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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZZA	29 / 299
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40MHz 128 QAM



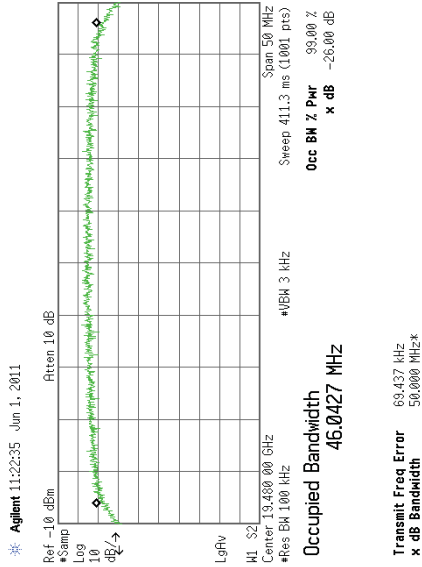
Transmit Freq Error -18.738 kHz
x dB Bandwidth 40.000 MHz*

Occupied Bandwidth 36.7088 MHz

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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZZA	30 / 299
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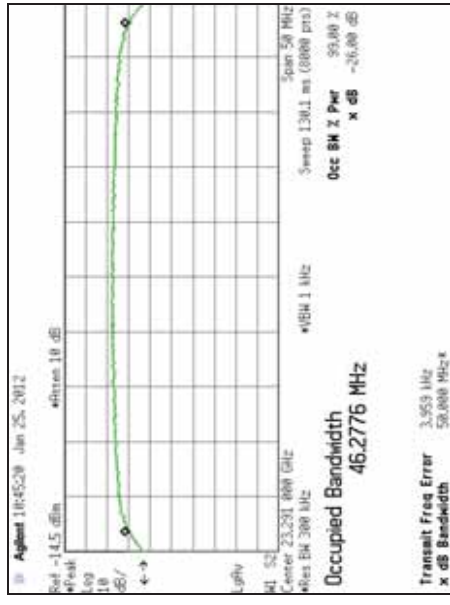
50MHz 4 QAM



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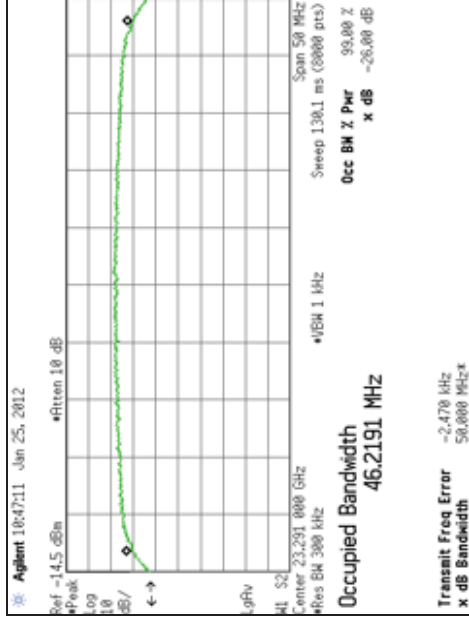
50MHz 8 QAM



8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE

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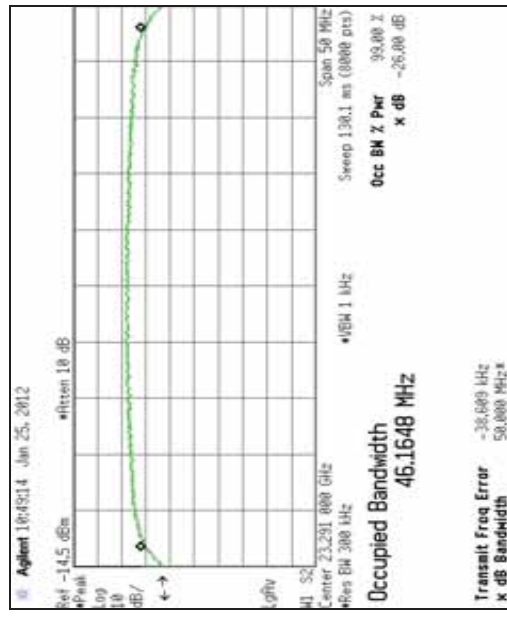
50MHz 16 QAM



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50MHz 32 QAM

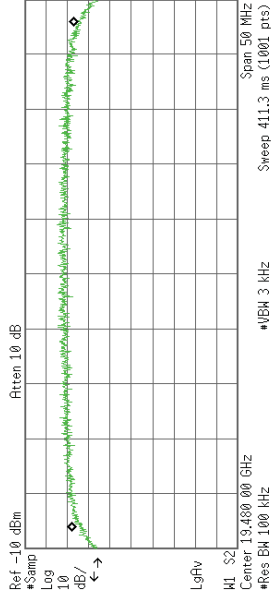


8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE

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50MHz 128 QAM

Agilent 10:38:16 Jun 1, 2011

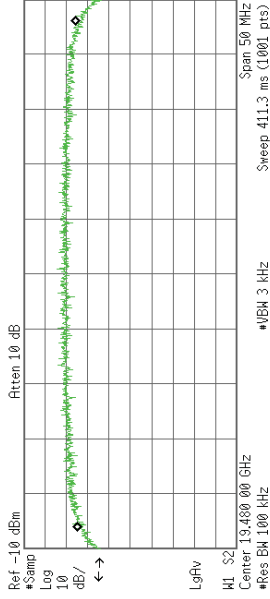


Occupied Bandwidth
45.9455 MHz

Transmit Freq Error
x dB Bandwidth 45.422 kHz
50.000 MHz*

50MHz 256 QAM

Agilent 10:38:49 Jun 1, 2011



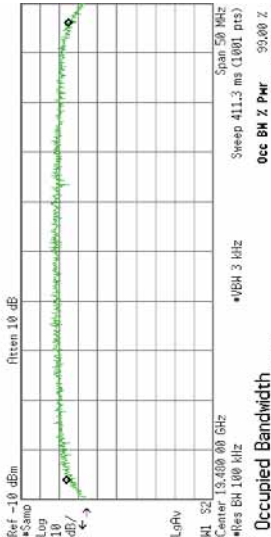
Occupied Bandwidth
46.0790 MHz

Transmit Freq Error
x dB Bandwidth 78.766 kHz
50.000 MHz*

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50MHz 64 QAM

Agilent 10:37:49 Jun 1, 2011



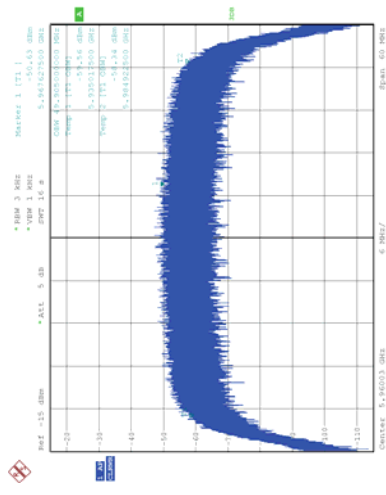
Occupied Bandwidth
46.0511 MHz

Transmit Freq Error
x dB Bandwidth 87.717 kHz
50.000 MHz*

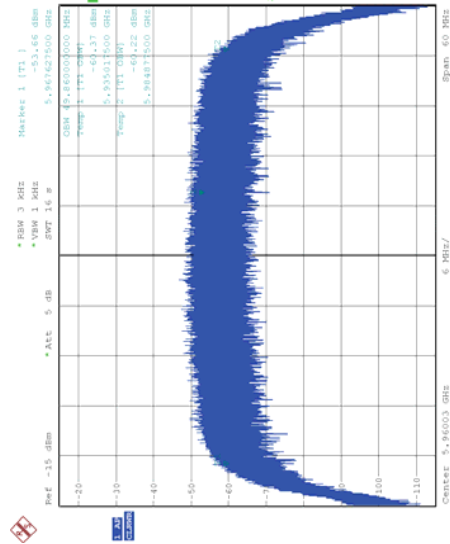
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	34 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	33 / 299
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60MHz 128 QAM



60MHz 256 QAM



Date: 11-20th-2013 18:17:15

ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZZA

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1.2.3 OUTPUT POWER LEVEL AND ACCURACY

In general output power limitation is defined at the antenna output and is limited to the values below. The requirement on the radio itself is to be very clear what the specified transmit power actually is and control that power within the specified limits under all worst case conditions. Testing covers verification of output power over the temperature and frequency range. Initial reporting accuracy is also recorded. Compliance with FCC power limitations must take antenna gain, line losses and radio specifications into consideration and is the responsibility of the user.

§ 101.113 Transmitter power limitations.

(a) On any authorized frequency, the average power delivered to an antenna in this service must be the minimum amount of power necessary to carry out the communications desired. Application of this principle includes, but is not to be limited to, requiring a licensee who replaces one or more of its antennas with larger antennas to reduce its antenna input power by an amount appropriate to compensate for the increased primary lobe gain of the replacement antenna(s). In no event shall the average equivalent isotropically radiated power (EIRP), as referenced to an isotropic radiator, exceed the values specified below. In cases of harmful interference, the Commission may, after notice and opportunity for hearing, order a change in the effective radiated power of this station. Further, the output power of a transmitter on any authorized frequency in this service may not exceed the following:

Frequency band (MHz)	Maximum allowable EIRP* (dBW)
5.925-6.425	+55
6.425-6.525	+35 [mobile]
6.525-6.875	+55
6.875-7.125	+55
10.550 to 10.600	+55
10.600 to 10.680	+40
10.700-11.700	+55
12.200-12.700	+50
12.700-13.200	+50
13.200-13.250	+55
14.200-14.400	+45
17.700-18.600	+55
18.600-18.800	+35
18.800-19.700	+55
21.200-23.600	+55
24.250-25.250	+55
27.500-28.350	+55
29.100-29.250	23dBW/MHz
31.000 to 31.075	30 dBW/MHz
31.075 to 31.225	30 dBW/MHz
31.225 to 31.300	30 dBW/MHz
38.600-40.000	+55
71.000-76.000	+55
81.000-86.000	+55
92.000-95.000	+55

* Per polarization

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Table 10
MPT-HC/XP Output power level and accuracy [L6GHz and U6GHz]

General		Output power Clause 101.113 Section 2.1046		Requirement Met? (yes/no)	
Frequency Band	BW (MHz)	QAM Mod (n)	Output Power (dBm +/- 2dB)		
			HC	XP	
L6GHz 252.04MHz	10	4	32	55	yes
		16	32	55	yes
		32	32	55	yes
		64	30	55	yes
		128	30	55	yes
	256	30	55	yes	
	30	4	32	55	yes
		16	32	55	yes
		32	32	55	yes
		64	30	55	yes
128		30	55	yes	
60	256	30	55	yes	
	128	30	55	yes	
	256	30	55	yes	
	4	26	55	yes	
	8	26	55	yes	
U6GHz 160 MHz	10	16	25	55	yes
		32	25	55	yes
		64	23	55	yes
		128	23	55	yes
		256	23	55	yes
	30	4	26	55	yes
		8	26	55	yes
		16	25	55	yes
		32	25	55	yes
		64	23	55	yes

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Table 11
MPT-HC Output power level and accuracy [11GHz]

General		Output power Clause 101.113 Section 2.1046		Requirement Met? (yes/no)	
Frequency Band	BW (MHz)	QAM Mod (n)	Output Power (dBm +/- 2dB)		
			Requirement * (dBW EIRP)		
11 GHz 490/500 MHz	10	4	21	55	yes
		8	21	55	yes
		16	20	55	yes
		32	20	55	yes
		64	19	55	yes
	30	128	19	55	yes
		256	19	55	yes
		4	23	55	yes
		8	23	55	yes
		16	22	55	yes
	40	32	22	55	yes
		64	21	55	yes
		128	21	55	yes
		256	21	55	yes
		4	23	55	yes

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Table 12
MPT-HC Output power level and accuracy [18GHz]

General				Output power		Requirement Met? (Yes/no)
Frequency Band	BW (MHz)	QAM Mod (n)	Output Power (dBm +/- 2dB)	Requirement *(dBW EIRP)		
18GHz	10	4	22	55	yes	
		8	22	55	yes	
		16	20	55	yes	
		32	20	55	Yes	
		64	19	55	Yes	
		128	19	55	Yes	
	256	18	55	Yes		
	30	4	22	55	55	Yes
		8	22	55	55	yes
		16	20	55	55	yes
		32	20	55	55	yes
		64	19	55	55	Yes
128		19	55	55	yes	
40	4	22	55	55	yes	
	8	22	55	55	yes	
	16	20	55	55	yes	
	32	20	55	55	yes	
	64	19	55	55	Yes	
	128	19	55	55	Yes	
50	4	22	55	55	Yes	
	8	22	55	55	Yes	
	16	20	55	55	yes	
	32	20	55	55	yes	
	64	19	55	55	yes	
	128	19	55	55	Yes	

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Table 13
MPT-HC Output power level and accuracy [23GHz]

General				Output power		Requirement Met? (Yes/no)
Frequency Band	BW (MHz)	QAM Mod (n)	Output Power (dBm +/- 2dB)	Requirement *(dBW EIRP)		
23GHz	10	4	20	55	yes	
		8	20	55	yes	
		16	19	55	yes	
		32	19	55	Yes	
		64	18	55	Yes	
		128	18	55	Yes	
	256	18	55	Yes		
	30	4	20	55	55	Yes
		8	20	55	55	yes
		16	19	55	55	yes
		32	19	55	55	yes
		64	18	55	55	Yes
128		18	55	55	yes	
40	4	20	55	55	yes	
	8	20	55	55	yes	
	16	19	55	55	yes	
	32	19	55	55	yes	
	64	18	55	55	Yes	
	128	18	55	55	Yes	
50	4	20	55	55	Yes	
	8	20	55	55	Yes	
	16	19	55	55	yes	
	32	19	55	55	yes	
	64	18	55	55	yes	
	128	18	55	55	Yes	

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Table 14
MPT-HC Output power level and accuracy [38GHz]

General		Output power		Clause 101.113	Section 2.1046	
Frequency Band	BW (MHz)	QAM Mod (n)	Output Power (dBm +/- 2dB)	Requirement * (dBW EIRP)	Requirement Met? (yes/no)	
38GHz 700 MHz	10	32	16	55	Yes	
		64	14	55	Yes	
		128	14	55	Yes	
		256	13	55	Yes	
		4	18	55	Yes	
		16	16	55	Yes	
	30	32	16	55	55	Yes
		64	14	55	55	Yes
		128	14	55	55	Yes
		256	13	55	55	Yes
		4	18	55	55	Yes
		16	16	55	55	Yes
40	32	16	55	55	Yes	
	64	14	55	55	Yes	
	128	14	55	55	Yes	
	256	13	55	55	Yes	
	4	18	55	55	Yes	
	16	16	55	55	Yes	
50	32	16	55	55	Yes	
	64	14	55	55	Yes	
	128	14	55	55	Yes	
	256	13	55	55	Yes	
	4	18	55	55	Yes	
	16	16	55	55	Yes	

*The FCC regulates output power in terms of dBW EIRP as radiated from the antenna. The radio is specified in terms of conducted power at the antenna port in terms of dBm. The radio guarantees control of this conducted power to be within +/-2dB of nominal. It is up to the user to maintain compliance of the EIRP limits through selection of antenna gain, branching losses and translating between dBm and dBW. The responsibility of the radio design is to control the accuracy of the output power and communicate the guaranteed limits clearly to the end user.

All variants are guaranteed to control output power to nominal power +/- 2.0dB. Output power was verified to be accurate to within +/-2dB across temperature, frequency and modulation states.

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Measured output power vs. frequency and temperature
Lower 6GHz
3DB20441BA SN: BS1106UW055

Channel configuration (BW and QAM)	Nominal power (dBm)	Temperature (deg C)	Low band D1=5935.32 MHz		Mid band D7=5994.62 MHz		High band D12=6044.03 MHz	
			Measured power (dBm)	Error (dB)	Measured power (dBm)	Error (dB)	Measured power (dBm)	Error (dB)
10 MHz	+22*	+25 C	21.05	-0.95	21.54	-0.46	22.20	0.20
128 QAM		-35 C	23.03	1.03	22.06	0.06	23.18	1.18
FCM		+55 C	20.47	-1.53	21.65	-0.35	21.65	-0.35

Measured output power vs. frequency and temperature
Lower 6GHz
3DB20441BA SN: BS1106UW055

Channel configuration (BW and QAM)	Nominal power (dBm)	Temperature (deg C)	Low band B1=5945.20 MHz		Mid band B3=6004.50 GHz		High band B4=6034.15 GHz	
			Measured power (dBm)	Error (dB)	Measured power (dBm)	Error (dB)	Measured power (dBm)	Error (dB)
30 MHz	+22*	+25 C	20.89	-1.11	21.87	-0.13	21.49	-0.51
32 QAM		-35 C	22.21	0.21	22.77	0.77	22.46	0.46
FCM		+55 C	20.71	-1.29	21.55	-0.45	21.38	-0.62
30 MHz	+26	+25 C	24.89	-1.11	25.75	-0.25	25.37	-0.63
4 QAM		-35 C	26.08	0.08	26.68	0.68	26.49	0.49
ACM		+55 C	24.77	-1.23	25.51	-0.49	25.36	-0.64

- Output power was set 1dB below nominal maximum power for this measurement. Accuracy is independent of output power.

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The following data was taken across the operating temperature of -35°C to +55°C.

L6 GHz [252.04 MHz CS/ 2P-2]
 MPT: 3DB20761BAAA02 SN#BS1246JW04J
 DBOX: 3DB20753BBAA, SN#ABF1150-0002
 SWP 4.02.00G

Time	State	BI temp	MTK Module temp	After Cable	At Unit (Before Cable)	Cable Loss
8:15 AM	Calibration	26	N/A	27.24	30.08	2.84
8:30 AM	start +25C	25	N/A	27.24	30.08	
9:00 AM	15min into ramp to -35	-21	N/A	27.14	29.98	
11:00 AM	1hr 50min into -35C	-36	N/A	27.08	29.92	
11:45 AM	30min into ramp to +55C	47	N/A	27.14	29.98	
1:45 PM	end of +55C	55	N/A	27.14	29.98	
2:00 PM	end of ramp to +25C	25	N/A	27.43	30.27	
4:00 PM	1hr 50min into +25C	23	N/A	27.40	30.24	
				MAX	30.27	
				MIN	29.92	
				AVG	30.07	
				Window	0.35	

10 MHz/4 QAM/FCM/Std Gain/2-2P/PTx= +32dBm/Tx Freq. 6375.14 MHz

Time	State	BI temp	MTK Module temp	After Cable	At Unit (Before Cable)	Cable Loss
11:20 AM	Calibration	23	N/A	29.24	32.02	2.78
11:25 AM	start +25C	23	N/A	29.32	32.10	
11:40 AM	end of +25C	23	N/A	29.33	32.11	
12:10 PM	start -35C	-21	N/A	29.26	32.04	
2:05 PM	end -35C	-36	N/A	28.99	31.77	
2:50 AM	start +55C	47	N/A	29.24	32.02	
4:45 PM	1hr 50min into +55C	55	N/A	29.51	32.29	
4:50 PM	1hr 55min into +55C	55	N/A	29.51	32.29	
4:55 PM	end of +55C	55	N/A	29.52	32.30	
5:10 PM	start +25C	24	N/A	29.51	32.29	
5:40 PM	30min into +25C	23	N/A	29.34	32.12	
5:55 PM	45min into +25C	23	N/A	29.32	32.10	
				MAX	32.30	
				MIN	31.77	
				AVG	32.12	
				Window	0.53	

The following data was taken across the operating temperature of -35°C to +55°C.

	BW/Modulation	252.04 MHz CS/FCM
	60/128 QAM	60/256QAM
	TX Freq. (MHz)	5960.025
	TX Output (Provisioned)	+23
	TX Output (Measured outside chamber @25C)	24.02
	TX Power (dBm) after cable outside chamber	24.07
	Calibration	24.02
	start +25C	24.06
	15min into ramp to -35	24.07
	1hr 50min into -35C	25.02
	30min into ramp to +55C	25.25
	end of +55C	23.74
	end of ramp to +25C	23.58
	1hr 50min into +25C	23.87
	MIN	23.58
	MAX	23.80
	WINDOW	25.43
	AVERAGE	1.67
		24.33
		24.53

U6 GHz MPT-HC P/N 3DB20806BAAA01, S/N proto. 3 DBOX P/N 3DB20755BA, S/N ABF1149 0001					
Modulation	Tx RF Freq	BW (MHz)	Tx Power (dBm) CT Setting	Measured TX Power (dBm)	Delta (dBm)
128 QAM	6435	10	23.0	23.23	0.23
	6505	10	5.0	5.09	0.09
			23.0	23.44	0.44
	6585	10	5.0	5.26	0.26
			23.0	23.10	0.10
	256 QAM	6445	30	23.0	23.05
6505		30	5.0	4.89	-0.11
			23.0	23.33	0.33
6565		30	5.0	5.17	0.17
			23.0	23.27	0.27
256 QAM		6435	10	23.0	23.22
	6505	10	5.0	5.06	0.06
			23.0	23.44	0.44
	6585	10	5.0	5.26	0.26
			23.0	23.11	0.11
	256 QAM	6445	30	23.0	23.05
6505		30	5.0	4.87	-0.13
			23.0	23.33	0.33
6565		30	5.0	5.15	0.15
			23.0	23.27	0.27
256 QAM		30	5.0	5.13	0.13

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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dB

Static 10 MHz 64 QAM						
CT	10.735			10.945		
	Offset	Error	Offset	Error	Offset	Error
+21	20.65	-0.35	19.82	-1.18	19.01	-1.99
+25C	20.96	-0.04	19.72	-1.28	19.91	-1.09
-35C	20.84	-0.16	20.51	-0.49	19.48	-1.52

11 GHz /10 MHz/128 QAM/FCM, Max TX Output: +21 dB

Static 10 MHz 128 QAM						
CT	10.735			10.945		
	Offset	Error	Offset	Error	Offset	Error
+21	20.63	-0.37	19.79	-1.21	18.98	-2.02
+25C	20.94	-0.06	19.69	-1.31	19.87	-1.13
-35C	20.82	-0.18	20.48	-0.52	19.45	-1.55

11 GHz /10 MHz/256 QAM/FCM, Max TX Output: +21 dB

Static 10 MHz 256 QAM						
CT	10.735			10.945		
	Offset	Error	Offset	Error	Offset	Error
+21	20.65	-0.35	19.81	-1.19	18.99	-2.01
+25C	20.96	-0.04	19.71	-1.29	19.88	-1.12
-35C	20.83	-0.17	20.50	-0.50	19.47	-1.53

11 GHz /30 MHz/64 QAM/FCM, Max TX Output: +21 dB

Static 30 MHz 64 QAM						
CT	10.765			10.915		
	Offset	Error	Offset	Error	Offset	Error
+21	19.62	-1.38	19.61	-1.39	19.27	-1.73
+25C	19.96	-1.04	19.65	-1.35	19.03	-1.97
-35C	20.67	-0.33	20.42	-0.58	19.64	-1.36

11 GHz /30 MHz/128 QAM/FCM, Max TX Output: +21 dB

Static 30 MHz 128 QAM						
CT	10.755			10.915		
	Offset	Error	Offset	Error	Offset	Error
+21	19.61	-1.39	19.61	-1.39	19.25	-1.75
+25C	19.95	-1.05	19.64	-1.36	19.01	-1.99
-35C	20.67	-0.33	20.42	-0.58	19.61	-1.39

11 GHz /30 MHz/256 QAM/FCM, Max TX Output: +21 dB

Static 30 MHz 256 QAM						
CT	10.755			10.915		
	Offset	Error	Offset	Error	Offset	Error
+21	19.61	-1.39	19.59	-1.41	19.24	-1.76
+25C	19.96	-1.04	19.63	-1.37	19.00	-2.00
-35C	20.67	-0.33	20.40	-0.60	19.60	-1.40

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U6 GHz MPT-HC P/N 3DB20806BAAA01, S/N proto. 6 DBOX P/N 3DB20755BA, S/N GA113089795						
Temperature	Option	BW (MHz)	Modulation	Tx Power (dBm)	Power change from Ref	Tx Power (dBm)
25C Start	FCM	10	128QAM	22.21 (+23 dBm @ 6845 MHz)	0.00	22.21
-35C					0.08	22.29
+55C					0.07	22.28
25C End	FCM	30	256QAM	22.52 (+23 dBm @ 6845 MHz)	0.12	22.33
25C Start					0.00	22.52
-35C					-0.06	22.46
+55C					-0.02	22.50
25C End					-0.07	22.45

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11 GHz /40 MHz/64 QAM/FCM, Max TX Output: +21 dB

Static 40 MHz 64 QAM				
10.735		10.855		10.935
CT	Offset	Error	Offset	Error
+21				
+55C	20.71	-0.29	20.64	-0.36
+25C	20.78	-0.22	20.16	-0.84
-35C	20.63	-0.37	19.94	-1.06
			19.27	-1.73

11 GHz /40 MHz/128 QAM/FCM, Max TX Output: +21 dB

Static 40 MHz 128 QAM				
10.735		10.855		10.935
CT	Offset	Error	Offset	Error
+21				
+55C	20.70	-0.30	20.63	-0.37
+25C	20.78	-0.22	20.15	-0.85
-35C	20.63	-0.37	19.93	-1.07
			19.25	-1.75

11 GHz /40 MHz/256 QAM/FCM, Max TX Output: +21 dB

Static 40 MHz 256 QAM				
10.735		10.855		10.935
CT	Offset	Error	Offset	Error
+21				
+55C	20.90	-0.10	20.81	-0.19
+25C	20.98	-0.02	20.33	-0.67
-35C	20.82	-0.18	20.12	-0.88
			19.44	-1.56

11 GHz /40 MHz/256 QAM High Gain/FCM, Max TX Output: +21 dB

Static 40 MHz 256 QAM				
10.735		10.855		10.935
CT	Offset	Error	Offset	Error
+21				
+55C	20.90	-0.10	20.81	-0.19
+25C	20.98	-0.02	20.33	-0.67
-35C	20.82	-0.18	20.12	-0.88
			19.44	-1.56

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11 GHz /30 MHz/4 QAM/ACM, Max TX Output: +23 dB

Adaptive 30 MHz 4 QAM				
10.755		10.835		10.915
CT	Offset	Error	Offset	Error
+23				
+55C	21.73	-1.27	21.79	-1.21
+25C	22.12	-0.88	21.83	-1.17
-35C	22.92	-0.08	22.70	-0.30
			21.87	-1.13

11 GHz /30 MHz/64 QAM/ACM, Max TX Output: +21 dB

Adaptive 30 MHz 64 QAM				
10.755		10.835		10.915
CT	Offset	Error	Offset	Error
+21				
+55C	19.60	-1.40	19.61	-1.39
+25C	19.96	-1.04	19.65	-1.35
-35C	20.67	-0.33	20.43	-0.57
			19.63	-1.37

11 GHz /30 MHz/128 QAM/ACM, Max TX Output: +21 dB

Adaptive 30 MHz 128 QAM				
10.755		10.835		10.915
CT	Offset	Error	Offset	Error
+21				
+55C	19.61	-1.39	19.63	-1.37
+25C	19.98	-1.02	19.67	-1.33
-35C	20.67	-0.33	20.42	-0.58
			19.61	-1.39

11 GHz /30 MHz/256 QAM/ACM, Max TX Output: +21 dB

Adaptive 30 MHz 256 QAM				
10.755		10.835		10.915
CT	Offset	Error	Offset	Error
+21				
+55C	19.63	-1.37	19.60	-1.40
+25C	19.99	-1.01	19.63	-1.37
-35C	20.68	-0.32	20.36	-0.64
			19.53	-1.47

11 GHz /40 MHz/4 QAM/ACM, Max TX Output: +23 dB

Adaptive 40 MHz 4 QAM				
10.735		10.855		10.935
CT	Offset	Error	Offset	Error
+23				
+55C	22.51	-0.49	22.50	-0.50
+25C	22.65	-0.35	22.06	-0.94
-35C	22.57	-0.43	21.95	-1.05
			21.23	-1.77

11 GHz /40 MHz/64 QAM/ACM, Max TX Output: +23 dB

Adaptive 40 MHz 64 QAM				
10.735		10.855		10.935
CT	Offset	Error	Offset	Error
+21				
+55C	20.69	-0.31	20.65	-0.35
+25C	20.78	-0.22	20.16	-0.84
-35C	20.62	-0.38	19.94	-1.06
			19.27	-1.73

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11 GHz /40 MHz/128 QAM/ACM, Max TX Output: +21 dB

Adaptive 40 MHz 128 QAM				
	10.735	10.855		10.935
CT	Offset	Error	Offset	Error
+21				
+55C	20.74	-0.26	20.70	-0.30
+25C	20.84	-0.16	20.21	-0.79
-35C	20.66	-0.34	19.97	-1.03
			19.29	-1.71

11 GHz /40 MHz/256 QAM/ACM, Max TX Output: +21 dB

Adaptive 40 MHz 256 QAM				
	10.735	10.855		10.935
CT	Offset	Error	Offset	Error
21				
55C	20.94	-0.06	20.84	-0.16
25C	21.04	0.04	20.35	-0.65
-35C	20.86	-0.14	20.10	-0.90
			19.40	-1.60

11 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +21 dB

XPIC 30 MHz 128 QAM Vertical				
	10.765	10.835		10.915
CT	Offset	Error	Offset	Error
+21				
+55C	19.61	-1.39	19.63	-1.37
+25C	19.98	-1.02	19.67	-1.33
-35C	20.68	-0.32	20.42	-0.58
			19.61	-1.39

11 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +21 dB

XPIC 30 MHz 256 QAM Vertical				
	10.765	10.835		10.915
CT	Offset	Error	Offset	Error
+21				
+55C	19.62	-1.38	19.63	-1.37
+25C	19.99	-1.01	19.66	-1.34
-35C	20.68	-0.32	20.41	-0.59
			19.59	-1.41

11 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +21 dB

XPIC 40 MHz 128 QAM Vertical				
	10.735	10.855		10.935
CT	Offset	Error	Offset	Error
+21				
+55C	20.65	-0.35	20.65	-0.35
+25C	20.71	-0.29	20.16	-0.84
-35C	20.54	-0.46	19.89	-1.11
			19.34	-1.66

11 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +21 dB

XPIC 40 MHz 256 QAM Vertical				
	10.735	10.855		10.935
CT	Offset	Error	Offset	Error
+21				
+55C	20.94	-0.06	20.89	-0.11
+25C	21.05	0.05	20.39	-0.61
-35C	20.87	-0.13	20.15	-0.85
			19.46	-1.54

ED 06

ECCN: 5E591
HTS: 4901.99.0050

3DB 200010094 QZZA

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18GHz power level accuracy tables:

**3DB20432BAAA
SN#BS1048JW05X**

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dB

Static 10 MHz 64 QAM				
	17.705	17.920		18.135
CT +19	Offset	Error	Offset	Error
+25C	19.00	0.00	19.06	0.06
-35C	18.73	-0.27	18.56	-0.44
+55C	18.99	-0.01	18.94	-0.06
			18.83	-0.17

18 GHz /10 MHz/128 QAM/FCM, Max TX Output: +19 dB

Static 10 MHz 128 QAM				
	17.705	17.920		18.135
CT +19	Offset	Error	Offset	Error
+25C	18.94	-0.06	19.04	0.04
-35C	18.71	-0.29	18.54	-0.46
+55C	18.97	-0.03	18.92	-0.08
			18.81	-0.19

18 GHz /10 MHz/256 QAM/FCM, Max TX Output: +18 dB

Static 10 MHz 256 QAM				
	17.705	17.920		18.135
CT +18	Offset	Error	Offset	Error
+25C	17.94	-0.06	18.04	0.04
-35C	17.70	-0.30	17.52	-0.48
+55C	17.97	-0.03	17.91	-0.09
			17.81	-0.19

18 GHz /30 MHz/64 QAM/FCM, Max TX Output: +19 dB

Static 30 MHz 64 QAM				
	17.715	17.920		18.125
CT +19	Offset	Error	Offset	Error
+25C	18.81	-0.19	18.89	-0.11
-35C	18.53	-0.47	18.41	-0.59
+55C	18.89	-0.11	18.78	-0.22
			18.56	-0.44

18 GHz /30 MHz/128 QAM/FCM, Max TX Output: +19 dB

Static 30 MHz 128 QAM				
	17.715	17.920		18.125
CT +19	Offset	Error	Offset	Error
+25C	18.80	-0.20	18.88	-0.12
			18.66	-0.34

ED 06

ECCN: 5E591
HTS: 4901.99.0050

3DB 200010094 QZZA

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-35C	18.53	-0.47	18.40	-0.60	18.86	-0.14
+55C	18.88	-0.12	18.77	-0.23	18.56	-0.44

18 GHz /30 MHz/256 QAM/FCM, Max TX Output: +18 dB

Static 30 MHz 256 QAM						
CT +18	17.715		17.920		18.125	
	Offset	Error	Offset	Error	Offset	Error
+25C	18.22	0.22	18.31	0.31	18.20	0.20
-35C	18.31					
+55C	18.20					

18 GHz /40 MHz/64 QAM/FCM, Max TX Output: +19 dB

Static 40 MHz 64 QAM						
CT +19	17.720		17.920		18.120	
	Offset	Error	Offset	Error	Offset	Error
+25C	18.90	-0.10	18.98	-0.02	18.77	-0.23
-35C	18.59	-0.41	18.54	-0.46	18.90	-0.10
+55C	19.00	0.00	18.88	-0.12	18.69	-0.31

18 GHz /40 MHz/128 QAM/FCM, Max TX Output: +19 dB

Static 40 MHz 128 QAM						
CT +19	17.720		17.920		18.120	
	Offset	Error	Offset	Error	Offset	Error
+25C	18.90	-0.10	18.97	-0.03	18.76	-0.24
-35C	18.59	-0.41	18.53	-0.47	18.89	-0.11
+55C	18.99	-0.01	18.87	-0.13	18.68	-0.32

18 GHz /40 MHz/256 QAM/FCM, Max TX Output: +18 dB

Static 40 MHz 256 QAM						
CT +18	17.720		17.920		18.120	
	Offset	Error	Offset	Error	Offset	Error
+25C	18.32	0.32	18.44	0.44	18.31	0.31
-35C						
+55C						

18 GHz /40 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dB

Static 40 MHz 256 QAM						
CT +18	17.720		17.920		18.120	
	Offset	Error	Offset	Error	Offset	Error
+25C						
+25C						
-35C						
+55C						

18 GHz /50 MHz/64 QAM/FCM, Max TX Output: +19 dB

Static 40 MHz 64 QAM						
CT +18	17.720		17.920		18.120	
	Offset	Error	Offset	Error	Offset	Error
+25C						
-35C						
+55C						

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CT +19	17.725		17.920		18.115	
	Offset	Error	Offset	Error	Offset	Error
+25C	19.02	0.02	19.09	0.09	18.88	-0.12
-35C	18.69	-0.31	18.67	-0.33	18.91	-0.09
+55C	19.13	0.13	19.00	0.00	18.86	-0.14

18 GHz /50 MHz/128 QAM/FCM, Max TX Output: +19 dB

Static 40 MHz 128 QAM						
CT +19	17.725		17.920		18.115	
	Offset	Error	Offset	Error	Offset	Error
+25C	19.02	0.02	19.09	0.09	18.88	-0.12
-35C	18.69	-0.31	18.66	-0.34	18.90	-0.10
+55C	19.12	0.12	18.99	-0.01	18.86	-0.14

18 GHz /50 MHz/256 QAM/FCM, Max TX Output: +18 dB

Static 40 MHz 256 QAM						
CT +18	17.725		17.920		18.115	
	Offset	Error	Offset	Error	Offset	Error
+25C	18.43	0.43	18.56	0.56	18.45	0.45
-35C						
+55C						

18 GHz /50 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dB

Static 40 MHz 256 QAM						
CT +18	17.725		17.920		18.115	
	Offset	Error	Offset	Error	Offset	Error
+25C						
-35C						
+55C						

18 GHz /30 MHz/4 QAM/ACM, Max TX Output: +22 dB

Adaptive 30 MHz 4 QAM						
CT +22	17.715		17.920		18.125	
	Offset	Error	Offset	Error	Offset	Error
+25C	21.84	-0.16	21.98	-0.02	21.78	-0.22
-35C	21.58	-0.42	21.57	-0.43	21.89	-0.11
+55C	21.94	-0.06	21.84	-0.16	21.69	-0.31

18 GHz /30 MHz/64 QAM/ACM, Max TX Output: +19 dB

Adaptive 30 MHz 64 QAM						
CT +19	17.715		17.920		18.125	
	Offset	Error	Offset	Error	Offset	Error
+25C	18.82	-0.18	18.89	-0.11	18.69	-0.31

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export administration regulations. Division contrary to U.S. law prohibited. The export or re-export (further transfer) of such

-35C	18.48	-0.52	18.41	-0.59	18.73	-0.27
+55C	18.94	-0.06	18.78	-0.22	18.61	-0.39

18 GHz /30 MHz/128 QAM/ACM, Max TX Output: +19 dB

Adaptive 30 MHz 128 QAM						
	17.715		17.920		18.125	
CT +19	Offset	Error	Offset	Error	Offset	Error
+25C	18.81	-0.19	18.88	-0.12	18.68	-0.32
-35C	18.47	-0.53	18.40	-0.60	18.72	-0.28
+55C	18.93	-0.07	18.77	-0.23	18.60	-0.40

18 GHz /30 MHz/256 QAM/ACM, Max TX Output: +18 dB

Adaptive 30 MHz 256 QAM						
	17.715		17.920		18.125	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C						
-35C						
+55C						

18 GHz /40 MHz/4 QAM/ACM, Max TX Output: +22 dB

Adaptive 40 MHz 4 QAM						
	17.720		17.920		18.120	
CT +22	Offset	Error	Offset	Error	Offset	Error
+25C	21.81	-0.19	21.94	-0.06	21.74	-0.26
-35C	21.54	-0.46	21.55	-0.45	21.83	-0.17
+55C	21.90	-0.10	21.82	-0.18	21.69	-0.31

18 GHz /40 MHz/64 QAM/ACM, Max TX Output: +19 dB

Adaptive 40 MHz 64 QAM						
	17.720		17.920		18.120	
CT +19	Offset	Error	Offset	Error	Offset	Error
+25C	18.91	-0.09	18.98	-0.02	18.77	-0.23
-35C	18.57	-0.43	18.54	-0.46	18.82	-0.18
+55C	19.02	0.02	18.88	-0.12	18.72	-0.28

18 GHz /40 MHz/128 QAM/ACM, Max TX Output: +19 dB

Adaptive 40 MHz 128 QAM						
	17.720		17.920		18.120	
CT +19	Offset	Error	Offset	Error	Offset	Error
+25C	18.90	-0.10	18.97	-0.03	18.77	-0.23
-35C	18.56	-0.44	18.53	-0.47	18.81	-0.19
+55C	19.01	0.01	18.87	-0.13	18.72	-0.28

18 GHz /40 MHz/256 QAM/ACM, Max TX Output: +18 dB

Adaptive 40 MHz 256 QAM						
	17.720		17.920		18.120	
CT +19	Offset	Error	Offset	Error	Offset	Error
+25C	18.90	-0.10	18.97	-0.03	18.77	-0.23
-35C	18.56	-0.44	18.53	-0.47	18.81	-0.19
+55C	19.01	0.01	18.87	-0.13	18.72	-0.28

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CT +18	17.720	Offset	Error	17.920	Offset	Error	18.120	Offset	Error
+25C									
-35C									
+55C									

18 GHz /50 MHz/4 QAM/ACM, Max TX Output: +22 dB

Adaptive 40 MHz 4 QAM									
	17.725		17.920		18.115				
CT +22	Offset	Error	Offset	Error	Offset	Error			
+25C	21.79	-0.21	21.92	-0.08	21.71	-0.29			
-35C	21.51	-0.49	21.54	-0.46	21.78	-0.22			
+55C	21.86	-0.14	21.80	-0.20	21.68	-0.32			

18 GHz /50 MHz/64 QAM/ACM, Max TX Output: +19 dB

Adaptive 40 MHz 64 QAM									
	17.725		17.920		18.115				
CT +19	Offset	Error	Offset	Error	Offset	Error			
+25C	19.02	0.02	19.09	0.09	18.88	-0.12			
-35C	18.69	-0.31	18.66	-0.34	18.61	-0.39			
+55C	19.13	0.13	18.99	-0.01	18.56	-0.44			

18 GHz /50 MHz/128 QAM/ACM, Max TX Output: +19 dB

Adaptive 40 MHz 128 QAM									
	17.725		17.920		18.115				
CT +19	Offset	Error	Offset	Error	Offset	Error			
+25C	19.02	0.02	19.09	0.09	18.88	-0.12			
-35C	18.69	-0.31	18.71	-0.29	18.66	-0.34			
+55C	19.12	0.12	19.04	0.04	18.61	-0.39			

18 GHz /50 MHz/256 QAM/ACM, Max TX Output: +18 dB

Adaptive 40 MHz 256 QAM									
	17.725		17.920		18.115				
CT +18	Offset	Error	Offset	Error	Offset	Error			
+25C									
-35C									
+55C									

18 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +19 dB

XPIC 30 MHz 128 QAM Vertical									
	17.715		17.920		18.125				
CT +19	Offset	Error	Offset	Error	Offset	Error			
+25C	18.80	-0.20	18.87	-0.13	18.67	-0.33			

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-35C	18.52	-0.48	18.40	-0.60	18.86	-0.14
+55C	18.87	-0.13	18.76	-0.24	18.55	-0.45

18 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +18 dB

XPIC 30 MHz 256 QAM Vertical						
	17.715		17.920		18.125	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C	17.85	-0.15	17.90	-0.10	17.69	-0.31
-35C	17.54	-0.46	17.40	-0.60	17.87	-0.13
+55C	17.92	-0.08	17.78	-0.22	17.57	-0.43

18 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +19 dB

XPIC 40 MHz 128 QAM Vertical						
	17.720		17.920		18.120	
CT +19	Offset	Error	Offset	Error	Offset	Error
+25C	18.83	-0.17	18.91	-0.09	18.69	-0.31
-35C	18.52	-0.48	18.47	-0.53	18.81	-0.19
+55C	18.93	-0.07	18.81	-0.19	18.64	-0.36

18 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +18 dB

XPIC 40 MHz 256 QAM Vertical						
	17.720		17.920		18.120	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C	17.96	-0.04	18.02	0.02	17.82	-0.18
-35C	17.62	-0.38	17.55	-0.45	17.92	-0.08
+55C	18.06	0.06	17.92	-0.08	17.73	-0.27

18 GHz /50 MHz/128 QAM/XPIC, Max TX Output: +19 dB

XPIC 40 MHz 128 QAM Vertical						
	17.725		17.920		18.115	
CT +19	Offset	Error	Offset	Error	Offset	Error
+25C	19.02	0.02	19.08	0.08	18.88	-0.12
-35C	18.68	-0.32	18.66	-0.34	18.90	-0.10
+55C	19.12	0.12	18.99	-0.01	18.86	-0.14

18 GHz /50 MHz/256 QAM/XPIC, Max TX Output: +18 dB

XPIC 40 MHz 256 QAM Vertical						
	17.725		17.920		18.115	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C	18.10	0.10	18.15	0.15	17.94	-0.06
-35C	17.72	-0.28	17.68	-0.32	17.94	-0.06
+55C	18.20	0.20	18.06	0.06	17.92	-0.08

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23GHz power level accuracy tables:

**3DB20476BAAA
SN#BS1042UW06Q**

23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dB

Static 10 MHz 64 QAM						
	22.986		23.291		23.595	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C	17.16	-0.84	17.28	-0.72	17.33	-0.87
+55C	16.69	-1.31	16.80	-1.20	17.32	-0.68
-35C	17.06	-0.94	17.94	-0.06	17.79	-0.21

23 GHz /10 MHz/128 QAM/FCM, Max TX Output: +18 dB

Static 10 MHz 128 QAM						
	22.986		23.291		23.595	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C	17.16	-0.84	17.28	-0.72	17.33	-0.87
+55C	16.69	-1.31	16.80	-1.20	17.32	-0.68
-35C	17.07	-0.93	17.94	-0.06	17.77	-0.23

23 GHz /10 MHz/256 QAM/FCM, Max TX Output: +18 dB

Static 10 MHz 256 QAM						
	22.986		23.291		23.595	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C	17.16	-0.84	17.28	-0.72	17.33	-0.87
+55C	16.69	-1.31	16.80	-1.20	17.31	-0.69
-35C	17.07	-0.93	17.95	-0.05	17.75	-0.25

23 GHz /30 MHz/64 QAM/FCM, Max TX Output: +18 dB

Static 30 MHz 64 QAM						
	22.996		23.291		23.585	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C	16.81	-1.19	16.98	-1.02	16.90	-1.10
+55C	16.24	-1.76	16.49	-1.51	16.86	-1.14
-35C	17.29	-0.71	17.65	-0.35	17.54	-0.46

23 GHz /30 MHz/128 QAM/FCM, Max TX Output: +18 dB

Static 30 MHz 128 QAM						
	22.996		23.291		23.585	
CT +18	Offset	Error	Offset	Error	Offset	Error
+25C	16.81	-1.19	16.98	-1.02	16.90	-1.10
+55C	16.24	-1.76	16.49	-1.51	16.86	-1.14
-35C	17.29	-0.71	17.64	-0.36	17.53	-0.47

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23 GHz /30 MHz/256 QAM/FCM, Max TX Output: +18 dB

Static 30 MHz 256 QAM						
	22.996	23.291	23.585			
CT +18	Offset	Error	Offset	Error		
+25C	16.81	-1.19	16.98	-1.02	16.81	-1.19
+55C	16.24	-1.76	16.49	-1.51	16.86	-1.14
-35C	17.29	-0.71	17.64	-0.36	17.52	-0.48

23 GHz /40 MHz/64 QAM/FCM, Max TX Output: +18 dB

Static 40 MHz 64 QAM						
	23.001	23.291	23.580			
CT +18	Offset	Error	Offset	Error		
+25C	16.88	-1.12	17.05	-0.95	16.97	-1.03
+55C	16.35	-1.65	16.56	-1.44	16.94	-1.06
-35C	17.53	-0.47	17.69	-0.31	17.39	-0.61

23 GHz /40 MHz/128 QAM/FCM, Max TX Output: +18 dB

Static 40 MHz 128 QAM						
	23.001	23.291	23.580			
CT +18	Offset	Error	Offset	Error		
+25C	16.88	-1.12	17.05	-0.95	16.97	-1.03
+55C	16.36	-1.64	16.57	-1.43	16.93	-1.07
-35C	17.53	-0.47	17.69	-0.31	17.38	-0.62

23 GHz /40 MHz/256 QAM/FCM, Max TX Output: +18 dB

Static 40 MHz 256 QAM						
	23.001	23.291	23.580			
CT +18	Offset	Error	Offset	Error		
+25C	16.88	-1.12	17.05	-0.95	16.97	-1.03
+55C	16.36	-1.64	16.57	-1.43	16.93	-1.07
-35C	17.54	-0.46	17.69	-0.31	17.36	-0.64

23 GHz /40 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dB

Static 40 MHz 256 QAM High Gain						
	23.001	23.291	23.580			
CT +18	Offset	Error	Offset	Error		
+25C	16.88	-1.12	17.05	-0.95	16.97	-1.03
+55C	16.35	-1.65	16.57	-1.43	16.94	-1.06
-35C	17.53	-0.46	17.69	-0.31	17.37	-0.63

23 GHz /50 MHz/64 QAM/FCM, Max TX Output: +18 dB

Static 50 MHz 64 QAM						
	23.006	23.291	23.575			
CT +18	Offset	Error	Offset	Error		
+25C	17.00	-1.00	17.13	-0.87	17.01	-0.99
+55C	16.51	-1.49	16.64	-1.36	16.98	-1.02
-35C	17.72	-0.28	17.76	-0.24	17.40	-0.60

23 GHz /50 MHz/128 QAM/FCM, Max TX Output: +18 dB

Static 50 MHz 128 QAM						
	23.006	23.291	23.575			
CT +18	Offset	Error	Offset	Error		
+25C	17.00	-1.00	17.13	-0.87	17.01	-0.99
+55C	16.50	-1.50	16.65	-1.35	16.99	-1.01
-35C	17.72	-0.28	17.75	-0.25	17.39	-0.61

23 GHz /50 MHz/256 QAM/FCM, Max TX Output: +18 dB

Static 50 MHz 256 QAM						
	23.006	23.291	23.575			
CT +18	Offset	Error	Offset	Error		
+25C	17.00	-1.00	17.13	-0.87	17.01	-0.99
+55C	16.51	-1.49	16.66	-1.34	17.00	-1.00
-35C	17.73	-0.27	17.77	-0.23	17.37	-0.63

23 GHz /50 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dB

Static 50 MHz 256 QAM High Gain						
	23.006	23.291	23.575			
CT +18	Offset	Error	Offset	Error		
+25C	17.00	-1.00	17.13	-0.87	17.01	-0.99
+55C	16.50	-1.50	16.66	-1.34	17.00	-1.00
-35C	17.72	-0.28	17.77	-0.23	17.37	-0.63

23 GHz /30 MHz/4 QAM/ACM, Max TX Output: +22 dB

Adaptive 30 MHz 4 QAM						
	22.996	23.291	23.585			
CT +18	Offset	Error	Offset	Error		
+25C	16.81	-1.19	16.98	-1.02	16.90	-1.10
+55C	16.31	-1.39	16.54	-1.46	16.85	-1.15
-35C	17.34	-0.66	17.66	-0.34	17.34	-0.66

23 GHz /30 MHz/64 QAM/ACM, Max TX Output: +18 dB
 (same as 30 MHz/64 QAM/FCM)

23 GHz /30 MHz/128 QAM/ACM, Max TX Output: +18 dB
 (same as 30 MHz/128 QAM/FCM)

23 GHz /30 MHz/256 QAM/ACM, Max TX Output: +18 dB
 (same as 30 MHz/256 QAM/FCM)

23 GHz /40 MHz/4 QAM/ACM, Max TX Output: +22 dB

Adaptive 40 MHz 4 QAM						
CT +18	23.001	23.291		23.580		
		Offset	Error	Offset	Error	
+25C	16.88	-1.12	17.05	-0.95	16.97	-1.03
+55C	16.38	-1.62	16.60	-1.40	16.92	-1.08
-35C	17.57	-0.43	17.72	-0.28	17.38	-0.62

23 GHz /40 MHz/64 QAM/ACM, Max TX Output: +18 dB
 (same as 40 MHz/64 QAM/FCM)

23 GHz /40 MHz/128 QAM/ACM, Max TX Output: +18 dB
 (same as 40 MHz/128 QAM/FCM)

23 GHz /40 MHz/256 QAM/ACM, Max TX Output: +18 dB
 (same as 40 MHz/256 QAM/FCM)

23 GHz /50 MHz/4 QAM/ACM, Max TX Output: +22 dB

Adaptive 50 MHz 4 QAM						
CT +22	17.725	17.920		18.115		
		Offset	Error	Offset	Error	
+25C	17.00	-1.00	17.13	-0.87	17.01	-0.99
+55C	16.56	-1.44	16.72	-1.28	16.98	-1.02
-35C	17.78	-0.22	17.80	-0.20	17.39	-0.61

23 GHz /50 MHz/64 QAM/ACM, Max TX Output: +18 dB
 (same as 50 MHz/64 QAM/FCM)

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23 GHz /50 MHz/128 QAM/ACM, Max TX Output: +18 dB
 (same as 50 MHz/128 QAM/FCM)

23 GHz /50 MHz/256 QAM/ACM, Max TX Output: +18 dB
 (same as 50 MHz/256 QAM/FCM)

23 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +18 dB
 (same as 30 MHz/128 QAM/FCM)

23 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +18 dB

XPIC 30 MHz 256 QAM Vertical						
CT +18	22.996	23.291		23.585		
		Offset	Error	Offset	Error	
+25C	16.81	-1.19	16.98	-1.02	16.90	-1.10
+55C	16.27	-1.73	16.52	-1.48	16.89	-1.11
-35C	17.30	-0.70	17.65	-0.35	17.32	-0.68

23 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +18 dB
 (same as 40 MHz/128 QAM/FCM)

23 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +18 dB

XPIC 40 MHz 256 QAM Vertical						
CT +18	23.001	23.291		23.580		
		Offset	Error	Offset	Error	
+25C	16.88	-1.12	17.05	-0.95	16.97	-1.03
+55C	16.36	-1.64	16.58	-1.42	16.95	-1.05
-35C	17.52	-0.48	17.68	-0.32	17.36	-0.64

23 GHz /50 MHz/128 QAM/XPIC, Max TX Output: +18 dB
 (same as 50 MHz/128 QAM/FCM)

23 GHz /50 MHz/256 QAM/XPIC, Max TX Output: +18 dB

XPIC 40 MHz 256 QAM Vertical						
CT +18	23.006	23.291		23.575		
		Offset	Error	Offset	Error	
+25C	17.00	-1.00	17.13	-0.87	17.01	-0.99
+55C	16.54	-1.46	16.69	-1.31	17.01	-0.99
-35C	17.73	-0.27	17.77	-0.23	17.37	-0.63

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ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

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ED 06

ECCN: 5E991
 HTS: 4901.99.0050

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1.2.4 FREQUENCY TOLERANCE

Control of the channel frequency is critical to control the energy transmitted out of the antenna. The FCC regulates the accuracy of the frequency for radios but has different requirements for each frequency band. The channel frequency must be measured to meet the tolerance requirements for the given bands over the expected temperature range and over the range of battery input to the radio. The requirement is copied below.

§ 101.107 Frequency tolerance:

a) The carrier frequency of each transmitter authorized in these services must be maintained within the following percentage of the reference frequency.

Frequency (MHz)	Frequency tolerance (percent)	Frequency tolerance (ppm)
5,925 to 6,875	0.005	50
6,875 to 7,125	0.005	50
10,550 to 11,700	0.005	50
11,700 to 12,200	0.005	50
12,200 to 13,250	0.005	50
14,200 to 14,400	0.03	300
17,700 to 18,820	0.003	30
18,820 to 18,920	0.001	10
18,920 to 19,700	0.003	30
19,700 to 27,500	0.001	10
27,500 to 28,350	0.001	10
29,100 to 29,250	0.001	10
31,000 to 31,300	0.001	10
31,300 to 40,000	0.03	300
71,000 to 76,000	exempt	
81,000 to 86,000	exempt	
92,000 to 95,000	exempt	

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Table 15: MPT-HC/XP Output Frequency accuracy [L6GHz and U6GHz]

Frequency Band	General		Frequency accuracy	Requirement (+/- ppm)	Requirement Met? (yes/no)	
	BW (MHz)	QAM Mod (n)				
L6GHz 252.04MHz	10	128	See table 13a	50	yes	
		256	See table 13a	50	yes	
	30	4	See table 13a	50	yes	
		16	See table 13a	50	yes	
		32	See table 13a	50	yes	
		64	See table 13a	50	yes	
		128	See table 13a	50	yes	
		256	See table 13a	50	yes	
		60	128	See table 13a	50	yes
			256	See table 13a	50	yes
4	See table 13a		50	yes		
8	See table 13a		50	yes		
16	See table 13a		50	yes		
32	See table 13a		50	yes		
U6GHz 160 MHz	10	64	See table 13a	50	yes	
		128	See table 13a	50	yes	
	30	256	See table 13a	50	yes	
		4	See table 13a	50	yes	
		8	See table 13a	50	yes	
		16	See table 13a	50	yes	
		32	See table 13a	50	yes	
		64	See table 13a	50	yes	
		128	See table 13a	50	yes	
		256	See table 13a	50	yes	

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Table 16:
MPT-HC Output Frequency accuracy [11GHz]

General		Frequency Accuracy	Clause	101.107	Section 2.1055
Frequency Band	BW (MHz)	QAM Mod (n)	Frequency accuracy	Requirement (+/- ppm)	Requirement Met? (yes/no)
11GHz 490/500 MHz	10	4	See table 13a	50	yes
		8	See table 13a	50	yes
		16	See table 13a	50	yes
		32	See table 13a	50	yes
		64	See table 13a	50	yes
		128	See table 13a	50	yes
	30	256	See table 13a	50	yes
		4	See table 13a	50	yes
		8	See table 13a	50	yes
		16	See table 13a	50	yes
		32	See table 13a	50	yes
		64	See table 13a	50	yes
40	128	See table 13a	50	yes	
	256	See table 13a	50	yes	
	4	See table 13a	50	yes	
	8	See table 13a	50	yes	
	16	See table 13a	50	yes	
	32	See table 13a	50	yes	
50	64	See table 13a	50	yes	
	128	See table 13a	50	yes	
	256	See table 13a	50	yes	
	4	See table 13a	50	yes	
	8	See table 13a	50	yes	
	16	See table 13a	50	yes	

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Table 17
MPT-HC Output Frequency and accuracy [18GHz]

General		Frequency Accuracy	Clause	101.107	Section 2.1055
Frequency Band	BW (MHz)	QAM Mod (n)	Frequency accuracy	Requirement (+/- ppm)	Requirement Met? (yes/no)
18GHz	10	4	See table 14a	30	yes
		8	See table 14a	30	yes
		16	See table 14a	30	yes
		32	See table 14a	30	yes
		64	See table 14a	30	yes
		128	See table 14a	30	yes
	30	256	See table 14a	30	yes
		4	See table 14a	30	yes
		8	See table 14a	30	yes
		16	See table 14a	30	yes
		32	See table 14a	30	yes
		64	See table 14a	30	yes
40	128	See table 14a	30	yes	
	256	See table 14a	30	yes	
	4	See table 14a	30	yes	
	8	See table 14a	30	yes	
	16	See table 14a	30	yes	
	32	See table 14a	30	yes	
50	64	See table 14a	30	yes	
	128	See table 14a	30	yes	
	256	See table 14a	30	yes	
	4	See table 14a	30	yes	
	8	See table 14a	30	yes	
	16	See table 14a	30	yes	

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Table 18
MPT-HC Output Frequency and accuracy [23GHz]

General		Frequency Accuracy Clause 101.107 Section 2.1055		Requirement Met? (yes/no)	
Frequency Band	BW (MHz)	QAM Mod (n)	Requirement (+/- ppm)		
23GHz	10	4	See table 15a	10	yes
		8	See table 15a	10	yes
		16	See table 15a	10	yes
		32	See table 15a	10	yes
	30	64	See table 15a	10	yes
		128	See table 15a	10	yes
		256	See table 15a	10	yes
		4	See table 15a	10	yes
	40	8	See table 15a	10	yes
		16	See table 15a	10	yes
		32	See table 15a	10	yes
		64	See table 15a	10	yes
128		See table 15a	10	yes	
256		See table 15a	10	yes	
4		See table 15a	10	yes	
8		See table 15a	10	yes	
50	16	See table 15a	10	yes	
	32	See table 15a	10	yes	
	64	See table 15a	10	yes	
	128	See table 15a	10	yes	
	256	See table 15a	10	yes	
	4	See table 15a	10	yes	
	8	See table 15a	10	yes	
	16	See table 15a	10	yes	

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Table 19
MPT-HC Frequency accuracy [38GHz]

General		Frequency Accuracy Clause 101.107 Section 2.1055		Requirement Met? (yes/no)	
Frequency Band	BW (MHz)	QAM Mod (n)	Requirement (+/- ppm)		
38GHz 700 MHz	10	32	See table 16a	300	Yes
		64	See table 16a	300	Yes
		128	See table 16a	300	Yes
		256	See table 16a	300	Yes
	30	4	See table 16a	300	Yes
		16	See table 16a	300	Yes
		32	See table 16a	300	Yes
		64	See table 16a	300	Yes
	40	128	See table 16a	300	Yes
		256	See table 16a	300	Yes
		4	See table 16a	300	Yes
		16	See table 16a	300	Yes
50	32	See table 16a	300	Yes	
	64	See table 16a	300	Yes	
	128	See table 16a	300	Yes	
	256	See table 16a	300	Yes	

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Below is the data captured to verify frequency compliance to FCC requirements including frequency accuracy vs. temperature and frequency accuracy vs. battery operating range.

ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	66 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	65 / 299
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L6 GHz frequency vs. temperature

Temperature (deg C)	Selected channel (MHz)	Measured Frequency (MHz)	Delta (kHz)	Delta (PPM)
+25	6004.5	6004.508678	+8.68	+ 1.45
-35	6004.5	6004.505648	+5.65	+ .941
+55	6004.5	6004.506387	+6.39	+ 1.06
+25	6004.5	6004.510258	+10.26	+1.71

L6 GHz frequency vs. battery

Battery Voltage (V DC)	Selected channel (MHz)	Measured Frequency (MHz)	Delta (kHz)	Delta (PPM)
-38.4	6004.5	6004.509255	9.26	+ 1.54
-48.0	6004.5	6004.509252	9.25	+ 1.54
-55.2	6004.5	6004.509255	9.26	+ 1.54

Table 15a Lower 6GHz frequency data

U6 GHz Freq vs. Temperature and Battery
MPT-HC P/N 3DB20806BAAA01, S/N proto 6
D80X P/N 3DB20755BA, S/N GAT13089795

Temperature	Frequency (kHz)	Delta (Hz)	PPM
+25C Start	6845007222	7222	1.055
-35C	6845010093	10093	1.475
+55C	6845009202	9202	1.344
+25C End	6845006977	6977	1.019

TX RF Freq	Voltage (TX ON)	Frequency	Delta	PPM
6.845 GHz	-48.10	6845007514	7514	1.098
6.845 GHz	-38.40	6845007504	7504	1.096
6.845 GHz	-55.20	6845007491	7491	1.094

Table 15b Upper 6GHz frequency data

11GHz frequency vs. temperature
3DB20547BAAA01 SN#BS1048UW026

Temperature	Frequency (kHz)	Delta (kHz)	PPM
25C Start	10935007135.000	0.000	0
-35C	10935013315.000	6180.000	0.565157
55C	10935009112.000	1977.000	0.180795
25C End	10935008775.000	1640.000	0.149977

11GHz frequency vs. battery
3DB20547BAAA01 SN#BS1048UW026

TX RF Freq	Voltage (TX ON)	Frequency	Delta (Hz)	PPM
11.330 GHz	-48.00	11330024480	24480	2.16
11.330 GHz	-38.40	11330024680	24680	2.17
11.330 GHz	-55.20	11330024420	24420	2.15

Table 16a 11GHz frequency data

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18 GHz 30 MHz/256 QAM, BS1012UW032, TX Freq. 17.920 GHz

Temperature	Frequency (kHz)	Delta (KHz)	PPM
25C Start	17920037.977	0.000	0
-35C	17920045.728	7.751	0.4325
55C	17920043.489	5.512	0.3076
25C End	17920038.819	0.842	0.0470

18 GHz 30 MHz/256 QAM, BS1012UW03J, TX Freq. 19.480 GHz

Temperature	Frequency (kHz)	Delta (KHz)	PPM
25C Start	19480040.127	0.000	0
-35C	19480053.851	13.724	0.704516
55C	19480039.382	-0.745	-0.038244
25C End	19480040.890	0.763	0.039168

3DB20432AAAA SN#BS1012UW032 #3.1, SWP 3.00.00L				3DB20433AAAA SN#BS1012UW03J #8.1, SWP 9.00.00H			
TX RF Freq (GHz)	Voltage (TX ON)	DC Current (TX ON)	Frequency	TX RF Freq (GHz)	Voltage (TX ON)	DC Current (TX ON)	Frequency
17.920 GHz	-48.10	0.780	17.92003468	19.480 GHz	-48.10	0.797	19.48003776
17.920 GHz	-38.40	0.980	17.92003469	19.480 GHz	-38.40	1.007	19.48003781
17.920 GHz	-55.20	0.674	17.92003474	19.480 GHz	-55.20	0.697	19.48003778

Table 17a 18GHz frequency data

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23GHz Frequency vs. Battery			
3DB20433AAAA SN#BS1012UW03J (172.22.47.24) - #8.1, SWP 3.00.00L			
TX RF Freq	Voltage (TX ON)	Frequency (kHz)	Delta (Hz)
22.996 GHz	-48.00	22996029.726	29726
22.996 GHz	-38.40	22996029.722	29722
22.996 GHz	-55.20	22996029.709	29709
			PPM
			1.3
			1.3
			1.3

23GHz Frequency vs. temperature		
Temperature	Frequency (kHz)	Delta (kHz)
25C Start	23291023.000	0.000
-35C	23291030.000	7.000
55C	23291028.000	5.000
25C End	23291020.000	-3.000
		PPM
		0
		0.3005
		0.2147
		-0.1288

Table 18a 23GHz frequency data

38GHz frequency vs. temperature			
Temperature (deg C)	Selected channel (MHz)	Measured Frequency (MHz)	Delta (KHz)
+25	39475	39475.0684	+ 68.4
-35	39475	39475.0367	+ 36.7
+55	39475	39475.0417	+ 41.7
			Delta (PPM)
			+ 1.73
			+ .930
			+ 1.06

38GHz frequency vs. battery			
Battery Voltage (V DC)	Selected channel (MHz)	Measured Frequency (MHz)	Delta (KHz)
-38.4	39475	39475.06708	67.1
-48.0	39475	39475.06708	67.1
-55.2	39475	39475.06708	67.1
			Delta (PPM)
			+ 1.70
			+ 1.70
			+ 1.70

Table 19a 38GHz frequency data

ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZZA	70 / 299
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1.2.5 EMISSIONS LIMIT [MASK]

§ 101.111 Emissions limitations.

- (a) The mean power of emissions must be attenuated below the mean output power of the transmitter in accordance with the following schedule:
 - (2) When using transmissions employing digital modulation techniques:
 - (i) For operating frequencies below 15 GHz, in any 4 KHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth; As specified by the following equation but in no event less than 50 decibels:
 $A = 35 + 0.8(P - 50) + 10 \text{ Log}10 B$. (Attenuation greater than 80 decibels or to an absolute power of less than $-13 \text{ dBm}/1\text{MHz}$ is not required.) where:
 A = Attenuation (in decibels) below the mean output power level.
 P = Percent removed from the center frequency of the transmitter bandwidth.
 B = A authorized bandwidth in MHz.
 - (ii) For operating frequencies above 15 GHz, in any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth;
 As specified by the following equation but in no event less than 11 decibels:
 $A = 11 + 0.4(P - 50) + 10 \text{ Log} [10] B$. (Attenuation greater than 56 decibels or to an absolute power of less than $-13 \text{ dBm}/1\text{MHz}$ is not required.)

The above requirements effectively define a mask within which the transmit power must respect the given limits. In general all masks plotted are measured against the stricter 80 dB requirement. The vast majority of spectrums meet this requirement. Of the few that do not, the less restrictive $-13\text{dBm}/\text{MHz}$ limit is shown. In all cases the spectrum emission requirement is met.

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Table 20: MPT-HC/XP Emissions mask [L6GHz and 11GHz]

General		Emission Limitation Clause 101.111 Section 2.1051			
Frequency Band	BW (MHz)	OAM Mod (n)	Mask Response	Requirement (mask)	Requirement Met? (yes/no)
L6GHz 252.04MHz	10	4	See section 1.2.5.1	mask	yes
		16	See section 1.2.5.1	mask	yes
		32	See section 1.2.5.1	mask	yes
		64	See section 1.2.5.1	mask	yes
		128	See section 1.2.5.1	mask	yes
		256	See section 1.2.5.1	mask	yes
	30	4	See section 1.2.5.1	mask	yes
		16	See section 1.2.5.1	mask	yes
		32	See section 1.2.5.1	mask	yes
		64	See section 1.2.5.1	mask	yes
		128	See section 1.2.5.1	mask	yes
		256	See section 1.2.5.1	mask	yes
60	128	See section 1.2.5.1	mask	yes	
	256	See section 1.2.5.1	mask	yes	
U6GHz 160 MHz	10	4	See section 1.2.5.2	mask	yes
		8	See section 1.2.5.2	mask	yes
		16	See section 1.2.5.2	mask	yes
		32	See section 1.2.5.2	mask	yes
		64	See section 1.2.5.2	mask	yes
		128	See section 1.2.5.2	mask	yes
	30	4	See section 1.2.5.3	mask	yes
		8	See section 1.2.5.3	mask	yes
		16	See section 1.2.5.3	mask	yes
		32	See section 1.2.5.3	mask	yes
		64	See section 1.2.5.3	mask	yes
		128	See section 1.2.5.3	mask	yes
256	See section 1.2.5.3	mask	yes		

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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	72 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	71 / 299
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Table 21:
MPT-HC Emissions mask [11GHz]

General		Emission Limitation Clause 101.111 Section 2.1051			
Frequency Band	BW (MHz)	QAM Mod (n)	Mask Response	Requirement (mask)	Requirement Met? (yes/no)
11GHz 490/500 MHz	10	4	See section 1.2.5.3	mask	yes
		8	See section 1.2.5.3	mask	yes
		16	See section 1.2.5.3	mask	yes
		32	See section 1.2.5.3	mask	yes
		64	See section 1.2.5.3	mask	yes
		128	See section 1.2.5.3	mask	yes
	30	256	See section 1.2.5.3	mask	yes
		4	See section 1.2.5.3	mask	yes
		8	See section 1.2.5.3	mask	yes
		16	See section 1.2.5.3	mask	yes
		32	See section 1.2.5.3	mask	yes
		64	See section 1.2.5.3	mask	yes
40	40	128	See section 1.2.5.3	mask	yes
		256	See section 1.2.5.3	mask	yes
		4	See section 1.2.5.3	mask	yes
		8	See section 1.2.5.3	mask	yes
		16	See section 1.2.5.3	mask	yes
		32	See section 1.2.5.3	mask	yes
	50	64	See section 1.2.5.3	mask	yes
		128	See section 1.2.5.3	mask	yes
		256	See section 1.2.5.3	mask	yes
		4	See section 1.2.5.3	mask	yes
		8	See section 1.2.5.3	mask	yes
		16	See section 1.2.5.3	mask	yes

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Table 22
MPT-HC Emissions mask [18GHz]

General		Emission Limitation Clause 101.111 Section 2.1051				
Frequency Band	BW (MHz)	QAM Mod (n)	Mask Response	Requirement (mask)	Requirement Met? (yes/no)	
18GHz	10	4	See section 1.2.5.4	mask	yes	
		8	See section 1.2.5.4	mask	yes	
		16	See section 1.2.5.4	mask	yes	
		32	See section 1.2.5.4	mask	yes	
		64	See section 1.2.5.4	mask	yes	
		128	See section 1.2.5.4	mask	yes	
		256	See section 1.2.5.4	mask	yes	
		30	4	See section 1.2.5.4	mask	yes
			8	See section 1.2.5.4	mask	yes
			16	See section 1.2.5.4	mask	yes
			32	See section 1.2.5.4	mask	yes
			64	See section 1.2.5.4	mask	yes
	128		See section 1.2.5.4	mask	yes	
	40	256	See section 1.2.5.4	mask	yes	
		4	See section 1.2.5.4	mask	yes	
		8	See section 1.2.5.4	mask	yes	
		16	See section 1.2.5.4	mask	yes	
		32	See section 1.2.5.4	mask	yes	
		64	See section 1.2.5.4	mask	yes	
	50	128	See section 1.2.5.4	mask	yes	
		256	See section 1.2.5.4	mask	yes	
		4	See section 1.2.5.4	mask	yes	
		8	See section 1.2.5.4	mask	yes	
		16	See section 1.2.5.4	mask	yes	
32		See section 1.2.5.4	mask	yes		
64	See section 1.2.5.4	mask	yes			
128	See section 1.2.5.4	mask	yes			
256	See section 1.2.5.4	mask	yes			

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Table 23
MPT-HC Emissions mask [23GHz]

General		Emission Limitation Clause 101.111 Section 2.1051			
Frequency Band	BW (MHz)	QAM Mod (n)	Mask Response	Requirement (mask)	Requirement Met? (yes/no)
23GHz	10	4	See section 1.2.5.5	mask	Yes
		8	See section 1.2.5.5	mask	Yes
		16	See section 1.2.5.5	mask	Yes
		32	See section 1.2.5.5	mask	Yes
		64	See section 1.2.5.5	mask	Yes
		128	See section 1.2.5.5	mask	Yes
	30	256	See section 1.2.5.5	mask	Yes
		4	See section 1.2.5.5	mask	Yes
		8	See section 1.2.5.5	mask	Yes
		16	See section 1.2.5.5	mask	Yes
		32	See section 1.2.5.5	mask	Yes
		64	See section 1.2.5.5	mask	Yes
40	128	See section 1.2.5.5	mask	Yes	
	256	See section 1.2.5.5	mask	Yes	
	4	See section 1.2.5.5	mask	Yes	
	8	See section 1.2.5.5	mask	Yes	
	16	See section 1.2.5.5	mask	Yes	
	32	See section 1.2.5.5	mask	Yes	
50	64	See section 1.2.5.5	mask	Yes	
	128	See section 1.2.5.5	mask	Yes	
	256	See section 1.2.5.5	mask	Yes	
	4	See section 1.2.5.5	mask	Yes	
	8	See section 1.2.5.5	mask	Yes	
	16	See section 1.2.5.5	mask	Yes	

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Table 24
MPT-HC Emissions mask [38GHz]

General		Emission Limitation Clause 101.111 Section 2.1051			
Frequency Band	BW (MHz)	QAM Mod (n)	Mask Response	Requirement (mask)	Requirement Met? (yes/no)
38GHz 700 MHz	10	32	See section 1.2.5.6	mask	Yes
		64	See section 1.2.5.6	mask	Yes
		128	See section 1.2.5.6	mask	Yes
		256	See section 1.2.5.6	mask	Yes
		4	See section 1.2.5.6	mask	Yes
		16	See section 1.2.5.6	mask	Yes
	30	32	See section 1.2.5.6	mask	Yes
		64	See section 1.2.5.6	mask	Yes
		128	See section 1.2.5.6	mask	Yes
		256	See section 1.2.5.6	mask	Yes
		4	See section 1.2.5.6	mask	Yes
		16	See section 1.2.5.6	mask	Yes
40	32	See section 1.2.5.6	mask	Yes	
	64	See section 1.2.5.6	mask	Yes	
	128	See section 1.2.5.6	mask	Yes	
	256	See section 1.2.5.6	mask	Yes	
	4	See section 1.2.5.6	mask	Yes	
	16	See section 1.2.5.6	mask	Yes	
50	32	See section 1.2.5.6	mask	Yes	
	64	See section 1.2.5.6	mask	Yes	
	128	See section 1.2.5.6	mask	Yes	
	256	See section 1.2.5.6	mask	Yes	
	4	See section 1.2.5.6	mask	Yes	
	16	See section 1.2.5.6	mask	Yes	

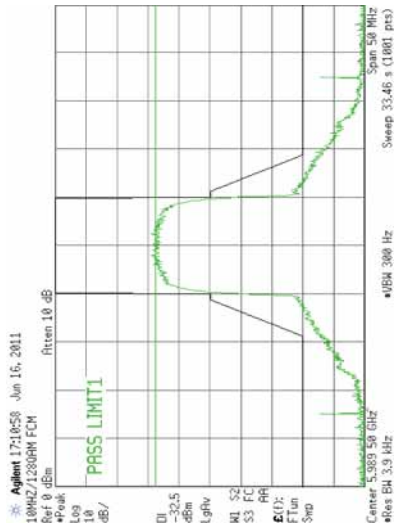
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1.2.5.1 L6GHZ FCC MASK MPT-HC

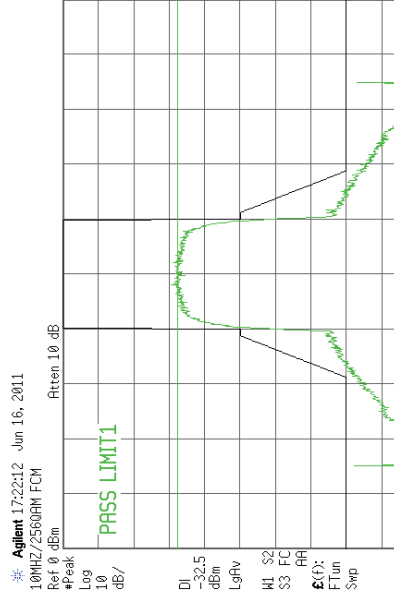
ODU P/N 3DB20441BA, S/N BS1106UW05S SWP V3.00.00X

Fixed Modulation profiles:

10 MHz/ 128 QAM



10 MHz/ 256 QAM



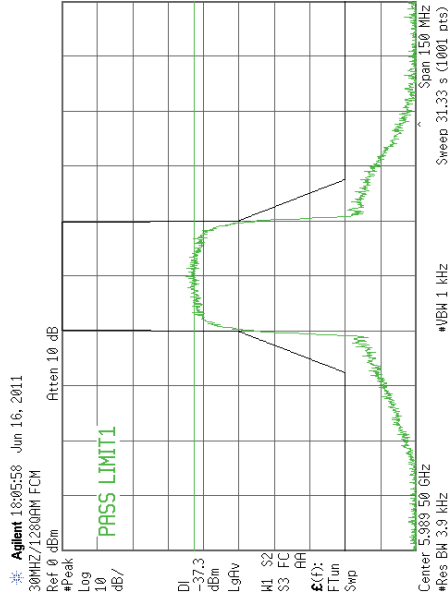
ED 06

ECCN: 5E991
 HTS: 4901.99.0050

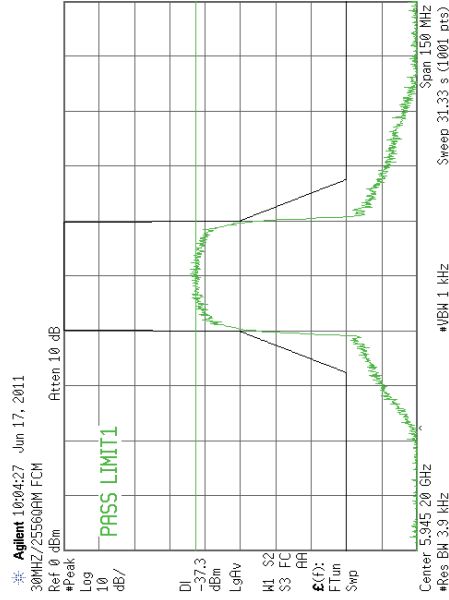
3DB 200010094 QZZA

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30 MHz/ 128 QAM



30 MHz/ 256 QAM



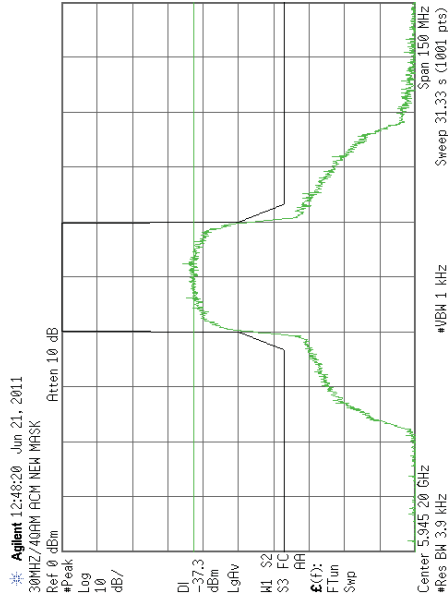
ED 06

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 HTS: 4901.99.0050

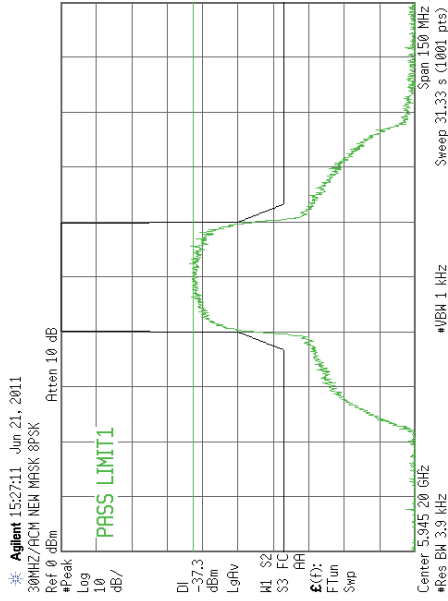
3DB 200010094 QZZA

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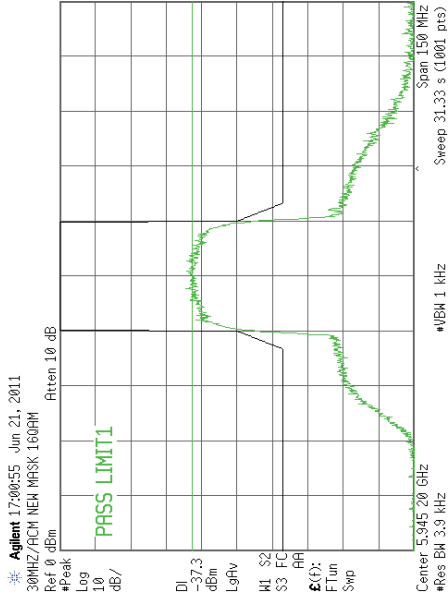
Adaptive Modulation profiles:
30 MHz/ 4 QAM



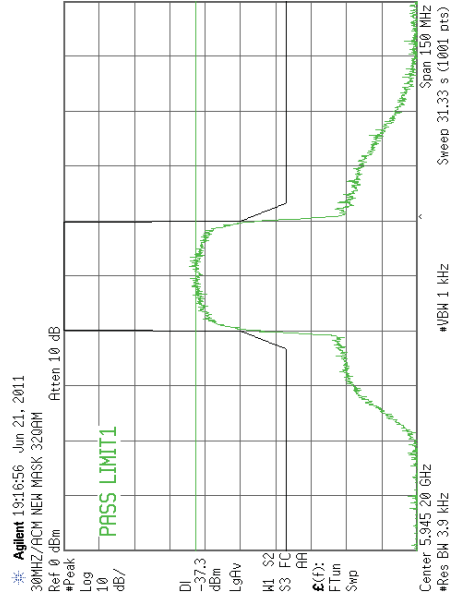
30 MHz/ 8 QAM



30 MHz/ 16 QAM



30 MHz/ 32 QAM



ED 06

ECCN: 5E991
HTS: 4901.99.0050

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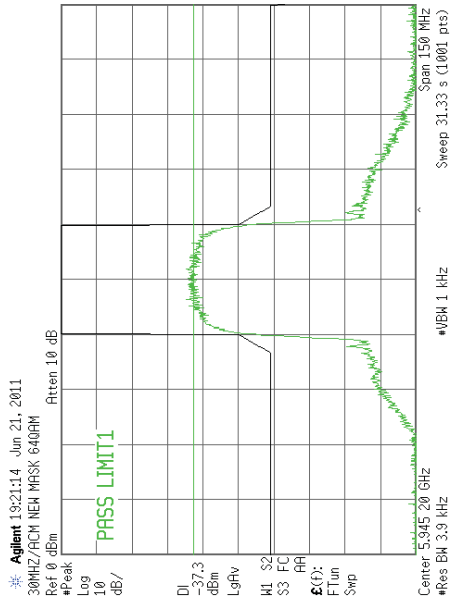
ED 06

ECCN: 5E991
HTS: 4901.99.0050

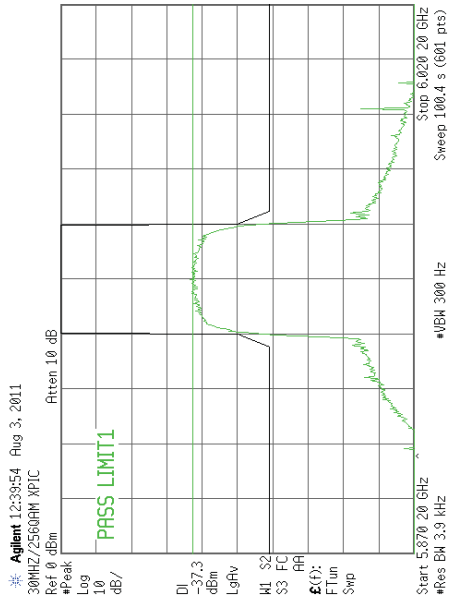
3DB 200010094 QZZA

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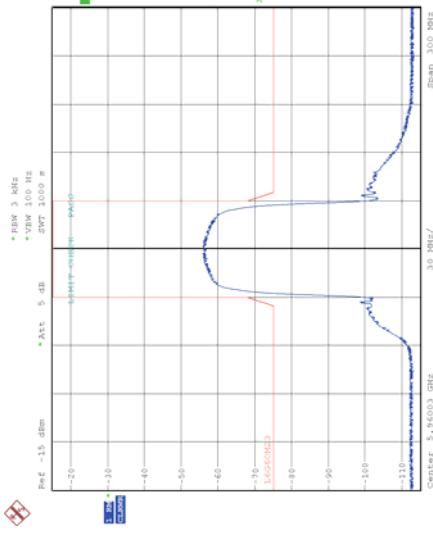
30 MHz/ 64 QAM



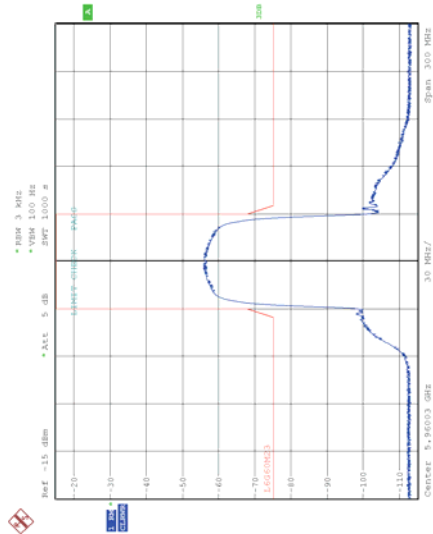
XPIC profiles:
 30 MHz/ 256 QAM



60 MHz/ 128 QAM



60 MHz/ 256 QAM



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Measured Results:

ODU P/N 3DB20441BA, S/N BS1106UW055
SWP V3.00.00X

30 MHz channel

Agilent 18:50:27 Aug 2, 2011

30MHz/ACM MXH HOLD

Atten 10 dB

Ref 0 dBm

#Peak

Log

10

dB/

DI

-37.3

dBm

LgRv

M1 S2

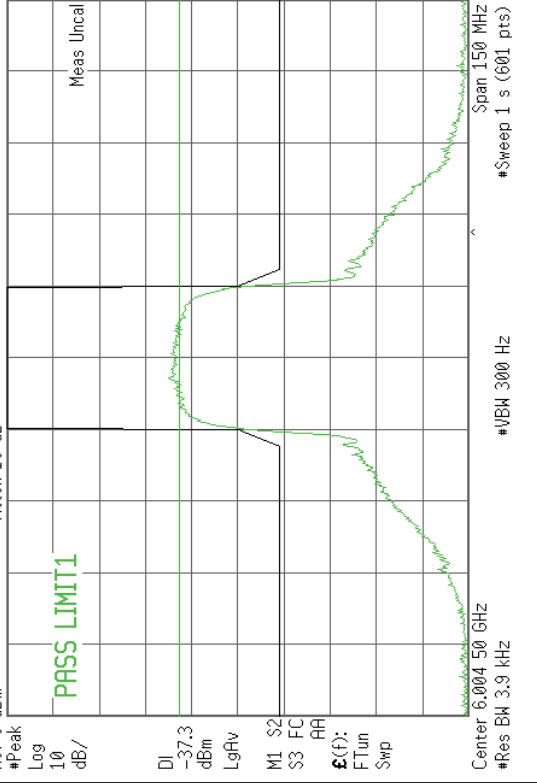
S3 FC

AR

£(f):

FTun

Swp



Center 6.004 50 GHz

#Res BW 3.9 kHz

#VBW 300 Hz

Span 150 MHz

#Sweep 1 s (601 pts)

FCC mask during adaptive modulation state changes.

ED 06

ECCN: 5E991

HTS:4901.99.0050

3DB 200010094 QZZZA

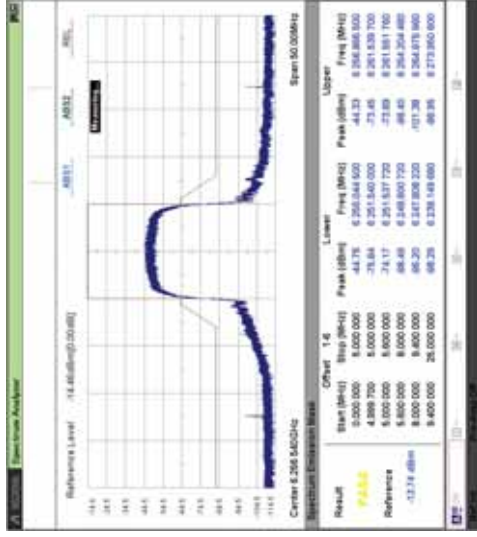
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L6GHz FCC mask MPT-XP

L6 GHz [252.04 MHz CS/1P-1]
P/N: 3DB20761BAAA01 S/N: BS1230UW002 booster_no3
DBOX P/N 3DB20753BAAA01, S/N ABF1205-0002

Fixed Modulation

10 MHz /4 QAM / FCM



Center 6.266 540MHz

Span 50.000MHz

Reference Level -12.74 dBm

Offset 1.6

Start (MHz) 6.2000000

Stop (MHz) 6.3000000

Start (dBm) -41.17

Stop (dBm) -21.17

Start (MHz) 6.251837720

Stop (MHz) 6.251837720

Start (dBm) -48.45

Stop (dBm) -28.45

Start (MHz) 6.264877600

Stop (MHz) 6.264877600

Start (dBm) -48.28

Stop (dBm) -28.28

Start (MHz) 6.273360000

Stop (MHz) 6.273360000

Start (dBm) -48.36

Stop (dBm) -28.36

ED 06

ECCN: 5E991

HTS:4901.99.0050

3DB 200010094 QZZZA

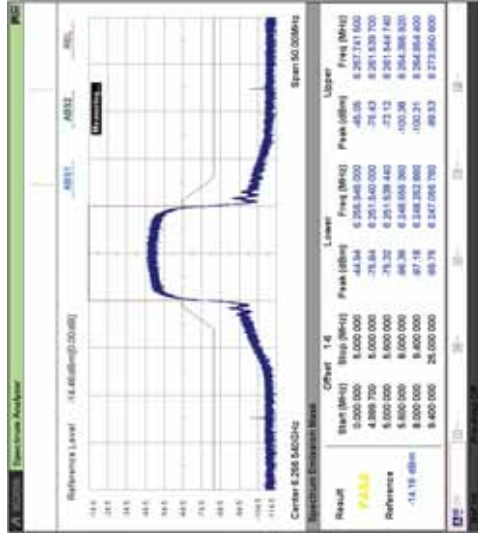
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10 MHz /64 QAM / FCM



10 MHz /128 QAM / FCM



ED 06

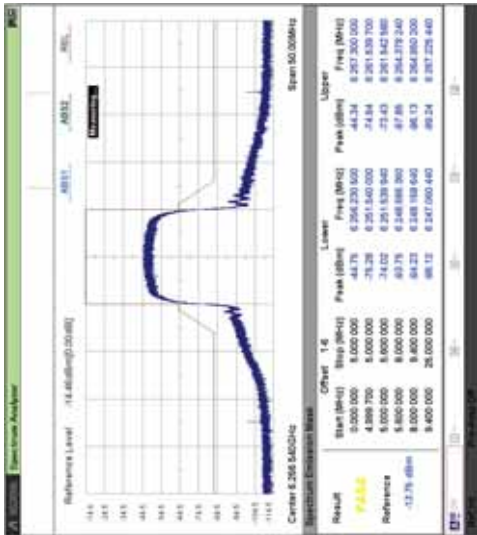
ECCN: 5E991 HTS: 4901.99.0050

3DB 200010094 QZZA

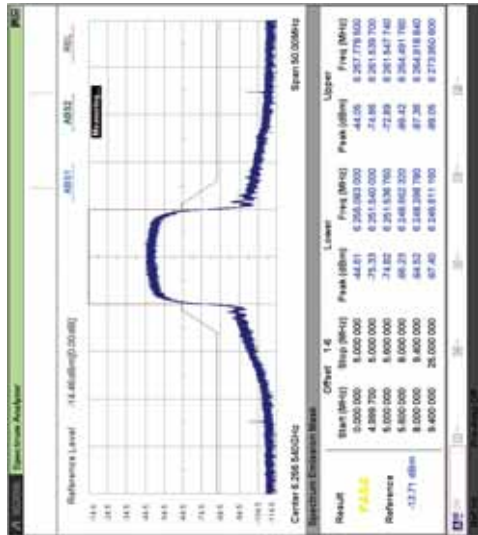
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10 MHz /16 QAM / FCM



10 MHz /32 QAM / FCM



ED 06

ECCN: 5E991 HTS: 4901.99.0050

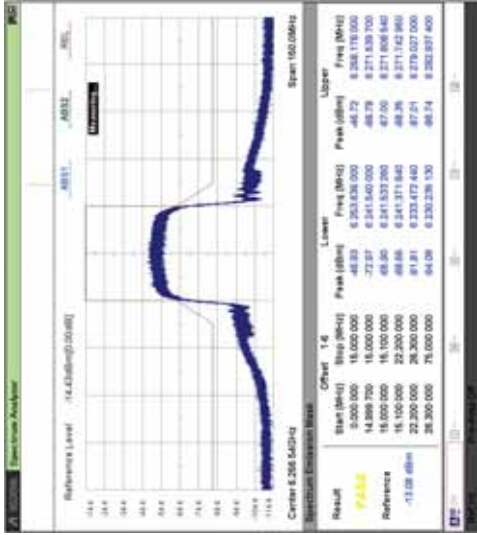
3DB 200010094 QZZA

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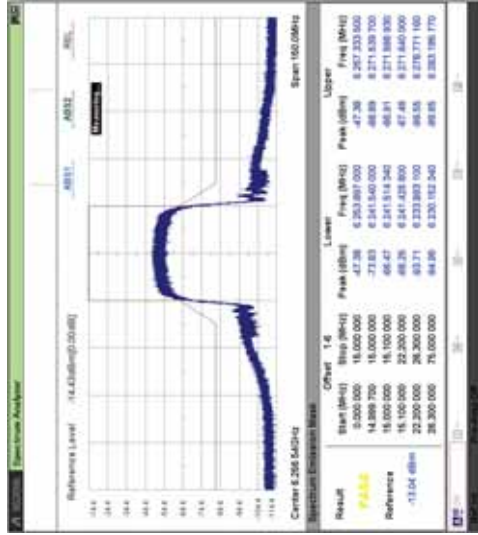
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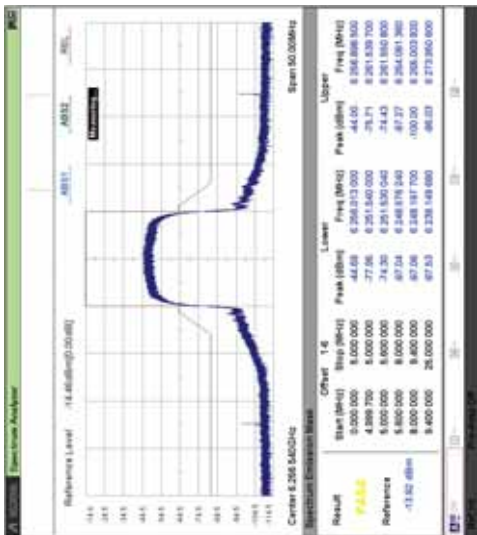
30 MHz /16 QAM / FCM



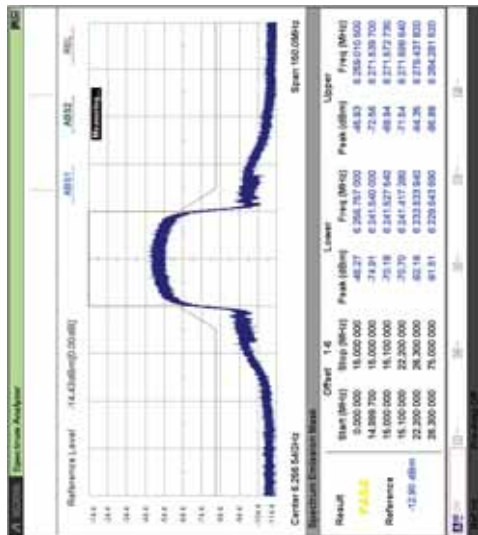
30 MHz /32 QAM / FCM



10 MHz /256 QAM / FCM



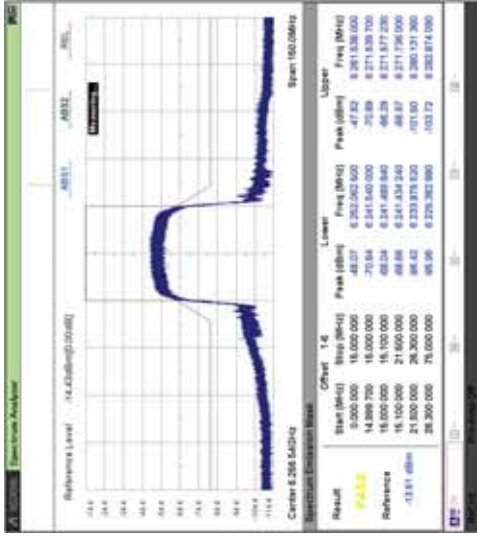
30 MHz /4 QAM / FCM



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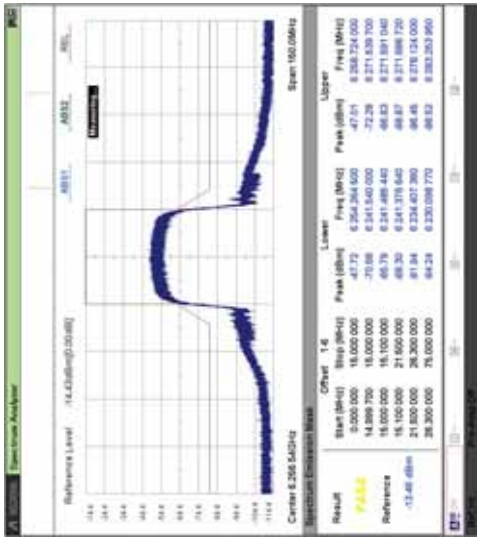
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30 MHz /256 QAM / FCM



ED	06	ECCN: 5E591 HTS: 4901.99.0050	3DB 200010094 QZZA	90 / 299
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30 MHz /64 QAM / FCM



ED	06	ECCN: 5E591 HTS: 4901.99.0050	3DB 200010094 QZZA	89 / 299
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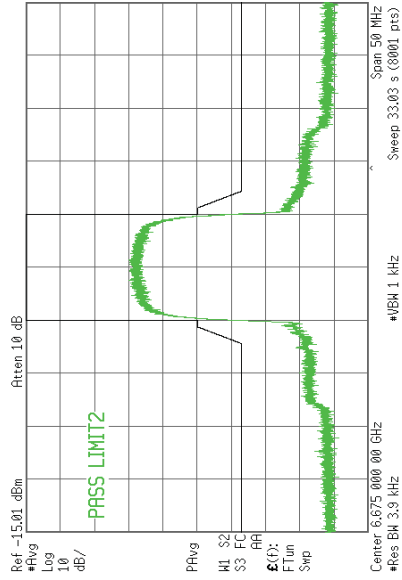
1.2.5.2 U6GHz FCC MASK

U6 GHz [160 MHz CS(3-3P)]
 MPT-HC P/N 3DB20804BAA01, S/N Proto_3
 DBOX P/N 3DB20756BAAA, S/N ABF11490001

Fixed Modulation

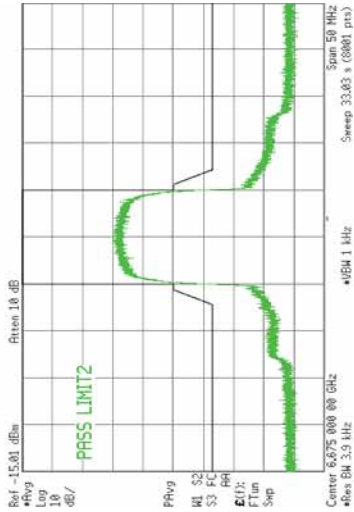
10 MHz /4 QAM / FCM

Agilent 11195:54 May 9, 2012



10 MHz /8 QAM / FCM

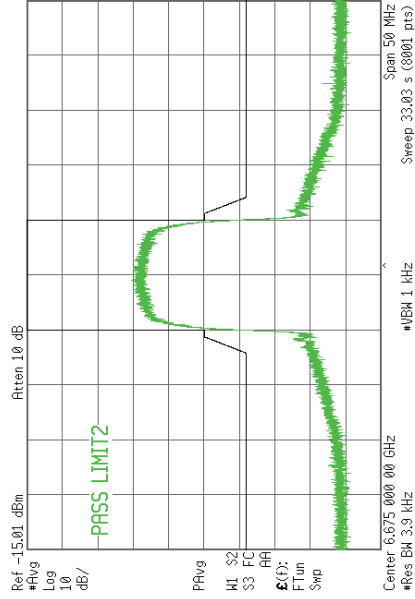
Agilent 11133:04 May 9, 2012



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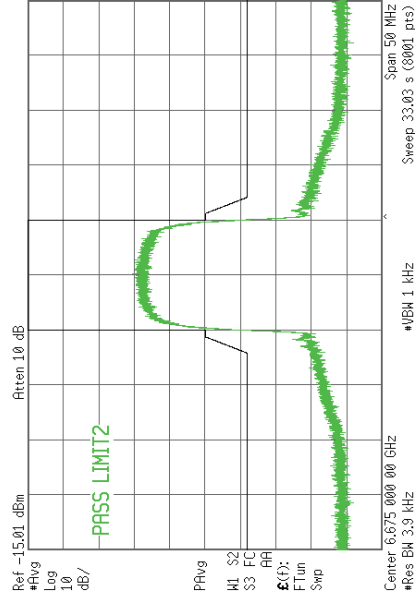
10 MHz /16 QAM / FCM

Agilent 11138:42 May 9, 2012



10 MHz /32 QAM / FCM

Agilent 11148:11 May 9, 2012



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ED 06

ECCN: 5E991

HTS:4901.98.0050

3DB 200010094 QZZA

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ED 06

ECCN: 5E991

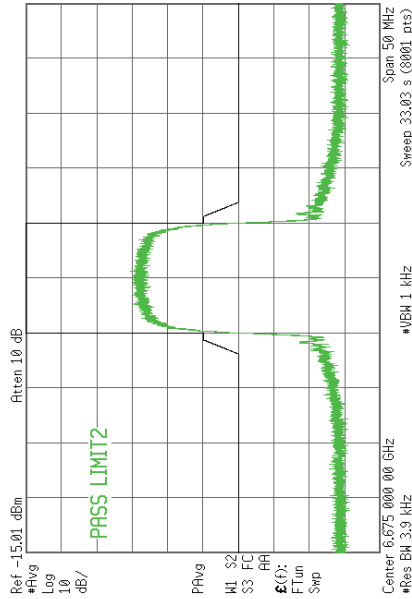
HTS:4901.98.0050

3DB 200010094 QZZA

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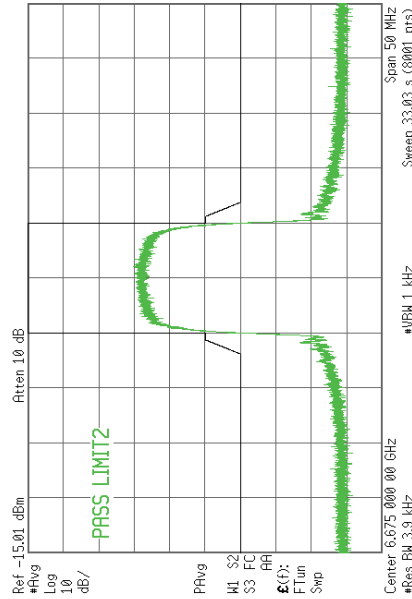
10 MHz /64 QAM / FCM

* Agilent 12:40:12 May 9, 2012



10 MHz /128 QAM / FCM

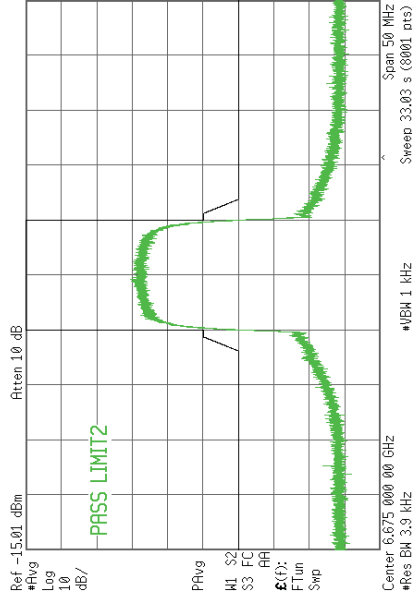
* Agilent 12:34:38 May 9, 2012



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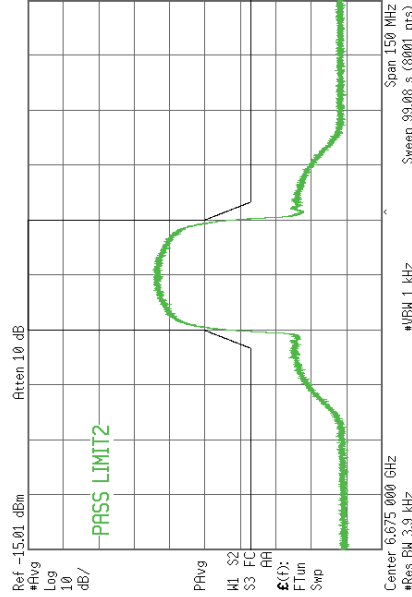
10 MHz /256 QAM / FCM

* Agilent 12:45:07 May 9, 2012



30 MHz /4 QAM / FCM

* Agilent 17:03:41 May 9, 2012



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ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

93 / 299

ED 06

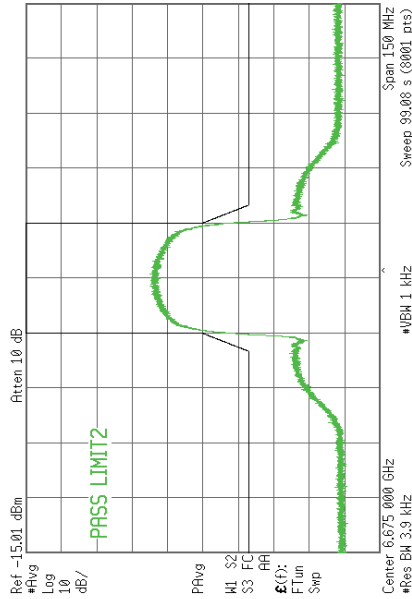
ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

94 / 299

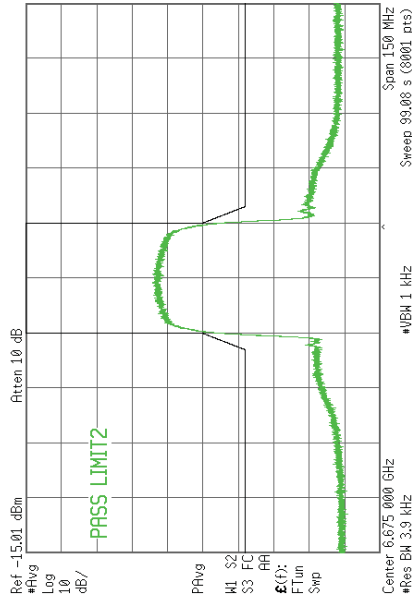
30 MHz /8 QAM / FCM

* Agilent 19:21:06 May 9, 2012



30 MHz /16 QAM / FCM

* Agilent 10:49:03 May 10, 2012



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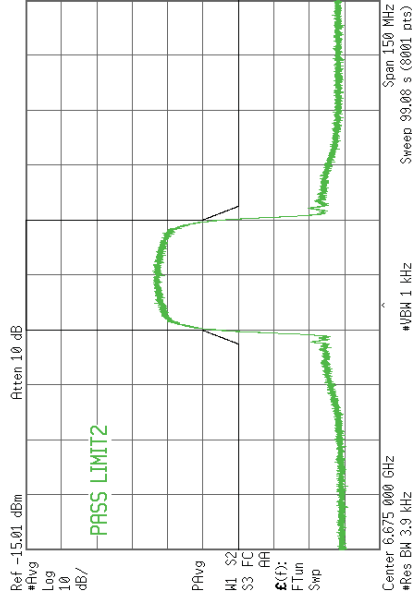
30 MHz /32 QAM / FCM

* Agilent 16:13:54 May 10, 2012



30 MHz /64 QAM / FCM

* Agilent 16:53:58 May 10, 2012



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ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

95 / 299

ED 06

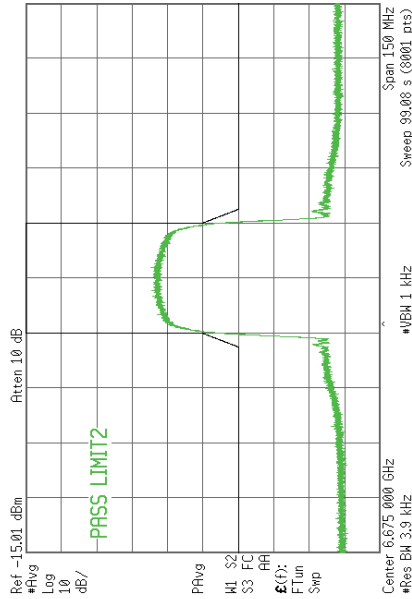
ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

96 / 299

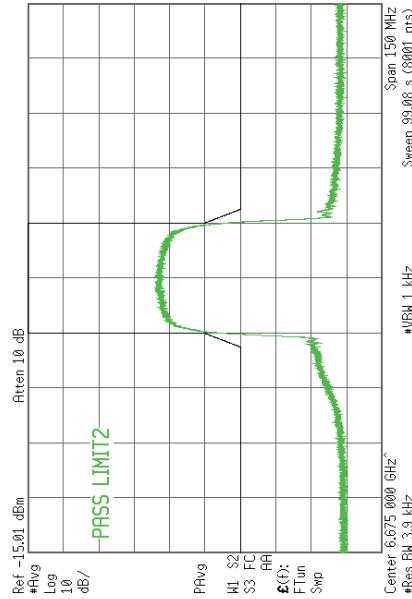
30 MHz / 128 QAM / FCM

* Agilent 17:03:50 May 10, 2012



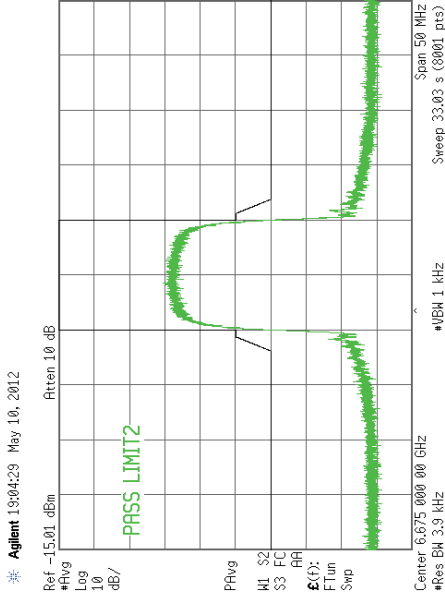
30 MHz / 256 QAM / FCM

* Agilent 17:13:20 May 10, 2012



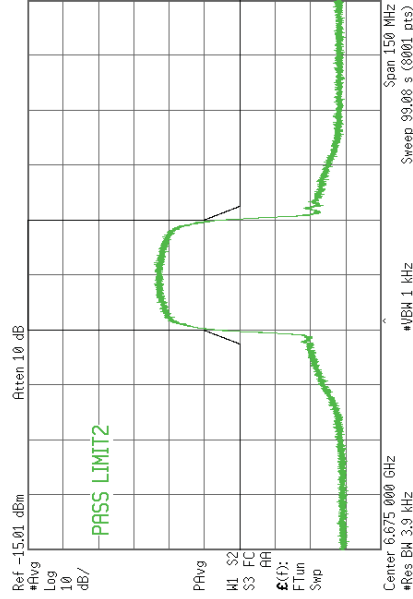
Adaptive Modulation

* Agilent 13:04:29 May 10, 2012



30 MHz / 256 QAM / ACM

* Agilent 17:43:50 May 10, 2012



ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	98 / 299
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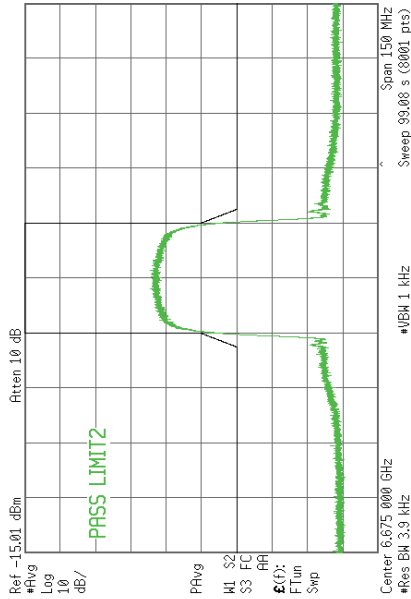
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	97 / 299
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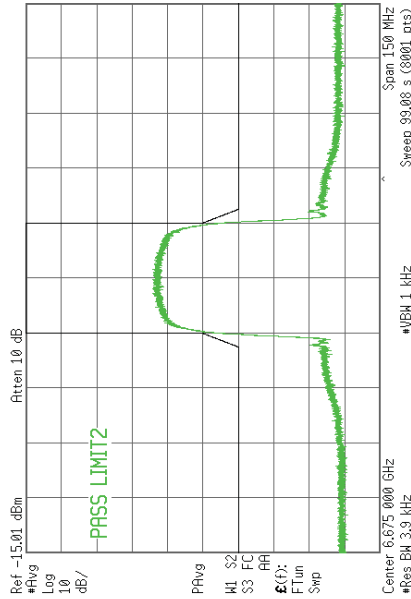
XPIC Fixed Modulation
30 MHz /128 QAM / XPIC FCM

* Agilent 18:41:03 May 10, 2012



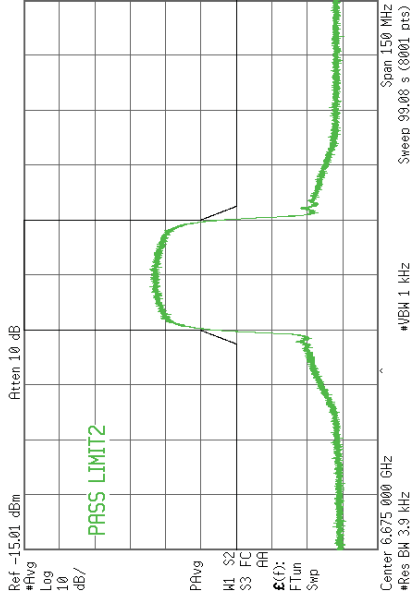
XPIC Adaptive Modulation
30 MHz /64 QAM / XPIC ACM

* Agilent 18:46:01 May 10, 2012



30 MHz /256 QAM / XPIC ACM

* Agilent 18:53:39 May 10, 2012



ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	100 / 299
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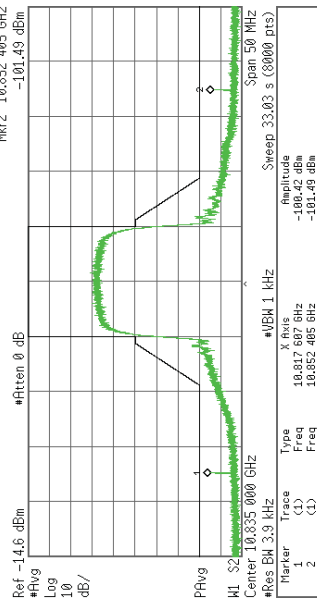
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	99 / 299
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1.2.5.3 11GHz FCC MASK

The 11GHz mask plots are shown below.

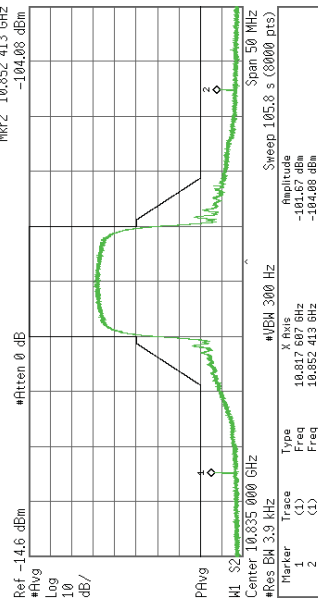
11 GHz /10 MHz/4 QAM/ACM, Max TX Output: +23 dB, (V03.03.01)

Agilent 15:45:33 Feb 27, 2012



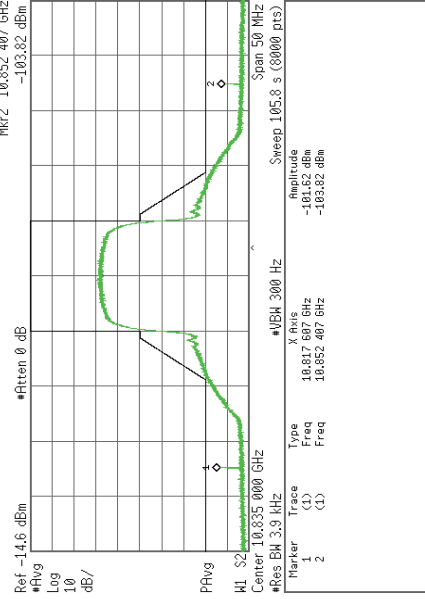
11 GHz /10 MHz/8 QAM/ACM, Max TX Output: +23 dB, (V03.03.01)

Agilent 16:11:52 Feb 27, 2012



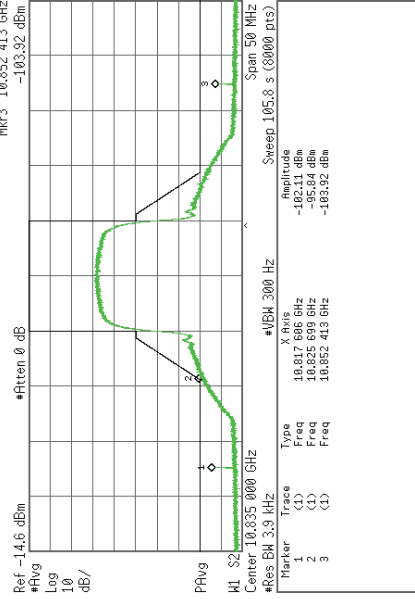
11 GHz /10 MHz/16 QAM/ACM, Max TX Output: +22 dB, (V03.03.01)

Agilent 16:25:00 Feb 27, 2012

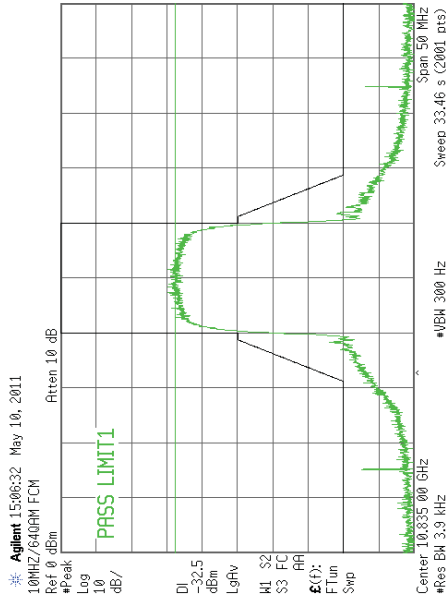


11 GHz /10 MHz/32 QAM/ACM, Max TX Output: +22 dB, (V03.03.01)

Agilent 17:12:27 Feb 27, 2012

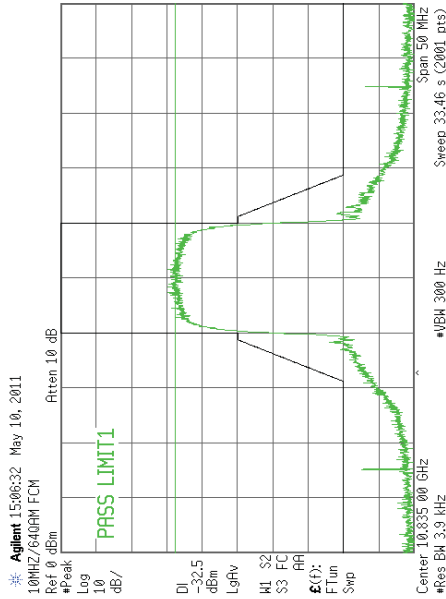


11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dB



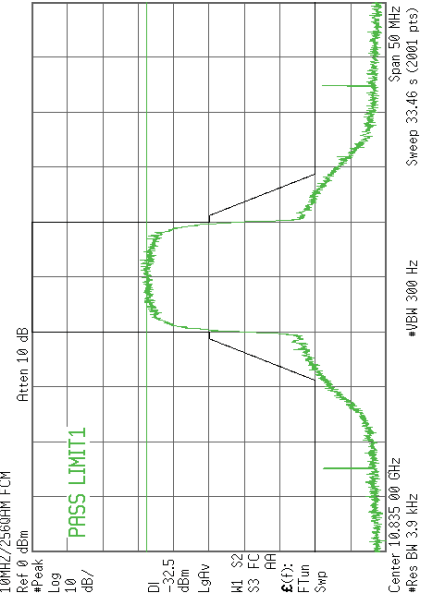
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11 GHz /10 MHz/128 QAM/FCM, Max TX Output: +21 dB



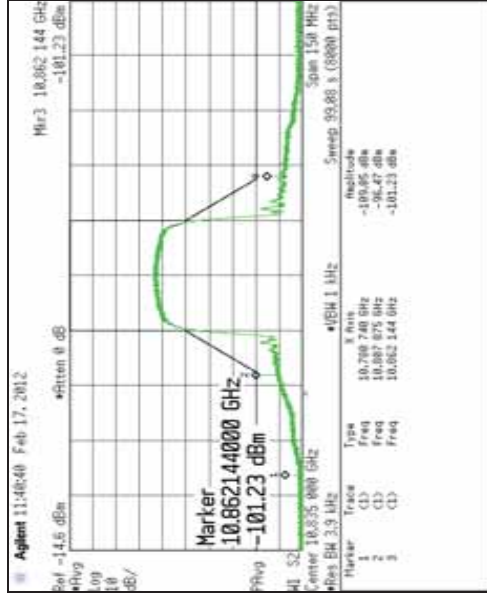
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11 GHz /10 MHz/256 QAM/FCM, Max TX Output: +21 dB



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11 GHz /30 MHz/4 QAM/FCM, Max TX Output: +23 dB, (V03.03.01)



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ED	06
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ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

103 / 299

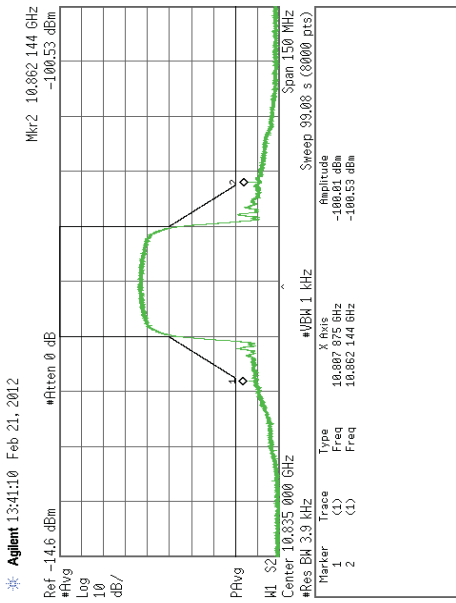
ED	06
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ECCN: 5E991
 HTS: 4901.99.0050

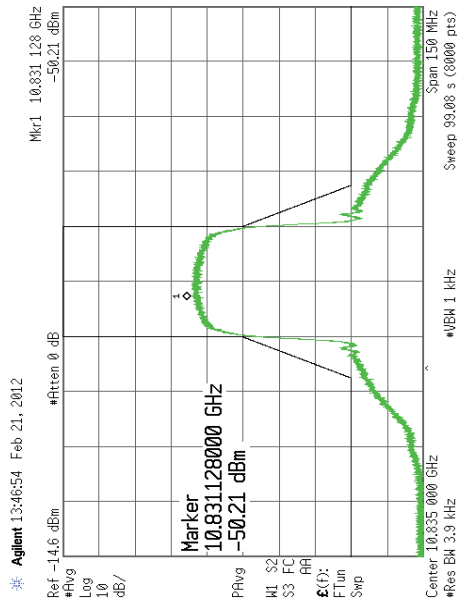
3DB 200010094 QZZA

104 / 299

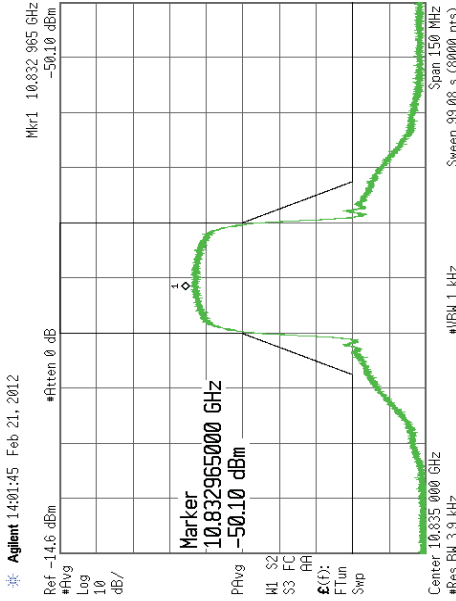
11 GHz /30 MHz/8 QAM/FCM, Max TX Output: +23 dB, (V03.03.01)



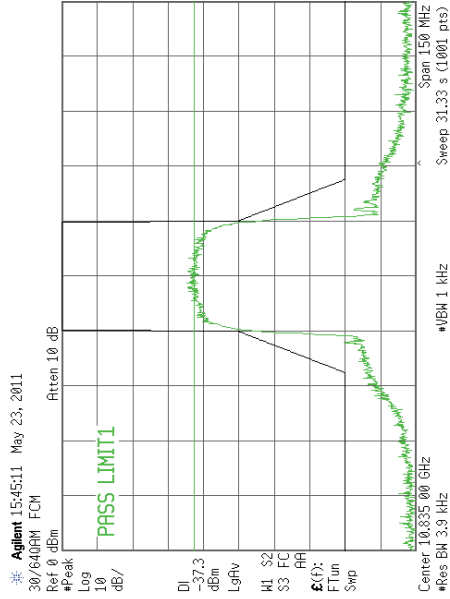
11 GHz /30 MHz/16 QAM/FCM, Max TX Output: +22 dB, (V03.03.01)



11 GHz /30 MHz/32 QAM/FCM, Max TX Output: +22 dB, (V03.03.01)



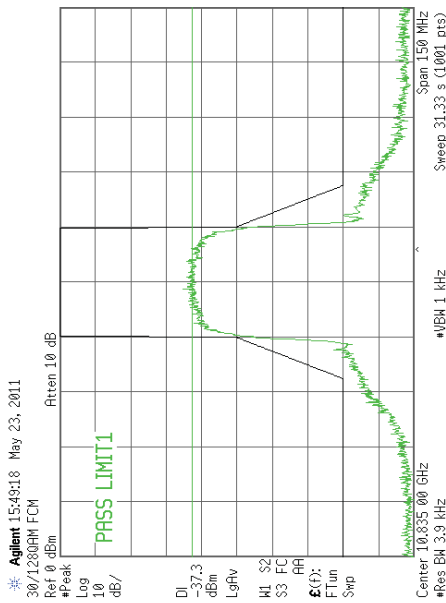
11 GHz /30 MHz/64 QAM/FCM, Max TX Output: +21 dB



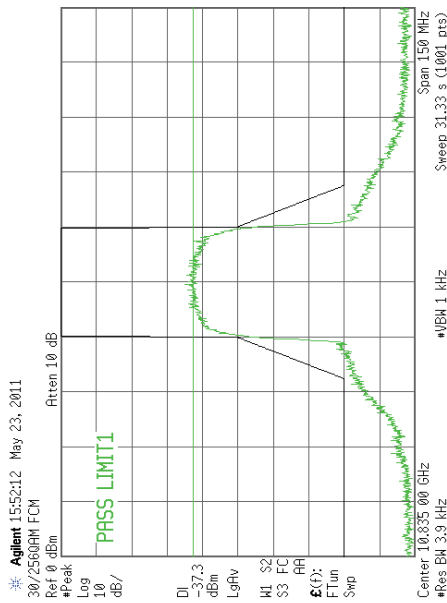
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	106 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	105 / 299
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11 GHz /30 MHz/128 QAM/FCM, Max TX Output: +21 dB



11 GHz /30 MHz/256 QAM/FCM, Max TX Output: +21 dB



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ED 06

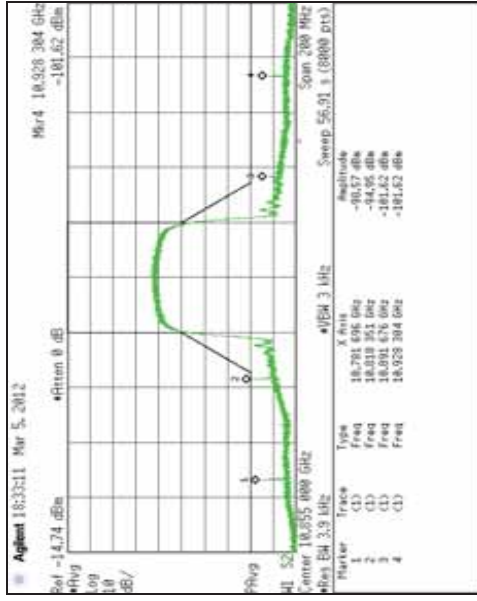
ECCN: 5E991

HTS:4901.98.0050

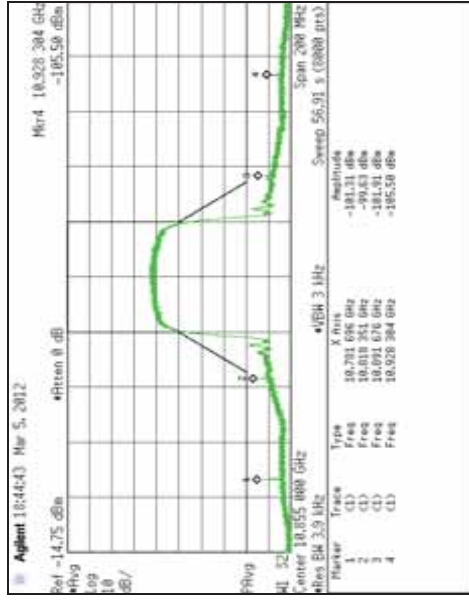
3DB 200010094 QZZZA

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11 GHz /40 MHz/4 QAM/FCM, Max TX Output: +23 dB, (V03.03.01)



11 GHz /40 MHz/8 QAM/FCM, Max TX Output: +23 dB, (V03.03.01)



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ED 06

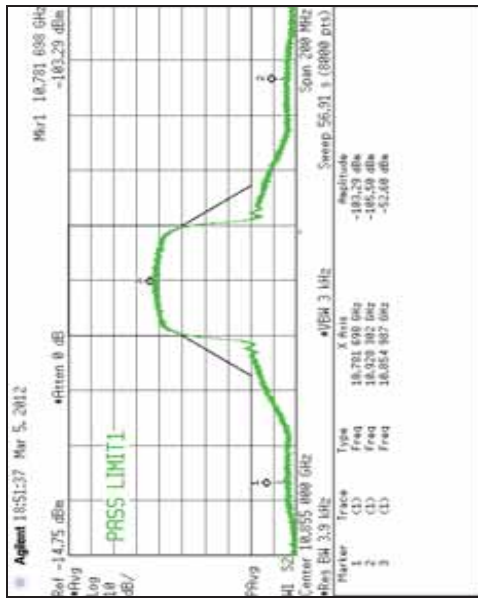
ECCN: 5E991

HTS:4901.98.0050

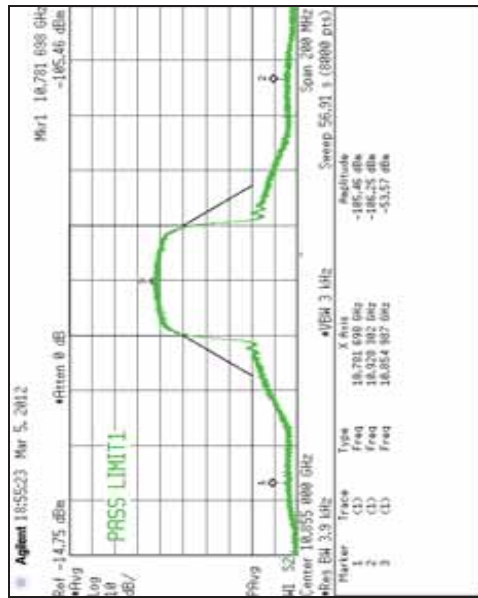
3DB 200010094 QZZZA

106 / 299

11 GHz /40 MHz/16 QAM/FCM, Max TX Output: +22 dB, (V03.03.01)



11 GHz /40 MHz/32 QAM/FCM, Max TX Output: +22 dB, (V03.03.01)



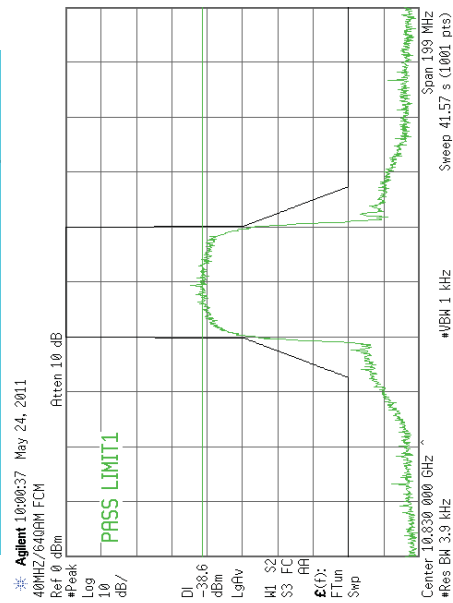
ED 06

ECCN: 5E991
HTS: 4901.99.0050

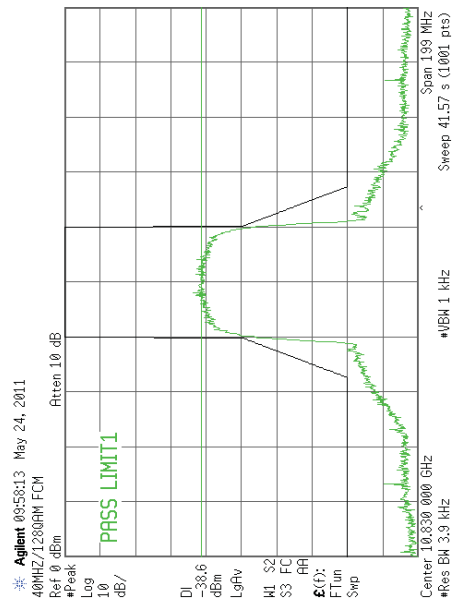
3DB 200010094 QZZA

109 / 299

11 GHz /40 MHz/64 QAM/FCM, Max TX Output: +21 dB



11 GHz /40 MHz/128 QAM/FCM, Max TX Output: +21 dB



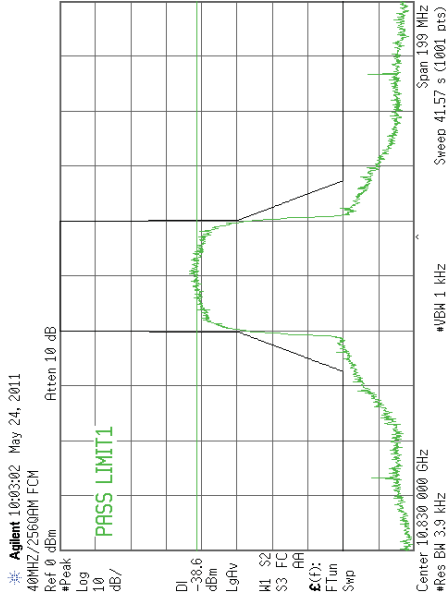
ED 06

ECCN: 5E991
HTS: 4901.99.0050

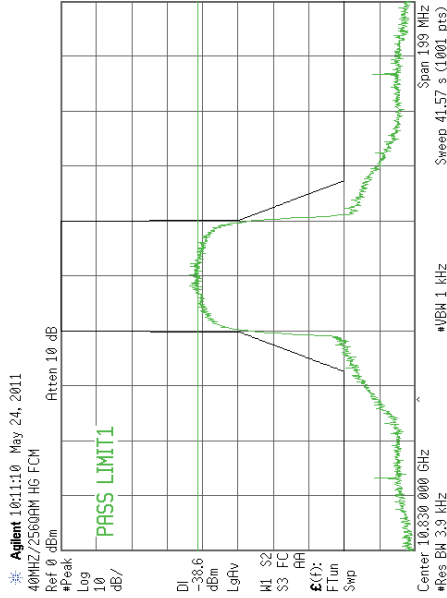
3DB 200010094 QZZA

110 / 299

11 GHz /40 MHz/256 QAM/FCM, Max TX Output: +21 dB



11 GHz /40 MHz/256 QAM High Gain/FCM, Max TX Output: +21 dB



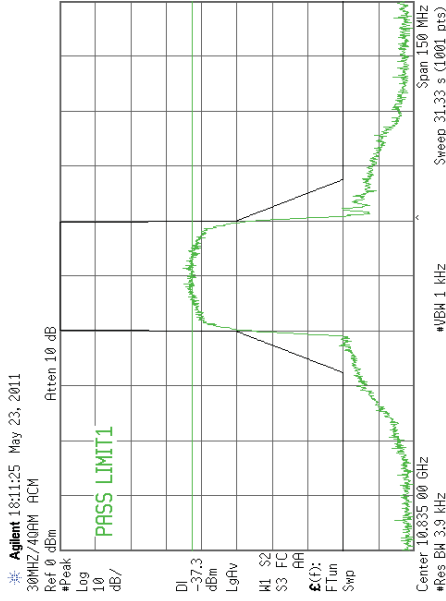
ED 06

ECCN: 5E991
 HTS: 4901.99.0050

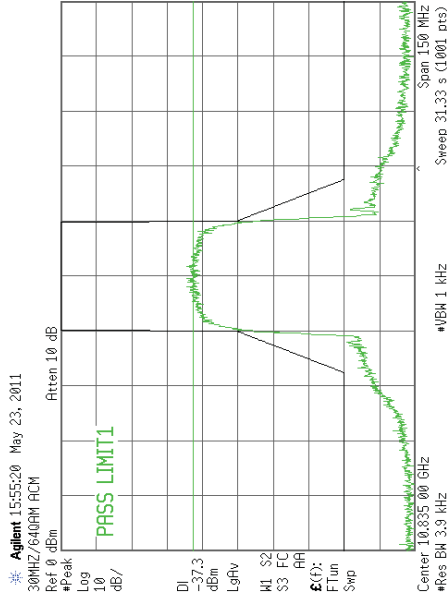
3DB 200010094 QZZZA

111 / 299

11 GHz /30 MHz/4 QAM/ACM, Max TX Output: +23 dB



11 GHz /30 MHz/64 QAM/ACM, Max TX Output: +21 dB



ED 06

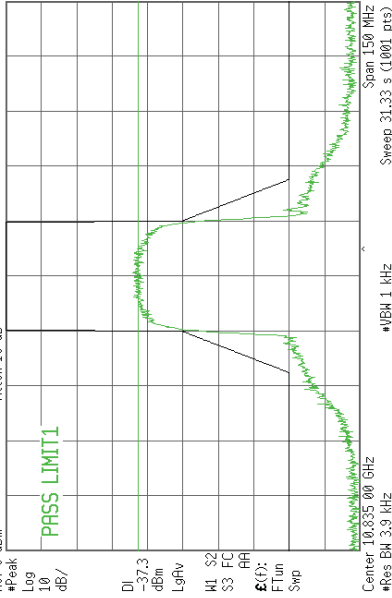
ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZZA

112 / 299

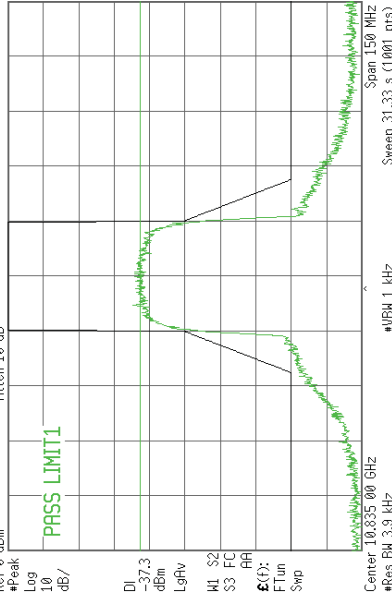
11 GHz /30 MHz/128 QAM/ACM, Max TX Output: +21 dB

* Agilent 1557:21 May 23, 2011
 30MHz/128QAM ACM
 Ref: 0 dBm
 #Peak
 Log
 10
 dB/



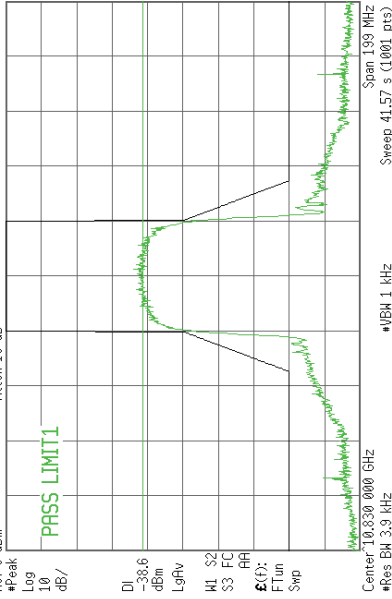
11 GHz /30 MHz/256 QAM/ACM, Max TX Output: +21 dB

* Agilent 1618:24 May 23, 2011
 30MHz/256QAM ACM
 Ref: 0 dBm
 #Peak
 Log
 10
 dB/



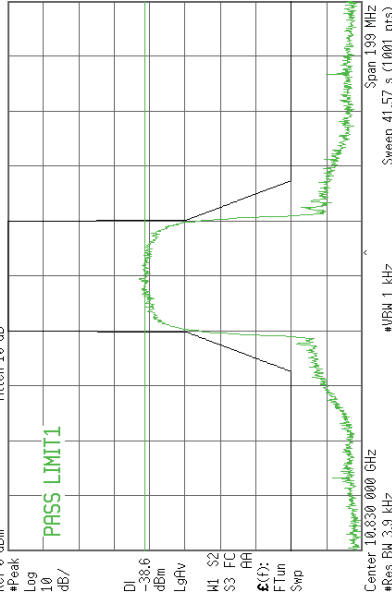
11 GHz /40 MHz/4 QAM/ACM, Max TX Output: +23 dB

* Agilent 1016:30 May 24, 2011
 40MHz/4QAM ACM
 Ref: 0 dBm
 #Peak
 Log
 10
 dB/



11 GHz /40 MHz/64 QAM/ACM, Max TX Output: +21 dB

* Agilent 1019:46 May 24, 2011
 40MHz/64QAM ACM
 Ref: 0 dBm
 #Peak
 Log
 10
 dB/



ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

113 / 299

ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

114 / 299

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11 GHz /40 MHz/128 QAM/ACM, Max TX Output: +21 dB

Agilent 10:23:19 May 24, 2011

40MHz/128QAM RCM

Ref: 0 dBm

#Peak

Log

dB/

DI

-38.6

dBm

LgrAv

M1 S2

S3 FC

ARR

EX(1):

FTun

Swp

Center 10.830 000 GHz

#Res BW 3.9 kHz

Span 199 MHz

Sweep 41.57 s (1001 pts)

*VBK 1 kHz

Atten 10 dB

PASS LIMIT1

11 GHz /40 MHz/256 QAM/ACM, Max TX Output: +21 dB

Agilent 10:28:40 May 24, 2011

40MHz/256QAM RCM

Ref: 0 dBm

#Peak

Log

dB/

DI

-38.6

dBm

LgrAv

M1 S2

S3 FC

ARR

EX(1):

FTun

Swp

Center 10.830 000 GHz

#Res BW 3.9 kHz

Span 199 MHz

Sweep 41.57 s (1001 pts)

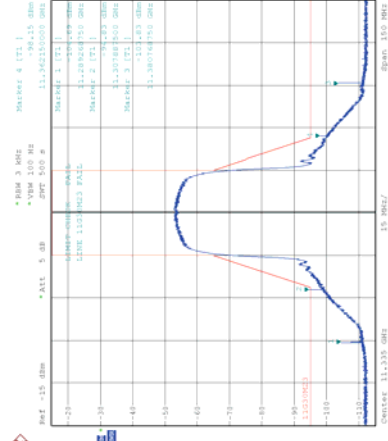
*VBK 1 kHz

Atten 10 dB

PASS LIMIT1

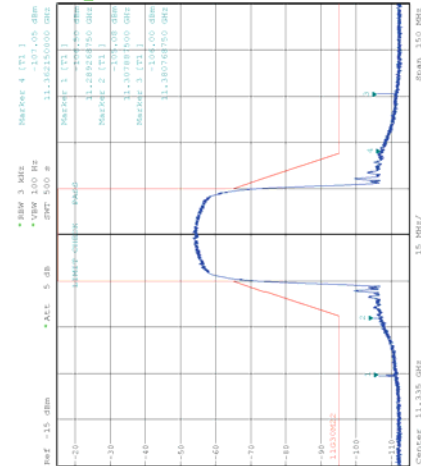
11 GHz /30 MHz/16 QAM/XPIC, Max TX Output: +23 dB

3DB20547BAAA01 SN# BS1048UW026



11 GHz /30 MHz/16 QAM/XPIC, Max TX Output: +22 dB

3DB20547BAAA01 SN# BS1048UW026



ED 06

ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZA

115 / 299

ED 06

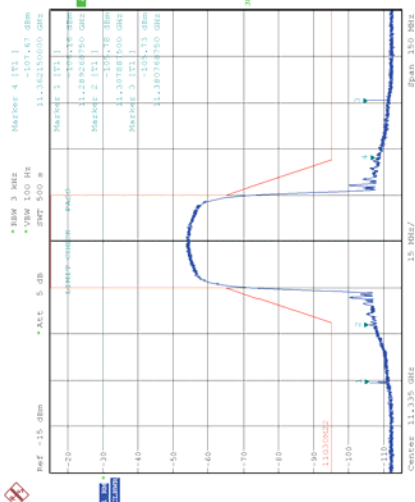
ECCN: 5E991

HTS: 4901.99.0050

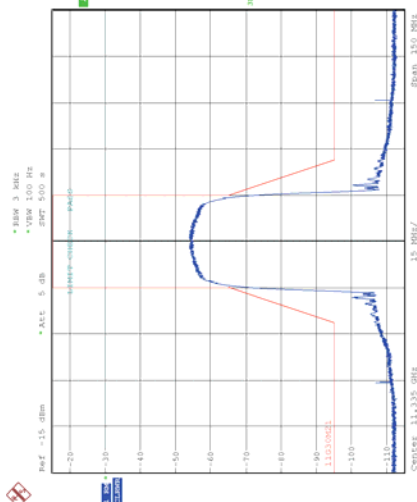
3DB 200010094 QZZA

116 / 299

11 GHz /30 MHz/32 QAM/XPIC, Max TX Output: +22 dB
3DB20547BAAA01 SN# BS1048UW026

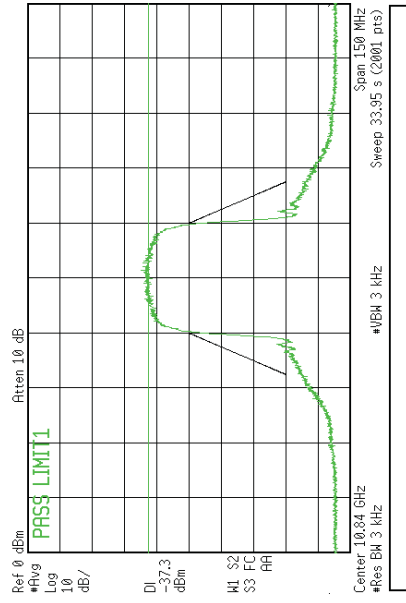


11 GHz /30 MHz/64 QAM/XPIC, Max TX Output: +21 dB
3DB20547BAAA01 SN# BS1048UW026



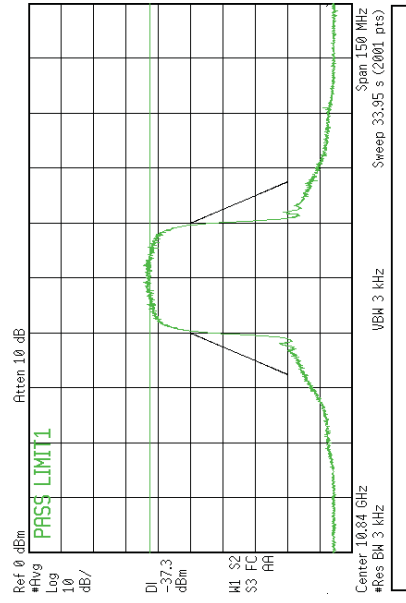
11 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +21 dB

Agilent 15:03:16 May 11, 2011



11 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +21 dB

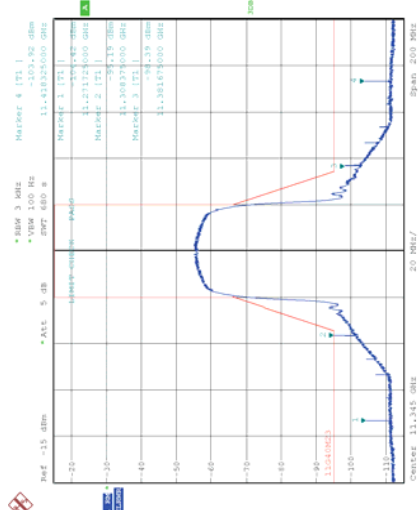
Agilent 23:00:46 May 11, 2011



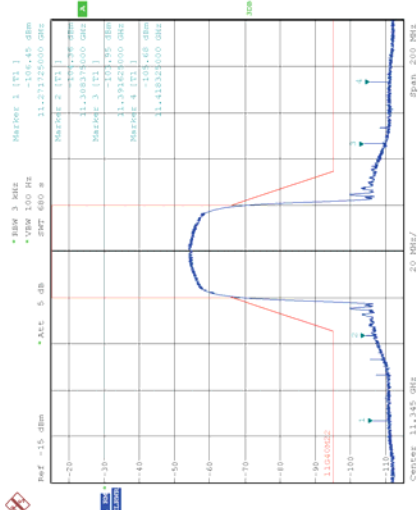
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	118 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	117 / 299
----	----	----------------------------------	--------------------	-----------

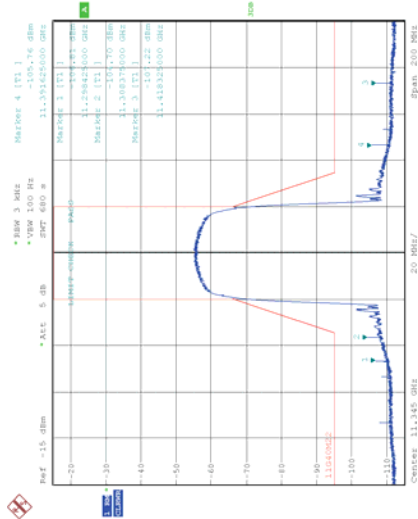
11 GHz /40 MHz/4 QAM/XPIC, Max TX Output: +23 dB
3DB20547BAAA01 SN# BS1048UW026



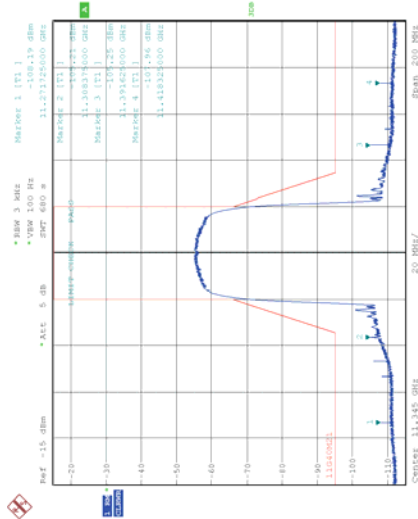
11 GHz /40 MHz/16 QAM/XPIC, Max TX Output: +22 dB
3DB20547BAAA01 SN# BS1048UW026



11 GHz /40 MHz/32 QAM/XPIC, Max TX Output: +22 dB
3DB20547BAAA01 SN# BS1048UW026



11 GHz /40 MHz/64 QAM/XPIC, Max TX Output: +21 dB
3DB20547BAAA01 SN# BS1048UW026



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ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

119 / 299

ED 06

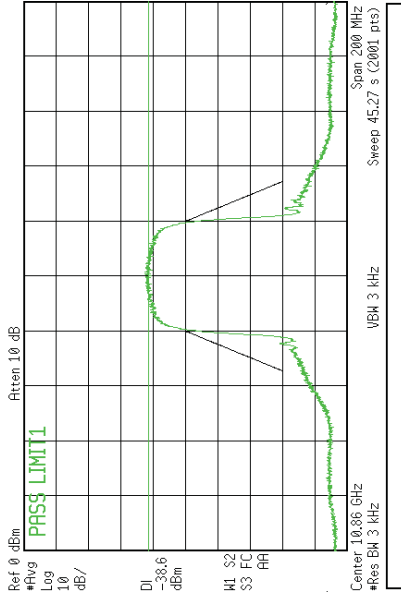
ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

120 / 299

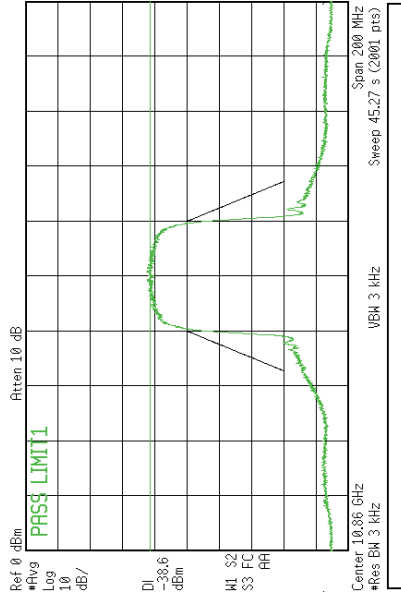
11 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +21 dB

* Agilent 18:35:12 May 28, 2011



11 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +21 dB

* Agilent 22:41:34 May 11, 2011



1.2.5.4 18GHz FCC MASK

The 18GHz mask plots are shown below.

10 MHz /4 QAM / FCM

* Agilent 18:42:36 May 17, 2011

10MHz/4QAM FCM

Ref -10 dBm

#Peak

Log 10 dB/

DI

-18.6 dBm

LgRv

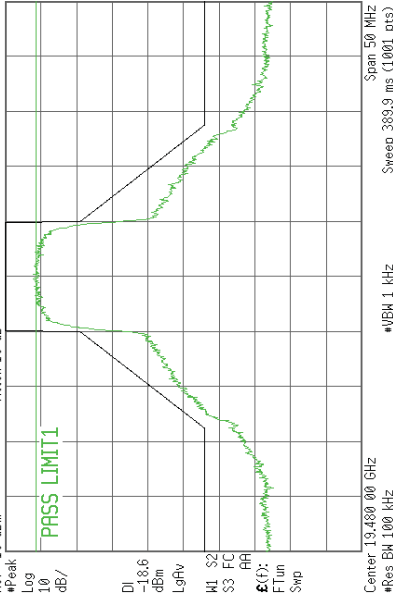
#1 S2

S3 FC

RA

FTun

Swp



10 MHz /8 QAM / FCM

* Agilent 17:54:45 May 17, 2011

10MHz/8QPSK FCM

Ref -10 dBm

#Peak

Log 10 dB/

DI

-18.6 dBm

LgRv

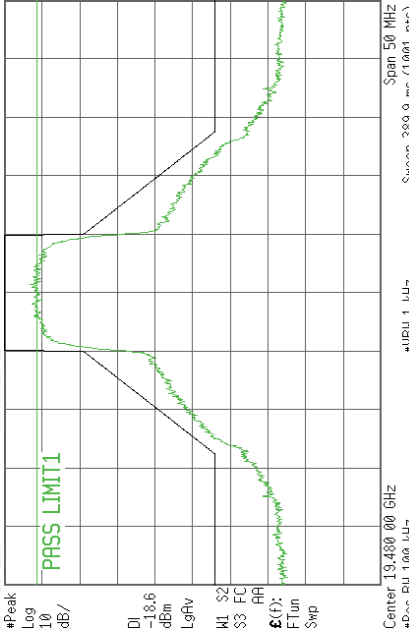
#1 S2

S3 FC

RA

FTun

Swp

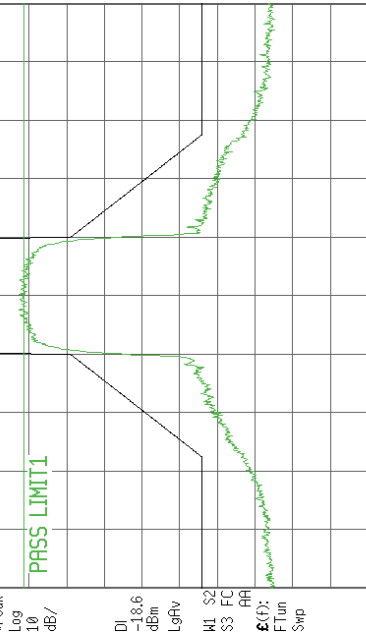


ED	06	ECCN: 5E991	3DB 200010094 QZZA	122 / 299
		HTS: 4901.99.0050		

ED	06	ECCN: 5E991	3DB 200010094 QZZA	121 / 299
		HTS: 4901.99.0050		

10 MHz /16 QAM / FCM

* Agilent 17:50:22 May 17, 2011
 10MHz/16QAM FCM
 Ref -10 dBm
 #Peak
 Log
 10
 dB/



Center 19.480 00 GHz
 #Res BW 100 kHz
 #VBW 1 kHz
 Span 50 MHz
 Sweep 389.9 ms (1001 pts)

10 MHz /32 QAM / FCM

* Agilent 18:40:31 May 17, 2011
 10MHz/32QAM FCM
 Ref -10 dBm
 #Peak
 Log
 10
 dB/



Center 19.480 00 GHz
 #Res BW 100 kHz
 #VBW 1 kHz
 Span 50 MHz
 Sweep 389.9 ms (1001 pts)

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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dB

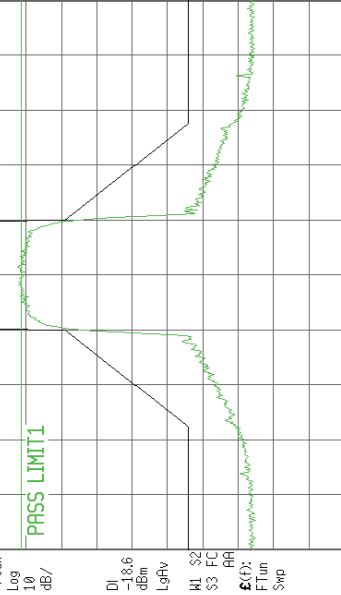
* Agilent 17:32:59 Apr 13, 2011
 10MHz/64QAM
 Ref -10 dBm
 #Peak
 Log
 10
 dB/



Center 19.480 00 GHz
 #Res BW 100 kHz
 #VBW 1 kHz
 Span 50 MHz
 Sweep 389.9 ms (601 pts)

18 GHz /10 MHz/128 QAM/FCM, Max TX Output: +19 dB

* Agilent 17:43:57 Apr 13, 2011
 10MHz/128QAM
 Ref -10 dBm
 #Peak
 Log
 10
 dB/



Center 19.480 00 GHz
 #Res BW 100 kHz
 #VBW 1 kHz
 Span 50 MHz
 Sweep 389.9 ms (601 pts)

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18 GHz /10 MHz/256 QAM/FCM, Max TX Output: +18 dB

Agilent 18:16:14 Apr 13, 2011

10MHz/256QAM

Ref -10 dBm

#Peak

Log

10

dB/

DI

-18.6

dBm

LgRv

M1 S2

S3 FC

RR

#:()

FTun

Swp

Center 19.480 80 GHz

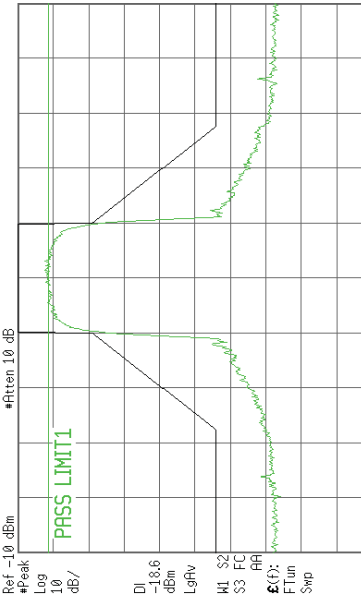
#Res BW 100 kHz

#VBW 1 kHz

#Rften 10 dB

Span 50 MHz

Sweep 389.9 ms (601 pts)



30 MHz /4 QAM / FCM

Agilent 13:55:27 Oct 25, 2011

Ref -10 dBm

#Avg

Log

10

dB/

DI

-23.3

dBm

M1 S2

S3 FC

RR

Center 17.9150 GHz

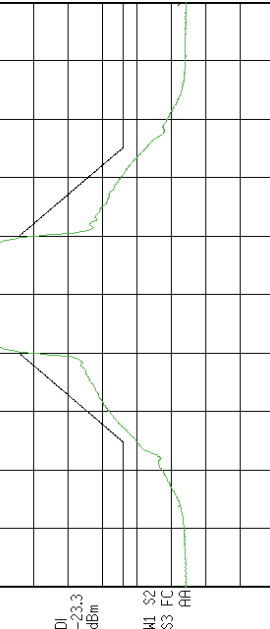
#Res BW 100 kHz

#VBW 100 Hz

#Rften 10 dB

Span 150 MHz

Sweep 19.27 s (1000 pts)



30 MHz /8 QAM / FCM

Agilent 13:59:39 Oct 25, 2011

Ref -10 dBm

#Avg

Log

10

dB/

DI

-23.3

dBm

M1 S2

S3 FC

RR



30 MHz /16 QAM / FCM

Agilent 14:09:28 Oct 25, 2011

Ref -10 dBm

#Avg

Log

10

dB/

DI

-23.3

dBm

M1 S2

S3 FC

RR



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ED 06

ECCN: 5E991

HTS:4901.98.0050

3DB 200010094 QZZA

125 / 299

ED 06

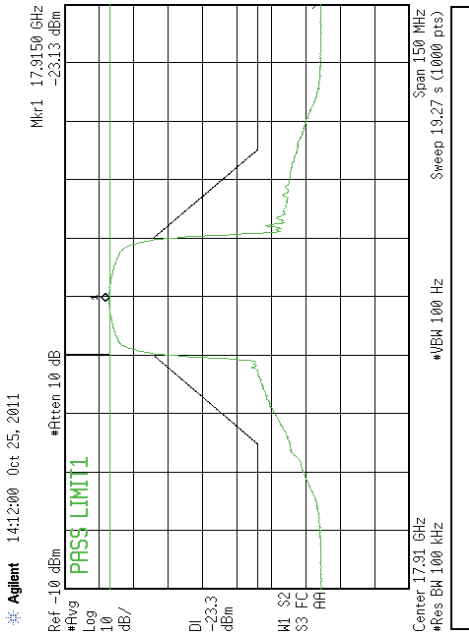
ECCN: 5E991

HTS:4901.98.0050

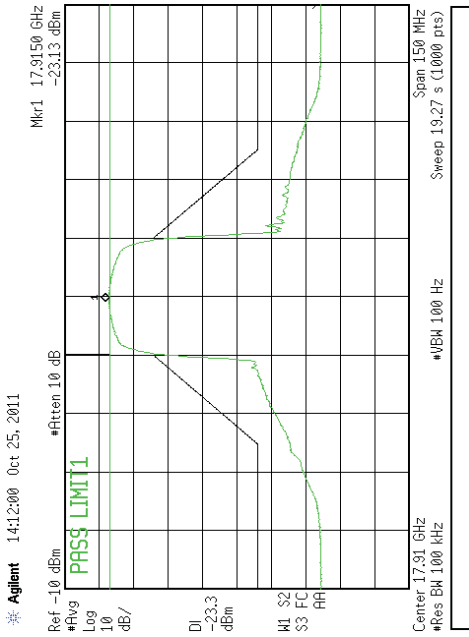
3DB 200010094 QZZA

126 / 299

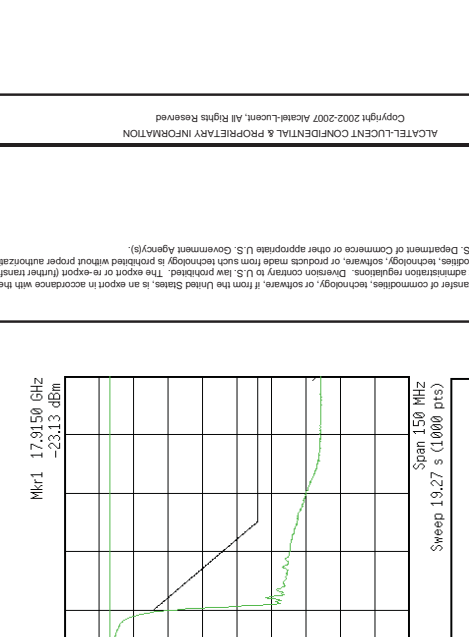
30 MHz /32 QAM / FCM



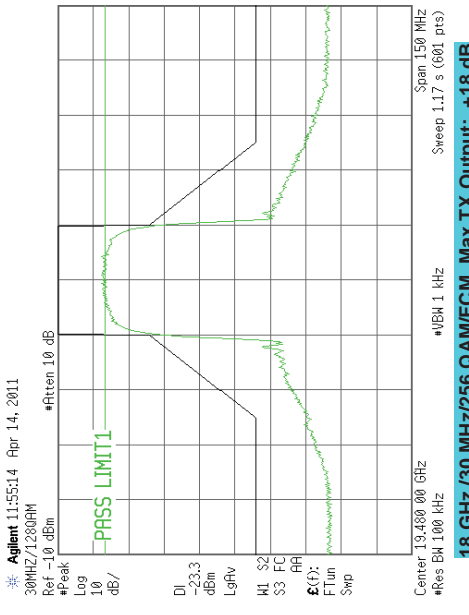
18 GHz /30 MHz/64 QAM/FCM, Max TX Output: +19 dB



18 GHz /30 MHz/128 QAM/FCM, Max TX Output: +19 dB



18 GHz /30 MHz/256 QAM/FCM, Max TX Output: +18 dB



ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

127 / 299

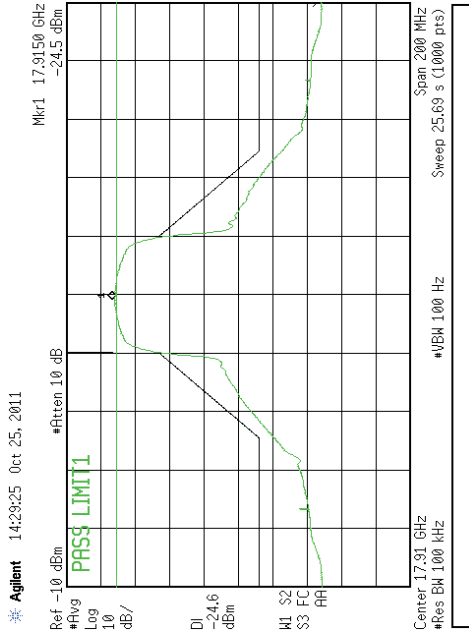
ED 06

ECCN: 5E991
HTS: 4901.99.0050

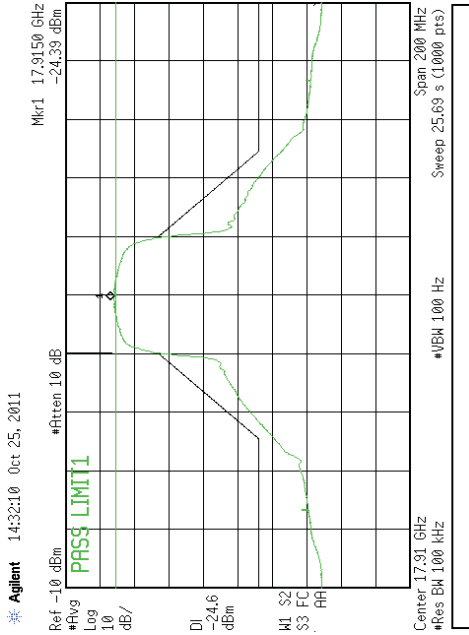
3DB 200010094 QZZA

128 / 299

40 MHz /4 QAM / FCM



40 MHz /8 QAM / FCM



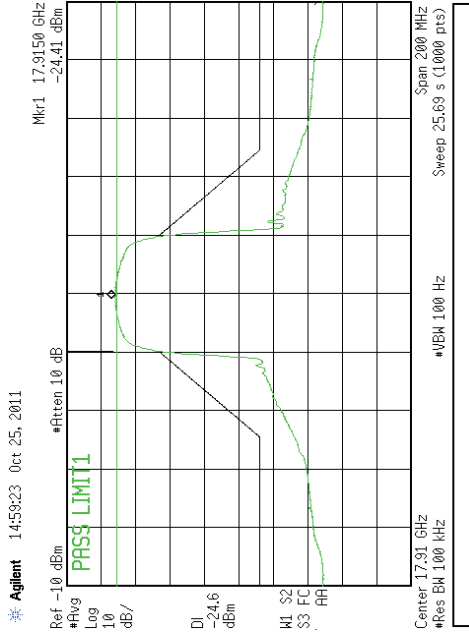
ED 06

ECCN: 5E991
HTS:4901.98.0050

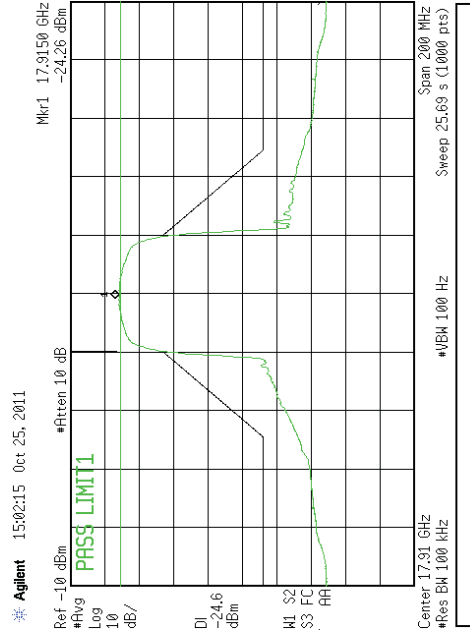
3DB 200010094 QZZA

129 / 299

40 MHz /16 QAM / FCM



40 MHz /32 QAM / FCM



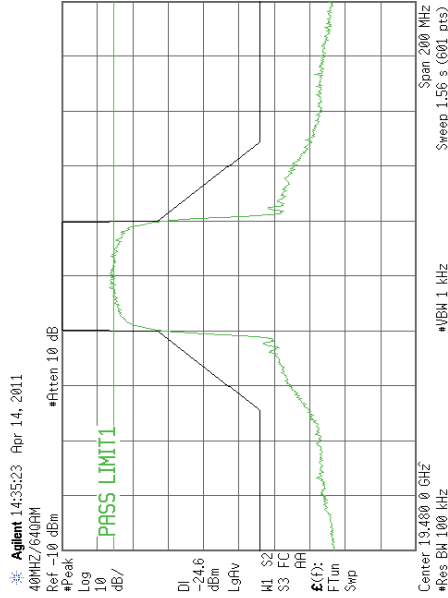
ED 06

ECCN: 5E991
HTS:4901.98.0050

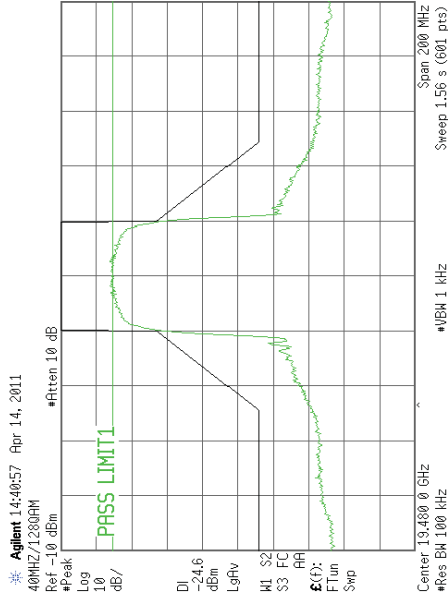
3DB 200010094 QZZA

130 / 299

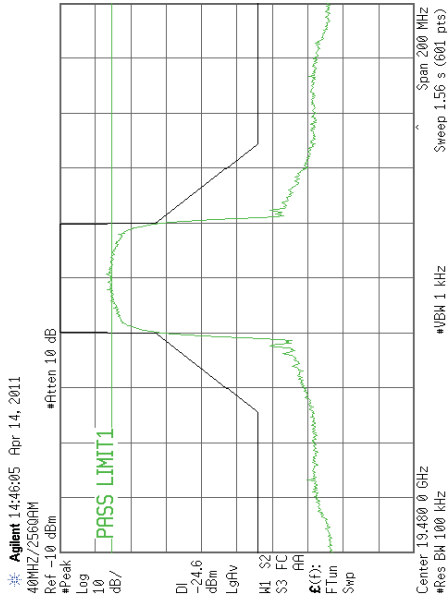
18 GHz /40 MHz/64 QAM/FCM, Max TX Output: +19 dB



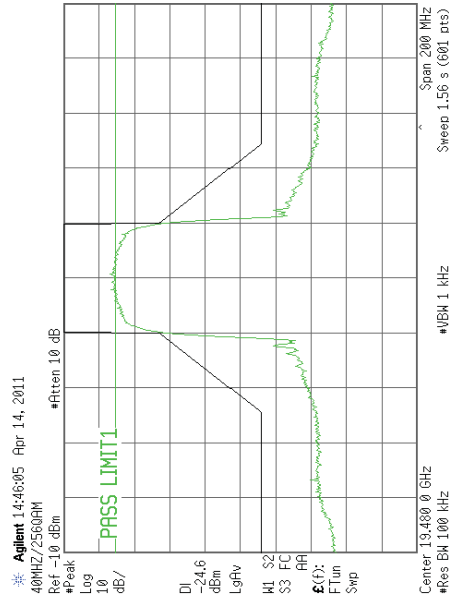
18 GHz /40 MHz/128 QAM/FCM, Max TX Output: +19 dB



18 GHz /40 MHz/256 QAM/FCM, Max TX Output: +18 dB



18 GHz /40 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dB
(same as 40 MHz/256 QAM Std Gain)



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ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

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ED 06

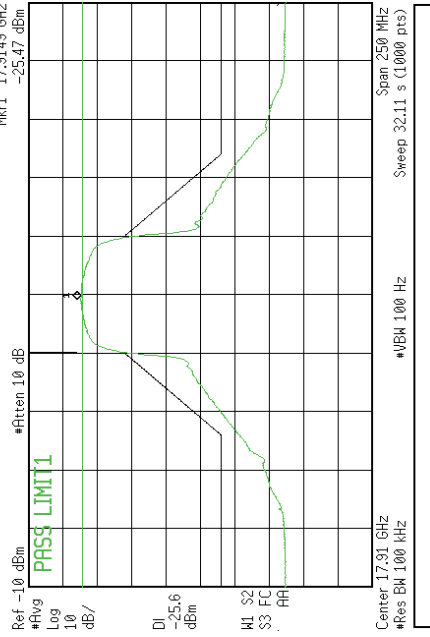
ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

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50 MHz / 4 QAM / FCM

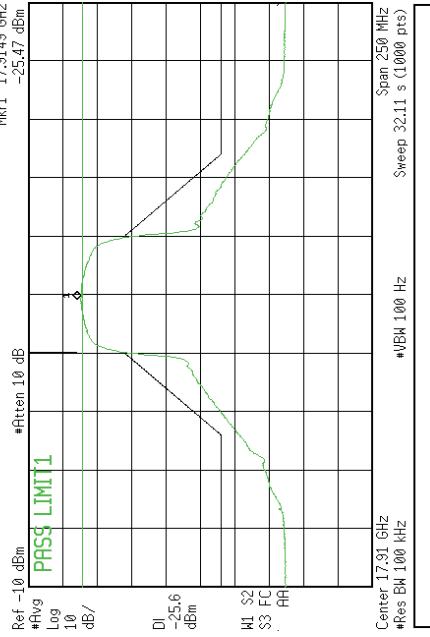
Agilent 15:39:55 Oct 25, 2011



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50 MHz / 8 QAM / FCM

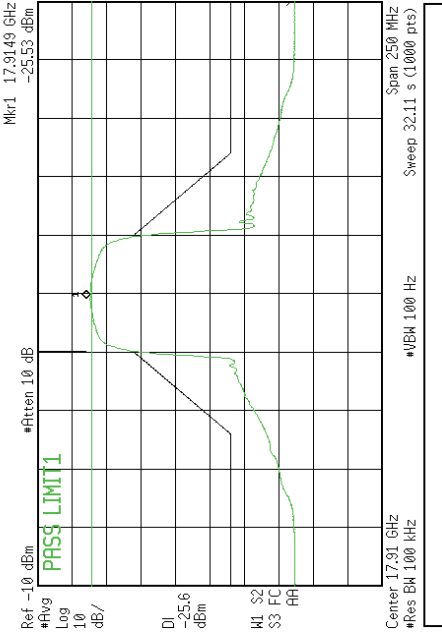
Agilent 15:50:38 Oct 25, 2011



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50 MHz / 16 QAM / FCM

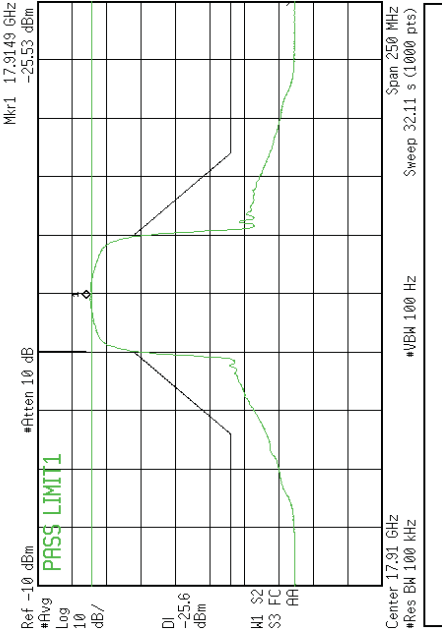
Agilent 15:59:03 Oct 25, 2011



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50 MHz / 32 QAM / FCM

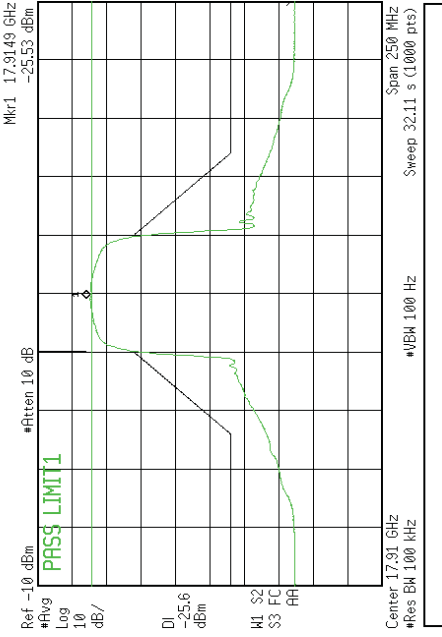
Agilent 16:04:51 Oct 25, 2011



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50 MHz / 32 QAM / FCM

Agilent 16:04:51 Oct 25, 2011



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ED 06

ECCN: 5E991

HTS: 4901.98.0050

3DB 200010094 QZZA

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ED 06

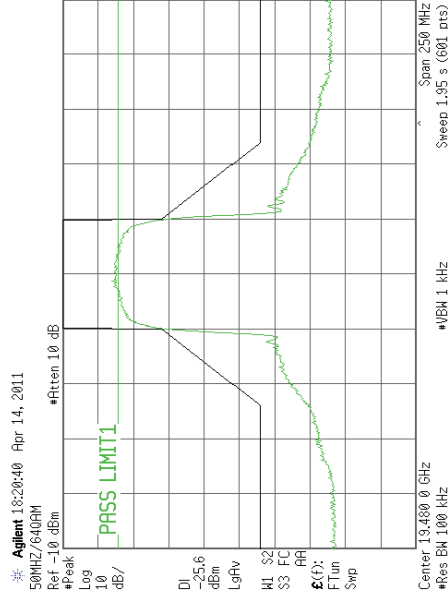
ECCN: 5E991

HTS: 4901.98.0050

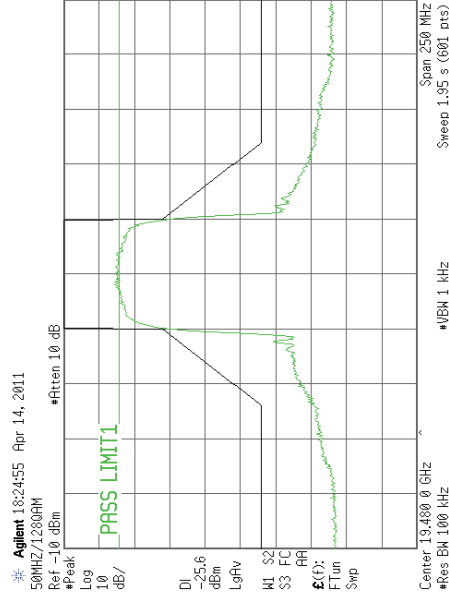
3DB 200010094 QZZA

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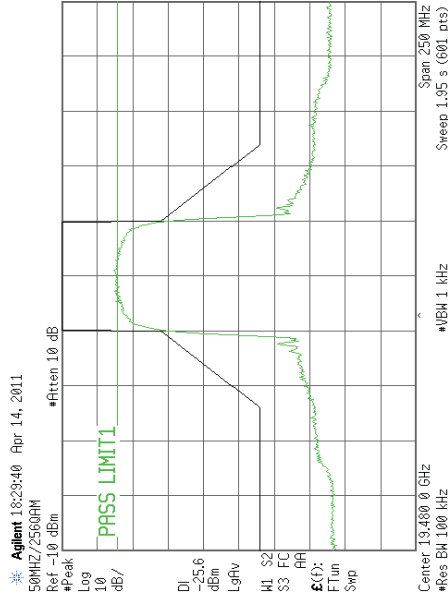
18 GHz /50 MHz/64 QAM /FCM, Max TX Output: +19 dB



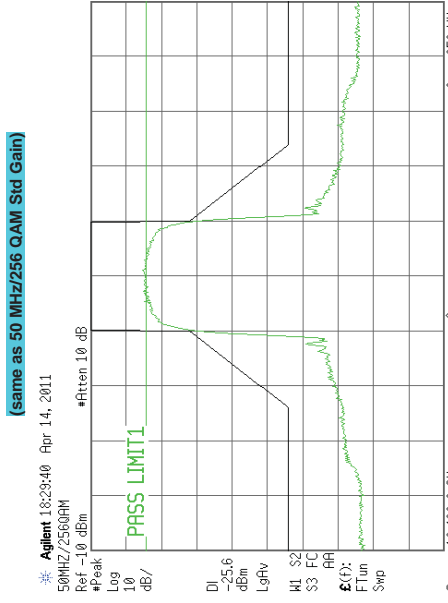
18 GHz /50 MHz/128 QAM /FCM, Max TX Output: +19 dB



18 GHz /50 MHz/256 QAM /FCM, Max TX Output: +18 dB



18 GHz /50 MHz/256 QAM /FCM, Max TX Output: +18 dB
(same as 50 MHz/256 QAM Std Gain)



ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

135 / 299

ED 06

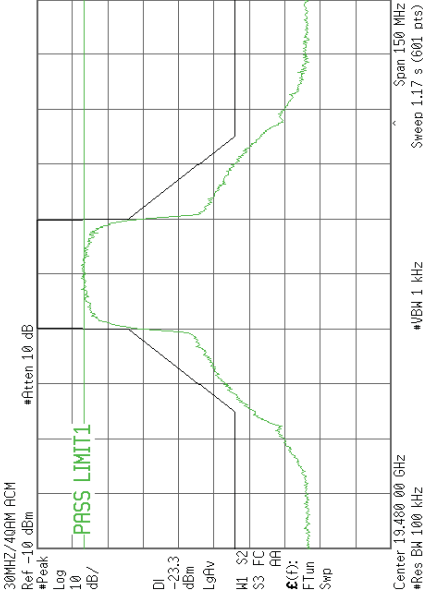
ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

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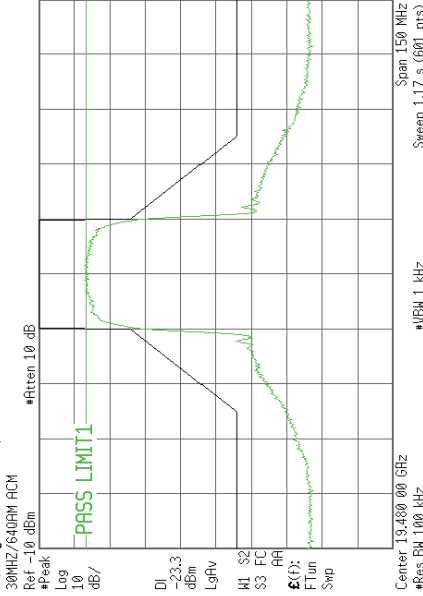
18 GHz /30 MHz/4 QAM/ACM, Max TX Output: +22 dB

Agilent 10:05:03 Apr 15, 2011



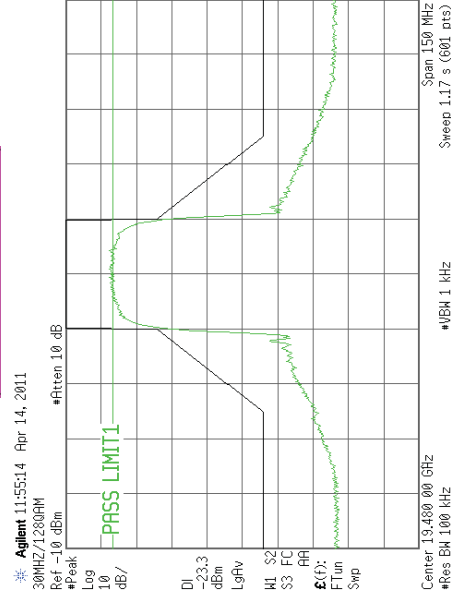
18 GHz /30 MHz/64 QAM/ACM, Max TX Output: +19 dB

Agilent 10:11:12 Apr 15, 2011



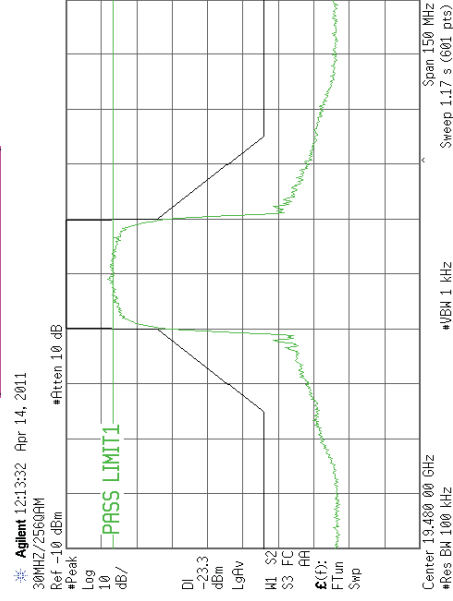
18 GHz /30 MHz/128 QAM/ACM, Max TX Output: +19 dB

Agilent 11:55:14 Apr 14, 2011



18 GHz /30 MHz/256 QAM/ACM, Max TX Output: +18 dB

Agilent 12:13:32 Apr 14, 2011



ED 06

ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZA

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ED 06

ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZA

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18 GHz /40 MHz/4 QAM/ACM, Max TX Output: +22 dB

Agilent 1013:12 Apr 15, 2011

40MHz/40M ACM

Ref -10 dBm

Peak

Log

10

dB/

DI

-24.6

dBm

LgrV

M1 S2

S3 FC

HA

ⓧ():

FTun

Swp

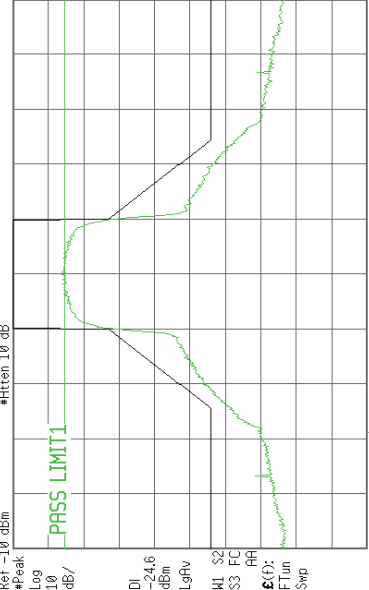
Center 13.480 0 GHz

Res BW 100 kHz

VBW 1 kHz

Span 200 MHz

Sweep 1.56 s (601 pts)



18 GHz /40 MHz/64 QAM/ACM, Max TX Output: +19 dB

Agilent 10124:23 Apr 15, 2011

40MHz/64QAM ACM

Ref -10 dBm

Peak

Log

10

dB/

DI

-24.6

dBm

LgrV

M1 S2

S3 FC

HA

ⓧ():

FTun

Swp

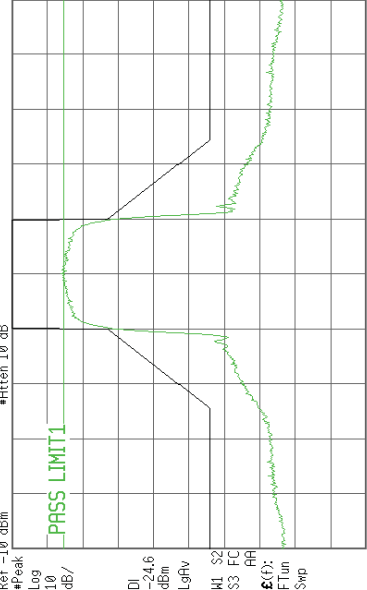
Center 13.480 0 GHz

Res BW 100 kHz

VBW 1 kHz

Span 200 MHz

Sweep 1.56 s (601 pts)



18 GHz /40 MHz/128 QAM/ACM, Max TX Output: +19 dB

Agilent 14:40:57 Apr 14, 2011

40MHz/128QAM

Ref -10 dBm

Peak

Log

10

dB/

DI

-24.6

dBm

LgrV

M1 S2

S3 FC

HA

ⓧ():

FTun

Swp

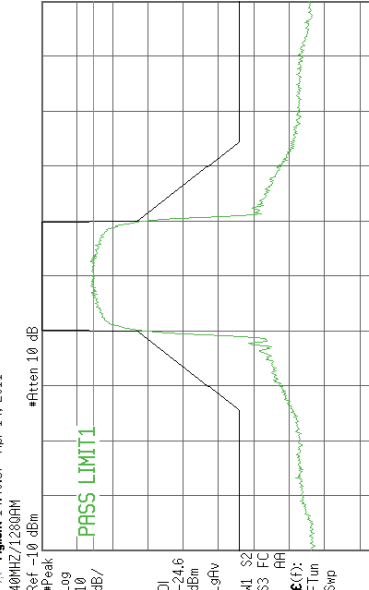
Center 13.480 0 GHz

Res BW 100 kHz

VBW 1 kHz

Span 200 MHz

Sweep 1.56 s (601 pts)



18 GHz /40 MHz/256 QAM/ACM, Max TX Output: +18 dB

Agilent 14:46:05 Apr 14, 2011

40MHz/256QAM

Ref -10 dBm

Peak

Log

10

dB/

DI

-24.6

dBm

LgrV

M1 S2

S3 FC

HA

ⓧ():

FTun

Swp

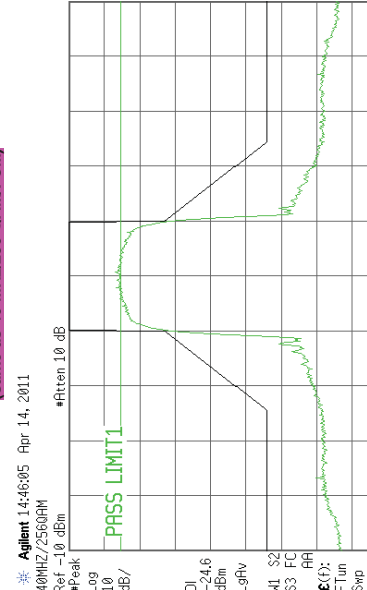
Center 13.480 0 GHz

Res BW 100 kHz

VBW 1 kHz

Span 200 MHz

Sweep 1.56 s (601 pts)



ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	140 / 299
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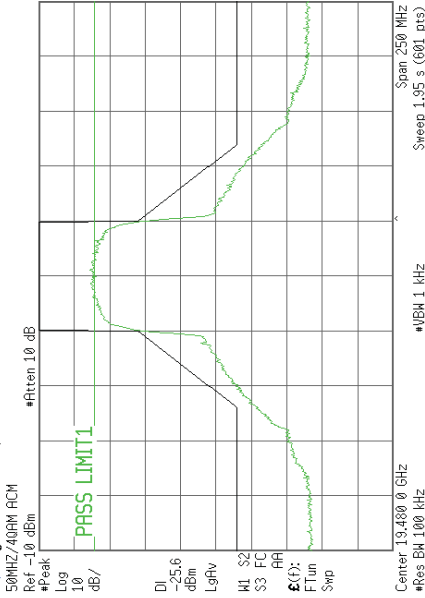
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	139 / 299
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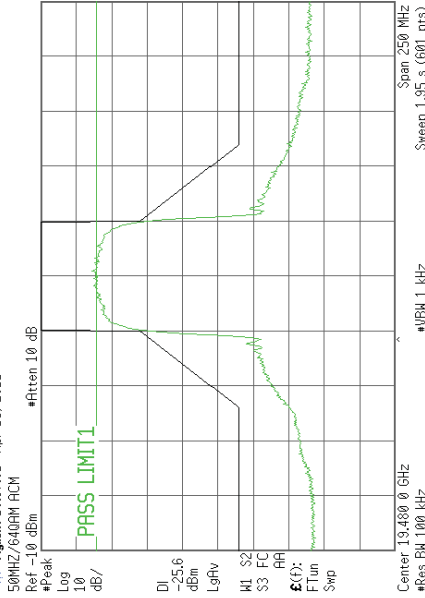
18 GHz /50 MHz/4 QAM/ACM, Max TX Output: +22 dB

Agilent 10:32:06 Apr 15, 2011



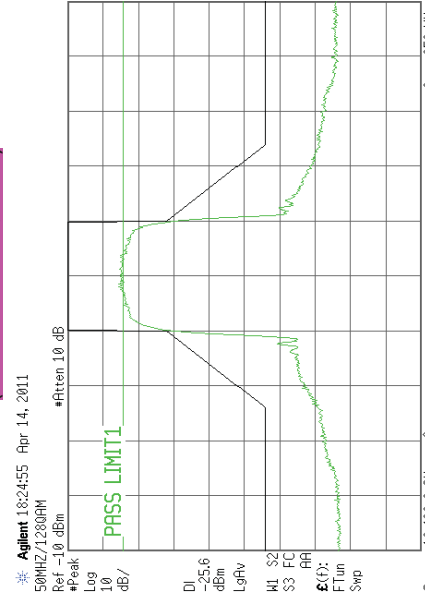
18 GHz /50 MHz/64 QAM/ACM, Max TX Output: +19 dB

Agilent 10:37:01 Apr 15, 2011



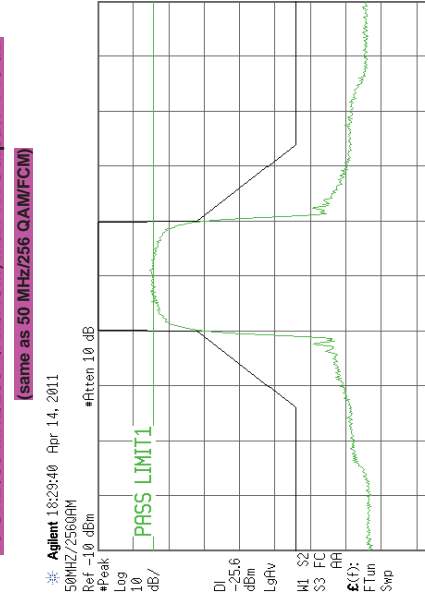
18 GHz /50 MHz/128 QAM/ACM, Max TX Output: +19 dB

Agilent 18:24:55 Apr 14, 2011



18 GHz /50 MHz/256 QAM/ACM, Max TX Output: +18 dB

Agilent 18:29:40 Apr 14, 2011

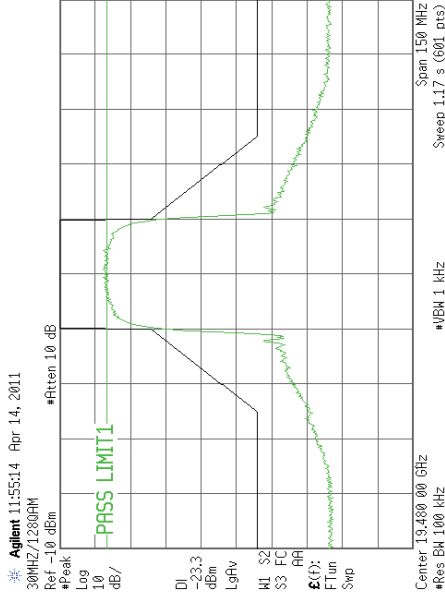


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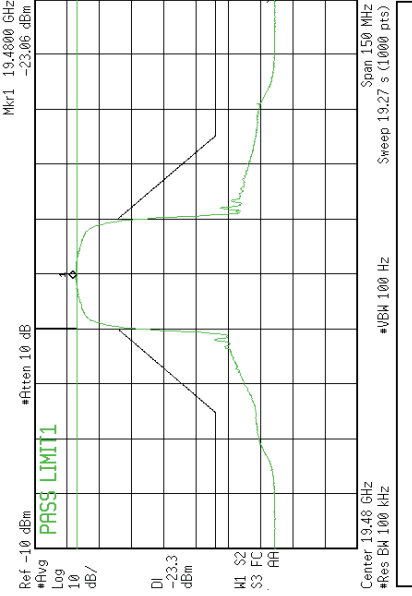
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	142 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	141 / 299
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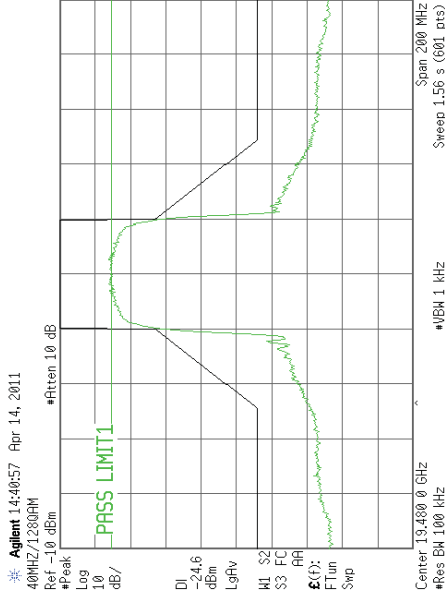
18 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +19 dB
 (same as 30 MHz/128 QAM/FCM)



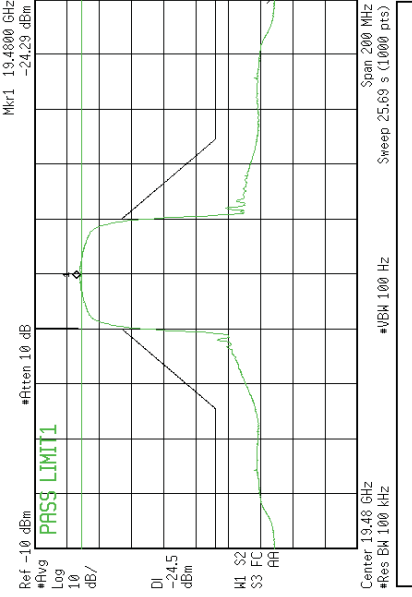
18 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +18 dB



18 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +19 dB
 (same as 40 MHz/128 QAM/FCM)



18 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +18 dB



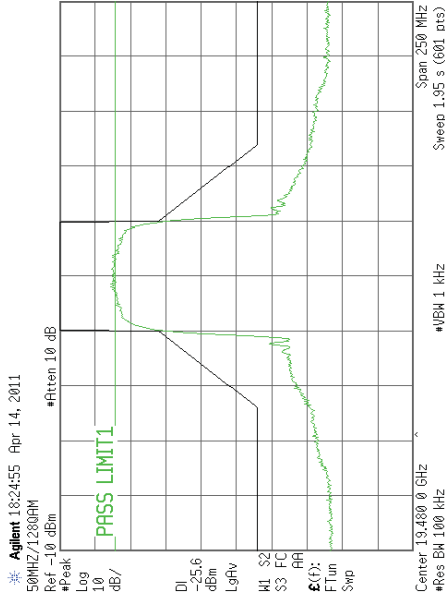
ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	144 / 299
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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	143 / 299
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18 GHz /50 MHz/128 QAM/XPIC, Max TX Output: +19 dB
(same as 50 MHz/128 QAM/FCM)



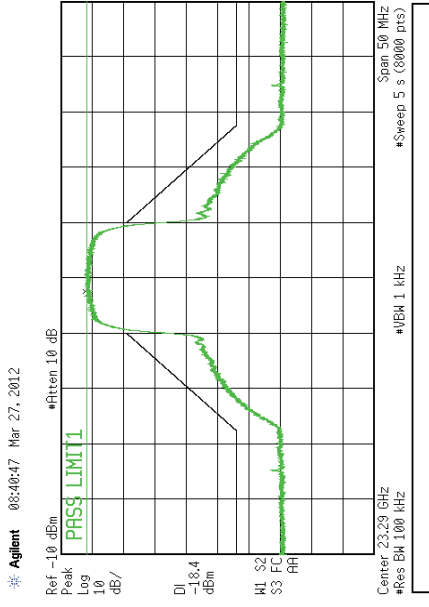
18 GHz /50 MHz/256 QAM/XPIC, Max TX Output: +18 dB



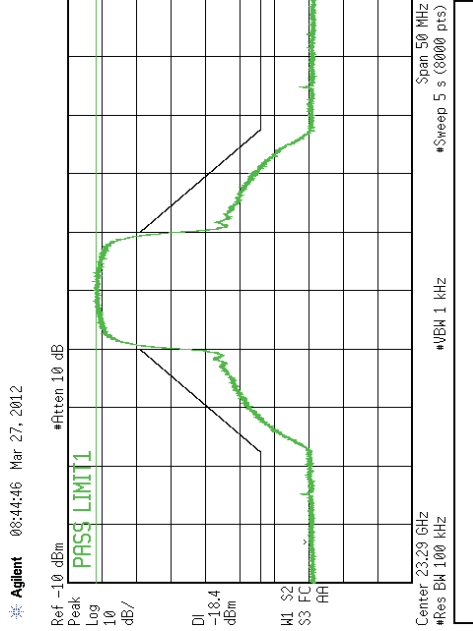
1.2.5.5 23GHz FCC MASK

The 23GHz mask plots are shown below.

10 MHz/ 4 QAM/ ACM



10 MHz/ 8 QAM/ ACM



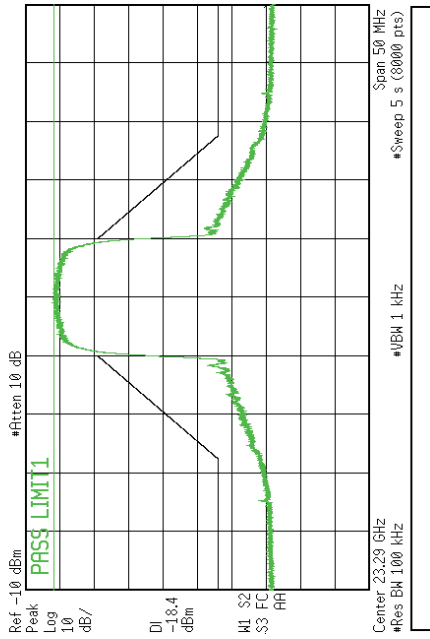
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	145 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	146 / 299
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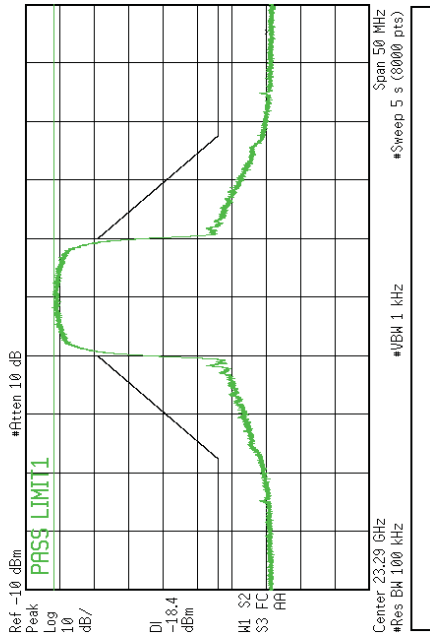
10 MHz/ 16 QAM/ ACM

Agilent 08:55:37 Mar 27, 2012

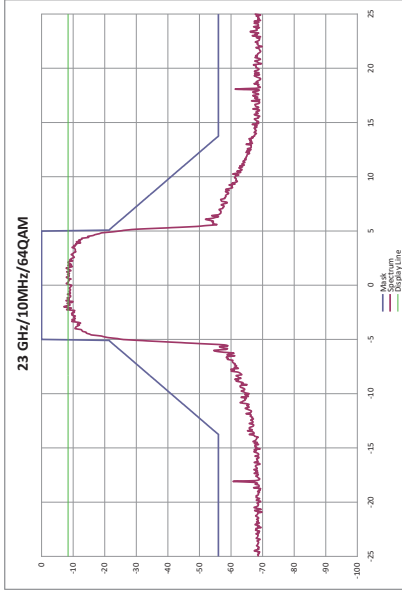


10 MHz/ 32 QAM/ ACM

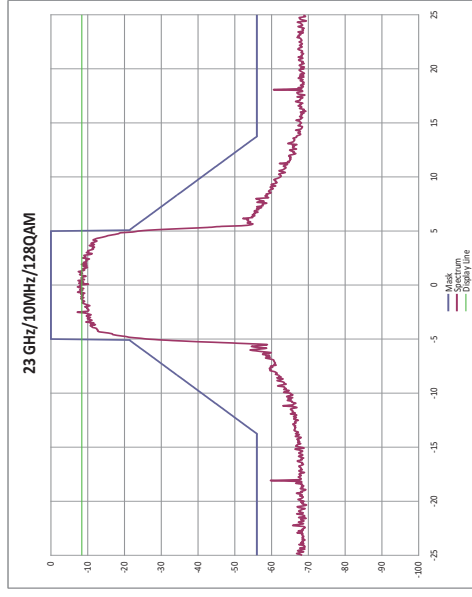
Agilent 09:01:12 Mar 27, 2012



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dB



23 GHz /10 MHz/128 QAM/FCM, Max TX Output: +18 dB



ED 06

ECCN: 5E991
HTS: 4901.98.0050

3DB 200010094 QZZA

147 / 299

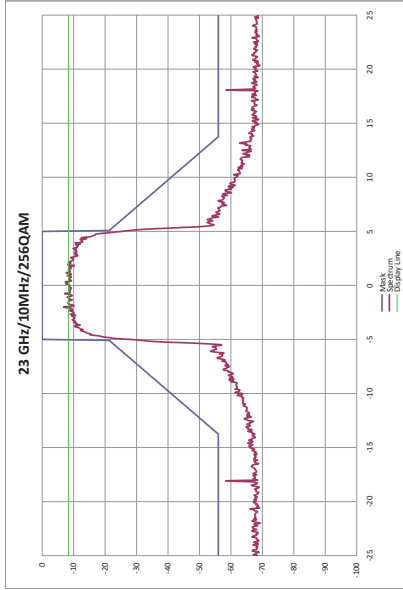
ED 06

ECCN: 5E991
HTS: 4901.98.0050

3DB 200010094 QZZA

148 / 299

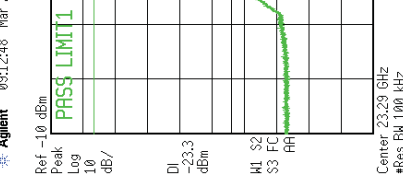
23 GHz /10 MHz/256 QAM/FCM, Max TX Output: +18 dB



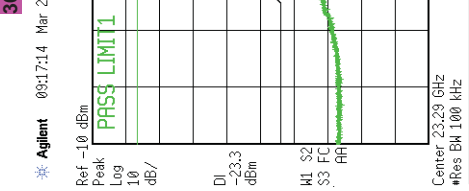
30 MHz/4 QAM/ACM, Max TX Output: +20 dB



30 MHz/8 QAM/ACM



30 MHz/16 QAM/ACM



ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZZA

149 / 299

ED 06

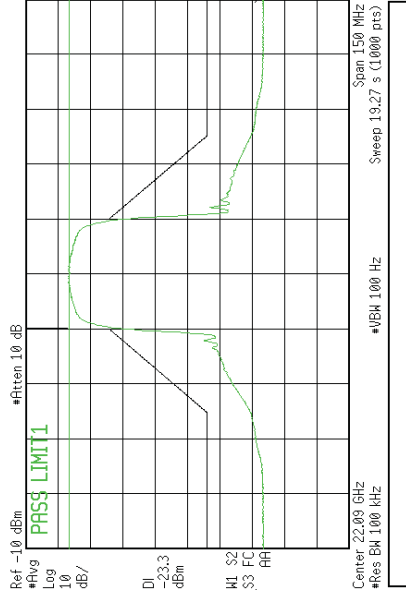
ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZZA

150 / 299

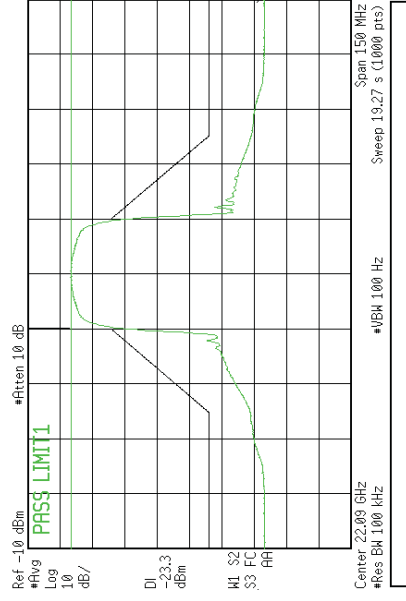
23 GHz /30 MHz/128 QAM/FCM, Max TX Output: +18 dB

Agilent 16:50:15 Jan 26, 2011



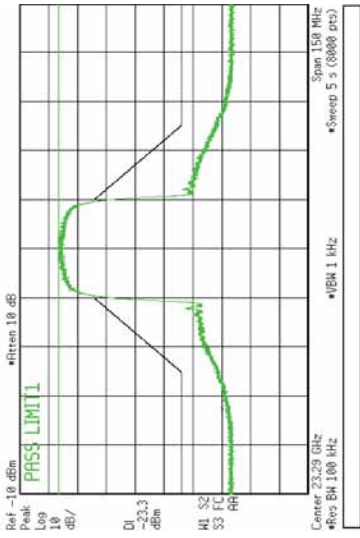
23 GHz /30 MHz/256 QAM/FCM, Max TX Output: +18 dB

Agilent 11:56:58 Jan 26, 2011



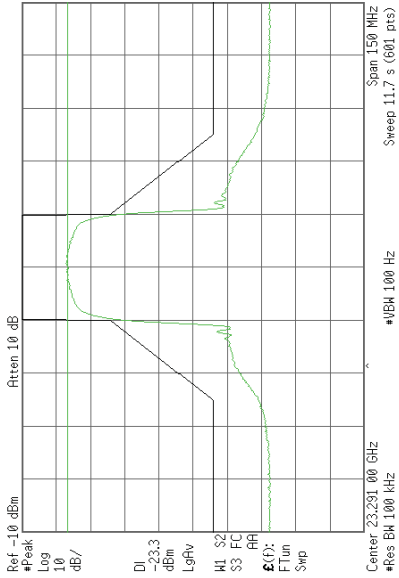
30 MHz/ 32 QAM/ ACM

Agilent 08:18:41 Mar 27, 2012



23 GHz /30 MHz/64 QAM/FCM, Max TX Output: +18 dB

Agilent 15:15:21 Jun 22, 2011



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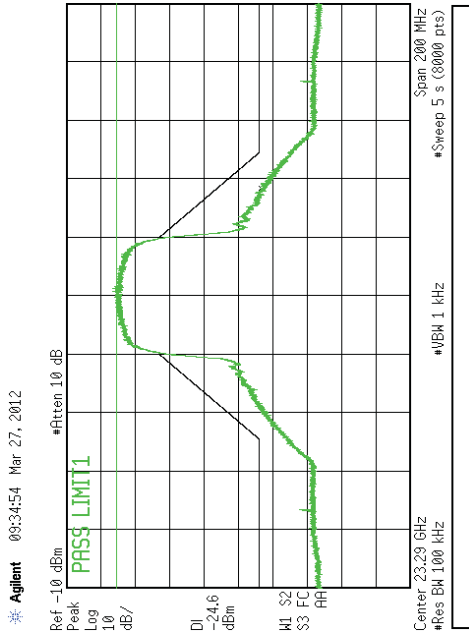
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	152 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	151 / 299
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40 MHz/4 QAM/ACM, Max TX Output: +20 dB

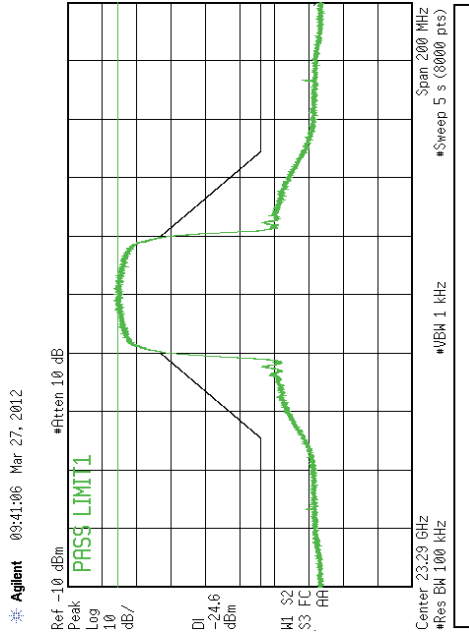


40 MHz/8 QAM/ACM

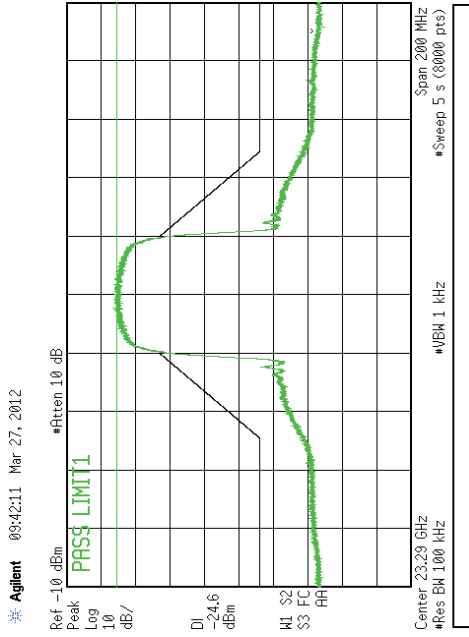


ED	06	ECCN: 5E991	3DB 200010094 QZZA	153 / 299
		HTS:4901.99.0050		

40 MHz/ 16 QAM/ ACM

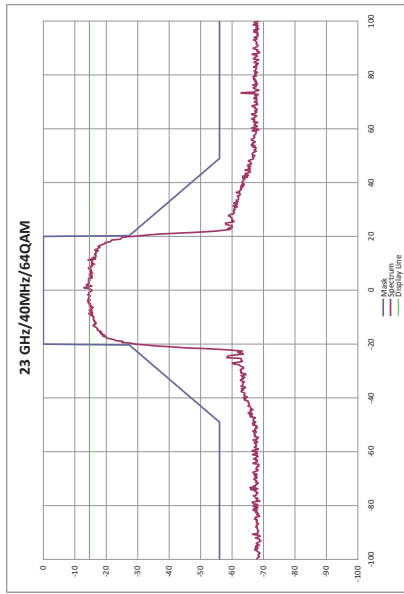


40 MHz/ 32 QAM/ ACM



ED	06	ECCN: 5E991	3DB 200010094 QZZA	154 / 299
		HTS:4901.99.0050		

23 GHz /40 MHz/64 QAM/FCM, Max TX Output: +18 dB



23 GHz /40 MHz/128 QAM/FCM, Max TX Output: +18 dB



23 GHz /40 MHz/256 QAM/FCM, Max TX Output: +18 dB



23 GHz /40 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dB
(same as 40 MHz/256 QAM Std Gain)



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This transfer of commodities, technology, or software, or products made from such technology is prohibited without proper authorization(s) from the U.S. Department of Commerce or other appropriate U.S. Government agency(s).

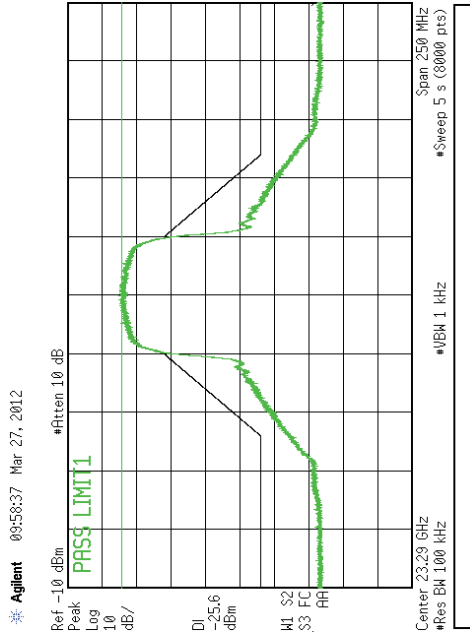
ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	155 / 299
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ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	156 / 299
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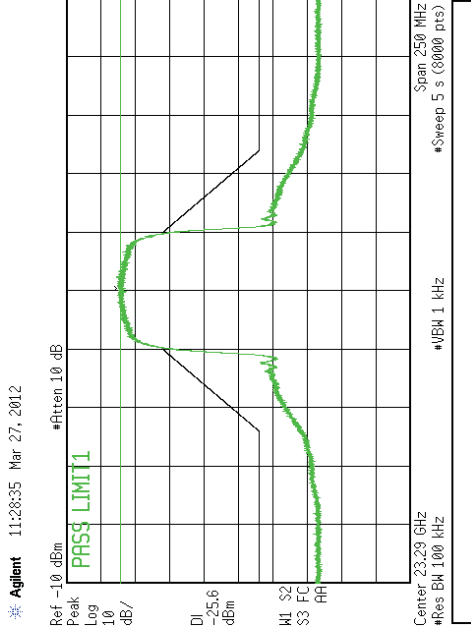
50 MHz/4 QAM/ACM, Max TX Output: +22 dB



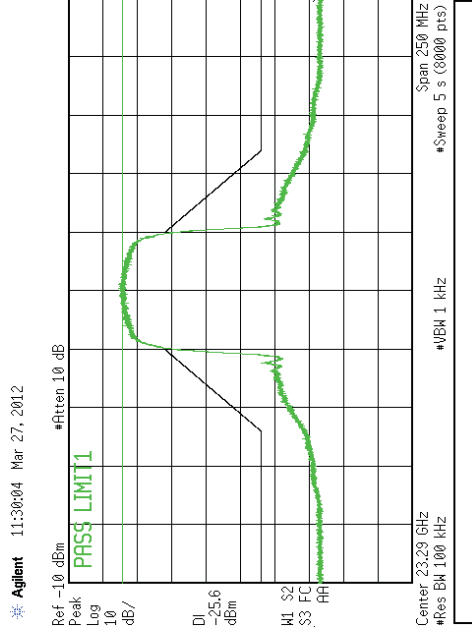
50 MHz/8 QAM/ ACM



50 MHz/ 16 QAM/ ACM



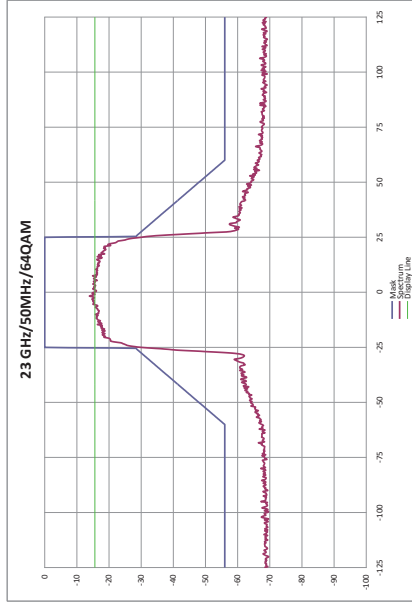
50 MHz/ 32 QAM/ ACM



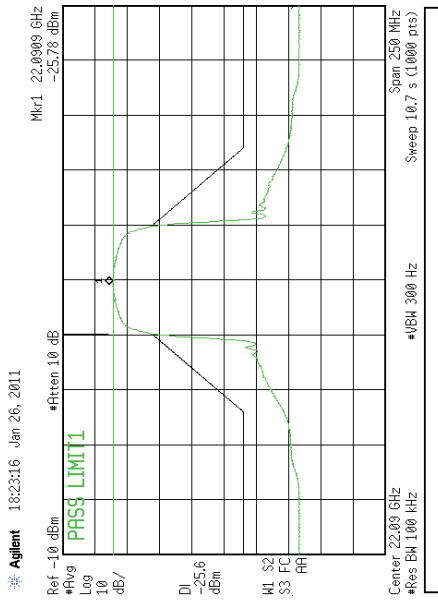
ED	06	ECCN: 5E591 HTS:4901.90.0050	3DB 200010094 QZZA	158 / 299
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ED	06	ECCN: 5E591 HTS:4901.90.0050	3DB 200010094 QZZA	157 / 299
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23 GHz /50 MHz/64 QAM /FCM, Max TX Output: +18 dB



23 GHz /50 MHz/128 QAM /FCM, Max TX Output: +18 dB



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ED 06

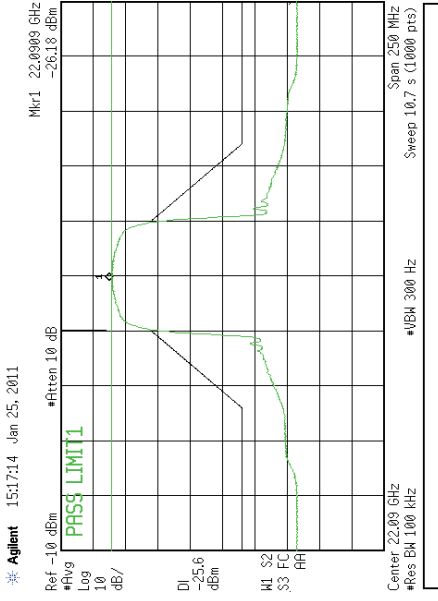
ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZA

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23 GHz /50 MHz/256 QAM /FCM, Max TX Output: +18 dB



23 GHz /50 MHz/256 QAM /FCM, Max TX Output: +18 dB
 (same as 50 MHz/256 QAM Std Gain)



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ED 06

ECCN: 5E991

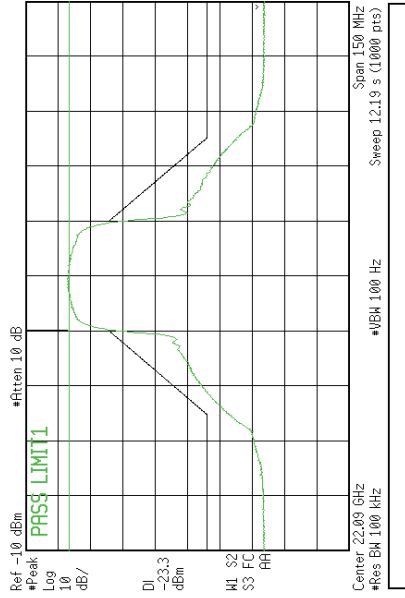
HTS: 4901.99.0050

3DB 200010094 QZZA

160 / 299

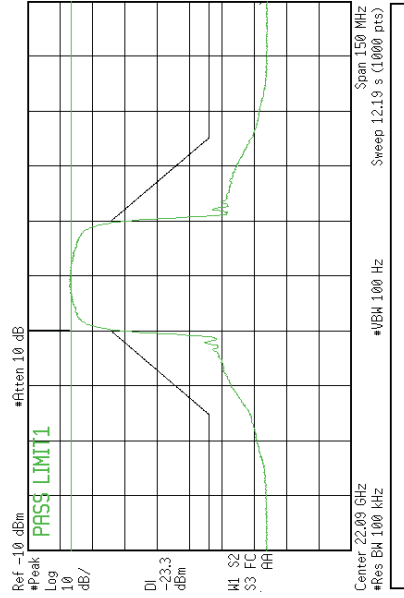
23 GHz /30 MHz/4 QAM/ACM, Max TX Output: +20 dB

* Agilent



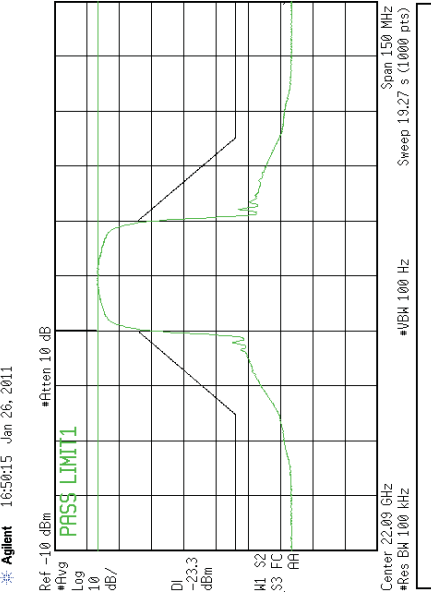
23 GHz /30 MHz/64 QAM/ACM, Max TX Output: +18 dB

* Agilent



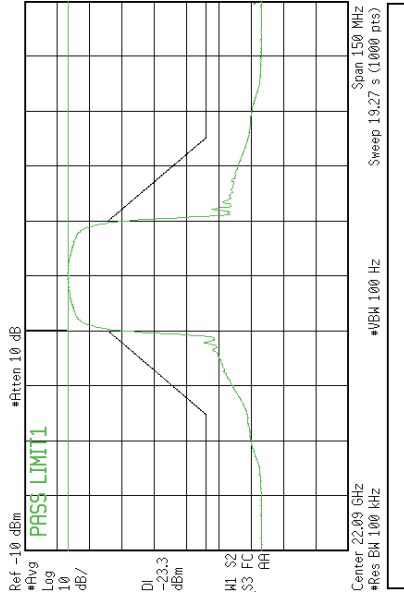
23 GHz /30 MHz/128 QAM/ACM, Max TX Output: +18 dB
(same as 30 MHz/128 QAM/FCM)

* Agilent 16:50:15 Jan 26, 2011



23 GHz /30 MHz/256 QAM/ACM, Max TX Output: +18 dB
(same as 30 MHz/256 QAM/FCM)

* Agilent 11:56:58 Jan 26, 2011



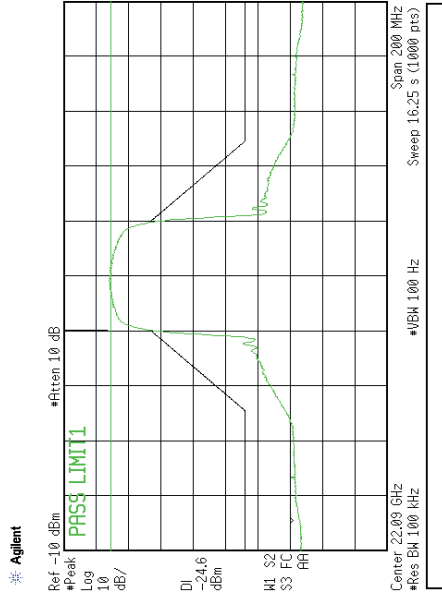
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	162 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	161 / 299
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23 GHz /40 MHz/4 QAM/ACM, Max TX Output: +20 dB



23 GHz /40 MHz/64 QAM/ACM, Max TX Output: +18 dB



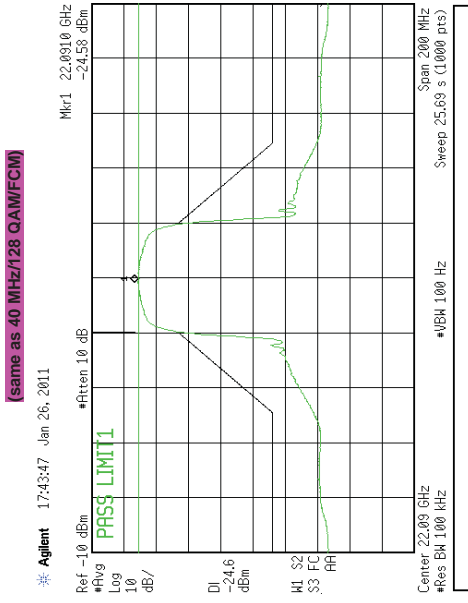
ED 06

ECCN: 5E991
 HTS: 4901.99.0050

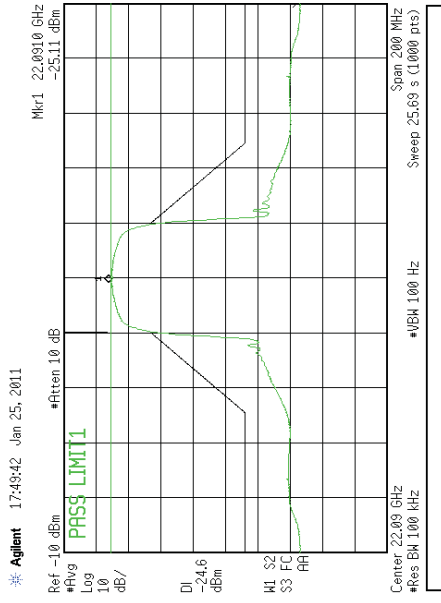
3DB 200010094 QZZA

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23 GHz /40 MHz/128 QAM/ACM, Max TX Output: +18 dB



23 GHz /40 MHz/256 QAM/ACM, Max TX Output: +18 dB



ED 06

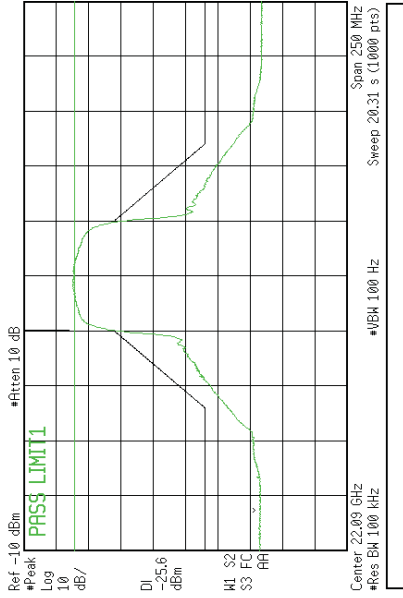
ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

164 / 299

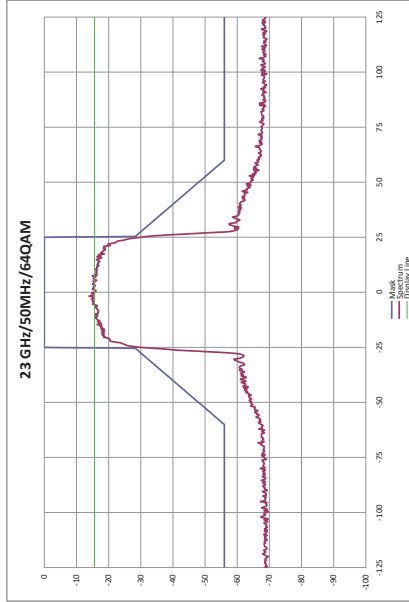
23 GHz /50 MHz/4 QAM/ACM, Max TX Output: +22 dB

Agilent



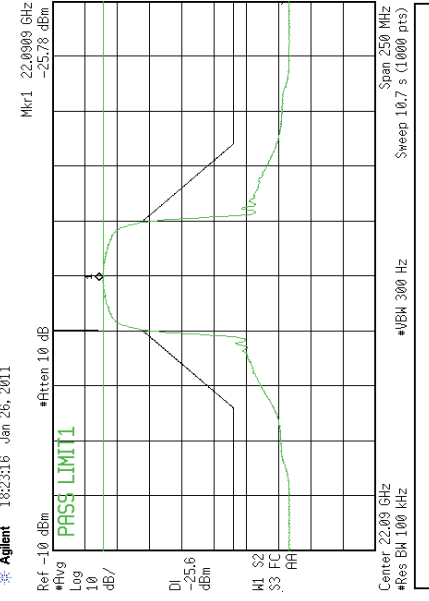
23 GHz /50 MHz/64 QAM/ACM, Max TX Output: +18 dB

(same as 50 MHz/64 QAM/ACM)



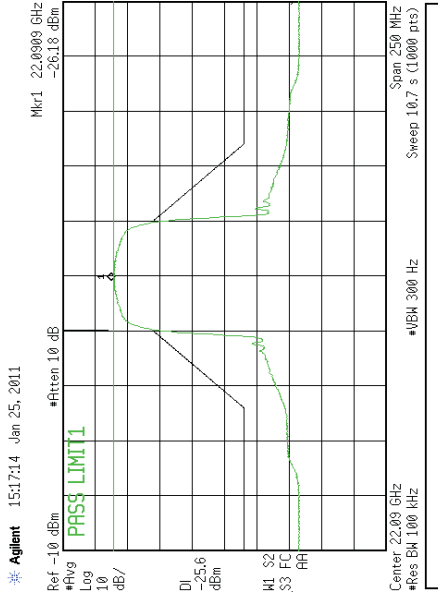
23 GHz /50 MHz/128 QAM/ACM, Max TX Output: +18 dB

Agilent



23 GHz /50 MHz/256 QAM/ACM, Max TX Output: +18 dB

(same as 50 MHz/256 QAM/ACM)



ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

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ED 06

ECCN: 5E991
HTS: 4901.99.0050

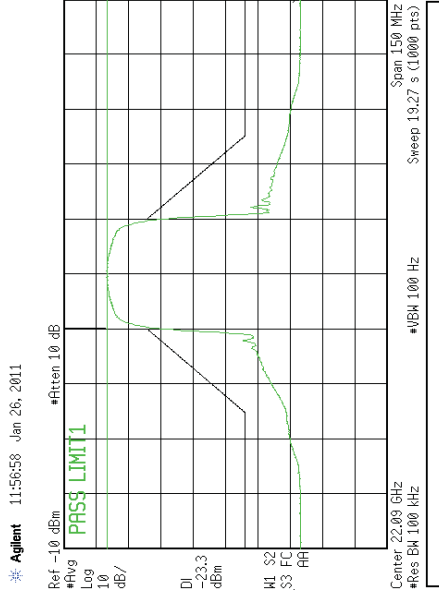
3DB 200010094 QZZA

166 / 299

23 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +18 dB
 (same as 30 MHz/128 QAM/FCM)



23 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +18 dB
 (same as 30 MHz/256 QAM/FCM)



ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

167 / 299

23 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +18 dB
 (same as 40 MHz/128 QAM/FCM)



23 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +18 dB
 (same as 40 MHz/256 QAM/FCM)



ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

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23 GHz /50 MHz/128 QAM/XPIC, Max TX Output: +18 dB
 (same as 50 MHz/128 QAM/FCM)



23 GHz /50 MHz/256 QAM/XPIC, Max TX Output: +18 dB
 (same as 50 MHz/256 QAM/FCM)

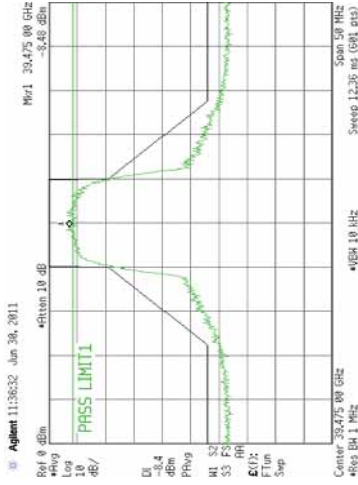


1.2.5.6 38GHz FCC MASK

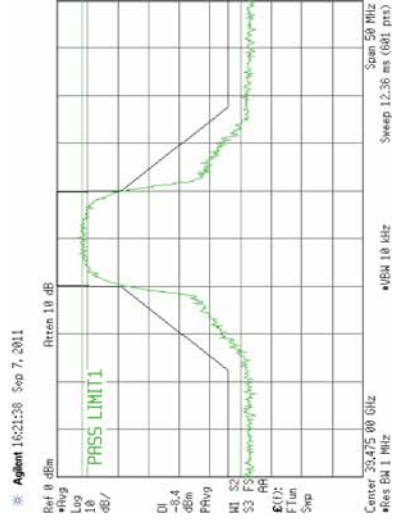
The 38GHz mask plots are shown below:

ODU P/N 3DB20563BA, S/N BS1122Uw01V
SWP V3.00.00Y

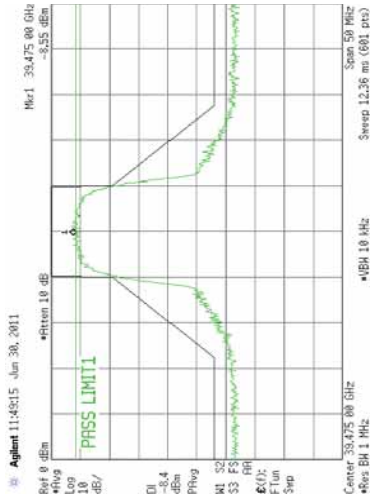
Fixed and Adaptive profiles:
10MHz 32QAM



10MHz 64QAM

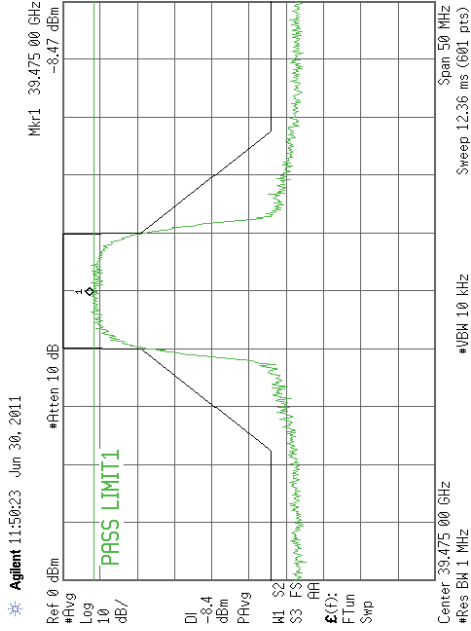


10MHz 128QAM



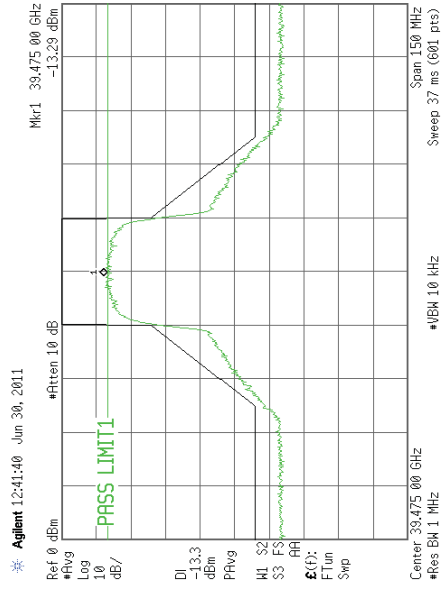
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10MHz 256QAM



This transfer of commodities, technology, or software, or products made from such technology is prohibited without proper authorization(s) from the U.S. Department of Commerce or other appropriate U.S. Government agency(s).

30MHz 4 QAM



Agilent 12:41:40 Jun 30, 2011

ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

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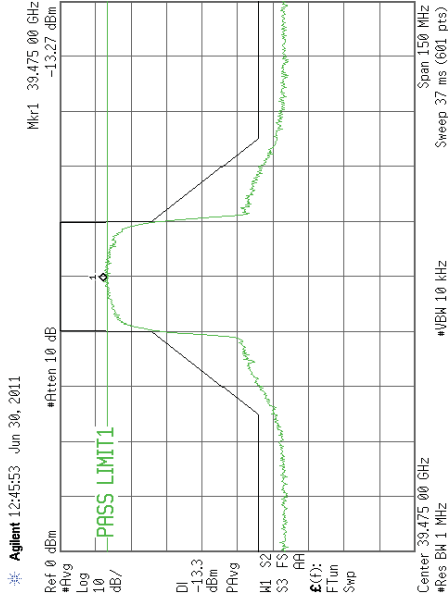
ED 06

ECCN: 5E991
HTS: 4901.99.0050

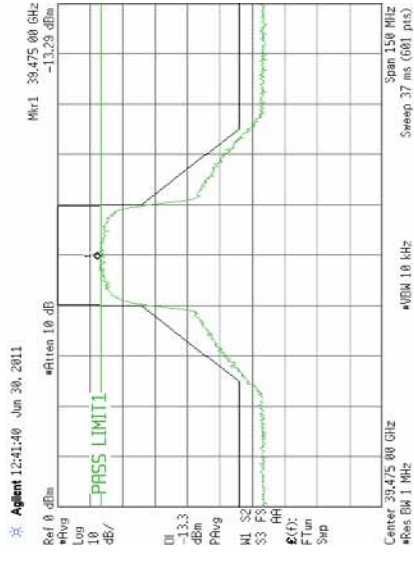
3DB 200010094 QZZA

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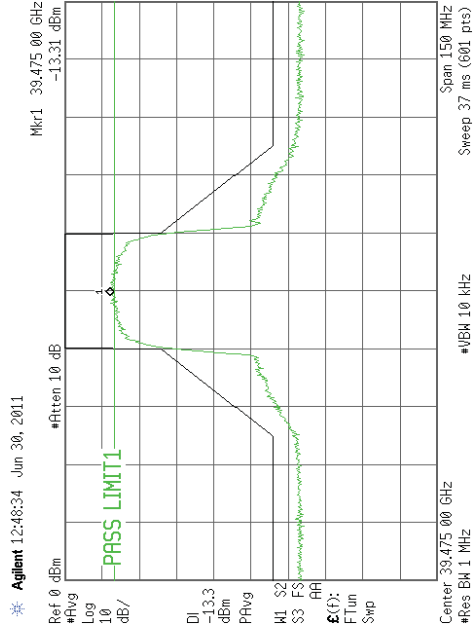
30MHz 16 QAM



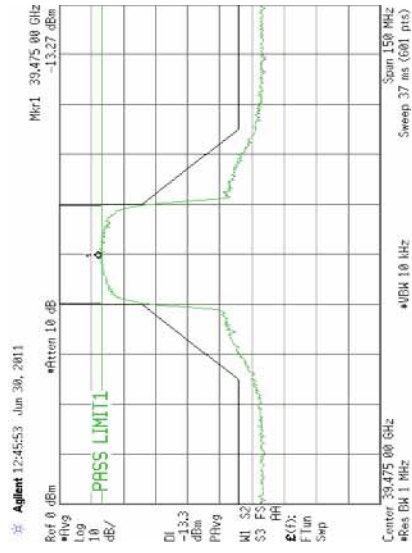
30MHz 32QAM



30MHz 64QAM



30MHz 128QAM



ED 06

ECCN: 5E991
HTS: 4801.98.0050

3DB 200010094 QZZA

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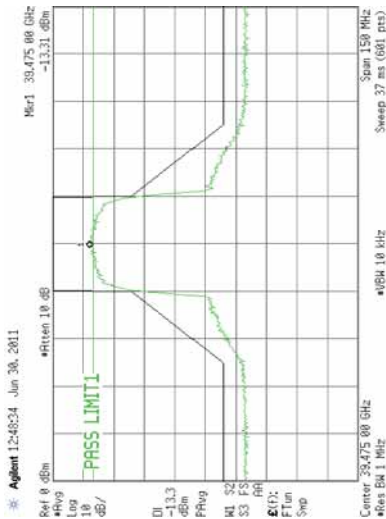
ED 06

ECCN: 5E991
HTS: 4801.98.0050

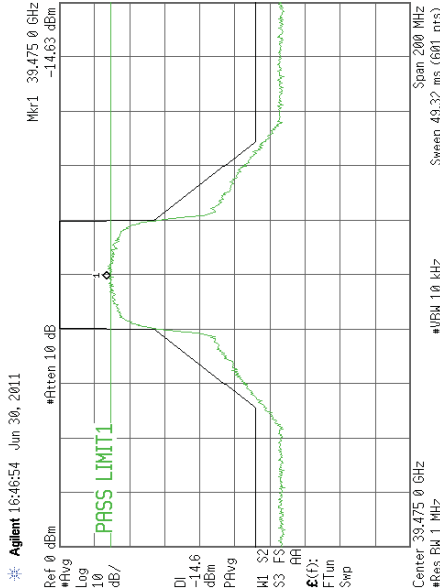
3DB 200010094 QZZA

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30MHz 256QAM



40MHz 4QAM



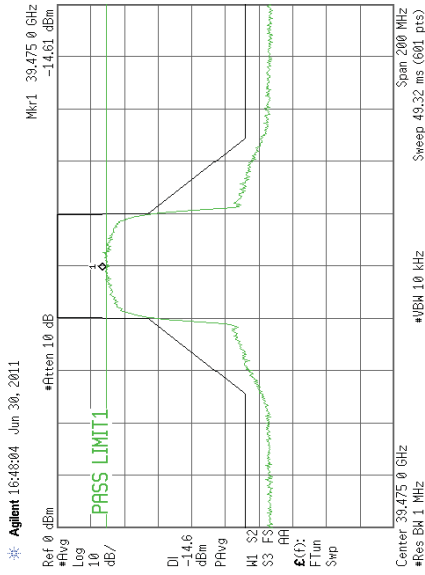
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HTS: 4901.99.0050

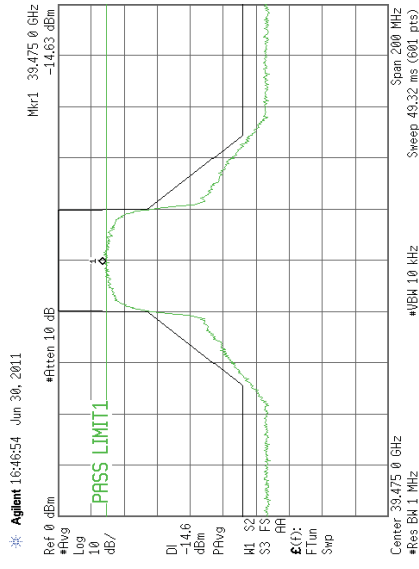
3DB 200010094 QZZA

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40MHz 16QAM



40MHz 32QAM



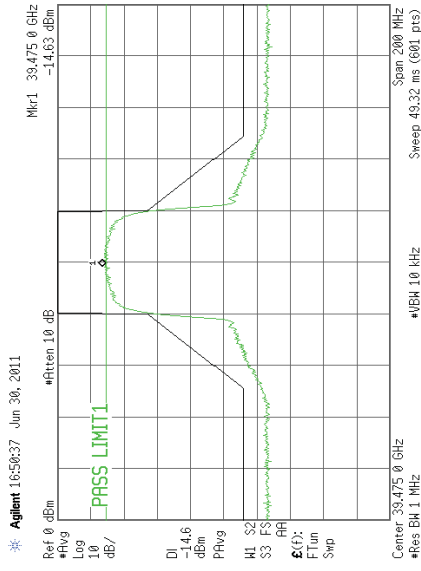
ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

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40MHz 256QAM

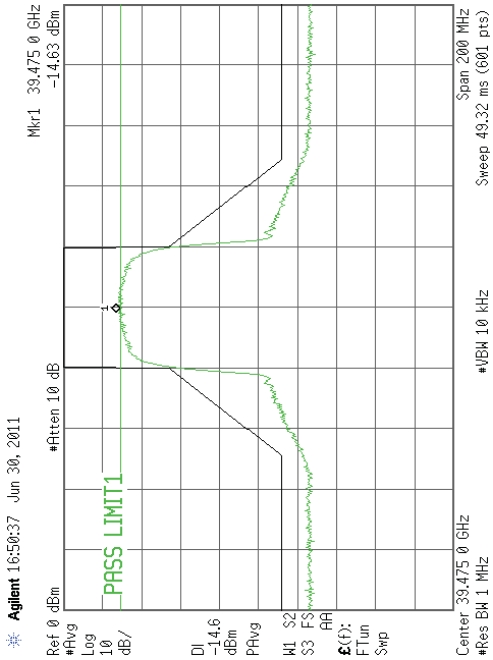


50MHz 4QAM

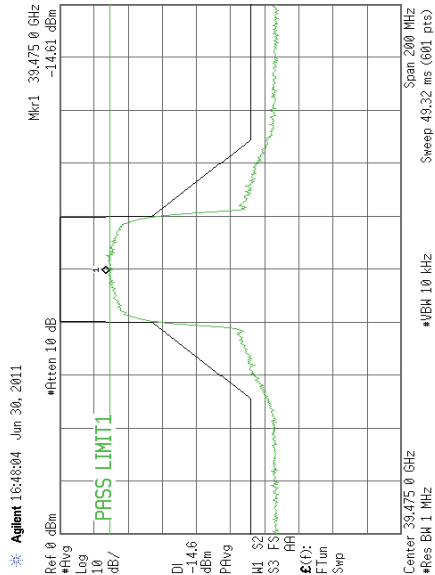


ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	176 / 299
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40MHz 64QAM



40MHz 128QAM

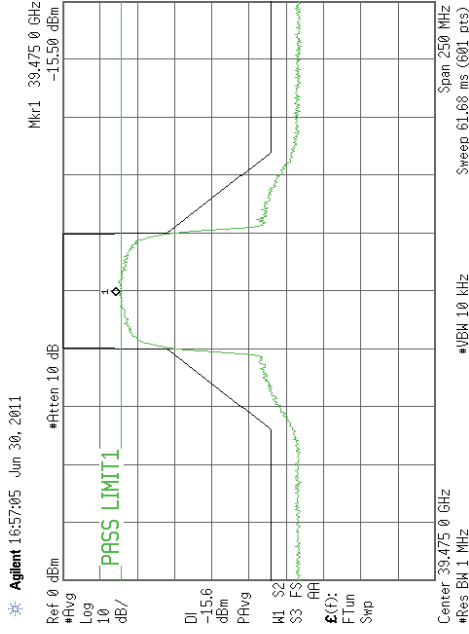


ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	177 / 299
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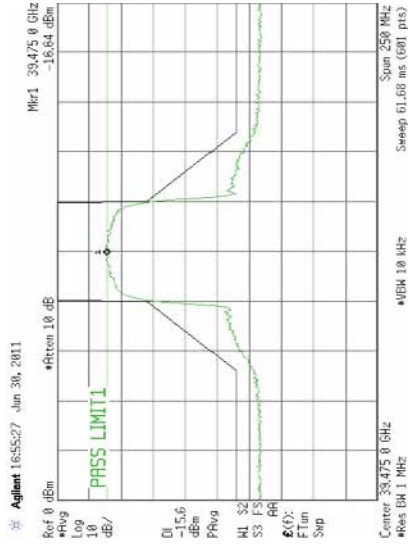
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50MHz 64QAM



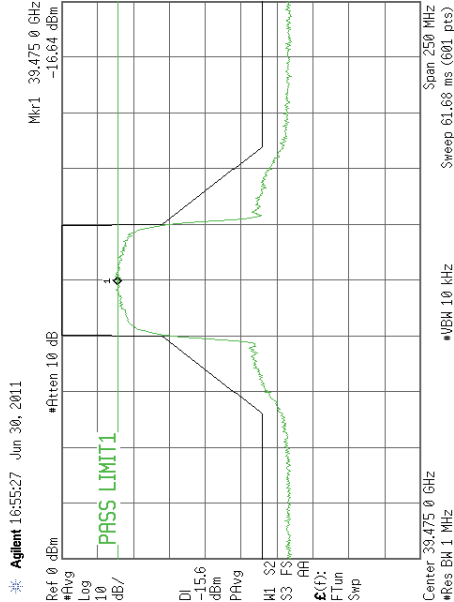
50MHz 128QAM



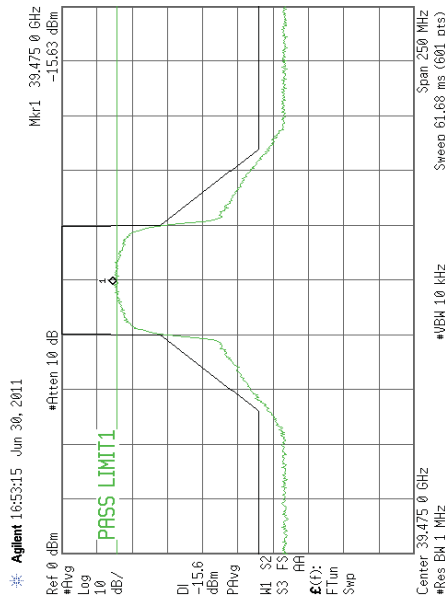
ED	06	ECCN: 5E991	3DB 200010094 QZZZA	180 / 299
		HTS: 4901.99.0050		

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50MHz 16QAM

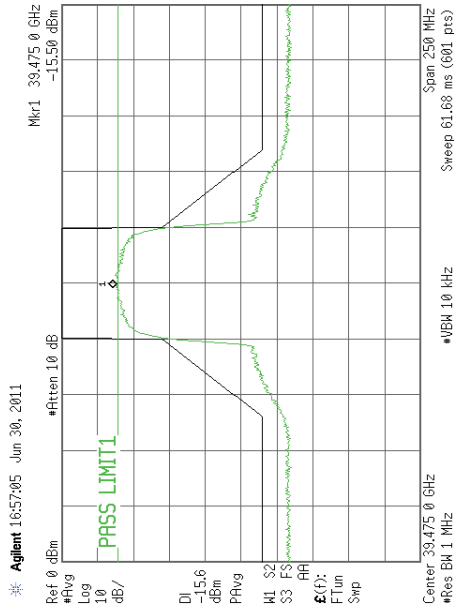


50MHz 32QAM



ED	06	ECCN: 5E991	3DB 200010094 QZZZA	179 / 299
		HTS: 4901.99.0050		

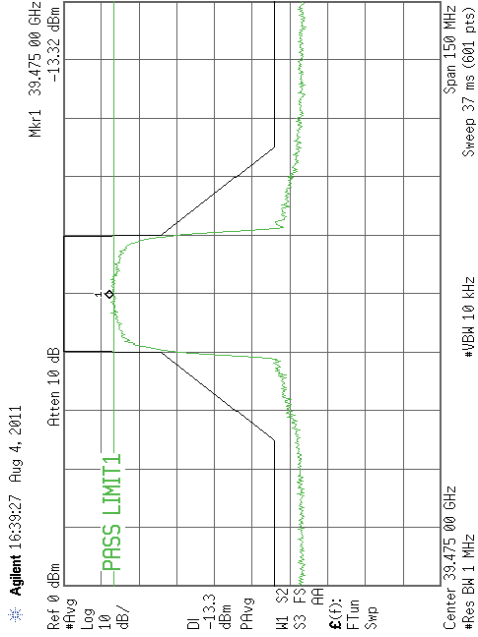
50MHz 256QAM



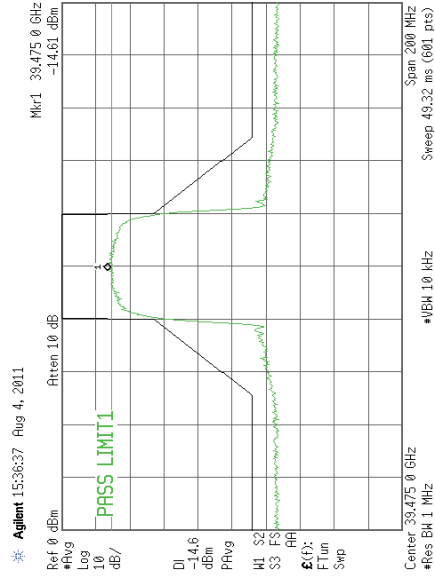
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export administration regulations. Diversion contrary to U.S. law prohibited. The export or re-export (further transfer) of such commodities, technology, software, or products made from such technology is prohibited without proper authorization(s) from the U.S. Department of Commerce or other appropriate U.S. Government agency(s).

XPIC Profiles

30MHz 256QAM



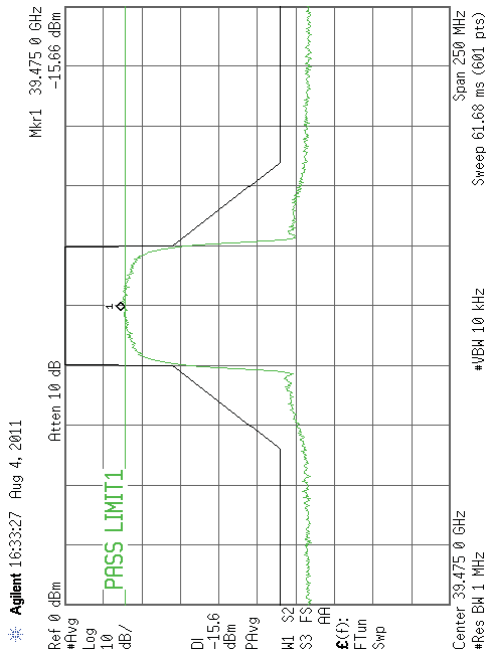
40MHz 256QAM



ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	182 / 299
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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	181 / 299
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50MHz 256QAM



Agilent 16333:27 Aug 4, 2011

ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	183 / 299
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1.2.6 WIDEBAND SPOURIOUS MEASUREMENTS

§ 101.111 Emissions limitations.

- (a) The mean power of emissions must be attenuated below the mean output power of the transmitter in accordance with the following schedule:
 - (2) When using transmissions employing digital modulation techniques:
 - (i) For operating frequencies below 15 GHz, in any 4 KHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth; As specified by the following equation but in no event less than 50 decibels:

$$A = 35 + 0.8(P - 50) + 10 \text{ Log}10 B.$$
 (Attenuation greater than 80 decibels or to an absolute power of less than -13 dBm/1MHz is not required.) where:
 - A = Attenuation (in decibels) below the mean output power level.
 - P = Percent removed from the center frequency of the transmitter bandwidth.
 - B = Authorized bandwidth in MHz.
 - (ii) For operating frequencies above 15 GHz, in any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth:
 - As specified by the following equation but in no event less than 11 decibels:

$$A = 11 + 0.4(P - 50) + 10 \text{ Log} [10] B.$$
 (Attenuation greater than 56 decibels or to an absolute power of less than -13 dBm/1MHz is not required.)

The FCC requires proof that emissions radiated from the antenna comply with out-of-band limits. This is controlled defining the mask of the channel to be transmitted and controlling the spurious emissions outside of the intended channel. Effectively the radio must comply with the -13dBm/1MHz limit defined in the emissions limit defined above. This section documents the conducted spurious emissions at the antenna port of the radio and therefore defines the spurious emissions that would be radiated out of the antenna.

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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	184 / 299
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Table 25:
MPT-HC/XP Spurious [L6GHz and U6GHz]

General		Emission Limitation Clause 101.111			
Frequency Band	BW (MHz)	OAM Mod (n)	Spurious measurement	Requirement (dBm/MHz)	Requirement Met? (yes/no)
L6GHz 252.04MHz	10	4	See section 1.2.6.1	mask	yes
		16	See section 1.2.6.1	mask	yes
		32	See section 1.2.6.1	mask	yes
		64	See section 1.2.6.1	mask	yes
		128	See section 1.2.6.1	mask	yes
		256	See section 1.2.6.1	mask	yes
	30	4	See section 1.2.6.1	mask	yes
		16	See section 1.2.6.1	mask	yes
		32	See section 1.2.6.1	mask	yes
		64	See section 1.2.6.1	mask	yes
		128	See section 1.2.6.1	mask	yes
		256	See section 1.2.6.1	mask	yes
U6GHz 160 MHz	10	4	See section 1.2.6.2	mask	yes
		8	See section 1.2.6.2	mask	yes
		16	See section 1.2.6.2	mask	yes
		32	See section 1.2.6.2	mask	yes
		64	See section 1.2.6.2	mask	yes
		128	See section 1.2.6.2	mask	yes
	30	4	See section 1.2.6.2	mask	yes
		8	See section 1.2.6.2	mask	yes
		16	See section 1.2.6.2	mask	yes
		32	See section 1.2.6.2	mask	yes
		64	See section 1.2.6.2	mask	yes
		128	See section 1.2.6.2	mask	yes

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Table 26:
MPT-HC Spurious [11GHz]

General		Emission Limitation Clause 101.111			
Frequency Band	BW (MHz)	OAM Mod (n)	Spurious measurement	Requirement (dBm/MHz)	Requirement Met? (yes/no)
11GHz 490/500 MHz	10	4	See section 1.2.6.3	mask	yes
		8	See section 1.2.6.3	mask	yes
		16	See section 1.2.6.3	mask	yes
		32	See section 1.2.6.3	mask	yes
		64	See section 1.2.6.3	mask	yes
		128	See section 1.2.6.3	mask	yes
	30	256	See section 1.2.6.3	mask	yes
		4	See section 1.2.6.3	mask	yes
		8	See section 1.2.6.3	mask	yes
		16	See section 1.2.6.3	mask	yes
		32	See section 1.2.6.3	mask	yes
		64	See section 1.2.6.3	mask	yes
	40	128	See section 1.2.6.3	mask	yes
		256	See section 1.2.6.3	mask	yes
		4	See section 1.2.6.3	mask	yes
		8	See section 1.2.6.3	mask	yes
		16	See section 1.2.6.3	mask	yes
		32	See section 1.2.6.3	mask	yes
40	64	See section 1.2.6.3	mask	yes	
	128	See section 1.2.6.3	mask	yes	
	256	See section 1.2.6.3	mask	yes	
	4	See section 1.2.6.3	mask	yes	
	8	See section 1.2.6.3	mask	yes	
	16	See section 1.2.6.3	mask	yes	

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Table 27 MPT-HC Spurious Emissions [18 GHz]					
Frequency Band	General		Emission Limitation Clause 101.111		
	BW (MHz)	QAM Mod (n)	Spurious measurement	Requirement (dBm/MHz)	
18GHz	10	4	See section 1.2.6.4	mask	Yes
		8	See section 1.2.6.4	mask	Yes
		16	See section 1.2.6.4	mask	Yes
		32	See section 1.2.6.4	mask	Yes
		64	See section 1.2.6.4	mask	Yes
	30	128	See section 1.2.6.4	mask	Yes
		256	See section 1.2.6.4	mask	Yes
		4	See section 1.2.6.4	mask	Yes
		8	See section 1.2.6.4	mask	Yes
		16	See section 1.2.6.4	mask	Yes
	40	32	See section 1.2.6.4	mask	Yes
		64	See section 1.2.6.4	mask	Yes
		128	See section 1.2.6.4	mask	Yes
		256	See section 1.2.6.4	mask	Yes
		4	See section 1.2.6.4	mask	Yes
	50	8	See section 1.2.6.4	mask	Yes
		16	See section 1.2.6.4	mask	Yes
		32	See section 1.2.6.4	mask	Yes
		64	See section 1.2.6.4	mask	Yes
		128	See section 1.2.6.4	mask	Yes
256	See section 1.2.6.4	mask	Yes		

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Table 28 MPT-HC Spurious Emissions [23 GHz]					
Frequency Band	General		Emission Limitation Clause 101.111		
	BW (MHz)	QAM Mod (n)	Spurious measurement	Requirement (dBm/MHz)	
18GHz	10	4	See section 1.2.6.5	mask	Yes
		8	See section 1.2.6.5	mask	Yes
		16	See section 1.2.6.5	mask	Yes
		32	See section 1.2.6.5	mask	Yes
		64	See section 1.2.6.5	mask	Yes
	30	128	See section 1.2.6.5	mask	Yes
		256	See section 1.2.6.5	mask	Yes
		4	See section 1.2.6.5	mask	Yes
		8	See section 1.2.6.5	mask	Yes
		16	See section 1.2.6.5	mask	Yes
	40	32	See section 1.2.6.5	mask	Yes
		64	See section 1.2.6.5	mask	Yes
		128	See section 1.2.6.5	mask	Yes
		256	See section 1.2.6.5	mask	Yes
		4	See section 1.2.6.5	mask	Yes
	50	8	See section 1.2.6.5	mask	Yes
		16	See section 1.2.6.5	mask	Yes
		32	See section 1.2.6.5	mask	Yes
		64	See section 1.2.6.5	mask	Yes
		128	See section 1.2.6.5	mask	Yes
256	See section 1.2.6.5	mask	Yes		

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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	187 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	188 / 299
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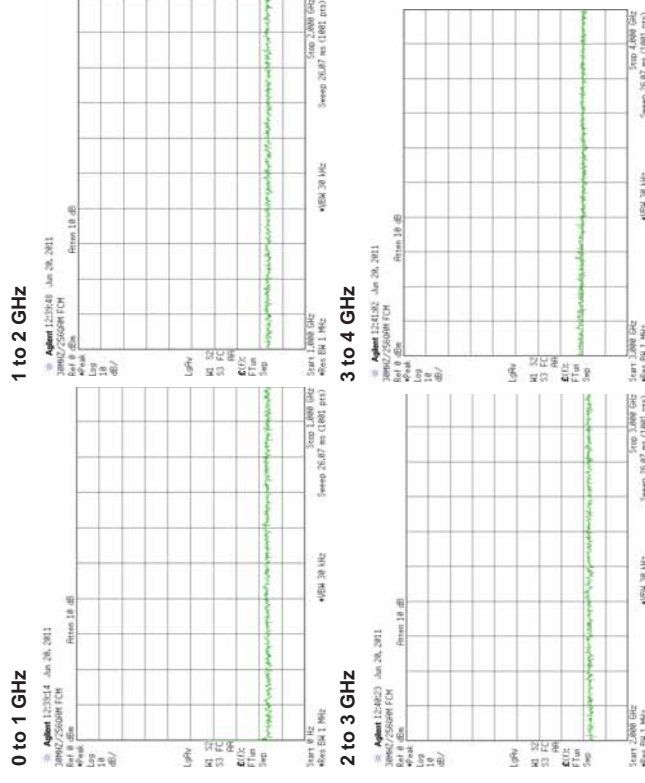
Table 29
MPT-HC Spurious Emissions [38GHz]

Frequency Band	General		Emission Limitation Clause 101.111		Requirement Met? (yes/no)
	BW (MHz)	QAM Mod (n)	Spurious measurement	Requirement (dBm/MHz)	
38GHz 700 MHz	10	64	See section 1.2.6.6	-13	Yes
		128	See section 1.2.6.5	-13	Yes
		256	See section 1.2.6.5	-13	Yes
	30	4	See section 1.2.6.5	-13	Yes
		16	See section 1.2.6.5	-13	Yes
		32	See section 1.2.6.5	-13	Yes
		64	See section 1.2.6.5	-13	Yes
		128	See section 1.2.6.5	-13	Yes
		256	See section 1.2.6.5	-13	Yes
	40	4	See section 1.2.6.5	-13	Yes
		64	See section 1.2.6.5	-13	Yes
		128	See section 1.2.6.5	-13	Yes
256		See section 1.2.6.5	-13	Yes	
4		See section 1.2.6.5	-13	Yes	
64		See section 1.2.6.5	-13	Yes	
50	128	See section 1.2.6.5	-13	Yes	
	256	See section 1.2.6.5	-13	Yes	

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1.2.6.1 L6GHZ SPURIOUS EMISSIONS

Spurious emissions for the L6GHz MPT-HC are captured in the sequence of plots below. No spurious was measured above the noise floor of the spectrum analyzer. In all cases the spectrum analyzer noise floor was at least -10dB below the -13dBm/MHz FCC requirement.

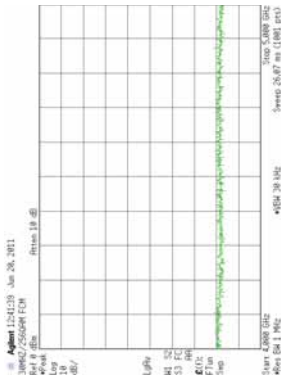


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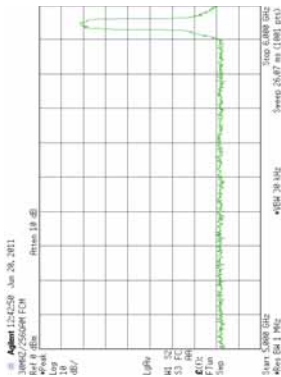
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	190 / 299
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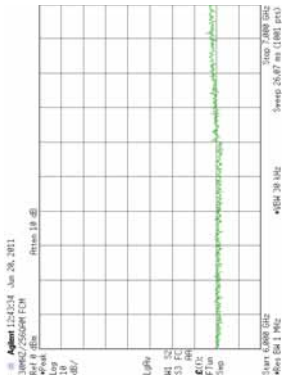
4 to 5 GHz



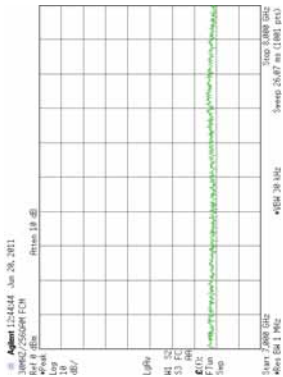
5 to 6 GHz



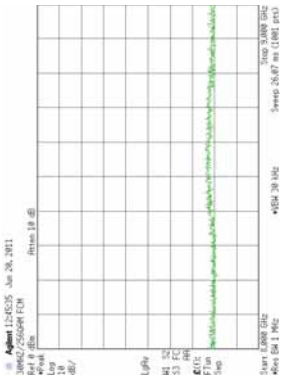
6 to 7 GHz



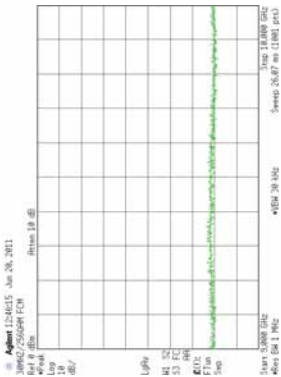
7 to 8 GHz



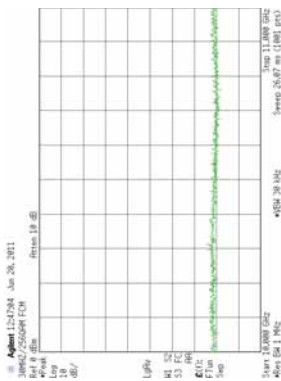
8 to 9 GHz



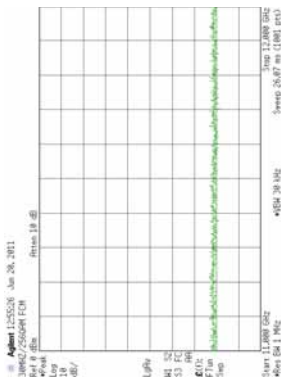
9 to 10 GHz



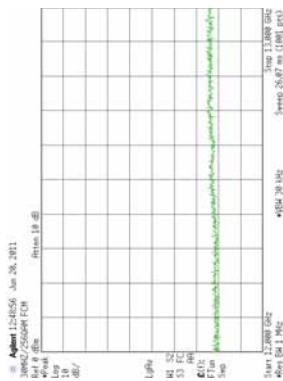
10 to 11 GHz



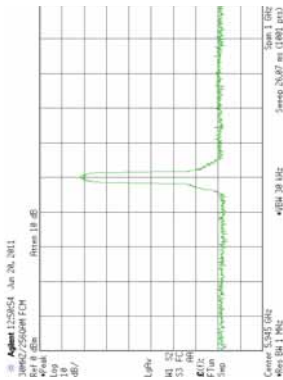
11 to 12 GHz



13 to 14 GHz



5.945 GHz



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ED 06

ECCN: 5E591
HTS: 4901.99.0050

3DB 200010094 QZZA

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ECCN: 5E591
HTS: 4901.99.0050

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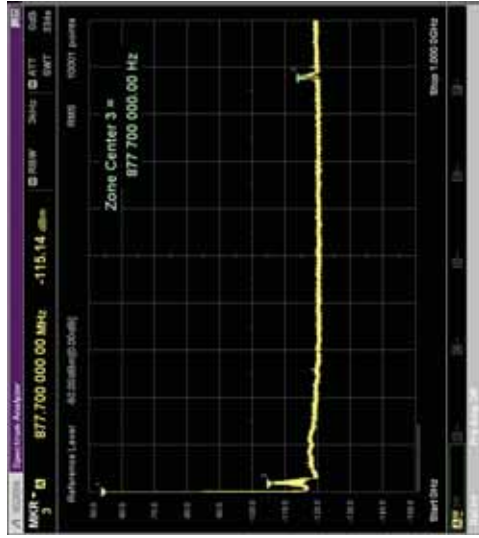


Spurious emissions for the L6GHz MPT-XP are captured in the sequence of plots below. No spurious was measured above the noise floor of the spectrum analyzer. In all cases the spectrum analyzer noise floor was at least 10dB below the -13dBm/MHz FCC requirement.

C.

L6 GHz [252.04 MHz CS/ 2P-2]
 IMPT: 3DB20761BAA02 SN#BS1246UW04J
 DBOX: 3DB20753BBAA, SN#ABF1150-0002
 SWP 4.02.00G

L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 0 to 1 GHz



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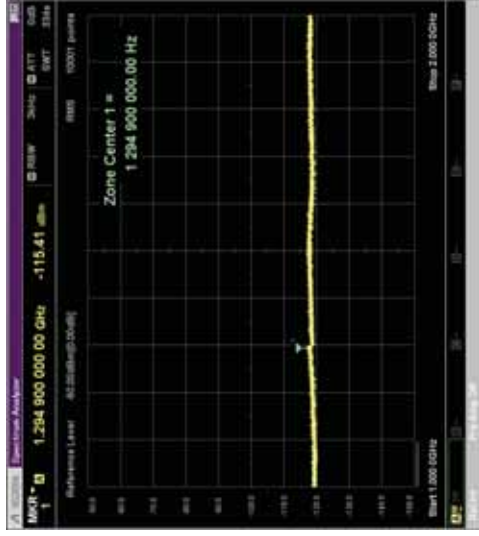
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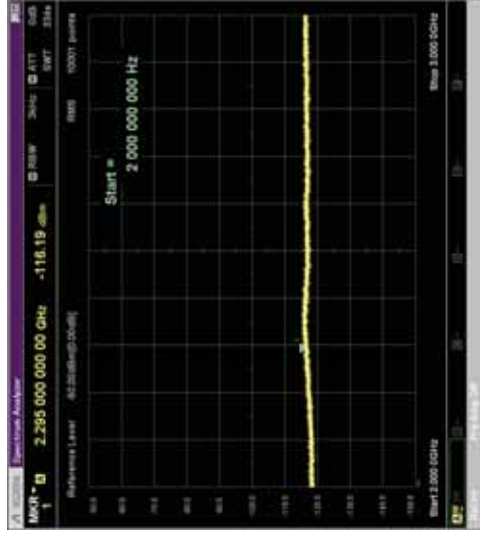
ED	06	ECCN: 5E591 HTS:4901.98.0050	3DB 200010094 QZZA	193 / 299
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L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 1 to 2 GHz



L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 2 to 3 GHz



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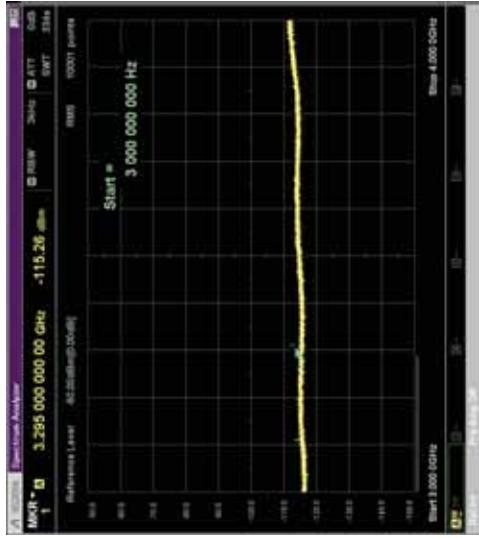
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8BD 00044 0118 CRZZA_05 (0307) A - WORD
 REQUIREMENTS SPECIFICATION TEMPLATE

ED	06	ECCN: 5E591 HTS:4901.98.0050	3DB 200010094 QZZA	194 / 299
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L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 3 to 4 GHz

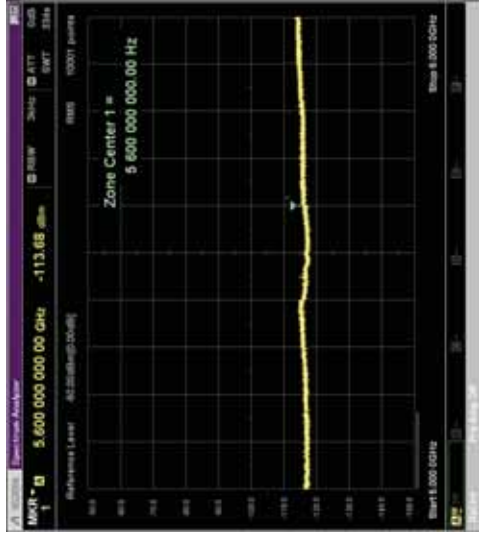


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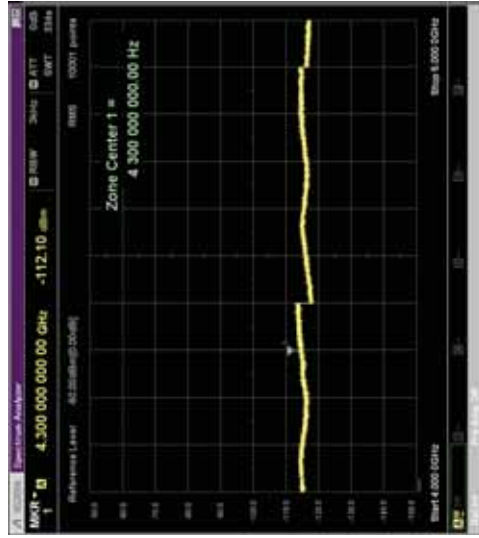
L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 5 to 6 GHz



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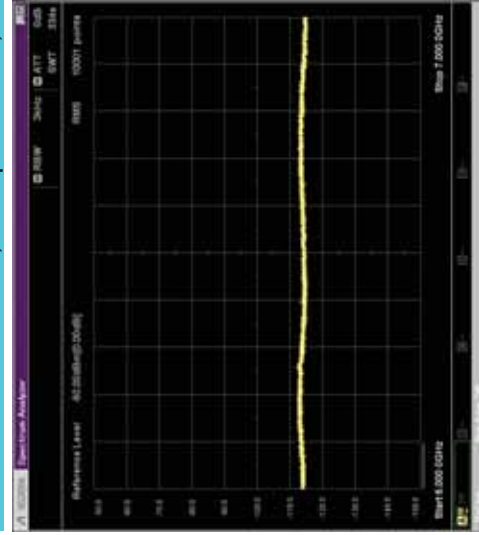
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L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 4 to 5 GHz



8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE

L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 6 to 7 GHz



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ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

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ED 06

ECCN: 5E991
HTS: 4901.99.0050

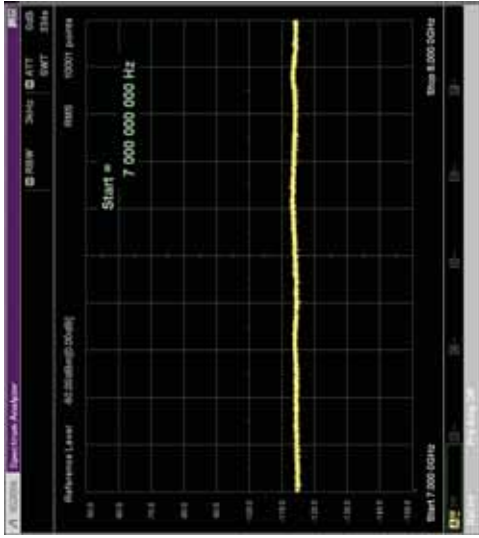
3DB 200010094 QZZA

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8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE



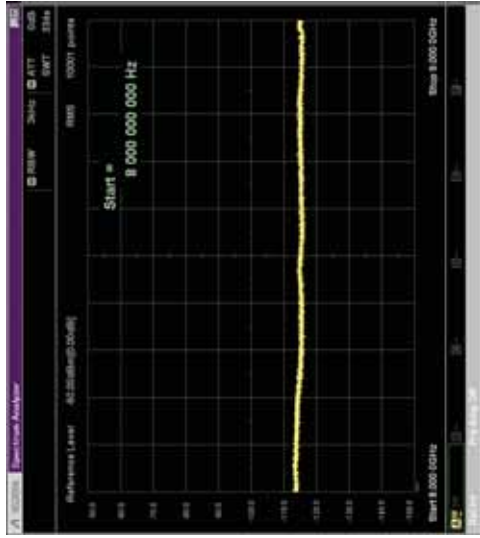
L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 7 to 8 GHz



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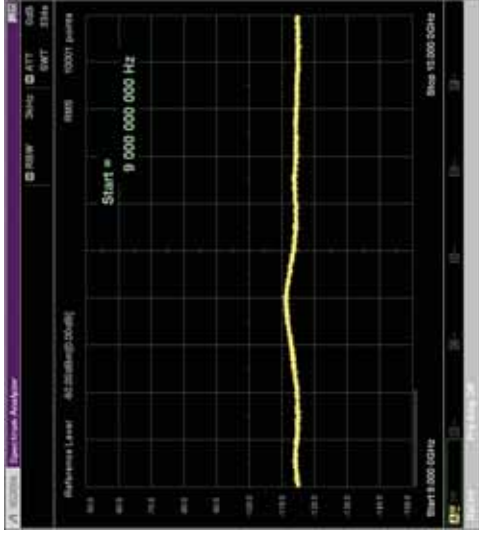
L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 8 to 9 GHz



8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE



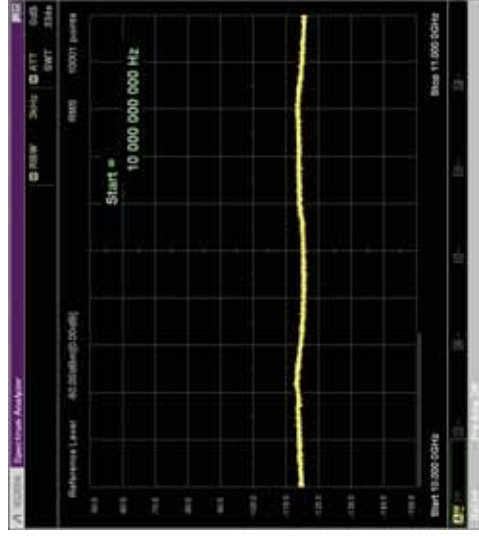
L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 9 to 10 GHz



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L6 GHz 30 MHz/256 QAM/FCM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 10 to 11 GHz



8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE

ED 06

ECCN: 5E991
HTS: 4901.99.0050

3DB 200010094 QZZA

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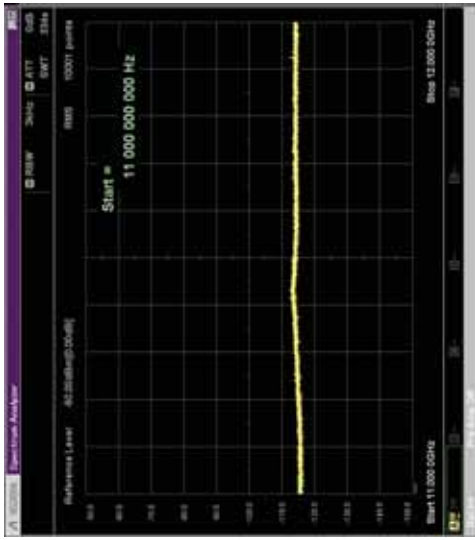
06

ECCN: 5E991
HTS: 4901.99.0050

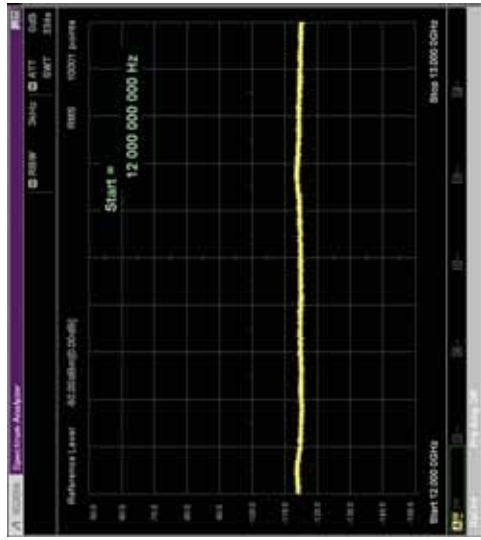
3DB 200010094 QZZA

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L6 GHz 30 MHz/256 QAM/FDM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 11 to 12 GHz



L6 GHz 30 MHz/256 QAM/FDM, TX Freq. 6.37514 GHz, TX Out: +30 dB, 12 to 13 GHz

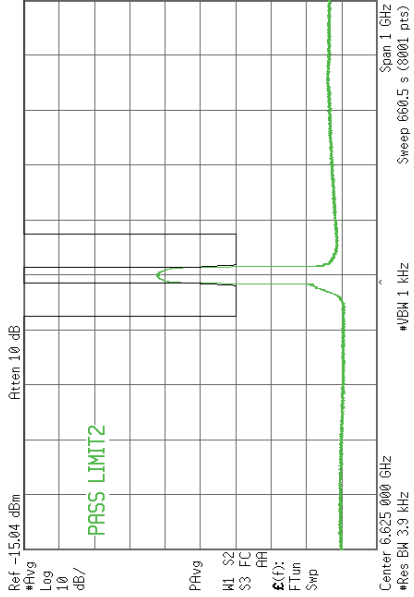


ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	199 / 299
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1.2.6.2 U6GHZ SPURIOUS EMISSIONS

**U6 GHz [160 MHz CS/3-3P]
MPT-HC P/N 3DB20804BAAA01, S/N Proto. 3
DBOX P/N 3DB20756BAAA, S/N GA113089776**

* Agilent 11:37:33 May 17, 2012



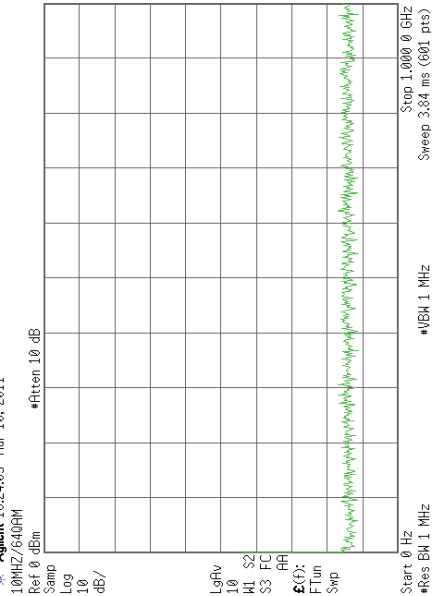
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	200 / 299
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1.2.6.3 11GHZ SPURIOUS EMISSIONS

Spurious emissions for the 11GHz ODU are captured in the sequence of plots below. No spurious was measured above the noise floor of the spectrum analyzer. In all cases the spectrum analyzer noise floor was at least 10dB below the -13dBm/MHz FCC requirement.

11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 0 to 1 GHz

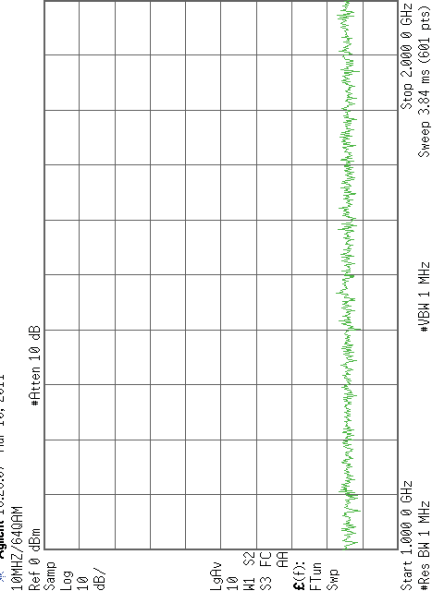
* Agilent 18:24:05 Mar 10, 2011



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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 1 to 2 GHz

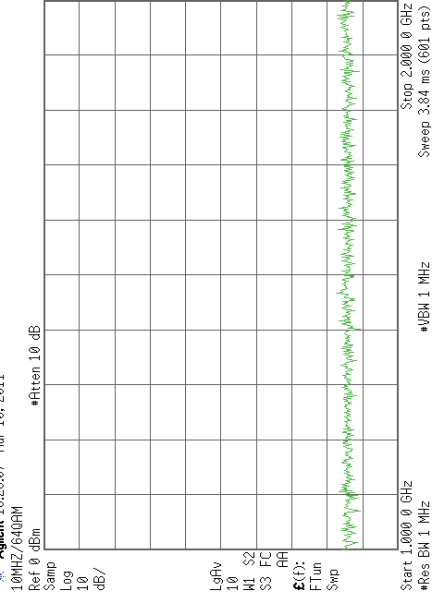
* Agilent 18:26:07 Mar 10, 2011



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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 2 to 3 GHz

* Agilent 18:26:51 Mar 10, 2011

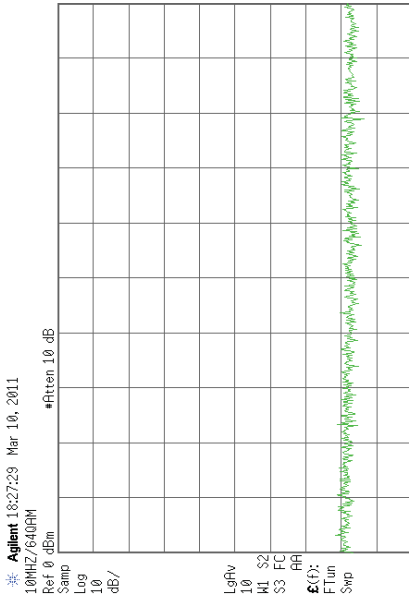


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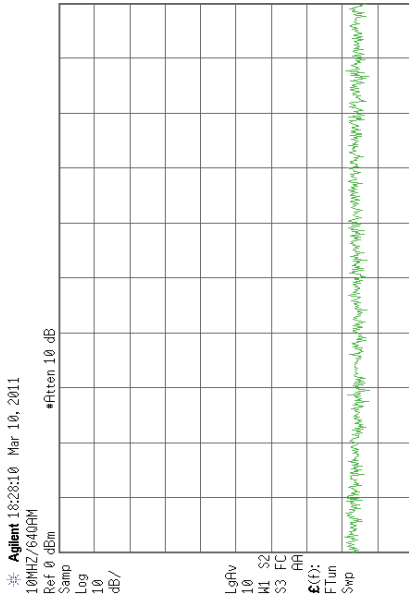
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	202 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	201 / 299
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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 3 to 4 GHz

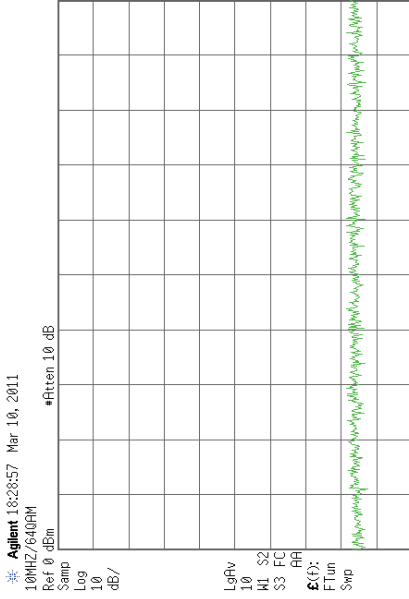


11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 4 to 5 GHz

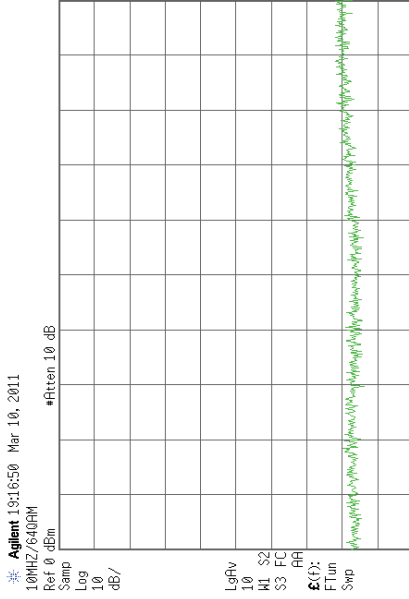


ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	203 / 299
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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 5 to 6 GHz

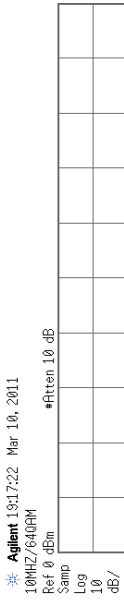


11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 6 to 7 GHz



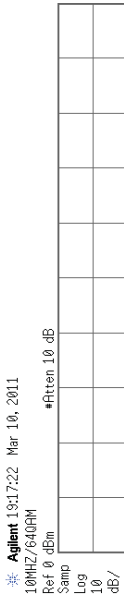
ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	204 / 299
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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 7 to 8 GHz

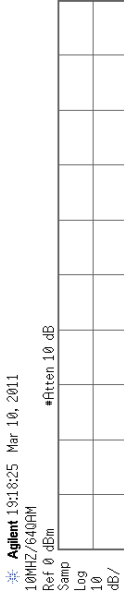


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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 8 to 9 GHz

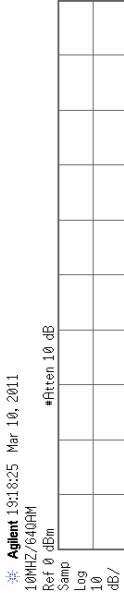


11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 9 to 10 GHz



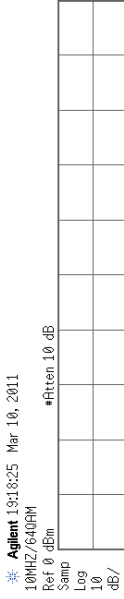
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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 10 to 11 GHz



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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 10 to 11 GHz



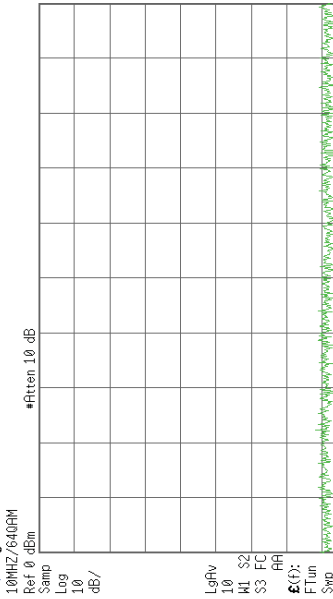
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	205 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	206 / 299
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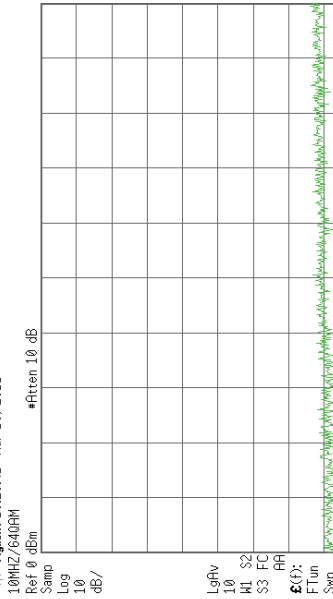
11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 11 to 12 GHz

* Agilent 19:19:45 Mar 10, 2011



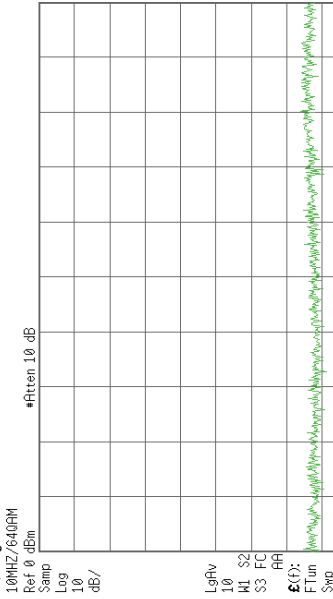
11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 12 to 13 GHz

* Agilent 19:20:41 Mar 10, 2011



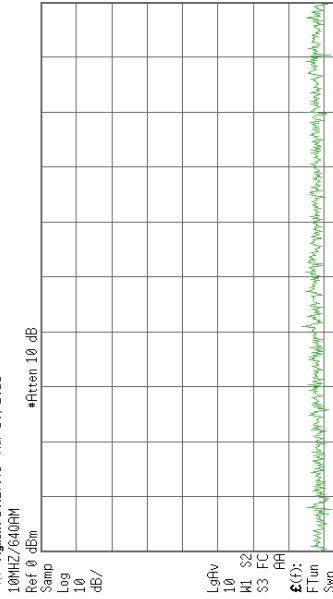
11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 13 to 14 GHz

* Agilent 19:24:15 Mar 10, 2011



11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 15 to 16 GHz

* Agilent 19:27:45 Mar 10, 2011



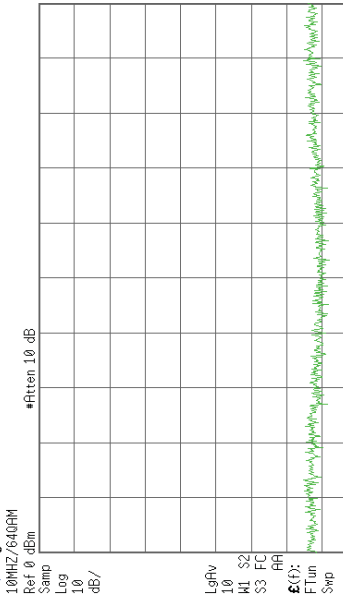
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	207 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	208 / 299
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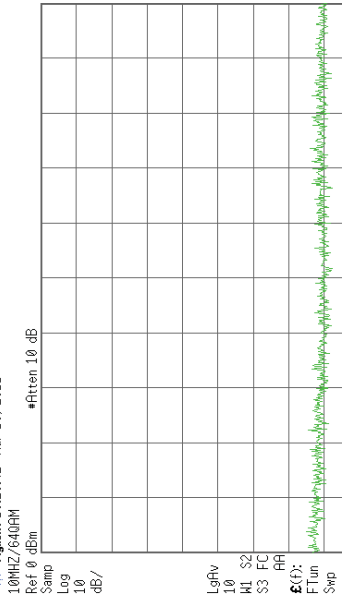
11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 17 to 18 GHz

* Agilent 19:29:07 Mar 10, 2011



11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 19 to 20 GHz

* Agilent 19:29:42 Mar 10, 2011

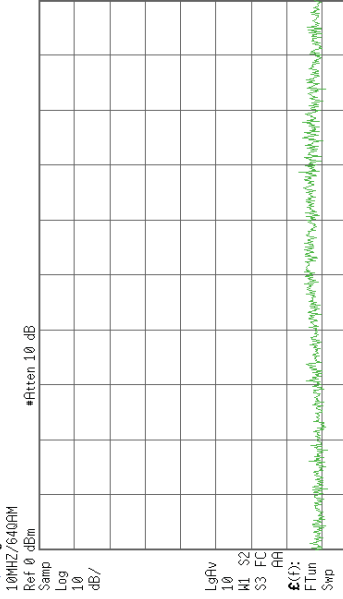


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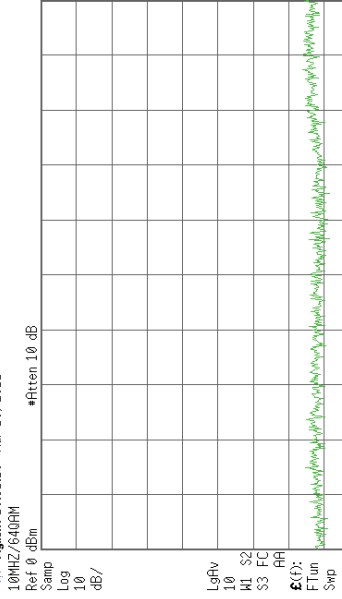
11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 20 to 21 GHz

* Agilent 19:30:53 Mar 10, 2011



11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 21 to 22 GHz

* Agilent 19:31:19 Mar 10, 2011

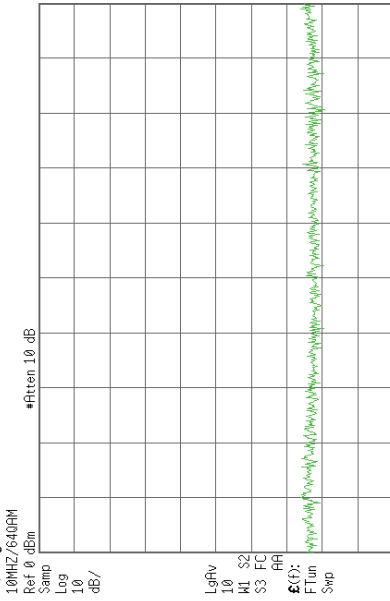


ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	209 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	210 / 299
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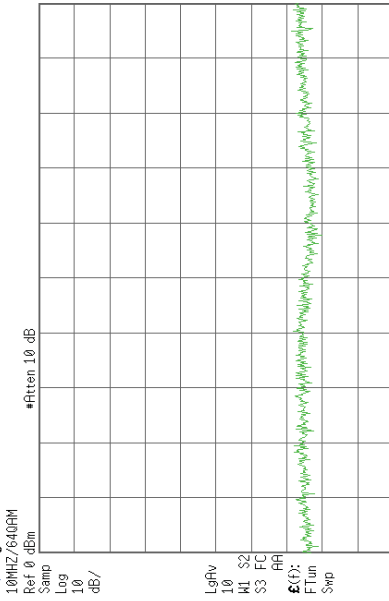
11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 22 to 23 GHz

* Agilent 19:31:57 Mar 10, 2011



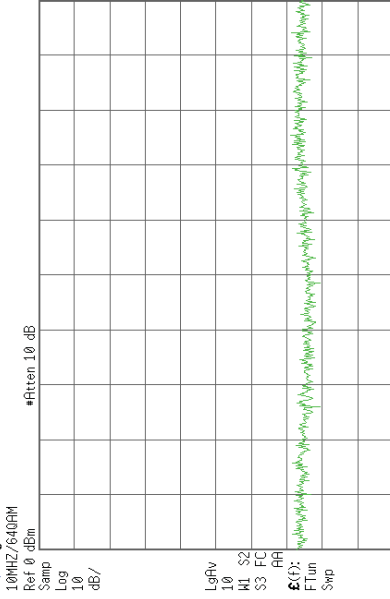
11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 23 to 24 GHz

* Agilent 19:32:29 Mar 10, 2011



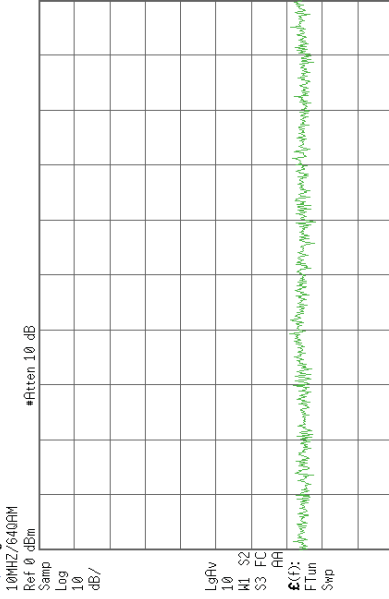
11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 24 to 25 GHz

* Agilent 19:33:07 Mar 10, 2011



11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 25 to 26 GHz

* Agilent 19:33:41 Mar 10, 2011

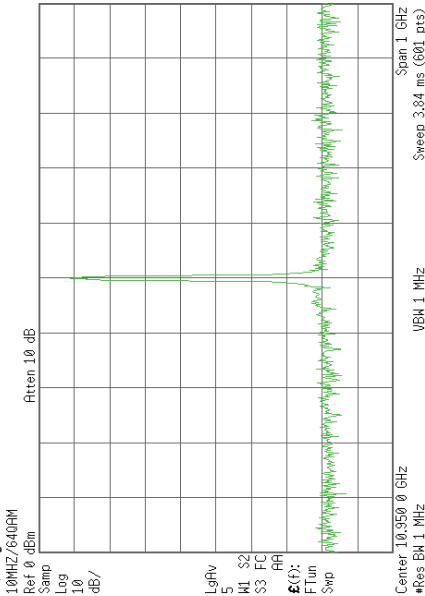


ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	211 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	212 / 299
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11 GHz /10 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

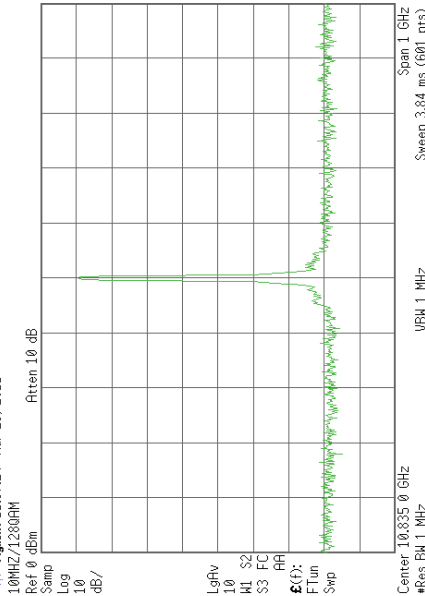
* Agilent 15:57:40 Mar 25, 2011



Center 10.350 0 GHz
*Res BW 1 MHz
Span 1 GHz
Sweep 3.04 ms (601 pts)

11 GHz /10 MHz/128 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 11:37:24 Mar 23, 2011

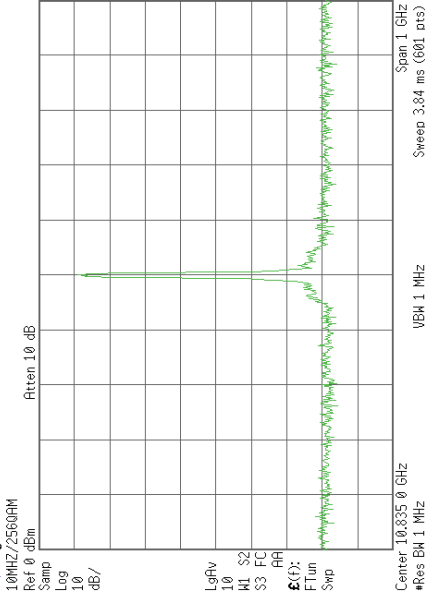


Center 10.350 0 GHz
*Res BW 1 MHz
Span 1 GHz
Sweep 3.04 ms (601 pts)

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11 GHz /10 MHz/256 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

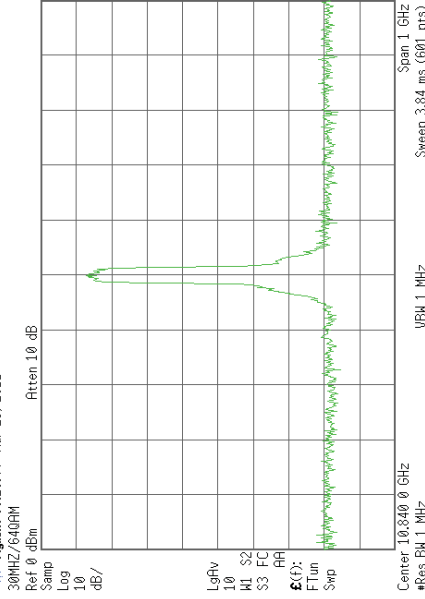
* Agilent 11:39:35 Mar 23, 2011



Center 10.335 0 GHz
*Res BW 1 MHz
Span 1 GHz
Sweep 3.04 ms (601 pts)

11 GHz /30 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 09:29:44 Mar 23, 2011



Center 10.340 0 GHz
*Res BW 1 MHz
Span 1 GHz
Sweep 3.04 ms (601 pts)

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ED 06

ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZZA

213 / 299

ED 06

ECCN: 5E991

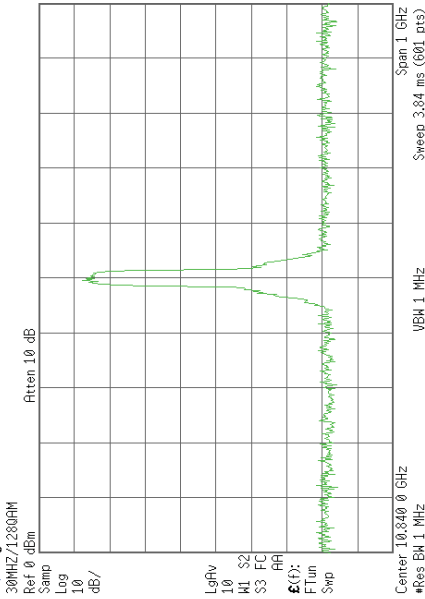
HTS: 4901.99.0050

3DB 200010094 QZZZA

214 / 299

11 GHz /30 MHz/128 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

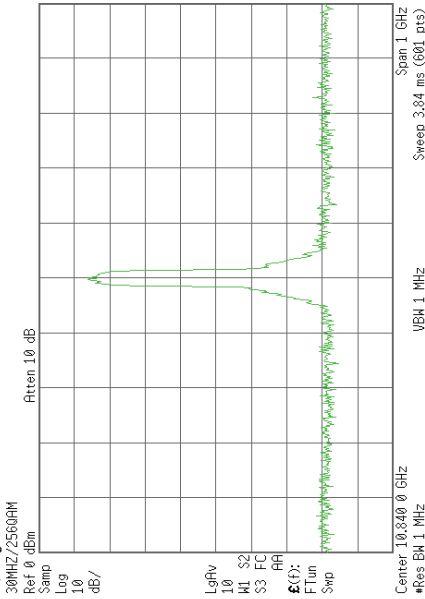
* Agilent 10:02:07 Mar 23, 2011



Center 10.840 0 GHz
*Res BW 1 MHz

11 GHz /30 MHz/256 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 10:24:08 Mar 23, 2011

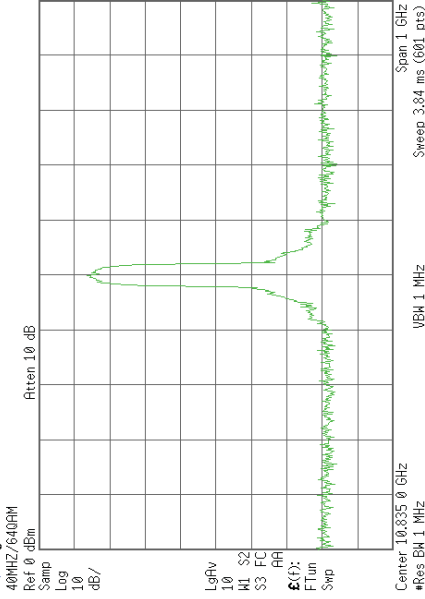


Center 10.840 0 GHz
*Res BW 1 MHz

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11 GHz /40 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

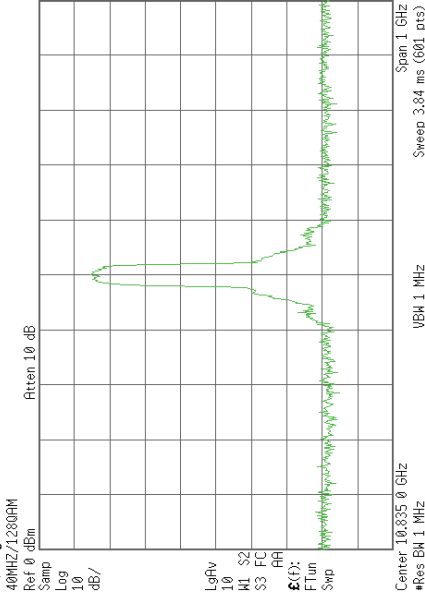
* Agilent 11:25:41 Mar 23, 2011



Center 10.835 0 GHz
*Res BW 1 MHz

11 GHz /40 MHz/128 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 11:27:52 Mar 23, 2011



Center 10.835 0 GHz
*Res BW 1 MHz

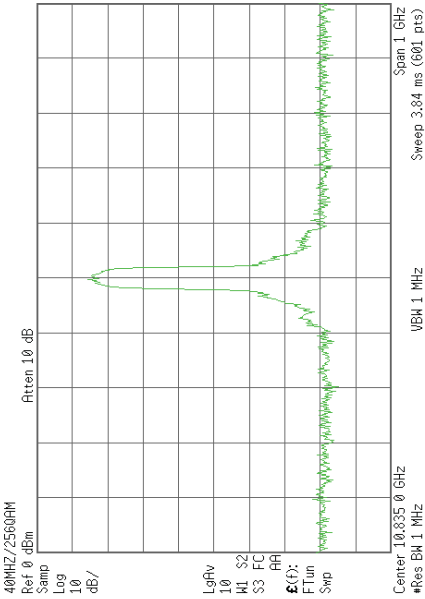
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	215 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	216 / 299
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11 GHz /40 MHz/256 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

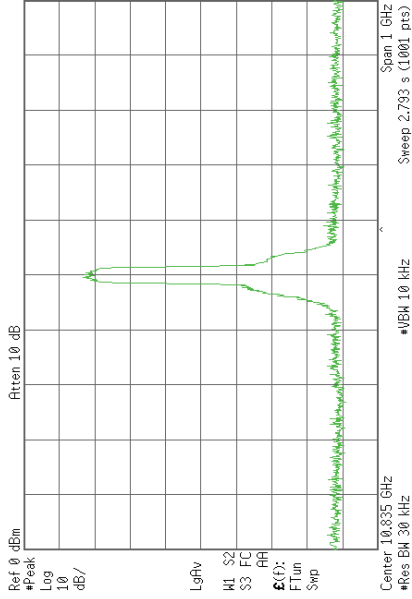
* Agilent 11:30:13 Mar 23, 2011



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11 GHz /30 MHz/4 QAM/FCM, Max TX Output: +23 dBm, 1 GHz Span

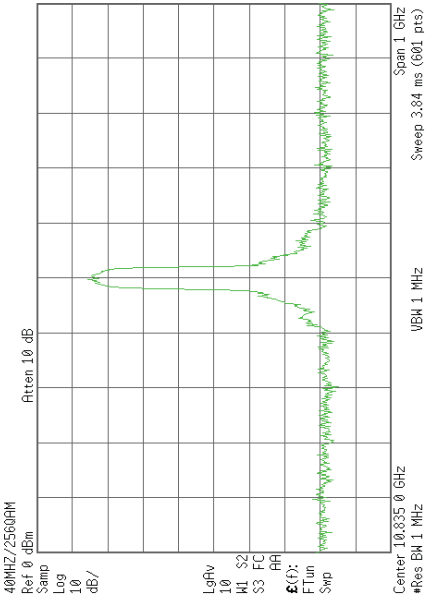
* Agilent 14:33:31 Jun 1, 2011



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11 GHz /40 MHz/256 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

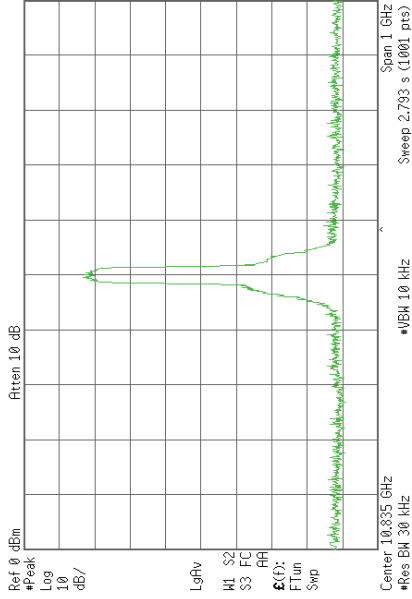
* Agilent 11:30:13 Mar 23, 2011



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11 GHz /30 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 14:34:19 Jun 1, 2011



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ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

217 / 299

ED 06

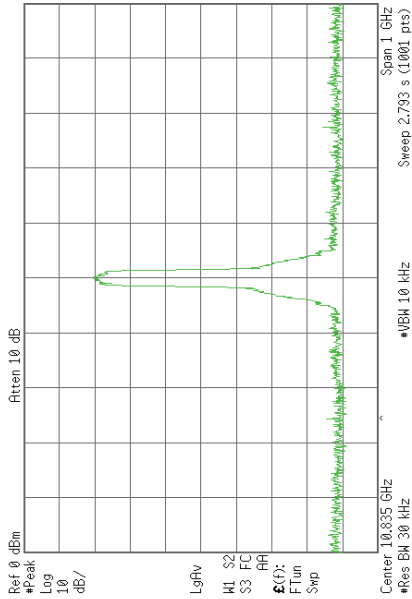
ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

218 / 299

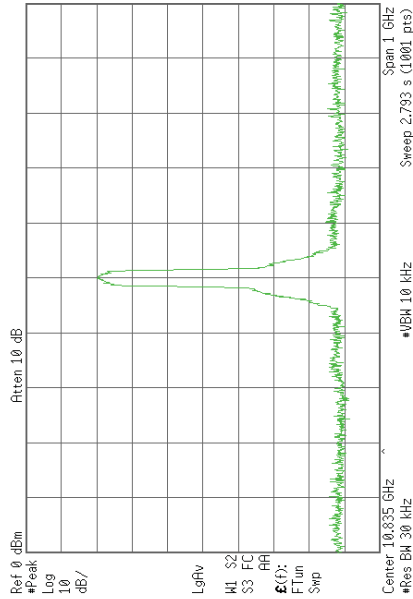
11 GHz /30 MHz/128 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 14:35:16 Jun 1, 2011



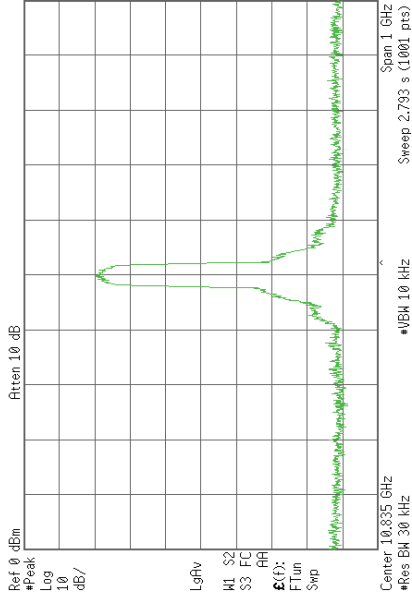
11 GHz /30 MHz/256 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 14:36:25 Jun 1, 2011



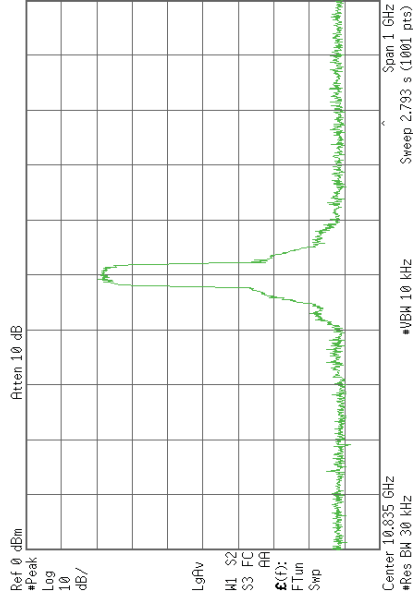
11 GHz /40 MHz/4 QAM/FCM, Max TX Output: +23 dBm, 1 GHz Span

* Agilent 14:59:22 Jun 1, 2011



11 GHz /40 MHz/64 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 15:00:02 Jun 1, 2011



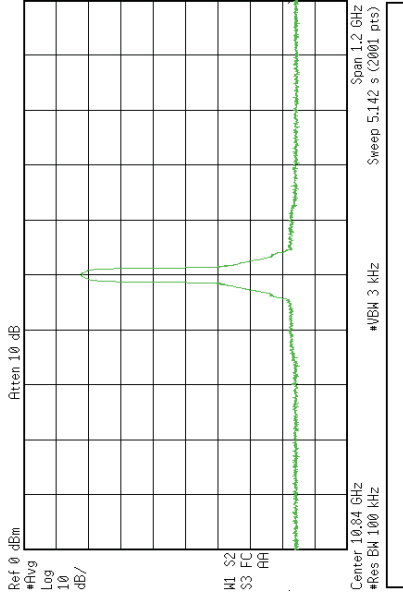
ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZZA	220 / 299
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ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZZA	219 / 299
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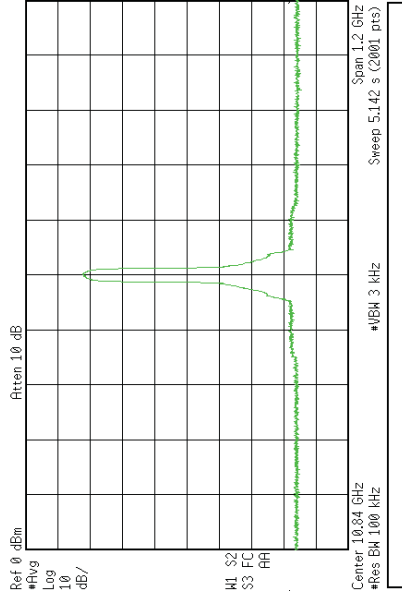
11 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +23 dBm, 1 GHz Span

* Agilent 06:53:16 May 17, 2011



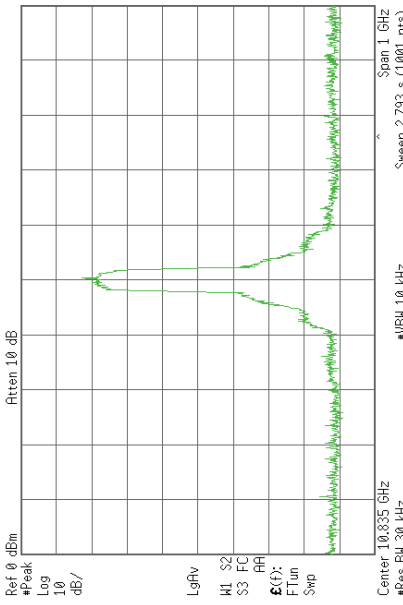
11 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +23 dBm, 1 GHz Span

* Agilent 06:56:30 May 17, 2011



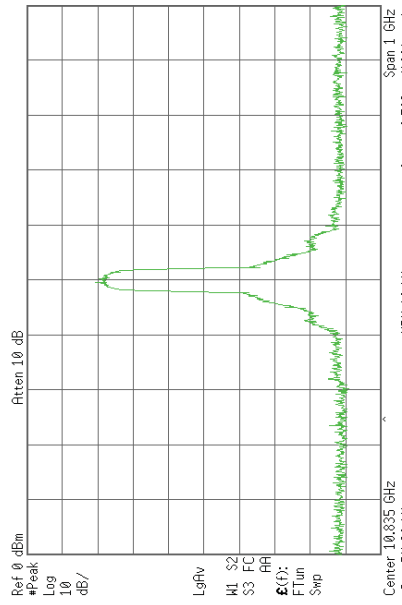
11 GHz /40 MHz/128 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 15:01:00 Jun 1, 2011



11 GHz /40 MHz/256 QAM/FCM, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 15:01:32 Jun 1, 2011



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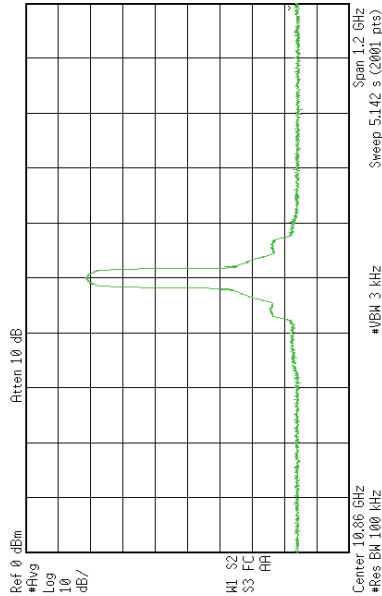
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	222 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	221 / 299
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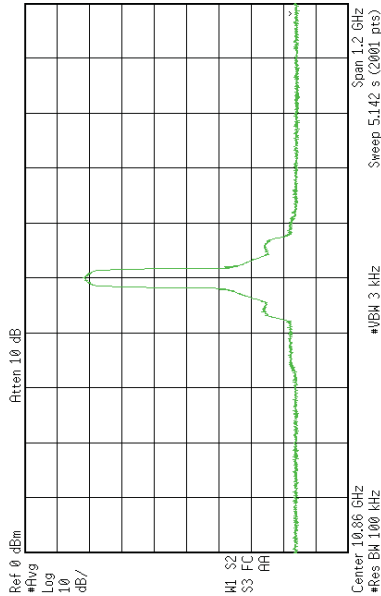
11 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 0058301 May 17, 2011



11 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +21 dBm, 1 GHz Span

* Agilent 0120199 May 17, 2011



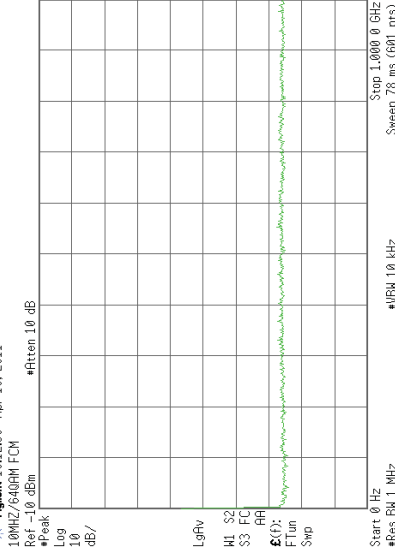
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1.2.6.4 18GHz SPURIOUS EMISSIONS

Spurious emissions for the 18GHz ODU are captured in the sequence of plots below. No spurious was measured above the noise floor of the spectrum analyzer. In all cases the spectrum analyzer noise floor was at least 10dB below the -13dBm/MHz FCC requirement.

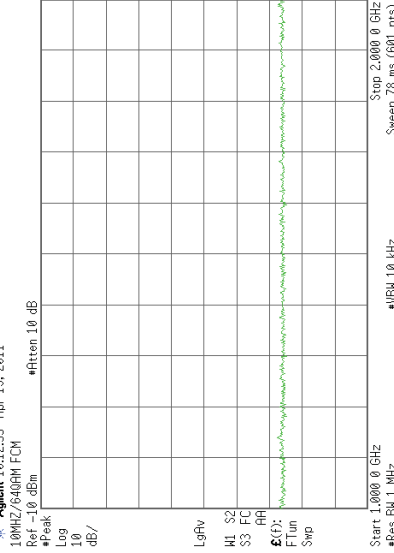
18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 0 to 1 GHz

* Agilent 1012330 Apr 19, 2011



18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 1 to 2 GHz

* Agilent 1012555 Apr 19, 2011



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ED 06

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 HTS: 4901.99.0050

3DB 200010094 QZZA

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ED 06

ECCN: 5E991
 HTS: 4901.99.0050

3DB 200010094 QZZA

224 / 299

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 4 to 5 GHz

* Agilent 10:26:05 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

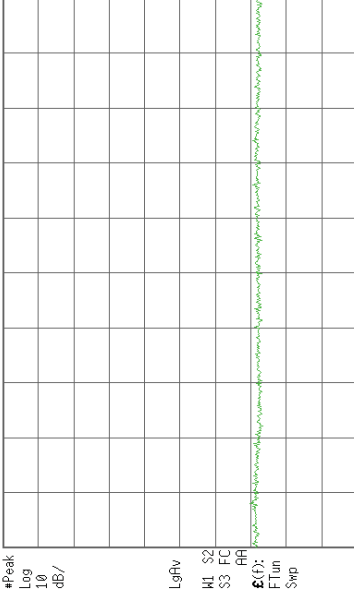
S3 FC

AA

Σ(f):

FTun

Swp



Start 4.000 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Stop 5.000 0 GHz

Sweep 78 ms (601 pts)

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 5 to 6 GHz

* Agilent 10:26:37 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

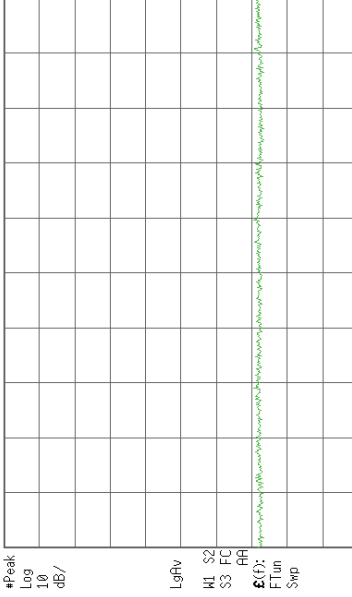
S3 FC

AA

Σ(f):

FTun

Swp



Start 5.000 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Stop 6.000 0 GHz

Sweep 78 ms (601 pts)

ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	226 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 2 to 3 GHz

* Agilent 10:25:06 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

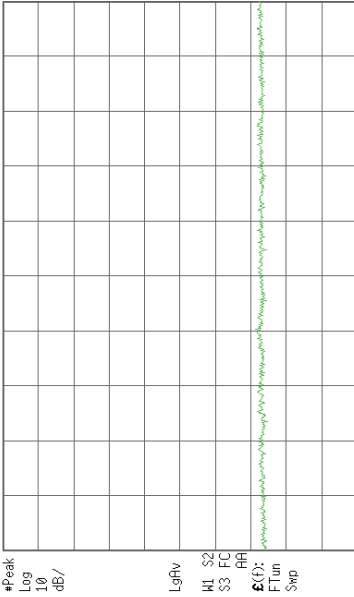
S3 FC

AA

Σ(f):

FTun

Swp



Start 2.000 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Stop 3.000 0 GHz

Sweep 78 ms (601 pts)

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 3 to 4 GHz

* Agilent 10:25:34 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

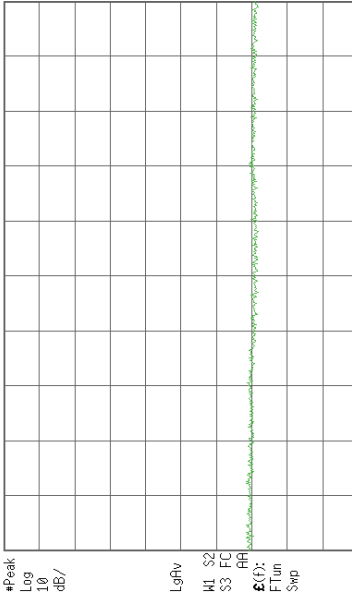
S3 FC

AA

Σ(f):

FTun

Swp



Start 3.000 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

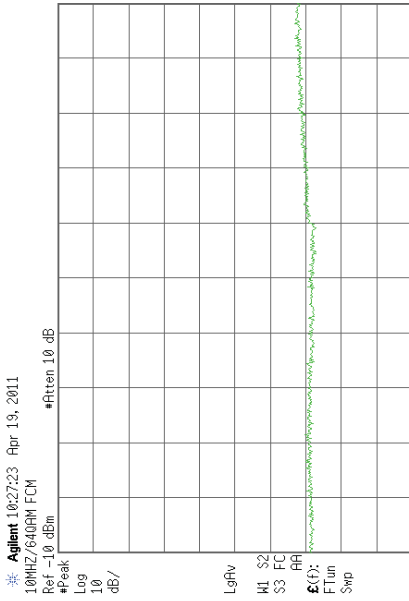
Stop 4.000 0 GHz

Sweep 78 ms (601 pts)

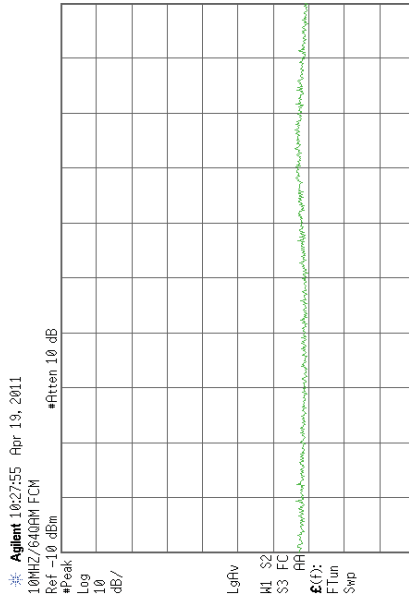
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	225 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 6 to 7 GHz

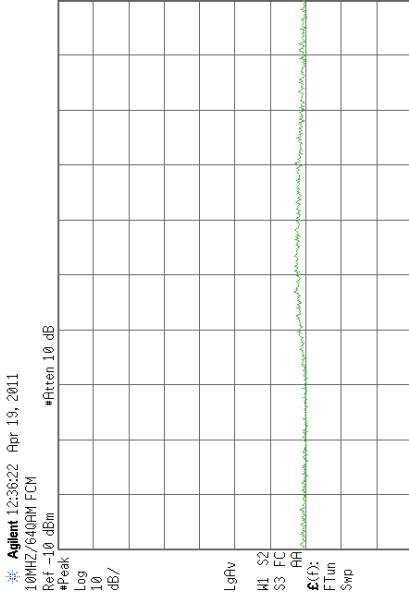


18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 7 to 8 GHz

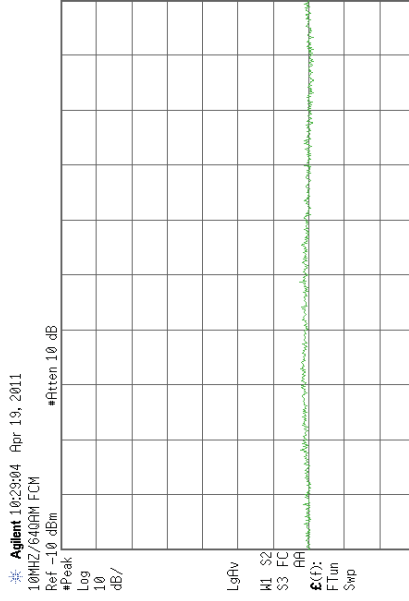


ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	227 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 8 to 9 GHz



18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 9 to 10 GHz



ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	228 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 12 to 13 GHz

* Agilent 10:33:06 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

RAI

Σ(f):

FTun

Swp

Start 12.000 0 GHz

#Res BW 1 MHz

*VBW 10 kHz

Stop 13.000 0 GHz

Sweep 78 ms (601 pts)

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 13 to 14 GHz

* Agilent 10:33:40 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

RAI

Σ(f):

FTun

Swp

Start 13.000 0 GHz

#Res BW 1 MHz

*VBW 10 kHz

Stop 14.000 0 GHz

Sweep 78 ms (601 pts)

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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	230 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 10 to 11 GHz

* Agilent 10:29:38 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

RAI

Σ(f):

FTun

Swp

Start 10.000 0 GHz

#Res BW 1 MHz

*VBW 10 kHz

Stop 11.000 0 GHz

Sweep 78 ms (601 pts)

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 11 to 12 GHz

* Agilent 10:30:08 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

RAI

Σ(f):

FTun

Swp

Start 11.000 0 GHz

#Res BW 1 MHz

*VBW 10 kHz

Stop 12.000 0 GHz

Sweep 78 ms (601 pts)

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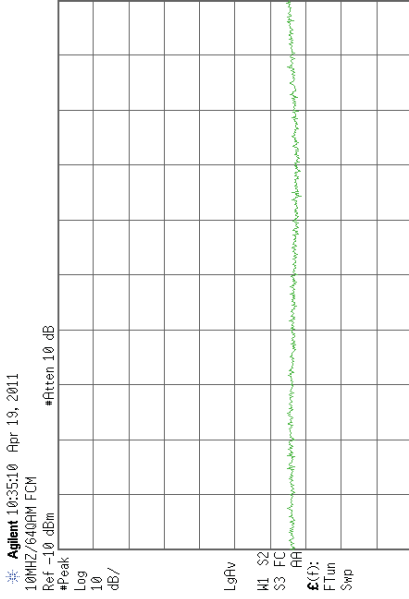
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	229 / 299
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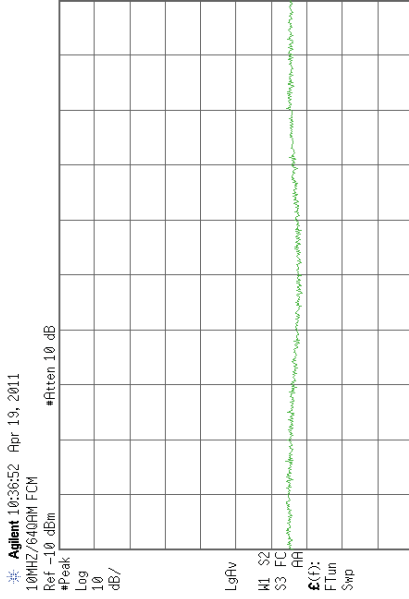
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 16 to 17 GHz



18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 17 to 18 GHz



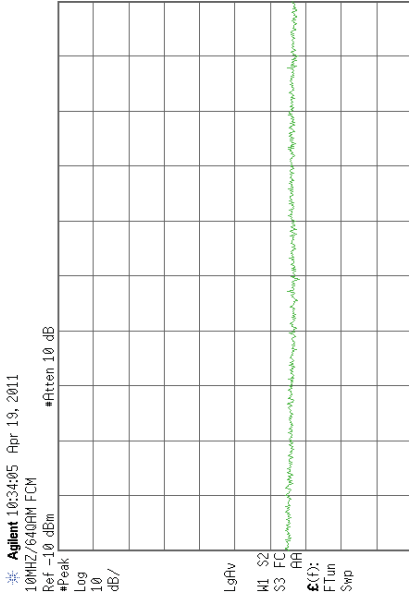
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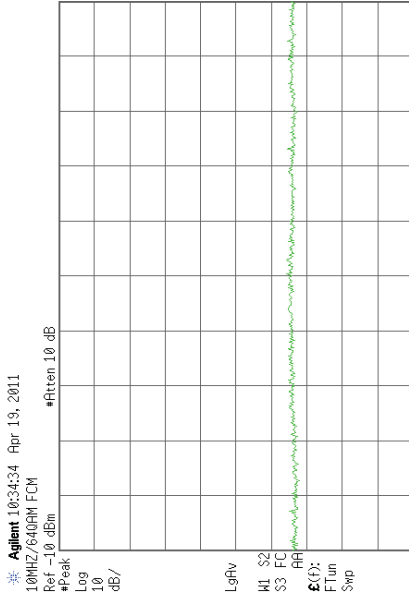
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	232 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 14 to 15 GHz



18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 15 to 16 GHz



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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	231 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 20 to 21 GHz

* Agilent 10:38:35 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

AR

Σ(f):

FTun

Swp

Start: 20.000 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Stop 21.000 0 GHz

Sweep 78 ms (601 pts)

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 21 to 22 GHz

* Agilent 10:39:03 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

AR

Σ(f):

FTun

Swp

Start: 21.000 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Stop 22.000 0 GHz

Sweep 78 ms (601 pts)

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 18 to 19 GHz

* Agilent 10:37:23 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

AR

Σ(f):

FTun

Swp

Start: 18.000 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Stop 19.000 0 GHz

Sweep 78 ms (601 pts)

18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 19 to 20 GHz

* Agilent 10:37:59 Apr 13, 2011

10MHz/64QAM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

AR

Σ(f):

FTun

Swp

Start: 19.000 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Stop 20.000 0 GHz

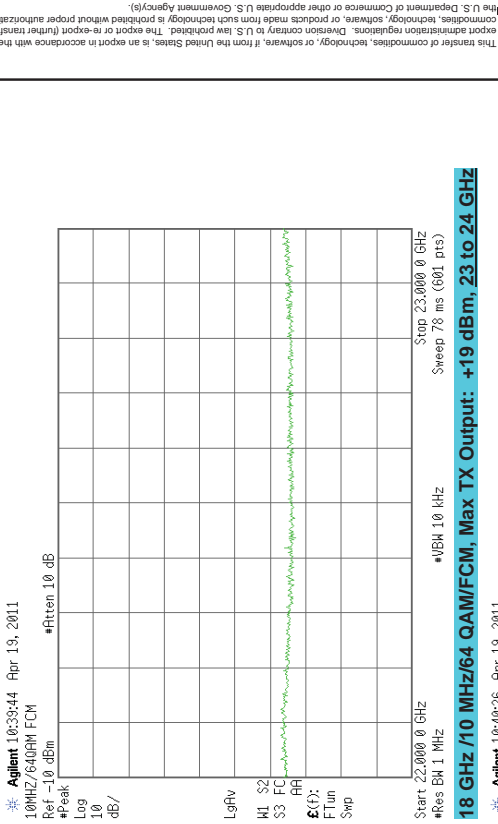
Sweep 78 ms (601 pts)

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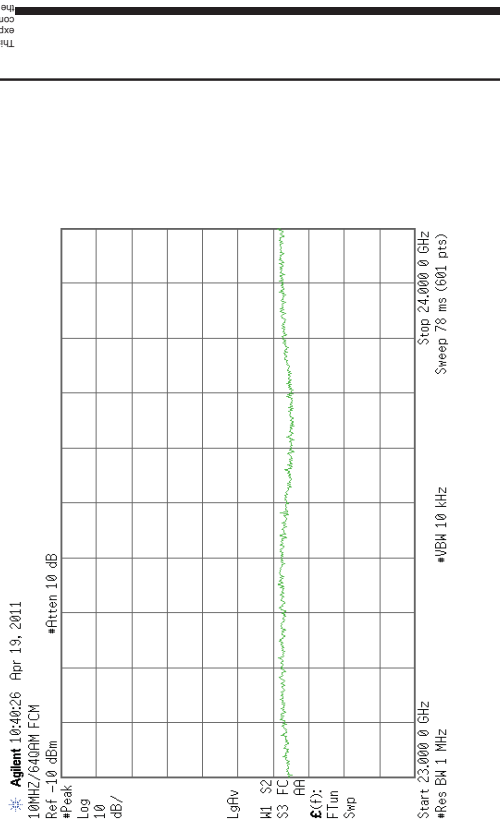
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	234 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	233 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 22 to 23 GHz

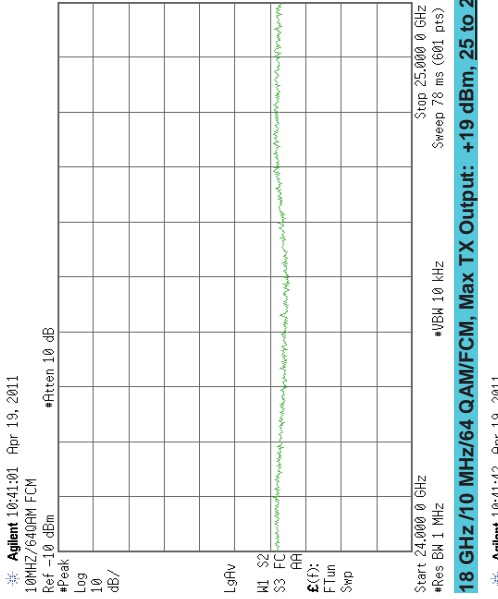


18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 23 to 24 GHz

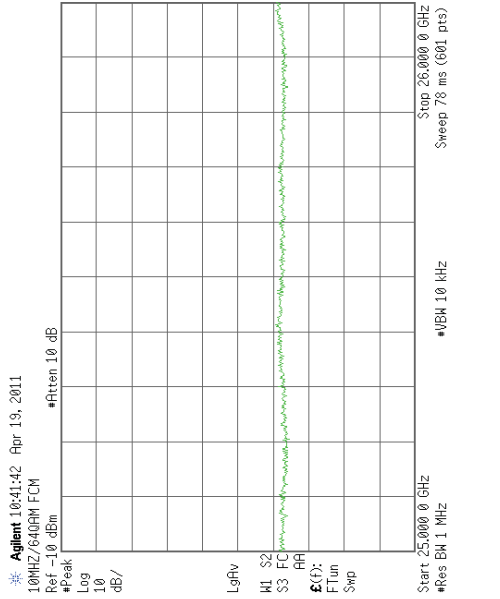


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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 24 to 25 GHz



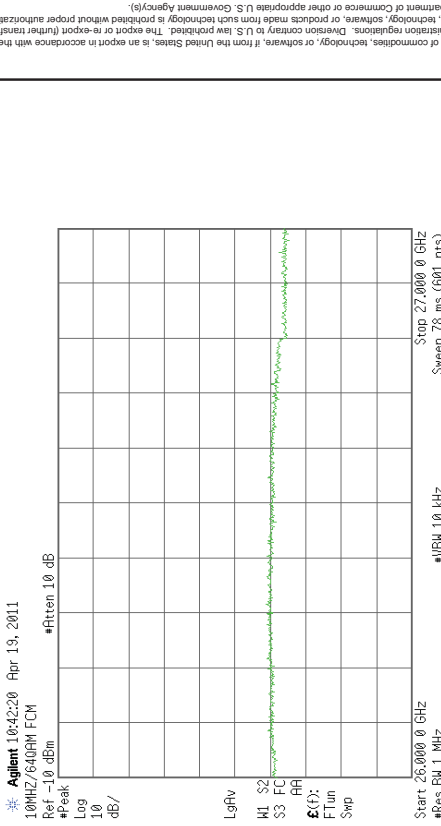
18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 25 to 26 GHz



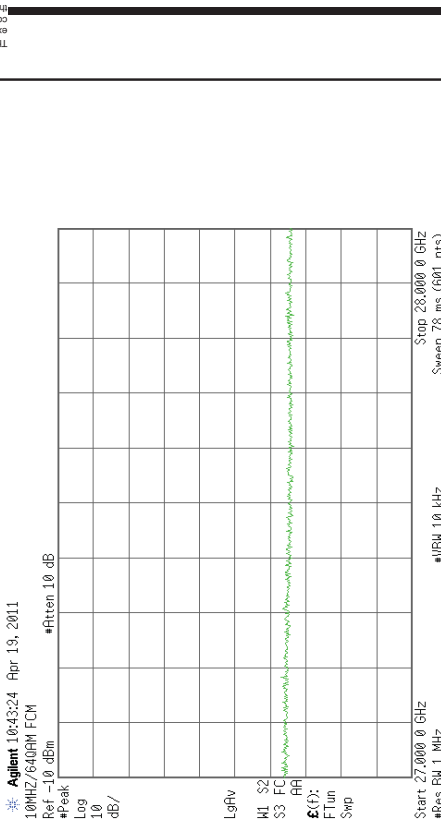
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	235 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	236 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 26 to 27 GHz

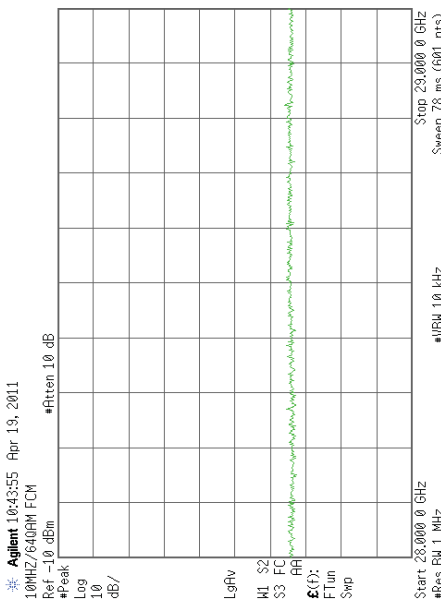


18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 27 to 28 GHz

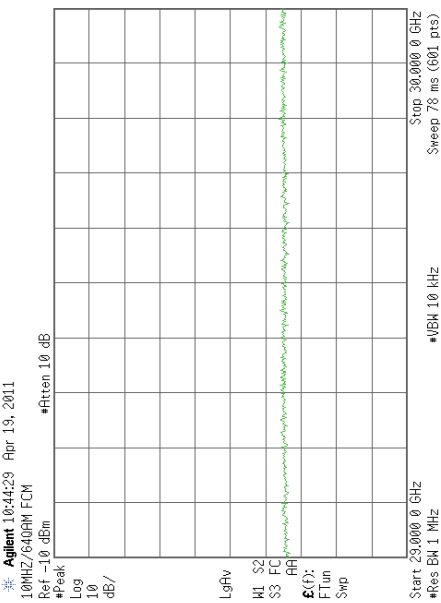


ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	237 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 28 to 29 GHz



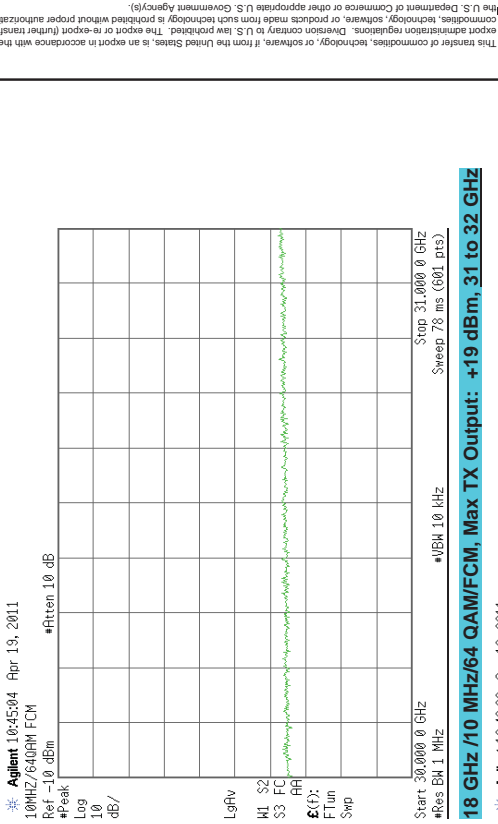
18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 29 to 30 GHz



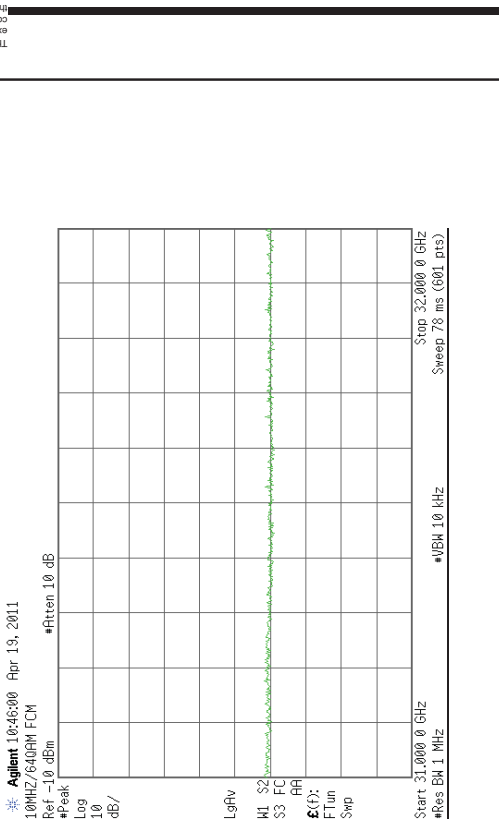
ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	238 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 30 to 31 GHz

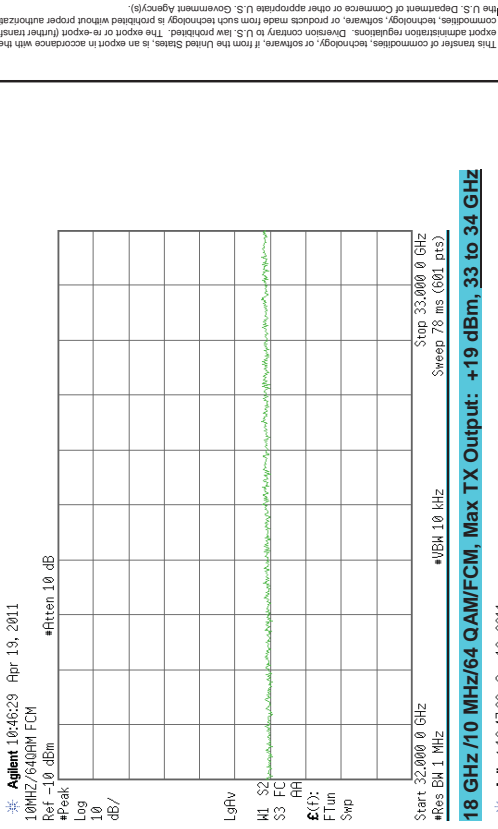


18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 31 to 32 GHz

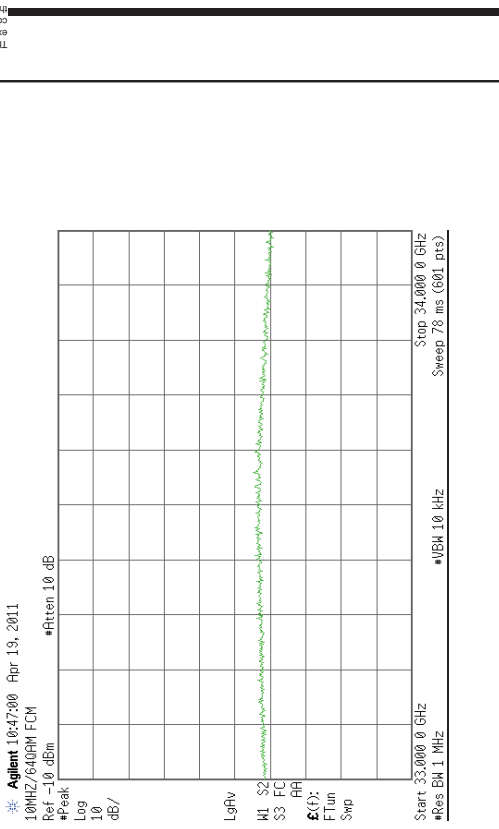


ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	239 / 299
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18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 32 to 33 GHz



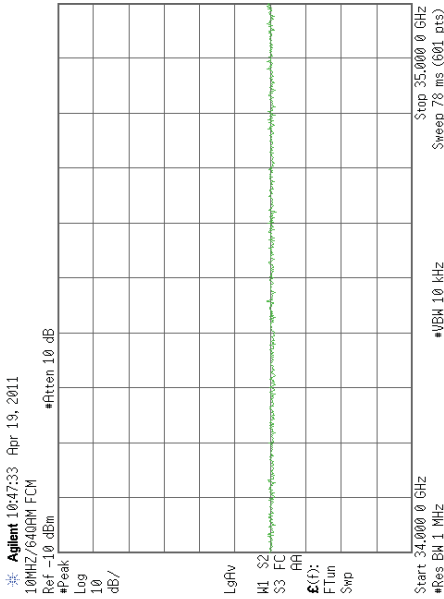
18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 33 to 34 GHz



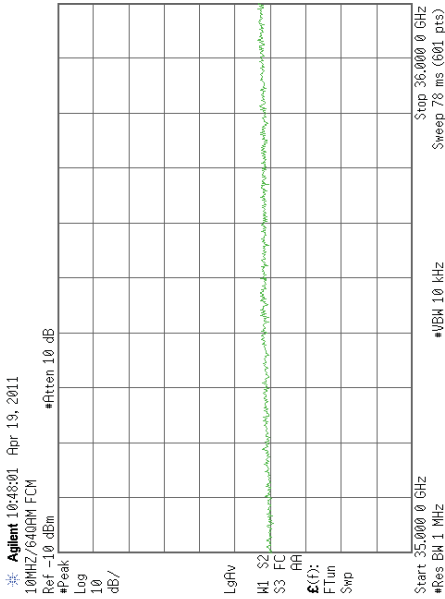
ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	240 / 299
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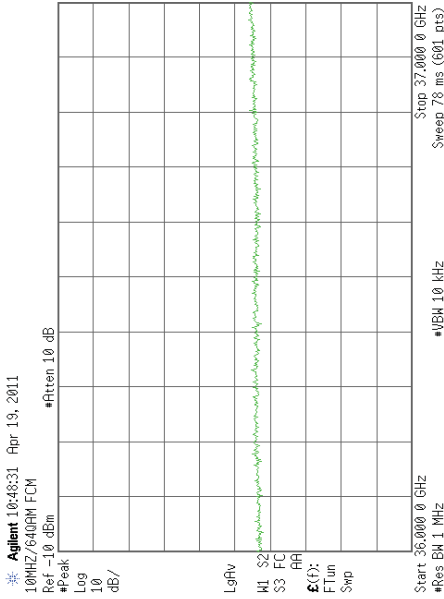
18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 34 to 35 GHz



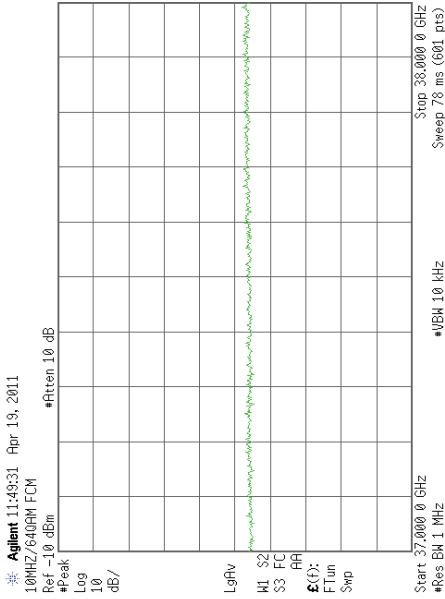
18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 35 to 36 GHz



18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 36 to 37 GHz



18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 37 to 38 GHz



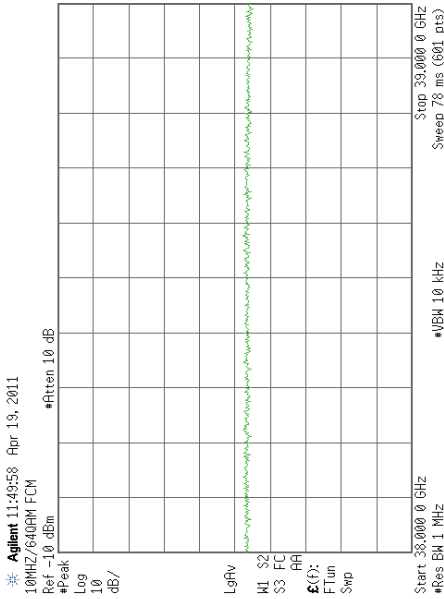
ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	241 / 299
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ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	242 / 299
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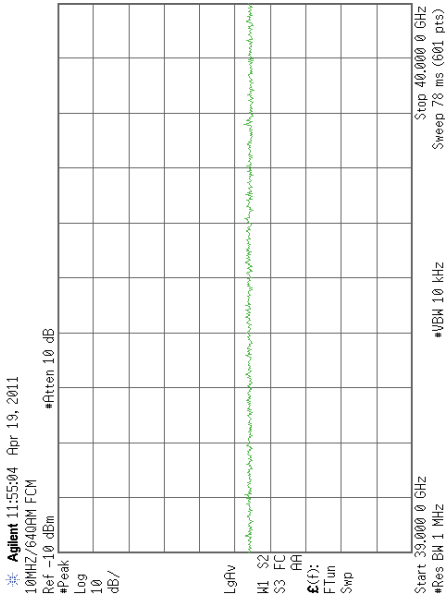
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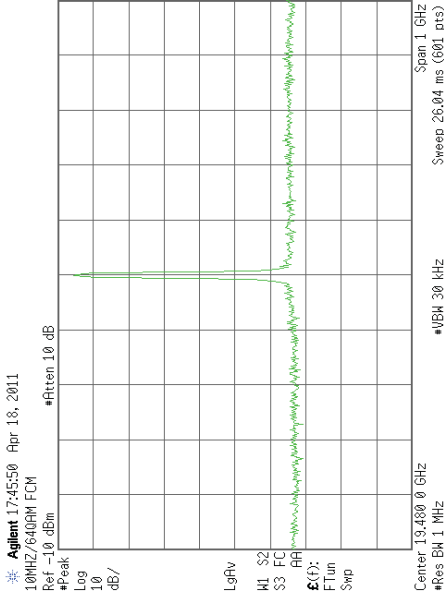
18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 38 to 39 GHz



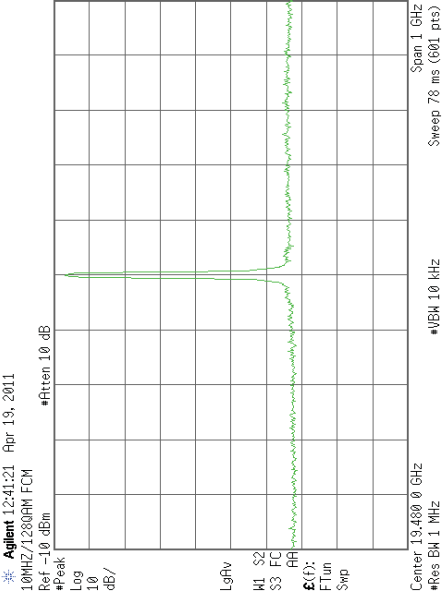
18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 39 to 40 GHz



18 GHz /10 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 1 GHz Span



18 GHz /10 MHz/128 QAM/FCM, Max TX Output: +19 dBm, 1 GHz Span



ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	243 / 299
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ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	244 / 299
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18 GHz /10 MHz/256 QAM/FCM, Max TX Output: +18 dBm, 1 GHz Span

* Agilent 1243305 Apr 19, 2011

10MHz/2560AM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

AR

Ⓢ(f):

FTun

Swp

Center 19.480 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

18 GHz /30 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 1 GHz Span

* Agilent 1433220 Apr 19, 2011

30MHz/640AM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

AR

Ⓢ(f):

FTun

Swp

Center 19.480 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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18 GHz /30 MHz/128 QAM/FCM, Max TX Output: +19 dBm, 1 GHz Span

* Agilent 1454116 Apr 19, 2011

30MHz/1280AM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

AR

Ⓢ(f):

FTun

Swp

Center 19.480 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

18 GHz /30 MHz/256 QAM/FCM, Max TX Output: +18 dBm, 1 GHz Span

* Agilent 145542 Apr 19, 2011

30MHz/2560AM FCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

AR

Ⓢ(f):

FTun

Swp

Center 19.480 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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ED 06

ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZA

245 / 299

ED 06

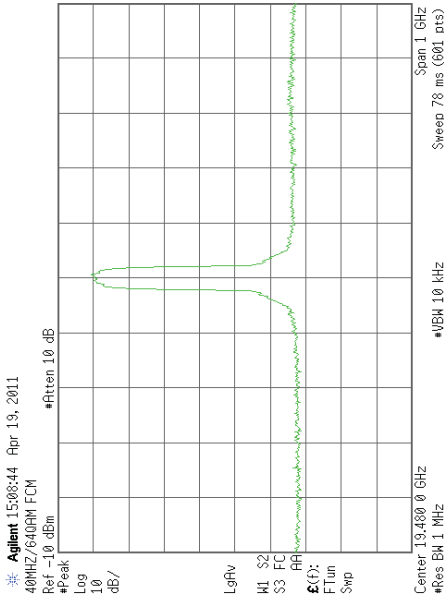
ECCN: 5E991

HTS: 4901.99.0050

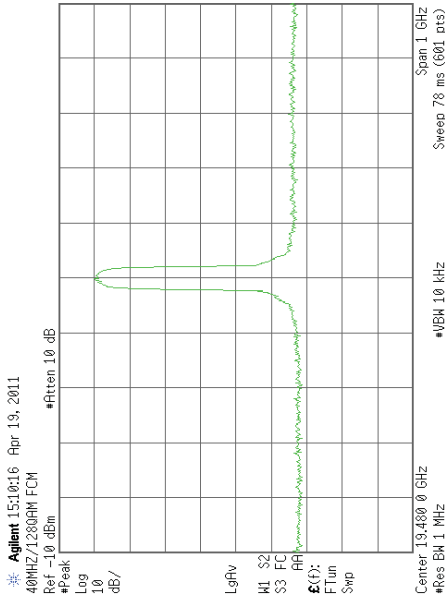
3DB 200010094 QZZA

246 / 299

18 GHz /40 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 1 GHz Span

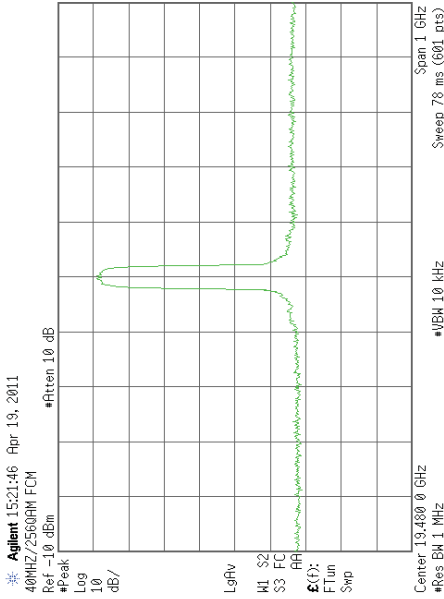


18 GHz /40 MHz/128 QAM/FCM, Max TX Output: +19 dBm, 1 GHz Span

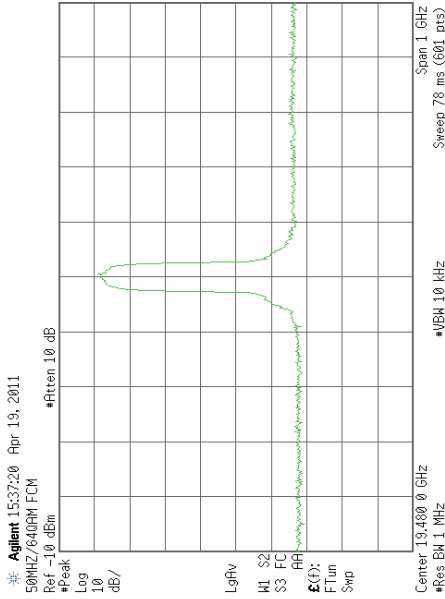


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18 GHz /40 MHz/256 QAM/FCM, Max TX Output: +18 dBm, 1 GHz Span



18 GHz /50 MHz/64 QAM/FCM, Max TX Output: +19 dBm, 1 GHz Span

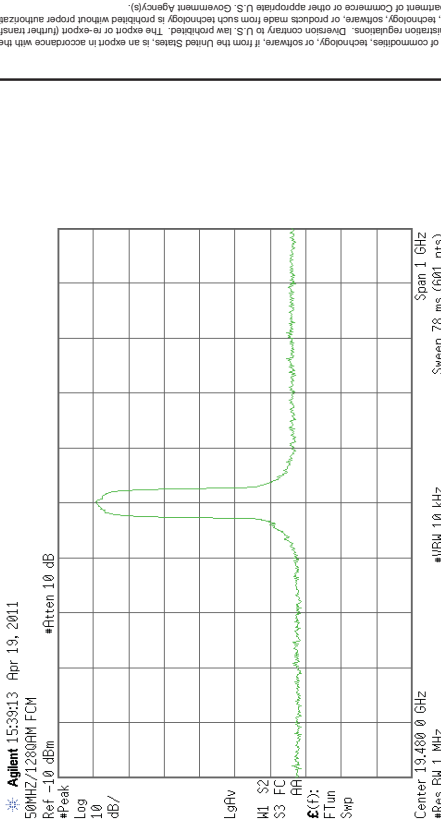


ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	247 / 299
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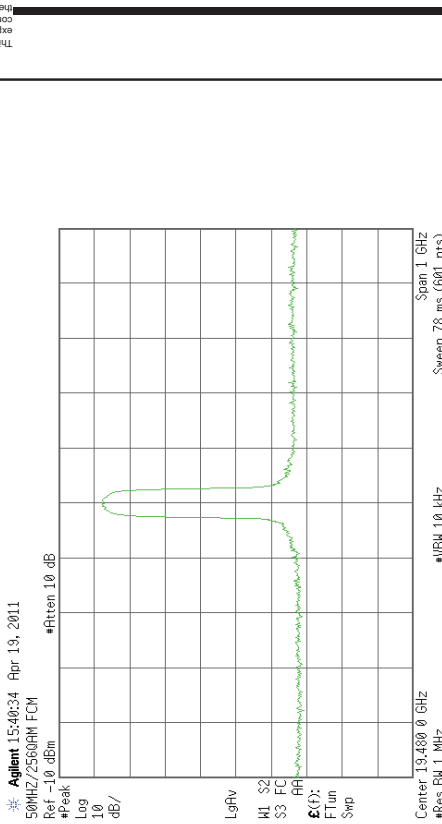
ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	248 / 299
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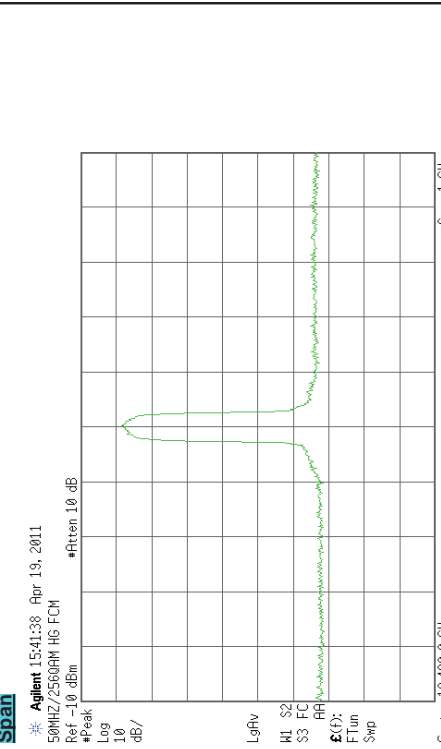
18 GHz /50 MHz/128 QAM/FCM, Max TX Output: +19 dBm, 1 GHz Span



18 GHz /50 MHz/256 QAM/FCM, Max TX Output: +18 dBm, 1 GHz Span



18 GHz /50 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dBm, 1 GHz Span



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8BD 00044 0118 QRZZA_05 (0307) A - WORD
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	250 / 299
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 REQUIREMENTS SPECIFICATION TEMPLATE

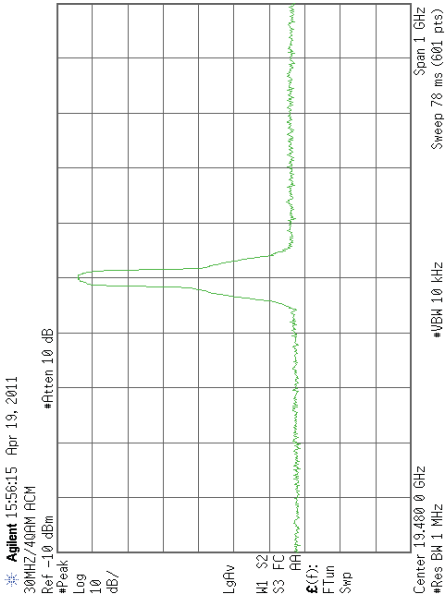
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	249 / 299
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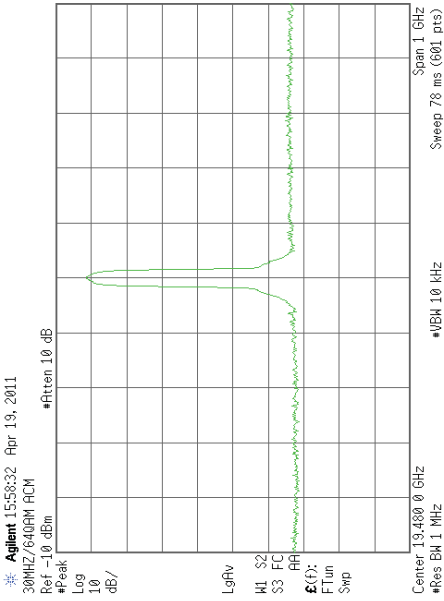
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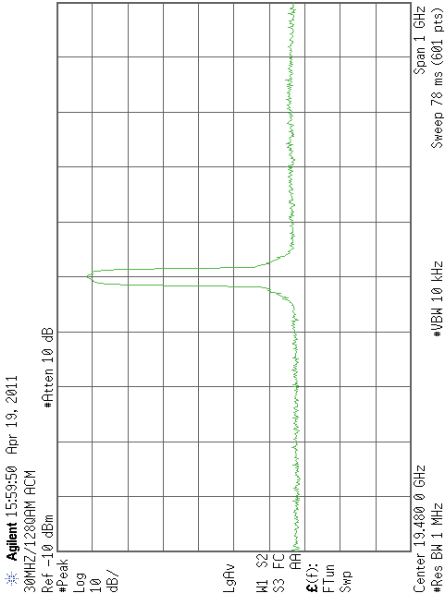
18 GHz /30 MHz/4 QAM/ACM, Max TX Output: +22 dBm, 1 GHz Span



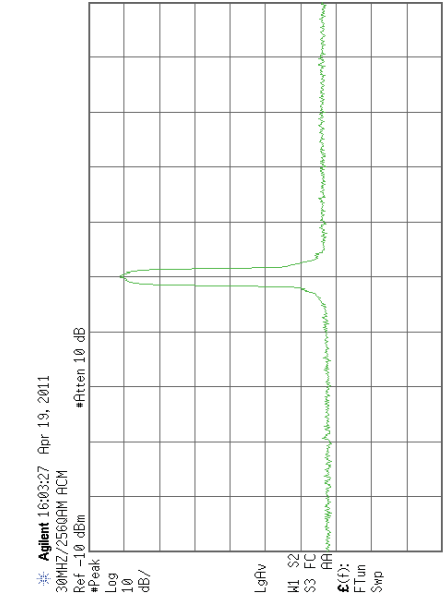
18 GHz /30 MHz/64 QAM/ACM, Max TX Output: +19 dBm, 1 GHz Span



18 GHz /30 MHz/128 QAM/ACM, Max TX Output: +19 dBm, 1 GHz Span



18 GHz /30 MHz/256 QAM/ACM, Max TX Output: +18 dBm, 1 GHz Span



ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	251 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	252 / 299
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18 GHz /40 MHz/4 QAM/ACM, Max TX Output: +22 dBm, 1 GHz Span

* Agilent 16:11:54 Apr 19, 2011

40MHz/40MHz RCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

RA

Ⓢ(f):

FTun

Swp

Center 19.480 0 GHz

#Res BW 1 MHz

#VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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18 GHz /40 MHz/64 QAM/ACM, Max TX Output: +19 dBm, 1 GHz Span

* Agilent 16:13:26 Apr 19, 2011

40MHz/640MHz RCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

RA

Ⓢ(f):

FTun

Swp

Center 19.480 0 GHz

#Res BW 1 MHz

#VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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18 GHz /40 MHz/128 QAM/ACM, Max TX Output: +19 dBm, 1 GHz Span

* Agilent 16:14:26 Apr 19, 2011

40MHz/1280MHz RCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

RA

Ⓢ(f):

FTun

Swp

Center 19.480 0 GHz

#Res BW 1 MHz

#VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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18 GHz /40 MHz/256 QAM/ACM, Max TX Output: +18 dBm, 1 GHz Span

* Agilent 16:20:05 Apr 19, 2011

40MHz/2560MHz RCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

LgRv

M1 S2

S3 FC

RA

Ⓢ(f):

FTun

Swp

Center 19.480 0 GHz

#Res BW 1 MHz

#VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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REQUIREMENTS SPECIFICATION TEMPLATE

ED 06

ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZA

253 / 299

ED 06

ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZA

254 / 299

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18 GHz /50 MHz/4 QAM/ACM, Max TX Output: +22 dBm, 1 GHz Span

* Agilent 16:34:07 Apr 19, 2011

50MHz/409M RCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

Log

10

dB/

LgRv

M1 S2

S3 FC

RR

Ⓢ(1):

FTun

Swp

Center 19.480 0 GHz

#Res BW 1 MHz

#VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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18 GHz /50 MHz/64 QAM/ACM, Max TX Output: +19 dBm, 1 GHz Span

* Agilent 16:37:11 Apr 19, 2011

50MHz/6409M RCM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

Log

10

dB/

LgRv

M1 S2

S3 FC

RR

Ⓢ(1):

FTun

Swp

Center 19.480 0 GHz

#Res BW 1 MHz

#VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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18 GHz /50 MHz/128 QAM/ACM, Max TX Output: +19 dBm, 1 GHz Span

* Agilent 16:37:57 Apr 19, 2011

50MHz/12809M ACM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

Log

10

dB/

LgRv

M1 S2

S3 FC

RR

Ⓢ(1):

FTun

Swp

Center 19.480 0 GHz

#Res BW 1 MHz

#VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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18 GHz /50 MHz/256 QAM/ACM, Max TX Output: +18 dBm, 1 GHz Span

* Agilent 16:40:48 Apr 19, 2011

50MHz/25609M ACM

Ref -10 dBm

#Peak

Log

10

dB/

#Rten 10 dB

Log

10

dB/

LgRv

M1 S2

S3 FC

RR

Ⓢ(1):

FTun

Swp

Center 19.480 0 GHz

#Res BW 1 MHz

#VBW 10 kHz

Span 1 GHz

Sweep 78 ms (601 pts)

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8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE

8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE

ED 06

ECCN: 5E991

HTS: 4901.99.0050

3DB 200010094 QZZA

255 / 299

ED 06

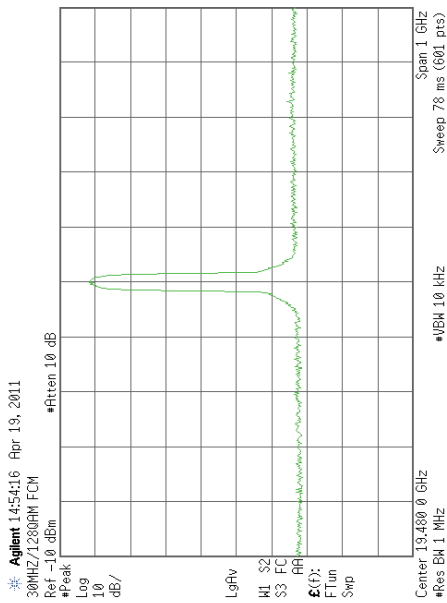
ECCN: 5E991

HTS: 4901.99.0050

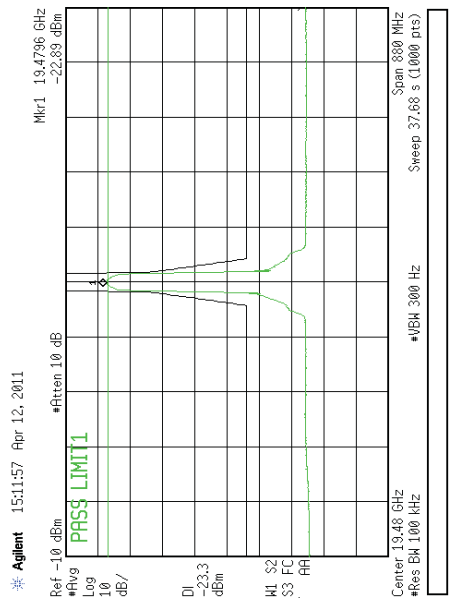
3DB 200010094 QZZA

256 / 299

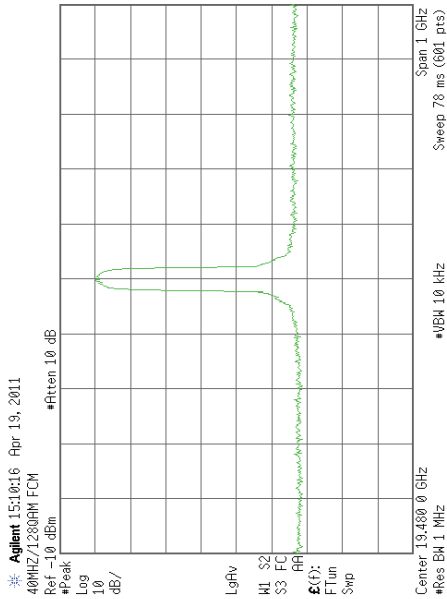
18 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +19 dBm, 880 MHz Span
 (same as 30 MHz/128 QAM/FCM)



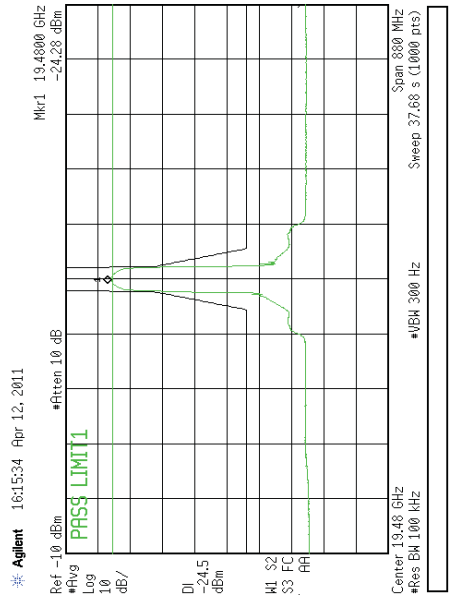
18 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +18 dBm, 880 MHz Span



18 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +19 dBm, 880 MHz Span
 (same as 40 MHz/128 QAM/FCM)



18 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +18 dBm, 880 MHz Span



ED	06	ECCN: 5E991	HTS: 4901.99.0050	3DB 200010094 QZZA	257 / 299
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ED	06	ECCN: 5E991	HTS: 4901.99.0050	3DB 200010094 QZZA	258 / 299
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18 GHz /50 MHz/128 QAM/XPIC, Max TX Output: +19 dBm, 880 MHz Span
 (same as 50 MHz/128 QAM/FCM)

* Agilent 15:39:13 Apr 13, 2011

50MHz/128QAM FCM

Ref -10 dBm

*Peak

Log

10

dB/

#Rten 10 dB

LgRv

HL S2

S3

FC

RA

ⓧ: F Lun

Swp

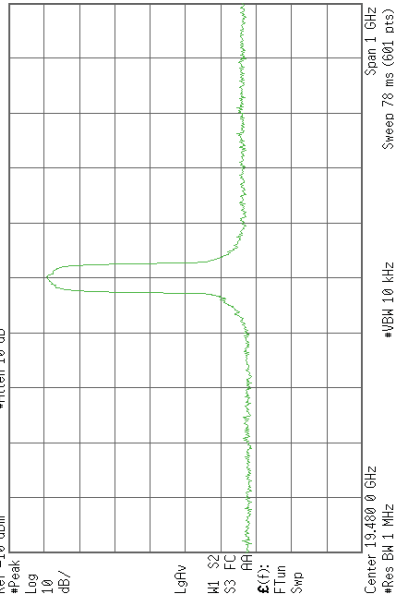
Center 19.480 0 GHz

*Res BW 1 MHz

*VBW 10 kHz

Sweep 78 ms (601 pts)

Span 1 GHz



18 GHz /50 MHz/256 QAM/XPIC, Max TX Output: +18 dBm, 880 MHz Span

* Agilent 08:38:15 Apr 13, 2011

Ref -10 dBm

*Avg

Log

10

dB/

#Rten 10 dB

DL

-25.5

dBm

HL S2

S3

FC

RA

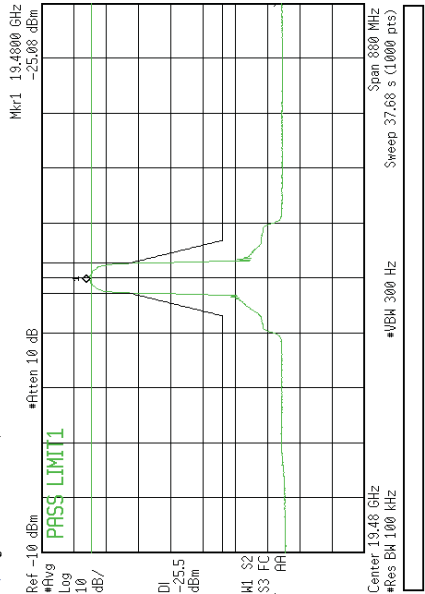
Center 19.48 GHz

*Res BW 1 MHz

*VBW 300 Hz

Sweep 37.68 s (1000 pts)

Span 880 MHz



1.2.6.5 23GHz SPURIOUS EMISSIONS

Spurious emissions for the 23GHz ODU are captured in the sequence of plots below. No spurious was measured above the noise floor of the spectrum analyzer. In all cases the spectrum analyzer noise floor was at least 10dB below the -13dBm/MHz FCC requirement.

23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 0 to 1 GHz

* Agilent 16:32:49 Mar 15, 2011

10MHz/256QAM

Ref 0 dBm

Samp

Log

10

dB/

#Rten 10 dB

VRvg

HL S2

S3

FS

RA

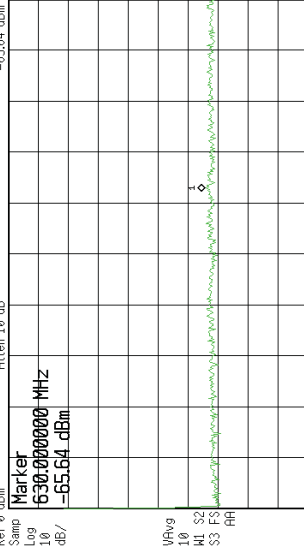
Marker

630.000000 MHz

-65.64 dBm

Mkr1 630 MHz

-65.64 dBm



Start 0 Hz

*Res BW 1 MHz

*VBW 1 MHz

Sweep 4 ms (401 pts)

Stop 1 GHz

23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 1 to 2 GHz

* Agilent 16:33:27 Mar 15, 2011

10MHz/256QAM

Ref 0 dBm

Samp

Log

10

dB/

#Rten 10 dB

VRvg

HL S2

S3

FS

RA

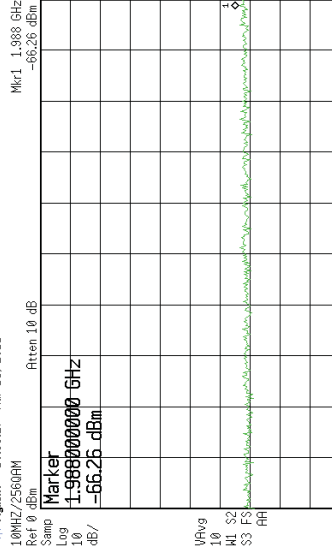
Marker

1.98800000 GHz

-66.26 dBm

Mkr1 1.988 GHz

-66.26 dBm



Start 1 GHz

*Res BW 1 MHz

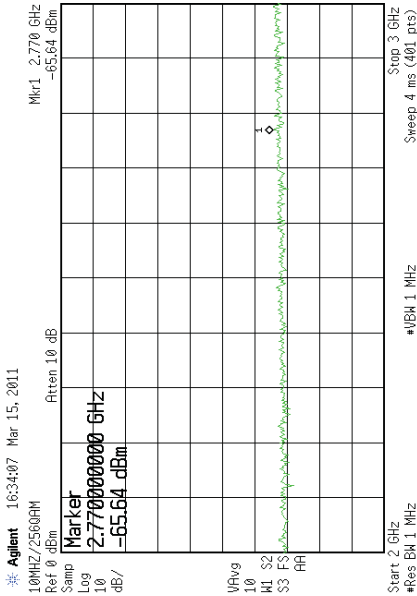
*VBW 1 MHz

Sweep 4 ms (401 pts)

Stop 2 GHz

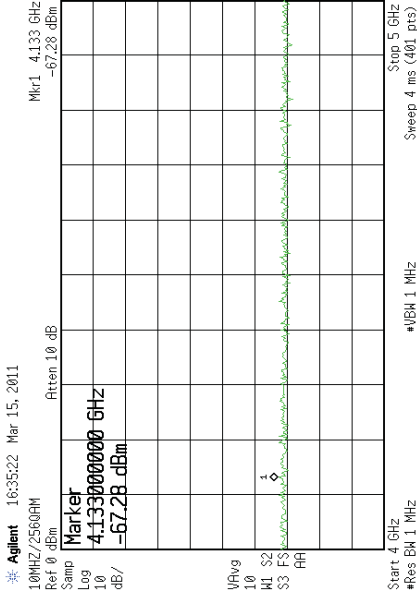
ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	260 / 299
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 2 to 3 GHz



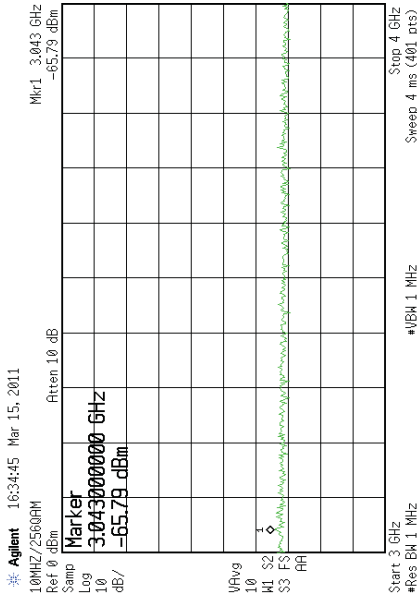
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 4 to 5 GHz

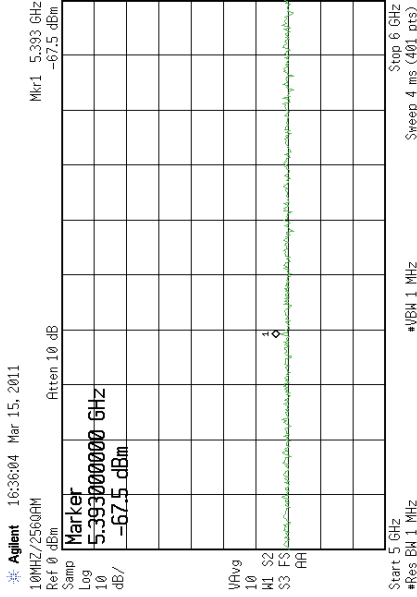


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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 3 to 4 GHz



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 5 to 6 GHz

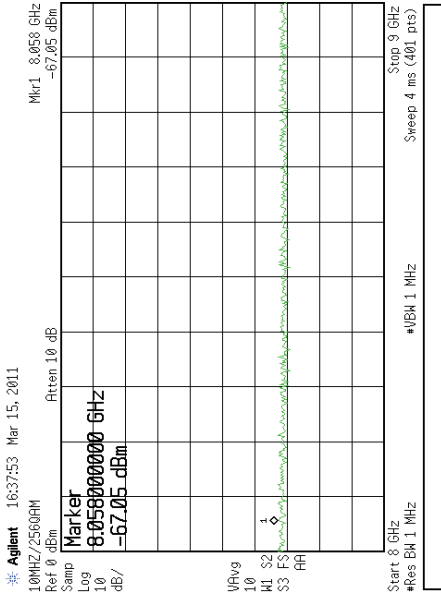


ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZZA	261 / 299
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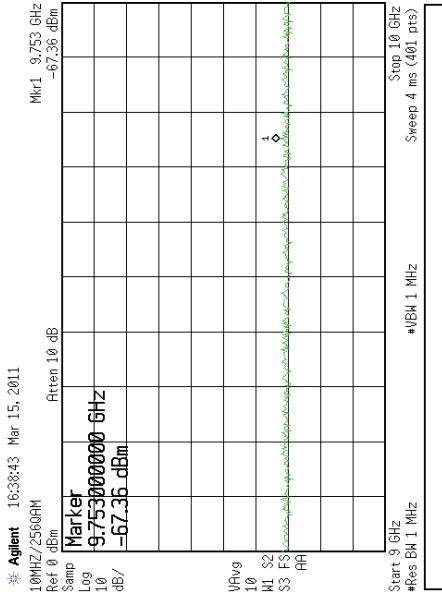
ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZZA	262 / 299
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 8 to 9 GHz



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 9 to 10 GHz



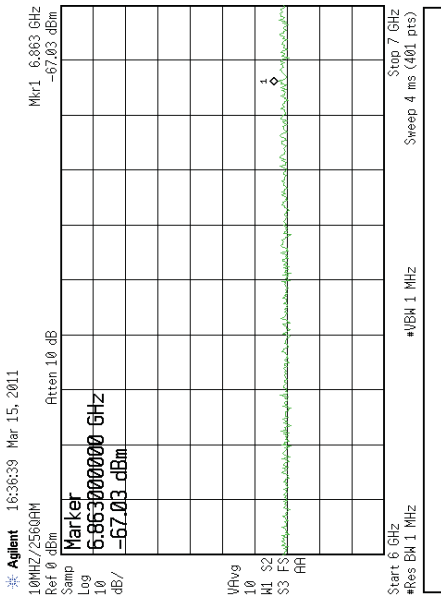
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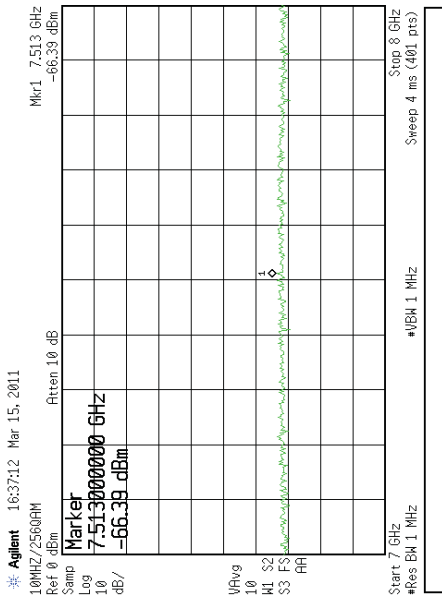
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	264 / 299
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 6 to 7 GHz



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 7 to 8 GHz



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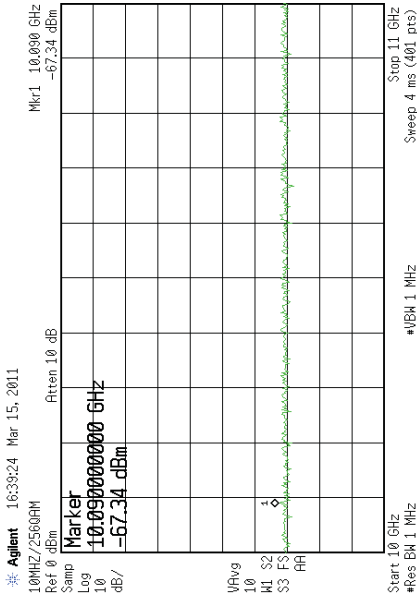
8BD 00044 0118 CRZZA_05 (0307) A - WORD
 REQUIREMENTS SPECIFICATION TEMPLATE

ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZZA	263 / 299
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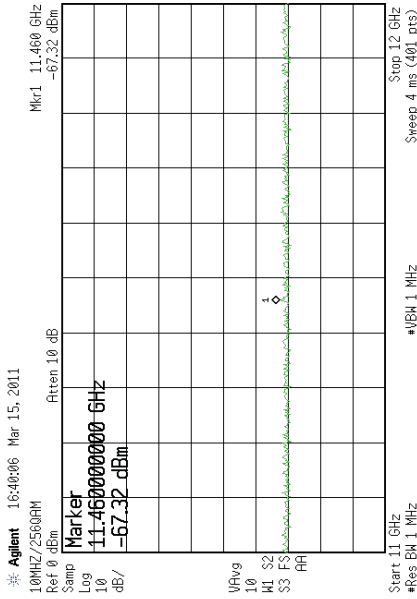
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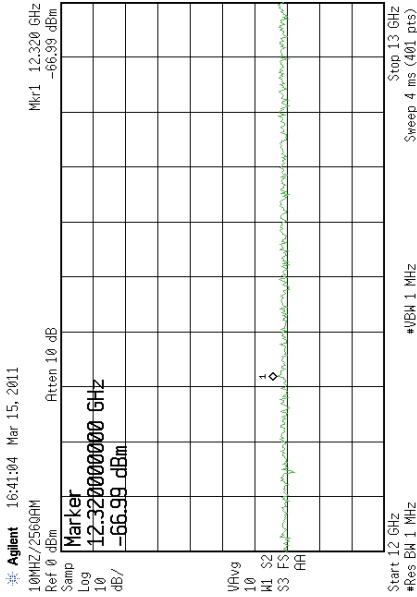
23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 10 to 11 GHz



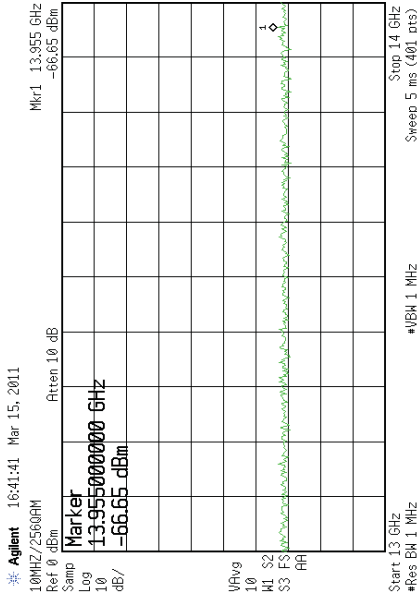
23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 11 to 12 GHz



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 12 to 13 GHz



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 13 to 14 GHz

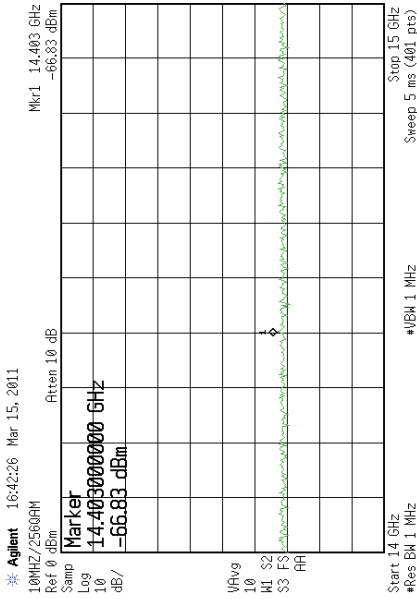


ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	265 / 299
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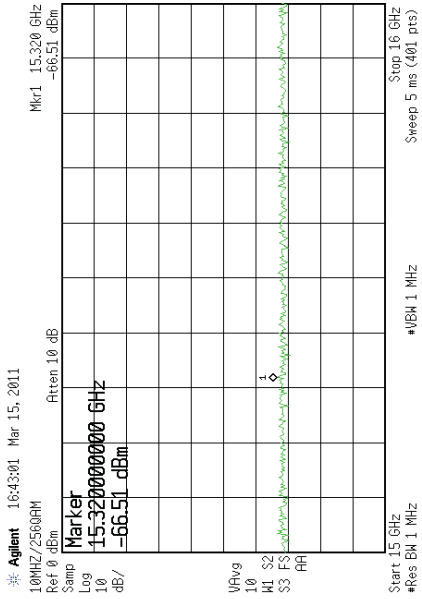
ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	266 / 299
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 14 to 15 GHz

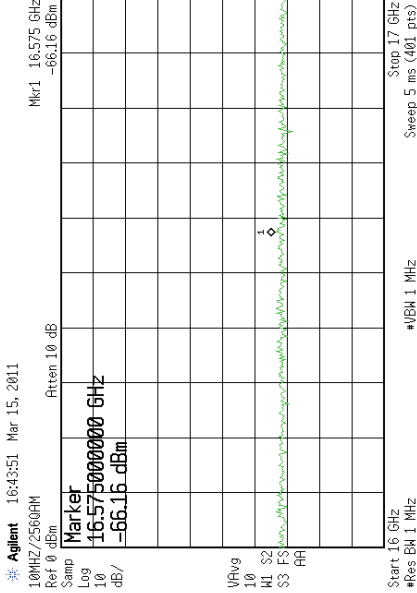


23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 15 to 16 GHz

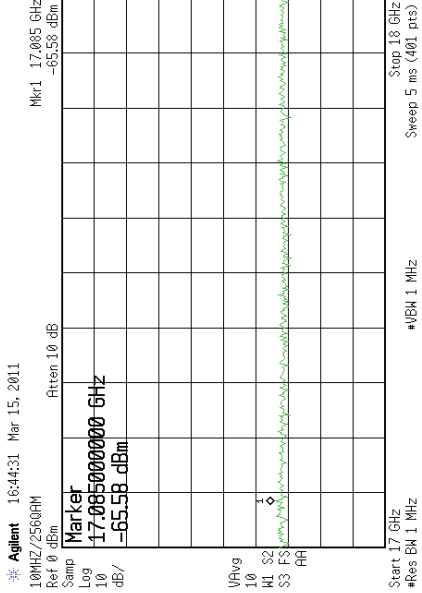


ED	06	ECCN: 5E991 HTS: 4901.98.0050	3DB 200010094 QZZA	267 / 299
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 16 to 17 GHz



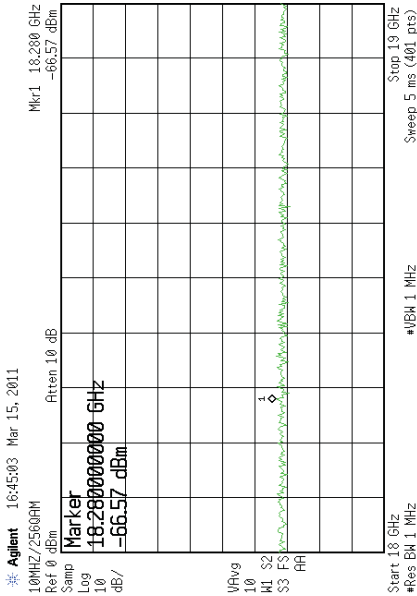
23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 17 to 18 GHz



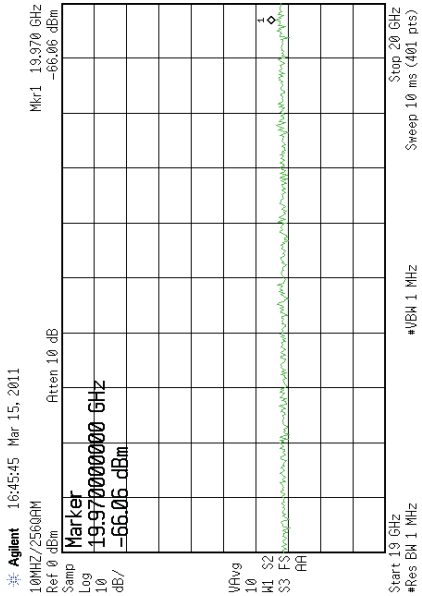
ED	06	ECCN: 5E991 HTS: 4901.98.0050	3DB 200010094 QZZA	268 / 299
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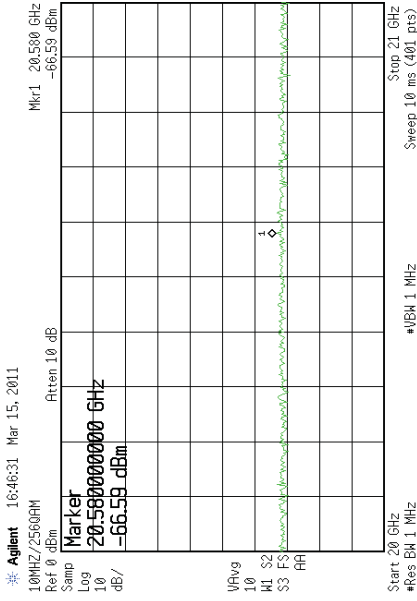
23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 18 to 19 GHz



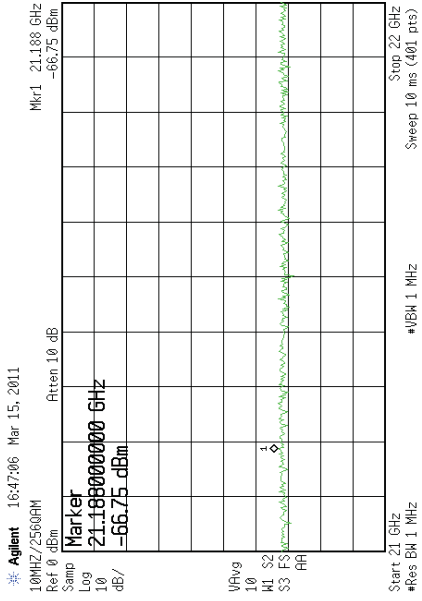
23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 19 to 20 GHz



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 20 to 21 GHz



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 21 to 22 GHz

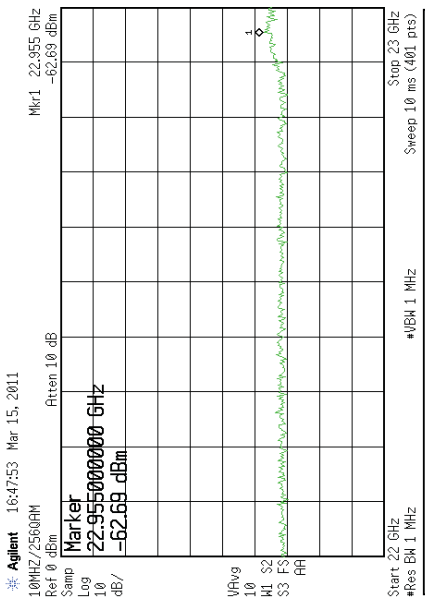


ED	06	ECCN: 5E991 HTS: 4901.98.0050	3DB 200010094 QZZA	269 / 299
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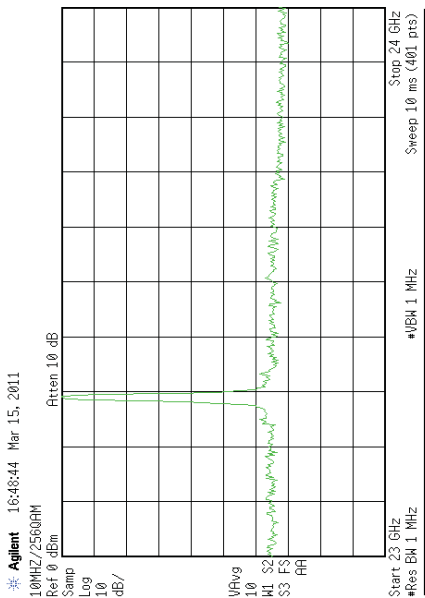
ED	06	ECCN: 5E991 HTS: 4901.98.0050	3DB 200010094 QZZA	270 / 299
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 22 to 23 GHz

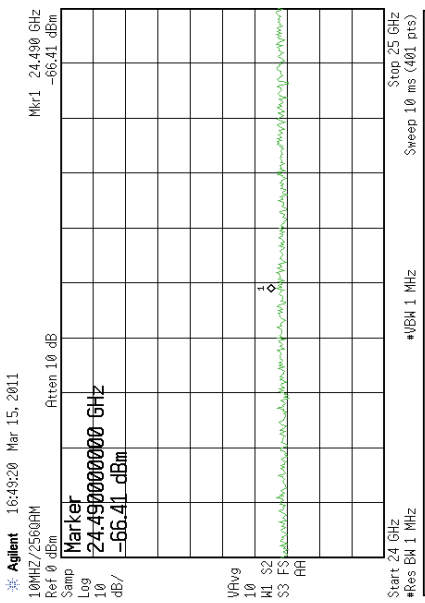


23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 23 to 24 GHz

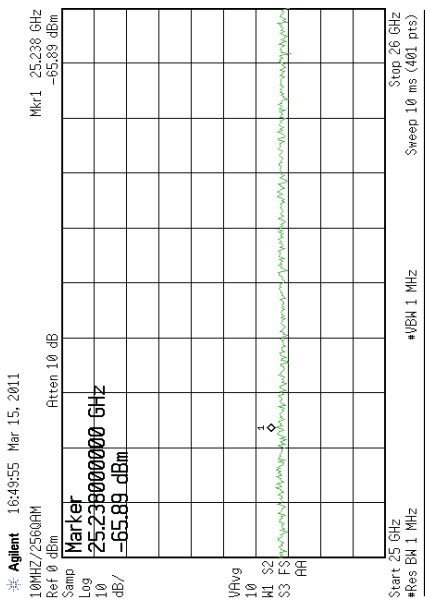


ED	06	ECCN: 5E991 HTS: 4901.98.0050	3DB 200010094 QZZA	271 / 299
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 24 to 25 GHz



23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 25 to 26 GHz

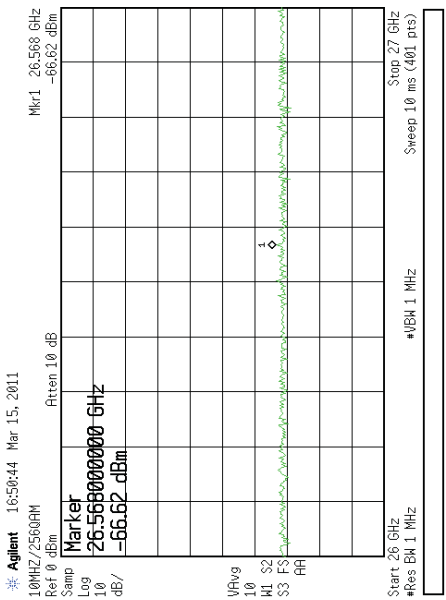


ED	06	ECCN: 5E991 HTS: 4901.98.0050	3DB 200010094 QZZA	272 / 299
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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 26 to 27 GHz

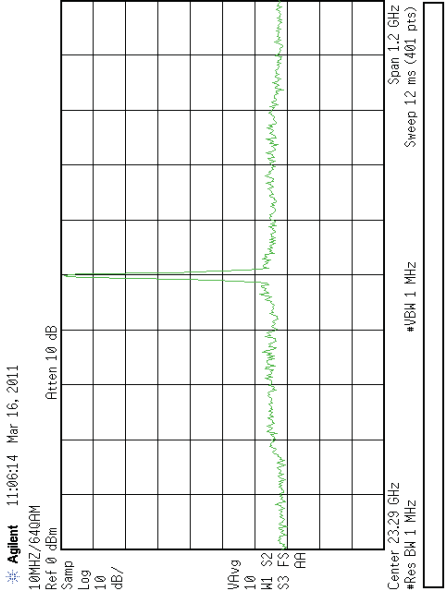


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23 GHz /10 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 1.2 GHz Span

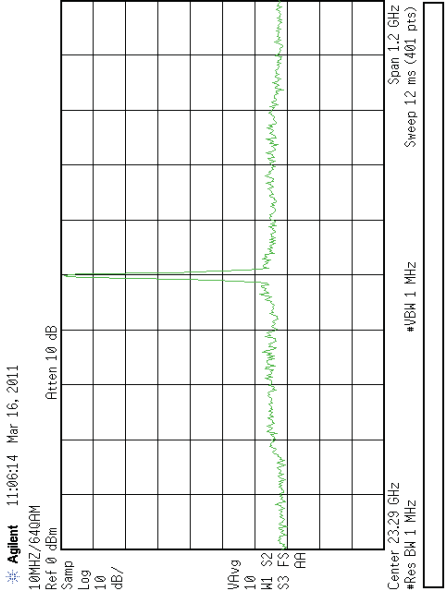


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23 GHz /10 MHz/128 QAM/FCM, Max TX Output: +18 dBm, 1.2 GHz Span



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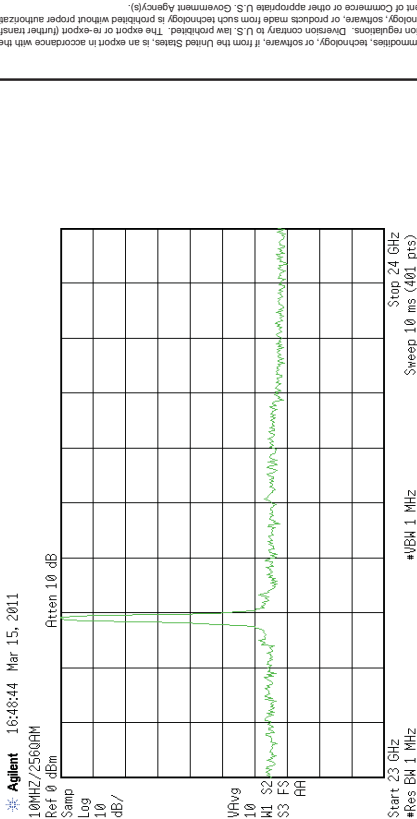
8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE

8BD 00044 0118 CRZZA_05 (0307) A - WORD
REQUIREMENTS SPECIFICATION TEMPLATE

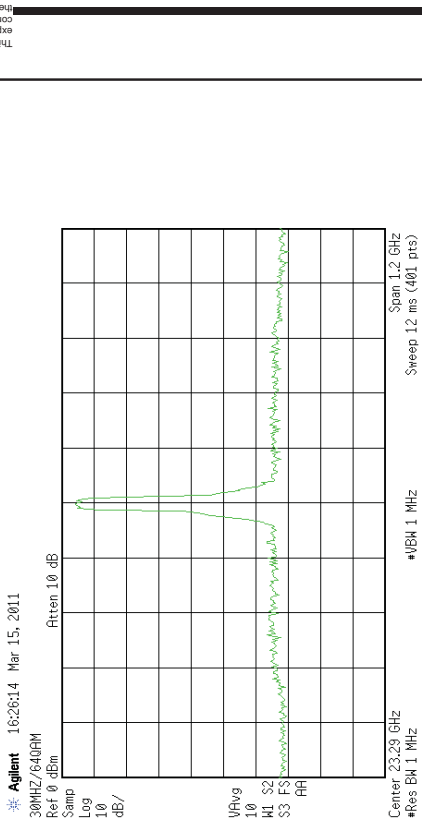
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	273 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	274 / 299
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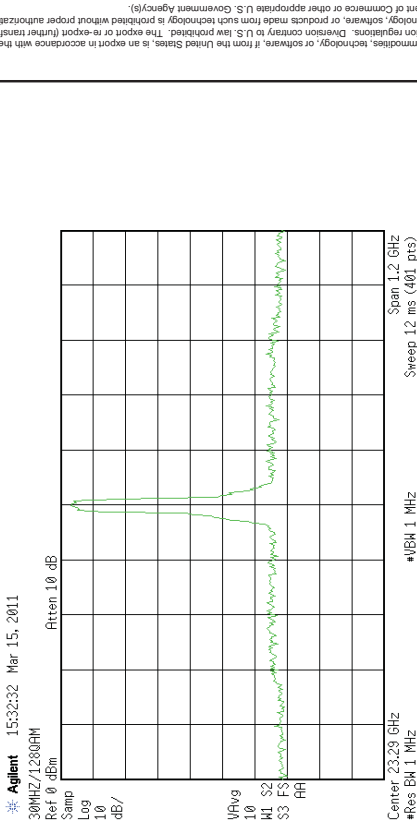
23 GHz /10 MHz/256 QAM/FCM, Max TX Output: +18 dBm, 1 GHz Span



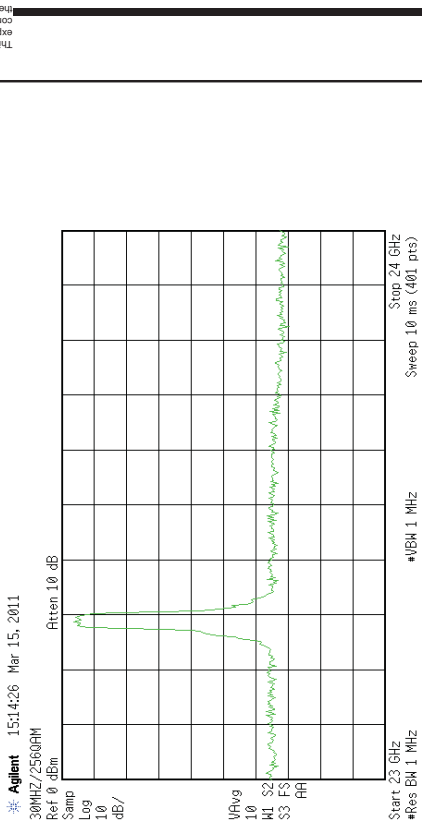
23 GHz /30 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 1.2 GHz Span



23 GHz /30 MHz/128 QAM/FCM, Max TX Output: +18 dBm, 1.2 GHz Span



23 GHz /30 MHz/256 QAM/FCM, Max TX Output: +18 dBm, 1 GHz Span



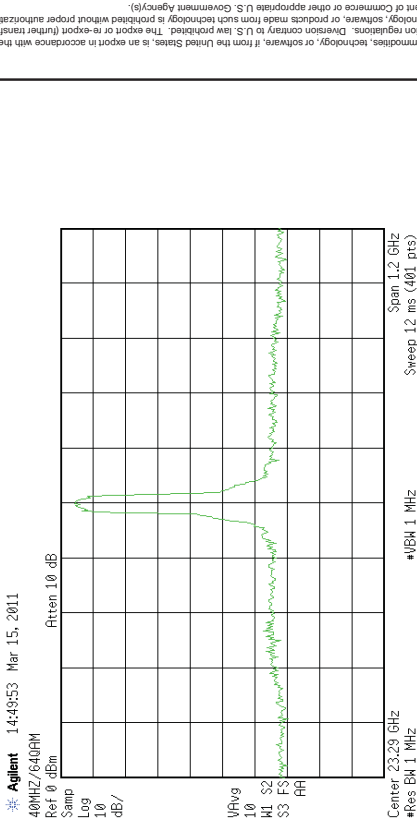
ED	06	ECCN: 5E991 HTS: 4901.98.0050	3DB 200010094 QZZA	275 / 299
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ED	06	ECCN: 5E991 HTS: 4901.98.0050	3DB 200010094 QZZA	276 / 299
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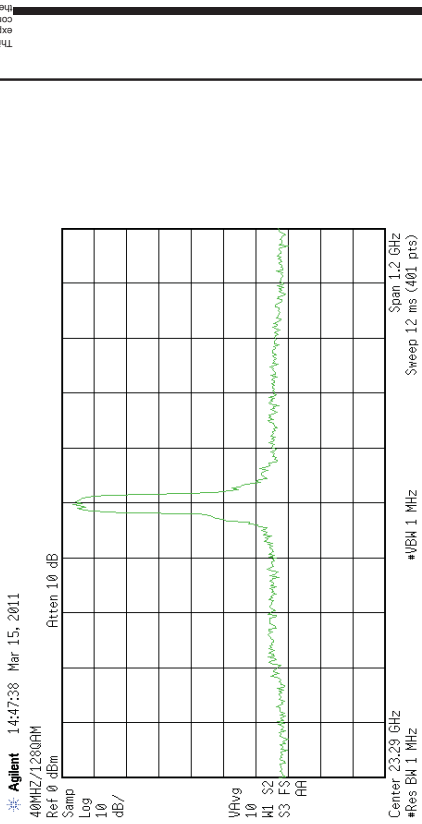
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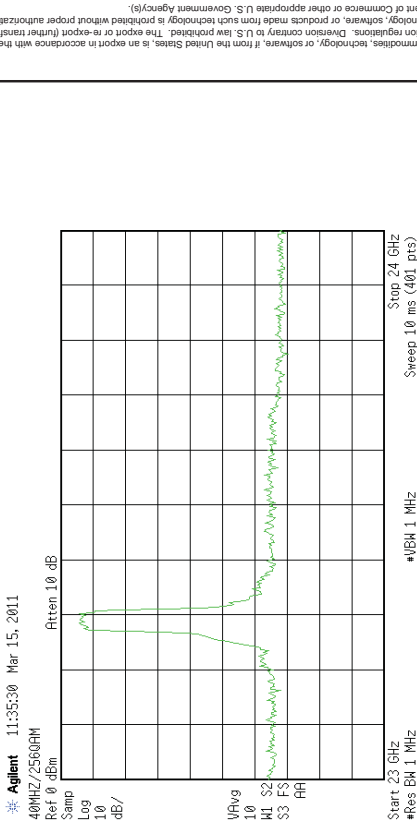
23 GHz /40 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 1.2 GHz Span



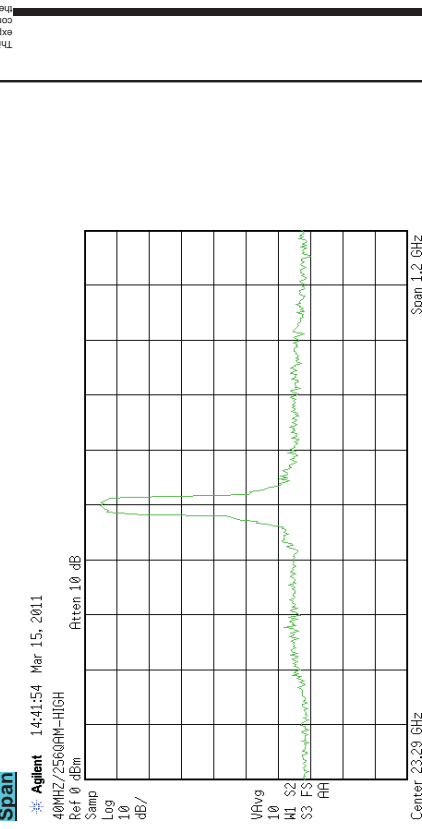
23 GHz /40 MHz/128 QAM/FCM, Max TX Output: +18 dBm, 1.2 GHz Span



23 GHz /40 MHz/256 QAM/FCM, Max TX Output: +18 dBm, 1 GHz Span



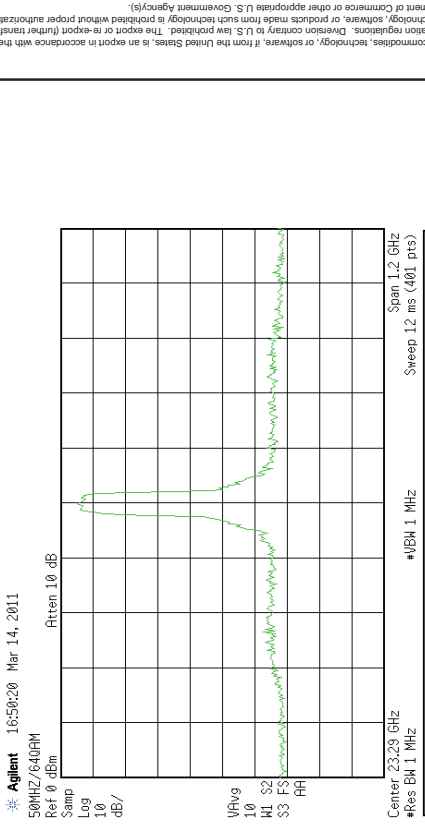
23 GHz /40 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dBm, 1.2 GHz Span



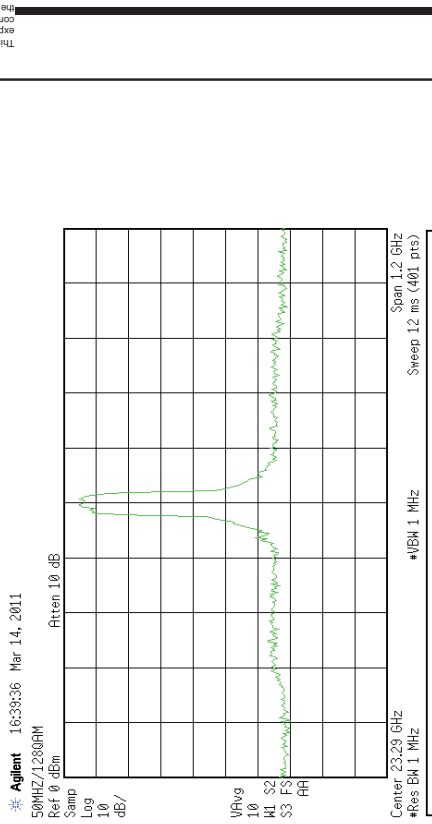
ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZZA	277 / 299
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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZZA	278 / 299
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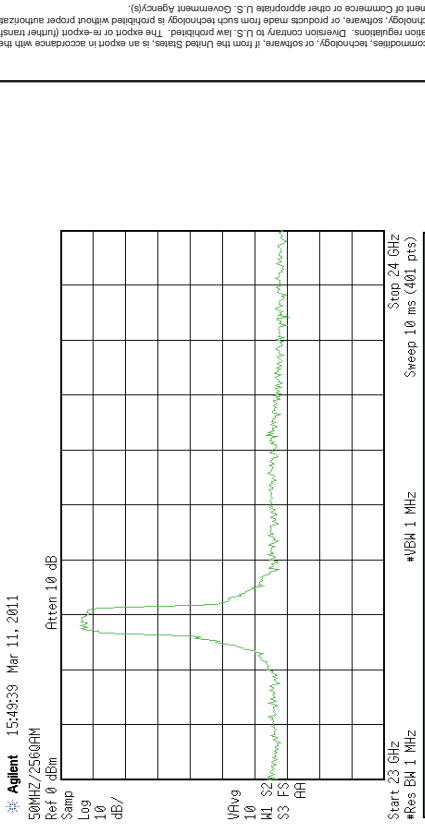
23 GHz /50 MHz/64 QAM/FCM, Max TX Output: +18 dBm, 1.2 GHz Span



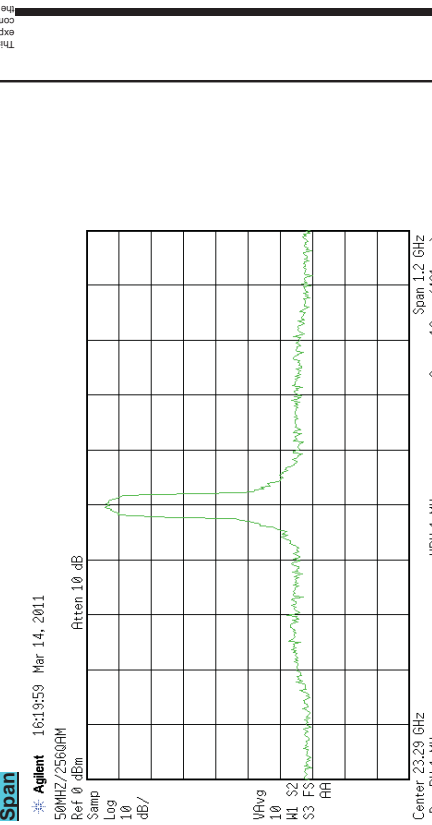
23 GHz /50 MHz/128 QAM/FCM, Max TX Output: +18 dBm, 1.2 GHz Span



23 GHz /50 MHz/256 QAM/FCM, Max TX Output: +18 dBm, 1 GHz Span



23 GHz /50 MHz/256 QAM High Gain/FCM, Max TX Output: +18 dBm, 1.2 GHz Span

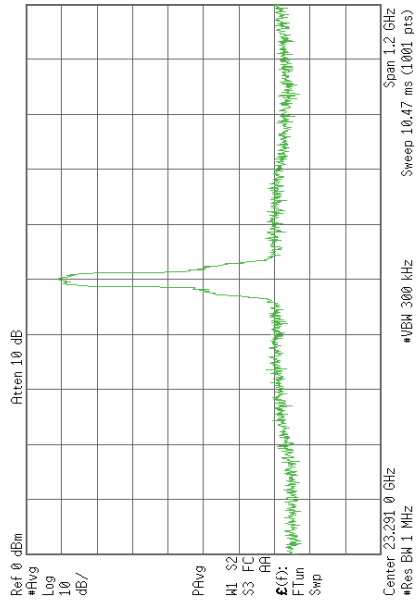


ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZZA	279 / 299
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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZZA	280 / 299
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23 GHz /30 MHz/4 QAM/ACM, Max TX Output: +20 dBm, 1 GHz Span

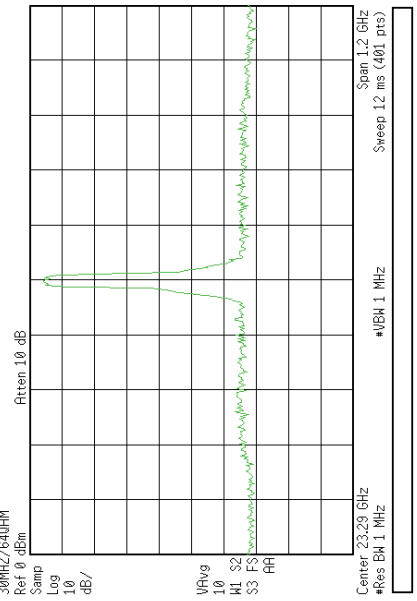
* Agilent 16:12:02 Jun 22, 2011



23 GHz /30 MHz/64 QAM/ACM, Max TX Output: +18 dBm, 1.2 GHz Span

(same as 30 MHz/64 QAM/FCM)

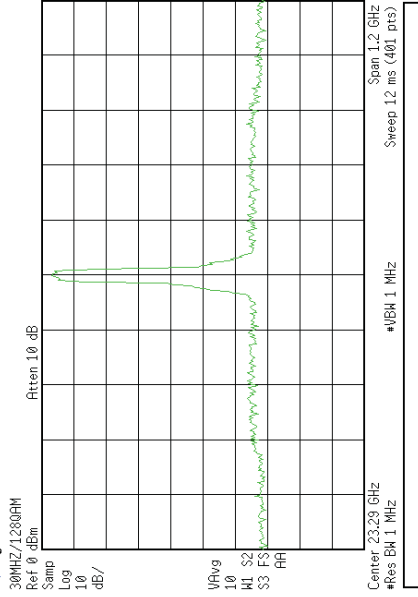
* Agilent 16:26:14 Mar 15, 2011



23 GHz /30 MHz/128 QAM/ACM, Max TX Output: +18 dBm, 1.2 GHz Span

(same as 30 MHz/128 QAM/FCM)

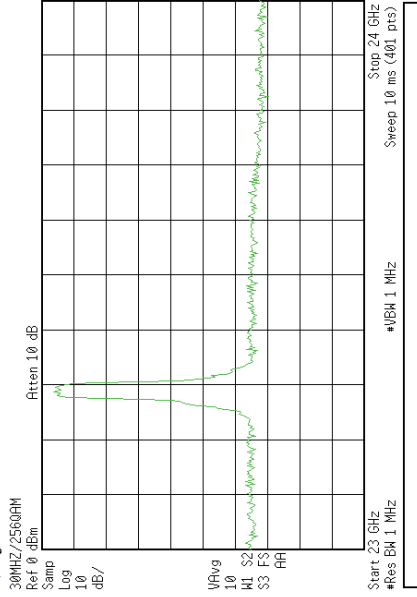
* Agilent 15:32:32 Mar 15, 2011



23 GHz /30 MHz/256 QAM/ACM, Max TX Output: +18 dBm, 1 GHz Span

(same as 30 MHz/256 QAM/FCM)

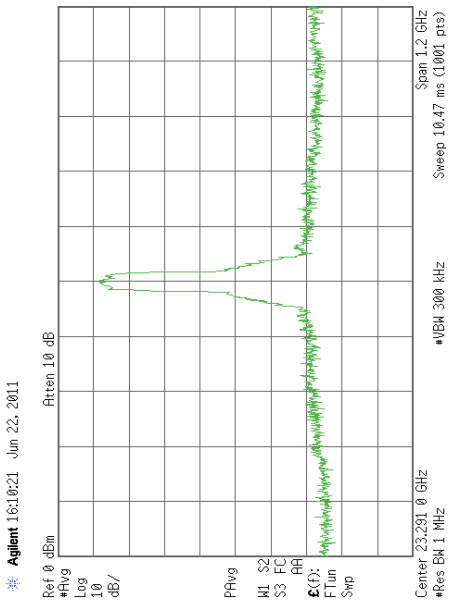
* Agilent 15:14:26 Mar 15, 2011



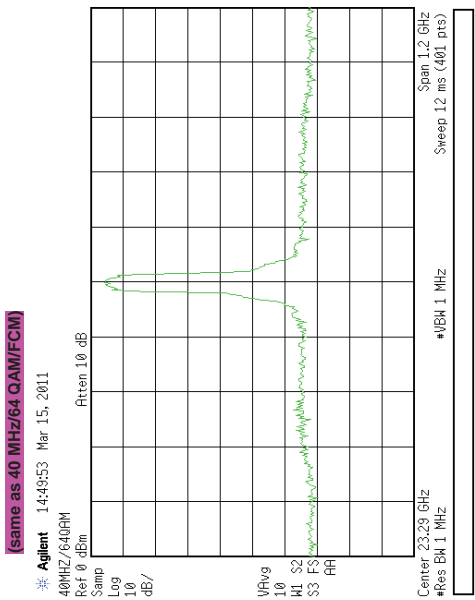
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	281 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	282 / 299
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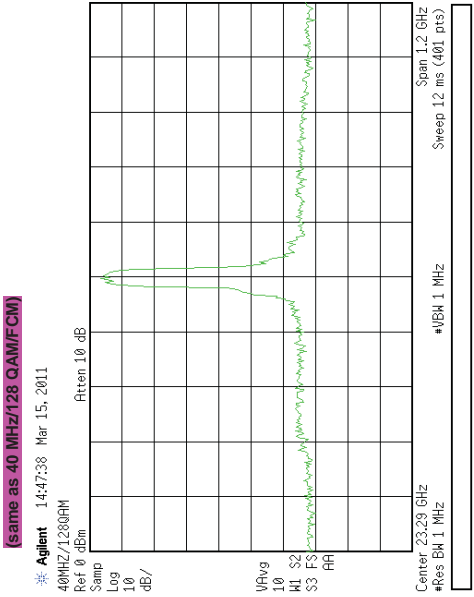
23 GHz /40 MHz/4 QAM/ACM, Max TX Output: +20 dBm, 1.2 GHz Span



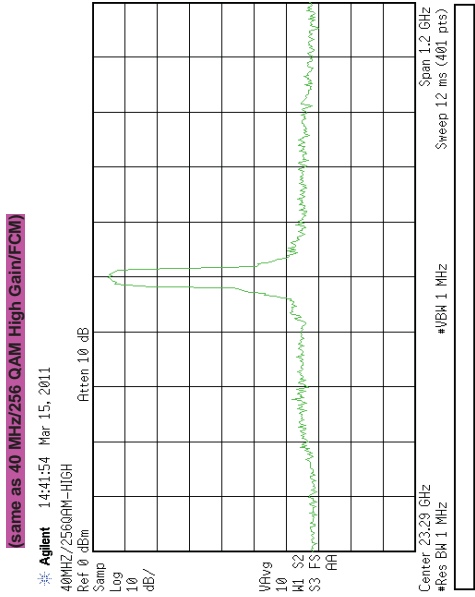
23 GHz /40 MHz/64 QAM/ACM, Max TX Output: +18 dBm, 1.2 GHz Span



23 GHz /40 MHz/128 QAM/ACM, Max TX Output: +18 dBm, 1.2 GHz Span



23 GHz /40 MHz/256 QAM/ACM, Max TX Output: +18 dBm, 1.2 GHz Span

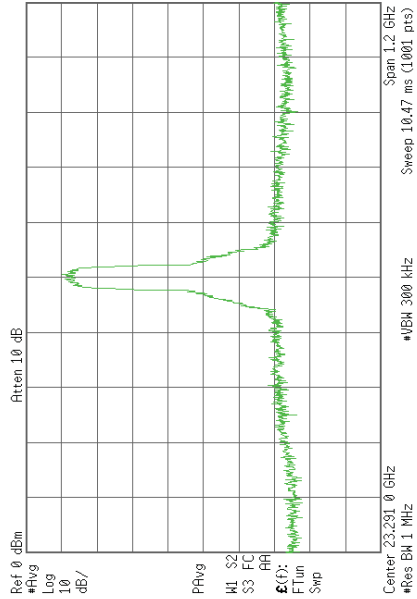


ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	283 / 299
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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	284 / 299
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23 GHz /50 MHz/4 QAM/ACM, Max TX Output: +20 dBm, 1 GHz Span

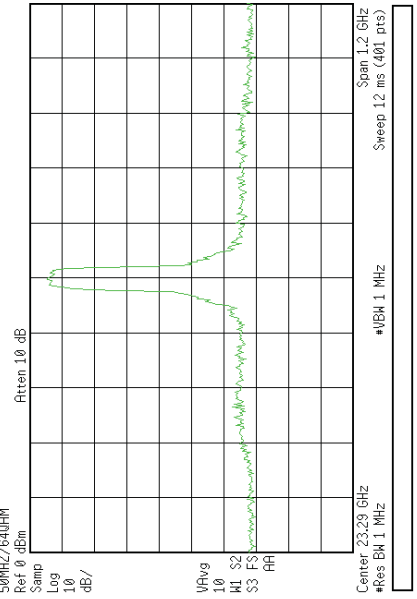
* Agilent 16:12:45 Jun 22, 2011



23 GHz /50 MHz/64 QAM/ACM, Max TX Output: +18 dBm, 1.2 GHz Span

(same as 50 MHz/64 QAM/FCM)

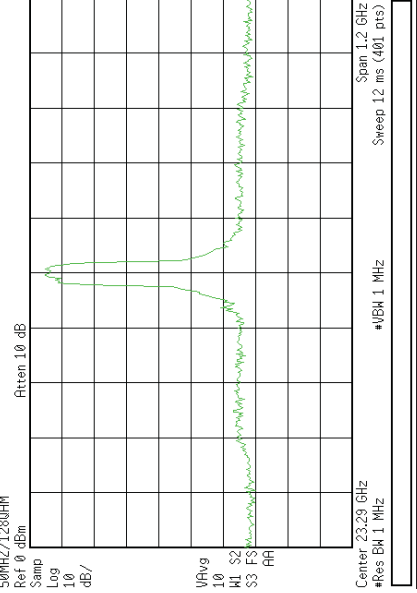
* Agilent 16:50:20 Mar 14, 2011



23 GHz /50 MHz/128 QAM/ACM, Max TX Output: +18 dBm, 1.2 GHz Span

(same as 50 MHz/128 QAM/FCM)

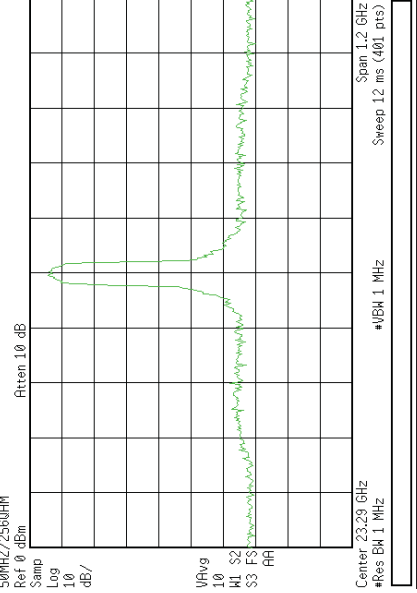
* Agilent 16:39:36 Mar 14, 2011



23 GHz /50 MHz/256 QAM/ACM, Max TX Output: +18 dBm, 1 GHz Span

(same as 50 MHz/256 QAM High Gain/FCM)

* Agilent 16:19:59 Mar 14, 2011



ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	286 / 299
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	285 / 299
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23 GHz /30 MHz/128 QAM/XPIC, Max TX Output: +18 dBm, 1.2 GHz Span

(same as 30 MHz/128 QAM/FCM)

* Agilent 1532:32 Mar 15, 2011

30MHz/128QAM

Ref 0 dBm

Samp

Log

10

dB/

VAv

10

HI

S2

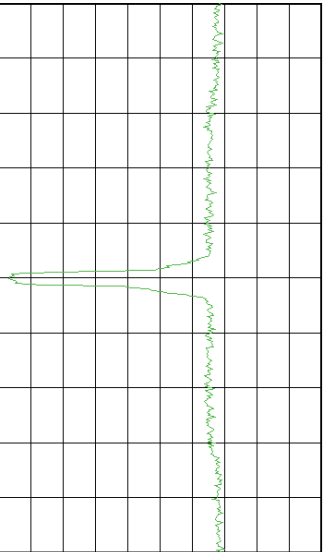
S3

FS

HI

HI

Rtten 10 dB



Center 23.29 GHz

*Res BW 1 MHz

Span 1.2 GHz

Sweep 12 ms (401 pts)

#VBW 1 MHz

23 GHz /30 MHz/256 QAM/XPIC, Max TX Output: +18 dBm, 1 GHz Span

(same as 30 MHz/256 QAM/FCM)

* Agilent 1514:26 Mar 15, 2011

30MHz/256QAM

Ref 0 dBm

Samp

Log

10

dB/

VAv

10

HI

S2

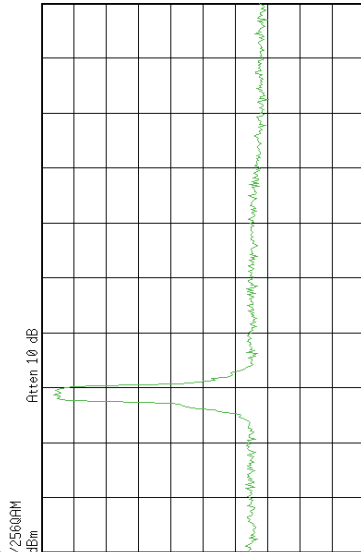
S3

FS

HI

HI

Rtten 10 dB



Start 23 GHz

*Res BW 1 MHz

Stop 24 GHz

Sweep 10 ms (401 pts)

#VBW 1 MHz



23 GHz /40 MHz/128 QAM/XPIC, Max TX Output: +18 dBm, 1.2 GHz Span

(same as 40 MHz/128 QAM/FCM)

* Agilent 1447:38 Mar 15, 2011

40MHz/128QAM

Ref 0 dBm

Samp

Log

10

dB/

VAv

10

HI

S2

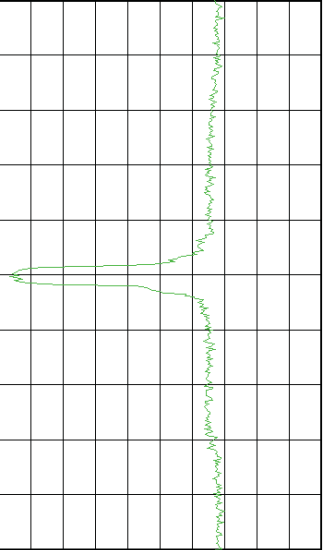
S3

FS

HI

HI

Rtten 10 dB



Center 23.29 GHz

*Res BW 1 MHz

Span 1.2 GHz

Sweep 12 ms (401 pts)

#VBW 1 MHz

23 GHz /40 MHz/256 QAM/XPIC, Max TX Output: +18 dBm, 1.2 GHz Span

(same as 40 MHz/256 QAM High Gain/FCM)

* Agilent 1441:54 Mar 15, 2011

40MHz/256QAM-HIGH

Ref 0 dBm

Samp

Log

10

dB/

VAv

10

HI

S2

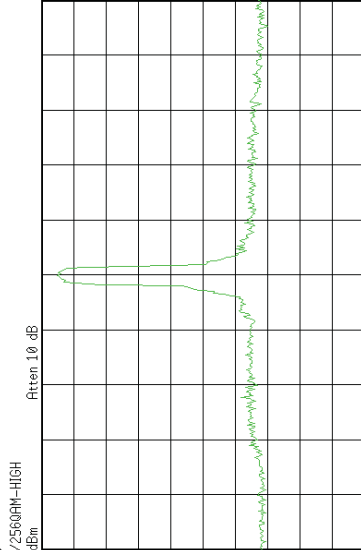
S3

FS

HI

HI

Rtten 10 dB



Center 23.29 GHz

*Res BW 1 MHz

Span 1.2 GHz

Sweep 12 ms (401 pts)

#VBW 1 MHz

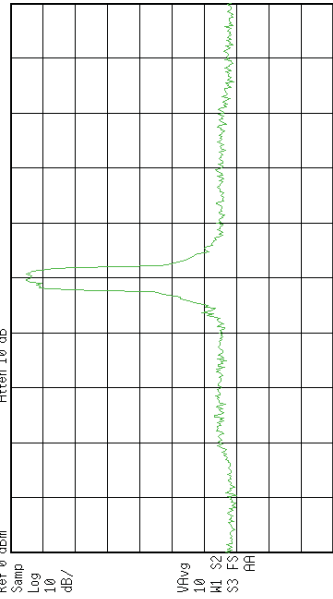
ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	287 / 299
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ED	06	ECCN: 5E991 HTS:4901.99.0050	3DB 200010094 QZZA	288 / 299
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23 GHz /50 MHz/128 QAM/ XPIC, Max TX Output: +18 dBm, 1.2 GHz Span
 (same as 50 MHz/128 QAM/FCM)

* Agilent 16:39:36 Mar 14, 2011

50MHz/128QAM
 Ref 0 dBm
 Samp 10
 Log
 dB/

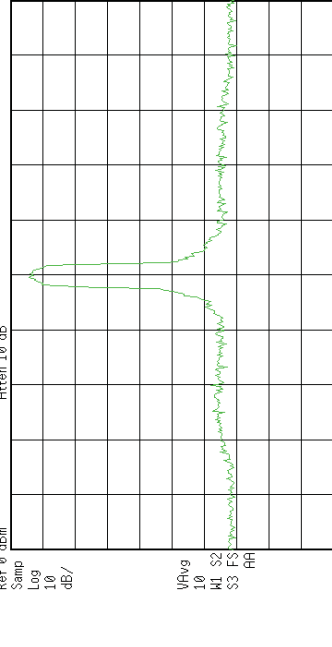


Center 23.29 GHz
 #Res BW 1 MHz
 #VBW 1 MHz
 Span 1.2 GHz
 Sweep 12 ms (401 pts)

23 GHz /50 MHz/256 QAM/ XPIC, Max TX Output: +18 dBm, 1.2 GHz Span
 (same as 50 MHz/256 QAM High Gain/FCM)

* Agilent 16:19:59 Mar 14, 2011

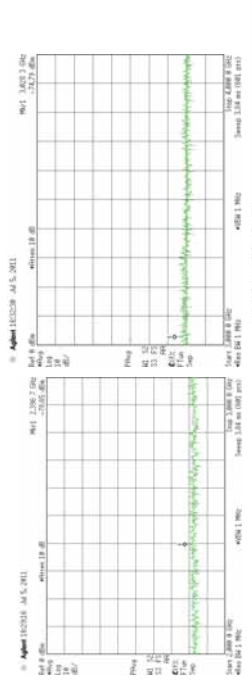
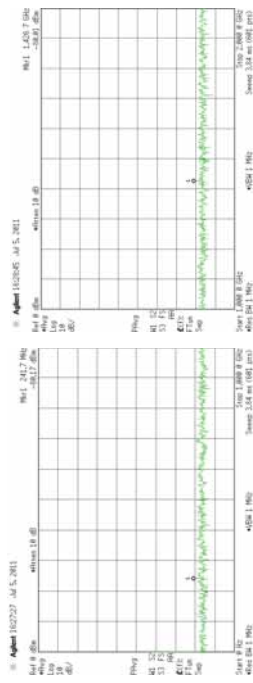
50MHz/256QAM
 Ref 0 dBm
 Samp 10
 Log
 dB/



Center 23.29 GHz
 #Res BW 1 MHz
 #VBW 1 MHz
 Span 1.2 GHz
 Sweep 12 ms (401 pts)

1.2.6.6 38GHz SPURIOUS EMISSIONS

Spurious emissions for the 38GHz ODU are captured in the sequence of plots below. No spurious was measured above the noise floor of the spectrum analyzer. In all cases the spectrum analyzer noise floor was at least 10dB below the -13dBm/MHz FCC requirement

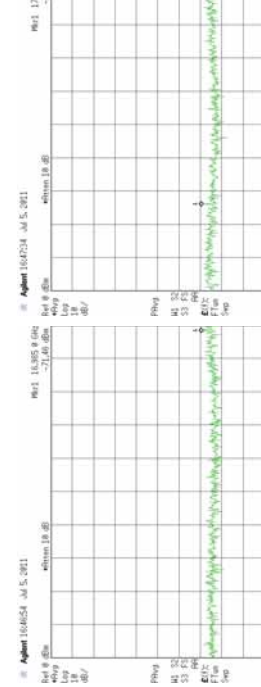
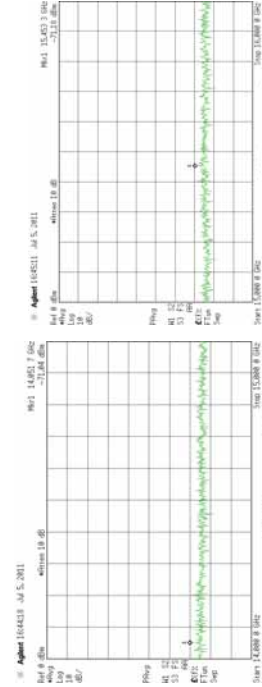
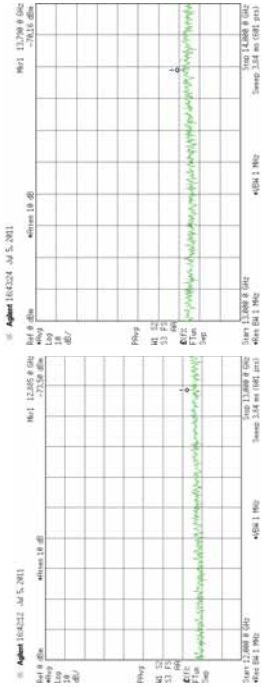


ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	290 / 299
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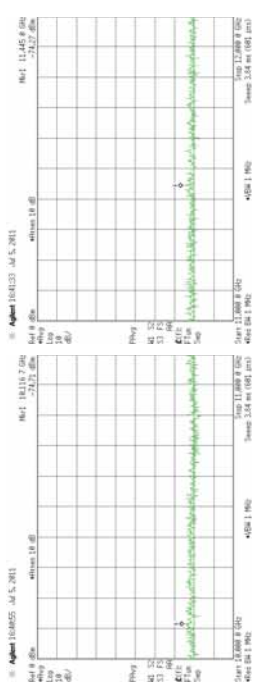
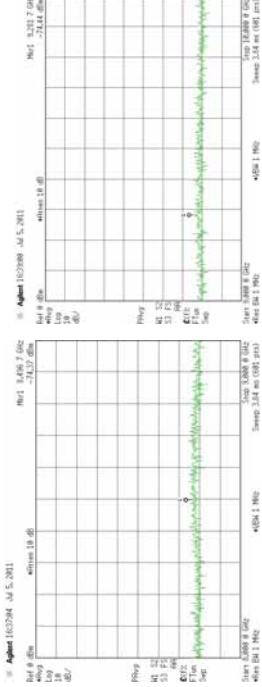
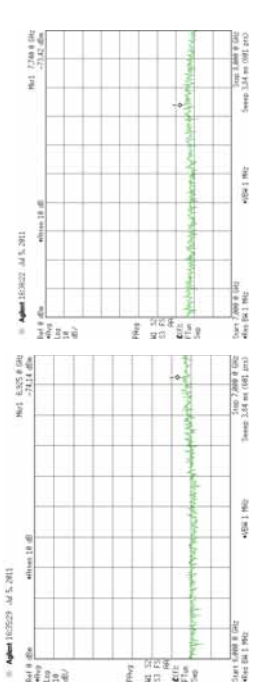
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	289 / 299
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ED	06	ECCN: 5E591 HTS: 4901.98.0050	3DB 200010094 QZZA	292 / 299
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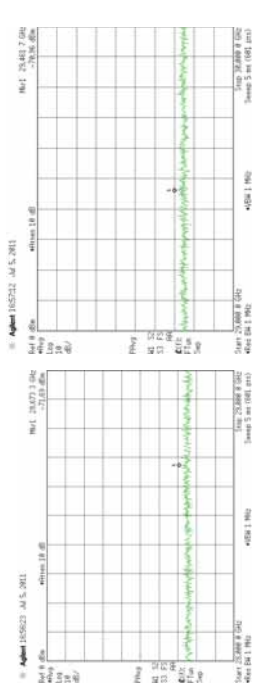
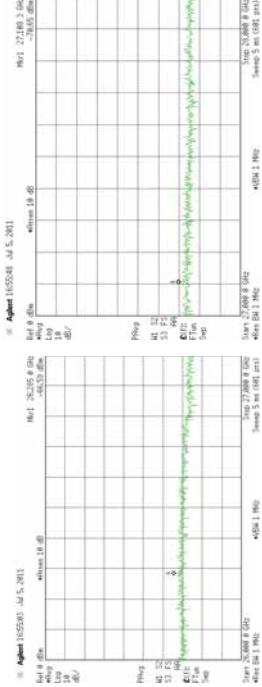
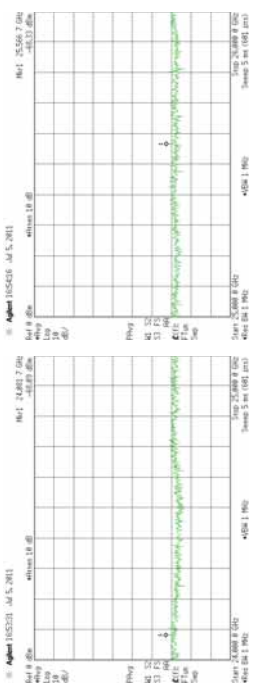
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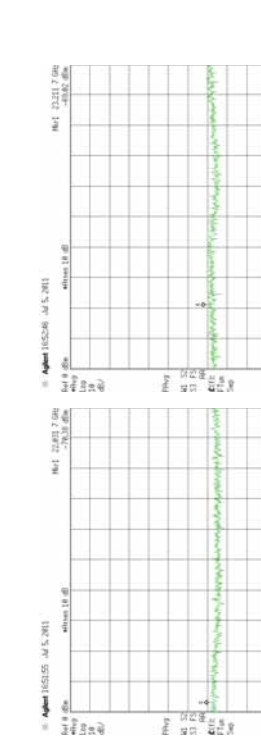
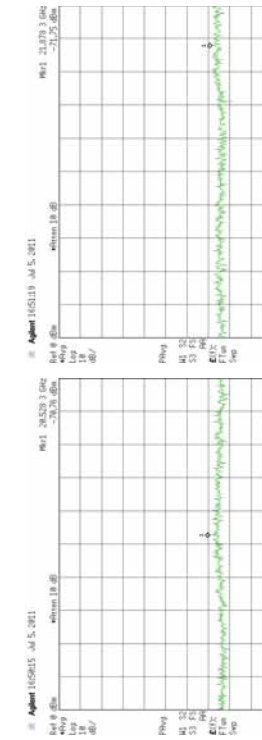
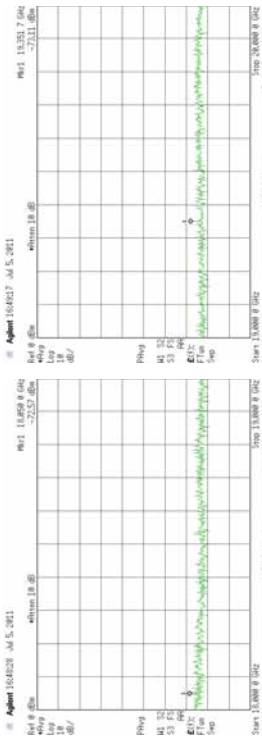
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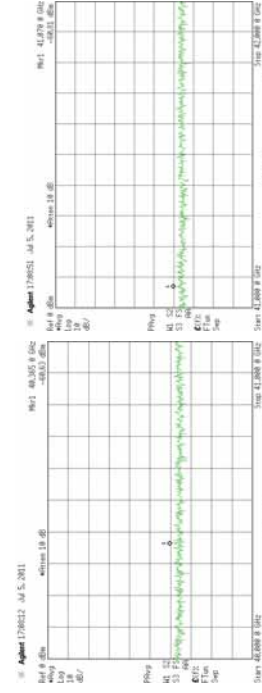
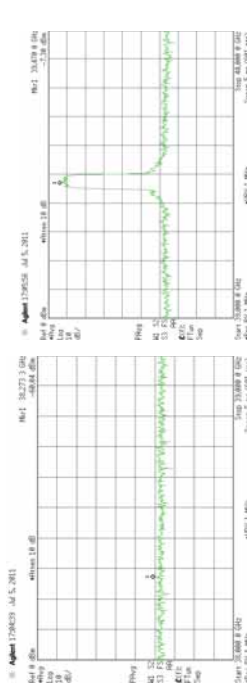
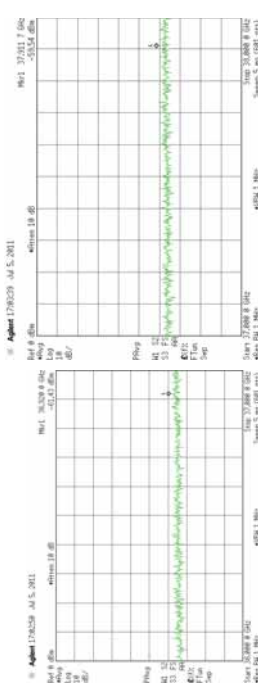
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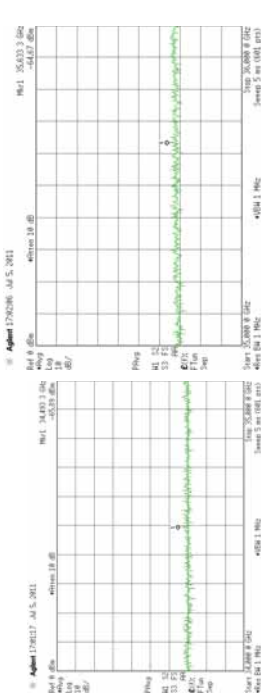
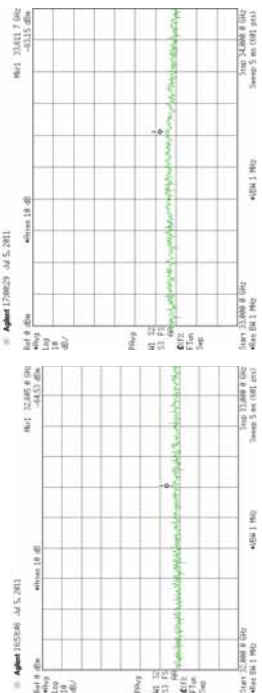
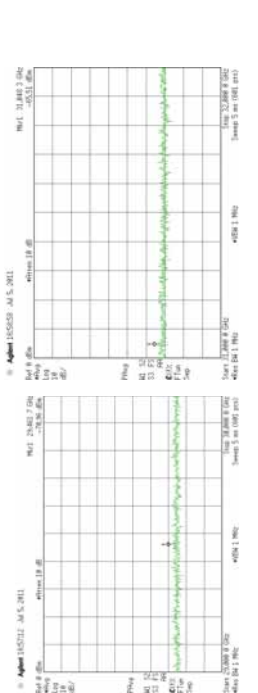
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ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	296 / 299
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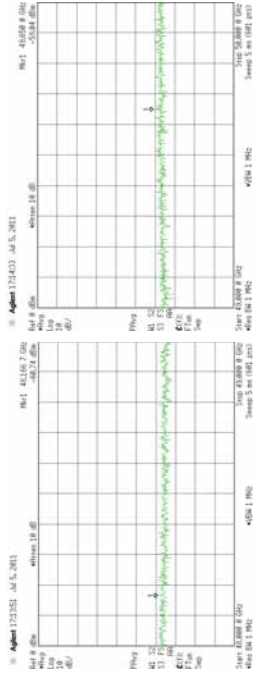
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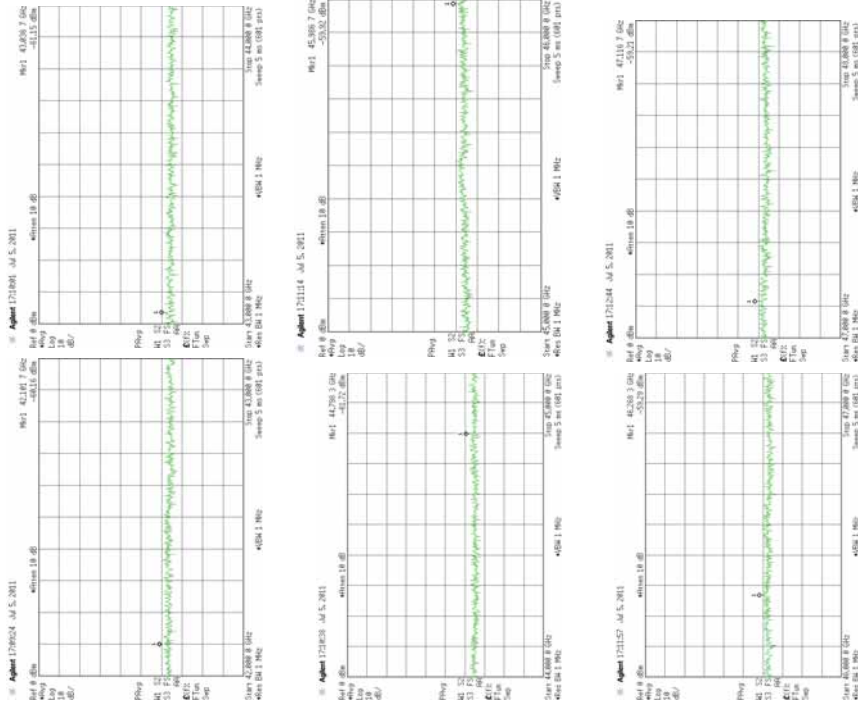
ED	06	ECCN: 5E991 HTS: 4901.99.0050	3DB 200010094 QZZA	295 / 299
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ED	06	ECCN: 5E591 HTS: 4901.99.0050	3DB 200010094 QZZA	298 / 299
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ED	06	ECCN: 5E591 HTS: 4901.99.0050	3DB 200010094 QZZA	297 / 299
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ED	06	ECCN: 5E991 HTS:4901.98.0050	3DB 200010094 QZZA	299 / 299
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