

TEST REPORT

Product : LTE MODULE
Trade mark : GlocalMe
Model/Type reference : GLMM18A02
Serial Number : N/A
Report Number : EED32K00246409
FCC ID : 2AC88-GLMM18A02
Date of Issue : Jan. 25, 2019
Test Standards : 47 CFR Part 2
47 CFR Part 27
Test result : PASS

Prepared for:

HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
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Jan. 25, 2019

Check No.: 3096318232



2 Version

Version No.	Date	Description
00	Jan. 25, 2019	Original

3 Test Summary

LTE Band 13			
Test Item	Test Requirement	Test method	Result
Conducted output power	Part 2.1046(a) /Part 27.50(b)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Effective Radiated Power of Transmitter(ERP)	Part 2.1046(a) / Part 27.50(b)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
99% & 26dB Occupied Bandwidth	Part 2.1049(h)	KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	Part 2.1051/ Part 27.53(c)	KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	Part 2.1051/ Part 27.53(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	Part 2.1053/ Part 27.53(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Frequency stability	Part 2.1055/Part 27.54	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS

Remark:

The tested samples and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

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5 Test Requirement

5.1 Test setup

5.1.1 For Radiated Emissions test setup

Radiated Emissions setup:

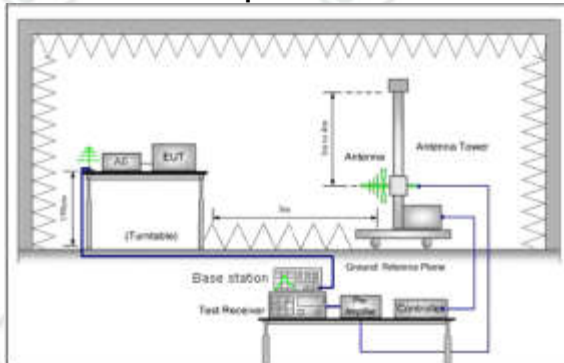


Figure 1.30MHz to 1GHz

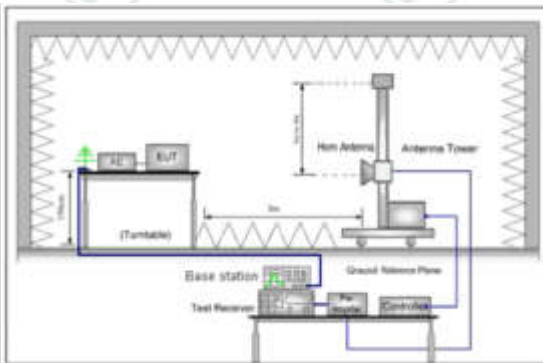


Figure 2. above 1GHz

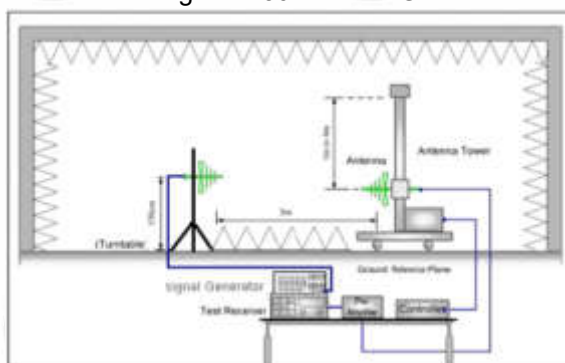


Figure 1. 30MHz to 1GHz

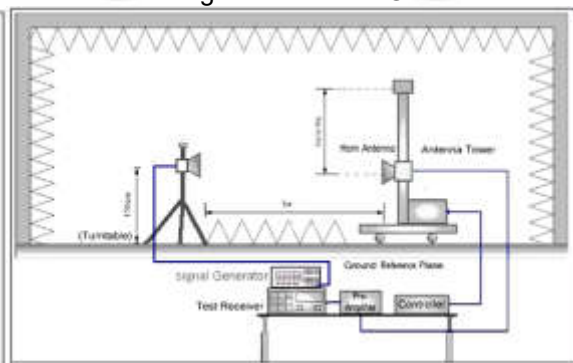


Figure 2. above 1GHz

5.2 Test Environment

Operating Environment:

Temperature:	23°C
Humidity:	57 % RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

LTE

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink(MHz)	Number [DL]	Frequency of Downlink(MHz)
LTEband13 TX:777-787MHz RX:746-756MHz	Low Range	5	23205	779.5	5205	748.5
		10	23230	782	5230	751
	Mid Range	5/10	23230	782	5230	751
		5	23255	784.5	5255	753.5
	High Range	10	23230	782	5230	751

6 General Information

6.1 Client Information

Applicant:	HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address of Applicant:	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, HongKong
Manufacturer:	HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address of Manufacturer:	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, HongKong
Factory:	SHENZHEN CHIHANG TECHNOLOGY CO., LTD
Address of Factory:	1-4/F, Building 5, Detai Industrial Park, Huarong Road, Dalang Street, Longhua, Shenzhen

6.2 General Description of EUT

Product Name:	LTE MODULE
Model No.(EUT):	GLMM18A02
Trade mark:	GlocalMe
EUT Supports Radios application:	4.0 BT Dual mode: 2402MHz to 2480MHz WiFi: IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz GPS: L1:1559MHz to 1610MHz GSM/GPRS/EGPRS 850: Tx: 824-849MHz, Rx: 869-894MHz GSM/GPRS/EGPRS 1900: Tx: 1850-1910MHz, Rx: 1930-1990MHz WCDMA Band 2: Tx: 1850-1910MHz, Rx: 1930-1990MHz WCDMA Band 4: Tx: 1850-1910MHz, Rx: 2110-2155MHz WCDMA Band 5: Tx: 824- 849MHz, Rx: 869 -894MHz LTE Band 2: Tx: 1850-1910MHz, Rx: 1930-1990MHz LTE Band 4: Tx: 1710-1755 MHz, Rx: 2110-2155 MHz LTE Band 5: Tx: 824-849 MHz, Rx: 869-894MHz LTE Band 7: TX:2500-2570 MHz, Rx: 2620-2690 MHz LTE Band 12: Tx: 699-716 MHz, Rx: 729-746 MHz LTE Band 13: Tx: 777-787 MHz, Rx: 746-756 MHz LTE Band 17: Tx: 704-716 MHz, Rx: 734-746 MHz LTE Band 26: Tx: 814-849 MHz, Rx: 859-894 MHz LTE Band 38: Tx: 2570- 2620MHz, Rx: 2570-2620MHz LTE Band 40: Tx:2305-2315 MHz, Rx:2305-2315MHz Tx:2350-2360 MHz, Rx:2350-2360MHz LTE Band 41: Tx: 2535-2655 MHz, Rx: 2535 -2655 MHz
Power Supply:	DC 3.3V
Firmware version:	GLMM18A01_TSV1.0.000.005.180821_userdebug (manufacturer declare)
Hardware version:	M2_VB (manufacturer declare)
Sample Received Date:	Sep. 10, 2018
Sample tested Date:	Sep. 11, 2018 to Dec. 12, 2018

6.3 Product Specification subjective to this standard

Frequency Band:	LTE Band 13: Tx: 777 MHz – 787 MHz, Rx: 746 MHz – 756 MHz
Modulation Type:	QPSK, 16QAM
Antenna Type:	External Antenna
Antenna Gain:	-0.5dBi
Test Voltage:	DC 3.3V

6.4 Description of Support Units

The EUT has been tested independently.

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

6.6 Deviation from Standards

None.

6.7 Abnormalities from Standard Conditions

None.

6.8 Other Information Requested by the Customer

None.

6.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.3dB (30MHz-1GHz)
		4.5dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

7 Equipment List

Communication RF test system					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Spectrum Analyzer	Agilent	E4440A	MY4618564 9	11-13-2017	11-14-2018
Spectrum Analyzer	Agilent	E4440A	MY4618564 9	11-14-2018	11-13-2019
Signal Generator	Agilent	E4438C	MY4509574 4	03-13-2018	03-12-2019
Communication test set	Agilent	E5515C	GB4705053 4	03-16-2018	03-15-2019
Signal Generator	Keysight	E8257D	MY5340110 6	03-13-2018	03-12-2019
Communication test set	R&S	CMW500	152394	03-16-2018	03-15-2019
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-10-2018	01-09-2019
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA09 CL12-0395-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA08 CL12-0393-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA04 CL12-0396-002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA03 CL12-0394-001	---	01-10-2018	01-09-2019
DC Power	Keysight	E3642A	MY5442611 2	03-13-2018	03-12-2019
DC Power	Keysight	E3642A	MY5442611 5	03-13-2018	03-12-2019
PC-2	Lenovo	R4960d	---	01-10-2018	01-09-2019
PC-3	Lenovo	R4960d	---	01-10-2018	01-09-2019
RF control unit	JS Tonscend	JS0806-1	158060004	03-13-2018	03-12-2019
DC power Box	JS Tonscend	JS0806-4	158060007	03-13-2018	03-12-2019
LTE Automatic test software	JS Tonscend	JS1120-1	---	03-30-2018	03-29-2019
WCDMA Automatic test software	JS Tonscend	JS1120-3	---	03-30-2018	03-29-2019
GSM Automatic test software	JS Tonscend	JS1120-3	---	03-30-2018	03-29-2019
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	10-11-2017	10-12-2018
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	10-12-2018	10-11-2019

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-04-2016	06-03-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	10-27-2017	10-28-2018
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	10-28-2018	10-27-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	07-30-2018	07-29-2019
Microwave Preamplifier	Agilent	8449B	3008A02425	08-21-2018	08-20-2019
Microwave Preamplifier	Tonscend	EMC051845 SE	980380	01-19-2018	01-18-2019
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04-25-2018	04-23-2021
Horn Antenna	ETS-LINDGREN	3117	00057410	06-05-2018	06-03-2021
Double ridge horn antenna	A.H.SYSTEMS	SAS-574	6042	06-05-2018	06-04-2021
Pre-amplifier	A.H.SYSTEMS	PAP-1840-60	6041	06-05-2018	06-04-2021
Loop Antenna	ETS	6502	00071730	06-22-2017	06-21-2019
Spectrum Analyzer	R&S	FSP40	100416	05-11-2018	05-10-2019
Receiver	R&S	ESCI	100435	05-25-2018	05-24-2019
Receiver	R&S	ESCI7	100938-003	11-22-2017	11-23-2018
Receiver	R&S	ESCI7	100938-003	11-23-2018	11-22-2019
Multi device Controller	maturo	NCD/070/107 11112	---	01-10-2018	01-09-2019
LISN	schwarzbeck	NNBM8125	81251547	05-11-2018	05-10-2019
LISN	schwarzbeck	NNBM8125	81251548	05-11-2018	05-10-2019
Signal Generator	Agilent	E4438C	MY4509574 4	03-13-2018	03-12-2019
Signal Generator	Keysight	E8257D	MY5340110 6	03-13-2018	03-12-2019
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	10-11-2017	10-12-2018
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	10-12-2018	10-11-2019
Communication test set	Agilent	E5515C	GB4705053 4	03-16-2018	03-15-2019
Cable line	Fulai(7M)	SF106	5219/6A	01-10-2018	01-09-2019
Cable line	Fulai(6M)	SF106	5220/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5216/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5217/6A	01-10-2018	01-09-2019
Communication test set	R&S	CMW500	104466	02-05-2018	02-04-2019
High-pass filter	Sinoscite	FL3CX03WG 18NM12-0398-002	---	01-10-2018	01-09-2019
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA0 9CL12-0395-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA0 8CL12-0393-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA0 4CL12-0396-002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA0 3CL12-0394-001	---	01-10-2018	01-09-2019

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	PART 22	PART 22 – PUBLIC MOBILE SERVICES Subpart H – Cellular Radiotelephone Service
2	PART 24	PART 24 – PERSONAL COMMUNICATIONS SERVICES Subpart E – Broadband PCS
3	PART 27	PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES Subpart C – Technical Standards
3	PART 2	Frequency allocations and radio treaty matters; general rules and regulations
4	TIA-603-E-2016	Land Mobile FM or PM -Communications Equipment -Measurement and Performance Standards
5	KDB971168 D01	KDB971168 D01 Power Meas License Digital Systems v03r01

Test Results List:

Test Requirement	Test method	Test item	Verdict	Note
Part 2.1046(a) /Part 27.50(b)	TIA-603-E-2016& KDB 971168 D01v03r01	Conducted output power	PASS	Appendix A)
Part 2.1046(a) / Part 27.50(b)	TIA-603-E-2016& KDB 971168 D01v03r01	Effective Radiated Power of Transmitter(ERP)	PASS	Appendix A)
Part 2.1049(h)	Part 22.917(b) &KDB 971168 D01v03r01	99% &26dBOccupied Bandwidth	PASS	Appendix B)
Part 2.1051/ Part 27.53(c)	Part 22.917(b) &KDB 971168 D01v03r01	Band Edge at antenna terminals	PASS	Appendix C)
Part 2.1051/ Part 27.53(c)	TIA-603-E-2016& KDB 971168 D01v03r01	Spurious emissions at antenna terminals	PASS	Appendix D)
Part 2.1055/Part 27.54	TIA-603-E-2016& KDB 971168 D01v03r01	Frequency stability	PASS	Appendix E)
Part 2.1053/ Part 27.53(c)	TIA-603-E-2016& KDB 971168 D01v03r01	Field strength of spurious radiation	PASS	Appendix F)

Appendix A): Conducted Output Power and Effective (Isotropic) Radiated Power

Description of the Conducted Output Power Measurement and ERP/EIRP Measurement:	<p>A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.</p> <p>According to KDB 412172 D01 Power Approach $EIRP = P_T + G_T - L_c$, $ERP = EIRP - 2.15$, where P_T = transmitter output power in dBm G_T = gain of the transmitting antenna in dBi L_c = signal attenuation in the connecting cable between the transmitter and antenna in dB</p>				
Measurement Procedure:	<ol style="list-style-type: none"> 1. The transmitter output port was connected to the system simulator. 2. Set EUT at maximum power through the system simulator. 3. Select lowest, middle, and highest channels for each band and different modulation. 4. Measure and record the power level from the system simulator. 				
Limit:	<table border="1"> <tr> <td>Mode</td><td>LTE band 13</td></tr> <tr> <td>Limit</td><td>34.77dBm</td></tr> </table>	Mode	LTE band 13	Limit	34.77dBm
Mode	LTE band 13				
Limit	34.77dBm				

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 $G_T - L_C = -0.5\text{dB}$

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Average Power [dBm]	ERP [dBm]	Verdict
		Size	Offset			
QPSK	LCH	1	0	23.18	20.53	PASS
		1	12	23.22	20.57	PASS
		1	24	23.08	20.43	PASS
		12	0	22.20	19.55	PASS
		12	6	22.16	19.51	PASS
		12	13	22.16	19.51	PASS
		25	0	22.16	19.51	PASS
	MCH	1	0	23.09	20.44	PASS
		1	12	23.06	20.41	PASS
		1	24	22.97	20.32	PASS
		12	0	22.09	19.44	PASS
		12	6	22.09	19.44	PASS
		12	13	22.00	19.35	PASS
		25	0	22.09	19.44	PASS
	HCH	1	0	22.99	20.34	PASS
		1	12	23.03	20.38	PASS
		1	24	23.06	20.41	PASS
		12	0	22.16	19.51	PASS
		12	6	22.16	19.51	PASS
		12	13	22.10	19.45	PASS
		25	0	22.16	19.51	PASS
16QAM	LCH	1	0	21.75	19.10	PASS
		1	12	21.81	19.16	PASS
		1	24	21.67	19.02	PASS
		12	0	22.25	19.60	PASS
		12	6	22.16	19.51	PASS
		12	13	22.25	19.60	PASS
		25	0	21.30	18.65	PASS
	MCH	1	0	21.50	18.85	PASS
		1	12	21.48	18.83	PASS
		1	24	21.36	18.71	PASS
		12	0	22.10	19.45	PASS
		12	6	22.11	19.46	PASS

	HCH	12	13	22.08	19.43	PASS
		25	0	21.23	18.58	PASS
		1	0	21.39	18.74	PASS
		1	12	21.41	18.76	PASS
		1	24	21.43	18.78	PASS
		12	0	22.15	19.50	PASS
		12	6	22.08	19.43	PASS
		12	13	22.26	19.61	PASS
		25	0	21.26	18.61	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Average Power [dBm]	ERP [dBm]	Verdict
		Size	Offset			
QPSK	LCH	1	0	23.13	20.48	PASS
		1	24	22.99	20.34	PASS
		1	49	22.91	20.26	PASS
		25	0	22.11	19.46	PASS
		25	12	22.11	19.46	PASS
		25	25	22.19	19.54	PASS
		50	0	22.19	19.54	PASS
	MCH	1	0	23.13	20.48	PASS
		1	24	23.02	20.37	PASS
		1	49	22.95	20.30	PASS
		25	0	22.10	19.45	PASS
		25	12	22.15	19.50	PASS
		25	25	22.02	19.37	PASS
		50	0	22.23	19.58	PASS
	HCH	1	0	23.13	20.48	PASS
		1	24	23.00	20.35	PASS
		1	49	22.99	20.34	PASS
		25	0	22.10	19.45	PASS
		25	12	22.12	19.47	PASS
		25	25	22.05	19.40	PASS
		50	0	22.20	19.55	PASS
16QAM	LCH	1	0	22.13	19.48	PASS
		1	24	22.11	19.46	PASS
		1	49	22.00	19.35	PASS

		25	0	22.18	19.53	PASS
		25	12	22.19	19.54	PASS
		25	25	21.99	19.34	PASS
		50	0	21.15	18.50	PASS
	MCH	1	0	22.18	19.53	PASS
		1	24	22.11	19.46	PASS
		1	49	22.02	19.37	PASS
		25	0	22.12	19.47	PASS
		25	12	22.10	19.45	PASS
		25	25	22.17	19.52	PASS
		50	0	21.20	18.55	PASS
		1	0	22.17	19.52	PASS
	HCH	1	24	22.12	19.47	PASS
		1	49	22.01	19.36	PASS
		25	0	22.11	19.46	PASS
		25	12	22.12	19.47	PASS
		25	25	22.03	19.38	PASS
		50	0	21.15	18.50	PASS

Appendix B): 26dB Bandwidth and Occupied Bandwidth

Test Result

Channel Bandwidth: 5 MHz

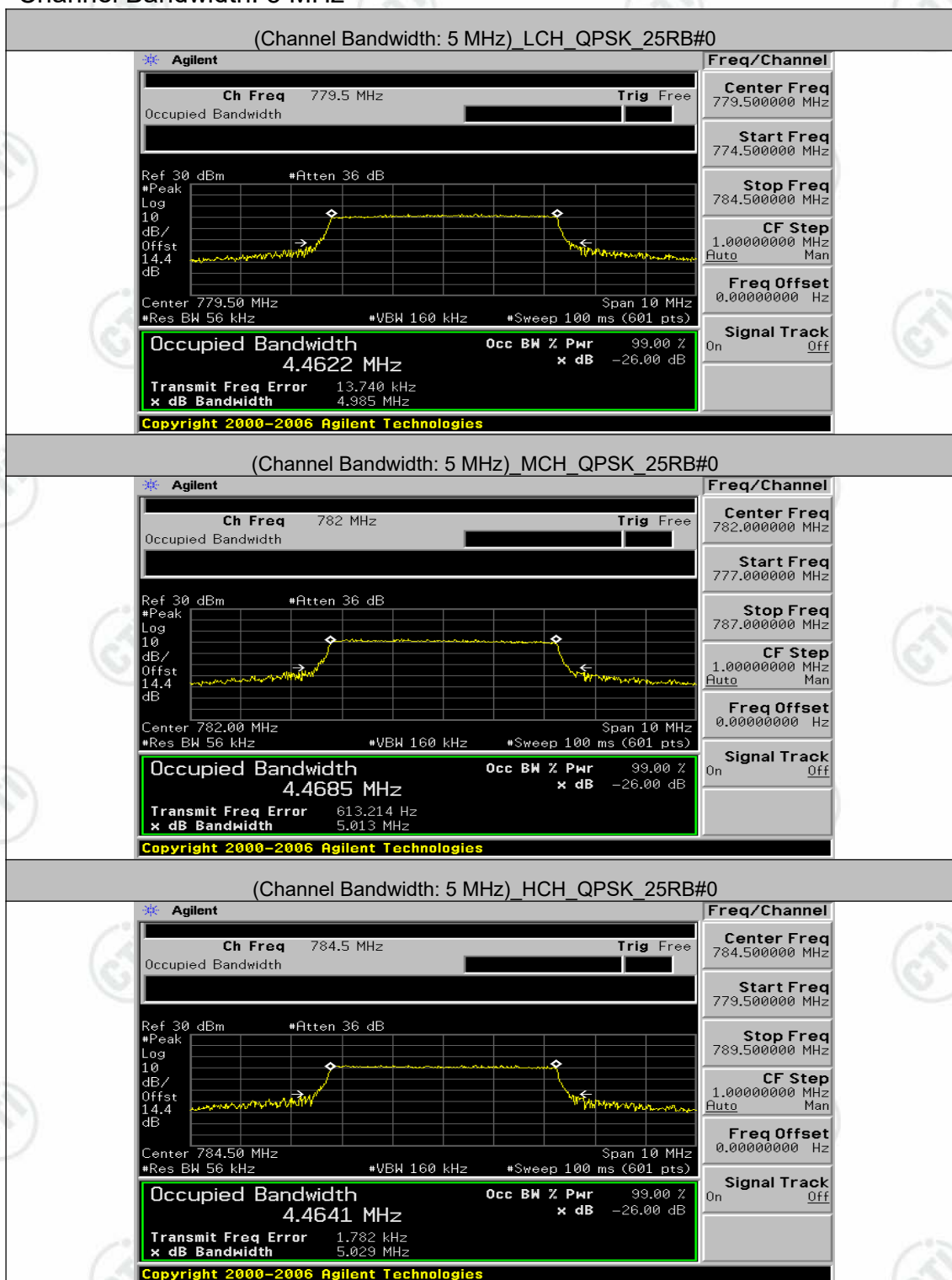
Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	25	0	4.4622	4.985	PASS
	MCH	25	0	4.4685	5.013	PASS
	HCH	25	0	4.4641	5.029	PASS
16QAM	LCH	25	0	4.4527	4.877	PASS
	MCH	25	0	4.4640	4.972	PASS
	HCH	25	0	4.4694	5.011	PASS

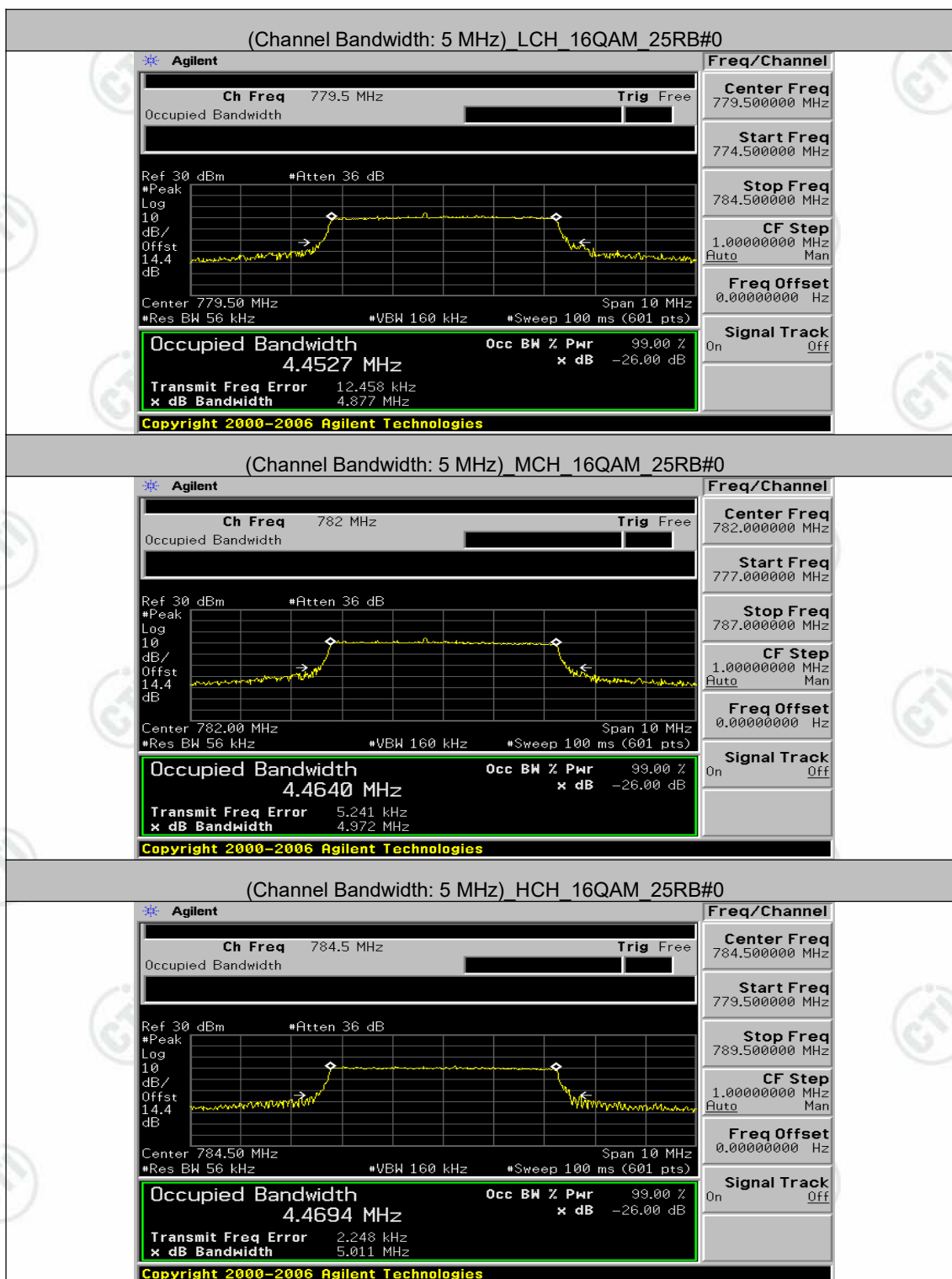
Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
		Size	Offset			
QPSK	LCH	50	0	8.9239	9.711	PASS
	MCH	50	0	8.9286	9.663	PASS
	HCH	50	0	8.9265	9.700	PASS
16QAM	LCH	50	0	8.9296	9.802	PASS
	MCH	50	0	8.9155	9.732	PASS
	HCH	50	0	8.9302	9.766	PASS

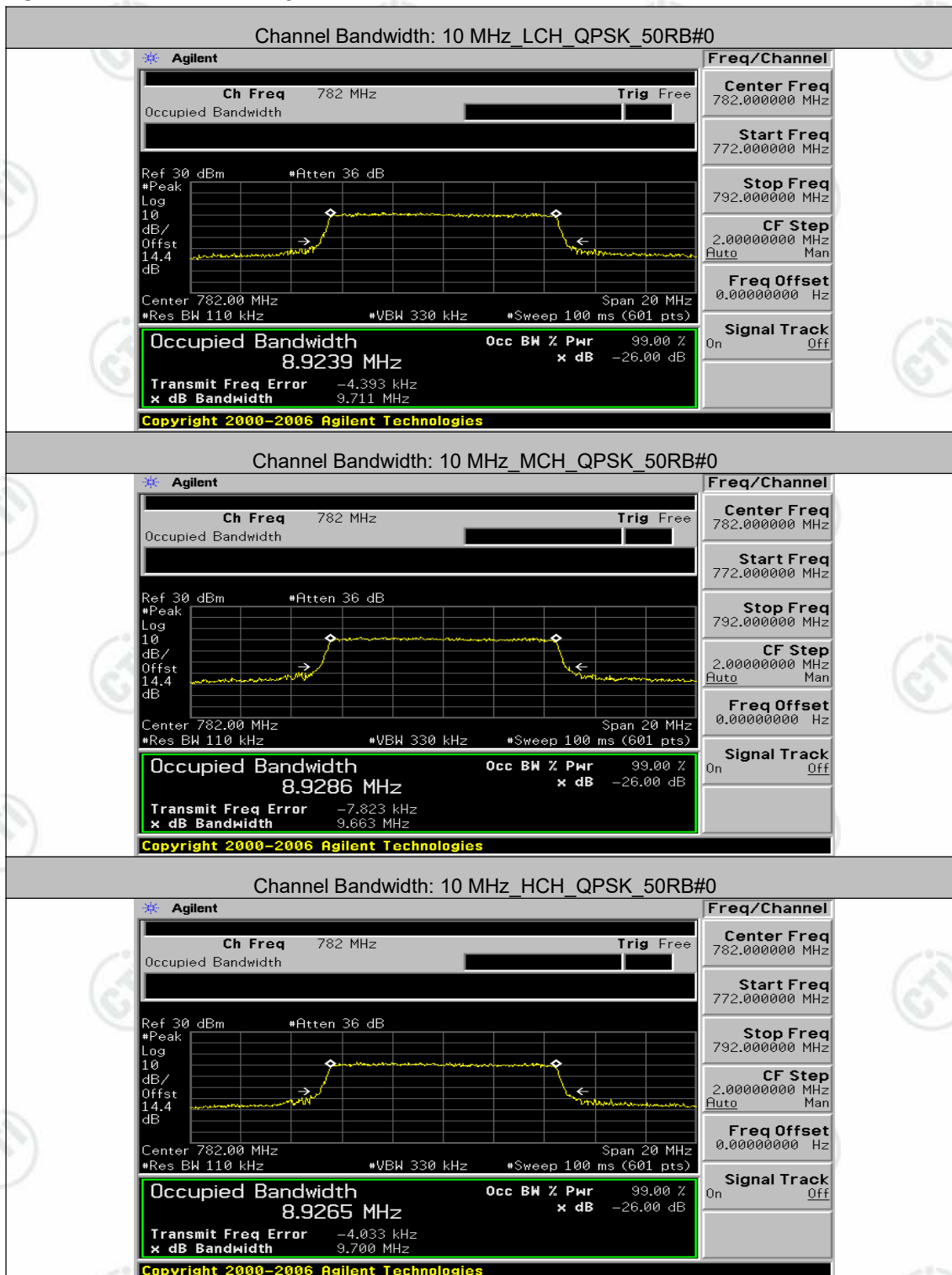
Test Graphs

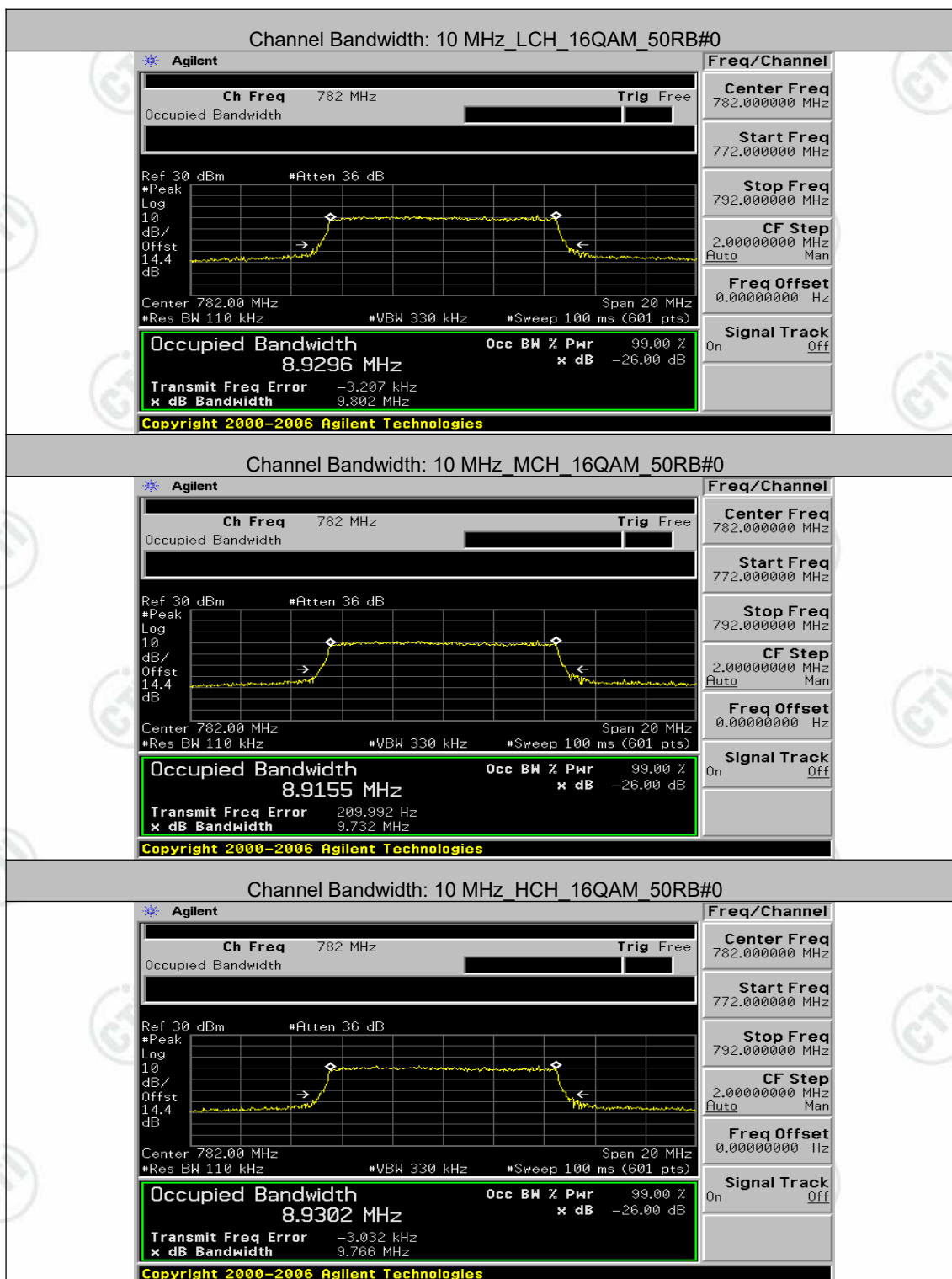
Channel Bandwidth: 5 MHz





Channel Bandwidth: 10 MHz

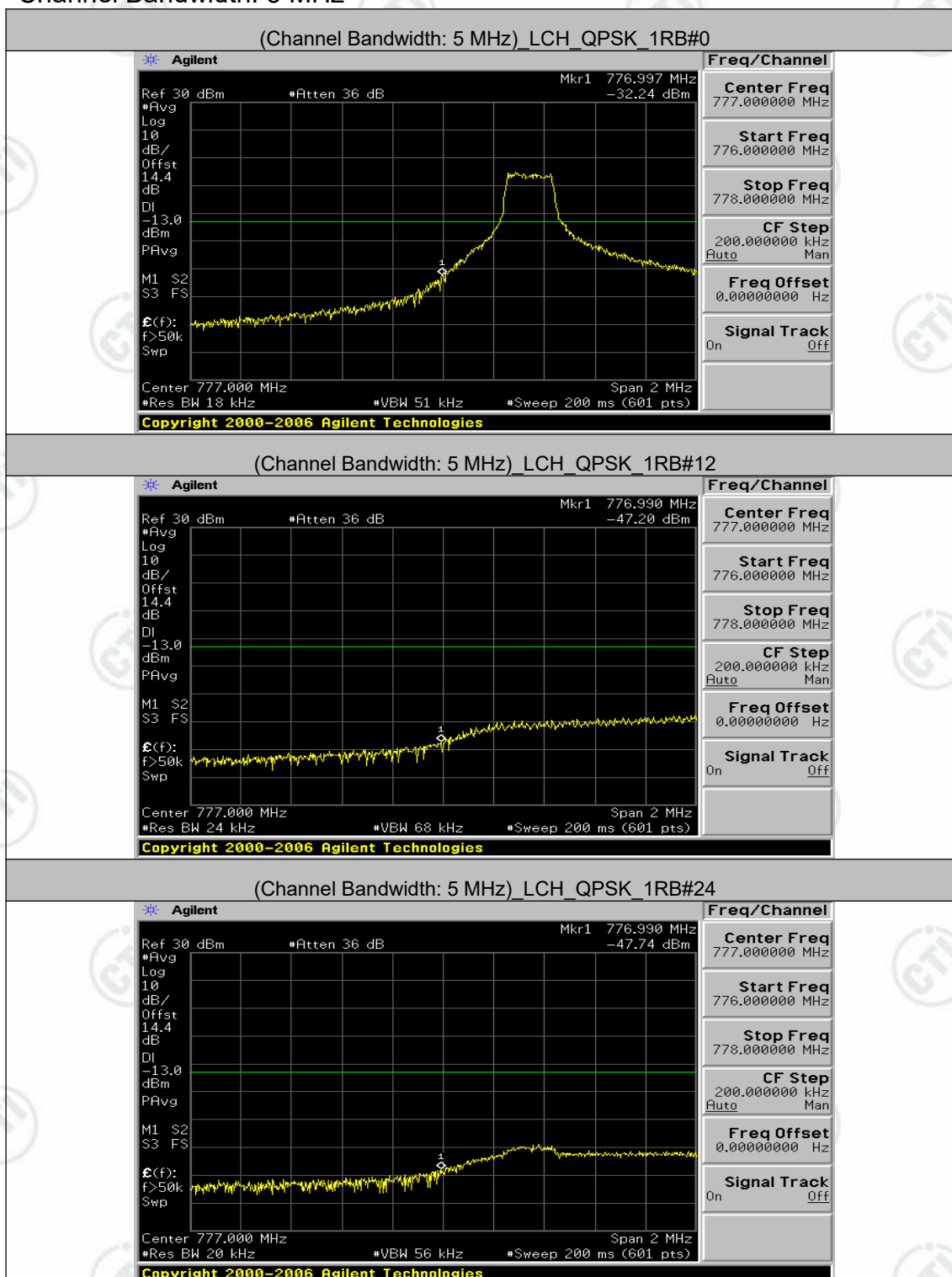


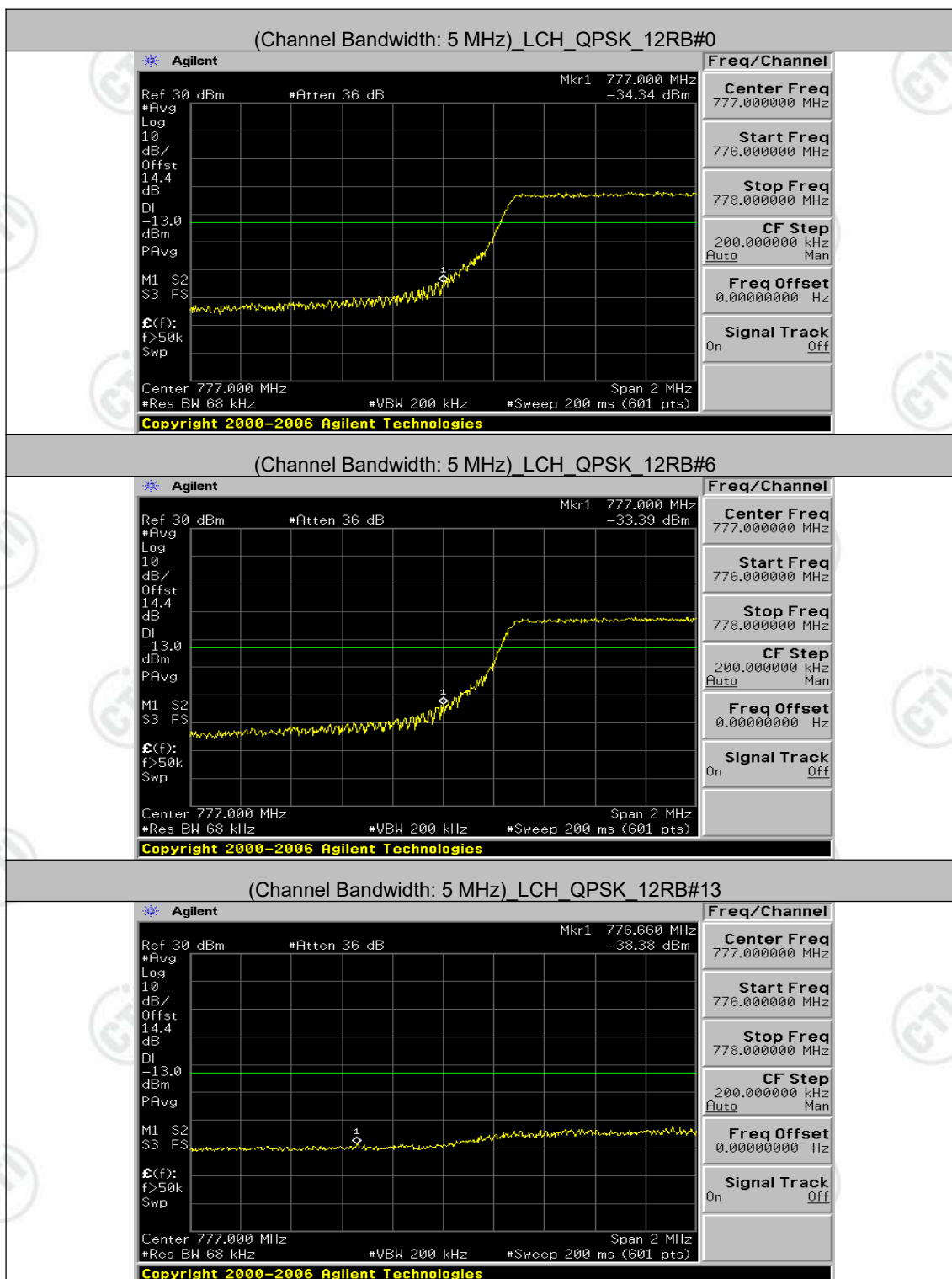


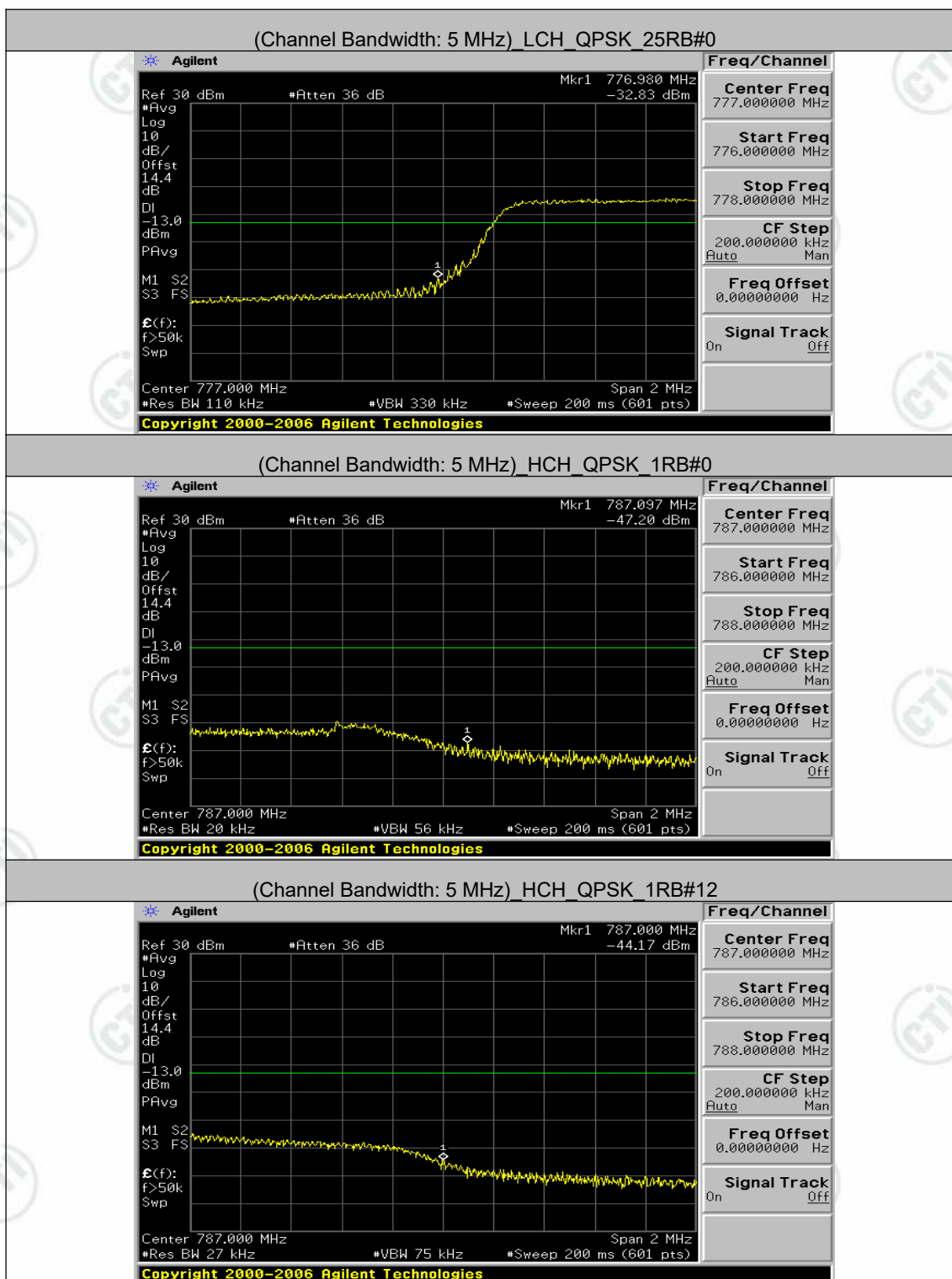
Appendix C): Band Edge

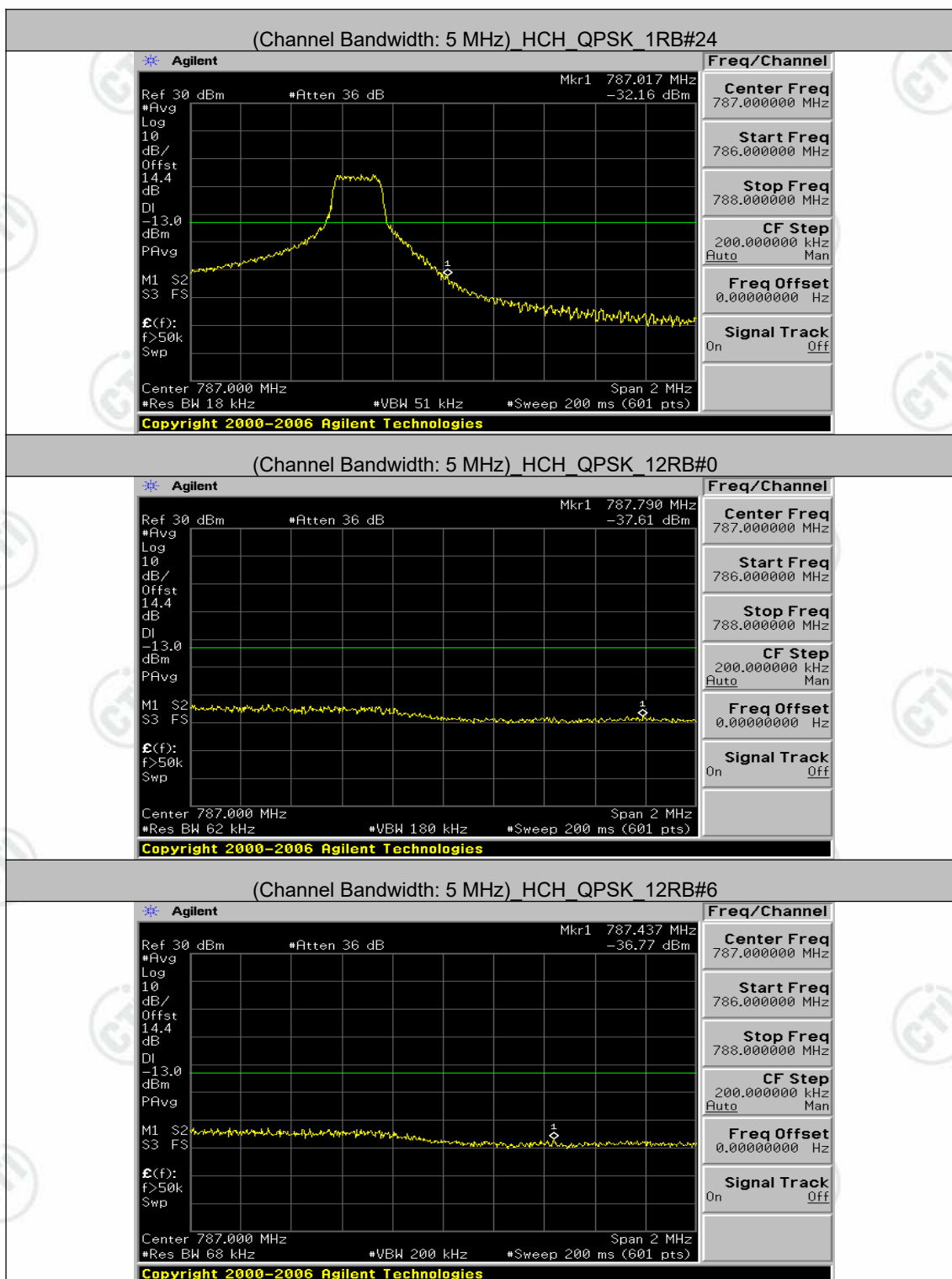
Test Graphs

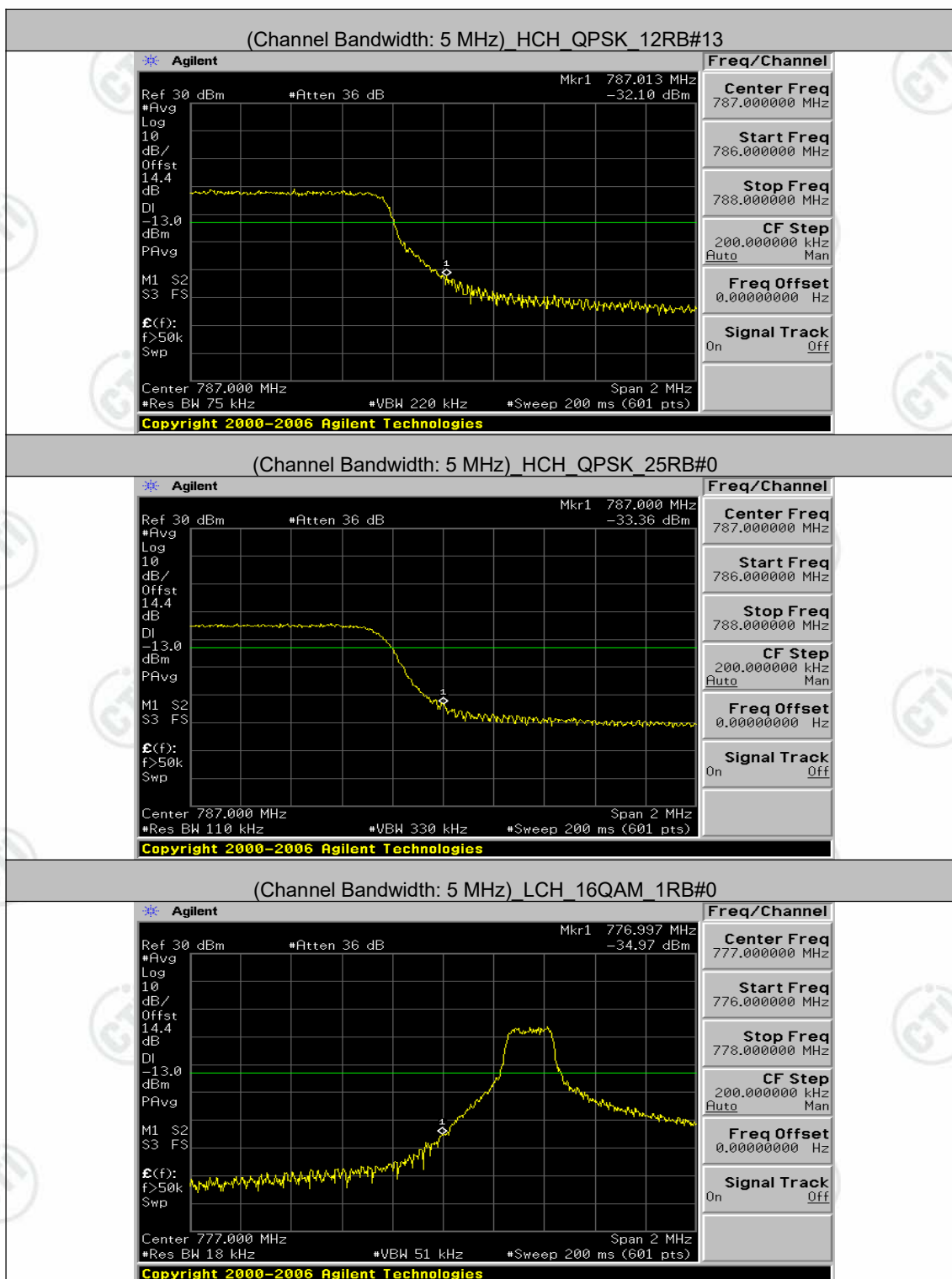
Channel Bandwidth: 5 MHz

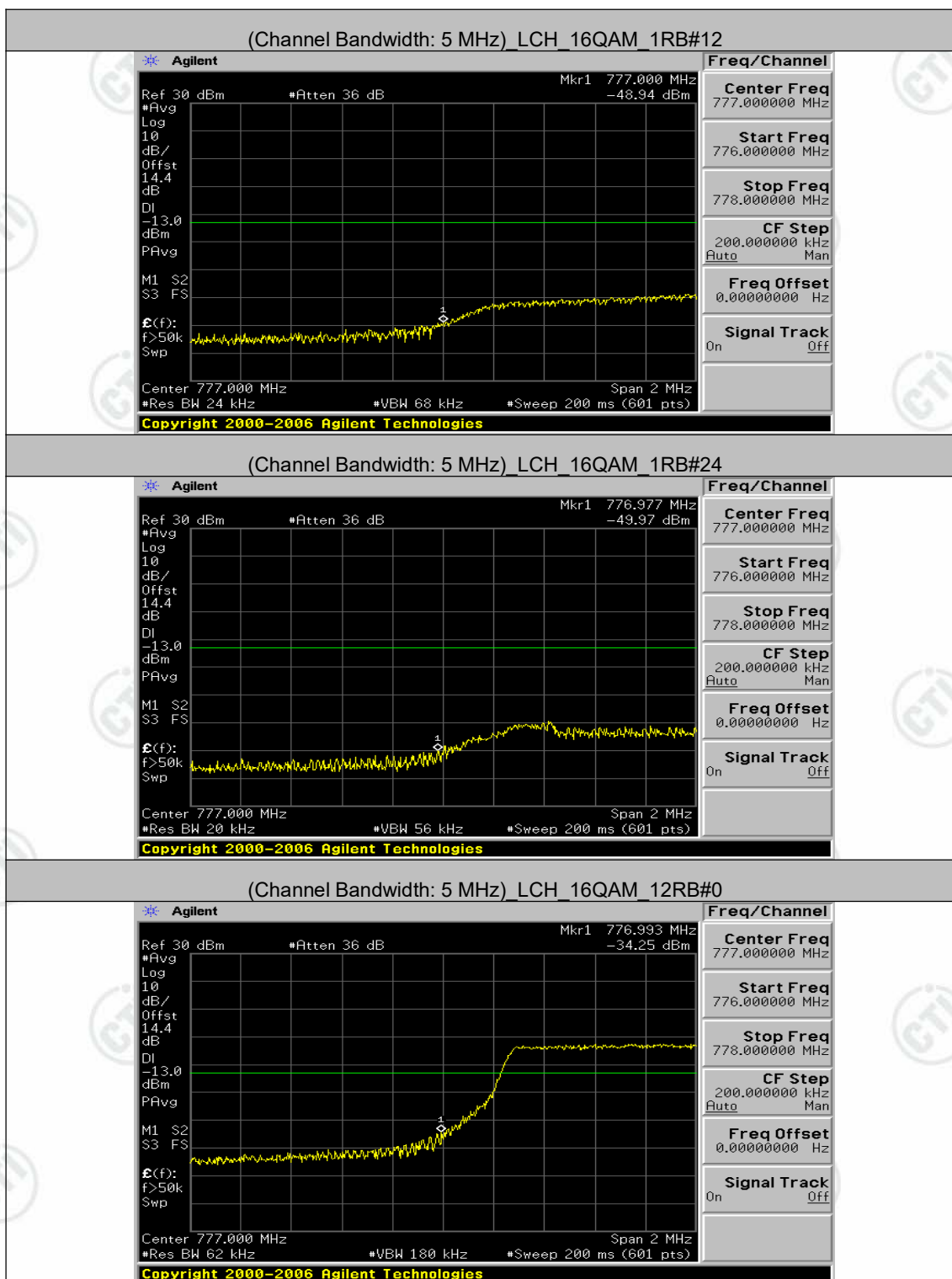


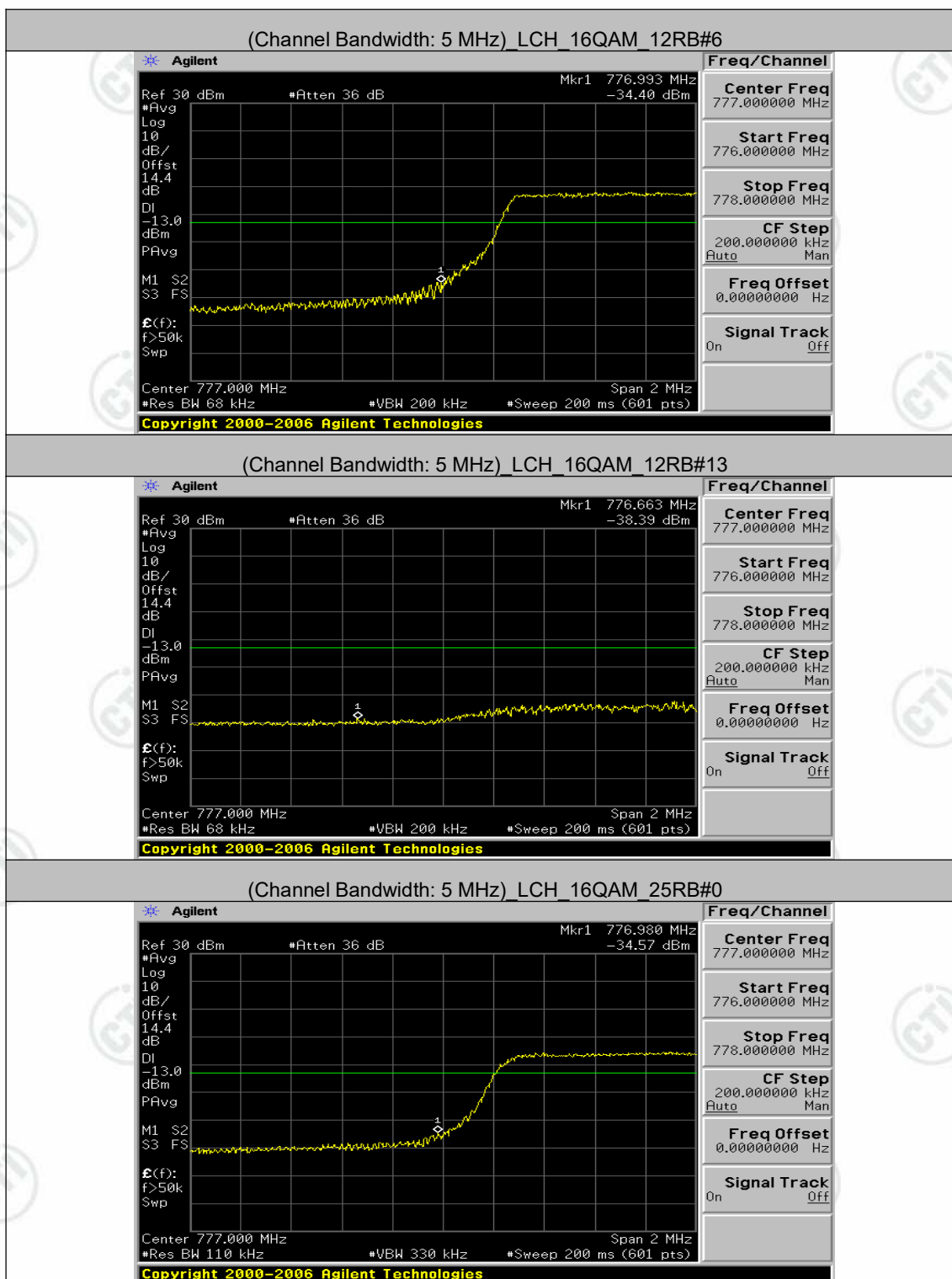


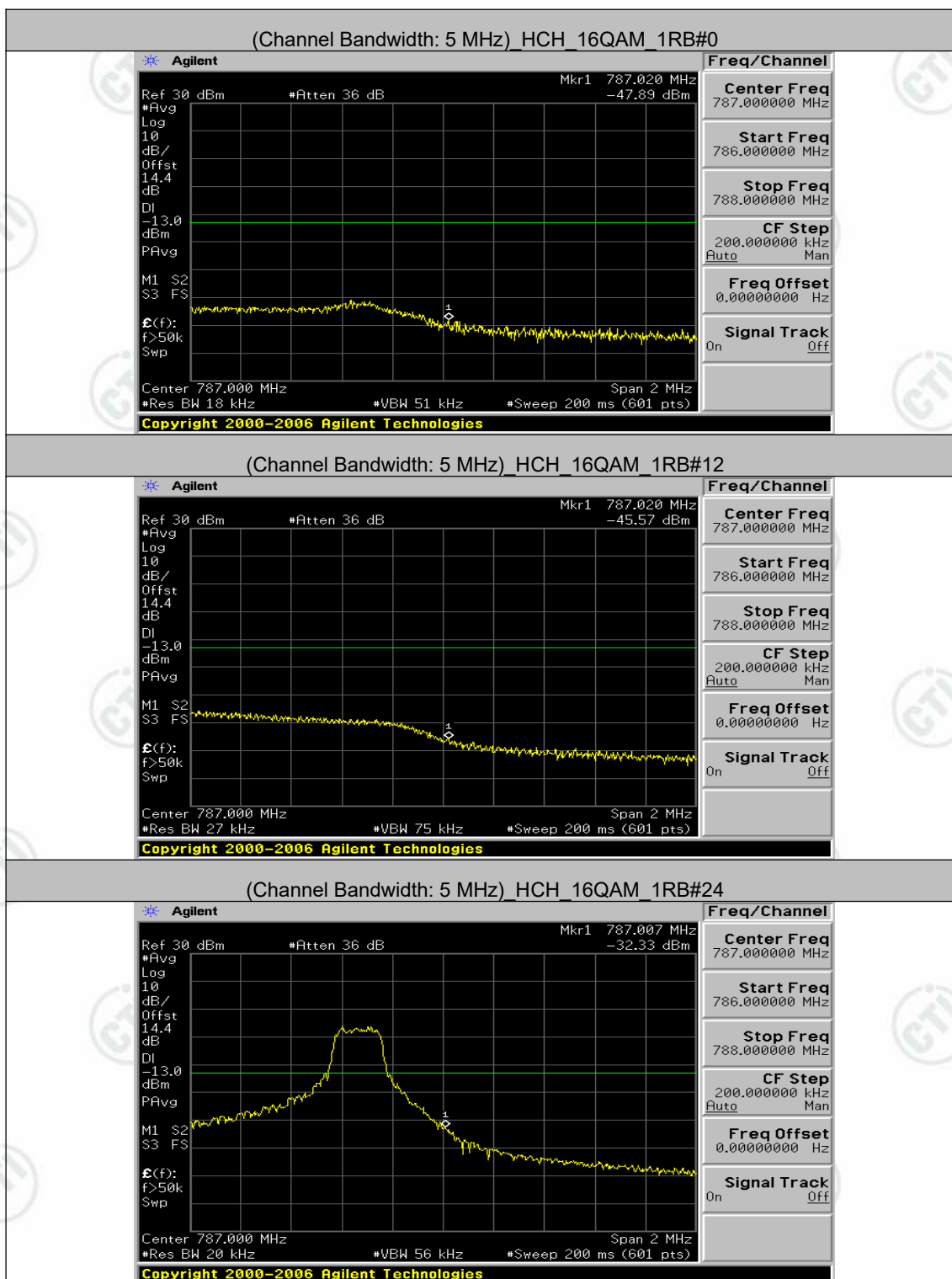


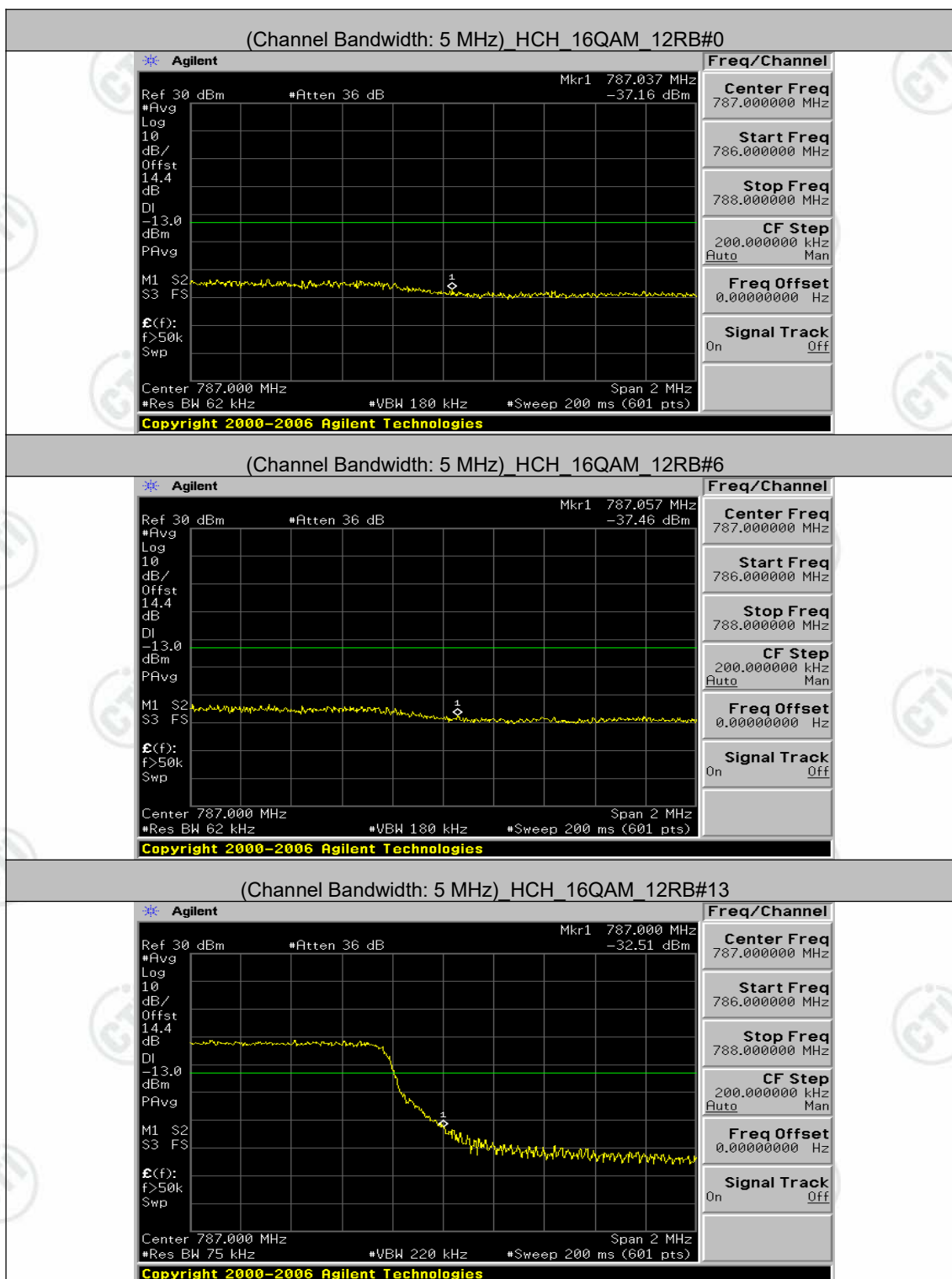


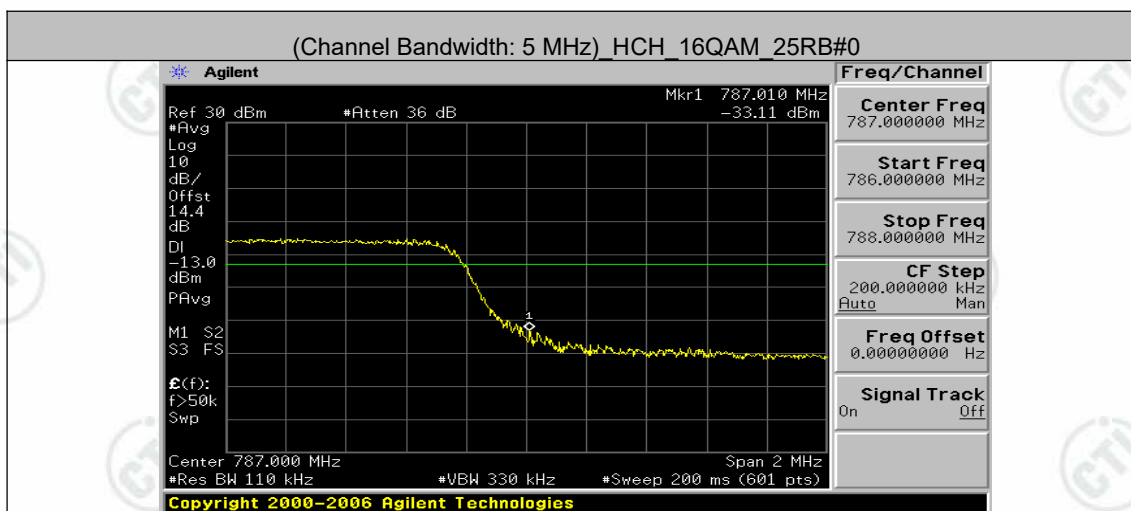




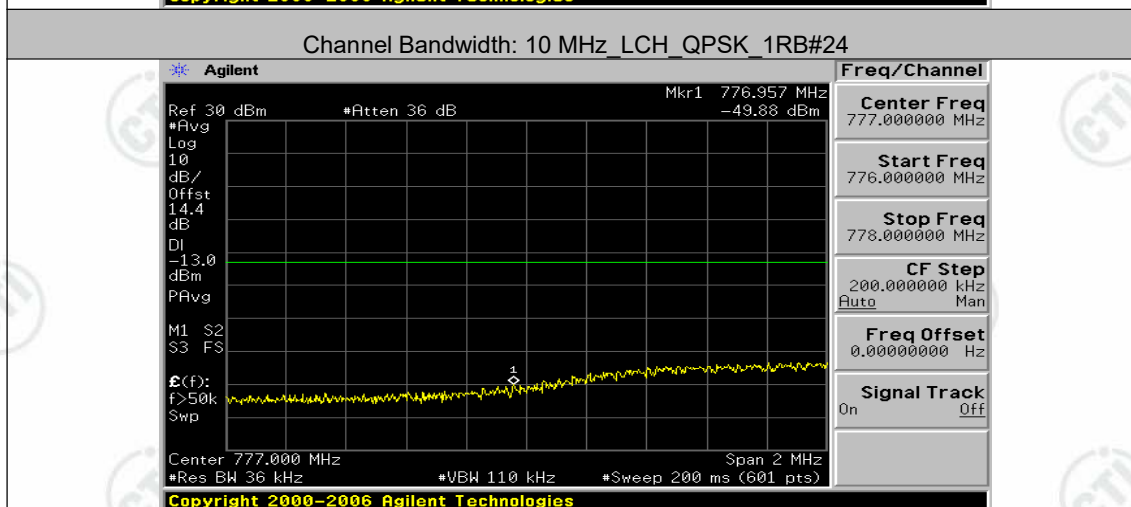
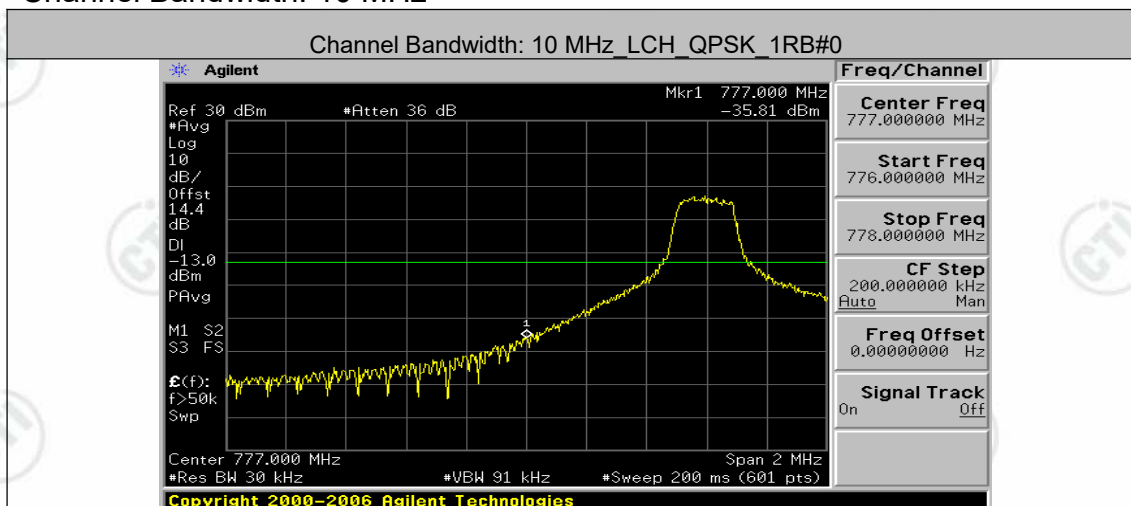


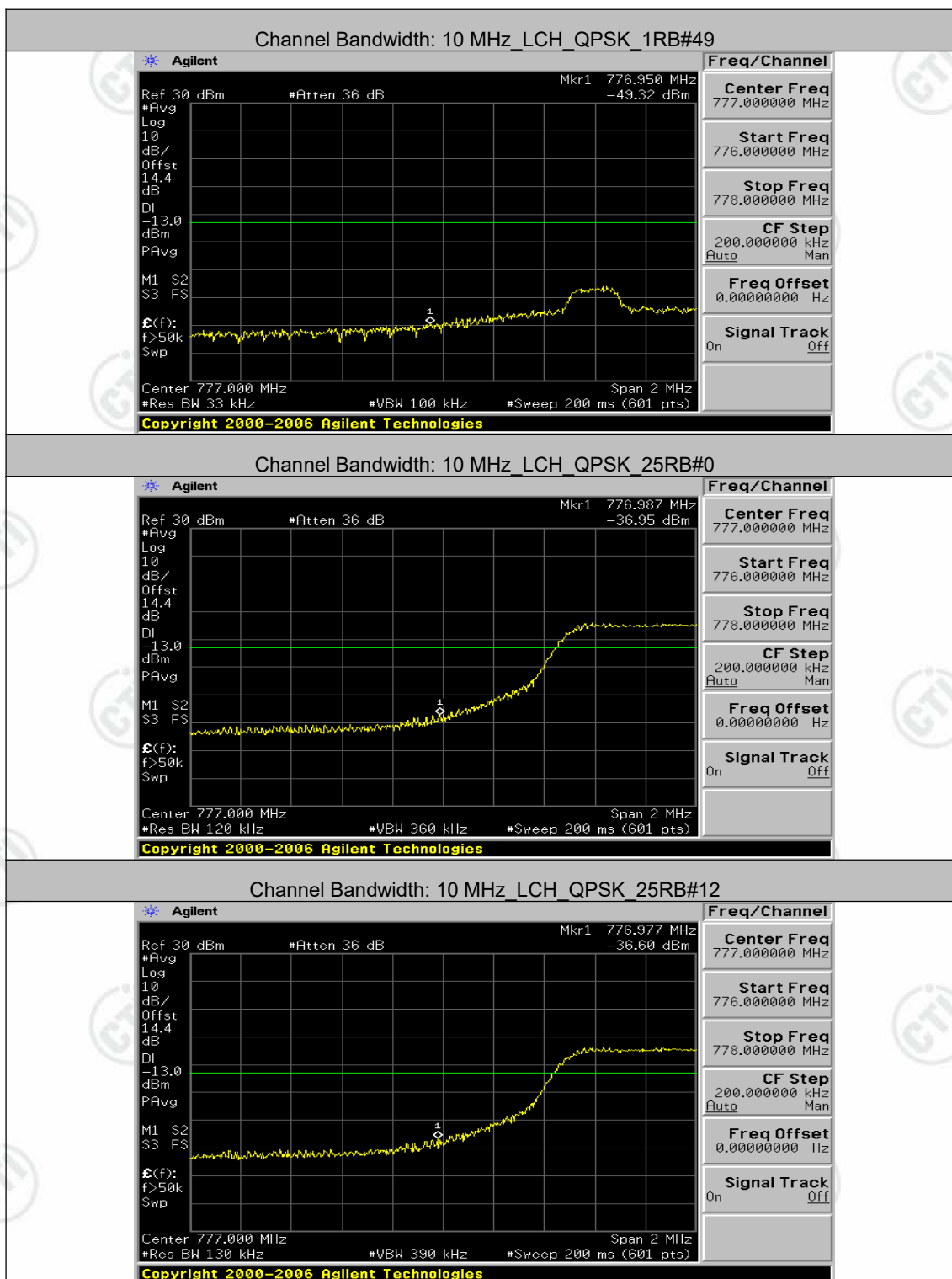


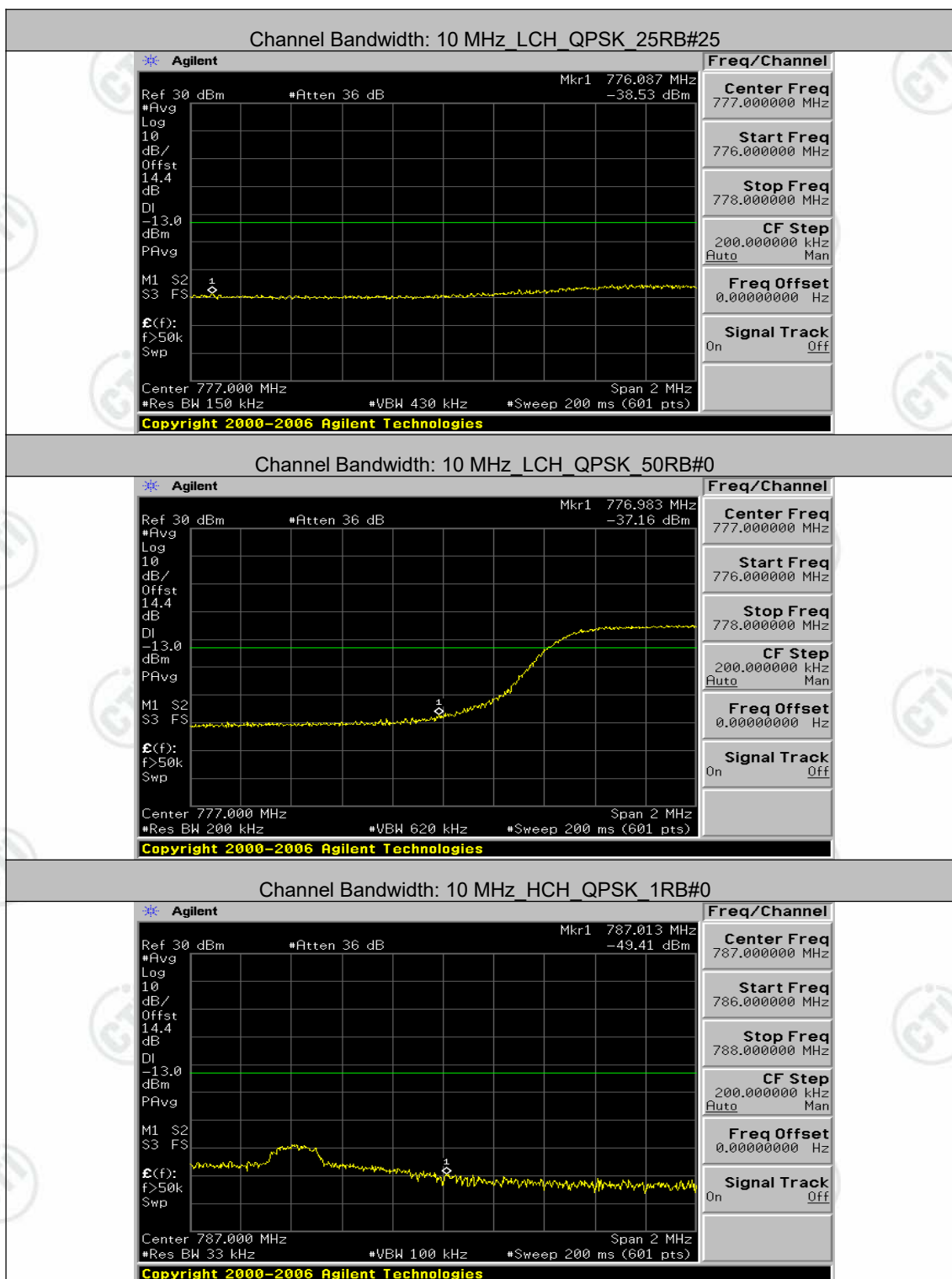


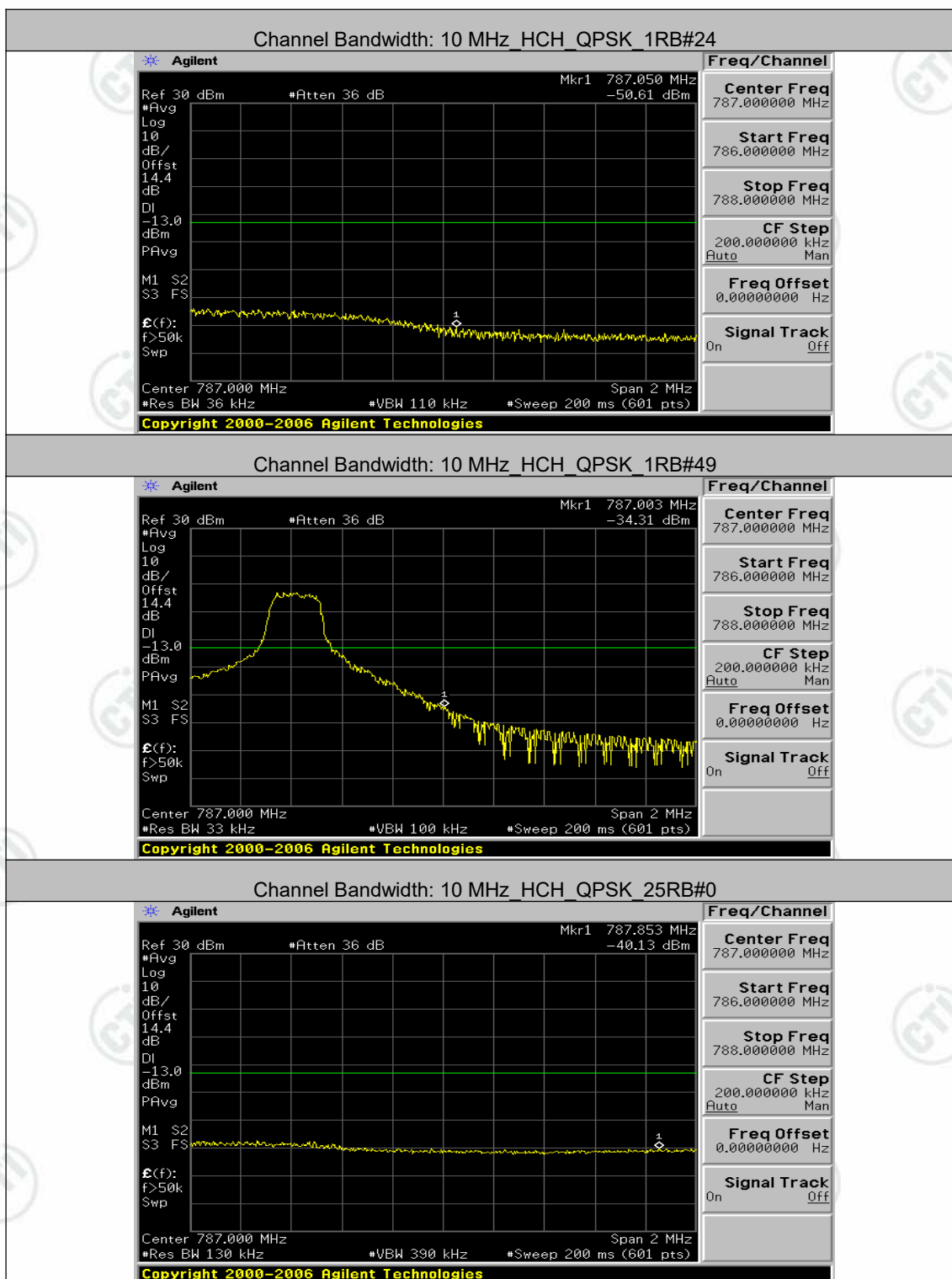


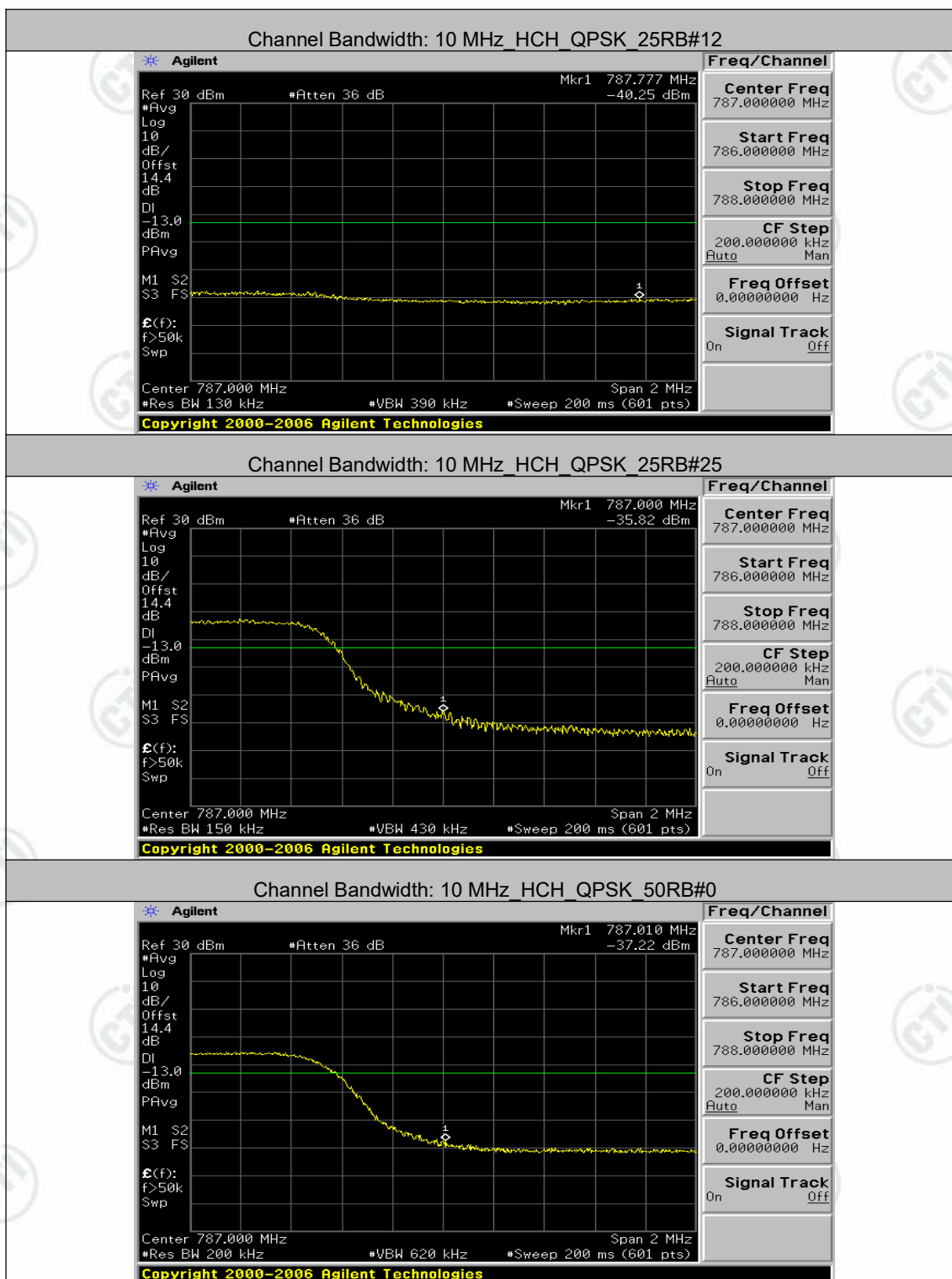
Channel Bandwidth: 10 MHz

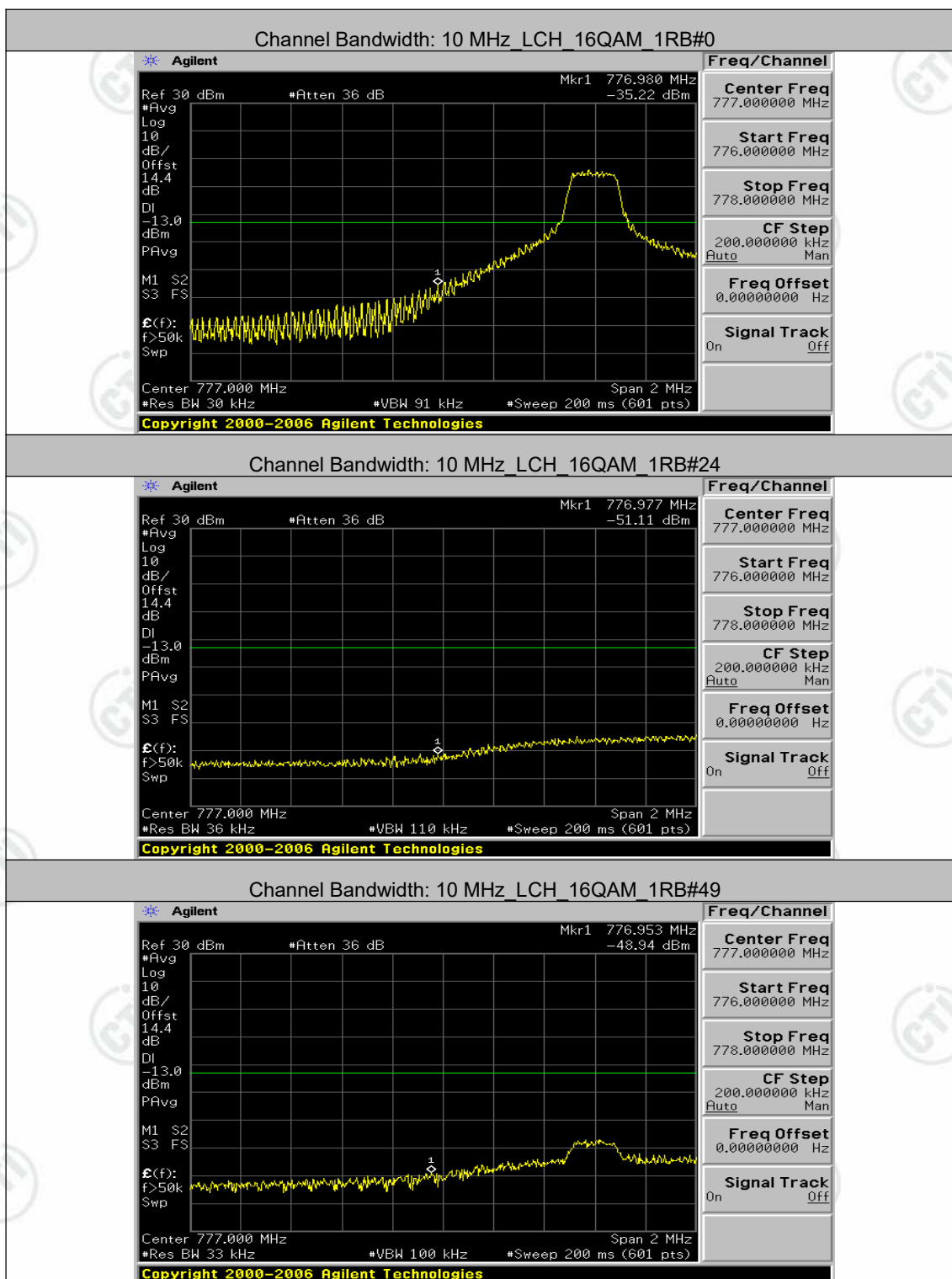


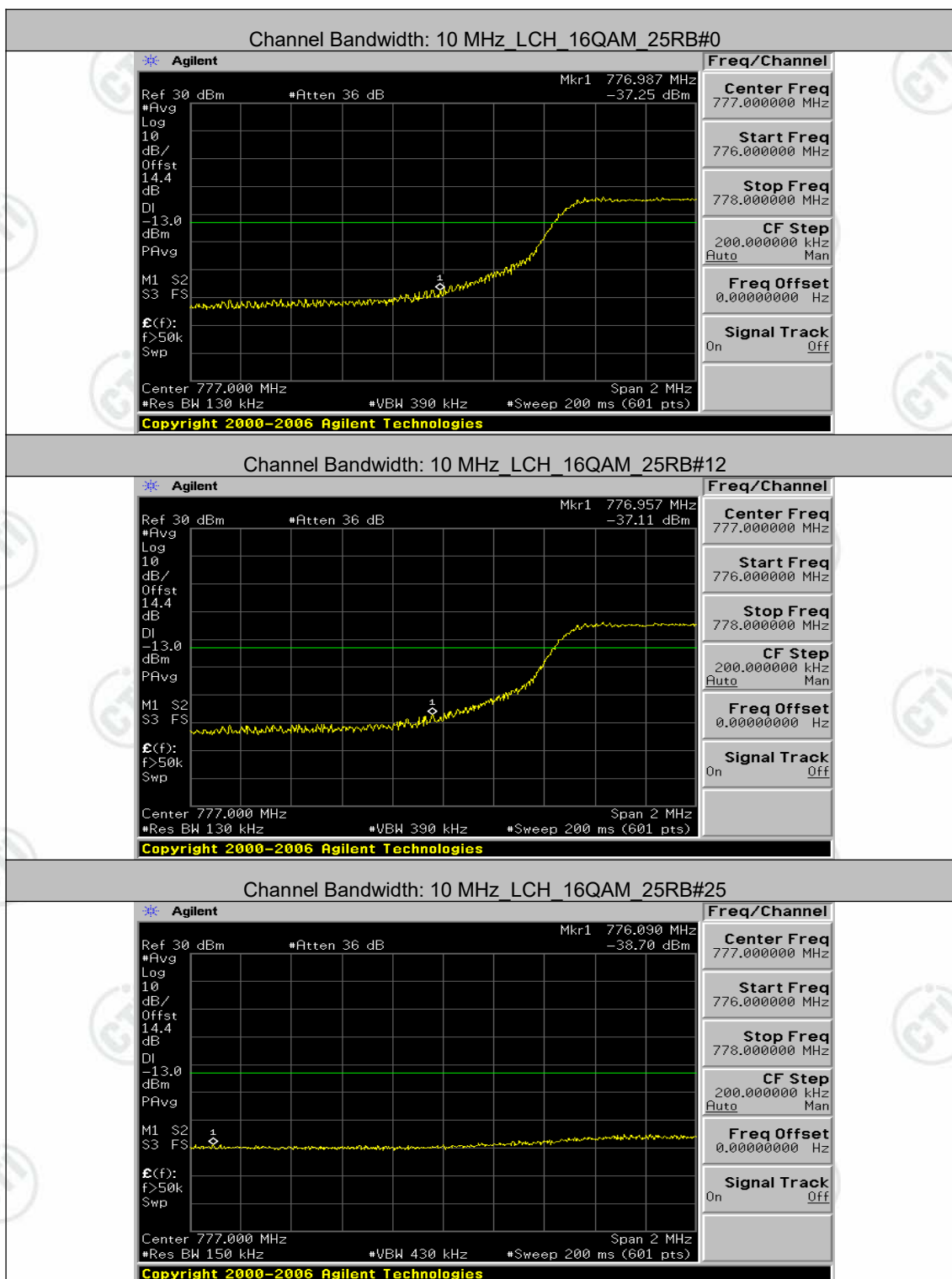


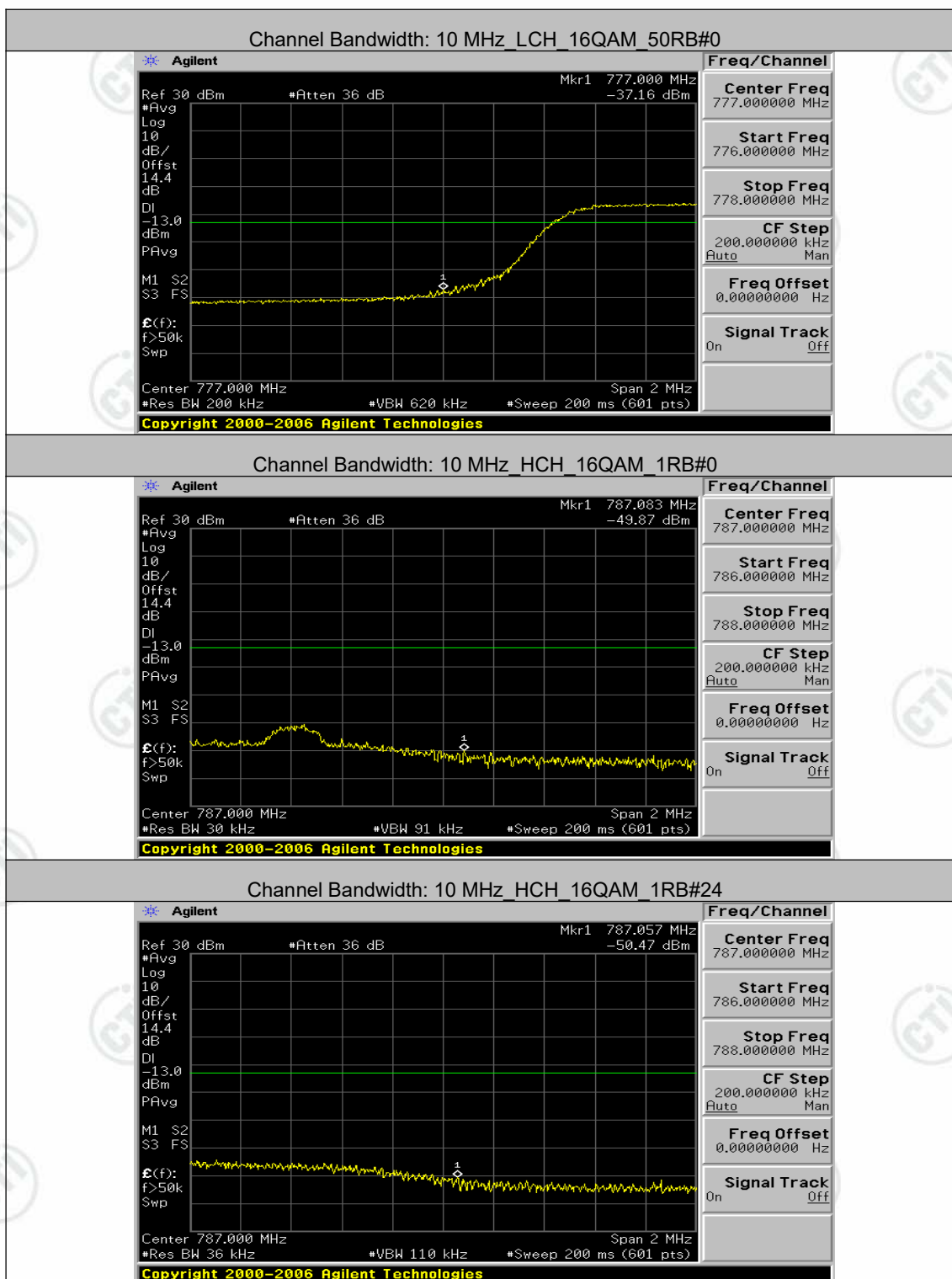


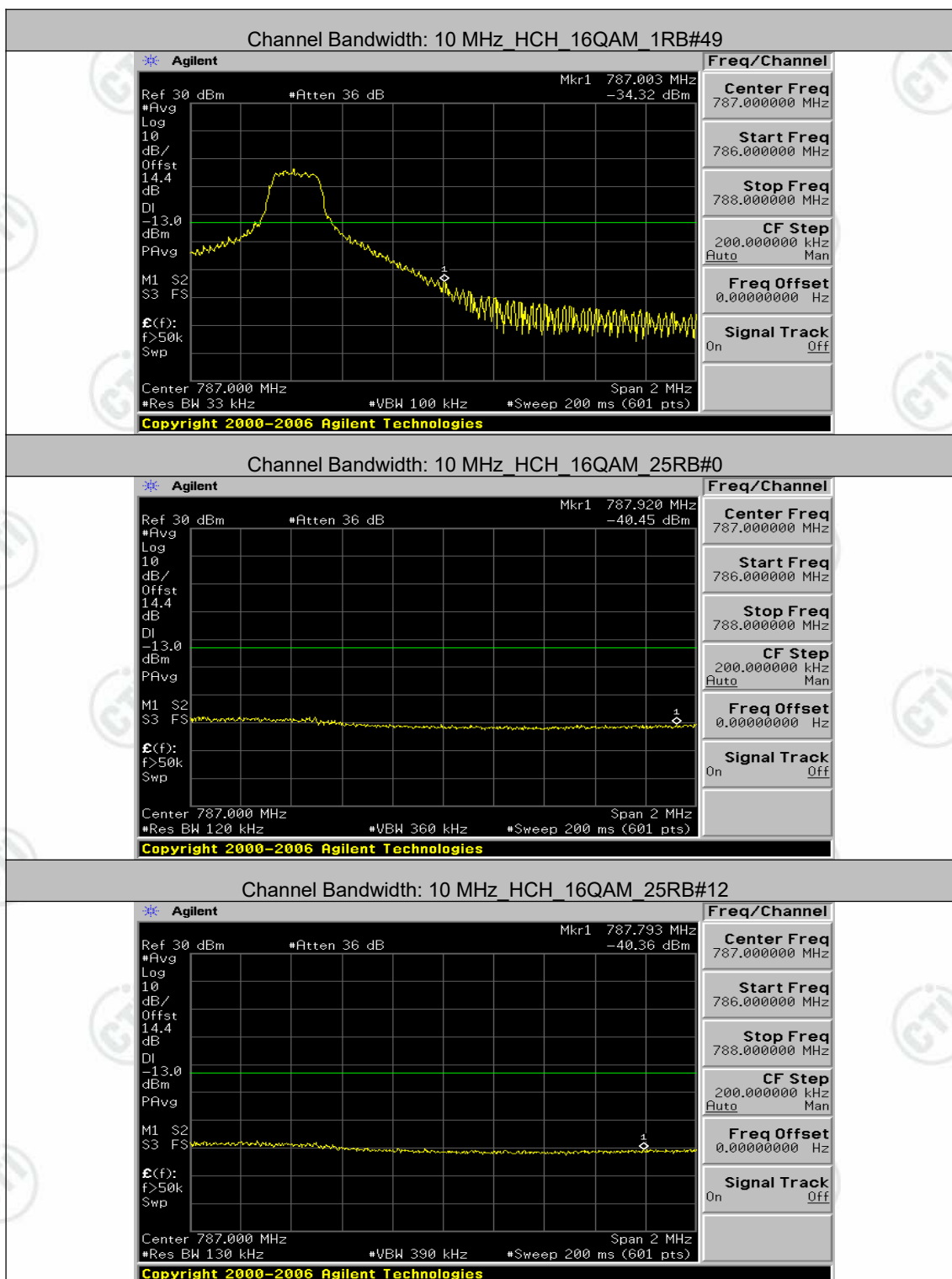


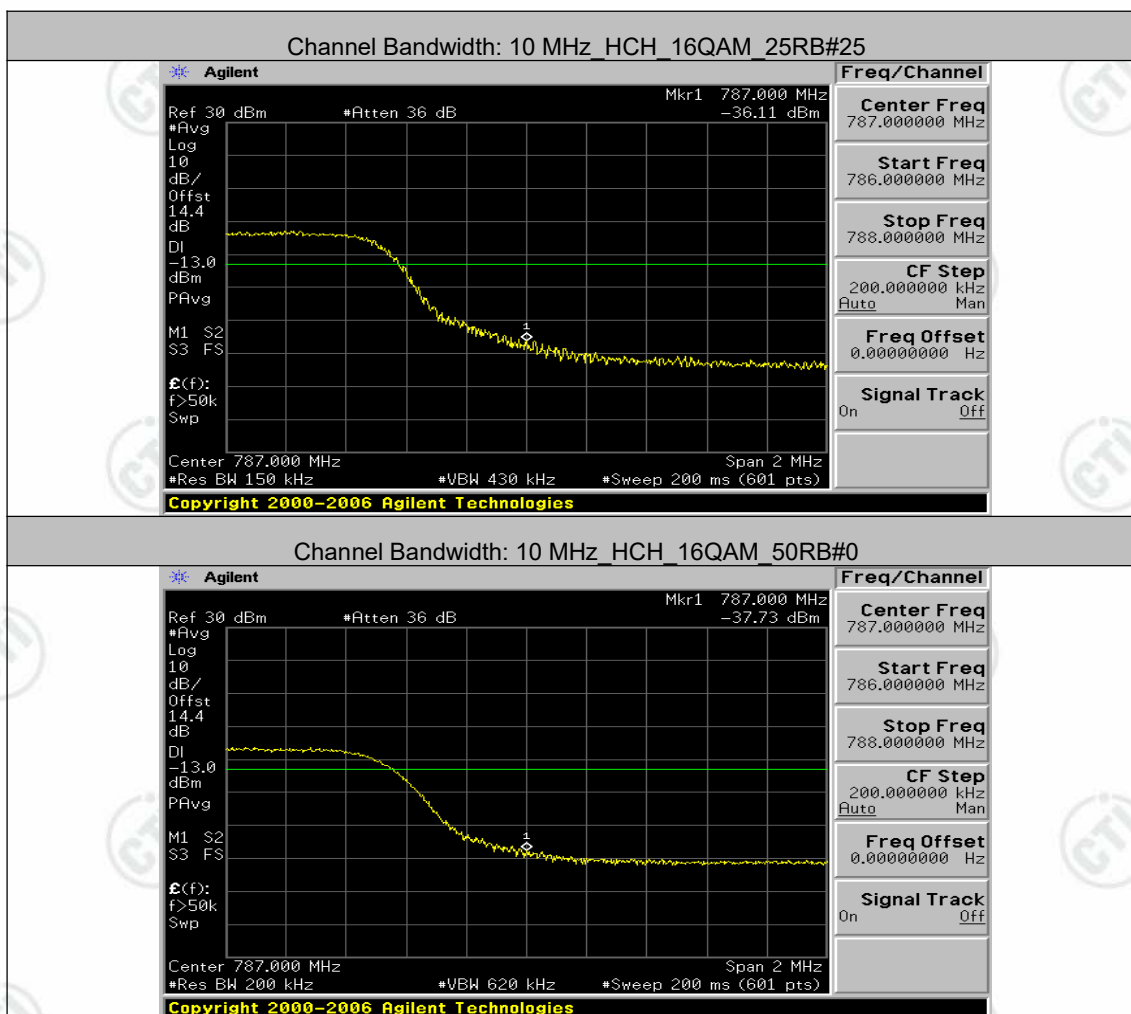








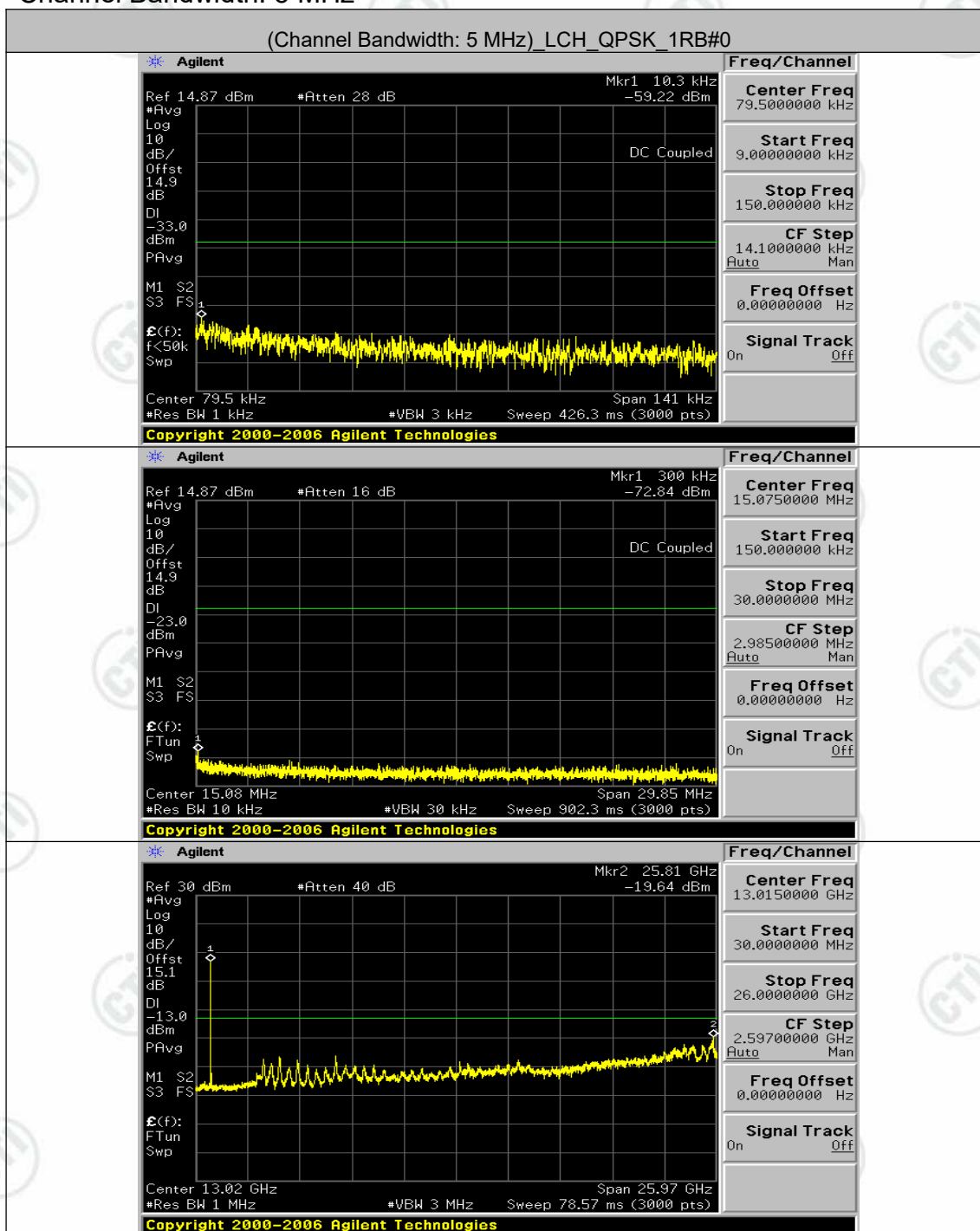


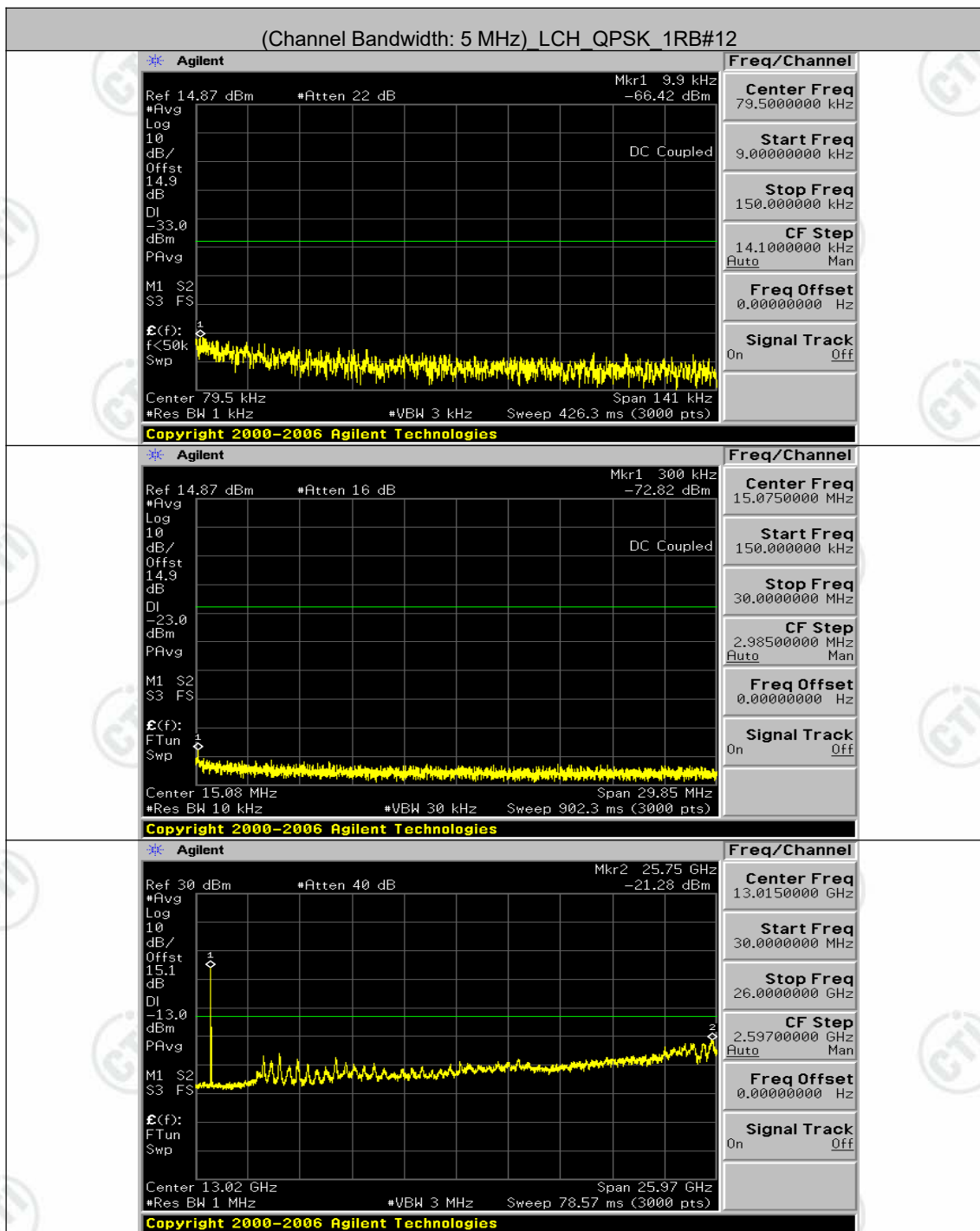


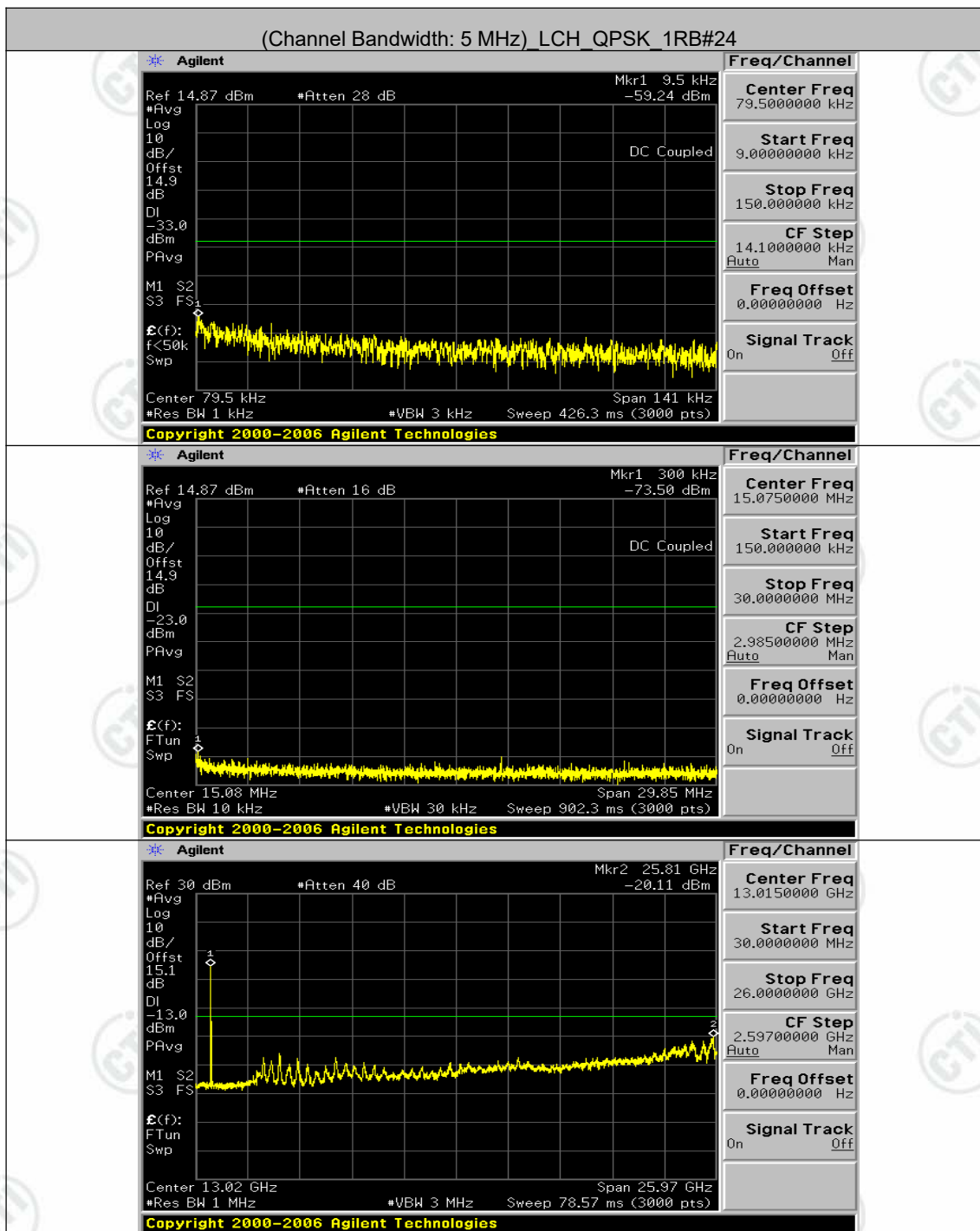
Appendix D): Conducted Spurious Emission

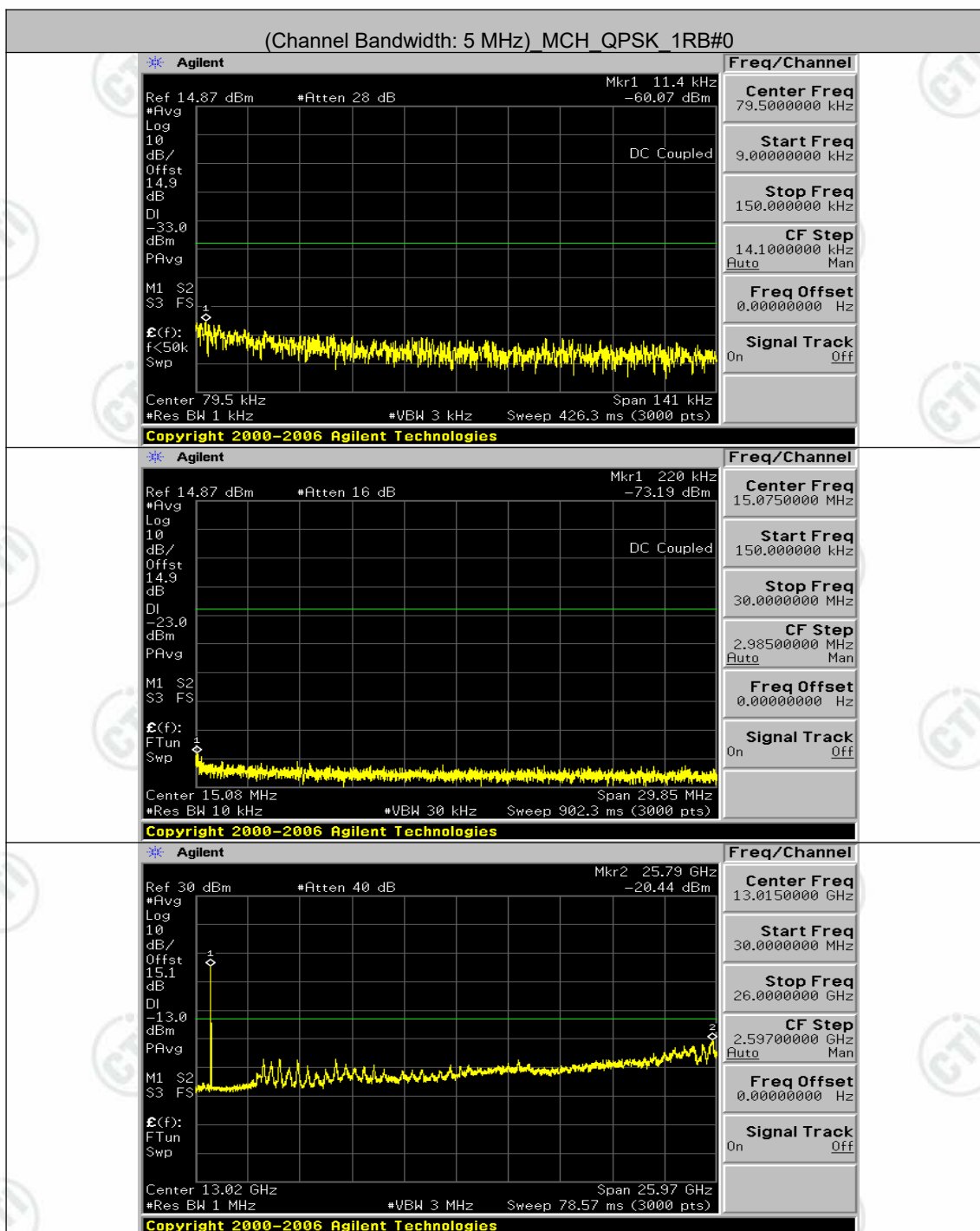
Test Graphs

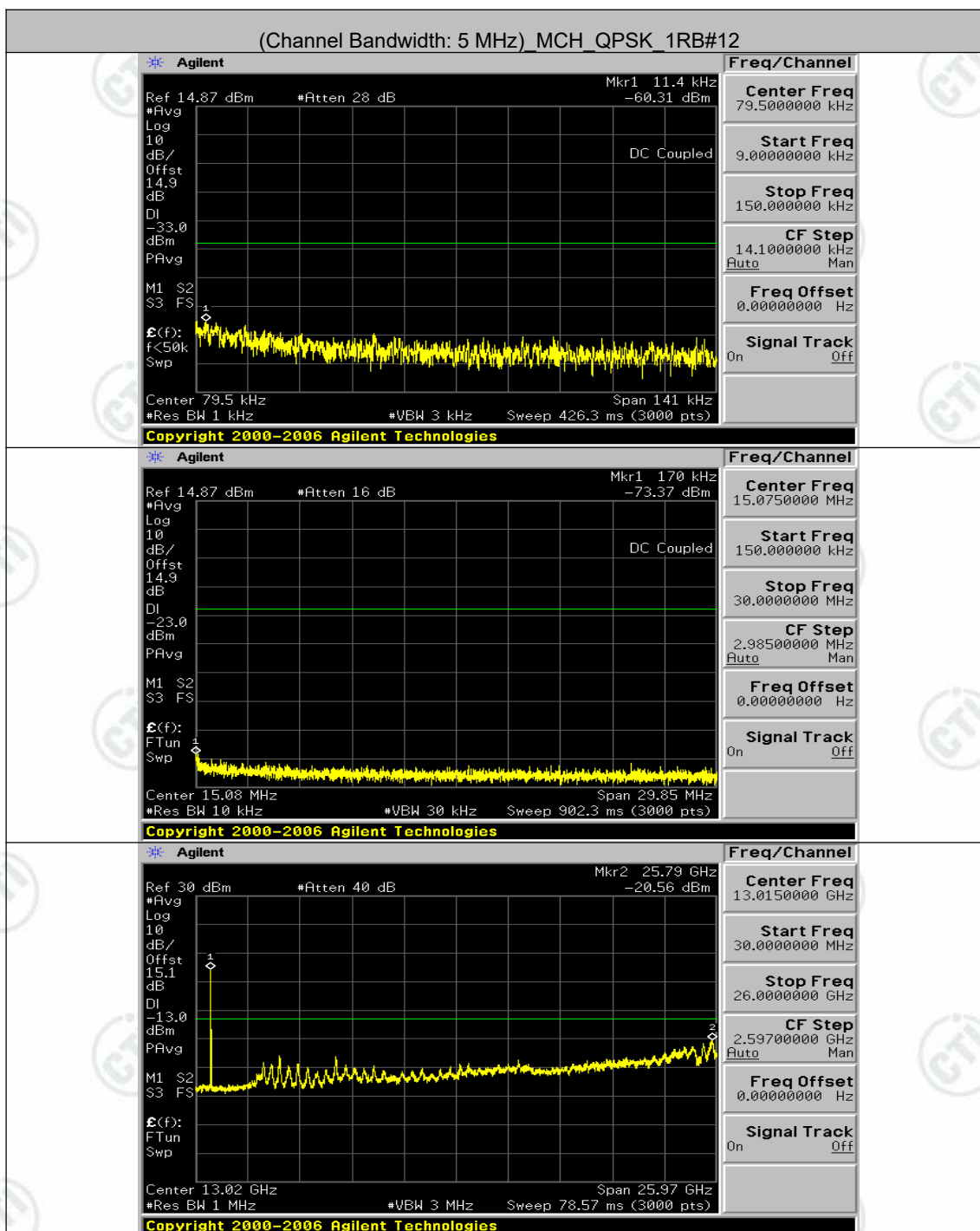
Channel Bandwidth: 5 MHz

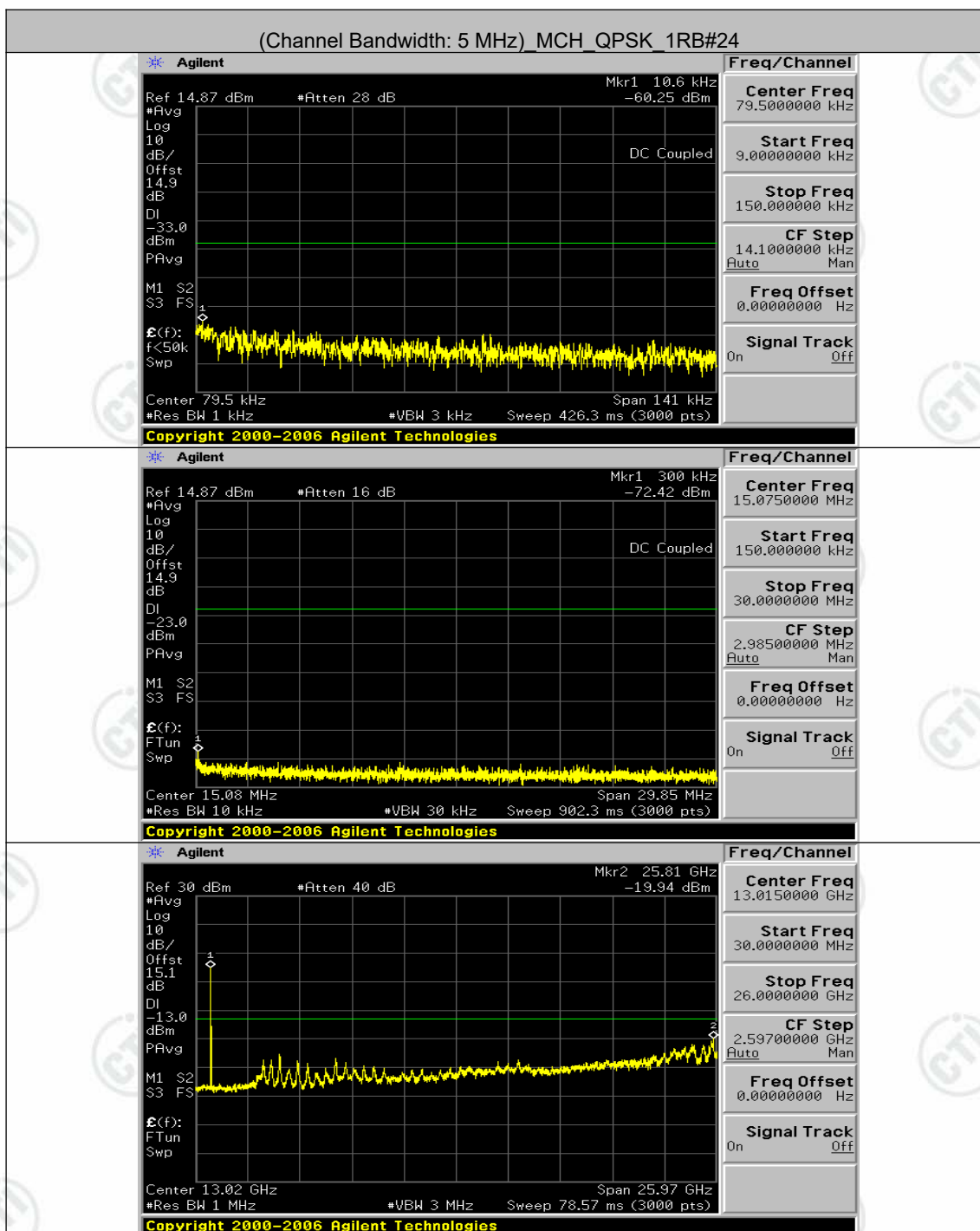


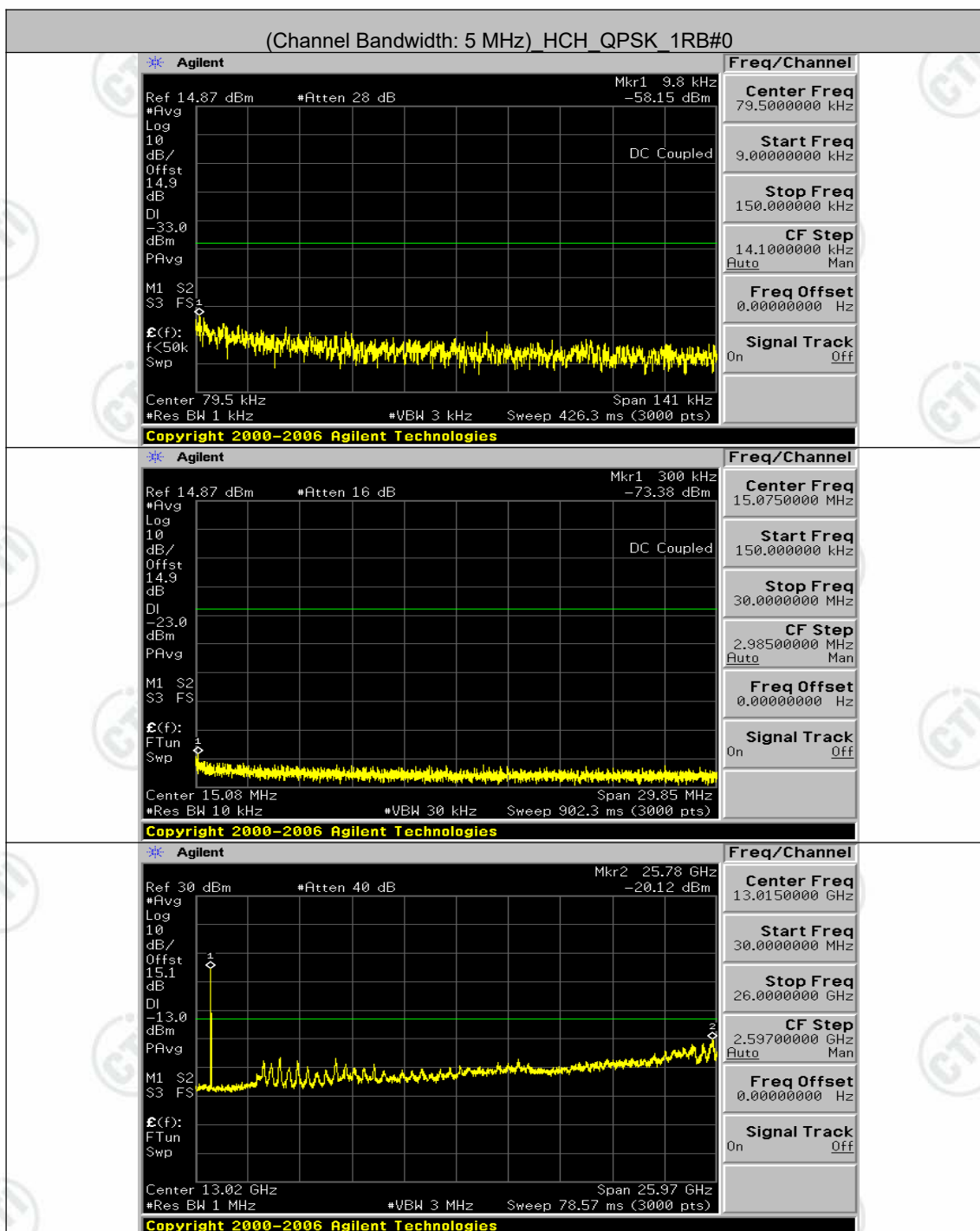


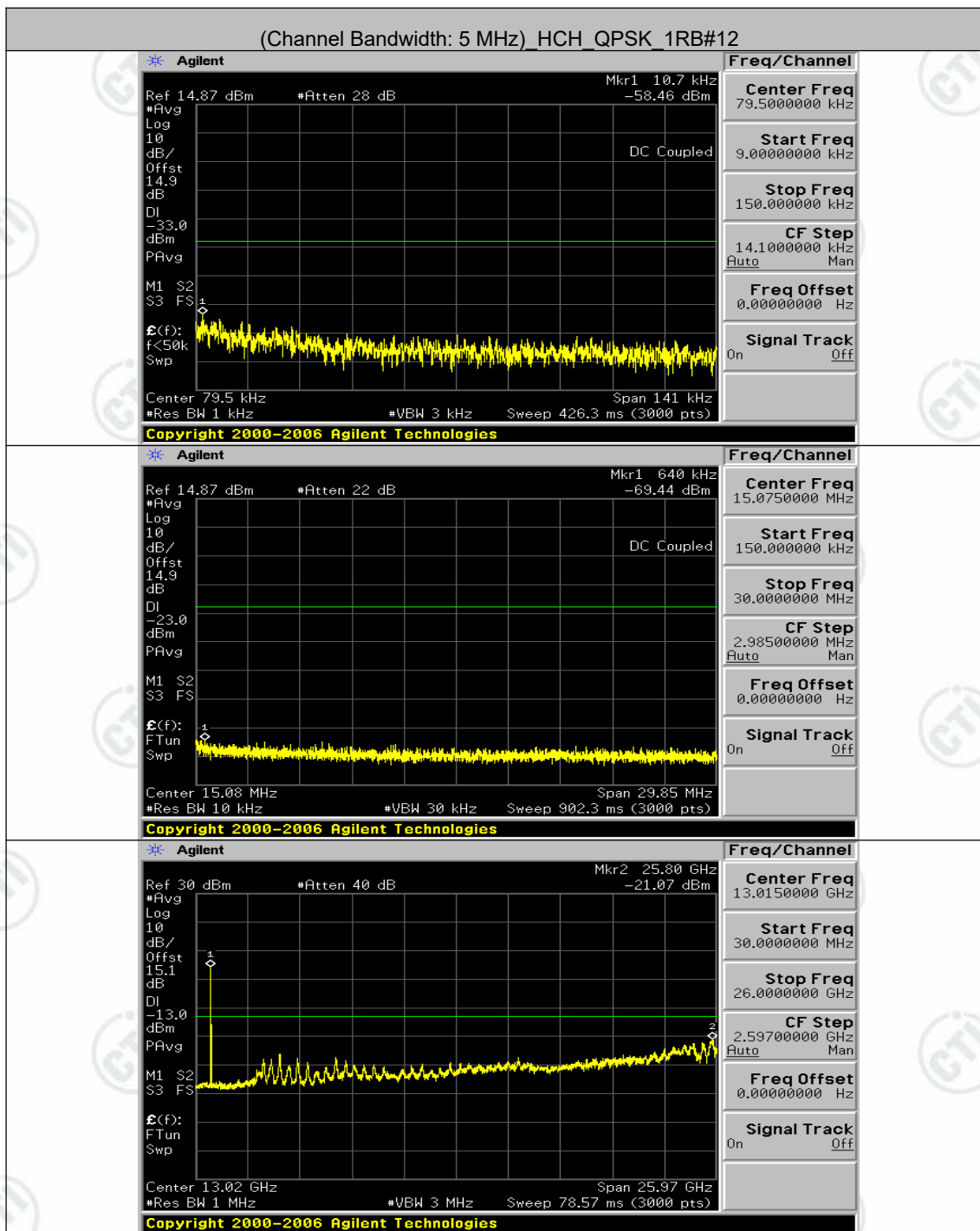


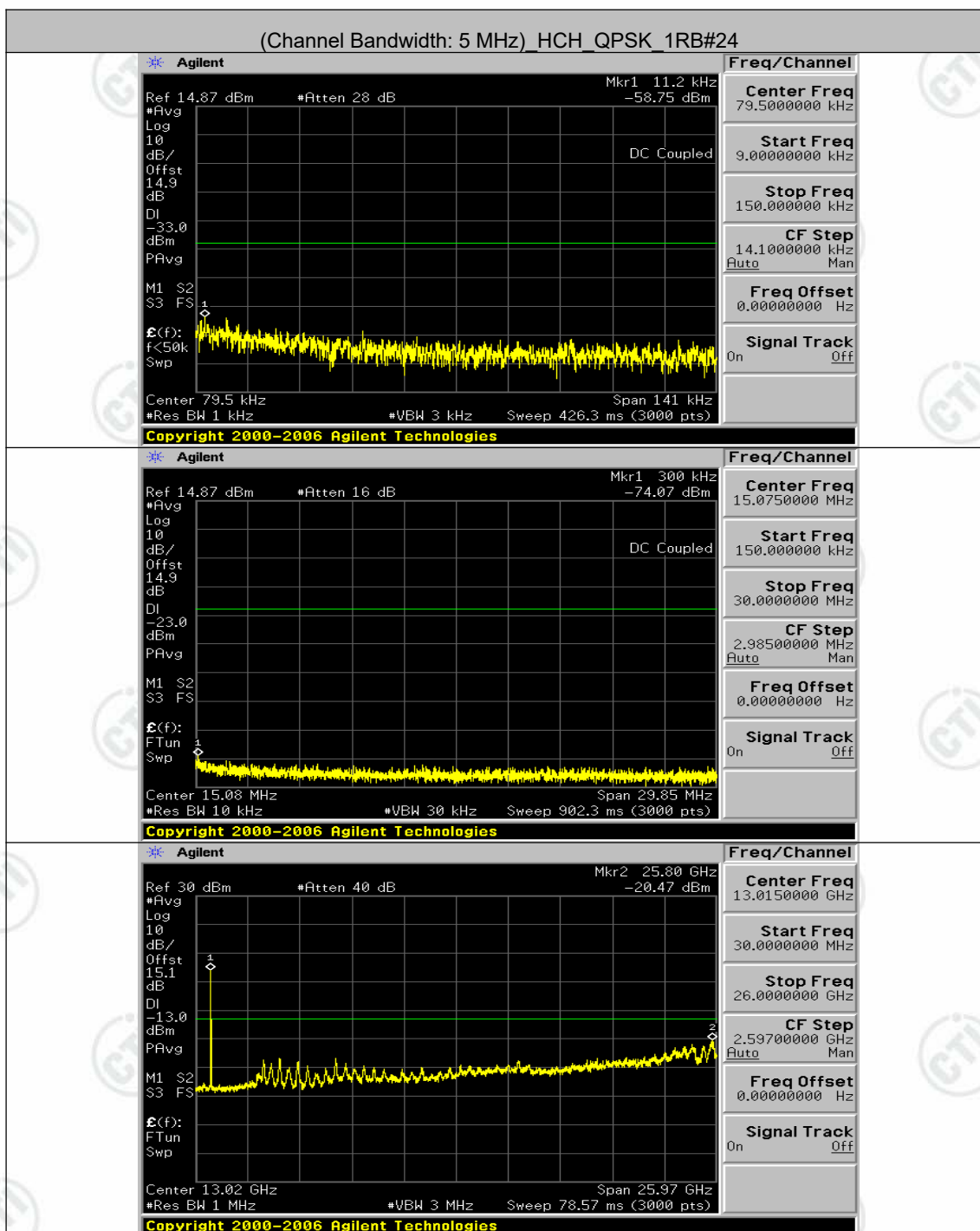


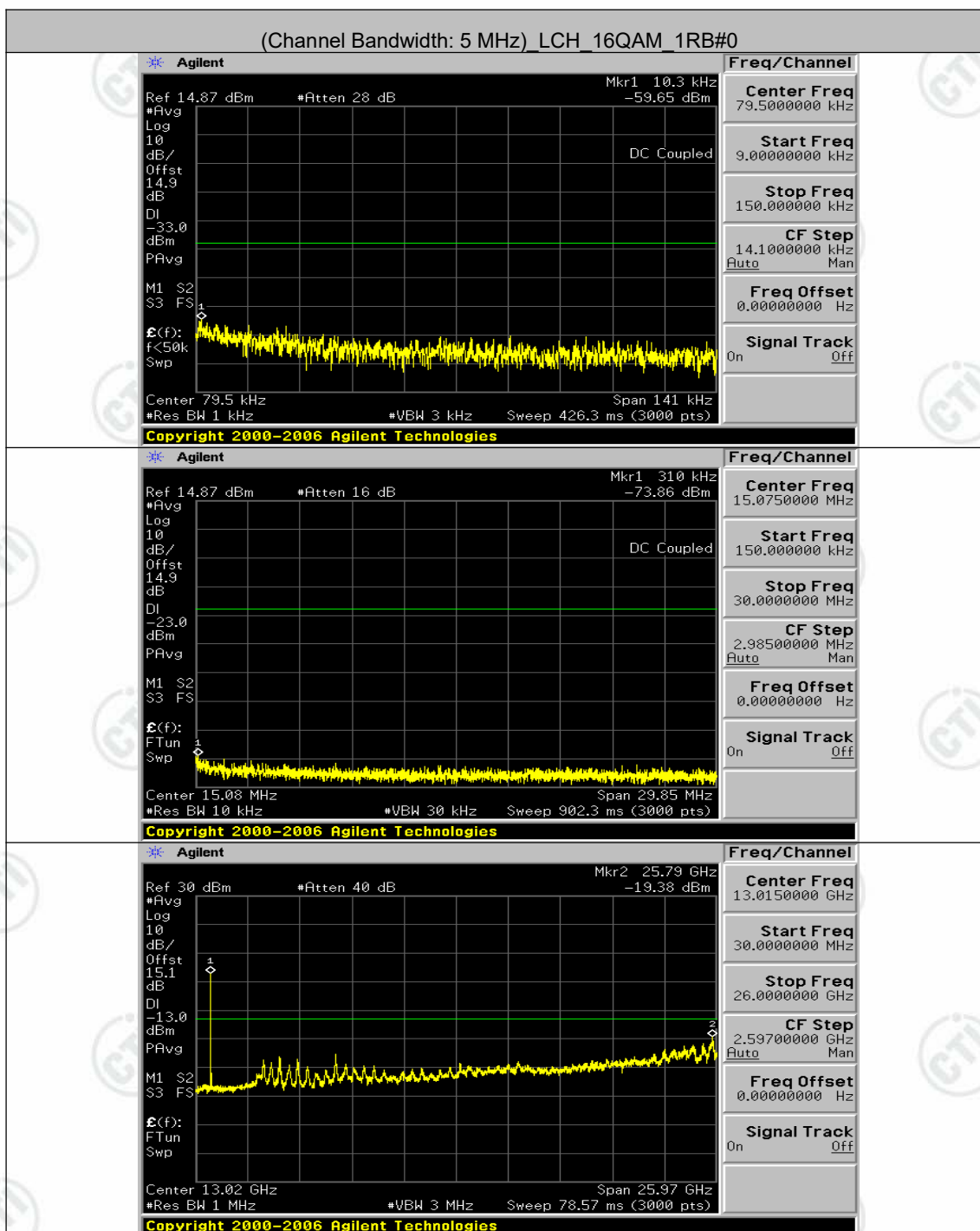


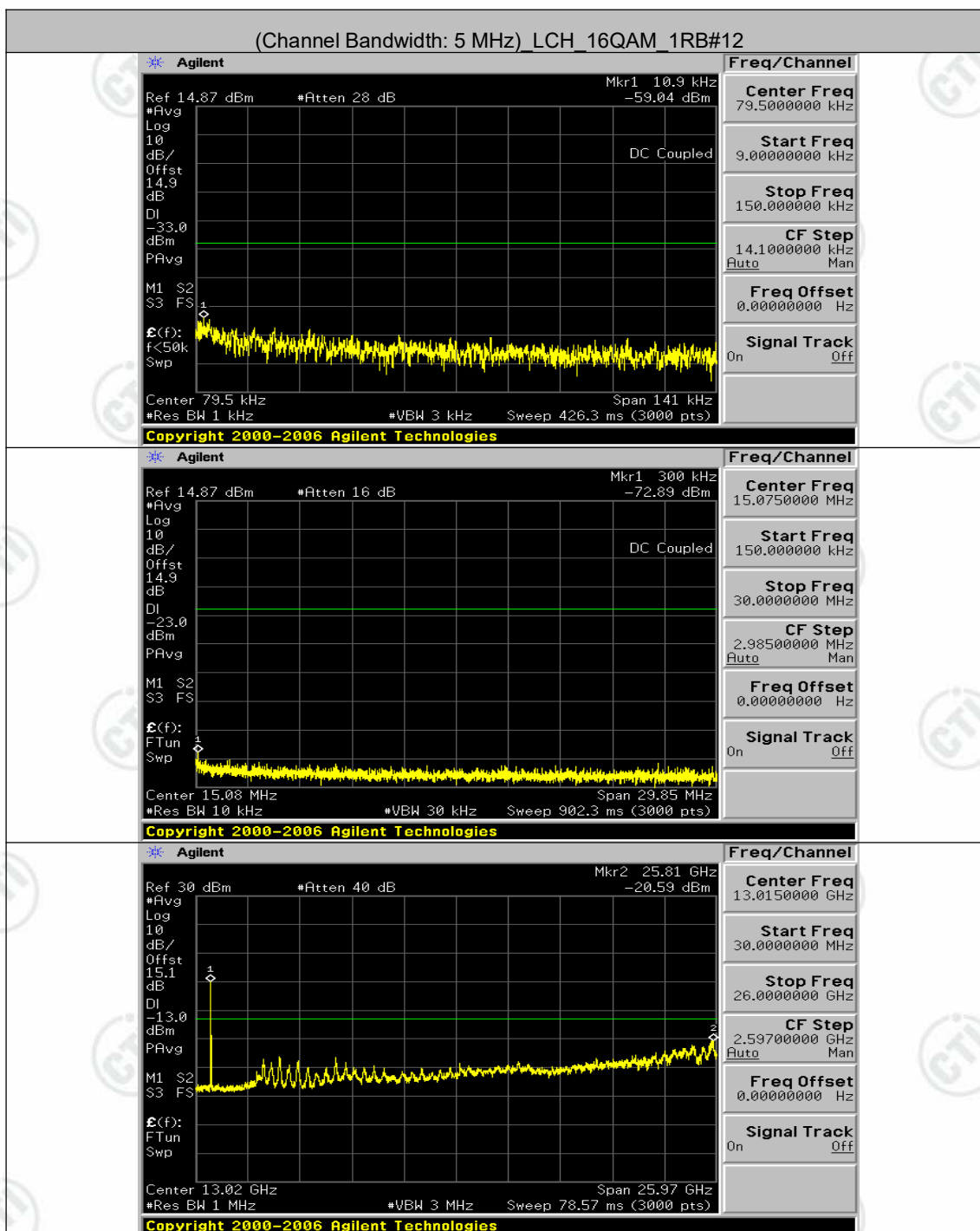


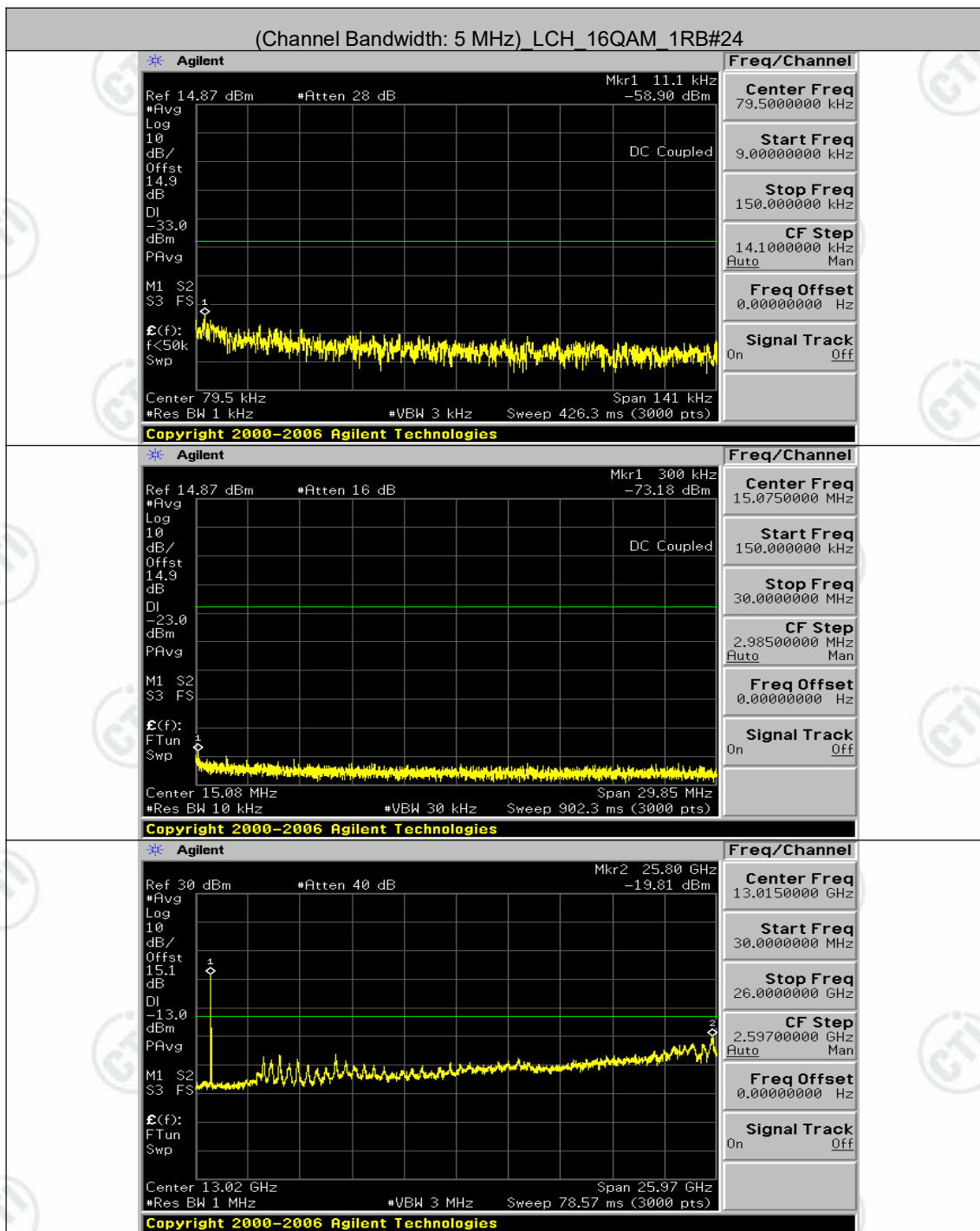


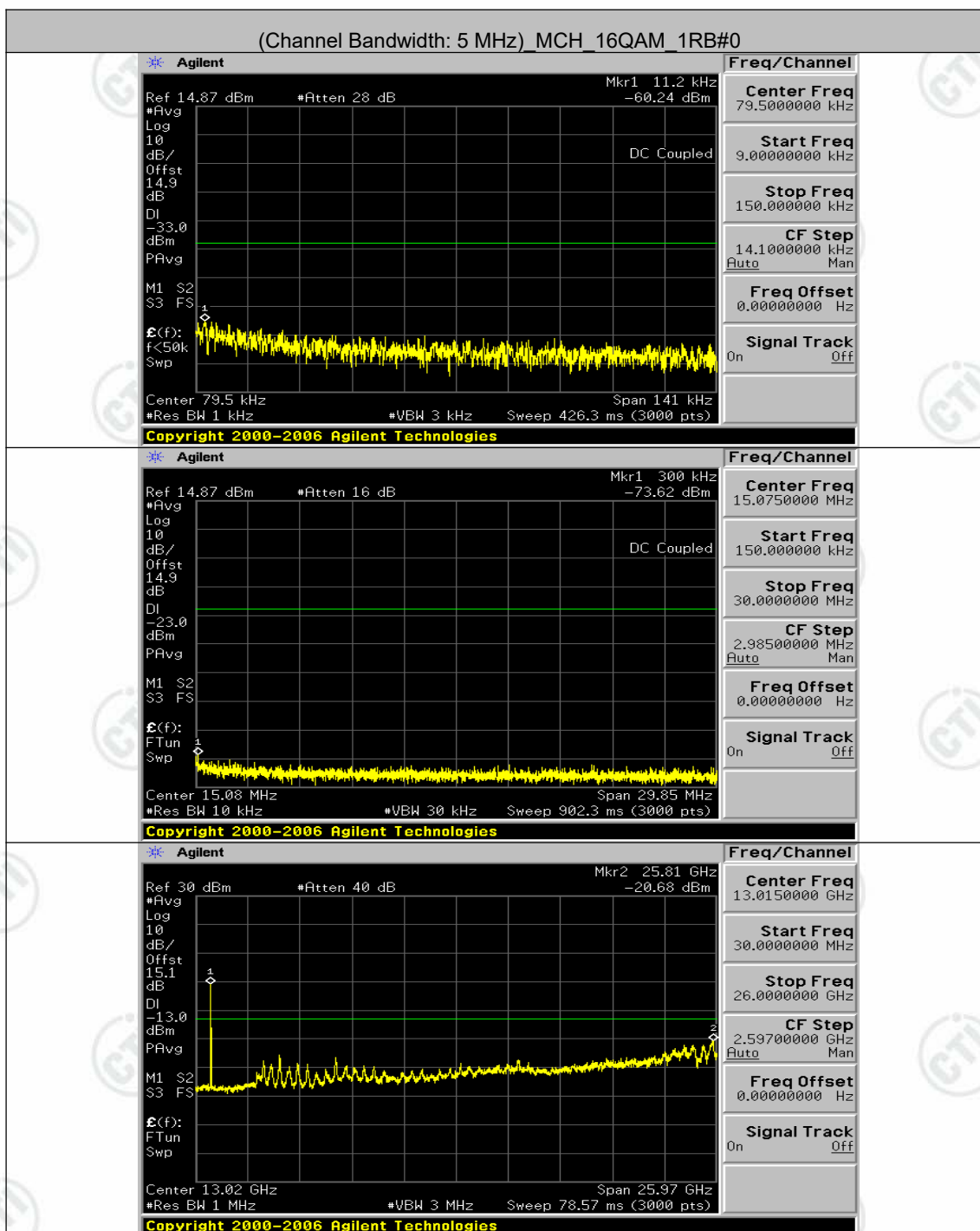


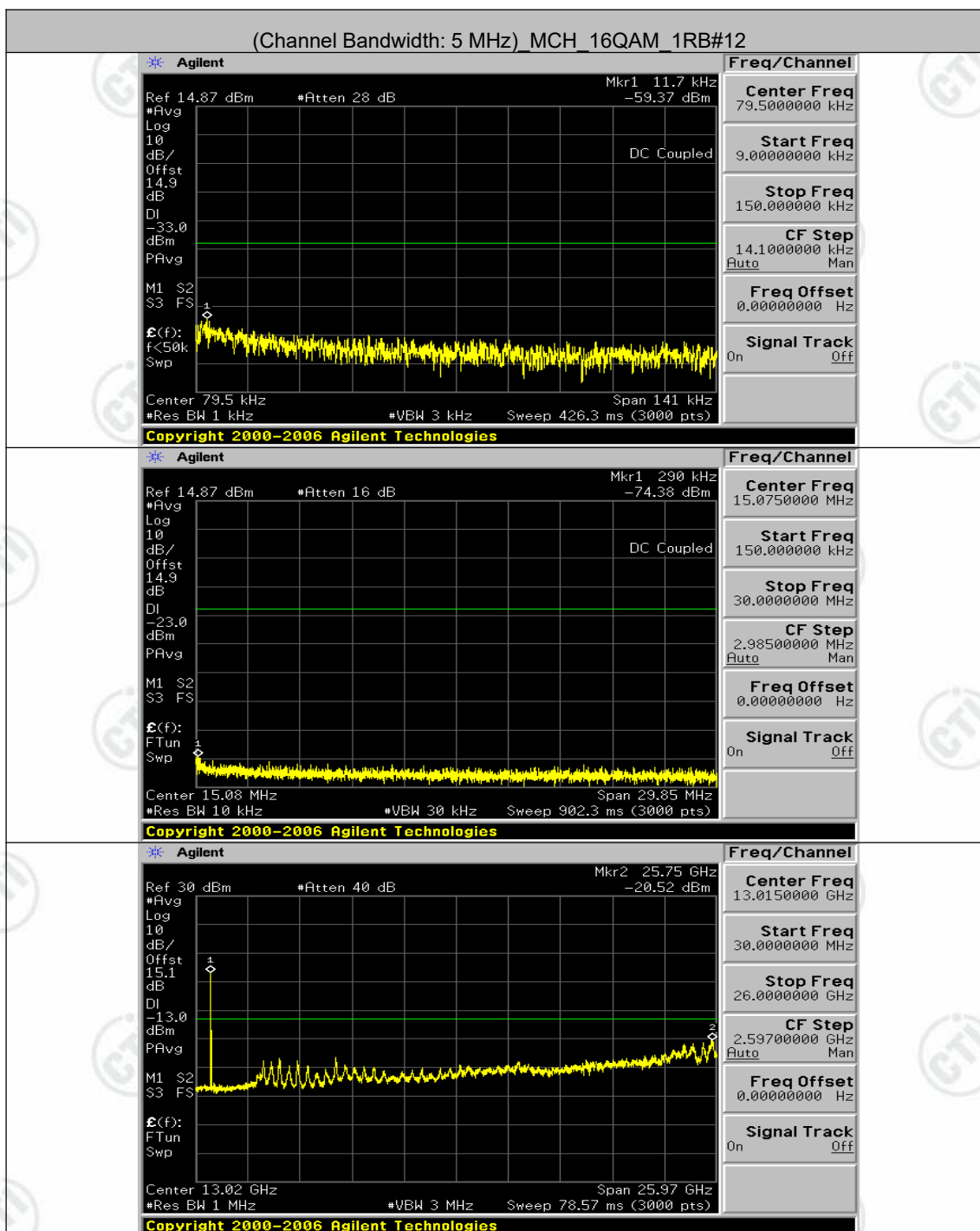


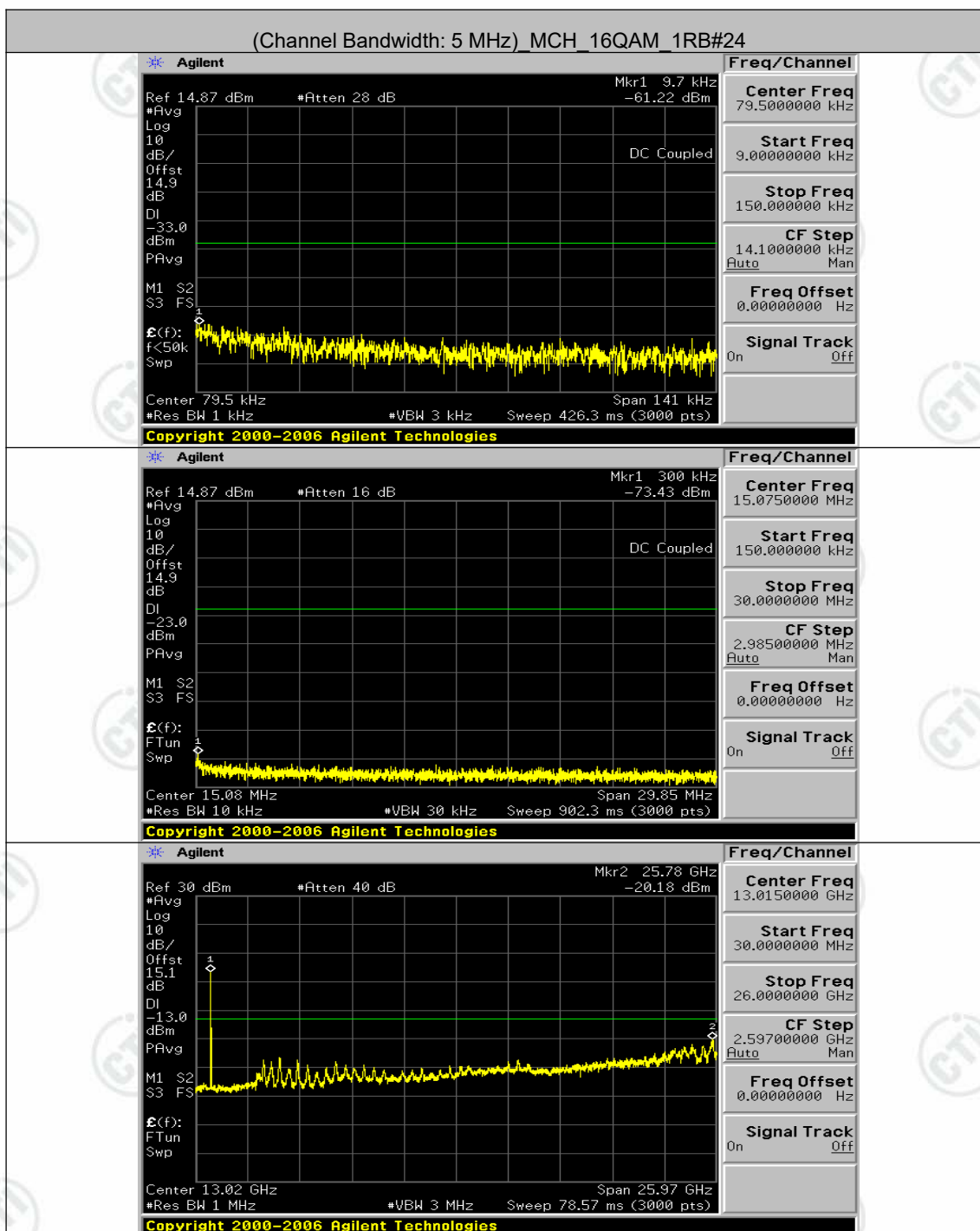


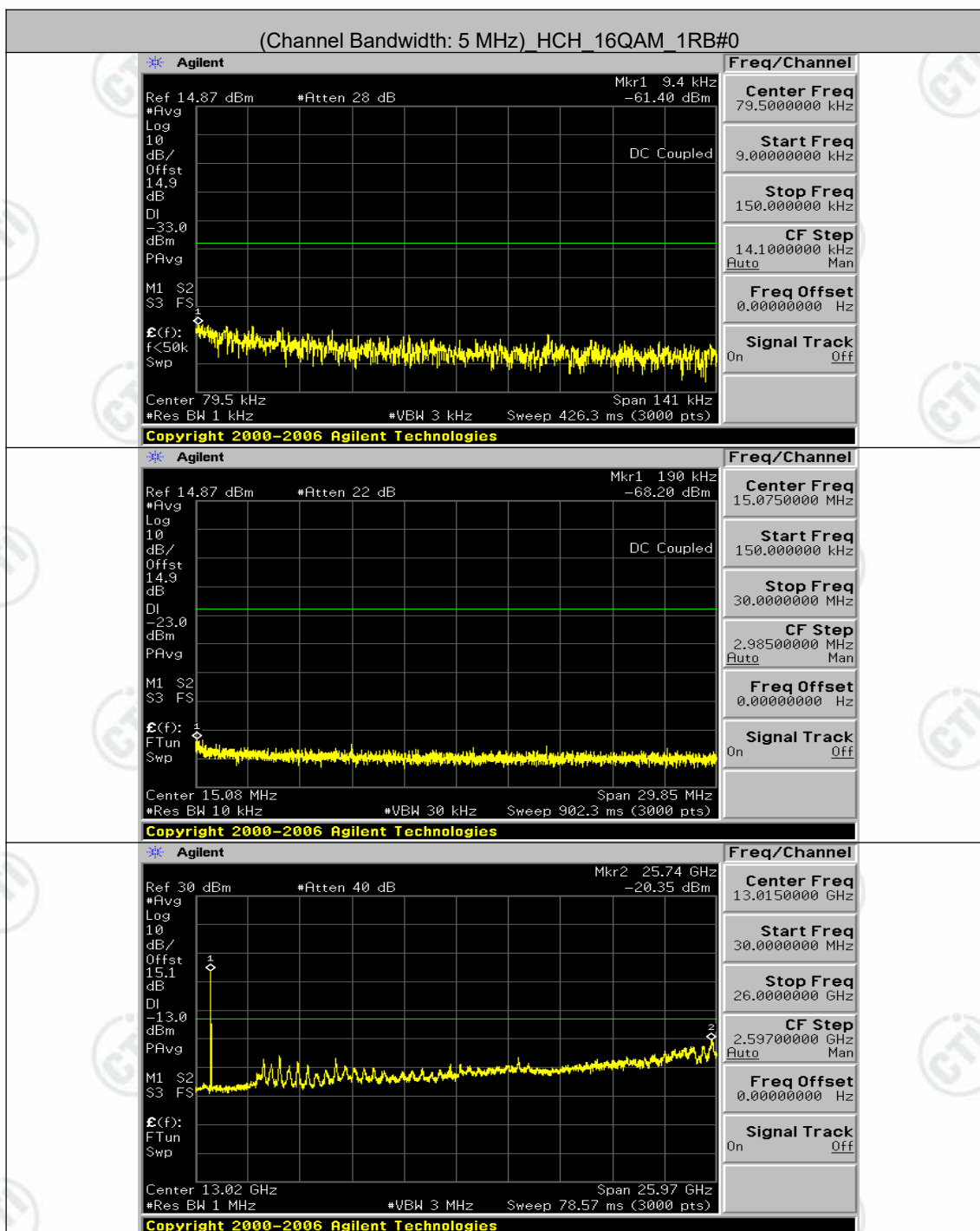


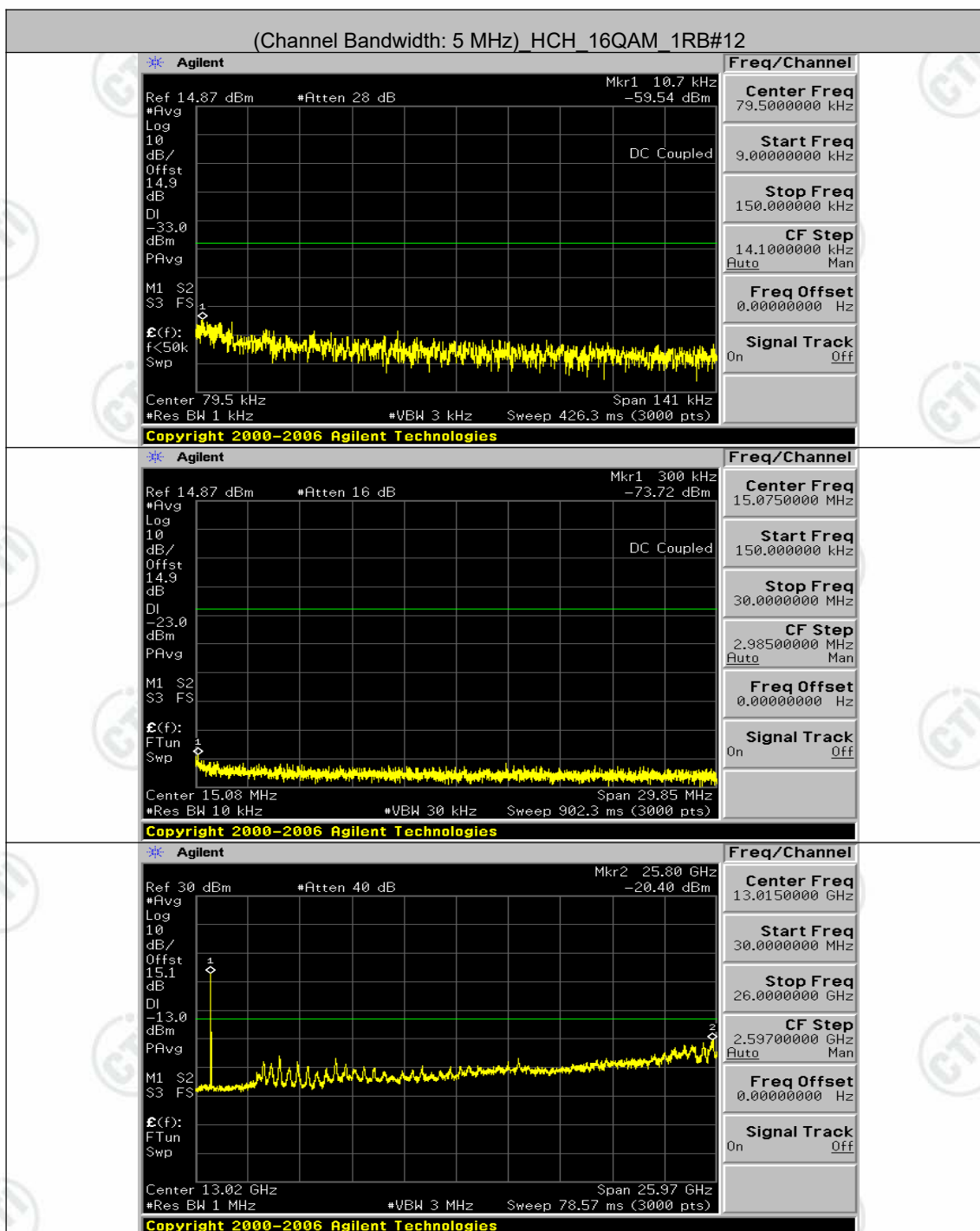


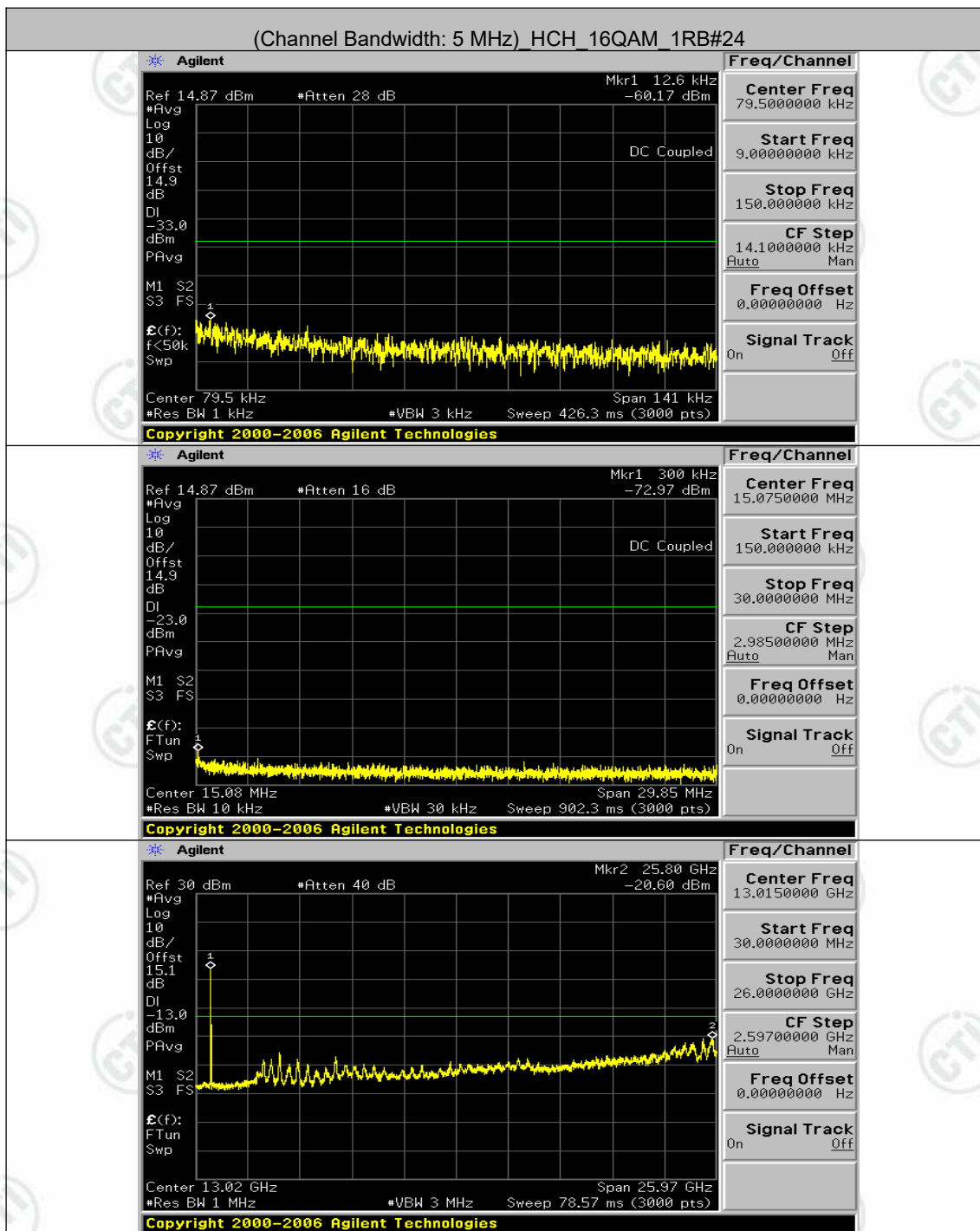


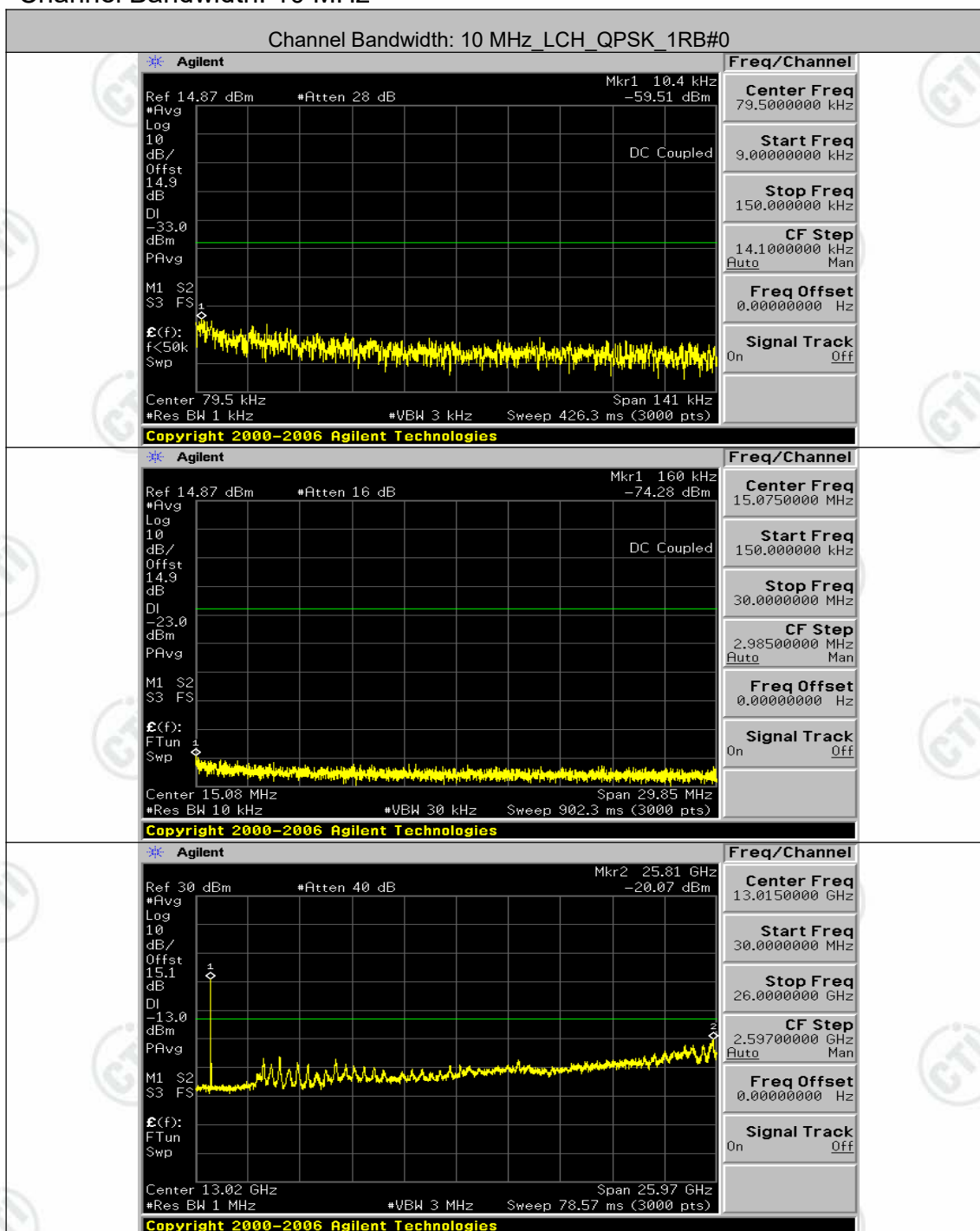


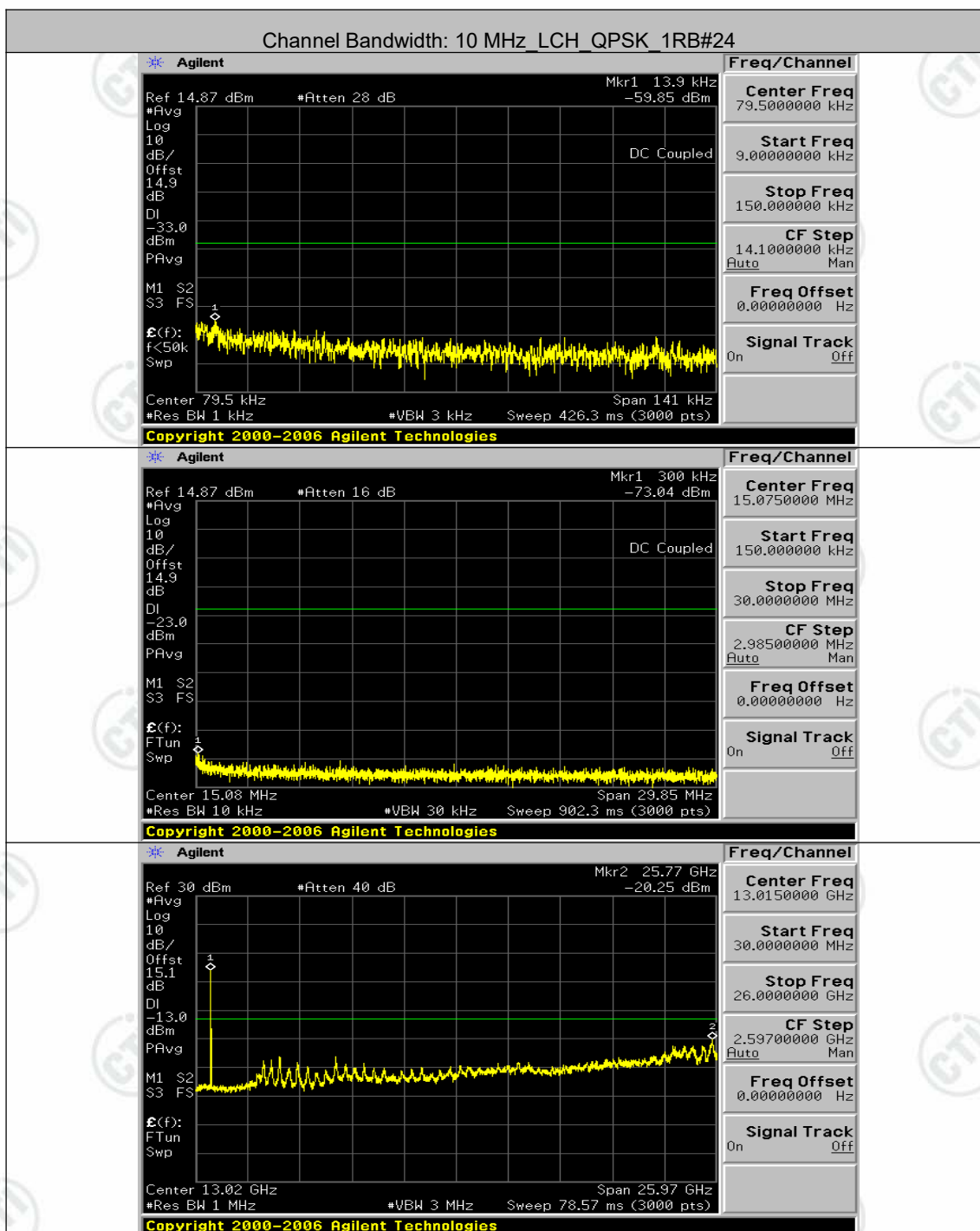


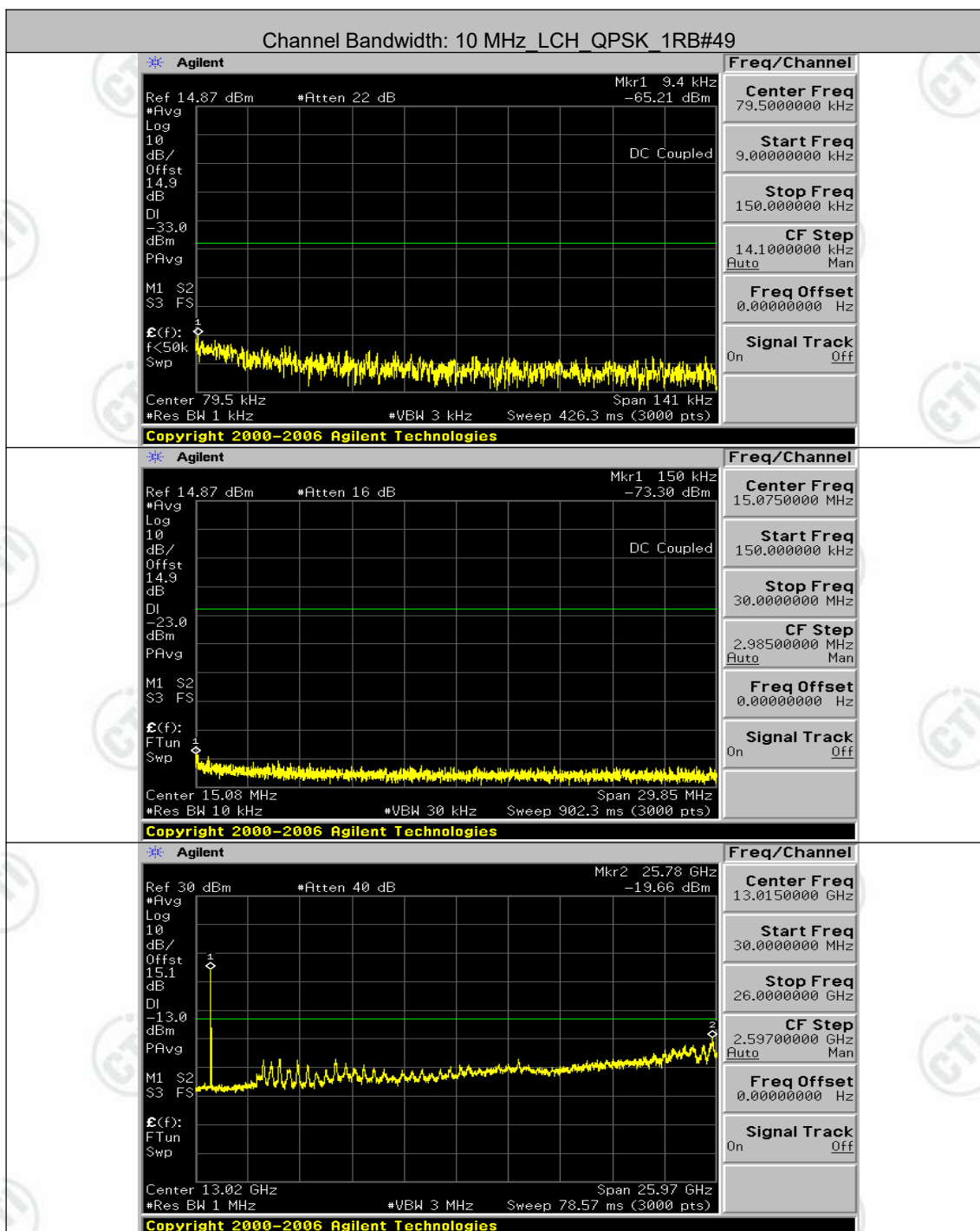


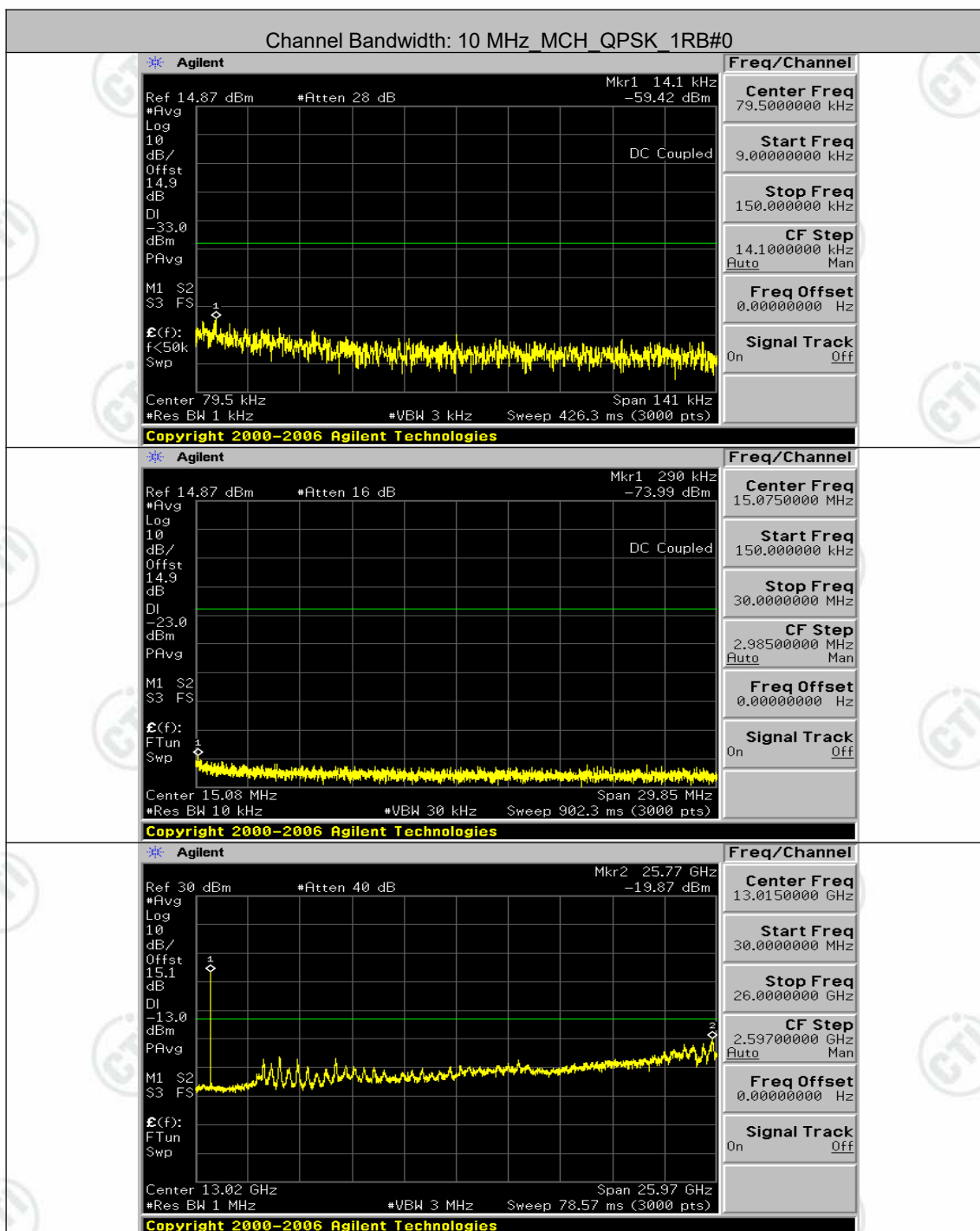


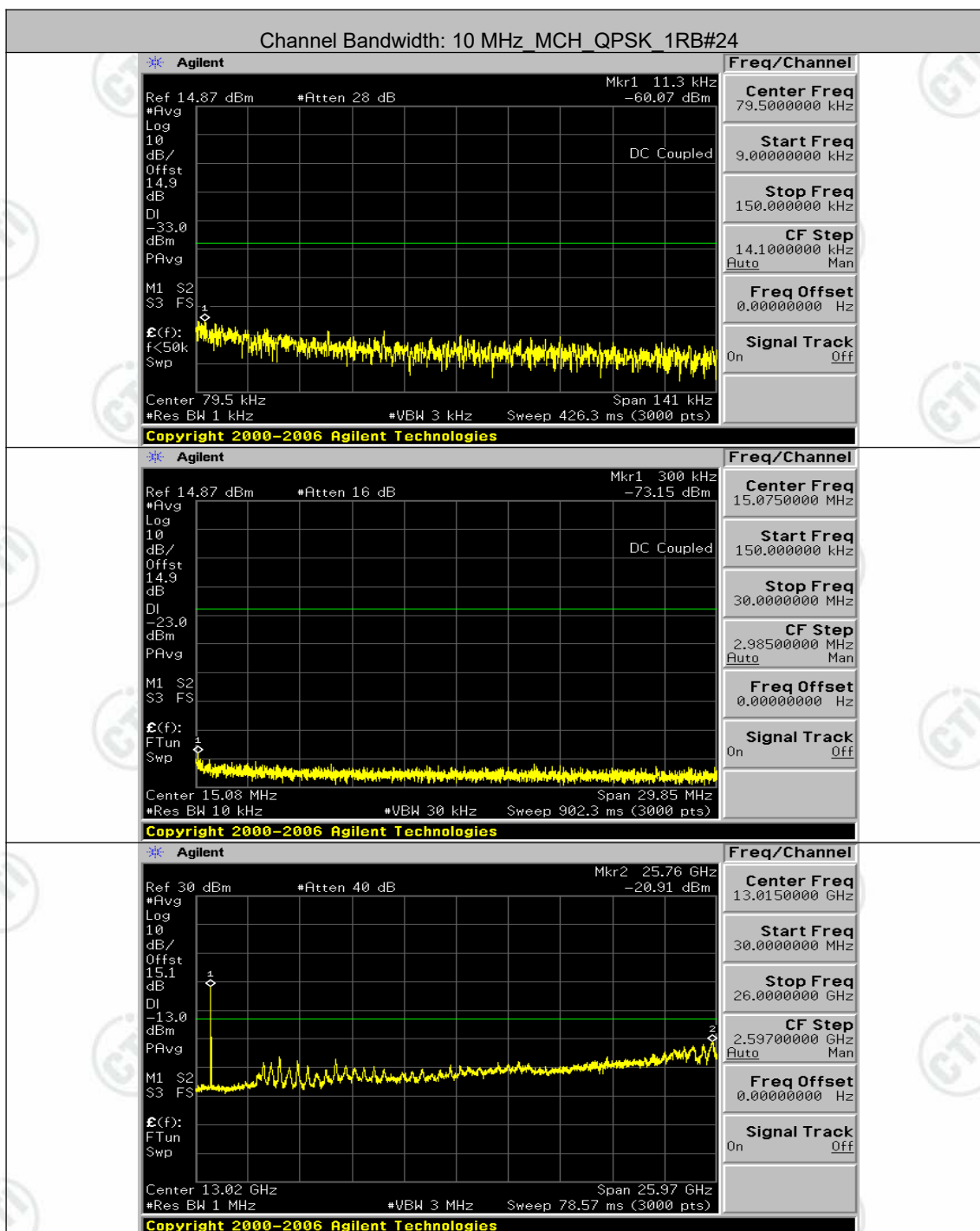


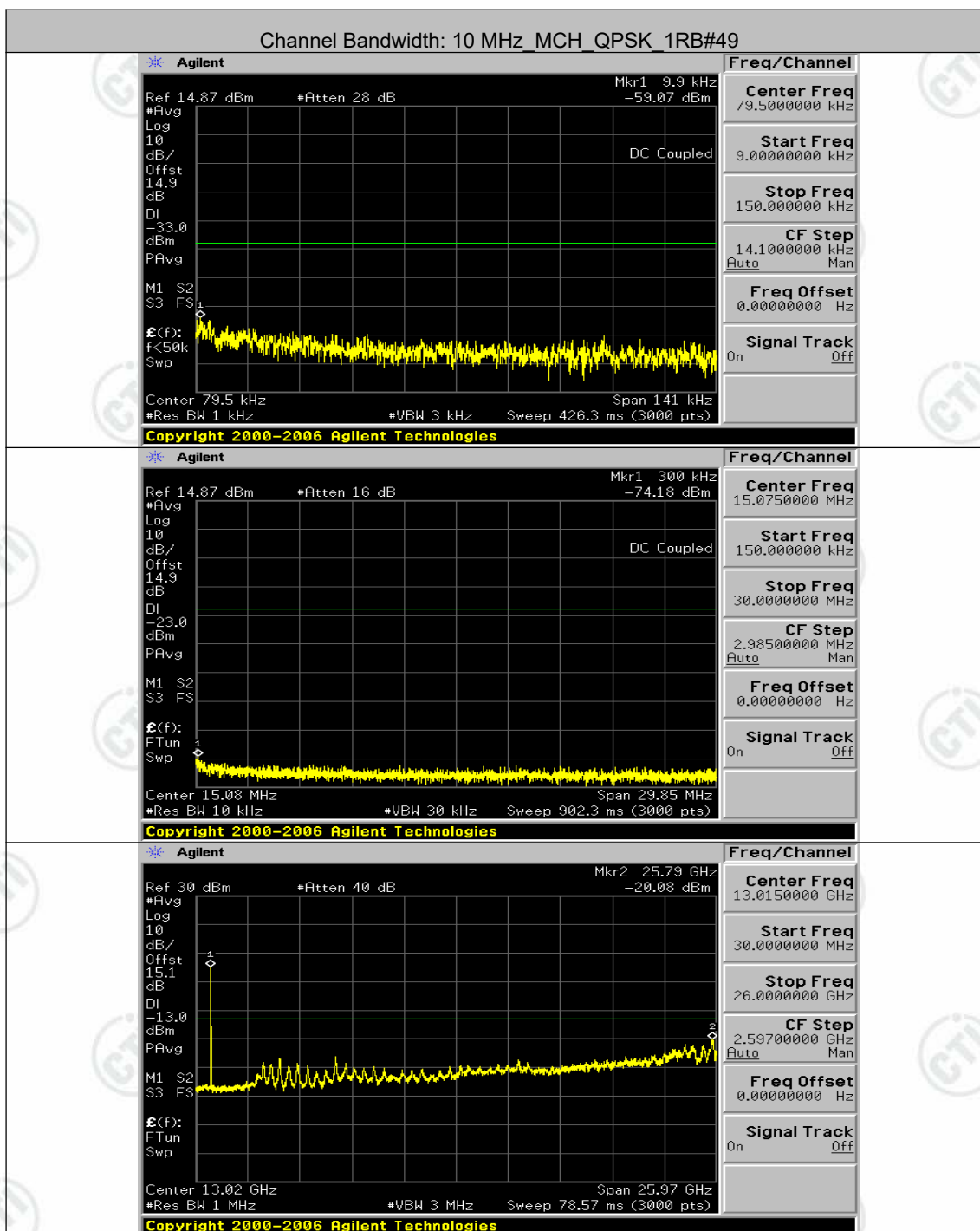


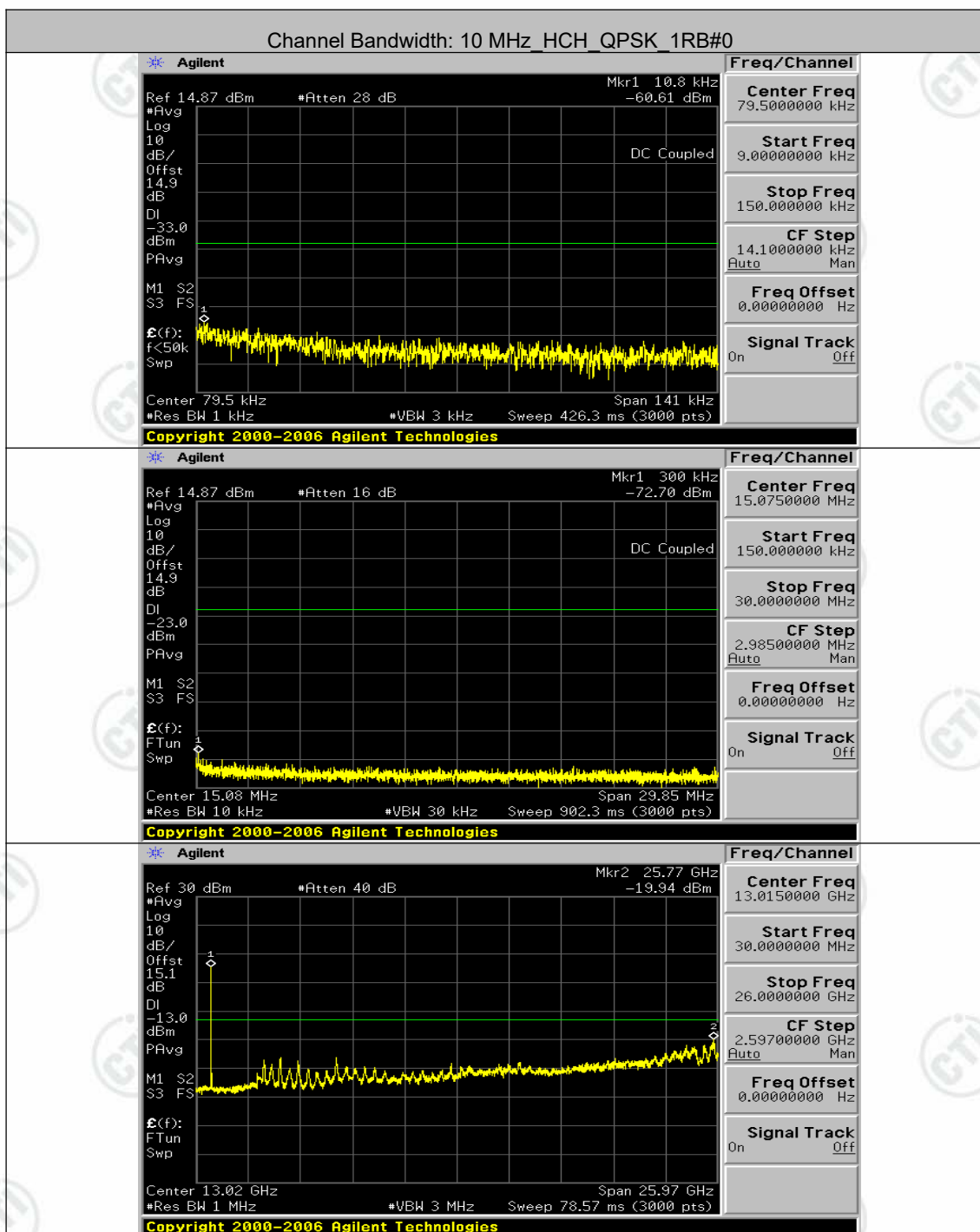


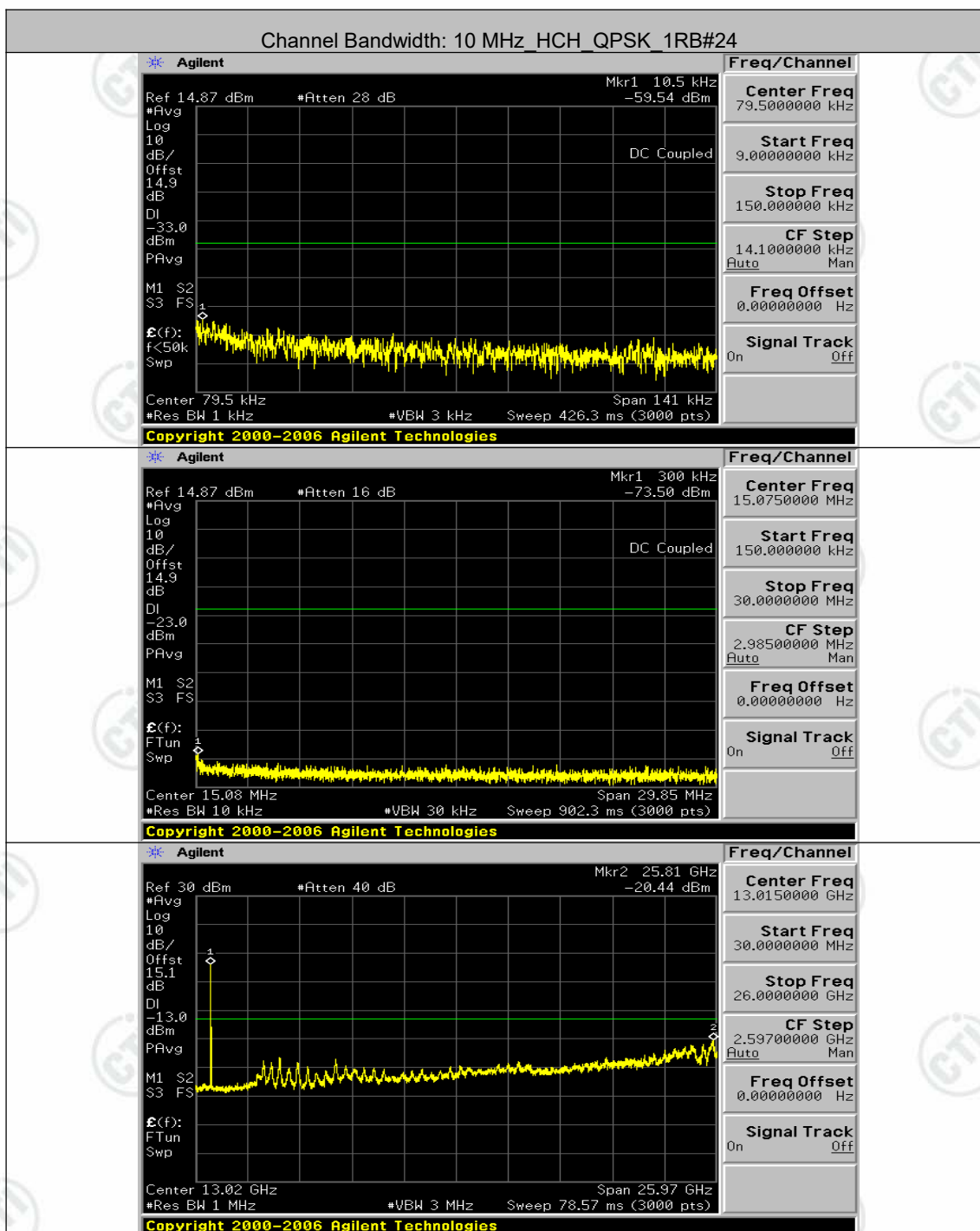


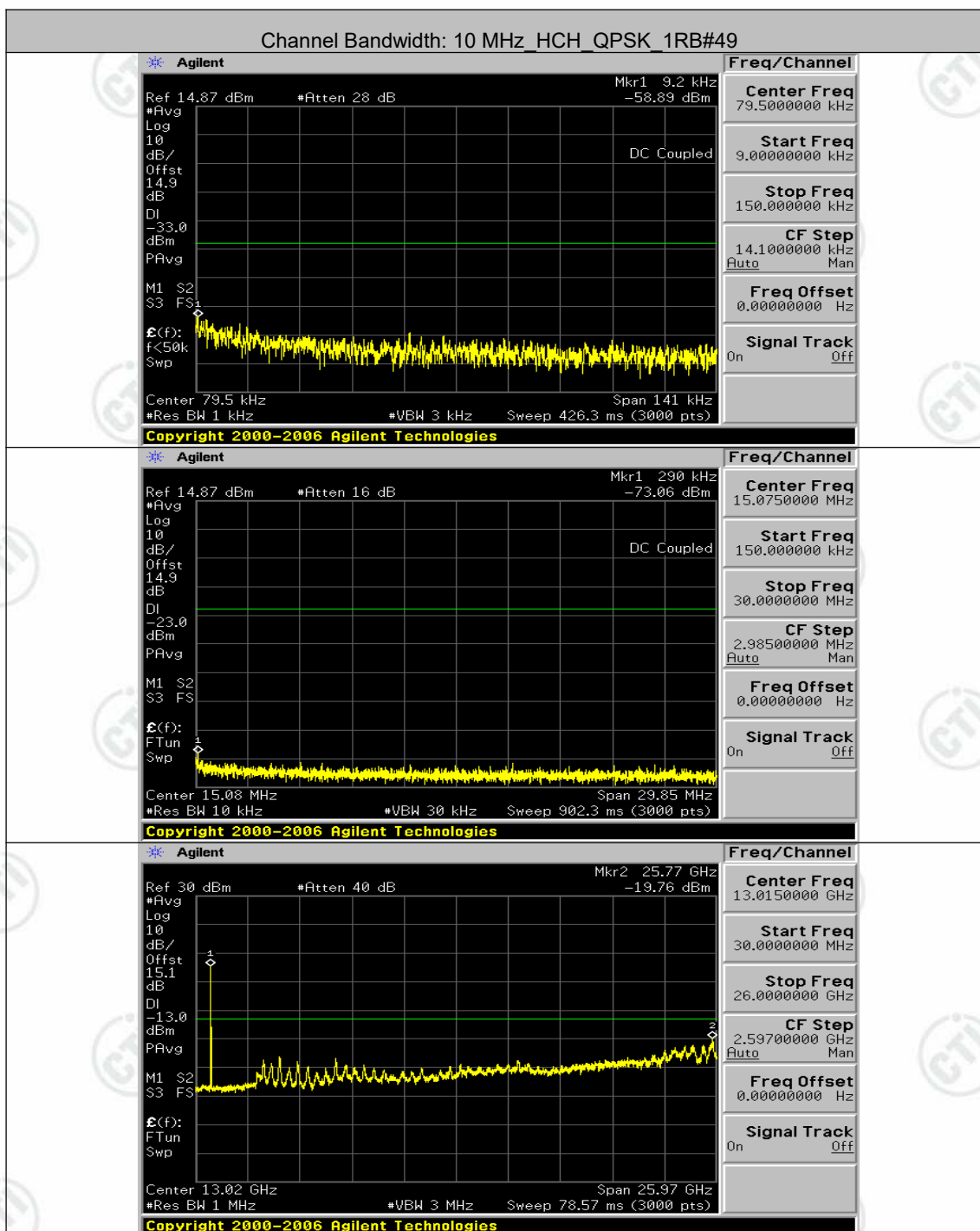


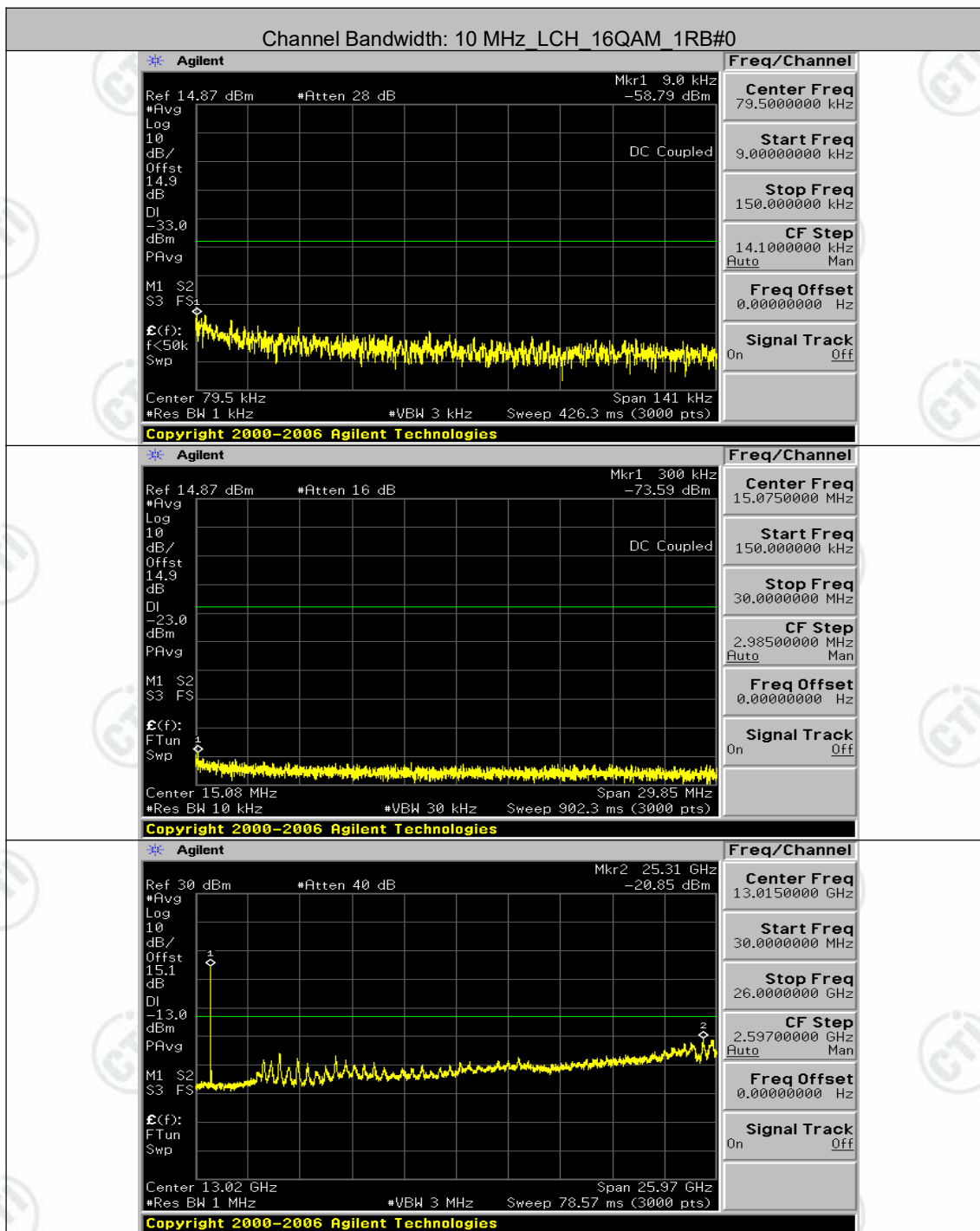


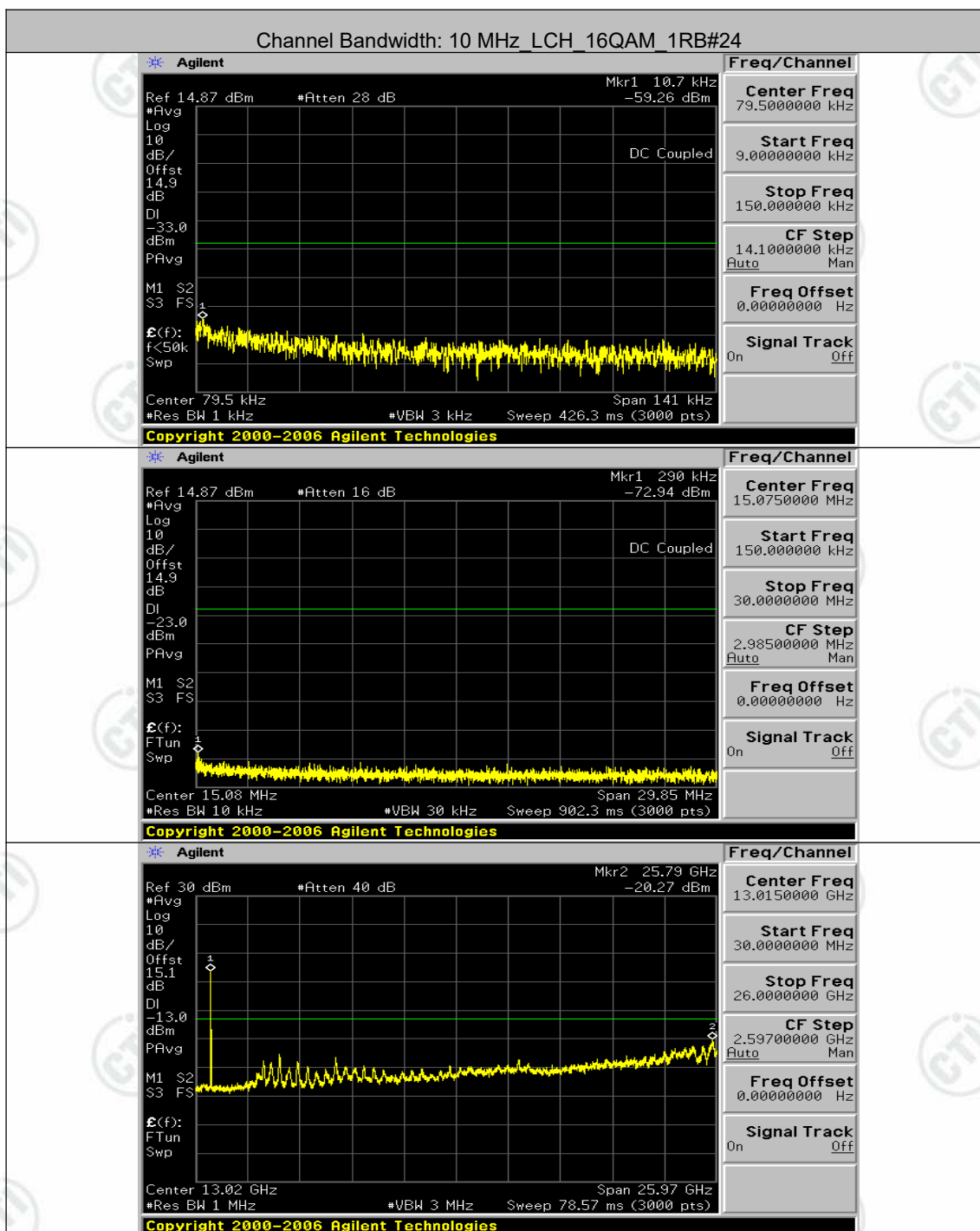


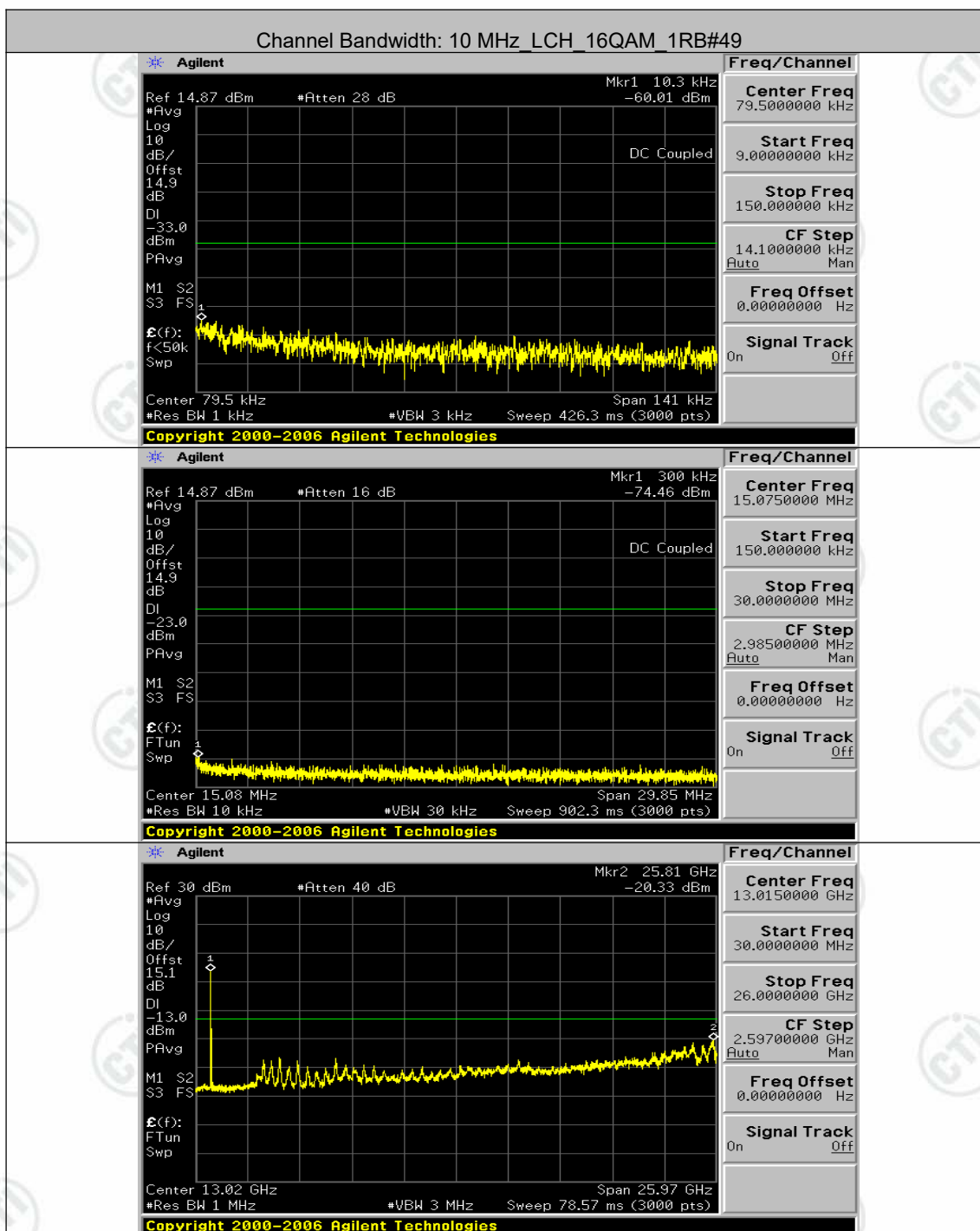


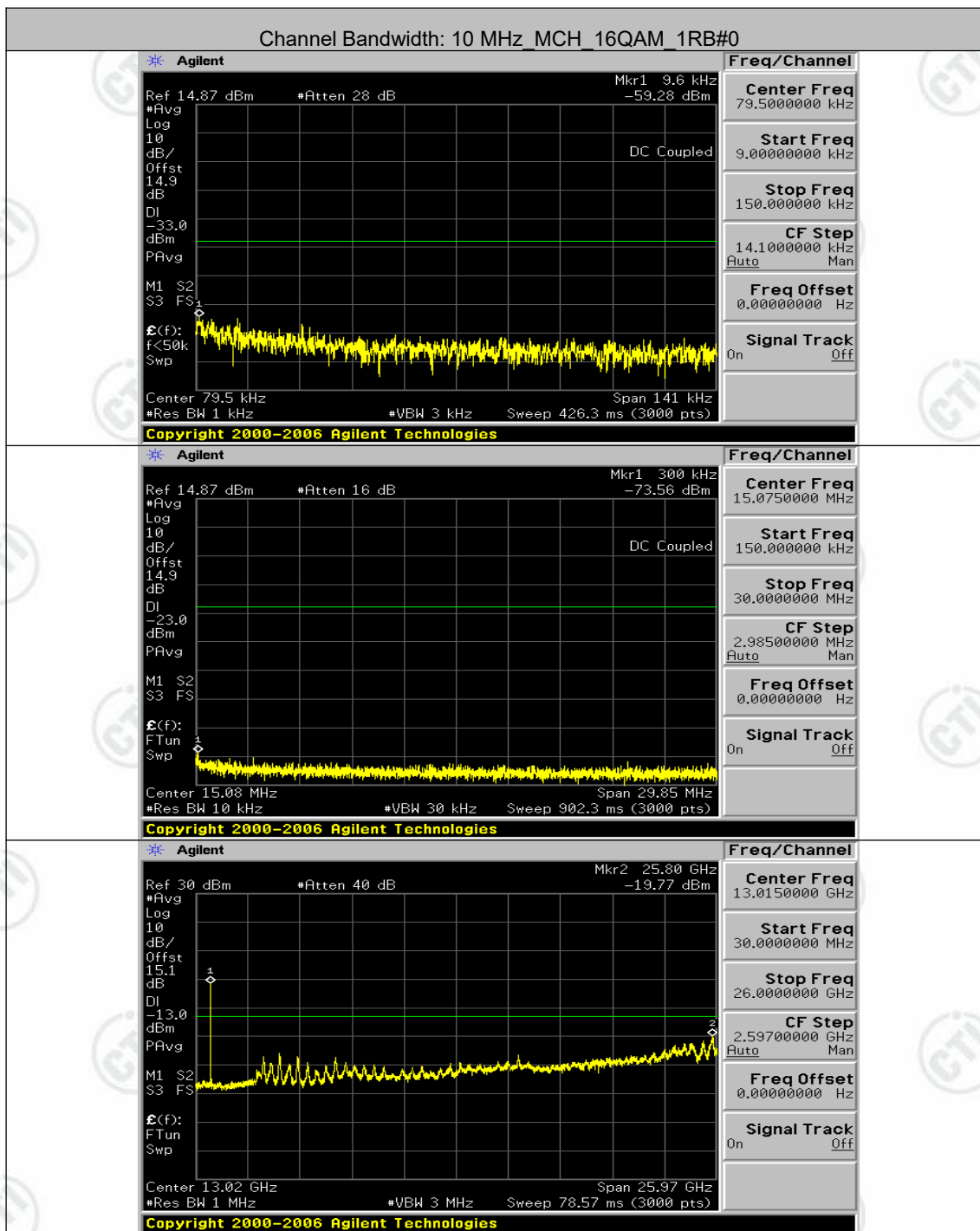


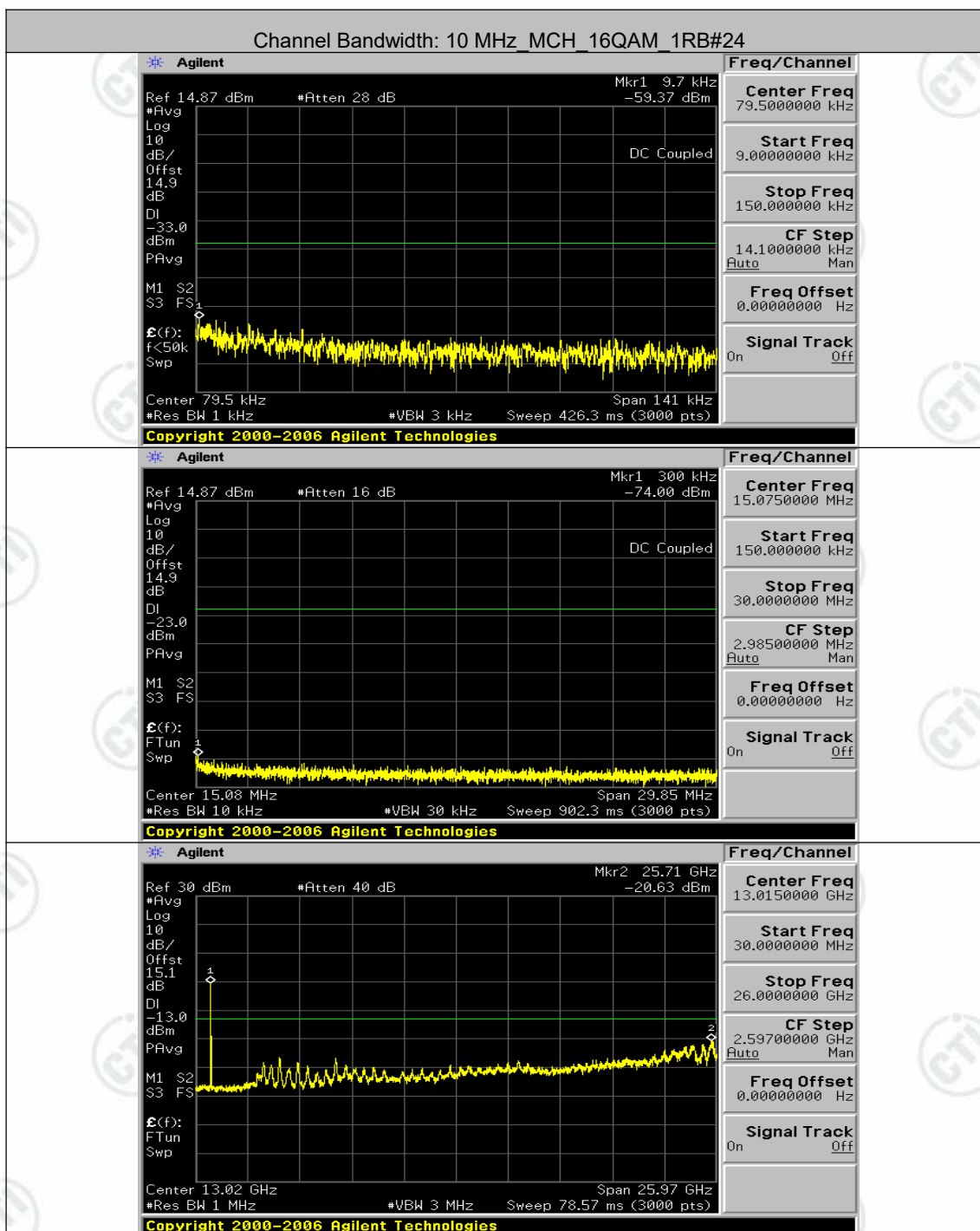


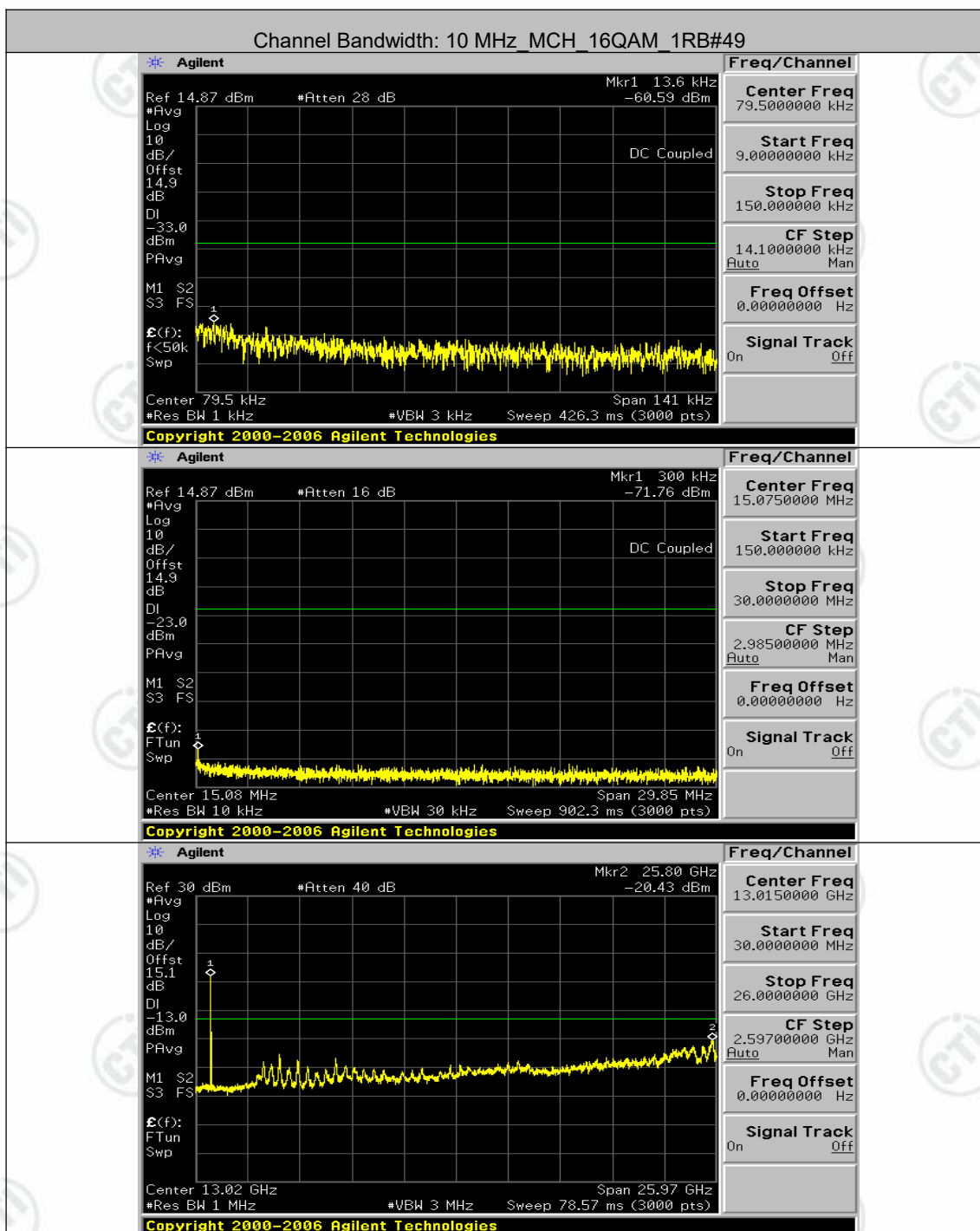


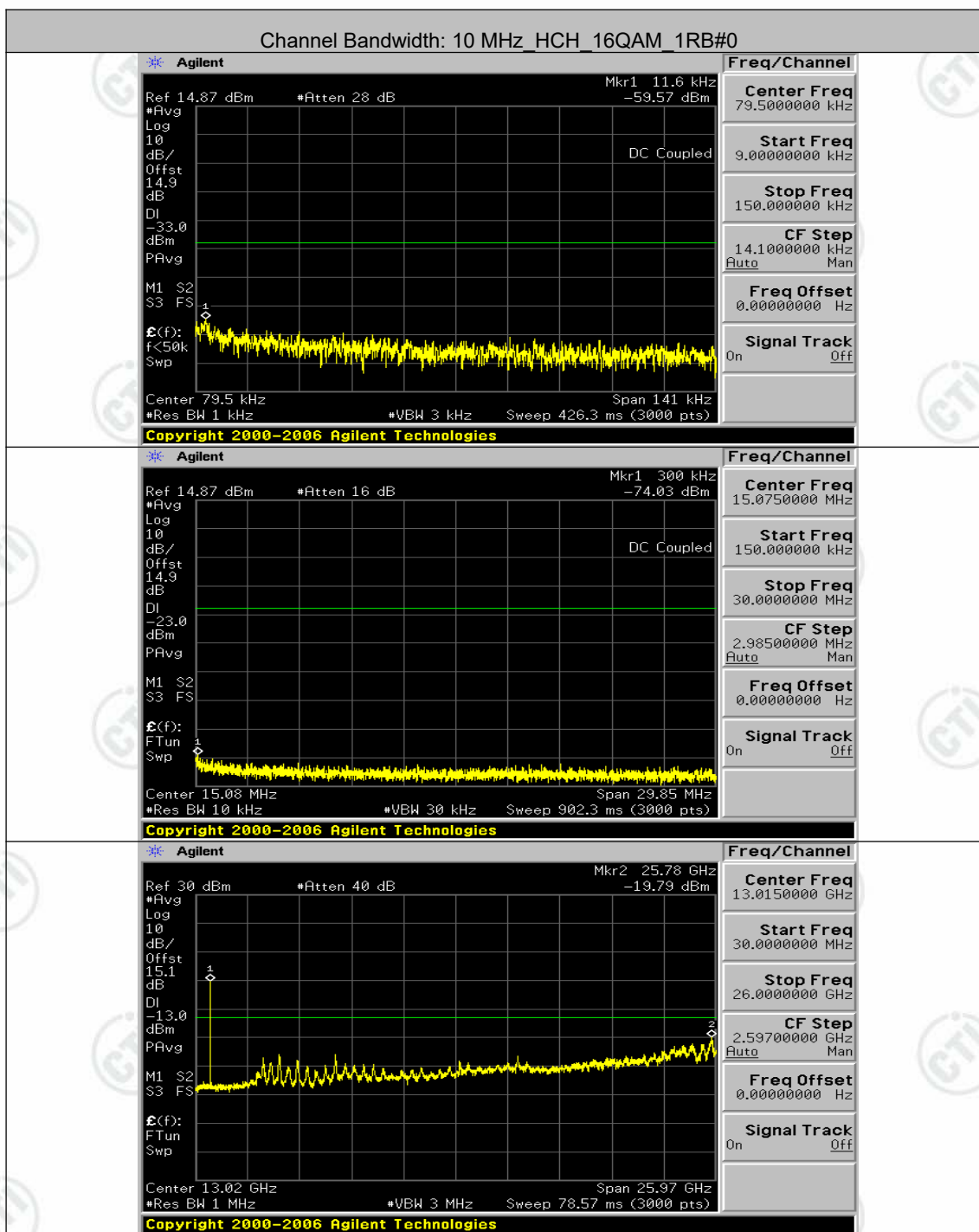


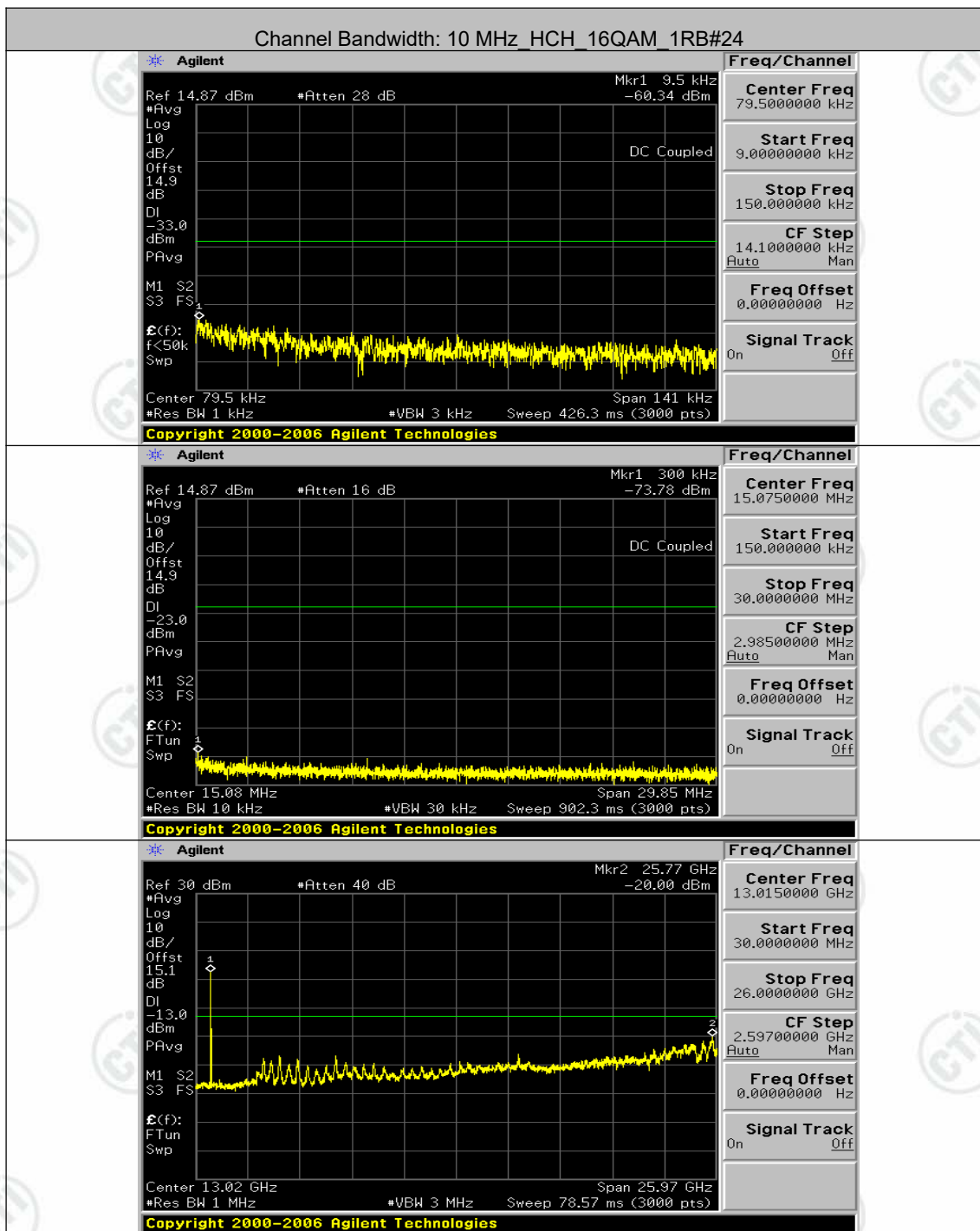


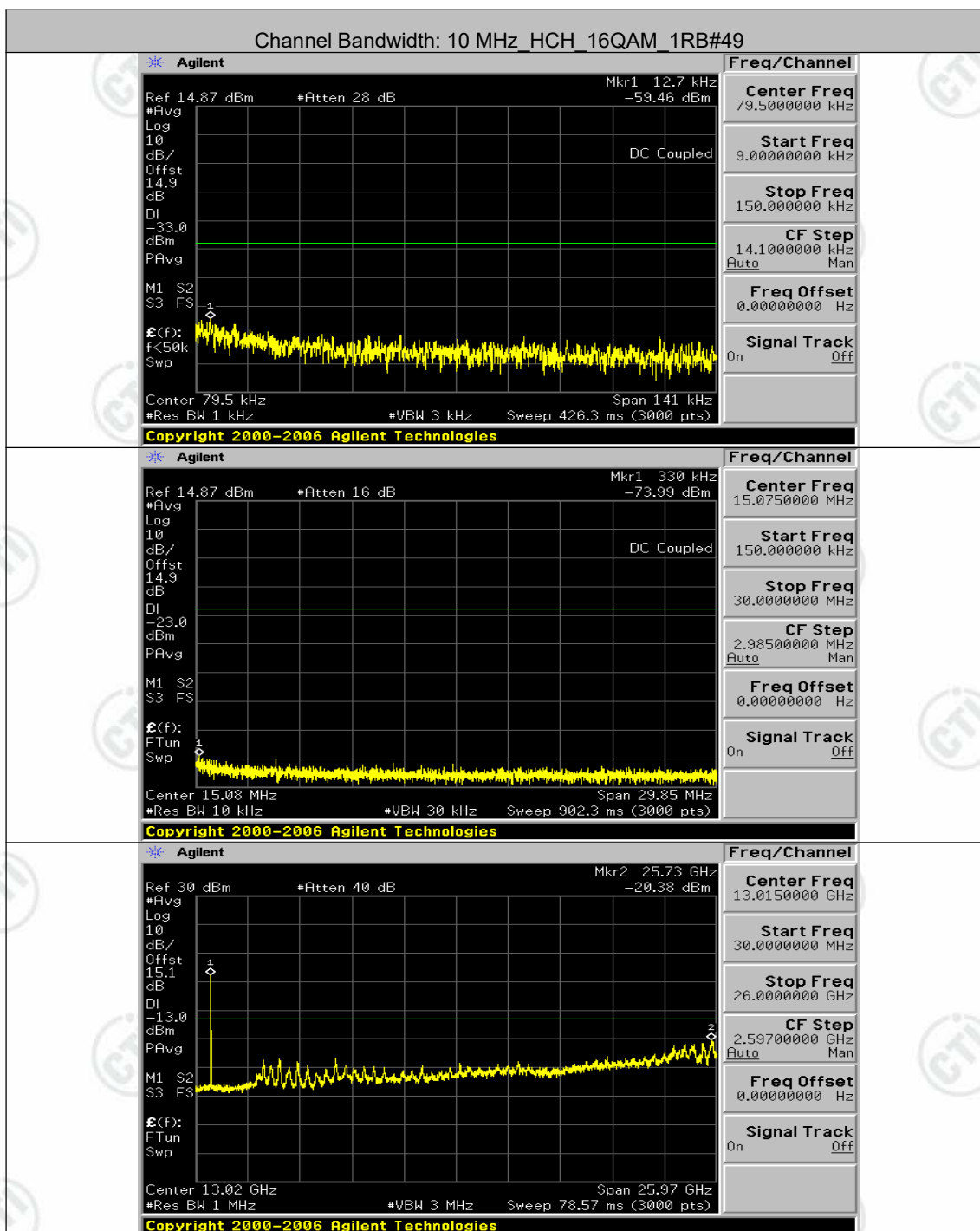












Appendix E): Frequency Stability

Test Result

 $G_T - L_C = -0.5\text{dB}$

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	37.97	0.048705	± 2.5	PASS
		VN	TN	36.21	0.046448	± 2.5	PASS
		VH	TN	37.64	0.048283	± 2.5	PASS
	MCH	VL	TN	-4.28	-0.005470	± 2.5	PASS
		VN	TN	14.18	0.018128	± 2.5	PASS
		VH	TN	-20.70	-0.026470	± 2.5	PASS
	HCH	VL	TN	-12.20	-0.015554	± 2.5	PASS
		VN	TN	-48.72	-0.062107	± 2.5	PASS
		VH	TN	-16.19	-0.020642	± 2.5	PASS
16QAM	LCH	VL	TN	1.00	0.001285	± 2.5	PASS
		VN	TN	24.65	0.031620	± 2.5	PASS
		VH	TN	11.09	0.014223	± 2.5	PASS
	MCH	VL	TN	31.70	0.040537	± 2.5	PASS
		VN	TN	-4.69	-0.006000	± 2.5	PASS
		VH	TN	44.40	0.056781	± 2.5	PASS
	HCH	VL	TN	12.59	0.016047	± 2.5	PASS
		VN	TN	-17.08	-0.021772	± 2.5	PASS
		VH	TN	26.95	0.034354	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VN	-30	37.14	0.047641	± 2.5	PASS
		VN	-20	34.50	0.044264	± 2.5	PASS
		VN	-10	35.98	0.046154	± 2.5	PASS
		VN	0	38.14	0.048926	± 2.5	PASS
		VN	10	41.91	0.053770	± 2.5	PASS
		VN	20	46.43	0.059569	± 2.5	PASS
		VN	30	51.18	0.065662	± 2.5	PASS
		VN	40	-0.03	-0.000037	± 2.5	PASS
		VN	50	3.00	0.003854	± 2.5	PASS
	MCH	VN	-30	-24.20	-0.030952	± 2.5	PASS
		VN	-20	-24.62	-0.031482	± 2.5	PASS
		VN	-10	-23.83	-0.030476	± 2.5	PASS
		VN	0	-21.82	-0.027897	± 2.5	PASS
		VN	10	-20.13	-0.025738	± 2.5	PASS
		VN	20	-35.93	-0.045952	± 2.5	PASS
		VN	30	-31.43	-0.040190	± 2.5	PASS
		VN	40	-29.63	-0.037885	± 2.5	PASS
		VN	50	-28.02	-0.035836	± 2.5	PASS
	HCH	VN	-30	-26.18	-0.033369	± 2.5	PASS
		VN	-20	-32.46	-0.041375	± 2.5	PASS
		VN	-10	-39.84	-0.050784	± 2.5	PASS
		VN	0	-49.55	-0.063165	± 2.5	PASS

		VN	10	-9.91	-0.012637	± 2.5	PASS
		VN	20	-15.76	-0.020095	± 2.5	PASS
		VN	30	-21.54	-0.027461	± 2.5	PASS
		VN	40	-27.49	-0.035047	± 2.5	PASS
		VN	50	-32.49	-0.041411	± 2.5	PASS
16QAM	LCH	VN	-30	17.40	0.022316	± 2.5	PASS
		VN	-20	22.62	0.029014	± 2.5	PASS
		VN	-10	32.82	0.042099	± 2.5	PASS
		VN	0	16.69	0.021416	± 2.5	PASS
		VN	10	27.08	0.034740	± 2.5	PASS
		VN	20	35.92	0.046081	± 2.5	PASS
		VN	30	43.24	0.055477	± 2.5	PASS
		VN	40	50.64	0.064965	± 2.5	PASS
		VN	50	-0.24	-0.000312	± 2.5	PASS
	MCH	VN	-30	53.96	0.069001	± 2.5	PASS
		VN	-20	14.26	0.018238	± 2.5	PASS
		VN	-10	20.60	0.026342	± 2.5	PASS
		VN	0	20.97	0.026818	± 2.5	PASS
		VN	10	1.62	0.002067	± 2.5	PASS
		VN	20	10.27	0.013134	± 2.5	PASS
		VN	30	15.81	0.020214	± 2.5	PASS
		VN	40	22.65	0.028958	± 2.5	PASS
		VN	50	27.35	0.034976	± 2.5	PASS
	HCH	VN	-30	35.26	0.044949	± 2.5	PASS
		VN	-20	43.50	0.055452	± 2.5	PASS
		VN	-10	14.22	0.018125	± 2.5	PASS
		VN	0	4.42	0.005635	± 2.5	PASS
		VN	10	-17.01	-0.021681	± 2.5	PASS
		VN	20	-12.97	-0.016539	± 2.5	PASS
		VN	30	-4.32	-0.005507	± 2.5	PASS
		VN	40	-0.30	-0.000383	± 2.5	PASS
		VN	50	3.45	0.004395	± 2.5	PASS

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 Channel Bandwidth: 10 MHz

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Channel Bandwidth: 10 MHz							
Voltage							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
QPSK	LCH	VL	TN	-18.10	-0.023141	± 2.5	PASS
		VN	TN	-34.75	-0.044434	± 2.5	PASS
		VH	TN	-37.39	-0.047818	± 2.5	PASS
	MCH	VL	TN	-43.47	-0.055592	± 2.5	PASS
		VN	TN	-4.19	-0.005360	± 2.5	PASS
		VH	TN	-1.89	-0.002415	± 2.5	PASS
	HCH	VL	TN	-32.03	-0.040958	± 2.5	PASS
		VN	TN	-7.01	-0.008964	± 2.5	PASS
		VH	TN	-51.26	-0.065544	± 2.5	PASS
16QAM	LCH	VL	TN	25.79	0.032982	± 2.5	PASS
		VN	TN	0.01	0.000018	± 2.5	PASS
		VH	TN	41.21	0.052702	± 2.5	PASS
	MCH	VL	TN	11.69	0.014945	± 2.5	PASS
		VN	TN	-29.47	-0.037684	± 2.5	PASS
		VH	TN	36.76	0.047013	± 2.5	PASS
	HCH	VL	TN	21.09	0.026964	± 2.5	PASS
		VN	TN	-15.98	-0.020433	± 2.5	PASS
		VH	TN	34.65	0.044306	± 2.5	PASS
Temperature							
Modulation	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
16QAM	LCH	VN	-30	-41.60	-0.053196	± 2.5	PASS
		VN	-20	-47.42	-0.060641	± 2.5	PASS
		VN	-10	-49.27	-0.063001	± 2.5	PASS
		VN	0	-52.66	-0.067336	± 2.5	PASS
		VN	10	-1.59	-0.002031	± 2.5	PASS
		VN	20	-9.68	-0.012384	± 2.5	PASS
		VN	30	-15.22	-0.019464	± 2.5	PASS
		VN	40	-20.54	-0.026269	± 2.5	PASS
		VN	50	-22.73	-0.029068	± 2.5	PASS
	MCH	VN	-30	-3.82	-0.004884	± 2.5	PASS
		VN	-20	-6.61	-0.008451	± 2.5	PASS
		VN	-10	-10.70	-0.013683	± 2.5	PASS
		VN	0	-14.25	-0.018220	± 2.5	PASS
		VN	10	-16.18	-0.020689	± 2.5	PASS
		VN	20	-17.78	-0.022738	± 2.5	PASS
		VN	30	-22.47	-0.028738	± 2.5	PASS
		VN	40	-36.12	-0.046190	± 2.5	PASS
		VN	50	-36.42	-0.046574	± 2.5	PASS
	HCH	VN	-30	-29.11	-0.037226	± 2.5	PASS
		VN	-20	-10.14	-0.012970	± 2.5	PASS
		VN	-10	-14.26	-0.018238	± 2.5	PASS
		VN	0	-19.23	-0.024586	± 2.5	PASS
		VN	10	-17.82	-0.022793	± 2.5	PASS
		VN	20	-14.63	-0.018714	± 2.5	PASS
		VN	30	-37.52	-0.047983	± 2.5	PASS

QPSK		VN	40	-37.01	-0.047324	± 2.5	PASS
		VN	50	-35.66	-0.045604	± 2.5	PASS
	LCH	VN	-30	23.59	0.030165	± 2.5	PASS
		VN	-20	32.90	0.042074	± 2.5	PASS
		VN	-10	40.73	0.052080	± 2.5	PASS
		VN	0	-5.24	-0.006695	± 2.5	PASS
		VN	10	1.85	0.002360	± 2.5	PASS
		VN	20	8.23	0.010518	± 2.5	PASS
		VN	30	16.18	0.020689	± 2.5	PASS
		VN	40	24.06	0.030769	± 2.5	PASS
		VN	50	28.15	0.036001	± 2.5	PASS
		MCH	VN	-30	46.85	0.059910	± 2.5
	VN		-20	-0.76	-0.000970	± 2.5	PASS
	VN		-10	3.39	0.004335	± 2.5	PASS
	VN		0	10.36	0.013244	± 2.5	PASS
	VN		10	9.73	0.012439	± 2.5	PASS
	VN		20	15.86	0.020287	± 2.5	PASS
	VN		30	21.04	0.026909	± 2.5	PASS
	VN		40	22.67	0.028994	± 2.5	PASS
	HCH	VN	50	25.08	0.032068	± 2.5	PASS
		VN	-30	44.16	0.056470	± 2.5	PASS
		VN	-20	-1.32	-0.001683	± 2.5	PASS
		VN	-10	5.44	0.006951	± 2.5	PASS
		VN	0	14.41	0.018421	± 2.5	PASS
		VN	10	21.20	0.027110	± 2.5	PASS
		VN	20	22.56	0.028848	± 2.5	PASS
		VN	30	26.89	0.034391	± 2.5	PASS
	VN	40	27.24	0.034830	± 2.5	PASS	
	VN	50	31.57	0.040373	± 2.5	PASS	

Appendix F): Field strength of spurious radiation

Receiver Setup:	<table><tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr><tr><td>0.009MHz-30MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr><tr><td>30MHz-1GHz</td><td>Peak</td><td>120kHz</td><td>300kHz</td><td>Peak</td></tr><tr><td>Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr></table>	Frequency	Detector	RBW	VBW	Remark	0.009MHz-30MHz	Peak	10kHz	30kHz	Peak	30MHz-1GHz	Peak	120kHz	300kHz	Peak	Above 1GHz	Peak	1MHz	3MHz	Peak
Frequency	Detector	RBW	VBW	Remark																	
0.009MHz-30MHz	Peak	10kHz	30kHz	Peak																	
30MHz-1GHz	Peak	120kHz	300kHz	Peak																	
Above 1GHz	Peak	1MHz	3MHz	Peak																	
Measurement Procedure:	<div>1. Scan up to 10th harmonic, find the maximum radiation frequency to measure.</div> <div>2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.</div> <div>Test procedure as below:</div> <div>1) The EUT was powered ON and placed on a 1.5m high table at a 3 meter fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.</div> <div>2) The EUT was set 3 meters(above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</div> <div>3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.</div> <div>4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.</div> <div>5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.</div> <div>6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.</div> <div>7) The output power into the substitution antenna was then measured.</div> <div>8) Steps 6) and 7)were repeated with both antennas polarized.</div> <div>9) Calculate power in dBm by the following formula:<div>ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)</div><div>EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)</div><div>EIRP=ERP+2.15dB</div><div>where:</div><div>Pg is the generator output power into the substitution antenna.</div></div> <div>10) Test the EUT in the lowest channel, the middle channel the Highest channel</div> <div>11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode,And found the X axis positioning which it is worse case.</div> <div>12) Repeat above procedures until all frequencies measured was complete.</div>																				
Limit:	Attenuated at least 43+10log(P)																				

Test Data:
QPSK

Mode:		LTE Traffic						
Band:		13		Channel:			23205	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	61.0901	150	153	-79.92	-13.00	66.92	Pass	Horizontal
2	161.3931	150	359	-58.12	-13.00	45.12	Pass	Horizontal
3	322.6151	150	135	-67.67	-13.00	54.67	Pass	Horizontal
4	354.8207	150	120	-64.64	-13.00	51.64	Pass	Horizontal
5	479.9570	150	120	-70.77	-13.00	57.77	Pass	Horizontal
6	598.3029	150	330	-66.36	-13.00	53.36	Pass	Horizontal
7	1559.0000	150	168	-53.78	-13.00	40.78	Pass	Horizontal
8	2338.5000	150	359	-51.98	-13.00	38.98	Pass	Horizontal
9	3118.0000	150	103	-48.53	-13.00	35.53	Pass	Horizontal
10	4270.6271	150	264	-47.77	-13.00	34.77	Pass	Horizontal
11	7680.4680	150	355	-45.42	-13.00	32.42	Pass	Horizontal
12	15278.7279	150	285	-35.80	-13.00	22.80	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23205	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	52.5051	150	298	-67.91	-13.00	54.91	Pass	Vertical
2	161.2476	150	359	-69.92	-13.00	56.92	Pass	Vertical
3	208.8769	150	266	-69.89	-13.00	56.89	Pass	Vertical
4	322.7606	150	24	-73.98	-13.00	60.98	Pass	Vertical
5	479.9570	150	284	-67.66	-13.00	54.66	Pass	Vertical
6	597.4784	150	316	-63.98	-13.00	50.98	Pass	Vertical
7	1559.0000	150	88	-53.92	-13.00	40.92	Pass	Vertical
8	2338.5000	150	154	-49.87	-13.00	36.87	Pass	Vertical
9	3118.0000	150	254	-49.42	-13.00	36.42	Pass	Vertical
10	4659.1659	150	72	-47.98	-13.00	34.98	Pass	Vertical
11	7278.4278	150	295	-45.61	-13.00	32.61	Pass	Vertical
12	11403.8404	150	183	-39.63	-13.00	26.63	Pass	Vertical

Mode:		LTE Traffic						
Band:		13			Channel:		23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.0205	150	345	-71.25	-13.00	58.25	Pass	Horizontal
2	161.1991	150	5	-57.50	-13.00	44.50	Pass	Horizontal
3	290.5065	150	121	-68.18	-13.00	55.18	Pass	Horizontal
4	354.7237	150	135	-64.31	-13.00	51.31	Pass	Horizontal
5	398.9094	150	135	-64.60	-13.00	51.60	Pass	Horizontal
6	599.1760	150	298	-65.14	-13.00	52.14	Pass	Horizontal
7	1564.0000	150	154	-53.43	-13.00	40.43	Pass	Horizontal
8	2346.0000	150	359	-51.13	-13.00	38.13	Pass	Horizontal
9	3128.0000	150	304	-48.52	-13.00	35.52	Pass	Horizontal
10	5170.7171	150	264	-48.07	-13.00	35.07	Pass	Horizontal
11	9399.6400	150	193	-41.24	-13.00	28.24	Pass	Horizontal
12	14827.1827	150	112	-36.81	-13.00	23.81	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13			Channel:		23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	52.4566	150	261	-68.57	-13.00	55.57	Pass	Vertical
2	94.9933	150	344	-79.76	-13.00	66.76	Pass	Vertical
3	161.2476	150	359	-69.93	-13.00	56.93	Pass	Vertical
4	199.7100	150	130	-67.22	-13.00	54.22	Pass	Vertical
5	398.4729	150	261	-73.91	-13.00	60.91	Pass	Vertical
6	598.5939	150	65	-65.86	-13.00	52.86	Pass	Vertical
7	1564.0000	150	2	-54.84	-13.00	41.84	Pass	Vertical
8	2346.0000	150	130	-50.21	-13.00	37.21	Pass	Vertical
9	3128.0000	150	187	-48.77	-13.00	35.77	Pass	Vertical
10	6426.3426	150	238	-46.98	-13.00	33.98	Pass	Vertical
11	9470.1470	150	228	-42.04	-13.00	29.04	Pass	Vertical
12	15305.7306	150	106	-37.12	-13.00	24.12	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	62.9816	150	359	-79.13	-13.00	66.13	Pass	Horizontal
2	119.9720	150	359	-70.33	-13.00	57.33	Pass	Horizontal
3	161.2961	150	359	-56.44	-13.00	43.44	Pass	Horizontal
4	354.8207	150	133	-63.76	-13.00	50.76	Pass	Horizontal
5	399.4915	150	274	-69.11	-13.00	56.11	Pass	Horizontal
6	598.9819	150	253	-67.90	-13.00	54.90	Pass	Horizontal
7	1564.0000	150	359	-54.79	-13.00	41.79	Pass	Horizontal
8	2346.0000	150	227	-51.39	-13.00	38.39	Pass	Horizontal
9	3128.0000	150	17	-49.03	-13.00	36.03	Pass	Horizontal
10	4567.6568	150	194	-48.01	-13.00	35.01	Pass	Horizontal
11	9417.6418	150	208	-42.14	-13.00	29.14	Pass	Horizontal
12	14777.6778	150	194	-36.99	-13.00	23.99	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	54.1542	150	1	-69.77	-13.00	56.77	Pass	Vertical
2	161.3446	150	312	-70.70	-13.00	57.70	Pass	Vertical
3	199.2735	150	164	-67.33	-13.00	54.33	Pass	Vertical
4	322.5666	150	39	-73.83	-13.00	60.83	Pass	Vertical
5	499.9885	150	358	-77.38	-13.00	64.38	Pass	Vertical
6	598.9334	150	333	-66.51	-13.00	53.51	Pass	Vertical
7	1564.0000	150	67	-54.73	-13.00	41.73	Pass	Vertical
8	2346.0000	150	116	-50.17	-13.00	37.17	Pass	Vertical
9	3128.0000	150	209	-49.76	-13.00	36.76	Pass	Vertical
10	5535.2535	150	179	-47.76	-13.00	34.76	Pass	Vertical
11	9519.6520	150	287	-41.97	-13.00	28.97	Pass	Vertical
12	14770.1770	150	28	-37.39	-13.00	24.39	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	61.9146	150	38	-79.80	-13.00	66.80	Pass	Horizontal
2	120.0205	150	1	-71.25	-13.00	58.25	Pass	Horizontal
3	161.2961	150	1	-57.05	-13.00	44.05	Pass	Horizontal
4	355.1118	150	134	-63.78	-13.00	50.78	Pass	Horizontal
5	480.7815	150	161	-69.64	-13.00	56.64	Pass	Horizontal
6	597.4784	150	86	-66.83	-13.00	53.83	Pass	Horizontal
7	1564.0000	150	256	-55.03	-13.00	42.03	Pass	Horizontal
8	2346.0000	150	256	-51.00	-13.00	38.00	Pass	Horizontal
9	3128.0000	150	104	-48.42	-13.00	35.42	Pass	Horizontal
10	6031.8032	150	2	-48.59	-13.00	35.59	Pass	Horizontal
11	9471.6472	150	148	-40.76	-13.00	27.76	Pass	Horizontal
12	14785.1785	150	359	-36.52	-13.00	23.52	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	54.7362	150	209	-69.58	-13.00	56.58	Pass	Vertical
2	161.2476	150	352	-69.61	-13.00	56.61	Pass	Vertical
3	199.3220	150	162	-66.64	-13.00	53.64	Pass	Vertical
4	322.5181	150	40	-74.35	-13.00	61.35	Pass	Vertical
5	399.2005	150	257	-76.00	-13.00	63.00	Pass	Vertical
6	599.1275	150	305	-66.61	-13.00	53.61	Pass	Vertical
7	1564.0000	150	305	-54.07	-13.00	41.07	Pass	Vertical
8	2346.0000	150	182	-51.42	-13.00	38.42	Pass	Vertical
9	3128.0000	150	60	-48.94	-13.00	35.94	Pass	Vertical
10	6013.8014	150	45	-48.85	-13.00	35.85	Pass	Vertical
11	9549.6550	150	45	-41.60	-13.00	28.60	Pass	Vertical
12	15632.7633	150	136	-36.50	-13.00	23.50	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23255	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	119.9720	150	360	-70.59	-13.00	57.59	Pass	Horizontal
2	161.4901	150	347	-59.09	-13.00	46.09	Pass	Horizontal
3	290.2155	150	132	-68.06	-13.00	55.06	Pass	Horizontal
4	354.5297	150	111	-64.28	-13.00	51.28	Pass	Horizontal
5	398.4244	150	1	-67.72	-13.00	54.72	Pass	Horizontal
6	597.4299	150	64	-69.01	-13.00	56.01	Pass	Horizontal
7	1569.0000	150	205	-54.47	-13.00	41.47	Pass	Horizontal
8	2353.5000	150	179	-50.56	-13.00	37.56	Pass	Horizontal
9	3138.0000	150	142	-48.72	-13.00	35.72	Pass	Horizontal
10	5759.3880	150	30	-48.35	-13.00	35.35	Pass	Horizontal
11	9433.8217	150	197	-41.24	-13.00	28.24	Pass	Horizontal
12	14738.8369	150	359	-36.74	-13.00	23.74	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23255	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	54.7847	150	299	-69.36	-13.00	56.36	Pass	Vertical
2	161.2476	150	359	-69.66	-13.00	56.66	Pass	Vertical
3	290.0700	150	1	-72.98	-13.00	59.98	Pass	Vertical
4	354.8692	150	67	-74.94	-13.00	61.94	Pass	Vertical
5	399.7825	150	274	-68.68	-13.00	55.68	Pass	Vertical
6	597.5754	150	299	-66.96	-13.00	53.96	Pass	Vertical
7	1569.0000	150	299	-54.31	-13.00	41.31	Pass	Vertical
8	2353.5000	150	113	-49.79	-13.00	36.79	Pass	Vertical
9	3138.0000	150	252	-50.09	-13.00	37.09	Pass	Vertical
10	5839.6420	150	281	-48.28	-13.00	35.28	Pass	Vertical
11	9466.0733	150	311	-41.26	-13.00	28.26	Pass	Vertical
12	15298.3649	150	119	-36.26	-13.00	23.26	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.0205	150	1	-70.13	-13.00	57.13	Pass	Horizontal
2	161.2476	150	1	-56.91	-13.00	43.91	Pass	Horizontal
3	322.5666	150	160	-67.38	-13.00	54.38	Pass	Horizontal
4	355.0633	150	160	-65.20	-13.00	52.20	Pass	Horizontal
5	479.8115	150	134	-67.74	-13.00	54.74	Pass	Horizontal
6	598.1089	150	41	-64.09	-13.00	51.09	Pass	Horizontal
7	1564.0000	150	206	-54.19	-13.00	41.19	Pass	Horizontal
8	2346.0000	150	160	-51.67	-13.00	38.67	Pass	Horizontal
9	3128.0000	150	0	-49.42	-13.00	36.42	Pass	Horizontal
10	4855.5928	150	311	-47.88	-13.00	34.88	Pass	Horizontal
11	9470.5735	150	165	-41.37	-13.00	28.37	Pass	Horizontal
12	14872.3436	150	190	-36.19	-13.00	23.19	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	54.3482	150	139	-69.97	-13.00	56.97	Pass	Vertical
2	161.3931	150	358	-69.97	-13.00	56.97	Pass	Vertical
3	208.8769	150	188	-69.56	-13.00	56.56	Pass	Vertical
4	290.3125	150	216	-73.03	-13.00	60.03	Pass	Vertical
5	399.8795	150	22	-74.02	-13.00	61.02	Pass	Vertical
6	599.2245	150	313	-66.03	-13.00	53.03	Pass	Vertical
7	1564.0000	150	334	-54.45	-13.00	41.45	Pass	Vertical
8	2346.0000	150	118	-50.98	-13.00	37.98	Pass	Vertical
9	3128.0000	150	278	-49.95	-13.00	36.95	Pass	Vertical
10	6657.1829	150	164	-47.22	-13.00	34.22	Pass	Vertical
11	9398.5699	150	334	-41.55	-13.00	28.55	Pass	Vertical
12	15316.3658	150	73	-36.30	-13.00	23.30	Pass	Vertical

16QAM

Mode:		LTE Traffic						
Band:		13			Channel:		23205	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	49.9830	150	59	-78.25	-13.00	65.25	Pass	Horizontal
2	90.7735	150	178	-78.82	-13.00	65.82	Pass	Horizontal
3	164.7882	150	18	-63.10	-13.00	50.10	Pass	Horizontal
4	269.9900	150	236	-78.50	-13.00	65.50	Pass	Horizontal
5	375.0463	150	18	-74.86	-13.00	61.86	Pass	Horizontal
6	478.5019	150	138	-73.24	-13.00	60.24	Pass	Horizontal
7	1559.0000	150	156	-56.74	-13.00	43.74	Pass	Horizontal
8	2338.5000	150	98	-52.71	-13.00	39.71	Pass	Horizontal
9	3118.0000	150	139	-51.75	-13.00	38.75	Pass	Horizontal
10	4945.6946	150	14	-49.16	-13.00	36.16	Pass	Horizontal
11	8976.5977	150	250	-42.77	-13.00	29.77	Pass	Horizontal
12	14396.6397	150	64	-38.75	-13.00	25.75	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13			Channel:		23205	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	59.7320	150	57	-66.44	-13.00	53.44	Pass	Vertical
2	166.9708	150	354	-69.64	-13.00	56.64	Pass	Vertical
3	208.8769	150	75	-67.61	-13.00	54.61	Pass	Vertical
4	299.9645	150	234	-77.39	-13.00	64.39	Pass	Vertical
5	398.6669	150	17	-74.82	-13.00	61.82	Pass	Vertical
6	599.7580	150	34	-71.74	-13.00	58.74	Pass	Vertical
7	1569.0000	150	354	-57.25	-13.00	44.25	Pass	Vertical
8	2353.5000	150	96	-52.64	-13.00	39.64	Pass	Vertical
9	3138.0000	150	13	-51.16	-13.00	38.16	Pass	Vertical
10	4741.6742	150	236	-48.23	-13.00	35.23	Pass	Vertical
11	9360.6361	150	27	-42.11	-13.00	29.11	Pass	Vertical
12	14047.1047	150	138	-39.60	-13.00	26.60	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	50.9530	150	175	-77.51	-13.00	64.51	Pass	Horizontal
2	119.9720	150	175	-76.78	-13.00	63.78	Pass	Horizontal
3	167.9409	150	356	-62.26	-13.00	49.26	Pass	Horizontal
4	270.0385	150	57	-77.39	-13.00	64.39	Pass	Horizontal
5	480.4905	150	34	-69.95	-13.00	56.95	Pass	Horizontal
6	687.5474	150	232	-69.96	-13.00	56.96	Pass	Horizontal
7	1564.0000	150	253	-56.17	-13.00	43.17	Pass	Horizontal
8	2346.0000	150	253	-51.54	-13.00	38.54	Pass	Horizontal
9	3128.0000	150	44	-51.40	-13.00	38.40	Pass	Horizontal
10	6543.3543	150	81	-47.94	-13.00	34.94	Pass	Horizontal
11	10200.7201	150	347	-42.41	-13.00	29.41	Pass	Horizontal
12	14858.6859	150	33	-39.61	-13.00	26.61	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	59.7320	150	16	-66.89	-13.00	53.89	Pass	Vertical
2	167.9894	150	1	-66.02	-13.00	53.02	Pass	Vertical
3	208.8769	150	191	-68.16	-13.00	55.16	Pass	Vertical
4	300.0130	150	212	-76.76	-13.00	63.76	Pass	Vertical
5	399.8795	150	34	-75.30	-13.00	62.30	Pass	Vertical
6	559.8890	150	112	-74.11	-13.00	61.11	Pass	Vertical
7	1564.0000	150	34	-58.09	-13.00	45.09	Pass	Vertical
8	2346.0000	150	73	-53.51	-13.00	40.51	Pass	Vertical
9	3128.0000	150	237	-51.75	-13.00	38.75	Pass	Vertical
10	5949.2949	150	187	-48.48	-13.00	35.48	Pass	Vertical
11	9483.6484	150	200	-42.45	-13.00	29.45	Pass	Vertical
12	16012.3012	150	225	-39.28	-13.00	26.28	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	51.2926	150	176	-77.70	-13.00	64.70	Pass	Horizontal
2	119.9720	150	176	-76.37	-13.00	63.37	Pass	Horizontal
3	168.0379	150	34	-60.98	-13.00	47.98	Pass	Horizontal
4	208.8769	150	193	-75.48	-13.00	62.48	Pass	Horizontal
5	374.9978	150	193	-74.99	-13.00	61.99	Pass	Horizontal
6	601.2131	150	115	-74.36	-13.00	61.36	Pass	Horizontal
7	1564.0000	150	98	-55.43	-13.00	42.43	Pass	Horizontal
8	2346.0000	150	176	-53.58	-13.00	40.58	Pass	Horizontal
9	3128.0000	150	336	-51.03	-13.00	38.03	Pass	Horizontal
10	6372.3372	150	348	-47.72	-13.00	34.72	Pass	Horizontal
11	9063.6064	150	72	-43.01	-13.00	30.01	Pass	Horizontal
12	14455.1455	150	158	-39.48	-13.00	26.48	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	59.9745	150	359	-65.51	-13.00	52.51	Pass	Vertical
2	168.0379	150	2	-68.07	-13.00	55.07	Pass	Vertical
3	208.8769	150	76	-68.27	-13.00	55.27	Pass	Vertical
4	398.7639	150	342	-75.98	-13.00	62.98	Pass	Vertical
5	591.5611	150	36	-75.16	-13.00	62.16	Pass	Vertical
6	687.5474	150	283	-66.80	-13.00	53.80	Pass	Vertical
7	1564.0000	150	99	-56.93	-13.00	43.93	Pass	Vertical
8	2346.0000	150	147	-53.65	-13.00	40.65	Pass	Vertical
9	3128.0000	150	336	-51.30	-13.00	38.30	Pass	Vertical
10	4968.1968	150	202	-48.92	-13.00	35.92	Pass	Vertical
11	8063.0063	150	32	-44.77	-13.00	31.77	Pass	Vertical
12	15058.2058	150	69	-38.94	-13.00	25.94	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	51.7291	150	178	-77.32	-13.00	64.32	Pass	Horizontal
2	102.6566	150	196	-77.74	-13.00	64.74	Pass	Horizontal
3	168.0379	150	22	-61.73	-13.00	48.73	Pass	Horizontal
4	374.9978	150	22	-74.48	-13.00	61.48	Pass	Horizontal
5	477.0469	150	118	-73.54	-13.00	60.54	Pass	Horizontal
6	687.5474	150	273	-72.00	-13.00	59.00	Pass	Horizontal
7	1564.0000	150	334	-57.48	-13.00	44.48	Pass	Horizontal
8	2346.0000	150	101	-51.18	-13.00	38.18	Pass	Horizontal
9	3128.0000	150	56	-51.81	-13.00	38.81	Pass	Horizontal
10	5410.7411	150	238	-49.25	-13.00	36.25	Pass	Horizontal
11	9744.6745	150	275	-42.45	-13.00	29.45	Pass	Horizontal
12	14471.6472	150	190	-39.60	-13.00	26.60	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	60.2655	150	97	-67.13	-13.00	54.13	Pass	Vertical
2	168.0379	150	1	-70.20	-13.00	57.20	Pass	Vertical
3	208.8769	150	75	-67.84	-13.00	54.84	Pass	Vertical
4	300.0130	150	137	-76.81	-13.00	63.81	Pass	Vertical
5	399.1035	150	354	-75.09	-13.00	62.09	Pass	Vertical
6	552.4196	150	1	-75.00	-13.00	62.00	Pass	Vertical
7	1564.0000	150	177	-57.51	-13.00	44.51	Pass	Vertical
8	2346.0000	150	234	-52.92	-13.00	39.92	Pass	Vertical
9	3128.0000	150	335	-51.75	-13.00	38.75	Pass	Vertical
10	5019.2019	150	286	-48.63	-13.00	35.63	Pass	Vertical
11	7957.9958	150	273	-43.34	-13.00	30.34	Pass	Vertical
12	13699.0699	150	3	-39.24	-13.00	26.24	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23255	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	51.3411	150	164	-76.98	-13.00	63.98	Pass	Horizontal
2	124.3857	150	127	-75.15	-13.00	62.15	Pass	Horizontal
3	168.0379	150	7	-64.58	-13.00	51.58	Pass	Horizontal
4	208.8769	150	212	-76.24	-13.00	63.24	Pass	Horizontal
5	375.0463	150	341	-74.25	-13.00	61.25	Pass	Horizontal
6	585.0133	150	16	-70.79	-13.00	57.79	Pass	Horizontal
7	1569.0000	150	323	-56.22	-13.00	43.22	Pass	Horizontal
8	2353.5000	150	286	-52.92	-13.00	39.92	Pass	Horizontal
9	3138.0000	150	252	-50.83	-13.00	37.83	Pass	Horizontal
10	5068.6034	150	206	-48.43	-13.00	35.43	Pass	Horizontal
11	10126.8563	150	137	-41.93	-13.00	28.93	Pass	Horizontal
12	14223.5612	150	355	-39.28	-13.00	26.28	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23255	
Remark:		5M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	59.7805	150	311	-66.95	-13.00	53.95	Pass	Vertical
2	168.0379	150	359	-67.83	-13.00	54.83	Pass	Vertical
3	208.8769	150	126	-67.91	-13.00	54.91	Pass	Vertical
4	300.0130	150	192	-76.03	-13.00	63.03	Pass	Vertical
5	399.8310	150	174	-74.84	-13.00	61.84	Pass	Vertical
6	597.8664	150	26	-71.77	-13.00	58.77	Pass	Vertical
7	1569.0000	150	118	-56.86	-13.00	43.86	Pass	Vertical
8	2353.5000	150	81	-51.67	-13.00	38.67	Pass	Vertical
9	3138.0000	150	287	-50.94	-13.00	37.94	Pass	Vertical
10	5989.6495	150	127	-48.64	-13.00	35.64	Pass	Vertical
11	10271.6136	150	48	-42.09	-13.00	29.09	Pass	Vertical
12	17552.9776	150	332	-37.91	-13.00	24.91	Pass	Vertical

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	51.0016	150	217	-76.62	-13.00	63.62	Pass	Horizontal
2	119.9720	150	159	-75.62	-13.00	62.62	Pass	Horizontal
3	167.9894	150	47	-65.75	-13.00	52.75	Pass	Horizontal
4	270.0385	150	226	-77.88	-13.00	64.88	Pass	Horizontal
5	374.9978	150	188	-75.21	-13.00	62.21	Pass	Horizontal
6	585.0133	150	93	-69.55	-13.00	56.55	Pass	Horizontal
7	1564.0000	150	151	-56.42	-13.00	43.42	Pass	Horizontal
8	2346.0000	150	205	-51.93	-13.00	38.93	Pass	Horizontal
9	3128.0000	150	25	-50.46	-13.00	37.46	Pass	Horizontal
10	4551.8276	150	299	-47.66	-13.00	34.66	Pass	Horizontal
11	10166.6083	150	254	-41.00	-13.00	28.00	Pass	Horizontal
12	14930.8465	150	60	-38.37	-13.00	25.37	Pass	Horizontal

Mode:		LTE Traffic						
Band:		13		Channel:			23230	
Remark:		10M						
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	59.7805	150	293	-66.64	-13.00	53.64	Pass	Vertical
2	167.9894	150	359	-70.80	-13.00	57.80	Pass	Vertical
3	208.8769	150	58	-67.82	-13.00	54.82	Pass	Vertical
4	399.6855	150	263	-74.97	-13.00	61.97	Pass	Vertical
5	599.8550	150	49	-72.39	-13.00	59.39	Pass	Vertical
6	687.5474	150	69	-66.97	-13.00	53.97	Pass	Vertical
7	1564.0000	150	244	-57.07	-13.00	44.07	Pass	Vertical
8	2346.0000	150	49	-52.75	-13.00	39.75	Pass	Vertical
9	3128.0000	150	286	-51.34	-13.00	38.34	Pass	Vertical
10	5042.3521	150	194	-48.95	-13.00	35.95	Pass	Vertical
11	9286.0643	150	355	-42.82	-13.00	29.82	Pass	Vertical
12	13664.7832	150	82	-39.30	-13.00	26.30	Pass	Vertical

Note:

Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

PHOTOGRAPHS OF TEST SETUP

Test model No.: GLMM18A02



Radiated spurious emission Test Setup-1(Below 1GHz)



Radiated spurious emission Test Setup-2(Above 1GHz)



Radiated spurious emission Test Setup-3(Close-up)

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No.EED32K00246401 for EUT external and internal photos.

*** End of Report ***

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