FCC §15.407(b) (1) –OUT OF BAND EMISSIONS

Applicable Standard

FCC §15.407 (b) (1), (2), (3), (4);

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.6 °C-26.8°C
Relative Humidity:	37 %-66%
ATM Pressure:	100.8 kPa-102.2 kPa

The testing was performed by Dean Liu from 2014-11-12 to 2014-12-12.

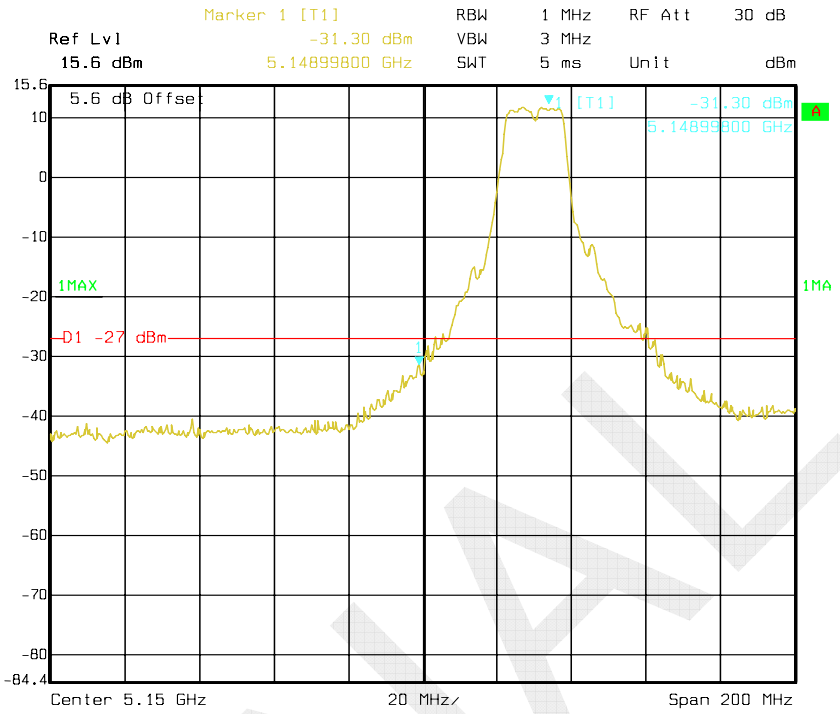
Please refer to the following table and plots:

Frequency Bands	Test Mode	Bandedge	Worst Reading Level (dBm)			Limit (dBm)	Result
			Chain 0	Chain 1	Total		
5.2G Band	20MHz Bandwidth	Left	-31.3	-32.43	-28.82	-27	PASS
		Right	-40.23	-42.69	-38.28	-27	PASS
	40MHz Bandwidth	Left	-32.19	-33.96	-29.98	-27	PASS
		Right	-41.35	-42.31	-38.79	-27	PASS
5.8G Band	20MHz Bandwidth	Left-1	-30.68	-30.75	-27.70	-27	PASS
		Left-2	-21.09	-22.35	-18.66	-17	PASS
		Right-1	-26.55	-25.77	-23.13	-17	PASS
		Right-2	-32.35	-31.33	-28.80	-27	PASS
	40MHz Bandwidth	Left-1	-31.76	-30.57	-28.11	-27	PASS
		Left-2	-26.45	-25.61	-23.00	-17	PASS
		Right-1	-30.61	-30.57	-27.58	-17	PASS
		Right-2	-33.6	-33.42	-30.50	-27	PASS

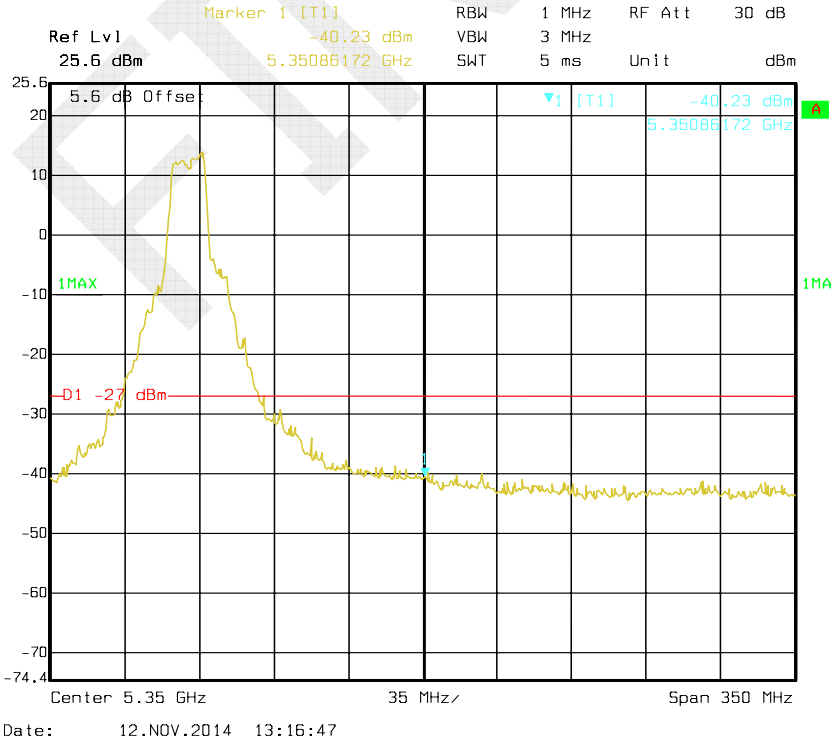
Note: the antenna gain was 4.6dBi,the cable loss was 1dB for 5.2G band, and 1.5dB for 5.8G band.

5150MHz-5250MHz:
20MHz Bandwidth:

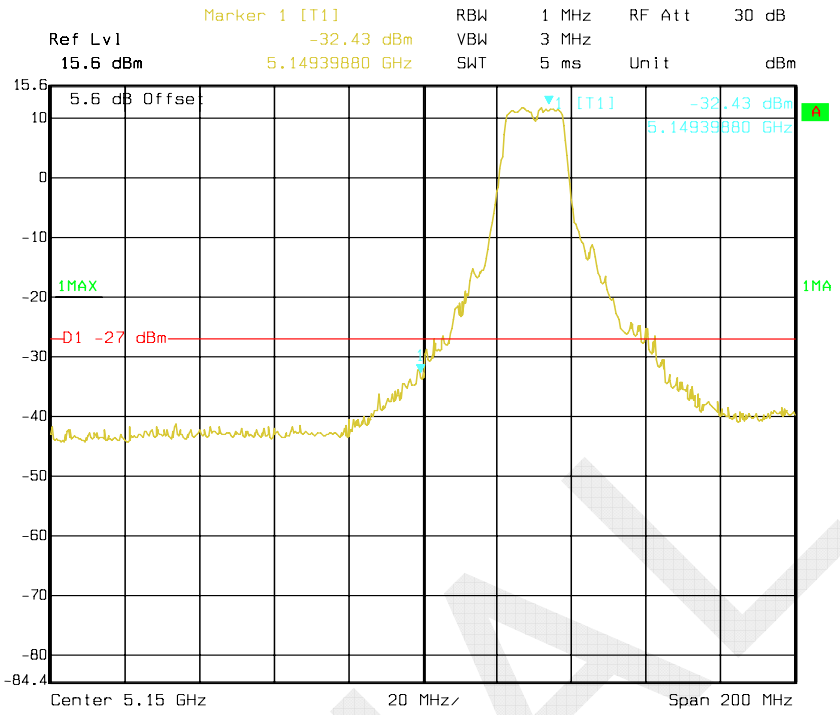
Chain0 Band Edge, Left Side



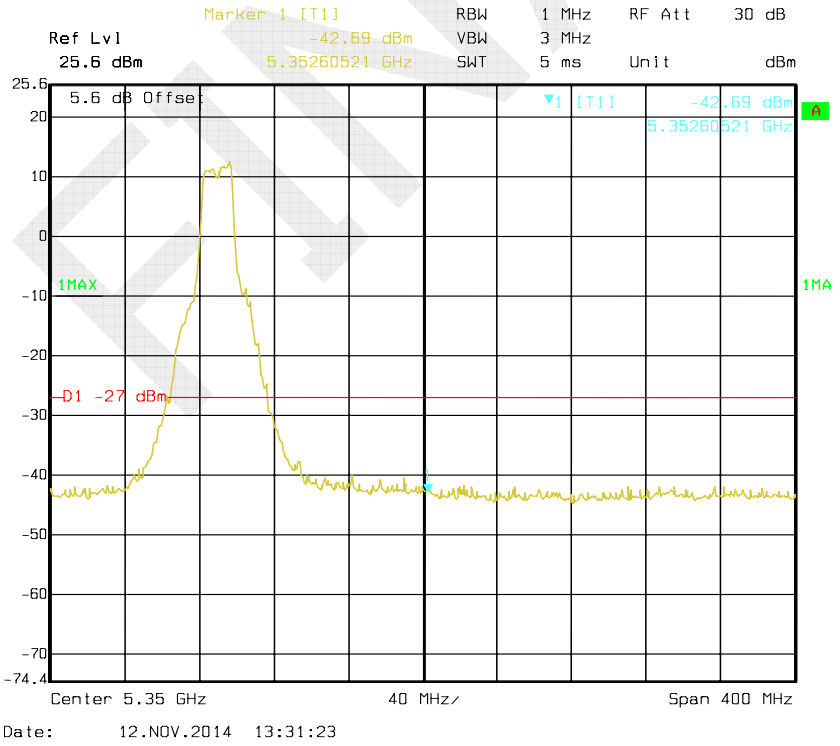
Chain0 Band Edge, Right Side



Chain1 Band Edge, Left Side

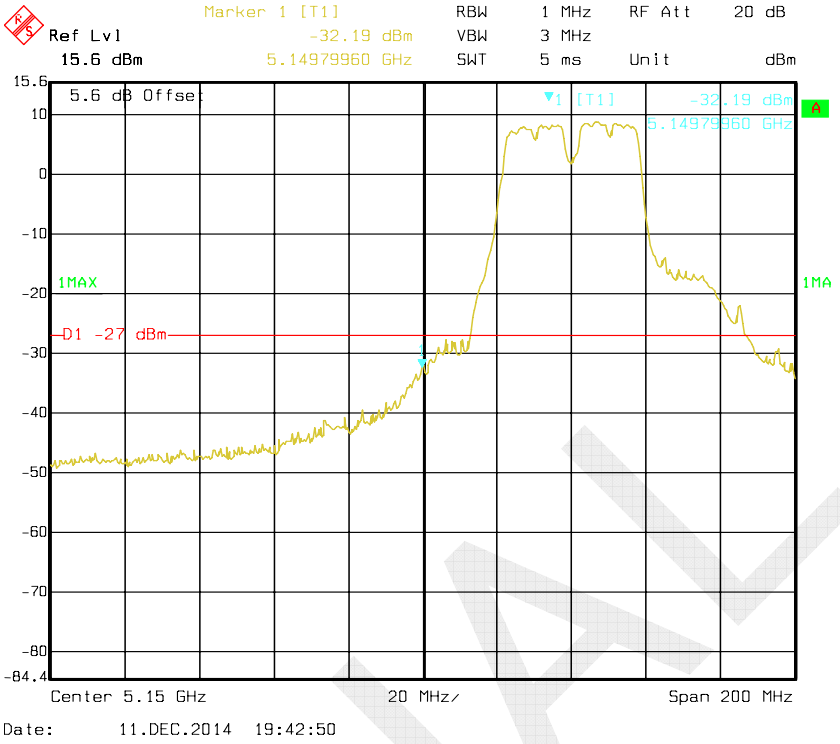


Chain1 Band Edge, Right Side

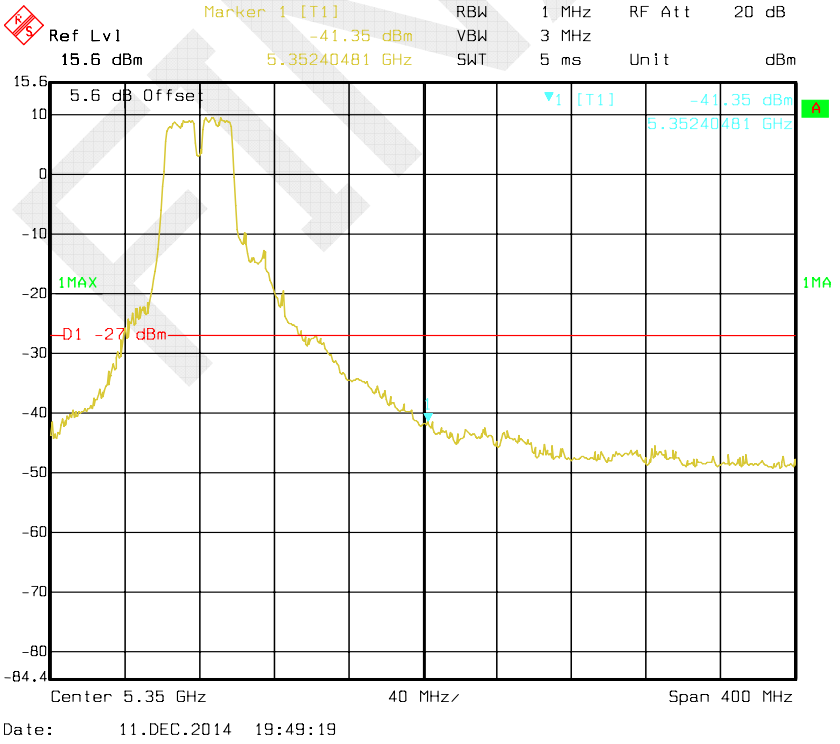


40MHz Bandwidth:

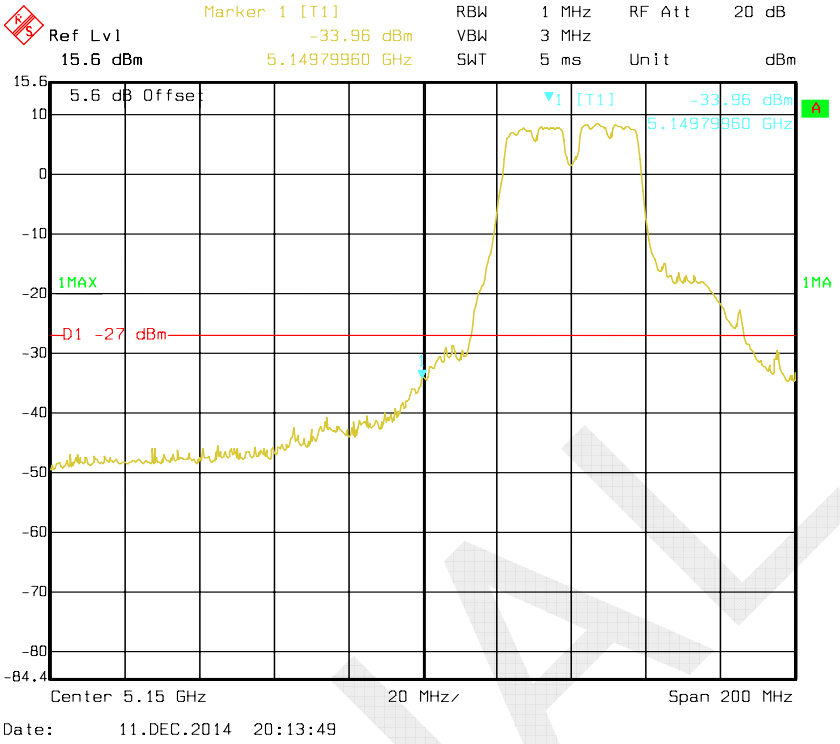
Chain0 Band Edge, Left Side



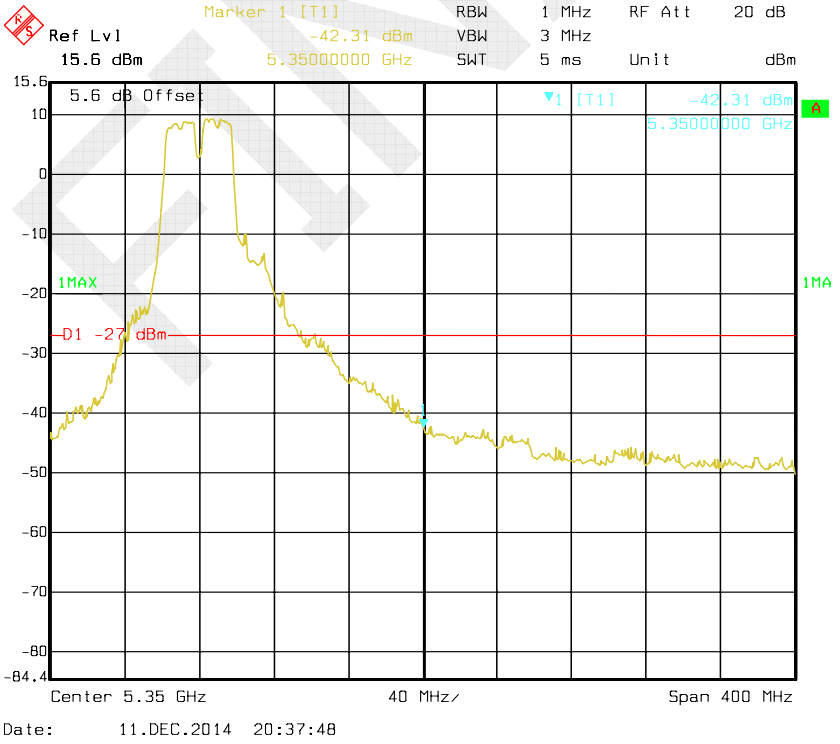
Chain0 Band Edge, Right Side



Chain1 Band Edge, Left Side

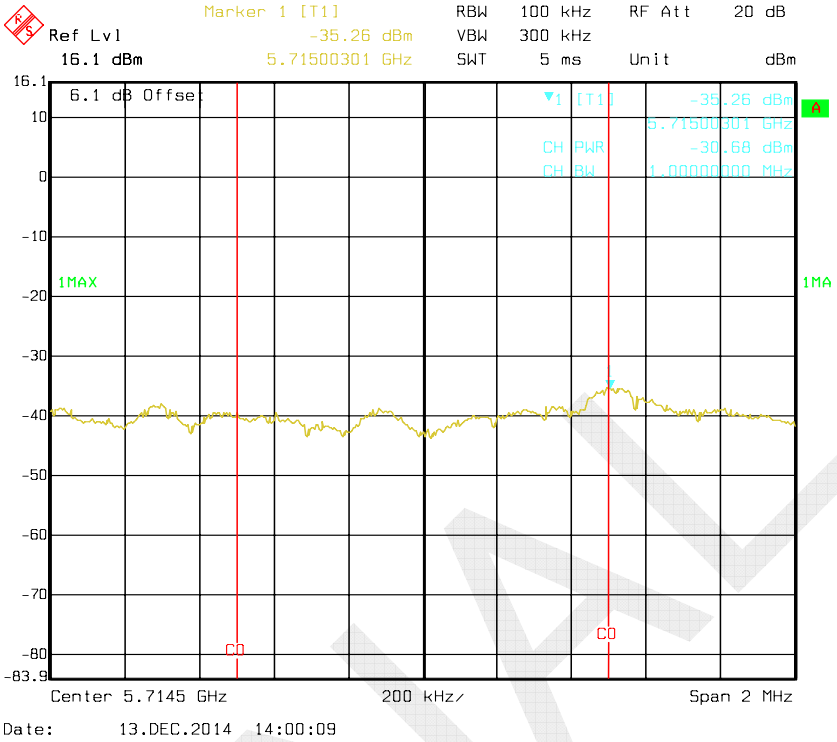


Chain1 Band Edge, Right Side

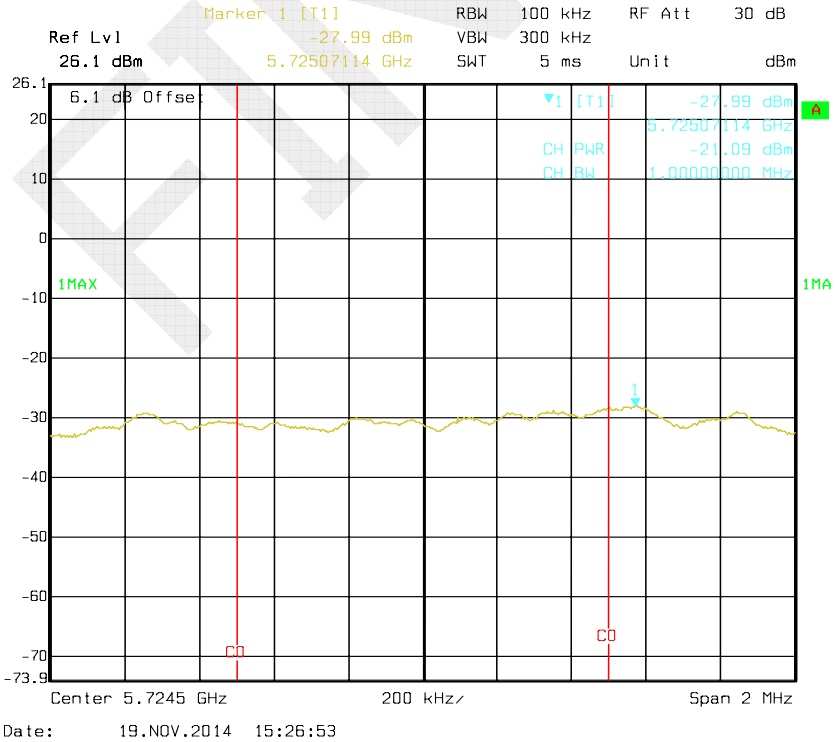


5725MHz-5850MHz:
20MHz Bandwidth:

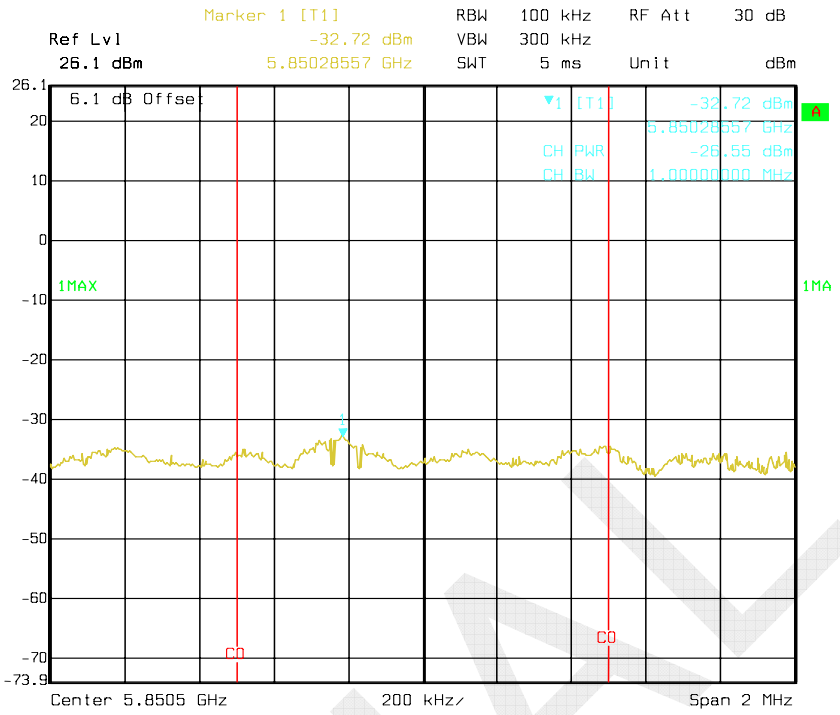
Chain0 Band Edge, Left Side-1



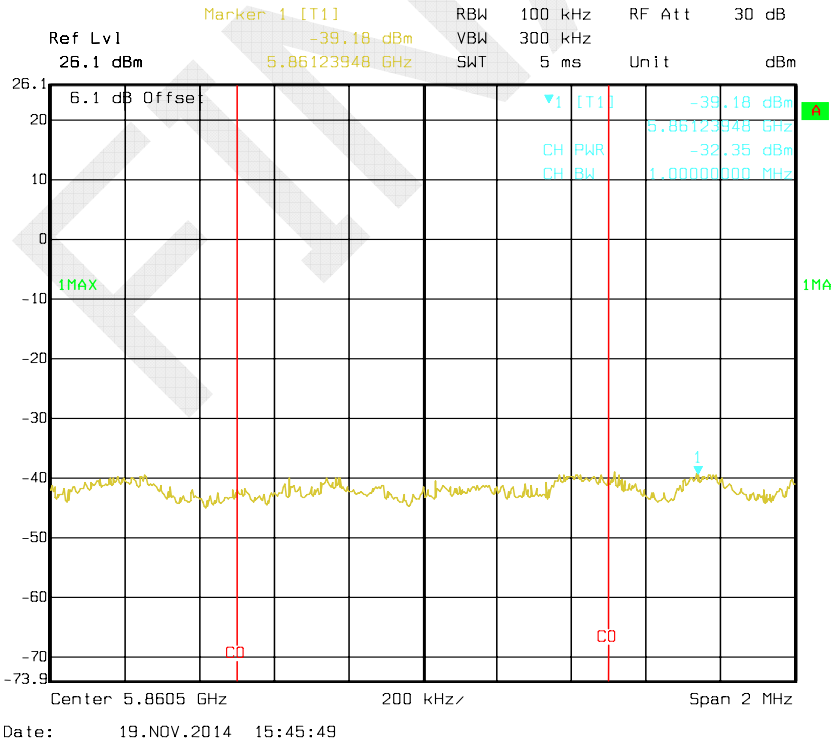
Chain0 Band Edge, Left Side-2



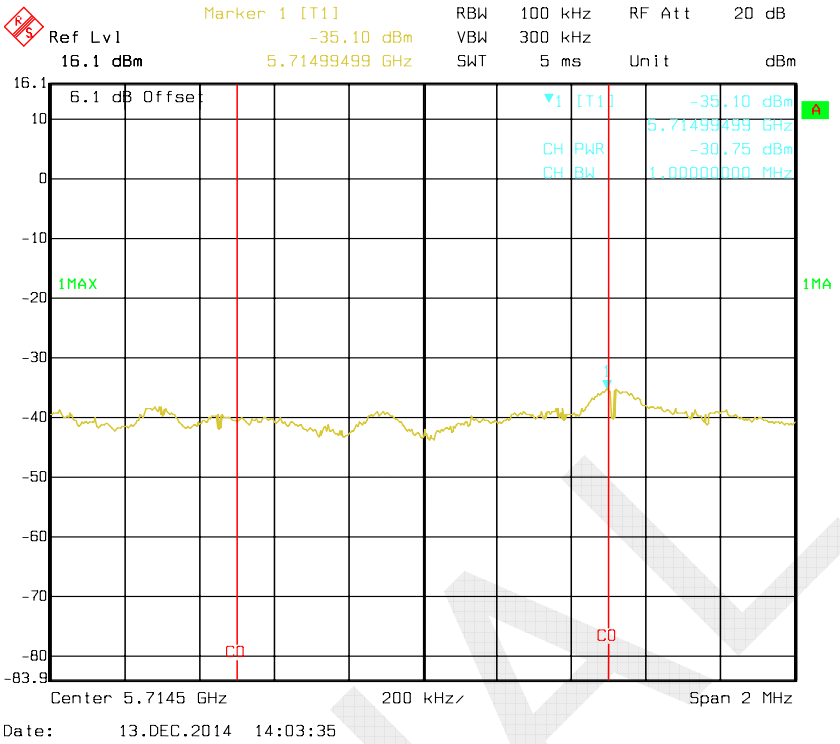
Chain0 Band Edge, Right Side-1



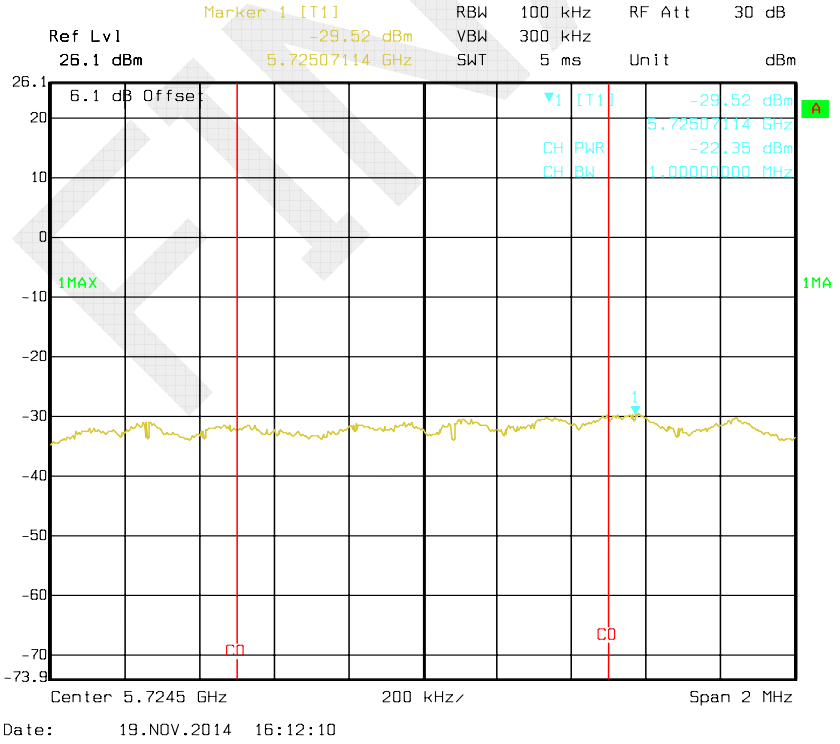
Chain0 Band Edge, Right Side-2



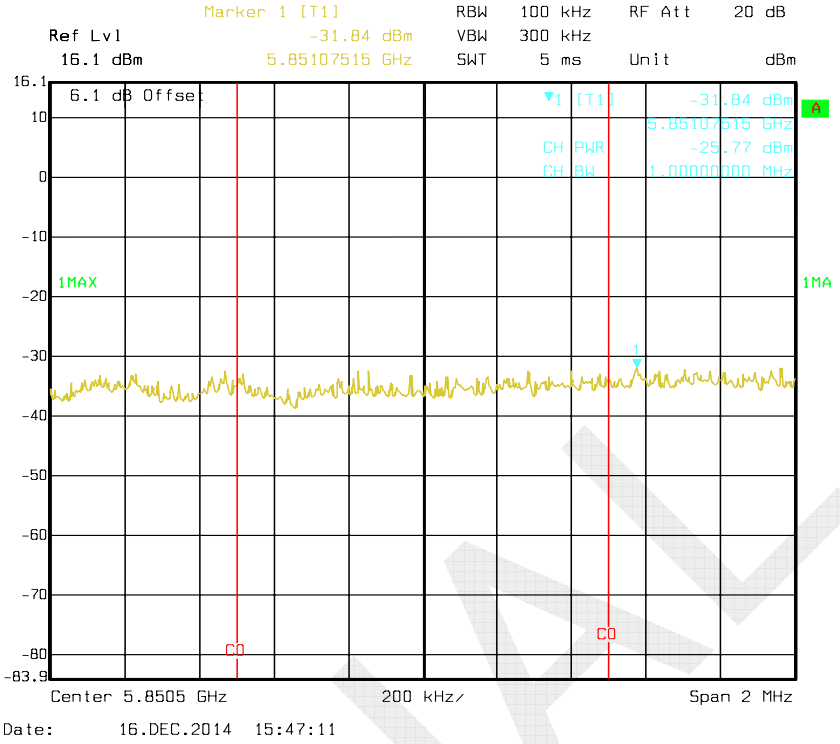
Chain1 Band Edge, Left Side-1



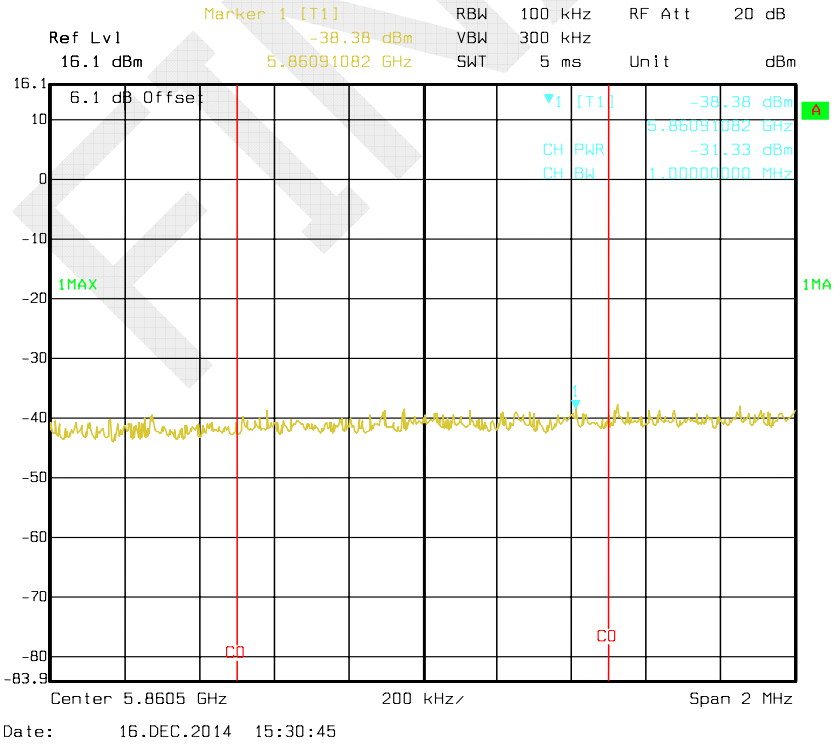
Chain1 Band Edge, Left Side-2



Chain1 Band Edge, Right Side-1

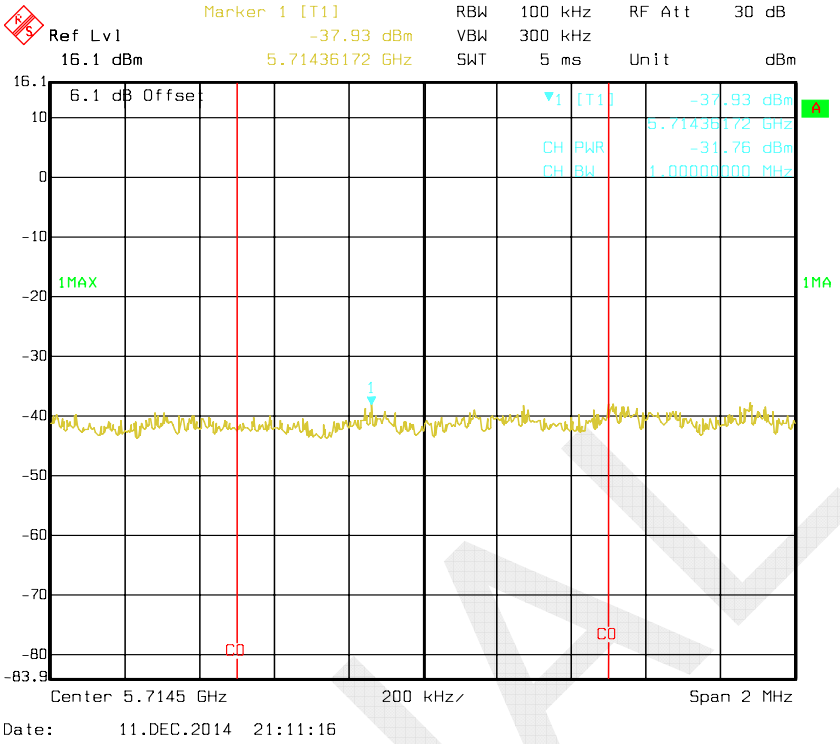


Chain1 Band Edge, Right Side-2

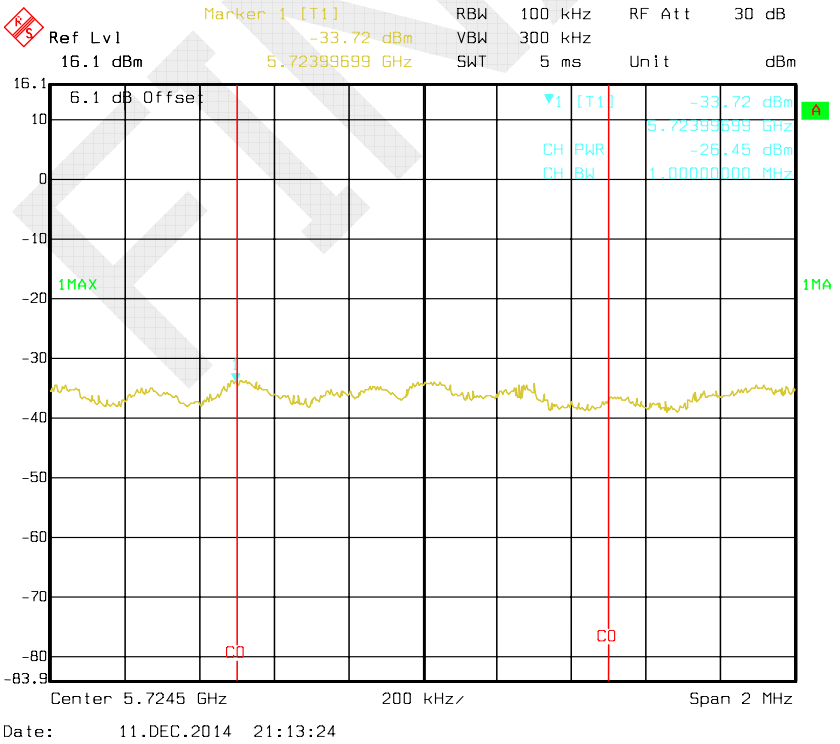


40MHz Bandwidth

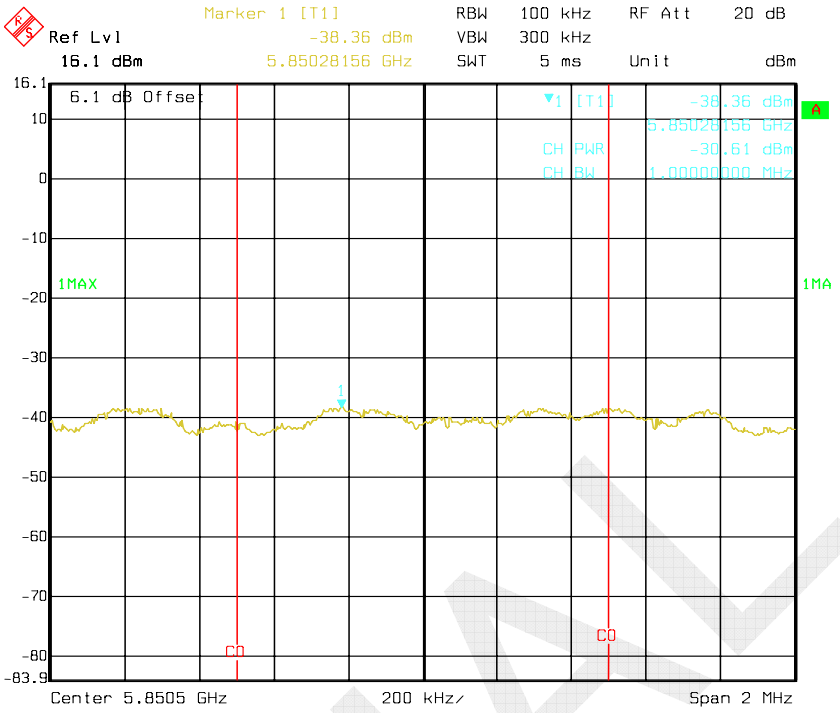
Chain0 Band Edge, Left Side-1



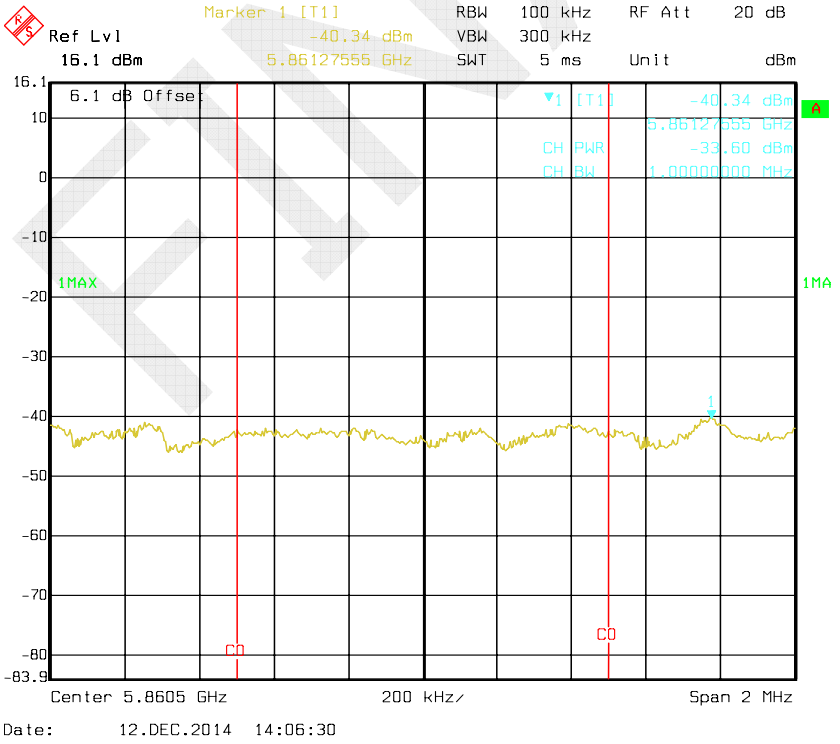
Chain0 Band Edge, Left Side-2



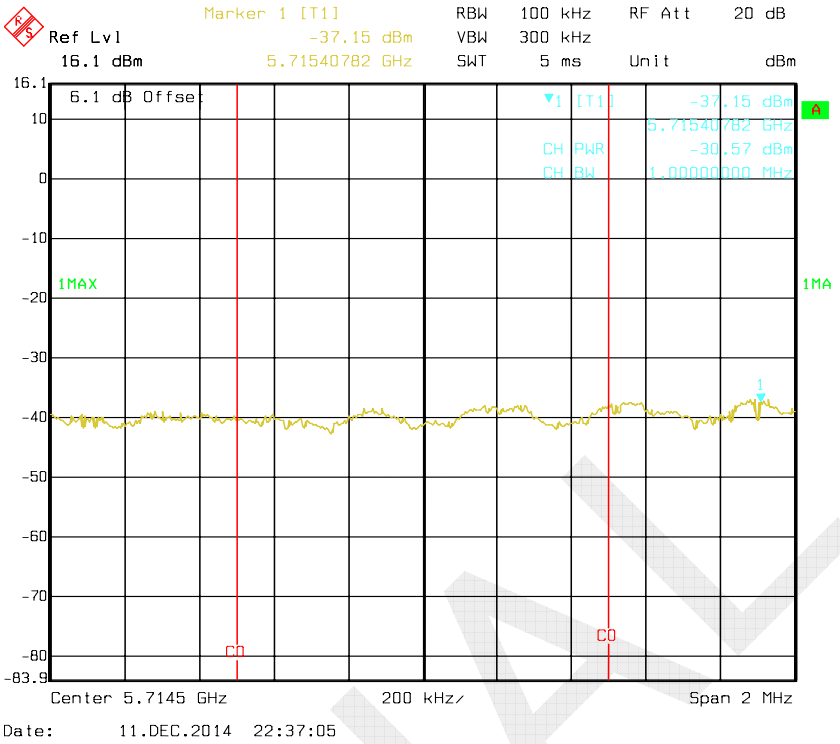
Chain0 Band Edge, Right Side-1



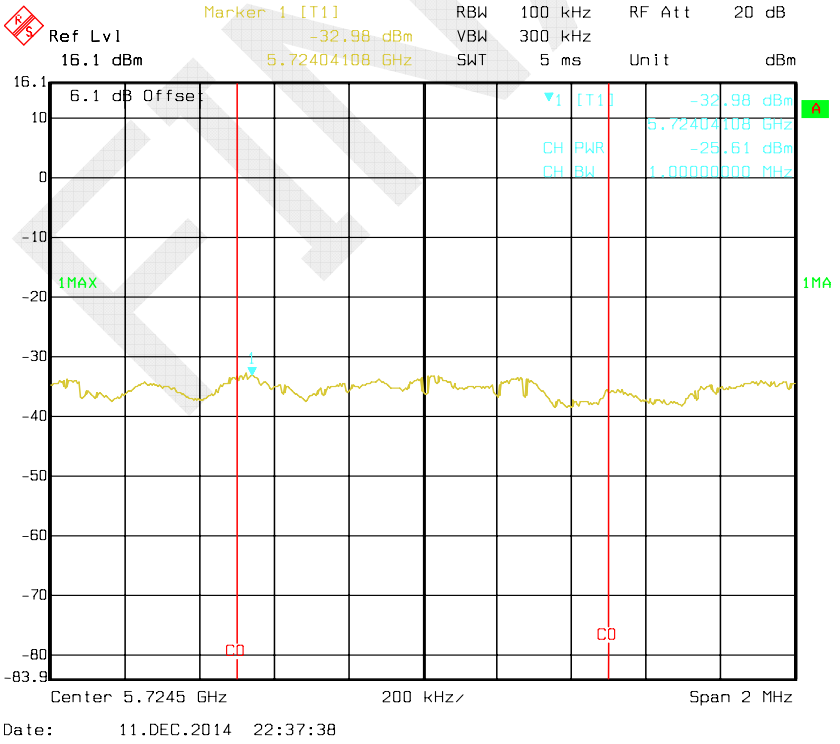
Chain0 Band Edge, Right Side-2



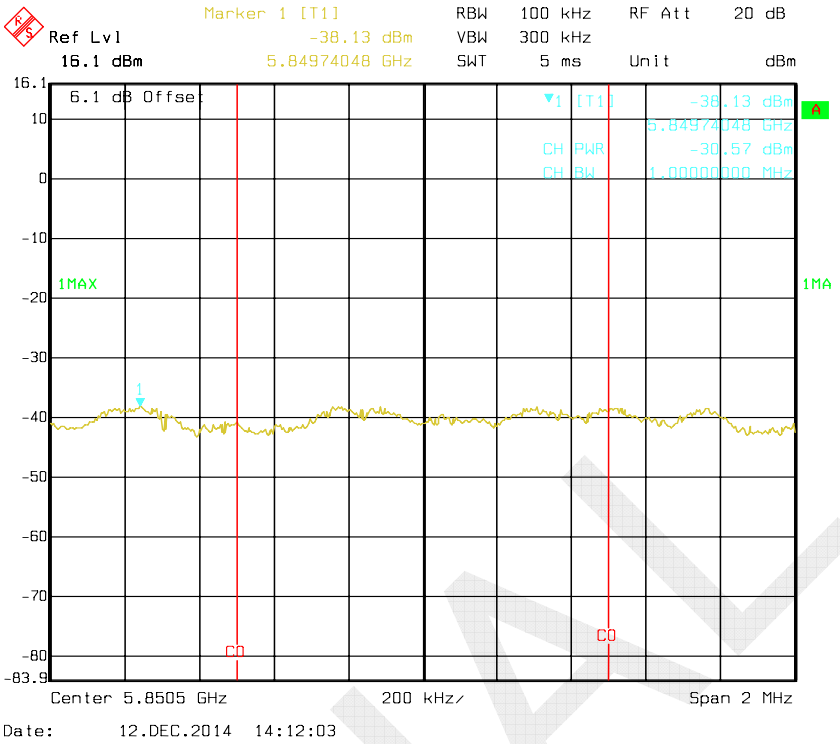
Chain1 Band Edge, Left Side-1



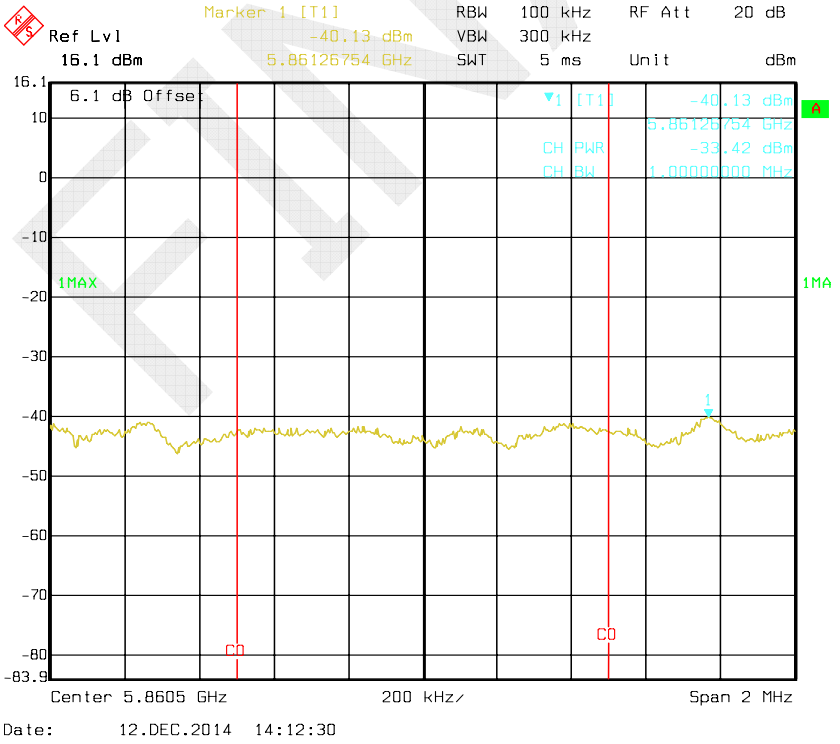
Chain1 Band Edge, Left Side-2



Chain1 Band Edge, Right Side-1



Chain1 Band Edge, Right Side-2



FCC §15.407(a) –EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH

Applicable Standard

15.407(a) (e)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01

Test Data

Environmental Conditions

Temperature:	22.6 °C-26.8°C
Relative Humidity:	37 %-66%
ATM Pressure:	100.8 kPa-102.2 kPa

The testing was performed by Dean Liu from 2014-11-12 to 2014-12-12.

Test Result: Pass.

Please refer to the following tables and plots.

Test mode: Transmitting

5150MHz-5250MHz:

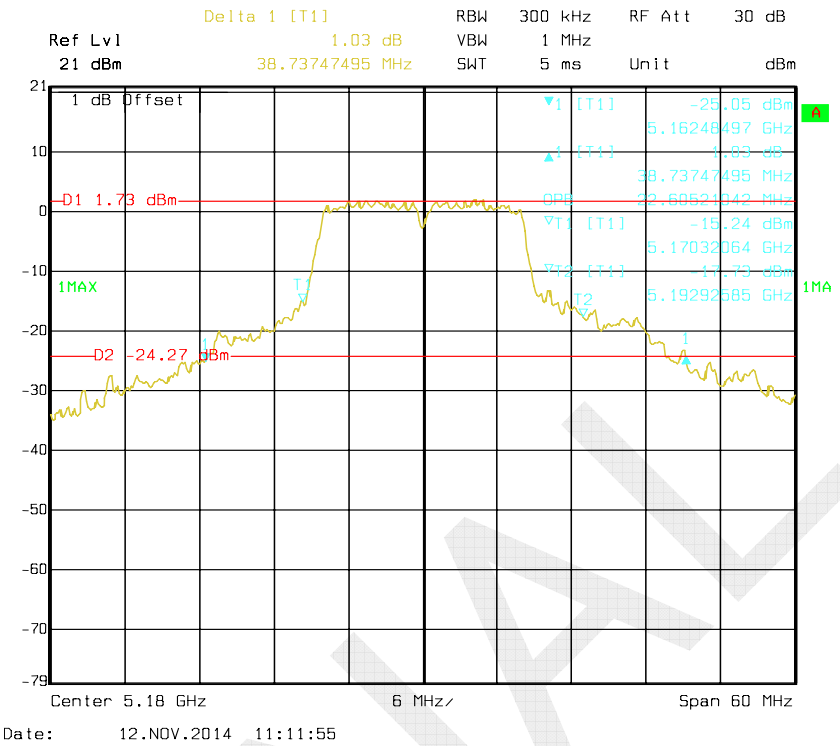
Mode	Channel	Frequency	26 dB Bandwidth (MHz)		99% occupied bandwidth (MHz)	
		MHz	Chain 0	Chain 1	Chain 0	Chain 1
20MHz Bandwidth	Low	5180	38.74	36.72	22.61	21.04
	Middle	5200	34.46	36.05	19.00	21.28
	High	5240	35.75	34.58	20.80	18.04
40MHz Bandwidth	Low	5190	58.22	58.00	37.07	37.07
	High	5230	60.40	60.40	37.47	37.47

5725MHz-5850MHz:

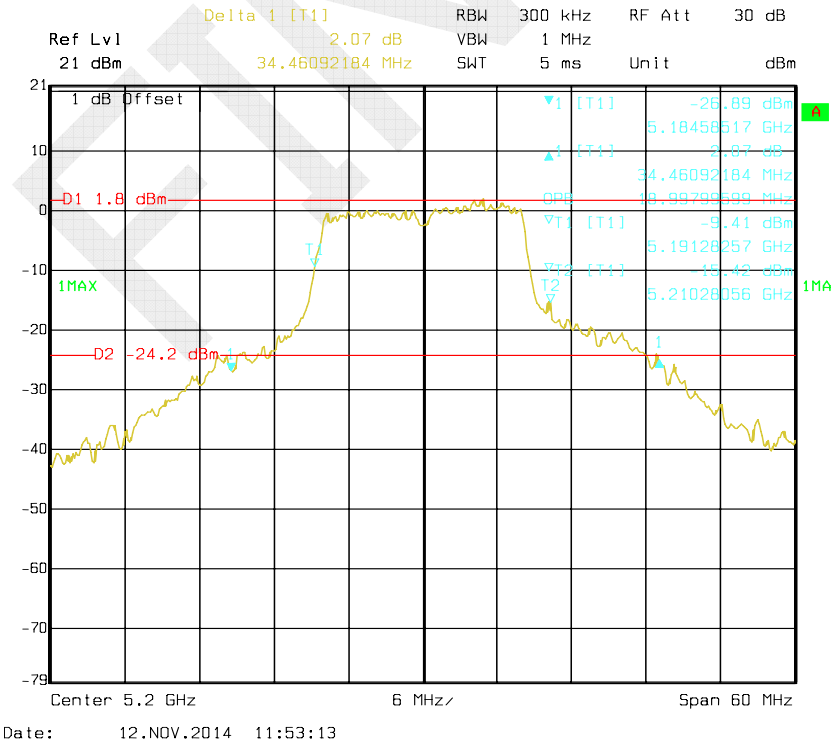
Mode	Channel	Frequency	6 dB Bandwidth (MHz)			Result
		MHz	Chain 0	Chain 1	Limits	
20MHz Bandwidth	Low	5745	16.67	16.77	0.50	PASS
	Middle	5785	16.61	16.64	0.50	PASS
	High	5825	16.69	16.69	0.50	PASS
40MHz Bandwidth	Low	5755	37.03	37.01	0.50	PASS
	High	5795	37.03	37.01	0.50	PASS

5150MHz-5250MHz:
20MHz Bandwidth:

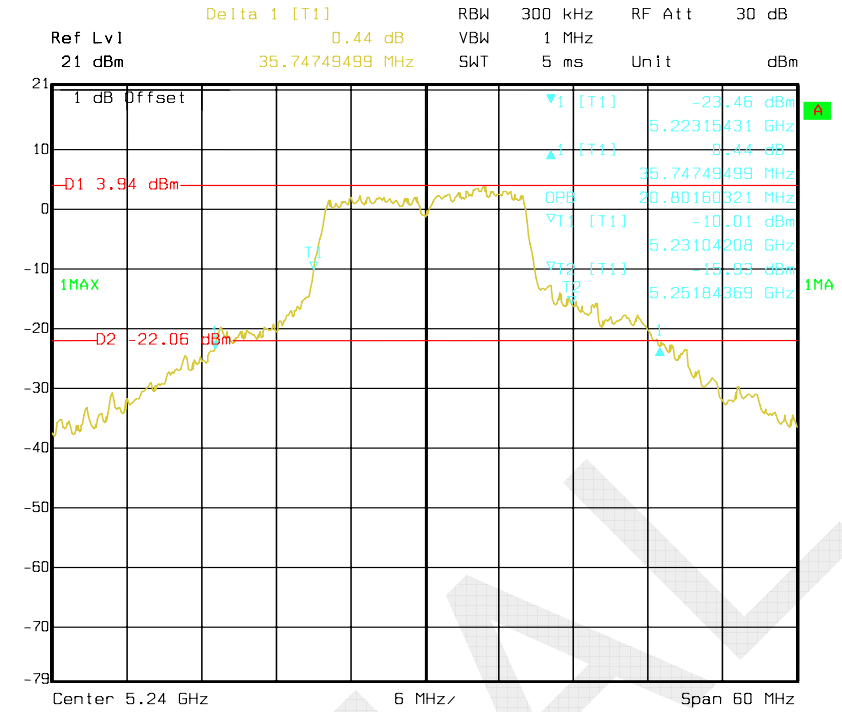
Chain0 Low Channel



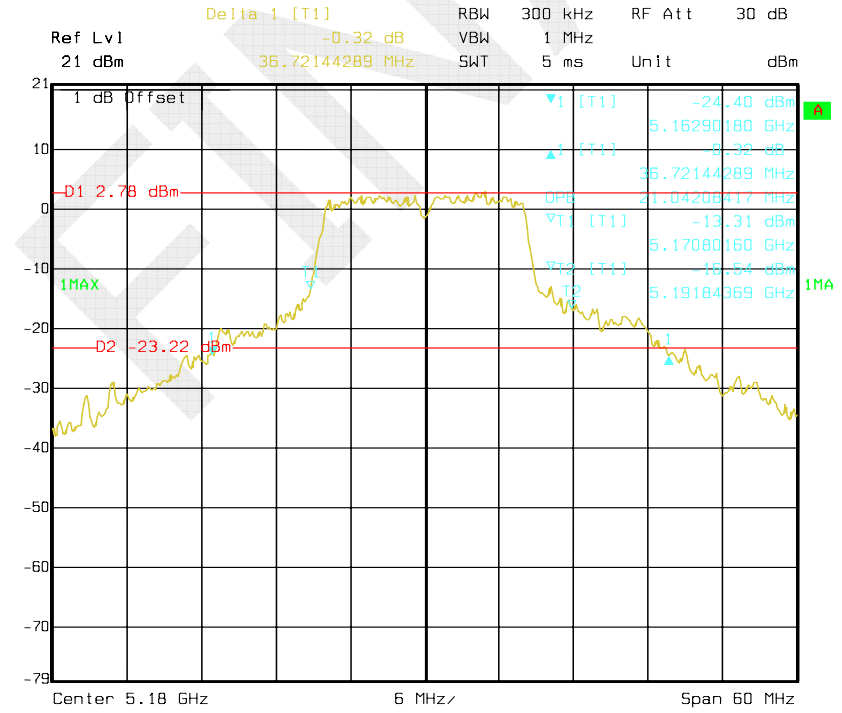
Chain0 Middle Channel



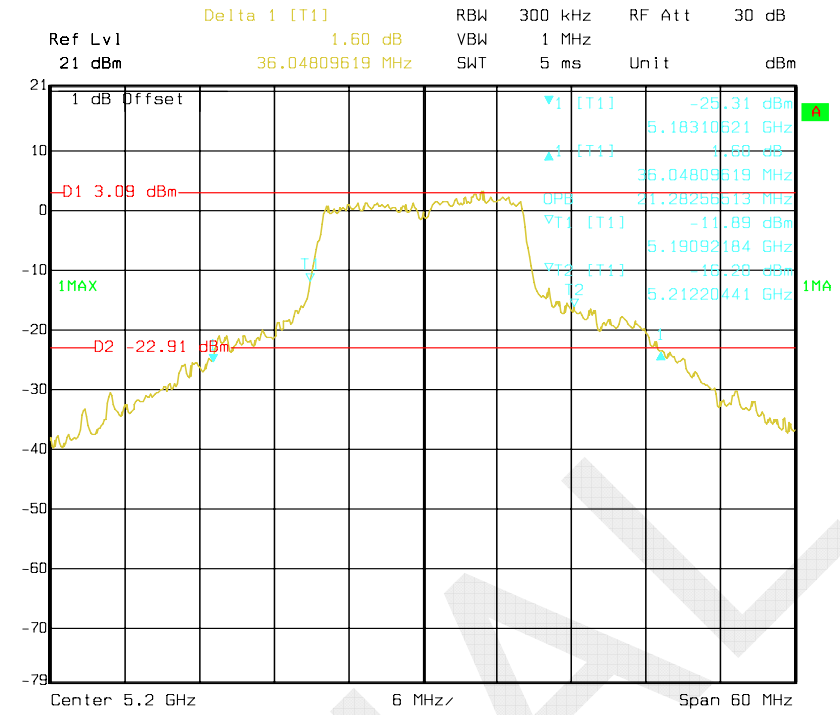
Chain0 High Channel



Chain1 Low Channel

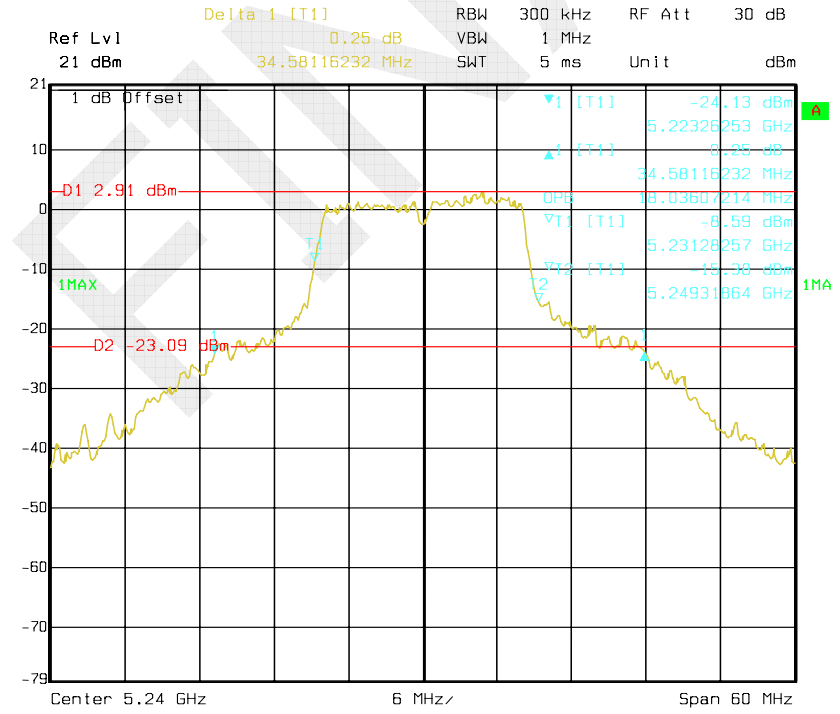


Chain1 Middle Channel



Date: 12.NOV.2014 13:07:44

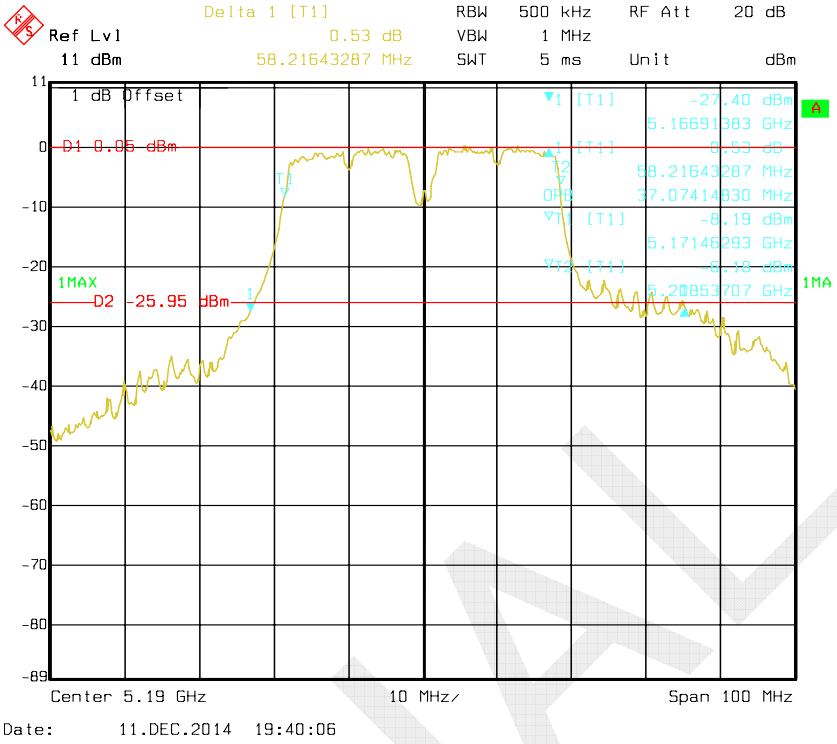
Chain1 High Channel



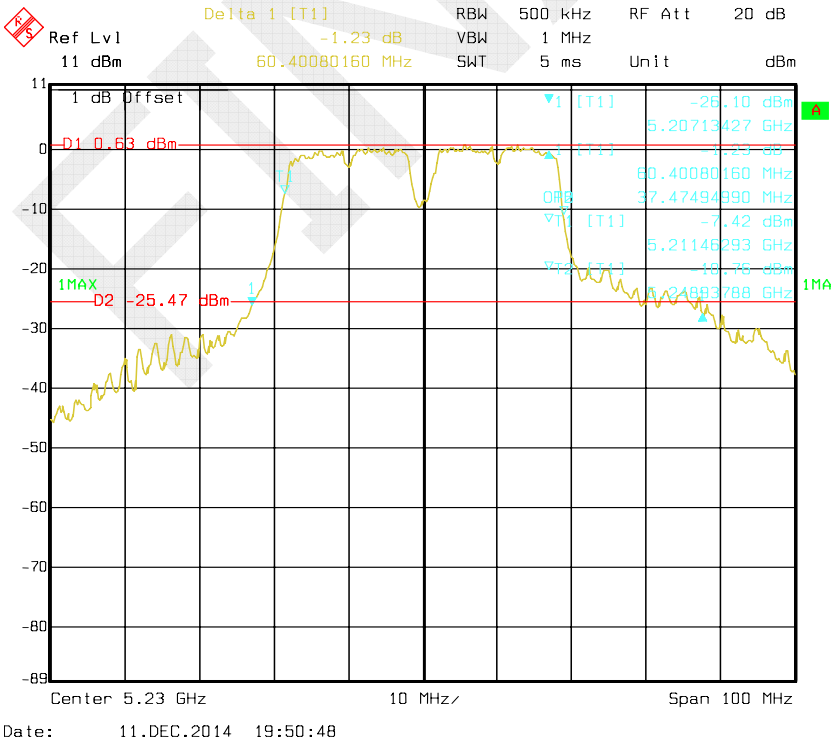
Date: 12.NOV.2014 13:25:08

40MHz Bandwidth:

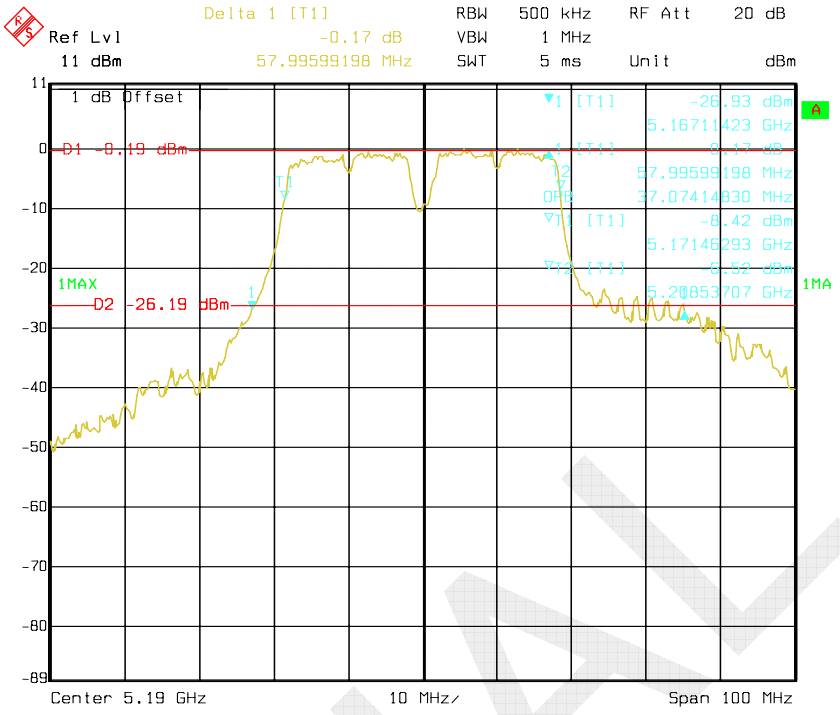
Chain0 Low Channel



Chain0 High Channel

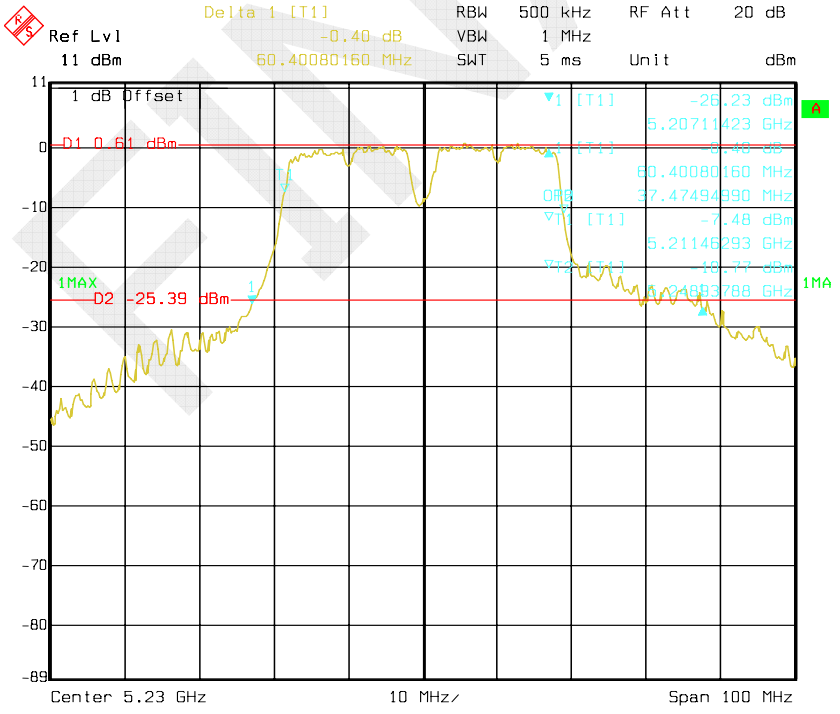


Chain1 Low Channel



Date: 11.DEC.2014 19:54:11

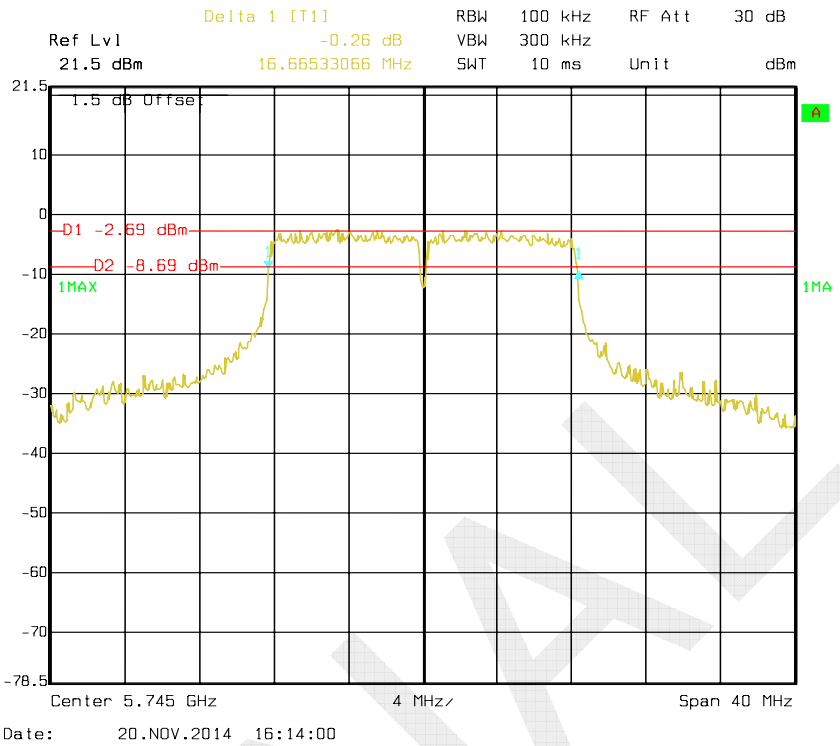
Chain1 High Channel



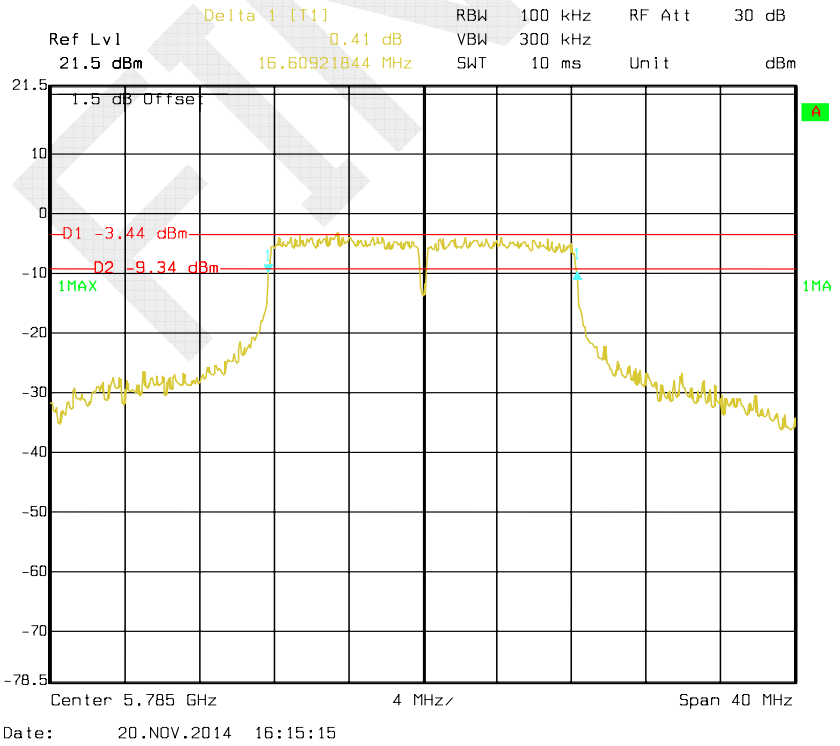
Date: 11.DEC.2014 20:39:15

5725-5850MHz Band:
20MHz Bandwidth:

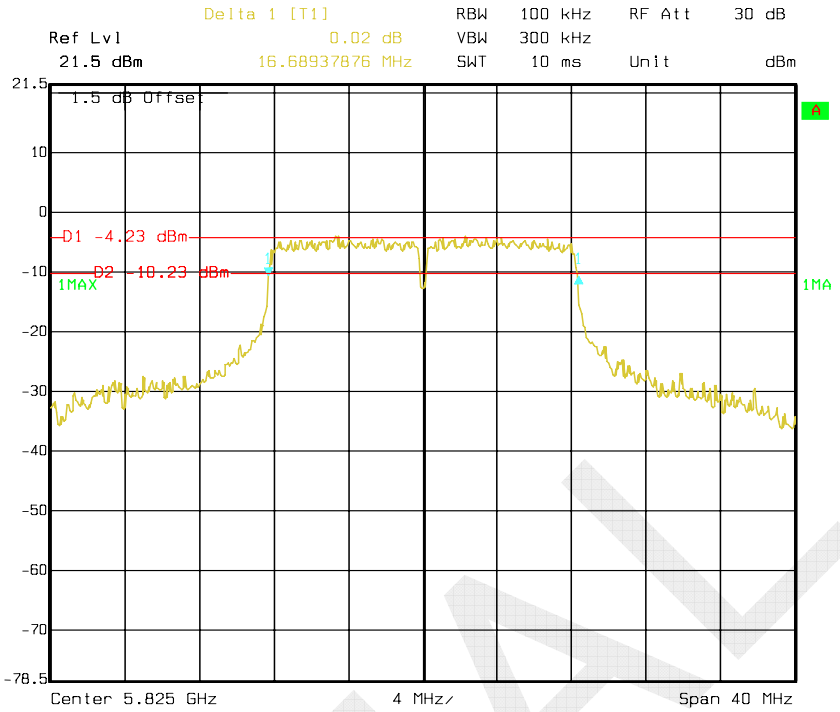
Chain0 Low Channel



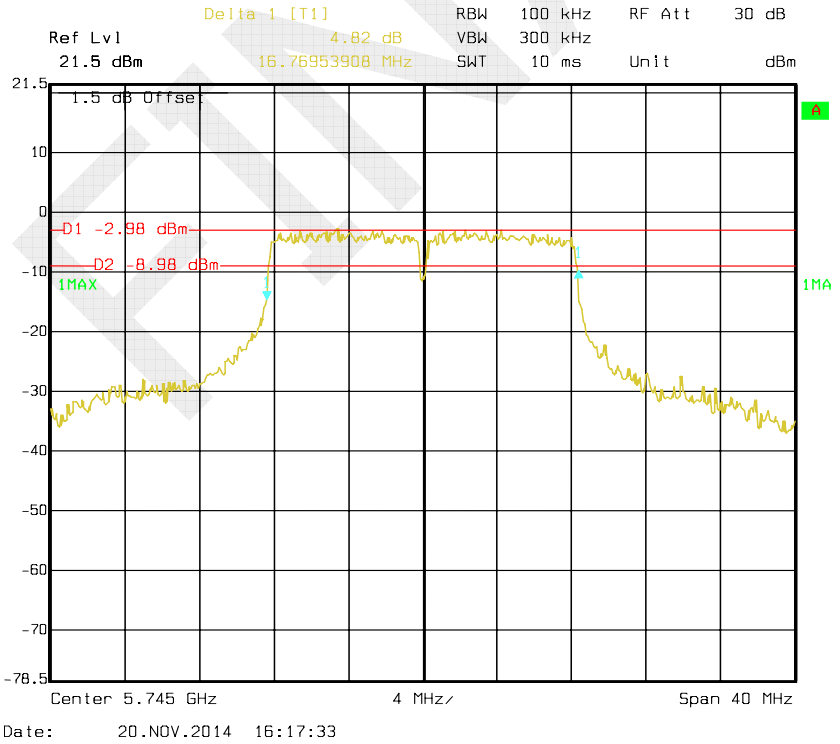
Chain0 Middle Channel



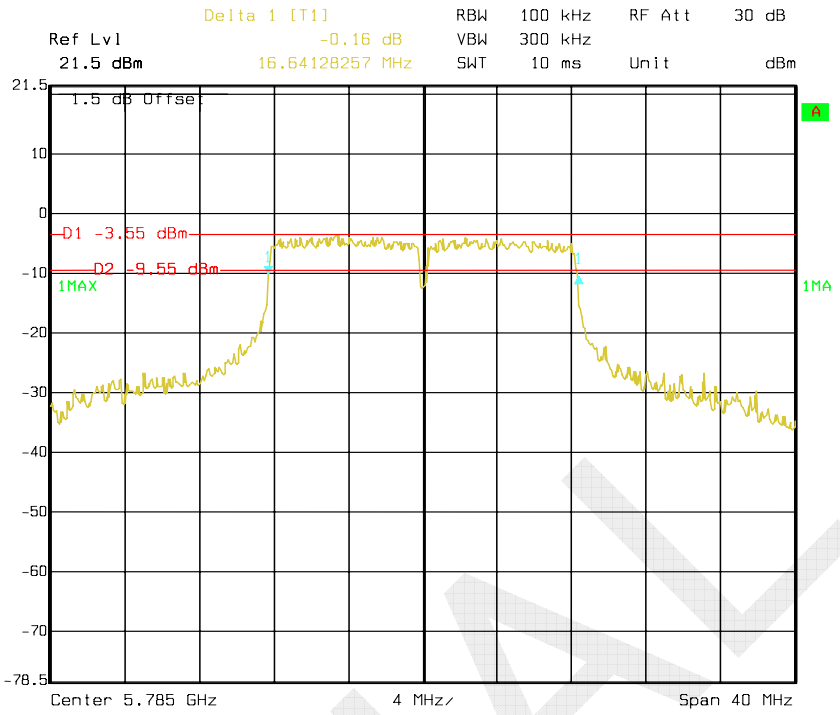
Chain0 High Channel



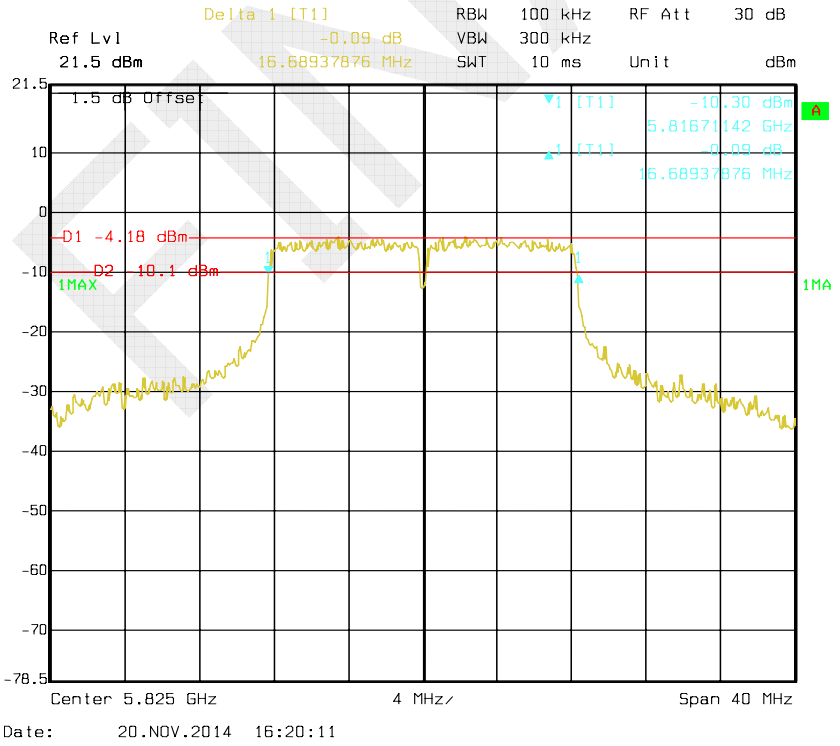
Chain1 Low Channel



Chain1 Middle Channel

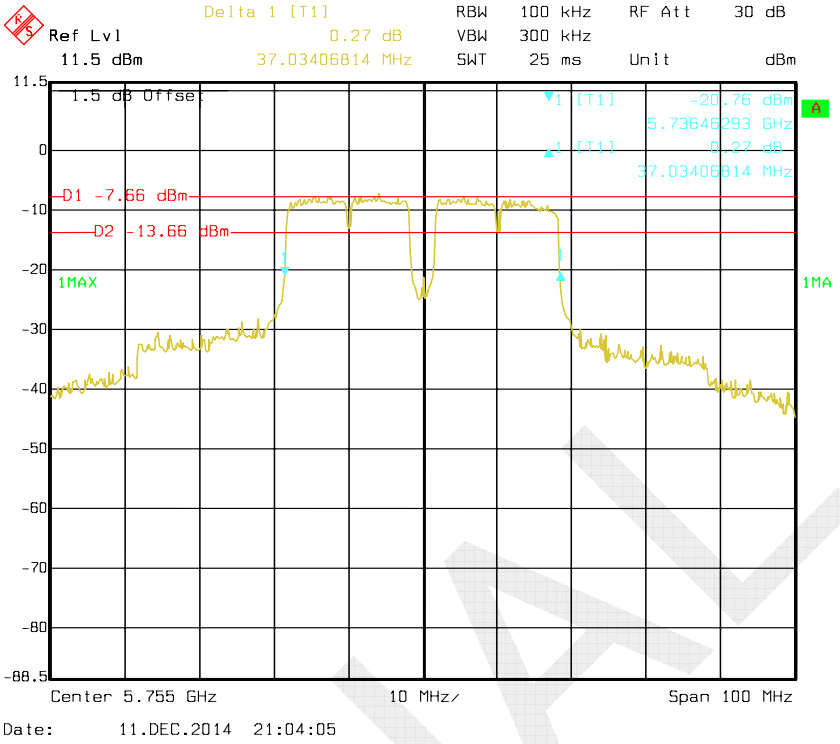


Chain1 High Channel

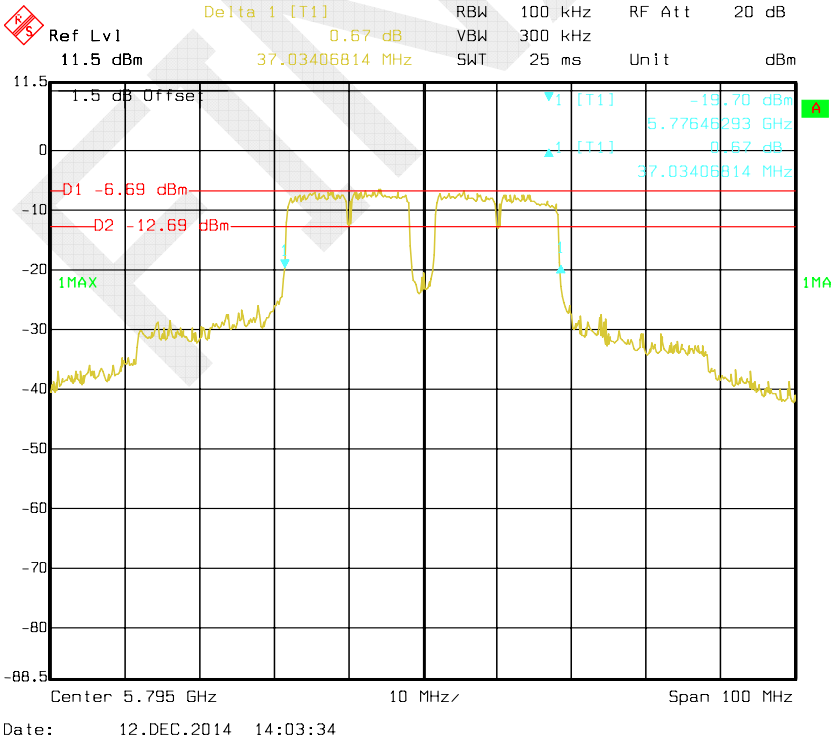


40MHz Bandwidth:

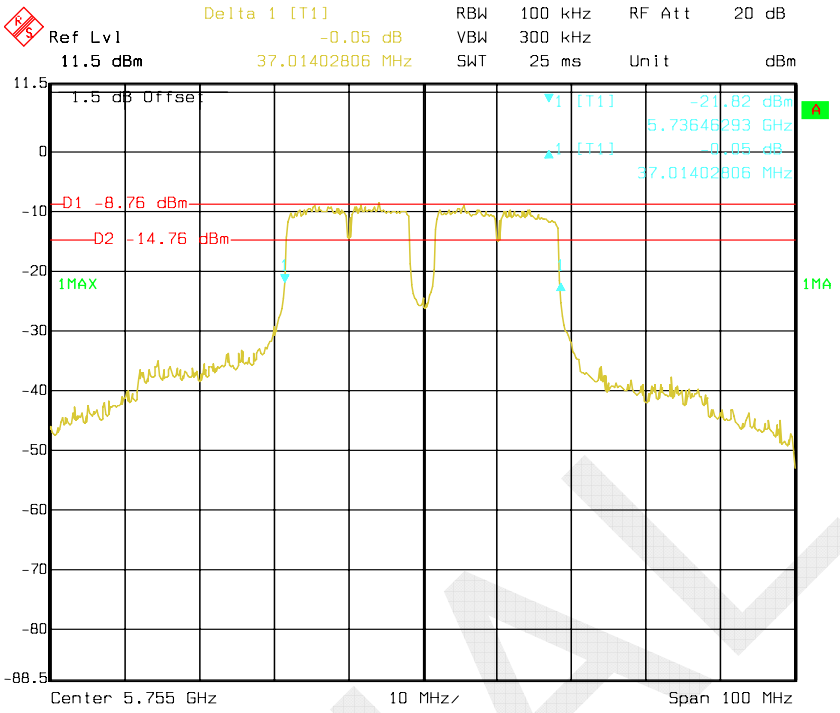
Chain0 Low Channel



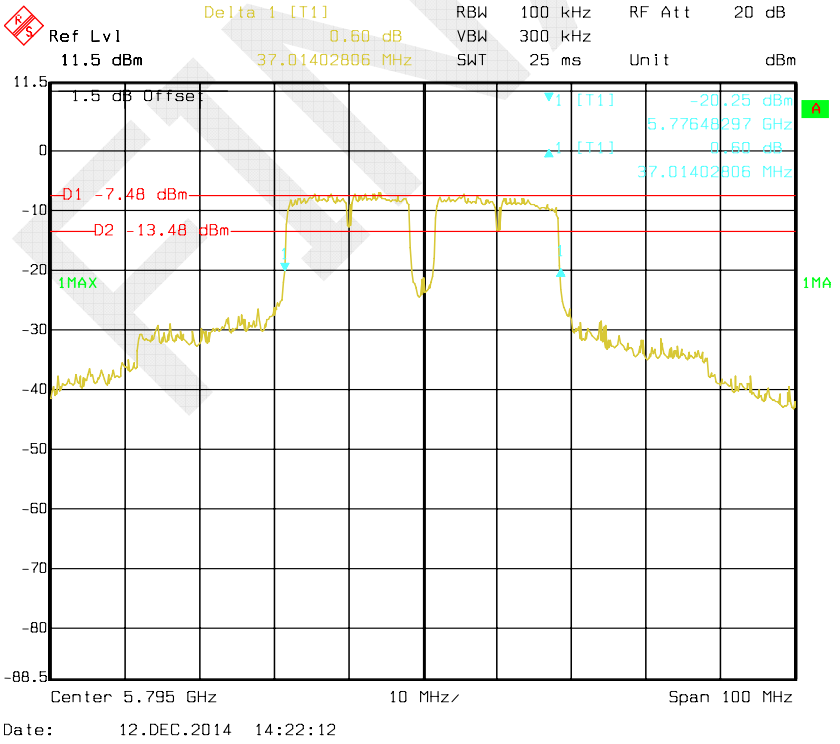
Chain0 High Channel



Chain1 Low Channel



Chain1 High Channel



FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(4) The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01.

Test Data

Environmental Conditions

Temperature:	22.6 °C-26.8°C
Relative Humidity:	37 %-66%
ATM Pressure:	100.8 kPa-102.2 kPa

The testing was performed by Dean Liu from 2014-11-12 to 2014-12-12.

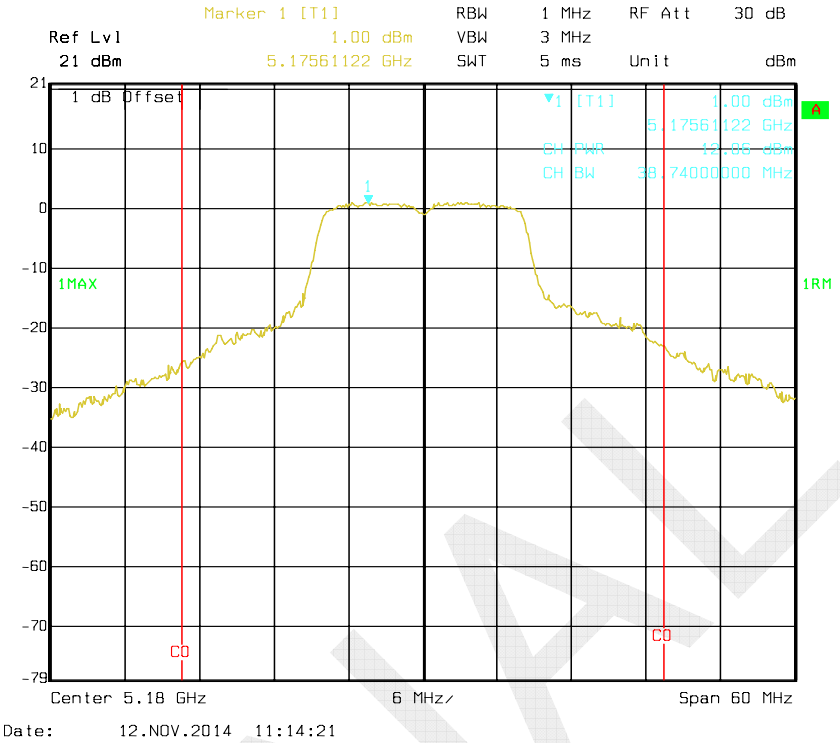
Test Mode: Transmitting

Frequency Bands	Mode	Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)				Result
				Chain 0	Chain 1	Total	Limits	
5.2G Band	20MHz Bandwidth	Low	5180	12.06	12.04	15.06	30	PASS
		Middle	5200	11.89	11.89	14.90	30	PASS
		High	5240	12.58	11.47	15.07	30	PASS
	40MHz Bandwidth	Low	5190	10.98	10.65	13.83	30	PASS
		High	5230	11.39	11.36	14.39	30	PASS
5.8G Band	20MHz Bandwidth	Low	5745	11.73	11.38	14.57	30	PASS
		Middle	5785	11.09	11.12	14.12	30	PASS
		High	5825	10.21	10.06	13.15	30	PASS
	40MHz Bandwidth	Low	5755	8.53	8.54	11.55	30	PASS
		High	5795	10.82	10.49	13.67	30	PASS

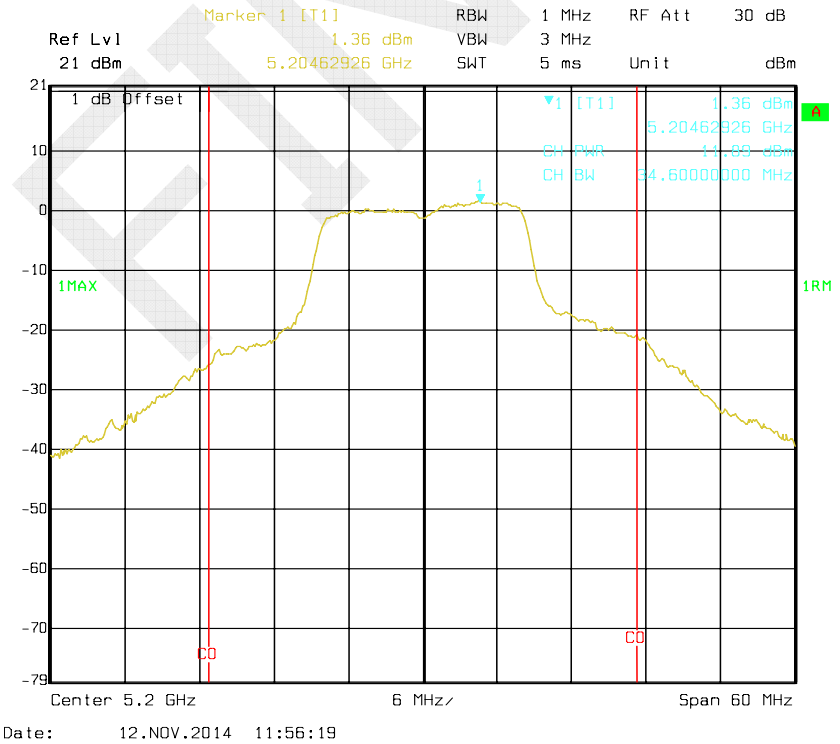
Note: 1. The duty cycle is 100%.
1. The EUT is only for indoor use.

5150MHz-5250MHz:
20MHz Bandwidth:

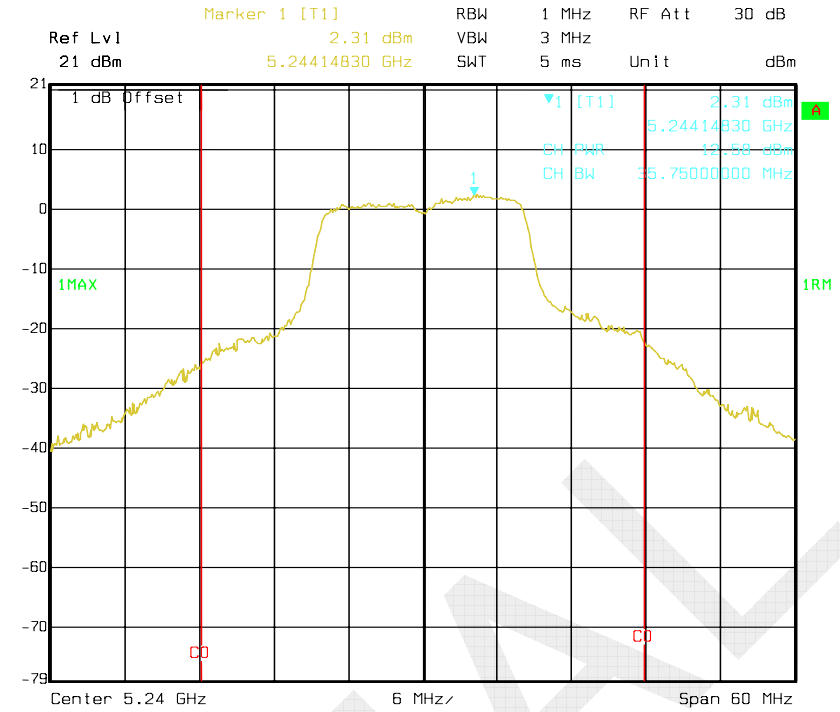
Chain0 Low Channel



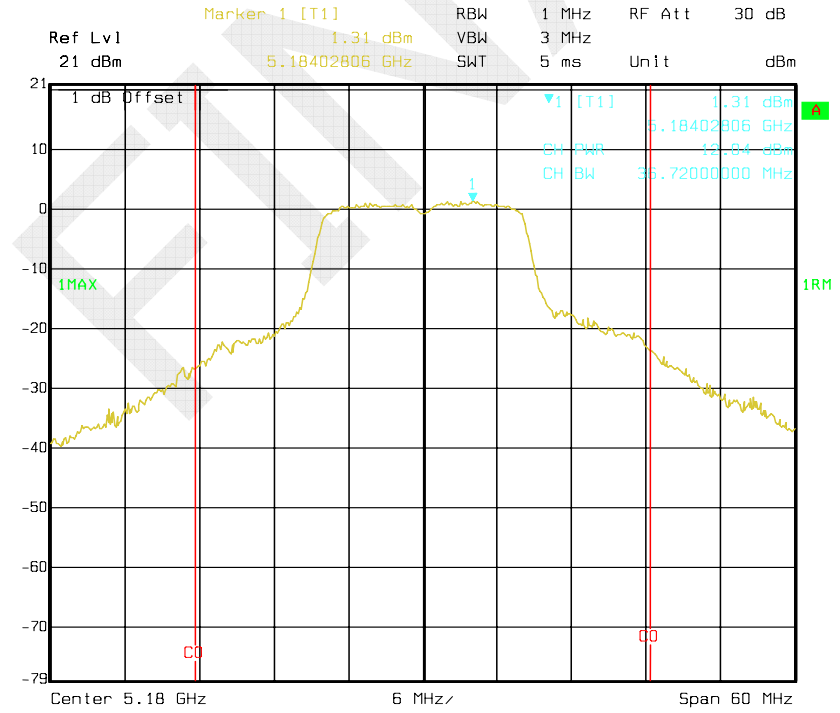
Chain0 Middle Channel



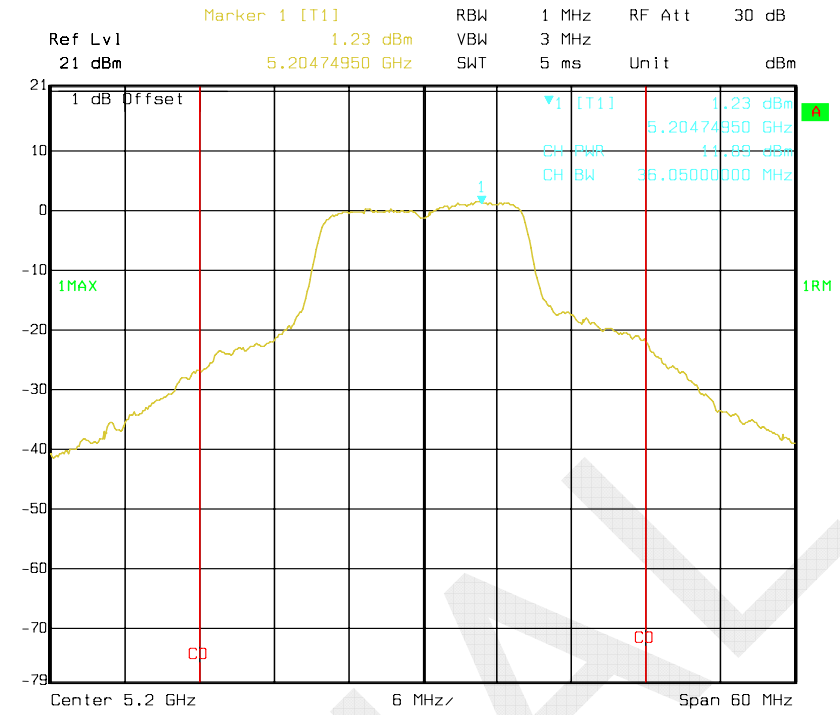
Chain0 High Channel



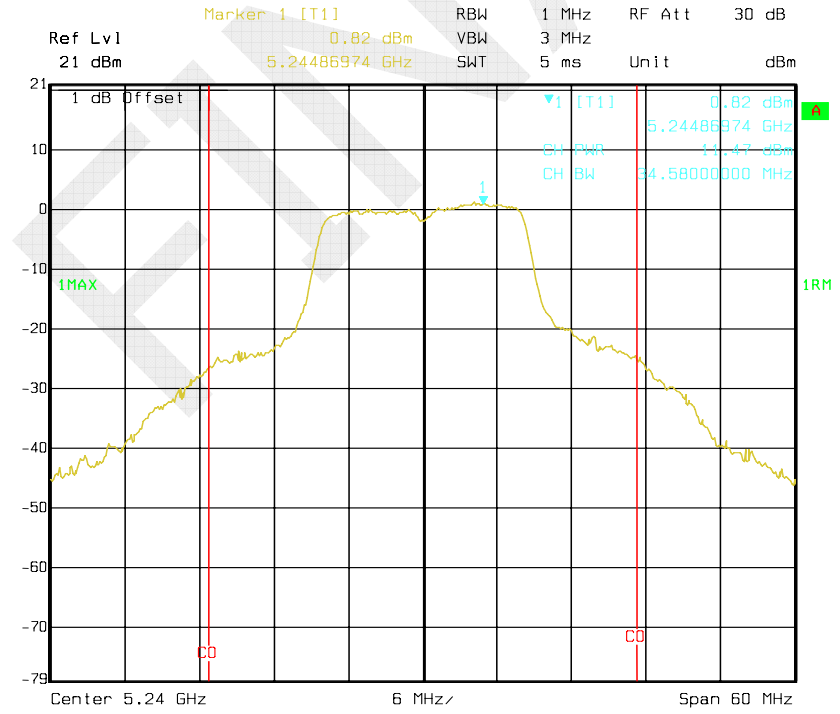
Chain1 Low Channel



Chain1 Middle Channel

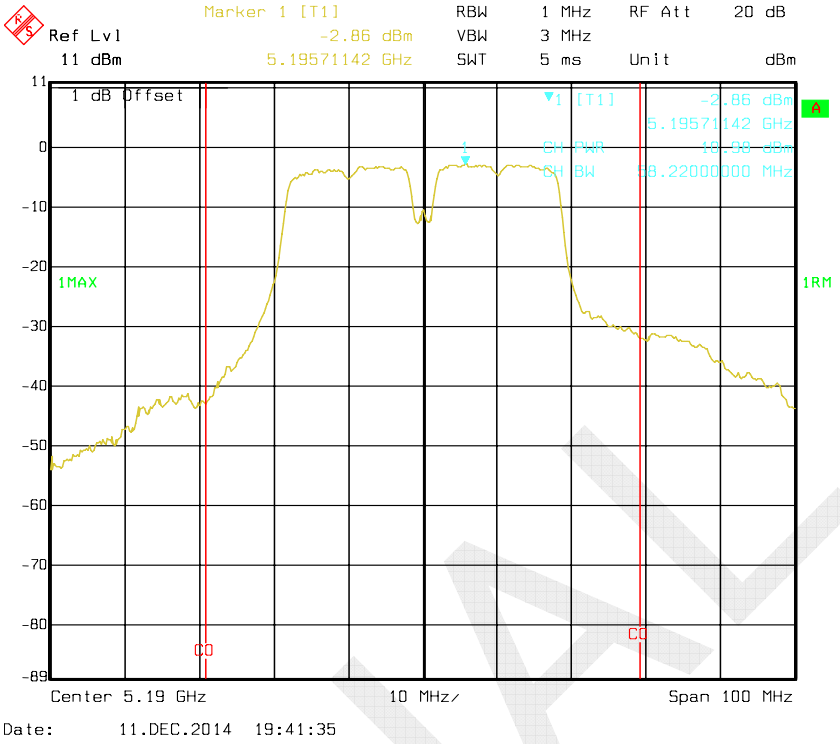


Chain1 High Channel

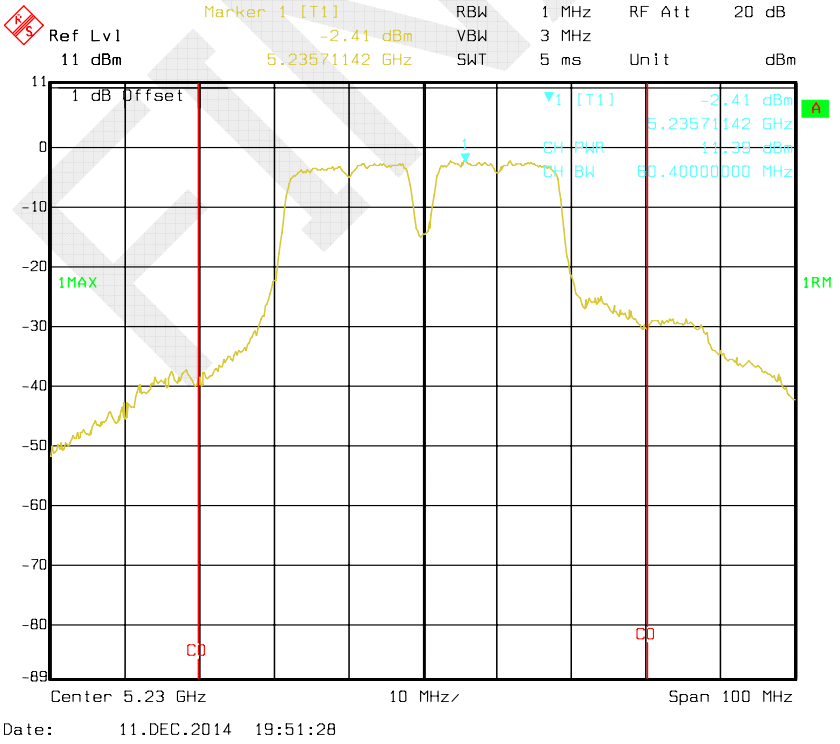


40MHz Bandwidth:

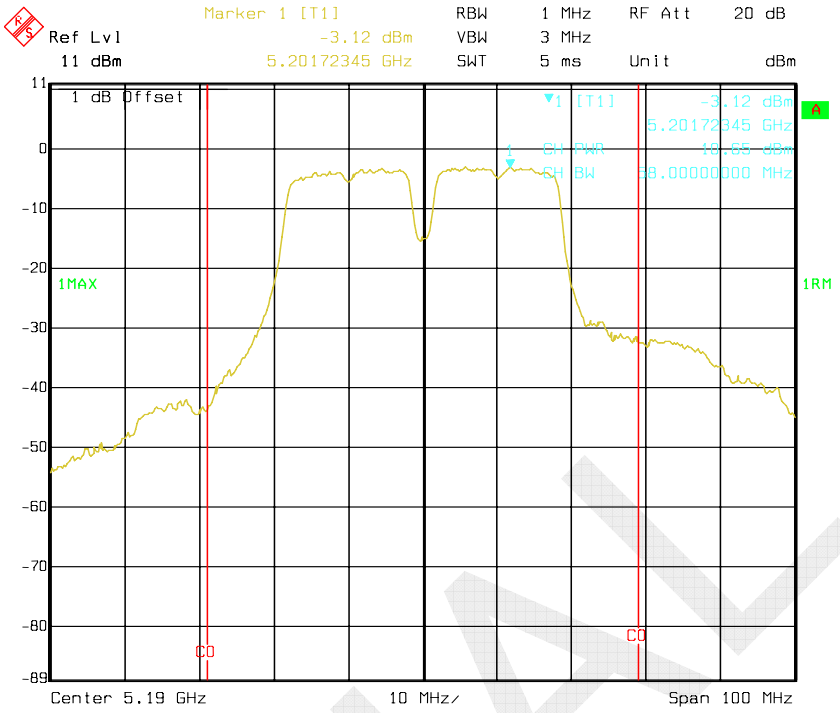
Chain0 Low Channel



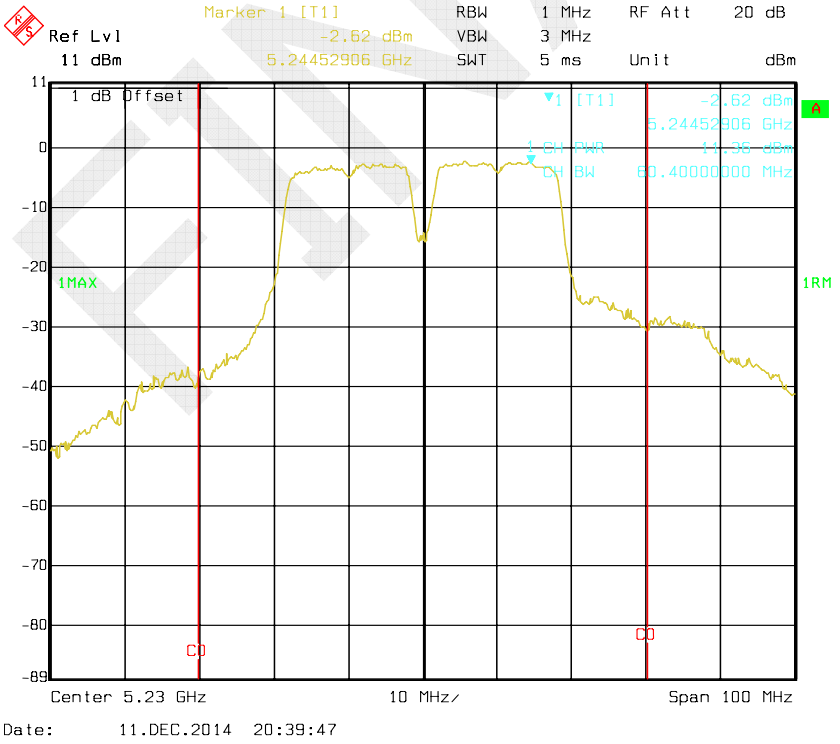
Chain0 High Channel



Chain1 Low Channel

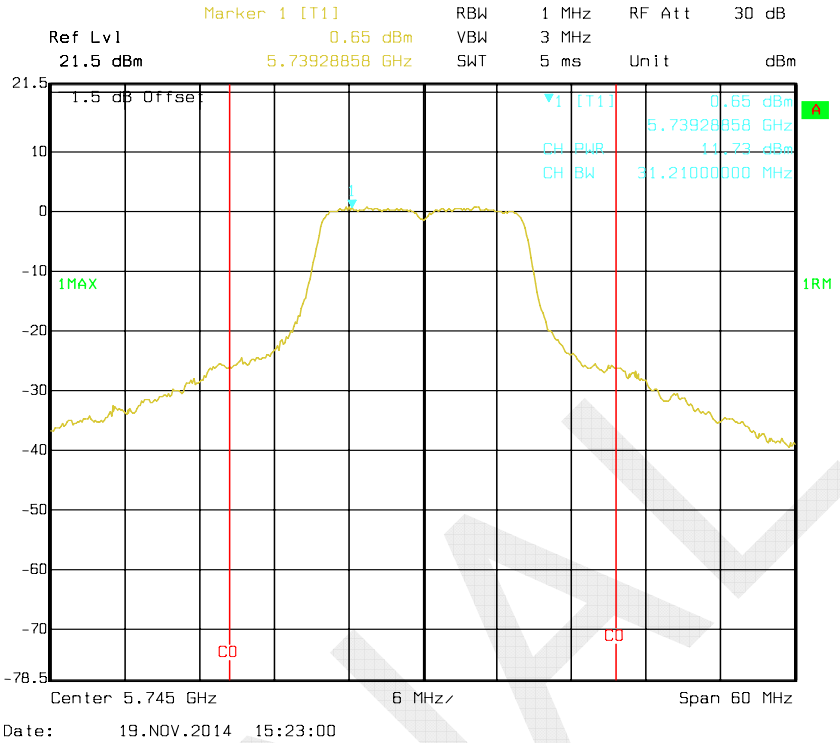


Chain1 High Channel

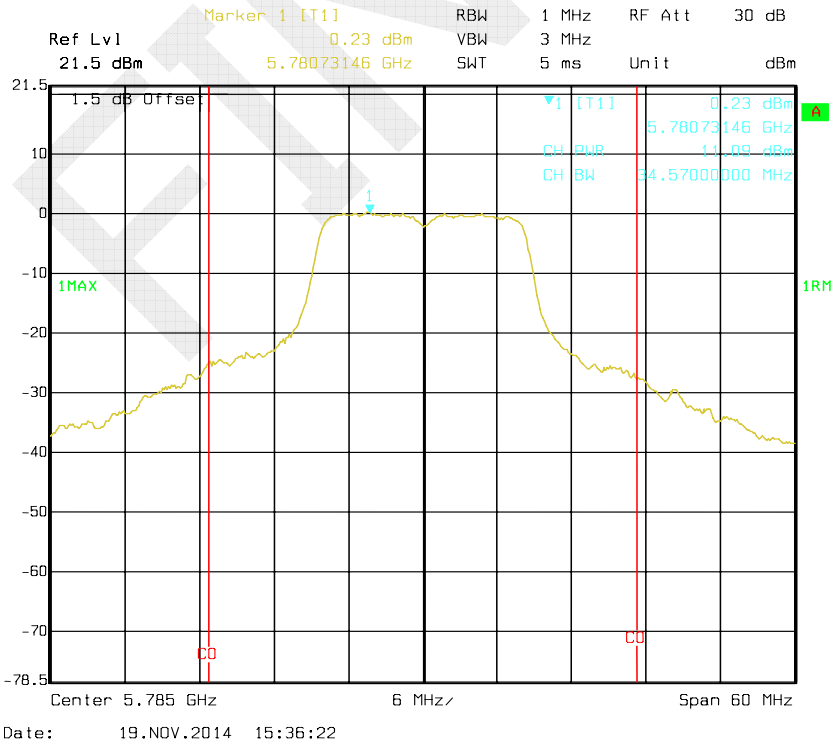


5725MHz-5850MHz:
20MHz Bandwidth:

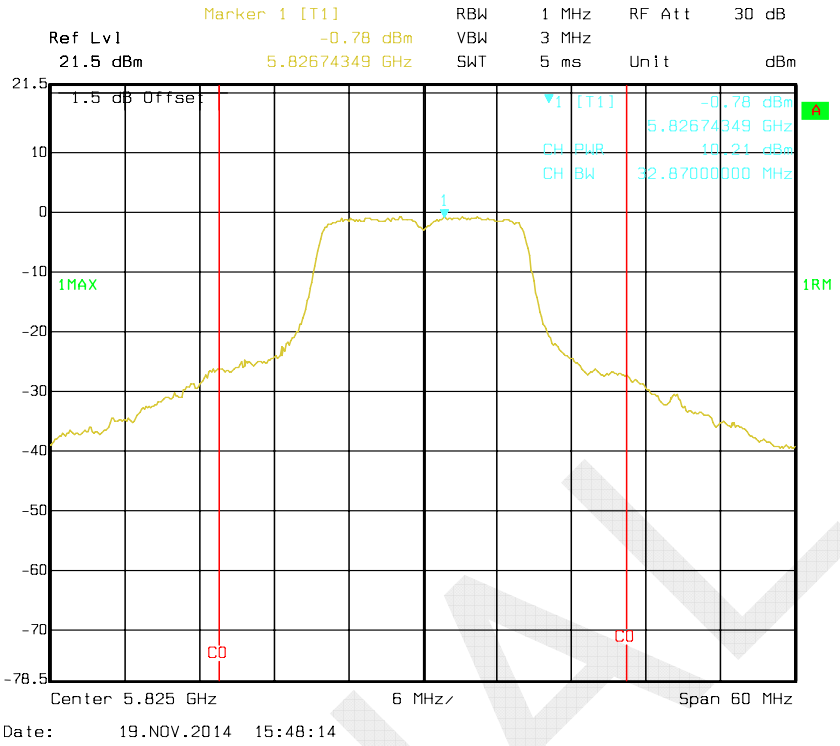
Chain0 Low Channel



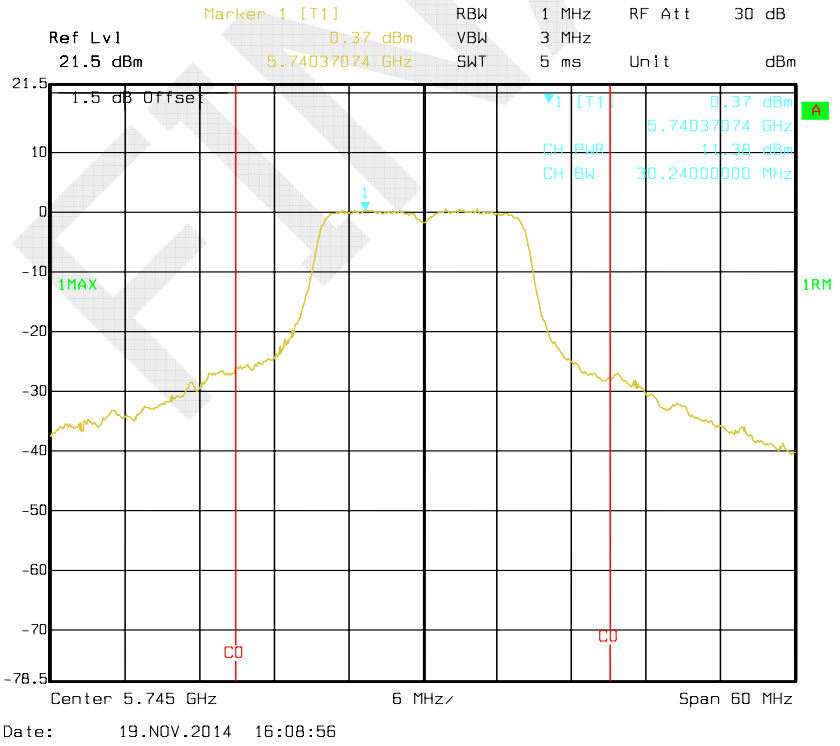
Chain0 Middle Channel



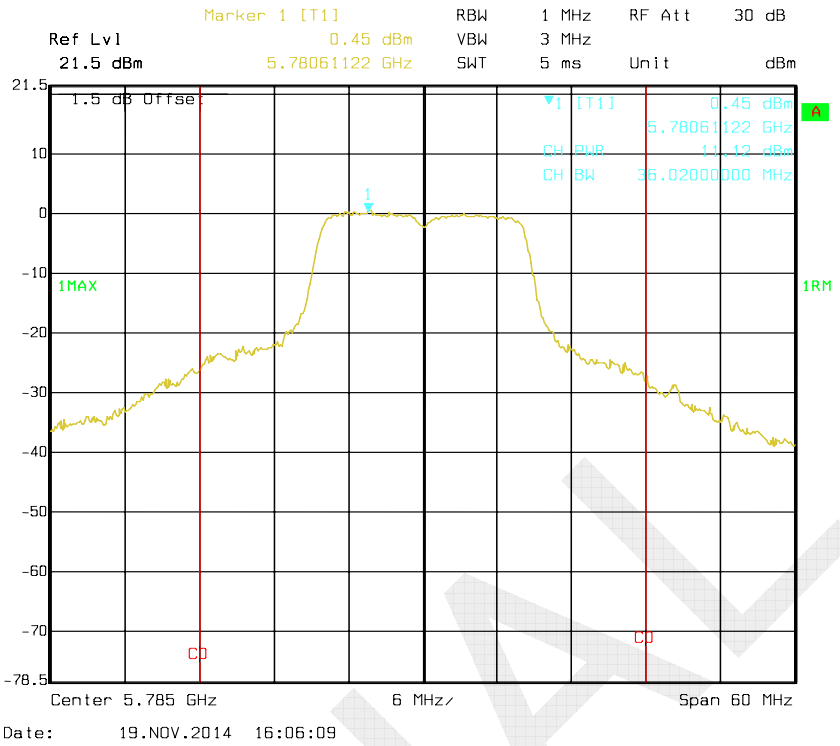
Chain0 High Channel



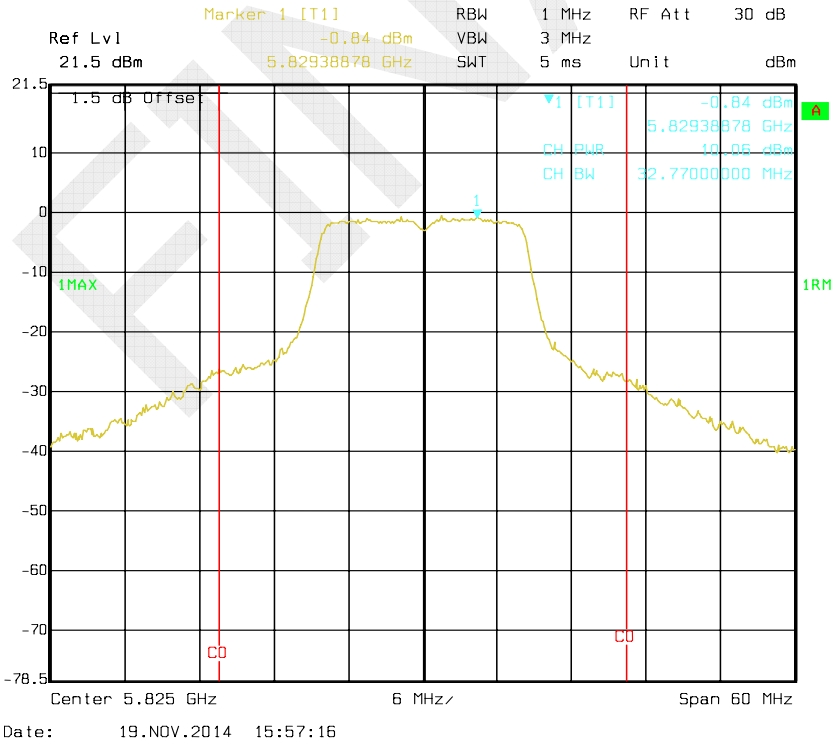
Chain1 Low Channel



Chain1 Middle Channel

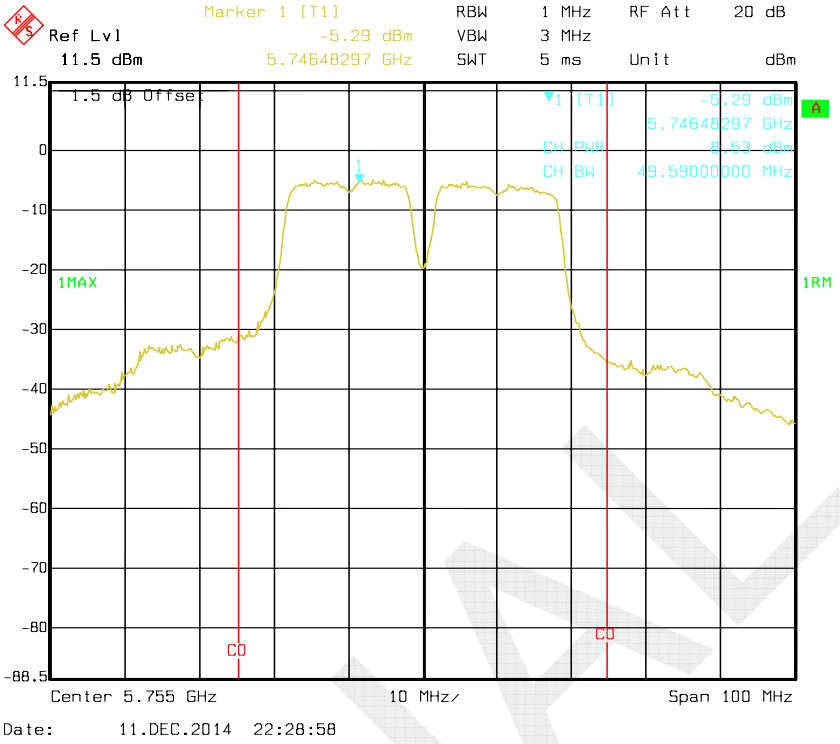


Chain1 High Channel

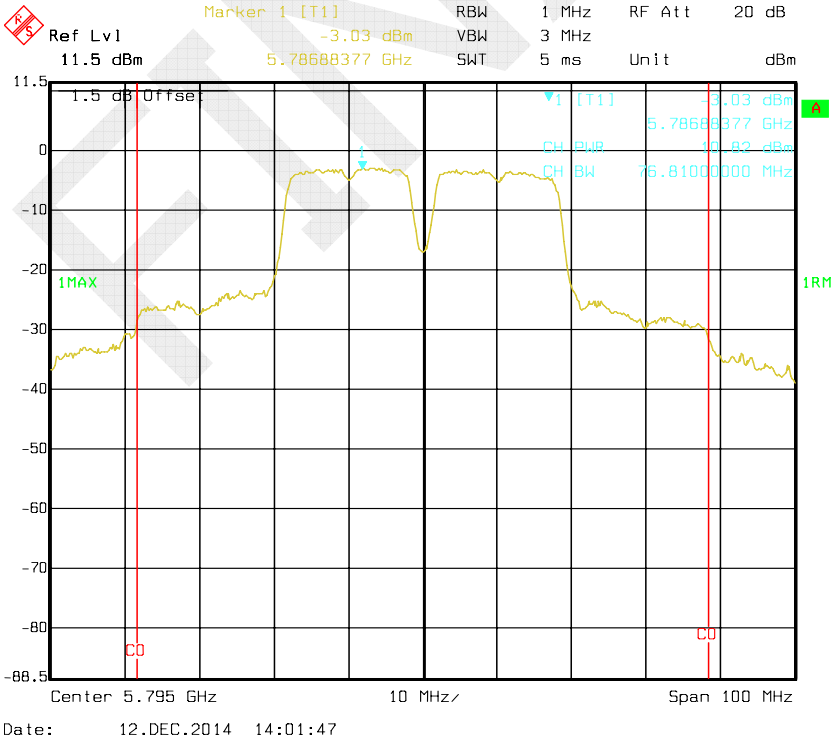


40MHz Bandwidth:

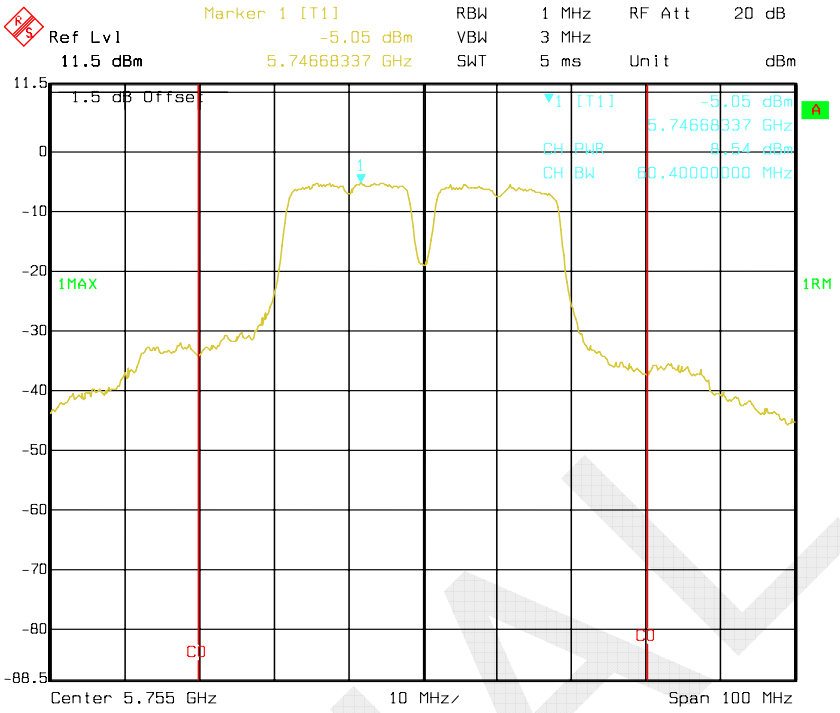
Chain0 Low Channel



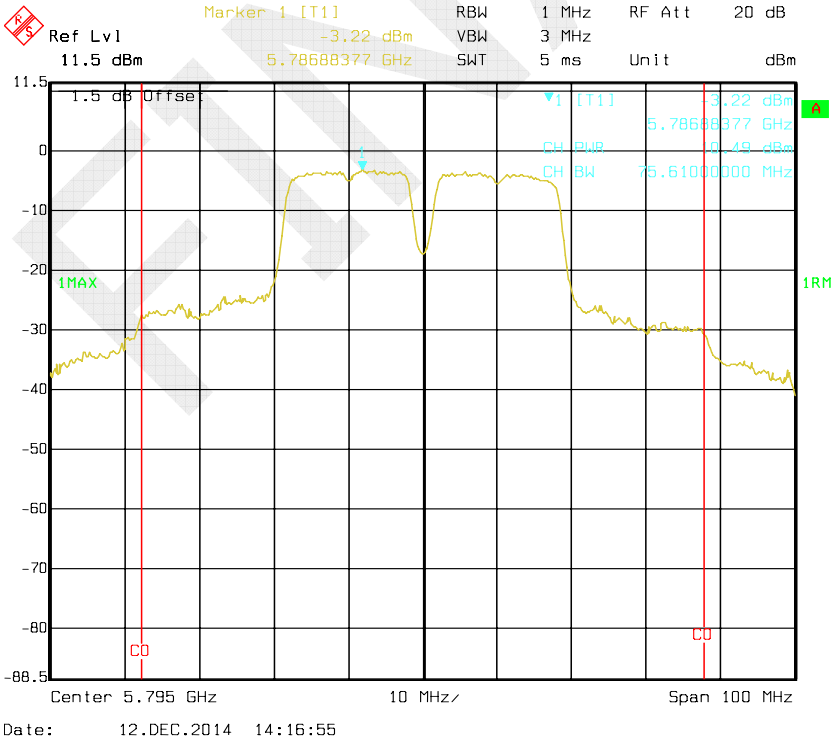
Chain0 High Channel



Chain1 Low Channel



Chain1 High Channel



FCC §15.407(a) - POWER SPECTRAL DENSITY

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.6 °C-26.8°C
Relative Humidity:	37 %-66%
ATM Pressure:	100.8 kPa-102.2 kPa

The testing was performed by Dean Liu from 2014-11-12 to 2014-12-12.

Test Mode: Transmitting

Test Result:Compliance.Please refer to the following table and plot.

5.2G Band:

Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/MHz)				Result
			Chain 0	Chain 1	Total	Limits	
20MHz Bandwidth	Low	5180	1.14	1.14	4.15	17	PASS
	Middle	5200	1.31	1.36	4.35	17	PASS
	High	5240	2.29	1.17	4.78	17	PASS
40MHz Bandwidth	Low	5190	-2.92	-3.01	0.05	17	PASS
	High	5230	-2.59	-2.08	0.68	17	PASS

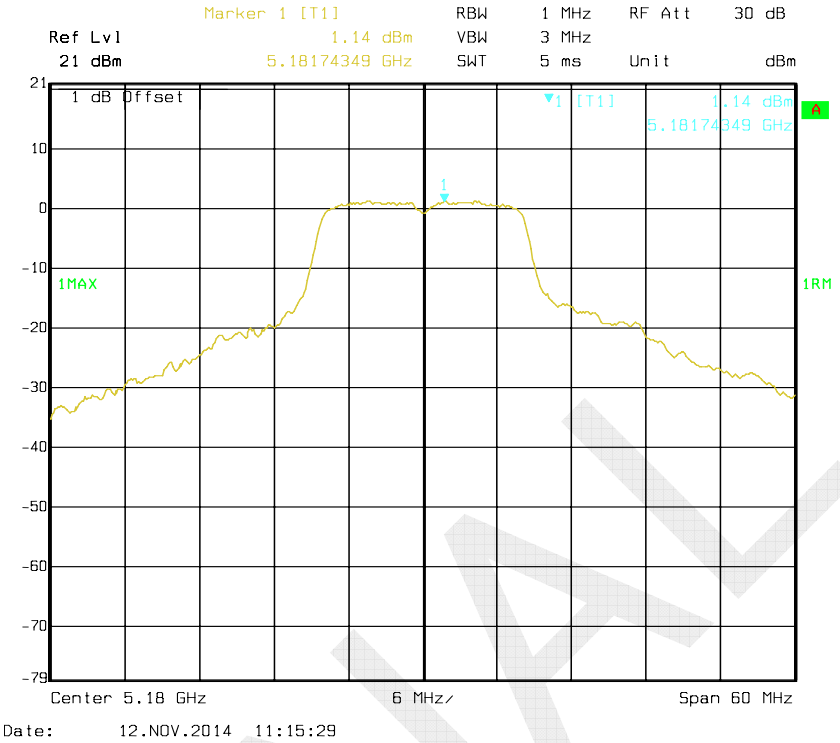
5.8G Band:

Mode	Channel	Frequency (MHz)	Power Spectral Density (dBm/500kHz)				Result
			Chain 0	Chain 1	Total	Limits	
20MHz Bandwidth	Low	5745	-1.68	-1.72	1.31	30	PASS
	Middle	5785	-2.32	-1.99	0.86	30	PASS
	High	5825	-3.1	-3.02	-0.05	30	PASS
40MHz Bandwidth	Low	5755	-8.63	-7.65	-5.10	30	PASS
	High	5795	-5.15	-6.04	-2.56	30	PASS

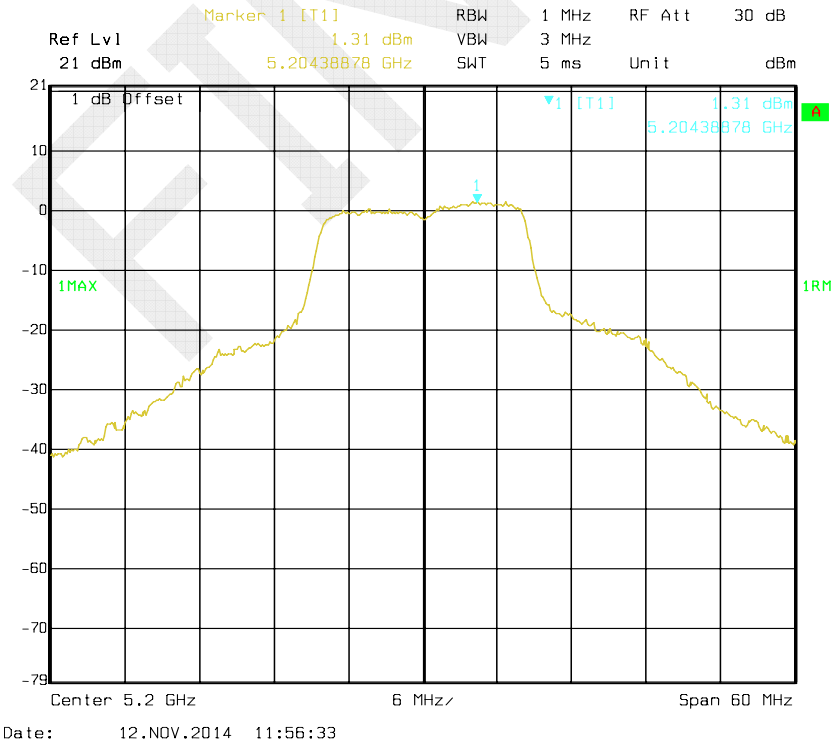
Note:
The duty cycle is 100%.

5150MHz-5250MHz:
20MHz Bandwidth:

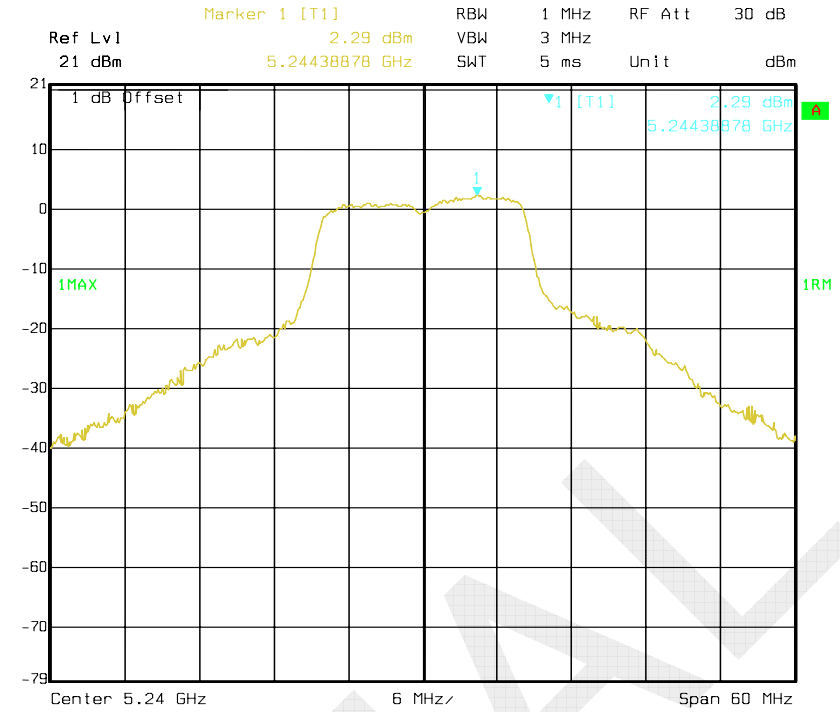
Chain0 Low Channel



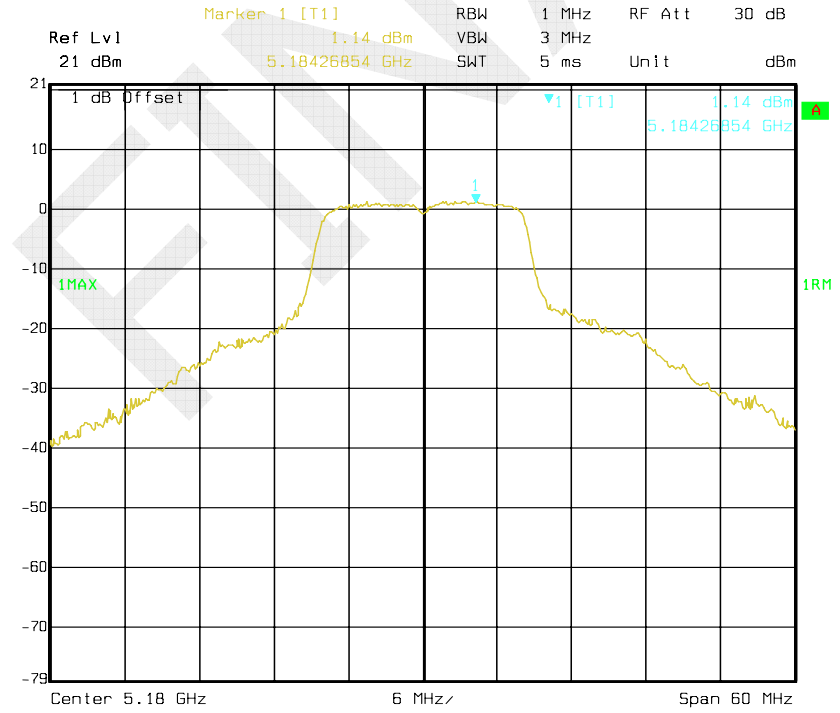
Chain0 Middle Channel



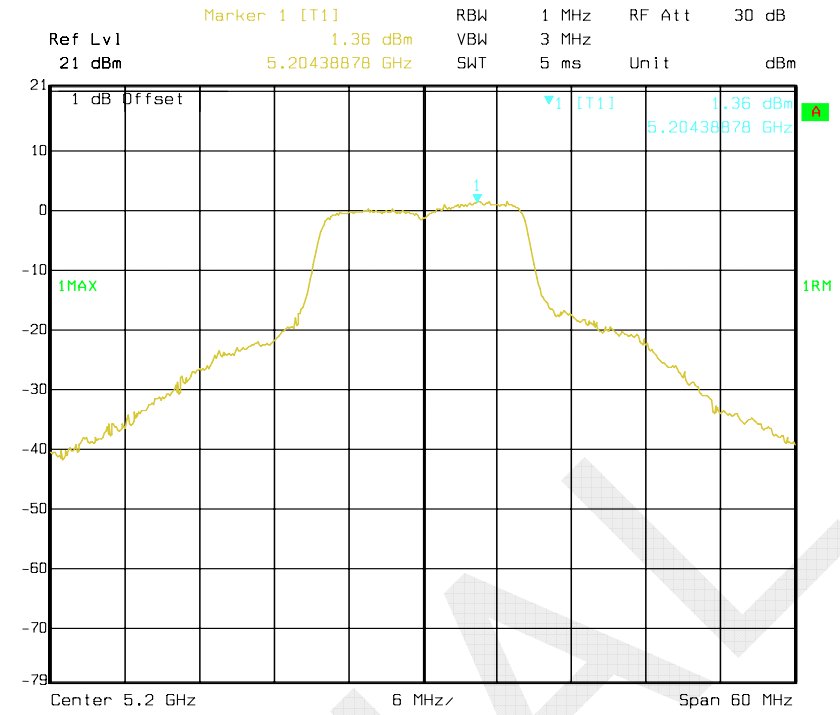
Chain0 High Channel



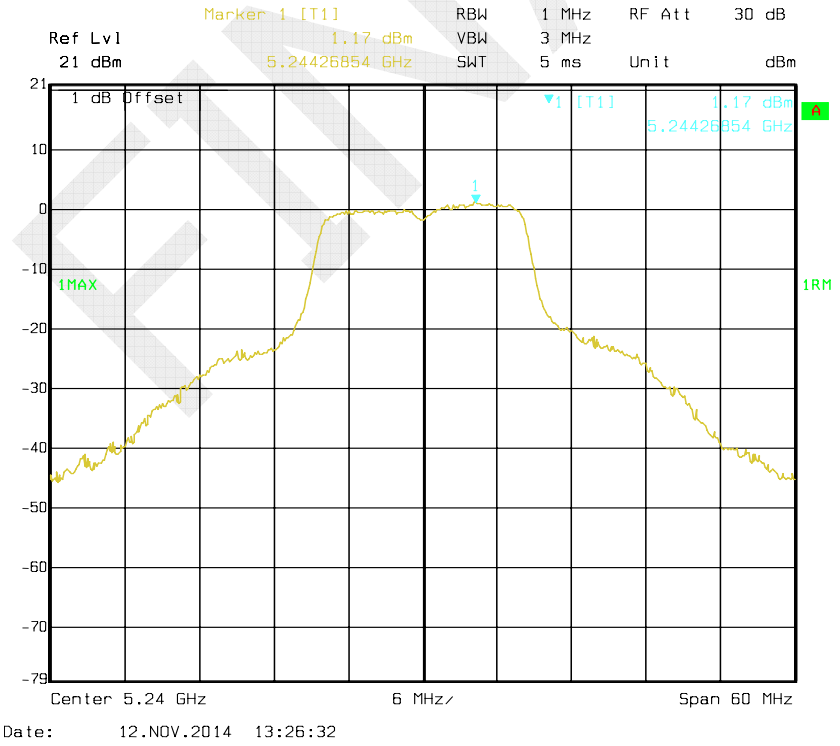
Chain1 Low Channel



Chain1 Middle Channel

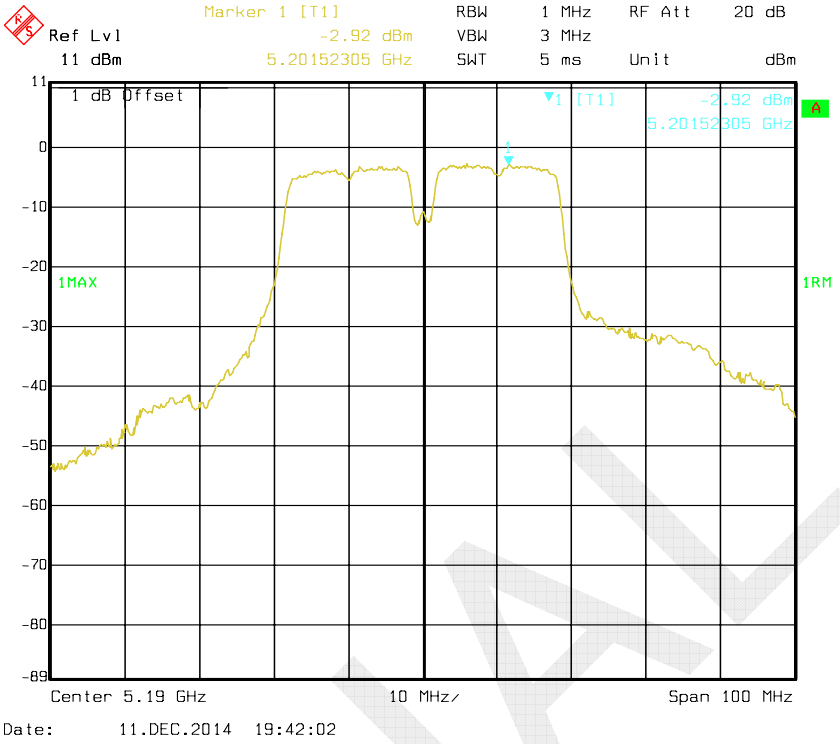


Chain1 High Channel

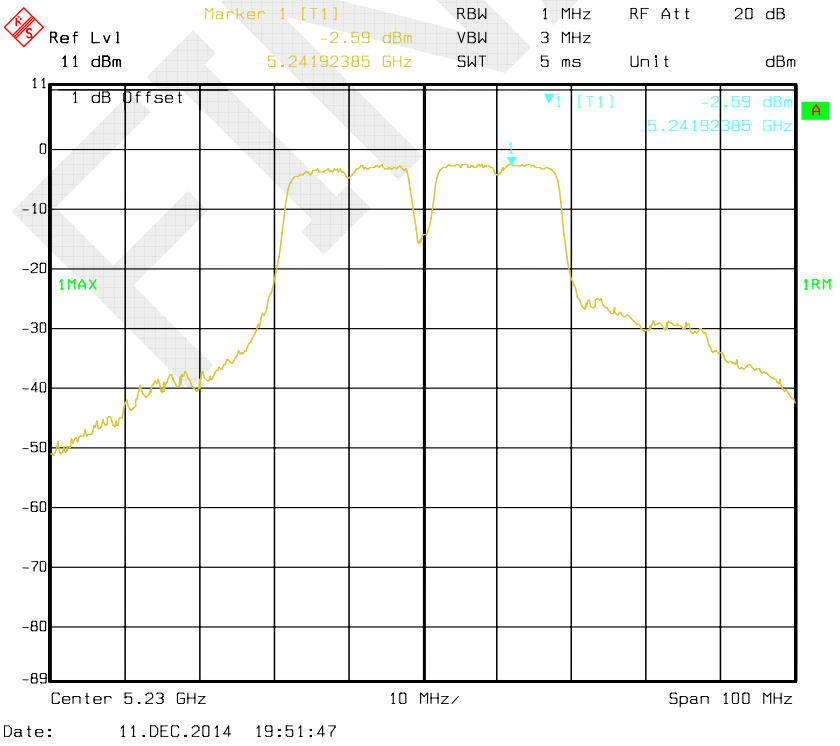


40MHz Bandwidth:

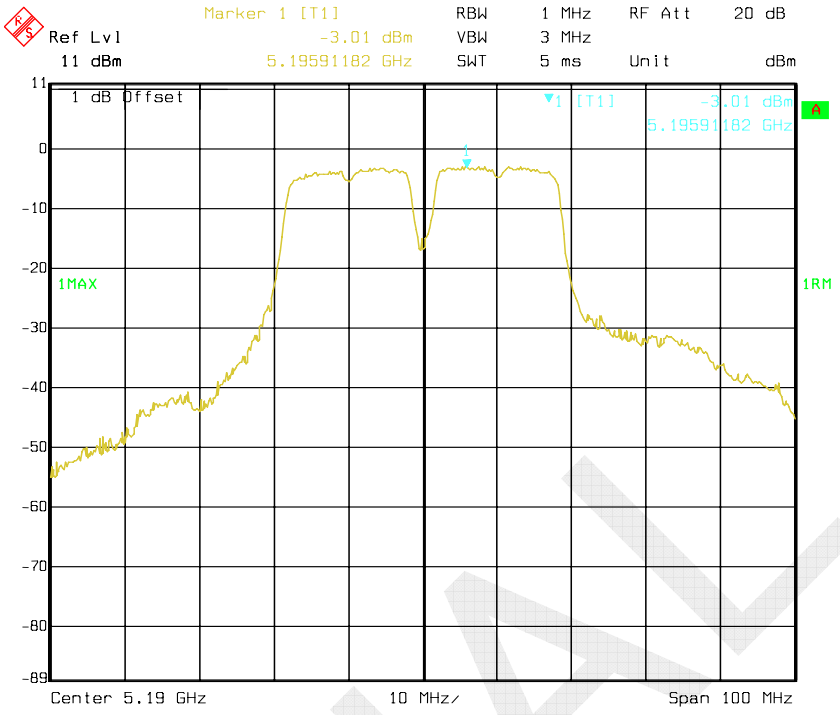
Chain0 Low Channel



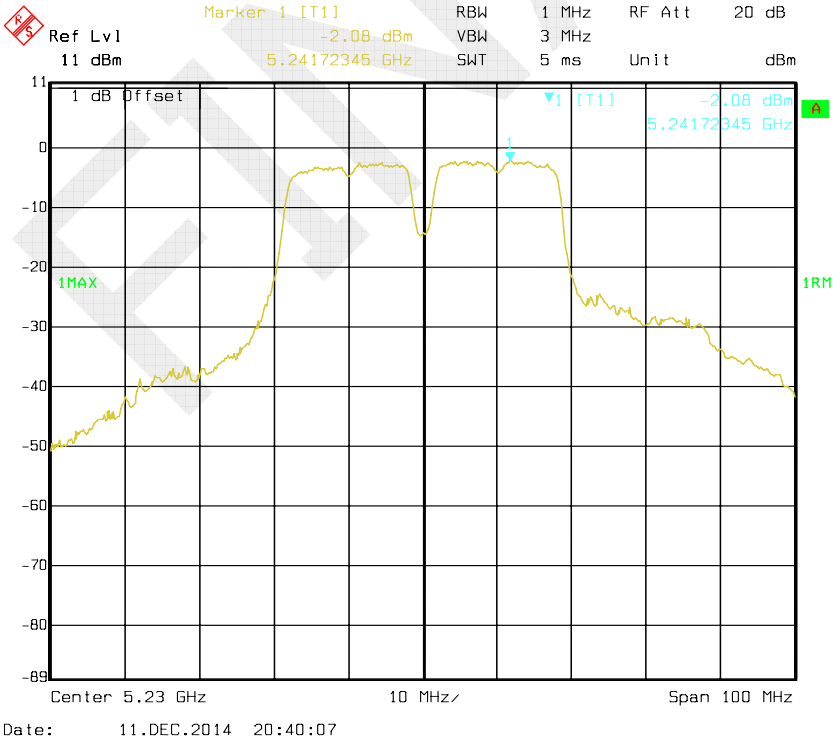
Chain0 High Channel



Chain1 Low Channel

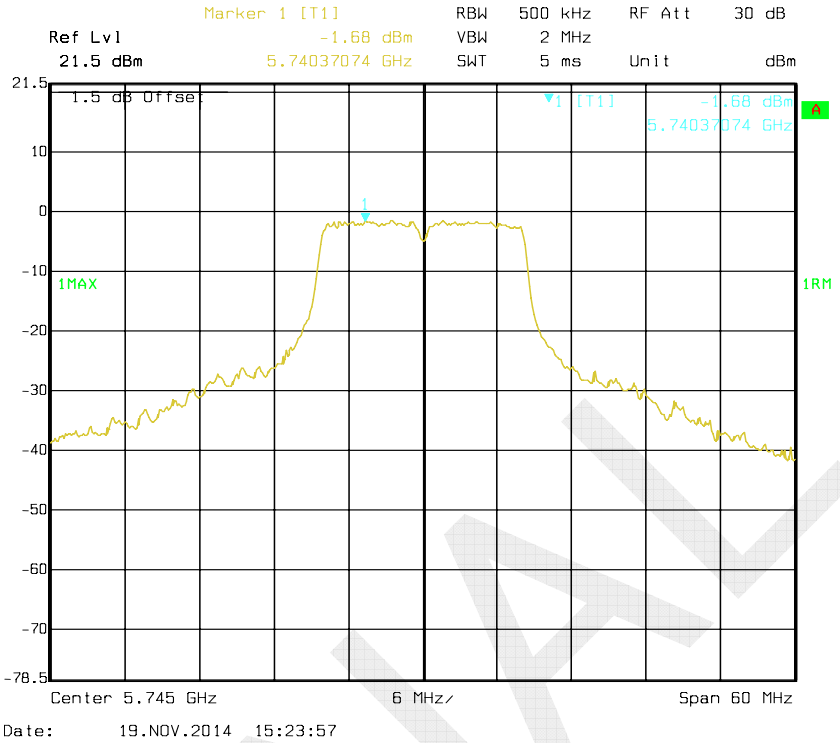


Chain1 High Channel

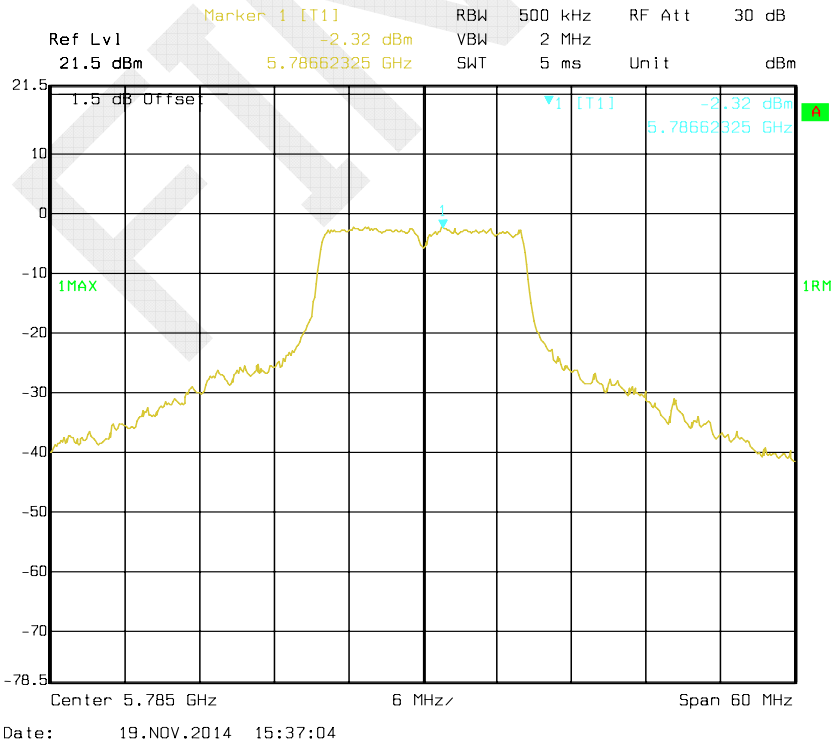


5725MHz-5850MHz:
20MHz Bandwidth:

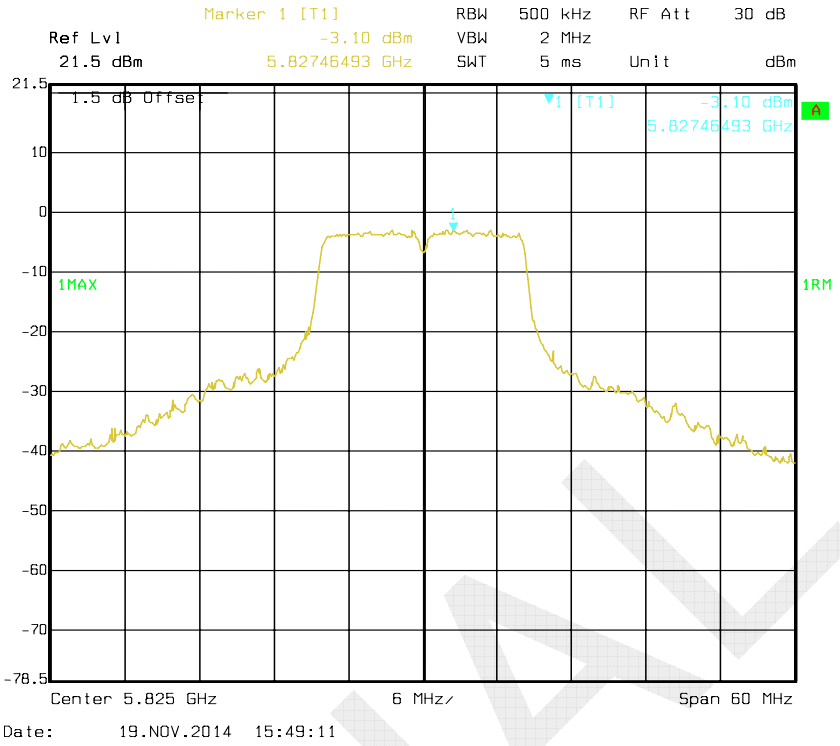
Chain0 Low Channel



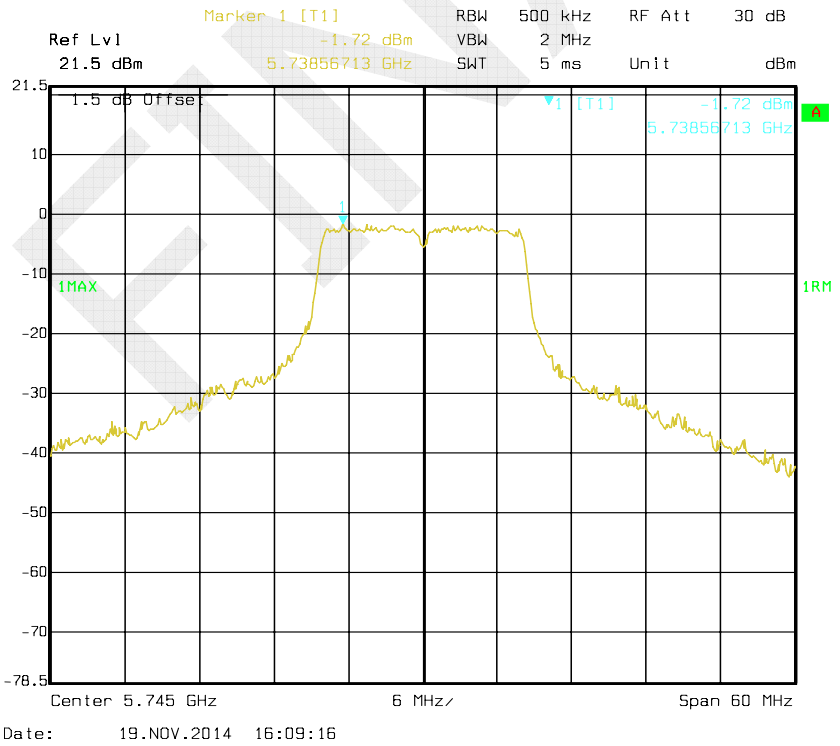
Chain0 Middle Channel



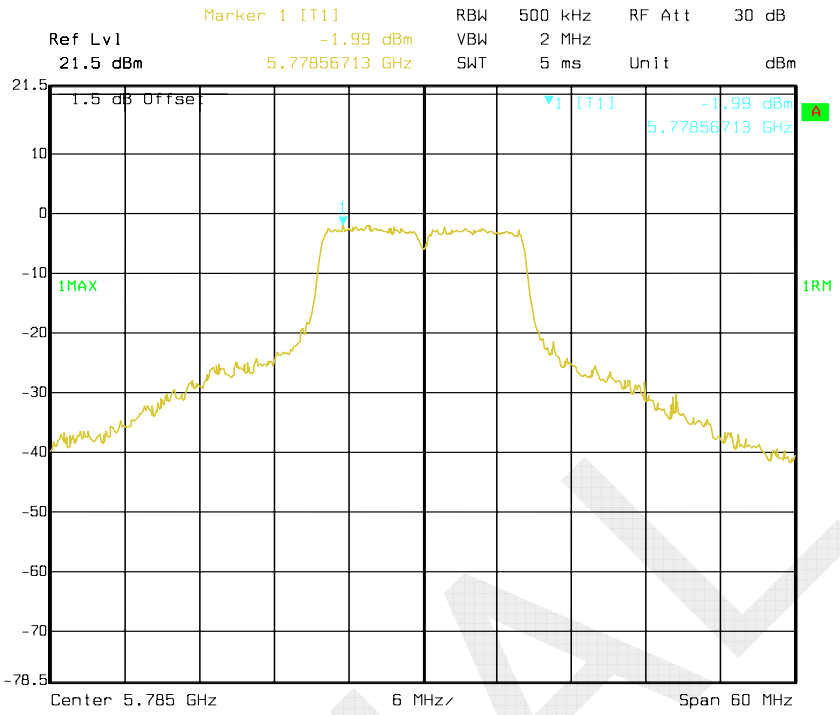
Chain0 High Channel



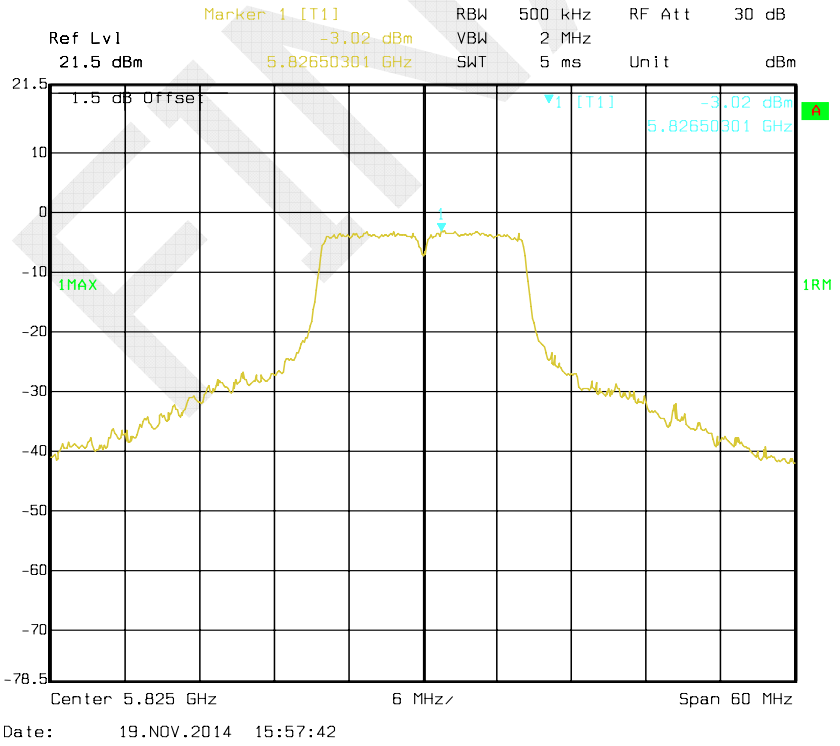
Chain1 Low Channel



Chain1 Middle Channel

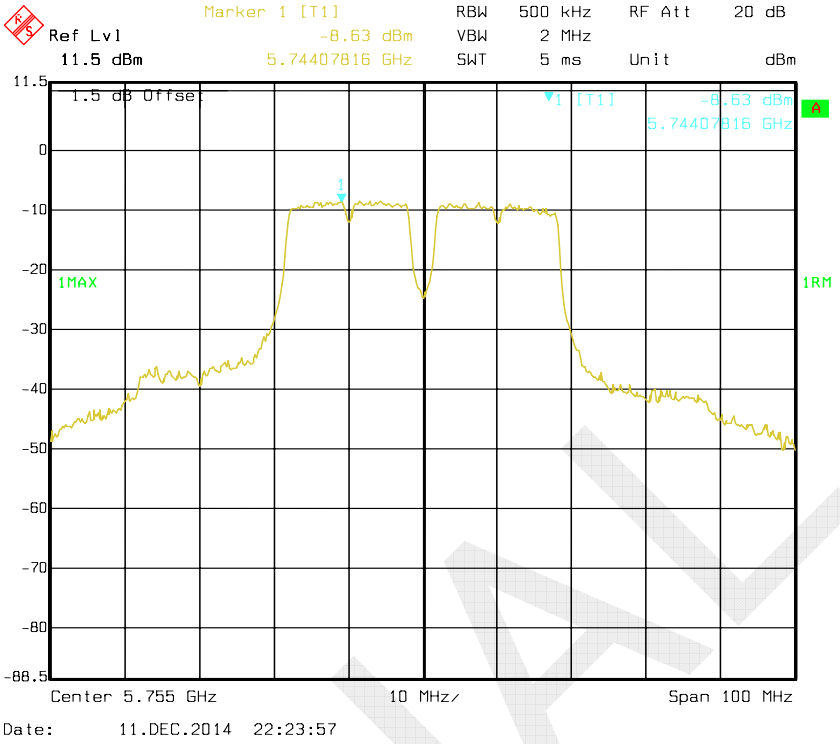


Chain1 High Channel

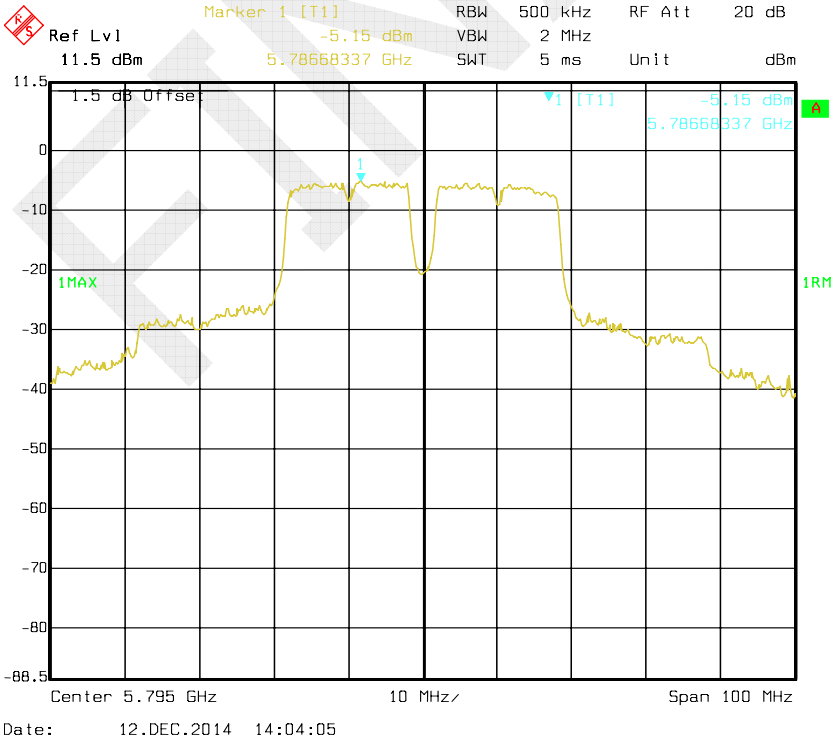


40MHz Bandwidth:

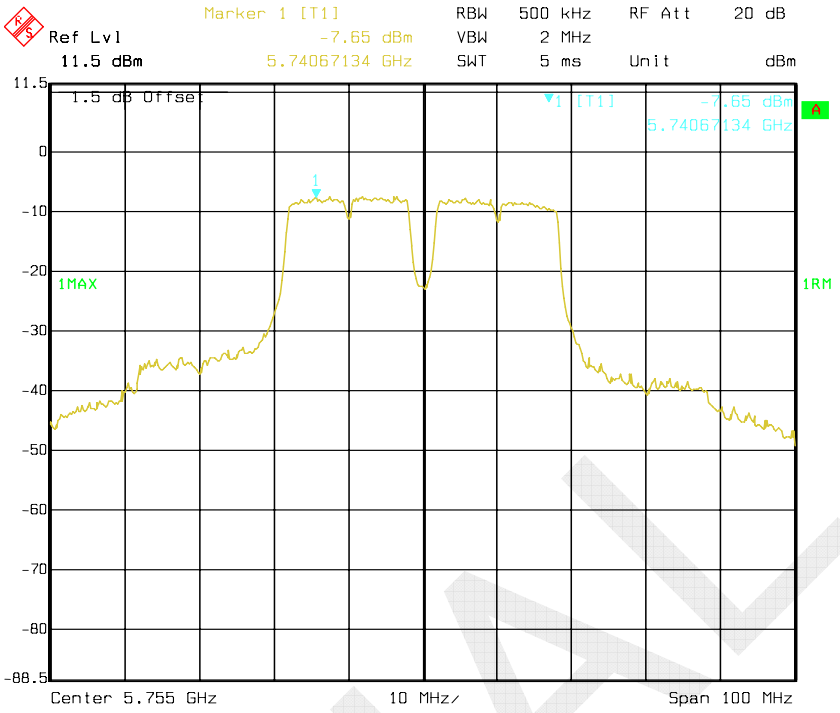
Chain0 Low Channel



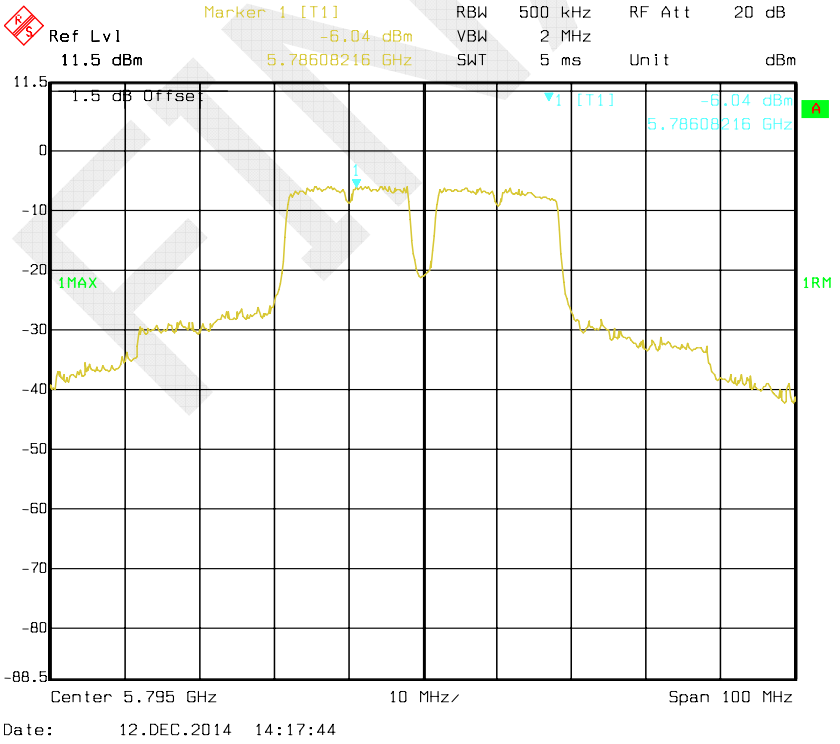
Chain0 High Channel



Chain1 Low Channel



Chain1 High Channel



DECLARATION LETTER

Shenzhen Crystal Video Technology Co.,LTD.
F13， F518 Idea Land, Baoyuan Road, Baoan Central Area, Shenzhen, China
Tel: 0755-26716030 Fax: 0755-23496331

Product Similarity Declaration

Date: 2014-11-26

To Whom It May Concern,

We, Shenzhen Crystal Video Technology Co.,LTD., hereby declare that our product HD wireless video transmitter, Model Number: CH7970, CH4970 are certified in BACL.

They are just different in model name.

The rest are the same.

Please contact me if you have any question.

Signature:

Zhang Zude
Majordomo

Zhang Zude

******* END OF REPORT *******