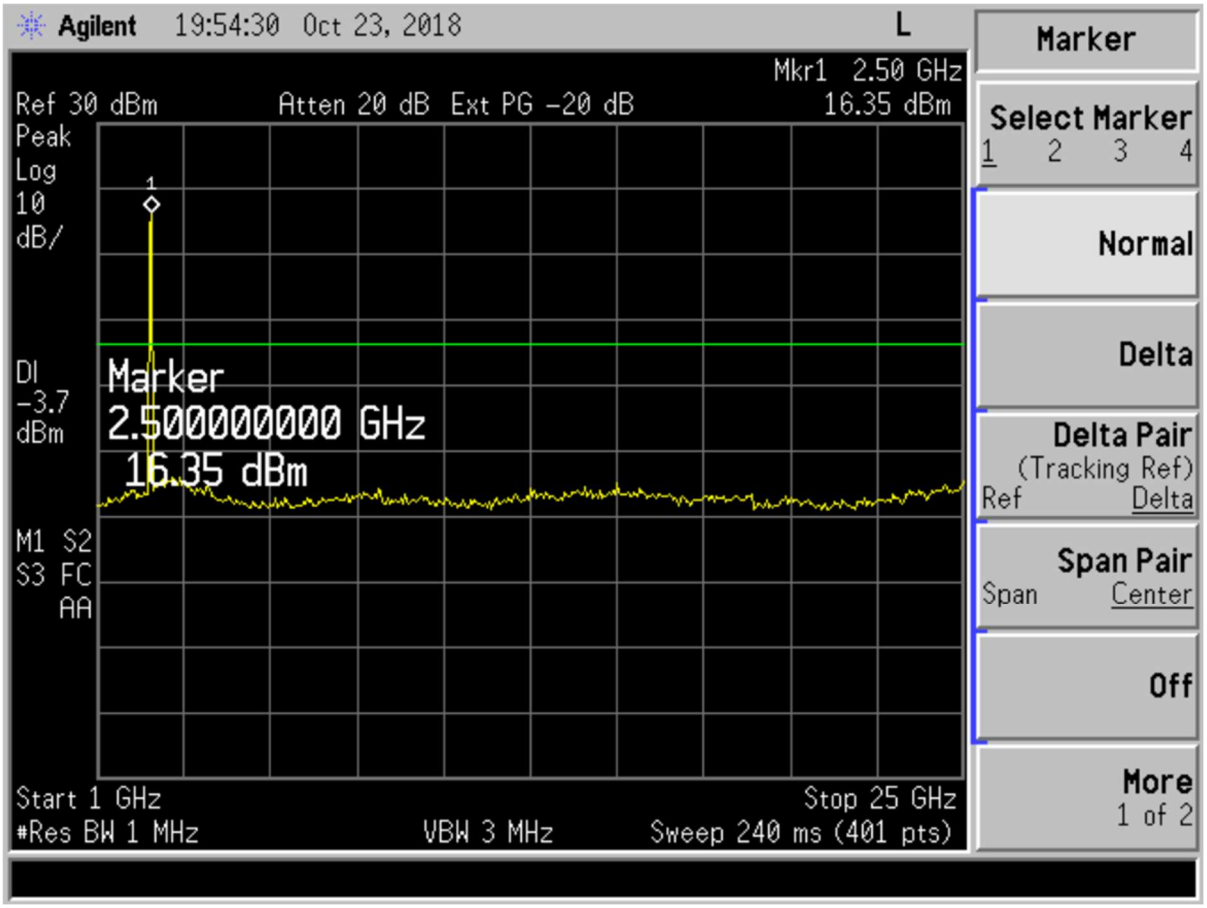

Figure 19. 802.11n, Channel 11, 1 – 25 GHz

2.10 Intentional Radiator, Radiated Emissions (CFR 15.209, 15.247(d), RSS-247, 5.5)

On the test site, the EUT was placed on top of a non-conductive table, 80 cm above the floor for measurements below 1 GHz and 150 cm above the floor for measurements > 1 GHz. The EUT was also evaluated in three orthogonal positions to determine the worst case position. The front of the EUT faced the measurement antenna located 3 meters away. Each signal measured was maximized by raising and lowering the receive antenna between 1 and 4 meters in height while monitoring the ever changing spectrum analyzer display (with channel A in the Clear-Write mode and channel B in the Max-Hold mode) for the largest signal visible. That exact antenna height where the signal was maximized was recorded for reproducibility purposes. Also, the EUT was rotated about its Y-axis while monitoring the Spectrum Analyzer display for maximum. The EUT azimuth was recorded for reproducibility purposes. The EUT was measured when both maxima were simultaneously satisfied.

For radiated measurements, the EUT was set into a continuous transmission mode. Below 1 GHz, the RBW of the measuring instrument was set equal to 120 kHz. Peak measurements above 1 GHz were measured using a RBW = 1 MHz, with a VBW ≥ RBW. The results of peak radiated spurious emissions falling within restricted bands are given in Table 6below.

For Average measurements above 1 GHz, the emissions were measured using RBW = 1 MHz and VBW = 10 Hz or the duty cycle correction factor was applied to the Peak recorded value.

Table 5.b mode - Peak Radiated Fundamental & Harmonic Emissions (Chip Antenna)

Tested By: AF	Test: FCC Part 15,247(d)			Client: Inventek Systems				
	Project: 18-0268			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151				
Frequency (MHz)	**Test Data (dBuV)**	**Additional Factor**	**AF+CL-PA (dB/m)**	**Corrected Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**Detector**
	Low Channel - PEAK							
2412.00	71.13	0.00	33.95	105.08	--	3.0m./HORZ	--	**PK**
*4824.00	49.47	0.00	6.52	55.99	74.0	3.0m./HORZ	18.0	**PK**
7236.00	40.65	0.00	15.10	55.75	74.0	3.0m./HORZ	18.3	**PK**
	Mid Channel - PEAK							
2437.00	76.69	0.00	34.05	110.74	--	3.0m./HORZ	--	**PK**
*4874.00	49.57	0.00	6.46	56.03	74.0	3.0m./HORZ	18.0	**PK**
*7311.00	40.96	0.00	15.66	56.62	74.0	3.0m./HORZ	17.4	**PK**
	High Channel– PEAK							
2462.00	78.85	0.00	34.06	112.91	--	3.0m./HORZ	--	**PK**
*4924.00	49.83	0.00	7.64	57.47	74.0	3.0m./HORZ	16.5	**PK**
*7386.00	40.83	0.00	15.51	56.34	74.0	3.0m./HORZ	17.7	**PK**

1. (*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209& 15.247.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic

Sample Calculation at 2412.00 MHz:

Magnitude of Measured Frequency	71.13	dBuV
+Additional Factor	0.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	33.95	dB/m
Corrected Result	105.08	dBuV/m

Test Date: September 18, 2018
Tested By Signature: Afzal Fazal

Name: Afzal Fazal

Table 6.bmode - Average Radiated Fundamental & Harmonic Emissions (Chip Antenna)

Tested By: AF	Test: FCC Part 15,247(d)			Client: Inventek Systems				
	Project: 18-0268			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151				
Frequency (MHz)	**Test Data (dBuV)**	**Additional Factor**	**AF+CL-PA (dB/m)**	**Corrected Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**Detector**
	Low Channel - Average							
2412.00	63.21	0.00	33.95	97.16	--	3.0m./HORZ	--	**AVG**
*4824.00	39.17	0.00	6.52	45.69	54.0	3.0m./HORZ	8.3	**AVG**
7236.00	30.49	0.00	15.10	45.59	54.0	3.0m./HORZ	8.4	**AVG**
	Mid Channel–Average							
2437.00	68.32	0.00	34.05	102.37	--	3.0m./HORZ	--	**AVG**
*4874.00	38.81	0.00	6.46	45.27	54.0	3.0m./HORZ	8.7	**AVG**
*7311.00	30.22	0.00	15.66	45.88	54.0	3.0m./HORZ	8.1	**AVG**
	High Channel–Average							
2462.00	69.52	0.00	34.06	103.58	--	3.0m./HORZ	--	**AVG**
*4924.00	39.34	0.00	7.64	46.98	54.0	3.0m./HORZ	7.0	**AVG**
*7386.00	30.34	0.00	15.51	45.85	54.0	3.0m./HORZ	8.1	**AVG**

1. (*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209 CFR 15.35.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic
3. Duty cycle applied where applicable.

Sample Calculation at 2412.00MHz:

Magnitude of Measured Frequency	63.21	dBuV
+Additional Factor (filter + duty cycle)	0.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain – Duty Cycle	33.95	dB/m
Corrected Result	97.16	dBuV/m

Test Date: September 18, 2018
Tested By
Signature: Afzal Fazal Name: Afzal Fazal

Note: The transmitter was programmed to transmit at >98% during all testing.

Table 7. g mode - Peak Radiated Fundamental & Harmonic Emissions (Chip Antenna)

Tested By: AF	Test: FCC Part 15,247(d)			Client: Inventek Systems				
	Project: 18-0268			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151				
Frequency (MHz)	**Test Data (dBuV)**	**Additional Factor**	**AF+CL-PA (dB/m)**	**Corrected Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**Detector**
	Low Channel - PEAK							
2412.00	70.80	0.00	33.95	104.75	--	3.0m./HORZ	--	**PK**
*4824.00	49.41	0.00	6.52	55.93	74.0	3.0m./HORZ	18.1	**PK**
7236.00	41.35	0.00	15.10	56.45	74.0	3.0m./HORZ	17.6	**PK**
	Mid Channel – PEAK							
2437.00	75.85	0.00	34.05	109.90	--	3.0m./HORZ	--	**PK**
*4874.00	49.78	0.00	6.46	56.24	74.0	3.0m./HORZ	17.8	**PK**
*7311.00	41.17	0.00	15.66	56.83	74.0	3.0m./HORZ	17.2	**PK**
	High Channel– PEAK							
2462.00	78.94	0.00	34.06	113.00	--	3.0m./HORZ	--	**PK**
*4924.00	49.20	0.00	7.64	56.84	74.0	3.0m./HORZ	17.8	**PK**
*7386.00	40.46	0.00	15.51	55.97	74.0	3.0m./HORZ	18.0	**PK**

1. (*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209& 15.247.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic

Sample Calculation at 2412.00 MHz:

Magnitude of Measured Frequency	70.80	dBuV
+Additional Factor	0.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	33.95	dB/m
Corrected Result	104.75	dBuV/m

Test Date: September 18, 2018
Tested By
Signature: Afzal Fazal Name: Afzal Fazal

Table 8. g mode - Average Radiated Fundamental & Harmonic Emissions (Chip Antenna)

Tested By: AF	Test: FCC Part 15,247(d)			Client: Inventek Systems				
	Project: 18-0268			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151				
Frequency (MHz)	**Test Data (dBuV)**	**Additional Factor**	**AF+CL-PA (dB/m)**	**Corrected Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**Detector**
	Low Channel–Average							
2412.00	57.16	0.00	33.95	91.11	--	3.0m./HORZ	--	**AVG**
*4824.00	39.90	0.00	6.52	46.42	54.0	3.0m./HORZ	7.6	**AVG**
7236.00	30.41	0.00	15.10	45.51	54.0	3.0m./HORZ	8.5	**AVG**
	Mid Channel –Average							
2437.00	61.96	0.00	34.05	96.01	--	3.0m./HORZ	--	**AVG**
*4874.00	38.88	0.00	6.46	45.34	54.0	3.0m./HORZ	8.7	**AVG**
*7311.00	30.42	0.00	15.66	46.08	54.0	3.0m./HORZ	7.9	**AVG**
	High Channel–Average							
2462.00	64.92	0.00	34.06	98.98	--	3.0m./HORZ	--	**AVG**
*4924.00	39.54	0.00	7.64	47.18	54.0	3.0m./HORZ	6.8	**AVG**
*7386.00	30.18	0.00	15.51	45.69	54.0	3.0m./HORZ	8.3	**AVG**

1. (*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209 CFR 15.35.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic
3. Duty cycle applied where applicable.

Sample Calculation at 2412.00 MHz:

Magnitude of Measured Frequency	57.16	dBuV
+Additional Factor	0.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	33.95	dB/m
Corrected Result	91.11	dBuV/m

Test Date: September 18, 2018
Tested By
Signature: Afzal Fazal Name: Afzal Fazal

Note: The transmitter was programmed to transmit at >98% during all testing.

Table 9. n mode – Peak Radiated Fundamental & Harmonic Emissions (Chip Antenna)

Tested By: AF	Test: FCC Part 15,247(d)			Client: Inventek Systems				
	Project: 18-0268			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151				
Frequency (MHz)	**Test Data (dBuV)**	**Additional Factor**	**AF+CL-PA (dB/m)**	**Corrected Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**Detector**
	Low Channel - PEAK							
2412.00	70.12	0.00	33.95	104.07	--	3.0m./HORZ	--	**PK**
*4824.00	49.58	0.00	6.52	56.10	74.0	3.0m./HORZ	17.9	**PK**
7236.00	41.13	0.00	15.10	56.23	74.0	3.0m./HORZ	17.8	**PK**
	Mid Channel – PEAK							
2437.00	75.38	0.00	34.05	109.43	--	3.0m./HORZ	--	**PK**
*4874.00	49.73	0.00	6.46	56.19	74.0	3.0m./HORZ	17.8	**PK**
*7311.00	40.97	0.00	15.66	56.63	74.0	3.0m./HORZ	17.4	**PK**
	High Channel– PEAK							
2462.00	78.81	0.00	34.06	112.87	--	3.0m./HORZ	--	**PK**
*4924.00	49.53	0.00	7.64	57.17	74.0	3.0m./HORZ	16.8	**PK**
*7386.00	41.16	0.00	15.51	56.67	74.0	3.0m./HORZ	17.3	**PK**

1. (*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209& 15.247.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic

Sample Calculation at 2412.00 MHz:

Magnitude of Measured Frequency	70.12	dBuV
+Additional Factor	0.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	33.95	dB/m
Corrected Result	104.07	dBuV/m

Test Date: September 18, 2018
Tested By
Signature: Afzal Fazal Name: Afzal Fazal

Table 10. n mode – Average Radiated Fundamental & Harmonic Emissions (Chip Antenna)

Tested By: AF	Test: FCC Part 15,247(d)			Client: Inventek Systems				
	Project: 18-0268			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151				
Frequency (MHz)	**Test Data (dBuV)**	**Additional Factor**	**AF+CL-PA (dB/m)**	**Corrected Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**Detector**
	Low Channel - Average							
2412.00	56.37	0.00	33.95	90.32	--	3.0m./HORZ	--	**AVG**
*4824.00	39.72	0.00	6.52	46.24	54.0	3.0m./HORZ	7.8	**AVG**
7236.00	31.34	0.00	15.10	46.44	54.0	3.0m./HORZ	7.6	**AVG**
	Mid Channel –Average							
2437.00	61.25	0.00	34.05	95.30	--	3.0m./HORZ	--	**AVG**
*4874.00	39.64	0.00	6.46	46.10	54.0	3.0m./HORZ	7.9	**AVG**
*7311.00	31.14	0.00	15.66	46.80	54.0	3.0m./HORZ	7.2	**AVG**
	High Channel–Average							
2462.00	64.73	0.00	34.06	98.79	--	3.0m./HORZ	--	**AVG**
*4924.00	39.83	0.00	7.64	47.47	54.0	3.0m./HORZ	6.5	**AVG**
*7386.00	31.18	0.00	15.51	46.69	54.0	3.0m./HORZ	7.3	**AVG**

1. (*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209 CFR 15.35.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic
3. Duty cycle applied where applicable.

Sample Calculation at 2412.00 MHz:

Magnitude of Measured Frequency	56.37	dBuV
+Additional Factor	0.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	33.95	dB/m
Corrected Result	90.32	dBuV/m

Test Date: September 18, 2018
Tested By
Signature: Afzal Fazal Name: Afzal Fazal

Note: The transmitter was programmed to transmit at >98% during all testing.

2.11 Band Edge Measurements (CFR 15.247(d), RSS-247, 5.5)

Band Edge measurements are made following the guidelines in ANSI C63.10-2013 with the EUT initially operating on the Lowest Channel and then operating on the Highest Channel within its band of operation. Antenna port radiated measurements are performed to demonstrate compliance with the requirement of 15.247(d) that all emissions outside of the band edges be attenuated by at least 20 dB when compared to its highest in-band value (contained in a 100 kHz band). Because these frequencies occur above 1000 MHz they have both a peak and average requirement.

To capture the band edge set the Spectrum Analyzer frequency span large enough (usually around 10 MHz) to capture the peak level of the emission operating on the channel closest to the band edge as well as any modulation products falling outside of the authorized band of operation. Conducted measurements are performed with RBW ≥1% of the frequency span. In all cases, the VBW is set ≥ RBW. See figures and calculations below for more detail.

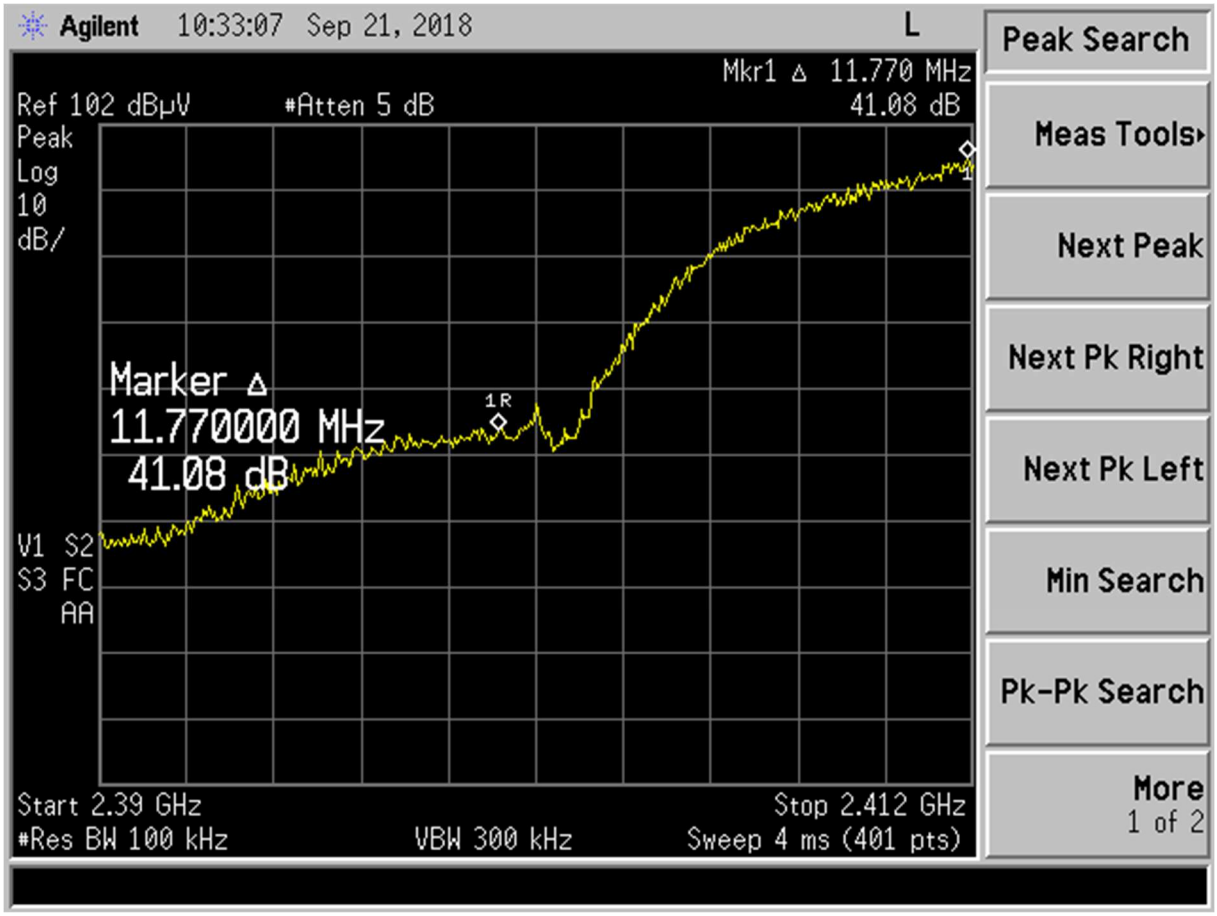

Figure 20. Band Edge Compliance – b mode (Chip Antenna) Low Channel Delta - Peak

Lower band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	41.08	dB
Band Edge Limit	20.00	dB
Band Edge Margin	21.08	dB

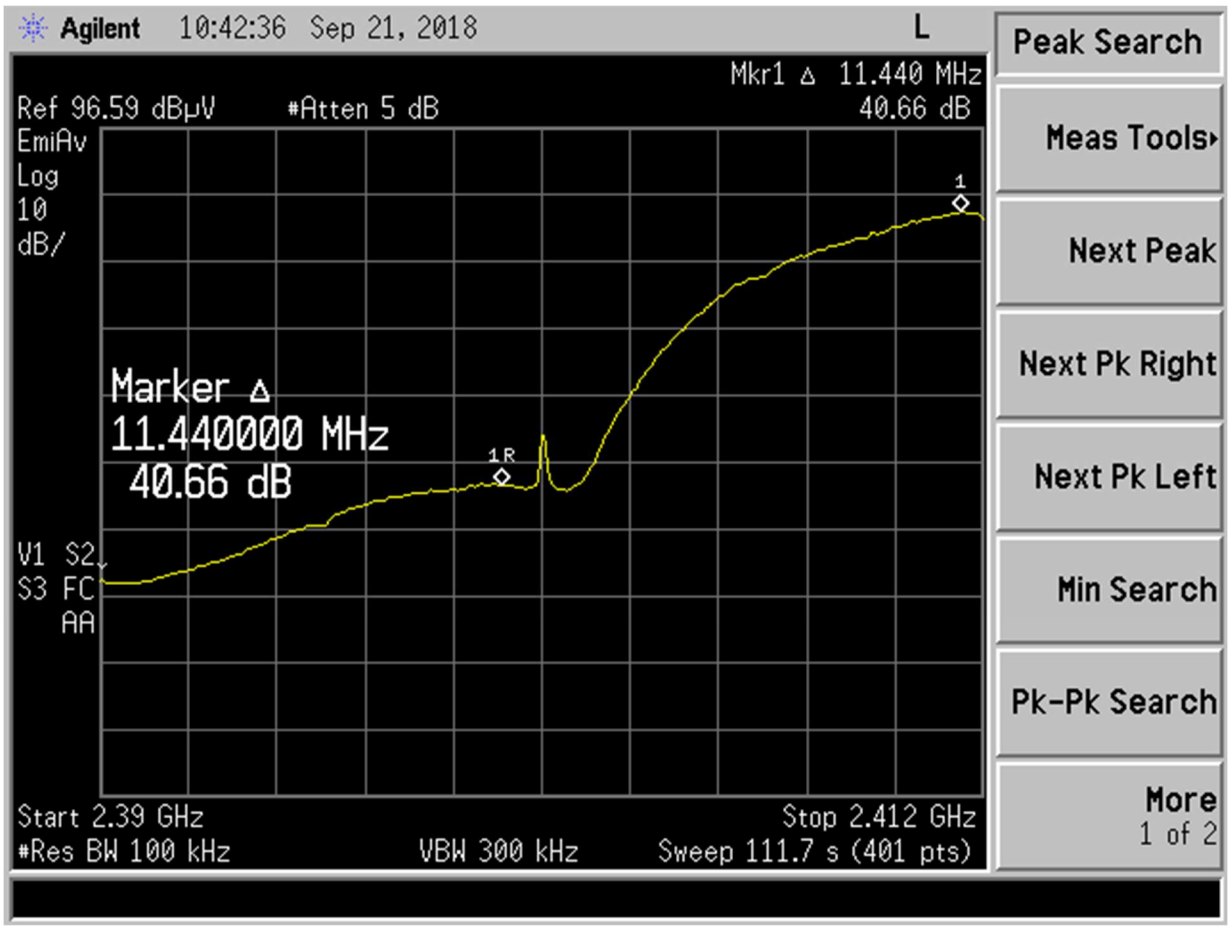

Figure 21. Band Edge Compliance – b mode (Chip Antenna) Low Channel Delta – Average

Lower band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	40.66	dB
Band Edge Limit	20.00	dB
Band Edge Margin	20.66	dB

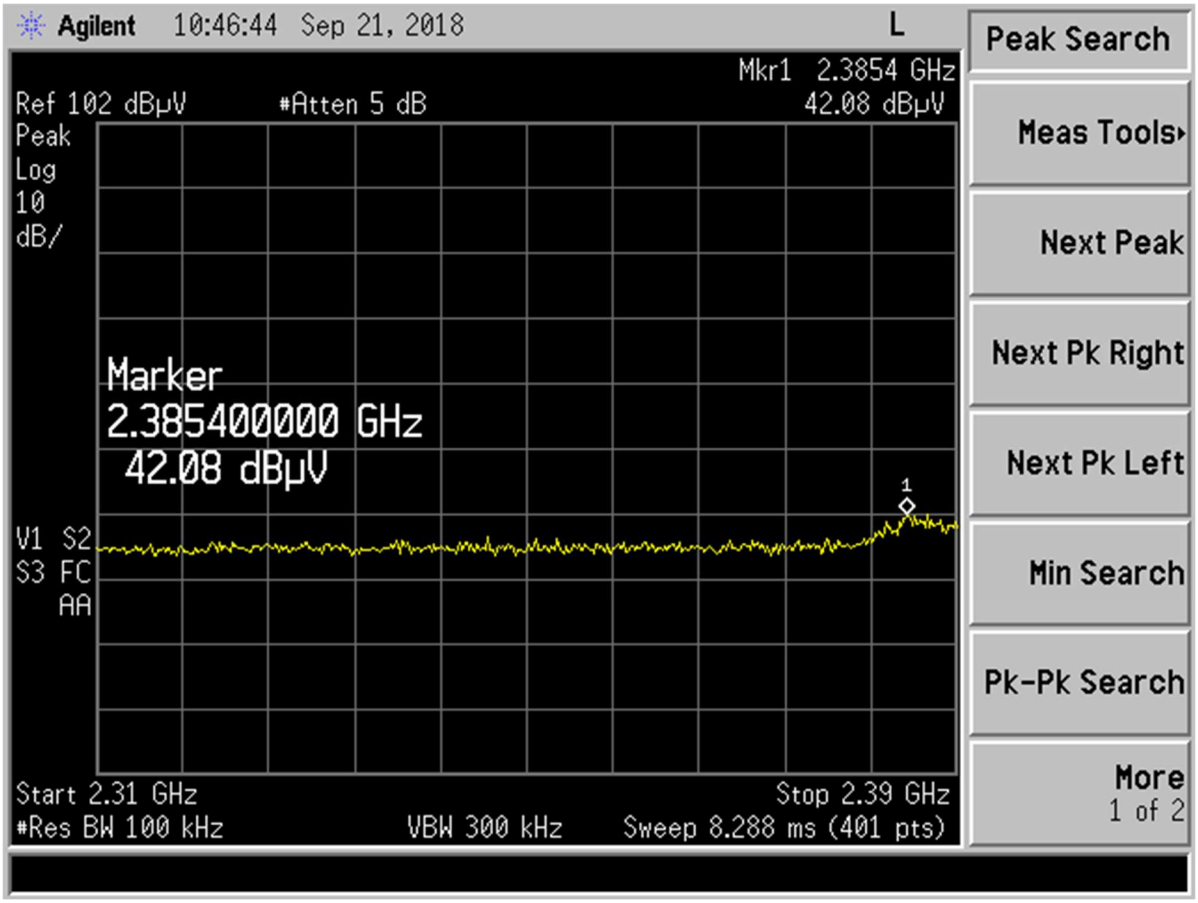

Figure 22. b mode (Chip Antenna) Low Channel Restricted Band - Peak

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2385.40	42.08	-1.66	40.42	74.0	3.0m./HORZ	33.6	**PK**

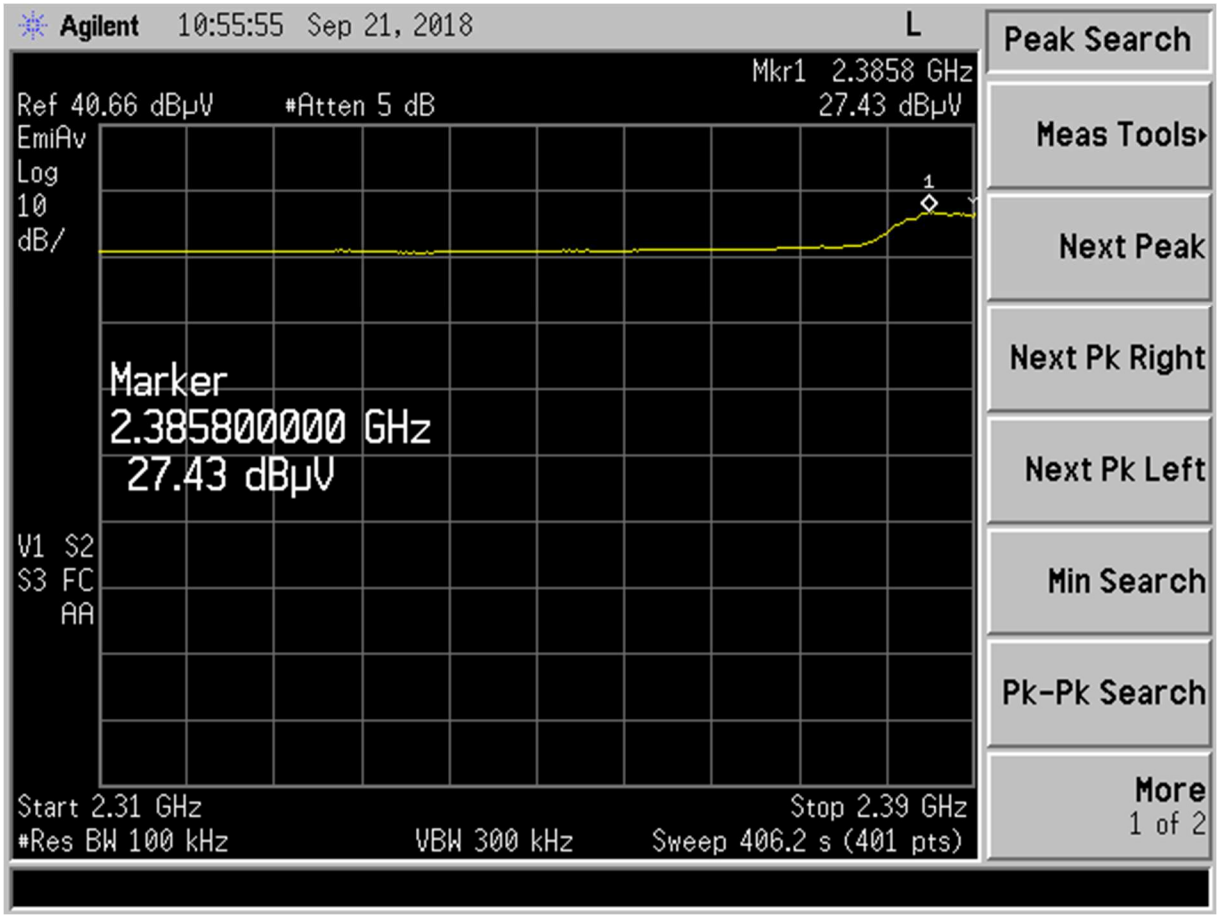

Figure 23. b mode (Chip Antenna) Low Channel Restricted Band–Average

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2385.80	27.43	-1.66	25.77	54.0	3.0m./HORZ	28.2	**AVG**

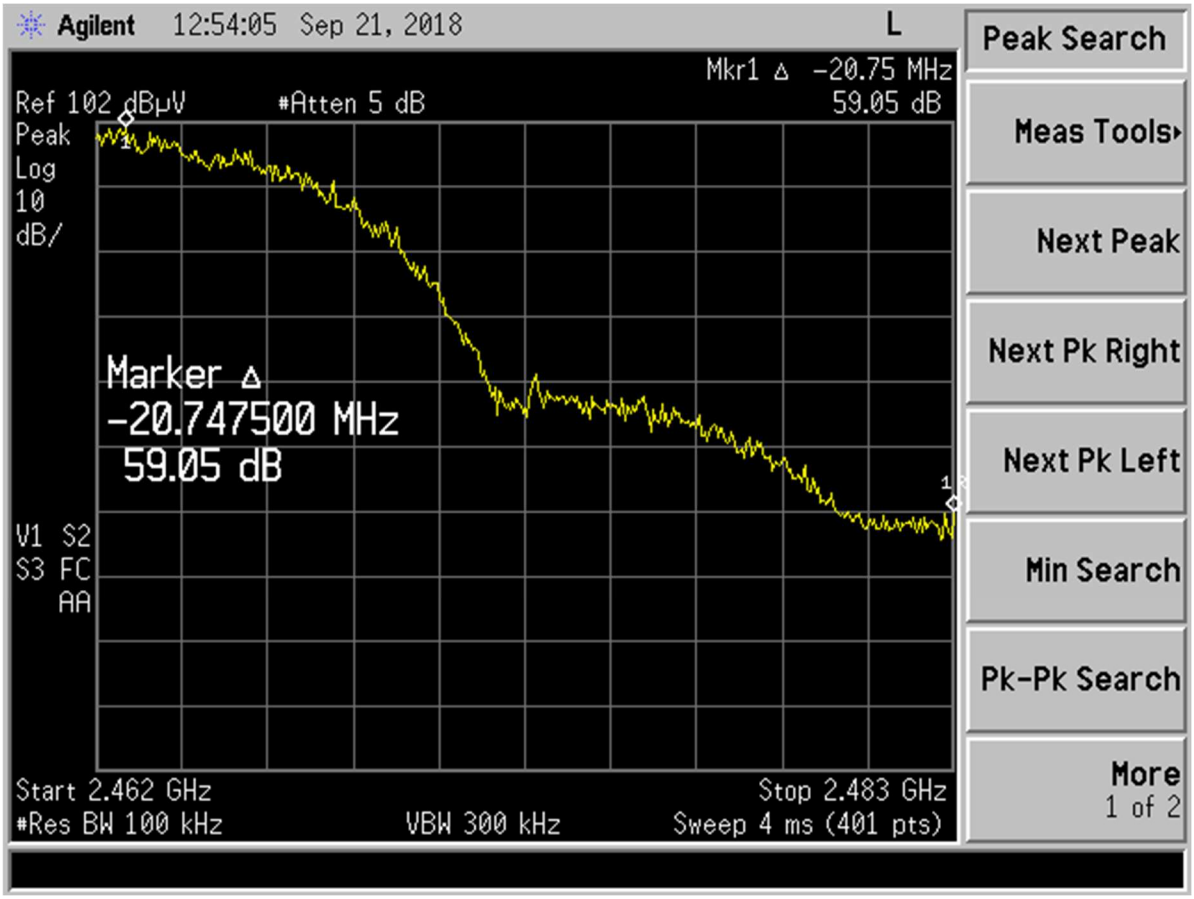

Figure 24. Band Edge Compliance – b mode (Chip Antenna) High Channel Delta - Peak

Higher band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	59.05	dB
Band Edge Limit	20.00	dB
Band Edge Margin	39.05	dB

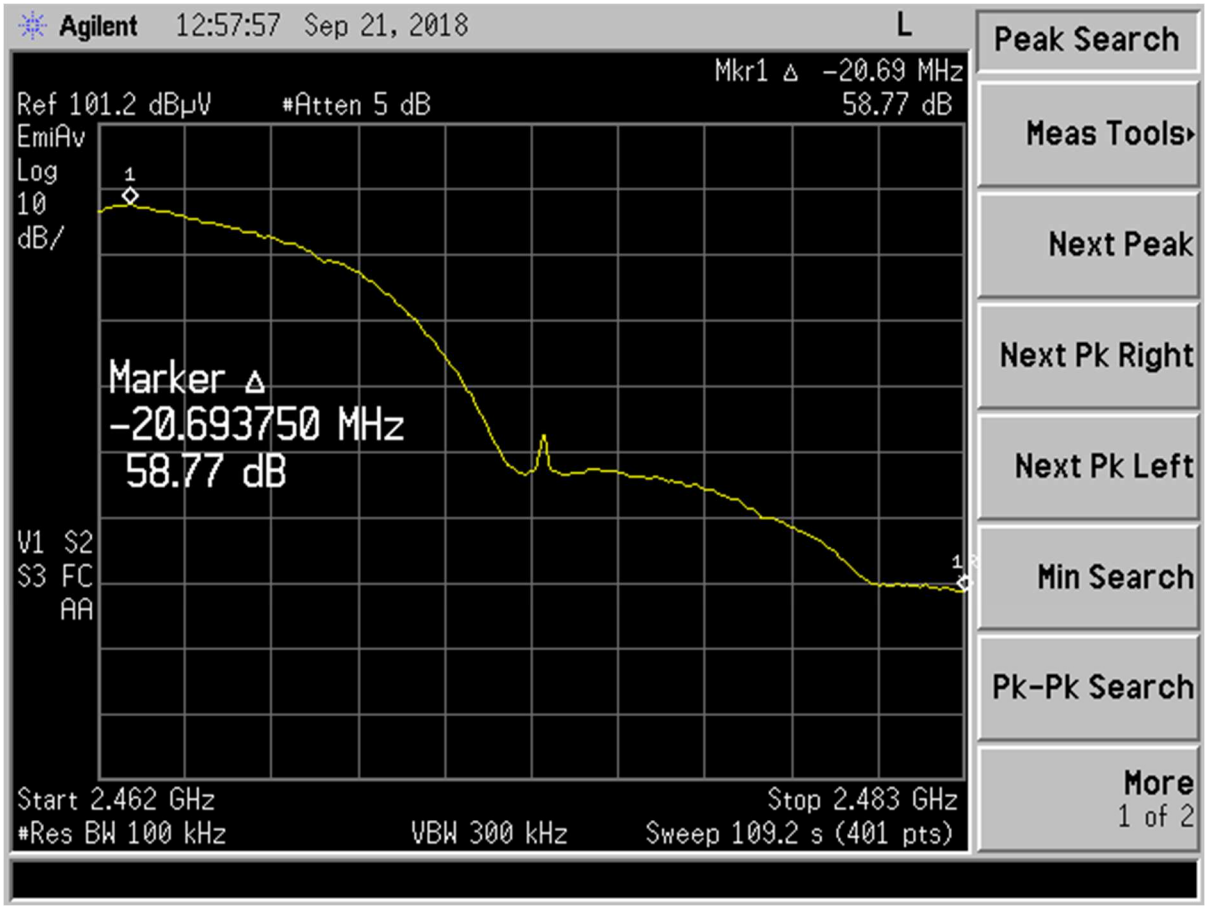

Figure 25. Band Edge Compliance – b mode (Chip Antenna) High Channel Delta - Average

Higher band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	58.77	dB
Band Edge Limit	20.00	dB
Band Edge Margin	38.77	dB

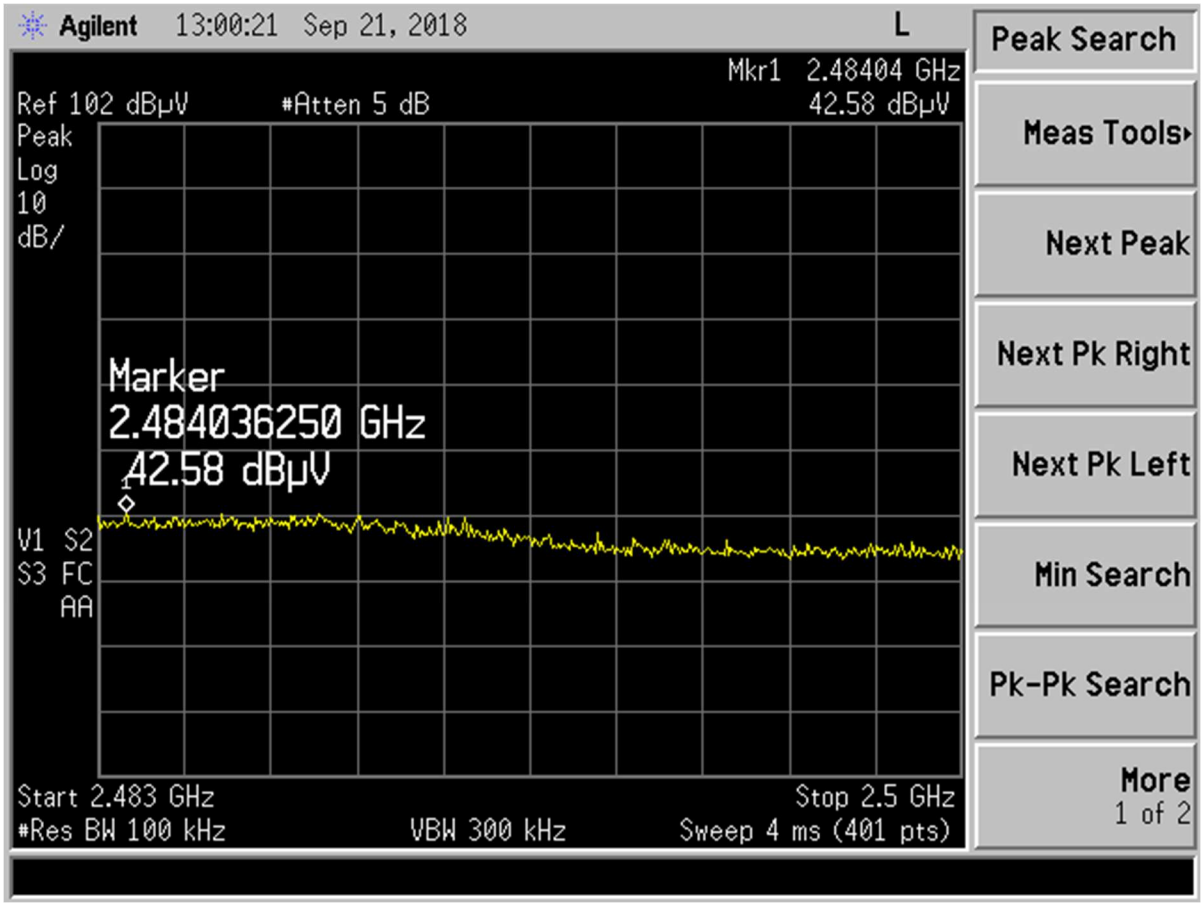

Figure 26.b mode (Chip Antenna) High Channel Restricted Band –Peak

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2484.04	42.58	-0.51	42.07	74.0	3.0m./HORZ	31.9	**PK**

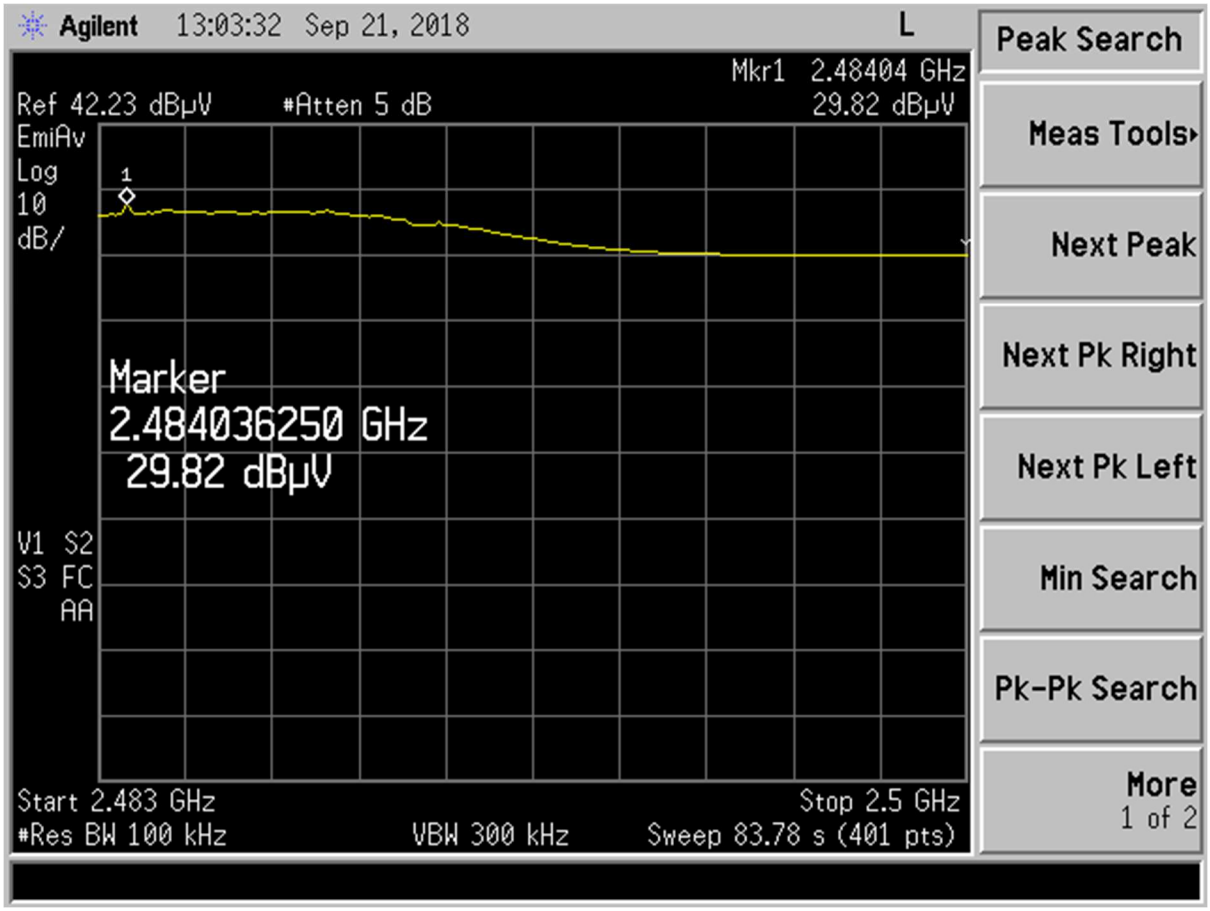

Figure 27.b mode (Chip Antenna) High Channel Restricted Band –Average

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2484.03	29.82	-0.51	29.31	54.0	3.0m./HORZ	24.7	**AVG**

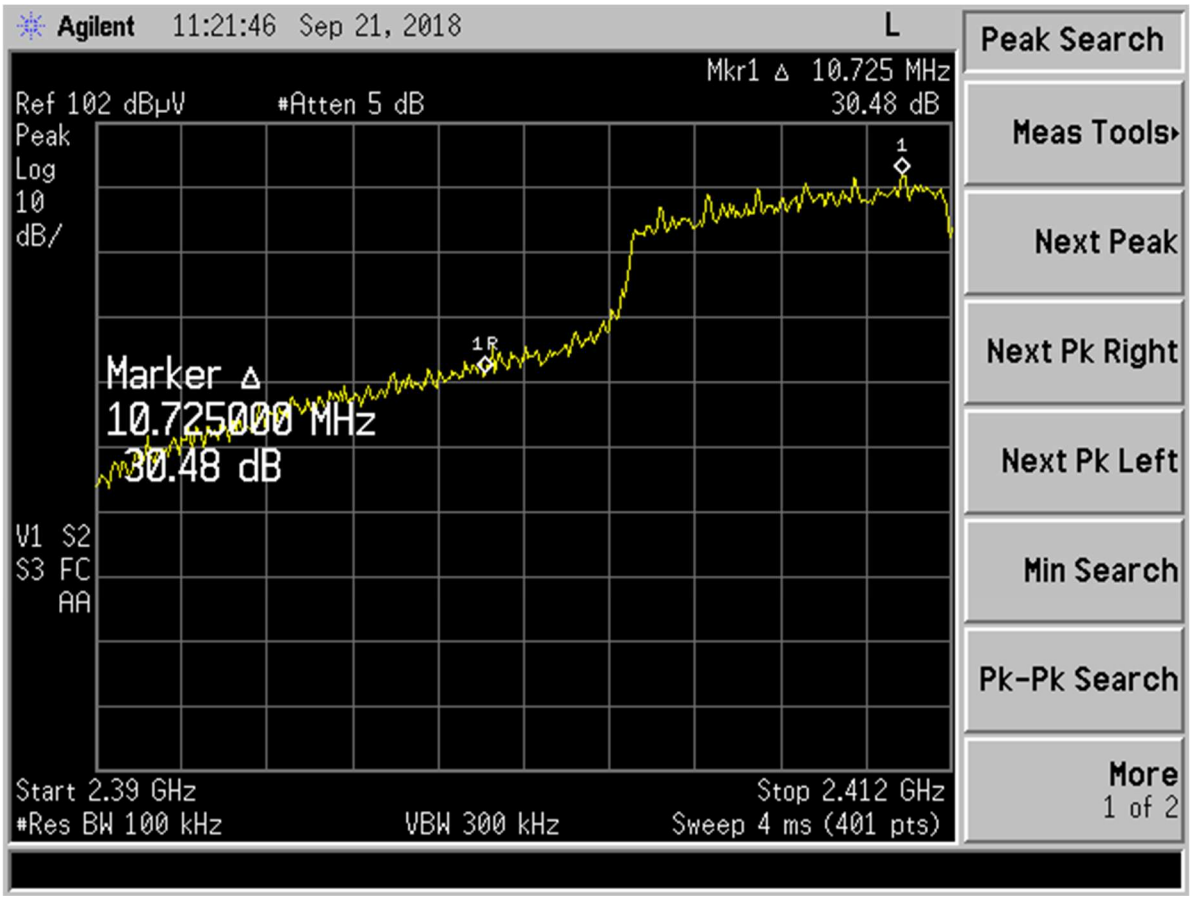

Figure 28. Band Edge Compliance – g mode (Chip Antenna) Low Channel Delta – Peak

Lower band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	30.48	dB
Band Edge Limit	20.00	dB
Band Edge Margin	10.48	dB

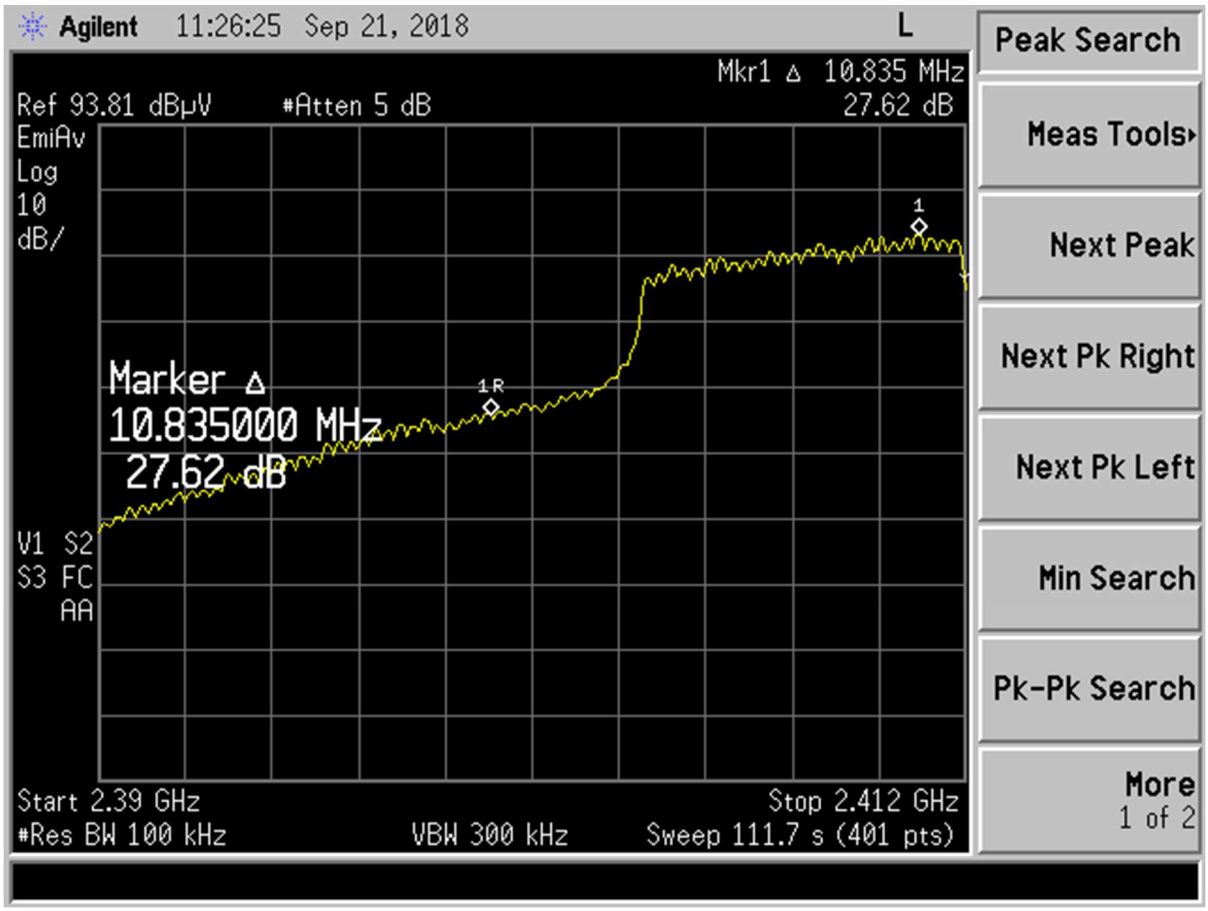

Figure 29. Band Edge Compliance – g mode (Chip Antenna) Low Channel Delta –Average

Lower band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	27.62	dB
Band Edge Limit	20.00	dB
Band Edge Margin	7.62	dB

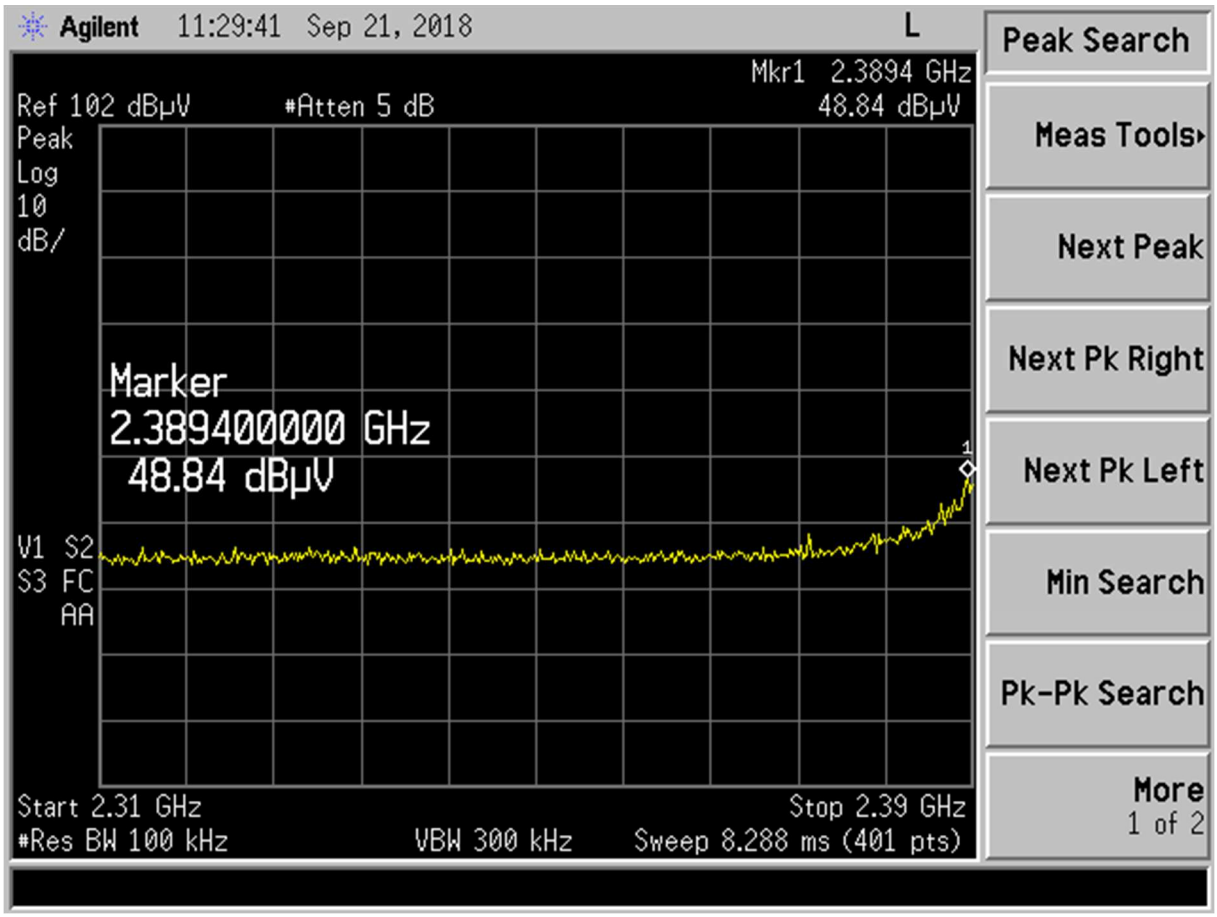

Figure 30. g mode (Chip Antenna) Low Channel Restricted Band – Peak

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2389.40	48.84	-1.66	47.18	74.0	3.0m./HORZ	26.8	**PK**

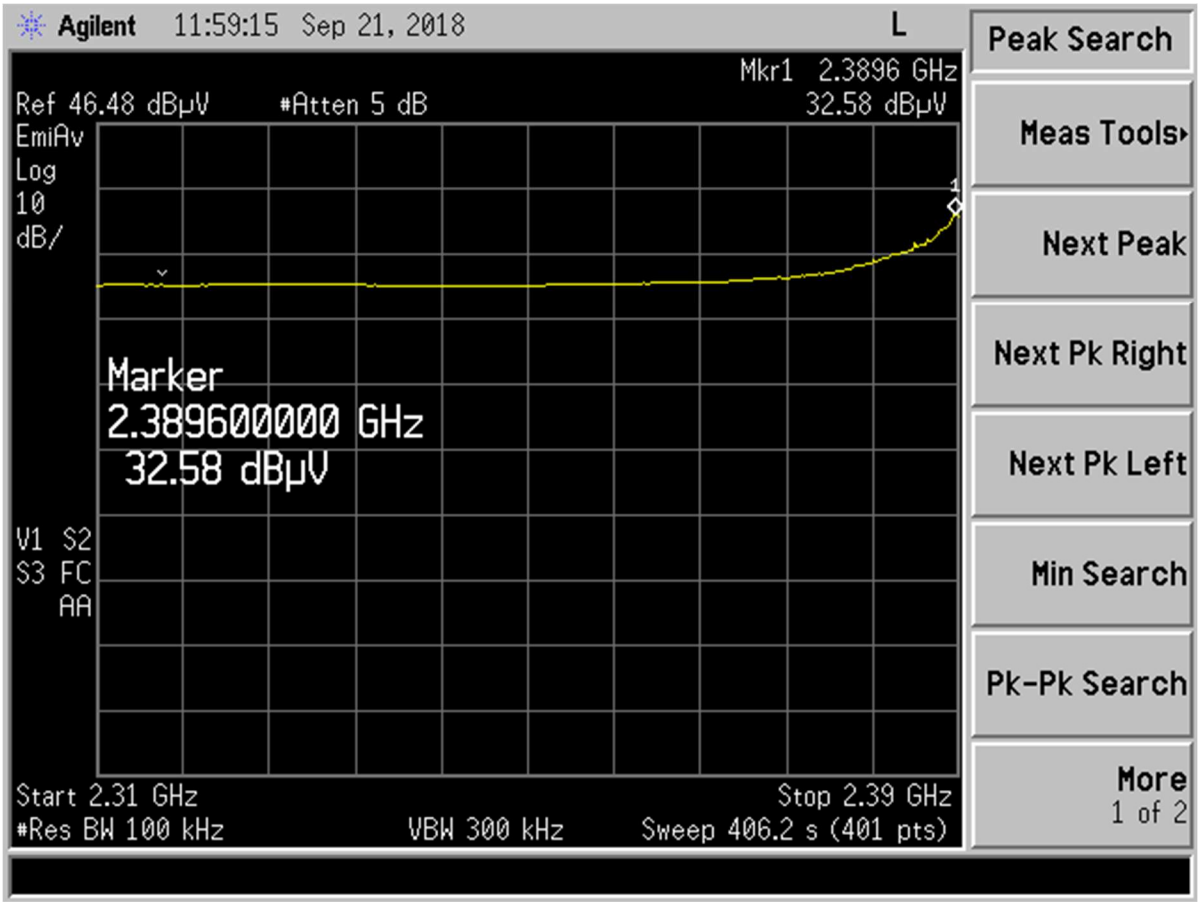

Figure 31. g mode (Chip Antenna) Low Channel Restricted Band – Average

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2390.60	32.58	-1.66	30.92	54.0	3.0m./HORZ	23.1	**AVG**

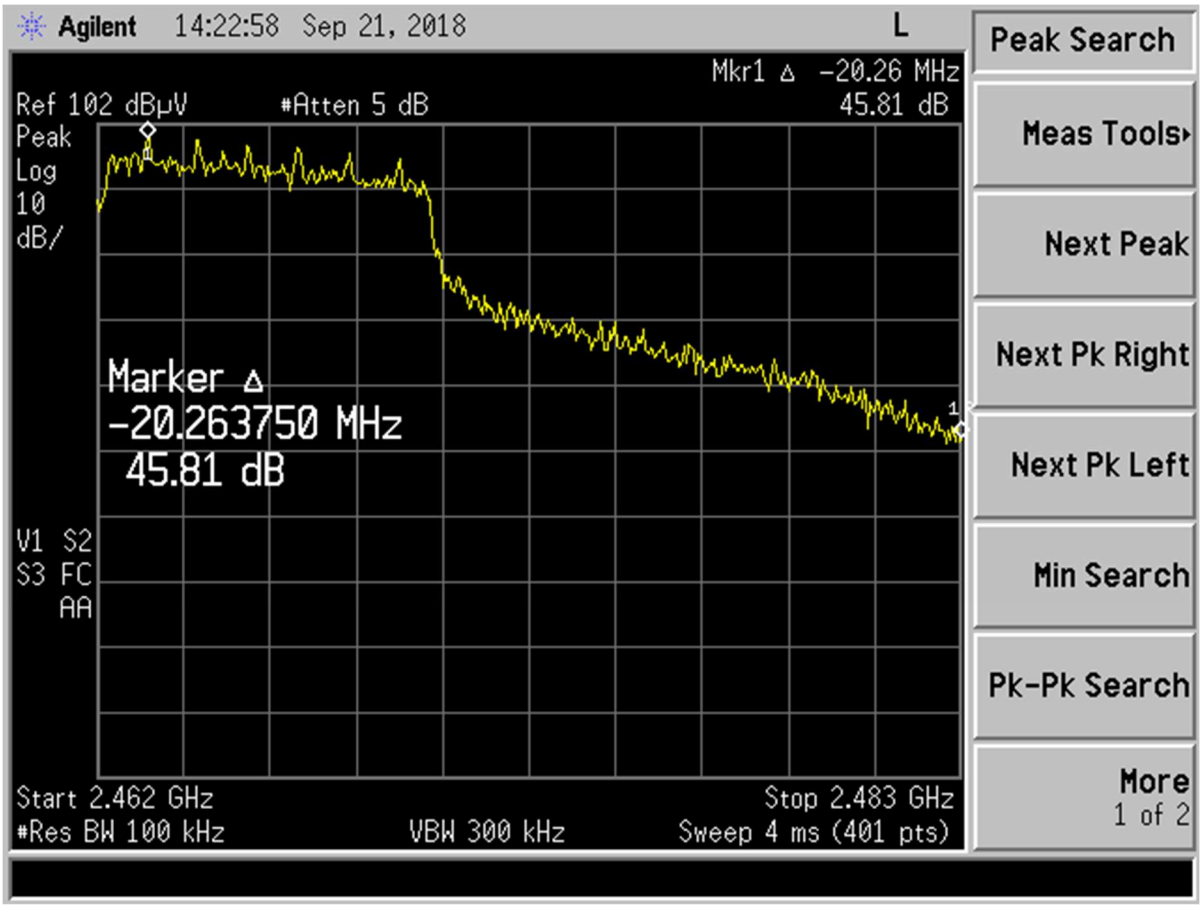

Figure 32. Band Edge Compliance – g mode (Chip Antenna) High Channel Delta – Peak

Higher band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	45.81	dB
Band Edge Limit	20.00	dB
Band Edge Margin	25.81	dB

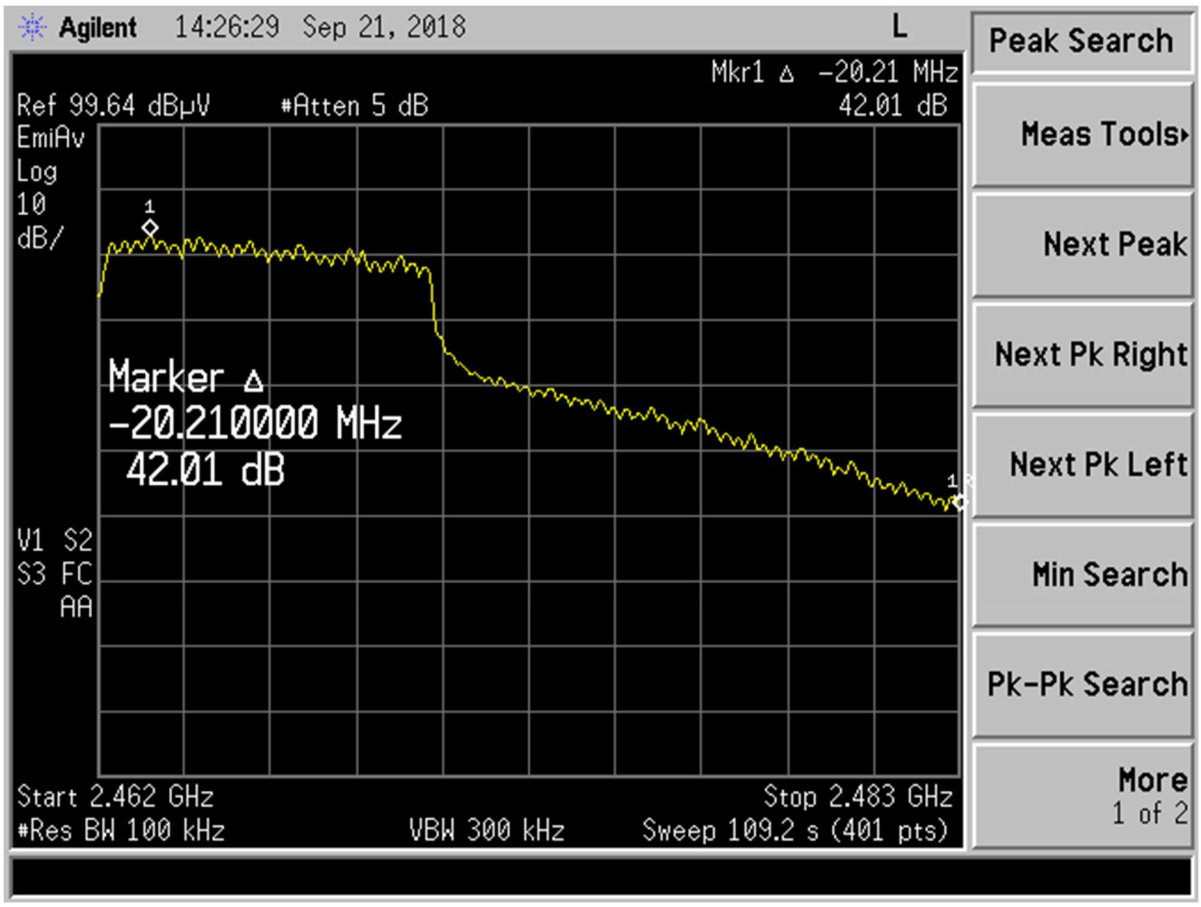

Figure 33. Band Edge Compliance – g mode (Chip Antenna) High Channel Delta – Average

Higher band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	42.01	dB
Band Edge Limit	20.00	dB
Band Edge Margin	22.01	dB

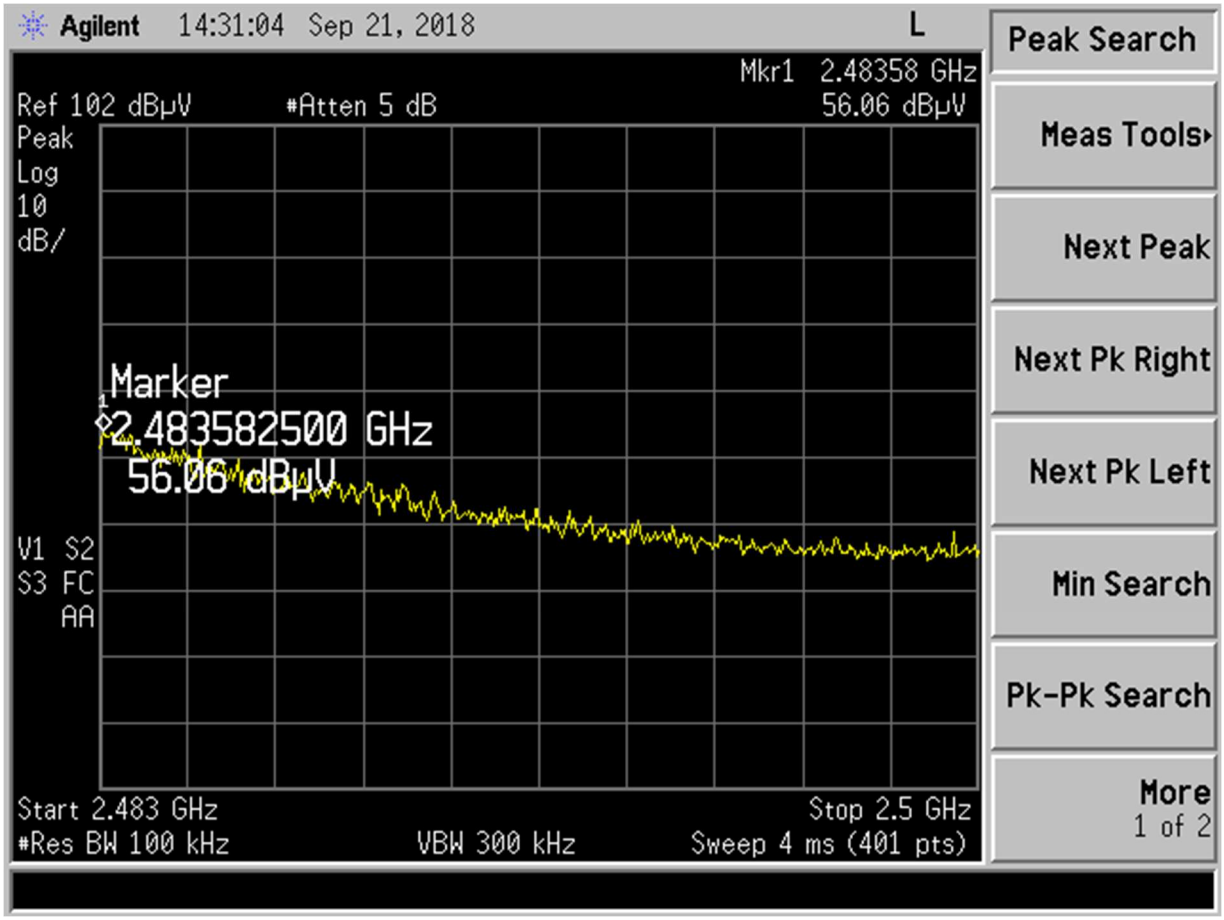

Figure 34. g mode (Chip Antenna) High Channel Restricted Band – Peak

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2483.58	56.06	-0.51	55.55	74.0	3.0m./HORZ	18.5	**PK**

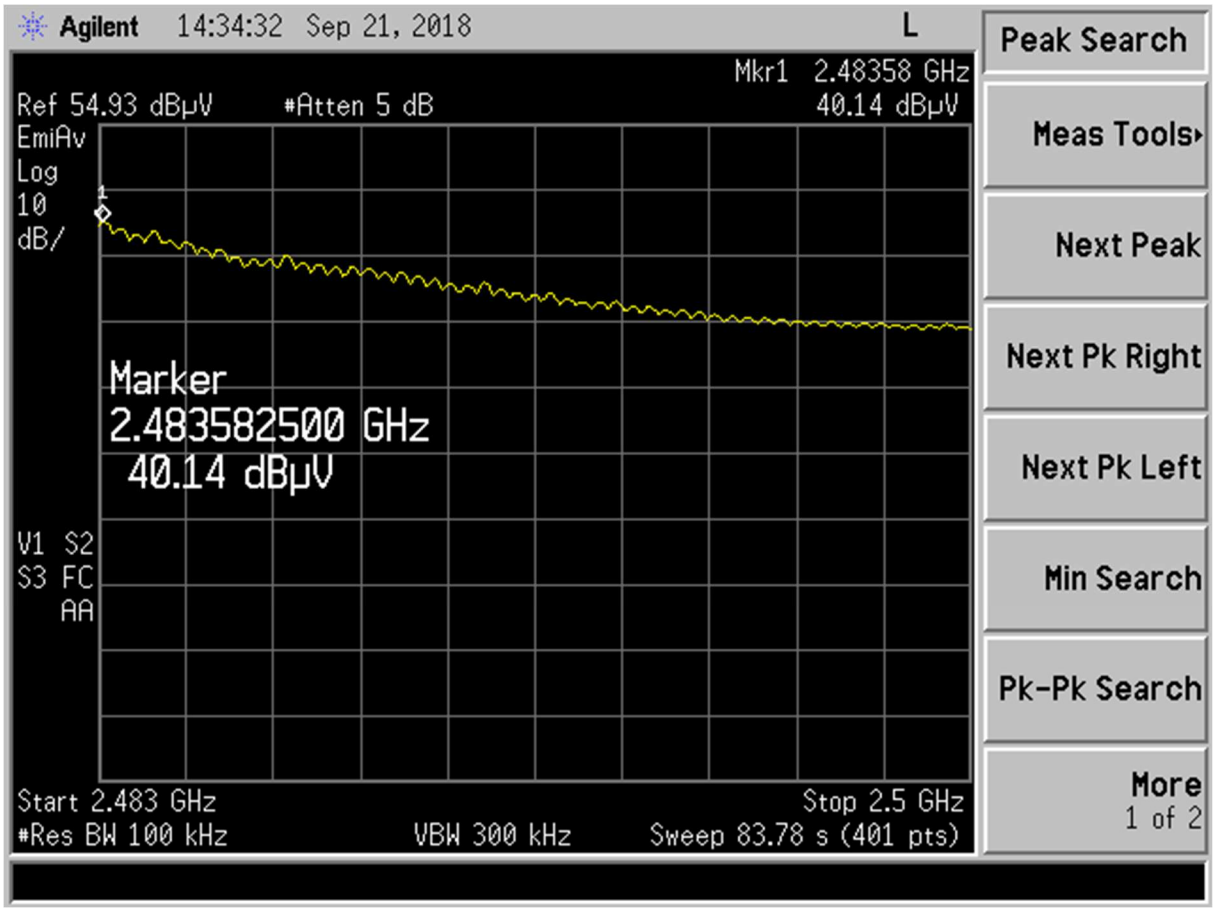

Figure 35. g mode (Chip Antenna) High Channel Restricted Band – Average

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2483.58	40.14	-0.51	39.63	54.0	3.0m./HORZ	14.4	**AVG**

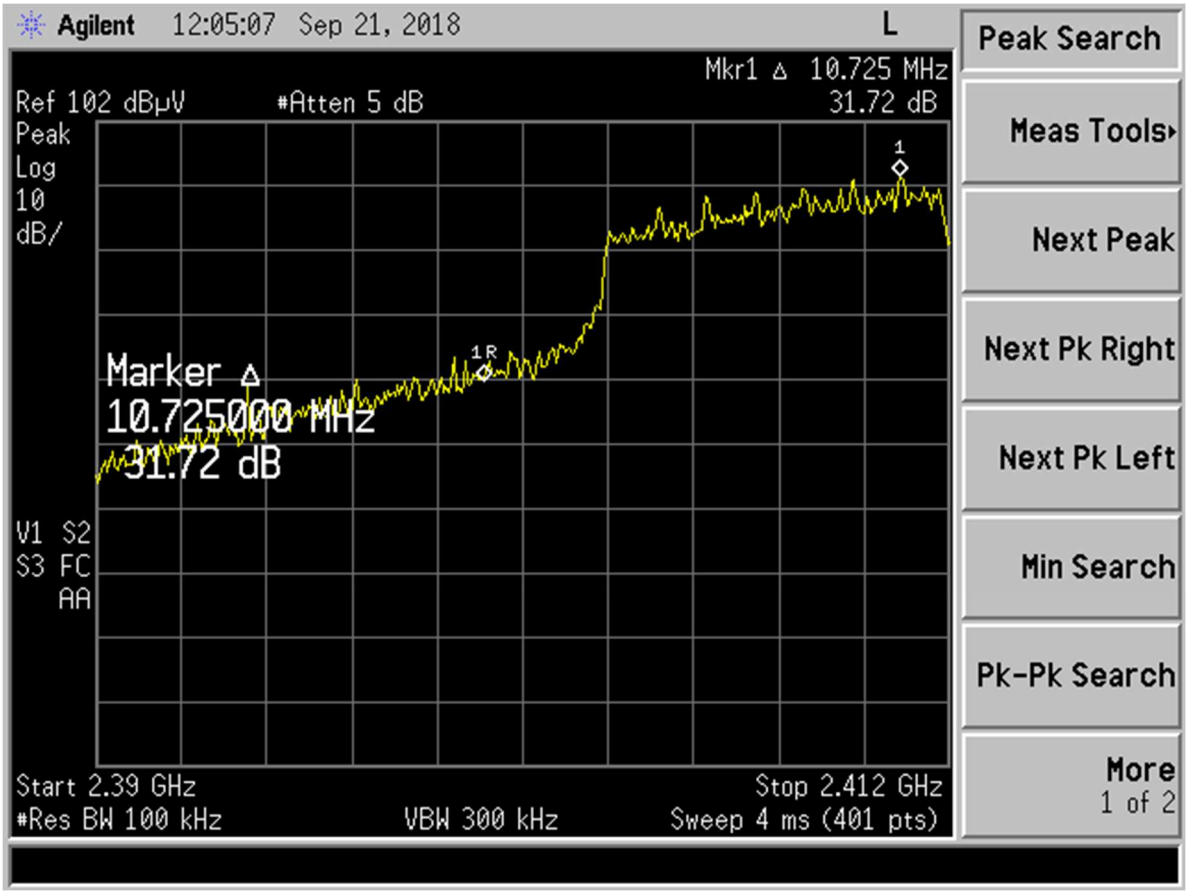

Figure 36. Band Edge Compliance – n mode (Chip Antenna) Low Channel Delta – Peak

Lower band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	31.72	dB
Band Edge Limit	20.00	dB
Band Edge Margin	11.72	dB

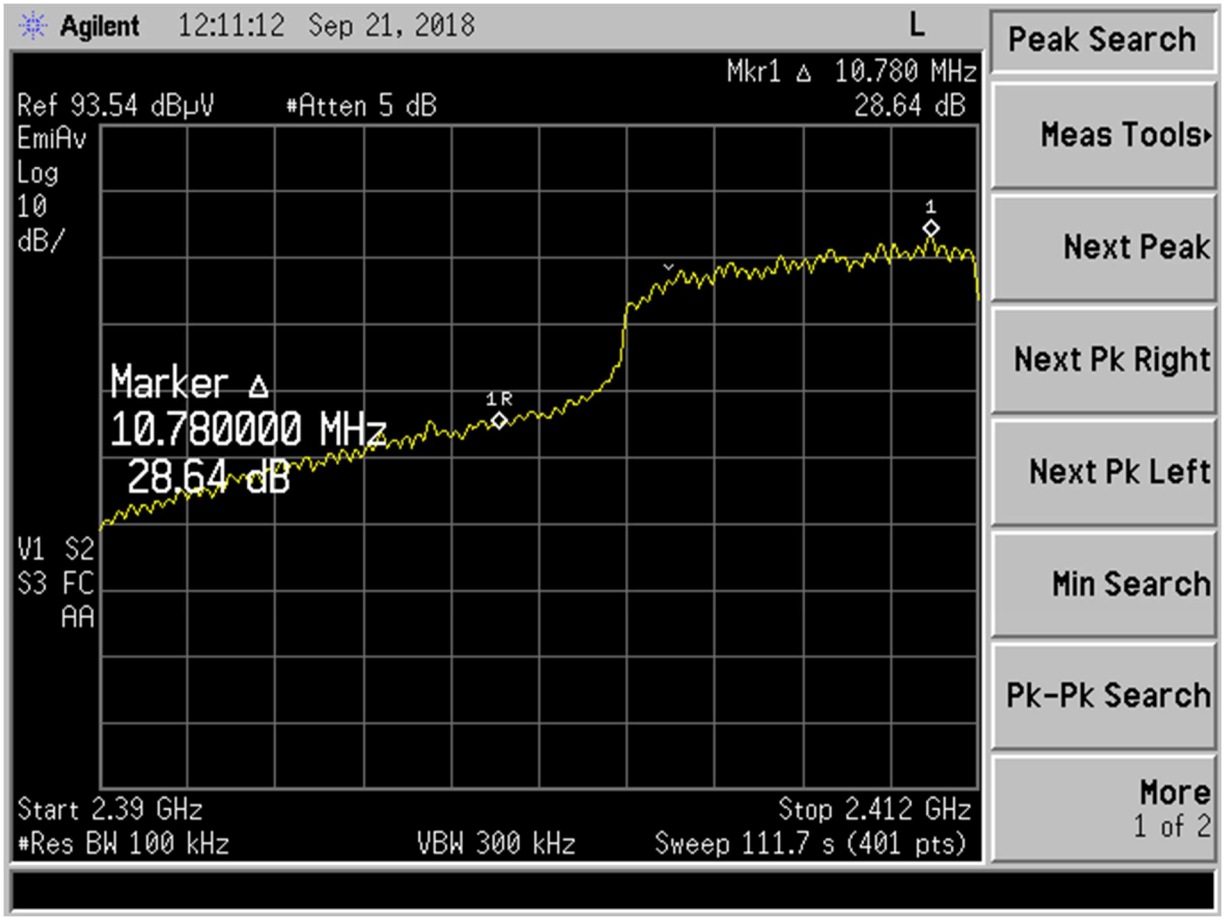

Figure 37. Band Edge Compliance – n mode (Chip Antenna) Low Channel Delta –Average

Lower band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	28.64	dB
Band Edge Limit	20.00	dB
Band Edge Margin	8.64	dB

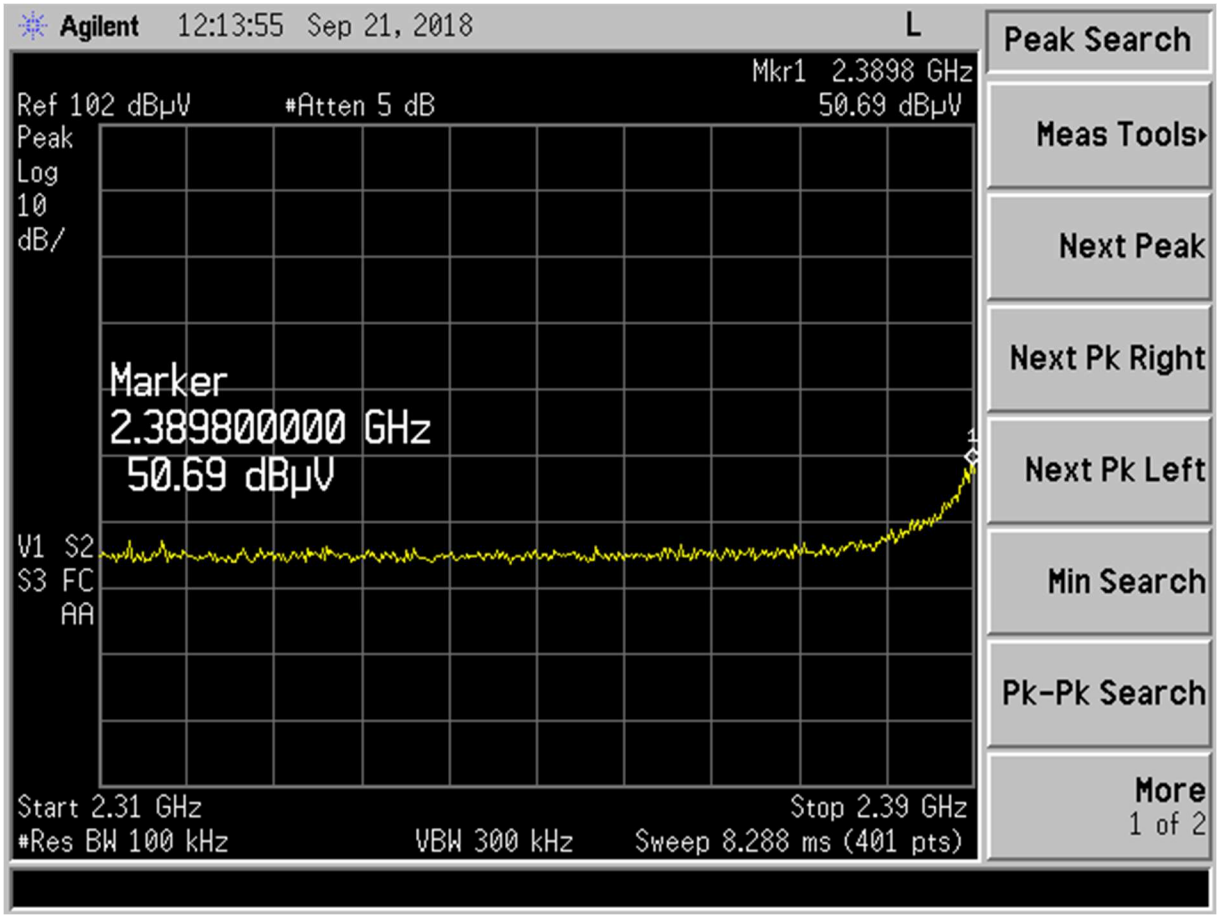

Figure 38. n mode (Chip Antenna) Low Channel Restricted Band – Peak

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2389.80	50.69	-1.66	49.03	74.0	3.0m./HORZ	25.0	**PK**

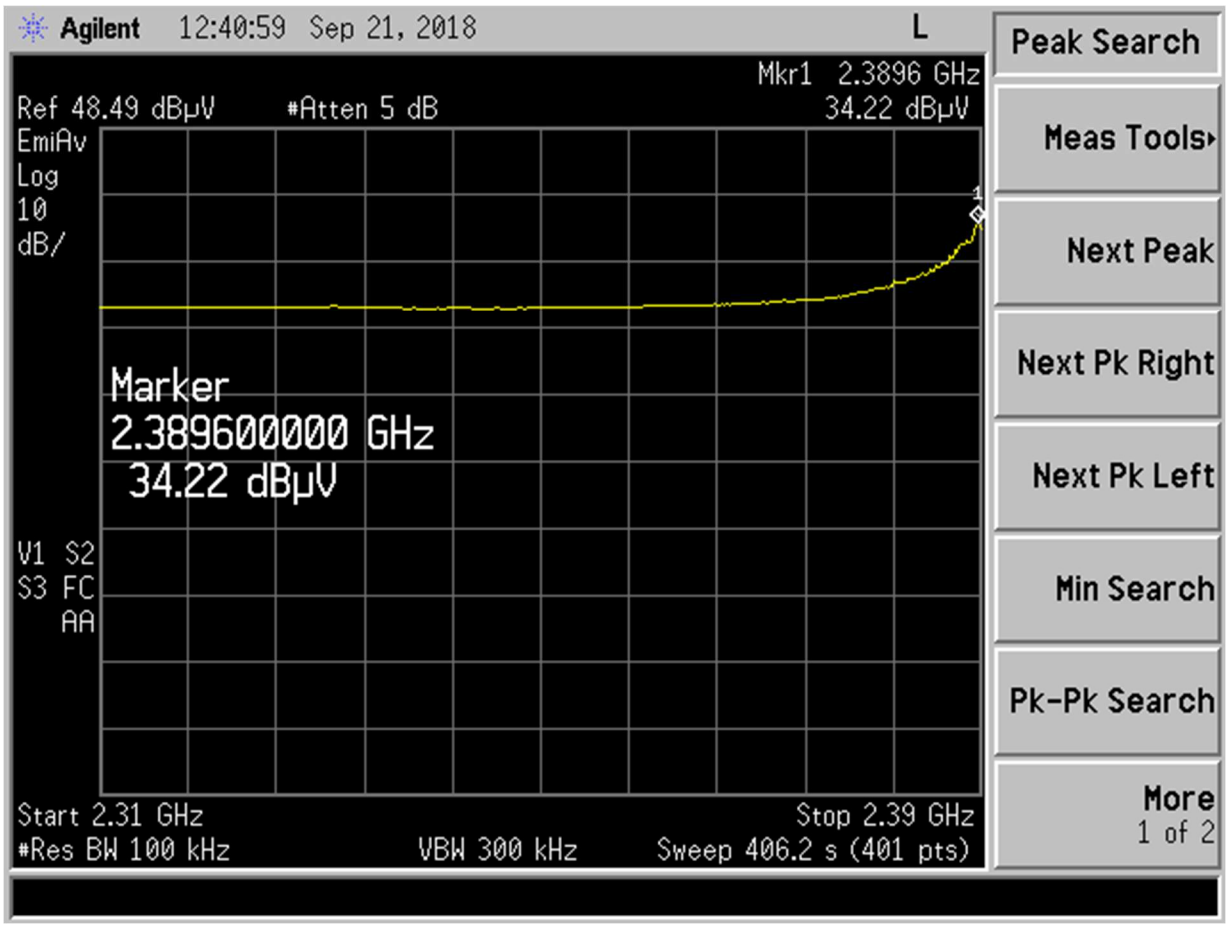

Figure 39. n mode (Chip Antenna) Low Channel Restricted Band – Average

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2389.60	34.22	-1.66	32.56	54.0	3.0m./HORZ	21.4	**AVG**

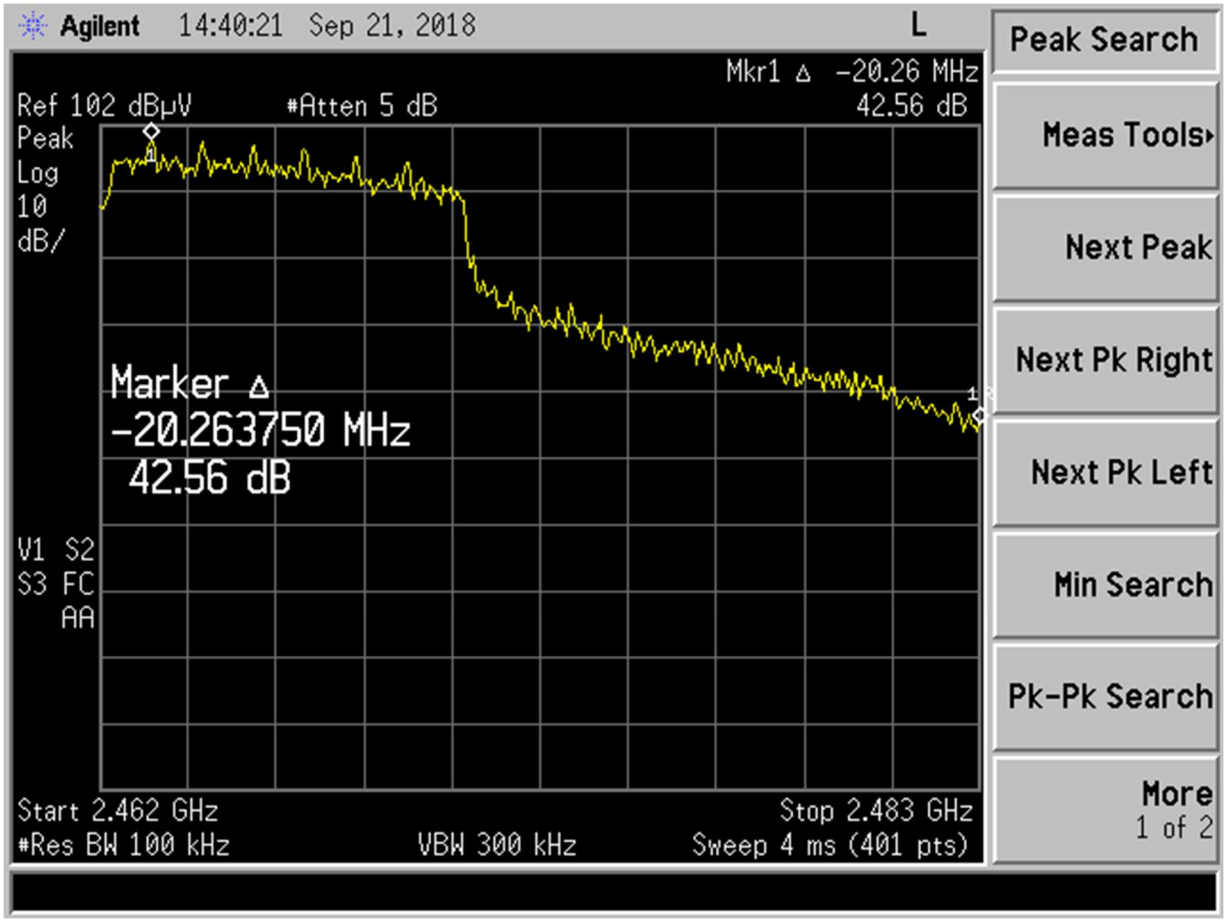

Figure 40. Band Edge Compliance – n mode (Chip Antenna) High Channel Delta – Peak

Higher band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	42.56	dB
Band Edge Limit	20.00	dB
Band Edge Margin	22.56	dB

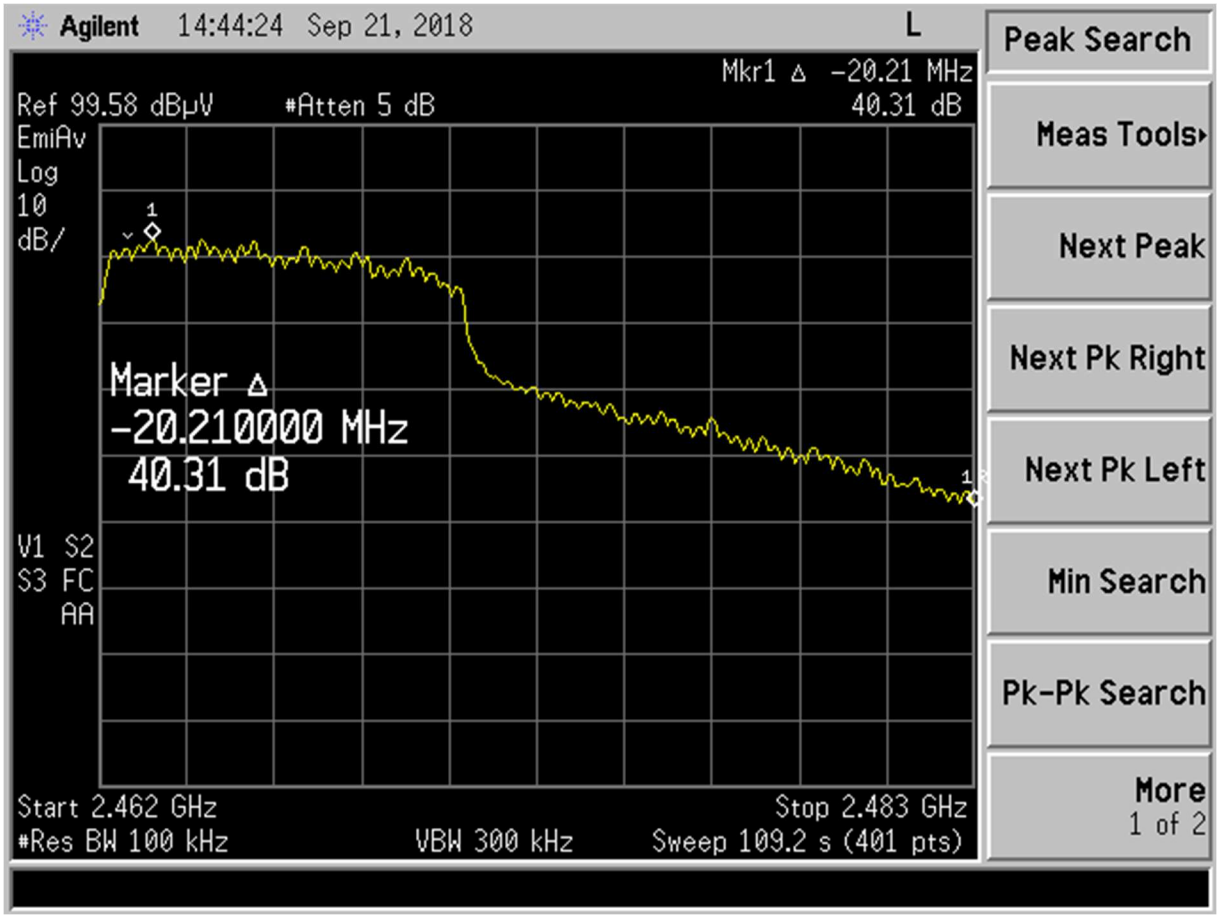

Figure 41. Band Edge Compliance – n mode (Chip Antenna) High Channel Delta - Average

Higher band edge must be 20 dB below the fundamental. This requirement is met.

Measured Result	40.31	dB
Band Edge Limit	20.00	dB
Band Edge Margin	20.31	dB

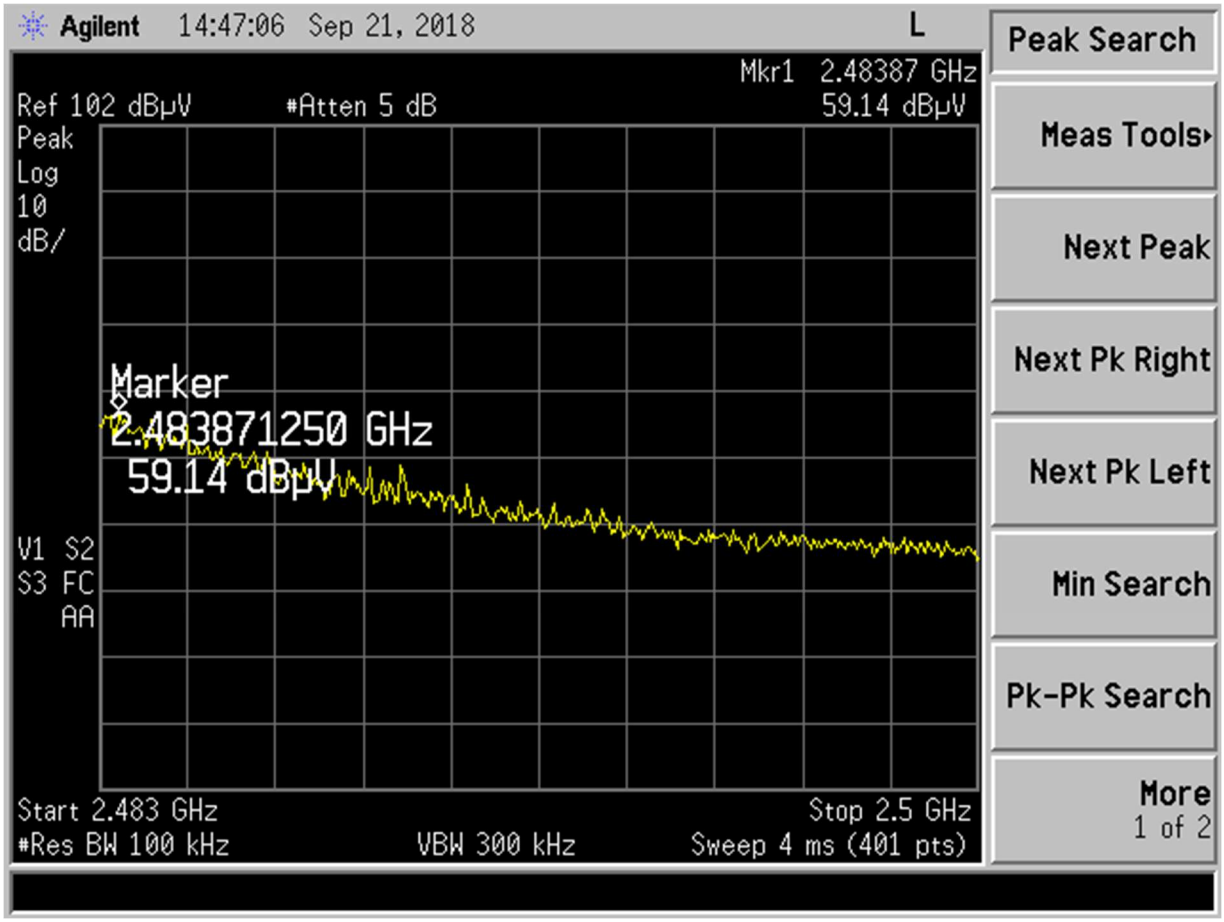

Figure 42. n mode (Chip Antenna) High Channel Restricted Band – Peak

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2483.87	59.14	-0.51	58.63	74.0	3.0m./HORZ	15.4	**PK**

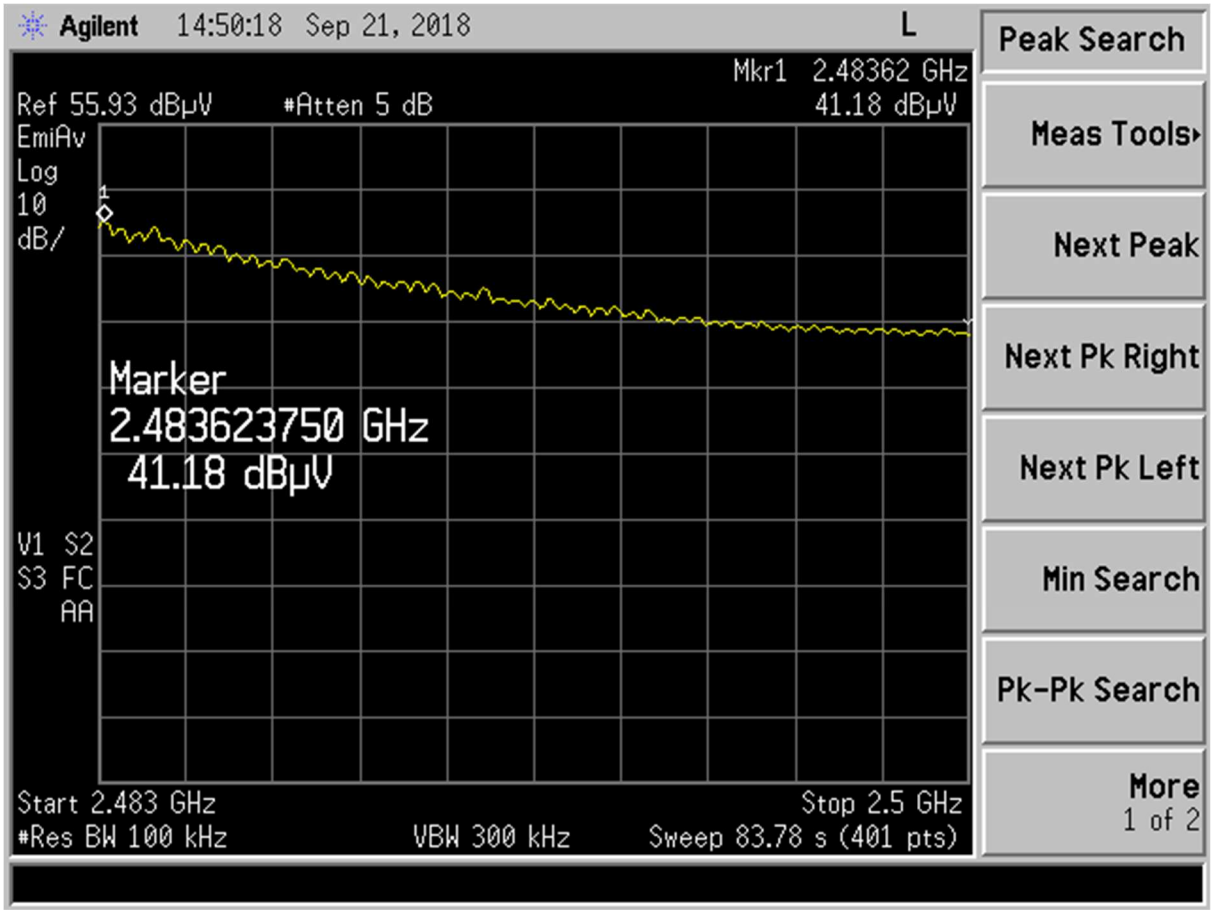

Figure 43. n mode (Chip Antenna) High Channel Restricted Band – Average

Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP+DC (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Distance / Polarization	Margin (dB)	Detector PK/QP/AVG
2483.62	41.18	-0.51	40.67	54.0	3.0m./HORZ	13.3	**AVG**

2.12 Intentional Radiator, Radiated Emissions (CFR 15.209, RSS-Gen, 8.9)

The test data provided herein is to support the verification requirement for radiated emissions coming for the EUT in a transmitting state per 15.209 and were investigated from 9kHz or the lowest operating clock frequency to 25 GHz and tested as detailed in ANSI C63.10:2013, Clause 6.4-6.6. Data is presented in Table 12.

Radiated emissions within the band of 9 kHz to 30 MHz were investigated using a calibrated Loop Antenna and per the requirements of ANSI C63.10:2013.

Measurements were made with the analyzer's resolution bandwidth set to 120 kHz for measurements made below 1 GHz and 1 MHz for measurements made above 1 GHz. The video bandwidth was set to three times the resolution bandwidth; 1 MHz RBW and 3 MHz VBW. The test data were maximized for magnitude by rotating the turn-table through 360 degrees and raising and lowering the receiving antenna between 1 to 4 meters in height as a part of the measurement procedure.

The worst case configuration was determined to be the radio module set up with the Dual band antenna. The test data is presented below.

The worst-case radiated emission was 9.0 dB below the specification limit at 31.31 MHz. All other measured signals were at least 10.0 dB below the specification limit. The results are shown in the table below. These results are meant to show that this EUT has met the intentional transmitter requirements of CFR Part 15.209.

Table 11. Spurious Radiated Emissions (150 KHz-30MHz)

Test By: AF	Test: FCC Part 15.209			Client: Inventek Systems			
	Project: 18-0268 Class B			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151			
Frequency (MHz)	**Test Data (dBuV)**	**AF+CL-PA (dB)**	**Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**DETECTOR PK / QP/AVG**
All emissions were at least 20 dB below the applicable limit.							

No other emissions detected other than those presented in this table and the tables in section 2.10 above.
AF is antenna factor. CL is cable loss. PA is preamplifier gain.

SAMPLE CALCULATION: N/A

Test Date: September 24, 2018
Tested By
Signature: Afzal Fazal Name: Afzal Fazal

Table 12. Spurious Radiated Emissions (30 MHz – 1 GHz)

Test By: AF	Test: FCC Part 15.109/15.209			Client: Inventek Systems				
	Project: 18-0268 Class B			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151				
Frequency (MHz)	**Test Data (dBuV)**	**Additional Factors**	**AF+CL-PA (dB)**	**Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**DETECTOR PK / QP/AVG**
	Tested from 30 MHz to 1 GHz, Quasi Peak Limits							
31.31	44.29	-	-13.25	31.04	40.0	3m./VERT	9.0	**QP**
58.28	40.96	-	-17.65	23.31	40.0	3m./VERT	16.7	**QP**
118.24	45.60	-	-15.14	30.46	43.5	3m./VERT	13.0	**QP**
134.76	43.92	-	-14.33	29.59	43.5	3m./VERT	13.9	**QP**
188.52	37.19	-	-11.35	25.84	43.5	3m./VERT	17.7	**QP**
58.57	37.96	-	-16.65	21.31	40.0	3m./HORZ	18.7	**QP**
192.20	45.62	-	-12.15	33.47	43.5	3m./HORZ	10.0	**PK**
213.33	41.35	-	-14.02	27.33	43.5	3m./HORZ	16.2	**QP**
216.63	47.31	-	-13.97	33.34	46.0	3m./HORZ	12.7	**QP**
251.90	44.82	-	-12.79	32.03	46.0	3m./HORZ	14.0	**QP**
981.00	41.32	-	-1.59	39.73	54.0	3m./HORZ	14.3	**PK**
219.00	43.49	-	-14.37	29.12	46.0	3m./VERT	16.9	**QP**
263.00	40.74	-	-12.32	28.42	46.0	3m./VERT	17.6	**QP**
979.40	41.15	-	-2.19	38.96	54.0	3m./VERT	15.0	**PK**
All other emissions were greater than 20 dB from the applicable limit.								

AF is antenna factor. CL is cable loss. PA is preamplifier gain.

SAMPLE CALCULATION AT: 31.31 MHz

Magnitude of Measured Frequency	44.29	dBuV
Additional Factor	0.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	-13.25	dB
Corrected Result	31.04	dBuV/m

Test Date: September 24, 2018
Tested By
Signature: Afzal Fazal Name: Afzal Fazal

Table 13. Spurious Radiated Emissions (1 GHz – 25 GHz)

Test By: AF	Test: FCC Part 15.109/15.209			Client: Inventek Systems				
	Project: 18-0268 Class B			Model: ISM4343-X including ISM4343-WBM-L151 and ISM4343-WB-L151				
Frequency (MHz)	**Test Data (dBuV)**	**Additional Factors**	**AF+CL-PA (dB)**	**Results (dBuV/m)**	**Limits (dBuV/m)**	**Distance / Polarization**	**Margin (dB)**	**DETECTOR PK / QP/AVG**
	Tested from 30 MHz to 1 GHz, Quasi Peak Limits							
2975.00	39.77	-	3.81	43.58	54.0	3.0m./VERT	10.4	**AVG**
3030.00	39.57	-	4.14	43.71	54.0	3.0m./VERT	10.3	**AVG**
2975.00	39.91	-	3.69	43.60	54.0	3.0m./HORZ	10.4	**AVG**
3053.00	39.75	-	3.93	43.68	54.0	3.0m./HORZ	10.3	**AVG**
8820.00	31.32	-	16.09	47.41	54.0	3.0m./HORZ	6.6	**AVG**
10290.00	29.10	-	18.91	48.01	54.0	3.0m./VERT	6.0	**AVG**
All other emissions were more than 20 dB below the applicable limit.								

AF is antenna factor. CL is cable loss. PA is preamplifier gain.

SAMPLE CALCULATION AT: 2975.00 MHz

Magnitude of Measured Frequency	39.77	dBuV
Additional Factor	0.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	3.81	dB
Corrected Result	43.58	dBuV/m

Test Date: September 24, 2018
Tested By
Signature: Afzal Fazal Name: Afzal Fazal

2.13 Measurement Uncertainty

The measurement uncertainties given were calculated using the method detailed in CISPR 16-4-2:2011. A coverage factor of k=2 was used to give a level of confidence of approximately 95%.

2.13.1 Conducted Emissions Measurement Uncertainty

Measurement Uncertainty (within a 95% confidence level) for this test is ±2.78 dB.

2.13.2 Radiated Emissions Measurement Uncertainty

For a measurement distance of 3 m the measurement uncertainty (with a 95% confidence level) for this test using a Biconical Antenna (30 MHz to 200 MHz) is ±5.3 dB. This value includes all elements of measurement.

The measurement uncertainty (with a 95% confidence level) for this test using a Log Periodic Antenna (200 MHz to 1000 MHz) is ±5.1 dB.

The measurement uncertainty (with a 95% confidence level) for this test using a Horn Antenna is ±5.1 dB.

3 Conclusions

The EUT is deemed to have met the requirements of the standards cited within the test report when tested as detailed in the present test report.