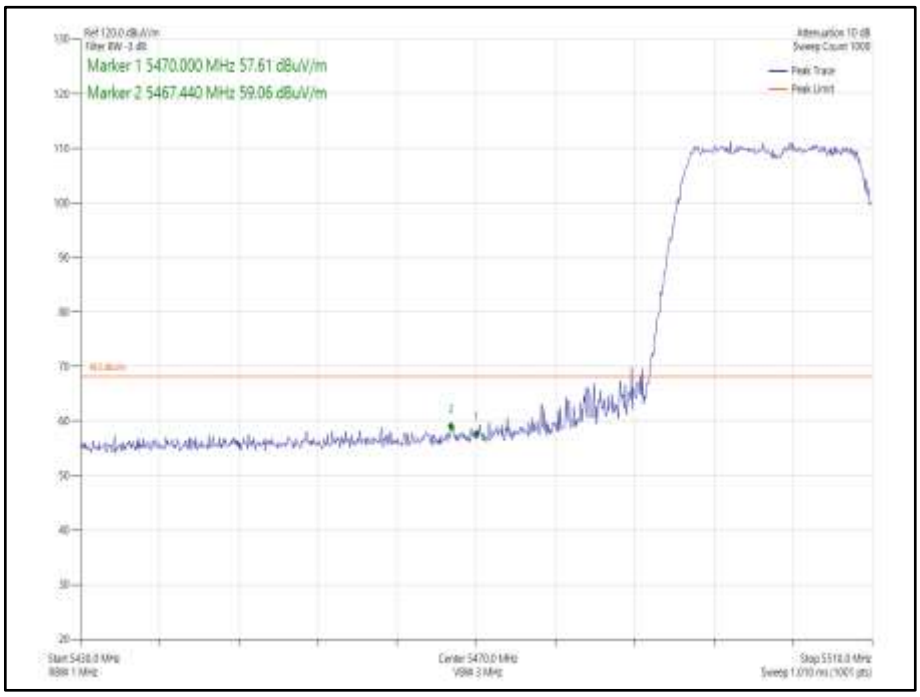

Figure 908 - 802.11n HT20 CDD, Cores 0-1 - 5500 MHz
Band Edge Frequency 5470 MHz

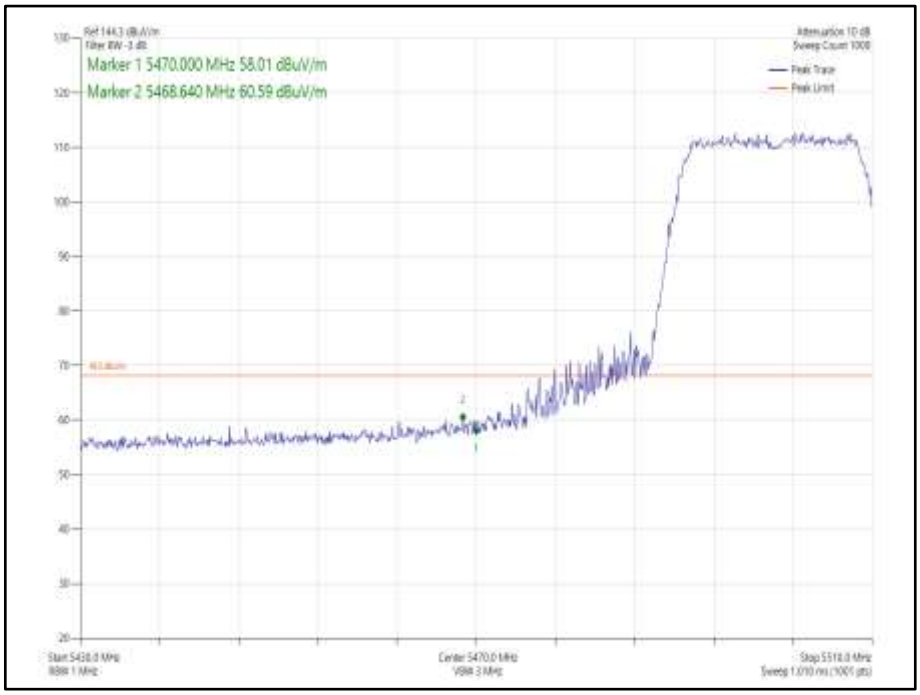

Figure 909 - 802.11n HT20 SDM, Cores 0-1 - 5500 MHz
Band Edge Frequency 5470 MHz

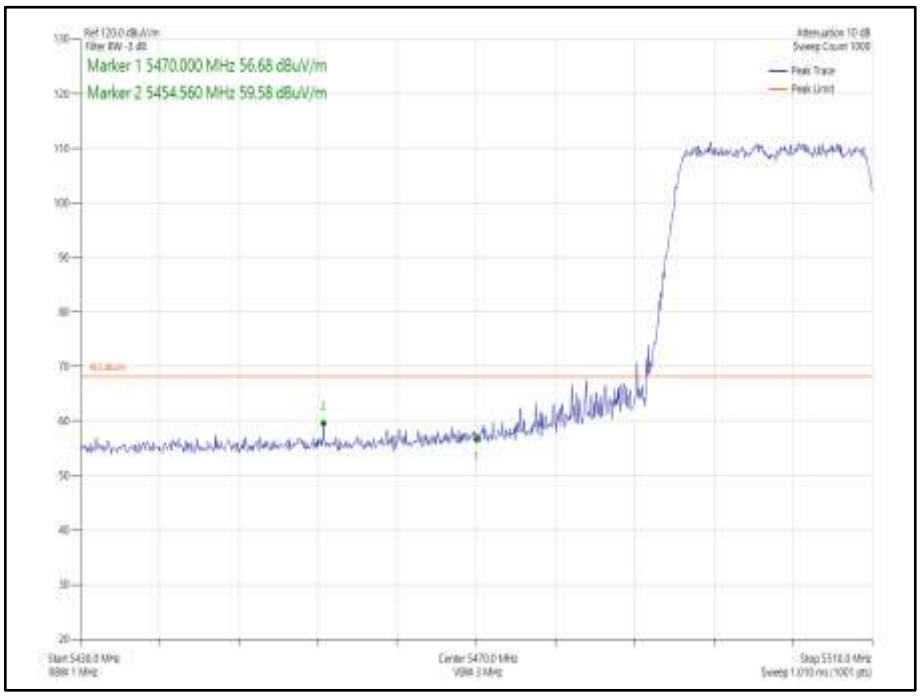

Figure 910 - 802.11ax HE20 CDD, Cores 0-1, SU - 5500 MHz Band Edge Frequency 5470 MHz

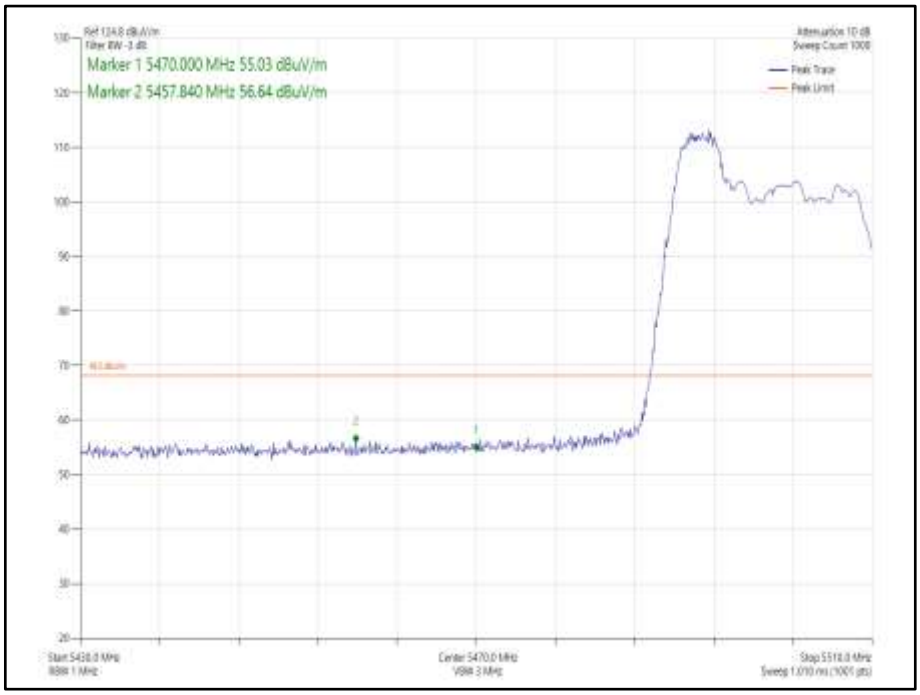

Figure 911 - 802.11ax HE20 CDD, Cores 0-1 52-37 - 5500 MHz Band Edge Frequency 5470 MHz

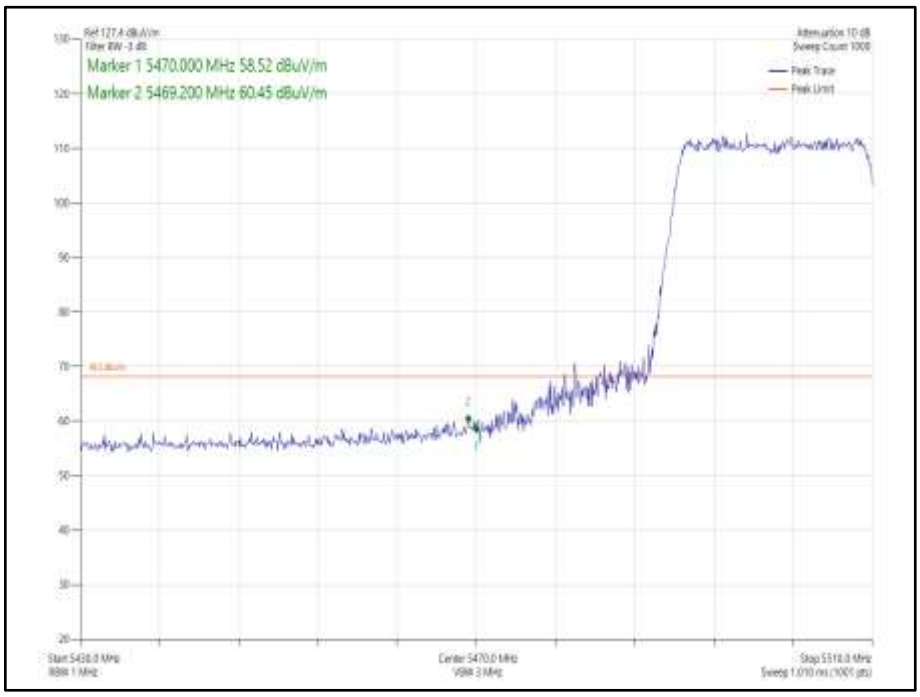

Figure 912 - 802.11ax HE20 SDM, Cores 0-1 SU - 5500 MHz Band Edge Frequency 5470 MHz

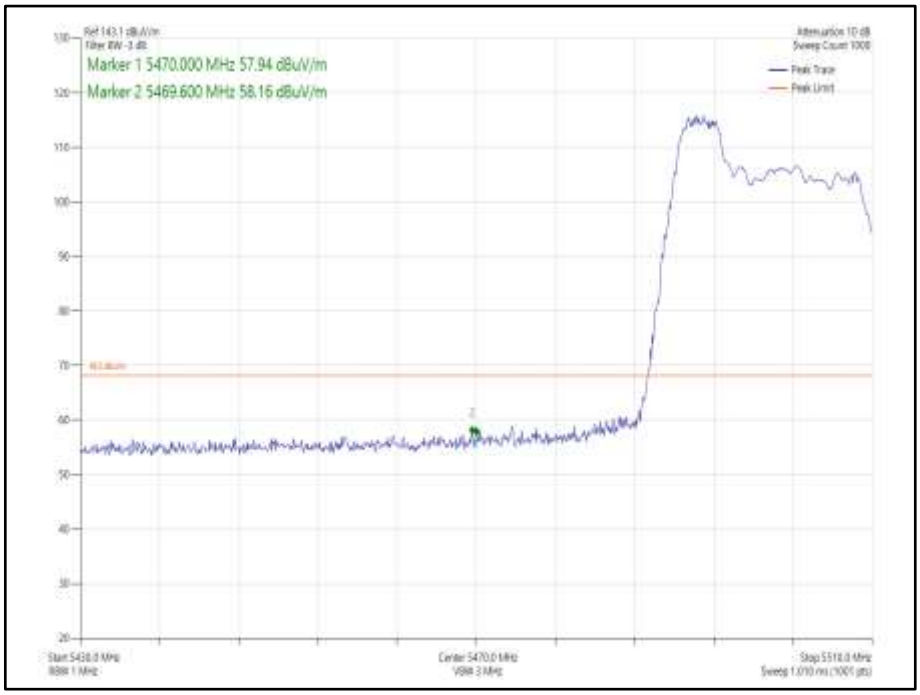

Figure 913 - 802.11ax HE20 SDM, Cores 0-1 52-37 - 5500 MHz Band Edge Frequency 5470 MHz

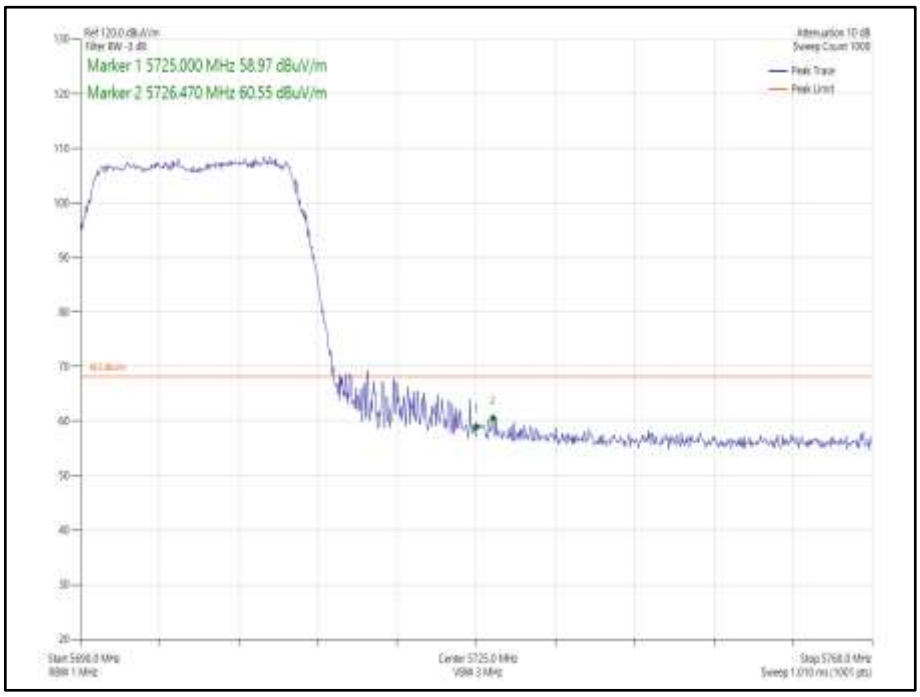

Figure 914 - 802.11n HT20 CDD, Cores 0-1 - 5700 MHz
Band Edge Frequency 5725 MHz

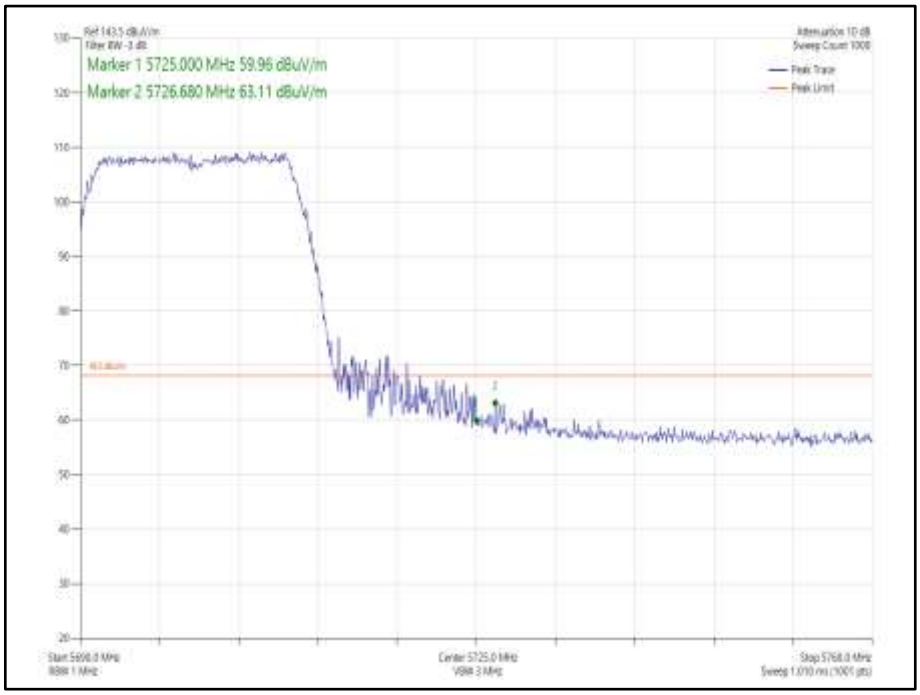

Figure 915 - 802.11n HT20 SDM, Cores 0-1 - 5700 MHz
Band Edge Frequency 5725 MHz

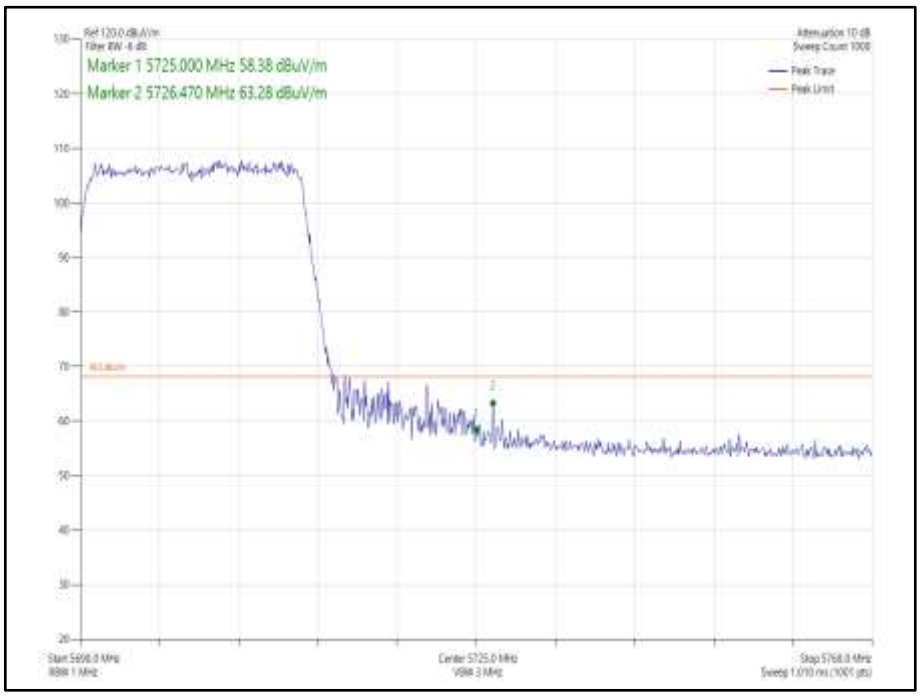

Figure 916 - 802.11ax HE20 CDD, Cores 0-1, SU - 5700 MHz Band Edge Frequency 5725 MHz

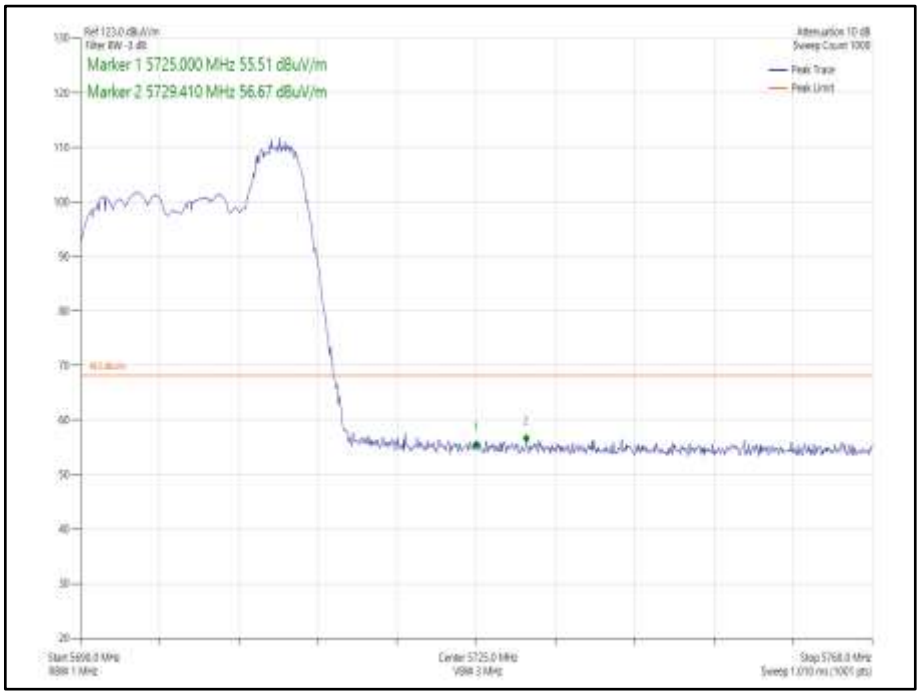

Figure 917 - 802.11ax HE20 CDD, Cores 0-1, 52-40 - 5700 MHz Band Edge Frequency 5725 MHz

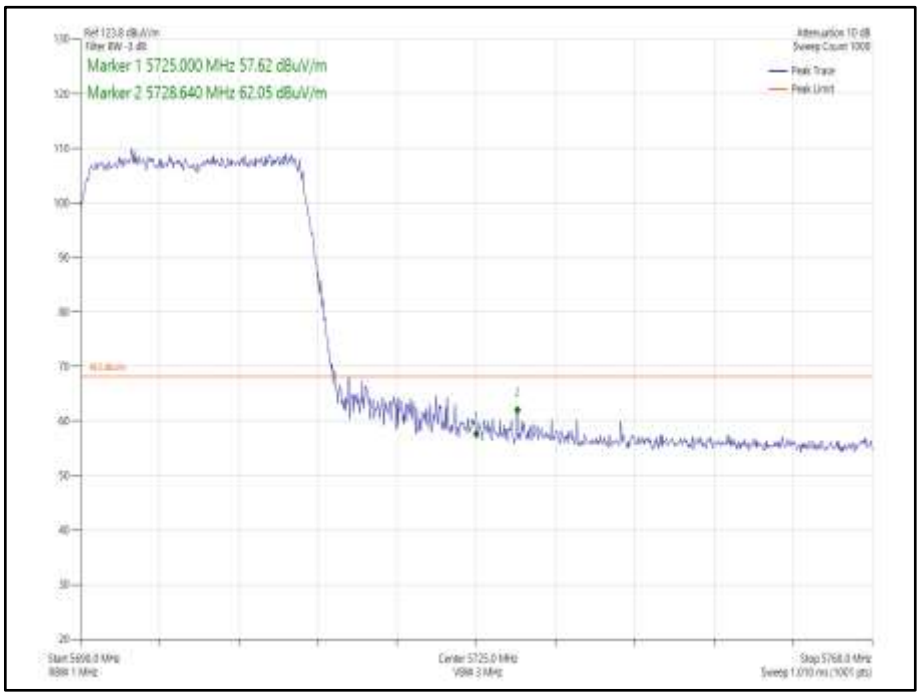

Figure 918 - 802.11ax HE20 SDM, Cores 0-1, SU - 5700 MHz Band Edge Frequency 5725 MHz

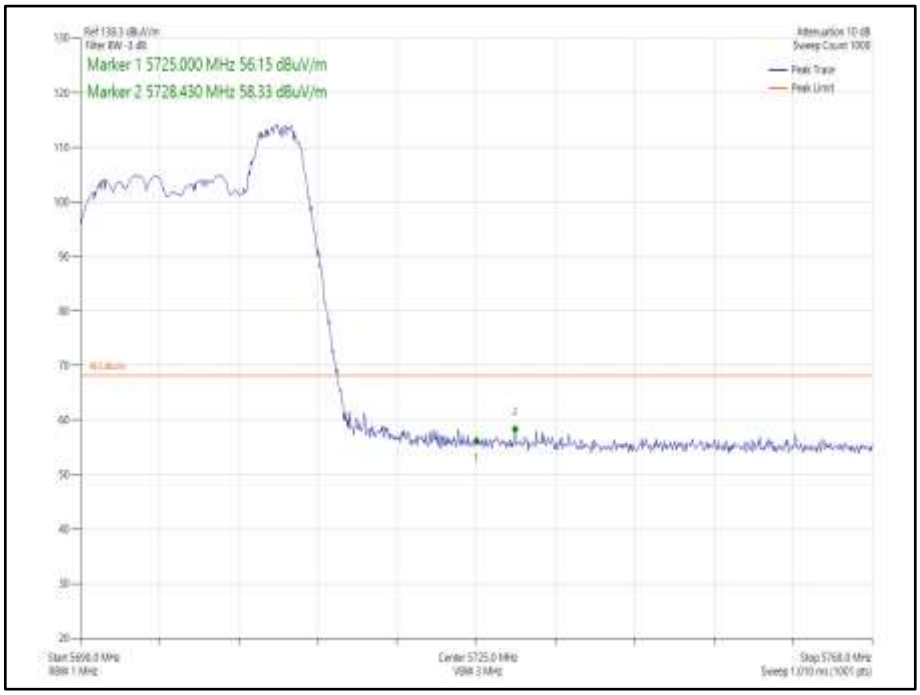

Figure 919 - 802.11ax HE20 SDM, Cores 0-1, 52-40 - 5700 MHz Band Edge Frequency 5725 MHz

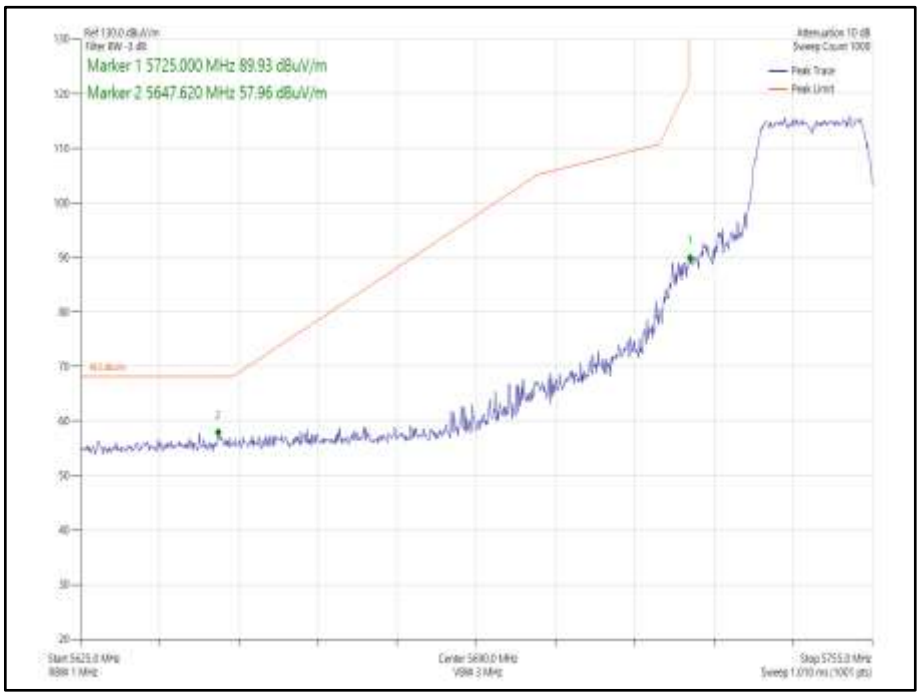

Figure 920 - 802.11n HT20 CDD, Cores 0-1 - 5745 MHz
Band Edge Frequency 5725 MHz

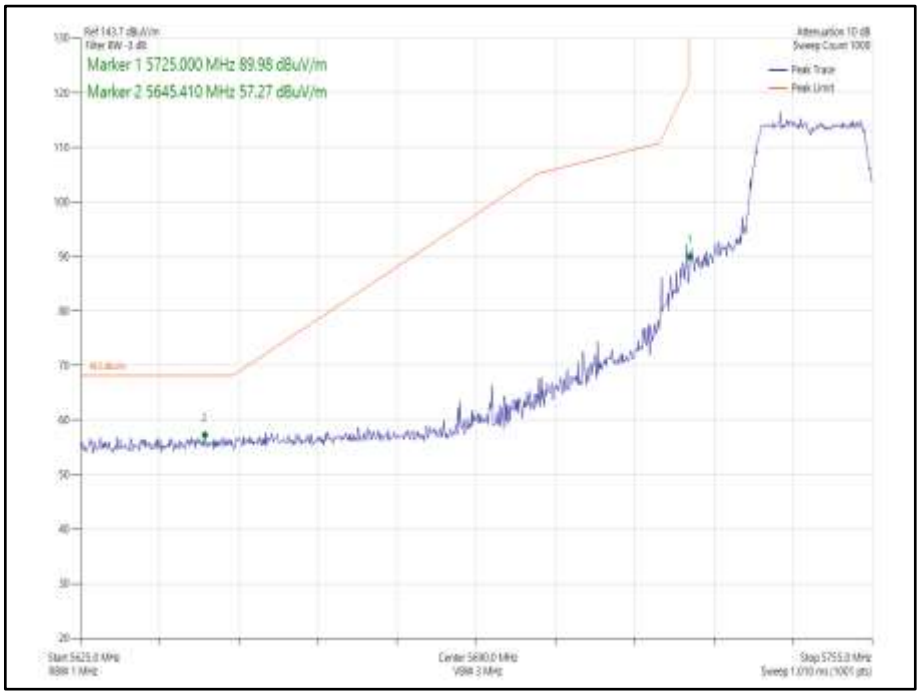

Figure 921 - 802.11n HT20 SDM, Cores 0-1 - 5745 MHz
Band Edge Frequency 5725 MHz

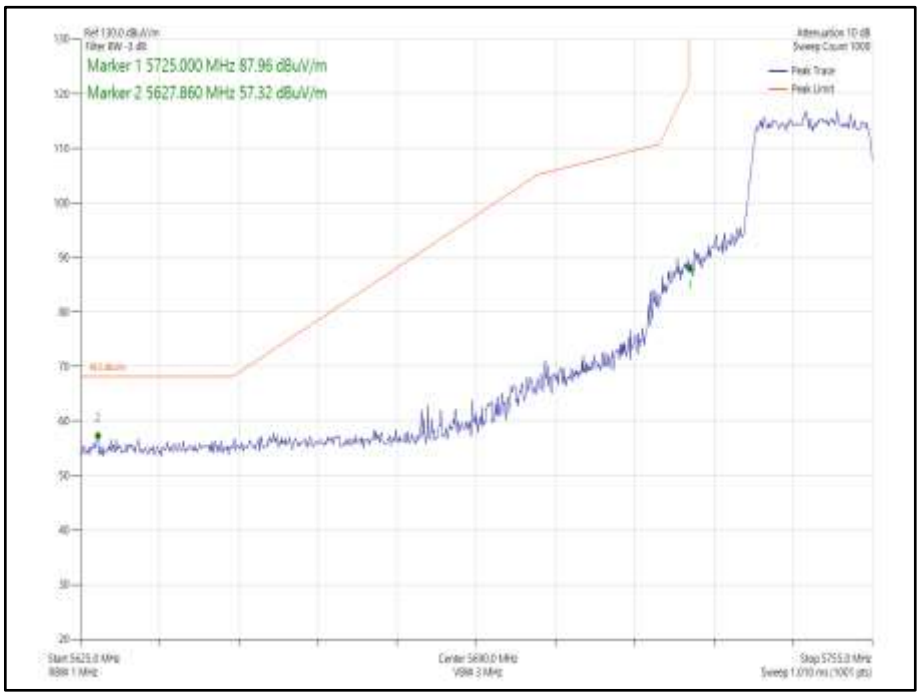

Figure 922 - 802.11ax HE20 CDD, Cores 0-1, SU - 5745 MHz Band Edge Frequency 5725 MHz

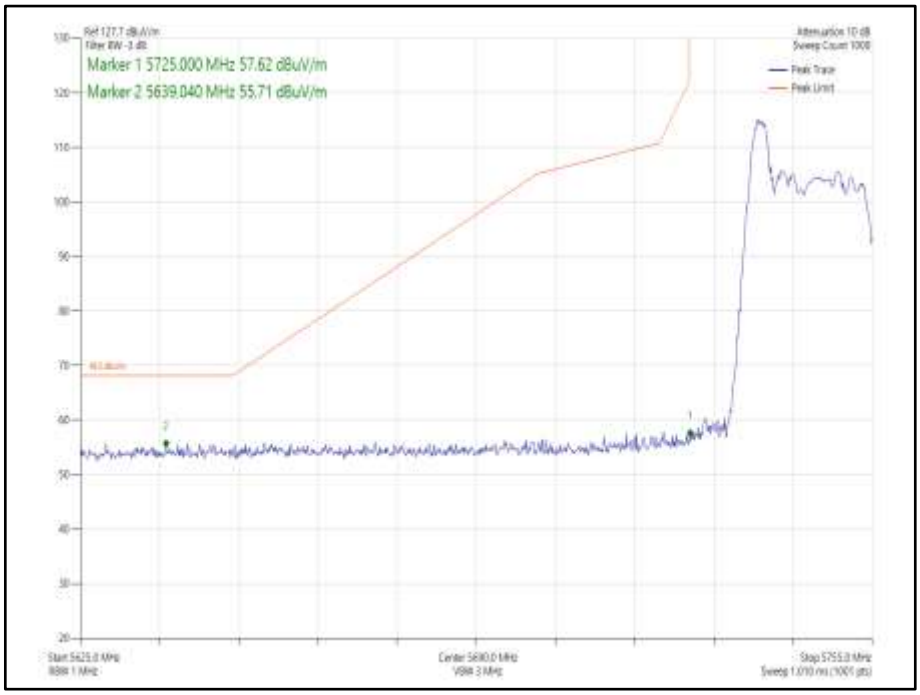

Figure 923 - 802.11ax HE20 CDD, Cores 0-1, 26-0 - 5745 MHz Band Edge Frequency 5725 MHz

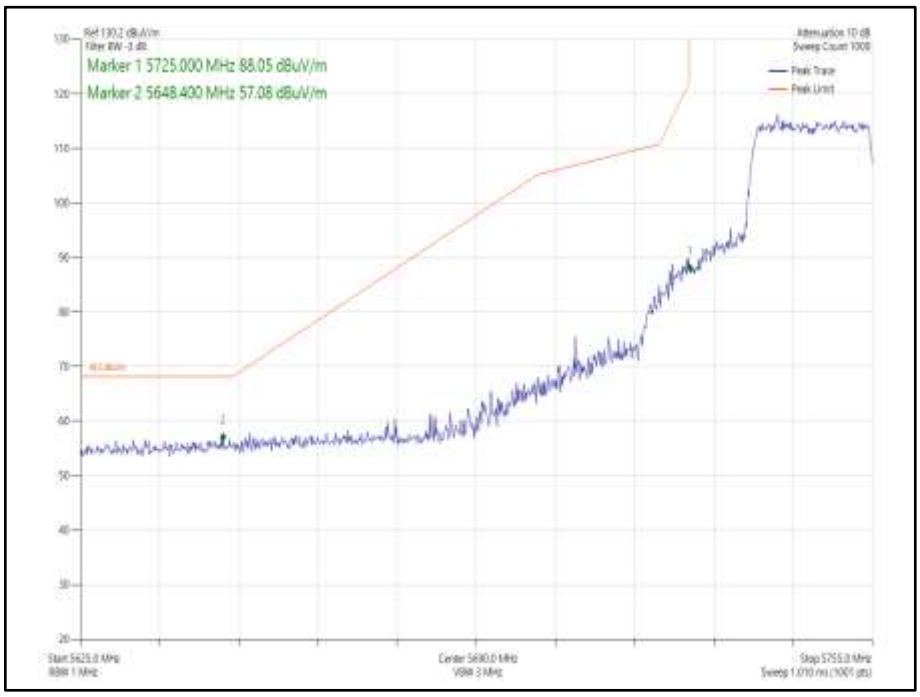

Figure 924 - - 802.11ax HE20 SDM, Cores 0-1, SU - 5745 MHz Band Edge Frequency 5725 MHz

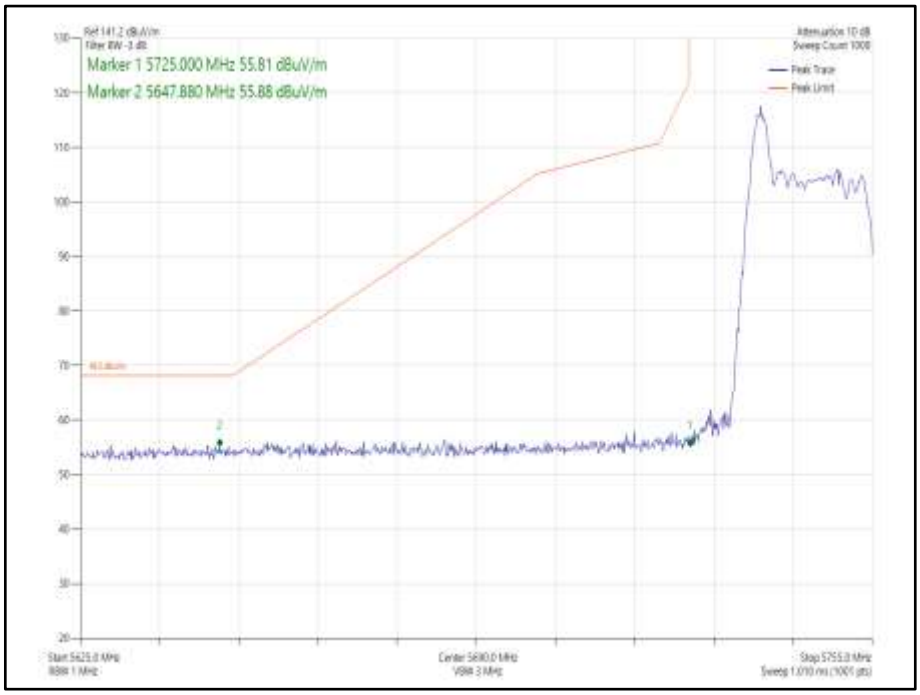

Figure 925 - 802.11ax HE20 SDM, Cores 0-1, 26-0 - 5745 MHz Band Edge Frequency 5725 MHz

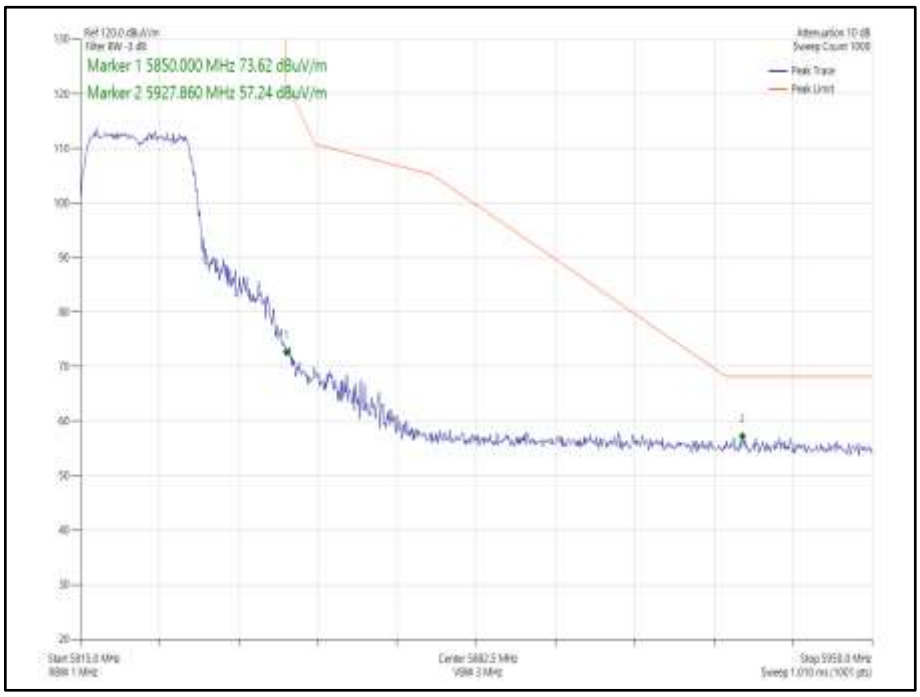

Figure 926 - 802.11n HT20 CDD, Cores 0-1 - 5825 MHz
Band Edge Frequency 5850 MHz

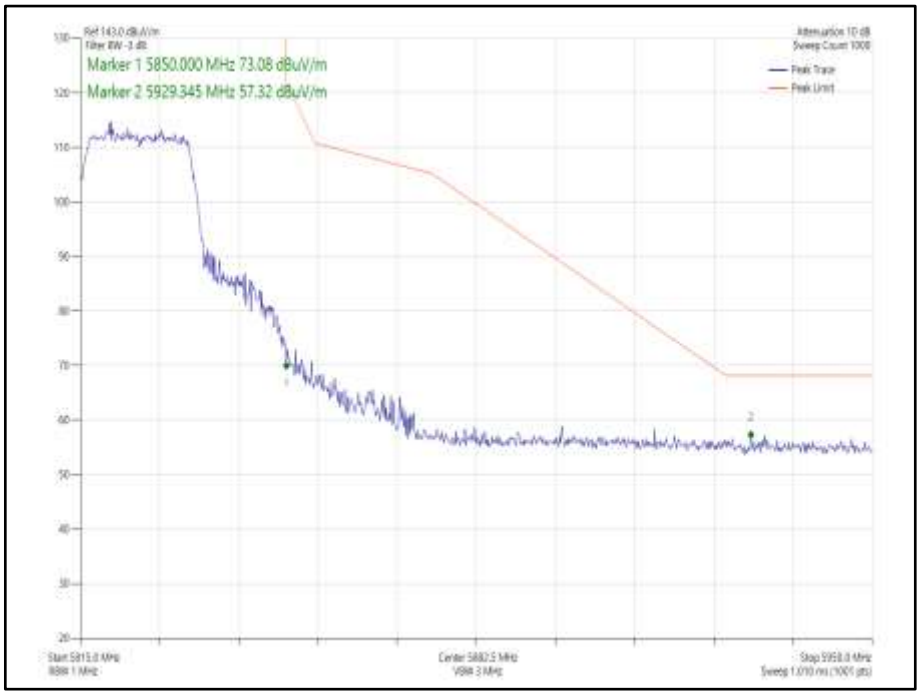

Figure 927 - 802.11n HT20 SDM, Cores 0-1 - 5825 MHz
Band Edge Frequency 5850 MHz

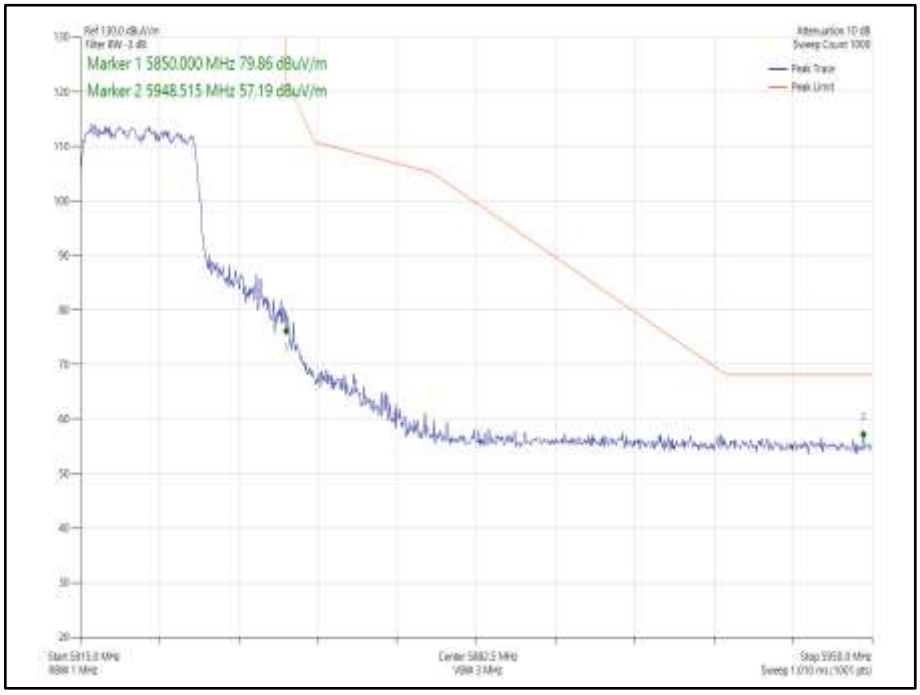

Figure 928 - 802.11ax HE20 CDD, Cores 0-1, SU - 5825 MHz Band Edge Frequency 5850 MHz

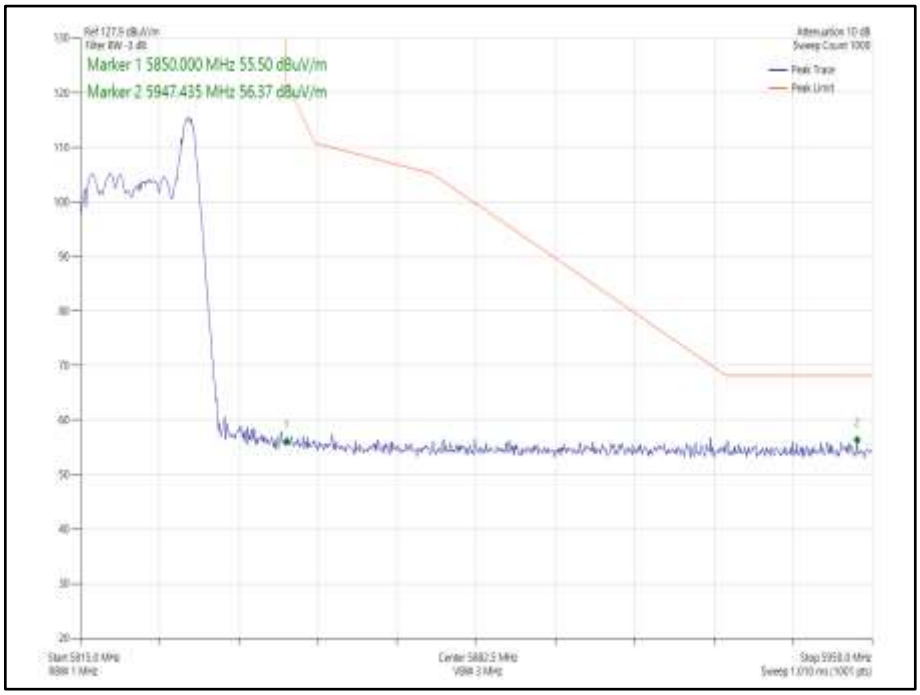

Figure 929 - 802.11ax HE20 CDD, Cores 0-1, 26-8 - 5825 MHz Band Edge Frequency 5850 MHz

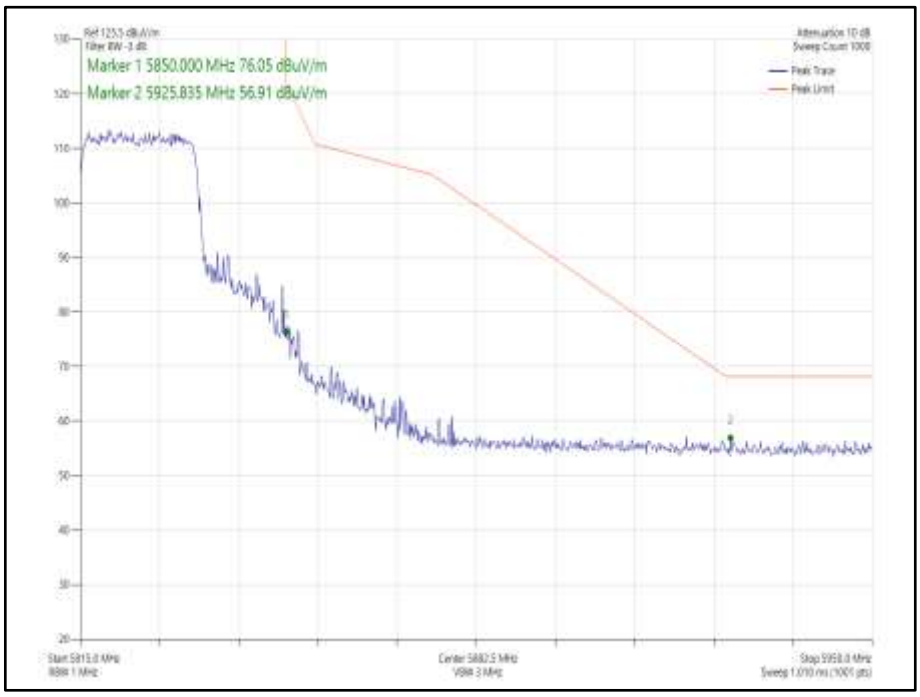

Figure 930 - 802.11ax HE20 SDM, Cores 0-1, SU - 5825 MHz Band Edge Frequency 5850 MHz

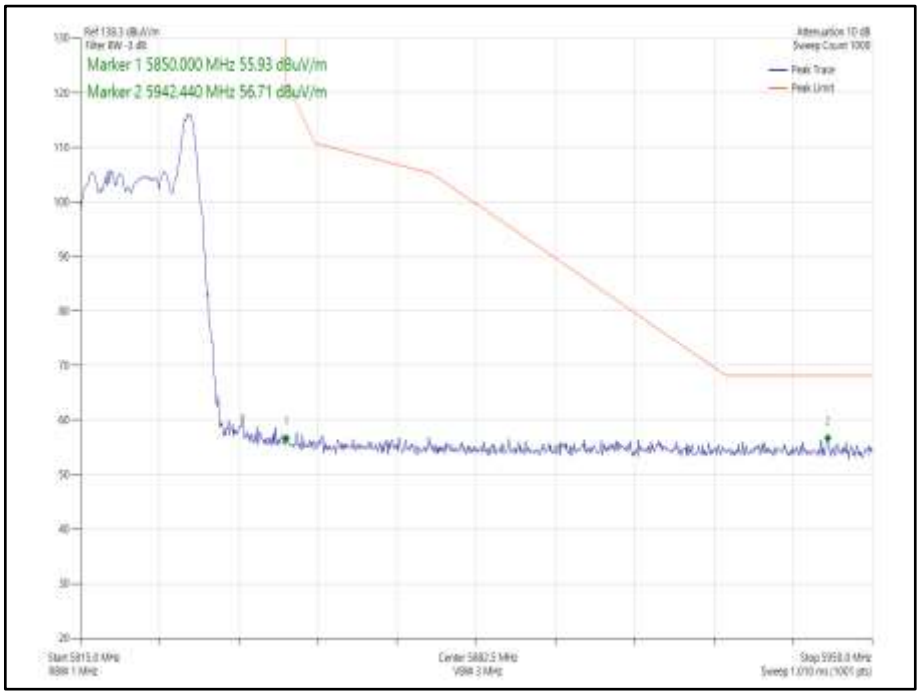

Figure 931 - 802.11ax HE20 SDM, Cores 0-1, 26-8 - 5825 MHz Band Edge Frequency 5850 MHz

Mode	Data Rate /MCS	Resource size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBuV/m)
802.11n HT40, Core 0	MCS7	-	-	5510	5470	63.44
802.11n HT40, Core 0	MCS7	-	-	5670	5725	57.27
802.11n HT40, Core 0	MCS7	-	-	5755	5725	60.94
802.11n HT40, Core 0	MCS7	-	-	5795	5850	56.37
802.11ax HE40, Core 0	MCS7x1	SU	-	5510	5470	63.18
802.11ax HE40, Core 0	MCS7x1	52	37	5510	5470	57.59
802.11ax HE40, Core 0	MCS7x1	SU	-	5670	5725	56.70
802.11ax HE40, Core 0	MCS7x1	52	44	5670	5725	56.14
802.11ax HE40, Core 0	MCS7x1	SU	-	5755	5725	62.37
802.11ax HE40, Core 0	MCS7x1	26	0	5755	5725	55.42
802.11ax HE40, Core 0	MCS7x1	SU	-	5795	5850	56.54
802.11ax HE40, Core 0	MCS7x1	26	17	5795	5850	55.80

Table 631 - SISO Authorised Band Edge Results

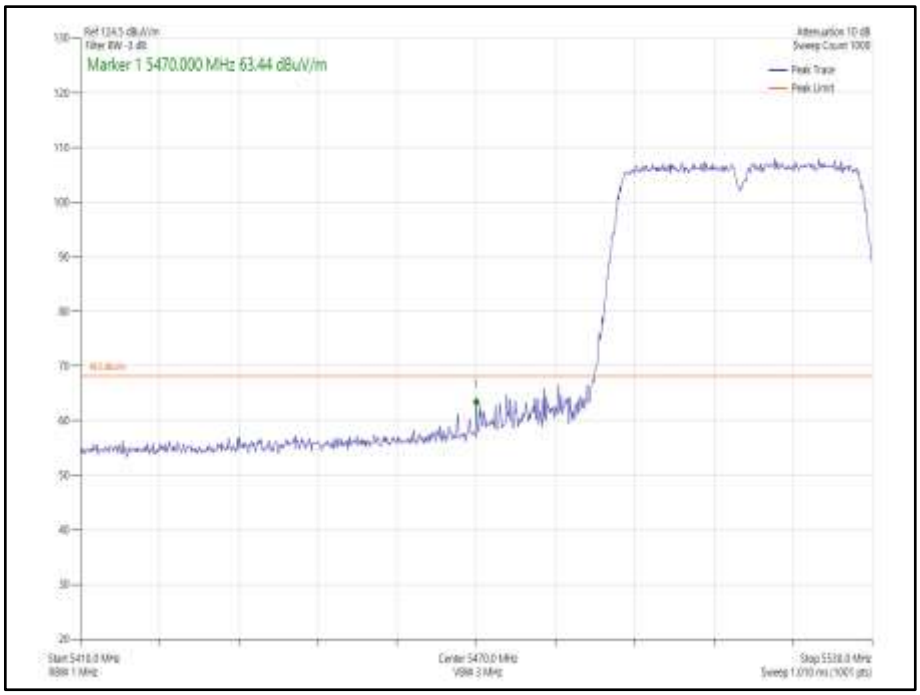

Figure 932 - 802.11n HT40, Core 0 - 5510 MHz
Band Edge Frequency 5470 MHz

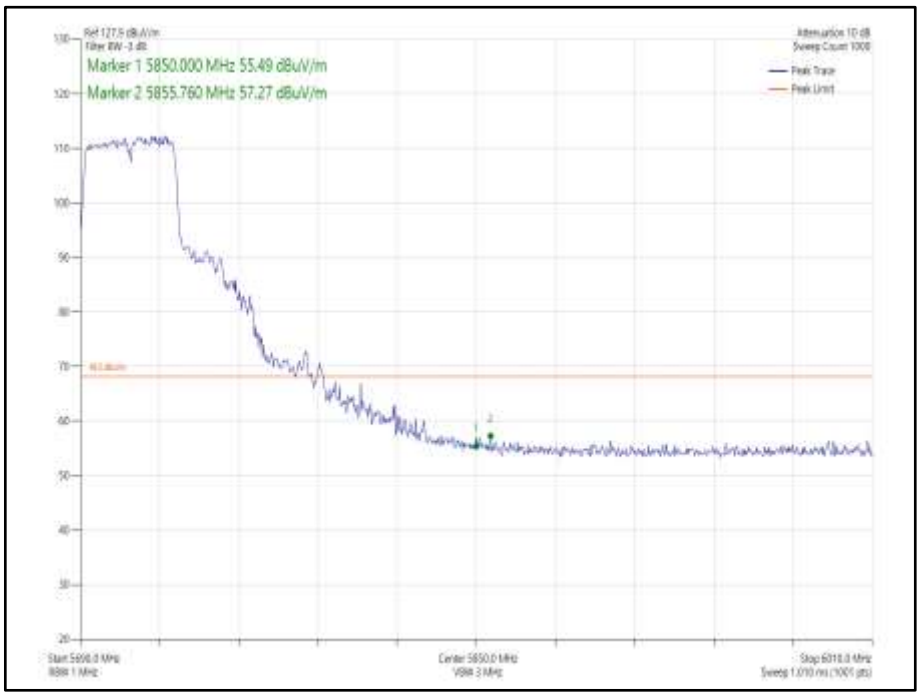

Figure 933 - 802.11n HT40, Core 0 - 5670 MHz
Band Edge Frequency 5725 MHz

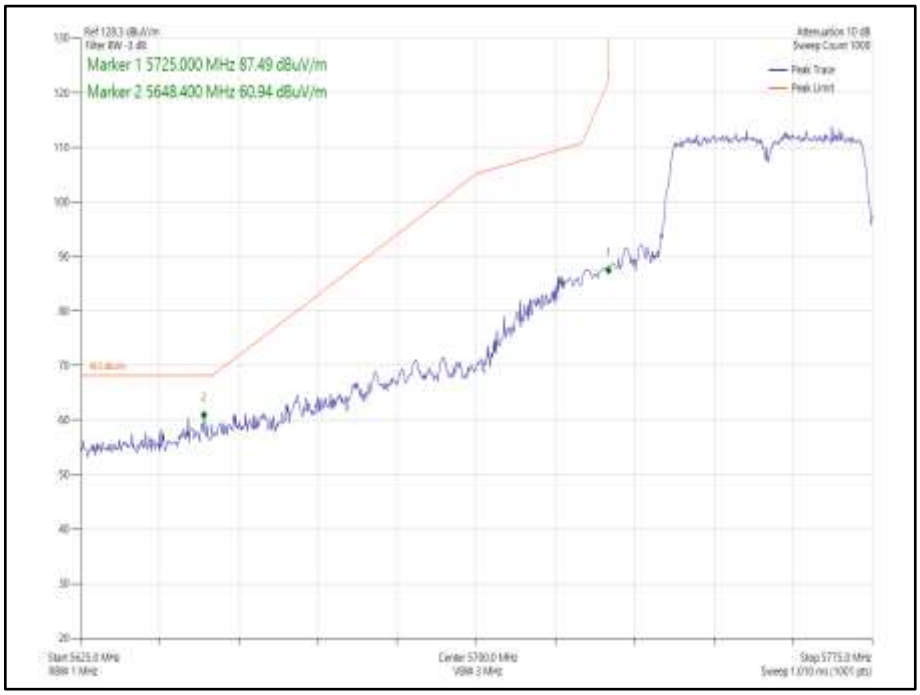

Figure 934 - 802.11n HT40, Core 0 - 5755 MHz
Band Edge Frequency 5725 MHz

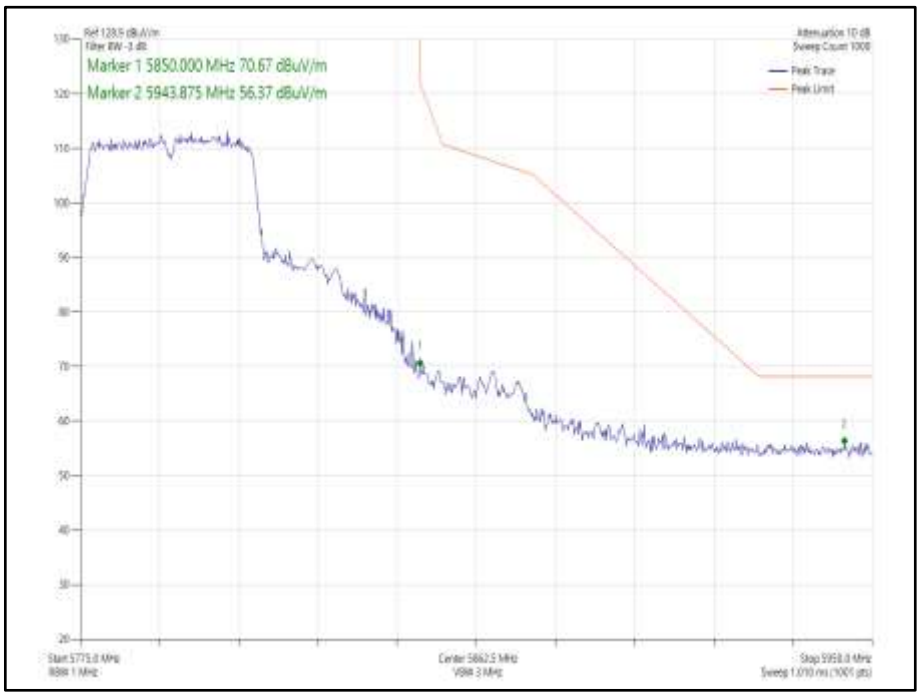

Figure 935 - 802.11n HT40, Core 0 - 5795 MHz
Band Edge Frequency 5850 MHz

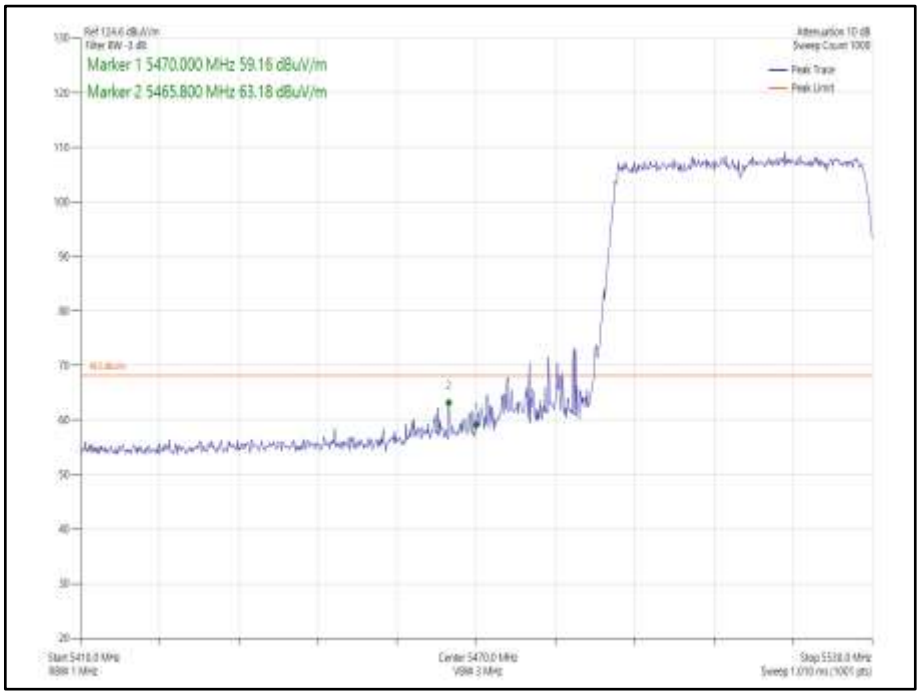

Figure 936 - 802.11ax HE40, Core 0, SU - 5510 MHz
Band Edge Frequency 5470 MHz

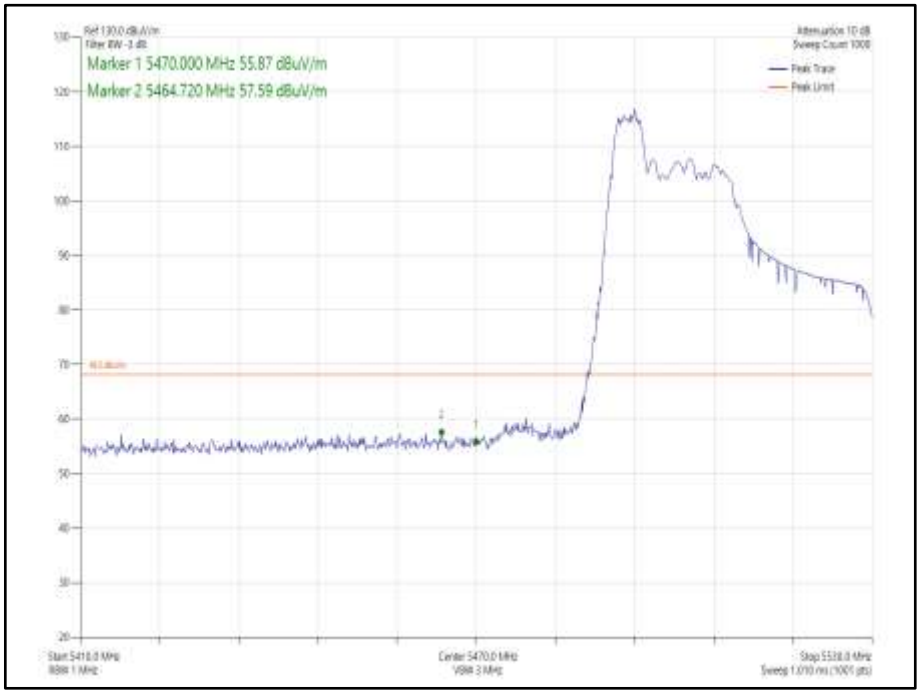

Figure 937 - 802.11ax HE40, Core 0, 52-37 - 5510 MHz
Band Edge Frequency 5470 MHz

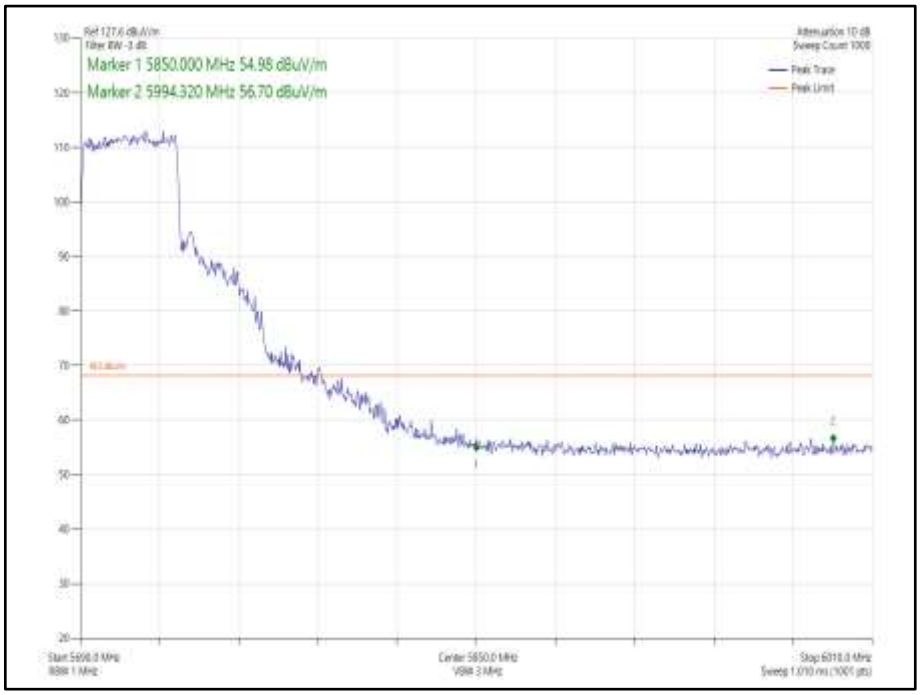

Figure 938 - 802.11ax HE40, Core 0, SU - 5670 MHz
Band Edge Frequency 5725 MHz

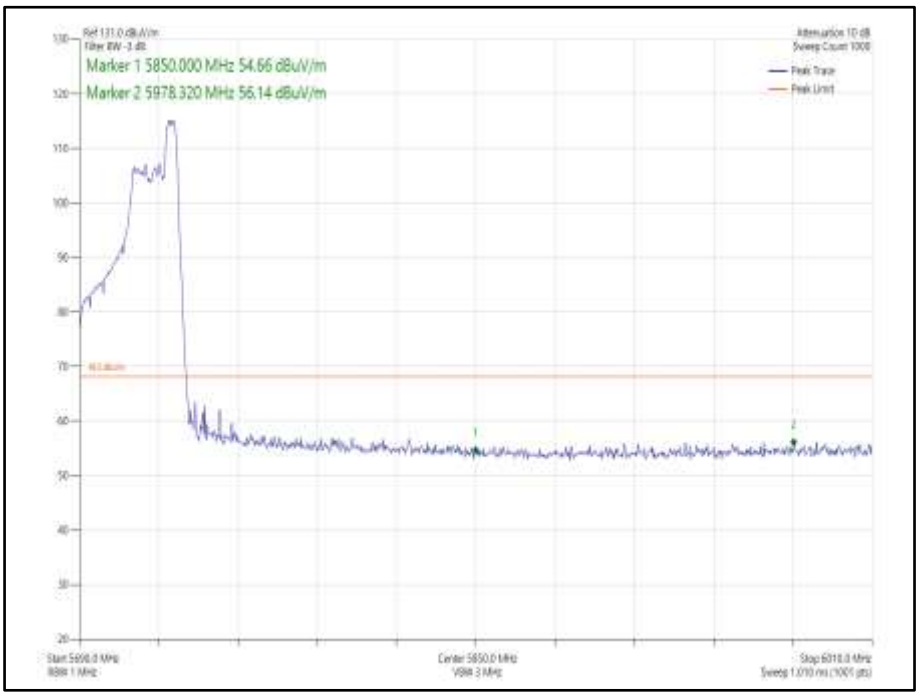

Figure 939 - 802.11ax HE40, Core 0, 26-17 - 5670 MHz
Band Edge Frequency 5725 MHz

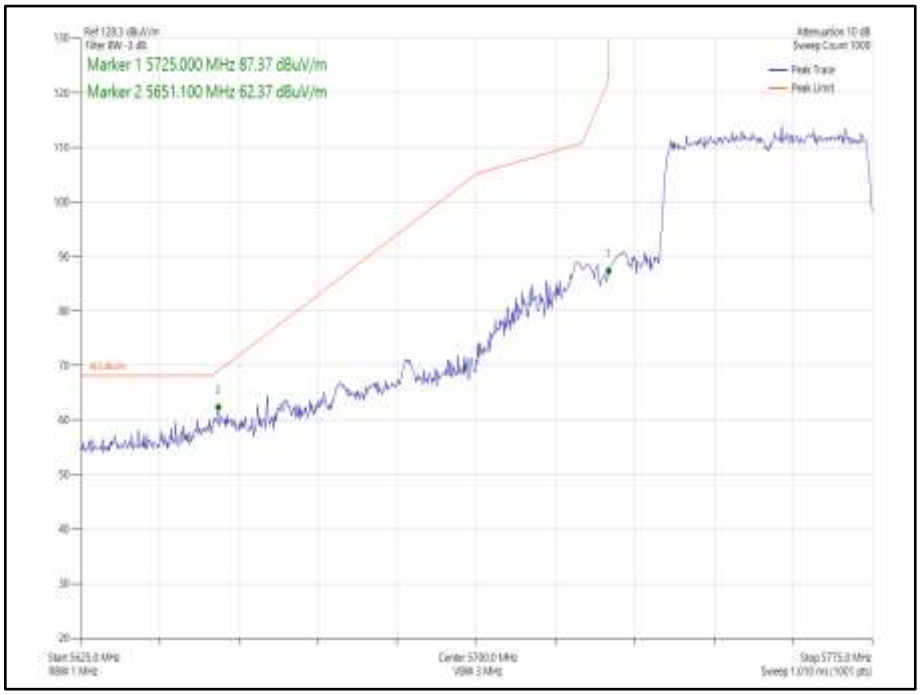

Figure 940 - 802.11ax HE40, Core 0, SU - 5755 MHz
Band Edge Frequency 5725 MHz

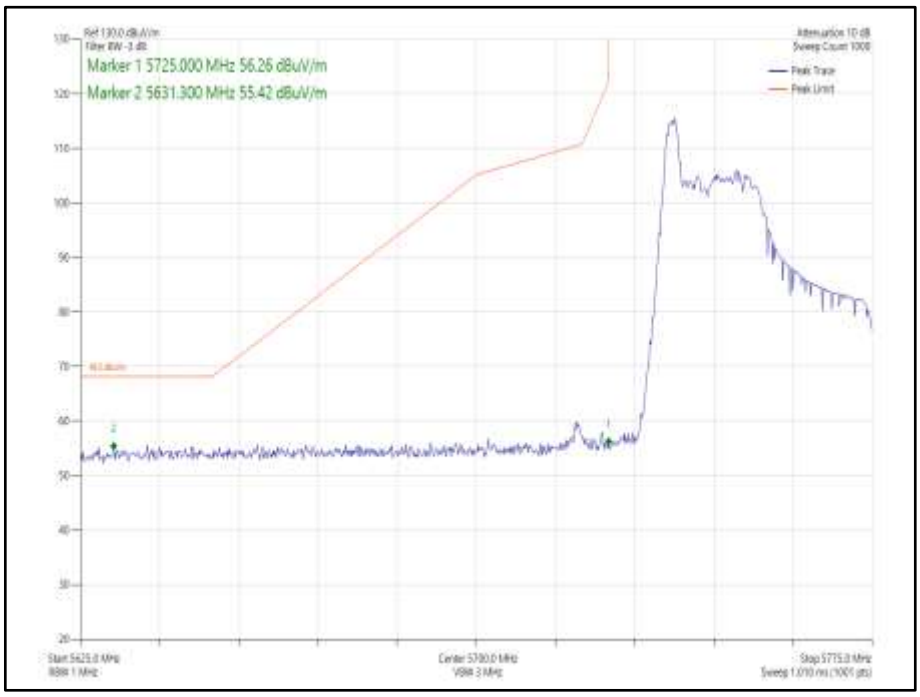

Figure 941 - 802.11ax HE40, Core 0, 26-0 - 5755 MHz
Band Edge Frequency 5725 MHz

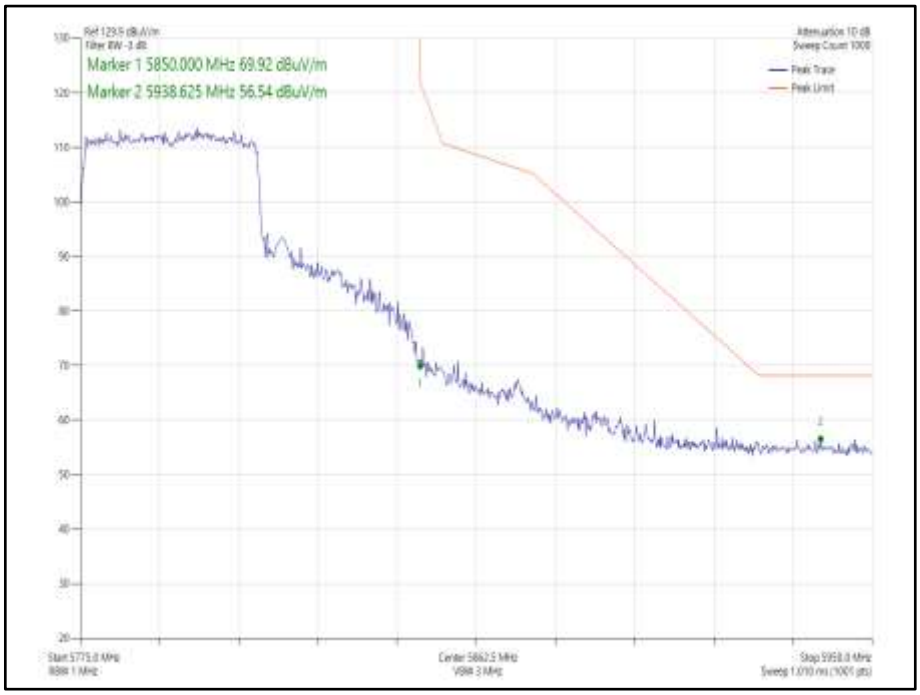

Figure 942 - 802.11ax HE40, Core 0, SU - 5795 MHz
Band Edge Frequency 5850 MHz

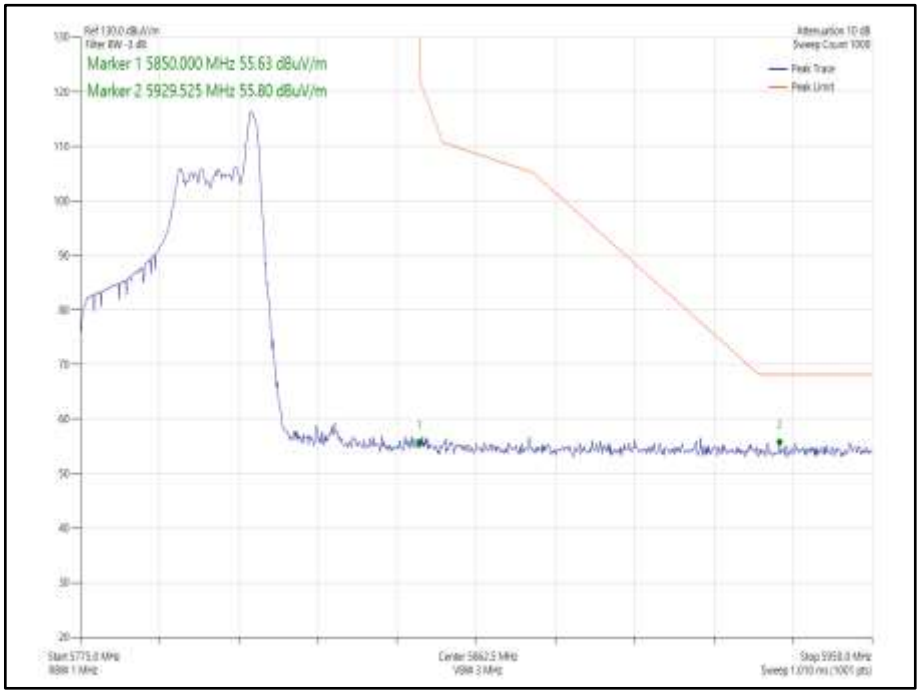

Figure 943 - 802.11ax HE40, Core 0, 26-17 - 5795 MHz
Band Edge Frequency 5850 MHz

Mode	Data Rate/ MCS	Resource size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBuV/m)
802.11n HT40 CDD, Cores 0-1	MCS7	-	-	5510	5470	58.75
802.11n HT40 SDM, Cores 0-1	MCS15	-	-	5510	5470	58.11
802.11ax HE40 CDD, Cores 0-1	MCS7x1	SU	-	5510	5470	58.32
802.11ax HE40 CDD, Cores 0-1	MCS7x1	52	37	5510	5470	56.73
802.11ax HE40 SDM, Cores 0-1	MCS7x2	SU	-	5510	5470	60.79
802.11ax HE40 SDM, Cores 0-1	MCS7x2	52	37	5510	5470	57.34
802.11n HT40 CDD, Cores 0-1	MCS7	-	-	5670	5725	56.62
802.11n HT40 SDM, Cores 0-1	MCS15	-	-	5670	5725	56.64
802.11ax HE40 CDD, Cores 0-1	MCS7x1	SU	-	5670	5725	56.57
802.11ax HE40 CDD, Cores 0-1	MCS7x1	52	44	5670	5725	55.93
802.11ax HE40 SDM, Cores 0-1	MCS7x2	SU	-	5670	5725	56.33
802.11ax HE40 SDM, Cores 0-1	MCS7x2	52	44	5670	5725	56.81
802.11n HT40, CDD Cores 0-1	MCS7	-	-	5755	5725	58.82
802.11n HT40, SDM Cores 0-1	MCS15	-	-	5755	5725	59.04
802.11ax HE40 CDD, Cores 0-1	MCS7x1	SU	-	5755	5725	58.85
802.11ax HE40 CDD, Cores 0-1	MCS7x1	26	0	5755	5725	55.45
802.11ax HE40 SDM, Cores 0-1	MCS7x2	SU	-	5755	5725	58.26
802.11ax HE40 SDM, Cores 0-1	MCS7x2	26	0	5755	5725	55.47
802.11n HT40 CDD, Cores 0-1	MCS7	-	-	5795	5850	57.19
802.11n HT40 SDM, Cores 0-1	MCS15	-	-	5795	5850	56.09
802.11ax HE40 CDD, Cores 0-1	MCS7x1	SU	-	5795	5850	57.12
802.11ax HE40 CDD, Cores 0-1	MCS7x1	26	17	5795	5850	56.41
802.11ax HE40 SDM, Cores 0-1	MCS7x2	SU	-	5795	5850	56.29
802.11ax HE40 SDM, Cores 0-1	MCS7x2	26	17	5795	5850	56.03

Table 632 - MIMO 2TX Authorised Band Edge Results

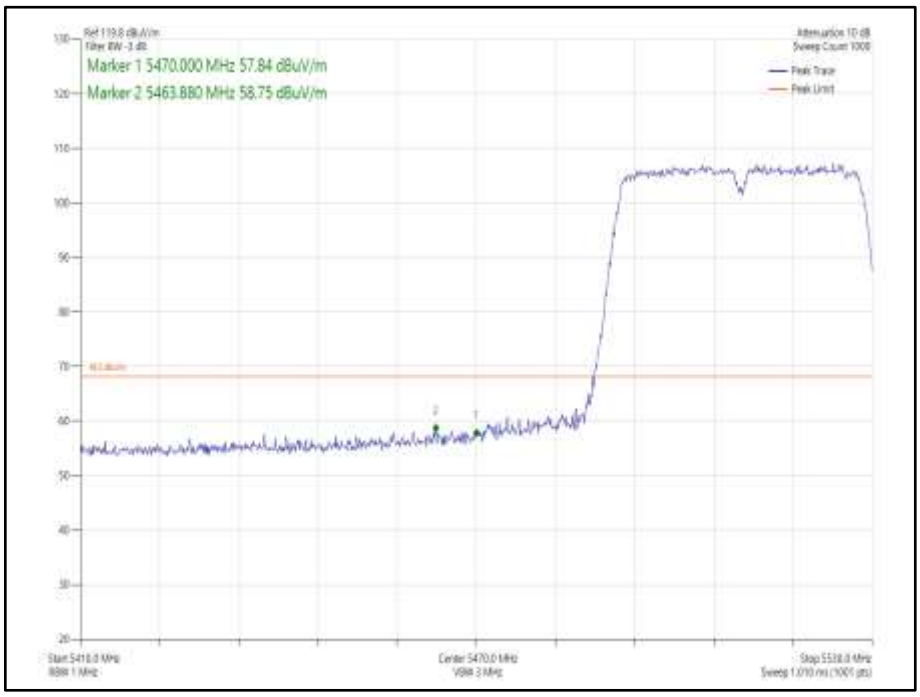

Figure 944 - 802.11n HT40 CDD, Cores 0-1 - 5510 MHz
Band Edge Frequency 5470 MHz

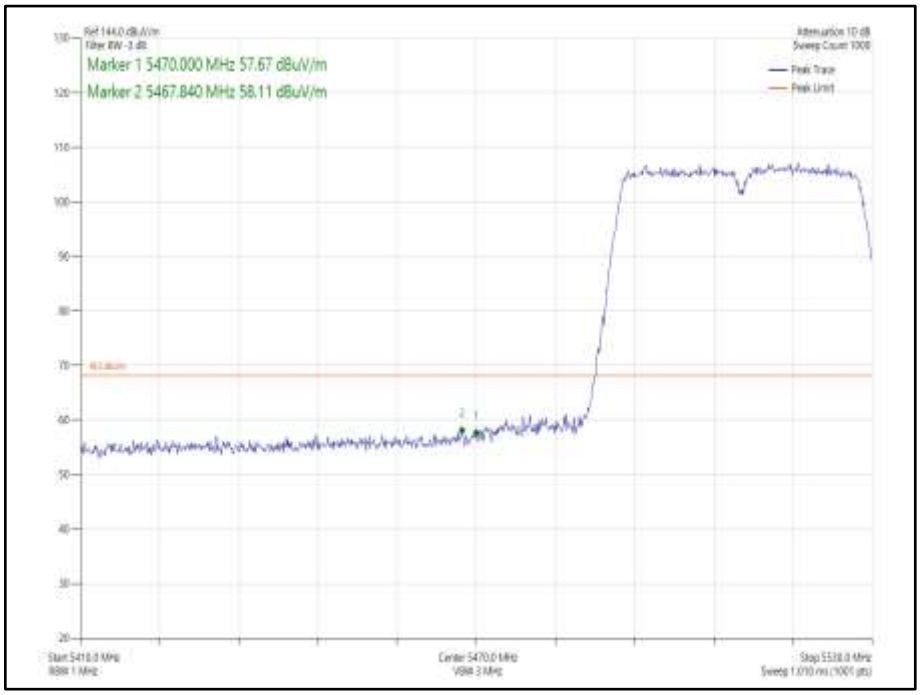

Figure 945 - 802.11n HT40 SDM, Cores 0-1 - 5510 MHz
Band Edge Frequency 5470 MHz

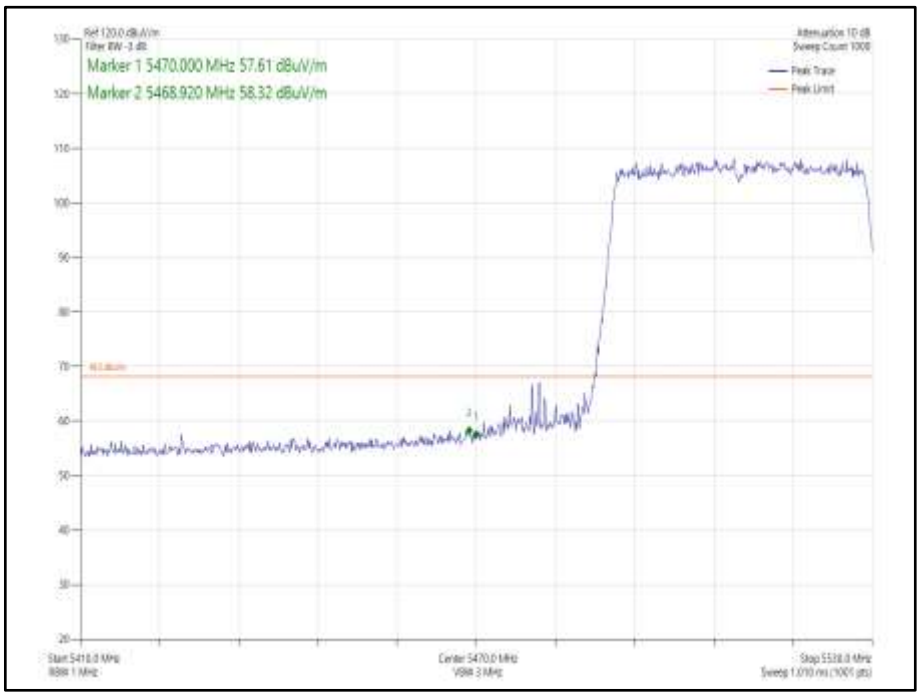

Figure 946 - 802.11ax HE40 CDD, Cores 0-1, SU - 5510 MHz Band Edge Frequency 5470 MHz

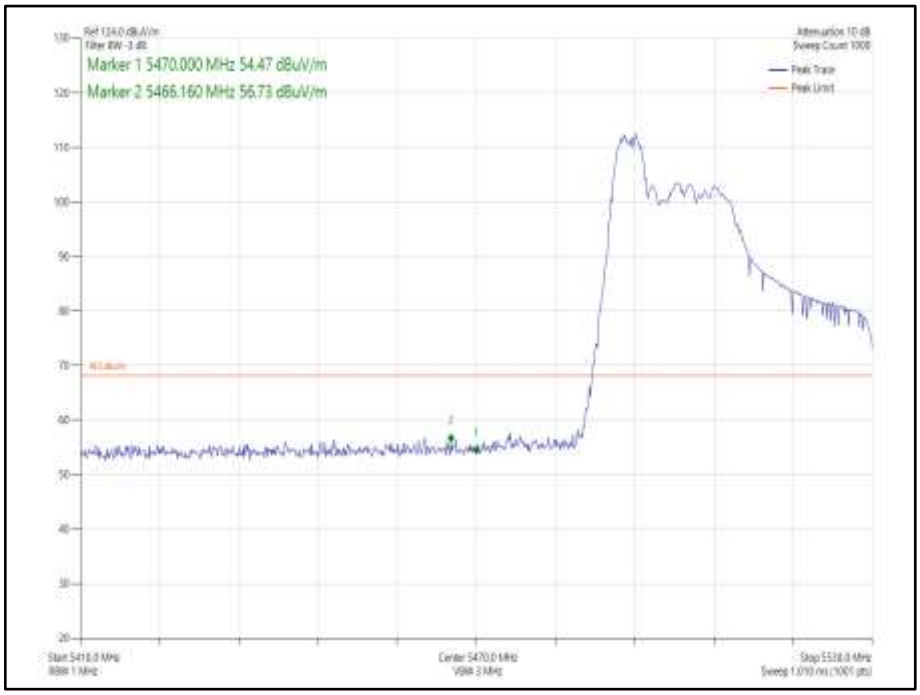

Figure 947 - 802.11ax HE40 CDD, Cores 0-1, 26-0 - 5510 MHz Band Edge Frequency 5470 MHz

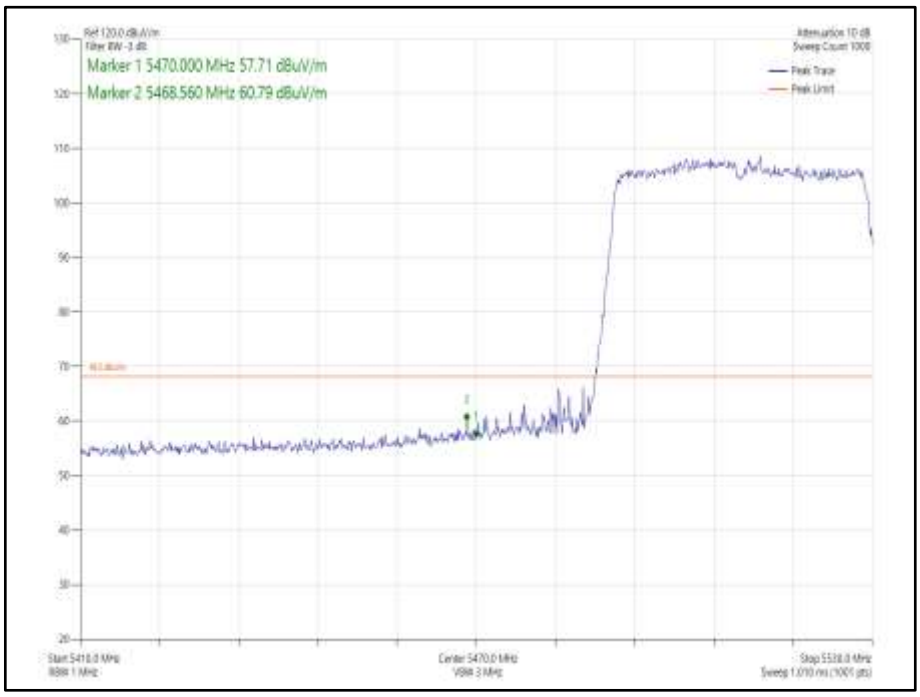

Figure 948 - 802.11ax HE40 SDM, Cores 0-1, SU - 5510 MHz Band Edge Frequency 5470 MHz

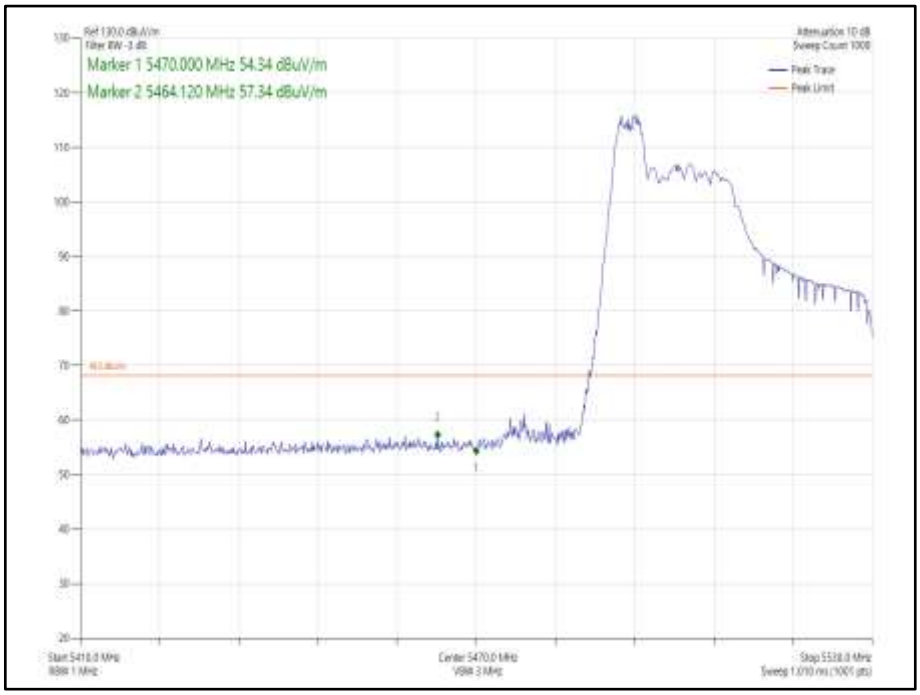

Figure 949 - 802. 11ax HE40 SDM, Cores 0-1, 26-0 - 5510 MHz Band Edge Frequency 5470 MHz

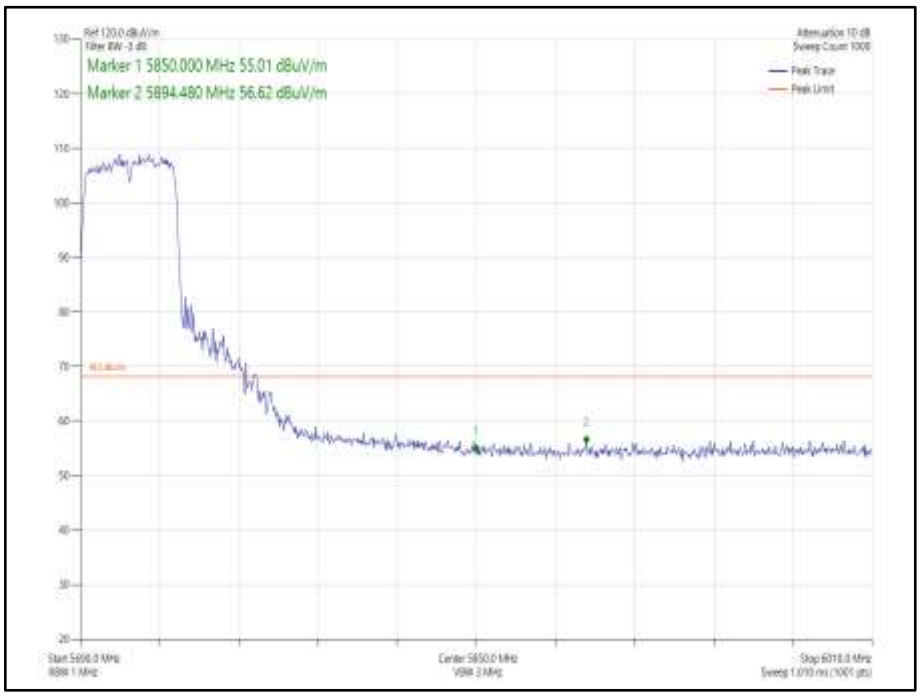

Figure 950 - 802.11n HT40 CDD, Cores 0-1 - 5670 MHz
Band Edge Frequency 5725 MHz

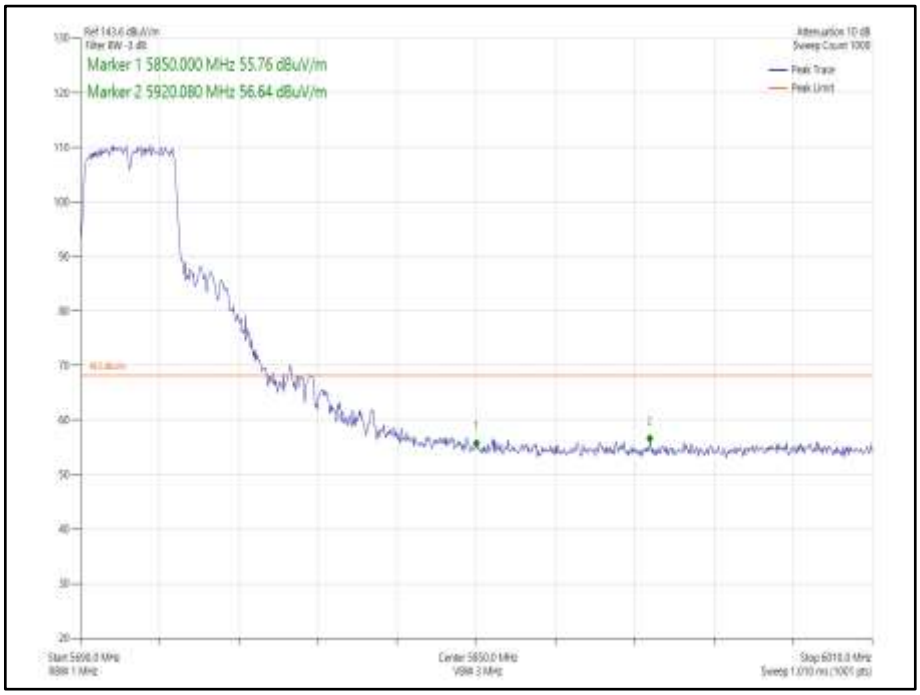

Figure 951 - 802.11n HT40 SDM, Cores 0-1 - 5670 MHz
Band Edge Frequency 5725 MHz

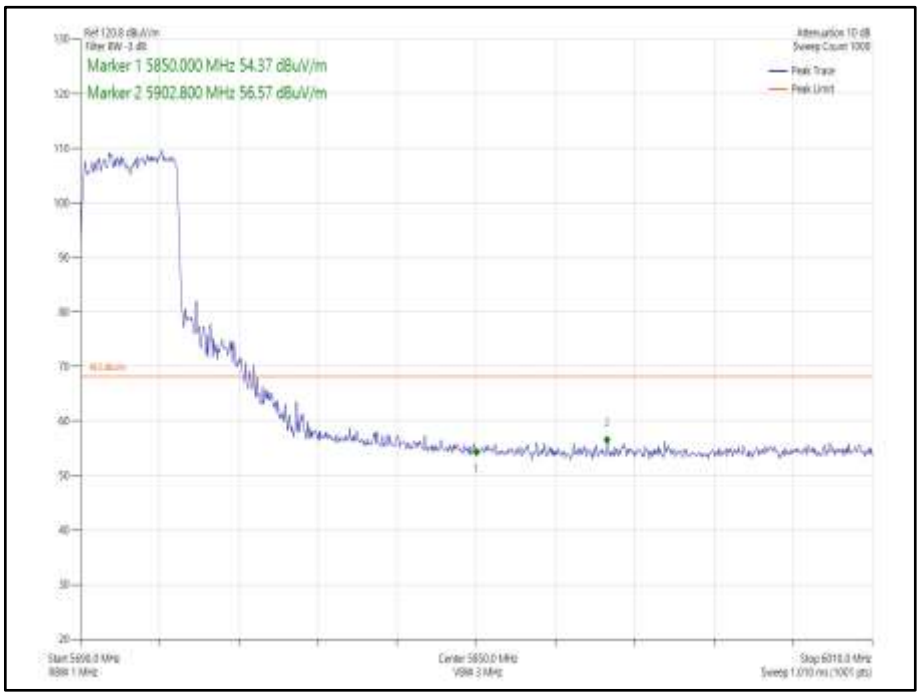

Figure 952 - 802.11ax HE40 CDD, Cores 0-1, SU - 5670 MHz
Band Edge Frequency 5725 MHz

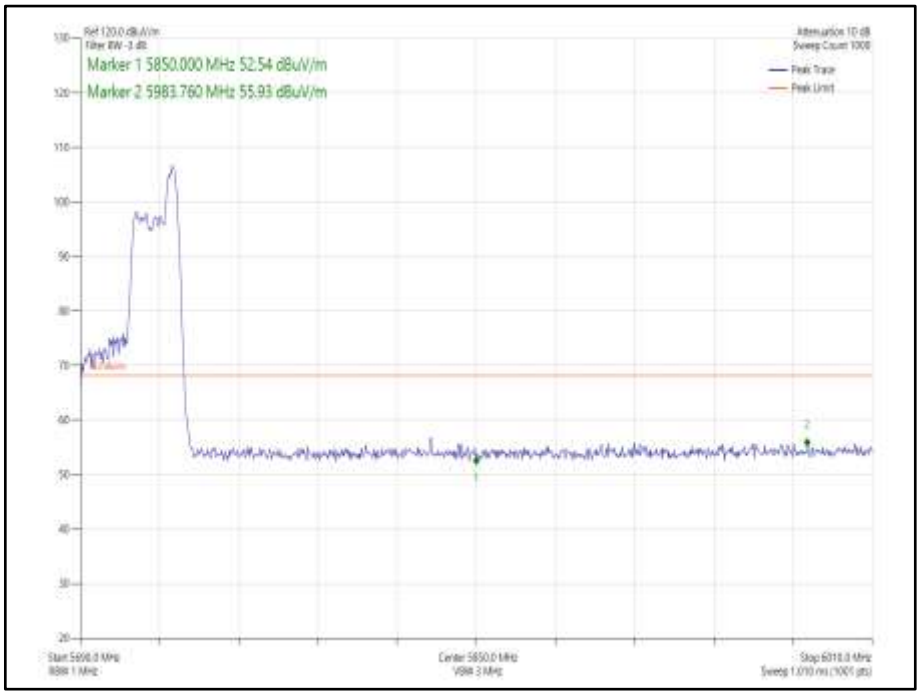

Figure 953 - 802.11ax HE40 CDD, Cores 0-1, 52-44 - 5670 MHz
Band Edge Frequency 5725 MHz

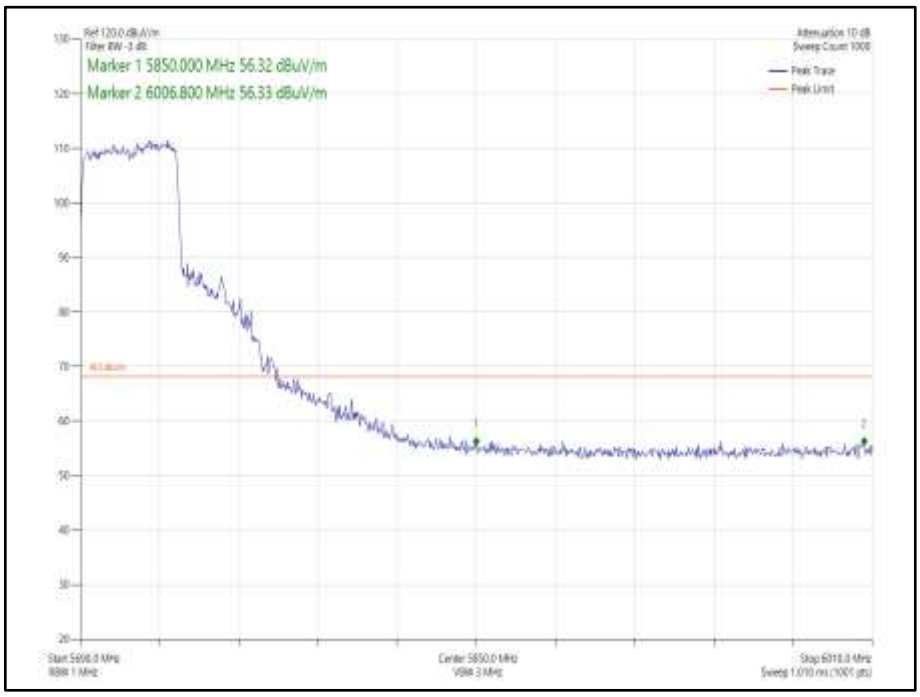

Figure 954 - 802.11ax HE40 SDM, Cores 0-1, SU - 5670 MHz
Band Edge Frequency 5725 MHz

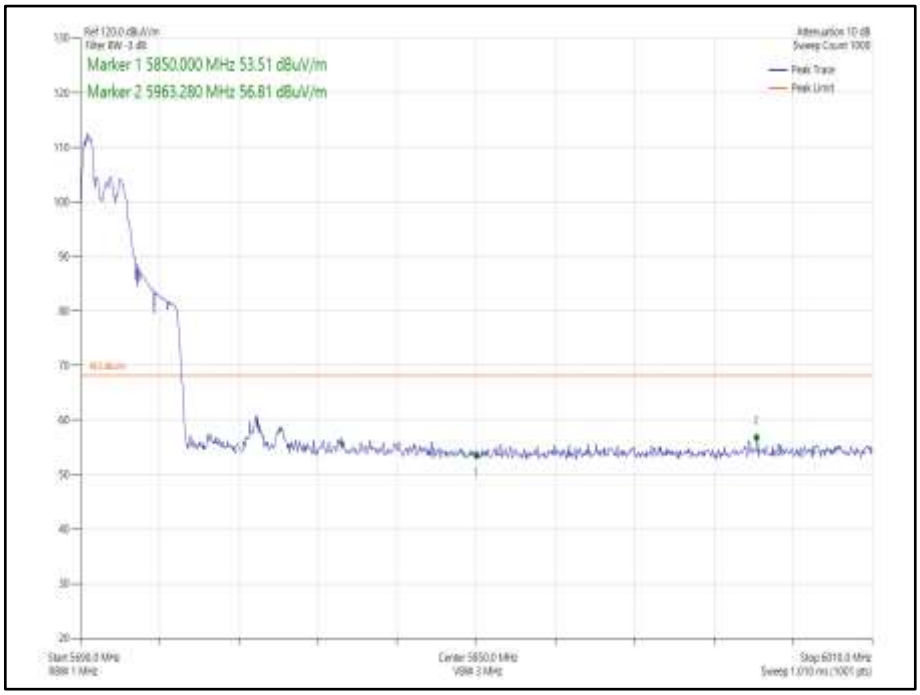

Figure 955 - 802.11ax HE40 SDM, Cores 0-1, 52-44 - 5710 MHz
Band Edge Frequency 5725 MHz

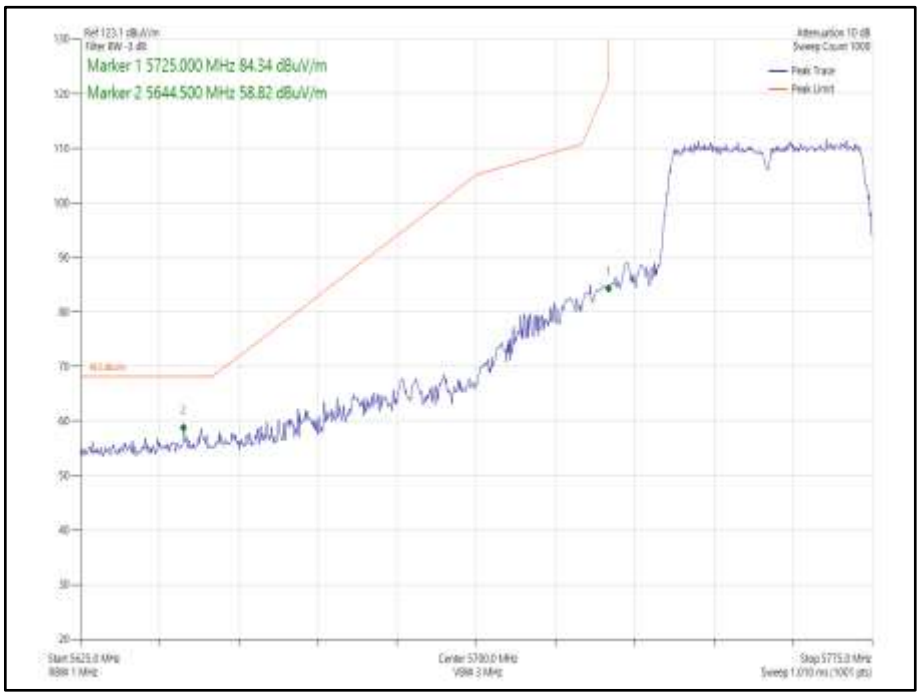

Figure 956 - 802.11n HT40 CDD, Cores 0-1 - 5755 MHz
Band Edge Frequency 5725 MHz

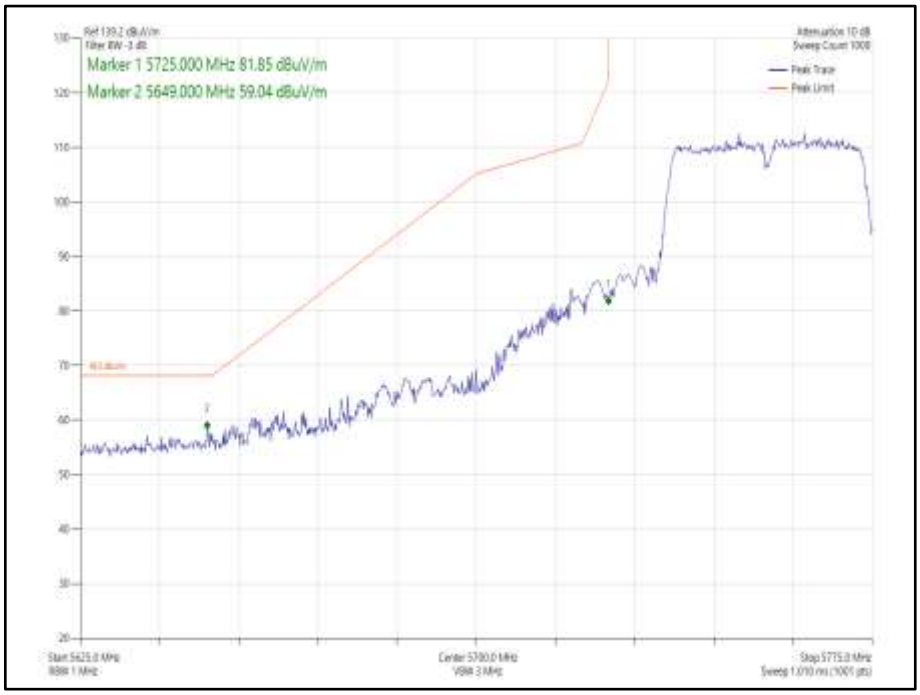

Figure 957 - 802.11n HT40 SDM, Cores 0-1 - 5755 MHz
Band Edge Frequency 5725 MHz

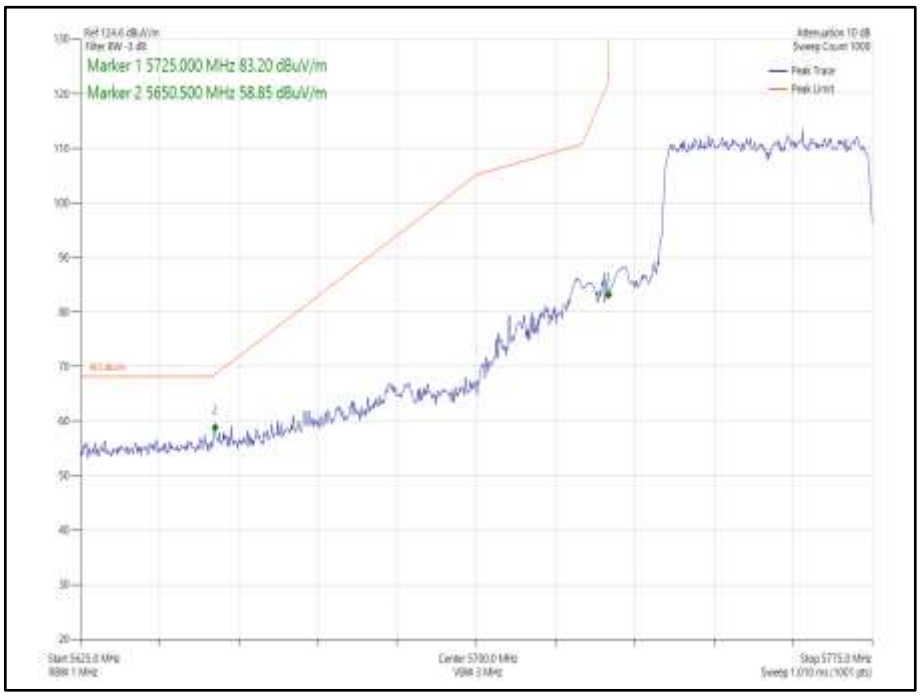

Figure 958 - 802.11ax HE40 CDD, Cores 0-1, SU - 5755 MHz Band Edge Frequency 5725 MHz

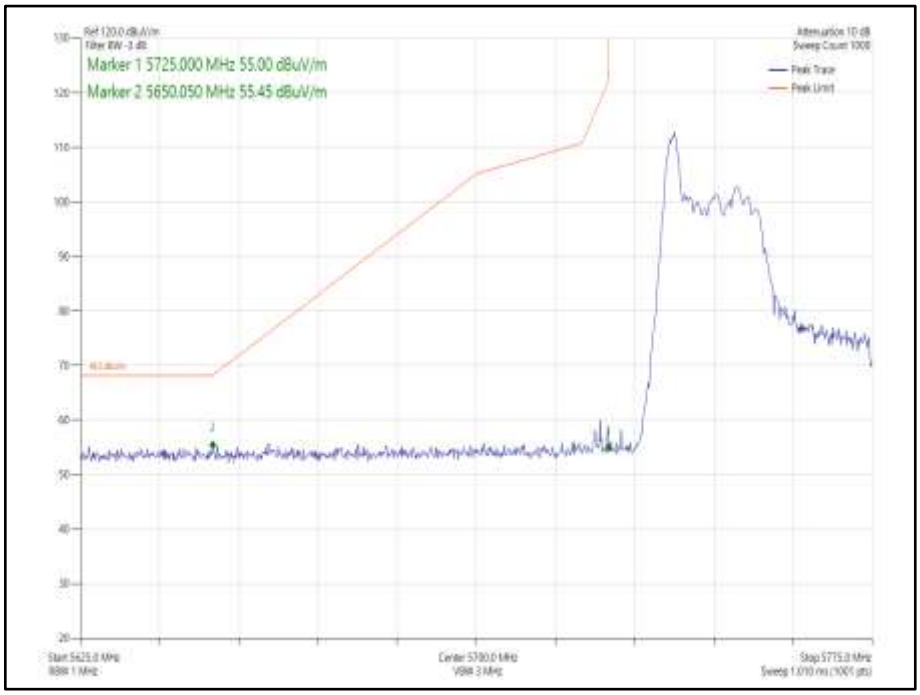

Figure 959 - 802.11ax HE40 CDD, Cores 0-1, 26-0 - 5755 MHz Band Edge Frequency 5725 MHz

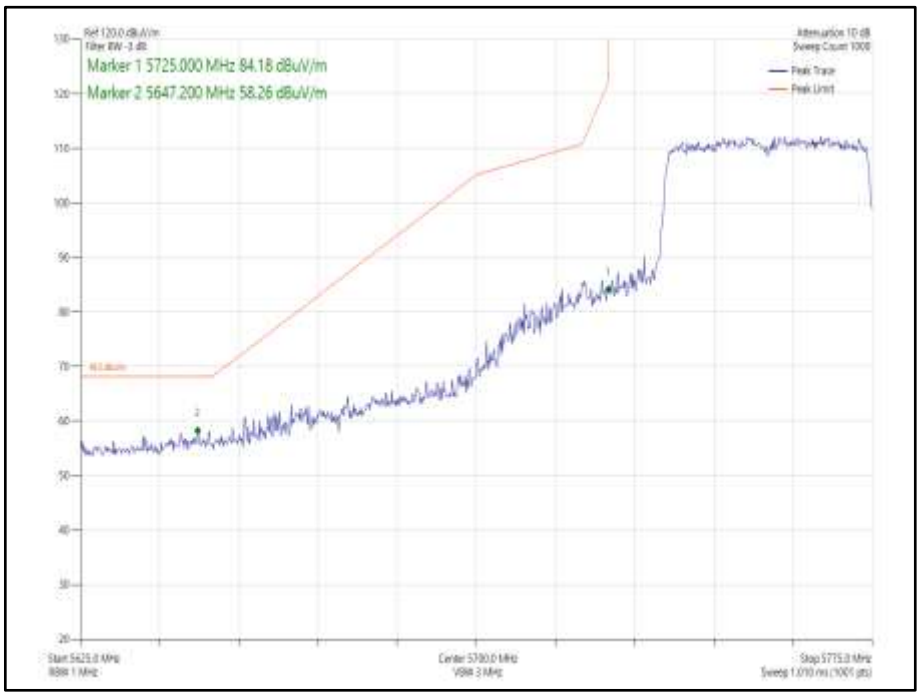

Figure 960 - 802.11ax HE40 SDM, Cores 0-1, SU - 5755 MHz Band Edge Frequency 5725 MHz

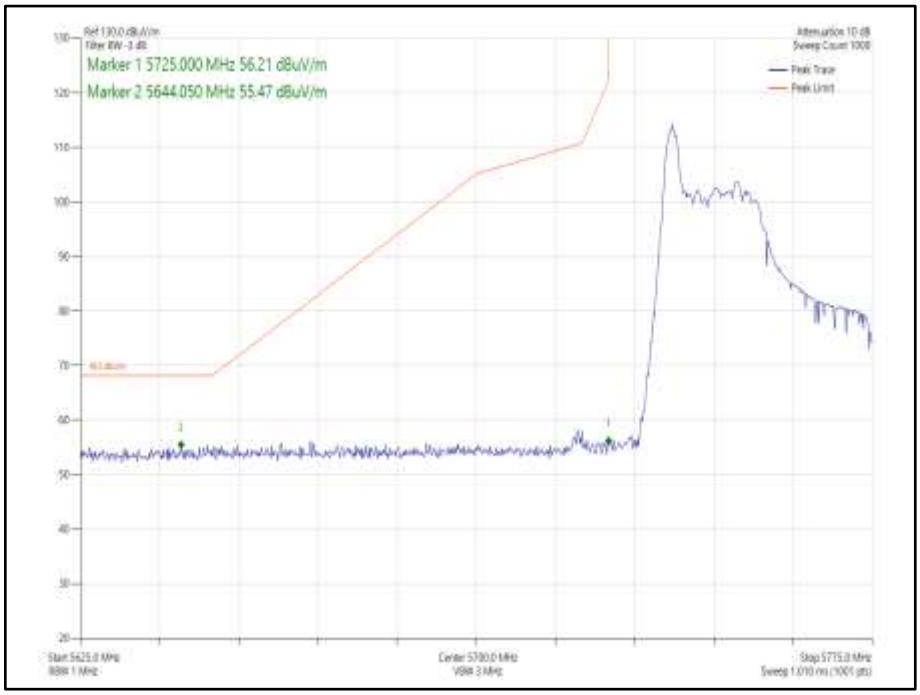

Figure 961 - 802.11ax HE40 SDM, Cores 0-1, 26-0 - 5755 MHz Band Edge Frequency 5725 MHz

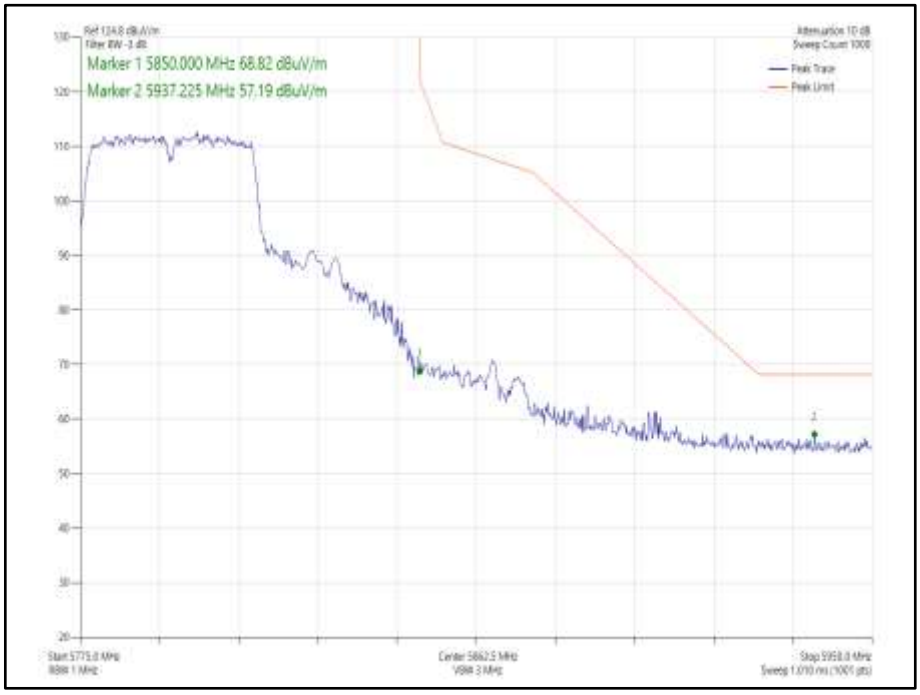

Figure 962 - 802.11n HT40 CDD, Cores 0-1 - 5795 MHz
Band Edge Frequency 5850 MHz

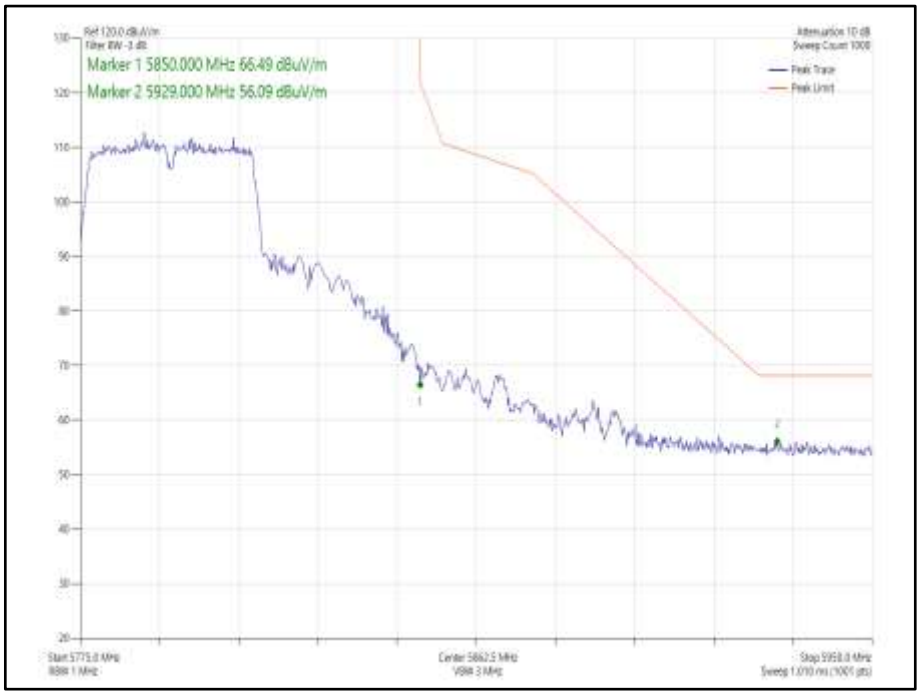

Figure 963 - 802.11n HT40 SDM, Cores 0-1 - 5795 MHz
Band Edge Frequency 5850 MHz

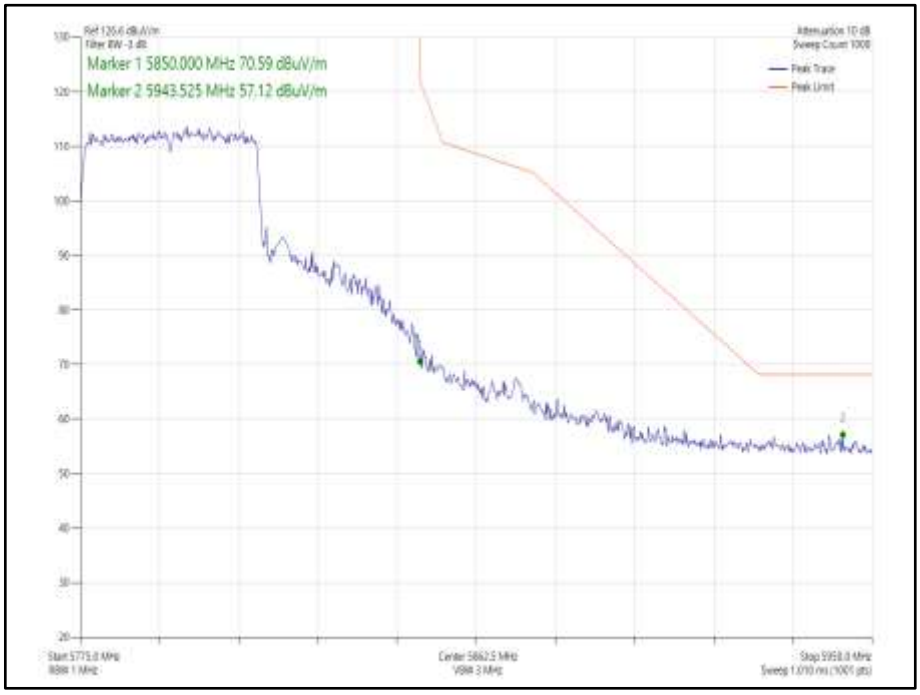

Figure 964 - 802.11ax HE40 CDD, Cores 0-1, SU - 5795 MHz
Band Edge Frequency 5850 MHz

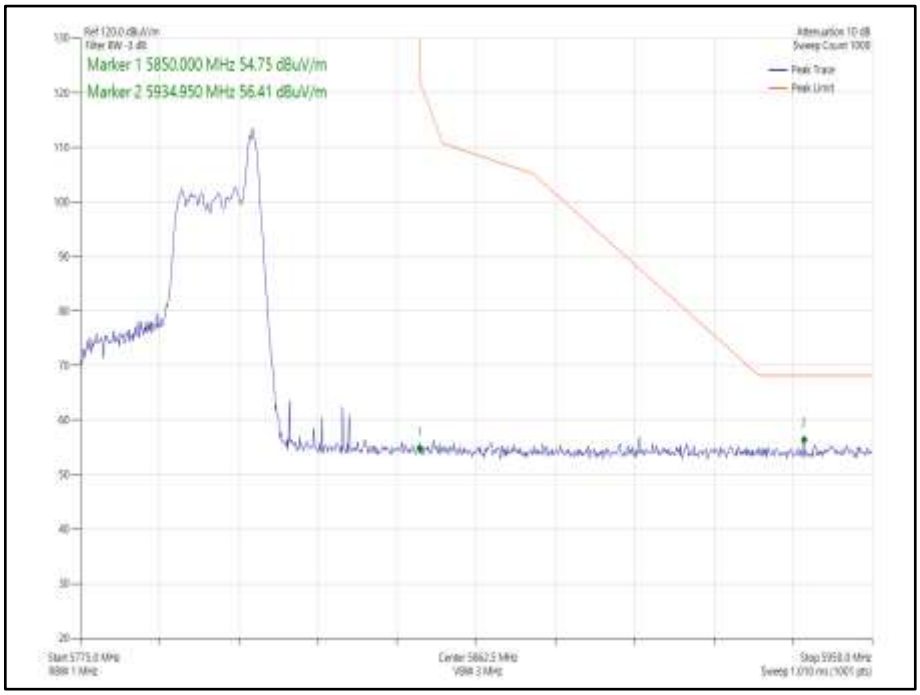

Figure 965 - 802.11ax HE40 CDD, Cores 0-1, 26-17 - 5795 MHz
Band Edge Frequency 5850 MHz

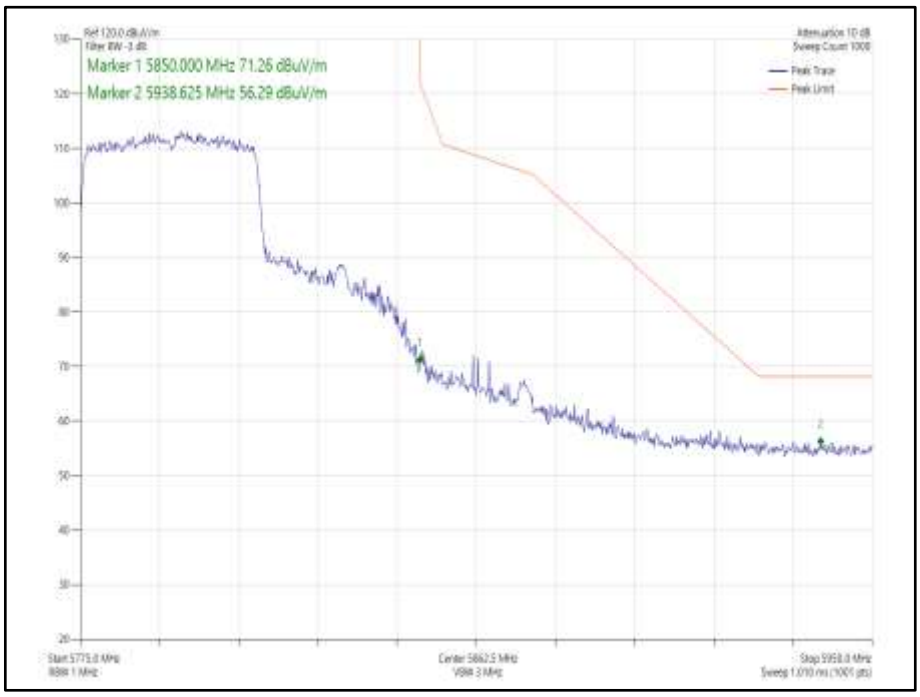

Figure 966 - 802.11ax HE40 SDM, Cores 0-1, SU - 5795 MHz Band Edge Frequency 5850 MHz

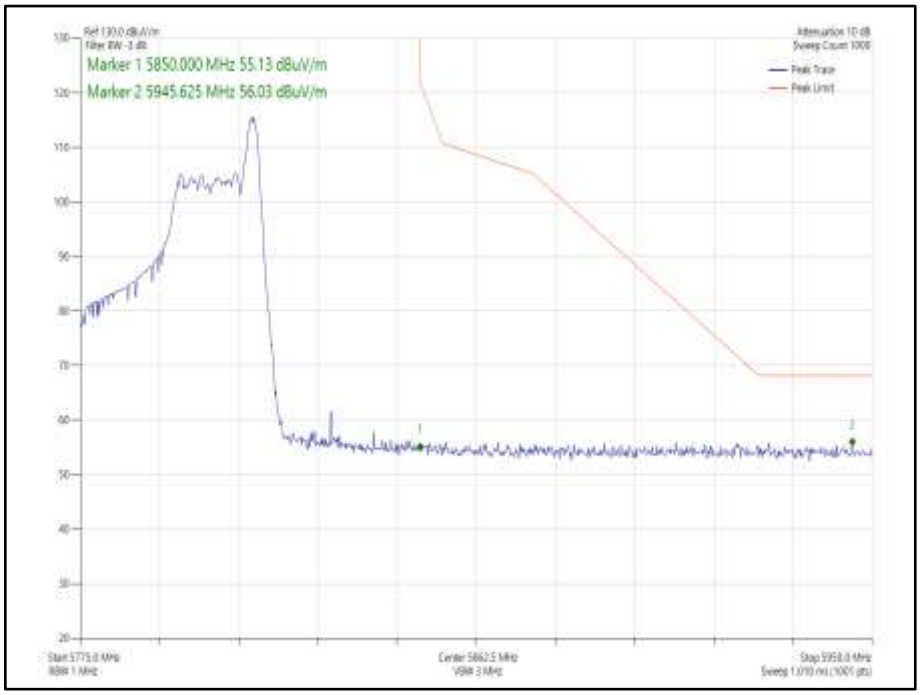

Figure 967 - 802.11ax HE40 SDM, Cores 0-1, 26-17 - 5795 MHz Band Edge Frequency 5850 MHz

Mode	Data Rate /MCS	Resource size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBuV/m
802.11ac VHT80, Core 0	MCS7x1	-	-	5530	5470	62.90
802.11ac VHT80, Core 0	MCS7x1	-	-	5610	5725	62.21
802.11ac VHT80, Core 0	MCS7x1	-	-	5775	5725	58.74
802.11ac VHT80, Core 0	MCS7x1	-	-	5775	5850	55.97
802.11ax HE80, Core 0	MCS7x1	SU	-	5530	5470	61.70
802.11ax HE80, Core 0	MCS7x1	52	37	5530	5470	57.06
802.11ax HE80, Core 0	MCS7x1	SU	-	5610	5725	63.02
802.11ax HE80, Core 0	MCS7x1	52	52	5610	5725	56.73
802.11ax HE80, Core 0	MCS7x1	SU	-	5775	5725	56.33
802.11ax HE80, Core 0	MCS7x1	26	0	5775	5725	55.80
802.11ax HE80, Core 0	MCS7x1	SU	-	5775	5850	56.70
802.11ax HE80, Core 0	MCS7x1	26	36	5775	5850	56.42

Table 633 - SISO Authorised Band Edge Results

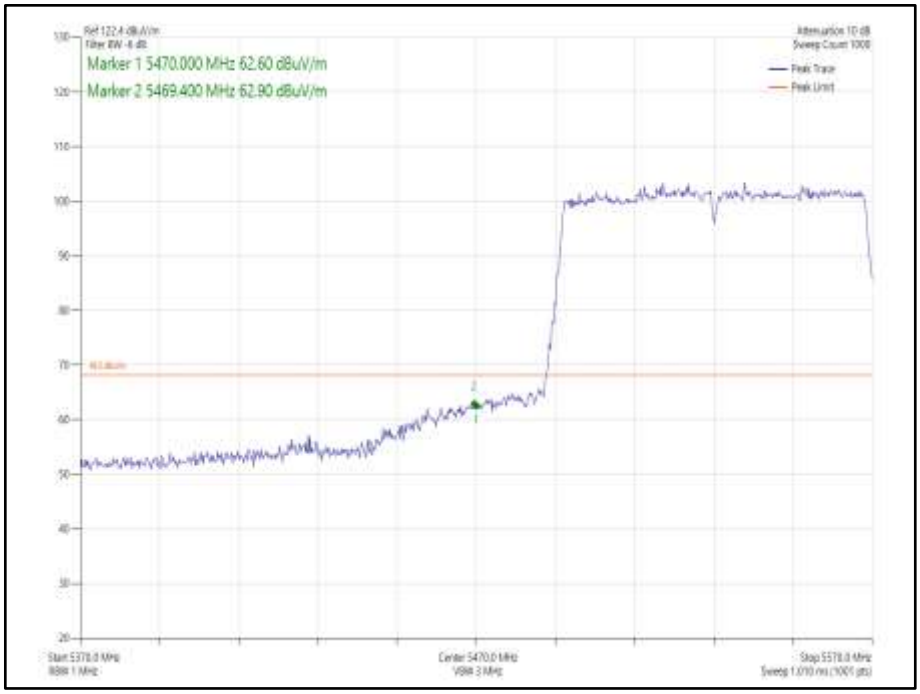

Figure 968 - 802.11ac VHT80 Core 0 - 5530 MHz
Band Edge Frequency 5470 MHz

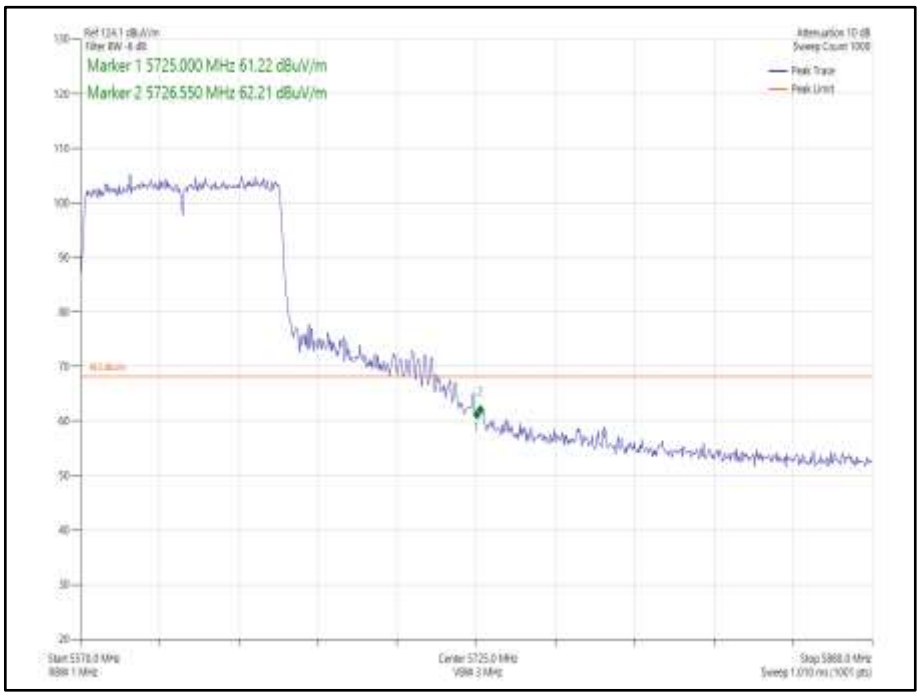

Figure 969 - 802.11ac VHT80 Core 0 - 5610 MHz
Band Edge Frequency 5725 MHz

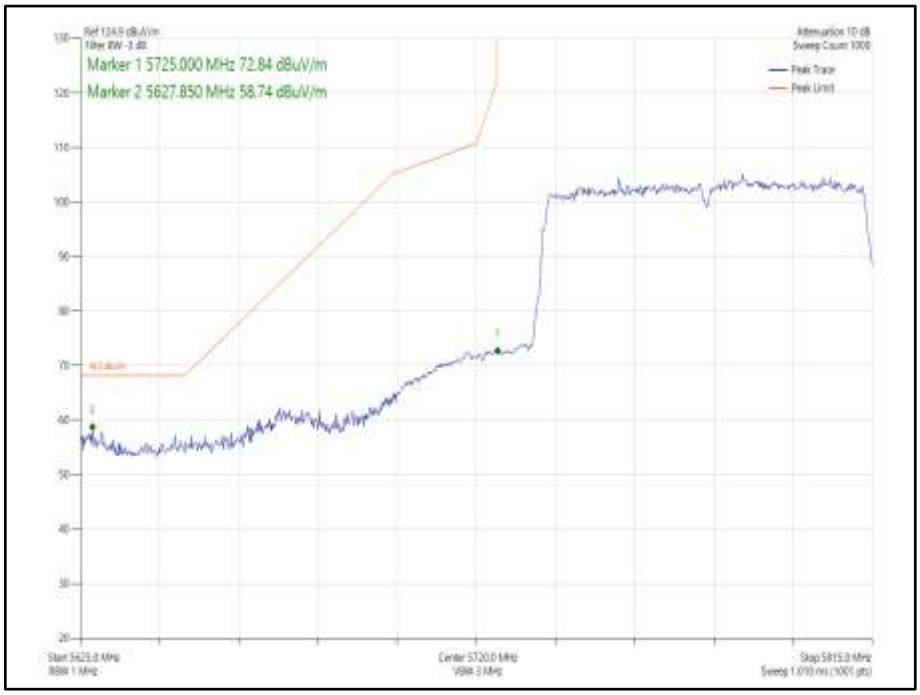

Figure 970 - 802.11ac VHT80 Core 0 - 5775 MHz
Band Edge Frequency 5725 MHz

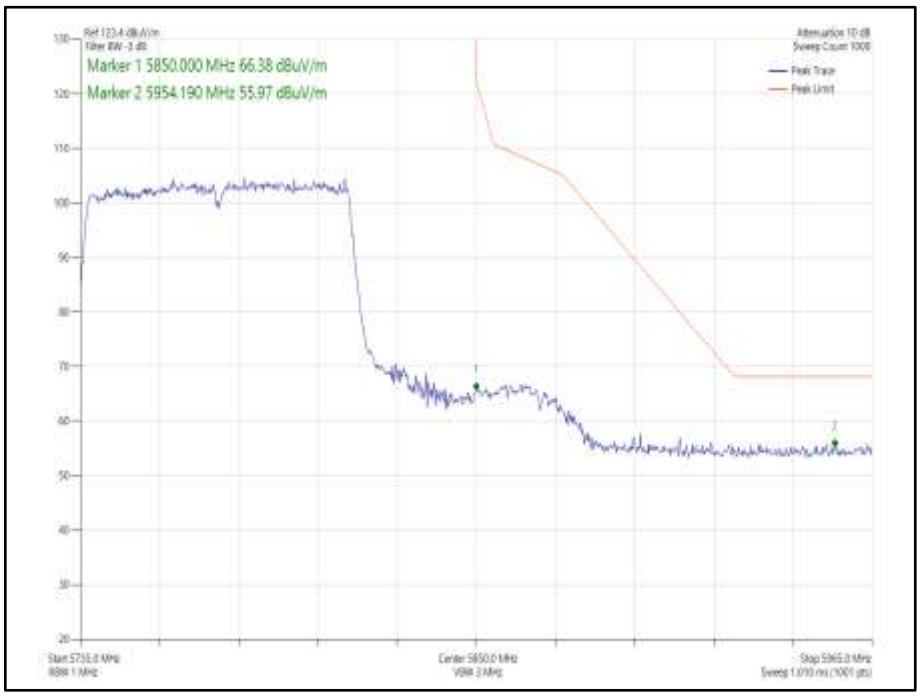

Figure 971 - 802.11ac VHT80 Core 0 - 5775 MHz
Band Edge Frequency 5850 MHz

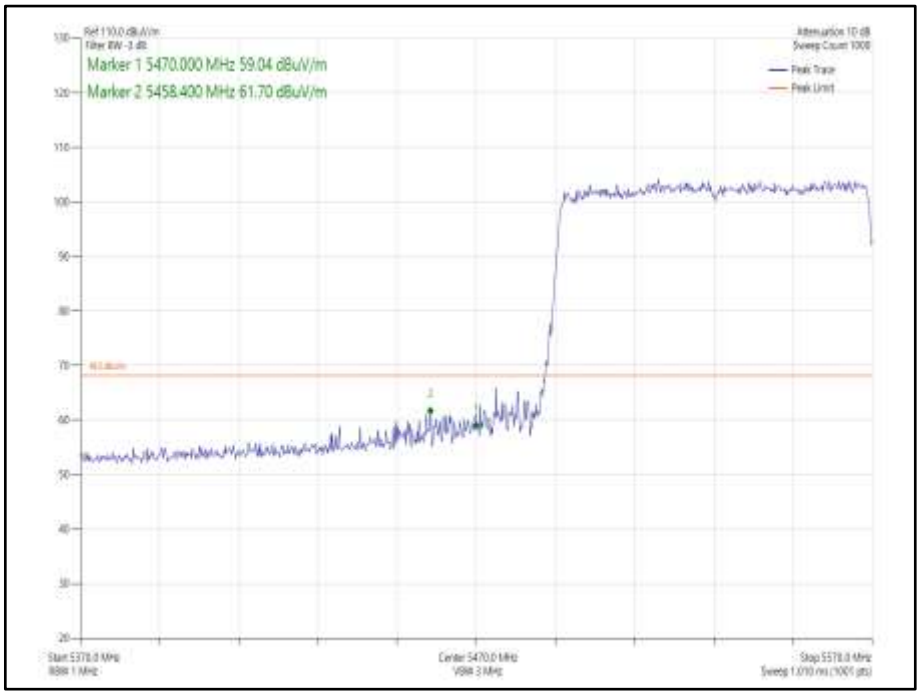

Figure 972 - 802.11ax HE80 Core 0 SU - 5530 MHz
Band Edge Frequency 5470 MHz

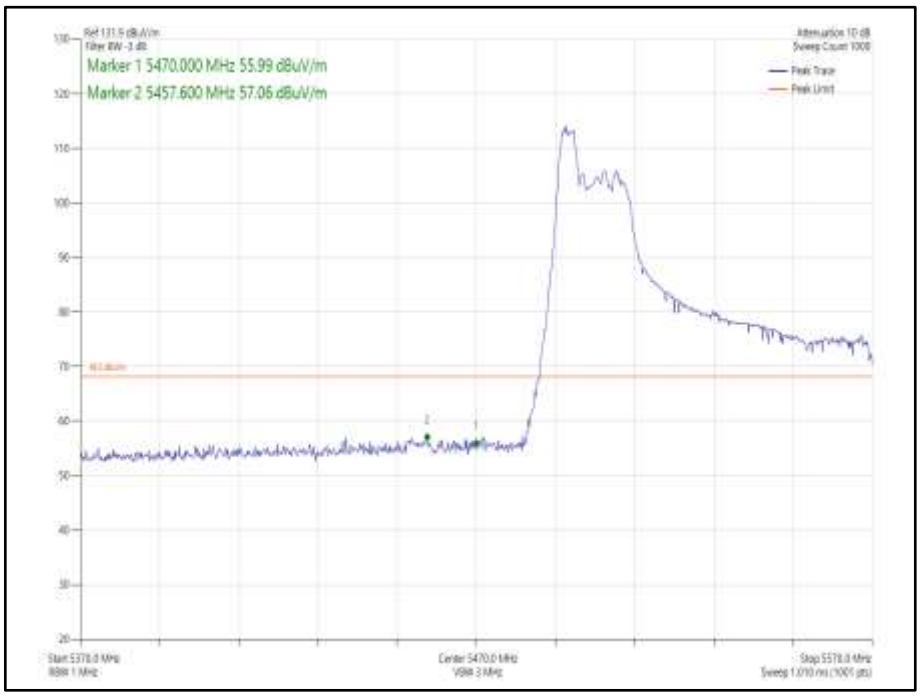

Figure 973 - 802.11ax HE80 Core 0 52-37- 5530 MHz
Band Edge Frequency 5470 MHz

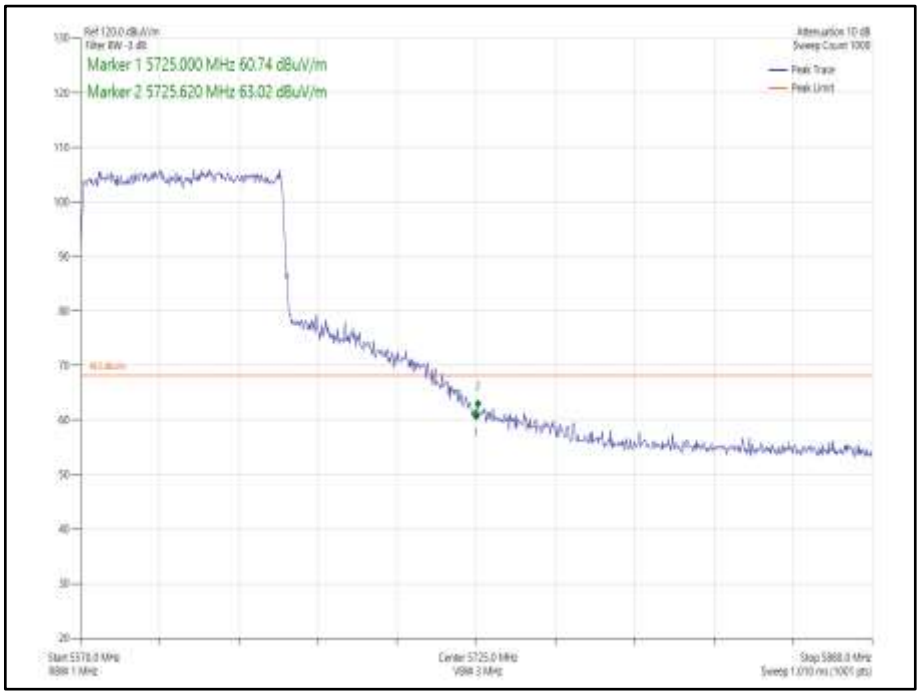

Figure 974 - 802.11ax HE80 Core 0 SU - 5610 MHz
Band Edge Frequency 5725 MHz

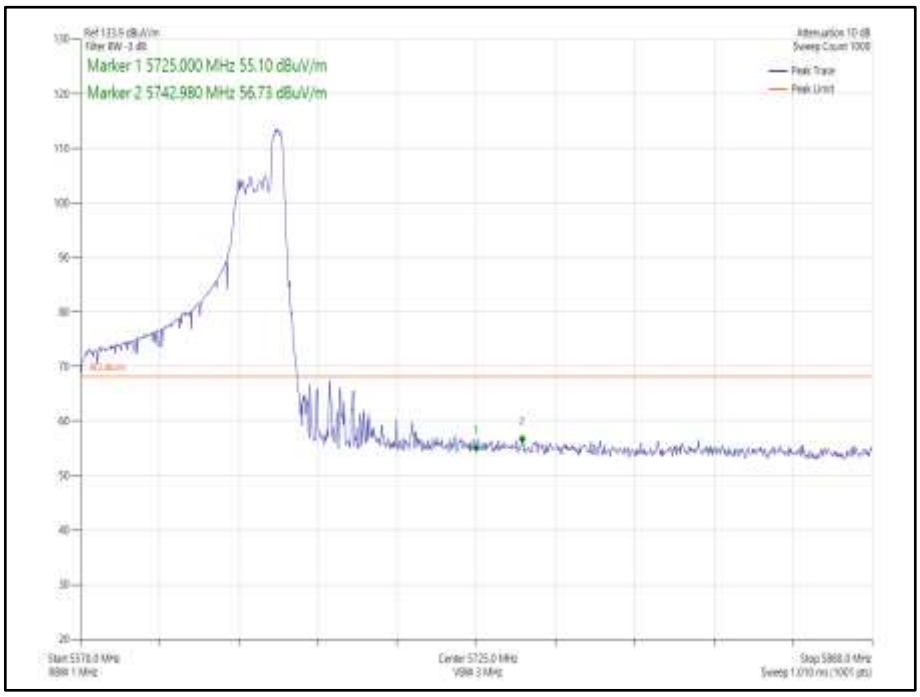

Figure 975 - 802.11ax HE80 Core 0 52-52 - 5610 MHz
Band Edge Frequency 5725 MHz

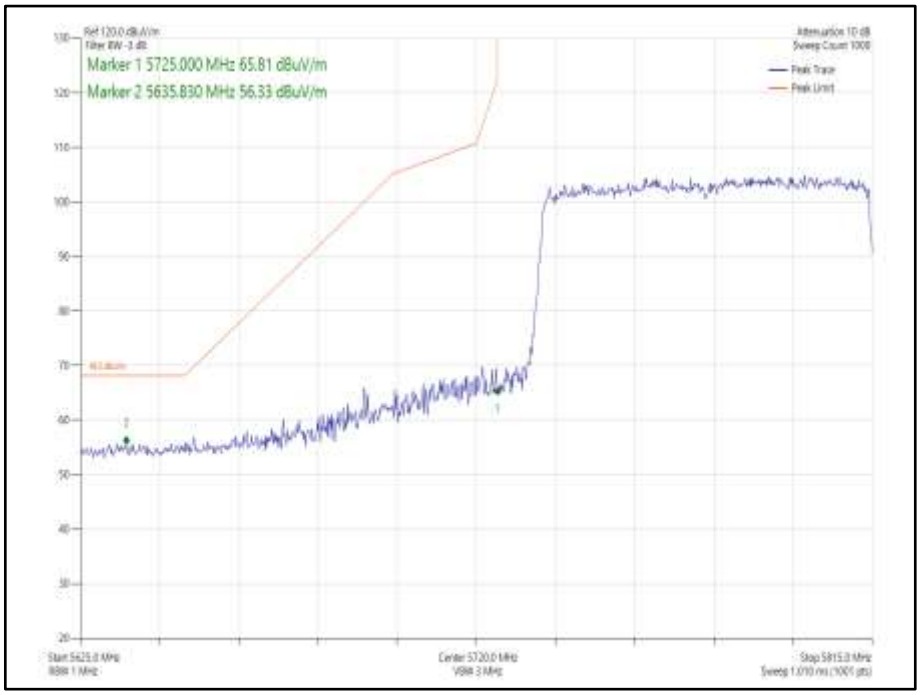

Figure 976 - 802.11ax HE80 Core 0 SU - 5775 MHz
Band Edge Frequency 5725 MHz

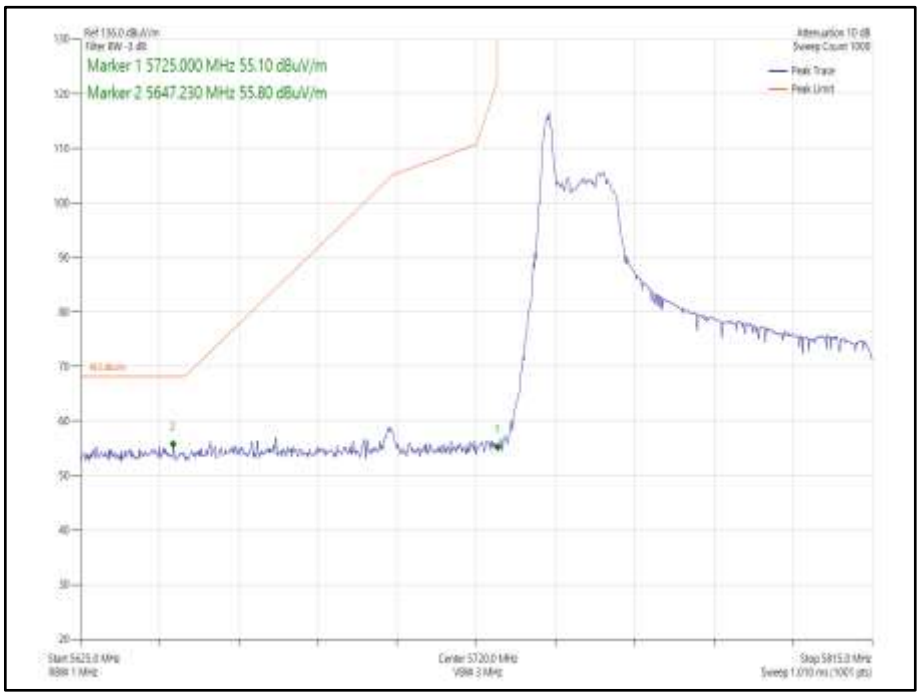

Figure 977 - 802.11ax HE80 Core 0 26-0 - 5775 MHz
Band Edge Frequency 5725 MHz

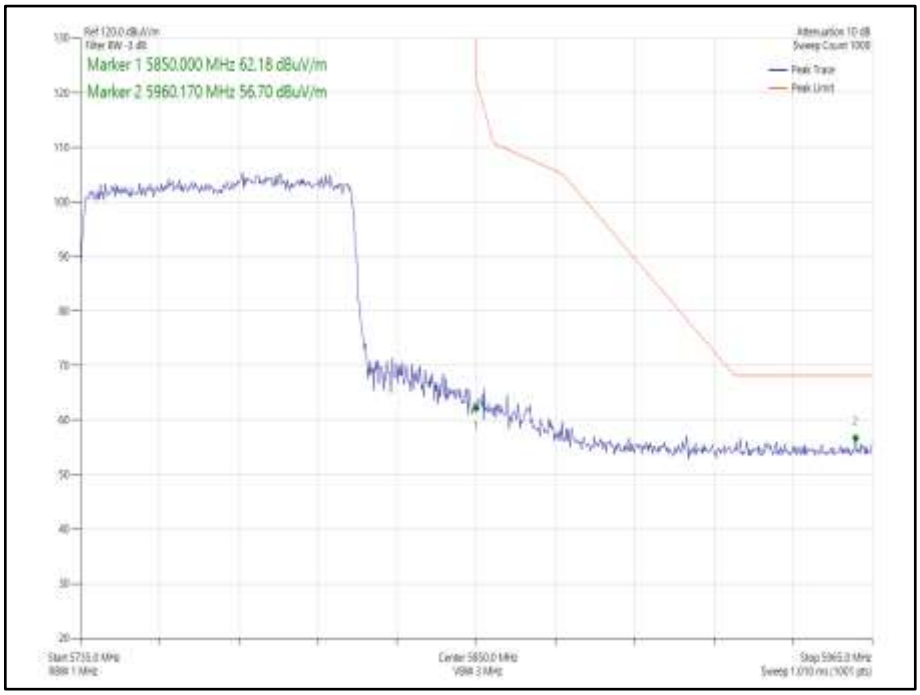

Figure 978 - 802.11ax HE80 Core 0 SU - 5775 MHz
Band Edge Frequency 5850 MHz

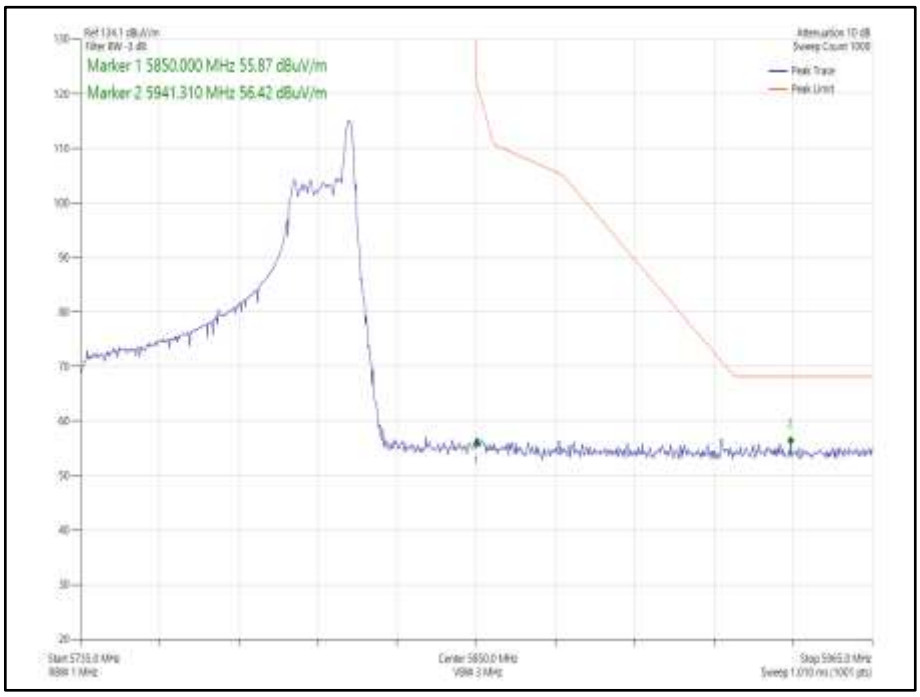

Figure 979 - 802.11ax HE80 Core 0 26-36 - 5775 MHz
Band Edge Frequency 5850 MHz

Mode	Data Rate/ MCS	Resource size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBuV/m)
802.11ac VHT80 CDD, Cores 0-1	MCS7x1	-	-	5530	5470	62.44
802.11ac VHT80 SDM, Cores 0-1	MCS7x2	-	-	5530	5470	59.19
802.11ax HE80 CDD, Cores 0-1	MCS7x1	SU	-	5530	5470	57.70
802.11ax HE80 CDD, Cores 0-1	MCS7x1	52	37	5530	5470	55.59
802.11ax HE80 SDM, Cores 0-1	MCS7x2	SU	-	5530	5470	56.95
802.11ax HE80 SDM, Cores 0-1	MCS7x2	52	37	5530	5470	57.20
802.11ac VHT80 CDD, Cores 0-1	MCS7x1	-	-	5610	5725	60.02
802.11ac VHT80 SDM, Cores 0-1	MCS7x2	-	-	5610	5725	58.21
802.11ax HE80 CDD, Cores 0-1	MCS7x1	SU	-	5610	5725	61.70
802.11ax HE80 CDD, Cores 0-1	MCS7x1	52	52	5610	5725	56.21
802.11ax HE80 SDM, Cores 0-1	MCS7x2	SU	-	5610	5725	60.11
802.11ax HE80 SDM, Cores 0-1	MCS7x2	52	52	5610	5725	56.61
802.11ac VHT80 CDD, Cores 0-1	MCS7x1	-	-	5775	5725	58.81
802.11ac VHT80 SDM, Cores 0-1	MCS7x2	-	-	5775	5725	56.96
802.11ax HE80 CDD, Cores 0-1	MCS7x1	SU	-	5775	5725	56.60
802.11ax HE80 CDD, Cores 0-1	MCS7x1	26	0	5775	5725	55.46
802.11ax HE80 SDM, Cores 0-1	MCS7x2	SU	-	5775	5725	56.33
802.11ax HE80 SDM, Cores 0-1	MCS7x2	26	0	5775	5725	55.56
802.11ac VHT80 CDD, Cores 0-1	MCS7x1	-	-	5775	5850	56.59
802.11ac VHT80 SDM, Cores 0-1	MCS7x2	-	-	5775	5850	55.80
802.11ax HE80 CDD, Cores 0-1	MCS7x1	SU	-	5775	5850	56.22
802.11ax HE80 CDD, Cores 0-1	MCS7x1	26	36	5775	5850	56.08
802.11ax HE80 SDM, Cores 0-1	MCS7x2	SU	-	5775	5850	56.70
802.11ax HE80 SDM, Cores 0-1	MCS7x2	26	36	5775	5850	56.90

Table 634 - MIMO 2TX Authorised Band Edge Results

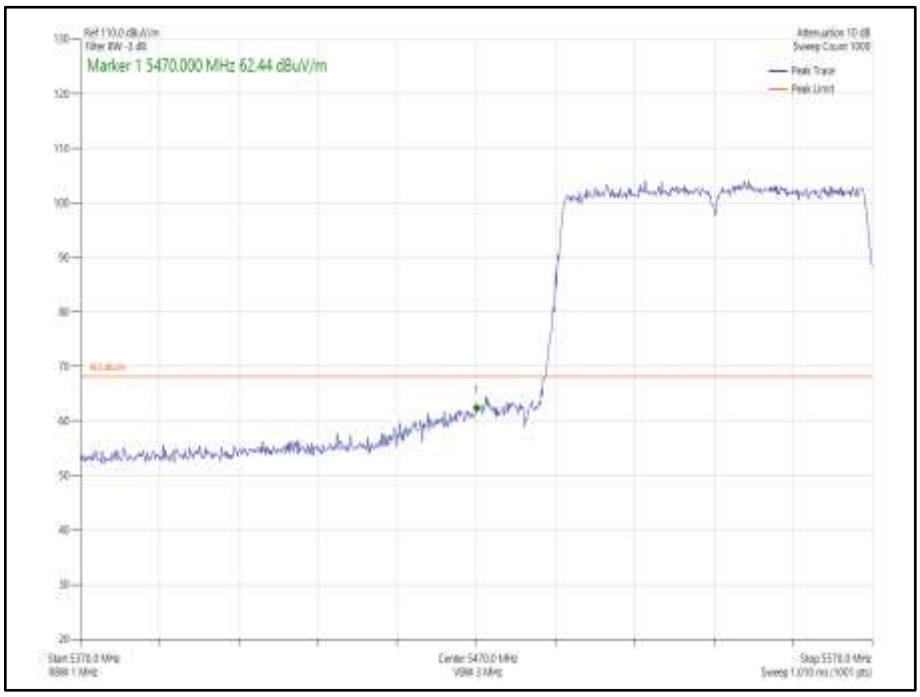

Figure 980 - 802.11ac VHT80 CDD, Cores 0-1 - 5530 MHz Band Edge Frequency 5470 MHz

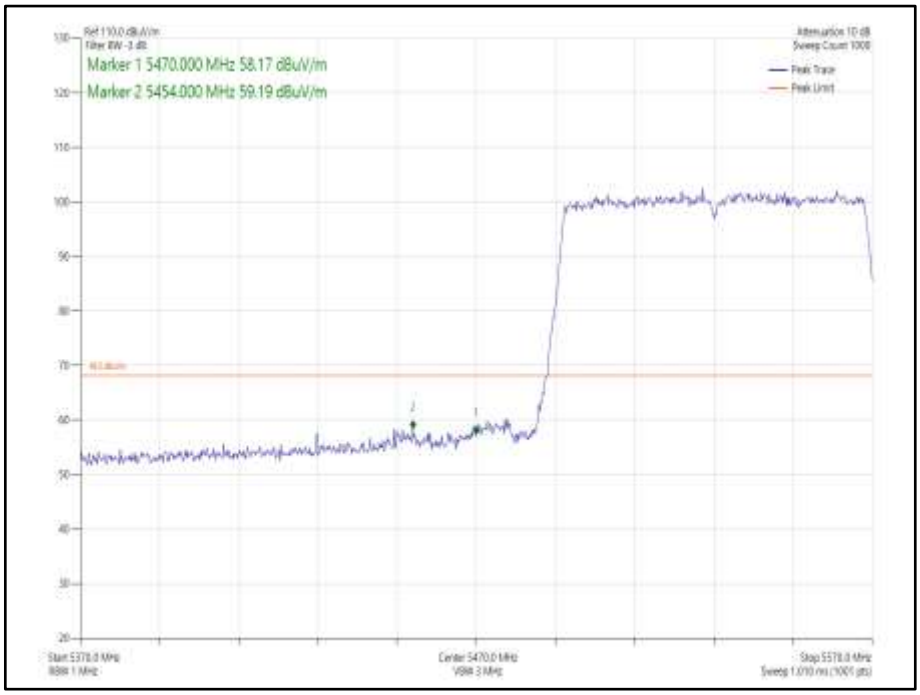

Figure 981 - 802.11ac VHT80 SDM, Cores 0-1 - 5530 MHz Band Edge Frequency 5470 MHz

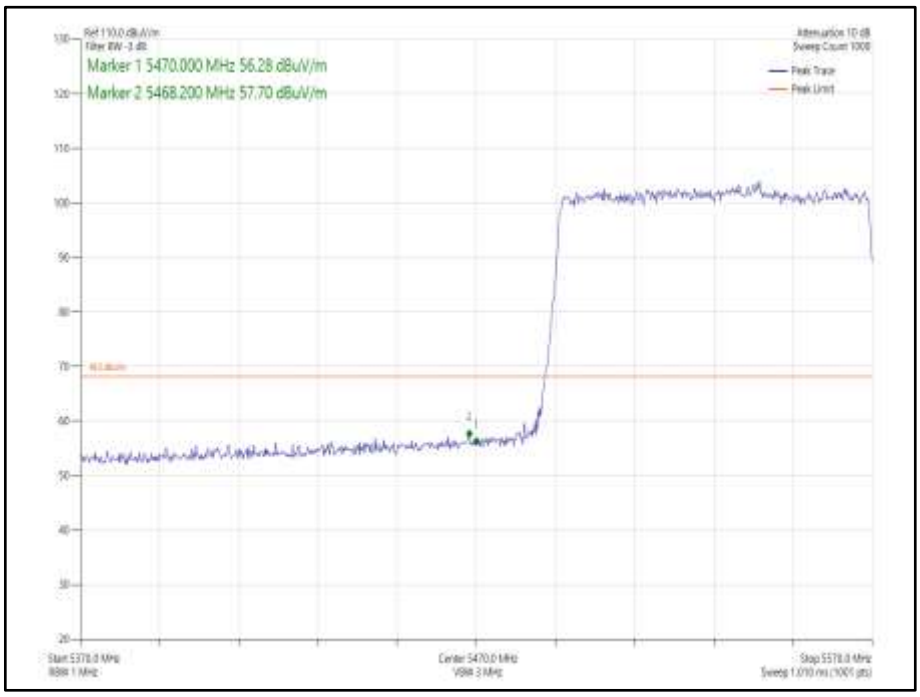

Figure 982 - 802.11ax HE80 CDD, Cores 0-1, SU - 5530 MHz Band Edge Frequency 5470 MHz

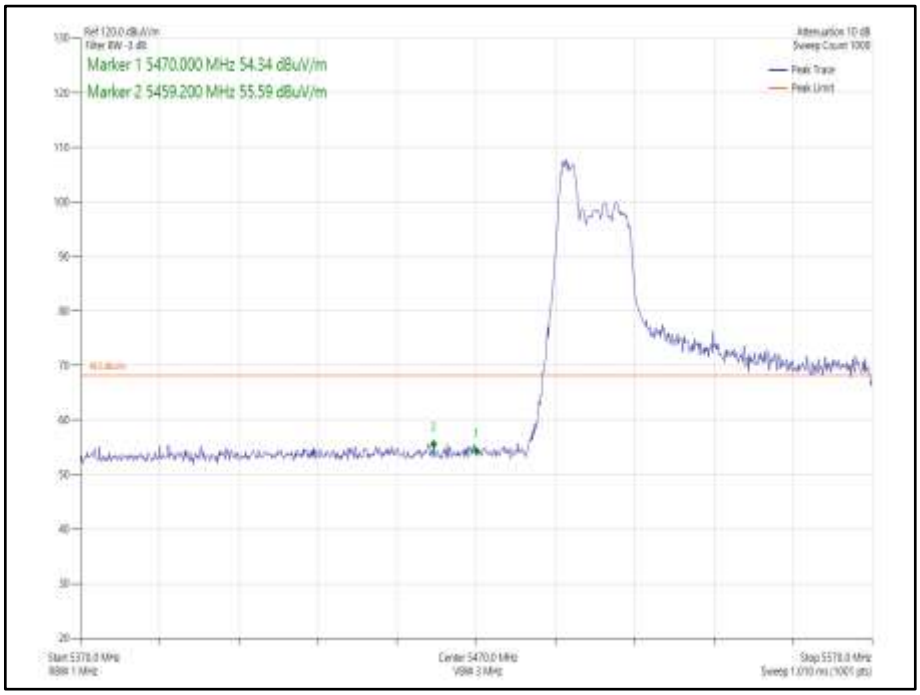

Figure 983 - 802.11ax HE80 CDD, Cores 0-1, 52-37- 5530 MHz Band Edge Frequency 5470 MHz

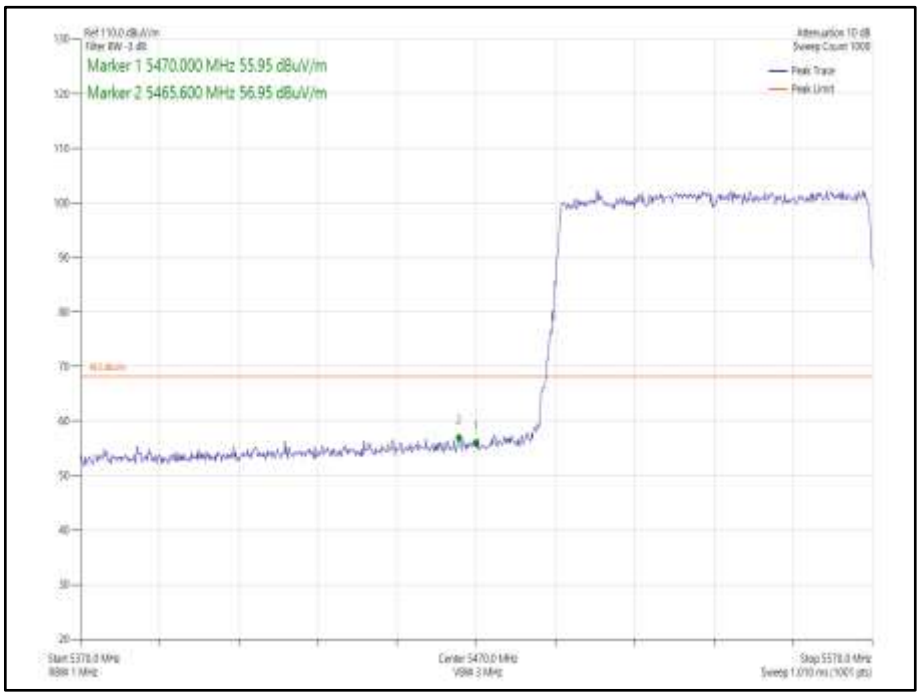

Figure 984 - 802.11ax HE80 SDM, Cores 0-1, SU - 5530 MHz Band Edge Frequency 5470 MHz

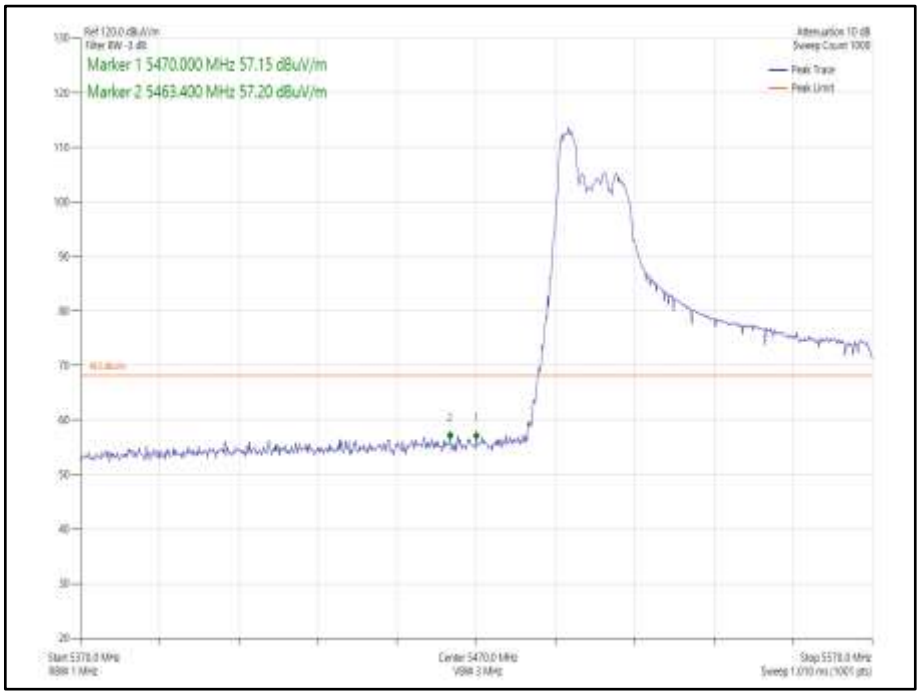

Figure 985 - 802.11ax HE80 SDM, Cores 0-1, 52-37 - 5530 MHz Band Edge Frequency 5470 MHz

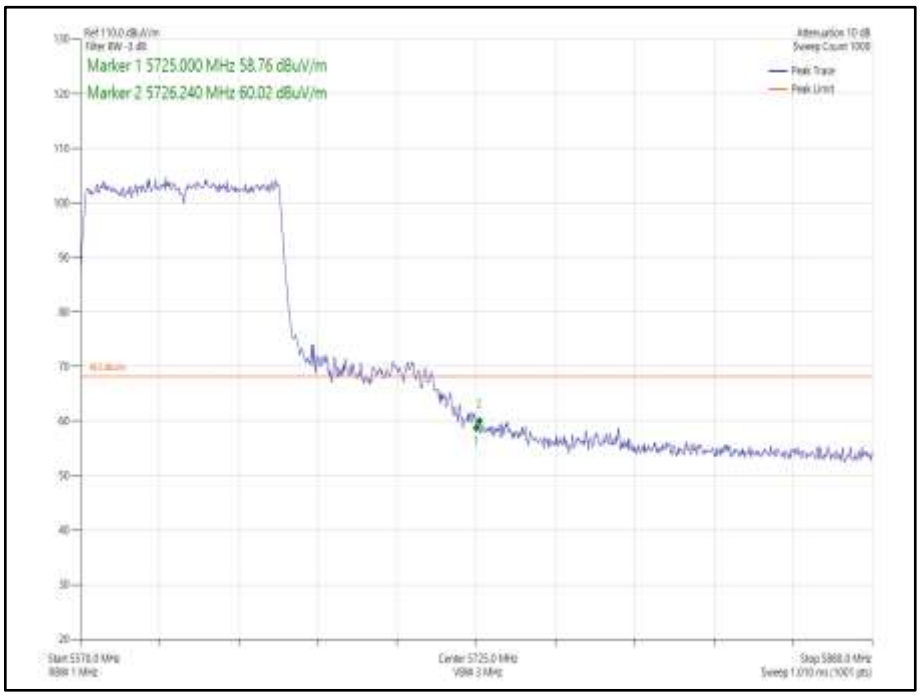

Figure 986 - 802.11ac VHT80 CDD, Cores 0-1 - 5610 MHz
Band Edge Frequency 5725 MHz

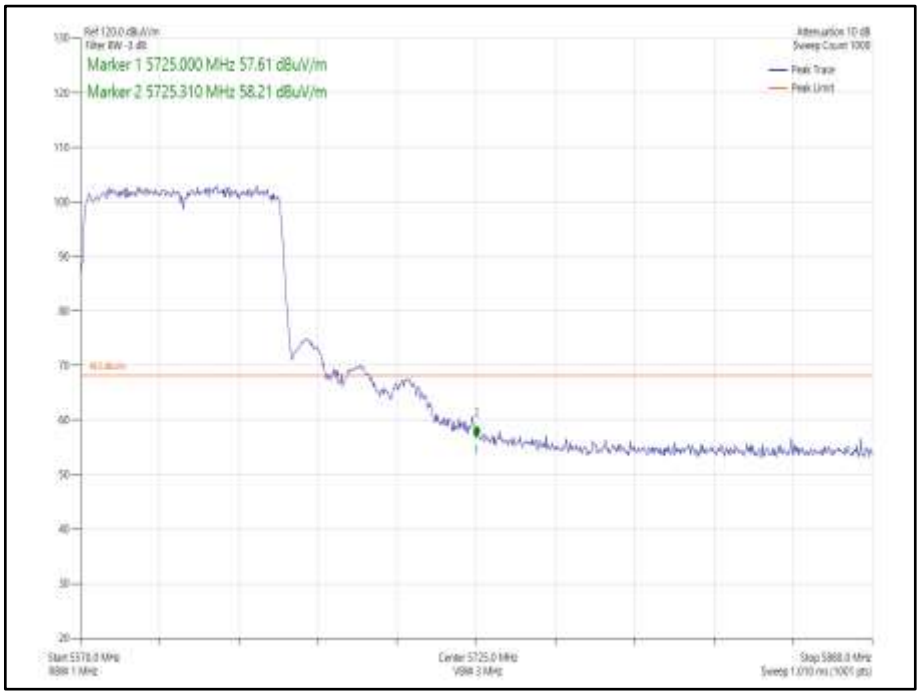

Figure 987 - 802.11ac VHT80 SDM, Cores 0-1 - 5610 MHz
Band Edge Frequency 5725 MHz

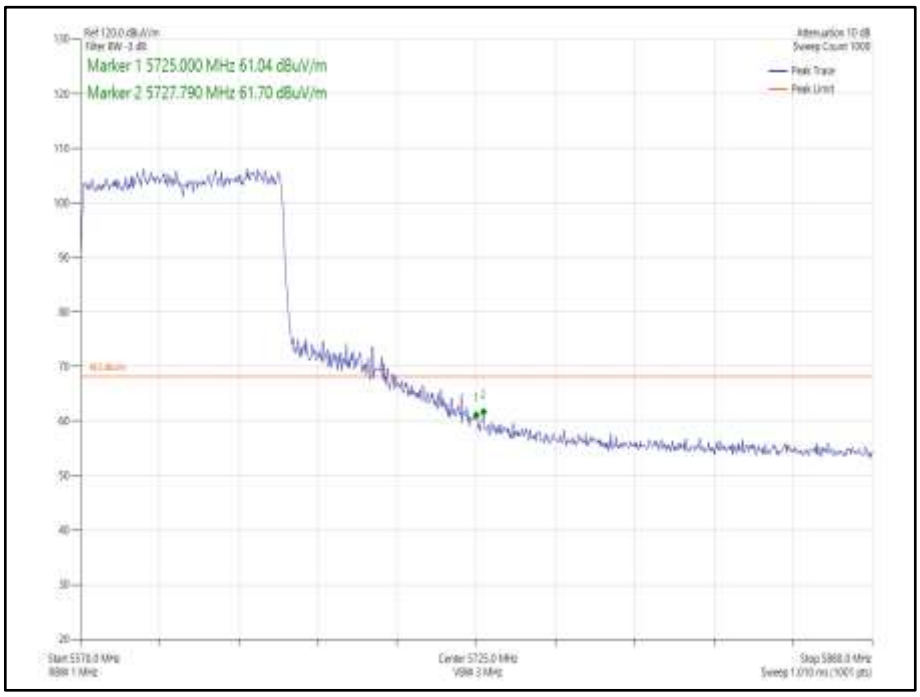

Figure 988 - 802.11ax HE80 CDD, Cores 0-1, SU - 5610 MHz Band Edge Frequency 5725 MHz

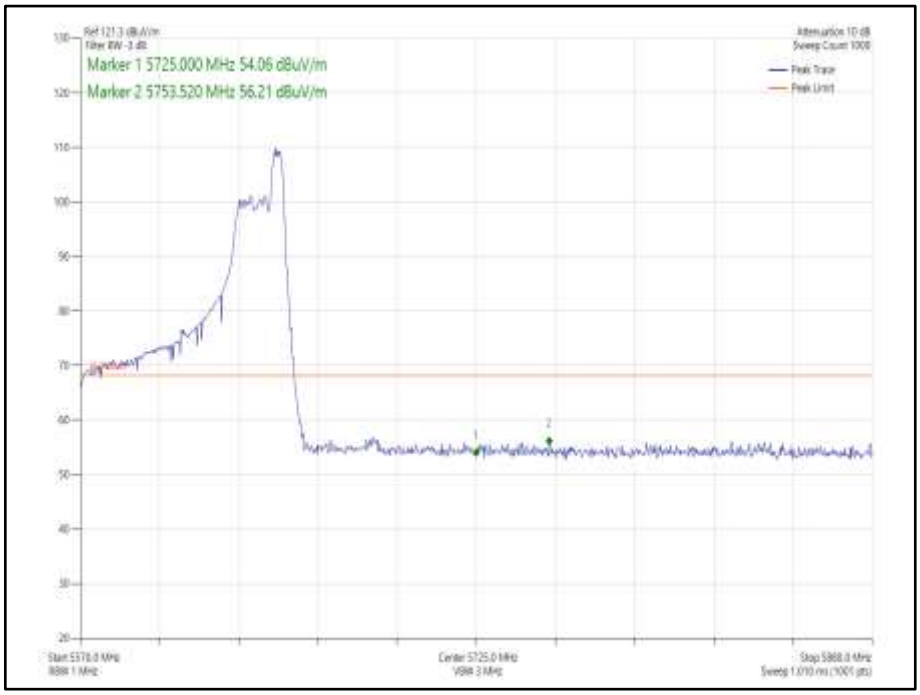

Figure 989 - 802.11ax HE80 CDD, Cores 0-1, 52-52- 5610 MHz Band Edge Frequency 5725 MHz

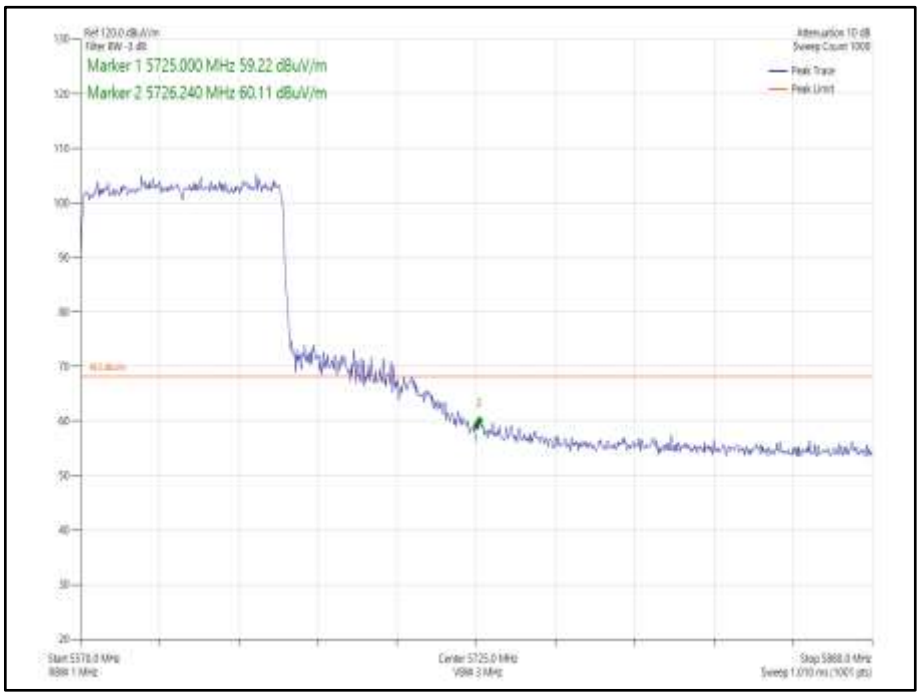

Figure 990 - 802.11ax HE80 SDM, Cores 0-1, SU - 5610 MHz Band Edge Frequency 5725 MHz

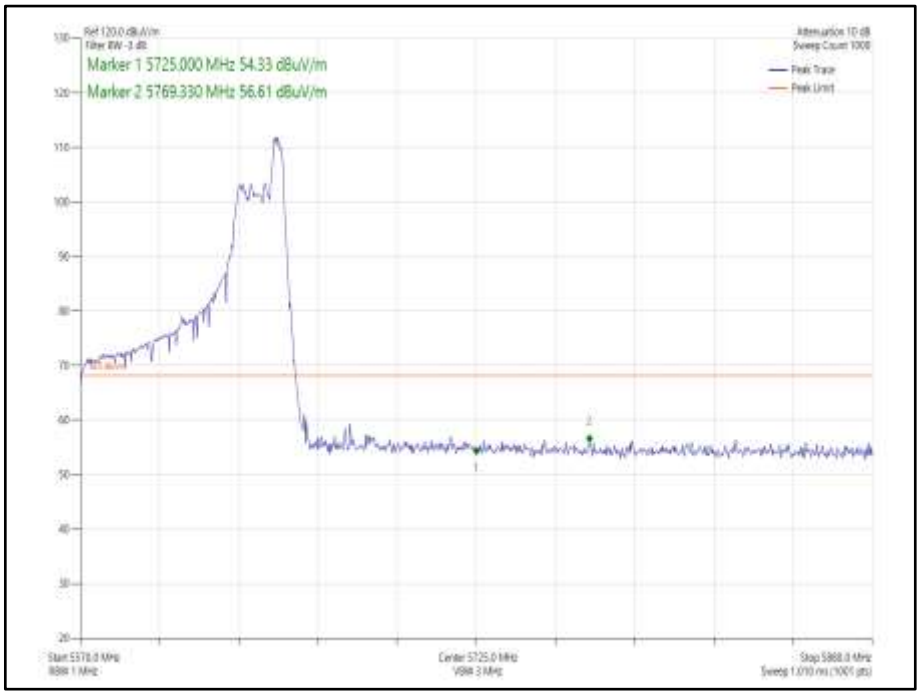

Figure 991 - 802.11ax HE80 SDM, Cores 0-1, 26-36 - 5610 MHz Band Edge Frequency 5725 MHz

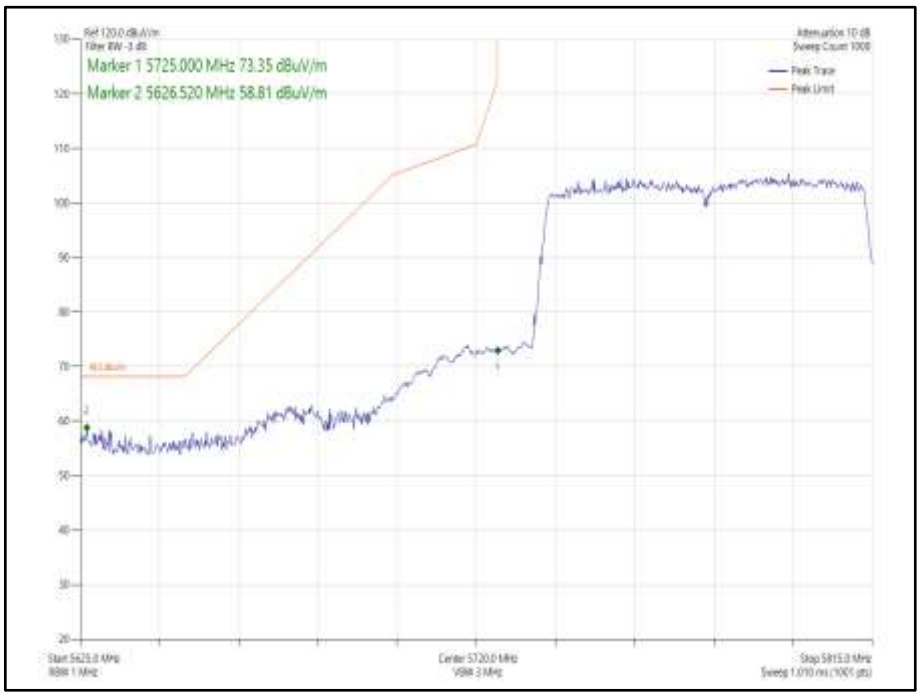

Figure 992 - 802.11ac VHT80 CDD, Cores 0-1 - 5775 MHz Band Edge Frequency 5725 MHz

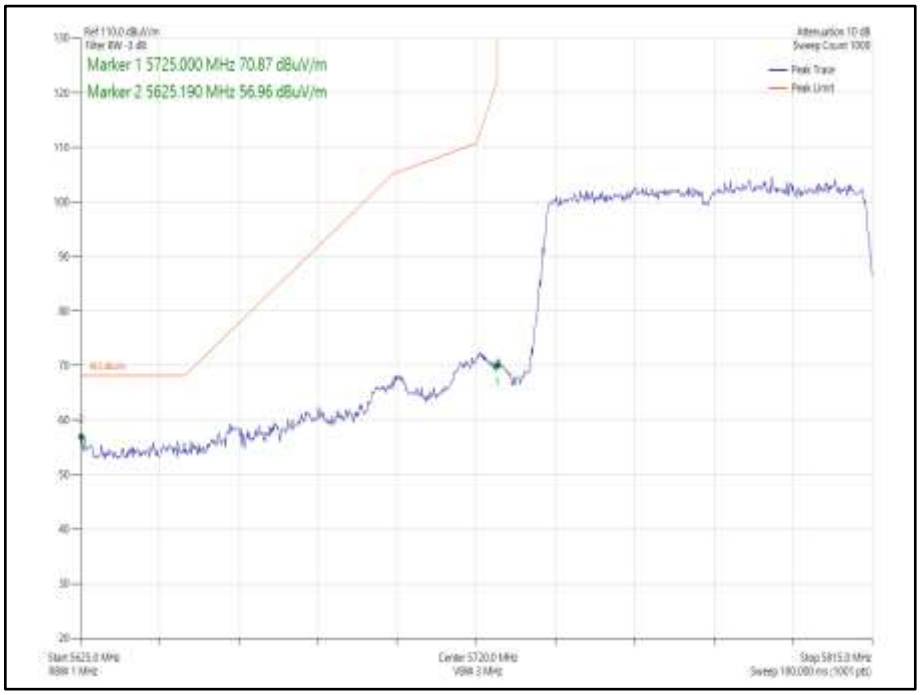

Figure 993 - 802.11ac VHT80 SDM, Cores 0-1 - 5775 MHz Band Edge Frequency 5725 MHz

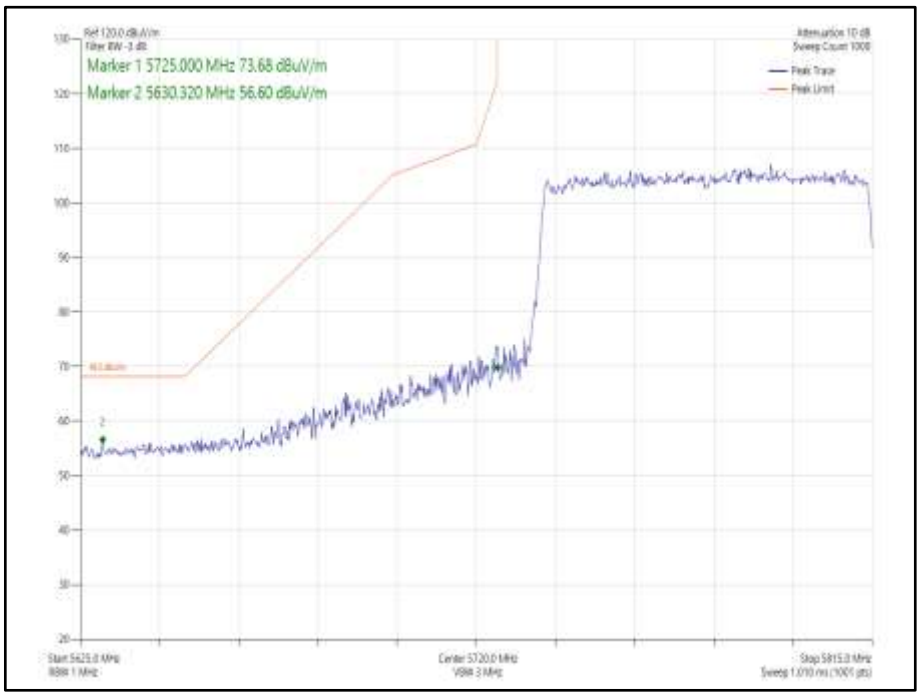

Figure 994 - 802.11ax HE80 CDD, Cores 0-1, SU - 5775 MHz Band Edge Frequency 5725 MHz

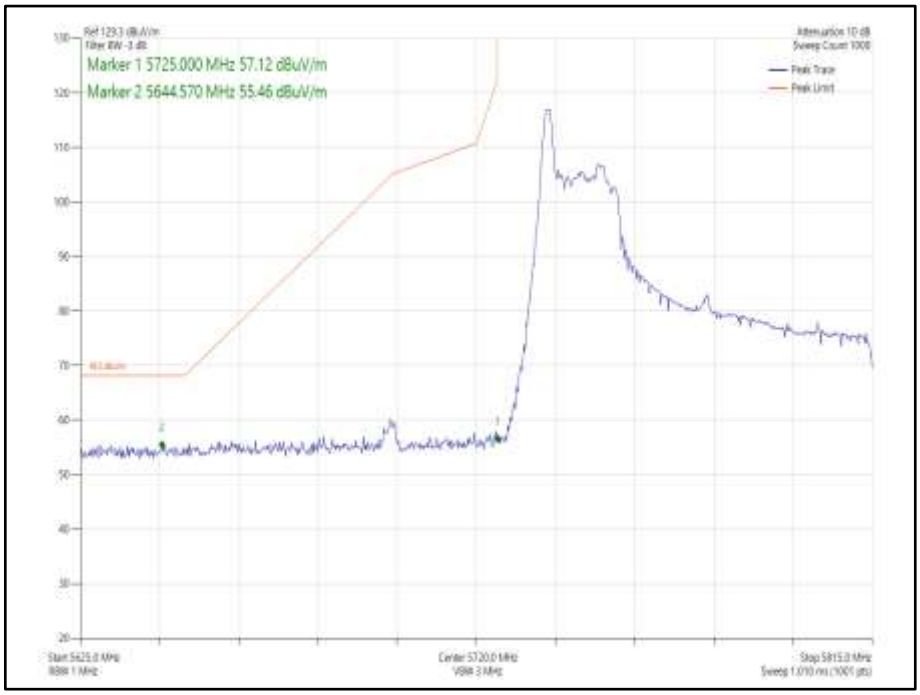

Figure 995 - 802.11ax HE80 CDD, Cores 0-1, 26-0 - 5775 MHz Band Edge Frequency 5725 MHz

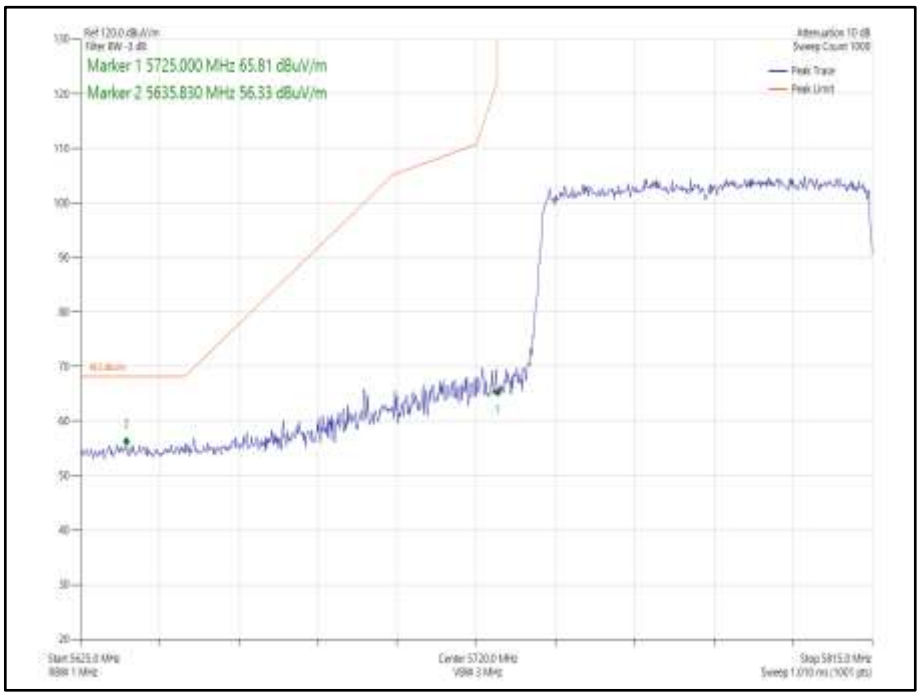

Figure 996 - 802.11ax HE80 SDM, Cores 0-1, SU - 5775 MHz Band Edge Frequency 5725 MHz

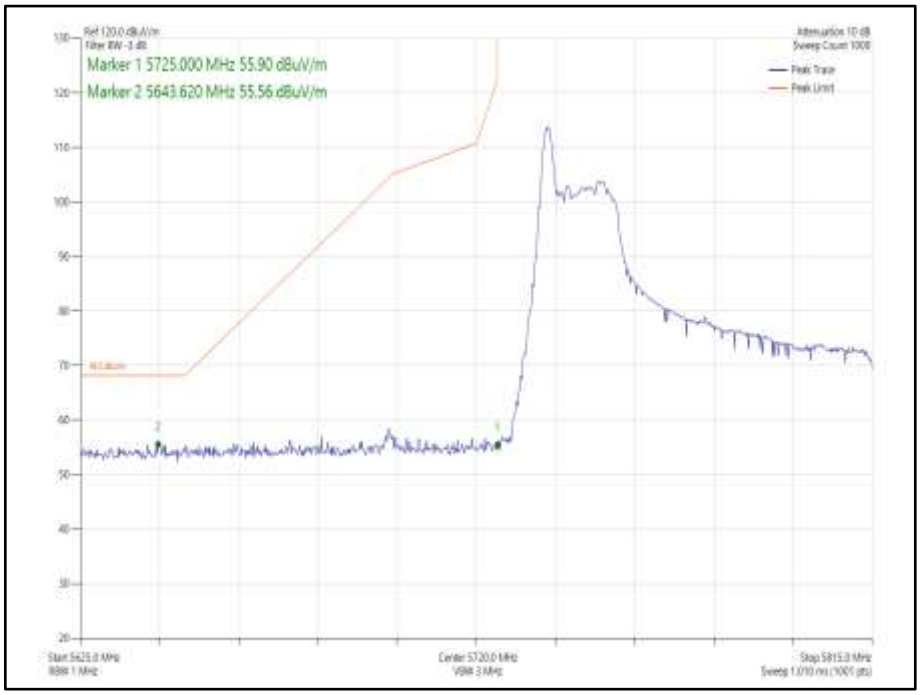

Figure 997 - 802.11ax HE80 SDM, Cores 0-1, 26-0 - 5775 MHz Band Edge Frequency 5725 MHz

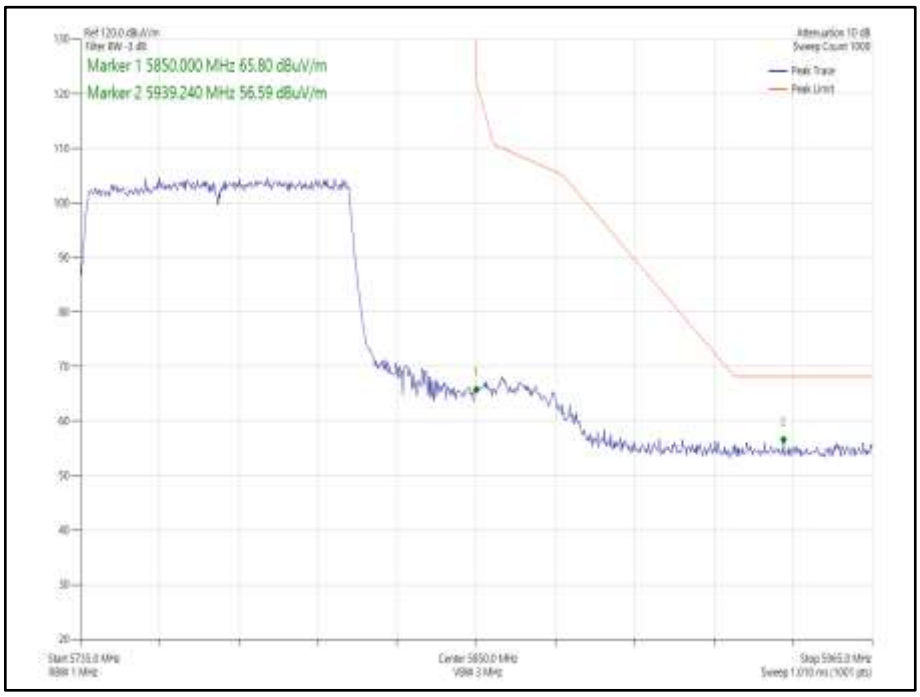

Figure 998 - 802.11ac VHT80 CDD, Cores 0-1 - 5775 MHz
Band Edge Frequency 5850 MHz

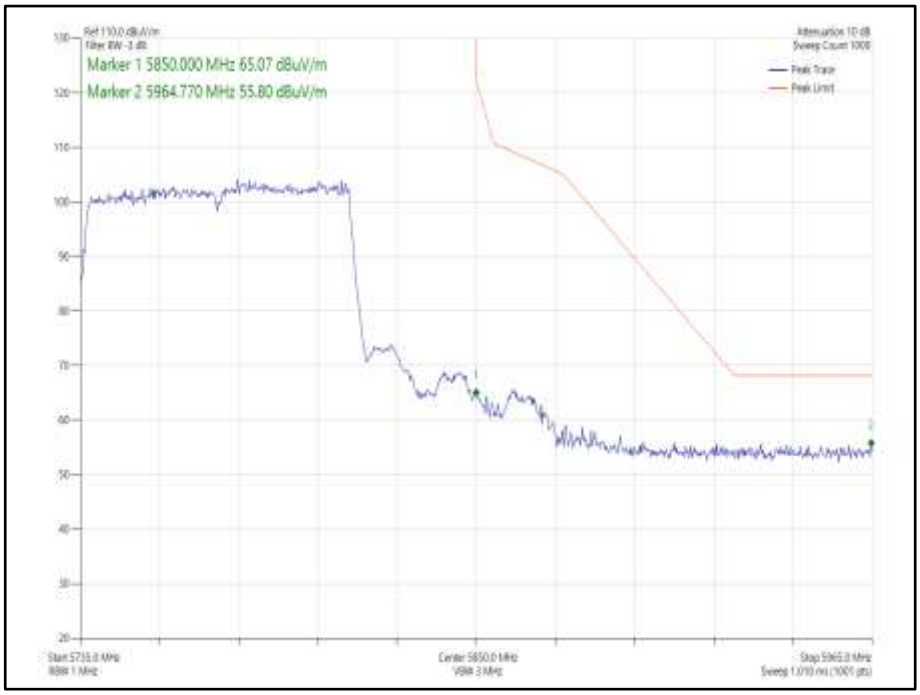

Figure 999 - 802.11ac VHT80 SDM, Cores 0-1 - 5775 MHz
Band Edge Frequency 5850 MHz

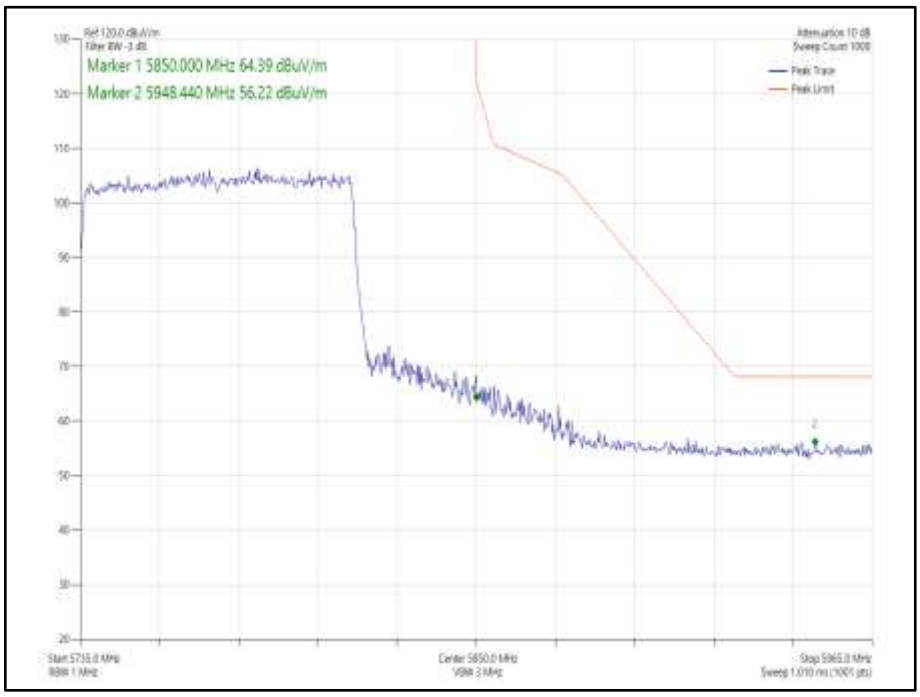

Figure 1000 - 802.11ax HE80 CDD, Cores 0-1, SU - 5775 MHz Band Edge Frequency 5850 MHz

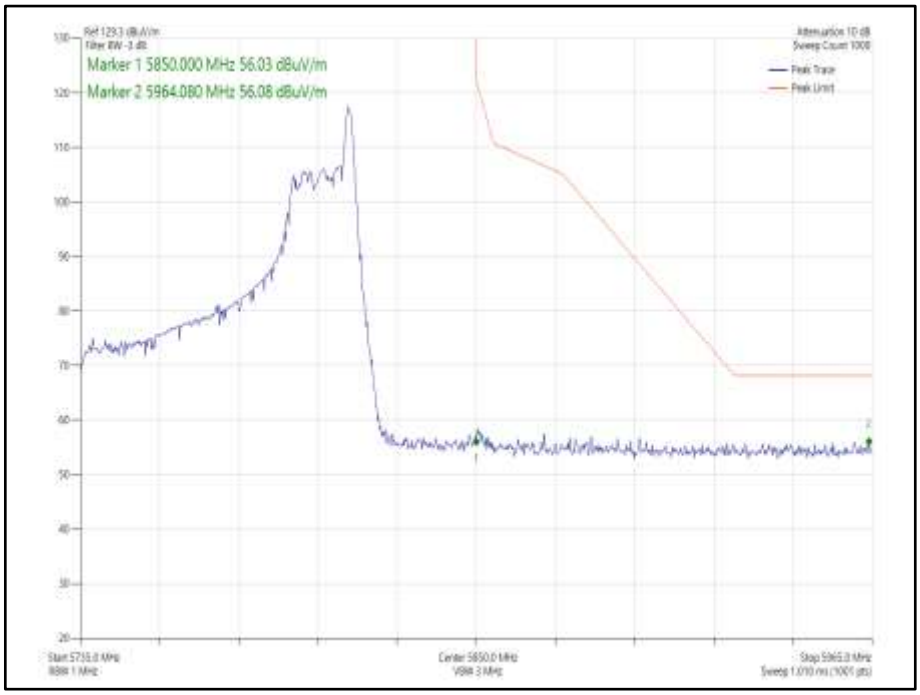

Figure 1001 - 802.11ax HE80 CDD, Cores 0-1, 26-36 - 5775 MHz Band Edge Frequency 5850 MHz

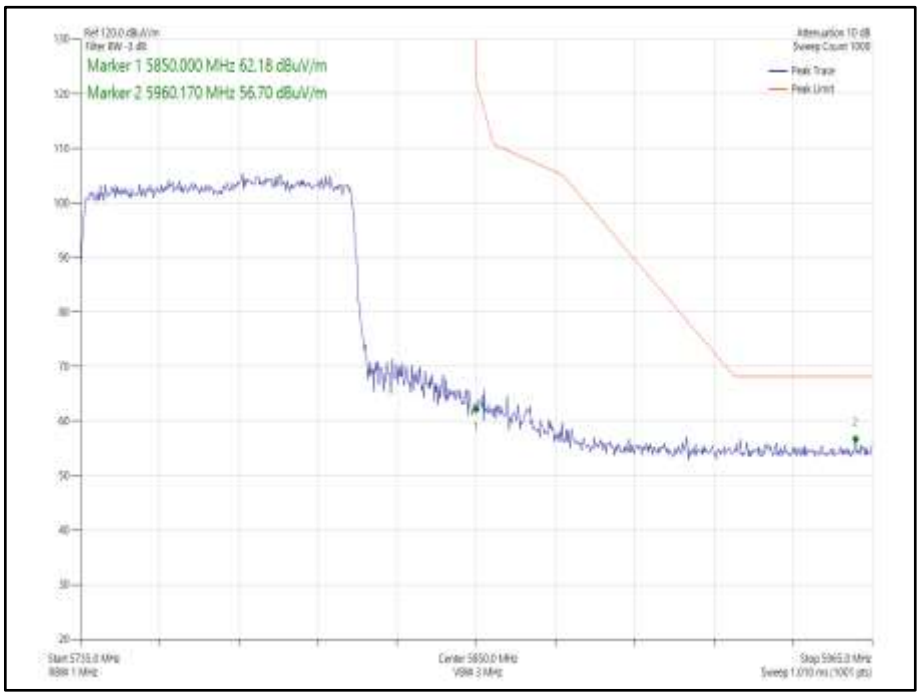

Figure 1002 - 802.11ax HE80 SDM, Cores 0-1, SU - 5775 MHz Band Edge Frequency 5850 MHz

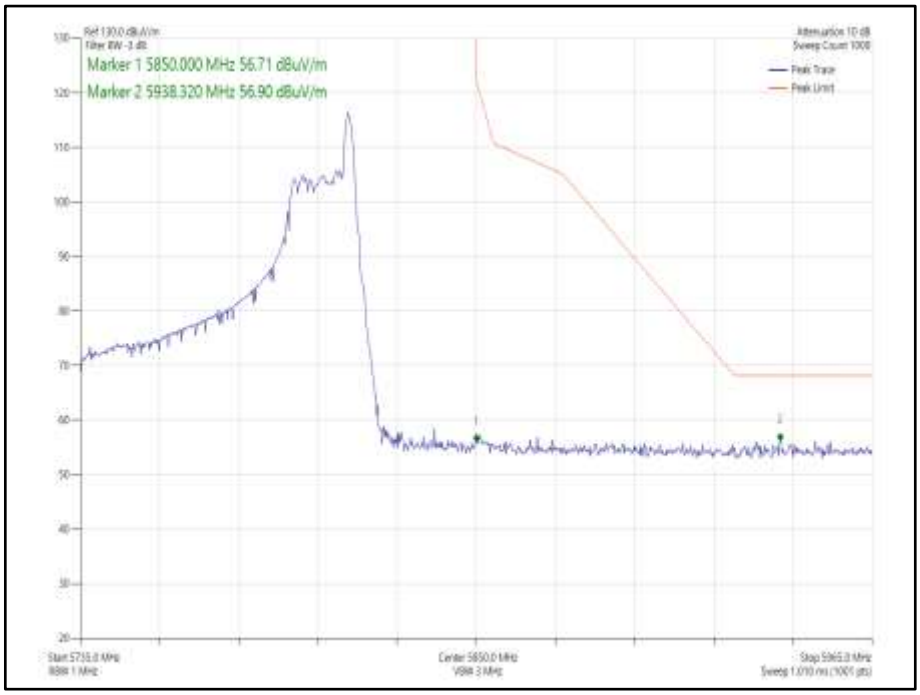

Figure 1003 - 802.11ax HE80 SDM, Cores 0-1, 26-36 - 5775 MHz Band Edge Frequency 5850 MHz

FCC 47 CFR Part 15E, Limit Clause 15.407(b)(1)(2)(3)(4)

For transmitters operating in the 5.15-5.25 GHz band: ≤-27 dBm/MHz outside 5150-5350 MHz.

For transmitters operating in the 5.25-5.35 GHz band: ≤-27 dBm/MHz outside 5150-5350 MHz.

For transmitters operating in the 5.47-5.725 GHz band: ≤-27 dBm/MHz outside 5470-5725 MHz

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

ISED RSS-247, Limit Clause 6.2.1.2, 6.2.2.2, 6.2.3.2 and 6.2.4.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB.

For transmitters with operating frequencies in the bands 5250-5350 MHz and 5470-5725 MHz, all emissions outside the band 5250-5350 MHz and 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.

Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;

b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;

c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and

d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

2.4.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EMI Test Receiver	Rohde & Schwarz	ESW44	5084	12	04-Feb-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5102	12	12-Oct-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5103	12	12-Oct-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5104	12	10-Dec-2021
EmX Emissions Software	TUV SUD	V2.1.0	5125	-	Software
Screened Room (11)	Rainford	Rainford	5136	36	01-Nov-2021
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
Turntable	Maturo	TT 15WF	5160	-	TU
Horn Antenna (1-10GHz)	Schwarzbeck	BBHA 9120 B	5215	12	10-Mar-2021
Preamp 1 - 26.5 GHz	Agilent Technologies	8449B	5445	12	06-May-2021
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	17-Mar-2021
Attenuator 5W 10dB DC-18GHz	Aaren	AT40A-4041-D18-10	5494	12	14-Apr-2021
2m SMA Cable	Junkosha	MWX221-02000AMSAMS/A	5518	12	01-Apr-2021
8m N Type Cable	Junkosha	MWX221-08000NMSNMS/B	5522	12	24-Mar-2021

Table 635

TU - Traceability Unscheduled

2.5 Restricted Band Edges

2.5.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.205
ISED RSS-GEN, Clause 8.10

2.5.2 Equipment Under Test and Modification State

A2438, S/N: C02DM00Q087X - Modification State 0

2.5.3 Date of Test

09-November-2020 to 09-January-2021

2.5.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.10.5.

Restricted Band Edge measurements were performed with the device operating with the device operating in SISO and MIMO configurations, across the various modes supported by the device.

Where duty cycle corrections were required for average results, these are included in the result tables but are not shown on the plots.

The measurements displayed within this report have been limited to those modes which have been shown to be worst case.

Further measurements are held on file by TÜV SÜD and are available if required.

2.5.5 Environmental Conditions

Ambient Temperature	18.9 - 21.9 °C
Relative Humidity	38.3 - 46.9 %

2.5.6 Test Results

5 GHz WLAN

Mode	Data Rate/ MCS	Resource Size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11a, Core 0	6 Mbps	-	-	5180	5150	61.44	48.49
802.11n HT20, Core 0	MCS7	-	-	5180	5150	62.88	49.60
802.11ax HE20, Core 0	MCS7x1	SU	-	5180	5150	63.35	50.37
802.11ax HE20, Core 0	MCS7x1	26	0	5180	5150	55.86	45.06
802.11a, Core 0	6 Mbps	-	-	5320	5350	62.53	51.23
802.11n HT20, Core 0	MCS7	-	-	5320	5350	66.00	50.89
802.11ax HE20, Core 0	MCS7x1	SU	-	5320	5350	65.99	51.21
802.11ax HE20, Core 0	MCS7x1	52	40	5320	5350	61.27	48.55
802.11a, Core 0	6 Mbps	-	-	5500	5460	59.30	47.80
802.11n HT20, Core 0	MCS7	-		5500	5460	59.25	47.85
802.11ax HE20, Core 0	MCS7x1	SU	-	5500	5460	59.02	47.94
802.11ax HE20, Core 0	MCS7x1	52	37	5500	5460	57.60	46.95

Table 636 - SISO Restricted Band Edge Results

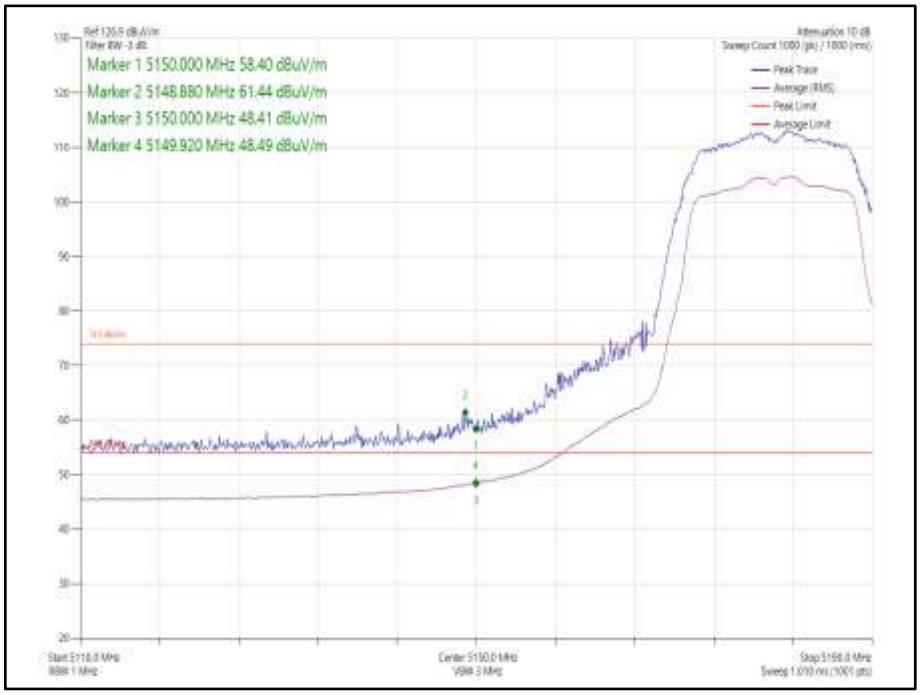

Figure 1004 - 802.11a, Core 0 - 5180 MHz, Band Edge Frequency 5150 MHz

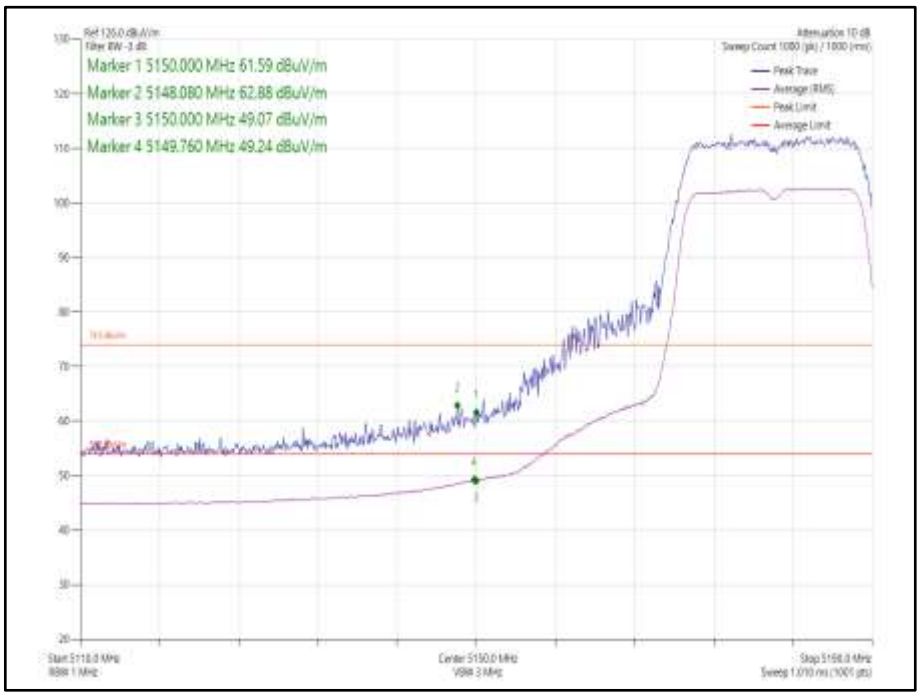

Figure 1005 - 802.11n HT20, Core 0 - 5180 MHz, Band Edge Frequency 5150 MHz

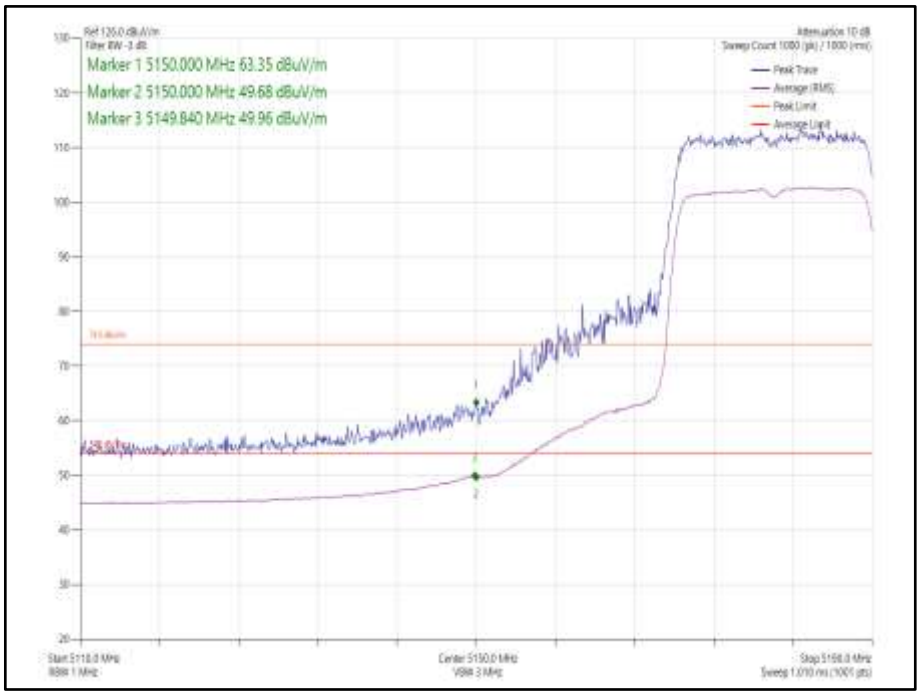

Figure 1006 - 802.11ax HE20, Core 0, SU - 5180 MHz, Band Edge Frequency 5150 MHz

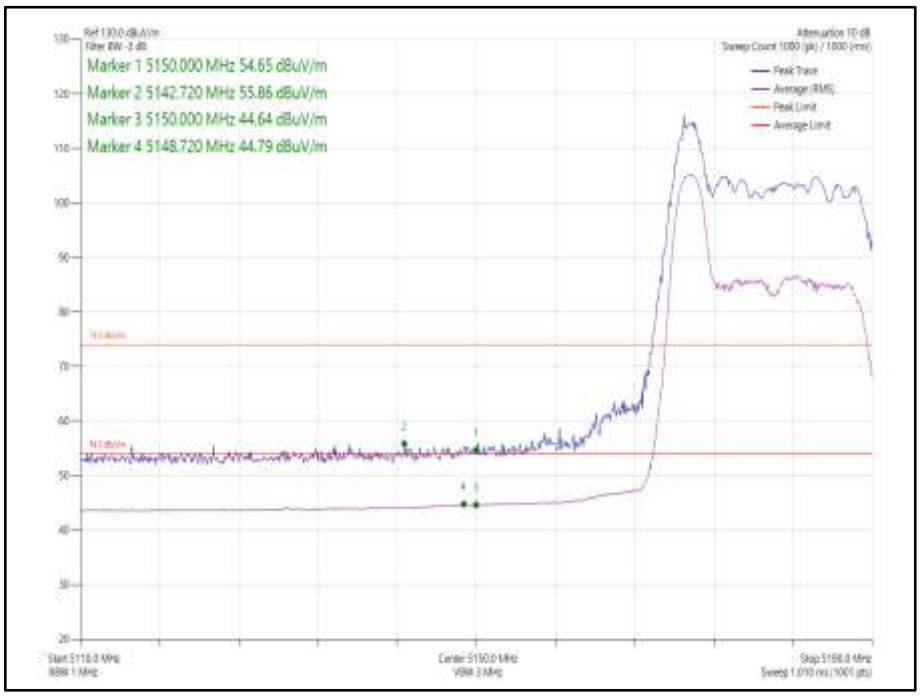

Figure 1007 - 802.11ax HE20, Core 0, 26-0 - 5180 MHz, Band Edge Frequency 5150 MHz

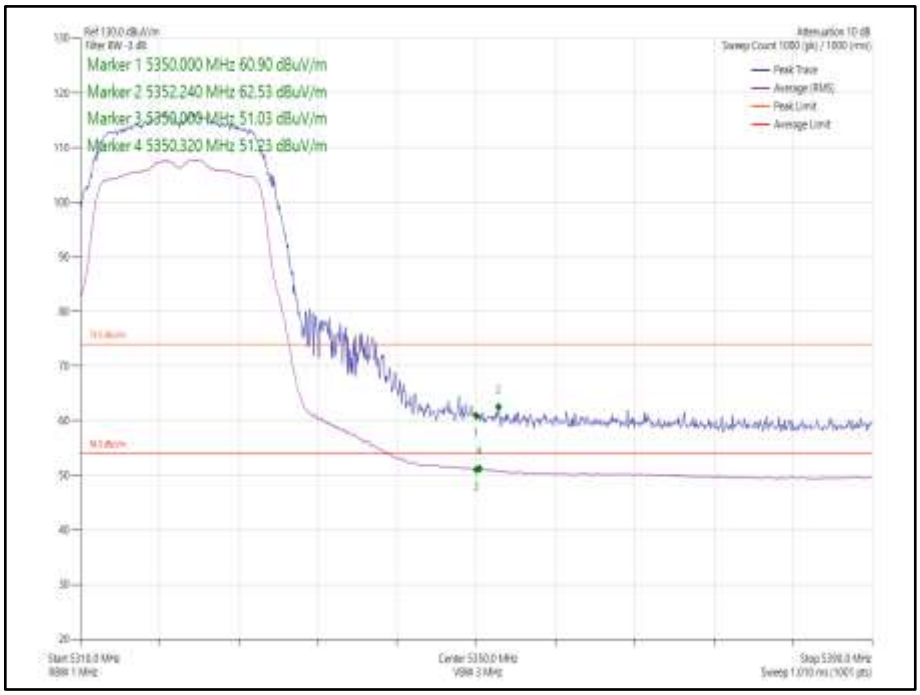

Figure 1008 - 802.11a, Core 0 - 5320 MHz, Band Edge Frequency 5350 MHz

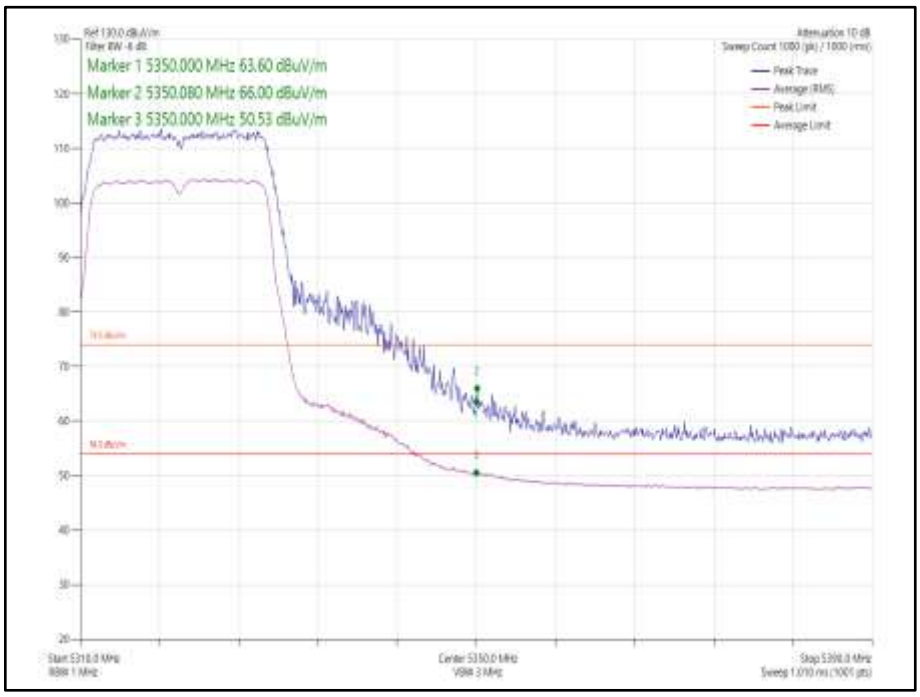

Figure 1009 - 802.11n HT20, Core 0 - 5320 MHz, Band Edge Frequency 5350 MHz

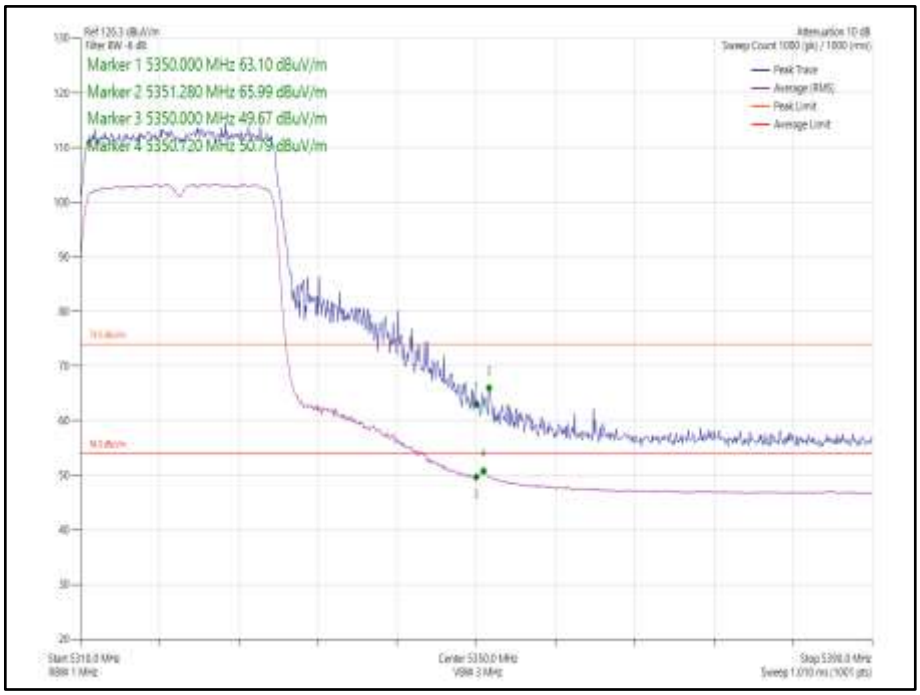

Figure 1010 - 802.11ax HE20, Core 0, SU - 5320 MHz, Band Edge Frequency 5350 MHz

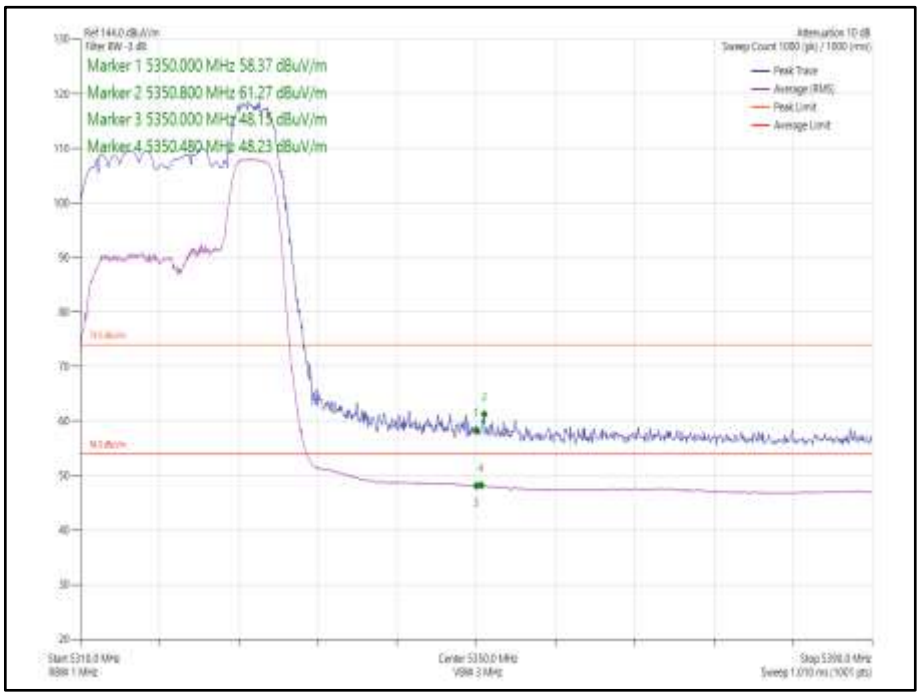

Figure 1011 - 802.11ax HE20, Core 0, 52-40 - 5320 MHz, Band Edge Frequency 5350 MHz

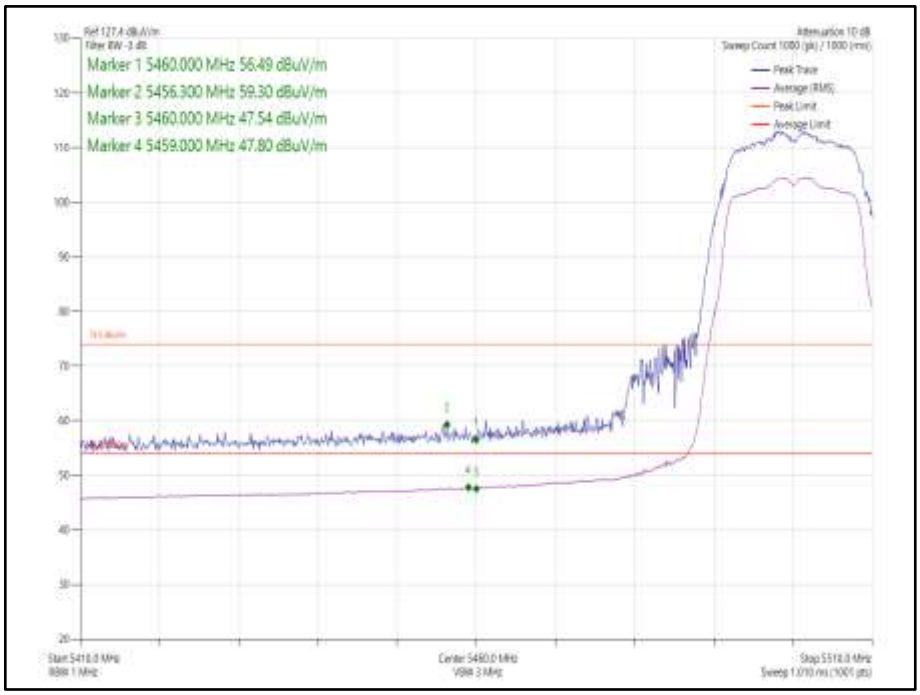

Figure 1012 - 802.11a, Core 0 - 5500 MHz, Band Edge Frequency 5460 MHz

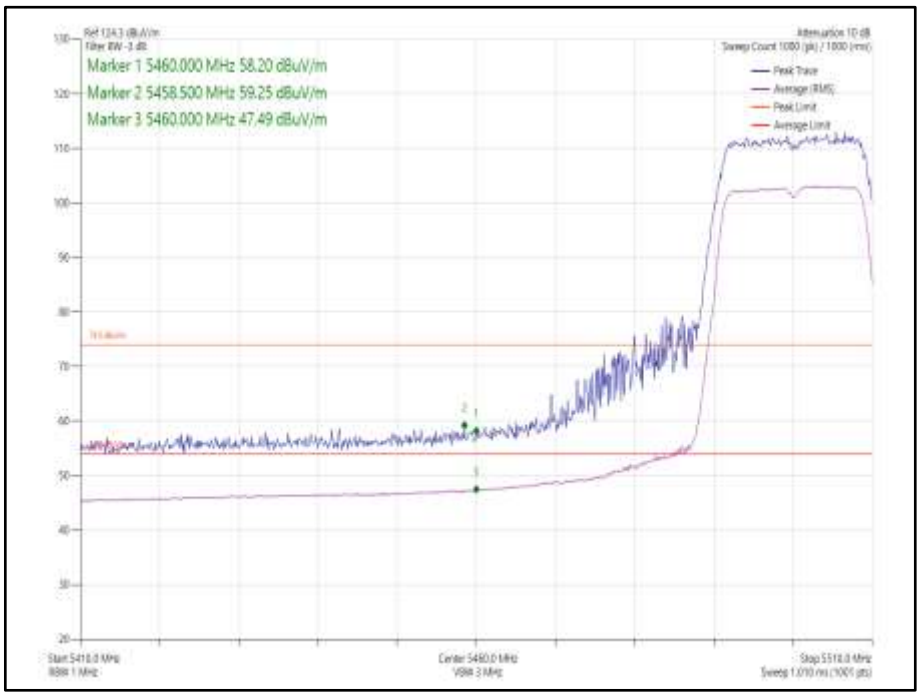

Figure 1013 - 802.11n HT20, Core 0 - 5500 MHz, Band Edge Frequency 5460 MHz

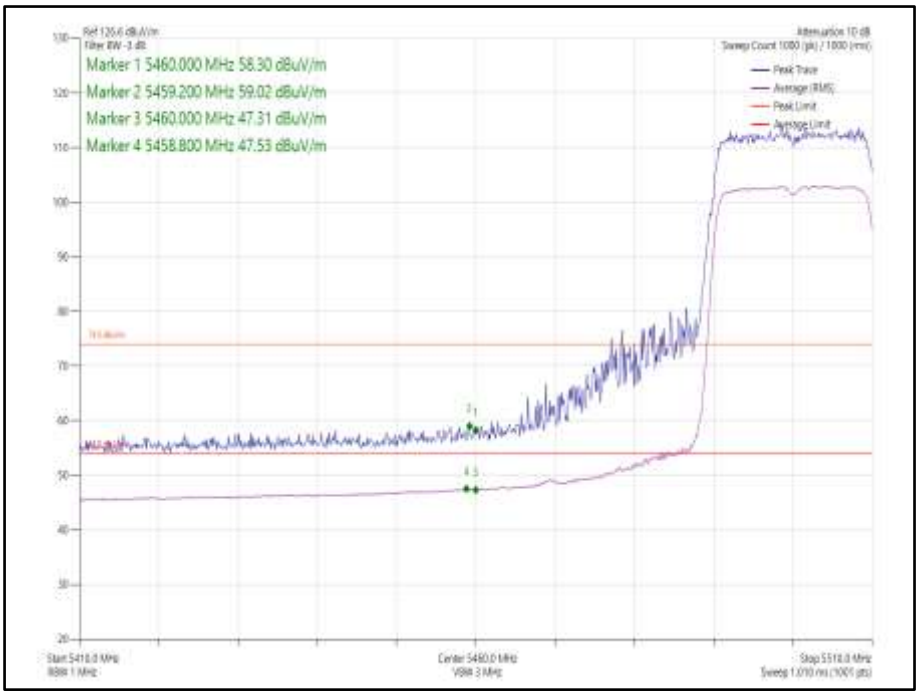

Figure 1014 - 802.11ax HE20, Core 0, SU - 5500 MHz, Band Edge Frequency 5460 MHz

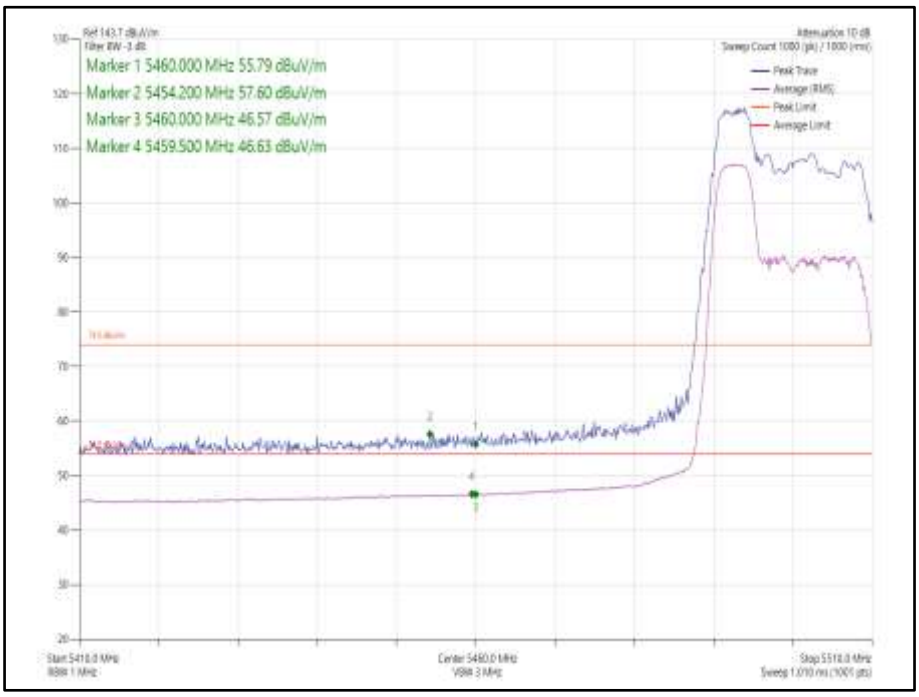

Figure 1015 - 802.11ax HE20, Core 0, 26-0 - 5500 MHz, Band Edge Frequency 5460 MHz

Mode	Modulation Coding Scheme	Resource size	Resource Index	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11n HT20 CDD, Cores 0-1	MCS7	-	-	5180	5150	59.67	46.93
802.11n HT20 SDM, Cores 0-1	MCS15	-	-	5180	5150	62.28	48.70
802.11ax HE20 CDD Cores 0-1	MCS7x1	SU	-	5180	5150	59.21	47.30
802.11ax HE20 CDD, Cores 0-1	MCS7x1	26	0	5180	5150	55.09	44.09
802.11ax HE20 SDM, Cores 0-1	MCS7x2	SU	-	5180	5150	61.82	49.20
802.11ax HE20 SDM, Cores 0-1	MCS7x2	26	0	5180	5150	55.62	44.57
802.11n HT20 CDD, Cores 0-1	MCS7	-	-	5320	5350	62.10	48.91
802.11n HT20 SDM, Cores 0-1	MCS15	-	-	5320	5350	64.19	50.17
802.11ax HE20 CDD, Cores 0-1	MCS7x1	SU	-	5320	5350	60.61	49.01
802.11ax HE20 CDD, Cores 0-1	MCS7x1	52	40	5320	5350	56.85	49.12
802.11ax HE20 SDM, Cores 0-1	MCS7x2	SU	-	5320	5350	66.80	51.62
802.11ax HE20 SDM, Cores 0-1	MCS7x2	52	40	5320	5350	59.49	47.54
802.11n HT20 CDD, Cores 0-1	MCS7	-	-	5500	5460	58.16	47.09
802.11n HT20 SDM, Cores 0-1	MCS15	-	-	5500	5460	58.20	47.65
802.11ax HE20 CDD, Cores 0-1	MCS7x1	SU	-	5500	5460	57.47	46.78
802.11ax HE20 CDD, Cores 0-1	MCS7x1	52	37	5500	5460	56.30	45.53
802.11ax HE20 SDM, Cores 0-1	MCS7x2	SU	-	5500	5460	58.65	47.38
802.11ax HE20 SDM, Cores 0-1	MCS7x2	52	37	5500	5460	57.51	45.77

Table 637 - MIMO 2TX Restricted Band Edge Results

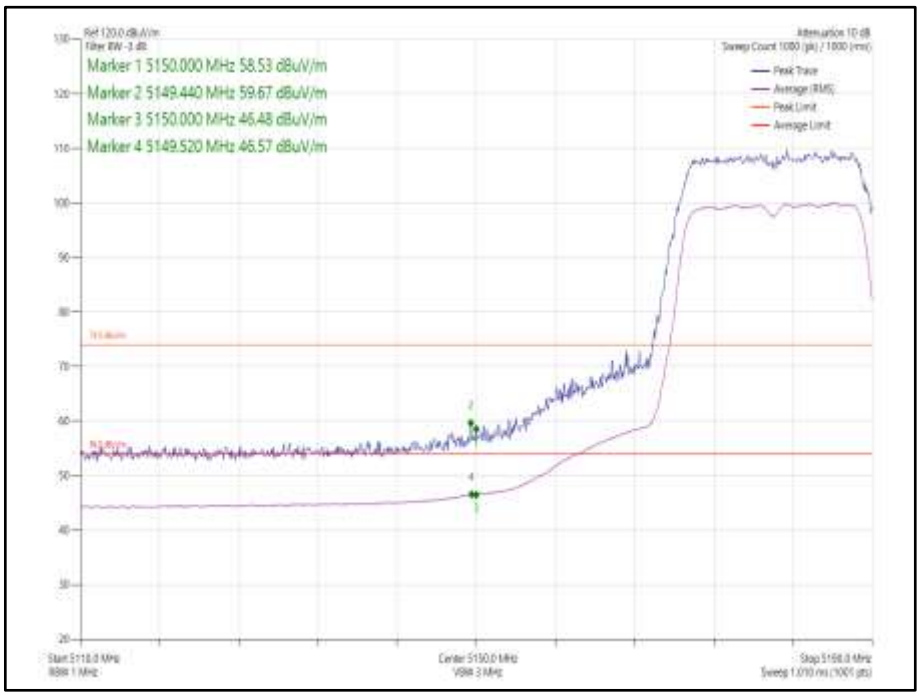

Figure 1016 - 802.11n HT20 CDD, Cores 0-1 - 5180 MHz
Band Edge Frequency 5150 MHz

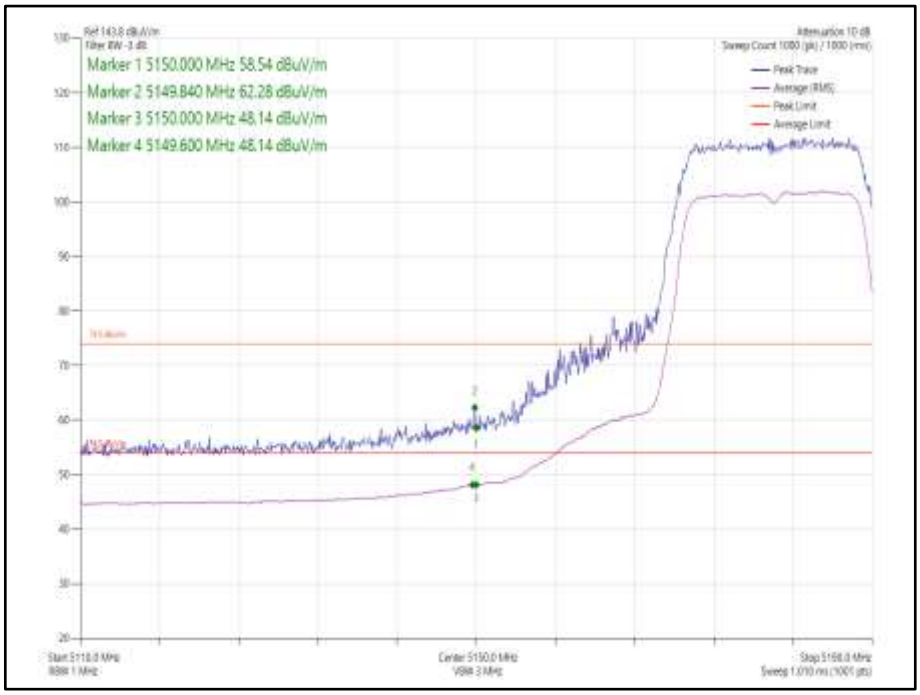

Figure 1017 - 802.11n HT20 SDM, Cores 0-1 - 5180 MHz
Band Edge Frequency 5150 MHz

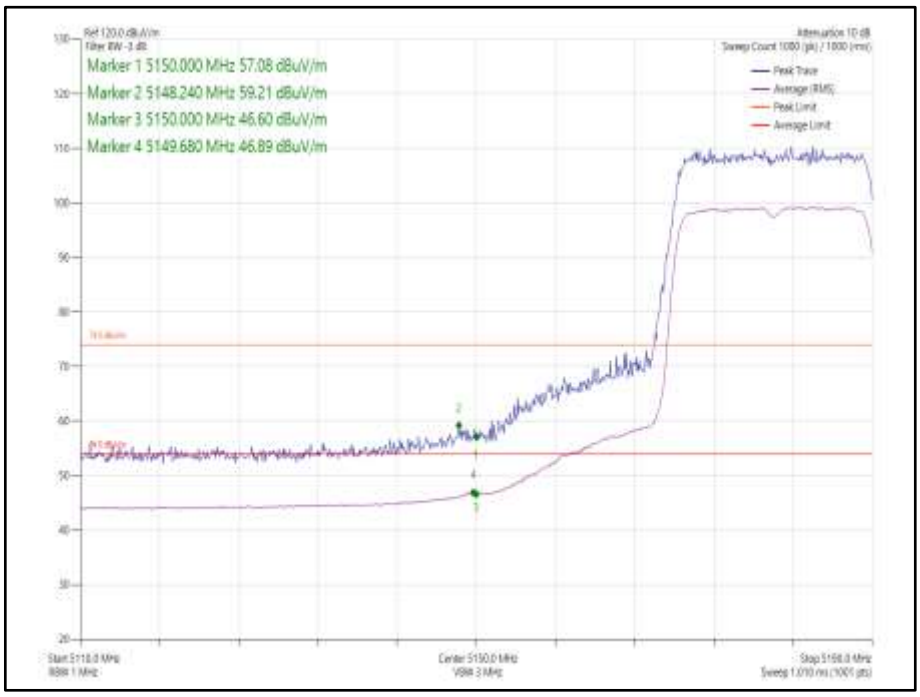

Figure 1018 - 802.11ax HE20 CDD, Cores 0-1 SU - 5180 MHz
Band Edge Frequency 5150 MHz

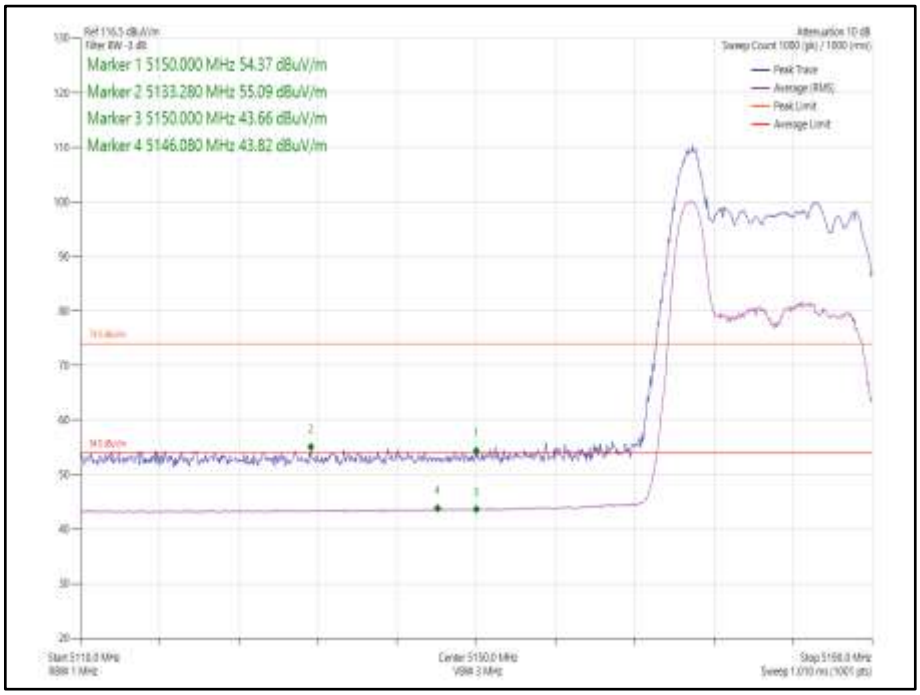

Figure 1019 - 802.11ax HE20 CDD, Cores 0-1, 26-0 - 5180 MHz
Band Edge Frequency 5150 MHz

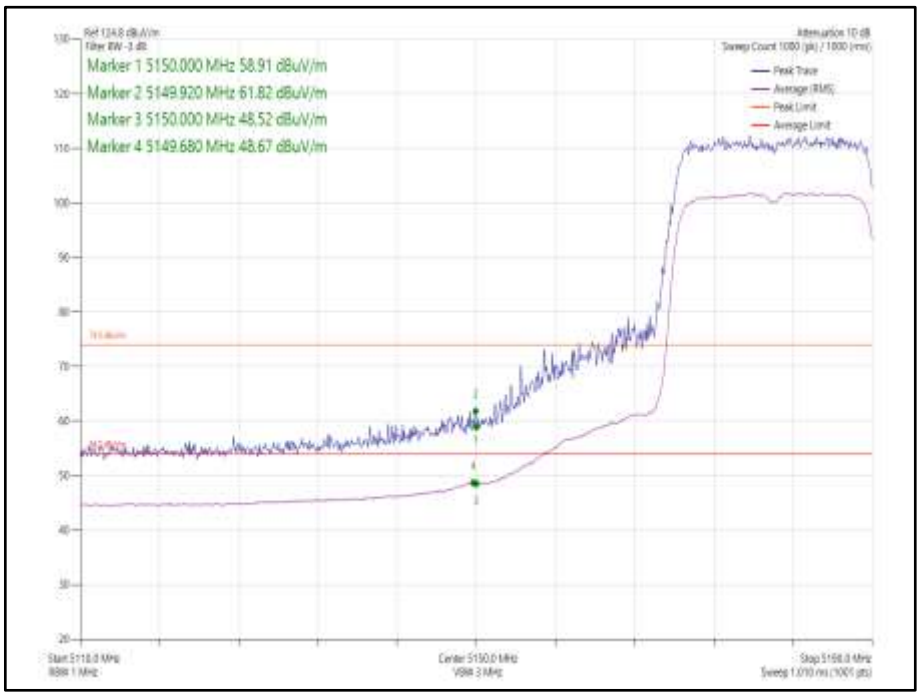

Figure 1020 - 802.11ax HE20 SDM, Cores 0-1, SU - 5180 MHz Band Edge Frequency 5150 MHz

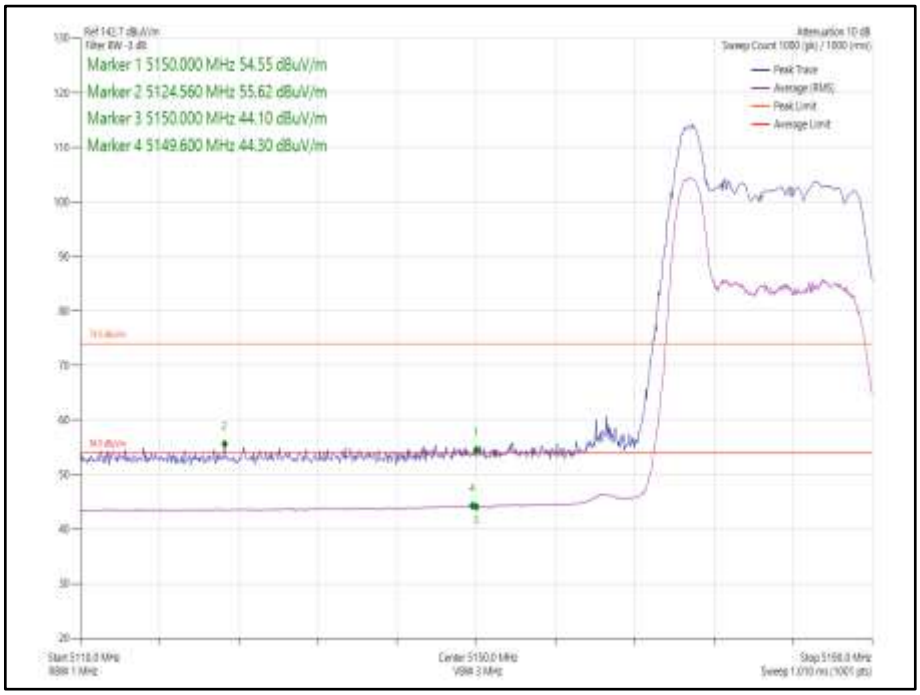

Figure 1021 - 802.11ax HE20 SDM, Cores 0-1, 26-0 - 5180 MHz Band Edge Frequency 5150 MHz

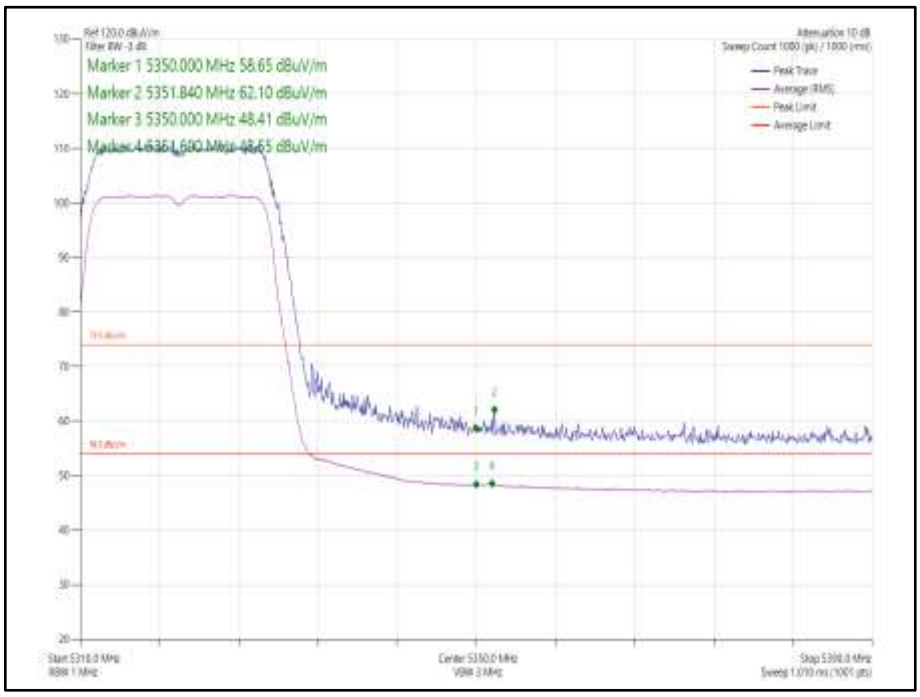

Figure 1022 - 802.11n HT20 CDD, Cores 0-1 - 5320 MHz
Band Edge Frequency 5350 MHz

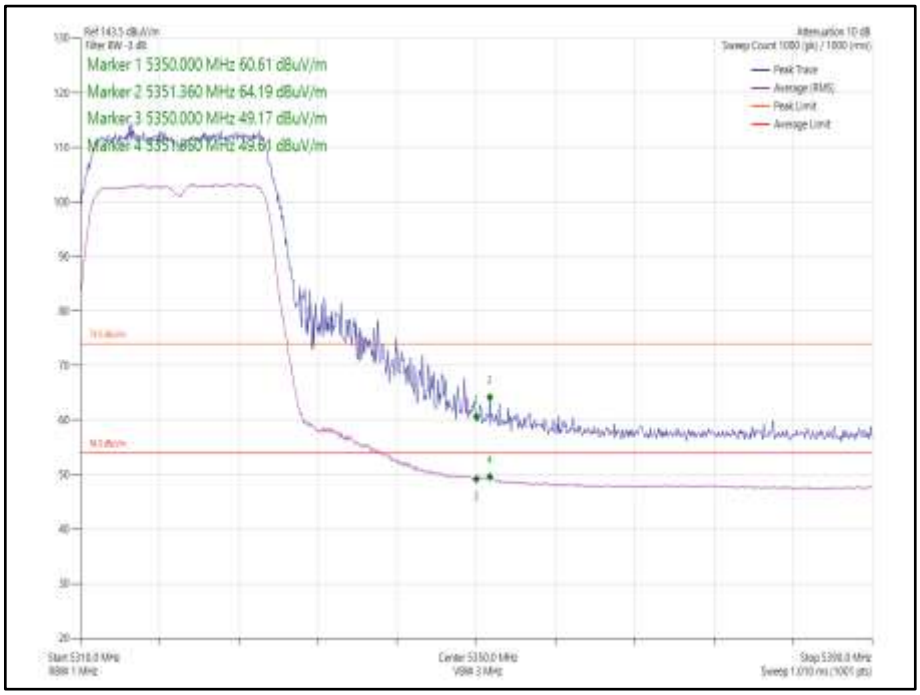

Figure 1023 - 802.11n HT20 SDM, Cores 0-1 - 5320 MHz
Band Edge Frequency 5350 MHz

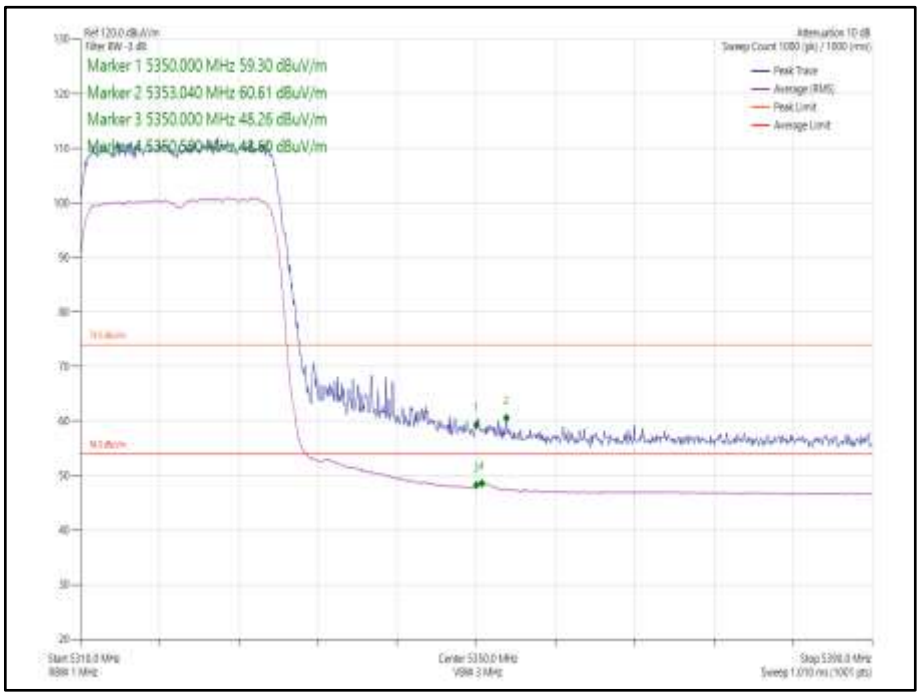

Figure 1024 - 802.11ax HE20 CDD, Cores 0-1, SU - 5320 MHz Band Edge Frequency 5350 MHz

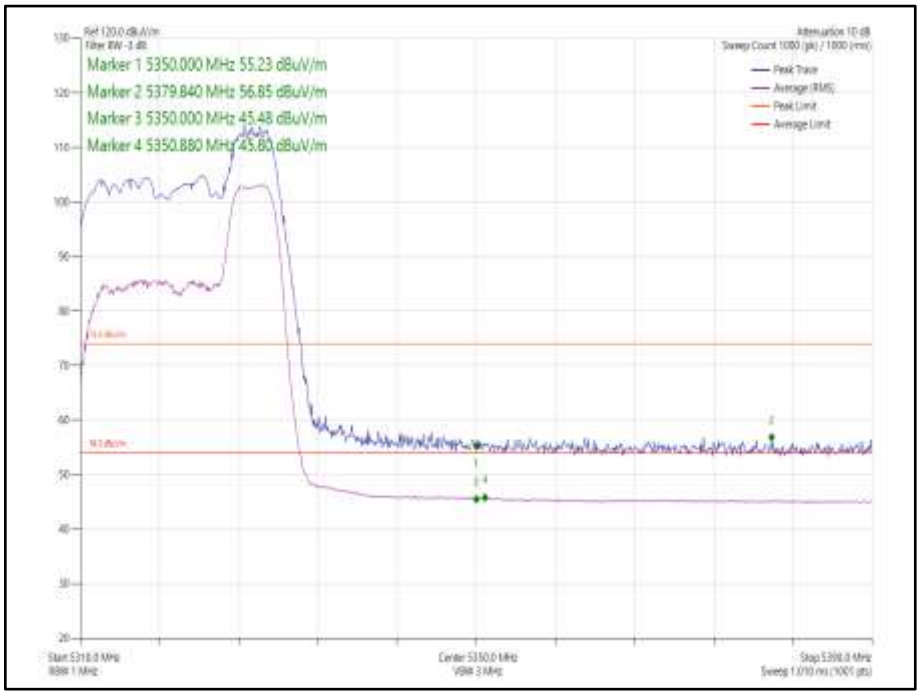

Figure 1025 - 802.11ax HE20 CDD, Cores 0-1, 52-40 - 5320 MHz Band Edge Frequency 5350 MHz

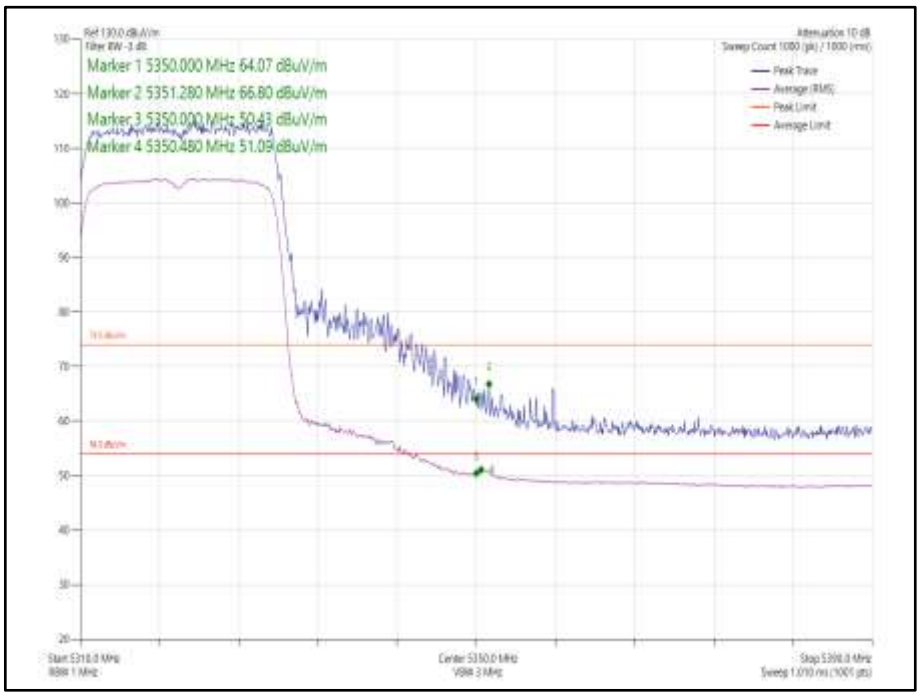

Figure 1026 - 802.11ax HE20 SDM, Cores 0-1, SU - 5320 MHz Band Edge Frequency 5350 MHz

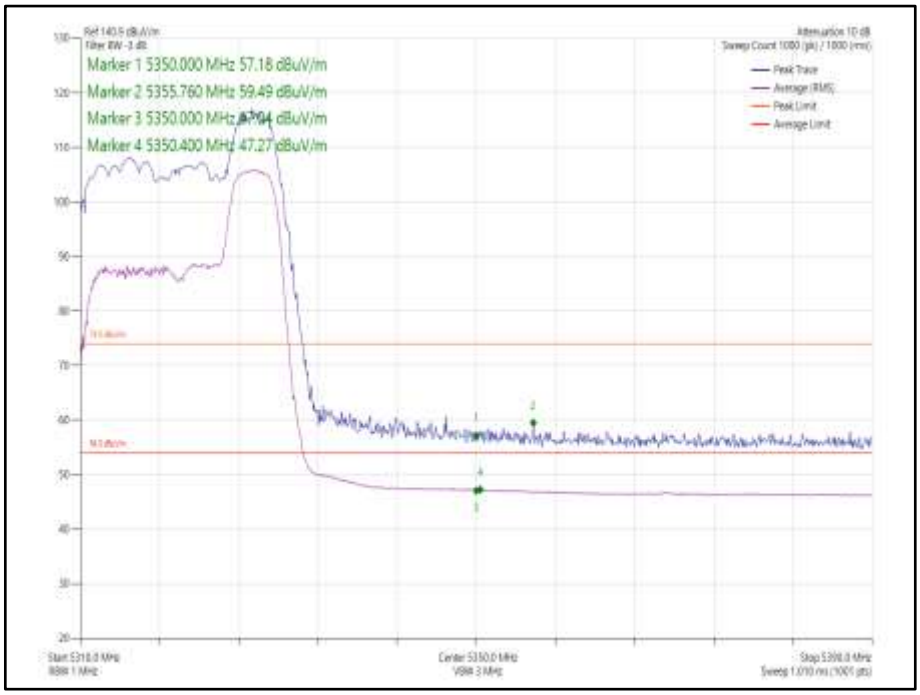

Figure 1027 - 802.11ax HE20 SDM, Cores 0-1, 52-40 - 5320 MHz Band Edge Frequency 5350 MHz

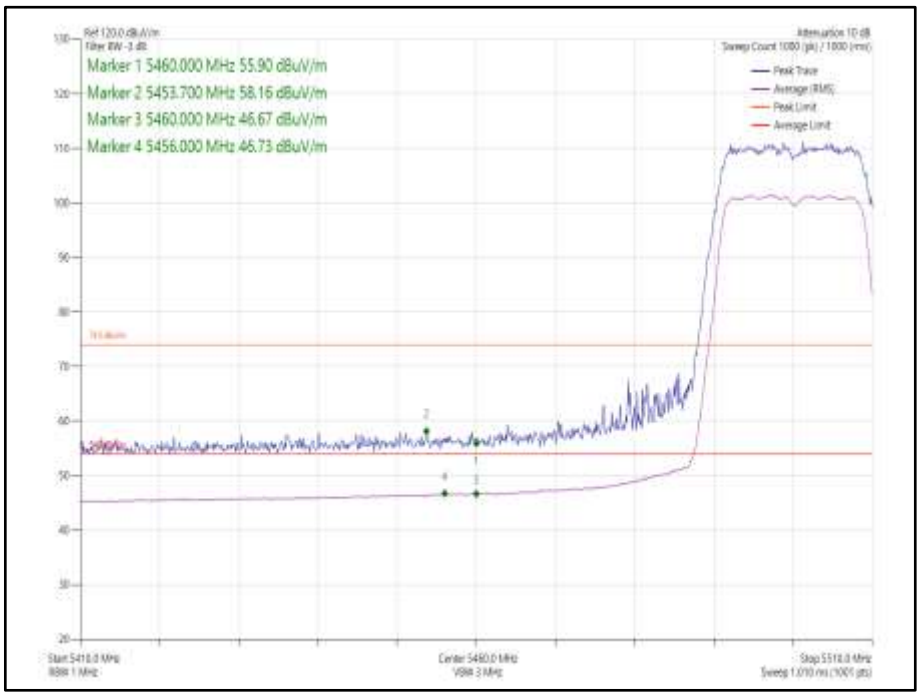

Figure 1028 - 802.11n HT20 CDD, Cores 0-1 - 5500 MHz
Band Edge Frequency 5460 MHz

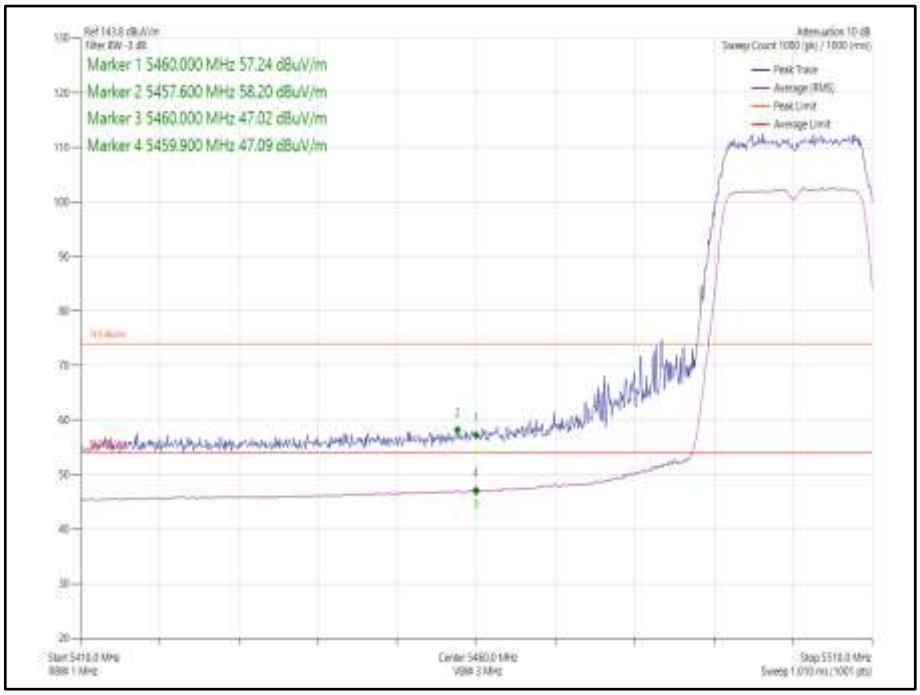

Figure 1029 - 802.11n HT20 SDM, Cores 0-1 - 5500 MHz
Band Edge Frequency 5460 MHz

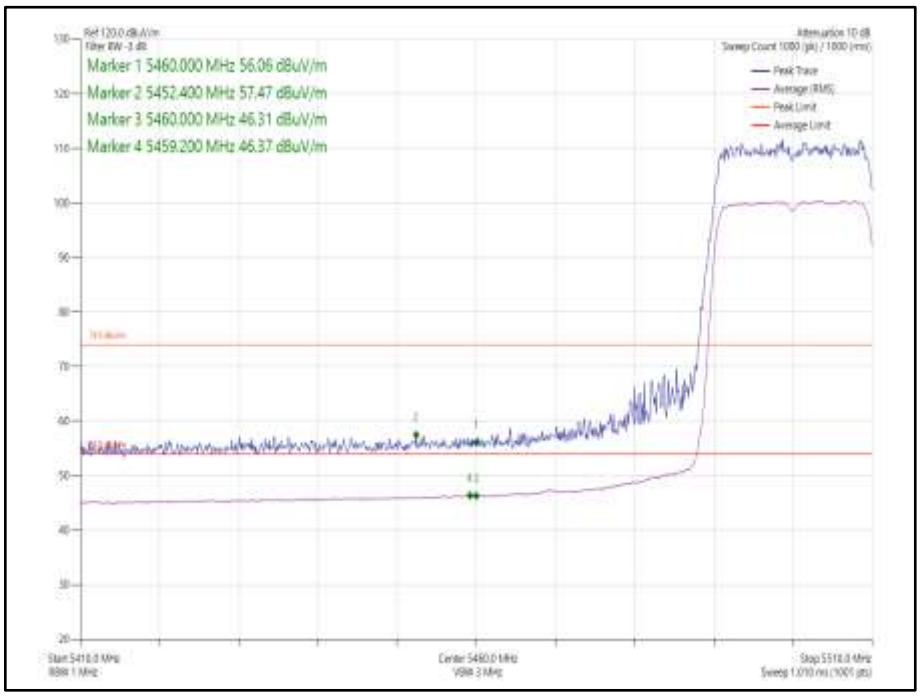

Figure 1030 - 802.11ax HE20 CDD, Cores 0-1, SU- 5500 MHz Band Edge Frequency 5460 MHz

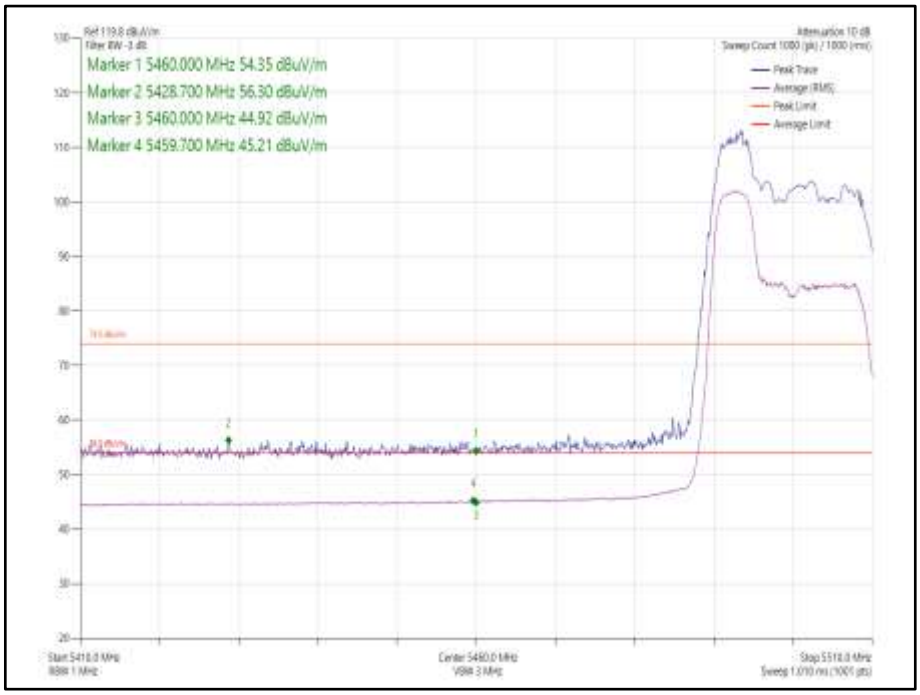

Figure 1031 - 802.11ax HE20 CDD, Cores 0-1, 52-37 - 5500 MHz Band Edge Frequency 5460 MHz

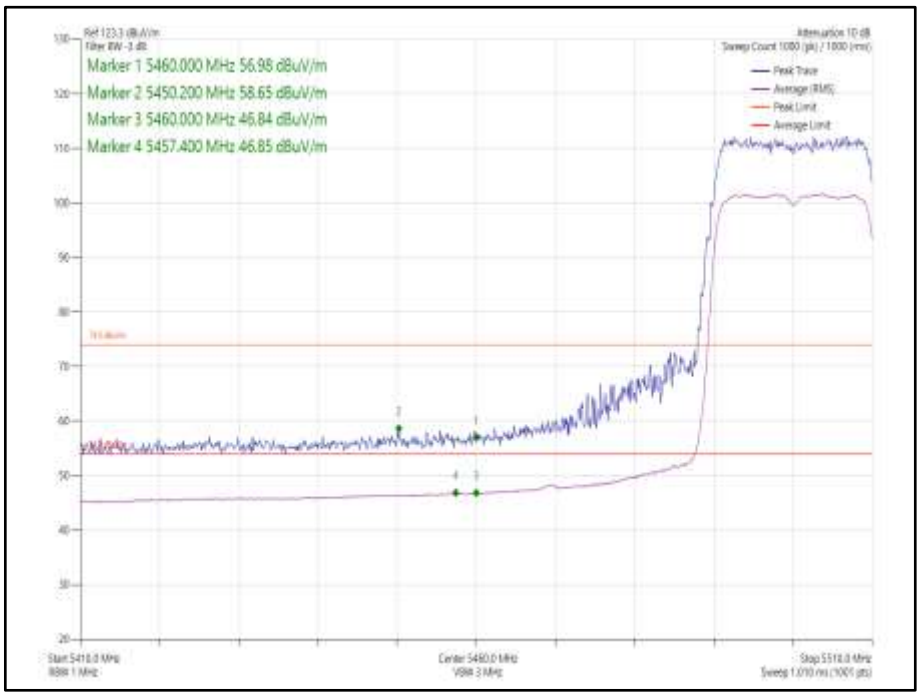

Figure 1032 - 802.11ax HE20 SDM, Cores 0-1, SU- 5500 MHz Band Edge Frequency 5460 MHz

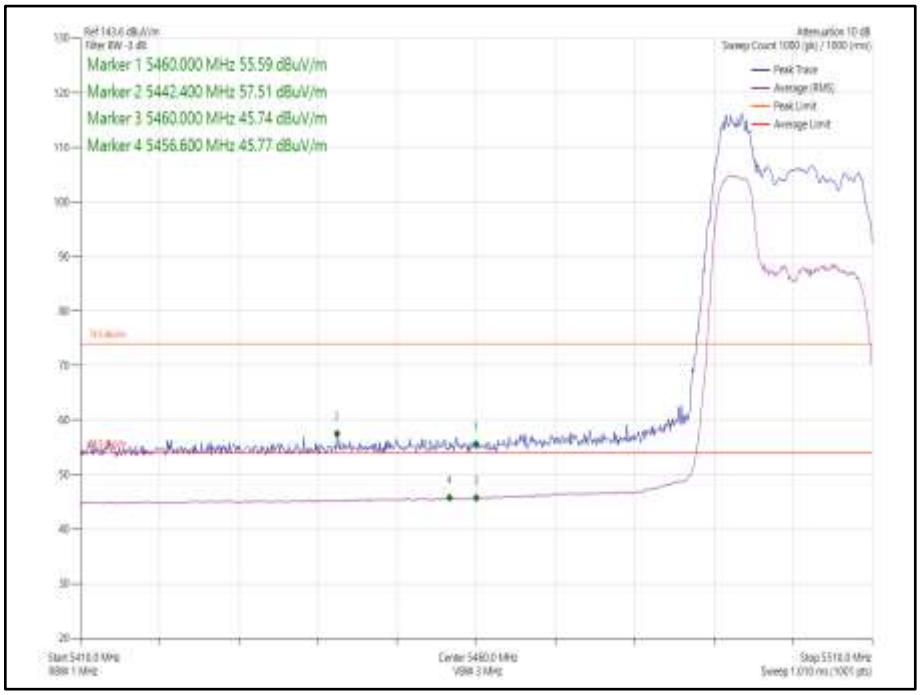

Figure 1033 - 802.11ax HE20 SDM, Cores 0-1, 26-0 - 5500 MHz Band Edge Frequency 5460 MHz

Mode	Data Rate/ MCS	Resource Size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11n HT40, Core 0	MCS7	-	-	5190	5150	62.45	49.05
802.11ax HE40, Core 0	MCS7x1	SU	-	5190	5150	61.09	49.50
802.11ax HE40, Core 0	MCS7x1	26	0	5190	5150	55.73	44.87
802.11n HT40, Core 0	MCS7	-	-	5310	5350	62.16	49.01
802.11ax HE40, Core 0	MCS7x1	SU	-	5310	5350	68.55	50.62
802.11ax HE40, Core 0	MCS7x1	52	44	5310	5350	61.99	48.11
802.11n HT40, Core 0	MCS7	-		5510	5460	57.57	47.27
802.11ax HE40, Core 0	MCS7x1	SU	-	5510	5460	59.55	47.00
802.11ax HE40, Core 0	MCS7x1	52	37	5510	5460	56.92	46.37

Table 638 - SISO Restricted Band Edge Results

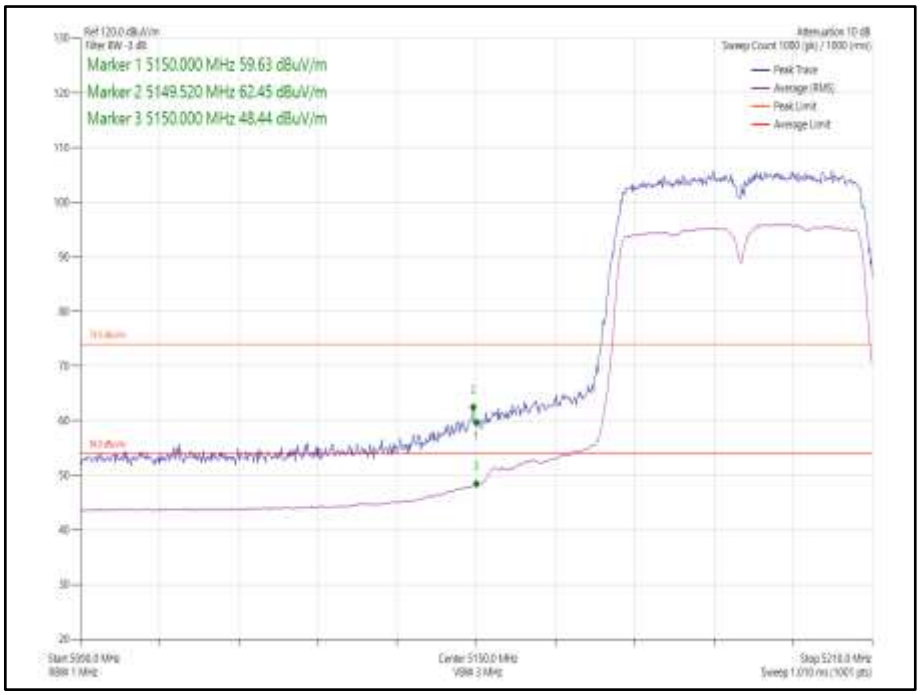

Figure 1034 **- 802.11n HT40, Core 0 - 5190 MHz**
Band Edge Frequency 5150 MHz

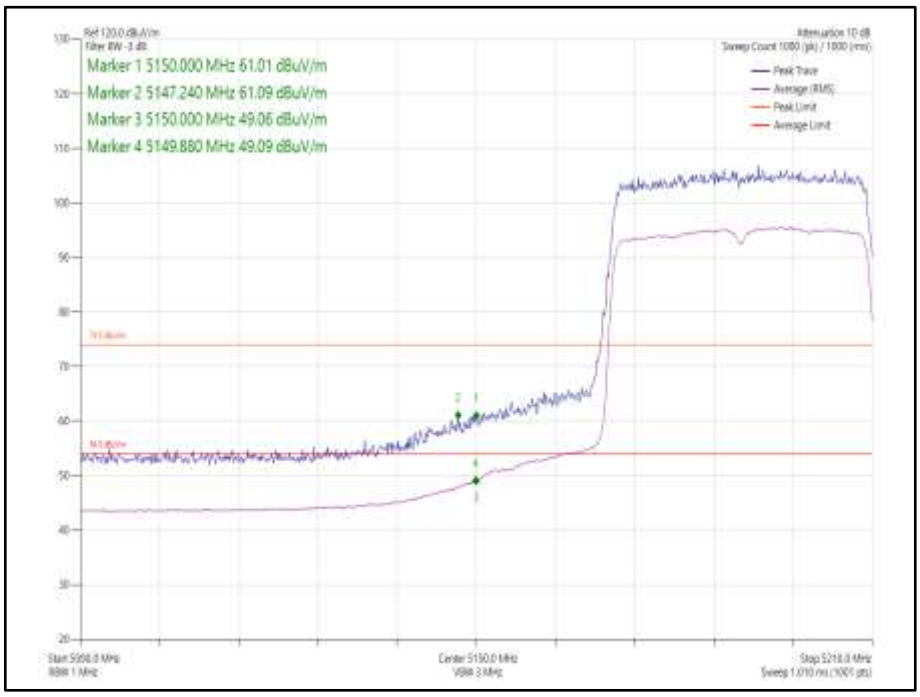

Figure 1035 - 802.11ax HE40, Core 0, SU - 5190 MHz
Band Edge Frequency 5150 MHz

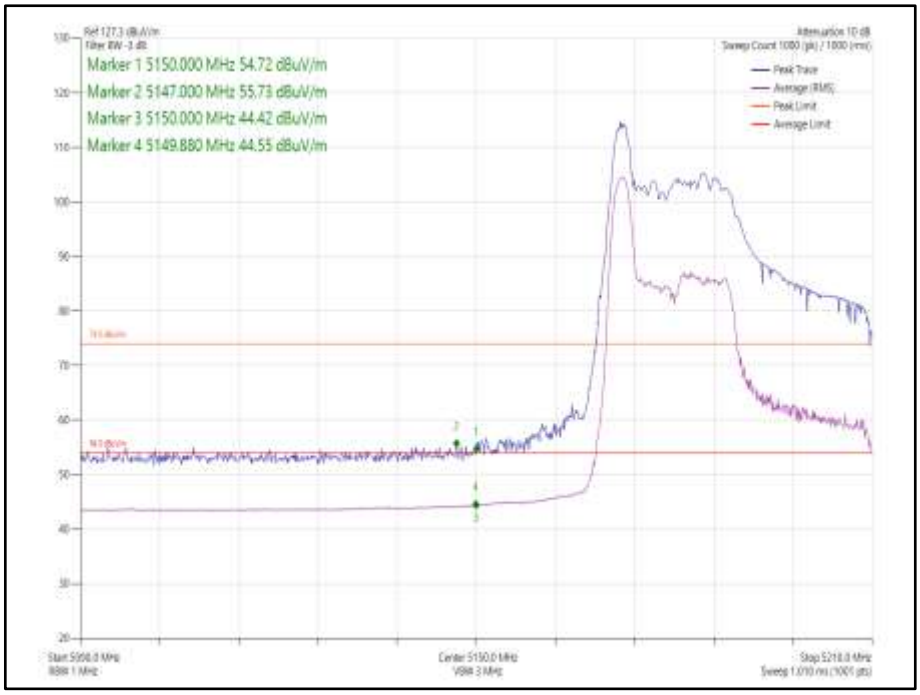

Figure 1036 - 802.11ax HE40, Core 0, 26-0 - 5190 MHz
Band Edge Frequency 5150 MHz

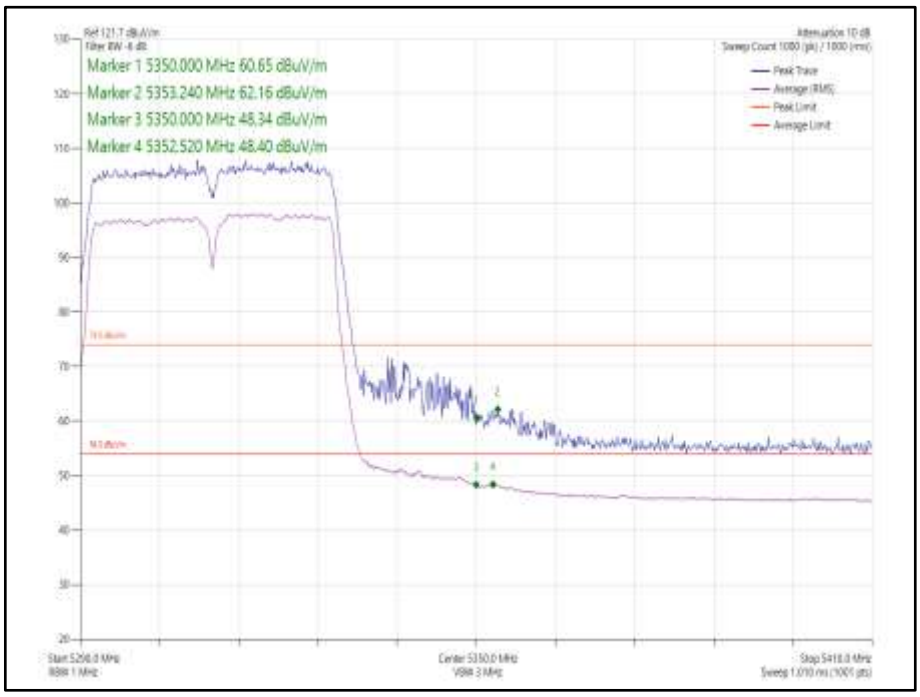

Figure 1037 **- 802.11n HT40, Core 0 - 5310 MHz**
Band Edge Frequency 5350 MHz

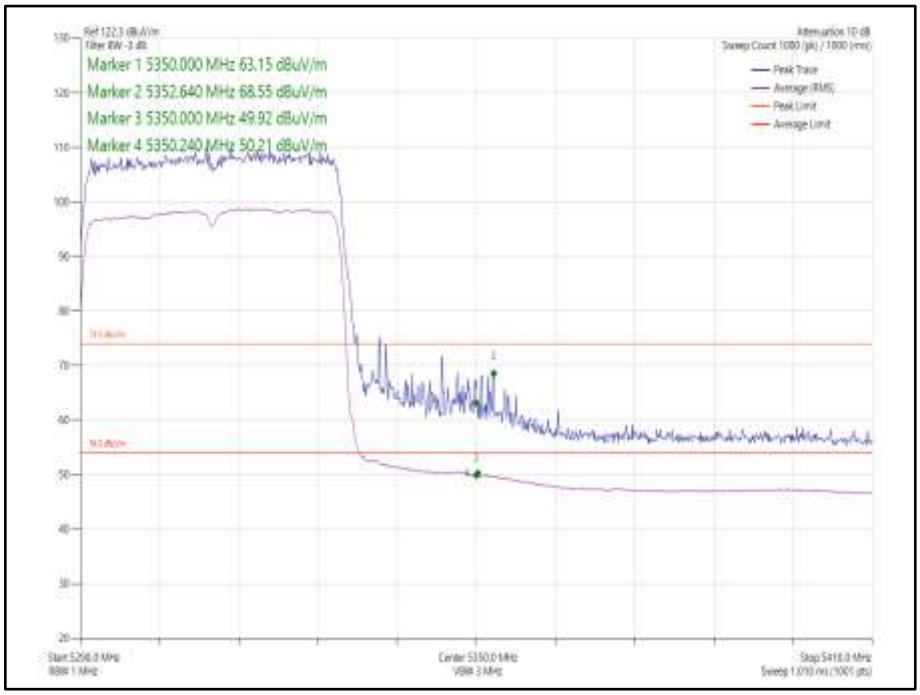

Figure 1038 - 802.11ax HE40, Core 0, SU - 5310 MHz
Band Edge Frequency 5350 MHz

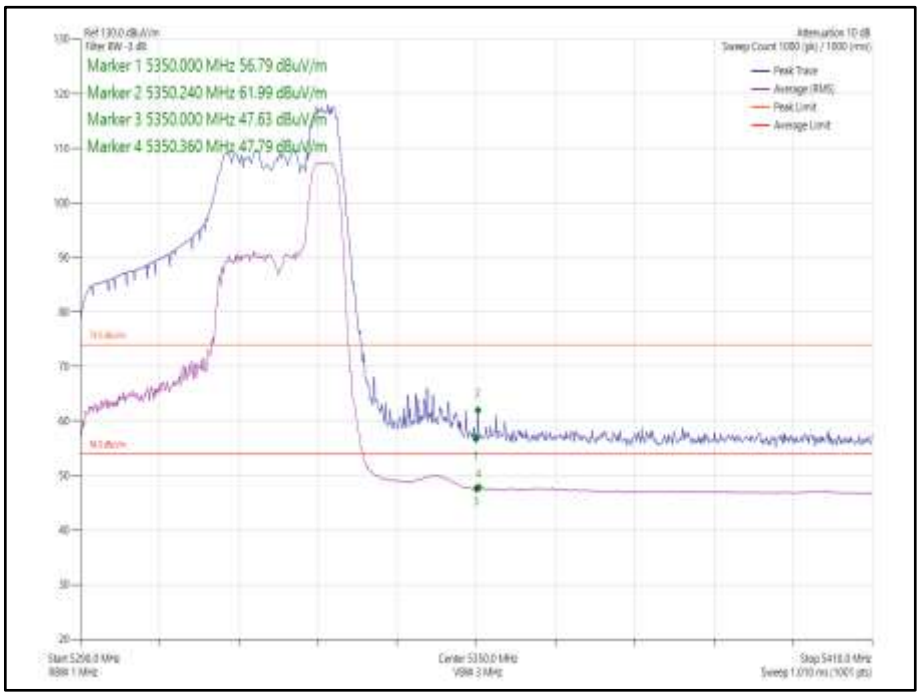

Figure 1039 - 802.11ax HE40, Core 0, 52-44 - 5310 MHz
Band Edge Frequency 5350 MHz

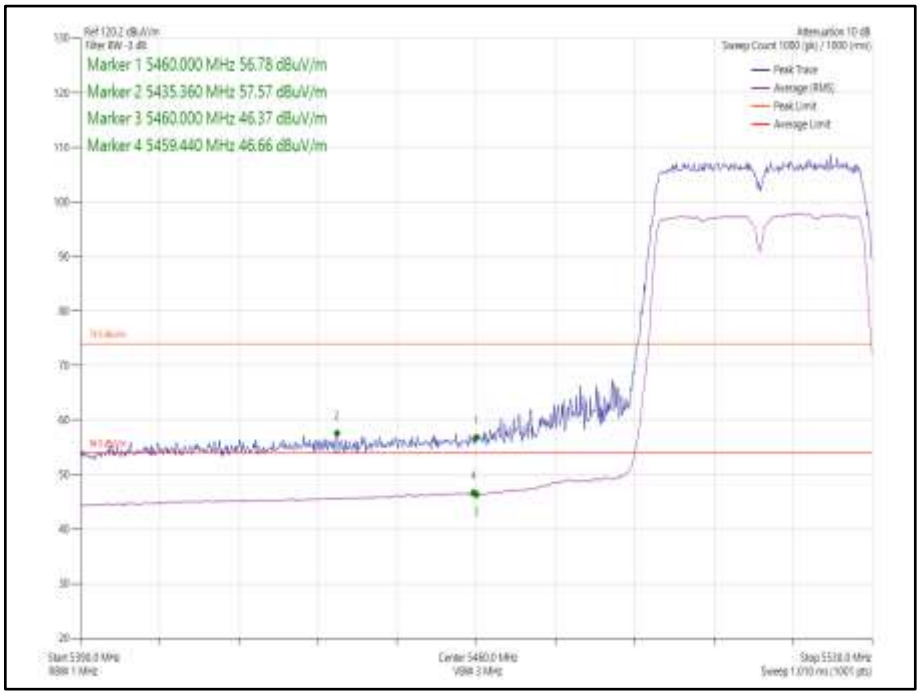

Figure 1040 - 802.11n HT40, Core 0 - 5510 MHz
Band Edge Frequency 5460 MHz

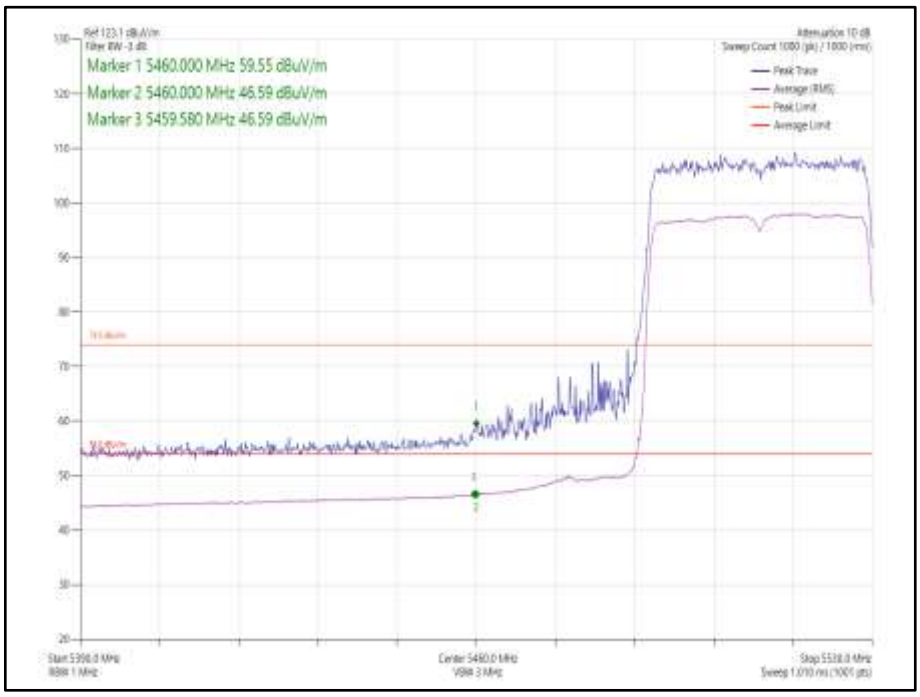

Figure 1041 - 802.11ax HE40, Core 0, SU - 5510 MHz
Band Edge Frequency 5460 MHz

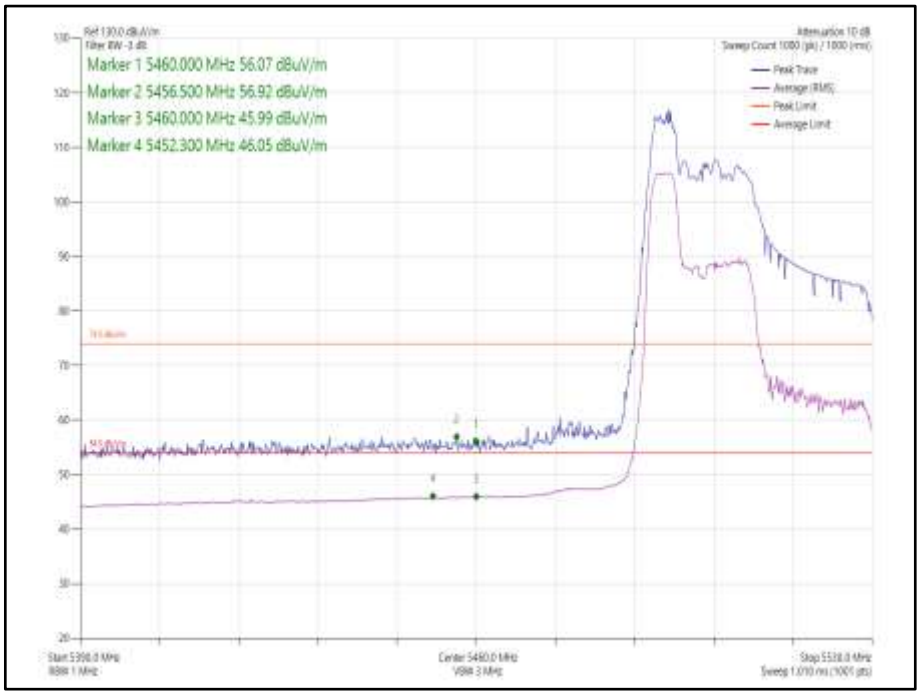

Figure 1042 - 802.11ax HE40, Core 0, 52-37- 5510 MHz
Band Edge Frequency 5460 MHz

Mode	Data Rate/ MCS	Resource Size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11n HT40 CDD, Cores 0-1	MCS7	-	-	5190	5150	61.28	48.93
802.11n HT40 SDM, Cores 0-1	MCS15	-	-	5190	5150	60.12	48.51
802.11ax HE40 CDD, Cores 0-1	MCS7x1	SU	-	5190	5150	61.76	50.44
802.11ax HE40 CDD, Cores 0-1	MCS7x1	26	0	5190	5150	55.01	43.85
802.11ax HE40 SDM, Cores 0-1	MCS7x2	SU	-	5190	5150	55.84	46.05
802.11ax HE40 SDM, Cores 0-1	MCS7x2	26	0	5190	5150	55.45	44.44
802.11n HT40 CDD, Cores 0-1	MCS7	-	-	5310	5350	63.86	49.91
802.11n HT40 SDM, Cores 0-1	MCS15	-	-	5310	5350	63.22	49.94
802.11ax HE40 CDD, Cores 0-1	MCS7x1	SU	-	5310	5350	60.36	48.68
802.11ax HE40 CDD, Cores 0-1	MCS7x1	52	44	5310	5350	56.14	44.72
802.11ax HE40 SDM, Cores 0-1	MCS7x2	SU	-	5310	5350	60.19	49.22
802.11ax HE40 SDM, Cores 0-1	MCS7x2	52	44	5310	5350	57.79	47.17
802.11n HT40 CDD, Cores 0-1	MCS7	-	-	5510	5460	57.97	46.92
802.11n HT40 SDM, Cores 0-1	MCS15	-	-	5510	5460	57.76	47.13
802.11ax HE40 CDD, Cores 0-1	MCS7x1	SU	-	5510	5460	57.40	46.76
802.11ax HE40 CDD, Cores 0-1	MCS7x1	52	37	5510	5460	56.28	45.37
802.11ax HE40 SDM, Cores 0-1	MCS7x2	SU	-	5510	5460	57.33	47.17
802.11ax HE40 SDM, Cores 0-1	MCS7x2	52	37	5510	5460	56.95	46.19

Table 639 – MIMO 2TX Restricted Band Edge Results

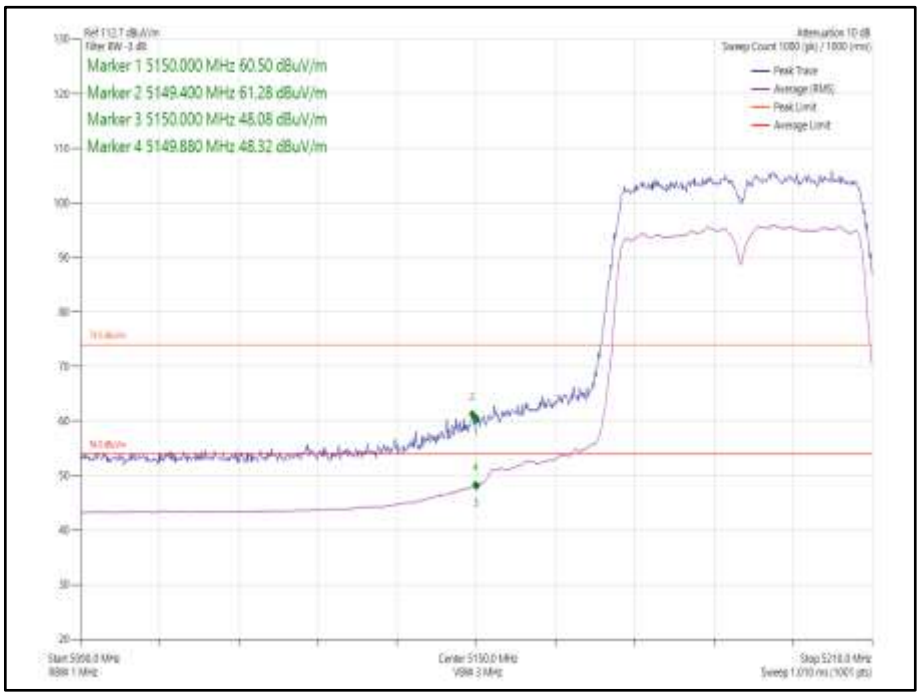

Figure 1043 - 802.11n HT40 CDD Cores 0-1 - 5190 MHz Band Edge Frequency 5150 MHz

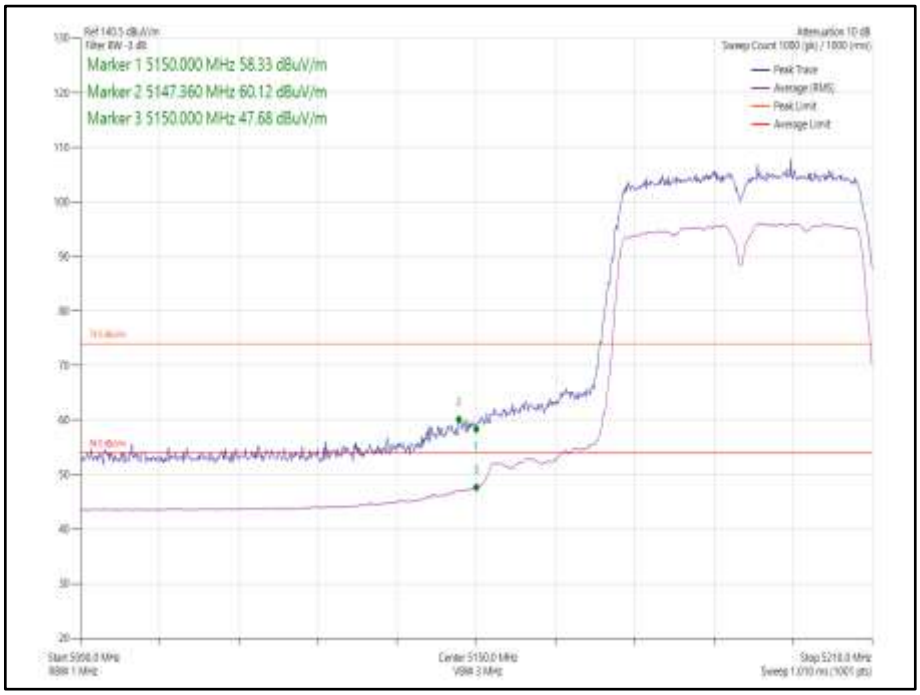

Figure 1044 - 802.11n HT40 SDM Cores 0-1 - 5190 MHz Band Edge Frequency 5150 MHz

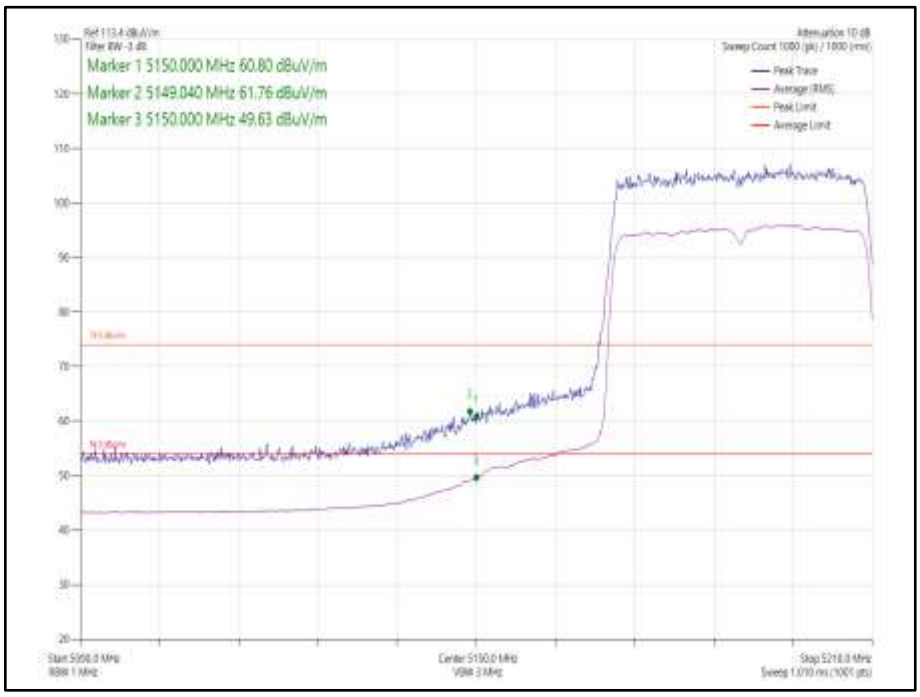

Figure 1045 - 802.11ax HE40 CDD, Cores 0-1, SU - 5190 MHz Band Edge Frequency 5150 MHz

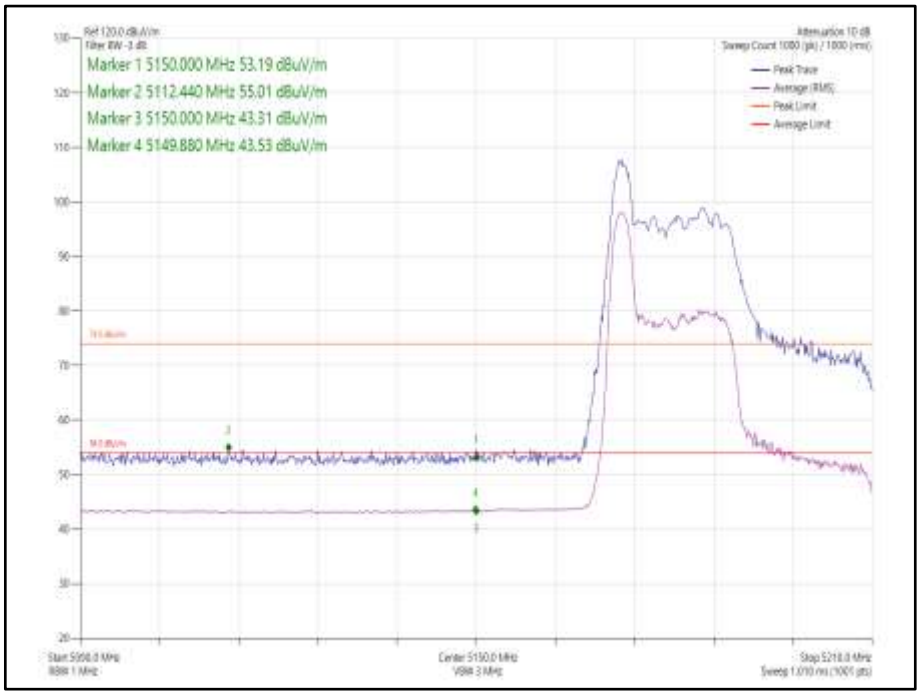

Figure 1046 - 802.11ax HE40 CDD, Cores 0-1, 26-0 - 5190 MHz Band Edge Frequency 5150 MHz

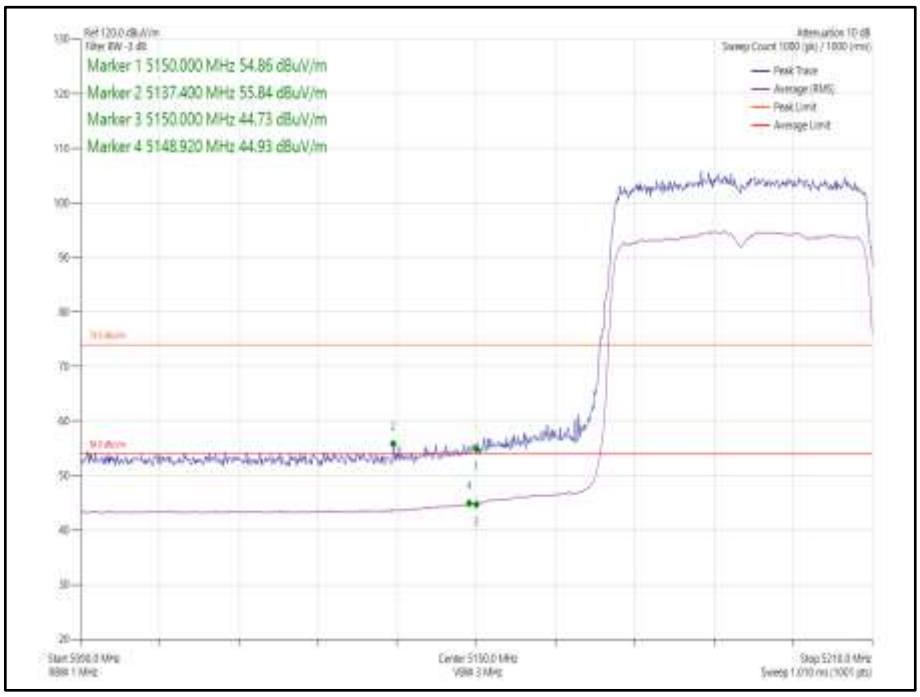

Figure 1047 - 802.11ax HE40 SDM, Cores 0-1, SU - 5190 MHz Band Edge Frequency 5150 MHz

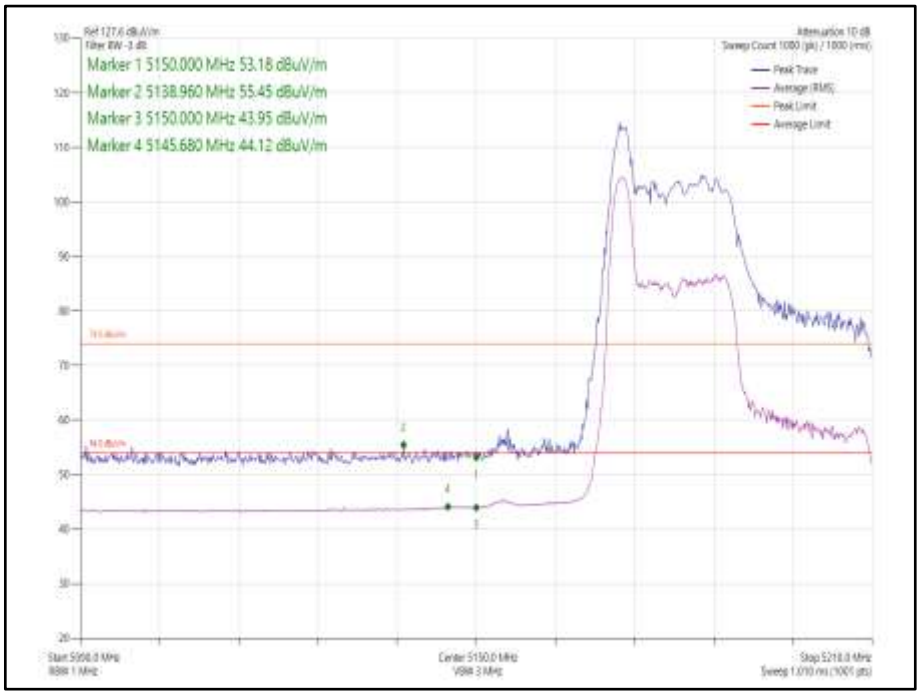

Figure 1048 - 802.11ax HE40 SDM, Cores 0-1, 26-0 - 5190 MHz Band Edge Frequency 5150 MHz

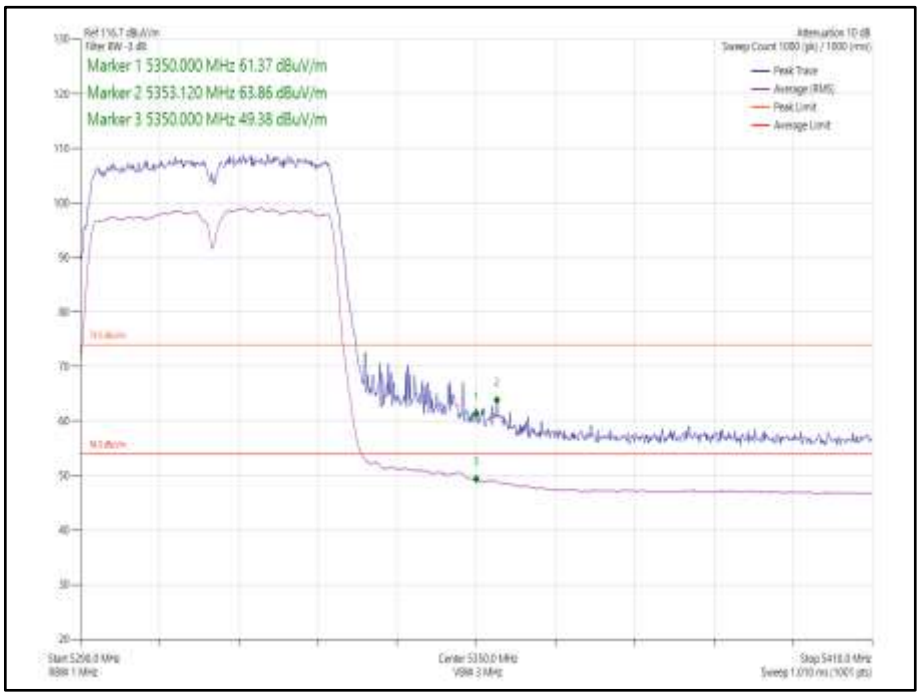

Figure 1049 - 802.11n HT40 CDD, Cores 0-1 - 5310 MHz
Band Edge Frequency 5350 MHz

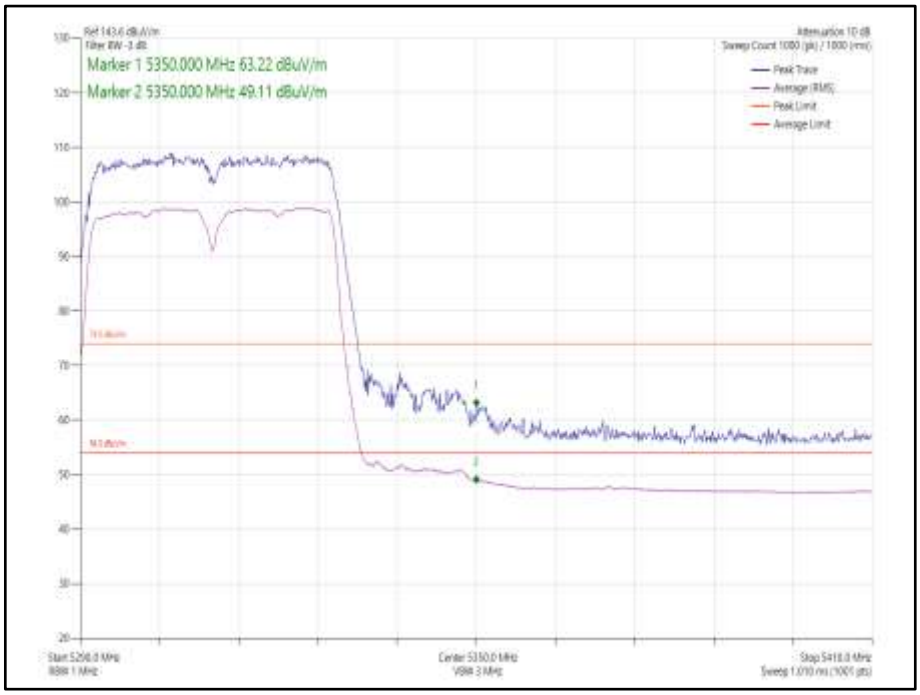

Figure 1050 - 802.11n HT40 SDM, Cores 0-1 - 5310 MHz
Band Edge Frequency 5350 MHz

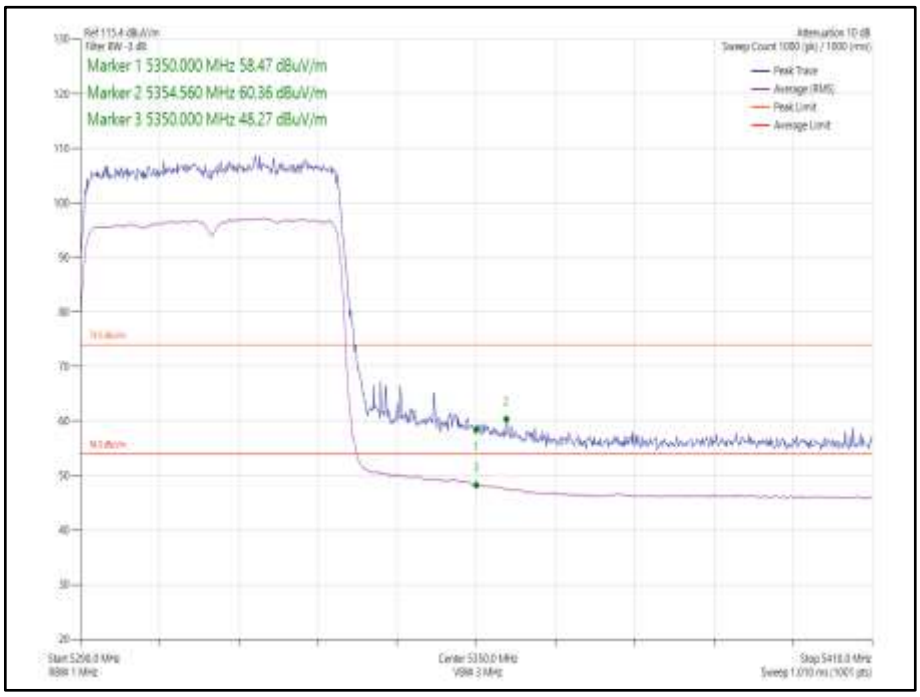

Figure 1051 - 802.11ax HE40 CDD, Cores 0-1, SU - 5310 MHz Band Edge Frequency 5350 MHz

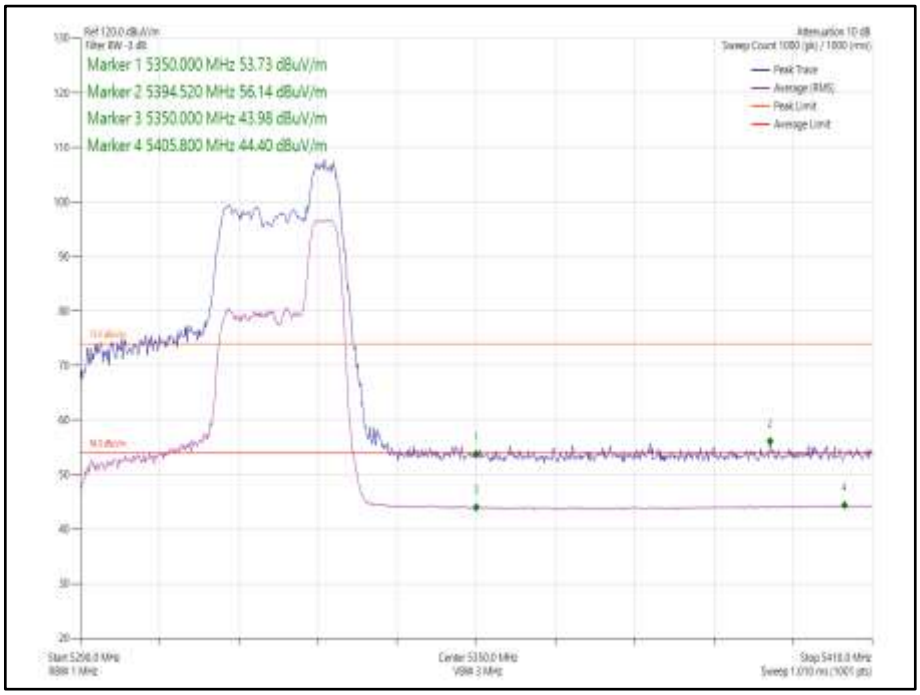

Figure 1052 - 802.11ax HE40 CDD, Cores 0-1, 26-17- 5310 MHz Band Edge Frequency 5350 MHz

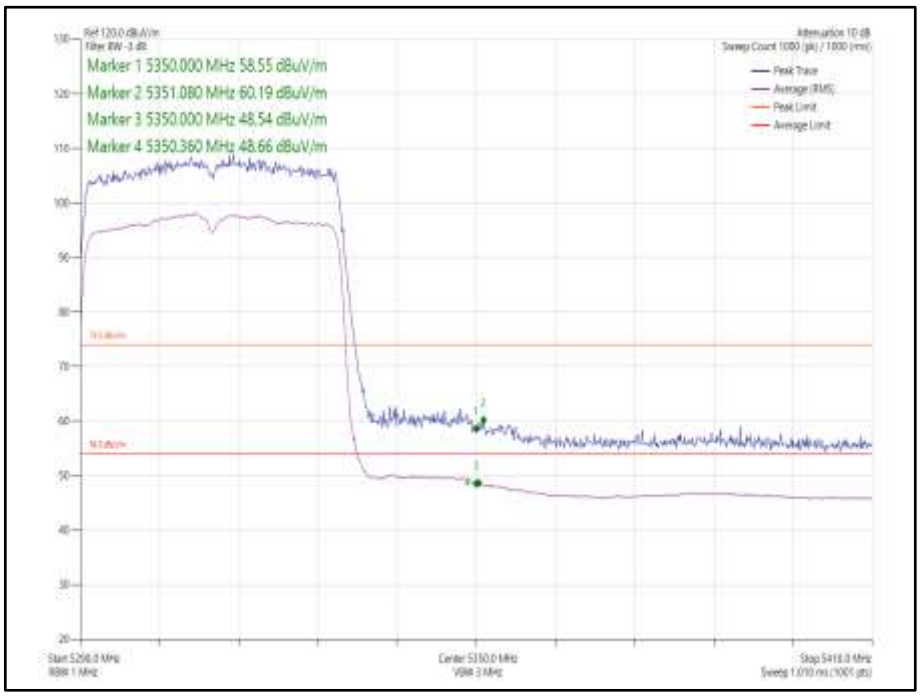

Figure 1053 - 802.11ax HE40 SDM, Cores 0-1, SU - 5310 MHz Band Edge Frequency 5350 MHz

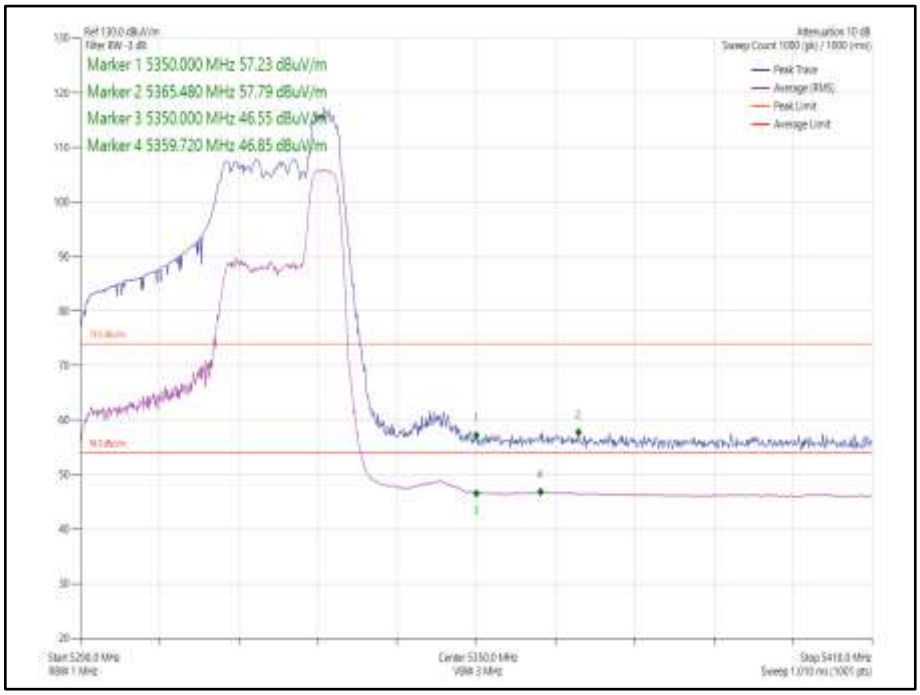

Figure 1054 - 802.11ax HE40 SDM, Cores 0-1, 26-17 - 5310 MHz Band Edge Frequency 5350 MHz

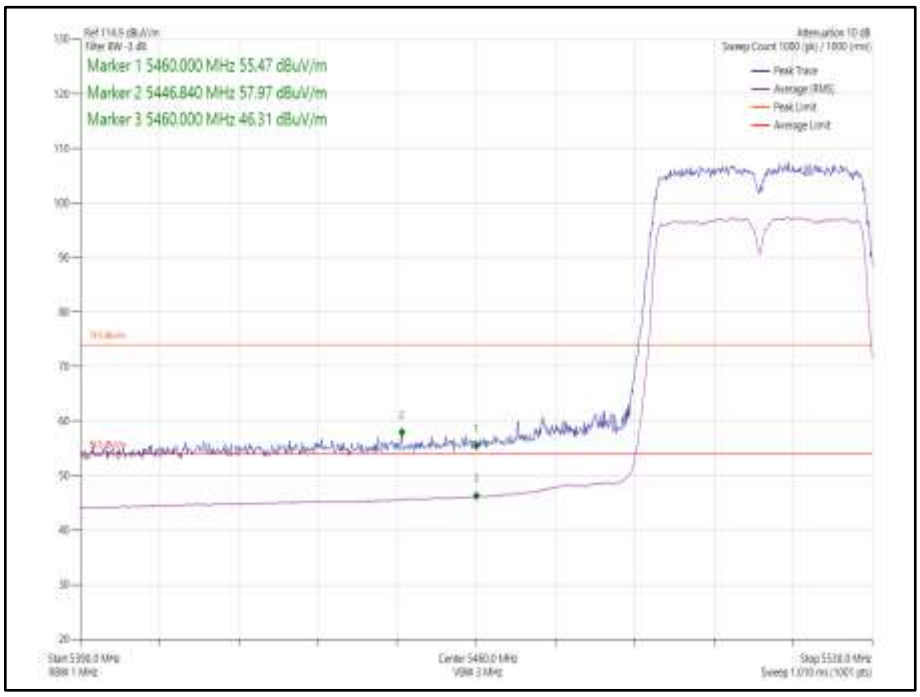

Figure 1055 - 802.11n HT40 CDD, Cores 0-1 - 5510 MHz
Band Edge Frequency 5460 MHz

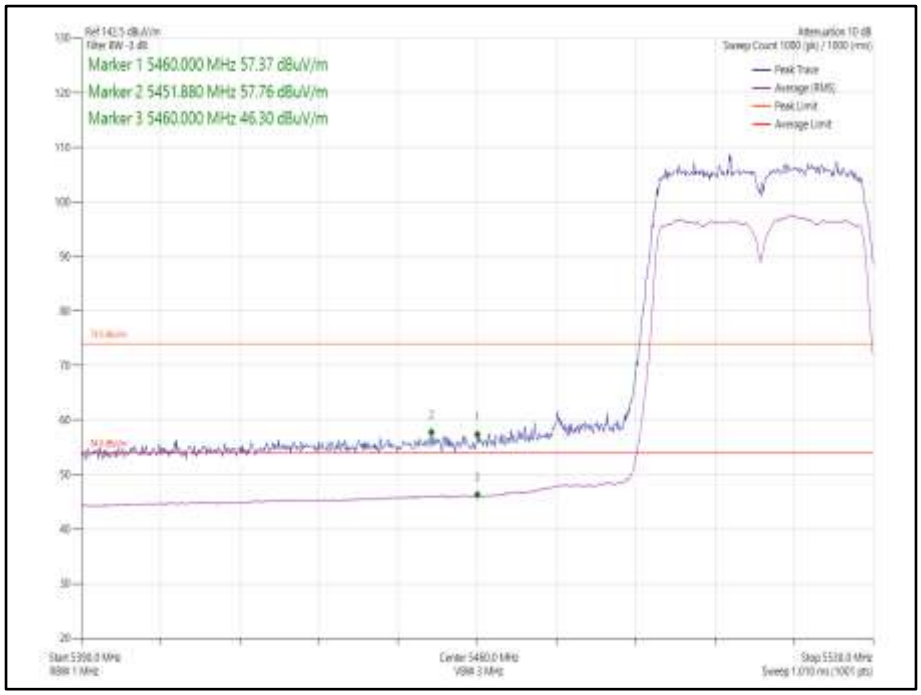

Figure 1056 - 802.11n HT40 SDM, Cores 0-1 - 5510 MHz
Band Edge Frequency 5460 MHz

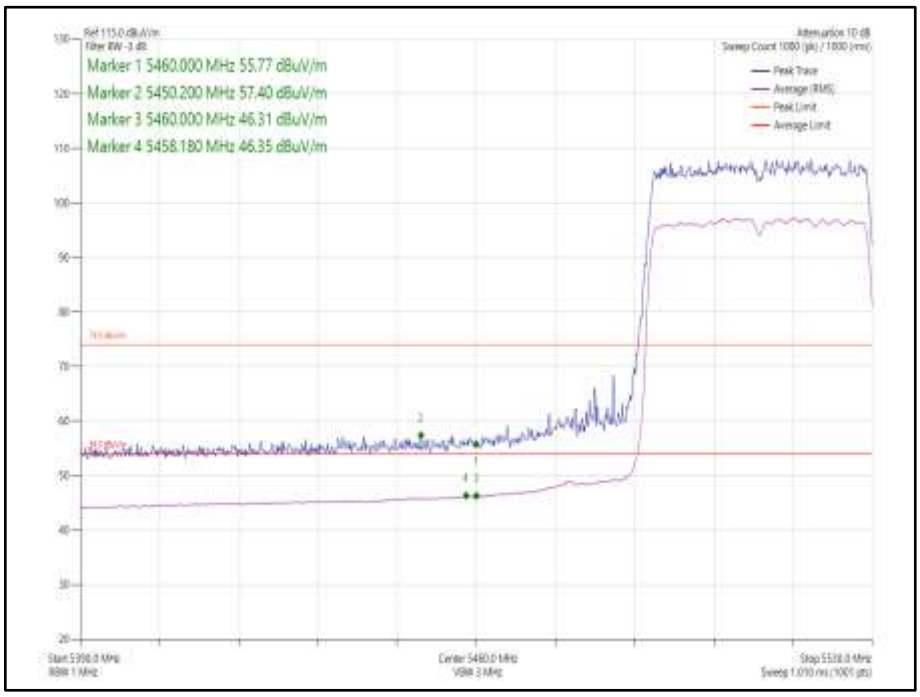

Figure 1057 - 802.11ax HE40 CDD, Cores 0-1, SU - 5510 MHz Band Edge Frequency 5460 MHz

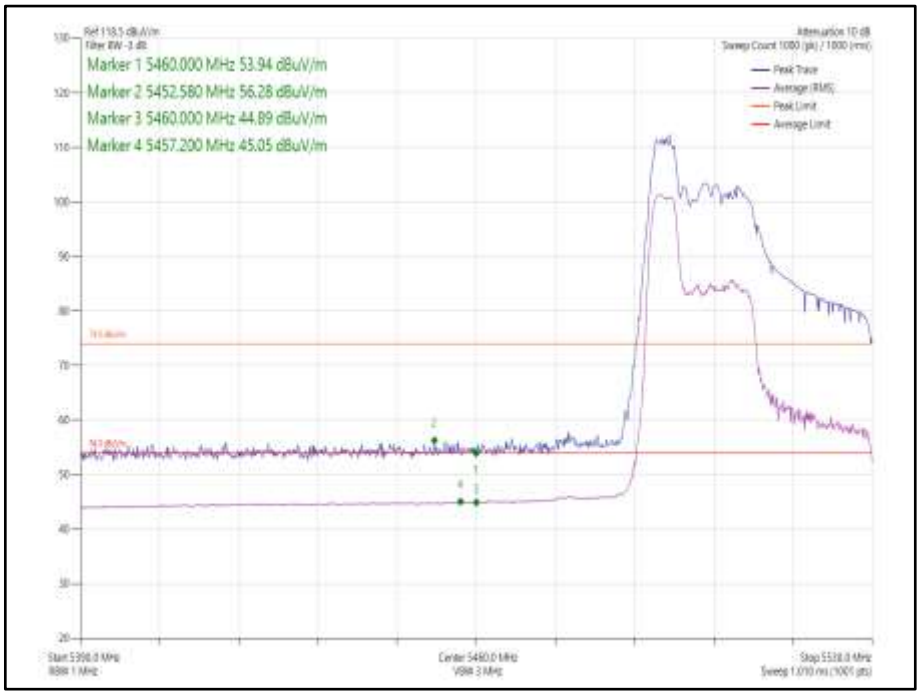

Figure 1058 - 802.11ax HE40 CDD, Cores 0-1, 26-0 - 5510 MHz Band Edge Frequency 5460 MHz

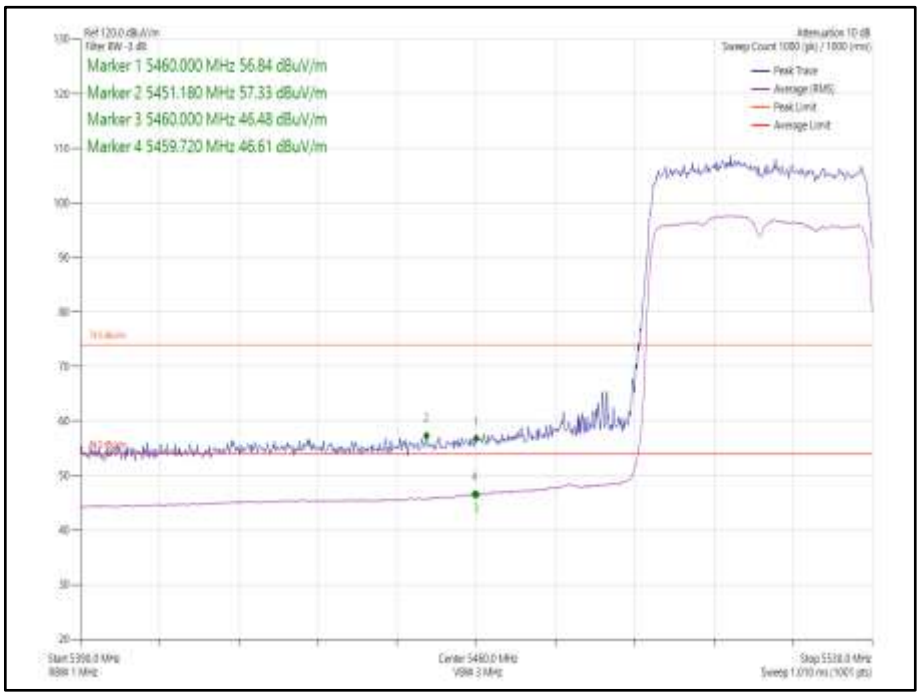

Figure 1059 - 802.11ax HE40 SDM, Cores 0-1, SU - 5510 MHz Band Edge Frequency 5460 MHz

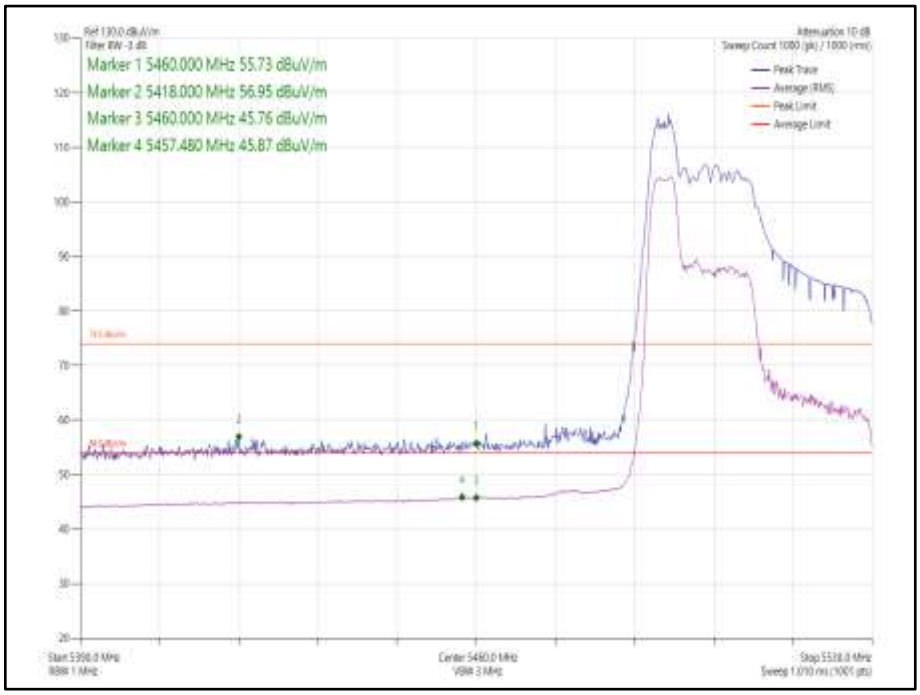

Figure 1060 - 802.11ax HE40 SDM, Cores 0-1, 26-0 - 5510 MHz Band Edge Frequency 5460 MHz

Mode	Data Rate/ MCS	Resource Size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11ac VHT80, Core 0	MCS7x1	-	-	5210	5150	58.18	47.25
802.11ac VHT80, Core 0	MCS7x1	-	-	5290	5350	59.96	48.80
802.11ac VHT80, Core 0	MCS7x1	-	-	5530	5460	63.14	47.95
802.11ax HE80, Core 0	MCS7x1	SU	-	5210	5150	60.68	48.80
802.11ax HE80, Core 0	MCS7x1	26	0	5210	5150	55.76	45.03
802.11ax HE80, Core 0	MCS7x1	SU	-	5290	5350	60.13	48.94
802.11ax HE80, Core 0	MCS7x1	52	52	5290	5350	59.47	47.73
802.11ax HE80, Core 0	MCS7x1	SU	-	5530	5460	60.94	46.91
802.11ax HE80, Core 0	MCS7x1	52	37	5530	5460	58.35	46.34

Table 640 - SISO Restricted Band Edge Results

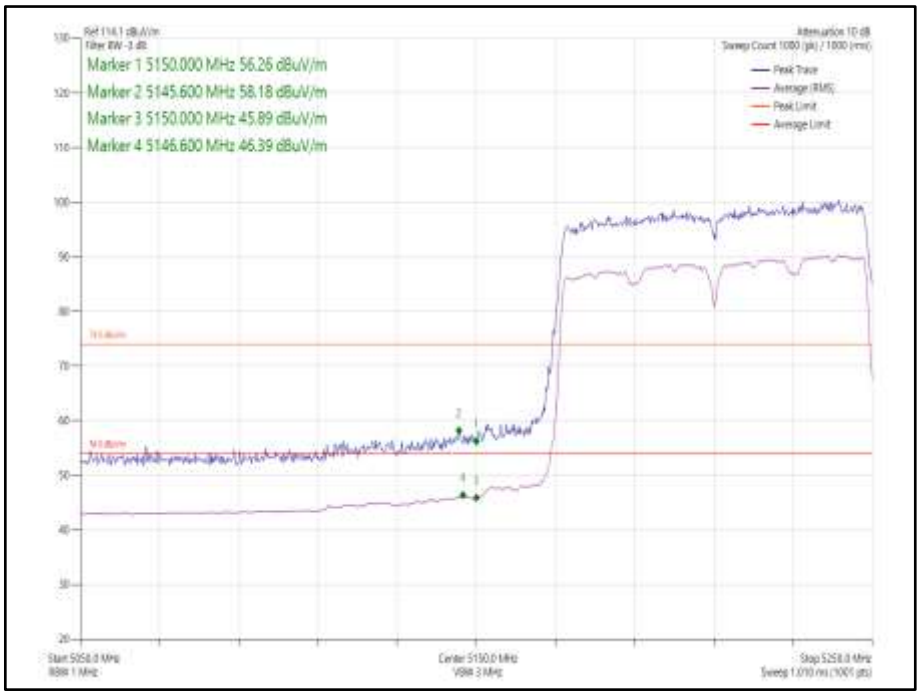

Figure 1061 - 802.11ac VHT80, Core 0 - 5210 MHz
Band Edge Frequency 5150 MHz

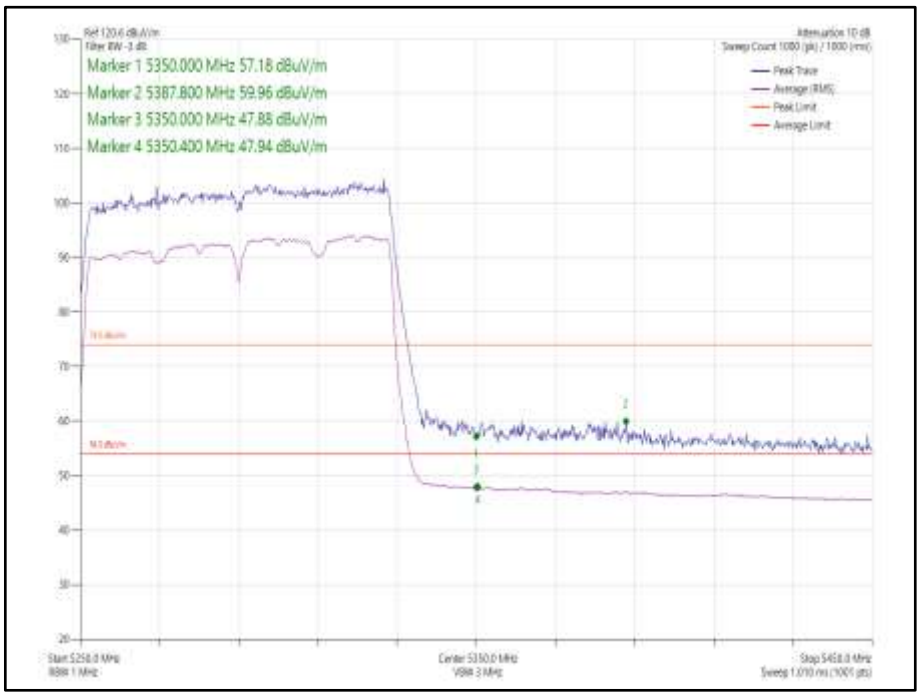

Figure 1062 - 802.11ac VHT80, Core 0 - 5290 MHz
Band Edge Frequency 5350 MHz

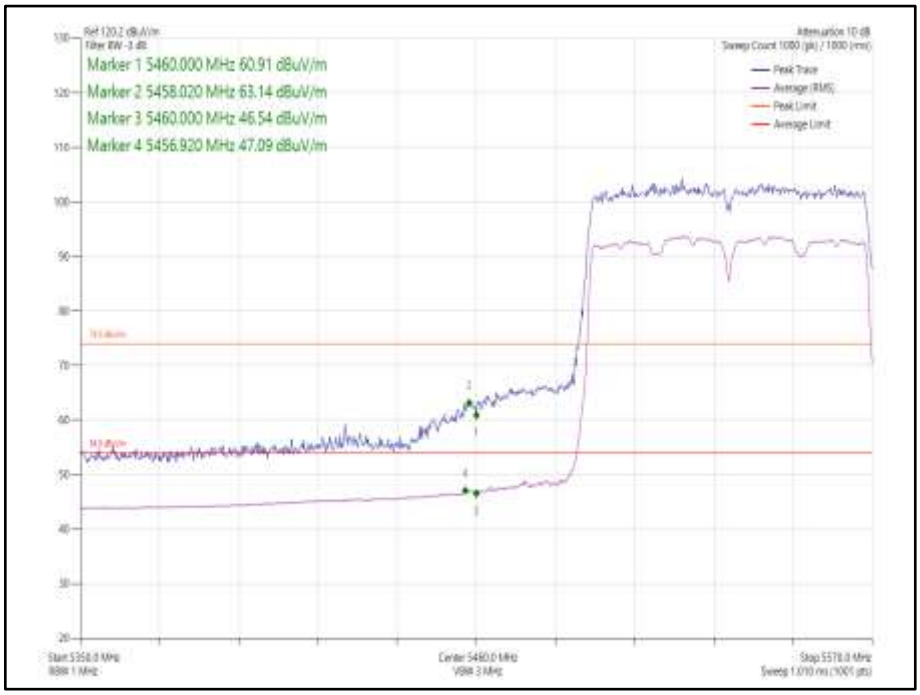

Figure 1063 - 802.11ac VHT80, Core 0 - 5530 MHz
Band Edge Frequency 5460 MHz

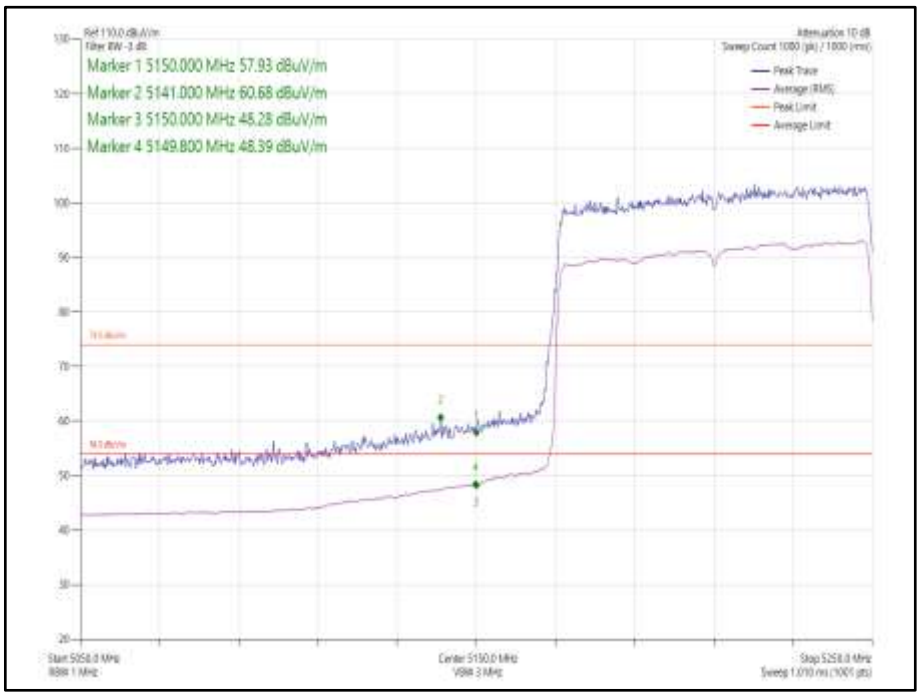

Figure 1064 - 802.11ax HE80, Core 0, SU - 5210 MHz
Band Edge Frequency 5150 MHz

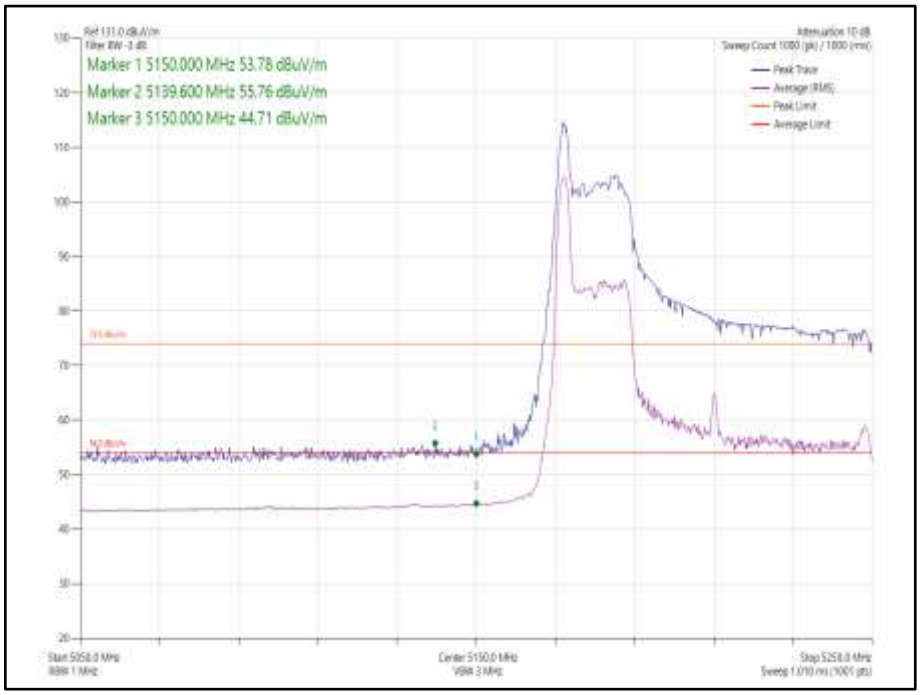

Figure 1065 - 802.11ax HE80, Core 0, 26-0 - 5210 MHz
Band Edge Frequency 5150 MHz

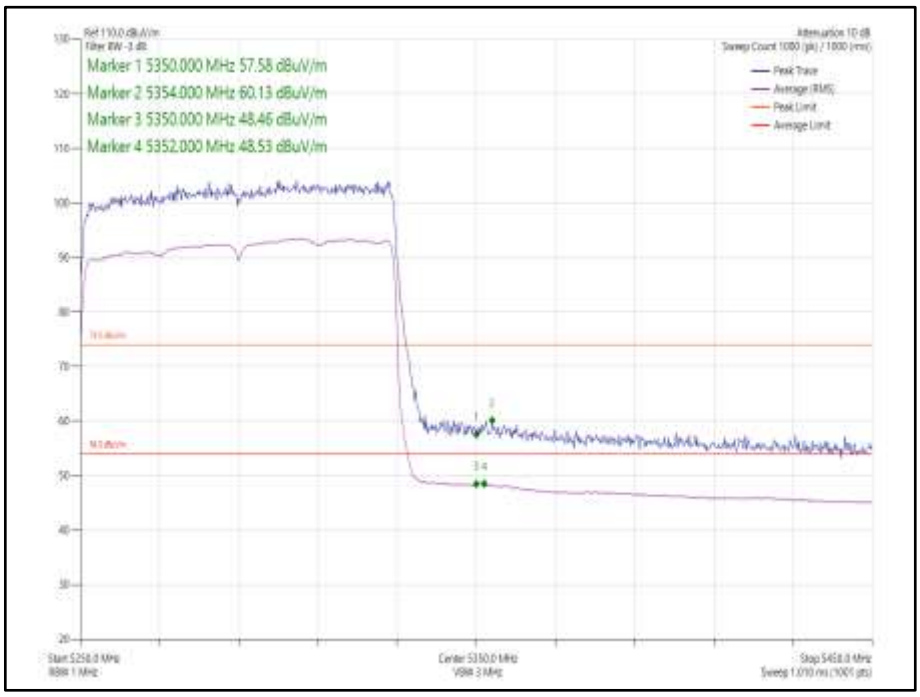

Figure 1066 - 802.11ax HE80, Core 0, SU - 5290 MHz
Band Edge Frequency 5350 MHz

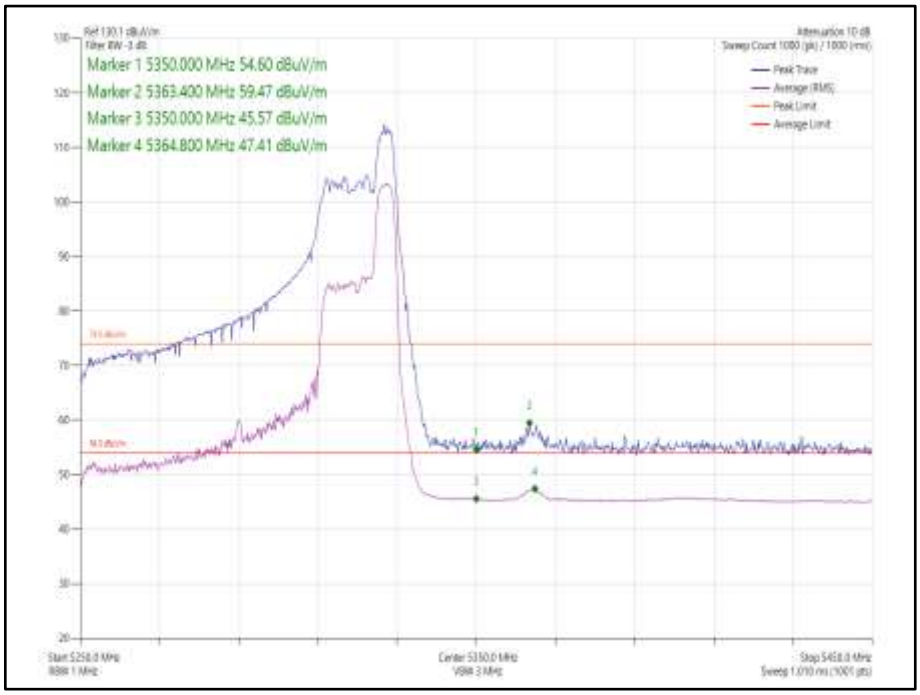

Figure 1067 - 802.11ax HE80, Core 0, 52-52 - 5290 MHz
Band Edge Frequency 5350 MHz

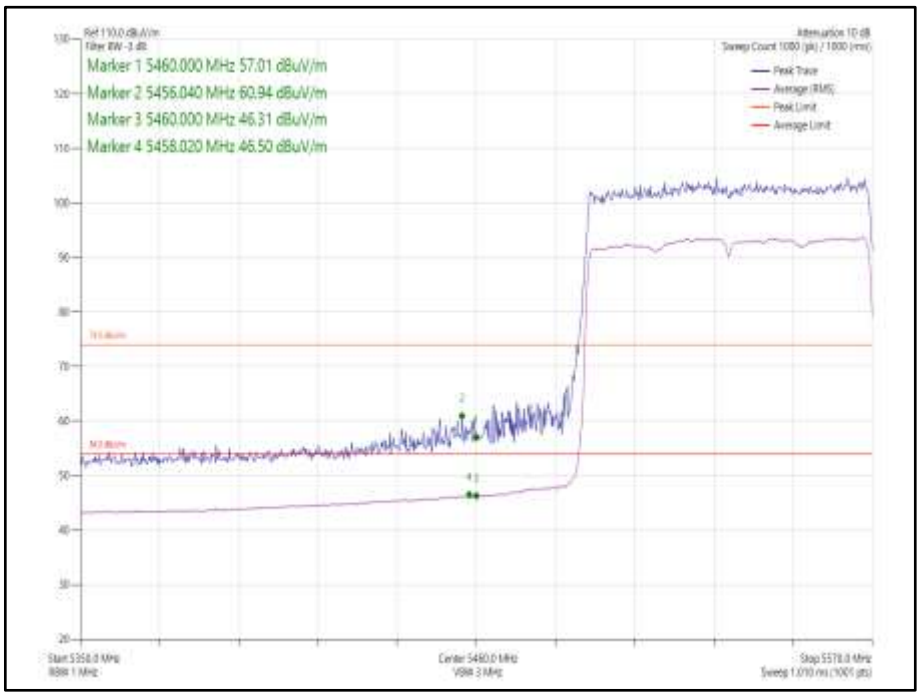

Figure 1068 - 802.11ax HE80, Core 0, SU - 5530 MHz
Band Edge Frequency 5490 MHz

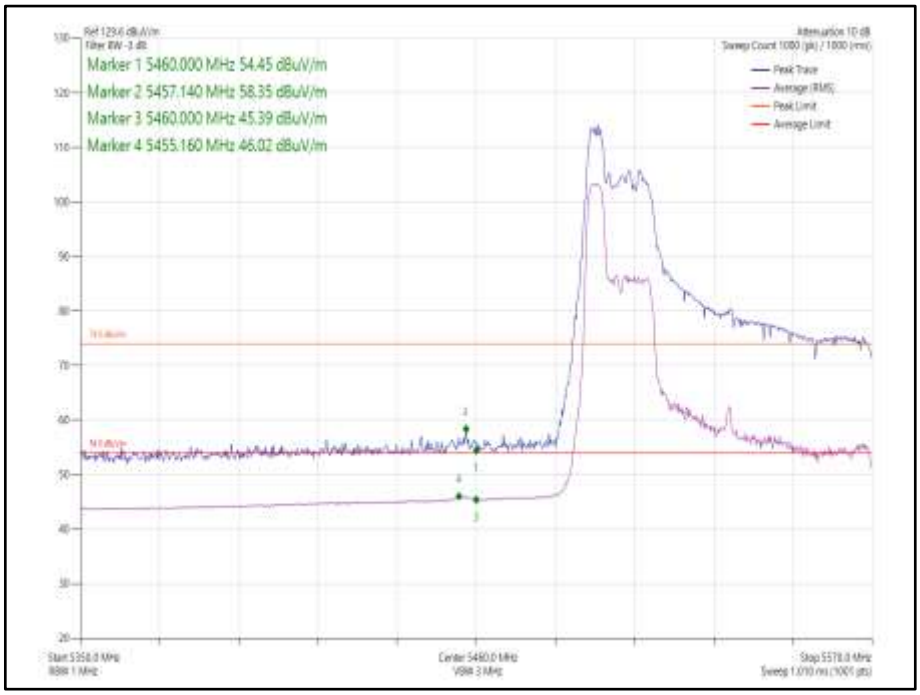

Figure 1069 - 802.11ax HE80, Core 0, 52-37 - 5530 MHz
Band Edge Frequency 5350 MHz

Mode	Data Rate/ MCS	Resource Size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
802.11ac VHT80 CDD, Cores 0-1	MCS7x1	-	-	5210	5150	59.57	49.00
802.11ac VHT80 SDM, Cores 0-1	MCS7x2	-	-	5210	5150	58.34	46.01
802.11ax HE80 CDD, Cores 0-1	MCS7x1	SU	-	5210	5150	60.93	49.29
802.11ax HE80 CDD, Cores 0-1	MCS7x1	26	0	5210	5150	55.74	44.11
802.11ax HE80 SDM, Cores 0-1	MCS7x2	SU	-	5210	5150	58.02	46.42
802.11ax HE80 SDM, Cores 0-1	MCS7x2	26	0	5210	5150	55.62	44.54
802.11ac VHT80 CDD, Cores 0-1	MCS7x1	-	-	5290	5350	61.30	49.00
802.11ac VHT80 SDM, Cores 0-1	MCS7x2	-	-	5290	5350	59.10	47.42
802.11ax HE80 CDD, Cores 0-1	MCS7x1	SU	-	5290	5350	62.37	50.71
802.11ax HE80 CDD, Cores 0-1	MCS7x1	52	52	5290	5350	60.54	47.69
802.11ax HE80 SDM, Cores 0-1	MCS7x2	SU	-	5290	5350	60.33	47.83
802.11ax HE80 SDM, Cores 0-1	MCS7x2	52	52	5290	5350	59.13	47.42
802.11ac VHT80 CDD, Cores 0-1	MCS7x1	-	-	5530	5460	61.21	47.36
802.11ac VHT80 SDM, Cores 0-1	MCS7x2	-	-	5530	5460	58.29	46.78
802.11ax HE80 CDD, Cores 0-1	MCS7x1	SU	-	5530	5460	58.29	46.11
802.11ax HE80 CDD, Cores 0-1	MCS7x1	52	37	5530	5460	56.01	45.02
802.11ax HE80 SDM, Cores 0-1	MCS7x2	SU	-	5530	5460	56.79	45.95
802.11ax HE80 SDM, Cores 0-1	MCS7x2	52	37	5530	5460	57.65	46.41

Table 641 - MIMO 2TX Restricted Band Edge Results

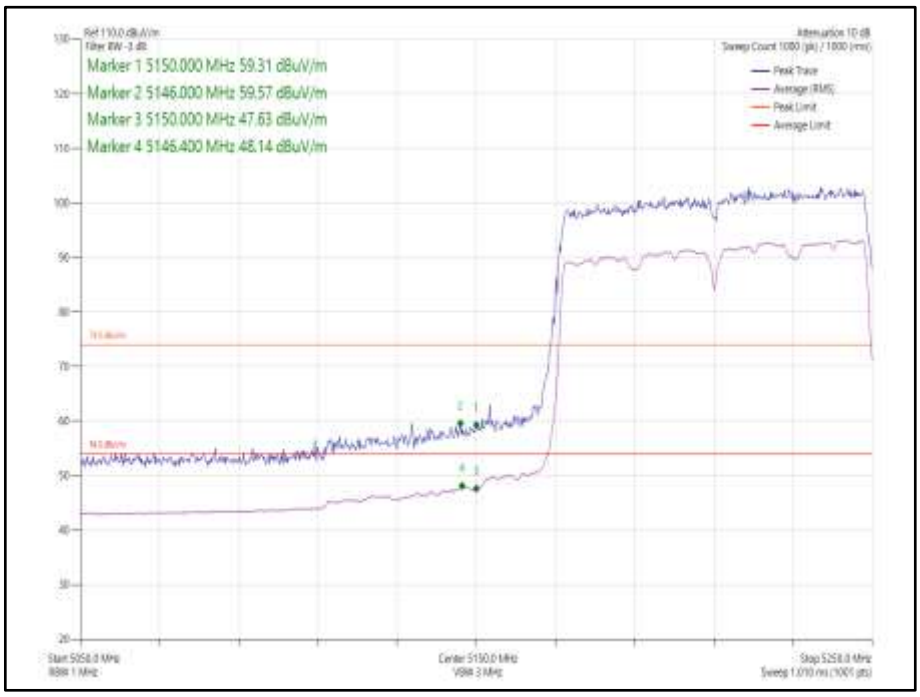

Figure 1070 - 802.11ac VHT80 CDD, Cores 0-1- 5210 MHz Band Edge Frequency 5150 MHz

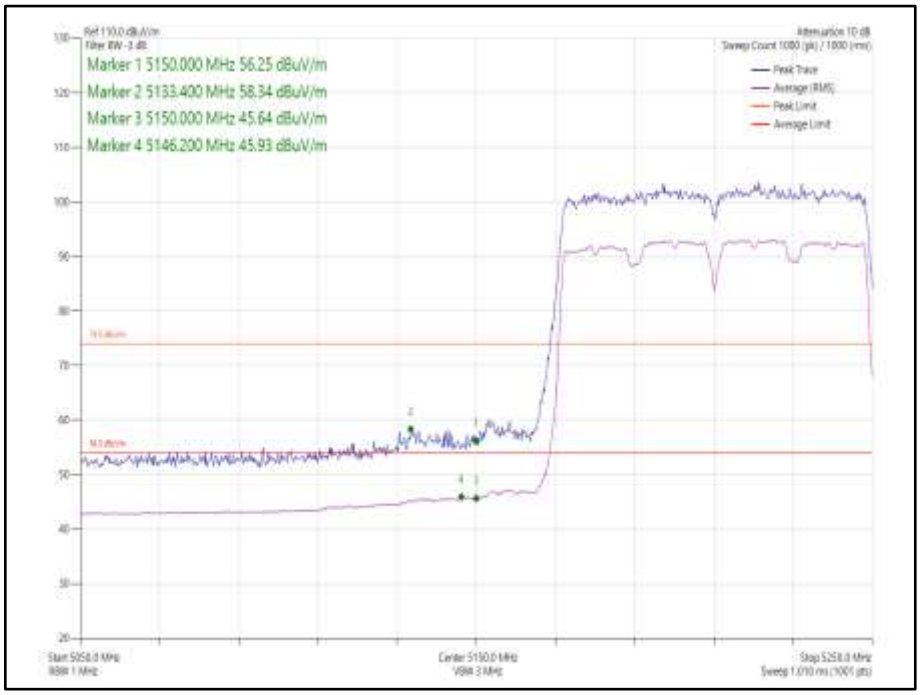

Figure 1071 - 802.11ac VHT80 SDM, Cores 0-1- 5210 MHz Band Edge Frequency 5150 MHz

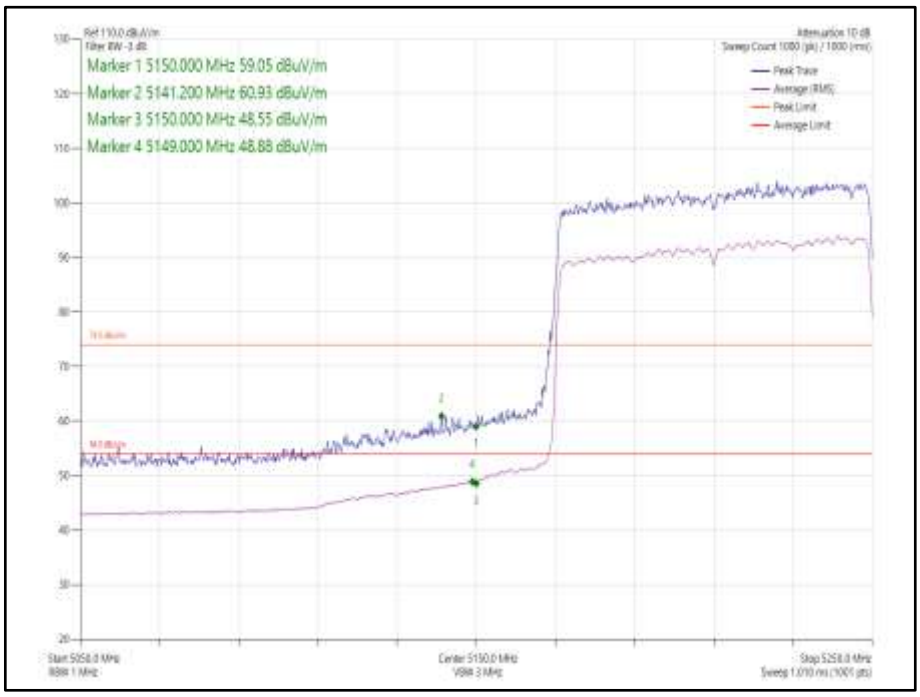

Figure 1072 - 802.11ax HE80 CDD, Cores 0-1, SU - 5210 MHz Band Edge Frequency 5150 MHz

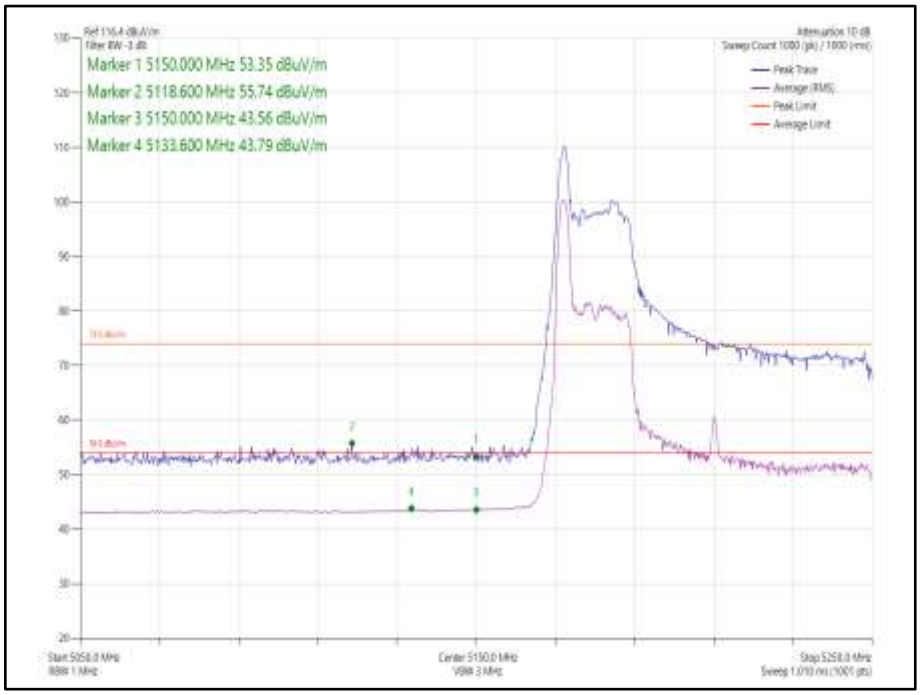

Figure 1073 - 802.11ax HE80 CDD, Cores 0-1, 26-0 - 5210 MHz Band Edge Frequency 5150 MHz

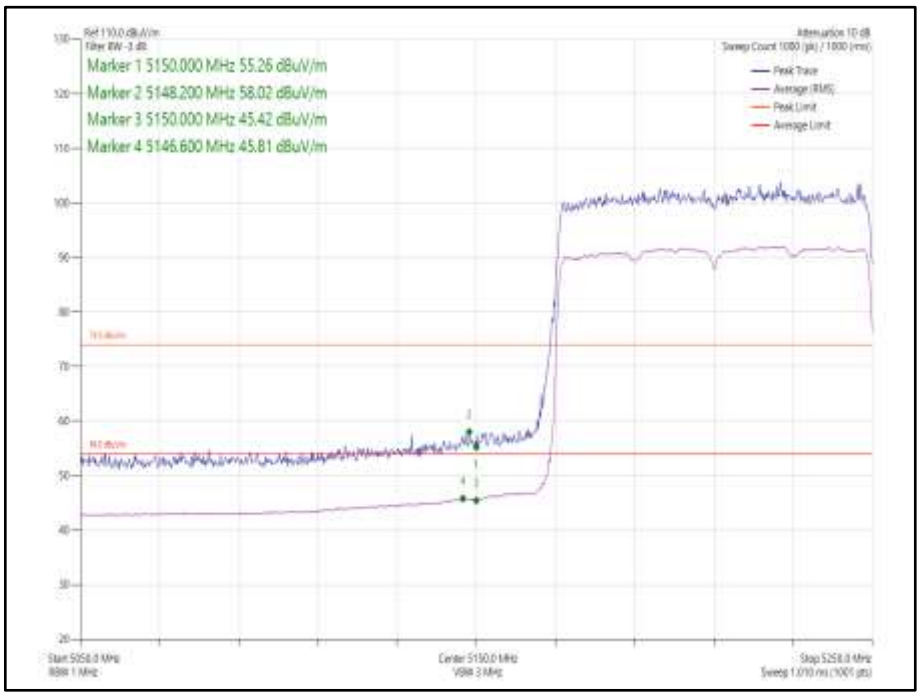

Figure 1074 - 802.11ax HE80 SDM, Cores 0-1, SU - 5210 MHz Band Edge Frequency 5150 MHz

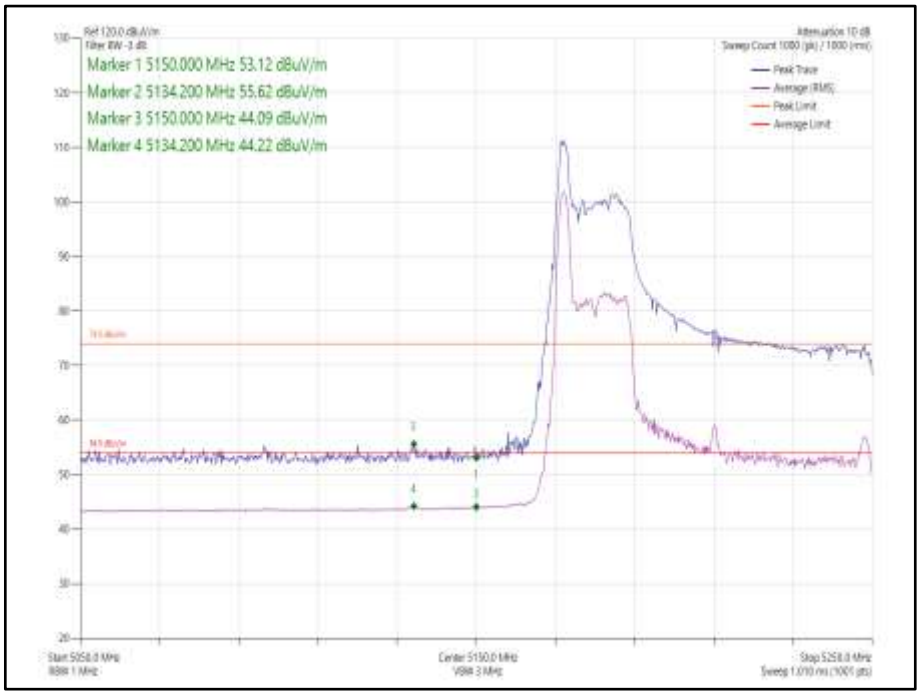

Figure 1075 - 802.11ax HE80 SDM, Cores 0-1, 26-0 - 5210 MHz Band Edge Frequency 5150 MHz

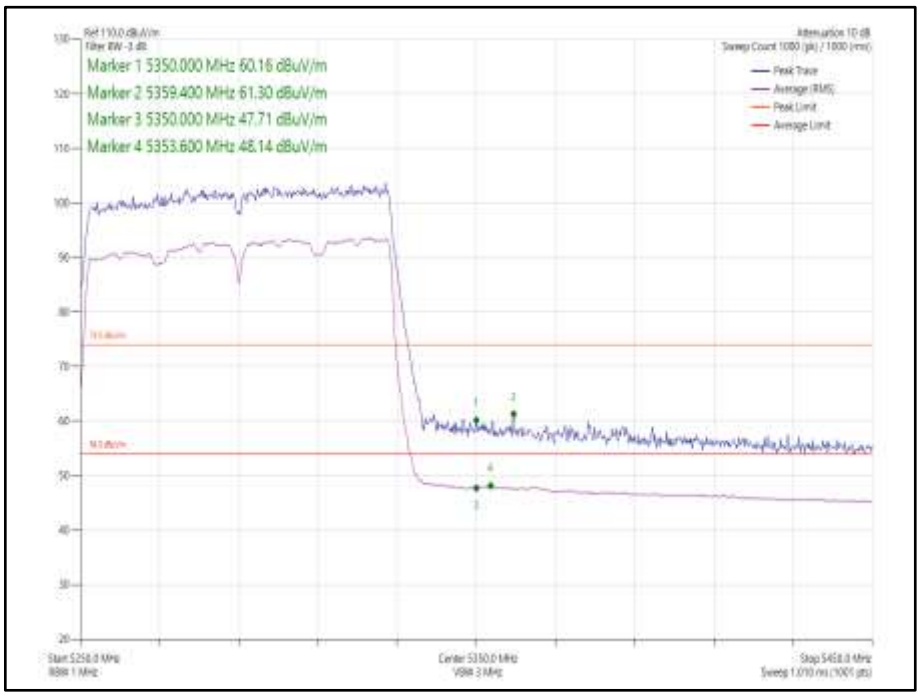

Figure 1076 - 802.11ac VHT80 CDD, Cores 0-1- 5290 MHz Band Edge Frequency 5350 MHz

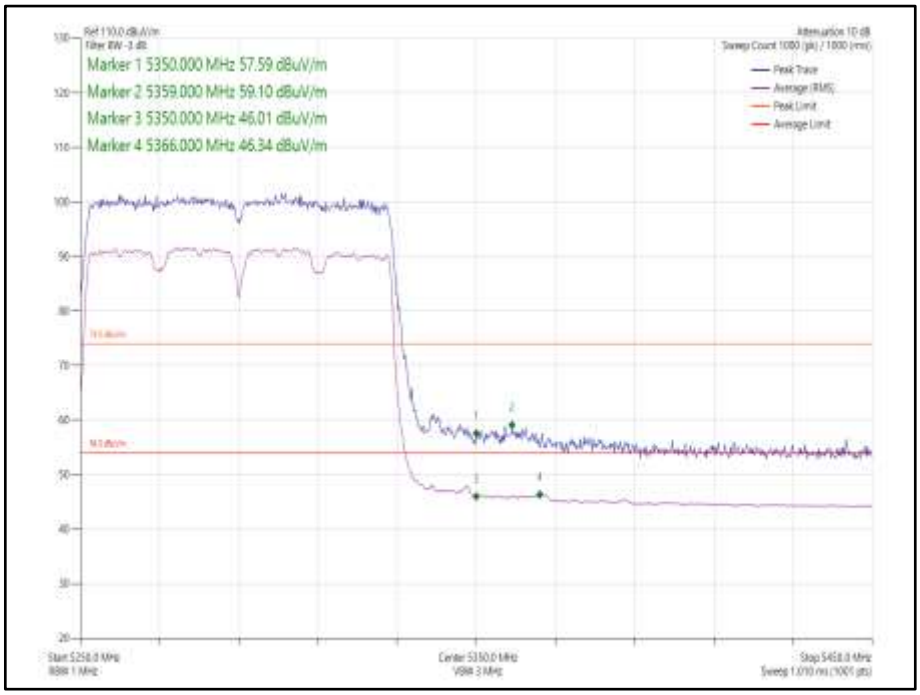

Figure 1077 - 802.11ac VHT80 SDM, Cores 0-1- 5290 MHz Band Edge Frequency 5350 MHz

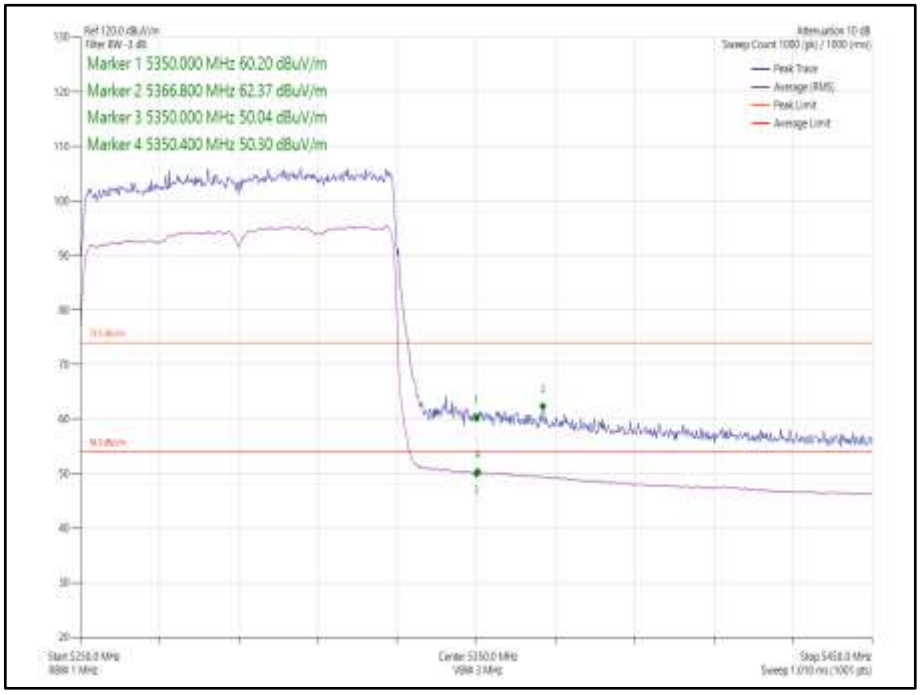

Figure 1078 - 802.11ax HE80 CDD, Cores 0-1, SU - 5290 MHz Band Edge Frequency 5350 MHz

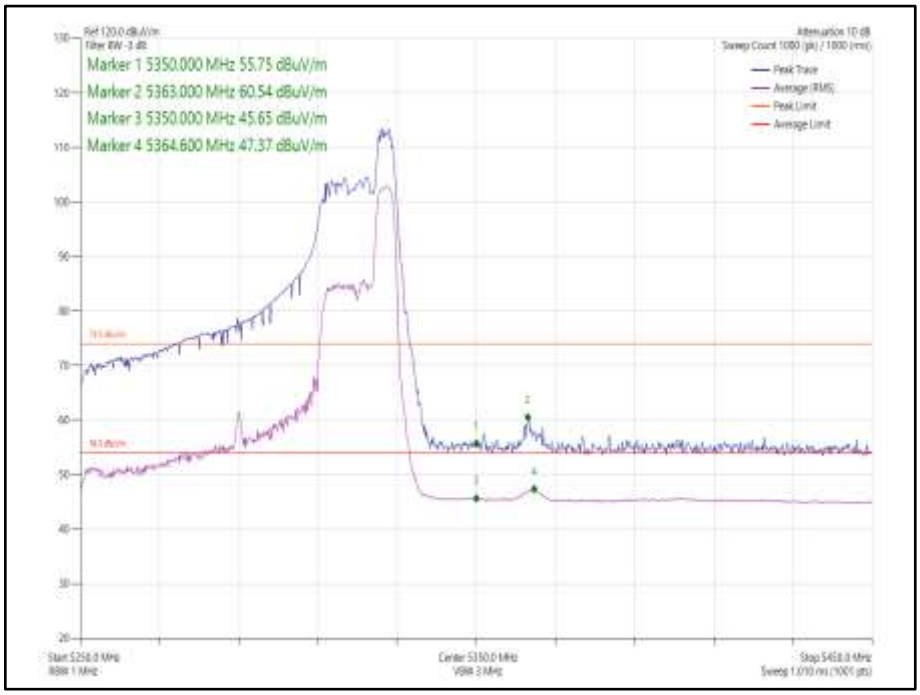

Figure 1079 - 802.11ax HE80 CDD, Cores 0-1, 52-52- 5290 MHz Band Edge Frequency 5350 MHz

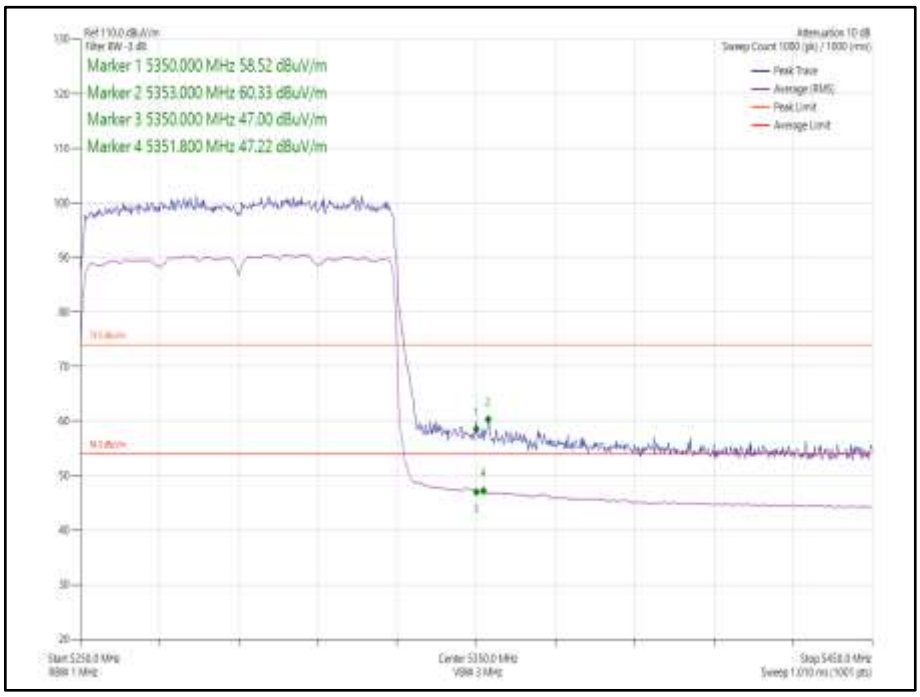

Figure 1080 - 802.11ax HE80 SDM, Cores 0-1, SU - 5290 MHz Band Edge Frequency 5350 MHz

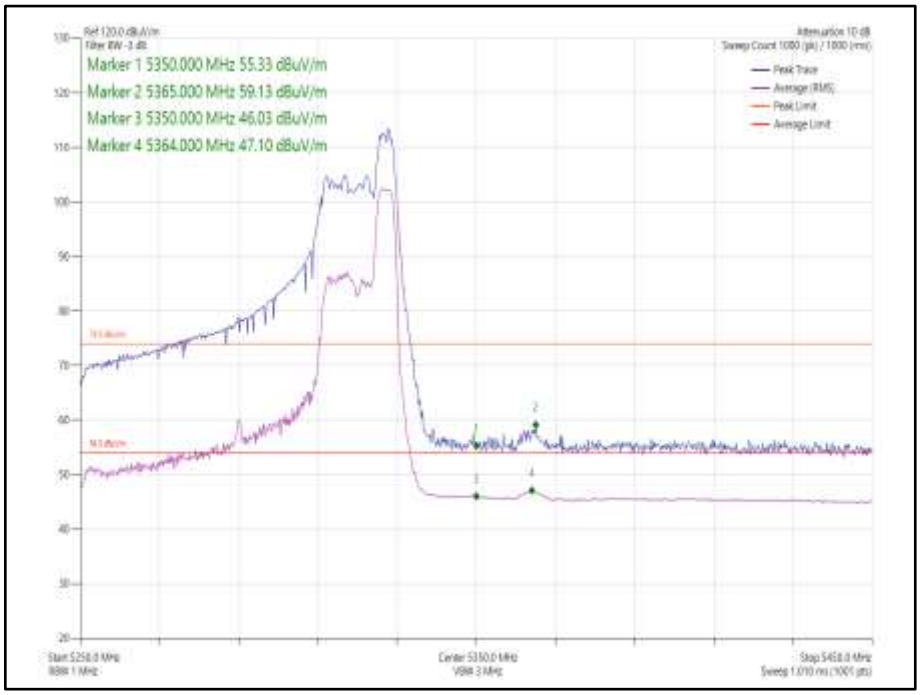

Figure 1081 - 802.11ax HE80 SDM, Cores 0-1, 52-52- 5290 MHz Band Edge Frequency 5350 MHz

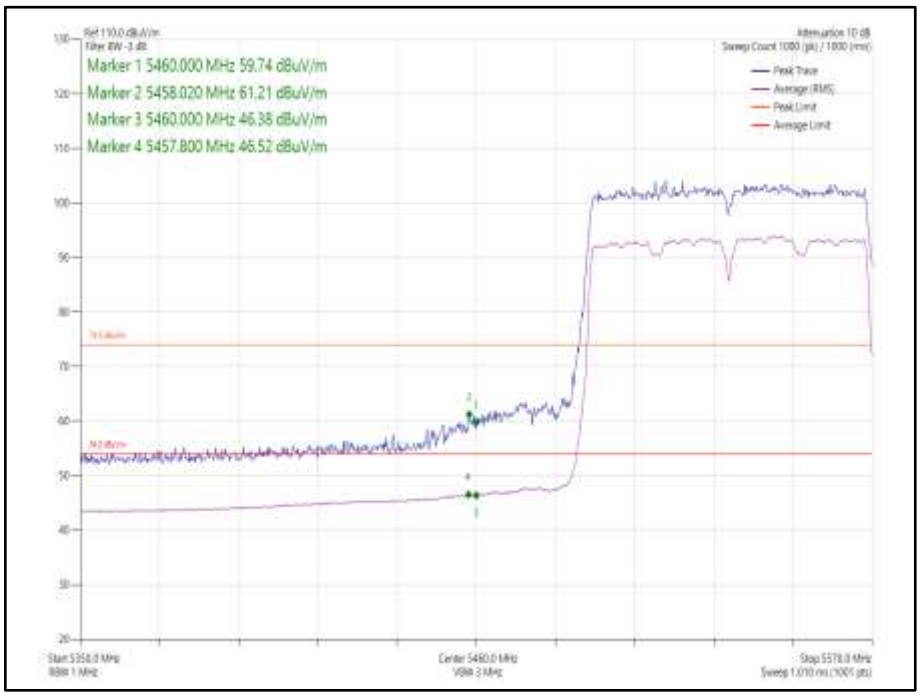

Figure 1082 - 802.11ac VHT80 CDD, Cores 0-1- 5530 MHz Band Edge Frequency 5460 MHz

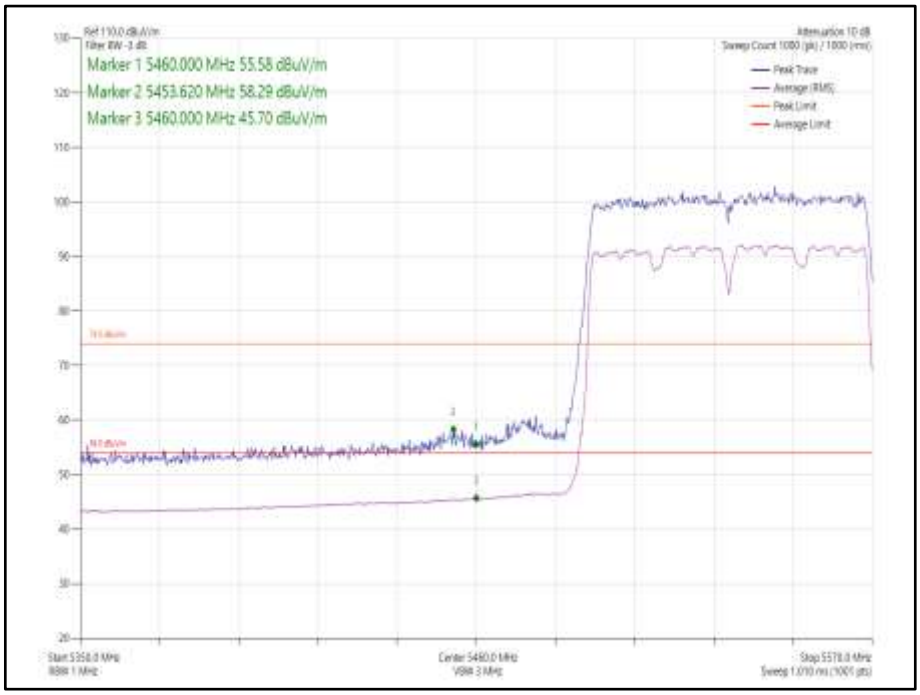

Figure 1083 - 802.11ac VHT80 SDM, Cores 0-1- 5530 MHz Band Edge Frequency 5460 MHz

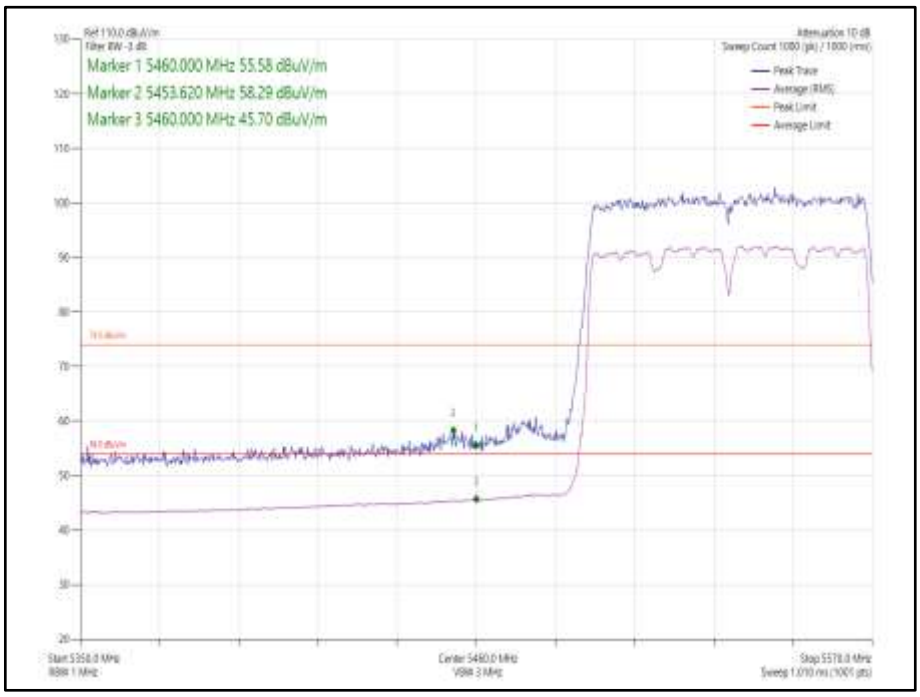

Figure 1084 - 802.11ax HE80 CDD, Cores 0-1, SU - 5530 MHz Band Edge Frequency 5460 MHz

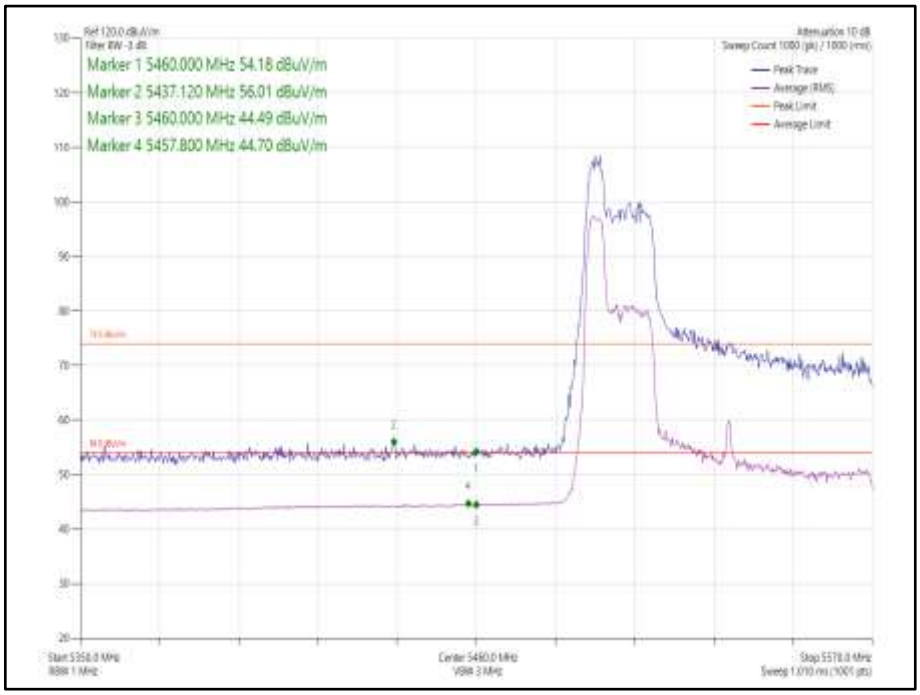

Figure 1085 - 802.11ax HE80 CDD, Cores 0-1, 52-37 - 5530 MHz Band Edge Frequency 5460 MHz

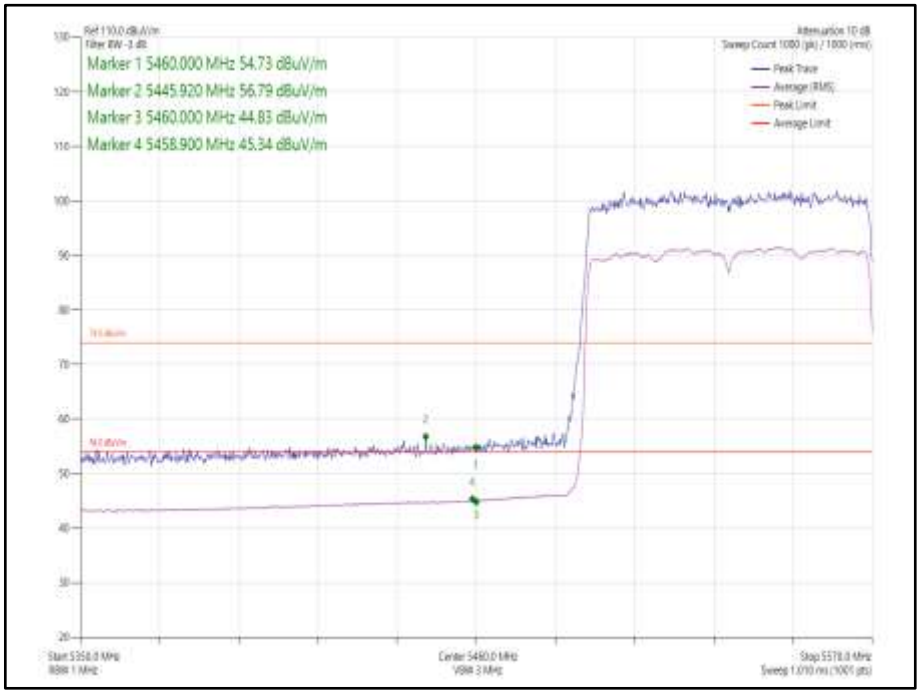

Figure 1086 - 802.11ax HE80 SDM, Cores 0-1, SU - 5530 MHz Band Edge Frequency 5460 MHz

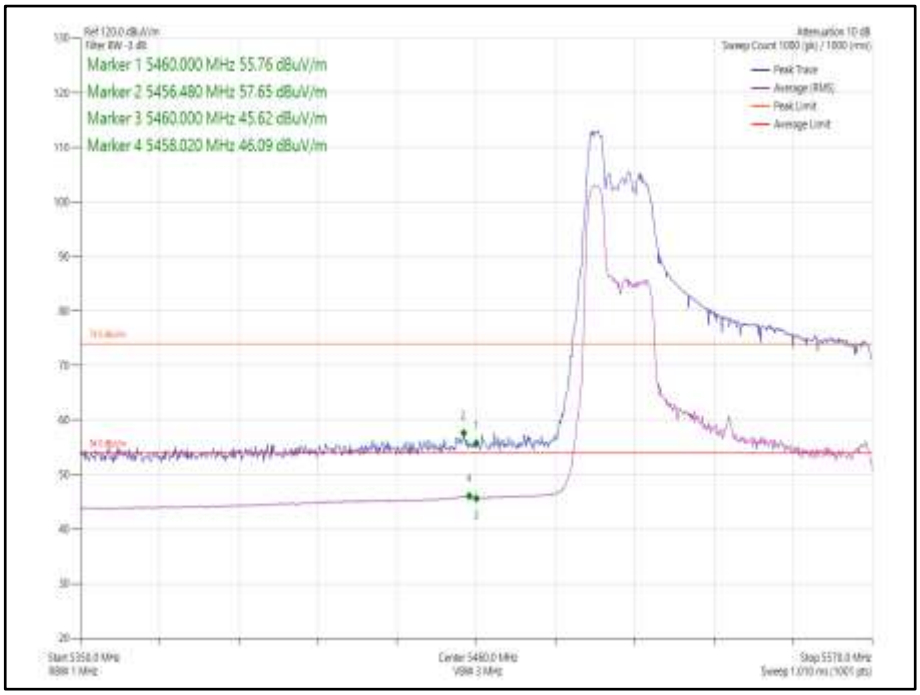

Figure 1087 - 802.11ax HE80 SDM, Cores 0-1, 26-0 - 5530 MHz Band Edge Frequency 5460 MHz

FCC 47 CFR Part 15, Limit Clause 15.205 and ISED RSS-GEN Limit Clause 8.10

	Peak (dBµV/m)	Average (dBµV/m)
Restricted Bands of Operation	74	54

Table 642

2.5.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EMI Test Receiver	Rohde & Schwarz	ESW44	5084	12	04-Feb-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5102	12	12-Oct-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5103	12	12-Oct-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5104	12	10-Dec-2021
EmX Emissions Software	TUV SUD	V2.1.0	5125	-	Software
Screened Room (11)	Rainford	Rainford	5136	36	01-Nov-2021
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
Turntable	Maturo	TT 15WF	5160	-	TU
Horn Antenna (1-10GHz)	Schwarzbeck	BBHA 9120 B	5215	12	10-Mar-2021
Preamp 1 - 26.5 GHz	Agilent Technologies	8449B	5445	12	06-May-2021
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	17-Mar-2021
Attenuator 5W 10dB DC-18GHz	Aaren	AT40A-4041-D18-10	5494	12	14-Apr-2021
2m SMA Cable	Junkosha	MWX221-02000AMSAMS/A	5518	12	01-Apr-2021
8m N Type Cable	Junkosha	MWX221-08000NMSNMS/B	5522	12	24-Mar-2021

Table 643

TU - Traceability Unscheduled

2.6 Spurious Radiated Emissions

2.6.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.407 (b) and 15.205
ISED RSS-247, Clause 6.2

2.6.2 Equipment Under Test and Modification State

A2438, S/N: C02DM00Q087X - Modification State 0

2.6.3 Date of Test

12-November-2020 to 19-December-2020

2.6.4 Test Method

Testing was performed in accordance with ANSI C63.10, clause 6.3, 6.5, 6.6 and 12.7.

Tests were performed in HT20 CDD in 2TX MIMO mode on the Main Radio, with measurements undertaken from 30 MHz to 40 GHz, on channel 36 (5180 MHz) and channel 165 (5825 MHz).

For the purpose of this testing, spurious emissions were limited to 1 GHz to 40 GHz on all other test channels.

Plots for average measurements were taken in accordance with ANSI C63.10, clause 12.7.7.2 with max-hold trace to characterize the EUT. Where emissions were detected, final average measurements were taken in accordance with ANSI C63.10, clauses 12.7.7.2

Where duty cycle corrections were required for average measurements on emissions temporally related to the fundamental, these are included in the result tables but are not shown on the plots.

Note the edges of the fundamental may be visible and in some cases appear to exceed the limit in these pre-scans. These band edge emissions were not measured in this section and are investigated fully in sections 2.4 and 2.5.

The plots shown are the characterization of the EUT. The limits on the plots represent the most stringent case for restricted bands, (54/74 dBuV/m @ 3 m and 64/84 dBuV/m @ 1m) when compared to -27 dBm/MHz EIRP outside restricted bands. The limits shown have been used as a threshold to determine where further measurements are necessary. Where results are within 10dB of the limits shown on the plots, further investigation was carried out and reported in results tables.

The following conversion can be applied to convert from dBµV/m to µV/m:
10^(Field Strength in dBµV/m/20).

EIRP was converted to field strength at 3m using the following formula:
Field Strength (dBµV/m at 3 m) = EIRP (dBm) + 95.2 dB

2.6.5 Example Test Setup Diagram

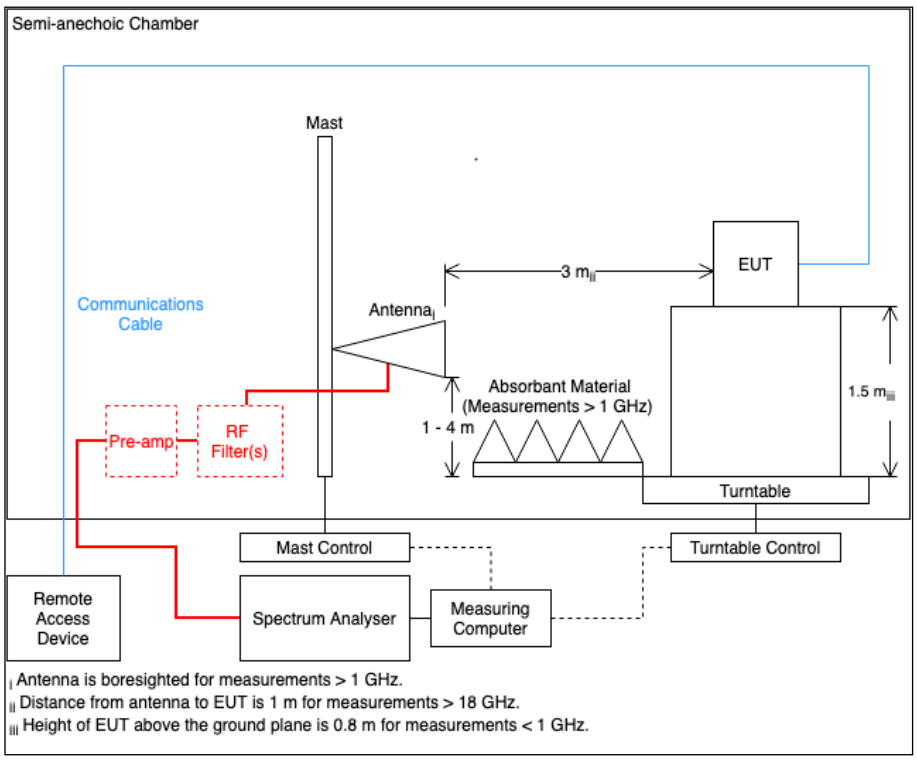

Figure 1088

2.6.6 Environmental Conditions

Ambient Temperature	20.6 - 21.8 °C
Relative Humidity	37.8 - 51.9 %

2.6.7 Test Results

5 GHz WLAN

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
10368.836	48.0	74.0	-26.0	Peak	253	101	Horizontal

Table 644 - U-NII-1 - 5180 MHz (CH36), HT20, CDD, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

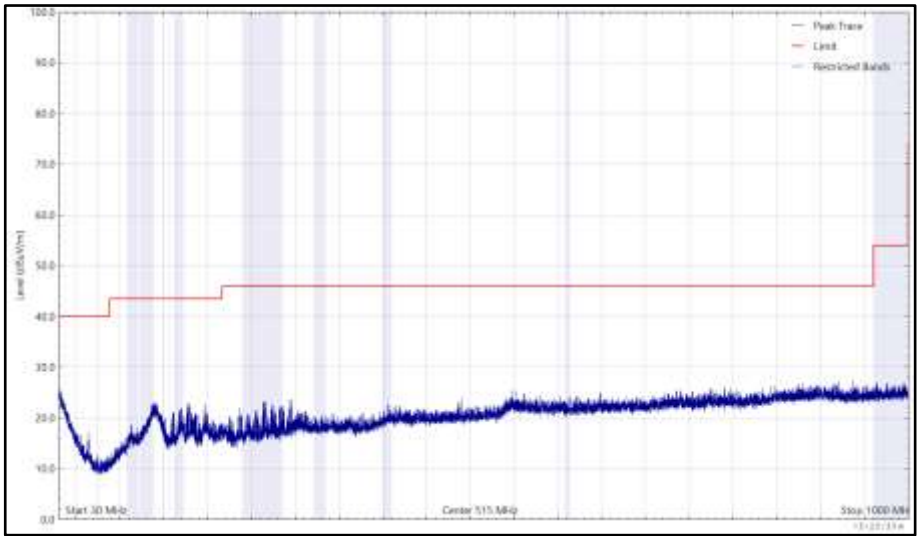

Figure 1089 - U-NII-1 - 5180 MHz (CH36), HT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

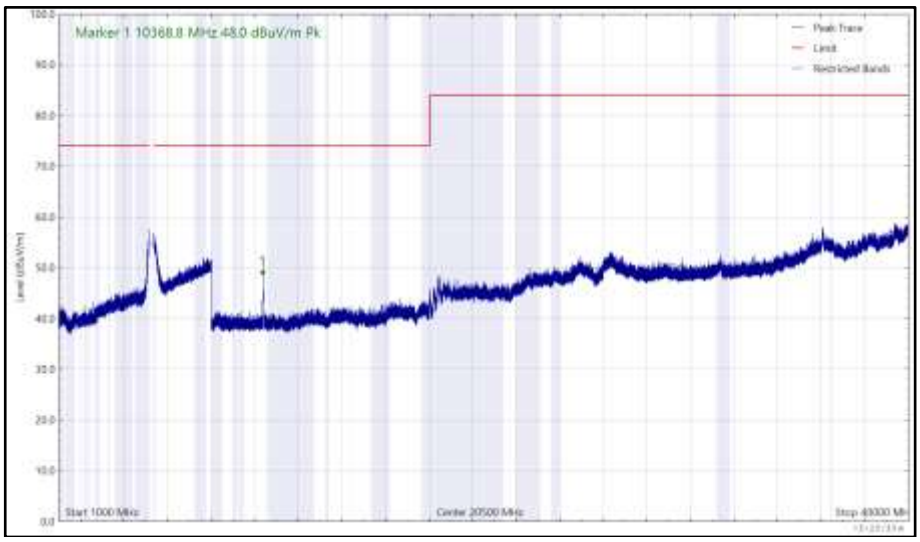

Figure 1090 - U-NII-1 - 5180 MHz (CH36), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

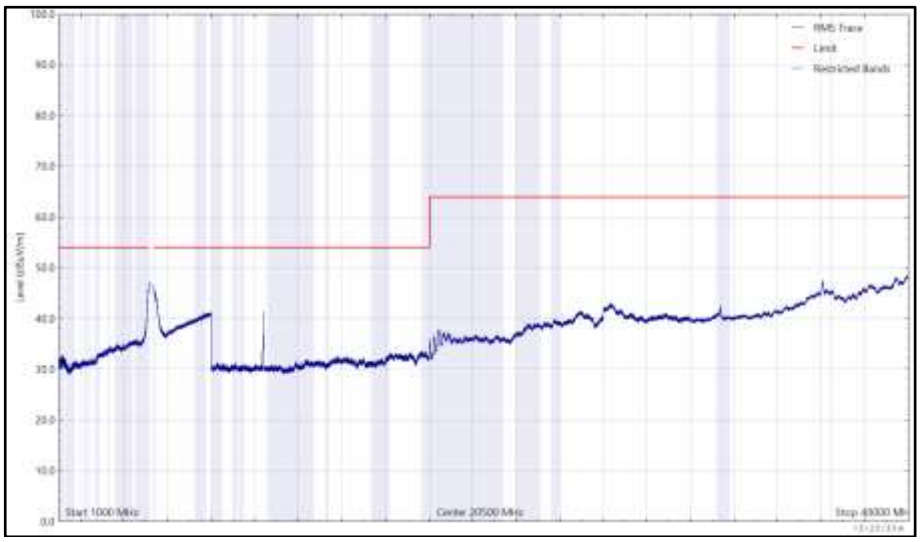

Figure 1091 - U-NII-1 - 5180 MHz (CH36), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

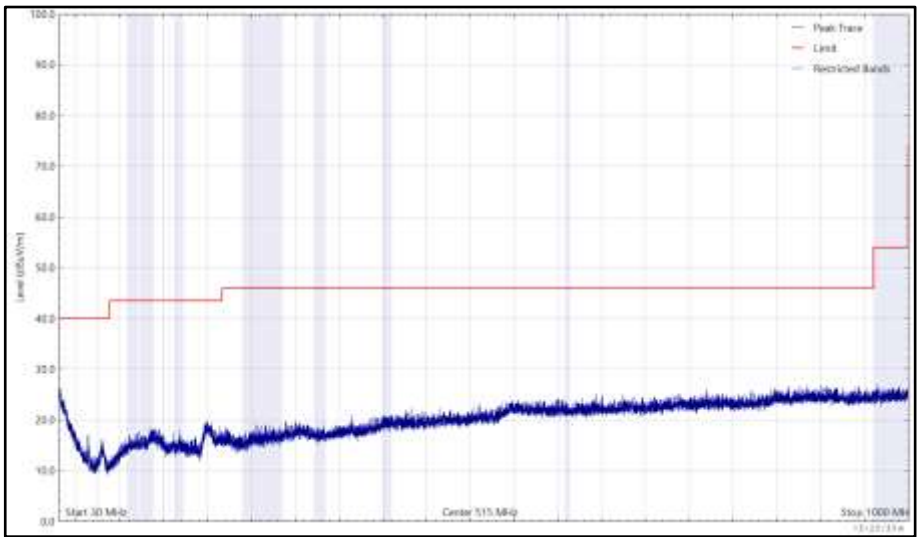

Figure 1092 - U-NII-1 - 5180 MHz (CH36), HT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

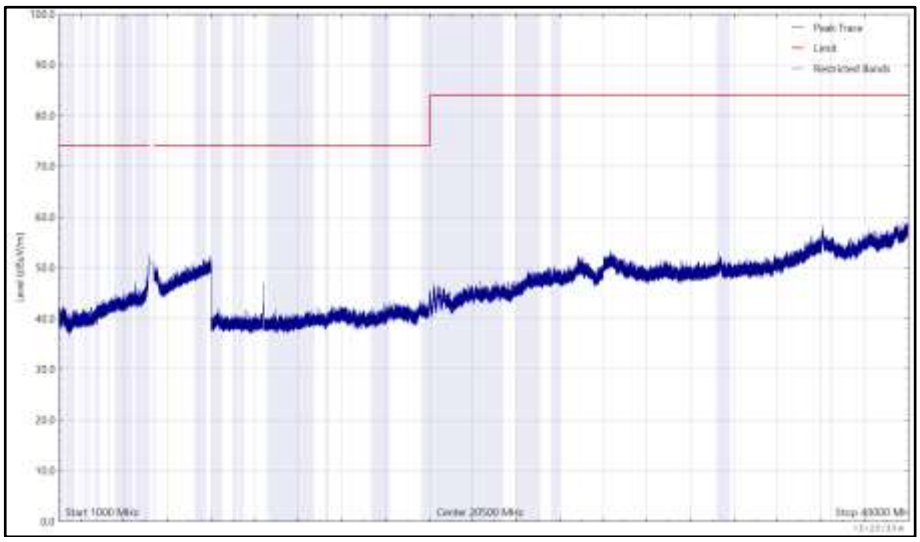

Figure 1093 - U-NII-1 - 5180 MHz (CH36), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

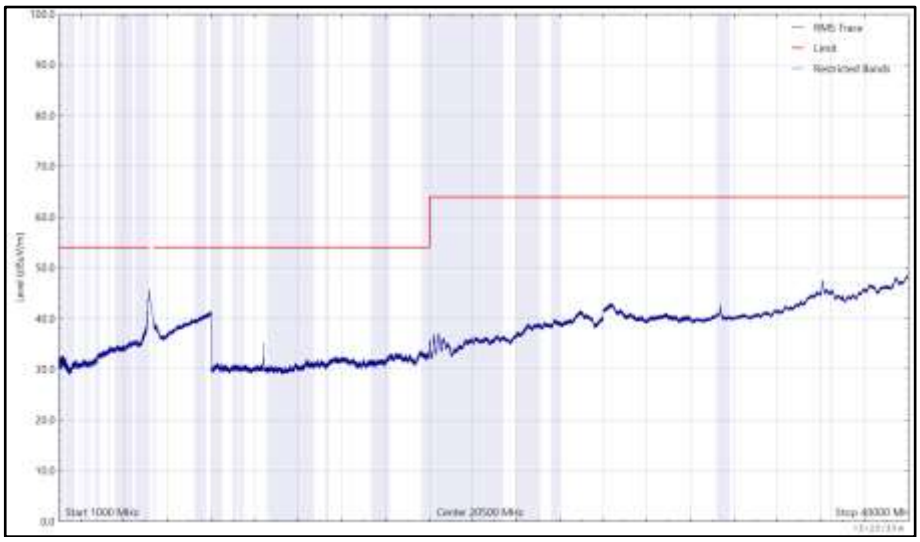

Figure 1094 - U-NII-1 - 5180 MHz (CH36), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
10639.719	34.7	54.0	-19.3	RMS	247	100	Horizontal
10639.729	34.9	54.0	-19.1	RMS	167	101	Vertical

Table 645 - U-NII-2A - 5320 MHz (CH64), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

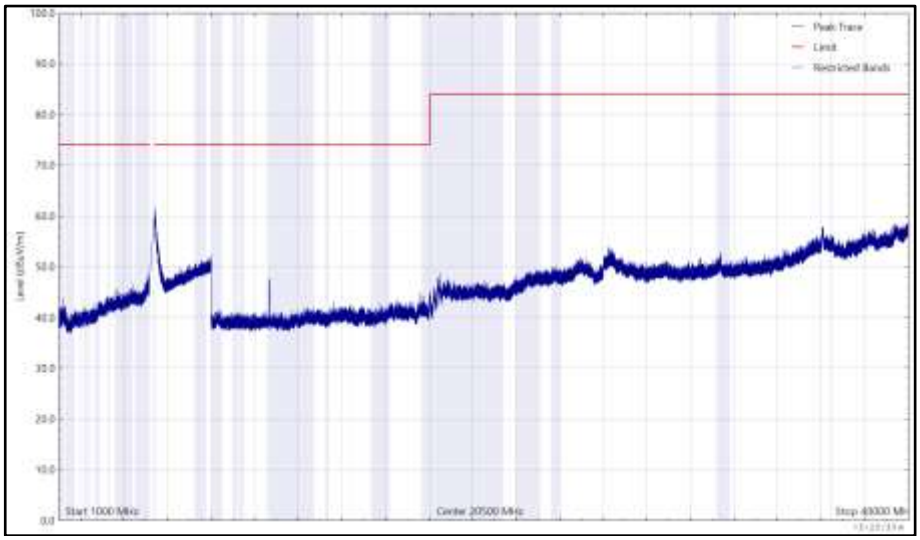

Figure 1095 - U-NII-2A - 5320 MHz (CH64), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

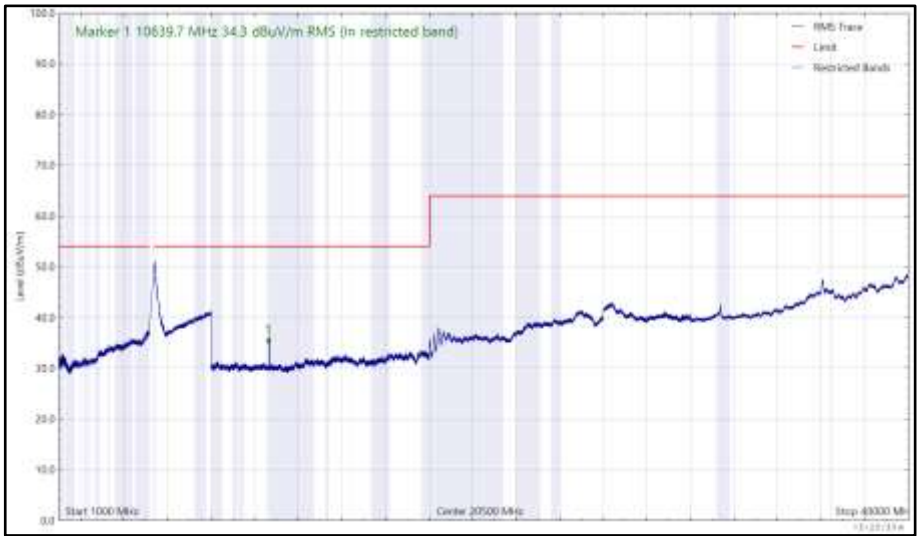

Figure 1096 - U-NII-2A - 5320 MHz (CH64), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

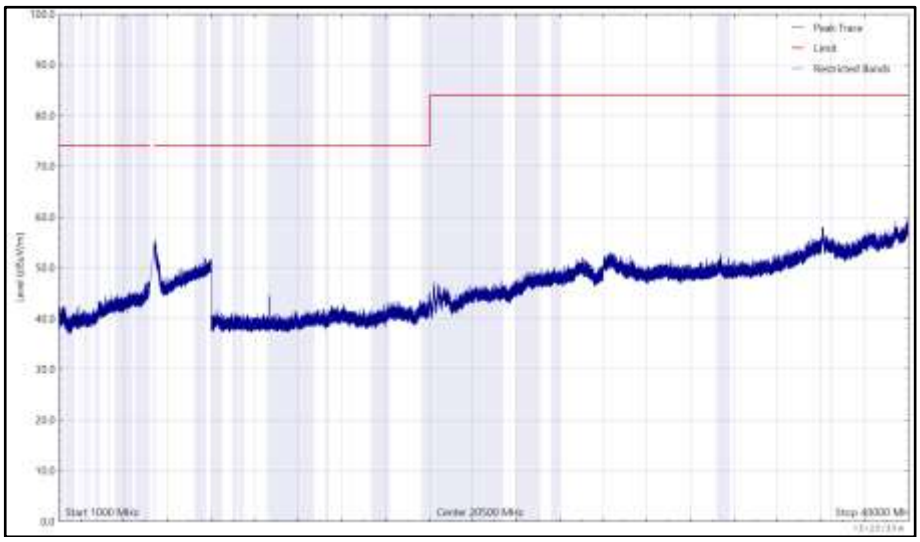

Figure 1097 - U-NII-2A - 5320 MHz (CH64), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

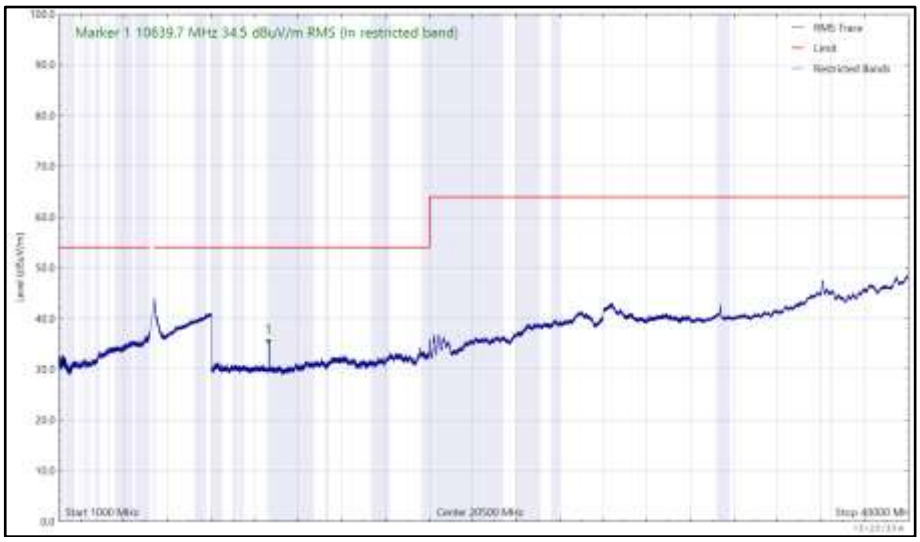

Figure 1098 - U-NII-2A - 5320 MHz (CH64), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
5076.829	38.1	54.0	-15.9	RMS	155	100	Horizontal
10999.719	33.5	54.0	-20.5	RMS	245	110	Vertical
11000.020	40.9	54.0	-13.1	RMS	200	244	Horizontal

Table 646 - U-NII-2C - 5500 MHz (CH100), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

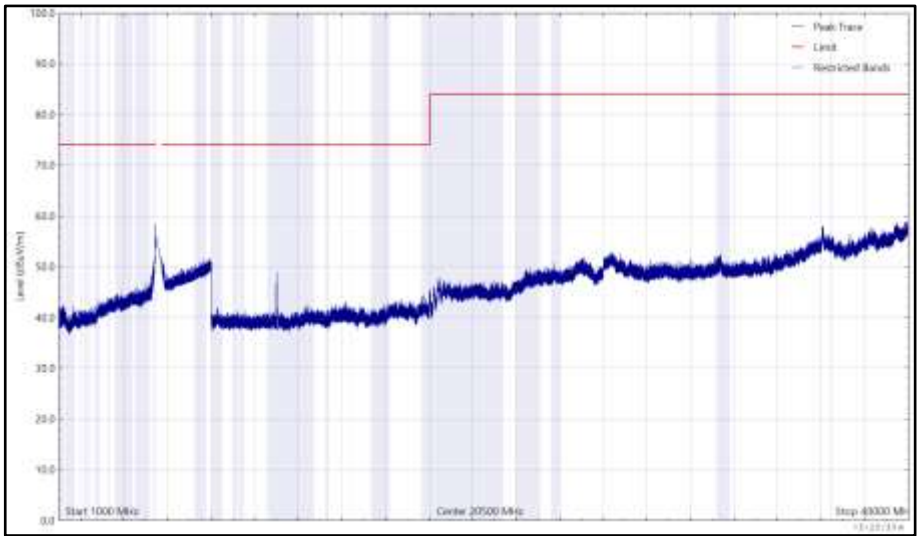

Figure 1099 - U-NII-2C - 5500 MHz (CH100), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

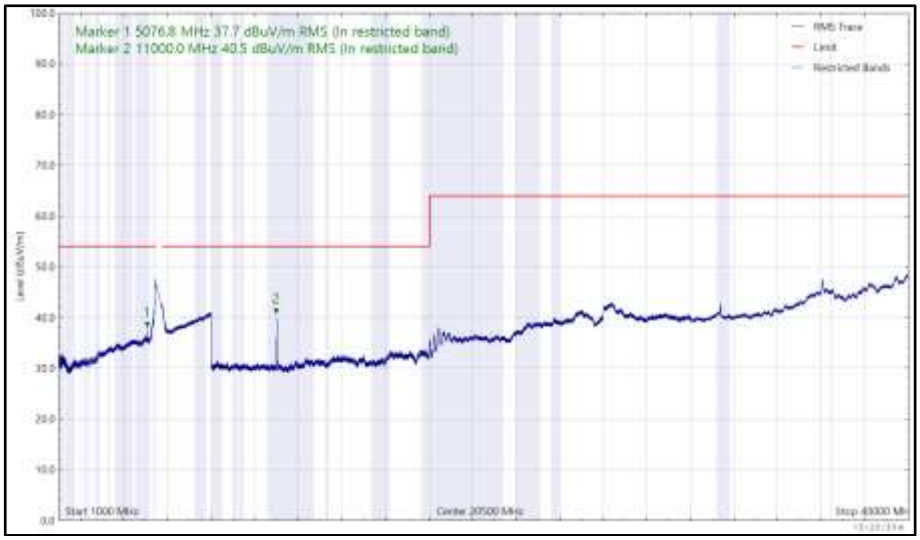

Figure 1100 - U-NII-2C - 5500 MHz (CH100), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

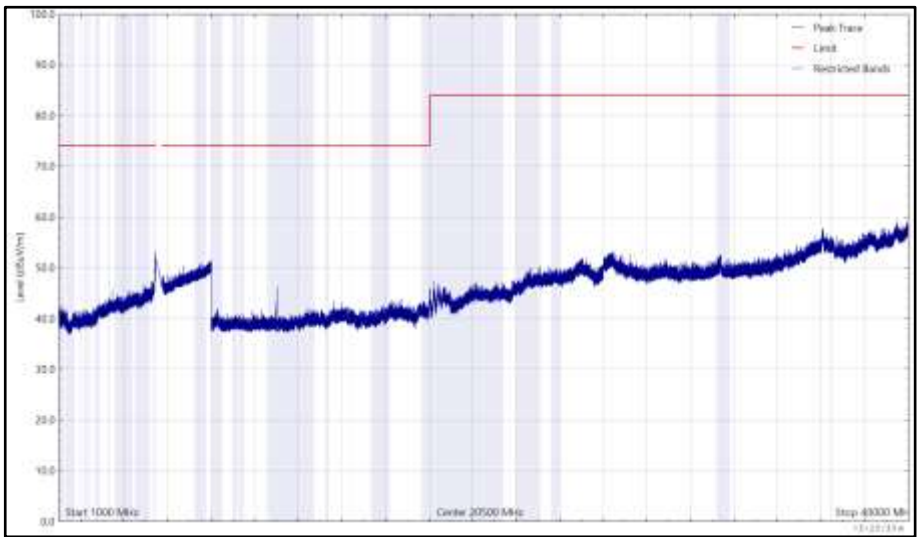

Figure 1101 - U-NII-2C - 5500 MHz (CH100), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

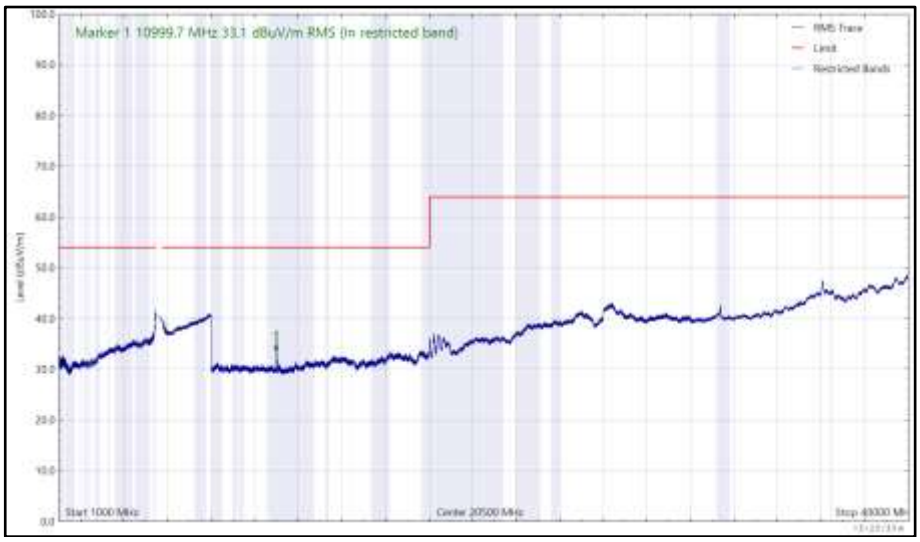

Figure 1102 - U-NII-2C - 5500 MHz (CH100), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
11400.865	44.6	54.0	-9.4	RMS	157	100	Vertical
11400.875	44.8	54.0	-9.2	RMS	195	262	Horizontal
11402.731	55.9	74.0	-18.1	Peak	191	105	Horizontal

Table 647 - U-NII-2C - 5700 MHz (CH140), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

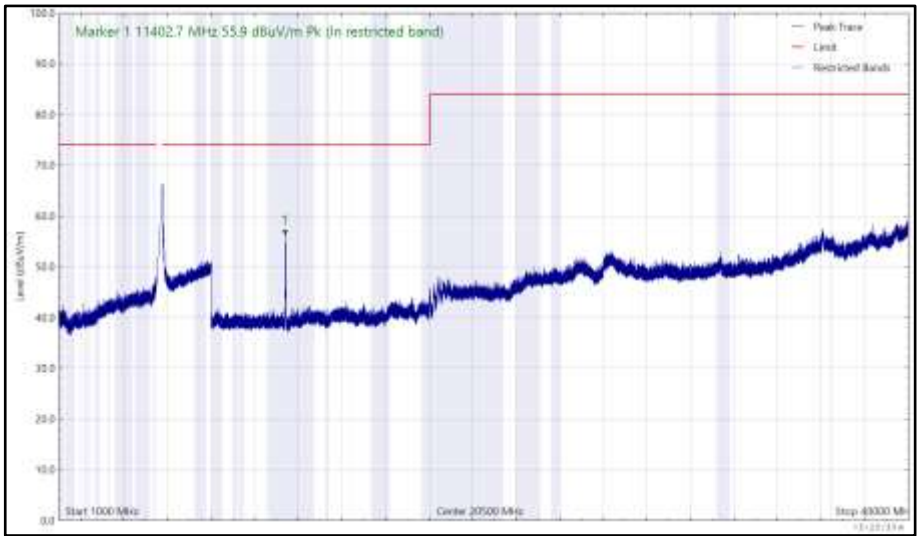

Figure 1103 - U-NII-2C - 5700 MHz (CH140), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

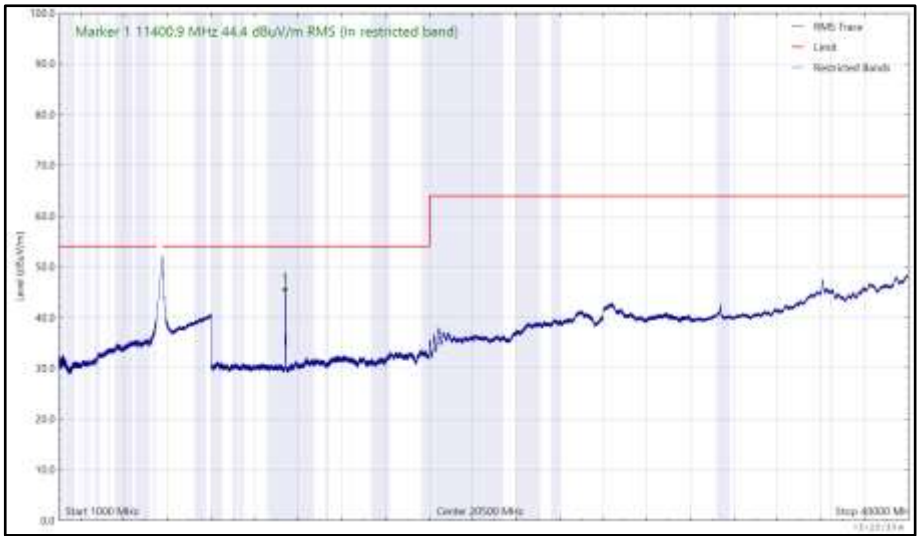

Figure 1104

Figure 1105 - U-NII-2C - 5700 MHz (CH140), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

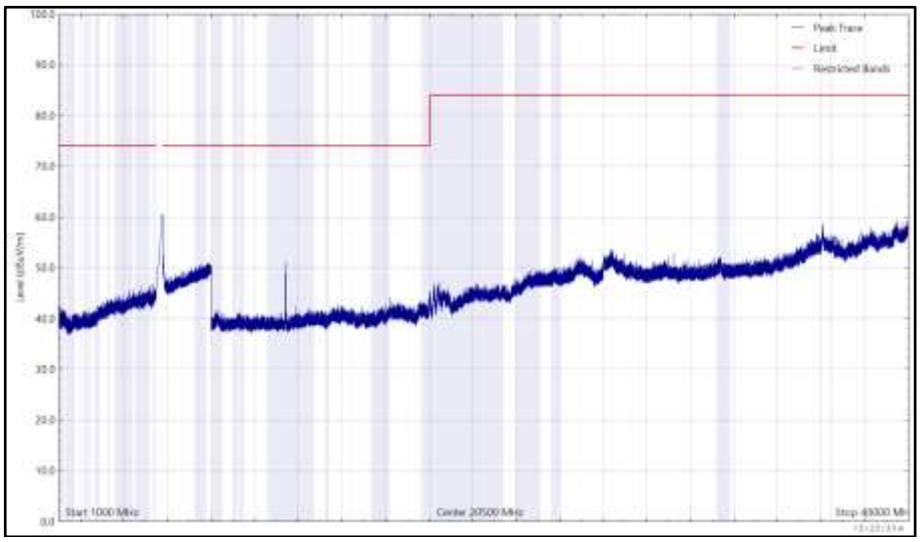

Figure 1106 - U-NII-2C - 5700 MHz (CH140), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

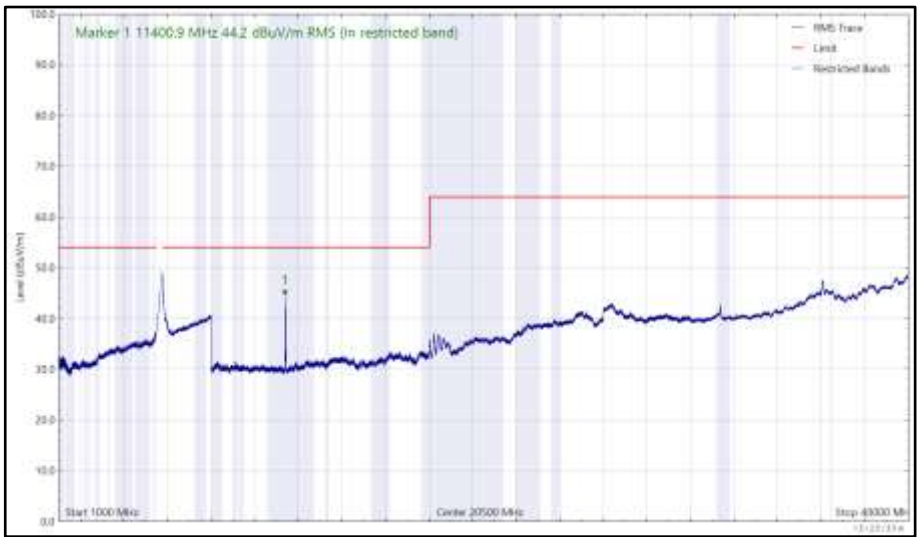

Figure 1107 - U-NII-2C - 5700 MHz (CH140), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
11491.139	41.0	54.0	-13.0	RMS	157	156	Vertical
11491.164	43.2	54.0	-10.8	RMS	237	101	Horizontal

Table 648 - U-NII-3 - 5745 MHz (CH149), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

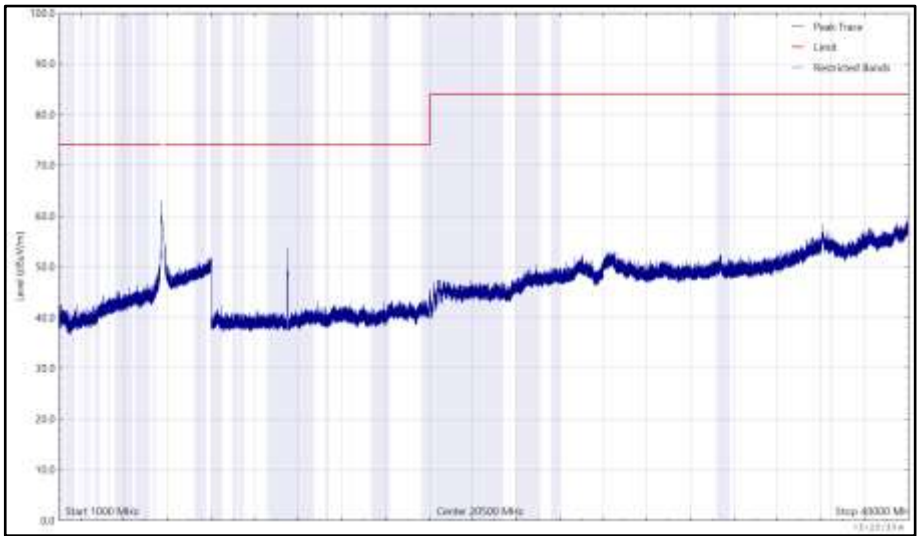

Figure 1108 - U-NII-3 - 5745 MHz (CH149), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

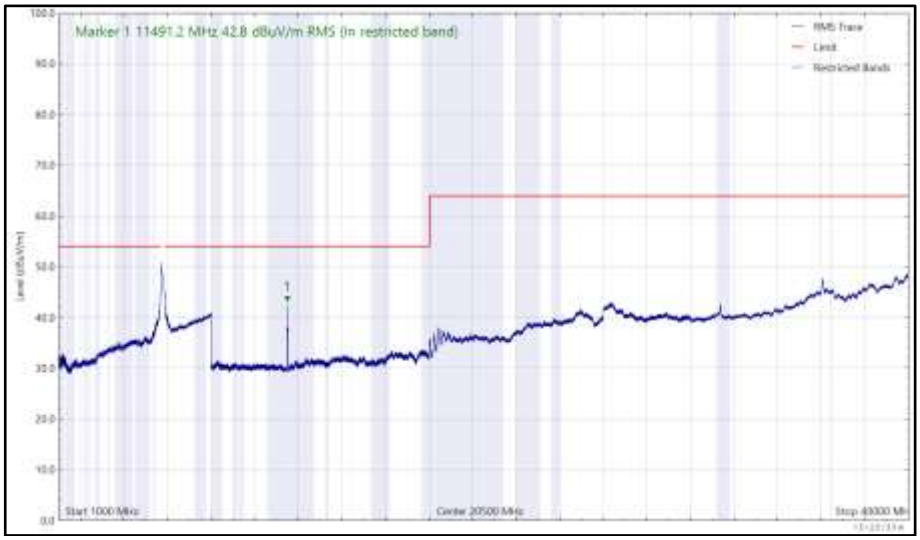

Figure 1109 - U-NII-3 - 5745 MHz (CH149), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

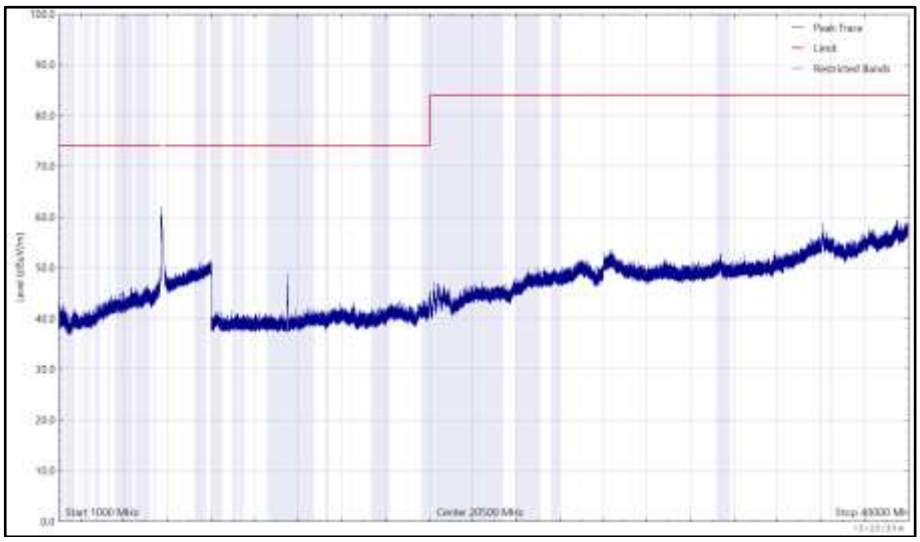

Figure 1110 - U-NII-3 - 5745 MHz (CH149), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

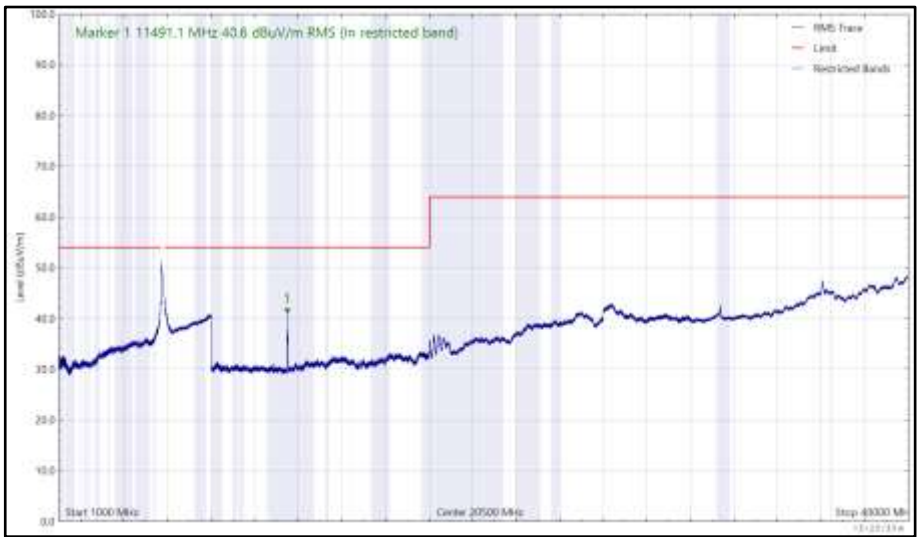

Figure 1111 - U-NII-3 - 5745 MHz (CH149), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
5376.893	41.4	54.0	-12.6	RMS	185	202	Horizontal
11648.820	38.5	54.0	-15.5	RMS	158	101	Vertical
11648.870	41.8	54.0	-12.2	RMS	194	195	Horizontal

Table 649 - U-NII-3 - 5825 MHz (CH165), HT20, CDD, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

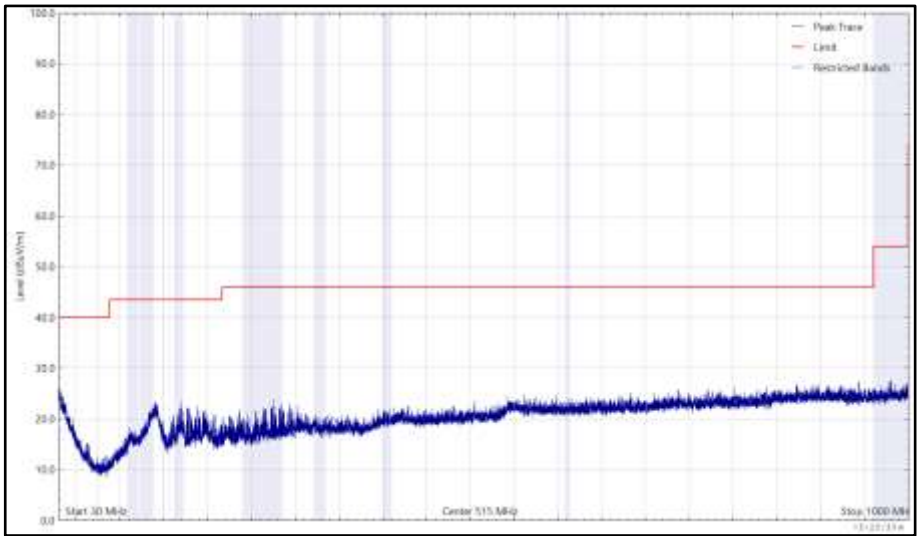

Figure 1112 - U-NII-3 - 5825 MHz (CH165), HT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

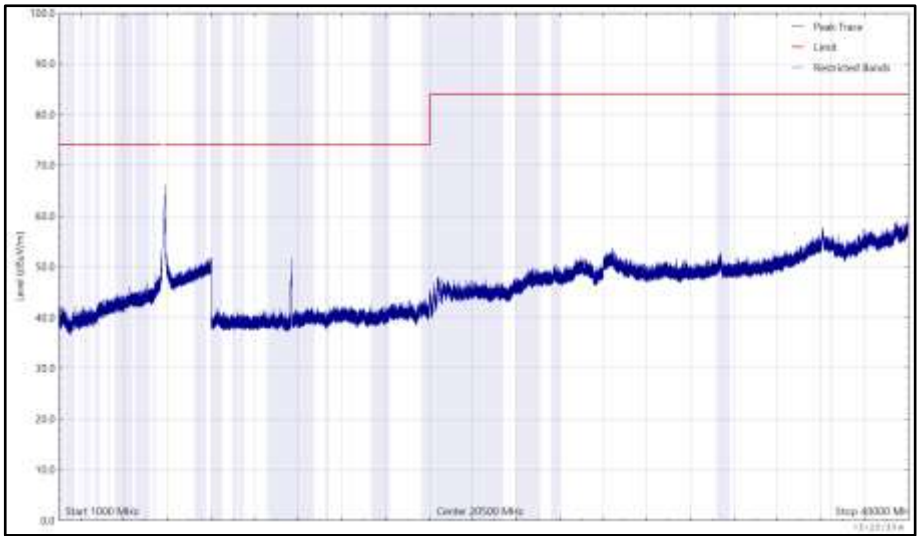

Figure 1113 - U-NII-3 - 5825 MHz (CH165), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

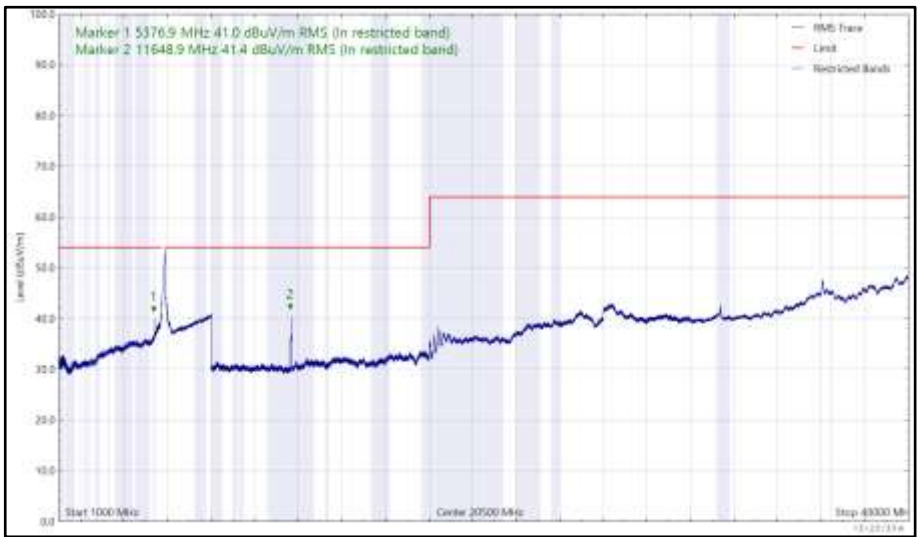

Figure 1114 - U-NII-3 - 5825 MHz (CH165), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

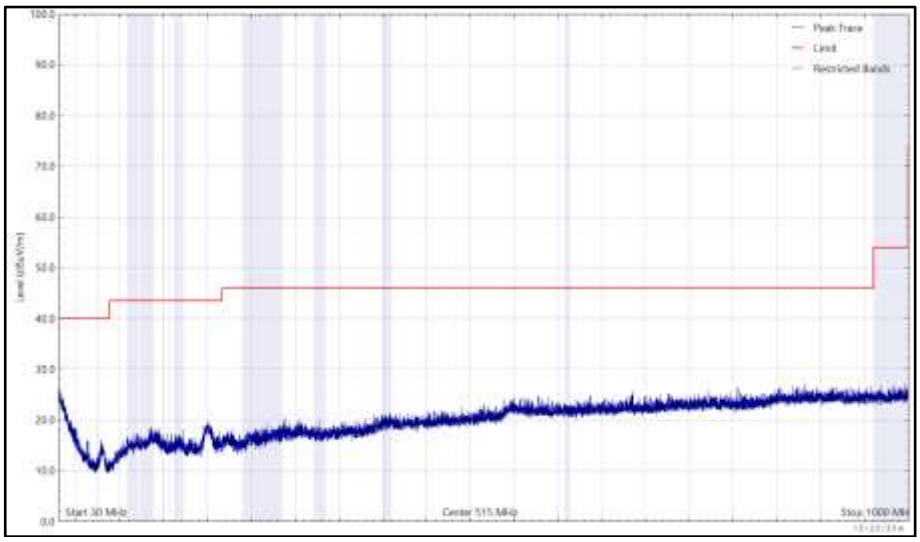

Figure 1115 - U-NII-3 - 5825 MHz (CH165), HT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

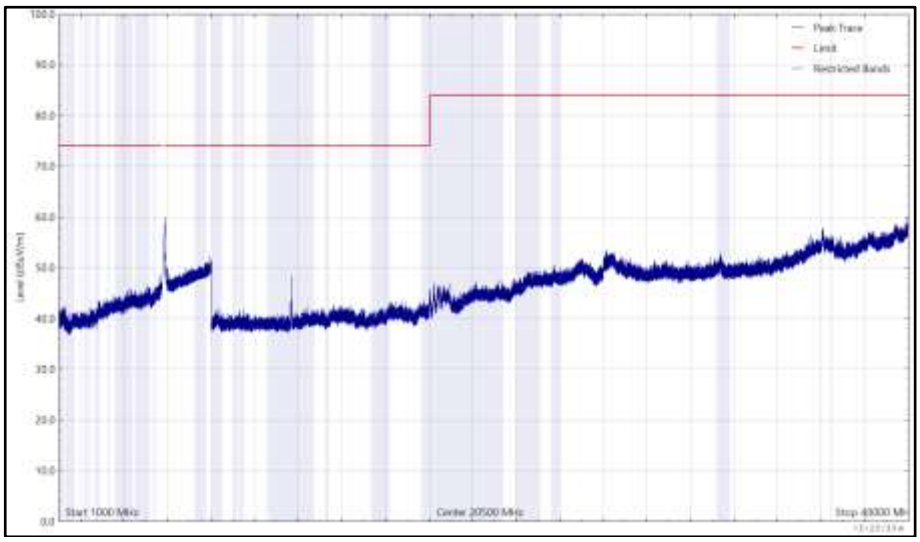

Figure 1116 - U-NII-3 - 5825 MHz (CH165), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

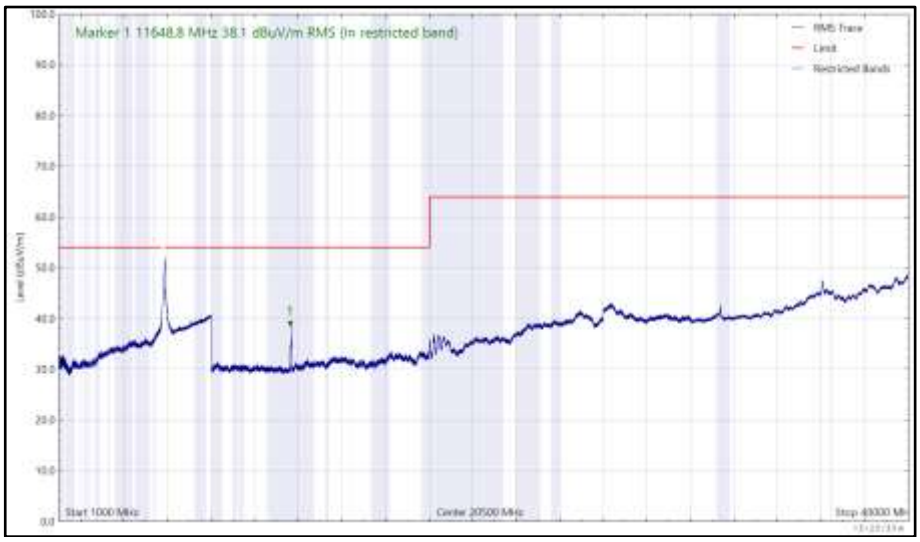

Figure 1117 - U-NII-3 - 5825 MHz (CH165), HT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 650 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 40 GHz

*No emissions found within 10 dB of the limit.

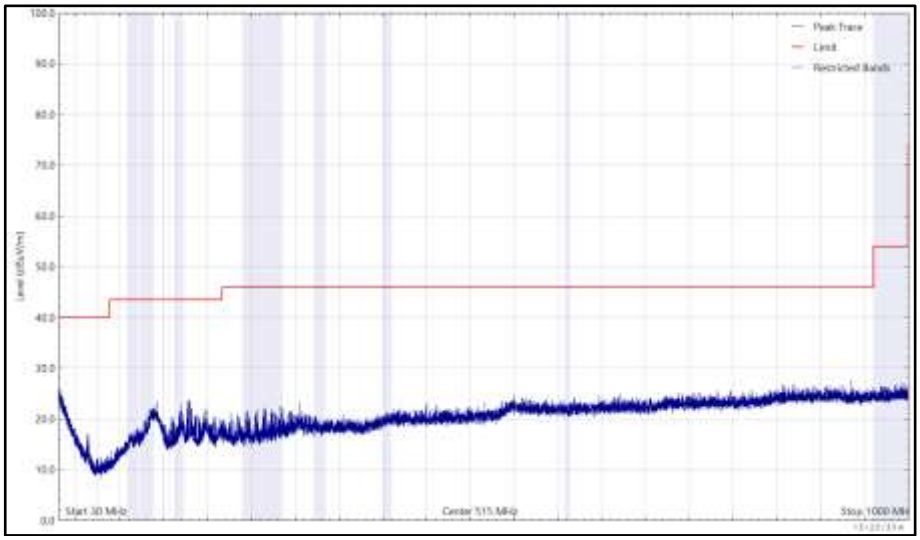

Figure 1118 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

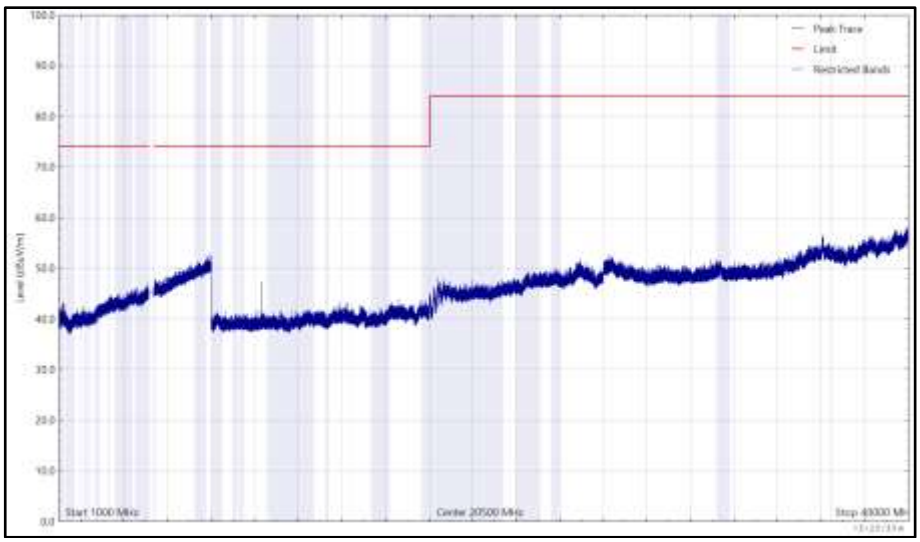

Figure 1119 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

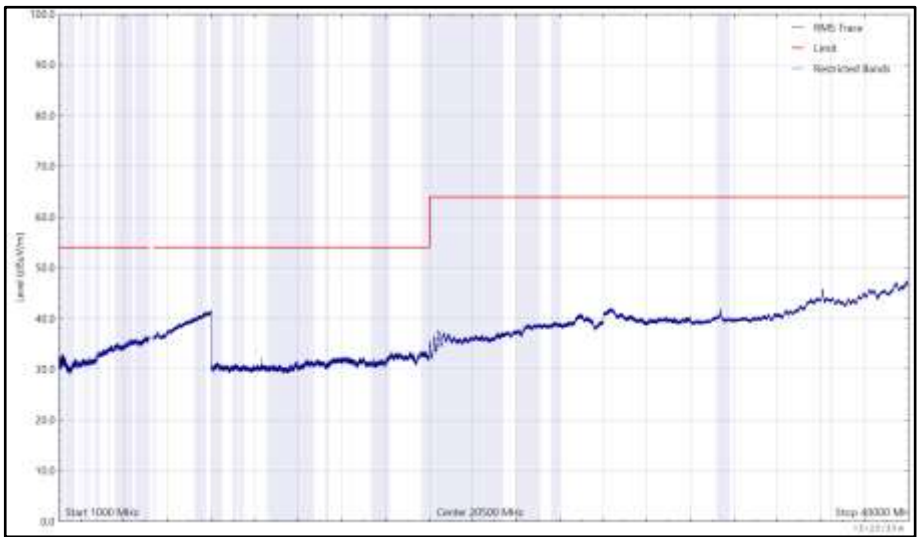

Figure 1120 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

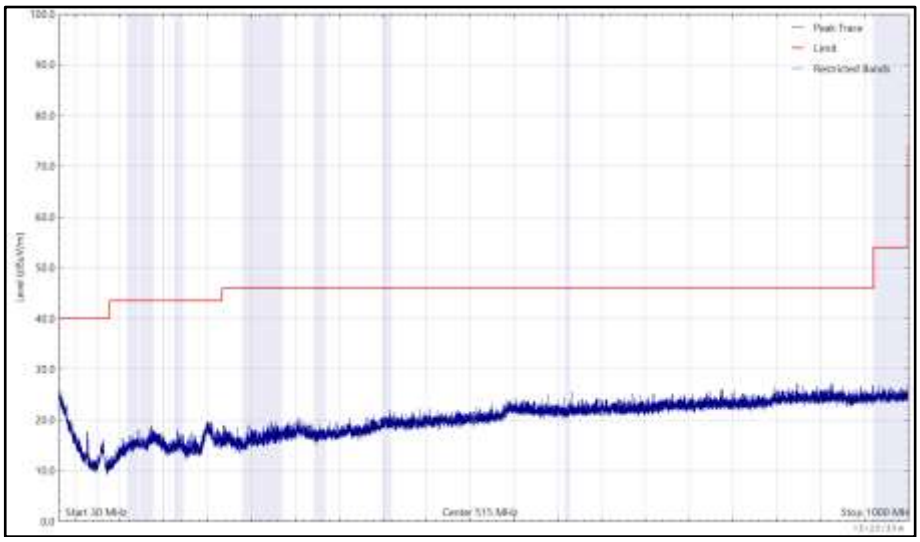

Figure 1121 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

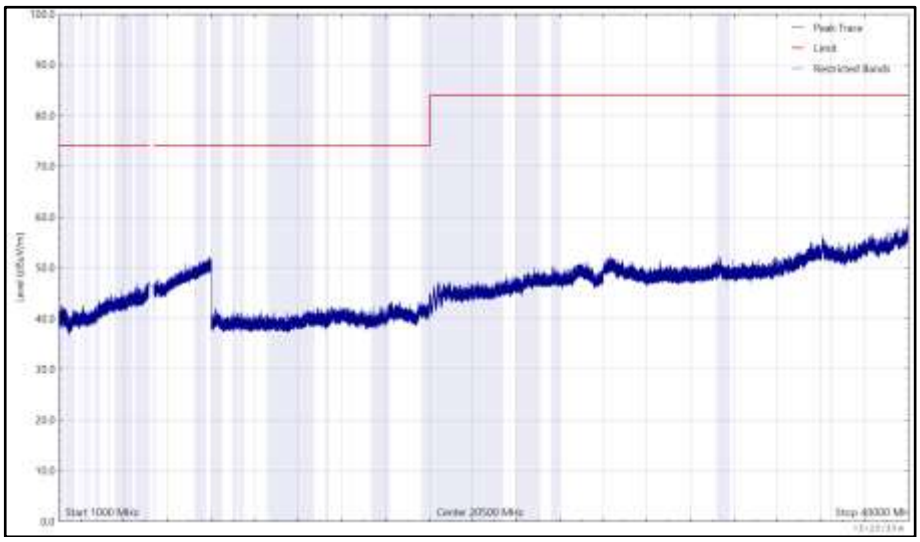

Figure 1122 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

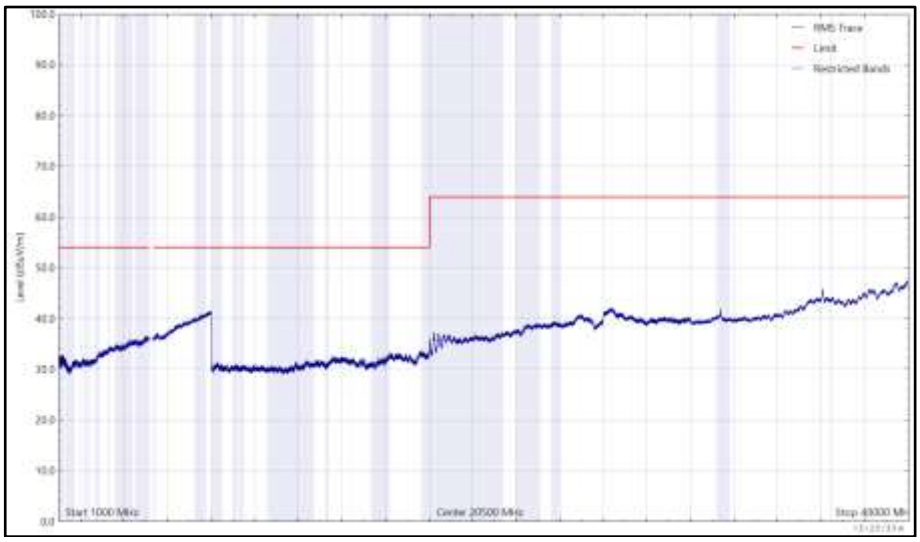

Figure 1123 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
10624.837	35.2	54.0	-18.8	RMS	257	182	Horizontal

Table 651 - 5320 MHz (CH64), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

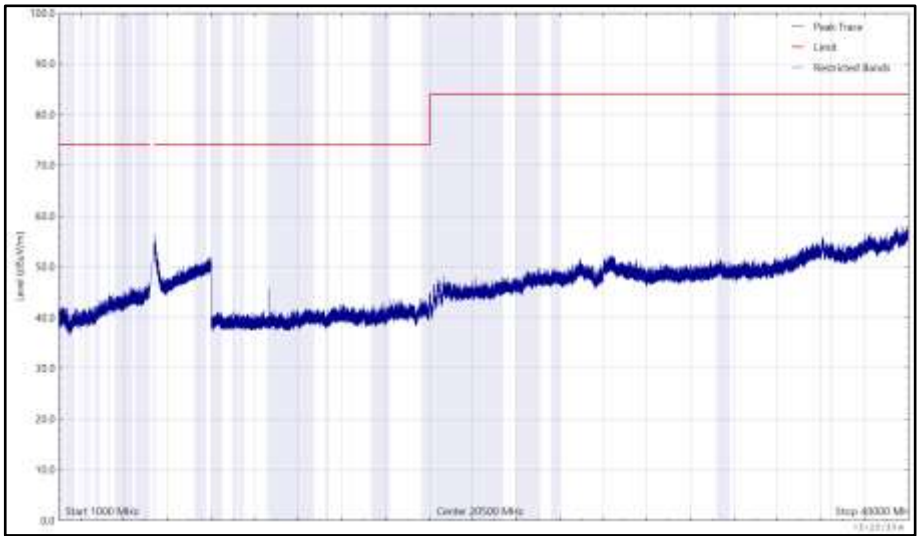

Figure 1124 - 5320 MHz (CH64), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

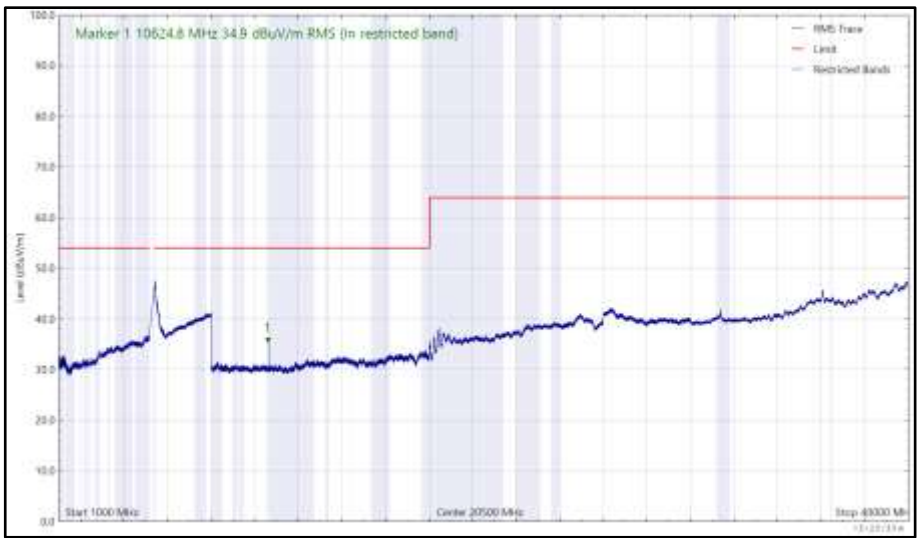

Figure 1125 - 5320 MHz (CH64), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

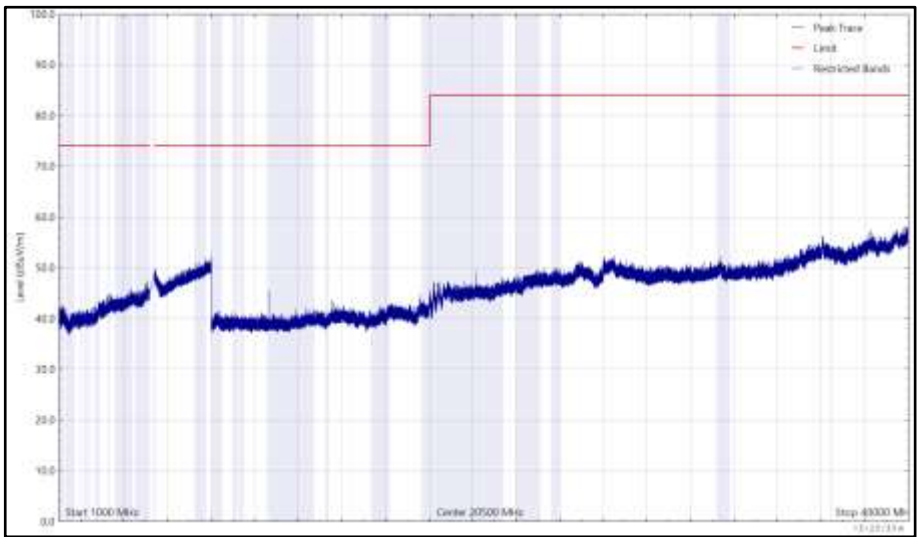

Figure 1126 - 5320 MHz (CH64), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

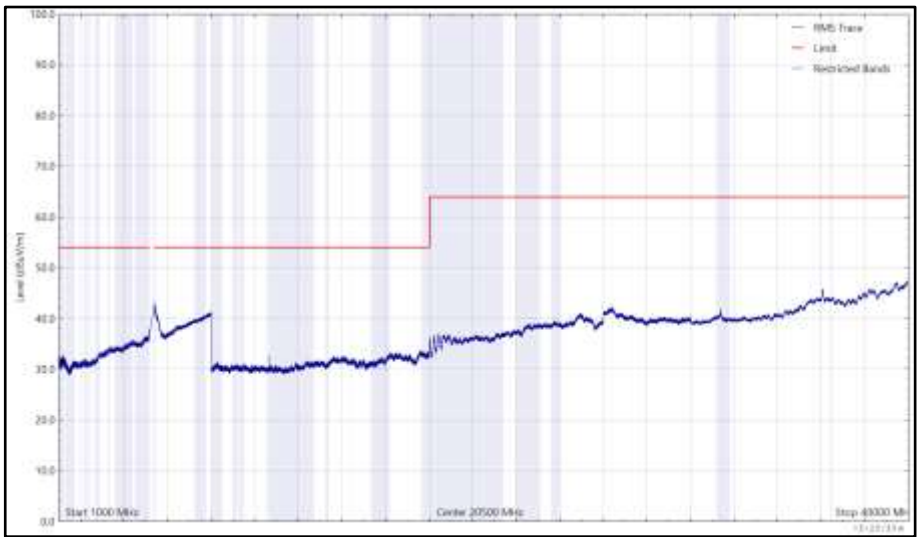

Figure 1127 - 5320 MHz (CH64), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
5049.649	34.8	54.0	-19.2	RMS	320	115	Horizontal
10984.814	38.2	54.0	-15.8	RMS	192	204	Horizontal

Table 652 - 5500 MHz (CH100), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

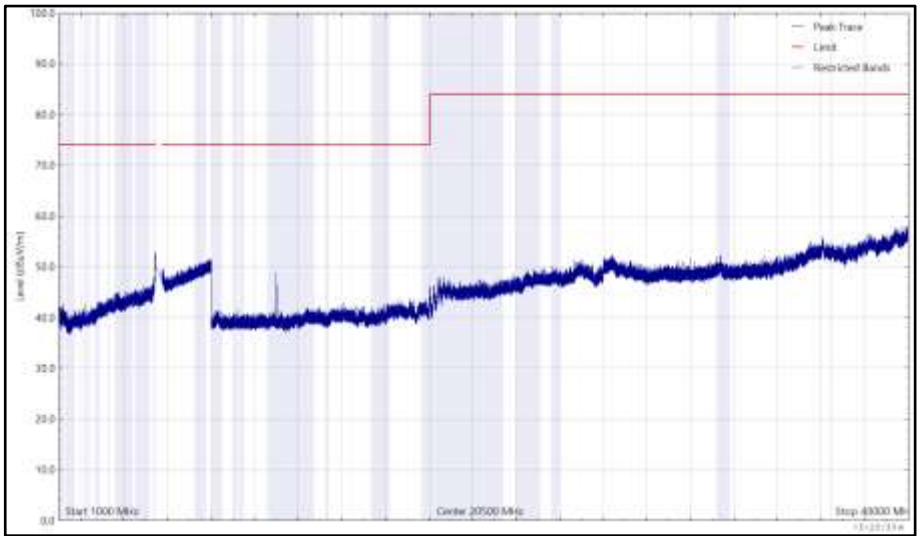

Figure 1128 - 5500 MHz (CH100), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

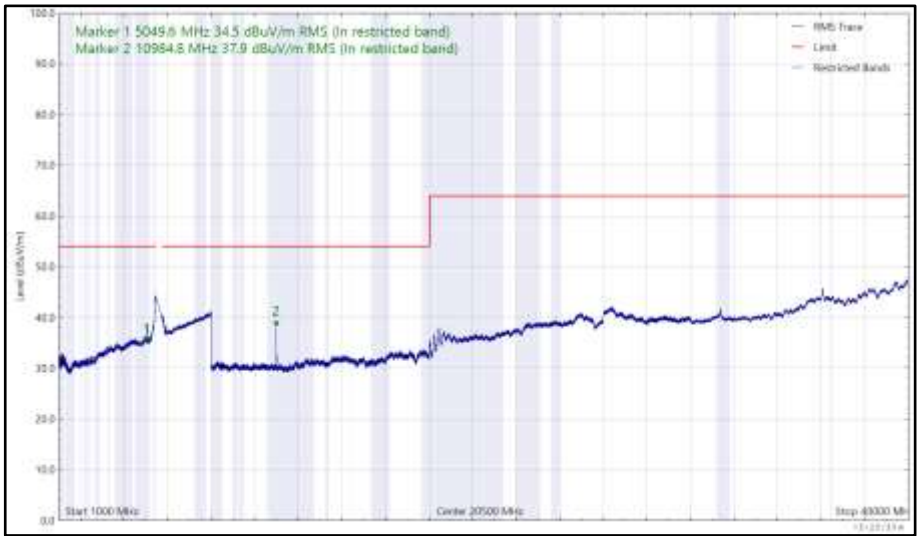

Figure 1129 - 5500 MHz (CH100), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

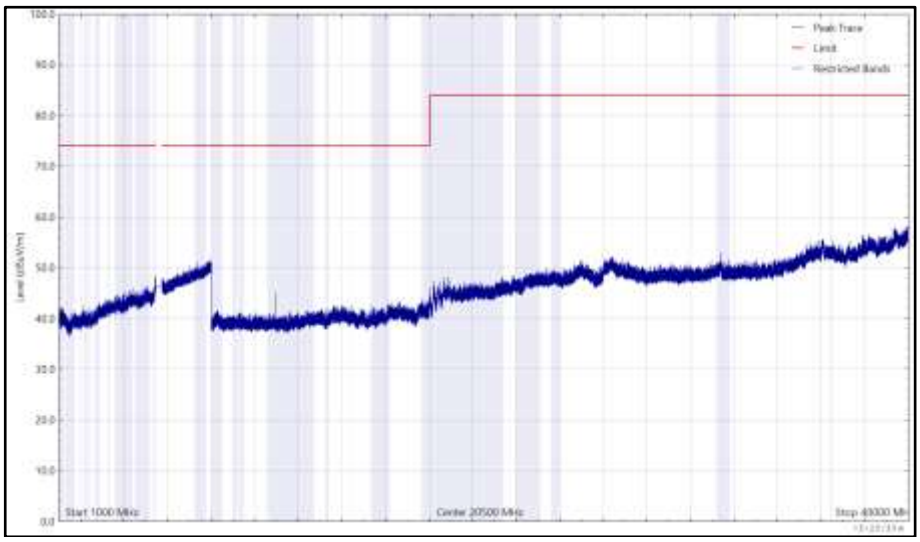

Figure 1130 - 5500 MHz (CH100), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

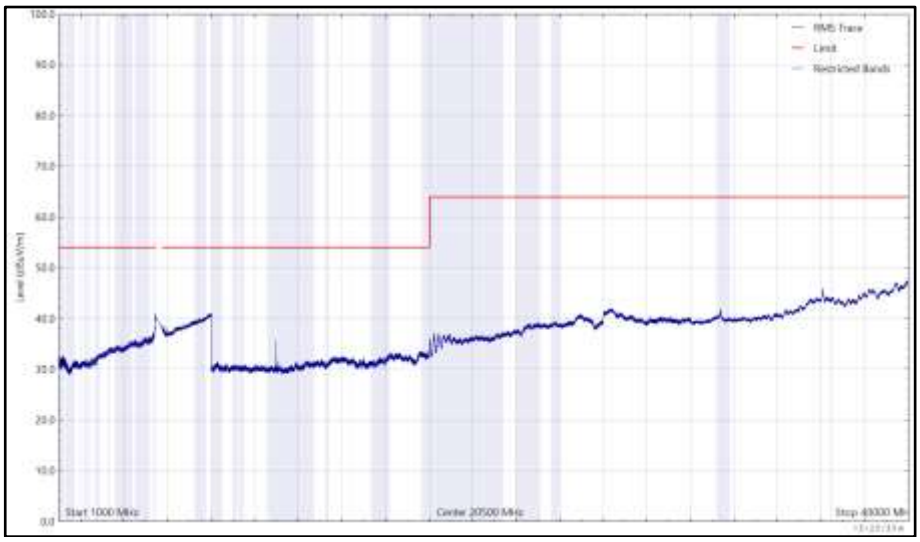

Figure 1131 - 5500 MHz (CH100), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
11385.114	57.8	74.0	-16.2	Peak	195	222	Horizontal
11385.173	42.3	54.0	-11.7	RMS	160	100	Vertical
11385.198	45.4	54.0	-8.6	RMS	191	162	Horizontal

Table 653 - 5700 MHz (CH140), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

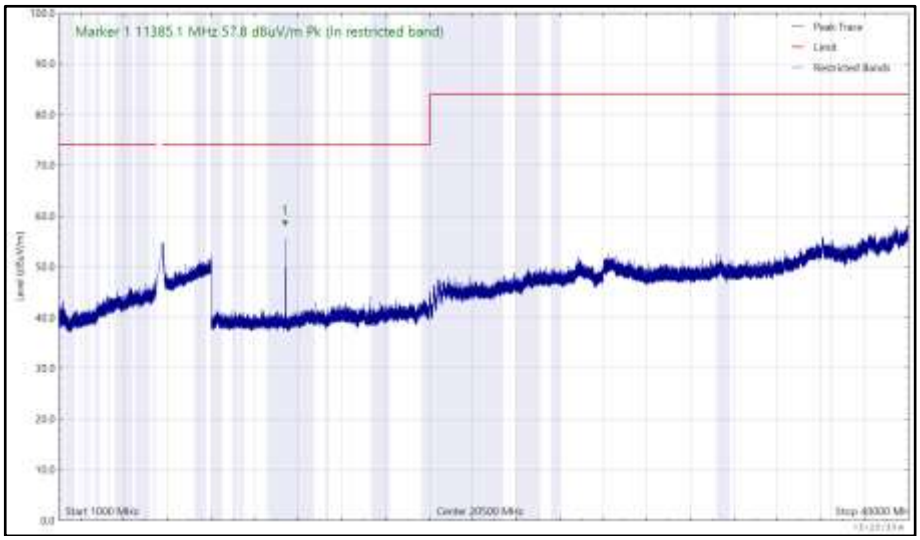

Figure 1132 - 5700 MHz (CH140), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

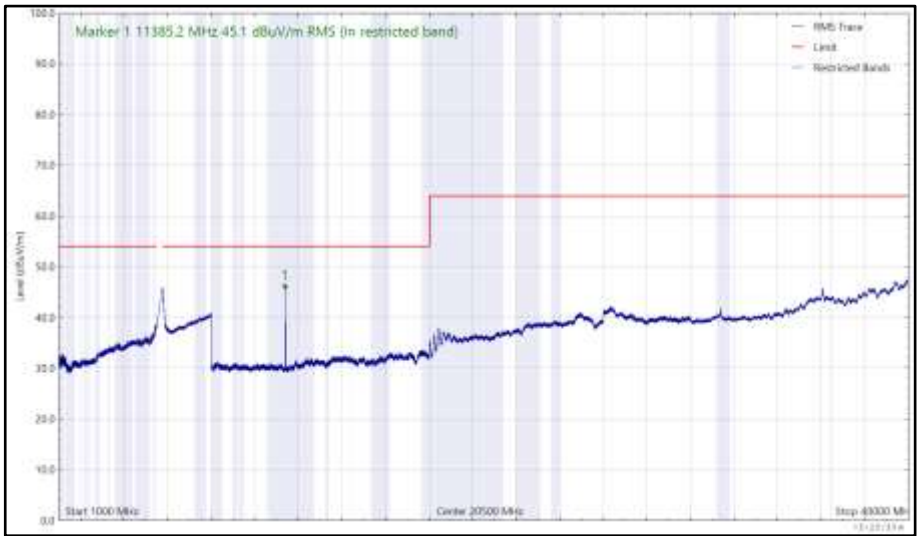

Figure 1133 - 5700 MHz (CH140), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

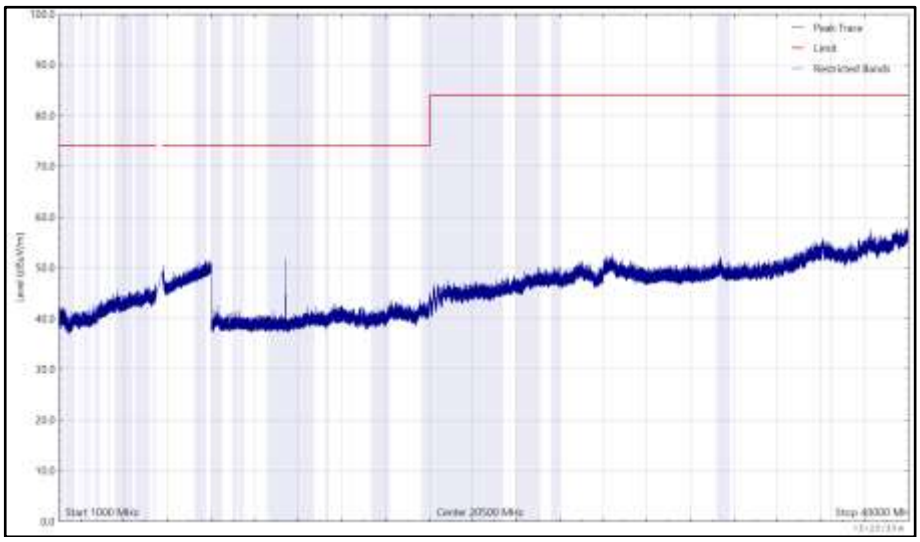

Figure 1134 - 5700 MHz (CH140), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

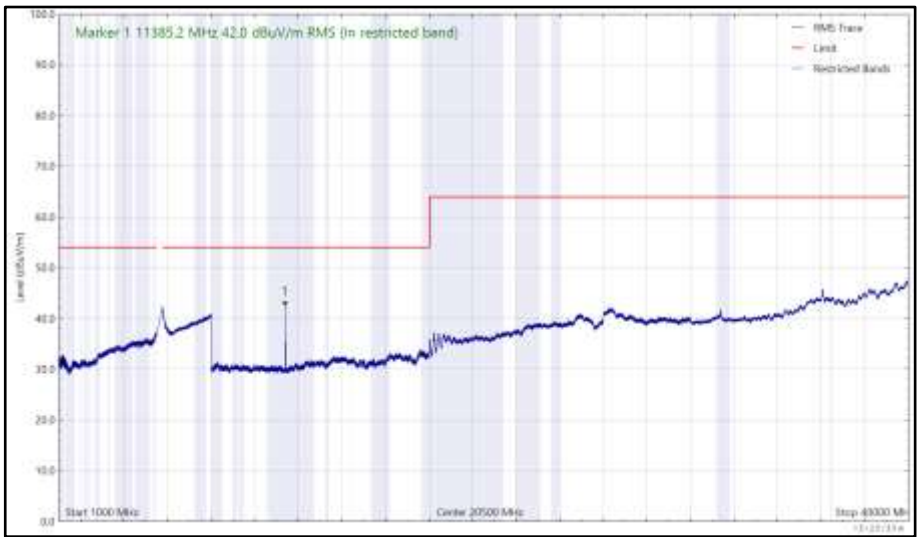

Figure 1135 - 5700 MHz (CH140), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
11472.527	40.2	54.0	-13.8	RMS	191	210	Horizontal
11472.602	56.4	74.0	-17.6	Peak	189	188	Horizontal
11472.817	38.3	54.0	-15.7	RMS	149	107	Vertical

Table 654 - 5745 MHz (CH149), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

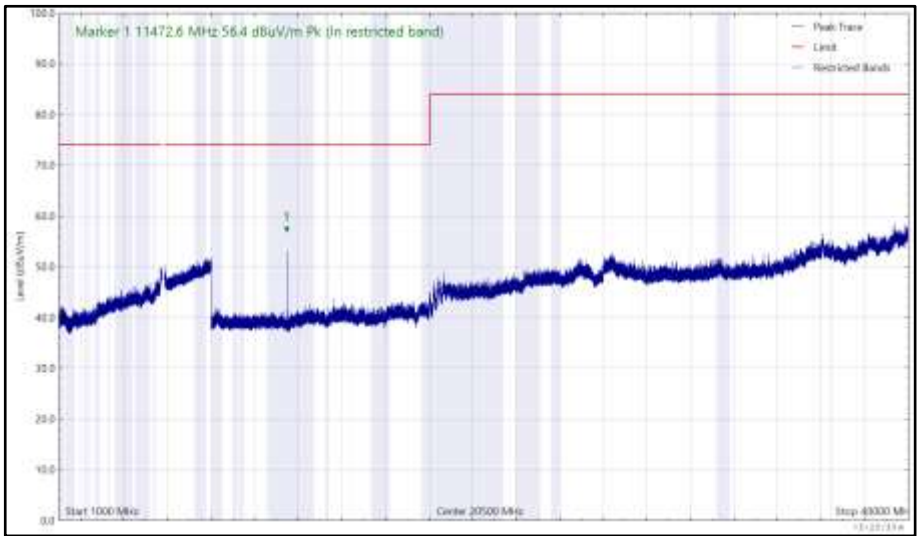

Figure 1136 - 5745 MHz (CH149), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

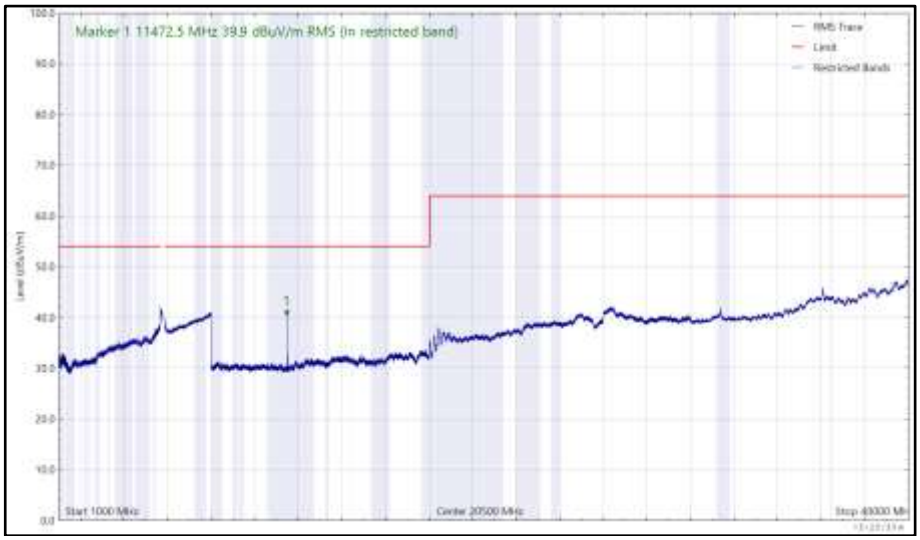

Figure 1137 - 5745 MHz (CH149), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

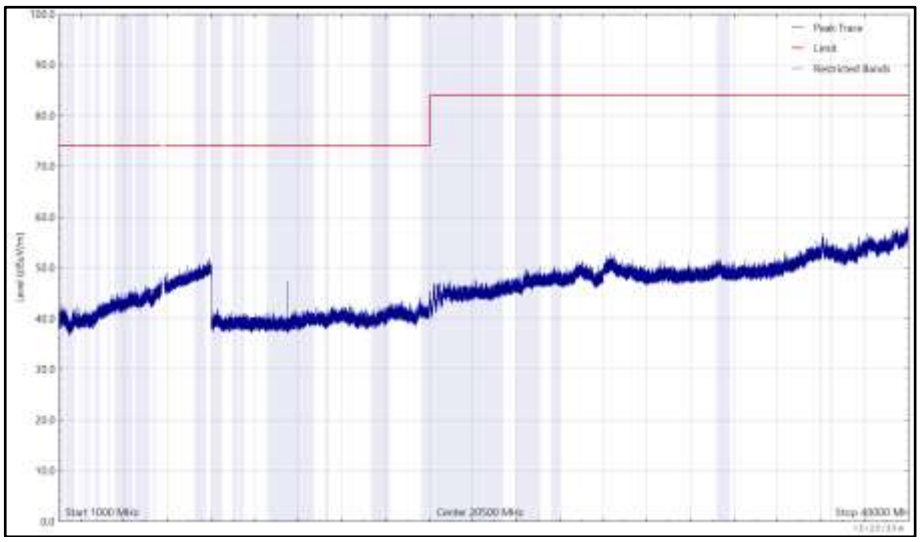

Figure 1138 - 5745 MHz (CH149), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

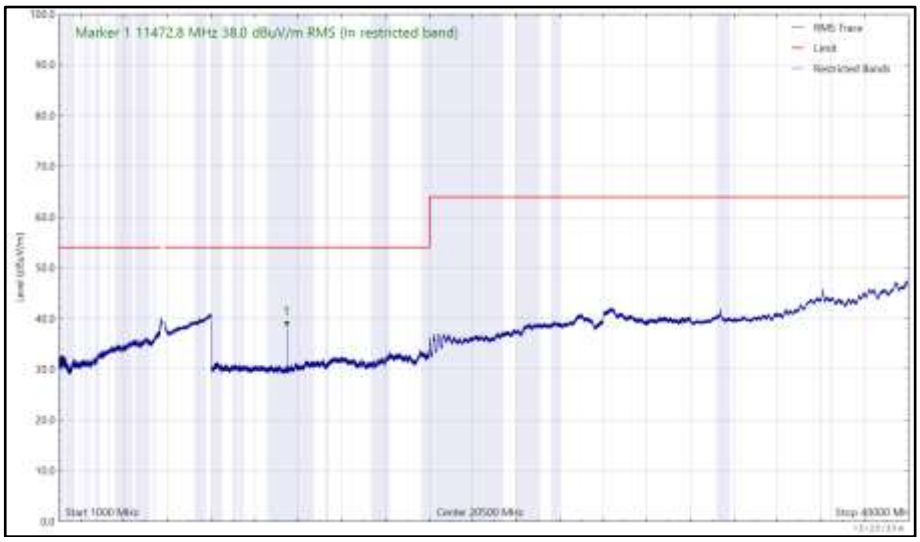

Figure 1139 - 5745 MHz (CH149), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
5404.488	35.6	54.0	-18.4	RMS	354	100	Horizontal
11632.023	33.6	54.0	-20.4	RMS	158	100	Vertical

Table 655 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

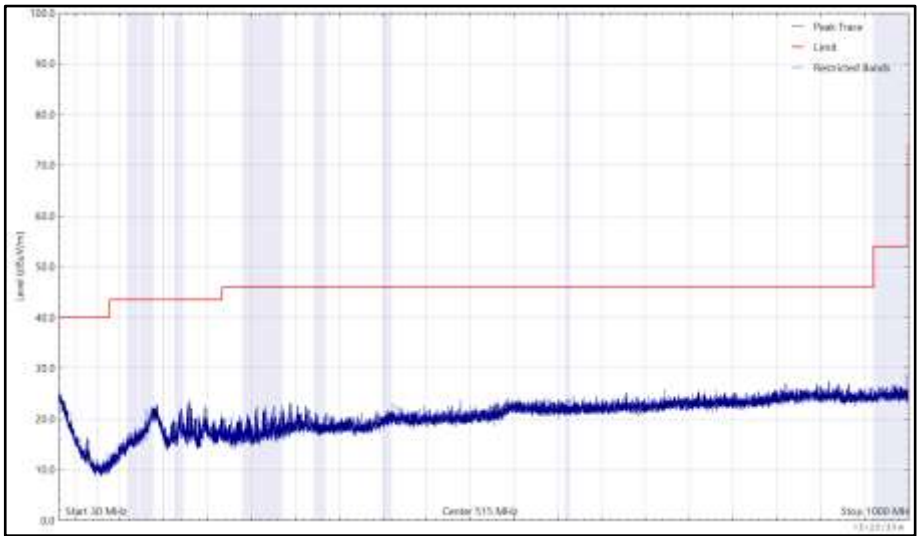

Figure 1140 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

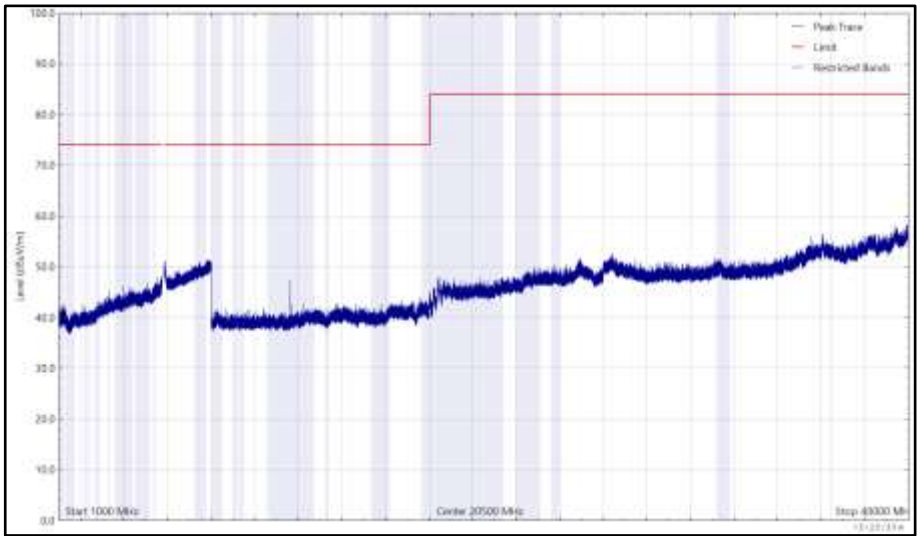

Figure 1141 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (Peak)

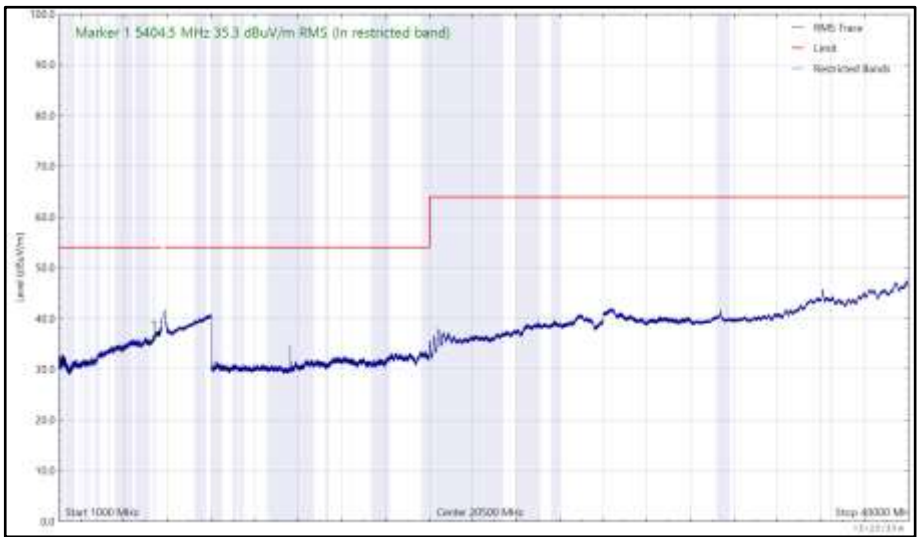

Figure 1142 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal (RMS)

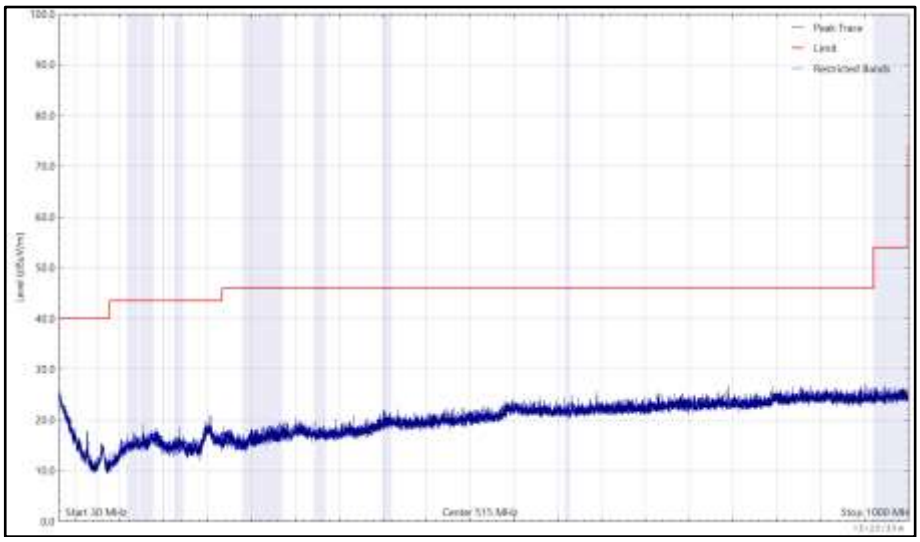

Figure 1143 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

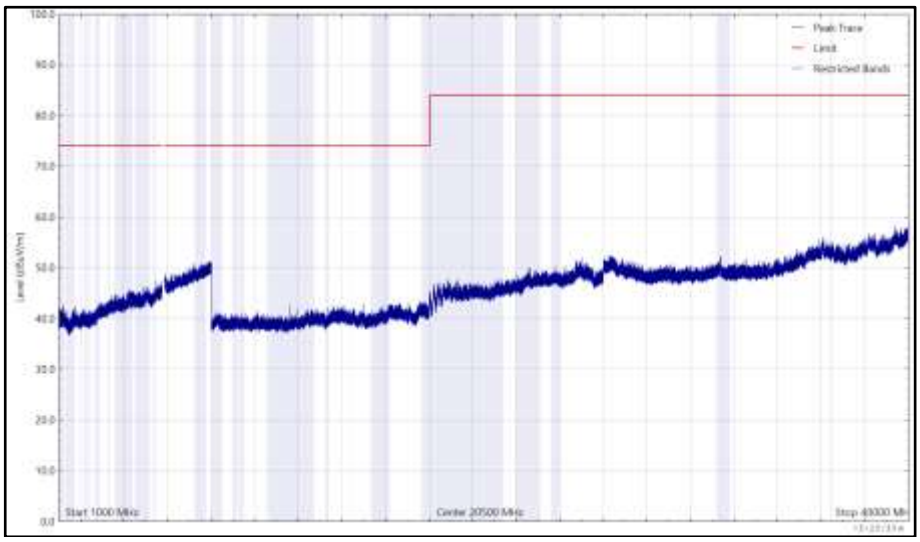

Figure 1144 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (Peak)

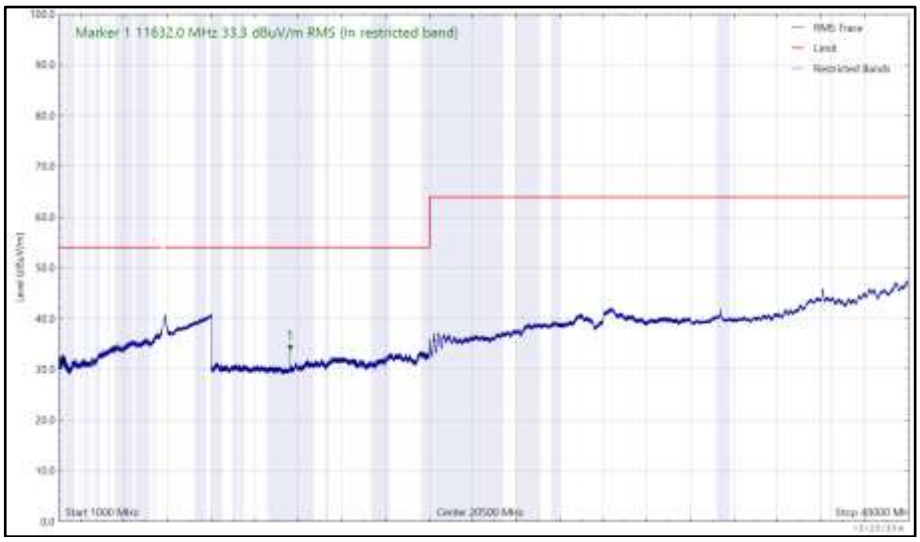

Figure 1145 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical (RMS)

FCC 47 CFR Part 15, Limit Clause 15.407(b)(1)(2)(3)(4)

Emissions not falling within the restricted bands listed in FCC 47 CFR Part 15.209:

For transmitters operating in the 5.15-5.25 GHz band: ≤-27 dBm/MHz outside 5150-5350 MHz.

For transmitters operating in the 5.25-5.35 GHz band: ≤-27 dBm/MHz outside 5150-5350 MHz.

For transmitters operating in the 5.47-5.725 GHz band: ≤-27 dBm/MHz outside 5470-5725 MHz

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Emissions within the restricted bands listed in FCC 47 CFR Part 15.209:

Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)
0.009 to 0.490	2400/F(kHz)	300
0.490 to 1.705	24000/F(kHz)	30
1.705 to 30	30	30
30 to 88	100	3
88 to 216	150	3
216 to 960	200	3
Above 960	500	3

Table 656 - Radiated Emissions Limit Table (FCC)

ISED RSS-247, Limit Clause 6.2.1.2, 6.2.2.2, 6.2.3.2 and 6.2.4.2 and ISED RSS-GEN, Limit Clause 8.9

Emissions not falling within the restricted bands listed in ISED RSS-GEN, Clause 8.10:

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB.

For transmitters with operating frequencies in the bands 5250-5350 MHz and 5470-5725 MHz, all emissions outside the band 5250-5350 MHz and 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.

Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

Emissions not falling within the restricted bands listed in ISED RSS-GEN, Clause 8.10:

Frequency (MHz)	Field Strength (µV/m)
0.009 to 0.490	2400/F(kHz)
0.490 to 1.705	24000/F(kHz)
1.705 to 30	30
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 657 - Radiated Emissions Limit Table (ISEDC)

2.6.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EMI Test Receiver	Rohde & Schwarz	ESW44	5084	12	04-Feb-2021
EmX Emissions Software	TUV SUD	V2.1.0	5125	-	Software
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
Turntable	Maturo	TT 15WF	5160	-	TU
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	17-Mar-2021
Antenna 18-40GHz (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	24	27-Jul-2022
18GHz - 40GHz Pre-Amplifier	Phase One	PSO4-0087	1534	12	18-Feb-2021
Antenna with permanent attenuator (Bilog)	Chase	CBL6143	2904	24	30-Sep-2021
Cable 1503 2M 2.92(P)m 2.92(P)m	Rhophase	KPS-1503A-2000-KPS	4293	12	16-Nov-2021
Screened Room (11)	Rainford	Rainford	5136	36	01-Nov-2021
Band Reject Filter - 5.795GHz	Wainwright	WRCJV10-5725-5755-5835-5865-50SS	5070	12	30-Sep-2021
Band Reject Filter - 5.22 GHz	Wainwright	WRCJV12-5120-5150-5290-5320-50SS	5072	12	02-Oct-2021
Band Reject Filter - 5.775 GHz	Wainwright	WRCJV10-5700-5735-5815-5850-50SS	5076	12	12-Oct-2021
Band Reject Filter - 5.690 GHz	Wainwright	WRCJV8-5635-5670-5710-5745-50SS	5080	12	02-Oct-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5102	12	12-Oct-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5103	12	12-Oct-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5104	12	10-Dec-2021
Horn Antenna (1-10GHz)	Schwarzbeck	BBHA 9120 B	5215	12	10-Mar-2021
DRG Horn Antenna (7.5-18GHz)	Schwarzbeck	HWRD750	5216	12	10-Mar-2021
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	5217	12	14-Oct-2021
Preamp 1 - 26.5 GHz	Agilent Technologies	8449B	5445	12	06-May-2021
1m K-Type Cable	Junkosha	MWX241-01000KMSKMS/A	5512	12	03-Apr-2021
2m SMA Cable	Junkosha	MWX221-02000AMSAMS/A	5518	12	01-Apr-2021
8m N Type Cable	Junkosha	MWX221-08000NMSNMS/B	5522	12	24-Mar-2021

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
2m K Type Cable	Junkosha	MWX241-02000KMSKMS/A	5524	12	03-Apr-2021
7 GHz High pass Filter	Wainwright	WHKX12-5850-6800-18000-80SS	5550	12	23-May-2021
Band Reject Filter - 5.28 GHz	Wainwright	WRCJV12-5180-5210-5350-5380-50SS	5555	12	06-May-2021
Band Reject Filter - 5.57 GHz	Wainwright	WRCJV10-5440-5490-5650-5700-50SS	5556	12	07-May-2021
1200 MHz Low Pass Filter (02)	Mini-Circuits	VLF-1200+	5560	12	23-May-2021
8 - 18 GHz Amplifier	Wright Technologies	APS06-0061	5595	12	25-Aug-2021

Table 658

TU – traceability Unscheduled

2.7 Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

2.7.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.407 (h)(2)(iii)(iv)
ISED RSS-247, Clause 6.3.2(c)(d)(e)

2.7.2 Equipment Under Test and Modification State

A2438, S/N: C02DM007087Q - Modification State 0

2.7.3 Date of Test

11-December-2020 to 14-December-2020

2.7.4 Test Method

This test was performed in accordance with FCC KDB 905462 D02, clause 7.8.3.

The EUT was a Client Device without Radar Detection.

A computer was connected via an Ethernet cable to the Master device and a conducted RF link set up between the DFS Master and Client devices.

Radar Pulse Type 0 was then transmitted, and the spectrum monitored. The transmissions from the UUT were observed for a period of 12 seconds after the final injected Radar Pulse.

It was checked that all transmissions stopped within the 10 second period defined from the point of the end of the final Radar pulse + 10 seconds. In addition, the aggregate on time during the first 200ms and the following 9.8 seconds of the Channel Move Time was computed by the Aeroflex DFS Software.

The markers on the trace data correspond to the following time periods:

Red - End Of Radar Burst, (T0)
Purple - End Of 200ms Period, (T0 + 200 ms)
Orange - End Of Channel Move Time, (T0 + 10 seconds)

To verify the non-occupancy period, the PXI digitiser was replaced with a spectrum analyser. The external trigger from the Aeroflex DFS test system was used to trigger a 30-minute sweep from the moment the radar burst sequence was injected. It was verified that no transmissions occurred on the test channel during this time period.

2.7.5 Environmental Conditions

Ambient Temperature	21.4 - 21.7 °C
Relative Humidity	41.0 - 41.1 %

2.7.6 Test Results

5 GHz WLAN

Master to Client - 802.11ac VHT80

The equipment was set up as shown in the diagram below. The EUT was configured to run iPerf, transmitting UDP to the client laptop. The channel loading was set to >17% by adjusting the bandwidth specified in the iPerf UDP transfer.

To calibrate the level of the radar at the input to the DFS Master, the DFS Master was replaced by the spectrum analyser and the output of the PXI RF generator adjusted to give -62 dBm.

Radar Type	Pulse Width (µs)	PRI (µs)	Number of Pulses
0	1	1428	18

Table 659 - Radar Pulse Type 0 Characteristics

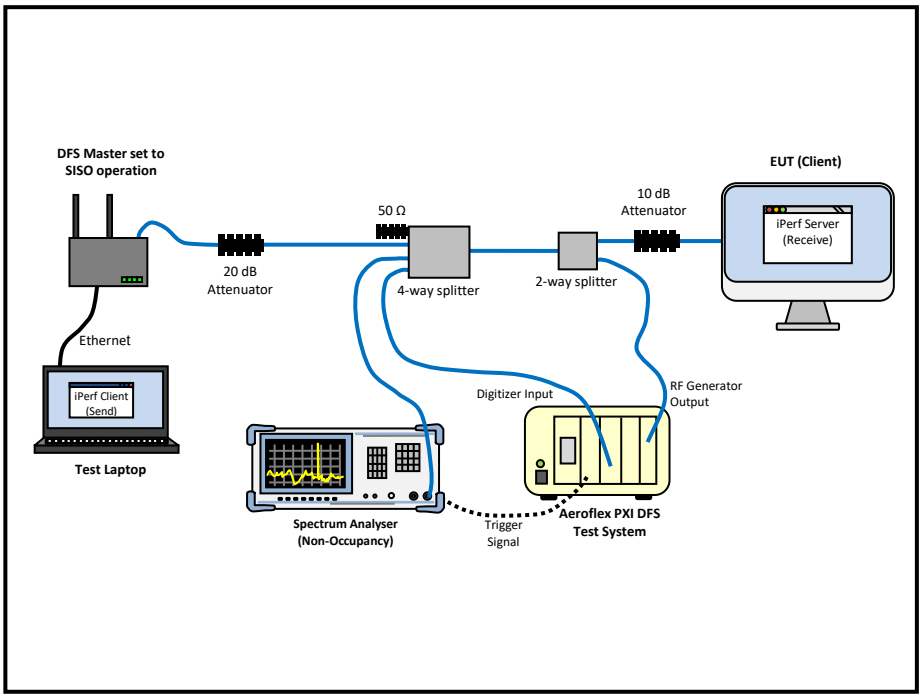

Figure 1146 - Test Equipment Setup Diagram for Client without Radar Detection with Injection at the Master – Master-to-Client Mode

Figure 1147 - Verification of Radar Type 0

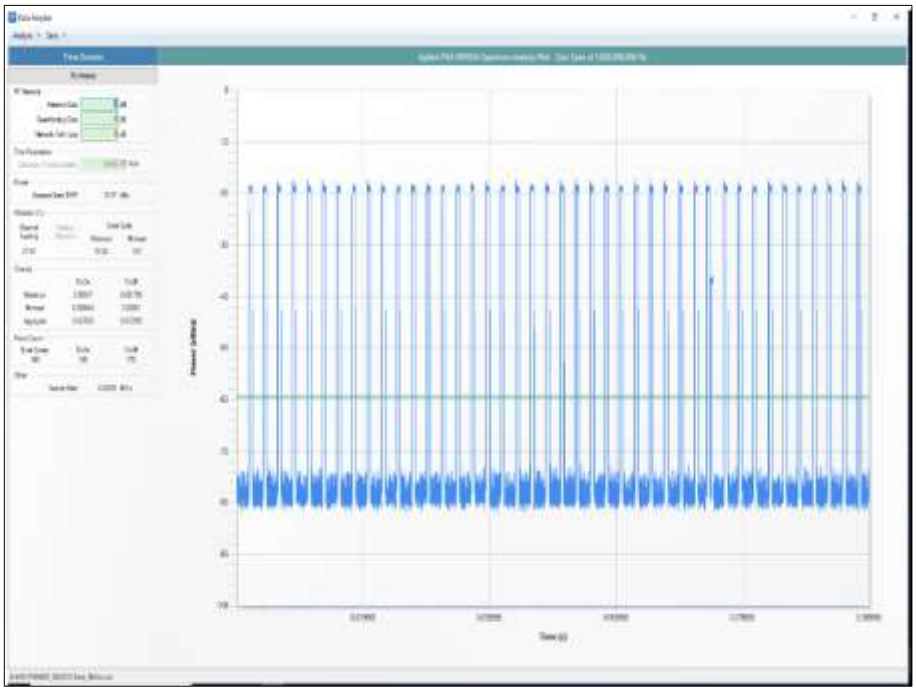

Figure 1148 - Channel Loading

The channel loading was 27.61 %

Maximum Transmit Power	Value (Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission wavefoRMS to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.	

Table 660 - DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Test Parameter	Result
Channel Move Time	0.161 s
Channel Closing Time (Aggregate Time During 200 ms)	29.77 ms
Channel Closing Time (Aggregate Time During 200 ms to 10 s)	0 s
Channel Closing Time (Aggregate Time During 10 s)	29.77 ms
Transmission Observed During Non-Occupancy Period	None

Table 661 - In-Service Monitoring Test Results

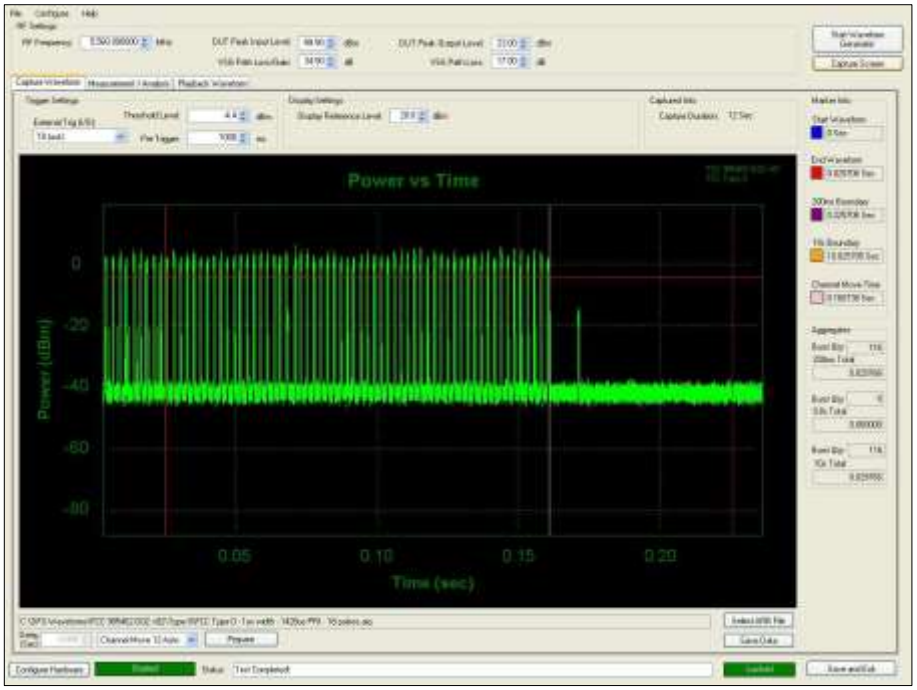

Figure 1149 - First 200 ms of Channel Shutdown Period

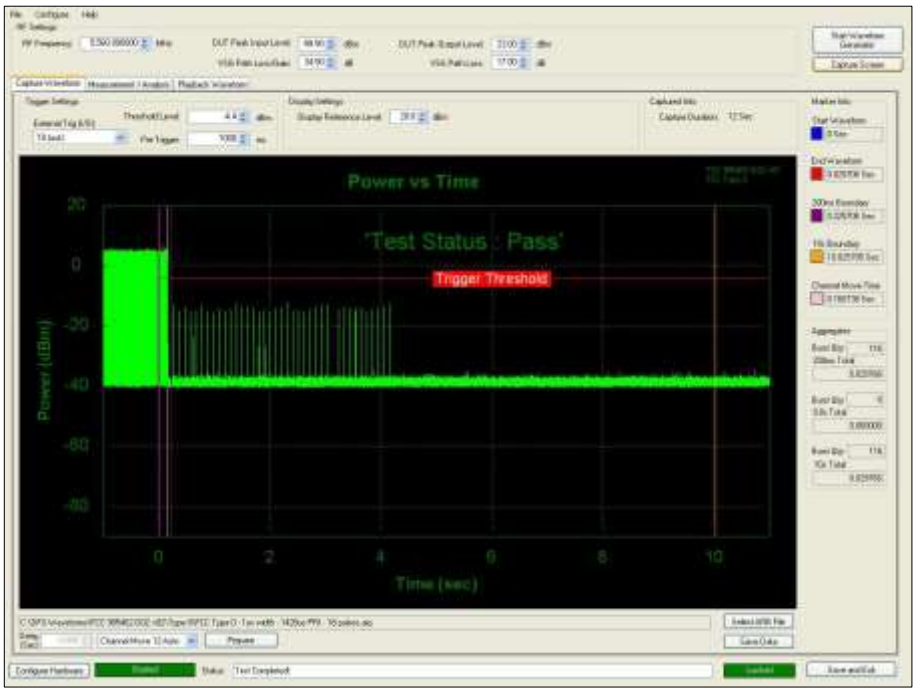

Figure 1150 - First 12 s of Channel Shutdown Period

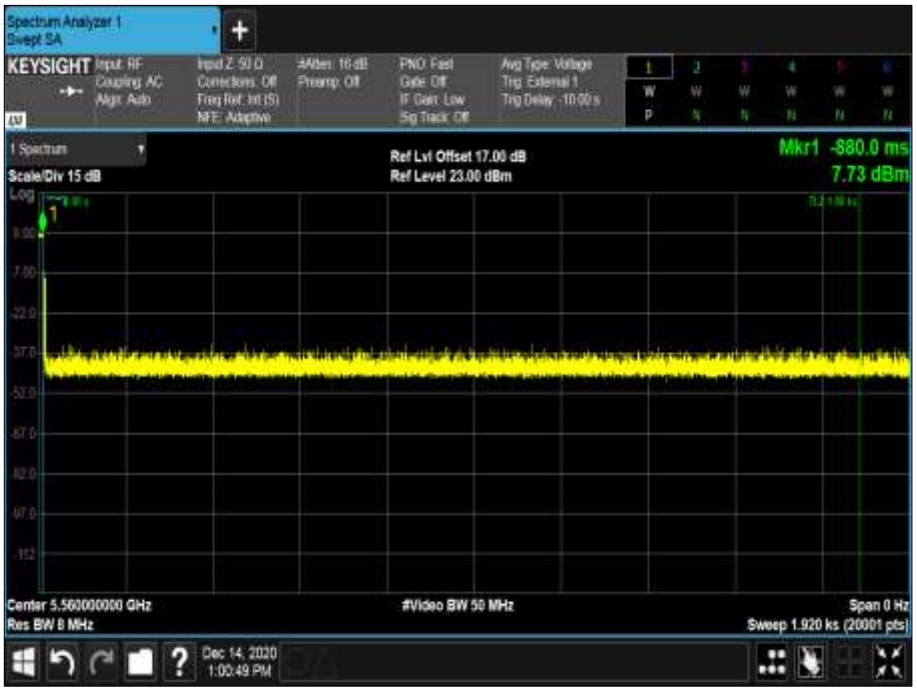

Figure 1151 - 30 minute Non-Occupancy Period

Client to Client - 802.11ac VHT80

The EUT could operate a direct client-to-client mode and so this was also tested as required by KDB 905462 D03 v01r02 clause (b)3.

The equipment was set up as shown in the diagram below. The EUT was configured to screencast its display (showing video playback), directly to the Apple TV box using the AirPlay transfer protocol. A spectrum analyser was used to measure the channel loading was >17 %. It was also used to verify the EUT mode of operation was correctly transmitting directly to the other client, with the DFS Master only doing occasional signalling and not re-transmitting the data.

To calibrate the level of the radar at the input to the DFS Master, the DFS Master was replaced by the spectrum analyser and the output of the PXI RF generator adjusted to give -62 dBm.

Radar Type	Pulse Width (µs)	PRI (µs)	Number of Pulses
0	1	1428	18

Table 662 - Radar Pulse Type 0 Characteristics

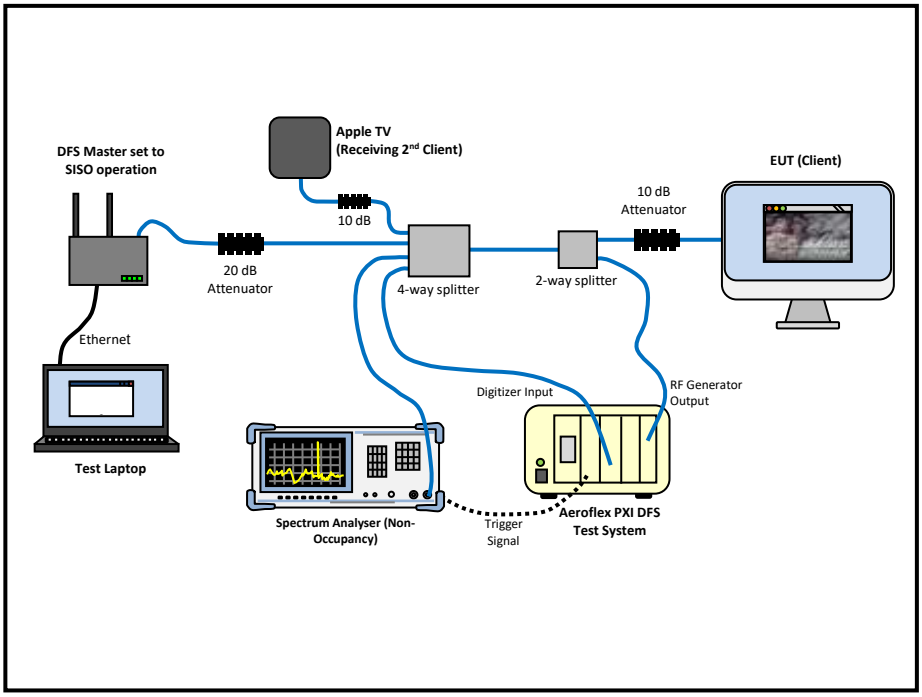

Figure 1152 - Test Equipment Setup Diagram for Client without Radar Detection with Injection at the Master – Client-to-Client Mode

Figure 1153 - Verification of Radar Type 0

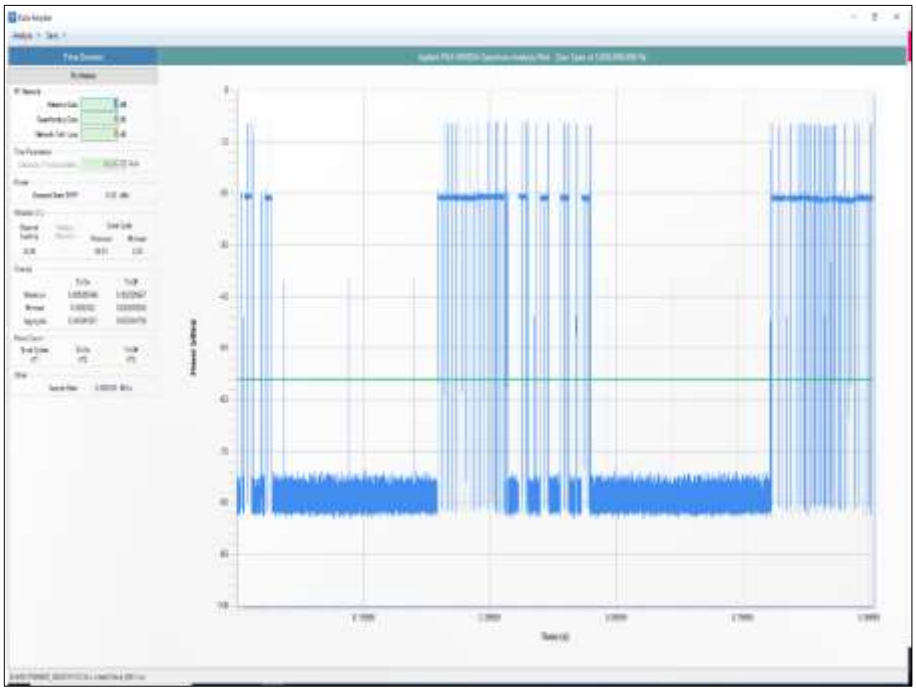

Figure 1154 - Channel Loading

The channel loading was 34.08 %

Maximum Transmit Power	Value (Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission wavefoRMS to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.	

Table 663 - DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Test Parameter	Result
Channel Move Time	0.064 s
Channel Closing Time (Aggregate Time During 200 ms)	10.551 ms
Channel Closing Time (Aggregate Time During 200 ms to 10 s)	0 ms
Channel Closing Time (Aggregate Time During 10 s)	10.551 ms
Transmission Observed During Non-Occupancy Period	None

Table 664 - In-Service Monitoring Test Results

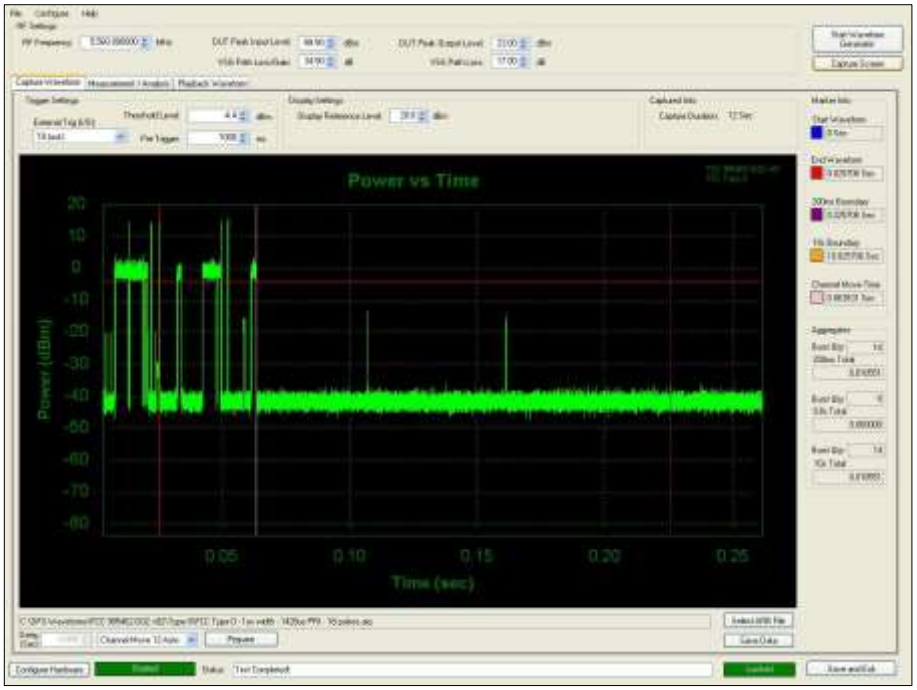

Figure 1155 - First 200 ms of Channel Shutdown Period

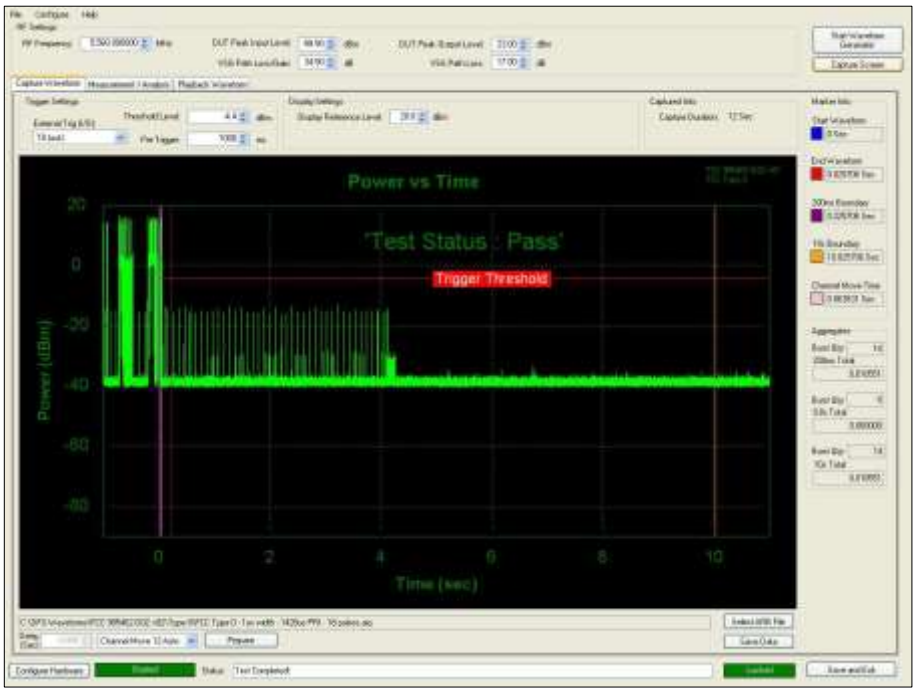

Figure 1156 - First 12 s of Channel Shutdown Period

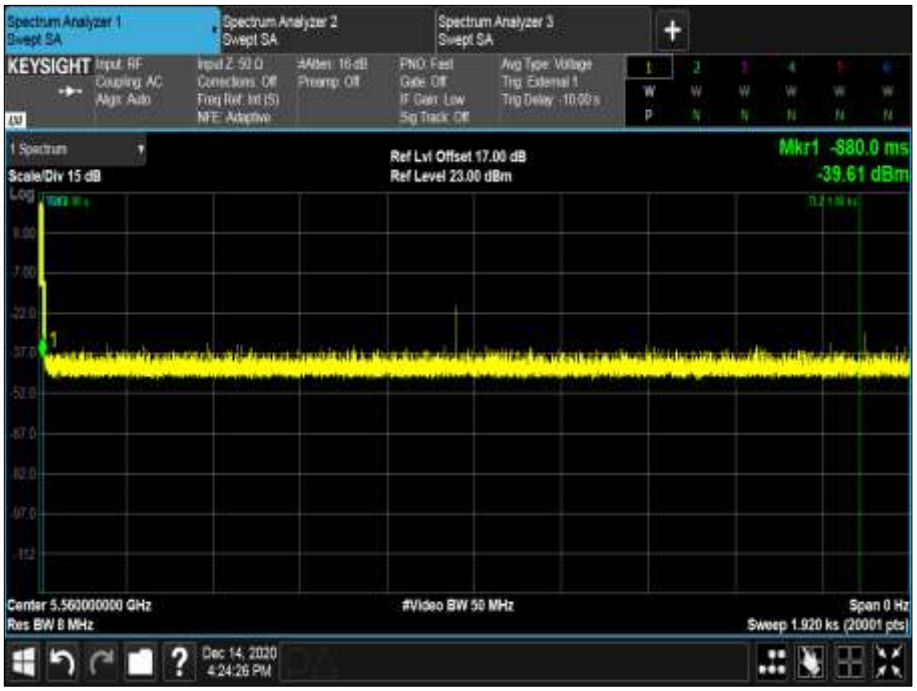

Figure 1157 - 30 minute Non-Occupancy Period

FCC 47 CFR Part 15, Limit Clause 15.407 (h)(2)(iii)

Channel Move Time	<10 seconds
Channel Closing Time (Aggregate Time During 200ms)	<200 ms
Channel Closing Time (Aggregate Time During +200ms to 10s)	<60 ms

Table 665 - Channel Move Time and Channel Closing Transmission Time Limit

FCC 47 CFR Part 15, Limit Clause 15.407 (h)(2)(iv)

Non-occupancy Period	> 30 minutes

Table 666 - Non-Occupancy Limit

ISED RSS-247, Limit Clause 6.3.2

Devices shall comply with the following requirements, however, the requirement for in-service monitoring does not apply to slave devices without radar detection.

In-service monitoring: an LE-LAN device shall be able to monitor the operating channel to check that a co-channel radar has not moved or started operation within range of the LE-LAN device. During in-service monitoring, the LE-LAN radar detection function continuously searches for radar signals between normal LE-LAN transmissions.

Channel availability check time: the device shall check whether there is a radar system already operating on the channel before it initiates a transmission on a channel and when it moves to a channel. The device may start using the channel if no radar signal with a power level greater than the interference threshold value specified in Section 6.3.1 above is detected within 60 seconds. This requirement only applies in the master operational mode.

Channel move time: after a radar signal is detected, the device shall cease all transmissions on the operating channel within 10 seconds.

Channel closing transmission time: is comprised of 200 ms starting at the beginning of the channel move time plus any additional intermittent control signals required to facilitate a channel move (an aggregate of 60 ms) over the remaining 10-second period of the channel move time.

Non-occupancy period: a channel that has been flagged as containing a radar signal, either by a channel availability check or in-service monitoring, is subject to a 30-minute non-occupancy period where the channel cannot be used by the LE-LAN device. The non-occupancy period starts from the time that the radar signal is detected

2.7.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
RF Coupler	TUV SUD	TÜV	415	-	TU
Hygrometer	Rotronic	I-1000	3220	12	16-Oct-2021
PXI RF Digitizer	Aeroflex	3035	4012	24	12-Nov-2022
PXI RF Synthesizer	Aeroflex	3010	4013	24	12-Nov-2022
PXI RF Synthesizer	Aeroflex	3011	4014	24	12-Nov-2022
PXI Digital RF Signal Generator	Aeroflex	3025	4015	24	12-Nov-2022
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	17-May-2021
2 metre SMA Cable	Florida Labs	SMS-235SP-78.8-SMS	4517	12	22-Jun-2021
Power splitter - 4 port	Mini-Circuits	ZN4PD1-63-S+	4744	12	22-Oct-2021
Wireless Cable & Fibre Router - AC 1900, Dual-band	Asus	RT-AC68U	4881	-	TU
EXA	Keysight Technologies	N9010B	4968	24	23-Dec-2021
Cable (40 GHz)	Rosenberger	LU1-001-500	5021	12	22-Jun-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5096	12	12-Oct-2021
Cable (18 GHz)	Rosenberger	LU7-071-1000	5099	12	12-Oct-2021
Power Splitter, 2 way	Mini-Circuits	ZN2PD2-63-S+	5237	-	O/P Mon
Power Splitter, 2 way	Mini-Circuits	ZN2PD2-63-S+	5238	-	O/P Mon
Attenuator 2W 10dB DC-10GHz	Telegartner	J01156A0031	5578		O/P Mon
Attenuator 2W 10dB DC-10GHz	Telegartner	J01156A0031	5582	-	O/P Mon

Table 667

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

3 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Maximum Conducted Output Power	± 3.2 dB
Maximum Conducted Power Spectral Density	± 3.2 dB
Emission Bandwidth	± 1.118 MHz
Authorised Band Edges	± 6.3 dB
Restricted Band Edges	± 6.3 dB
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period	Time: ± 0.47 % Power: ± 1.29 dB

Table 668

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.