

FCC Test Report

FCC ID : I88NBG6815
Equipment : Simultaneous Dual-Band Wireless AC2200
Gigabit Ethernet Gateway
Model No. : EMG3425-Q10A 、NBG6815
(Please refer to section 1.1.1 for more details.)
Brand Name : ZyXEL
Applicant : ZyXEL Communications Corporation
Address : No. 2, Gongye E. 9th Road, Hsinchu Science
Park, Hsinchu, Taiwan.
Standard : 47 CFR FCC Part 15.247
Received Date : Jun. 16, 2015
Tested Date : Aug. 10 ~ Nov. 25, 2015

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:



Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR570601-01AI	Rev. 01	Initial issue	Nov. 26, 2015

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.437MHz 34.69 (Margin -12.42dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 11650.00MHz 52.99 (Margin -1.01dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: <i>Non-beamforming mode</i> 5725-5850MHz: 28.09 <i>Beamforming mode</i> 5725-5850MHz: 27.99	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
ZyXEL	EMG3425-Q10A	Simultaneous Dual-Band Wireless AC2200 Gigabit Ethernet Gateway	The difference between both models is only numbers of LED of non-RF portion
	NBG6815		

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS
5725-5850	a	5745-5825	149-165 [5]	4	6-54 Mbps
5725-5850	n (HT20)	5745-5825	149-165 [5]	4	MCS 0-31
5725-5850	n (HT40)	5755-5795	151-159 [2]	4	MCS 0-31
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	4	MCS 0-9
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	4	MCS 0-9
5725-5850	ac (VHT80)	5775	155 [1]	4	MCS 0-9
Note 1: RF output power specifies that Maximum Peak Conducted Output Power..					
Note 2: 802.11a/n/ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.					

1.1.3 Antenna Details

Ant. No.	Type	Operating Frequency / Gain (dBi)		Connector
		2.4GHz	5GHz	
1	Dipole	1.53	1.92	UFL

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from AC adapter
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1.1.5 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand Name: APD Model Name: DA-48T12 Power Rating: I/P: 100-240Vac, 50-60Hz, 1.4A Max O/P: 12Vdc, 4A Power Line: AC 1.5m non-shielded cable w/o core DC 1.2m non-shielded cable w/o core
2	AC adapter	Brand Name: APD Model Name: WA-36A12FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.9A Max O/P: 12Vdc, 3A Power Line: DC 1.5m non-shielded cable with one core
3	RJ45 cable	1.0m non-shielded cable w/o core.

1.1.6 Channel List

Frequency band (MHz)		5725~5850	
802.11 a / HT20 / VHT20		HT40 / VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
149	5745	151	5755
153	5765	159	5795
157	5785	VHT80	
161	5805	155	5775
165	5825	---	---

1.1.7 Test Tool and Duty Cycle

Test Tool	Putty; Version 0.6				
Duty Cycle and Duty Factor	Mode	Non-beamforming		Beamforming	
		Duty cycle (%)	Duty factor (dB)	Duty cycle (%)	Duty factor (dB)
	11a	99.60%	0.02	---	---
	VHT20	99.57%	0.02	98.42%	0.07
	VHT40	98.54%	0.06	99.01%	0.04
	VHT80	96.62%	0.15	97.53%	0.11

1.1.8 Power Setting

For Frequency band 5725~5850 MHz			
Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-Beamforming	Beamforming
11a	5745	25	---
11a	5785	25	---
11a	5825	25	---
HT20	5745	25	---
HT20	5785	25	---
HT20	5825	25	---
HT40	5755	23	---
HT40	5795	25	---
VHT20	5745	25	25
VHT20	5785	25	25
VHT20	5825	25	25
VHT40	5755	23	25
VHT40	5795	25	25
VHT80	5775	22	25

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Aug. 14, 2015				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
EMC Receiver	R&S	ESCS 30	100169	Oct. 17, 2014	Oct. 16, 2015
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 17, 2014	Nov. 16, 2015
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 31, 2014	Dec. 30, 2015
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Nov. 25, 2015				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
EMC Receiver	R&S	ESCS 30	100169	Oct. 21, 2015	Oct. 20, 2016
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 31, 2014	Dec. 30, 2015
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Nov. 23 ~ Nov. 25, 2015				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Feb. 03, 2015	Feb. 02, 2016
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 03, 2014	Dec. 02, 2015
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested Date	Aug. 10, 2015				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 16, 2014	Sep. 15, 2015
Receiver	Agilent	N9038A	MY53290044	Oct. 21, 2014	Oct. 20, 2015
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-562	Jan. 19, 2015	Jan. 18, 2016
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	EMC	EMC02325	980187	Sep. 26, 2014	Sep. 25, 2015
Preamplifier	Agilent	83017A	MY53270014	Sep. 17, 2014	Sep. 16, 2015
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Feb. 09, 2015	Feb. 08, 2016
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 09, 2015	Feb. 08, 2016
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Feb. 09, 2015	Feb. 08, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested Date	Nov. 20 ~ Nov. 24, 2015				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 14, 2015	Sep. 13, 2016
Receiver	Agilent	N9038A	MY53290044	Oct. 14, 2015	Oct. 13, 2016
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-562	Jan. 19, 2015	Jan. 18, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 03, 2015	Feb. 02, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	TESEQ	HLA6120	24155	Mar. 12, 2015	Mar. 11, 2016
Preamplifier	EMC	EMC02325	980187	Sep. 21, 2015	Sep. 20, 2016
Preamplifier	Agilent	83017A	MY53270014	Sep. 07, 2015	Sep. 06, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 09, 2015	Feb. 08, 2016
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22601/4	Feb. 09, 2015	Feb. 08, 2016
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 09, 2015	Feb. 08, 2016
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22600/4	Feb. 09, 2015	Feb. 08, 2016
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Feb. 09, 2015	Feb. 08, 2016
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 09, 2015	Feb. 08, 2016
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Feb. 09, 2015	Feb. 08, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247

ANSI C63.10-2013

FCC KDB 558074 D01 DTS Meas Guidance v03r03

FCC KDB 644545 D01 Guidance for IEEE 802 11ac Old Rules v01

FCC KDB 644545 D02 Alternative Guidance for 802 11ac Old Rules v01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$))

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.134 Hz
Conducted power	± 0.808 dB
Power density	± 0.463 dB
Conducted emission	± 2.670 dB
AC conducted emission	± 2.92 dB
Radiated emission ≤ 1 GHz	± 3.99 dB
Radiated emission > 1 GHz	± 5.52 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 52% 21°C / 59%	Kevin Ma Peter Lin
Radiated Emissions	03CH03-WS	22°C / 66-68%	Anderson Hong Morgan Chen
RF Conducted	TH01-WS	22°C / 63%	Felix Sung

➤ FCC site registration No.: 390588

➤ IC site registration No.: 10807C -1

2.2 The Worst Test Modes and Channel Details

Non-beamforming mode

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	11a	5785	6 Mbps	2, 4
Radiated Emissions ≤1GHz	11a	5785	6 Mbps	1, 3
Maximum Output Power	11a	5745 / 5785 / 5825	6 Mbps	1
	HT20	5745 / 5785 / 5825	MCS 0	
	HT40	5755 / 5795	MCS 0	
	VHT20	5745 / 5785 / 5825	MCS 0	
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Radiated Emissions >1GHz 6dB bandwidth Power spectral density	11a	5745 / 5785 / 5825	6 Mbps	1
	VHT20	5745 / 5785 / 5825	MCS 0	
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	

NOTE:

- Each model was selected for final testing as below test configuration. (Model 1: EMG3425-Q10A; Model 2: NBG6815)
- Adapter 1 and Adapter 2 had been covered during pretest. Worst adapter was final testing as below test configuration. (Adapter 1: DA-48T12; Adapter 2: WA-36A12FU).
- Test configurations are listed as below:
 - Configuration 1: Model EMG3425-Q10A, Adapter 1: DA-48T12
 - Configuration 2: Model EMG3425-Q10A, Adapter 2: WA-36A12FU
 - Configuration 3: Model NBG6815, Adapter 1: DA-48T12
 - Configuration 4: Model NBG6815, Adapter 2: WA-36A12FU

Beamforming mode

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	VHT20	5785	MCS 0	2, 4
Radiated Emissions ≤ 1 GHz	VHT20	5785	MCS 0	1, 3
Maximum Output Power	VHT20	5745 / 5785 / 5825	MCS 0	1
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Radiated Emissions > 1 GHz 6dB bandwidth Power spectral density	VHT20	5745 / 5785 / 5825	MCS 0	1
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	

NOTE:

- Each model was selected for final testing as below test configuration. (Model 1: EMG3425-Q10A; Model 2: NBG6815)
- Adapter 1 and Adapter 2 had been covered during pretest. Worst adapter was final testing as below test configuration. (Adapter 1: DA-48T12; Adapter 2: WA-36A12FU).
- Test configurations are listed as below:
 - Configuration 1: Model EMG3425-Q10A, Adapter 1: DA-48T12
 - Configuration 2: Model EMG3425-Q10A, Adapter 2: WA-36A12FU
 - Configuration 3: Model NBG6815, Adapter 1: DA-48T12
 - Configuration 4: Model NBG6815, Adapter 2: WA-36A12FU

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

3.1.3 Test Setup

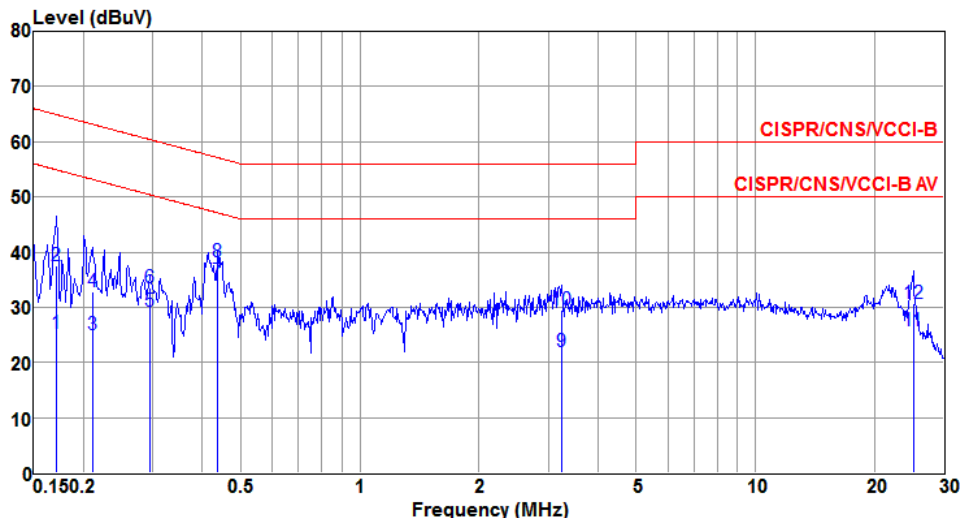


- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Non-beamforming mode

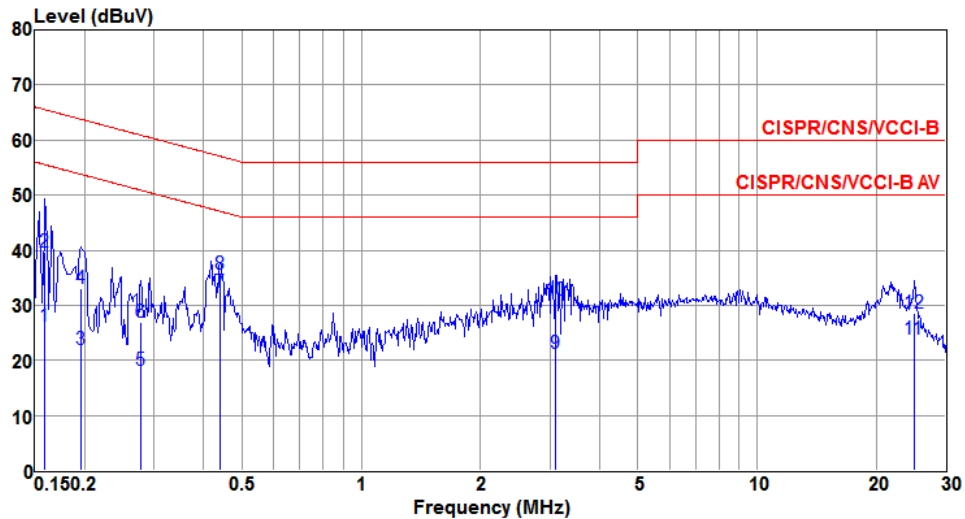
Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBUV	Limit dBUV	Over Limit dB	Read Level dBUV	LISN factor dB	cable loss dB	Remark
1	0.171	25.15	54.90	-29.75	15.40	9.67	0.08	Average
2	0.171	37.44	64.90	-27.46	27.69	9.67	0.08	QP
3	0.211	25.07	53.18	-28.11	15.32	9.66	0.09	Average
4	0.211	32.72	63.18	-30.46	22.97	9.66	0.09	QP
5	0.294	29.18	50.41	-21.23	19.42	9.66	0.10	Average
6	0.294	33.57	60.41	-26.84	23.81	9.66	0.10	QP
7*	0.437	34.69	47.11	-12.42	24.92	9.66	0.11	Average
8	0.437	38.23	57.11	-18.88	28.46	9.66	0.11	QP
9	3.241	21.85	46.00	-24.15	11.88	9.68	0.29	Average
10	3.241	29.40	56.00	-26.60	19.43	9.68	0.29	QP
11	25.055	25.84	50.00	-24.16	16.10	9.65	0.09	Average
12	25.055	30.65	60.00	-29.35	20.91	9.65	0.09	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

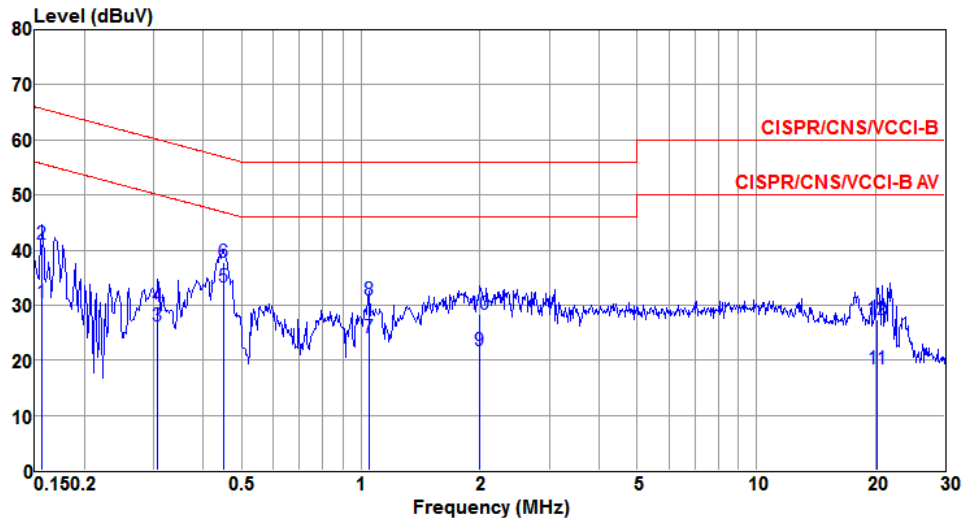
Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Neutral	Test Configuration	2



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.159	26.10	55.52	-29.42	16.35	9.67	0.08	Average
2	0.159	39.64	65.52	-25.88	29.89	9.67	0.08	QP
3	0.195	22.00	53.80	-31.80	12.25	9.66	0.09	Average
4	0.195	32.95	63.80	-30.85	23.20	9.66	0.09	QP
5	0.277	18.28	50.90	-32.62	8.52	9.66	0.10	Average
6	0.277	27.01	60.90	-33.89	17.25	9.66	0.10	QP
7*	0.440	32.25	47.07	-14.82	22.48	9.66	0.11	Average
8	0.440	35.74	57.07	-21.33	25.97	9.66	0.11	QP
9	3.107	21.27	46.00	-24.73	11.31	9.68	0.28	Average
10	3.107	31.00	56.00	-25.00	21.04	9.68	0.28	QP
11	24.922	23.84	50.00	-26.16	13.98	9.77	0.09	Average
12	24.922	28.66	60.00	-31.34	18.80	9.77	0.09	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

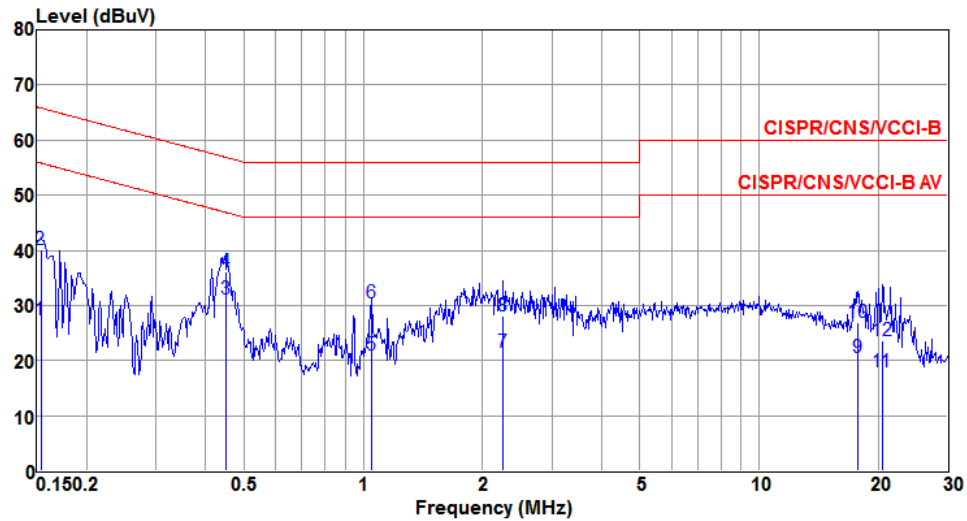
Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Line	Test Configuration	4



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	30.54	55.65	-25.11	30.41	0.11	0.02	Average
2	0.156	41.16	65.65	-24.49	41.03	0.11	0.02	QP
3	0.307	26.23	50.06	-23.83	26.08	0.12	0.03	Average
4	0.307	29.76	60.06	-30.30	29.61	0.12	0.03	QP
5	0.449	33.35	46.89	-13.54	33.19	0.13	0.03	Average
6	0.449	37.81	56.89	-19.08	37.65	0.13	0.03	QP
7	1.049	24.14	46.00	-21.86	23.95	0.13	0.06	Average
8	1.049	30.85	56.00	-25.15	30.66	0.13	0.06	QP
9	2.001	21.79	46.00	-24.21	21.55	0.16	0.08	Average
10	2.001	28.37	56.00	-27.63	28.13	0.16	0.08	QP
11	20.270	18.37	50.00	-31.63	17.82	0.37	0.18	Average
12	20.270	27.41	60.00	-32.59	26.86	0.37	0.18	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Neutral	Test Configuration	4

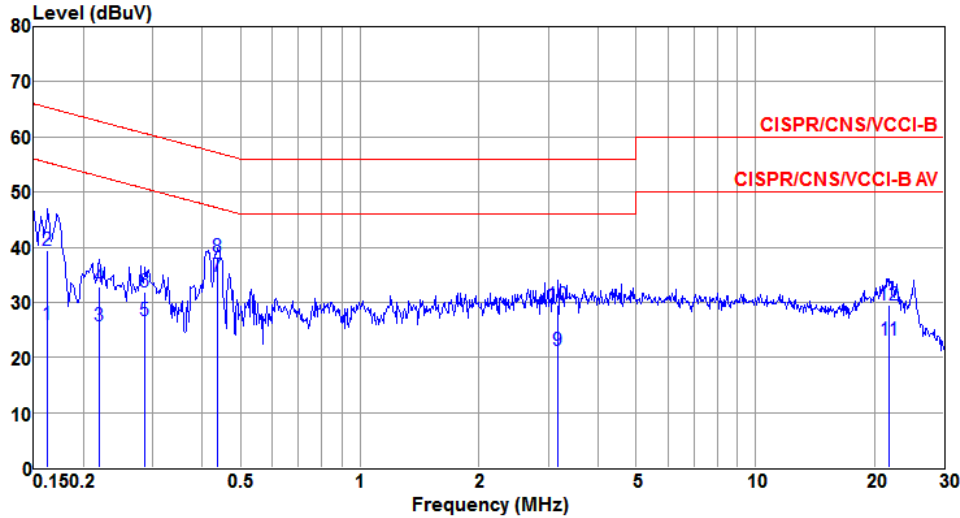


	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.153	27.33	55.82	-28.49	27.18	0.13	0.02	Average
2	0.153	40.22	65.82	-25.60	40.07	0.13	0.02	QP
3	0.449	31.24	46.89	-15.65	31.07	0.14	0.03	Average
4	0.449	36.06	56.89	-20.83	35.89	0.14	0.03	QP
5	1.049	21.11	46.00	-24.89	20.92	0.13	0.06	Average
6	1.049	30.42	56.00	-25.58	30.23	0.13	0.06	QP
7	2.261	21.48	46.00	-24.52	21.22	0.17	0.09	Average
8	2.261	28.15	56.00	-27.85	27.89	0.17	0.09	QP
9	17.755	20.54	50.00	-29.46	19.97	0.38	0.19	Average
10	17.755	27.00	60.00	-33.00	26.43	0.38	0.19	QP
11	20.486	17.90	50.00	-32.10	17.31	0.41	0.18	Average
12	20.486	23.67	60.00	-36.33	23.08	0.41	0.18	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

Beamforming mode

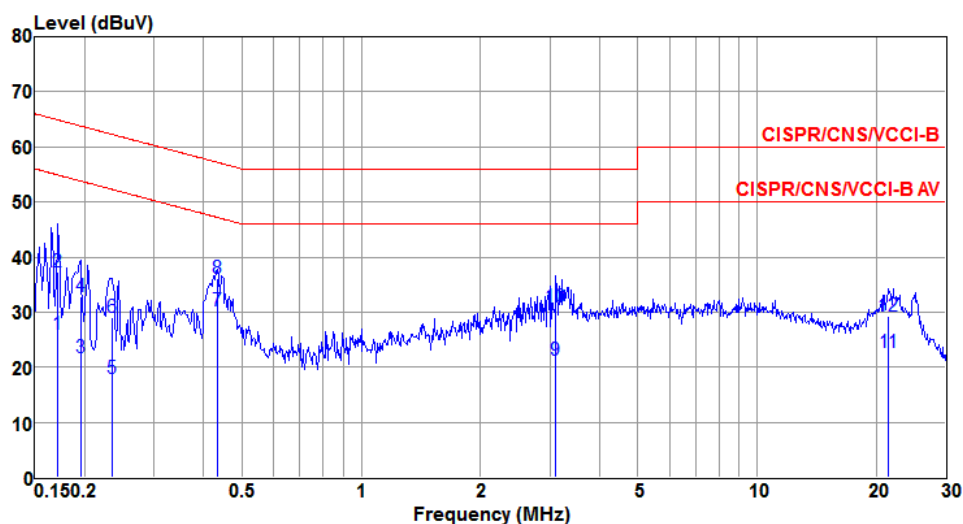
Modulation	VHT20	Test Freq. (MHz)	5785
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.162	26.08	55.34	-29.26	16.33	9.67	0.08	Average
2	0.162	39.45	65.34	-25.89	29.70	9.67	0.08	QP
3	0.220	25.68	52.83	-27.15	15.93	9.66	0.09	Average
4	0.220	32.92	62.83	-29.91	23.17	9.66	0.09	QP
5	0.286	26.63	50.63	-24.00	16.87	9.66	0.10	Average
6	0.286	31.94	60.63	-28.69	22.18	9.66	0.10	QP
7*	0.437	34.69	47.11	-12.42	24.92	9.66	0.11	Average
8	0.437	38.21	57.11	-18.90	28.44	9.66	0.11	QP
9	3.173	21.35	46.00	-24.65	11.38	9.68	0.29	Average
10	3.173	29.55	56.00	-26.45	19.58	9.68	0.29	QP
11	21.830	23.20	50.00	-26.80	13.46	9.69	0.05	Average
12	21.830	29.47	60.00	-30.53	19.73	9.69	0.05	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

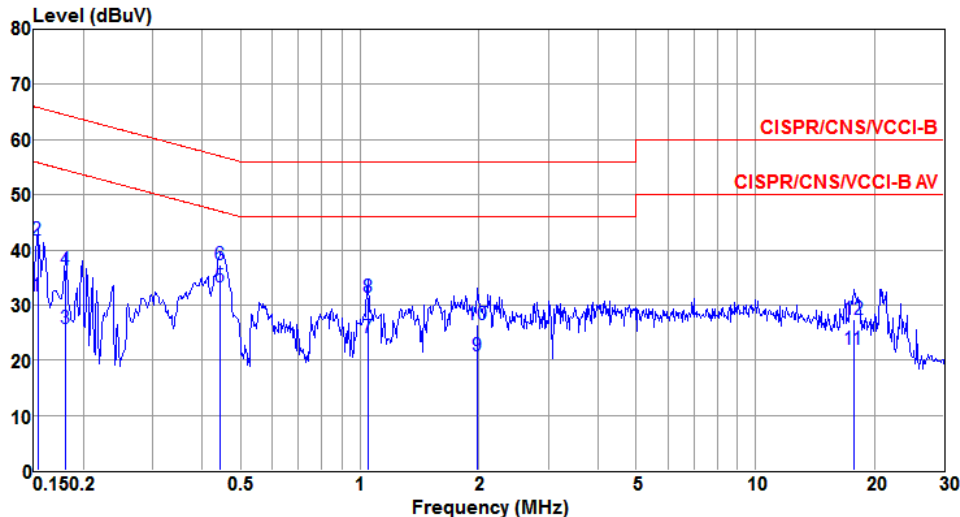
Modulation	VHT20	Test Freq. (MHz)	5785
Power Phase	Neutral	Test Configuration	2



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.171	25.90	54.90	-29.00	16.15	9.67	0.08	Average
2	0.171	37.36	64.90	-27.54	27.61	9.67	0.08	QP
3	0.195	21.82	53.80	-31.98	12.07	9.66	0.09	Average
4	0.195	32.77	63.80	-31.03	23.02	9.66	0.09	QP
5	0.234	17.88	52.30	-34.42	8.13	9.66	0.09	Average
6	0.234	29.01	62.30	-33.29	19.26	9.66	0.09	QP
7*	0.433	30.12	47.20	-17.08	20.35	9.66	0.11	Average
8	0.433	36.01	57.20	-21.19	26.24	9.66	0.11	QP
9	3.107	21.32	46.00	-24.68	11.36	9.68	0.28	Average
10	3.107	30.92	56.00	-25.08	20.96	9.68	0.28	QP
11	21.486	22.55	50.00	-27.45	12.72	9.79	0.04	Average
12	21.486	29.19	60.00	-30.81	19.36	9.79	0.04	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

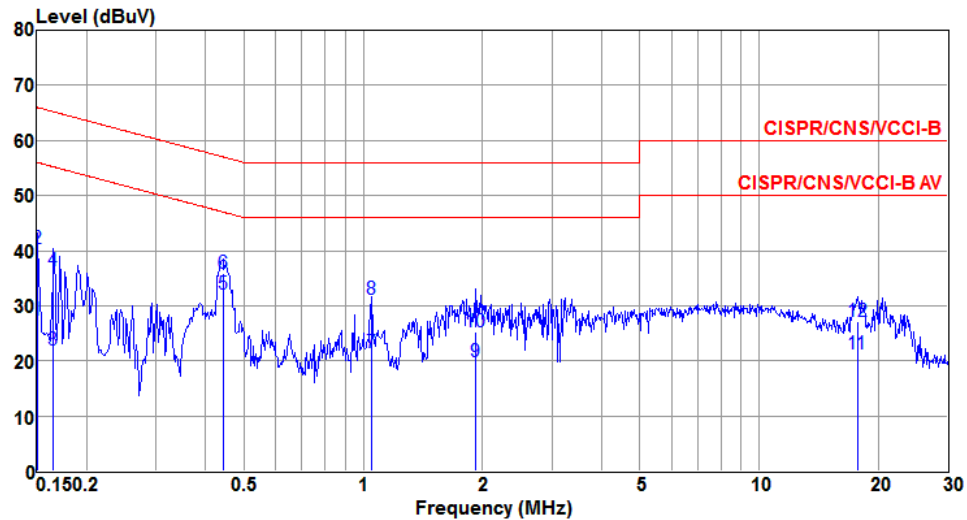
Modulation	VHT20	Test Freq. (MHz)	5785
Power Phase	Line	Test Configuration	4



	Freq	Level	Limit	Over	Read	LISN	cable	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.153	31.62	55.82	-24.20	31.49	0.11	0.02	Average
2	0.153	41.78	65.82	-24.04	41.65	0.11	0.02	QP
3	0.181	25.80	54.46	-28.66	25.67	0.11	0.02	Average
4	0.181	36.25	64.46	-28.21	36.12	0.11	0.02	QP
5@	0.444	33.19	46.98	-13.79	33.03	0.13	0.03	Average
6	0.444	37.32	56.98	-19.66	37.16	0.13	0.03	QP
7	1.049	24.09	46.00	-21.91	23.90	0.13	0.06	Average
8	1.049	31.46	56.00	-24.54	31.27	0.13	0.06	QP
9	1.980	20.88	46.00	-25.12	20.64	0.16	0.08	Average
10	1.980	26.49	56.00	-29.51	26.25	0.16	0.08	QP
11	17.755	22.07	50.00	-27.93	21.53	0.35	0.19	Average
12	17.755	27.32	60.00	-32.68	26.78	0.35	0.19	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	VHT20	Test Freq. (MHz)	5785
Power Phase	Neutral	Test Configuration	4



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.150	27.30	56.00	-28.70	27.15	0.13	0.02	Average
2	0.150	40.35	66.00	-25.65	40.20	0.13	0.02	QP
3	0.165	21.84	55.21	-33.37	21.70	0.12	0.02	Average
4	0.165	36.31	65.21	-28.90	36.17	0.12	0.02	QP
5@	0.442	31.99	47.02	-15.03	31.82	0.14	0.03	Average
6	0.442	35.84	57.02	-21.18	35.67	0.14	0.03	QP
7	1.049	21.48	46.00	-24.52	21.29	0.13	0.06	Average
8	1.049	31.13	56.00	-24.87	30.94	0.13	0.06	QP
9	1.918	19.93	46.00	-26.07	19.68	0.17	0.08	Average
10	1.918	25.34	56.00	-30.66	25.09	0.17	0.08	QP
11	17.755	21.16	50.00	-28.84	20.59	0.38	0.19	Average
12	17.755	27.08	60.00	-32.92	26.51	0.38	0.19	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

3.2.2 Test Procedures

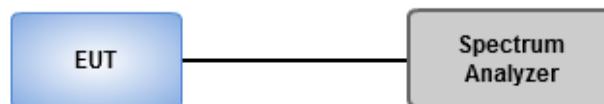
6dB Bandwidth

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

1. Set resolution bandwidth (RBW) = 1 MHz, Video bandwidth = 3 MHz.
2. Detector = Sample, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

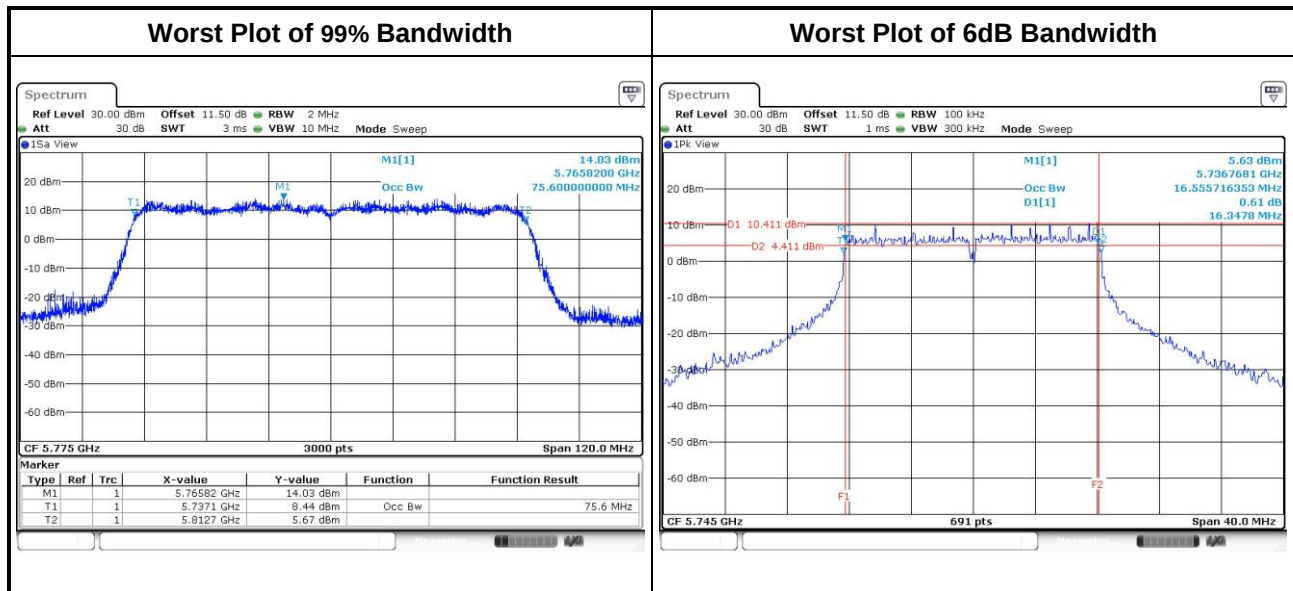
3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

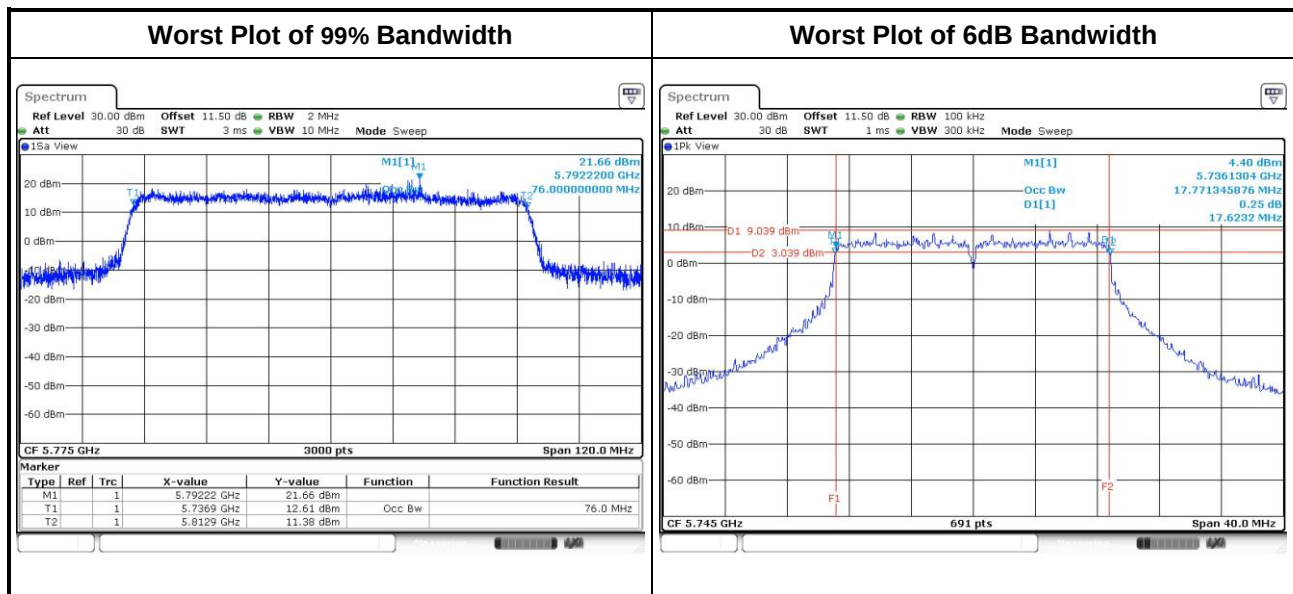
Non-beamforming mode

For Frequency band 5725-5850 MHz											
Emission Bandwidth											
Mode	N _{TX}	Freq. (MHz)	OBW Bandwidth (MHz)				6dB Bandwidth (MHz)				6dB BW Limit (MHz)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
11a	4	5745	16.88	17.09	16.93	16.94	16.35	16.35	16.35	16.35	0.5
11a	4	5785	16.93	17.15	16.92	16.97	16.35	16.46	16.35	16.35	0.5
11a	4	5825	16.92	17.11	17.00	16.91	16.35	16.35	16.35	16.35	0.5
VHT20	4	5745	18.25	18.30	18.09	18.00	17.62	17.62	17.62	17.62	0.5
VHT20	4	5785	18.24	18.33	18.11	18.03	17.62	17.74	17.62	17.62	0.5
VHT20	4	5825	18.22	18.28	18.12	17.97	17.62	17.62	17.62	17.62	0.5
VHT40	4	5755	36.96	36.72	36.88	36.64	36.29	36.29	36.06	36.52	0.5
VHT40	4	5795	37.06	36.80	36.84	36.74	36.29	35.83	36.06	36.29	0.5
VHT80	4	5775	75.52	75.44	75.48	75.60	75.13	75.13	75.13	75.13	0.5



Beamforming mode

For Frequency band 5725-5850 MHz											
Emission Bandwidth											
Mode	N _{TX}	Freq. (MHz)	OBW Bandwidth (MHz)				6dB Bandwidth (MHz)				6dB BW Limit (MHz)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
VHT20	4	5745	18.21	18.19	18.27	18.20	17.62	17.62	17.62	17.62	0.5
VHT20	4	5785	18.18	18.20	18.26	18.20	17.62	17.62	17.62	17.62	0.5
VHT20	4	5825	18.19	18.22	18.25	18.22	17.62	17.62	17.62	17.62	0.5
VHT40	4	5755	36.98	37.00	37.00	37.06	36.06	35.59	35.71	35.83	0.5
VHT40	4	5795	36.92	36.92	37.02	37.02	35.71	35.71	35.83	35.71	0.5
VHT80	4	5775	75.48	75.88	76.00	75.64	75.13	75.13	75.13	73.97	0.5



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

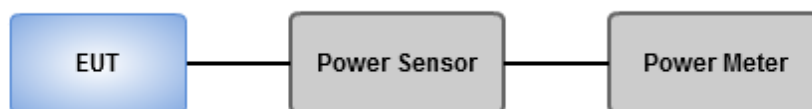
- ☒ Antenna gain $\leq 6\text{dBi}$, no any corresponding reduction is in output power limit.
- ☐ Antenna gain $> 6\text{dBi}$
 - ☐ Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB
 - ☐ Fixed, point to point operations
Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations ,no any corresponding reduction is in transmitter peak output power

3.3.2 Test Procedures

- ☐ Maximum Peak Conducted Output Power
 - ☐ **Spectrum analyzer**
 1. Set RBW = 1MHz, VBW = 3MHz, Detector = Peak.
 2. Sweep time = auto, Trace mode = max hold, Allow trace to fully stabilize.
 3. Use the spectrum analyzer channel power measurement function with the band limits set equal to the DTS bandwidth edges.
 - ☒ **Power meter**
 1. A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.
- ☒ Maximum Conducted Output Power
 - ☒ **Power meter**
 1. A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.3.3 Test Setup



3.3.4 Test Result of Maximum Output Power

Non-beamforming mode

Modulation Mode	N _{TX}	Freq. (MHz)	Conducted (Average) Output Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11a	4	5745	21.76	22.45	22.24	20.75	612.105	27.87	30.00
11a	4	5785	22.09	22.43	22.53	21.06	643.497	28.09	30.00
11a	4	5825	21.88	22.43	22.39	20.69	619.755	27.92	30.00
HT20	4	5745	21.09	22.69	22.44	20.88	612.159	27.87	30.00
HT20	4	5785	21.92	22.34	22.61	21.01	635.565	28.03	30.00
HT20	4	5825	20.67	22.1	22.43	21.39	591.568	27.72	30.00
HT40	4	5755	19.62	21.01	20.43	20.04	429.138	26.33	30.00
HT40	4	5795	21.68	22.24	22.35	20.64	602.394	27.80	30.00
VHT20	4	5745	22.18	22.18	22.32	21	626.893	27.97	30.00
VHT20	4	5785	21.96	22.36	22.65	21.03	640.066	28.06	30.00
VHT20	4	5825	20.8	22.2	22.53	21.53	607.479	27.84	30.00
VHT40	4	5755	19.66	21.13	20.58	20.18	440.707	26.44	30.00
VHT40	4	5795	21.80	22.31	22.46	20.73	616.074	27.90	30.00
VHT80	4	5775	18.49	20.03	19.72	19.34	350.982	25.45	30.00

Beamforming mode

Modulation Mode	N _{TX}	Freq. (MHz)	Conducted (Average) Output Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
VHT20	4	5745	20.57	22.69	22.33	21.94	627.122	27.97	28.06
VHT20	4	5785	21.05	22.52	22.49	21.66	629.973	27.99	28.06
VHT20	4	5825	20.52	22.48	22.55	21.89	624.143	27.95	28.06
VHT40	4	5755	20.84	22.17	22.19	21.65	597.950	27.77	28.06
VHT40	4	5795	20.75	22.28	22.17	21.94	609.025	27.85	28.06
VHT80	4	5775	20.88	22.38	22.23	21.58	606.432	27.83	28.06

Note:

- Directional gain = $1.92 + 10 \cdot \log(4/1) = 7.94 \text{ dBi} > 6 \text{ dBi}$.
Limit shall be reduced to $30 \text{ dBm} - (7.94 \text{ dBi} - 6 \text{ dBi}) = 28.06 \text{ dBm}$

3.4 Power Spectral Density

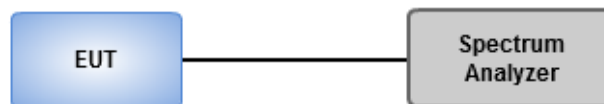
3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.4.2 Test Procedures

- ☐ Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.
 1. Set the RBW = 30kHz, VBW = 100kHz.
 2. Detector = Peak, Sweep time = auto couple.
 3. Trace mode = max hold, allow trace to fully stabilize.
 4. Use the peak marker function to determine the maximum amplitude level.
- ☒ Maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit.
 1. Set the RBW = 30kHz, VBW = 100 kHz.
 2. Detector = RMS, Sweep time = auto couple.
 3. Set the sweep time to: $\geq 10 \times (\text{number of measurement points in sweep}) \times (\text{maximum data rate per stream})$.
 4. Perform the measurement over a single sweep.
 5. Use the peak marker function to determine the maximum amplitude level.

3.4.3 Test Setup

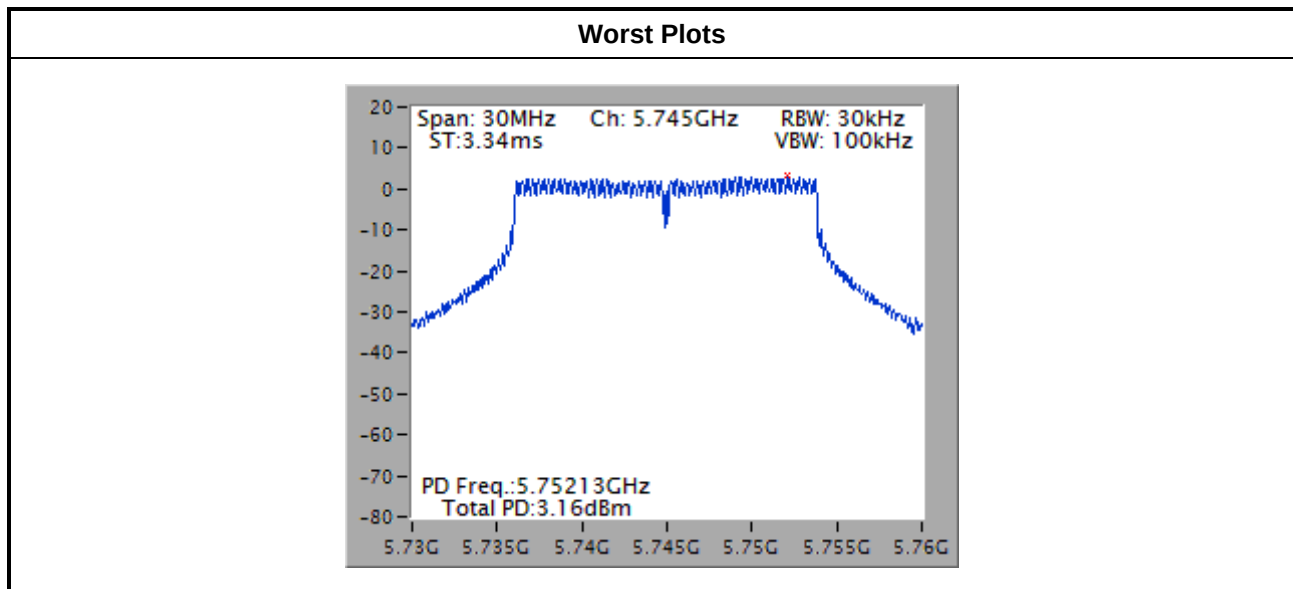


3.4.4 Test Result of Power Spectral Density

Non-beamforming mode

Condition			Peak Power Spectral Density (dBm)			
Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty Factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)
11a	4	5745	3.08	0.00	3.08	8.00
11a	4	5785	3.15	0.00	3.15	8.00
11a	4	5825	2.67	0.00	2.67	8.00
VHT20	4	5745	3.16	0.00	3.16	8.00
VHT20	4	5785	2.94	0.00	2.94	8.00
VHT20	4	5825	2.72	0.00	2.72	8.00
VHT40	4	5755	-2.19	0.00	-2.19	8.00
VHT40	4	5795	-0.49	0.00	-0.49	8.00
VHT80	4	5775	-6.47	0.15	-6.32	8.00

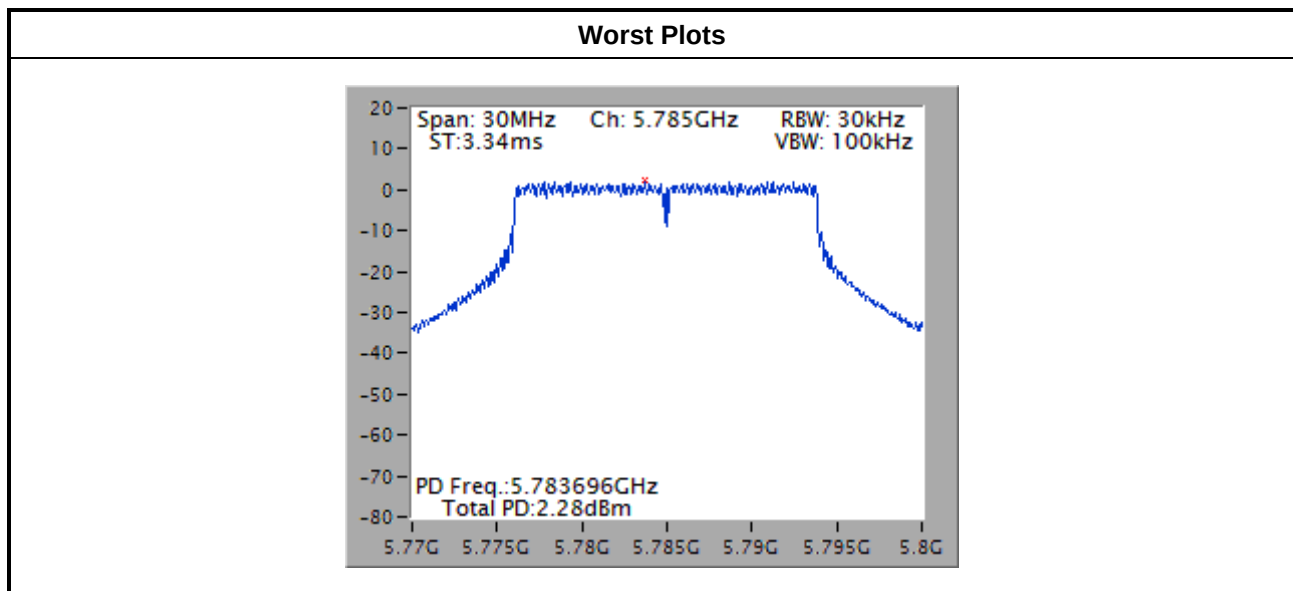
Note: D.F is duty factor.



Beamforming mode

Condition			Peak Power Spectral Density (dBm)			
Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty Factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)
VHT20	4	5745	1.72	0.00	1.72	8.00
VHT20	4	5785	2.28	0.00	2.28	8.00
VHT20	4	5825	2.12	0.00	2.12	8.00
VHT40	4	5755	-1.99	0.00	-1.99	8.00
VHT40	4	5795	-1.70	0.00	-1.70	8.00
VHT80	4	5775	-4.96	0.11	-4.85	8.00

Note: D.F is duty factor.



3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Quasi-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.5.2 Test Procedures

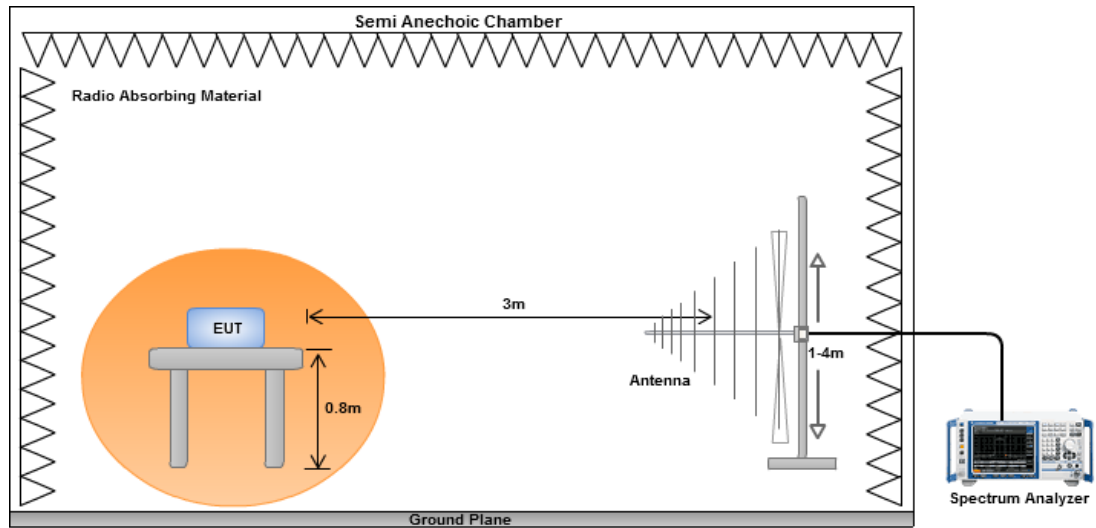
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

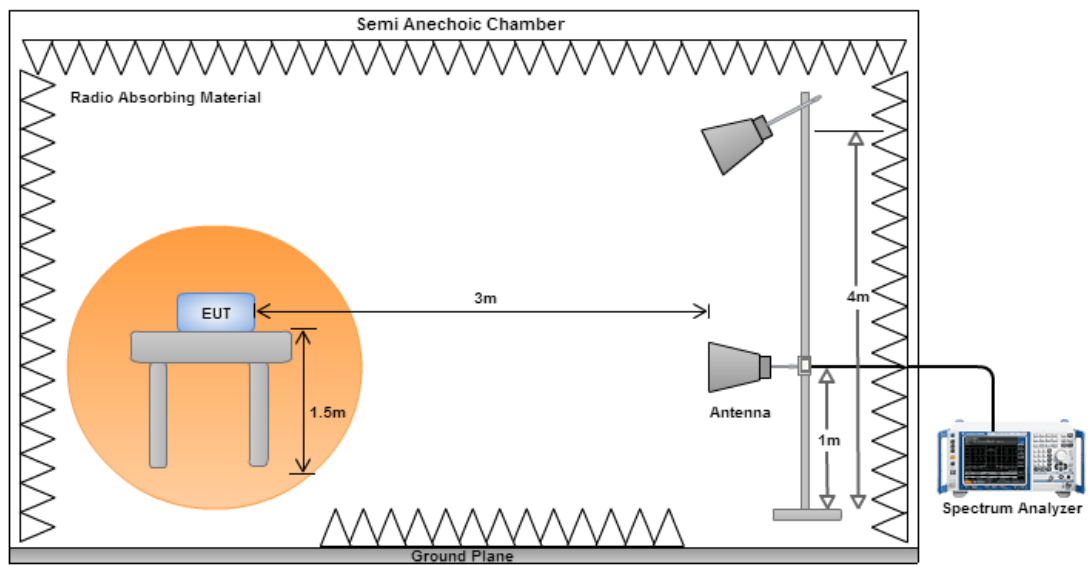
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.5.3 Test Setup

Radiated Emissions below 1 GHz



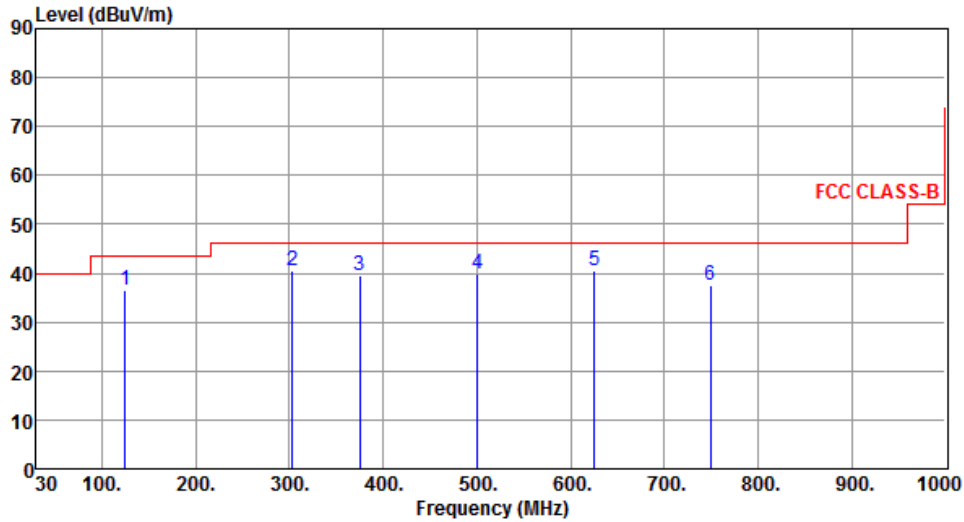
Radiated Emissions above 1 GHz



Non-beamforming mode

3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	1

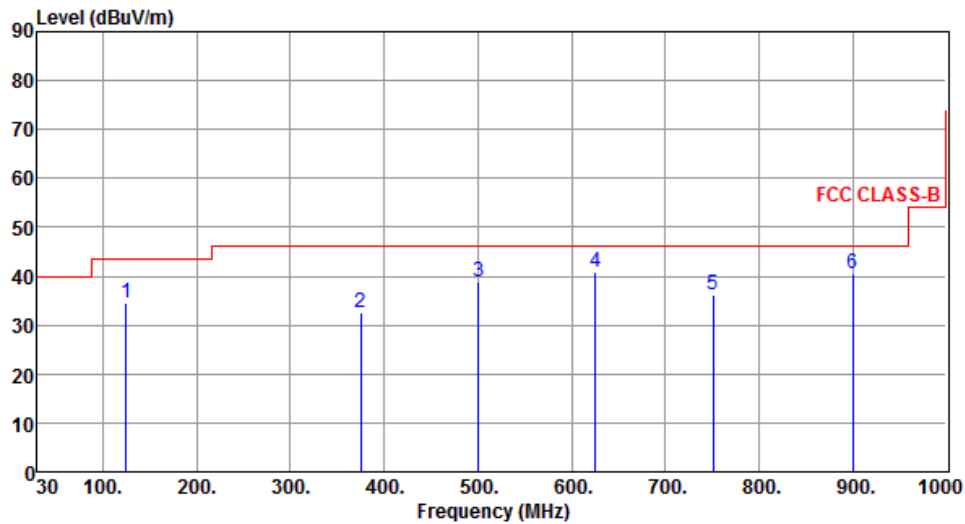


The graph displays the Level (dBuV/m) on the y-axis (0 to 90) against Frequency (MHz) on the x-axis (30 to 1000). A red line represents the FCC CLASS-B limit, which is 40 dBuV/m from 30 to 100 MHz, 45 dBuV/m from 100 to 300 MHz, 50 dBuV/m from 300 to 1000 MHz, and 55 dBuV/m above 1000 MHz. Six blue vertical lines indicate measured peaks at 125.06, 303.54, 375.32, 500.45, 625.58, and 749.74 MHz, labeled 1 through 6 respectively.

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.06	36.70	43.50	-6.80	51.80	-15.10	Peak	---	---
2	303.54	40.41	46.00	-5.59	52.97	-12.56	Peak	---	---
3	375.32	39.50	46.00	-6.50	50.23	-10.73	Peak	---	---
4	500.45	40.00	46.00	-6.00	47.64	-7.64	Peak	---	---
5	625.58	40.58	46.00	-5.42	45.90	-5.32	Peak	---	---
6	749.74	37.63	46.00	-8.37	40.82	-3.19	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.06	34.49	43.50	-9.01	49.59	-15.10	Peak	---	---
2	375.32	32.46	46.00	-13.54	43.19	-10.73	Peak	---	---
3	500.45	38.72	46.00	-7.28	46.36	-7.64	Peak	---	---
4	625.58	40.70	46.00	-5.30	46.02	-5.32	Peak	---	---
5	750.71	36.31	46.00	-9.69	39.49	-3.18	Peak	---	---
6	900.09	40.62	46.00	-5.38	41.29	-0.67	Peak	---	---

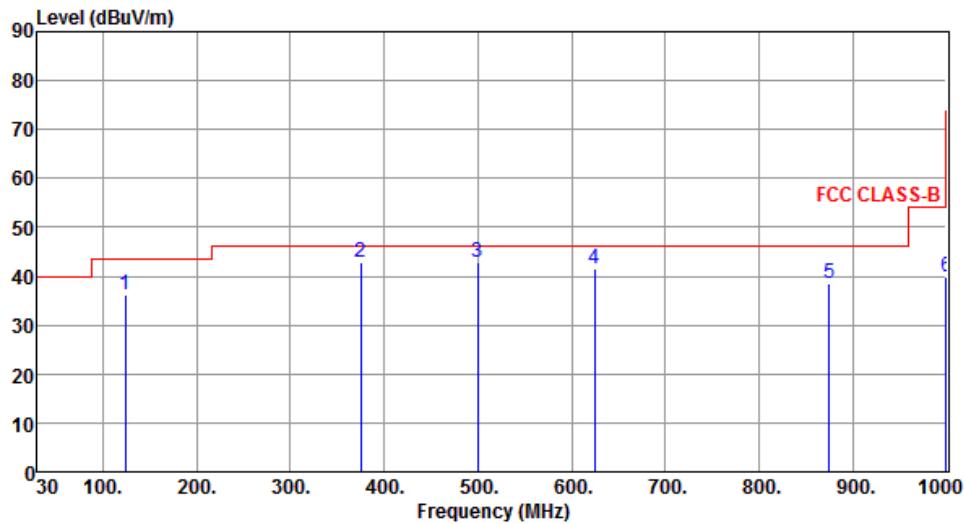
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	3



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	124.25	36.12	43.50	-7.38	51.33	-15.21	Peak	---	---
2	374.78	42.76	46.00	-3.24	53.53	-10.77	QP	100	196
3	499.98	42.99	46.00	-3.01	50.64	-7.65	QP	100	260
4	624.61	41.55	46.00	-4.45	46.99	-5.44	Peak	---	---
5	874.87	38.59	46.00	-7.41	39.85	-1.26	Peak	---	---
6	999.98	39.99	54.00	-14.01	39.44	0.55	Peak	---	---

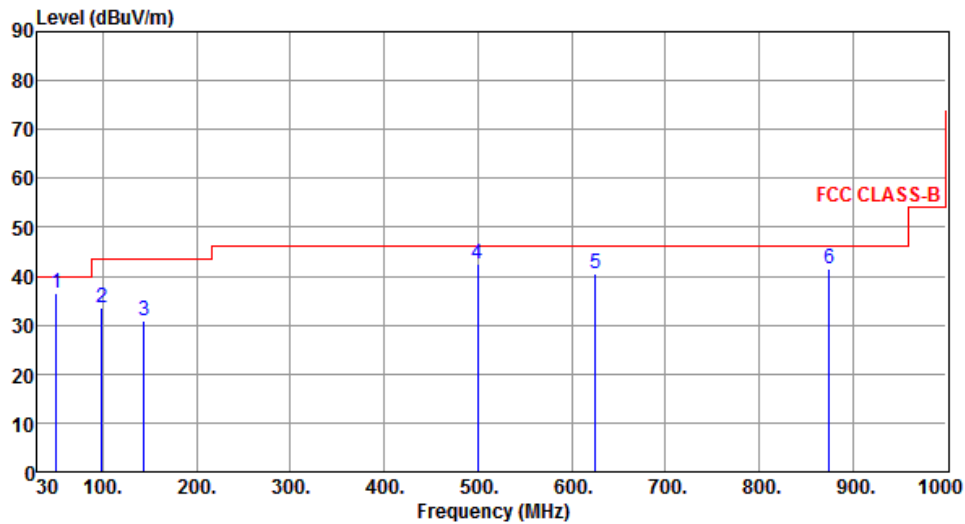
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	50.39	36.41	40.00	-3.59	49.42	-13.01	Peak	---	---
2	99.06	33.52	43.50	-9.98	52.09	-18.57	Peak	---	---
3	143.85	30.96	43.50	-12.54	44.58	-13.62	Peak	---	---
4	500.03	42.52	46.00	-3.48	50.17	-7.65	Peak	---	---
5	625.36	40.53	46.00	-5.47	45.95	-5.42	Peak	---	---
6	875.09	41.52	46.00	-4.48	42.77	-1.25	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

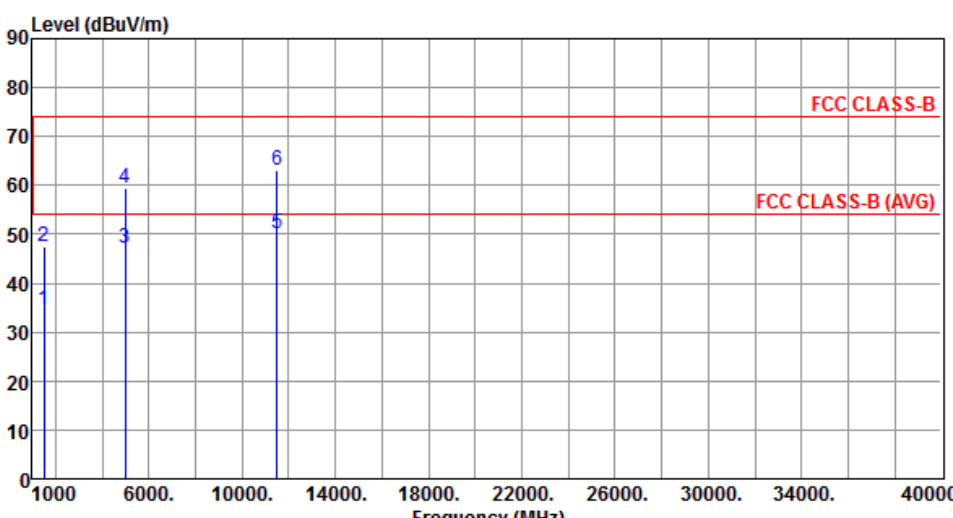
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11a

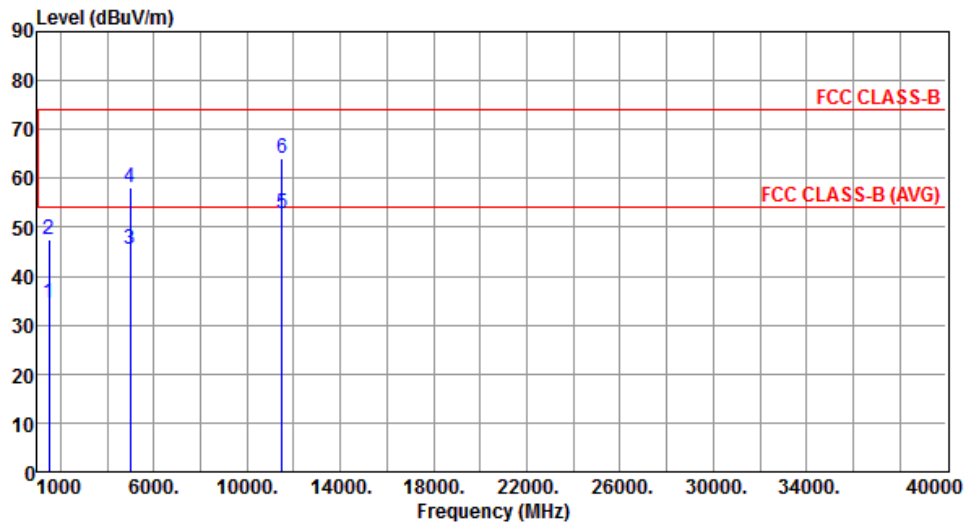
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.39	54.00	-19.61	39.05	-4.66	Average	173	133
2	1500.00	47.54	74.00	-26.46	52.20	-4.66	Peak	173	133
3	5000.00	47.02	54.00	-6.98	40.96	6.06	Average	190	344
4	5000.00	59.30	74.00	-14.70	53.24	6.06	Peak	190	344
5	11490.00	50.25	54.00	-3.75	33.34	16.91	Average	236	189
6	11490.00	63.08	74.00	-10.92	46.17	16.91	Peak	236	189

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
 *Factor includes antenna factor , cable loss and amplifier gain
 Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	11a	Test Freq. (MHz)	5745
Polarization	Vertical	Test Configuration	1



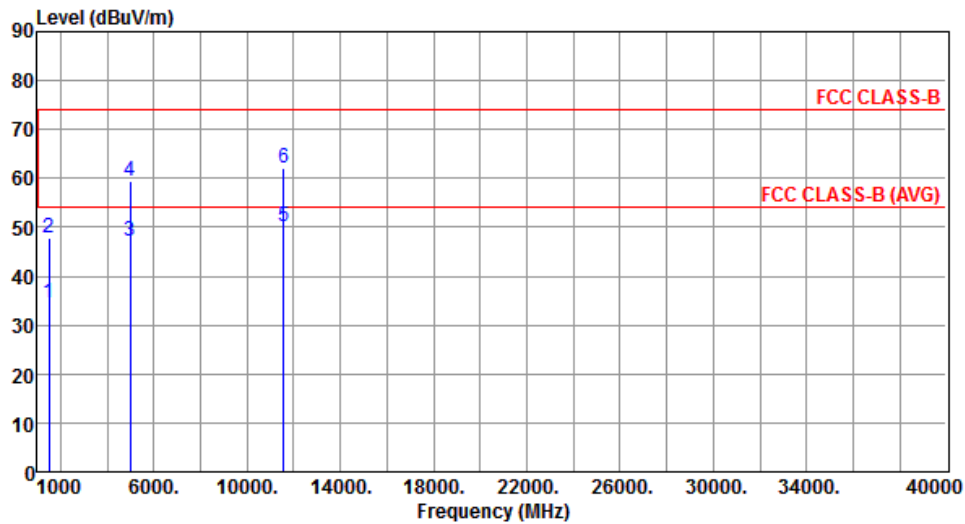
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.67	54.00	-19.33	39.33	-4.66	Average	224	46
2	1500.00	47.48	74.00	-26.52	52.14	-4.66	Peak	224	46
3	5000.00	45.60	54.00	-8.40	39.54	6.06	Average	206	115
4	5000.00	58.27	74.00	-15.73	52.21	6.06	Peak	206	115
5	11490.00	52.64	54.00	-1.36	35.73	16.91	Average	237	332
6	11490.00	64.22	74.00	-9.78	47.31	16.91	Peak	237	332

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	1



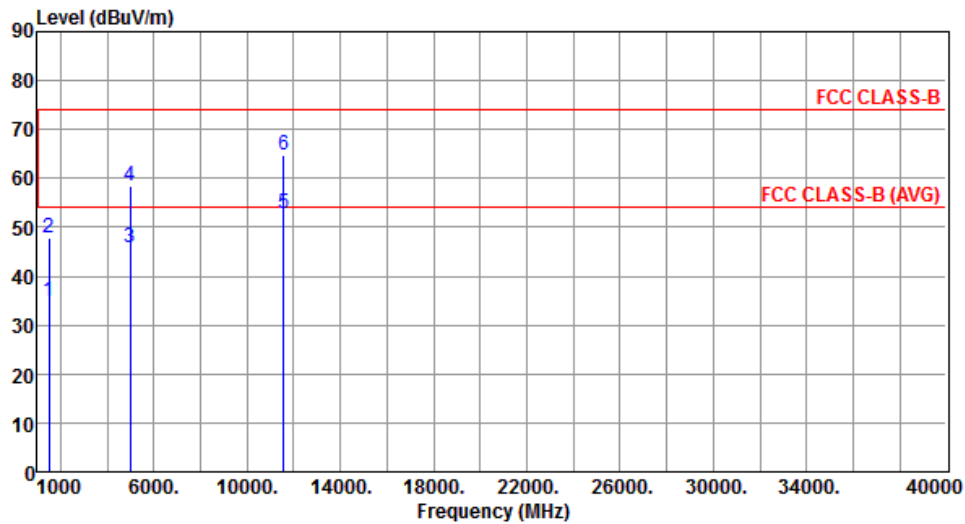
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.61	54.00	-19.39	39.27	-4.66	Average	174	139
2	1500.00	47.82	74.00	-26.18	52.48	-4.66	Peak	174	139
3	5000.00	47.24	54.00	-6.76	41.18	6.06	Average	191	348
4	5000.00	59.38	74.00	-14.62	53.32	6.06	Peak	191	348
5	11570.00	50.28	54.00	-3.72	33.48	16.80	Average	180	220
6	11570.00	62.07	74.00	-11.93	45.27	16.80	Peak	180	220

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical	Test Configuration	1



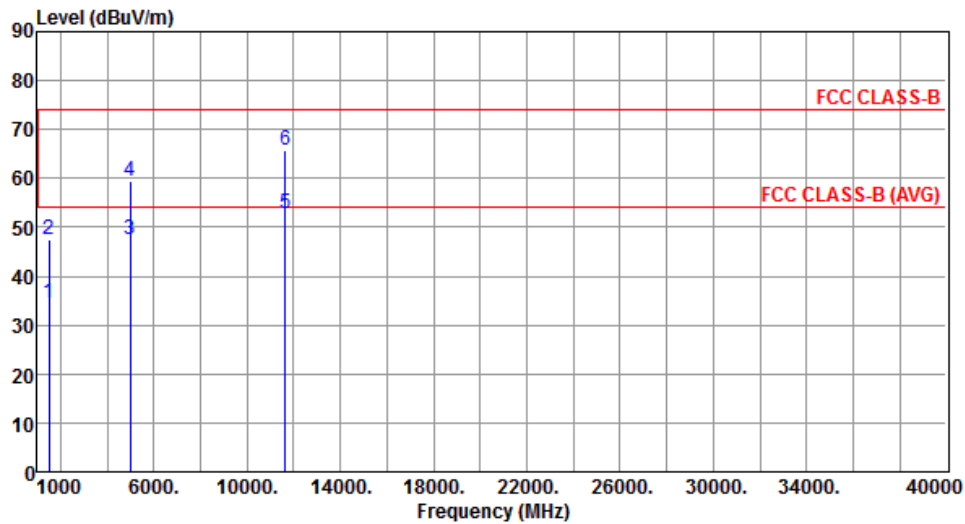
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.01	54.00	-18.99	39.67	-4.66	Average	223	42
2	1500.00	47.82	74.00	-26.18	52.48	-4.66	Peak	223	42
3	5000.00	45.82	54.00	-8.18	39.76	6.06	Average	203	111
4	5000.00	58.43	74.00	-15.57	52.37	6.06	Peak	203	111
5	11570.00	52.97	54.00	-1.03	36.17	16.80	Average	156	131
6	11570.00	64.77	74.00	-9.23	47.97	16.80	Peak	156	131

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	11a	Test Freq. (MHz)	5825
Polarization	Horizontal	Test Configuration	1



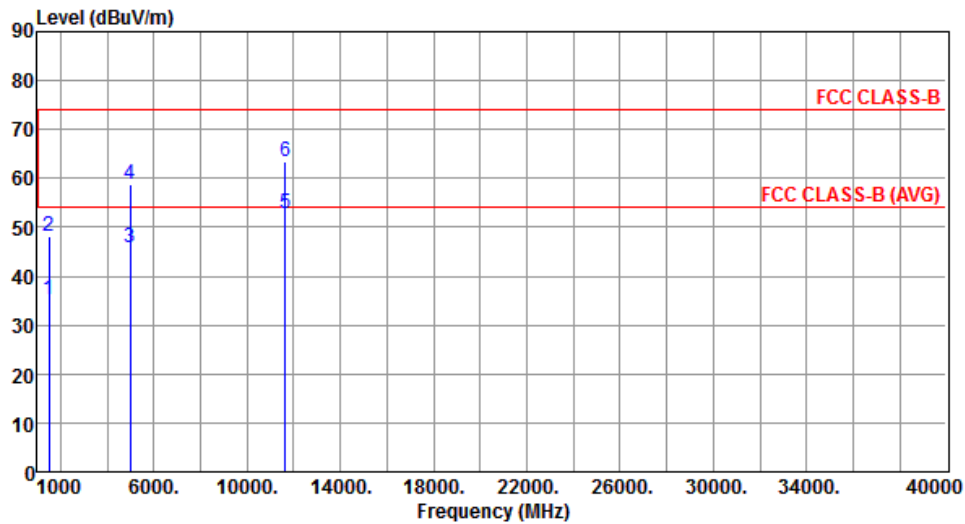
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.57	54.00	-19.43	39.23	-4.66	Average	178	135
2	1500.00	47.58	74.00	-26.42	52.24	-4.66	Peak	178	135
3	5000.00	47.36	54.00	-6.64	41.30	6.06	Average	195	344
4	5000.00	59.60	74.00	-14.40	53.54	6.06	Peak	195	344
5	11650.00	52.76	54.00	-1.24	36.11	16.65	Average	161	231
6	11650.00	65.81	74.00	-8.19	49.16	16.65	Peak	161	231

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11a	Test Freq. (MHz)	5825
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.24	54.00	-18.76	39.90	-4.66	Average	227	32
2	1500.00	48.03	74.00	-25.97	52.69	-4.66	Peak	227	32
3	5000.00	45.68	54.00	-8.32	39.62	6.06	Average	208	114
4	5000.00	58.75	74.00	-15.25	52.69	6.06	Peak	208	114
5	11650.00	52.73	54.00	-1.27	36.08	16.65	Average	380	192
6	11650.00	63.46	74.00	-10.54	46.81	16.65	Peak	380	192

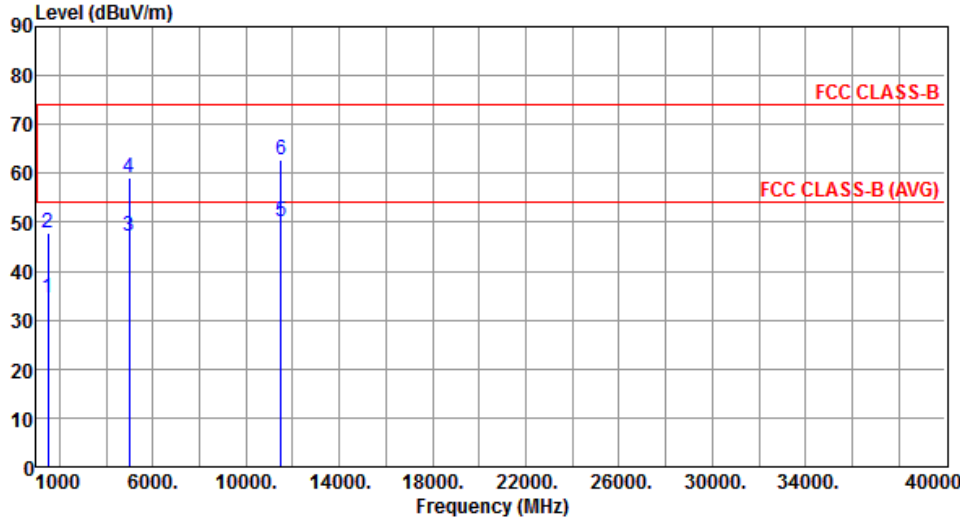
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT20

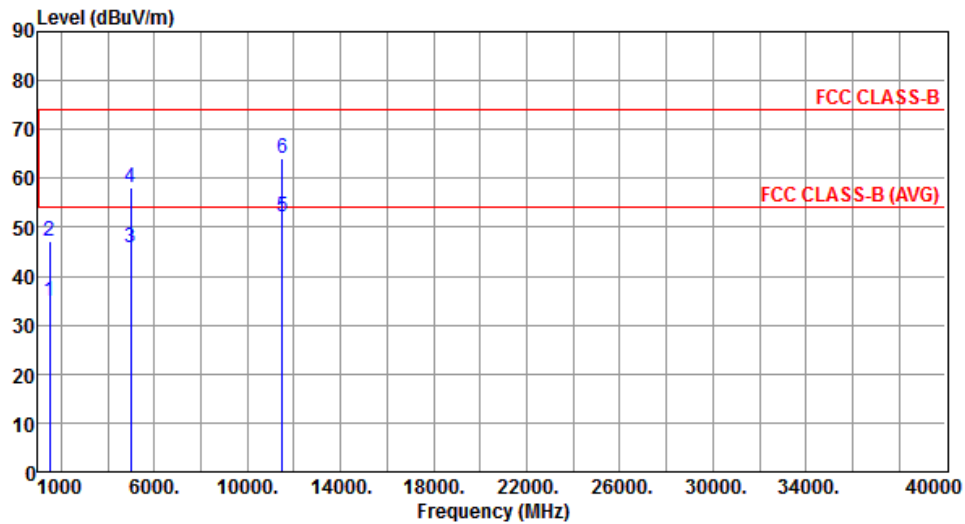
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.52	54.00	-19.48	39.18	-4.66	Average	164	128
2	1500.00	47.87	74.00	-26.13	52.53	-4.66	Peak	164	128
3	5000.00	47.08	54.00	-6.92	41.02	6.06	Average	188	341
4	5000.00	59.15	74.00	-14.85	53.09	6.06	Peak	188	341
5	11490.00	50.01	54.00	-3.99	33.10	16.91	Average	235	185
6	11490.00	62.87	74.00	-11.13	45.96	16.91	Peak	235	185

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
 *Factor includes antenna factor , cable loss and amplifier gain
 Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical	Test Configuration	1



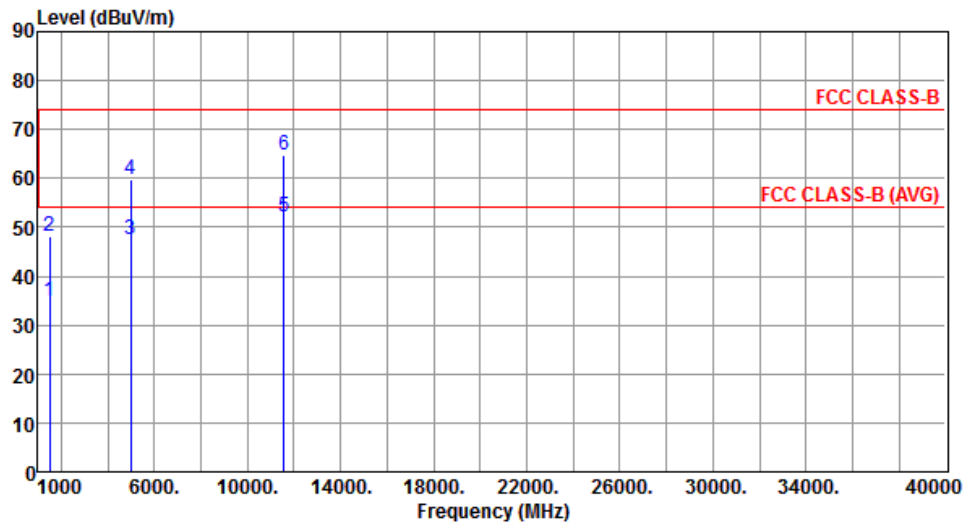
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.82	54.00	-19.18	39.48	-4.66	Average	221	43
2	1500.00	47.15	74.00	-26.85	51.81	-4.66	Peak	221	43
3	5000.00	45.82	54.00	-8.18	39.76	6.06	Average	199	114
4	5000.00	58.05	74.00	-15.95	51.99	6.06	Peak	199	114
5	11490.00	52.14	54.00	-1.86	35.23	16.91	Average	234	339
6	11490.00	63.98	74.00	-10.02	47.07	16.91	Peak	234	339

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	1



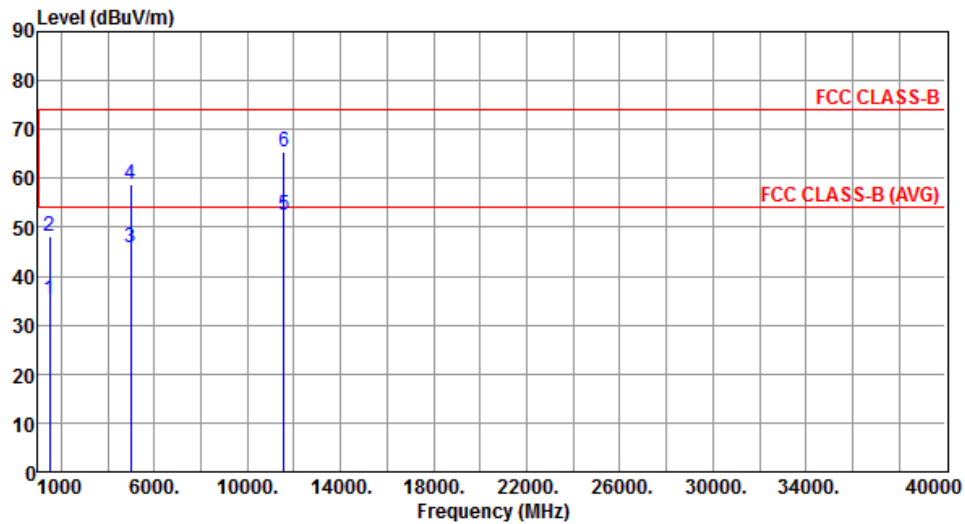
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.78	54.00	-19.22	39.44	-4.66	Average	178	133
2	1500.00	48.10	74.00	-25.90	52.76	-4.66	Peak	178	133
3	5000.00	47.46	54.00	-6.54	41.40	6.06	Average	196	344
4	5000.00	59.72	74.00	-14.28	53.66	6.06	Peak	196	344
5	11570.00	52.12	54.00	-1.88	35.32	16.80	Average	150	132
6	11570.00	64.72	74.00	-9.28	47.92	16.80	Peak	150	132

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical	Test Configuration	1



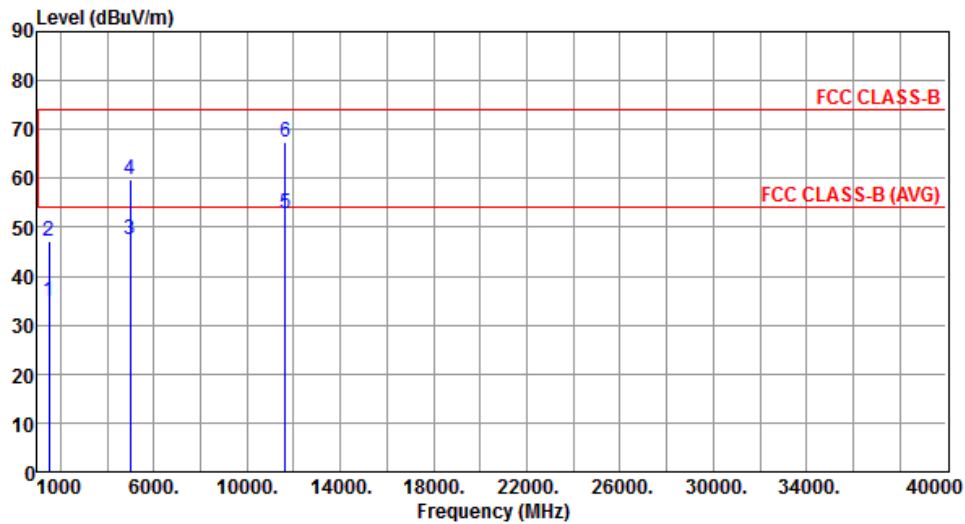
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.24	54.00	-18.76	39.90	-4.66	Average	229	26
2	1500.00	48.05	74.00	-25.95	52.71	-4.66	Peak	229	26
3	5000.00	45.73	54.00	-8.27	39.67	6.06	Average	198	113
4	5000.00	58.70	74.00	-15.30	52.64	6.06	Peak	198	113
5	11570.00	52.45	54.00	-1.55	35.65	16.80	Average	150	134
6	11570.00	65.53	74.00	-8.47	48.73	16.80	Peak	150	134

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal	Test Configuration	1



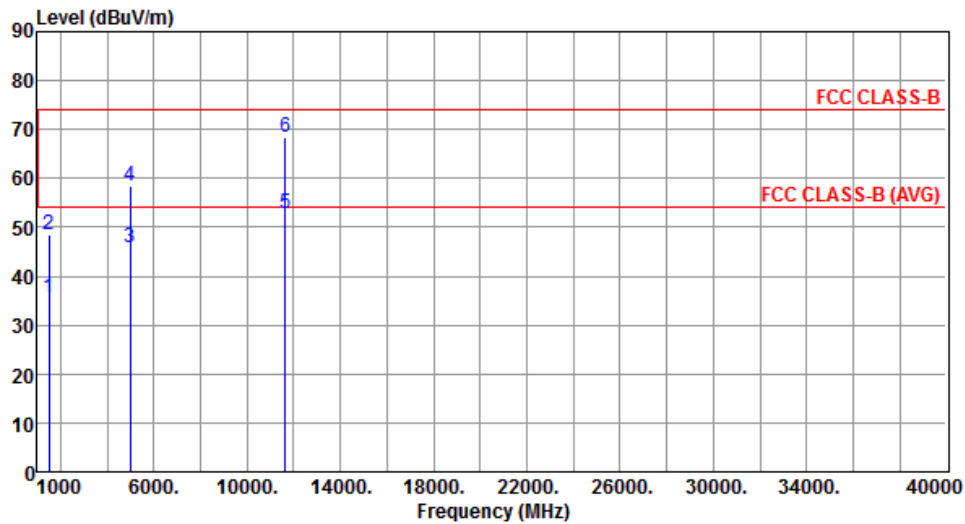
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.96	54.00	-19.04	39.62	-4.66	Average	175	131
2	1500.00	47.24	74.00	-26.76	51.90	-4.66	Peak	175	131
3	5000.00	47.46	54.00	-6.54	41.40	6.06	Average	196	336
4	5000.00	59.86	74.00	-14.14	53.80	6.06	Peak	196	336
5	11650.00	52.85	54.00	-1.15	36.20	16.65	Average	173	219
6	11650.00	67.48	74.00	-6.52	50.83	16.65	Peak	173	219

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.70	54.00	-18.30	40.36	-4.66	Average	229	36
2	1500.00	48.34	74.00	-25.66	53.00	-4.66	Peak	229	36
3	5000.00	45.82	54.00	-8.18	39.76	6.06	Average	203	117
4	5000.00	58.61	74.00	-15.39	52.55	6.06	Peak	203	117
5	11650.00	52.93	54.00	-1.07	36.28	16.65	Average	270	18
6	11650.00	68.50	74.00	-5.50	51.85	16.65	Peak	270	18

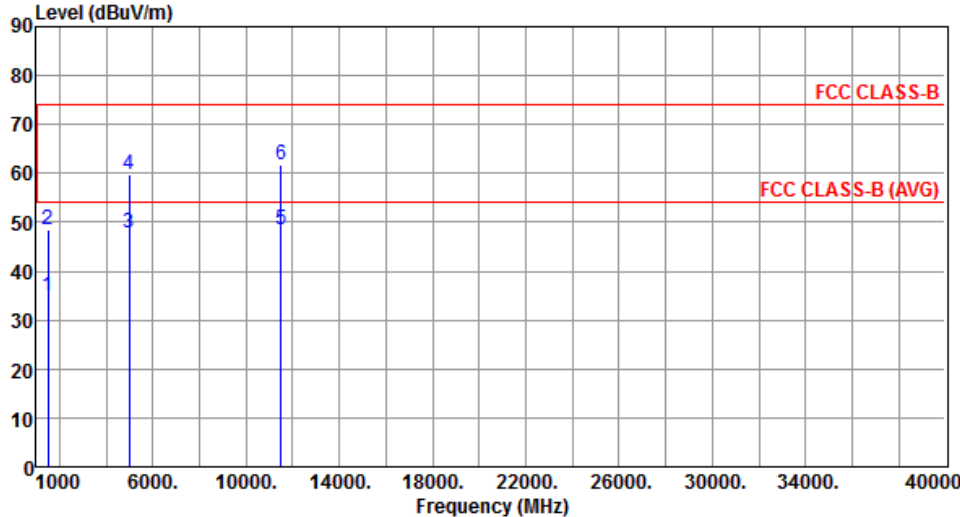
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT40

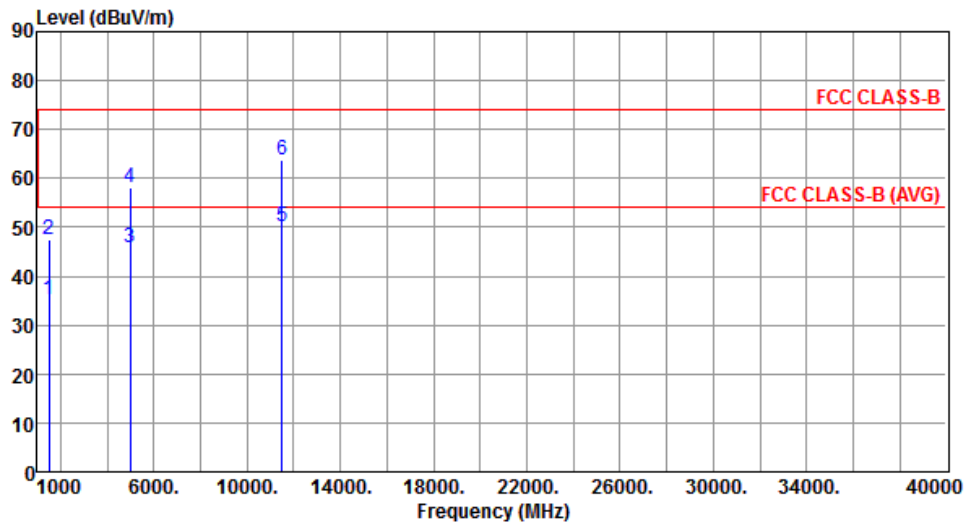
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.78	54.00	-19.22	39.44	-4.66	Average	174	132
2	1500.00	48.43	74.00	-25.57	53.09	-4.66	Peak	174	132
3	5000.00	47.68	54.00	-6.32	41.62	6.06	Average	189	338
4	5000.00	59.84	74.00	-14.16	53.78	6.06	Peak	189	338
5	11510.00	48.65	54.00	-5.35	31.75	16.90	Average	168	234
6	11510.00	61.79	74.00	-12.21	44.89	16.90	Peak	168	234

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
 *Factor includes antenna factor , cable loss and amplifier gain
 Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical	Test Configuration	1



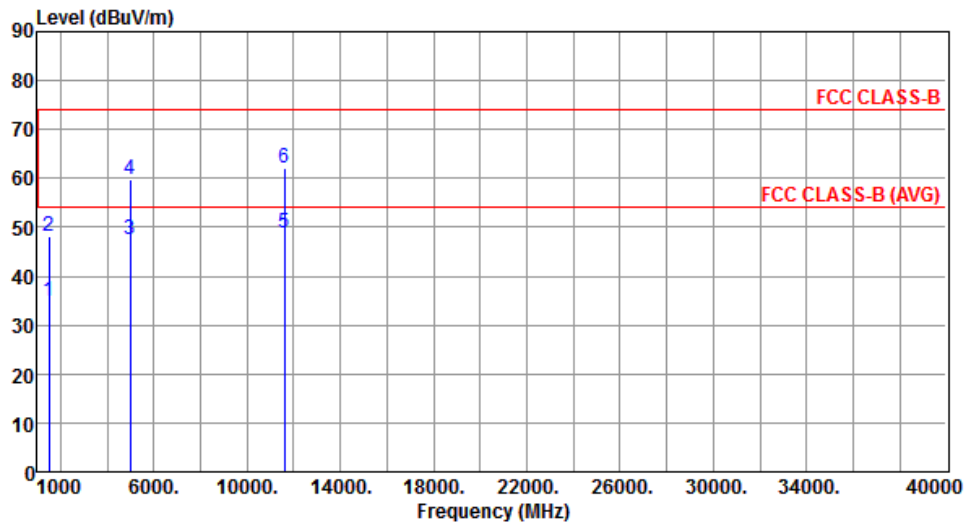
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.08	54.00	-18.92	39.74	-4.66	Average	203	41
2	1500.00	47.65	74.00	-26.35	52.31	-4.66	Peak	203	41
3	5000.00	45.89	54.00	-8.11	39.83	6.06	Average	211	115
4	5000.00	58.24	74.00	-15.76	52.18	6.06	Peak	211	115
5	11510.00	50.14	54.00	-3.86	33.24	16.90	Average	158	139
6	11510.00	63.70	74.00	-10.30	46.80	16.90	Peak	158	139

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal	Test Configuration	1



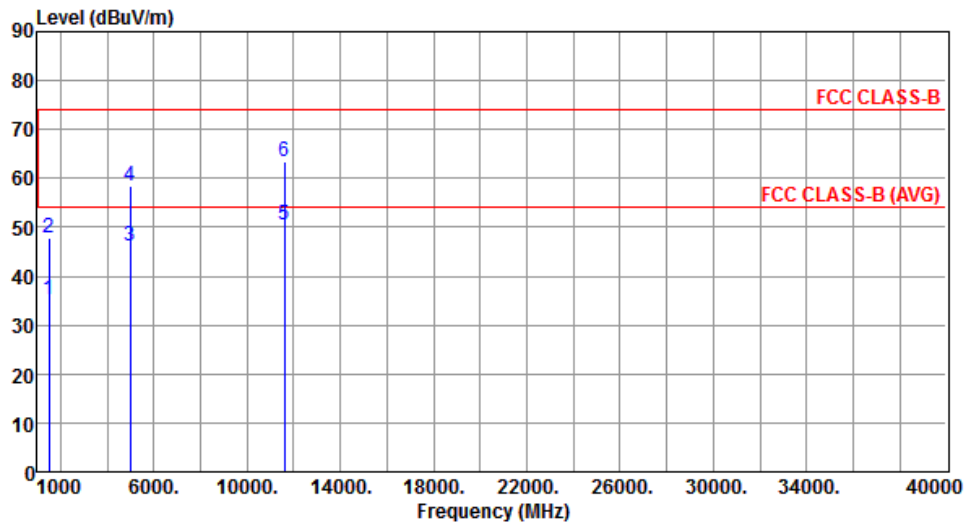
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.95	54.00	-19.05	39.61	-4.66	Average	178	134
2	1500.00	48.12	74.00	-25.88	52.78	-4.66	Peak	178	134
3	5000.00	47.52	54.00	-6.48	41.46	6.06	Average	194	344
4	5000.00	59.70	74.00	-14.30	53.64	6.06	Peak	194	344
5	11590.00	48.82	54.00	-5.18	32.06	16.76	Average	160	230
6	11590.00	62.04	74.00	-11.96	45.28	16.76	Peak	160	230

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.23	54.00	-18.77	39.89	-4.66	Average	208	47
2	1500.00	47.96	74.00	-26.04	52.62	-4.66	Peak	208	47
3	5000.00	46.10	54.00	-7.90	40.04	6.06	Average	204	116
4	5000.00	58.59	74.00	-15.41	52.53	6.06	Peak	204	116
5	11590.00	50.35	54.00	-3.65	33.59	16.76	Average	150	132
6	11590.00	63.39	74.00	-10.61	46.63	16.76	Peak	150	132

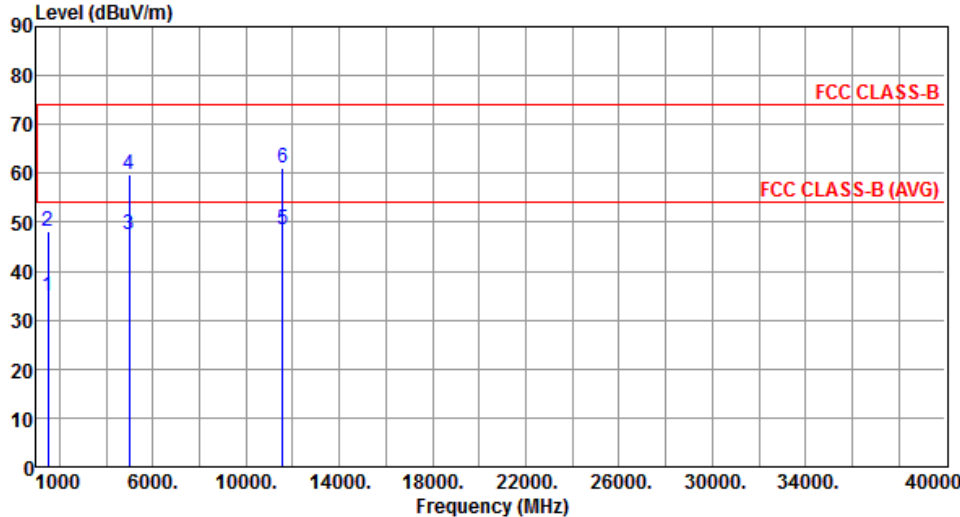
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

3.5.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT80

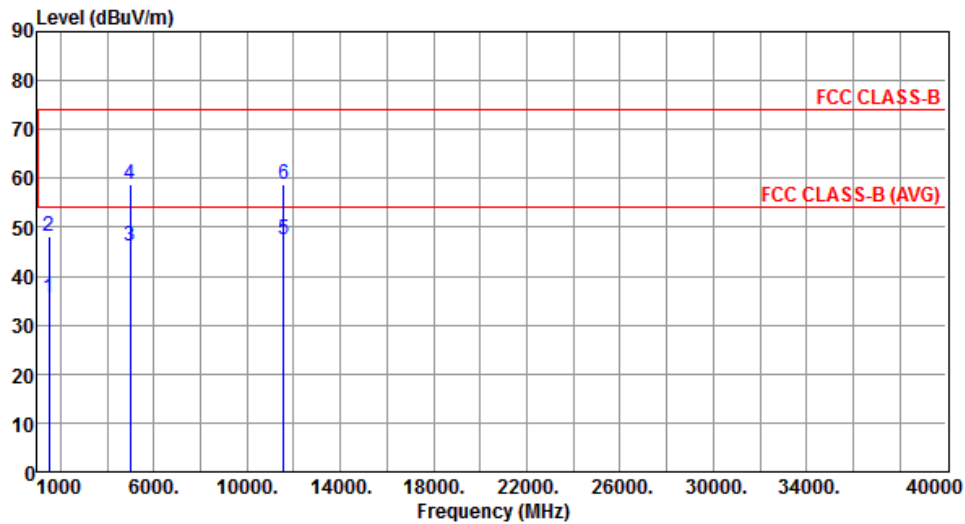
Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.96	54.00	-19.04	39.62	-4.66	Average	165	143
2	1500.00	48.30	74.00	-25.70	52.96	-4.66	Peak	165	143
3	5000.00	47.59	54.00	-6.41	41.53	6.06	Average	198	343
4	5000.00	59.70	74.00	-14.30	53.64	6.06	Peak	198	343
5	11550.00	48.38	54.00	-5.62	31.55	16.83	Average	175	220
6	11550.00	61.15	74.00	-12.85	44.32	16.83	Peak	175	220

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
 *Factor includes antenna factor , cable loss and amplifier gain
 Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.40	54.00	-18.60	40.06	-4.66	Average	227	49
2	1500.00	48.15	74.00	-25.85	52.81	-4.66	Peak	227	49
3	5000.00	46.30	54.00	-7.70	40.24	6.06	Average	209	114
4	5000.00	58.75	74.00	-15.25	52.69	6.06	Peak	209	114
5	11550.00	47.35	54.00	-6.65	30.52	16.83	Average	243	330
6	11550.00	58.90	74.00	-15.10	42.07	16.83	Peak	243	330

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

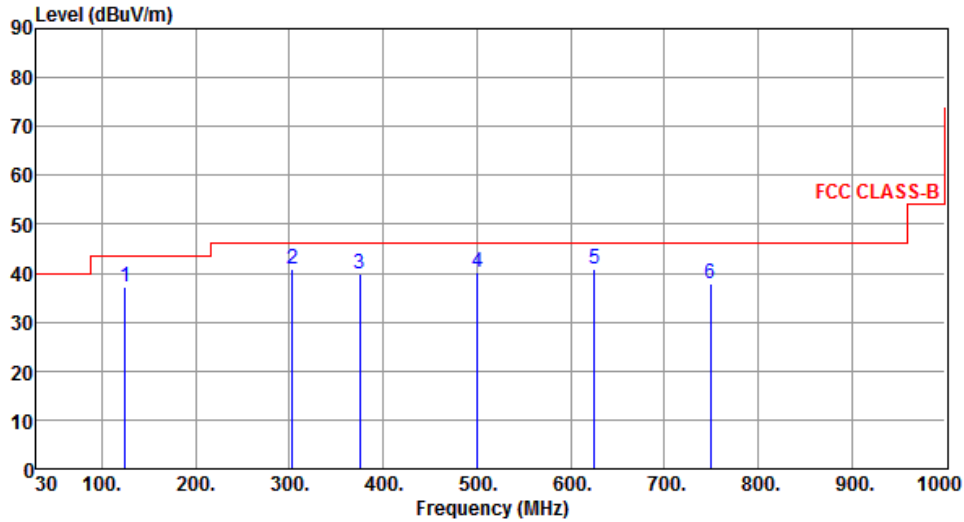
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Beamforming mode

3.5.9 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	1

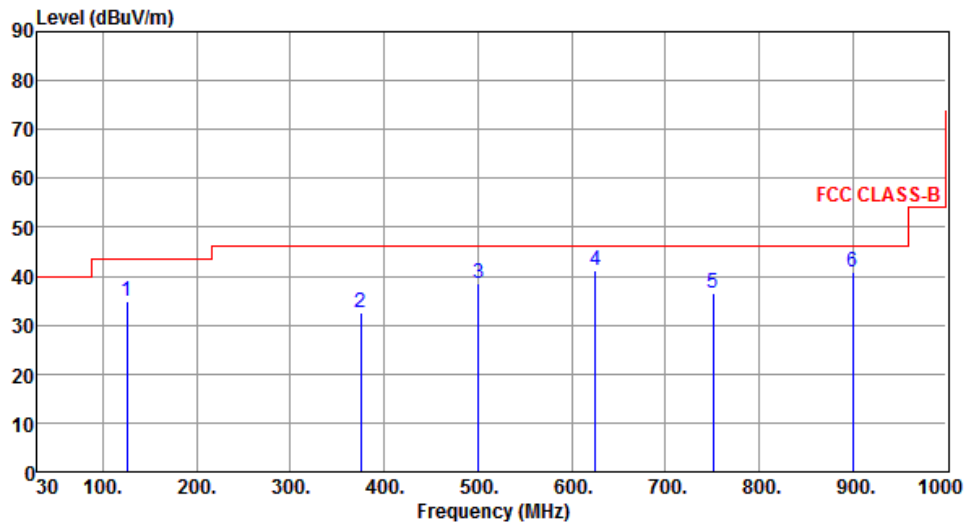


The graph displays the emission level in dBuV/m on the y-axis (0 to 90) against frequency in MHz on the x-axis (30 to 1000). A red line represents the FCC CLASS-B limit, which is 40 dBuV/m from 30 to 100 MHz, 45 dBuV/m from 100 to 300 MHz, and 55 dBuV/m from 300 to 1000 MHz. Six emission peaks are identified and labeled 1 through 6, with their corresponding data listed in the table below.

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.11	37.19	43.50	-6.31	52.29	-15.10	Peak	---	---
2	303.59	40.82	46.00	-5.18	53.38	-12.56	Peak	---	---
3	375.36	39.72	46.00	-6.28	50.45	-10.73	Peak	---	---
4	500.42	40.25	46.00	-5.75	47.89	-7.64	Peak	---	---
5	625.53	40.93	46.00	-5.07	46.25	-5.32	Peak	---	---
6	749.72	37.91	46.00	-8.09	41.11	-3.20	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
 *Factor includes antenna factor , cable loss and amplifier gain
 Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
 Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.63	34.78	43.50	-8.72	49.83	-15.05	Peak	---	---
2	375.35	32.69	46.00	-13.31	43.42	-10.73	Peak	---	---
3	500.42	38.58	46.00	-7.42	46.22	-7.64	Peak	---	---
4	625.55	41.12	46.00	-4.88	46.44	-5.32	Peak	---	---
5	750.73	36.64	46.00	-9.36	39.82	-3.18	Peak	---	---
6	900.13	40.96	46.00	-5.04	41.63	-0.67	Peak	---	---

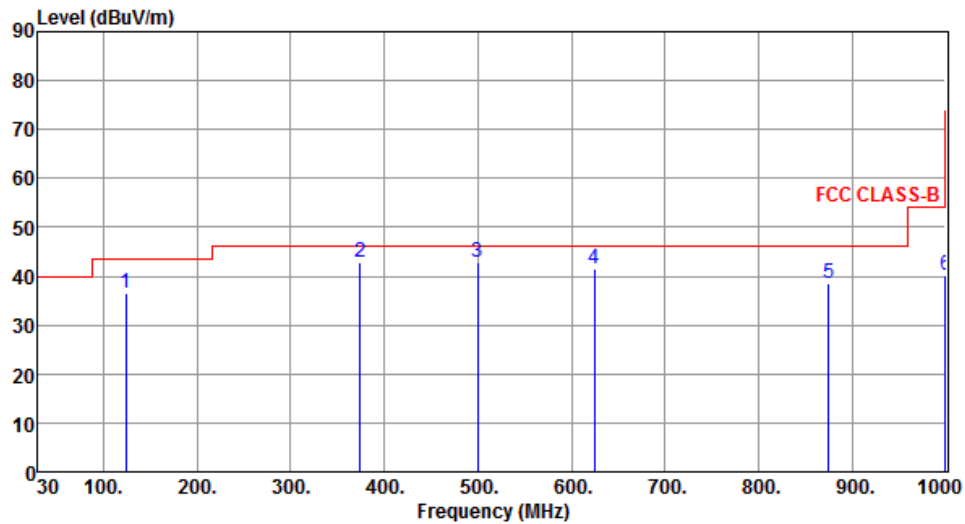
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	124.30	36.55	43.50	-6.95	51.75	-15.20	Peak	---	---
2	374.61	42.81	46.00	-3.19	53.58	-10.77	QP	100	200
3	500.02	42.88	46.00	-3.12	50.53	-7.65	QP	100	264
4	624.77	41.57	46.00	-4.43	47.01	-5.44	Peak	---	---
5	875.12	38.42	46.00	-7.58	39.67	-1.25	Peak	---	---
6	1000.00	40.03	54.00	-13.97	39.48	0.55	Peak	---	---

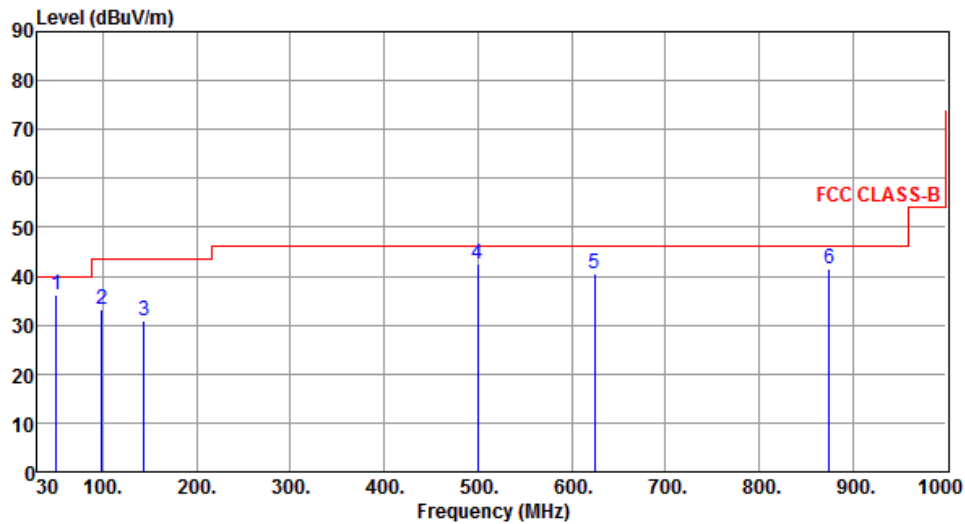
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical	Test Configuration	3



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	50.15	36.33	40.00	-3.67	49.31	-12.98	Peak	---	---
2	98.96	33.19	43.50	-10.31	51.77	-18.58	Peak	---	---
3	143.89	31.02	43.50	-12.48	44.64	-13.62	Peak	---	---
4	499.96	42.48	46.00	-3.52	50.13	-7.65	Peak	---	---
5	624.98	40.43	46.00	-5.57	45.87	-5.44	Peak	---	---
6	874.95	41.35	46.00	-4.65	42.61	-1.26	Peak	---	---

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

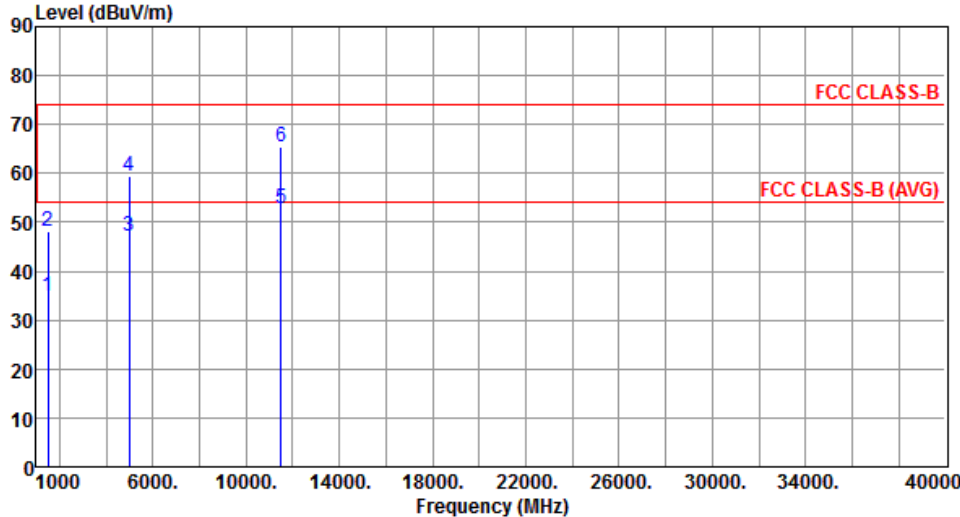
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT20

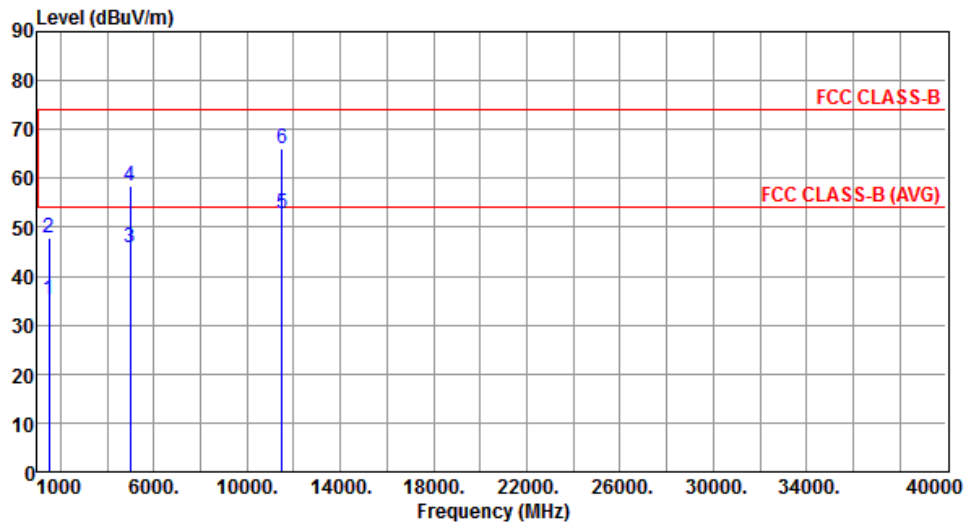
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.74	54.00	-19.26	39.40	-4.66	Average	174	133
2	1500.00	48.06	74.00	-25.94	52.72	-4.66	Peak	174	133
3	5000.00	47.25	54.00	-6.75	41.19	6.06	Average	198	338
4	5000.00	59.54	74.00	-14.46	53.48	6.06	Peak	198	338
5	11490.00	52.79	54.00	-1.21	35.88	16.91	Average	158	115
6	11490.00	65.54	74.00	-8.46	48.63	16.91	Peak	159	115

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
 *Factor includes antenna factor , cable loss and amplifier gain
 Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical	Test Configuration	1



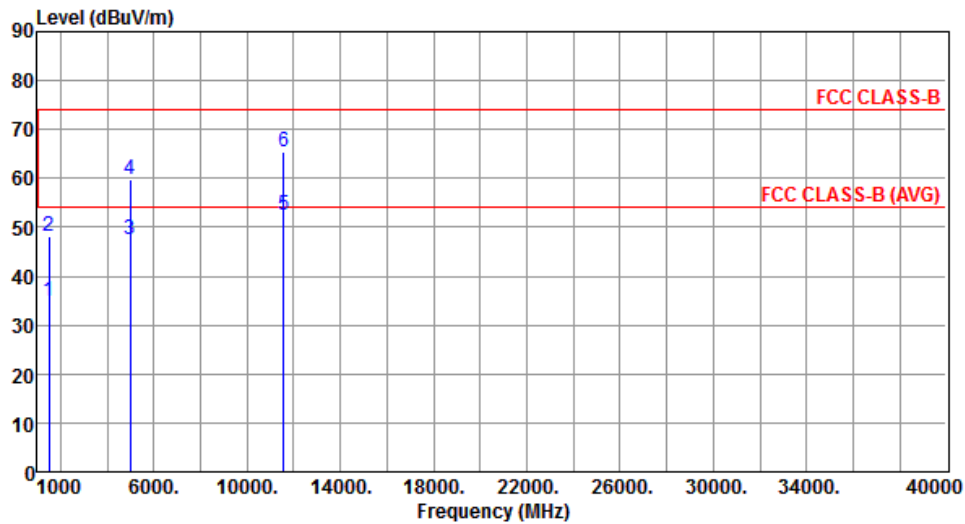
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.20	54.00	-18.80	39.86	-4.66	Average	224	43
2	1500.00	47.96	74.00	-26.04	52.62	-4.66	Peak	224	43
3	5000.00	45.89	54.00	-8.11	39.83	6.06	Average	203	113
4	5000.00	58.52	74.00	-15.48	52.46	6.06	Peak	203	113
5	11490.00	52.73	54.00	-1.27	35.82	16.91	Average	159	289
6	11490.00	66.23	74.00	-7.77	49.32	16.91	Peak	159	289

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	1



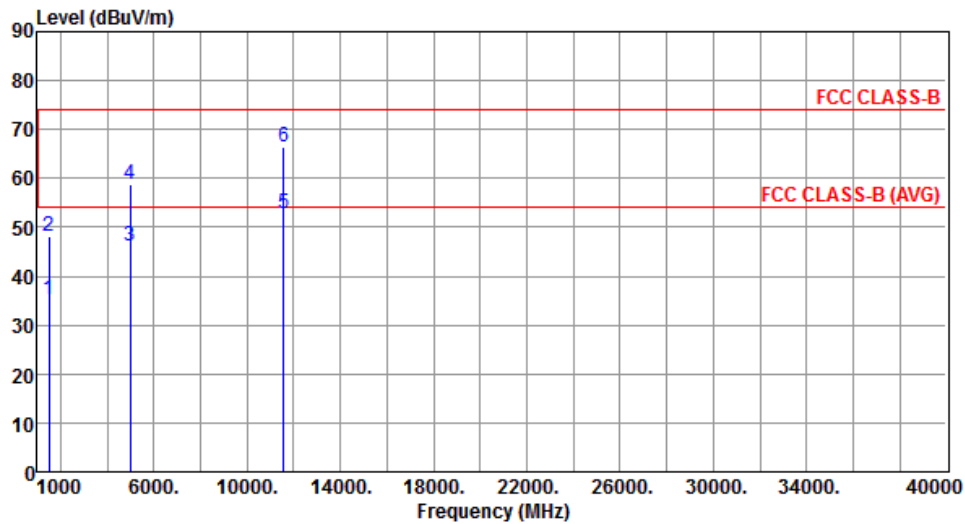
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.95	54.00	-19.05	39.61	-4.66	Average	179	134
2	1500.00	48.27	74.00	-25.73	52.93	-4.66	Peak	179	134
3	5000.00	47.55	54.00	-6.45	41.49	6.06	Average	196	344
4	5000.00	59.78	74.00	-14.22	53.72	6.06	Peak	196	344
5	11570.00	52.51	54.00	-1.49	35.71	16.80	Average	153	120
6	11570.00	65.32	74.00	-8.68	48.52	16.80	Peak	153	120

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical	Test Configuration	1



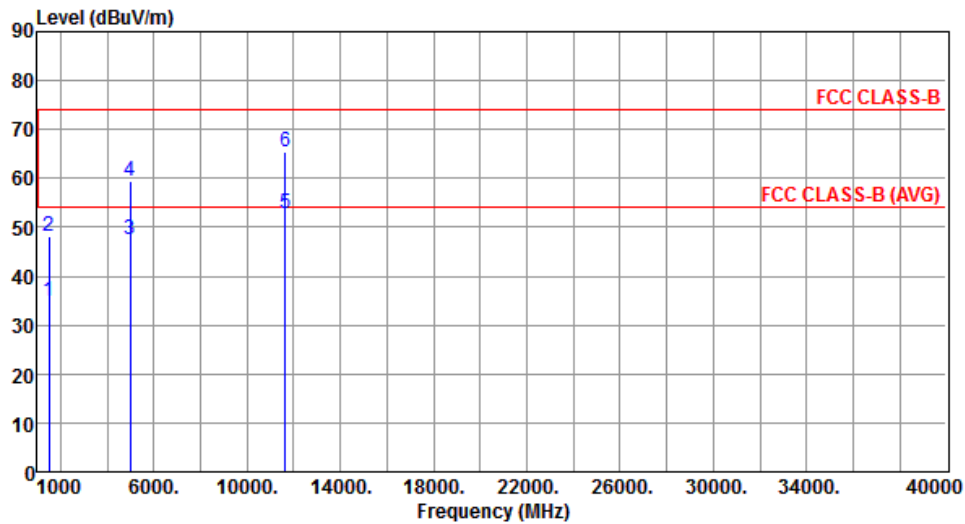
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.34	54.00	-18.66	40.00	-4.66	Average	227	49
2	1500.00	48.15	74.00	-25.85	52.81	-4.66	Peak	227	49
3	5000.00	46.12	54.00	-7.88	40.06	6.06	Average	209	114
4	5000.00	58.78	74.00	-15.22	52.72	6.06	Peak	209	114
5	11570.00	52.84	54.00	-1.16	36.04	16.80	Average	155	299
6	11570.00	66.37	74.00	-7.63	49.57	16.80	Peak	155	299

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal	Test Configuration	1



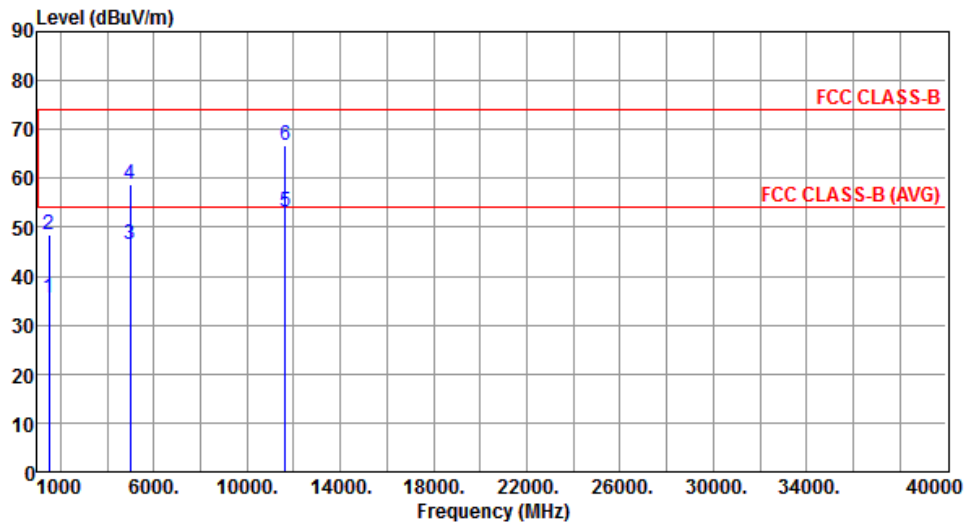
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.82	54.00	-19.18	39.48	-4.66	Average	175	128
2	1500.00	48.05	74.00	-25.95	52.71	-4.66	Peak	175	128
3	5000.00	47.36	54.00	-6.64	41.30	6.06	Average	191	340
4	5000.00	59.54	74.00	-14.46	53.48	6.06	Peak	191	340
5	11650.00	52.70	54.00	-1.30	36.05	16.65	Average	159	124
6	11650.00	65.46	74.00	-8.54	48.81	16.65	Peak	159	124

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.70	54.00	-18.30	40.36	-4.66	Average	220	38
2	1500.00	48.52	74.00	-25.48	53.18	-4.66	Peak	220	38
3	5000.00	46.34	54.00	-7.66	40.28	6.06	Average	205	113
4	5000.00	58.64	74.00	-15.36	52.58	6.06	Peak	205	113
5	11650.00	52.99	54.00	-1.01	36.34	16.65	Average	162	309
6	11650.00	66.70	74.00	-7.30	50.05	16.65	Peak	162	309

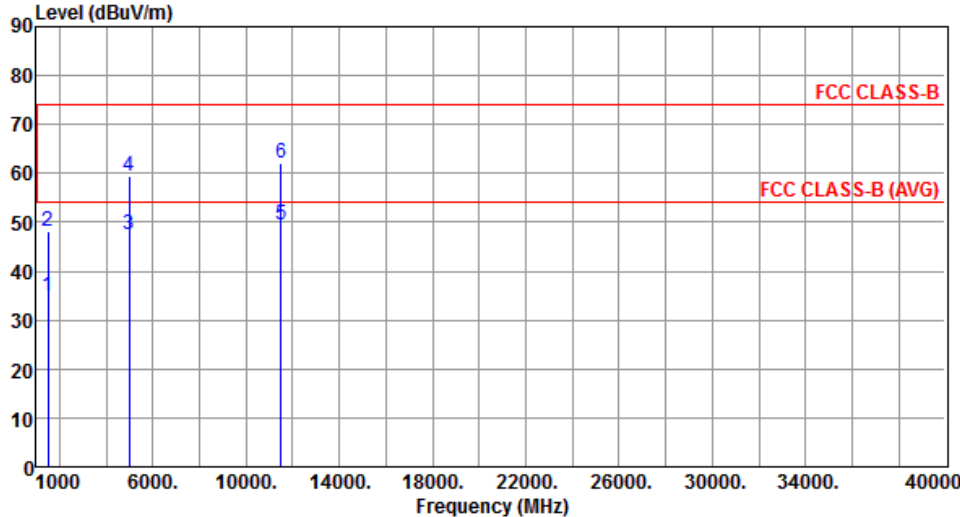
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

3.5.11 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT40

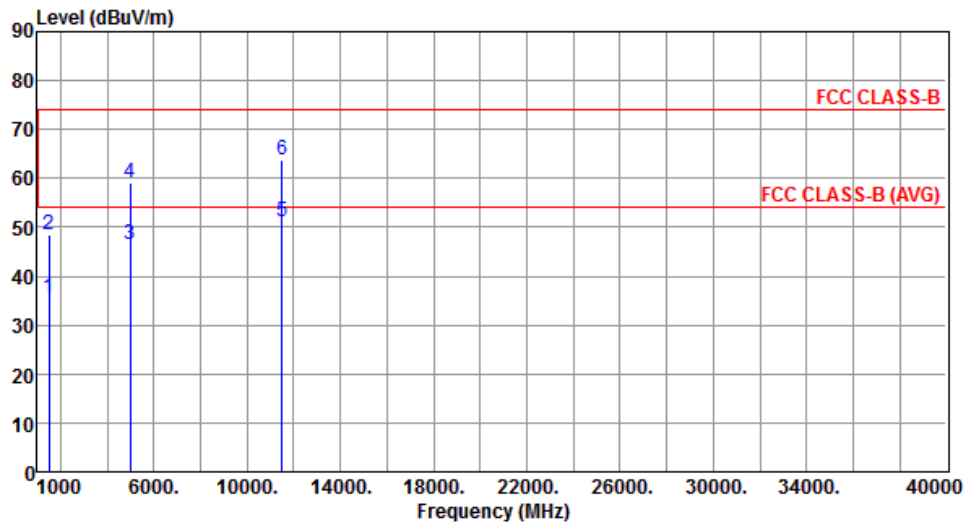
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.72	54.00	-19.28	39.38	-4.66	Average	173	128
2	1500.00	48.05	74.00	-25.95	52.71	-4.66	Peak	173	128
3	5000.00	47.52	54.00	-6.48	41.46	6.06	Average	191	344
4	5000.00	59.39	74.00	-14.61	53.33	6.06	Peak	191	344
5	11510.00	49.62	54.00	-4.38	32.72	16.90	Average	163	89
6	11510.00	62.25	74.00	-11.75	45.35	16.90	Peak	163	89

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
 *Factor includes antenna factor , cable loss and amplifier gain
 Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical	Test Configuration	1



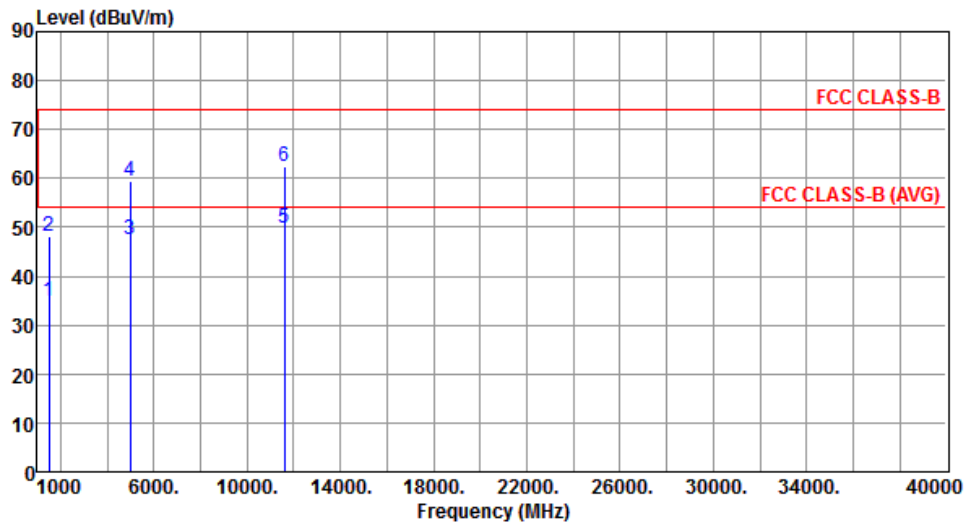
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.52	54.00	-18.48	40.18	-4.66	Average	229	43
2	1500.00	48.50	74.00	-25.50	53.16	-4.66	Peak	229	43
3	5000.00	46.38	54.00	-7.62	40.32	6.06	Average	214	119
4	5000.00	58.96	74.00	-15.04	52.90	6.06	Peak	214	119
5	11510.00	50.98	54.00	-3.02	34.08	16.90	Average	171	83
6	11510.00	63.65	74.00	-10.35	46.75	16.90	Peak	171	83

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal	Test Configuration	1



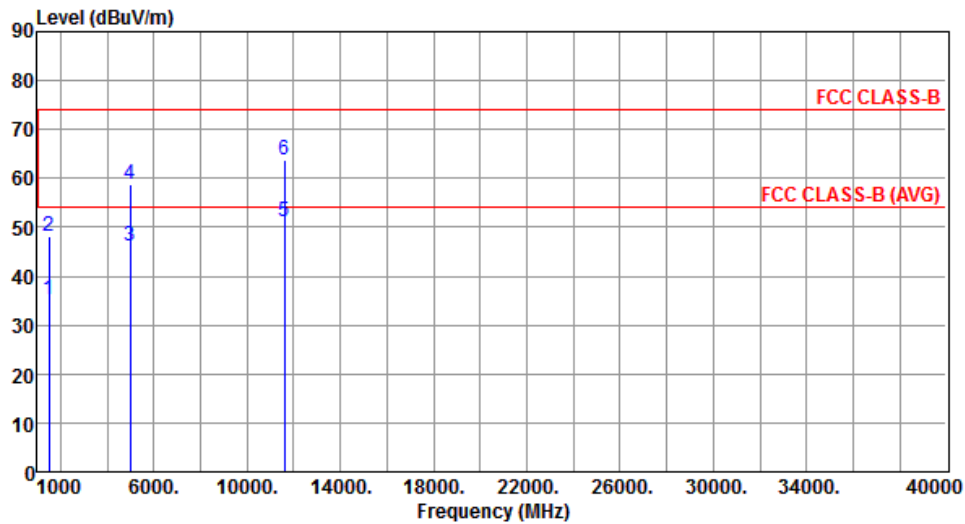
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.88	54.00	-19.12	39.54	-4.66	Average	178	135
2	1500.00	48.11	74.00	-25.89	52.77	-4.66	Peak	178	135
3	5000.00	47.43	54.00	-6.57	41.37	6.06	Average	195	344
4	5000.00	59.46	74.00	-14.54	53.40	6.06	Peak	195	344
5	11590.00	49.78	54.00	-4.22	33.02	16.76	Average	169	96
6	11590.00	62.43	74.00	-11.57	45.67	16.76	Peak	169	96

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.32	54.00	-18.68	39.98	-4.66	Average	224	48
2	1500.00	48.17	74.00	-25.83	52.83	-4.66	Peak	224	48
3	5000.00	46.19	54.00	-7.81	40.13	6.06	Average	208	114
4	5000.00	58.72	74.00	-15.28	52.66	6.06	Peak	208	114
5	11590.00	51.12	54.00	-2.88	34.36	16.76	Average	178	89
6	11590.00	63.75	74.00	-10.25	46.99	16.76	Peak	178	89

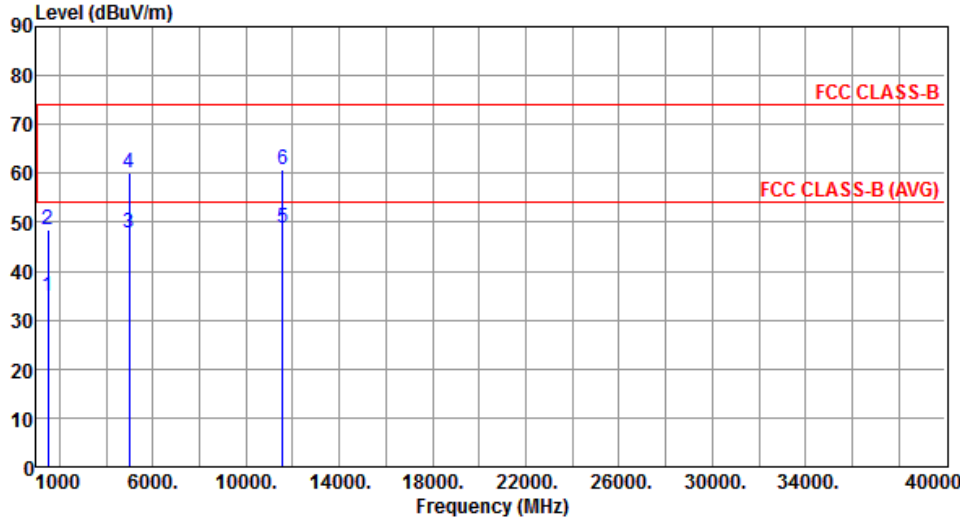
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

3.5.12 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT80

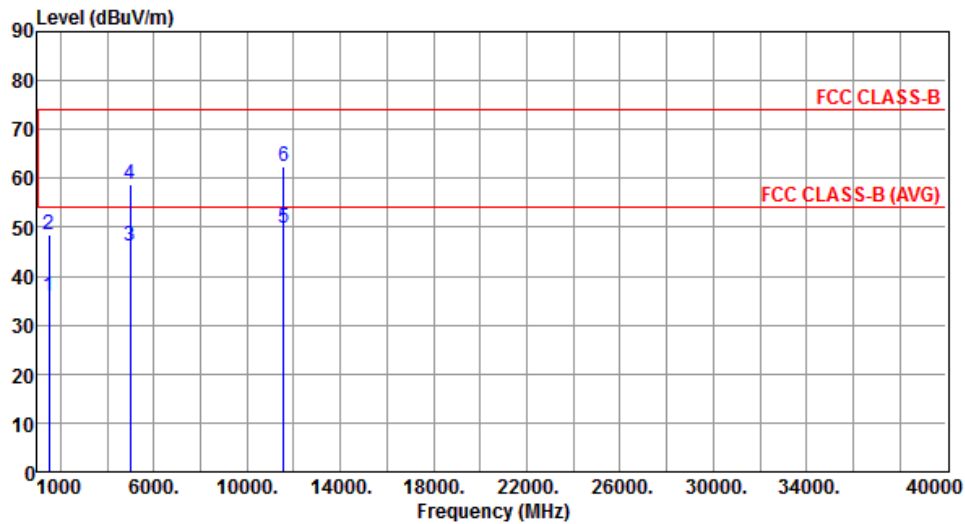
Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.98	54.00	-19.02	39.64	-4.66	Average	181	149
2	1500.00	48.43	74.00	-25.57	53.09	-4.66	Peak	181	149
3	5000.00	47.68	54.00	-6.32	41.62	6.06	Average	199	351
4	5000.00	59.99	74.00	-14.01	53.93	6.06	Peak	199	351
5	11550.00	48.68	54.00	-5.32	31.85	16.83	Average	155	159
6	11550.00	60.82	74.00	-13.18	43.99	16.83	Peak	155	159

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	35.72	54.00	-18.28	40.38	-4.66	Average	229	34
2	1500.00	48.43	74.00	-25.57	53.09	-4.66	Peak	229	34
3	5000.00	46.32	54.00	-7.68	40.26	6.06	Average	215	119
4	5000.00	58.78	74.00	-15.22	52.72	6.06	Peak	215	119
5	11550.00	49.87	54.00	-4.13	33.04	16.83	Average	178	332
6	11550.00	62.50	74.00	-11.50	45.67	16.83	Peak	178	332

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

3.6 Unwanted Emissions into Non-Restricted Frequency Bands

3.6.1 Limit of Unwanted Emissions into Non-Restricted Frequency Bands

The peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.6.2 Test Procedures

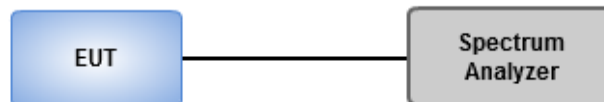
Reference Level Measurement

1. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Set Sweep time = auto couple, Trace mode = max hold.
3. Allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

Unwanted Emissions Level Measurement

1. Set RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Trace Mode = max hold, Sweep = auto couple.
3. Allow the trace to stabilize.
4. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

3.6.3 Test Setup



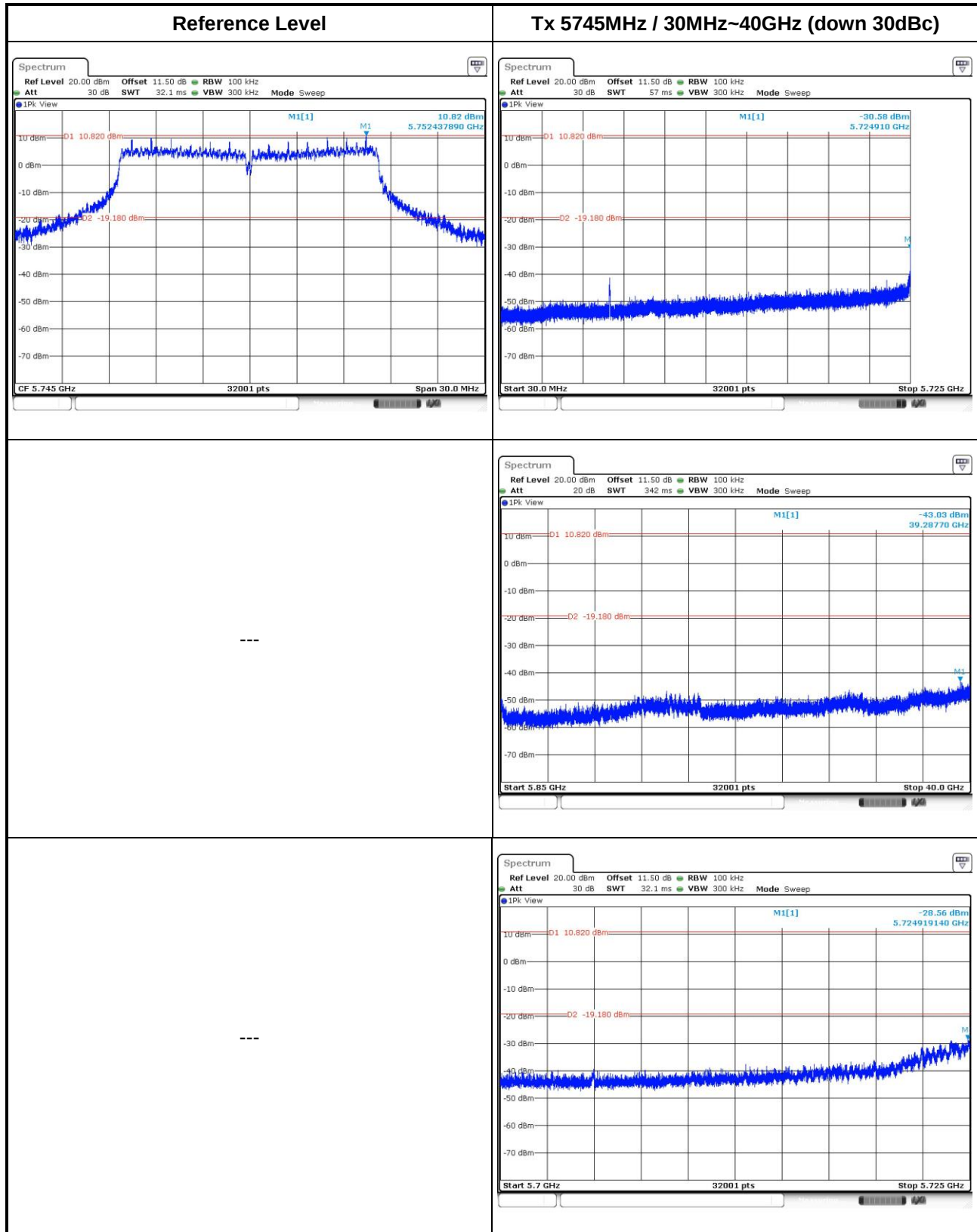
3.6.4 Test Result of Emissions in non-restricted frequency bands

This test item is performed on each TX output individually without summing or adding $10 \log(N_{ANT})$ since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

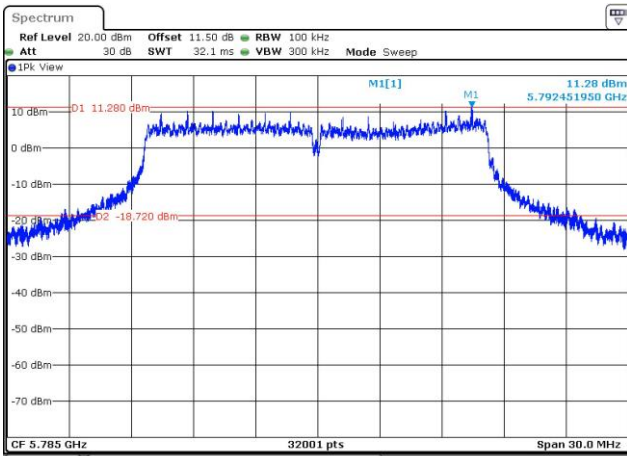
Non- beamforming mode

3.6.5 Unwanted Emissions into Non-Restricted Frequency Bands

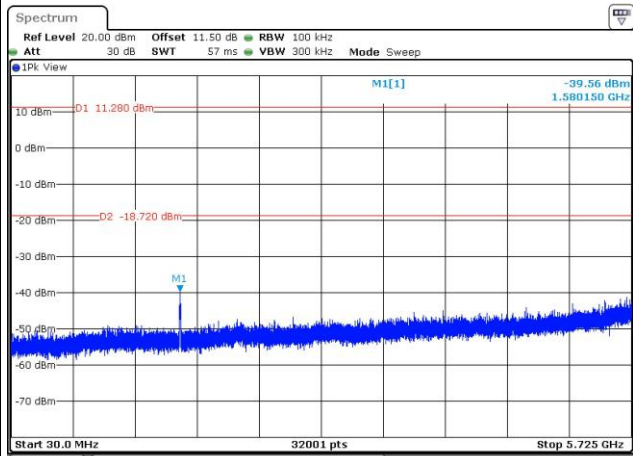
802.11a

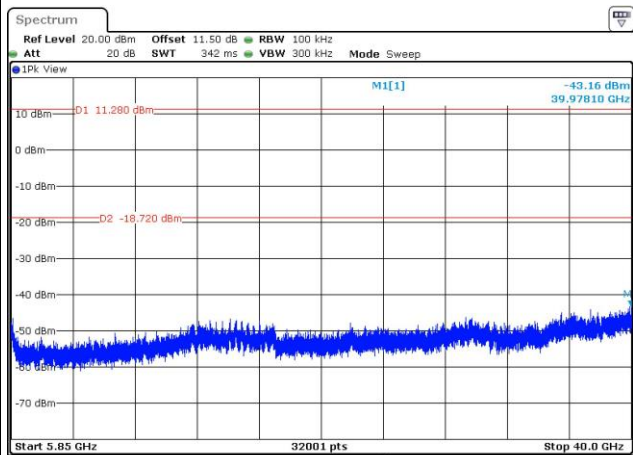


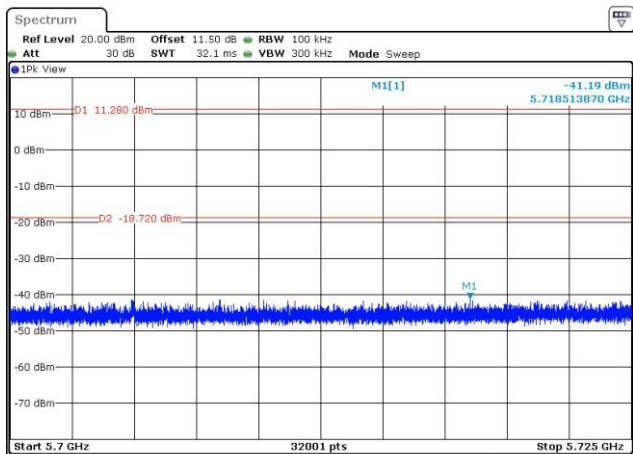
Reference Level

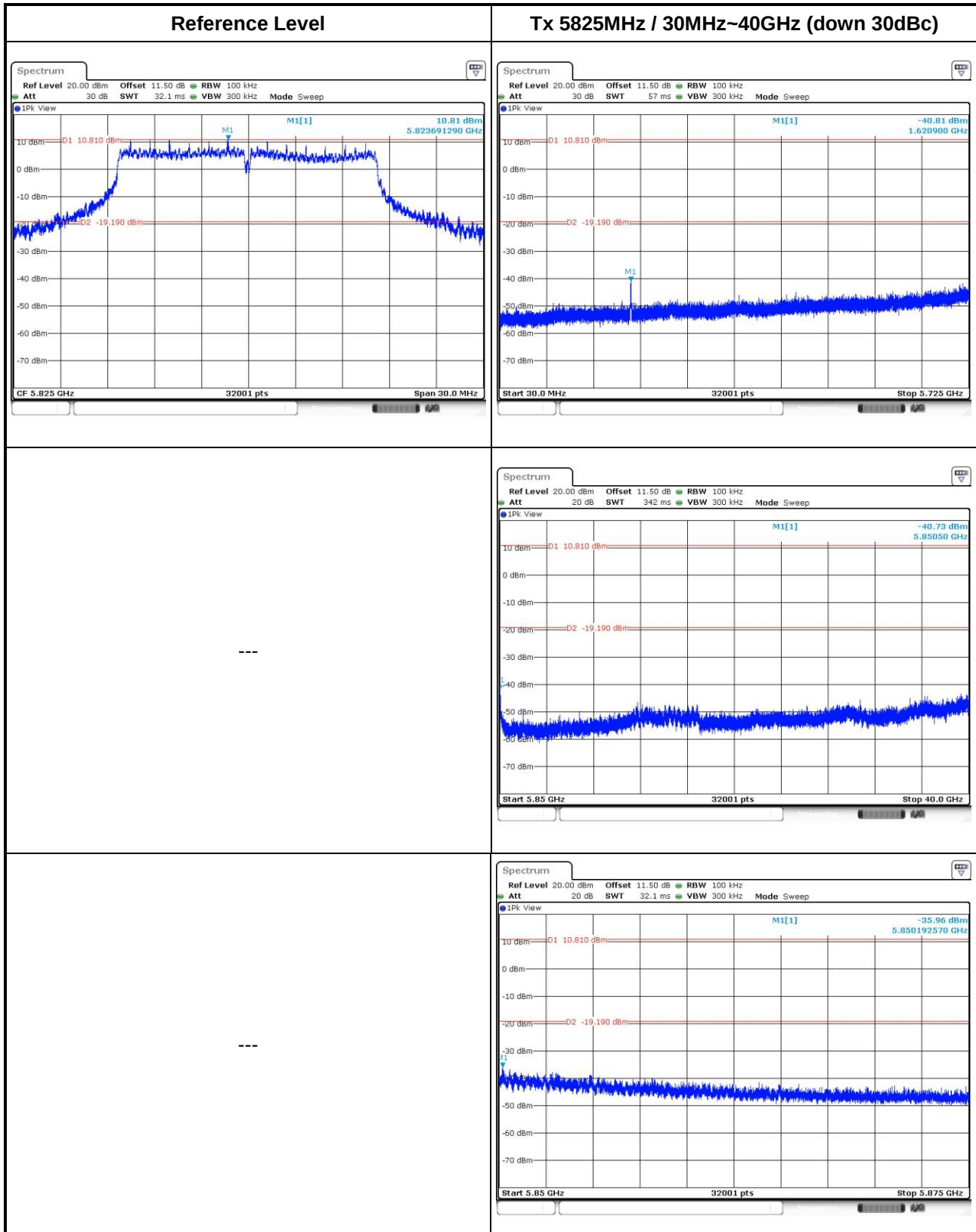


Tx 5785MHz / 30MHz~40GHz (down 30dBc)

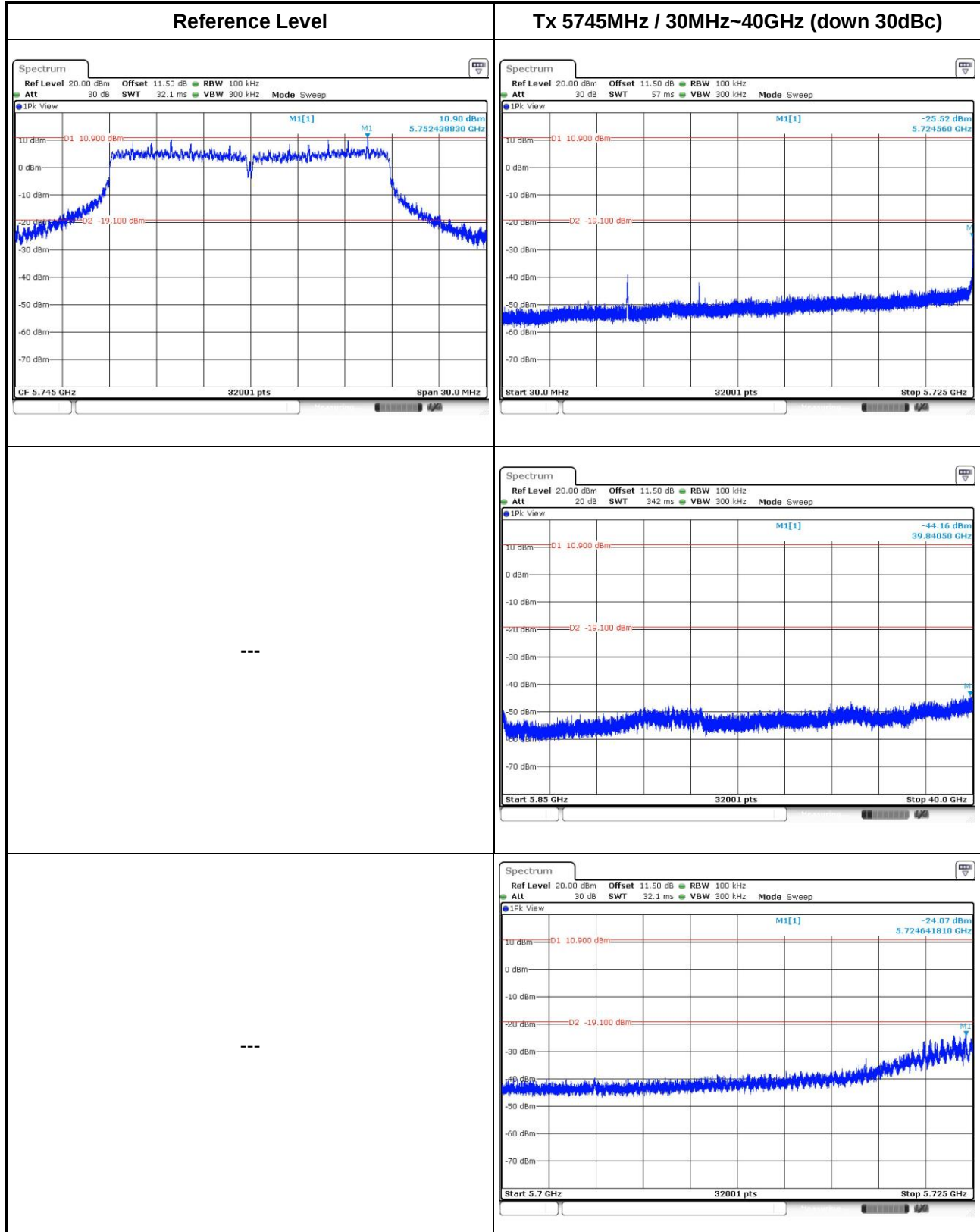


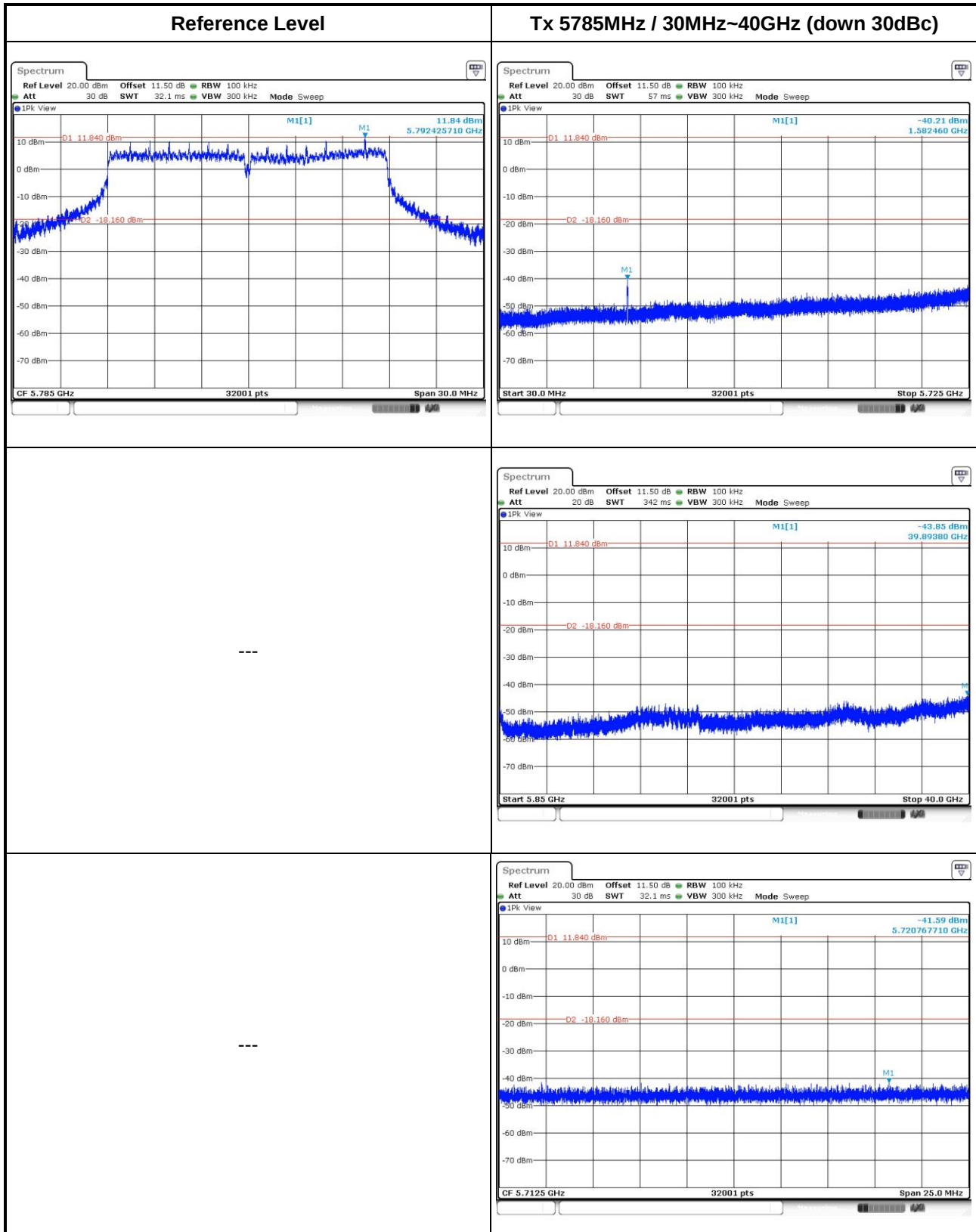


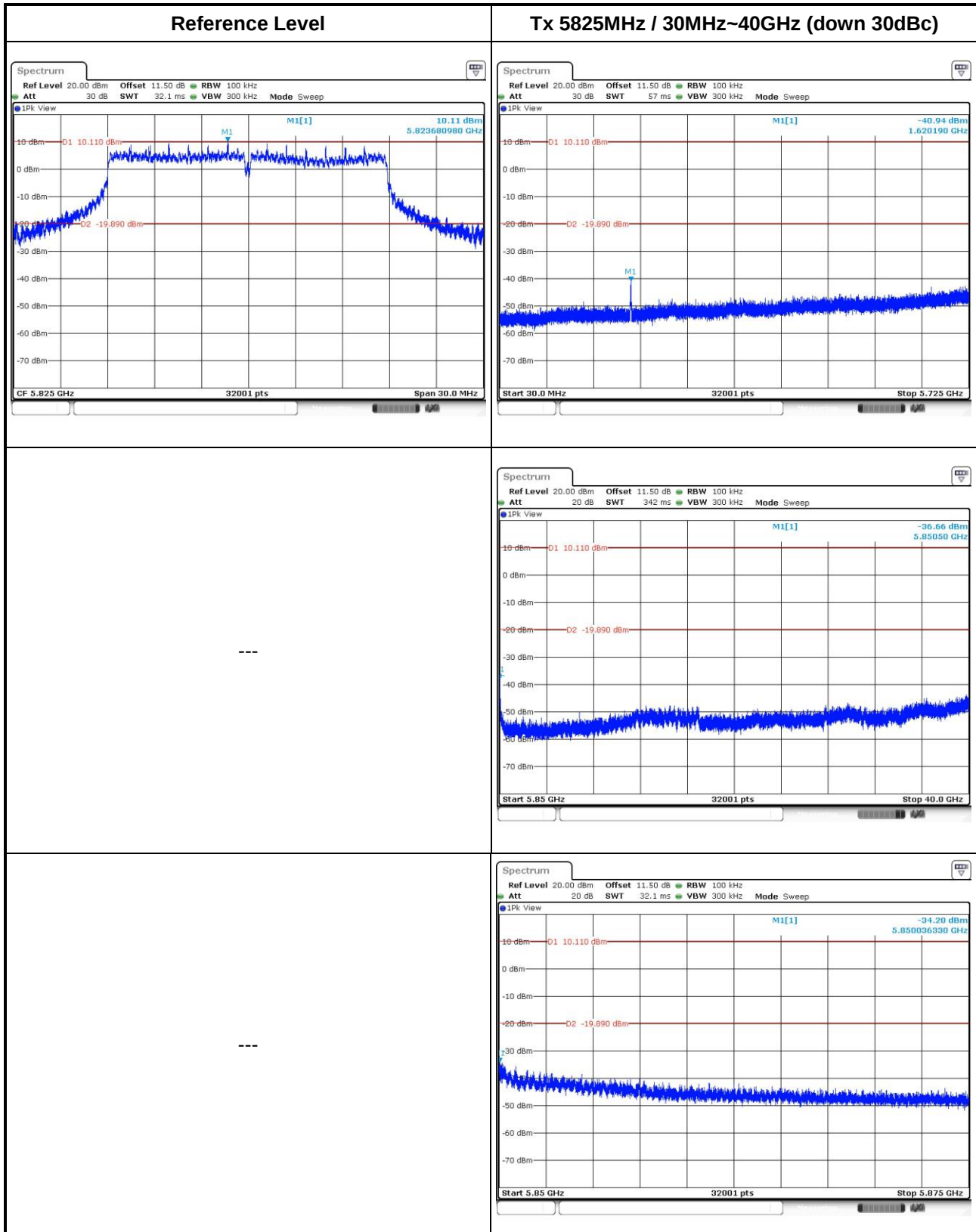




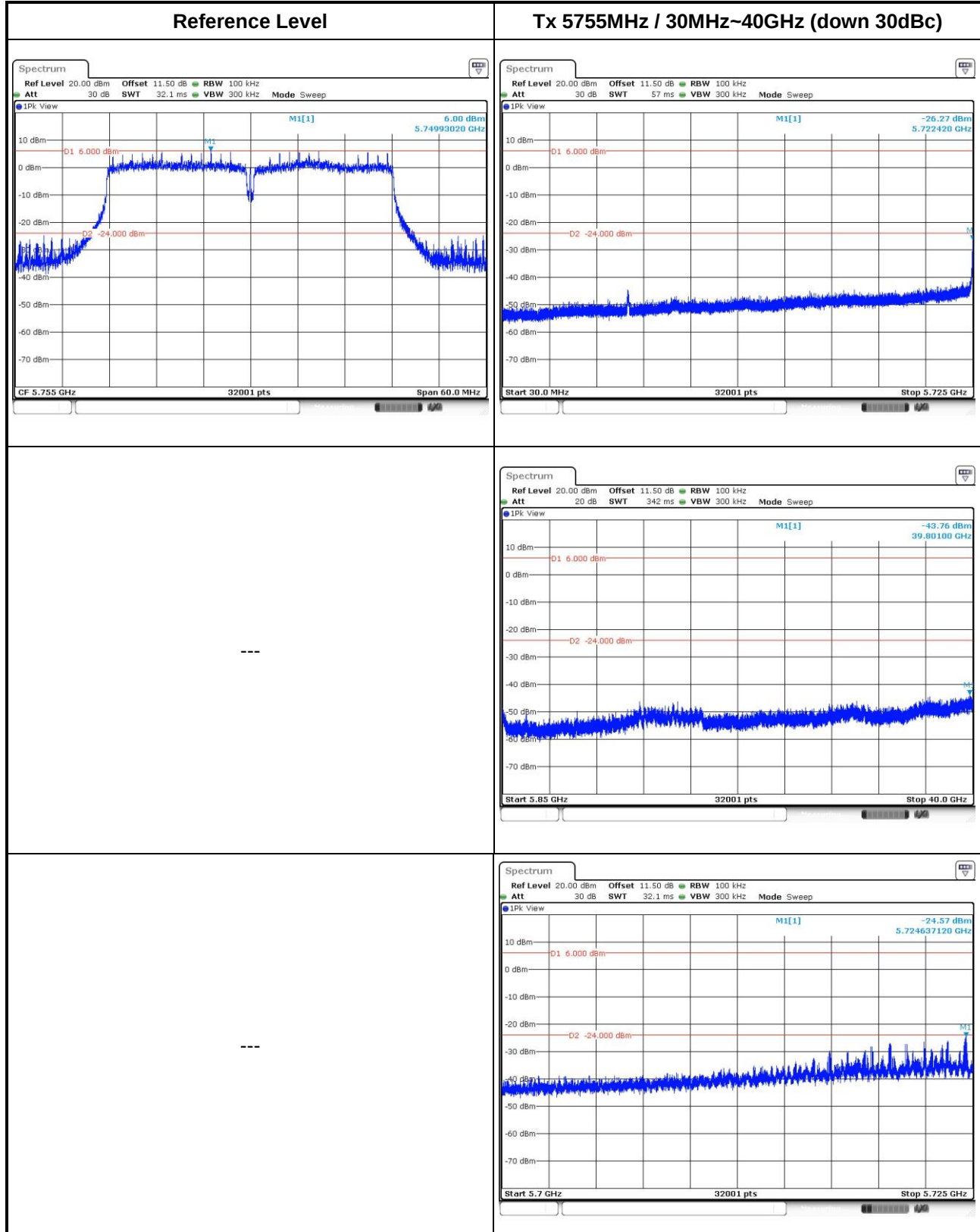
802.11n VHT20

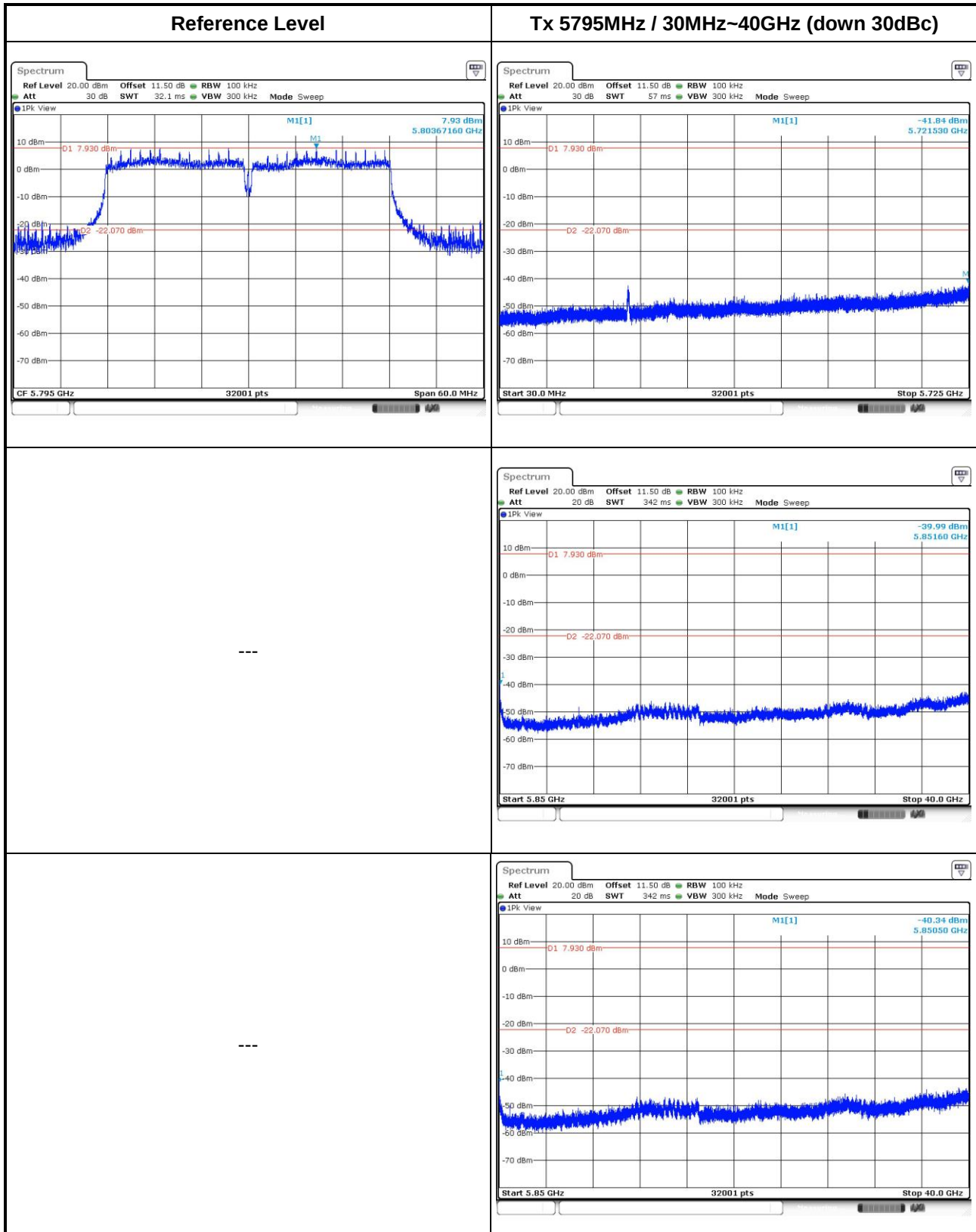




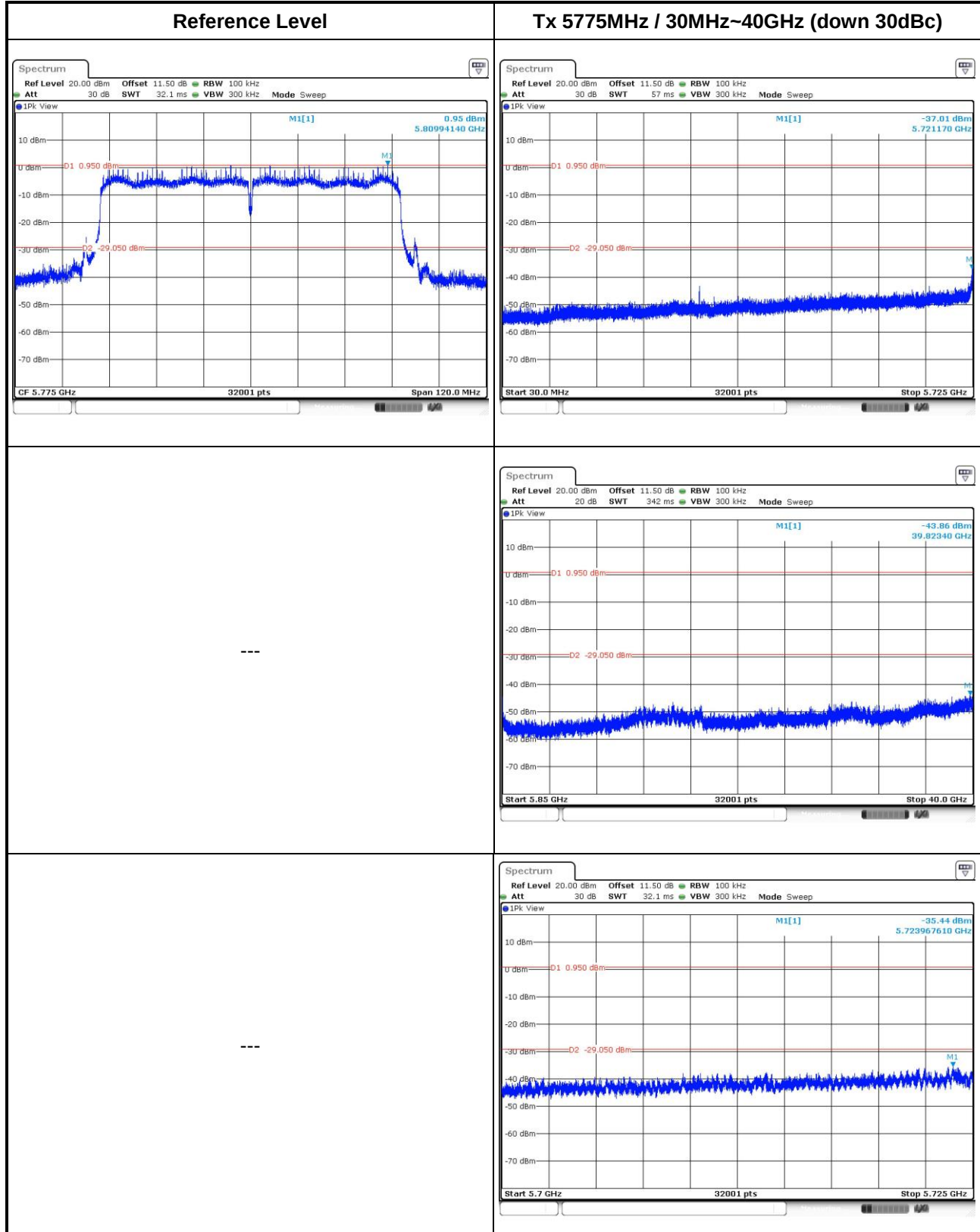


802.11n VHT40





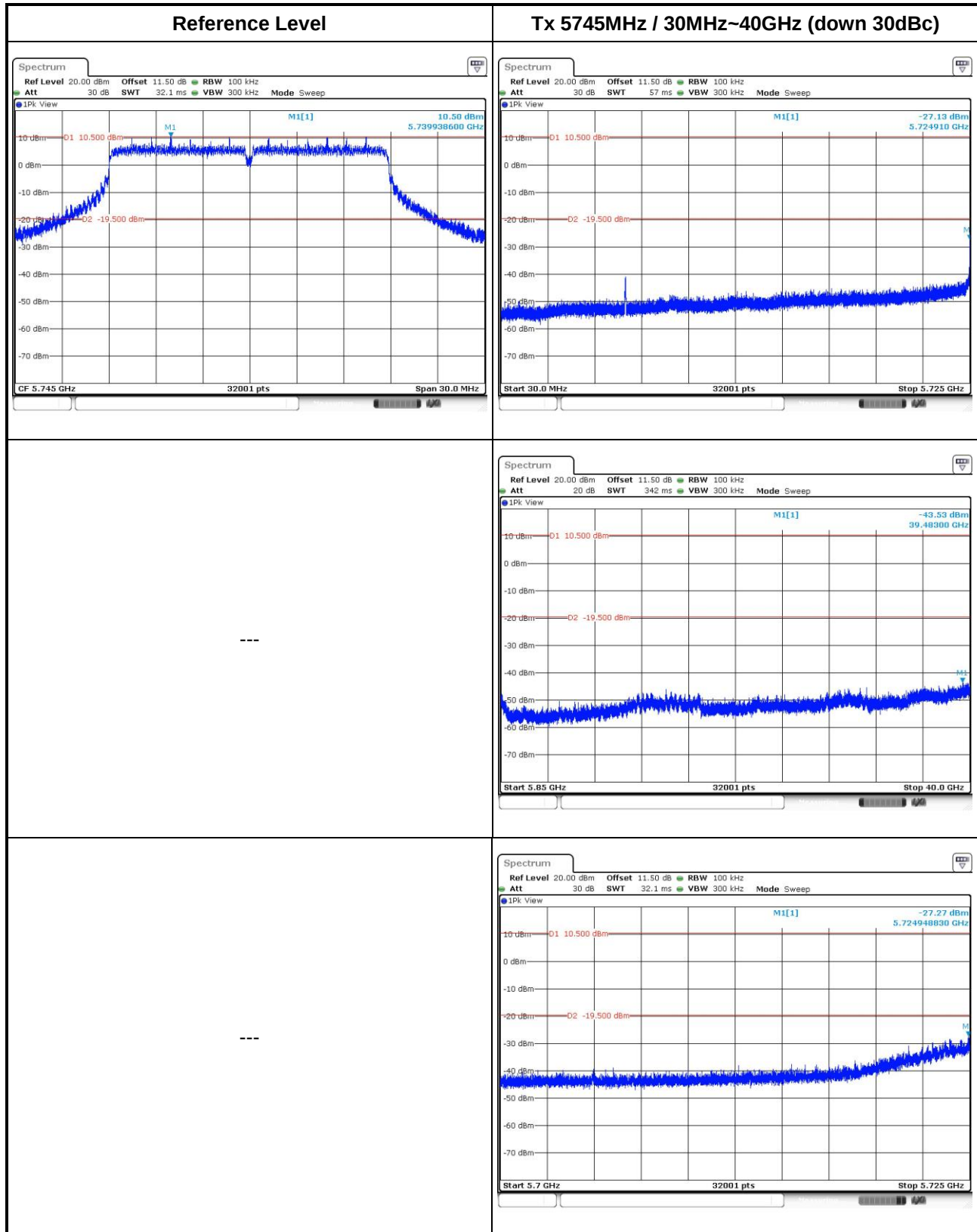
802.11n VHT80



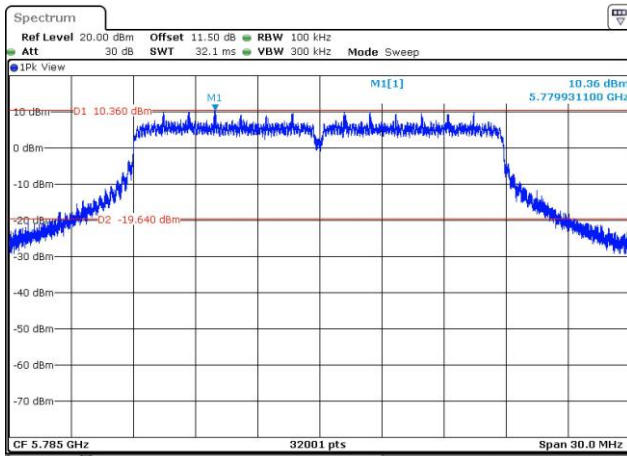
Beamforming mode

3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands

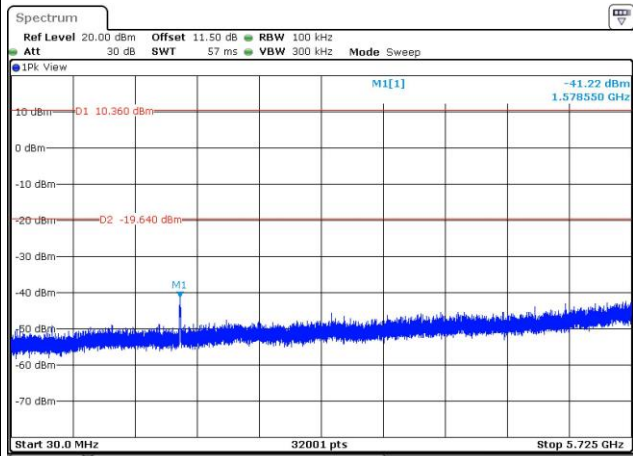
802.11n VHT20

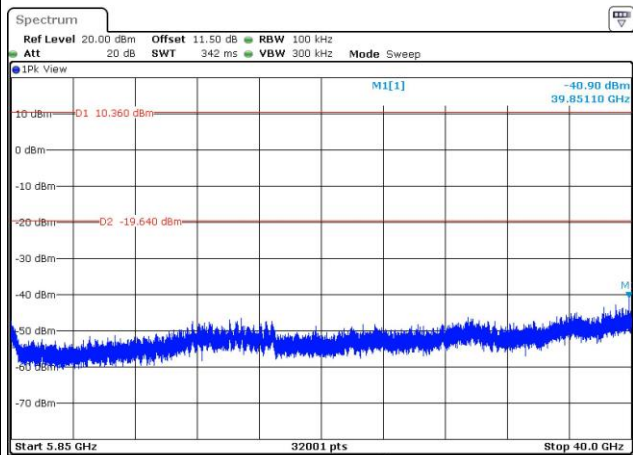


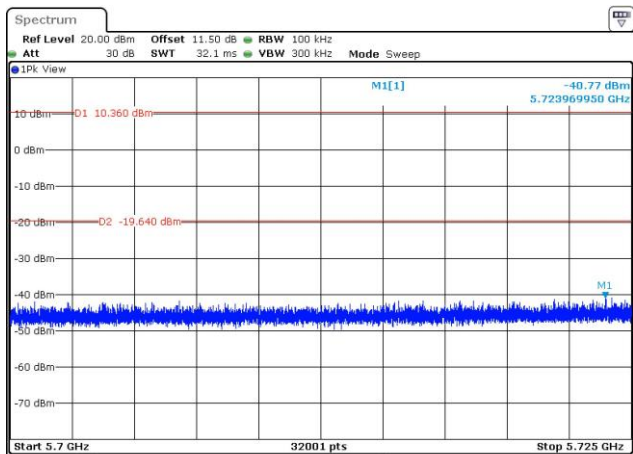
Reference Level

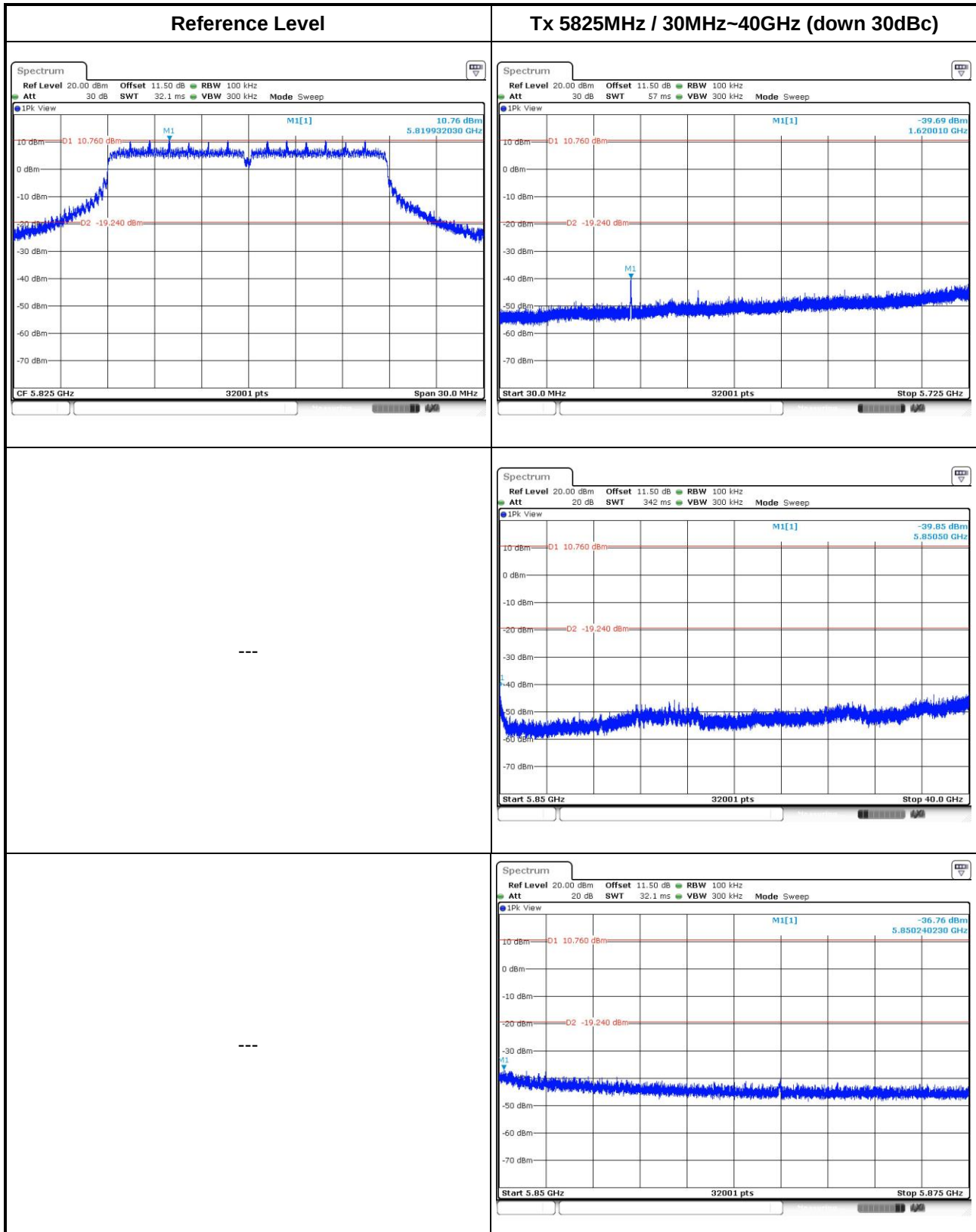


Tx 5785MHz / 30MHz~40GHz (down 30dBc)

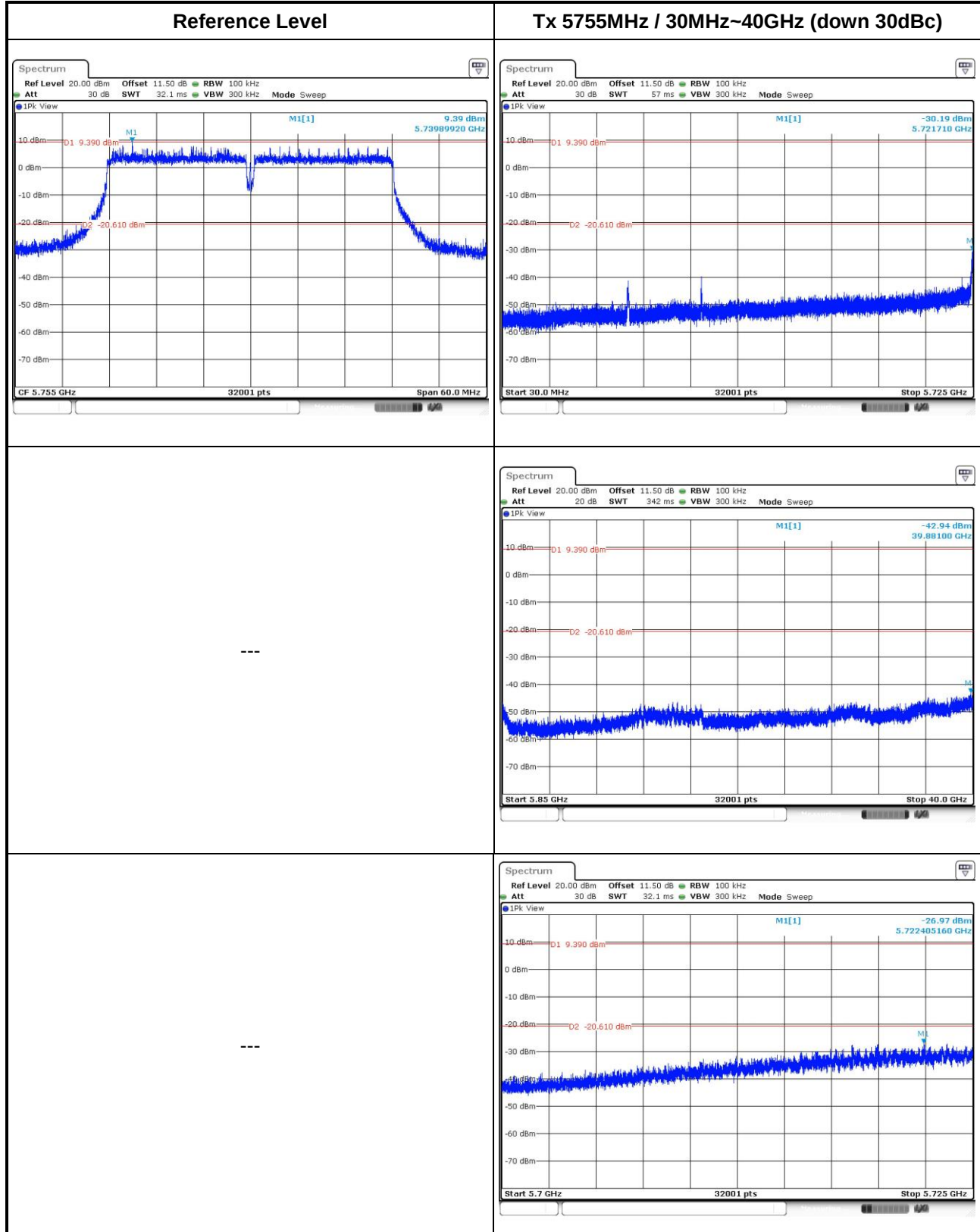


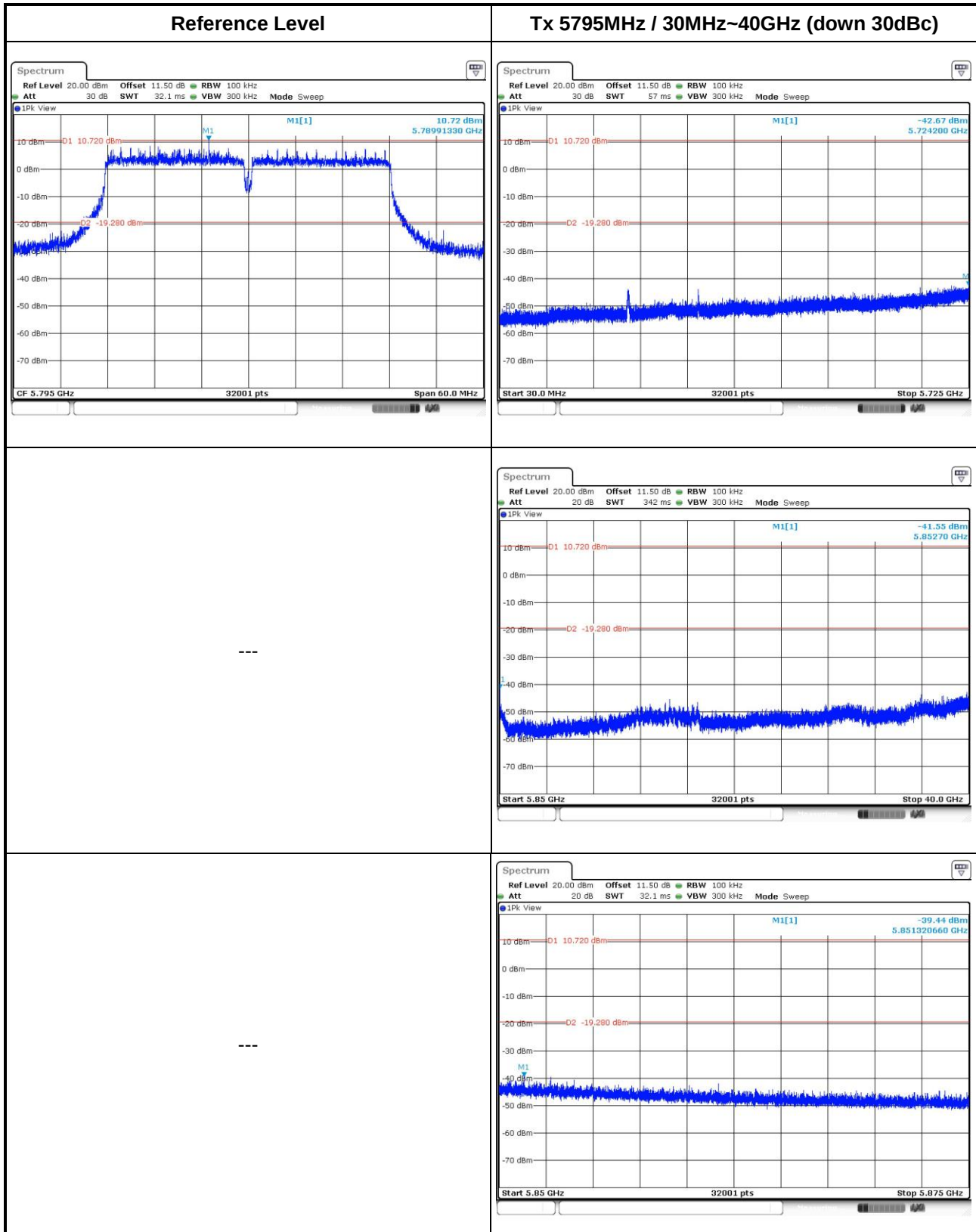




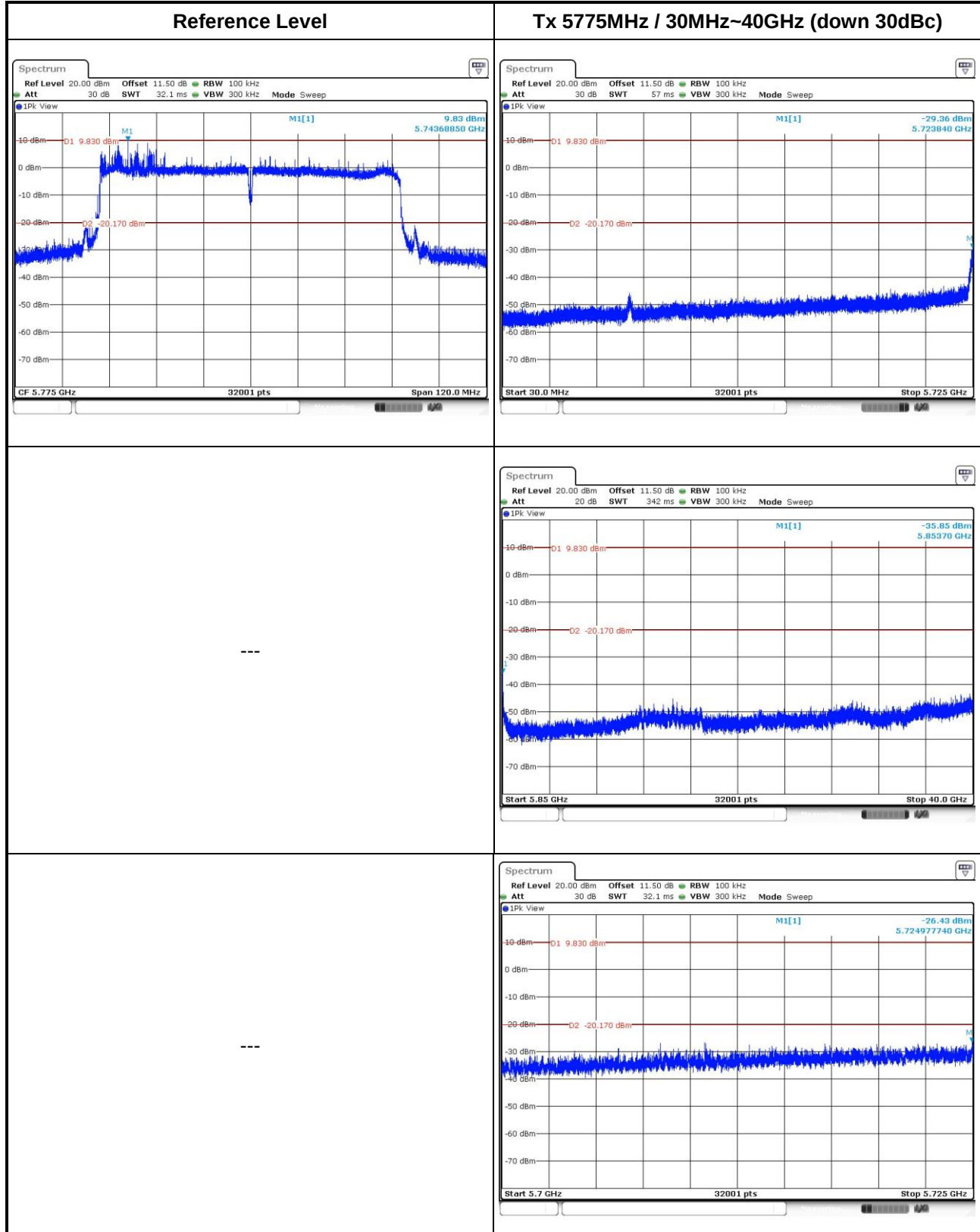


802.11n VHT40





802.11n VHT80



4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp, it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin Kou
District, New Taipei City, Taiwan,
R.O.C.

Kwei Shan

Tel: 886-3-271-8666

No. 3-1, Lane 6, Wen San 3rd
St., Kwei Shan Hsiang, Tao Yuan
Hsien 333, Taiwan, R.O.C.

Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd
St., Kwei Shan Hsiang, Tao Yuan
Hsien 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666

Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==