

FCC Test Report

Equipment	:	Mevo
Brand Name	:	Mevo
Model No.	:	A10101A
FCC ID	:	2AHGTA10101A
Standard	:	47 CFR FCC Part 15.407
Operating Band	:	5150 MHz – 5250 MHz 5250 MHz – 5350 MHz 5470 MHz – 5725 MHz 5725 MHz – 5850 MHz
FCC Classification	:	UNII
Applicant	:	Livestream, Inc. 195 Morgan Ave, Brooklyn, NY 11237
Manufacturer	:	Chicony Electronics (Dong Guan) Co.,Ltd. San Zhong Guan Li Qu, Qingxi Town, Dongguan City Guangdong 523651 China

The product sample received on Feb. 18, 2016 and completely tested on May 03, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Kevin Liang / Assistant Manager





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APPENDIX A. TEST PHOTOS

APPENDIX B. PHOTOGRAPHS OF EUT



Summary of Test Result

	Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Result			
1.1.2	15.203	Antenna Requirement	Complied			
3.1	15.207	AC Power-line Conducted Emissions	Complied			
3.2	15.407(a)	Emission Bandwidth	Complied			
3.3	15.407(a)	RF Output Power (Maximum Conducted Output Power)	Complied			
3.4	15.407(a)	Peak Power Spectral Density	Complied			
3.5	15.407(b)	Transmitter Bandedge Emissions	Complied			
3.6	15.407(b)	Transmitter Unwanted Emissions	Complied			
3.7	15.407(g)	Frequency Stability	Complied			





Revision History

Report No.	Version	Description	Issued Date
FR621807AN	Rev. 01	Initial issue of report	Jun. 24, 2016



1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information (5150-5250MHz band)					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	RF Output Power (dBm)
5150-5250	а	5180-5240	36-48 [4]	1	17.44
5150-5250	n (HT20)	5180-5240	36-48 [4]	1	16.41
5150-5250	n (HT40)	5190-5230	38-46 [2]	1	15.81

Note 1: RF output power specifies that Maximum Conducted Output Power.

Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

Note 3: The repeater in the client mode it can support full band, in the master mode it can support band 1 & 4.

RF General Information	(5250-5350MHz band)

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{⊤x})	RF Output Power (dBm)
5250-5350	а	5260-5320	52-64 [4]	1	17.33
5250-5350	n (HT20)	5260-5320	52-64 [4]	1	16.25
5250-5350	n (HT40)	5270-5310	54-62 [2]	1	15.63

Note 1: RF output power specifies that Maximum Conducted Output Power.

Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

Note 3: The repeater in the client mode it can support full band, in the master mode it can support band 1 & 4.

RF General Information (5470-5725MHz band)					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	RF Output Power (dBm)
5470-5725	а	5500-5700	100-140 [11]	1	15.45
5470-5725	n (HT20)	5500-5700	100-140 [11]	1	14.35
5470-5725	n (HT40)	5510-5670	102-134 [5]	1	14.55

Note 1: RF output power specifies that Maximum Conducted Output Power.

Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

Note 3: The repeater in the client mode it can support full band, in the master mode it can support band 1 & 4.



RF General Information (5725-5850MHz band)					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	RF Output Power (dBm)
5725-5850	а	5745-5825	149-165 [5]	1	16.78
5725-5850	n (HT20)	5745-5825	149-165 [5]	1	15.78
5725-5850	n (HT40)	5755-5795	151-159 [2]	1	15.28
Note 1: RF output power specifies that Maximum Conducted Output Power.					

Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

Note 3: The repeater in the client mode it can support full band, in the master mode it can support band 1 & 4.

1.1.2 Antenna Information

	Antenna Category						
\square	Integral antenna (antenna permanently attached)						
	Temporary RF connector provided						
	No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.						
	External antenna (dedicated antennas)						
	Single power level with corresponding antenna(s).						
	Multiple power level and corresponding antenna(s).						

	Antenna General Information					
No.	Ant. Cat.	Ant. Type	Connector Type	Gain _(dBi)		
1	Integral	PIFA	Fixed on board	2.79		

1.1.3 Type of EUT

	Identify EUT				
EUT Serial Number		N/A			
Pres	sentation of Equipment	☑ Production ; ☐ Pre-Production ; ☐ Prototype			
	Type of EUT				
\square	Stand-alone				
	Combined (EUT where the radio part is fully integrated within another device)				
	Combined Equipment - Brand Name / Model No.:				
	Plug-in radio (EUT intended for a variety of host systems)				
	Host System - Brand Name / Model No.:				
	Other:				



1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle						
Operated normally mode for worst duty cycle	Operated normally mode for worst duty cycle					
Operated test mode for worst duty cycle						
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)					
⊠ 96.77% - IEEE 802.11a	0.14					
⊠ 97.03% - IEEE 802.11n (HT20)	0.13					
☑ 92.31% - IEEE 802.11n (HT40)	0.35					

1.1.5 EUT Operational Condition

Supply Voltage	AC mains	DC DC	
Type of DC Source	Transformer	From System	External DC adapter

1.1.6 DFS and TPC Information

The DFS Related Operating Mode(s) of the Equipment								
Master	Master							
Slave with radar detection								
Slave without radar de	etection							
Software/Firmware Version 6.26.3.6(r572568) FWID 01-15d9f945								
Communication Mode		IP Based	Frame Based					
IEEE Std. 802.11 Frequency Range (MHz)		TPC (Transmit Power Control)	Passive Scan					
⊠ 5250-5350		No	Yes					
a / n (HT20) n (HT40) 5470-5725		No	Yes					
	⊠ 5600-5650	No	Yes					



1.2 Accessories and Support Equipment

Accessories Information						
AC Adaptor	Brand Name	Mevo	Model Name	KSA29B0500200D5		
AC Adapter	Power Rating	I/P: 100-240V ~50/60Hz 0.5A MAX; O/P: 5.0V === 2.0A				
USB Cable Signal Line 3 meter, D-shielded cable, with w/o ferrite core						

Reminder: Regarding to more detail and other information, please refer to user manual.

	Support Equipment - RF Conducted								
No.	No. Equipment Brand Name Model Name FCC ID								
1	Notebook	DELL	E5540	DoC					
2	Adapter for Notebook	DELL	HA65NM130	DoC					

	Support Equipment - AC Conduction and Radiated Emission								
No.	No. Equipment Brand Name Model Name FCC ID								
1	Notebook	DELL	E5540	DoC					
2	Adapter for Notebook	DELL	LA65NS2-01	DoC					

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 789033 D02 v01r02
- FCC KDB 662911 v02r01
- FCC-14-30A1-UNII

1.4 Testing Location Information

	Testing Location								
\boxtimes	HWA YA	ADD :	DD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.						
	TEL : 886-3-327-3456 FAX : 886-3-327-0973								
	Test Condition Test Site No.			Test Engineer	Test Environment				
	AC Conduction CO04-HY		Ryan	24°C / 58%					
RF Conducted TH01-HY				Howard	23°C / 63%				
Radiated Emission 03CH09-HY				Thor	23°C / 62%				



1.5 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)

Ν	leasurement Uncertainty	
Test Item		Uncertainty
AC power-line conducted emissions		±2.26 dB
Emission bandwidth, 26dB bandwidth		±1.42 %
RF output power, conducted		±0.63 dB
Power density, conducted		±0.81 dB
Unwanted emissions, conducted	9 – 150 kHz	±0.38 dB
	0.15 – 30 MHz	±0.42 dB
	30 – 1000 MHz	±0.51 dB
	1 – 18 GHz	±0.67 dB
	18 – 40 GHz	±0.83 dB
	40 – 200 GHz	N/A
All emissions, radiated	9 – 150 kHz	±2.49 dB
	0.15 – 30 MHz	±2.28 dB
	30 – 1000 MHz	±2.56 dB
	1 – 18 GHz	±3.59 dB
	18 – 40 GHz	±3.82 dB
	40 – 200 GHz	N/A
Temperature		±0.8 °C
Humidity		±3 %
DC and low frequency voltages		±3 %
Time		±1.42 %
Duty Cycle		±1.42 %



2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

	Worst Modulation Used for Conformance Testing							
Modulation Mode Transmit Chains (N _{TX}) Data Rate / MCS Worst Data Rate / MC								
11a	1	6-54Mbps	6 Mbps					
HT20	1	MCS 0-7	MCS 0					
HT40	1	MCS 0-7	MCS 0					

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (5150-5250MHz band)							
Test Software		PUTTY					
		Test Frequency (MHz)					
Modulation Mode	ulation Mode N _{TX}		NCB: 20MH	z	NCB: 4	40MHz	
		5180	5200	5240	5190	5230	
11a	1	Default	Default	Default	-	-	
HT20	1	Default	Default	Default	-	-	
HT40	1	-	-	-	Default	Default	

The Worst Case Power Setting Parameter (5250-5350MHz band)							
Test Software		PUTTY					
		Test Frequency (MHz)					
Modulation Mode	\mathbf{N}_{TX}	I	NCB: 20MH	z	NCB: 4	40MHz	
		5260	5300	5320	5270	5310	
11a	1	Default	Default	Default	-	-	
HT20	1	Default	Default	Default	-	-	
HT40	1	-	-	-	Default	Default	



The Worst Case Power Setting Parameter (5470-5725MHz band)								
Test Software		PUTTY						
			Test Frequency (MHz)					
Modulation Mode	\mathbf{N}_{TX}	NCB: 20MHz NCB: 40				NCB: 40MHz	ЛНz	
		5500	5580	5700	5510	5550	5670	
11a	1	Default	Default	Default	-	-	-	
HT20	1	Default	Default	Default	-	-	-	
HT40	1	-	-	-	Default	Default	Default	

The Worst Case Power Setting Parameter (5725-5850MHz band)								
Test Software		PUTTY						
			Test Frequency (MHz)					
Modulation Mode	Ντχ	NCB: 20MHz			NCB: 40MHz			
		5745	5785	5825	5755	5795		
11a	1	Default	Default	Default	-	-		
HT20	1	Default	Default	Default	-	-		
HT40	1	-	-	-	Default	Default		



2.3 The Worst Case Measurement Configuration

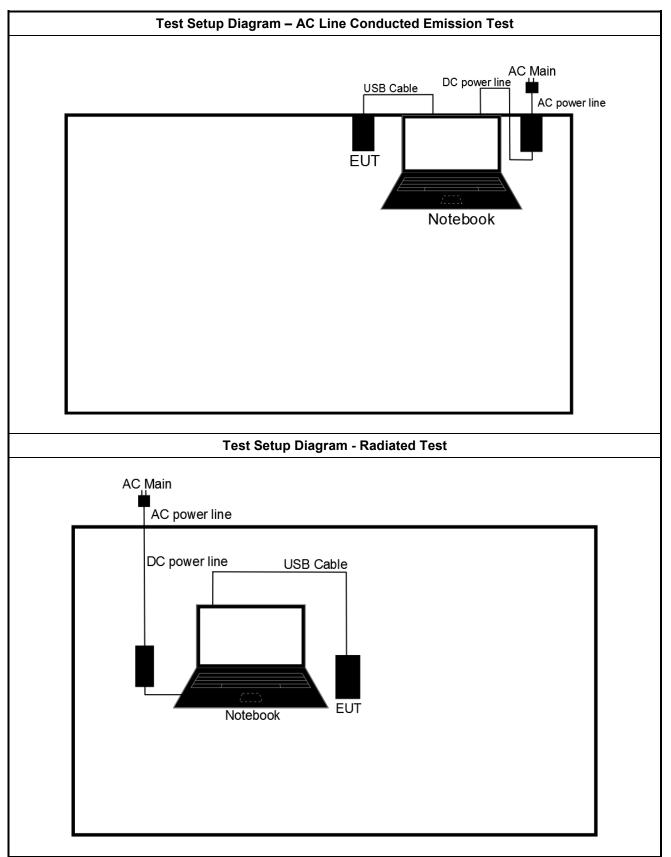
The Worst Case Mode for Following Conformance Tests					
Tests Item	AC power-line conducted emissions				
Condition AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz					
Operating Mode Operating Mode Description					
1 Adapter Mode					
2 USB Mode(EUT with Notebook via USB Cable)					
The operating mode 2 is the	ne worst case and it was record in this test report.				

The Worst Case Mode for Following Conformance Tests					
Tests Item	RF Output Power, Peak Power Spectral Density, Emission Bandwidth, Transmitter Conducted Unwanted Emissions Transmitter Conducted Bandedge Emissions				
Test Condition Conducted measurement at transmit chains					
Modulation Mode	11a, HT20, HT40				

Th	e Worst Case Mode for Fo	llowing Conformance Te	sts				
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions						
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.						
	EUT will be placed in	fixed position.					
User Position	EUT will be placed in mobile position and operating multiple positions. El shall be performed three orthogonal planes.						
	EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.						
Operating Mode	Operating Mode Description	n					
	1. Adapter Mode						
Radiated Emissions (Below 1GHz)	2. USB Mode (EUT with Notebook via USB Cable)						
()	The operating mode 2 is the	e worst case and it was rec	cord in this test report.				
Modulation Mode	11a, HT20, HT40						
	X Plane	Y Plane	Z Plane				
Orthogonal Planes of EUT							
Worst Planes of EUT	V						



2.4 Test Setup Diagram





Transmitter Test Result 3

3.1 **AC Power-line Conducted Emissions**

3.1.1 **AC Power-line Conducted Emissions Limit**

AC Power-line 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							
5-30 60 50 Note 1: * Decreases with the logarithm of the frequency.							

ecreases with the logarithm of the frequency

3.1.2 Measuring Instruments

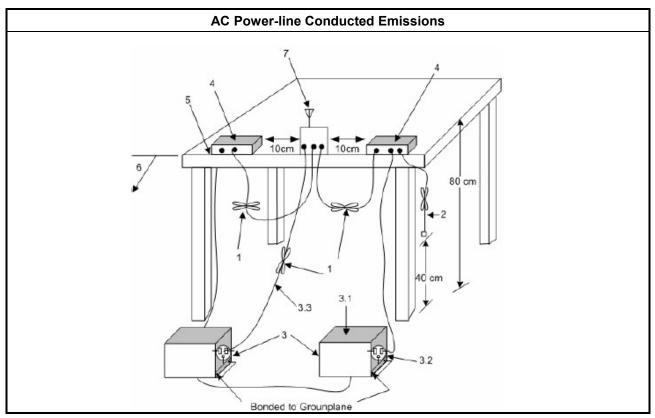
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method

Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



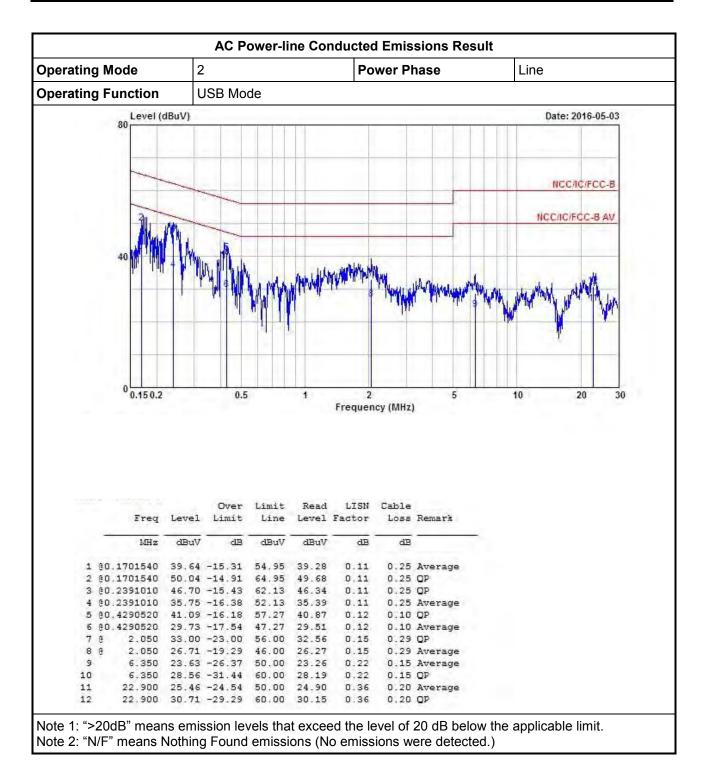


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0.150.2	0.5 Over	1 Limit Read	Frequenc			10	20	3
		Limit Read	Frequenc	y (MHz)		10	20	3
Freq L	Over	Limit Read	Frequenc	y (MHz) Cable		10	20	3
Freq L MHz	Over evel Limit dBuV dB	Limit Read Line Level dBuV dBuV	LISN Factor dB	Cable Loss Remark dB		10	20	3
Freq L MHz 1 00.1854100 3	Over evel Limit	Limit Read Line Level	LISN Factor dB 0.11	y (MHz) Cable Loss Remark		10	20	3
Freq L MHz 1 @0.1854100 3 2 @0.1854100 4	evel Limit dBuV dB 8.76 -15.48	Limit Read Line Level dBuV dBuV 54.24 38.37 64.24 48.92	LISN Factor dB 0.11 0.11	Cable Loss Remark dB 0.28 Average		10	20	3
Freq L MHz 1 @0.1854100 3 2 @0.1854100 4 3 @0.2455200 4 4 @0.2455200 3	Over evel Limit dBuV dB 8.76 -15.48 9.31 -14.93 7.15 -14.76 8.72 -13.19	Limit Read Line Level dBuV dBuV 54.24 38.37 64.24 48.92 61.91 46.80 51.91 38.37	LISN Factor dB 0.11 0.11 0.11 0.11	Cable Loss Remark dB 0.28 Average 0.28 QP 0.24 QP 0.24 Average		10	20	3
Freq L MHz 1 @0.1854100 3 2 @0.1854100 4 3 @0.2455200 4 4 @0.2455200 3 5 @0.4285230 4	Over evel Limit dBuV dB 8.76 -15.48 9.31 -14.93 7.15 -14.76 8.72 -13.19 3.29 -13.99	Limit Read Line Level dBuV dBuV 54.24 38.37 64.24 48.92 61.91 46.80 51.91 38.37 57.28 43.07	LISN Factor dB 0.11 0.11 0.11 0.11 0.12	Cable Loss Remark dB 0.28 Average 0.28 QP 0.24 QP 0.24 Average 0.10 QP		10	20	3
Freq L MHz 1 @0.1854100 3 2 @0.1854100 4 3 @0.2455200 4 4 @0.2455200 3 5 @0.4285230 4 6 @0.4285230 3	Over evel Limit dBuV dB 8.76 -15.48 9.31 -14.93 7.15 -14.76 8.72 -13.19 3.29 -13.99 4.20 -13.08	Limit Read Line Level dBuV dBuV 54.24 38.37 64.24 48.92 61.91 46.80 51.91 38.37 57.28 43.07 47.28 33.98	LISN Factor dB 0.11 0.11 0.11 0.12 0.12	Cable Loss Remark dB 0.28 Average 0.28 QP 0.24 QP 0.24 Average 0.10 QP 0.10 Average		10	20	3
Freq L MHz 1 @0.1854100 3 2 @0.1854100 4 3 @0.2455200 4 4 @0.2455200 3 5 @0.4285230 3 5 @0.4285230 3 7 @ 1.660 3	Over evel Limit dBuV dB 8.76 -15.48 9.31 -14.93 7.15 -14.76 8.72 -13.19 3.29 -13.19 3.29 -13.99 4.20 -13.08 2.15 -23.85	Limit Read Line Level dBuV dBuV 54.24 38.37 64.24 48.92 61.91 46.80 51.91 38.37 57.28 43.07 47.28 33.98 56.00 31.76	Frequence LISN Factor dB 0.11 0.11 0.11 0.11 0.12 0.12 0.14	Cable Loss Remark dB 0.28 Average 0.28 QP 0.24 QP 0.24 QP 0.24 Average 0.10 QP 0.10 Average 0.25 QP	•	10	20	3
Freq L MHz 1 @0.1854100 3 2 @0.1854100 4 3 @0.2455200 4 4 @0.2455200 3 5 @0.4285230 3 5 @0.4285230 3 7 @ 1.660 3 8 @ 1.660 2	Over evel Limit dBuV dB 8.76 -15.48 9.31 -14.93 7.15 -14.76 8.72 -13.19 3.29 -13.99 3.29 -13.99 3.29 -13.99 3.29 -13.99 3.29 -13.99 3.29 -13.99 3.29 -13.99 3.20 -13.08 2.15 -23.85 3.63 -22.37	Limit Read Line Level dBuV dBuV 54.24 38.37 64.24 48.92 61.91 46.80 51.91 38.37 57.28 43.07 47.28 33.98 56.00 31.76 46.00 23.24	Frequence LISN Factor dB 0.11 0.11 0.11 0.12 0.12 0.14 0.14	Cable Loss Remark dB 0.28 Average 0.28 QP 0.24 QP 0.24 Average 0.10 QP 0.10 Average 0.25 QP 0.25 Average	•	10	20	3
Freq L MHz 1 @0.1854100 3 2 @0.1854100 4 3 @0.2455200 4 4 @0.2455200 3 5 @0.4285230 4 6 @0.4285230 3 7 @ 1.660 3 8 @ 1.660 2 9 @ 14.520 2	Over Limit dBuV dB 8.76 -15.48 9.31 -14.93 7.15 -14.76 8.72 -13.19 3.29 -13.99 4.20 -13.08 2.15 -23.85 3.63 -22.37 7.35 -22.65	Limit Read Line Level dBuV dBuV 54.24 38.37 64.24 48.92 61.91 46.80 51.91 38.37 57.28 43.07 47.28 33.98 56.00 31.76	Frequence LISN Factor dB 0.11 0.11 0.11 0.12 0.12 0.14 0.14 0.33	Cable Loss Remark dB 0.28 Average 0.28 QP 0.24 QP 0.24 QP 0.24 Average 0.10 QP 0.10 Average 0.25 QP	•	10	20	3
Freq L MHz 1 @0.1854100 3 2 @0.1854100 4 3 @0.2455200 4 4 @0.2455200 3 5 @0.4285230 4 6 @0.4285230 3 7 @ 1.660 3 8 @ 1.660 3 8 @ 1.660 2 9 @ 14.520 2 10 14.520 3	Over Limit dBuV dB 8.76 -15.48 9.31 -14.93 7.15 -14.76 8.72 -13.19 3.29 -13.99 4.20 -13.08 2.15 -23.85 3.63 -22.37 7.35 -22.65 2.83 -27.17	Limit Read Line Level dBuV dBuV 54.24 38.37 64.24 48.92 61.91 46.80 51.91 38.37 57.28 43.07 47.28 33.08 56.00 31.76 46.00 23.24 50.00 26.82	Frequence LISN Factor dB 0.11 0.11 0.11 0.12 0.12 0.14 0.13 0.33 0.33	Cable Loss Remark dB 0.28 Average 0.28 QP 0.24 QP 0.24 Average 0.10 QP 0.10 Average 0.25 QP 0.25 Average 0.20 Average	2	10	20	3

3.1.5 Test Result of AC Power-line Conducted Emissions









3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit							
UNII Devices							
For the 5.15-5.25 GHz band, N/A							
For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.							
For the 5.47-5.725 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.							
For the 5.725-5.85 GHz band, 6 dB emission bandwidth \geq 500kHz.							

3.2.2 Measuring Instruments

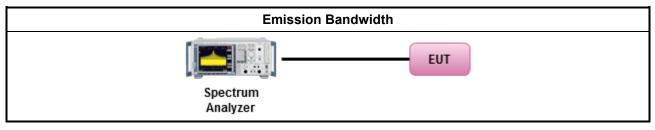
Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

		Test Method
\boxtimes	For	the emission bandwidth shall be measured using one of the options below:
	\square	Refer as FCC KDB 789033, clause C for EBW and clause D for OBW measurement.
		Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
		Refer as IC RSS-Gen, clause 6.6 for bandwidth testing.
\boxtimes	For	conducted measurement.
	\square	The EUT supports single transmit chain and measurements performed on this transmit chain.
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
		The EUT supports multiple transmit chains using options given below:
		Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
		Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.



3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Condit	ion		Emission Bandwidth (MHz)		
Modulation Mode N _{TX}	Ντχ	Freq. (MHz)	99% Bandwidth	26dB Bandwidth	
11a	1	5180	16.31	18.17	
11a	1	5200	16.34	18.82	
11a	1	5240	16.49	18.50	
HT20	1	5180	17.54	19.05	
HT20	1	5200	17.49	18.95	
HT20	1	5240	17.49	18.82	
HT40	1	5190	36.14	39.88	
HT40	1	5230	36.14	39.68	
Resu	lt		Com	nplied	

UNII Emission Bandwidth Result (5250-5350MHz band)							
Condition			Emission Bandwidth (MHz)				
Modulation Mode	Ντχ	Freq. (MHz)	99% Bandwidth	26dB Bandwidth			
11a	1	5260	16.54	18.70			
11a	1	5300	16.71	18.90			
11a	1	5320	16.66	18.70			
HT20	1	5260	17.64	19.05			
HT20	1	5300	17.56	19.27			
HT20	1	5320	17.59	19.25			
HT40	1	5270	36.18	40.16			
HT40	1	5310	36.10	39.88			
Resu	lt		Cor	nplied			

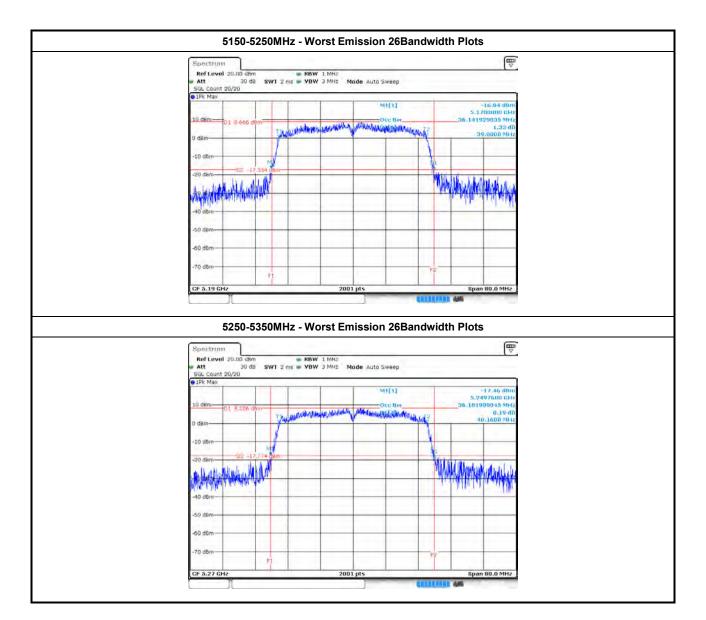




UNII Emission Bandwidth Result (5470-5725MHz band)								
Condition			Emission Bandwidth (MHz)					
Modulation Mode N _{TX} Freq. (MHz)				26dB Bandwidth				
11a	1	5500	16.46	18.40				
11a	1	5580	16.51	18.82				
11a	1	5700	16.49	18.65				
HT20	1	5500	17.56	19.15				
HT20	1	5580	17.51	18.95				
HT20	1	5700	17.56	19.00				
HT40	1	5510	36.10	39.64				
HT40	1	5550	36.10	39.92				
HT40	1	5670	36.14	39.84				
Result			Com	Iplied				

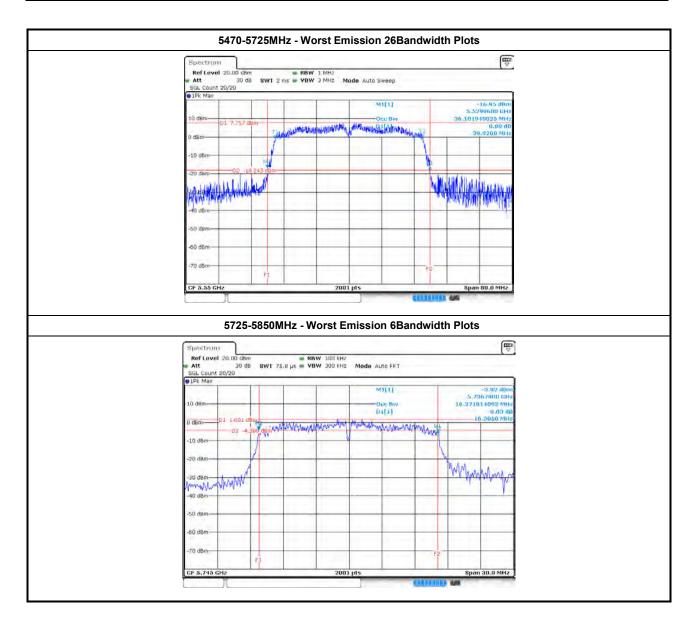
	UNII Emission Bandwidth Result (5725-5850MHz band)							
Condition			Emission Bandwidth (MHz)					
Modulation Mode	Ντχ	Freq. (MHz)	99% Bandwidth	6dB Bandwidth				
11a	1	5745	16.37	16.30				
11a	1	5785	16.37	16.30				
11a	1	5825	16.38	16.32				
HT20	1	5745	17.55	17.58				
HT20	1	5785	17.54	17.58				
HT20	1	5825	17.51	17.55				
HT40	1	5755	35.94	31.23				
HT40	1	5795	35.98	35.28				
Limi	t		-	≥ 500 kHz				
Resu	lt		Com	plied				













3.3 **RF Output Power**

3.3.1 RF Output Power Limit

	Maximum Conducted Output Power Limit								
UNI	UNII Devices								
\square	⊠ For the 5.15-5.25 GHz band:								
		Outdoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$. e.i.r.p. at any elevation angle above 30 degrees ≤ 125 mW [21dBm]							
	\boxtimes	Indoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)							
		Point-to-point AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W If G_{TX} > 23 dBi, then P_{Out} = 30 – (G_{TX} – 23).							
		Mobile or Portable Client: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.							
\boxtimes	250	the 5.25-5.35 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G_{TX} > 6 dBi, then = 24 - (G_{TX} - 6).							
\boxtimes	of 2	the 5.47-5.725 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser 50 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then = 24 - ($G_{TX} - 6$).							
\boxtimes	For	the 5.725-5.85 GHz band:							
	\boxtimes	Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$.							
		Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.							
		aximum conducted output power in dBm, e maximum transmitting antenna directional gain in dBi.							

3.3.2 Measuring Instruments

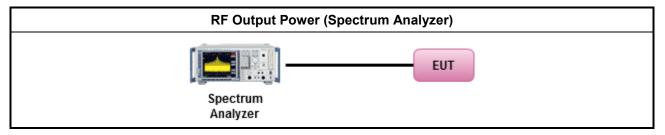
Refer a test equipment and calibration data table in this test report.



3.3.3 Test Procedures

		Test Method
\square	Max	mum Conducted Output Power
	[duty	v cycle ≥ 98% or external video / power trigger]
		Refer as FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).
		Refer as FCC KDB 789033, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)
	duty	cycle < 98% and average over on/off periods with duty factor
	\boxtimes	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
		Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wide	eband RF power meter and average over on/off periods with duty factor
		Refer as FCC KDB 789033, clause E Method PM (using an RF average power meter).
\square	For	conducted measurement.
	\boxtimes	The EUT supports single transmit chain and measurements performed on this transmit chain.
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
		The EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
		If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP _{total} = P _{total} + DG

3.3.4 Test Setup





Maximum Conducted Output Power (5150-5250MHz band)							
Modulation Mode	Ντχ	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit		
11a	1	5180	17.37	2.79	30.00		
11a	1	5200	17.44	2.79	30.00		
11a	1	5240	17.35	2.79	30.00		
HT20	1	5180	16.41	2.79	30.00		
HT20	1	5200	16.36	2.79	30.00		
HT20	1	5240	16.30	2.79	30.00		
HT40	1	5190	15.75	2.79	30.00		
HT40	1	5230	15.81	2.79	30.00		
Result				Complied			

3.3.5 Test Result of Maximum Conducted Output Power

	Maximum Conducted Output Power (5250-5350MHz band)							
Modulation Mode	Ντχ	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit			
11a	1	5260	17.33	2.79	23.72			
11a	1	5300	17.26	2.79	23.76			
11a	1	5320	17.20	2.79	23.72			
HT20	1	5260	16.25	2.79	23.80			
HT20	1	5300	16.16	2.79	23.85			
HT20	1	5320	16.11	2.79	23.84			
HT40	1	5270	15.63	2.79	24.00			
HT40	1	5310	15.58	2.79	24.00			
Resu	Result			Complied				





Maximum Conducted Output Power (5470-5725MHz band)							
Modulation Mode	Ντχ	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit		
11a	1	5500	15.40	2.79	23.65		
11a	1	5580	15.45	2.79	23.75		
11a	1	5700	15.30	2.79	23.71		
HT20	1	5500	14.29	2.79	23.82		
HT20	1	5580	14.35	2.79	23.78		
HT20	1	5700	14.20	2.79	23.79		
HT40	1	5510	14.53	2.79	24.00		
HT40	1	5550	14.55	2.79	24.00		
HT40	1	5670	14.49	2.79	24.00		
Result				Complied			

	Maximum Conducted Output Power (5725-5850MHz band)						
Modulation Mode	Ντχ	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit		
11a	1	5745	16.78	2.79	30.00		
11a	1	5785	16.45	2.79	30.00		
11a	1	5825	16.37	2.79	30.00		
HT20	1	5745	15.78	2.79	30.00		
HT20	1	5785	15.60	2.79	30.00		
HT20	1	5825	15.36	2.79	30.00		
HT40	1	5755	15.28	2.79	30.00		
HT40	1	5795	15.02	2.79	30.00		
Result				Complied			





Note 1: RF Output Power Plots w/o Duty Factor





Note 1: RF Output Power Plots w/o Duty Factor



3.4 Peak Power Spectral Density

3.4.1 Peak Power Spectral Density Limit

	Peak Power Spectral Density Limit							
UN	UNII Devices							
\boxtimes	For	the 5.15-5.25 GHz band:						
		Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$.						
		Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$.						
		Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G_{TX} > 23 dBi, then P_{Out} = 17 – (G_{TX} – 23).						
		Mobile or Portable Client: the peak power spectral density (PPSD) \leq 11 dBm/MHz. If G _{TX} > 6 dBi, then PPSD= 11 - (G _{TX} - 6)						
\boxtimes		the 5.25-5.35 GHz band, the peak power spectral density (PPSD) \leq 11 dBm/MHz. If G _{TX} > 6 dBi, PPSD= 11 – (G _{TX} – 6).						
\boxtimes		the 5.47-5.725 GHz band, the peak power spectral density (PPSD) \leq 11 dBm/MHz. If G _{TX} > 6 dBi, PPSD= 11 – (G _{TX} – 6).						
\boxtimes	For	the 5.725-5.85 GHz band:						
		Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) \leq 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then PPSD= 30 – ($G_{TX} - 6$).						
		Point-to-point systems (P2P): the peak power spectral density (PPSD) \leq 30 dBm/500kHz.						
pov	PPSD = peak power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz G_{TX} = the maximum transmitting antenna directional gain in dBi.							

3.4.2 Measuring Instruments

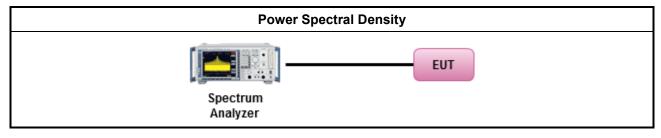
Refer a test equipment and calibration data table in this test report.



3.4.3 Test Procedures

		Test Method							
	Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options:								
		Refer as FCC KDB 789033, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth							
	[duty	/ cycle ≥ 98% or external video / power trigger]							
		Refer as FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).							
		Refer as FCC KDB 789033, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)							
	duty	cycle < 98% and average over on/off periods with duty factor							
	\boxtimes	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).							
		Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)							
\boxtimes	For	conducted measurement.							
	\boxtimes	The EUT supports single transmit chain and measurements performed on this transmit chain.							
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.							
		The EUT supports multiple transmit chains using options given below:							
		Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.							
		Option 2: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.							
		If multiple transmit chains, EIRP PPSD calculation could be following as methods: PPSD _{total} = PPSD ₁ + PPSD ₂ + + PPSD _n (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP _{total} = PPSD _{total} + DG							
		Each individually PPSD plots refer as test report clause 3.3.5 with each individually PPSD plots.							
R									

3.4.4 Test Setup





3.4.5 Test Result of Peak Power Spectral Density

	Peak Power Spectral Density Result (5150-5250MHz band)							
Modulation Mode	Ντχ	Freq. (MHz)	Peak Power Spectral Density (dBm/MHz)	PSD Limit (dBm/MHz)	Antenna Gain (dBi)			
11a	1	5180	7.34	17.00	2.79			
11a	1	5200	7.45	17.00	2.79			
11a	1	5240	7.36	17.00	2.79			
HT20	1	5180	6.18	17.00	2.79			
HT20	1	5200	6.41	17.00	2.79			
HT20	1	5240	6.15	17.00	2.79			
HT40	1	5190	2.89	17.00	2.79			
HT40	1	5230	2.61	17.00	2.79			
Resu	ılt			Complied				

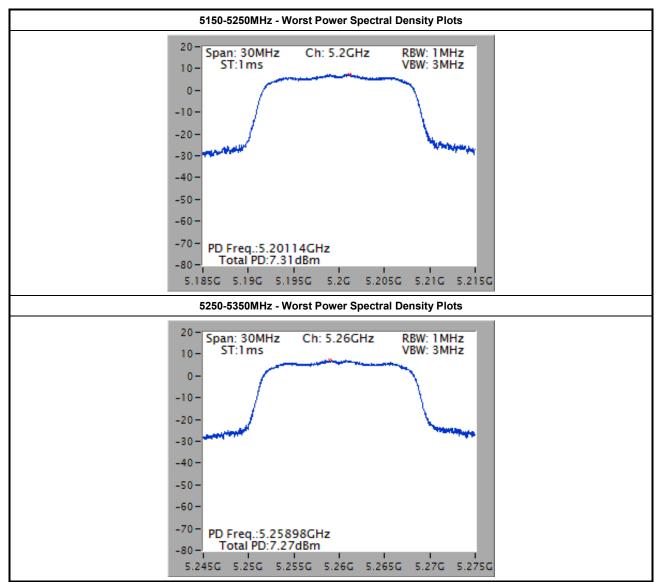
	Peak Power Spectral Density Result (5250-5350MHz band)							
Modulation Mode	Ντχ	Freq. (MHz)	Peak Power Spectral Density (dBm/MHz)	PSD Limit (dBm/MHz)	Antenna Gain (dBi)			
11a	1	5260	7.41	11.00	2.79			
11a	1	5300	7.09	11.00	2.79			
11a	1	5320	7.26	11.00	2.79			
HT20	1	5260	6.11	11.00	2.79			
HT20	1	5300	6.01	11.00	2.79			
HT20	1	5320	6.12	11.00	2.79			
HT40	1	5270	2.69	11.00	2.79			
HT40	1	5310	2.91	11.00	2.79			
Resu	lt			Complied				



	Peak Power Spectral Density Result (5470-5725MHz band)							
Modulation Mode	N _{TX}	Freq. (MHz)	Peak Power Spectral Density (dBm/MHz)	PSD Limit (dBm/MHz)	Antenna Gain (dBi)			
11a	1	5500	5.47	11.00	2.79			
11a	1	5580	5.59	11.00	2.79			
11a	1	5700	5.35	11.00	2.79			
HT20	1	5500	4.09	11.00	2.79			
HT20	1	5580	4.05	11.00	2.79			
HT20	1	5700	4.17	11.00	2.79			
HT40	1	5510	2.00	11.00	2.79			
HT40	1	5550	2.17	11.00	2.79			
HT40	1	5670	1.49	11.00	2.79			
Resu	ult	•		Complied	·			

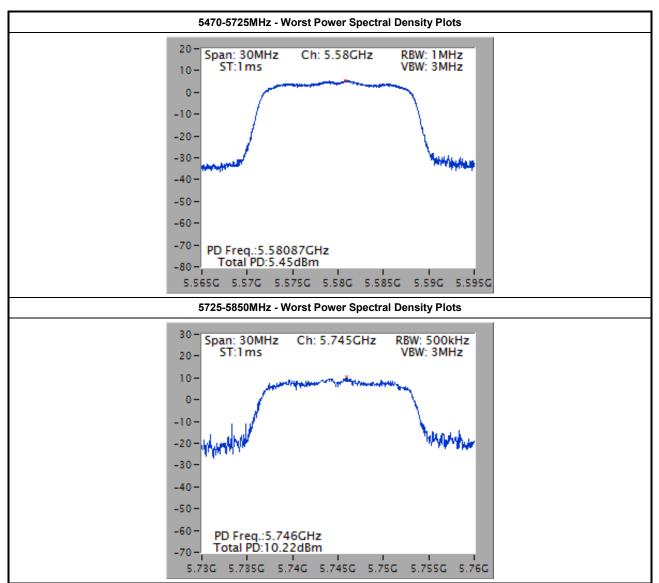
	Peak Power Spectral Density Result (5725-5850MHz band)							
Modulation Mode	Ντχ	Freq. (MHz)	Peak Power Spectral Density (dBm/500kHz)	PSD Limit (dBm/500kHz)	Antenna Gain (dBi)			
11a	1	5745	10.36	30.00	2.79			
11a	1	5785	10.29	30.00	2.79			
11a	1	5825	10.16	30.00	2.79			
HT20	1	5745	9.52	30.00	2.79			
HT20	1	5785	9.37	30.00	2.79			
HT20	1	5825	8.96	30.00	2.79			
HT40	1	5755	6.95	30.00	2.79			
HT40	1	5795	6.35	30.00	2.79			
Resu	ılt			Complied				





Note 1: Power Density Plots w/o Duty Factor



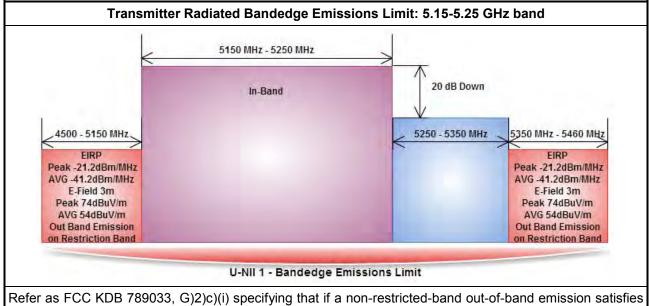


Note 1: Power Density Plots w/o Duty Factor

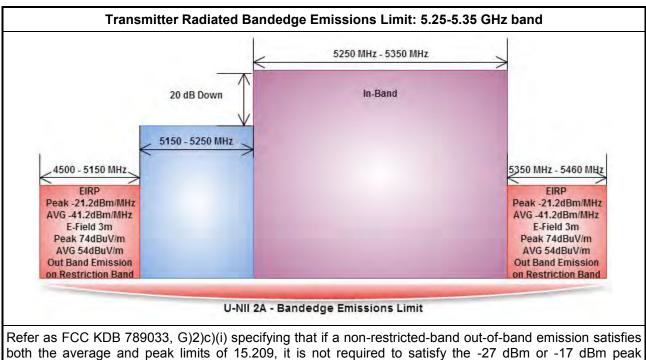


3.5 Transmitter Bandedge Emissions

3.5.1 Transmitter Radiated Bandedge Emissions Limit

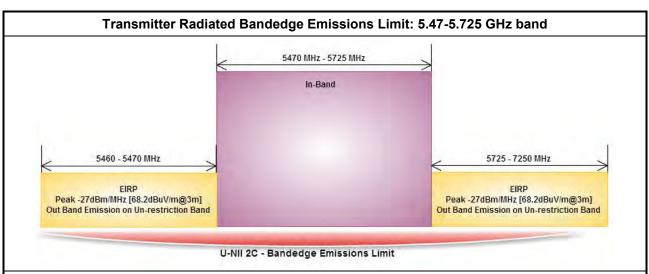


Refer as FCC KDB 789033, G)2)c)(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.

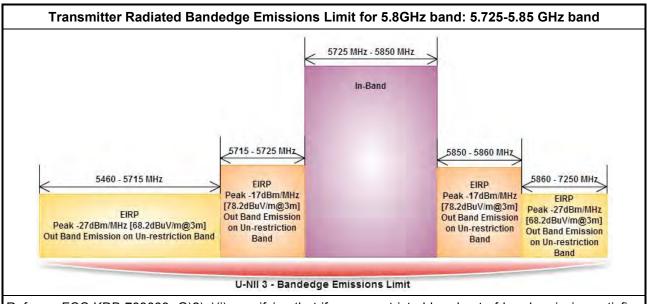


Refer as FCC KDB 789033, G)2)c)(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.





Refer as FCC KDB 789033, G)2)c)(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.



Refer as FCC KDB 789033, G)2)c)(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.

3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

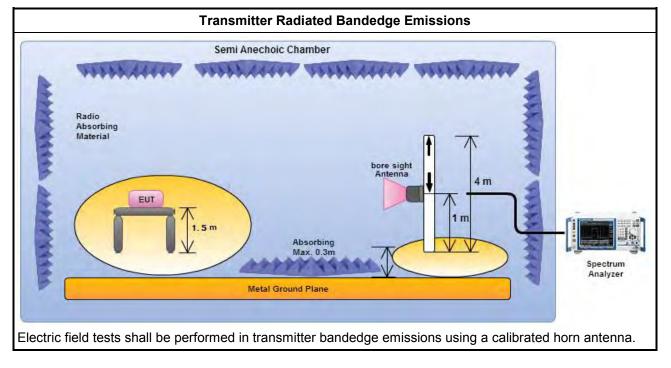


3.5.3 Test Procedures

	Test Method
\boxtimes	The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
\boxtimes	Refer as ANSI C63.10, clause 6.10 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
	If EUT operate in adjacent contiguous bands, bandedge testing performed at the lowest frequency channel at lower-band and highest frequency channel at higher-band. Transmitter in-band emissions will consist of adjacent contiguous bands (e.g., IEEE 802.11ac VHT160 The lowest frequency channel at lower-band and highest frequency channel at higher-band in-band emissions will consist of two adjacent contiguous bands.)
	Operating in 5.15-5.25 GHz band (lower-band) and 5.25-5.35 GHz band (higher-band).
	Operating in 5.47-5.725 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).
	If EUT operate in individual non-contiguous bands, bandedge testing performed at the lowest frequency channel and highest frequency channel within lower-band and higher-band. (e.g., (e.g., IEEE 802.11ac VHT160)
	Operating in 5.25-5.35 GHz band (lower-band) and 5.47-5.725 GHz band (higher-band).
	Operating in 5.15-5.25 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).
\square	For the transmitter unwanted emissions shall be measured using following options below:
	Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
	Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.
	Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).
	Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).
	Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW \geq 1/T, where T is pulse time.
	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
	Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.
	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
\square	For the transmitter bandedge emissions shall be measured using following options below:
	Refer as FCC KDB 789033, clause G)3)d) for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
	Refer as ANSI C63.10, clause 6.10 for band-edge testing.
	Refer as ANSI C63.10, clause 6.10.6.2 for marker-delta method for band-edge measurements.
\square	For radiated measurement, refer as ANSI C63.10, clause 6.6. Test distance is 3m.
	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). Measurements in the bandedge are typically made at a closer distance 3m, because the instrumentation noise floor is typically close to the radiated emission limit.



3.5.4 Test Setup





3.5.5 Transmitter Radiated Bandedge Emissions (with Antenna)

Modulation Mode	N _{TX}	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11a	1	5180	3	5149.90	62.51	74	5150.00	49.87	54	V
11a	1	5240	3	5350.80	57.58	74	5398.80	46.95	54	V
HT20	1	5180	3	5149.90	61.08	74	5150.00	48.69	54	V
HT20	1	5240	3	5386.80	57.64	74	5361.00	46.98	54	V
HT40	1	5190	3	5147.74	64.41	74	5149.50	51.55	54	V
HT40	1	5230	3	5358.00	58.88	74	5395.20	46.91	54	V

Modulation Mode	N _{TX}	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11a	1	5260	3	5358.60	59.02	74	5377.80	46.96	54	V
11a	1	5320	3	5350.04	63.50	74	5350.18	49.48	54	V
HT20	1	5260	3	5359.80	58.17	74	5350.20	46.69	54	V
HT20	1	5320	3	5350.74	61.85	74	5350.32	48.32	54	V
HT40	1	5270	3	5383.20	58.10	74	5356.80	46.92	54	V
HT40	1	5310	3	5350.80	66.86	74	5350.20	52.75	54	V





Modulation Mode	Ντχ	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11a	1	5500	3	5468.24	60.06	68.20	5453.52	47.81	54.00	V
11a	1	5700	3	5726.24	60.90	68.20	5725.16	48.62	68.20	V
HT20	1	5500	3	5465.84	58.82	68.20	5458.32	47.92	54.00	V
HT20	1	5700	3	5725.16	61.31	68.20	5726.24	48.52	68.20	V
HT40	1	5510	3	5468.20	63.75	68.20	5459.20	47.93	54.00	V
HT40	1	5670	3	5725.00	59.73	68.20	5733.00	47.98	68.20	V

Modulation Mode	Ντχ	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Pol.
11a	1	5745	3	5710.27	60.75	68.2	5723.71	66.43	78.2	V
11a	1	5825	3	5865.61	60.17	68.2	5850.49	62.33	78.2	V
HT20	1	5745	3	5714.05	60.70	68.2	5724.97	65.83	78.2	V
HT20	1	5825	3	5873.17	60.64	68.2	5851.75	61.18	78.2	V
HT40	1	5755	3	5714.74	61.70	68.2	5723.32	65.47	78.2	V
HT40	1	5795	3	5885.50	59.71	68.2	5854.30	59.92	78.2	V



3.6 Transmitter Unwanted Emissions

3.6.1 Transmitter Radiated Unwanted Emissions Limit

Unwanted emiss	sions below 1 GHz and re	stricted band emissions a	bove 1GHz 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: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

	Un-restricted band emissions above 1GHz Limit
Operating Band	Limit
5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]
5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]
5.725 - 5.85 GHz	5.715 5.725 GHz: e.i.r.p17 dBm [78.2 dBuV/m@3m] 5.85 5.86 GHz: e.i.r.p17 dBm [78.2 dBuV/m@3m] Other un-restricted band: e.i.r.p27 dBm [68.2 dBuV/m@3m]
performed in the ne	y be performed at a distance other than the limit distance provided they are not ear field and the emissions to be measured can be detected by the measurement performing measurements at a distance other than that specified, the results shal the specified distance using an extrapolation factor of 20 dB/decade (inverse of

linear distance for field-strength measurements, inverse of linear distance-squared for power-density

3.6.2 Measuring Instruments

measurements).

Refer a test equipment and calibration data table in this test report.

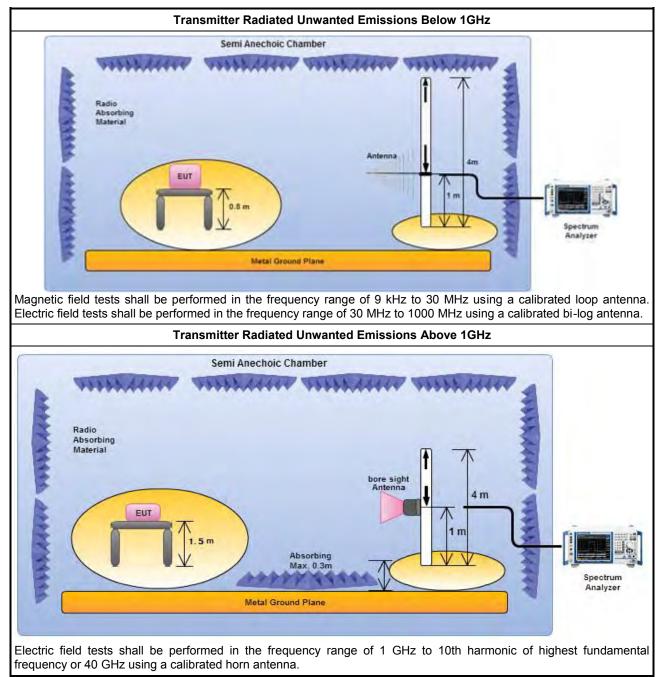


3.6.3 Test Procedures

		Test Method
	perfe equi abov are i be e dista	isurements may be performed at a distance other than the limit distance provided they are not ormed in the near field and the emissions to be measured can be detected by the measurement ipment. Measurements shall not be performed at a distance greater than 30 m for frequencies ve 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less impractical. When performing measurements at a distance other than that specified, the results shall extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear ance for field-strength measurements, inverse of linear distance-squared for power-density asurements).
\square	The	average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
\square	For	the transmitter unwanted emissions shall be measured using following options below:
	\boxtimes	Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
	\square	Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.
		Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).
		Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).
		Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW \geq 1/T, where T is pulse time.
		Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
		Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.
		Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
\boxtimes	For	radiated measurement.
	\boxtimes	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
	\boxtimes	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
	\square	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz. For 1 GHz to 5 GHz, test distance is 3m; For 5 GHz to 40 GHz, test distance is 3m.
\square	The	any unwanted emissions level shall not exceed the fundamental emission level.
\bowtie		implitude of spurious emissions that are attenuated by more than 20 dB below the permissible value no need to be reported.



3.6.4 Test Setup



3.6.5 Transmitter Radiated Unwanted Emissions-with Antenna (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

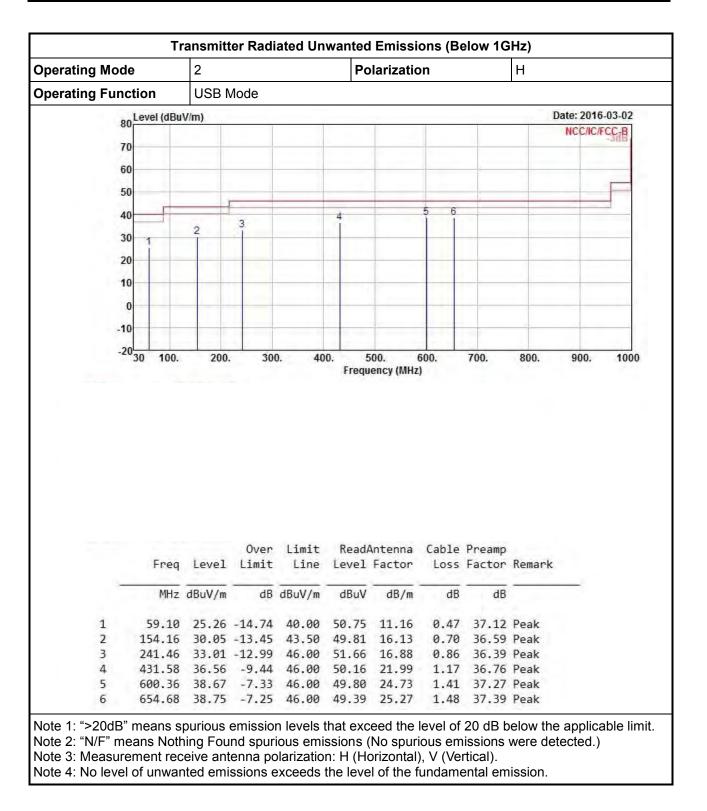


	ode	2			Po	olarizati	on		V		
perating Fu	Inction	USB I	Mode						1		
	80 Level (dBu	V/m)					_		I)ate: 20'	16-03-02
										NCC/K	FCCB
	70										
	60										
	50							_	_		F
							5	-	6		-
	40	2 .				1					
	30	2 3				-					
	20	-					-	_			
	10										
				·							
	0				-						
	-10						-			-	
						And States		-		-	1 T +r
	-20 <mark>30 100.</mark>	200.	. 300	0. 40		60. ency (MHz	600. :)	700.	800.	900.	100
	-20 <mark>30 100.</mark>	200.	. 300	0. 40				700.	800.	900.	100
			Over	Limit	Frequ Read/	ency (MHz Antenna	cable	Preamp		900.	100
		200.	Over	Limit	Frequ Read/	lency (MHz	cable	Preamp	800. Remark	900.	100
	Freq		Over Limit	Limit	Frequ Read/	ency (MHz Antenna	cable	Preamp		900.	100
1	Freq MHz	Level dBuV/m	Over Limit dB	Limit Line dBuV/m	Read/ Level dBuV	Antenna Factor dB/m	Cable Loss dB	Preamp Factor dB	Remark	900.	100
	Freq MHz 41.64	Level dBuV/m 28.71	Over Limit dB -11.29	Limit Line	Read/ Level dBuV 47.59	Antenna Factor dB/m 18.02	Cable Loss dB 0.38	Preamp Factor dB 37.28	Remark Peak	900.	100
1	Freq MHz 41.64 154.16 187.14	Level dBuV/m 28.71 31.26 28.93	Over Limit dB -11.29 -12.24 -14.57	Limit Line dBuV/m 40.00 43.50 43.50	Read/ Level dBuV 47.59 51.02 50.19	Antenna Factor dB/m 18.02 16.13 14.42	Cable Loss dB 0.38 0.70 0.77	Preamp Factor dB 37.28 36.59 36.45	Remark Peak Peak Peak Peak	900.	100
1 2 3 4	Freq MHz 41.64 154.16 187.14 503.36	Level dBuV/m 28.71 31.26 28.93 36.94	Over Limit dB -11.29 -12.24 -14.57 -9.06	Limit Line dBuV/m 40.00 43.50 43.50 43.60	Read/ Level dBuV 47.59 51.02 50.19 49.46	Antenna Factor dB/m 18.02 16.13 14.42 23.18	Cable Loss dB 0.38 0.70 0.77 1.29	Preamp Factor dB 37.28 36.59 36.45 36.99	Remark Peak Peak Peak Peak Peak	900.	100
1 2 3	Freq MHz 41.64 154.16 187.14 503.36 598.42	Level dBuV/m 28.71 31.26 28.93 36.94 42.94	Over Limit dB -11.29 -12.24 -14.57 -9.06 -3.06	Limit Line dBuV/m 40.00 43.50 43.50	Frequ Read/ Level dBuV 47.59 51.02 50.19 49.46 54.10	Antenna Factor dB/m 18.02 16.13 14.42 23.18 24.69	Cable Loss dB 0.38 0.70 0.77 1.29 1.41	Preamp Factor dB 37.28 36.59 36.45	Remark Peak Peak Peak Peak QP	900.	100

3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

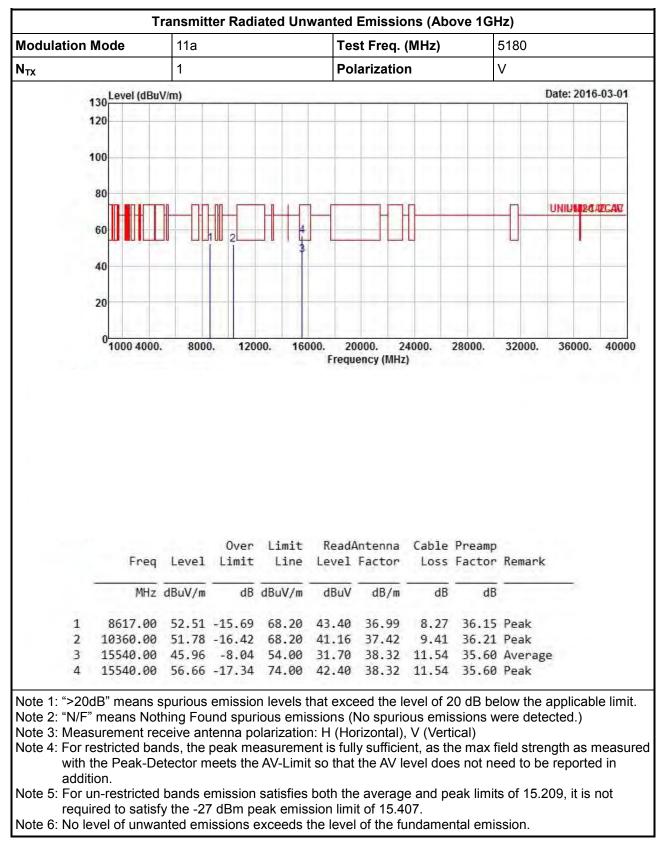




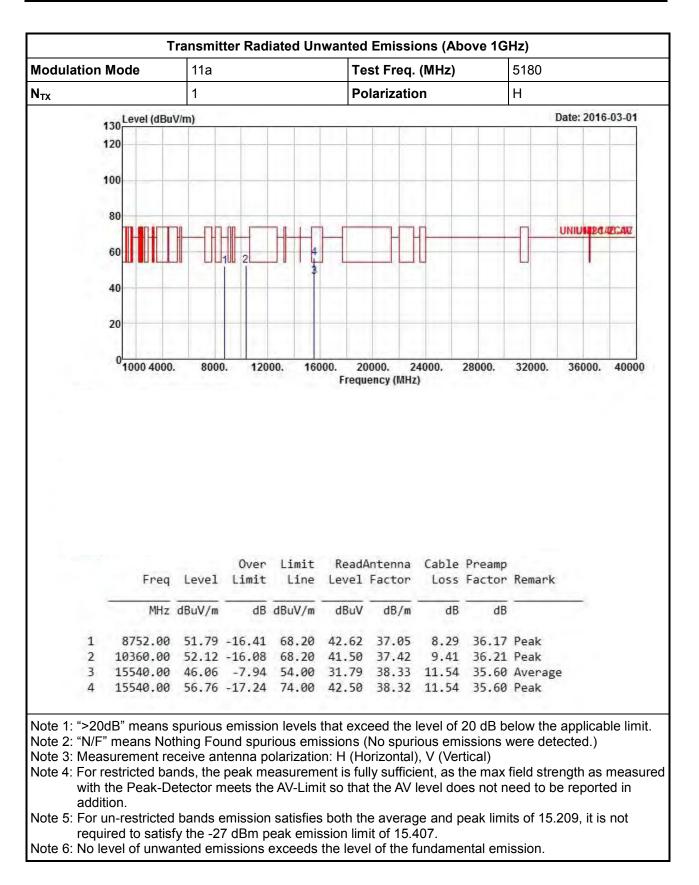




3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5150-5250MHz

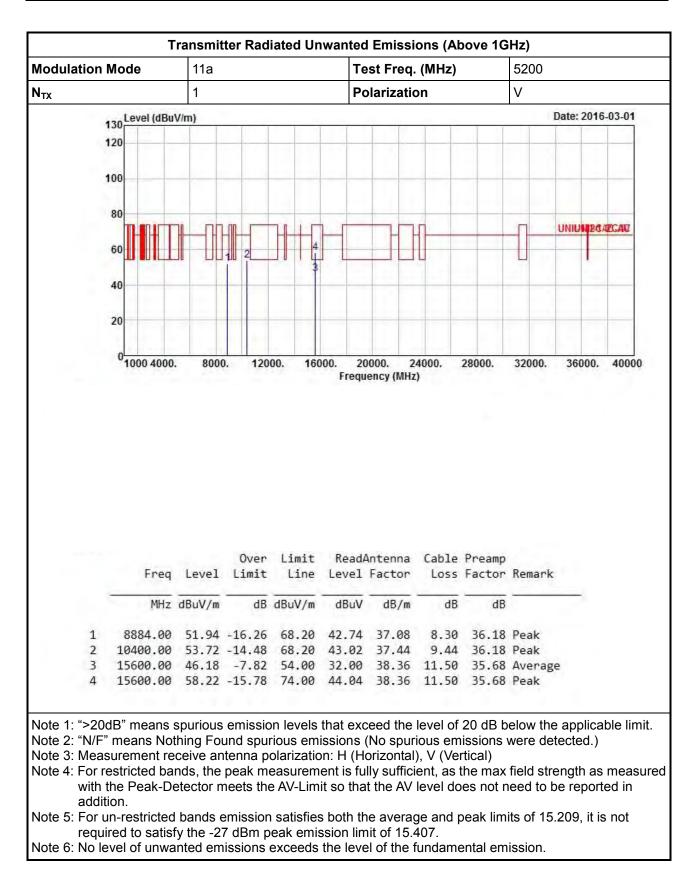




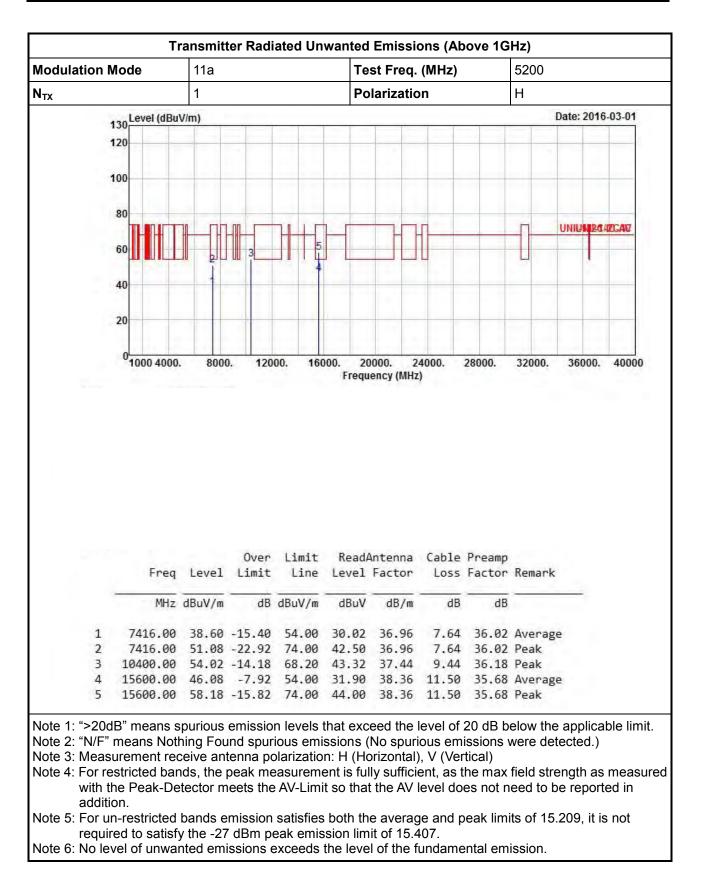






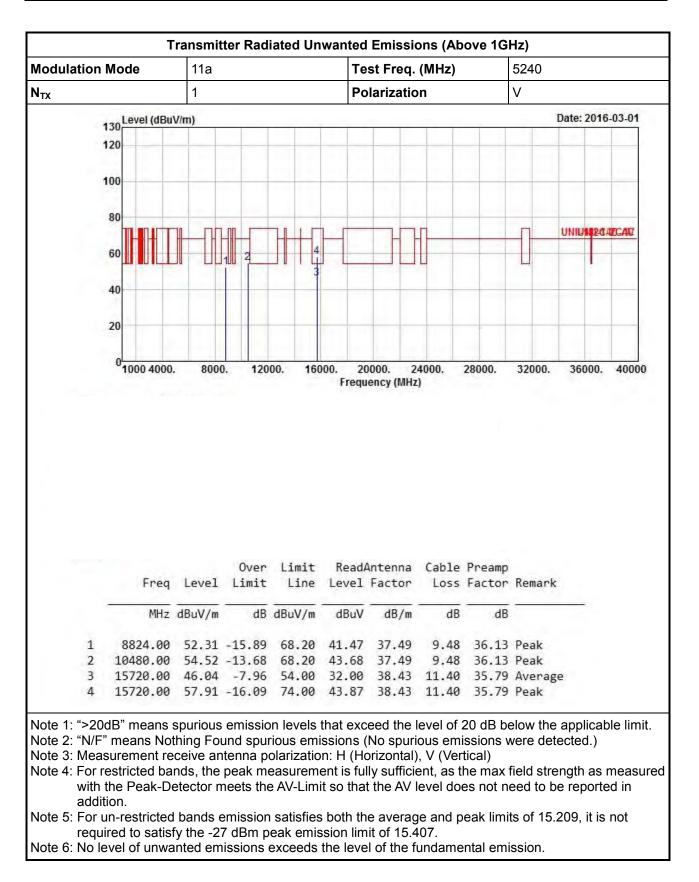






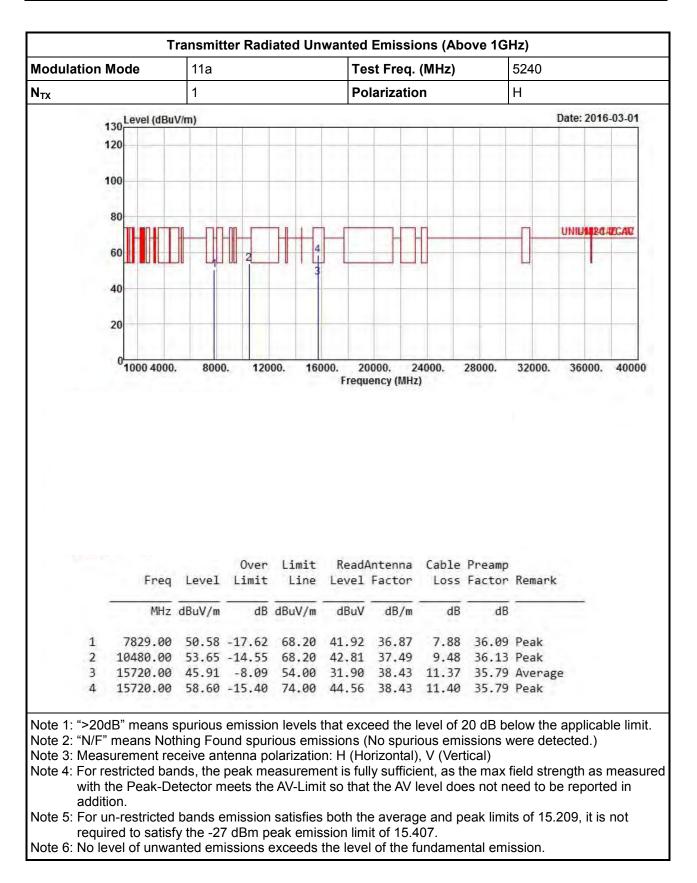




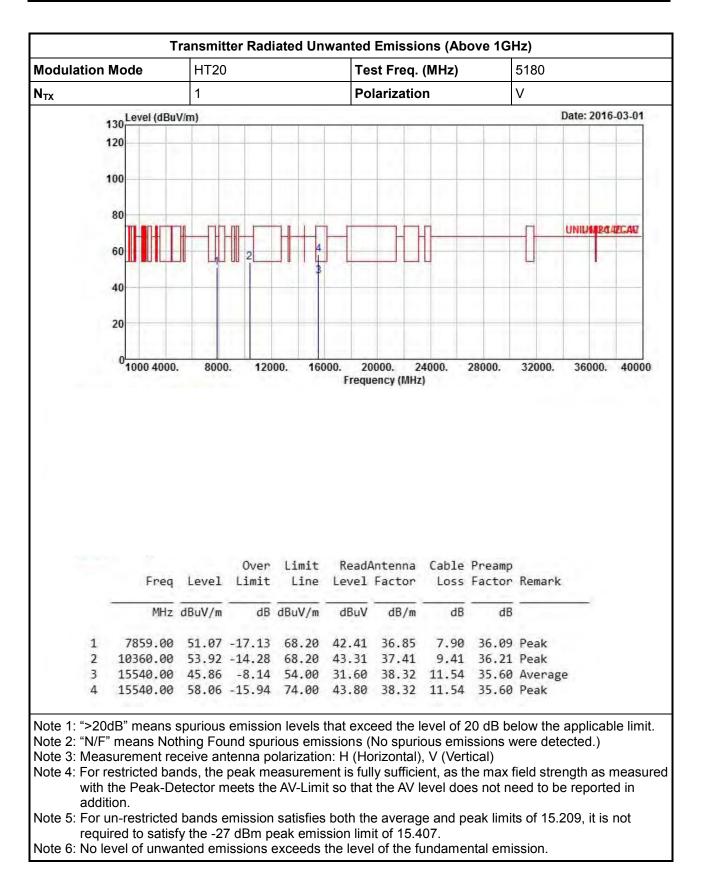




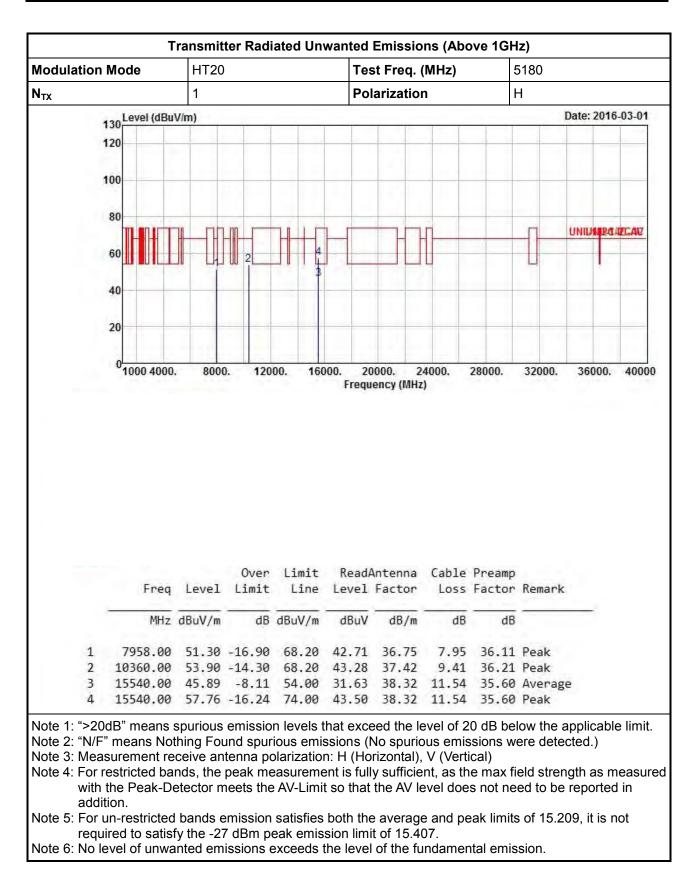






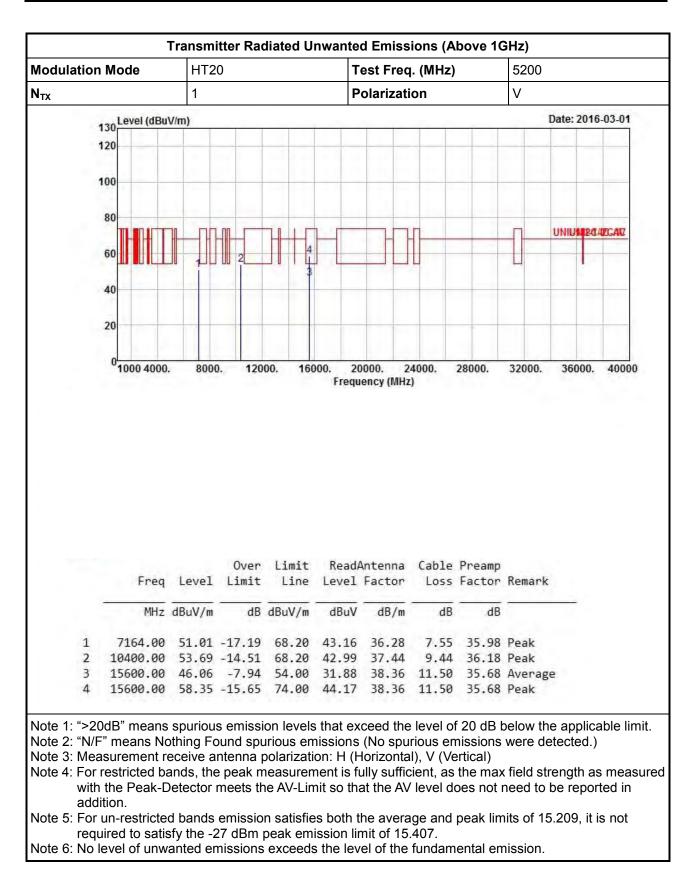






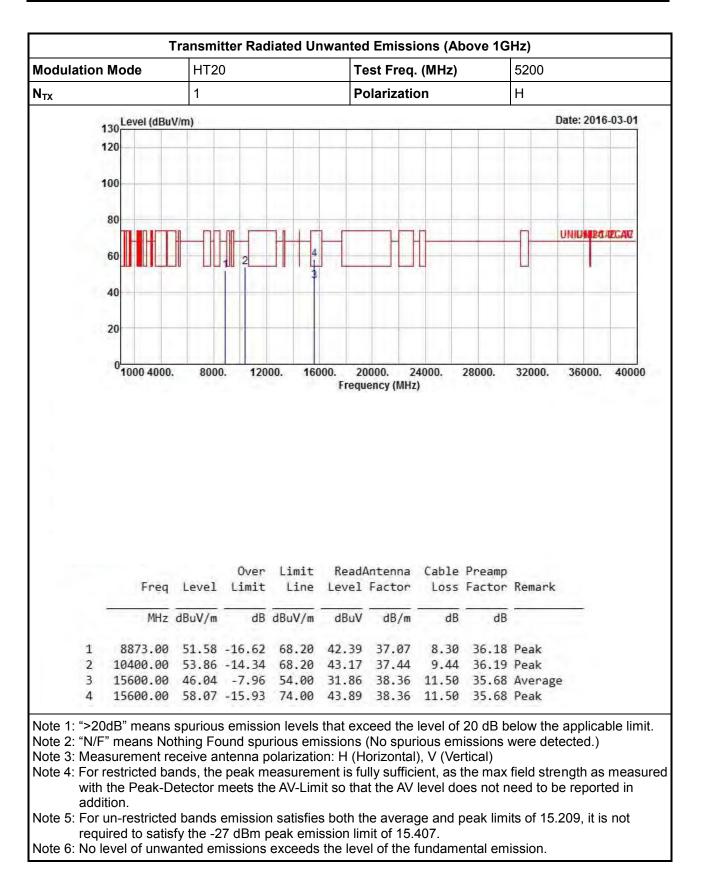






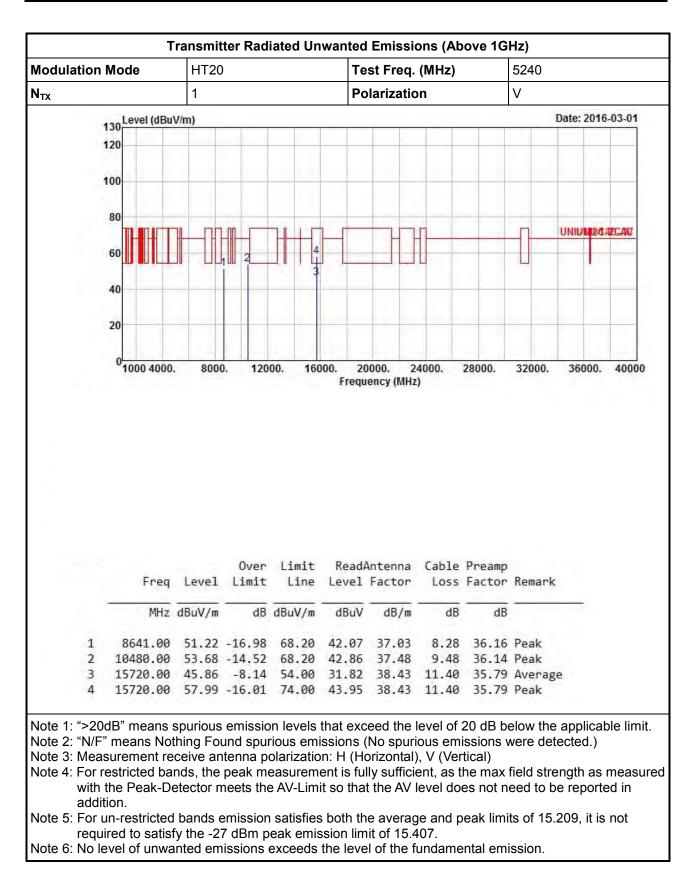






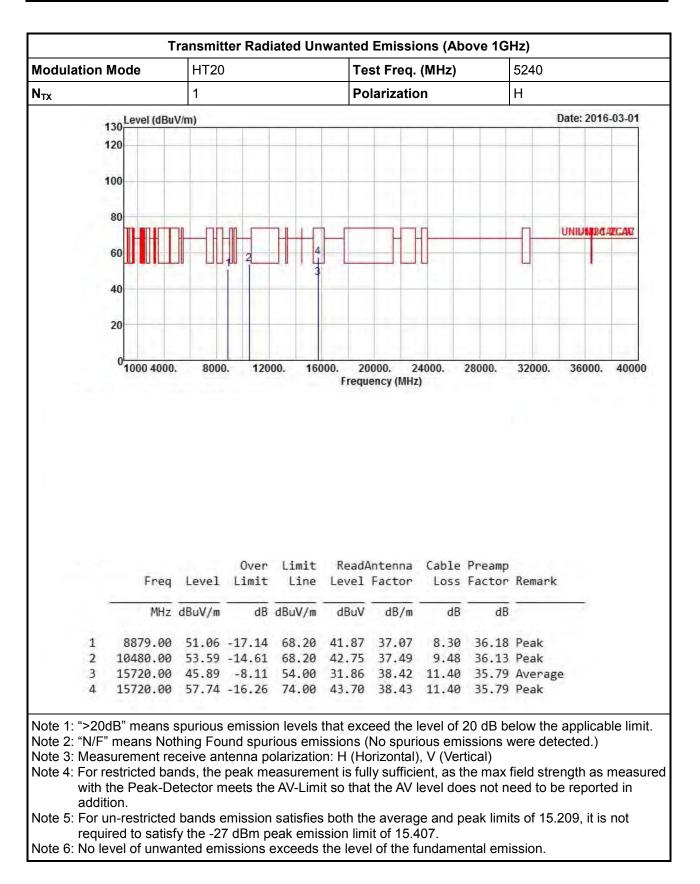






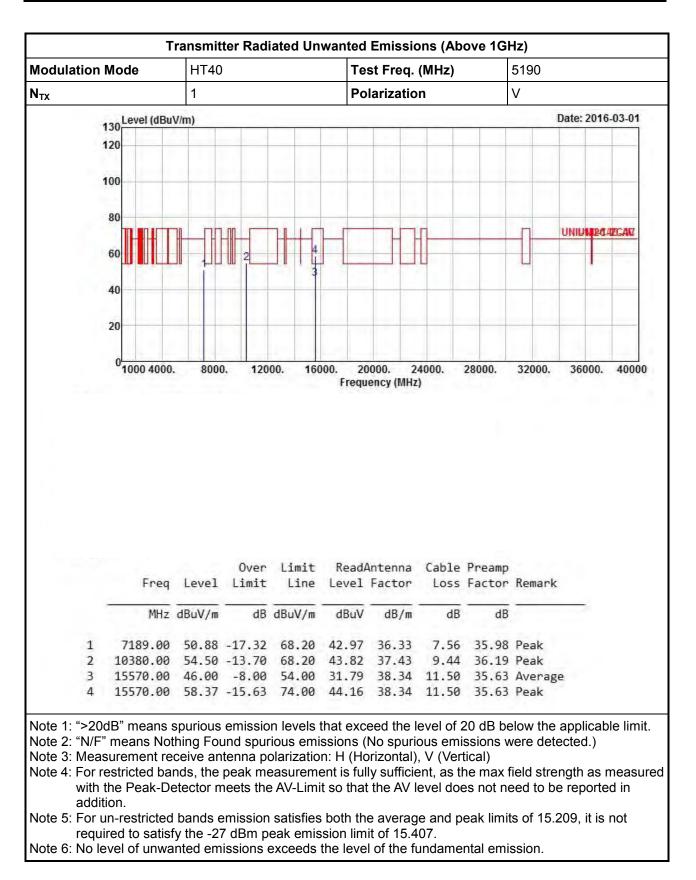




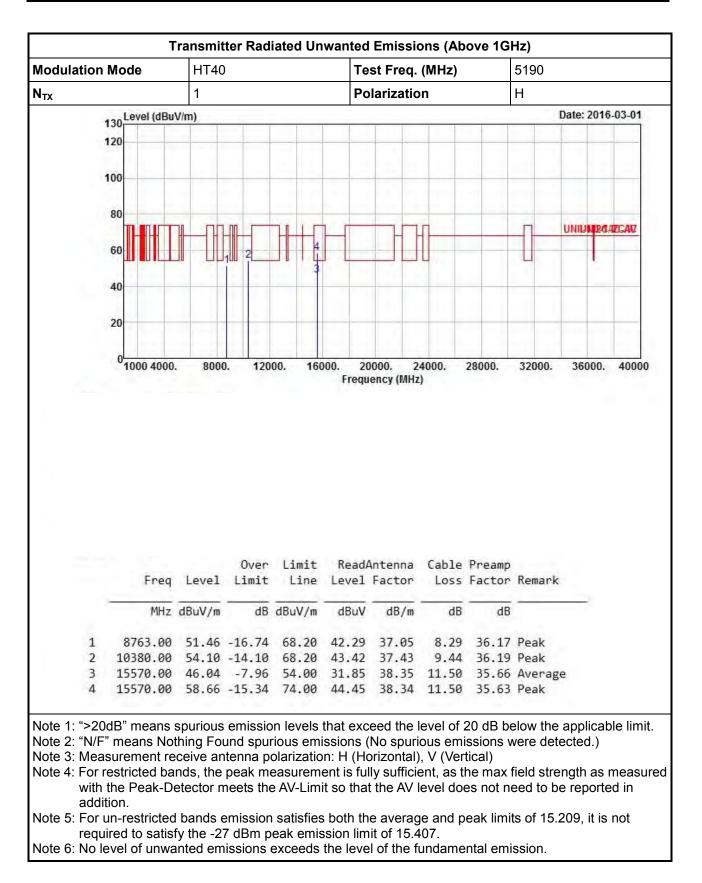


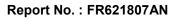




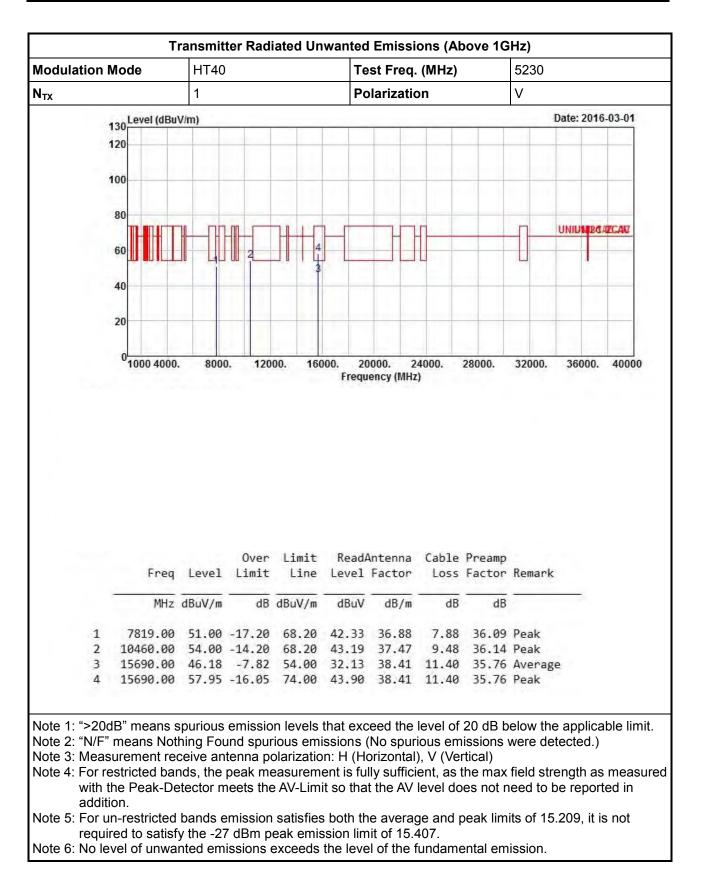






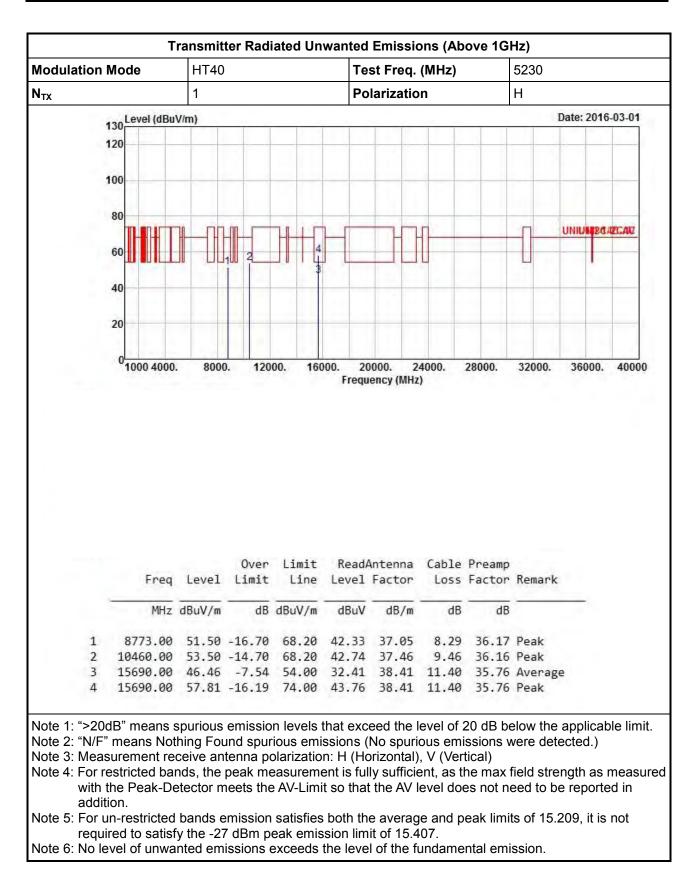






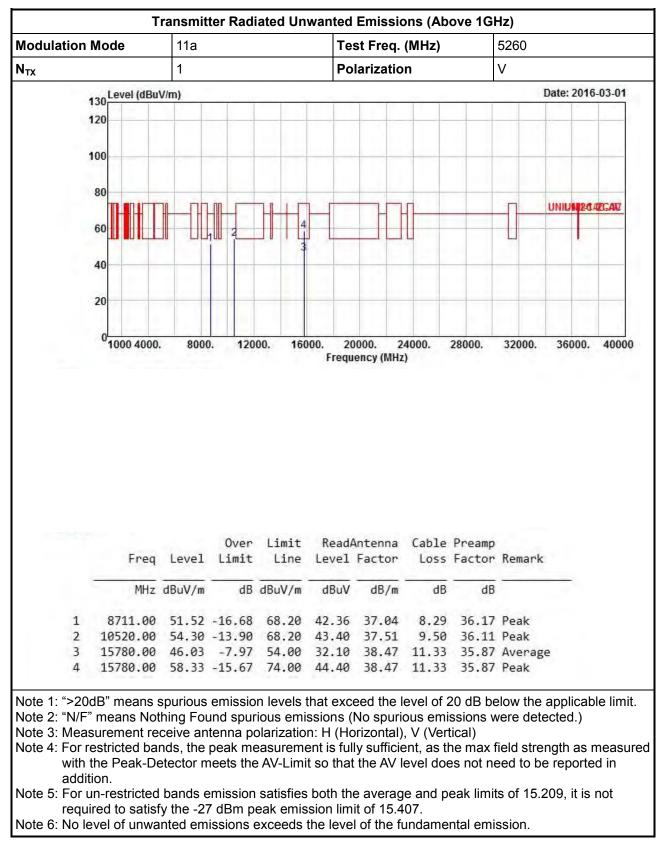






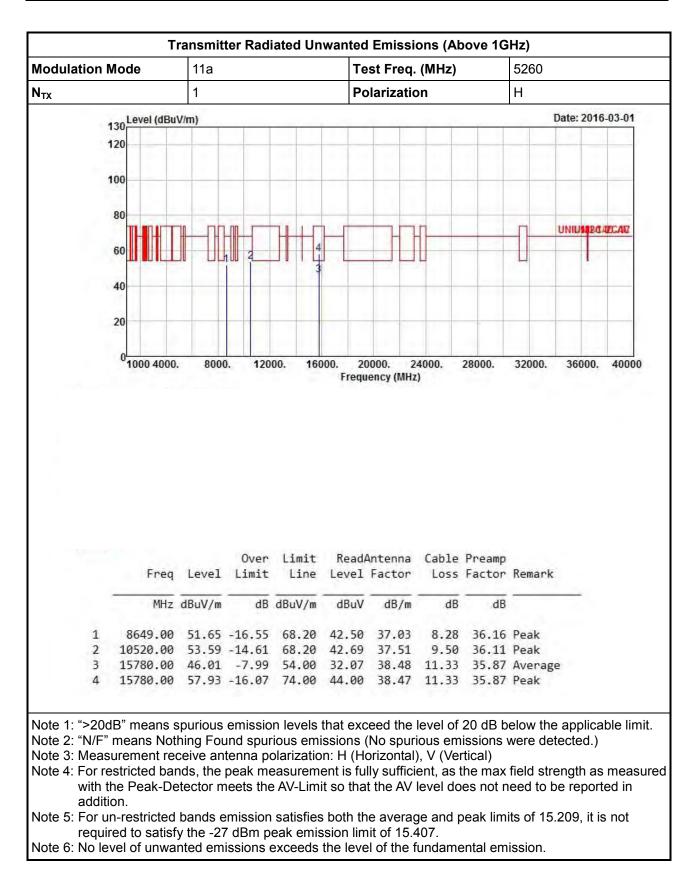


3.6.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5250-5350MHz



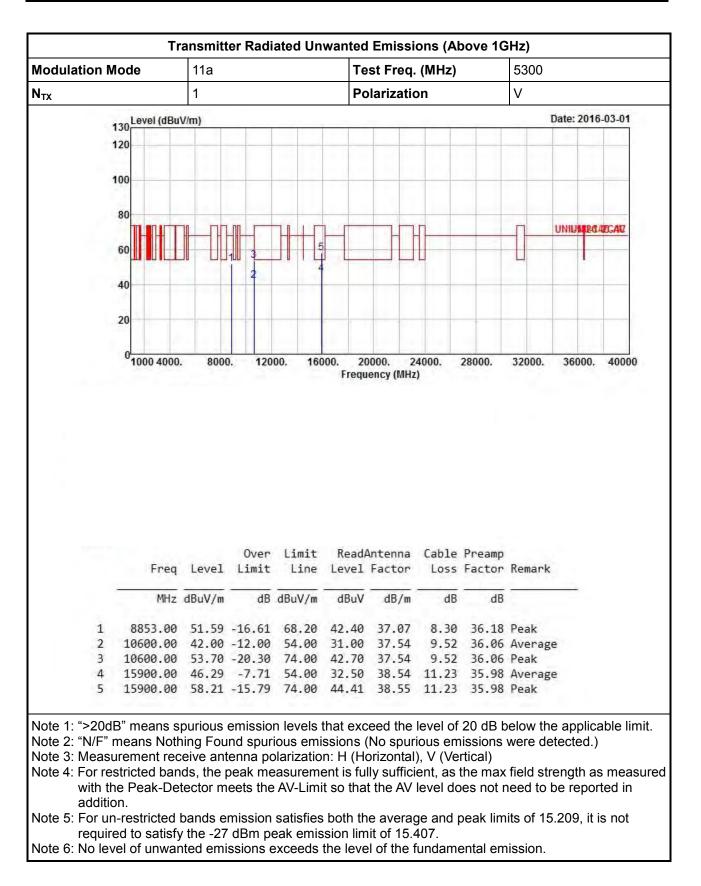




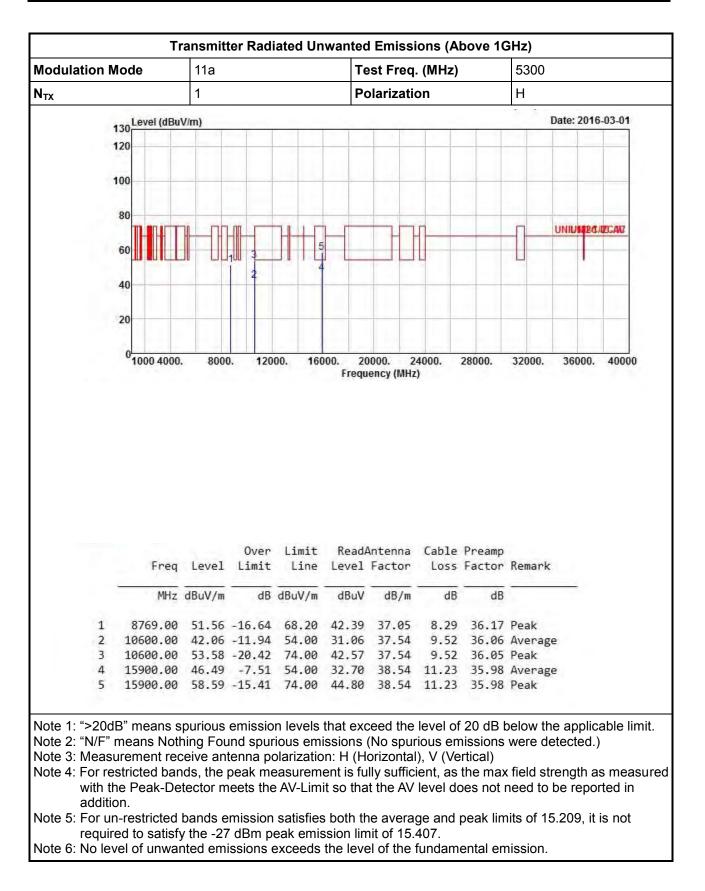


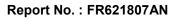




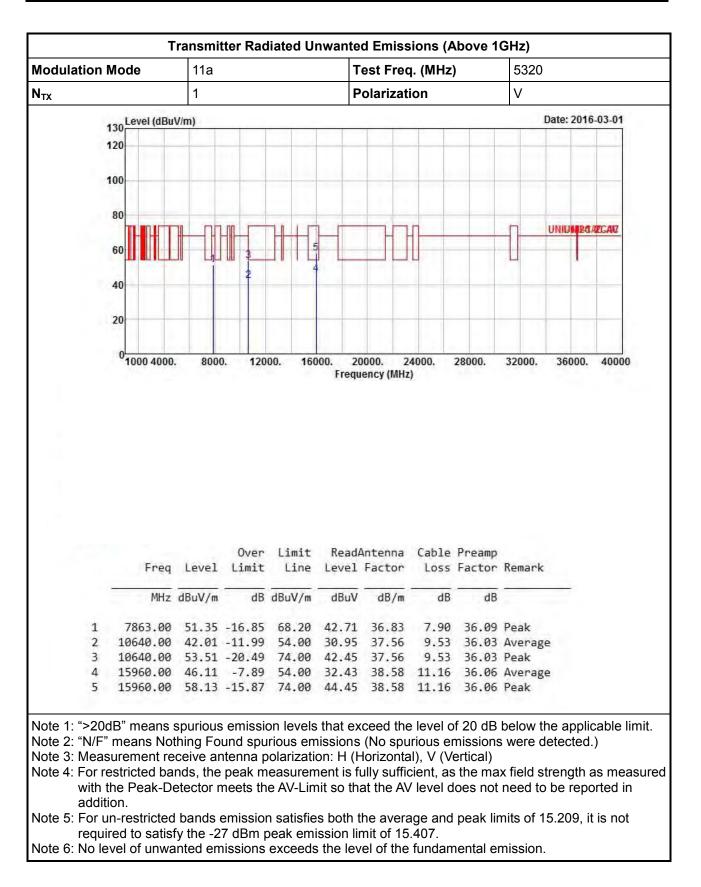


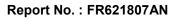




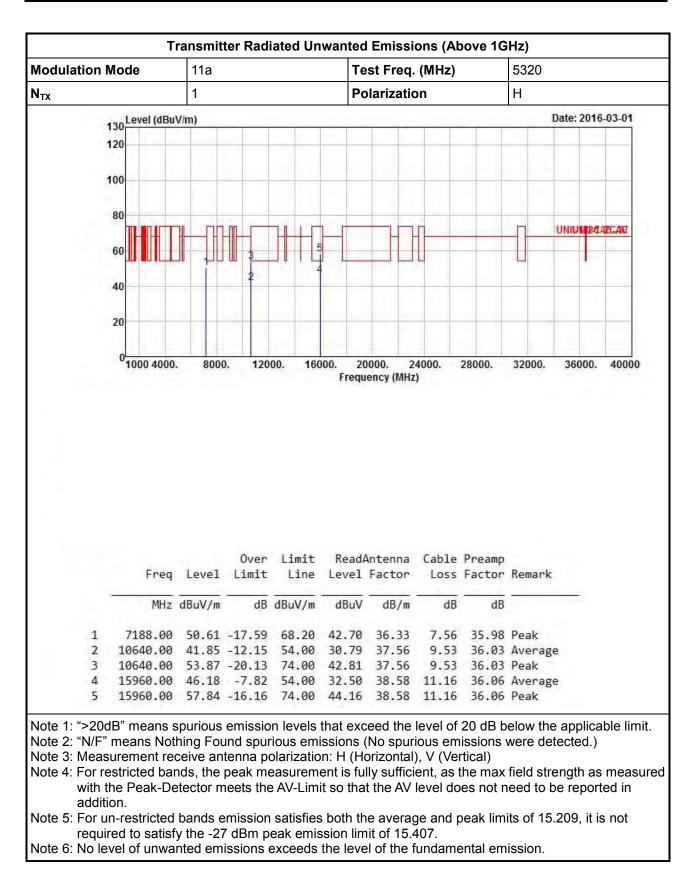


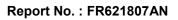




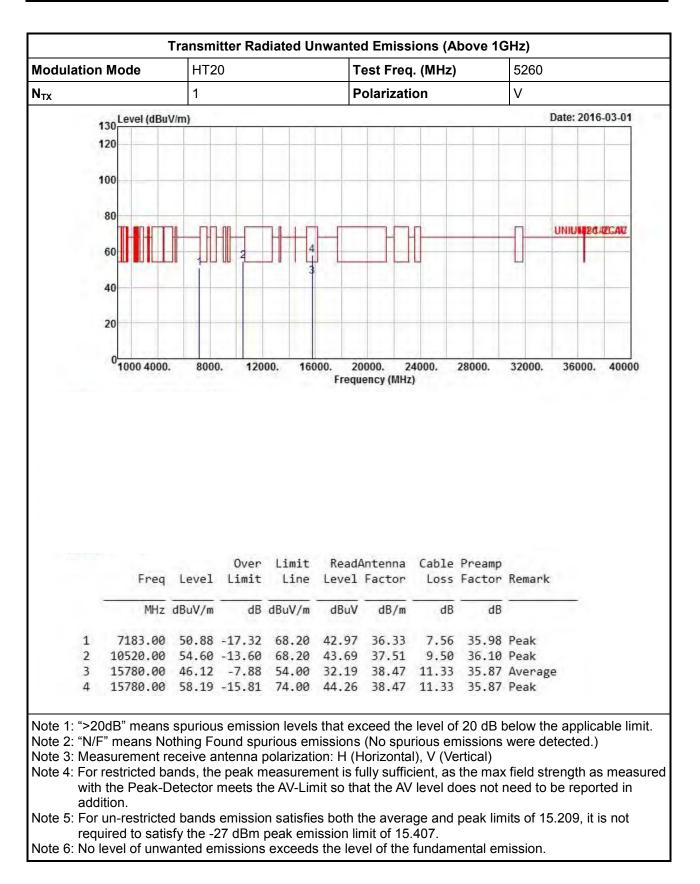




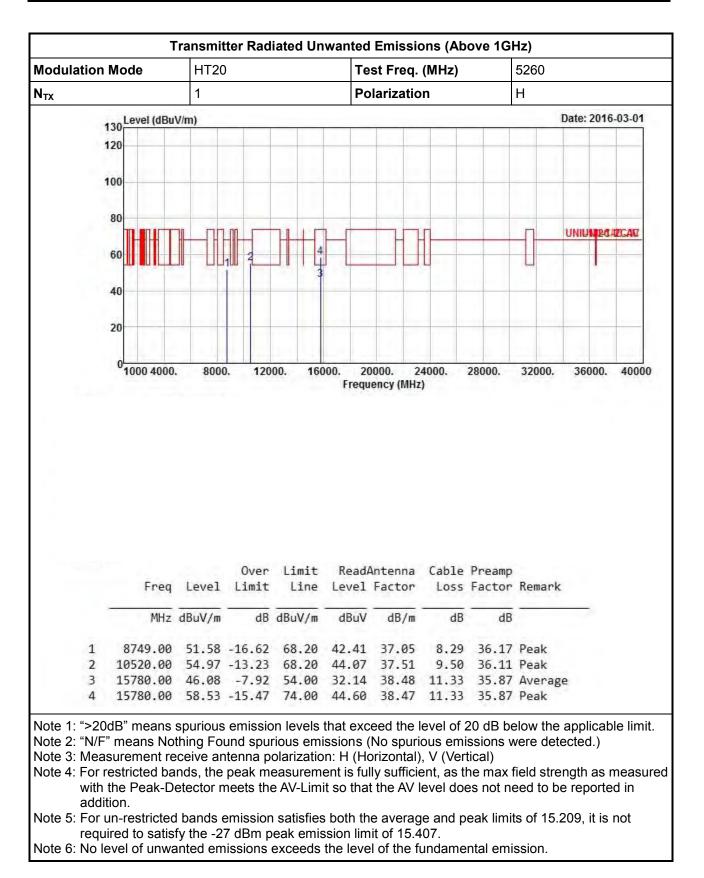






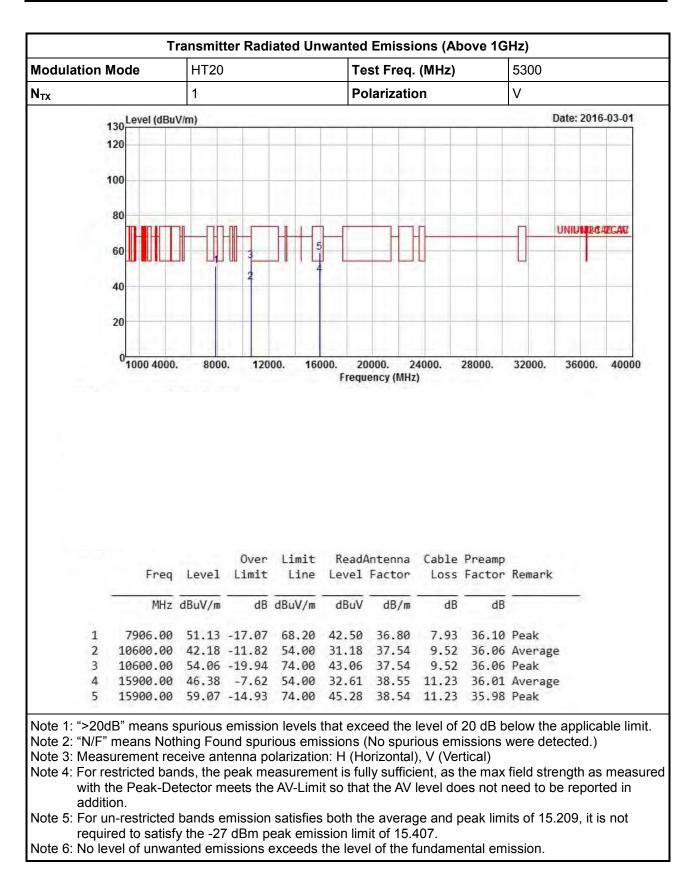




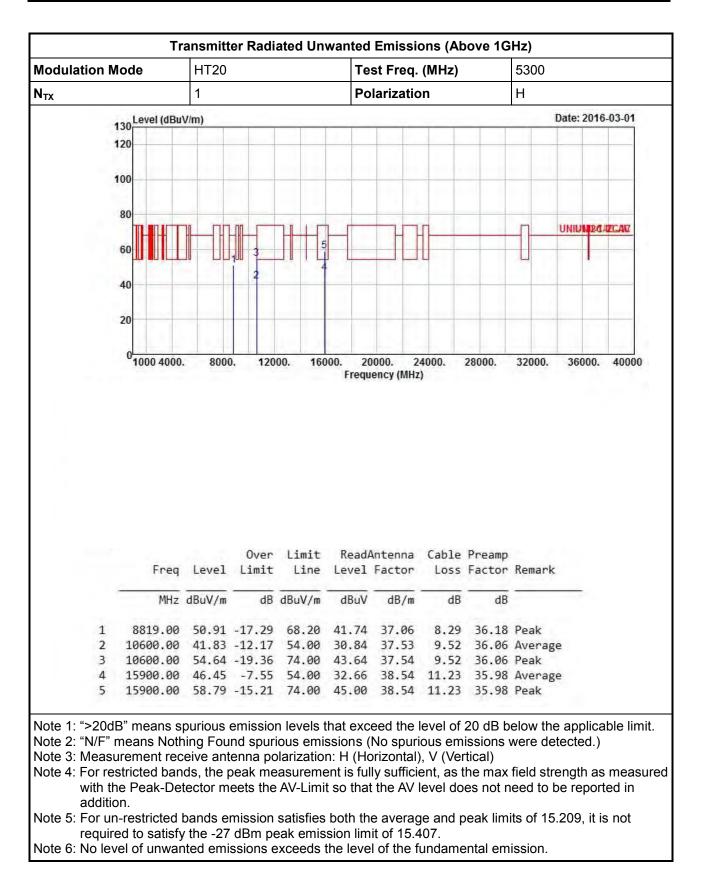






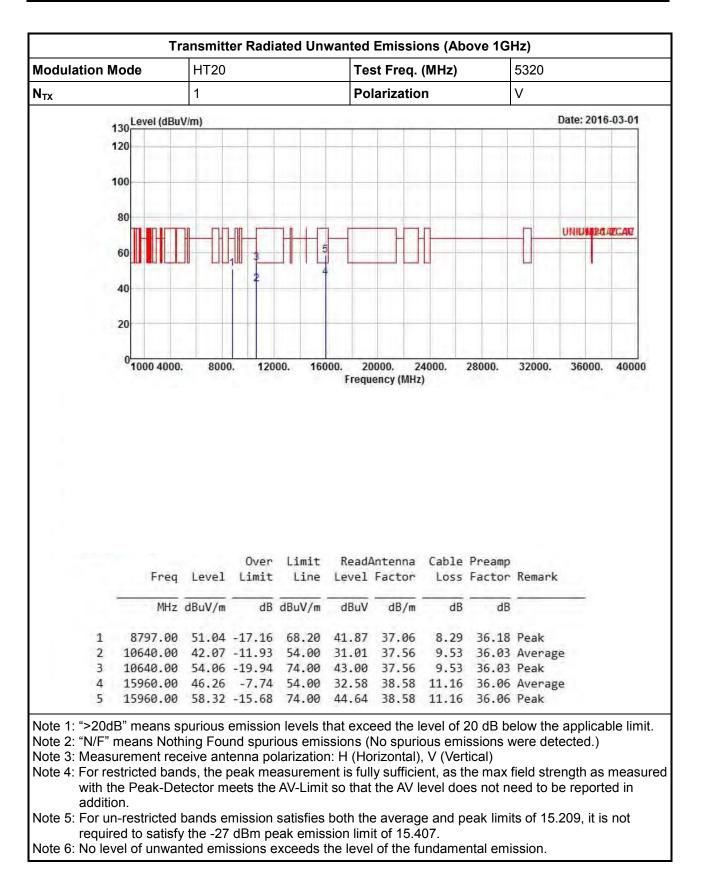




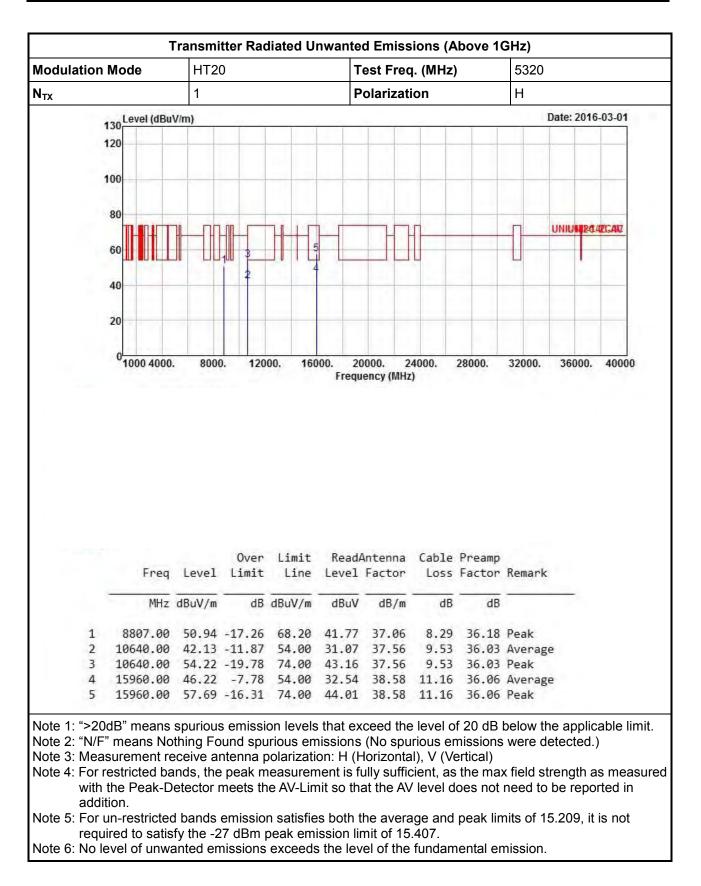






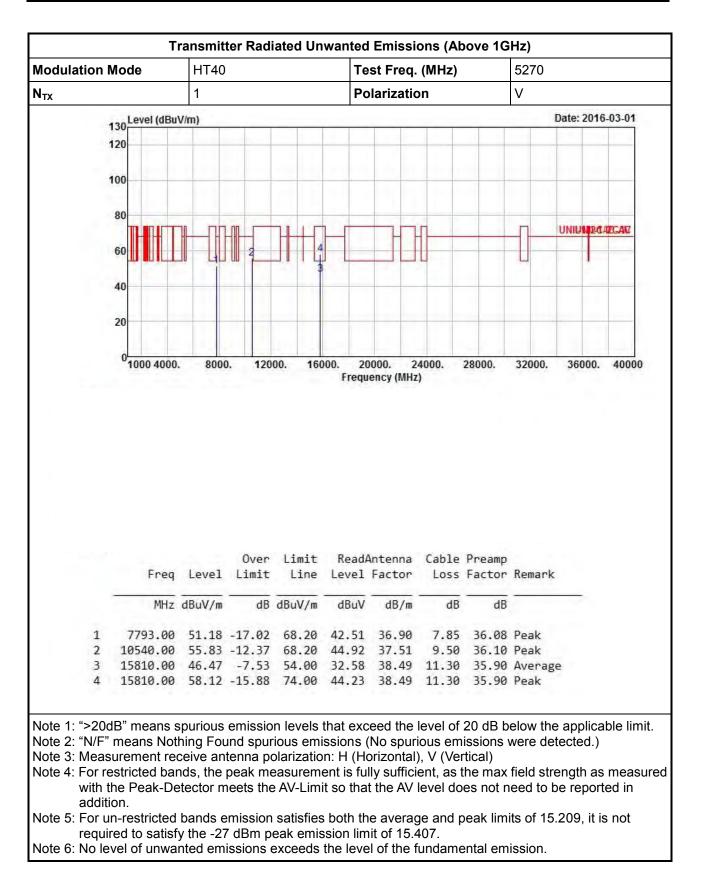




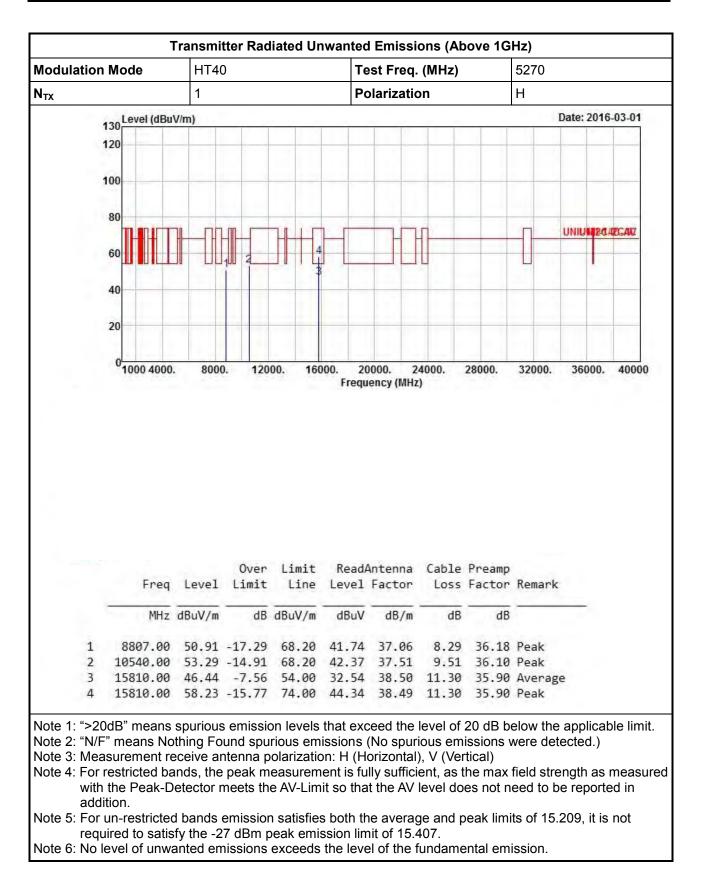




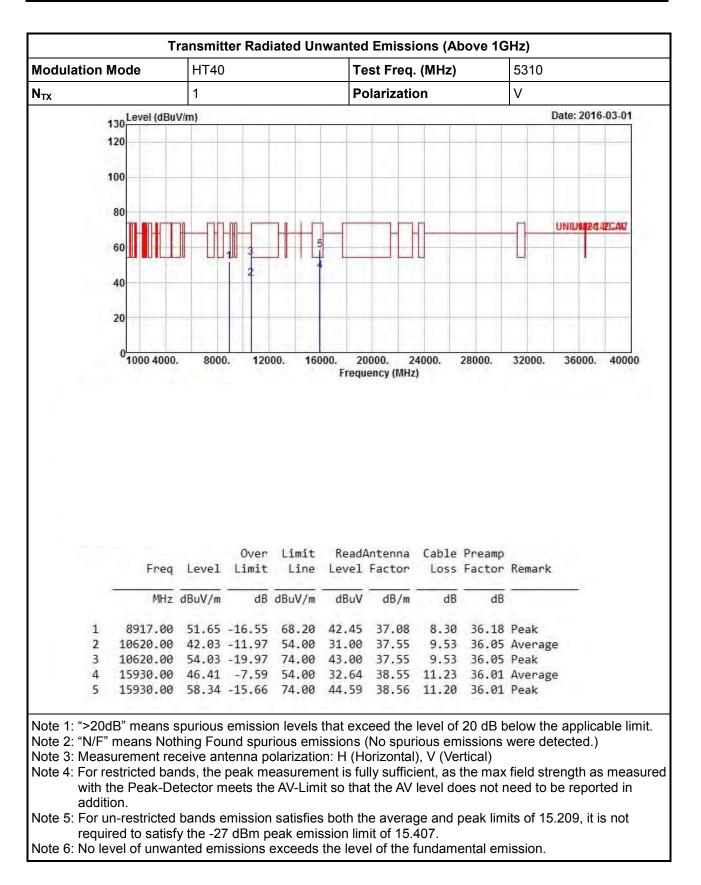




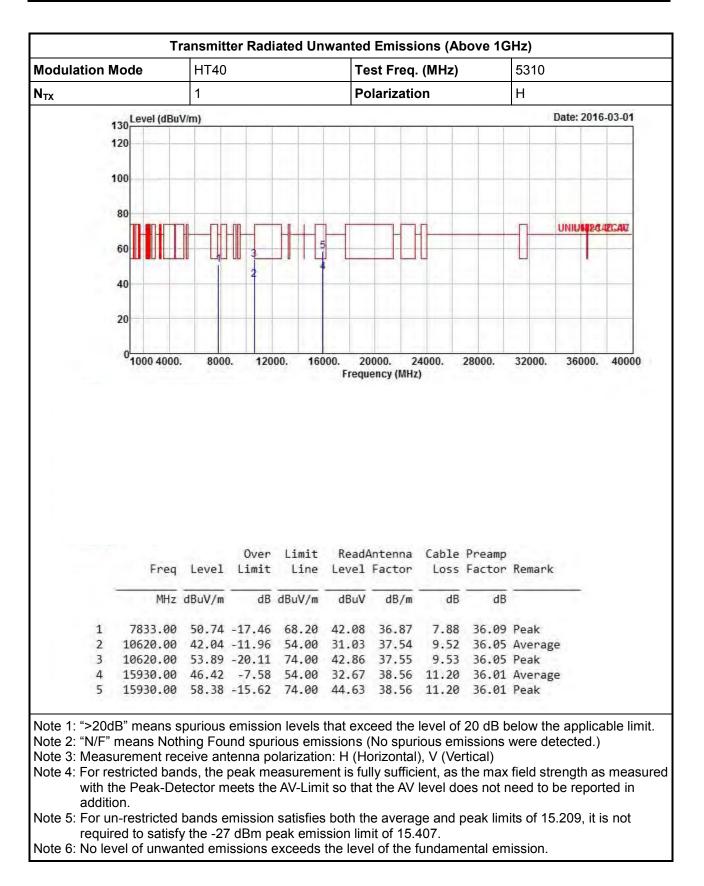






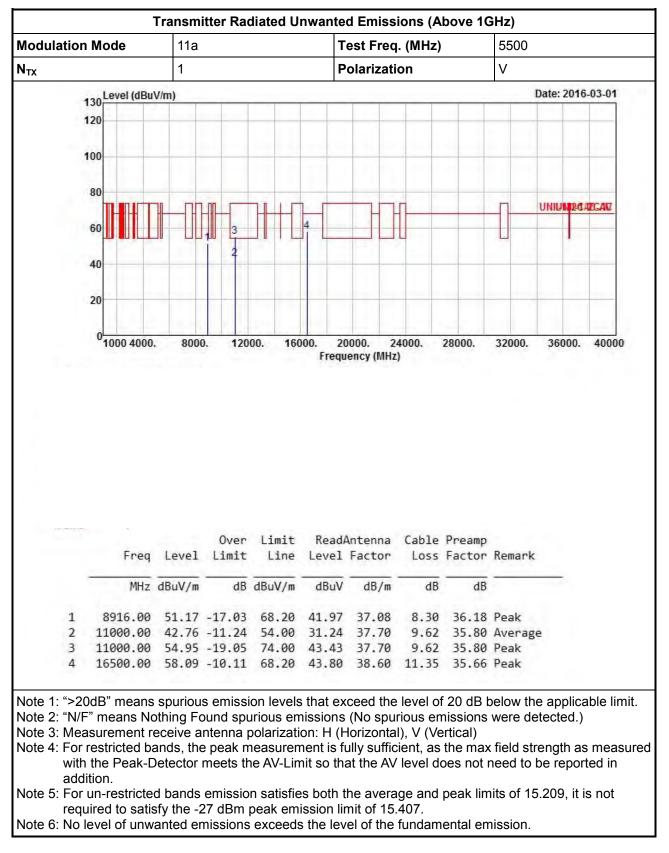




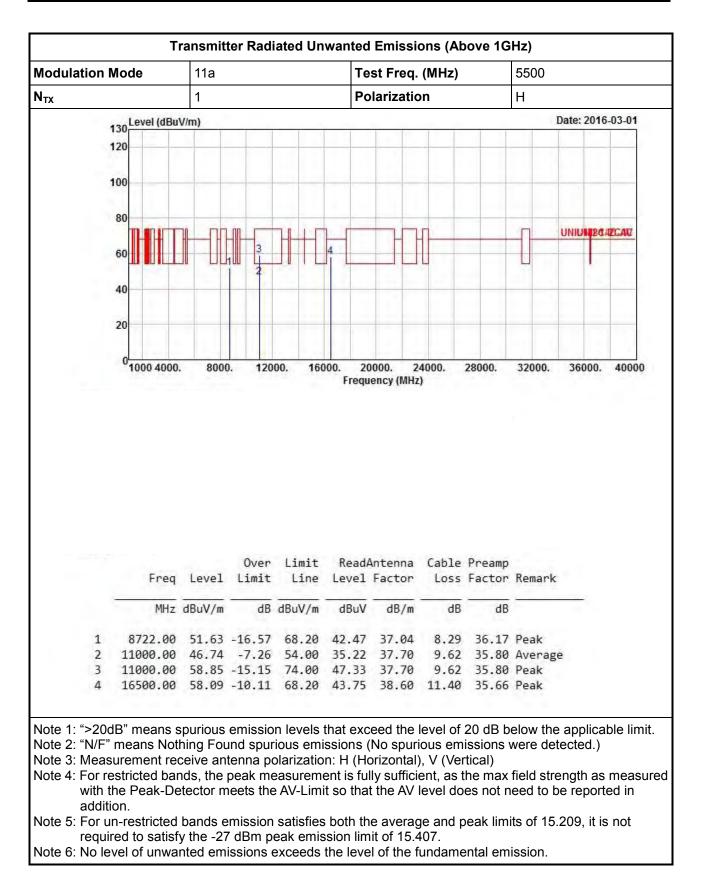




3.6.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5470-5725MHz

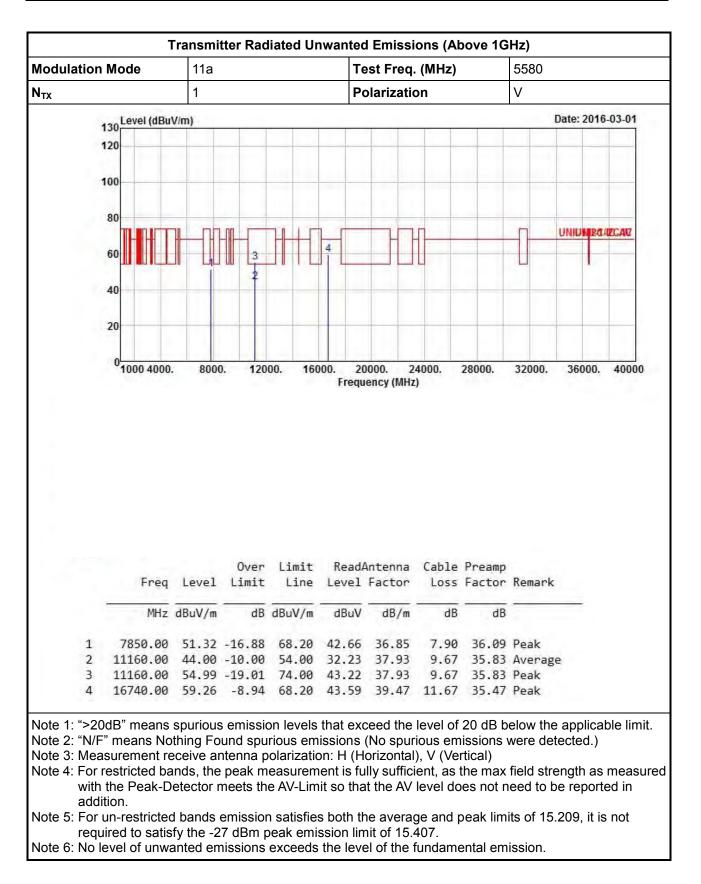






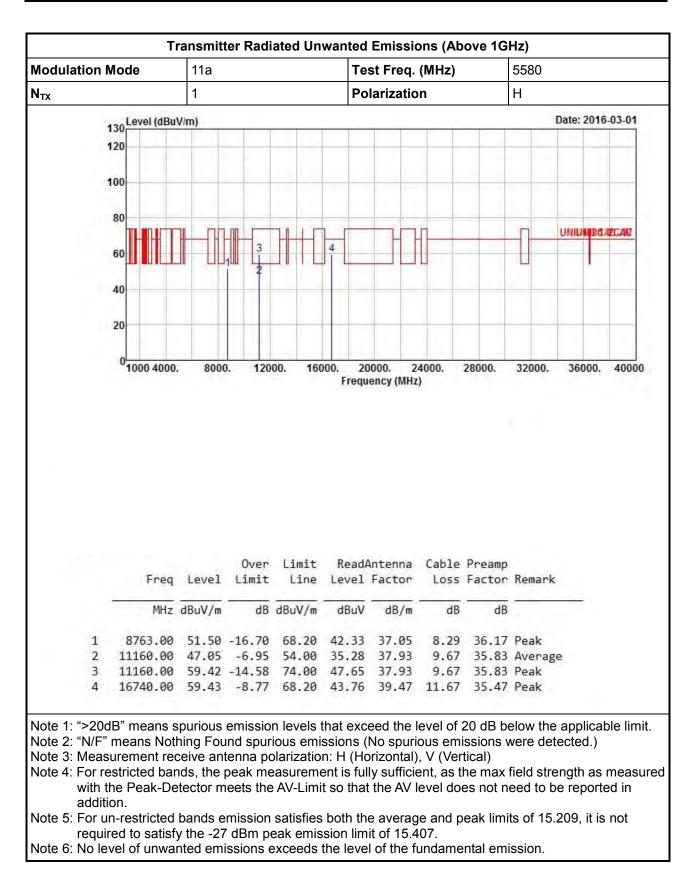






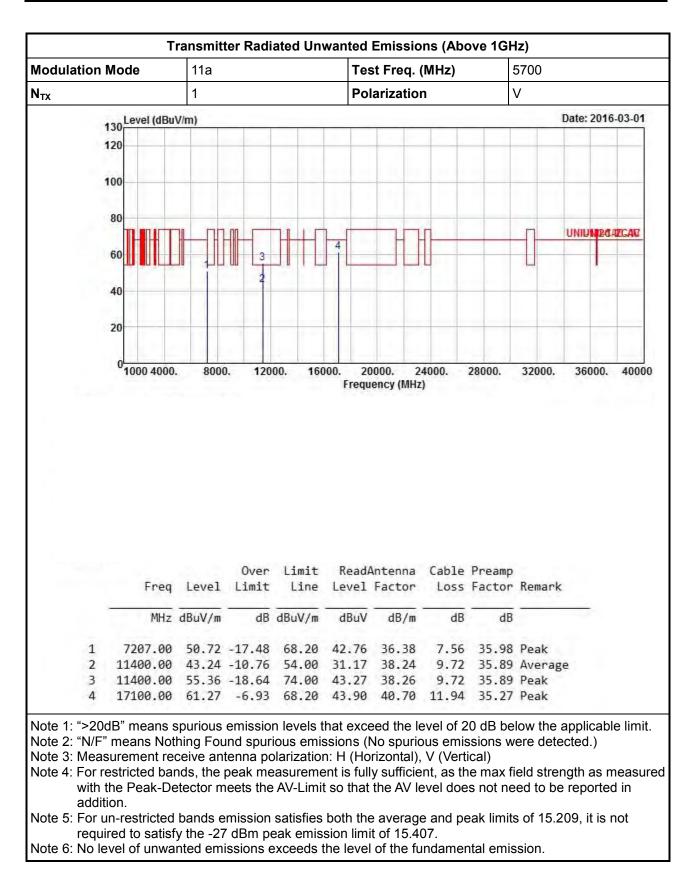




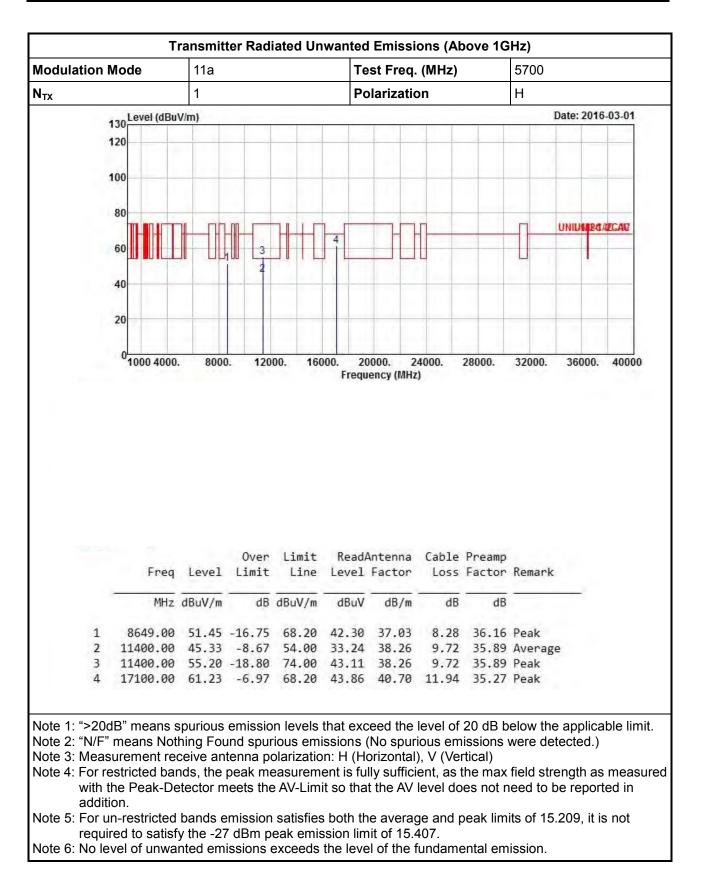






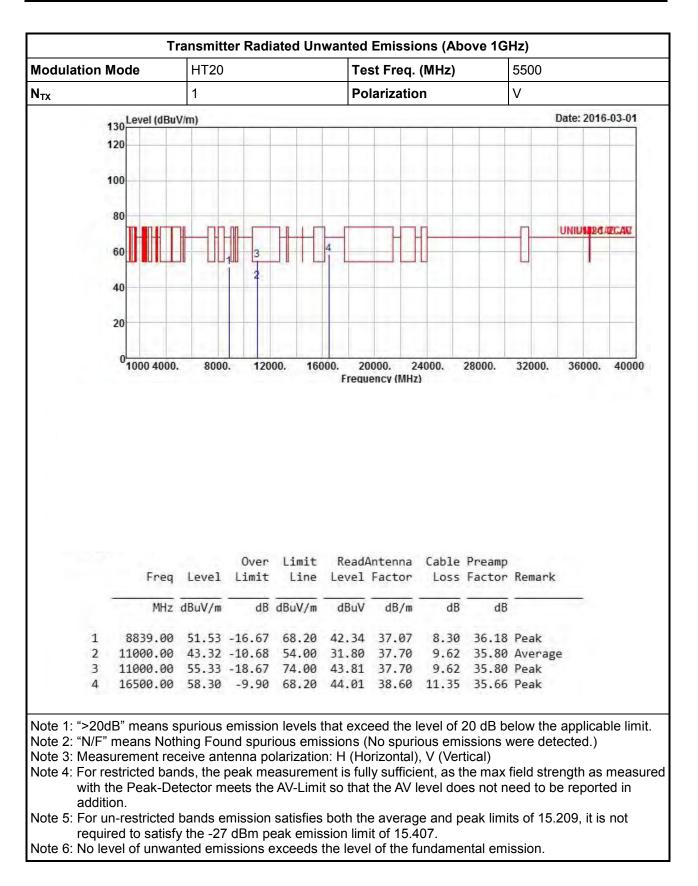






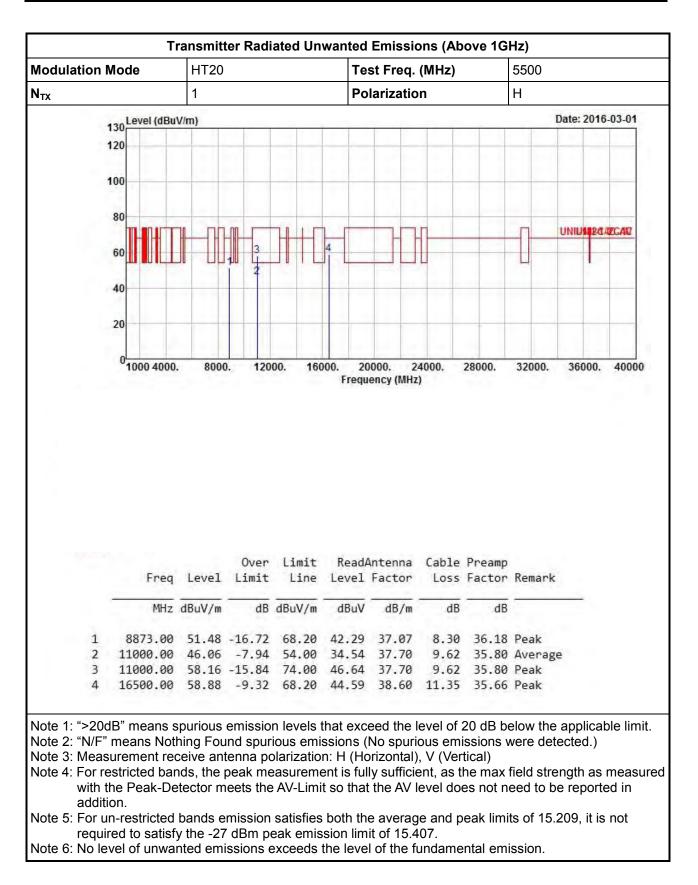






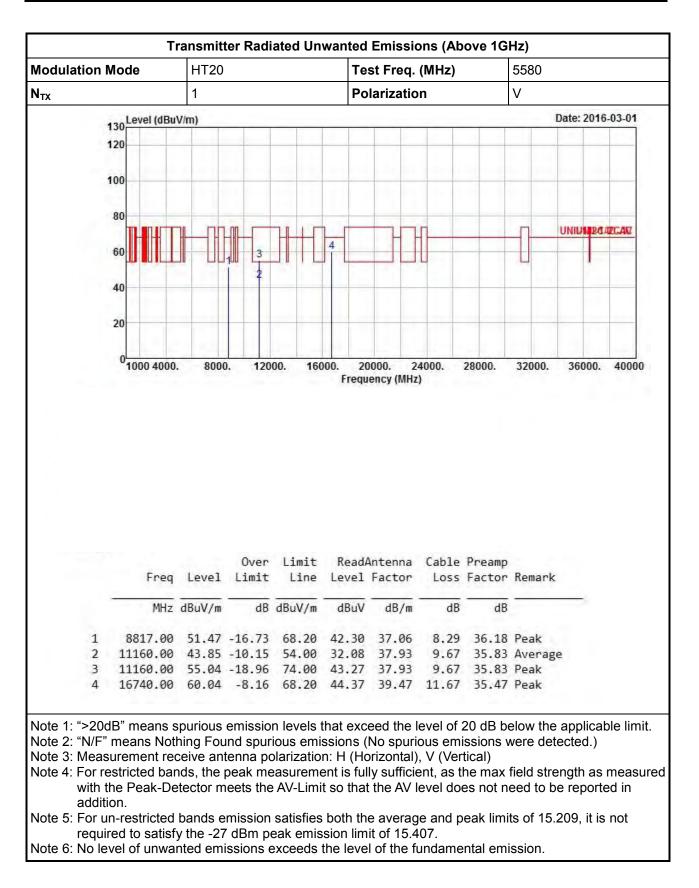






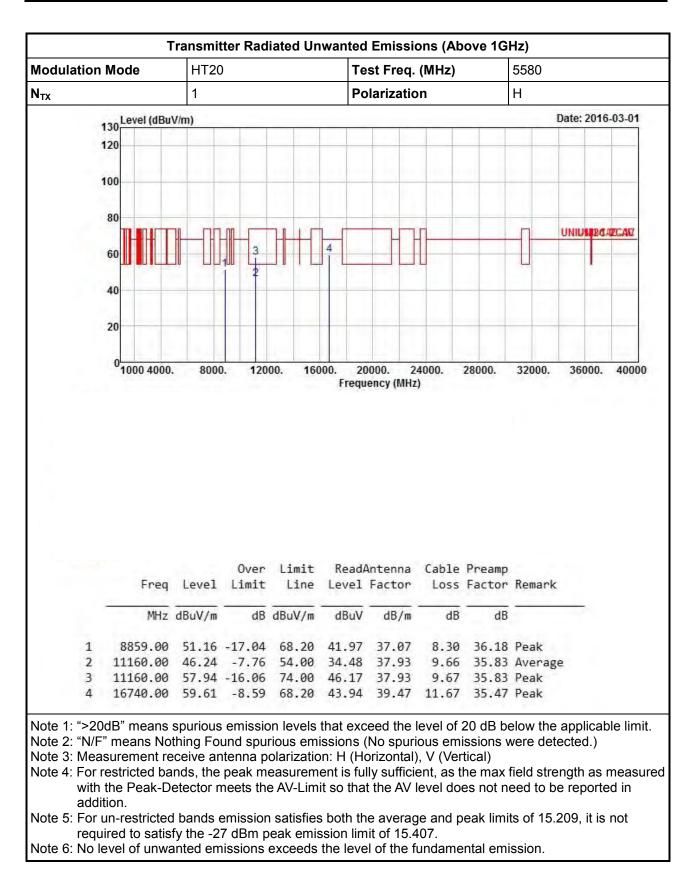




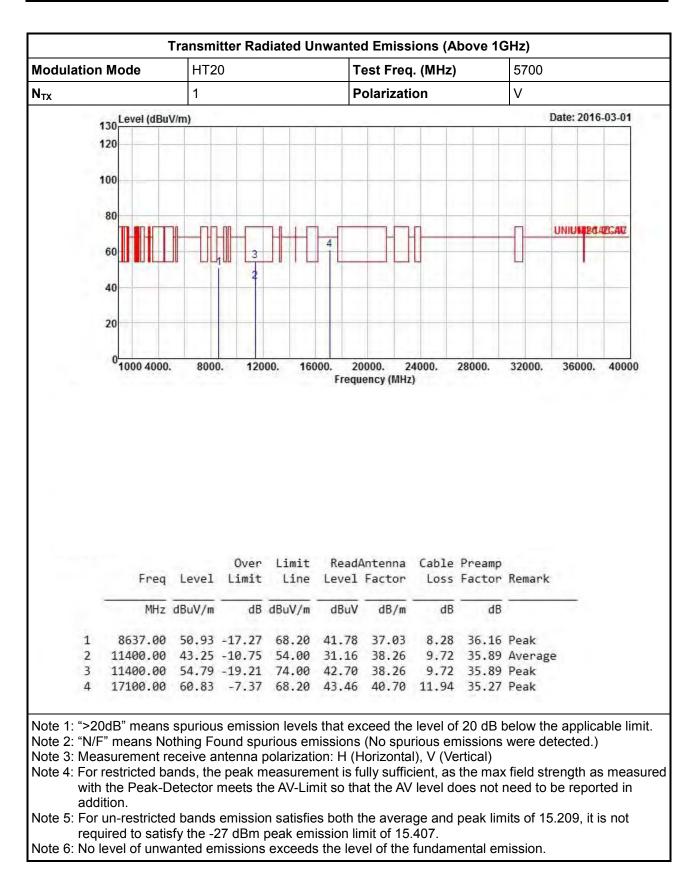




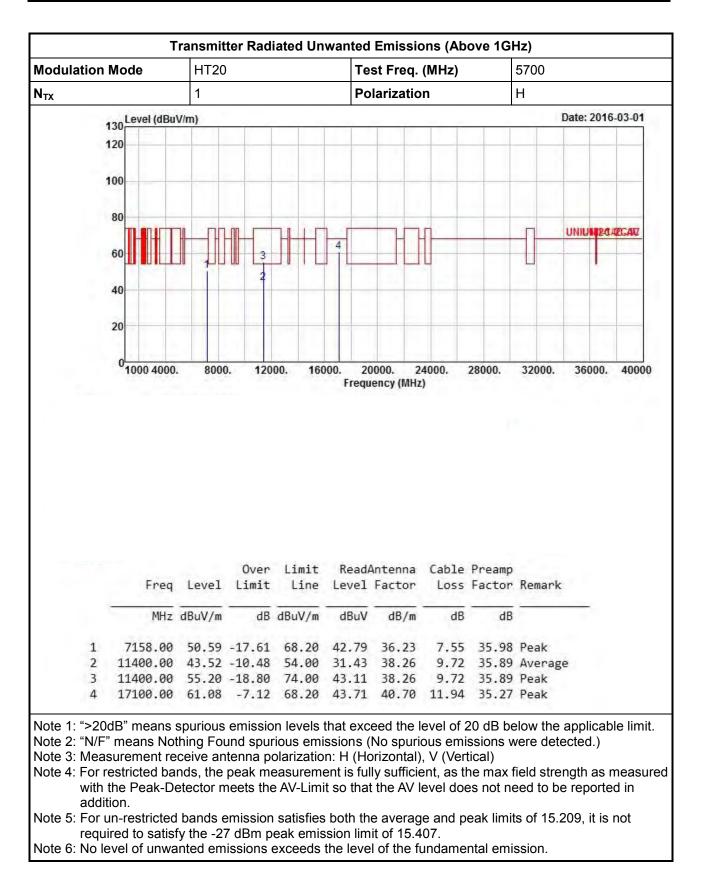




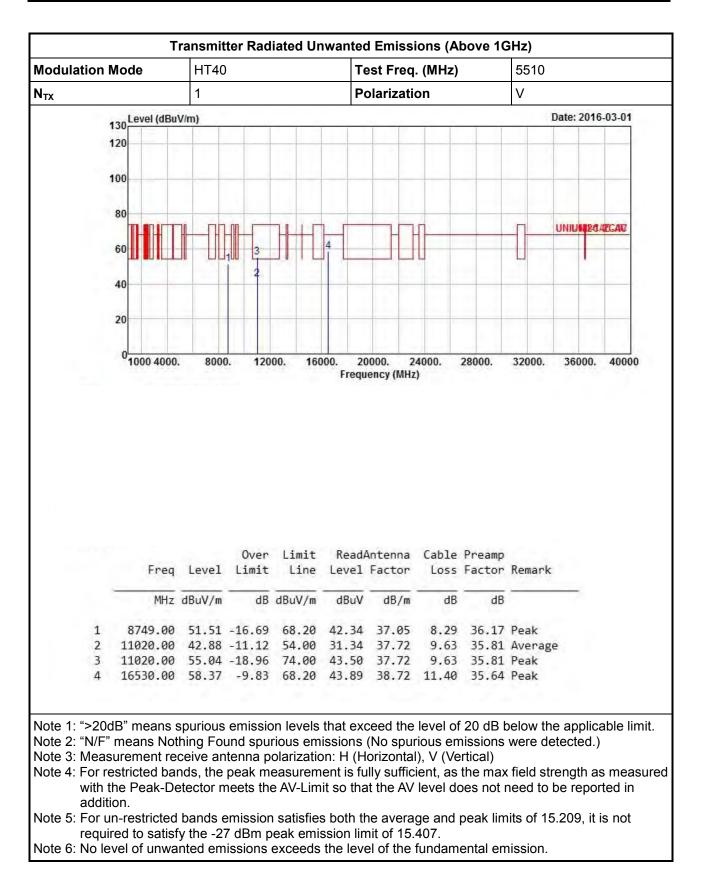


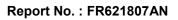




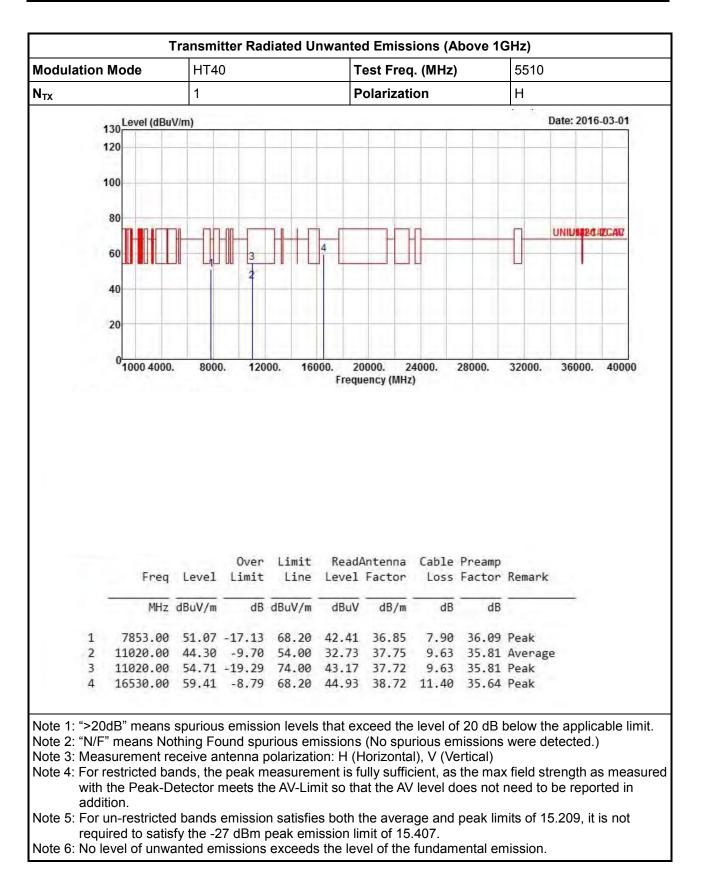




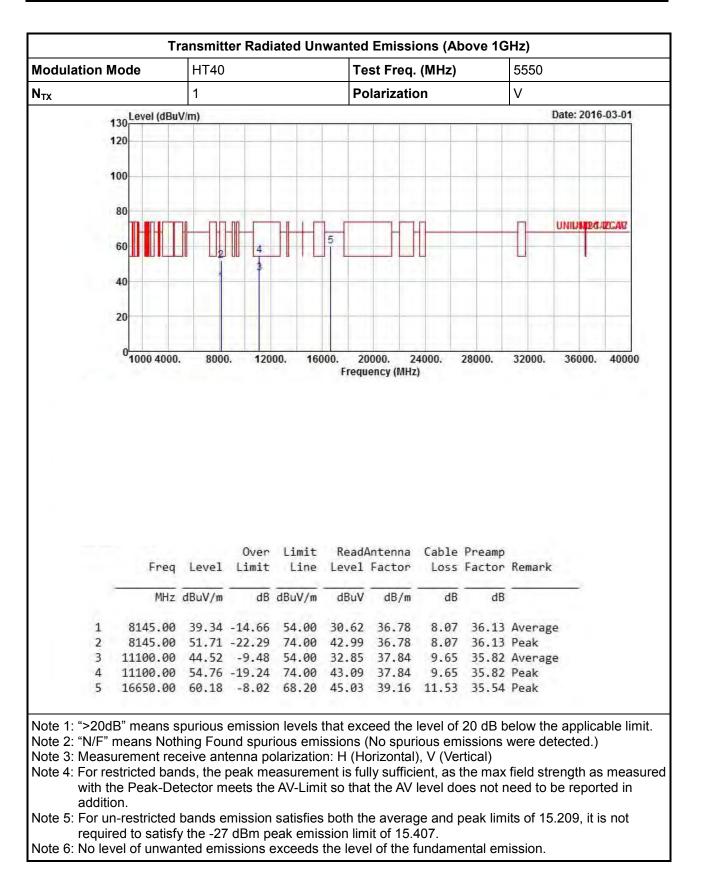






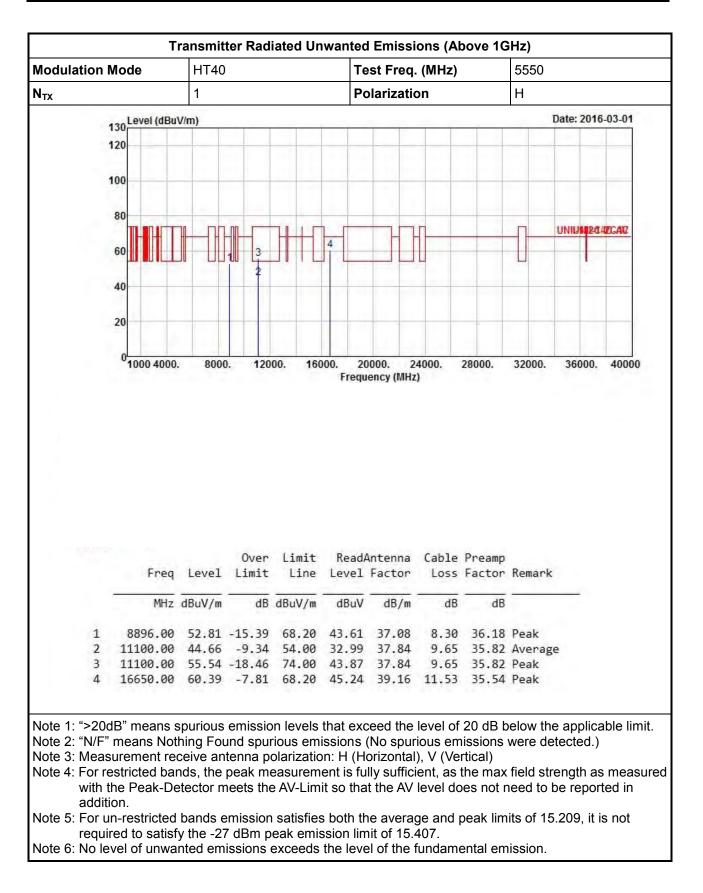




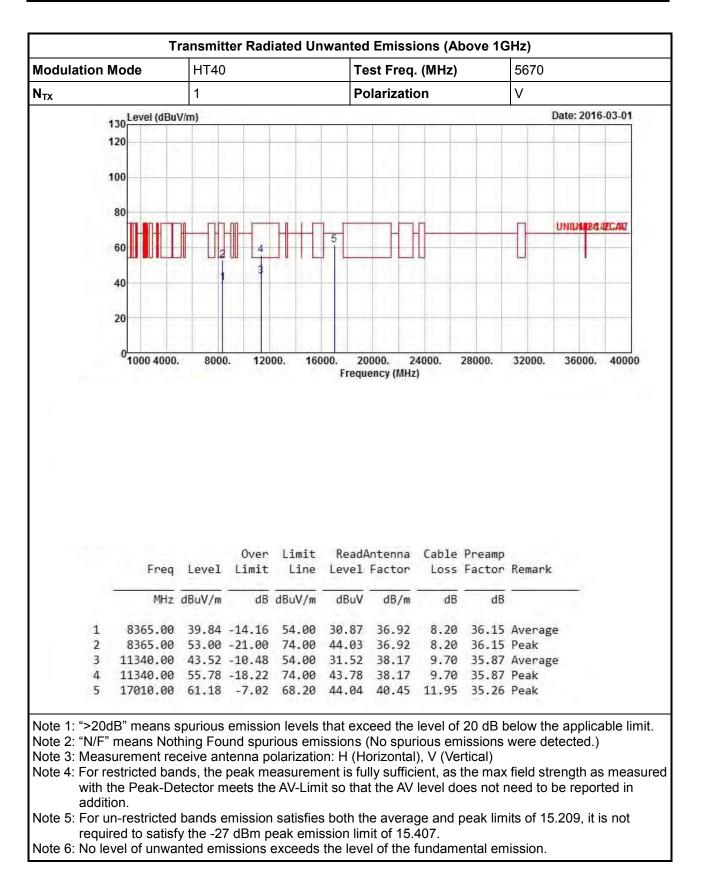






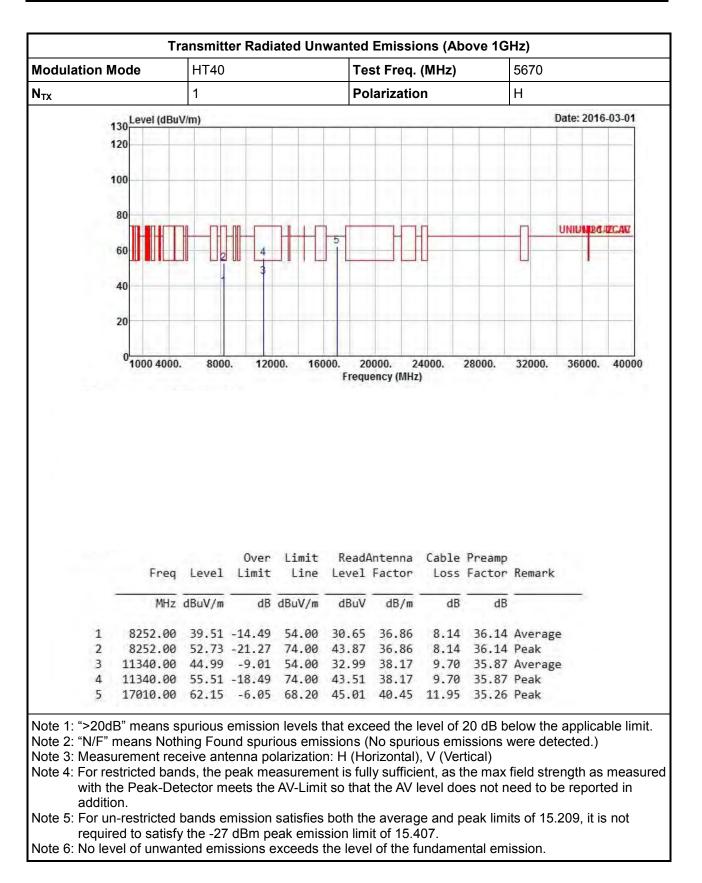






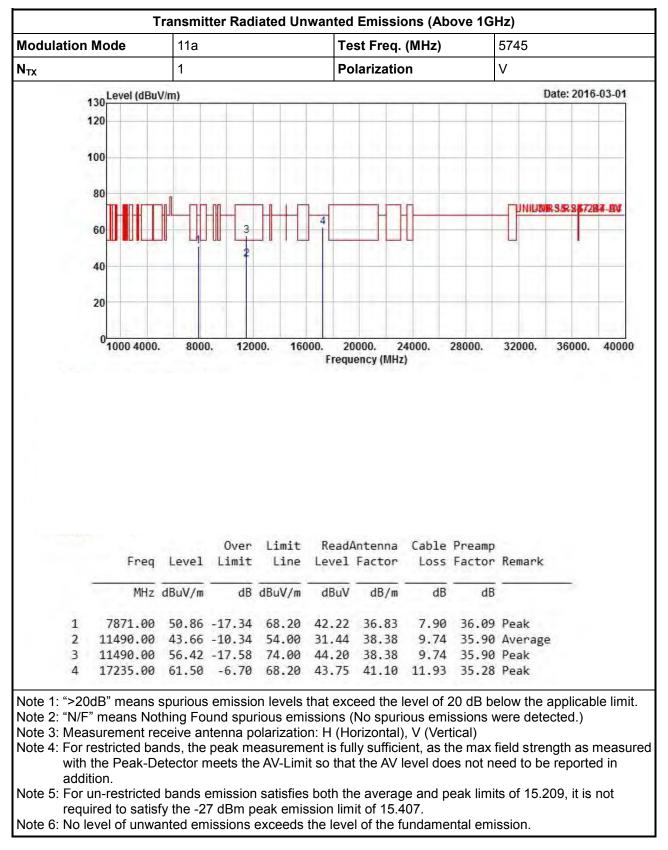




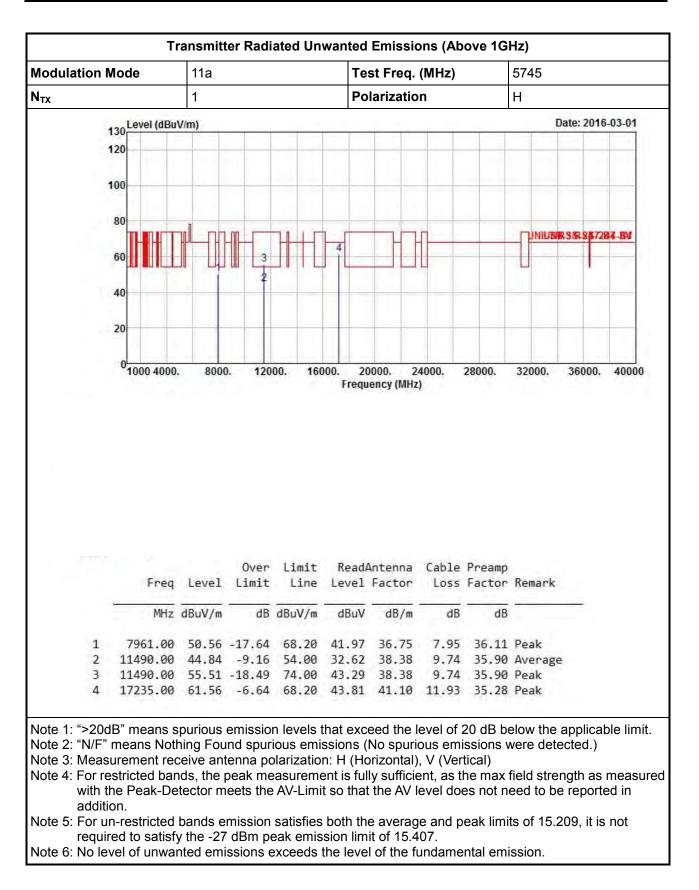




3.6.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5725-5850MHz

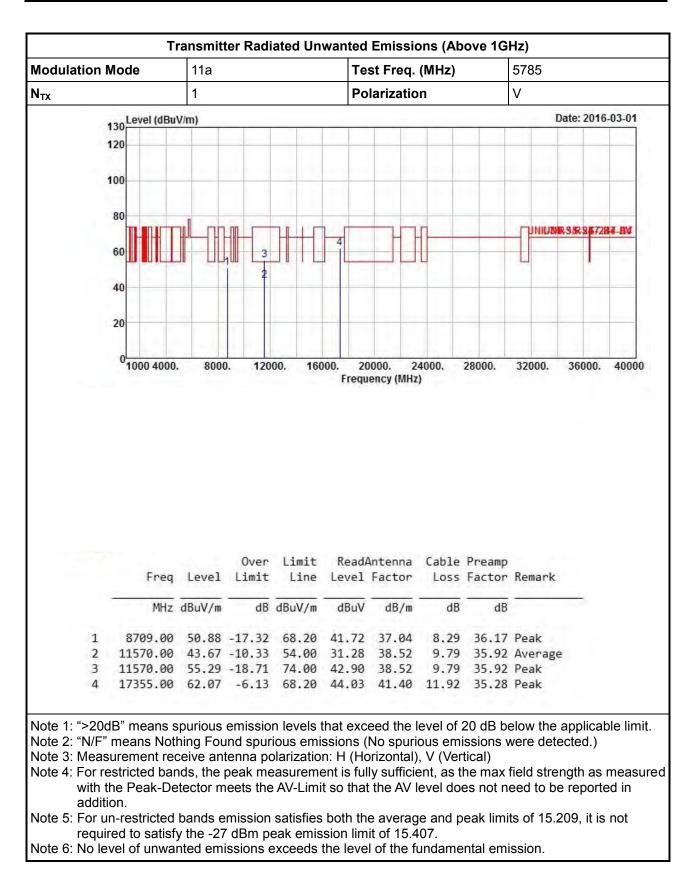




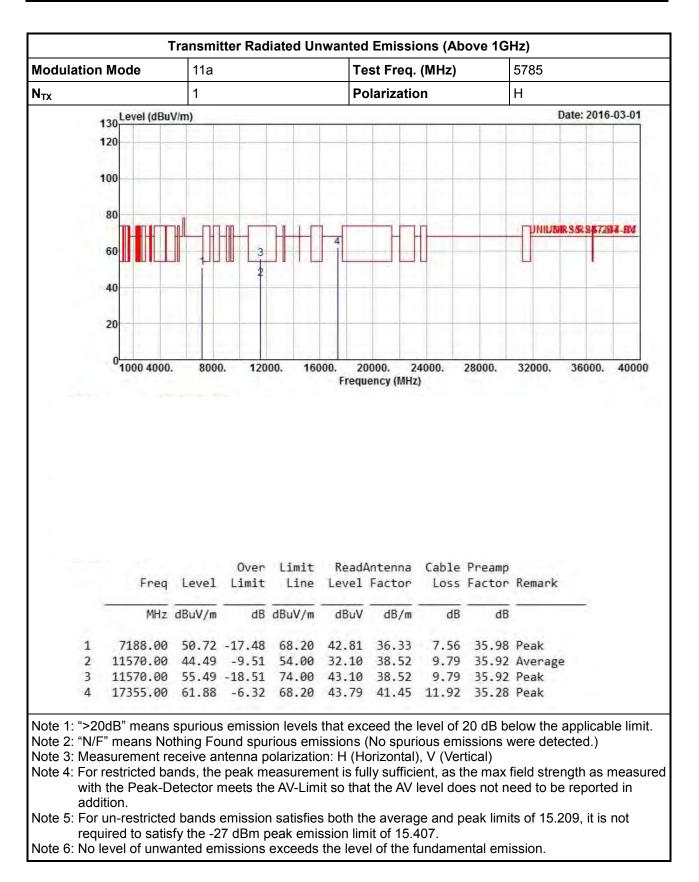




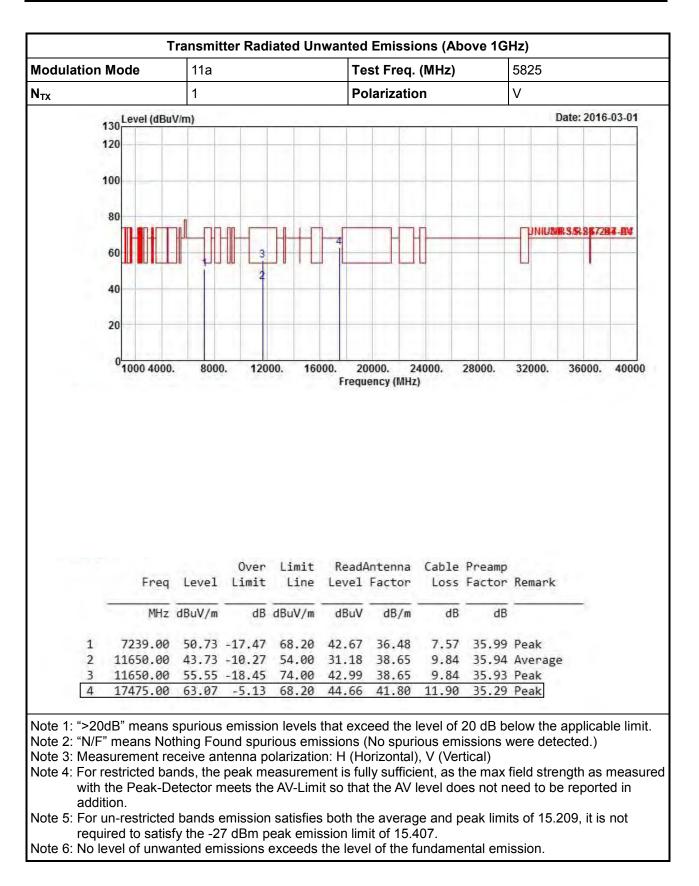




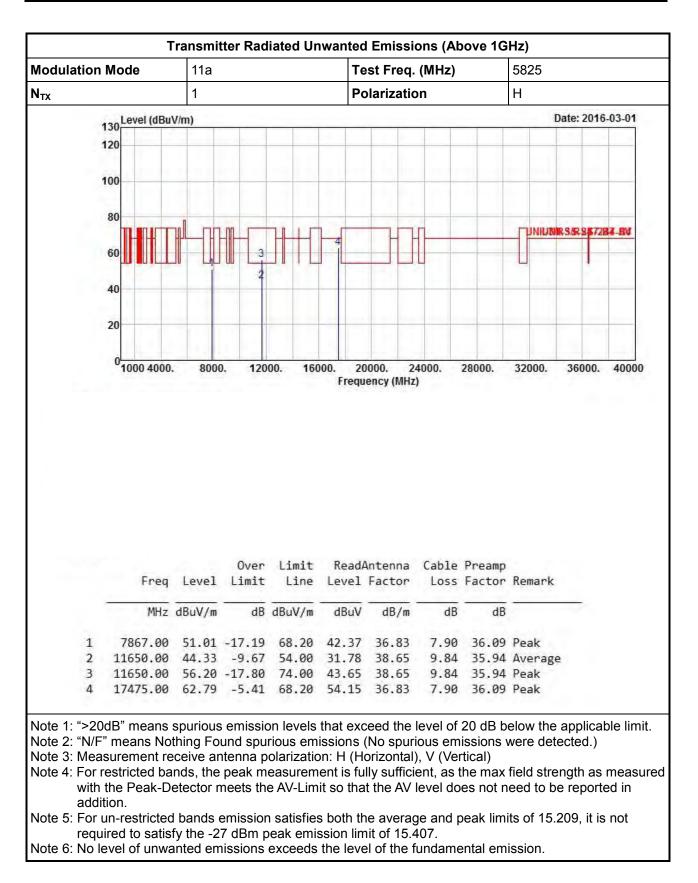




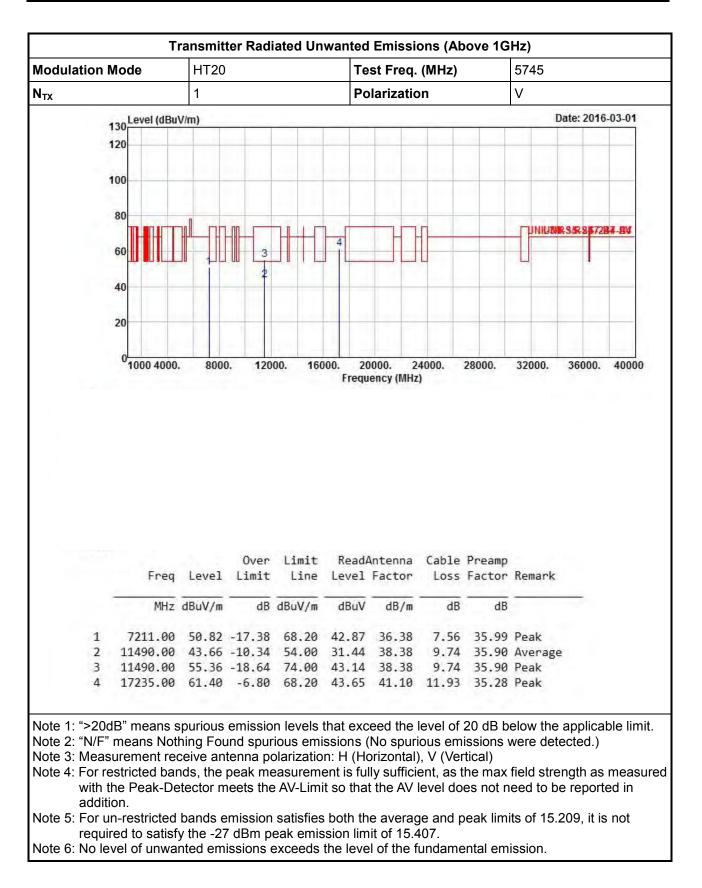




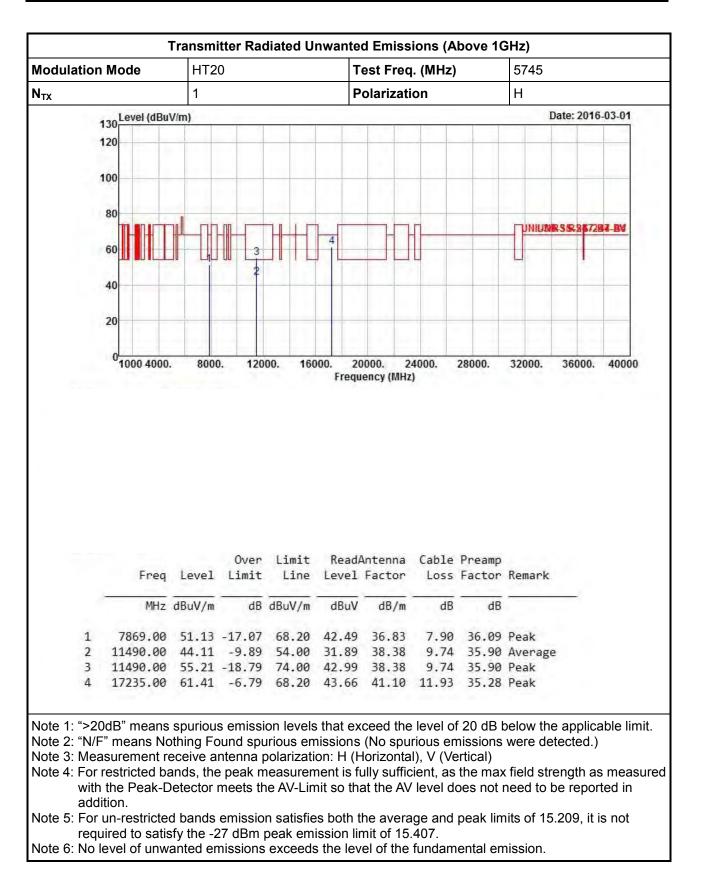




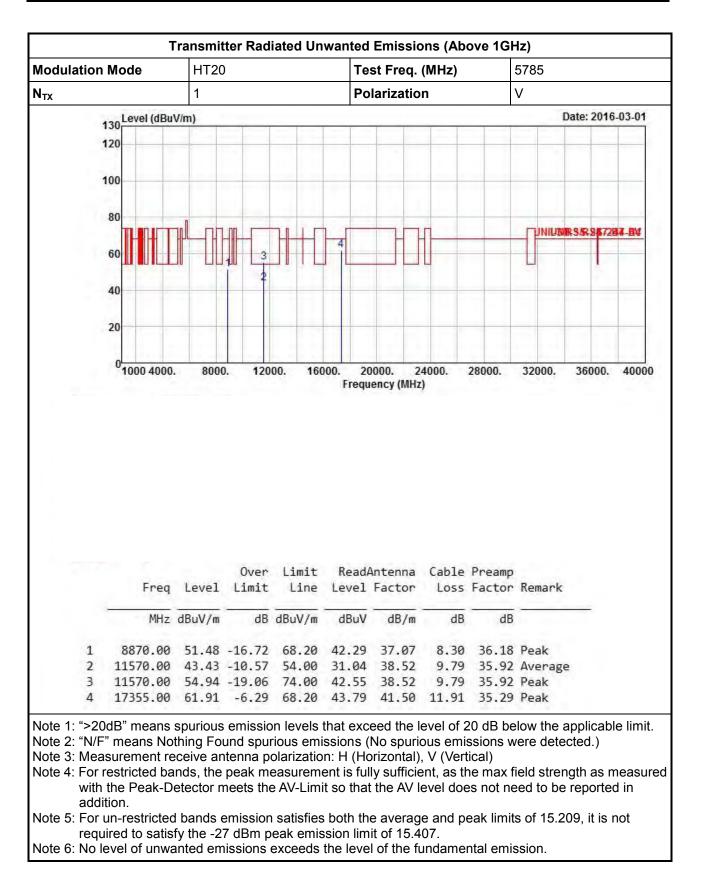




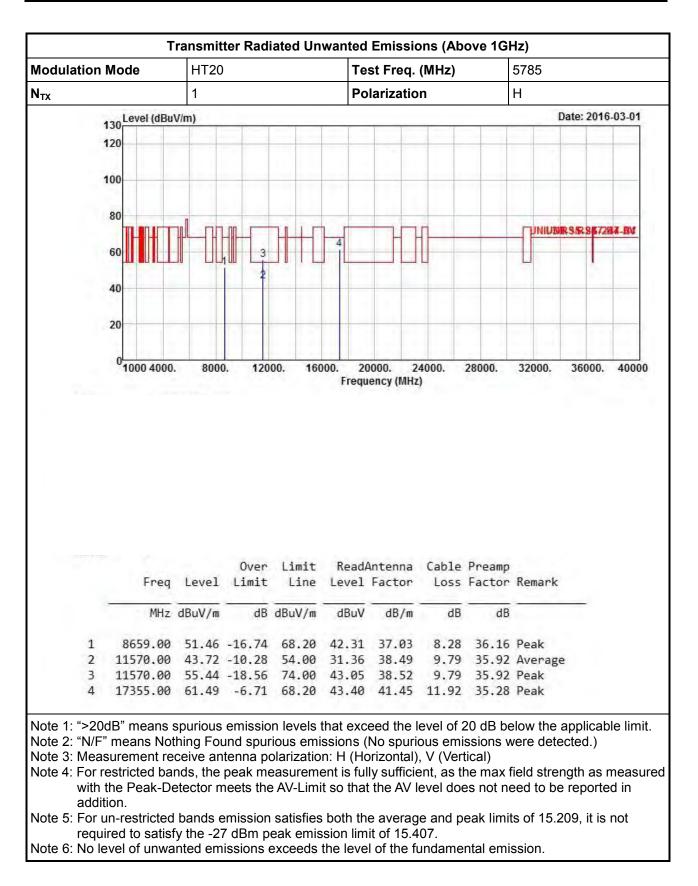






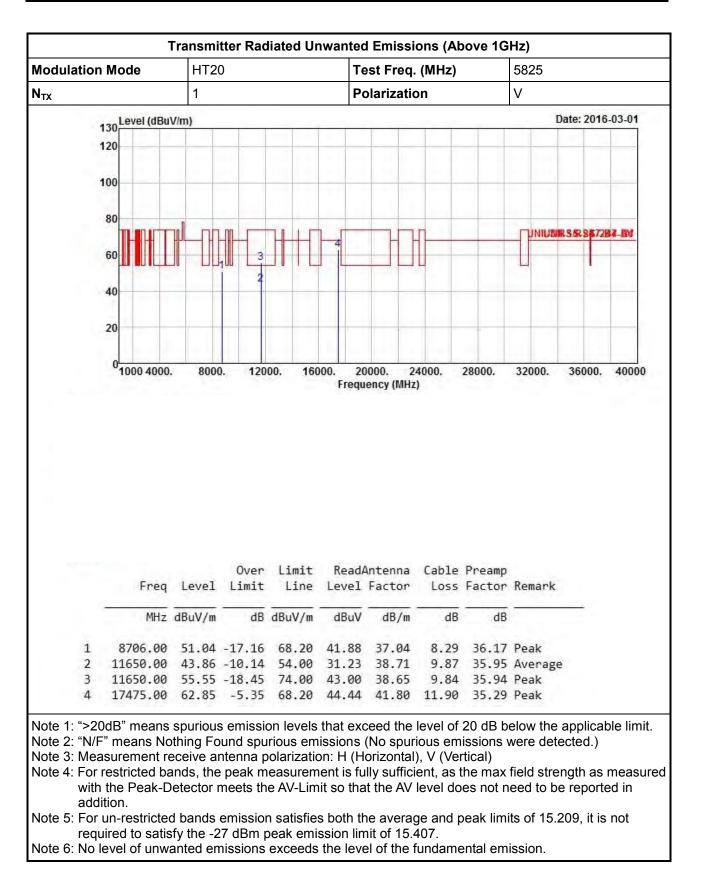






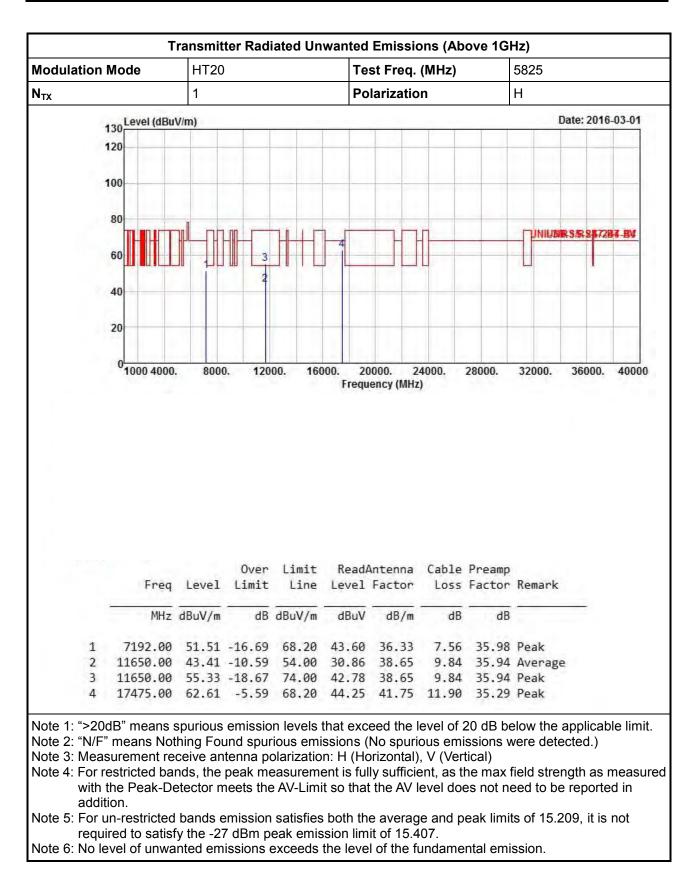




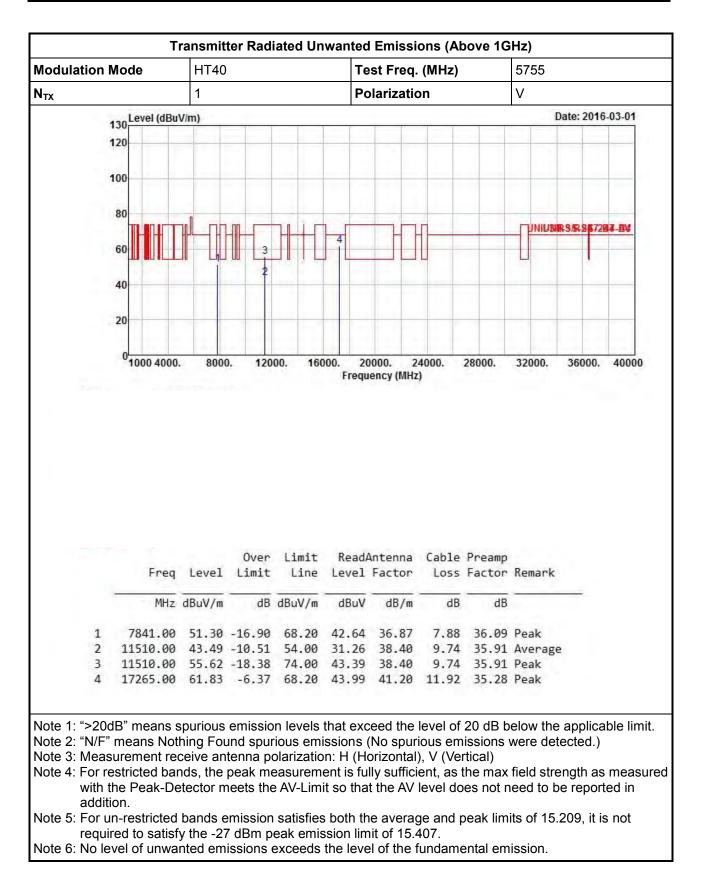




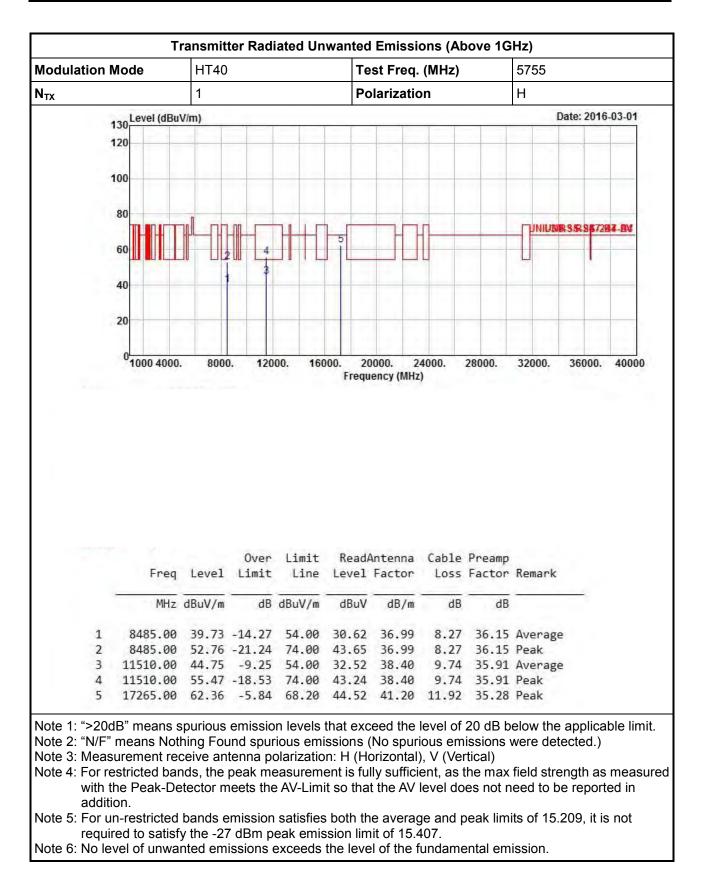




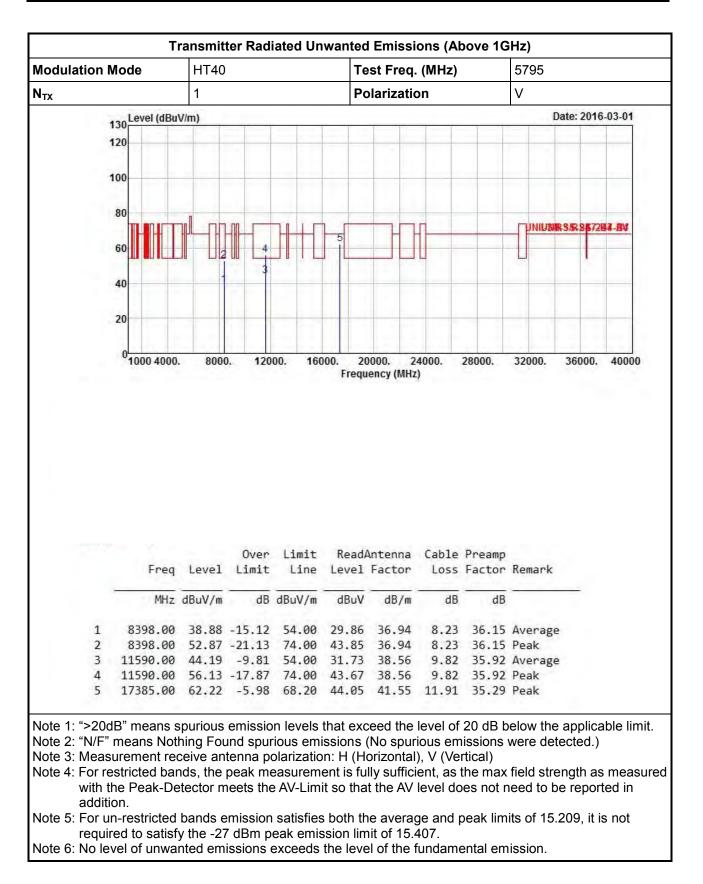




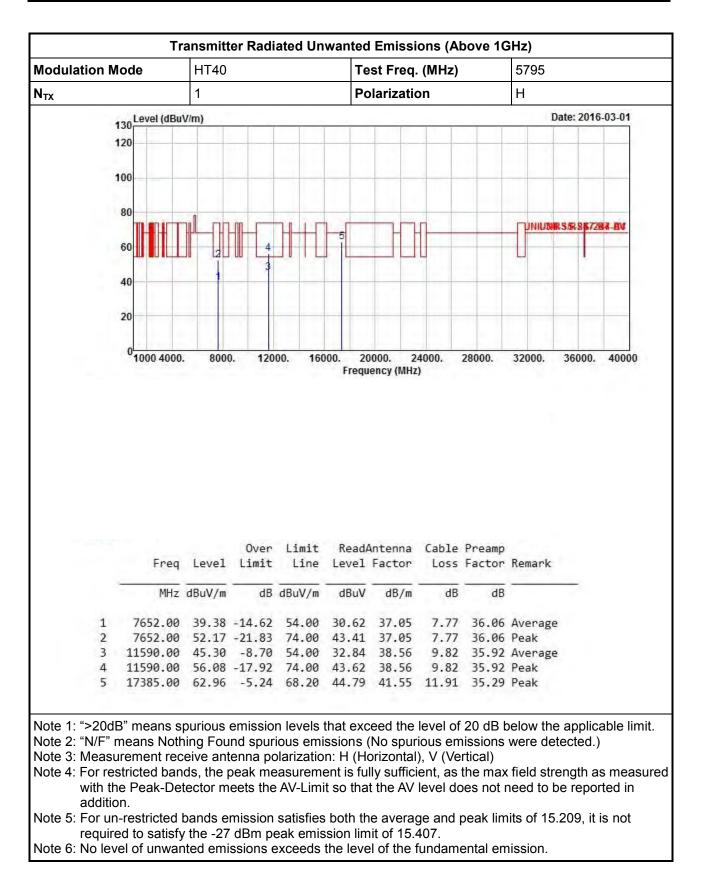














3.7 Frequency Stability

3.7.1 Frequency Stability Limit

Frequency Stability Limit							
UNII Devices							
In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.							
IEEE Std. 802.11n-2009							
\square The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band.							

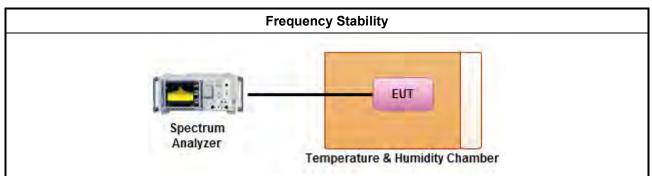
3.7.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.7.3 Test Procedures

	Test Method								
\square	Refer as ANSI C63.10, clause 6.8 for frequency stability tests								
	\boxtimes	Frequency stability with respect to ambient temperature							
	\boxtimes	Frequency stability when varying supply voltage							
\square	For	conducted measurement.							
	\boxtimes	For conducted measurements on devices with multiple transmit chains: Measurements need only to be performed on one of the active transmit chains (antenna outputs)							
		radiated measurement. The equipment to be measured and the test antenna shall be oriented to in the maximum emitted power level.							

3.7.4 Test Setup





3.7.5 Test Result of Frequency Stability

Frequency Stability Result									
Мо	Mode Frequency Stability (ppm)								
0	Freq. (MHz)	Test Frequency (MHz)			Frequency Stability (ppm)				
Condition		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min
T20°CVmax	5200	5199.93661	5199.93575	5199.93488	5199.92923	-12.1904	-12.3558	-12.5231	-13.6096
T20°CVmin	5200	5199.93922	5199.93792	5199.93575	5199.93488	-11.6885	-11.9385	-12.3558	-12.5231
T50°CVnom	5200	5199.93835	5199.93922	5199.94052	5199.94182	-11.8558	-11.6885	-11.4385	-11.1885
T40°CVnom	5200	5199.93661	5199.93618	5199.93531	5199.93401	-12.1904	-12.2731	-12.4404	-12.6904
T30°CVnom	5200	5199.92923	5199.92880	5199.92750	5199.92706	-13.6096	-13.6923	-13.9423	-14.0269
T20°CVnom	5200	5199.93878	5199.93575	5199.93401	5199.93010	-11.7731	-12.3558	-12.6904	-13.4423
T10°CVnom	5200	5199.96179	5199.95919	5199.95485	5199.95007	-7.3481	-7.8481	-8.6827	-9.6019
T0°CVnom	5200	5199.96874	5199.96787	5199.96657	5199.96483	-6.0115	-6.1788	-6.4288	-6.7635
T-10°CVnom	5200	5199.98307	5199.98177	5199.97959	5199.97786	-3.2558	-3.5058	-3.9250	-4.2577
T-20°CVnom	5200	5199.98784	5199.98567	5199.98394	5199.98307	-2.3385	-2.7558	-3.0885	-3.2558
Limit	(ppm)		- ±20						
Result Complied									
	Note 1: Measure at 85 % [Vmin] and 115 % [Vmax] of the nominal voltage [Vnom]. Note 2: The nominal voltage refer test report clause 1.1.5 for EUT operational condition.								



4 Test Equipment and Calibration Data

< AC Conduction >								
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date		
EMC Receiver	KETSIGHT	N9038A	MY54130031	20Hz ~ 8.4GHz	Apr. 14, 2016	Apr. 13, 2017		
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 26, 2016	Jan. 25, 2017		
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 30, 2015	Oct. 29, 2016		
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	N/A		

< RF Conducted >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	May 06, 2015	May 05, 2016
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	-20 ~ 100℃	Jun. 12, 2015	Jun. 11, 2016
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	Jul. 27, 2016
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jul. 22, 2015	Jul. 21, 2016

< Radiated Emission >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz 3m	Jul. 01, 2015	Jun. 30, 2016
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz 3m	Jul. 01, 2015	Jun. 30, 2016
Amplifier	EMC	EMC9135	980232	9kHz ~ 1.0GHz	Jan. 29, 2016	Jan. 28, 2017
Amplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	Apr. 09, 2015	Apr. 08, 2016
Spectrum	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	Jul. 15, 2015	Jul. 14, 2016
Bilog Antenna	SCHAFFNER	CBL 6112B	2723	30MHz ~ 1GHz	Oct. 05, 2015	Oct. 04, 2016
Horn Antenna	AARONIA AG	POWERLOG 70180	05192	1GHz ~ 18GHz	Jan. 08, 2016	Jan. 07, 2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170614	18GHz ~ 40GHz	Jan. 04, 2016	Jan. 03, 2017

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	100330	9 kHz~30 MHz	Nov. 10, 2014	Nov. 09, 2016
Amplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Jun. 01, 2017