

FCC Test Report

Equipment	:	Sophos Wireless Access Point AP100	
Brand Name	:	Sophos	
Model No.	:	AP 100	
FCC ID	:	2ACTO-AP100	
Standard	:	47 CFR FCC Part 15.407	
Operating Band	:	5250 MHz – 5350 MHz 5470 MHz – 5725 MHz	
FCC Classification	:	NII	
Applicant	:	Sophos Ltd The Pentagon, Abingdon, OX14 3YP, United Kingdom	
Manufacturer	:	Edimax Technology Co., Ltd. No.3, Wu-Chuan 3rd Road, Wu-Ku Industrial Park, New Taipei City 24891, Taiwan R.O.C.	

The product sample received on Aug. 6, 2014 and completely tested on Aug. 27, 2014. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 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:

Vic Hsiao / Supervisor





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Summary of Test Result

Conformance Test Specifications				
Report Ref. Std. Clause Description				
1.1.2	15.203	Antenna Requirement	Complied	
3.1	15.407(a)	Emission Bandwidth	Complied	
3.2	15.407(a)	RF Output Power (Maximum Conducted Output Power)	Complied	
3.3	15.407(a)	Peak Power Spectral Density	Complied	
3.4	15.407(b)	Transmitter Bandedge Emissions	Complied	
3.5	15.407(b)	Transmitter Unwanted Emissions	Complied	



Revision History

Report No.	Version	Description	Issued Date
FR462324AN	Rev. 01	Initial issue of report	Sep. 16, 2014
FR462324-01AN	Rev. 01	C2PC for Add Band 2 and band 3	Sep. 29, 2014



General Description 1

Information 1.1

1.1.1 **RF General Information**

RF General Information								
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	21.75			
5470-5725		5500-5700	100-140 [8]	1	21.54			
5250-5350	n (HT20)	5260-5320	52-64 [4]	3/3	21.18 / 21.01			
5470-5725	ac (VHT20)	5500-5700	100-140 [8]	3/3	21.00 / 21.08			
5250-5350	n (HT40)	5270-5310	54-62 [2]	3/3	21.85 / 21.98			
5470-5725	ac (VHT40)	5510-5670	102-134 [3]	3/3	22.12 / 22.26			
5250-5350	ac (VHT80)	5290	58 [1]	3	16.50			
5470-5725		5530	106 [1]	3	16.35			
Note 1: RF output	t power specifies t	hat Maximum Con	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: 802.11ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.

1.1.2 Antenna Information

	Antenna Category			
\boxtimes	External 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.			

Antenna General Information							
No.	Ant. Cat.	Ant. Type	Gain (dBi)				
1			2.58				
2	External	Dipole	2.58				
3			2.58				
Remark:	Remark [.]						

1. 11a only include 1TX and Port1 for emission.

2. HT20 and HT40 only include 3TX and Data Rate are MCS0 ~ MCS23.

3. VHT20 only include 3TX and Data Rate are MCS0 ~ MCS8.

4. VHT40 and VHT80 only include 3TX and Data Rate are MCS0 ~ MCS9.



1.1.3 Type of EUT

	Identify EUT			
EUT	۲ Serial Number	N/A		
Pre	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 test mode for worst duty cycle				
Test Signal Duty Cycle (x)Power Duty Factor[dB] - (10 log 1/x)				
⊠ 100% - IEEE 802.11a	0			
□ 100% - IEEE 802.11n (HT20) 0				
□ 100% - IEEE 802.11n (HT40) 0				
□ 100% - IEEE 802.11ac (VHT20) 0				
☑ 100% - IEEE 802.11ac (VHT40)				
☑ 100% - IEEE 802.11ac (VHT80)	0			

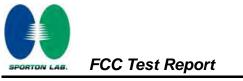
1.1.5 EUT Operational Condition

Supply Voltage	AC mains	DC DC	System
Type of DC Source	External DC supply	From Host System	From PoE
Test Voltage	Vnom (120 V)	🛛 Vmax (132 V)	🛛 Vmin (108 V)
Test Climatic	Tnom (20°C)	🖂 Tmax (50°C)	⊠ Tmin (-20°C)



1.1.6 DFS and TPC Information

The DFS Related Operating Mode(s) of the Equipment				
Master				
Slave with radar detection	tion			
Slave without radar de	etection			
Software / Firmware Vers	sion	9.203-3		
Power-on Cycle. (Master)	100.5 sec		
Communication Mode		IP Based	Frame Based	
IEEE Std. 802.11	Frequency Range (MHz)	TPC (Transmit Power Control)	Active Scan	
a / n (HT20) / ac (VHT20) 🛛 5250-5350		Yes	Yes	
n (HT40) / ac (VHT40) 🛛 🖾 5470-5725		Yes	Yes	
ac (VHT80)	5600-5650	-	-	



1.2 Support Equipment

	Support Equipment - RF Conducted					
No.	No. Equipment Brand Name Model Name FCC ID					
1	Notebook	DELL	E5520	-		

	Support Equipment - Radiated Emission								
No.	Equipment	Brand Name	Brand Name Model Name						
1	Adapter	APD	DA-48T12	-					
2	PoE	Customer provide	Customer provide	-					
3	Notebook (Remote)	DELL	E5530	DoC					
4	HUB (Remote)	DELL	Power Connect 2816	DoC					
5	UTM (Remote)	SOPHOS	UTM110/120	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 C63.10-2009
- FCC KDB 789033 D02 v01
- FCC KDB 644545 D03 v01
- FCC KDB 662911 v02r01
- FCC-14-30A1-UNII

1.4 Testing Location Information

	Testing Location								
HWA YA ADD : No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.									
		TEL	:	886-3-327-3456 FAX	: 886-3-327-0973				
	Test Cond	ition		Test Site No.	Test Engineer	Test Environment			
RF Conducted				TH06-HY	Cain	22.2°C / 64%			
Radiated Emission				03CH02-HY	Daniel	24.8°C / 59%			



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)

	Measurement Uncertainty	
Test Item		Uncertainty
Emission bandwidth, 26dB bandwidth		±1.4 %
RF output power, conducted		±0.6 dB
Power density, conducted		±0.8 dB
Unwanted emissions, conducted	9 – 150 kHz	±0.4 dB
	0.15 – 30 MHz	±0.4 dB
	30 – 1000 MHz	±0.5 dB
	1 – 18 GHz	±0.7 dB
	18 – 40 GHz	±0.8 dB
	40 – 200 GHz	N/A
All emissions, radiated	9 – 150 kHz	±2.5 dB
	0.15 – 30 MHz	±2.3 dB
	30 – 1000 MHz	±2.6 dB
	1 – 18 GHz	±3.6 dB
	18 – 40 GHz	±3.8 dB
	40 – 200 GHz	N/A
Temperature		±0.8 °C
Humidity		±3 %
DC and low frequency voltages		±3 %
Time		±1.4 %
Duty Cycle		±1.4 %



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 / MCS					
11a	1	6-54Mbps	6 Mbps					
HT20	3	MCS 0-23	MCS 0					
HT40	3	MCS 0-23	MCS 0					
VHT20	3	MCS 0-8	MCS 0					
VHT40	3	MCS 0-9	MCS 0					
VHT80	3	MCS 0-9	MCS 0					

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (5250-5350MHz band)										
Test Software Version		DOS Command								
				Test Fred	quency (MH	z)				
Modulation Mode	N _{TX}	I	NCB: 20MH	z	NCB:	40MHz	NCB: 80MHz			
		5260	5300	5320	5270	5310	5290			
11a	1	20	20	20	-	-	-			
HT20	3	14.5	14.5	14.5	-	-	-			
HT40	3	-	-	-	16.5	14	-			
VHT20	3	14.5	14.5	14.5	-	-	-			
VHT40	3	-	-	-	16.5	14	-			
VHT80	3	-	-	-	-	-	10.5			

The Worst Case Power Setting Parameter (5470-5725MHz band)									
Test Software Version		DOS Command							
				Tes	t Frequer	ncy (MHz)			
Modulation Mode	N _{TX}	NCB: 20MHz			N	CB: 40MF	łz	NCB: 80MHz	
		5500	5580	5700	5510	5550	5670	5530	
11a	1	21	21.5	21	-	-	-	-	
HT20	3	16.5	16.5	15	-	-	-	-	
HT40	3	-	-	-	14	17	16.5	-	
VHT20	3	16.5	16.5	13.5	-	-	-	-	
VHT40	3	-	-	-	14.5	17	16.5	-	
VHT80	3	-	-	-	-	-	-	12.5	



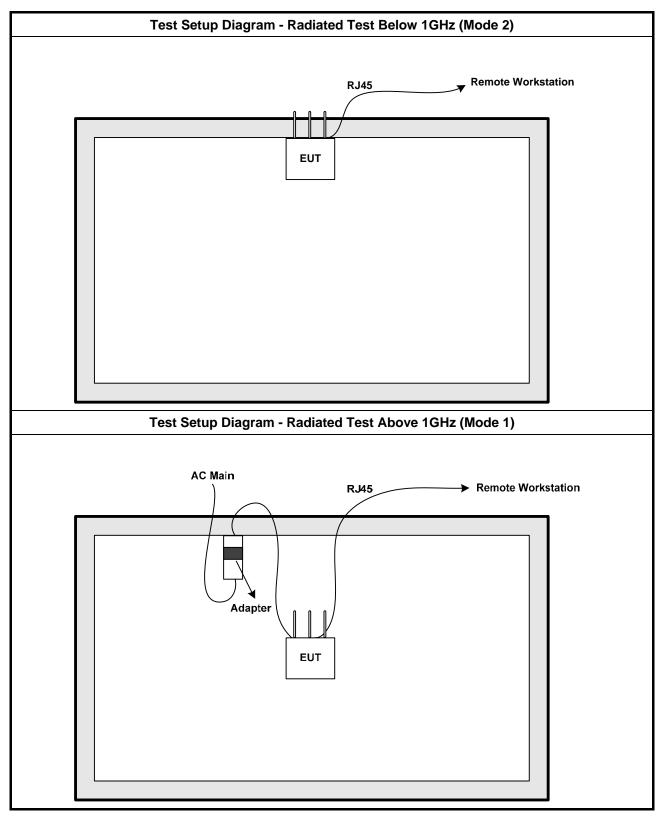
2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests					
Tests Item	RF Output Power, Peak Power Spectral Density, Emission Bandwidth, Peak Excursion, Transmitter Conducted Unwanted Emissions Transmitter Conducted Bandedge Emissions				
Test Condition	Conducted measurement at transmit chains				
Modulation Mode	11a, HT20, HT40, VHT20, VHT40, VHT80				

Th	e Worst Case Mode for Following Con	formance Tests		
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions			
Test Condition		mbly (multiple antenna are used in EUT configuration), the radiated test should of each antenna type.		
	EUT will be placed in fixed position.			
User Position	EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst planes is Z.			
	EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.			
Operating Mode < 1GHz	Operating Mode Description			
1	EUT with AC power (Transmitter)			
2	EUT with PoE (Transmitter)			
The operatin	g mode 2 is the worst case and it was	record in this test report.		
Operating Mode > 1GHz	Operating Mode Description			
1	EUT with AC power (Transmitter)			
Modulation Mode	11a, HT20, HT40, VHT20, VHT40, VHT8	30		
	X Plane	Z Plane		
Orthogonal Planes of EUT				



2.4 Test Setup Diagram





3 Transmitter Test Result

3.1 Emission Bandwidth

3.1.1 Emission Bandwidth Limit

	Emission Bandwidth Limit					
UN	UNII Devices					
	For the 5.15-5.25 GHz band, N/A					
\square	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.					

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

	Test Method									
\boxtimes	For	the emission bandwidth shall be measured using one of the options below:								
	Refer as FCC KDB 789033 D02 v01, 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 4.6 for bandwidth testing.								
\boxtimes	For	conducted measurement.								
	\boxtimes	The EUT supports single transmit chain and measurements performed on this transmit chain port 1.								
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.								
	\boxtimes	The EUT supports multiple transmit chains using options given below:								
	Option 1: Multiple transmit chains measurements need to be performed on one of the transmit chains (antenna outputs). All measurement had be performed on transmit chains (antenna outputs).									
		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.								

3.1.4 Test Setup

Emission Bandwidth					
EUT					
Spectrum Analyzer					



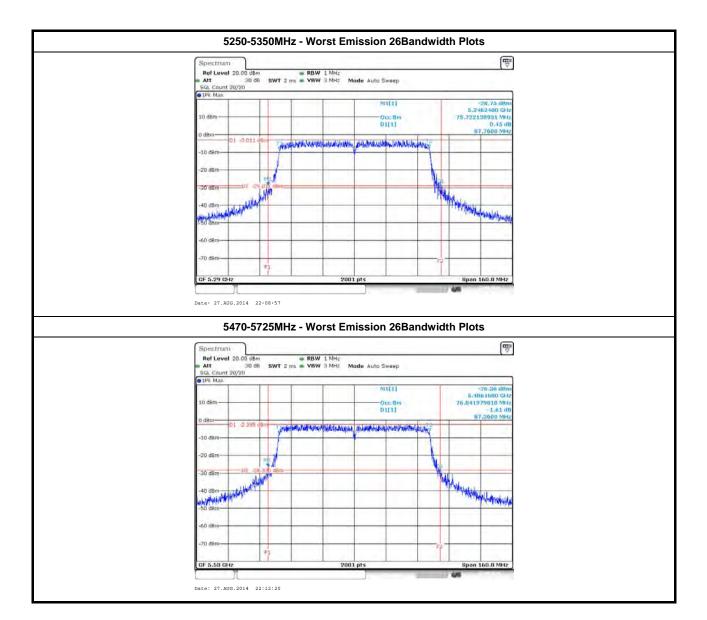
3.1.5 Test Result of Emission Bandwidth

UNII Emission Bandwidth Result (5250-5350MHz band)										
Condit	ion		Emission Bandwidth (MHz)							
		Freg.	99% Bandwidth			2	26dB Bandwidt	h		
Modulation Mode	Ντχ	(MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 1	Chain Port 2	Chain Port 3		
11a	1	5260	16.64	-	-	20.15	-	-		
11a	1	5300	16.89	-	-	20.05	-	-		
11a	1	5320	16.69	-	-	20.07	-	-		
HT20	3	5260	17.74	17.79	17.71	21.20	20.65	21.35		
HT20	3	5300	17.74	17.89	17.71	21.30	22.87	21.22		
HT20	3	5320	18.16	17.71	17.91	21.82	20.67	22.40		
HT40	3	5270	36.74	36.66	36.66	46.04	46.08	44.28		
HT40	3	5310	36.70	36.66	36.70	44.76	44.56	45.00		
VHT20	3	5260	18.06	17.76	17.79	21.07	20.40	21.50		
VHT20	3	5300	17.91	17.84	17.76	20.80	22.45	21.57		
VHT20	3	5320	17.89	17.84	17.69	21.47	21.25	21.00		
VHT40	3	5270	36.58	36.82	36.58	45.28	44.72	43.88		
VHT40	3	5310	36.74	36.74	36.66	43.88	45.04	43.76		
VHT80	3	5290	75.72	75.80	75.80	87.76	87.36	85.04		
Resu	ılt				Com	plied				



		UN	II Emission Ba	ndwidth Resul	t (5470-5725MF	Iz band)			
Condit	ion		Emission Bandwidth (MHz)						
		F ree r	9	99% Bandwidt	h	:	26dB Bandwidt	h	
Modulation Mode	Ντχ	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 1	Chain Port 2	Chain Port 3	
11a	1	5500	16.61	-	-	20.27	-	-	
11a	1	5580	16.49	-	-	19.67	-	-	
11a	1	5700	16.74	-	-	20.10	-	-	
HT20	3	5500	17.84	18.01	17.84	21.60	21.50	22.02	
HT20	3	5580	17.76	17.74	18.06	20.80	22.17	21.22	
HT20	3	5700	17.89	17.76	17.89	20.72	21.02	22.10	
HT40	3	5510	36.70	36.74	36.62	44.84	42.96	44.44	
HT40	3	5550	36.74	36.58	36.62	45.24	44.44	45.40	
HT40	3	5670	36.58	36.66	36.54	44.40	45.44	43.16	
VHT20	3	5500	17.69	17.71	17.79	21.15	20.60	21.05	
VHT20	3	5580	17.71	17.81	17.91	21.92	21.00	22.07	
VHT20	3	5700	17.96	17.86	17.76	21.15	21.30	21.15	
VHT40	3	5510	36.66	36.66	36.70	44.88	45.80	45.32	
VHT40	3	5550	36.74	36.50	36.62	45.48	44.60	43.48	
VHT40	3	5670	36.66	36.54	36.58	43.40	45.80	44.76	
VHT80	3	5530	75.88	76.04	75.80	87.04	87.36	85.28	
Resu	ılt			•	Com	plied	•	•	







3.2 **RF Output Power**

3.2.1 RF Output Power Limit

		Maximum Conducted Output Power Limit				
UNI	l Dev	vices				
	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]				
		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 V 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	For the 5.47-5.725 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.					
	For	the 5.725-5.85 GHz band:				
		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.				

3.2.2 Measuring Instruments

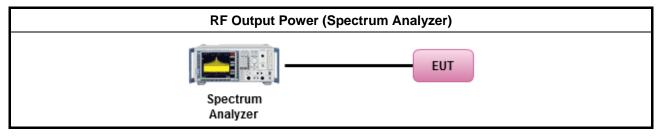
Refer a test equipment and calibration data table in this test report.



3.2.3 Test Procedures

		Test Method
\square	Max	imum Conducted Output Power
	[dut	y cycle ≥ 98% or external video / power trigger]
	\boxtimes	Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 (spectral trace averaging).
		Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)
	duty	cycle < 98% and average over on/off periods with duty factor
		Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 (spectral trace averaging).
		Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wid	eband RF power meter and average over on/off periods with duty factor
		Refer as FCC KDB 789033 D02 v01, 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 port 1.
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
	\boxtimes	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.
	\boxtimes	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

3.2.4 Test Setup





	Directiona	al Gain (DG) R	lesult		
Transmit Chain	s No.	1	2	3	-
Maximum G _{ANT}	(dBi)	2.58	2.58	2.58	-
Modulation Mode	DG (dBi) (See the Note 3)	N _{TX}	N _{ss} (Min.)	STBC	Array Gain (dB)
11a	2.58	1	1	-	-
HT20	7.35	3	1/2/3	-	4.77
HT40	7.35	3	1/2/3	-	4.77
VHT20	7.35	3	1/2/3	-	4.77
VHT40	7.35	3	1/2/3	-	4.77
VHT80	7.35	3	1/2/3	-	4.77
Note 1: For all transmitter out Any transmit signals a All transmit signals ar Note 2: For all transmitter out Any transmit signals a All transmit signals ar Note 3: For Spatial Multiplexir where Nss = the num Note 4: For CDD transmission Directional Gain (DG)	are correlated, Direct e completely uncorre- puts with unequal at are correlated, Direct e completely uncorre- ng, Directional Gain ber of independent ns, directional gain i	ctional Gain = 0 related, Direction ntenna gains, o ctional Gain =1 related, Direction (DG) = G _{ANT} + spatial streams s calculated as	$G_{ANT} + 10$ log(N- onal Gain = G_{AN} directional gain 0 log[($10^{G1/20}$ +. onal Gain = 10 log 10 log(N _{TX} /N _{SS} s data. s power measur	rx) T is to be compu + 10 ^{GN/20}) ² /I og[(10 ^{G1/10} +), ements:	ited as follows

3.2.5 Directional Gain for Power Measurement

Array Gain = 0 dB (i.e., no array gain) for $N_{TX} \le 4$; Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{TX}

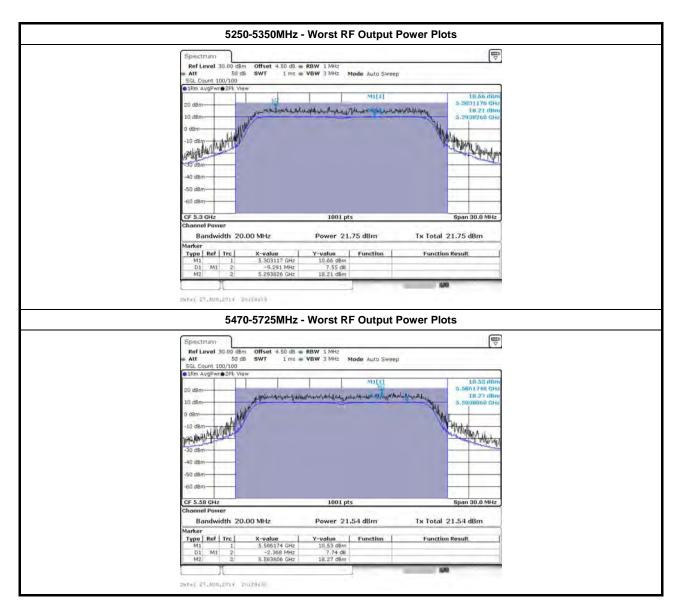


		Maxim	um Conducte	ed Output Po	wer (5250-53	50MHz band)		
		F		Output Power (dBm)				
Modulation Mode	Ντχ	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Sum Chain	Antenna Gain (dBi)	Power Limit
11a	1	5260	21.64	-	-	21.64	2.58	24.22
11a	1	5300	21.75	-	-	21.75	2.58	24.33
11a	1	5320	21.62	-	-	21.62	2.58	24.20
HT20	3	5260	15.79	16.85	15.47	20.85	7.35	28.20
HT20	3	5300	16.01	16.81	15.80	21.00	7.35	28.35
HT20	3	5320	15.83	16.67	16.67	21.18	7.35	28.53
HT40	3	5270	17.26	16.98	17.00	21.85	7.35	29.20
HT40	3	5310	15.18	15.97	15.19	20.23	7.35	27.58
VHT20	3	5260	15.97	17.00	15.63	21.01	7.35	28.36
VHT20	3	5300	16.09	17.09	15.30	20.99	7.35	28.34
VHT20	3	5320	16.11	16.89	15.53	20.98	7.35	28.33
VHT40	3	5270	17.35	17.22	17.04	21.98	7.35	29.33
VHT40	3	5310	15.18	15.98	15.17	20.23	7.35	27.58
VHT80	3	5290	11.38	12.36	11.37	16.50	7.35	23.85
Resu	ult	-		•		Complied		-

3.2.6 Test Result of Maximum Conducted Output Power

	Maximum Conducted Output Power (5470-5725MHz band)								
		F	Output Power (dBm)				Antonno Osin		
Modulation Mode	Ντχ	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Sum Chain	Antenna Gain (dBi)	Power Limit	
11a	1	5500	20.70	-	-	20.70	2.58	23.28	
11a	1	5580	21.54	-	-	21.54	2.58	24.12	
11a	1	5700	21.01	-	-	21.01	2.58	23.59	
HT20	3	5500	16.22	16.37	16.08	21.00	7.35	28.35	
HT20	3	5580	16.21	16.36	15.95	20.95	7.35	28.30	
HT20	3	5700	14.85	14.76	14.23	19.39	7.35	26.74	
HT40	3	5510	13.32	13.60	13.63	18.29	7.35	25.64	
HT40	3	5550	17.50	17.01	17.52	22.12	7.35	29.47	
HT40	3	5670	16.93	16.95	16.44	21.55	7.35	28.90	
VHT20	3	5500	16.37	16.56	15.77	21.02	7.35	28.37	
VHT20	3	5580	16.42	16.69	15.75	21.08	7.35	28.43	
VHT20	3	5700	13.44	13.32	12.07	17.76	7.35	25.11	
VHT40	3	5510	13.72	14.02	13.96	18.67	7.35	26.02	
VHT40	3	5550	17.48	17.55	17.45	22.26	7.35	29.61	
VHT40,	3	5670	16.83	16.90	16.49	21.51	7.35	28.86	
VHT80	3	5530	11.34	11.74	11.65	16.35	7.35	23.70	
Resu	ult					Complied			





perated normally mode for worst duty cycle	
perated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
100% - IEEE 802.11a	0
100% - IEEE 802.11n (HT20)	0
100% - IEEE 802.11n (HT40)	0
100% - IEEE 802.11ac (VHT20)	0
100% - IEEE 802.11ac (VHT40)	0
100% - IEEE 802.11ac (VHT80)	0

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



3.3 Peak Power Spectral Density

3.3.1 Peak Power Spectral Density Limit

	Peak Power Spectral Density Limit
UN	II Devices
	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 $P_{Out} = 17 - (G_{TX} - 23)$.
\square	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) \leq 11 dBm/MHz. If G _{TX} > 6 dBi, then PPSD= 11 – (G _{TX} – 6).
\square	For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) \leq 11 dBm/MHz. If G _{TX} > 6 dBi, then PPSD= 11 – (G _{TX} – 6).
	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) ≤ 30 dBm/500kHz.
pov	SD = peak power spectral density that he same method as used to determine the conducted output wer shall be used to determine the power spectral density. And power spectral density in dBm/MHz $_{c}$ = the 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

	<u>.</u>	Test Method
\boxtimes	outp func	power spectral density procedures that the same method as used to determine the conducted ut power shall be used to determine the peak power spectral density and use the peak search ion on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density be measured using below options:
		Refer as FCC KDB 789033 D02 v01, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth
	[duty	r cycle ≥ 98% or external video / power trigger]
	\boxtimes	Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 (spectral trace averaging).
		Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)
	duty	cycle < 98% and average over on/off periods with duty factor
		Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 (spectral trace averaging).
		Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
\boxtimes	For o	conducted measurement.
	\boxtimes	The EUT supports single transmit chain and measurements performed on this transmit chain port 1.
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
	\boxtimes	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.

3.3.4 Test Setup

Power Spectral Density						
	EUT					
Spectrum Analyzer						

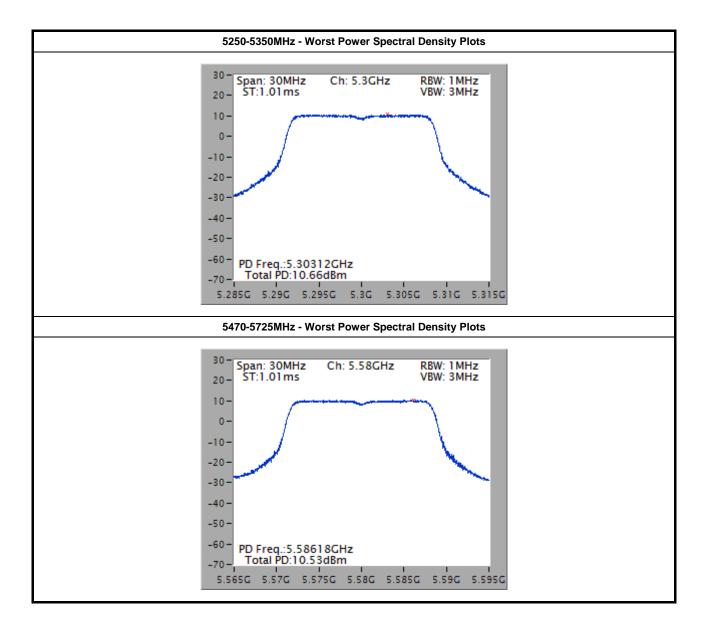


		Peak P	ower Spectral Density Resul	t (5250-5350MHz band	i)
Modulation Mode	Ντχ	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit	Antenna Gain (dBi)
11a	1	5260	10.51	11.00	2.58
11a	1	5300	10.66	11.00	2.58
11a	1	5320	10.61	11.00	2.58
HT20	3	5260	9.19	9.65	7.35
HT20	3	5300	9.41	9.65	7.35
HT20	3	5320	9.39	9.65	7.35
HT40	3	5270	7.16	9.65	7.35
HT40	3	5310	5.59	9.65	7.35
VHT20	3	5260	9.35	9.65	7.35
VHT20	3	5300	9.51	9.65	7.35
VHT20	3	5320	9.32	9.65	7.35
VHT40	3	5270	7.24	9.65	7.35
VHT40	3	5310	5.62	9.65	7.35
VHT80	3	5290	-1.40	9.65	7.35
Resu	ult			Complied	

3.3.5 Test Result of Peak Power Spectral Density

		Peak P	ower Spectral Density Result ((5470-5725MHz band)	
Modulation Mode	Ντχ	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit	Antenna Gain (dBi)
11a	1	5500	9.67	11.00	2.58
11a	1	5580	10.53	11.00	2.58
11a	1	5700	9.99	11.00	2.58
HT20	3	5500	9.44	9.65	7.35
HT20	3	5580	9.42	9.65	7.35
HT20	3	5700	7.86	9.65	7.35
HT40	3	5510	3.74	9.65	7.35
HT40	3	5550	7.58	9.65	7.35
HT40	3	5670	7.11	9.65	7.35
VHT20	3	5500	9.35	9.65	7.35
VHT20	3	5580	9.51	9.65	7.35
VHT20	3	5700	6.23	9.65	7.35
VHT40	3	5510	4.00	9.65	7.35
VHT40	3	5550	7.60	9.65	7.35
VHT40	3	5670	6.90	9.65	7.35
VHT80	3	5530	-1.40	9.65	7.35
Resu	ult			Complied	

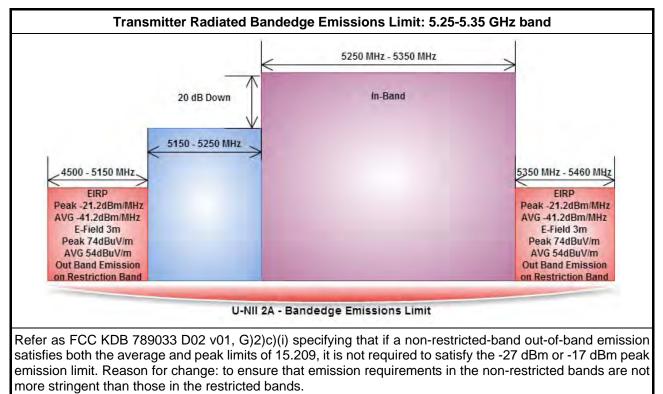


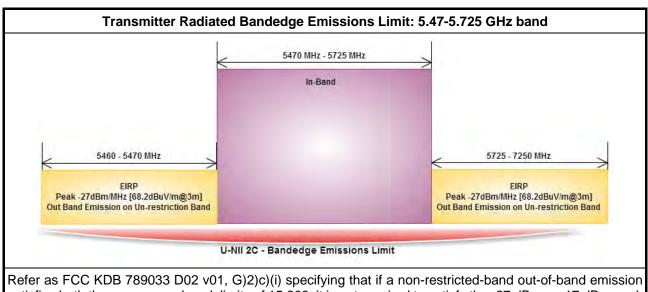




3.4 Transmitter Bandedge Emissions

3.4.1 Transmitter Radiated Bandedge Emissions Limit





Refer as FCC KDB 789033 D02 v01, 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.

3.4.2 Measuring Instruments

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

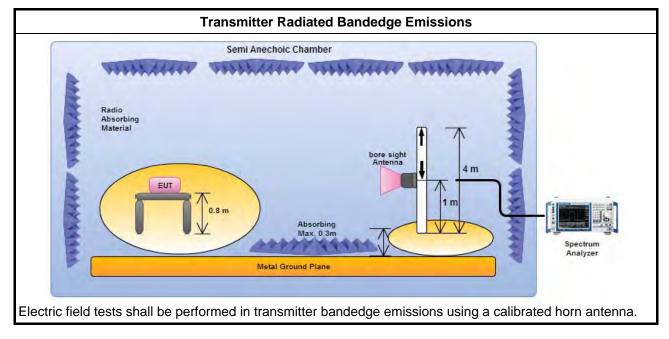


3.4.3 Test Procedures

	Test Method
\square	The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
\boxtimes	Refer as ANSI C63.10, clause 6.9.2.2 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 D02 v01, clause H)2) for unwanted emissions into non-restricted bands.
	Refer as FCC KDB 789033 D02 v01, clause H)1) for unwanted emissions into restricted bands.
	Refer as FCC KDB 789033 D02 v01, H)6) Method AD (Trace Averaging).
	Refer as FCC KDB 789033 D02 v01, H)6) Method VB (Reduced VBW).
	⊠ Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ $1/T$, where T is pulse time.
	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
	\boxtimes Refer as FCC KDB 789033 D02 v01, clause H)5) measurement procedure peak limit.
	Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
\square	For the transmitter bandedge emissions shall be measured using following options below:
	Refer as FCC KDB 789033 D02 v01, clause H)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 6.9.2 for band-edge testing.
	Refer as ANSI C63.10, clause 6.9.3 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.



3.4.4 Test Setup





3.4.5	Transmitter Radiated Bandedge Emissions	(with Antenna)
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		U-NII	5250-5350M	Hz Transmi	itter Radiate	d Bandedge	e (with Ante	enna)		
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	5260	3	5124.60	59.80	74	5109.60	46.06	54	V
11a	1	5320	3	5352.56	67.47	74	5350.04	52.13	54	V
HT20	3	5260	3	5144.40	60.34	74	5115.00	46.76	54	V
HT20	3	5320	3	5352.56	70.05	74	5352.14	52.98	54	V
HT40	3	5270	3	5146.20	60.83	74	5118.00	47.20	54	V
HT40	3	5310	3	5353.54	70.05	74	5350.03	52.88	54	V
VHT20	3	5260	3	5124.00	60.26	74	5116.20	46.90	54	V
VHT20	3	5320	3	5350.74	70.61	74	5350.32	52.83	54	V
VHT40	3	5270	3	5110.20	60.72	74	5112.60	46.95	54	V
VHT40	3	5310	3	5351.20	68.05	74	5350.12	52.55	54	V
VHT80	3	5290	3	5117.40	59.00	74	5134.80	45.45	54	V
VHT80	3	5290	3	5351.40	70.37	74	5350.50	52.70	54	V
lote 1: Measure	ment wo	rst emission	s of receive	antenna pola	arization.	•		•	•	

	1		5470-5725M	112 11a113111		a banueuye			n	
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	5459.28	65.82	74	5460.00	48.83	54	V
11a	1	5700	3	5726.00	66.47	68.2	-	-	-	V
HT20	3	5500	3	5448.24	61.10	74	5449.20	47.17	54	V
HT20	3	5700	3	5725.04	66.57	68.2	-	-	-	V
HT40	3	5510	3	5455.60	59.78	74	5459.90	46.33	54	V
HT40	3	5670	3	5728.60	66.45	68.2	-	-	-	V
VHT20	3	5500	3	5459.28	62.32	74	5451.40	46.95	54	V
VHT20	3	5700	3	5727.12	66.97	68.2	-	-	-	V
VHT40	3	5510	3	5452.00	58.12	74	5458.40	46.40	54	V
VHT40	3	5670	3	5726.20	66.58	68.2	-	-	-	V
VHT80	3	5530	3	5458.80	65.40	74	5459.76	51.69	54	V
VHT80	3	5530	3	5725.04	51.97	68.2	-	-	-	V



3.5 Transmitter Unwanted Emissions

3.5.1 Transmitter Radiated Unwanted Emissions Limit

Unwanted emiss	sions below 1 GHz and re	estricted 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 n equipment. When be extrapolated to	ay 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 field-strength measurements, inverse of linear distance-squared for power-density

3.5.2 Measuring Instruments

measurements).

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

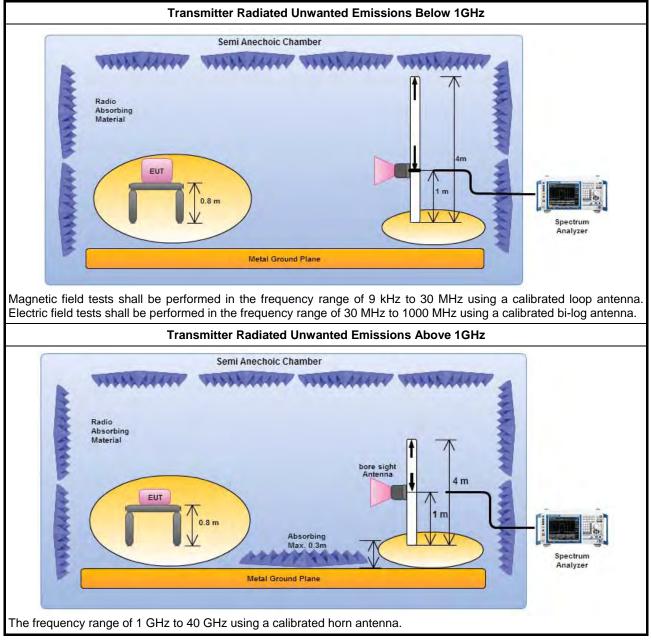


3.5.3 Test Procedures

		Test Method
	perfe equi abov are i be e dista	surements 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 pment. 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 mpractical. When performing measurements at a distance other than that specified, the results shall xtrapolated 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 surements).
\square	The	average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
\boxtimes	For	the transmitter unwanted emissions shall be measured using following options below:
	\boxtimes	Refer as FCC KDB 789033 D02 v01, clause G)2) for unwanted emissions into non-restricted bands.
	\square	Refer as FCC KDB 789033 D02 v01, clause G)1) for unwanted emissions into restricted bands.
		Refer as FCC KDB 789033 D02 v01, G)6) Method AD (Trace Averaging).
		Refer as FCC KDB 789033 D02 v01, G)6) Method VB (Reduced VBW).
		Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW \geq 1/T, where T is pulse time.
		Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
		Refer as FCC KDB 789033 D02 v01, clause G)5) measurement procedure peak limit.
		Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
\bowtie	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.
	\boxtimes	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.
\boxtimes	The	any unwanted emissions level shall not exceed the fundamental emission level.
\square		mplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value no need to be reported.



3.5.4 Test Setup



3.5.5 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.

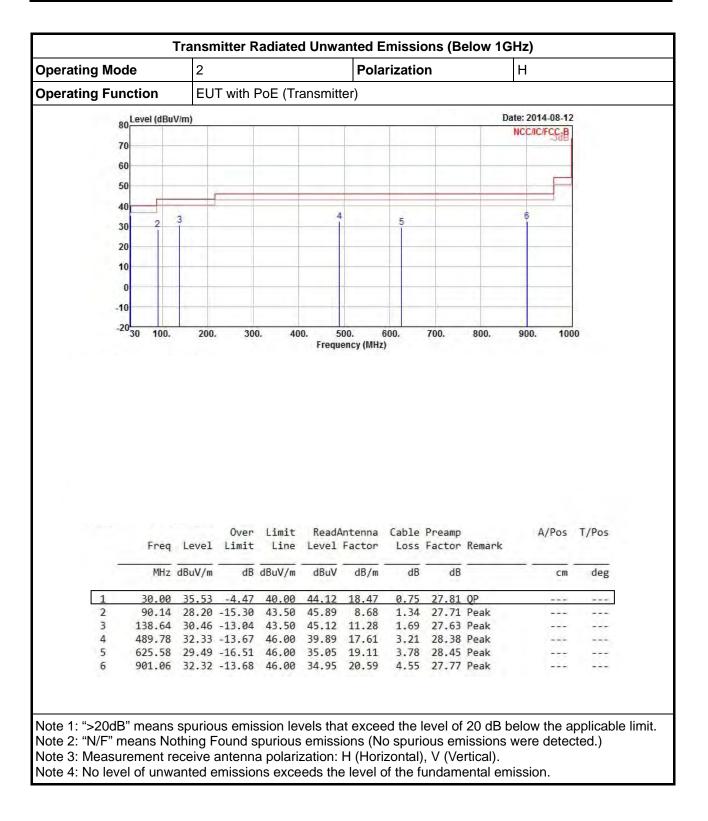


ting F	ode	2				Pola	rizatio	on		V	
-	unction	EU	T with I	PoE (Tr	ansmit	ter)					
104	80 Level (dBu	V/m)						12	D	ate: 2014-08-12	2
										NCC/IC/FCC_B	1
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	60					-					
	50		_				-	_		_	
	40						-				e 1
	30		3				-	5		0	
		2					1	Ĭ			
	20										
	10										
	0										
	-10							_		-	4
	-20 <mark>30 100.</mark>	200.				500. (500.		-	-	1.
	Freq	Level		Limit Line		Antenna Factor		Preamp Factor	Remark	A/Pos	T/Pos
		Level dBuV/m	Limit			Factor			Remark	A/Pos cm	T/Pos
1	MHz	dBuV/m	Limit dB	Line dBuV/m	Level dBuV	Factor dB/m	Loss dB	Factor dB			
1 2	MHz 31.94 159.98	dBuV/m 23.30 24.67	Limit dB -16.70 -18.83	Line dBuV/m 40.00 43.50	Level dBuV 32.74 40.24	Factor dB/m 17.57 10.16	Loss dB 0.76	Factor	Peak		
2 3	MHz 31.94 159.98 222.06	dBuV/m 23.30 24.67 29.11	Limit dB -16.70 -18.83 -16.89	Line dBuV/m 40.00 43.50 46.00	Level dBuV 32.74 40.24 44.80	Factor dB/m 17.57 10.16 9.51	Loss dB 0.76 1.83 2.17	Factor dB 27.77 27.56 27.37	Peak Peak Peak		deg
2	MHz 31.94 159.98 222.06 600.36	dBuV/m 23.30 24.67 29.11 25.22	Limit dB -16.70 -18.83 -16.89 -20.78	Line dBuV/m 40.00 43.50 46.00 46.00	Level dBuV 32.74 40.24 44.80 31.32	Factor dB/m 17.57 10.16	Loss dB 0.76 1.83 2.17 3.70	Factor dB 27.77 27.56	Peak Peak Peak Peak		
			Limit	Line	Level	Factor	Loss	Factor	Remark		

3.5.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)





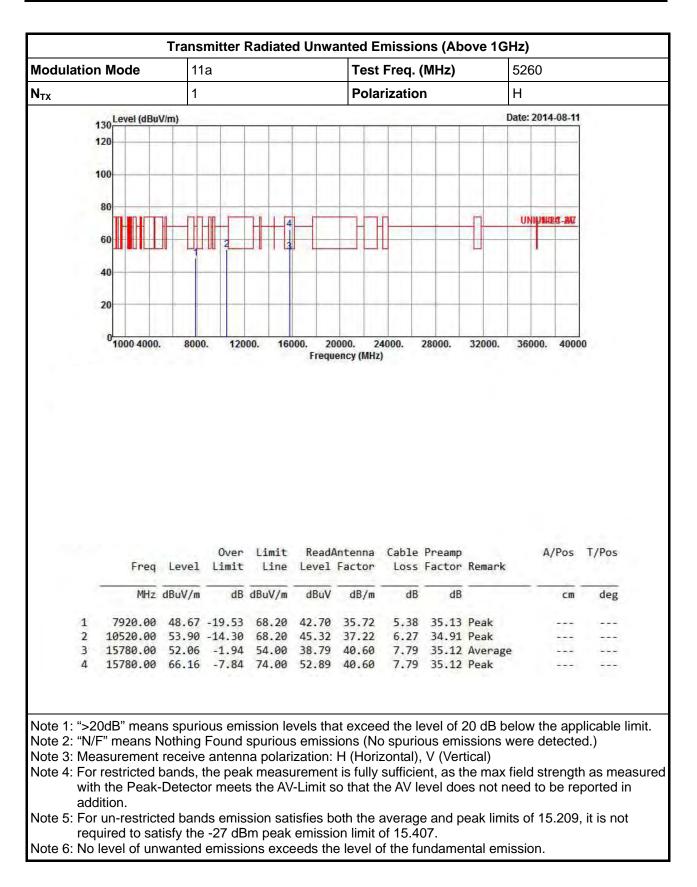




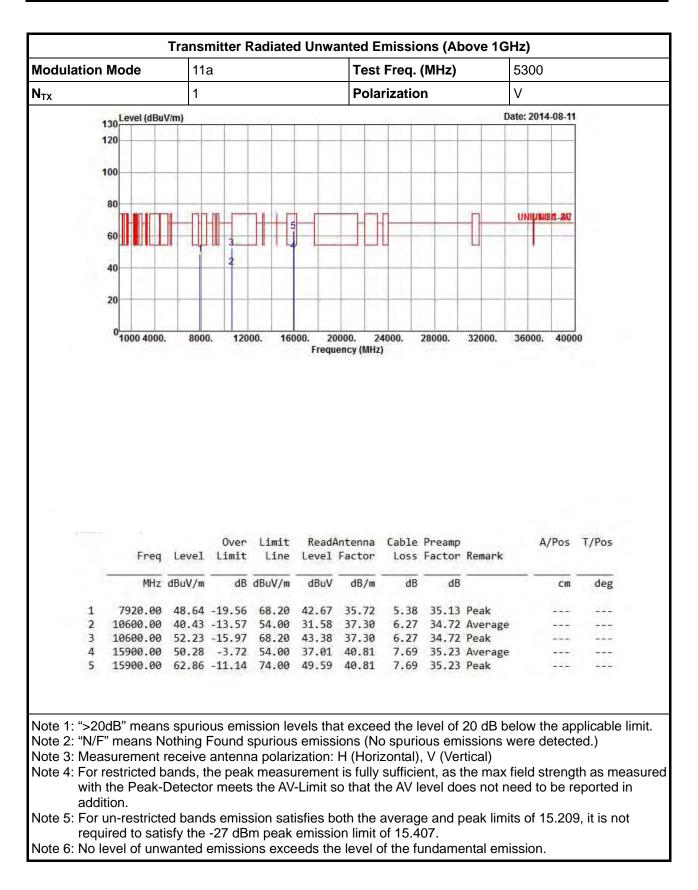
3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5250-5350MHz

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∎TX		1				Pola	rizatio	n		V		
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			Over	Limit	Frequ Read/	ency (MH	cable	Preamp				T/Pos
	Freq	Level	Over Limit	Limit Line	Frequ Read/ Level	Antenna Factor	Cable Loss	Preamp Factor	Remark		Pos	T/Pos
	Freq MHz	Level dBuV/m	Over Limit dB	Limit Line dBuV/m	Read/ Level dBuV	Antenna Factor dB/m	Cable Loss 	Preamp Factor dB	Remark			
1	Freq MHz 7134.00	Level dBuV/m 49.42	Over Limit dB -18.78	Limit Line dBuV/m 68.20	Read/ Level dBuV 43.17	Antenna Factor dB/m 35.94	Cable Loss dB 5.23	Preamp Factor dB 34.92	Remark Peak		Pos	T/Pos
1 2 3	Freq MHz 7134.00 10520.00	Level dBuV/m 49.42 52.09	Over Limit dB -18.78 -16.11	Limit Line dBuV/m 68.20 68.20	Read/ Level dBuV 43.17 43.51	Antenna Factor dB/m 35.94 37.22	Cable Loss dB 5.23 6.27	Preamp Factor dB 34.92 34.91	Remark Peak	Α/	Pos	T/Pos

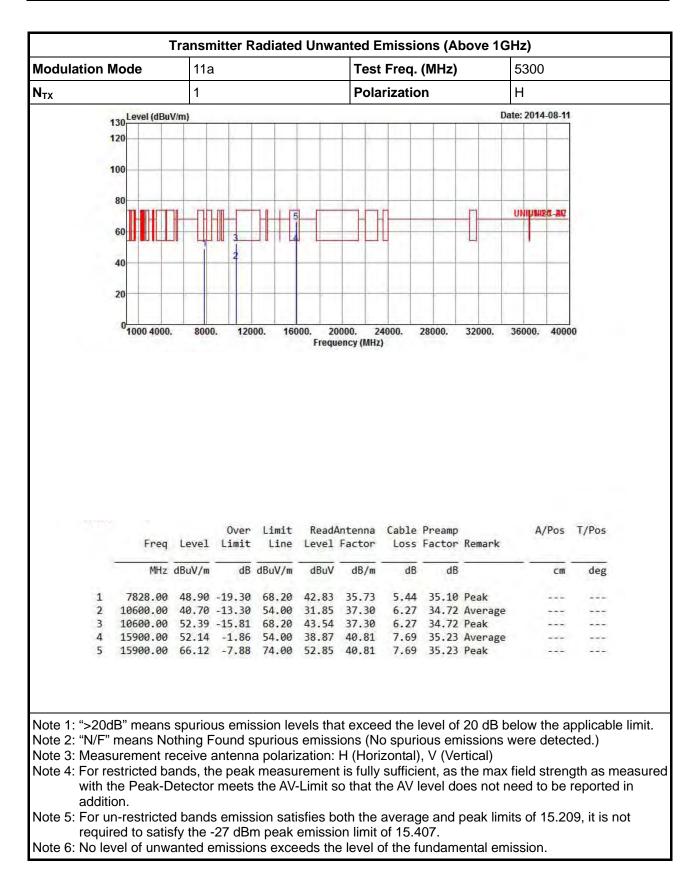




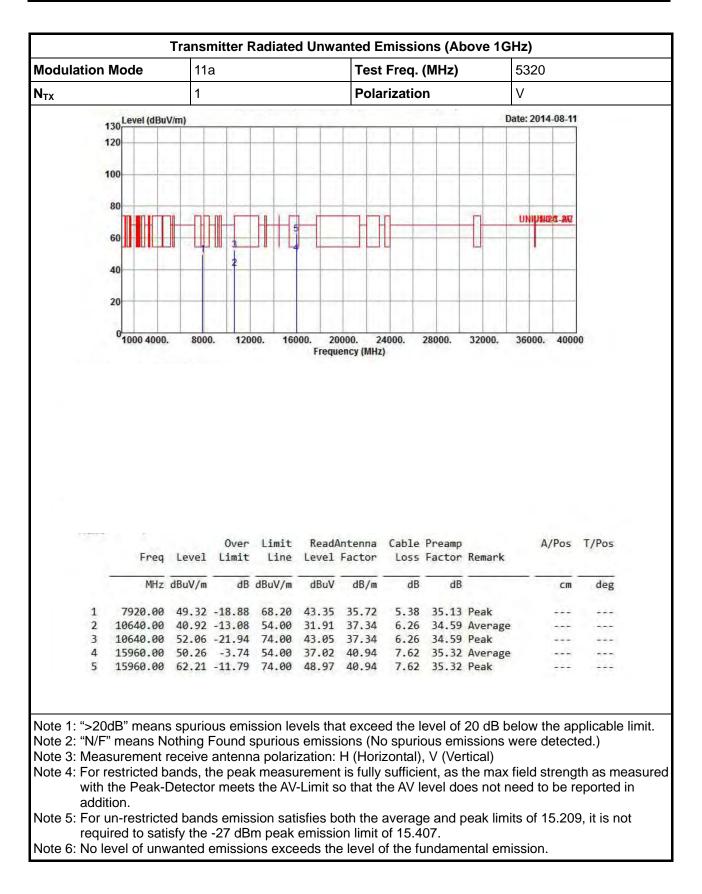




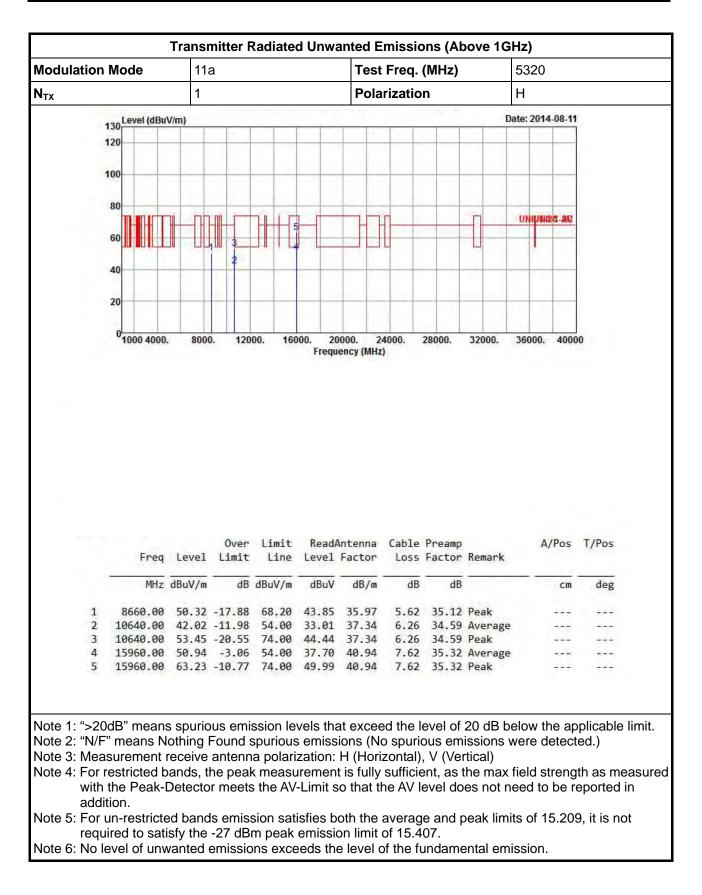




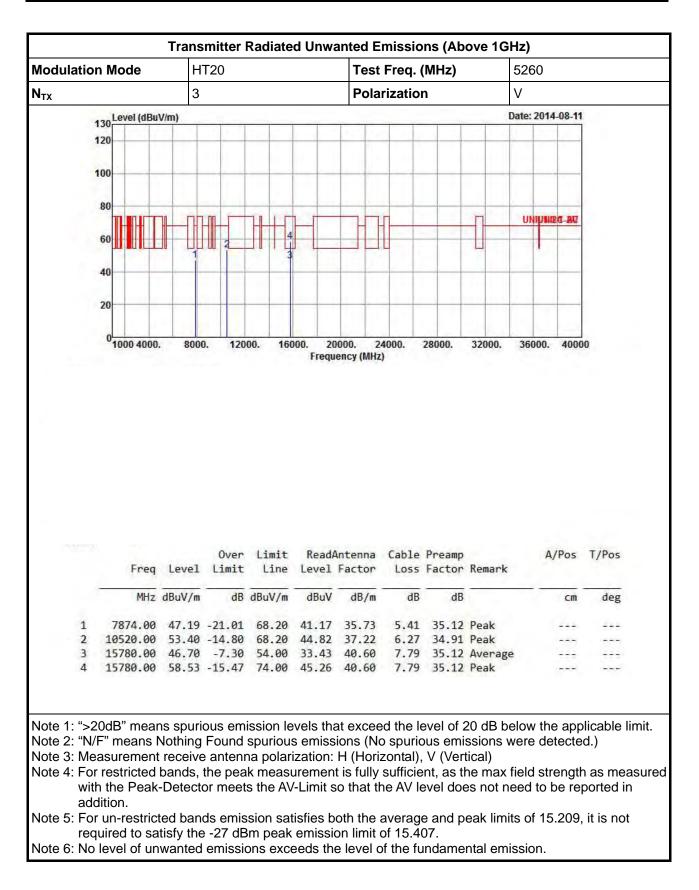




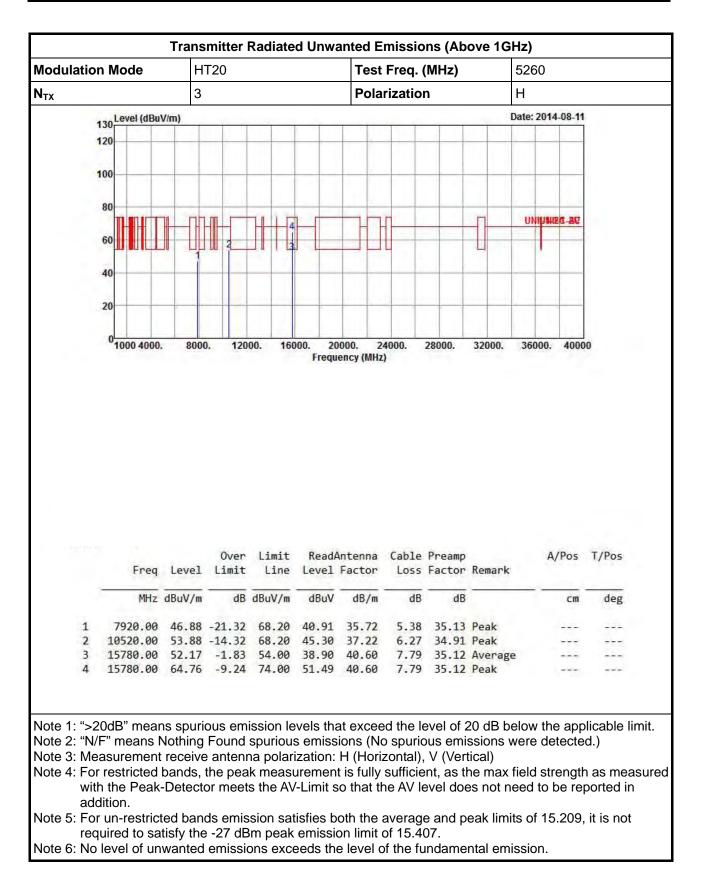




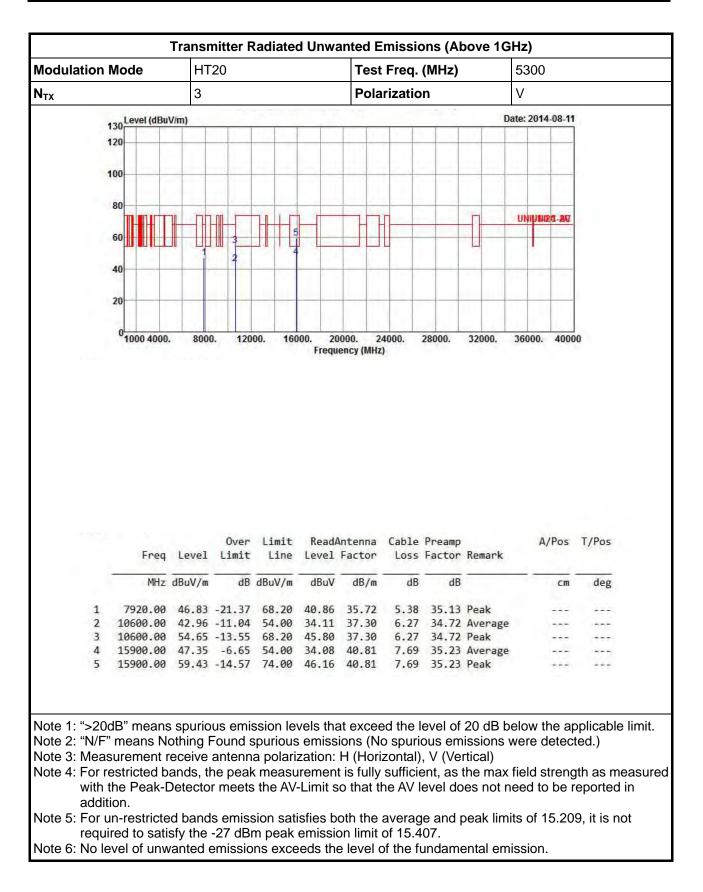




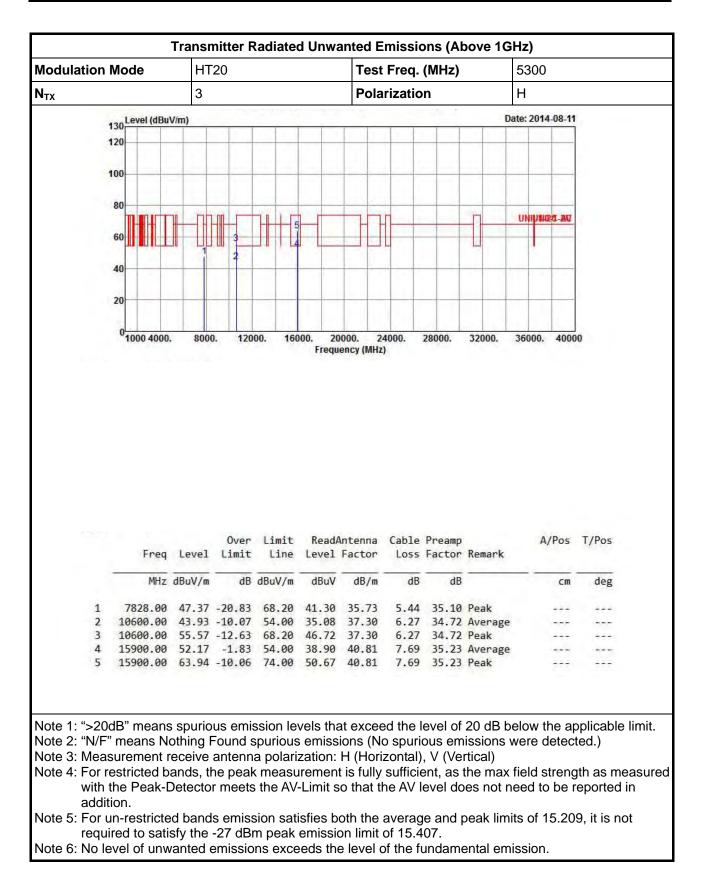




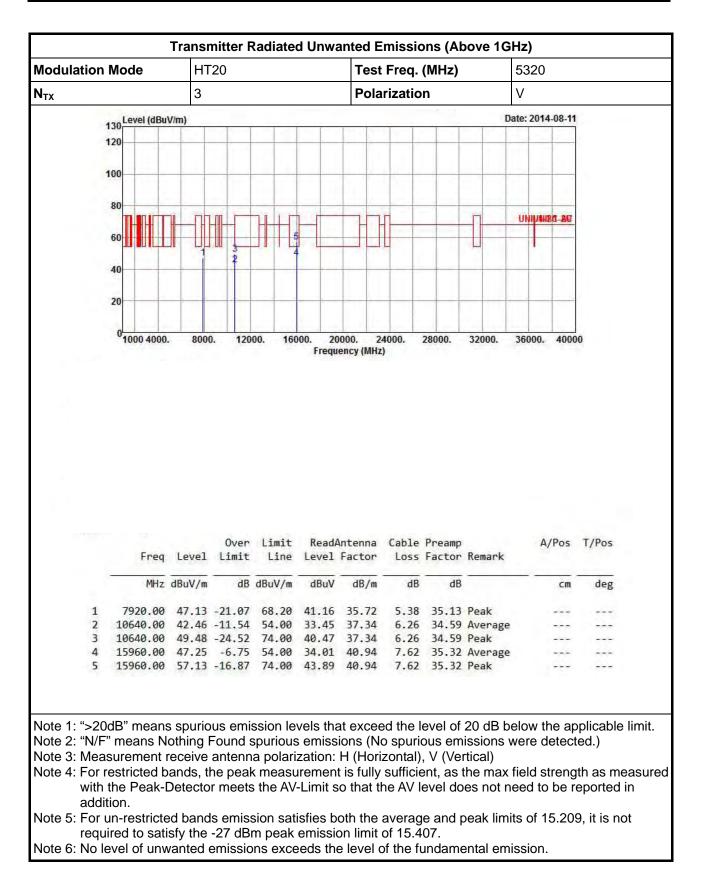




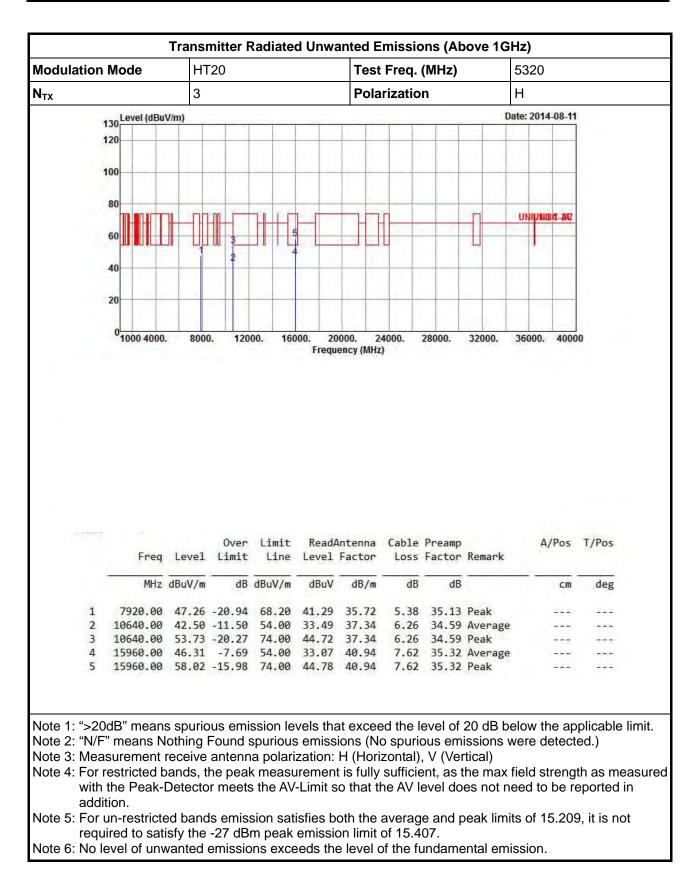




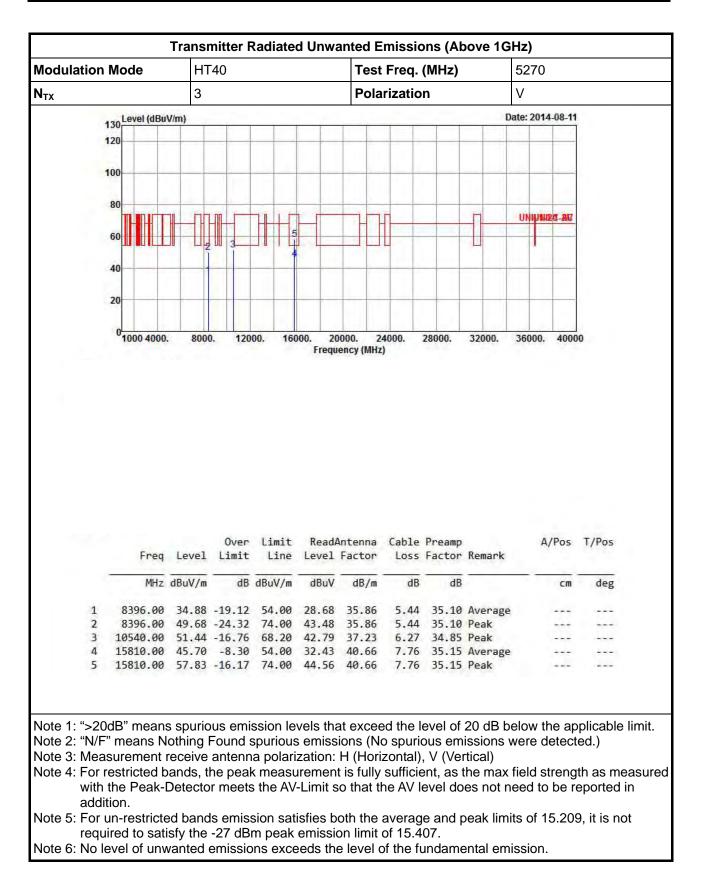




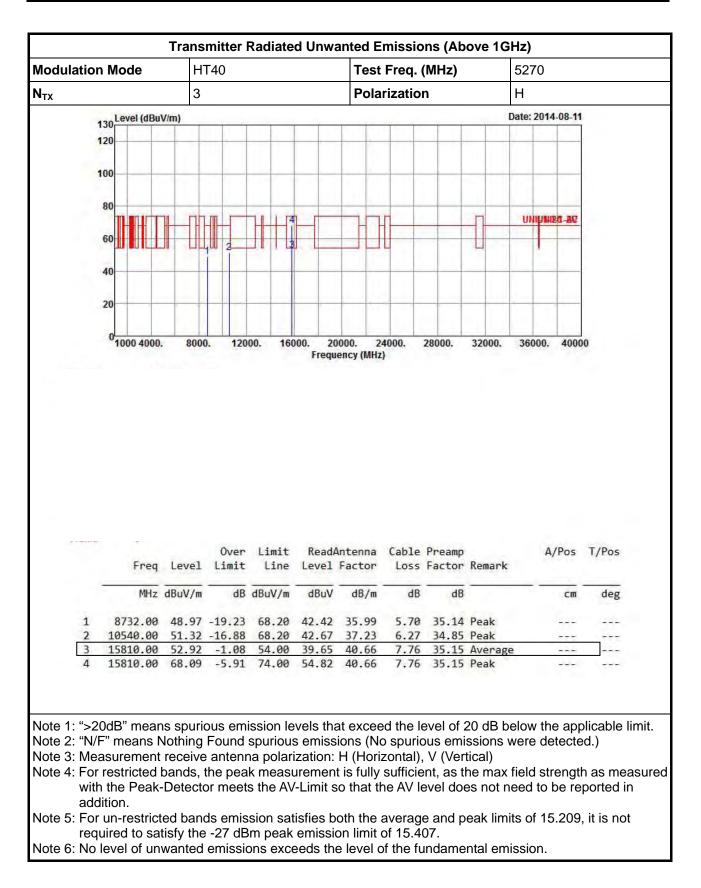




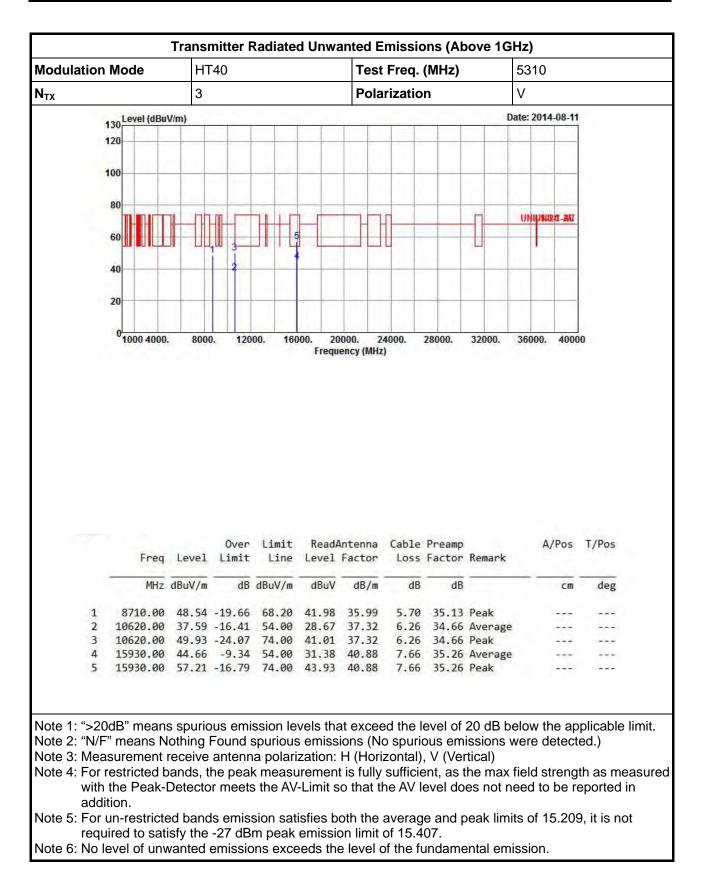




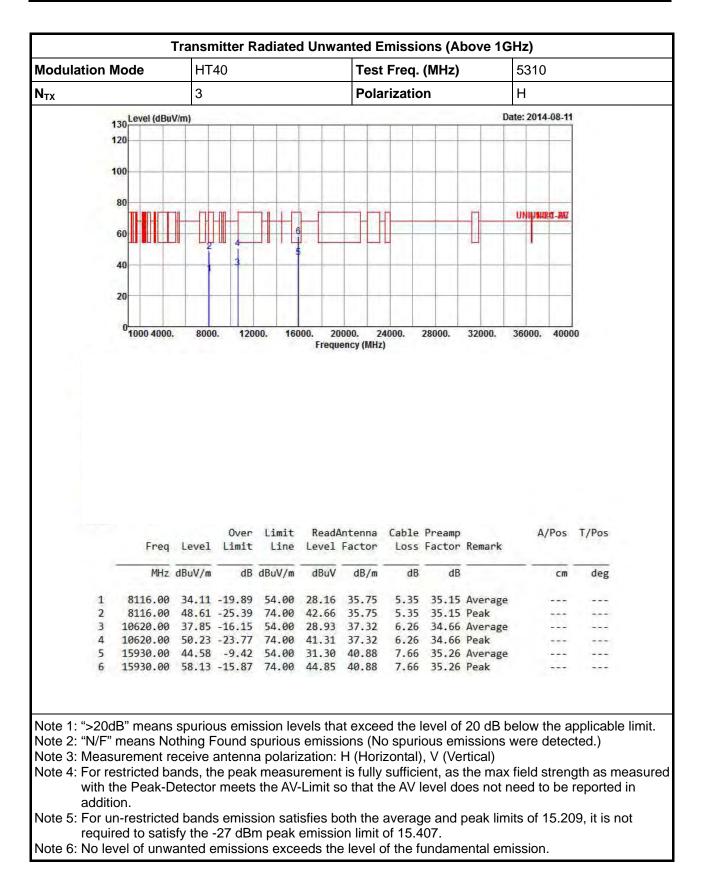




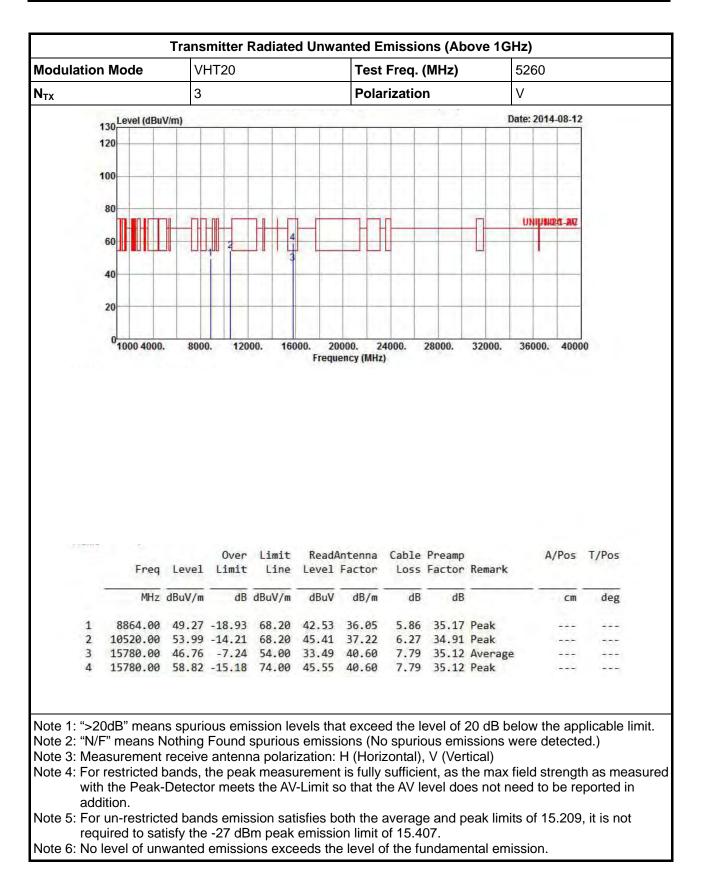




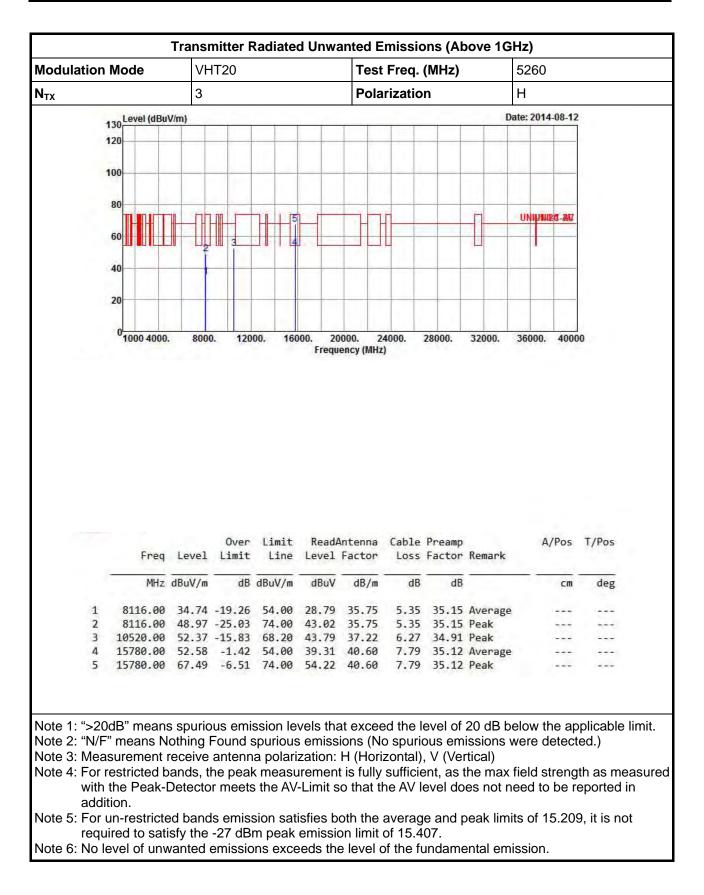




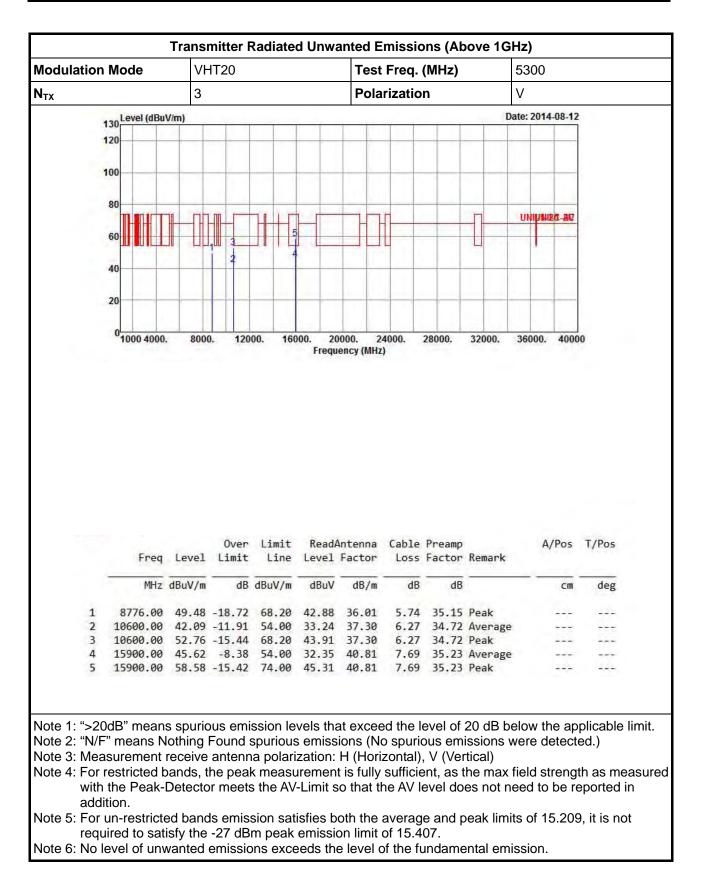




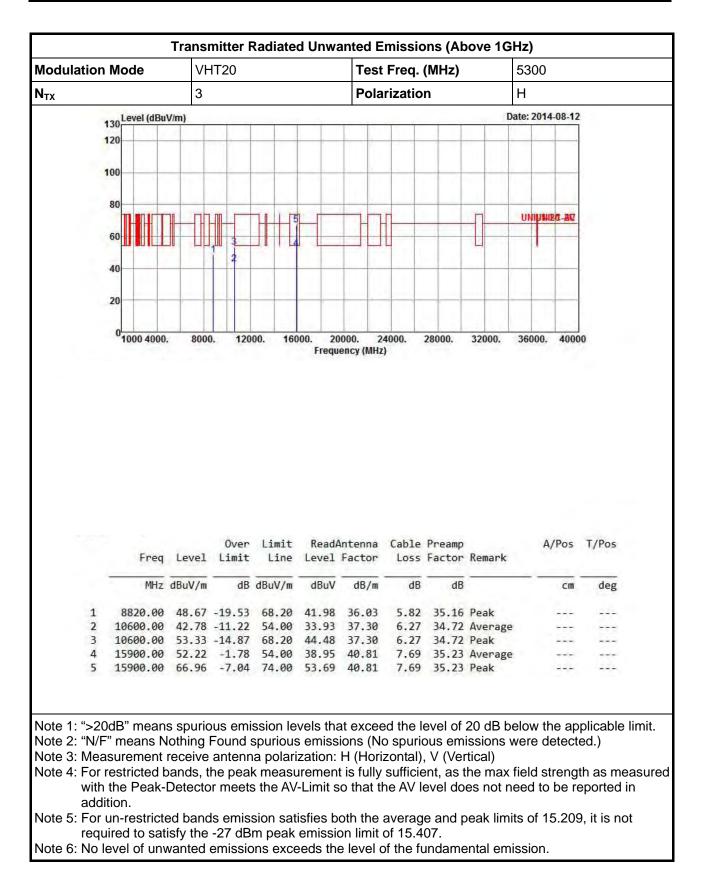




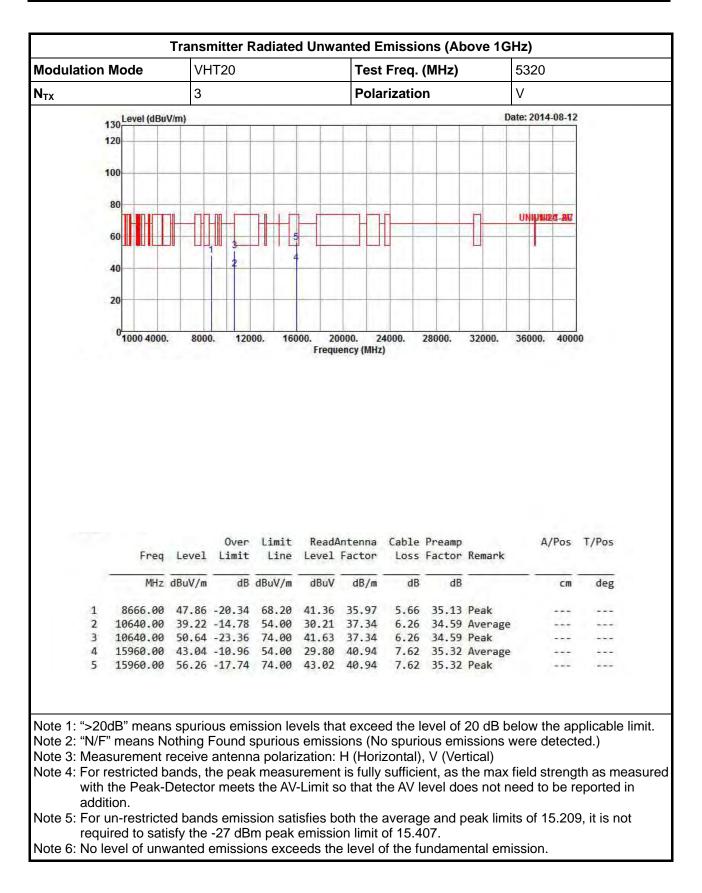




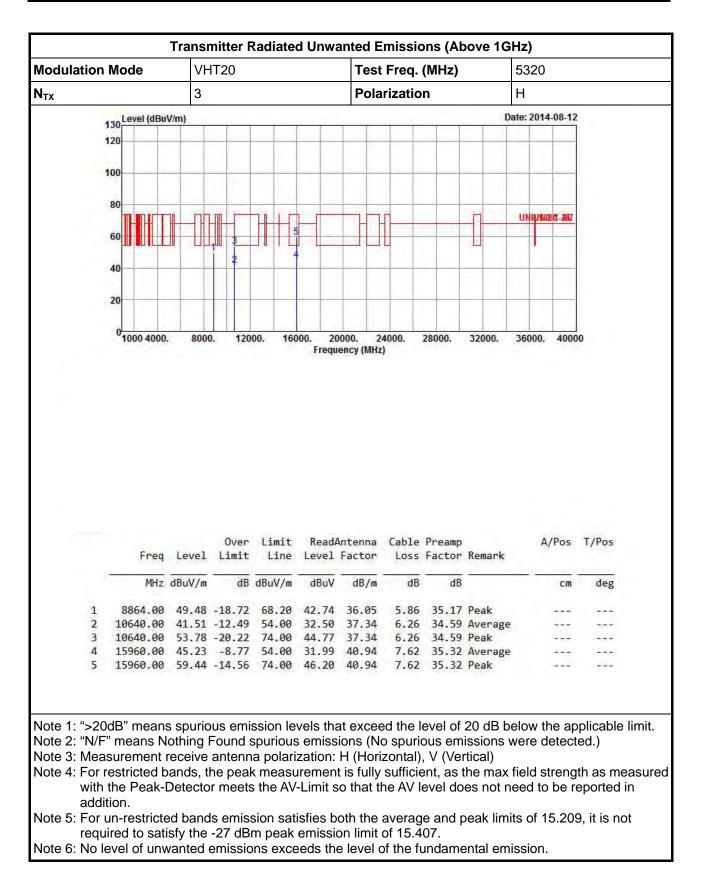




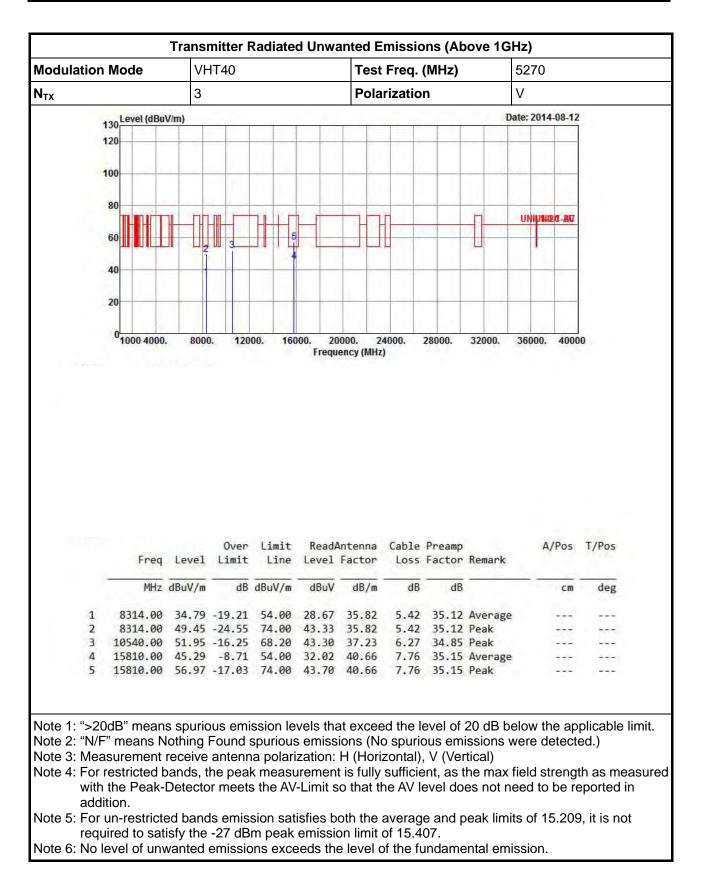




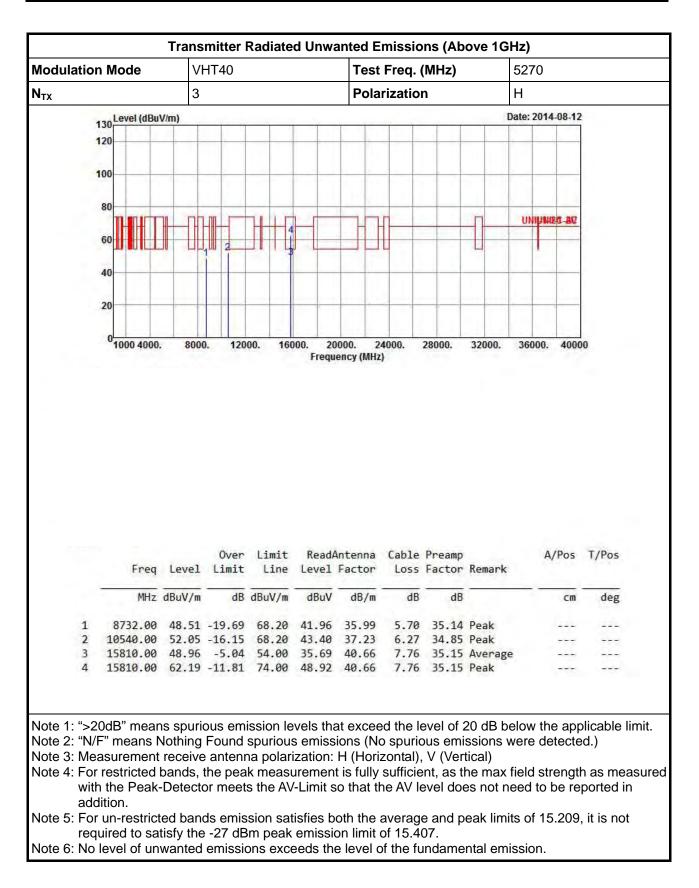




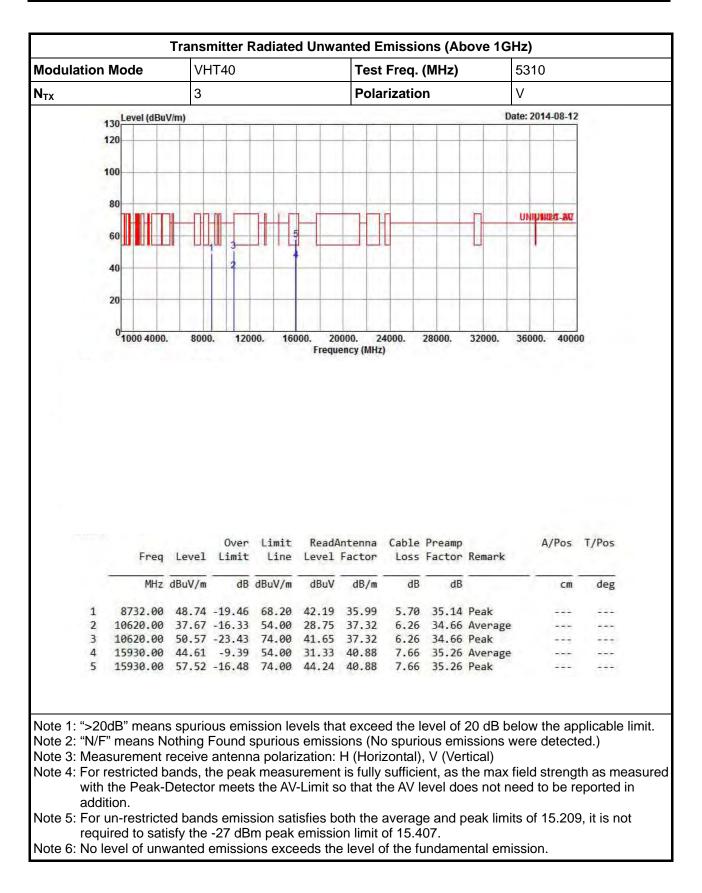




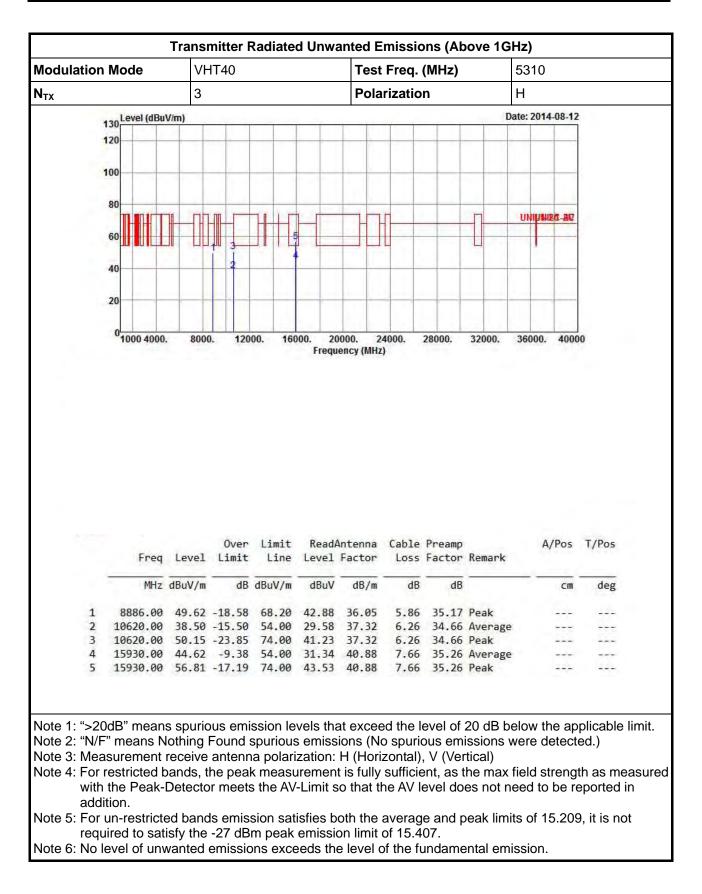




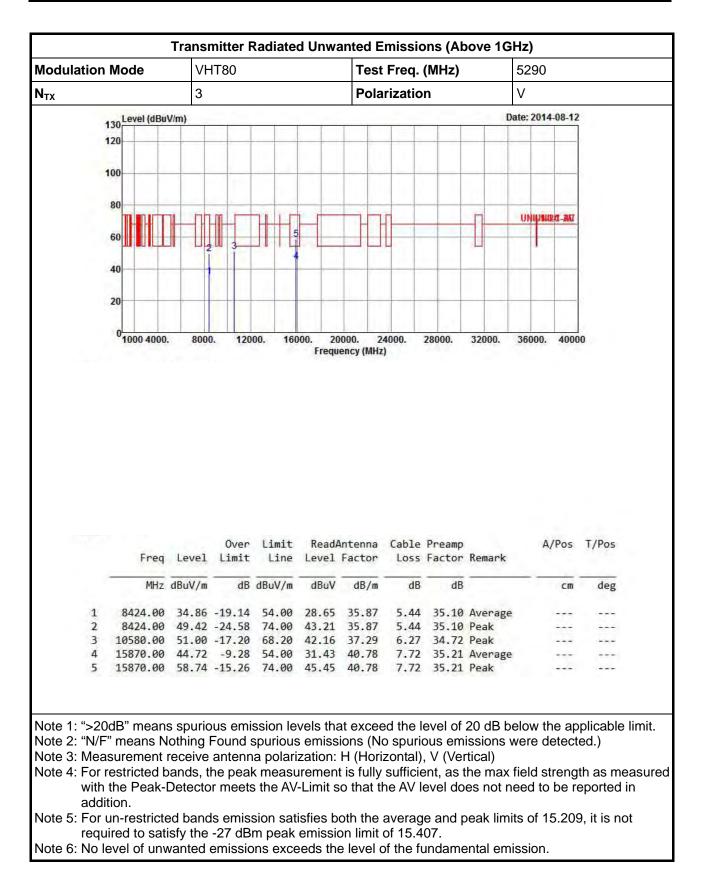




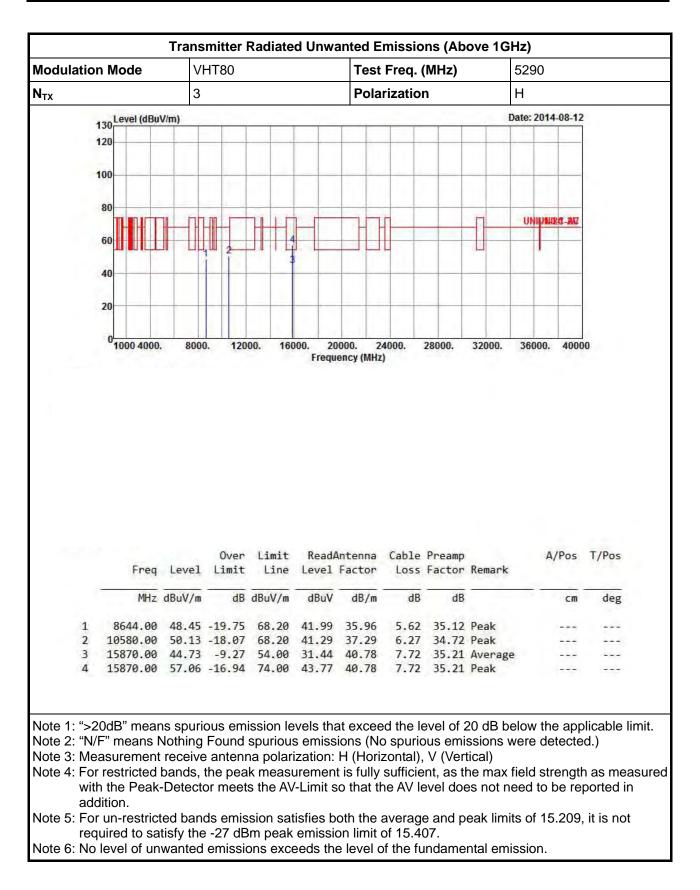






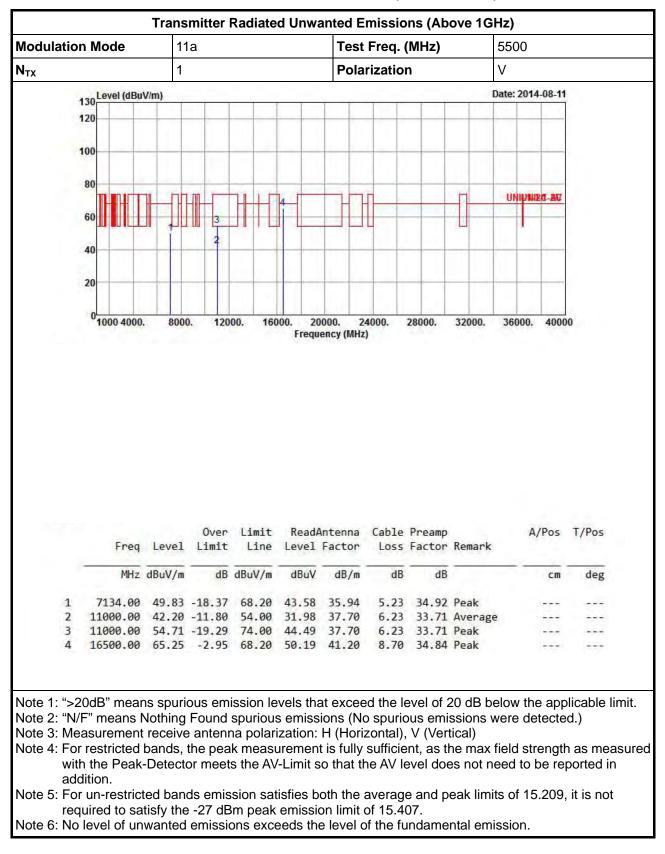




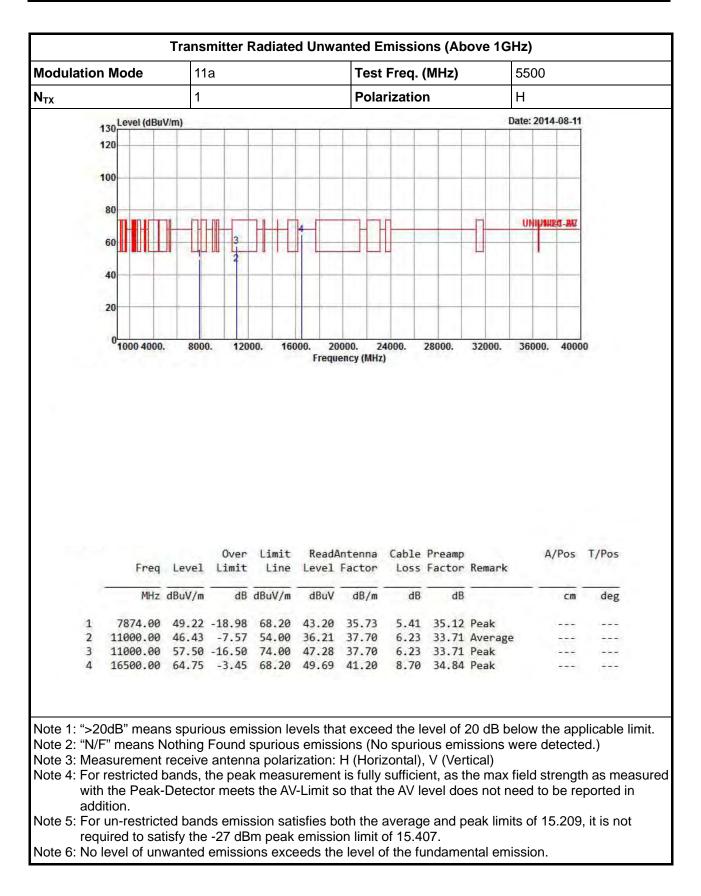




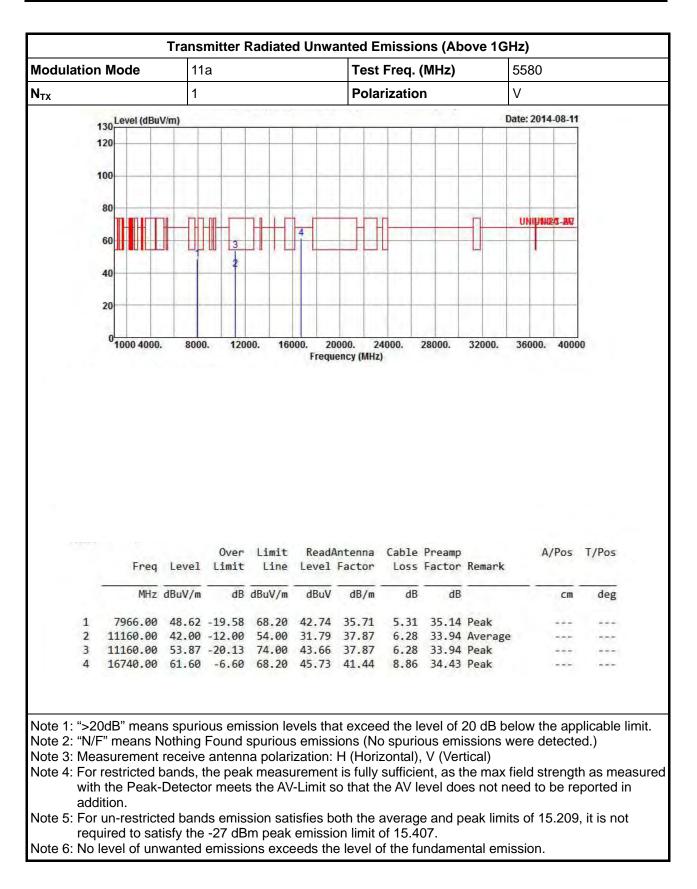
3.5.8 T	Transmitter Radiated	Unwanted Emissions (Above 1GHz) for 5470-5725MHz
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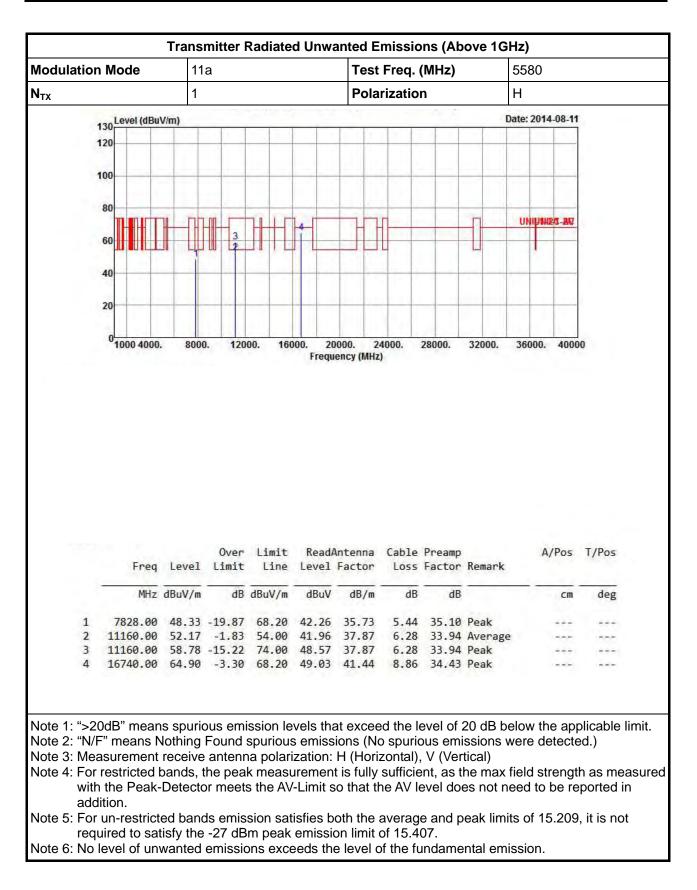




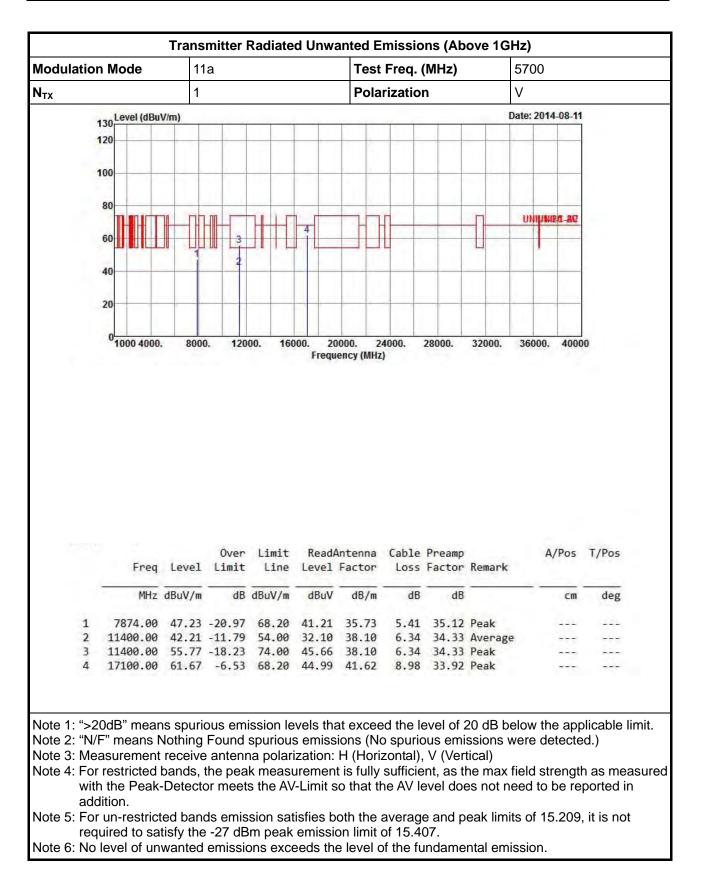




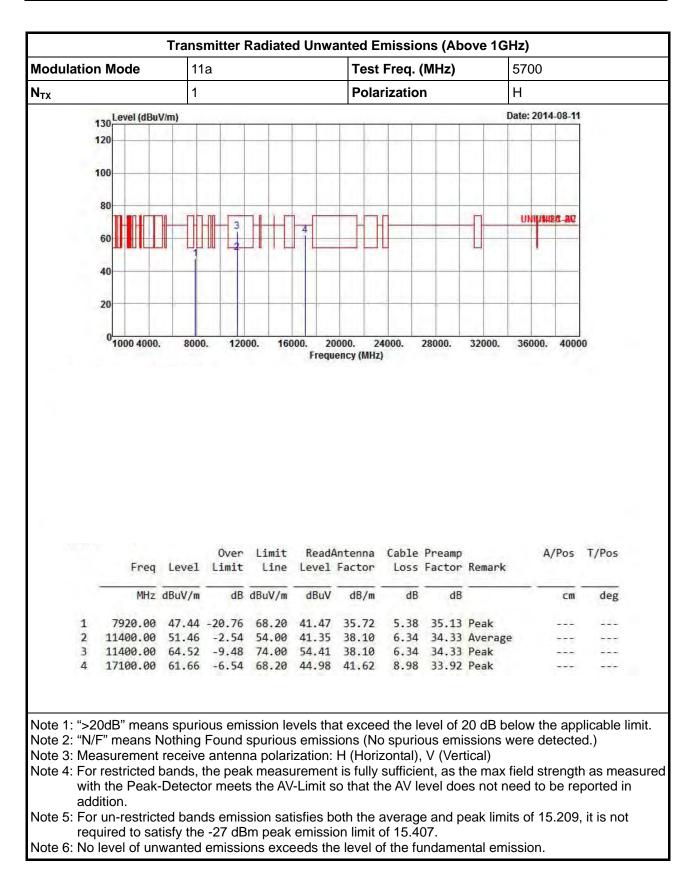




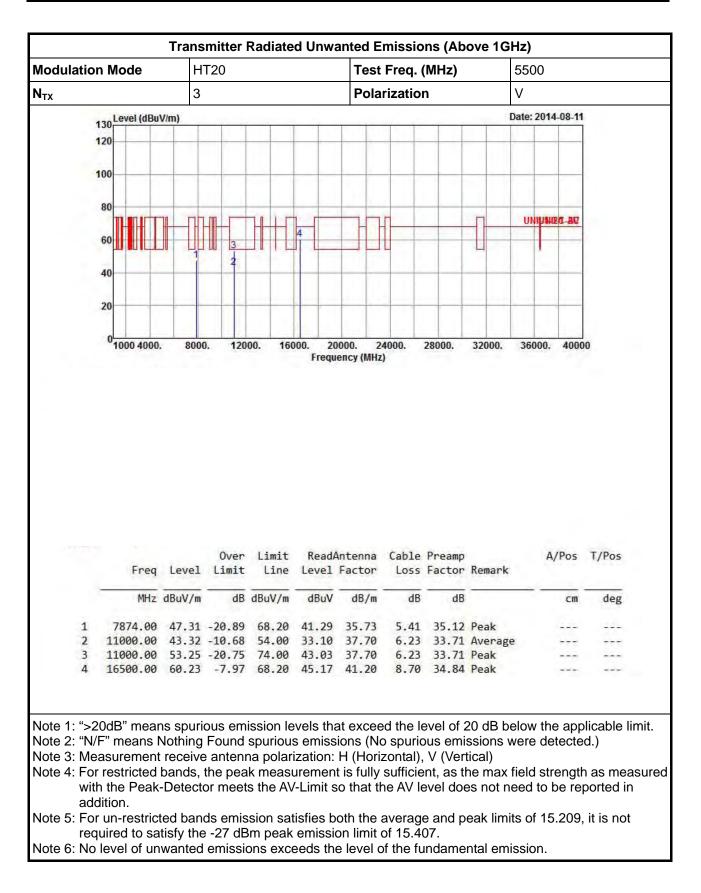




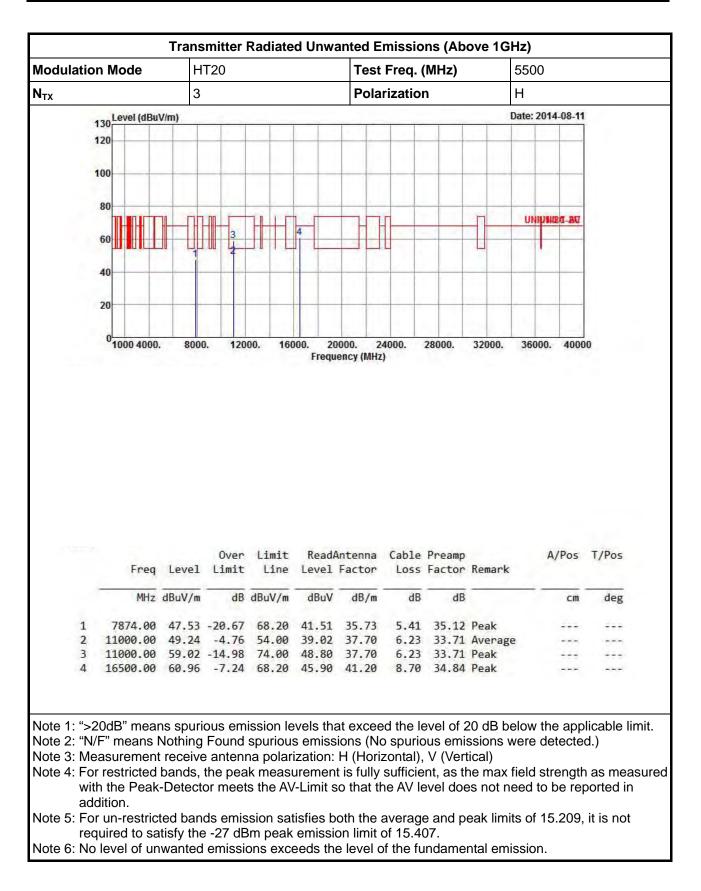




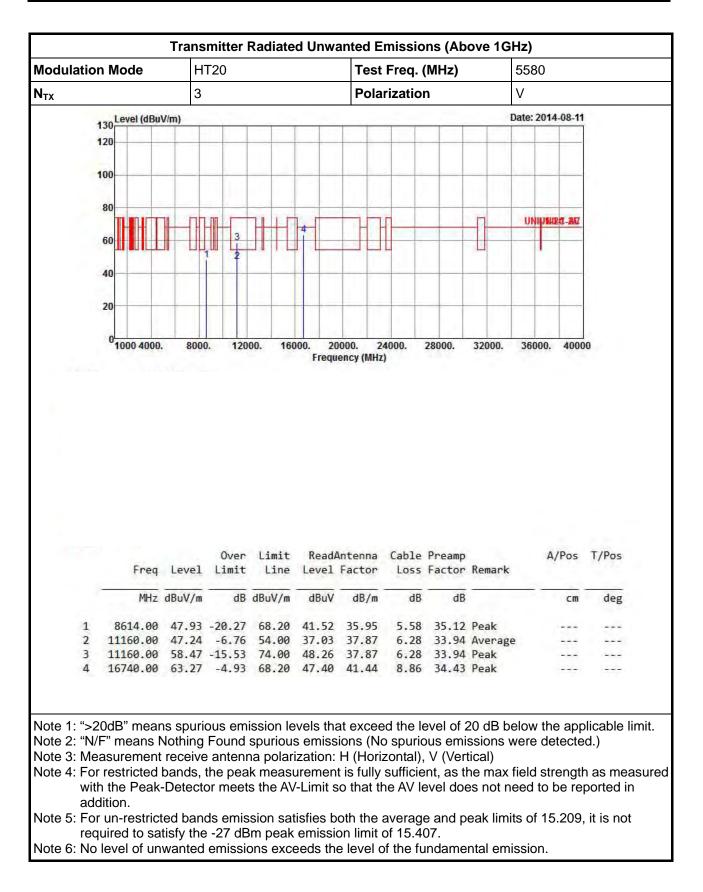




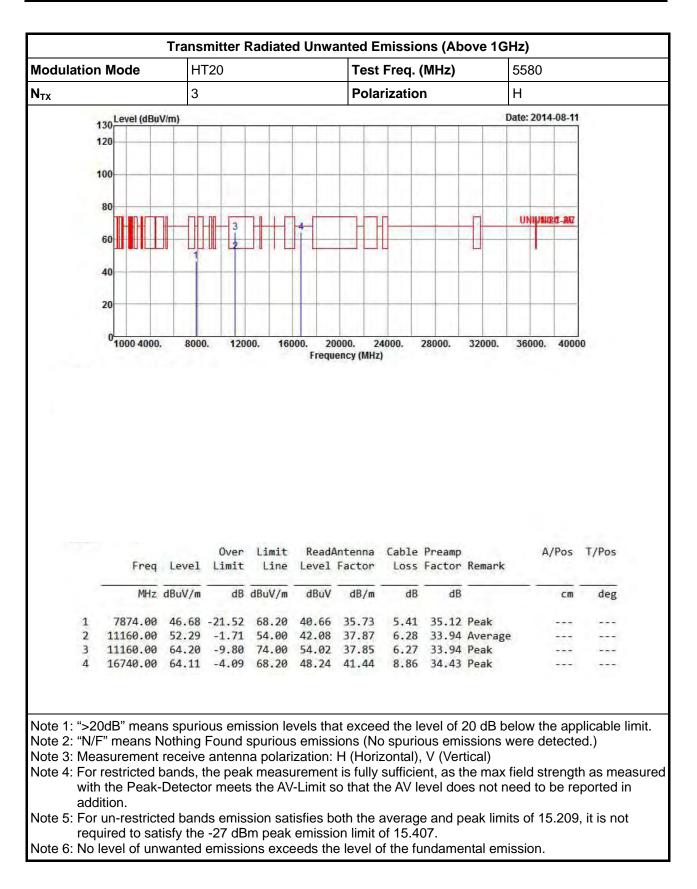




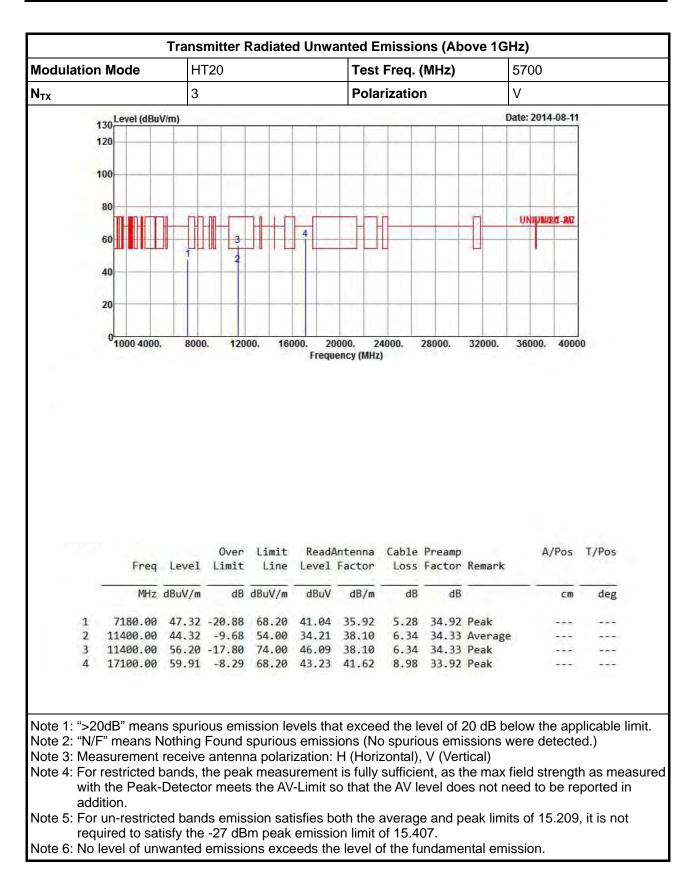




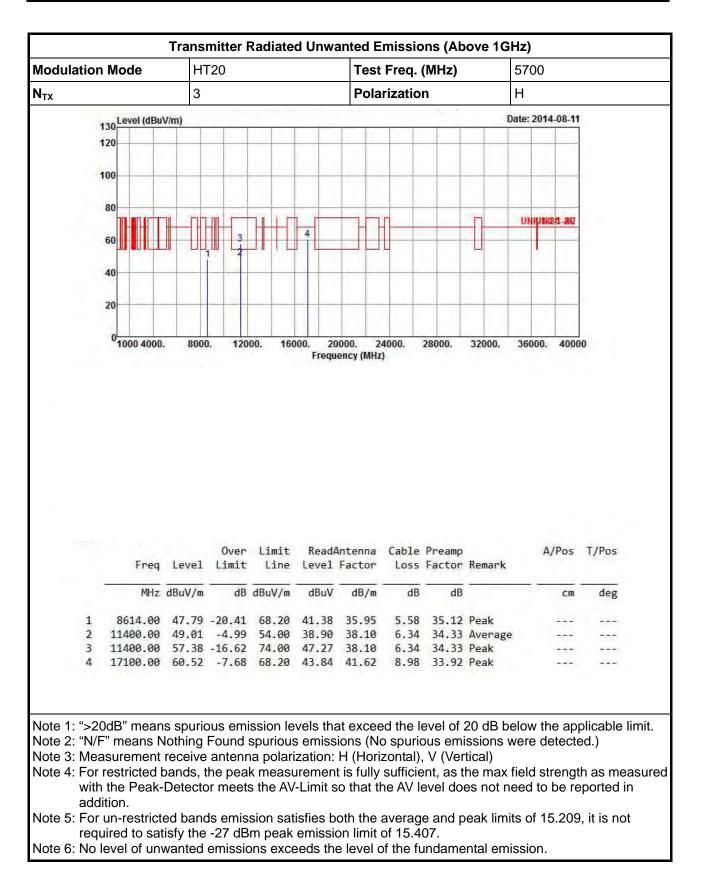




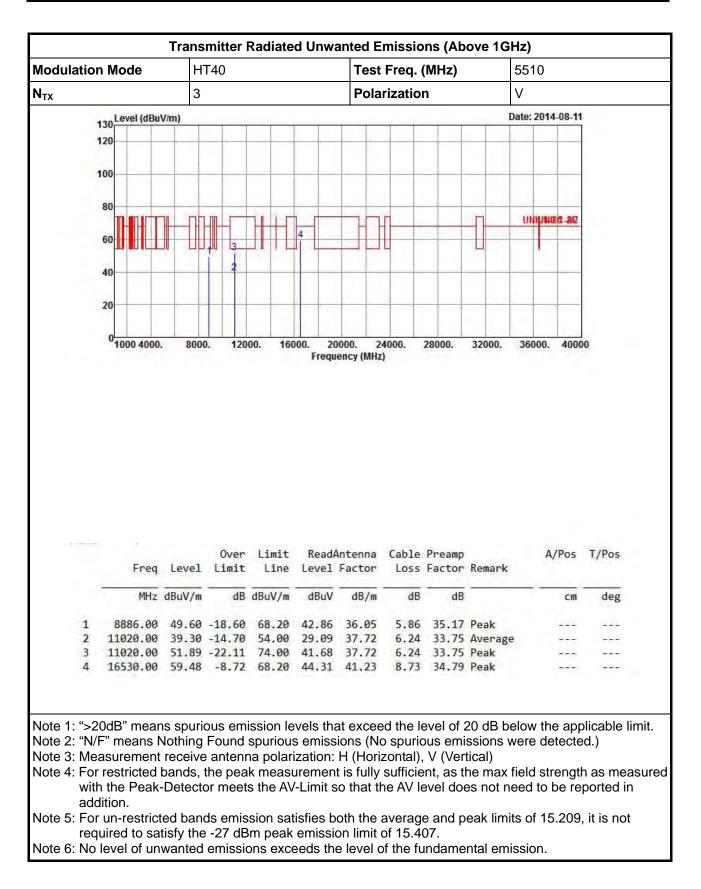




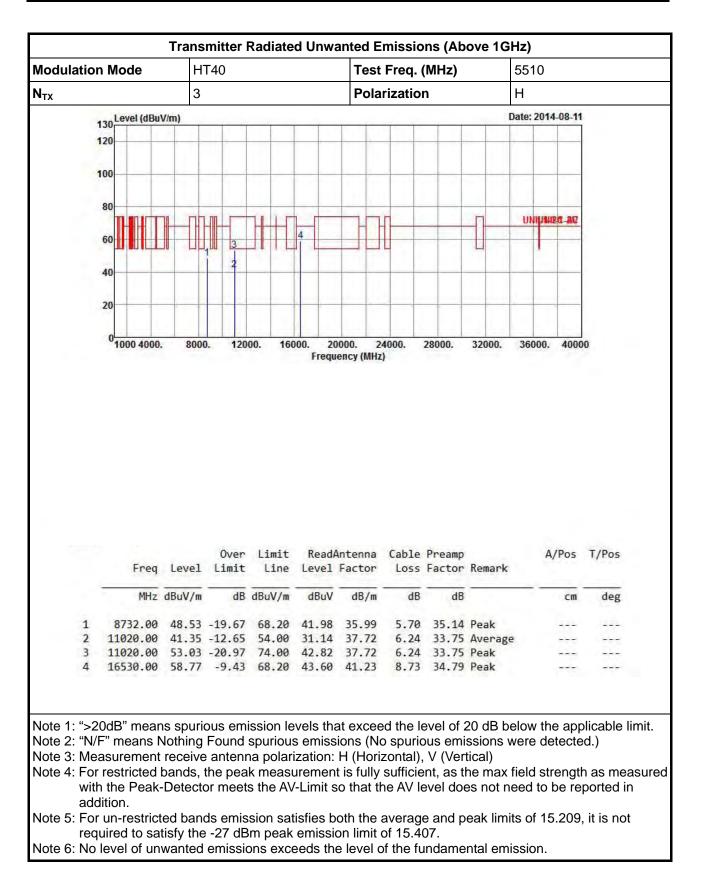




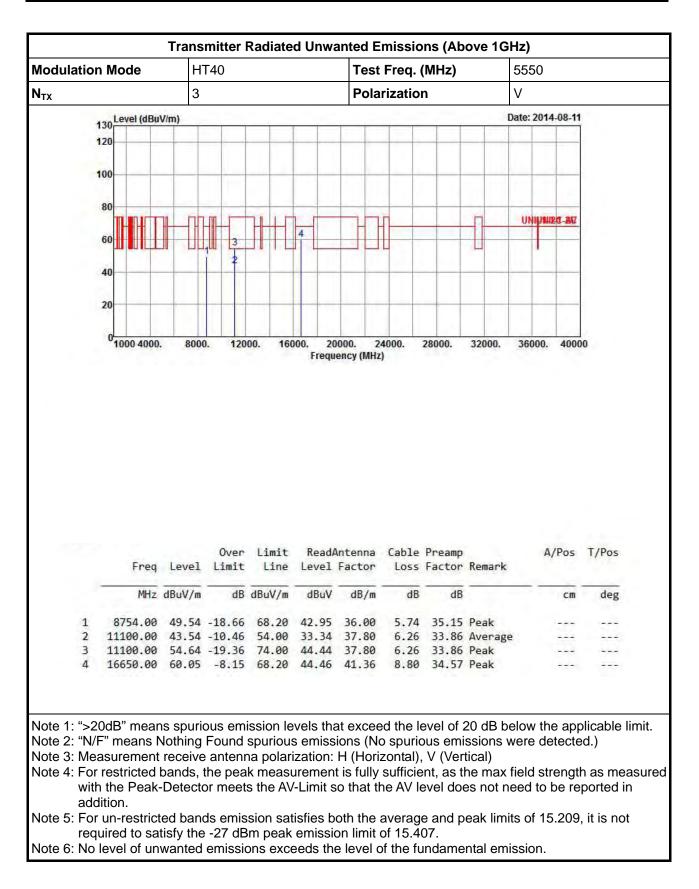




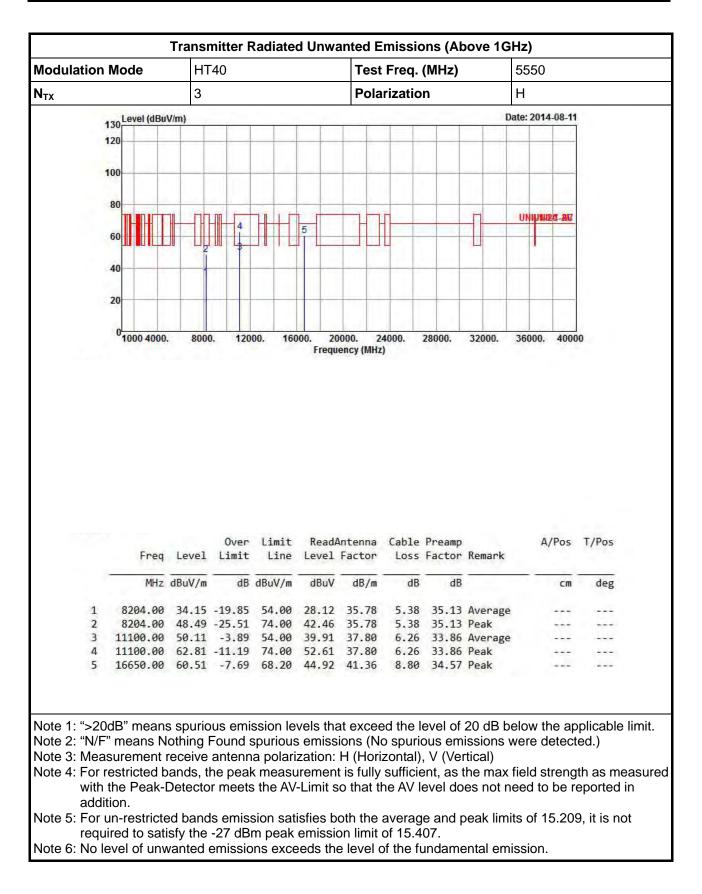




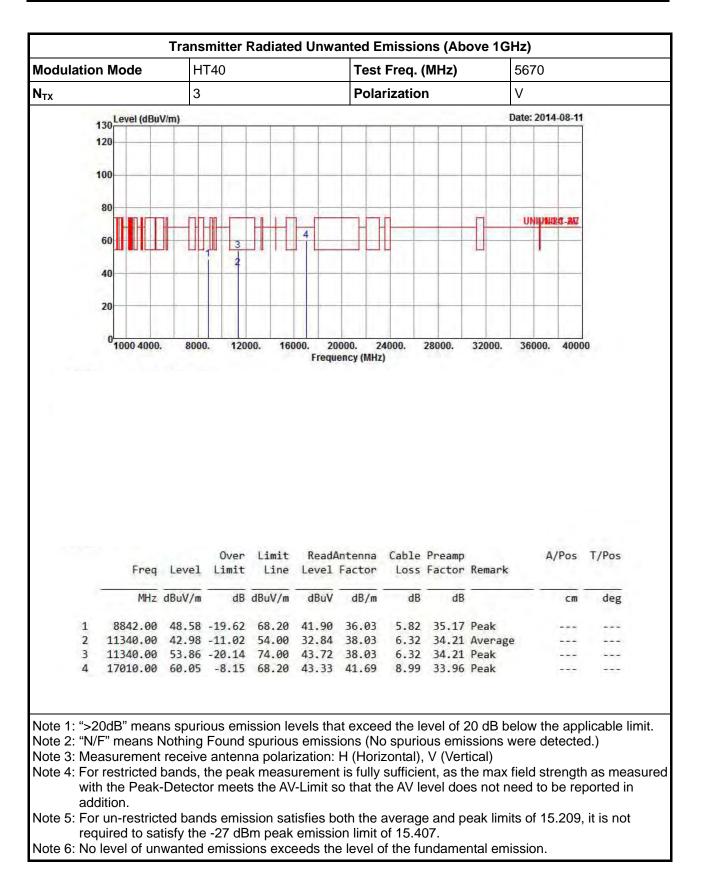




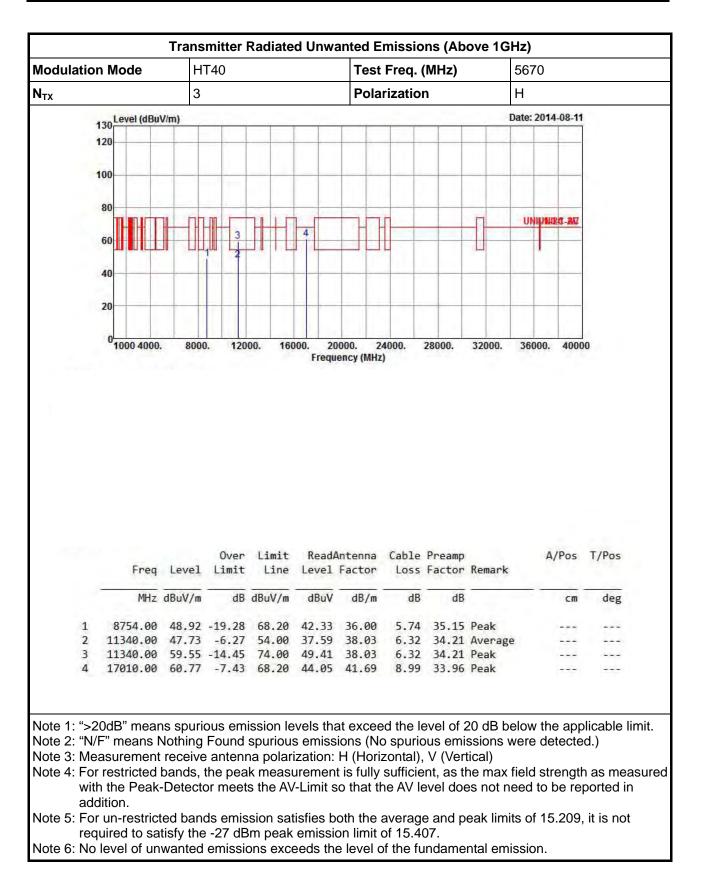




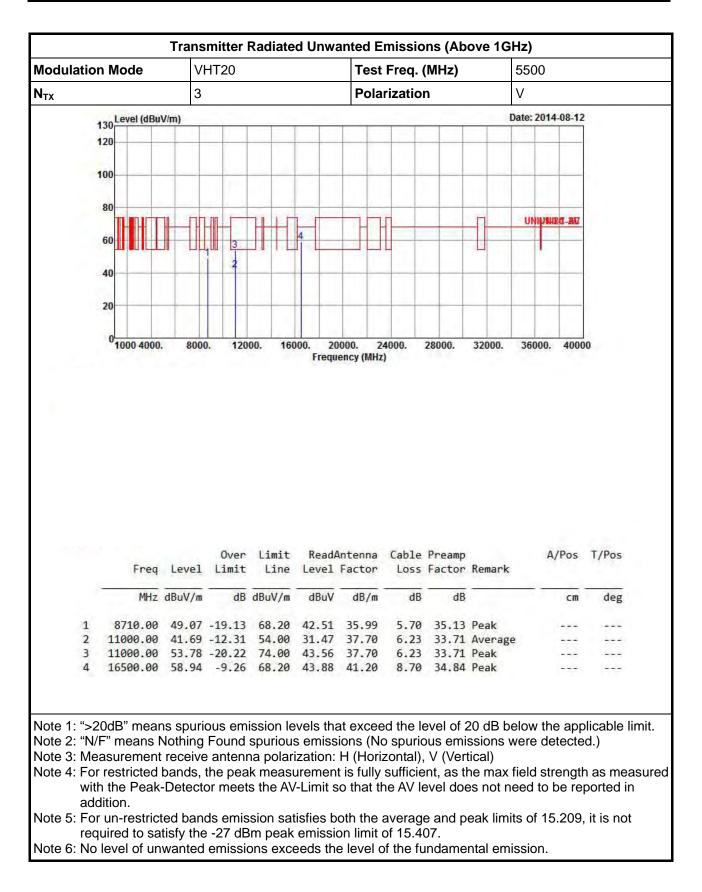




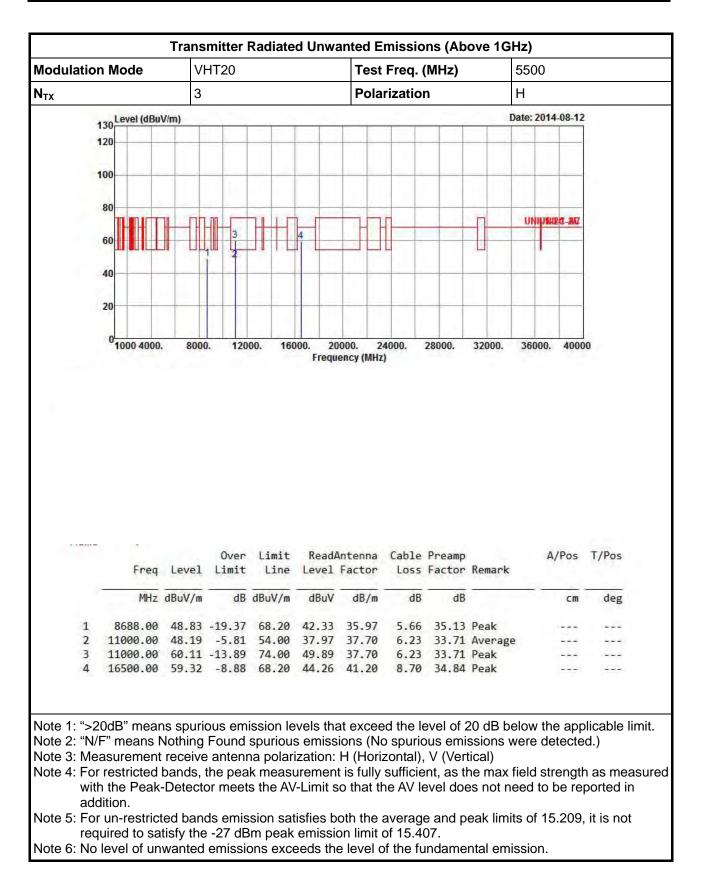




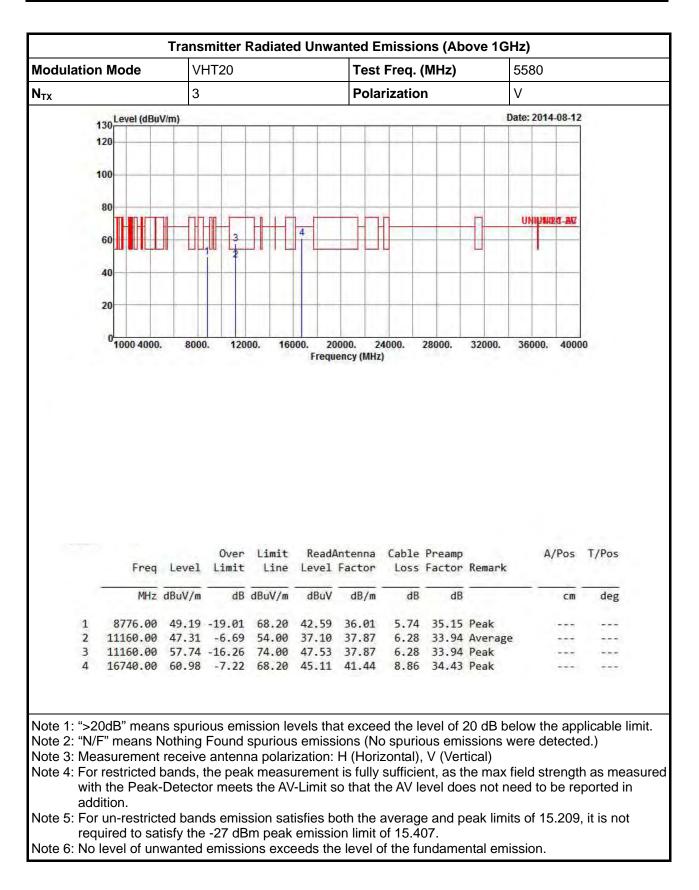




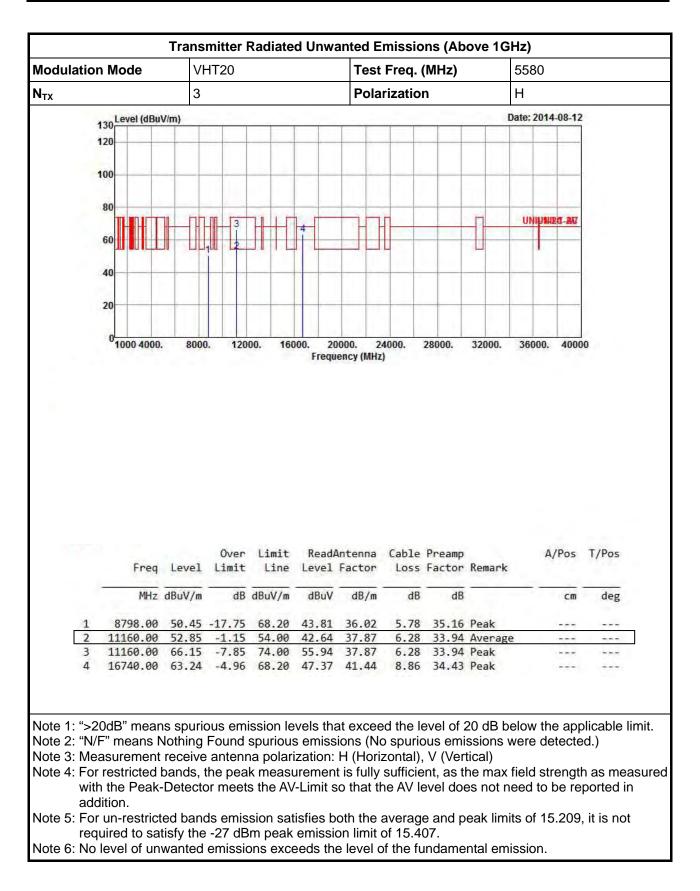




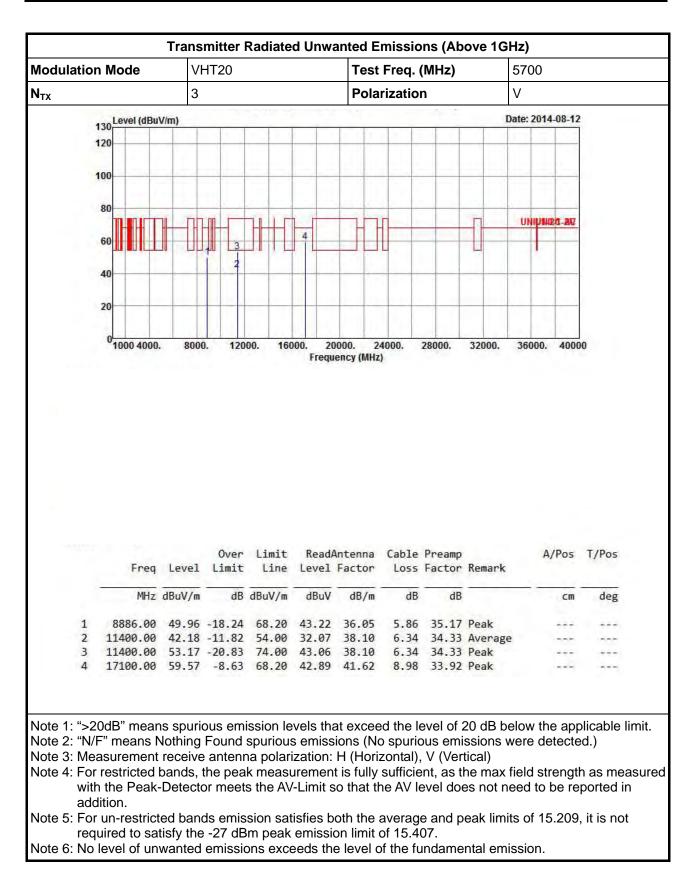




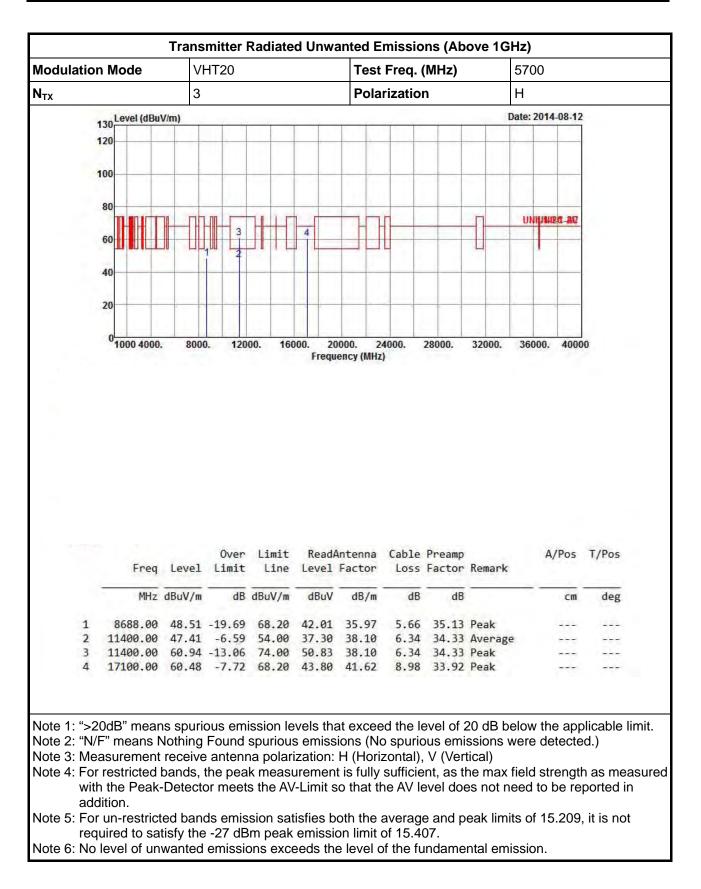




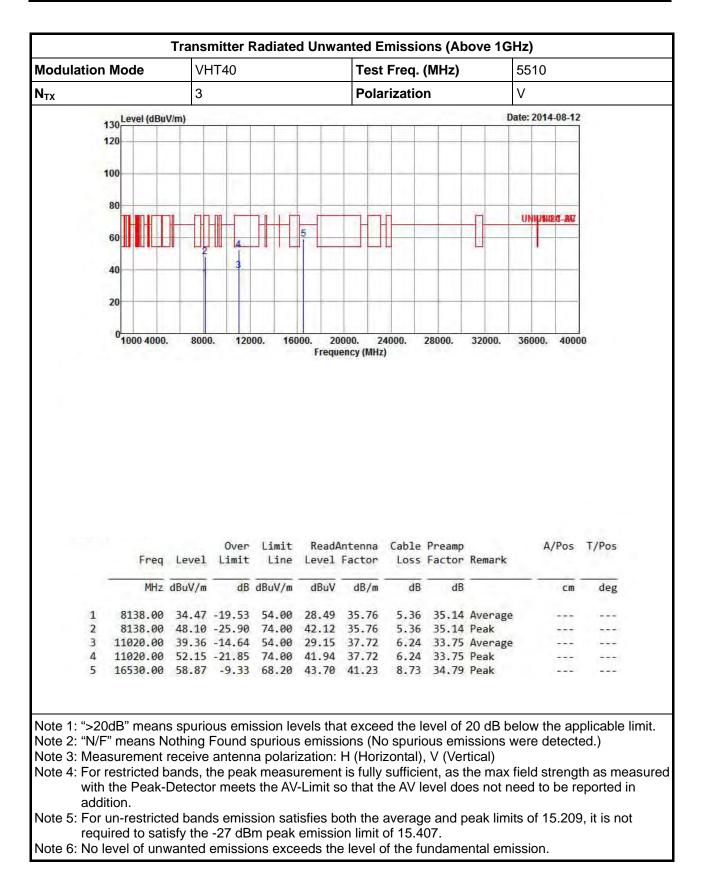




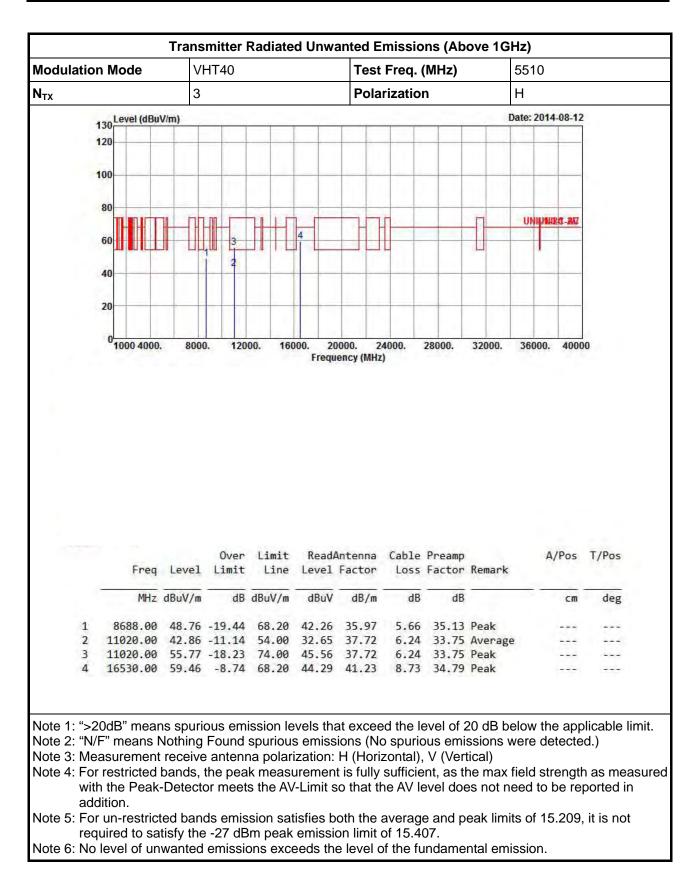




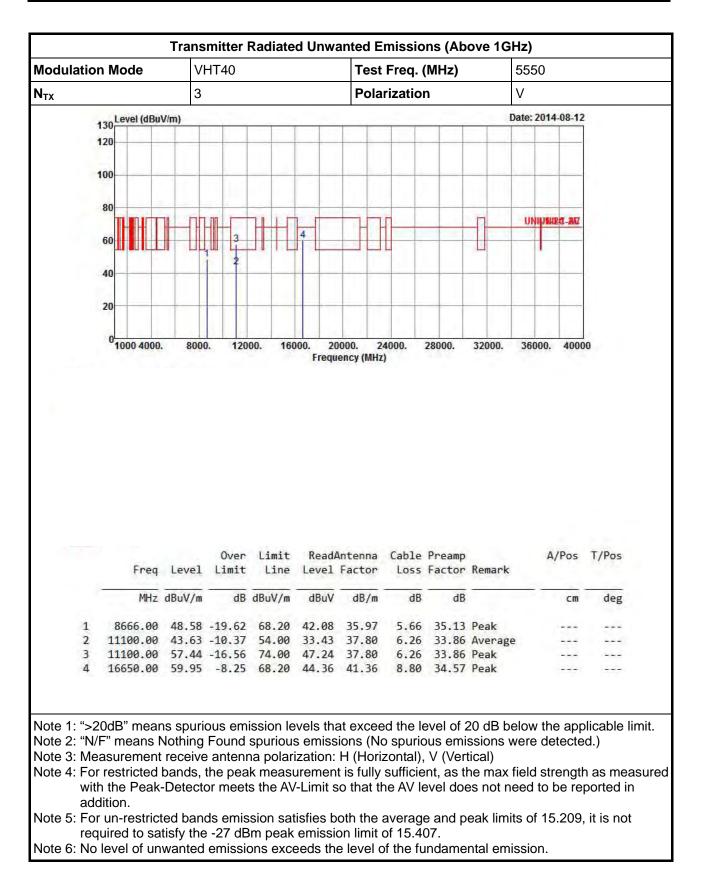




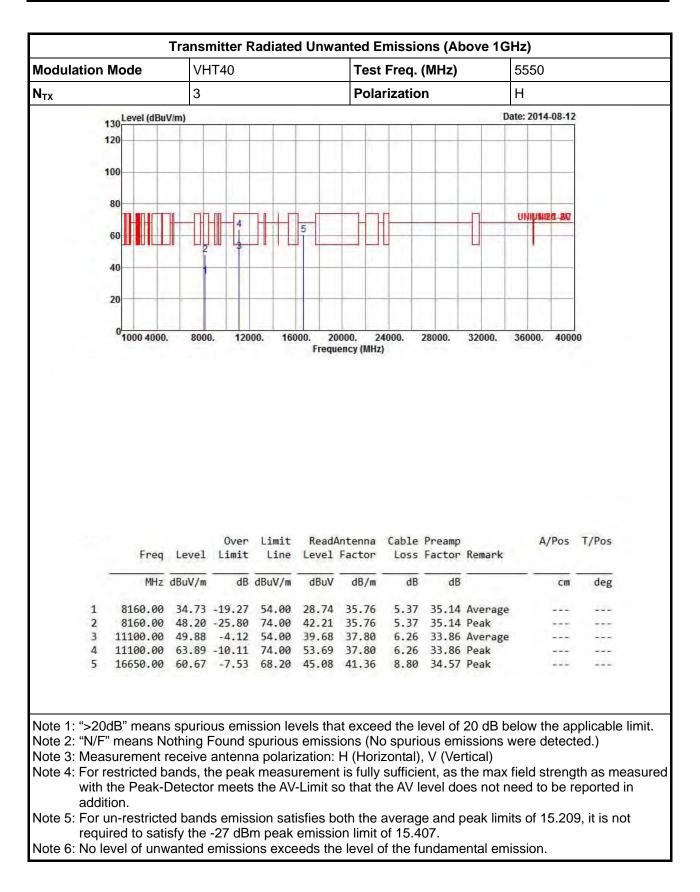




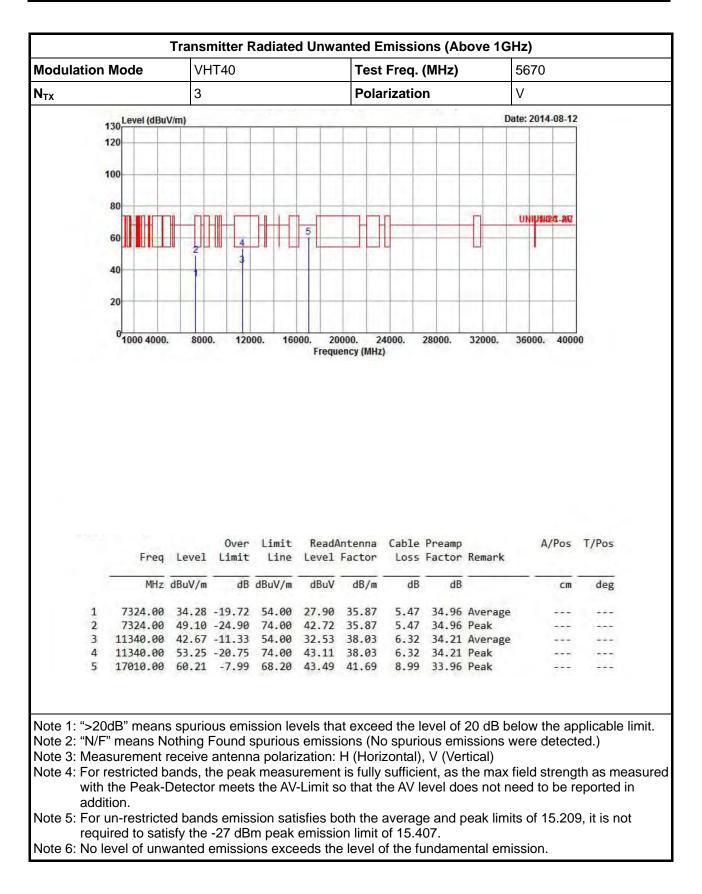




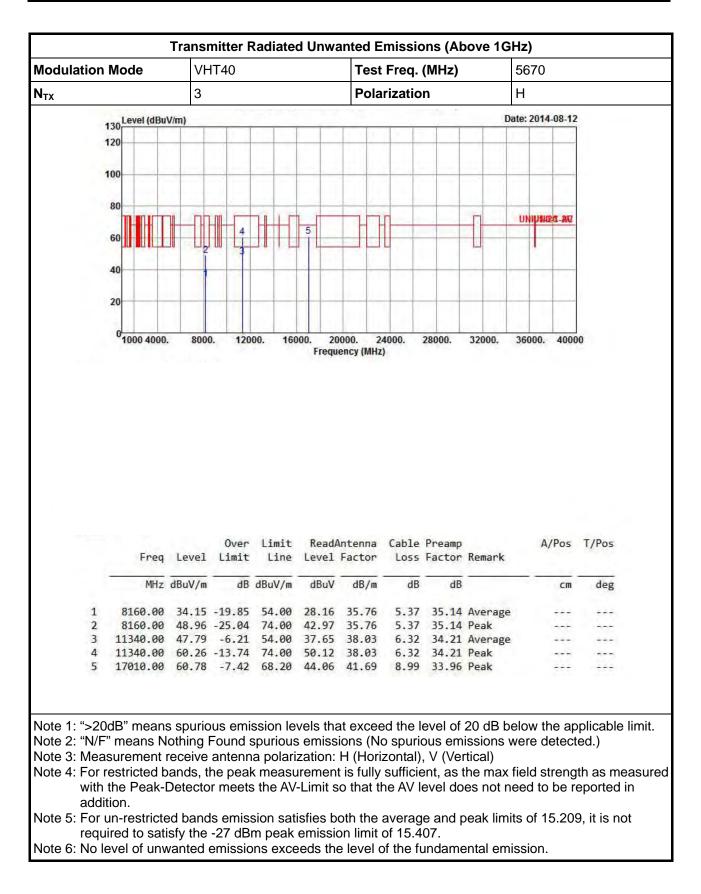




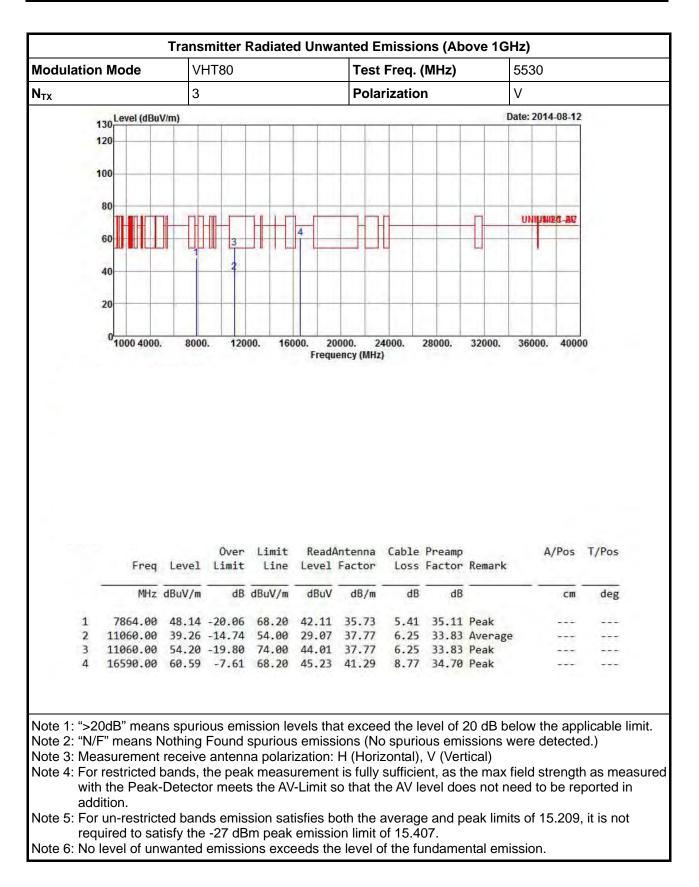




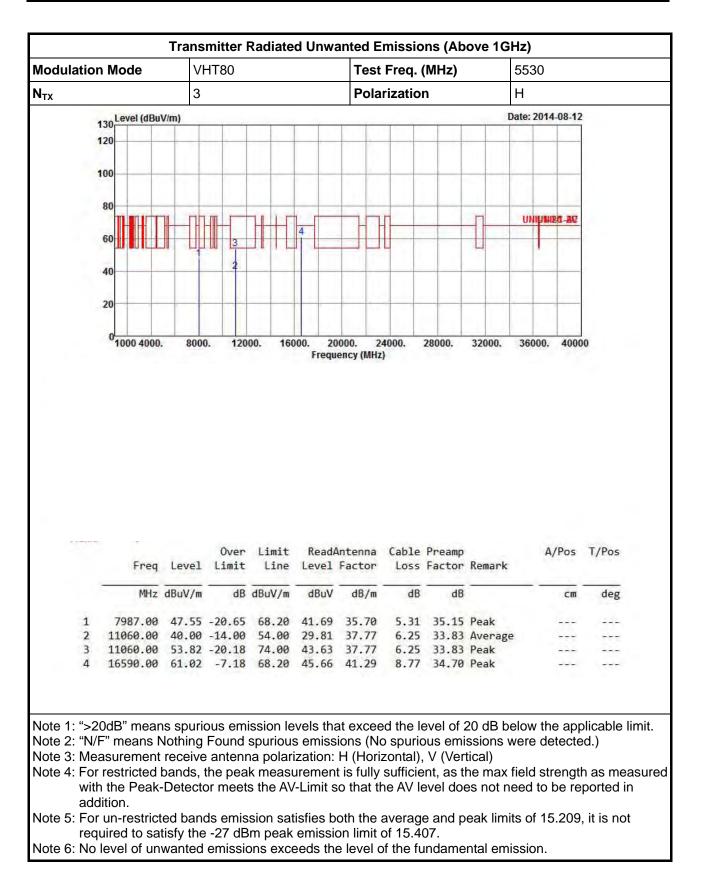














4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101013	9kHz ~ 40GHz	Jan. 25, 2014	RF Conducted
Signal Generator	R&S	SMB 100A	175727	100kHz ~ 40GHz	Jan. 07, 2014	RF Conducted
RF Cable-1m	HUBER+SUHNER	SUCOFLEX_104	SN 324557	30MHz ~ 26.5GHz	Dec. 02, 2013	RF Conducted
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jul. 15, 2014	RF Conducted

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP40	100593	9kHz ~ 40GHz	Oct. 03, 2013	Radiation
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	May 11, 2014	Radiation
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	Jul. 22, 2014	Radiation
Amplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	Aug. 28, 2013	Radiation
Horn Antenna	ETS-LINDGREN	3117	00091920	1GHz ~ 18GHz	Nov. 25, 2013	Radiation
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jan. 10, 2014	Radiation
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 09, 2013	Radiation
RF Cable-high	SUHNER	SUCOFLEX106	03CH02-HY	1GHz ~ 40GHz	Mar. 05, 2014	Radiation
Bilog Antenna	SCHAFFNER	CBL61128	2723	30MHz ~ 2GHz	Oct. 10, 2013	Radiation
Turn Table	Chaintek Instruments	3000	MF7802058	0~ 360 degree	N/A	Radiation
Antenna Mast	MF	MF7802	MF780208205	1 ~ 4 m	N/A	Radiation

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz ~ 40GHz	Apr. 19, 2013	Radiated
Loop Antenna	TESEQ	HLA 6120	31244	9kHz ~ 30MHz	Dec. 02, 2012	Radiation

Note: Calibration Interval of instruments listed above is two year.