

FCC Test Report

Equipment	:	RF Module
Brand Name	:	Chicony
Model No.	:	AR5B22
FCC ID	:	E8H-AR5B22
Standard	:	47 CFR FCC Part 15.407
Operating Band	:	5150 MHz – 5250 MHz 5250 MHz – 5350 MHz 5470 MHz – 5725 MHz
FCC Classification	:	NII
Applicant Manufacturer	:	Chicony Electronics Co., Ltd. No.25,Wugong 6th RD.,Wugu Dist., New Taipei City 248 , Taiwan (R.O.C)

The product sample received on Jun. 16, 2015 and completely tested on Jul. 21, 2015. 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





Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information	5
1.2	Support Equipment	7
1.3	Testing Applied Standards	7
1.4	Testing Location Information	7
1.5	Measurement Uncertainty	8
2	TEST CONFIGURATION OF EUT	9
2.1	The Worst Case Modulation Configuration	9
2.2	The Worst Case Power Setting Parameter	9
2.3	The Worst Case Measurement Configuration	11
2.4	Test Setup Diagram	12
3	TRANSMITTER TEST RESULT	14
3.1	AC Power-line Conducted Emissions	14
3.2	RF Output Power	17
3.3	Transmitter Radiated Bandedge Emissions	22
3.4	Transmitter Radiated Unwanted Emissions	27
4	TEST EQUIPMENT AND CALIBRATION DATA	106

APPENDIX A. TEST PHOTOS

APPENDIX B. PHOTOGRAPHS OF EUT



Summary of Test Result

		Confor	mance Test Specifications			
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result	
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied	
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]:0.2173520MHz 26.02 (Margin26.90dB) - AV 42.15 (Margin20.77dB) - QP	FCC 15.207	Complied	
-	15.407(a)	Emission Bandwidth	-	Information only	-	
3.2	15.407(a)	RF Output Power (Maximum Conducted Output Power)	Power [dBm] 5150-5250MHz:16.45 5250-5350MHz:18.59 5470-5725MHz:16.46	Power [dBm] 5150-5250MHz:17 5250-5350MHz:24 5470-5725MHz:24	Complied	
-	15.407(a)	Peak Power Spectral Density	-	PPSD [dBm/MHz] 5150-5250MHz:4 5250-5350MHz:11 5470-5725MHz:11	-	
-	15.407(a)	Peak Excursion	-	13 dB	-	
3.3	15.407(b)	Transmitter Radiated Bandedge Emissions	Restricted Bands [dBuV/m at 3m]: 5149.940MHz 64.83 (Margin 9.17dB) - PK 48.66 (Margin 5.34dB) - AV	Non-Restricted Bands: ≤ -27dBm (54dBuV/m@3m) Restricted Bands: FCC 15.209	Complied	
3.4	15.407(b)	Transmitter Radiated Unwanted Emissions	Restricted Bands Below 1GHz [dBuV/m at 3m]:385.020MHz 42.32 (Margin 3.68dB) - PK Above 1GHz(Worst) [dBuV/m at 3m]: 15780MHz 67.59 (Margin 6.41dB) - PK 52.76 (Margin 1.24dB) - AV	Non-Restricted Bands: ≤ -27dBm (54dBuV/m@3m) Restricted Bands: FCC 15.209	Complied	
-	15.407(g)	Frequency Stability	-	Signal shall remain in-band	-	

Note: Standard clause 15.247(a) 15.247(g) have been done module test by Atheros / AR5B22.





Revision History

Report No.	Version	Description	Issued Date
FR561307AN	Rev. 04	Initial issue of report	Jul. 31, 2015



1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information							
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	RF Output Power (dBm)	Co-location	
5150-5250		5180-5240	36-48 [4]	1	14.63		
5250-5350	а	5260-5320	52-64 [4]	1	17.29	Yes	
5470-5725		5500-5700	100-140 [8]	1	16.46		
5150-5250		5180-5240	36-48 [4]	2	14.34		
5250-5350	а	5260-5320	52-64 [4]	2	18.59	Yes	
5470-5725		5500-5700	100-140 [8]	2	14.02		
5150-5250		5180-5240	36-48 [4]	2	14.19		
5250-5350	n (HT20)	5260-5320	52-64 [4]	2	17.42	Yes	
5470-5725		5500-5700	100-140 [8]	2	14.31		
5150-5250		5190-5230	38-46 [2]	2	16.45		
5250-5350	n (HT40)	5270-5310	54-62 [2]	2	17.91	Yes	
5470-5725		5510-5670	102-134 [3]	2	15.33		

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: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)

1.1.2 Antenna Information

EUT may match the two group antennas use. The only difference is the antennas. For more detailed features description, please refer to the specifications or user's manual.

Antenna Group Port. No.		Antenna Model Name
1	1	WPB107-1(Mini 1.13 Antenna with MHF L70mm)
I	2	WPB107-1(Mini 1.13 Antenna with MHF L49mm)
2	1	WPB220 (Mini 1.13 Antenna with MHF L70mm)
2	2	WPB220 (Mini 1.13 Antenna with MHF L49mm)

	Antenna Category							
\boxtimes	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.							



Antenna General Information								
Group Port. No. Ant. Cat. Ant. Type Gain (dBi)								
1	1/2	Integral	РСВ	3.01 / 3.01				
2	1/2	Integral	PIFA	2.97 /3.08				

Remark:

- 1. In modulation mode 11a, this EUT supports 1TX and diversity. Port 1 is the worst case of the EUT. The test result of Port 1 was recorded in this report.
- 2. In modulation mode 11a/n, this EUT supports 2TX.
- 3. Original equipment is PIFA antenna. The additional PIFA antenna not the higher gain and worst configuration that all items didn't retest. Therefore, we tested and recorded PCB antenna in this report.

1.1.3 Type of EUT

	Identify EUT					
EUT	F Serial Number	N/A				
Pre	sentation of Equipment	Production ; Pre-Production ; Prototype				
		Type of EUT				
\boxtimes	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 EUT Operational Condition

Supply Voltage	□ A	AC mains	\boxtimes	DC	
Type of DC Source	F	From Host System		External AC adapter	Li-ion Battery



1.2 Support Equipment

	Support Equipment							
No.	No. Equipment Brand Name Model Name FCC ID							
1	Notebook	DELL	E5540	DoC				
2	Test Fixture	NA	NA	NA				

Note : The test fixture provides is by customer.

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
- FCC KDB 662911
- FCC KDB 412172

1.4 Testing Location Information

	Testing Location								
\square	HWA YA	ADD	:	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yua City, Taiwan, R.O.C.					
		TEL	:	886-3-327-3456 FAX	886-3-327-3456 FAX : 886-3-327-0973				
	Test Condition			Test Site No.	Test Engineer	Test Environment			
	AC Conduction			CO04-HY Zeus		23°C / 59%			
RF Conducted			TH06-HY	Rory	22.2°C / 65%				
F	Radiated Emission			03CH03-HY	Hunter	25.4°C / 56.1%			



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		±2.3 dB
Emission bandwidth, 26dB bandwidth	±0.5%	
RF output power, conducted	±0.1 dB	
Power density, conducted	±0.5 dB	
Unwanted emissions, conducted	9 – 150 kHz	±0.4 dB
	0.15 – 30 MHz	±0.4 dB
	30 – 1000 MHz	±0.6 dB
	1 – 18 GHz	±0.5 dB
	18 – 40 GHz	±0.5 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		±5 %
DC and low frequency voltages		±0.9%
Time		±1.4 %
Duty Cycle		±0.5 %



2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

	Worst Modulation Used f	for Conformance Testing	
Modulation Mode	Transmit Chains (N_{TX})	Data Rate / MCS	Worst Data Rate / MCS
11a	1	6-54Mbps	6 Mbps
11a	2	6-54Mbps	6 Mbps
HT20	2	MCS 0-15	MCS 0
HT40	2	MCS 0-15	MCS 0

2.2 The Worst Case Power Setting Parameter

The W	/orst C	Case Power	r Setting Pa	rameter (51	50-5250MHz band)		
Test Software Version		ART2					
				Test Fred	quency (MHz)		
Modulation Mode	N _{TX}		NCB: 20MH	z	NCB: 4	40MHz	
		5180	5200	5240	5190	5230	
11a	1	14.5	14	13.5	-	-	
11a	2	12	11.5	11.5	-	-	
HT20	2	11.5	11.5	11	-	-	
HT40	2	-	-	-	9.5	13.5	

The V	Vorst (Case Powe	r Setting Pa	rameter (52	50-5350MHz band)				
Test Software Version									
		Test Frequency (MHz)							
Modulation Mode	Ντχ		NCB: 20MH	z	NCB:	40MHz			
		5260	5300	5320	5270	5310			
11a	1	17.5	17	17.5	-	-			
11a	2	15	17	14.5	-	-			
HT20	2	14.5	15	15	-	-			
HT40	2	-	-	-	15	9.5			



The W	orst (Case Pov	wer Setti	ng Parar	neter (54	70-5725MHz	The Worst Case Power Setting Parameter (5470-5725MHz band)								
Test Software Version					AR	Г2									
					Fest Freq	juency (MHz)									
Modulation Mode	N _{TX}		NCB:	20MHz			NCB: 40MHz	!							
		5500	5580	5660	5700	5510	5550	5670							
11a	1	14.5	17	15	13	-	-								
11a	2	10.5	11.5	11.5	10.5	-	-								
HT20	2	11.5	12	11.5	10.5	-	-								
HT40	2	-	-		-	8.5	13.	12							



2.3 The Worst Case Measurement Configuration

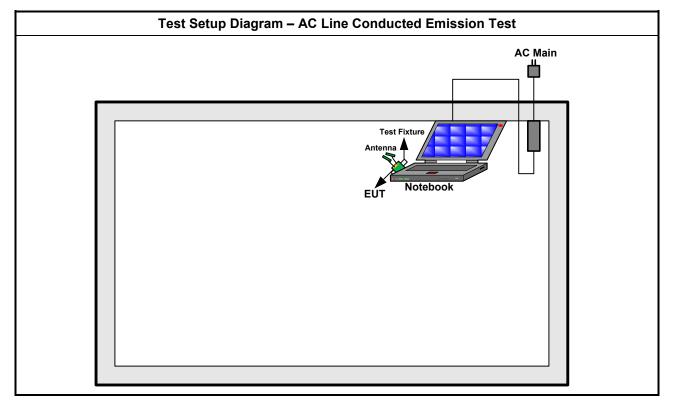
Th	e Worst Case Mode for Following Conformance Tests
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Transmit Mode (WLAN)

Th	e Worst Case Mode for Following Conformance Tests
Tests Item	RF Output Power
Test Condition	Conducted measurement at transmit chains
Modulation Mode	11a, HT20, HT40

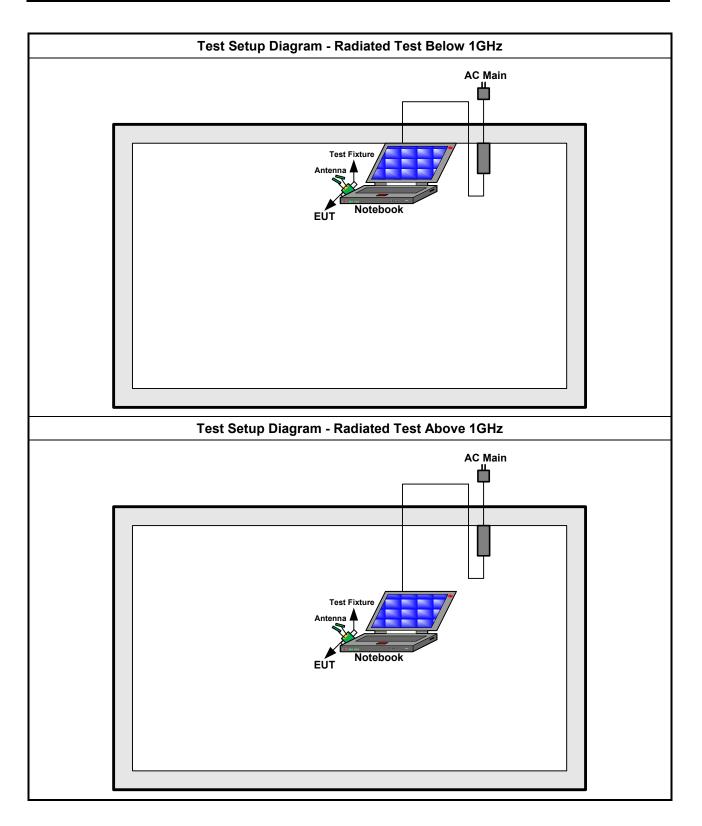
Th	e Worst Case Mode for Fo	ollowing Conformance Te	sts			
Tests Item	Transmitter Radiated Unwa Transmitter Radiated Banc					
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the 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. EUT shall be performed two orthogonal planes.					
	EUT will be a hand-he operating multiple pos	eld or body-worn battery-por sitions.	wered devices and			
Operating Mode	1. Transmit Mode (WLAN	1)				
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 Powe	er-line Conducted Emissions L	_imit
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm c	of the frequency	

ecreases with the logarithm of the frequency

3.1.2 Measuring Instruments

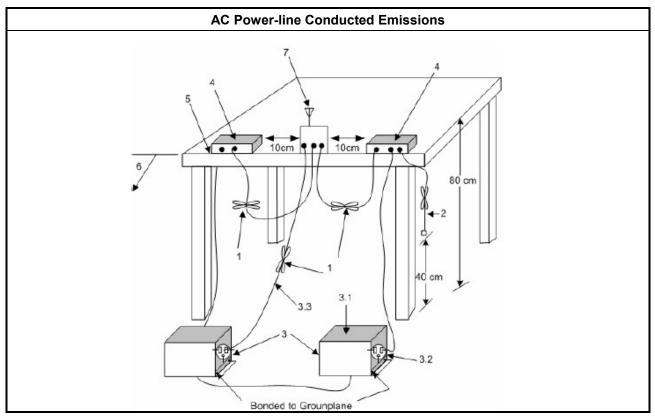
Refer a test equipment and calibration data table in this test report.

3.1.3 **Test Procedures**

Test Method

Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



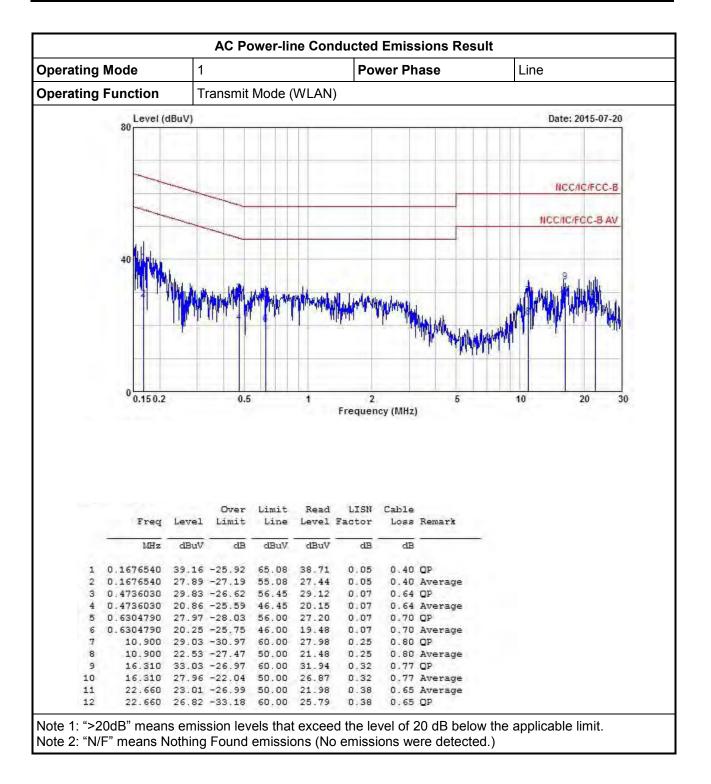


	Mode	1				Po	wer Pł	nase		N	leutral	
perating	Function	T	ransmit	Mode (WLAN)						
	Level (dBuV)									Date: 2	015-07-20
		-										
			_	_								
	1	-									NCC	IC/FCC-B
									TT	11		
			_				_				NCC/IC/F	CC-B AV
	4.1							-				
	40											
		ALA	di alla		1	1				1	1	
			UNA	11/11/11	AN MAN	LUMPAN	Billy			M	Here with	Y The
	T -				Jun 1	WIL 1	C DH	Mar. Au		AI	T'NIN'I	1 10
					6			THE REPORT OF TH				
							T.	T WITH W	Law All		Min.	
		1						THE	(hauph/will		×h,	
								1. Amarine A	(hauph/WM			
	0 0.15 0.2		0.5		1	2		5	(baugh/WM	10		20 3
	0 0.15 0.2		0.5		1	2 Frequen				10		20 3
	0 0.15 0.2		0.5	6	1					10		20 3
	0 0.15 0.2	111	0.5		1					10		20 3
	0 0.15 0.2		0.5		1				(have have have have have have have have	10		20 3
	0 0.15 0.2		0.5		1					10		20 3
	0 0.15 0.2		0.5	Limit	e 1 Read					10		20 3
	0 0.150.2 Freq	Level			Read	Frequen	Cable			10		20 3
		Level	Over	Limit	Read	Frequen	Cable			10		20 3
1	Freq 1Hz 0.1540270	29.09	Over Limit dB -26.69	Limit Line dBuV 55.78	Read Level dBuV 28.67	LISN Factor dB 0.07	Cable Loss dB 0.35	Remark		10		20 3
2	Freq MHz 0.1540270 0.1540270	29.09 40.22	Over Limit dB -26.69 -25.56	Limit Line dBuV 55.78 65.78	Read Level dBuV 28.67 39.80	LISN Factor dB 0.07 0.07	Cable Loss dB 0.35 0.35	Remark Average OP		10		20 3
	Freq 1Hz 0.1540270	29.09 40.22 26.02	Over Limit dB -26.69 -25.56	Limit Line dBuV 55.78 65.78	Read Level dBuV 28.67 39.80	LISN Factor dB 0.07	Cable Loss dB 0.35 0.35	Remark Average QP <u>Ave</u> rage		10		20 3
2	Freq MHz 0.1540270 0.1540270 0.2173520	29.09 40.22 26.02 42.15	Over Limit dB -26.69 -25.56 -26.90	Limit Line dBuV 55.78 65.78 52.92 62.92	Read Level dBuV 28.67 39.80 25.44	LISN Factor dB 0.07 0.07 0.07	Cable Loss dB 0.35 0.51	Remark Average OP Average		10		20 3
2 3 4	Freq MHz 0.1540270 0.1540270 0.2173520 0.2173520	29.09 40.22 26.02 42.15 26.49	Over Limit dB -26.69 -25.56 -26.90 -20.77 -29.51	Limit Line dBuV 55.78 65.78 65.78 65.292 62.92 56.00	Read Level dBuV 28.67 39.80 25.44 41.57 25.62	LISN Factor 0.07 0.07 0.07 0.07	Cable Loss dB 0.35 0.51 0.51 0.78	Remark Average OP Average		10		20 3
2 3 4 5	Freq MHz 0.1540270 0.2173520 0.2173520 0.8991650 0.8991650	29.09 40.22 26.02 42.15 26.49 17.37	Over Limit dB -26.69 -25.56 -26.90 -20.77 -29.51	Limit Line dBuV 55.78 65.78 52.92 56.00 46.00	Read Level dBuV 28.67 39.80 25.44 41.57 25.62 16.50	LISN Factor 0.07 0.07 0.07 0.07 0.09	Cable Loss dB 0.35 0.51 0.51 0.78 0.78	Remark Average OP Average OP		10		20 3
2 3 4 5 6	Freq MHz 0.1540270 0.1540270 0.2173520 0.2173520 0.8991650 0.8991650 2.120	29.09 40.22 26.02 42.15 26.49 17.37 18.11	Over Limit dB -26.69 -25.56 -26.90 -20.77 -29.51 -28.63	Limit Line dBuV 55.78 65.78 52.92 62.92 56.00 46.00 46.00	Read Level dBuV 28.67 39.80 25.44 41.57 25.62 16.50 17.22	LISN Factor dB 0.07 0.07 0.07 0.07 0.07 0.09 0.09	Cable Loss dB 0.35 0.51 0.51 0.78 0.78	Remark Average OP Average OP OP Average Average		10		20 3
2 3 4 5 6 7	Freq MHz 0.1540270 0.1540270 0.2173520 0.2173520 0.8991650 0.8991650 0.8991650 2.120 2.120	29.09 40.22 26.02 42.15 26.49 17.37 18.11 30.74	Over Limit dB -26.69 -25.56 -26.90 -20.77 -29.51 -28.63 -27.89	Limit Line dBuV 55.78 65.78 65.78 52.92 56.00 46.00 46.00 56.00	Read Level dBuV 28.67 39.80 25.44 41.57 25.62 16.50 17.22 29.85	LISN Factor dB 0.07 0.07 0.07 0.07 0.07 0.09 0.09 0.09	Cable Loss dB 0.35 0.35 0.51 0.78 0.78 0.79 0.79	Remark Average OP Average OP OP Average Average		10		20 3
2 3 4 5 6 7 8	Freq 0.1540270 0.1540270 0.2173520 0.2173520 0.8991650 0.8991650 2.120 2.120 10.790	29.09 40.22 26.02 42.15 26.49 17.37 18.11 30.74 23.00	Over Limit dB -26.69 -25.56 -26.90 -20.77 -29.51 -28.63 -27.89 -25.26	Limit Line dBuV 55.78 65.78 52.92 62.92 56.00 46.00 56.00 56.00	Read Level dBuV 28.67 39.80 25.44 41.57 25.62 16.50 17.22 29.85 21.94	LISN Factor dB 0.07 0.07 0.07 0.07 0.07 0.09 0.09 0.10 0.10 0.26	Cable Loss dB 0.35 0.35 0.51 0.78 0.78 0.79 0.79	Remark Average OP Average OP Average OP Average OP Average		10		20 3
2 3 4 5 6 7 8 9	Freq MHz 0.1540270 0.2173520 0.2173520 0.8991650 0.8991650 2.120 2.120 10.790 10.790	29.09 40.22 26.02 42.15 26.49 17.37 18.11 30.74 23.00 33.90	Over Limit dB -26.69 -25.56 -20.77 -29.51 -28.63 -27.89 -25.26 -27.00	Limit Line dBuV 55.78 65.78 65.78 52.92 56.00 46.00 56.00 56.00 50.00 60.00	Read Level dBuV 28.67 39.80 25.44 41.57 25.62 16.50 17.22 29.85 21.94 32.84	LISN Factor 0.07 0.07 0.07 0.07 0.07 0.09 0.09 0.09	Cable Loss dB 0.35 0.51 0.78 0.79 0.79 0.80 0.80	Remark Average OP Average OP Average OP Average OP Average		10		20 3

3.1.5 Test Result of AC Power-line Conducted Emissions









3.2 **RF Output Power**

3.2.1 RF Output Power Limit

	Maximum Conducted Output Power Limit
UNI	II Devices
\boxtimes	For the 5.15-5.25 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$.
\square	For the 5.25-5.35 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).
\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 5.725-5.825 GHz band:
	Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W or 17 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. 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 or 17 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 23$ dBi, then $P_{Out} = 30 - (G_{TX} - 23)$.

3.2.2 Measuring Instruments

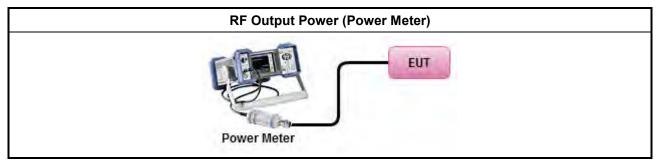
Refer a test equipment and calibration data table in this test report.



3.2.3 Test Procedures

		Test Method				
\boxtimes	Max	imum Conducted Output Power				
	[dut	y 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				
		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)				
	Wideband RF power meter and average over on/off periods with duty factor					
	\square	Refer as FCC KDB 789033, clause E Method PM (using an RF average power meter).				
\square	For	conducted measurement.				
		The EUT supports single transmit chain and measurements performed on this transmit chain.				
	\boxtimes	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.				
		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





	Direction	al Gain (DG) R	lesult		
Transmit Chains	s No.	1	2	-	-
Maximum G _{ANT}	(dBi)	3.01	3.01	-	-
Modulation Mode	DG (dBi)	N _{TX}	N _{ss} (Min.)	STBC	Array Gain (dB)
а	3.01	1	1		0
а	6.02	2	1	-	3.01 (Note1)
n (HT20)	6.02	2	1	-	3.01 (Note1)
n (HT40)	6.02	2	1	-	3.01 (Note1)
Note 1: For all transmitter outp Any transmit signals a All transmit signals are Note 2: For all transmitter outp Any transmit signals are All transmit signals are Note 3: For Spatial Multiplexin where Nss = the numb Note 4: For CDD transmission Directional Gain (DG) Array Gain = 0 dB (i.e Array Gain = 0 dB (i.e)	re correlated, Direct e completely uncorr puts with unequal a re correlated, Direct e completely uncorr g, Directional Gain per of independent us, directional gain i = G_{ANT} + Array Gai ., no array gain) for	ctional Gain = C related, Direction ntenna gains, c ctional Gain = 10 related, Direction (DG) = G_{ANT} + spatial streams s calculated as n, where Array N _{TX} ≤ 4;	G_{ANT} + 10 log(N bonal Gain = G_{AN} directional gain 0 log[(10 ^{G1/20} +. bonal Gain = 10 l 10 log(N _{TX} /N _{SS} s data. s power measur Gain is as follo	T_{X}) = 3.01+10 I is to be computed in the	og(2)= 6.02

3.2.5 Directional Gain for Power Measurement



	М	aximum	Conducted Ou	tput Power (5	150-5250MHz	band)	
Test Date: J Cond		2015		RF O	utput Power (dBm)	
Modulation Mode	Ν _{τχ}	Freq. (MHz)	Chain Port 1	Chain Port 2	Sum Chain	Power Limit	DG (dBi)
11a	1	5180	14.63	-	14.63	17	3.01
11a	1	5200	14.43	-	14.43	17	3.01
11a	1	5240	14.44	-	14.44	17	3.01
11a	2	5180	11.69	10.56	14.17	16.98	6.02
11a	2	5200	11.78	10.70	14.28	16.98	6.02
11a	2	5240	11.99	10.54	14.34	16.98	6.02
HT20	2	5180	11.47	10.54	14.04	16.98	6.02
HT20	2	5200	11.64	10.66	14.19	16.98	6.02
HT20	2	5240	11.62	10.12	13.95	16.98	6.02
HT40	2	5190	9.81	8.84	12.36	16.98	6.02
HT40	2	5230	14.26	12.45	16.45	16.98	6.02
Res	ult	•			Complied	•	

3.2.6 Test Result of Maximum Conducted Output Power

	Μ	aximum	Conducted Ou	tput Power (5	250-5350MHz	band)	
Test Date: J	ul. 21, 2	2015			utput Power (dBm)	
Cond	ition			KF U	utput Power (ubili)	
Modulation Mode	Ντχ	Freq. (MHz)	Chain Port 1	Chain Port 2	Sum Chain	Power Limit	DG (dBi)
11a	1	5260	17.29	-	17.29	24	3.01
11a	1	5300	16.37	-	16.37	24	3.01
11a	1	5320	16.50	-	16.50	24	3.01
11a	2	5260	15.39	13.17	17.43	23.98	6.02
11a	2	5300	16.32	14.68	18.59	23.98	6.02
11a	2	5320	13.69	11.94	15.91	23.98	6.02
HT20	2	5260	15.10	13.59	17.42	23.98	6.02
HT20	2	5300	14.86	13.73	17.34	23.98	6.02
HT20	2	5320	14.65	13.08	16.95	23.98	6.02
HT40	2	5270	15.66	14.00	17.91	23.98	6.02
HT40	2	5310	10.08	8.30	12.29	23.98	6.02
Res	ult				Complied		

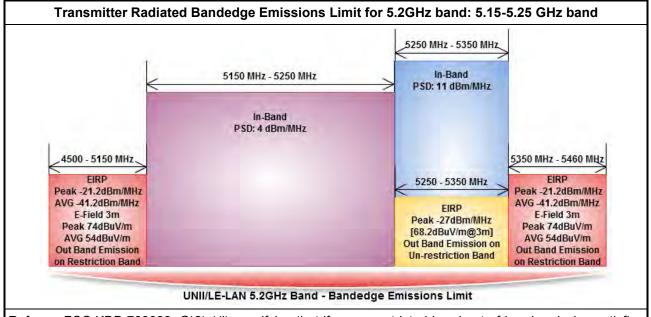


Test Date: J			Conducted Ou			bulluj	
Cond			-	RF O	utput Power (dBm)	
Modulation Mode	Ντχ	Freq. (MHz)	Chain Port 1	Chain Port 2	Sum Chain	Power Limit	DG (dBi)
11a	1	5500	14.48	-	14.48	24	3.01
11a	1	5580	16.46	-	16.46	24	3.01
11a	1	5660	14.88	-	14.88	24	3.01
11a	1	5700	13.68	-	13.68	24	3.01
11a	2	5500	10.37	9.76	13.09	23.98	6.02
11a	2	5580	11.27	10.59	13.95	23.98	6.02
11a	2	5660	11.69	10.21	14.02	23.98	6.02
11a	2	5700	11.18	10.10	13.68	23.98	6.02
HT20	2	5500	10.96	10.42	13.71	23.98	6.02
HT20	2	5580	11.78	10.76	14.31	23.98	6.02
HT20	2	5660	11.41	10.08	13.81	23.98	6.02
HT20	2	5700	10.69	9.41	13.11	23.98	6.02
HT40	2	5510	8.65	8.59	11.63	23.98	6.02
HT40	2	5550	12.59	12.05	15.33	23.98	6.02
HT40	2	5670	12.42	11.53	15.00	23.98	6.02
Res	sult	•		•	Complied	· ·	

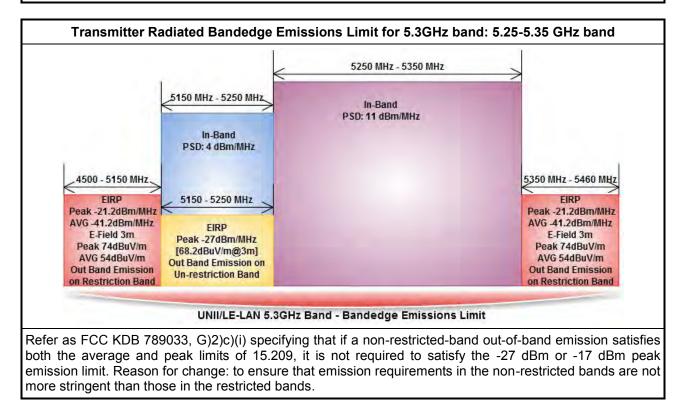


3.3 Transmitter Radiated Bandedge Emissions

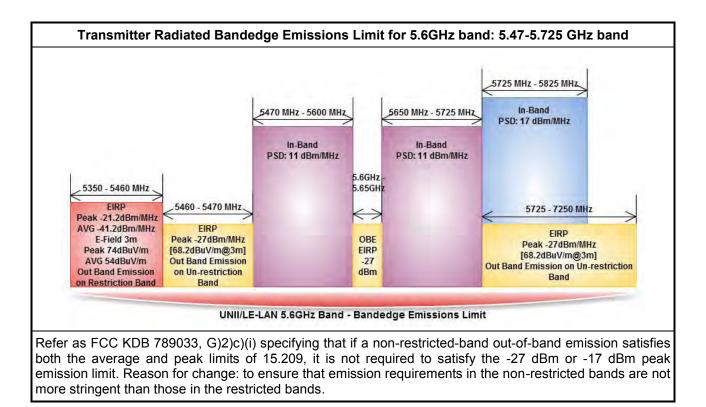
3.3.1 Transmitter Radiated Bandedge Emissions Limit



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.







3.3.2 Measuring Instruments

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

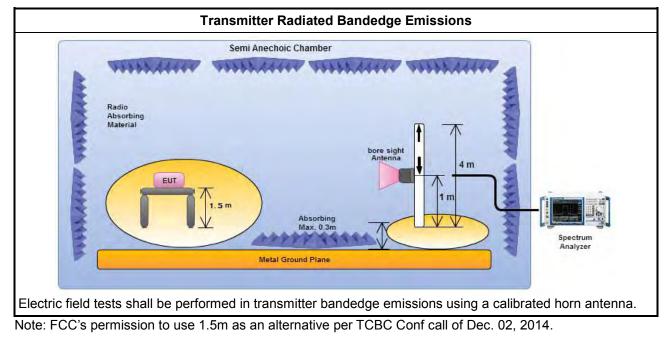


3.3.3 Test Procedures

	Test Method
	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.
\square	The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
	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 5.725-5.825 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 5.725-5.825 GHz band (higher-band).
\boxtimes	For the transmitter unwanted emissions shall be measured using following options below:
	Refer as FCC KDB 789033, clause H)2) for unwanted emissions into non-restricted bands.
	Refer as FCC KDB 789033, clause H)1) for unwanted emissions into restricted bands.
	Refer as FCC KDB 789033, H)6) Method AD (Trace Averaging).
	Refer as FCC KDB 789033, 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.
	Refer as FCC KDB 789033, clause H)5) measurement procedure peak limit.
	Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
\boxtimes	For the transmitter bandedge emissions shall be measured using following options below:
	Refer as FCC KDB 789033, 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.
\boxtimes	For radiated measurement, refer as ANSI C63.10, clause 6.5 for radiated emissions from above 1 GHz.



3.3.4 Test Setup





3.3.5 Test Result of Transmitter Radiated Bandedge Emissions

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	5180	3	5149.400	60.75	74	5150.000	45.49	54	Н
11a	2	5180	3	5137.400	59.26	74	5106.000	45.44	54	Н
HT20	2	5180	3	5132.600	58.98	74	5137.600	45.41	54	Н
HT40	2	5190	3	5149.940	64.83	74	5149.940	48.66	54	Н

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	5320	3	5350.110	69.44	74	5350.250	48.28	54	Н
11a	2	5320	3	5352.280	63.21	74	5360.120	46.41	54	Н
HT20	2	5320	3	5351.580	66.82	74	5350.320	46.88	54	Н
HT40	2	5310	3	5350.570	62.37	74	5350.300	47.82	54	Н

Modulation Mode	Ν _{τx}	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Pol.
11a	1	5500	3	5443.120	60.14	74.0	Н
11a	1	5700	3	5726.240	67.16	68.2	Н
11a	2	5500	3	5433.360	60.37	74.0	Н
11a	2	5700	3	5725.160	62.48	68.2	Н
HT20	2	5500	3	5447.600	60.55	74.0	Н
HT20	2	5700	3	5725.280	66.61	68.2	Н
HT40	2	5510	3	5441.200	59.72	74.0	Н
HT40	2	5670	3	5726.000	60.35	68.2	Н



3.4 Transmitter Radiated Unwanted Emissions

3.4.1 Transmitter Radiated Unwanted Emissions Limit

sions below 1 GHz and re	stricted band emissions a	bove 1GHz limit
Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
2400/F(kHz)	48.5 - 13.8	300
24000/F(kHz)	33.8 - 23	30
30	29	30
100	40	3
150	43.5	3
200	46	3
500	54	3
	Field Strength (uV/m) 2400/F(kHz) 24000/F(kHz) 30 100 150 200	2400/F(kHz) 48.5 - 13.8 24000/F(kHz) 33.8 - 23 30 29 100 40 150 43.5 200 46

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 - 5.825 GHz	5.715 5.725 GHz: e.i.r.p17 dBm [78.2 dBuV/m@3m] 5.825 5.835 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	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 measuremen performing measurements at a distance other than that specified, the results sha

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).

3.4.2 Measuring Instruments

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

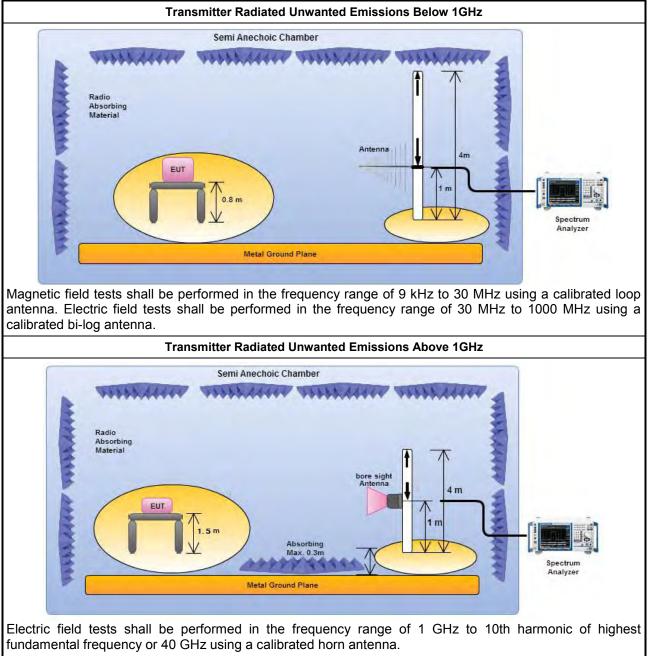


3.4.3 Test Procedures

		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).
\boxtimes	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 H)2) for unwanted emissions into non-restricted bands.
	\boxtimes	Refer as FCC KDB 789033, clause H)1) for unwanted emissions into restricted bands.
		Refer as FCC KDB 789033, H)6) Method AD (Trace Averaging).
		Refer as FCC KDB 789033, H)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, clause H)5) measurement procedure peak limit.
		Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
\boxtimes	For	radiated measurement.
	\boxtimes	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
	\boxtimes	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
	\boxtimes	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.



3.4.4 Test Setup



Note: FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 02, 2014.

3.4.5 Transmitter Radiated Unwanted Emissions (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.

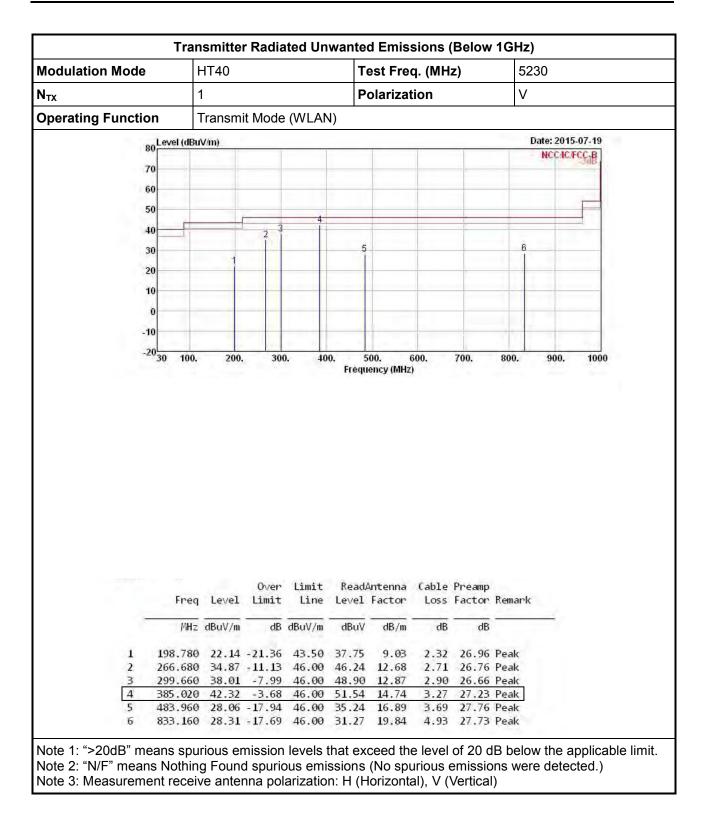


Modulation Mod	e I	HT40			Т	est Fre	q. (MH	z)	52	30	
N _{TX}		1			Р	olarizat	tion		V		
Operating Funct	ion	Transm	it Mode	e (WLAN	۷)						
	80 Level (dBu	V/m)								Date: 20	15-07-19
						1.2				NCCA	C/FCC-B
	70										
	60										
	50						-	_			_
	40								6		
	40			4							
	30	2	3				1	5			
	20						-		_		
	10		_	1.1.1							
	10										
	0										
	-10						-	_		-	
				1.1		1. · · ·	1.0		-1.16.1	100	
	-20 <mark>30 100.</mark>	200.	. 300	o. 40		500. (MHz liency (MHz	600.)	700.	800.	900.	1000
	-20 <mark>30 100.</mark>	200.	. 300). 40				700.	800.	900.	1000
			0ver	Limit	Frequ	Antenna) (able	Preamp			1000
		200. Level	0ver	Limit	Frequ	iency (MHz) (able				1000
	Freq		Over Limit	Limit	Frequ	Antenna Factor) (able	Preamp Factor			1000
1	Freq 	Level dBuV/m 21.81	Over Limit dB -18.19	Limit Line dBuV/m 40.00	Frequ Read, Level dBuV 41.72	Antenna Factor dB/m 6.31) (able Loss dB 1.26	Preamp Factor dB 27.48	Remark Peak		1000
1 2	Freq MHz 61.040 173.560	Level dBuV/m 21.81 24.22	Over Limit 	Limit Line dBuV/m 40.00 43.50	Frequ Read, Level dBuV 41.72 39.91	Antenna Factor dB/m 9.20	(able Loss dB 1.26 2.17	Preamp Factor dB 27.48 27.06	Remark Peak Peak		1000
1 2 3	Freq MHz 61.040 173.560 299.660	Level dBuV/m 21.81 24.22 23.84	Over Limit 	Limit Line dBuV/m 40.00 43.50 46.00	Frequ Read, Level dBuV 41.72 39.91 34.73	Antenna Factor dB/m 6.31 9.20 12.87	(able Loss dB 1.26 2.17 2.90	Preamp Factor dB 27.48 27.06 26.66	Remark Peak Peak Peak		1000
1 2 3 4	Freq MHz 61.040 173.560 299.660 398.600	Level dBuV/m 21.81 24.22 23.84 32.20	Over Limit 	Limit Line dBuV/m 40.00 43.50 46.00 46.00	Frequ Read, Level dBuV 41.72 39.91 34.73 40.94	Antenna Factor dB/m 6.31 9.20 12.87 15.24	(able Loss dB 1.26 2.17 2.90 3.34	Preamp Factor dB 27.48 27.06 26.66 27.32	Remark Peak Peak Peak Peak Peak		1000
1 2 3	Freq MHz 61.040 173.560 299.660	Level dBuV/m 21.81 24.22 23.84 32.20 25.91	Over Limit dB -18.19 -19.28 -22.16 -13.80 -20.09	Limit Line dBuV/m 40.00 43.50 46.00 46.00 46.00	Frequ Read, Level dBuV 41.72 39.91 34.73 40.94 29.67	Antenna Factor dB/m 6.31 9.20 12.87 15.24 19.48	(able Loss dB 1.26 2.17 2.90 3.34 4.63	Preamp Factor dB 27.48 27.06 26.66	Remark Peak Peak Peak Peak Peak Peak		1000

3.4.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)





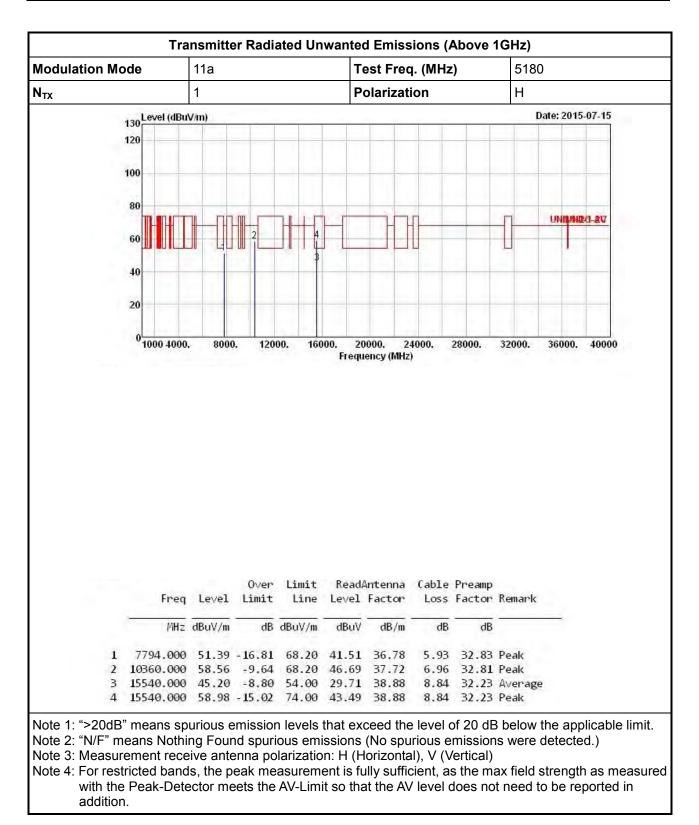




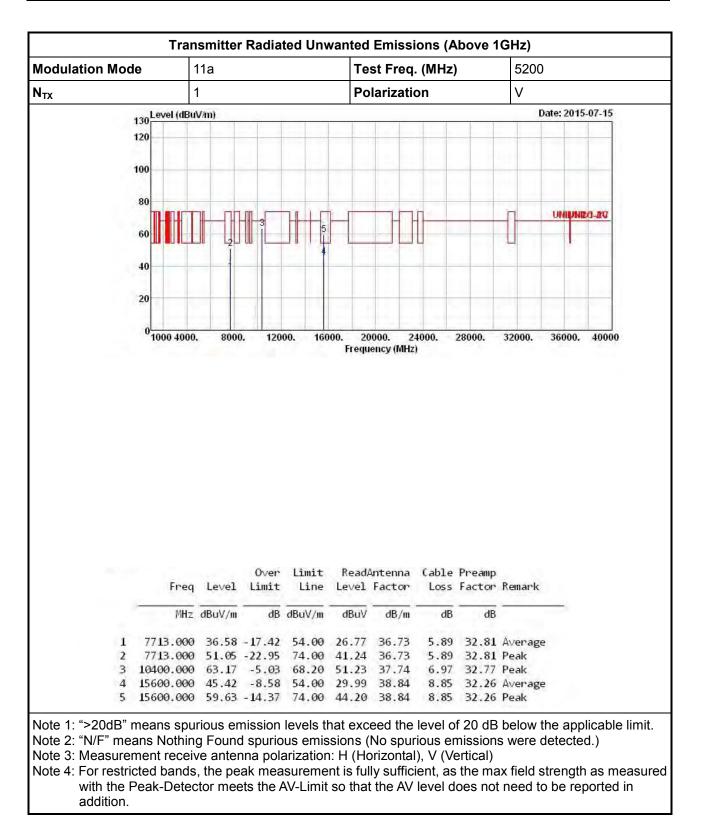
		11a					q. (MHz	·/	5180			
N _{TX}		1			P	olarizat	ion		V			
	130 Level (dBu	V/m)							D	ate: 2	015-0	7-15
	120											
	100	-			-					-		-
	80				1 -				п	UNI	UNEO.	av
	60		-1-2	4		Ē						
									Ц			
	40			-				-		_		-
	1.14											
	20											
	0 1000 4000	. 800	0. 120	00. 160		1000. 2 ency (MH)		28000.	32000.	3600	00. 4	4000
			0ver	Limit	Frequ	ency (MH;	2) Cable	Preamp		3600	00. 4	4000
				Limit	Frequ	ency (MH;	2) Cable			3600	00. 4	4000
	Freq		0ver Limit	Limit	Frequ	ency (MH;	2) Cable	Preamp		3600	00. 4	4000
1	Freq	Level dBuV/m	Over Limit dB	Limit Line dBuV/m	Frequ Read, Level dBuV	Antenna Factor dB/m	Cable Loss dB	Preamp Factor	Remark	3600	00. 4	4000
2	Freq MHz 6977.000 10360.000	Le∨el dBuV/m 49.92 64.35	0∨er Limit dB -18.28 -3.85	Limit Line dBuV/m 68.20 68.20	Frequ Read Level dBuV 40.98 52.48	Antenna Factor dB/m 35.87 37.72	Cable Loss dB 5.61 6.96	Preamp Factor dB 32.54 32.81	Remark Peak Peak		00. 4	4000
2 3	Freq 	Le∨el dBuV/m 49.92 64.35 45.22	0√er Limit dB -18.28 -3.85 -8.78	Limit Line dBuV/m 68.20 68.20 54.00	Frequ Read, Level dBuV 40.98 52.48 29.73	Antenna Factor dB/m 35.87 37.72 38.88	Cable Loss dB 5.61 6.96 8.84	Preamp Factor dB 32.54 32.81	Remark Peak Peak Average		00. 4	4000

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

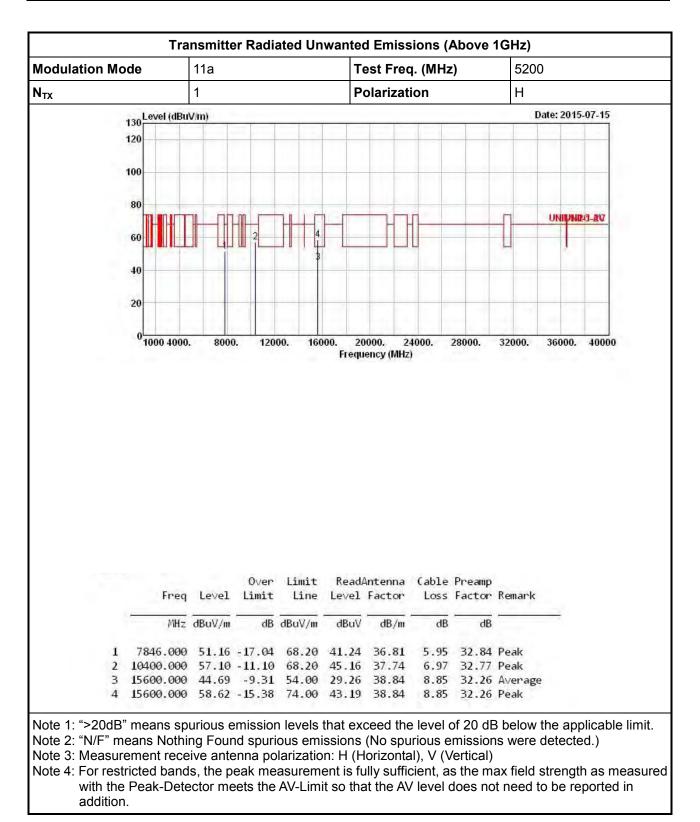




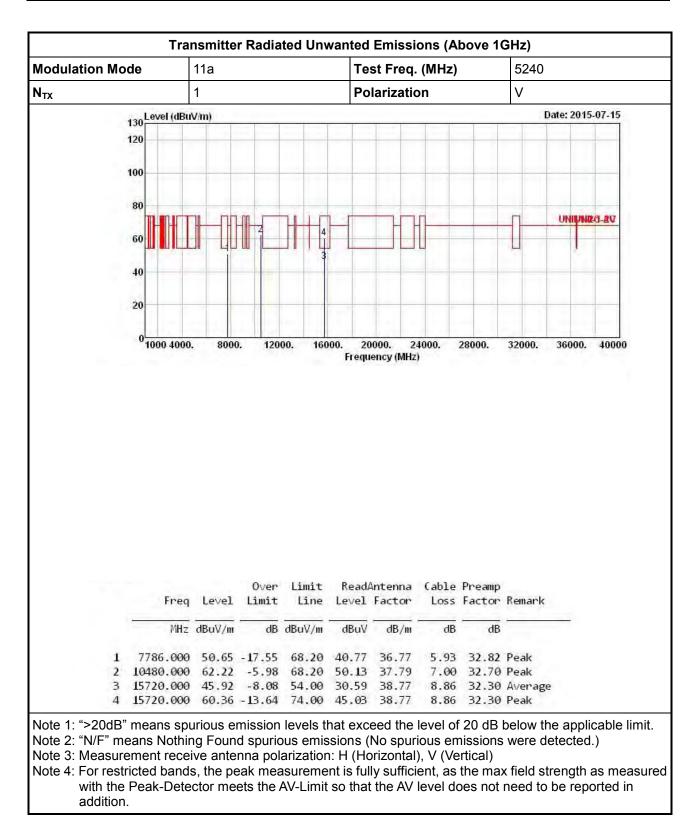




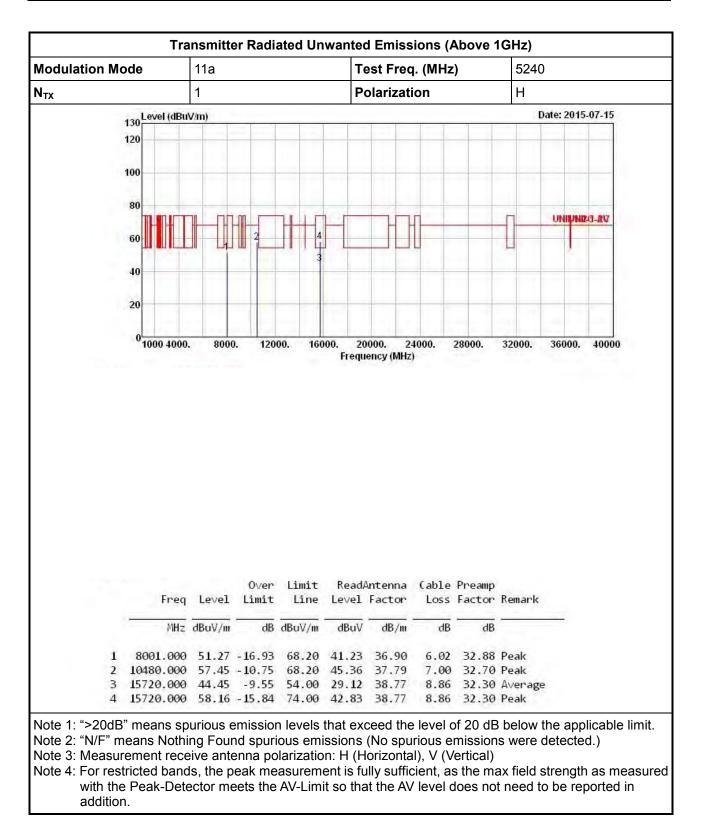




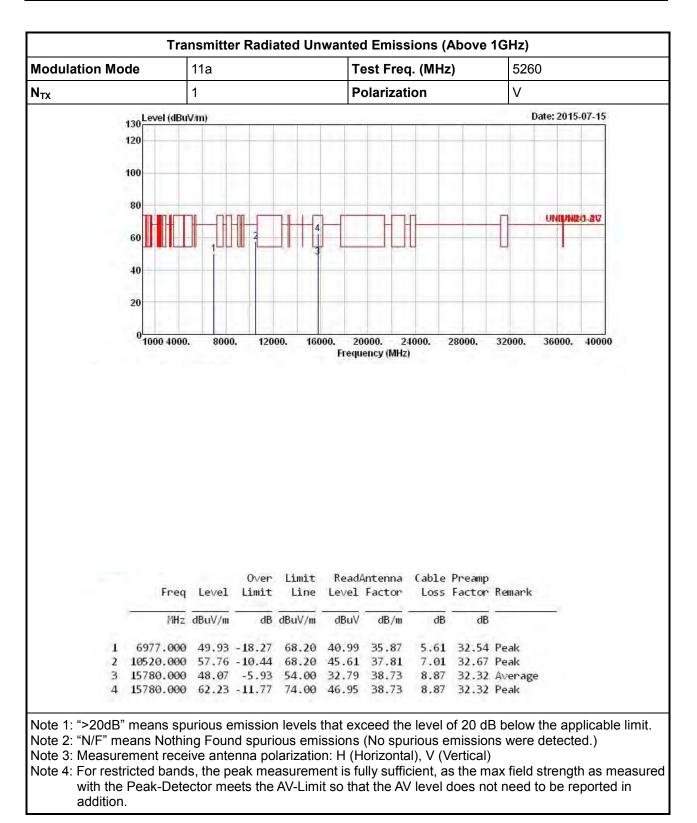




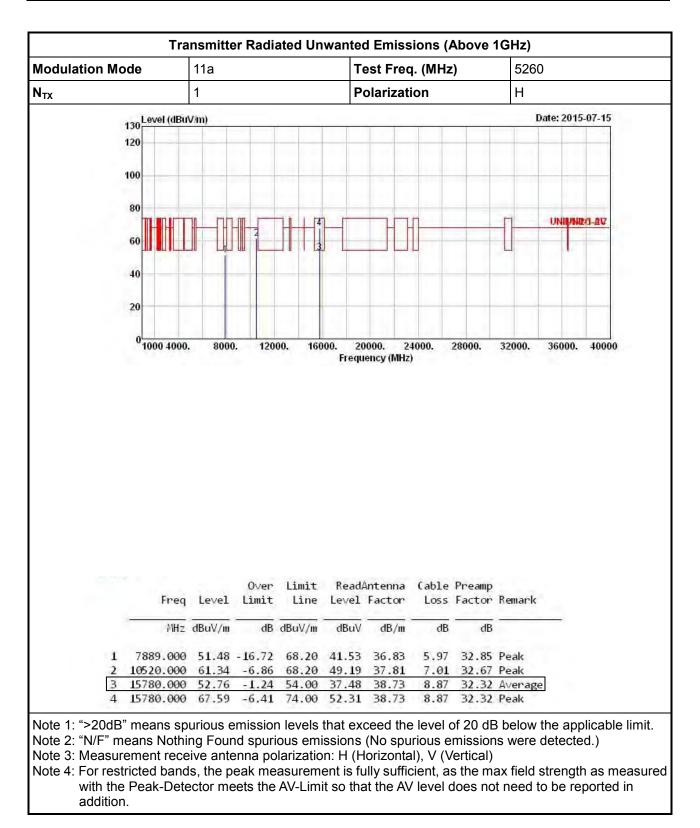




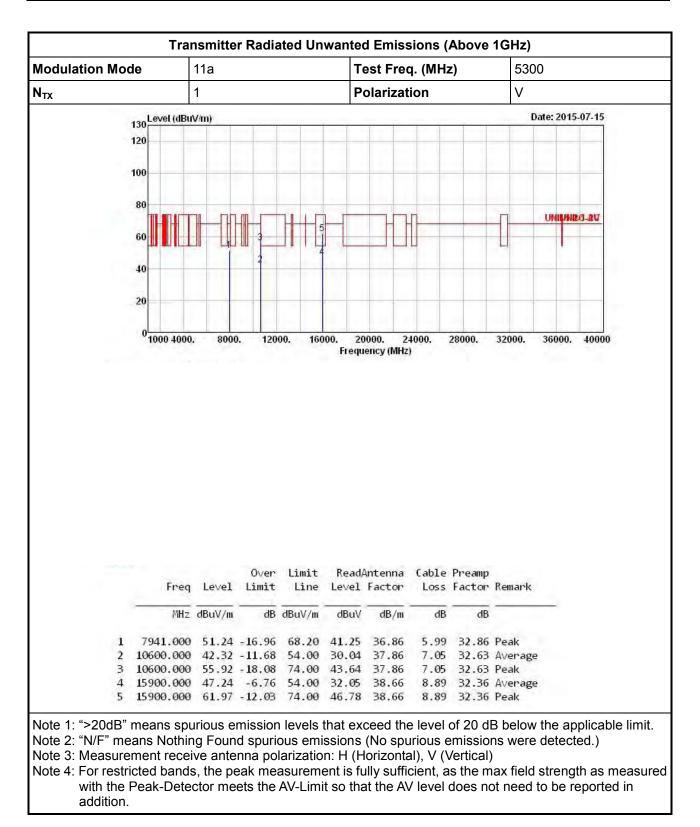




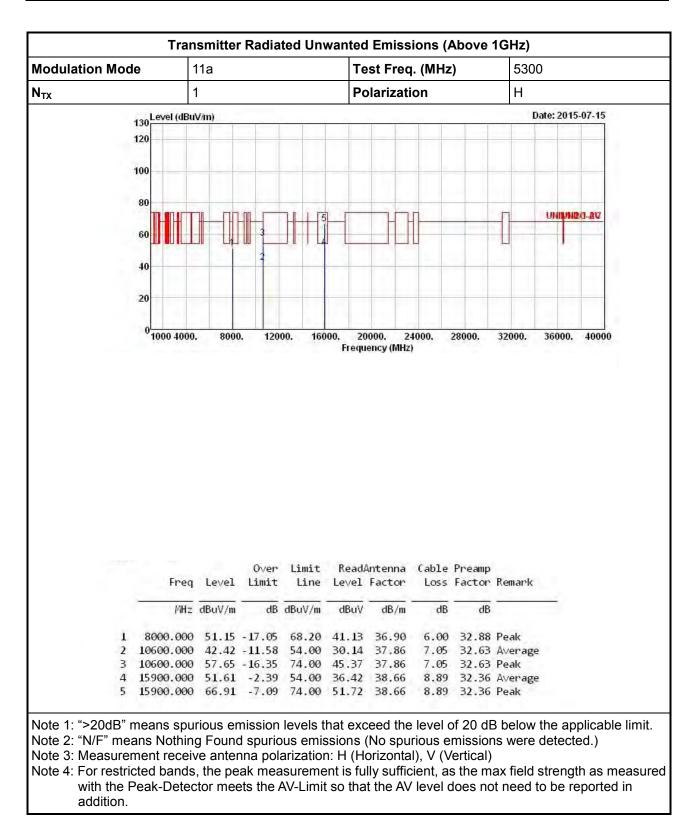




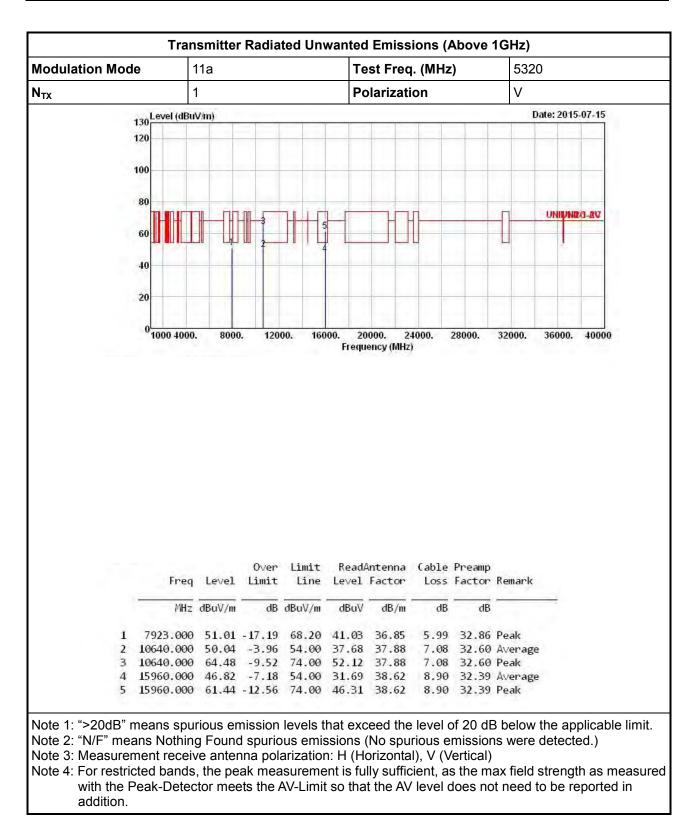




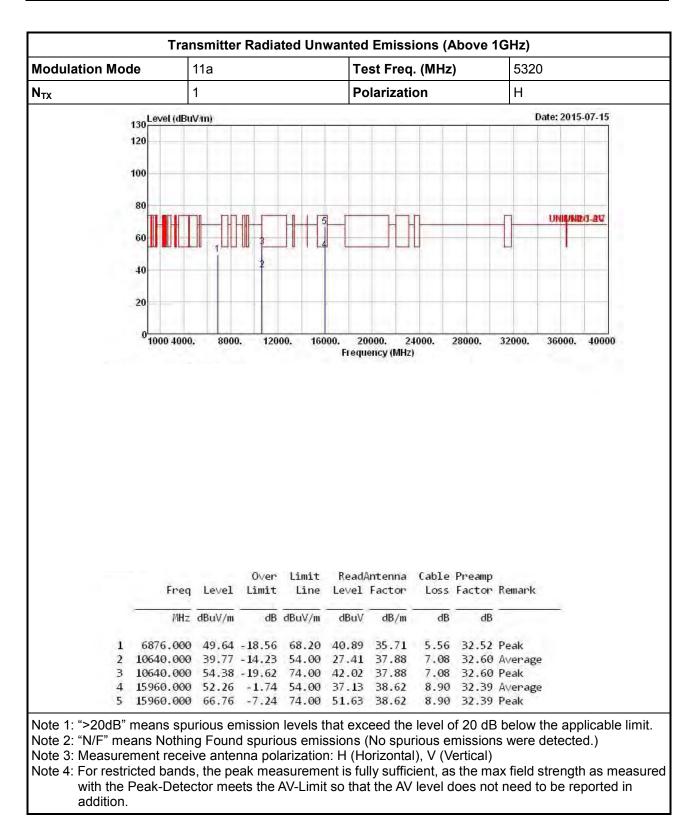




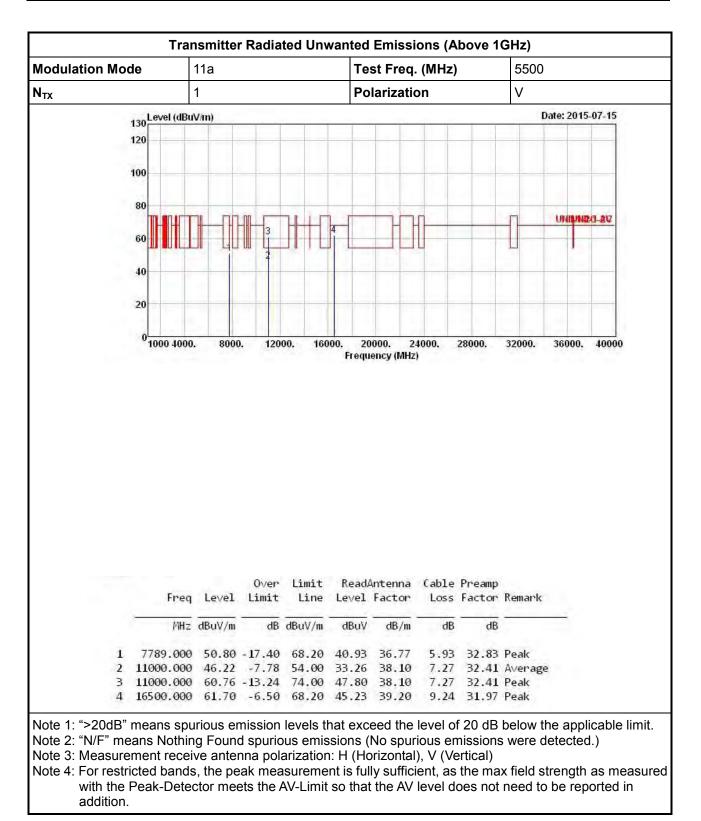




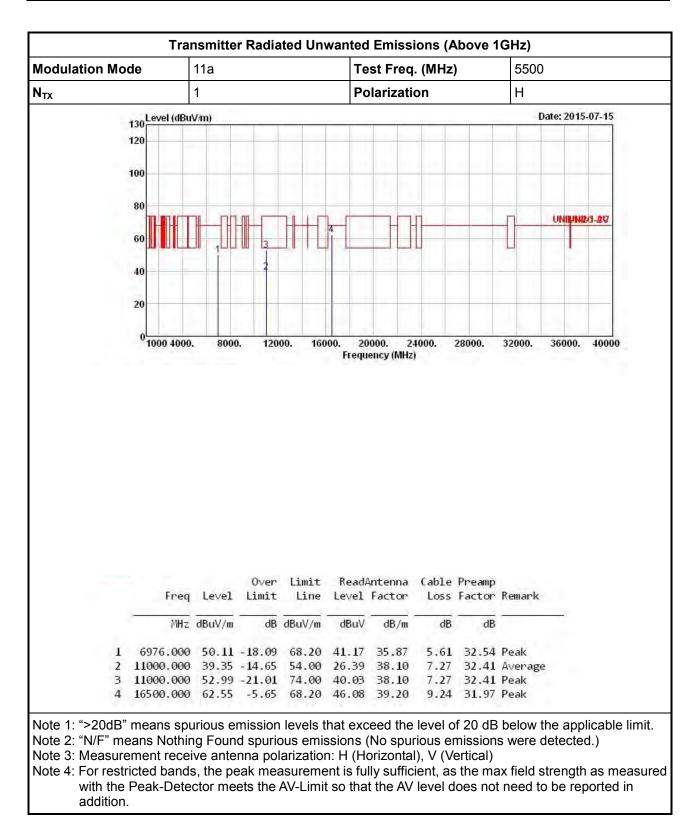




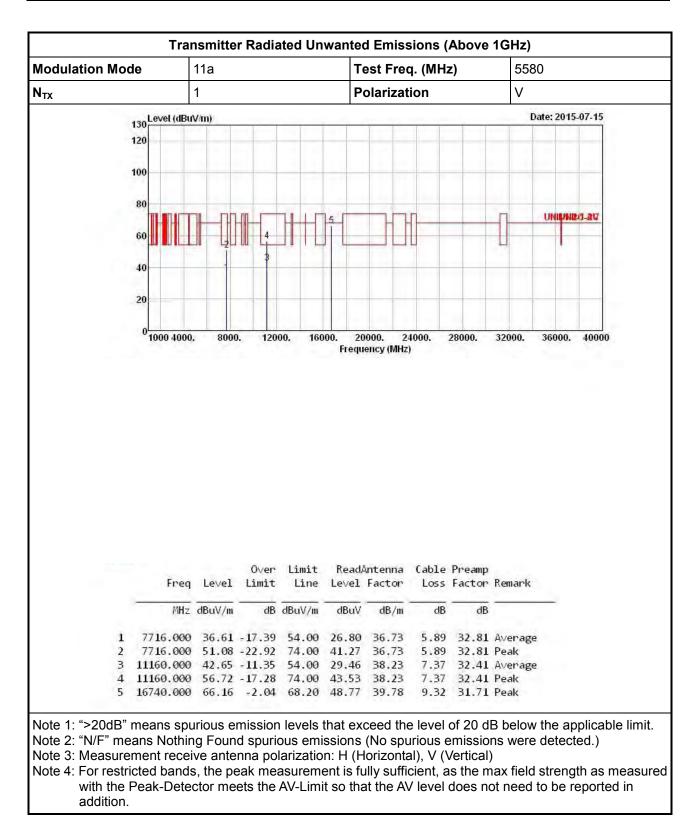




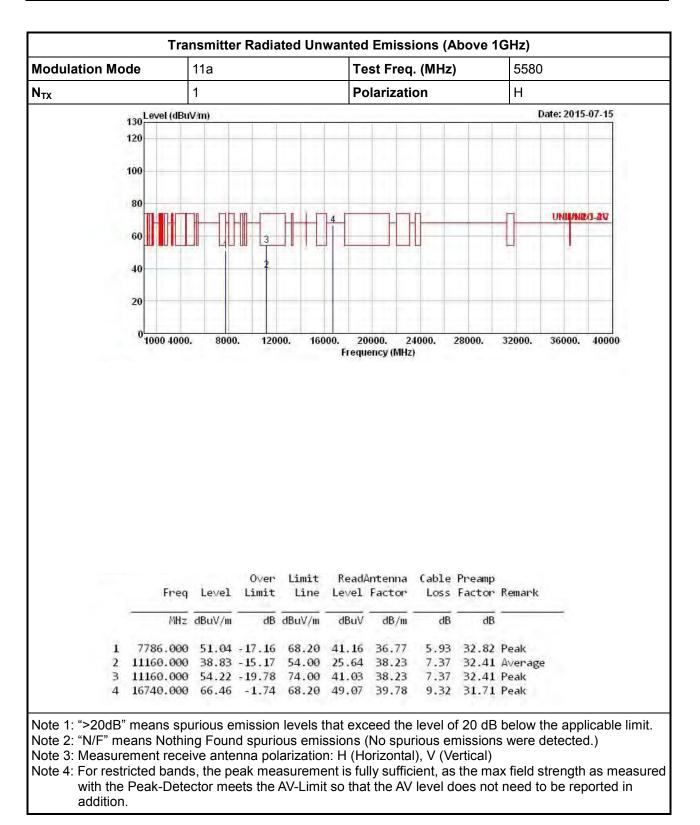




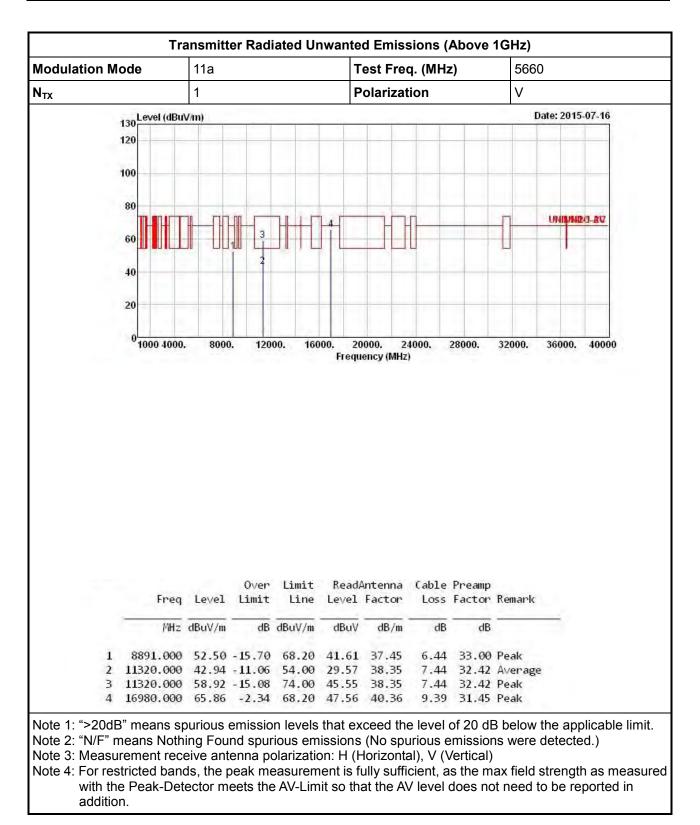




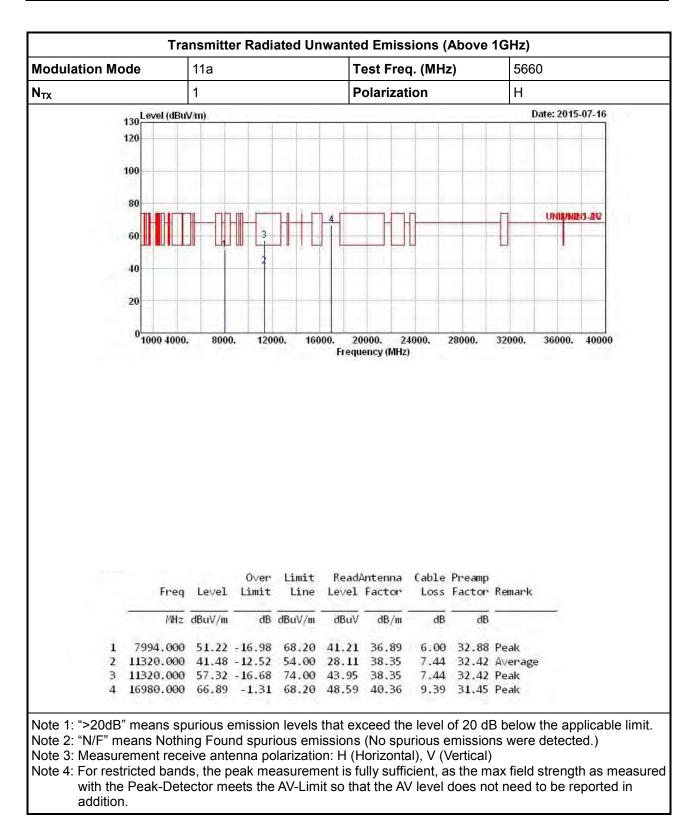




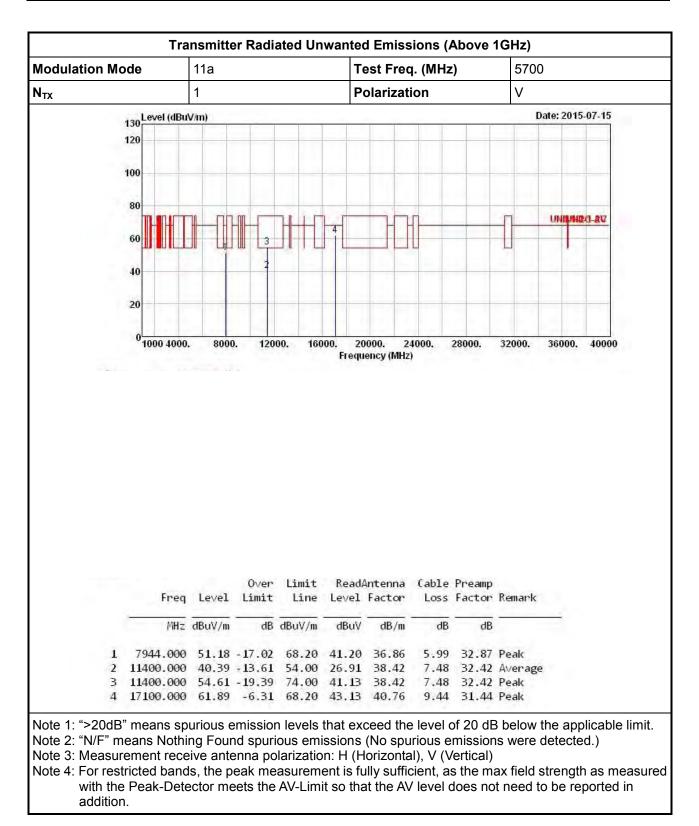




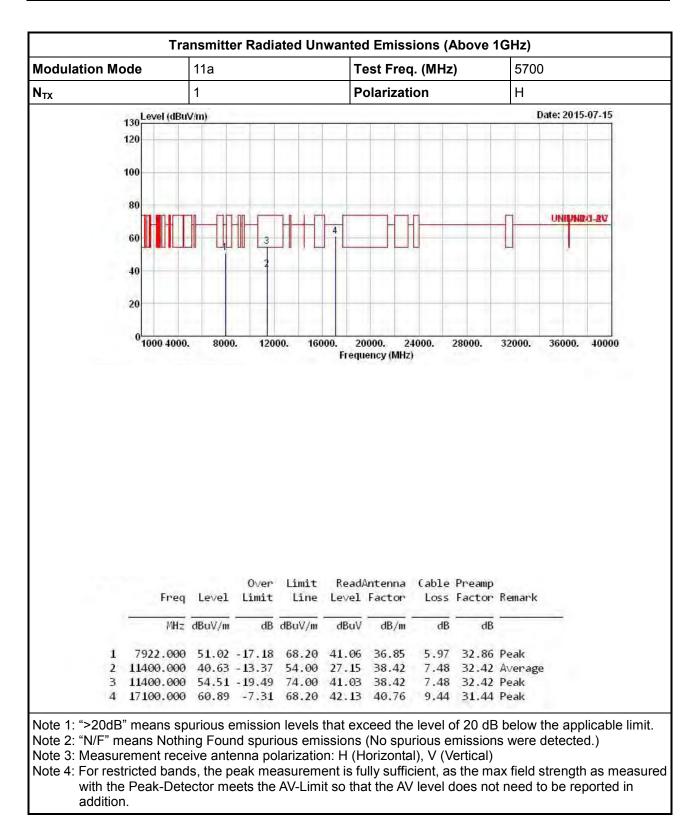




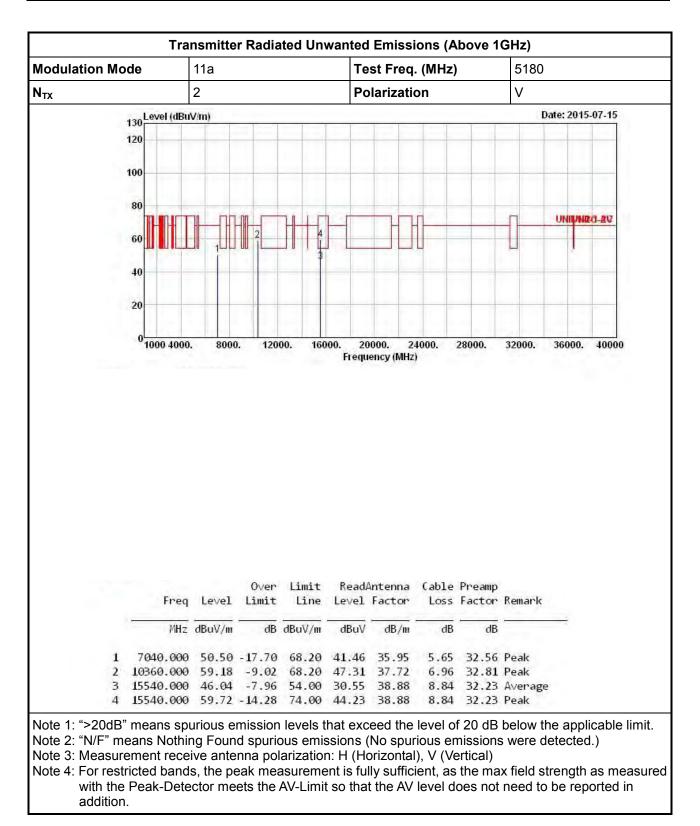




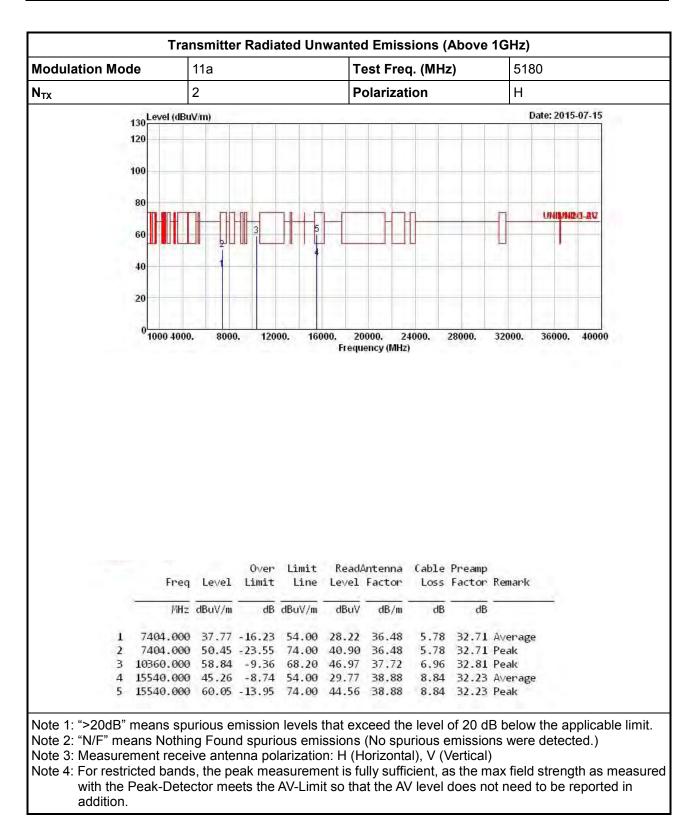




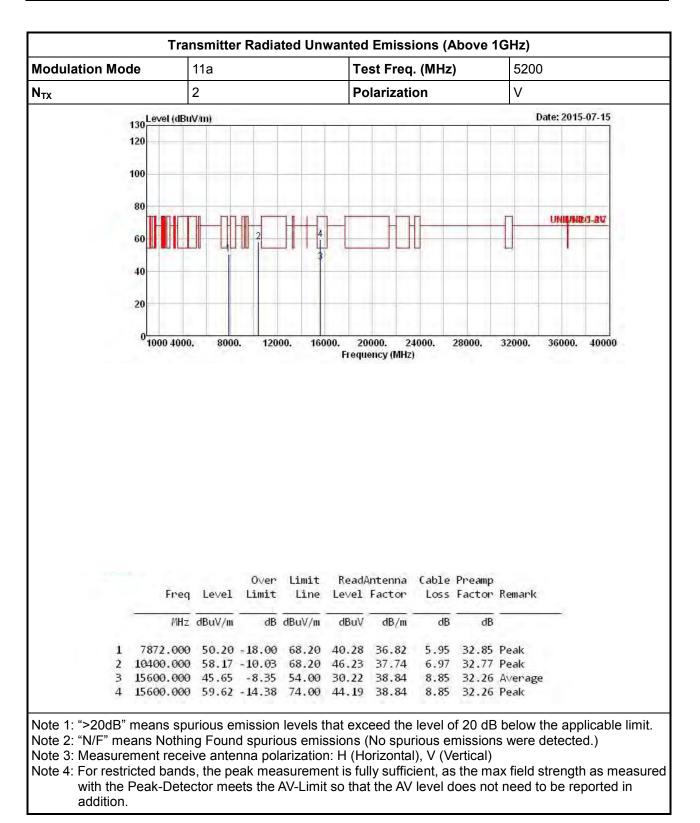




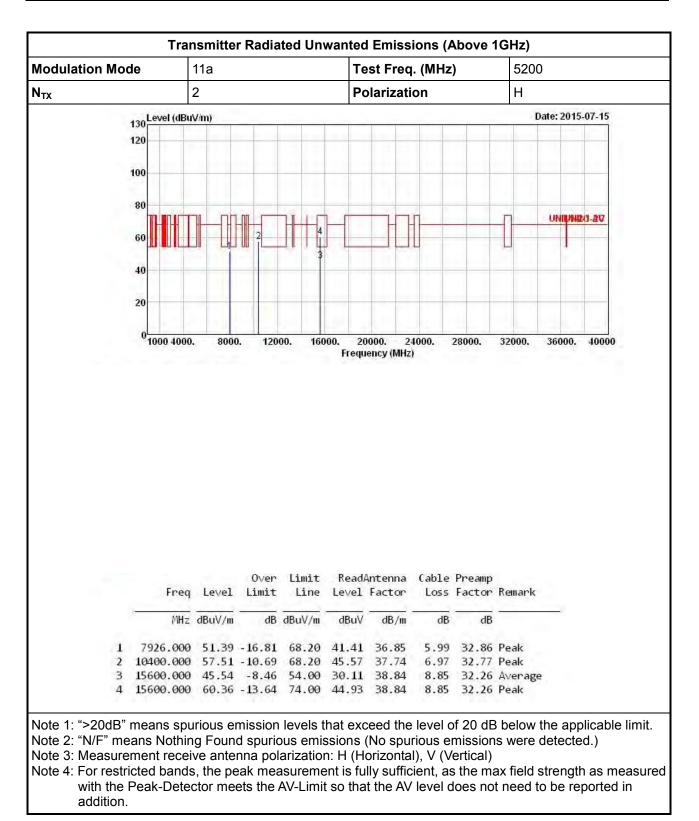




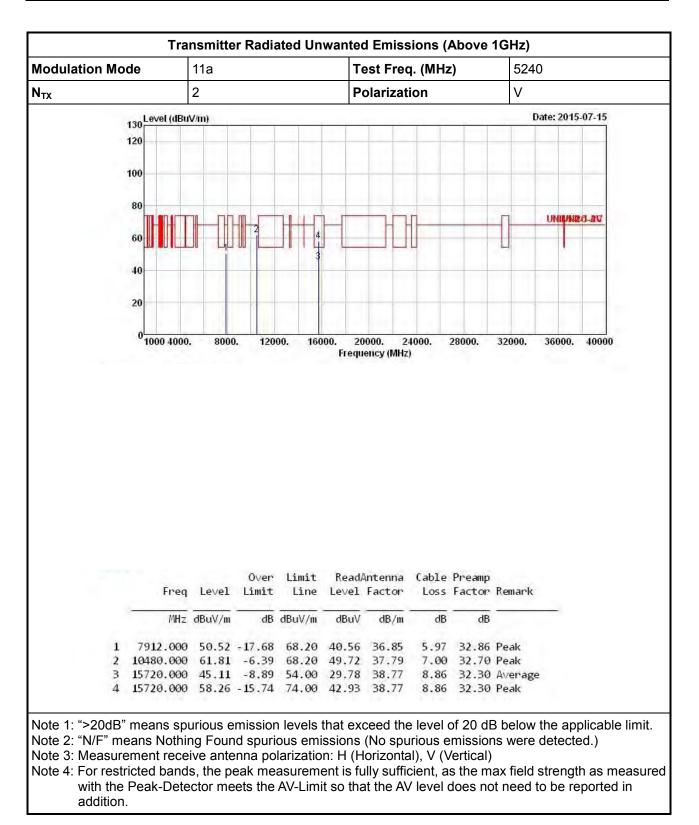




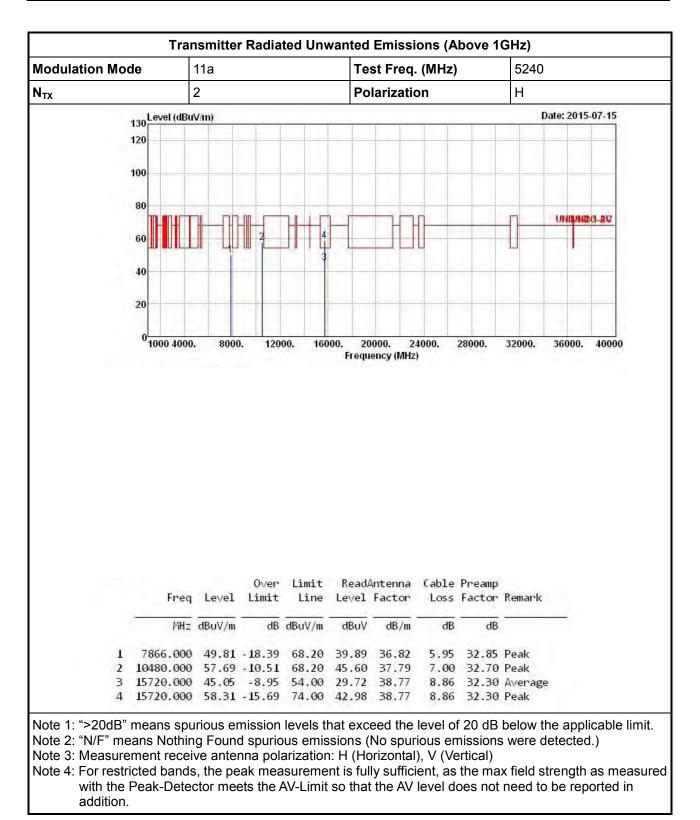




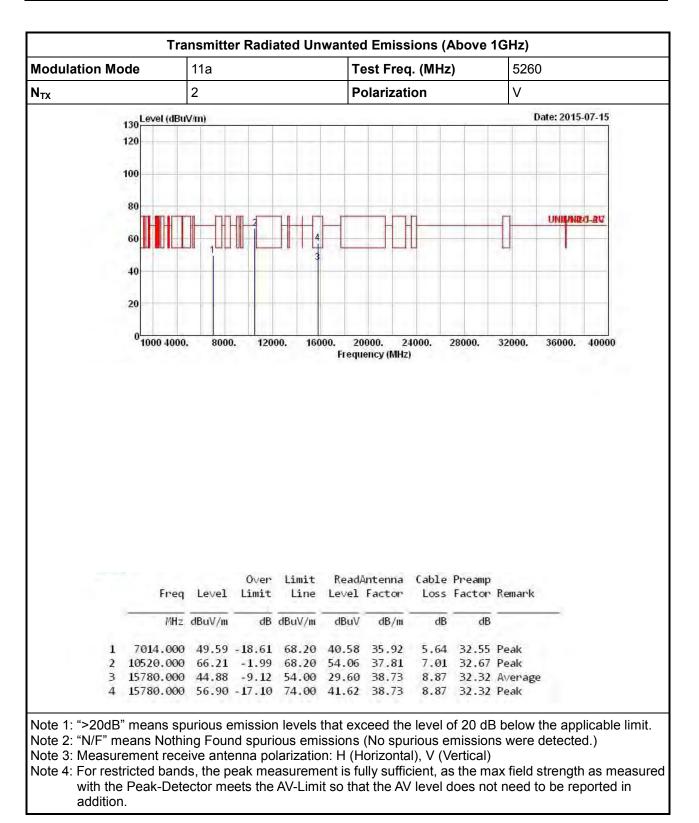




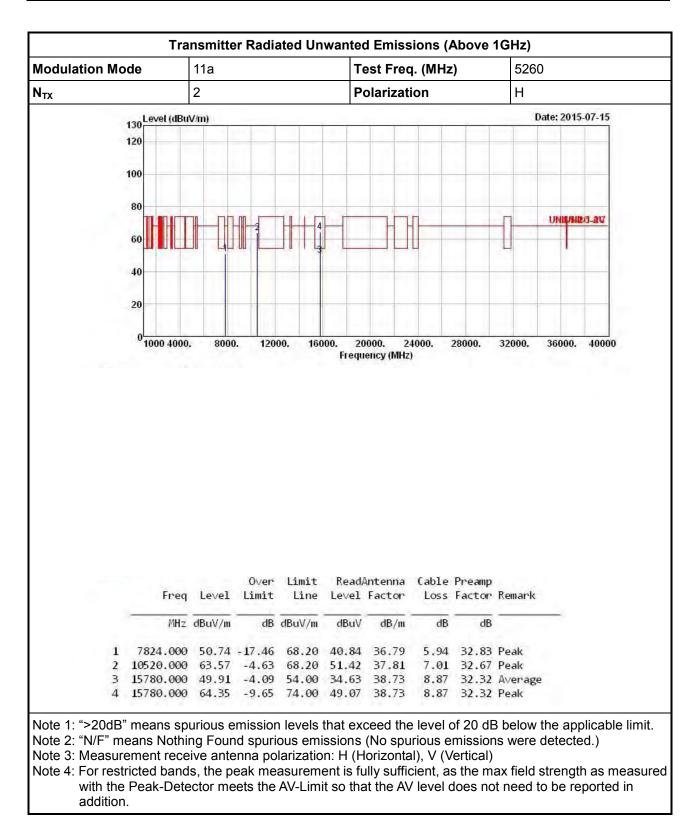




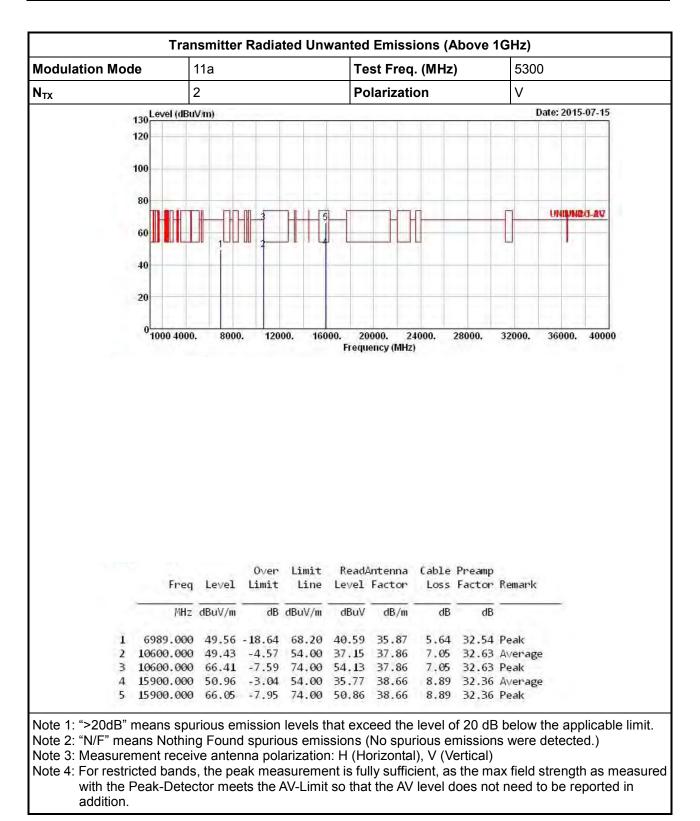




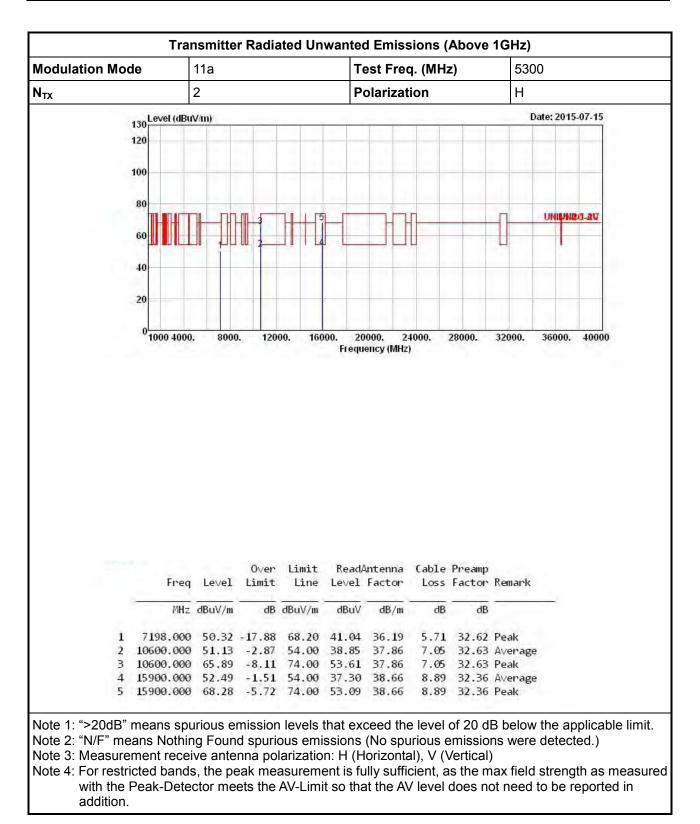




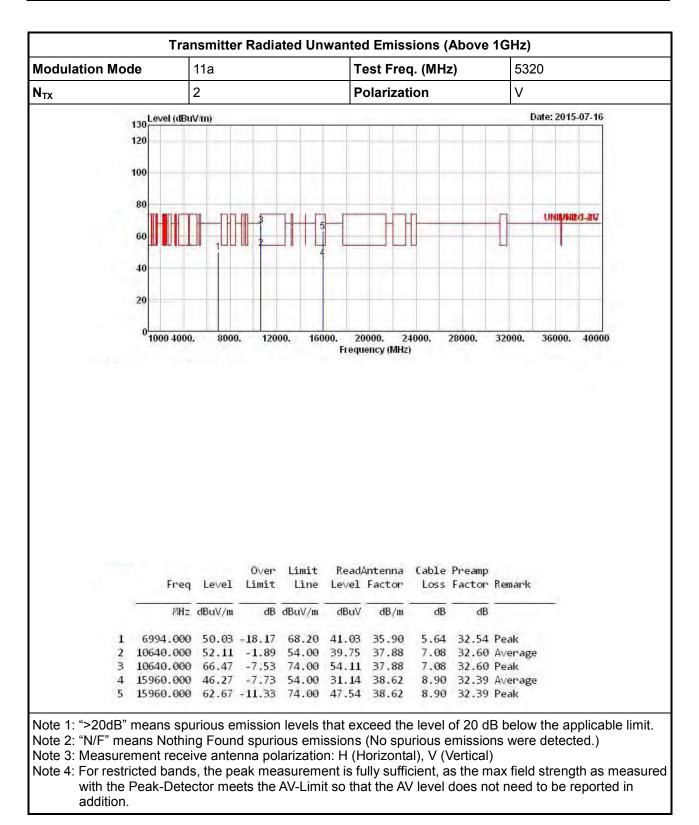




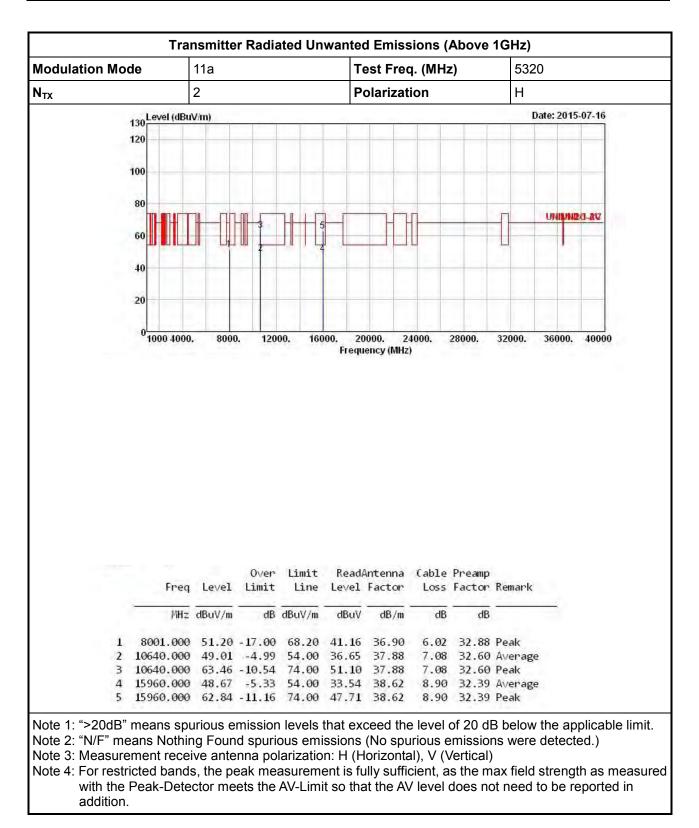




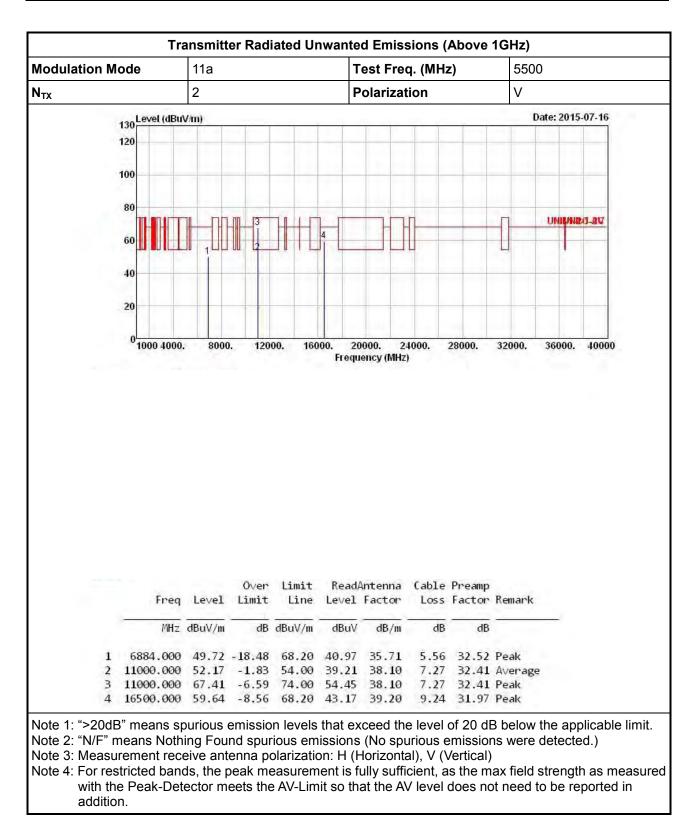




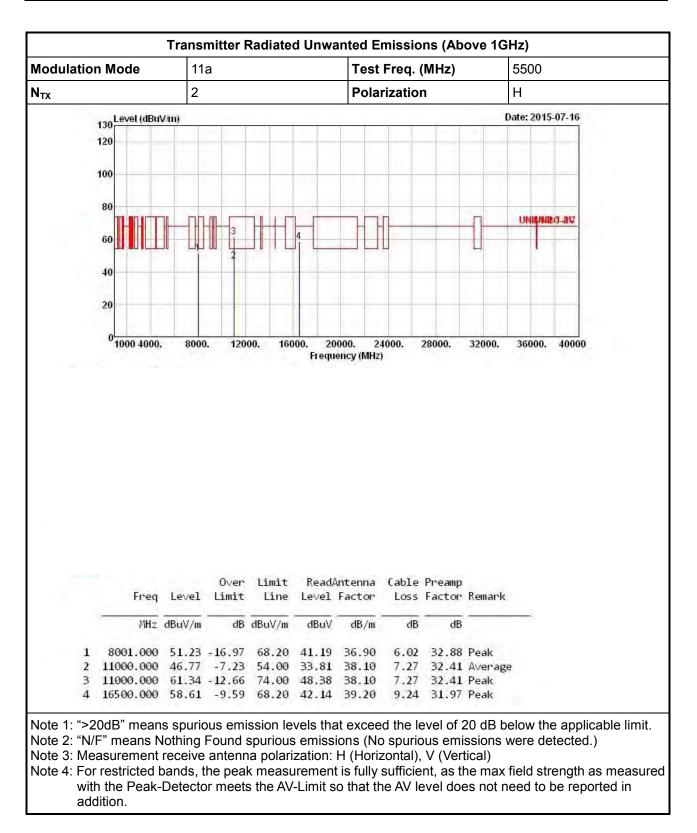




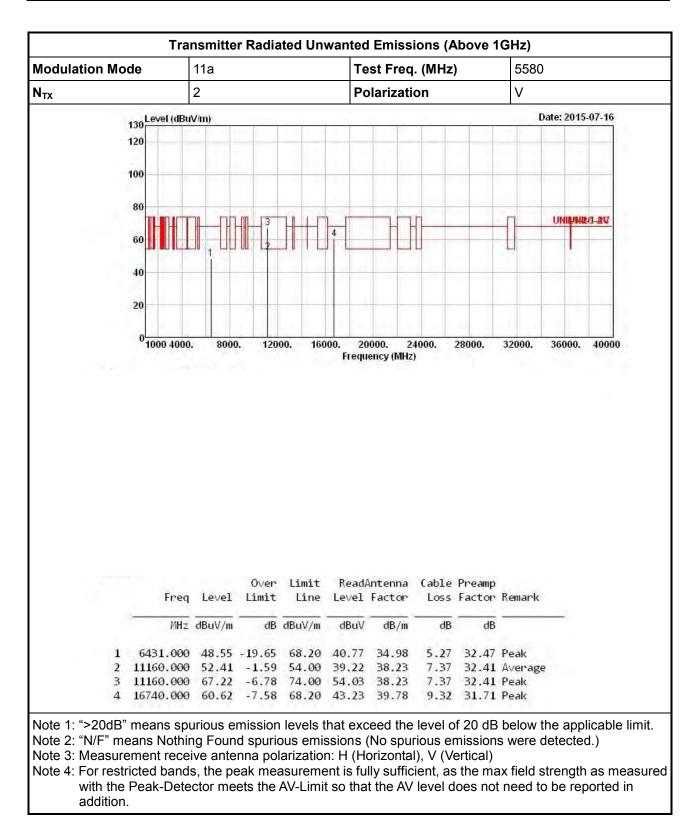




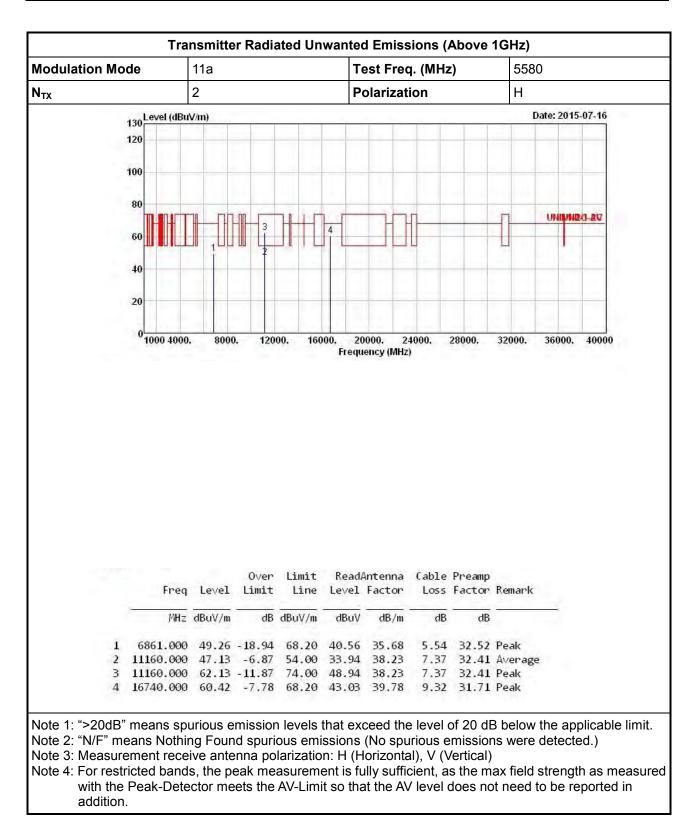




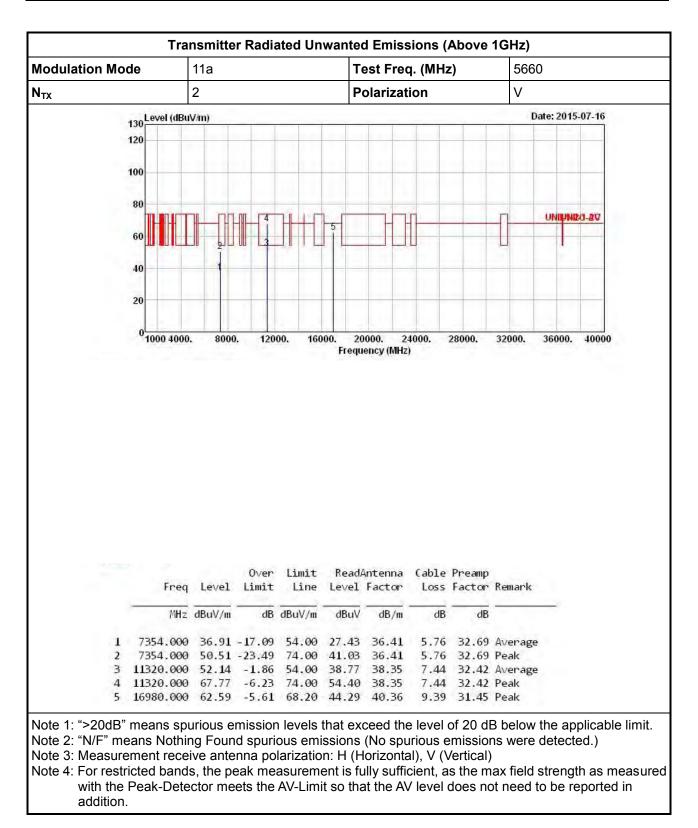




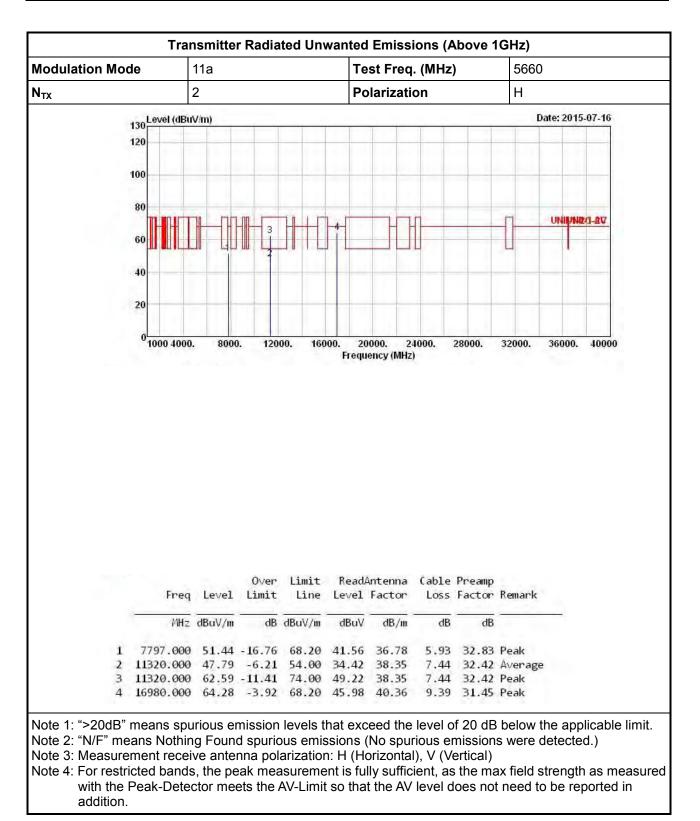




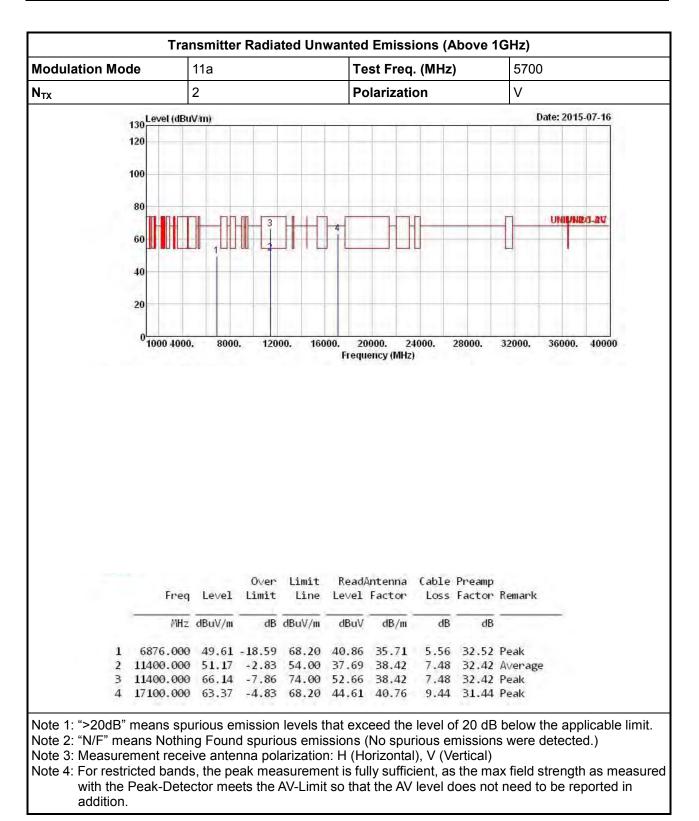




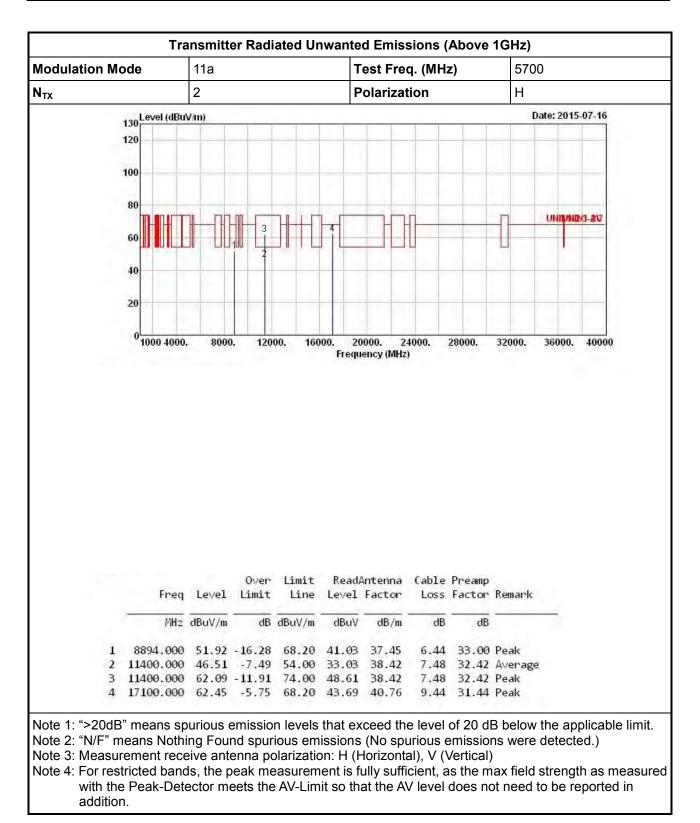










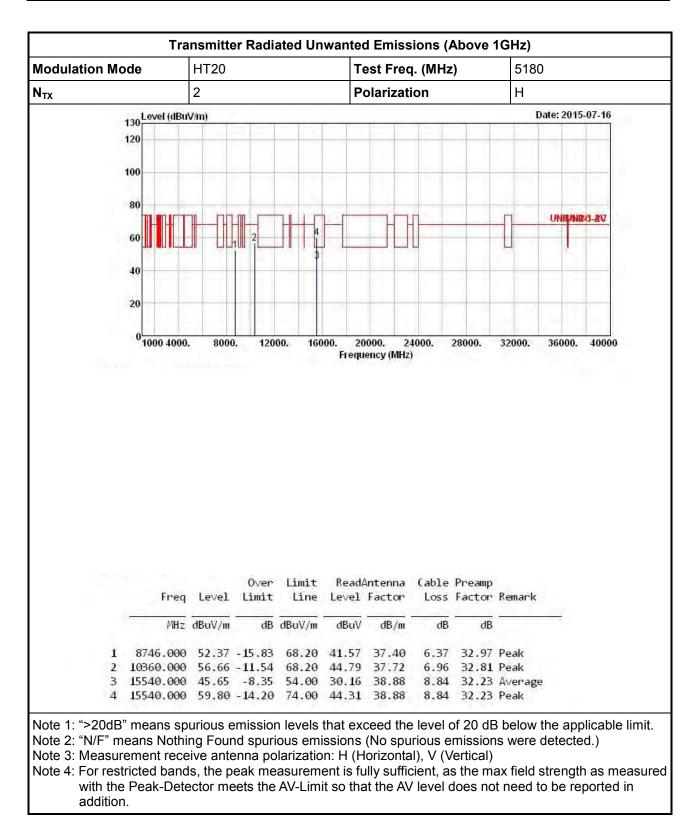




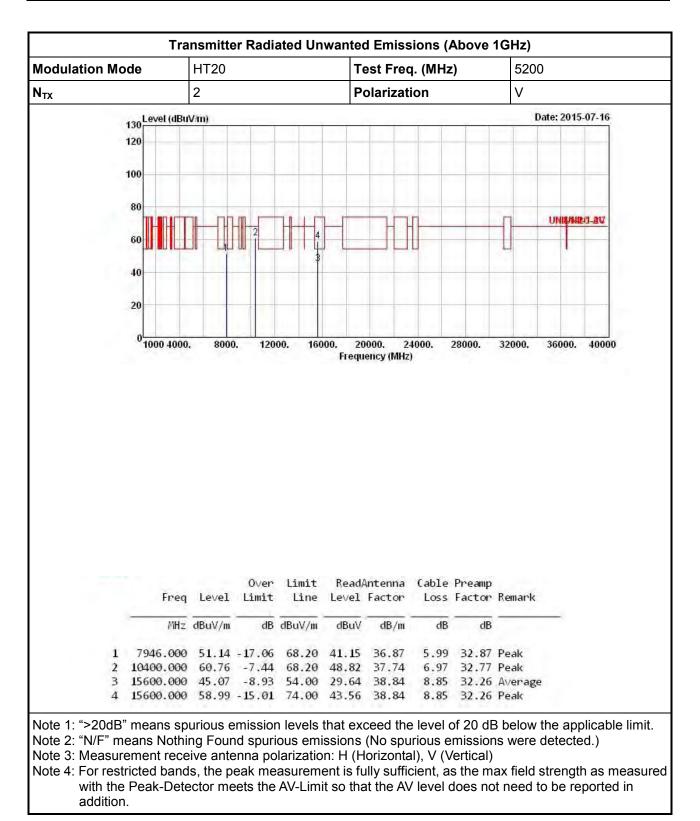
	ode	HT20				031110	q. (MHz	-)	5180	, ,		
N _{TX}		2			Р	olarizat	ion		V			
	130 Level (dBu	IV/m)							D	ate:	2015	-07-10
	120											
	100									_		
	80						п		D	UN	ILIAND	ug-av
	60		1 2	4								
									Ц			
	40		-							_		-
	20											
	20											
	0 1000 4000	. 8000	0. 120	00 460	000. 20	0000. 2	4000.	28000.	32000.	261	000.	400
					Frequ	iency (MHz	()					
			0ver	Limit	Read	Antenna	Cable	A CONTRACT OF A CONTRACT OF				
		Level	0ver Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Factor	Remark			
			0ver Limit	Limit	Read Level	Antenna Factor	Cable Loss	Factor	Remark			
1		Level dBuV/m	Over Limit 	Limit Line dBuV/m	Read. Level dBuV	Antenna Factor dB/m	Cable Loss dB	Factor dB	-			
2	MHz 8840.000 10360.000	Level dBuV/m 52.53 53.96	0ver Limit dB -15.67 -14.24	Limit Line dBuV/m 68.20 68.20	Read. Level dBuV 41.68 42.09	Antenna Factor dB/m 37.43 37.72	Cable Loss dB 6.41 6.96	Factor dB 32.99 32.81	Peak Peak			
		Level	0ver Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Factor	Remark			
	MHz 8840.000	Level dBuV/m 52.53	Over Limit dB -15.67	Limit Line dBuV/m 68.20	Read Level dBuV 41.68	Antenna Factor dB/m 37.43	Cable Loss dB 6.41	Factor dB 32.99	Peak			
2	MHz 8840.000	Level dBuV/m 52.53 53.96 45.43	Over Limit dB -15.67 -14.24 -8.57	Limit Line dBuV/m 68.20 68.20 54.00	Read Level dBuV 41.68 42.09 29.94	Antenna Factor dB/m 37.43 37.72 38.88	Cable Loss dB 6.41 6.96 8.84	Factor dB 32.99 32.81	Peak Peak Average			

3.4.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20

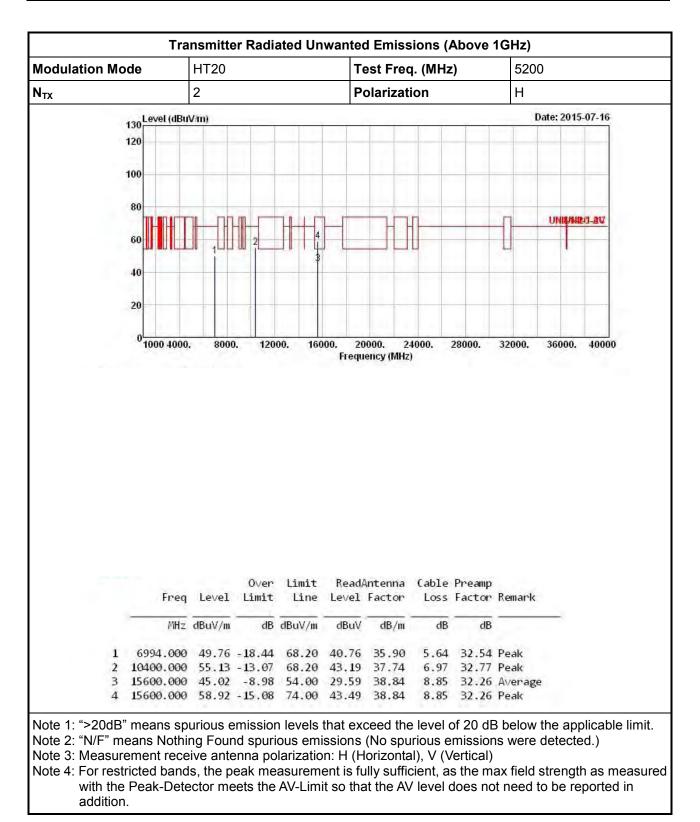




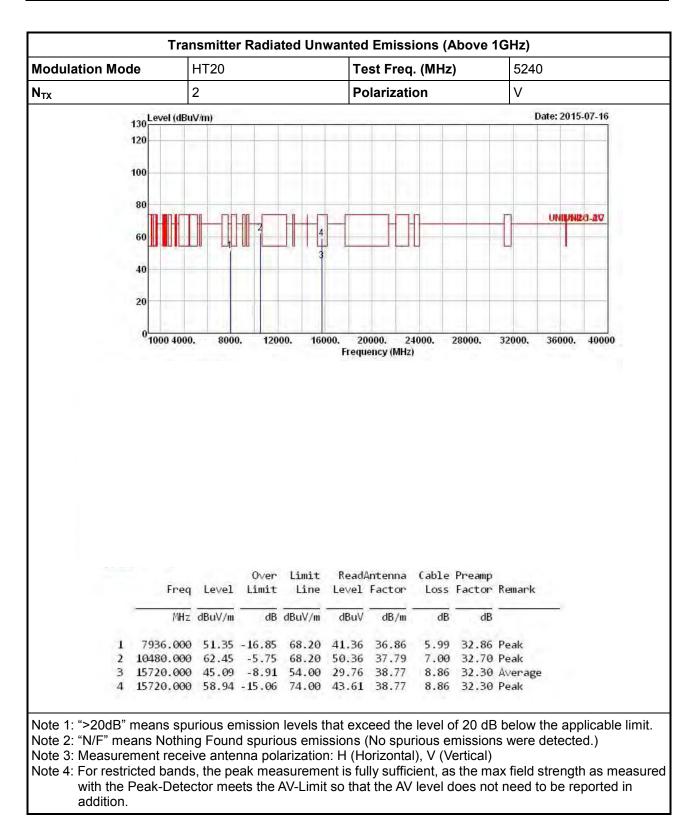




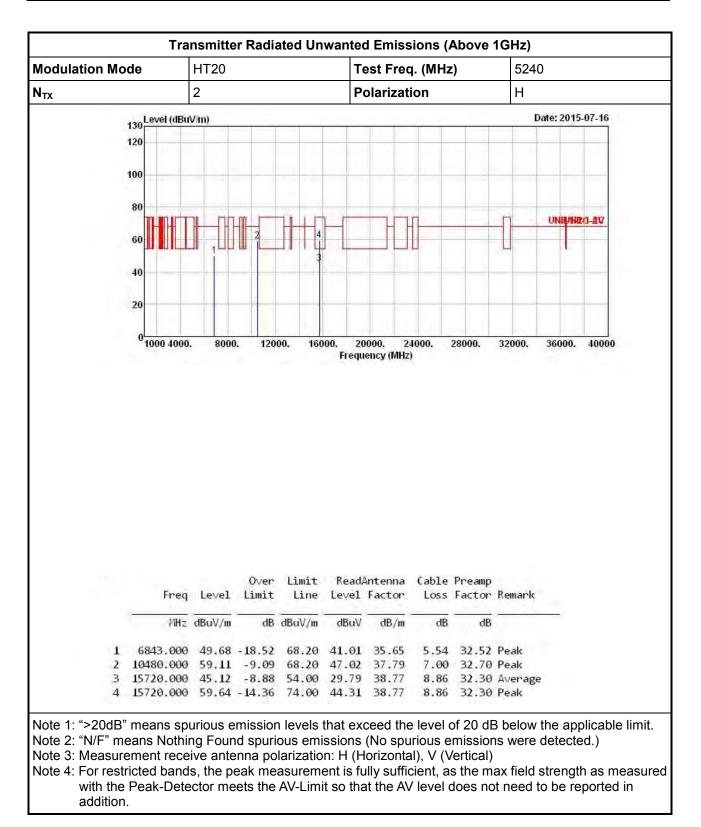




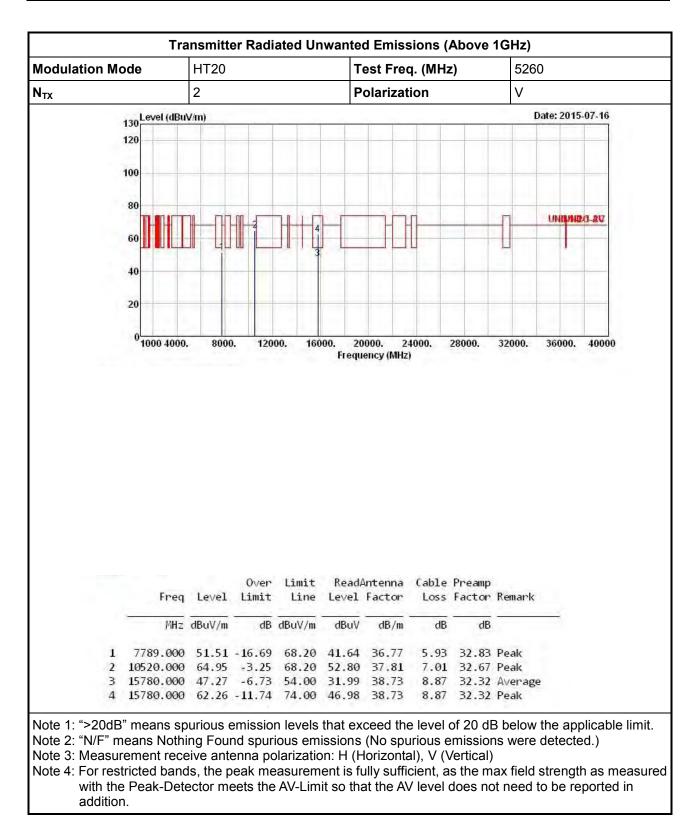




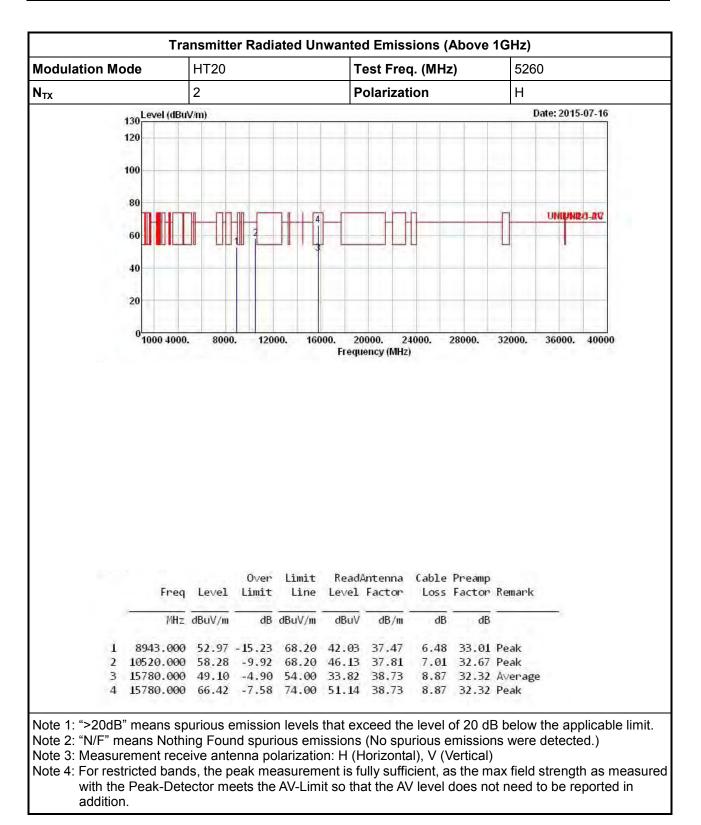




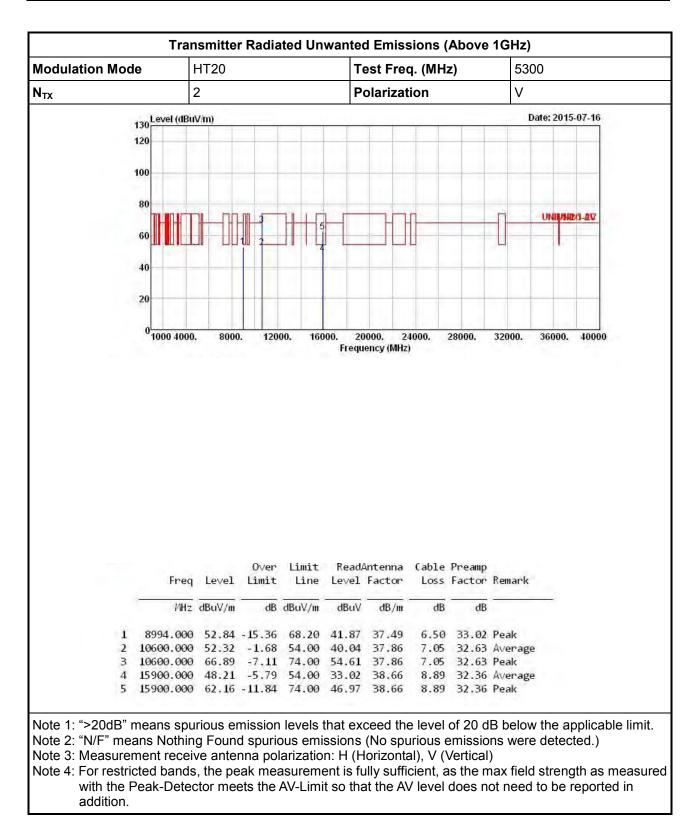




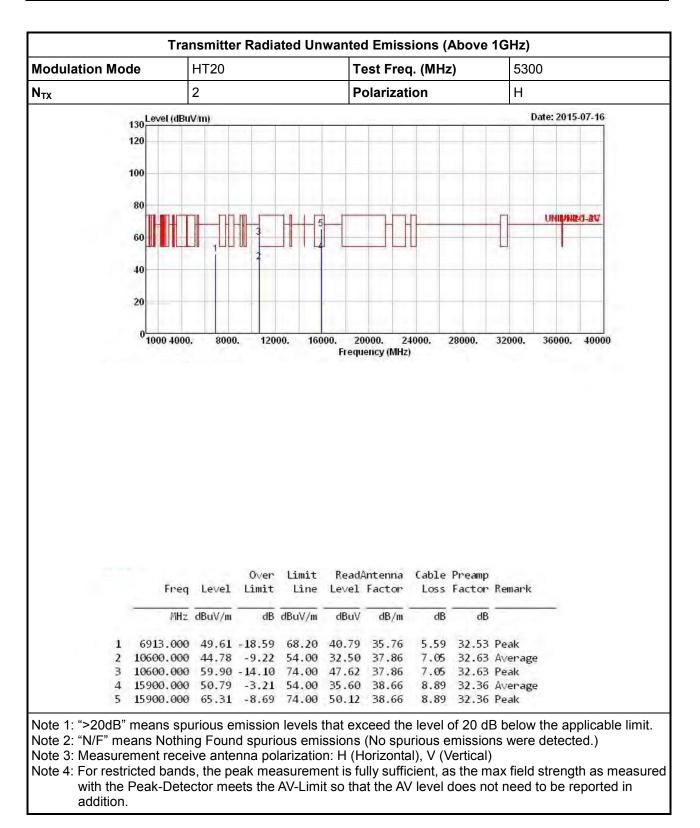




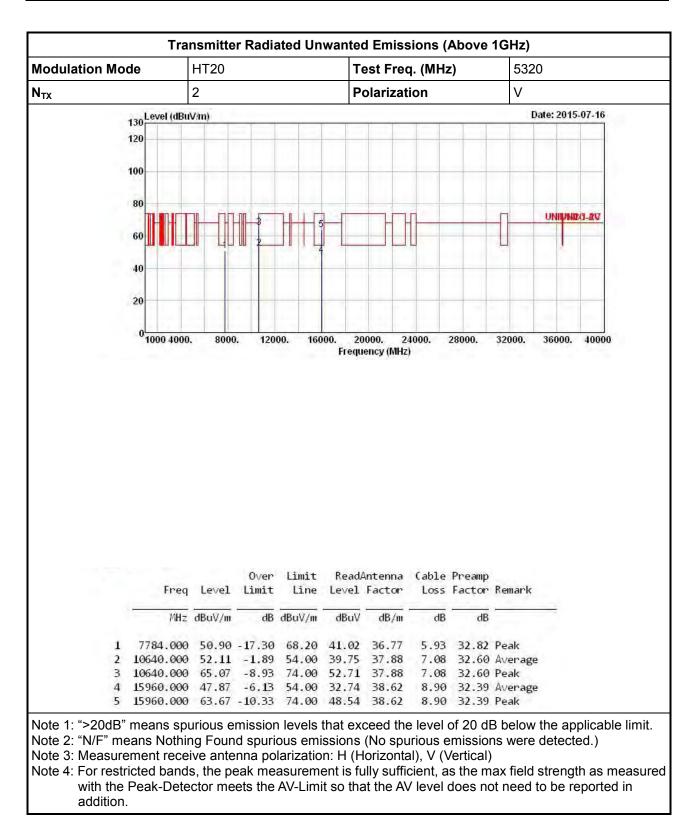




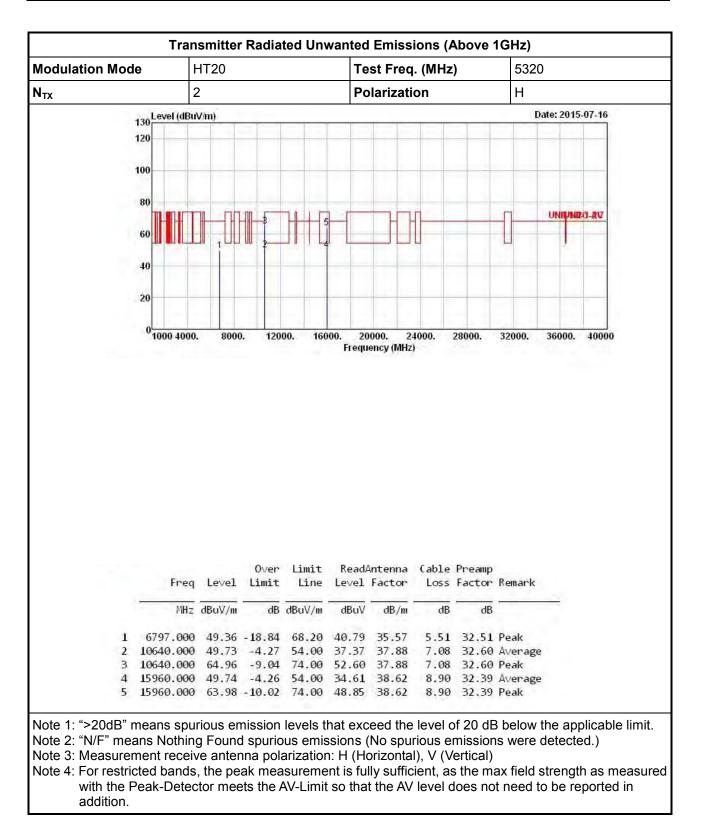




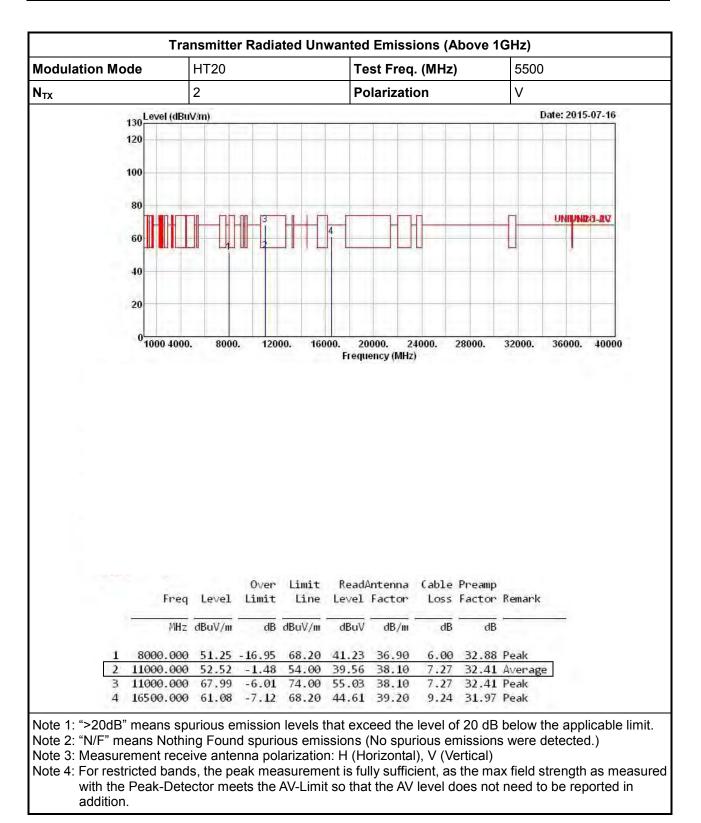




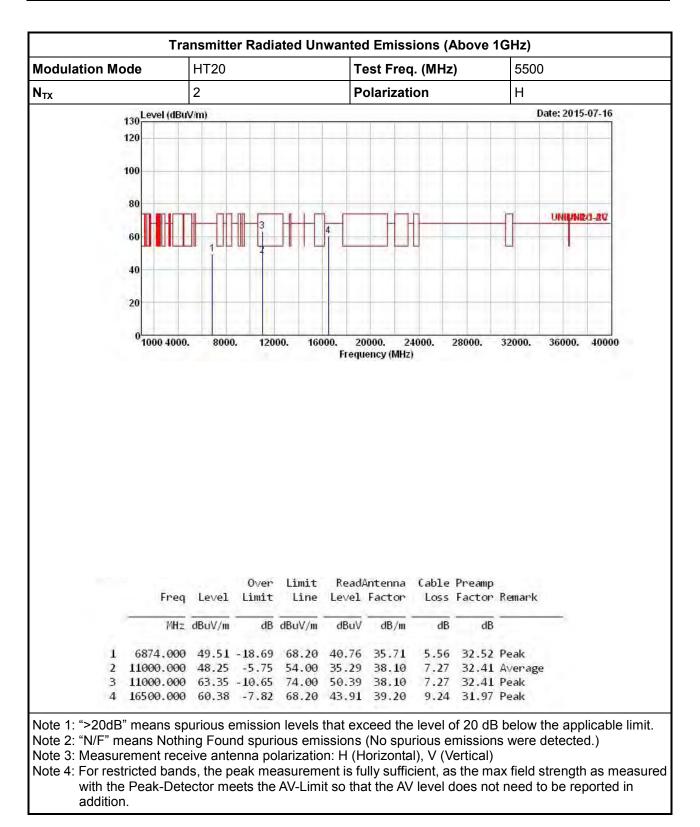




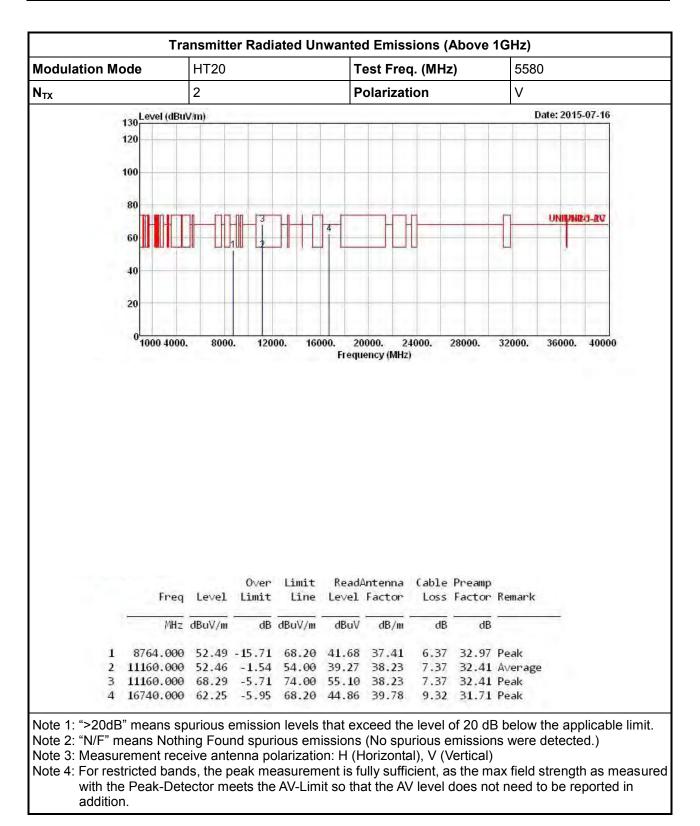




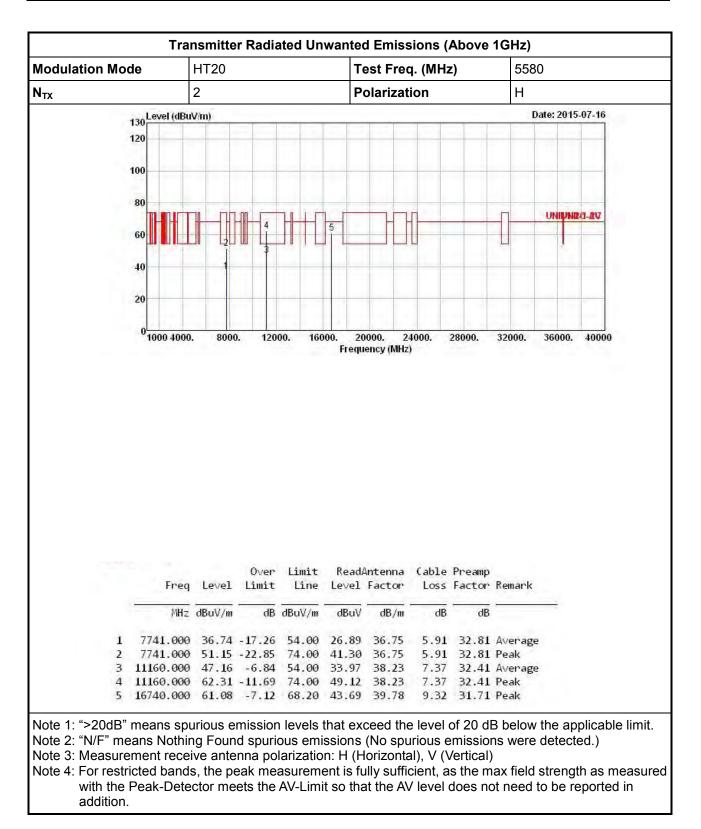




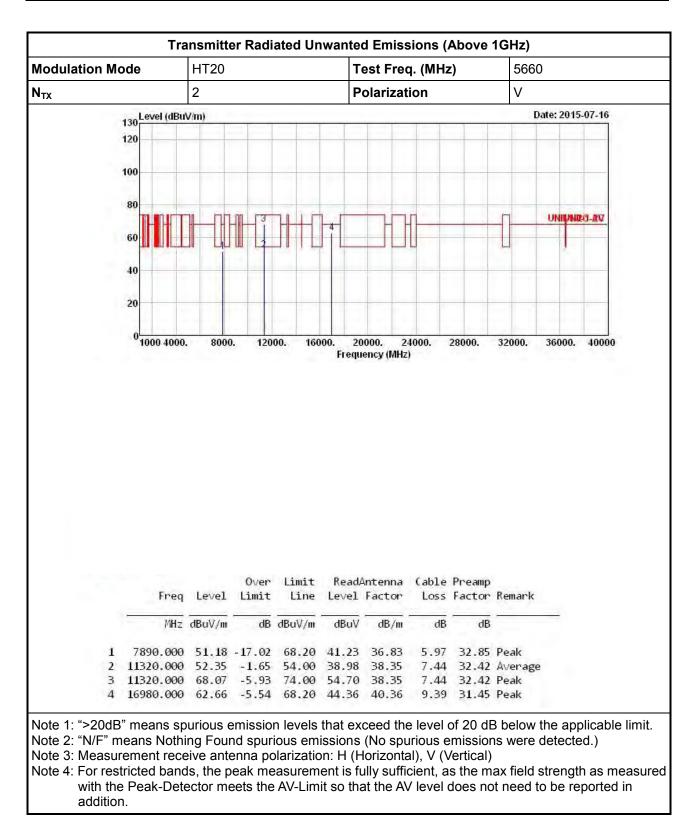




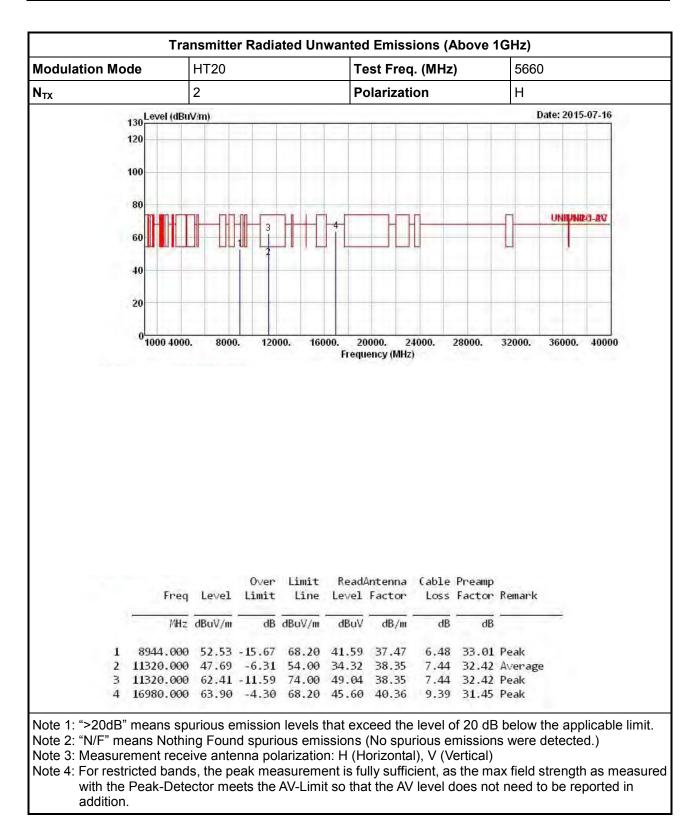




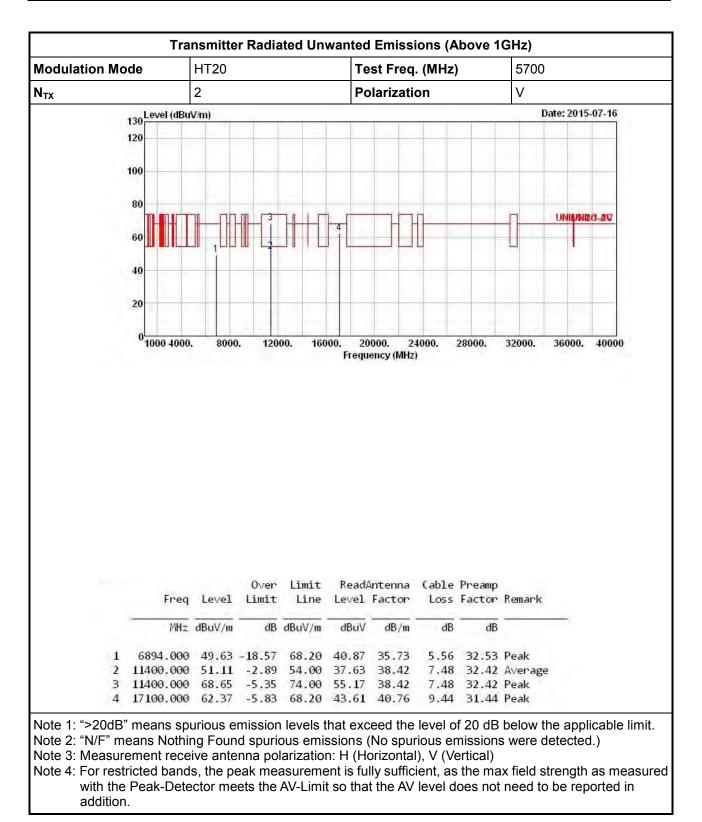




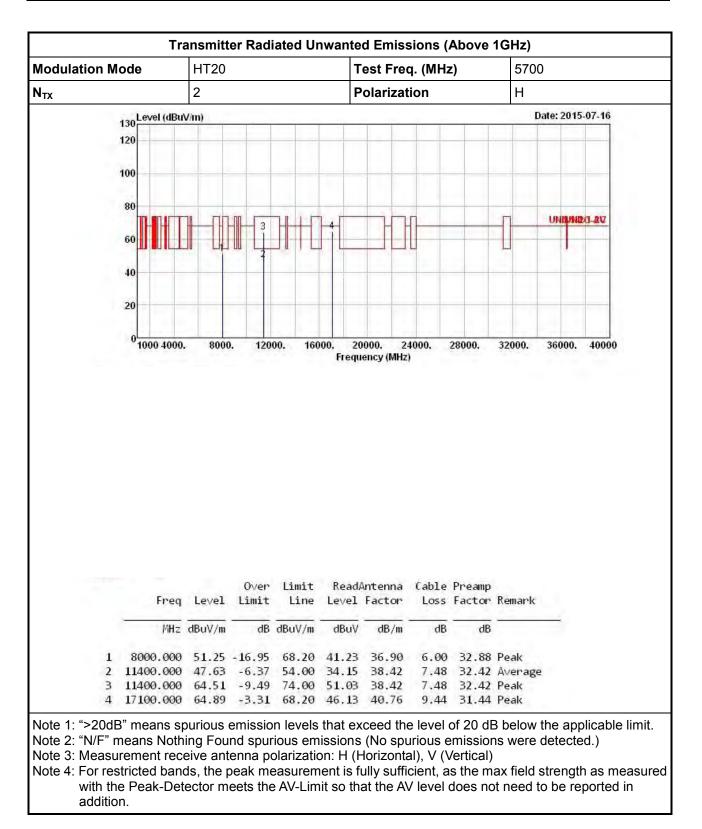




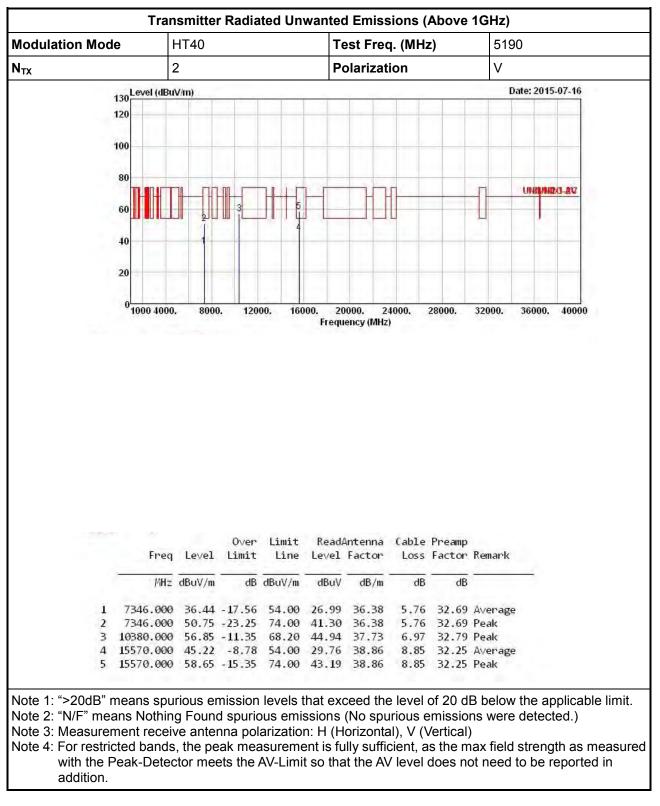






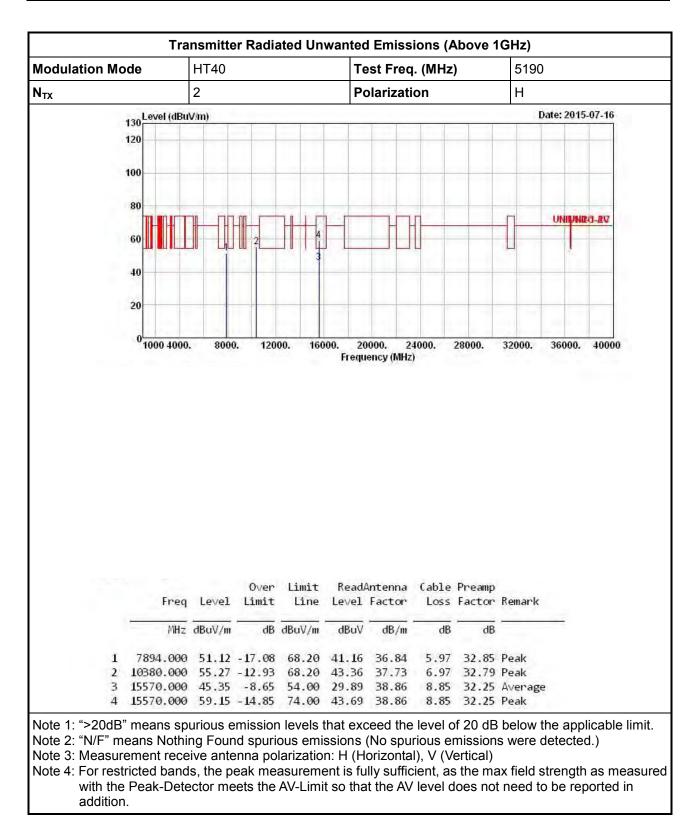




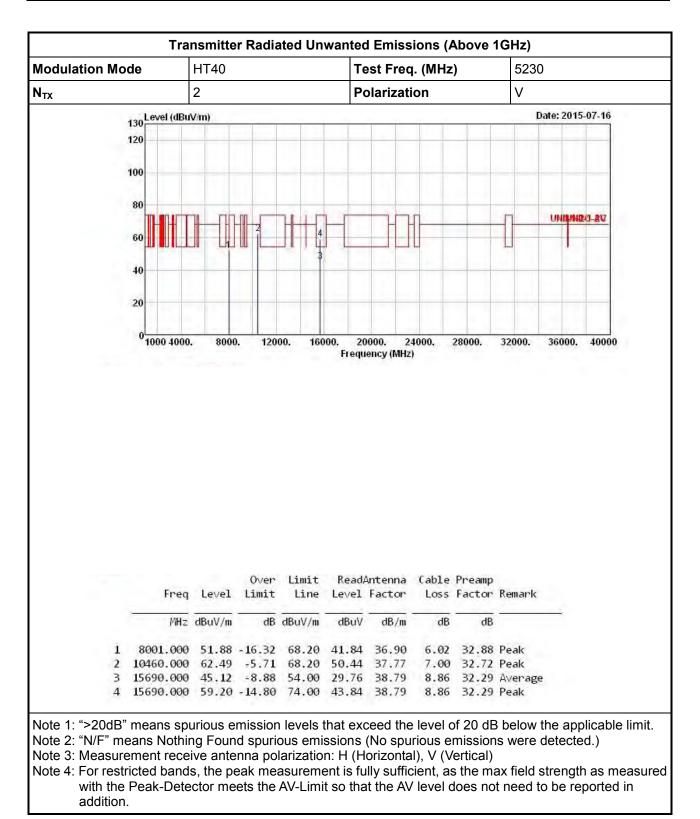


3.4.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40

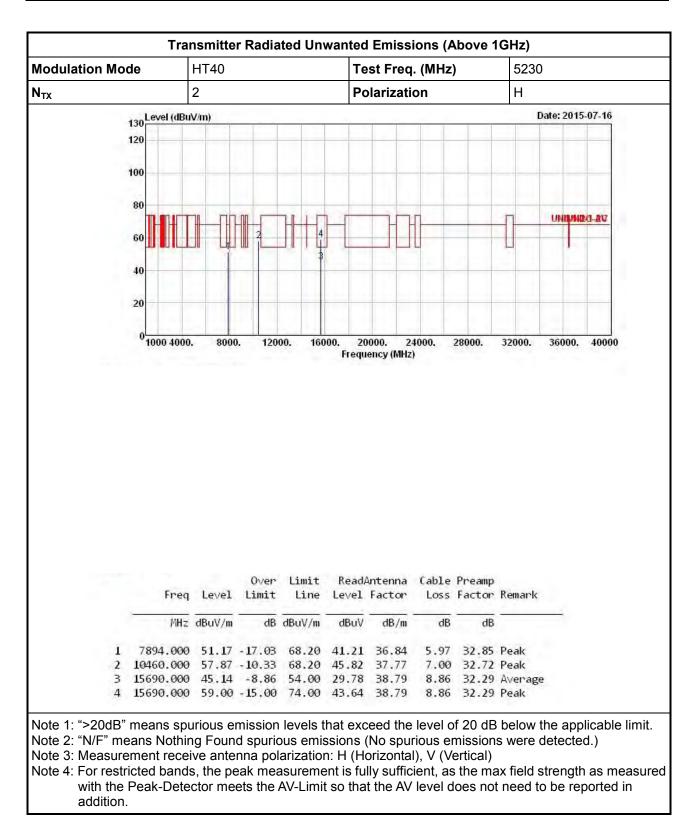




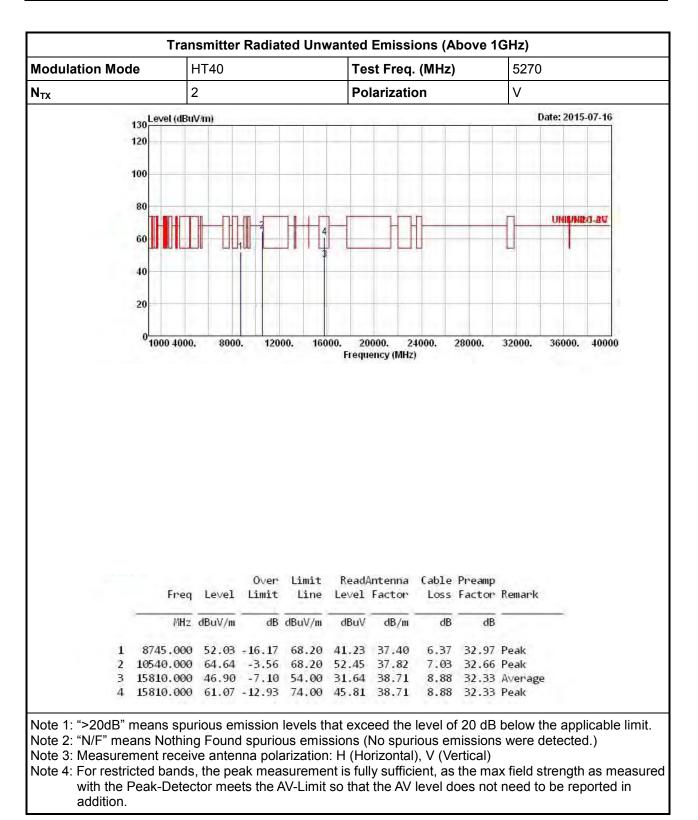




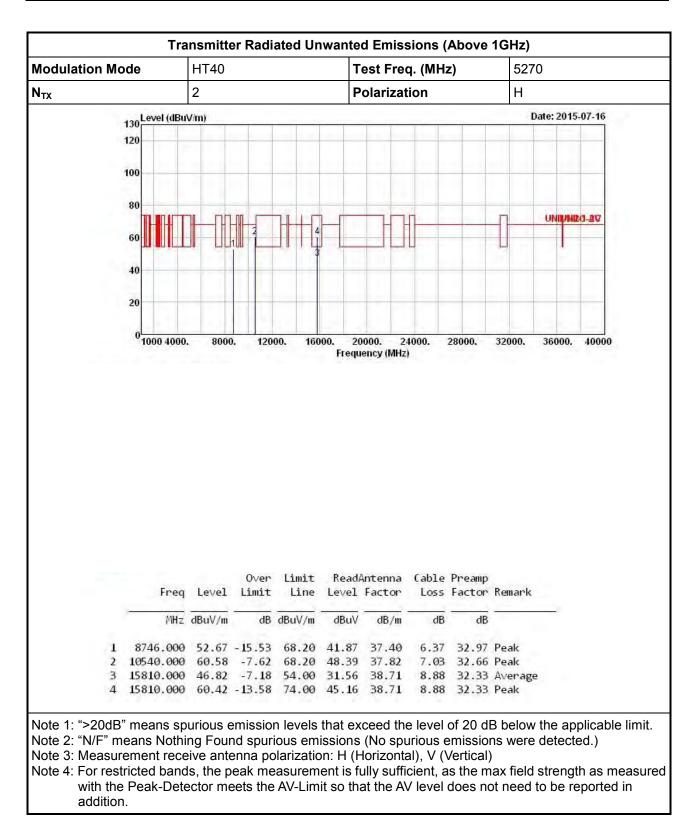




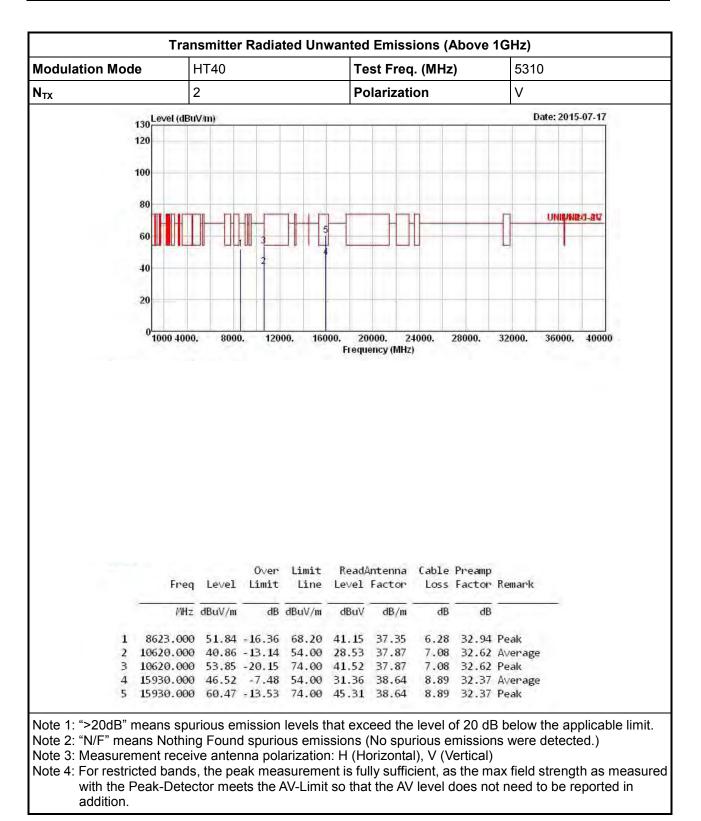




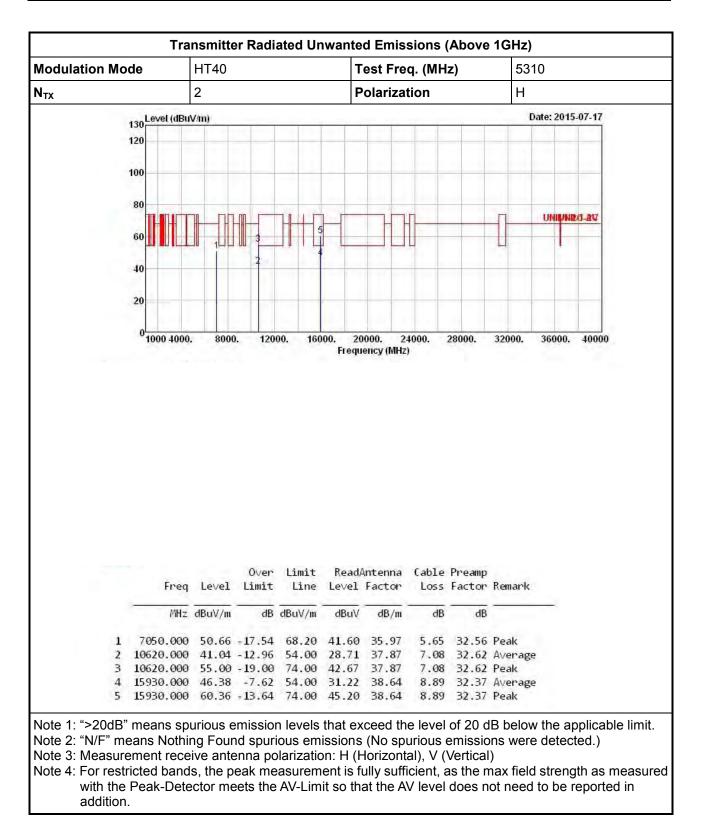




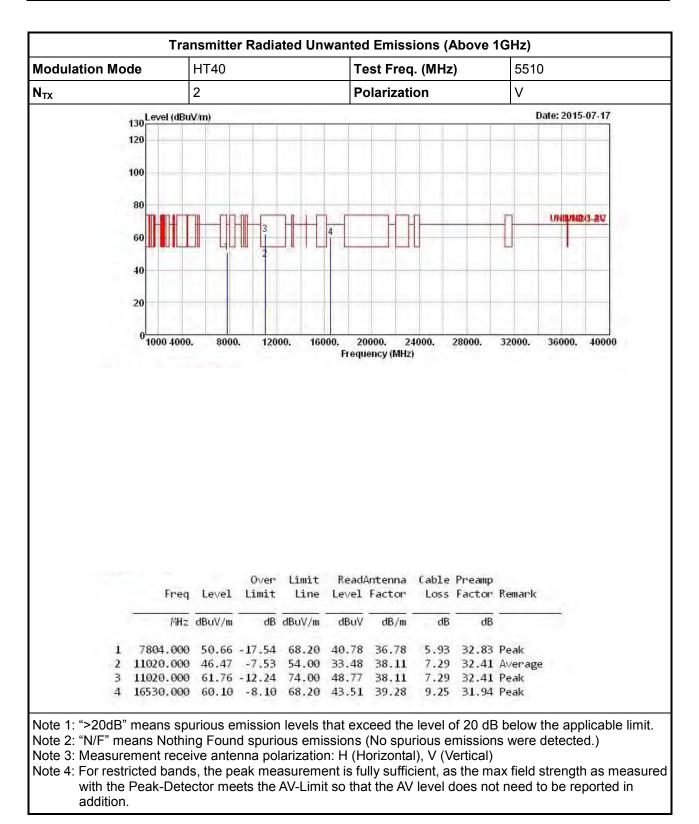




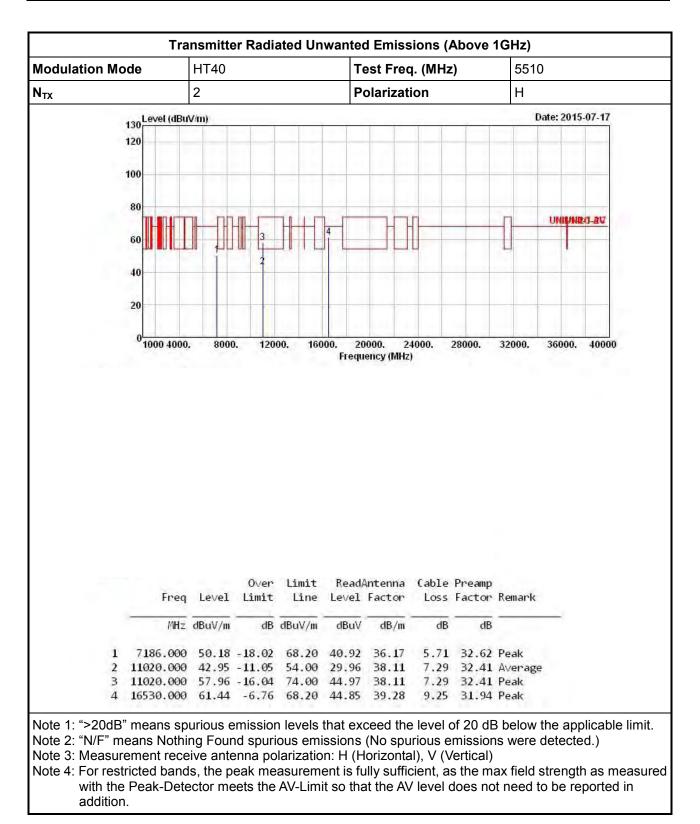




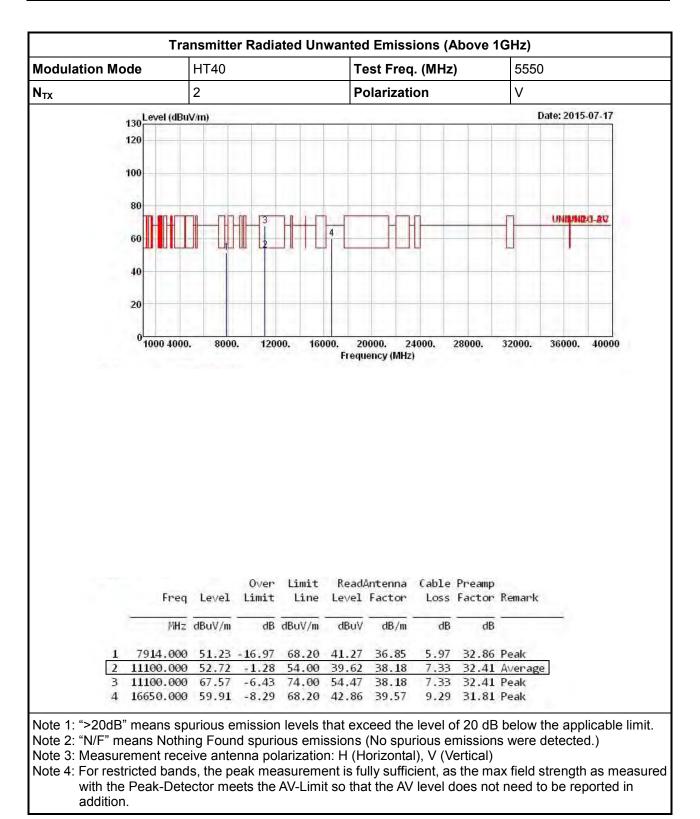




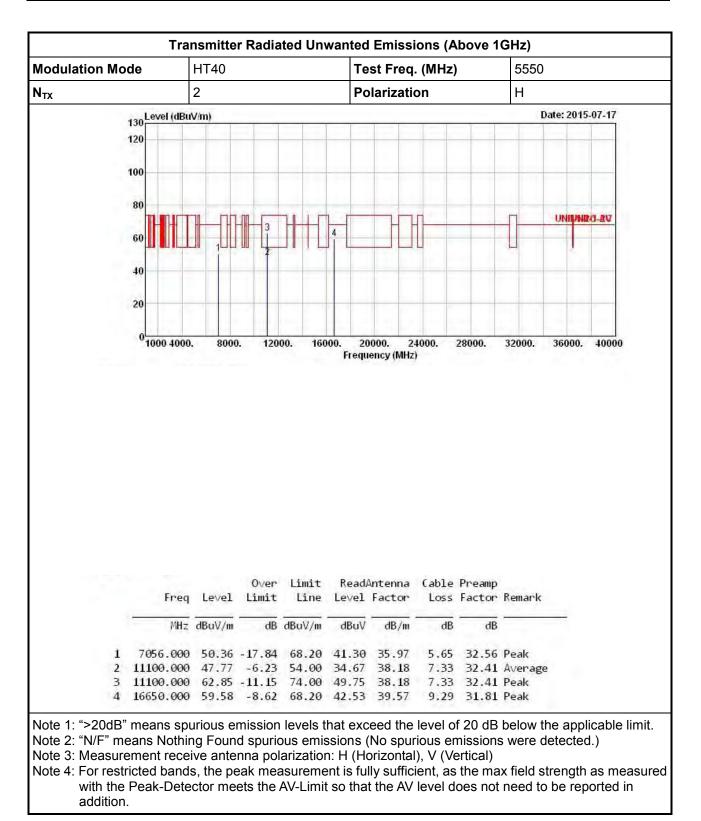




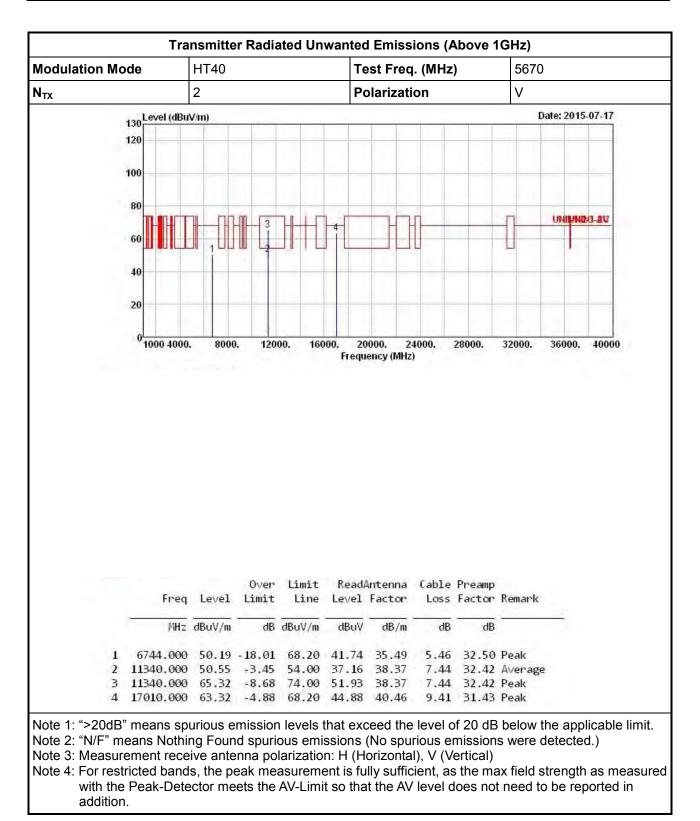




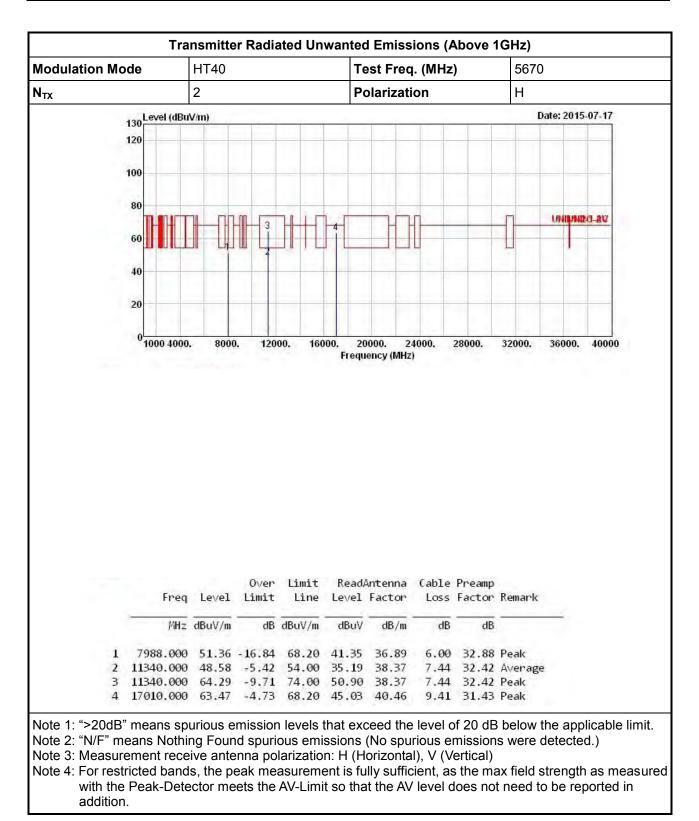














4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Apr. 15. 2015	AC Conduction
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 22, 2015	AC Conduction
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 31, 2014	AC Conduction
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	AC Conduction

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 31, 2014	RF Conducted
Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	Jan. 29, 2015	RF Conducted
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	Jan. 29, 2015	RF Conducted

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



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 29, 2014	Radiated Emission
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 11, 2015	Radiated Emission
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 01, 2014	Radiated Emission
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Apr. 02, 2015	Radiated Emission
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 20, 2014	Radiated Emission
Horn Antenna	AARONIAAG	POWERLOG 70180	05192	1GHz ~ 18GHz	May 01, 2015	Radiated Emission
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 27, 2015	Radiated Emission
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 15, 2014	Radiated Emission
RF Cable-high	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec. 12, 2014	Radiated Emission
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	Radiated Emission
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	Radiated Emission

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	EMC INSTRUMENTS	EMC184045B	980192	18GHz ~ 40GHz	Aug. 25.2014	Radiated Emission
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	Feb. 02, 2015	Radiated Emission

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