



FCC Test Report

Equipment : Wireless AC1200 Dual Band Access Point
Brand Name : D-Link
Model No. : DAP-1665
FCC ID : KA2AP1665A1
Standard : 47 CFR FCC Part 15.247
Operating Band : 5725 MHz – 5850 MHz
FCC Classification : DTS
Applicant : D-Link Corporation
Manufacturer : 17595 Mt. Herrmann, Fountain Valley, CA 92708 U.S.A

The product sample received on Aug. 08, 2013 and completely tested on Sep. 07, 2013. 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:

Gary Chang / Manager





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Summary of Test Result

Conformance 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]:0.1564950MHz 45.60 (Margin 10.05dB) – AV 47.90 (Margin 17.75dB) - QP	FCC 15.207	Complied
3.2	15.247(a)	6dB Bandwidth	6dB Bandwidth [MHz] 20M:17.33/ 40M:35.83 80M:75.36	≥500kHz	Complied
3.3	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm]:29.79	Power [dBm]:30	Complied
3.4	15.247(e)	Power Spectral Density	PSD [dBm/10kHz]:0.92	PSD [dBm/3kHz]:5.99	Complied
3.5	15.247(d)	Emissions in non-restricted frequency bands	Out-of -band emissions are 20dB below the highest power	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.6	15.247(d)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]:11650.00MHz 51.50 (Margin 2.50dB) - AV 60.17 (Margin 13.83dB) - PK	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied



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
5725-5850	a	5745-5825	149-165 [5]	2	26.64	Yes
5725-5850	n(HT20)	5745-5825	149-165 [5]	2	26.03	Yes
5725-5850	n(HT40)	5755-5795	151-159 [2]	2	26.41	Yes
5725-5850	ac(VHT20)	5745-5825	149-165 [5]	2	26.74	Yes
5725-5850	ac(VHT40)	5755-5795	151-159 [2]	2	26.50	Yes
5725-5850	ac(VHT80)	5775	155 [1]	2	29.79	Yes

Note 1: RF output power specifies that Maximum Peak 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.
 Note 4: 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

Antenna Category	
<input type="checkbox"/>	Equipment placed on the market without antennas
<input type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	Temporary RF connector provided
<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	External antenna (dedicated antennas)
<input type="checkbox"/>	Single power level with corresponding antenna(s).
<input type="checkbox"/>	Multiple power level and corresponding antenna(s).
<input checked="" type="checkbox"/>	RF connector provided
<input checked="" type="checkbox"/>	Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type...)
<input type="checkbox"/>	Standard antenna connector. (e.g., SMA, N, BNC, and TNC type...)



Antenna General Information				
No.	Ant. Cat.	Ant. Type	Connector	Gain (dBi)
1	External	Dipole	R-SMA	2
2	External	Dipole	R-SMA	5

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input checked="" type="checkbox"/> Pre-Production ; <input type="checkbox"/> Prototype
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
<input type="checkbox"/>	Operated normally mode for worst duty cycle
<input checked="" type="checkbox"/>	Operated test mode for worst duty cycle
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 91.55% - IEEE 802.11a	0.38
<input checked="" type="checkbox"/> 92.76% - IEEE 802.11ac (VHT20)	0.33
<input checked="" type="checkbox"/> 88.44% - IEEE 802.11ac (VHT40)	0.53
<input checked="" type="checkbox"/> 66.96% - IEEE 802.11ac (VHT80)	1.74

1.1.5 EUT Operational Condition

Supply Voltage	<input checked="" type="checkbox"/> AC mains	<input type="checkbox"/> DC	
Type of DC Source	<input type="checkbox"/> Internal DC supply	<input type="checkbox"/> External DC adapter	<input type="checkbox"/> Battery

1.2 Accessories and Support Equipment

Accessories				
No.	Equipment	Brand Name	Model Name	Spec.
1	Adapter 1	D-Link	ADS012PM-W	I/P: 100-240Vac, 50-60Hz, 0.5A, O/P: 12Vdc, 1.0A 1.25m non-shielded without core.
1	Adapter 2	D-Link	F12W-120100SPAU	I/P: 100-240Vac, 50-60Hz, 0.3A, O/P: 12Vdc, 1.0A 1.2m non-shielded without core.

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	ThinkPad	SL410	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 558074 v03r01
- ◆ FCC KDB 662911 v02
- ◆ FCC KDB 412172 v01

1.4 Testing Location Information

Testing Location				
<input checked="" type="checkbox"/>	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 Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Mark Liao	22°C / 62%	Sep. 07, 2013
AC Conduction	CO04-HY	Skys Huang	23°C / 65%	Aug. 27, 2013
Radiated Emission	03CH08-HY	Jack Li	24°C / 66%	Aug.19, 2013
Test site registered number [636805] with FCC Test site registered number [4086B-2] with IC				

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	Limit
AC power-line conducted emissions		±2.26 dB	N/A
Emission bandwidth, 6dB bandwidth		±1.42 %	N/A
RF output power, conducted		±0.63 dB	N/A
Power density, conducted		±0.81 dB	N/A
Unwanted emissions, conducted	30 – 1000 MHz	±0.51 dB	N/A
	1 – 18 GHz	±0.67 dB	N/A
	18 – 40 GHz	±0.83 dB	N/A
	40 – 200 GHz	N/A	N/A
All emissions, radiated	30 – 1000 MHz	±2.56 dB	N/A
	1 – 18 GHz	±3.59 dB	N/A
	18 – 40 GHz	±3.82 dB	N/A
	40 – 200 GHz	N/A	N/A
Temperature		±0.8 °C	N/A
Humidity		±3 %	N/A
DC and low frequency voltages		±3 %	N/A
Time		±1.42 %	N/A
Duty Cycle		±1.42 %	N/A

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	2	6-54Mbps	6 Mbps
HT20	2	M0-15	M0
HT40	2	M0-15	M0
VHT20	2	M0-9	M0
VHT40	2	M0-9	M0
VHT80	2	M0-9	M0

2.2 The Worst Case Power Setting Parameter




The Worst Case Power Setting Parameter (5725-5850MHz band)							
Test Software	RTL819x						
Test Software Version	2.3						
Modulation Mode	N _{TX}	Test Frequency (MHz)					
		NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
		5745	5785	5825	5755	5795	5775
11a,6-54Mbps	2	61/63	61/63	61/63	-	-	-
HT20,M0-15	2	62/61	62/61	63/62	-	-	-
HT40,M0-15	2	-	-	-	63/62	63/62	-
VHT20,M0-9	2	61/63	61/63	61/63	-	-	-
VHT40,M0-9	2	-	-	-	61/63	61/63	-
VHT80,M0-9	2	-	-	-	-	-	57/59

2.3 The Worst Case Measurement Configuration

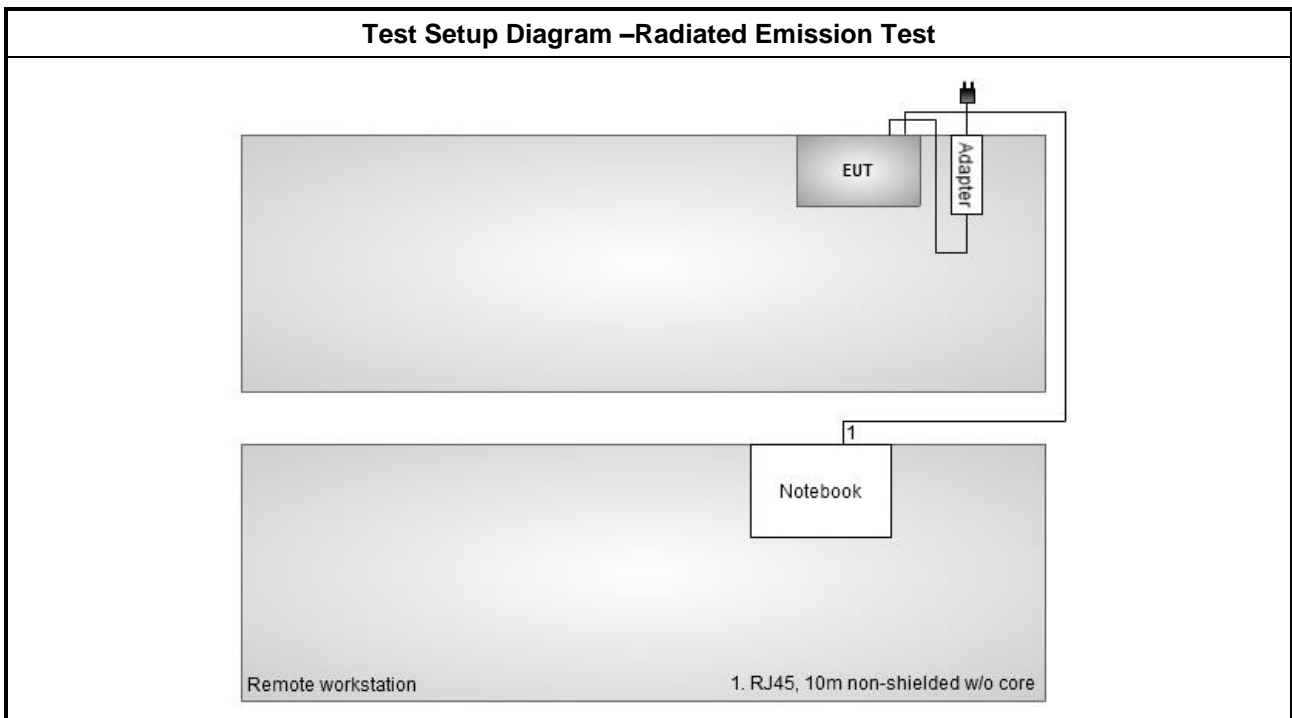
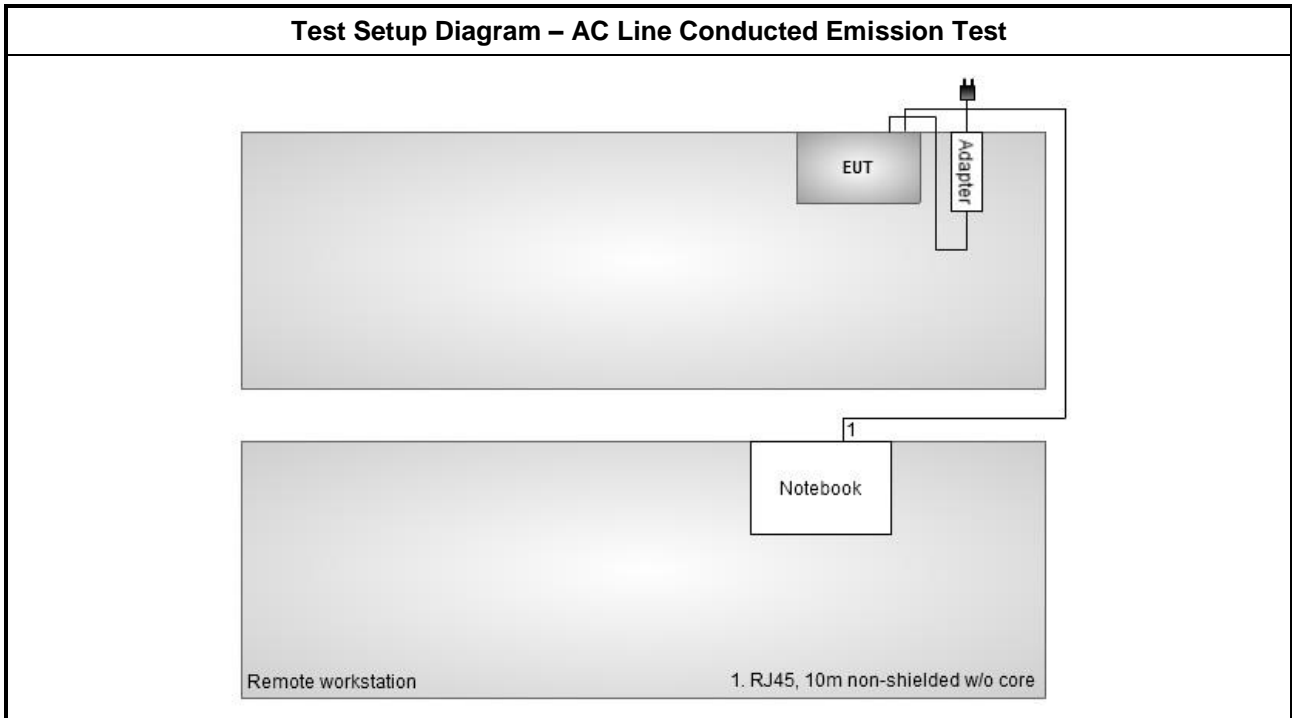
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	AC Power & Radio link (WLAN), adapter 1
Note: Adapter 1, adapter 2 had been pretested and found that the adapter 1 was the worst case and was selected for final test.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, 6 dB Bandwidth
Test Condition	Conducted measurement at transmit chains
Modulation Mode	11a, HT20, HT40, VHT20, VHT40, VHT80
Operating Mode	Operating Mode Description
1	AC Power & Radio link (WLAN), adapter 1

The Worst Case Mode for Following Conformance Tests	
Tests Item	Power Spectral Density
Test Condition	Conducted measurement at transmit chains
Modulation Mode	11a, VHT20, VHT40, VHT80
Operating Mode	Operating Mode Description
1	AC Power & Radio link (WLAN), adapter 1

The Worst Case Mode for Following Conformance Tests			
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
User Position	<input checked="" type="checkbox"/> EUT will be placed in fixed position.		
	<input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst planes is X.		
	<input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes. The worst planes is X.		
Operating Mode < 1GHz	<input checked="" type="checkbox"/> 1. AC Power & Radio link (WLAN), adapter 1		
Modulation Mode	11a, VHT20,VHT40, VHT80		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Note: Adapter 1, adapter 2 had been pretested and found that the adapter 1 was the worst case and was selected for final test.			

2.4 Test Setup Diagram



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

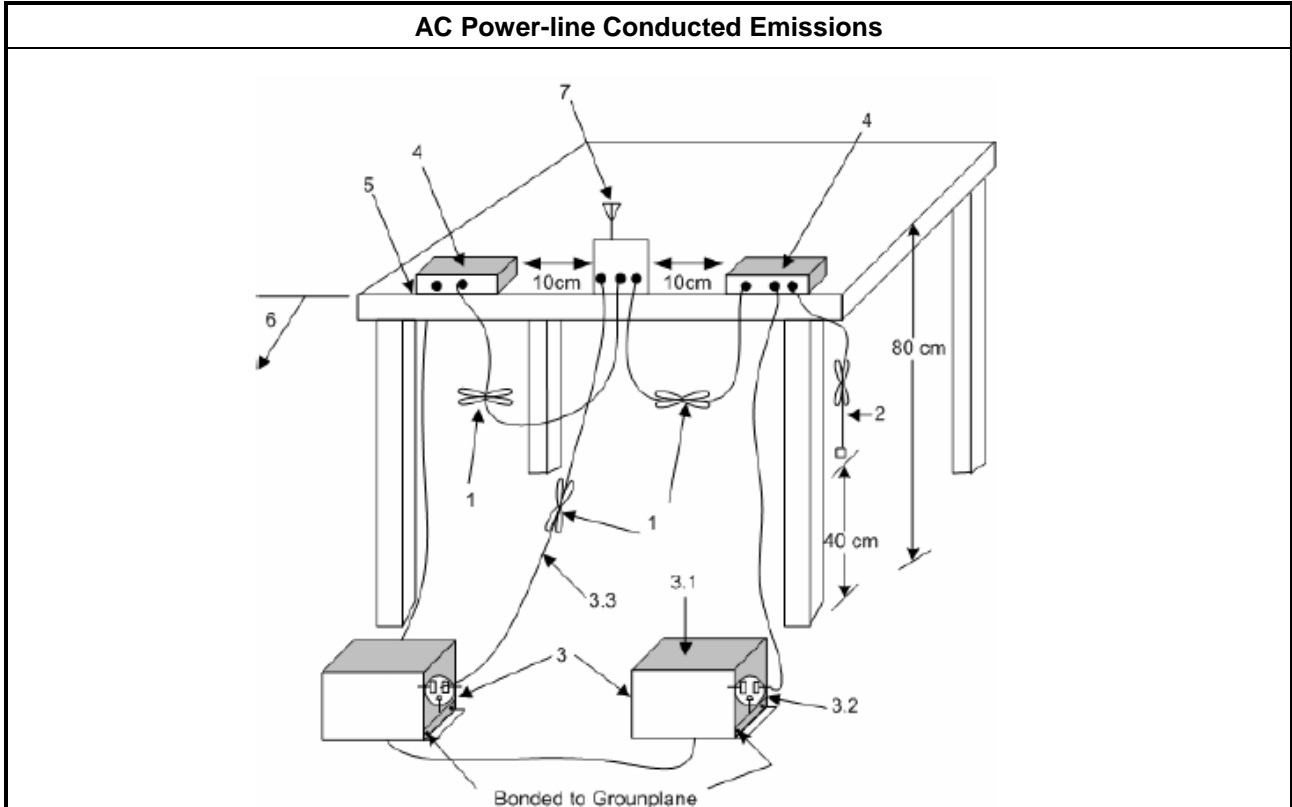
3.1.2 Measuring Instruments

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

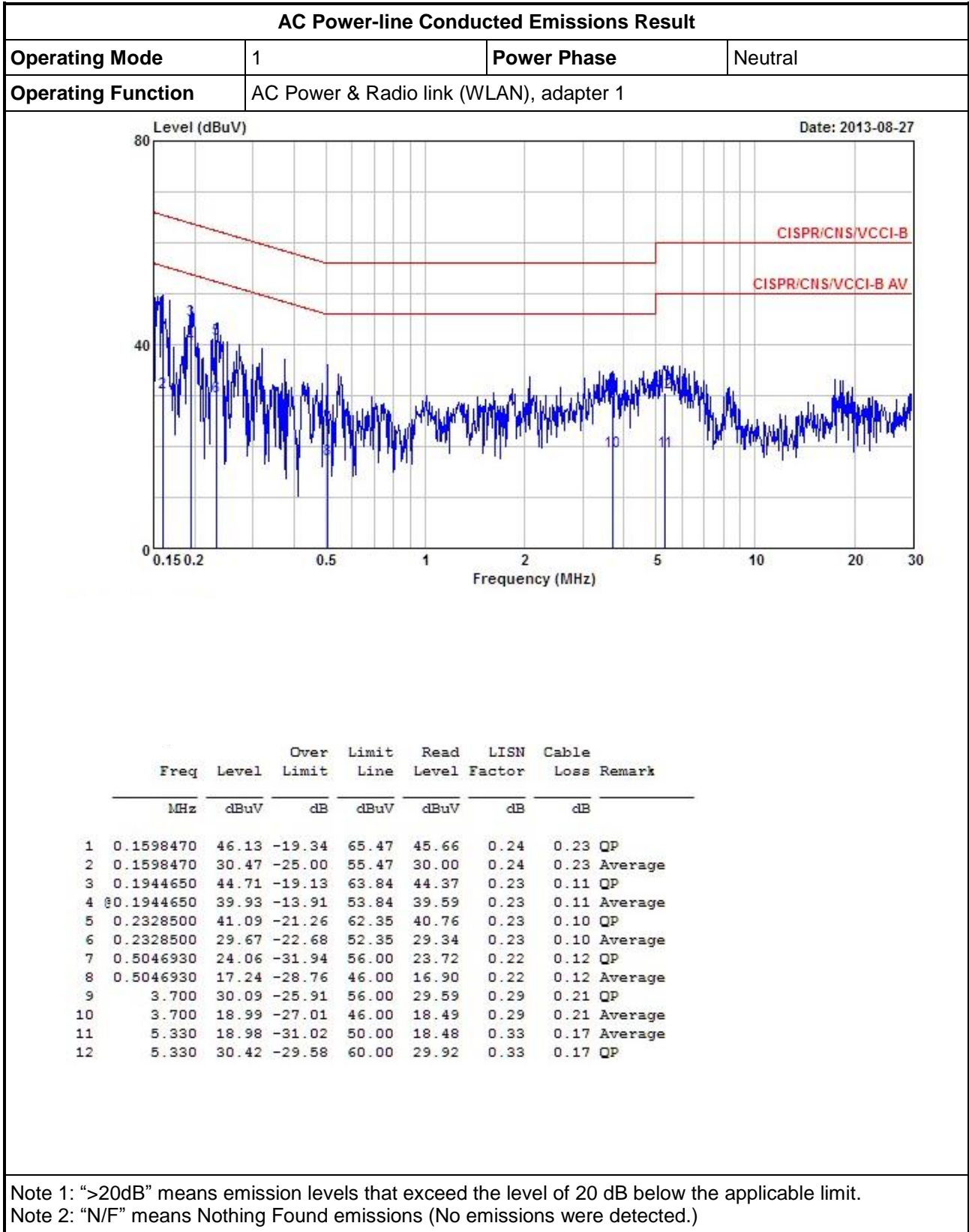
3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

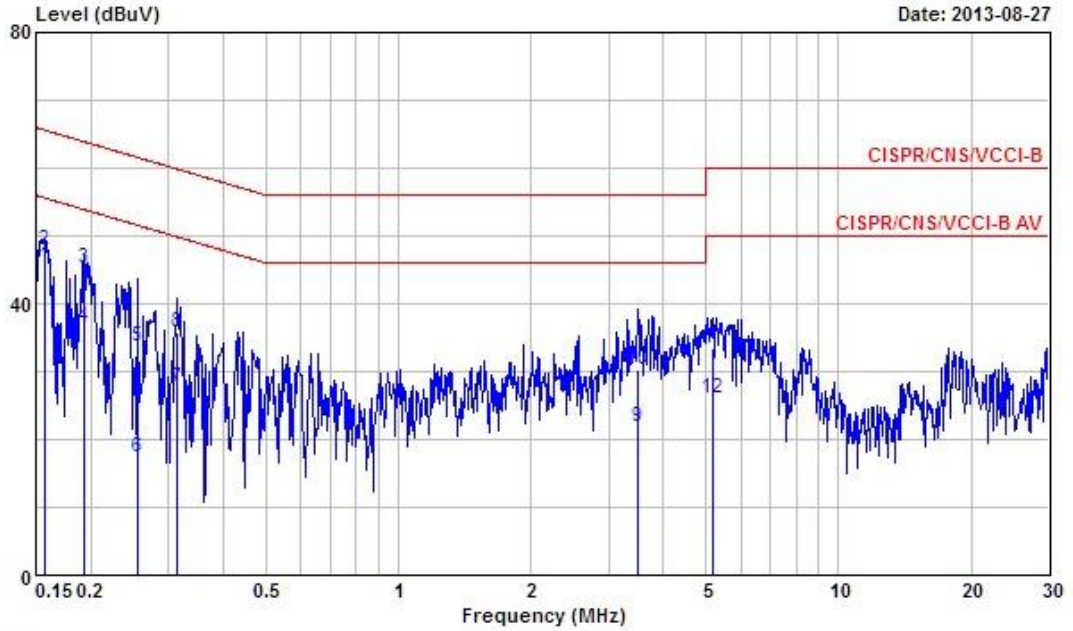


3.1.5 Test Result of AC Power-line Conducted Emissions



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	AC Power & Radio link (WLAN), adapter 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1564950	45.60	-10.05	55.65	45.25	0.11	0.24	Average
2	0.1564950	47.90	-17.75	65.65	47.55	0.11	0.24	QP
3	0.1934380	45.14	-18.75	63.89	44.91	0.11	0.12	QP
4	0.1934380	36.60	-17.29	53.89	36.37	0.11	0.12	Average
5	0.2547970	33.80	-27.80	61.60	33.59	0.11	0.10	QP
6	0.2547970	17.30	-34.30	51.60	17.09	0.11	0.10	Average
7	0.3149460	27.54	-22.30	49.84	27.34	0.10	0.10	Average
8	0.3149460	35.69	-24.15	59.84	35.49	0.10	0.10	QP
9	3.510	21.93	-24.07	46.00	21.56	0.15	0.22	Average
10	3.510	30.32	-25.68	56.00	29.95	0.15	0.22	QP
11	5.190	33.43	-26.57	60.00	33.08	0.18	0.17	QP
12	5.190	25.93	-24.07	50.00	25.58	0.18	0.17	Average

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

3.2 6dB Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
Systems using digital modulation techniques:	
<input checked="" type="checkbox"/>	6 dB bandwidth \geq 500 kHz.

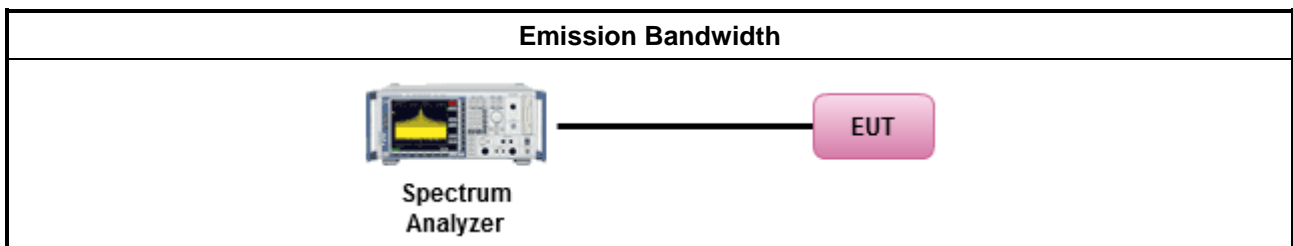
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
<input checked="" type="checkbox"/>	For conducted measurement.
<input type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" type="checkbox"/>	The EUT supports multiple transmit chains using options given below:
<input type="checkbox"/>	Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
<input checked="" type="checkbox"/>	Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.

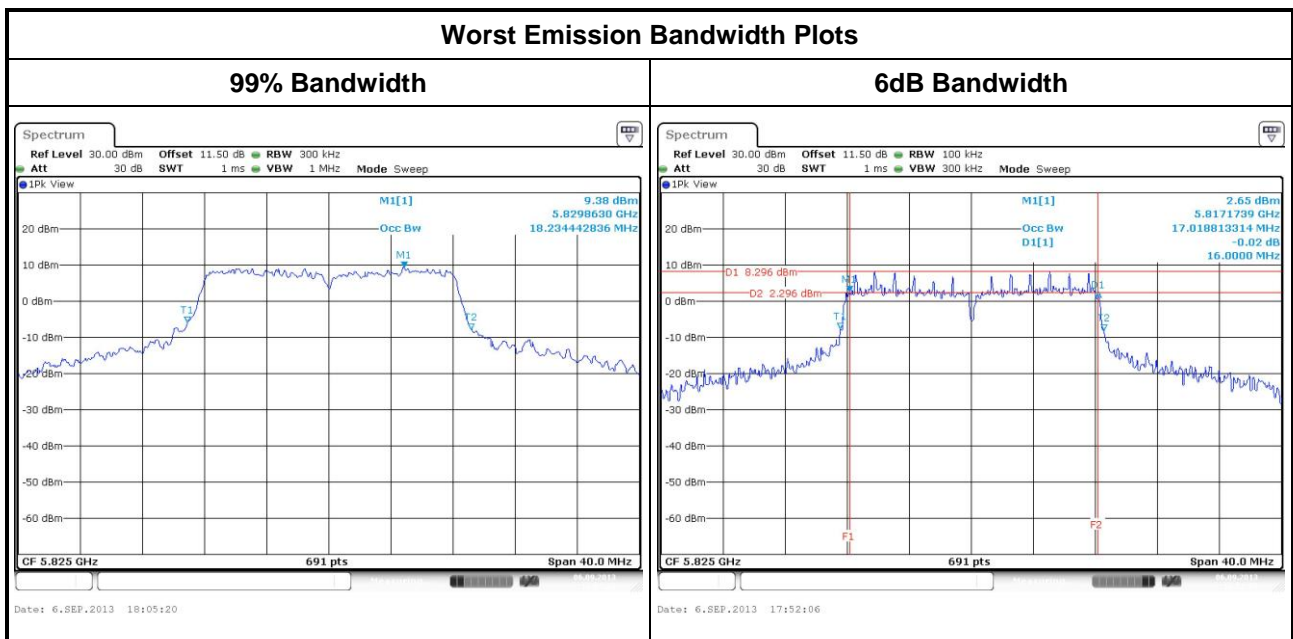
3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result										
Condition			Emission Bandwidth (MHz)							
Modulation Mode	N _{TX}	Freq. (MHz)	99% Bandwidth				6dB Bandwidth			
			Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4	Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4
11a	2	5745	18.29	21.77	-	-	16.35	16.35	-	-
11a	2	5785	18.87	19.68	-	-	16.35	16.35	-	-
11a	2	5825	18.23	19.74	-	-	16.00	16.35	-	-
HT20	2	5745	18.81	19.22	-	-	17.33	17.04	-	-
HT20	2	5785	18.64	19.86	-	-	16.70	17.28	-	-
HT20	2	5825	18.99	18.99	-	-	17.04	16.99	-	-
HT40	2	5755	37.86	39.25	-	-	35.83	35.36	-	-
HT40	2	5795	38.32	38.78	-	-	35.83	35.36	-	-
VHT20	2	5745	18.81	19.22	-	-	17.33	17.04	-	-
VHT20	2	5785	18.64	19.86	-	-	16.70	17.28	-	-
VHT20	2	5825	18.99	18.99	-	-	17.04	16.99	-	-
VHT40	2	5755	37.86	39.25	-	-	35.83	35.36	-	-
VHT40	2	5795	38.32	38.78	-	-	35.83	35.36	-	-
VHT80	2	5775	76.41	77.34	-	-	75.36	75.13	-	-
Limit			N/A				≥500 kHz			
Result			Complied							

Note 1: N_{TX} = Number of Transmit Chains





3.3 RF Output Power

3.3.1 RF Output Power Limit

RF Output Power Limit	
Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit (for ac(VHT80) only)	
<input checked="" type="checkbox"/>	5725-5850 MHz Band:
<input checked="" type="checkbox"/>	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
<input checked="" type="checkbox"/>	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
<input type="checkbox"/>	Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30$ dBm
e.i.r.p. Power Limit:	
<input checked="" type="checkbox"/>	5725-5850 MHz Band
<input checked="" type="checkbox"/>	Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
<input type="checkbox"/>	Point-to-point systems (P2P): N/A
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi. P_{eirp} = e.i.r.p. Power in dBm.	

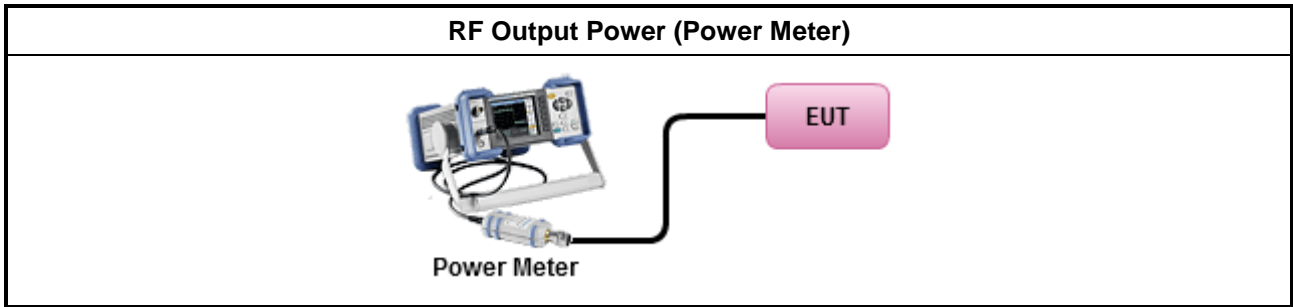
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Maximum Peak Conducted Output Power
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.1.1 (RBW ≥ DTS BW).
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.1.2 (Integrated band power method).
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.1.3 (Peak power meter)
<input checked="" type="checkbox"/>	Maximum Conducted Output Power (Reference only)
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.2.1.2 Method AVGSA-1 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.2.1.3 Method AVGSA-1 Alt. (slow sweep speed)
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.2.1.4 Method AVGSA-2 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.2.1.5 Method AVGSA-2 Alt. (slow sweep speed)
	RF power meter and average over on/off periods with duty factor or gated trigger
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 9.2.3 Method AVGPM-G (using a gated RF average power meter)
<input checked="" type="checkbox"/>	For conducted measurement.
<input type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup



3.3.5 Directional Gain for Power Measurement

Directional Gain (DG) Result					
Transmit Chains No.		1	2		-
Maximum G _{ANT} (dBi)		5	5		-
Modulation Mode	DG (dBi)	N _{TX}	N _{SS}	STBC	Array Gain (dB)
11a,6-54Mbps	5	2	1	-	-
HT20,M0-15	5	2	1	-	-
HT40,M0-15	5	2	1	-	-
VHT20,M0-9	5	2	1	-	-
VHT40,M0-9	5	2	1	-	-
VHT80,M0-9	5	2	1	-	-

Note 1: For all transmitter outputs with equal antenna gains, directional gain is to be computed as follows:
Any transmit signals are correlated, Directional Gain = G_{ANT} + 10 log(N_{TX})
All transmit signals are completely uncorrelated, Directional Gain = G_{ANT}

Note 2: For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows:
Any transmit signals are correlated, Directional Gain = 10 log[(10^{G₁/20} + ... + 10^{G_N/20})² / N_{TX}]
All transmit signals are completely uncorrelated, Directional Gain = 10 log[(10^{G₁/10} + ... + 10^{G_N/10}) / N_{TX}]

Note 3: For Spatial Multiplexing, Directional Gain (DG) = G_{ANT} + 10 log(N_{TX}/N_{SS}),
where N_{SS} = the number of independent spatial streams data.

Note 4: For CDD transmissions, directional gain is calculated as power measurements:
Directional Gain (DG) = G_{ANT} + Array Gain, where Array Gain is as follows:
Array Gain = 0 dB (i.e., no array gain) for N_{TX} ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{TX};



3.3.6 Test Result of Maximum Conducted Output Power

Maximum Conducted Output Power											
Condition			RF Output Power (dBm)								
Modulation Mode	N _{TX}	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 4	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11a	2	5745	23.84	23.41	-	-	26.64	30	5.00	31.64	36
11a	2	5785	23.41	23.23	-	-	26.33	30	5.00	31.33	36
11a	2	5825	23.13	22.86	-	-	26.01	30	5.00	31.01	36
HT20	2	5745	23.23	22.79	-	-	26.03	30	5.00	31.03	36
HT20	2	5785	23.19	22.81	-	-	26.01	30	5.00	31.01	36
HT20	2	5825	22.93	22.63	-	-	25.79	30	5.00	30.79	36
HT40	2	5755	23.67	23.11	-	-	26.41	30	5.00	31.41	36
HT40	2	5795	23.54	22.96	-	-	26.27	30	5.00	31.27	36
VHT20	2	5745	23.56	23.89	-	-	26.74	30	5.00	31.74	36
VHT20	2	5785	23.23	23.67	-	-	26.47	30	5.00	31.47	36
VHT20	2	5825	23.01	23.67	-	-	26.36	30	5.00	31.36	36
VHT40	2	5755	23.31	23.67	-	-	26.50	30	5.00	31.50	36
VHT40	2	5795	23.01	23.46	-	-	26.25	30	5.00	31.25	36
VHT80	2	5775	26.75	26.81	-	-	29.79	30	5.00	34.79	36
Result			Complied								



Maximum Conducted (Average) Output Power											
Condition			RF Output Power (dBm)								
Modulation Mode	N _{TX}	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 4	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11a	2	5745	18.31	18.41	-	-	21.37	30	5.00	26.37	36
11a	2	5785	18.12	18.04	-	-	21.09	30	5.00	26.09	36
11a	2	5825	18.12	17.81	-	-	20.98	30	5.00	25.98	36
HT20	2	5745	17.89	17.66	-	-	20.79	30	5.00	25.79	36
HT20	2	5785	18.01	17.77	-	-	20.90	30	5.00	25.90	36
HT20	2	5825	17.99	17.57	-	-	20.80	30	5.00	25.80	36
HT40	2	5755	17.71	17.64	-	-	20.69	30	5.00	25.69	36
HT40	2	5795	17.93	17.79	-	-	20.87	30	5.00	25.87	36
VHT20	2	5745	17.76	17.83	-	-	20.81	30	5.00	25.81	36
VHT20	2	5785	17.92	17.89	-	-	20.92	30	5.00	25.92	36
VHT20	2	5825	18.09	18.15	-	-	21.13	30	5.00	26.13	36
VHT40	2	5755	17.98	17.95	-	-	20.98	30	5.00	25.98	36
VHT40	2	5795	17.96	18.02	-	-	21.00	30	5.00	26.00	36
VHT80	2	5775	18.01	18.11	-	-	21.07	30	5.00	26.07	36
Result			Complied								

Note: Average power is for reference only

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
<input checked="" type="checkbox"/> Power Spectral Density (PSD) \leq 8 dBm/3kHz

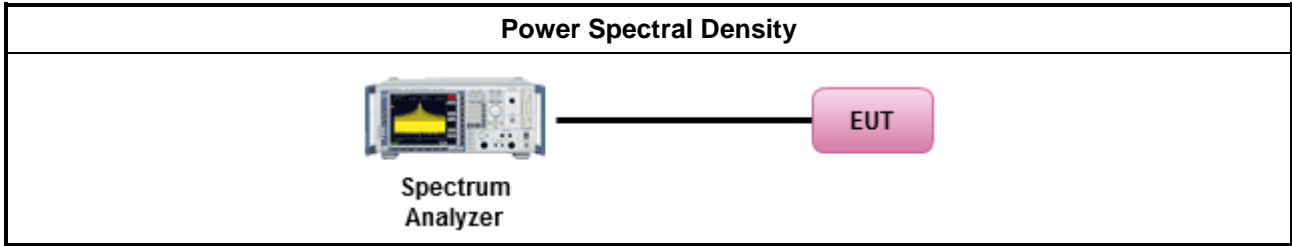
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

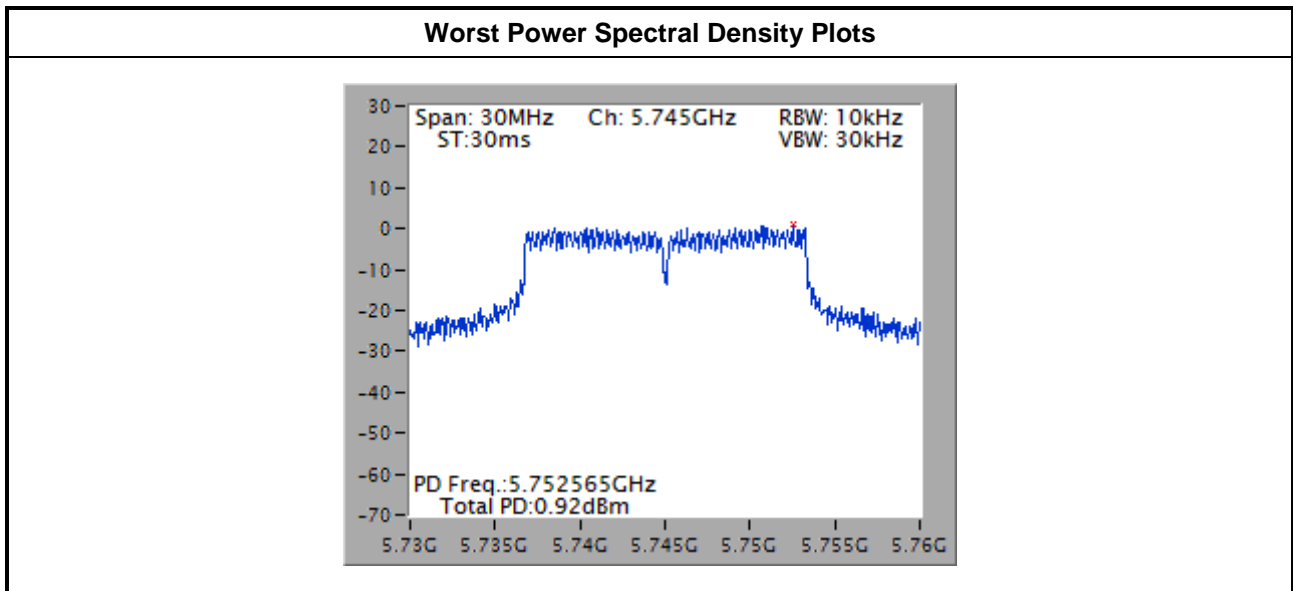
Test Method
<input checked="" type="checkbox"/> Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
<input checked="" type="checkbox"/> Refer as FCC KDB 558074 v03r01, clause 10.2 Method PKPSD (RBW=10kHz; detector=peak)..
<input type="checkbox"/> Refer as FCC KDB 558074 v03r01, clause 10.3 Method AVGPSD-1 (spectral trace averaging).
<input type="checkbox"/> Refer as FCC KDB 558074 v03r01, clause 10.4 Method AVGPSD-1 Alt. (slow sweep speed)
<input type="checkbox"/> Refer as FCC KDB 558074 v03r01, clause 10.5 Method AVGPSD-2 (spectral trace averaging).
<input type="checkbox"/> Refer as FCC KDB 558074 v03r01, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)
<input checked="" type="checkbox"/> For conducted measurement.
<input type="checkbox"/> The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" type="checkbox"/> The EUT supports multiple transmit chains using options given below:
<input checked="" type="checkbox"/> Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the N _{TX} output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
<input type="checkbox"/> 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.

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Power Spectral Density Result				
Condition			Power Spectral Density (dBm/10kHz)	
Modulation Mode	N _{TX}	Freq. (MHz)	Sum Chain	Power Limit
11a	2	5745	0.92	5.99
11a	2	5785	0.44	5.99
11a	2	5825	0.31	5.99
VHT20	2	5745	0.51	5.99
VHT20	2	5785	-0.37	5.99
VHT20	2	5825	0.19	5.99
VHT40	2	5755	-1.62	5.99
VHT40	2	5795	-1.82	5.99
VHT80	2	5775	-4.27	5.99
Result			Complied	
<p>Note</p> <ol style="list-style-type: none"> PSD = sum each transmit chains by bin-to-bin PSD Directional gain = $5 + 10 \cdot \log(2/1) = 8.01 \text{ dBi} > 6 \text{ dBi}$, Limit shall be reduced to $8 \text{ dBm} - (8.01 \text{ dBi} - 6 \text{ dBi}) = 5.99 \text{ dBm}$ 				



3.5 Emissions in non-restricted frequency bands

3.5.1 Emissions in non-restricted frequency bands limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz

3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

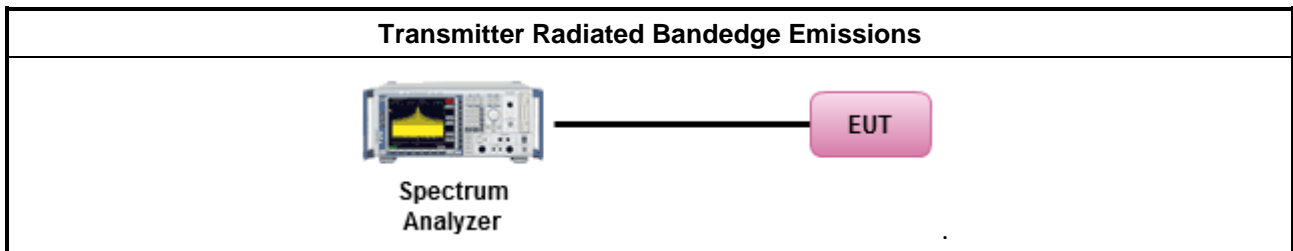
Reference level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 40GHz
4. Use the peak marker function to determine the maximum amplitude level

3.5.4 Test Setup

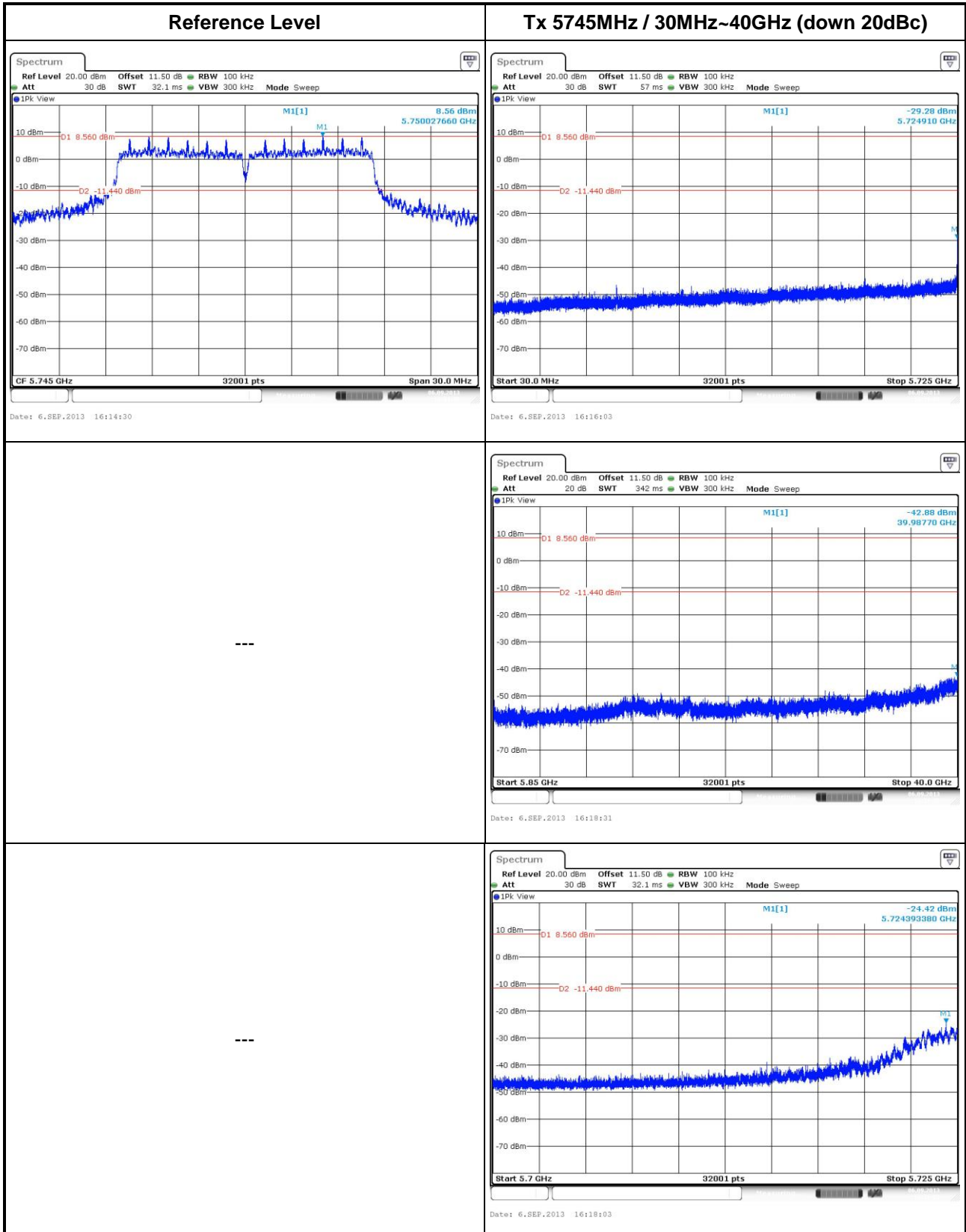


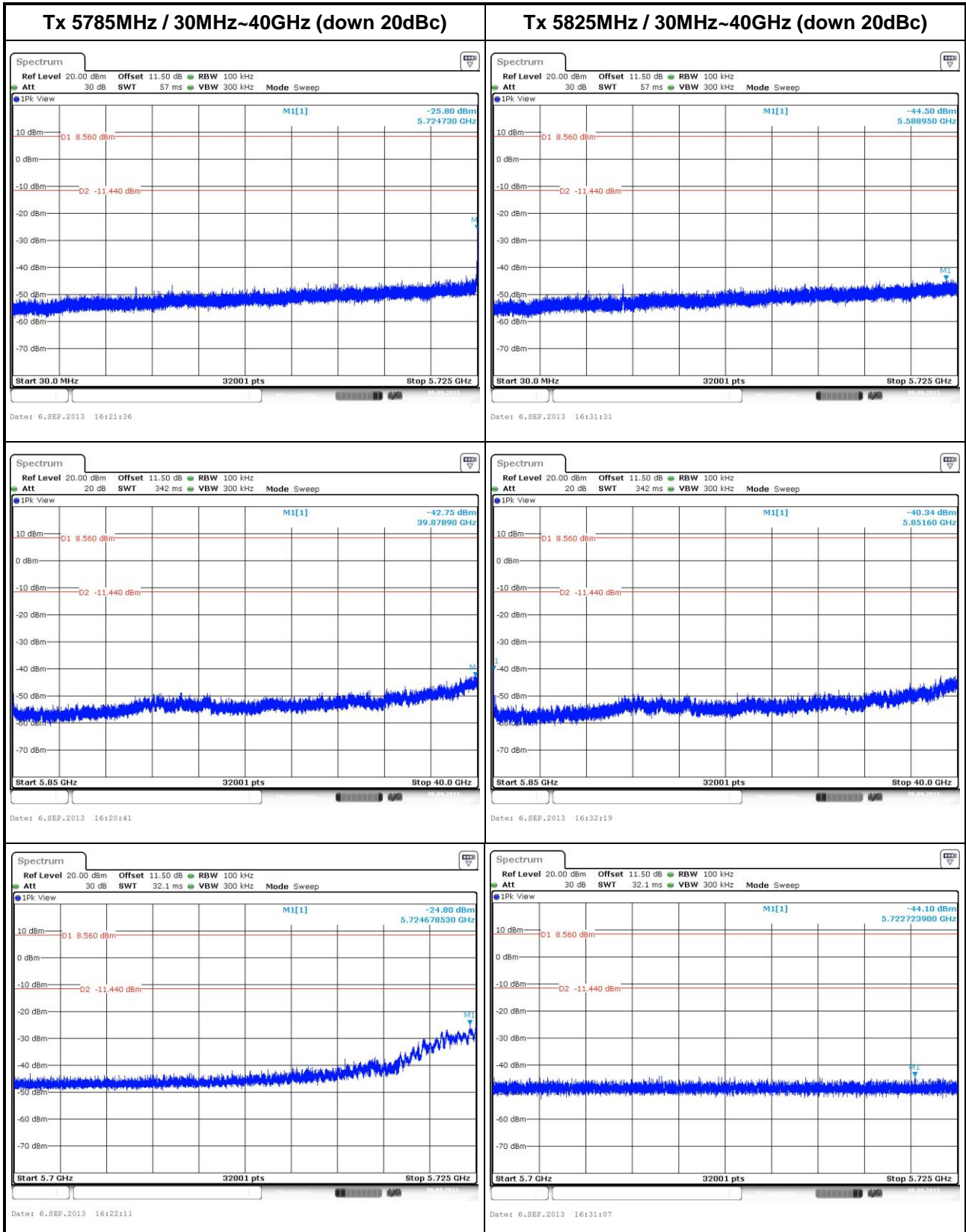
3.5.5 Test Result of Emissions in non-restricted frequency bands

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



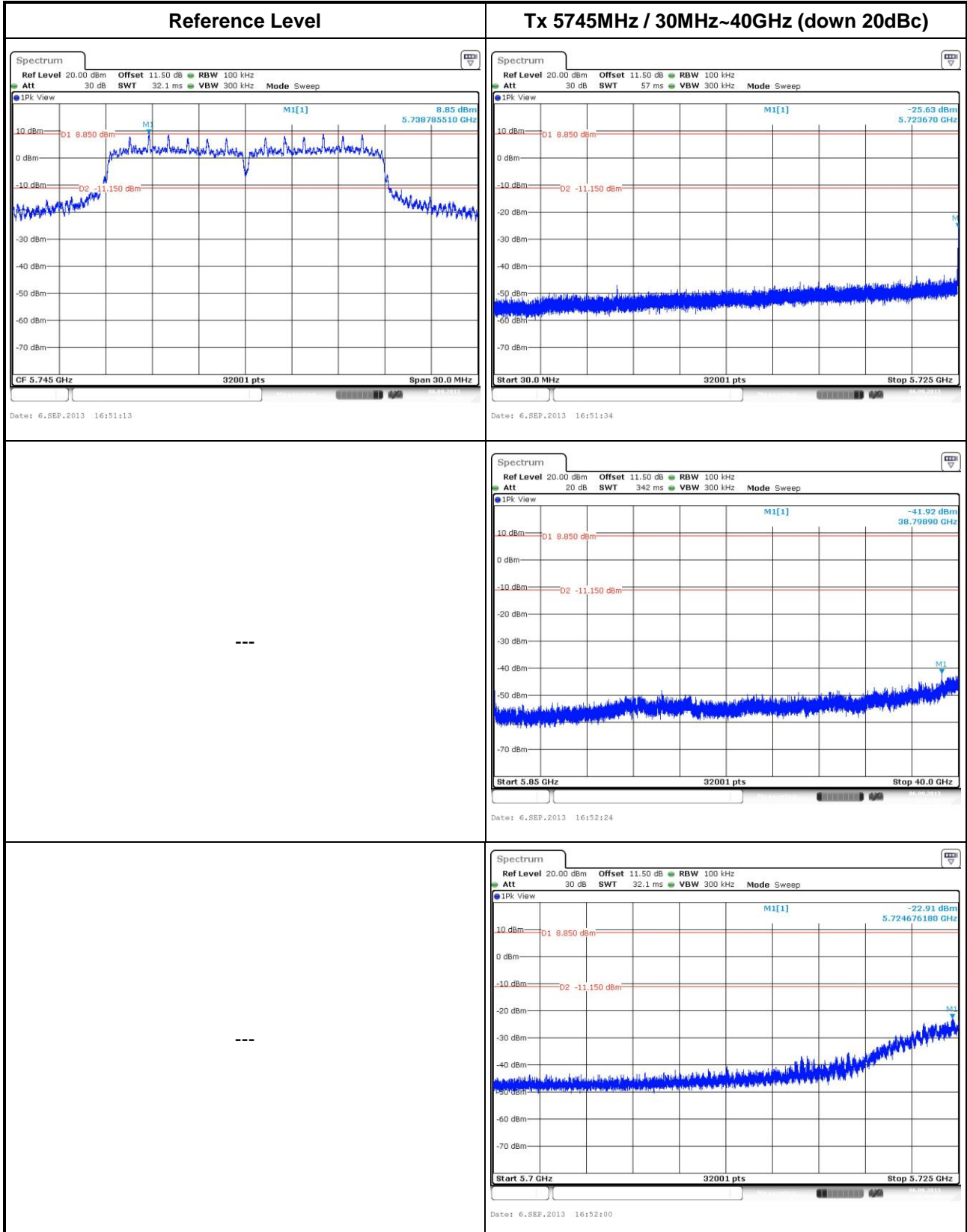
802.11a

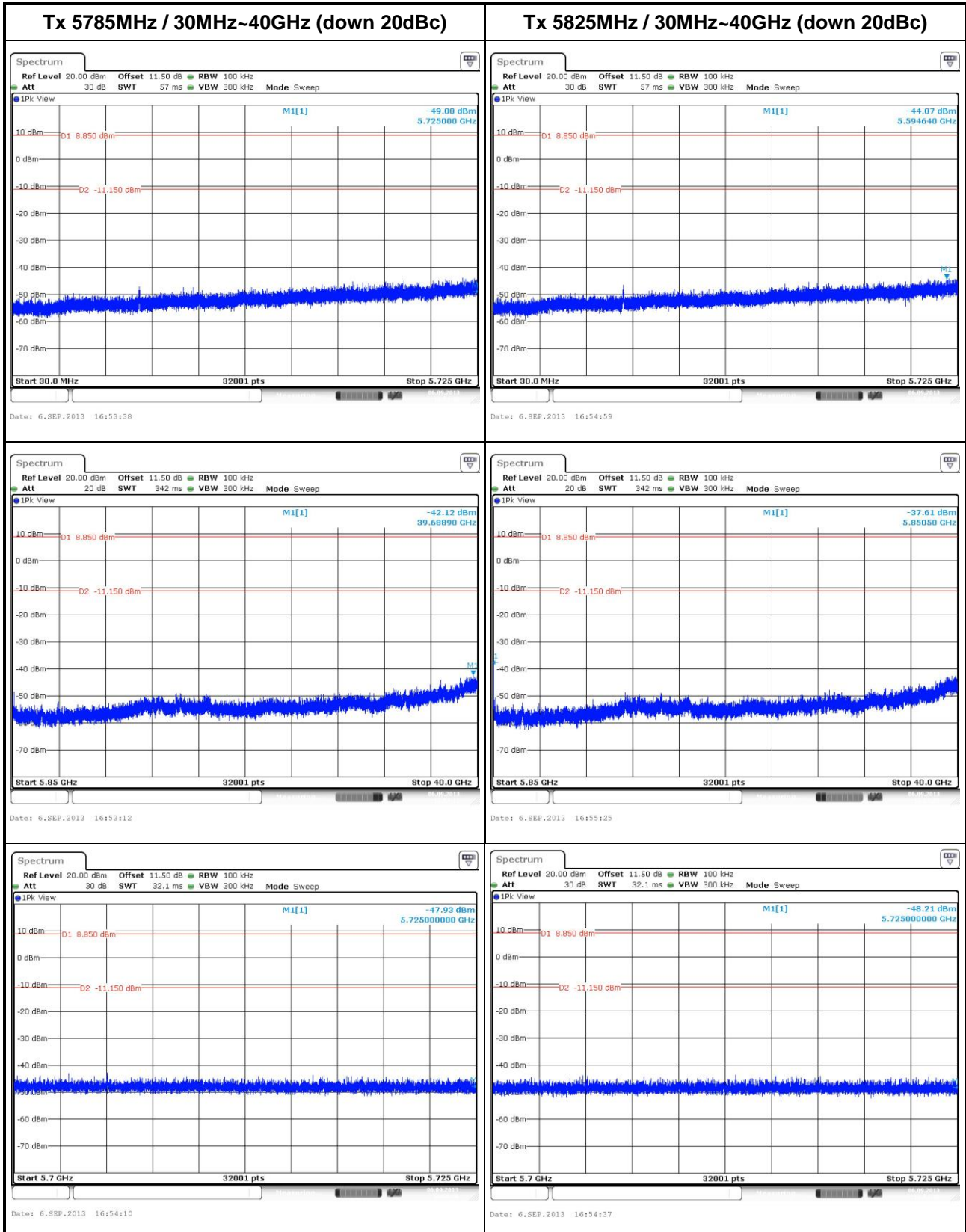






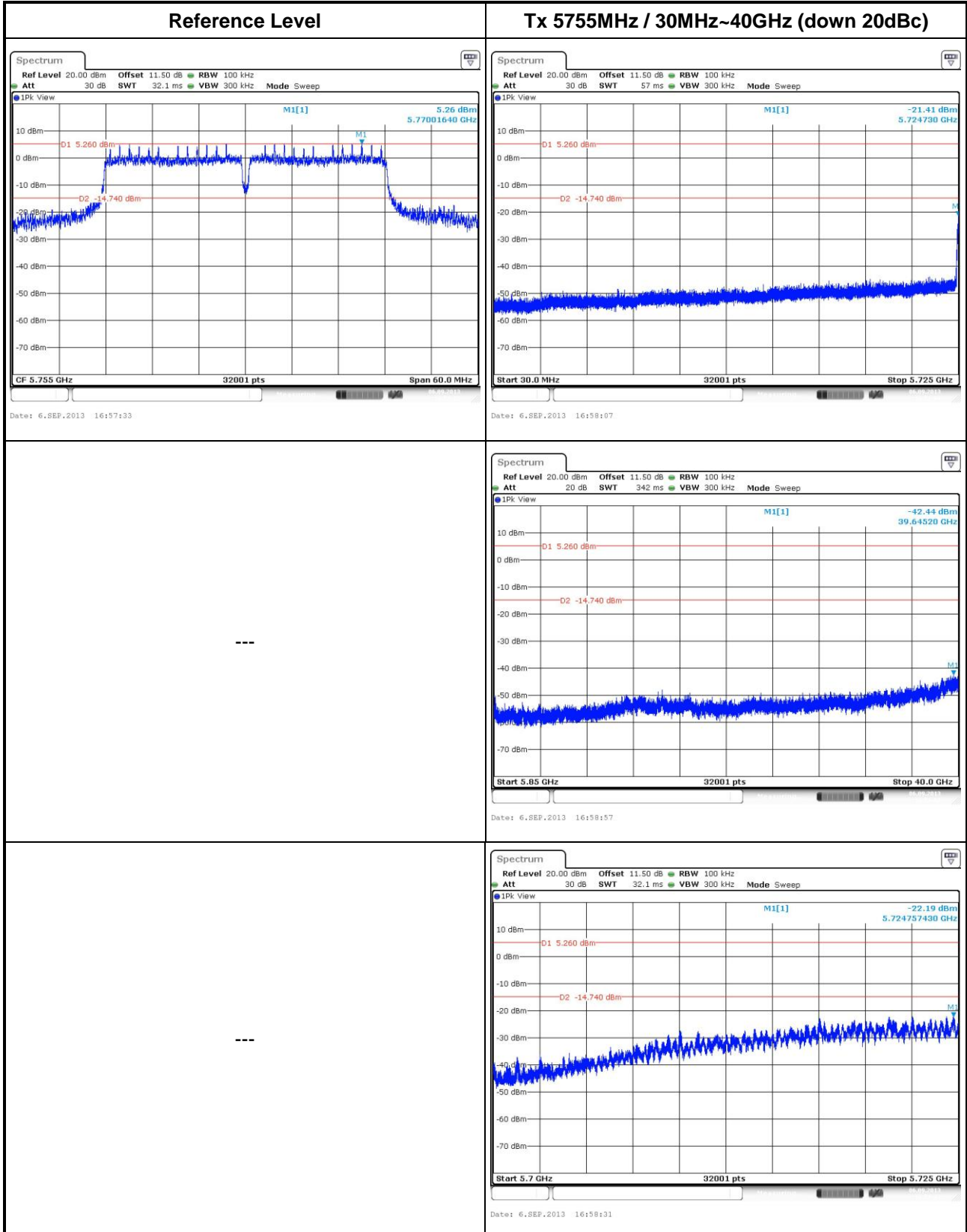
802.11ac VHT20







802.11ac VHT40

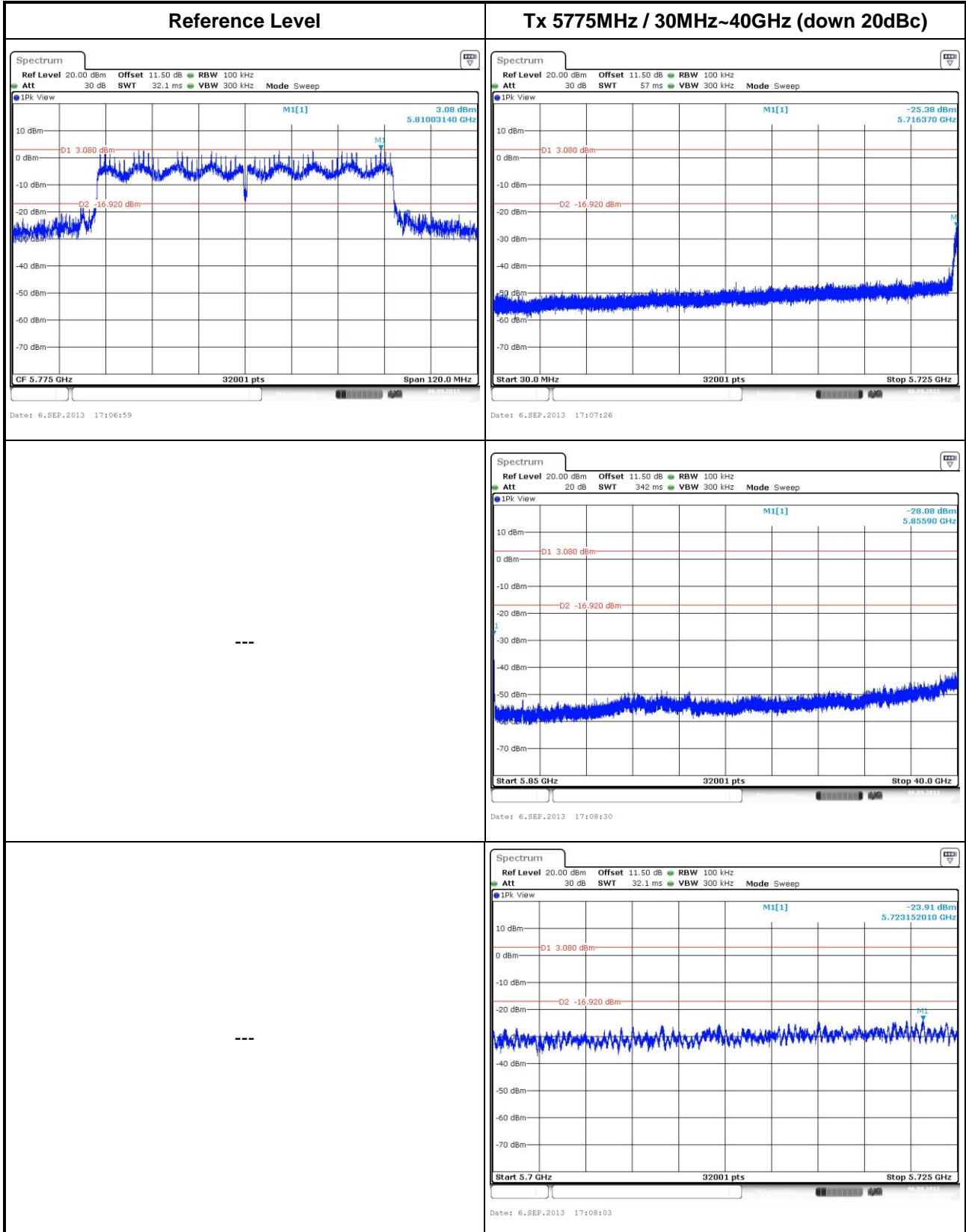




Tx 5795MHz / 30MHz~40GHz (down 20dBc)	---
<p>Spectrum</p> <p>Ref Level 20.00 dBm Offset 11.50 dB RBW 100 kHz Att 30 dB SWT 57 ms VBW 300 kHz Mode Sweep</p> <p>M1[1] -43.93 dBm 5.668670 GHz</p> <p>D1 5.260 dBm D2 -14.740 dBm</p> <p>Start 30.0 MHz 32001 pts Stop 5.725 GHz</p> <p>Date: 6.SEP.2013 16:59:59</p>	---
<p>Spectrum</p> <p>Ref Level 20.00 dBm Offset 11.50 dB RBW 100 kHz Att 20 dB SWT 342 ms VBW 300 kHz Mode Sweep</p> <p>M1[1] -42.38 dBm 39.84370 GHz</p> <p>D1 5.260 dBm D2 -14.740 dBm</p> <p>Start 5.85 GHz 32001 pts Stop 40.0 GHz</p> <p>Date: 6.SEP.2013 16:59:30</p>	---
<p>Spectrum</p> <p>Ref Level 20.00 dBm Offset 11.50 dB RBW 100 kHz Att 30 dB SWT 32.1 ms VBW 300 kHz Mode Sweep</p> <p>M1[1] -41.87 dBm 5.721259100 GHz</p> <p>D1 5.260 dBm D2 -14.740 dBm</p> <p>Start 5.7 GHz 32001 pts Stop 5.725 GHz</p> <p>Date: 6.SEP.2013 17:00:23</p>	---



802.11ac VHT80



3.6 Transmitter Radiated Unwanted Emissions

3.6.1 Transmitter Radiated Unwanted Emissions Limit

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

Note 1: 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 Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

3.6.2 Measuring Instruments

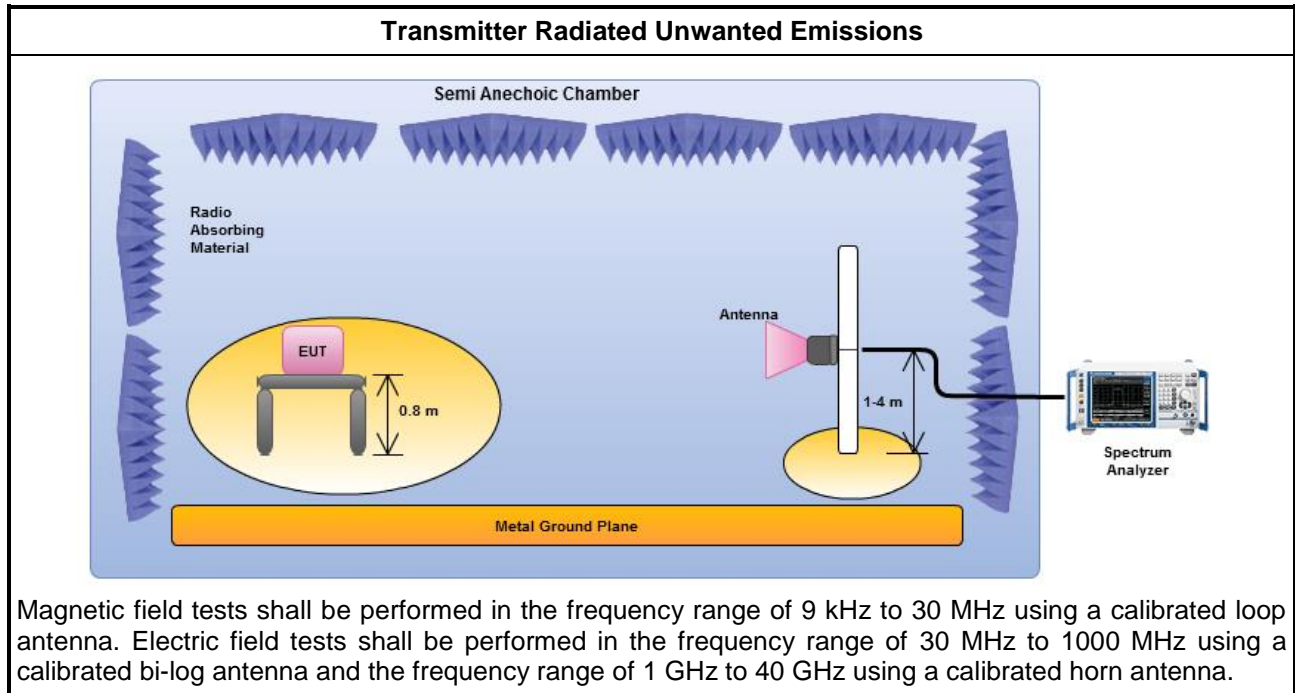
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	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).
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 11 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 12 for unwanted emissions into restricted bands.
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$)
<input type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$).
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 11.3 and 12.2.4 measurement procedure peak limit.
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074 v03r01, clause 12.2.3 measurement procedure Quasi-Peak limit.
<input checked="" type="checkbox"/>	For radiated measurement, refer as FCC KDB 558074 v03r01, clause 12.2.7.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.

Test Method	
<input type="checkbox"/>	For conducted and cabinet radiation measurement, refer as FCC KDB 558074 v03r01, clause 10.2.2
<input type="checkbox"/>	For conducted unwanted emissions into non-restricted bands (relative emission limits). Devices with multiple transmit chains: Refer as FCC KDB 662911, when testing out-of-band and spurious emissions against relative emission limits, tests may be performed on each output individually without summing or adding 10 log(N) if the measurements are made relative to the in-band emissions on the individual outputs.
<input type="checkbox"/>	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB

3.6.4 Test Setup



Note: The test distance is 3m.

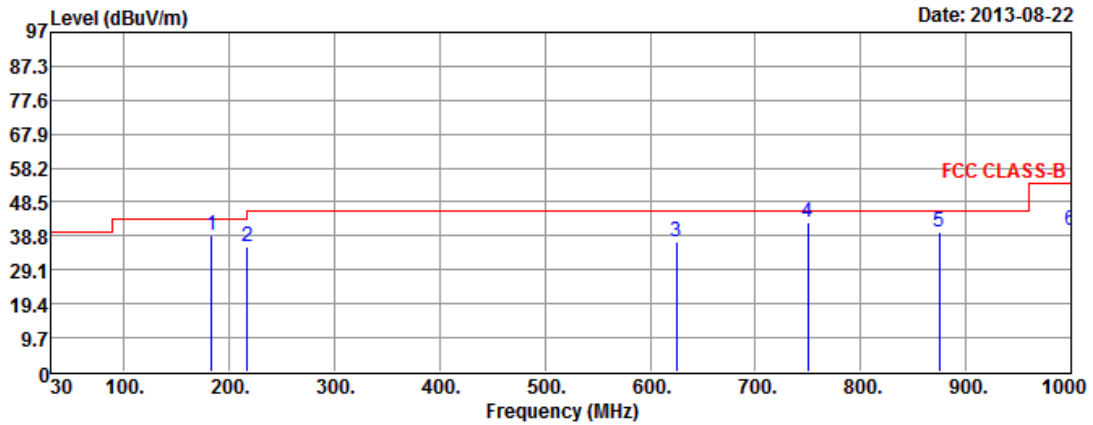
3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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



3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	Polarization	H
Operating Function	AC Power & Radio link (WLAN), adapter 1		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	183.33	39.12	-4.38	43.50	57.58	11.60	1.50	31.56	---	---	Peak
2	217.25	35.82	-10.18	46.00	54.50	11.14	1.68	31.50	---	---	Peak
3	624.58	37.05	-8.95	46.00	45.64	20.35	2.36	31.30	---	---	Peak
4	749.76	42.83	-3.17	46.00	49.45	22.10	2.50	31.22	---	---	QP
5	874.85	40.06	-5.94	46.00	45.22	23.45	2.54	31.15	---	---	Peak
6	1000.00	40.25	-13.75	54.00	43.71	24.70	2.88	31.04	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



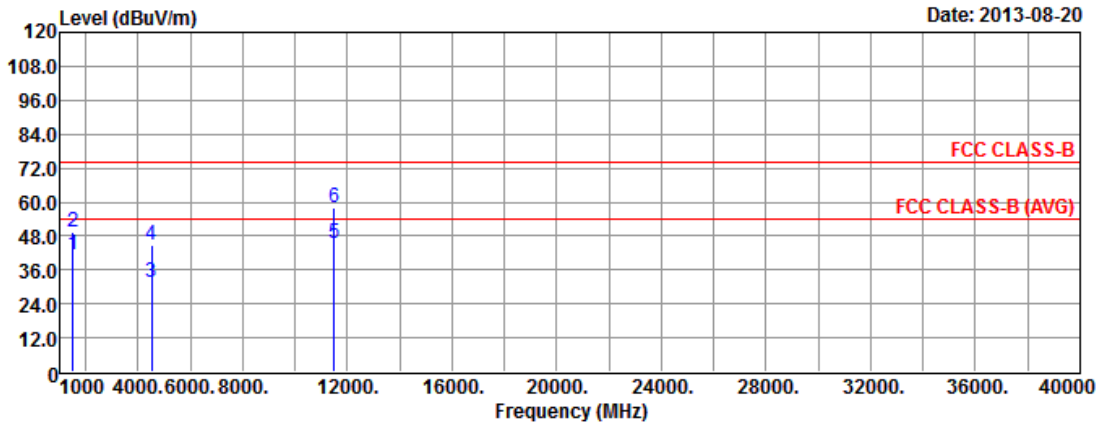
Transmitter Radiated Unwanted Emissions (Below 1GHz)											
Operating Mode	1			Polarization	V						
Operating Function	AC Power & Radio link (WLAN), adapter 1										
<div style="display: flex; justify-content: space-between;"> <div> <p>The graph plots Level (dBuV/m) on the y-axis (0 to 97) against Frequency (MHz) on the x-axis (30 to 1000). A red line represents the FCC CLASS-B limit, which is 38.8 dBuV/m from 30 MHz to 100 MHz, 43.5 dBuV/m from 100 MHz to 155 MHz, 46.0 dBuV/m from 155 MHz to 700 MHz, and 54.0 dBuV/m from 700 MHz to 1000 MHz. Six blue vertical lines indicate measured peaks at 38.97, 52.36, 155.25, 699.31, 874.91, and 1000.00 MHz.</p> </div> <div> <p>Date: 2013-08-22</p> </div> </div>											
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	38.97	36.87	-3.13	40.00	53.34	14.12	1.22	31.81	---	---	QP
2	52.36	36.42	-3.58	40.00	52.54	14.43	1.24	31.79	---	---	QP
3	155.25	37.99	-5.51	43.50	54.32	13.75	1.50	31.58	---	---	Peak
4	699.31	38.64	-7.36	46.00	46.15	21.19	2.52	31.22	---	---	Peak
5	874.91	40.49	-5.51	46.00	45.65	23.45	2.54	31.15	---	---	Peak
6	1000.00	42.85	-11.15	54.00	46.31	24.70	2.88	31.04	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



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

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11a	Test Freq. (MHz)	5745
N _{TX}	2	Polarization	H



	Over	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos		
Freq	Level	Limit	Level	Factor	Loss	Factor			Remark	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	41.22	-12.78	54.00	47.56	25.80	3.51	35.65	---	Average
2	1500.00	49.13	-24.87	74.00	55.47	25.80	3.51	35.65	---	Peak
3	4515.00	31.82	-22.18	54.00	27.65	30.72	6.62	33.17	---	Average
4	4515.00	44.64	-29.36	74.00	40.47	30.72	6.62	33.17	---	Peak
5	11490.00	45.54	-8.46	54.00	30.72	40.01	10.04	35.23	---	Average
6	11490.00	58.28	-15.72	74.00	43.46	40.01	10.04	35.23	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)												
Modulation Mode	11a			Test Freq. (MHz)	5745							
N _{TX}	2			Polarization	V							
<div style="display: flex; justify-content: space-between;"> <div> </div> <div style="text-align: right;">Date: 2013-08-20</div> </div>												
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos cm	T/Pos deg	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB				
	1	1500.00	44.34	-9.66	54.00	50.68	25.80	3.51	35.65	---	---	Average
	2	1500.00	50.27	-23.73	74.00	56.61	25.80	3.51	35.65	---	---	Peak
	3	4515.00	32.52	-21.48	54.00	28.35	30.72	6.62	33.17	---	---	Average
	4	4515.00	45.90	-28.10	74.00	41.73	30.72	6.62	33.17	---	---	Peak
	5	11490.00	49.20	-4.80	54.00	34.38	40.01	10.04	35.23	---	---	Average
	6	11490.00	60.58	-13.42	74.00	45.76	40.01	10.04	35.23	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)											
Modulation Mode	11a			Test Freq. (MHz)	5785						
N _{TX}	2			Polarization	H						
Date: 2013-08-20											
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	41.26	-12.74	54.00	47.60	25.80	3.51	35.65	---	---	Average
2	1500.00	49.33	-24.67	74.00	55.67	25.80	3.51	35.65	---	---	Peak
3	4515.00	31.74	-22.26	54.00	27.57	30.72	6.62	33.17	---	---	Average
4	4515.00	44.98	-29.02	74.00	40.81	30.72	6.62	33.17	---	---	Peak
5	11570.00	45.16	-8.84	54.00	30.46	39.83	10.08	35.21	---	---	Average
6	11570.00	58.29	-15.71	74.00	43.59	39.83	10.08	35.21	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)											
Modulation Mode	11a			Test Freq. (MHz)	5785						
N _{TX}	2			Polarization	V						
<div style="display: flex; justify-content: space-between;"> <div> </div> <div style="text-align: right;">Date: 2013-08-20</div> </div>											
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	44.16	-9.84	54.00	50.50	25.80	3.51	35.65	---	---	Average
2	1500.00	50.36	-23.64	74.00	56.70	25.80	3.51	35.65	---	---	Peak
3	4515.00	32.49	-21.51	54.00	28.32	30.72	6.62	33.17	---	---	Average
4	4515.00	45.44	-28.56	74.00	41.27	30.72	6.62	33.17	---	---	Peak
5	11570.00	50.26	-3.74	54.00	35.56	39.83	10.08	35.21	---	---	Average
6	11570.00	58.20	-15.80	74.00	43.50	39.83	10.08	35.21	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



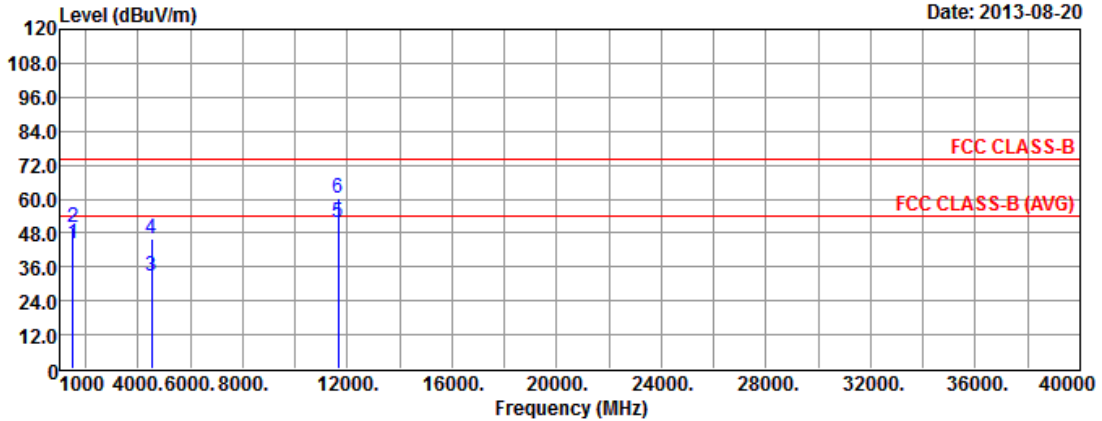
Transmitter Radiated Unwanted Emissions (Above 1GHz)											
Modulation Mode	11a			Test Freq. (MHz)	5825						
N _{TX}	2			Polarization	H						
Date: 2013-08-20											
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	41.21	-12.79	54.00	47.55	25.80	3.51	35.65	---	---	Average
2	1500.00	49.33	-24.67	74.00	55.67	25.80	3.51	35.65	---	---	Peak
3	4515.00	31.71	-22.29	54.00	27.54	30.72	6.62	33.17	---	---	Average
4	4515.00	44.77	-29.23	74.00	40.60	30.72	6.62	33.17	---	---	Peak
5	11650.00	45.34	-8.66	54.00	30.77	39.64	10.12	35.19	---	---	Average
6	11650.00	58.29	-15.71	74.00	43.72	39.64	10.12	35.19	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11a	Test Freq. (MHz)	5825
N _{TX}	2	Polarization	V



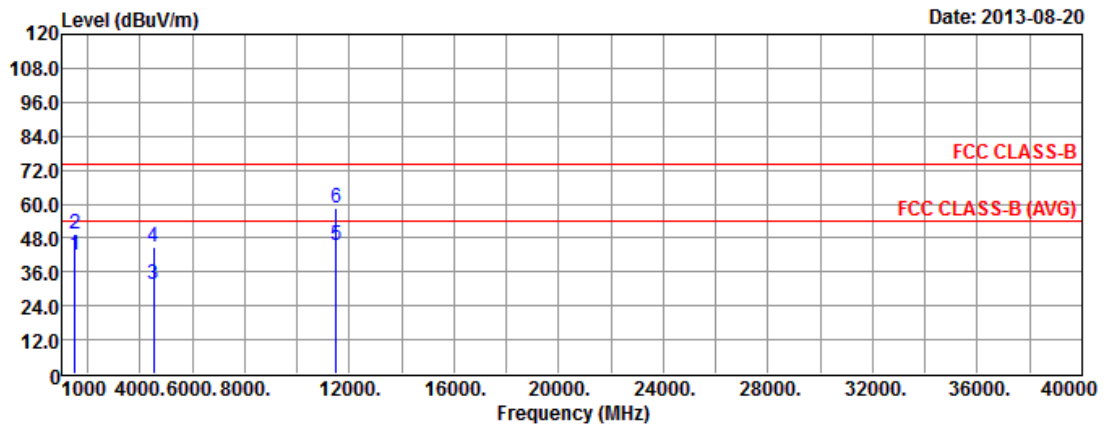
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	44.19	-9.81	54.00	50.53	25.80	3.51	35.65	---	---	Average
2	1500.00	50.21	-23.79	74.00	56.55	25.80	3.51	35.65	---	---	Peak
3	4515.00	32.57	-21.43	54.00	28.40	30.72	6.62	33.17	---	---	Average
4	4515.00	45.83	-28.17	74.00	41.66	30.72	6.62	33.17	---	---	Peak
5	11650.00	51.50	-2.50	54.00	36.93	39.64	10.12	35.19	---	---	Average
6	11650.00	60.17	-13.83	74.00	45.60	39.64	10.12	35.19	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



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

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	VHT20	Test Freq. (MHz)	5745
N _{TX}	2	Polarization	H



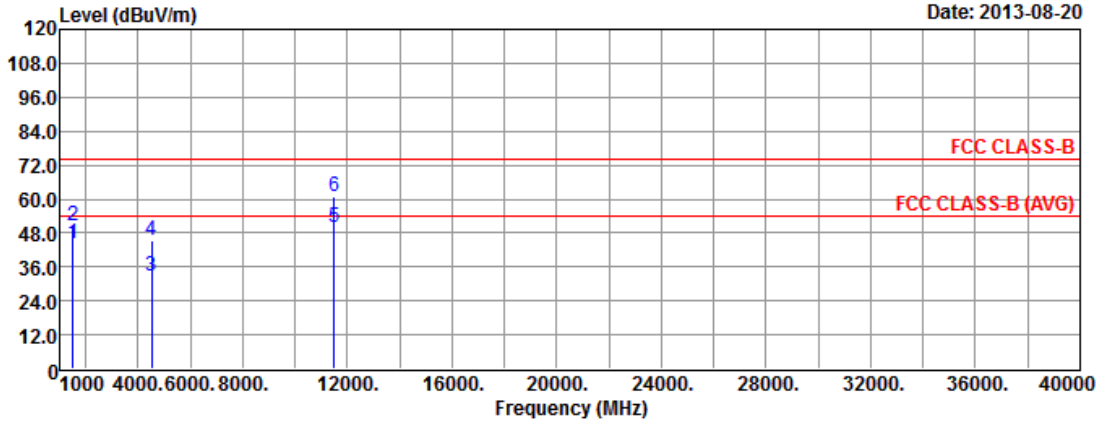
	Over	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
Freq	Level	Limit	Line	Level	Factor	Loss	Factor		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	1500.00	41.63	-12.37	54.00	47.97	25.80	3.51	35.65	--- --- Average
2	1500.00	49.55	-24.45	74.00	55.89	25.80	3.51	35.65	--- --- Peak
3	4515.00	31.82	-22.18	54.00	27.65	30.72	6.62	33.17	--- --- Average
4	4515.00	44.85	-29.15	74.00	40.68	30.72	6.62	33.17	--- --- Peak
5	11490.00	45.36	-8.64	54.00	30.54	40.01	10.04	35.23	--- --- Average
6	11490.00	58.49	-15.51	74.00	43.67	40.01	10.04	35.23	--- --- Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	VHT20	Test Freq. (MHz)	5745
N _{TX}	2	Polarization	V



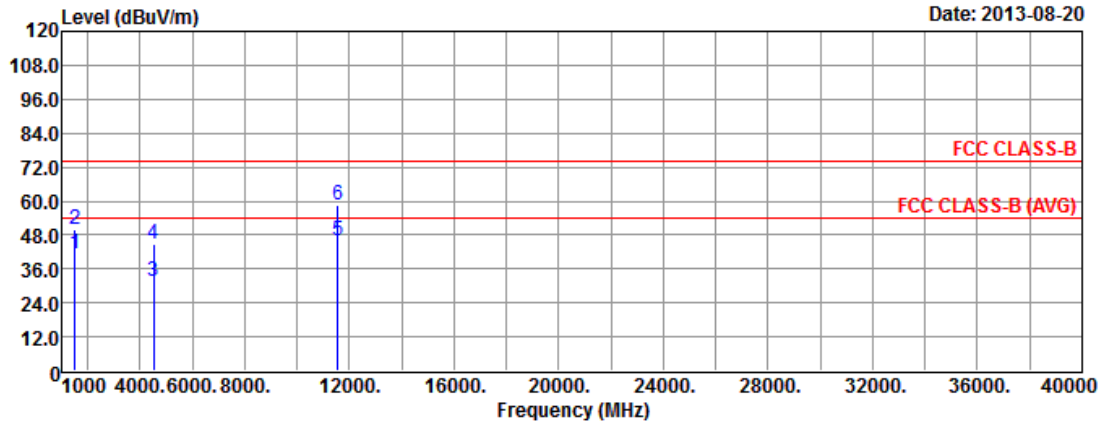
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	44.39	-9.61	54.00	50.73	25.80	3.51	35.65	---	---	Average
2	1500.00	50.48	-23.52	74.00	56.82	25.80	3.51	35.65	---	---	Peak
3	4515.00	32.77	-21.23	54.00	28.60	30.72	6.62	33.17	---	---	Average
4	4515.00	45.60	-28.40	74.00	41.43	30.72	6.62	33.17	---	---	Peak
5	11490.00	49.69	-4.31	54.00	34.87	40.01	10.04	35.23	---	---	Average
6	11490.00	60.71	-13.29	74.00	45.89	40.01	10.04	35.23	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	VHT20	Test Freq. (MHz)	5785
N _{TX}	2	Polarization	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	41.48	-12.52	54.00	47.82	25.80	3.51	35.65	---	---	Average
2	1500.00	49.81	-24.19	74.00	56.15	25.80	3.51	35.65	---	---	Peak
3	4515.00	31.57	-22.43	54.00	27.40	30.72	6.62	33.17	---	---	Average
4	4515.00	44.79	-29.21	74.00	40.62	30.72	6.62	33.17	---	---	Peak
5	11570.00	45.89	-8.11	54.00	31.19	39.83	10.08	35.21	---	---	Average
6	11570.00	58.77	-15.23	74.00	44.07	39.83	10.08	35.21	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

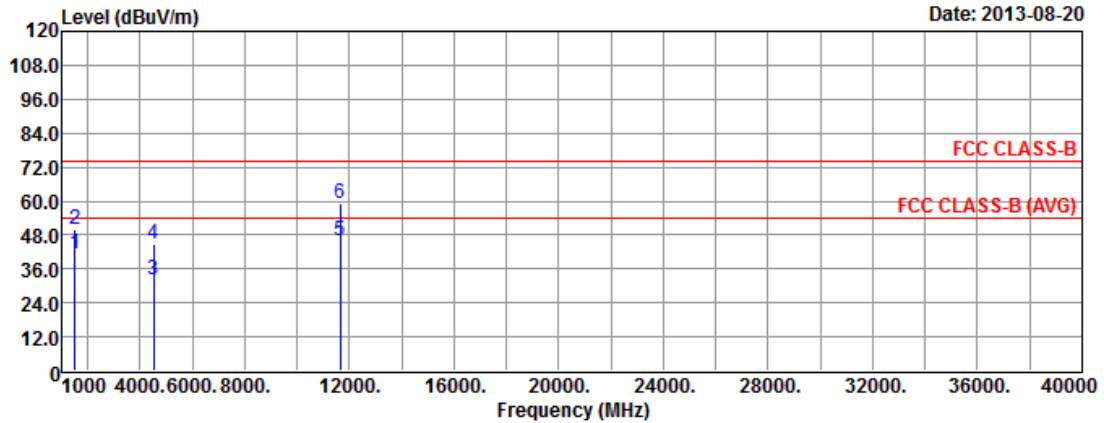


Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																																																			
Modulation Mode	VHT20	Test Freq. (MHz)	5785																																																																																																
N _{TX}	2	Polarization	V																																																																																																
<div style="display: flex; justify-content: space-between;"> <div> </div> <div style="text-align: right;">Date: 2013-08-20</div> </div>																																																																																																			
<table border="1" style="width:100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th></th> <th>Freq</th> <th>Level</th> <th>Over Limit</th> <th>Limit Line</th> <th>Read Level</th> <th>Antenna Factor</th> <th>Cable Loss</th> <th>Preamp Factor</th> <th>A/Pos</th> <th>T/Pos</th> <th>Remark</th> </tr> <tr> <th></th> <th>MHz</th> <th>dBuV/m</th> <th>dB</th> <th>dBuV/m</th> <th>dBuV</th> <th>dB/m</th> <th>dB</th> <th>dB</th> <th>cm</th> <th>deg</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1500.00</td> <td>44.74</td> <td>-9.26</td> <td>54.00</td> <td>51.08</td> <td>25.80</td> <td>3.51</td> <td>35.65</td> <td>---</td> <td>---</td> <td>Average</td> </tr> <tr> <td>2</td> <td>1500.00</td> <td>50.81</td> <td>-23.19</td> <td>74.00</td> <td>57.15</td> <td>25.80</td> <td>3.51</td> <td>35.65</td> <td>---</td> <td>---</td> <td>Peak</td> </tr> <tr> <td>3</td> <td>4515.00</td> <td>32.62</td> <td>-21.38</td> <td>54.00</td> <td>28.45</td> <td>30.72</td> <td>6.62</td> <td>33.17</td> <td>---</td> <td>---</td> <td>Average</td> </tr> <tr> <td>4</td> <td>4515.00</td> <td>45.85</td> <td>-28.15</td> <td>74.00</td> <td>41.68</td> <td>30.72</td> <td>6.62</td> <td>33.17</td> <td>---</td> <td>---</td> <td>Peak</td> </tr> <tr> <td>5</td> <td>11570.00</td> <td>50.66</td> <td>-3.34</td> <td>54.00</td> <td>35.96</td> <td>39.83</td> <td>10.08</td> <td>35.21</td> <td>---</td> <td>---</td> <td>Average</td> </tr> <tr> <td>6</td> <td>11570.00</td> <td>61.81</td> <td>-12.19</td> <td>74.00</td> <td>47.11</td> <td>39.83</td> <td>10.08</td> <td>35.21</td> <td>---</td> <td>---</td> <td>Peak</td> </tr> </tbody> </table>					Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg		1	1500.00	44.74	-9.26	54.00	51.08	25.80	3.51	35.65	---	---	Average	2	1500.00	50.81	-23.19	74.00	57.15	25.80	3.51	35.65	---	---	Peak	3	4515.00	32.62	-21.38	54.00	28.45	30.72	6.62	33.17	---	---	Average	4	4515.00	45.85	-28.15	74.00	41.68	30.72	6.62	33.17	---	---	Peak	5	11570.00	50.66	-3.34	54.00	35.96	39.83	10.08	35.21	---	---	Average	6	11570.00	61.81	-12.19	74.00	47.11	39.83	10.08	35.21	---	---	Peak
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark																																																																																								
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg																																																																																									
1	1500.00	44.74	-9.26	54.00	51.08	25.80	3.51	35.65	---	---	Average																																																																																								
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3	4515.00	32.62	-21.38	54.00	28.45	30.72	6.62	33.17	---	---	Average																																																																																								
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<p>Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.) Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical) Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition. Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.</p>																																																																																																			



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	VHT20	Test Freq. (MHz)	5825
N _{TX}	2	Polarization	H



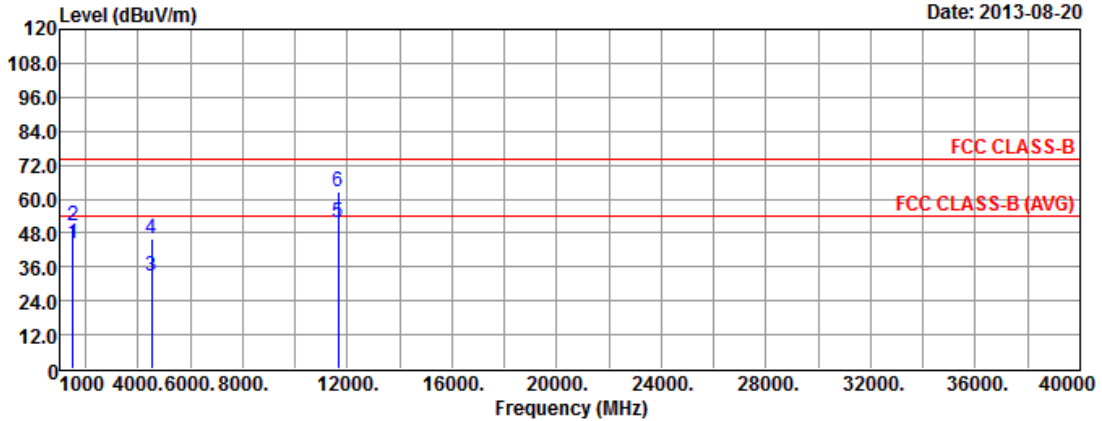
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	41.45	-12.55	54.00	47.79	25.80	3.51	35.65	---	---	Average
2	1500.00	49.68	-24.32	74.00	56.02	25.80	3.51	35.65	---	---	Peak
3	4515.00	31.88	-22.12	54.00	27.71	30.72	6.62	33.17	---	---	Average
4	4515.00	44.81	-29.19	74.00	40.64	30.72	6.62	33.17	---	---	Peak
5	11650.00	46.03	-7.97	54.00	31.46	39.64	10.12	35.19	---	---	Average
6	11650.00	59.25	-14.75	74.00	44.68	39.64	10.12	35.19	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	VHT20	Test Freq. (MHz)	5825
N _{TX}	2	Polarization	V



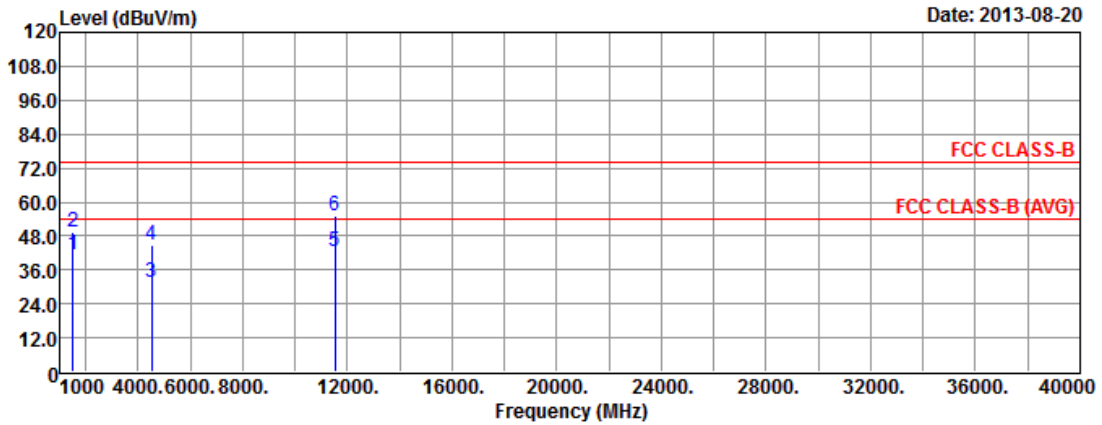
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	44.48	-9.52	54.00	50.82	25.80	3.51	35.65	---	---	Average
2	1500.00	50.77	-23.23	74.00	57.11	25.80	3.51	35.65	---	---	Peak
3	4515.00	32.49	-21.51	54.00	28.32	30.72	6.62	33.17	---	---	Average
4	4515.00	45.70	-28.30	74.00	41.53	30.72	6.62	33.17	---	---	Peak
5	11650.00	51.43	-2.57	54.00	36.86	39.64	10.12	35.19	---	---	Average
6	11650.00	62.45	-11.55	74.00	47.88	39.64	10.12	35.19	---	---	Peak

- Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
- Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
- Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
- Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
- Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



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

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	VHT40	Test Freq. (MHz)	5755
N _{TX}	2	Polarization	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	41.29	-12.71	54.00	47.63	25.80	3.51	35.65	---	---	Average
2	1500.00	49.61	-24.39	74.00	55.95	25.80	3.51	35.65	---	---	Peak
3	4515.00	31.47	-22.53	54.00	27.30	30.72	6.62	33.17	---	---	Average
4	4515.00	44.84	-29.16	74.00	40.67	30.72	6.62	33.17	---	---	Peak
5	11510.00	42.74	-11.26	54.00	27.94	39.98	10.05	35.23	---	---	Average
6	11510.00	55.23	-18.77	74.00	40.43	39.98	10.05	35.23	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

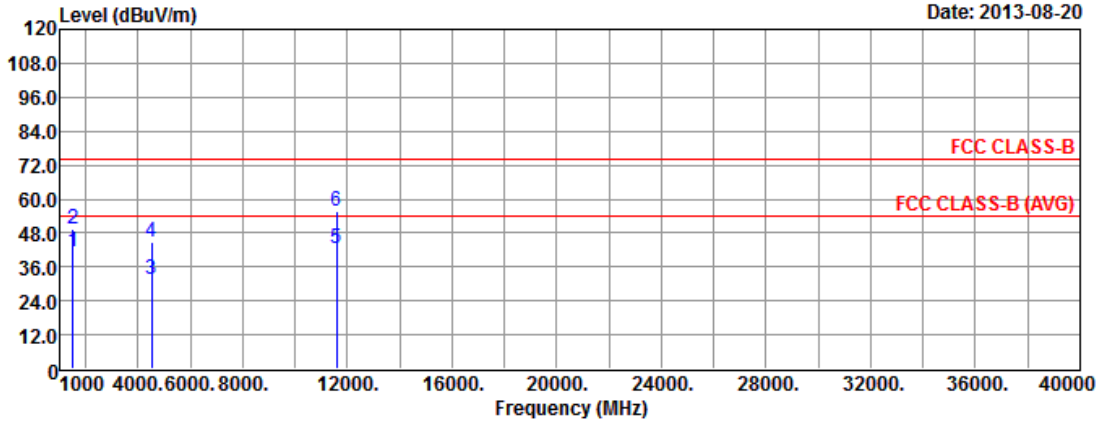


Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																																																			
Modulation Mode	VHT40	Test Freq. (MHz)	5755																																																																																																
N _{TX}	2	Polarization	V																																																																																																
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Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	VHT40	Test Freq. (MHz)	5795
N _{TX}	2	Polarization	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	41.29	-12.71	54.00	47.63	25.80	3.51	35.65	---	---	Average
2	1500.00	49.63	-24.37	74.00	55.97	25.80	3.51	35.65	---	---	Peak
3	4515.00	31.32	-22.68	54.00	27.15	30.72	6.62	33.17	---	---	Average
4	4515.00	44.82	-29.18	74.00	40.65	30.72	6.62	33.17	---	---	Peak
5	11590.00	42.62	-11.38	54.00	27.96	39.78	10.09	35.21	---	---	Average
6	11590.00	55.75	-18.25	74.00	41.09	39.78	10.09	35.21	---	---	Peak

- Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
- Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
- Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
- Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
- Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

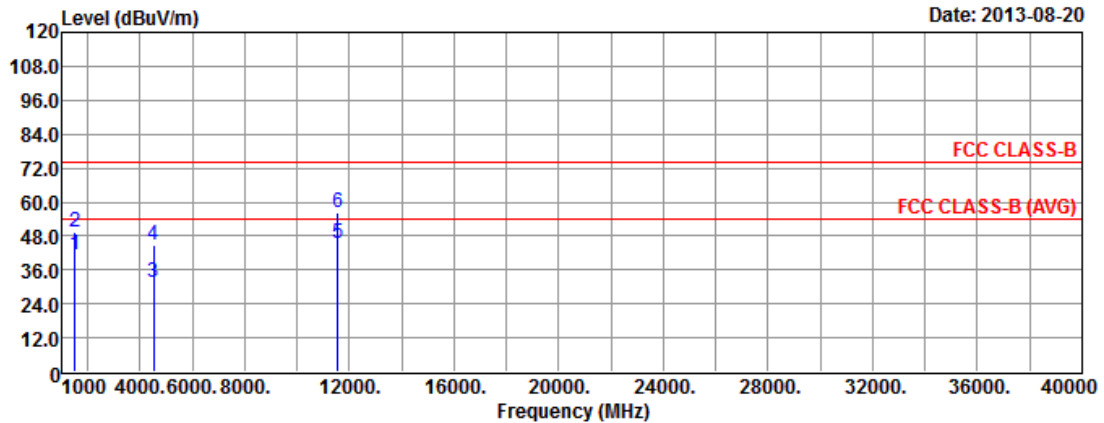


Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																																																			
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3.6.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT80

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	VHT80	Test Freq. (MHz)	5775
Operating Mode	2	Polarization	V



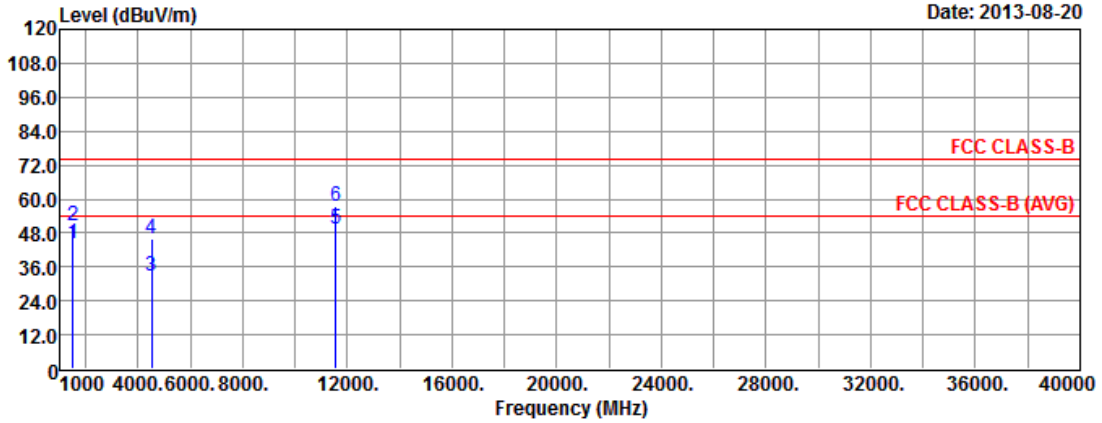
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	41.24	-12.76	54.00	47.55	25.80	3.54	35.65	---	---	Average
2	1500.00	49.42	-24.58	74.00	55.73	25.80	3.54	35.65	---	---	Peak
3	4515.00	31.64	-22.36	54.00	27.47	30.72	6.62	33.17	---	---	Average
4	4515.00	44.85	-29.15	74.00	40.68	30.72	6.62	33.17	---	---	Peak
5	11550.00	45.40	-8.60	54.00	30.65	39.88	10.09	35.22	---	---	Average
6	11550.00	56.15	-17.85	74.00	41.40	39.88	10.09	35.22	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	VHT80	Test Freq. (MHz)	5775
Operating Mode	2	Polarization	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	44.25	-9.75	54.00	50.56	25.80	3.54	35.65	---	---	Average
2	1500.00	50.42	-23.58	74.00	56.73	25.80	3.54	35.65	---	---	Peak
3	4515.00	32.55	-21.45	54.00	28.38	30.72	6.62	33.17	---	---	Average
4	4515.00	46.00	-28.00	74.00	41.83	30.72	6.62	33.17	---	---	Peak
5	11550.00	49.21	-4.79	54.00	34.46	39.88	10.09	35.22	---	---	Average
6	11550.00	57.55	-16.45	74.00	42.80	39.88	10.09	35.22	---	---	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9 kHz ~ 2.75 GHz	Mar. 26, 2013	Conduction (CO04-HY)
LISN	SCHWARZBECK MESS-ELEKTRO NIK	NSLK 8127	8127-477	9kHz – 30MHz	Jan. 21, 2013	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9 kHz ~ 30 MHz	Apr. 18, 2013	Conduction (CO04-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832010001	9 kHz ~ 30 MHz	Nov. 09, 2012	Conduction (CO04-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV40	101499	9Kz – 40GHz	Jan. 28, 2013	Radiation (03CH08-HY)
Receiver	R&S	ESR3	101657	9KHz – 3GHz	Jan. 30, 2013	Radiation (03CH08-HY)
Amplifier	COM-POWER	PA-103	161241	10MHz ~ 1000MHz	Feb. 26, 2013	Radiation (03CH08-HY)
Amplifier	Agilent	83017A	MY39501308	1GHz – 26.5 GHz	Dec. 18, 2012	Radiation (03CH08-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	1GHz~18GHz	Feb. 18, 2013	Radiation (03CH08-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170517	18GHz~40GHz	Jan. 14, 2013	Radiation (03CH08-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170517	15GHz~40GHz	Sep. 28, 2012	Radiation (03CH08-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30 MHz - 1 GHz	Oct. 06, 2012	Radiation (03CH08-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	MITEQ	AMF-7D-001018 00-30-10P	9121372	26.5GHz ~ 40GHz	Feb. 27, 2013	Radiation (03CH08-HY)
Loop Antenna	R&S	HFH2-Z2	860004/0001	9 kHz - 30 MHz	Jul. 03, 2012	Radiation (03CH08-HY)

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



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101063	9KHz~40GHz	Feb. 18, 2013	Conducted (TH01-HY)
Spectrum Analyzer	R&S	FSP 40	100305	9KHz~40GHz	Mar. 20, 2013	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100°C	Nov. 21, 2012	Conducted (TH01-HY)
Signal Generator	R&S	SMB100A	175727	10MHz ~ 40GHz	Jan. 14, 2013	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 02, 2013	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 02, 2013	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jun. 21, 2013	Conducted (TH01-HY)
AC Power Source	G.W.	APS-9102	EL920581	AC 0V ~ 300V	Jul. 16, 2013	Conducted (TH01-HY)

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