





FCC Test Report

FCC ID : 2AEUPBHASC051

Equipment : Stick Up Cam Wired

Brand Name : Ring

Model Name : Stick Up Cam Wired

Applicant : Ring, Inc

1523 26th St, Santa Monica, CA 90404, USA

Manufacturer : Chicony Electronics (Dong Guan) Co.,Ltd.

San Zhong Guan Li Qu, Qingxi Town, Dongguan City

Guangdong 523651 China

Standard : 47 CFR FCC Part 15.407

The product was received on Jun. 01, 2018, and testing was started from Jun. 18, 2018 and completed on Aug. 15, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Allen Lin

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SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

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Report No.	Version	Description	Issued Date
FR852814AN	01	Initial issue of report	Aug. 15, 2018

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Summary of Test Result

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Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.407(a)	Emission Bandwidth	PASS	-
3.3	15.407(a)	Maximum Conducted Output Power	PASS	-
3.4	15.407(a)	Peak Power Spectral Density	PASS	-
3.5	15.407(b)	Unwanted Emissions	PASS	-

Reviewed by: Sam Tsai

Report Producer: Debby Hung

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General Description

1.1 Information

RF General Information 1.1.1

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20)	5180-5240	36-48 [4]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40)	5190-5230	38-46 [2]
5725-5850		5755-5795	151-159 [2]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	1TX
5.725-5.85GHz	802.11a	20	1TX
5.15-5.25GHz	802.11n HT20	20	1TX
5.725-5.85GHz	802.11n HT20	20	1TX
5.15-5.25GHz	802.11n HT40	40	1TX
5.725-5.85GHz	802.11n HT40	40	1TX

Note:

- 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector
1	1	-	Orion Wifi Antenna	PIFA Antenna	Fixed on board

2	.4G	5	G		ВТ
Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)	Frequency (MHz)	Gain (dBi)
2412	0.94	5180	2.68	2402	0.94
2417	0.94	5200	2.68	2440	0.69
2422	0.94	5240	2.77	2480	0.10
2427	0.69	5190	2.68	-	-
2432	0.69	5230	2.77	-	-
2437	0.69	5745	3.12	-	-
2442	0.69	5785	2.65	-	-
2447	0.69	5825	1.67	-	-
2452	0.69	5755	3.12	-	-
2457	0.69	5795	2.65	-	-
2462	0.69	-	-	-	-

For 2.4 GHz function:

For IEEE 802.11b/g/n mode (1TX/1RX)

Only Ant. 1 (port 1) can be used as transmitting/receiving antenna.

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For 5 GHz function:

For IEEE 802.11a/n mode (1TX/1RX)

Only Ant. 1 (port 1) can be used as transmitting/receiving antenna.

For Bluetooth function:

For Bluetooth mode (1TX/1RX)

Only Ant. 1 (port 1) can be used as transmitting/receiving antenna.

1.1.3 EUT Information

	Operational Condition						
EU1	Γ Power Ty	/pe	Fro	m AC Adapter			
E117	Γ Function		\boxtimes	Outdoor			Indoor
	runction	l		Fixed P2P			Client
Bea	mforming	Function		With beamformi	ng 🛭		Without beamforming
				7	Type of	EU	т
\boxtimes	Stand-alor	ne					
	Combined	(EUT where	e the	radio part is fully	/ integra	ted	within another device)
	Combined	l Equipment	- Bra	and Name / Mode	el No.:		
	Plug-in radio (EUT intended for a variety of host systems)						
Host System - Brand Name / Model No.:							
	Other:						

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1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.897	0.472	1.421m	1k
802.11n HT20	0.932	0.306	1.339m	1k
802.11n HT40	0.876	0.575	666.875u	3k

1.2 Testing Applied Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- KDB 789033 D02 v02r01

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1.3 **Testing Location Information**

	Testing Location							
\boxtimes	HWA YA	ADD	:	No. 52, Huaya 1st Rd.,	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)			
		TEL	:	886-3-327-3456 FAX : 886-3-327-0973				
				Test site Designation	n No. TW1190 with FCC.			
	JHUBEI	ADD	:	No.8, Ln. 724, Bo'ai St.	, Zhubei City, Hsinchu County, Taiwan (R.O.C.)			
	TEL: 886-3-656-9065 FAX: 886-3-656-9085							
	Test site Designation No. TW0006 with FCC.							

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Andy	23.5°C / 65%	21/Jun/2018
Radiated <9k~30M>	03CH02-HY	Jeff	23.5°C / 60%	15/Aug/2018
Radiated <30M~1G>	03CH02-HY	Terry	22.6°C / 61%	18/Jun/2018
AC Conduction	CO04-HY	Andy	23.5°C / 53.8%	25/Jul/2018

1.4 **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)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%

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Test Configuration of EUT 2

Test Condition 2.1

Condition Item	Abbreviation/Remark	Remark
RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

Test Channel Mode 2.2

Test Software	Dos
---------------	-----

Mode	PowerSetting
802.11a_Nss1,(6Mbps)_1TX	-
5180MHz	15.5
5200MHz	20
5240MHz	20
5745MHz	20
5785MHz	20
5825MHz	20
802.11n HT20_Nss1,(MCS0)_1TX	-
5180MHz	15.5
5200MHz	20
5240MHz	20
5745MHz	20
5785MHz	20
5825MHz	20
802.11n HT40_Nss1,(MCS0)_1TX	-
5190MHz	12
5230MHz	20
5755MHz	20
5795MHz	20

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2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests		
Tests Item	Tests Item AC power-line conducted emissions	
Condition AC power-line conducted measurement for line and neutral		
Operating Mode CTX		
1 Adapter mode		

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The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth Maximum Conducted Output Power Peak Power Spectral Density
Test Condition Conducted measurement at transmit chains	

The Worst Case Mode for Following Conformance Tests				
Tests Item	Unwanted Emissions	Unwanted 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.			
Operating Mode < 1GHz	СТХ			
1	Adapter mode			
Operating Mode > 1GHz	CTX			
	X Plane Y Plane Z Plane		Z Plane	
Orthogonal Planes of EUT				
Worst Planes of EUT	V			

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2.4 **Accessories and Support Equipment**

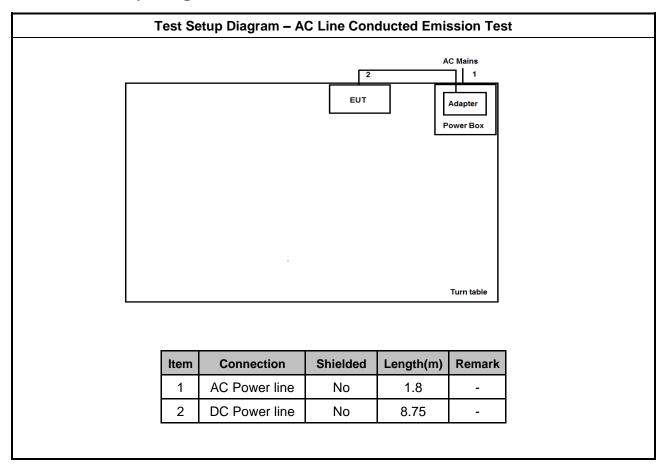
Accessories		
	Brand Name	DEE VAN ENTERPRISE Model Name DSA-15CAB-05 050250
Indoor Adapter Power Rating I/P: 100 - 240Vac, 0.5 A, O/P: 5 Vdc, 2.5 A		I/P: <u>100</u> - <u>240</u> Vac, <u>0.5</u> A, O/P: <u>5</u> Vdc, <u>2.5</u> A
USB cable Power Cord <u>2.45</u> meter, non-shielded cable, w/o ferrite core		

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

Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	Adapter for NB	DELL	HA65NM130	DoC
3	AC Power Source	G.W	APS-9102	-

2.5 **Test Setup Diagram**

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DC Power line

Test Setup Diagram - Radiated Test

AC Mains

1 2

Adapter
Power Box

EUT

Item Connection Shielded Length(m) Remark
1 AC Power line No 2.45 -

No

8.75

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3 **Transmitter Test Result**

AC Power-line Conducted Emissions 3.1

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		s 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.			

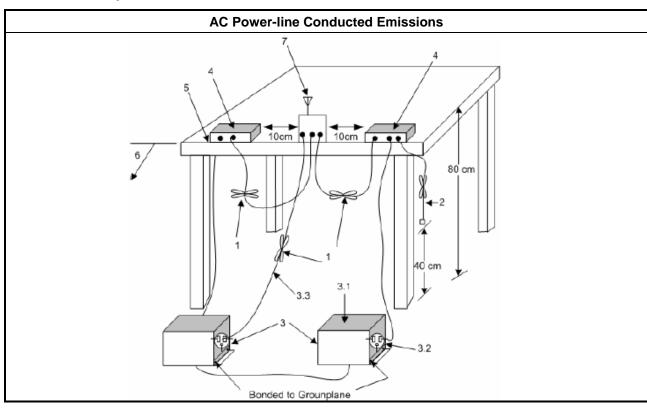
3.1.2 Measuring Instruments

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

Test Procedures 3.1.3

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

3.1.4 **Test Setup**



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3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

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3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

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

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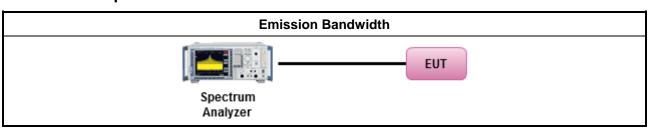
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

	Test Method		
•	For the emission bandwidth shall be measured using one of the options below:		
	Refer as KDB 789033, clause C for EBW and clause D for OBW measurement.		
	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.		
	Refer as IC RSS-Gen, clause 6.7 for bandwidth testing.		

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

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Maximum Conducted Output Power 3.3

3.3.1 **Maximum Conducted Output Power Limit**

	Maximum Conducted Output Power Limit								
UN	UNII Devices								
\boxtimes	For the 5.15-5.25 GHz band:								
	Outdoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 - (G_{TX} - 6). e.i.r.p. at any elevation angle above 30 degrees \leq 125mW [21dBm]								
	Indoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$								
	Point-to-point AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W If $G_{TX} > 23$ dBi, then $P_{Out} = 30 - (G_{TX} - 23)$.								
	Mobile or Portable Client: the maximum conducted output power (P _{Out}) shall not exceed the lesser of 250 mW. If G _{TX} > 6 dBi, then P _{Out} = 24 - (G _{TX} - 6).								
	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 $P_{Out} = 24 - (G_{TX} - 6)$.								
	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 $P_{Out} = 24 - (G_{TX} - 6)$.								
\boxtimes	For the 5.725-5.85 GHz band:								
	Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$.								
	 Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. 								
	t = maximum conducted output power in dBm, t = the maximum transmitting antenna directional gain in dBi.								

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3.3.2 Measuring Instruments

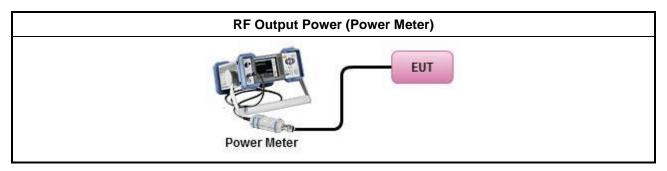
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

	Test Method								
•	Maximum Conducted Output Power								
	Duty cycle ≥ 98%								
	Refer as KDB 789033, clause E Method SA-2 (spectral trace averaging).								
	Duty cycle < 98%								
	Refer as 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								
	Refer as KDB 789033, clause E Method PM (using an RF average power meter).								
•	For conducted measurement.								
	If the EUT supports multiple transmit chains using options given below: Refer as 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								

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3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

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3.4 Peak Power Spectral Density

3.4.1 Peak Power Spectral Density Limit

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

power shall be used to determine the power spectral density. And power spectral density in dBm/MHz

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3.4.2 Measuring Instruments

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

 G_{TX} = the maximum transmitting antenna directional gain in dBi.

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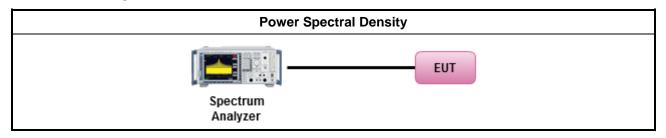
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3.4.3 **Test Procedures**

	Test Method
•	Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options:
	Refer as KDB 789033, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth
	Duty cycle ≥ 98%
	Refer as KDB 789033, clause E Method SA-2 (spectral trace averaging).
	Duty cycle < 98%
	Refer as KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
•	For conducted measurement.
	If the EUT supports multiple transmit chains using options given below:
	Measure and sum the spectra across the outputs. Refer as 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 NTX 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.
	■ If multiple transmit chains, EIRP PPSD calculation could be following as methods: PPSD _{total} = PPSD ₁ + PPSD ₂ + + PPSD _n (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP _{total} = PPSD _{total} + DG

Test Setup 3.4.4



Test Result of Peak Power Spectral Density

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3.5 **Unwanted Emissions**

3.5.1 **Transmitter Radiated Unwanted Emissions Limit**

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit									
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)						
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300						
0.490~1.705	24000/F(kHz)	33.8 - 23	30						
1.705~30.0	30	29	30						
30~88	100	40	3						
88~216	150	43.5	3						
216~960	200	46	3						
Above 960	500	54	3						

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

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

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

Un-restricted band emissions above 1GHz Limit							
Operating Band Limit							
5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]						
5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]						
5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]						
5.725 - 5.85 GHz	5.650-5700 GHz: e.i.r.p27 ~ 10 dBm [68.2 ~ 105.2 dBuV/m@3m] 5.700-5720 GHz: e.i.r.p. 10 ~ 15.6 dBm [105.2 ~ 110.8 dBuV/m@3m] 5.720-5725 GHz: e.i.r.p. 15.6 ~ 27 dBm [110.8 ~ 122.2 dBuV/m@3m] 5.850-5.855 GHz: e.i.r.p. 27 ~ 15.6 dBm [122.2 ~ 110.8 dBuV/m@3m] 5.855-5.875 GHz: e.i.r.p. 15.6 ~ 10 dBm [110.8 ~ 105.2 dBuV/m@3m] 5.875-5.925 GHz: e.i.r.p. 10 ~ -27 dBm [105.2 ~ 68.2dBuV/m@3m] Other un-restricted band: e.i.r.p27 dBm [68.2 dBuV/m@3m]						

Note 1: 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).

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3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method

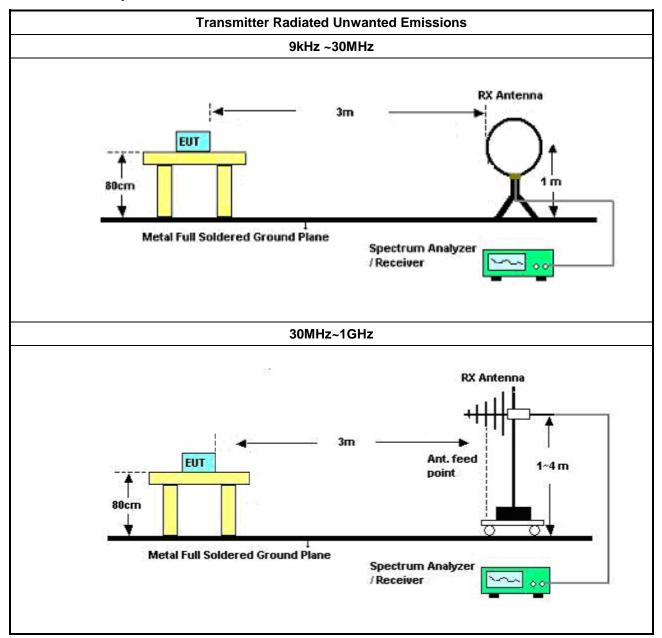
- Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. 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).
- The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
- For the transmitter unwanted emissions shall be measured using following options below:
 - Refer as KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
 - Refer as KDB 789033, clause G)1) for unwanted emissions into restricted bands.
 - Refer as KDB 789033, G)6) Method VB (ANSI C63.10, clause 4.1.4.2.3), Reduced VBW.
 - Refer as KDB 789033, clause G)5) (ANSI C63.10, clause 4.1.4.2.2), measurement procedure peak limit.
- For radiated measurement.
 - Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
 - Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
 - Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.
- The any unwanted emissions level shall not exceed the fundamental emission level.
- All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

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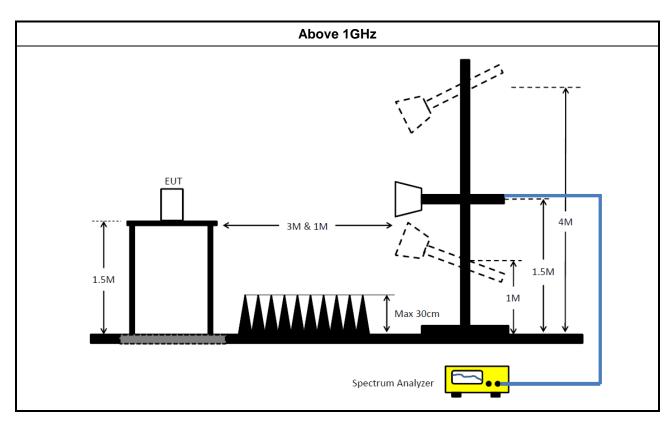
3.5.4 **Test Setup**



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3.5.5 Transmitter Unwanted Emissions

Refer as Appendix E

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Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date			
EMC Receiver	R&S	ESR	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019			
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	17/Nov/2017	16/Nov/2018			
RF Cable-CON	HUBER+SUHN ER	RG213/U	0761183202000 1	9kHz ~ 30MHz	06/Oct/2017	05/Oct/2018			
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR			
Impuls Begrenzer Puls e Limiter	SCHWARZBEC K	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	12/Oct/2017	11/Oct/2018			

NCR : Non-Calibration Require

Instrument for Radiated Test

Instrument	Instrument Manufacturer Mode		Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	03CH02-HY 30MHz ~ 1GHz 3m		19/Oct/2018
3m Semi Anechoic Chamber	Anechoic SIDT SAC-3M		03CH02-HY	1GHz ~ 18GHz 3m	27/Oct/2017	26/Oct/2018
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	29Jun/2017	28/Jun/2018
Microwave Preamplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	28/Sep/2017	27/Sep/2018
Spectrum Analyzer	Rohde & Schwarz	FSP40	100593	9KHz - 40GHz	12/Dec/2017	11/Dec/2018
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100354	9kHz ~ 2.75GHz	08/Dec/2017	07/Dec/2018
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	19/Jan/2018	18/Jan/2019
RF Cable-high	SUHNER	SUCOFLEX104	MY34918/4	1GHz ~ 40GHz	19/Jan/2018	18/Jan/2019
Bilog Antenna	SCHAFFNER	CBL 6112B	2723	30MHz ~ 1GHz	09/Sep/2017	08/Sep/2018
Broadband Horn Antenna	SCHWARZBEC K	BBHA 9170	BBHA 9170154	18GHz ~ 40GHz	06/Feb/2018	05/Feb/2019
Double Ridged Guide Horn Antenna	SCHWARZBEC K	BBHA 9120D	BBHA 9120 D 1543	1GHz ~ 18GHz	11/May/ 2018	10/May/2019
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	31/Aug/2017	30/Aug/2018
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019

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FCC Test Report

Instrument for Conducted Test

FCC ID: 2AEUPBHASC051

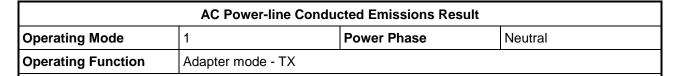
Instrument Manufacturer		Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101515	9kHz~40GHz	08/Dec/2017	07/Dec/2018
Power Sensor	Anritsu	MA2411B	1339407	300MHz ~ 40GHz	06/Nov/2017	05/Nov/2018
Power Meter	Anritsu	ML2495A	1517010	300MHz ~ 40GHz	06/Nov/2017	05/Nov/2018
RF Cable-0.2m	HUBER+SUHN ER	SUCOFLEX_10	MY10710/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-0.2m	HUBER+SUHN ER	SUCOFLEX_10 4	MY10709/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-1m	HUBER+SUHN ER	SUCOFLEX_10	MY37333/4	30MHz ~ 26.5GHz	26/Jan/2018	25/Jan/2019
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	27/Jul/2017	26/Jul/2018

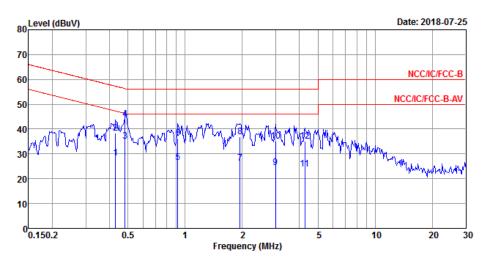
Report No.: FR852814AN

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			0ver	Limit	Read	LISN	Cable	
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.43	28.34	-18.90	47.24	18.64	9.61	0.09	Average
2	0.43	38.24	-19.00	57.24	28.54	9.61	0.09	QP
3 MAX	0.48	35.19	-11.08	46.27	25.50	9.61	0.08	Average
4	0.48	43.97	-12.30	56.27	34.28	9.61	0.08	QP
5	0.91	26.55	-19.45	46.00	16.92	9.62	0.01	Average
6	0.91	36.38	-19.62	56.00	26.75	9.62	0.01	QP
7	1.95	26.35	-19.65	46.00	16.72	9.63	0.00	Average
8	1.95	37.02	-18.98	56.00	27.39	9.63	0.00	QP
9	2.99	24.52	-21.48	46.00	14.83	9.64	0.05	Average
10	2.99	35.00	-21.00	56.00	25.31	9.64	0.05	QP
11	4.27	23.88	-22.12	46.00	14.15	9.64	0.09	Average
12	4.27	35.05	-20.95	56.00	25.32	9.64	0.09	_
								•

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.)

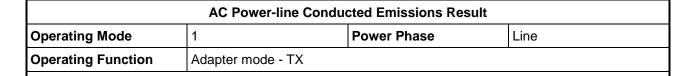
SPORTON INTERNATIONAL INC.

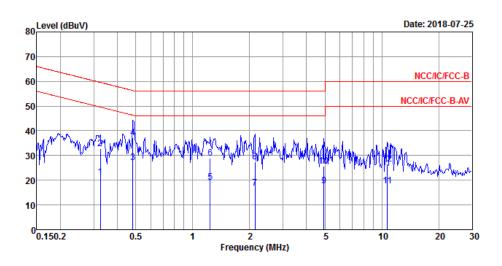
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	F	1 1	0ver	Limit	Read	LISN	Cable	Damanla
	Freq	rever	Limit	Line	rever	Factor	LOSS	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.33	21.11	-28.46	49.57	11.43	9.61	0.07	Average
2	0.33	32.88	-26.69	59.57	23.20	9.61	0.07	QP
3	0.48	27.21	-19.06	46.27	17.52	9.61	0.08	Average
4 MAX	0.48	37.29	-18.98	56.27	27.60	9.61	0.08	QP
5	1.24	19.19	-26.81	46.00	9.58	9.61	0.00	Average
6	1.24	28.92	-27.08	56.00	19.31	9.61	0.00	QP
7	2.13	16.97	-29.03	46.00	7.34	9.62	0.01	Average
8	2.13	27.54	-28.46	56.00	17.91	9.62	0.01	QP
9	4.95	17.74	-28.26	46.00	7.99	9.64	0.11	Average
10	4.95	25.71	-30.29	56.00	15.96	9.64	0.11	QP
11	10.68	17.70	-32.30	50.00	7.87	9.66	0.17	Average
12	10.68	26.67	-33.33	60.00	16.84	9.66	0.17	QP

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.)

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Appendix B EBW Result

Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
5.15-5.25GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	39.525M	18.316M	18M3D1D	29.975M	16.542M
802.11n HT20_Nss1,(MCS0)_1TX	41.9M	18.541M	18M5D1D	32.625M	17.616M
802.11n HT40_Nss1,(MCS0)_1TX	81.4M	36.532M	36M5D1D	44.5M	35.982M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	15.05M	20.415M	20M4D1D	15M	18.416M
802.11n HT20_Nss1,(MCS0)_1TX	15.1M	20.79M	20M8D1D	14.15M	18.941M
802.11n HT40_Nss1,(MCS0)_1TX	35.05M	36.682M	36M7D1D	33.75M	36.432M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;
Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

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EBW Result Appendix B

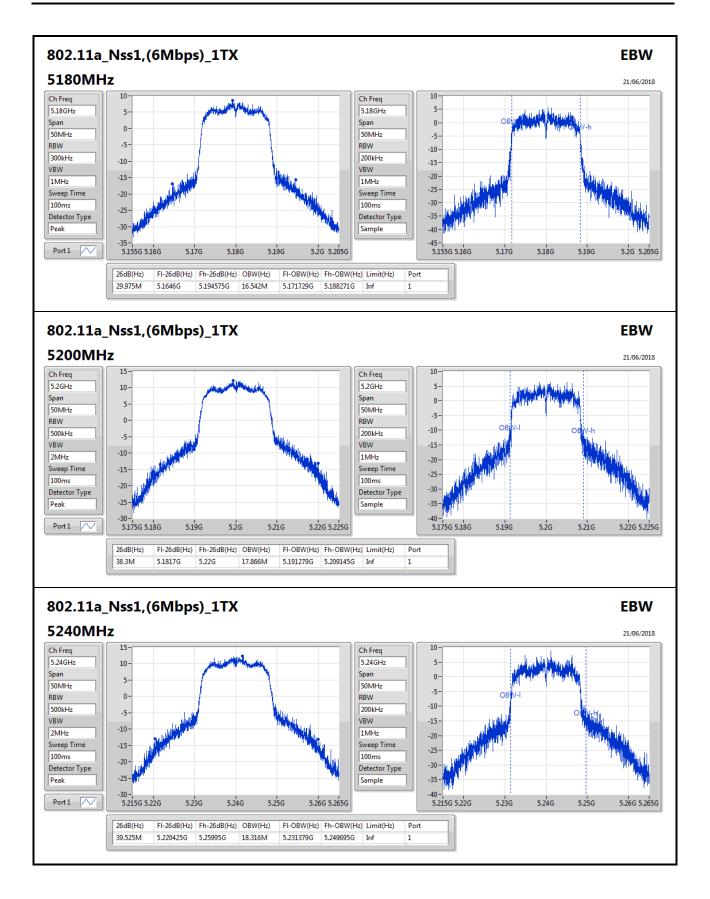
Result

Mode	Result	Limit	Port 1-N dB	Port 1-OBW	
		(Hz)	(Hz)	(Hz)	
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-	
5180MHz_TnomVnom	Pass	Inf	29.975M	16.542M	
5200MHz_TnomVnom	Pass	Inf	38.3M	17.866M	
5240MHz_TnomVnom	Pass	Inf	39.525M	18.316M	
5745MHz_TnomVnom	Pass	500k	15.025M	20.415M	
5785MHz_TnomVnom	Pass	500k	15M	20.115M	
5825MHz_TnomVnom	Pass	500k	15.05M	18.416M	
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	
5180MHz_TnomVnom	Pass	Inf	32.625M	17.616M	
5200MHz_TnomVnom	Pass	Inf	41.9M	18.316M	
5240MHz_TnomVnom	Pass	Inf	39.35M	18.541M	
5745MHz_TnomVnom	Pass	500k	14.15M	20.44M	
5785MHz_TnomVnom	Pass	500k	15.05M	20.79M	
5825MHz_TnomVnom	Pass	500k	15.1M	18.941M	
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-	
5190MHz_TnomVnom	Pass	Inf	44.5M	35.982M	
5230MHz_TnomVnom	Pass	Inf	81.4M	36.532M	
5755MHz_TnomVnom	Pass	500k	33.75M	36.682M	
5795MHz_TnomVnom	Pass	500k	35.05M	36.432M	

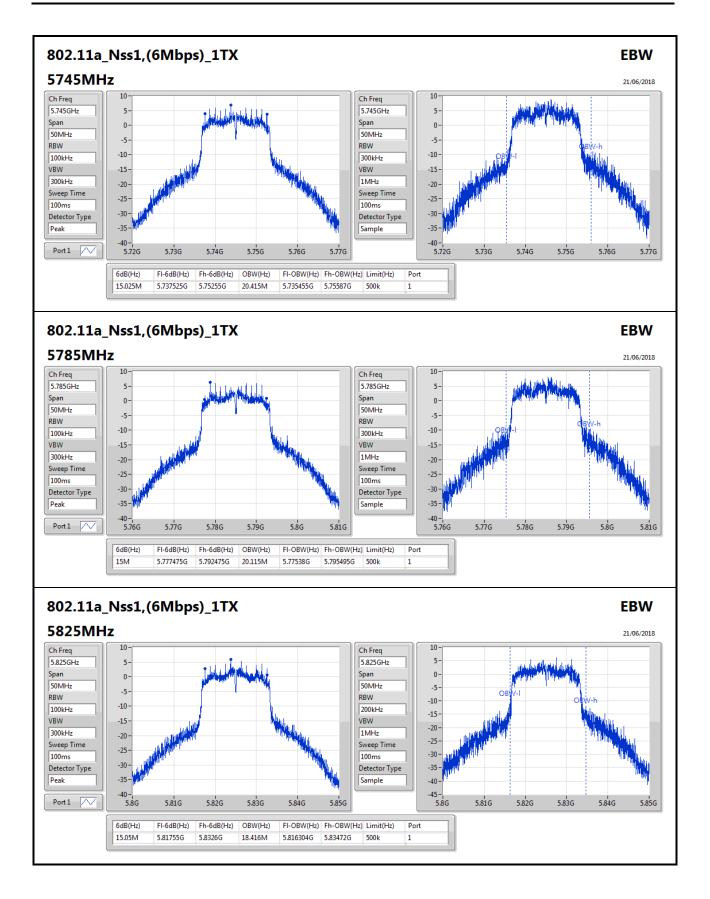
Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band Port X-OBW = Port X 99% occupied bandwidth;

Appendix B



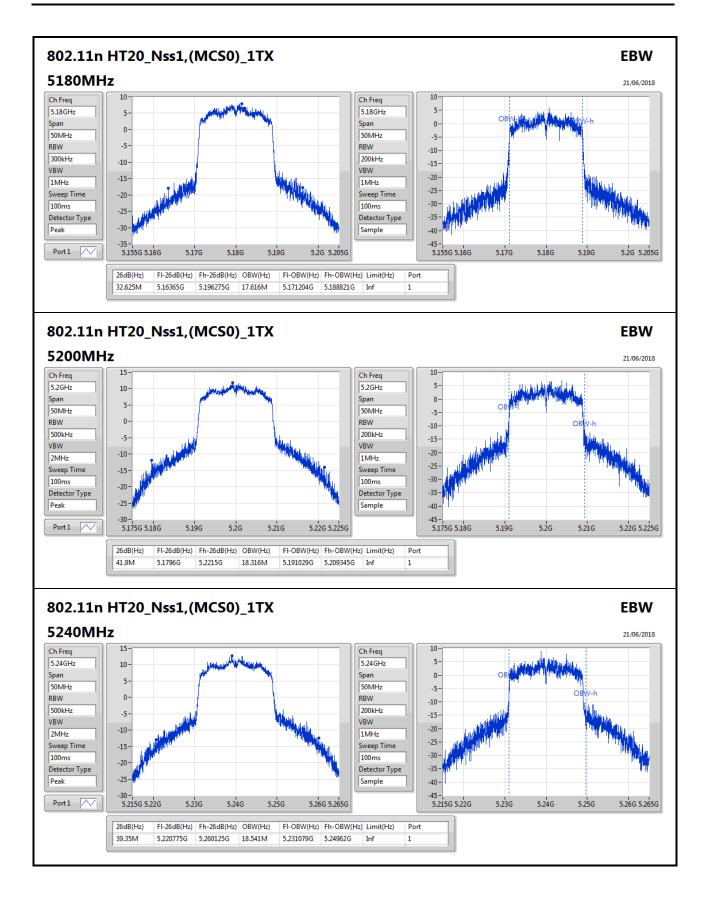




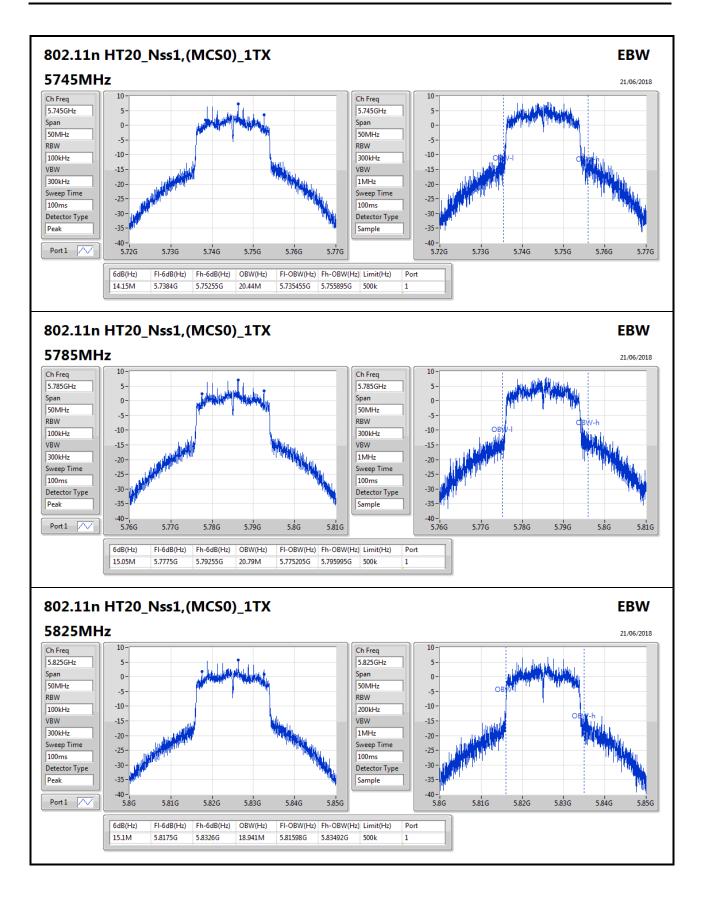


Appendix B

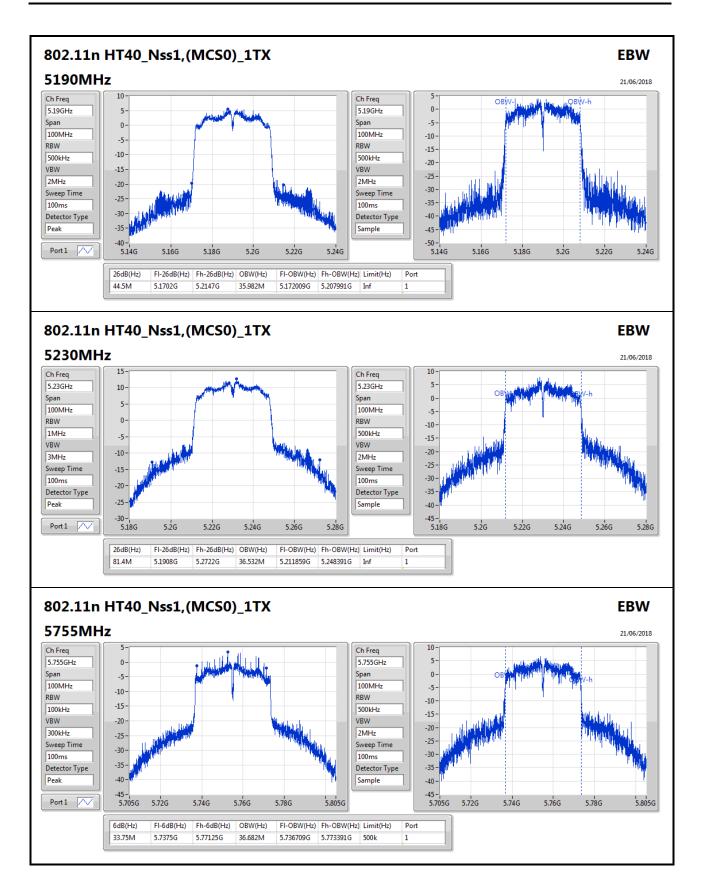






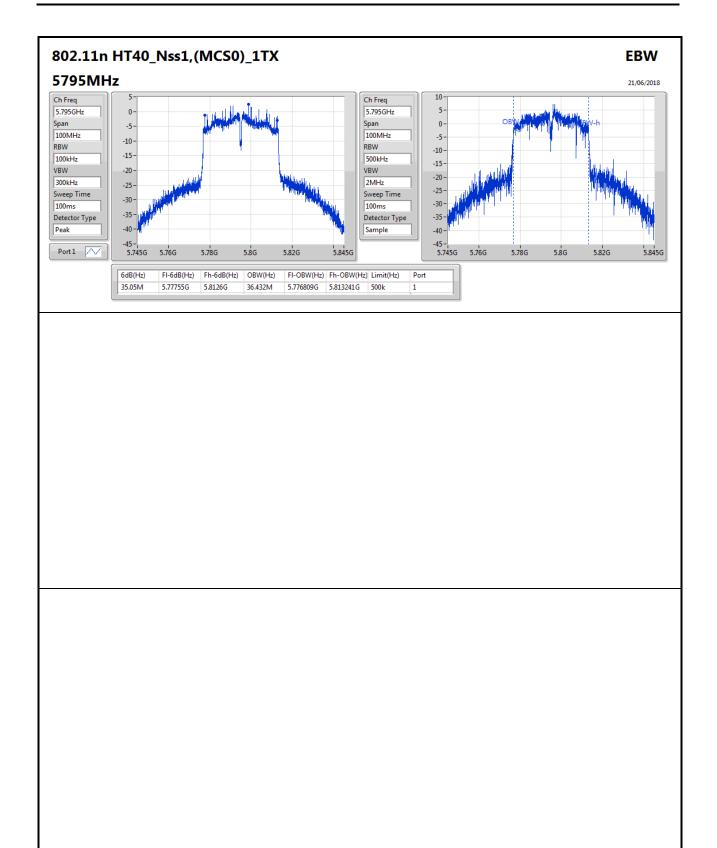






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Appendix B EBW Result





Power Result Appendix C

Summary

Mode	Total Power	Total Power	EIRP	EIRP	
	(dBm)	(W)	(dBm)	(W)	
5.15-5.25GHz	-	-	-	-	
802.11a_Nss1,(6Mbps)_1TX	17.44	0.05546	20.21	0.10495	
802.11n HT20_Nss1,(MCS0)_1TX	17.32	0.05395	20.09	0.10209	
802.11n HT40_Nss1,(MCS0)_1TX	16.36	0.04325	19.13	0.08185	
5.725-5.85GHz	-	-	-	-	
802.11a_Nss1,(6Mbps)_1TX	16.86	0.04853	19.98	0.09954	
802.11n HT20_Nss1,(MCS0)_1TX	16.55	0.04519	19.67	0.09268	
802.11n HT40_Nss1,(MCS0)_1TX	15.72	0.03733	18.84	0.07656	



Power Result Appendix C

Result

Mode	Result	DG	Port 1	Total Power	Power Limit	EIRP	EIRP Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	2.68	15.66	15.66	24.00	18.34	30.00
5200MHz_TnomVnom	Pass	2.68	17.05	17.05	24.00	19.73	30.00
5240MHz_TnomVnom	Pass	2.77	17.44	17.44	24.00	20.21	30.00
5745MHz_TnomVnom	Pass	3.12	16.86	16.86	30.00	19.98	36.00
5785MHz_TnomVnom	Pass	2.65	16.48	16.48	30.00	19.13	36.00
5825MHz_TnomVnom	Pass	1.67	16.09	16.09	30.00	17.76	36.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	2.68	15.53	15.53	24.00	18.21	30.00
5200MHz_TnomVnom	Pass	2.68	16.91	16.91	24.00	19.59	30.00
5240MHz_TnomVnom	Pass	2.77	17.32	17.32	24.00	20.09	30.00
5745MHz_TnomVnom	Pass	3.12	16.55	16.55	30.00	19.67	36.00
5785MHz_TnomVnom	Pass	2.65	16.44	16.44	30.00	19.09	36.00
5825MHz_TnomVnom	Pass	1.67	15.93	15.93	30.00	17.60	36.00
802.11n HT40_Nss1,(MCS0)_1TX	-	=	-	-	=	-	-
5190MHz_TnomVnom	Pass	2.68	13.37	13.37	24.00	16.05	30.00
5230MHz_TnomVnom	Pass	2.77	16.36	16.36	24.00	19.13	30.00
5755MHz_TnomVnom	Pass	3.12	15.72	15.72	30.00	18.84	36.00
5795MHz_TnomVnom	Pass	2.65	15.25	15.25	30.00	17.90	36.00

DG = Directional Gain;**Port X** = Port X output power

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PSD Result Appendix D

Summary

Mode	PD	EIRP PD				
	(dBm/RBW)	(dBm/RBW)				
5.15-5.25GHz	-	-				
802.11a_Nss1,(6Mbps)_1TX	6.07	8.84				
802.11n HT20_Nss1,(MCS0)_1TX	5.85	8.62				
802.11n HT40_Nss1,(MCS0)_1TX	2.28	5.05				
5.725-5.85GHz	-	-				
802.11a_Nss1,(6Mbps)_1TX	4.25	7.37				
802.11n HT20_Nss1,(MCS0)_1TX	3.61	6.73				
802.11n HT40_Nss1,(MCS0)_1TX	0.14	3.26				

RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;



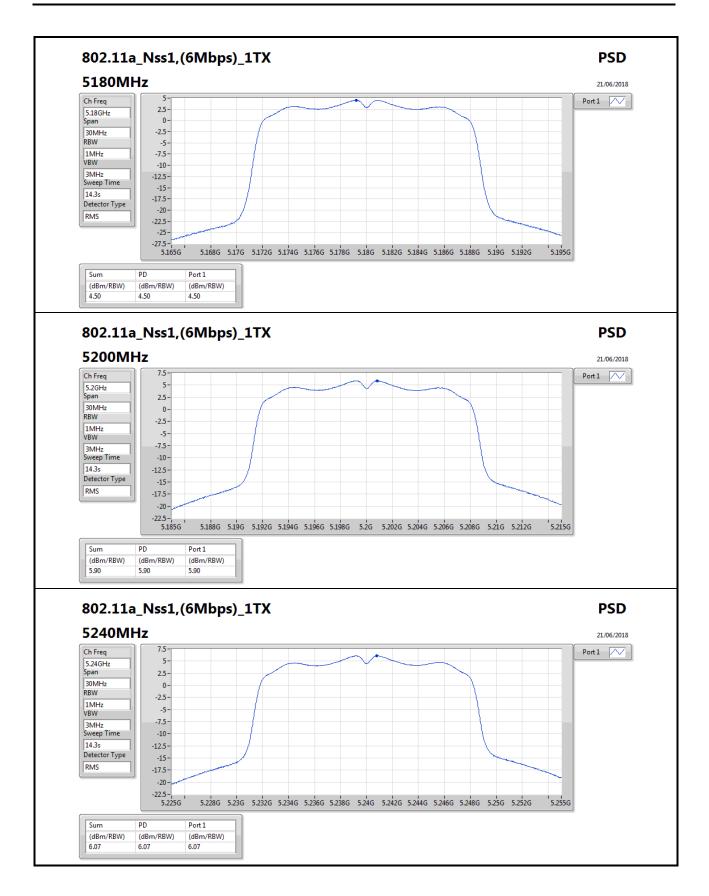
Appendix D **PSD Result**

Result

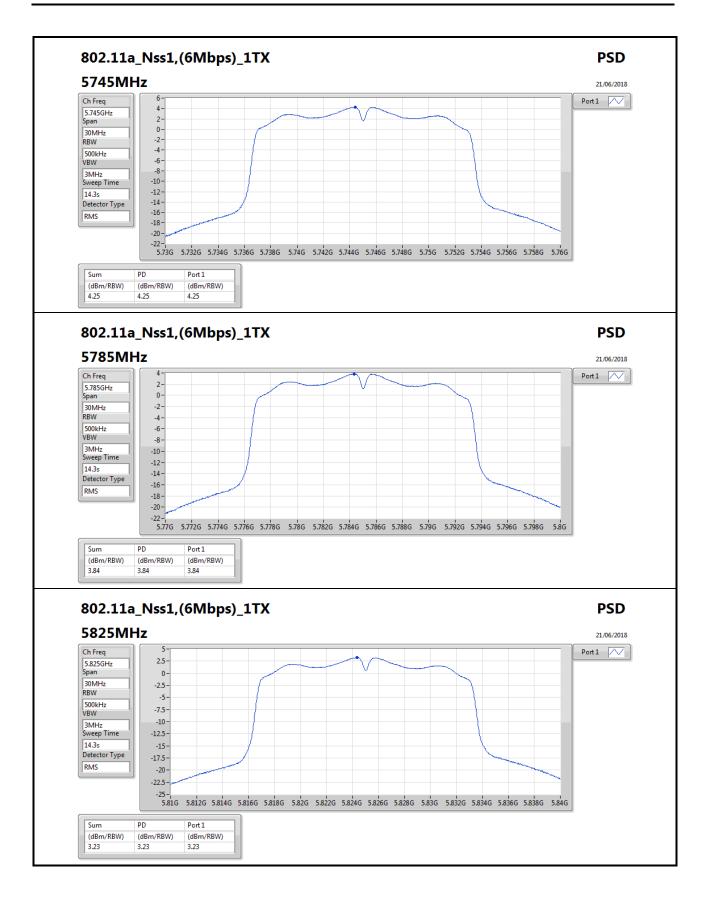
Mode	Result	DG	Port 1	PD	PD Limit	EIRP PD	EIRP PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	2.68	4.50	4.50	11.00	7.18	17.00
5200MHz_TnomVnom	Pass	2.68	5.90	5.90	11.00	8.58	17.00
5240MHz_TnomVnom	Pass	2.77	6.07	6.07	11.00	8.84	17.00
5745MHz_TnomVnom	Pass	3.12	4.25	4.25	30.00	7.37	36.00
5785MHz_TnomVnom	Pass	2.65	3.84	3.84	30.00	6.49	36.00
5825MHz_TnomVnom	Pass	1.67	3.23	3.23	30.00	4.90	36.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	2.68	4.01	4.01	11.00	6.69	17.00
5200MHz_TnomVnom	Pass	2.68	5.36	5.36	11.00	8.04	17.00
5240MHz_TnomVnom	Pass	2.77	5.85	5.85	11.00	8.62	17.00
5745MHz_TnomVnom	Pass	3.12	3.61	3.61	30.00	6.73	36.00
5785MHz_TnomVnom	Pass	2.65	3.46	3.46	30.00	6.11	36.00
5825MHz_TnomVnom	Pass	1.67	2.74	2.74	30.00	4.41	36.00
802.11n HT40_Nss1,(MCS0)_1TX	-	i	-	-	-	-	-
5190MHz_TnomVnom	Pass	2.68	-0.77	-0.77	11.00	1.91	17.00
5230MHz_TnomVnom	Pass	2.77	2.28	2.28	11.00	5.05	17.00
5755MHz_TnomVnom	Pass	3.12	0.14	0.14	30.00	3.26	36.00
5795MHz_TnomVnom	Pass	2.65	-0.45	-0.45	30.00	2.20	36.00

DG = Directional Gain; RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port Xpower density;

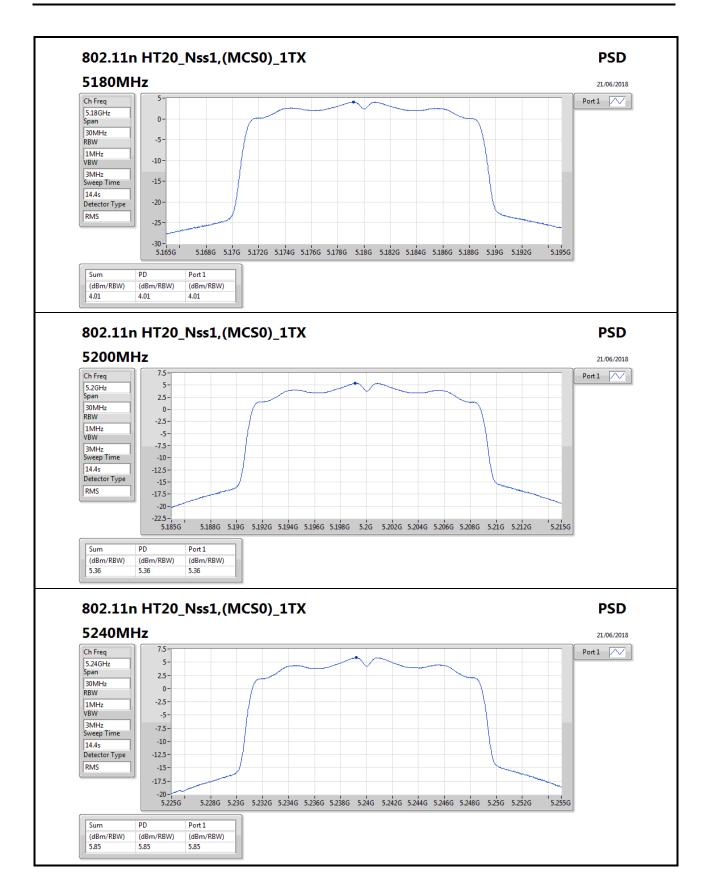




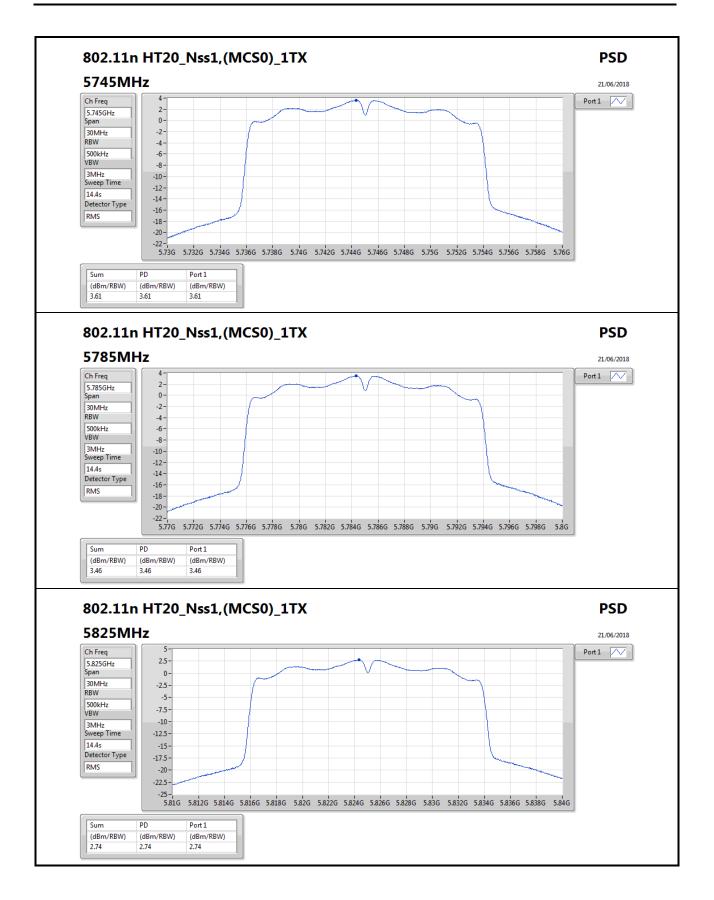




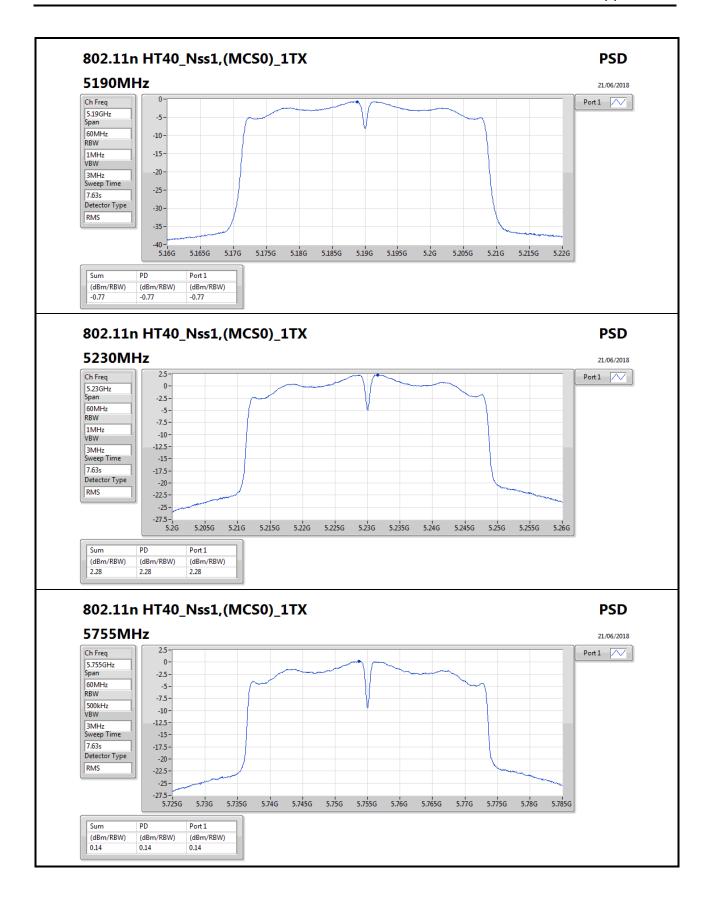




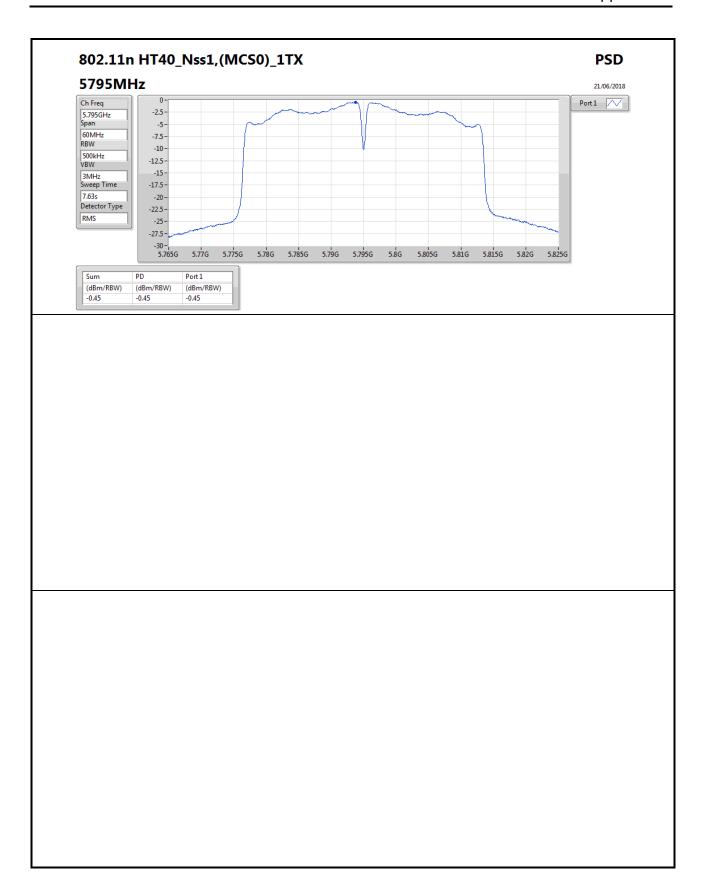








PSD Result Appendix D





RSE TX below 1GHz Result _9k~30M

Appendix E.1

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
5.725-5.85GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11n HT40_Nss1,(MCS0)_1TX	Pass	PK	749.74M	41.17	43.50	-4.83	0.95	3	Horizontal	0	1.00	-

SPORTON INTERNATIONAL INC. Page No. : E1 of E6



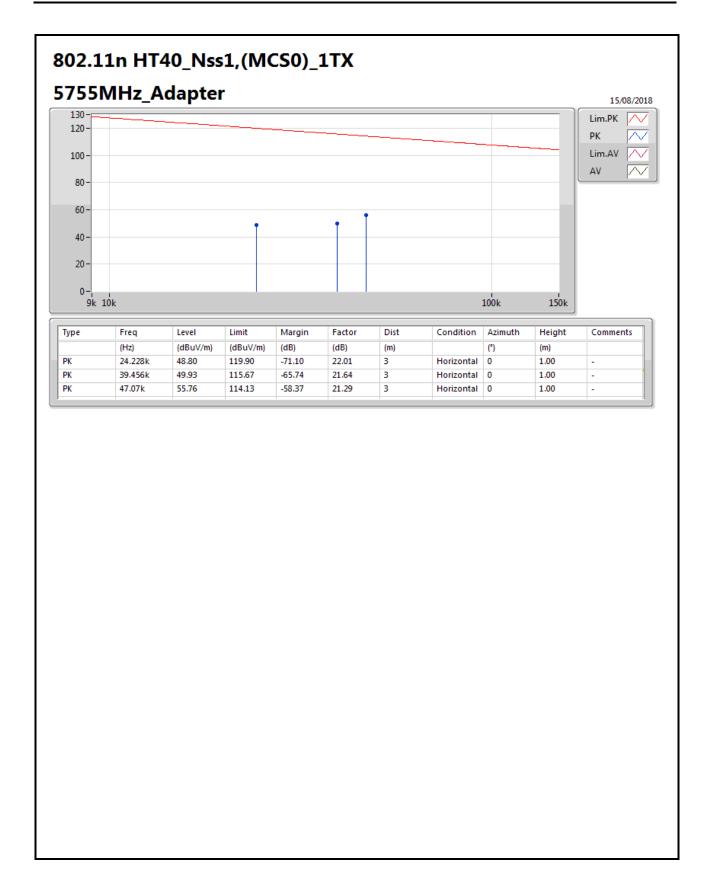
RSE TX below 1GHz Result _9k~30M

Appendix E.1

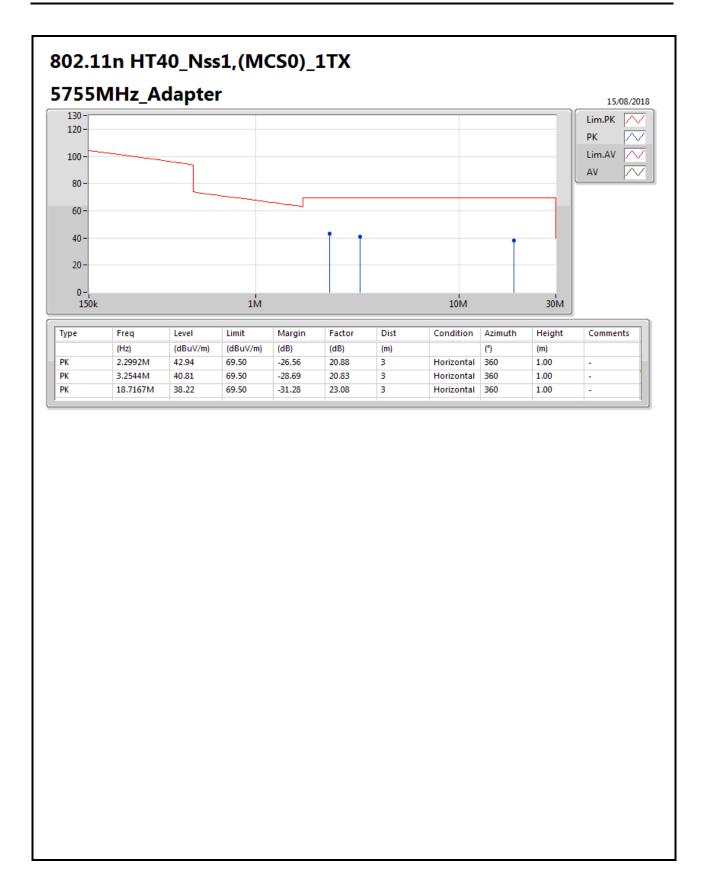
Result

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-	-	-	-	-	-
5755MHz	Pass	PK	24.228k	48.80	119.90	-71.10	22.01	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	39.456k	49.93	115.67	-65.74	21.64	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	47.07k	55.76	114.13	-58.37	21.29	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	2.2992M	42.94	69.50	-26.56	20.88	3	Horizontal	360	1.00	-
5755MHz	Pass	PK	3.2544M	40.81	69.50	-28.69	20.83	3	Horizontal	360	1.00	-
5755MHz	Pass	PK	18.7167M	38.22	69.50	-31.28	23.08	3	Horizontal	360	1.00	-
5755MHz	Pass	PK	90.14M	31.75	43.50	-11.75	-12.35	3	Vertical	0	1.00	-
5755MHz	Pass	PK	119.24M	29.49	43.50	-14.01	-8.80	3	Vertical	0	1.00	-
5755MHz	Pass	PK	270.56M	39.79	46.00	-6.21	-6.37	3	Vertical	0	1.00	-
5755MHz	Pass	PK	522.76M	35.56	46.00	-10.44	-2.27	3	Vertical	0	1.00	-
5755MHz	Pass	PK	749.74M	34.60	46.00	-11.40	0.95	3	Vertical	0	1.00	-
5755MHz	Pass	PK	850.62M	34.63	46.00	-11.37	2.00	3	Vertical	0	1.00	-
5755MHz	Pass	PK	31.94M	24.51	40.00	-15.49	-5.36	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	121.18M	27.54	43.50	-15.96	-8.80	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	650.8M	35.51	46.00	-10.49	-0.42	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	749.74M	41.17	43.50	-4.83	0.95	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	850.62M	39.66	46.00	-6.34	2.00	3	Horizontal	0	1.00	-
5755MHz	Pass	QP	274.44M	36.28	46.00	-9.72	-6.33	3	Horizontal	138	1.00	-

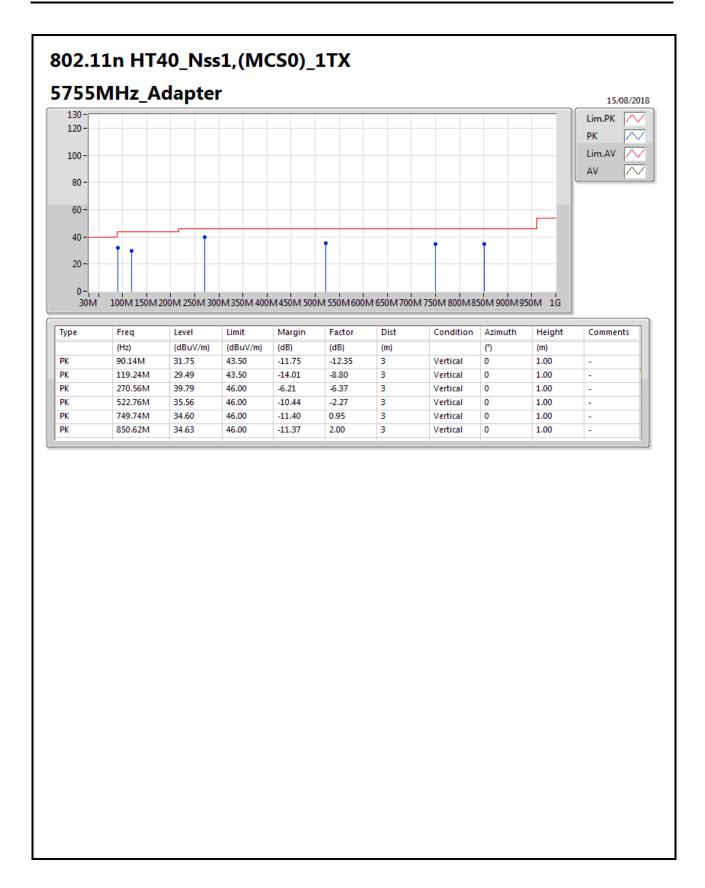




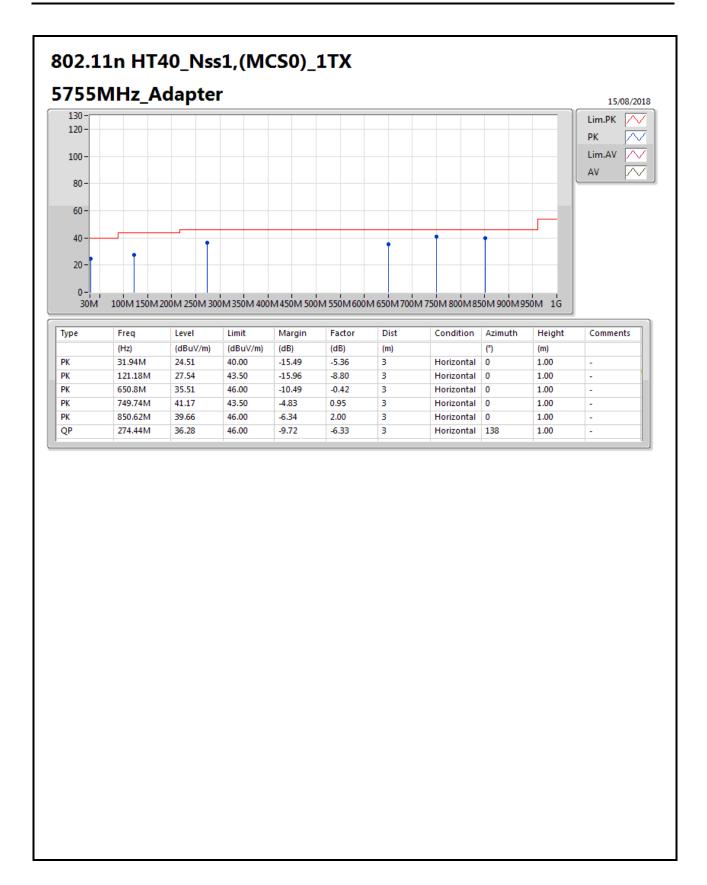














RSE TX below 1GHz Result_30M~1G

Appendix E.2

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
5.725-5.85GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11n HT40_Nss1,(MCS0)_1TX	Pass	PK	749.74M	41.17	43.50	-4.83	0.95	3	Horizontal	0	1.00	-

SPORTON INTERNATIONAL INC. Page No. : E1 of E4



RSE TX below 1GHz Result_30M~1G

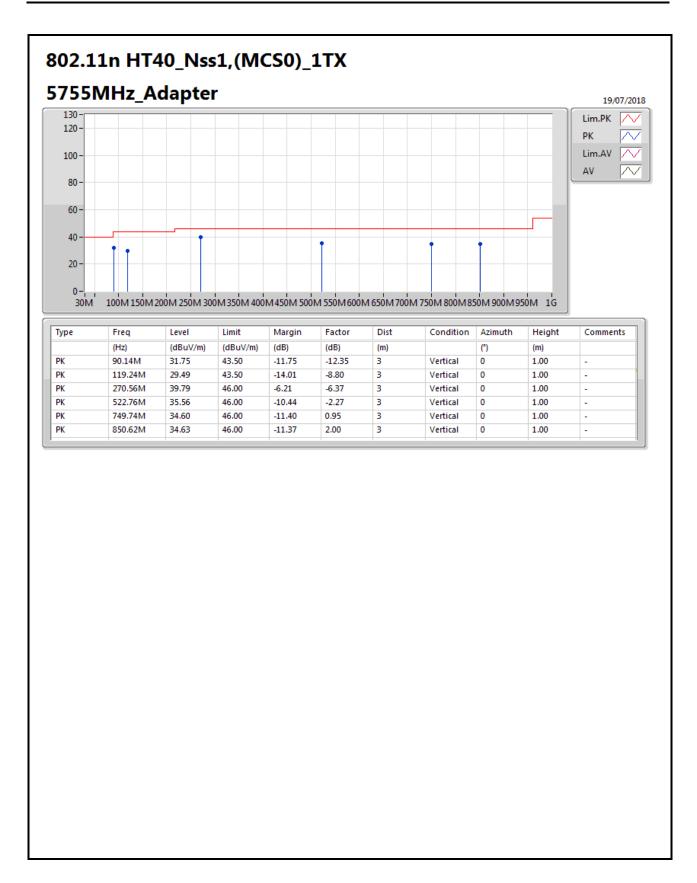
Appendix E.2

Result

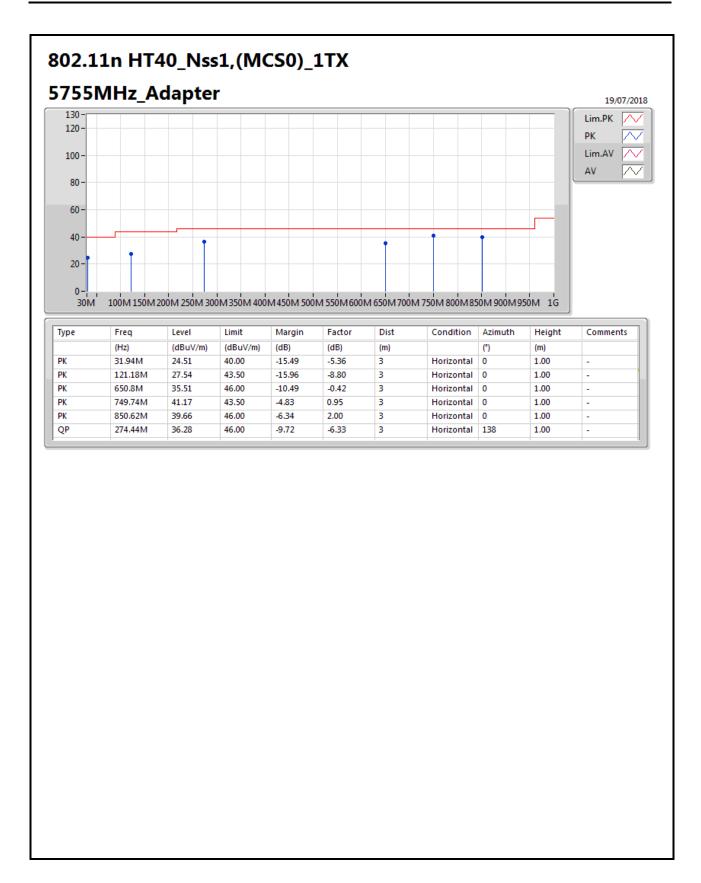
Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-	-	-	-	-	-
5755MHz	Pass	PK	90.14M	31.75	43.50	-11.75	-12.35	3	Vertical	0	1.00	-
5755MHz	Pass	PK	119.24M	29.49	43.50	-14.01	-8.80	3	Vertical	0	1.00	-
5755MHz	Pass	PK	270.56M	39.79	46.00	-6.21	-6.37	3	Vertical	0	1.00	-
5755MHz	Pass	PK	522.76M	35.56	46.00	-10.44	-2.27	3	Vertical	0	1.00	-
5755MHz	Pass	PK	749.74M	34.60	46.00	-11.40	0.95	3	Vertical	0	1.00	-
5755MHz	Pass	PK	850.62M	34.63	46.00	-11.37	2.00	3	Vertical	0	1.00	-
5755MHz	Pass	PK	31.94M	24.51	40.00	-15.49	-5.36	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	121.18M	27.54	43.50	-15.96	-8.80	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	650.8M	35.51	46.00	-10.49	-0.42	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	749.74M	41.17	43.50	-4.83	0.95	3	Horizontal	0	1.00	-
5755MHz	Pass	PK	850.62M	39.66	46.00	-6.34	2.00	3	Horizontal	0	1.00	-
5755MHz	Pass	QP	274.44M	36.28	46.00	-9.72	-6.33	3	Horizontal	138	1.00	-

SPORTON INTERNATIONAL INC. Page No. : E2 of E4











Appendix E.3

Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
5.725-5.85GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	Pass	AV	11.64826G	45.62	54.00	-8.38	14.87	3	Vertical	2	3.17	-
802.11n HT20_Nss1,(MCS0)_1TX	Pass	AV	11.49276G	45.81	54.00	-8.19	15.05	3	Vertical	356	3.14	-
802.11n HT40_Nss1,(MCS0)_1TX	Pass	PK	5.9306G	59.67	68.20	-8.53	4.99	3	Horizontal	356	2.13	-

SPORTON INTERNATIONAL INC. Page No. : E1 of E36



Result

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Commen
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-
5745MHz	Pass	AV	5.7438G	99.17	Inf	-Inf	4.70	3	Vertical	31	2.53	-
5745MHz	Pass	PK	5.5386G	58.72	68.20	-9.48	4.38	3	Vertical	31	2.53	-
5745MHz	Pass	PK	5.7462G	106.97	Inf	-Inf	4.70	3	Vertical	31	2.53	-
5745MHz	Pass	PK	5.9898G	58.53	68.20	-9.67	5.09	3	Vertical	31	2.53	-
5745MHz	Pass	AV	5.7462G	100.45	Inf	-Inf	4.70	3	Horizontal	10	2.26	-
5745MHz	Pass	PK	5.649G	59.52	68.20	-8.68	4.55	3	Horizontal	10	2.26	-
5745MHz	Pass	PK	5.745G	108.34	Inf	-Inf	4.70	3	Horizontal	10	2.26	-
5745MHz	Pass	PK	5.9274G	58.76	68.20	-9.44	4.99	3	Horizontal	10	2.26	-
5745MHz	Pass	AV	11.49018G	45.52	54.00	-8.48	15.05	3	Vertical	218	1.96	-
5745MHz	Pass	PK	11.49156G	57.04	74.00	-16.96	15.05	3	Vertical	218	1.96	-
5745MHz	Pass	AV	11.49144G	45.33	54.00	-8.67	15.05	3	Horizontal	149	1.50	-
5745MHz	Pass	PK	11.47722G	57.56	74.00	-16.44	15.07	3	Horizontal	149	1.50	-
5785MHz	Pass	AV	5.7838G	98.74	Inf	-Inf	4.76	3	Vertical	30	2.49	-
5785MHz	Pass	PK	5.5114G	58.80	68.20	-9.40	4.34	3	Vertical	30	2.49	-
5785MHz	Pass	PK	5.7862G	106.90	Inf	-Inf	4.77	3	Vertical	30	2.49	_
5785MHz	Pass	PK	5.965G	58.50	68.20	-9.70	5.05	3	Vertical	30	2.49	_
5785MHz	Pass	AV	5.7838G	99.32	Inf	-Inf	4.76	3	Horizontal	9	1.49	-
5785MHz	Pass	PK	5.6134G	59.00	68.20	-9.20	4.50	3	Horizontal	9	1.49	<u> </u>
5785MHz	Pass	PK	5.7838G	107.23	Inf	-Inf	4.76	3	Horizontal	9	1.49	
5785MHz	Pass	PK	5.947G	59.03	68.20	-9.17	5.03	3	Horizontal	9	1.49	
	-	AV						3				-
5785MHz	Pass		11.58476G	44.86	54.00	-9.14	14.94		Vertical	57	1.78	-
5785MHz	Pass	PK	11.55776G	56.33	74.00	-17.67	14.97	3	Vertical	57	1.78	-
5785MHz	Pass	AV	11.582G	45.10	54.00	-8.90	14.94	3	Horizontal	151	1.32	-
5785MHz	Pass	PK	11.57384G	57.71	74.00	-16.29	14.95	3	Horizontal	151	1.32	-
5825MHz	Pass	AV	5.8238G	97.66	Inf	-Inf	4.83	3	Vertical	27	2.47	-
5825MHz	Pass	PK	5.6174G	58.93	68.20	-9.27	4.49	3	Vertical	27	2.47	-
5825MHz	Pass	PK	5.8238G	106.04	Inf	-Inf	4.83	3	Vertical	27	2.47	-
5825MHz	Pass	PK	5.969G	58.75	68.20	-9.45	5.06	3	Vertical	27	2.47	-
5825MHz	Pass	AV	5.8238G	99.39	Inf	-Inf	4.83	3	Horizontal	141	1.01	-
5825MHz	Pass	PK	5.6474G	59.29	68.20	-8.91	4.55	3	Horizontal	141	1.01	-
5825MHz	Pass	PK	5.8238G	107.33	Inf	-Inf	4.83	3	Horizontal	141	1.01	-
5825MHz	Pass	PK	5.9438G	58.79	68.20	-9.41	5.02	3	Horizontal	141	1.01	-
5825MHz	Pass	AV	11.64826G	45.62	54.00	-8.38	14.87	3	Vertical	2	3.17	-
5825MHz	Pass	PK	11.64634G	57.32	74.00	-16.68	14.87	3	Vertical	2	3.17	-
5825MHz	Pass	AV	11.64598G	45.42	54.00	-8.58	14.87	3	Horizontal	172	1.50	-
5825MHz	Pass	PK	11.65006G	57.24	74.00	-16.76	14.87	3	Horizontal	172	1.50	-
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-	-	-	-	-	-
5745MHz	Pass	AV	5.7462G	97.84	Inf	-Inf	4.70	3	Vertical	21	2.16	-
5745MHz	Pass	PK	5.625G	58.51	68.20	-9.69	4.51	3	Vertical	21	2.16	-
5745MHz	Pass	PK	5.7474G	106.26	Inf	-Inf	4.71	3	Vertical	21	2.16	-
5745MHz	Pass	PK	5.9274G	58.74	68.20	-9.46	4.99	3	Vertical	21	2.16	-
5745MHz	Pass	AV	5.7462G	101.20	Inf	-Inf	4.70	3	Horizontal	353	2.35	-
5745MHz	Pass	PK	5.643G	58.73	68.20	-9.47	4.54	3	Horizontal	353	2.35	-
5745MHz	Pass	PK	5.745G	109.35	Inf	-Inf	4.70	3	Horizontal	353	2.35	-
5745MHz	Pass	PK	5.955G	59.08	68.20	-9.12	5.03	3	Horizontal	353	2.35	-
5745MHz	Pass	AV	11.49276G	45.81	54.00	-8.19	15.05	3	Vertical	356	3.14	-
5745MHz	Pass	PK	11.48322G	57.46	74.00	-16.54	15.06	3	Vertical	356	3.14	_



Appendix E.3

Γ	1	1	1	1	1		1	1			1	
Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
5745MHz	Pass	AV	11.48742G	45.23	54.00	-8.77	15.05	3	Horizontal	148	2.07	-
5745MHz	Pass	PK	11.50254G	56.60	74.00	-17.40	15.04	3	Horizontal	148	2.07	-
5785MHz	Pass	AV	5.7862G	97.79	Inf	-Inf	4.77	3	Vertical	30	2.36	-
5785MHz	Pass	PK	5.5618G	59.31	68.20	-8.89	4.41	3	Vertical	30	2.36	-
5785MHz	Pass	PK	5.7862G	105.83	Inf	-Inf	4.77	3	Vertical	30	2.36	-
5785MHz	Pass	PK	5.953G	59.33	68.20	-8.87	5.02	3	Vertical	30	2.36	-
5785MHz	Pass	AV	5.7862G	100.71	Inf	-Inf	4.77	3	Horizontal	354	2.18	-
5785MHz	Pass	PK	5.6482G	58.94	68.20	-9.26	4.55	3	Horizontal	354	2.18	-
5785MHz	Pass	PK	5.7862G	108.81	Inf	-Inf	4.77	3	Horizontal	354	2.18	-
5785MHz	Pass	PK	5.9482G	58.55	68.20	-9.65	5.03	3	Horizontal	354	2.18	-
5785MHz	Pass	AV	11.57858G	45.08	54.00	-8.92	14.95	3	Vertical	14	3.03	-
5785MHz	Pass	PK	11.57324G	56.75	74.00	-17.25	14.96	3	Vertical	14	3.03	-
5785MHz	Pass	AV	11.57606G	45.07	54.00	-8.93	14.95	3	Horizontal	150	2.10	-
5785MHz	Pass	PK	11.58014G	57.01	74.00	-16.99	14.95	3	Horizontal	150	2.10	-
5825MHz	Pass	AV	5.8238G	97.47	Inf	-Inf	4.83	3	Vertical	29	2.08	-
5825MHz	Pass	PK	5.5442G	58.59	68.20	-9.61	4.39	3	Vertical	29	2.08	-
5825MHz	Pass	PK	5.8238G	105.41	Inf	-Inf	4.83	3	Vertical	29	2.08	-
5825MHz	Pass	PK	5.9354G	58.40	68.20	-9.80	5.00	3	Vertical	29	2.08	-
5825MHz	Pass	AV	5.8238G	97.96	Inf	-Inf	4.83	3	Horizontal	1	1.50	-
5825MHz	Pass	PK	5.585G	59.37	68.20	-8.83	4.44	3	Horizontal	1	1.50	-
5825MHz	Pass	PK	5.825G	105.64	Inf	-Inf	4.83	3	Horizontal	1	1.50	-
5825MHz	Pass	PK	5.9438G	59.77	68.20	-8.43	5.02	3	Horizontal	1	1.50	-
5825MHz	Pass	AV	11.66488G	45.18	54.00	-8.82	14.85	3	Vertical	38	2.23	-
5825MHz	Pass	PK	11.66494G	57.34	74.00	-16.66	14.85	3	Vertical	38	2.23	-
5825MHz	Pass	AV	11.66044G	45.03	54.00	-8.97	14.85	3	Horizontal	278	1.50	_
5825MHz	Pass	PK	11.65594G	56.97	74.00	-17.03	14.86	3	Horizontal	278	1.50	-
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-	-	-17.03	-	-	-	-	1.00	
5755MHz	Pass	AV	5.7562G	95.04	Inf	-Inf	4.72	3	Vertical	32	2.38	
5755MHz	Pass	PK	5.6314G	58.88	68.20	-9.32	4.72	3	Vertical	32	2.38	
		PK										-
5755MHz	Pass		5.7562G	103.41	Inf	-Inf	4.72	3	Vertical	32	2.38	-
5755MHz	Pass	PK	5.9866G	58.48	68.20	-9.72	5.07	3	Vertical	32	2.38	-
5755MHz	Pass	AV	5.7538G	96.83	Inf	-Inf	4.72	3	Horizontal	4	1.82	-
5755MHz	Pass	PK	5.6386G	58.90	68.20	-9.30	4.53	3	Horizontal	4	1.82	-
5755MHz	Pass	PK	5.7538G	104.28	Inf	-Inf	4.72	3	Horizontal	4	1.82	-
5755MHz	Pass	PK	5.9446G	58.67	68.20	-9.53	5.02	3	Horizontal	4	1.82	-
5755MHz	Pass	AV	11.49872G	44.53	54.00	-9.47	15.04	3	Vertical	133	1.52	-
5755MHz	Pass	PK	11.49518G	56.83	74.00	-17.17	15.05	3	Vertical	133	1.52	-
5755MHz	Pass	AV	11.50154G	44.48	54.00	-9.52	15.04	3	Horizontal	302	2.07	-
5755MHz	Pass	PK	11.50238G	56.38	74.00	-17.62	15.04	3	Horizontal	302	2.07	-
5795MHz	Pass	AV	5.7938G	94.22	Inf	-Inf	4.78	3	Vertical	29	2.49	-
5795MHz	Pass	PK	5.5526G	58.21	68.20	-9.99	4.39	3	Vertical	29	2.49	-
5795MHz	Pass	PK	5.7902G	101.60	Inf	-Inf	4.77	3	Vertical	29	2.49	-
5795MHz	Pass	PK	5.963G	58.24	68.20	-9.96	5.05	3	Vertical	29	2.49	-
5795MHz	Pass	AV	5.7938G	97.13	Inf	-Inf	4.78	3	Horizontal	356	2.13	-
5795MHz	Pass	PK	5.633G	58.98	68.20	-9.22	4.53	3	Horizontal	356	2.13	-
5795MHz	Pass	PK	5.7974G	105.18	Inf	-Inf	4.79	3	Horizontal	356	2.13	-
5795MHz	Pass	PK	5.9306G	59.67	68.20	-8.53	4.99	3	Horizontal	356	2.13	-
5795MHz	Pass	AV	11.60008G	44.64	54.00	-9.36	14.92	3	Vertical	130	1.49	-
5795MHz	Pass	PK	11.59732G	56.72	74.00	-17.28	14.93	3	Vertical	130	1.49	-

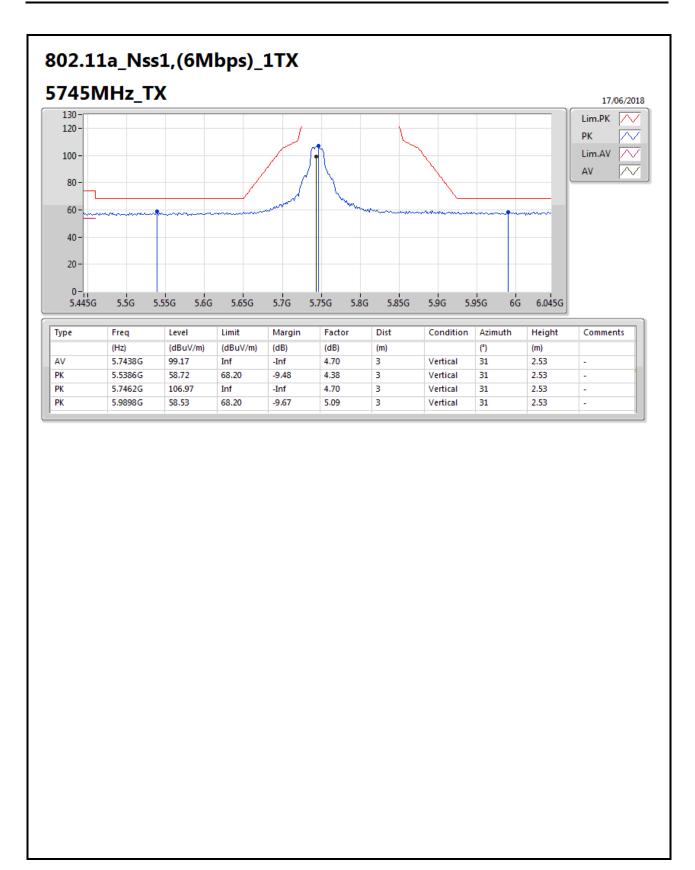


Appendix E.3

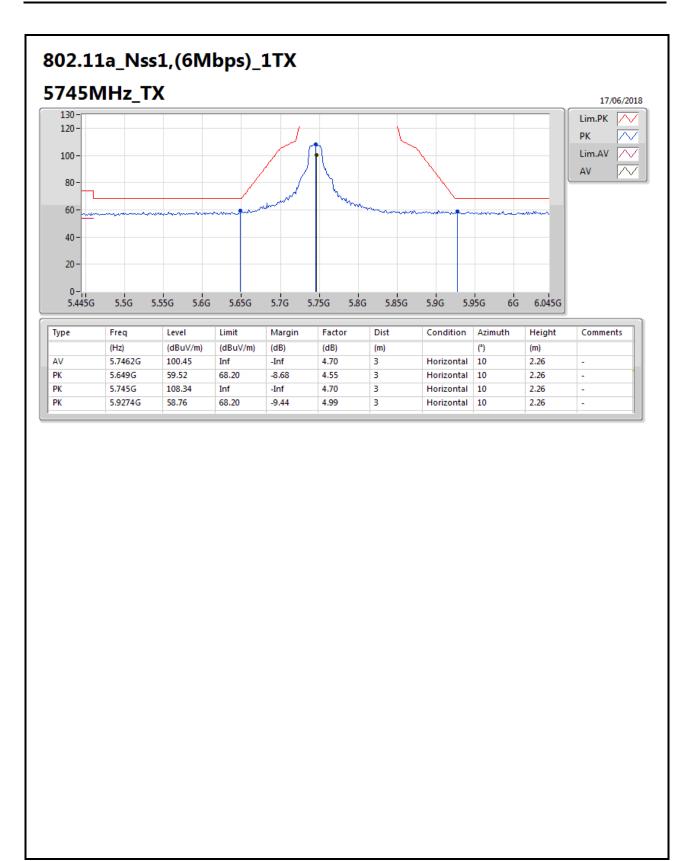
Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
5795MHz	Pass	AV	11.59804G	44.71	54.00	-9.29	14.93	3	Horizontal	300	2.08	-
5795MHz	Pass	PK	11.60092G	56.94	74.00	-17.06	14.92	3	Horizontal	300	2.08	-

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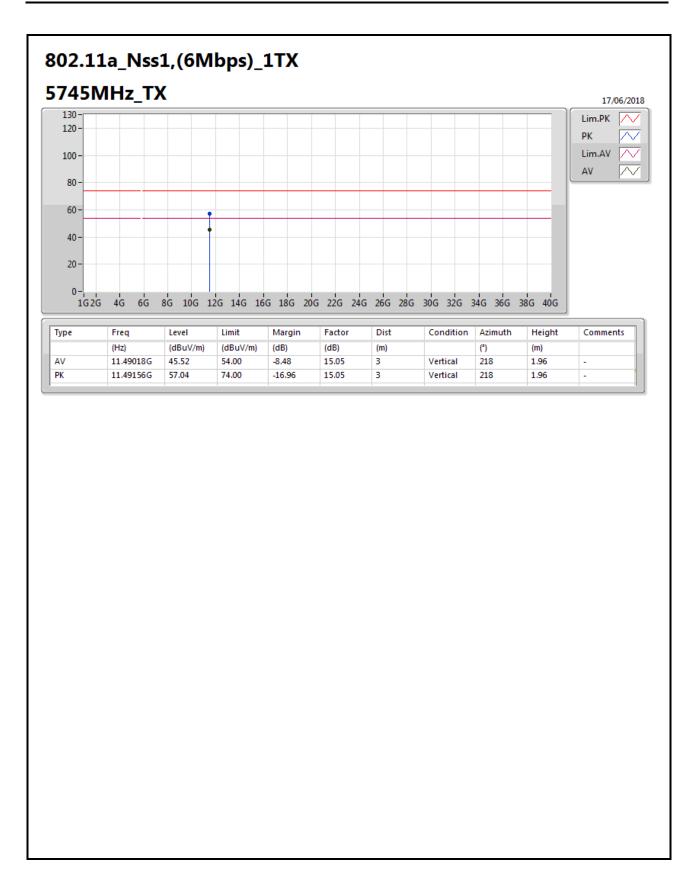












802.11a_Nss1,(6Mbps)_1TX 5745MHz_TX 17/06/2018 130 Lim.PK 120- $\overline{}$ PK Lim.AV 100 A۷ 80 60 -40 -20 -8G 10G 12G 14G 16G 18G 20G 22G 24G 26G 28G 30G 32G 34G 36G 38G 40G Type Freq Limit Margin Factor Dist Condition Azimuth Comments (Hz) (dBuV/m) (dBuV/m) (dB) (m) (m) 1.50 ΑV 11.49144G 45.33 54.00 -8.67 15.05 3 Horizontal 149 PK 11.47722G 57.56 74.00 15.07 3 1.50 -16.44 Horizontal 149



