

FCC Test Report

Equipment : Wireless 802.11 ac/a/b/g/n Access Point

Brand Name : Senao Networks

Model No. : CAP7252AG, CAP7253AG

FCC ID : U2M-CAP7252AG

Standard : 47 CFR FCC Part 15.407

Operating Band : 5150 MHz - 5250 MHz

FCC Classification: NII

Applicant : Senao Networks, Inc.

3F, No. 529, Chung Cheng Rd., Hsintien, Taipei, Taiwan,

R.O.C

The product sample received on Apr. 16, 2014 and completely tested on Aug. 27, 2014. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.

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

Reviewed by:

≨ames Fan / Assistant Manager





SPORTON INTERNATIONAL INC. Page No. : 1 of 85
TEL: 886-3-3273456 Report Version : Rev. 01



FCC Test Report

Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information	5
1.2	Accessories and Support Equipment	7
1.3	Testing Applied Standards	8
1.4	Testing Location Information	8
1.5	Measurement Uncertainty	9
2	TEST CONFIGURATION OF EUT	10
2.1	The Worst Case Modulation Configuration	10
2.2	The Worst Case Power Setting Parameter	10
2.3	The Worst Case Measurement Configuration	11
2.4	Test Setup Diagram	13
3	TRANSMITTER TEST RESULT	14
3.1	AC Power-line Conducted Emissions	14
3.2	Emission Bandwidth	23
3.3	RF Output Power	26
3.4	Peak Power Spectral Density	30
3.5	Transmitter Radiated Unwanted Emissions and Band Edge	34
3.6	Frequency Stability	81
4	TEST EQUIPMENT AND CALIBRATION DATA	84
APPE	ENDIX A. TEST PHOTOS	A1-A12

Report No.: FR441605ANB1



Summary of Test Result

Report No.: FR441605ANB1

	Conformance Test Specifications							
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result			
1.1.3	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied			
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 0.374MHz 46.93 (Margin 1.47dB) - AV 52.37 (Margin 6.03dB) - QP	FCC 15.207	Complied			
3.2	15.407(a)	Emission Bandwidth	Bandwidth [MHz] 20M: 31.01 / 40M: 48.23 80M: 93.22	Information only	Complied			
3.3	15.407(a)	RF Output Power (Maximum Conducted (Average) Output Power)	Power [dBm] 5150-5250MHz: 28.15	Power [dBm] 5150-5250MHz: 30	Complied			
3.4	15.407(a)	Peak Power Spectral Density	PPSD [dBm/MHz] 5150-5250MHz: 15.76	PPSD [dBm/MHz] 5150-5250MHz: 17	Complied			
3.5	15.407(b)	Transmitter Unwanted Emissions and Band Edge	Restricted Bands [dBuV/m at 3m]: 5150.00MHz 73.00 (Margin 1.00dB) - PK	Non-Restricted Bands: ≤ -27dBm (68.3dBuV/m@3m) Restricted Bands: FCC 15.209	Complied			
3.6	15.407(g)	Frequency Stability	7.0481 ppm	Signal shall remain in-band	Complied			

SPORTON INTERNATIONAL INC. : 3 of 85
TEL: 886-3-3273456 : Report Version : Rev. 01



Revision History

Report No.	Version	Description	Issued Date
FR441605ANB1	Rev. 01	Initial issue of report	Oct. 03, 2014

SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No.

: 4 of 85

Report Version

: Rev. 01

Report No.: FR441605ANB1



1 General Description

1.1 Information

1.1.1 Feature of Equipment under Test

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
Senao Networks	CAP7252AG	Wireless 802.11 ac/a/b/g/n Access Point	Internal PIFA antenna
	CAP7253AG		External Dipole antenna

Report No.: FR441605ANB1

1.1.2 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	
Internal anten	na						
5150-5250	а	5180-5240	36-48 [4]	2	27.14	Yes	
5150-5250	n(HT20)	5180-5240	36-48 [4]	2	27.51	Yes	
5150-5250	n(HT40)	5190-5230	38-46 [2]	2	23.67	Yes	
5150-5250	ac(VHT20)	5180-5240	36-48 [4]	2	27.58	Yes	
5150-5250	ac(VHT40)	5190-5230	38-46 [2]	2	23.79	Yes	
5150-5250	ac(VHT80)	5210	42 [1]	2	14.30	Yes	
External anter	nna						
5150-5250	а	5180-5240	36-48 [4]	2	28.15	Yes	
5150-5250	n(HT20)	5180-5240	36-48 [4]	2	27.68	Yes	
5150-5250	n(HT40)	5190-5230	38-46 [2]	2	25.10	Yes	
5150-5250	ac(VHT20)	5180-5240	36-48 [4]	2	27.77	Yes	
5150-5250	ac(VHT40)	5190-5230	38-46 [2]	2	25.22	Yes	
5150-5250	ac(VHT80)	5210	42 [1]	2	15.98	Yes	

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

SPORTON INTERNATIONAL INC. Page No. : 5 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

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.)

1.1.3 Antenna Information

		Antenna Category					
\boxtimes	Inte	gral antenna (antenna permanently attached)					
	\boxtimes	Temporary RF connector provided					
		No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.					
\boxtimes	Exte	xternal antenna (dedicated antennas)					
		Single power level with corresponding antenna(s).					
		Multiple power level and corresponding antenna(s).					
	RF connector provided						
		☐ Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type)					
		Standard antenna connector. (e.g., SMA, N, BNC, and TNC type)					

	Antenna General Information						
No.	Model	Туре	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)			
				2400~2483.5	5150~5250	5725~5850	
1	5718A0075300	PIFA	I-Pex	3.52			
2	5718A0074300	PIFA	I-Pex	3.16			
3	5718A0077300	PIFA	I-Pex		5.40	5.23	
4	5718A0076300	PIFA	I-Pex		4.08	5.68	
5	7102A0300000	Dipole	R SMA	4.42			
6	7102A0300000	Dipole	R SMA	4.42			
7	7102A0301000	Dipole	R SMA		3.18	2.95	
8	7102A0301000	Dipole	R SMA		3.18	2.95	

1.1.4 Type of EUT

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

SPORTON INTERNATIONAL INC.
TEL: 886-3-3273456

FAX: 886-3-3270973

Page No. : 6 of 85

Report Version : Rev. 01

Report No.: FR441605ANB1

1.1.5 Test Signal Duty Cycle

	Operated Mode for Worst Duty Cycle					
	Operated normally mode for worst duty cycle					
\boxtimes	Operated test mode for worst duty cycle					
	Test Signal Duty Cycle (x) Power Duty Factor [dB] – (10 log 1/x)					
\boxtimes	98.26% - IEEE 802.11a	0.08				
\boxtimes	98.15% - IEEE 802.11ac (VHT20)	0.08				
\boxtimes	94.93% - IEEE 802.11ac (VHT40)	0.23				
\boxtimes	88.46% - IEEE 802.11ac (VHT80)	0.53				

Report No.: FR441605ANB1

1.1.6 EUT Operational Condition

Supply Voltage 12Vdc from adapter, 48Vdc from POE				
Test Voltage				
Test Climatic	☐ Tnom (20°C)		☐ Tmin (-30°C)	

1.2 Accessories and Support Equipment

	Accessories					
No.	Equipment	Description				
Brand: Powertron Electronics Corp. Model: PA1015-2I I/P: 100-240Vac, 50-60Hz, 0.4A O/P: 12Vdc, 1.25A, 15W Power line: 1.2m non-shielded with one core						
2	Power Supply Type 2 With POE injector (Model: NPE-5818) **Support unit only	Brand: Powertron Electronics Corp. Model: PA1040-480IB080 I/P: 100-240Vac, 50-60Hz, 1.5A O/P: 48Vdc, 0.8A, 38.4W max Power line: 1.5m non-shielded with one core				

	Support Equipment							
No.	No. Equipment Brand Name Model Name FCC ID							
1	Notebook	DELL	E6440	DoC				
2	POE	Ruckus	NPE-5818					

SPORTON INTERNATIONAL INC. Page No. : 7 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

1.3 Testing Applied Standards

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

Report No.: FR441605ANB1

- 47 CFR FCC Part 15
- ANSI C63.10-2009
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v01
- FCC KDB 644545 D03 Guidance for IEEE 802 11ac New Rule v01
- FCC KDB 662911 v02r01

1.4 Testing Location Information

	Testing Location										
\boxtimes	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	:	886-3-327-345	6 FAX : 886	6-3-327-0973					
\boxtimes	ICC Lab	ICC Lab ADD : No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.									
	TEL: 886-3-271-8640 FAX: 886-3-327-0973										
Te	est Condition	n	Т	est Site No.	Test Engineer	Test Environment	Test Date				
R	RF Conducte	d		TH01-HY	Mark Liao	23°C / 64%	Aug. 27, 2014				
А	C Conductio	n		*CO01-WS	Skys Huang	22°C / 63%	Jul. 24, 2014				
Rad	Radiated Emission *03CH01-WS Anderson Hung 20-23°C / 65-68% Jun. 10 ~ Jul. 17, 2014										
	Test site registered number [657002] with FCC Test site registered number [10807A-1] with IC										

Note: * Sporton Lab subcontracts this test item to ICC lab (TAF:2732).

ICC lab is a TAF accreditation test firm and also is an approved provider of Sporton Lab.

SPORTON INTERNATIONAL INC. : 8 of 85 TEL: 886-3-3273456 : Report Version : Rev. 01

Measurement Uncertainty



1.5

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)

Report No.: FR441605ANB1

Measurement Uncertainty							
Test Item		Uncertainty	Limit				
AC power-line conducted emissions		±2.92 dB	N/A				
Emission bandwidth	±1.42 %	N/A					
RF output power, conducted	±0.63 dB	N/A					
Power density, conducted		±0.81 dB	N/A				
All emissions, radiated	30 – 1000 MHz	±3.26 dB	N/A				
	Above 1 GHz	±4.94 dB	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				

SPORTON INTERNATIONAL INC. Page No. : 9 of 85
TEL: 886-3-3273456 Report Version : Rev. 01



2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing (5150-5250MHz)									
Modulation Mode	Transmit Chains (N _{TX})	Data Rate / MCS	Worst Data Rate / MCS						
11a	2	6-54Mbps	6 Mbps						
HT20	2	MCS 0-15	MCS 0						
HT40	2	MCS 0-15	MCS 0						
VHT20	2	MCS 0-8	MCS 0						
VHT40	2	MCS 0-9	MCS 0						
VHT80	2	MCS 0-9	MCS 0						

2.2 The Worst Case Power Setting Parameter

The	e Worst	Case Pow	er Setting F	Parameter (5150-5250M	Hz band)					
Test Software	ART2	-GUI, Versi	on: 4_9_575	5_5_CS_U3							
Internal antenna	•										
	Test Frequency (MHz)										
Modulation Mode	N _{TX}		NCB: 20MH	z	NCB:	40MHz	NCB: 80MHz				
		5180	5200	5240	5190	5230	5210				
11a,6-54Mbps	2	18	22	22.5							
HT20,M0-15	2	17.5	22	23							
HT40,M0-15	2				13	20					
VHT20,M0-8	2	17.5	22	23							
VHT40,M0-9	2				13	20					
VHT80,M0-9	2						10.5				
External antenna							•				
				Test Fre	quency (Mi	łz)					
Modulation Mode	N _{TX}		NCB: 20MH	z	NCB:	40MHz	NCB: 80MHz				
		5180	5200	5240	5190	5230	5210				
11a,6-54Mbps	2	18	23	23							
HT20,M0-15	2	18	22.5	21							
HT40,M0-15	2				13.5	21.5					
VHT20,M0-8	2	18	22.5	21							
VHT40,M0-9	2				13.5	21.5					
VHT80,M0-9	2						12				

SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 10 of 85
Report Version : Rev. 01

Report No.: FR441605ANB1



2.3 The Worst Case Measurement Configuration

Th	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								
	Internal antenna with adapter mode							
	2. Internal antenna with POE mode							
	3. External antenna with adapter mode							
	4. External antenna with POE mode							

Report No.: FR441605ANB1

The Worst Case Mode for Following Conformance Tests						
Tests Item	RF Output Power					
Test Condition	Conducted measurement at transmit chains					
Modulation Mode	11a, HT20, HT40, VHT20, VHT40, VHT80					
Operating Mode	Operating Mode Description					
	Internal antenna with adapter mode					
	2. External antenna with adapter mode					

Th	The Worst Case Mode for Following Conformance Tests						
Tests Item	Peak Power Spectral Density, Emission Bandwidth						
Test Condition	Conducted measurement at transmit chains						
Modulation Mode	11a, VHT20, VHT40, VHT80						
Operating Mode	Operating Mode Description						
	Internal antenna with adapter mode						
	2. External antenna with adapter mode						

SPORTON INTERNATIONAL INC. Page No. : 11 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



FCC Test Report

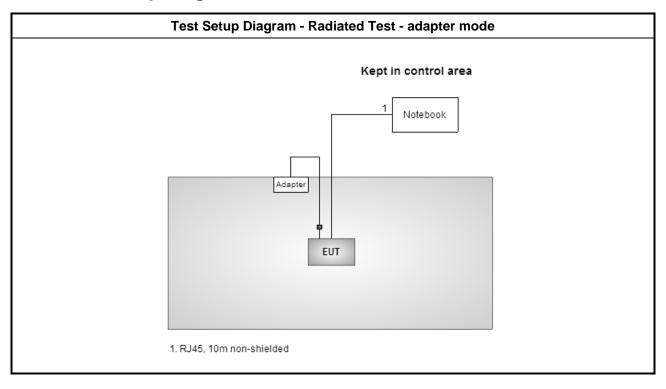
Th	e Worst Case Mode for Fo	ollowing Conformance Te	sts				
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions						
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.						
	☐ EUT will be placed in	fixed position.					
User Position	EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes. The worst planes are Y-plane for internal antenna and X-plane for external antenna.						
	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 Z.						
Operating Mode							
	2. Internal antenna v	with POE mode					
		with adapter mode					
	∠	with POE mode					
Modulation Mode	11a, VHT20, VHT40, VHT8	30					
	X Plane	Y Plane	Z Plane				
Orthogonal Planes of EUT							

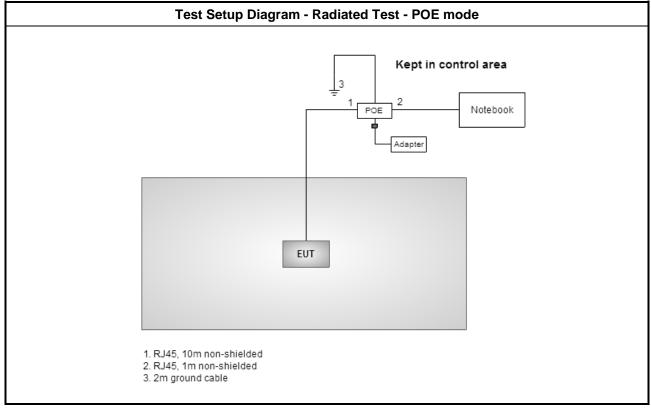
Report No.: FR441605ANB1

SPORTON INTERNATIONAL INC. Page No. : 12 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



2.4 **Test Setup Diagram**





SPORTON INTERNATIONAL INC. Page No. : 13 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



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							
66 - 56 *	56 - 46 *						
56	46						
60	50						
	Quasi-Peak 66 - 56 * 56						

Report No.: FR441605ANB1

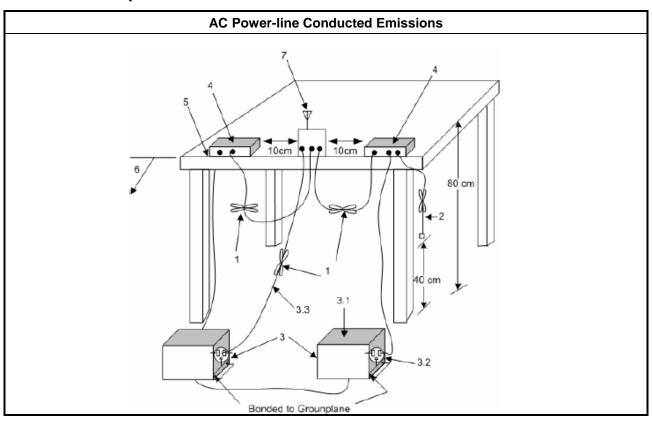
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup

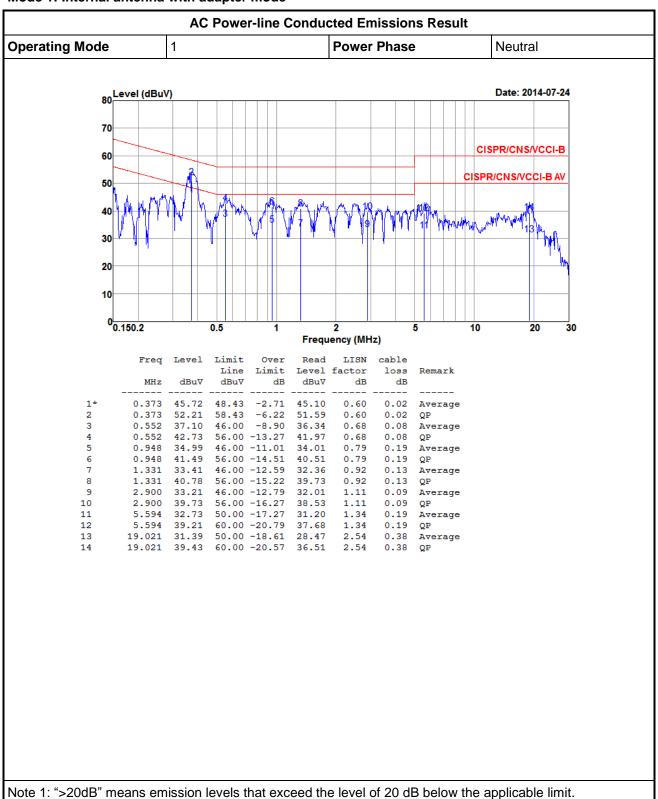


SPORTON INTERNATIONAL INC. Page No. : 14 of 85
TEL: 886-3-3273456 Report Version : Rev. 01



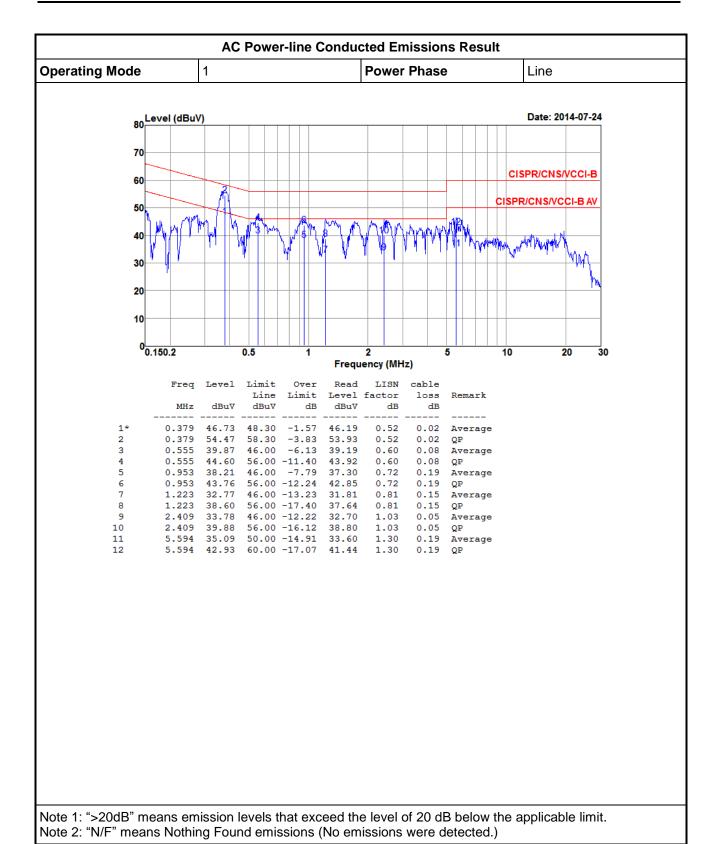
Test Result of AC Power-line Conducted Emissions

Mode 1: Internal antenna with adapter mode



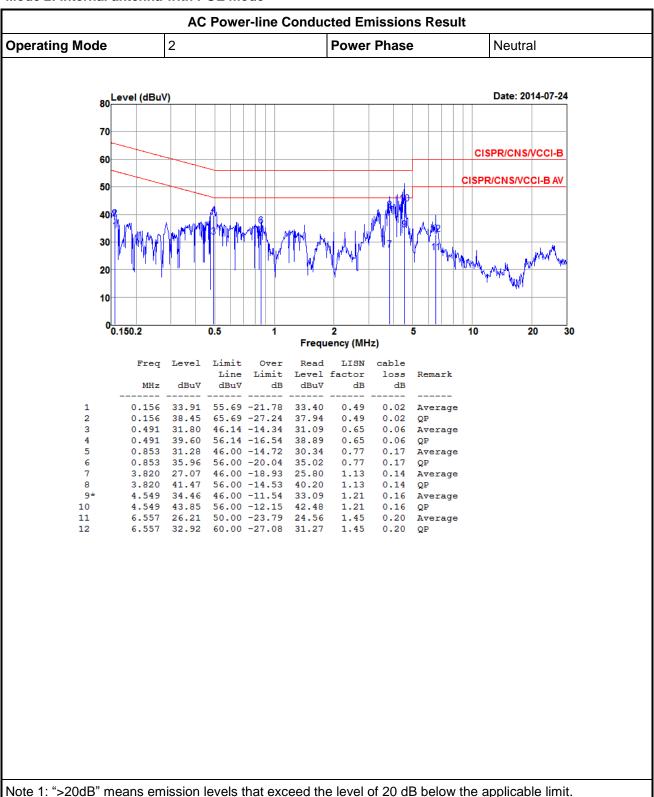
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

SPORTON INTERNATIONAL INC. Page No. : 15 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



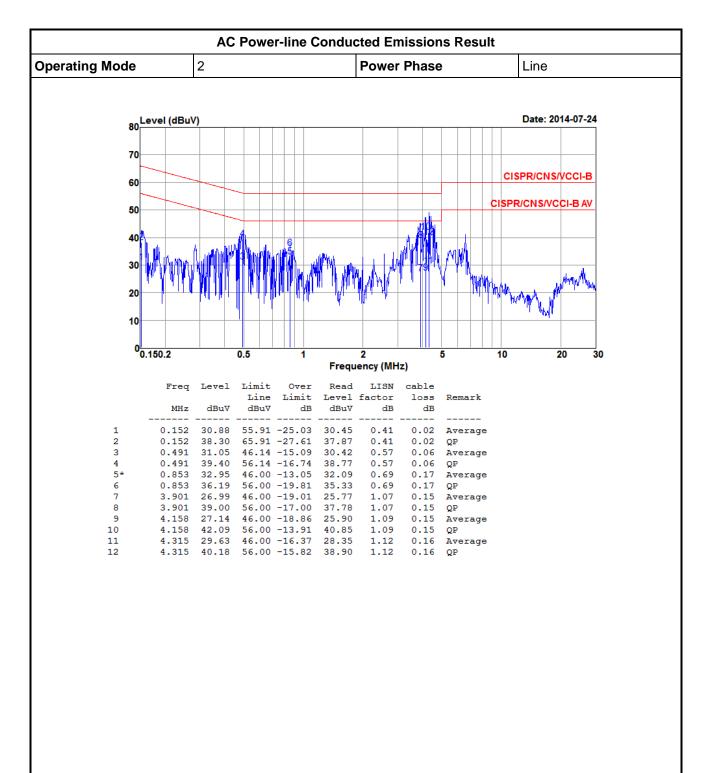
SPORTON INTERNATIONAL INC. Page No. : 16 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

Mode 2: Internal antenna with POE mode



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

SPORTON INTERNATIONAL INC. Page No. : 17 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

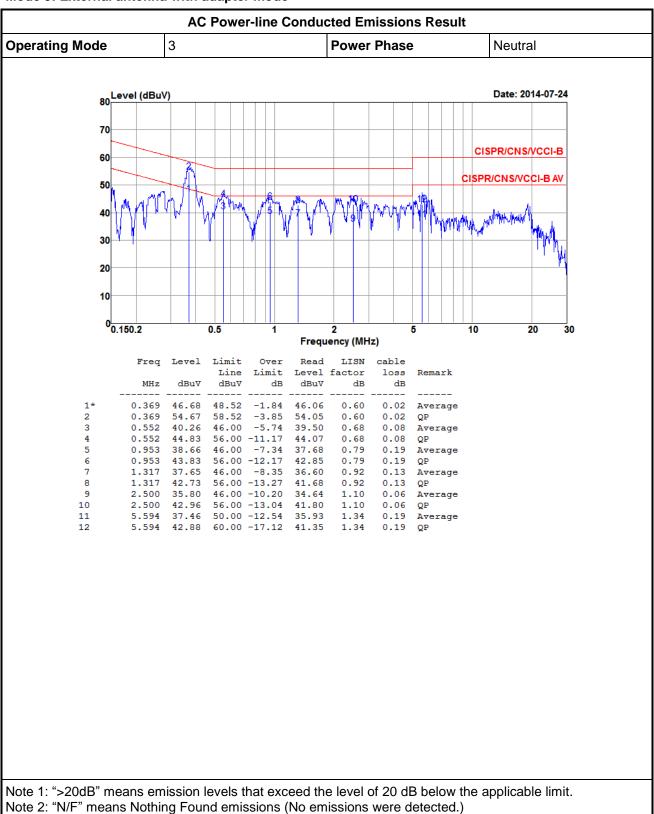


Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

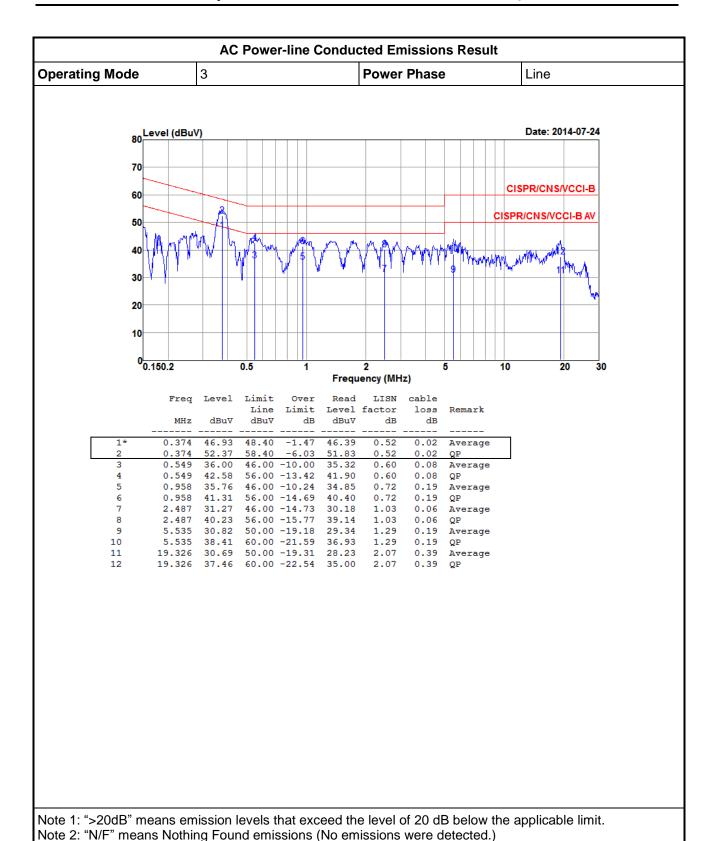
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

SPORTON INTERNATIONAL INC. Page No. : 18 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

Mode 3: External antenna with adapter mode

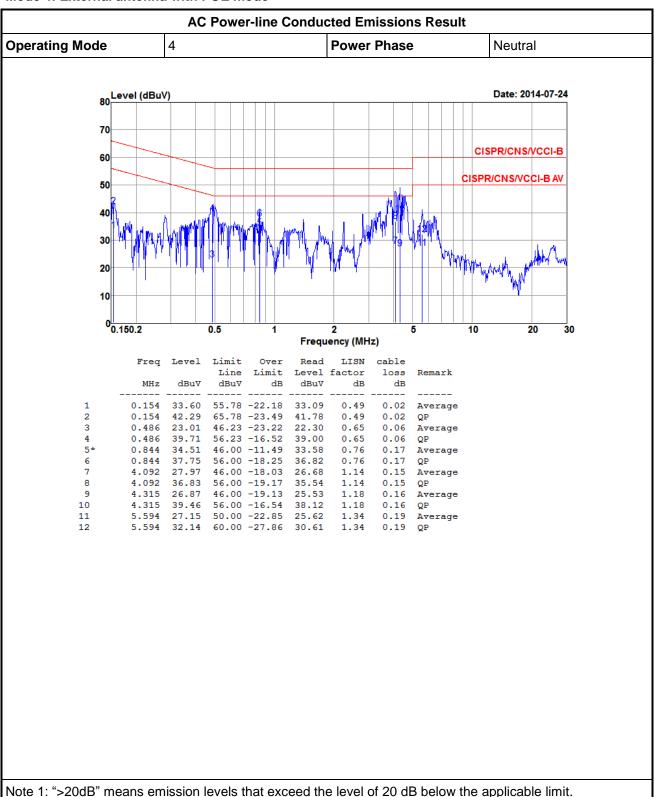


SPORTON INTERNATIONAL INC. Page No. : 19 of 85
TEL: 886-3-3273456 Report Version : Rev. 01



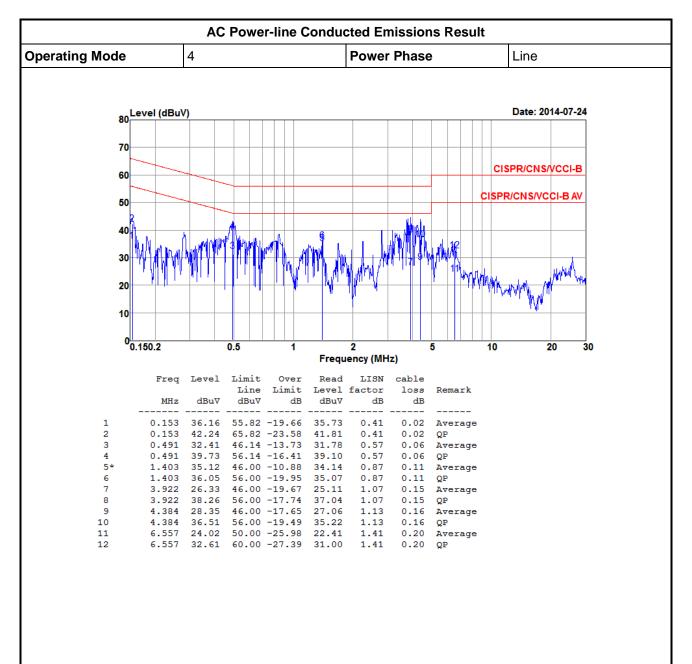
SPORTON INTERNATIONAL INC. Page No. : 20 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

Mode 4: External antenna with POE mode



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

SPORTON INTERNATIONAL INC. Page No. : 21 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



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. Page No. : 22 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

3.2 Emission Bandwidth

3.2.1 Measuring Instruments

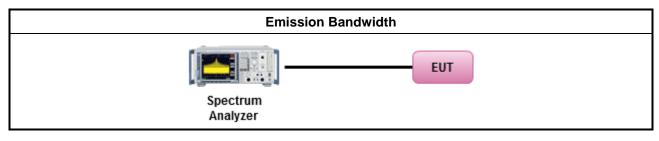
Refer a test equipment and calibration data table in this test report.

3.2.2 Test Procedures

	Test Method									
\boxtimes	For	the emission bandwidth shall be measured using one of the options below:								
	\boxtimes	Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause C for EBV and clause D for OBW measurement.								
		Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.								
		Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.								
\boxtimes	For	conducted measurement.								
		The EUT supports single transmit chain and measurements performed on this transmit chain.								
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.								
	\boxtimes	The EUT supports multiple transmit chains using options given below:								
	Option 1: Multiple transmit chains measurements need to be performed on one of transmit chains (antenna outputs). All measurement had be performed on transmit									
		Option 2: Multiple transmit chains measurements need to be performed on each transmi chains individually (antenna outputs). All measurement had be performed on all transmi chains.								

Report No.: FR441605ANB1

3.2.3 Test Setup



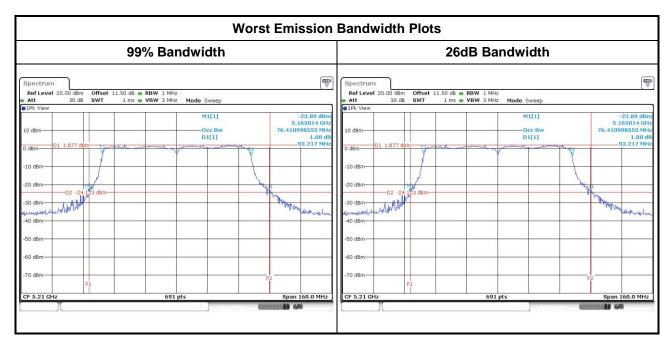
SPORTON INTERNATIONAL INC. Page No. : 23 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



Test Result of Emission Bandwidth 3.2.4

Mode 1: Internal antenna with adapter mode

	UNII Emission Bandwidth Result (5150-5250MHz band)										
Cond	Condition				Emission Bandwidth (MHz)						
Modulation		Freq.		99% Ba	ndwidth			26dB Ba	ndwidth		
Mode N _{TX}	N _{TX}	(MHz)	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	5180	17.19	16.79			23.36	22.67			
11a	2	5200	17.13	16.85			26.03	22.61			
11a	2	5240	17.19	16.96			25.22	24.64			
VHT20	2	5180	18.29	18.06			24.41	24.12			
VHT20	2	5200	18.18	18.18			30.03	24.93			
VHT20	2	5240	18.29	18.18			29.68	31.01			
VHT40	2	5190	37.63	37.28			47.19	47.54			
VHT40	2	5230	37.51	37.28			48.23	46.38			
VHT80	2	5210	76.41	76.41			93.22	92.29			
Res	ult			•	•	Com	plied		•		

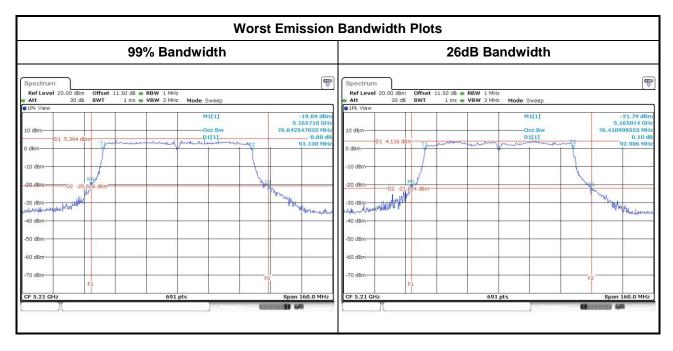


SPORTON INTERNATIONAL INC. Page No. : 24 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



Mode 2: External antenna with adapter mode

		UNII Em	ission B	andwidth	Result (5150-525	0MHz ba	nd)		
Cond	ition				Emis	sion Bar	ndwidth (MHz)		
Modulation		Freq.		99% Ba	ndwidth			26dB Ba	ndwidth	
Mode	N _{TX}	(MHz)	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	5180	16.90	16.61			22.78	21.22		
11a	2	5200	16.85	16.85			23.19	24.58		
11a	2	5240	16.96	16.85			24.23	23.94		
VHT20	2	5180	17.83	17.89			22.67	22.90		
VHT20	2	5200	18.12	18.00			23.94	24.58		
VHT20	2	5240	18.06	17.89			23.42	23.42		
VHT40	2	5190	37.05	37.05			45.68	45.57		
VHT40	2	5230	36.93	37.05			45.57	44.41		
VHT80	2	5210	76.41	76.64			92.99	91.13		
Result						Com	plied			



SPORTON INTERNATIONAL INC. Page No. : 25 of 85 Report Version TEL: 886-3-3273456 : Rev. 01



3.3 RF Output Power

3.3.1 RF Output Power Limit

Maximum Conducted Output Power Limit

Report No.: FR441605ANB1

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

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

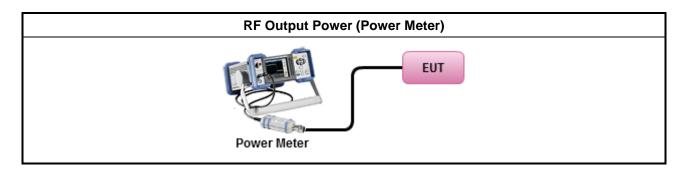
3.3.3 Test Procedures

		Test Method
\boxtimes	Max	imum Conducted Output Power
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method SA-1 (spectral trace averaging).
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method SA-2 (spectral trace averaging).
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wid	eband RF power meter and average over on/off periods with duty factor
	\boxtimes	Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method PM-G (using a gated RF average power meter).
\boxtimes	For	conducted measurement.
		The EUT supports single transmit chain and measurements performed on this transmit chain.
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
		The EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
		If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

SPORTON INTERNATIONAL INC. Page No. : 26 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



Test Setup 3.3.4



3.3.5 **Directional Gain for Power Measurement**

Mode 1: Internal antenna with adapter mode

	Directional Gain (DG) Result							
Transmit Chains No.		1	2	-	-			
Maximum G _{ANT} (dBi)		5.40	4.08	-	-			
Modulation Mode	Modulation Mode DG (dBi)		N _{ss}	STBC	Array Gain (dB)			
11a,6-54Mbps	5.4	2	1	-	-			
HT20,M0-15	5.4	2	1	-	-			
HT40,M0-15	5.4	2	1	-	-			
VHT20,M0-8	5.4	2	1	-	-			
VHT40,M0-9	5.4	2	1	-	-			
VHT80,M0-9	5.4.	2	1		-			

Note: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain

Mode 2: External antenna with adapter mode

	Directional Gain (DG) Result							
Transmit Chains No.		1	2	-	-			
Maximum G _{ANT} (dBi)		3.18	3.18	-	-			
Modulation Mode	Modulation Mode DG (dBi)		N _{SS}	STBC	Array Gain (dB)			
11a,6-54Mbps	3.18	2	1	-	-			
HT20,M0-15	3.18	2	1	-	-			
HT40,M0-15	3.18	2	1	-	-			
VHT20,M0-8	3.18	2	1	-	-			
VHT40,M0-9	3.18	2	1	-	-			
VHT80,M0-9	3.18	2	1		-			

SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 27 of 85

Report Version : Rev. 01



3.3.6 Test Result of Maximum Conducted Output Power

Mode 1: Internal antenna with adapter mode

N	Maximum Conducted (Average) Output Power (5150-5250MHz band)											
Condit	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	5180	19.14	18.94			22.05	30.00	5.4	27.45	36.00	
11a	2	5200	23.94	23.55			26.76	30.00	5.4	32.16	36.00	
11a	2	5240	24.32	23.93			27.14	30.00	5.4	32.54	36.00	
HT20	2	5180	19.04	18.56			21.82	30.00	5.4	27.22	36.00	
HT20	2	5200	23.89	23.54			26.73	30.00	5.4	32.13	36.00	
HT20	2	5240	24.68	24.31			27.51	30.00	5.4	32.91	36.00	
HT40	2	5190	13.42	13.14			16.29	30.00	5.4	21.69	36.00	
HT40	2	5230	20.85	20.46			23.67	30.00	5.4	29.07	36.00	
VHT20	2	5180	19.11	18.64			21.89	30.00	5.4	27.29	36.00	
VHT20	2	5200	24.02	23.61			26.83	30.00	5.4	32.23	36.00	
VHT20	2	5240	24.71	24.42			27.58	30.00	5.4	32.98	36.00	
VHT40	2	5190	13.55	13.26			16.42	30.00	5.4	21.82	36.00	
VHT40	2	5230	20.96	20.59			23.79	30.00	5.4	29.19	36.00	
VHT80	2	5210	11.36	11.22			14.30	30.00	5.4	19.70	36.00	
Resu	Result			•		C	Complie	d			•	

Report No.: FR441605ANB1

SPORTON INTERNATIONAL INC. Page No. : 28 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



Mode 2: External antenna with adapter mode

	Maximum Conducted (Average) Output Power (5150-5250MHz band)											
Cond	ition			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	5180	19.68	20.35			23.04	30.00	3.18	26.22	36.00	
11a	2	5200	24.82	25.44			28.15	30.00	3.18	31.33	36.00	
11a	2	5240	24.48	25.01			27.76	30.00	3.18	30.94	36.00	
HT20	2	5180	19.42	20.31			22.90	30.00	3.18	26.08	36.00	
HT20	2	5200	24.35	24.96			27.68	30.00	3.18	30.86	36.00	
HT20	2	5240	22.26	23.15			25.74	30.00	3.18	28.92	36.00	
HT40	2	5190	13.75	14.52			17.16	30.00	3.18	20.34	36.00	
HT40	2	5230	21.86	22.31			25.10	30.00	3.18	28.28	36.00	
VHT20	2	5180	19.51	20.43			23.00	30.00	3.18	26.18	36.00	
VHT20	2	5200	24.47	25.04			27.77	30.00	3.18	30.95	36.00	
VHT20	2	5240	22.38	23.26			25.85	30.00	3.18	29.03	36.00	
VHT40	2	5190	13.86	14.63			17.27	30.00	3.18	20.45	36.00	
VHT40	2	5230	21.98	22.43			25.22	30.00	3.18	28.40	36.00	
VHT80	2	5210	12.56	13.35			15.98	30.00	3.18	19.16	36.00	
Res	Result					Complied						

SPORTON INTERNATIONAL INC. Page No. : 29 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

3.4 Peak Power Spectral Density

3.4.1 Peak Power Spectral Density Limit

Peak Power Spectral Density Limit
The maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band

Report No.: FR441605ANB1

3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

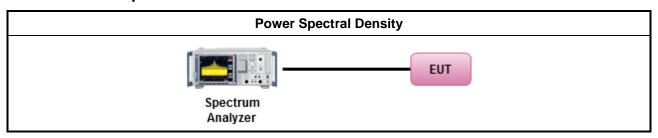
		Test Method
\boxtimes	outp func	c power spectral density procedures that the same method as used to determine the conducted ut power shall be used to determine the peak power spectral density and use the peak search tion on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density be measured using below options:
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, F)5) power spectral density can be measured using resolution bandwidths $<$ 1 MHz provided that the results are integrated over 1 MHz bandwidth
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method SA-1 (spectral trace averaging).
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method SA-2 (spectral trace averaging).
	\boxtimes	Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
\boxtimes	For	conducted measurement.
		The EUT supports single transmit chain and measurements performed on this transmit chain.
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
	\boxtimes	The EUT supports multiple transmit chains using options given below:
		Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
		Option 2: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.
		If multiple transmit chains, EIRP PPSD calculation could be following as methods: $ PPSD_{total} = PPSD_1 + PPSD_2 + \ldots + PPSD_n \\ (calculated in linear unit [mW] and transfer to log unit [dBm]) \\ EIRP_{total} = PPSD_{total} + DG $
		Each individually PPSD plots refer as test report clause 3.3.5 with each individually PPSD plots.

SPORTON INTERNATIONAL INC. Page No. : 30 of 85
TEL: 886-3-3273456 Report Version : Rev. 01



FCC Test Report

3.4.4 Test Setup



Report No.: FR441605ANB1

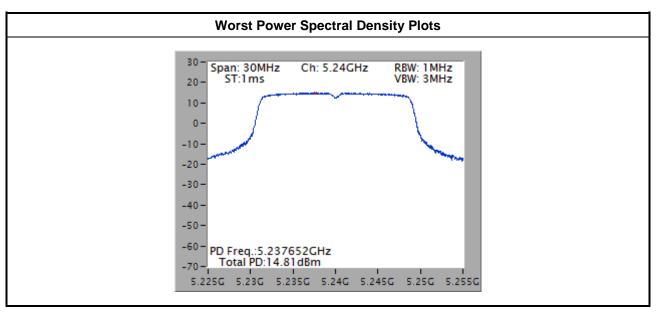
SPORTON INTERNATIONAL INC. Page No. : 31 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



Test Result of Peak Power Spectral Density

Mode 1: Internal antenna with adapter mode

	Peak Power Spectral Density Result (5150-5250MHz band)									
Condi	ition			Peak Power Spectral Density (dBm/MHz)						
Modulation Mode	N _{TX}	Freq. (MHz)	Sum Chain	PSD Limit	DG (dBi)	EIRP PSD	EIRP Limit			
11a	2	5180	9.75	15.22	7.78	17.53	23			
11a	2	5200	14.17	15.22	7.78	21.95	23			
11a	2	5240	14.74	15.22	7.78	22.52	23			
VHT20	2	5180	8.92	15.22	7.78	16.70	23			
VHT20	2	5200	14.00	15.22	7.78	21.78	23			
VHT20	2	5240	14.81	15.22	7.78	22.59	23			
VHT40	2	5190	-0.36	15.22	7.78	7.42	23			
VHT40	2	5230	7.61	15.22	7.78	15.39	23			
VHT80	2	5210	-5.58	15.22	7.78	2.20	23			
Res	ult				Complied					



Note:

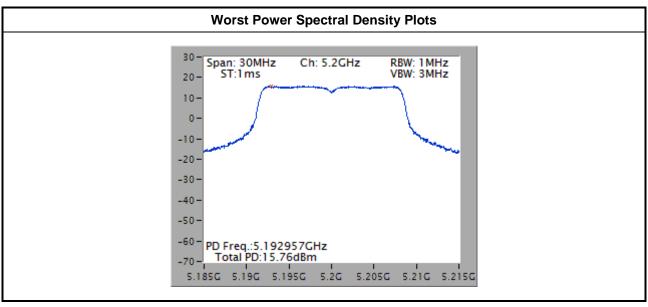
- 1. Peak Power Spectral Density w/o Duty Factor.
- 2. Test results are bin-by-bin summing measured value of each TX port. Directional gain = $10 * log((10^{5.40/20}+10^{4.08/20})^2/2) = 7.78 dBi > 6 dBi$ Limit shall be reduced to 17 dBm - (7.78 dBi - 6 dBi) = 15.22 dBm

SPORTON INTERNATIONAL INC. Page No. : 32 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



Mode 2: External antenna with adapter mode

	Peak Power Spectral Density Result (5150-5250MHz band)									
Condi	tion			Peak Power Spectral Density (dBm/MHz)						
Modulation Mode	N _{TX}	Freq. (MHz)	Sum Chain	PSD Limit	DG (dBi)	EIRP PSD	EIRP Limit			
11a	2	5180	10.55	16.81	6.19	16.74	23			
11a	2	5200	15.76	16.81	6.19	21.95	23			
11a	2	5240	15.33	16.81	6.19	21.52	23			
VHT20	2	5180	10.28	16.81	6.19	16.47	23			
VHT20	2	5200	15.09	16.81	6.19	21.28	23			
VHT20	2	5240	12.94	16.81	6.19	19.13	23			
VHT40	2	5190	1.51	16.81	6.19	7.70	23			
VHT40	2	5230	9.38	16.81	6.19	15.57	23			
VHT80	2	5210	-3.41	16.81	6.19	2.78	23			
Res	ult				Complied					



Note:

- 1. Peak Power Spectral Density w/o Duty Factor.
- Test results are bin-by-bin summing measured value of each TX port.
 Directional gain = 3.18+10* log(2/1) = 6.19 dBi > 6 dBi.
 Limit shall be reduced to 17 dBm (6.19 dBi 6 dBi) = 16.81 dBm

SPORTON INTERNATIONAL INC. Page No. : 33 of 85
TEL: 886-3-3273456 Report Version : Rev. 01



3.5 Transmitter Radiated Unwanted Emissions and Band Edge

3.5.1 Transmitter Radiated Unwanted Emissions and Band Edge Limit

Unwanted emiss	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						

Report No.: FR441605ANB1

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

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

	Un-restricted band emissions above 1GHz Limit						
Operating Band	Limit						
5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]						
5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]						
5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]						
5.725 - 5.825 GHz	5.715 5.725 GHz: e.i.r.p17 dBm [78.2 dBuV/m@3m] 5.825 5.835 GHz: e.i.r.p17 dBm [78.2 dBuV/m@3m] Other un-restricted band: e.i.r.p27 dBm [68.2 dBuV/m@3m]						

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).

3.5.2 Measuring Instruments

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

SPORTON INTERNATIONAL INC. Page No. : 34 of 85
TEL: 886-3-3273456 Report Version : Rev. 01



3.5.3 Test Procedures

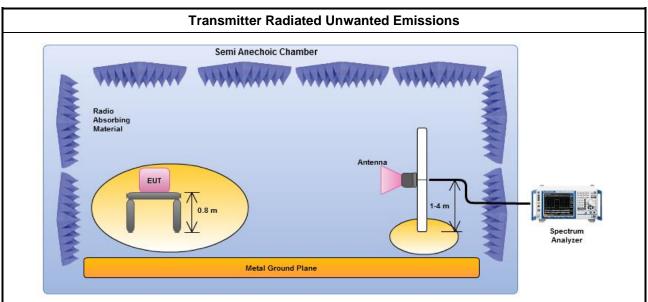
Test Method		
	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies 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).	
	For	the transmitter unwanted emissions shall be measured using following options below:
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause G)2) for unwanted emissions into non-restricted bands.
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause G)1) for unwanted emissions into restricted bands.
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, G)6) Method AD (Trace Averaging).
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, G)6) Method VB (Reduced VBW).
		Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
		Refer as FCC KDB 789033 D02 General UNII Test Procedures New Rules v01, clause G)5) measurement procedure peak limit.
		Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
	For	radiated measurement.
		Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
		Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
	\boxtimes	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.
		conducted and cabinet radiation measurement, refer as FCC KDB 789033 D02 General UNII Test redures New Rules v01, clause G)3).
		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.
		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
		For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

Report No.: FR441605ANB1

SPORTON INTERNATIONAL INC. Page No. : 35 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



3.5.4 Test Setup



Report No.: FR441605ANB1

Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn antenna.

Note: Test distance is 3m.

3.5.5 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.

SPORTON INTERNATIONAL INC. Page No. : 36 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

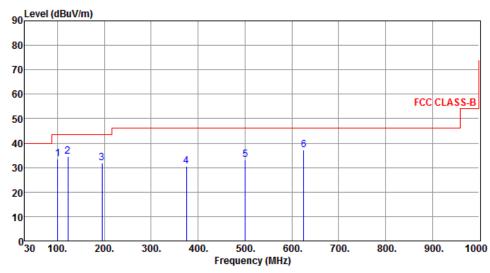


3.5.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Mode 1: Internal antenna with adapter mode

Transmitter Radiated Unwanted Emissions (Below 1GHz)										
Modulation ModeVHT20Test Freq. (MHz)5240										
Polarization	Н	Operating Mode	1							
	(12.1/1.)	·	·							

Report No.: FR441605ANB1



	Freq.	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV		Remark	ANT High cm	Turn Table deg
4	100 01		43. 50	10.00		24 70	DI-		
1	100.81	33.41	43.50	-10.09	55.11	-21.70	Peak		
2	122.15	34.62	43.50	-8.88	53.57	-18.95	Peak		
3	194.90	31.74	43.50	-11.76	51.36	-19.62	Peak		
4	375.32	30.48	46.00	-15.52	44.82	-14.34	Peak		
5	500.45	33.32	46.00	-12.68	44.86	-11.54	Peak		
6	625.58	37.12	46.00	-8.88	46.30	-9.18	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)

SPORTON INTERNATIONAL INC. Page No. : 37 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

4

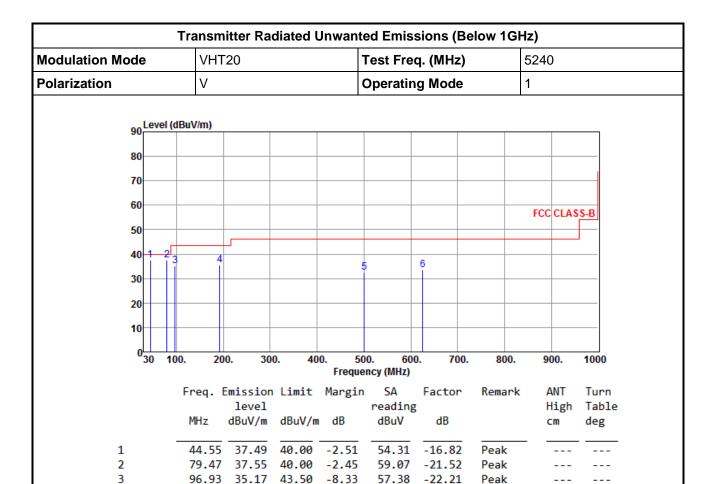
5

6

191.99

500.45

FCC Test Report No.: FR441605ANB1



55.09

44.21

42.75

-19.61

-11.54

-9.18

Peak

Peak

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.)

35.48 43.50 -8.02

32.67 46.00 -13.33

625.58 33.57 46.00 -12.43

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

SPORTON INTERNATIONAL INC. Page No. : 38 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

Mode 2: Internal antenna with POE mode

VHT20 H		Test Fred	q. (MHz)	5	240			
						5240		
•		Operatin	g Mode	2	2			
BuV/m)								
					FCC CLAS	S-B		
<u> </u>	4	9	6					
Ĭ								
200 300) 400 5	00 600	700	900	000	1000		
. 200. 300			. 700.	000.	300.	1000		
	Limit Margi		Factor	Remark	ANT	Turn		
	4D: M/ 4D	_			High	Table		
MITZ GBUV/M	abuv/m ab	abuv	ab		CM	deg		
59.10 28.91				Peak				
79.47 29.73			-21.52	Peak				
_	Freq. Emission level MHz dBuV/m 59.10 28.91 79.47 29.73	200. 300. 400. 5 Freque Freq. Emission Limit Marginalevel MHz dBuV/m dBuV/m dB 59.10 28.91 40.00 -11.09 79.47 29.73 40.00 -10.27	200. 300. 400. 500. 600 Frequency (MHz) Freq. Emission Limit Margin SA level reading MHz dBuV/m dBuV/m dB dBuV 59.10 28.91 40.00 -11.09 46.01 79.47 29.73 40.00 -10.27 51.25	200. 300. 400. 500. 600. 700. Frequency (MHz) Freq. Emission Limit Margin SA Factor reading dBuV/m dB dBuV dB 59.10 28.91 40.00 -11.09 46.01 -17.10 79.47 29.73 40.00 -10.27 51.25 -21.52	200. 300. 400. 500. 600. 700. 800. Frequency (MHz) Freq. Emission Limit Margin SA Factor Remark level reading dBuV/m dB dBuV/m dB 59.10 28.91 40.00 -11.09 46.01 -17.10 Peak 79.47 29.73 40.00 -10.27 51.25 -21.52 Peak	200. 300. 400. 500. 600. 700. 800. 900. Frequency (MHz) Freq. Emission Limit Margin SA Factor Remark ANT level reading High Cm 59.10 28.91 40.00 -11.09 46.01 -17.10 Peak 79.47 29.73 40.00 -10.27 51.25 -21.52 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.)

375.32 31.26 46.00 -14.74 45.60 -14.34

500.45 34.57 46.00 -11.43 46.11 -11.54 Peak 625.58 33.82 46.00 -12.18 43.00 -9.18

Peak

Peak

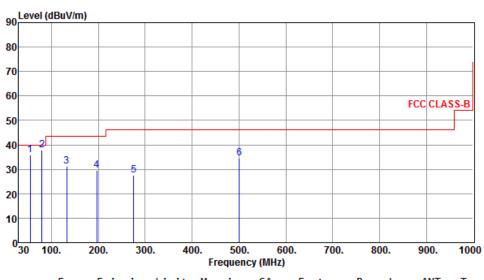
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

SPORTON INTERNATIONAL INC. Page No. : 39 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

FAX: 886-3-3270973

5

Transmitter Radiated Unwanted Emissions (Below 1GHz)										
Modulation Mode	VHT20	Test Freq. (MHz)	5240							
Polarization	V	Operating Mode	2							



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	54.24	35.88	40.00	-4.12	52.68	-16.80	QP .		
2	79.47	38.02	40.00	-1.98	59.54	-21.52	Peak		
3	132.82	31.14	43.50	-12.36	49.15	-18.01	Peak		
4	196.84	29.59	43.50	-13.91	49.23	-19.64	Peak		
5	275.41	27.70	46.00	-18.30	44.57	-16.87	Peak		
6	500.45	34.67	46.00	-11.33	46.21	-11.54	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.)

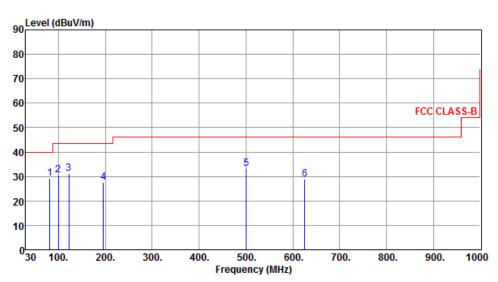
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

SPORTON INTERNATIONAL INC. Page No. : 40 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



Mode 3: External antenna with adapter mode

Transmitter Radiated Unwanted Emissions (Below 1GHz)										
Modulation Mode 11a Test Freq. (MHz) 5200										
Polarization	Н	Operating Mode	3							

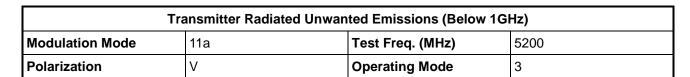


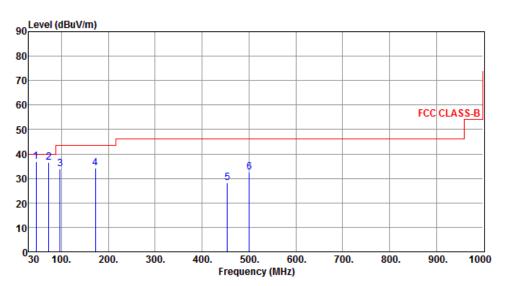
	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	81.41	29.17	40.00	-10.83	51.00	-21.83	Peak		
2	99.84	30.61	43.50	-12.89	52.46	-21.85	Peak		
3	122.15	31.36	43.50	-12.14	50.31	-18.95	Peak		
4	195.87	27.61	43.50	-15.89	47.24	-19.63	Peak		
5	500.45	33.28	46.00	-12.72	44.82	-11.54	Peak		
6	625.58	28.99	46.00	-17.01	38.17	-9.18	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)

SPORTON INTERNATIONAL INC. Page No. : 41 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	45.52	36.75	40.00	-3.25	53.51	-16.76	Peak		
2	72.68	36.57	40.00	-3.43	56.59	-20.02	Peak		
3	96.93	33.85	43.50	-9.65	56.06	-22.21	Peak		
4	172.59	34.29	43.50	-9.21	52.01	-17.72	Peak		
5	453.89	28.26	46.00	-17.74	40.71	-12.45	Peak		
6	500.45	32.54	46.00	-13.46	44.08	-11.54	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)

SPORTON INTERNATIONAL INC. Page No. : 42 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

3

5

FCC Test Report No.: FR441605ANB1

Mode 4: External antenna with POE mode

Modulation Mode	11a				,				5200 4		
Polarization	Н										
90 Level	(dBuV/m)									_	
80											
70											
60									01.40	-	
50								FCC	CLAS	2-B	
40					_						
30 1 2	3		4		3		6				
20											
10											
⁰ 30 1	00. 200). 300	0. 4		00. 60 ency (MHz)	0. 70	0. 80	00. 9	000.	1000	
	Freq. E		Limit	Margi		Factor	Rema		ANT	Turn	
	MHz	level dBuV/m	dBuV/	m dB	reading dBuV	g dB			High cm	Table deg	

81.41 30.31 40.00 -9.69 52.14 -21.83 Peak

196.84 26.71 43.50 -16.79 46.35 -19.64 Peak 375.32 28.01 46.00 -17.99 42.35 -14.34 Peak

500.45 35.03 46.00 -10.97 46.57 -11.54 Peak 749.74 29.53 46.00 -16.47 36.77 -7.24 Peak

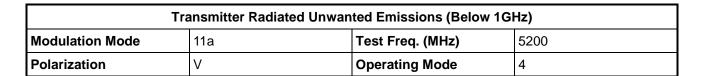
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

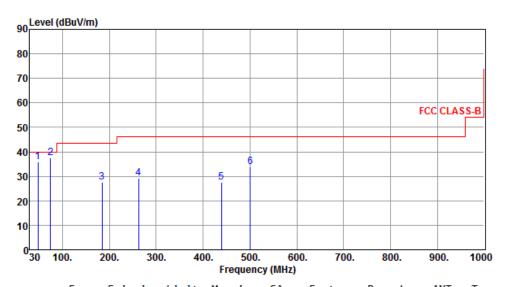
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

SPORTON INTERNATIONAL INC. Page No. : 43 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

FCC Test Report Report No.: FR441605ANB1





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	47.46	35.78	40.00	-4.22	52.43	-16.65	Peak		
2	74.62	37.54	40.00	-2.46	58.01	-20.47	Peak		
3	184.23	27.65	43.50	-15.85	46.63	-18.98	Peak		
4	262.80	29.37	46.00	-16.63	46.84	-17.47	Peak		
5	439.34	27.67	46.00	-18.33	40.43	-12.76	Peak		
6	500.45	33.81	46.00	-12.19	45.35	-11.54	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)

SPORTON INTERNATIONAL INC. Page No. : 44 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

Mode 1: Internal antenna with adapter mode

		Tra	ansm	itter	Rad	diate	d U	nwant	ed Eı	nis	sions (Above	1GI	Hz)		
Modulation Mod	е		11a						Test	Fre	q. (MHz	:)		518	0	
N _{TX}			2						Polar	izat	tion			Н		
90	Leve	el (dBu\	V/m)				_									
80																
		n 1 + 1 + 2	2 _		_	٦, ,	\forall		 	\neg \dashv						
70	PHHI			ΠIL	-	111	- 			ш			+	FCC	PAR	15E
60	Н				3		5			-			FCC	DADI	Γ15E (A) (C)
50													rcc	PARI	I ISE (AVG)
							4									
40	1						+									
30)						+			\rightarrow			+	+	-	
20																
10																
(1000) 6	6000.	100	00.	1400	0.	18000. Freque	2200 ency (N		26000.	30000	. 34	4000.		40000
		Fr	req.	Emis	sion	Limi	t	Margin	S/	4	Factor	Rer	nark		ANT	Turn
					vel				read	ding	3			ı	High	Table
		M	ИHz	dBu\	V/m	dBu\	//m	dB	dBı	ıV	dB				cm	deg
1		515	0.00	52	.53	54.6	00	-1.47	46.	.97	5.56	Ave	erag	 e		
2		515	0.00			74.6	0	-1.00	67.		5.56					
3			0.00		.04			11.16		.97	15.07					
4			10.00		.85			10.15		.32	14.53		erag	e		
5		1554	10.00	60	.03	74.6	- 00	13.97	45	. 50	14.53	Pea	aК			

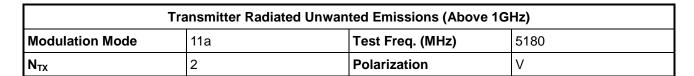
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

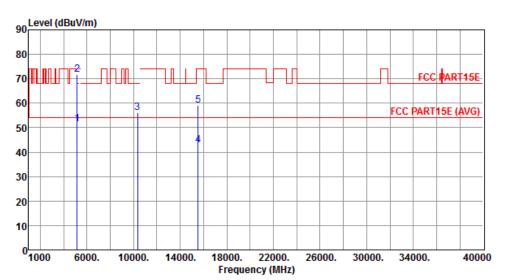
SPORTON INTERNATIONAL INC. Page No. : 45 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

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.





	Freq. 8	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	51.42	54.00	-2.58	45.86	5.56	Average		
2	5150.00	71.85	74.00	-2.15	66.29	5.56	Peak		
3	10360.00	56.01	68.20	-12.19	40.94	15.07	Peak		
4	15540.00	42.73	54.00	-11.27	28.20	14.53	Average		
5	15540.00	59.15	74.00	-14.85	44.62	14.53	Peak		

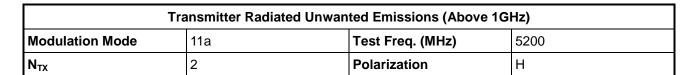
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

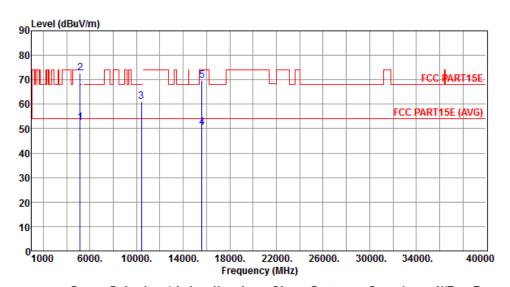
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 46 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.39	54.00	-1.61	46.83	5.56	Average		
2	5150.00	72.82	74.00	-1.18	67.26	5.56	Peak		
3	10400.00	61.07	68.20	-7.13	45.94	15.13	Peak		
4	15600.00	50.56	54.00	-3.44	36.12	14.44	Average		
5	15600.00	69.72	74.00	-4.28	55.28	14.44	Peak		

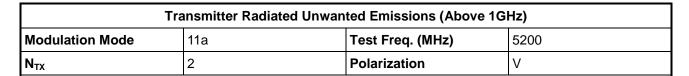
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

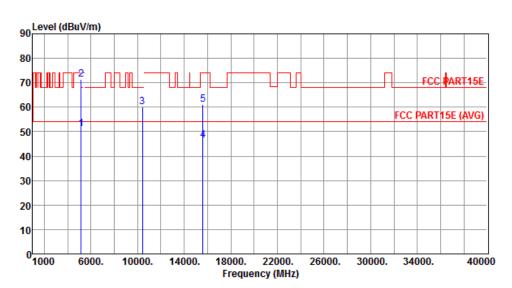
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 47 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission	Limit	Margin			Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	51.15	54.00	-2.85	45.59	5.56	Average		
2	5150.00	71.48	74.00	-2.52	65.92	5.56	Peak		
3	10400.00	60.06	68.20	-8.14	44.93	15.13	Peak		
4	15600.00	46.65	54.00	-7.35	32.21	14.44	Average		
5	15600.00	61.20	74.00	-12.80	46.76	14.44	Peak		

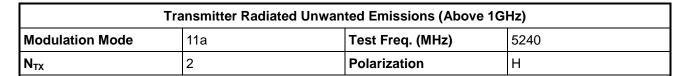
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

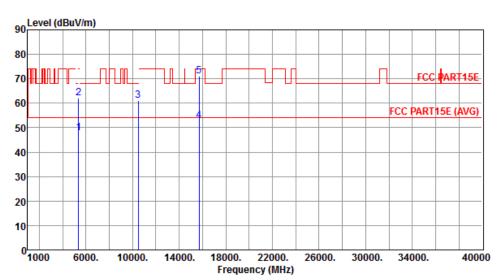
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 48 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq. 6	Emission level dBuV/m		Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	47.83	54.00	-6.17	42.12	5.71	Average		
2	5350.00	62.12	74.00	-11.88	56.41	5.71	Peak		
3	10480.00	61.03	68.20	-7.17	45.79	15.24	Peak		
4	15720.00	52.67	54.00	-1.33	38.41	14.26	Average		
5	15720.00	70.96	74.00	-3.04	56.70	14.26	Peak		

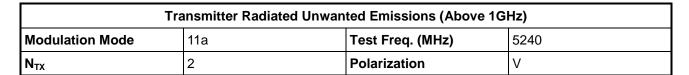
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

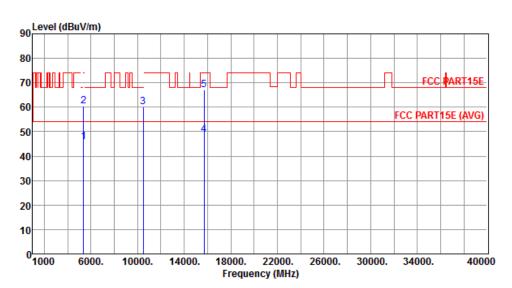
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 49 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission	Limit	Margin		Factor	Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5350.00	45.95	54.00	-8.05	40.24	5.71	Average		
2	5350.00	60.52	74.00	-13.48	54.81	5.71	Peak		
3	10480.00	60.00	68.20	-8.20	44.76	15.24	Peak		
4	15720.00	48.87	54.00	-5.13	34.61	14.26	Average		
5	15720.00	66.92	74.00	-7.08	52.66	14.26	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.)

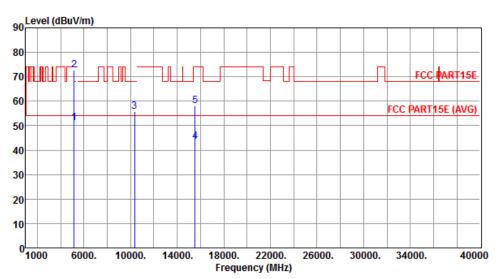
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

SPORTON INTERNATIONAL INC. Page No. : 50 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

FCC Test Report Report No.: FR441605ANB1

Transmitter Radiated Unwanted Emissions (Above 1GHz)							
Modulation Mode	VHT20	Test Freq. (MHz)	5180				
N _{TX}	2	Polarization	Н				



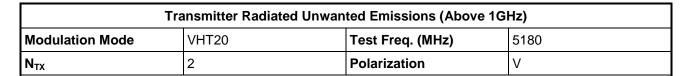
	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	51.11	54.00	-2.89	45.55	5.56	Average		
2	5150.00	72.81	74.00	-1.19	67.25	5.56	Peak		
3	10360.00	55.87	68.20	-12.33	40.80	15.07	Peak		
4	15540.00	43.60	54.00	-10.40	29.07	14.53	Average		
5	15540.00	58.13	74.00	-15.87	43.60	14.53	Peak		

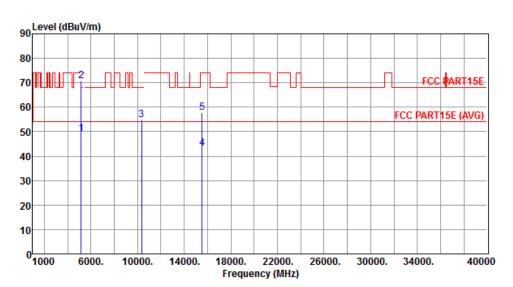
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 51 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	49.06	54.00	-4.94	43.50	5.56	Average		
2	5150.00	70.75	74.00	-3.25	65.19	5.56	Peak		
3	10360.00	54.65	68.20	-13.55	39.58	15.07	Peak		
4	15540.00	43.13	54.00	-10.87	28.60	14.53	Average		
5	15540.00	57.62	74.00	-16.38	43.09	14.53	Peak		

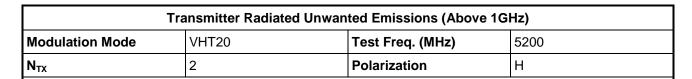
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

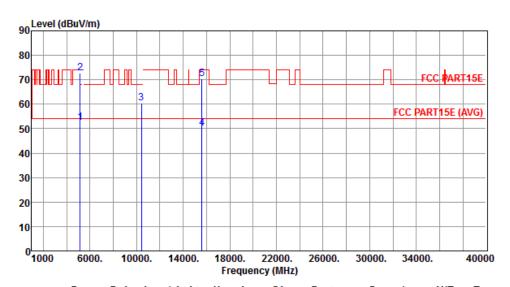
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 52 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.44	54.00	-1.56	46.88	5.56	Average		
2	5150.00	72.73	74.00	-1.27	67.17	5.56	Peak		
3	10400.00	60.37	68.20	-7.83	45.24	15.13	Peak		
4	15600.00	50.31	54.00	-3.69	35.87	14.44	Average		
5	15600.00	70.50	74.00	-3.50	56.06	14.44	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.

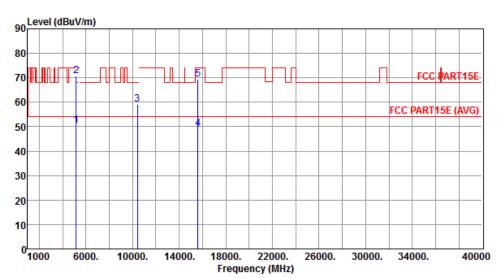
SPORTON INTERNATIONAL INC. Page No. : 53 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

<u>-</u>	

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode VHT20 Test Freq. (MHz) 5200

N_{TX} 2 Polarization V



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m		SA reading dBuV		Remark	ANT High cm	Turn Table deg
1	5150.00	50.38	54.00	-3.62	44.82	5.56	Average		
2	5150.00	70.65	74.00	-3.35	65.09	5.56	Peak		
3	10400.00	59.25	68.20	-8.95	44.12	15.13	Peak		
4	15600.00	49.13	54.00	-4.87	34.69	14.44	Average		
5	15600.00	69.27	74.00	-4.73	54.83	14.44	Peak		

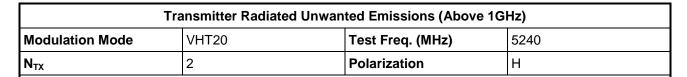
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

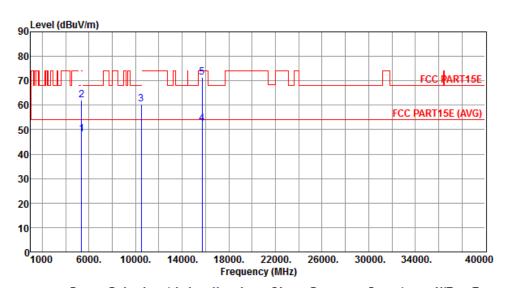
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 54 of 85
TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5350.00	48.10	54.00	-5.90	42.39	5.71	Average		
2	5350.00	62.13	74.00	-11.87	56.42	5.71	Peak		
3	10480.00	60.50	68.20	-7.70	45.26	15.24	Peak		
4	15720.00	52.55	54.00	-1.45	38.29	14.26	Average		
5	15720.00	71.26	74.00	-2.74	57.00	14.26	Peak		

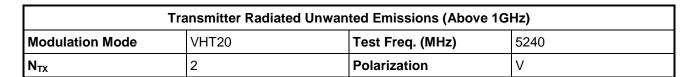
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

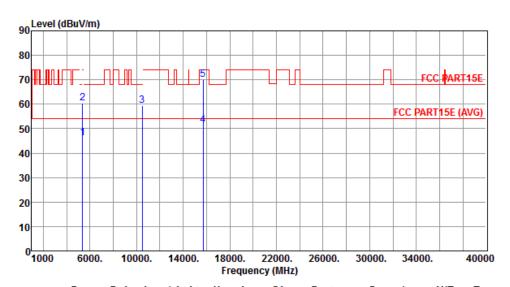
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 55 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5350.00	46.27	54.00	-7.73	40.56	5.71	Average		
2	5350.00	60.38	74.00	-13.62	54.67	5.71	Peak		
3	10480.00	59.45	68.20	-8.75	44.21	15.24	Peak		
4	15720.00	51.36	54.00	-2.64	37.10	14.26	Average		
5	15720.00	70.12	74.00	-3.88	55.86	14.26	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.)

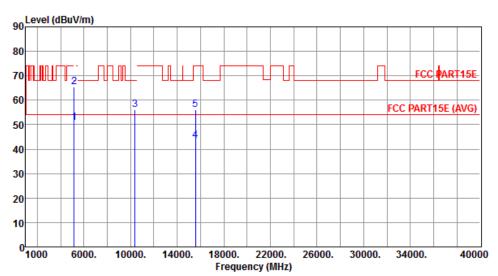
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

SPORTON INTERNATIONAL INC. Page No. : 56 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

FCC Test Report Report No.: FR441605ANB1

Transmitter Radiated Unwanted Emissions (Above 1GHz)							
Modulation Mode	VHT40	Test Freq. (MHz)	5190				
N _{TX}	2	Polarization	Н				



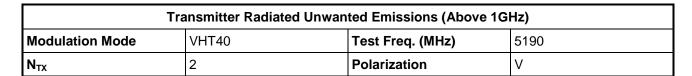
	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	50.88	54.00	-3.12	45.32	5.56	Average		
2	5150.00	65.37	74.00	-8.63	59.81	5.56	Peak		
3	10380.00	55.97	68.20	-12.23	40.86	15.11	Peak		
4	15570.00	43.49	54.00	-10.51	29.00	14.49	Average		
5	15570.00	56.13	74.00	-17.87	41.64	14.49	Peak		

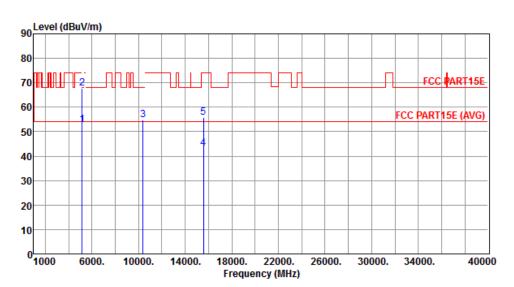
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 57 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.91	54.00	-1.09	47.35	5.56	Average		
2	5150.00	67.64	74.00	-6.36	62.08	5.56	Peak		
3	10380.00	54.82	68.20	-13.38	39.71	15.11	Peak		
4	15570.00	43.11	54.00	-10.89	28.62	14.49	Average		
5	15570.00	55.85	74.00	-18.15	41.36	14.49	Peak		

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

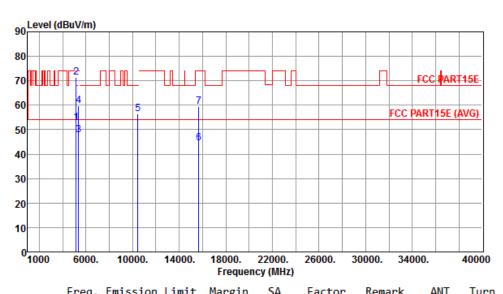
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 58 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode	VHT40	Test Freq. (MHz)	5230					
N _{TX}	2	Polarization	Н					



MH= dP.3//m dP.3//m dP dP.3/ dP	cm	deg
MHz dBuV/m dBuV/m dB dBuV dB		
1 5150.00 52.84 54.00 -1.16 47.28 5.56 Average		
2 5150.00 71.52 74.00 -2.48 65.96 5.56 Peak		
3 5350.00 47.70 54.00 -6.30 41.99 5.71 Average		
4 5350.00 59.94 74.00 -14.06 54.23 5.71 Peak		
5 10460.00 56.61 68.20 -11.59 41.40 15.21 Peak		
6 15690.00 44.61 54.00 -9.39 30.30 14.31 Average		
7 15690.00 59.44 74.00 -14.56 45.13 14.31 Peak		

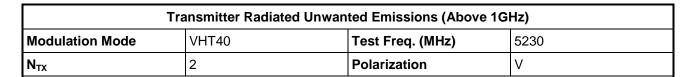
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

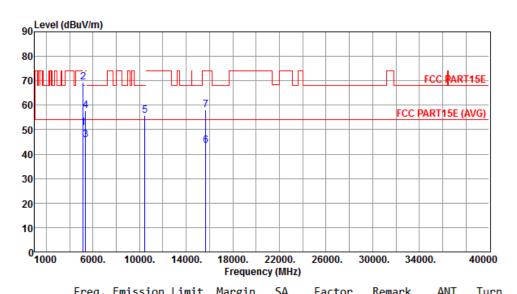
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 59 of 85
TEL: 886-3-3273456 Report Version : Rev. 01





		level	LIMIL	nai 8111	reading	Factor	Kelliui K	High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	50.73	54.00	-3.27	45.17	5.56	Average		
2	5150.00	69.48	74.00	-4.52	63.92	5.56	Peak		
3	5350.00	45.89	54.00	-8.11	40.18	5.71	Average		
4	5350.00	57.93	74.00	-16.07	52.22	5.71	Peak		
5	10460.00	55.72	68.20	-12.48	40.51	15.21	Peak		
6	15690.00	43.53	54.00	-10.47	29.22	14.31	Average		
7	15690.00	58.27	74.00	-15.73	43.96	14.31	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.)

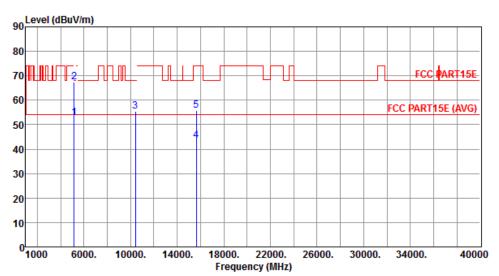
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

SPORTON INTERNATIONAL INC. Page No. : 60 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

FCC Test Report Report No.: FR441605ANB1

Transmitter Radiated Unwanted Emissions (Above 1GHz)							
Modulation Mode	VHT80	Test Freq. (MHz)	5210				
N _{TX}	2	Polarization	Н				



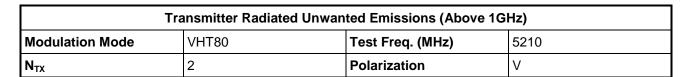
	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.89	54.00	-1.11	47.33	5.56	Average		
2	5150.00	67.47	74.00	-6.53	61.91	5.56	Peak		
3	10420.00	55.45	68.20	-12.75	40.30	15.15	Peak		
4	15630.00	43.60	54.00	-10.40	29.20	14.40	Average		
5	15630.00	55.63	74.00	-18.37	41.23	14.40	Peak		

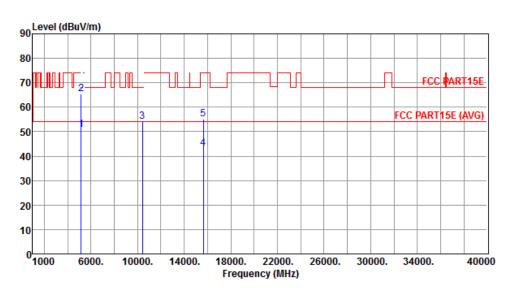
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 61 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	50.82	54.00	-3.18	45.26	5.56	Average		
2	5150.00	65.43	74.00	-8.57	59.87	5.56	Peak		
3	10420.00	54.27	68.20	-13.93	39.12	15.15	Peak		
4	15630.00	43.12	54.00	-10.88	28.72	14.40	Average		
5	15630.00	55.29	74.00	-18.71	40.89	14.40	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)

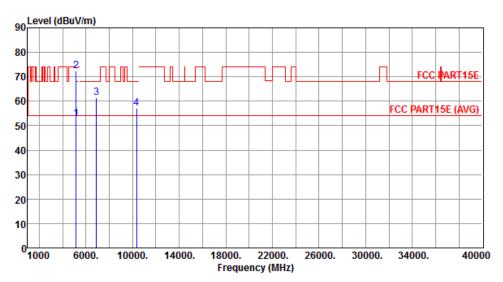
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

SPORTON INTERNATIONAL INC. Page No. : 62 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

SPORTON LAB

Mode 3: External antenna with adapter mode

Transmitter Radiated Unwanted Emissions (Above 1GHz)							
Modulation Mode	11a	Test Freq. (MHz)	5180				
N _{TX}	2	Polarization	Н				



	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.78	54.00	-1.22	47.22	5.56	Average		
2	5150.00	72.49	74.00	-1.51	66.93	5.56	Peak		
3	6906.70	61.60	68.20	-6.60	53.49	8.11	Peak		
4	10360.00	57.09	68.20	-11.11	42.02	15.07	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.

SPORTON INTERNATIONAL INC. Page No. : 63 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



FCC Test Report

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode 11a Test Freq. (MHz) 5180

N_{TX} 2 Polarization V

Report No.: FR441605ANB1



	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	47.97	54.00	-6.03	42.41	5.56	Average		
2	5150.00	65.38	74.00	-8.62	59.82	5.56	Peak		
3	6906.70	62.37	68.20	-5.83	54.26	8.11	Peak		
4	10360.00	55.31	68.20 -	-12.89	40.24	15.07	Peak		

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

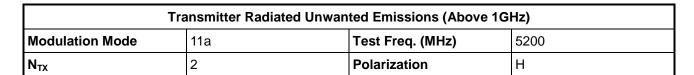
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

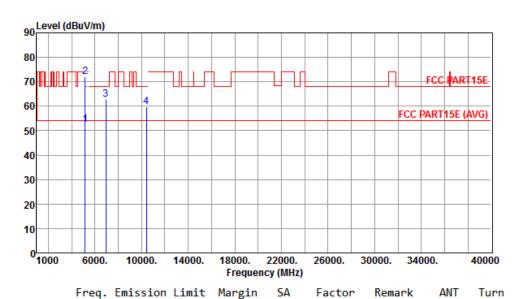
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

SPORTON INTERNATIONAL INC. Page No. : 64 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

FCC Test Report Report No.: FR441605ANB1





		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.63	54.00	-1.37	47.07	5.56	Average		
2	5150.00	72.19	74.00	-1.81	66.63	5.56	Peak		
3	6933.30	62.70	68.20	-5.50	54.58	8.12	Peak		
4	10400.00	59.91	68.20	-8.29	44.78	15.13	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.

SPORTON INTERNATIONAL INC. Page No. : 65 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



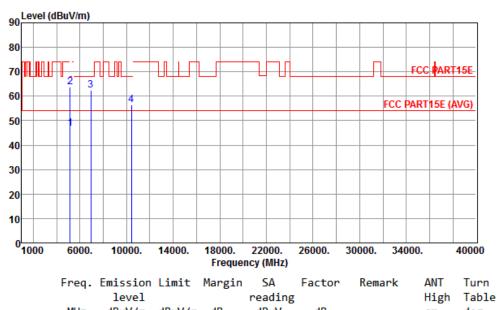
FCC Test Report

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode 11a Test Freq. (MHz) 5200

N_{TX} 2 Polarization V

Report No.: FR441605ANB1



	MHZ	dBuV/m	dBuV/m dB	dBuV	dВ		cm	deg
1	5150.00	46.88	54.00 -7.12	41.32	5.56	Average		
2	5150.00	63.73	74.00 -10.27	58.17	5.56	Peak		
3	6933.30	62.46	68.20 -5.74	54.34	8.12	Peak		
4	10400.00	56.39	68.20 -11.81	41.26	15.13	Peak		

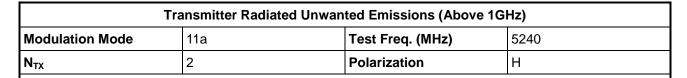
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

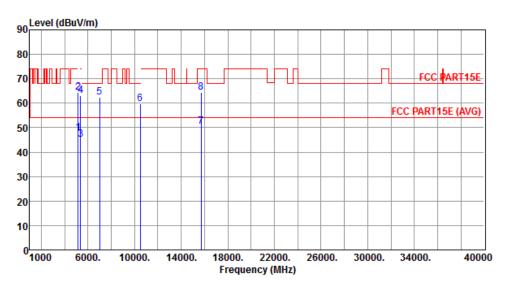
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 66 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	47.73	54.00	-6.27	42.17	5.56	Average		
2	5150.00	64.52	74.00	-9.48	58.96	5.56	Peak		
3	5350.00	45.09	54.00	-8.91	39.38	5.71	Average		
4	5350.00	63.09	74.00	-10.91	57.38	5.71	Peak		
5	6986.70	62.43	68.20	-5.77	54.29	8.14	Peak		
6	10480.00	59.93	68.20	-8.27	44.69	15.24	Peak		
7	15720.00	50.61	54.00	-3.39	36.35	14.26	Average		
8	15720.00	64.57	74.00	-9.43	50.31	14.26	Peak		

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

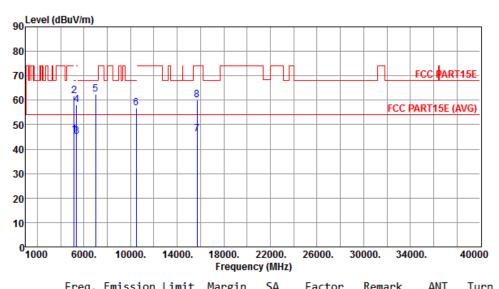
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 67 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

	Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	11a	Test Freq. (MHz)	5240							
N _{TV}	2	Polarization	V							



	Freq.	level	Limit	margin	reading		Kemark	High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	45.98	54.00	-8.02	40.42	5.56	Average		
2	5150.00	61.64	74.00	-12.36	56.08	5.56	Peak		
3	5350.00	45.23	54.00	-8.77	39.52	5.71	Average		
4	5350.00	58.02	74.00	-15.98	52.31	5.71	Peak		
5	6986.70	62.58	68.20	-5.62	54.44	8.14	Peak		
6	10480.00	56.74	68.20	-11.46	41.50	15.24	Peak		
7	15720.00	46.03	54.00	-7.97	31.77	14.26	Average		
8	15720.00	60.14	74.00	-13.86	45.88	14.26	Peak		

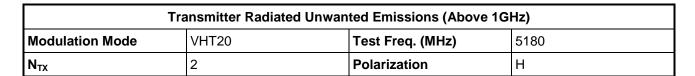
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

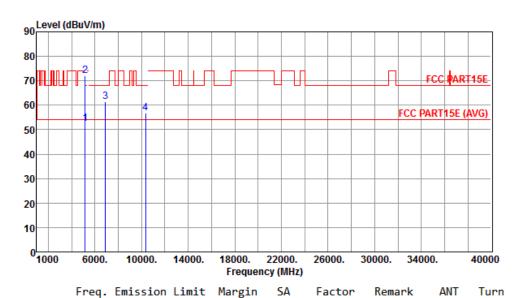
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 68 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.56	54.00	-1.44	47.00	5.56	Average		
2	5150.00	72.12	74.00	-1.88	66.56	5.56	Peak		
3	6906.70	61.33	68.20	-6.87	53.22	8.11	Peak		
4	10360.00	56.89	68.20 -	11.31	41.82	15.07	Peak		

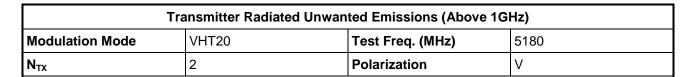
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

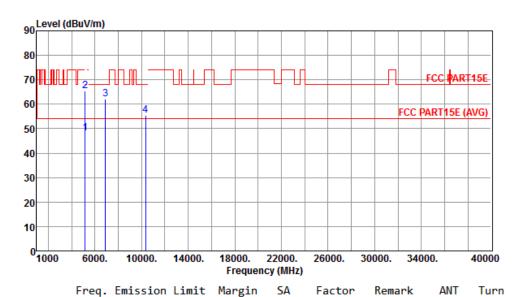
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 69 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	48.08	54.00	-5.92	42.52	5.56	Average		
2	5150.00	65.48	74.00	-8.52	59.92	5.56	Peak		
3	6906.70	62.12	68.20	-6.08	54.01	8.11	Peak		
4	10360.00	55.37	68.20	-12.83	40.30	15.07	Peak		

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

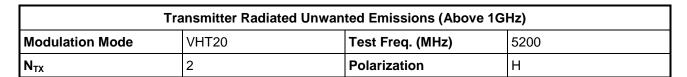
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

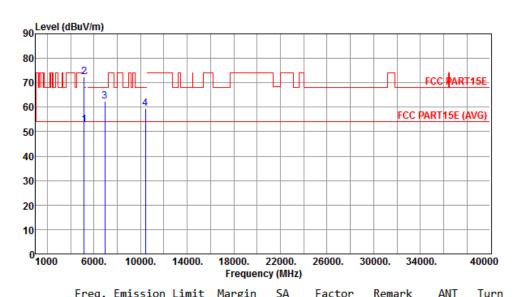
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

SPORTON INTERNATIONAL INC. Page No. : 70 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

FCC Test Report Report No.: FR441605ANB1





	MHz	level dBuV/m		Ū	reading dBuV	dB	nemar n	High cm	Table deg
1	5150.00	52.75	54.00	-1.25	47.19	5.56	Average		
2	5150.00	72.31	74.00	-1.69	66.75	5.56	Peak		
3	6933.30	62.43	68.20	-5.77	54.31	8.12	Peak		
4	10400.00	59.45	68.20	-8.75	44.32	15.13	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.

SPORTON INTERNATIONAL INC. Page No. : 71 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



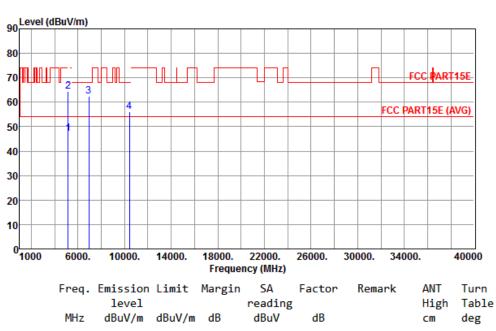
FCC Test Report

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode VHT20 Test Freq. (MHz) 5200

N_{TX} 2 Polarization V

Report No.: FR441605ANB1



	MUZ	abuv/m	ubuv/m	ub	abuv	ub		CIII	aeg
1	5150.00	47.12	54.00	-6.88	41.56	5.56	Average		
2	5150.00	64.54	74.00	-9.46	58.98	5.56	Peak		
3	6933.30	62.49	68.20	-5.71	54.37	8.12	Peak		
4	10400.00	56.00	68.20	-12.20	40.87	15.13	Peak		

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

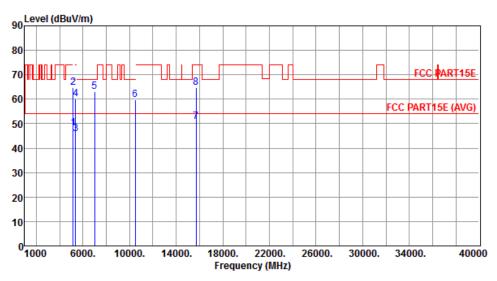
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 72 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	VHT20	Test Freq. (MHz)	5240						
N _{TX}	2	Polarization	Н						



	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	ı dB	dBuV	dB		cm	deg
1	5150.00	48.10	54.00	-5.90	42.54	5.56	Average		
2	5150.00	64.86	74.00	-9.14	59.30	5.56	Peak		
3	5350.00	45.97	54.00	-8.03	40.26	5.71	Average		
4	5350.00	60.24	74.00	-13.76	54.53	5.71	Peak		
5	6986.70	63.01	68.20	-5.19	54.87	8.14	Peak		
6	10480.00	59.67	68.20	-8.53	44.43	15.24	Peak		
7	15720.00	50.83	54.00	-3.17	36.57	14.26	Average		
8	15720.00	64.72	74.00	-9.28	50.46	14.26	Peak		

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

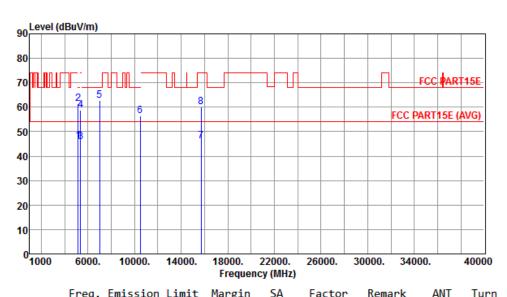
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 73 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode	VHT20	Test Freq. (MHz)	5240					
N _{TX}	2	Polarization	V					



	rreq.	level	LIMIC	nai gin	reading		IVEIII AI	High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	46.24	54.00	-7.76	40.68	5.56	Average		
2	5150.00	61.59	74.00	-12.41	56.03	5.56	Peak		
3	5350.00	45.87	54.00	-8.13	40.16	5.71	Average		
4	5350.00	58.68	74.00	-15.32	52.97	5.71	Peak		
5	6986.70	62.83	68.20	-5.37	54.69	8.14	Peak		
6	10480.00	56.51	68.20	-11.69	41.27	15.24	Peak		
7	15720.00	46.21	54.00	-7.79	31.95	14.26	Average		
8	15720.00	59.95	74.00	-14.05	45.69	14.26	Peak		

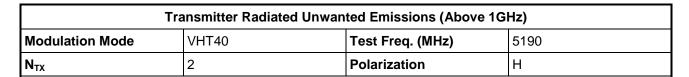
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

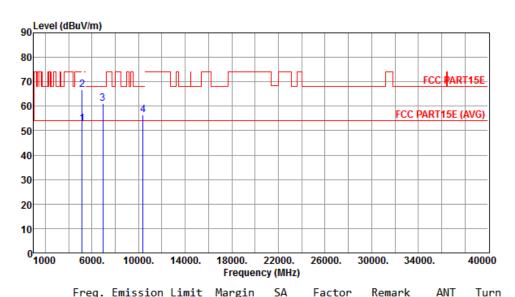
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 74 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





	MHz	level dBuV/m		dB	reading dBuV	dB		High cm	Table deg
1	5150.00	52.76	54.00	-1.24	47.20	5.56	Average		
2	5150.00	66.88	74.00	-7.12	61.32	5.56	Peak		
3	6920.00	61.17	68.20	-7.03	53.06	8.11	Peak		
4	10380.00	56.55	68.20	-11.65	41.44	15.11	Peak		

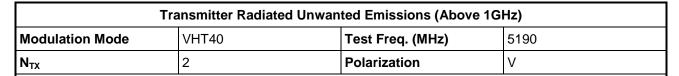
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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.

SPORTON INTERNATIONAL INC. Page No. : 75 of 85 TEL: 886-3-3273456 Report Version : Rev. 01





		level		reading			High		
	MHz	dBuV/m	dBuV/m dB	dBuV	dB		cm	deg	
1	5150.00	47.67	54.00 -6.33	42.11	5.56	Average			
2	5150.00	61.05	74.00 -12.95	55.49	5.56	Peak			
3	6920.00	62.43	68.20 -5.77	54.32	8.11	Peak			
4	10380.00	55.23	68.20 -12.97	40.12	15.11	Peak			

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

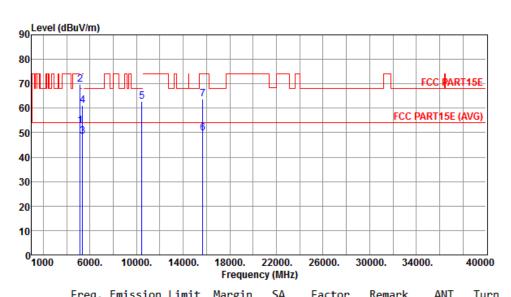
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 76 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode	VHT40	Test Freq. (MHz)	5230					
N _{TX}	2	Polarization	Н					



	Freq.	level	Limit	margin	reading	Factor	Kemark	High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.86	54.00	-1.14	47.30	5.56	Average		
2	5150.00	69.73	74.00	-4.27	64.17	5.56	Peak		
3	5350.00	48.45	54.00	-5.55	42.74	5.71	Average		
4	5350.00	61.19	74.00	-12.81	55.48	5.71	Peak		
5	10460.00	62.62	68.20	-5.58	47.41	15.21	Peak		
6	15690.00	49.86	54.00	-4.14	35.55	14.31	Average		
7	15690.00	63.63	74.00	-10.37	49.32	14.31	Peak		

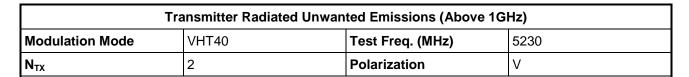
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

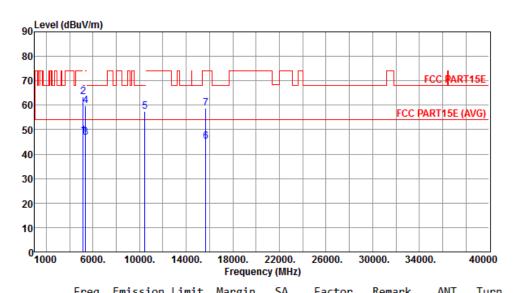
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 77 of 85
TEL: 886-3-3273456 Report Version : Rev. 01





level reading		Table
MHz dBuV/m dB dBuV dB	cm	deg
1 5150.00 47.60 54.00 -6.40 42.04 5.56 Average		
2 5150.00 63.41 74.00 -10.59 57.85 5.56 Peak		
3 5350.00 46.93 54.00 -7.07 41.22 5.71 Average		
4 5350.00 59.92 74.00 -14.08 54.21 5.71 Peak		
5 10460.00 57.34 68.20 -10.86 42.13 15.21 Peak		
6 15690.00 45.13 54.00 -8.87 30.82 14.31 Average		
7 15690.00 58.78 74.00 -15.22 44.47 14.31 Peak		

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

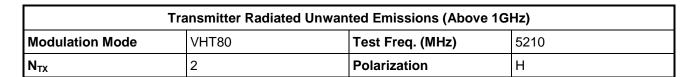
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

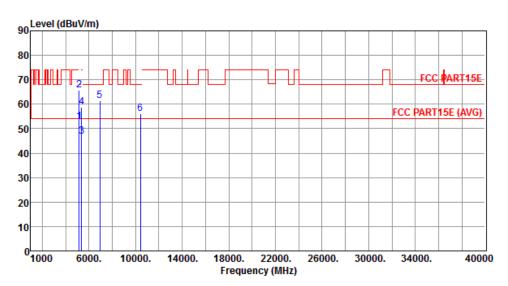
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

SPORTON INTERNATIONAL INC. Page No. : 78 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

FCC Test Report Report No.: FR441605ANB1





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5150.00	52.92	54.00	-1.08	47.36	5.56	Average		
2	5150.00	65.87	74.00	-8.13	60.31	5.56	Peak		
3	5350.00	46.68	54.00	-7.32	40.97	5.71	Average		
4	5350.00	58.71	74.00	-15.29	53.00	5.71	Peak		
5	6946.70	61.43	68.20	-6.77	53.31	8.12	Peak		
6	10420.00	56.24	68.20	-11.96	41.09	15.15	Peak		

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

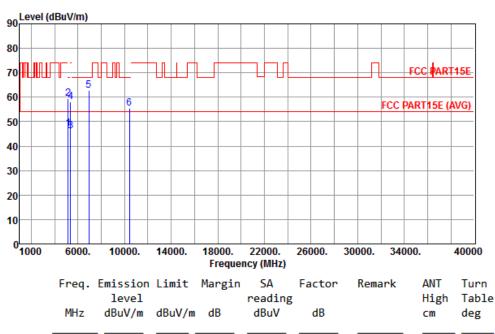
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

SPORTON INTERNATIONAL INC. Page No. : 79 of 85 TEL: 886-3-3273456 Report Version : Rev. 01

Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	VHT80	Test Freq. (MHz)	5210						
N _{TV}	2	Polarization	V						



1	5150.00	47.14	54.00 -6.86	41.58	5.56	Average	
2	5150.00	59.59	74.00 -14.41	54.03	5.56	Peak	
3	5350.00	46.21	54.00 -7.79	40.50	5.71	Average	
4	5350.00	57.96	74.00 -16.04	52.25	5.71	Peak	
5	6946.70	62.78	68.20 -5.42	54.66	8.12	Peak	
6	10420.00	55.48	68.20 -12.72	40.33	15.15	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.

SPORTON INTERNATIONAL INC. Page No. : 80 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



3.6 Frequency Stability

3.6.1 Frequency Stability Limit

	Frequency Stability Limit						
UN	II Devices						
	In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.						
LE-	-LAN Devices						
\boxtimes	N/A						
IEE	E Std. 802.11n-2009						
	The transmitter center frequency tolerance shall be \pm 20 ppm maximum for the 5 GHz band and \pm 25 ppm maximum for the 2.4 GHz band.						

Report No.: FR441605ANB1

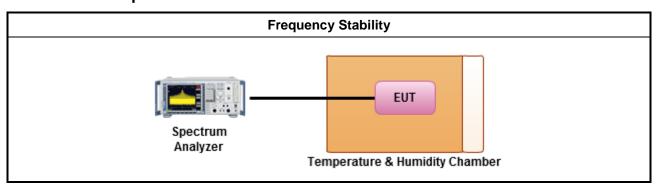
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

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

3.6.4 Test Setup



SPORTON INTERNATIONAL INC. Page No. : 81 of 85
TEL: 886-3-3273456 Report Version : Rev. 01

3.6.5 Test Result of Frequency Stability

Mode 1: Internal antenna with adapter mode

Frequency Stability Result					
Мо	de	Frequency Stability (ppm)			
Condition Freq. (MHz)		Test Frequency (MHz)	Frequency Stability (ppm)		
T _{20°C} Vmax 5200		5200.00453	0.8712		
T _{20°C} Vmin	5200	5200.02378	4.5731		
T _{50°C} Vnom	5200	5200.03273	6.2942		
T _{40°C} Vnom 5200 T _{30°C} Vnom 5200		5199.99687 5200.01435	-0.6019		
			2.7596		
T _{20°C} Vnom	5200	5200.01265	2.4327		
T _{10°C} Vnom	5200	5200.00740	1.4231		
T _{0°C} Vnom	5200	5200.00785	1.5096		
T _{-10°C} Vnom	5200	5200.00925	1.7788		
T _{-20°C} Vnom	5200	5199.99132	-1.6692		
T _{-30°C} Vnom	5200	5200.01378	2.6500		
Limit (ppm)			20		
Result		Con	nplied		

Report No.: FR441605ANB1

Note 1: Measure at 85 % [Vmin] and 115 % [Vmax] of the nominal voltage [Vnom].

Note 2: The nominal voltage refer test report clause 1.1.6 for EUT operational condition.

SPORTON INTERNATIONAL INC. Page No. : 82 of 85
TEL: 886-3-3273456 Report Version : Rev. 01



Mode 2: External antenna with adapter mode

Frequency Stability Result					
Мо	de	Frequency Stability (ppm)			
Condition	Freq. (MHz)	Test Frequency (MHz)	Frequency Stability (ppm)		
T _{20°C} Vmax	5200	5200.00807	1.5519		
T _{20°C} Vmin	5200	5200.02515	4.8365		
T _{50°C} Vnom	5200	5200.03665	7.0481		
T _{40°C} Vnom	5200	5199.99564	-0.8385		
T _{30°C} Vnom	5200	5200.01642	3.1577		
T _{20°C} Vnom	5200	5200.01664	3.2000		
T _{10°C} Vnom	5200	5200.01263	2.4288		
T _{0°C} Vnom 5200 T _{-10°C} Vnom 5200			1.6154		
			1.7981		
T _{-20°C} Vnom	5200	5199.98981	-1.9596		
T _{-30°C} Vnom 5200		5200.01330	2.5577		
Limit (ppm)			20		
Result		Cor	nplied		

Note 1: Measure at 85 % [Vmin] and 115 % [Vmax] of the nominal voltage [Vnom]. Note 2: The nominal voltage refer test report clause 1.1.6 for EUT operational condition.

SPORTON INTERNATIONAL INC. Page No. : 83 of 85 Report Version TEL: 886-3-3273456 : Rev. 01



4 Test Equipment and Calibration Data

Test Item	Radiated Emissions					
Test Site	966 chamber1 / (03CH01-WS)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until	
Spectrum Analyzer	R&S	FSV40	101498	Jan. 25, 2014	Jan. 24, 2015	
Receiver	R&S	ESR3	101658	Jan. 10, 2014	Jan. 09, 2015	
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jan. 02, 2014	Jan. 01, 2015	
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Feb. 13, 2014	Feb. 12, 2015	
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Dec. 27, 2013	Dec. 26, 2014	
Preamplifier	Burgeon	BPA-530	SN:100219	Nov. 28, 2013	Nov. 27, 2014	
Preamplifier	Agilent	83017A	MY39501308	Dec. 16, 2013	Dec. 15, 2014	
Preamplifier	WM	TF-130N-R1	923365	Oct. 23, 2013	Oct. 22, 2014	
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 16, 2013	Dec. 15, 2014	
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 16, 2013	Dec. 15, 2014	
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 16, 2013	Dec. 15, 2014	
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 16, 2013	Dec. 15, 2014	
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 16, 2013	Dec. 15, 2014	
Note: Calibration Interval of instruments listed above is one year.						

Report No.: FR441605ANB1

Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014
Note: Calibration Interval of instruments listed above is two year.					

Test Item	Conducted Emission						
Test Site	Conduction room 1 / (CO01-WS)						
Instrument	Manufacturer Model No. Serial No. Calibration Date Calibration Until						
EMC Receiver	R&S	ESCS 30	100169	Oct. 15, 2013	Oct. 14, 2014		
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 23, 2013	Nov. 22, 2014		
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127-666	Dec. 04, 2013	Dec. 03, 2014		
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Apr. 23, 2014	Apr. 22, 2015		
50 ohm terminal (Support Unit)	NA	50	04	Apr. 18, 2014	Apr. 17, 2015		
Note: Calibration Interval of instruments listed above is one year.							

SPORTON INTERNATIONAL INC. Page No. : 84 of 85 TEL: 886-3-3273456 Report Version : Rev. 01



FCC Test Report

Test Item	RF Conducted					
Test Site	TH01-HY					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until	
Spectrum Analyzer	R&S	FSV 40	101063	Feb. 17, 2014	Feb. 16, 2015	
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	Nov. 21, 2013	Nov. 20, 2014	
Signal Generator	R&S	SMB100A	175727	Jan. 07, 2014	Jan. 06, 2015	
Power Sensor	Anritsu	MA2411B	1207366	Oct. 24, 2013	Oct. 23, 2014	
Power Meter	Anritsu	ML2495A	1241002	Oct. 24, 2013	Oct. 23, 2014	
DC Power Source	G.W.	GPS-3030DD	GEN865896	Nov. 21, 2013	Nov. 20, 2014	
AC Power Source	G.W	APS-9102	EL920581	Jul. 15, 2014	Jul. 14, 2015	
Note: Calibration Interval of instruments listed above is one year.						

Report No.: FR441605ANB1

SPORTON INTERNATIONAL INC. Page No. : 85 of 85 TEL: 886-3-3273456 Report Version : Rev. 01