

FCC Test Report

Equipment

: N300 High Power Easy-N-Range

Extender

Brand Name

: TRENDnet

Model No.

: TEW-737HRE

FCC ID

: XU8TEW737HRE

Standard

: 47 CFR FCC Part 15.247

Operating Band

: 2400 MHz - 2483.5 MHz

Equipment Class

: DTS

Applicant

: TRENDNET, Inc.

Manufacturer

20675 Manhattan Place, Torrance,

CA 90501, USA

The product sample received on May 07, 2013 and completely tested on May 28, 2013. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.

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

Reviewed by:

Wayne Hsu / Assistant Manager

Testing Laboratory
1190

Report No.: FR352148

SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-327-0973 Page No.

: 1 of 60

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	7
1.4	Testing Location Information	7
1.5	Measurement Uncertainty	8
2	TEST CONFIGURATION OF EUT	9
2.1	The Worst Case Modulation Configuration	9
2.2	Test Channel Frequencies Configuration	9
2.3	The Worst Case Power Setting Parameter	9
2.4	The Worst Case Measurement Configuration	10
2.5	Test Setup Diagram	11
3	TRANSMITTER TEST RESULT	12
3.1	AC Power-line Conducted Emissions	12
3.2	6dB Bandwidth	15
3.3	RF Output Power	17
3.4	Power Spectral Density	21
3.5	Transmitter Radiated Bandedge Emissions	24
3.6	Transmitter Radiated Unwanted Emissions	30
4	TEST EQUIPMENT AND CALIBRATION DATA	59
APPI	ENDIX A. TEST PHOTOS	A1

TEL: 886-3-327-3456 FAX: 886-3-327-0973 **Report No. : FR352148**



Summary of Test Result

Report No. : FR352148

		Conforr	mance Test Specifications		
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 0.383MHz 45.76 (Margin 12.45dB) - QP 41.19 (Margin 7.02dB) - AV	FCC 15.207	Complied
3.2	15.247(a)	6dB Bandwidth	6dB Bandwidth Unit [MHz] 20M: 17.57 / 40M: 36.06	≥500kHz	Complied
3.3	15.247(b)	RF Output Power (Maximum Conducted (Average) Output Power)	Power [dBm]: 22.97	Power [dBm]: 30	Complied
3.4	15.247(e)	Power Spectral Density	PSD [dBm/30kHz]: -0.62	PSD [dBm/3kHz]: 8	Complied
3.5	15.247(d)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2400.00MHz: 31.10dB Restricted Bands [dBuV/m at 3m]: 2388.80MHz 67.89 (Margin 6.11dB) - PK 52.91 (Margin 1.09dB) - AV	Non-Restricted Bands: > 30 dBc Restricted Bands: FCC 15.209	Complied
3.6	15.247(d)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 4924.00MHz 55.05 (Margin 18.95dB) – PK 52.83 (Margin 1.17dB) - AV	Non-Restricted Bands: > 30 dBc Restricted Bands: FCC 15.209	Complied

SPORTON INTERNATIONAL INC. : 3 of 60
TEL: 886-3-327-3456 : Report Version : Rev. 01



Revision History

Report No. : FR352148

Report No.	Version	Description	Issued Date
FR352148	Rev. 01	Initial issue of report	Jun. 03, 2013

SPORTON INTERNATIONAL INC. Page No. : 4 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information								
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	RF Output Power (dBm)	Co-location		
2400-2483.5	b	2412-2462	1-11 [11]	2	22.97	N/A		
2400-2483.5	g	2412-2462	1-11 [11]	2	22.73	N/A		
2400-2483.5	n (HT-20)	2412-2462	1-11 [11]	2	22.72	N/A		
2400-2483.5	n (HT-40)	2422-2452	3-9 [7]	2	18.93	N/A		

Report No.: FR352148

- Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.
- Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- Note 4: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)

1.1.2 Antenna Information

_										
		Antenna Category								
	Equ	Equipment placed on the market without antennas								
\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.								
	Exte	ernal 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.	No. Ant. Cat. Ant. Type Connector Gain (dBi)					
1	Integral	PIFA	U.FL	0		

SPORTON INTERNATIONAL INC. : 5 of 60
TEL: 886-3-327-3456 : Report Version : Rev. 01



FCC Test Report

1.1.3 Type of EUT

	ldent	ify EU	IT			
Serial Number	Т	,	· -			
		ro Dro	dustion . Drototus	•		
sentation of Equipment				<u> </u>		
	Туре	of EU	IT			
Stand-alone						
Combined (EUT where the	ne radio part is fully integ	grated	within another device)		
Combined Equipment - E	Brand Name / Model No.	.:				
Plug-in radio (EUT intend	ded for a variety of host	syster	ms)			
Host System - Brand Na	me / Model No.:					
Other:						
	Operated Mode for	or Wo	rst Duty Cycle			
Operated normally mode		or Wo	rst Duty Cycle			
Operated normally mode	e for worst duty cycle	or Wo	rst Duty Cycle			
Operated test mode for v	e for worst duty cycle	or Wo		ity Eactor		
•	e for worst duty cycle	or Wo	Power Du	uty Factor 0 log 1/x)		
Operated test mode for v	e for worst duty cycle	or Wo	Power Du [dB] – (1			
Operated test mode for v Test Signal Dut	e for worst duty cycle	or Wo	Power Du [dB] – (1	0 log 1/x)		
Operated test mode for values Signal Dute 99.59% - IEEE 802.11b	worst duty cycle worst duty cycle y Cycle (x)	or Wo	Power Du [dB] – (10 0.	0 log 1/x) 02		
Operated test mode for virial signal Dut 99.59% - IEEE 802.11b 98.46% - IEEE 802.11g	e for worst duty cycle worst duty cycle y Cycle (x) (HT-20)	or Wo	Power Du [dB] – (10 0.	0 log 1/x) 02 07		
Operated test mode for visual street Signal Dut 99.59% - IEEE 802.11b 98.46% - IEEE 802.11g 98.36% - IEEE 802.11n	e for worst duty cycle worst duty cycle y Cycle (x) (HT-20)	or Wol	Power Du [dB] - (1) 0. 0.	0 log 1/x) 02 07		
Operated test mode for visual street Signal Dut 99.59% - IEEE 802.11b 98.46% - IEEE 802.11g 98.36% - IEEE 802.11n	worst duty cycle worst duty cycle y Cycle (x) (HT-20) (HT-40)	or Wol	Power Du [dB] - (1) 0. 0.	0 log 1/x) 02 07		
Operated test mode for visual part of the second sec	e for worst duty cycle worst duty cycle y Cycle (x) (HT-20) (HT-40)	or Wor	Power Du [dB] - (1) 0. 0.	0 log 1/x) 02 07		
	Combined Equipment - E Plug-in radio (EUT intend Host System - Brand Nat Other:	Serial Number Sentation of Equipment Type Stand-alone Combined (EUT where the radio part is fully inte Combined Equipment - Brand Name / Model No Plug-in radio (EUT intended for a variety of host Host System - Brand Name / Model No.: Other:	Serial Number Sentation of Equipment Type of EU Stand-alone Combined (EUT where the radio part is fully integrated Combined Equipment - Brand Name / Model No.: Plug-in radio (EUT intended for a variety of host system Host System - Brand Name / Model No.: Other:	Stand-alone Combined (EUT where the radio part is fully integrated within another device Combined Equipment - Brand Name / Model No.: Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: Other:		

Report No. : FR352148

SPORTON INTERNATIONAL INC. Page No. : 6 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

FCC Test Report

1.2 Accessories and Support Equipment

	Accessories					
No.	Equipment	Brand Name	Model Name	Spec.		
1						

Report No.: FR352148

Support Equipment						
No.	No. Equipment Brand Name Model Name Serial No.					
1	Notebook	DELL	E6430	DoC		

1.3 Testing Applied Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2009
- FCC KDB 558074
- FCC KDB 662911
- FCC KDB 412172

1.4 Testing Location Information

	Testing Location							
\boxtimes	Sporton Lab	ADD	:	: No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.				
		TEL	:	886-3-327-34	56 FAX : 8	886-3-327-0973		
\boxtimes	ICC Lab ADD : No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsein 333, Taiwan (R.O.C.)					ao Yuan Hsein 333,		
		TEL	:	886-3-327-34	56 FAX : 8	886-3-327-0973		
T	est Condition	n	Te	est Site No.	Test Engineer	Test Environment	Test Date	
F	RF Conducte	d		TH01-HY	lan Du	22.1°C / 61%	May 28, 2013	
AC Conduction CO01-WS*			CO01-WS*	Peter Lin	23°C / 68%	May 27, 2013		
Radiated Emission 03CH01-WS* Haru Yang 25°C / 65% May 07 ~ May 24,				May 07 ~ May 24, 2013				
	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. : 7 of 60
TEL: 886-3-327-3456 : Report Version : Rev. 01



1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Report No.: FR352148

Measurement Uncertainty					
Test Item		Uncertainty	Limit		
AC power-line conducted emissions		±2.80 dB	N/A		
Emission bandwidth, 6dB bandwidth		±1.42 %	N/A		
RF output power, conducted		±0.63 dB	N/A		
Power density, conducted	±0.81 dB	N/A			
All emissions, radiated	30 – 1000 MHz	±3.9 dB	N/A		
	Above 1GHz	±4.2 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. : 8 of 60
TEL: 886-3-327-3456 Report Version : Rev. 01



2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing							
Modulation Mode	Transmit Chains (N _{TX})	Data Rate / MCS	Worst Data Rate / MCS	RF Output Power (dBm)			
11b,1-11Mbps	2	1-11 Mbps	11 Mbps	22.97			
11g,6-54Mbps	2	6-54 Mbps	6 Mbps	22.73			
HT20,M0-15	2	MCS 0-15	MCS 0	22.72			
HT40,M0-15	2	MCS 0-15	MCS 0	18.93			

Report No.: FR352148

2.2 Test Channel Frequencies Configuration

Test Channel Freque	encies Configuration
IEEE Std. 802.11	Test Channel Frequencies (MHz)
b, g, n (HT-20)	2412-(F1), 2437-(F2), 2462-(F3)
n (HT-40)	2422-(F4), 2437-(F5), 2452-(F6)

2.3 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (2400-2483.5MHz band)							
Test Software	ART	2-GUI					
Test Software Version	2.3						
				Test Frequ	ency (MHz)		
Modulation Mode	N_{TX}		NCB: 20MHz	Z	NCB: 40MHz		
		2412	2437	2462	2422	2437	2452
11b,1-11Mbps	2	20.5	20.5	20.5	-	-	-
11g,6-54Mbps	2	18.5	20.5	19	-	-	-
HT20,M0-15	2	18	20.5	18	-	-	-
HT40,M0-15	2	-	-	-	13	16	13.5

SPORTON INTERNATIONAL INC. : 9 of 60
TEL: 886-3-327-3456 : Report Version : Rev. 01

2.4 The Worst Case Measurement Configuration

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

Report No. : FR352148

The Worst Case Mode for Following Conformance Tests				
Tests Item	RF Output Power, Power Spectral Density, 6 dB Bandwidth			
Test Condition	Conducted measurement at transmit chains			
Modulation Mode	11b, 11g, HT-20, HT-40			

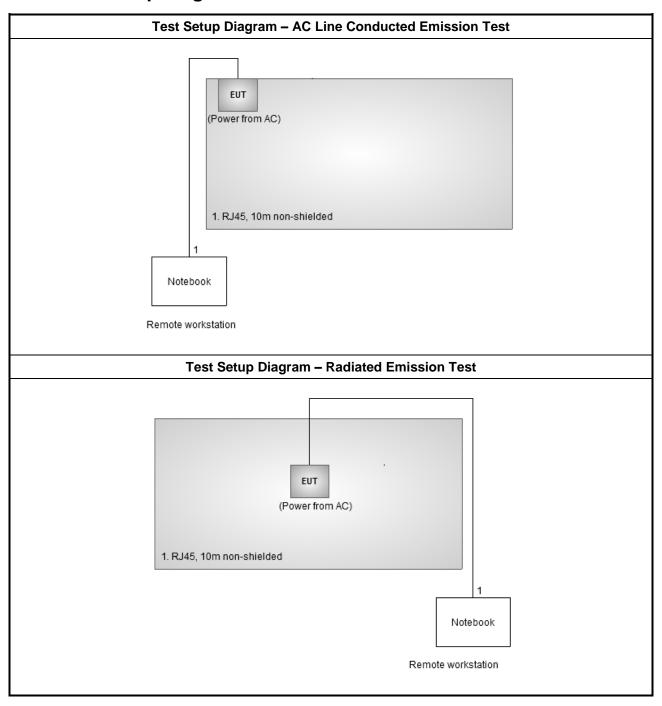
Th	The Worst Case Mode for Following Conformance Tests						
Tests Item		ransmitter Radiated Unwanted Emissions ransmitter Radiated Bandedge Emissions					
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EU regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.						
	☐ EUT will be placed in	fixed position.					
User Position	EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst planes is Y.						
	EUT will be operating multiple positions. EUT shall be performed three orthogonal planes. The worst planes is Y.						
Operating Mode							
Modulation Mode	11b, 11g, HT-20, HT-40						
	X Plane	Y Plane	Z Plane				
Orthogonal Planes of EUT							

SPORTON INTERNATIONAL INC. Page No. : 10 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



Report No.: FR352148

2.5 **Test Setup Diagram**



SPORTON INTERNATIONAL INC. Page No. : 11 of 60 TEL: 886-3-327-3456 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 Pow	er-line Conducted Emissions L	imit
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Report No.: FR352148

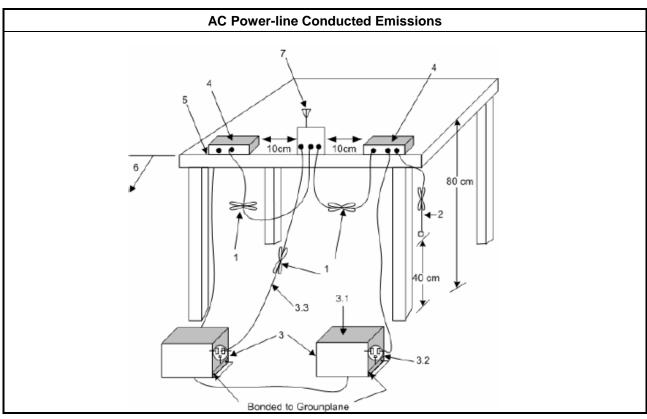
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

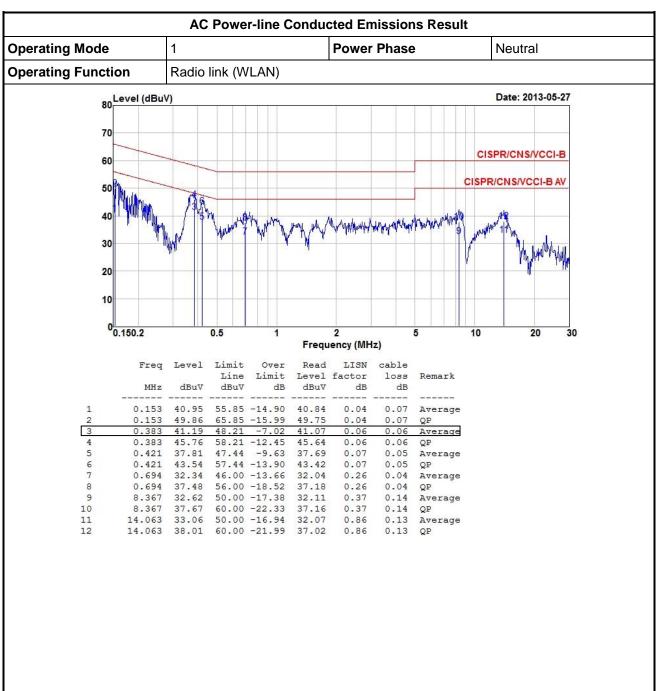
	Test Method
\boxtimes	Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



SPORTON INTERNATIONAL INC. Page No. : 12 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

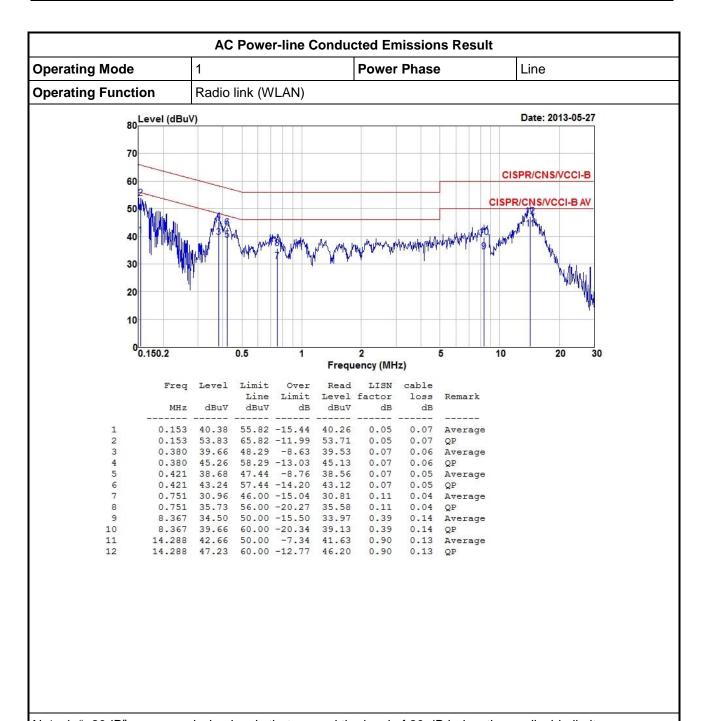
3.1.5 Test Result of AC Power-line Conducted Emissions



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. : 13 of 60
TEL: 886-3-327-3456 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. : 14 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

3.2 6dB Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit			
Systems using digital modulation techniques:			
6 dB bandwidth ≥ 500 kHz.			

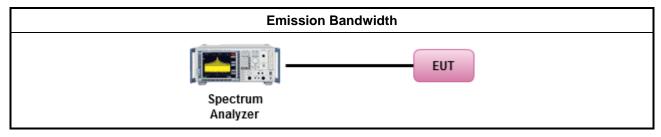
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

			Test Method
\boxtimes	For	the e	mission bandwidth shall be measured using one of the options below:
	\boxtimes	Ref	er as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
		Ref	er as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
		Ref	er as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
\boxtimes	For	cond	ucted 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 the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
		\boxtimes	Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.

3.2.4 Test Setup



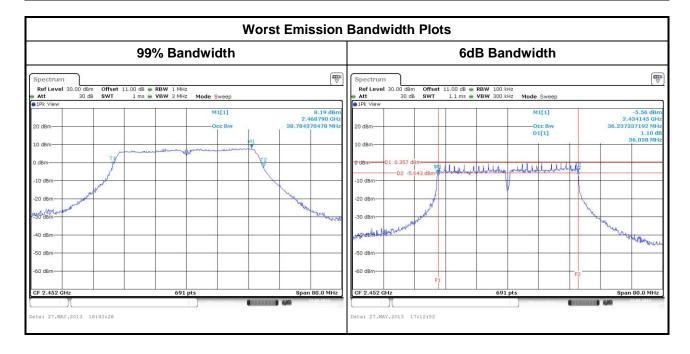
SPORTON INTERNATIONAL INC. Page No. : 15 of 60
TEL: 886-3-327-3456 Report Version : Rev. 01



3.2.5 Test Result of Emission Bandwidth

			Em	ission Ba	andwidth	Result					
Condition			Emission Bandwidth (MHz)								
		_	99% Bandwidth				6dB Bandwidth				
Modulation Mode	N _{TX}	Freq. (MHz)	Chain- Port 1	Chain- Port 2	-	-	Chain- Port 1	Chain- Port 2	-	-	
11b	2	2412	13.72	14.01	-	-	10.09	10.03	-	-	
11b	2	2437	14.01	13.95	-	-	10.09	10.03	-	-	
11b	2	2462	14.07	13.95	-	-	10.03	10.09	-	-	
11g	2	2412	17.25	16.90	-	-	16.35	16.35	-	-	
11g	2	2437	17.31	16.96	-	-	16.29	16.41	-	-	
11g	2	2462	17.13	16.90	-	-	16.06	16.29	-	-	
HT-20	2	2412	18.12	18.12	-	-	17.57	17.57	-	-	
HT-20	2	2437	18.29	18.12	-	-	17.28	17.33	-	-	
HT-20	2	2462	18.29	18.12	-	-	17.57	17.33	-	-	
HT-40	2	2422	38.55	37.97	-	-	35.71	36.06	-	-	
HT-40	2	2437	38.67	37.97	-	-	35.71	35.94	-	-	
HT-40	2	2452	38.78	38.09	-	-	36.06	35.94	-	-	
Limit			N/A ≥500 kHz								
Resu	ılt			Complied							
Note 1: N _{TX} = Number of Transmit Chains											

Report No.: FR352148



SPORTON INTERNATIONAL INC. Page No. : 16 of 60
TEL: 886-3-327-3456 Report Version : Rev. 01

3.3 RF Output Power

3.3.1 RF Output Power Limit

		DE Output Dawar Limit				
		RF Output Power Limit				
Max	Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit					
\boxtimes	240	0-2483.5 MHz Band:				
	\boxtimes	If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W)				
	\boxtimes	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm				
		Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm				
		Smart antenna system (SAS):				
		☐ Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm				
		Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm				
		\square Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm				
e.i.r	.p. P	ower Limit:				
\boxtimes	240	0-2483.5 MHz Band				
	\boxtimes	Point-to-multipoint systems (P2M): P _{eirp} ≤ 36 dBm (4 W)				
		Point-to-point systems (P2P): $P_{eirp} \le MAX(36, [P_{Out} + G_{TX}]) dBm$				
		Smart antenna system (SAS)				
		☐ Single beam: $P_{eirp} \le MAX(36, P_{Out} + G_{TX}) dBm$				
		Overlap beam: $P_{eirp} \le MAX(36, P_{Out} + G_{TX}) dBm$				
		☐ Aggregate power on all beams: $P_{eirp} \le MAX(36, [P_{Out} + G_{TX} + 8]) dBm$				
G_{TX}	 Pout = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi. P_{eirp} = e.i.r.p. Power in dBm. 					

Report No. : FR352148

3.3.2 Measuring Instruments

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

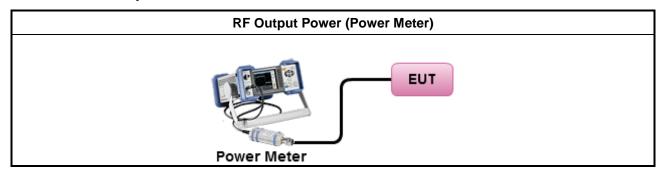
SPORTON INTERNATIONAL INC. Page No. : 17 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

3.3.3 Test Procedures

		Test Method					
	Max	imum Peak Conducted Output Power					
		Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).					
		Refer as FCC KDB 558074, clause 9.1.2 Option 2 (integrated band power method).					
		Refer as FCC KDB 558074, clause 9.1.3 Option 2 (peak power meter for VBW ≥ DTS BW)					
\boxtimes	Max	imum Conducted (Average) Output Power					
		Refer as FCC KDB 558074, clause 9.2.1.2 Method AVGSA-1 (spectral trace averaging).					
		Refer as FCC KDB 558074, clause 9.2.1.3 Method AVGSA-1 Alt. (slow sweep speed)					
		Refer as FCC KDB 558074, clause 9.2.1.4 Method AVGSA-2 (spectral trace averaging).					
		Refer as FCC KDB 558074, clause 9.2.1.5 Method AVGSA-2 Alt. (slow sweep speed)					
	RF power meter and average over on/off periods with duty factor or gated trigger						
	\boxtimes	Refer as FCC KDB 558074, clause 9.2.2 Method AVGPM-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: $P_{total} = P_1 + P_2 + + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$					

Report No. : FR352148

3.3.4 Test Setup



SPORTON INTERNATIONAL INC. Page No. : 18 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

FCC Test Report

3.3.5 Directional Gain for Power Measurement

	Directional Gain (DG) Result							
Transmit Chains No.		1	2	-	-			
Maximum G _{ANT} (dBi)		0	0	-	-			
Modulation Mode	DG (dBi)	N _{TX}	N _{SS}	STBC	Array Gain (dB)			
11b,1-11Mbps	3	2	1	-	3			
11g,6-54Mbps	3	2	1	-	3			
HT-20,M0-M15	3	2	1	-	3			
HT-40,M0-M15	3	2	1	-	3			

Report No.: FR352148

- Note 1: For all transmitter outputs with equal antenna gains, directional gain is to be computed as follows: Any transmit signals are correlated, Directional Gain = G_{ANT} + 10 log(N_{TX}) All transmit signals are completely uncorrelated, Directional Gain = G_{ANT}
- All transmit signals are completely uncorrelated, Directional Gain = G_{ANT} Note 2: For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows:

 Any transmit signals are correlated, Directional Gain = $10 \log[(10^{G1/20} + ... + 10^{GN/20})^2 / N_{TX}]$ All transmit signals are completely uncorrelated, Directional Gain = $10 \log[(10^{G1/10} + ... + 10^{GN/10})^2 / N_{TX}]$
- Note 3: For Spatial Multiplexing, Directional Gain (DG) = G_{ANT} + 10 log(N_{TX}/N_{SS}), where Nss = the number of independent spatial streams data.
- Note 4: For CDD transmissions, directional gain is calculated as power measurements: Directional Gain (DG) = G_{ANT} + Array Gain, where Array Gain is as follows: Array Gain = 0 dB (i.e., no array gain) for N_{TX} ≤ 4; Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{TX};

SPORTON INTERNATIONAL INC. Page No. : 19 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



3.3.6 Test Result of Maximum Average Conducted Output Power

	Maximum Average Conducted Output Power Result										
Condi	ition					RF Outp	ut Pow	er (dBm))		
Modulation Mode	N _{TX}	Freq. (MHz)	Chain Port 1	Chain Port 2	-	-	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	2	2412	20.19	19.72	-	-	22.97	30.00	3	25.97	36.00
11b	2	2437	19.21	19.44	-	-	22.34	30.00	3	25.34	36.00
11b	2	2462	18.83	19.92	-	-	22.42	30.00	3	25.42	36.00
11g	2	2412	17.48	17.81	-	-	20.66	30.00	3	23.66	36.00
11g	2	2437	20.09	19.32	-	-	22.73	30.00	3	25.73	36.00
11g	2	2462	17.52	18.98	-	-	21.32	30.00	3	24.32	36.00
HT-20	2	2412	16.92	17.21	-	-	20.08	30.00	3	23.08	36.00
HT-20	2	2437	19.83	19.58	-	-	22.72	30.00	3	25.72	36.00
HT-20	2	2462	16.83	17.65	-	-	20.27	30.00	3	23.27	36.00
HT-40	2	2422	12.97	13.01	-	-	16.00	30.00	3	19.00	36.00
HT-40	2	2437	16.27	15.53	-	-	18.93	30.00	3	21.93	36.00
HT-40	2	2452	13.90	13.49	-	-	16.71	30.00	3	19.71	36.00
Res	ult			•	•	(Complie	d			

SPORTON INTERNATIONAL INC. Page No. : 20 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

	Power Spectral Density Limit
\boxtimes	Power Spectral Density (PSD) ≤ 8 dBm/3kHz

3.4.2 Measuring Instruments

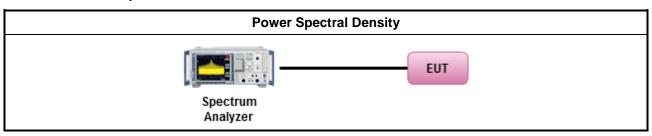
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

		Test Method
\boxtimes	power proc when dem	ver spectral density procedures that the same method as used to determine the conducted output er shall be used to determine the power spectral density. In addition, the use of a peak PSD sedure will always result in a "worst-case" measured level for comparison to the limit. Therefore, never the DTS bandwidth exceeds 500 kHz, it is acceptable to utilize the peak PSD procedure to constrate compliance to the PSD limit, regardless of how the fundamental output power was assured. For the power spectral density shall be measured using below options:
		Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3kHz; detector=peak)
		Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging). For 11b / 11g / HT20 / mode
		Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-1 Alt. (slow sweep speed)
		Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-2 (spectral trace averaging).
		Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed) For HT40 mode
\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 spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the N _{TX} output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
		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.

SPORTON INTERNATIONAL INC. Page No. : 21 of 60
TEL: 886-3-327-3456 Report Version : Rev. 01

3.4.4 Test Setup



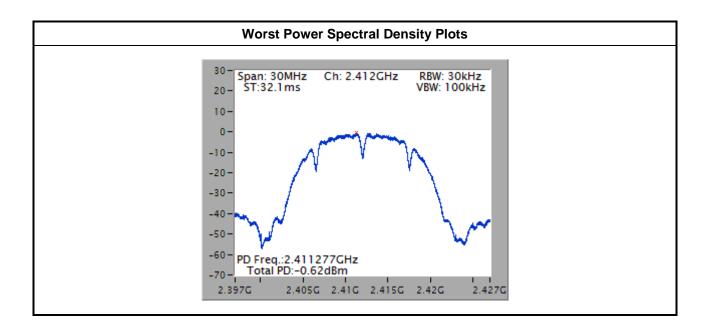
SPORTON INTERNATIONAL INC. Page No. : 22 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



Report No.: FR352148

3.4.5 Test Result of Power Spectral Density

Cond	ition		Power Spectral De	ensity (dBm/30kHz)
Modulation Mode	N _{TX}	Freq. (MHz)	Sum Chain	Power Limit
11b	2	2412	-0.62	8
11b	2	2437	-1.00	8
11b	2	2462	-1.23	8
11g	2	2412	-4.01	8
11g	2	2437	-1.68	8
11g	2	2462	-3.28	8
HT-20	2	2412	-4.97	8
HT-20	2	2437	-2.90	8
HT-20	2	2462	-5.14	8
HT-40	2	2422	-11.96	8
HT-40	2	2437	-8.91	8
HT-40	2	2452	-11.29	8
Res	ult		Com	plied

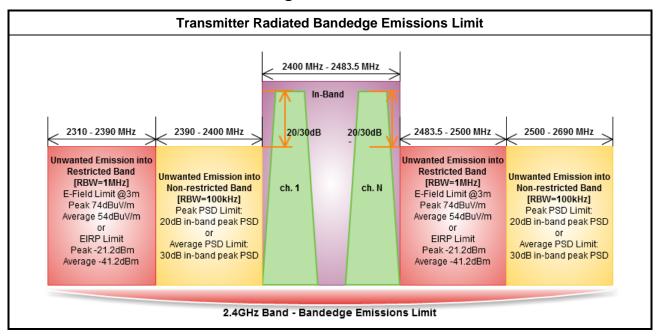


SPORTON INTERNATIONAL INC. Page No. : 23 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



3.5 Transmitter Radiated Bandedge Emissions

3.5.1 Transmitter Radiated Bandedge Emissions Limit



Report No.: FR352148

3.5.2 Measuring Instruments

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

SPORTON INTERNATIONAL INC. Page No. : 24 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

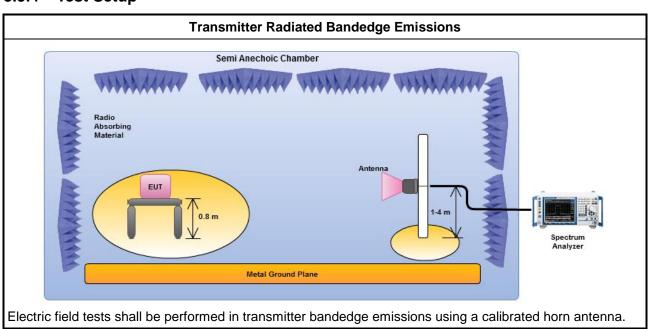


3.5.3 Test Procedures

		Test Method
\boxtimes	The	average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
\boxtimes		er as ANSI C63.10, clause 6.9.2.2 bandedge testing shall be performed at the lowest frequency nnel and highest frequency channel within the allowed operating band.
\boxtimes	For	the transmitter unwanted emissions shall be measured using following options below:
	\boxtimes	Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands
	\boxtimes	Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.
		Refer as FCC KDB 558074, clause 12.2.4.1 Option 1 (trace averaging for duty cycle ≥98%)
		Refer as FCC KDB 558074, clause 12.2.4.2 Option 2 (trace averaging + duty factor).
		Refer as FCC KDB 558074, clause 12.2.4.3 Option 3 (Reduced VBW≥1/T).
		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 558074, clause 12.2.3 measurement procedure peak limit.
\boxtimes	For	the transmitter bandedge emissions shall be measured using following options below:
		Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth using the band power and summing the spectral levels (i.e., 100 kHz or 1 MHz).
	\boxtimes	Refer as ANSI C63.10, clause 6.9.2 for band-edge testing.
		Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements.
\boxtimes	For	radiated measurement, refer as FCC KDB 558074, clause 12.2.6
	For	conducted measurement, refer as FCC KDB 558074, clause 12.2

Report No.: FR352148

3.5.4 Test Setup

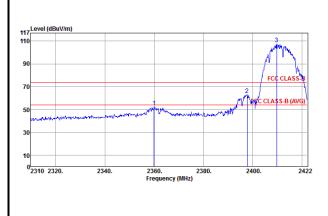


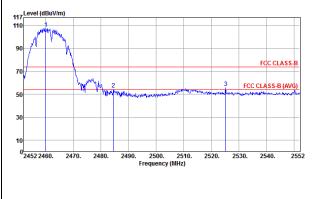
SPORTON INTERNATIONAL INC. Page No. : 25 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

3.5.5 Test Result of Transmitter Radiated Bandedge Emissions

	Transmitter Radiated Bandedge Emissions Result									
Modulation	11b			11b N _{TX} 2						
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol.		
2390-2400	2412	107.51	2397.70	63.17	44.34	30	PK	V		
2500-2690	2462	107.48	2525.20	55.58	51.90	30	PK	V		







Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

Transmitter Radiated Bandedge Emissions Result									
Modulation		11b		N _{TX}	2				
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol.	
2310-2390	2412	109.59	2389.41	3	67.25	74.00	PK	V	
2310-2390	2412	106.51	2360.29	3	50.43	54.00	AV	V	
2483.5-2500	2462	110.48	2483.70	3	71.04	74.00	PK	V	
2483.5-2500	2462	107.06	2484.60	3	48.14	54.00	AV	V	

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).

SPORTON INTERNATIONAL INC. Page No. : 26 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



Modulation		11g		N_{TX}	2			
lon-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Po
2390-2400	2412	102.59	2399.94	70.48	32.11	30	PK	V
2500-2690	2462	104.30	2520.30	54.09	50.21	30	PK	٧
	Low Bande	edge			<u> Ор Ва</u>	ndedge		
17 Level (dBuV/m) 10	Low Band	edge	3 FCC CLASSER	117 Level (dBuV/m) 110 90	Ор Ва	ndedge	FGC CL	ASS-B
17 Level (dBuV/m)	Low Bande	1 A FCCC	FCC CLASS B	110	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	ndedge	FCC CLASS-B	

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

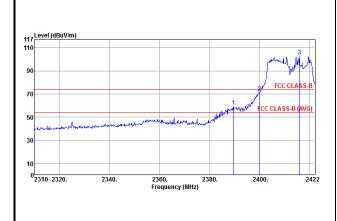
	Transmitter Radiated Bandedge Emissions Result									
Modulation		11g		N _{TX}	2					
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol.		
2310-2390	2412	110.64	2389.97	3	72.25	74.00	PK	V		
2310-2390	2412	98.48	2389.97	3	52.02	54.00	AV	V		
2483.5-2500	2462	111.80	2483.90	3	72.46	74.00	PK	V		
2483.5-2500	2462	100.93	2484.30	3	52.29	54.00	AV	V		
Note 1: Measurem	ent worst e	missions of r	eceive ante	nna polarizat	ion: H (Horizo	ntal) or V (Ve	ertical).			

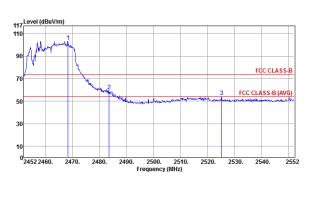
SPORTON INTERNATIONAL INC. Page No. : 27 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



Transmitter Radiated Bandedge Emissions Result Modulation HT-20 N_{TX} Test Ch. In-band **NBE Out-band** Non-restricted [i] **–** [o] Level Pol. Limit (dB) PSD [i] Freq. PSD [o] Freq. Band (MHz) (dB) **Type** note 1 (MHz) (MHz) (dBuV/100kHz) (dBuV/100kHz) PΚ 2390-2400 2412 102.60 2399.94 71.36 31.24 30 ٧ 2500-2690 2462 103.22 2525.20 54.05 49.17 30 PΚ ٧

Low Bandedge Up Bandedge





Report No.: FR352148

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

	Transmitter Radiated Bandedge Emissions Result									
Modulation		HT-20		N _{TX}	2					
Restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/1MHz)	RBE Freq. (MHz)	Measure Distance (m)	Out-Band Level (dBuV/m)	Limit (dBuV/m)	Level Type	Pol.		
2310-2390	2412	109.47	2387.28	3	72.69	74.00	PK	V		
2310-2390	2412	97.58	2389.86	3	52.18	54.00	AV	V		
2483.5-2500	2462	111.48	2483.60	3	71.42	74.00	PK	V		
2483.5-2500	2462	98.53	2483.40	3	52.79	54.00	AV	V		

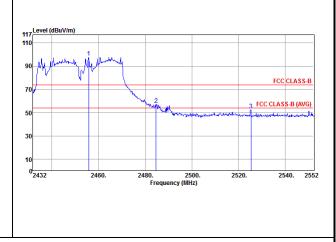
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).

SPORTON INTERNATIONAL INC. Page No. : 28 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



Transmitter Radiated Bandedge Emissions Result Modulation HT-40 N_{TX} Test Ch. In-band **NBE Out-band** Non-restricted [i] **–** [o] Level Pol. Limit (dB) Freq. PSD [i] Freq. PSD [o] Band (MHz) (dB) **Type** note 1 (MHz) (MHz) (dBuV/100kHz) (dBuV/100kHz) 2390-2400 PΚ 2422 95.79 2400.00 64.69 31.10 30 ٧ 2500-2690 2452 97.57 2525.24 52.19 45.38 30 PΚ ٧ Low Bandedge **Up Bandedge**

117 Level (dBuV/m) 110 90 70 FCC CLASS B 6AVG 50 2310 2340. 2360. 2380. 2400. 2420. 2442 Frequency (MHz)



Report No.: FR352148

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

	2			
	Level Type	Pol.		
4.00	PK	V		
54.00	AV	V		
4.00	PK	V		
54.00	AV	V		
,	74.00 54.00 74.00 54.00	54.00 AV 74.00 PK		

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).

SPORTON INTERNATIONAL INC. Page No. : 29 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



3.6 Transmitter Radiated Unwanted Emissions

3.6.1 Transmitter Radiated Unwanted Emissions Limit

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

Report No.: FR352148

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

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

Un-restricted Band Emissions Limit						
RF output power procedure	Limit (dB)					
Peak output power procedure	20					
Average output power procedure	30					

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

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

3.6.2 Measuring Instruments

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

SPORTON INTERNATIONAL INC. Page No. : 30 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



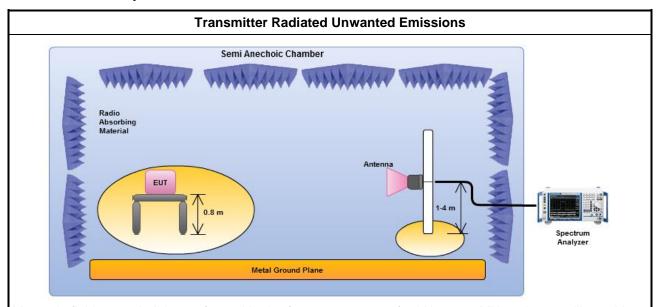
Report No. : FR352148

3.6.3 Test Procedures

Test Method									
perfo equi extra dista	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).								
	Measurements in the frequency range 10 GHz - 18GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit.								
	Measurements in the frequency range above 18 GHz - 25GHz are typically made at a closer distance 0.5m, because the instrumentation noise floor is typically close to the radiated emission limit.								
The	average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].								
For	the transmitter unwanted emissions shall be measured using following options below:								
\boxtimes	Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.								
\boxtimes	Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.								
	☐ Refer as FCC KDB 558074, clause 12.2.4.1 Option 1 (trace averaging for duty cycle ≥98%)								
	Refer as FCC KDB 558074, clause 12.2.4.2 Option 2 (trace averaging + duty factor).								
	Refer as FCC KDB 558074, clause 12.2.4.3 Option 3 (Reduced VBW≥1/T).								
	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 558074, 12.2.3 measurement procedure peak limit.								
	Refer as FCC KDB 558074, clause 12.2.2 measurement procedure Quasi-Peak limit.								
For	radiated measurement, refer as FCC KDB 558074, clause 12.2.6.								
\boxtimes	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.								
\boxtimes	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.								
\boxtimes	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.								
For	conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.								
	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								

SPORTON INTERNATIONAL INC. Page No. : 31 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

3.6.4 Test Setup



Report No.: FR352148

: 32 of 60

: Rev. 01

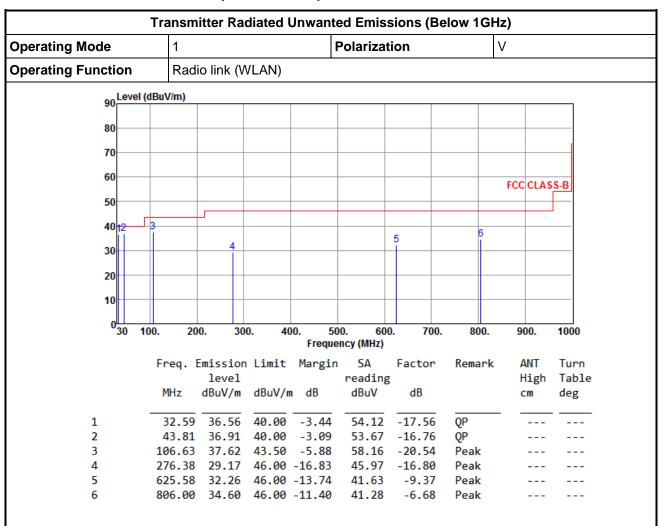
Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn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

3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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

SPORTON INTERNATIONAL INC. Page No.
TEL: 886-3-327-3456 Report Version

3.6.6 Radiated Emissions (Below 1GHz)



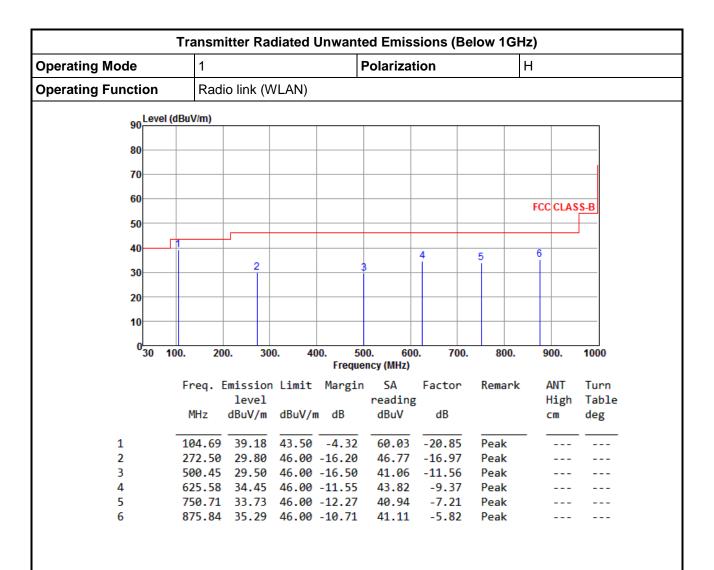
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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. : 33 of 60
TEL: 886-3-327-3456 Report Version : Rev. 01

Report No. : FR352148



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

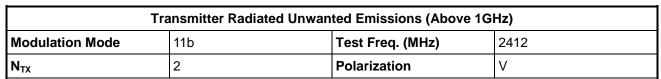
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

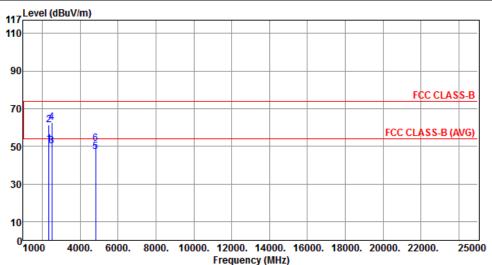
SPORTON INTERNATIONAL INC. Page No. : 34 of 60
TEL: 886-3-327-3456 Report Version : Rev. 01

FCC Test Report

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



Report No.: FR352148



	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2360.00	51.04	54.00	-2.96	54.38	-3.34	Average		
2	2360.00	61.52	74.00	-12.48	64.86	-3.34	Peak		
3	2500.00	50.19	54.00	-3.81	52.95	-2.76	Average		
4	2500.00	62.67	74.00	-11.33	65.43	-2.76	Peak		
5	4824.00	47.26	54.00	-6.74	42.95	4.31	Average		
6	4824.00	51.28	74.00	-22.72	46.97	4.31	Peak		

SPORTON INTERNATIONAL INC. Page No. : 35 of 60
TEL: 886-3-327-3456 Report Version : Rev. 01

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

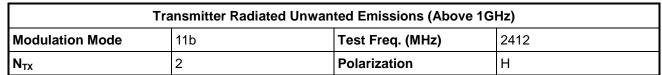
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

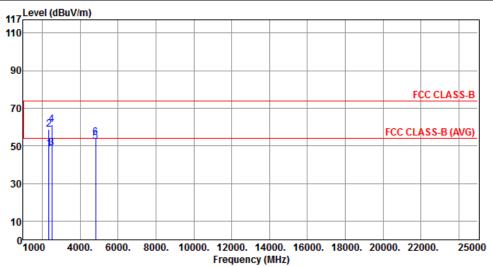
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

Report No.: FR352148





	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		CM	deg
1	2360.00	48.32	54.00	-5.68	51.66	-3.34	Average		
2	2360.00	58.57	74.00	-15.43	61.91	-3.34	Peak		
3	2500.00	48.59	54.00	-5.41	51.35	-2.76	Average		
4	2500.00	61.25	74.00	-12.75	64.01	-2.76	Peak		
5	4824.00	52.30	54.00	-1.70	47.99	4.31	Average		
6	4824.00	54.59	74.00	-19.41	50.28	4.31	Peak		

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

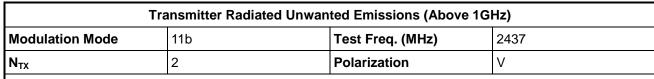
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

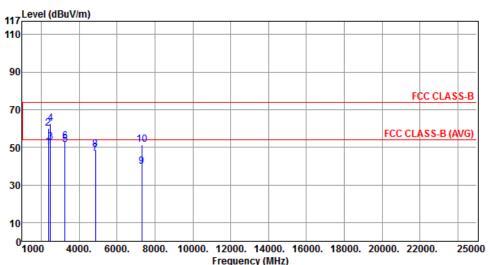
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 36 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01





	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	2387.00	49.95	54.00	-4.05	53.18	-3.23	Average		
2	2387.00	60.11	74.00	-13.89	63.34	-3.23	Peak		
3	2488.80	52.49	54.00	-1.51	55.30	-2.81	Average		
4	2488.80	62.76	74.00	-11.24	65.57	-2.81	Peak		
5	3249.30	51.35	54.00	-2.65	51.64	-0.29	Average		
6	3249.30	53.21	74.00	-20.79	53.50	-0.29	Peak		
7	4874.00	46.73	54.00	-7.27	42.34	4.39	Average		
8	4874.00	48.92	74.00	-25.08	44.53	4.39	Peak		
9	7311.00	39.60	54.00	-14.40	30.68	8.92	Average		
10	7311.00	51.22	74.00	-22.78	42.30	8.92	Peak		

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

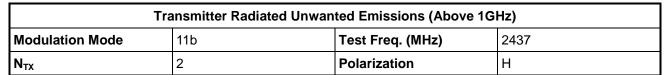
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

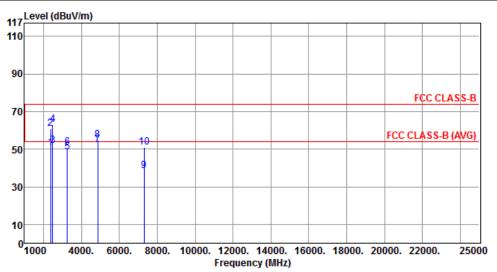
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 37 of 60
TEL: 886-3-327-3456 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	2387.00	50.67	54.00	-3.33	53.90	-3.23	Average		
2	2387.00	61.06	74.00	-12.94	64.29	-3.23	Peak		
3	2488.80	51.77	54.00	-2.23	54.58	-2.81	Average		
4	2488.80	62.88	74.00	-11.12	65.69	-2.81	Peak		
5	3249.30	48.45	54.00	-5.55	48.74	-0.29	Average		
6	3249.30	51.01	74.00	-22.99	51.30	-0.29	Peak		
7	4874.00	52.13	54.00	-1.87	47.74	4.39	Average		
8	4874.00	54.68	74.00	-19.32	50.29	4.39	Peak		
9	7311.00	38.45	54.00	-15.55	29.53	8.92	Average		
10	7311.00	50.96	74.00	-23.04	42.04	8.92	Peak		

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

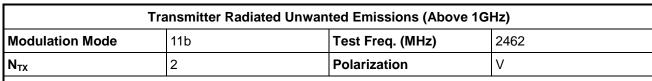
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

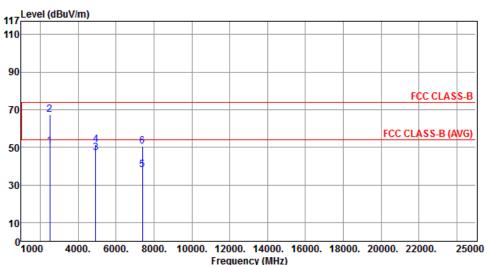
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 38 of 60
TEL: 886-3-327-3456 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	2500.00	50.56	54.00	-3.44	53.32	-2.76	Average		
2	2500.00	67.19	74.00	-6.81	69.95	-2.76	Peak		
3	4924.00	47.12	54.00	-6.88	42.64	4.48	Average		
4	4924.00	51.29	74.00	-22.71	46.81	4.48	Peak		
5	7386.00	38.13	54.00	-15.87	29.15	8.98	Average		
6	7386.00	50.33	74.00	-23.67	41.35	8.98	Peak		

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

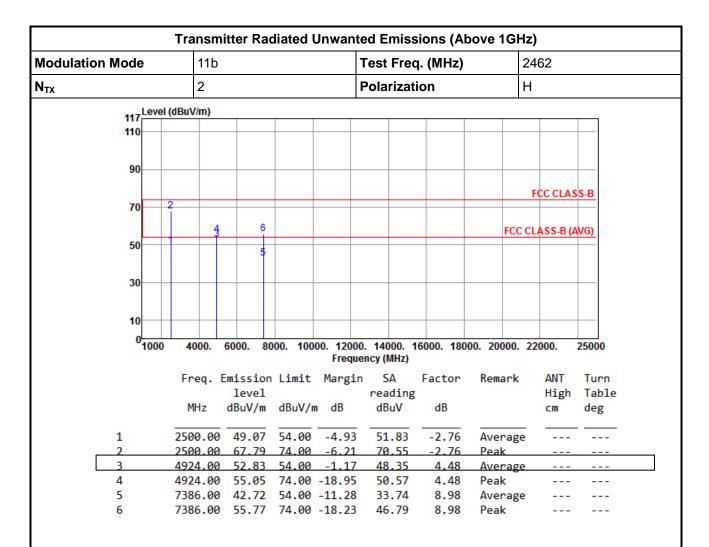
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 39 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



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

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

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

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

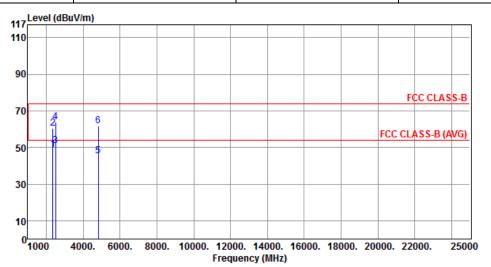
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 40 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



3.6.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g

Tra	ansmitter Radiated Unwan	ted Emissions (Above 1G	Hz)
Modulation Mode	11g	Test Freq. (MHz)	2412
N _{TX}	2	Polarization	V



		Emission level		Ū	reading		Remark		Turn Table
	MHz	dBuV/m	aBuv/m	ав	dBuV	dB		CM	deg
1	2360.00	48.63	54.00	-5.37	51.97	-3.34	Average		
2	2360.00	60.36	74.00	-13.64	63.70	-3.34	Peak		
3	2500.00	50.88	54.00	-3.12	53.64	-2.76	Average		
4	2500.00	64.03	74.00	-9.97	66.79	-2.76	Peak		
5	4824.00	45.37	54.00	-8.63	41.06	4.31	Average		
6	4824.00	61.57	74.00	-12.43	57.26	4.31	Peak		

SPORTON INTERNATIONAL INC. Page No. : 41 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

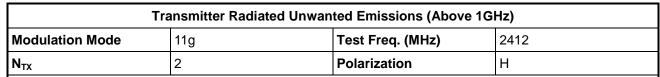
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

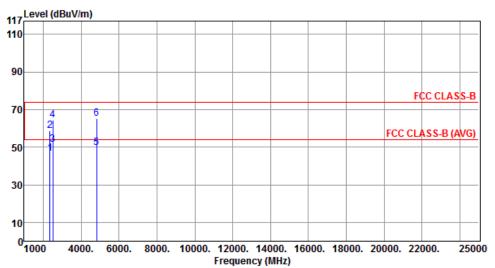
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.





	Freq. MHz	Emission level dBuV/m		Ü	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2360.00	46.77	54.00	-7.23	50.11	-3.34	Average		
2	2360.00				61.92	-3.34	Peak		
3	2500.00	51.21	54.00	-2.79	53.97	-2.76	Average		
4	2500.00	64.30	74.00	-9.70	67.06	-2.76	Peak		
5	4824.00	49.67	54.00	-4.33	45.36	4.31	Average		
6	4824.00	65.35	74.00	-8.65	61.04	4.31	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)

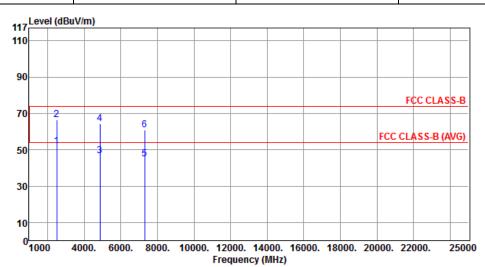
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 42 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

rt Report No. : FR352148

Tra	Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	11g	Test Freq. (MHz)	2437							
N_{TX}	N _{TX} 2 Polarization V									



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2500.00	51.80	54.00	-2.20	54.56	-2.76	Average		
2	2500.00	66.57	74.00	-7.43	69.33	-2.76	Peak		
3	4874.00	46.49	54.00	-7.51	42.10	4.39	Average		
4	4874.00	64.24	74.00	-9.76	59.85	4.39	Peak		
5	7311.00	44.72	54.00	-9.28	35.80	8.92	Average		
6	7311.00	61.05	74.00	-12.95	52.13	8.92	Peak		

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

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

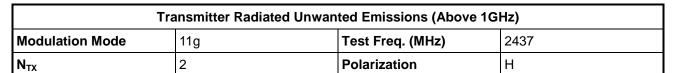
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

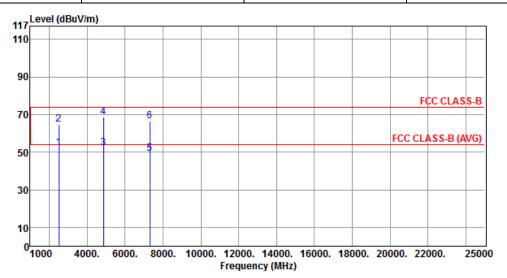
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 43 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

eport Report No. : FR352148





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2500.00	52.03	54.00	-1.97	54.79	-2.76	Average		
2	2500.00	64.65	74.00	-9.35	67.41	-2.76	Peak		
3	4874.00	52.31	54.00	-1.69	47.92	4.39	Average		
4	4874.00	68.81	74.00	-5.19	64.42	4.39	Peak		
5	7311.00	49.25	54.00	-4.75	40.33	8.92	Average		
6	7311.00	66.29	74.00	-7.71	57.37	8.92	Peak		

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

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

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

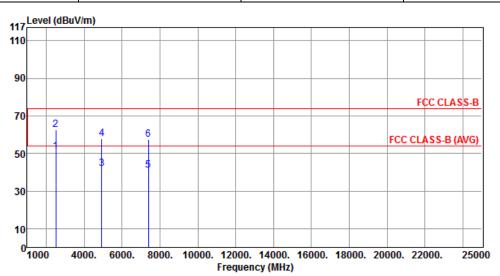
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 44 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

eport Report No. : FR352148

Tra	Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode	11g	Test Freq. (MHz)	2462							
N_{TX}										



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2500.00	51.06	54.00	-2.94	53.82	-2.76	Average		
2	2500.00	62.71	74.00	-11.29	65.47	-2.76	Peak		
3	4924.00	41.93	54.00	-12.07	37.45	4.48	Average		
4	4924.00	57.98	74.00	-16.02	53.50	4.48	Peak		
5	7386.00	40.90	54.00	-13.10	31.92	8.98	Average		
6	7386.00	57.33	74.00	-16.67	48.35	8.98	Peak		

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

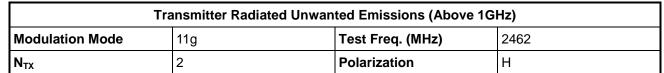
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

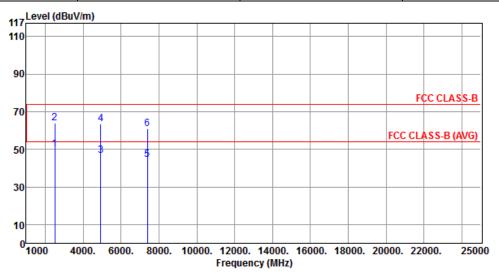
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 45 of 60 TEL: 886-3-327-3456 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	2500.00	50.21	54.00	-3.79	52.97	-2.76	Average		
2	2500.00	63.90	74.00	-10.10	66.66	-2.76	Peak		
3	4924.00	46.65	54.00	-7.35	42.17	4.48	Average		
4	4924.00	63.58	74.00	-10.42	59.10	4.48	Peak		
5	7386.00	44.52	54.00	-9.48	35.54	8.98	Average		
6	7386.00	60.76	74.00	-13.24	51.78	8.98	Peak		

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

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

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

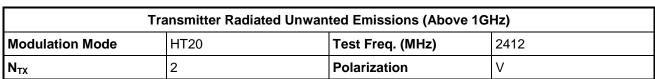
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

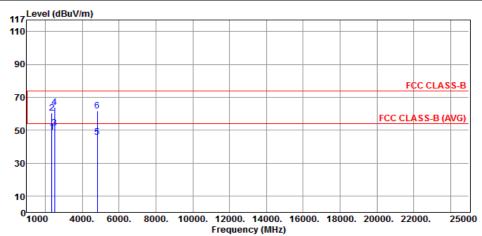
SPORTON INTERNATIONAL INC. Page No. : 46 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



3.6.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT-20



Report No.: FR352148



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2360.00	48.81	54.00	-5.19	52.15	-3.34	Average		
2	2360.00	60.63	74.00	-13.37	63.97	-3.34	Peak		
3	2500.00	51.39	54.00	-2.61	54.15	-2.76	Average		
4	2500.00	64.07	74.00	-9.93	66.83	-2.76	Peak		
5	4824.00	45.66	54.00	-8.34	41.35	4.31	Average		
6	4824.00	61.95	74.00	-12.05	57.64	4.31	Peak		

SPORTON INTERNATIONAL INC. Page No. : 47 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01

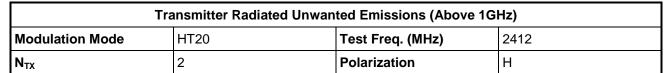
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

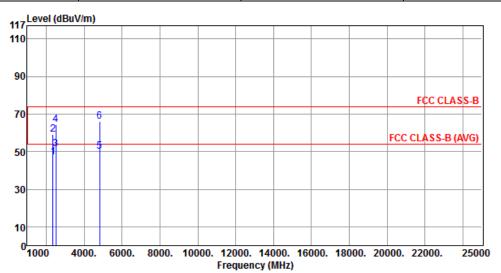
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.





	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		CM	deg
1	2360.00	47.25	54.00	-6.75	50.59	-3.34	Average		
2	2360.00	59.02	74.00	-14.98	62.36	-3.34	Peak		
3	2500.00	51.36	54.00	-2.64	54.12	-2.76	Average		
4	2500.00	64.53	74.00	-9.47	67.29	-2.76	Peak		
5	4824.00	50.05	54.00	-3.95	45.74	4.31	Average		
6	4824.00	66.14	74.00	-7.86	61.83	4.31	Peak		

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

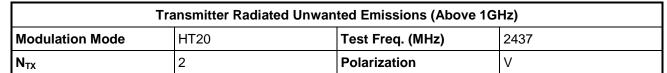
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

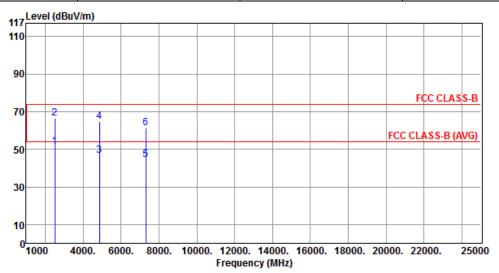
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

Page No. SPORTON INTERNATIONAL INC. : 48 of 60 TEL: 886-3-327-3456 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	2500.00	51.45	54.00	-2.55	54.21	-2.76	Average		
2	2500.00	66.40	74.00	-7.60	69.16	-2.76	Peak		
3	4874.00	46.76	54.00	-7.24	42.37	4.39	Average		
4	4874.00	64.67	74.00	-9.33	60.28	4.39	Peak		
5	7311.00	44.34	54.00	-9.66	35.42	8.92	Average		
6	7311.00	61.36	74.00	-12.64	52.44	8.92	Peak		

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

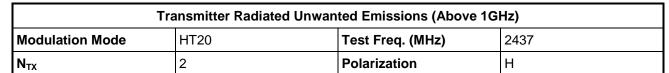
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

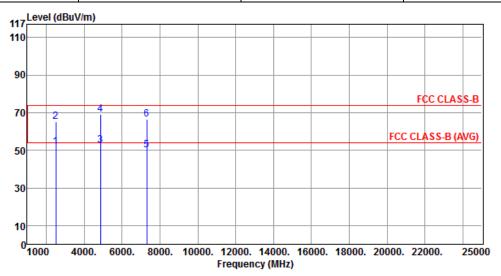
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 49 of 60
TEL: 886-3-327-3456 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	2500.00	51.89	54.00	-2.11	54.65	-2.76	Average		
2	2500.00		74.00		67.82	-2.76	Peak		
3	4874.00	52.62	54.00	-1.38	48.23	4.39	Average		
4	4874.00	69.08	74.00	-4.92	64.69	4.39	Peak		
5	7311.00	50.29	54.00	-3.71	41.37	8.92	Average		
6	7311.00	66.33	74.00	-7.67	57.41	8.92	Peak		

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

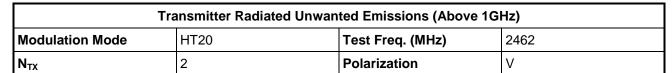
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

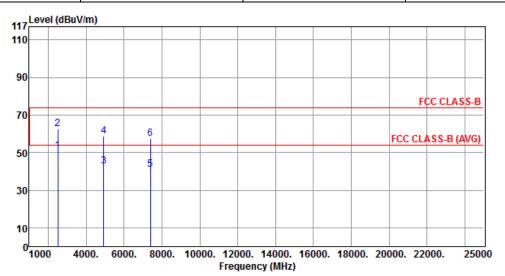
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 50 of 60
TEL: 886-3-327-3456 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	2500.00	50.89	54.00	-3.11	53.65	-2.76	Average		
2	2500.00	62.52	74.00	-11.48	65.28	-2.76	Peak		
3	4924.00	42.67	54.00	-11.33	38.19	4.48	Average		
4	4924.00	58.72	74.00	-15.28	54.24	4.48	Peak		
5	7386.00	41.05	54.00	-12.95	32.07	8.98	Average		
6	7386.00	57.41	74.00	-16.59	48.43	8.98	Peak		

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

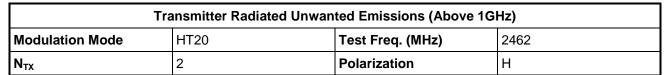
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

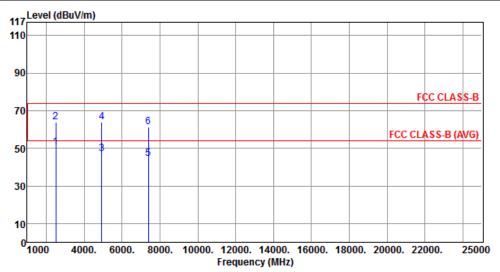
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 51 of 60 TEL: 886-3-327-3456 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	2500.00	50.57	54.00	-3.43	53.33	-2.76	Average		
2	2500.00	63.96	74.00	-10.04	66.72	-2.76	Peak		
3	4924.00	47.02	54.00	-6.98	42.54	4.48	Average		
4	4924.00	64.11	74.00	-9.89	59.63	4.48	Peak		
5	7386.00	44.46	54.00	-9.54	35.48	8.98	Average		
6	7386.00	61.39	74.00	-12.61	52.41	8.98	Peak		

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

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

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

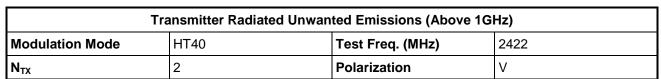
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

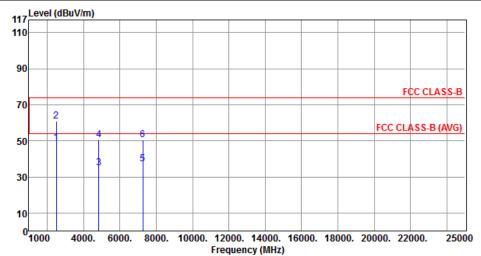
SPORTON INTERNATIONAL INC. Page No. : 52 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



3.6.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT-40



Report No.: FR352148



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2500.00	48.98	54.00	-5.02	51.74	-2.76	Average		
2	2500.00	60.83	74.00	-13.17	63.59	-2.76	Peak		
3	4844.00	34.78	54.00	-19.22	30.44	4.34	Average		
4	4844.00	50.56	74.00	-23.44	46.22	4.34	Peak		
5	7266.00	37.01	54.00	-16.99	28.13	8.88	Average		
6	7266.00	50.47	74.00	-23.53	41.59	8.88	Peak		

SPORTON INTERNATIONAL INC. Page No. : 53 of 60
TEL: 886-3-327-3456 Report Version : Rev. 01

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

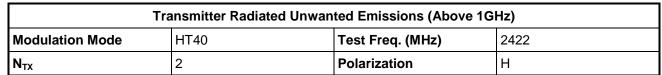
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

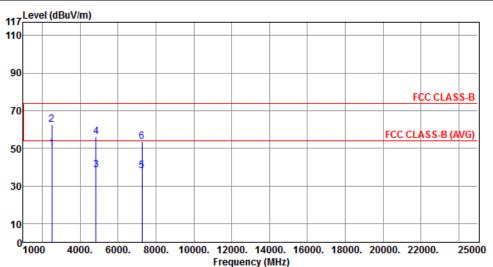
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

Report Report No. : FR352148





	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2500.00	49.46	54.00	-4.54	52.22	-2.76	Average		
2	2500.00	62.46	74.00	-11.54	65.22	-2.76	Peak		
3	4844.00	38.37	54.00	-15.63	34.03	4.34	Average		
4	4844.00	55.98	74.00	-18.02	51.64	4.34	Peak		
5	7266.00	38.05	54.00	-15.95	29.17	8.88	Average		
6	7266.00	53.58	74.00	-20.42	44.70	8.88	Peak		

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

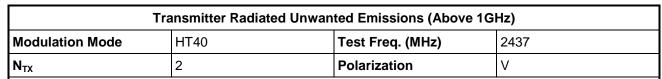
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

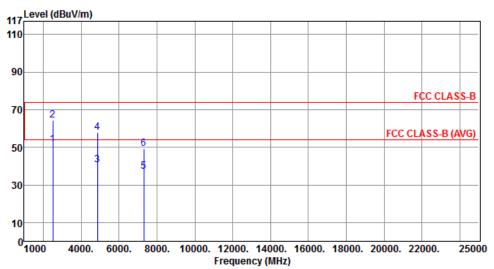
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 54 of 60
TEL: 886-3-327-3456 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	2500.00	51.28	54.00	-2.72	54.04	-2.76	Average		
2	2500.00	64.37	74.00	-9.63	67.13	-2.76	Peak		
3	4874.00	40.77	54.00	-13.23	36.38	4.39	Average		
4	4874.00	58.01	74.00	-15.99	53.62	4.39	Peak		
5	7311.00	37.07	54.00	-16.93	28.15	8.92	Average		
6	7311.00	49.20	74.00	-24.80	40.28	8.92	Peak		

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

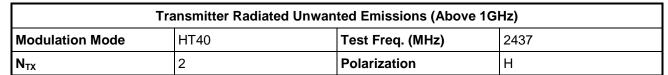
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

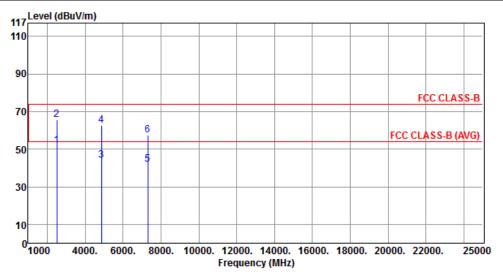
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 55 of 60 TEL: 886-3-327-3456 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	2500.00	51.95	54.00	-2.05	54.71	-2.76	Average		
2	2500.00	65.41	74.00	-8.59	68.17	-2.76	Peak		
3	4874.00	44.07	54.00	-9.93	39.68	4.39	Average		
4	4874.00	62.73	74.00	-11.27	58.34	4.39	Peak		
5	7311.00	41.93	54.00	-12.07	33.01	8.92	Average		
6	7311.00	57.32	74.00	-16.68	48.40	8.92	Peak		

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

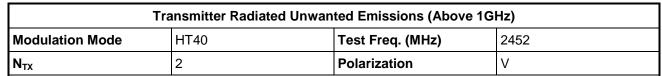
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

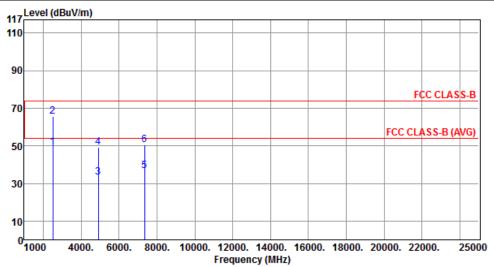
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 56 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01





	Freq. MHz	Emission level dBuV/m	Limit dBuV/m		SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2500.00	49.05	54.00	-4.95	51.81	-2.76	Average		
2	2500.00	65.51	74.00	-8.49	68.27	-2.76	Peak		
3	4904.00	33.34	54.00	-20.66	28.89	4.45	Average		
4	4904.00	49.33	74.00	-24.67	44.88	4.45	Peak		
5	7356.00	36.88	54.00	-17.12	27.92	8.96	Average		
6	7356.00	50.30	74.00	-23.70	41.34	8.96	Peak		

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

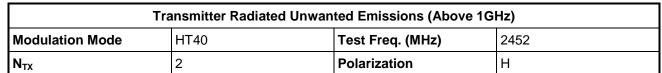
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

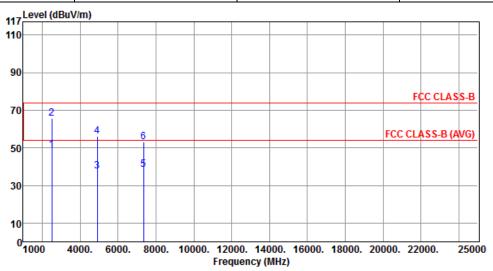
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 57 of 60
TEL: 886-3-327-3456 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	2500.00	48.98	54.00	-5.02	51.74	-2.76	Average		
2	2500.00	65.41	74.00	-8.59	68.17	-2.76	Peak		
3	4904.00	37.70	54.00	-16.30	33.25	4.45	Average		
4	4904.00	56.16	74.00	-17.84	51.71	4.45	Peak		
5	7356.00	38.33	54.00	-15.67	29.37	8.96	Average		
6	7356.00	52.91	74.00	-21.09	43.95	8.96	Peak		

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

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

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

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level.

SPORTON INTERNATIONAL INC. Page No. : 58 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101063	9KHz~40GHz	Feb. 18, 2013	Conducted (TH01-HY)
Spectrum Analyzer	R&S	FSP 40	100305	9KHz~40GHz	Mar. 20, 2013	Conducted (TH01-HY)
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jul. 02, 2012	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20- SP-SD	MAA1112-007	-20 ~ 100℃	Nov. 21, 2012	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jun. 26, 2012	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 02, 2013	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 02, 2013	Conducted (TH01-HY)

Report No. : FR352148

Note: Calibration Interval of instruments listed above is one 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	Dec. 12, 2012	Dec. 11, 2013		
LISN	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-667	Dec. 04, 2012	Dec. 03, 2013		
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-666	Dec. 04, 2012	Dec. 03, 2013		
ISN	TESEQ	ISN T800	34406	Apr. 08, 2013	Apr. 07, 2014		
ISN	TESEQ	ISN T200A	30494	Apr. 09, 2013	Apr. 08, 2014		
ISN	TESEQ	ISN T8-Cat6	27262	Sep. 17, 2012	Sep. 16, 2013		
ISN	TESEQ	ISN ST08	22589	Jan. 24, 2013	Jan. 23, 2014		
RF Current Probe	FCC	F-33-4	121630	Dec. 04, 2012	Dec. 03, 2013		
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 25, 2012	Dec. 24, 2013		
ESH3-Z6 V-Network(+)	R&S	ESH3-Z6	100920	Nov. 21, 2012	Nov. 20, 2013		
ESH3-Z6 V-Network(-)	R&S	ESH3-Z6	100951	Jan. 03, 2013	Jan. 02, 2014		
Two-Line V-Network	R&S	ENV216	101579	Jan. 07, 2013	Jan. 06, 2014		
50 ohm terminal	NA	50	01	Apr. 22, 2013	Apr. 21, 2014		
50 ohm terminal	NA	50	02	Apr. 22, 2013	Apr. 21, 2014		
50 ohm terminal	NA	50	03	Apr. 22, 2013	Apr. 21, 2014		
50 ohm terminal (Support Unit)	NA	50	04	Apr. 22, 2013	Apr. 21, 2014		

SPORTON INTERNATIONAL INC. Page No. : 59 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01



FCC Test Report

Test Item	Radiated Emission above 1GHz						
Test Site	966 chamber1 / (03CH01-WS)						
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until		
3m semi-anechoic chamber	CHAMPRO	SAC-03	03CH01-WS	Jan. 04, 2013	Jan. 03, 2014		
Amplifier	Burgeon	BPA-530	100219	Nov. 28, 2012	Nov. 27, 2013		
Amplifier	Agilent	83017A	MY39501308	Dec. 18, 2012	Dec. 17, 2013		
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jan. 11, 2013	Jan. 10, 2014		
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Feb. 18, 2013	Feb. 17, 2014		
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Jan. 14, 2013	Jan. 13, 2014		
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 25, 2012	Dec. 24, 2013		
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 25, 2012	Dec. 24, 2013		
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 25, 2012	Dec. 24, 2013		
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-001	Dec. 25, 2012	Dec. 24, 2013		
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-002	Dec. 25, 2012	Dec. 24, 2013		
Spectrum Analyzer	R&S	FSV40	101498	Jan. 24, 2013	Jan. 23, 2014		
Receiver	ROHDE&SCHWAR Z ESR3		101658	Jan. 28, 2013	Jan. 27, 2014		
control	EM Electronics	EM1000	60612	N/A	N/A		

Report No.: FR352148

Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2013	
Amplifier	MITEQ	AMF-6F-260400	9121372	Apr. 19, 2013	Apr. 18, 2014	
Note: Calibration Interval of instruments listed above is two year.						

SPORTON INTERNATIONAL INC. Page No. : 60 of 60 TEL: 886-3-327-3456 Report Version : Rev. 01