

Certificate No.: CB10202029

# **FCC and IC Radio Test Report**

Equipment : Cisco Aironet 700 Series Access Point

**Brand Name** : CISCO

Model No. : AIR-CAP702I-A-K9, AIR-SAP702I-A-K9,

AIR-CAP7021-N-K9, AIR-SAP7021-N-K9, AIR-CAP7021-Z-K9, AIR-SAP7021-Z-K9

FCC ID : LDK102085

IC : 2461B-102085

Standard : 47 CFR FCC Part 15.247

IC RSS-210 Issue 8 and RSS-Gen Issue 3

Frequency Range : 5725 MHz - 5850 MHz

Equipment Class : DTS

Applicant : CISCO System, Inc.

170 West Tasman Drive San Jose, CA

95134-1706

Manufacturer : Wistron NeWeb Corporation

20 Park Avenue II, Hsinchu Science Park.

Hsinchu 308, Taiwan, R.O.C.

The product sample received on Oct. 05, 2012 and completely tested on Apr. 12, 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: Jordan Hsiao

1190

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

: 1 of 146

Report Version

: Rev. 01



# **Table of Contents**

1	GENERAL DESCRIPTION	5
1.1	Information	5
1.2	Accessories	7
1.3	Support Equipment	7
1.4	Testing Applied Standards	7
1.5	Testing Location Information	7
1.6	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	10
2.4	Target Maximum Channel Power	10
2.5	EUT Operation during Test	10
2.6	The Worst Case Measurement Configuration	11
2.7	Test Setup Diagram	13
3	TRANSMITTER TEST RESULT	15
3.1	AC Power-line Conducted Emissions	15
3.2	6dB Bandwidth	18
3.3	26dB Bandwidth	27
3.4	RF Output Power	36
3.5	Power Spectral Density	51
3.6	Transmitter Conducted Unwanted Emissions	66
3.7	Transmitter Radiated Unwanted Emissions	78
4	TEST EQUIPMENT AND CALIBRATION DATA	145
APPI	ENDIX A. TEST PHOTOS	A1 ~ A5
APPI	ENDIX B. MAXIMUM PERMISSIBLE EXPOSURE	B1 ~ B4
APPI	ENDIX C. CO-LOCATION	C1 ~ C3

Report No.: FR281405-03AB

# **Summary of Test Result**

Report No.: FR281405-03AB

			Conformar	nce Test Specifications		
Report Clause	FCC Std. Clause	IC 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	RSS-Gen 7.2.4	AC Power-line Conducted Emissions	[dBuV]: 21.169MHz 38.62 (Margin 11.38dB) - AV 40.70 (Margin 19.30dB) - QP	FCC 15.207 / RSS-Gen 7.2.4	Complied
3.2	15.247(a)	RSS-210 A8.2	6dB Bandwidth	6dB Bandwidth Unit [MHz] 20M: 17.76 / 40M: 36.48	≥500kHz	Complied
3.3	15.247	RSS-210	26dB Bandwidth	Bandwidth [MHz] 20M:26.41 / 40M:49.12	Information only	Complied
3.4	15.247(b)	RSS-210 A8.4	RF Output Power (Maximum Conducted Output Power)	Power [dBm] 20M:20.64 / 40M:20.73	Power [dBm]:30	Complied
3.5	15.247(d)	RSS-210 A8.2	Power Spectral Density	PSD [dBm/3kHz] 20M: -4.28 / 40M:-7.74	PSD [dBm/3kHz]:8	Complied
3.6	15.247(c)	RSS-210 A8.5	Transmitter Conducted Unwanted Emissions	38.75 (Margin 8.75dB)	Non-Restricted Bands: > 30 dBc	Complied
3.7	15.247(c)	RSS-210 A8.5	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 41.09MHz 36.65 (Margin 3.35dB) - QP	Restricted Bands: FCC 15.209 / RSS-Gen 7.2.5	Complied

SPORTON INTERNATIONAL INC. Page No. : 3 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# **Revision History**

Report No.	Version	Description	Issued Date
FR281405-03AB	Rev. 01	Initial issue of report	Apr. 17, 2013

SPORTON INTERNATIONAL INC.

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

: 4 of 146

Report Version

: Rev. 01

Report No.: FR281405-03AB



# 1 General Description

### 1.1 Information

#### 1.1.1 RF General Information

	RF General Information			
Frequency Range (MHz)	Operating Mode	Ch. Freq. (MHz)	Channel Number	Co-location
5725-5850	Non HT-20, 6 to 54Mbps	5745-5825	149-165 [5]	Yes
5725-5850	Non HT-20, Beam Forming, 6 to 54Mbps	5745-5825	149-165 [5]	Yes
5725-5850	HT-20, M0 to M15	5745-5825	149-165 [5]	Yes
5725-5850	HT-20, STBC, M0 to M7	5745-5825	149-165 [5]	Yes
5725-5850	HT-20, Beam Forming, M0 to M7	5745-5825	149-165 [5]	Yes
5725-5850	HT-20, Beam Forming, M8 to M15	5745-5825	149-165 [5]	Yes
5725-5850	HT-40, M0 to M15	5755-5795	151-159 [2]	Yes
5725-5850	HT-40, STBC, M0 to M7	5755-5795	151-159 [2]	Yes
5725-5850	HT-40, Beam Forming, M0 to M7	5755-5795	151-159 [2]	Yes
5725-5850	HT-40, Beam Forming, M8 to M15	5755-5795	151-159 [2]	Yes

Report No.: FR281405-03AB

#### 1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	WNC	WNC	PIFA Antenna	I-PEX	5
2	WNC	WNC	PIFA Antenna	I-PEX	5

SPORTON INTERNATIONAL INC. Page No. : 5 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

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

Note 2: Non HT-20 / HT-20 / HT-40 uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

Note 3: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)



### 1.1.3 EUT Description

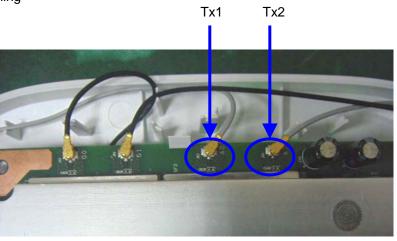
Operating Non HT-20 Mode 6 to 54Mbps		Non HT-20 BF 6 to 54Mbps		HT-20 M0 to M15		HT-20 STBC M0 to M7		HT-20BF M0 to M7		HT-20 BF M8 to M15		
Tx	1	2	1	2	1	2	1	2	1	2	1	2
Single (Tx)	V	-	-	-	٧	-	-	-	-	-	-	-
Two (Tx)	V	V	V	V	٧	V	V	V	V	V	V	V

Report No.: FR281405-03AB

Note: BF: Beam Forming

Operating Mode	g HT-40 M0 to M15		HT-40 STBC M0 to M7		HT-40 BF M0 to M7		HT-40 BF M8 to M15	
Tx	1	2	1	2	1	2	1	2
Single (Tx)	V	-	-	-	-	-	-	-
Two (Tx)	V	V	٧	V	V	V	V	V

Note: BF: Beam Forming



# 1.1.4 Type of EUT

	Identify EUT							
EU	T Serial Number	N/A						
Pre	sentation of Equipment	☐ Production ; ☐ Prototype						
	The EUT has six model names. All the models are identical; the different model names served as marketing strategy.							
		Type of EUT						
$\boxtimes$	Stand-alone							
	Combined (EUT where the	ne radio part is fully integrated within another device)						
	Combined Equipment - B	rand Name / Model No.:						
	Plug-in radio (EUT intend	led for a variety of host systems)						
	Host System - Brand Name / Model No.:							
	Other:							

### 1.1.5 EUT Operational Condition

EUT Power Type	From Power Adapter / POE

SPORTON INTERNATIONAL INC. Page No. : 6 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



#### 1.2 Accessories

	Accessories									
No.	Equipment Name	Brand Name	Model Name	Rating	Remark					
1	AC Adapter	CISCO	AA25480L	INPUT: 100-240V ~ 600mA, 50/60Hz OUTPUT: 48V, 380mA	With power cable					
2	AC Adapter	CISCO	EADP-18MB B	INPUT: 100-240V ~ 0.5A, 50-60Hz OUTPUT: 48V, 0.38A	With power cable					

Report No.: FR281405-03AB

# 1.3 Support Equipment

	Support Equipment									
No.	Equipment	Model Name	FCC ID							
1	Notebook	DELL	M1330	E2KWM3945ABG						
2	Notebook	DELL	E6220	E2KWM3945ABG						
3	Notebook	DELL	E6220	E2KWM3945ABG						
4	Notebook	DELL	E6400	E2KWM3945ABG						
5	POE	CISCO	DPSN-35FB A	N/A						
6	POE	CISCO	POE30U-560(G)	N/A						
7	POE Switch	MOTOROLA	RFS-4010	N/A						

# 1.4 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

### 1.5 Testing Location Information

Testing Location								
HWA YA	ADD	:	No. 52, Hwa Ya 1st Rd., K	No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.				
	TEL	:	886-3-327-3456 FA	X : 886-3-318-0055				
JHUBEI	ADD	:	No.8, Lane 724, Bo-ai St.,	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.				
	TEL	:	886-3-656-9065 FA	X : 886-3-656-9085				
Test Condition			Test Site No.	Test Engineer	Test Environment			
RF Condu	cted		TH01-CB	Satoshi Yang	24°C / 60%			
AC Conduction			CO01-CB	Sollo Luo	24°C / 64%			
Radiated Em	nission		03CH01-CB	Satoshi Yang	24°C / 60%			

SPORTON INTERNATIONAL INC. Page No. : 7 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# 1.6 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.: FR281405-03AB

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

SPORTON INTERNATIONAL INC. Page No. : 8 of 146
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				
Worst Data Rate / MCS				
6Mbps				
6Mbps				
6.5Mbps (M0)				
6.5Mbps (M0)				
6.5Mbps (M0)				
13Mbps (M8)				
13.5Mbps (M0)				
13.5Mbps (M0)				
13.5Mbps (M0)				
27Mbps (M8)				

Report No.: FR281405-03AB

# 2.2 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration					
Operating Mode	Test Channel Frequencies (MHz)				
Non HT-20, 6 to 54Mbps					
Non HT-20, Beam Forming, 6 to 54Mbps					
HT-20, M0 to M15	5745 5785 5825				
HT-20, STBC, M0 to M7	5745, 5785, 5825				
HT-20, Beam Forming, M0 to M7					
HT-20, Beam Forming, M8 to M15	7				
HT-40, M0 to M15					
HT-40, STBC, M0 to M7	- - - 				
HT-40, Beam Forming, M0 to M7	<del>-</del> 5755, 5795				
HT-40, Beam Forming, M8 to M15					

SPORTON INTERNATIONAL INC. Page No. : 9 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Worst modulation mode of Guard Interval (GI) is 400ns.

Note 2: Modulation modes consist below configuration:

M: Modulation and Coding Scheme

Note 3: RF output power specifies that Maximum Conducted Output Power.



# 2.3 The Worst Case Power Setting Parameter

The Worst Ca	ase Pov	wer Setting	g Paramet	er				
Test Software Version	ART 2	2 GUI:2.3						
		Test Frequency (MHz)						
Operating Mode	N <sub>TX</sub>	N	ICB: 20MF	NCB: 40MHz				
		5745	5785	5825	5755	5795		
Non HT-20, 6 to 54Mbps	2	16.5	17	17.5	-	-		
Non HT-20, Beam Forming, 6 to 54Mbps	2	16.5	17	17.5	-	-		
HT-20, M0 to M15 / HT-20, STBC, M0 to M7	2	17	17	17.5	-	-		
HT-20, Beam Forming, M0 to M7	2	17	17	17.5	-	-		
HT-20, Beam Forming, M8 to M15	2	17	17	17.5	-	-		
HT-40, M0 to M15 / HT-40, STBC, M0 to M7	2	-	-	-	17	17.5		
HT-40, Beam Forming, M0 to M7	2	-	-	-	17	17.5		
HT-40, Beam Forming, M8 to M15	2	-	-	-	17	17.5		

Report No.: FR281405-03AB

### 2.4 Target Maximum Channel Power

	Target Maximum Channel Power (dBm)						
Operating Mode	N <sub>TX</sub>	Frequency (MHz)					
Operating mode	ТТХ	5745	5785	5825			
Non HT-20, 6 to 54Mbps	2	20.39	20.60	20.51			
Non HT-20, Beam Forming, 6 to 54Mbps	2	20.39	20.60	20.51			
HT-20, M0 to M15 / HT-20, STBC, M0 to M7	2	20.46	20.64	20.28			
HT-20, Beam Forming, M0 to M7	2	20.46	20.64	20.28			
HT-20, Beam Forming, M8 to M15	2	20.46	20.52	20.45			
		5755	5795				
HT-40, M0 to M15 / HT-40, STBC, M0 to M7	2	20.53	20.73				
HT-40, Beam Forming, M0 to M7	2	20.53	20.73				
HT-40, Beam Forming, M8 to M15	2	20.30	20.60				

# 2.5 EUT Operation during Test

During the test, "ART 2 GUI:2.3" under WIN XP was executed the test program to control the EUT continuously transmit RF signal.

SPORTON INTERNATIONAL INC. Page No. : 10 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# 2.6 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests						
Tests Item	Tests Item AC power-line conducted emissions					
Test Condition	Test Condition  AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz					
Test Mode	Normal Link					
1	1 EUT with AC Adapter 1 (CISCO AA25480L)					
2 EUT with AC Adapter 2 (CISCO EADP-18MB B)						
For test mode 2 is the worst case and it was record in this test report.						

Report No.: FR281405-03AB

Th	The Worst Case Mode for Following Conformance Tests					
Tests Item	6 dB Bandwidth					
	26 dB Bandwidth					
	RF Output Power					
	Power Spectral Density					
	Transmitter Conducted Bandedge Emissions					
	Transmitter Conducted Unwanted Emissions					
Test Condition	Conducted measurement at transmit chains					
Operating Mode	Non HT-20 / Non HT-20, Beam Forming / HT-20 / HT-20, STBC / HT-20, Beam Forming / HT-40 / HT-40, STBC / HT-40, Beam Forming					

SPORTON INTERNATIONAL INC. Page No. : 11 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



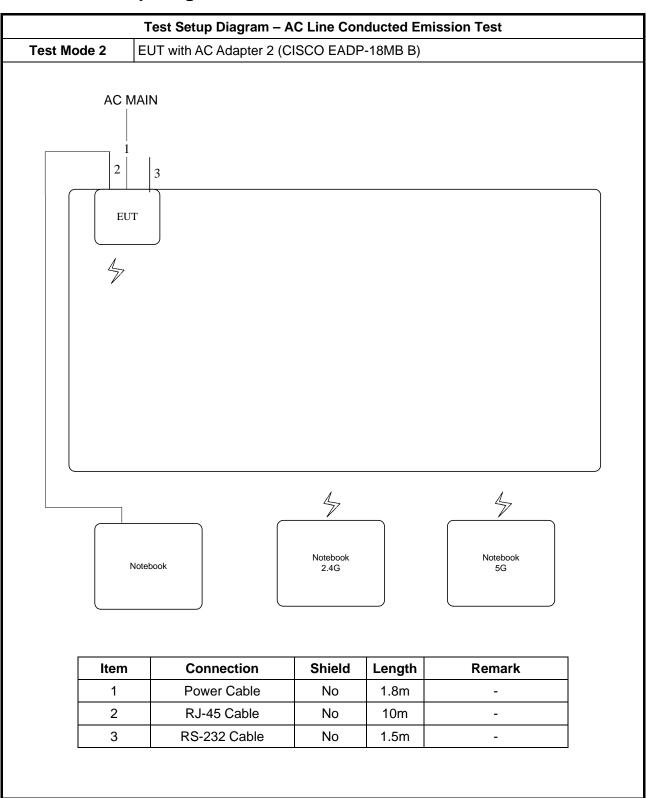
The Worst Case Mode for Following Conformance Tests						
Tests Item	Transmitter Radiated Unwanted Emissions					
Test Condition	Radiated measurement					
Test Mode < 1GHz	Normal Link					
1	stand-up of EUT with AC Adapter 1 (CISCO AA25480L)					
2	aying-flat of EUT with AC Adapter 1 (CISCO AA25480L)					
Mode 1 has been evaluate	ed to be the worst case, thus measurement will follow this same test mode.					
3	and-up of EUT with AC Adapter 2 (CISCO EADP-18MB B)					
4	Stand-up of EUT with POE 1 (CISCO DPSN-35FB A)					
5	Stand-up of EUT with POE 2 (CISCO POE30U-560(G))					
6	Stand-up of EUT with POE Switch (MOTOROLA RFS-4010)					
For test mode 4 is the wor	st case and it was record in this test report.					
Operating Mode  Non HT-20 / Non HT-20, Beam Forming / HT-20 / HT-20, STBC / HT-20, Beam Forming / HT-40 / HT-40, STBC / HT-40, Beam Forming						
Test Mode > 1GHz	Continuously transmit RF signal					
1	Stand-up of EUT					
2	Laying-flat of EUT					
For test mode 2 is the wor	st case and it was record in this test report.					

Report No. : FR281405-03AB

SPORTON INTERNATIONAL INC. Page No. : 12 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# 2.7 Test Setup Diagram



SPORTON INTERNATIONAL INC.

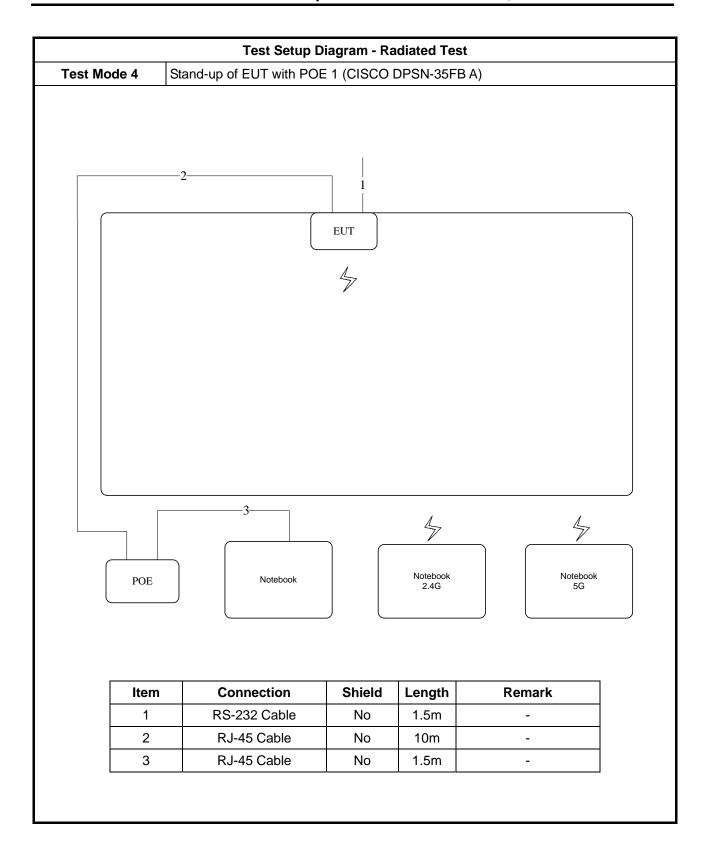
TEL: 886-3-3273456 FAX: 886-3-3270973 Page No.

: 13 of 146

Report Version

: Rev. 01

Report No.: FR281405-03AB



SPORTON INTERNATIONAL INC.

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

: 14 of 146

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					
0.15-0.5	66 - 56 *	56 - 46 *					
0.5-5	56	46					
5-30	60	50					
Note 1: * Decreases with the logarithm of the frequency.							

Report No.: FR281405-03AB

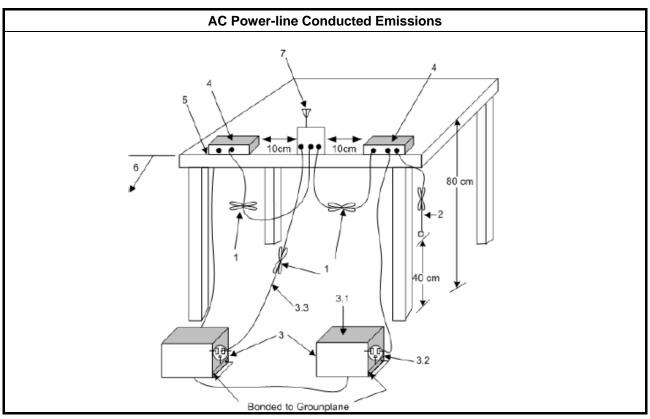
### 3.1.2 Measuring Instruments

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.

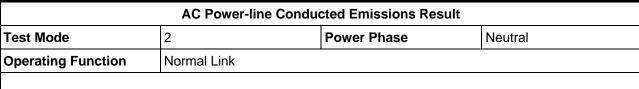
### 3.1.4 Test Setup



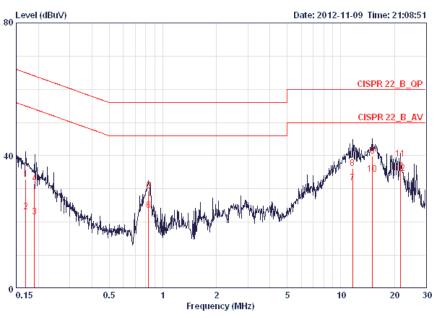
SPORTON INTERNATIONAL INC. Page No. : 15 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



#### 3.1.5 Test Result of AC Power-line Conducted Emissions



Report No.: FR281405-03AB



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.16944	32.98	-32.01	64.99	32.70	0.08	0.20	NEUTRAL	QP
2	0.16944	23.05	-31.94	54.99	22.77	0.08	0.20	NEUTRAL	AVERAGE
3	0.18959	21.48	-32.57	54.05	21.20	0.08	0.20	NEUTRAL	AVERAGE
4	0.18959	31.50	-32.55	64.05	31.22	0.08	0.20	NEUTRAL	QP
5	0.83047	29.50	-26.50	56.00	29.21	0.09	0.20	NEUTRAL	QP
6	0.83047	23.49	-22.51	46.00	23.20	0.09	0.20	NEUTRAL	AVERAGE
7	11.621	31.73	-18.27	50.00	31.07	0.26	0.40	NEUTRAL	AVERAGE
8	11.621	36.29	-23.71	60.00	35.63	0.26	0.40	NEUTRAL	QP
9	15.066	39.92	-20.08	60.00	39.20	0.32	0.40	NEUTRAL	QP
10	15.066	34.55	-15.45	50.00	33.83	0.32	0.40	NEUTRAL	AVERAGE
11	21.662	38.91	-21.09	60.00	37.99	0.42	0.50	NEUTRAL	QP
12	21.662	34.57	-15.43	50.00	33.65	0.42	0.50	NEUTRAL	AVERAGE

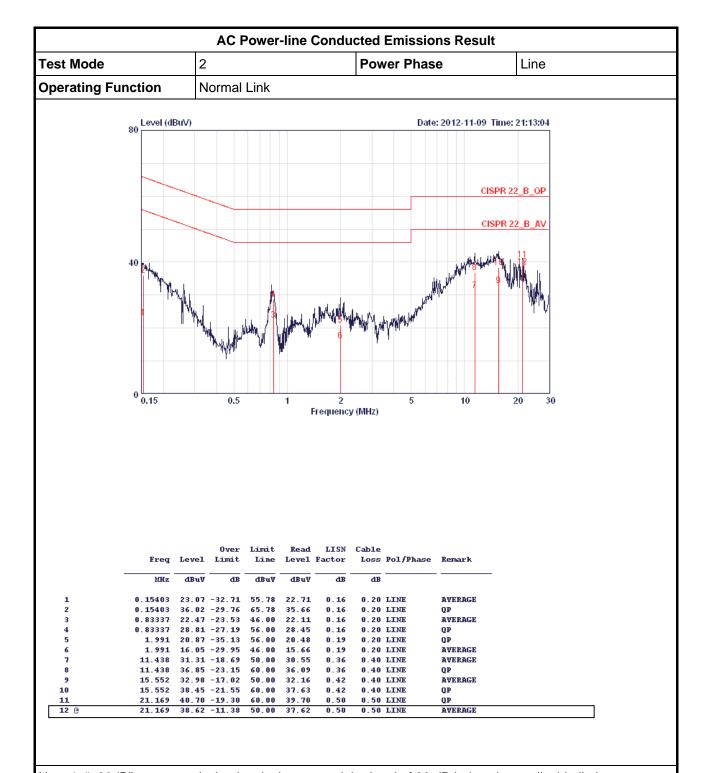
Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

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

SPORTON INTERNATIONAL INC. Page No. : 16 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



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. : 17 of 146
TEL: 886-3-3273456 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.

Report No.: FR281405-03AB

### 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 emission bandwidth shall be measured using one of the options below:			
	$\boxtimes$	Refer as FCC KDB 558074, clause 7.1 Option 1 for 6 dB bandwidth measurement.		
		Refer as FCC KDB 558074, clause 7.2 Option 2 for 6 dB bandwidth measurement.		
		Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.		

### 3.2.4 Test Setup

Emission Bandwidth  EUT  Spectrum Analyzer	
	Emission Bandwidth

SPORTON INTERNATIONAL INC. Page No. : 18 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



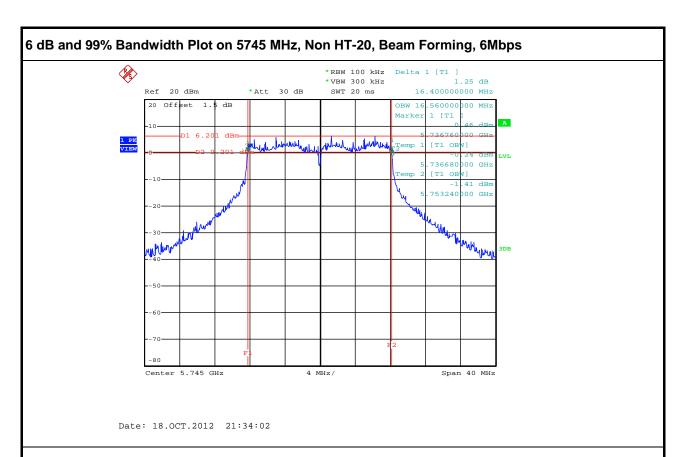
### 3.2.5 Test Result of Emission Bandwidth

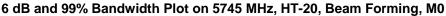
Freq.		Data Rate	99% BW	6dB BW	Limit	Margin
(MHz)	Operating Mode	(Mbps)	(MHz)	(MHz)	(kHz)	(MHz)
	Non HT-20, Beam Forming, 6 to 54Mbps	6	16.56	16.4	>500	15.9
5745	HT-20, Beam Forming, M0 to M7	MO	17.84	17.6	>500	17.1
	HT-20, Beam Forming, M8 to M15	M8	17.84	17.76	>500	17.26
	Non HT-20, Beam Forming, 6 to 54Mbps	6	16.56	16.4	>500	15.9
5785	HT-20, Beam Forming, M0 to M7	MO	17.84	17.6	>500	17.1
	HT-20, Beam Forming, M8 to M15	M8	17.84	17.68	>500	17.18
	Non HT-20, Beam Forming, 6 to 54Mbps	6	16.64	16.32	>500	15.82
5825	HT-20, Beam Forming, M0 to M7	MO	17.84	17.68	>500	17.18
	HT-20, Beam Forming, M8 to M15	M8	17.84	17.6	>500	17.1
5755	HT-40, Beam Forming, M0 to M7	MO	36.48	36.48	>500	35.98
3733	HT-40, Beam Forming, M8 to M15	M8	36.48	36.48	>500	35.98
5795	HT-40, Beam Forming, M0 to M7	MO	36.32	35.84	>500	35.34
3133	HT-40, Beam Forming, M8 to M15	M8	36.48	36.48	>500	35.98

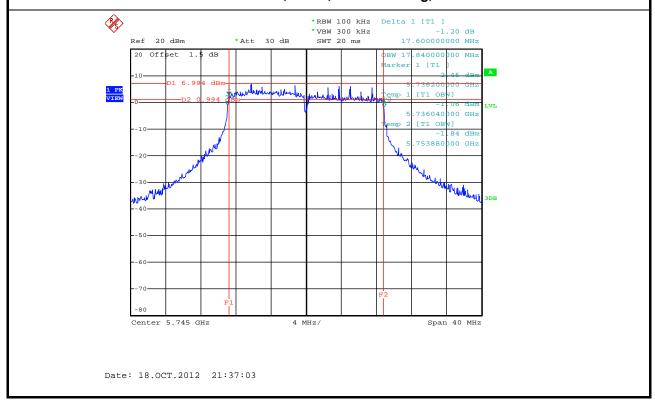
Report No.: FR281405-03AB

SPORTON INTERNATIONAL INC. Page No. : 19 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



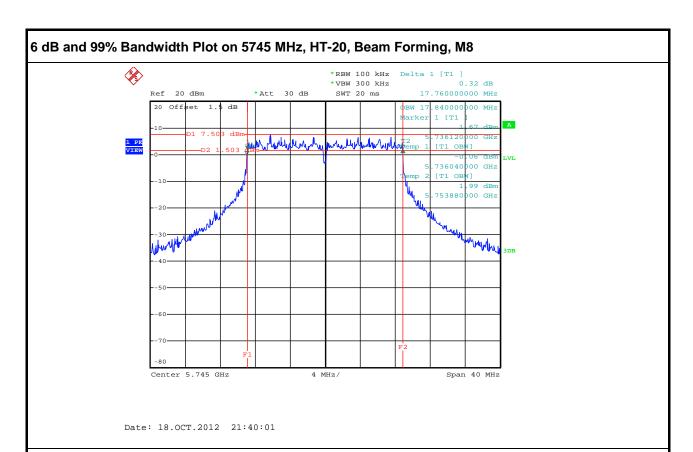




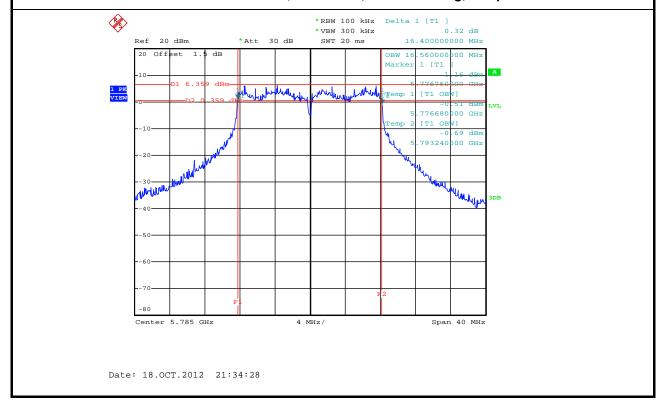


SPORTON INTERNATIONAL INC. Page No. : 20 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



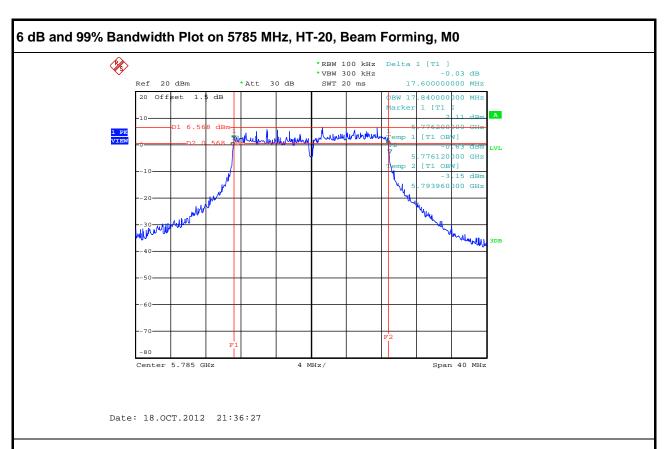


#### 6 dB and 99% Bandwidth Plot on 5785 MHz, Non HT-20, Beam Forming, 6Mbps

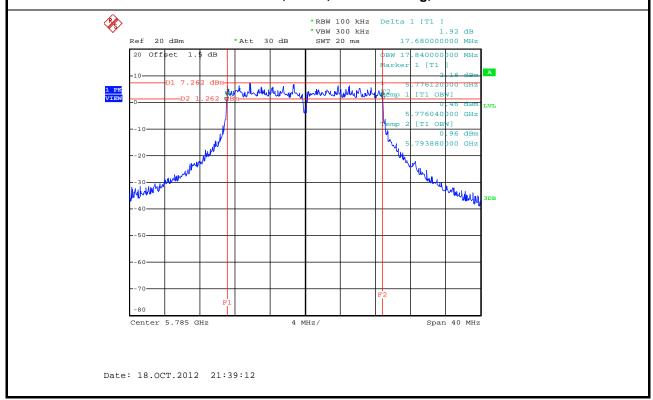


SPORTON INTERNATIONAL INC. Page No. : 21 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



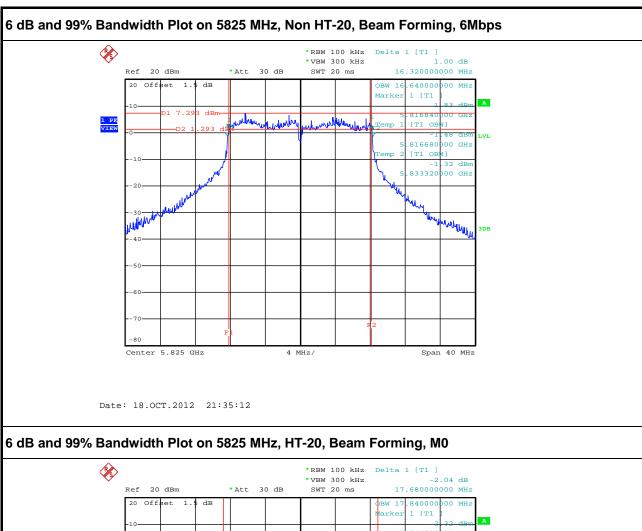


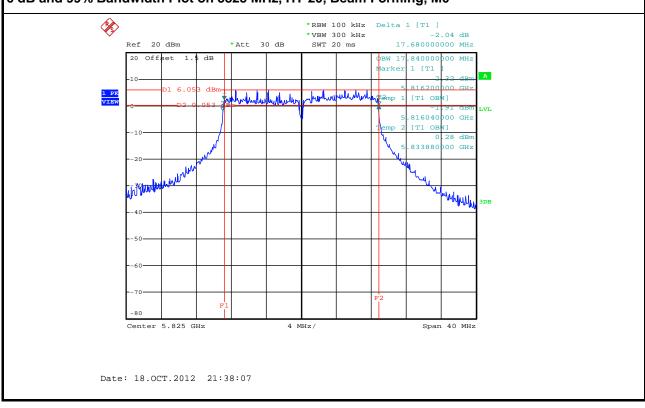
### 6 dB and 99% Bandwidth Plot on 5785 MHz, HT-20, Beam Forming, M8



SPORTON INTERNATIONAL INC. Page No. : 22 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

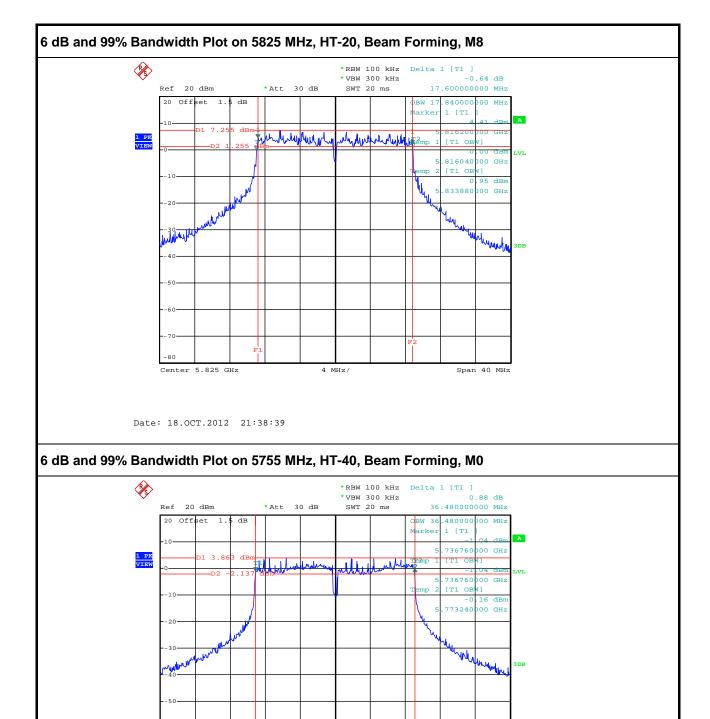






SPORTON INTERNATIONAL INC. Page No. : 23 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





SPORTON INTERNATIONAL INC. Page No. : 24 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

8 MHz/

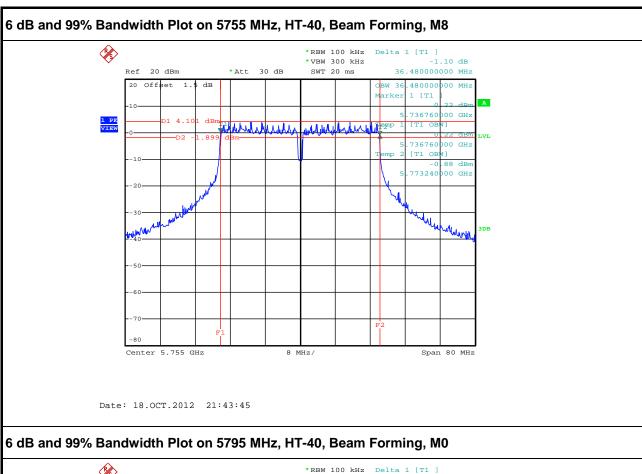
Span 80 MHz

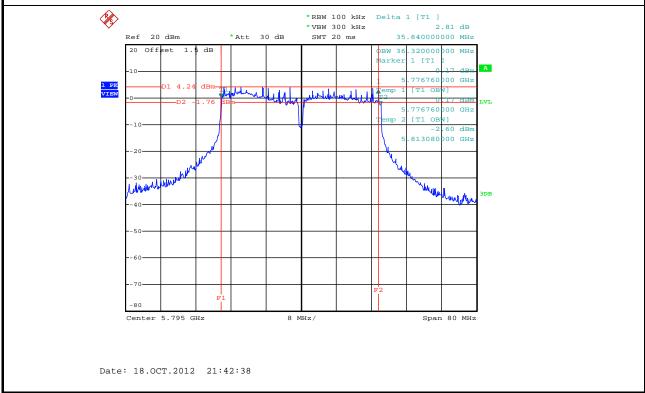
FAX: 886-3-3270973

Center 5.755 GHz

Date: 18.OCT.2012 21:42:09

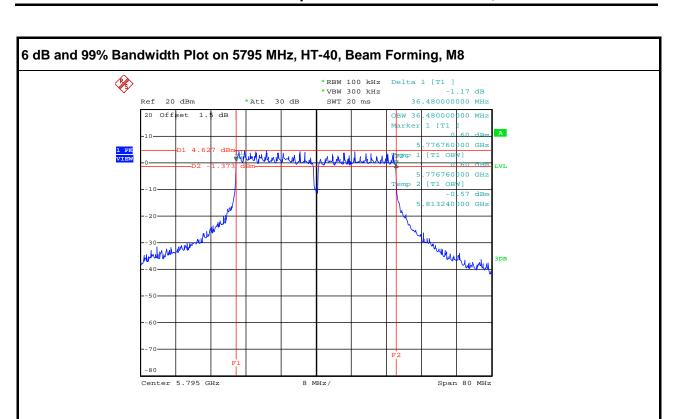






SPORTON INTERNATIONAL INC. Page No. : 25 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

Date: 18.OCT.2012 21:43:14



Report No.: FR281405-03AB

SPORTON INTERNATIONAL INC. Page No. : 26 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

### 3.3 26dB Bandwidth

### 3.3.1 Measuring Instruments

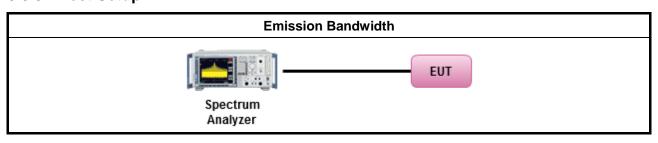
Refer a test equipment and calibration data table in this test report.

### 3.3.2 Test Procedures

Test Method					
the emission bandwidth	shall be measured using below:				
Center Frequency	: Frequency from table below				
Span	: 2 x Nominal Bandwidth (e.g. 40MHz for a 20MHz channel)				
Reference Level	: 20 dBm				
Attenuation	: 10 dB				
Sweep Time	: 5s				
Resolution Bandwidth	: 1%-3% of 26 dB Bandwidth				
Video Bandwidth	: ≥Resolution Bandwidth				
X dB Bandwidth	: 26 dB				
Detector	: Peak				
Trace	: Single				

Report No.: FR281405-03AB

### 3.3.3 Test Setup



SPORTON INTERNATIONAL INC. Page No. : 27 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



### 3.3.4 Test Result of Emission Bandwidth

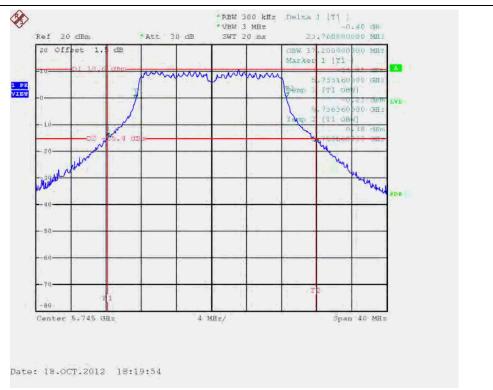
Freq.		Data Rate	99% BW	26dB BW
(MHz)	Operating Mode	(Mbps)	(MHz)	(MHz)
	Non HT-20, 6 to 54Mbps	6	17.2	23.76
5745	Non HT-20, Beam Forming, 6 to 54Mbps	6	17.2	23.76
5745	HT-20, Beam Forming, M0 to M7	MO	18.72	25.68
	HT-20, Beam Forming, M8 to M15	M8	18.4	25.2
	Non HT-20, 6 to 54Mbps	6	17.04	23.76
5785	Non HT-20, Beam Forming, 6 to 54Mbps	6	17.04	23.76
5765	HT-20, Beam Forming, M0 to M7	MO	18.8	26.4
	HT-20, Beam Forming, M8 to M15	M8	18.48	24.88
	Non HT-20, 6 to 54Mbps	6	17.28	23.52
5825	Non HT-20, Beam Forming, 6 to 54Mbps	6	17.28	23.52
3623	HT-20, Beam Forming, M0 to M7	MO	18.88	26.08
	HT-20, Beam Forming, M8 to M15	M8	18.4	24.96
	HT-40, STBC, M0 to M7	MO	36.96	48.64
5755	HT-40, Beam Forming, M0 to M7	MO	36.96	48.64
	HT-40, Beam Forming, M8 to M15	M8	36.8	47.36
	HT-40, STBC, M0 to M7	MO	37.12	49.12
5795	HT-40, Beam Forming, M0 to M7	MO	37.12	49.12
	HT-40, Beam Forming, M8 to M15	M8	36.64	46.72

Report No.: FR281405-03AB

SPORTON INTERNATIONAL INC. Page No. : 28 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







#### 26 dB and 99% Bandwidth Plot on 5745 MHz, HT-20, Beam Forming, M0

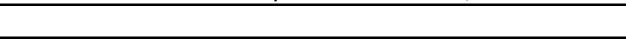


SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 29 of 146
Report Version : Rev. 01

Report No.: FR281405-03AB







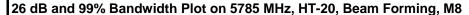
#### 26 dB and 99% Bandwidth Plot on 5785 MHz, Non HT-20 / Non HT-20, Beam Forming, 6Mbps

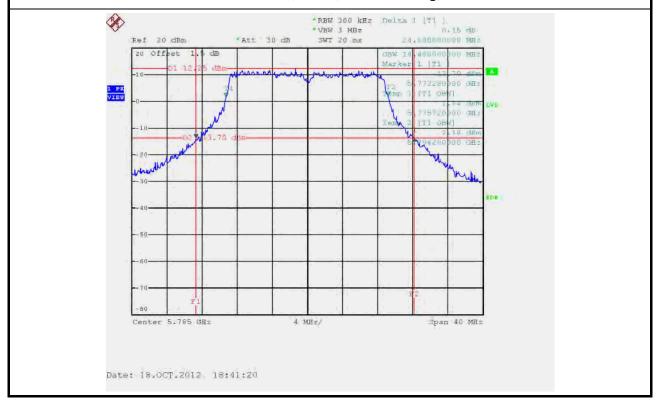


SPORTON INTERNATIONAL INC. Page No. : 30 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



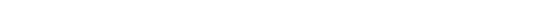


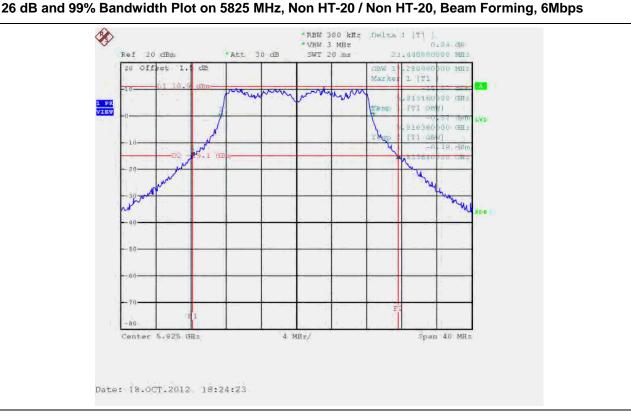




SPORTON INTERNATIONAL INC. Page No. : 31 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







#### 26 dB and 99% Bandwidth Plot on 5825 MHz, HT-20, Beam Forming, M0

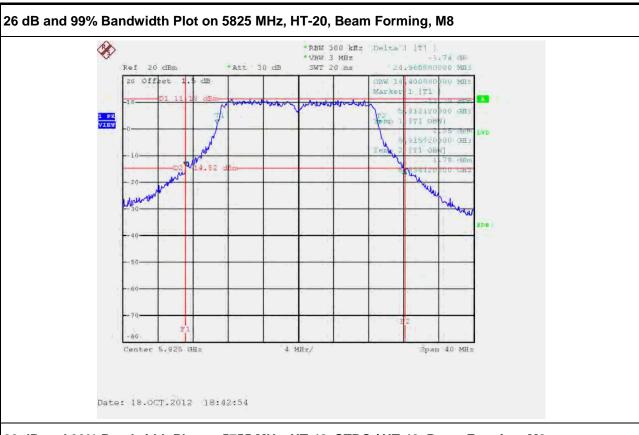


SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 32 of 146
Report Version : Rev. 01







#### 26 dB and 99% Bandwidth Plot on 5755 MHz, HT-40, STBC / HT-40, Beam Forming, M0

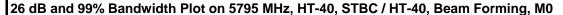


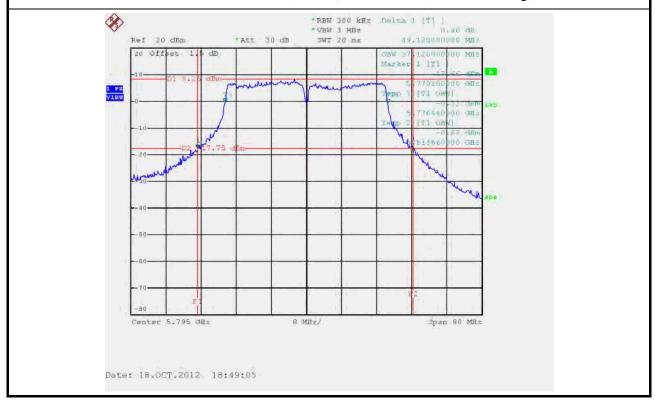
SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 33 of 146
Report Version : Rev. 01









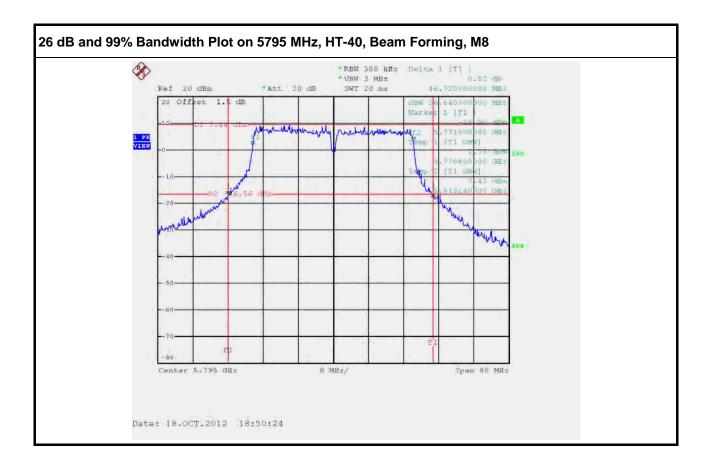
SPORTON INTERNATIONAL INC.
TEL: 886-3-3273456

FAX: 886-3-3270973

Page No. : 34 of 146
Report Version : Rev. 01

Report No.: FR281405-03AB





SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 35 of 146
Report Version : Rev. 01

Report No.: FR281405-03AB



# 3.4 RF Output Power

### 3.4.1 RF Output Power Limit

	RF Output Power Limit			
Max	imu	m 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 (P to M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm		
		Point-to-point systems (P to P): 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		
		Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm		
	$\mathbf{P}_{Out} = maximum$ conducted output power in dBm, $\mathbf{G}_{TX} = the$ maximum transmitting antenna directional gain in dBi.			

Report No.: FR281405-03AB

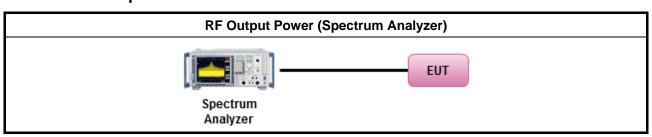
### 3.4.2 Measuring Instruments

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

#### 3.4.3 Test Procedures

	Test Method				
$\boxtimes$	Maximum Conducted Output Power				
	$\boxtimes$	Refer as FCC KDB 558074, clause 8.2.1 Option 1 (spectral trace averaging).			
		Refer as FCC KDB 558074, clause 8.2.2 Option 2 (slow sweep speed).			
		Refer as FCC KDB 558074, clause 8.2.3 Option 3 (average power meter).			
$\boxtimes$	For	conducted measurement.			
		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.			

### 3.4.4 Test Setup



SPORTON INTERNATIONAL INC. Page No. : 36 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



#### 3.4.5 Test Result of Maximum Conducted Output Power

Freq.	Operating Mode	N <sub>TX</sub>	Correlated Antenna Gain (dBi)	Output Power	Tx2 Output Power (dBm)	Total Tx Channel Power (dBm)		Margin (dB)
(IVITIZ)	Non HT-20, 6 to 54Mbps	2	5.00	17.66	17.07	20.39	30.00	9.61
	Non HT-20, 8 to 54Mbps  Non HT-20, Beam Forming, 6 to 54Mbps	2	8.01	17.66	17.07	20.39	27.99	7.60
	HT-20, M0 to M15	2	5.00	17.83	17.03	20.46	30.00	9.54
5745	HT-20, STBC, M0 to M7	2	5.00	17.83	17.03	20.46	30.00	9.54
	HT-20, Beam Forming, M0 to M7	2	8.01	17.83	17.03	20.46	27.99	7.53
	HT-20, Beam Forming, M8 to M15	2	5.00	17.84	17.01	20.46	30.00	9.54
	, , , , , , , , , , , , , , , , , , ,		0.00					
	Non HT-20, 6 to 54Mbps	2	5.00	17.92	17.23	20.60	30.00	9.40
	Non HT-20, Beam Forming, 6 to 54Mbps	2	8.01	17.92	17.23	20.60	27.99	7.39
5785	HT-20, M0 to M15	2	5.00	17.96	17.28	20.64	30.00	9.36
3763	HT-20, STBC, M0 to M7	2	5.00	17.96	17.28	20.64	30.00	9.36
	HT-20, Beam Forming, M0 to M7	2	8.01	17.96	17.28	20.64	27.99	7.35
	HT-20, Beam Forming, M8 to M15	2	5.00	17.95	17.01	20.52	30.00	9.48
			•	•	-	-		
	Non HT-20, 6 to 54Mbps	2	5.00	18.00	16.94	20.51	30.00	9.49
	Non HT-20, Beam Forming, 6 to 54Mbps	2	8.01	18.00	16.94	20.51	27.99	7.48
5825	HT-20, M0 to M15	2	5.00	17.52	17.00	20.28	30.00	9.72
3023	HT-20, STBC, M0 to M7	2	5.00	17.52	17.00	20.28	30.00	9.72
	HT-20, Beam Forming, M0 to M7	2	8.01	17.52	17.00	20.28	27.99	7.71
	HT-20, Beam Forming, M8 to M15	2	5.00	17.79	17.05	20.45	30.00	9.55
	HT-40, M0 to M15	2	5.00	17.91	17.1	20.53	30.00	9.47
5755	HT-40, STBC, M0 to M7	2	5.00	17.91	17.1	20.53	30.00	9.47
3733	HT-40, Beam Forming, M0 to M7	2	8.01	17.91	17.1	20.53	27.99	7.46
	HT-40, Beam Forming, M8 to M15	2	5.00	17.64	16.9	20.30	30.00	9.70
	HT-40, M0 to M15	2	5.00	18.26	17.1	20.73	30.00	9.27
5795	HT-40, STBC, M0 to M7	2	5.00	18.26	17.1	20.73	30.00	9.27
0.00	HT-40, Beam Forming, M0 to M7	2	8.01	18.26	17.1	20.73	27.99	7.26
	HT-40, Beam Forming, M8 to M15	2	5.00	18.10	17.00	20.60	30.00	9.40

Report No.: FR281405-03AB

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

Note 2: For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows:

Any transmit signals are correlated, Directional Gain =10 log[(10<sup>G1/20</sup> +... + 10<sup>GN/20</sup>)<sup>2</sup> /N<sub>TX</sub>]

All transmit signals are completely uncorrelated, Directional Gain = 10 log[(10<sup>G1/10</sup> +... + 10<sup>GN/10</sup>)/N<sub>TX</sub>]

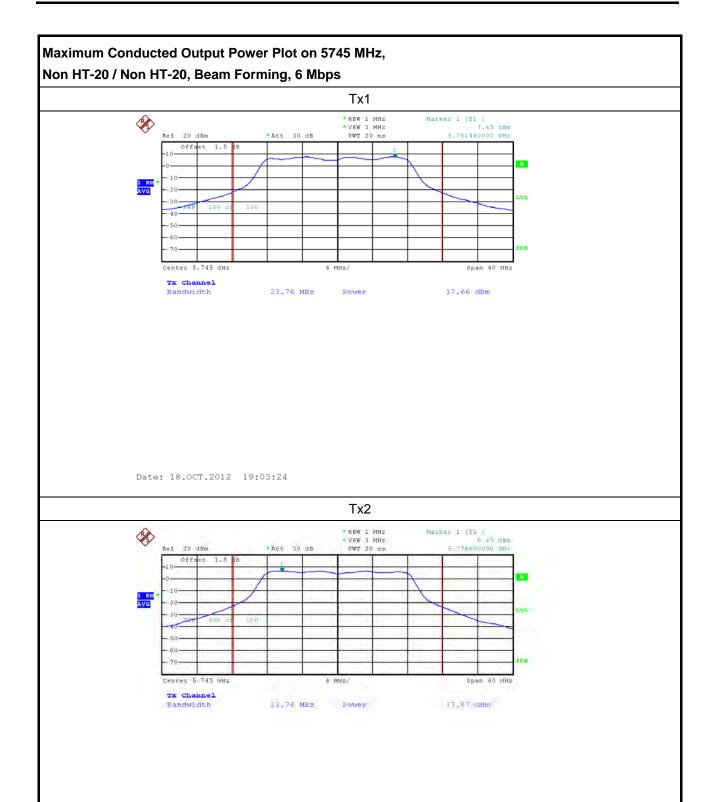
Note 3: For Spatial Multiplexing, Directional Gain (DG) =  $G_{ANT}$  + 10 log( $N_{TX}/N_{SS}$ ), where Nss = the number of independent spatial streams data.

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  $N_{TX} \le 4$ ;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any  $N_{TX}$ 

SPORTON INTERNATIONAL INC. Page No. : 37 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





SPORTON INTERNATIONAL INC.
TEL: 886-3-3273456

Date: 18.OCT.2012 19:02:35

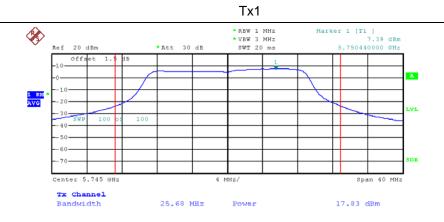
FAX: 886-3-3270973

Page No. : 38 of 146 Report Version : Rev. 01



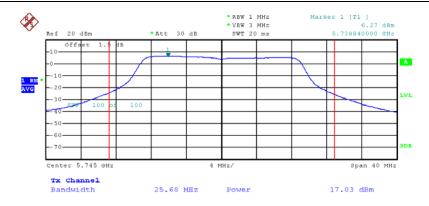
#### Report No.: FR281405-03AB

# Maximum Conducted Output Power Plot on 5745 MHz, HT-20 / HT-20, STBC / HT-20, Beam Forming, M0



Date: 18.0CT.2012 19:20:20

#### Tx2

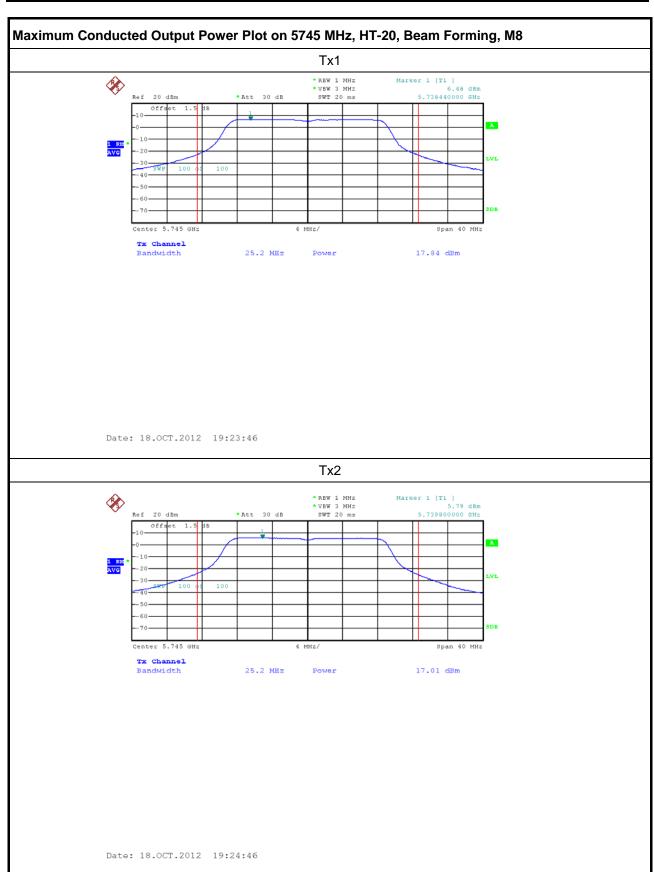


Date: 18.0CT.2012 19:19:18

SPORTON INTERNATIONAL INC. Page No. : 39 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

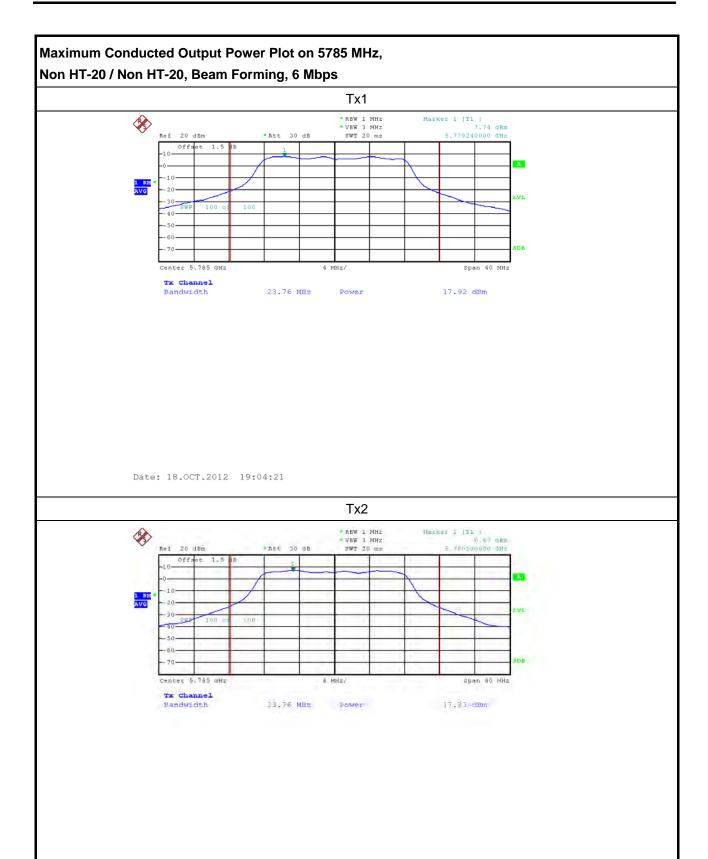


#### Report No.: FR281405-03AB



SPORTON INTERNATIONAL INC. Page No. : 40 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





SPORTON INTERNATIONAL INC. Page No. : 41 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

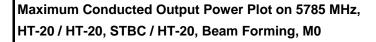
Date: 18.OCT.2012 19:05:38

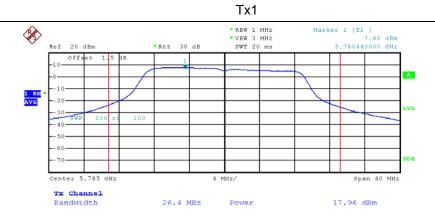


#### Report No.: FR281405-03AB

: 42 of 146

: Rev. 01





Date: 18.0CT.2012 19:16:05

# 

Date: 18.OCT.2012 19:15:18

SPORTON INTERNATIONAL INC. Page No.
TEL: 886-3-3273456 Report Version



#### Report No.: FR281405-03AB



SPORTON INTERNATIONAL INC. Page No. : 43 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# Maximum Conducted Output Power Plot on 5825 MHz, Non HT-20 / Non HT-20, Beam Forming, 6 Mbps Tx1 \*RBW 1 MHz \*VBW 3 MHz SWT 20 ms Marker 1 [T1 ] 8.05 dBm 5.818920000 GHz **\$** Tx Channel Bandwidth 23.52 MHz Power 18.00 dBm Date: 18.0CT.2012 20:21:59 Tx2 RBW 1 MHz VBW 3 MHz SWT 20 ms Center 5,825 GHz Span 40 MHz Tx Channel Eandwidth 23,52 MHs 16.94 dBm

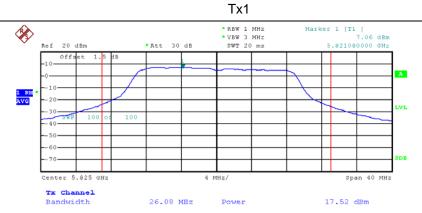
SPORTON INTERNATIONAL INC.

Date: 18.OCT.2012 20:21:23

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 44 of 146
Report Version : Rev. 01



# Maximum Conducted Output Power Plot on 5825 MHz, HT-20 / HT-20, STBC / HT-20, Beam Forming, M0



Date: 18.0CT.2012 19:13:36

# 

Tx2

Date: 18.OCT.2012 19:14:19

SPORTON INTERNATIONAL INC. TEL: 886-3-3273456

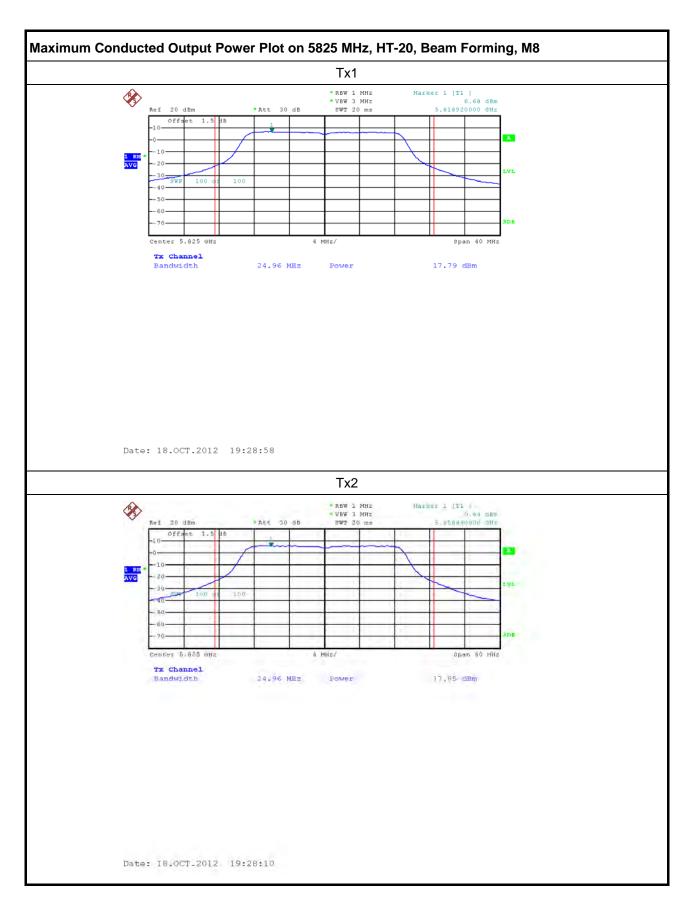
FAX: 886-3-3270973

Page No. : 45 of 146

Report Version

: Rev. 01





SPORTON INTERNATIONAL INC.
TEL: 886-3-3273456

FAX: 886-3-3270973

Page No. : 46 of 146
Report Version : Rev. 01

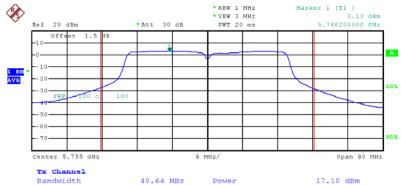


# Maximum Conducted Output Power Plot on 5755 MHz, HT-40 / HT-40, STBC / HT-40, Beam Forming, M0

# 

Date: 18.OCT.2012 19:58:12

# Tx2



Date: 18.0CT.2012 19:57:06

SPORTON INTERNATIONAL INC. Page No. : 47 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# Maximum Conducted Output Power Plot on 5755 MHz, HT-40, Beam Forming, M8 Tx1 \*RBW 1 MHz \*VBW 3 MHz SWT 20 ms Marker 1 [T1 ] 3.54 dBm 5.739480000 GHz Offset Center 5.755 GHz Tx Channel Bandwidth 47.36 MHz 17.64 dBm Date: 18.OCT.2012 20:05:00 Tx2 \* RBW 1 MHz \* VBW 3 MHz SWT 20 ms Marker 1 [T1 | 1.00 mam. 5.739900000 9Ms 1v. 90 dBm 47.36 MHz Power Bandwidth

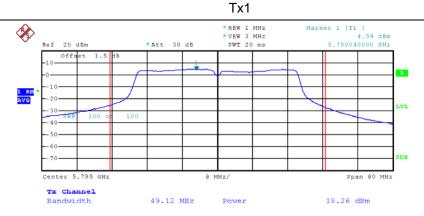
Report No.: FR281405-03AB

SPORTON INTERNATIONAL INC. Page No. : 48 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

Date: 18.OCT.2012 20:08:49

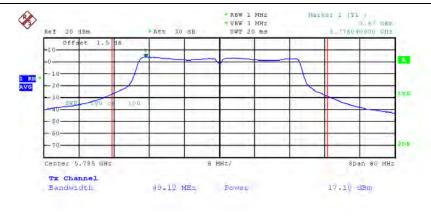


# Maximum Conducted Output Power Plot on 5795 MHz, HT-40 / HT-40, STBC / HT-40, Beam Forming, M0



Date: 18.0CT.2012 20:01:23

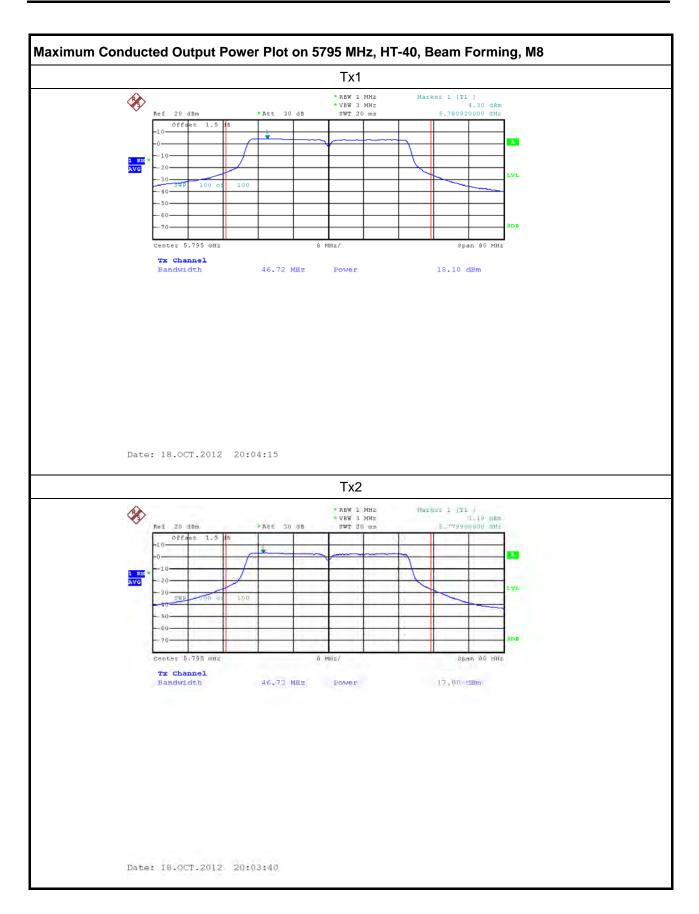
#### Tx2



Date: 18.OCT.2012 20:02:08

SPORTON INTERNATIONAL INC. Page No. : 49 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





SPORTON INTERNATIONAL INC. Page No. : 50 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

# 3.5 Power Spectral Density

### 3.5.1 Power Spectral Density Limit

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

Report No.: FR281405-03AB

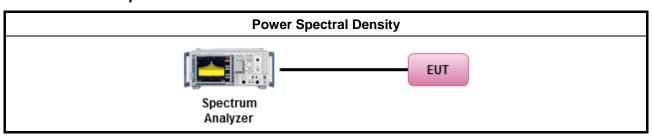
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

		Test Method				
	Power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the power spectral density. In addition, the use of a peak PSD procedure will always result in a "worst-case" measured level for comparison to the limit. Therefore, whenever the DTS bandwidth exceeds 500 kHz, it is acceptable to utilize the peak PSD procedure to demonstrate compliance to the PSD limit, regardless of how the fundamental output power was measured. For the power spectral density shall be measured using below options:					
	$\boxtimes$	Refer as FCC KDB 558074, clause 9.1 Option 1 - (RBW≥3kHz; sweep=auto, detector=peak).				
		Refer as FCC KDB 558074, clause 9.2 Option 2 - (RBW≥3kHz; sweep=auto, average=100).				
		Refer as FCC KDB 558074, clause 9.3 Option 3 - (RBW≥3kHz; slow sweep speed).				
		Refer as FCC KDB 558074, clause 9.4 Option 2 (average PSD; BWCF=-15.2dB).				
		RBW>3kHz, add the bandwidth correction factor (BWCF) adjusting in PSD per 3kHz.				
$\boxtimes$	For	conducted measurement.				
	$\boxtimes$	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 <sub>TX</sub> 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.				

## 3.5.4 Test Setup



SPORTON INTERNATIONAL INC. Page No. : 51 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# 3.5.5 Test Result of Power Spectral Density

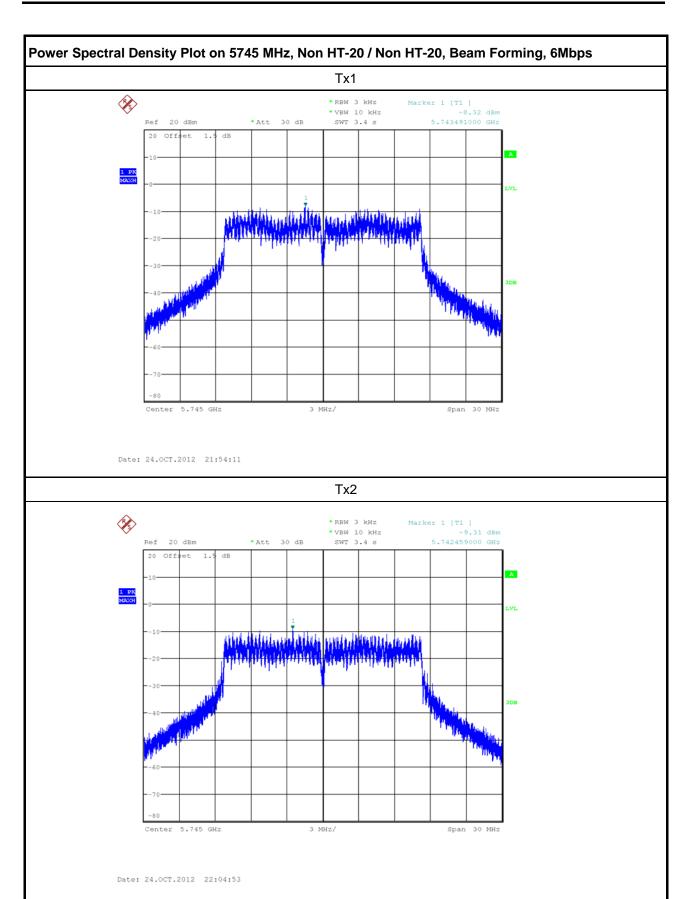
Ferq. (MHz)	Operating Mode	Data Rate (Mbps)	Tx1 PSD Antenna (dBm/3kHz)	Tx2 PSD Antenna (dBm/3kHz)	1Port Limit (dBm/3kHz)	1Port Margin (dB)	Total Tx PSD Antenna (dBm/3kHz)	Total Port Limit (dBm/3kHz)	Margin (dB)
	Non HT-20, 6 to 54Mbps	6	-8.32	-9.31	4.99	13.31	-5.78	8.00	13.78
	Non HT-20, Beam Forming, 6 to 54Mbps	6	-8.32	-9.31	2.98	11.30	-5.78	5.99	11.77
5745	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	M0	-7.7	-9.09	4.99	12.69	-5.33	8.00	13.33
	HT-20, Beam Forming, M0 to M7	M0	-7.7	-9.09	2.98	10.68	-5.33	5.99	11.32
	HT-20, Beam Forming, M8 to M15	M8	-8.83	-9.84	4.99	13.82	-6.30	8.00	14.30
		•	•	•				•	
	Non HT-20, 6 to 54Mbps	6	-7.85	-9.33	4.99	12.84	-5.52	8.00	13.52
	Non HT-20, Beam Forming, 6 to 54Mbps	6	-7.85	-9.33	2.98	10.83	-5.52	5.99	11.51
5785	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	M0	-8.89	-9.17	4.99	13.88	-6.02	8.00	14.02
	HT-20, Beam Forming, M0 to M7	M0	-8.89	-9.17	2.98	11.87	-6.02	5.99	12.01
	HT-20, Beam Forming, M8 to M15	M8	-8.68	-9.07	4.99	13.67	-5.86	8.00	13.86
	Non HT-20, 6 to 54Mbps	6	-6.28	-8.6	4.99	11.27	-4.28	8.00	12.28
	Non HT-20, Beam Forming, 6 to 54Mbps	6	-6.28	-8.6	2.98	9.26	-4.28	5.99	10.27
5825	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	M0	-6.99	-8.3	4.99	11.98	-4.59	8.00	12.59
	HT-20, Beam Forming, M0 to M7	M0	-6.99	-8.3	2.98	9.97	-4.59	5.99	10.58
	HT-20, Beam Forming, M8 to M15	M8	-7.56	-9.18	4.99	12.55	-5.28	8.00	13.28
	HT-40, M0 to M15 / HT-40, STBC, M0 to M7	M0	-9.44	-12.69	4.99	14.43	-7.76	8.00	15.76
5755	HT-40, Beam Forming, M0 to M7	M0	-9.44	-12.69	2.98	12.42	-7.76	5.99	13.75
	HT-40, Beam Forming, M8 to M15	M8	-10.6	-12.65	4.99	15.59	-8.49	8.00	16.49
	HT-40, M0 to M15 / HT-40, STBC, M0 to M7	M0	-9.46	-12.58	4.99	14.45	-7.74	8.00	15.74
5795	HT-40, Beam Forming, M0 to M7	M0	-9.46	-12.58	2.98	12.44	-7.74	5.99	13.73
	HT-40, Beam Forming, M8 to M15	M8	-11.98	-12.53	4.99	16.97	-9.24	8.00	17.24

Report No.: FR281405-03AB

Note 1: PSD [dBm/3kHz] = each transmit chains PSD [dBm/3kHz] +  $10\log N_{TX}$  Note 2: Power spectral density plots w/o [ $10\log N_{TX}$ ] factor

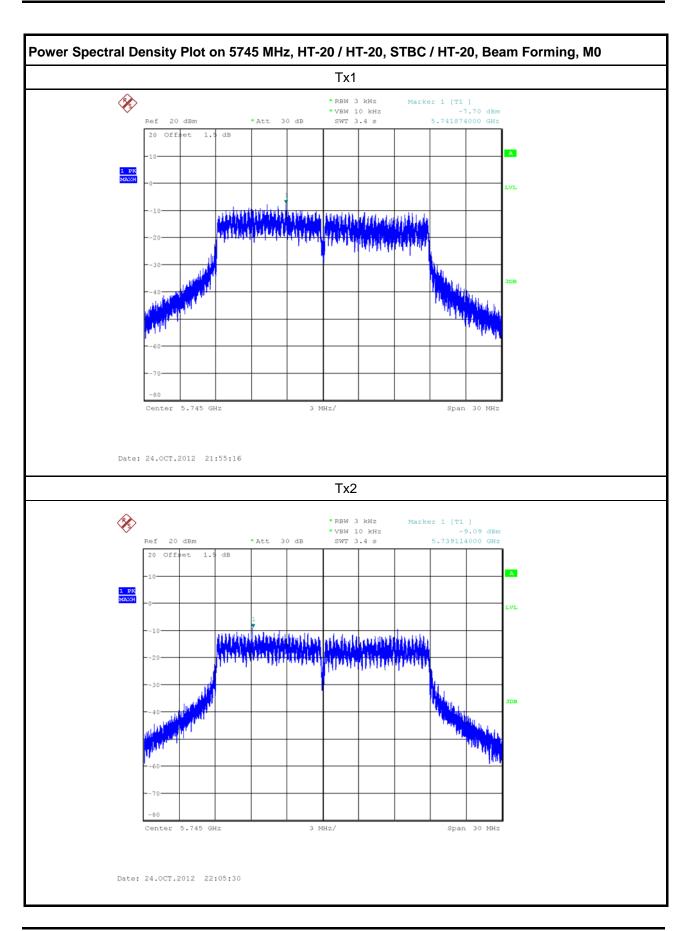
SPORTON INTERNATIONAL INC. : 52 of 146 Page No. TEL: 886-3-3273456 Report Version : Rev. 01





SPORTON INTERNATIONAL INC. Page No. : 53 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

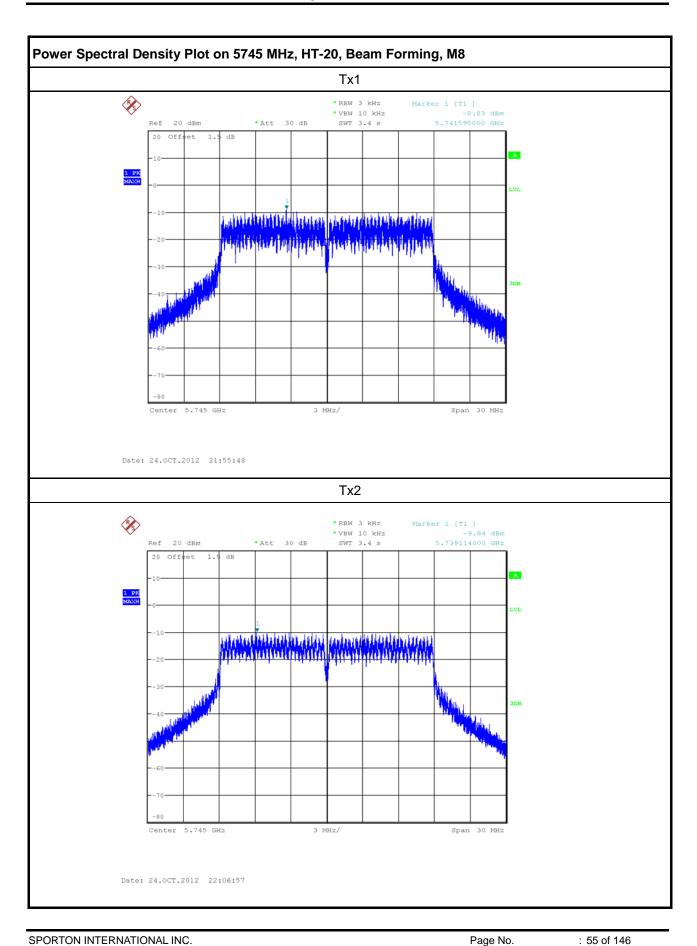




SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 54 of 146 Report Version : Rev. 01

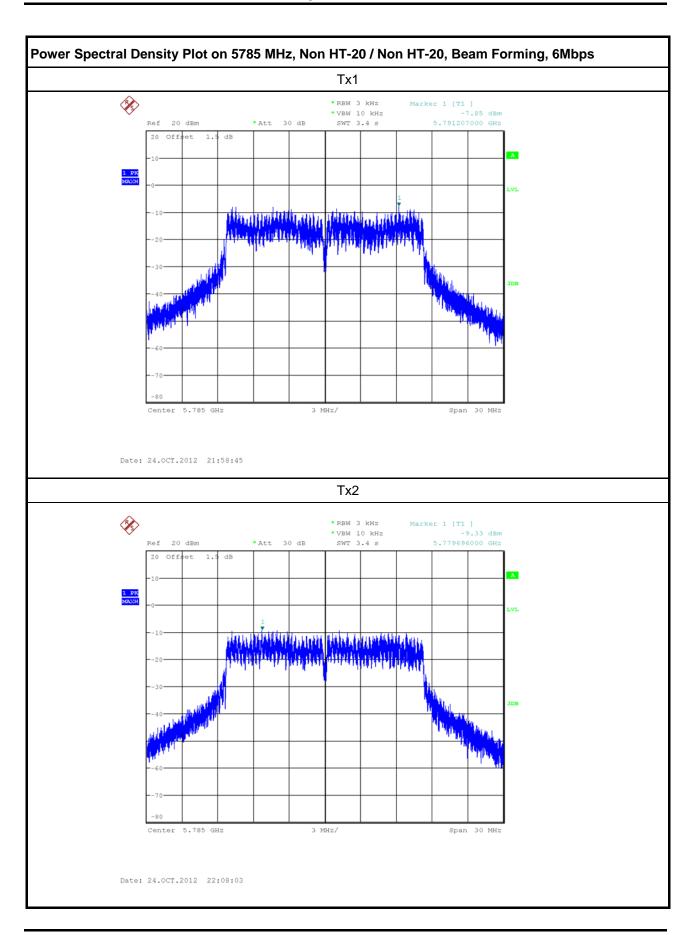




TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. Report Version : Rev. 01



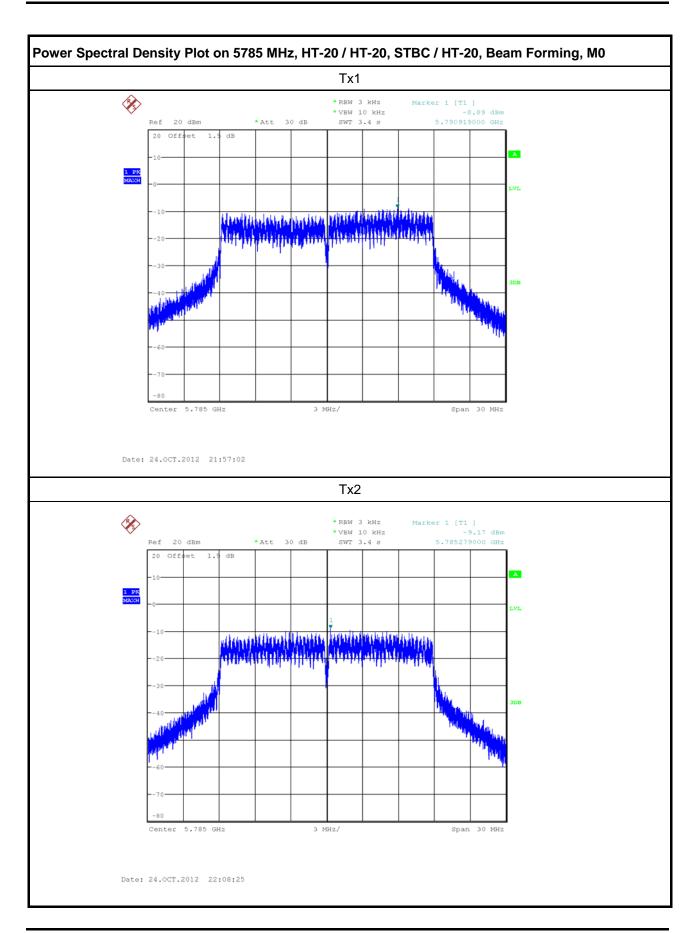




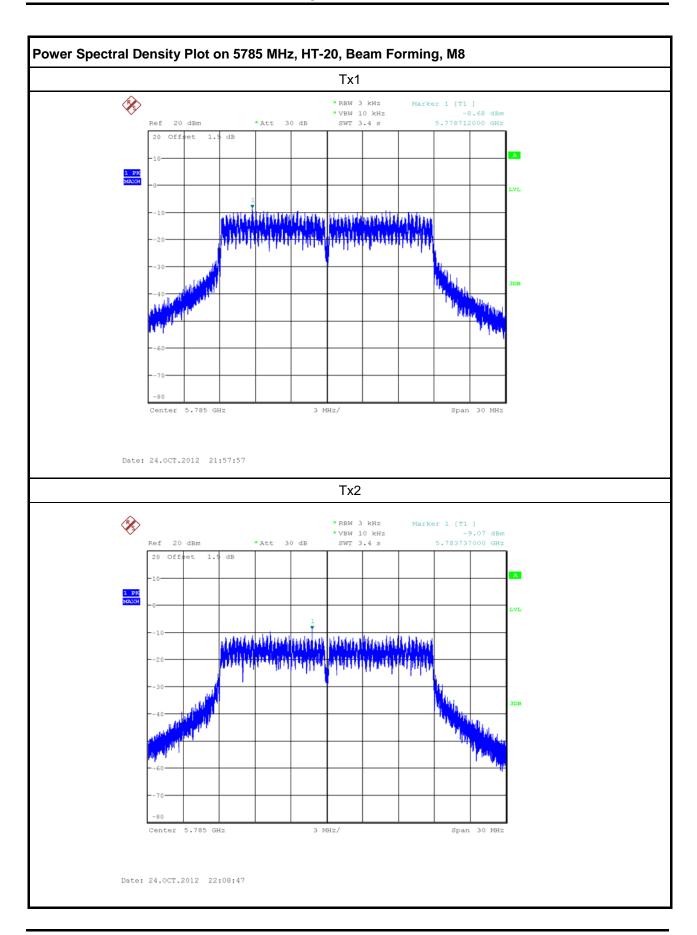
TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 56 of 146 Report Version : Rev. 01







TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 57 of 146 Report Version : Rev. 01

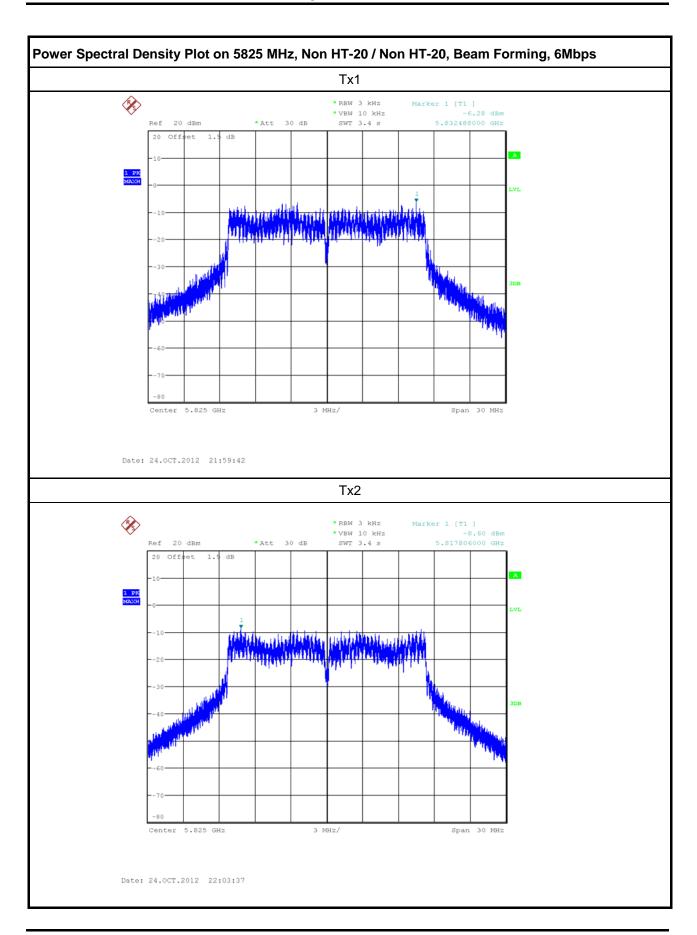


SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 58 of 146 Report Version : Rev. 01

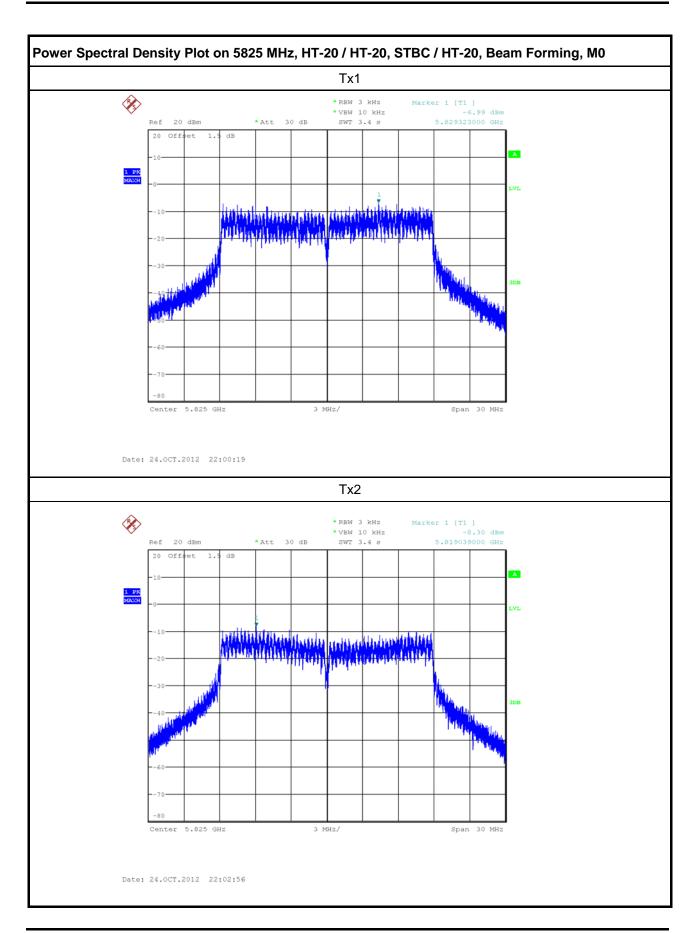






TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 59 of 146 Report Version : Rev. 01

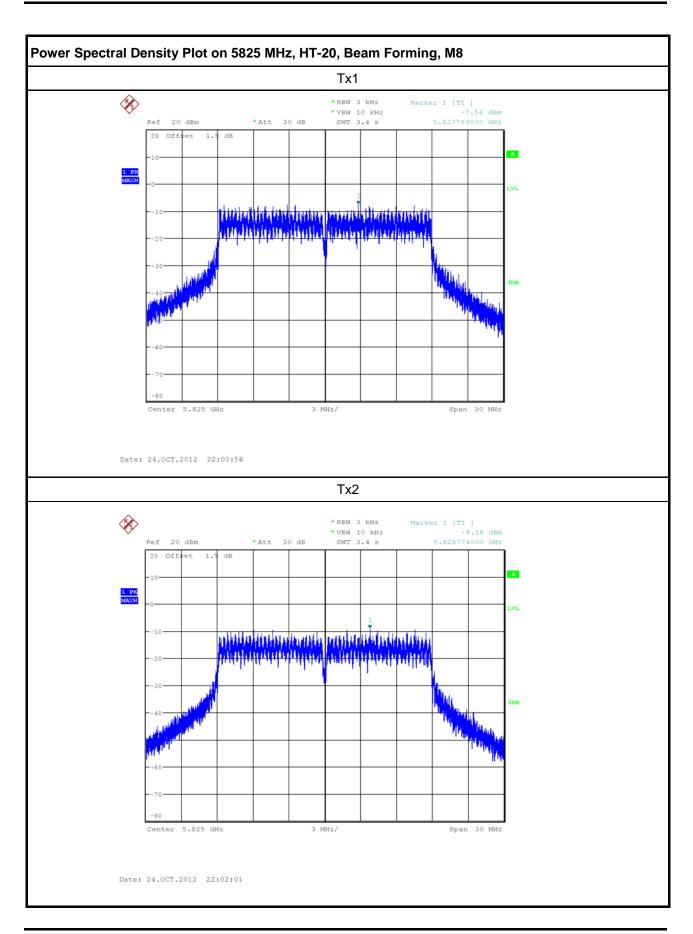




SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 60 of 146 Report Version : Rev. 01



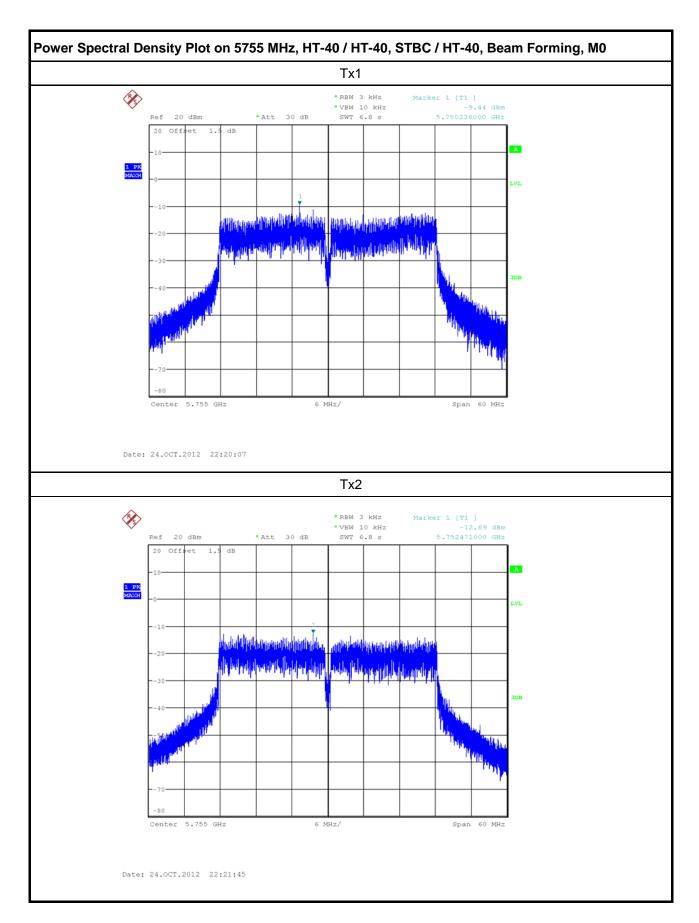


TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. Report Version

: 61 of 146 : Rev. 01



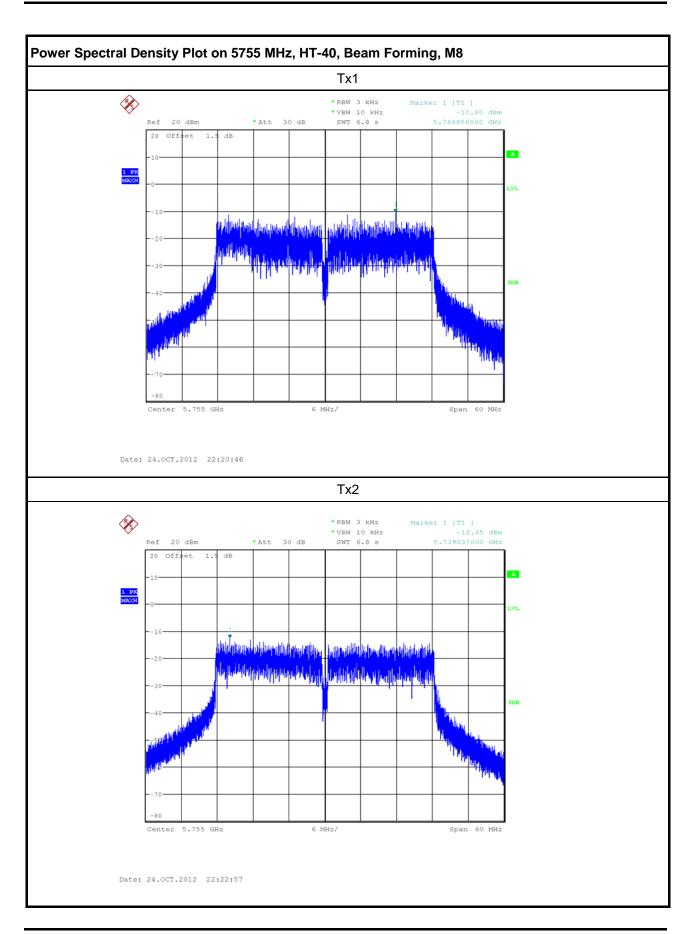




TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. Report Version

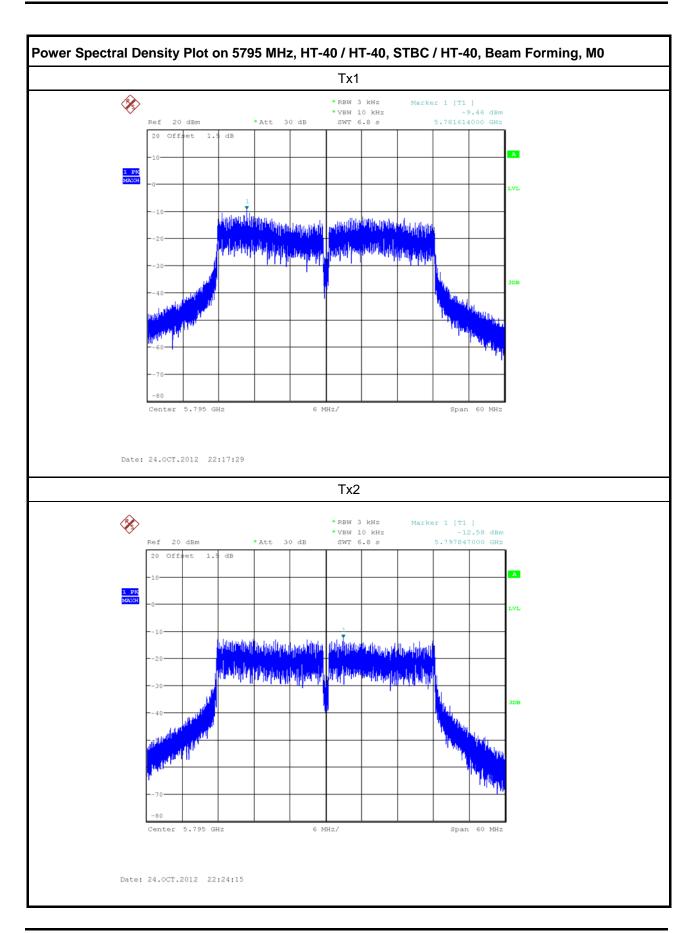
: 62 of 146 : Rev. 01





TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 63 of 146 Report Version : Rev. 01

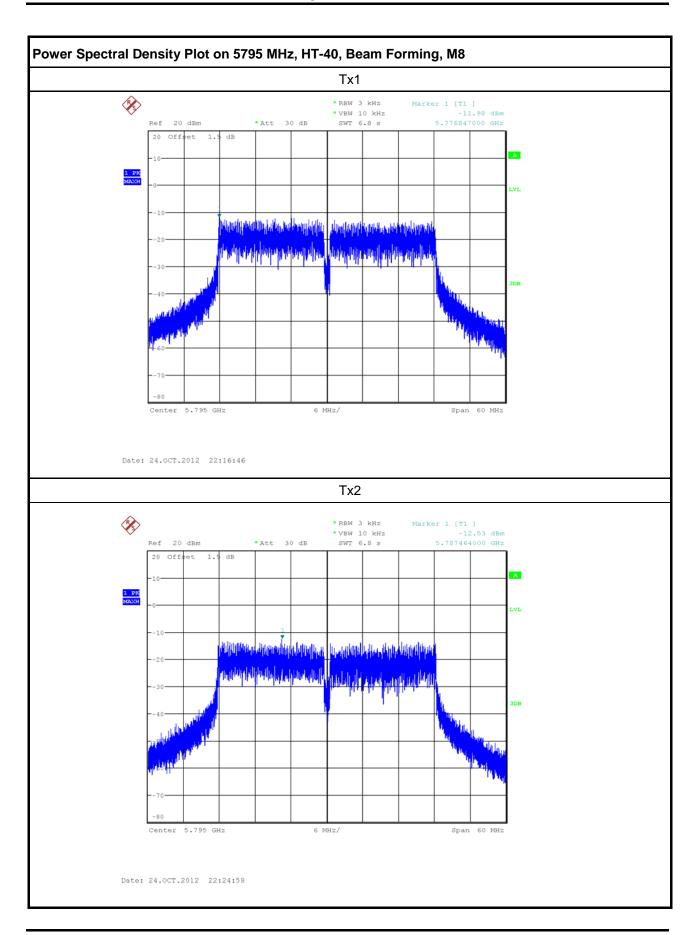




SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. Report Version : 64 of 146 : Rev. 01





TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 65 of 146 Report Version : Rev. 01

#### 3.6 Transmitter Conducted Unwanted Emissions

#### 3.6.1 Transmitter Conducted Unwanted Emissions Limit

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

Report No.: FR281405-03AB

- Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
- Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

#### 3.6.2 Measuring Instruments

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

#### 3.6.3 Test Procedures

	Test Method					
$\boxtimes$	For the transmitter unwanted emissions shall be measured using following options below:					
	Refer as FCC KDB 558074, clause 10.1 for unwanted emissions into non-restricted bands.					
$\boxtimes$	For conducted measurement, refer as FCC KDB 558074, clause 10.2.2.					
	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.					

#### 3.6.4 Test Setup

Transmitter Conducted Unwanted Emissions		
Spectrum EUT		
Analyzer		

SPORTON INTERNATIONAL INC. : 66 of 146
TEL: 886-3-3273456 : Report Version : Rev. 01



## 3.6.5 Transmitter Conducted Unwanted Emissions

Freq. (MHz)	Operating Mode	Data Rate (Mbps)	Conducted Spur Delta (dB)	Limit (dBc)	Margin (dB)	
	Non HT-20, 6 to 54Mbps	6	42.5	30	12.5	
	Non HT-20, Beam Forming, 6 to 54Mbps	6	42.5	30	12.5	
5745	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	MO	43.13	30	13.13	
	HT-20, Beam Forming, M0 to M7	MO	43.13	30	13.13	
	HT-20, Beam Forming, M8 to M15	M8	42.37	30	12.37	
	Non HT-20, 6 to 54Mbps	6	41.91	30	11.91	
	Non HT-20, Beam Forming, 6 to 54Mbps	6	41.91	30	11.91	
5785	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	MO	42.22	30	12.22	
	HT-20, Beam Forming, M0 to M7	MO	42.22	30	12.22	
	HT-20, Beam Forming, M8 to M15	M8	42.41	30	12.41	
	Non HT-20, 6 to 54Mbps	6	42.12	30	12.12	
	Non HT-20, Beam Forming, 6 to 54Mbps	6	42.12	30	12.12	
5825	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	M0	41.88	30	11.88	
	HT-20, Beam Forming, M0 to M7	MO	41.88	30	11.88	
	HT-20, Beam Forming, M8 to M15	M8	42.35	30	12.35	
					_	
	HT-40, M0 to M15 / HT-40, STBC, M0 to M7	MO	38.75	30	8.75	
5755	HT-40, Beam Forming, M0 to M7	MO	38.75	30	8.75	
	HT-40, Beam Forming, M8 to M15	M8	40.93	30	10.93	
	HT-40, M0 to M15 / HT-40, STBC, M0 to M7	MO	39.93	30	9.93	
5795	HT-40, Beam Forming, M0 to M7	MO	39.93	30	9.93	
	HT-40, Beam Forming, M8 to M15	M8	39.71	30	9.71	

Report No.: FR281405-03AB

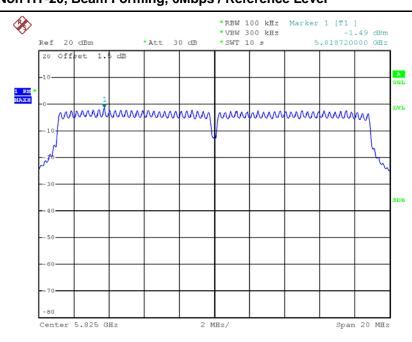
: 67 of 146

: Rev. 01

SPORTON INTERNATIONAL INC. Page No.
TEL: 886-3-3273456 Report Version

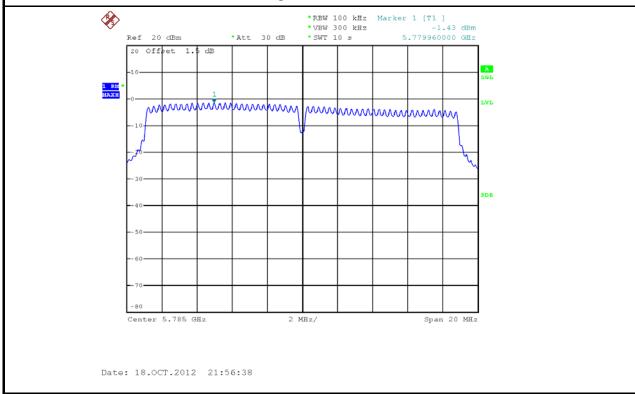


# Transmitter Conducted Unwanted Emissions Plot on Non HT-20 / Non HT-20, Beam Forming, 6Mbps / Reference Level



Date: 18.0CT.2012 21:58:46

# Transmitter Conducted Unwanted Emissions Plot on HT-20 / HT-20, STBC / HT-20, Beam Forming, M0 / Reference Level



SPORTON INTERNATIONAL INC.

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

: 68 of 146

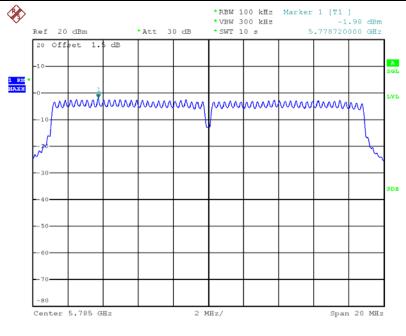
Report Version

: Rev. 01

Report No.: FR281405-03AB

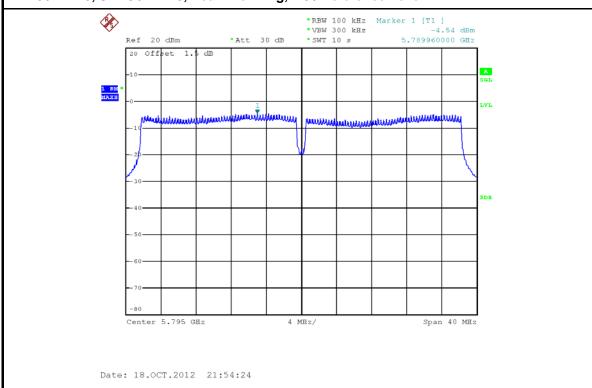






Date: 18.0CT.2012 21:58:02

# Transmitter Conducted Unwanted Emissions Plot on HT-40 / HT-40, STBC / HT-40, Beam Forming, M0 / Reference Level



SPORTON INTERNATIONAL INC. Page No. : 69 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



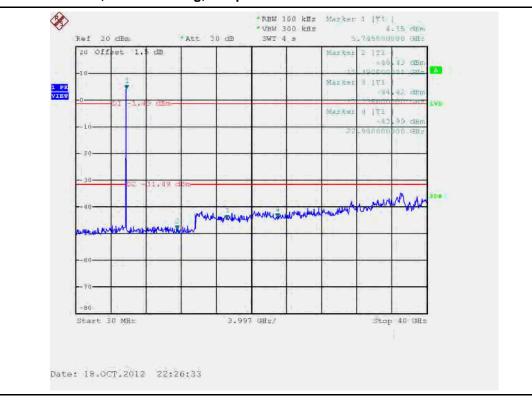


Report No.: FR281405-03AB

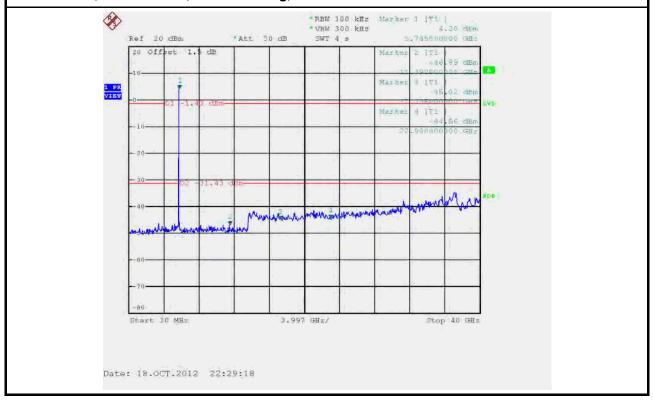
SPORTON INTERNATIONAL INC. Page No. : 70 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Transmitter Conducted Unwanted Emissions Plot on 5745 MHz, Non HT-20 / Non HT-20, Beam Forming, 6Mbps



Transmitter Conducted Unwanted Emissions Plot on 5745 MHz, HT-20 / HT-20, STBC / HT-20, Beam Forming, M0



SPORTON INTERNATIONAL INC.

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

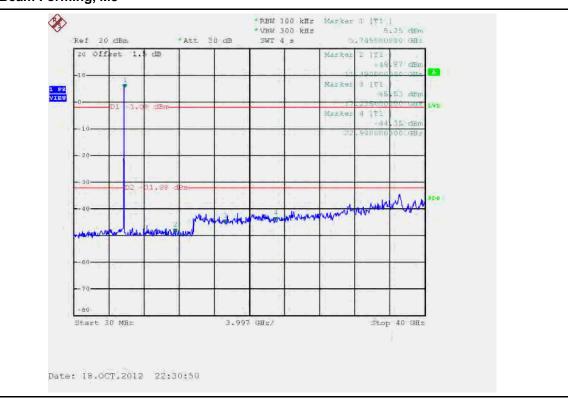
Report Version

: 71 of 146 : Rev. 01

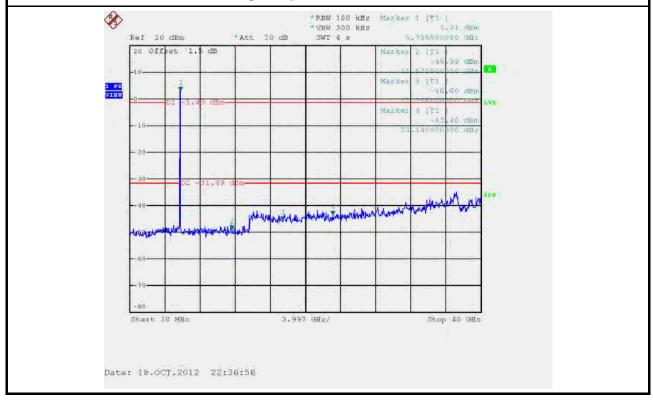
Report No.: FR281405-03AB



Transmitter Conducted Unwanted Emissions Plot on 5745 MHz, HT-20, Beam Forming, M8



Transmitter Conducted Unwanted Emissions Plot on 5785 MHz, Non HT-20 / Non HT-20, Beam Forming, 6Mbps



SPORTON INTERNATIONAL INC.

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

: 72 of 146

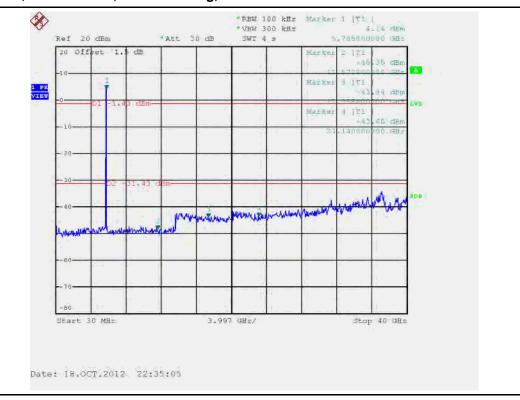
Report Version

: Rev. 01

Report No.: FR281405-03AB



Transmitter Conducted Unwanted Emissions Plot on 5785 MHz, HT-20 / HT-20, STBC / HT-20, Beam Forming, M0



Transmitter Conducted Unwanted Emissions Plot on 5785 MHz, HT-20, Beam Forming, M8

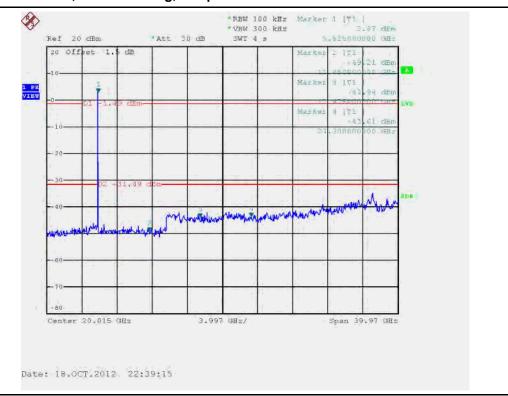


SPORTON INTERNATIONAL INC.

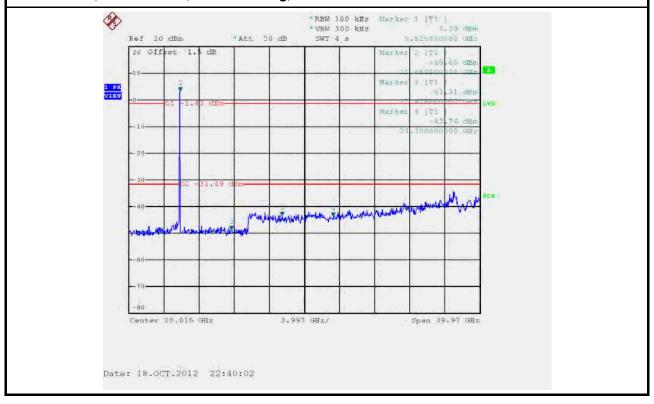
TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 73 of 146 Report Version : Rev. 01



Transmitter Conducted Unwanted Emissions Plot on 5825 MHz, Non HT-20 / Non HT-20, Beam Forming, 6Mbps



Transmitter Conducted Unwanted Emissions Plot on 5825 MHz, HT-20 / HT-20, STBC / HT-20, Beam Forming, M0



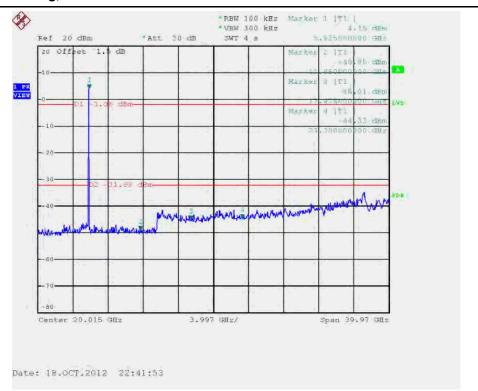
SPORTON INTERNATIONAL INC.

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

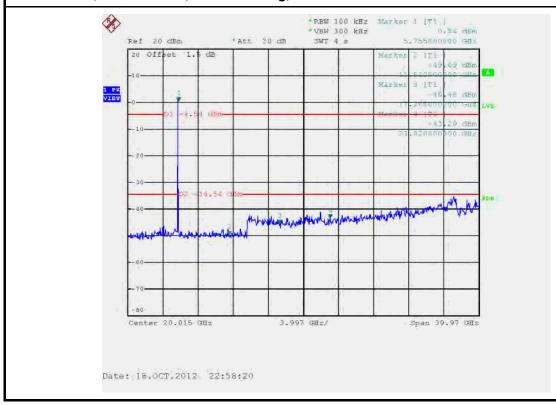
: 74 of 146 : Rev. 01



# Transmitter Conducted Unwanted Emissions Plot on 5825 MHz, HT-20, Beam Forming, M8



# Transmitter Conducted Unwanted Emissions Plot on 5755 MHz, HT-40 / HT-40, STBC / HT-40, Beam Forming, M0

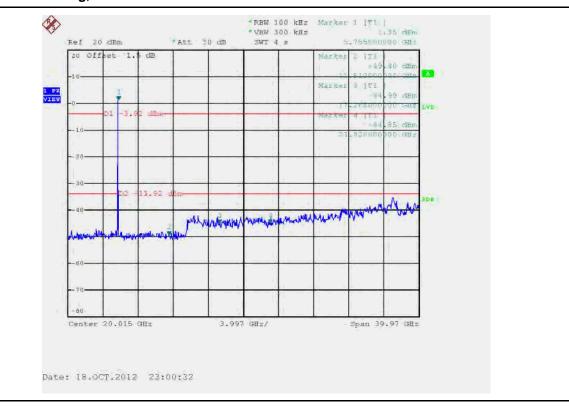


SPORTON INTERNATIONAL INC.

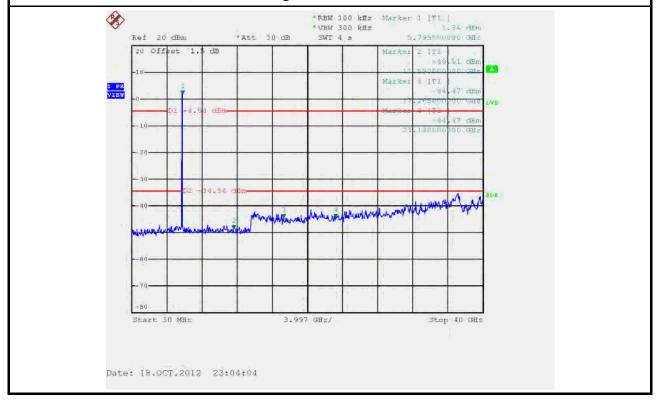
TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 75 of 146 Report Version : Rev. 01



Transmitter Conducted Unwanted Emissions Plot on 5755 MHz, HT-40, Beam Forming, M8



Transmitter Conducted Unwanted Emissions Plot on 5795 MHz, HT-40 / HT-40, STBC / HT-40, Beam Forming, M0

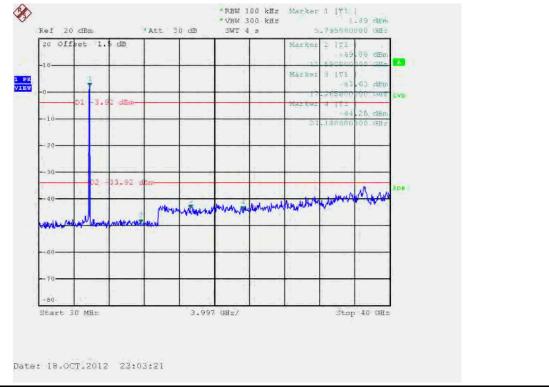


SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 76 of 146
Report Version : Rev. 01



# Transmitter Conducted Unwanted Emissions Plot on 5795 MHz, HT-40, Beam Forming, M8 Ref 20 dBm Att 30 dB SWT 4 s 5-795 Ref 20 offet 1.5 dB Market 2 7



Report No.: FR281405-03AB

: 77 of 146

: Rev. 01

SPORTON INTERNATIONAL INC. Page No.
TEL: 886-3-3273456 Report Version



#### 3.7 Transmitter Radiated Unwanted Emissions

#### 3.7.1 Transmitter Radiated Unwanted Emissions Limit

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

Report No.: FR281405-03AB

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.

#### 3.7.2 Measuring Instruments

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

SPORTON INTERNATIONAL INC. Page No. : 78 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# 3.7.3 Test Procedures

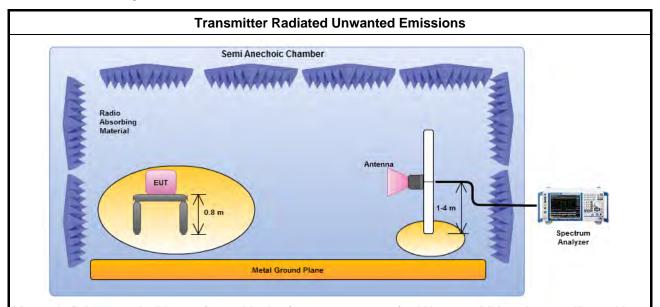
		Test Method
$\boxtimes$	perf equi extra dista	isurements may be performed at a distance other than the limit distance provided they are not ormed in the near field and the emissions to be measured can be detected by the measurement pment. When performing measurements at a distance other than that specified, the results shall be appolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear ance for field-strength measurements, inverse of linear distance-squared for power-density issurements).
	$\boxtimes$	Measurements in the frequency range above 1GHz -40GHz are typically made at a closer distance 3m, because the instrumentation noise floor is typically close to the radiated emission limit.
$\boxtimes$	The	average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
$\boxtimes$	For	the transmitter unwanted emissions shall be measured using following options below:
	$\boxtimes$	Refer as FCC KDB 558074, clause 10.1 for unwanted emissions into non-restricted bands.
	$\boxtimes$	Refer as FCC KDB 558074, clause 10.2 for unwanted emissions into restricted bands.
		Refer as FCC KDB 558074, clause 10.2.3.3 and 8.2.1 Option 1 (spectral trace averaging)
		Refer as FCC KDB 558074, clause 10.2.3.3 and 8.2.1 Option 2 (slow sweep speed).
		Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) – Duty cycle ≥ 98%.
		Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
		Refer as FCC KDB 558074, clause 10.2.3.2 and 8.1.1 measurement procedure peak limit.
		Refer as FCC KDB 558074, clause 10.2.3.1 measurement procedure Quasi-Peak limit.
$\boxtimes$	For	cabinet radiation radiated measurement, refer as FCC KDB 558074, clause 10.2.1.
	$\boxtimes$	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.
		Refer as ANSI C63.10, clause 6.5 for radiated emissions from above 1 GHz.

Report No.: FR281405-03AB

SPORTON INTERNATIONAL INC. Page No. : 79 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



#### 3.7.4 Test Setup



Report No.: FR281405-03AB

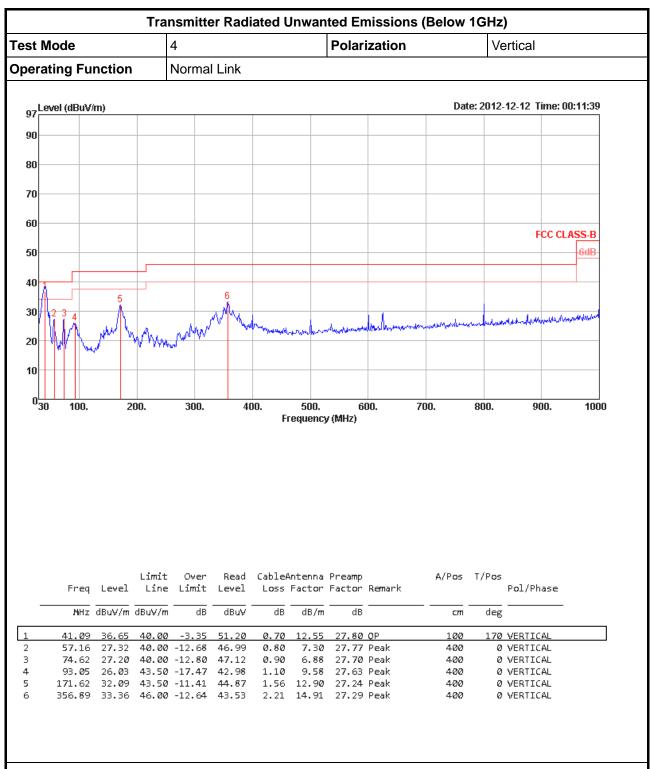
Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn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

#### 3.7.5 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. : 80 of 146
TEL: 886-3-3273456 Report Version : Rev. 01

#### Transmitter Radiated Unwanted Emissions (Below 1GHz)



Report No.: FR281405-03AB

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

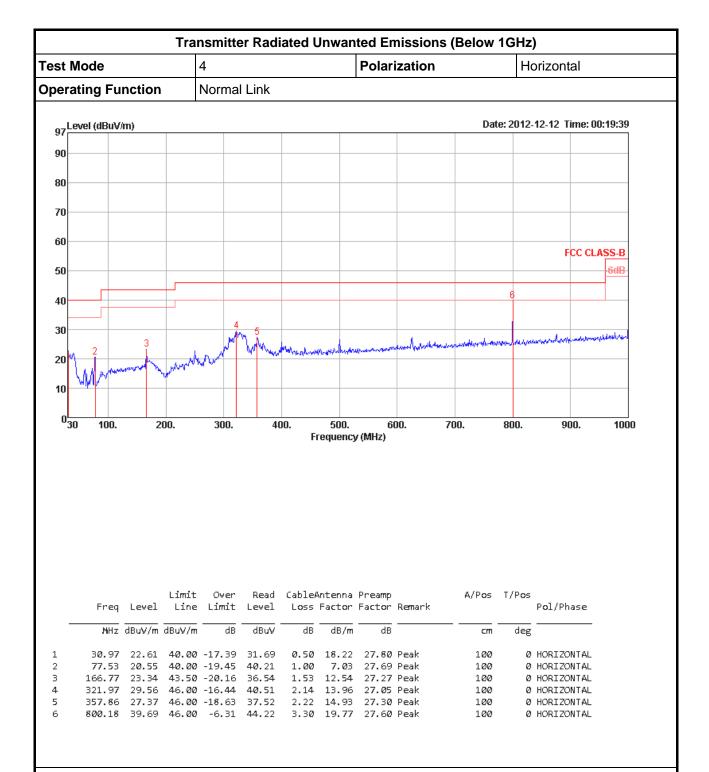
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

SPORTON INTERNATIONAL INC. Page No. : 81 of 146 TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



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. : 82 of 146 TEL: 886-3-3273456 Report Version : Rev. 01



# 3.7.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

**Transmitter Radiated Unwanted Emissions Result – Average** 

Freq.	nitter Radiated Unwanted Emissions Resul	Data Rate	Spurious Emission	Limit	Margin
(MHz)	Operating Mode	(Mbps)	(dBuV/m)	(dBuV/m)	•
, ,	Non HT-20, 6 to 54Mbps	6	43.48	54	10.52
	Non HT-20, Beam Forming, 6 to 54Mbps	6	43.48	54	10.52
5745	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	MO	43.48	54	10.52
	HT-20, Beam Forming, M0 to M7	MO	43.48	54	10.52
	HT-20, Beam Forming, M8 to M15	M8	43.48	54	10.52
	Non HT-20, 6 to 54Mbps	6	43.32	54	10.68
	Non HT-20, Beam Forming, 6 to 54Mbps	6	43.32	54	10.68
5785	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	MO	43.32	54	10.68
	HT-20, Beam Forming, M0 to M7	MO	43.32	54	10.68
	HT-20, Beam Forming, M8 to M15	M8	43.32	54	10.68
	Non HT-20, 6 to 54Mbps	6	43.56	54	10.44
	Non HT-20, Beam Forming, 6 to 54Mbps	6	43.56	54	10.44
5825	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	MO	43.56	54	10.44
	HT-20, Beam Forming, M0 to M7	MO	43.56	54	10.44
	HT-20, Beam Forming, M8 to M15	M8	43.56	54	10.44
	HT-40, M0 to M15 / HT-40, STBC, M0 to M7	MO	43.37	54	10.63
5755	HT-40, Beam Forming, M0 to M7	MO	43.37	54	10.63
	HT-40, Beam Forming, M8 to M15	M8	43.37	54	10.63
	HT-40, M0 to M15 / HT-40, STBC, M0 to M7	MO	43.31	54	10.69
5795	HT-40, Beam Forming, M0 to M7	MO	43.31	54	10.69
	HT-40, Beam Forming, M8 to M15	M8	43.31	54	10.69

SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. Report Version : 83 of 146

: Rev. 01



Transmitter Radiated Unwanted Emissions Result – Peak

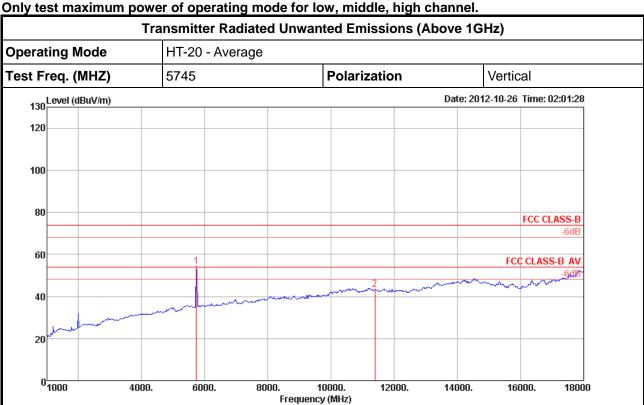
Freq.	Operating Mode	Data Rate (Mbps)	Spurious Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
, ,	Non HT-20, 6 to 54Mbps	6	56.27	74	17.73
	Non HT-20, Beam Forming, 6 to 54Mbps	6	56.27	74	17.73
5745	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	MO	56.27	74	17.73
	HT-20, Beam Forming, M0 to M7	MO	56.27	74	17.73
	HT-20, Beam Forming, M8 to M15	M8	56.27	74	17.73
	Non HT-20, 6 to 54Mbps	6	56.2	74	17.8
	Non HT-20, Beam Forming, 6 to 54Mbps	6	56.2	74	17.8
5785	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	MO	56.2	74	17.8
	HT-20, Beam Forming, M0 to M7	MO	56.2	74	17.8
	HT-20, Beam Forming, M8 to M15	M8	56.2	74	17.8
	Non HT-20, 6 to 54Mbps	6	56.2	74	17.8
	Non HT-20, Beam Forming, 6 to 54Mbps	6	56.2	74	17.8
5825	HT-20, M0 to M15 / HT-20, STBC, M0 to M7	MO	56.2	74	17.8
	HT-20, Beam Forming, M0 to M7	MO	56.2	74	17.8
	HT-20, Beam Forming, M8 to M15	M8	56.2	74	17.8
	HT-40, M0 to M15 / HT-40, STBC, M0 to M7	M0	55.69	74	18.31
5755	HT-40, Beam Forming, M0 to M7	M0	55.69	74	18.31
	HT-40, Beam Forming, M8 to M15	M8	55.69	74	18.31
	HT-40, M0 to M15 / HT-40, STBC, M0 to M7	M0	56.17	74	17.83
5795	HT-40, Beam Forming, M0 to M7	MO	56.17	74	17.83
	HT-40, Beam Forming, M8 to M15	M8	56.17	74	17.83

Report No.: FR281405-03AB

SPORTON INTERNATIONAL INC. Page No. : 84 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Transmitter Radiated Unwanted Emissions Worst Plots (Above 1GHz)
Only test maximum power of operating mode for low, middle, high chann



Report No.: FR281405-03AB

	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg
1 2	5736.00 11392.00								Average Average	100 100	Ø VERTICAL 77 VERTICAL

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.)

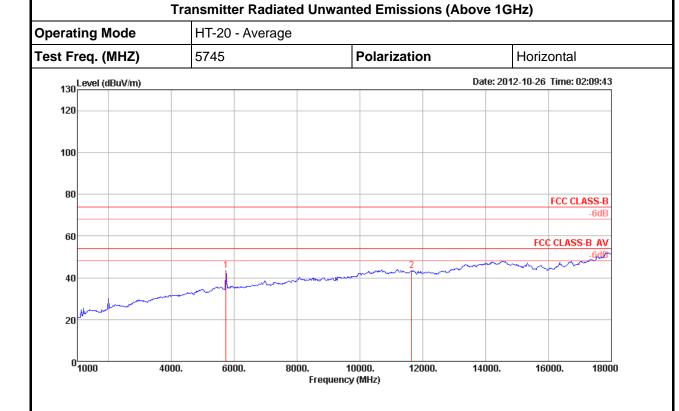
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 85 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No. : FR281405-03AB



	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu∀	dB	dB/m	dB		cm	deg	
1 2	5736.00 11638.00								Average Average	100 100		HORIZONTAL HORIZONTAL

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. : 86 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



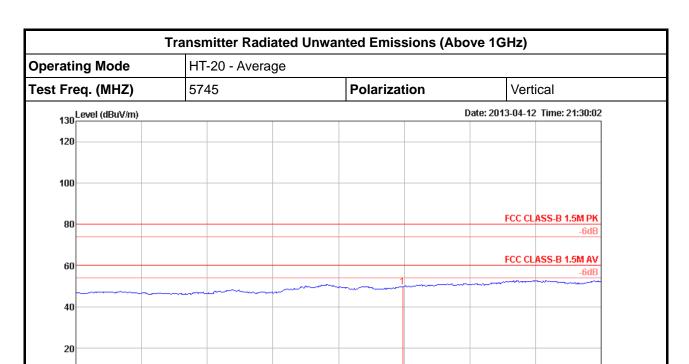
0<sup>1</sup>8000

19000.

20000.

21000.

# FCC and IC Radio Test Report



22000.

Frequency (MHz)

23000.

24000.

25000.

26000

Report No.: FR281405-03AB

	Freq	Level	Limit Line	Over L <b>imi</b> t						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg
1	22980.00	49.53	60.00	-10.47	31.61	14.77	38.66	35.51	Average	100	18 VERTICAL

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

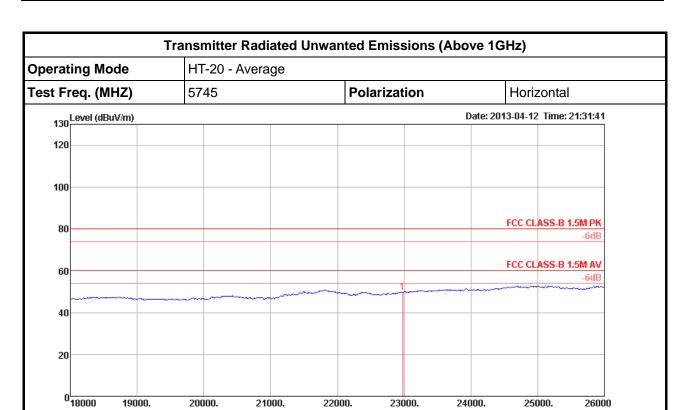
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 87 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Frequency (MHz)

Report No.: FR281405-03AB

	Freq	Level		Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg ————
1	22980.00	49.65	60.00	-10.35	31.73	14.77	38.66	35.51	Average	100	157 HORIZONTAL

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. : 88 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



40

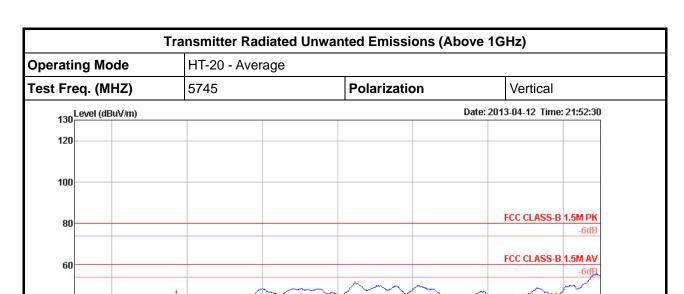
20

<sup>0</sup>26000

29000.

31000.

# FCC and IC Radio Test Report



33000.

Frequency (MHz)

35000.

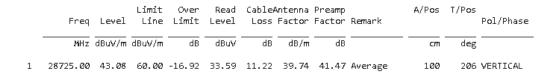
37000.

Report No.: FR281405-03AB

39000. 40000

: 89 of 146

: 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.)

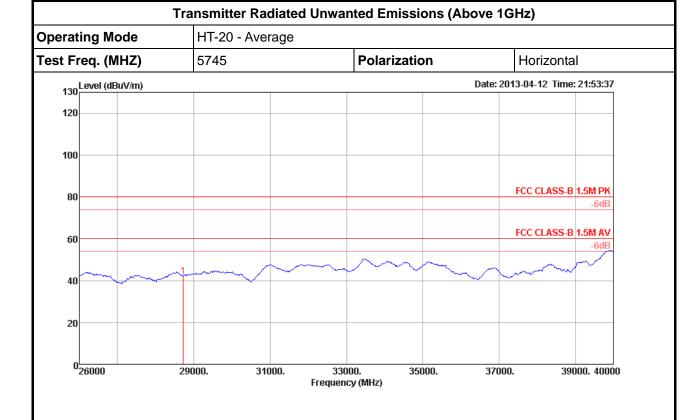
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

SPORTON INTERNATIONAL INC. Page No.
TEL: 886-3-3273456 Report Version







	Freq	Level			Read Level					A/Pos	T/Pos Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg ———	
1	28725.00	41.99	60.00	-18.01	32.50	11.22	39.74	41.47	Average	100	101 HORIZONTAL	

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.)

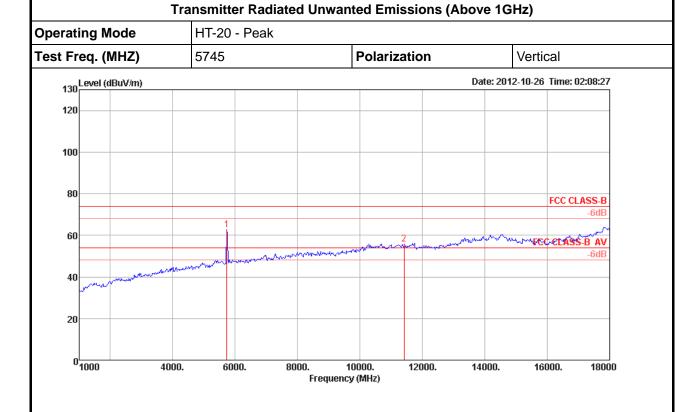
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 90 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



	Freq	Level		Over Limit					A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg
1 2	5736.00 11416.00								100 100	Ø VERTICAL 77 VERTICAL

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.)

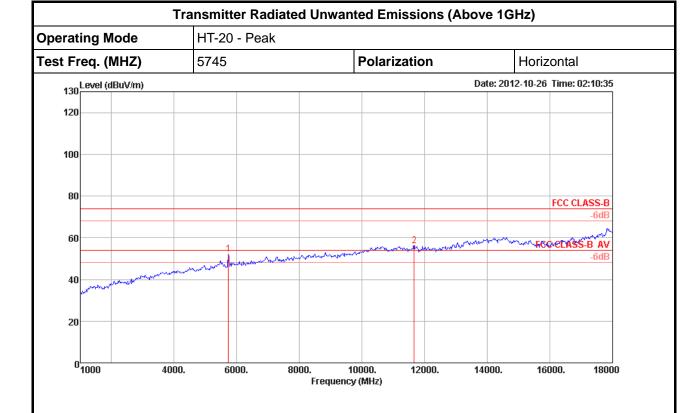
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 91 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



	Frea	Level	Over Limit			Remark	A/Pos	-	Pol/Phase
			 ——dB	 	dB/m	 	cm	deg	
1 2	5736.00 11662.00						100 100	_	HORIZONTAL HORIZONTAL

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.)

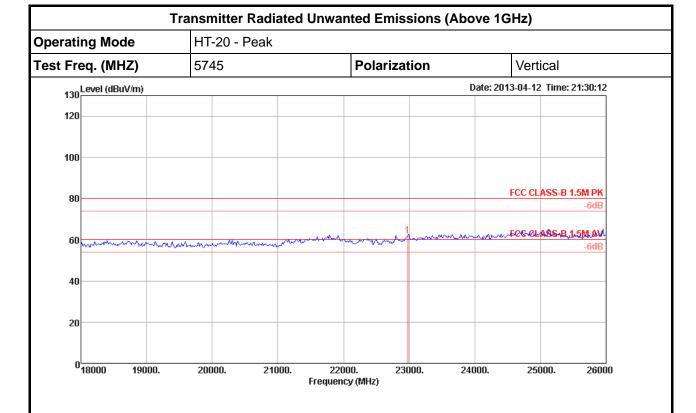
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 92 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level		Over L <b>imi</b> t					Remark	A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg
1	22980.00	62.01	80.00	-17.99	44.09	14.77	38.66	35.51	Peak	100	18 VERTICAL

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

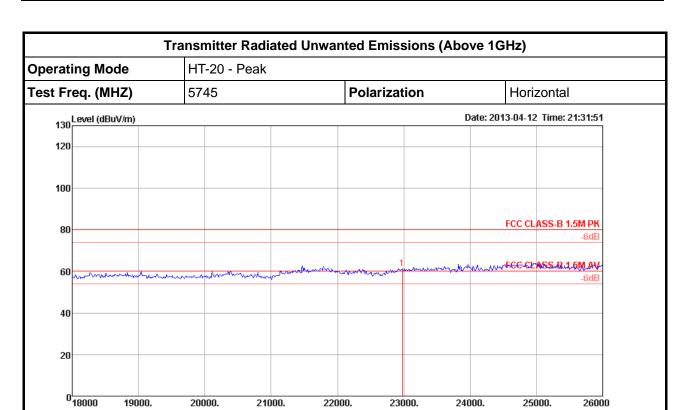
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 93 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Frequency (MHz)

Report No.: FR281405-03AB

	Freq	Level		Limit						A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg	
1	22980.00	61.21	80.00	-18.79	43.29	14.77	38.66	35.51	Peak	100	157	HORIZONTAL

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.)

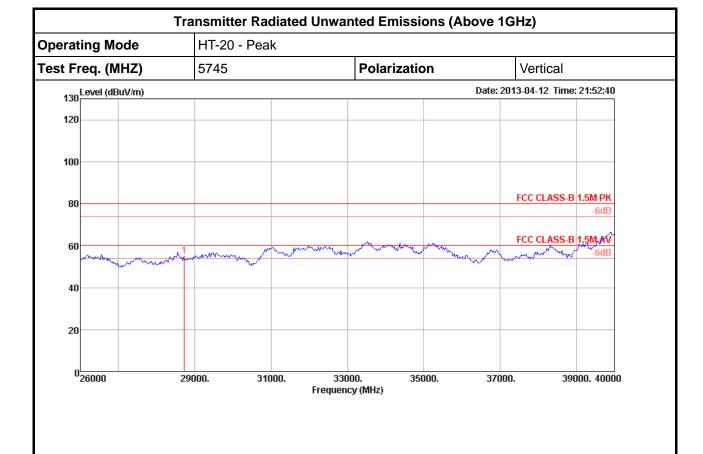
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 94 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit						A/Pos		ol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB			deg	
1	28725.00	55.04	80.00	-24.96	45.55	11.22	39.74	41.47	Peak	100	206 VI	ERTICAL

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.)

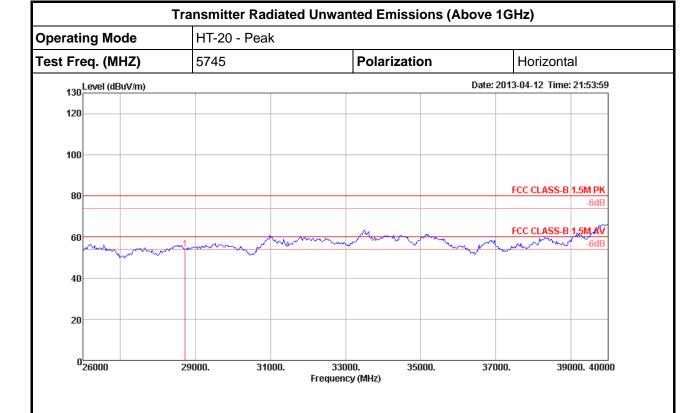
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 95 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level		Over Limit					Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg	
1	28725.00	53.95	80.00	-26.05	44.46	11.22	39.74	41.47	Peak	100	101	HORIZONTAL

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

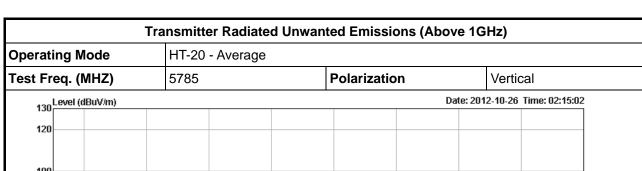
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

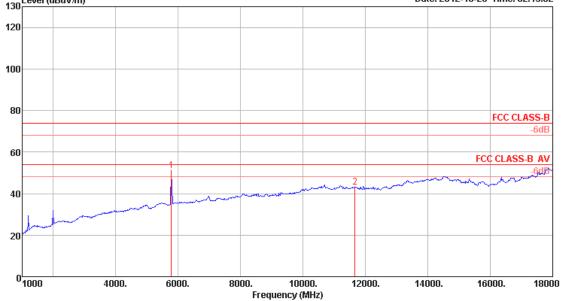
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

SPORTON INTERNATIONAL INC. Page No. : 96 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB



	Freq	Level	Limit Line	Over Limit						A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5785.00	51.09	54.00	-2.91	46.94	4.42	34.93	35.20	Average	100	ø	VERTICAL
2	11668.00	43.08	54.00	-10.92	31.49	7.22	39.44	35.07	Average	100	10	VERTICAL

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.)

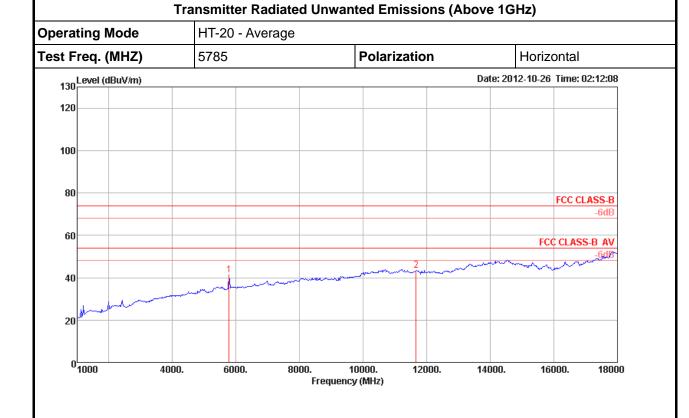
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 97 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



	Freq	Level		Over Limit						A/Pos	T/P <b>o</b> s	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg	
1	5785.00	41.32	54.00	-12.68	37.17	4.42	34.93	35.20	Average	100	360	HORIZONTAL
2	11668.00	43.32	54.00	-10.68	31.73	7.22	39.44	35.07	Average	100	55	HORIZONTAL

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. : 98 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



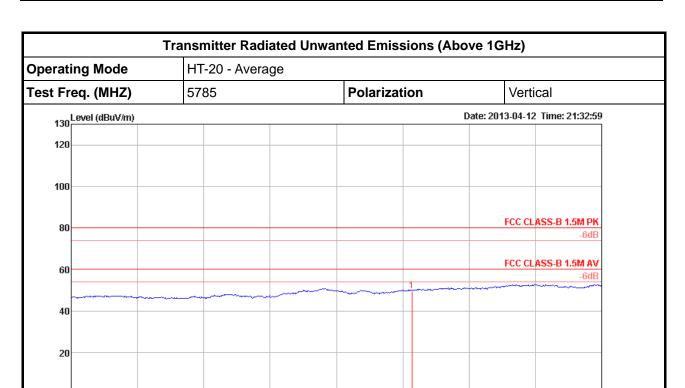
<sup>0</sup>18000

19000.

20000.

21000.

# FCC and IC Radio Test Report



22000.

Frequency (MHz)

23000.

24000.

25000.

26000

Report No.: FR281405-03AB

	Freq	Level		Over Limit						A/Pos	T/Pos Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg ————	
1	23140.00	49.79	60.00	-10.21	31.47	14.90	38.70	35.28	Average	100	315 VERTICAL	

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

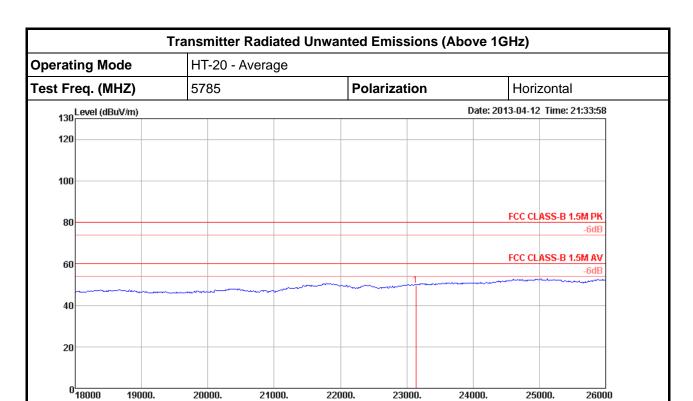
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 99 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Frequency (MHz)

Report No.: FR281405-03AB

	Freq	Level	Limit	Over Limit						A/Pos	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg ———	
1	23140.00	49.78	60.00	-10.22	31.46	14.90	38.70	35.28	Average	100	208 HORIZONTAL	

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

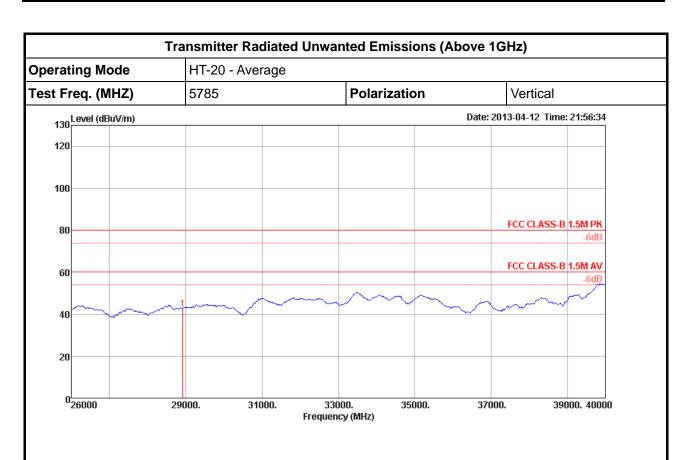
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 100 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB

	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg
1	28925.00	42.46	60.00	-17.54	33.43	11.31	39.85	42.13	Average	100	93 VERTICAL

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

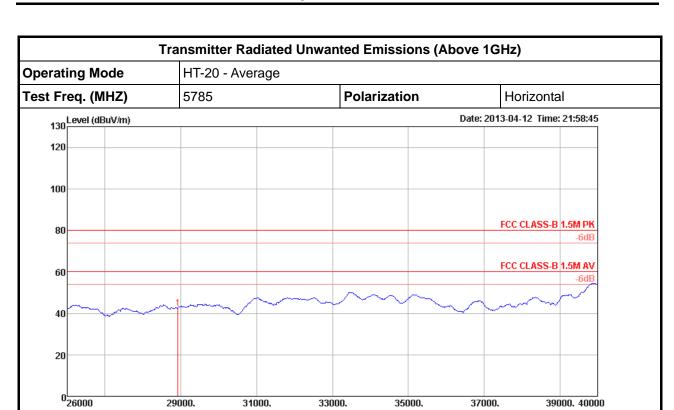
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 101 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Frequency (MHz)

Report No.: FR281405-03AB

	Freq	Level	Limit Line		Read Level					A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	——dB	dBu∀	dB	dB/m	——dB			deg
1	28925.00	42.34	60.00	-17.66	33.31	11.31	39.85	42.13	Average	100	177 HORIZONTAL

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

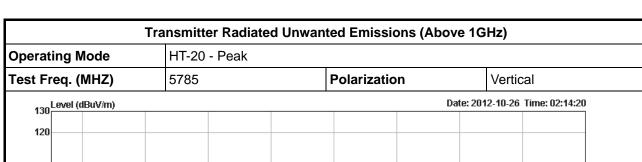
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

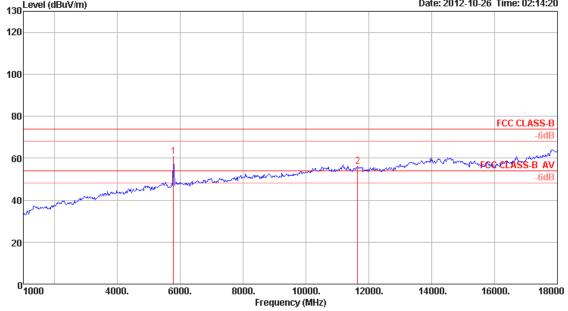
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

SPORTON INTERNATIONAL INC. Page No. : 102 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB



	Freq	Level	Limit Line	Over Limit						A/Pos		/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg —	
1	5785.00	60.78	74.00	-13.22	56.63	4.42	34.93	35.20	Peak	100	Ø VER	TICAL
2	11644.00	56.20	74.00	-17.80	44.59	7.24	39.44	35.07	Peak	100	10 VER	TICAL

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.)

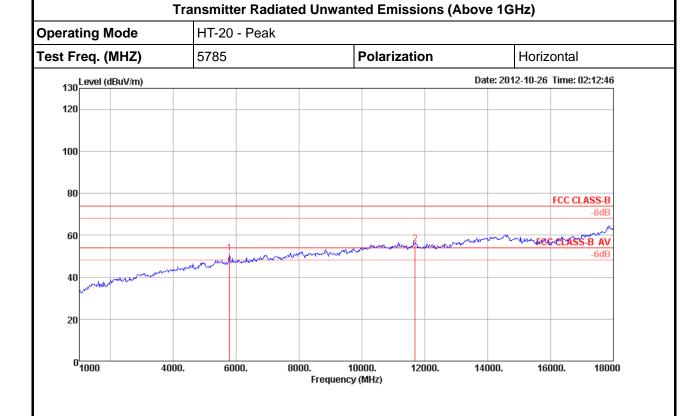
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 103 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



	Freq	Level	Limit Line		Read Level				A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB	cm	deg	
1 2	5785.00 11693.00								100 100		HORIZONTAL HORIZONTAL

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

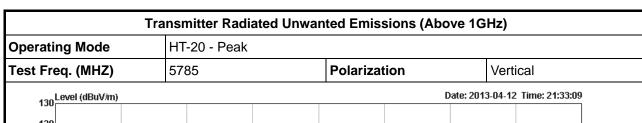
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

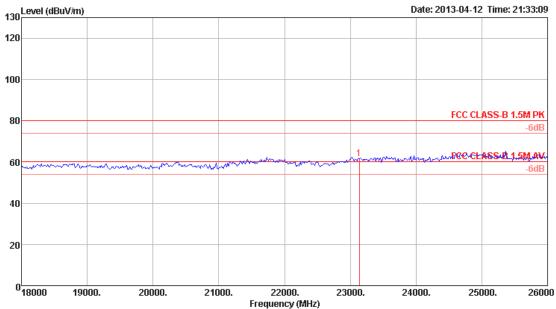
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

SPORTON INTERNATIONAL INC. Page No. : 104 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB



	Freq	Level	Limit Line		Read Level					A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	——dB		cm	deg
1	23140.00	61.60	80.00	-18.40	43.28	14.90	38.70	35.28	Peak	100	315 VERTICAL

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. : 105 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



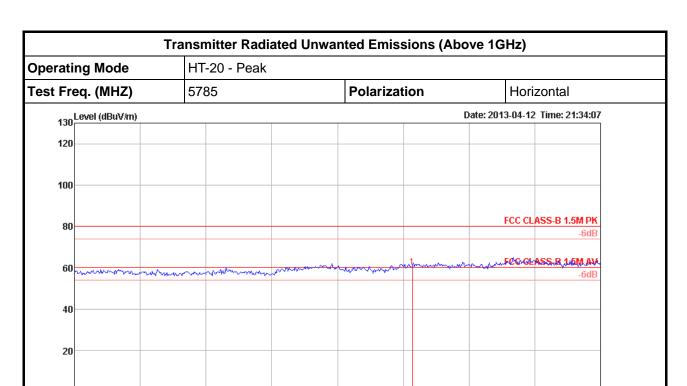
0<sup>1</sup>18000

19000.

20000.

21000.

# FCC and IC Radio Test Report



22000.

Frequency (MHz)

23000.

24000.

25000.

26000

Report No.: FR281405-03AB

	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	——dB	dBuV	dB	dB/m	——dB			deg
1	23140.00	60.20	80.00	-19.80	41.88	14.90	38.70	35.28	Peak	100	208 HORIZONTAL

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

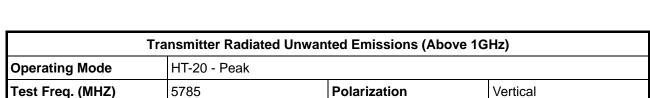
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

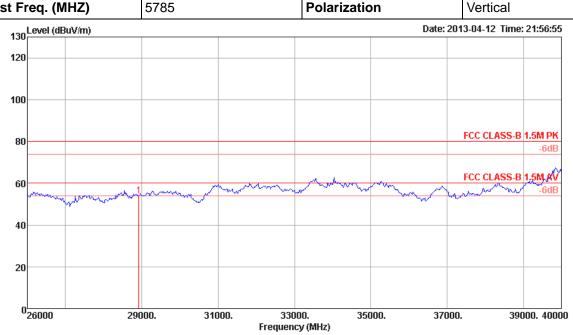
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

SPORTON INTERNATIONAL INC. Page No. : 106 of 146 TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB



	Freq	Level		Over Limit						A/Pos	-	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg	
1	28925.00	53.92	80.00	-26.08	44.89	11.31	39.85	42.13	Peak	100	93	VERTICAL

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)

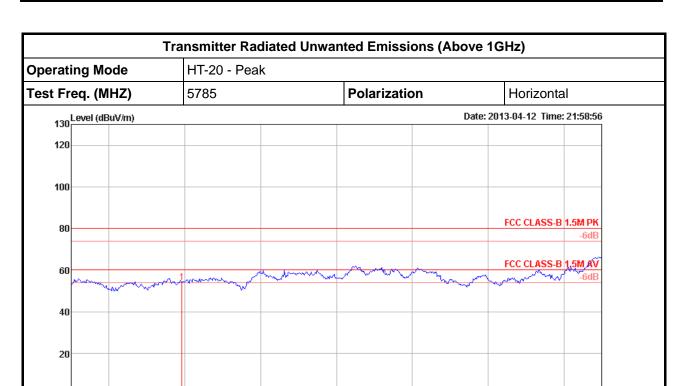
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

SPORTON INTERNATIONAL INC. Page No. : 107 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



<sup>0</sup>26000

# FCC and IC Radio Test Report



33000.

Frequency (MHz)

35000.

37000.

Report No.: FR281405-03AB

39000. 40000

	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase
									- Tellar K		
	MHz	dBuV/m	dBuV/m	dB	dBu∀	dB	dB/m	dB		cm	deg
1	28925.00	53.83	80.00	-26.17	44.80	11.31	39.85	42.13	Peak	100	177 HORIZONTAL

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)

31000.

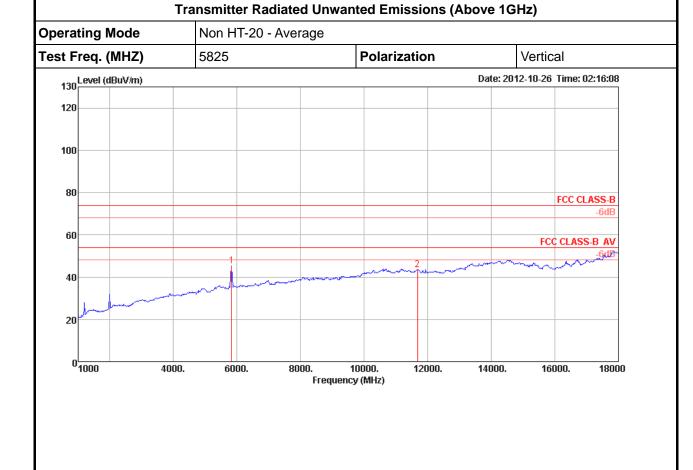
29000.

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. : 108 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg	-
1	5834.00								_	100	Ø VERTICAL	
2	11675.00	43.56	54.00	-10.44	31.99	7.20	39.43	35.06	Average	100	89 VERTICAL	_

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.)

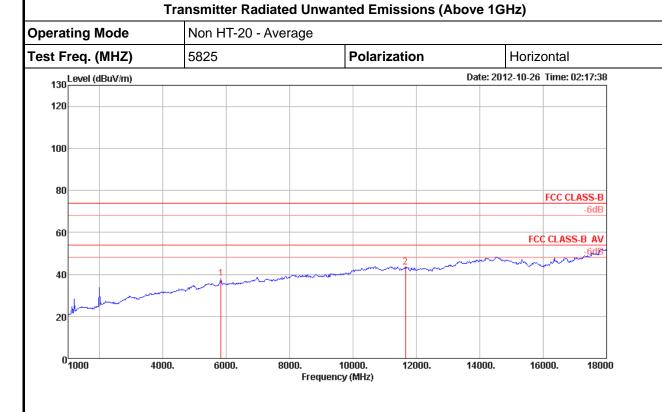
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 109 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit					A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	 cm	deg	
1 2	5825.00 11650.00								 100 100		HORIZONTAL HORIZONTAL

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

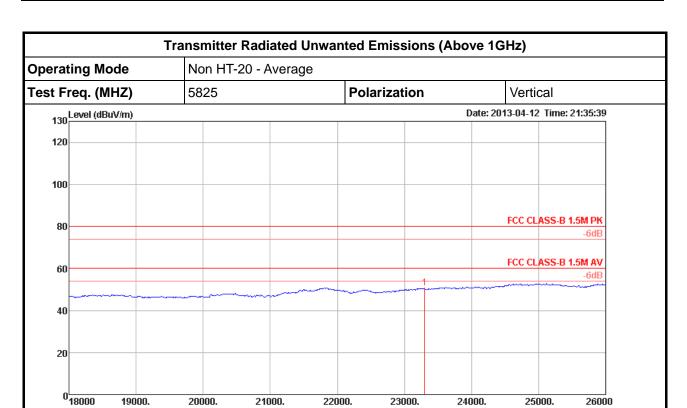
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 110 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Frequency (MHz)

Report No.: FR281405-03AB

	Freq	Level	Limit Line		Read Level					A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg ————
1	23300.00	50.56	60.00	-9.44	31.77	15.05	38.70	34.96	Average	100	10 VERTICAL

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

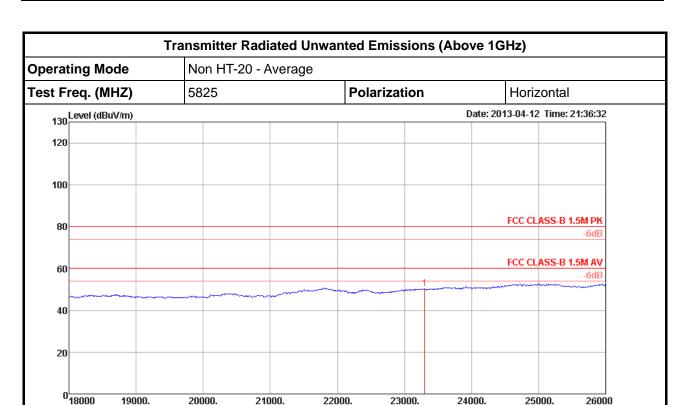
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 111 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Frequency (MHz)

Report No.: FR281405-03AB

	Freq	Level	Limit Line		Read Level					A/Pos	T/Pos Pol/Pha	ise
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg —	
1	23300.00	50.37	60.00	-9.63	31.58	15.05	38.70	34.96	Average	100	182 HORIZON	ITAL

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

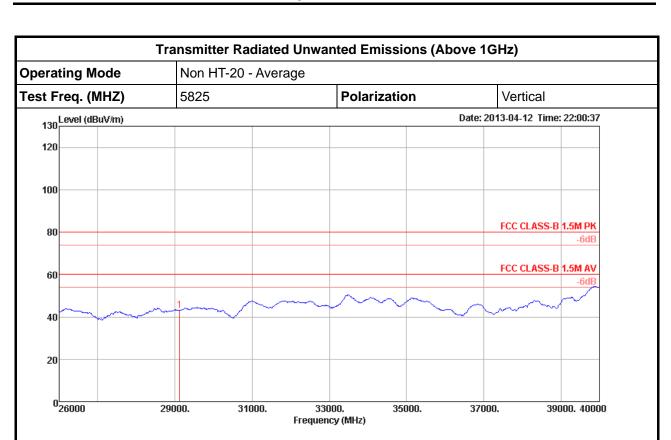
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 112 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB

	Freq	Level	Limit Line		Read Level					A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu∀	dB	dB/m	dB		cm	deg ———
1	29125.00	43.02	60.00	-16.98	33.93	11.38	39.93	42.22	Average	100	195 VERTICAL

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. : 113 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



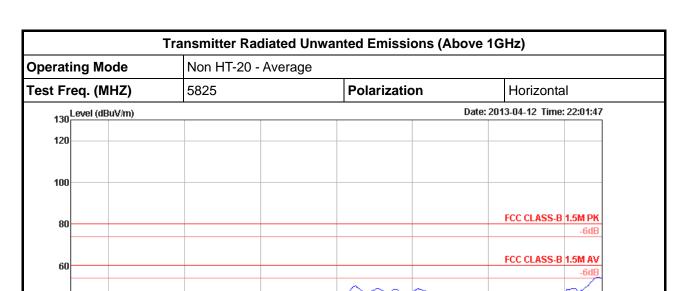
40

20

#### FCC and IC Radio Test Report

29000.

31000.



33000.

Frequency (MHz)

35000.

37000.

39000. 40000

Report No.: FR281405-03AB



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.)

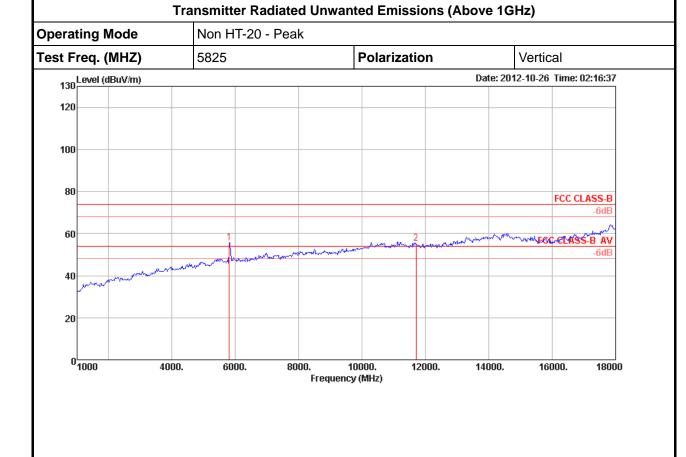
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 114 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No. : FR281405-03AB



	Freq	Level		Over Limit					A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 2	5810.00 11699.00								100 100	_	VERTICAL VERTICAL

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.)

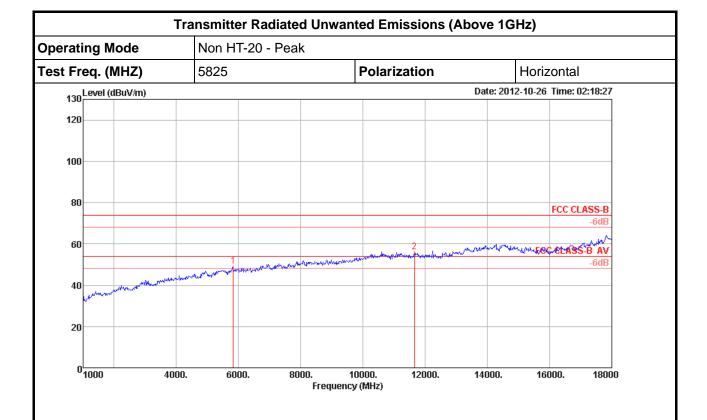
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 115 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



	Freq	Level	Limit Line	Over Limit					A/Pos	T/P <b>o</b> s	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 2	5825.00 11650.00								100 100		HORIZONTAL HORIZONTAL

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

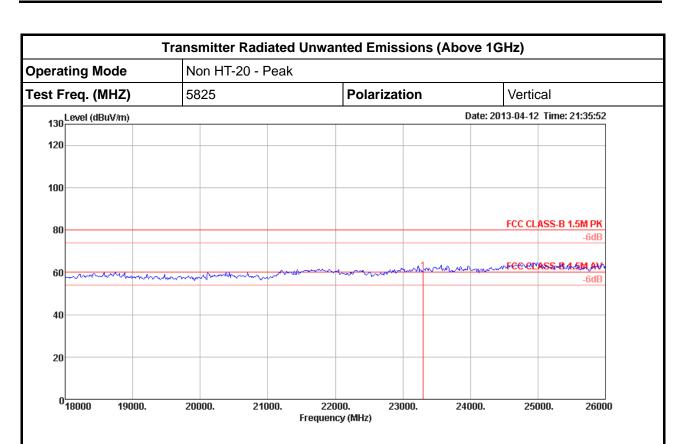
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 116 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB

	Freq	Level	Limit Line		Read Level					A/Pos	T/Pos Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg ———	
1	23300.00	60.57	80.00	-19.43	41.78	15.05	38.70	34.96	Peak	100	10 VERTICAL	

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. : 117 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



40

20

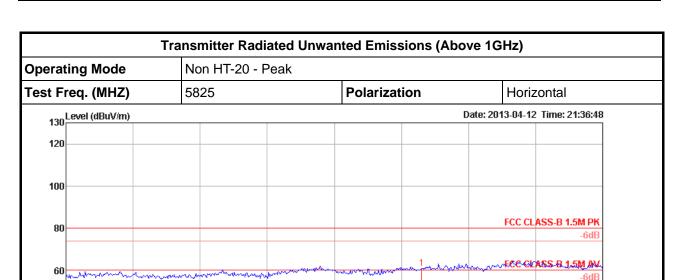
0<sup>L</sup>18000

19000.

20000.

21000.

#### FCC and IC Radio Test Report



22000.

Frequency (MHz)

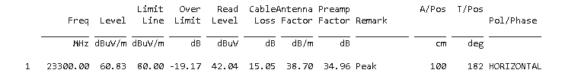
23000.

24000.

25000.

26000

Report No.: FR281405-03AB



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.)

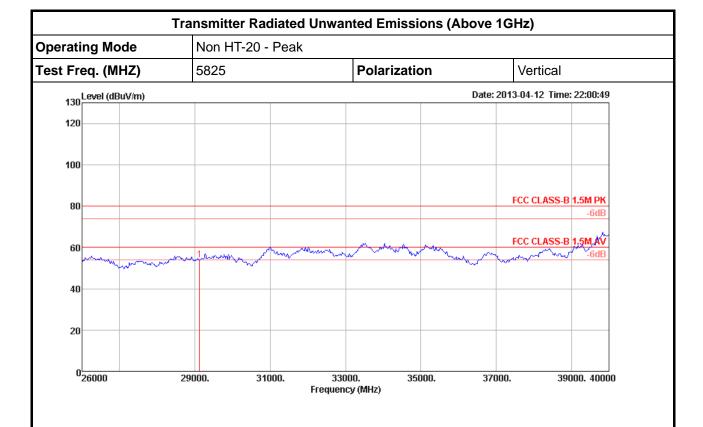
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 118 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line		Read Level					A/Pos		l/Phase
	MHz	dBuV/m	dBuV/m	——dB	dBuV	dB	dB/m	——dB			deg	
1	29125.00	54.09	80.00	-25.91	45.00	11.38	39.93	42.22	Peak	100	195 VEI	RTICAL

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.)

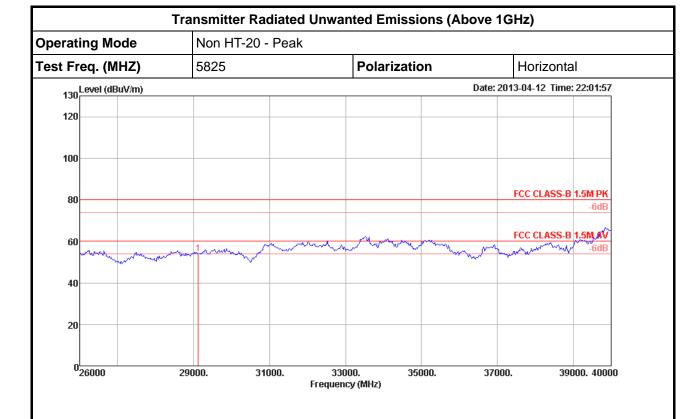
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 119 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	——dB	dBu∀	dB	dB/m	dB		cm	deg
1	29125.00	53.94	80.00	-26.06	44.85	11.38	39.93	42.22	Peak	100	270 HORIZONTAL

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

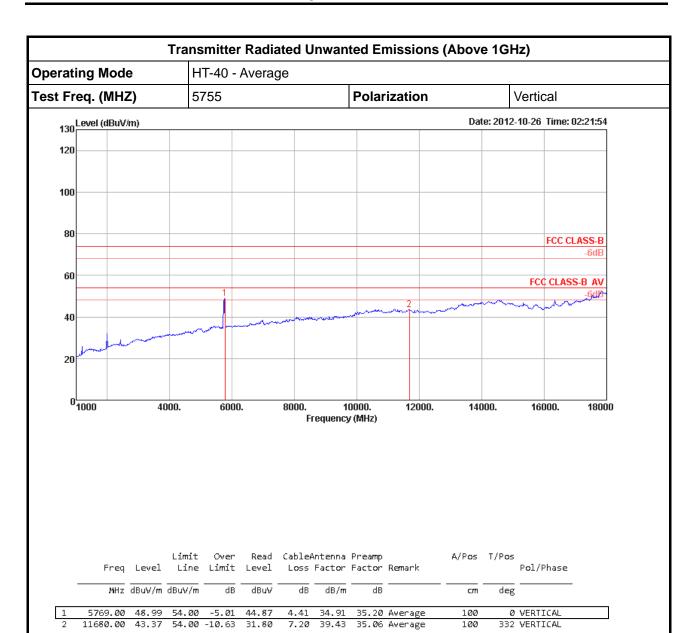
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 120 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB

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.)

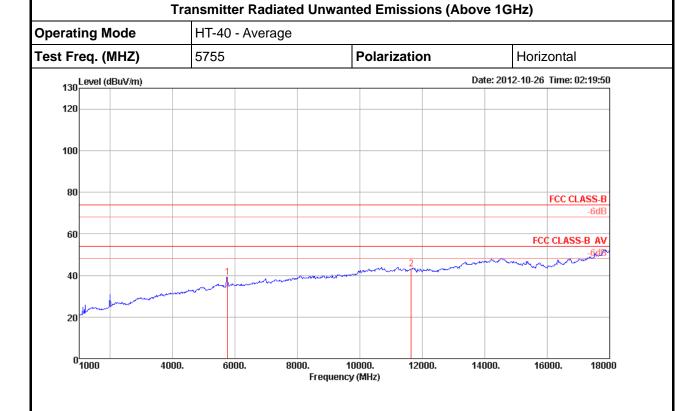
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 121 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



	Freq	Level		Over Limit						A/Pos	T/Pos Pol/Phas	e
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg —	_
1 2	5755.00 11646.00								_	100 100	360 HORIZONT	

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. : 122 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



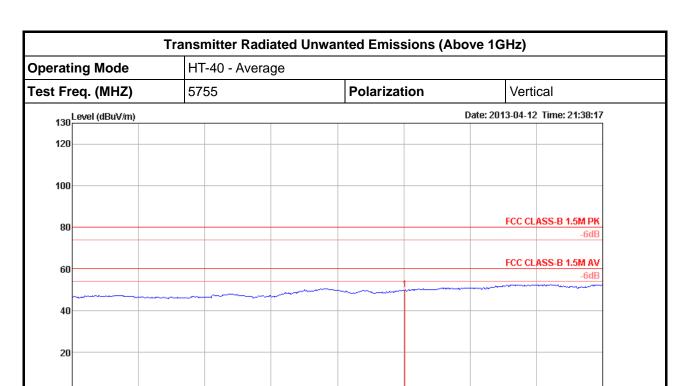
0<sup>1</sup>18000

19000.

20000.

21000.

# FCC and IC Radio Test Report



22000.

Frequency (MHz)

23000.

24000.

25000.

26000

Report No.: FR281405-03AB

	Freq	Level	Limit Line	Over Limit						A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	23020.00	49.85	60.00	-10.15	31.84	14.77	38.70	35.46	Average	100	168	VERTICAL

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.

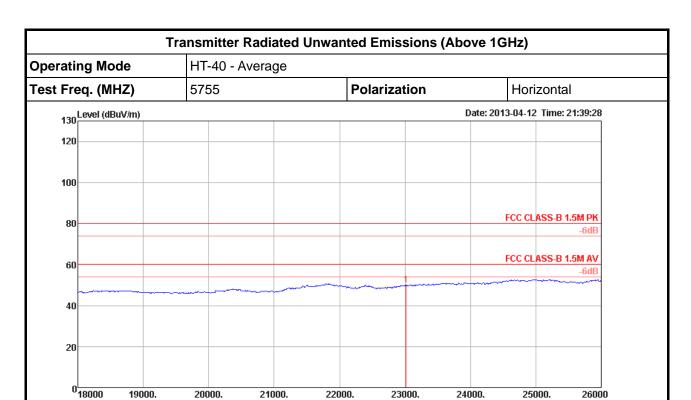
SPORTON INTERNATIONAL INC. Page No. : 123 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



20000.

21000.

19000.



22000.

Frequency (MHz)

23000.

24000.

25000.

26000

Report No.: FR281405-03AB

	Freq	Level		Over L <b>imi</b> t					Remark	A/Pos	T/Pos Pol/Phas	se
	MHz	dBuV/m	dBuV/m	dB	dBu√	dВ	dB/m	dB		cm	deg	—
1	23020.00	49.94	60.00	-10.06	31.93	14.77	38.70	35.46	Average	100	108 HORIZON	TAL

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.)

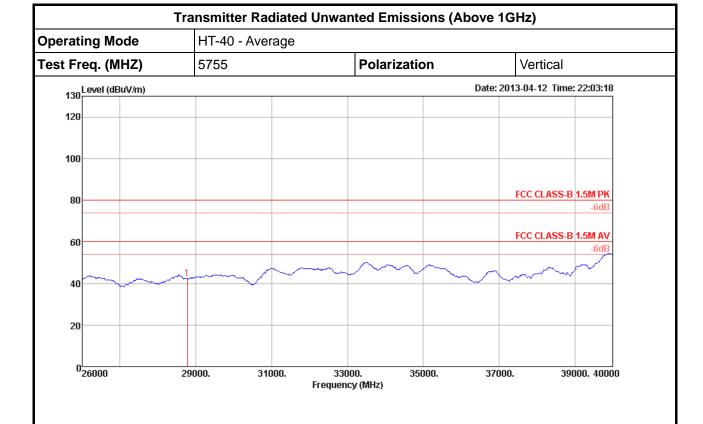
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 124 of 146 TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level		Over Limit						A/Pos		l/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg	
1	28775.00	42.30	60.00	-17.70	32.92	11.24	39.76	41.62	Average	100	1 VE	RTICAL

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.)

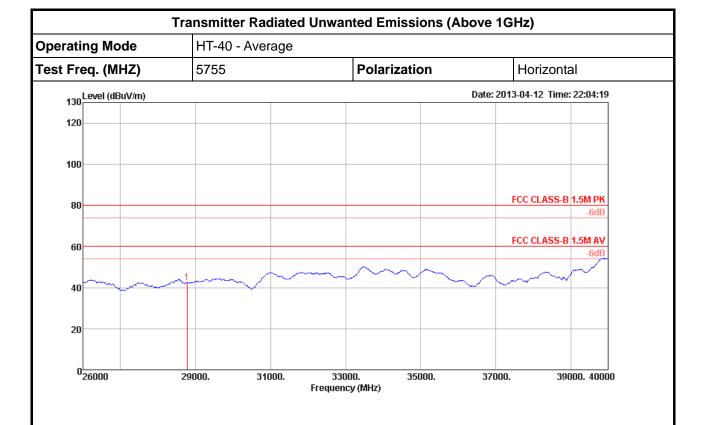
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 125 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line		Read Level					A/Pos	T/Pos Pol/Ph	ase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	28775.00	42.32	60.00	-17.68	32.94	11.24	39.76	41.62	Average	100	103 HORIZO	NTAL

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.)

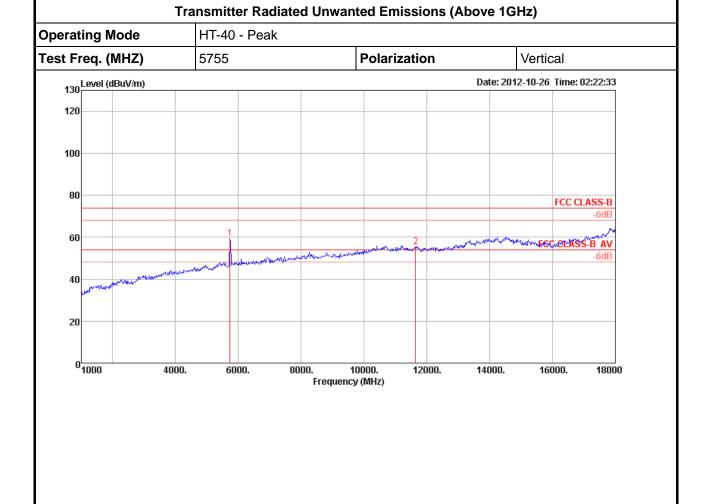
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 126 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit					A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB	 cm	deg
1 2	5735.00 11646.00								100 100	Ø VERTICAL 332 VERTICAL

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.)

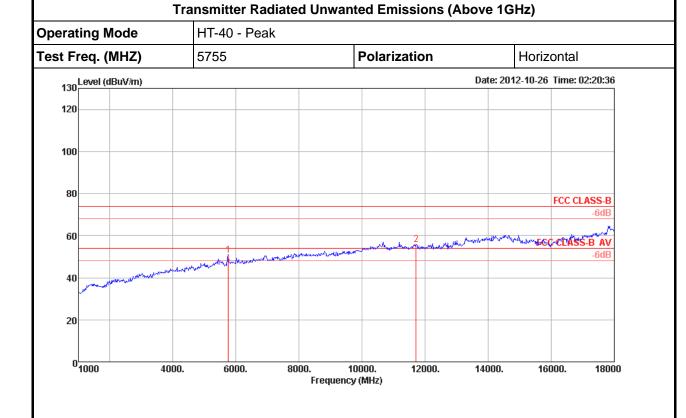
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 127 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



Report No.: FR281405-03AB



	Freq	Level	Limit Line	Over Limit					A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	——dB	 cm	deg	
1 2	5755.00 11714.00								 100 100		HORIZONTAL HORIZONTAL

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

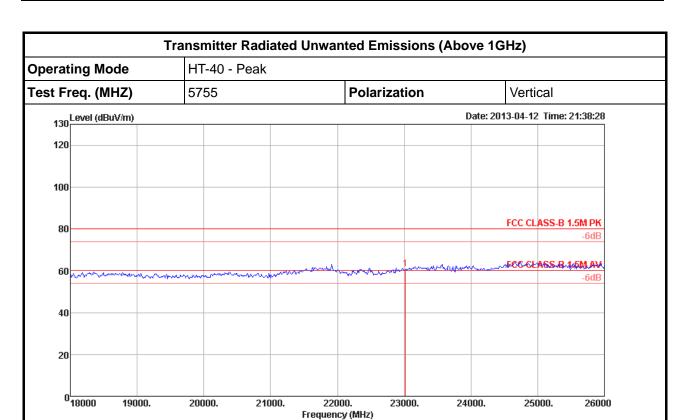
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 128 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB

	Freq	Level			Read Level					A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg
1	23020.00	60.69	80.00	-19.31	42.68	14.77	38.70	35.46	Peak	100	168 VERTICAL

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

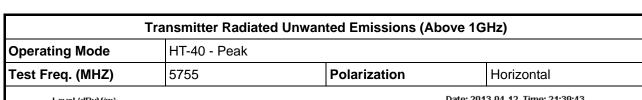
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

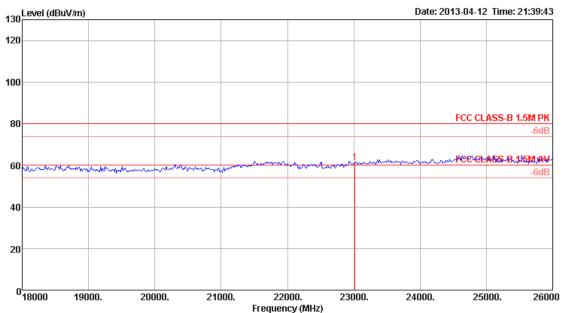
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

SPORTON INTERNATIONAL INC. Page No. : 129 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB



	Freq	Level		Over Limit						A/Pos		P <b>o</b> l/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	23020.00	61.24	80.00	-18.76	43.23	14.77	38.70	35.46	Peak	100	108	HORIZONTAL

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.)

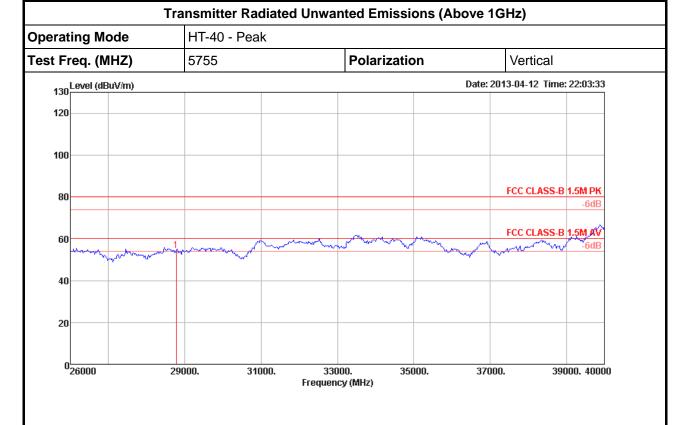
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 130 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phas	e
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg —	_
1	28775.00	54.46	80.00	-25.54	45.08	11.24	39.76	41.62	Peak	100	1 VERTICAL	

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.)

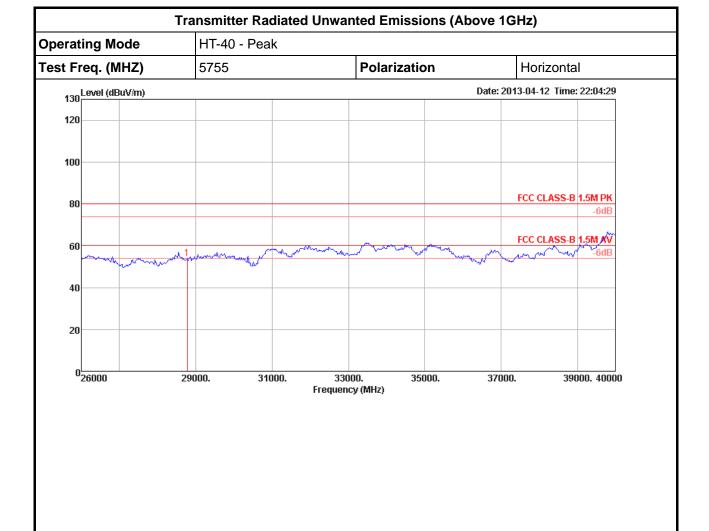
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 131 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level		Over Limit					Remark	A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg
1	28775.00	53.90	80.00	-26.10	44.52	11.24	39.76	41.62	Peak	100	103 HORIZONTAL

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.)

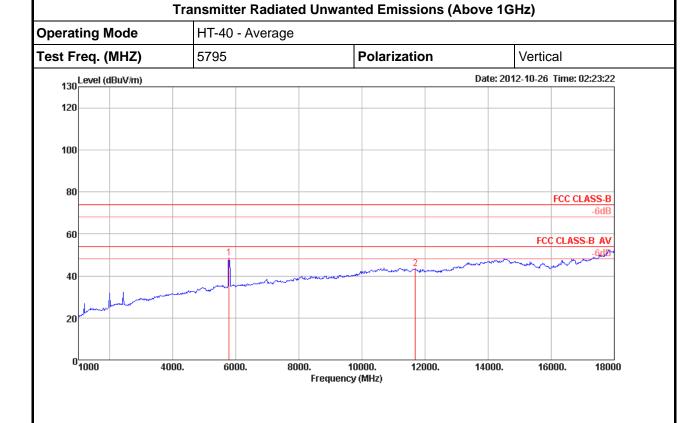
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 132 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level		Over Limit					A/Pos	T/Pos Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 2	5786.00 11692.00								100 100	360 VERTICAL 147 VERTICAL	

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.)

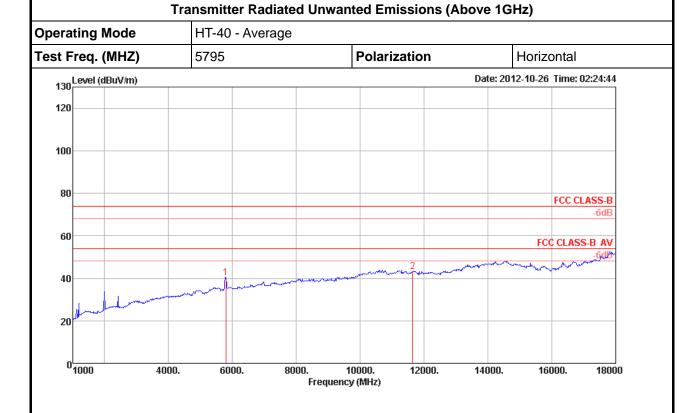
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 133 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg
1 2	5795.00 11641.00								_	100 100	Ø HORIZONTAL 32 HORIZONTAL

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. : 134 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



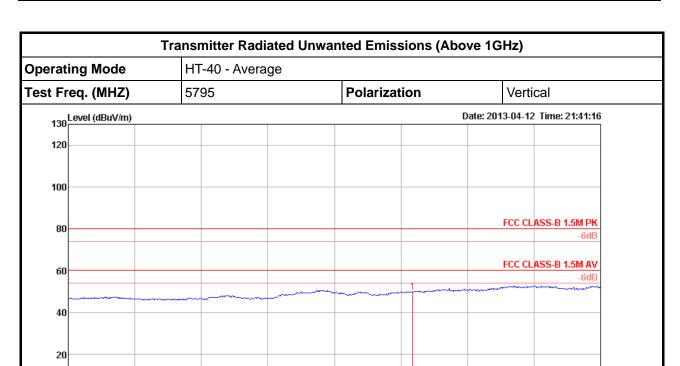
0<sup>L</sup> 18000

19000.

20000.

21000.

# FCC and IC Radio Test Report



22000.

Frequency (MHz)

23000.

24000.

25000.

26000

Report No.: FR281405-03AB

	Freq	Level		Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg
1	23180.00	49.71	60.00	-10.29	31.27	14.92	38.70	35.18	Average	100	Ø VERTICAL

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. : 135 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



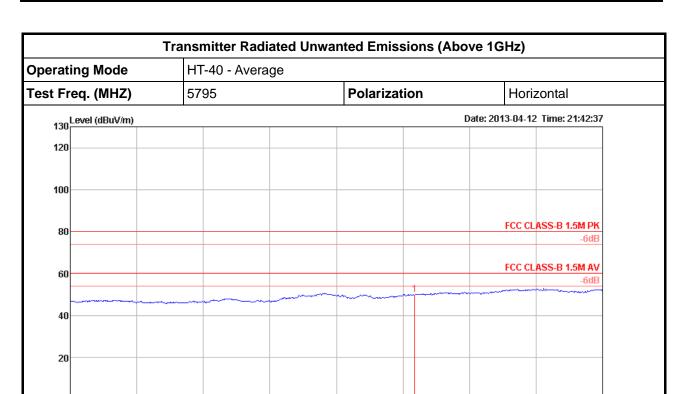
0<sup>1</sup>18000

19000.

20000.

21000.

#### FCC and IC Radio Test Report



22000.

Frequency (MHz)

23000.

24000.

25000.

26000

Report No.: FR281405-03AB

	Freq	Level		Over Limit						A/Pos	T/P <b>o</b> s P <b>o</b> l/Phase	2
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB			deg ———	_
1	23180.00	49.88	60.00	-10.12	31.44	14.92	38.70	35.18	Average	110	16 HORIZONTA	4L

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.)

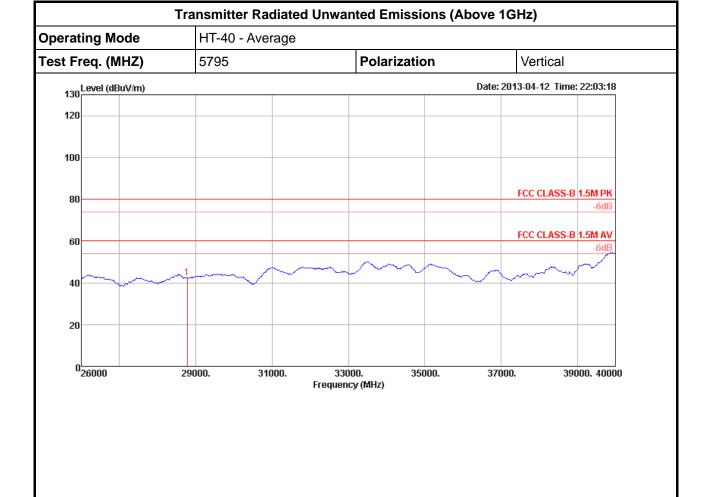
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 136 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level		Over Limit					Remark	A/Pos	T/Pos Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	28775.00	42.30	60.00	-17.70	32.92	11.24	39.76	41.62	Average	100	1 VERTICAL	

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

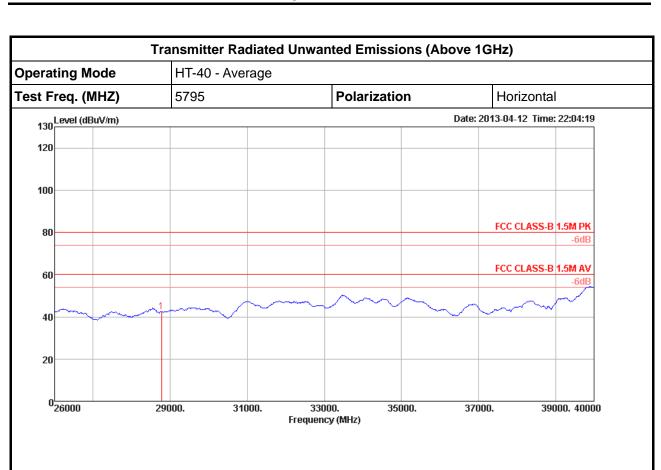
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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. : 137 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB

	Freq	Level		Over Limit						A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg	
1	28775.00	42.32	60.00	-17.68	32.94	11.24	39.76	41.62	Average	100	103	HORIZONTAL

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.)

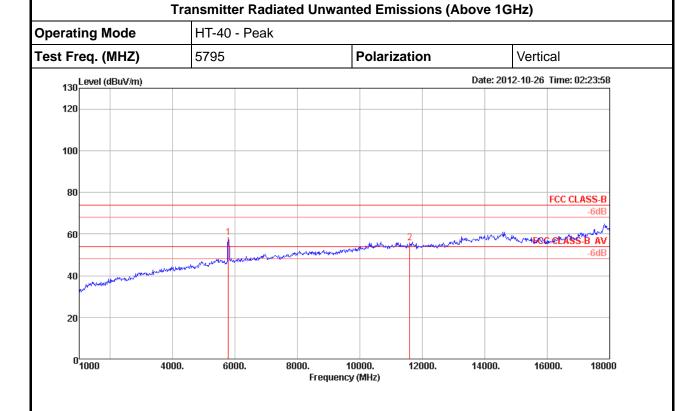
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 138 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







Limit Over Read CableAntenna Preamp	A/Pos T/Pos
Freq Level Line Limit Level Loss Factor Factor Remar	k Pol/Phase
'	
MHz dBuV/m dBuV/m dB dBuV dB dB/m dB	<u></u>
4 F78C 00 F8 40 74 00 45 F8 F4 07 4 40 04 00 05 00 Deel.	100 DC0 MEDITON
1 5786.00 58.42 74.00 -15.58 54.27 4.42 34.93 35.20 Peak	100 360 VERTICAL
2 11590.00 55.64 74.00 -18.36 43.96 7.29 39.47 35.08 Peak	100 147 VERTICAL

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.)

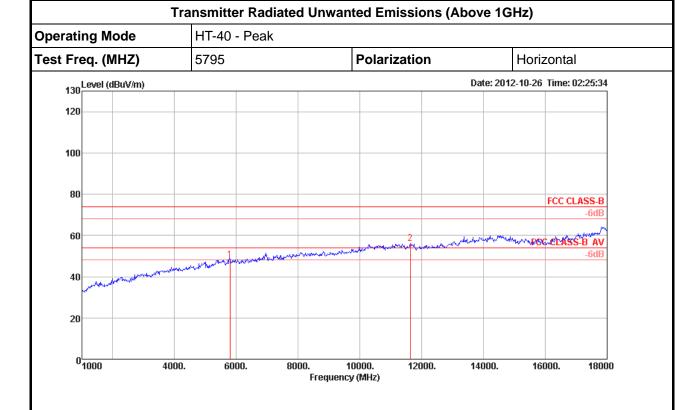
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 139 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg
1	5795.00	48.31	74.00	-25.69	44.15	4.42	34.94	35.20	Peak	100	Ø HORIZONTAL
2	11624.00	56.17	74.00	-17.83	44.55	7.24	39.45	35.07	Peak	100	32 HORIZONTAL

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

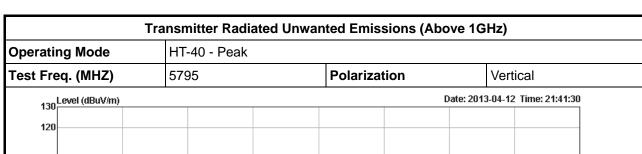
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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

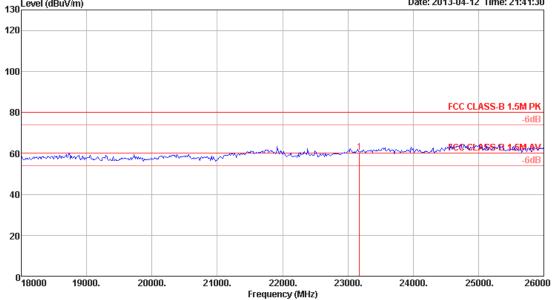
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

SPORTON INTERNATIONAL INC. Page No. : 140 of 146
TEL: 886-3-3273456 Report Version : Rev. 01





Report No.: FR281405-03AB



	Freq	Level	Limit Line		Read Level					A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg
1	23180.00	60.58	80.00	-19.42	42.14	14.92	38.70	35.18	Peak	100	Ø VERTICAL

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. : 141 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



40

20

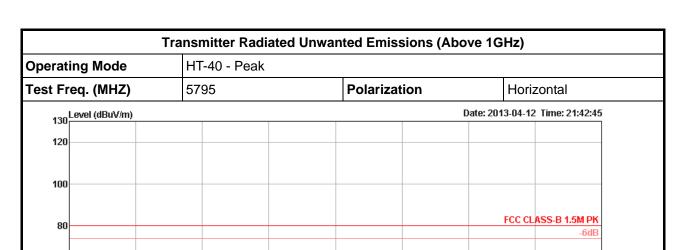
0<sup>L</sup> 18000

19000.

20000.

21000.

# FCC and IC Radio Test Report



Report No.: FR281405-03AB



22000.

23000.

24000.

25000.

26000

	Freq	Level		Over Limit						A/Pos		Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB			deg	
1	23180.00	60.92	80.00	-19.08	42.48	14.92	38.70	35.18	Peak	110	16	HORIZONTAL

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.)

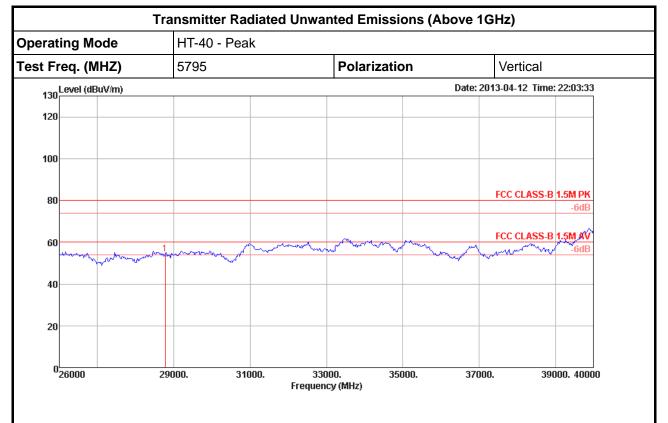
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 142 of 146 Page No. TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level	Limit Line	Over Limit						A/Pos	T/Pos Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB		cm	deg
1	28775.00	54.46	80.00	-25.54	45.08	11.24	39.76	41.62	Peak	100	1 VERTICAL

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

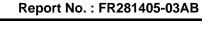
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

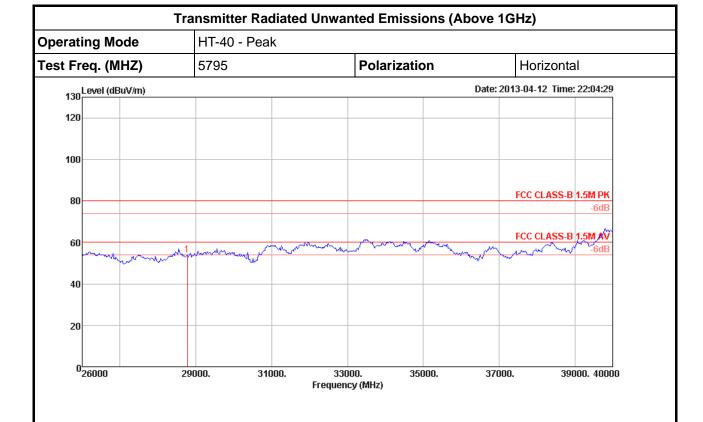
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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. : 143 of 146
TEL: 886-3-3273456 Report Version : Rev. 01







	Freq	Level		Over Limit						A/Pos	-	l/Phase
	MHz	dBuV/m	dBuV/m	dB	dBu√	dB	dB/m	dB			deg	
1	28775.00	53.90	80.00	-26.10	44.52	11.24	39.76	41.62	Peak	100	103 HO	RIZONTAL

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. : 144 of 146
TEL: 886-3-3273456 Report Version : Rev. 01



# 4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100377	9kHz ~ 2.75GHz	Oct. 23, 2012	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Nov. 14, 2011	Conduction (CO01-CB)
V- LISN	Schwarzbeck	NSLK 8127	8127-478	9K ~ 30MHz	Jun. 22, 2012	Conduction (CO01-CB)
PULSE LIMITER	R&S	ESH3-Z2	100430	9K~30MHz	Feb. 03, 2012	Conduction (CO01-CB)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Oct. 08, 2012	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 05, 2012	Conducted (TH01-CB)
RF Power Divider	HP	11636A	00306	2GHz ~ 18GHz	N.C.R	Conducted (TH01-CB)
RF Power Splitter	Anaren	44100	1839	2GHz ~ 18GHz	N.C.R	Conducted (TH01-CB)
RF Power Splitter	Anaren	42100	17930	2GHz ~ 18GHz	N.C.R	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 11, 2012	Radiation (03CH01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 10, 2013	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 27, 2012	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEA K	BBHA 9170	BBHA91702 52	15GHz ~ 40GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 27, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 31, 2012	Radiation (03CH01-CB)

SPORTON INTERNATIONAL INC.

TEL: 886-3-3273456 FAX: 886-3-3270973 Page No. : 145 of 146
Report Version : Rev. 01

Report No.: FR281405-03AB



Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Remark
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 02, 2012	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 20, 2012	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 19, 2013	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Oct. 29, 2012	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N.C.R	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation
		9	. ,,			(03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation
						(03CH01-CB) Radiation
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 18, 2012	(03CH01-CB)
						Radiation
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 18, 2012	(03CH01-CB)

Report No.: FR281405-03AB

Note: Calibration Interval of instruments listed above is one year. N.C.R. means Non-Calibration required.

SPORTON INTERNATIONAL INC. Page No. : 146 of 146 TEL: 886-3-3273456 Report Version : Rev. 01