

Equipment : Bluetooth EarPhone

Brand Name : Allsor

Model No. : FAR006A

Multiple Listing : FAR006A-XX-XXX(where X can be 0~9,A~Z or blank)

FCC ID : 2AA5C-FAR006A

Standard : 47 CFR FCC Part 15.247 Operating Band : 2400 MHz – 2483.5 MHz

FCC Classification: DSS

Applicant : CviLux Corporation

9F., No.9, Lane 3, Sec 1, Chung-Cheng East Road,

Tamshui, New Taipei City 25147, Taiwan.

The product sample received on Oct. 15, 2014 and completely tested on Dec. 29, 2014. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The 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:

James Fan / Assistant Manager

Testing Laboratory
1190

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Summary of Test Result

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	Conformance Test Specifications						
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result		
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied		
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 0.157MHz 40.86 (Margin 14.74dB) - AV 52.21 (Margin 13.39dB) - QP	FCC 15.207	Complied		
3.2	15.247(a)	20dB Bandwidth	1.2522 MHz	N/A	Complied		
3.2	15.247(a)	Carrier Frequency Separation (ChS)	1.0029 MHz	ChS ≥ BW _{20dB} x2/3.	Complied		
3.3	15.247(a)	Number of Hopping Frequencies (N)	Max:79 Min:20	N ≥ 15	Complied		
3.4	15.247(a)	Time of Occupancy (Dwell Time)	0.316 sec	0.4 s within 0.4 x N	Complied		
3.5	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm] -1.01	Power [dBm] 21	Complied		
3.6	15.247(d)	Emissions in non-restricted frequency bands	Out-of -band emissions are 20dB below the highest power	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied		
3.7	15.247(d)	Transmitter Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 448.07 43.78 (Margin 2.22dB) - PK	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied		

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Revision History

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Report No.	Version	Description	Issued Date
FR493012	Rev. 01	Initial issue of report	Mar. 16, 2015

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1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information							
Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number	RF Output Power (dBm)	Co-location		
2400-2483.5	BR / EDR	2402-2480	0-78 [79]	-1.01	N/A		

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- Note 1: Bluetooth BR uses a GFSK (1Mbps).
- Note 2: Bluetooth EDR uses a combination of $\pi/4$ -DQPSK (2Mbps) and 8DPSK (3Mbps).
- Note 3: RF output power specifies that Maximum Peak Conducted Output Power.
- Note 4: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)

1.1.2 Antenna Information

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

Antenna General Information							
No.	No. Ant. Cat. Ant. Type Connector Gain (dBi)						
1	Integral	Printed	No Connector	-4.79			

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1.1.3 Type of EUT

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

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1.1.4 Test Signal Duty Cycle

	Operated Mode for Worst Duty Cycle					
	Operated normally hopping mode for worst duty of	cycle				
\boxtimes	Operated test mode for worst duty cycle					
	Test Signal Duty Cycle (x) Power Duty Factor [dB] – (10 log 1/x)					
\boxtimes	79.77% - test mode single channel – DH1	0.98				
\boxtimes	79.07% - test mode single channel – DH3	1.02				
\boxtimes	79.23% - test mode single channel – DH5	1.01				

Bluetooth ACL packets can be 1, 3, or 5 time slots. The DH1 packet can cover a single time slot. The DH3 packet can cover up to 3 time slots. The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle.

1.1.5 EUT Operational Condition

Power Supply Type	From host: 5Vdc From battery: 3.7Vdc
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1.2 Accessories and Support Equipment

	Accessories						
No. Equipment Brand Name Model Name Spec.							
1	Lithium battery	N/A	SX401120	Rating: 3.7Vdc, 55mAh.			

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	Support Equipment						
No.	No. Equipment Brand Name Model Name FCC ID						
1	Notebook	DELL	Latitude E6430	DoC			

1.3 Testing Applied Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC Public Notice DA 00-705
- FCC KDB 412172 D01 Determining ERP and EIRP v01

1.4 Testing Location Information

	Testing Location							
	Sporton Lab	ADD	DD : No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.					
		TEL	: 886-3-327-34	156 FAX : 8	886-3-327-0973			
\boxtimes	ICC Lab	ADD	DD : No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsein 333, Taiwan (R.O.C.)					
		TEL	: 886-3-327-34	156 FAX : 8	886-3-327-0973			
To	est Condition	n	Test Site No.	Test Engineer	Test Environment	Test Date		
F	RF Conducte	d	TH01-HY	Aaron Liang	21°C / 61%	Dec. 25, 2014		
А	C Conductio	n	CO01-WS*	Peter Lin	16°C / 70%	Dec. 29, 2014		
Rad	Radiated Emission 03CH01-WS* Haru Yang 20°C / 62% Dec. 24, 2014							
	Test site registered number [657002] with FCC. Test site registered number [10807A-1] with IC.							

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

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

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1.5 Measurement Uncertainty

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

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Measurement Uncertainty			
Test Item		Uncertainty	Limit
AC power-line conducted emissions		±2.26 dB	N/A
Emission bandwidth, 6dB bandwidth		±1.42 %	N/A
RF output power, conducted		±0.63 dB	N/A
Power density, conducted		±0.81 dB	N/A
All emissions, radiated	30 – 1000 MHz	±3.72 dB	N/A
	Above 1GHz	±5.65 dB	N/A
Temperature		±0.8 °C	N/A
Humidity		±3 %	N/A
DC and low frequency voltages		±3 %	N/A
Time		±1.42 %	N/A
Duty Cycle		±1.42 %	N/A

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2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing					
Bluetooth Mode	Transmit Chains (N _{TX})	Data Rate	Modulation Mode	RF Output Power (dBm)	Worst Mode
BR	1	1 Mbps	BR-1Mbps	-1.01	BR-1Mbps
EDR	1	2 Mbps	EDR-2Mbps	-2.19	
EDR	1	3 Mbps	EDR-3Mbps	-1.78	

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2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter			
Test Software Version / Instrument RF Control Kit v1.0, Bluetooth Tester: R&S CBT			
Modulation Mode	2402 MHz 2440 MHz 2480 MHz		
BR,1Mbps	DEFAULT	DEFAULT	DEFAULT
EDR,2Mbps	DEFAULT	DEFAULT	DEFAULT
EDR,3Mbps	DEFAULT	DEFAULT	DEFAULT

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2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item AC power-line conducted emissions	
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
1	USB charging + Radio link

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The Worst Case Mode for Following Conformance Tests	
Tests Item RF Output Power, 20dB Bandwidth, Carrier Frequency Separation (ChS)	
Test Condition	Conducted measurement at transmit chains
Modulation Mode	BR-1Mbps, EDR-2Mbps, EDR-3Mbps

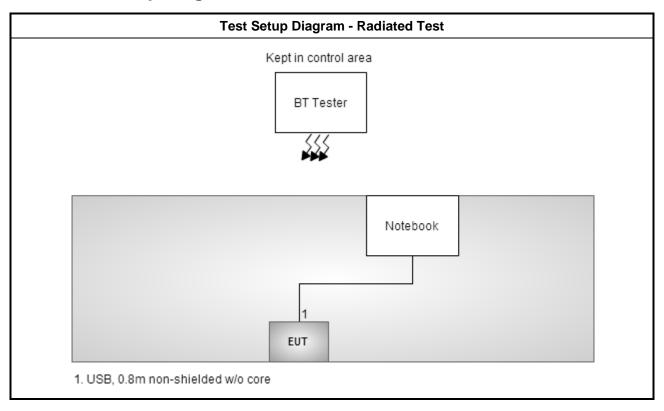
Th	The Worst Case Mode for Following Conformance Tests	
Tests Item Number of Hopping Frequencies (N), Time of Occupancy (Dwell Time), Emissions in Non-Restricted Frequency Bands		
Test Condition Conducted measurement at transmit chains		
Modulation Mode	EDR-3Mbps	

The Worst Case Mode for Following Conformance Tests			
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions		
Test Condition	Radiated measurement		
	☐ EUT will be placed in fixed position.		
User Position	EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst planes is X.		
	EUT will be a battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes. The worst planes is Y.		
Operating Mode			
Modulation Mode	BR-1Mbps, EDR-3Mbps		
	X Plane Y Plane Z Plane		Z Plane
Orthogonal Planes of EUT			

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2.4 Test Setup Diagram



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3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Powe	er-line Conducted Emissions L	imit
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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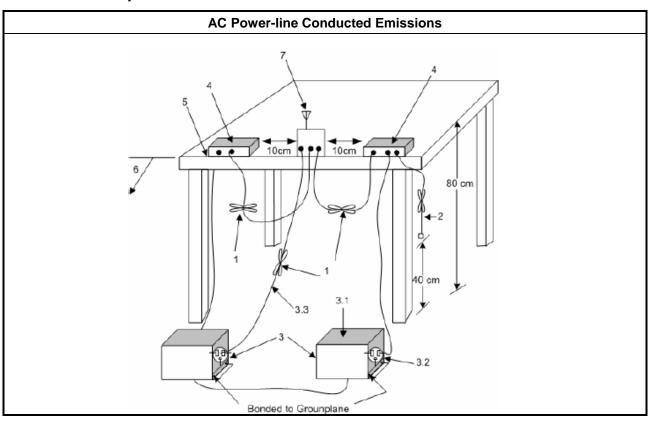
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

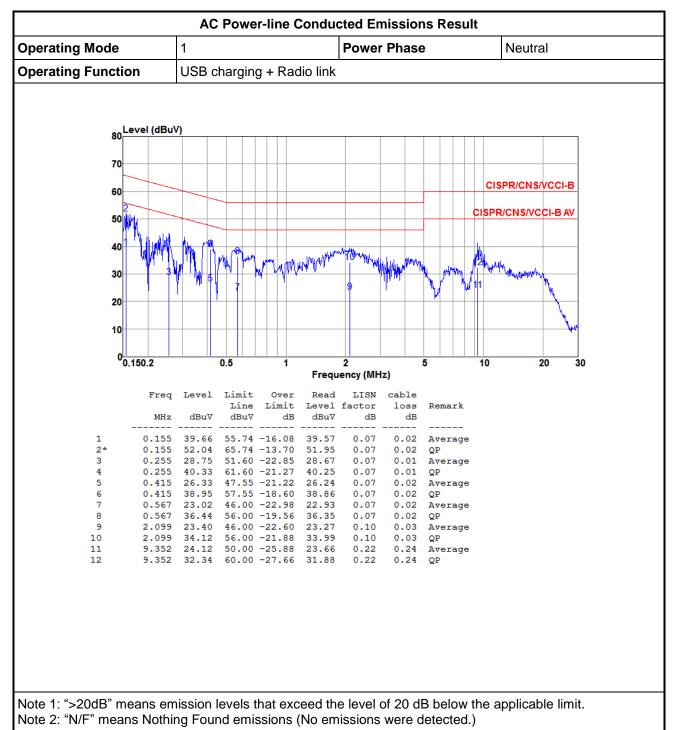
3.1.4 Test Setup



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3.1.5 Test Result of AC Power-line Conducted Emissions



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AC Power-line Conducted Emissions Result Operating Mode 1 **Power Phase** Line **Operating Function** USB charging + Radio link 80 Level (dBuV) 70 CISPR/CNS/VCCI-B 60 CISPR/CNS/VCCI-B AV 50 40 30 20 10 0.150.2 0.5 5 10 20 30 Frequency (MHz) Limit LISN Freq Level Over Read cable Line Limit Level factor loss Remark MHz dBuV dBuV dB dBuV dB dB 0.157 55.60 -14.74 40.77 0.07 40.86 0.02 Average 52.21 65.60 -13.39 52.12 0.07 0.02 QP 52.13 -21.39 0.239 30.74 30.66 0.07 0.01 Average 62.13 -21.12 0.239 41.01 40.93 0.07 0.01 QP 47.68 -22.62 25.06 0.408 24.97 0.07 0.02 Average 0.408 57.68 -21.15 36.53 36.44 0.07 0.02 QP 46.00 -22.38 1.949 23.62 23.50 0.10 0.02 Average 1.949 56.00 -21.94 8 34.06 33.94 0.10 0.02 QP 46.00 -24.71 4.549 9 21.29 21.00 0.13 0.16 Average 10 4.549 29.40 56.00 -26.60 29.11 0.13 0.16 QP 31.35 50.00 -18.65 11 9.502 30.91 0.20 0.24 Average 9.502 37.09 60.00 -22.91 36.65 12 0.20 0.24 QP

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

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

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3.2 20dB Bandwidth and Carrier Frequency Separation

3.2.1 20dB Bandwidth and Carrier Frequency Separation Limit

	20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems			
\boxtimes	2400-2483.5 MHz Band:			
	N ≥ 75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).			
	N ≥ 15 and ChS ≥ MAX (20 dB bandwidth x 2/3, 25 kHz).			
N : N	N: Number of Hopping Frequencies; ChS: Hopping Channel Separation			

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3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

	Test Method				
\boxtimes	Refer as ANSI C63.10, clause 6.9.2 for 20 dB bandwidth measurement.				
\boxtimes	Refer as ANSI C63.10, clause 7.8.2 for carrier frequency separation measurement.				
\boxtimes	For conducted measurement.				
	☐ The EUT supports single transmit chain and measurements performed on this transmit chain.				
	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.				

3.2.4 Test Setup

20dB Bandwidth and Carrier Frequency Separation		
Spectrum Analyzer	EUT	

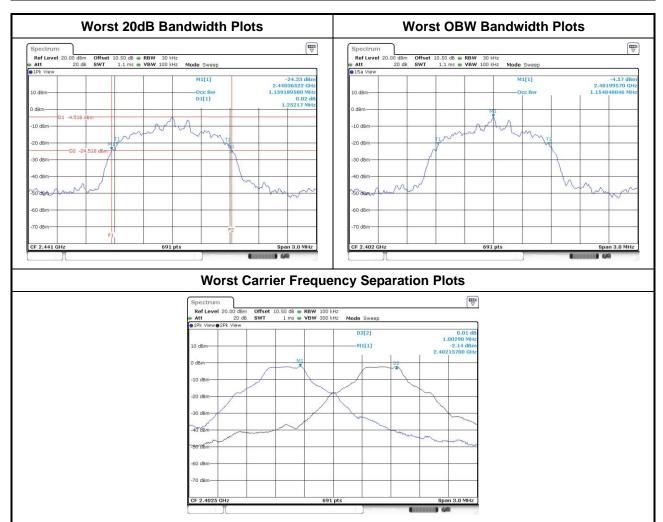
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3.2.5 Test Result of 20dB Bandwidth and Carrier Frequency Separation

	20dB Band	lwidth and Carrier	Frequency Separa	ation Result	
Modulation Mode	Freq. (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)
BR-1Mbps	2402	0.9391	0.8857	1.0029	0.626
BR-1Mbps	2441	0.9391	0.8900	1.0029	0.626
BR-1Mbps	2480	0.9391	0.8857	1.0029	0.626
EDR-2Mbps	2402	1.2348	1.1548	1.0029	0.823
EDR-2Mbps	2441	1.2348	1.1548	1.0029	0.823
EDR-2Mbps	2480	1.2348	1.1505	1.0029	0.823
EDR-3Mbps	2402	1.2478	1.1548	1.0029	0.832
EDR-3Mbps	2441	1.2522	1.1548	1.0029	0.835
EDR-3Mbps	2480	1.2478	1.1548	1.0029	0.832
Result			Comp	lied	

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3.3 Number of Hopping Frequencies

3.3.1 Number of Hopping Frequencies Limit

	Number of Hopping Frequencies Limit for Frequency Hopping Systems					
\boxtimes	2400-2483.5 MHz Band:					
	N ≥ 75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).					
	N ≥ 15 and ChS ≥ MAX (20 dB bandwidth x 2/3, 25 kHz).					
N: 1	N: Number of Hopping Frequencies; ChS : Hopping Channel Separation					

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3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

	Test Method						
\boxtimes	Refer as ANSI C63.10, clause 7.8.3 for number of hopping frequencies measurement.						
\boxtimes	□ For conducted measurement.						
	\boxtimes	The EUT supports single transmit chain and measurements performed on this transmit chain.					
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.					

3.3.4 Test Setup

Number of Hopping Frequencies					
Spectrum Analyzer	EUT				

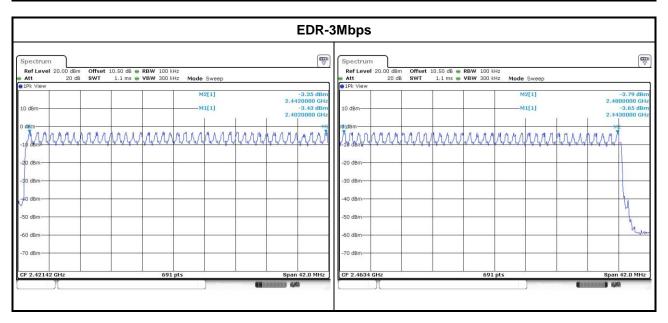
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3.3.5 Test Result of Number of Hopping Frequencies

Number of Hopping Frequencies Result					
Modulation Mode Freq. (MHz) Hopping Channel Number (N) Hopping Ch					
EDR-3Mbps	2402-2480 79 15				
Result	Complied				

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3.4 Time of Occupancy (Dwell Time)

3.4.1 Time of Occupancy (Dwell Time) Limit

Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems

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≥ 2400-2483.5 MHz Band: Dwell time ≤ 0.4 second within 0.4 x N

N: Number of Hopping Frequencies

3.4.2 Measuring Instruments

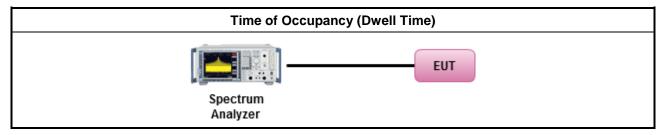
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method

- Refer as ANSI C63.10, clause 7.8.4 for dwell time measurement.
- Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle.
 - The DH1 packet can cover a single time slot. A maximum length packet has duration of 1 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 1/1600 seconds, or 0.625ms. DH1 Packet permit maximum 1600 / 79 /2 = 10.12 hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times 10.12 x 31.6 = 320 within 31.6 seconds.
 - The DH3 packet can cover up to 3 time slots. A maximum length packet has duration of 3 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 3/1600 seconds, or 1.875ms. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 5.06 x 31.6 = 160 within 31.6 seconds.
 - The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms. DH5 Packet permit maximum 1600/79 / 6 = 3.37 hops per second in each channel (5 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 3.37 x 31.6 = 106.6 within 31.6 seconds
- For conducted measurement.
 - ☐ The EUT supports single transmit chain and measurements performed on this transmit chain.
 - The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.4.4 Test Setup



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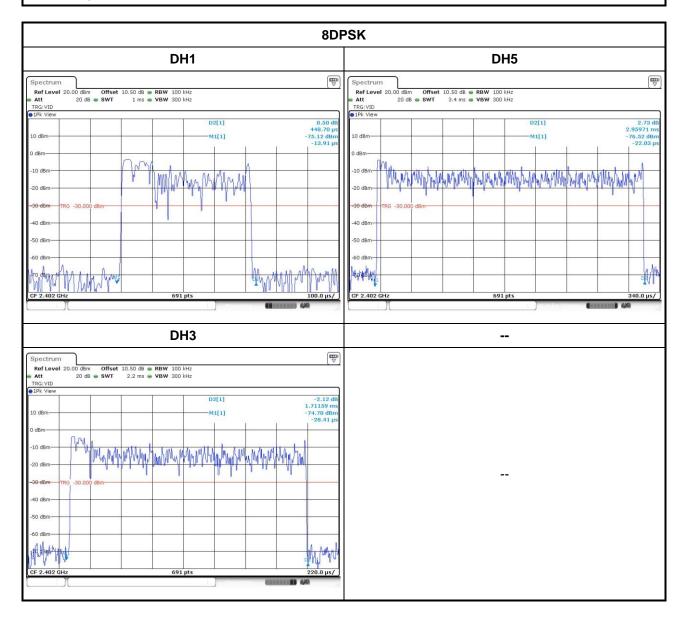


3.4.5 Test Result of Time of Occupancy (Dwell Time)

	Time of Occupancy (Dwell Time) Result						
Modulation Mode	Freq. (MHz)	Pulse Time per Hop (ms)	Number of Pulse in [0.4 x N sec]	Dwell Time in [0.4 x N sec] (s)	Dwell Time Limits (s)		
EDR-3Mbps	2402	2.96	106.7	0.316	0.4		
Result		Complied					

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Bluetooth ACL packets can be 1, 3, or 5 time slots. The DH1 packet can cover a single time slot. The DH3 packet can cover up to 3 time slots. The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.



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3.5 RF Output Power

3.5.1 RF Output Power Limit

	RF Output Power Limit for Frequency Hopping Systems						
Max	Maximum Peak Conducted Output Power Limit						
\boxtimes	2400-2483.5 MHz Band:						
		For Hopping Channel: N ≥ 75					
		☐ If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W)					
		If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm					
	\boxtimes	For Hopping Channel: N ≥ 15					
		☐ If $G_{TX} \le 6$ dBi, then $P_{Out} \le 21$ dBm (0.125 W)					
		If $G_{TX} > 6$ dBi, then $P_{Out} = 21 - (G_{TX} - 6)$ dBm					
e.i.r	.p. P	ower Limit:					
\boxtimes	240	0-2483.5 MHz Band:					
		For Hopping Channel: N ≥ 75 - P _{eirp} ≤ 36 dBm (4 W)					
	\boxtimes	For Hopping Channel: 75 > N ≥ 15 - P _{eirp} ≤ 27 dBm (0.5 W)					
P _{eirp} N: N	, = e. Numb	e maximum transmitting antenna directional gain in dBi. i.r.p. Power in dBm. per of Hopping Frequencies pping Channel Separation					

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3.5.2 Measuring Instruments

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

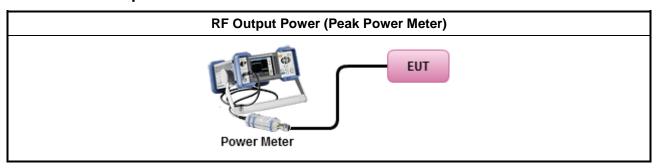
3.5.3 Test Procedures

	Test Method						
\boxtimes	Maximum Peak Conducted Output Power						
		Refer as FCC DA 00-0705, spectrum analyzer for peak power.					
	\boxtimes	Refer as FCC DA 00-0705, peak power meter for peak power.					
		Refer as ANSI C63.10, clause 7.8.5 for peak power meter.					
		Refer as ANSI C63.10, clause 7.8.5 for spectrum analyzer - (RBW ≥ EBW).					
\boxtimes	For conducted measurement.						
	\boxtimes	The EUT supports single transmit chain and measurements performed on this transmit chain.					
		The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.					

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3.5.4 Test Setup



3.5.5 Test Result of Maximum Peak Conducted Output Power

	Maximum Peak Conducted Output Power Result					
Condition		RF Output Power (dBm)				
Modulation Mode	Freq. (MHz)	RF Output Power	Power Limit	Antenna Gain (dBi)	EIRP Power	EIRP Limit
BR-1Mbps	2402	-1.02	21	-4.79	-5.81	27
BR-1Mbps	2441	-1.01	21	-4.79	-5.8	27
BR-1Mbps	2480	-1.41	21	-4.79	-6.2	27
EDR-2Mbps	2402	-2.19	21	-4.79	-6.98	27
EDR-2Mbps	2441	-2.31	21	-4.79	-7.1	27
EDR-2Mbps	2480	-2.6	21	-4.79	-7.39	27
EDR-3Mbps	2402	-1.78	21	-4.79	-6.57	27
EDR-3Mbps	2441	-1.86	21	-4.79	-6.65	27
EDR-3Mbps	2480	-2.16	21	-4.79	-6.95	27
Result				Complied		

	Maximum Average Conducted Output Power Result						
Condition		RF Output Power (dBm)					
Modulation Mode	Freq. (MHz)	Average Power	Duty Factor (dB)	RF Output Power	Antenna Gain (dBi)	EIRP Power	
BR-1Mbps	2402	-2.53	0.98	-1.55	-4.79	-6.34	
BR-1Mbps	2441	-2.60	0.98	-1.62	-4.79	-6.41	
BR-1Mbps	2480	-2.98	0.98	-2.00	-4.79	-6.79	
EDR-2Mbps	2402	-5.55	1.02	-4.53	-4.79	-9.32	
EDR-2Mbps	2441	-5.62	1.02	-4.60	-4.79	-9.39	
EDR-2Mbps	2480	-6.01	1.02	-4.99	-4.79	-9.78	
EDR-3Mbps	2402	-5.49	1.01	-4.48	-4.79	-9.27	
EDR-3Mbps	2441	-5.58	1.01	-4.57	-4.79	-9.36	
EDR-3Mbps	2480	-6.02	1.01	-5.01	-4.79	-9.80	

Note: Average power is for reference only.

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3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 Emissions in Non-Restricted Frequency Bands Limit

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

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3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

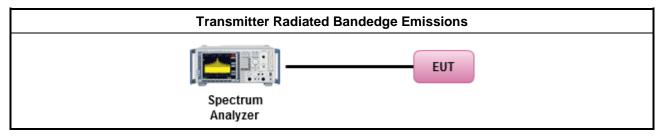
Reference level measurement

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

Emission level measurement

- Set RBW=100kHz, VBW = 300kHz, Detector = Peak, Sweep time = Auto
- 2. Trace = max hold, Allow Trace to fully stabilize
- 3. Scan Frequency range is up to 25GHz
- 4. Use the peak marker function to determine the maximum amplitude level

3.6.4 Test Setup

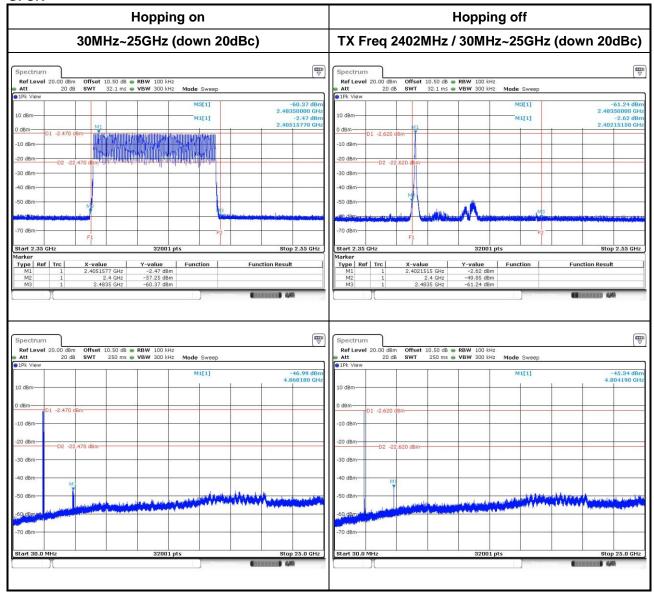


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3.6.5 Test Result of Emissions in Non-Restricted Frequency Bands

GFSK



SPORTON INTERNATIONAL INC.

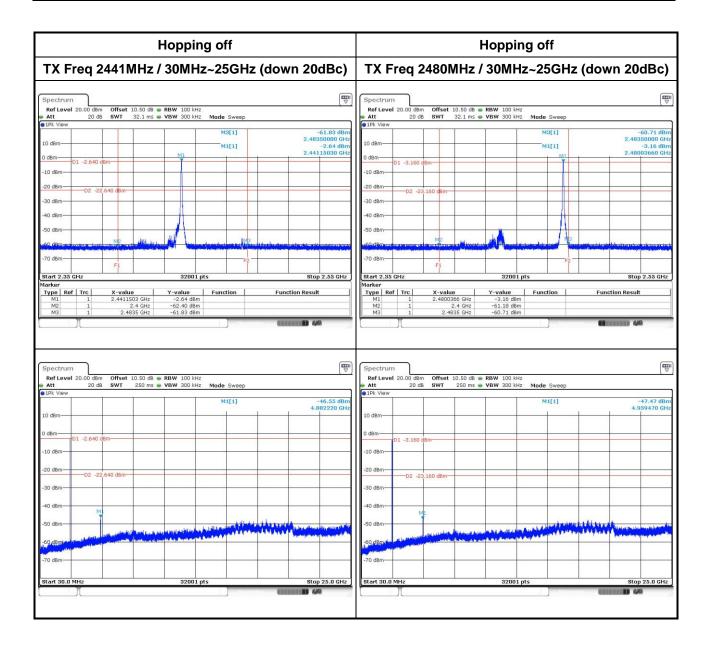
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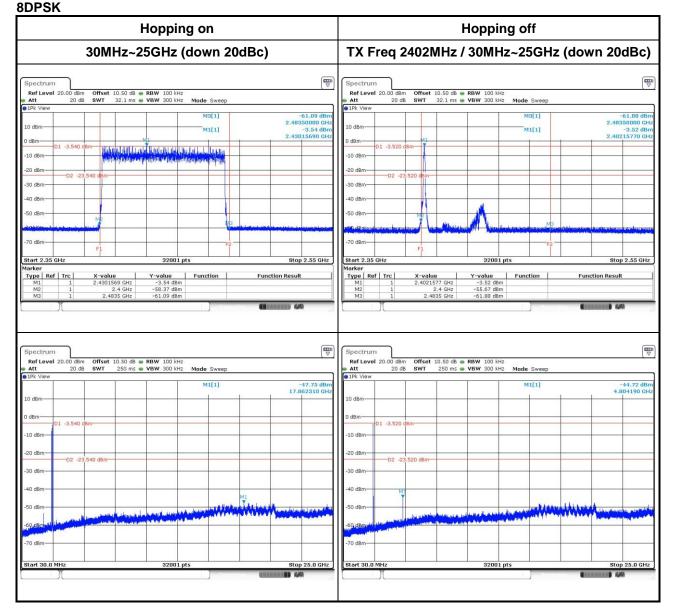
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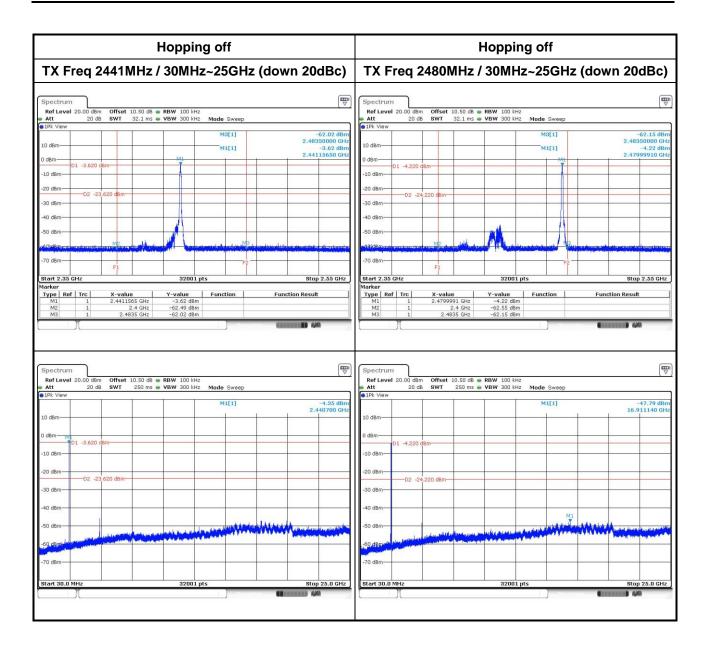
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3.7 Transmitter Unwanted Emissions

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			

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

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

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

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

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

3.7.2 Measuring Instruments

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

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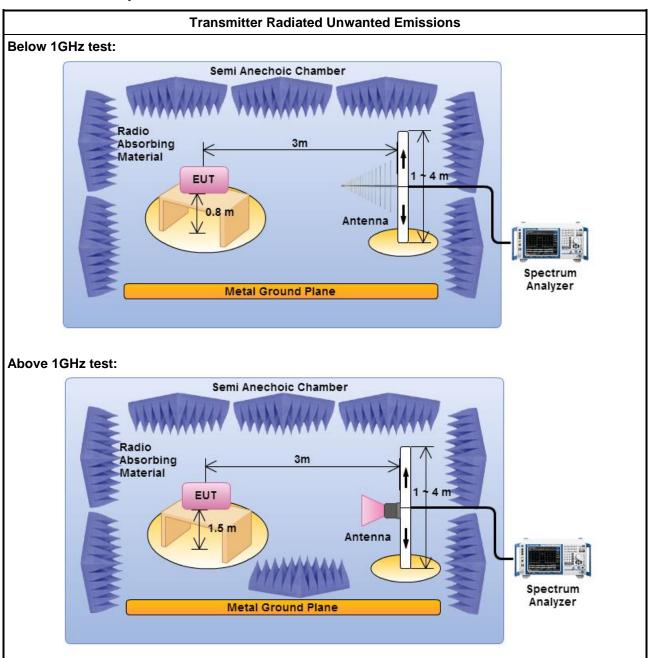
3.7.3 Test Procedures

		Test Method – General Information								
	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).									
	Fort	he transmitter unwanted emissions shall be measured using following options below:								
		Refer as FCC DA 00-0705, for spurious radiated emissions. The dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from 20log (dwell time/100 ms)								
		For unwanted emissions into non-restricted bands. 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.								
	\boxtimes	For unwanted emissions into restricted bands.								
		☐ Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.								
		Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.								
		Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.								
\boxtimes	For	adiated measurement.								
	\boxtimes	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.								
	\boxtimes	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.								
	\boxtimes	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.								

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3.7.4 Test Setup



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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.

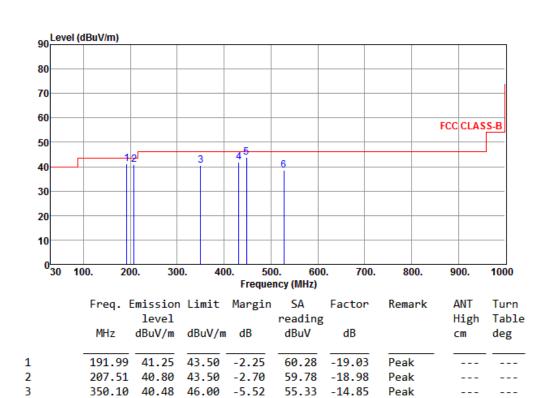
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3.7.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Transmitter Radiated Unwanted Emissions (Below 1GHz)							
Modulation Mode	2402						
Polarization	Н						

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

-4.08

-2.22

-7.44

54.77

56.25

49.42

-12.85

-10.86

Peak

Peak

Peak

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

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

431.58

527.61

41.92

43.78

38.56

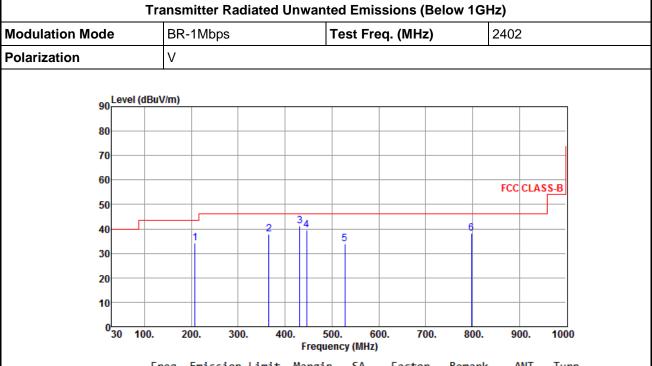
46.00

46.00

46.00

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	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	207.51	34.17	43.50	-9.33	53.15	-18.98	Peak		
2	365.62	37.97	46.00	-8.03	52.42	-14.45	Peak		
3	431.58	41.15	46.00	-4.85	54.00	-12.85	Peak		
4	446.13	39.52	46.00	-6.48	52.04	-12.52	Peak		
5	527.61	33.93	46.00	-12.07	44.79	-10.86	Peak		
6	798.24	38.11	46.00	-7.89	44.82	-6.71	Peak		

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

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

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

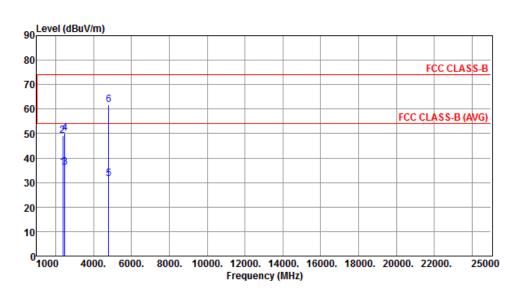
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3.7.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for GFSK

Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode	Modulation Mode BR-1Mbps Test Freq. (MHz) 2402							
Operating Function	Н							

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	Freq.	level	Limit	Margin	SA reading		Kemark	ANI High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	36.15	54.00	-17.85	39.49	-3.34	Average		
2	2390.00	49.07	74.00	-24.93	52.41	-3.34	Peak		
3	2497.00	36.22	54.00	-17.78	39.06	-2.84	Average		
4	2497.00	50.08	74.00	-23.92	52.92	-2.84	Peak		
5	4804.00	31.58	54.00	-22.42	26.79	4.79	Average		
6	4804.00	61.68	74.00	-12.32	56.89	4.79	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

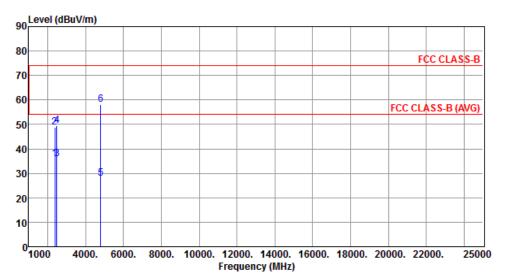
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

Transmitter Radiated Unwanted Emissions (Above 1GHz)							
Modulation Mode	Modulation Mode BR-1Mbps Test Freq. (MHz) 2402						
Operating Function	Transmit	Polarization	V				

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	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	35.82	54.00	-18.18	39.16	-3.34	Average		
2	2390.00	48.93	74.00	-25.07	52.27	-3.34	Peak		
3	2497.00	35.83	54.00	-18.17	38.67	-2.84	Average		
4	2497.00	49.61	74.00	-24.39	52.45	-2.84	Peak		
5	4804.00	27.97	54.00	-26.03	23.18	4.79	Average		
6	4804.00	58.07	74.00	-15.93	53.28	4.79	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

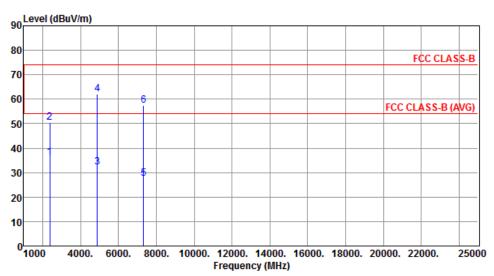
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)							
Modulation ModeBR-1MbpsTest Freq. (MHz)2441							
Operating Function	Transmit	Polarization	Н				

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		Emission level		Ü	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	36.32	54.00	-17.68	39.66	-3.34	Average		
2	2390.00	50.37	74.00	-23.63	53.71	-3.34	Peak		
3	4882.00	32.14	54.00	-21.86	27.14	5.00	Average		
4	4882.00	62.24	74.00	-11.76	57.24	5.00	Peak		
5	7323.00	27.41	54.00	-26.59	17.85	9.56	Average		
6	7323.00	57.51	74.00	-16.49	47.95	9.56	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

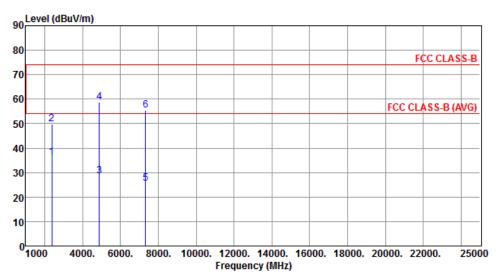
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode	Modulation ModeBR-1MbpsTest Freq. (MHz)2441							
Operating Function	Transmit	Polarization	V					



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	36.13	54.00	-17.87	39.47	-3.34	Average		
2	2390.00	49.91	74.00	-24.09	53.25	-3.34	Peak		
3	4882.00	28.69	54.00	-25.31	23.69	5.00	Average		
4	4882.00	58.79	74.00	-15.21	53.79	5.00	Peak		
5	7323.00	25.44	54.00	-28.56	15.88	9.56	Average		
6	7323.00	55.54	74.00	-18.46	45.98	9.56	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

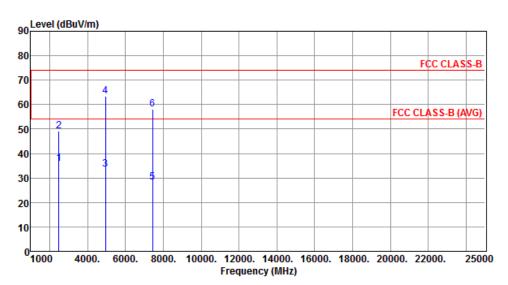
Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

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Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode	Modulation Mode BR-1Mbps Test Freq. (MHz) 2480							
Operating Function	Transmit	Polarization	Н					

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	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	35.95	54.00	-18.05	38.85	-2.90	Average		
2	2483.50	49.12	74.00	-24.88	52.02	-2.90	Peak		
3	4960.00	33.44	54.00	-20.56	28.23	5.21	Average		
4	4960.00	63.54	74.00	-10.46	58.33	5.21	Peak		
5	7440.00	28.16	54.00	-25.84	18.35	9.81	Average		
6	7440.00	58.26	74.00	-15.74	48.45	9.81	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

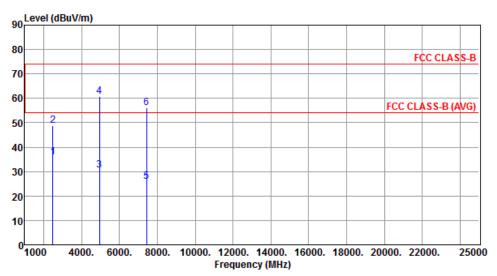
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

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Tra	ansmitter Radiated Unwan	ted Emissions (Above 1G	Hz)							
Modulation Mode	BR-1Mbps	Test Freq. (MHz)	2480							
Operating Function	Operating Function Transmit Polarization V									



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.56	36.01	54.00	-17.99	38.91	-2.90	Average		
2	2483.50				51.65	-2.90	Peak		
3	4960.00	30.55	54.00	-23.45	25.34	5.21	Average		
4	4960.00	60.65	74.00	-13.35	55.44	5.21	Peak		
5	7440.00	25.98	54.00	-28.02	16.17	9.81	Average		
6	7440.00	56.08	74.00	-17.92	46.27	9.81	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

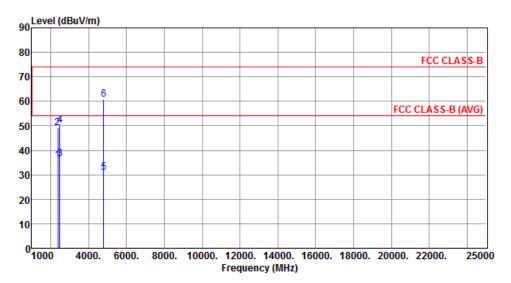
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3.7.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 8DPSK

Tra	ansmitter Radiated Unwan	ted Emissions (Above 1G	Hz)
Modulation Mode	EDR-3Mbps	Test Freq. (MHz)	2402
Operating Function	Transmit	Polarization	Н

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	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
		level			reading			High	Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	35.87	54.00	-18.13	39.21	-3.34	Average		
2	2390.00	49.09	74.00	-24.91	52.43	-3.34	Peak		
3	2497.00	36.42	54.00	-17.58	39.26	-2.84	Average		
4	2497.00	50.01	74.00	-23.99	52.85	-2.84	Peak		
5	4804.00	30.82	54.00	-23.18	26.03	4.79	Average		
6	4804.00	60.92	74.00	-13.08	56.13	4.79	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

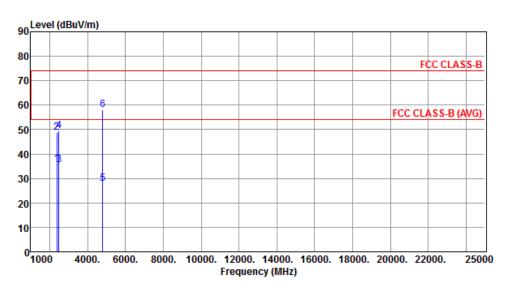
Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode EDR-3Mbps Test Freq. (MHz) 2402

Operating Function Transmit Polarization V

Report No. : FR493012



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	35.87	54.00	-18.13	39.21	-3.34	Average		
2	2390.00	48.81	74.00	-25.19	52.15	-3.34	Peak		
3	2497.00	35.51	54.00	-18.49	38.35	-2.84	Average		
4	2497.00	49.35	74.00	-24.65	52.19	-2.84	Peak		
5	4804.00	27.88	54.00	-26.12	23.09	4.79	Average		
6	4804.00	57.98	74.00	-16.02	53.19	4.79	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

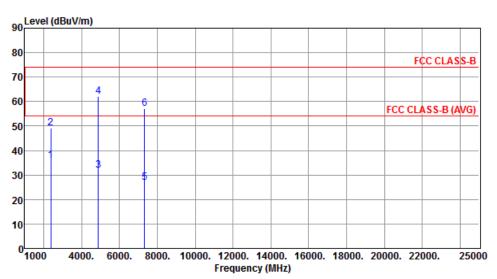
Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

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Tra	Transmitter Radiated Unwanted Emissions (Above 1GHz)								
Modulation Mode	Modulation Mode EDR-3Mbps Test Freq. (MHz) 2441								
Operating Function	Transmit	Polarization	Н						

Report No.: FR493012



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m		SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390 00	35.83	54 00	19 17	39.17	-3.34	Average		
2	2390.00				52.44	-3.34	Peak		
2	2590.00				52.44	-3.34	reak		
3	4882.00	31.98	54.00	-22.02	26.98	5.00	Average		
4	4882.00	62.08	74.00	-11.92	57.08	5.00	Peak		
5	7323.00	27.01	54.00	-26.99	17.45	9.56	Average		
6	7323.00	57.11	74.00	-16.89	47.55	9.56	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

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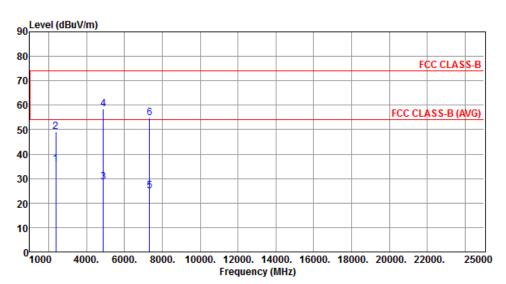


Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode EDR-3Mbps Test Freq. (MHz) 2441

Operating Function Transmit Polarization V

Report No. : FR493012



	Freq. MHz	Emission level dBuV/m		J	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390 00	35.78	54 00	-18 22	39.12	-3.34	Average		
2	2390.00				52.47	-3.34	Peak		
3	4882.00	28.46	54.00	-25.54	23.46	5.00	Average		
4	4882.00	58.56	74.00	-15.44	53.56	5.00	Peak		
5	7323.00	24.82	54.00	-29.18	15.26	9.56	Average		
6	7323.00	54.92	74.00	-19.08	45.36	9.56	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

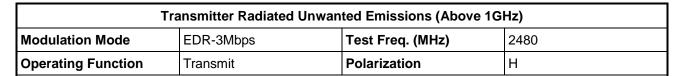
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

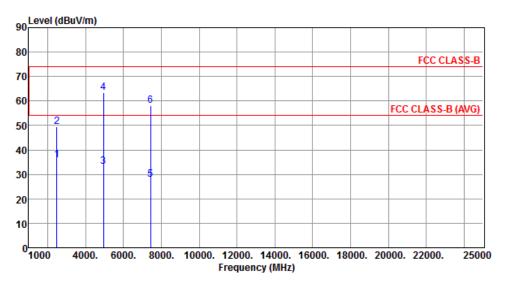
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

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Report No. : FR493012





	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	35.93	54.00	-18.07	38.83	-2.90	Average		
2	2483.50	49.52	74.00	-24.48	52.42	-2.90	Peak		
3	4960.00	33.24	54.00	-20.76	28.03	5.21	Average		
4	4960.00	63.34	74.00	-10.66	58.13	5.21	Peak		
5	7440.00	27.99	54.00	-26.01	18.18	9.81	Average		
6	7440.00	58.09	74.00	-15.91	48.28	9.81	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

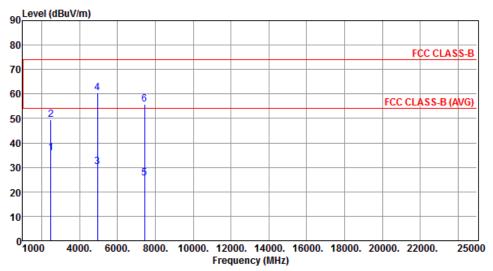
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Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode EDR-3Mbps Test Freq. (MHz) 2480

Operating Function Transmit Polarization V

Report No. : FR493012



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	35.73	54.00	-18.27	38.63	-2.90	Average		
2	2483.50	49.49	74.00	-24.51	52.39	-2.90	Peak		
3	4960.00	30.37	54.00	-23.63	25.16	5.21	Average		
4	4960.00	60.47	74.00	-13.53	55.26	5.21	Peak		
5	7440.00	25.64	54.00	-28.36	15.83	9.81	Average		
6	7440.00	55.74	74.00	-18.26	45.93	9.81	Peak		

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Note 5: Average emission obtained from the worst average correction factor = 20 log ((1s/1600x5)/100ms) = -30.1dB or Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., DH5 VBW≥1/3.125ms, VBW=1kHz.

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4 Test Equipment and Calibration Data

Test Item	Conducted Emission	Conducted Emission										
Test Site	Conduction room 1 / (Conduction room 1 / (CO01-WS)										
Test Date	Dec. 29, 2014	Dec. 29, 2014										
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until							
EMC Receiver	R&S	R&S ESCS 30 100169 Oct. 17, 2014 Oct. 16, 2015										
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 17, 2014	Nov. 16, 2015							
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Apr. 23, 2014	Apr. 22, 2015							
Measurement Software	AUDIX	e3	6.120210k	NA	NA							
Note: Calibration Interval of instruments listed above is one year.												

Report No. : FR493012

Test Item	RF Conducted							
Test Site	(TH01-HY)							
Test date	Dec. 25, 2014							
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until			
Spectrum Analyzer	R&S	FSV40	101013	Jan. 25, 2014	Jan. 24, 2015			
Power Meter	Anritsu	ML2495A	0949003	Jan. 28, 2014	Jan. 27, 2015			
Power Sensor	Anritsu	MA2411B	0917017	Jan. 28, 2014	Jan. 27, 2015			
BT Station	R&S	CBT	100959	Mar. 10, 2014	Mar. 09, 2015			
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA			
Note: Calibration Interval of instruments listed above is one year.								

Test Item	Radiated Emission							
Test Site	966 chamber1 / (03CH01-WS)							
Test Date	Dec. 24, 2014							
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until			
Spectrum Analyzer	R&S	FSV40	101498	Dec. 09, 2014	Dec. 08, 2015			
Receiver	R&S	ESR3	101658	Nov. 10, 2014	Nov. 09, 2015			
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Sep. 05, 2014	Sep. 04, 2015			
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 11, 2014	Dec. 10, 2015			
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015			
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 10, 2014	Nov. 09, 2015			
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 09, 2014	Sep. 08, 2015			
Preamplifier	Agilent	83017A	MY39501308	Oct. 09, 2014	Oct. 08, 2015			
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015			
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 15, 2014	Dec. 14, 2015			
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 15, 2014	Dec. 14, 2015			
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 15, 2014	Dec. 14, 2015			
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 15, 2014	Dec. 14, 2015			
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 15, 2014	Dec. 14, 2015			
Measurement Software	AUDIX	e3	6.120210g	NA	NA			
Bluetooth Tester	ROHDE&SCHWARZ	CBT	100959	Mar. 10, 2014	Mar. 09, 2015			
Note: Calibration Interval of instruments listed above is one year.								

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