



FCC ID: Z3K-EVOLVE8 **Report No.:** T210429C13-RP1 IC: 9930A-EVOLVE8

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RADIO TEST REPORT FCC 47 CFR PART 15 SUBPART C INDUSTRY CANADA RSS-247

Test Standard	FCC Part 15.247 RSS-247 issue 2 and RSS-GEN issue 5
Product name	Evolve Universal 8 inch Headrest Monitor
Brand Name	Ford
Model No.	661182
Test Result	Pass
Statements of Conformity	Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:

Komil Tson

Kevin Tsai Deputy Manager

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	July 20, 2021	Initial Issue	ALL	Doris Chu
01	July 28, 2021	See the following Note Rev. (01)	P.8, P.14-P.17, P.31, P.33, P.36, P.39	Doris Chu
02	July 30, 2021	See the following Note Rev. (02)	P.31	Doris Chu

Rev. (01)

1. Revised calibration table in section 1.7.

2. Added duty cycle in section 3.3.

3. Revised Test Procedure in section 4.5.2.

4. Added test result in section 4.5.4.

5. Revised Spurious Emission in section 4.6.4.

Rev. (02)

1. Revised Test Procedure in section 4.5.2.



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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	JET OPTOELECTRONICS CO., LTD. 3F., No.300, Yangguang St., Neihu Dist., Taipei City 11491, Taiwan
Manufacturer	JET OPTOELECTRONICS CO., LTD. 3F., No.300, Yangguang St., Neihu Dist., Taipei City 11491, Taiwan
Equipment	Evolve Universal 8 inch Headrest Monitor
Model No.	661182
Model Discrepancy	N/A
Trade Name	Ford
Received Date	April 29, 2021
Date of Test	June 7 ~ July 27, 2021
Power Supply	Power from Power Supply: DC 12V
HW Version	20210208 D01
SW Version	95126
EUT Serial #	GA51RW0011030013
Remark:	

Remark:

1. For more details, please refer to the User's manual of the EUT.

2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

3. The EUT (model: 661182) had been tested under operating condition.



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1.2 INFORMATION ABOUT THE FHSS CHARACTERISTICS

1.2.1 Pseudorandom Frequency Hopping Sequence

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master. The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1 600 hops/s.

1.2.2 Equal Hopping Frequency Use

The channels of this system will be used equally over the long-term distribution of the hopsets.

1.2.3 Example of a 79 hopping sequence in data mode:

02, 05, 31, 24, 20, 10, 43, 36, 30, 23, 40, 06, 21, 50, 44, 09, 71, 78, 01, 13, 73, 07, 70, 72, 35, 62, 42, 11, 41, 08, 16, 29, 60, 15, 34, 61, 58, 04, 67, 12, 22, 53, 57, 18, 27, 76, 39, 32, 17, 77, 52, 33, 56, 46, 37, 47, 64, 49, 45, 38, 69, 14, 51, 26, 79, 19, 28, 65, 75, 54, 48, 03, 25, 66, 05, 16, 68, 74, 59, 63, 55

1.2.4 System Receiver Input Bandwidth

Each channel bandwidth is 1MHz.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

1.2.5 Equipment Description

RSS-247, 5.1 (a): The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.



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1.3 EUT CHANNEL INFORMATION

Frequency Range	2402MHz-2480MHz
Modulation Type	 GFSK for BDR-1Mbps π/4-DQPSK for EDR-2Mbps 8DPSK for EDR-3Mbps
Number of channel	79 Channels

Remark:

Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 and RSS-GEN Table 1 for test channels

Number of frequencies to be tested				
Frequency range inNumber ofLocation in frequencywhich device operatesfrequenciesrange of operation				
1 MHz or less	1	Middle		
1 MHz to 10 MHz	2	1 near top and 1 near bottom		
More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom		

1.4 ANTENNA INFORMATION

Antenna Type	🛛 Ceramic 🗌 PCB 🗌 Dipole 🗌 Coils
Antenna Gain	Gain :1 dBi
Antenna Connector	N/A

Remark:

1. The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203 and RSS-Gen 6.8.



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1.5 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.



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1.6 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan. (R.O.C.) CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	-	Not applicable, because EUT doesn't connect to AC Main Source direct.
Radiation	Ray Li	-
RF Conducted	Lance Chen	-

Remark: The lab has been recognized as the FCC accredited lad under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309"

1.7 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2020	09/06/2021
Coaxial Cable	Woken	WC12	CC003	06/29/2020	06/28/2021
Coaxial Cable	Woken	WC12	CC001	06/29/2020	06/28/2021
Signal Analyzer	R&S	FSV 40	101073	09/17/2020	09/16/2021
Power Meter	Anritsu	ML2487A	6K00003260	05/24/2021	05/23/2022
Power Seneor	Anritsu	MA2490A	032910	05/24/2021	05/23/2022
Software			N/A		

For July 27, 2021

RF Conducted Test Site						
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2020	09/06/2021	
Coaxial Cable	Woken	WC12	CC003	06/28/2021	06/27/2022	
Coaxial Cable	Woken	WC12	CC001	06/28/2021	06/27/2022	
Signal Analyzer	R&S	FSV 40	101073	09/17/2020	09/16/2021	
Power Meter	Anritsu	ML2487A	6K00003260	05/24/2021	05/23/2022	
Power Seneor	Anritsu	MA2490A	032910	05/24/2021	05/23/2022	
Software			N/A			



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3M 966 Chamber Test Site						
Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due	
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/08/2021	02/07/2022	
Bilog Antenna	Sunol Sciences	JB3	A030105	07/24/2020	07/23/2021	
Horn Antenna	ETS LINDGREN	3116	00026370	12/11/2020	12/10/2021	
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/24/2021	02/23/2022	
Coaxial Cable	EMCI	EMC105	190914+327109/4	09/19/2020	09/18/2021	
K Type Cable	Huber+Suhner	SUCOFLEX 102	29406/2	12/09/2020	12/08/2021	
K Type Cable	Huber+Suhner	SUCOFLEX 102	22470/2	12/09/2020	12/08/2021	
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/06/2021	01/05/2022	
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	09/30/2020	09/29/2021	
Loop Ant	COM-POWER	AL-130	121051	04/07/2021	04/06/2022	
Pre-Amplifier	EMEC	EM330	060609	02/24/2021	02/23/2022	
Pre-Amplifier	HP	8449B	3008A00965	12/25/2020	12/24/2021	
Pre-Amplifier	MITEQ	AMF-6F-18004000-37-8P	985646	09/02/2020	09/01/2021	
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	07/24/2020	07/23/2021	
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R	
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R	
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R	
Software	e3 6.11-20180413					

Remark: Each piece of equipment is scheduled for calibration once a year.



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1.8 SUPPORT AND EUT ACCESSORIES EQUIPMENT

	EUT Accessories Equipment					
No. Equipment Brand Model Series No. FCC ID						
	N/A					

	Support Equipment						
No.	No. Equipment Brand Model Series No. FCC ID IC						
1	DC Power Source	Agilent	E3640A	N/A	N/A	N/A	
2	DC Power Source	GWINSTEK	SPS-3610	N/A	N/A	N/A	
3	NB(J)	TOSHIBA	PT345T-00L002	N/A	PD97260H	1000M-7260H	

1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, RSS-247 Issue 2 and RSS-GEN Issue 5.



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2. TEST SUMMARY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
15.203	RSS-Gen 6.8	1.3	Antenna Requirement	Pass
15.207(a)	RSS-GEN 8.8	4.1	AC Conducted Emission	N/A
15.247(a)(1)	RSS-247(5.1)(a)	4.2	20 dB Bandwidth	Pass
-	RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)(1)	RSS-247(5.4)(b)	4.3	Output Power Measurement	Pass
15.247(a)(1)	RSS-247(5.1)(b)	4.4	Frequency Separation	Pass
15.247(a)(1)(iii)	RSS-247(5.1)(d)	4.5	Number of Hopping	Pass
15.247(d)	RSS-247(5.5)	4.6	Conducted Band Edge	Pass
15.247(d)	RSS-247(5.5)	4.6	Conducted Spurious Emission	Pass
15.247(a)(1)(iii)	RSS-247(5.1)(d)	4.7	Time of Occupancy	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.8	Radiation Band Edge	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.8	Radiation Spurious Emission	Pass



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3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	GFSK for BDR-1Mbps (DH5) π /4-DQPSK for EDR-2Mbps (2DH5) 8DPSK for EDR-3Mbps (3DH5)
Test Channel Frequencies	GFSK for BDR-1Mbps: 1.Lowest Channel: 2402MHz 2.Middle Channel: 2441MHz 3.Highest Channel: 2480MHz π /4-DQPSK for EDR-2Mbps (2DH5) 1.Lowest Channel: 2402MHz 2.Middle Channel: 2441MHz 3.Highest Channel: 2480MHz 8DPSK for EDR-3Mbps: 1.Lowest Channel: 2441MHz 2.Middle Channel: 2441MHz 3.Highest Channel: 2480MHz

Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.



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3.2 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G				
Test Condition Radiated Emission Above 1G				
Power supply Mode Mode 1: EUT power by Power supply				
Worst Mode 🛛 Mode 1 🗌 Mode 2 🗌 Mode 3 🗌 Mode 4				
Worst Position	 Placed in fixed position. Placed in fixed position at X-Plane (E2-Plane) Placed in fixed position at Y-Plane (E1-Plane) Placed in fixed position at Z-Plane (H-Plane) 			

Radiated Emission Measurement Below 1G					
Test Condition	Test Condition Radiated Emission Below 1G				
Power supply Mode	Power supply Mode Mode 1: EUT power by Power supply				
Worst Mode Mode 1 Mode 2 Mode 3 Mode 4					

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Z-Plane) were recorded in this report



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3.3 EUT DUTY CYCLE

Temperature:	24.7 ~ 25.3 ℃	Humidity:	50.6 ~ 56.2% RH
Tested by:	Lance Chen	Test date:	June 7 ~ 9, 2021

For GFSK (1Mbps)

Duty Cycle (%) - Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
14.80	8.30	2.70	3.00
65.20	1.86	0.61	1.00
57.66	2.39	0.35	1.00
-	Ton / (Ton+Toff) 14.80 65.20	Ton / (Ton+Toff) =10*log (1/Duty Cycle) 14.80 8.30 65.20 1.86 57.66 2.39	Ton / (Ton+Toff)=10*log (1/Duty Cycle)1/1 (KH2)14.808.302.7065.201.860.6157.662.390.35

For π/4 DQPSK (2Mbps)

PACKET TYPE	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
2DH1	15.20	8.18	2.63	3.00
2DH3	65.20	1.86	0.61	1.00
2DH5	57.66	2.39	0.35	1.00

For 8-DPSK (3Mbps)

PACKET TYPE	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
3DH1	15.40	8.12	2.60	3.00
3DH3	65.60	1.83	0.61	1.00
3DH5	57.49	2.40	0.35	1.00



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For GFSK (1Mbps)





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For π/4 DQPSK (2Mbps)





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For 8-DPSK (3Mbps)





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4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a) and RSS-GEN section 8.8,

Frequency Range	Limits(dBµV)		
(MHz)	Quasi-peak	Average	
0.15 to 0.50	66 to 56*	56 to 46*	
0.50 to 5	56	46	
5 to 30	60	50	

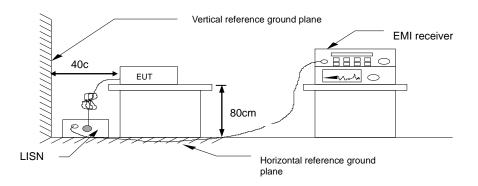
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

- 1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
- 2. EUT connected to the line impedance stabilization network (LISN)
- 3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



4.1.4 Test Result

Not applicable, because EUT doesn't connect to AC Main Source direct.



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4.220dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a) (1), RSS-247 section 5.1(a) and RSS-GEN 6.7,

<u>20 dB Bandwidth</u> : For reporting purposes only.

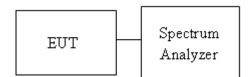
Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 7.8.7,

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- 3. SA set RBW = 1% ~ 5% OBW, VBW ≥3*RBW and Detector = Peak, to measurement 20 dB Bandwidth.
- SA set RBW = 1% ~ 5% OBW, VBW ≥ three times the RBW and Detector = Peak, to measurement 99% Bandwidth
- 5. Measure and record the result of 20 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup





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4.2.4 Test Result

Temperature:	24.7 ~ 25.3 ℃	Humidity:	50.6 ~ 56.2% RH
Tested by:	Lance Chen	Test date:	June 7 ~ 9, 2021

Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz					
Channel	annel Frequency OBW(99%) 20dB BW (MHz) (MHz) (MHz)				
Low	2402	0.86062	0.9242		
Mid	2441	0.85789	0.9239		
High	2480	0.85705	0.9237		

1	Test mode: π/4-DQPSK_EDR -2Mbps mode / 2402-2480 MHz				
ChannelFrequency (MHz)OBW(99%) (MHz)20dB BW (MHz)					
Low	2402	1.1698	1.277		
Mid	2441	1.1710	1.263		
High	2480	1.1701	1.304		

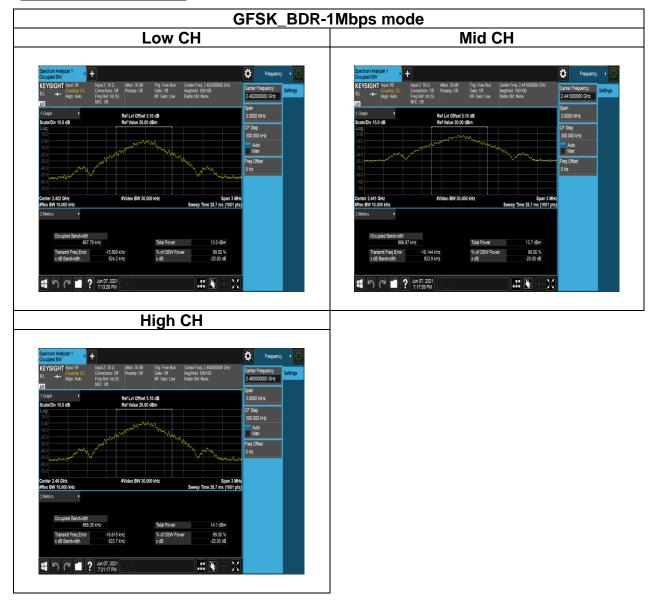
	Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	ChannelFrequency (MHz)OBW(99%) (MHz)20dB BW (MHz)				
Low	2402	1.1765	1.274		
Mid	2441	1.1766	1.273		
High	2480	1.1770	1.273		



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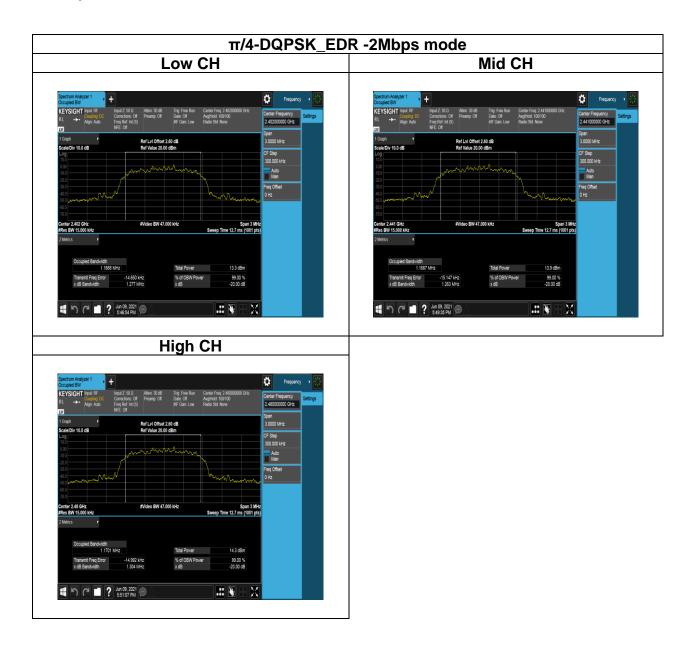
Test Data

20dB BANDWIDTH



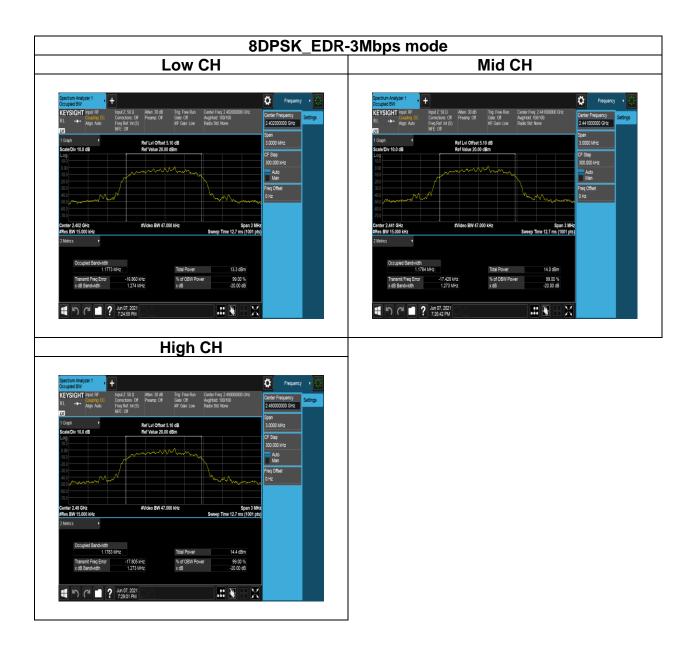


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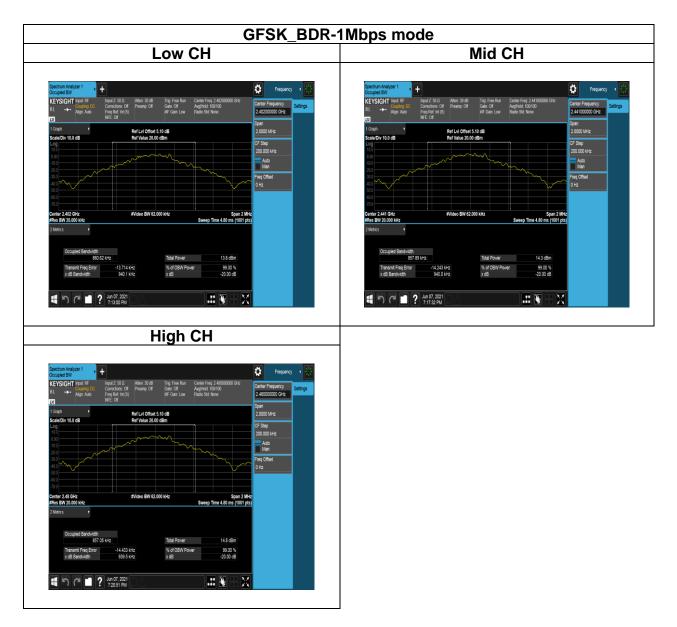
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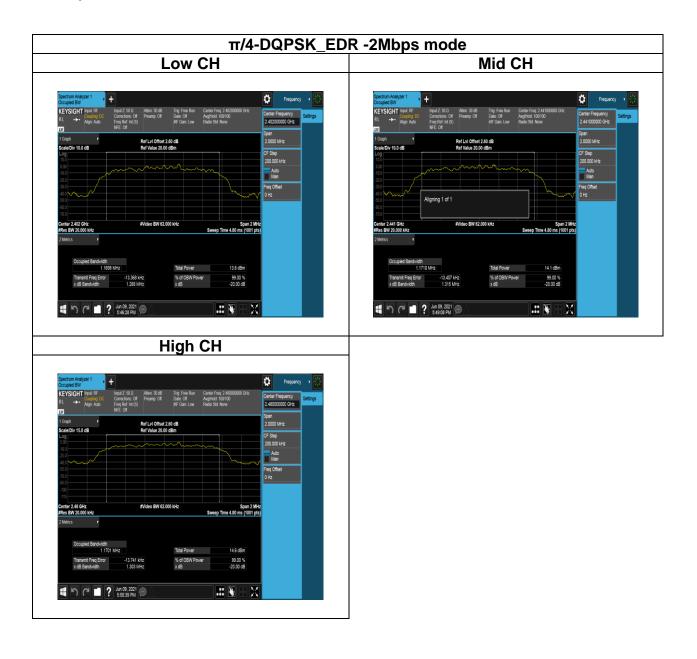
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Test Data BANDWIDTH 99%





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4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(a)(1) and RSS-247 section 5.4(b)

Peak output power :

FCC

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

<u>IC</u>

According to RSS-247 section 5.4(b), For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).



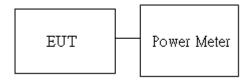
Antenna not exceed 6 dBi : 21dBm
 Antenna with DG greater than 6 dBi : 21dBm [Limit = 30 – (DG – 6)]

Average output power : For reporting purposes only.

4.3.2 Test Procedure

- 1. The EUT RF output connected to the power meter by RF cable.
- 2. Setting maximum power transmit of EUT.
- 3. The path loss was compensated to the results for each measurement.
- 4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup





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4.3.4 Test Result

Temperature:	24.7 ℃	Humidity:	50.6% RH
Tested by:	Lance Chen	Test date:	June 7, 2021

Peak output power :

					BT					
Config.	СН	Freq. (MHz)	Power Setting	PK Power (dBm)	PK Power (W)	EIRP PK Power (dBm)	EIRP PK Power (W)	FCC/IC Limit (dBm)	IC EIRP Limit (dBm)	Antenna Gain (dBi)
GFSK	0	2402	7	7.8200	0.0061	8.8200	0.0076			
BR-1Mbps	39	2441	7	8.0400	0.0064	9.0400	0.0080			
(DH5)	78	2480	7	8.8300	0.0076	9.8300	0.0096			
π/4- DQPSK	0	2402	7	9.2600	0.0084	10.2600	0.0106			
EDR-	39	2441	7	9.6500	0.0092	10.6500	0.0116	21	36	1
2Mbps (DH5)	78	2480	7	10.3100	0.0107	11.3100	0.0135			
8DPSK	0	2402	7	10.2100	0.0105	11.2100	0.0132			
EDR- 3Mbps	39	2441	7	10.4700	0.0111	11.4700	0.0140			
(3DH5)	78	2480	7	11.2100	0.0132	12.2100	0.0166			

Average output power :

	BT				
Config.	СН	Freq. (MHz)	Power set	AV Power (dBm)	
GFSK	0	2402	7	7.4558	
BR-1Mbps	39	2441	7	7.6758	
(DH5)	78	2480	7	8.4458	
π/4- DQPSK	0	2402	7	6.5557	
EDR-	39	2441	7	6.8657	
2Mbps (DH5)	78	2480	7	7.6057	
8DPSK	0	2402	7	6.9158	
EDR- 3Mbps	39	2441	7	7.3058	
(3DH5)	78	2480	7	8.1358	



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4.4 FREQUENCY SEPARATION

4.4.1 Test Limit

According to §15.247(a)(1) and RSS-247 section 5.1(b)

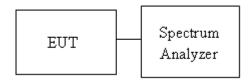
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Limit	> two-thirds of the 20 dB bandwidth
-------	-------------------------------------

4.4.2 Test Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. EUT RF output port connected to the SA by RF cable.
- 3. Set the spectrum analyzer as RBW = 300kHz, VBW = 300kHz, Sweep = auto. Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency

4.4.3 Test Setup





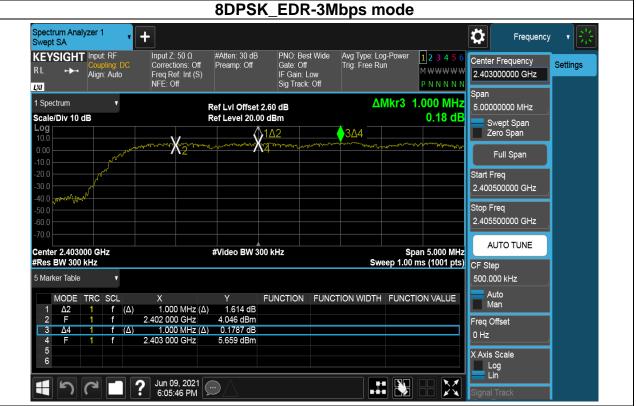
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4.4.4 Test Result

Temperature:	25.3 ℃	Humidity:	56.2% RH
Tested by:	Lance Chen	Test date:	June 9, 2021

	Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result	
Low	2402	1.000	0.85	PASS	
Mid	2441	1.000	0.85	PASS	
High	2480	1.000	0.85	PASS	

Test Data



Note: We selected worst case to performed test in low channel, The results can be meet other channel.



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4.5 NUMBER OF HOPPING

4.5.1 Test Limit

According to §15.247(a)(1)(iii) and RSS-247 section 5.1(d)

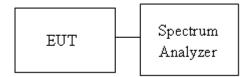
Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

4.5.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 7.8.3

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. EUT RF output port connected to the SA by RF cable.
- 3. Set spectrum analyzer Start Freq. = 2400 MHz, Stop Freq. = 2441 MHz for Low range, Start Freq. = 2441 MHz, Stop Freq. = 2483.5 MHz for High range; RBW=430KHz, VBW = 1.5MHz.
- 4. Max hold, view and count how many channel in the band.

4.5.3 Test Setup





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4.5.4 Test Result

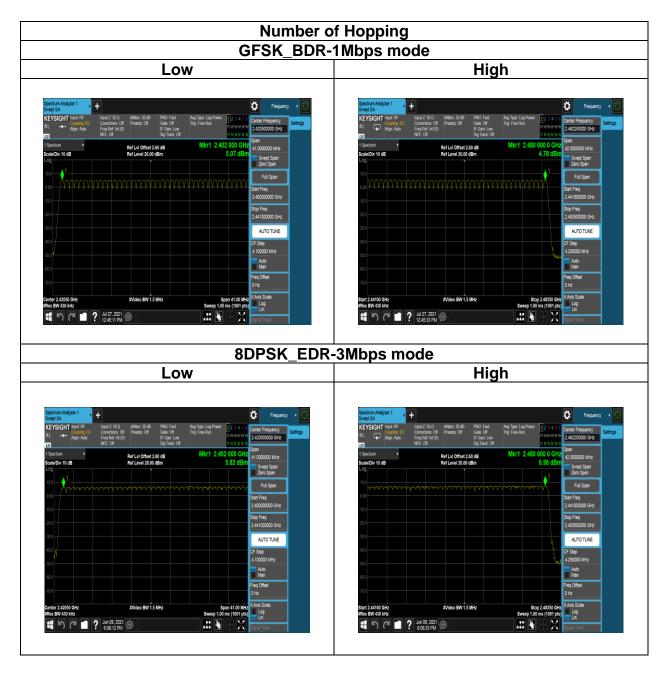
Temperature:	25.3 ℃	Humidity:	56.2% RH
Tested by:	Lance Chen	Test date:	June 9, 2021
Temperature:	23.2 ℃	Humidity:	53.9% RH
Tested by:	Lance Chen	Test date:	July 27, 2021

	Number of Hopping					
Mode	Frequency (MHz)	Hopping Channel Number	Hopping Channel Number Limits	Result		
BDR-1Mbps	2402-2480	79	15	Dooo		
EDR-3Mbps	2402-2480	79	15	Pass		



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Test Data





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4.6 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

According to §15.247(d) and RSS-247 section 5.5

Limit	-20 dBc
-------	---------

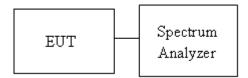
4.6.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. The Band Edge at 2.4GHz and 2.4835GHz are investigated with both hopping "ON" and "OFF" modes ".

4.6.3 Test Setup



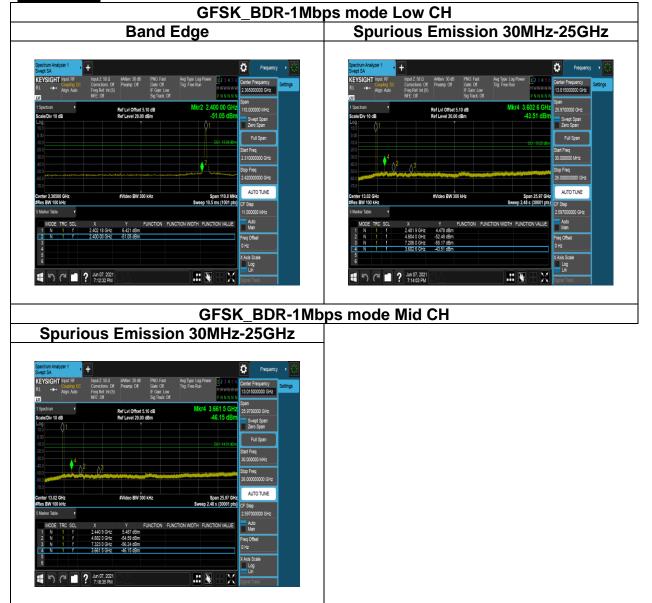


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4.6.4 Test Result

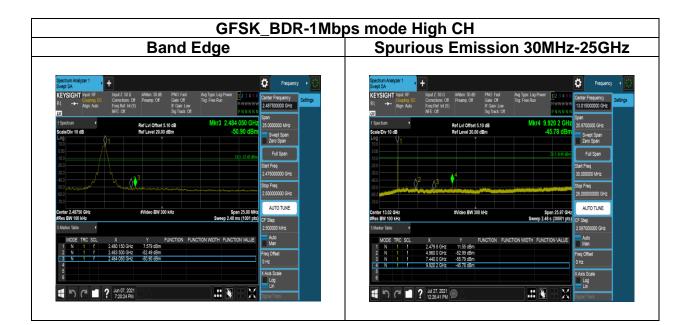
Temperature:	24.7 ~ 25.3 ℃	Humidity:	50.6 ~ 56.2% RH
Tested by:	Lance Chen	Test date:	June 7 ~ 9, 2021
Temperature:	23.2 °C	Humidity:	53.9% RH
Tested by:	Lance Chen	Test date:	July 27, 2021

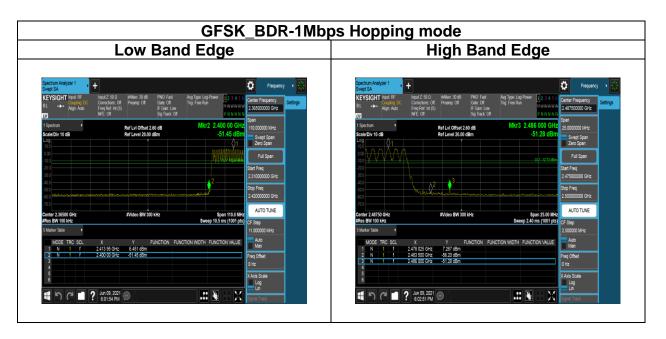
Test Data





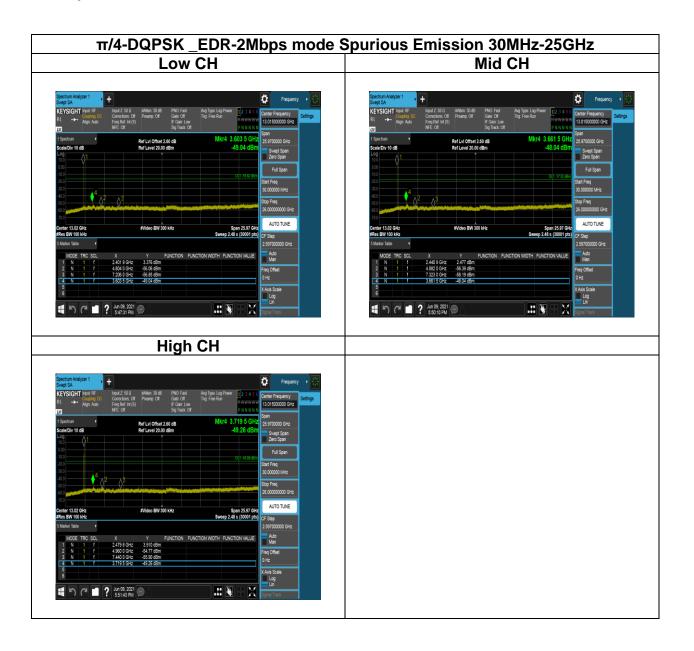
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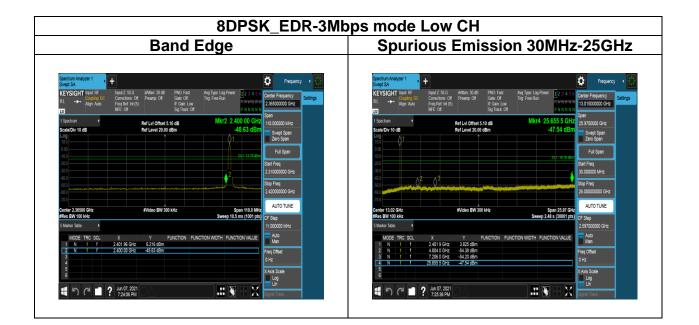


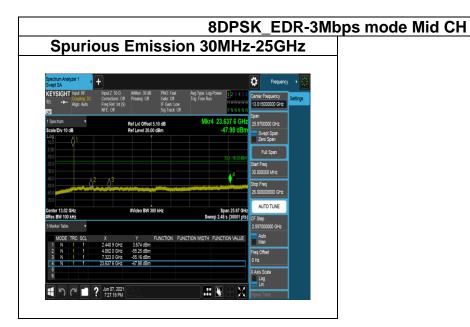
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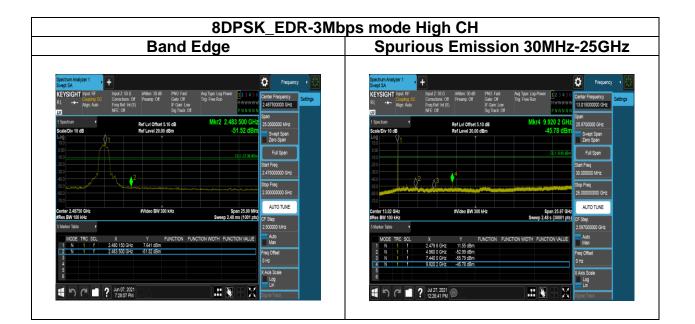
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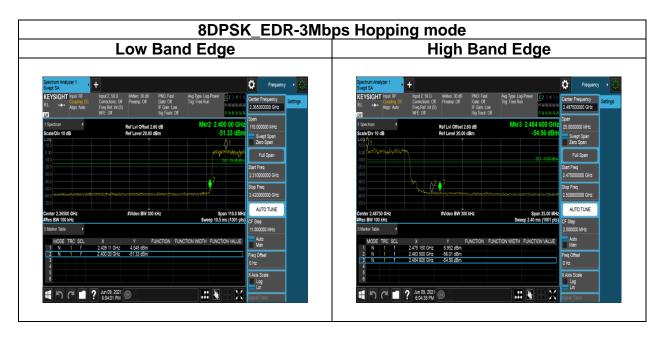






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4.7 TIME OF OCCUPANCY (DWELL TIME)

4.7.1 Test Limit

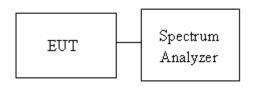
According to §15.247(a)(1)(iii)and RSS-247 section 5.1(d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

4.7.2 Test Procedure

- 1. EUT RF output port connected to the SA by RF cable.
- 2. Set center frequency of spectrum analyzer = operating frequency.
- 3. Set the spectrum analyzer as RBW, VBW=1MHz, Sweep = 1 ms

4.7.3 Test Setup



4.7.4 Test Result

Temperature:	24.7 ~ 25.3 ℃	Humidity:	50.6 ~ 56.2% RH
Tested by:	Lance Chen	Test date:	June 7 ~ 9, 2021



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For GFSK (1Mbps)

PACKET TYPE	Measurement Result (ms)	Limit (ms)
DH1	118.40	400ms
DH3	260.80	400ms
DH5	307.20	400ms

DH1 time slot	=	0.370 *	(1600/2/79)	*	31.6 =	118.40 (ms)
DH3 time slot	=	1.630 *	(1600/4/79)	*	31.6 =	260.80 (ms)
DH5 time slot	=	2.880 *	(1600/6/79)	*	31.6 =	307.20 (ms)

For π/4 DQPSK (2Mbps)

PACKET TYPE	Measurement Result (ms)	Limit (ms)
2DH1	121.60	400ms
2DH3	260.80	400ms
2DH5	307.20	400ms

2DH1 time slot =	0.380 *	(1600/2/79)	*	31.6 =	121.60 (ms)
2DH3 time slot =	1.630 *	(1600/4/79)	*	31.6 =	260.80 (ms)
2DH5 time slot =	2.880 *	(1600/6/79)	*	31.6 =	307.20 (ms)

For 8-DPSK (3Mbps)

PACKET TYPE	Measurement Result (ms)	Limit (ms)
3DH1	123.20	400ms
3DH3	262.40	400ms
3DH5	307.20	400ms

3DH1 time slot =	0.385 *	(1600/2/79)	*	31.6 =	123.20 (ms)
3DH3 time slot =	1.640 *	(1600/4/79)	*	31.6 =	262.40 (ms)
3DH5 time slot =	2.880 *	(1600/6/79)	*	31.6 =	307.20 (ms)



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For GFSK (1Mbps)





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For π/4 DQPSK (2Mbps)





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For 8-DPSK (3Mbps)





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4.8 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.8.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency	Field Stre microvolts/m at 3 metr			
(MHz)	Transmitters Receivers			
30-88	100 (3 nW)	100 (3 nW)		
88-216	150 (6.8 nW)	150 (6.8 nW)		
216-960	200 (12 nW)	200 (12 nW)		
Above 960	500 (75 nW)	500 (75 nW)		

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



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IC according to RSS-247 section 5.5, RSS-Gen, Section 8.9 and 8.10

<u>RSS-Gen Table 3 and Table 5 – General Field Strength Limits for Transmitters and</u> <u>Receivers at Frequencies Above 30 MHz</u> (Note)

Frequency	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)			
(MHz)	Transmitters Receivers			
30-88	100 (3 nW)	100 (3 nW)		
88-216	150 (6.8 nW)	150 (6.8 nW)		
216-960	200 (12 nW)	200 (12 nW)		
Above 960	500 (75 nW)	500 (75 nW)		

Note: Measurements for compliance with the limits in table 3 may be performed at distances other than 3 metres, in accordance with Section 6.6.

<u>RSS-Gen Table 6: General Field Strength Limits for Transmitters at Frequencies</u> <u>Below 30 MHz (Transmit)</u>

Frequency	Magnetic field strength (H-Field) (µA/m)	Measurement Distance (m)
9-490 kHz ^{Note}	6.37/F (F in kHz)	300
490-1,705 kHz	63.7/F (F in kHz)	30
1.705-30 MHz	0.08	30

Note: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.



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Report No.: T210429C13-RP1

4.8.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

4. For harmonic, the worst case of output power was BDR-1Mbps. Therefore only BDR-1Mbps record in the report.

- 5. The SA setting following :
 - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2) Above 1G:
 - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2.2) For Average measurement : RBW = 1MHz, VBW

If Duty Cycle \geq 98%, VBW=10Hz.

If Duty Cycle < 98%, VBW≥1/T.

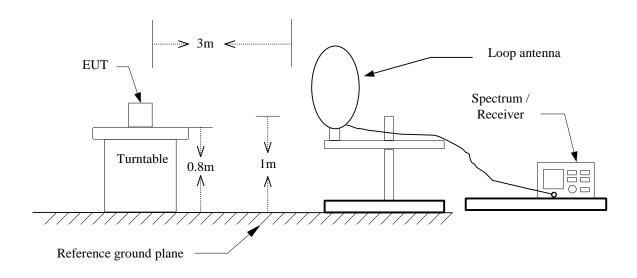


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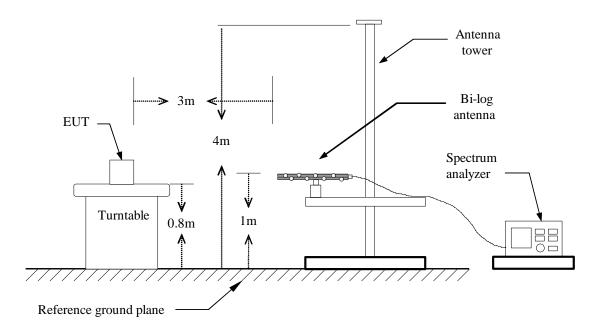
Report No.: T210429C13-RP1

4.8.3 Test Setup

<u>9kHz ~ 30MHz</u>



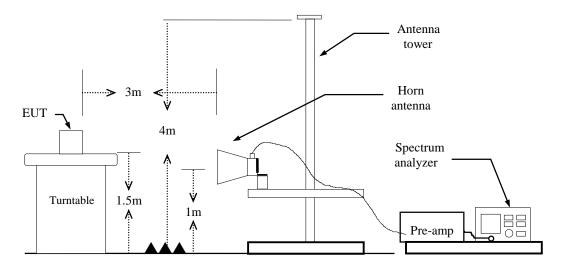
<u>30MHz ~ 1GHz</u>





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Above 1 GHz





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4.8.4 Test Result

Band Edge Test Data

Test M		GFSK_BDR-1M Low CH		Temp/Hum		C)/ 50%RH
Test I	tem	Band Edge		Test Date	June	11, 2021
Polar	ize	Vertical	-	Test Engineer	R	lay Li
Deteo	ctor	Peak / Averag	ge			
120 Level (dB	uV/m)					
110						
90						Λ
70						
50		un man frankt den grenne	mannom		man	him
30					2	
10						
0 <mark></mark> 2310	2330.	2350. Fi	requency (MHz)	2370.	2390.	2410
Freq.	Detector	Spectrum	Factor	Actual	Limit	Morgin
FIEO	Detector	Spectrum	Factor	FS	@3m	Margin
1.04	Mada	Deadlers				
	Mode	Reading Level			-	
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBμV/m	@3m dBµV/m	dB
·		_	dB -1.00		-	dB -29.54

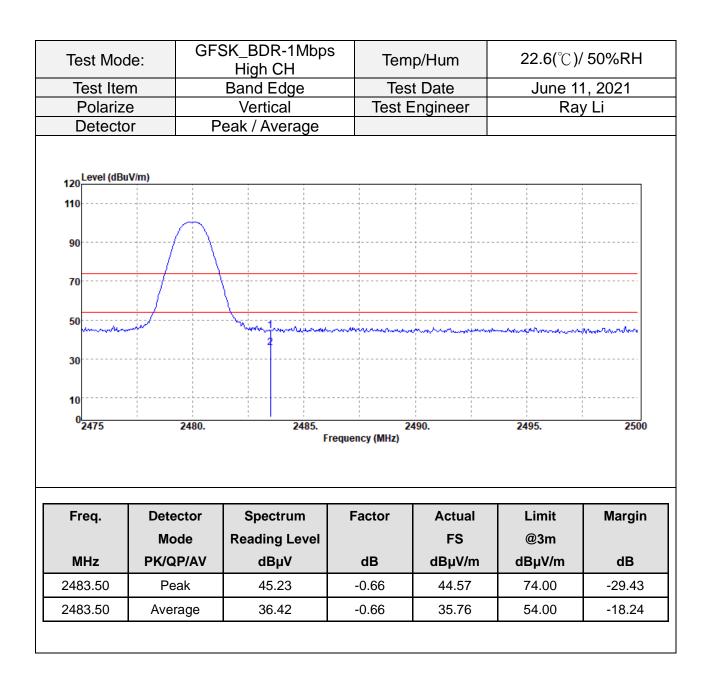


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Test M	lode:	GFSK_BDR-1M Low CH	lbps	Temp/Hum		C)/ 50%RH	
Test I		Band Edge		Test Date	June	June 11, 2021	
Polar	ize	Horizontal		Test Engineer	R	lay Li	
Deteo	ctor	Peak / Avera	ge				
120 Level (dB	uV/m)						
90						A	
70							
50 	manghamma	han marker and the second		humana	uhanna maradati	turne	
30							
10			 			 	
0 <mark></mark> 2310	2330.	2350. F	requency (MHz)	2370.	2390.	2410	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
0000.00	Peak	45.03	-1.00	44.03	74.00	-29.97	
2390.00	1		-1.00	34.17	54.00	-19.83	
2390.00	Average	35.17	-1.00	34.17	54.00	-19.05	



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Test M	lode:	GFSK_BDR-1 High CH		Temp/Hum	22.6(°C	C)/ 50%RH
Test I	tem	Band Edg	e	Test Date	June 11, 2021	
Pola	rize	Horizonta	I T	est Engineer	R	ay Li
Dete	ctor	Peak / Avera	age			
120 Level (dBu 110 90 70 50	IV/m)	Managana				
30					·	
10						
0 <mark>2475</mark>	2480.	2485. F	2 requency (MHz)	490.	2495.	2500
Freq.	Detector Mode	Spectrum Reading Loval	Factor	Actual FS	Limit @3m	Margin
		Reading Level		_		10
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
		45.02	-0.66	44.36	74.00	-29.64
2483.50	Peak	40.02	0.00			20101



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Test M	ode:	GFSK_BDR-1M Low CH Hopp	ing	Temp/Hum		2)/ 50%RH
Test It		Band Edge		Test Date		15, 2021
Polar	ize	Vertical	-	Test Engineer	R	ay Li
Detec	ctor	Peak / Averag	ge			
120 Level (dBi	uV/m)					
110						
90						
70						
50			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~		
30					2	
10						
0 <mark>2310</mark>	2330.	2350. F	requency (MHz)	2370.	2390.	2410
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
		45.27	-1.00	44.27	74.00	-29.73
2390.00	Peak	40.21				

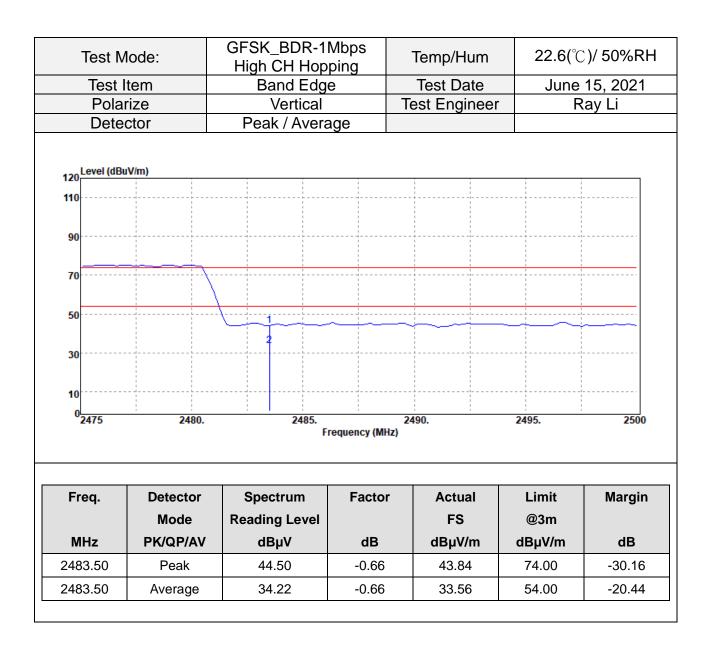


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Test M	ode:	GFSK_BDR-1M Low CH Hopp		Temp/Hum	22.6(°C	2)/ 50%RH
Test It	tem	Band Edge		Test Date	June 15, 2021	
Polar		Horizontal		est Engineer		ay Li
Deteo	ctor	Peak / Averag	ge			
120 Level (dB	uV/m)					
90						
70						
50	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
30					2	
10			 			
0	2330.	2350.	1	2370.	2390.	2410
0 <mark></mark> 2310	2550.	-				
			Factor		1:00:4	Mousie
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Freq.	Detector Mode	Spectrum Reading Level	Factor	FS	@3m	-
	Detector	Spectrum				Margin dB
Freq.	Detector Mode	Spectrum Reading Level	Factor	FS	@3m	-



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Test M	lode:	GFSK_BDR-11 High CH Hop		Temp/Hum	22.6(°C	c)/ 50%RF	
Test I	tem	Band Edge	e	Test Date	June	June 15, 2021	
Pola	rize	Horizonta	9			ay Li	
Dete	ctor	Peak / Avera	ige				
120 Level (dBu	JV/m)	i i		i i			
110		· · · · · · · · · · · · · · · · · · ·					
90		·					
70							
50							
50							
30		2					
10							
0 <mark>2475</mark>	2480.	2485.		2490.	2495.	2500	
		Fi	requency (MHz)				
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
	Mode	Reading Level		FS	@3m		
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.50	Peak	45.04	-0.66	44.38	74.00	-29.62	
2483.50	Average	34.24	-0.66	33.58	54.00	-20.42	



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Frequency (MHZ)
Frequency (MHZ)
Frequency (MHZ)
Frequency (MHZ)
Freq. Detector Spectrum Factor Actual Limit
Freq. Detector Spectrum Factor Actual Limit
Mode Reading Level FS @3m
Mode Reading Level FS @3m
MHz PK/QP/AV dBµV dB dBµV/m dBµV/m
MHz PK/QP/AV dBµV dB dBµV/m dBµV/m



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8DF	PSK_EDR-3Mbp Low CH	S	Temp/Hum	22.6(°C	22.6(℃)/ 50%R	
	Band Edge		Test Date	June	June 11, 2021	
	Horizontal	Te	est Engineer	R	ay Li	
F	Peak / Average					
<u>V/m)</u>						
					A	
monorman	mana	man	an a	warmannews	han	
				2		
2330.	2350. F		2370.	2390.	2410	
			1			
Detector	Spectrum	Factor	Actual	Limit	Margin	
20100101	-					
Mode	Reading Level		FS	@3m		
	-	dB	FS dBµV/m	@3m dBµV/m	dB	
Mode	Reading Level	dB -1.00		•	dB -30.30	
	V/m)	Low CH Band Edge Horizontal Peak / Average	Low CH Band Edge Horizontal Telepeak / Average	Low CH Temp/Hum Band Edge Test Date Horizontal Test Engineer Peak / Average Vm	Low CH Temp/Hum 22.0(C) Band Edge Test Date June Horizontal Test Engineer R Peak / Average Vm) Vim) 2330. 2350. 2330. 2350. 2370. 2330. 2350. Frequency (MHz)	



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Test Moc	le:	8D		_EDR-: igh CH			Temp	22.6(℃)/ 50%F			
Test Iter	n			nd Edg			Test	Date	Jun	June 11, 202	
Polarize	Э			/ertical			Test Er	ngineer		Ray Li	
Detecto	or		Peak	/ Aver	age						
120 Level (dBu	iV/m)					1		1	-		
90									+		
70											
50 munn	-		from	1 minum	gradent and the	manun	www.weight	munahar	a sala and	mhrain	
30						 			 		
10											
0 <mark></mark> 2475	2	2480.	-	2485		ncy (MHz)	2490.	24	495.	2500	
Freq.	Detec	tor	Spe	ectrum	F	actor	Actu	al	Limit	Margin	
MI 1-	Mod			ng Leve		ЧD	FS		@3m		
MHz	PK/QP			Βμν		dB	dBµV/		BµV/m	dB	
2483.50	Pea			4.44		0.66	43.7		74.00	-30.22	
2483.50	Avera	ige	3	5.79	-	0.66	35.1	3	54.00	-18.87	



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Detector Peak / Average 120 Level (dBuV/m) 110		Temp/Hum 22.6(°C)	22.6(°℃)/ 50%F	
Polarize Horizontal Test Engineer Detector Peak / Average Image: Constraint of the second seco		Test Date June 1	11, 202	
Detector Peak / Average 120 Level (dBuV/m) 110			ay Li	
110 110 90 10 70 10 90 <td></td> <th></th> <td></td>				
110 110 90 10 70 10 90 10 90 10 92475 2480. 2485. 2490. Frequency (MHz) 2490. Frequency (MHz)				
90 90 70 90 70 90 90 90 70 90 90				
Freq. Detector Spectrum Reading Level Factor Actual FS				
30 2 30 2 10 2 2475 2480. 2485. 2490. Frequency (MHz)				
10 2475 2480. 2485. 2490. Frequency (MHz) Frequency (MHz) Frequency (MHz) Freq. Detector Spectrum Factor Actual Mode Reading Level FS	ww	- Martin Ma	handhan	
0 2475 2480. 2485. 2490. Frequency (MHz) Frequency (MHz)				
Frequency (MHZ) Freq. Detector Spectrum Factor Actual Mode Reading Level FS				
Frequency (MHZ) Freq. Detector Spectrum Factor Actual Mode Reading Level FS		2490. 2495.	2500	
Mode Reading Level FS	:y (N	инz)		
	cto	or Actual Limit	Margin	
		FS @3m		
	dΒ	dBµV/m dBµV/m	dB	
2483.50 Peak 45.36 -0.66 44.70).66	6 44.70 74.00	-29.30	
2483.50 Average 34.87 -0.66 34.21).66	6 34.21 54.00	-19.79	



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Test Mod	de:	8	DPSK_EDR-3N Low CH Hoppi		Temp/Hur	m 22.0	22.6(°C)/ 50%F	
Test Iter	m		Band Edge		Test Date		ine 15, 2021	
Polarizo	е		Vertical		Test Engine	eer	Ray Li	
Detecto	or		Peak / Averag	je				
120 Level (dBu 110	uV/m)					2		
10								
10 0		2330.	2350.	requency (MUz)	2370.	2390.	2410	
0_2310 Freq.	Mc	ector ode	F Spectrum Reading Level	Frequency (MHz) Factor	Actual FS	Limit @3m	Margin	
0 ₂₃₁₀ Freq. MHz	Ma PK/Q	ector ode IP/AV	F Spectrum Reading Level dBμV	Factor	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB	
0_2310 Freq.	Ma PK/Q	ector ode	F Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin	



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Test Mod	de:		DPSK_EDR-3N Low CH Hoppi		Temp/Hur	n 22.	.6(℃)/ 50%R
Test Iter	m		Band Edge		Test Date	3 JI	une 15, 2021
Polariz	е		Horizontal		Test Engineer		Ray Li
Detecto	or		Peak / Averag	je			
120 Level (dBr 110	uV/m)						
70							
50	~~~~						~~~
30							
10						2	
		2330.	2350.		2370.	2	2410
10 0 2310	Dot		F	Frequency (MHz)			
10		ector	F	Frequency (MHz)	Actual	Limit	2410 Margin
10 0 2310 Freq.	Мо	ector ode	F Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
10 0 2310 Freq. MHz	Ma PK/G	ector ode QP/AV	F Spectrum Reading Level dBμV	Factor	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
10 0 2310 Freq.	Ma PK/G	ector ode	F Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin



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Test Mod	de:			_EDR-3M CH Hoppi		Temp/Hu	m 22.6	22.6(℃)/ 50%F	
Test Iter	m			nd Edge	-	Test Dat	e Ju	June 15, 202	
Polariz				ertical		Test Engin	Ray Li		
Detecto	or		Peak	/ Averag	е				
120	uV/m)								
110					 		 	 	
90						· · · · · · · · · · · · · · · · · · ·			
70							 		
50				1	~~				
30				2					
50									
10									
0 <mark></mark> 2475	1	2480.	2485.		2490. 2495.				
					requency (MHz)				
Freq.	Dete	ctor	Spe	ectrum	Factor	Actual	Limit	Margin	
	Мо		Reading Level			FS	@3m	J	
MHz	PK/Q			BμV	dB	dBµV/m	dBµV/m	dB	
2483.50	Pe	ak		4.70	-0.66	44.04	74.00	-29.96	
2483.50	Aver	age	3,	4.30	-0.66	33.64	54.00	-20.36	
							1		



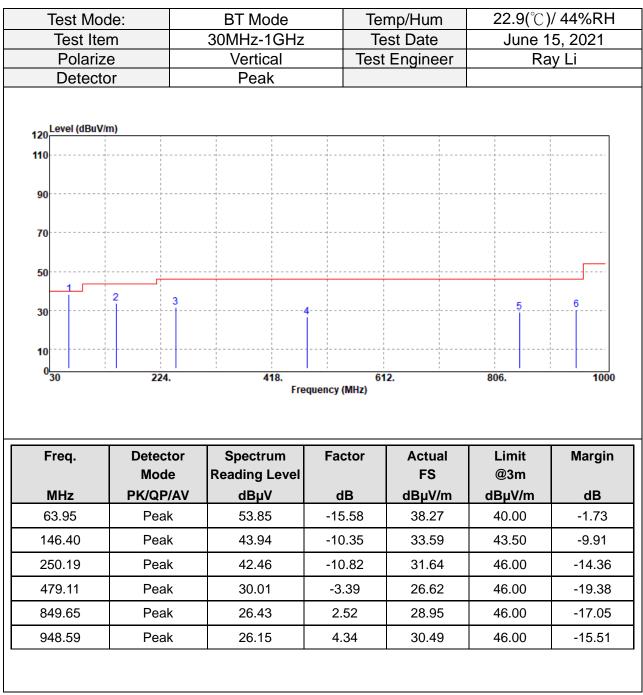
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MHz	PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB	
rieq.	Mode	-	i dotoi	FS	@3m	margin	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin	
		·	i cquency (miliz)				
0 2475	2480.	2485.	Frequency (MHz)	2490.	2495.	2500	
10							
30		4	 				
50							
70		\					
90							
110							
120	,						
120	uV/m)						
Detecto	or	Peak / Averag	je				
Polariz		Horizontal		Test Engine	eer	Ray Li	
Test Ite	m	Band Edge		Test Date	e Jun	e 15, 202 ⁻	
Test Mod	de:	8DPSK_EDR-3N High CH Hopp		Temp/Hur	m 22.6(22.6(°C)/ 50%I	



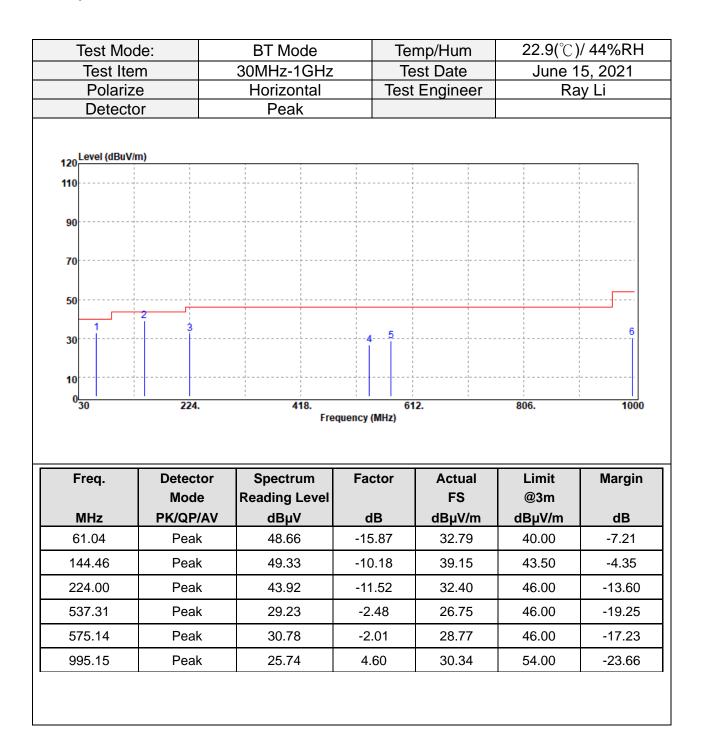
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Below 1G Test Data





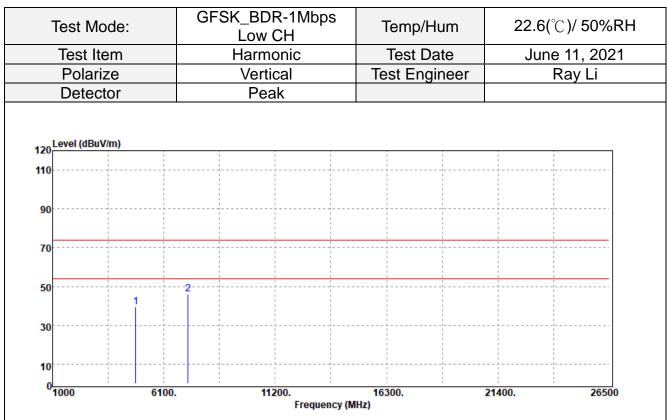
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Above 1G Test Data



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	33.69	5.62	39.31	74.00	-34.69
7206.00	Peak	32.78	13.13	45.91	74.00	-28.09
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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Test Mo	de:	GFSK_BDR-1Mt Low CH	ops Te	mp/Hum	22.6(°C)	/ 50%RH
Test Ite	m	Harmonic	Te	est Date	June 1	1, 2021
Polariz	e	Horizontal	Test	Engineer		ıy Li
Detecto	or	Peak				
120 <mark>Level (dBuV/</mark>	m)			1		
110	 			 		
90						
70						
50	1 2					
30				 		
10						
0 <u>1000</u>	6100.	11200. Freq	16300 uency (MHz)		21400.	26500
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
-	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	/ dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	34.52	5.62	40.14	74.00	-33.86
7206.00	Peak	32.44	13.13	45.57	74.00	-28.43

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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Test Mo	ode:	GFSK_BDR-1M Mid CH	^{1bps} Te	Temp/Hum)/ 50%RH	
Test Ite	em	Harmonic	Te	est Date	June 1	1, 2021	
Polari	ze	Vertical	Tes	t Engineer		Ray Li	
Detec	tor	Peak					
120	//m)						
110							
90							
70							
50	1	2					
30							
10							
0 <mark>1000</mark>	6100.	11200. Fre	1630 equency (MHz)) .	21400.	26500	
Freq.	Detect	or Spectrum	Factor	Actual	Limit	Margin	

Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4882.00	Peak	33.03	5.99	39.02	74.00	-34.98
7323.00	Peak	31.87	13.20	45.07	74.00	-28.93
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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Test Mo	de: G	FSK_BDR-1Mb Mid CH	ps Te	mp/Hum	22.6(°C)	/ 50%RH
Test Ite	m	Harmonic		est Date		1, 2021
Polariz	e	Horizontal	Tes	t Engineer	Ra	y Li
Detecto	or	Peak				
120 Level (dBuV/	m)					
90						
70						
50	1					
30						
10				 		
0 <mark></mark>	6100.	11200.	16300	; D.	21400.	26500
		Frequ	ency (MHz)			
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4882.00	Peak	32.89	5.99	38.88	74.00	-35.12
7323.00	Peak	31.71	13.20	44.91	74.00	-29.09
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



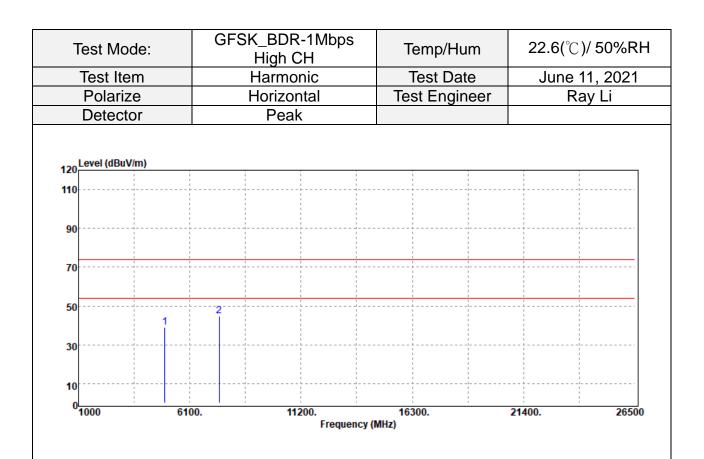
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Test Mod	de:	GFSK_BDR-1Mb High CH	ps Te	mp/Hum	22.6(°C).	/ 50%RH	
Test Ite	m	Harmonic		est Date	June 1	June 11, 2021	
Polariz	е	Vertical	Tes	t Engineer	Ra	y Li	
Detecto	or	Peak					
120 Level (dBuV/ 110 90	m)						
70							
50	1						
30							
10				 			
0 <mark></mark>	6100.	11200.	1630).	21400.	26500	
		Frequ	iency (MHz)				
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	PK/QP/AV		dB	dBµV/m	dBµV/m	dB	
4960.00	Peak	31.76	6.73	38.49	74.00	-35.51	
7440.00	Peak	31.95	13.13	45.08	74.00	-28.92	
N/A							
				1	+		

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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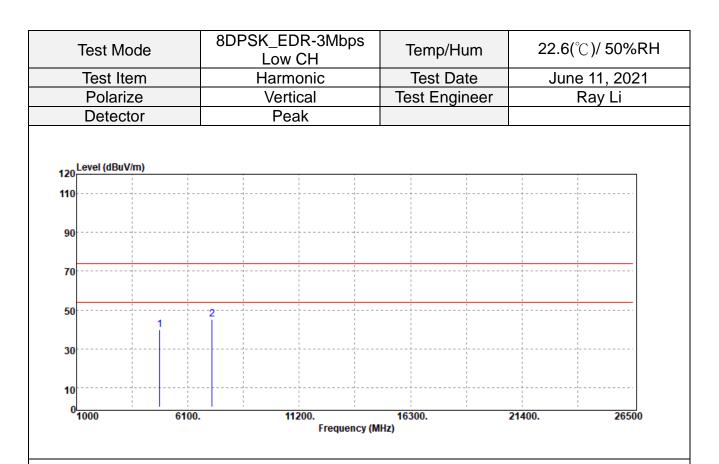


Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	32.46	6.73	39.19	74.00	-34.81
7440.00	Peak	31.86	13.13	44.99	74.00	-29.01
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	34.32	5.62	39.94	74.00	-34.06
7206.00	Peak	32.28	13.13	45.41	74.00	-28.59
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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Test Mo	ode	8DPSK_EDR-3N Low CH	/lbps Te	emp/Hum	22.6(°∁)	/ 50%RH
Test Ite	em	Harmonic	Т	est Date	June 1	1, 2021
Polari	ze	Horizontal	Tes	t Engineer		y Li
Detec	tor	Peak				
120	//m)					
110					· · · · · · · · · · · · · · · · · · ·	
90						
70						
50	1	2				
30		-				
10						
0 <mark></mark> 1000	6100.		1630 equency (MHz)	0.	21400.	26500
Freq.	Detect Mode		Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/	/AV dBµV	dB	dBµV/m	dBµV/m	dB
4804.00	Peak	x 34.40	5.62	40.02	74.00	-33.98
7206.00	Peak	x 33.26	13.13	46.39	74.00	-27.61
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



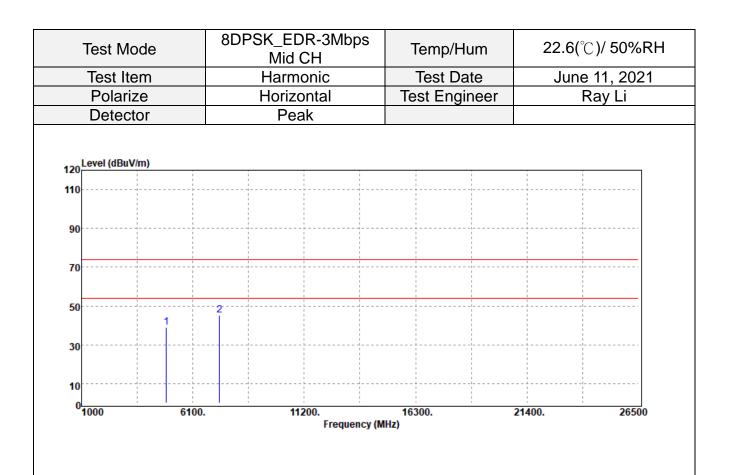
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Test Mo	de 8	DPSK_EDR-3Mb Mid CH	ops Te	mp/Hum		22.6(℃)/ 50%RH	
Test Ite	m	Harmonic		est Date	June 1	1, 2021	
Polariz	е	Vertical	Test	Engineer	Ra	y Li	
Detecto	or	Peak					
120 Level (dBuV/	m)						
110							
90							
70							
50	1 2						
30							
10							
0 <u> </u>	6100.	11200. Frequ	1630(ency (MHz)).	21400.	26500	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
4882.00	Peak	34.16	5.99	40.15	74.00	-33.85	
7323.00	Peak	31.54	13.20	44.74	74.00	-29.26	
N/A							

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4882.00	Peak	33.11	5.99	39.10	74.00	-34.90
7323.00	Peak	31.90	13.20	45.10	74.00	-28.90
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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Test Mo	de 81	8DPSK_EDR-3Mbps High CH		mp/Hum	22.6(℃)/ 50%RH	
Test Ite	m	Harmonic		est Date	June 11, 2021	
Polariz	e	Vertical		t Engineer	Ray Li	
Detect	or	Peak				
120 <mark>Level (dBuV/</mark> 110	m)					
90						
70						
50	2					
30				 		
10				·		
0 <mark></mark> 1000	6100.	11200. Frequ	16300 iency (MHz)).	21400.	26500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	32.75	6.73	39.48	74.00	-34.52
7440.00	Peak	31.05	13.13	44.18	74.00	-29.82
				1		
N/A						

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit



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Test Mo	ue	8DPSK_EDR-3Mbps High CH		mp/Hum	22.6(℃)/ 50%RH	
Test Ite	m	Harmonic		est Date	June 11, 2021	
Polariz	e	Horizontal		t Engineer	Ray Li	
Detecto	or	Peak				
120	m)					
110						
90						
70						
10						
50	1					
30						
10						
0 <mark></mark>	6100.	11200. Frequ	1630 Jency (MHz)	D.	21400. 26500	
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4960.00	Peak	33.17	6.73	39.90	74.00	-34.10
7440.00	Peak	32.05	13.13	45.18	74.00	-28.82
N/A						

Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

- End of Test Report -