



FCC ID: GKR425338 Report No.: T210413W01-RP1 IC: 2533B-425338

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

Test Standard	FCC Part 15.247 IC RSS-247 issue 2 and IC RSS-GEN issue 5
Product name	Tablet
Brand Name	ICON/iFit
Model No.	MP7-ARGON2-C
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 Ison

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 23, 2021	Initial Issue	ALL	Allison Chen
01	August 2, 2021	See the following Note Rev.(01)	P.18, 19, 34	Allison Chen

Note:

Rev.(01)

1. Modified test procedure SA setting and test result value table of EDR-2Mbps mode in section 4.2.

2. Modified test procedure setting in section 4.5.2.



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	RADIATION BANDEDGE AND SPURIOUS EMISSION



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## **1. GENERAL INFORMATION**

## **1.1 EUT INFORMATION**

FCC ApplicantCompal Electronics IncNo.581 & 581-1, Ruiguang Rd., Neihu District, Taipei city, Taiwan					
IC Applicant COMPAL ELECTRONICS INC. No. 581 & 581-1, Ruiguang Rd,, Neihu District Taipei R.O.C 114 Taiwan					
Manufacturer	Compal Electronics Inc No.581 & 581-1, Ruiguang Rd., Neihu District, Taipei city, 11492 Taiwan				
Equipment	Tablet				
Model No.	MP7-ARGON2-C				
Model Discrepancy	N/A				
Trade Name	ICON/iFit				
Received Date	April 13, 2021				
Date of Test	June 29 ~ July 8, 2021				
Power Operation	EUT Power from Power Supply. (DC12V)				
HW Version	LA-L511P				
SW Version	Android 9				
EUT Serial #	Conducted Emission: PP41D304791 Radiated Emission: PP41D304792				

Remark:

1. For more details, 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.



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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	<ol> <li>GFSK for BDR-1Mbps</li> <li>π/4-DQPSK for EDR-2Mbps</li> <li>8DPSK for EDR-3Mbps</li> </ol>
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	PIFA PCB Dipole Coils
Antenna Gain	1.95 dBi
Antenna Connector	IPEX

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.



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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~1G (Horizontally)	+/- 3.91
3M Semi Anechoic Chamber / 30M~1G (Vertically)	+/- 4.57
3M Semi Anechoic Chamber / 1G~6G	+/- 5.20
3M Semi Anechoic Chamber / 6G~18G	+/- 5.18
3M Semi Anechoic Chamber / 18G~40G	+/- 3.68

#### 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	N/A	Not applicable, because EUT doesn't connect to AC Main Source direct.
Radiation	Ray Li	-
RF Conducted	Lance Chen	-

**Remark:** The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## **1.7 INSTRUMENT CALIBRATION**

3M 966 Chamber Test Site						
Equipment	Manufacturer	Model	S/N	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	Software e3 6.11-20180419c					

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



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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	
Power Meter	Anritsu	ML2487A	6K00003260	05/24/2021	05/23/2022	
Power Seneor	Anritsu	MA2490A	032910	05/24/2021	05/23/2022	
Software	Radio Test Software					

**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.	No. Equipment Brand Model Series No. FCC ID						
	N/A						

	Support Equipment					
No.	No. Equipment Brand Model Series No. FCC ID					
1	Adapter	WEIHAI POWER	HAS060123-EA	N/A	N/A	

## **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: 1.Lowest Channel: 2402MHz 2.Middle Channel: 2480MHz 8DPSK for EDR-3Mbps: 1.Lowest Channel: 2402MHz 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	<ul> <li>Placed in fixed position.</li> <li>Placed in fixed position at X-Plane (E2-Plane)</li> <li>Placed in fixed position at Y-Plane (E1-Plane)</li> </ul>		

Radiated Emission Measurement Below 1G				
Test Condition	Test Condition Radiated Emission Below 1G			
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 two axis ,X,Y and two polarity, for radiated measurement. The worst case(Y-Plane) were recorded in this report



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# 3.3 EUT DUTY CYCLE

Temperature:	25.6°C	Tested by:	Lance Chen
Humidity:	48% RH	Test date:	June 29, 2021

Duty Cycle					
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)	
BDR-1Mbps-DH1	30.40	5.17	2.63	3.00	
BDR-1Mbps-DH3	65.20	1.86	0.61	1.00	
BDR-1Mbps-DH5	76.80	1.15	0.35	1.00	





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Duty Cycle					
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)	
EDR-2Mbps-DH1	30.80	5.11	2.60	3.00	
EDR-2Mbps-DH3	65.20	1.86	0.61	1.00	
EDR-2Mbps-DH5	77.20	1.12	0.35	1.00	





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Duty Cycle					
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)	
EDR-3Mbps-DH1	31.20	5.06	2.56	3.00	
EDR-3Mbps-DH3	65.60	1.83	0.61	1.00	
EDR-3Mbps-DH5	77.20	1.12	0.35	1.00	





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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	

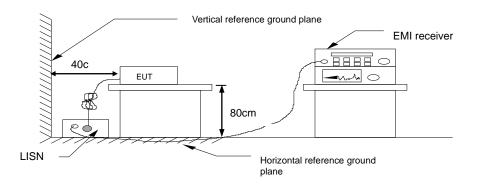
\* Decreases with the logarithm of the frequency.

## 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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## 4.2 20dB 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.

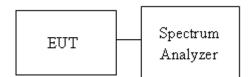
**Occupied Bandwidth(99%)** : For reporting purposes only.

### 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 = 30kHz, VBW = 100kHz and Detector = Peak, to measurement 20 dB Bandwidth.
- 4. 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:	25.6°C	Tested by:	Lance Chen
Humidity:	48% RH	Test date:	June 29, 2021

Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz					
Channel	Frequency (MHz)	OBW(99%) (MHz)	20 dB BW (MHz)	2/3 BW (MHz)	
Low	2402	0.90621	1.043	0.70	
Mid	2441	0.90535	1.04	0.69	
High	2480	0.90482	1.04	0.69	

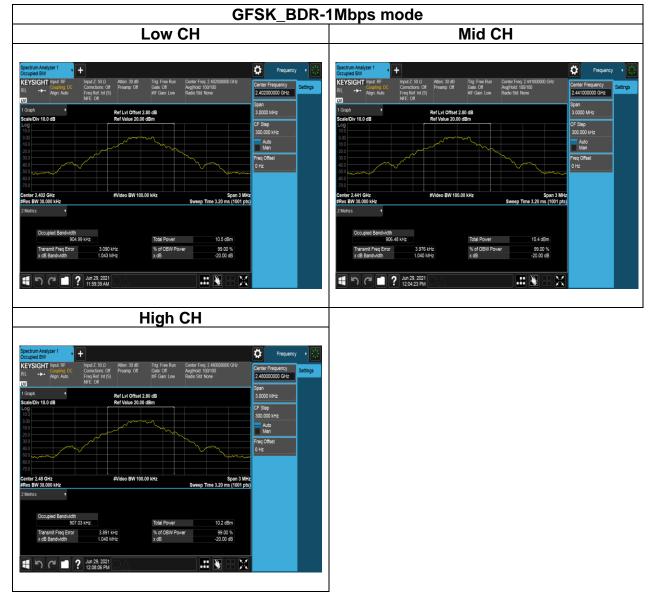
Test mode: $\pi$ /4-DQPSK_EDR-2Mbps mode / 2402-2480 MHz								
Channel	Frequency (MHz)	OBW(99%) (MHz)	20 dB BW (MHz)	2/3 BW (MHz)				
Low	2402	1.1678	1.292	0.86				
Mid	2441	1.1688	1.289	0.86				
High	2480	1.1676	1.289	0.86				

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz							
Channel	Frequency (MHz)	OBW(99%) (MHz)	20 dB BW (MHz)	2/3 BW (MHz)			
Low	2402	1.1751	1.293	0.86			
Mid	2441	1.1754	1.292	0.86			
High	2480	1.1760	1.298	0.87			



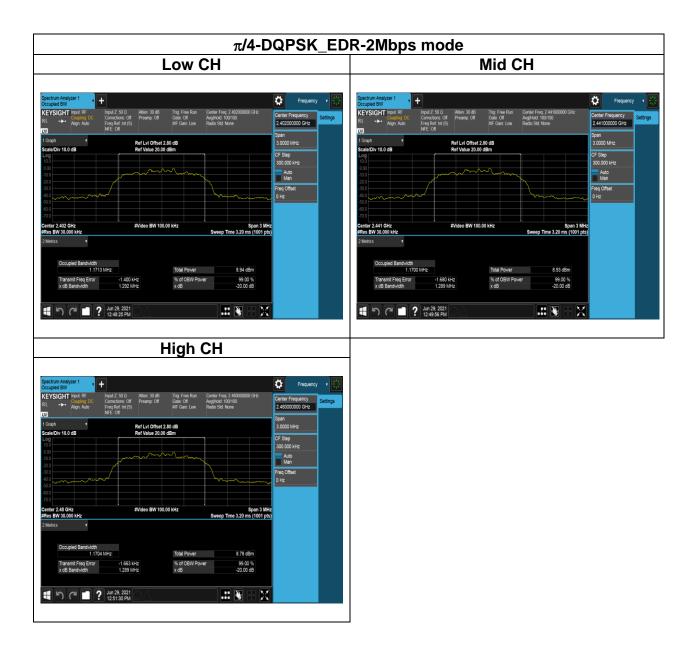
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## Test Data 20dB BANDWIDTH



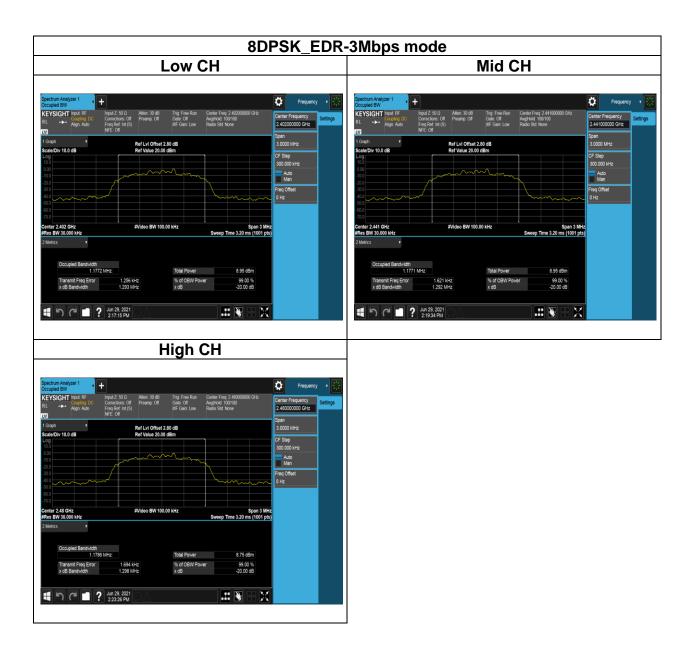


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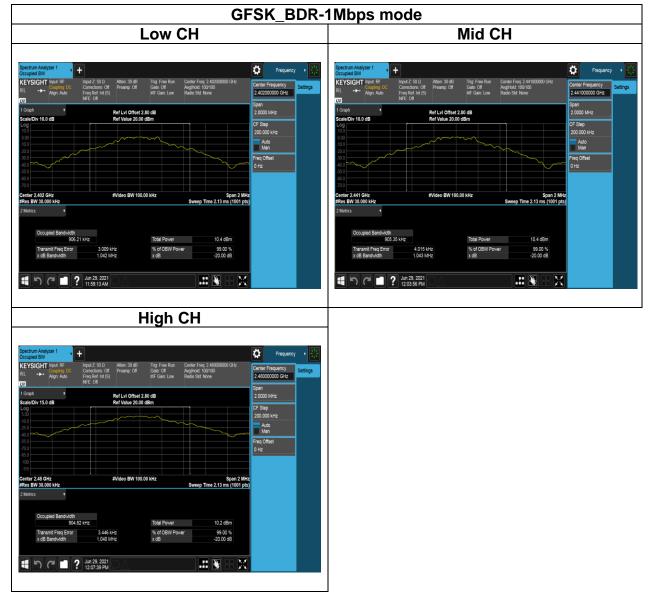
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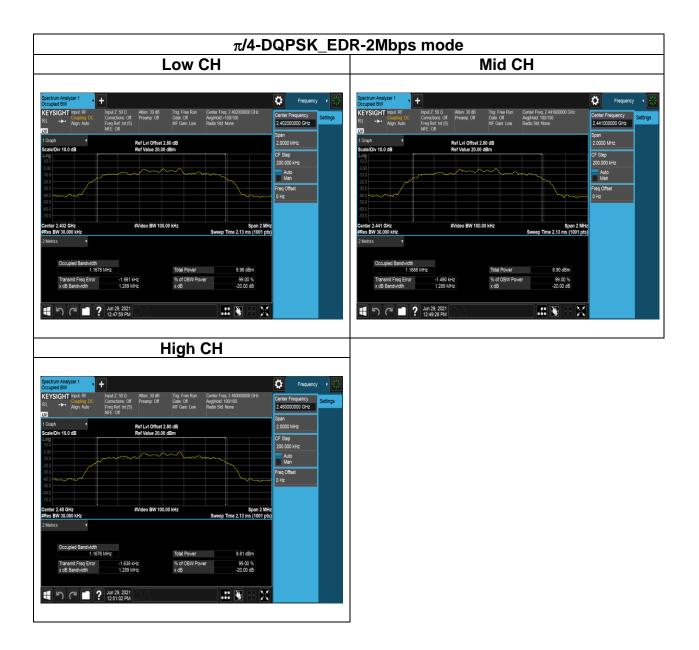
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## Test Data BANDWIDTH 99%



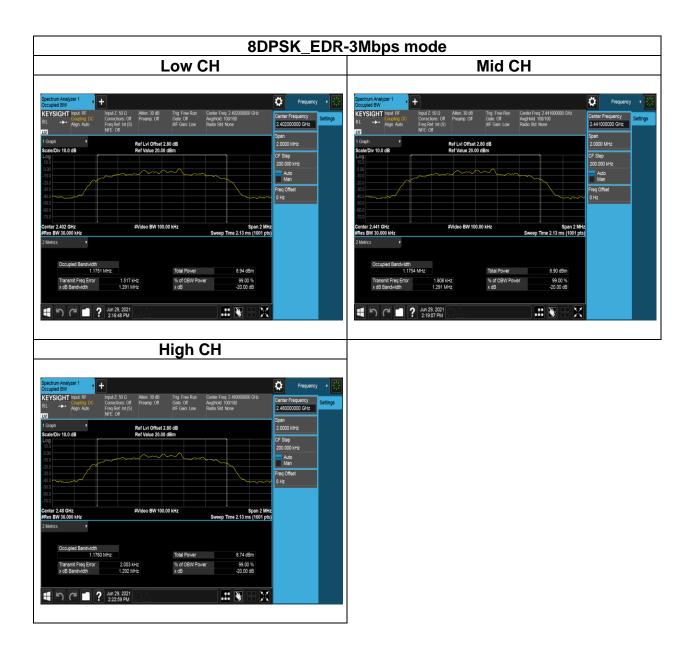


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## 4.3 OUTPUT POWER MEASUREMENT

### 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).



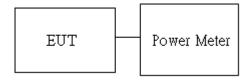
Antenna not exceed 6 dBi : 21dBm
 Antenna with DG greater than 6 dBi : 21dBm [Limit = 30 – (DG – 6)]

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:	25.6°C	Tested by:	Lance Chen
Humidity:	48% RH	Test date:	June 29, 2021

#### Peak output power :

1M BR mode (Peak):

СН	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	3.93	2.472	125
Mid	2441	default	3.87	2.438	125
High	2480	default	3.78	2.388	125

#### 2M EDR mode (Peak):

СН	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	3.62	2.301	125
Mid	2441	default	3.61	2.296	125
High	2480	default	3.54	2.259	125

#### 3M EDR mode (Peak):

СН	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	3.74	2.366	125
Mid	2441	default	3.75	2.371	125
High	2480	default	3.62	2.301	125



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#### Average output power :

#### 1M BR mode (Average):

СН	Freq. (MHz)	Power set	Max. Output include tune up tolerance Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	3.54	2.258	125
Mid	2441	default	3.56	2.268	125
High	2480	default	3.47	2.221	125

#### 2M EDR mode (Average):

СН	Freq. (MHz)	Power set	Max. Avg.Output include tune up tolerance Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	1.11	1.292	125
Mid	2441	default	1.10	1.289	125
High	2480	default	1.02	1.266	125

#### 3M EDR mode (Average):

СН	Freq. (MHz)	Power set	Max. Avg.Output include tune up tolerance Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	1.07	1.280	125
Mid	2441	default	1.08	1.283	125
High	2480	default	1.01	1.262	125

\*Note: Max. Output include tune up tolerance Power measured by using average detector.



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### EIRP :

#### 1M BR mode EIRP

Channel	Frequency (MHz)	Power set	Max. Output include tune up tolerance Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	default	3.54	1.95	3.537	4000
Mid	2441	default	3.56	1.95	3.553	4000
High	2480	default	3.47	1.95	3.480	4000

#### 2M EDR mode EIRP

Channel	Frequency (MHz)	Power set	Max. Avg.Output include tune up tolerance Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	default	1.11	1.95	2.025	4000
Mid	2441	default	1.10	1.95	2.020	4000
High	2480	default	1.02	1.95	1.983	4000

#### 3M EDR mode EIRP

Channel	Frequency (MHz)	Power set	Max. Avg.Output include tune up tolerance Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	default	1.07	1.95	2.005	4000
Mid	2441	default	1.08	1.95	2.010	4000
High	2480	default	1.01	1.95	1.978	4000

\* Note: EIRP = Average Power + Gain



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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)

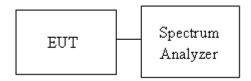
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 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 = 100kHz, VBW = 100kHz, 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:	25.6°C	Tested by:	Lance Chen
Humidity:	48% RH	Test date:	June 29, 2021

Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz						
ModeFrequency (MHz)20dB Bandwidth (MHz)Channel Separation (MHz)Channel Separation Limits (MHz)Channel Separation Limits (MHz)						
DH5	2402	1.043	1.0000	0.70	PASS	
	2441	1.04	1.0000	0.69	PASS	
	2480	1.04	1.0000	0.69	PASS	

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz						
ModeFrequency (MHz)20dB Bandwidth (MHz)Channel Separation (MHz)Channel Separation (MHz)					Result	
3DH5	2402	1.293	1.0000	0.86	PASS	
	2441	1.292	1.0000	0.86	PASS	
	2480	1.298	1.0000	0.87	PASS	



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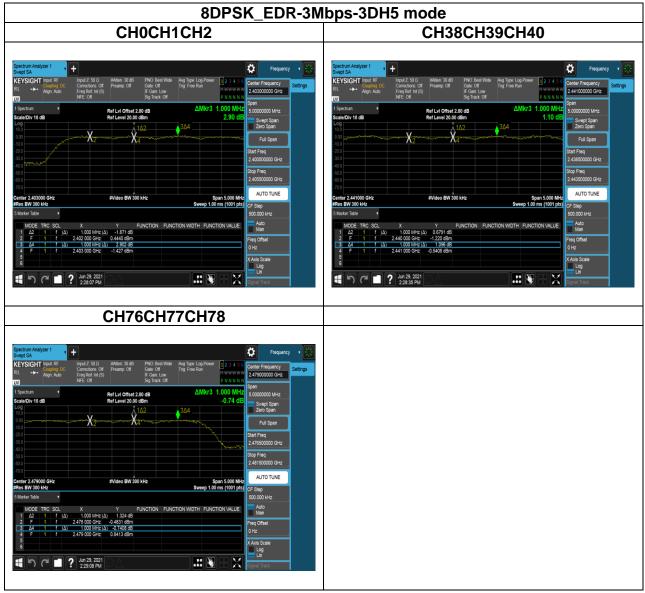
## Test Data





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## Test Data





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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.

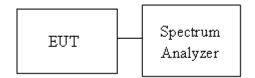
2. EUT RF output port connected to the SA by RF cable.

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



## 4.5.4 Test Result

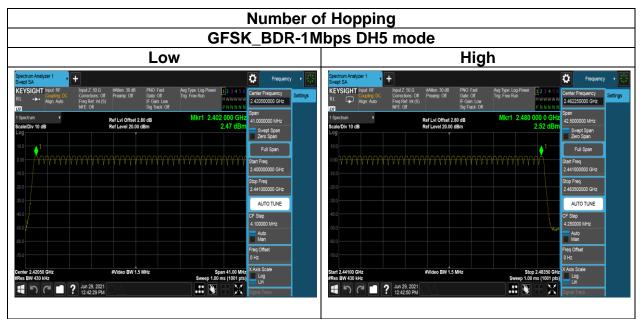
Temperature:	25.6°C	Tested by:	Lance Chen
Humidity:	48% RH	Test date:	June 29, 2021

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



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## Test Data



		Low			Hig	h	
Coupling DC Co Align: Auto Fre NF	rrections: Off Preamp: Off G q Ref: Int (S)	NO First Aug Type Log-Power iate: Off Trig: Free Run Gam Low ig Track: Off	Frequency     Frequency     Frequency     Frequency     Settings     Soan	1.01	input Z 50 0 #Atten 30 dB PNO Fiest Correctors: Off Preamp: Off Gate Off Fing Ref Int (S) IF Gan. Low NFE: Off Sig Track: Off	Avg Type: Log-Power 2 2 3 4 5 6 Ting: Free Run P N N N N	Center Frequency Center Frequency 2.462250000 GHz
ectrum •	Ref Lvi Offset 2.80 d Ref Level 20.00 dBm	B Mkr1 2.402	0.20 dBm Zero Span	1 Spectrum   Scale/Div 10 dB Log	Ref LvI Offset 2.80 dB Ref Level 20.00 dBm	Mkr1 2.480 000 0 GHz 0.21 dBm	42.5000000 MHz Swept Span Zero Span
	ᡐᡗᠯ᠋ᢞᡊ᠆ᡗᡟᡧᡘᡅᡐ᠆ᢩᢣ᠊ᡧᡐᢩ	ᠵᡗᡇᡏᡐᠬᡗᡗᢦ᠊ᠧᡊᡃᡭᡊᡎᡘᡊ᠇ᢧᢇᢦ᠇ᢦᠬ	Full Span	10.0 0.00 \\ .10.0	www.warana	~~~~	Full Span Start Freq 2.441000000 GHz
			Stop Freq 2.441000000 GHz	-20.0			Stop Freq 2.483500000 GHz
			CF Step 4.100000 MHz	-40.0			CF Step 4.250000 MHz
			Auto Man Freq Offset 0 Hz	-60.0			Auto Man Freq Offset 0 Hz
er 2.42050 GHz BW 430 kHz	#Video BW 1.5 MHz	z Sp Sweep 1.00	an 41.00 MHz X Axis Scale ms (1001 pts)	Start 2.44100 GHz #Res BW 430 kHz 특 이 여 미 ?	#Video BW 1.5 MHz	Stop 2.48350 GHz Sweep 1.00 ms (1001 pts)	X Axis Scale



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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	
-------	---------	--

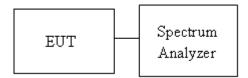
### 4.6.2 Test Procedure

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





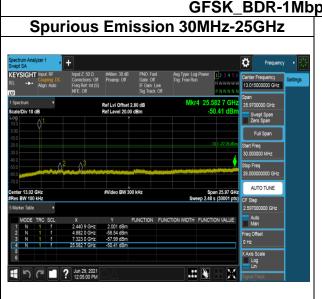
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## 4.6.4 Test Result

Temperature:	25.6°C	Tested by:	Lance Chen
Humidity:	48% RH	Test date:	June 29, 2021

### Test Data

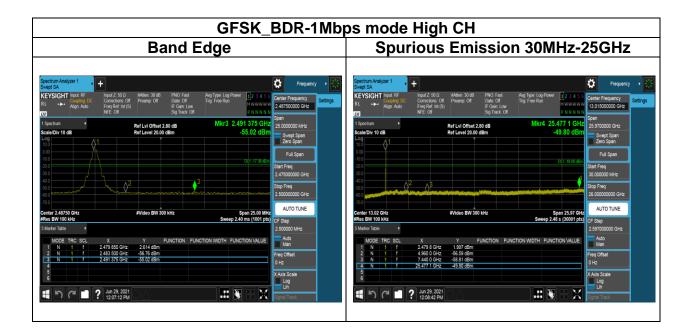
	Band E	dge		ps mode Spuri		ssior	n 30MHz-2	25GHz
Coupling: DC Coupling: Auto Free	#7.50.0. #Atten:30.d8 PNO Fast rectors: 01 Preamp: 01 Gate 08 Ref ht (S) ⊮ Gan Low Sig Track 011	Aug Type: Log-Power 23456 Trig: Free Run MWWWWW PNNNNN	Center Frequency • K	Spectrum Analyzer 1 Swept SA KEYSIGHT Input: RF RL → Gouping DC Align: Auto	Input Z: 50 0 #Atten: 30 dB Correctors: Off Frea Ref. Int (S) NFE: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	Aug Type: Log Power 123456 Trig: Free Run P.N.N.N.N	Frequency  Center Frequency 13.015000000 GHz Span
Implicit         Implicit           Implicit         10 dB           Implicit         Implicit           Implicit         Implicit <td>Ref Level 200 dB</td> <td>Mkr2 2.400 00 GHz -53.99 dBm 0 (1-17.33 dbm</td> <td>Span 110 000000 MHz Swept Span Full Span Start Freq 2.310000000 GHz Stop Freq 2.42000000 GHz</td> <td>1 Sportrum  Scala/Div 10 dB  Log  10  .00  .00  .00  .00  .00  .00  .00</td> <td>Ref Lvi Offset 2 Ref Level 20.00</td> <td></td> <td>Mkr4 25.365 5 GHz -50.61 dBm D(1-1797-86m</td> <td>Span 25.9700000 GHz Swept Span Zero Span Full Span Start Freq 30.000000 MHz Stop Freq 26.00000000 GHz</td>	Ref Level 200 dB	Mkr2 2.400 00 GHz -53.99 dBm 0 (1-17.33 dbm	Span 110 000000 MHz Swept Span Full Span Start Freq 2.310000000 GHz Stop Freq 2.42000000 GHz	1 Sportrum  Scala/Div 10 dB  Log  10  .00  .00  .00  .00  .00  .00  .00	Ref Lvi Offset 2 Ref Level 20.00		Mkr4 25.365 5 GHz -50.61 dBm D(1-1797-86m	Span 25.9700000 GHz Swept Span Zero Span Full Span Start Freq 30.000000 MHz Stop Freq 26.00000000 GHz
	FV1deo BW 300 MHz Y FUNCTION FUN 2 18 GHz 2577 dBm 0 00 GHz -53 \$9 dBm	Span 110.9 MHJ Sweep 10.5 ms (1001 pts) CTION WIDTH FUNCTION VALUE	AUTO TUNE GF Step 11 JODOD MHz Auto Man Freq Offset 0 Hz X Auto Scale Ling		X         Y           2.401 9 GHz         2.032 dBm           4.804 0 GHz         -57.58 dBm           7.266 GHz         -57.38 dBm           7.265 GHz         -50.61 dBm		Span 25.97 GHz Sweep 2.48 s (30001 pts) TION WIDTH FUNCTION VALUE	AUTO TUNE CF Step 2.597000000 GHz Auto Man Freq Offset 0 Hz X.Axis Scale Lin

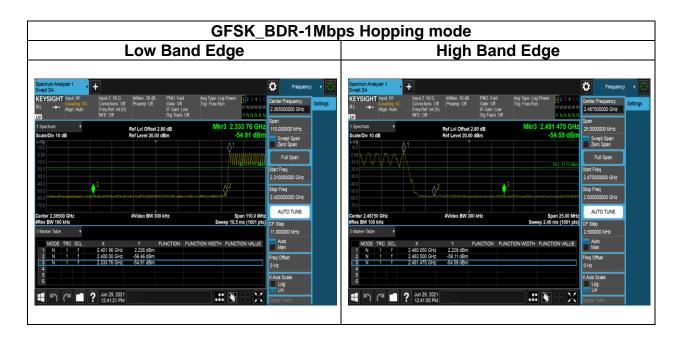


# GFSK\_BDR-1Mbps mode Mid CH



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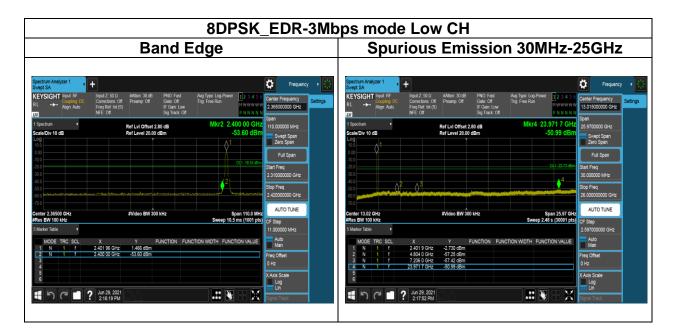


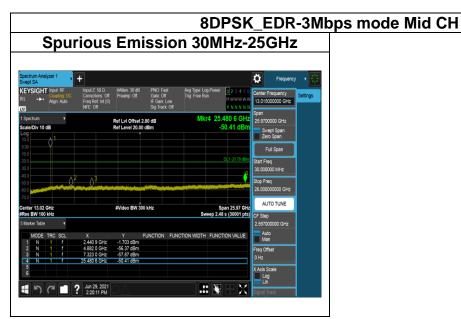
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$\pi$ /4 DQPSK_EE	DR-2Mbps mode
Spurious Emission 30MHz-25GHz	Spurious Emission 30MHz-25GHz
Low CH	Mid CH
Spectrum Analyzer 1       Image: Construction of the sector	Socktorm Analyzer 1       Implicit 250.0       Book 250.00       Book 250.00
Spectrum Analyzer 1         Image 12:00 D         Production: 00 B         Production: 00 B<	



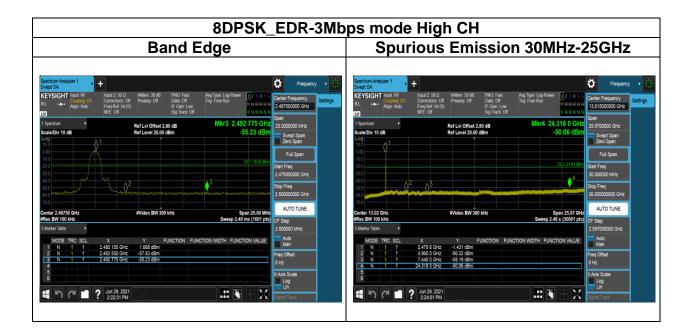
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RL         Appr Aug         Concluse CII         The prevent of the prevent of the concluse CII         The prevent of the co	Section         Production		Low Band	d Edge			High	Band Edg	je	
Agen Add         Program         South Cold         P N IN IN IN         248000000 CHz           Statution         P N IN IN IN         South Cold         P N IN IN IN         248000000 CHz         South Cold         P N IN IN IN         248000000 CHz	The state in the second of the seco	KEYSIGHT Input: RF Input: RF Coupling: DC Core	rections: Off Preamp: Off Gate: Off	Avg Type: Log-Power 12 3 4 5 6 Cer	Inter Frequency Settings	Swept SA  KEYSIGHT Input: RF Coupling: DC C	Corrections: Off Preamp: Off	Gate: Off Trig: Free Run	Power 123456	Center Frequency
100         100         100         000 <td>No         Find         Start Freq         Start Freq</td> <td>spectrum v</td> <td>E Off Sig Track: Off Ref Lvi Offset 2.80 dB</td> <td>PNNNNN Mkr3 2.349 49 GHz 11</td> <td>an 10.000000 MHz Swept Span</td> <td>Align Auto H</td> <td>Ref Lvi Offset 2.1</td> <td>Sig Track: Off 30 dB Mkr3</td> <td>P N N N N N 2.488 250 GHz</td> <td>Span 25.0000000 MHz Swept Span</td>	No         Find         Start Freq	spectrum v	E Off Sig Track: Off Ref Lvi Offset 2.80 dB	PNNNNN Mkr3 2.349 49 GHz 11	an 10.000000 MHz Swept Span	Align Auto H	Ref Lvi Offset 2.1	Sig Track: Off 30 dB Mkr3	P N N N N N 2.488 250 GHz	Span 25.0000000 MHz Swept Span
	1         1         1         2.473 550 GHz         1         2.473 550 GHz         2.473 550 GHz         2.470 TUNE         2.5000000 GHz         2.50000000 GHz         2.50000000 GHz	00	A3	Di 1 - 18 09 dBm 2.3	art Freq 310000000 GHz	0.00 -10.0 -20.0 -30.0 -40.0	4 42	«3		Start Freq 2.475000000 GHz
	Strukter Table         MODE TRC SCL         X         Y         Function Function Width Function Value         Addo         Addo         Addo         Addo         Addo         Strukter Table         Mone         TN         1         F         2.475 ISG GHz         1.50 GHz         1.50 GHz         Strukter Table         Addo         Ad	500 600 700 Center 2.36500 GHz Res BW 100 kHz	#Video BW 300 kHz	Span 110.0 MHz	420000000 GHz AUTO TUNE		#Video BW 300	kHz Swei	Span 25.00 MHz	2.50000000 GHz AUTO TUNE



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# 4.7 TIME OF OCCUPANCY (DWELL TIME)

## 4.7.1 Test Limit

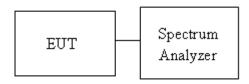
According to §15.247(a)(1)(iii)and RSS-247 section 5.1(d)

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





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### 4.7.4 Test Result

Temperature:	25.6°C	Tested by:	Lance Chen
Humidity:	48% RH	Test date:	June 29, 2021

#### GFSK (1Mbps)

Channel	ΡΑСΚΕΤ ΤΥΡΕ	Measu	remer (ms)	nt Result		Limi (ms)	-	1/T	(kHz)	VBW setting (kHz)
	DH1		121.6	0		400m	S	2	2.632	3.00
Mid	DH3		260.8	0		400m	S	C	).613	1.00
	DH5		307.2	0		400m	s	C	).347	1.00
Note:										
CH Mid I	DH1 time slot =	0.380	*	(1600/2/7	'9)	*	31.6	=	121.60	(ms)
ſ	DH3 time slot =	1.630	*	(1600/4/7	79)	*	31.6	=	260.80	(ms)
[	DH5 time slot =	2.880	*	(1600/6/7	79)	*	31.6	=	307.20	(ms)
A period time	= 0.4 (s) * 79 = 31.	6 (s)								

#### π/4 DQPSK (2Mbps)

Channel		PACKET TY	PE	Measur	remei (ms	nt Result )		Lim (ms		1/1	ſ (kHz)	VBW setting (kHz)
		2DH1			123.2	20		400n	าร	2	2.597	3.00
Mid		2DH3			260.8	30		400n	าร	(	).613	1.00
		2DH5			308.8	30		400n	าร	(	).345	1.00
Note:												
CH Mid	2	DH1 time slot	=	0.385	*	(1600/2/	79)	*	31.6	=	123.20	(ms)
	2	DH3 time slot	=	1.630	*	(1600/4/	79)	*	31.6	=	260.80	(ms)
	2	DH5 time slot	=	2.895	*	(1600/6/	79)	*	31.6	=	308.80	(ms)
A period ti	me	= 0.4 (s) * 79 =	- 31	6 (s)								

A period time = 0.4 (s) \* 79 = 31.6 (s)



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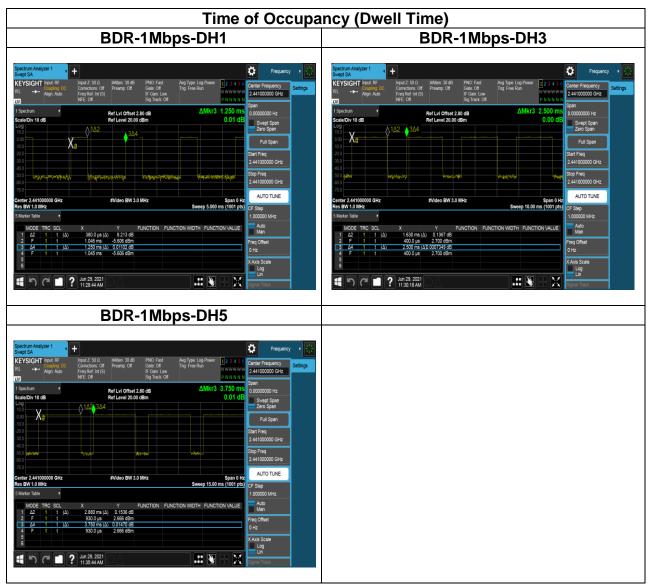
#### 8-DPSK (3Mbps)

Channel	PACKET TYPE	Measu	remei (ms	nt Result )		Limi (ms	-	1/1	「(kHz)	VBW setting (kHz)
	3DH1		124.8	30	2	100m	าร	2	2.564	3.00
Mid	3DH3		262.4	40	2	100m	าร	(	).610	1.00
	3DH5		308.8	30	2	100m	าร	(	).345	1.00
Note:										
CH Mid 3	BDH1 time slot =	0.390	*	(1600/2/7	'9)	*	31.6	=	124.80	(ms)
:	3DH3 time slot =	1.640	*	(1600/4/7	'9)	*	31.6	=	262.40	(ms)
3	BDH5 time slot =	2.895	*	(1600/6/7	'9)	*	31.6	=	308.80	(ms)
A period time	e = 0.4 (s) * 79 = 31	.6 (s)								



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### Test Data





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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 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)

**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 <sup>Note</sup>	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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### 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.

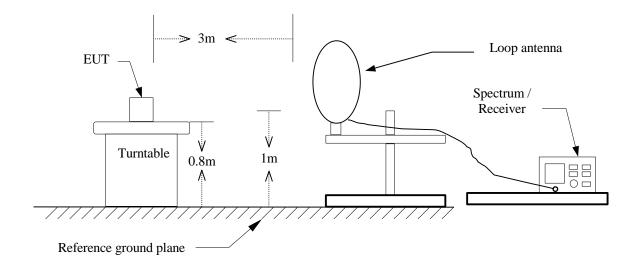
<sup>·</sup>If Duty Cycle < 98%, VBW≥1/T.



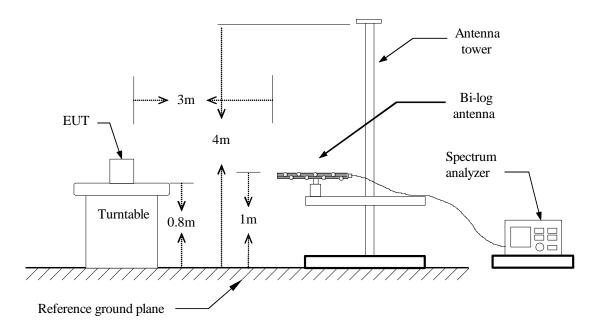
### 4.8.3 Test Setup

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

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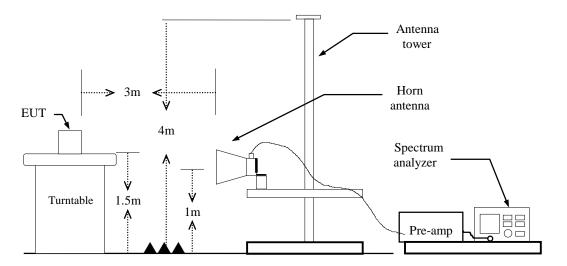
### <u>30MHz ~ 1GHz</u>





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### Above 1 GHz





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## 4.8.4 Test Result

### Band Edge Test Data

Detector         Peak / Average           120	
Polarize       Vertical       Test Engineer       Ray         Detector       Peak / Average       Image: Constraint of the second s	', 2021
Image: state of the	ay Li
II0         II0         III0	
III0         III0 <t< td=""><td></td></t<>	
90	
Treq.         Detector         Spectrum         Factor         Actual         Limit           MHz         PK/QP/AV         dBµV         dB         dBµV/m         dBµV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	
Treq.         Detector         Spectrum         Factor         Actual         Limit           MHz         PK/QP/AV         BBµV         dB         dBµV/m         dBµV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	
Freq.         Detector         Spectrum Reading Level dBμV         Factor         Actual FS         Limit @3m           MHz         PK/QP/AV         dBμV         dB         dBμV/m         dBμV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	<u> </u>
Freq.         Detector         Spectrum Reading Level dBμV         Factor         Actual FS         Limit @3m           MHz         PK/QP/AV         dBμV         dB         dBμV/m         dBμV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	
Joint Spectrum         Factor         Actual         Limit           Mode         Reading Level         FS         @3m           MHz         PK/QP/AV         dBµV         dB         dBµV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	
Joint Spectrum         Factor         Actual         Limit           Mode         Reading Level         FS         @3m           MHz         PK/QP/AV         dBµV         dB         dBµV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	
Image: system of the system         Detector         Spectrum         Frequency (MHz)         Actual         Limit           MHz         PK/QP/AV         dBµV         dB         dBµV/m         dBµV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	man
Image: system of the system         Detector         Spectrum         Frequency (MHz)         Actual         Limit           MHz         PK/QP/AV         dBµV         dB         dBµV/m         dBµV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	
Preq.DetectorSpectrum Reading Level dBµVFactorActual FSLimit @3m dBµV/mMHzPK/QP/AVdBµVdBdBµV/mdBµV/m2390.00Peak44.75-1.0043.7574.00	
Preq.DetectorSpectrum Reading Level dBµVFactorActual FSLimit @3m dBµV/mMHzPK/QP/AVdBµVdBdBµV/mdBµV/m2390.00Peak44.75-1.0043.7574.00	
Frequency (MHz)Freq.DetectorSpectrum Reading Level dBµVFactorActual FSLimit @3mMHzPK/QP/AVdBµVdBdBµV/mdBµV/m2390.00Peak44.75-1.0043.7574.00	
Freq.DetectorSpectrumFactorActualLimitModeReading LevelFS@3mMHzPK/QP/AVdBµVdBdBµV/mdBµV/m2390.00Peak44.75-1.0043.7574.00	2410
Mode PK/QP/AV         Reading Level dBµV         FS         @3m           2390.00         Peak         44.75         -1.00         43.75         74.00	
Mode PK/QP/AV         Reading Level dBµV         FS         @3m           2390.00         Peak         44.75         -1.00         43.75         74.00	
MHz         PK/QP/AV         dBμV         dB         dBμV/m         dBμV/m           2390.00         Peak         44.75         -1.00         43.75         74.00	Margin
2390.00 Peak 44.75 -1.00 43.75 74.00	
	dB
	-30.25
2390.00 Average 33.60 -1.00 32.60 54.00	-21.40

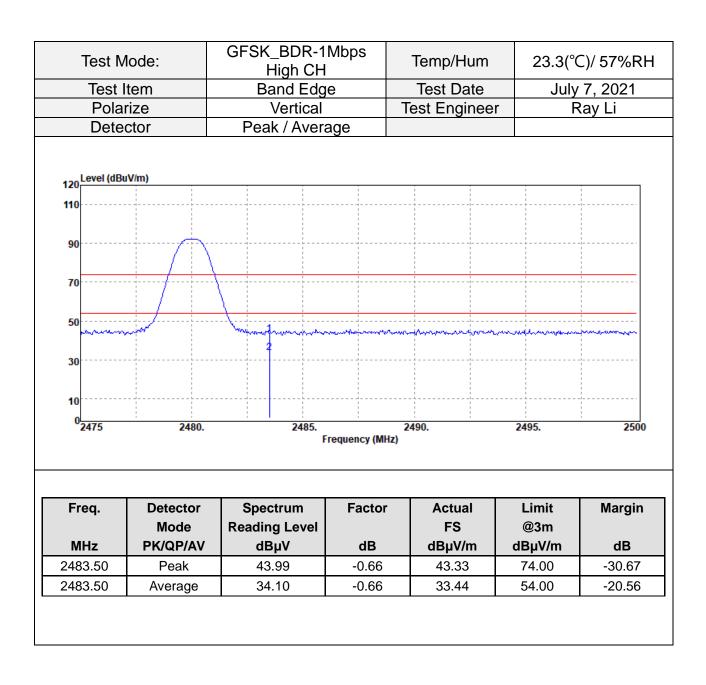


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Test N		GFSK_BDR-1M Low CH		Temp/Hum		C)/ 57%RH
Test I		Band Edge		Test Date	July	7, 2021
Pola	rize	Horizontal		Test Enginee	r F	Ray Li
Dete	ctor	Peak / Averag	je			
120 Level (dB	buV/m)					
90						<u> </u>
70						
50	man and a second	and the product of the second		and the second	wanname	
30					2	
10						
0 <mark></mark> 2310	2330.	2350. Fi	requency (MHz	2370. :)	2390.	2410
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Peak	45.34	-1.00	44.34	74.00	-29.66
2390.00	Average	33.88	-1.00	32.88	54.00	-21.12
2390.00	Average	33.88	-1.00	32.88	54.00	-21.1

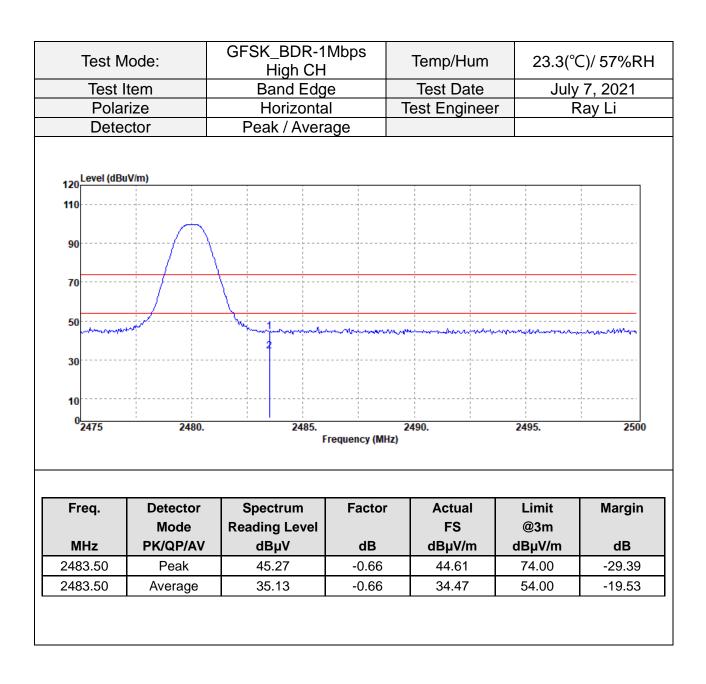


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Test M		GFSK_BDR-1N Low CH Hopp	oing	Temp/Hum		C)/ 57%RH
Test I		Band Edge		Test Date		7, 2021
Polai	ize	Vertical	Т	est Engineer	R	lay Li
Deteo	ctor	Peak / Avera	ge			
120	uV/m)					
110						
90						······
70						
<b>50</b>						
50		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~		/
30					2	
50						
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
2390.00	Peak	46.83	-1.00	45.83	74.00	-28.17
2390.00	Average	34.03	-1.00	33.03	54.00	-20.97

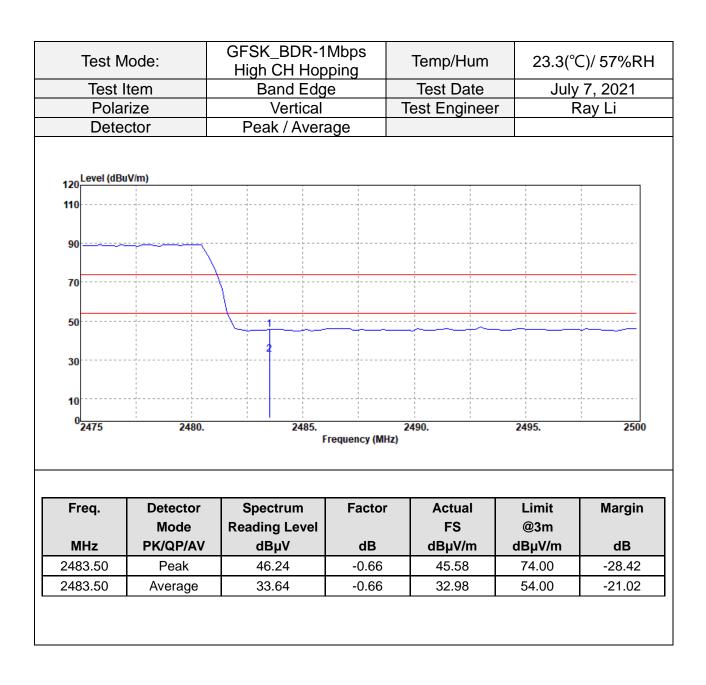


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Test M	lode:	GFSK_BDR-1M Low CH Hoppi		Temp/Hum	23.3(°C	C)/ 57%RH
Test I	tem	Band Edge		Test Date	July	7, 2021
Polar	ize	Horizontal	-	Test Engineer		ay Li
Deteo	ctor	Peak / Averag				-
120 Level (dB	uV/m)					
90						[
70						
50	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
30					2	
10						
0 <mark></mark> 2310	2330.	2350. Fr	equency (MHz)	2370.	2390.	2410
Freq.	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
MHZ		44.71	-1.00	43.71	74.00	-30.29
<b>MHz</b>	Poor		-1.00	43.71	74.00	-30.29
MHz 2390.00 2390.00	Peak Average	34.21	-1.00	33.21	54.00	-20.79

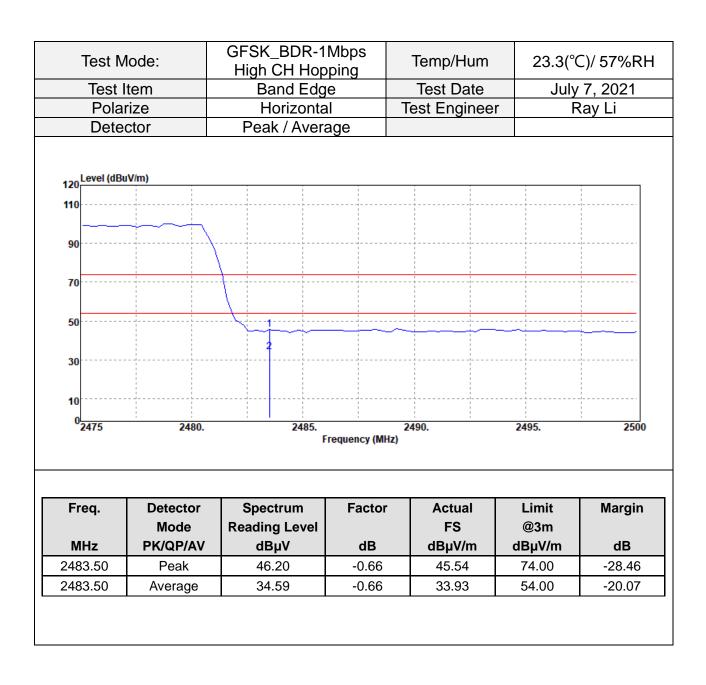


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Test N	/lode:	8DPSK_EDR-3 Low CH	BMbps	Temp/Hu	m	23.3(°C	2)/ 57%RI
Test	Item	Band Edg	e	Test Date	е	July	7, 2021
Pola	rize	Vertical		Test Engine	eer		ay Li
Dete	ector	Peak / Avera	age	-			
120 Level (dBi	uV/m)						
90							Λ
70							
50 	mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	were when when the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		mum	montenand	time
30						2	
10							
0 <mark></mark> 2310	2330.	2350. Fr	equency (MHz)	2370. )	2:	390.	2410
Freq.	Detector	Spectrum	Factor	Actual		Limit	Margin
	Mode	Reading Level		FS		@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	d	3μV/m	dB
2390.00	Peak	45.92	-1.00	44.92		74.00	-29.08
2390.00	Average	34.07	-1.00	33.07	Ę	54.00	-20.93

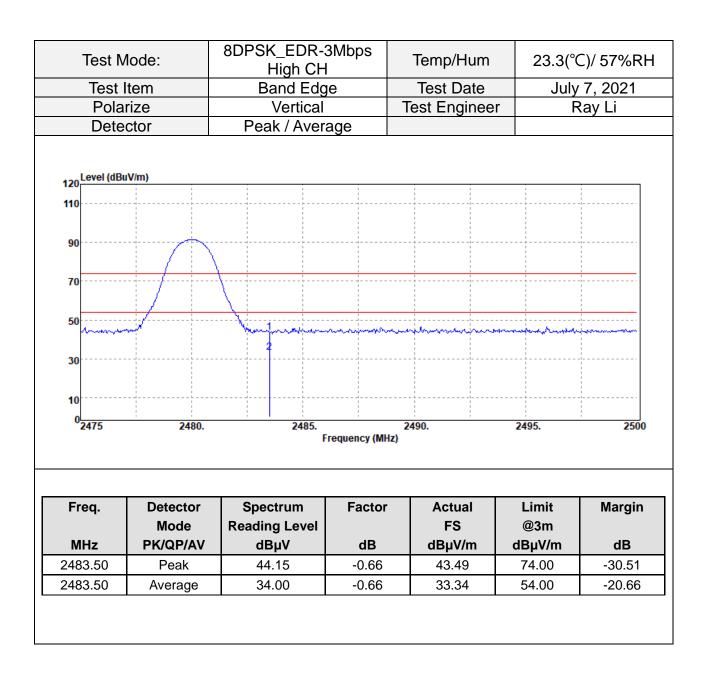


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Test M	lode:	8DPSK_EDR-3 Low CH	Mbps	Temp/Hum	23.3(°	C)/ 57%RI
Test	Item	Band Edg	e	Test Date	July	7, 2021
Pola	rize	Horizonta		Test Enginee		Ray Li
Dete	ctor	Peak / Avera	age			
120 Level (dBu	uV/m)					
90						Д
70						
50 	Ref. a. Martin Martin and Martin a		mmun		home -	H
30					2	
10 0 2310	2330.	2350.		2370.	2390.	2410
2010	2000.		equency (MHz)		2000.	2410
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Peak	45.01	-1.00	44.01	74.00	-29.99
2390.00	Average	34.31	-1.00	33.31	54.00	-20.69

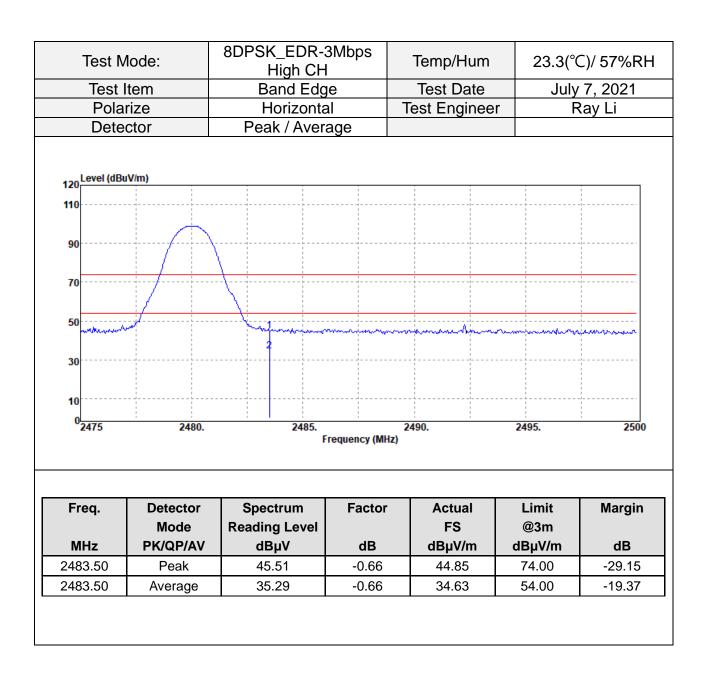


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Test N	/lode:	8DPSK_EDR-3 Low CH Hop	ping	Temp/Hum	,	C)/ 57%RI
Test		Band Edg	e	Test Date		7, 2021
Pola	rize	Vertical		Test Enginee	er F	Ray Li
Dete	ctor	Peak / Avera	age			
120 Level (dBr	uV/m)					
90						( mini
70						
50	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
30						
10						
0 <mark></mark> 2310	2330.	2350. F	requency (MHz)	2370.	2390.	2410
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
-	Mode	Reading Level	dB	FS dBµV/m	@3m dBµV/m	dB
MHz	PK/QP/AV	dBµV	uВ			ab
	PK/QP/AV Peak	<b>dBμV</b> 45.69	-1.00	44.69	74.00	-29.31

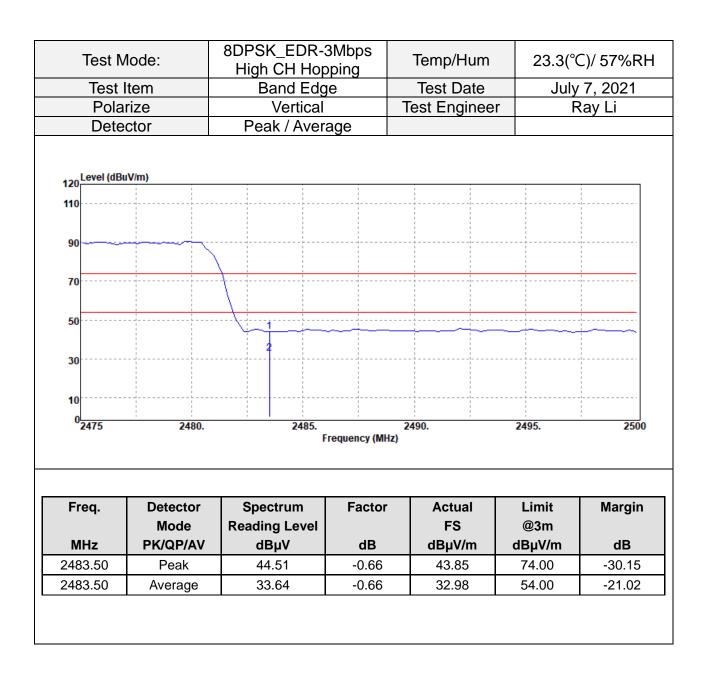


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Test	: Mode:	8DPSK_EDR-3 Low CH Hop	oing	Temp/Hum	23.3(°C	C)/ 57%RI
Tes	st Item	Band Edg		Test Date	July	7, 2021
Po	larize	Horizonta		Test Enginee	er F	Ray Li
De	tector	Peak / Avera	age			
120 Level (	dBuV/m)					
110					· · · · · · · · · · · · · · · · · · ·	
<mark>90</mark>						f
70						
50	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					
30					2	
10						
0 <mark></mark> 2310	2330.	2350. Fr	equency (MHz	2370. )	2390.	2410
<b>-</b>	Detector		<b>F</b> actor		1 1 1 1 1	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Peak	46.56	-1.00	45.56	74.00	-28.44
2390.00	Average	34.42	-1.00	33.42	54.00	-20.58

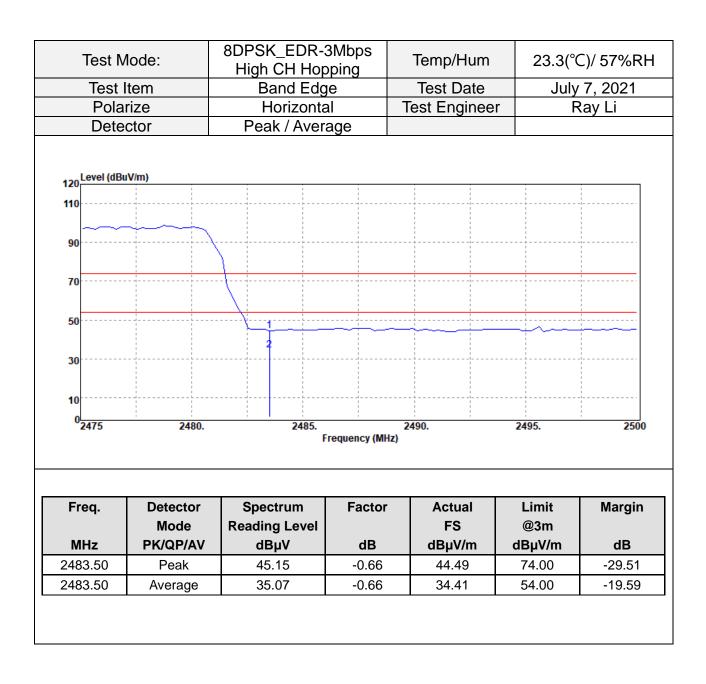


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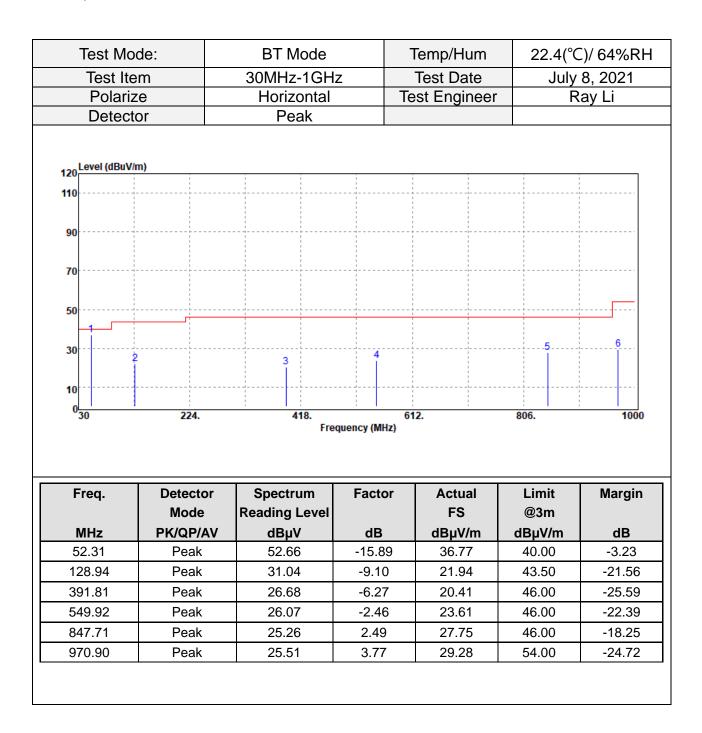
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### Below 1G Test Data

Test Mo		BT Mode		Temp/Hum	· ·	C)/ 64%R
Test It		30MHz-1GHz		Test Date	July 8, 2021	
Polari		Vertical Peak	1	est Engineer	R	ay Li
Detec		Feak				
120 Level (dBuV	//m)					
110						
90						
70						
50						
30	0		4			e
	4	3		i i		
10	2					
	224.	418.		512.	806.	100
10 0 30	224.	418.	quency (MHz)	512.	806.	1000
	224. Detector Mode	418.		Actual FS	806. Limit @3m	1000 Margin
0	Detector	418. Free Spectrum	quency (MHz)	Actual	Limit	
0 <sub>30</sub> Freq.	Detector Mode	418. Free Spectrum Reading Level	quency (MHz) Factor	Actual FS	Limit @3m	Margin
o <sub>30</sub> Freq. MHz	Detector Mode PK/QP/AV	418. Free Spectrum Reading Level dBµV	quency (MHz) Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB -3.89
030 Freq. MHz 66.86	Detector Mode PK/QP/AV Peak	418. Free Spectrum Reading Level dBµV 51.54	Factor dB -15.43	Actual FS dBμV/m 36.11	<b>Limit</b> @3m dBµV/m 40.00	Margin
030 Freq. MHz 66.86 128.94	Detector Mode PK/QP/AV Peak Peak	418. Free Spectrum Reading Level dBµV 51.54 30.54	<b>Factor</b> <b>dB</b> -15.43 -9.10	Actual           FS           dBμV/m           36.11           21.44	Limit @3m dBµV/m 40.00 43.50	Margin dB -3.89 -22.06
030 Freq. MHz 66.86 128.94 372.41	Detector Mode PK/QP/AV Peak Peak Peak	418. Free Spectrum Reading Level dBµV 51.54 30.54 27.70	<b>Factor</b> <b>dB</b> -15.43 -9.10 -6.60	Actual FS dBµV/m 36.11 21.44 21.10	Limit @3m dBµV/m 40.00 43.50 46.00	Margin dB -3.89 -22.06 -24.90



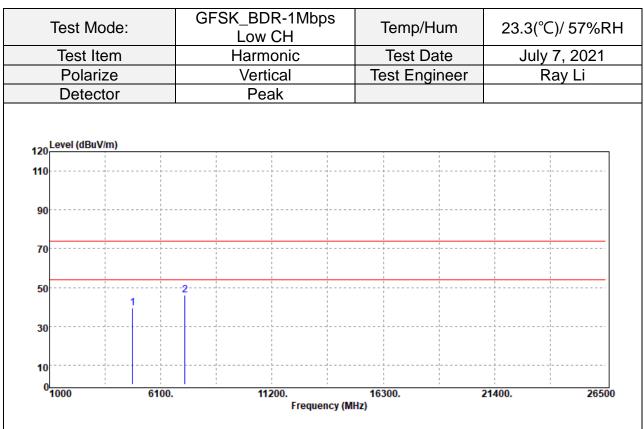
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### Above 1G Test Data

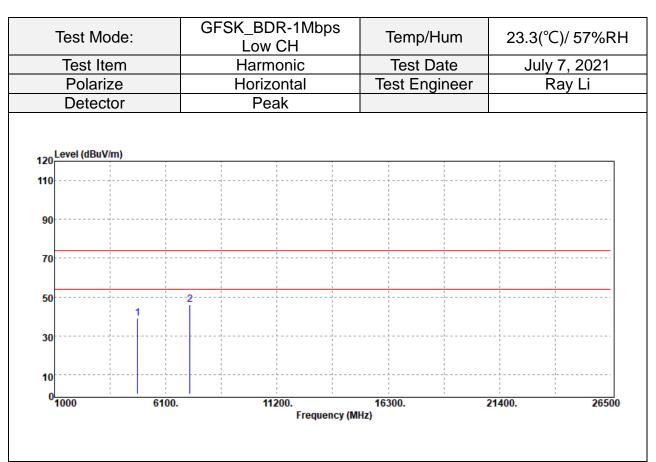


Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Peak	33.96	5.62	39.58	74.00	-34.42
Peak	33.05	13.13	46.18	74.00	-27.82
	Mode PK/QP/AV Peak	ModeReading LevelPK/QP/AVdBµVPeak33.96	Mode PK/QP/AVReading Level dBµVPeak33.96	Mode PK/QP/AVReading Level dBµVFS dBPeak33.965.6239.58	Mode PK/QP/AV         Reading Level dBµV         FS         @3m           Peak         33.96         5.62         39.58         74.00

- 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	33.32	5.62	38.94	74.00	-35.06
7206.00	Peak	33.02	13.13	46.15	74.00	-27.85
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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Test Mod	le:	GFSK_BDR-1Mbp Mid CH	s Temp/Hu	um 23.3(°C	C)/ 57%RI
Test Iter	n	Harmonic	Test Dat	te July	7, 2021
Polarize	Э	Vertical	Test Engir		lay Li
Detecto	or	Peak			
120 Level (dBuV/m	)				
110					1 1 1
90					
70					
50	2				1 1 1 1 1
30					
10					
0 <mark>1000</mark>	6100.	11200. Frequer	16300. Icy (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	33.75	5.99	39.74	74.00	-34.26
7323.00	Peak	31.59	13.20	44.79	74.00	-29.21
N/A						
1				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



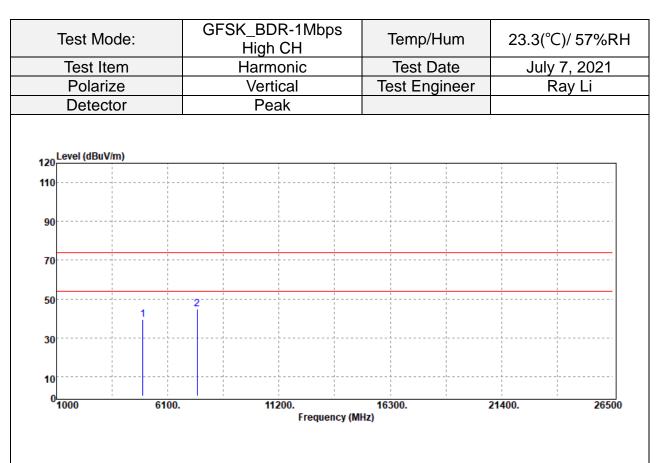
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Test Mo	ode:	GFSK_BDR-1Mbps Mid CH		Temp/Hum	23.3(°C	C)/ 57%RI
Test It	em	Harmonic		Test Date	Julv	7, 2021
Polari		Horizontal	Т	est Engineer		
Detec	tor	Peak				
120 Level (dBu\ 110 90 70	//m)					
50	1					
30						
10	······					
0 <u>1000</u>	6100.	11200. Free	16 quency (MHz)	<b>3300</b> .	21400.	26500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
<b>MHz</b> 4882.00	PK/QP/AV Peak	<b>dBμV</b> 33.18	<b>dB</b> 5.99	<b>dBµV/m</b> 39.17	<b>dBμV/m</b> 74.00	<b>dB</b> -34.83
7323.00	Peak	32.13	13.20	45.33	74.00	-34.83
N/A			10.20		1.00	20.07

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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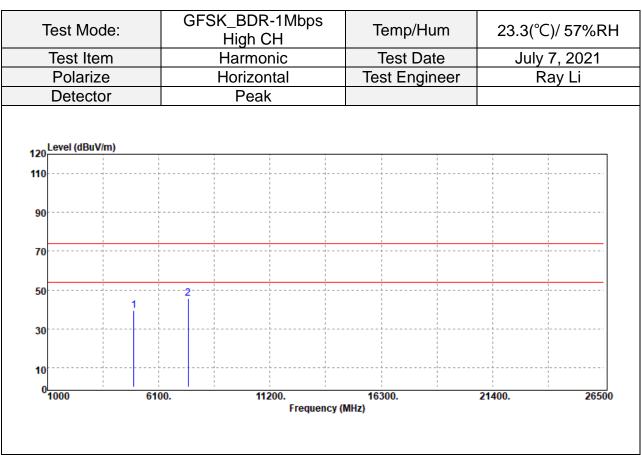


Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Peak	32.91	6.73	39.64	74.00	-34.36
Peak	31.78	13.13	44.91	74.00	-29.09
	Mode PK/QP/AV Peak	ModeReading LevelPK/QP/AVdBµVPeak32.91	ModeReading LevelPK/QP/AVdBµVdBPeak32.916.73	Mode PK/QP/AVReading Level dBµVFS dBPEak32.916.7339.64	Mode         Reading Level         FS         @3m           PK/QP/AV         dBµV         dB         dBµV/m         dBµV/m           Peak         32.91         6.73         39.64         74.00

- 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	32.75	6.73	39.48	74.00	-34.52
7440.00	Peak	32.47	13.13	45.60	74.00	-28.40
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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Test Mode	•	8DPSK_EDR-3Mbps Low CH	Temp/Hum	23.3(°C)/	57%RI
Test Item		Harmonic	Test Date	July 7, 2021	
Polarize		Vertical	Test Engineer	Ray	
Detector		Peak			
120 Level (dBuV/m)					
110	·				
90					
70					
50	1	2			
30					
10					
0	6100.	11200.	16300.	21400.	26500
		Frequency	(MHZ)		

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	33.78	5.62	39.40	74.00	-34.60
7206.00	Peak	33.56	13.13	46.69	74.00	-27.31
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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Test Mode	8DPSK_EDR-3Mbps Low CH	Temp/Hum	23.3(°C)/ 57%Rł
Test Item	Harmonic	Test Date	July 7, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		
120 Level (dBuV/m)			
110			
90			
70			
50 1	-2		
30			
10			
0 <mark></mark> 1000 6100.	11200. Frequency (M		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
4804.00	Peak	33.63	5.62	39.25	74.00	-34.75
7206.00	Peak	32.37	13.13	45.50	74.00	-28.50
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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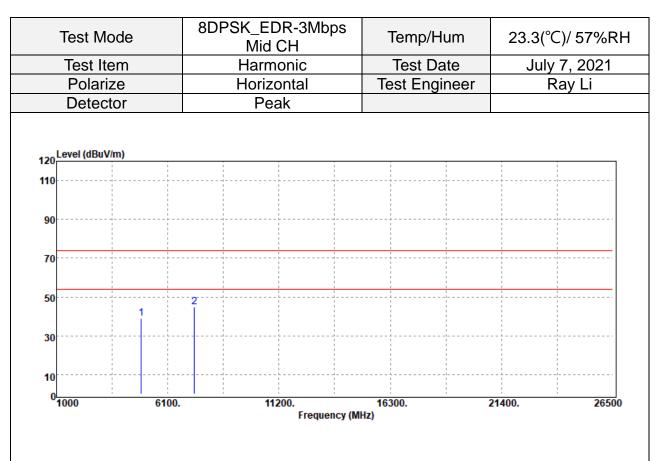
Test Mode	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	23.3(°C)/ 57%Rł
Test Item	Harmonic	Test Date	July 7, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		
120 Level (dBuV/m)			
110			
90			
70			
50			
30			
10			
0 <mark></mark>	11200. Frequency	16300. (MHz)	<b>21400. 26500</b>

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	33.10	5.99	39.09	74.00	-34.91
7323.00	Peak	31.67	13.20	44.87	74.00	-29.13
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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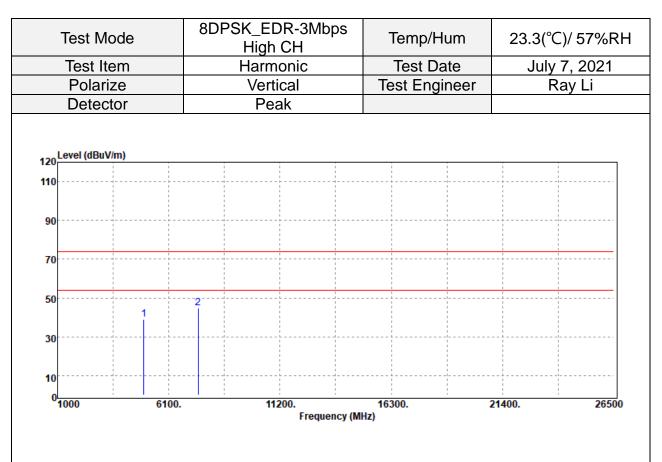


Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4882.00	Peak	32.86	5.99	38.85	74.00	-35.15
7323.00	Peak	31.46	13.20	44.66	74.00	-29.34
N/A						

- 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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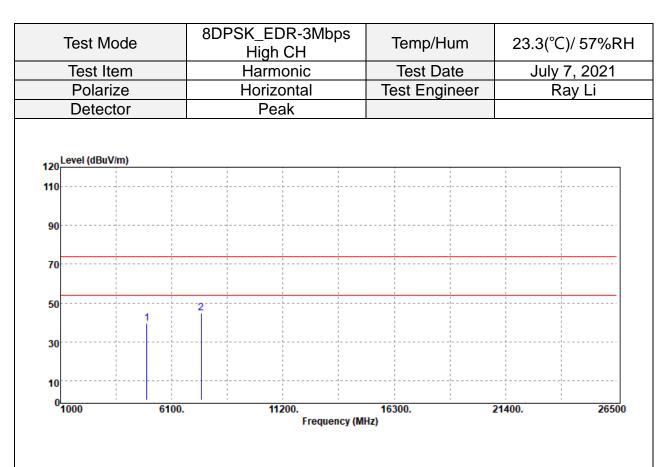


Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Peak	32.42	6.73	39.15	74.00	-34.85
Peak	31.73	13.13	44.86	74.00	-29.14
	Mode PK/QP/AV Peak	ModeReading LevelPK/QP/AVdBµVPeak32.42	ModeReading LevelPK/QP/AVdBµVdBPeak32.426.73	Mode PK/QP/AVReading Level dBµVFS dBPeak32.426.7339.15	Mode         Reading Level         FS         @3m           PK/QP/AV         dBµV         dB         dBµV/m         dBµV/m           Peak         32.42         6.73         39.15         74.00

- 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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Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Peak	32.53	6.73	39.26	74.00	-34.74
Peak	31.87	13.13	45.00	74.00	-29.00
	Mode PK/QP/AV Peak	ModeReading LevelPK/QP/AVdBµVPeak32.53	ModeReading LevelPK/QP/AVdBµVdBPeak32.536.73	ModeReading LevelFSPK/QP/AVdBµVdBdBµV/mPeak32.536.7339.26	Mode         Reading Level         FS         @3m           PK/QP/AV         dBµV         dB         dBµV/m         dBµV/m           Peak         32.53         6.73         39.26         74.00

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 -