

# Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC151148
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# FCC Radio Test Report FCC ID: 2AKMD-S921

# **Original Grant**

Report No. : TB-FCC151148

**Applicant**: ShenZhen Megastek Electronics Co. Ltd.

**Equipment Under Test (EUT)** 

**EUT Name** : Home base unit

Model No. : S921

Series Model No. : MT200-HBU, MT200XF

Brand Name : N/A

**Receipt Date** : 2016-12-24

**Test Date** : 2016-12-25 to 2017-03-13

Issue Date : 2017-03-14

**Standards** : FCC Part 15: 2016, Subpart C(15.247)

**Test Method** : ANSI C63.10: 2013

Conclusions : PASS

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC requirements

Test/Witness Engineer :

Approved& Authorized :

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0

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# 1. General Information about EUT

#### 1.1 Client Information

**Applicant**: ShenZhen Megastek Electronics Co. Ltd.

Address : RmB1111, Niulanqian Building, Minzhi Road, Longhua Town, Baoan

District, Shenzhen, China

Manufacturer : Megastek Technologies Electronics (ShenZhen) Co. Ltd .

Address : Qiangcheng Technologis Park, Xinglang Road, Xingguang village,

HuangjiangTown, DongguanCity, China

## 1.2 General Description of EUT (Equipment Under Test)

<b>EUT Name</b>	÷	Home base unit	Home base unit		
Models No.	1	S921, MT200-HBU, MT20	S921, MT200-HBU, MT200XF		
Model Difference			ical in the same PCB, layout and electrical is model name for commercial.		
mnB.		Operation Frequency:	Bluetooth V3.0: 2402~2480 MHz		
		Number of Channel: Bluetooth: 79 Channels See Note 2			
Product	1	Max Peak Output Power: Bluetooth: -6.115 dBm(GFSK)			
Description		Antenna Gain: 3 dBi Internal Antenna			
		Modulation Type:	GFSK 1Mbps(1 Mbps)		
			π/4-DQPSK(2 Mbps)		
2		AO	8-DPSK(3 Mbps)		
Power Supply		AC power by AC cable.			
D D		DC power by Li-ion battery	/.		
Power Rating	÷	AC 100-240V, 50/60Hz			
		DC 3.7V by 100mAh Li-ion battery.			
Connecting I/O Port(S)	9	Please refer to the User's Manual			

#### Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

#### (2) Channel List:

	Bluetooth Channel List				
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459



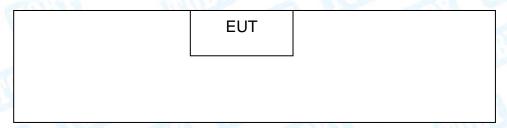
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04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		100
26	2428	53	2455	Will B	

<sup>(3)</sup> The Antenna information about the equipment is provided by the applicant.

# 1.3 Block Diagram Showing the Configuration of System Tested

**Charging with TX Mode** 



# 1.4 Description of Support Units

The EUT has been test as an independent unit.



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#### 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For	Conducted Test
Final Test Mode	Description
Mode 1	Charging+TX Mode

For Radiated Test				
Final Test Mode	Description			
Mode 1	TX GFSK Mode			
Mode 2	TX Mode(GFSK) Channel 00/39/78			
Mode 3	TX Mode( π /4-DQPSK) Channel 00/39/78			
Mode 4	TX Mode(8-DPSK) Channel 00/39/78			
Mode 5	Hopping Mode(GFSK)			
Mode 6	Hopping Mode( π /4-DQPSK)			
Mode 7	Hopping Mode(8-DPSK)			

#### Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate. We have pretested all the test modes above.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

TX Mode: GFSK (1 Mbps)
TX Mode: π /4-DQPSK (2 Mbps)
TX Mode: 8-DPSK (3Mbps)

(2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane as the normal use. Therefore only the test data of this X-plane was used for radiated emission measurement test.

# 1.6 Description of Test Software Setting

During testing channel power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of Bluetooth mode.



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Test Software Version	The state of the s	Maui META 3G ver 7.1424.5	733
Frequency	2402 MHz	2441MHz	2480 MHz
GFSK	DEF	DEF	DEF
π/4-DQPSK	DEF	DEF	DEF
8-DPSK	DEF	DEF	DEF

# 1.7 Measurement Uncertainty

The reported uncertainty of measurement y  $\pm$  U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U <sub>Lab</sub> )
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.42 dB ±3.42 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB



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#### 1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

#### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

#### FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

#### IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.



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# 2. Test Summary

	F	CC Part 15 Subpart C(15.247)/ RSS	247 Issue 1		
Standard S	ection	Test Hem	11		
FCC	IC Test Item		Judgment	Remark	
15.203	<b>13</b>	Antenna Requirement	PASS	N/A	
15.207	RSS-GEN 7.2.2	Conducted Emission	PASS	N/A	
15.205	RSS-Gen 7.2.3	Restricted Bands	PASS	N/A	
15.247(a)(1)	RSS 247 5.1 (2)	Hopping Channel Separation	PASS	N/A	
15.247(a)(1)	RSS 247 5.1 (4)	Dwell Time	PASS	N/A	
15.247(b)(1)	RSS 247 5.4 (2)	Peak Output Power	PASS	N/A	
15.247(b)(1)	RSS 247 5.1 (4)	Number of Hopping Frequency	PASS	N/A	
15.247(d)	RSS 247 5.5	Band Edge	PASS	N/A	
15.247(c)& 15.209	RSS 247 5.5	Radiated Spurious Emission	PASS	N/A	
15.247(a)	RSS 247 5.1 (1)	99% Occupied Bandwidth & 20dB Bandwidth	PASS	99%OBW GFSK:1001.90kHz π/4-DQPSK: 1081.40kHz 8-DPSK: 1159.60KHz	

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# 3. Test Equipment

AC Main C	onducted Emiss	sion			
Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	ROHDE& SCHWARZ	ESCI	100321	Jul. 22, 2016	Jul. 21, 2017
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 22, 2016	Jul. 21, 2017
L.I.S.N	Rohde & Schwarz	ENV216	101131	Jul. 22, 2016	Jul. 21, 2017
L.I.S.N	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 22, 2016	Jul. 21, 2017
Description	Spurious Emiss  Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2016	Jul. 21, 2017
EMI Test Receiver	Rohde & Schwarz	ESPI	10S9210/007	Jul. 22, 2016	Jul. 21, 2017
Bilog Antenna	ETS-LINDGREN	3142E	S92117537	Mar. 20, 2016	Mar. 19, 2017
Horn Antenna	ETS-LINDGREN	3117	S92143207	Mar. 19, 2016	Mar. 18, 2017
Pre-amplifier	Sonoma	310N	185903	Mar. 20, 2016	Mar. 19, 2017
Pre-amplifier	HP	8449B	3008A00849	Mar. 26, 2016	Mar. 25, 2017
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 26, 2016	Mar. 25, 2017
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna C	conducted Emiss	sion			
Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2016	Jul. 21, 2017
Spectrum Analyzer	Rohde & Schwarz	ESPI	100321	Jul. 22, 2016	Jul. 21, 2017



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# 4. Conducted Emission Test

#### 4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

#### 4.1.2 Test Limit

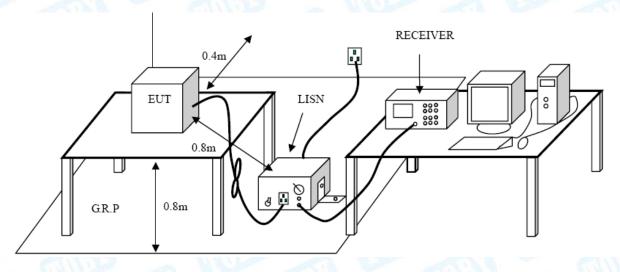
#### **Conducted Emission Test Limit**

Eroguanov	Maximum RF Line Voltage (dBμV)		
Frequency	Quasi-peak Level	Average Level	
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

#### Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

#### 4.2 Test Setup



#### 4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



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I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

### 4.4 EUT Operating Mode

Please refer to the description of test mode.

#### 4.5 Test Data

Test data please refer the following pages.



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EUT:	Home ba	ase unit	1011	Model Name	:	S921			
Temperature:	25℃			Relative Hun	nidity:	55%	OH DE		
Test Voltage:	AC 120\	AC 120V/60 Hz							
Terminal:	Line		CALL!		187				
Test Mode:	USB Ch	arging Mode				- W	Million		
Remark:	Only wo	rse case is re	eported	P. Carrier		18			
90.0 dBuV									
						QP: AVG:			
v	v								
Munther			* #						
40	N N	THE PARTY OF THE P	Wrong All			1			
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						man market and the second that the second se	peak		
							"YMMMMAVG		
-10									
0.150	0.5		(MHz)	5			30.000		
		Reading	Correct	Measure-					
No. Mk.	Freq.	Level	Factor	ment	Limit	Over			
	MHz	dBuV	dB	dBu∀	dBuV	dB	Detector		
1 0.	2580	34.33	10.10	44.43	61.49	-17.06	QP		
2 0.	2580	18.22	10.10	28.32	51.49	-23.17	AVG		
3 0.	4220	34.06	10.05	44.11	57.41	-13.30	QP		
4 0.	4220	20.98	10.05	31.03	47.41	-16.38	AVG		
5 * 0.	6220	32.73	10.02	42.75	56.00	-13.25	QP		
6 0.	6220	18.36	10.02	28.38	46.00	-17.62	AVG		
7 0.	8020	32.22	10.07	42.29	56.00	-13.71	QP		
8 0.	8020	20.48	10.07	30.55	46.00	-15.45	AVG		
9 1.	0859	29.63	10.15	39.78	56.00	-16.22	QP		
10 1.	0859	18.39	10.15	28.54	46.00	-17.46	AVG		
11 2.	0940	31.39	10.06	41.45	56.00	-14.55	QP		
12 2.	0940	20.88	10.06	30.94	46.00	-15.06	AVG		
Emission Level	= Read Le	evel+ Correc	t Factor						



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EUT:	Home	base unit		Model Nam	e :	S921	9		
Temperature:	25℃		0.0	Relative Hu	midity:	55%			
Test Voltage:	AC 12	20V/60 Hz	13	$M_{\rm col}$	17.3		ARIT		
Terminal:	Neutra	Neutral							
Test Mode:	USB	Charging Mo	ode		1 10		STORAGE STORAGE		
Remark:	Only	worse case	is reported		3	a W	M. Carrie		
90.0 dBuV						QP:			
						AVG:			
×	*	× v							
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				make a service	who washed	mandle billing	peak		
							AVG		
-10									
0.150	0.5		(MHz)	5			30.000		
		Reading	Correct	Measure-					
No. Mk.	Freq.	Level	Factor	ment	Limit	Over			
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector		
1	0.2220	32.88	10.11	42.99	62.74	-19.75	QP		
2	0.2220	14.58	10.11	24.69	52.74	-28.05	AVG		
3	0.4020	32.37	10.05	42.42	57.81	-15.39	QP		
4	0.4020	15.75	10.05	25.80	47.81	-22.01	AVG		
5 *	0.5820	32.96	10.02	42.98	56.00	-13.02	QP		
6	0.5820	15.43	10.02	25.45	46.00	-20.55	AVG		
7	0.9220	31.99	10.12	42.11	56.00	-13.89	QP		
8	0.9220	15.05	10.12	25.17	46.00	-20.83	AVG		
	1.2020	30.86	10.14	41.00		-15.00	QP		
	1.2020	14.25	10.14	24.39		-21.61	AVG		
	2.1300	30.23	10.06	40.29		-15.71	QP		
	2.1300		10.06			-20.11			
12	2. 1300	15.83	10.06	25.89	40.00	-20.11	AVG		
Emission Leve	el= Read L	.evel+ Corr	ect Factor						



EUT: S921 Home base unit **Model Name:** 25℃ **Relative Humidity:** Temperature: 55% **Test Voltage:** AC 240V/60 Hz Terminal: Line **Test Mode: USB Charging Mode** Remark: Only worse case is reported 90.0 dBuV QP: AVG: 40 0.5 (MHz) 0.150 30.000 Reading Correct Measure-Limit Over No. Mk. Freq. Level Factor ment MHz dBuV dΒ dBuV dBuV dΒ Detector 0.2460 34.90 10.02 44.92 61.89 -16.97 QP 1 2 0.2460 -20.77 21.10 10.02 31.12 51.89 AVG 3 0.4780 32.03 10.02 42.05 56.37 -14.32 QΡ 17.07 4 0.4780 10.02 27.09 46.37 -19.28 AVG 34.71 44.77 QΡ 5 0.5820 10.06 56.00 -11.23 17.53 0.5820 10.06 27.59 46.00 -18.41 AVG 6 0.7300 42.80 56.00 -13.20 QΡ 7 32.69 10.11 46.00 -17.29 8 0.7300 18.60 10.11 28.71 AVG 9 1.0420 28.08 10.06 38.14 56.00 -17.86 QΡ 46.00 -17.36 1.0420 18.58 AVG 10 10.06 28.64 56.00 -14.41 31.53 QΡ 11 2.0500 10.06 41.59 AVG 12 2.0500 21.56 10.06 31.62 46.00 -14.38



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EUT:		Home I	pase unit	-	<b>Model Name</b>	:	S921		
Temper	ature:	25℃		61	Relative Hur	nidity:	55%		
Test Vo	Itage:	AC 240	)V/60 Hz	3			-	MAIN	
Termina	al:	Neutral	Marie			6710	133		
Test Mo	ode:	USB C	harging Mod	le		167			l,
Remark	<b>C</b> :	Only w	orse case is	reported				1 Jaco	
90.0 dBu	N						QP:		
							AVG:		
-	¥	U. 7	< ×	×					
40	- Immy My	mary had		M. Whill	11 .				
40			, Agr.		Allenda de Lecuria				
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-10									
		0.5		(MH=)	5			30 000	
0.150		0.5		(MHz)	5			30.000	
0.150	Mk E	F	3	Correct	Measure-	Limit	Over	30.000	
		req.	Level	Correct Factor	Measure- ment	Limit	Over		
0.150 No.	M	req. IHz	Level dBuV	Correct Factor	Measure- ment	dBuV	dB	Detecto	
No.	0.2	req. IHz	dBuV 33.61	Correct Factor dB	Measure- ment dBuV 43.72	dBu∨ 62.30	dB -18.58	Detecto	
No.	0.2 0.2	req.  1Hz  340  340	dBuV 33.61 16.16	Correct Factor dB 10.11	Measure- ment dBuV 43.72 26.27	dBu√ 62.30 52.30	dB -18.58 -26.03	Detecto QP AV0	G
No.	0.2 0.2	req. IHz	dBuV 33.61	Correct Factor dB	Measure- ment dBuV 43.72	dBu√ 62.30 52.30	dB -18.58	Detecto	G
No.	0.2 0.2 0.3	req.  1Hz  340  340	dBuV 33.61 16.16	Correct Factor dB 10.11	Measure- ment dBuV 43.72 26.27	dBuV 62.30 52.30 58.15	dB -18.58 -26.03	Detecto QP AV0	G
No.	0.2 0.2 0.3 0.3	req.  340  340  860	dBuV 33.61 16.16 29.88	Correct Factor dB 10.11 10.11	Measure- ment dBuV 43.72 26.27 39.94	dBuV 62.30 52.30 58.15 48.15	dB -18.58 -26.03 -18.21	Detector QP AV0	G
No.  1 2 3 4	0.2 0.2 0.3 0.3 * 0.5	req.  340  340  860	dBuV 33.61 16.16 29.88 15.68	Correct Factor dB 10.11 10.11 10.06	Measure- ment dBuV 43.72 26.27 39.94 25.74	dBuV 62.30 52.30 58.15 48.15 56.00	dB -18.58 -26.03 -18.21 -22.41	QP AV0 QP	G
No.  1 2 3 4 5	0.2 0.2 0.3 0.3 * 0.5	req.  340  340  860  700	dBuV 33.61 16.16 29.88 15.68 33.90	Correct Factor dB 10.11 10.11 10.06 10.06	Measure- ment  dBuV  43.72  26.27  39.94  25.74  43.92	dBuV 62.30 52.30 58.15 48.15 56.00 46.00	dB -18.58 -26.03 -18.21 -22.41 -12.08	QP AV0 QP AV0	G G
No.  1 2 3 4 5	0.2 0.2 0.3 0.3 * 0.5 0.5	req.  340  340  860  700	Level  dBuV  33.61  16.16  29.88  15.68  33.90  18.69	Correct Factor  dB  10.11  10.11  10.06  10.06  10.02	Measure- ment  dBuV  43.72  26.27  39.94  25.74  43.92  28.71	dBuV 62.30 52.30 58.15 48.15 56.00 46.00	dB -18.58 -26.03 -18.21 -22.41 -12.08 -17.29	QP AV( QP AV( QP AV(	G G
No.  1 2 3 4 5 6 7	0.2 0.2 0.3 0.3 * 0.5 0.5 0.6	req.  340  340  860  700  740	Level  dBuV  33.61  16.16  29.88  15.68  33.90  18.69  32.00	Correct Factor  dB  10.11  10.11  10.06  10.06  10.02  10.02  10.02	Measure- ment  dBuV  43.72  26.27  39.94  25.74  43.92  28.71  42.02  24.05	dBuV 62.30 52.30 58.15 48.15 56.00 46.00 46.00	dB -18.58 -26.03 -18.21 -22.41 -12.08 -17.29 -13.98 -21.95	QP AVC QP AVC	G G G
0.150  No.  1 2 3 4 5 6 7 8	0.2 0.2 0.3 0.3 * 0.5 0.5 0.6 0.6	req.  340  340  860  700  740  740  260	Level  dBuV  33.61  16.16  29.88  15.68  33.90  18.69  32.00  14.03  30.96	Correct Factor  dB  10.11  10.11  10.06  10.02  10.02  10.02  10.02  10.02	Measure- ment  dBuV  43.72  26.27  39.94  25.74  43.92  28.71  42.02  24.05  41.09	dBuV 62.30 52.30 58.15 48.15 56.00 46.00 46.00 56.00	dB -18.58 -26.03 -18.21 -22.41 -12.08 -17.29 -13.98 -21.95 -14.91	QP AVC QP AVC QP AVC	G G G
0.150  No.  1 2 3 4 5 6 7 8 9 10	M 0.2 0.2 0.3 0.3 * 0.5 0.6 0.6 0.9 0.9	req.  340  340  860  700  740  740  260	Level  dBuV  33.61  16.16  29.88  15.68  33.90  18.69  32.00  14.03  30.96  15.90	Correct Factor  dB  10.11  10.11  10.06  10.06  10.02  10.02  10.02  10.03  10.13	Measure-ment  dBuV  43.72  26.27  39.94  25.74  43.92  28.71  42.02  24.05  41.09  26.03	dBuV 62.30 52.30 58.15 48.15 56.00 46.00 56.00 46.00	dB -18.58 -26.03 -18.21 -22.41 -12.08 -17.29 -13.98 -21.95 -14.91 -19.97	QP AV( QP AV( QP AV( QP AV( QP) AV(	G G G
0.150  No.  1 2 3 4 5 6 7 8	M 0.2 0.2 0.3 0.3 * 0.5 0.6 0.6 0.9 0.9 2.1	req.  340  340  860  700  740  740  260	Level  dBuV  33.61  16.16  29.88  15.68  33.90  18.69  32.00  14.03  30.96	Correct Factor  dB  10.11  10.11  10.06  10.02  10.02  10.02  10.02  10.02	Measure- ment  dBuV  43.72  26.27  39.94  25.74  43.92  28.71  42.02  24.05  41.09	dBuV 62.30 52.30 58.15 48.15 56.00 46.00 56.00 46.00 56.00	dB -18.58 -26.03 -18.21 -22.41 -12.08 -17.29 -13.98 -21.95 -14.91	QP AVC QP AVC QP AVC	G G G



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# 5. Radiated Emission Test

### 5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.209

5.1.2 Test Limit

#### Radiated Emission Limit (9 kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

### Radiated Emission Limit (Above 1000MHz)

Frequency	Class B (dBuV	/m)(at 3m)
(MHz)	Peak	Average
Above 1000	74	54

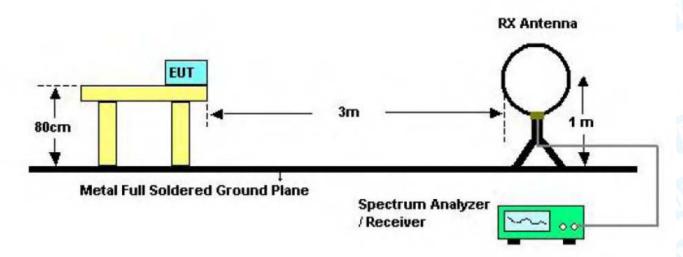
#### Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBuV/m)=20log Emission Level (uV/m)

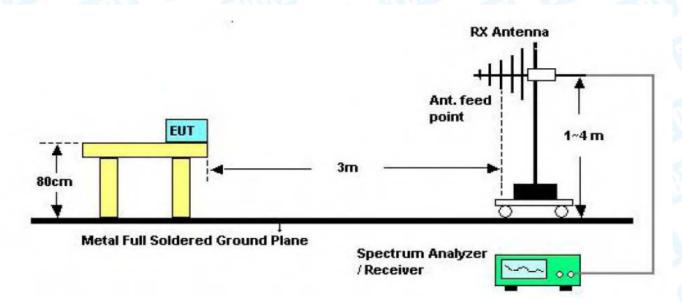


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# 5.2 Test Setup



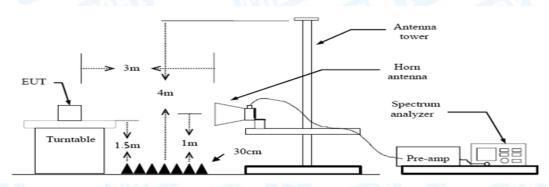
**Below 30MHz Test Setup** 



**Below 1000MHz Test Setup** 



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**Above 1GHz Test Setup** 

#### 5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

# 5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power in TX mode.

#### 5.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.



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#### 9KHz~30MHz

From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB

below the permissible value has no need to be reported.

#### 30MHz~1GHz

EUT:	Home base unit	N. Same	Model Na	me :	S921	11.50
Temperature:	25℃		Relative Hu	umidity:	55%	
Test Voltage:	DC 3.7V			(All D		2 1
Ant. Pol.	Horizontal	A Britain	1777	1	CITI!	13
Test Mode:	TX GFSK Mode	2402MHz				
Remark:	Only worse case	is reported	ed			
80.0 dBuV/m						
-20	Market and the state of the sta	All the state of t	3 45 * * *	(RF)FCC 15C	3M Radiation Margin -6 o	IB
30.000 40 50	60 70 80	(MHz)	300	400 500	600 700	1000.000
No. Mk. Fr	Reading eq. Level	Correct Factor	Measure- ment	Limit	Over	
M	Hz dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1 166.0	0680 50.29	-20.66	29.63	43.50	-13.87	peak
2 204.9	9550 48.75	-19.77	28.98	43.50	-14.52	peak
3 274.	1938 49.24	-17.18	32.06	46.00	-13.94	peak
4 300.3	3672 48.69	-16.64	32.05	46.00	-13.95	peak
5 * 307.8	3312 48.77	-16.35	32.42	46.00	-13.58	peak

480.5276

6

**Emission Level= Read Level+ Correct Factor** 

43.28

-11.13

32.15

-13.85

peak

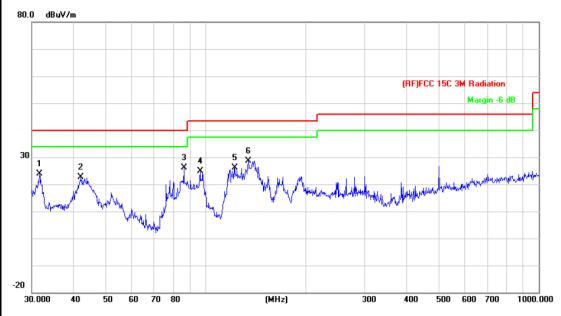
46.00

<sup>\*:</sup>Maximum data x:Over limit !:over margin



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EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		33
Ant. Pol.	Vertical		
Test Mode:	TX GFSK Mode 2402MHz		LINE TO SERVICE
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		31.6202	38.97	-15.14	23.83	40.00	-16.17	peak
2		42.1542	43.80	-21.20	22.60	40.00	-17.40	peak
3	*	85.8983	49.07	-22.99	26.08	40.00	-13.92	peak
4		96.0986	47.07	-22.20	24.87	43.50	-18.63	peak
5		121.9753	48.61	-22.38	26.23	43.50	-17.27	peak
6		134.0882	50.71	-21.97	28.74	43.50	-14.76	peak

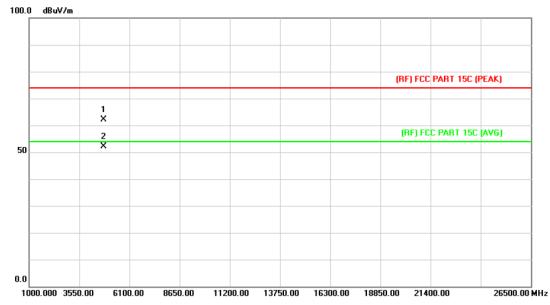
<sup>\*:</sup>Maximum data x:Over limit !:over margin



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## Above 1GHz(Only worse case is reported)

EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V		33				
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	TX GFSK Mode 2402MHz	TX GFSK Mode 2402MHz					
Remark:	No report for the emission wh prescribed limit.	ich more than 10 dB b	elow the				

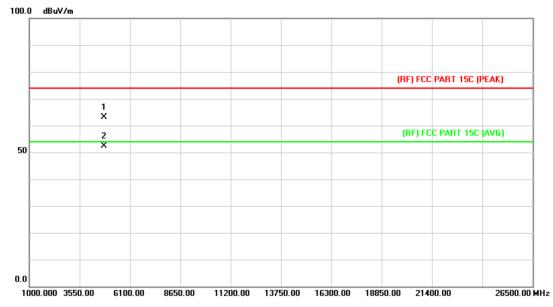


No	. Mk	Freq.	_		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.052	48.67	13.44	62.11	74.00	-11.89	peak
2	*	4804.183	38.75	13.44	52.19	54.00	-1.81	AVG



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EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	TY CONTRACTOR	733				
Ant. Pol.	Vertical	Vertical					
Test Mode:	TX GFSK Mode 2402MH		LINE TO SERVICE				
Remark:	No report for the emission prescribed limit.	which more than 10 dB	3 below the				

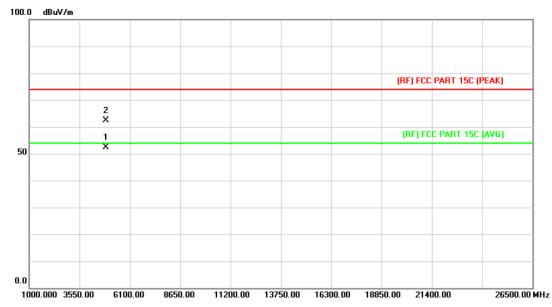


No.	Mk.	Freq.	_		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.769	49.80	13.44	63.24	74.00	-10.76	peak
2	*	4804.186	39.03	13.44	52.47	54.00	-1.53	AVG



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EUT:	Home base unit	Model Name :	S921			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Ant. Pol.	Horizontal	W Comments				
Test Mode:	TX GFSK Mode 2441MHz		THE PARTY OF THE P			
Remark:	Remark: No report for the emission which more than 10 dB below the prescribed limit.					

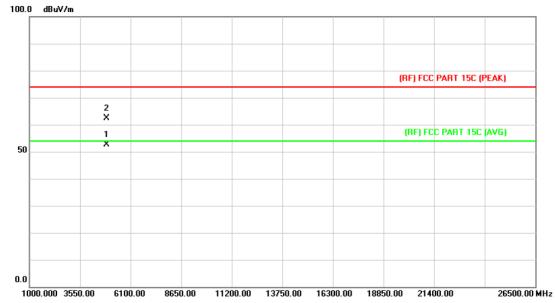


No	. Mk	. Freq.			Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4881.637	38.56	13.90	52.46	54.00	-1.54	AVG
2		4882.324	48.47	13.90	62.37	74.00	-11.63	peak



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EUT:	Home base unit	Model Name :	S921					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Vertical	Vertical						
Test Mode:	TX GFSK Mode 2441MHz		LILL STREET					
Remark:	No report for the emission wh prescribed limit.	ich more than 10 dB b	elow the					

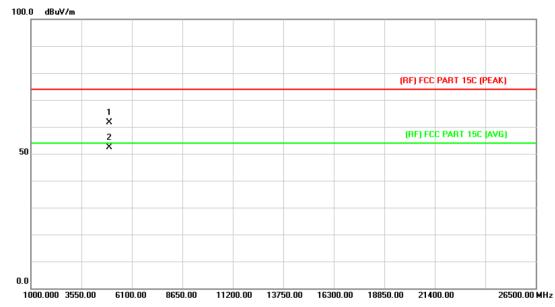


No	o. Mk	. Freq.			Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4881.913	38.63	13.90	52.53	54.00	-1.47	AVG
2		4882.002	48.52	13.90	62.42	74.00	-11.58	peak



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EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	TX GFSK Mode 2480MHz		LITTLE OF				
Remark:	mark: No report for the emission which more than 10 dB below the prescribed limit.						

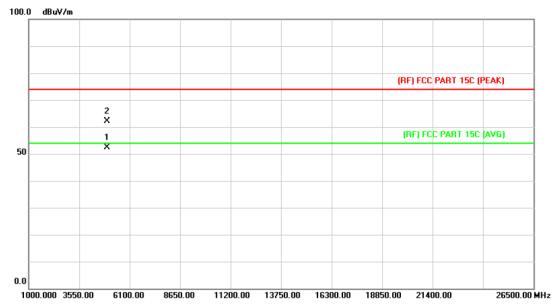


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.820	47.19	14.36	61.55	74.00	-12.45	peak
2	*	4960.040	37.98	14.36	52.34	54.00	-1.66	AVG



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EUT:	Home base unit	Model Name :	S921					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Vertical	Vertical						
Test Mode:	TX GFSK Mode 2480MHz		- TILL					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.							
	prescribed liftiit.							

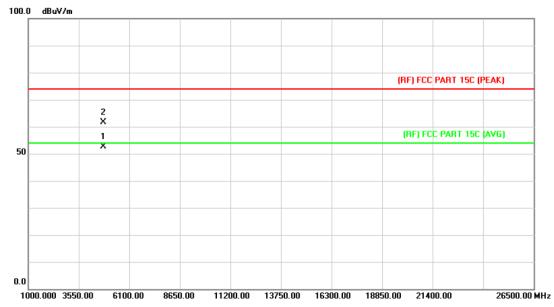


N	0.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	4959.770	38.03	14.36	52.39	54.00	-1.61	AVG
2			4959.811	47.72	14.36	62.08	74.00	-11.92	peak



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EUT:	Home base unit	S921						
Temperature:	25℃	Relative Humidity: 55%						
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Horizontal							
Test Mode:	TX π /4-DQPSK Mode 2402	MHz	LINE TO SERVICE					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.							

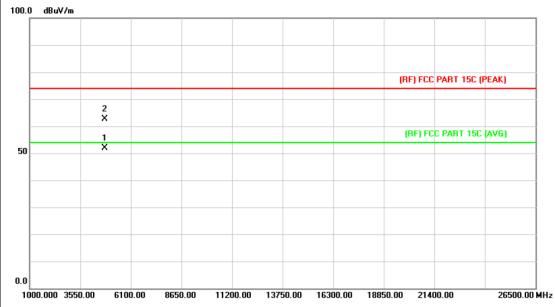


No	o. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.921	39.22	13.44	52.66	54.00	-1.34	AVG
2		4804.270	48.25	13.44	61.69	74.00	-12.31	peak



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EUT:	Home base unit	Model Name :	S921					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Vertical	N Comment						
Test Mode:	TX π /4-DQPSK Mode 240	02MHz	O. C. C.					
Remark:	Remark: No report for the emission which more than 10 dB below the prescribed limit.							
100 0 ID VI								

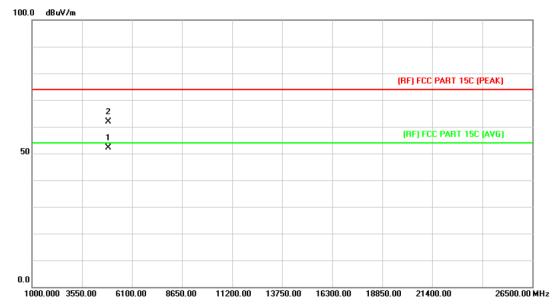


N	o. M	lk. Freq.			Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.703	38.43	13.44	51.87	54.00	-2.13	AVG
2		4803.96	5 49.23	13.44	62.67	74.00	-11.33	peak



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EUT:	Home base unit	Model Name :	S921					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V							
Ant. Pol.	Horizontal							
Test Mode:	TX π /4-DQPSK Mode 244	1MHz	DITT.					
Remark:	No report for the emission which more than 10 dB below the							
	prescribed limit.							



No. Mk.		. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4881.633	38.27	13.90	52.17	54.00	-1.83	AVG
2		4881.973	48.02	13.90	61.92	74.00	-12.08	peak



Report No.: TB-FCC151148
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THE RESERVE							
EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Vertical						
Test Mode:	TX π /4-DQPSK Mode 2441	TX π /4-DQPSK Mode 2441MHz					
Remark:	No report for the emission v	which more than 10 dB	below the				

Remark: No report for the emission which more than 10 dB below the prescribed limit.

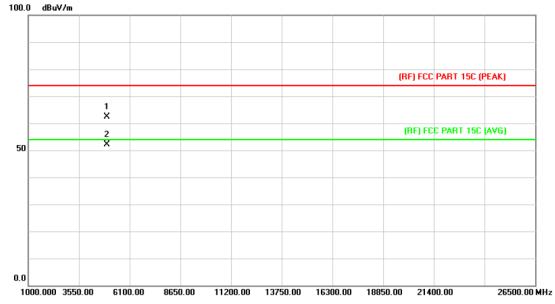


N	lo. N	Лk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4	4881.698	38.56	13.90	52.46	54.00	-1.54	AVG
2		4	4881.874	48.52	13.90	62.42	74.00	-11.58	peak



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EUT:	Home base unit	Model Name:	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Horizontal						
Test Mode:	TX π /4-DQPSK Mode 2480M	Hz	CHILL:				
Remark: No report for the emission which more than 10 dB below the prescribed limit.							

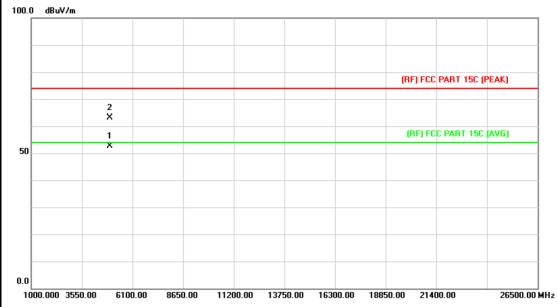


No	. Mk	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4960.215	48.01	14.36	62.37	74.00	-11.63	peak
2	*	4960.218	37.75	14.36	52.11	54.00	-1.89	AVG



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EUT:	Home base unit	Model Name :	S921					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V							
Ant. Pol.	Vertical	Vertical						
Test Mode:	TX π /4-DQPSK Mode 2480M	Hz	LITTLE OF					
Remark: No report for the emission which more than 10 dB below the prescribed limit.								

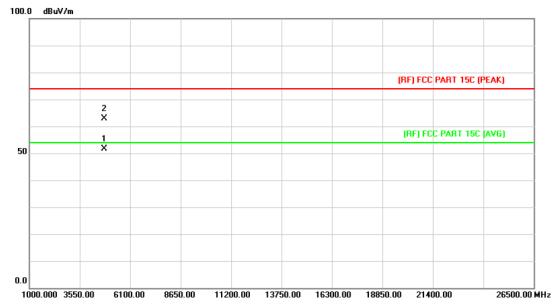


N	o. M	1k.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4	1959.635	38.37	14.36	52.73	54.00	-1.27	AVG
2		4	1960.093	48.72	14.36	63.08	74.00	-10.92	peak



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EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Horizontal	Horizontal					
Test Mode:	TX 8-DPSK Mode 2402MHz		THE PERSON				
Remark: No report for the emission which more than 10 dB below the prescribed limit.							

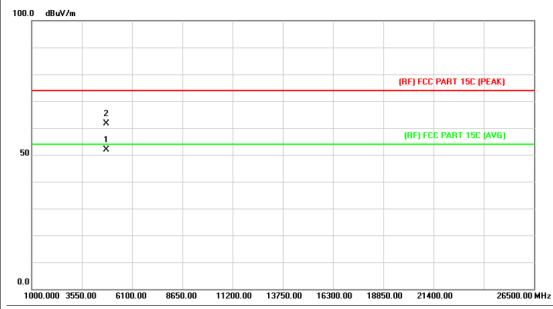


No	o. MI	κ. Freq.			Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4804.124	38.17	13.44	51.61	54.00	-2.39	AVG
2		4804.177	49.35	13.44	62.79	74.00	-11.21	peak



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EUT:	Home base unit	Model Name :	S921					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Vertical	Vertical						
Test Mode:	TX 8-DPSK Mode 2402M	Hz	THE PARTY OF					
Remark: No report for the emission which more than 10 dB below the prescribed limit.								

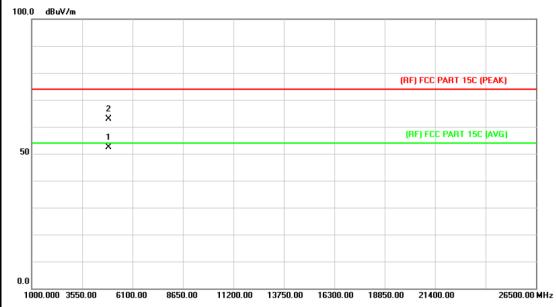


N	lo.	Mk.	Freq.			Measure- ment	Limit	Over	
			MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	4803.927	38.39	13.44	51.83	54.00	-2.17	AVG
2			4804.381	48.29	13.44	61.73	74.00	-12.27	peak



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EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Horizontal						
Test Mode:	TX 8-DPSK Mode 2441MHz						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						

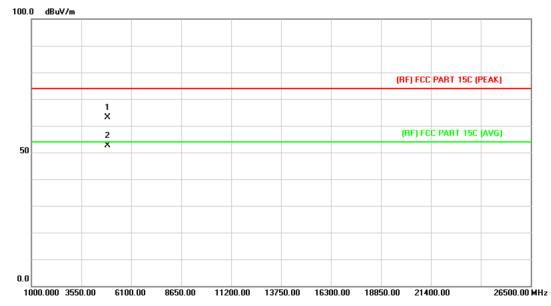


N	o. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4881.857	38.48	13.90	52.38	54.00	-1.62	AVG
2		4881.899	48.94	13.90	62.84	74.00	-11.16	peak



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EUT:	Home base unit	Model Name :	S921					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Vertical	W Co						
Test Mode:	TX 8-DPSK Mode 2441MI	TX 8-DPSK Mode 2441MHz						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.							

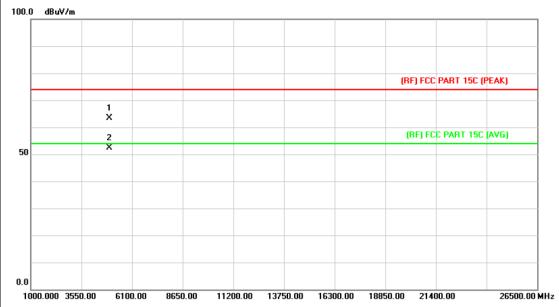


No	o. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4881.795	49.20	13.90	63.10	74.00	-10.90	peak
2	*	4881.994	38.72	13.90	52.62	54.00	-1.38	AVG



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EUT:	Home base unit	Model Name :	S921					
Temperature:	25℃	Relative Humidity:	55%					
Test Voltage:	DC 3.7V	DC 3.7V						
Ant. Pol.	Horizontal	Horizontal						
Test Mode:	TX 8-DPSK Mode 2480MHz		LITTLE OF					
Remark:	No report for the emission which more than 10 dB below the prescribed limit.							
prescribed limit.								

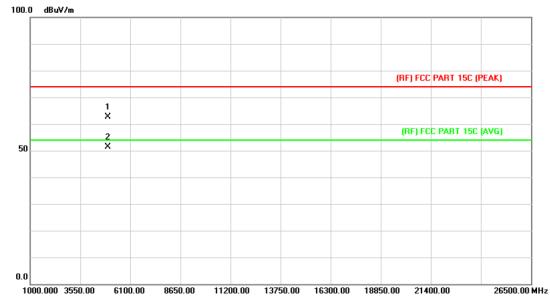


No	. Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.748	48.91	14.36	63.27	74.00	-10.73	peak
2	*	4959.969	38.08	14.36	52.44	54.00	-1.56	AVG



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EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V						
Ant. Pol.	Vertical	Vertical					
Test Mode:	TX 8-DPSK Mode 2480MHz		LINE TO SERVICE				
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						



No.	. Mk	Freq.			Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.943	48.29	14.36	62.65	74.00	-11.35	peak
2	*	4960.284	37.12	14.36	51.48	54.00	-2.52	AVG



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6. Restricted Bands Requirement

### 6.1 Test Standard and Limit

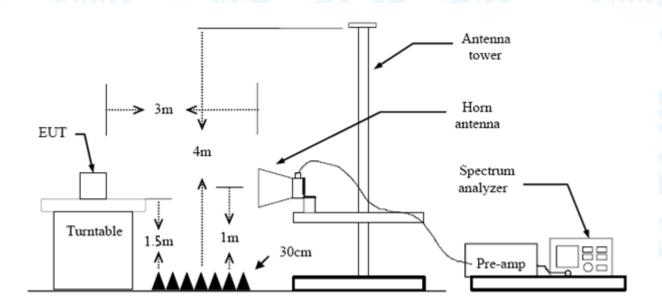
6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Class B (dE	BuV/m)(at 3m)
Band (MHz)	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

Note: All restriction bands have been tested, only the worst case is reported.

## 6.2 Test Setup



### 6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.



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(3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with AVG Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

# 6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

### 6.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

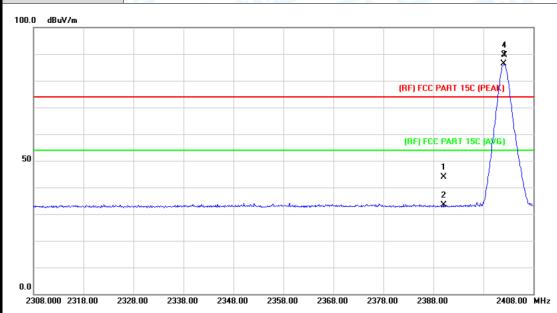
All restriction bands have been tested, only the worst case is reported.



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# (1) Radiation Test

EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Horizontal		THE PERSON NAMED IN				
Test Mode:	TX GFSK Mode 2402MHz						
Remark:	Only worse case is reported	THU .					

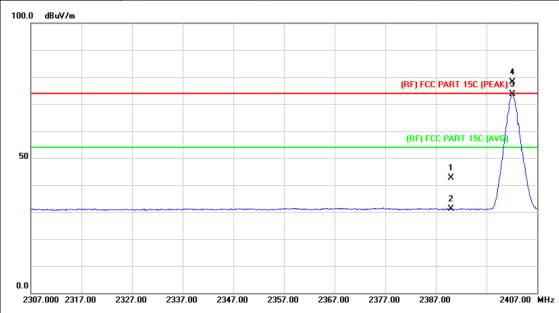


No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	43.10	0.77	43.87	74.00	-30.13	peak
2		2390.000	32.55	0.77	33.32	54.00	-20.68	AVG
3	*	2402.100	85.54	0.82	86.36	Fundamental Frequency		AVG
4	Χ	2402.200	88.83	0.82	89.65	Fundamental	Frequency	peak



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EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Vertical						
Test Mode:	TX GFSK Mode 2402MHz						
Remark:	Only worse case is reported	(IIII)					

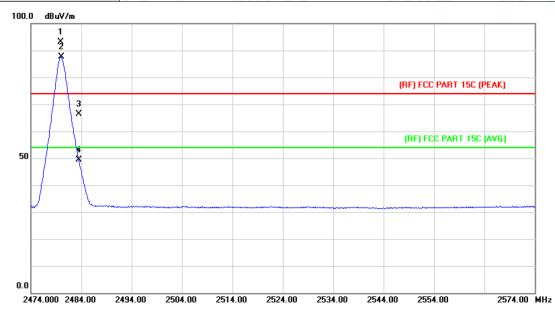


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.87	0.77	42.64	74.00	-31.36	peak
2		2390.000	30.35	0.77	31.12	54.00	-22.88	AVG
3	*	2402.100	72.70	0.82	73.52	Fundamental	Frequency	AVG
4	Χ	2402.200	77.30	0.82	78.12	Fundamental	Frequency	peak



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EUT:	Home base unit	Model Name :	S921			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Ant. Pol.	Horizontal					
Test Mode:	TX GFSK Mode 2480 MHz					
Remark:	Only worse case is reported	and the	3 _ 6			

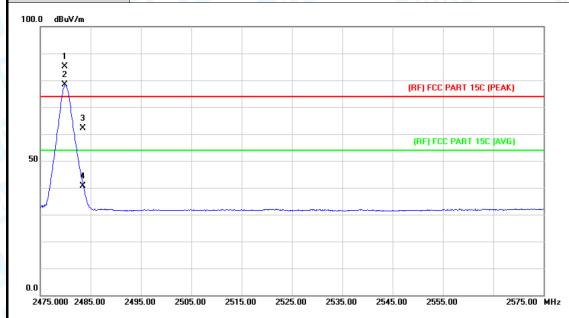


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2479.900	92.08	1.15	93.23	Fundamental	Frequency	peak
2	*	2480.000	86.40	1.15	87.55	Fundamental	Frequency	AVG
3		2483.500	65.33	1.17	66.50	74.00	-7.50	peak
4		2483.500	48.19	1.17	49.36	54.00	-4.64	AVG



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EUT:	Home base unit	Model Name :	S921				
Temperature:	25℃	25℃ Relative Humidity: 55%					
Test Voltage:	DC 3.7V		33				
Ant. Pol.	Vertical						
Test Mode:	Test Mode: TX GFSK Mode 2480 MHz						
Remark:							

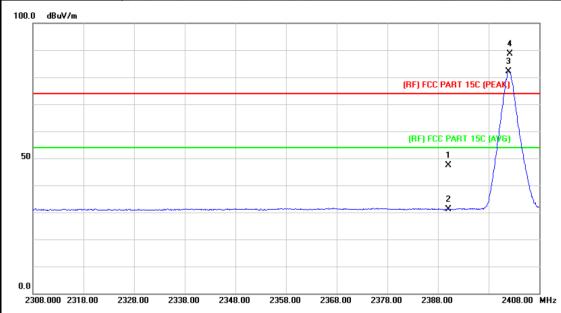


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2479.900	84.04	1.15	85.19	Fundamental	l Frequency	peak
2	*	2479.900	77.22	1.15	78.37	Fundamenta	I Frequency	AVG
3		2483.500	60.98	1.17	62.15	74.00	-11.85	peak
4		2483.500	39.55	1.17	40.72	54.00	-13.28	AVG



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EUT:	Home base unit	S921					
Temperature: 25℃ Relative Humid		Relative Humidity:	55%				
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Horizontal						
Test Mode:	TX π /4-DQPSK Mode 2402MHz						
Remark:	Only worse case is reported						

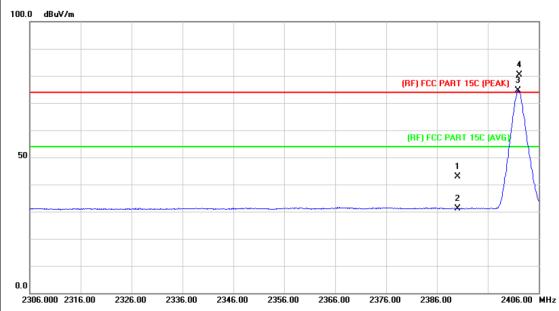


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	46.65	0.77	47.42	74.00	-26.58	peak
2		2390.000	30.40	0.77	31.17	54.00	-22.83	AVG
3	*	2401.900	81.29	0.82	82.11	Fundamenta	I Frequency	AVG
4	Χ	2402.200	87.92	0.82	88.74	Fundamenta	I Frequency	peak



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Home base unit	se unit Model Name :				
25℃	Relative Humidity: 55				
DC 3.7V					
Vertical					
TX π /4-DQPSK Mode 2402MHz					
Remark: Only worse case is reported					
	25°C DC 3.7V Vertical TX π /4-DQPSK Mode 2402M	25°C Relative Humidity:  DC 3.7V  Vertical  ΤΧ π /4-DQPSK Mode 2402MHz			

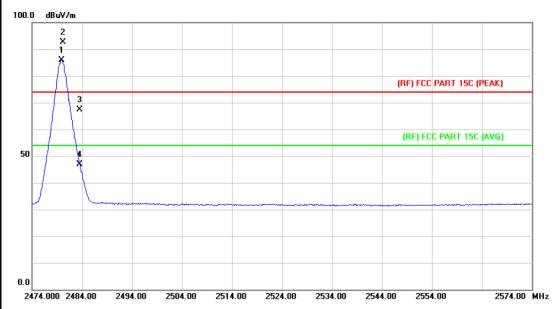


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	42.06	0.77	42.83	74.00	-31.17	peak
2		2390.000	30.24	0.77	31.01	54.00	-22.99	AVG
3	*	2401.900	73.93	0.82	74.75	Fundamenta	I Frequency	AVG
4	Χ	2402.200	79.53	0.82	80.35	Fundamenta	I Frequency	peak



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EUT:	Home base unit	Model Name :					
Temperature:	erature: 25°C Relative Humidity:						
Test Voltage:	DC 3.7V	DC 3.7V					
Ant. Pol.	Horizontal		S. France				
Test Mode:	TX π /4-DQPSK Mode 2480MHz						
Remark: Only worse case is reported							

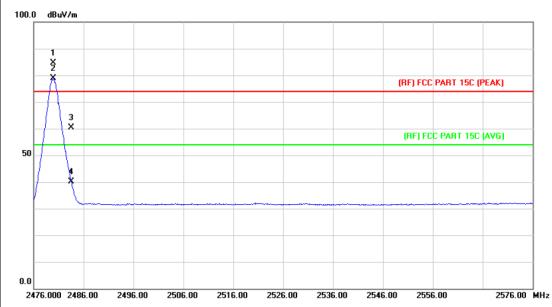


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2479.900	84.85	1.15	86.00	Fundamenta	I Frequency	AVG
2	Χ	2480.200	91.59	1.15	92.74	Fundamenta	I Frequency	peak
3		2483.500	66.16	1.17	67.33	74.00	-6.67	peak
4		2483.500	45.70	1.17	46.87	54.00	-7.13	AVG



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EUT:	Home base unit Model Name :		S921			
Temperature:	nperature: 25°C Relative		55%			
Test Voltage:	DC 3.7V					
Ant. Pol.	Vertical					
Test Mode:	TX π /4-DQPSK Mode 2480MHz					
Remark: Only worse case is reported						

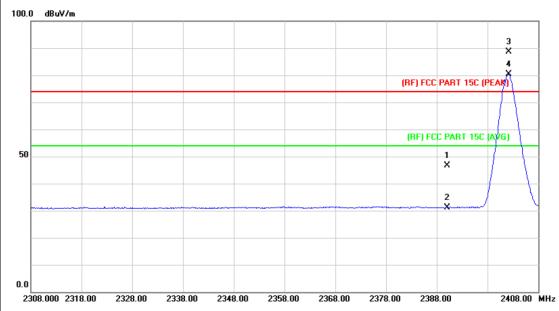


No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2479.900	83.51	1.15	84.66	Fundamental	Frequency	peak
2	*	2479.900	77.77	1.15	78.92	Fundamental	Frequency	AVG
3		2483.500	59.09	1.17	60.26	74.00	-13.74	peak
4		2483.500	39.05	1.17	40.22	54.00	-13.78	AVG



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EUT: Home base unit Model Name		S921			
Temperature: 25℃ Relative		55%			
DC 3.7V					
Horizontal					
TX 8-DPSK Mode 2402MHz					
Remark: Only worse case is reported					
	25°C DC 3.7V Horizontal TX 8-DPSK Mode 2402MHz	25°C Relative Humidity:  DC 3.7V  Horizontal  TX 8-DPSK Mode 2402MHz			

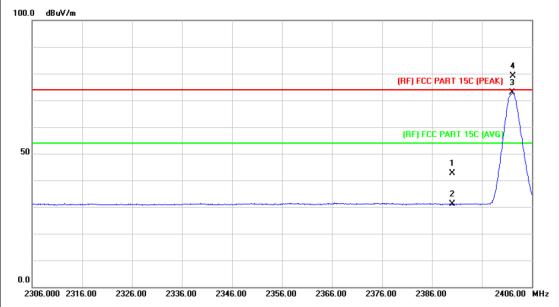


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	45.89	0.77	46.66	74.00	-27.34	peak
2		2390.000	30.43	0.77	31.20	54.00	-22.80	AVG
3	Χ	2402.200	87.92	0.82	88.74	Fundamental	Frequency	peak
4	*	2402.200	79.54	0.82	80.36	Fundamental Frequency		AVG



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EUT:	Home base unit	Model Name :	S921		
Temperature:	25℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Ant. Pol.	Vertical				
Test Mode:	TX 8-DPSK Mode 2402MHz				
Remark: Only worse case is reported					

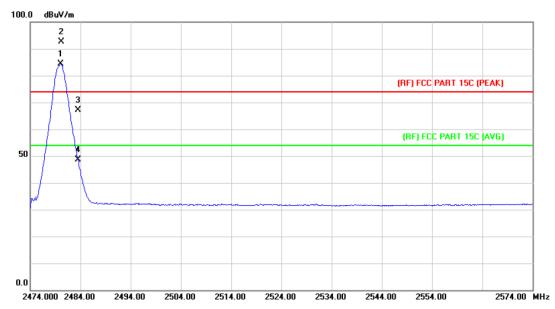


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.84	0.77	42.61	74.00	-31.39	peak
2		2390.000	30.24	0.77	31.01	54.00	-22.99	AVG
3	*	2402.100	72.13	0.82	72.95	Fundamental	Frequency	AVG
4	Χ	2402.200	78.42	0.82	79.24	Fundamental	Frequency	peak



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Home base unit	Model Name :	S921			
25℃	Relative Humidity:	55%			
DC 3.7V					
Horizontal					
TX 8-DPSK Mode 2480MHz					
Remark: Only worse case is reported					
	25℃ DC 3.7V Horizontal TX 8-DPSK Mode 2480MHz	25°C Relative Humidity:  DC 3.7V  Horizontal  TX 8-DPSK Mode 2480MHz			

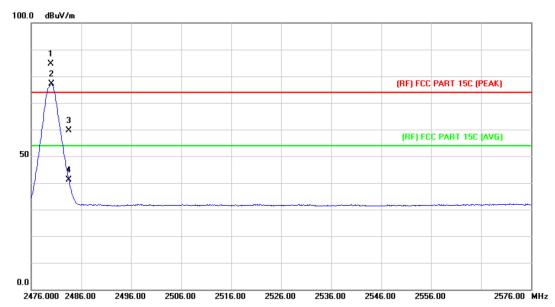


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2480.100	83.22	1.15	84.37	Fundamental	Frequency	AVG
2	Χ	2480.200	91.58	1.15	92.73	Fundamental	Frequency	peak
3		2483.500	65.97	1.17	67.14	74.00	-6.86	peak
4		2483.500	47.35	1.17	48.52	54.00	-5.48	AVG



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EUT:	Home base unit	Model Name :	S921			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Ant. Pol.	Vertical					
Test Mode:	TX 8-DPSK Mode 2480MHz					
Remark: Only worse case is reported						

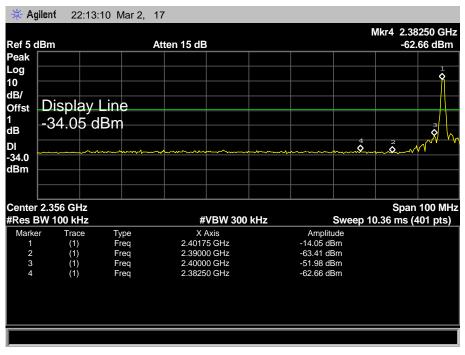


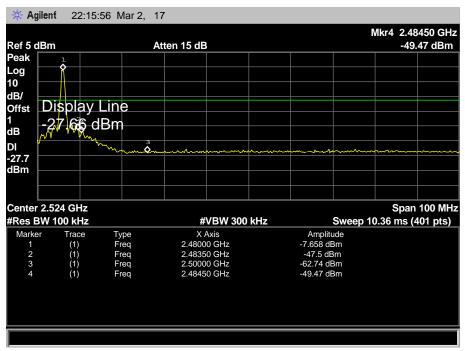
			Dooding	Corroct	Magazira			
No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	X	2479.900	83.58	1.15	84.73	Fundamental	Frequency	peak
2	*	2480.000	75.87	1.15	77.02	Fundamental	Frequency	AVG
3		2483.500	58.48	1.17	59.65	74.00	-14.35	peak
4		2483.500	39.91	1.17	41.08	54.00	-12.92	AVG



(2) Conducted Test

EUT:	Home base unit	Model Name :	S921			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V					
Test Mode:	TX GFSK Mode 2402MHz/2480 MHz					
Remark:	Remark: Only worse case is reported					







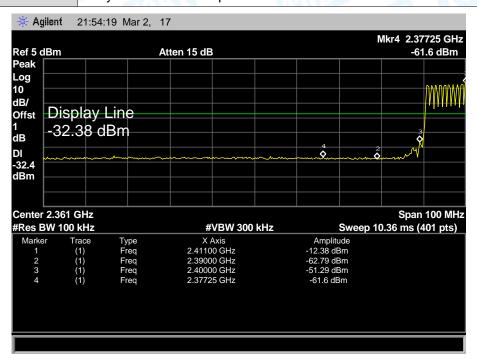
 EUT:
 Home base unit
 Model Name:
 S921

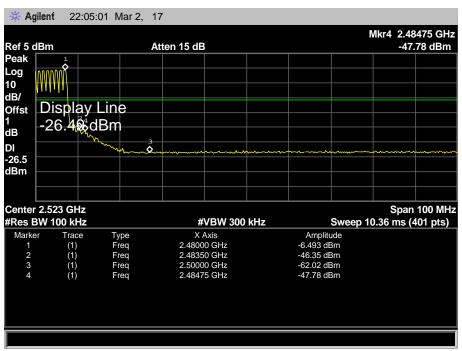
 Temperature:
 25℃
 Relative Humidity:
 55%

 Test Voltage:
 DC 3.7V

 Test Mode:
 GFSK Hopping Mode

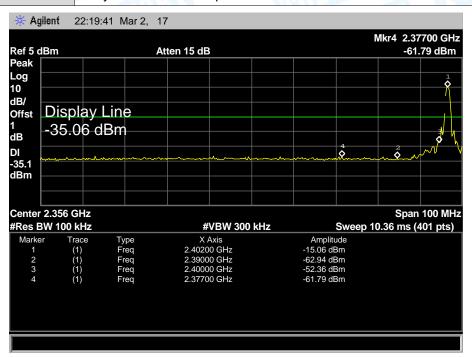
 Remark:
 Only worse case is reported

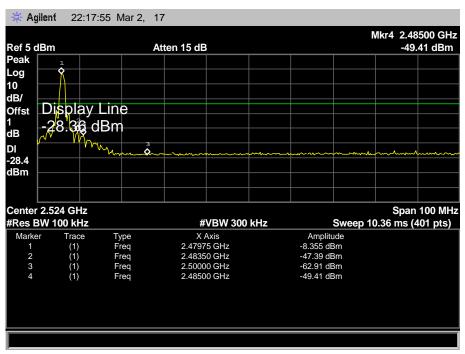






EUT:Home base unitModel Name :S921Temperature:25°CRelative Humidity:55%Test Voltage:DC 3.7VTest Mode:TX π /4-DQPSK Mode 2402MHz/2480 MHzRemark:Only worse case is reported







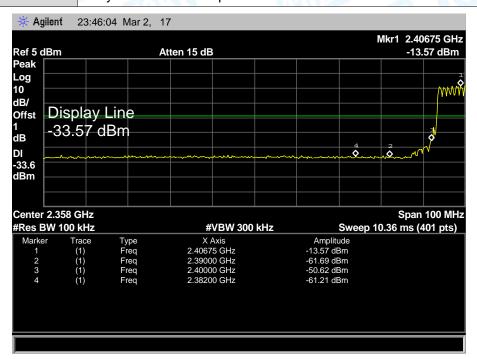
 EUT:
 Home base unit
 Model Name:
 S921

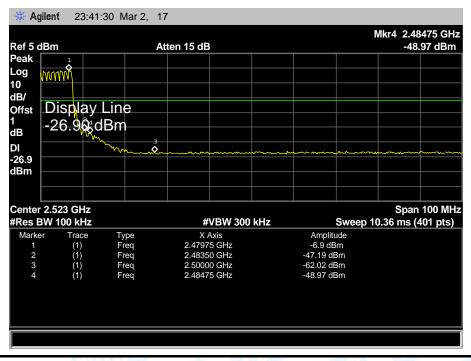
 Temperature:
 25°C
 Relative Humidity:
 55%

 Test Voltage:
 DC 3.7V

 Test Mode:
 π /4-DQPSK Hopping Mode

 Remark:
 Only worse case is reported

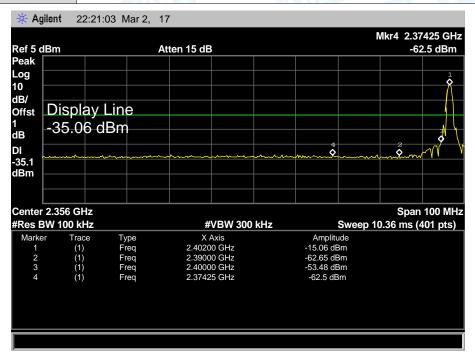


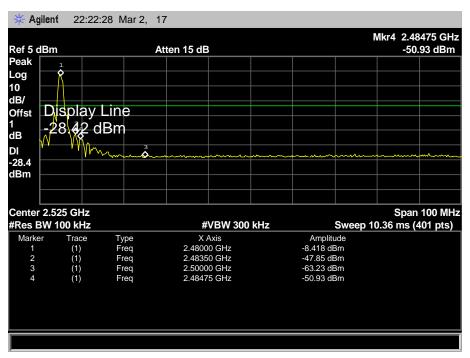




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EUT:	Home base unit	Model Name :	S921			
Temperature:	25℃	Relative Humidity:	55%			
Test Voltage:	DC 3.7V	DC 3.7V				
Test Mode:	TX 8-DPSK Mode 2402MHz/2480 MHz					
Remark:	Remark: Only worse case is reported					







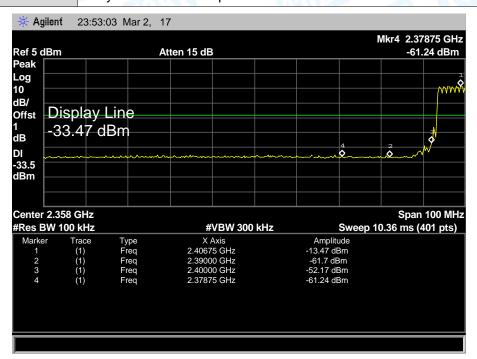
EUT: Home base unit Model Name: S921

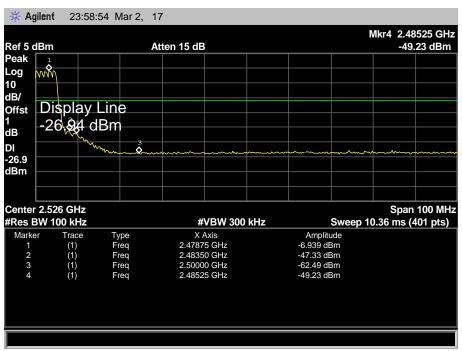
Temperature: 25℃ Relative Humidity: 55%

Test Voltage: DC 3.7V

Test Mode: 8-DPSK Hopping Mode

Remark: Only worse case is reported







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# 7. Number of Hopping Channel

### 7.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.247 (a)(1)

6.1.2 Test Limit

Section	Test Item	Limit
15.247	Number of Hopping Channel	>15

# 7.2 Test Setup



### 7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=100 KHz, VBW=100 KHz, Sweep time= Auto.

# 7.4 EUT Operating Condition

The EUT was set to the Hopping Mode by the Customer.

## 7.5 Test Data

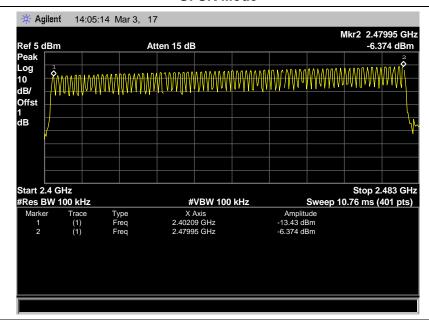


EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		1.8.3

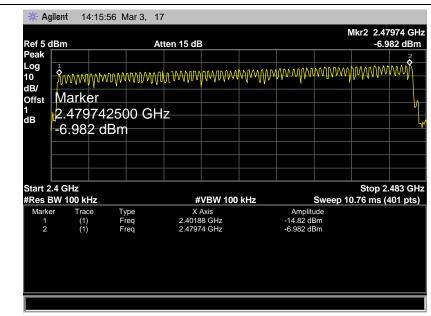
**Test Mode:** Hopping Mode

Frequency Range	Test Mode	Quantity of Hopping Channel	Limit
	GFSK	79	
2402MHz~2480MHz	π /4-DQPSK	79	>15
	8-DPSK	79	

#### **GFSK Mode**

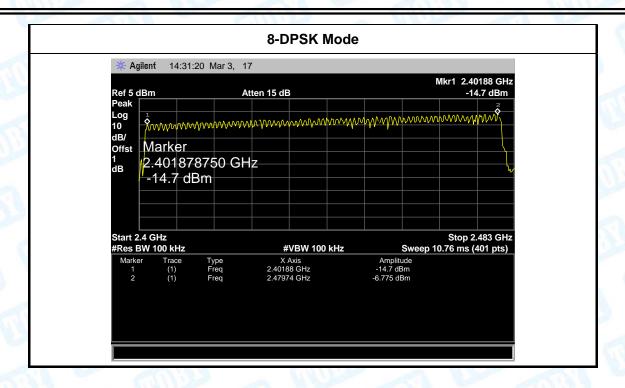


## π/4-DQPSK Mode





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# 8. Average Time of Occupancy

### 8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (a)(1)

8.1.2 Test Limit

Section	Test Item	Limit
15.247(a)(1)/ RSS-210	Average Time of	0.4.000
Annex 8(A8.1d)	Occupancy	0.4 sec

## 8.2 Test Setup



#### 8.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=1MHz, VBW=1MHz.
- (3) Use video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for packet transmitting.
- (8) Measure the maximum time duration of one single pulse.

# 8.4 EUT Operating Condition

The average time of occupancy on any channel within the Period can be calculated with formulas:

 ${Total of Dwell} = {Pulse Time} * (1600 / X) / {Number of Hopping Frequency} * {Period} = 0.4s * {Number of Hopping Frequency}$ 

Note: X=2 or 4 or 6 (1DH1=2, 1DH3=4, 1DH5=6. 2DH1=2, 2DH3=4, 2DH5=6. 3DH1=2,3DH3=4, 3DH5=6)

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

The EUT was set to the Hopping Mode by the Customer.



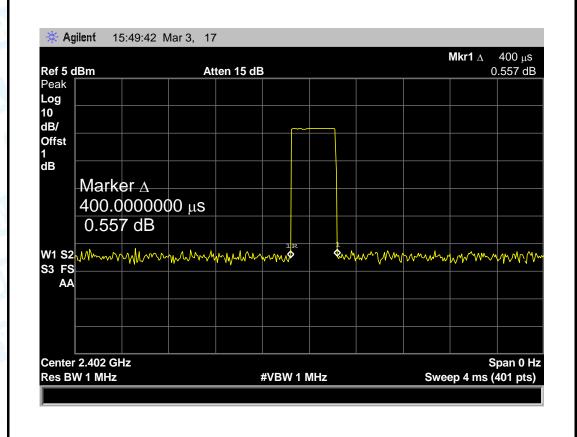
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### 8.5 Test Data

EUT:	Home base	unit	Model Name :		S921
Temperature:	25℃		Relative Humidity:		55%
Test Voltage:	DC 3.7V	OC 3.7V			
Test Mode:	Hopping Mod	de (GFSK 1DH1)	CHILL ST		A HILL
Channel	Pulse Time	Total of Dwell	Period Time Limit		Result
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	0.400	128.00	31.60	400	
2441	0.400	128.00			PASS
2480	0.400	128.00			
Note: Dwell time Dules Time (ms) v (1600 · 2 · 70) v 21 6					

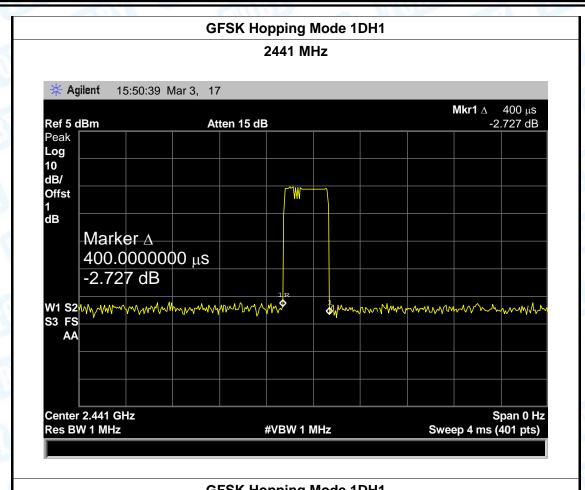
Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  2  $\div$  79)  $\times$ 31.6

### **GFSK Hopping Mode 1DH1**

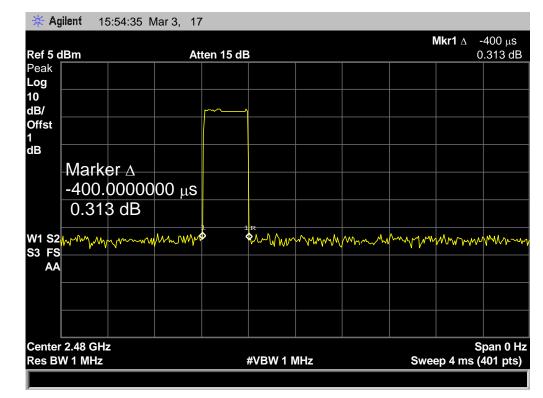




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# **GFSK Hopping Mode 1DH1** 2480 MHz



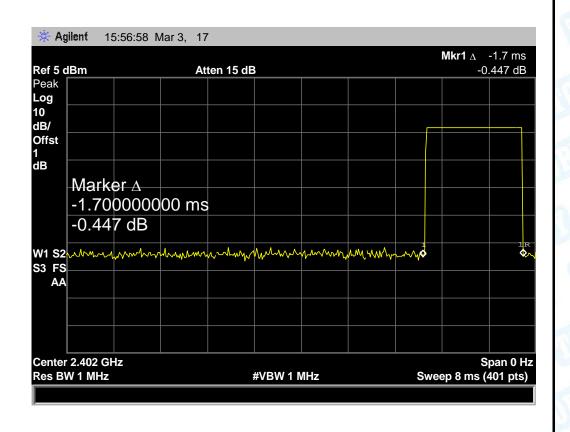


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EUT:	Home base	e unit	Model Nam	e :	S921
Temperature:	25°C		Relative Humidity:		55%
Test Voltage:	DC 3.7V	MAN TO SERVICE STATE OF THE PARTY OF THE PAR	4 12		18
Test Mode:	Hopping M	ode (GFSK 1DH3)		Hillian	
Channel	Pulse Time	Total of Dwell	Period Time	Limit	Result
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	1.700	272.00			
2441	1.700	272.00	31.60	400	PASS
2480	1.700	272.00			

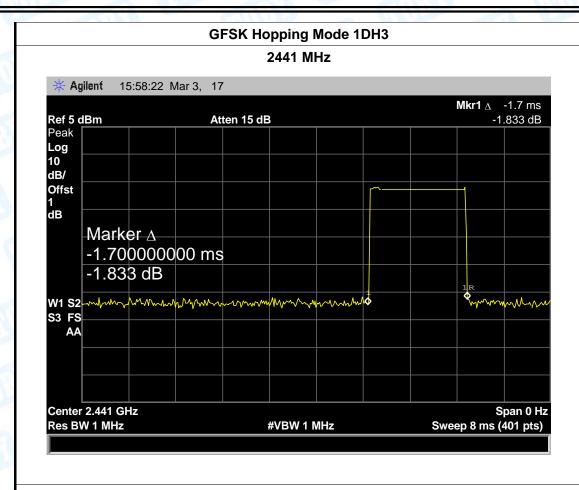
Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  4  $\div$  79)  $\times$ 31.6

### **GFSK Hopping Mode 1DH3**

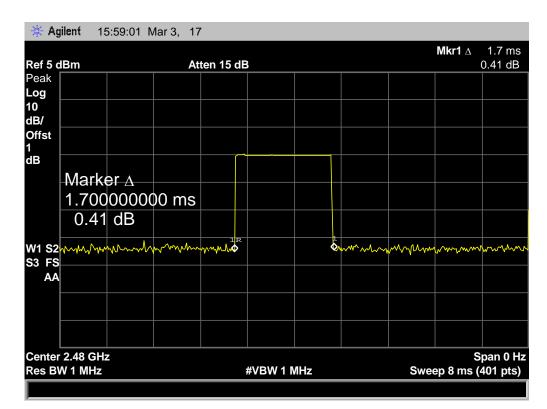




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# **GFSK Hopping Mode 1DH3**



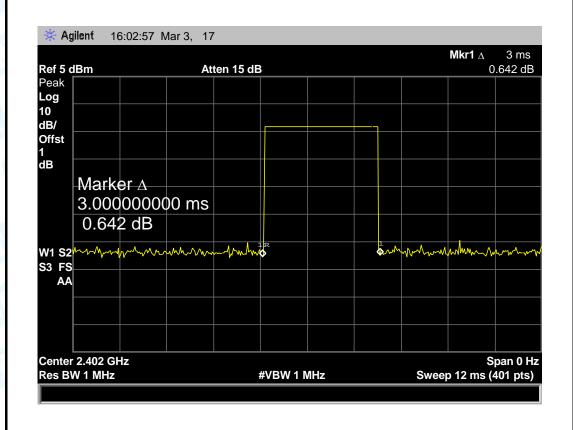


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EUT:	Home base	e unit	Model Name :		S921
Temperature:	<b>25</b> ℃	1033	Relative Humidity:		55%
Test Voltage:	DC 3.7V	N. S. C.	W. A.	-	18.0
Test Mode:	Hopping M	ode (GFSK 1DH5)		Hilli	
Channel	Pulse Time	Total of Dwell	Period Time	Limit	Result
(MHz)	(ms)	(ms)	(s)	(ms)	Resuit
2402	3.000	320.00			
2441	3.000	320.00	31.60	400	PASS
2480	3.000	320.00			

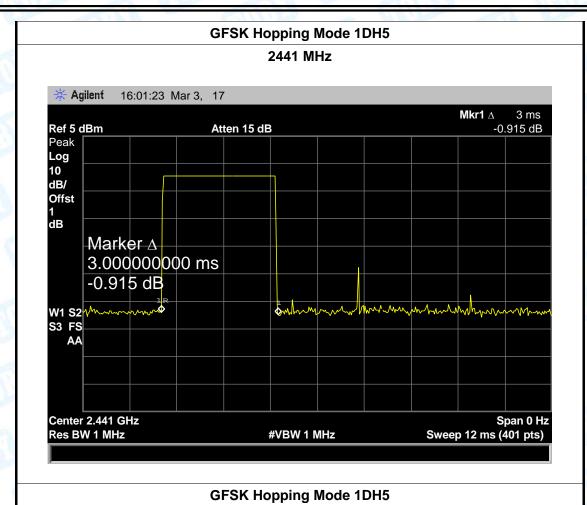
Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  6  $\div$  79)  $\times$ 31.6

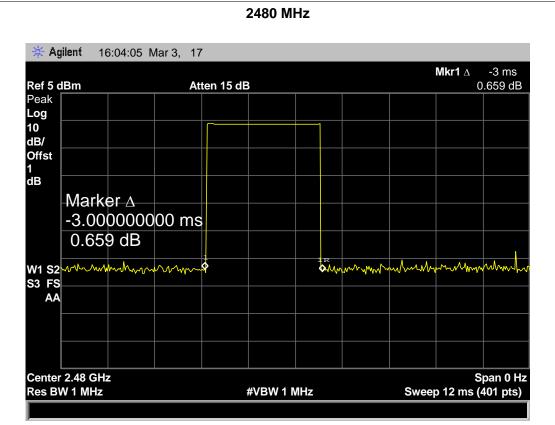
### **GFSK Hopping Mode 1DH5**





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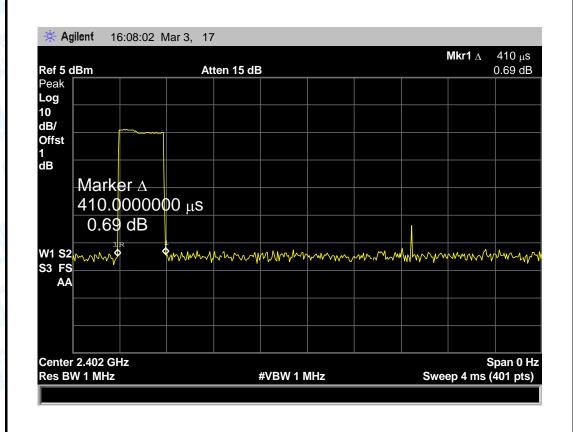
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EUT:	Home base unit	Model Name :	S921		
Temperature:	25℃	Relative Humidity:	55%		
Test Voltage:	DC 3.7V				
Test Mode:	Hopping Mode ( π /4-DQPSK 2DH1)				

root mode.	i iopping iii	545 ( 7 1 E Q 1 6 1 t			
Channel	Pulse Time	Total of Dwell	Period Time	Limit	Pocult
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	0.410	131.20			
2441	0.410	131.20	31.60	400	PASS
2480	0.410	131.20			

Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  2  $\div$  79)  $\times$ 31.6

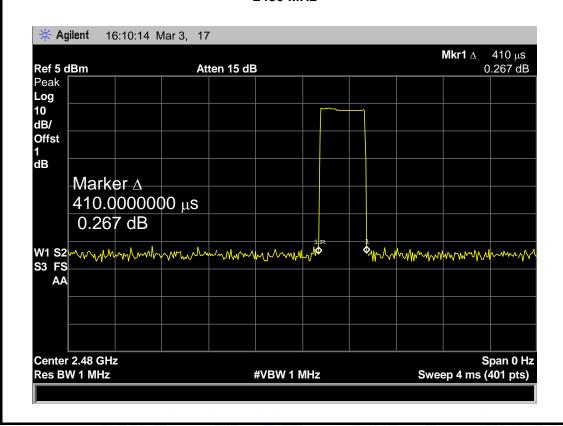
### $\pi$ /4-DQPSK Hopping Mode 2DH1





π /4-DQPSK Hopping Mode 2DH1 2441 MHz 16:09:07 Mar 3, 17 \* Agilent Mkr1  $\Delta$ 410 μs -3.13 dB Ref 5 dBm Atten 15 dB Peak Log 10 dB/ Offst 1 dB Marker ∆ 410.0000000 μs -3.13 dB & many many m S3 FS AA Center 2.441 GHz Span 0 Hz Res BW 1 MHz #VBW 1 MHz Sweep 4 ms (401 pts)

π/4-DQPSK Hopping Mode 2DH1





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EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Toot Voltage:	DC 3.7\/		1.9.19

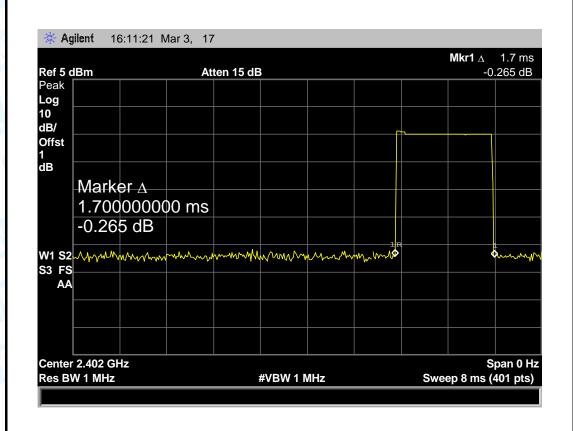
Test Voltage: DC 3.7V

**Test Mode:** Hopping Mode ( π /4-DQPSK 2DH3)

		· · · · · · · · · · · · · · · · · · ·			67, 111, 11, 12, 20
Channel	Pulse Time	Total of Dwell	Period Time	Limit	Popult
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	1.700	272.00			
2441	1.700	272.00	31.60	400	PASS
2480	1.700	272.00			

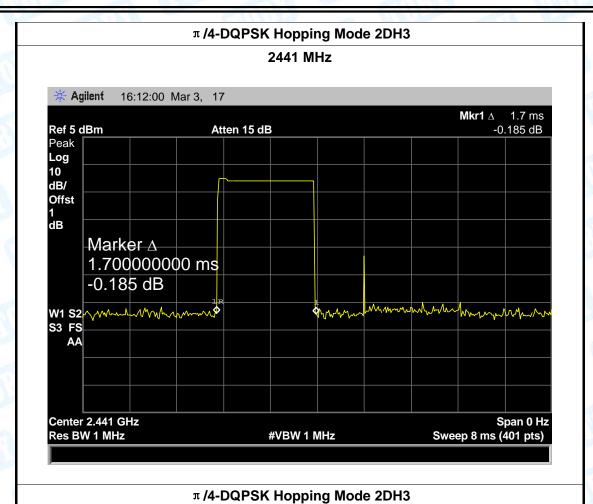
Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  4  $\div$  79)  $\times$ 31.6

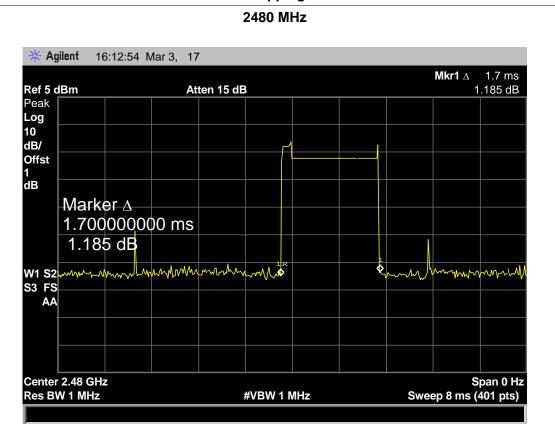
### π/4-DQPSK Hopping Mode 2DH3





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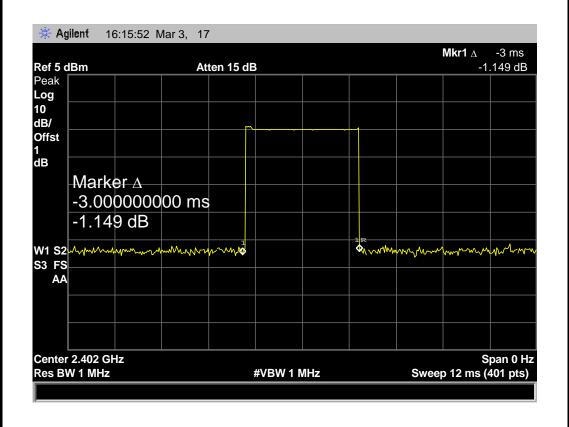
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Channel	Pulse Time	Total of Dwell	Period Time	Limit	Result
Test Mode:	Hopping M	ode (π/4-DQPSK	2DH5)	Alto	
Test Voltage:	DC 3.7V				189
Temperature:	25℃		Relative Hum	idity:	55%
EUT:	Home base	e unit	Model Nam	e :	S921

Channel	Pulse Time	Total of Dwell	Period Time	Limit	
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	3.000	320.00			
2441	3.000	320.00	31.60	400	PASS
2480	3.000	320.00			

Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  6  $\div$  79)  $\times$ 31.6

## $\pi$ /4-DQPSK Hopping Mode 2DH5





π /4-DQPSK Hopping Mode 2DH5 2441 MHz \* Agilent 16:17:22 Mar 3, 17 Mkr1  $\Delta$ Ref 5 dBm Atten 15 dB 0.678 dB Peak Log 10 dB/ Offst 1 dB Marker ∆ -3.00000000 ms 0.678 dB annumprobe W1 S2 S3 FS AA Center 2.441 GHz Span 0 Hz Res BW 1 MHz #VBW 1 MHz Sweep 12 ms (401 pts) π/4-DQPSK Hopping Mode 2DH5 2480 MHz \* Agilent 16:18:04 Mar 3, 17 Mkr1  $\Delta$ 0.018 dB Ref 5 dBm Atten 15 dB Peak Log 10 dB/ Offst 1 dB Marker ∆ -3.00000000 ms 0.018 dB hurry S3 FS AA

#VBW 1 MHz

Center 2.48 GHz

Res BW 1 MHz

Span 0 Hz

Sweep 12 ms (401 pts)



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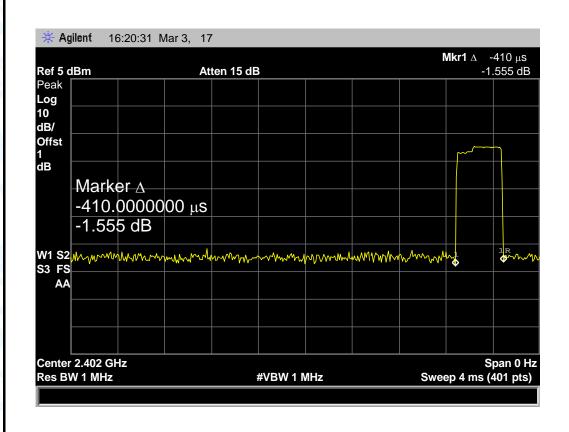
EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		

**Test Mode:** Hopping Mode (8-DPSK 3DH1)

Channel	Pulse Time	Total of Dwell	Period Time	Limit	Result
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	0.410	131.20			
2441	0.410	131.20	31.60	400	PASS
2480	0.410	131.20			

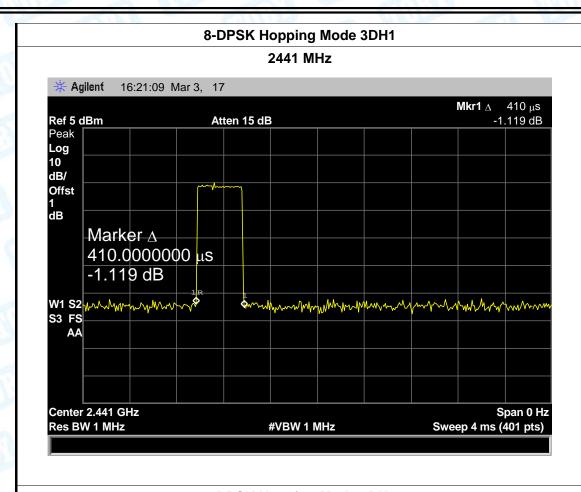
Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  2  $\div$  79)  $\times$ 31.6

## 8-DPSK Hopping Mode 3DH1

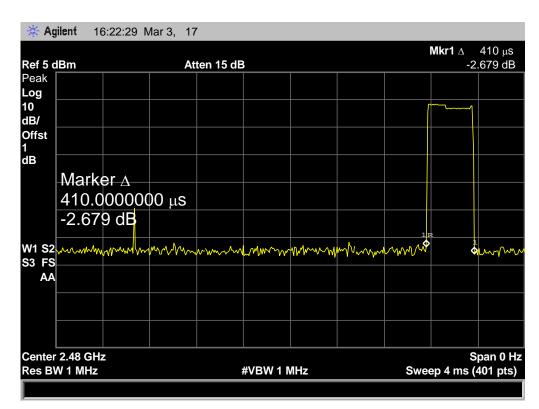




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## 8-DPSK Hopping Mode 3DH1





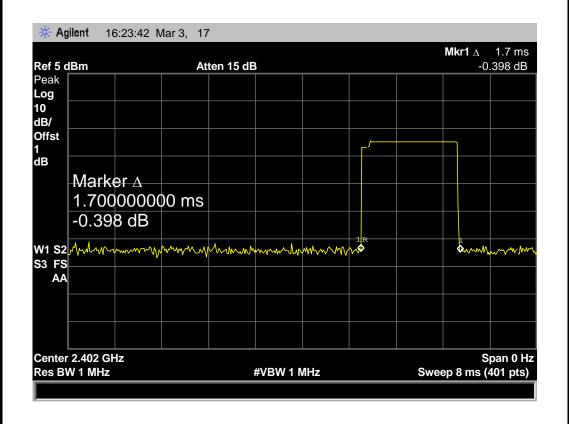
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EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		33
Test Mode:	Hopping Mode (8-DPSK 3DE	13)	

		•			
Channel	Pulse Time	Total of Dwell	Period Time	Limit	Popul <del>t</del>
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	1.700	272.00			
2441	1.700	272.00	31.60	400	PASS
2480	1.700	272.00			

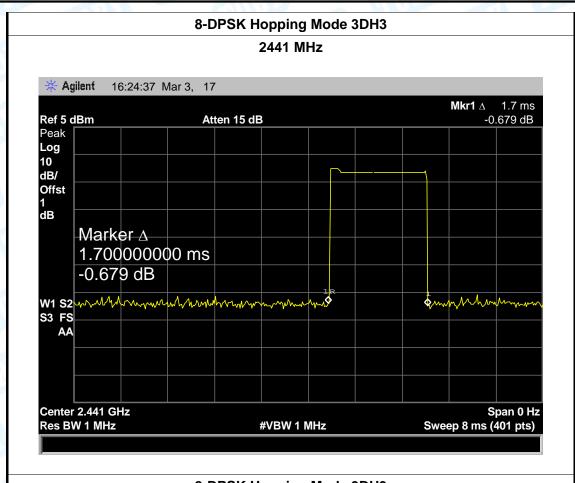
Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  4  $\div$  79)  $\times$ 31.6

## 8-DPSK Hopping Mode 3DH3

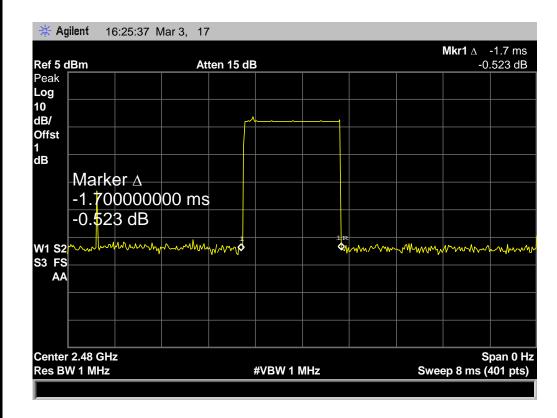




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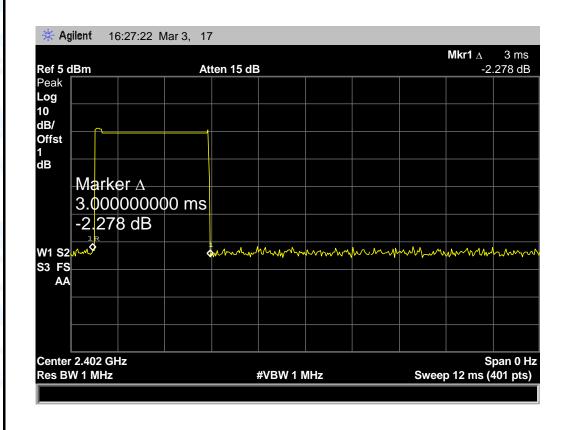


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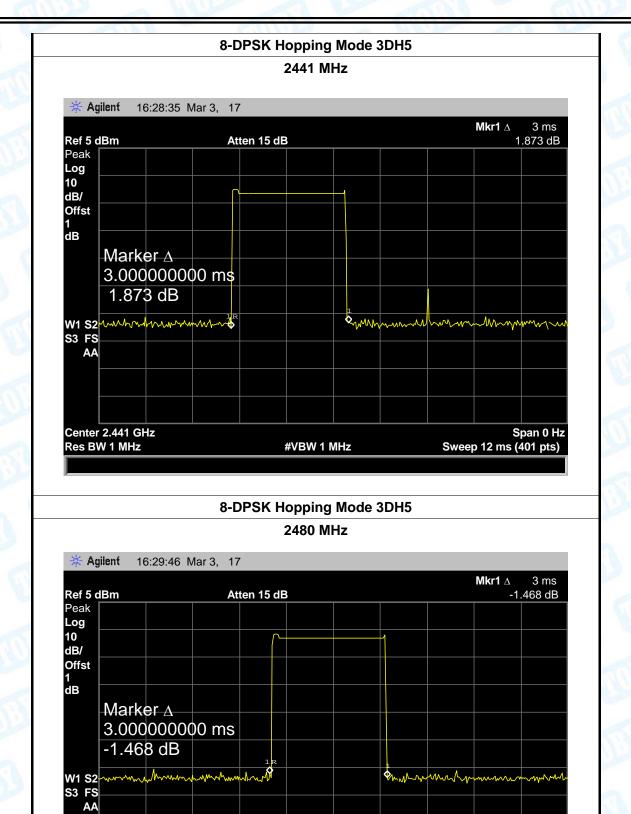
EUT:	Home base	Home base unit		e :	S921
Temperature:	<b>25</b> ℃		Relative Hum	idity:	55%
Test Voltage:	DC 3.7V	N. C.	W. Comment	-	189
Test Mode:	Hopping M	ode (8-DPSK 3DF	<del>1</del> 5)	River	
Channel	Pulse Time	Total of Dwell	Period Time	Limit	Result
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	3.000	320.00			
2441	3.000	320.00	31.60	400	PASS
2480	3.000	320.00			

Note: Dwell time=Pulse Time (ms)  $\times$  (1600  $\div$  6  $\div$  79)  $\times$ 31.6

## 8-DPSK Hopping Mode 3DH5







#VBW 1 MHz

Center 2.48 GHz

Res BW 1 MHz

Span 0 Hz

Sweep 12 ms (401 pts)



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# 9. Channel Separation and Bandwidth Test

### 9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247

9.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Bandwidth	<=1 MHz (20dB bandwidth)	2400~2483.5
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

## 9.2 Test Setup



## 9.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Channel Separation: RBW=30 kHz, VBW=100 kHz.

Bandwidth: RBW=30 kHz, VBW=100 kHz.

- (3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
  - (4) Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:30 kHz, and Video Bandwidth:100 kHz. Sweep Time set auto.

# 9.4 EUT Operating Condition

The EUT was set to the Hopping Mode for Channel Separation Test and continuously transmitting for the Bandwidth Test.

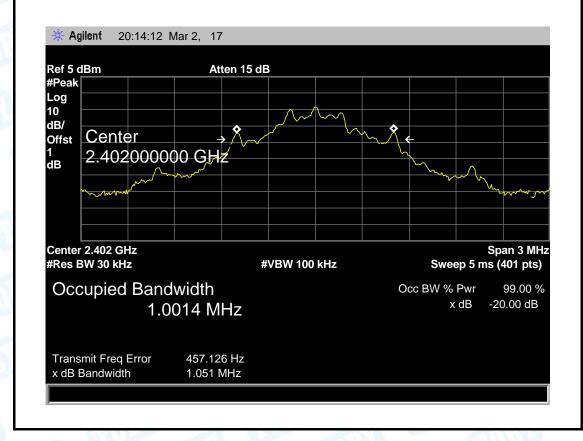


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# 9.5 Test Data

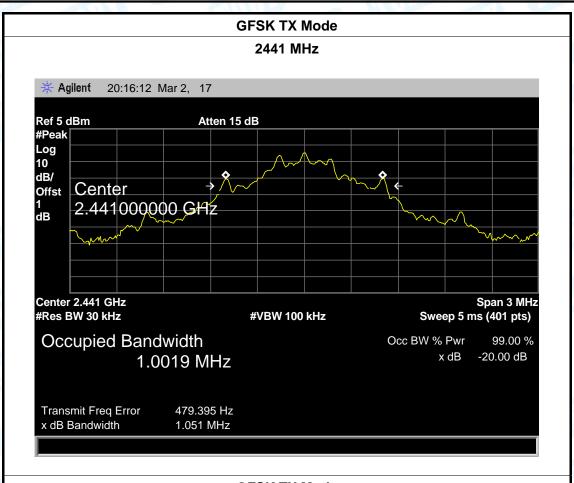
EUT:	Home	e base unit	Model Name :	S921
Temperature:	25℃		Relative Humidity:	55%
Test Voltage:	DC 3.7V			
Test Mode:	TX M	ode (GFSK)	THE PARTY OF THE P	2 Aller
Channel frequency (MHz)		99% OBW (kHz)	20dB Bandwidth (kHz)	20dB Bandwidth *2/3
				(kHz)
2402		1001.40	1051.00	700.67
2402 2441		1001.40 1001.90	1051.00 1051.00	, ,

### **GFSK TX Mode**

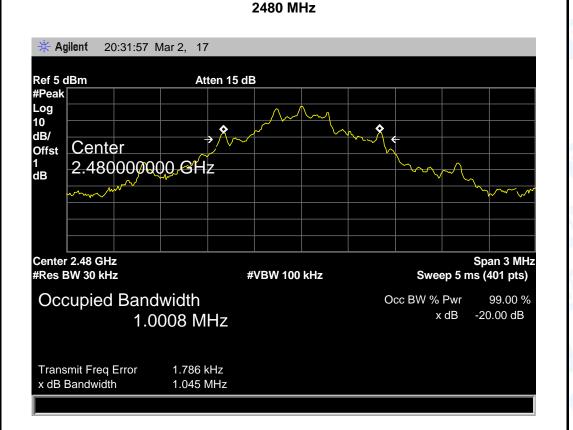




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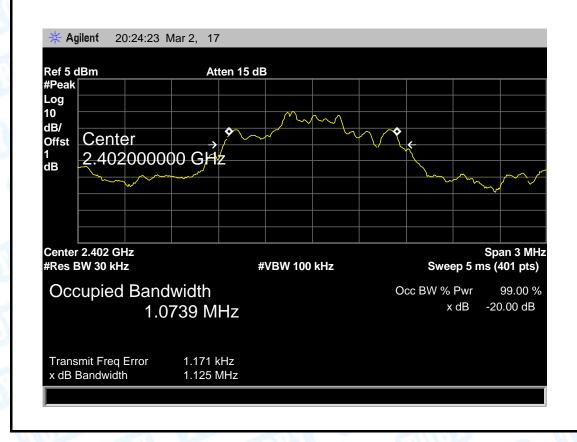


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EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		130
Test Mode:	TX Mode (π/4-DQPSK)		
			00 ID

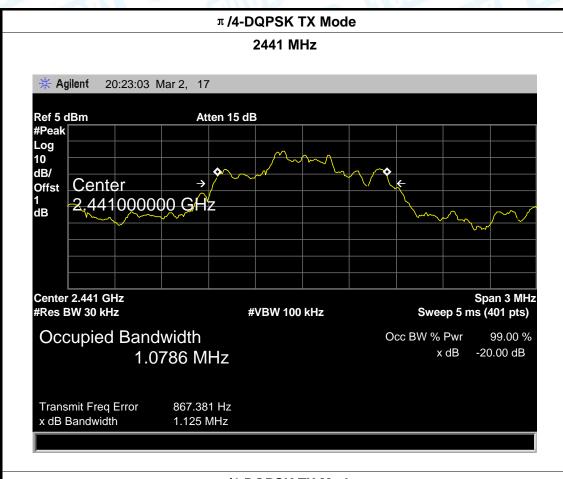
Channel frequency (MHz)	99% OBW (kHz)	20dB Bandwidth (kHz)	20dB Bandwidth *2/3 (kHz)
2402	1073.90	1125.00	750.00
2441	1078.60	1125.00	750.00
2480	1081.40	1124.00	749.33

### π/4-DQPSK TX Mode

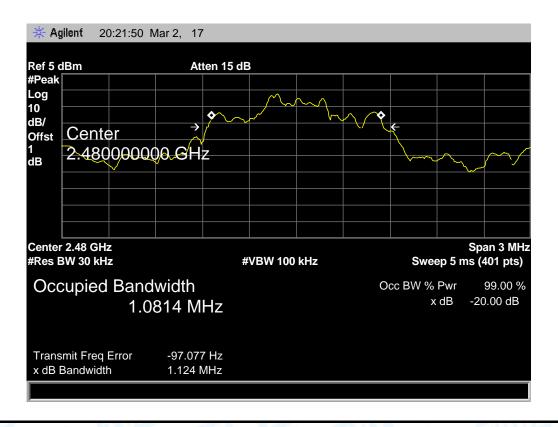




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## $\pi$ /4-DQPSK TX Mode



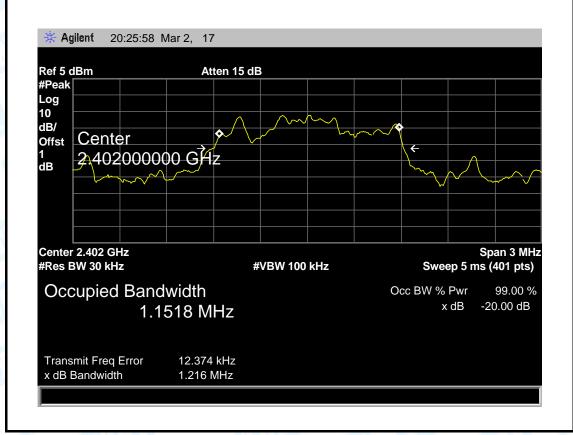


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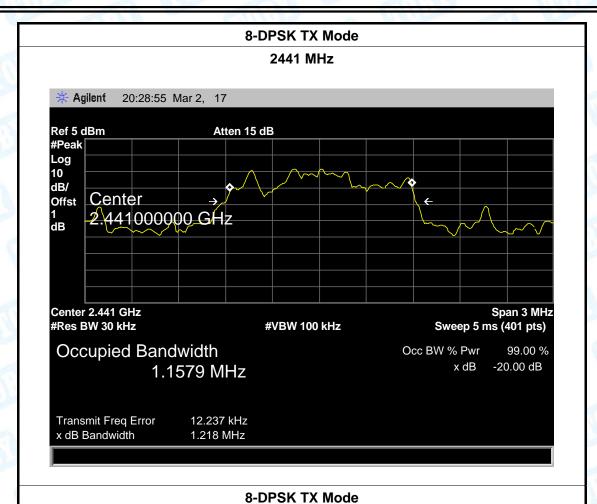
EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
Test Mode:	TX Mode (8-DPSK)		

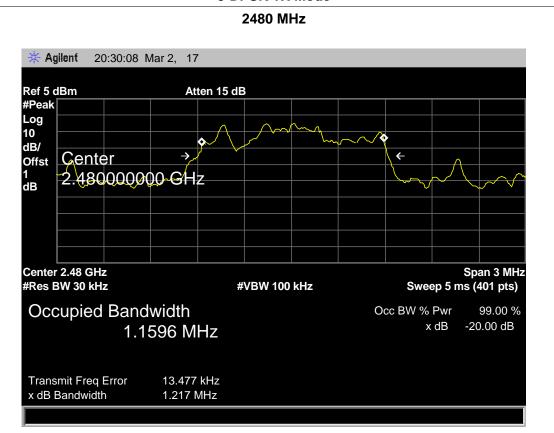
Channel frequency (MHz)	99% OBW (kHz)	20dB Bandwidth (kHz)	20dB Bandwidth *2/3 (kHz)
2402	1151.80	1216.00	810.67
2441	1157.90	1218.00	812.00
2480	1159.60	1217.00	811.33

### 8-DPSK TX Mode











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EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		

Test Mode: Hopping Mode (GFSK)

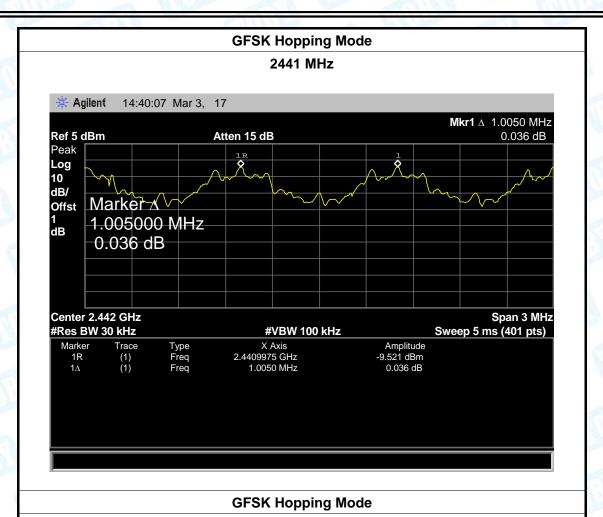
Channel frequency	Separation Read Value	Separation Limit
(MHz)	(kHz)	(kHz)
2402	1005.00	700.67
2441	1005.00	700.67
2480	1005.00	696.67

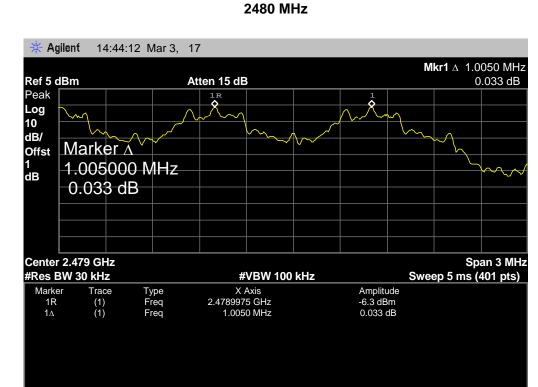
## **GFSK Hopping Mode**













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EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V	D W	

**Test Mode:** Hopping Mode ( π /4-DQPSK)

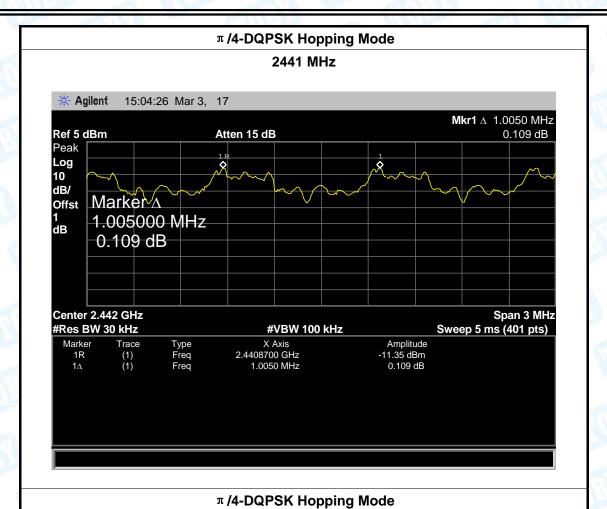
, ,			
Channel frequency	Separation Read Value	Separation Limit	
(MHz)	(kHz)	(kHz)	
2402	1005.00	750.00	
2441	1005.00	750.00	
2480	1005.00	749.33	

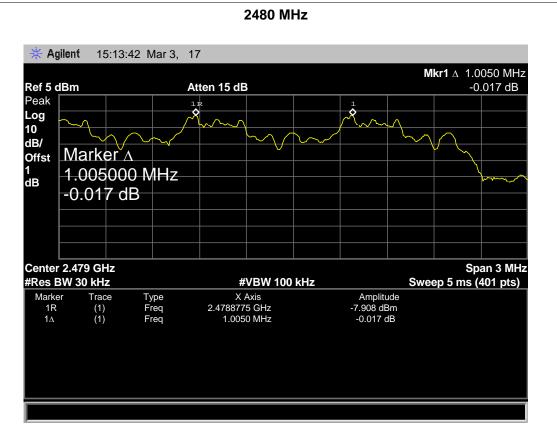
### π/4-DQPSK Hopping Mode













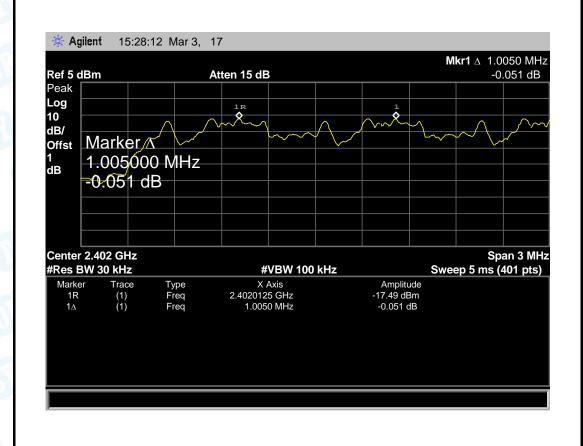
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EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		
	11 1 14 1 (0 DD016)		

Test Mode: Hopping Mode (8-DPSK)

Channel frequency	Separation Read Value	Separation Limit
(MHz)	(kHz)	(kHz)
2402	1005.00	810.67
2441	1005.00	812.00
2480	1005.00	811.33

## 8-DPSK Hopping Mode





8-DPSK Hopping Mode 2441 MHz \* Agilent 15:34:50 Mar 3, 17 Mkr1 A 1.0050 MHz 0.131 dB Ref 5 dBm Atten 15 dB Peak Log 10 dB/ Marker ∧ Offst 1.005000 MHz dΒ 0.131 dB Center 2.442 GHz Span 3 MHz #Res BW 30 kHz **#VBW 100 kHz** Sweep 5 ms (401 pts) Amplitude -13.61 dBm Type Freq Freq X Axis 2.4410125 GHz (1) (1) 1.0050 MHz 0.131 dB 8-DPSK Hopping Mode 2480 MHz \* Agilent 15:39:35 Mar 3, 17 Mkr1 A 1.0050 MHz Ref 5 dBm Atten 15 dB 0.032 dB Peak Log 10 dB/ Marker ∧ Offst 1 dB 1.005000 MHz 0.032 dB Center 2.479 GHz Span 3 MHz #Res BW 30 kHz **#VBW 100 kHz** Sweep 5 ms (401 pts)

X Axis 2.4790125 GHz 1.0050 MHz

Marker

Trace (1) (1) Amplitude -10.16 dBm 0.032 dB



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# 10. Peak Output Power Test

## 10.1 Test Standard and Limit

10.1.1 Test Standard FCC Part 15.247 (b) (1)

10.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	Hopping Channels>75 Power<1W(30dBm)	2400~2483.5
	Other <125 mW(21dBm)	

# 10.2 Test Setup



## 10.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Peak Detector: RBW=1 MHz, VBW=3 MHz for bandwidth less than 1MHz. RBW=3 MHz, VBW=3 MHz for bandwidth more than 1MHz.

# 10.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

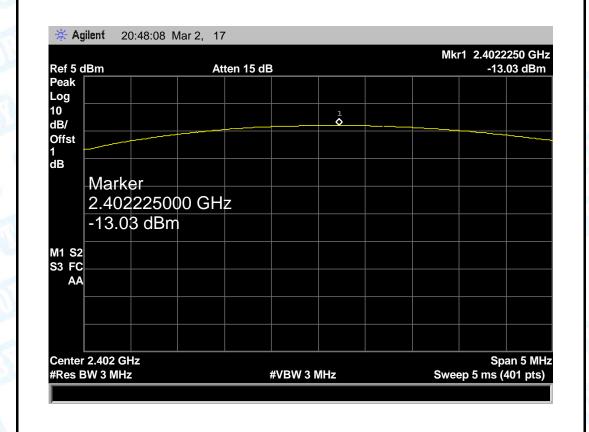


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# 10.5 Test Data

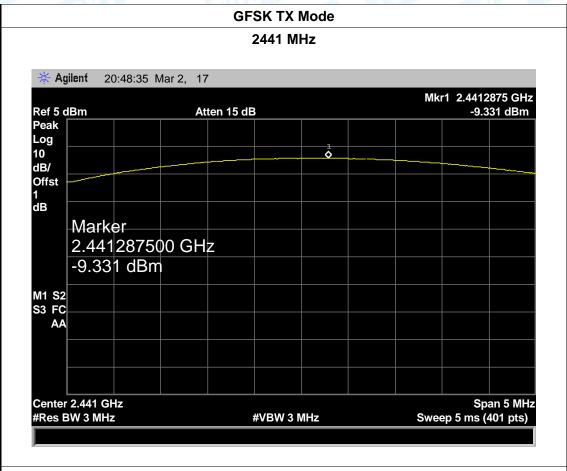
EUT:	Home bas	se unit	Model Name :	S921
Temperature:	25℃	- PIU	Relative Humidity:	55%
Test Voltage:	DC 3.7V		A MILLIA	
Test Mode:	TX Mode	(GFSK)		13
Channel frequen	hannel frequency (MHz) Test Result (dBm)		(dBm) L	imit (dBm)
2402		-13.030	)	
2441		-9.331		21
2480		-6.115		
GFSK TX Mode				



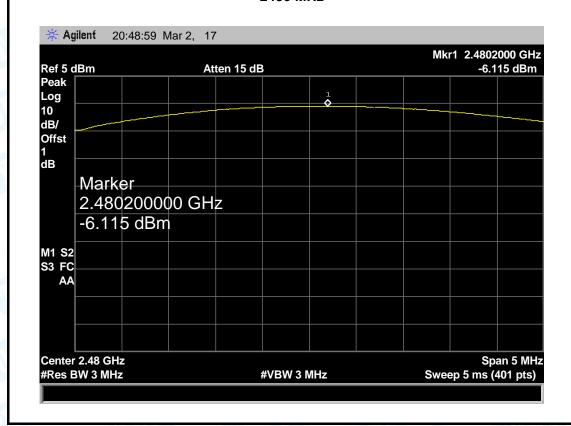




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## **GFSK TX Mode**

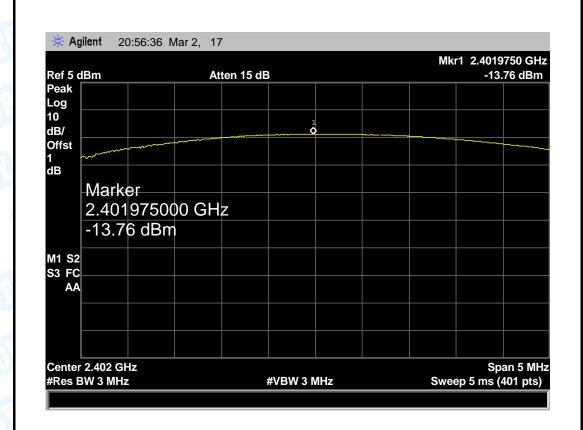




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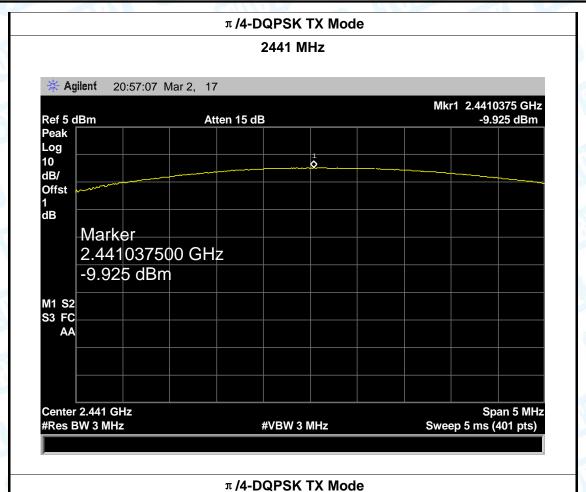
EUT:	Home bas	se unit	Model Name :	S921
Temperature:	25℃		Relative Humidity:	55%
Test Voltage:	DC 3.7V		V C	133
Test Mode:	TX Mode	(π/4-DQPSK)		
Channel frequen	cy (MHz)	) Test Result (dBm) Lin		mit (dBm)
2402		-13.76	)	
2441		-9.925		21
2480		-6.583		
# // DOBSK TV Mode				

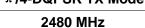
### π /4-DQPSK TX Mode

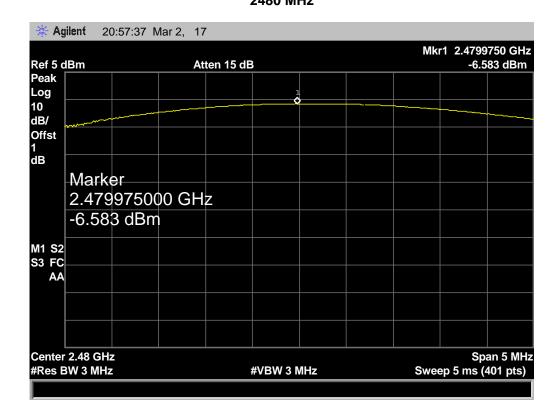




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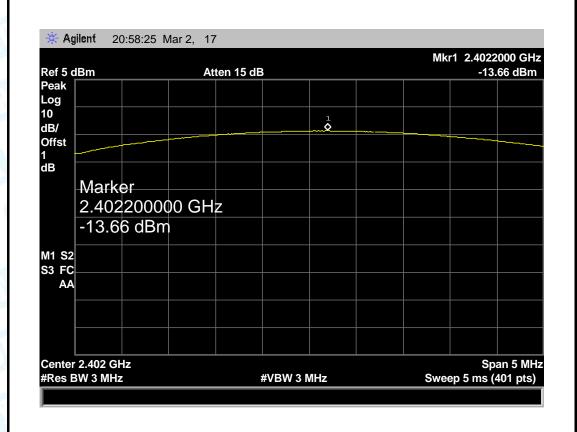
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EUT:	Home base unit	Model Name :	S921
Temperature:	25℃	Relative Humidity:	55%
Test Voltage:	DC 3.7V		33
Test Mode:	TX Mode (8-DPSK)	LIP AND	

Test Mode:	TX Mode (	(8-DPSK)
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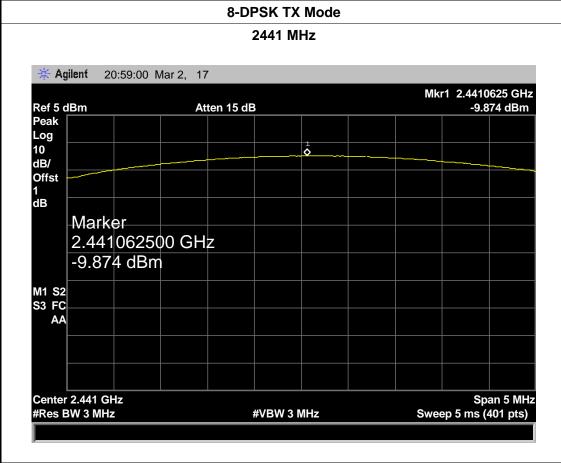
The second of th		
Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
2402	-13.66	
2441	-9.874	21
2480	-6.498	

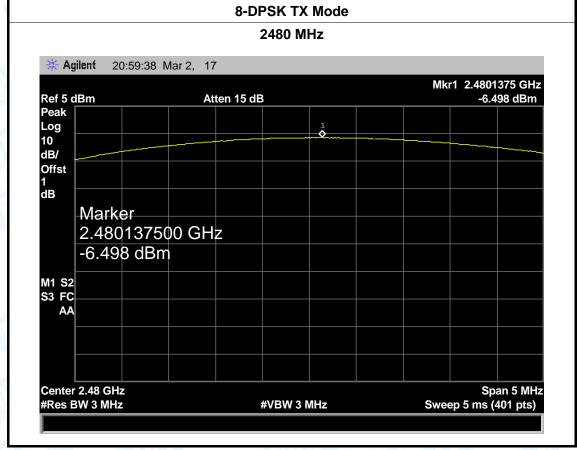
### 8-DPSK TX Mode





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11. Antenna Requirement

# 11.1 Standard Requirement

11.1.1 Standard FCC Part 15.203

### 11.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

## 11.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 3 dBi, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

The EUT antenna is a Internal antenna. It complies with the standard requirement.

Antenna Type		
a gu	▶ Permanent attached antenna	
	□ Unique connector antenna	
No.	☐ Professional installation antenna	

----END OF REPORT----