

Test Report					
1. Client • Name : • Address : 2. Use of Report :	SENA TECHNOLOGIES.Inc 19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, Korea FCC Approval				
 3. Sample Description Product Name : SPLASH Model Name : SP114 4. Date of Receipt : 2022-06-21 					
 5. Date of Test : 2022-08-16 ~ 2022-09-01 6. Test Method : FCC Part 15 Subpart C 15.247 RSS-247 Issue 2(2017-02), RSS-GEN Issue 5(2019-03) 7. Test Desults : Defen to the test requires 					
This test report must not be reproduced or reproduced in any way. The results shown in this test report are the results of testing the samples provided. This test report is prepared according to the requirements of ISO / IEC 17025.					
Affirmation Dae-	d by Seong, Choi Technical Manager Yong-Min, Won				
	Sep 19, 2022				
	EMC Labs Co., Ltd.				

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APPENDIX II UNCERTAINTY ······



<u>Version</u>

TEST REPORT NO.	DATE	DESCRIPTION
KR0140-RF2209-009	Sep 19, 2022	Initial Issue

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1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant Information

Applicant	SENA TECHNOLOGIES.Inc
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1.2. Manufacturer Information

Manufacturer	SENA TECHNOLOGIES.Inc	
Manufacturer Address	19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, Korea	

1.3 Test Laboratory Information

Laboratory	EMC Labs Co., Ltd.
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FCC Designation No.	KR0140
FCC Registration No.	58000
IC Site Registration No.	28751



2. Equipment under Test(EUT) Information

2.1 General Information

Product Name	SPLASH
Model Name	SP114
FCC ID	S7A-SP114
IC	8154A-SP114
Power Supply	DC 3.7 V

2.2 Additional Information

Operating Frequency	2 402 MHz ~ 2 480 MHz	
Number of channel 79		
Modulation Type BDR Mode(GFSK), EDR Mode(Pi/4 DQPSK, 8DPSK)		
Antenna Type Chip Antenna		
Antenna Gain	0.3 dBi	
Firmware Version	1.0	
Hardware Version	1.0	
Test software	Lab Test Tool V2.9.1	

2.3 Test Frequency

Test mode	Test Frequency (MHz)			
	Low Frequency	Middle Frequency	High Frequency	
GFSK	2 402	2 441	2 480	
Pi/4 DQPSK	2 402	2 441 2 4		
8DPSK	8DPSK 2 402		2 480	

2.4 Used Test Software Setting Value

Toot Mode	Setting Item	
Test Mode	Power	
GFSK	55	
Pi/4 DQPSK	54	
8DPSK	54	

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2.5 Worst-Case

EDR 8DPSK (3-DH5)	

Note: The power measurement has been conducted to determine the worst-case mode from all possible Combinations between available modelations, data rates.

2.6 Mode of operation during the test

- The EUT continuous transmission mode during the test with set at Low Channel, Middle Channel, and High Channel. To get a maximum radiated emission levels from the EUT, the EUT was moved throughout the XY, YZ, XZ planes.

2.7 Modifications of EUT

- None



3. Test Summary

Applied	FCC Rule	IC Rule	Test Items	Test Condition	Result
	15.203	_	Antenna Requirement		С
\square	15.247(a)	-	20 dB Bandwidth		С
\square	-	RSS GEN (6.7)	Occupied Bandwidth (99%)		С
\square	15.247(a)	RSS-247 (5.1)	Number of Hopping Frequencies	Conducted	С
\square	15.247(a)	RSS-247 (5.1)	Time of Occupancy (Dwell Time)	Conducted	С
\square	15.247(a)	RSS-247 (5.1)	Carrier Frequencies Separation		С
	15.247(b)	RSS-247 (5.4)	Peak Output Power		С
\square	15.247(d)	RSS-247 (5.5)	Conducted Spurious Emission		С
	15.247(d) 15.205 & 15.209	RSS-247 (5.5) RSS-GEN (8.9 & 8.10)	Radiated Spurious Emission	Radiated	С
	15.207	RSS-GEN (8.8)	Conducted Emissions	AC Line Conducted	С

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

The sample was tested according to the following specification: ANSI C63.10:2013.

Compliance was determined by specification limits of the applicable standard according to customer requirements.



4. Used equipment on test

Description	Description Manufacturer		Serial Name	Next Cal.
TEMP & HUMID CHAMBER	JFM	JFMA-001	20200929-01	2022.12.17
CONTROLLER	AMWON TECHNOLOGY	TEMI2500	S7800VK191 0707	2022.12.17
PSA SERIES SPECTRUM ANALYZER	AGILENT	E4440A	MY45304057	2022.12.15
MXG ANALOG SIGNAL GENERATOR	AGILENT	N5183A	MY50141890	2022.12.15
SYSTEM DC POWER SUPPLY	AGILENT	6674A	MY53000118	2022.12.15
VECTOR SIGNAL GENERATOR	ROHDE & SCHWARZ	SMBV100A	257524	2022.12.15
BLUETOOTH TESTER	TESCOM	TC-3000A	3000A480088	2022.12.15
DIRECTIONAL COUPLER	AGILENT	773D	2839A01855	2022.12.15
ATTENUATOR	AGILENT	8493C	73193	2022.12.15
ATTENUATOR	ACE RF COMM	ATT SMA 20W 20dB 8GHz	A-0820.SM20.2	2023.04.11
TERMINATIOM	HEWLETT PACKARD	909D	07492	2022.12.15
POWER DIVIDER	HEWLETT PACKARD	11636A	06916	2022.12.15
SLIDE-AC	DAEKWANG TECH	SV-1023	-	-
DIGITAL MULTIMETER	HUMANTECHSTORE	15B+	50561541WS	2022.12.15
ACTIVE LOOP ANTENNA	TESEQ	HLA 6121	55685	2022.12.30
Biconilog ANT	Schwarzbeck	VULB 9160	3260	2023.02.03
Biconilog ANT	Schwarzbeck	VULB9168	902	2023.01.14
Horn Ant.	Schwarzbeck	BBHA9120D	974	2023.01.08
Horn Ant.	S/B	BBHA9120D	1497	2023.01.25
Amplifier	TESTEK	TK-PA18H	200104-L	2023.03.17
EMI TEST RECEIVER	ROHDE& SCHWARZ	ESW44	101952	2023.04.07
PROGRAMMABLE DC POWER SUPPLY	ODA	OPE-305Q	oda-01-09-23-1831	2023.01.10
DC POWER SUPPLY	AGILENT	E3634A	MY40012120	2023.02.03
POWER SENSOR	AGILENT	U2001H	MY51140028	2023.02.19
Test Receiver	ROHDE & SCHWARZ	ESR7	101616	2023.06.28
LISN	ROHDE & SCHWARZ	ENV216	100409	2023.01.10
PULSE LIMITER	lignex1	EPL-30	NONE	2023.01.24

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5. Antenna Requirement

According to §15.203 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.

According to §15.247(b)(4) e conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.1 Result

Complies

(The transmitter has a Chip Antenna. The directional peak gain of the antenna is 0.3 dBi.)



6. 20 dB Bandwidth & Occupied Bandwidth (99%)

6.1 Test Setup

Refer to the APPENDIX I.

6.2 Limit

Limit : Not Applicable

6.3 Test Procedure

- 1. The 20 dB bandwidth & Occupied bandwidth were measured with a spectrum analyzer connected to RF antenna Connector (conducted measurement) while EUT was operating in transmit mode. The analyzer center frequency was set to the EUT carrier frequency, using the analyzer.
- 2. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using below setting:

RBW = 1% to 5% of the 20 dB Bandwidth & Occupied Bandwidth VBW $\geq 3 \times RBW$ Span = between two times and five times the 20 dB Bandwidth & Occupied Bandwidth Sweep = Auto Detector function = Peak Trace = Max Hold

6.4 Test Result

Test Mode	Test Frequency	20 dB Bandwidth (MHz)	Occupied Bandwidth (MHz)	
	Low	0.965	0.883	
GFSK	Middle	0.964	0.884	
	High	0.960	0.881	
	Low	1.282	1.161	
8DPSK	Middle	1.286	1.166	
	High	1.289	1.168	

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6.5 Test Plot



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7. Number of Hopping Frequencies

7.1 Test Setup

Refer to the APPENDIX I.

7.2 Limit

Limit : >= 15 hops

7.3 Test Procedure

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

To get higher resolution, two frequency ranges for FH mode within the 2400 \sim 2483.5 MHz were examined.

The spectrum analyzer is set to:

 Span = 50 MHz

 RBW = To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.

 VBW ≥ RBW
 Sweep = Auto

 Detector = Peak
 Trace = Max hold

7.4 Test Result

Test Mode	Number of Hopping Channels
GFSK	79
8DPSK	79

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7.5 Test Plot



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8. Time of Occupancy (Dwell Time)

8.1 Test Setup

Refer to the APPENDIX I.

8.2 Limit

The maximum permissible time of occupancy is 400 ms within a period of 400 ms multiplied by the number of hopping channels employed.

8.3 Test Procedure

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:

```
Center frequency = 2441 MHz Span = Zero

RBW = 1 MHz (RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T,

where T is the expected dwell time per channel)

VBW ≥ RBW Detector = Peak

Trace = Max hold
```

8.4 Test Result

Test Mode	Number of Test Mode Hopping Channels		Result (sec)	Limit (sec)	
GFSK (non-AFH)	79	2.884	0.31	0.40	
GFSK (AFH)	20	2.884	0.15	0.40	
8DPSK (non-AFH)	79	2.880	0.31	0.40	
8DPSK (AFH)	20	2.880	0.15	0.40	

Note: Dwell Time = 0.4 x Hopping channel x Burst On Time x ((Hopping rate / Time slots) / Hopping channel)

- Time slots for DH5 = 6 slots (TX = 5 slot / RX = 1 slot)

- Hopping Rate = 1600 for FH mode & 800 for AFH mode





8.5 Test Plot



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9. Carrier Frequencies Separation

9.1 Test Setup

Refer to the APPENDIX I.

9.2 Limit

Limit : \geq 25 kHz or \geq Two-Thirds of the 20 dB Bandwidth whichever is greater.

9.3 Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

After the trace being stable, the reading value between the peaks of the adjacent channels using the marker delta function was recorded as the measurement results.

The spectrum analyzer is set to:

Span = wide enough to capture the peaks of two adjacent channelsRBW = Start with the RBW set to approximately 30% of the channel spacing; adjust asnecessary to best identify the center of each individual channel. $VBW \ge RBW$ Sweep = AutoDetector = PeakTrace = Max hold

Test Mode	Test Frequency	Carrier Frequencies Separation (MHz)	Min. Limit (MHz)
	Low	0.999	0.643
GFSK	Middle	1.002	0.643
	High	0.999	0.640
	Low	0.999	0.855
8DPSK	Middle	0.999	0.857
	High	0.999	0.859

9.4 Test Result

Note: Limit(kHz) = Test Result of 20 dB BW * 2/3



9.5 Test Plot



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Freq/Channel 🔆 Agilent L ▲ Mkr1 999 kHz Center Freq Ref 20 dBm #Peak 0.00 dB Atten 30 dB 2.40200000 GHz Log 10 dB/ Start Freq 1 R 2.40050000 GHz 1 Stop Freq 2.40350000 GHz **CF** Step 300.000000 kHz LgAv <u>Auto</u> Ъ Am /1 V2 Freq Offset 0.0000000 Hz w λn m S3 FC £(f): Signal Track f>50k 0n <u>0ff</u> Swp Center 2.402 000 GHz Span 3 MHz Sweep 4.067 ms (1001 pts) #Res BW 30 kHz ₩VBW 30 kHz 2005 Agilent Technologie: vriaht

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10. Peak Output Power

10.1 Test Setup

Refer to the APPENDIX I.

10.2 Limit

■ FCC Requirements

The maximum peak output power of the intentional radiator shall not exceed the following:

- §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. 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.
- §15.247(b)(1), For frequency hopping systems operating in the 2400 2483.5 MHz employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725 5805 MHz band: 1 Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
- IC Requirements
- RSS-247(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)

10.3 Test Procedure

- 1. The RF output power was measured with a spectrum analyzer connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency, a spectrum analyzer was used to record the shape of the transmit signal.
- 2. The peak output power of the fundamental frequency was measured with the spectrum analyzer using;

Span = approximately 5 times of the 20 dB bandwidth, centered on a hopping channel

 $RBW \ge 20 dB Bandwidth$ $VBW \ge RBW$ Sweep = Auto Detector function = PeakTrace = Max Hold

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10.4 Test Result

Toot Modo	Test Frequency	Peak Output Power			
Test Mode	Test Frequency	dBm	mW		
	Low	3.42	2.20		
GFSK	Middle	4.36	2.73		
	High	2.91	1.95		
	Low	3.07	2.03		
Pi/4 DQPSK	Middle	4.03	2.53		
	High	2.68	1.85		
8DPSK	Low	3.16	2.07		
	Middle	4.12	2.58		
	High	2.78	1.90		

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10.5 Test Plot



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GFSK_High fre	equency			Pea	k Output Powe
* Agilent				L	Freq/Channel
Ref 20 dBm #Peak	Atten 30 dB		Mkr1	2.479 860 GHz 2.91 dBm	Center Freq 2.48000000 GHz
10 dB/		1 (Start Freq 2.47750000 GHz
					Stop Freq 2.48250000 GHz
LgAv					CF Step 500.000000 kHz <u>Auto</u> Man
V1 S2 S3 FC A					FreqOffset 0.00000000 Hz
£(f): FTun Swp					Signal Track ^{On <u>Off</u>}
Center 2.480 000 #Res BW 3 MHz	GHz #V	BW 3 MHz	Sweep 1	Span 5 MHz ms (1001 pts)	
i/4 DQPSK L	.ow frequence	CV		Pea	k Output Pow
* Agilent		-		L	Freg/Channel
Ref 20 dBm #Peak	Atten 30 dB		Mkr1	2.401 910 GHz 3.07 dBm	Center Freq 2.40200000 GHz
Log 10 dB/					Start Freq 2.39950000 GHz
					Stop Freq 2.40450000 GHz
LgAv					CF Step 500.000000 kHz <u>Auto</u> Man
V1 S2 S3 FC A					Freq Offset 0.00000000 Hz
£(†): FTun					Signal Track

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Center 2.402 000 GHz #Res BW 3 MHz

vriaht

Cot

#VBW 3 MHz

0-2005 Agilent Technologies

Span 5 MHz Sweep 1 ms (1001 pts)



/4 DQPSK	_ Middle	frequency			Peal	Coutput Powe
🔆 Agilent					L	Freq/Channel
Ref 20 dBm #Peak	Atten	30 dB		Mkr1 :	2.440 905 GHz 4.03 dBm	Center Freq 2.44100000 GHz
Log 10 dB/						Start Freq 2.43850000 GHz
						Stop Freq 2.44350000 GHz
_gAv						CF Step 500.000000 kHz Auto Man
л s2 53 FC						Freq Offset
H 8(f): Tun Swn						Signal Track On <u>Off</u>
Center 2.441 (000 GHz				Span 5 MHz	
#Res BW 3 MHz Copyright 20	: 00-2005 Aş	#VBW 3 M gilent Technol	IHz Iogies	Sweep 1 r	ns (1001 pts)	
/4 DOPSK	High fre	equency			Peal	
Agilent					L	Freg/Channel
Ref 20 dBm				Mkr1	2 479 890 GHz	
#Peak I I	Atten	30 dB			2.68 dBm	Center Freq 2.48000000 GHz
≠Peak _og L0 dB/	Atten	30 dB			2.68 dBm	Center Freq 2.48000000 GHz Start Freq 2.47750000 GHz
*Peak _og L0 dB/	Atten	30 dB			2.68 dBm	Center Freq 2.48000000 GHz Start Freq 2.47750000 GHz Stop Freq 2.48250000 GHz
•Peak _og _l0 _JB/ 	Atten	30 dB			2.68 dBm	Center Freq 2.48000000 GHz Start Freq 2.47750000 GHz Stop Freq 2.48250000 GHz CF Step 500.000000 Han Auto Man
*Peak _og L0 _B/ _gAv 	Atten	30 dB			2.68 dBm	Center Freq 2.48000000 GHz Start Freq 2.47750000 GHz Stop Freq 2.48250000 GHz CF Step 500.000000 Hz <u>Auto</u> Man Freq Offset 0.00000000 Hz
#Peak Log 10 dB/ gAv V1 \$2 \$3 FC A £(f): FTun \$up	Atten	30 dB			2.68 dBm	Center Freq 2.48000000 GHz Start Freq 2.47750000 GHz Stop Freq 2.48250000 GHz CF Step 500.000000 Hz Auto Freq Offset 0.0000000 Hz Signal Track Off
+Peak _og L0 dB/ dB/ _gAv /1 \$2 33 FC A €(f): Tun Swp	Atten	30 dB			2.68 dBm	Center Freq 2.48000000 GHz Start Freq 2.47750000 GHz Stop Freq 2.48250000 GHz CF Step 500.000000 KHz Auto Freq Offset 0.0000000 Hz Signal Track On

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Agilent				L	Freq/Channe
ef 20 dBm Peak	Atten 3	0 dB	Mkr1	2.479 985 GHz 2.78 dBm	Center Fre 2.48000000 GH
99) 3/		1			Start Fre 2.47750000 GH
					Stop Fre 2.48250000 GH
aAv					CF Ste 500.000000 kH <u>Auto</u> Ma
L S2 3 FC					FreqOffse 0.00000000 H
(f): Tun YP					Signal Trac ^{On <u>Ot</u>}
enter 2.480 00 Res BW 3 MHz	0 GHz	#VBW 3 MHz	Sween 1	Span 5 MHz ms (1001 nts)	

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11. TX Radiated Spurious Emission and Conducted Spurious Emission

11.1 Test Setup

Refer to the APPENDIX I.

11.2 Limit

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in section §15.209(a) is not required. In addition, radiated emission which in the restricted band, as define in section §15.205(a), must also comply the radiated emission limits specified in section §15.209(a) (see section §15.205(c))

According to § 15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)						
0.009 ~ 0.490	2400/F (kHz)	300						
0.490 ~ 1705	24000/F (kHz)	30						
1705 ~ 30.0	30	30						
30 ~ 88	100 **	3						
88 ~ 216	150 **	3						
216 ~ 960	200 **	3						
Above 960	500	3						

radiator shall not exceed the field strength levels specified in the following table

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 - 72 MHz, 76 - 88 MHz, 174 - 216 MHz or 470 - 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

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MHz	MHz	MHz	GHz
0.009 ~ 0.110	16.42 ~ 16.423	399.90 ~ 410	4.5 ~ 5.15
0.495 ~ 0.505	16.69475 ~ 16.69525	608 ~ 614	5.35 ~ 5.46
2.1735 ~ 2.1905	16.80425 ~ 16.80475	960 ~ 1240	7.25 ~ 7.75
4.125 ~ 4.128	25.5 ~ 25.67	1300 ~ 1427	8.025 ~ 8.5
4.17725 ~ 4.17775	37.5 ~ 38.	1435 ~ 1626.5	9.0 ~ 9.2
4.20725 ~ 4.20775	25 73 ~ 74.6	1645.5 ~ 1646.5	9.3 ~ 9.5
4.17725 ~ 4.17775	74.8 ~ 75.2	1660 ~ 1710	10.6 ~ 12.7
6.215 ~ 6.218	108 ~ 121.94	1718.8 ~ 1722.2	13.25 ~ 13.4
6.26775 ~ 6.26825	149.9 ~ 150.05	2200 ~ 2300	14.47 ~ 14.5
6.31175 ~ 6.31225	156.52475 ~ 156.52525	2310 ~ 2390	15.35 ~ 16.2
8.291 ~ 8.294	156.7 ~ 156.9	2483.5 ~ 2500	17.7 ~ 21.4
8.362 ~ 8.366	162.0125 ~ 167.17	2690 ~ 2900	22.01 ~ 23.12
8.37625 ~ 8.38675	3345.8 ~ 3358	3260 ~ 3267	23.6 ~ 24.0
8.41425 ~ 8.41475	3600 ~ 4400	3332 ~ 3339	31.2 ~ 31.8
12.51975 ~ 12.52025	3345.8 ~ 3358	240 ~ 285	36.43 ~ 36.5
12.57675 ~ 12.57725	3600 ~ 4400	322 ~ 335.4	Above 38.6
13.36 ~ 13.41			

According to § 15.205(a) and (b), only spurious emissions are permitted in any of The frequency bands listed below:

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.



11.3 Test Procedure for Radiated Spurious Emission

- 1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m. The table was rotated 360 degrees to determine the position of the highest radiation.
- During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 1 or 3 meter away from the interference-receiving antenna.
- 3. For measurements above 1 GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.
- 4. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then The antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading. (The EUT was pre-tested with three axes (X, Y, Z) and the final test was performed at the worst case.)
- 6. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 7. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.





Measurement Instrument Setting

- Frequency Range: Below 1 GHz RBW = 100 or 120 kHz, VBW = 3 x RBW, Detector = Peak or Quasi Peak
- Frequency Range: Above 1 GHz
 Peak Measurement
 RBW = 1 MHz, VBW = 3 MHz, Detector = Peak, Sweep time = Auto, Trace mode = Max Hold until the trace stabilizes

Average Measurement RBW = 1MHz, VBW ≥ 1/T, Detector = Peak, Sweep Time = Auto, Trace Mode = Max Hold until the trace stabilizes

11.4 Test Procedure for Conducted Spurious Emission

- 1. The transmitter output was connected to the spectrum analyzer.
- The reference level of the fundamental frequency was measured with the spectrumanalyzer using RBW = 100 kHz, VBW = 300 kHz.
- The conducted spurious emission was tested each ranges were set as below. Frequency range: 30 MHz ~ 26.5 GHz RBW = 100 kHz, VBW = 300 kHz, Sweep Time = Auto, Detector = Peak, Trace = Max Hold

LIMIT LINE = 20 dB below of the reference level of above measurement procedure Step 2. (RBW = 100 kHz, VBW = 300 kHz)

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11.5 Test Result

9 kHz ~ 25 GHz Data (Modulation: GFSK)

• Low frequency

Frequency	Rea	ding			0005	Limits (dBuV/m) AV / Peak		Result (dBuV/m) AV / Peak		Margin (dB) AV / Peak	
Frequency	(dBuV/m)) AV / Peak		Pol. Fac	Factor (dB)	(dB)						
(MHz)					(60)						
2 389.80	N/A	27.55	Н	11.84	-24.78	54.0	74.0	14.6	39.4	39.4	34.6
4 803.99	N/A	43.36	Н	4.30	-24.78	54.0	74.0	22.9	47.7	31.1	26.3

Middle frequency

Frequency	Rea	ding	Factor			Limits		Result		Ma	rgin
Frequency	(dBu	IV/m)	Pol.	I. Factor DCCF (dBuV/m)		V/m)	(dBuV/m)		(d	в)	
(MHz)	AV ,	/ Peak		(00)	(00)	AV /	Peak	AV /	Peak	AV /	Peak
4 882.23	N/A	40.61	Н	4.04	-24.78	54.0	74.0	19.9	44.7	34.1	29.4

High frequency

Fraguanay	Rea	ding				Lin	nits	Re	sult	Ма	rgin
Frequency	cy (dBuV/m)		Pol.	ol. Factor	(dB)	(dBuV/m)		(dBuV/m)		(dB)	
(MHz)	AV ,	/ Peak		(00)	(00)	AV /	Peak	AV /	Peak	AV /	Peak
2 483.59	N/A	33.25	Н	12.21	-24.78	54.0	74.0	20.7	45.5	33.3	28.5
4 959.63	N/A	39.36	Н	4.21	-24.78	54.0	74.0	18.8	43.6	35.2	30.4

Note 1: The radiated emissions were inverstigated 9 kHz to 25 GHz. And no other spurious and harmonic emissions were found above listed frequencies.

Note 2: DCCF(Duty Cycle Correction Factor)

- Time to cycle through all channels = Δt = T [ms] X 20 minimum hopping channels, where T = pulse width = 2.884 ms - 100 ms / Δt [ms] = H -> Round up to next highest integer, to account for worst case, H' = 100 / (2.884 X 20) = 1.73 = 2

- The Worst Case Dwell Time = T [ms] \times H' = 2.884 ms X 2 = 5.77 ms

- DCCF = $20 \times \log(\text{The Worst Case Dwell Time / 100 ms}) dB = <math>20 \times \log(5.77 / 100) = -24.78 dB$ Note 3: Sample Calculation.

Margin = Limit - Result / Peak Result = Peak Reading + TF / Average Result = Peak Reading + TF + DCCF TF = Ant factor + Cable Loss + Filter Loss - Amp Gain



9 kHz ~ 25 GHz Data (Modulation: 8DPSK)

• Low frequency

Fraguanay	Rea	ding	Factor				Limits		Result		Margin	
Frequency	requency (dBuV/m)		Pol.	Factor (dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		
(MHz)	AV / Peak			(60)	(00)	AV /	AV / Peak		AV / Peak		AV / Peak	
2 389.88	N/A	28.45	Н	11.84	-24.79	54.0	74.0	15.5	40.3	38.5	33.7	
4 803.76	N/A	42.96	Н	4.30	-24.79	54.0	74.0	22.5	47.3	31.5	26.7	

• Middle frequency

Fraguanay	Rea	ding	- Factor				Limits		Result		rgin
Frequency	(dBuV/m)		Pol.	Factor (dB)	DCCF (dB)	(dBuV/m)		(dBuV/m)		(dB)	
(MHz)	AV	/ Peak		(00)	(00)	AV /	Peak	AV / Peak		AV / Peak	
4 882.34	N/A	40.03	Н	4.04	-24.79	54.0	74.0	19.3	44.1	34.7	29.9

• High frequency

Fraguanay	Rea	ding	- Easter			Lin	nits	Re	sult	Ма	rgin
Frequency	y (dBuV/m)		Pol. Factor		(dB)	(dBuV/m)		(dBuV/m)		(dB)	
(MHz)	AV .	/ Peak		(00)	(00)	AV / Peak		AV /	AV / Peak		Peak
2 483.51	N/A	39.54	Н	12.21	-24.79	54.0	74.0	27.0	51.8	27.0	22.3
4 959.70	N/A	38.56	Н	4.21	-24.79	54.0	74.0	18.0	42.8	36.0	31.2

Note 1: The radiated emissions were inverstigated 9 kHz to 25 GHz.

Note 2: DCCF(Duty Cycle Correction Factor)

- Time to cycle through all channels = $\Delta t = T \text{ [ms] } X$ 20 minimum hopping channels, where T = pulse width = 2.880 ms

- 100 ms / Δt [ms] = H -> Round up to next highest integer, to account for worst case, H' = 100 / (2.880 X 20) = 1.74 ≈ 2

- The Worst Case Dwell Time = T [ms] x H' = 2.880 ms X 2 = 5.76 ms

- DCCF = $20 \times \log(\text{The Worst Case Dwell Time / 100 ms}) dB = <math>20 \times \log(5.76 / 100) = -24.79 dB$ Note 3: Sample Calculation.

Margin = Limit - Result / Peak Result = Peak Reading + TF / Average Result = Peak Reading + TF + DCCF TF = Ant factor + Cable Loss + Filter Loss - Amp Gain



11.6 Test Plot for Radiated Spurious Emission

• GFSK _ Low frequency

MultiView 8	Spectrum	Spectr	um 2 🕅	Spectrum 3	Spectru	m 4 🕱			
Ref Level 8 Att	7.00 dBµV 0 dB SWT	• RE 1.01 ms • VB	W 1 MHz W 3 MHz Mod	le Auto Sweep			Fre	equency 2.35	500000 GHz
Input Frequency	Sweep	On No	itch Off						o 1Pk Max
								M1[1]	27.55 dBµV 3898002 GHz
10 GRHA									
70 dBµV	000								
0 dBµV	\$-			-					
0 dBµV									
0 dBµV	-		_						
0 d8µV									M
Almanual	15 million set in the	and man and	application and the second	markenshe	manihiliti	manne	hickomment	nakanaka kanadah	an porter
.0 dBµV									
0 dBuV									
o dop i									
dBµV									
10 dBµV									
2.31 GHz			1001 p	ts	8,	0 MHz/			2.39 GHz
MultiView	Spectrum	x s	pectrum 2	I Spectr	'um 3 🕅	ו			
Ref Level 80 Att	0.00 dBµV 0 dB SWT	• RB 1.01 ms • VB	WF1MHz NF3MHz Mod	e Auto Sweep		1	Fre	equency 4.80	40000 GHz
Input Frequency	1 AC PS	Off Not	tch Off						
	Sweep								●1Pk Max
	Sweep							M1[1] 4.	● 1Pk Max 43.36 dBµV 80399001 GHz
'0 dBµV	Sweep							M1[1] 4.	●1Pk Max 43.36 dBµV 80399001 GHz
'0 dBµV	Sweep							M1[1] 4,	• 1Pk Max 43.36 dBµV 80399001 GHz
о авру	Sweep							M1[1] 4.	• 1Pk Max 43.36 dBμV 80399001 GHz
о авµv	Sweep							M1[1] 4.	● 1Pk Max 43.36 dBµV 80399001 GHz
о dвµv о dвµv	Sweep				<u>n</u>			M1[1] 4;	 1Pk Max 43.36 dBµV 80399001 GHz
0 dBµV 0 dBµV 0 dBµV	Sweep							M1[1] 4,	 1Pk Max 43.36 dB₁V 80399001 GHz
0 dBµV 0 dBµV 0 dBµV 0 dBµV	Sweep					and a start and a start a	Sayd and sales	M1[1] 4.	• IPk Max 43.36 dByV 80399001 GHz
0 daµv 0 daµv 0 daµv	Sweep	gyslat car kor yr			E		Sang Price Mar Parlieran	MI[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GH2
0 d8µV 0 d8µV 0 d8µV 0 d8µV 0 d8µV	Sweep	the second second second				and a star of local	Saug ^{ar} a-Jac, Maran	MI[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GHz
0 dbµv	Sweep	la starter terrer				and some from the second	sugtion for the sec	MI[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GHz
10 dBµV	Sweep	ي رو مور مور مور مور مور مور مور مور مور	a dan dan men		a	and for the second	Sangt and a set	M1[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GHz
0 dbµv 0 dbµv	Sweep	gester son son or				and the second second	tangthio-filester	MI[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GHz
0 dbµv	Sweep	and a section of				and a start week	Saughu-Jo-Johnson	MI[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GHz
0 dbµv	Sweep					and a star of a set	Saughtur Statistics	MI[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GHz
0 dBµV 1 dBµV	Sweep	2477141 444 1444 1444 1444 1444 1444 144				and the state of t	Sugt under so	MI[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GHz
0 dBµV 10 dBµV	Sweep	Sector Large				0 MHz/	tragt in france	MI[1] 4.	• 1Pk Max 43.36 dBµV 80399001 GHz

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						S	Spuriou	is – Peak
MultiView 8	Spectrum	Spectrum 2	I Spectr	um 3 🛛 🛛	Ĵ			
Ref Level 80.0 Att Input	0 dBµV 0 dB SWT 1.01 m 1 AC PS 0	● RBW 1 MHz s ● VBW 3 MHz Mode ff Notch Off	e Auto Sweep			Fre	equency 7.20	060000 GHz
1 Frequency Sv	veep							• 1Pk Max
							M1[1]	29.57 dBµV
70 dBµV							1	20533067 GHz
60 dBµV								
50 dBµV								
40 dBµV								
			M1					
the hadrest	interactions application and applications	Williamstrand	Andrews	ummelline ide	monthumb	rep. Nerrow	radiologica	and many services
20 dBµV								
10 dBµV								
0 dBµV								
-10 dBµV								
CF 7.206 GHz		1001 pt	S	1	.0 MHz/		:	Span 10.0 MHz

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• GFSK _ Middle frequency

MultiView	Spectrum	x	pectrum 2	I Spectr	rum 3 🛛 🛛	S			
Ref Level 80.0 Att	0 dBµV 0 dB SWT	• RE 1.01 ms • VB	W 1 MHz W 3 MHz Mode	Auto Sweep		A	Fn	equency 4.8	820000 GH
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dBµV	and an a fit place, and up	A Ch A series (Asso	Name of			10 M M	Coloren Analynder de	a der Comercia de sugle	North Part Conceptor
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dBµV									
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) dBµV									
4.882 GHz			1001 pts	i	1	.0 MHz/			Span 10.0 MH
							;	Spuriou	ıs – Pe
ultiView 8	Spectrum	x s	Spectrum 2	Spectr	rum 3 🛛 🛛	5	{	Spuriou	is – Pe
ultiView 8 lef Level 80.0 ltt	P Spectrum 0 dBµV 0 dB SWT	RE 1.01 ms © VB	Spectrum 2 W 1 MHz W 3 MHz Mode	Spectr Auto Sweep	rum 3 🛛 🗵	s)	Fr	Spuriou	IS – Pe
ultiView lef Level 80.0 itt nput requency S	H Spectrum D0 dBµV 0 dB SWT 1 AC PS weep	RE 1.01 ms • VB Off No	Spectrum 2 W 1 MHz W 3 MHz Mode tch Off	Spectr Auto Sweep	um 3 🛛 🛛	3	Ę	Spuriou	IS – Pe 230000 GI
ultiView The f Level 80.0 Ht nput Frequency S	B Spectrum 00 dBµV 0 dB SWT 1AC PS weep	EX RE 1.01 ms • VB Off No	Spectrum 2 W 1 MHz W 3 MHz Mode tch Off	X Spectr	rum 3 🛛 🛛	3	Fr	Spuriou equency 7.3 M1[1]	IS – Pe 230000 GI 1Pk Ma: 28.97 dB; 32401896 G
ultiView a sef Level 80.0 tt nput requency S d8µV	Spectrum 0 dB _µ V 0 dB SWT 1AC PS weep	■ RE 1.01 ms ● VB Off No	Spectrum 2 W 1 MHz W 3 MHz Mode tch Off	Spectr Auto Sweep	um 3 🛛 🛛	\$	Fn	equency 7.3	IS – Pe 230000 GI • 1Pk Ma 28.97 dB .32401898 G
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ultiView e ef Level 80.0 hput requency S d8µV d8µV d8µV	Spectrum 0 dB _W / 0 dB SWT 1AC PS weep	RE RE 1.01 ms = VB Off No	Spectrum 2 W 1 MHz W 3 MHz Mode	Auto Sweep	rum 3 (2	3	Fn	Spuriou equency 7.3 MI[1] 7	IS – Pe 230000 GI 28.97 dB 32401895 G
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ultiView lef Level 80.0 itt nput requency S d8µV	Spectrum 0 dBV 1 AC PS weep	EX S R R No 1.01 ms • VB Off No	Spectrum 2 W 1 MHz Wode tch Off	X Spectr	um 3 (ב	5 	Fr 	Spuriou equency 7.3 M1[1] 7	IS - Pe 230000 GH 1PKM8 28.97 /b; 28.97 /b; 29.97 /b; 29.97 /b; 20.97 /b; 29.97 /b; 29.97 /b; 20.97
ultiView tef Level 80.0 tt nput requency S d8µV d8µV	Spectrum 0 dBµV 0 dB SWT 1AC PS weep	EX S REAL Off No Off No	Spectrum 2 W 1 MHz W Off Off	Auto Sweep	2 2		Fn	Spuriou equency 7.3 MI[1] 7	IS - Pe 230000 GH 28.97 MB 32401898 GH 32401898 GH
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ultiView ef Level 80.0 tt uput d8µV	Spectrum 0 dBµV 0 dB SWT 1AC PS weep	EX S REP 1.01 ms • Vor Off No	Spectrum 2 W 1MHz Wode tch Off	X Spectr	um 3 🛛	2 	Fr	Spuriou equency 7.3	s – Pe
ultiView 6 ef Level 80.0 80.0 tt теquency S d8µV 6	Spectrum 0 dBµV 0 dB SWT 1 AC PS weep	EX S REAL 1.01 ms @ VPA Off No	Spectrum 2 W 1MHz Wode th Off	Spectr Auto Sweep	rum 3 (Σ		Fn	Spuriou equency 7.3	s – Pe
ultiView tef Level 30.0 ttt nput requency S d8µV d8µV	Spectrum D dBµV D dB SWT 1 AC PS weep	S R S S S S S S S S S S S S S S S S S S	Spectrum 2 W 1MHz Wode the Off	X Spectr	rum 3 (2	S	Fn	Spuriou equency 7.3 MI[1] 7	s – Pe

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• GFSK _ High frequency

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MultiView 8	Spectrum	Spectru	m 2 🕱	Spectrum 3	Spectru	um 4 🕱			
Ref Level 8	7.00 dBµV 0 dB SWT	● RBV 1.01 ms ● VBV	V 1 MHz V 3 MHz Mod	e Auto Sweep	(Fre	equency 2.49	917500 GHz
1 Frequency	Sweep	UNINOL							●1Pk Max
							N	1[1]	33.25 dBµV
80 dBµV									
20 40.41									
70 06µv									
60 dBuV									
50 dBµV	-								
40 dBµV		-							
M1									
30 dBµV	to an	and Abelle worked	in here a						
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10 dBµV	-								
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-10 dBuV							0		
2,4835 GHz			1001 nt	\$	1.	65 MHz /			2.5 GHz
MultiView	Spectrum	x Sp	ectrum 2	Spectr	um 3 🕅	1		Spuriou	s – Pea
Ref Level 80	opeetrum			Copecti	un o				
Att	0.00 dBµV	RBW 1.01 ms WBW	1 MHZ 3 MHz Mode	Auto Sween			Fra		500000 GH7
Att Input	.00 dBµV 0 dB SWT 1 AC PS	● RBW 1.01 ms ● VBW Off Note	1 MHZ 3 MHz Mode h Off	e Auto Sweep			Fre	equency 4.96	500000 GHz
Att Input I Frequency :	.00 dBµV 0 dB SWT 1 AC PS Sweep	● RBW 1.01 ms ● VBW Off Noto	1 MHZ 3 MHZ Mode h Off	Auto Sweep			Fre	equency 4.96	500000 GHz • 1Pk Max 39.36 dBµV
Att Input I Frequency :	.00 dBµV 0 dB SWT 1 AC PS Sweep	● RB₩ 1.01 ms ● VBW Off Noto	h Off	Auto Sweep			Fre	equency 4.96 M1[1] 4.	500000 GHz • 1Pk Max 39.36 dBpV 95963037 GHz
Att Input I Frequency	00 dBµV 0 dB SWT 1 AC PS Sweep	● RBW 1.01 ms ● VBW Off Note	1 Minz Mode h Off	e Auto Sweep			Fre	equency 4.96 M1[1] 4.	500000 GHz • 1Pk Max 39.36 dBµV 95963037 GHz
Att <u>Input</u> I Frequency 70 d8µV	00 dBµV 0 dB SWT 1 AC PS Sweep	● RB₩ 1.01 ms ● VBW Off Notc	1 MHZ Mode 3 MHZ Mode h Off	Auto Sweep			Fra	equency 4.96	000000 GHz ● 1Pk Max 39.36 dBµV 95963037 GHz
Att Input 1 Frequency 70 dBµV 60 dBµV	00 dBµV 0 dB SWT 1 AC PS Sweep	● RB¥ 1.01 ms ● VBW Off Note	1 MHz Mode 3 MHz Mode h Off	Auto Sweep			Fra	M1[1] 4.96	500000 GHz • 1Pk Max 39,36 dBµV 95963037 GHz
Att Input 1 Frequency 70 dBµV 60 dBµV 50 dBµV	.00 dBuV 0 dB SWT 1 AC PS Sweep	RBW I.01 ms VBW Off Note	1 Minz Mode 3 Mitz Mode h Off	Auto Sweep			Fre	M1[1] 4.90	500000 GHz 1Pk Max 39.36 dBµW 95963037 GHz
Att Input 1 Frequency 70 dBμV 60 dBμV 50 dBμV	.00 dBuV 0 dB SWT 1 AC PS Sweep	RBW I.01 ms VBW Off Note	1 Minz Mode 3 Mitz Mode	Auto Sweep			Fre	M1[1] 4.90	500000 GHz • 1Pk Max 39.36 dBµV 95963037 GHz
Att Input 1 Frequency 70 d8μV 60 d8μV 50 d8μV 40 d8μV	.00 dBuV 0 dB SWT 1 AC PS Sweep	RBW I.01 ms VBW Off Note	1 Minz Mode	Auto Sweep			Fre	M1[1] 4.90	500000 GHz 1Pk Max 39.36 dByV 55963037 GH2
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Att Input Input Ifrequency Ifrequency	0.0 dBuV 0 dB SWT 1 AC PS SWEEP	RBW I.01 ms VBW Off Note	1 MHz Mode 3 MHz Mode h Off	MI MI	an line and a set	Mar water Ander	Fre	M1[1] 4.90 4.90 4.90	500000 GHz 1 Ek Max 39.36 dBµV 35963037 GHz 25963037 GHz
Att Input Input I Frequency I Frequency I Go dbµV 60 dbµV 50 dbµV 40 dbµV 30 dbµV 20 dbµV	0.0 dBuV 0 dB SWT 1 AC PS SWCEP	RBW I.01 ms VBW Off Note	1 MHz Mode 3 MHz Mode h Off	MI MI	where and a second	the other haster	Fr	A.90	500000 GHz 9.19k Max 39.36 dBµV 95963037 GHz
Att Input 1 Frequency 1 Frequency 10 dBµV 60 dBµV 50 dBµV 40 dBµV 30 dBµV 20 dBµV	0.0 dBuV 0 dB SWT 1 AC PS Sweep	RBW I.01 ms VBW Off Note	1 Mitz Mode 3 Mitz Mode h Off	MI MI	meenne	in a straight and and and and and and and a straight and a straigh	Fr	equency 4.90	500000 GHz 39.36 dByV 395963037 GHz
Att Input Input 1 Frequency 10 dBµV 60 dBµV 50 dBµV 40 dBµV 30 dBµV 20 dBµV 10 dBµV	ol dau/ O da SwT I AC PS Sweep	RBW 1.01 ms @ VBW Off Note	1 MHz Mode 3 MHz Mode h Off	MI MI	whet may	and the star where the	Fre	A.90	500000 GHz 9.19k Max 39.36 dBµV 95963037 GHz
Att Input Input 1 Frequency 10 dbµv 60 dbµv 50 dbµv 40 dbµv 30 dbµv 20 dbµv 10 dbµv	0.00 dBu/ 0 dB SWT 1 AC PS Sweep	RBW 1.01 ms @ VBW Off Note	1 MHz Mode 3 MHz Mode h Off	ML ML	mlat may and	the man and a star when the star	Fre	A.90	500000 GHz 1Pk Max 39.36 dByV 95963037 GHz 195963037 GHz
Att Input Input Input 10 dbµv 60 dbµv 60 dbµv 50 dbµv 40 dbµv 20 dbµv 20 dbµv 10 dbµv 10 dbµv 0 dbµv	ol dau/ O da SwT I AC PS Sweep	RBW 1.01 ms @ VBW Off Note	1 MHz Mode h Off	Auto Sweep	whet may a so	nur-minularius	Fre	M1[1] 4.90	500000 GHz • 1Pk Max 39.36 dByV 95963037 GHz - Mux4aranaa
Att Input Input I Frequency I Frequency I Go dbµv 60 dbµv 50 dbµv 40 dbµv 40 dbµv 30 dbµv 20 dbµv 10 dbµv 10 dbµv	0.00 dBuV 0 dB SWT 1 AC PS Sweep	Rew 1.01 ms We Ve Ve	1 MHZ Mode	Auto Sweep		new water where the	Fr	A.90	500000 GHz 919k Max 39.36 dByV 95963037 GHz 249004000000000000000000000000000000000
Att Input Input 1 Frequency 1 Frequency 1 60 dbµv 60 dbµv 50 dbµv 40 dbµv 30 dbµv 20 dbµv 10 dbµv -10 dbµv	ol dau/ 0 da SwT 1 AC PS Sweep	RBW I.01 ms @ VRW Off Vote	1 Minz Mode	Auto Sweep		Mar water Ander	Fr	A.90	500000 GHz 91Pk Max 39.36 dByV 95963037 GHz 195963037 GHz
Att Input Input 1 Frequency 1 Frequency 1 60 dbµv 60 dbµv 50 dbµv 40 dbµv 30 dbµv 20 dbµv 10 dbµv -10 dbµv	0.00 dBµV 0 dB SWT 1 AC PS Sweep	RBW I.01 ms • RBW Off Note	1 Minz Mode	Auto Sweep		Mar water Ander	Fr	A.90	500000 GHz 919K Max 39.36 dBµV 95963037 GHz 29.36 dBµV

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						S	Spuriou	s – Peak
MultiView 8	Spectrum	Spectrum 2	I Spectr	rum 3 🛛 🛛				▽
Ref Level 80.0 Att Input	0 dBµV 0 dB SWT 1.01 m 1 AC PS Of	● RBW 1 MHz s ● VBW 3 MHz Mode ff Notch Off	Auto Sweep			Fre	equency 7.4	400000 GHz
1 Frequency Sv	veep						M1[1]	 1Pk Max 28.97 dBµV
70 dBµV							7	43519481 GHz
60 dBµV								
co de w								
зо овру								
40 dBµV								
MI 30 dBµV	weren which a parlian	and the stand and the second	-	Metrophic and	and the shades	manpahana	mannith	er veren den veren den veren den veren veren den ve
20 dBµV								
10 dBµV								
0 dBµV								
10 40.41								
-10 08hA						C. 12		
CF 7.44 GHz		1001 pt	s	1	.0 MHz/			Span 10.0 MHz

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• 8DPSK _ Low frequency

				Restricted Band - I	-ea
MultiView 🗄 Spectrum	Spectrum 2	Spectrum 3	Spectrum 4		▽
Ref Level 87.00 dBµV Att 0 dB SV Input 1 AC P4		MHz MHz Mode Auto Sweep		Frequency 2.3500000) GHz
1 Frequency Sweep				• 1Pk M1[1] 28.45	c Max 5 dBµV
80 dBµV				2.389880	01 GHz
70 dBµV					
60 dBuV					
50 dBµV					
40 dBµV					
30 dBµV					MI
20 dBpV	erson warman ward	at a sub-	all another a second and the second sec	ment pre-un alimontal agree and all	gent and
10 30-41					
10 08pv					
0 dBµV					
-10 dBµV		1001			0.011
2.31 GHZ		1001 pts		2.3	9 GHZ
				Spurious – f	⊃ea
MultiView 🗄 Spectru	um 🖾 Spectru	um 2 🕱 Speci	rum 3 🕅	Spurious – f	⊃ea
MultiView Spectru Ref Level 80.00 dBµV Att 0 dB SW Invert 100 SB	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 🕱 Spect Hz Hz Mode Auto Sweep of	rum 3 🛛 🖾	Spurious - F	Dea
MultiView @ Spectru Ref Level 80.00 dBµV Att 0 dB SW Input 1AC PS I Frequency Sweep	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 I Speci Hz Hz Mode Auto Sweep Off	rum 3 🛛	Spurious - F Frequency 4.8040000	Dea
MultiView (Spectru Ref Level 80.00 dBW Att 0 dB SM Input 1 AC PS I Frequency Sweep 70 dBy/	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 🕱 Spect Hz Hz Mode Auto Sweep Off	rum 3 🛛	Spurious - F Frequency 4.8040000 192 4.8037602	Dea ⊽) GHz CMax 6 dBµV 24 GHz
MultiView Spectru Ref Level 80.00 dBµV Att Att 0 dB SW Input 1 AC I Frequency Sweep 70 dBµV	IM Spectro RBW 1M VT 1.01 ms • VBW 3M Off Notch	um 2 I Spect Hz Hz Mode Auto Sweep Off	rum 3 🛛	Spurious - F Frequency 4.8040000 1926 MI[1] 42.90 4.8037602	Dea GHz GHz GHz GHz
MultiView @ Spectru Ref Level 80.00 dBµV Att 0 dB SW Input 1 AC PS I Frequency Sweep I Frequency Sweep Augure 70 dBµV 60 dBµV Augure Augure	IIM Z Spectri • RBW 1M VT 1.01 ms • VBW 3M Off Notch	um 2 Spect Hz Hz Mode Auto Sweep Off	rum 3 🗵	Spurious - F Frequency 4.8040000 • 1Pk MI[1] 42.90 4.8037602	Dea GHz GHz GHz GHz
MultiView Spectru Ref Level 80.00 dBµV Att 0 dB SW Att 1 AC PS Input 1 AC PS I Frequency Sweep 70 dBµV 60 dBµV 50 dBµV 50 dBµV 50 dBµV	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 I Spect Hz Mode Auto Sweep	rum 3 🖾	Spurious - F	©ea ⊽) GHz (Max 6 dBµV 24 GHz
MultiView @ Spectru Ref Level 80.00 dBµV 0 dB SW Att 0 dB SW Input 1 AC PS I Frequency Sweep 9 70 dBµV 60 dBµV 50 dBµV 9	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 😰 Spect Hz Hz Mode Auto Sweep Off	rum 3 🖾	Spurious - F Frequency 4.8040000 192 MI[1] 42.90 4.8037602	©ea ⊽) GHz × Max 6 dBµV 24 GHz
MultiView Spectru Ref Level 80.00 dBµV 0 dB SW Att 0 dB SW Ipput 1 AC PS I Frequency Sweep 9 70 dBµV 60 dBµV 60 dBµV 9 50 dBµV 9 40 dBµV 9 50 dBµV 9	IM IN Spectro	um 2 II Spect Hz Hz Mode Auto Sweep	rum 3 🗵	Spurious - 6	Pea ⊽) GHz k Max 24 GHz
MultiView Spectru Ref Level 80.00 dBµ/ 0 dB SW Att 0 dB SW Input 1 AC PS PS I frequency Sweep 0 70 dBµ/ - 60 dBµ/ - 50 dBµ/ - 40 dBµ/ - 30 dBµ/ - 20 dBµ/ -	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 I Spect	rum 3 🖾	Spurious - 6	Pea ▼) GHz (Max 6 dBµV 24 GHz
MultiView Spectru Ref Level 80.00 dBµV 0 dB SV Att 0 dB SV Input 1 AC PS I Frequency Sweep 9 70 dBµV 60 dBµV 50 dBµV 9 40 dBµV 9 20 dBµV 9	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 😰 Spect Hz Hz Mode Auto Sweep Off	rum 3 🖾	Spurious - 6	▽ ○ 0) GHz K Max 5 dBµV 24 GHz
MultiView Spectri Ref Level 80.00 dBµV 0 dB SW Att 0 dB SW Ipput 1 AC PS IFrequency Sweep 70 dBµV 60 dBµV 60 dBµV 50 dBµV 40 dBµV 9 20 dBµV 9 20 dBµV 9 10 dBµV 10 dBµV	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 IX Spect Hz Hz Mode Auto Sweep Off	rum 3 🗷	Spurious - 6	▽ ea
MultiView Spectru Ref Level 80.00 dBµ/ 0 dB SW Att 0 dB SW Input 1 AC PS I Frequency Sweep 9 70 dBµ/ 6 60 dBµ/ 6 50 dBµ/ 6 20 dBµ/ 6 30 dBµ/ 6 10 dBµ/ 6 10 dBµ/ 10 dBµ/ 10 dBµ/ 10 dBµ/	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 I Spect	rum 3 🗵	Spurious - 6	>ea
MultiView Spectru Ref Level 80.00 dBµV 0 dB SV Att 0 dB SV Ipput 1 AC PS Frequency Sweep 9 70 dBµV 60 dBµV 60 dBµV 9 50 dBµV 9 40 dBµV 9 20 dBµV 9 10 dBµV 10 dBµV	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 🕱 Spect	rum 3 🖾	Spurious - 6	▼ea ▼ 0) GHz K Max 6 dBµV 24 GHz
MultiView Spectru Ref Level 80.00 dBµV 0 dB SW Att 0 dB SW Input 1 AC PS I Frequency Sweep 9 70 dBµV 60 60 dBµV 9 50 dBµV 9 50 dBµV 9 20 dBµV 9 20 dBµV 9 20 dBµV 9 10 dBµV 9 -10 dBµV 9	IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	um 2 I Speci Hz Mode Auto Sweep	rum 3 🖾	Spurious - 6	▼ ▼ ↓ GHz ↓ GHz

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							9	Spuriou	s – Peak
MultiView 8	Spectrum	X Spec	trum 2	Spectr	um 3 🛛 🛛				▽
Ref Level 80.0 Att Input	0 dBµV 0 dB SWT 1.0 1 AC PS	RBW M	1 MHz 3 MHz Mode Off	Auto Sweep			Fre	equency 7.20)60000 GHz
1 Frequency Sv	veep								1Pk Max
								M1[1] 7.	29.11 dBµV 20215385 GHz
70 dBµV									
60 dBµV									
50 dBµV									
40 dBµV									
30 dBµV-	MI Intelnetter	and and a second as	and and south start	waturn	manufacely	mounda	-	ulen, er dette sere pår	Marchanderson
20 dBµV									
10 dBµV									
0 dBµV									
10 db.42									
-10 0004									
CF 7.206 GHz			1001 pts		1	.0 MHz/		5	pan 10.0 MHz



• 8DPSK _ Middle frequency

					_			_
fultiView (Spec	trum 🕱 S	pectrum 2	X Spectr	um 3 🛛 🕱				▽
Att 0 dB Input 1 AC	SWT 1.01 ms = VB PS Off No	W 3 MHz Mode tch Off	Auto Sweep			Fr	equency 4.88	320000 GH
Frequency Sweep							M1[1]	1Pk Max 40.03 dBu
							4.	88233966 GH
dBµV								
dBµV								
dBµV								
				M1				
dBµV-		July 1	and and a second and	and when				
dBuV-	and a contraction of the second	www.humanus			manulationste	manulturt	-	Bon Araba ann Ist
-20								
dвµV								-
авил								
івµv								
) dBµV						-		-
4.882 GHz		1001 pts		1	.0 MHz/		5	Span 10.0 M⊦
4.882 GHz	I	1001 pts		1	.0 MHz/		5	i Span 10.0 M⊦
4.882 GHz		1001 pts		1.	.0 MHz/		Spuriou	s − Pe
4.882 GHz	trum VS	1001 pts	Spectr	1. 1.	.0 MHz/		Spuriou	s – Pe
4.882 GHz	trum 🕱 S • RB	ipectrum 2	X Spectr	1. um 3 🛛 🕱	.0 MHz/		Spuriou	s – Pe
4.882 GHz ultiView @ Spec tef Level 80.00 dB _U V tt 0 dB nput 1 AC	trum 🕱 S ® RB SWT 1.01 ms ® VB PS Off No	DO1 pts 1001 pts pectrum 2 W 1 MHz W 3 MHz Mode tch Off	Spectro Auto Sweep	1. um 3 🛛 🕱	.0 MHz/	Fr	Spuriou equency 7.32	s – Pe 230000 GI
4.882 GHz ultiView & Spec tef Level 80.00 dBµV tt 0 dB nput 1 AC requency Sweep	trum II S SWT 1.01 ms + VB PS Off No	1001 pts pectrum 2 W 1 MHz W 3 MHz Mode tch Off	Spectr Auto Sweep	1. um 3 (x	.0 MHz/	Fr	Spuriou equency 7.32 M1[1]	s – Pe 330000 GI 1Pk Mai 29.08 dB
4.882 GHz ultiView Spec lef Level 80.00 dBµV tt 0 dB nput 1 AC requency Sweep dbuV	trum III S RB SWT 1.01 ms = VB PS Off No	1001 pts pectrum 2 W 1 MHz W 3 MHz Mode tch Off	X Spectr Auto Sweep	1. um 3 🛛 🕱	.0 MHz/	Fr	Spuriou equency 7.32 M1[1] 7.	s – Pe 330000 GI 1Pk Ma 29.08 dB 32675624 G
4.882 GHz ultiView Spec ef Level 80.00 dBuV tt 0 dB iput 1 AC requency Sweep dBuV	trum 🖾 S ® RB SWT 1.01 ms ® VB PS Off No	1001 pts pectrum 2 W 1MHz W 3MHz Mode th Off	X Spectr Auto Sweep	um 3 🕅	0 MHz/	Fn	Spuriou equency 7.32 M1[1] 7.	s – Pe 30000 GI 1Pk Ma 29.06 dB 32675624 G
4.882 GHz ultiView @ Spec ef Level 80.00 dBµV tt 0 dB nput 1 AC requency Sweep dBµV dBµV	trum I S SWT 1.01 ms + VB PS Off No	1001 pts ipectrum 2 W 1 MHz W 3 MHz Mode tch Off	X Spectr	1. um 3 (x	0 MHz/	Fr	Spuriou equency 7.32 M1[1] 7.	s – Pe 330000 GI 19kMa 22,00 dB 32675624 G
4.882 GHz	trum I R R SWT 1.01 ms @ VB PS Off No	1001 pts ipectrum 2 W 1 MHz W 3 MHz Mode tch Off	X Spectr Auto Sweep	1. um 3 🛛 🛛	0 MHz/	Fn	Spuriou equency 7.32 M1[1] 7.	s – Pe 30000 Gl 1Pk Ma 29.08 dB 32675624 Gl
4.882 GHz ultiView Spect tef Level 80.00 dBμV 0 dB tt 0 dB requency Sweep dBμV dBμV dBμV	trum I S SWT 1.01 ms # VB PS Off No	1001 pts pectrum 2 W 1 MHz W 3 MHz Mode tch Off	X Spectr Auto Sweep	um 3 🛛 🕱	0 MHz/	Fr	Spuriou equency 7.32 M1[1] 7.	s – Pe s – Pe 230000 GI 29.08 (B) 32675624 Gi
4.882 GHz ultiView Spec f Level 80.00 dBµV 0 dB pput 1 AC requency Sweep dBµV dBµV dBµV dBµV dBµV	trum I S S • RB • RB • VB PS Off No	1001 pts pectrum 2 W 1 MHz W 3 MHz Mode Off	X Spectr Auto Sweep	um 3 🕅	0 MHz/	Fn	Spuriou equency 7.32 M1[1] 7.	s – Pe s – Pe 230000 GI 1Pk/Ma 22.00 db 32675624 G
4.882 GHz ultiView Spec ef Level 80.00 dBµV 0 dB tt 0 dB gBµV 1 AC dBµV dBµV	trum I S SWT 1.01 ms + VB SWT 1.01 ms + VB PS Off No	1001 pts	Auto Sweep	um 3 🕅	0 MHz/	Fr	Spuriou equency 7.32 M1[1] 7.	s – Pe 230000 GI 1Pk Ma 29.08 dB 32675624 G
4.882 GHz	trum II S R SWT 1.01 ms • VB PS Off No	ipectrum 2 w 11/11z Wode tch Off	Auto Sweep	um 3 🛛 🛛	0 MHz/	Fr	Spuriou equency 7.32	s – Pe s – Pe z30000 Gl • IPk Ma 29.08 dB 32675624 G
4.882 GHz	trum II S S SWT 1.01 ms • VB PS Off No	1001 pts	X Spectr Auto Sweep	um 3 (x		Fr	Spuriou equency 7.32 M1[1] 7.	s – Pe 230000 GI 1.PK Ma 29.08 dB 32675624 G
4.882 GHz ultiView @ Spec fet Level 80.00 dBµV	trum Z S • RB SWT 1.01 ms #V PS Off No	1001 pts	X Spectr	um 3 🕅	0 MHz/	Fr	Spuriou equency 7.32 M1[1] 7.	s – Pe s – Pe 230000 Gł 1Pk Mał 22.000 Gł 29.00 dł 32675624 Gł
4.882 GHz ultiView Spec fLevel 80.00 dBµV ft 0 dB pput 1 AC frequency Sweep dBµV dBµV dBµV dBµV dBµV dBµV dBµV dBµV	trum I S S SWT 1.01 ms + VB PS Off No	ion petrum 2 ipectrum 2 w 1 MHz Mode tch Off	Image: System Auto Sweep	um 3 🛛	0 MHz/	Fr	equency 7.32	s – Pe
4.882 GHz ultiView Spec cef Level 80.00 dBµV 0 dB dBµV 1 AC dBµV 0 dB dBµV 0 dBµV dBµV 0 dBµV dBµV 0 dBµV	trum I S S SWT 1.01 ms + VB PS Off No	ipectrum 2 ipectrum 2 w 1 MHz Mode tch Off	Image: System Auto Sweep	um 3 🕅	0 MHz/	Fr	equency 7.32	s – Pe
4.882 GHz ultiView Spec cef Level 80.00 dBµV 0 dB µV dBµV 1 AC requency Sweep dBµV dBµV dBµV	trum I S SWT 1.01 ms • VB	ipectrum 2 w 11/12 Mode the Off	Auto Sweep	um 3 (x	0 MHz/	Fr	Spuriou equency 7.32	s – Pe 230000 Gł 29.06 dła 32675624 Gł
ultiView Spec ultiView Spec cef Level 80.00 dBµV 0 dB µV dBµV 1 AC dBµV dBµV	trum II S S SWT 1.01 ms • VB PS Off No	1001 pts	X Spectr	um 3 (x	0 MHz/	Fr	equency 7.3	s – Pe
ultiView Spec ultiView Spec ief Level 80.00 dBµV 0 dB image: specific data 0 dB dBµV 1 AC dBµV dBµV dBµV dBµV	trum I S S SWT 1.01 ms #VB PS Off No	1001 pts	Image: System Auto Sweep	um 3 🕅	0 MHz/	Fn	equency 7.32	s – Pe

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• 8DPSK _ High frequency

AultiView 🛞 Spectrum	Spectr	rum 2 🕱	Spectrum 3	Spectru	ım 4 🛛 🕱			
Ref Level 87.00 dBµV Att 0 dB	● RI SWT 1.01 ms ● VE	BW 1 MHz BW 3 MHz Moo	de Auto Sweep			Fr	equency 2.4	1917500 GH
Frequency Sweep	PS UN N	oten Um					1113	● 1Pk Max
I dBuV							1[1]	2,4835082 G
dBµV								10
-								
gBhA								
dBµV								
dBµV								
dauv-	WALL							
		monthalphich	summer during	t-matching and	al months	manantari	through the state	Marguel month
dBµV								
dp. at								
овру								
iBµV		-		-				
O dBuV								
4835 GHz		1001 p	ts	1.	65 MHz/	Restric	ed Bar	2.5 GH
4835 GHz	rum 🕱 S	1001 pi	Its Spectro	1. rum 3	65 MHz/	Restric	ed Bar	<u>2.5 G</u> ⊢ nd – Pe
4835 GHz ultiView (Spect ef Level 80.00 dBW tt 0 dB 1AC	rum 🕱 S BWT 1.01 ms VB PS Off No	1001 p 1001 p Spectrum 2 W 1 MHz W 3 MHz Mod tch Off	E Auto Sweep	1. rum 3 🛛 🛛	65 MHz/	Restric	ed Bar	2.5 GH
ultiView Spect eff Level 80.00 dB ₁ Y tt 0 dB nput 1 AC requency Sweep	rum 🖾 S ®RB SWT 1.01 ms ® VB PS Off No	1001 p 5pectrum 2 W 1 MHz W 3 MHz Mod tch Off	IS Spectro	1. rum 3 🛛 🛛	65 MHz/	Restric	ed Bar equency 4.9	2.5 GF nd − Pe ⊽ 2.5 GF v 2.5 GF v 2.5 GF v 2.5 GF v 2.5
4835 GHz 4835 GHz set Level 80.00 dBµV tt 0 dB 1 requency Sweep dbw	FUT IN STATES	1001 p Spectrum 2 W 1 Minz W 3 Minz Mod Off	ES Spectr	1. rum 3 🛛 🕱	65 MHz/	Restric	ed Bar equency 4.5	2.5 GH
4835 GHz 4835 GHz sef Level 80.00 dBy/Y tt 0 dB requency Sweep dBy/Y	rum I S S • RB SWT 1.01 ms • VB PS Off No	1001 p Spectrum 2 W 11Miz W 31Miz Mod tch Off	Spectro Sweep	1. rum 3 🛛 🕅	65 MHz/	Restric	ed Bar equency 4.5	2.5 GF 2.5 GF
ultiView Spect 4835 GHz	rum Z S RB SWT 1.01 ms • VB SS Off No	1001 p Spectrum 2 W 1MHz W 3MHz Mod tch Off	EX Spectra	1. rum 3 🛛	65 MHz/	Restric Fr	ed Bar	2.5 GF
	FUT S SWT 1.01 ms + VB PS Off No	1001 p Spectrum 2 W 1 MHz W 3 MHz Mod tch Off	EX Spectr	1. rum 3 🛛 🗵	65 MHz/	Restric Pr	ed Bar	2.5 GF
	rum I S • RB SWT 1.01 ms • VB PS Off No	ipectrum 2 spectrum 2 W 1MHz W 3MHz Mod tch Off	Spectr e Auto Sweep	1.	65 MHz/	Restric Fr	ed Bar	2.5 GH 2.5 GH 2.5 GH ↓ 26000000 GH ↓ 26000000 GH ↓ 28,56 dBµ 38,56 dBµ 38,56 dBµ 38,55 70030 GH
ultiView Spect 4835 GHz Spect ultiView Spect f Level 80.00 /BµV dt 0 /8 /s requency Sweep dt 0 /4 /s dt 1 /4 C requency Sweep dt dt dt dt dt dt dt dt dt dt dt dt	rum I S S RB SWT 1.01 ms • VB PS Off No	1001 p	EX Spectri e Auto Sweep	1. rum 3 2	65 MHz/	Restric Fr	ed Bar equency 4.9	2.5 GF
ultiView Spect ef Level 80.00 dBµV 0 dB µV tt 0 dB µ requency Sweep dBµV dBµV dBµV dBµV dBµV	rum Z S BBS SWT 1.01 ms + VB PS Off No	Beectrum 2 W 1 MHz W 3 MHz Mod teh Off	EX Spectri e Auto Sweep	1. rum 3 (2	65 MHz/	Restric Pr	ed Bar	2.5 GF
ultiView Spect ef Level 80.00 dBµV tt 0 dB requency Sweep dBµV dBµV dBµV dBµV dBµV dBµV	rum III S SWT 1.01 ms = VB SSWT 1.01 ms = VB Off No	ipectrum 2 ipectrum 2 W 1MHz W 3MHz Mod tch Off		1.	65 MHz/	Restric Fr	ed Bar	2.5 GF
	rum II S RB SWT 1.01 ms • VB PS Off No	Depectrum 2 W 1MHz Wod W 3MHz Mod tch Off	EX Spectri e Auto Sweep	1. rum 3 22	65 MHz/	Restric Fr	ed Bar	2.5 GF
ultiView Spect ef Level 80.00 dBµV tt 0 dB requency Sweep dBµV dBµV dBµV dBµV dBµV dBµV	rum Z S BB SWT 1.01 ms + VB PS Off No	Bectrum 2 W 1MHz Mod tch Off	EX Spectri	1.	65 MHz/	Restric Fr	ed Bar	2.5 GH
ultiView Spect 4835 GHz	rum III S SWT 1.01 ms = VB SWT 1.01 ms = VB Off No	illing in the second se	EX Spectri	1.	65 MHz/	Restric Fr	ed Bar	2.5 GF
ultiView Spect ef Level 80.00 dBµV ef Level 80.00 dBµV dBµV dBµV	rum III S • RB SWT 1.01 ms • VB PS Off No	Depectrum 2	EX Spectri	1.	65 MHz/	Restric Fr	ed Bar	2.5 GF
ultiView Speci 4835 GHz ultiView Speci ef Level 80.00 dByV gapt 1 AC 1 requency Sweep dBµV	rum Z S • RB SWT 1.01 ms • VB PS Off No	interview in the second	EX Spectro	1.	65 MHz/	Restric Fr	ed Bar	2.5 GF
ultiView Spect ef Level 80.00 dBµV 0 dB µV tt 0 dB µV dBµV dBµV	rum II S S SWT 1.01 ms + VB PS Off No	illing	EX Spectric	1.	65 MHz/	Restric	ed Bar	2.5 GH
Intriview Spect IultiView Iter IultiView Iter IultiView Iter IultiView Iter IdBµV Iter	rum 🐹 S SWT 1.01 ms = VB SWT 1.01 ms = VB Off No	illion p	EX Spectri	rum 3 (2	65 MHz/	Restric	ed Bar	2.5 GH

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						5	Spuriou	is – Peak
MultiView 8	Spectrum	Spectrum 2	I Specti	rum 3 🛛 🛛	3			
Ref Level 80.0 Att Input	0 dBµV 0 dB SWT 1.01 ms 1 AC PS Off	RBW 1 MHz VBW 3 MHz Mode Notch Off	Auto Sweep			Fre	equency 7.4	400000 GHz
1 Frequency Sv	weep						MILTI	 1Pk Max 20.26 dPwV
							7	44324675 GHz
70 dBµV								
60 dBµV								
50 dBµV								
40 dBµV								~
30 dBuV							M1	
manutationship	ale survive in the second	nother the matter that have	where he was	hope the holder	the manufacture and	property many many	millionarchile	where with all with
20 dBµV								
10 dвµv								
0 dвµV								
-10 dBµV								
CF 7.44 GHz		 1001 pt	s	1	1.0 MHz/			Span 10.0 MHz



11.7 Test Plot for Conducted Spurious Emission

• GFSK _ Low frequency



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• GFSK _ Middle frequency



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• GFSK _ High frequency



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• 8DPSK _ Low frequency



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• 8DPSK _ Middle frequency



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• 8DPSK _ High frequency



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12. Conducted Emission

12.1 Test Setup

See test photographs for the actual connections between EUT and support equipment.

12.2 Limit

According to §15.207(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network (LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

	Conducted Limit (dBuV)				
Frequency Range (MHZ)	Quasi-Peak	Average			
0.15 ~ 0.5	66 to 56 *	56 to 46 *			
0.5 ~ 5	56	46			
5~30	60	50			

* Decreases with the logarithm of the frequency

12.3 Test Procedure

Conducted emissions from the EUT were measured according to the ANSI C63.10.

- The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
- The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
- 3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
- 4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

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12.4 Test Result

• AC Line Conducted Emission (Graph)



Final_Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Bandwidth	Line	Corr.
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dB)	(kHz)		(dB)
0.158	53.87		65.57	11.70	9	L1	19.4
0.206		28.70	53.37	24.66	9	L1	19.4
0.610		24.34	46.00	21.66	9	L1	19.8
0.610	33.67		56.00	22.33	9	L1	19.8
1.910		26.19	46.00	19.81	9	L1	19.7
1.910	34.74		56.00	21.26	9	L1	19.7
3.530		21.46	46.00	24.54	9	L1	19.8
4.750	25.70		56.00	30.30	9	L1	19.8
10.250	37.60		60.00	22.40	9	L1	20.0
10.340		28.58	50.00	21.42	9	L1	20.0
10.850	38.49		60.00	21.51	9	L1	20.0
11.110		28.74	50.00	21.26	9	L1	20.0

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Conducted Emission

Final_Result

SP114_BLE_N

Frequency	QuasiPeak	CAverage	Limit	Margin	Bandwidth	Line	Corr.
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dB)	(kHz)		(dB)
0.150		34.37	56.00	21.63	9	N	19.2
0.154	57.05		65.78	8.73	9	N	19.3
0.394	27.88		57.98	30.09	9	N	19.8
0.630	33.43		56.00	22.57	9	N	19.8
1.910		25.38	46.00	20.62	9	N	19.7
1.910	34.77		56.00	21.23	9	N	19.7
3.530		20.28	46.00	25.72	9	N	19.8
4.710		23.35	46.00	22.65	9	N	19.8
10.260		25.32	50.00	24.68	9	N	20.0
10.390	34.58		60.00	25.42	9	N	20.0
10.630		25.89	50.00	24.11	9	N	20.0
10.830	35.42		60.00	24.58	9	N	20.0

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APPENDIX I

TEST SETUP

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Radiated Measurement



• Conducted Measurement

Conducted	EUT	Attenuator	Spectrum Analyzer

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APPENDIX II

UNCERTAINTY

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Measurement Item	Expanded Uncertainty U = <i>k</i> Uc (<i>k</i> =2)
Conducted RF power	0.32 dB
Conducted Spurious Emissions	0.32 dB
Radiated Spurious Emissions	6.34 dB
Conducted Emissions	1.74 dB