

## CFR 47 FCC PART 15 SUBPART C ISED RSS-247 ISSUE 2

**CERTIFICATION TEST REPORT** 

For

## **Square Register**

#### MODEL NUMBER: SPS1-01

FCC ID: 2AF3K-SPS1

IC: 21827-SPS1

REPORT NUMBER: 4789598114.1-2

ISSUE DATE: October 9, 2020

Prepared for

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## **Revision History**

Rev.	Issue Date	Revisions	Revised By
V0	10/09/2020	Initial Issue	



Summary of Test Results							
Clause	Test Items	FCC/ISED Rules	Test Results				
1	20dB Bandwidth and 99% Occupied Bandwidth	FCC 15.247 (a) (1) RSS-247 Clause 5.1 (a) RSS-Gen Clause 6.7	Pass				
2	Conducted Output Power	FCC 15.247 (b) (1) RSS-247 Clause 5.1 (b)	Pass				
3	Carrier Hopping Channel Separation	FCC 15.247 (a) (1) RSS-247 Clause 5.1 (b)	Pass				
4	Number of Hopping Frequency	15.247 (a) (1) III RSS-247 Clause 5.1 (d)	Pass				
5	Time of Occupancy (Dwell Time)	15.247 (a) (1) III RSS-247 Clause 5.1 (d)	Pass				
6	Conducted Bandedge	FCC 15.247 (d) RSS-247 Clause 5.5	Pass				
7	Radiated Bandedge and Spurious	FCC 15.247 (d) FCC 15.209 FCC 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9 RSS-GEN Clause 8.10	Pass				
8	Conducted Emission Test for AC Power Port	FCC 15.207 RSS-GEN Clause 8.8	Pass				
9	Antenna Requirement	FCC 15.203 RSS-GEN Clause 6.8	Pass				
Note:							

Note:

1. This test report is only published to and used by the applicant, and it is not for evidence purpose in China.

2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C >< ISED RSS-247 > when <Accuracy Method> decision rule is applied.



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# **1. ATTESTATION OF TEST RESULTS**

FCC	
Applicant Information	
Company Name:	Square, Inc.
Address:	1455 Market St, Suite 600, San Francisco, California, United States 94103
ISED	
Applicant Information	
Company Name:	Square Canada, Inc.
Address:	5000 Yonge Street, Suite 1501; Toronto, ON, M2N7E9 Canada
FCC	
Manufacturer	
Information	
Company Name:	Square, Inc.
Address:	1455 Market St, Suite 600, San Francisco, California, United States 94103
ISED	
Manufacturer	
Information	
Company Name:	Square Canada, Inc.
Address:	5000 Yonge Street, Suite 1501; Toronto, ON, M2N7E9 Canada
EUT Information	
EUT Name:	Square Register
Square Register Model:	SPS1-01
Brand:	SQUARE
Sample Received Date:	August 17, 2020
Sample Status:	Normal
Sample ID:	2809002
Date of Tested:	August 17~ September 15, 2020



APPLICABLE STANDARDS					
STANDARD TEST RESULTS					
CFR 47 FCC PART 15 SUBPART C	PASS				
ISED RSS-247 Issue 2	PASS				
ISED RSS-GEN Issue 5	PASS				

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# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r02, 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 2, CFR 47 FCC Part 15, ANSI C63.10-2013, ISED RSS-247 Issue 2 and ISED RSS-GEN Issue 5.

# 3. FACILITIES AND ACCREDITATION

	A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
	has been assessed and proved to be in compliance with A2LA.
	FCC (FCC Designation No.: CN1187)
	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
	Has been recognized to perform compliance testing on equipment subject
	to the Commission's Delcaration of Conformity (DoC) and Certification rules
	ISED (Company No.: 21320)
Accreditation	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Certificate	has been registered and fully described in a report filed with ISED.
	The Company Number is 21320.
	VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)
	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
	has been assessed and proved to be in compliance with VCCI, the
	Membership No. is 3793.
	Facility Name:
	Chamber D, the VCCI registration No. is G-20019 and R-20004
	Shielding Room B, the VCCI registration No. is C-20012 and T-20011

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.



# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

## 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty		
Conduction emission	3.62 dB		
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	,,,,,,,,		
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB		
Radiated Emission	5.78 dB (1 GHz ~ 18 GHz)		
(Included Fundamental Emission) (1 GHz to 26 GHz)	5.23 dB (18 GHz ~ 26 GHz)		
Note: This uncertainty represents an expanded uncertainty expressed at approximately the % confidence level using a coverage factor of k=2.			



# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

EUT Name	Square Register					
Square Register Model	SPS1-01					
Technology	Bluetooth – BR	& EDR				
Transmit Frequency Range	2402 MHz ~ 248	2402 MHz ~ 2480 MHz				
Mode	Basic Rate			Enhanced Data Rate		
Modulation	GFSK		I	∏/4-DQPSK	8DPSK	
Packet Type (Maximum Payload):	DH5			2DH5	3DH5	
Data Rate	1 Mbps	2 Mb		2 Mbps	3 Mbps	
	Dowor Adoptor	Input	Input 100~240 Vac,50/6		0 Hz,1.2 A	
Power Supply	Power Adapter	Output	Output 12 Vdc,4.0 A			
	Battery	/				

## 5.2. MAXIMUM PEAK OUTPUT POWER

Modulation	Frequency (MHz)	Channel Number	Maximum Peak Output Power (dBm)	Maximum EIRP (dBm)
GFSK	2402 ~ 2480	0-78[79]	9.91	12.37
8DPSK	2402 ~ 2480	0-78[79]	9.70	12.16

## 5.3. PACKET TYPE CONFIGURATION

Modulation	Packet Type	Setting (Packet Length)
	DH1	27
GFSK	DH3	183
	DH5	339
	2-DH1	54
∏/4-DQPSK	2-DH3	367
	2-DH5	679
	3-DH1	83
8DPSK	3-DH3	552
	3-DH5	1021



Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2422	40	2442	60	2462
01	2403	21	2423	41	2443	61	2463
02	2404	22	2424	42	2444	62	2464
03	2405	23	2425	43	2445	63	2465
04	2406	24	2426	44	2446	64	2466
05	2407	25	2427	45	2447	65	2467
06	2408	26	2428	46	2448	66	2468
07	2409	27	2429	47	2449	67	2469
08	2410	28	2430	48	2450	68	2470
09	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	/	/

# 5.4. CHANNEL LIST

## 5.5. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
GFSK-DH5	CH 0(Low Channel), CH 39(MID Channel), CH 78(High Channel)	2402 MHz, 2441 MHz, 2480 MHz
8DPSK-3DH5	CH 0(Low Channel), CH 39(MID Channel), CH 78(High Channel)	2402 MHz, 2441 MHz, 2480 MHz
GFSK-DH5	Hopping	2402 MHz ~ 2480 MHz
8DPSK-3DH5	Hopping	2402 MHz ~ 2480 MHz

## 5.6. WORST-CASE CONFIGURATIONS

Bluetooth Mode	Modulation Technology	Modulation Type	Data Rate	Packet Type
BR	FHSS	GFSK	1Mbit/s	DH5
EDR	FHSS	8DPSK	3Mbit/s	3-DH5

Note: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates. Only GFSK and 8DPSK test data were report in this report.

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## 5.7. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5 MHz Band					
Test Se	oftware	QRCT			
Modulation	Transmit Antenna	Test Software Setting Value			
woodation	Number	CH 00	CH 39	CH 78	
GFSK	1	9 9 9			
8DPSK	1	9 9 9			

## 5.8. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
1	2402-2480	Internal PCB antenna	2.46

Modulation	Transmit and Receive Mode	Description
GFSK	⊠1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.
8DPSK	⊠1TX, 1RX	Antenna 1 can be used as transmitting/receiving antenna.

Note: The value of the antenna gain was declared by customer.



## 5.9. DESCRIPTION OF TEST SETUP

#### SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	ThinkPad	X230i	/
2	RJ45 terminal spring block adapter	Adafruit	485-4511	/
3	USB flash disk	Kingston	8GB	5PCS
4	Customer Display	SQUARE	SPS4-01/ SPS4-01-A	/

#### I/O PORT

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	/	/	1.0 m	/
2	USB	/	/	2.0 m	Customer display cable

#### ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	Power Adapter	SQUARE	SWB2-01	Input: 100-240V,50/60Hz, 1.2A Output: 12Vdc, 4A
2	Hub	SQUARE	SHF3-01	Hub Output X5: 5Vdc, 2.5A Output for Register: 12Vdc, 2.3A
3	HUB	SQUARE	SHB3-01	Hub Output: 5V, 2.5A Register Output: 12V2.3A

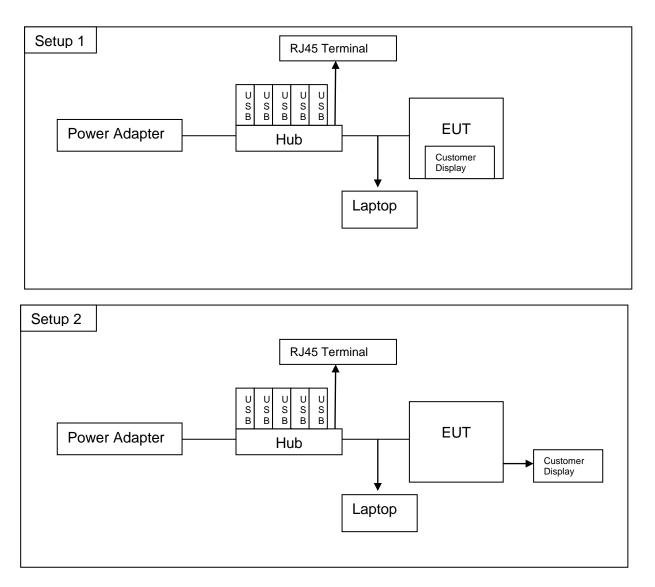
Note: Two Hubs had been considered, but only the worst data (SHF3-01) recorded in the report.



#### TEST SETUP

The EUT can work in an engineering mode though the laptop before the testing.

#### SETUP DIAGRAM FOR TESTS



Note:

- 1. After setting the EUT to engineering mode, the Laptop was removed from the test table.
- 2. There are two Settings for the sample and both settings have considered, Only the worst cases (Setup 1) were recorded in the report.

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# 6. MEASURING INSTRUMENT AND SOFTWARE USED

	Conducted Emissions							
			Ins	trument				
Used	Equipment	Manufacturer	Мос	del No.	Serial No		Last Cal.	Next Cal.
$\checkmark$	EMI Test Receiver	R&S	Е	SR3	101961		Dec.05,2019	Dec.05,2020
V	Two-Line V- Network	R&S	EN	IV216	101983		Dec.05,2019	Dec.05,2020
			So	oftware				
Used	Desc	ription		Mai	nufacturer		Name	Version
$\checkmark$	Test Software for Co	onducted distu	Irbano	ce	Farad		EZ-EMC	Ver. UL-3A1
		Ra	diate	d Emiss	sions			
			Ins	trument				
Used	Equipment	Manufacturer	Мос	del No.	Serial No	•	Last Cal.	Next Cal.
V	MXE EMI Receiver	KESIGHT	N9	038A	MY564000	36	Dec.06,2019	Dec.06,2020
V	Hybrid Log Periodic Antenna	TDK	HLP	-3003C	130960		Sep.17, 2018	Sep.17, 2021
$\checkmark$	Preamplifier	HP	84	447D	2944A0909	99	Dec.05,2019	Dec.05,2020
V	EMI Measurement Receiver	R&S	E	SR26	101377		Dec.05,2019	Dec.05,2020
$\checkmark$	Horn Antenna	TDK	HRI	N-0118	130939		Sep.17, 2018	Sep.17, 2021
V	High Gain Horn Antenna	Schwarzbeck	BBH	A-9170	691		Aug.11, 2018	Aug.11, 2021
V	Preamplifier	TDK	PA-0	02-0118	TRS-305 00066		Dec.05,2019	Dec.05,2020
V	Preamplifier	TDK	PA	-02-2	TRS-307 00003	-	Dec.05,2019	Dec.05,2020
$\checkmark$	Loop antenna	Schwarzbeck	15	519B	80000		Jan.07, 2019	Jan.07, 2022
V	Preamplifier	TDK		02-001-	TRS-302 00050	-	Dec.5, 2019	Dec.5, 2020
V	High Pass Filter	Wi	WHKX10- 2700-3000- 18000-40SS		23		Dec.05,2019	Dec.05,2020
	Software							
Used	Descri	ption		Manufa	cturer		Name	Version
	Test Software disturb			Fara	ad	E	Z-EMC	Ver. UL-3A1



	Other instruments							
Used	ed Equipment Manufacturer Model No. Serial No. Last Cal. Next Cal.							
$\checkmark$	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec.06,2019	Dec.06,2020		
$\checkmark$	Spectrum Analyzer	Keysight	N9020A	MY49100060	Dec.06,2019	Dec.06,2020		
$\checkmark$	Power Meter	Keysight	N1911A	MY55416024	Dec.06,2019	Dec.06,2020		
$\checkmark$	Power Sensor	Keysight	U2021XA	MY5100022	Dec.06,2019	Dec.06,2020		



# 7. ANTENNA PORT TEST RESULTS

# 7.1. ON TIME AND DUTY CYCLE

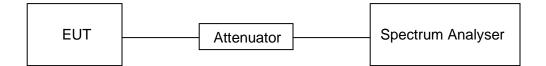
#### LIMITS

None; for reporting purposes only.

#### PROCEDURE

Refer to ANSI C63.10-2013 Zero – Span Spectrum Analyzer method.

#### TEST SETUP



#### **TEST ENVIRONMENT**

Temperature	23.7 °C	Relative Humidity	64.2 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V,60HZ

#### **RESULTS**

Please refer to appendix A.



## 7.2. 20 dB BANDWIDTH AND 99 % OCCUPIED BANDWIDTH

#### LIMITS

CFR 47FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2						
Section Test Item Limit Frequency Range (MHz)						
CFR 47 FCC 15.247 (a) (1) RSS-247 Clause 5.1 (a)			2400-2483.5			
ISED RSS-Gen Clause 6.7	99 % Occupied Bandwidth	None; for reporting purposes only.	2400-2483.5			

#### TEST PROCEDURE

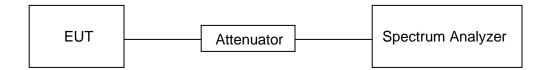
Refer to ANSI C63.10-2013 clause 6.9.2.

Center Frequency	The center frequency of the channel under test
Detector	Peak
IRR///	For 20 dB Bandwidth: 1 % to 5 % of the 20 dB bandwidth For 99 % Occupied Bandwidth: 1 % to 5 % of the occupied bandwidth
	For 20 dB Bandwidth: approximately 3×RBW For 99 % Occupied Bandwidth: ≥ 3×RBW
Span	Approximately 2 to 3 times the 20dB bandwidth
Trace	Max hold
Sweep	Auto couple

Connect the EUT to the spectrum analyser and use the following settings:

a) Use the occupied bandwidth function of the instrument, allow the trace to stabilize and report the measured 99 % occupied bandwidth and 20 dB Bandwidth.

#### TEST SETUP





#### **TEST ENVIRONMENT**

Temperature	23.7 °C	Relative Humidity	64.2 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V,60HZ

#### **RESULTS**

Please refer to appendix B and C.



## 7.3. CONDUCTED OUTPUT POWER

#### LIMITS

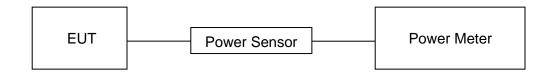
CFR 47 FCC Part15 (15.247), Subpart C ISED RSS-247 ISSUE 2			
Section Test Item Limit Frequer			
CFR 47 FCC 15.247 (b) (1) ISED RSS-247 Clause 5.4 (b)	Peak Conducted Output Power	Hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel: 1 watt or 30 dBm; Hopping channel carrier frequencies that are separated by 25 kHz or two- thirds of the 20 dB bandwidth of the hopping channel: 125 mW or 21 dBm	2400-2483.5

#### TEST PROCEDURE

Connect the EUT to a low loss RF cable from the antenna port to the power sensor (video bandwidth is greater than the occupied bandwidth).

Measure peak emission level, the indicated level is the peak output power, after any corrections for external attenuators and cables.

#### TEST SETUP



#### TEST ENVIRONMENT

Temperature	23.7 °C	Relative Humidity	64.2 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V,60HZ

#### **RESULTS**

Please refer to appendix D.



## 7.4. CARRIER FREQUENCY SEPARATION

#### LIMITS

CFR 47 FCC Part15 (15.247), Subpart C ISED RSS-247 ISSUE 2			
Section	Section Test Item Limit		Frequency Range (MHz)
CFR 47 FCC 15.247 (a) (1) ISED RSS-247 Clause 5.1 (b)	Carrier Frequency Separation	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.	2400-2483.5

#### TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 7.8.2.

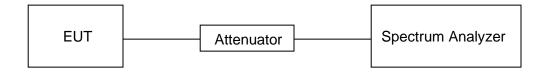
Connect the EUT to the spectrum analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Span	wide enough to capture the peaks of two adjacent channels
Detector	Peak
	Start with the RBW set to approximately 30 % of the channel spacing; adjust as necessary to best identify the center of each individual channel.
VBW	≥RBW
Trace	Max hold
Sweep time	Auto couple

Allow the trace to stabilize and use the marker-delta function to determine the separation between the peaks of the adjacent channels.

Compliance of an EUT with the appropriate regulatory limit shall be determined.

#### TEST SETUP





#### **TEST ENVIRONMENT**

Temperature	23.7 °C	Relative Humidity	64.2 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V,60HZ

#### <u>RESULTS</u>

Please refer to Appendix E.



## 7.5. NUMBER OF HOPPING FREQUENCIES

#### <u>LIMITS</u>

CFR 47 FCC Part15 (15.247), Subpart C ISED RSS-247 ISSUE 2			
Section Test Item Limit			
CFR 47 15.247 (a) (1) III Number of Hopping ISED RSS-247 Clause 5.1 (d) Frequency		at least 15 hopping channels	

#### TEST PROCEDURE

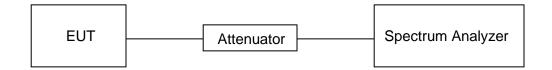
Refer to ANSI C63.10-2013 clause 7.8.3.

Connect the EUT to the spectrum Analyzer and use the following settings:

Detector	Peak
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
Span	The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
Trace	Max hold
Sweep time	Auto couple

Set EUT to transmit maximum output power and switch on frequency hopping function. then set enough count time (larger than 5000 times) to get all the hopping frequency channel displayed on the screen of spectrum analyzer, count the quantity of peaks to get the number of hopping channels.

#### TEST SETUP





#### **TEST ENVIRONMENT**

Temperature	23.7 °C	Relative Humidity	64.2 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V,60HZ

#### <u>RESULTS</u>

Please refer to appendix F.



## 7.6. TIME OF OCCUPANCY (DWELL TIME)

#### LIMITS

CFR 47 FCC Part15 (15.247), Subpart C ISED RSS-247 ISSUE 2			
Section Test Item Limit			
CFR 47 15.247 (a) (1) III ISED RSS-247 Clause 5.1 (d) Time of Occupancy (Dwell Time)		The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed.	

#### TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 7.8.4.

Connect the EUT to the spectrum Analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	1 MHz
VBW	≥RBW
Span	Zero span, centered on a hopping channel
Trace	Max hold
Sweep time	As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel

Use the marker-delta function to determine the transmit time per hop (Burst Width). If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time.

For FHSS Mode (79 Channel):

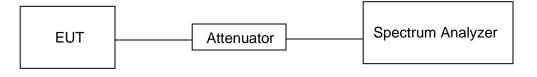
DH1 Dwell Time: Burst Width \* (1600/2) \* 31.6 / (channel number) DH3 Dwell Time: Burst Width \* (1600/4) \* 31.6 / (channel number) DH5 Dwell Time: Burst Width \* (1600/6) \* 31.6 / (channel number)

For AFHSS Mode (20 Channel):

DH1 Dwell Time: Burst Width \* (800/2) \* 8 / (channel number) DH3 Dwell Time: Burst Width \* (800/4) \* 8 / (channel number) DH5 Dwell Time: Burst Width \* (800/6) \* 8 / (channel number)



#### TEST SETUP



#### **TEST ENVIRONMENT**

Temperature	23.7 °C	Relative Humidity	64.2 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V,60HZ

#### **RESULTS**

Please refer to appendix G.



## 7.7. CONDUCTED BANDEDGE AND SPURIOUS EMISSION

#### <u>LIMITS</u>

CFR 47 FCC Part15 (15.247), Subpart C ISED RSS-247 ISSUE 2		
Section	Test Item	Limit
CFR 47 FCC §15.247 (d) ISED RSS-247 5.5	Conducted Spurious Emission	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

#### TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 7.8.6 and 7.8.8.

Connect the EUT to the spectrum analyser and use the following settings for reference level measurement:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100 kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level.

Change the settings for emission level measurement:

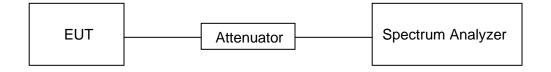
1.50.40	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100 kHz
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements.

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#### **TEST SETUP**



#### **TEST ENVIRONMENT**

Temperature	23.7 °C	Relative Humidity	64.2 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V,60HZ

#### **RESULTS**

Please refer to appendix H & I.



# 8. RADIATED TEST RESULTS

#### LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209.

Please refer to ISED RSS-GEN Clause 8.9 and Clause 8.10.

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz-1 GHz)

Emissions radiated outside of the specified frequency bands above 30 MHz			
Frequency Range	Field Strength Limit	Field Strer	ngth Limit
(MHz)	(uV/m) at 3 m	(dBuV/m) at 3 m	
(11112)		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
Above 1000	500	74	54

FCC Emissions radiated outside of the specified frequency bands below 30 MHz		
Frequency (MHz)         Field strength (microvolts/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

#### ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz		
Frequency         Magnetic field strength (H-Field) (μA/m)         Measurement distance (m)		
9 - 490 kHz <sup>Note 1</sup>	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

**Note 1:** The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.



#### ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10

MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	158.52475 - 158.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.877 - 5.883	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	38.43 - 38.5
8.291 - 8.294	1845.5 - 1848.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 – 138		

note in contain requertly barries is the initiative 7 and in barries above 35.0 GHz are designated to incence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

#### FCC Restricted bands of operation refer to FCC §15.205 (a):

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 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	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	( <sup>2</sup> )
13.36-13.41			

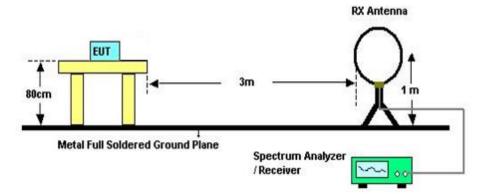
Note: <sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. <sup>2</sup>Above 38.6c

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#### TEST SETUP AND PROCEDURE

Below 30 MHz



The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.4.

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1 m height antenna tower.

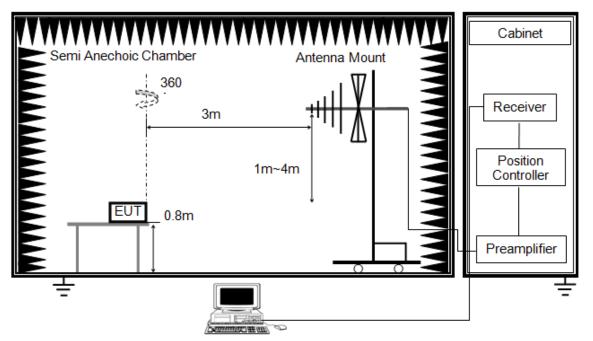
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

6. For measurement below 1 GHz, 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 and average detector mode remeasured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.

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



#### Below 1 GHz and above 30 MHz



The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.5.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1 GHz, 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. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.



# Above 1 GHz

The setting of the spectrum analyser

RBW	1 MHz
IV BW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.6.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5 m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

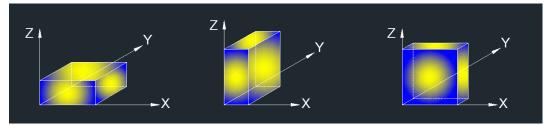
5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.

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X axis, Y axis, Z axis positions:



Note 1: The manufacturer has recommended that the EUT only be used in the desktop (horizontal) orientation; therefore, all radiated testing was performed in desktop orientation(X).

Note 2: The EUT does not support simultaneous transmission.

Note 3: The EUT was fully exercised with external accessories during the test. In the case of multiple accessory external ports, an external accessory shall be connected to one of each type of port.

#### TEST ENVIRONMENT

Temperature	23.5 °C	Relative Humidity	58 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V,60HZ

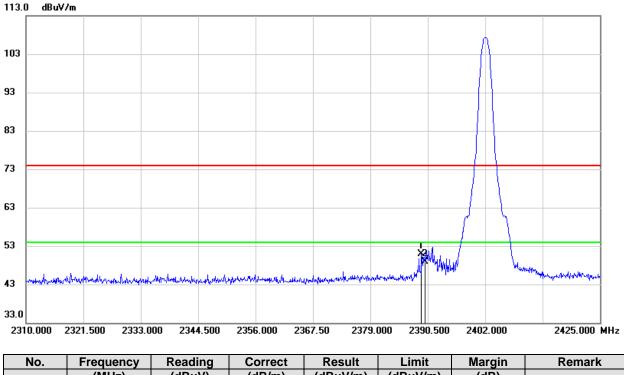
**RESULTS** 



## 8.1. RESTRICTED BANDEDGE

## 8.1.1. GFSK MODE

#### **RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.235	39.04	11.95	50.99	74.00	-23.01	peak
2	2390.000	36.85	11.96	48.81	74.00	-25.19	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

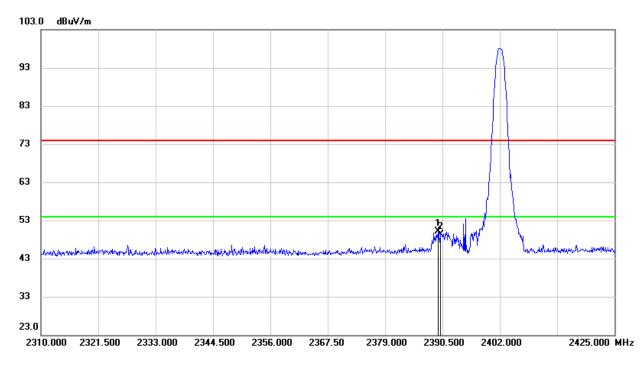
5. For the transmitting duration, please refer to clause 7.1.

6. Only the worst data was recorded, if it complies with the limit, the other emissions

deemed to comply with the limit.



#### **RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.695	38.09	11.96	50.05	74.00	-23.95	peak
2	2390.000	37.35	11.96	49.31	74.00	-24.69	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

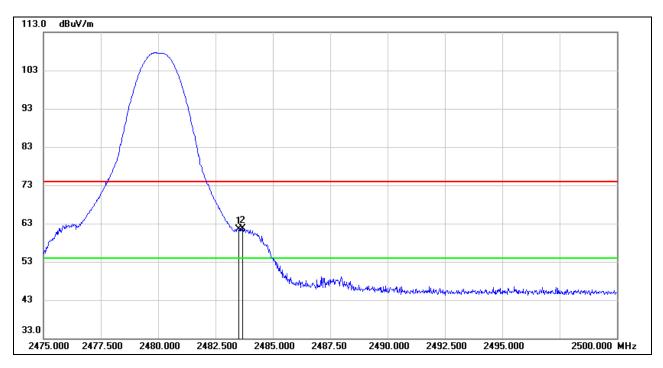
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	49.13	12.38	61.51	74.00	-12.49	peak
2	2483.675	49.35	12.38	61.73	74.00	-12.27	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

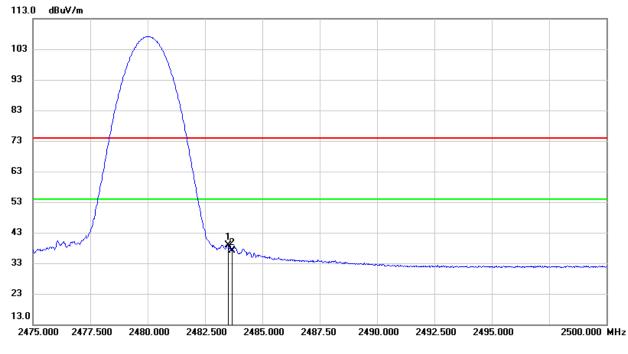
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.



<u>AVG</u>



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	26.43	12.38	38.81	54.00	-15.19	AVG
2	2483.675	24.81	12.38	37.19	54.00	-16.81	AVG

Note: 1. Measurement = Reading Level + Correct Factor.

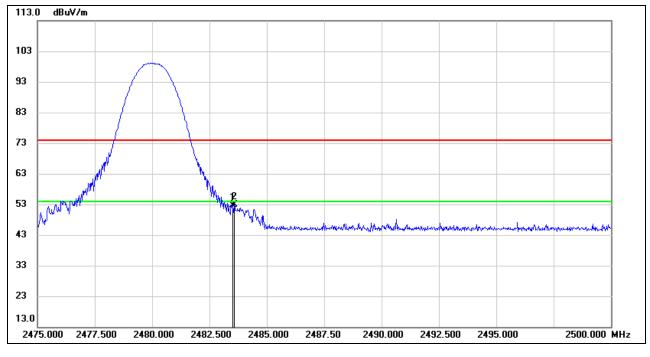
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

4. For the transmitting duration, please refer to clause 7.1.



## **RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	40.29	12.38	52.67	74.00	-21.33	peak
2	2483.575	40.47	12.38	52.85	74.00	-21.15	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 3. Peak: Peak detector.

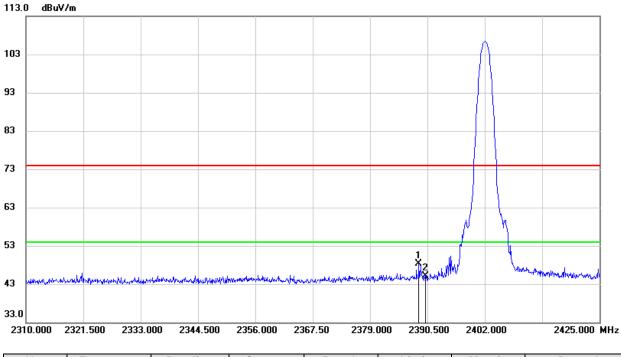
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.



## 8.1.2. 8DPSK MODE

### **RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2388.775	36.25	11.95	48.20	74.00	-25.80	peak
2	2390.000	33.10	11.96	45.06	74.00	-28.94	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

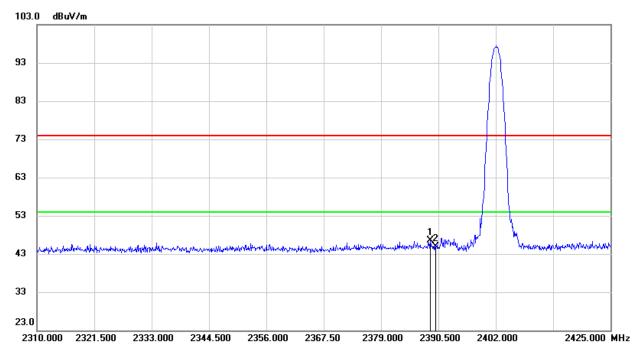
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.



## **RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2388.890	34.47	11.95	46.42	74.00	-27.58	peak
2	2390.000	32.96	11.96	44.92	74.00	-29.08	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

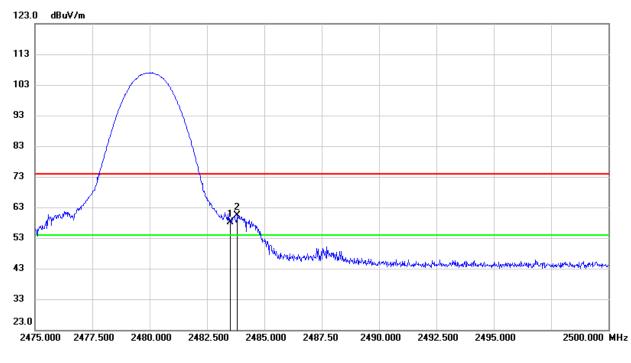
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.



## **RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	45.75	12.38	58.13	74.00	-15.87	peak
2	2483.825	47.91	12.38	60.29	74.00	-13.71	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

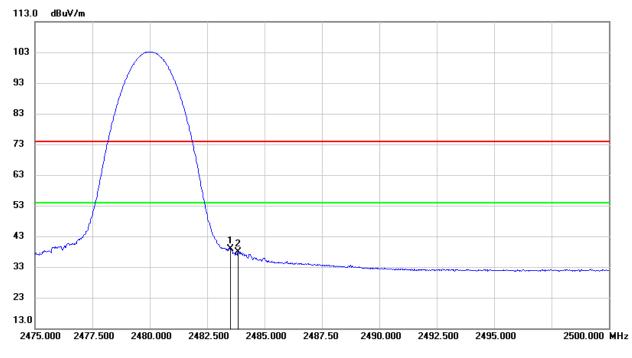
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.



<u>AVG</u>



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	26.45	12.38	38.83	54.00	-15.17	AVG
2	2483.825	25.59	12.38	37.97	54.00	-16.03	AVG

Note: 1. Measurement = Reading Level + Correct Factor.

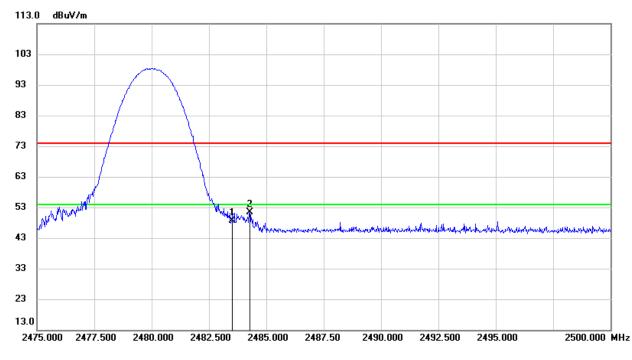
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

4. For the transmitting duration, please refer to clause 7.1.



## **RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	36.23	12.38	48.61	74.00	-25.39	peak
2	2484.275	39.02	12.38	51.40	74.00	-22.60	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

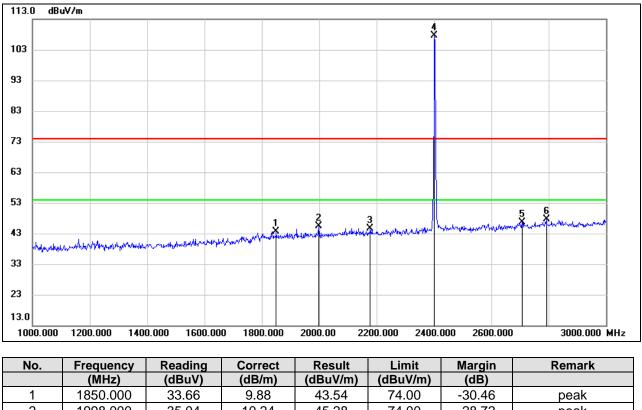
Note: All the polarities had been tested, only the worst data was recorded in the report.



# 8.2. SPURIOUS EMISSIONS (1 GHz ~ 3 GHz)

## 8.2.1. GFSK MODE

## HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



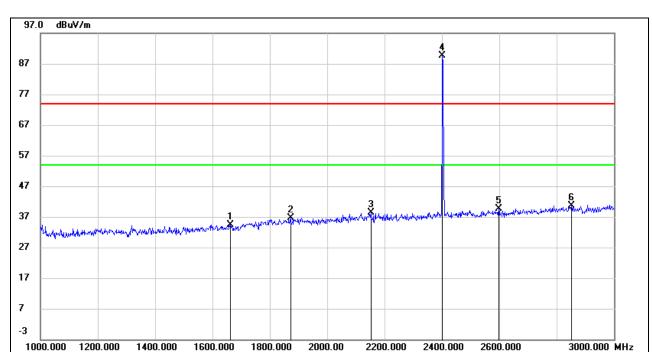
1	1850.000	33.66	9.88	43.54	74.00	-30.46	peak
2	1998.000	35.04	10.24	45.28	74.00	-28.72	peak
3	2178.000	33.49	11.26	44.75	74.00	-29.25	peak
4	2402.000	95.70	12.03	107.73	/	/	fundamental
5	2708.000	33.66	13.05	46.71	74.00	-27.29	peak
6	2792.000	33.96	13.70	47.66	74.00	-26.34	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



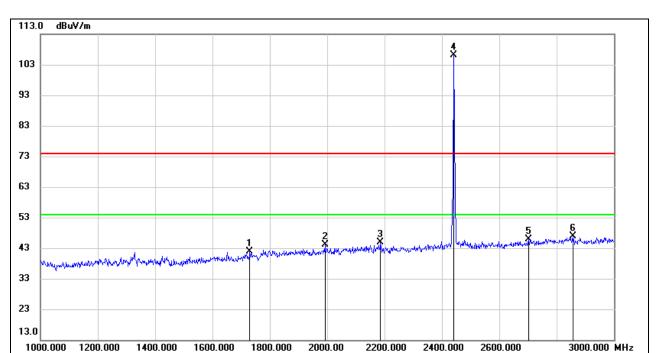


#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1662.000	26.34	8.13	34.47	74.00	-39.53	peak
2	1872.000	26.72	9.92	36.64	74.00	-37.36	peak
3	2152.000	27.09	11.18	38.27	74.00	-35.73	peak
4	2402.000	77.67	12.03	89.70	/	/	fundamental
5	2598.000	27.34	12.41	39.75	74.00	-34.25	peak
6	2852.000	26.77	13.90	40.67	74.00	-33.33	peak

Note: 1. Measurement = Reading Level + Correct Factor.



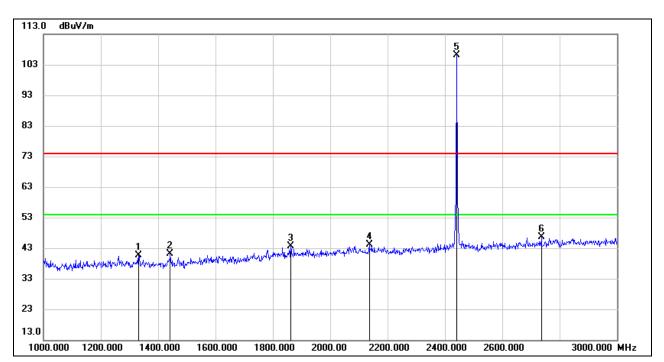


#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1730.000	33.17	8.68	41.85	74.00	-32.15	peak
2	1992.000	33.98	10.22	44.20	74.00	-29.80	peak
3	2186.000	33.61	11.28	44.89	74.00	-29.11	peak
4	2441.000	94.04	12.19	106.23	/	/	fundamental
5	2702.000	32.94	13.02	45.96	74.00	-28.04	peak
6	2856.000	32.86	13.91	46.77	74.00	-27.23	peak

Note: 1. Measurement = Reading Level + Correct Factor.



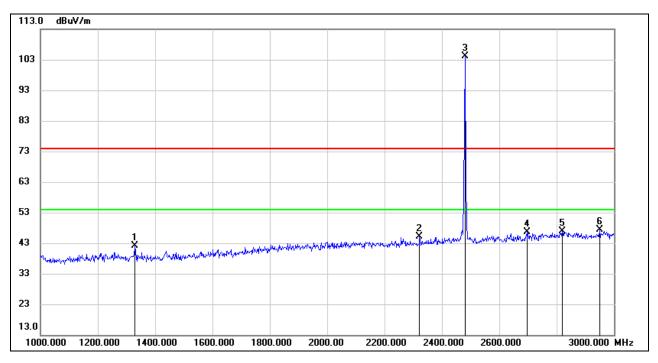


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1332.000	34.08	6.64	40.72	74.00	-33.28	peak
2	1442.000	34.35	6.81	41.16	74.00	-32.84	peak
3	1862.000	33.71	9.91	43.62	74.00	-30.38	peak
4	2136.000	33.01	11.13	44.14	74.00	-29.86	peak
5	2441.000	93.95	12.19	106.14	/	/	fundamental
6	2736.000	33.24	13.27	46.51	74.00	-27.49	peak

Note: 1. Measurement = Reading Level + Correct Factor.



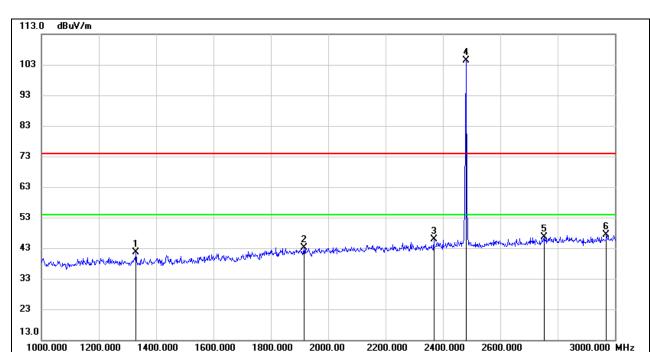




No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1330.000	35.48	6.64	42.12	74.00	-31.88	peak
2	2322.000	33.53	11.48	45.01	74.00	-28.99	peak
3	2480.000	91.82	12.35	104.17	/	/	fundamental
4	2696.000	33.74	12.98	46.72	74.00	-27.28	peak
5	2820.000	33.13	13.81	46.94	74.00	-27.06	peak
6	2950.000	32.90	14.36	47.26	74.00	-26.74	peak

Note: 1. Measurement = Reading Level + Correct Factor.





#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1330.000	34.95	6.64	41.59	74.00	-32.41	peak
2	1916.000	33.08	10.01	43.09	74.00	-30.91	peak
3	2368.000	34.09	11.81	45.90	74.00	-28.10	peak
4	2480.000	91.93	12.35	104.28	/	/	fundamental
5	2752.000	33.27	13.40	46.67	74.00	-27.33	peak
6	2970.000	32.77	14.49	47.26	74.00	-26.74	peak

Note: 1. Measurement = Reading Level + Correct Factor.



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# 8.2.2. 8DPSK MODE



## HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

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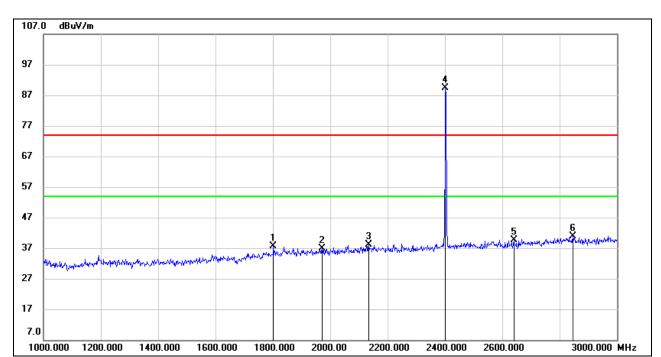
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1594.000	26.16	7.92	34.08	74.00	-39.92	peak
2	1854.000	26.21	9.89	36.10	74.00	-37.90	peak
3	2184.000	26.46	11.27	37.73	74.00	-36.27	peak
4	2402.000	86.19	12.03	98.22	/	/	fundamental
5	2666.000	27.05	12.80	39.85	74.00	-34.15	peak
6	2762.000	26.91	13.47	40.38	74.00	-33.62	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



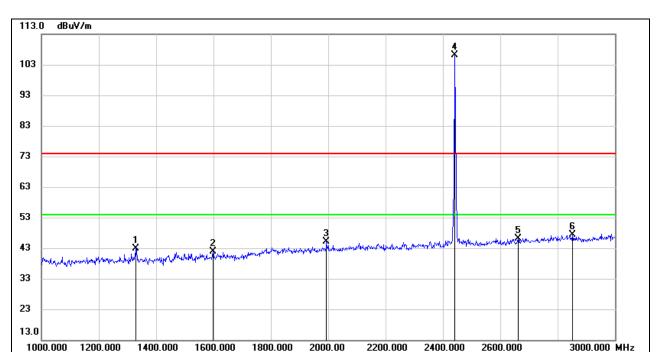


#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1802.000	27.87	9.79	37.66	74.00	-36.34	peak
2	1972.000	26.78	10.17	36.95	74.00	-37.05	peak
3	2134.000	27.10	11.13	38.23	74.00	-35.77	peak
4	2402.000	77.40	12.03	89.43	/	/	fundamental
5	2640.000	26.93	12.64	39.57	74.00	-34.43	peak
6	2846.000	26.87	13.89	40.76	74.00	-33.24	peak

Note: 1. Measurement = Reading Level + Correct Factor.



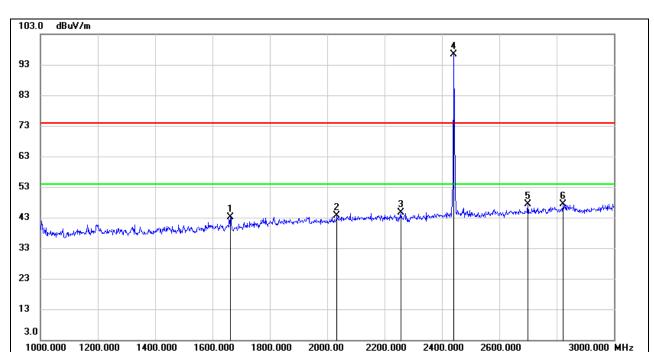


#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1330.000	36.28	6.64	42.92	74.00	-31.08	peak
2	1598.000	33.88	7.95	41.83	74.00	-32.17	peak
3	1994.000	34.85	10.24	45.09	74.00	-28.91	peak
4	2441.000	94.05	12.19	106.24	/	/	fundamental
5	2662.000	33.43	12.77	46.20	74.00	-27.80	peak
6	2852.000	33.37	13.90	47.27	74.00	-26.73	peak

Note: 1. Measurement = Reading Level + Correct Factor.





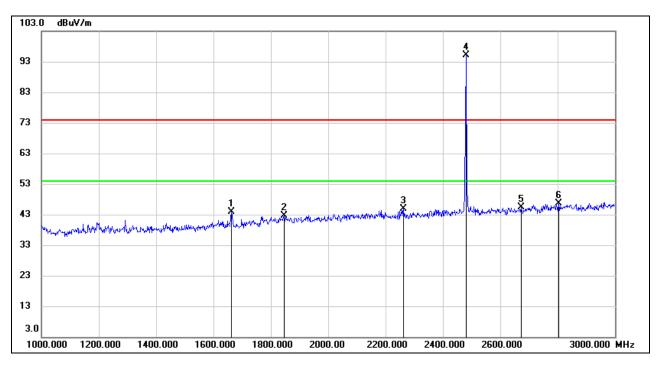
#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1662.000	34.96	8.13	43.09	74.00	-30.91	peak
2	2034.000	33.09	10.52	43.61	74.00	-30.39	peak
3	2256.000	33.43	11.32	44.75	74.00	-29.25	peak
4	2441.000	84.24	12.19	96.43	/	/	fundamental
5	2700.000	34.36	13.00	47.36	74.00	-26.64	peak
6	2822.000	33.54	13.82	47.36	74.00	-26.64	peak

Note: 1. Measurement = Reading Level + Correct Factor.



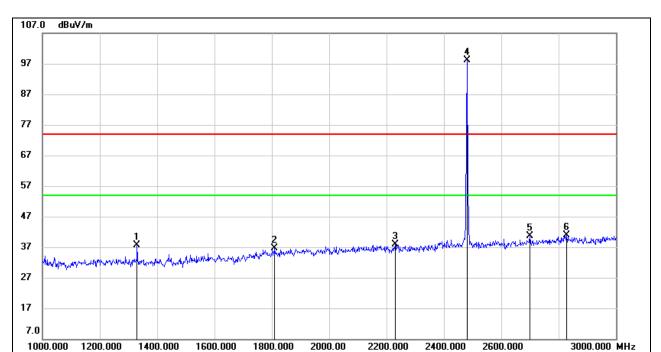




No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1662.000	35.69	8.13	43.82	74.00	-30.18	peak
2	1846.000	32.69	9.87	42.56	74.00	-31.44	peak
3	2262.000	33.44	11.33	44.77	74.00	-29.23	peak
4	2480.000	82.67	12.35	95.02	/	/	fundamental
5	2672.000	32.42	12.84	45.26	74.00	-28.74	peak
6	2804.000	32.77	13.76	46.53	74.00	-27.47	peak

Note: 1. Measurement = Reading Level + Correct Factor.





#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)

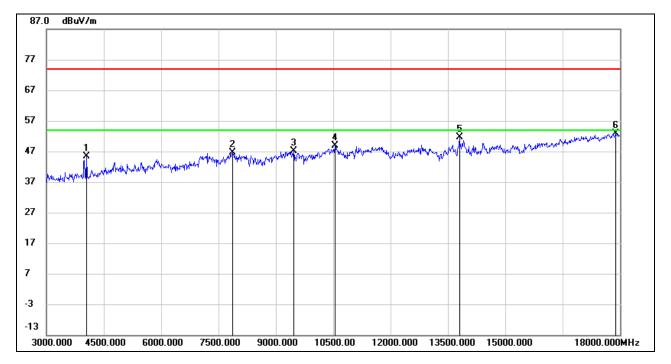
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1330.000	30.88	6.64	37.52	74.00	-36.48	peak
2	1810.000	26.71	9.81	36.52	74.00	-37.48	peak
3	2230.000	26.46	11.32	37.78	74.00	-36.22	peak
4	2480.000	85.73	12.35	98.08	/	/	fundamental
5	2700.000	27.61	13.00	40.61	74.00	-33.39	peak
6	2828.000	26.93	13.84	40.77	74.00	-33.23	peak

Note: 1. Measurement = Reading Level + Correct Factor.



# 8.3. SPURIOUS EMISSIONS (3 GHz ~ 18 GHz)

# 8.3.1. GFSK MODE



#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4050.000	48.38	-2.89	45.49	74.00	-28.51	peak
2	7860.000	39.02	7.51	46.53	74.00	-27.47	peak
3	9465.000	37.49	9.54	47.03	74.00	-26.97	peak
4	10545.000	37.21	11.64	48.85	74.00	-25.15	peak
5	13800.000	34.45	17.10	51.55	74.00	-22.45	peak
6	17895.000	29.63	23.34	52.97	74.00	-21.03	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

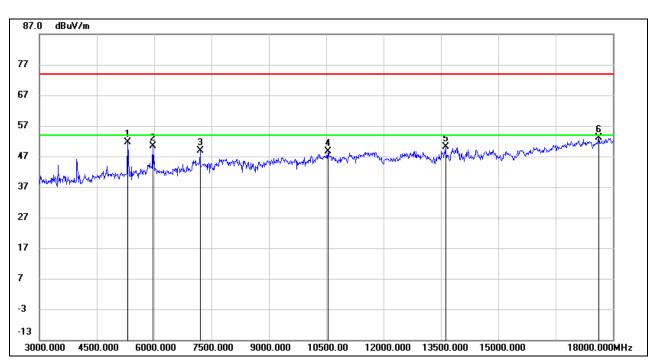
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5310.000	49.49	2.02	51.51	74.00	-22.49	peak
2	5970.000	46.60	3.79	50.39	74.00	-23.61	peak
3	7200.000	43.14	5.82	48.96	74.00	-25.04	peak
4	10545.000	36.99	11.64	48.63	74.00	-25.37	peak
5	13620.000	34.22	15.99	50.21	74.00	-23.79	peak
6	17625.000	31.16	21.95	53.11	74.00	-20.89	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

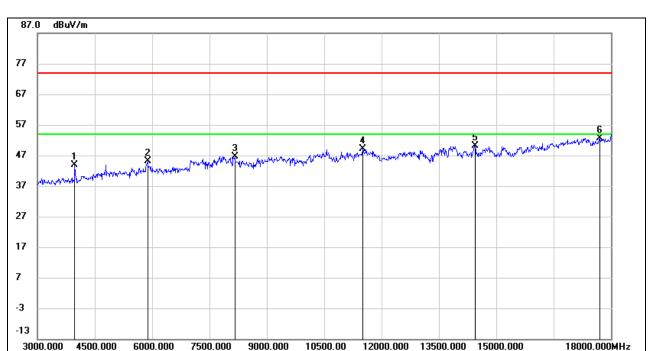
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3975.000	46.80	-2.90	43.90	74.00	-30.10	peak
2	5880.000	40.46	4.59	45.05	74.00	-28.95	peak
3	8160.000	38.45	8.18	46.63	74.00	-27.37	peak
4	11505.000	35.69	13.42	49.11	74.00	-24.89	peak
5	14445.000	33.89	16.36	50.25	74.00	-23.75	peak
6	17715.000	30.18	22.56	52.74	74.00	-21.26	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

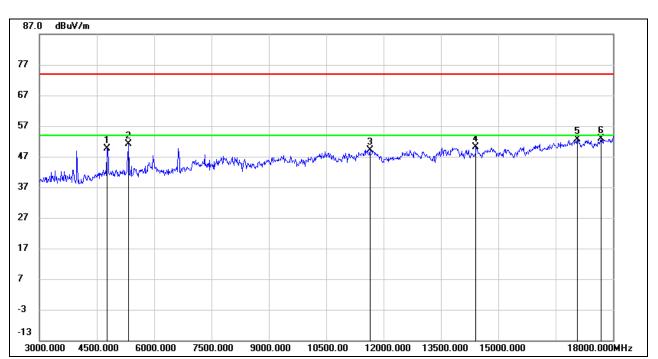
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4770.000	49.25	0.37	49.62	74.00	-24.38	peak
2	5325.000	49.23	1.99	51.22	74.00	-22.78	peak
3	11640.000	36.07	13.09	49.16	74.00	-24.84	peak
4	14415.000	33.76	16.35	50.11	74.00	-23.89	peak
5	17070.000	32.11	20.57	52.68	74.00	-21.32	peak
6	17685.000	30.45	22.33	52.78	74.00	-21.22	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

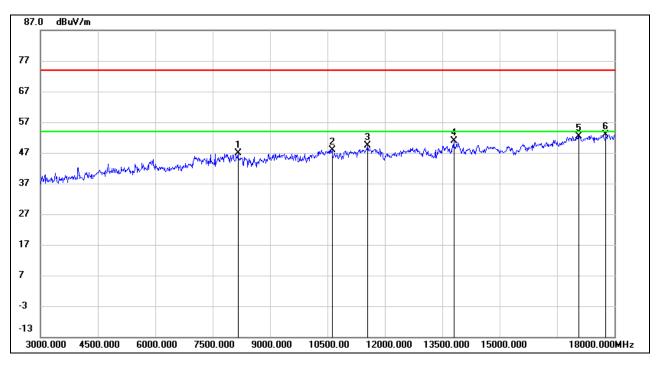
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	8160.000	38.73	8.18	46.91	74.00	-27.09	peak
2	10620.000	36.08	11.88	47.96	74.00	-26.04	peak
3	11550.000	36.13	13.30	49.43	74.00	-24.57	peak
4	13800.000	33.76	17.10	50.86	74.00	-23.14	peak
5	17070.000	31.91	20.57	52.48	74.00	-21.52	peak
6	17775.000	29.87	23.09	52.96	74.00	-21.04	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

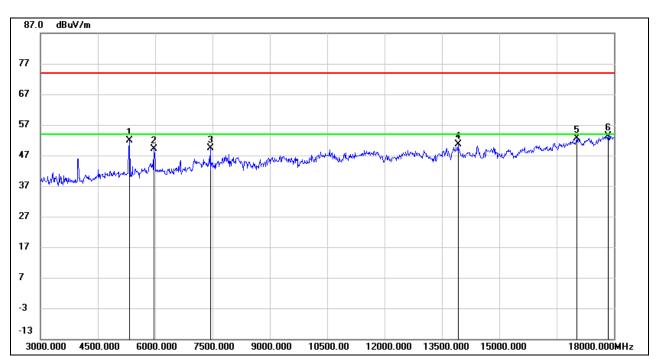
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5325.000	49.96	1.99	51.95	74.00	-22.05	peak
2	5970.000	45.29	3.79	49.08	74.00	-24.92	peak
3	7440.000	43.15	6.32	49.47	74.00	-24.53	peak
4	13920.000	34.49	16.17	50.66	74.00	-23.34	peak
5	17025.000	32.15	20.46	52.61	74.00	-21.39	peak
6	17850.000	30.03	23.32	53.35	74.00	-20.65	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

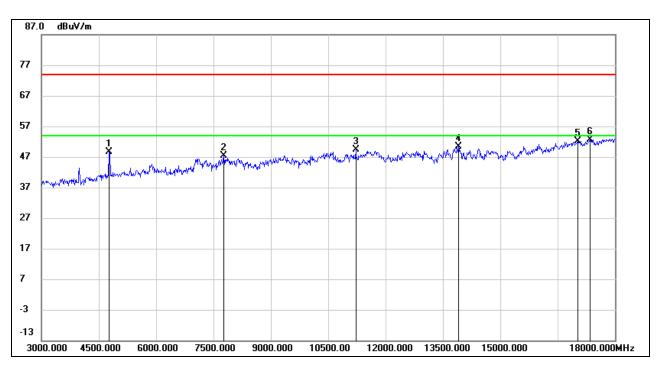
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



## 8.3.2. 8DPSK MODE



## HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4770.000	48.38	0.37	48.75	74.00	-25.25	peak
2	7770.000	39.97	7.50	47.47	74.00	-26.53	peak
3	11220.000	36.82	12.48	49.30	74.00	-24.70	peak
4	13905.000	34.13	16.20	50.33	74.00	-23.67	peak
5	17025.000	31.79	20.46	52.25	74.00	-21.75	peak
6	17340.000	31.14	21.61	52.75	74.00	-21.25	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

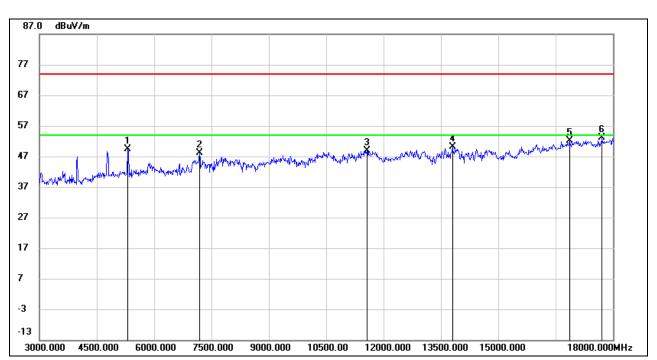
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5310.000	47.24	2.02	49.26	74.00	-24.74	peak
2	7185.000	42.36	5.83	48.19	74.00	-25.81	peak
3	11565.000	35.61	13.26	48.87	74.00	-25.13	peak
4	13800.000	33.10	17.10	50.20	74.00	-23.80	peak
5	16860.000	32.08	19.95	52.03	74.00	-21.97	peak
6	17715.000	30.50	22.56	53.06	74.00	-20.94	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

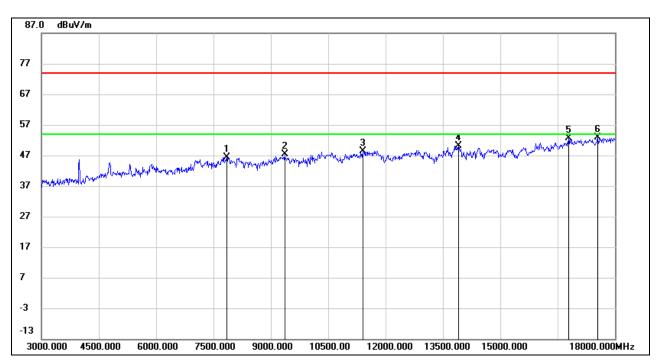
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	7845.000	38.72	7.62	46.34	74.00	-27.66	peak
2	9360.000	37.91	9.36	47.27	74.00	-26.73	peak
3	11400.000	35.88	12.62	48.50	74.00	-25.50	peak
4	13905.000	33.90	16.20	50.10	74.00	-23.90	peak
5	16785.000	32.71	19.94	52.65	74.00	-21.35	peak
6	17550.000	31.20	21.57	52.77	74.00	-21.23	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

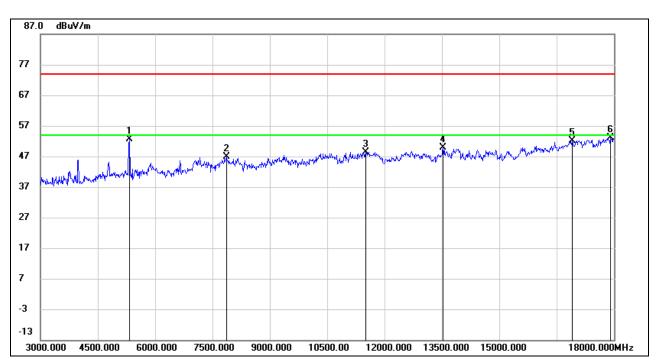
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5325.000	50.73	1.99	52.72	74.00	-21.28	peak
2	7860.000	39.46	7.51	46.97	74.00	-27.03	peak
3	11505.000	34.91	13.42	48.33	74.00	-25.67	peak
4	13530.000	33.94	15.86	49.80	74.00	-24.20	peak
5	16905.000	32.23	19.99	52.22	74.00	-21.78	peak
6	17910.000	29.67	23.35	53.02	74.00	-20.98	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

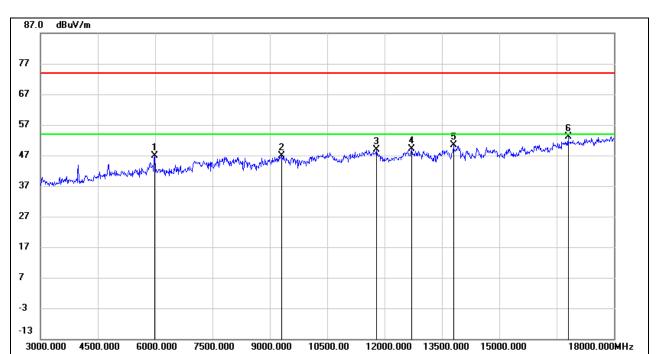
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5985.000	43.24	3.54	46.78	74.00	-27.22	peak
2	9300.000	37.86	8.99	46.85	74.00	-27.15	peak
3	11790.000	35.62	13.17	48.79	74.00	-25.21	peak
4	12705.000	34.71	14.35	49.06	74.00	-24.94	peak
5	13800.000	33.27	17.10	50.37	74.00	-23.63	peak
6	16800.000	33.22	19.95	53.17	74.00	-20.83	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

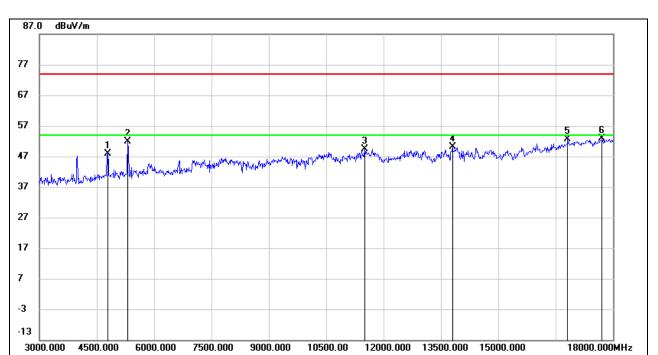
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4785.000	47.55	0.42	47.97	74.00	-26.03	peak
2	5310.000	49.98	2.02	52.00	74.00	-22.00	peak
3	11505.000	35.88	13.42	49.30	74.00	-24.70	peak
4	13800.000	33.03	17.10	50.13	74.00	-23.87	peak
5	16815.000	32.55	19.96	52.51	74.00	-21.49	peak
6	17715.000	30.31	22.56	52.87	74.00	-21.13	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

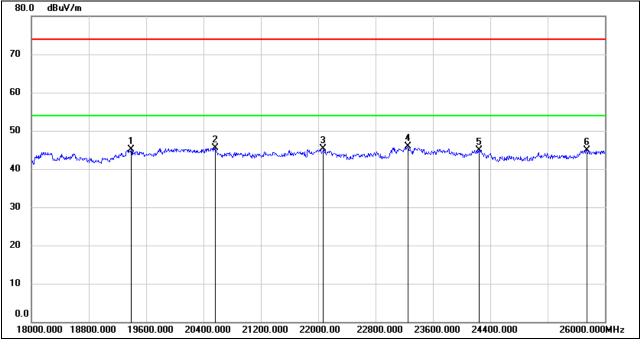
5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



# 8.4. SPURIOUS EMISSIONS (18 GHz ~ 26 GHz)

# 8.4.1. GFSK MODE



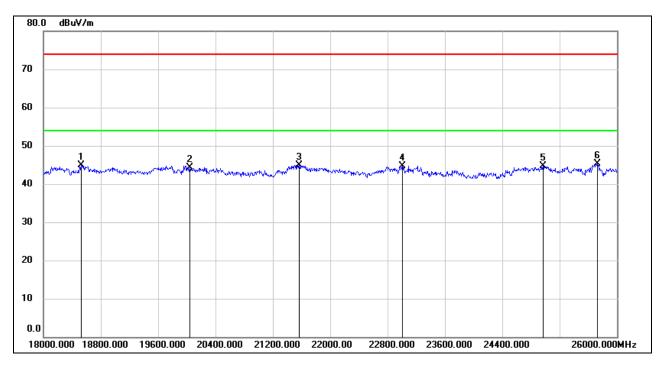
#### SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	19392.000	50.62	-5.57	45.05	74.00	-28.95	peak
2	20560.000	50.73	-5.30	45.43	74.00	-28.57	peak
3	22072.000	49.77	-4.41	45.36	74.00	-28.64	peak
4	23256.000	49.22	-3.35	45.87	74.00	-28.13	peak
5	24248.000	47.82	-2.83	44.99	74.00	-29.01	peak
6	25744.000	45.50	-0.64	44.86	74.00	-29.14	peak

Note: 1. Peak Result = Reading Level + Correct Factor.



## SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	18528.000	50.11	-5.26	44.85	74.00	-29.15	peak
2	20040.000	49.71	-5.48	44.23	74.00	-29.77	peak
3	21568.000	49.44	-4.59	44.85	74.00	-29.15	peak
4	23008.000	48.10	-3.44	44.66	74.00	-29.34	peak
5	24968.000	46.76	-2.14	44.62	74.00	-29.38	peak
6	25728.000	46.11	-0.72	45.39	74.00	-28.61	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

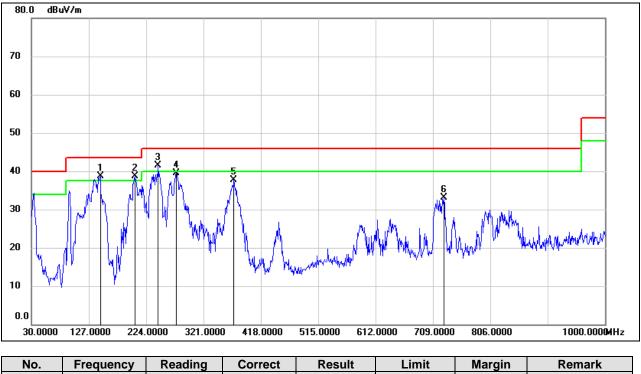
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

Note: All the modes have been tested, only the worst data was recorded in the report.



# 8.5. SPURIOUS EMISSIONS (30 MHz ~ 1 GHz)

# 8.5.1. GFSK MODE



SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	146.4000	57.28	-18.56	38.72	43.50	-4.78	QP
2	204.6000	54.93	-16.31	38.62	43.50	-4.88	QP
3	244.3700	58.38	-16.84	41.54	46.00	-4.46	QP
4	275.4100	54.83	-15.33	39.50	46.00	-6.50	QP
5	372.4100	50.75	-13.13	37.62	46.00	-8.38	QP
6	727.4300	39.62	-6.57	33.05	46.00	-12.95	QP

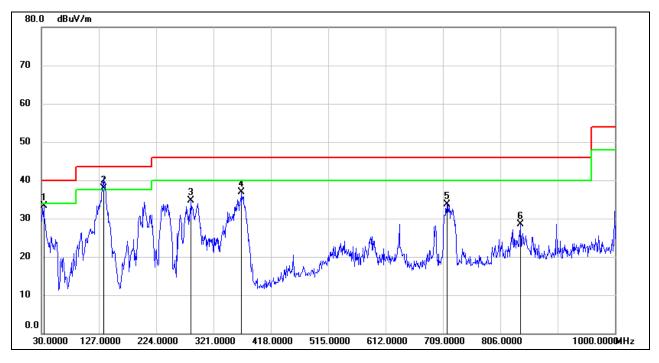
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



## SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	33.8800	50.72	-17.33	33.39	40.00	-6.61	QP
2	134.7600	57.27	-19.40	37.87	43.50	-5.63	QP
3	283.1700	49.71	-14.97	34.74	46.00	-11.26	QP
4	368.5300	50.14	-13.20	36.94	46.00	-9.06	QP
5	715.7900	40.34	-6.58	33.76	46.00	-12.24	QP
6	839.9500	33.44	-4.86	28.58	46.00	-17.42	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

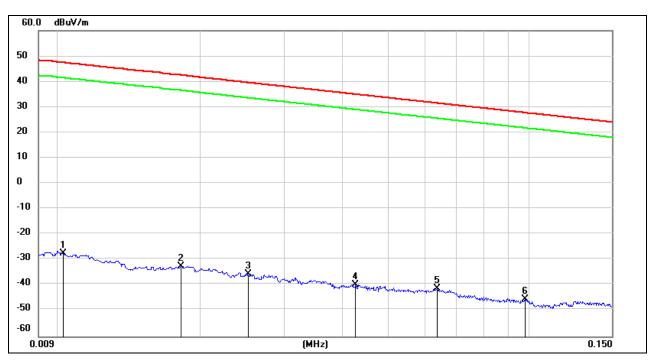
Note: All the modes have been tested, only the worst data was recorded in the report.



## 8.6. SPURIOUS EMISSIONS BELOW 30 MHz

## 8.6.1. GFSK MODE

#### SPURIOUS EMISSIONS (LOW CHANNEL, LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)



#### <u>9 kHz~ 150 kHz</u>

No.	Frequency	Reading	Correct	Result	Limit	ISED	ISED	Margin	Remark
						Result	Limit		
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.0102	74.05	-101.40	-27.35	47.43	-78.85	-4.07	-74.78	peak
2	0.0181	68.85	-101.36	-32.51	42.45	-84.01	-9.05	-74.96	peak
3	0.0252	65.82	-101.37	-35.55	39.57	-87.05	-11.93	-75.12	peak
4	0.0427	61.64	-101.45	-39.81	34.99	-91.31	-16.51	-74.80	peak
5	0.0636	60.31	-101.54	-41.23	31.53	-92.73	-19.97	-72.76	peak
6	0.0981	56.27	-101.78	-45.51	27.77	-97.01	-23.73	-73.28	peak

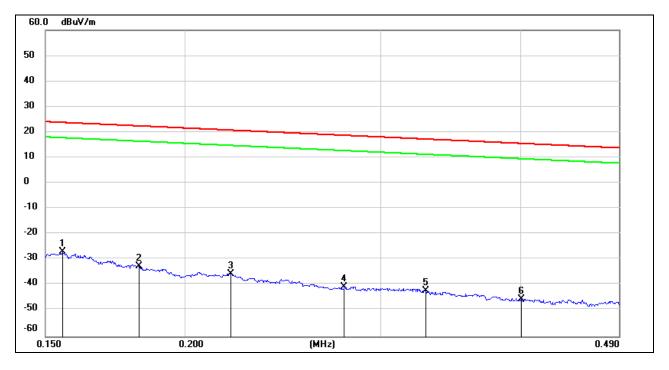
Note: 1. Measurement = Reading Level + Correct Factor ( $dBuA/m = dBuV/m - 20Log10[120\pi] = dBuV/m - 51.5$ ).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



#### <u>150 kHz ~ 490 kHz</u>



No.	Frequency	Reading	Correct	Result	Limit	ISED Result	ISED Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.1554	74.77	-101.65	-26.88	23.77	-78.38	-27.73	-50.65	peak
2	0.1819	68.99	-101.68	-32.69	22.41	-84.19	-29.09	-55.10	peak
3	0.2200	66.24	-101.75	-35.51	20.75	-87.01	-30.75	-56.26	peak
4	0.2782	61.29	-101.83	-40.54	18.71	-92.04	-32.79	-59.25	peak
5	0.3286	59.71	-101.88	-42.17	17.27	-93.67	-34.23	-59.44	peak
6	0.4007	56.56	-101.96	-45.40	15.54	-96.90	-35.96	-60.94	peak

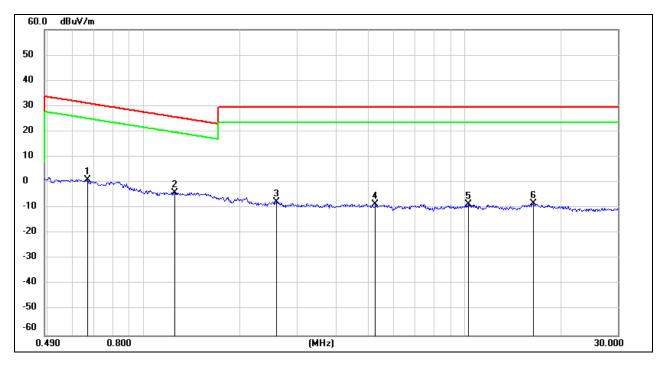
Note: 1. Measurement = Reading Level + Correct Factor ( $dBuA/m = dBuV/m - 20Log10[120\pi] = dBuV/m - 51.5$ ).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



#### <u>490 kHz ~ 30 MHz</u>



No.	Frequency	Reading	Correct	Result	Limit	ISED	ISED	Margin	Remark
						Result	Limit		
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.6671	63.25	-62.10	1.15	31.12	-50.35	-20.38	-29.97	peak
2	1.2460	58.25	-62.16	-3.91	25.70	-55.41	-25.80	-29.61	peak
3	2.5935	54.11	-61.68	-7.57	29.54	-59.07	-21.96	-37.11	peak
4	5.2705	53.04	-61.45	-8.41	29.54	-59.91	-21.96	-37.95	peak
5	10.2576	52.13	-60.81	-8.68	29.54	-60.18	-21.96	-38.22	peak
6	16.3959	52.67	-60.96	-8.29	29.54	-59.79	-21.96	-37.83	peak

Note: 1. Measurement = Reading Level + Correct Factor ( $dBuA/m = dBuV/m - 20Log10[120\pi] = dBuV/m - 51.5$ ).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

Note: All the modes have been tested, only the worst data was recorded in the report.



# 9. AC POWER LINE CONDUCTED EMISSIONS

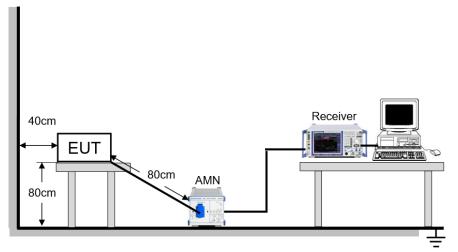
## LIMITS

Please refer to CFR 47 FCC §15.207 (a) and ISED RSS-Gen Clause 8.8

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

## TEST SETUP AND PROCEDURE

Refer to ANSI C63.10-2013 clause 6.2.



The EUT is put on a table of non-conducting material that is 80 cm high. The vertical conducting wall of shielding is located 40 cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9 kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

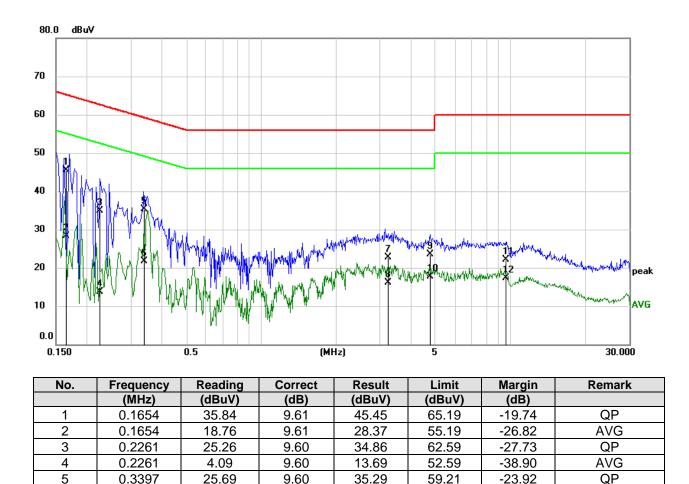
#### TEST ENVIRONMENT

Temperature	25.2 °C	Relative Humidity	64.5 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120 V/60 Hz

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## 9.1.1. GFSK MODE



## LINE L RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)

Note: 1. Result = Reading + Correct Factor.

12.16

13.11

6.54

13.93

8.02

12.27

7.55

0.3397

3.2413

3.2413

4.7598

4.7598

9.6081

9.6081

6

7

8

9

10

11

12

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

21.76

22.75

16.18

23.60

17.69

22.01

17.29

49.21

56.00

46.00

56.00

46.00

60.00

50.00

-27.45

-33.25

-29.82

-32.40

-28.31

-37.99

-32.71

AVG

QP

AVG

QP

AVG

QP

AVG

3. Test setup: RBW: 200 Hz (9 kHz ~ 150 kHz), 9 kHz (150 kHz ~ 30 MHz).

9.60

9.64

9.64

9.67

9.67

9.74

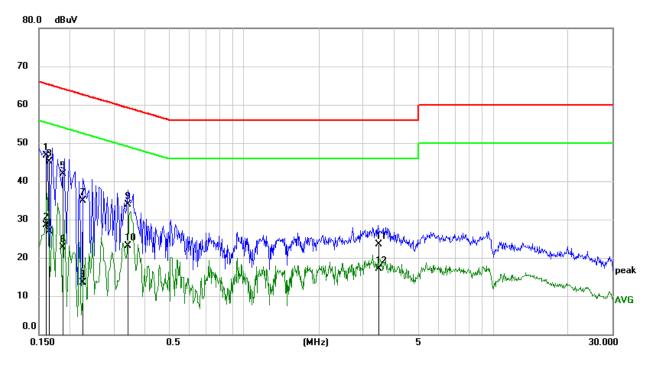
9.74

4. Step size: 80 Hz (0.009 MHz  $\sim$  0.15 MHz), 4 kHz (0.15 MHz  $\sim$  30 MHz), Scan time: auto.

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## LINE N RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1594	37.08	9.60	46.68	65.50	-18.82	QP
2	0.1594	18.84	9.60	28.44	55.50	-27.06	AVG
3	0.1655	35.53	9.60	45.13	65.18	-20.05	QP
4	0.1655	17.21	9.60	26.81	55.18	-28.37	AVG
5	0.1870	32.21	9.60	41.81	64.17	-22.36	QP
6	0.1870	13.20	9.60	22.80	54.17	-31.37	AVG
7	0.2241	25.31	9.60	34.91	62.67	-27.76	QP
8	0.2241	3.85	9.60	13.45	52.67	-39.22	AVG
9	0.3425	24.34	9.60	33.94	59.14	-25.20	QP
10	0.3425	13.49	9.60	23.09	49.14	-26.05	AVG
11	3.4822	13.94	9.65	23.59	56.00	-32.41	QP
12	3.4822	7.54	9.65	17.19	46.00	-28.81	AVG

Note: 1. Result = Reading + Correct Factor.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz ~ 150 kHz), 9 kHz (150 kHz ~ 30 MHz).

4. Step size: 80 Hz (0.009 MHz ~ 0.15 MHz), 4 kHz (0.15 MHz ~ 30 MHz), Scan time: auto.

Note: All the modes have been tested, only the worst data was recorded in the report.



# **10. ANTENNA REQUIREMENTS**

### APPLICABLE REQUIREMENTS

#### Please refer to FCC §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.

## Please refer to FCC §15.247(b)(4)

The 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.

## **RESULTS**

Complies



# APPENDIX A: DUTY CYCLE

## **Test Result**

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
GFSK	2.884	3.749	0.7693	76.93%	1.1392	0.35	0.5
8DPSK	2.888	3.751	0.7699	76.99%	1.1355	0.35	0.5

Note:

Duty Cycle Correction Factor=10log(1/x).

Where: x is Duty Cycle (Linear)

Where: T is On Time (transmit duration)

If that calculated VBW is not available on the analyzer then the next higher value should be used.



# **Test Graphs**

RE RE Center Freq 2.44	50 Ω DC 41000000 GHz NFE PNO: Fast ↔	SENSE:INT Trig Delay-200.0 µs Trig: Video	ALIGN AUTO	TRACE		Frequency
	IFGain:Low	#Atten: 30 dB		ΔMkr3 3.7		Auto Tune
10 dB/div Ref 20	et 9.79 dB . <b>00 dBm</b>				89 dB	
10.0 1	2Δ1	3Δ1				Center Freq
0.00	<b>`</b>					2.441000000 GHz
-10.0						
-20.0						Start Freq
-30.0	and posts adjusted					2.441000000 GHz
-50.0			· · · ·			Stop Frog
-60.0						<b>Stop Freq</b> 2.441000000 GHz
-70.0						
Center 2.4410000 Res BW 8 MHz		№ 8.0 MHz	Sween	Spa 10.13 ms (80	an 0 Hz 100 pts)	CF Step 8.000000 MHz
MKR MODE TRC SCL	X	Y FUN	ICTION FUNCTION WID	-	<u> </u>	Auto Man
1 N 1 t 2 Δ1 1 t (Δ)	197.6 μs 2.884 ms (Δ	8.03 dBm ) 1.21 dB				Eron Offert
3 Δ1 1 t (Δ)	3.749 ms (Δ	) -5.89 dB				Freq Offset 0 Hz
5 6 7					Ξ.	
6 7 8 9						Scale Type
10 11					-	Log <u>Lin</u>
∢ [		m	STA	TUS	•	
		DH5_Ant				
Keysight Spectrum Analyze					_	
	50 Ω DC	SENSE:INT	ALIGN AUT	0 03:28:55 PM A	ug 21, 2020 1 2 3 4 5 6	Frequency
X RL RF	50 Ω DC	SENSE:INT	ALIGN AUT	TRACE	ug 21, 2020 2 3 4 5 6 WWWWW P P P P P P P	Frequency
RE RE Center Freq 2.44 Ref Offs	50 Ω DC 41000000 GHz NFE PNO: Fast ↔ IFGain:Low set 9.79 dB	SENSE:INT Trig Delay-200.0 µs ⊢ Trig: Video	ALIGN AUT	TRACE TYPE DET	23456 PPPPPP 51 ms	
RL RF Center Freq 2.44 Ref Offs 10 dB/div Ref 20	50 Ω DC 11000000 GHz NFE PNO: Fast ↔ IFGain:Low	SENSE:INT Trig Delay-200.0 µs Trig: Video #Atten: 30 dB	ALIGN AUT	TRACE TYPE DET	1 2 3 4 5 6 WWWWW P P P P P P P	Frequency Auto Tune
Z RL RF Center Freq 2.44 10 dB/div Ref 20	50 Ω DC 41000000 GHz NFE PNO: Fast ↔ IFGain:Low set 9.79 dB	SENSE:INT Trig Delay-200.0 µs Trig: Video #Atten: 30 dB	ALIGN AUT	TRACE TYPE DET	51 ms 70 dB	Frequency Auto Tune Center Freq
Center Freq 2.44	50 Ω DC 41000000 GHz NFE PNO: Fast ↔ IFGain:Low set 9.79 dB	SENSE:INT Trig Delay-200.0 µs Trig: Video #Atten: 30 dB	ALIGN AUT	TRACE TYPE DET	23456 PPPPPP 51 ms	Frequency Auto Tune
X         RL         RF           Center Freq 2.44         Ref Offs           10 dB/div         Ref Offs           10.0         10.0           .10.0	50 Ω DC 41000000 GHz NFE PNO: Fast ↔ IFGain:Low set 9.79 dB	SENSE:INT Trig Delay-200.0 µs Trig: Video #Atten: 30 dB	ALIGN AUT	TRACE TYPE DET	51 ms 70 dB	Frequency Auto Tune Center Freq
X         RL         RF           Center Freq 2.44         Ref Offs           10 dB/div         Ref 20           10.0	50 Ω DC 41000000 GHz NFE PNO: Fast ↔ IFGain:Low set 9.79 dB	SENSE:INT Trig Delay-200.0 µs Trig: Video #Atten: 30 dB	ALIGN AUT	TRACE TYPE DET	51 ms 70 dB	Frequency Auto Tune Center Freq 2.441000000 GHz
X         RL         RF           Center Freq 2.44         Ref Offs           10 dB/div         Ref 20           0.00         10.0           10.0         10.0           .000         20.0	50 Ω DC 41000000 GHz NFE PNO: Fast ↔ IFGain:Low set 9.79 dB	SENSE:INT] Trig Delay-200.0 μs Trig: Video #Atten: 30 dB	ALIGN AUT	AMkr3 3.7 3.	51 ms 70 dB	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz
X         RL         RF           Center Freq 2.44         Ref Offs           10 dB/div         Ref 20           10.0         1           10.0         1           -10.0         1           -20.0         -30.0           -40.0         4	50 Ω DC 41000000 GHz NFE PNO: Fast ↔ IFGain:Low set 9.79 dB	SENSE:INT] Trig Delay-200.0 μs Trig: Video #Atten: 30 dB	ALIGN AUT	AMkr3 3.7 3.	51 ms 70 dB	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz Stop Freq
X         RL         RF           Center Freq 2.44         Ref Offs           10 dB/div         Ref 20           10.0         10.0           -10.0         10.0           -20.0         10.0           -30.0         10.0           -40.0         10.0	50 Ω DC 41000000 GHz NFE PNO: Fast ↔ IFGain:Low set 9.79 dB	SENSE:INT] Trig Delay-200.0 μs Trig: Video #Atten: 30 dB	ALIGN AUT	AMkr3 3.7 3.	51 ms 70 dB	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz
X         RL         RF           Center Freq 2.44         Ref Offs           10 dB/div         Ref Offs           10.0         0.00           0.00         0.00           -10.0         0.00           -20.0         0.00           -30.0         0.00           -60.0         0.00           -70.0         0.00           Center 2.4410000	190 0 0C HZ 11000000 GHZ NFE PN0: Fast → IFGain:Low 19.79 dB 00 dBm	SENSE:INT Trig Delay-200.0 µs #Atten: 30 dB 2△1 3△1 3△1 4 µpaulainu	ALIGN AUT #Avg Type: RMS	TRACE Type Det AMkr3 3.7 3.7 3.7 4.7 5.7 5.7 5.7 5.7 5.7 5.7 5.7 5	51 ms 70 dB 	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz Stop Freq 2.44100000 GHz CF Step
X         RL         RF           Center Freq 2.44         Ref Offs           10 dB/div         Ref 20           10.0	190 20 DC 41000000 GH2 NFE PNO: Fast → IFGain:Low 19.79 dB .00 dBm .00 dBm .00 GHz #VB\	SENSE:INT Trig Delay-200.0 µs #Atten: 30 dB 2△1 3△1 3△1 4 µµµµµ ainten M 8.0 MHz	ALIGN AUT #Avg Type: RMS	TRACE Type Det	23456 PPPPP 51 ms 70 dB 	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.441000000 GHz Stop Freq 2.441000000 GHz
X         RL         RF           Center Freq 2.44         Ref Offs           10.0         Ref 20           10.0         10.0           -0.0         10.0           -20.0         10.0           -50.0         10.0           -60.0         10.0           -50.0         10.0           -60.0         10.0           -60.0         10.0           -70.0         10.0           -60.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0           -70.0         10.0	100 DC 11000000 GH2 NFE PN0: Fast → IFGain:Low iet 9.79 dB .00 dBm .00 dBm .00 GHz x 1.291 ms	SENSE:INT           Trig Delay-200.0 μs           Trig: Video           #Atten: 30 dB           2Δ1         3Δ1           2Δ1         3Δ1           4         4           9         4           1         9           1         9	ALIGN AUT #Avg Type: RMS	TRACE Type Det	23456 PPPPP 51 ms 70 dB 	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz Stop Freq 2.441000000 GHz CF Step 8.00000 MHz Auto Man
X         RL         RF           Center Freq 2.44         Ref Offs           10.0         Ref 20           10.0         10.0           -0.0         10.0           -20.0         10.0           -30.0         10.0           -40.0         10.0           -50.0         10.0           -60.0         10.0           -70.0         10.0           -60.0         10.0           -70.0         10.0           Center 2.4410000         Res BW 8 MHz           MKR WOODE TRE Set 1         1	100 DC 11000000 GH2 NFE PN0: Fast → IFGain:Low iet 9.79 dB .00 dBm .00 dBm .00 GHz x 1.291 ms	SENSE:INT Trig Delay-200.0 µs #Atten: 30 dB 2△1 3△1 2△1 3△1 4 100 100 100 100 100 100 100 100 100 10	ALIGN AUT #Avg Type: RMS	TRACE Type Det	23456 PPPPP 51 ms 70 dB 	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz 2.441000000 GHz 2.441000000 GHz 8.000000 MHz Auto Man
X         RL         RF           Center Freq 2.44         Ref Offs           10.0         Ref 20           10.0         10.0           -0.0         10.0           -20.0         10.0           -30.0         10.0           -40.0         10.0           -50.0         10.0           -60.0         10.0           -70.0         10.0           -60.0         10.0           -70.0         10.0           Center 2.4410000         Res BW 8 MHz           MKR WOODE TRE Set 1         1	100 DC 11000000 GH2 NFE PN0: Fast → IFGain:Low iet 9.79 dB .00 dBm .00 dBm .00 GHz x 1.291 ms	SENSE:INT Trig Delay-200.0 µs #Atten: 30 dB 2△1 3△1 2△1 3△1 4 100 100 100 100 100 100 100 100 100 10	ALIGN AUT #Avg Type: RMS	TRACE Type Det	23456 PPPPP 51 ms 70 dB 	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz Stop Freq 2.441000000 GHz CF Step 8.00000 MHz Auto Man
X         RL         RF           Center Freq 2.44         Ref Offs           10.0         Ref 20           10.0         10.0           -0.0         10.0           -20.0         10.0           -30.0         10.0           -40.0         10.0           -50.0         10.0           -60.0         10.0           -70.0         10.0           -60.0         10.0           -70.0         10.0           Center 2.4410000         Res BW 8 MHz           MKR WOODE TRE Set 1         1	100 DC 11000000 GH2 NFE PN0: Fast → IFGain:Low iet 9.79 dB .00 dBm .00 dBm .00 GHz x 1.291 ms	SENSE:INT Trig Delay-200.0 µs #Atten: 30 dB 2△1 3△1 2△1 3△1 4 100 100 100 100 100 100 100 100 100 10	ALIGN AUT #Avg Type: RMS	TRACE Type Det	23456 PPPPP 51 ms 70 dB 	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz 2.441000000 GHz 2.441000000 GHz 8.000000 MHz Auto Man
XI         RF           Center Freq 2.44           0 dB/div         Ref 20           10 dB/div         Ref 20           10 dB/div         Ref 20           10 dB/div         Ref 20           10 dB/div         Ref 20           0.00	100 DC 11000000 GH2 NFE PN0: Fast → IFGain:Low iet 9.79 dB .00 dBm .00 dBm .00 GHz x 1.291 ms	SENSE:INT Trig Delay-200.0 µs #Atten: 30 dB 2△1 3△1 2△1 3△1 4 100 100 100 100 100 100 100 100 100 10	ALIGN AUT #Avg Type: RMS	TRACE Type Det	23456 PPPPP 51 ms 70 dB 	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz 2.441000000 GHz 2.441000000 GHz 8.000000 MHz Auto Man Freq Offset 0 Hz
X         RL         RF           Center Freq 2.44         Ref Offs           10.0         Ref 20           10.0         10.0           -0.0         10.0           -20.0         10.0           -30.0         10.0           -40.0         10.0           -50.0         10.0           -60.0         10.0           -70.0         10.0           -60.0         10.0           -70.0         10.0           Center 2.4410000         Res BW 8 MHz           MKR WOODE TRE Set 1         1	100 DC 11000000 GH2 NFE PN0: Fast → IFGain:Low iet 9.79 dB .00 dBm .00 dBm .00 GHz x 1.291 ms	SENSE: INT           Trig Delay-200.0 μs           #Atten: 30 dB           2Δ1           3Δ1           2Δ1           3Δ1           4.00 μ/s μ/s μ/s           4.00 μ/s μ/s μ/s           4.00 μ/s           4.00 μ/s           4.00 μ/s           4.00 μ/s           3.00 μ/s           4.00 μ/s	ALIGN AUT #Avg Type: RMS	TRACE Type Det	23456 PPPPP 51 ms 70 dB 	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz 2.441000000 GHz 2.441000000 GHz 8.000000 MHz Auto Man Freq Offset 0 Hz Scale Type



# **APPENDIX B: 20DB BANDWIDTH**

## **Test Result**

Test Mode	Antenna	Channel	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Verdict
		2402	0.930	2401.559	2402.489	PASS
DH5	Ant1	2441	0.930	2440.562	2441.492	PASS
		2480	0.864	2479.559	2480.423	PASS
		2402	1.272	2401.370	2402.642	PASS
3DH5	Ant1	2441	1.272	2440.370	2441.642	PASS
		2480	1.263	2479.373	2480.636	PASS



# **Test Graphs**

Center Fi	RF 50 Ω DC req 2.402000000 GH	Z SENSE:INT	ALIGN AUTO #Avg Type: RMS	03:16:17 PM Aug 21, 2020 TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
	NFE PN	O: Wide ↔ Trig: Free Run ain:Low #Atten: 30 dB	Avg Hold: 100/100	DET PPPPP	
10 dB/div	Ref Offset 9.79 dB Ref 20.00 dBm		2	∆Mkr3 930 kHz 0.722 dB	Auto Tune
10.0		^2			Conton Fra
0.00		mm			Center Freq 2.402000000 GHz
-10.0		$\Delta^1$	∿~3∆1		2.40200000 GHZ
-20.0			- Wala	DET -T3:00 UDM	
-30.0		V			Start Freq 2.400500000 GHz
-40.0	m			m	2.40000000000
-50.0	NN Y		V	home	Stop Freq
-60.0				~~v	2.403500000 GHz
-70.0					
	402000 GHz			Span 3.000 MHz	CF Step
#Res BW		#VBW 62 kHz	-	333 ms (1001 pts)	300.000 kHz <u>Auto</u> Man
MKR MODE TR 1 N 1 2 N 1	f 2.401 559	GHz -14.486 dBm	JNCTION FUNCTION WIDTH	FUNCTION VALUE	_
2 Ν 1 3 Δ1 1	f 2.402 075	GHz 6.325 dBm 0 kHz (Δ) 0.722 dB			Freq Offset
4 5				E	0 Hz
6 7					<b>a</b> –
7 8 9					Scale Type
10 11				•	Log <u>Lin</u>
< [		m	STATUS	Þ	
MSG					
Kawight Spa	actum Analyzer, Sweet SA	DH5_An			
RL	ectrum Analyzer - Swept SA RF 50 Ω DC	SENSE:INT	t1_2402	03:19:45 PM Aug 21, 2020	Frequency
LXI RL	RF         50 Ω         DC           req 2.441000000 GH:           NFE         PN	Z O: Wide	t1_2402	03:19:45 PM Aug 21, 2020 TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
LXI RL	RF         50 Ω         DC         Image: block inclusion         Image: block inclinition         Image: block inclusion <t< td=""><td>Z</td><td>t1_2402 ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100</td><td>TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P</td><td>[</td></t<>	Z	t1_2402 ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P	[
10 dB/div	RF         50 Ω         DC           req 2.441000000 GH:         NFE         PN	Z O: Wide	t1_2402 ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	03:19:45 PMAug 21, 2020 TRACE 1 2 3 4 5 6 TYPE WWWWW DET P P P P P MKr3 930 KHz 0.887 dB	Frequency
10 dB/div	RF   50 Ω DC   req 2.441000000 GH NFE PN IFG Ref Offset 9.79 dB	Z O: Wide	t1_2402 ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P P	Frequency Auto Tune
10 dB/div	RF   50 Ω DC   req 2.441000000 GH NFE PN IFG Ref Offset 9.79 dB	Z C: Wide ↔ Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P P	Frequency
10 dB/div	RF   50 Ω DC   req 2.441000000 GH NFE PN IFG Ref Offset 9.79 dB	Z O: Wide	t1_2402 ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P P	Frequency Auto Tune Center Freq
10 dB/div Log 0.00	RF   50 Ω DC   req 2.441000000 GH NFE PN IFG Ref Offset 9.79 dB	Z C: Wide ↔ Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 12 34 5 6 TYPE MAWNOW OFT P P P P P P AMkr3 930 kHz 0.887 dB	Frequency Auto Tune Center Freq 2.441000000 GHz
Center Fr           10 dB/div           10.0           10.0           -10.0           -20.0           -30.0	RF   50 Ω DC   req 2.441000000 GH NFE PN IFG Ref Offset 9.79 dB	Z C: Wide ↔ Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 12 34 5 6 TYPE MAWNOW OFT P P P P P P AMkr3 930 kHz 0.887 dB	Frequency Auto Tune Center Freq
10 dB/div           Log           10.0           .000           .10.0           .20.0           .30.0           .40.0	RF   50 Ω DC   req 2.441000000 GH NFE PN IFG Ref Offset 9.79 dB	Z C: Wide ↔ Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 12 34 5 6 TYPE MAWNOW OFT P P P P P P AMkr3 930 kHz 0.887 dB	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq
10 dB/div           Center Fr           10.0           .000           .10.0           .20.0           .30.0           .40.0           .50.0	RF   50 Ω DC   req 2.441000000 GH NFE PN IFG Ref Offset 9.79 dB	Z C: Wide ↔ Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 12 34 5 6 TYPE MAWNOW OFT P P P P P P AMkr3 930 kHz 0.887 dB	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq
10 dB/div           10.0           10.0           -10.0           -10.0           -20.0           -30.0           -40.0           -50.0           -60.0	RF   50 Ω DC   req 2.441000000 GH NFE PN IFG Ref Offset 9.79 dB	Z C: Wide ↔ Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 12.34.5.6 TYPE MWWWWW DET P P P P P 2Mkr3 930 kHz 0.887 dB 0.1.1448 dbm	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.439500000 GHz
20 dB/div Center Fr 10.0 0.00 -10.0 -20.0 -20.0 -30.0 -40.0 -50.0 -70.0	№         50 Ω DC           req 2.441000000 GH         №           NFE         PN           Ref Offset 9.79 dB         Ref 20.00 dBm	Z C: Wide ↔ Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 12.34.5.6 TYPE MWWWWW DET P P P P P P 2Mkr3 930 kHz 0.887 dB	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.439500000 GHz Stop Freq 2.442500000 GHz
10 dB/div           10 dB/div           10 0           10.0           10.0           -20.0           -30.0           -40.0           -50.0           -70.0           Center 2.4	RF         50 Q DC           req 2.4410000000 GH         PN           NFE         PN           Ref Offset 9.79 dB         Ref 20.00 dBm	Z C: Wide Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 12 34 5 6 TYPE 14 45 6 DET P P P P P P 2Mkr3 930 kHz 0.887 dB	Frequency Auto Tune Center Freq 2.44100000 GHz 2.439500000 GHz 2.439500000 GHz 2.442500000 GHz CF Step
20 dB/div Center Fr 10.0 0.00 -10.0 -20.0 -20.0 -30.0 -40.0 -50.0 -70.0	Ref 2.4410000 GH           Ref Offset 9.79 dB           Ref 20.00 dBm           4410000 GHz           20 KHz	Z C: Wide → Trig: Free Run #Atten: 30 dB	t1_2402	TRACE 12.34.5.6 TYPE MWWWWW DET P P P P P P 2Mkr3 930 kHz 0.887 dB	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.439500000 GHz Stop Freq 2.442500000 GHz
10         RL           Center Fr           0.00           10.0           0.00           -10.0           -20.0           -30.0           -40.0           -50.0           -70.0           Center 2.4           #Res BW           MKR MODE FF           1           2           1	Ref Offset 9.79 dB         PN           Ref Offset 9.79 dB         PN           Ref 20.00 dBm         IFG           441000 GHz         20 kHz           20 kHz         Iff	Z O: Wide ↔ Trig: Free Run ain:Low Atten: 30 dB #Atten: 30 dB #VBW 62 kHz EHz -15.408 dBm	t1_2402	TRACE 12.34.5.6 TYPE 14.56 DET 19.29.29 2007 20 20 20 20 20 20 20 20 20 20 20 20 20	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.439500000 GHz 2.442500000 GHz 2.442500000 GHz CF Step 300.000 kHz Auto Man
10 dB/div           Center Fr           10.0           0.00           10.0           -10.0           -20.0           -30.0           -40.0           -50.0           -60.0           -70.0           -60.0           -70.0           -60.0           -7	Ref         50 @ DC           req         2.4410000000 GH           NFE         PN           Ref Offset 9.79 dB         Ref 20.00 dBm           441000 GHz         20 kHz           20 kHz         X440 562           f         2.440 562	Z O: Wide ↔ Trig: Free Run ain:Low Atten: 30 dB #Atten: 30 dB #VBW 62 kHz EHz -15.408 dBm	t1_2402	TRACE 12.34.5.6 TYPE 14.56 DET 19.29.29 2007 20 20 20 20 20 20 20 20 20 20 20 20 20	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.439500000 GHz 2.442500000 GHz CF Step 300.000 kHz Auto Man Freq Offset
10         RL           Center Fr           0           0           0           0           0           0           -10           -10           -10           -10           -10           -10           -10           -20           -30           -40.0           -50.0           -70.0           Center 2.4           #Res BW           MKE MODE MF           1           2           1           3           4           5	Ref         50 @ DC           req         2.4410000000 GH           NFE         PN           Ref Offset 9.79 dB           Ref 20.00 dBm           441000 GHz           20 kHz           I           2.440 562           f         2.440 562	Z C: Wide → Trig: Free Run ain:Low → Trig: Free Run #Atten: 30 dB #Atten: 30 dB #Atten: 30 dB #Atten: 40 dB #VBW 62 kHz FU GHz -15.408 dBm FU	t1_2402	TRACE 12.34.5.6 TYPE 14.56 DET 19.29.29 2007 20 20 20 20 20 20 20 20 20 20 20 20 20	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.439500000 GHz 2.442500000 GHz 2.442500000 GHz CF Step 300.000 kHz Auto Man
10         RL           Center Fr           10.0           0.00           -10.0           -20.0           -30.0           -40.0           -50.0           -60.0           -70.0           Example           40.0           -60.0           -70.0	Ref         50 @ DC           req         2.4410000000 GH           NFE         PN           Ref Offset 9.79 dB           Ref 20.00 dBm           441000 GHz           20 kHz           I           2.440 562           f         2.440 562	Z C: Wide → Trig: Free Run ain:Low → Trig: Free Run #Atten: 30 dB #Atten: 30 dB #Atten: 30 dB #Atten: 40 dB #VBW 62 kHz FU GHz -15.408 dBm FU	t1_2402	TRACE 12.34.5.6 TYPE 14.56 DET 19.29.29 2007 20 20 20 20 20 20 20 20 20 20 20 20 20	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.439500000 GHz 2.442500000 GHz CF Step 300.000 kHz Auto Man Freq Offset 0 Hz
10 dB/div           Center Fi           10.0           0.00           -10.0           -20.0           -30.0           -40.0           -50.0           -70.0           Center 2.4           #Res BW           MSR MODE FF           1         N           2         N           3         A1           5         6           7         8           9         9	Ref         50 @ DC           req         2.4410000000 GH           NFE         PN           Ref Offset 9.79 dB           Ref 20.00 dBm           441000 GHz           20 kHz           I           2.440 562           f         2.440 562	Z C: Wide → Trig: Free Run ain:Low → Trig: Free Run #Atten: 30 dB #Atten: 30 dB #Atten: 30 dB #Atten: 40 dB #VBW 62 kHz FU GHz -15.408 dBm FU	t1_2402	TRACE 12.34.5.6 TYPE 14.56 DET 19.29.29 2007 20 20 20 20 20 20 20 20 20 20 20 20 20	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.439500000 GHz Stop Freq 2.442500000 GHz CF Step 300.000 kHz Auto Man Freq Offset 0 Hz Scale Type
IO         RL           Center         Fi           Conter         Fi           10.0	Ref         50 @ DC           req         2.4410000000 GH           NFE         PN           Ref Offset 9.79 dB           Ref 20.00 dBm           441000 GHz           20 kHz           I           2.440 562           f         2.440 562	Z C: Wide → Trig: Free Run ain:Low → Trig: Free Run #Atten: 30 dB #Atten: 30 dB #Atten: 30 dB #Atten: 40 dB #VBW 62 kHz FU GHz -15.408 dBm FU	t1_2402	TRACE 12.34.5.6 TYPE 14.56 DET 19.29.29 2007 20 20 20 20 20 20 20 20 20 20 20 20 20	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.439500000 GHz 2.442500000 GHz CF Step 300.000 kHz Auto Man Freq Offset 0 Hz
IO         RL           Center Fr           0           0           0           0           0           -10.0           -20.0           -30.0           -40.0           -60.0           -70.0           Center 2.4           #Res BW           MKR MODE FF           1         N           2         N           3         A1           5         6           7         8           9         9	Ref         50 @ DC           req         2.4410000000 GH           NFE         PN           Ref Offset 9.79 dB           Ref 20.00 dBm           441000 GHz           20 kHz           I           2.440 562           f         2.440 562	Z C: Wide → Trig: Free Run ain:Low → Trig: Free Run #Atten: 30 dB #Atten: 30 dB #Atten: 30 dB #Atten: 40 dB #VBW 62 kHz FU GHz -15.408 dBm FU	t1_2402	TRACE 12.34.5.6 TYPE 14.56 DET 19.29.29 2007 20 20 20 20 20 20 20 20 20 20 20 20 20	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.439500000 GHz Stop Freq 2.442500000 GHz CF Step 300.000 kHz Auto Man Freq Offset 0 Hz Scale Type

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# APPENDIX C: OCCUPIED CHANNEL BANDWIDTH

## **Test Result**

Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict
		2402	0.84334	2401.589	2402.432	PASS
DH5	Ant1	2441	0.84401	2440.591	2441.435	PASS
		2480	0.83792	2479.594	2480.432	PASS
		2402	1.2002	2401.409	2402.609	PASS
3DH5	Ant1	2441	1.1866	2440.421	2441.607	PASS
		2480	1.1987	2479.412	2480.611	PASS

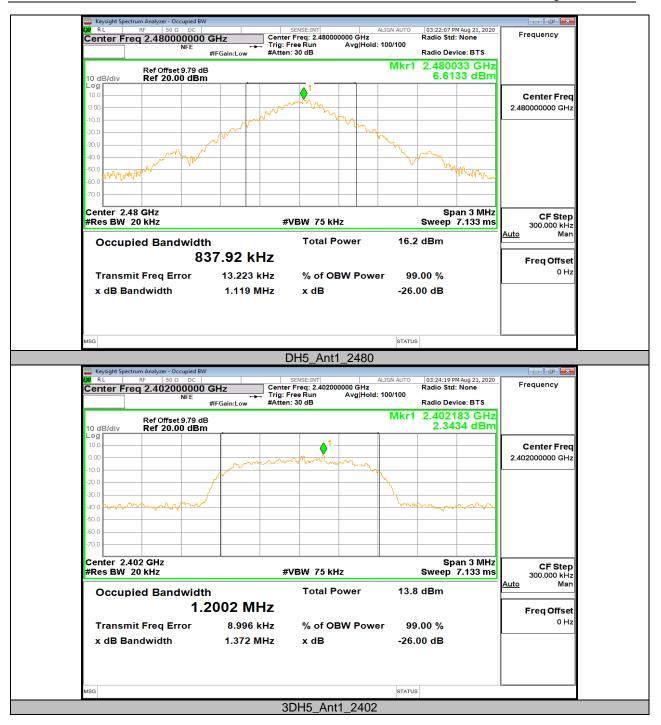


# **Test Graphs**

Keysight Spectrum Analyzer	- Occupied BW i0 Ω DC	CENCE-INT	ALIGN AUTO	03:16:32 PM Aug 21, 2020	
Center Freq 2.402		Center Freq: 2.4020000	00 GHz Avg Hold: 100/100	Radio Std: None	Frequency
	#IFGain:Low	#Atten: 30 dB		Radio Device: BTS	
	set 9.79 dB		Mkr1	2.402036 GHz 6.4294 dBm	
Log	0.00 dBm	1			
0.00		mm			Center Freq 2.402000000 GHz
-10.0		www.			2.402000000 GHZ
-20.0			my		
-30.0	~ ~ ~ ·		- M		
-40.0			- Notes	my .	
-50.0 My WWW				Whit My Who	
-60.0					
Center 2.402 GHz #Res BW 20 kHz		#VBW 75 kHz		Span 3 MHz Sweep 7.133 ms	CF Step
FRES DW ZO KHZ				-	300.000 kHz Auto Man
Occupied Bar		Total Por	wer 16.1	1 dBm	
	843.34 k	Hz			Freq Offset
Transmit Freq I	Error 10.790	kHz % of OBV	N Power 99	9.00 %	0 Hz
x dB Bandwidt	h 1.123 I	MHz xdB	-26.	00 dB	
ISG			STATUS	s	
ISG		DH5 Ant1		s	
🔐 Keysight Spectrum Analyzer -		DH5_Ant1_	_2402		
🔐 Keysight Spectrum Analyzer -	0 Ω DC	SENSE:INT	_2402	s 03:20:00 PM Aug 21, 2020 Radio Std: None	
Keysight Spectrum Analyzer	0 Ω DC	SENSE:INT	_2402	03:20:00 PM Aug 21, 2020	
Keysight Spectrum Analyzer RL RF 5 Center Freq 2.441 Ref Off	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run	_2402	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz	Frequency
Reysight Spectrum Analyzer RL RF S Center Freq 2.441 Ref Off 10 dB/div Ref 21	0 Ω DC   0000000 GHz NFE #IFGain:Low	SENSE:INT Center Freq: 2.4410000 Trig: Free Run	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS	Frequency
Reysight Spectrum Analyzer RL RF 5 Center Freq 2.441 Ref Off 10 dB/div Ref 2t	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz	Frequency Center Freq
Reysight Spectrum Analyzer RL RF 5 Center Freq 2.441 Ref Off 10 dB/div Ref 2t -og	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz	Frequency
Reysight Spectrum Analyzer RL RF 5 Center Freq 2.441 Ref Off 10 dB/div Ref 2t	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz	Frequency Center Freq
Revight Spectrum Analyzer RL RF S Center Freq 2.441 Ref Off 10 dB/div Ref 20 10.0 .00 .00	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz	Frequency Center Freq
Reysight Spectrum Analyzer           RL         RF         S           Center Freq 2.441         Ref Off         Ref off           10         dB/div         Ref 2(           0         0         0           10.0         0         0           20.0         0         0	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz	Frequency Center Freq
Reysight Spectrum Analyzer           RL         RF         5           Center Freq 2.441         Ref Off         10           0         0         0           0         0         0           10         0         0           0         0         0           0         0         0           0         0         0           0         0         0           0         0         0           0         0         0           0         0         0           0         0         0           0         0         0	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PMAug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm	Frequency Center Freq
Keysight Spectrum Analyzer           RL         RF         S           Center Freq 2.441         Ref Off           10 dB/div         Ref off           10.0         0.00           10.0         0.00           10.0         0.00           10.0         0.00           10.0         0.00           10.0         0.00           0.00         0.00           0.00         0.00           0.00         0.00           0.00         0.00           0.00         0.00           0.00         0.00           0.00         0.00	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz	Frequency Center Freq
Reysight Spectrum Analyzer           RL         RF         S           Center Freq 2.441         Ref Off         Ref off           10         dB/div         Ref off           10.0	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB	_2402 ALIGN AUTO 00 GHz Avg Hold: 100/100	03:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm	Center Freq 2.441000000 GHz
Keysight Spectrum Analyzer           RL         RF         S           Center Freq 2.441           IO         Ref Off           IO         Ref off           IO         Box (IV)         Ref Off           IO         Box (IV)         Ref Off           IO         IO         IO         IO           IO         Box (IV)         Ref Off         IO           IO         IO         IO         IO         IO           IOO         IO         IO <thio< th=""> <thio< th=""> <t< td=""><td>0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB</td><td>SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB</td><td>2402</td><td>03:20:00 PMAug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm</td><td>Center Freq 2.441000000 GHz</td></t<></thio<></thio<>	0 Ω DC 000000 GHz NFE #IFGain:Low set 9.79 dB	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB	2402	03:20:00 PMAug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm	Center Freq 2.441000000 GHz
Reysight Spectrum Analyzer           RL         RF         S           Center Freq 2.441         Ref Off         Ref Off           10         dB/div         Ref Off           10.0         0         0           10.0         0         0           10.0         0         0           10.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0	0 Ω DC NFE #IFGain:Low set 9.79 dB 0.00 dBm	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB	2402	03:20:00 PMAug 21, 2020         Radio Std: None         Radio Device: BTS         2.441075 GHz         5.7811 dBm	CE Step
Keysight Spectrum Analyzer           RL         RF         S           Center Freq 2.441           IO         Ref Off           IO         Ref off           IO         Box (IV)         Ref Off           IO         Box (IV)         Ref Off           IO         IO         IO         IO           IO         Box (IV)         Ref Off         IO           IO         IO         IO         IO         IO           IOO         IO         IO <thio< th=""> <thio< th=""> <t< td=""><td>0 Ω DC NFE #IFGain:Low set 9.79 dB 0.00 dBm</td><td>SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #Atten: 30 dB #Atten: 40 dB</td><td>2402</td><td>03:20:00 PMAug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm</td><td>Center Freq 2.441000000 GHz</td></t<></thio<></thio<>	0 Ω DC NFE #IFGain:Low set 9.79 dB 0.00 dBm	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #Atten: 30 dB #Atten: 40 dB	2402	03:20:00 PMAug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm	Center Freq 2.441000000 GHz
Reysight Spectrum Analyzer           RL         RF         S           Center Freq 2.441         Ref Off         Ref Off           10         dB/div         Ref Off           10.0         0         0           10.0         0         0           10.0         0         0           10.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0	0 Ω DC NFE #IFGain:Low set 9.79 dB 0.00 dBm	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #Atten: 30 dB #Atten: 40 dB	2402	03:20:00 PMAug 21, 2020         Radio Std: None         Radio Device: BTS         2.441075 GHz         5.7811 dBm	Frequency Center Freq 2.441000000 GHz 300.000 KHz Auto Man Freq Offset
Reysight Spectrum Analyzer           RL         RF         S           Center Freq 2.441         Ref Off         Ref Off           10         dB/div         Ref Off           10.0         0         0           10.0         0         0           10.0         0         0           10.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0           0.0         0         0	ndwidth 844.01 k	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #VBW 75 kHz Total Por HZ	2402 00 GHz Avg Hold: 100/100 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1	03:20:00 PMAug 21, 2020         Radio Std: None         Radio Device: BTS         2.441075 GHz         5.7811 dBm	Center Freq 2.441000000 GHz CF Step 300.000 KHz Auto Man
Reysight Spectrum Analyzer RL RF S Center Freq 2.441 Center Freq 2.441 Ref Off Center 2.441 Center 2.441 Ce	10 2 DC 1000000 GHz NFE #IFGain:Low set 9.79 dB 0.00 dBm 	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #VBW 75 kHz Total Por HZ kHz % of OBV	2402 00 GHz AvgHold: 100/100 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr2	03:20:00 PMAug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm Span 3 MHz Sweep 7.133 ms	Frequency Center Freq 2.441000000 GHz 300.000 KHz Auto Man Freq Offset
Rysight Spectrum Analyzer RL RF S Center Freq 2.441 Conter Freq 2.441 Ref Off Center 2.441 Center 2.441 Cen	10 2 DC 1000000 GHz NFE #IFGain:Low set 9.79 dB 0.00 dBm 	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #VBW 75 kHz Total Por HZ kHz % of OBV	2402 00 GHz AvgHold: 100/100 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr2	03:20:00 PMAug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm Span 3 MHz Sweep 7.133 ms 5 dBm	Frequency Center Freq 2.441000000 GHz 300.000 KHz Auto Man Freq Offset
Rysight Spectrum Analyzer RL RF S Center Freq 2.441 Conter Freq 2.441 Ref Off Center 2.441 Center 2.441 Cen	10 2 DC 1000000 GHz NFE #IFGain:Low set 9.79 dB 0.00 dBm 	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #VBW 75 kHz Total Por HZ kHz % of OBV	2402 00 GHz AvgHold: 100/100 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr2	03:20:00 PMAug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm Span 3 MHz Sweep 7.133 ms 5 dBm	Frequency Center Freq 2.441000000 GHz 300.000 KHz Auto Man Freq Offset
Rexight Spectrum Analyzer RL RF S Center Freq 2.441 Center Freq 2.441 Ref Off Center 2.441 Center 2.441 Cen	10 2 DC 1000000 GHz NFE #IFGain:Low set 9.79 dB 0.00 dBm 	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #VBW 75 kHz Total Por HZ kHz % of OBV	2402 ALIGN AUTO 00 GHz Avg Hold: 100/100 Mkr1 Mwr Mkr1 Mwr 15.5 N Power 99 -26.	D3:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm Span 3 MHz Sweep 7.133 ms 5 dBm 9.00 %	Frequency Center Freq 2.441000000 GHz 300.000 KHz Auto Man Freq Offset
Rysight Spectrum Analyzer RL RF S Center Freq 2.441 Conter Freq 2.441 Ref Off Center 2.441 Center 2.441 Cen	10 2 DC 1000000 GHz NFE #IFGain:Low set 9.79 dB 0.00 dBm 	SENSE:INT Center Freq: 2.4410000 Trig: Free Run #Atten: 30 dB #VBW 75 kHz Total Por HZ kHz % of OBV	2402 ALIGN AUTO 00 GHz Avg Hold: 100/100 Mkr1 Mkr1 Mkr1 Mkr1 Mkr1 Mkr2	D3:20:00 PM Aug 21, 2020 Radio Std: None Radio Device: BTS 2.441075 GHz 5.7811 dBm Span 3 MHz Sweep 7.133 ms 5 dBm 9.00 %	Frequency Center Freq 2.441000000 GHz 300.000 KHz Auto Man Freq Offset

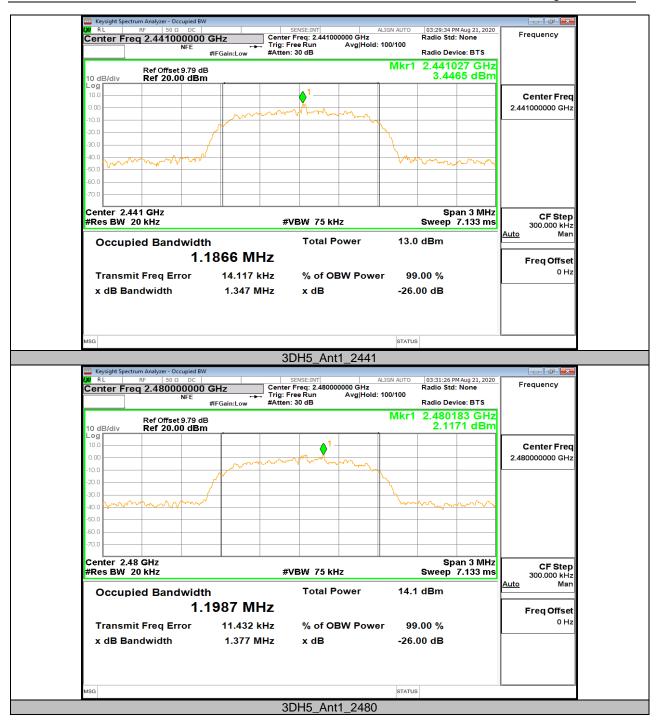
# (U)

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# (U)

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# APPENDIX D: PEAK CONDUCTED OUTPUT POWER

## **Test Result**

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
		2402	9.91	30	PASS
DH5	Ant1	2441	9.33	30	PASS
		2480	9.88	30	PASS
		2402	9.70	21	PASS
3DH5	Ant1	2441	8.97	21	PASS
		2480	9.67	21	PASS



# APPENDIX E: CARRIER FREQUENCY SEPARATION

## **Test Result**

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	Нор	1.004	>=0.930	PASS
3DH5	Ant1	Нор	1.004	>=0.848	PASS

# **Test Graphs**

Start I	req 2.43	50 Ω 950000 N	DOGHZ	IO: Wide ↔ Gain:Low	Trig: Free Run #Atten: 30 dB	#Avg Typ	ALIGN AUTO pe: RMS d: 100/100	03:36:16 PM Aug 21, 2020 TRACE 1 2 3 4 5 6 TYPE DET P P P P P	Frequency
10 dB/d Log		fset 9.79 0.00 dE	dB				ΔΜ	kr2 1.004 MHz 0.344 dB	Auto Tune
10.0				21		2∆1			Center Freq 2.441500000 GHz
0.00			$\bigvee$						Start Freq 2.439500000 GHz
-20.0									Stop Freq
-30.0									2.443500000 GHz
-40.0									CF Step 400.000 kHz <u>Auto</u> Man
-60.0									Freq Offset 0 Hz
-70.0									Scale Type
#Res E	.439500 G 3W 300 kH			#VBW	/ 910 kHz		Sweep 2.0	op 2.443500 GHz 000 ms (1001 pts)	Log <u>Lin</u>
MSG							STATUS		
					DH5 Ar	nt1 Hop			
	ht Spectrum Anal				DH5_Ar				
LXI RL		50 Ω 950000	DC DO GHZ	IO: Wide ↔	SENSE:INT	#Avg Typ	ALIGN AUTO pe: RMS i: 100/100	03:47:09 PM Aug 21, 2020 TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P	Frequency
XV RL Start I	R⊧ Freq 2.43 Ref 0f	50 Ω 950000	DC DO GHZ FE PN IFC dB	iO: Wide ↔ Sain:Low	SENSE:INT	#Avg Typ	pe: RMS d: 100/100	03:47:09 PM Aug 21, 2020 TRACE 12:3:4:5:6 TYPE MWWWW DET P P P P P kr2 1.004 MHz 0.417 dB	[
Start I	R⊧ Freq 2.43 Ref 0f	50 Ω 950000 N fset 9.79	DC DO GHZ FE PN IFC dB	IO: Wide ↔ Sain:Low	SENSE:INT	#Avg Typ	pe: RMS d: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWW DET P P P P P kr2 1.004 MHz	Frequency
10 dB/d	R⊧ Freq 2.43 Ref 0f	50 Ω 950000 N fset 9.79	DC DO GHZ FE PN IFC dB	Gain:Low	SENSE:INT	#Avg Typ Avg Hold	pe: RMS d: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWW DET P P P P P kr2 1.004 MHz	Frequency Auto Tune Center Freq
10 dB/d Log	R⊧ Freq 2.43 Ref 0f	50 Ω 950000 N fset 9.79	DC DO GHZ FE PN IFC dB	Gain:Low	SENSE:INT	#Avg Typ Avg Hold	pe: RMS d: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWW DET P P P P P kr2 1.004 MHz	Frequency Auto Tune Center Freq 2.441500000 GHz Start Freq 2.439500000 GHz Stop Freq
22 RL Start I 10 dB/d 10.0	R⊧ Freq 2.43 Ref 0f	50 Ω 950000 N fset 9.79	DC DO GHZ FE PN IFC dB	Gain:Low	SENSE:INT	#Avg Typ Avg Hold	pe: RMS d: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWW DET P P P P P kr2 1.004 MHz	Frequency Auto Tune Center Freq 2.441500000 GHz Start Freq 2.439500000 GHz Stop Freq 2.443500000 GHz
22 RL Start I 10 dB/d Log -10.0 -20.0	R⊧ Freq 2.43 Ref 0f	50 Ω 950000 N fset 9.79	DC DO GHZ FE PN IFC dB	Gain:Low	SENSE:INT	#Avg Typ Avg Hold	pe: RMS d: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWW DET P P P P P kr2 1.004 MHz	Frequency Auto Tune Center Freq 2.441500000 GHz Start Freq 2.439500000 GHz Stop Freq
(22 RL Start I 10.0 - 10.0 - -10.0 - -20.0 - -30.0 - -40.0 -	R⊧ Freq 2.43 Ref 0f	50 Ω 950000 N fset 9.79	DC DO GHZ FE PN IFC dB	Gain:Low	SENSE:INT	#Avg Typ Avg Hold	pe: RMS d: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWW DET P P P P P kr2 1.004 MHz	Frequency Auto Tune Center Freq 2.441500000 GHz Start Freq 2.439500000 GHz Stop Freq 2.443500000 GHz CF Step 400.000 kHz
(22 RL Start I 10.0	R⊧ Freq 2.43 Ref 0f	50 Ω 950000 N fset 9.79	DC DO GHZ FE PN IFC dB	Gain:Low	SENSE:INT	#Avg Typ Avg Hold		TRACE 1 2 3 4 5 6 TYPE MWWW DET P P P P P kr2 1.004 MHz	Frequency Auto Tune Center Freq 2.441500000 GHz Start Freq 2.439500000 GHz CF Step 400.000 KHz Auto Man Freq Offset 0 Hz Scale Type

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# **APPENDIX F: NUMBER OF HOPPING FREQUENCIES**

## **Test Result**

Test Mode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Нор	79	>=15	PASS
3DH5	Ant1	Нор	79	>=15	PASS

# **Test Graphs**

Cente	er Freq		0000 GH	<mark>IZ</mark> NO: Fast ↔ Gain:Low	Trig: Free #Atten: 3		#Avg Type Avg Hold:	e: RMS 1000/1000	TRAC TYI DI	DE 1 2 3 4 5 6 PE M WWWW ET P P P P P P	Frequency
10 dB/c		f Offset 9.7 •f 20.00 d	9 dB			_					Auto Tune
10.0	ለለለለከበበ	ANNANA	NATION	<b>በ</b> ለብለክለበስ	ስሰበለበስለ	ለስበበስለክ	งกลุงสุญภา	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	ስብእስለቢስ	ስስቤክ ስስ	Center Freq 2.441750000 GHz
0.00											Start Freq
-10.0											2.40000000 GHz
-30.0											<b>Stop Freq</b> 2.483500000 GHz
-40.0											CF Step 8.350000 MHz <u>Auto</u> Man
-50.0										<u>м</u>	Freq Offset
-70.0 —											0 Hz Scale Type
	2.40000 BW 200			#VBW	200 kHz					8350 GHz (1001 pts)	Log <u>Lin</u>
MSG								STATUS		,	
Mag											
mod					Dł	H5_Ant	1_Hop				
🔐 Keysi		Analyzer - Swe	ept SA			H5_Ant				M Aug 21, 2020	
Keysig	R	F 50 Ω <b>2.44175</b>	DC 0000 GH NFE P	NO: Fast 🔸	SE	ISE:INT	#Avg Type	ALIGN AUTO	03:50:55 P TRAC TYI	M Aug 21, 2020 2E 1 2 3 4 5 6 M WWWWW ET P P P P P P	Frequency
Keysia (X) RL Cente	er Freq Re	F 50 Ω <b>2.44175</b>	DC 0000 GH NFE P IFC 9 dB		SEN	ISE:INT	#Avg Type	ALIGN AUTO	03:50:55 P TRAC TYI	DE 1 2 3 4 5 6	Frequency
Cento	er Freq Re	F 50 Ω <b>2.44175</b> f Offset 9.7	DC 0000 GH NFE P IFC 9 dB	NO: Fast 🔸	SEN	ISE:INT	#Avg Type	ALIGN AUTO	03:50:55 P TRAC TYI	DE 1 2 3 4 5 6	Frequency
10 dB/r	er Freq Re div Re	F 50 Ω 2.44175 f Offset 9.7 f 20.00 d	DC 00000 GH NFE P IF( 9 dB IBm	NO: Fast 🔸	Trig: Free #Atten: 3	ISE:INT Run O dB	#Avg Type Avg Hold:	ALIGN AUTO 2: RMS 1000/1000	03:50:55 P TRA TY D	22 1 2 3 4 5 6 PE M WWWW P P P P P P P	Frequency Auto Tune
	er Freq Re div Re	F 50 Ω 2.44175 f Offset 9.7 f 20.00 d	DC 00000 GH NFE P IF( 9 dB IBm	NO: Fast ↔ Gain:Low	Trig: Free #Atten: 3	ISE:INT Run O dB	#Avg Type Avg Hold:	ALIGN AUTO 2: RMS 1000/1000	03:50:55 P TRA TY D	22 1 2 3 4 5 6 PE M WWWW P P P P P P P	Frequency Auto Tune Center Freq
10 dB/c	er Freq Re div Re	F 50 Ω 2.44175 f Offset 9.7 f 20.00 d	DC 00000 GH NFE P IF( 9 dB IBm	NO: Fast ↔ Gain:Low	Trig: Free #Atten: 3	ISE:INT Run O dB	#Avg Type Avg Hold:	ALIGN AUTO 2: RMS 1000/1000	03:50:55 P TRA TY D	22 1 2 3 4 5 6 PE M WWWW P P P P P P P	Frequency Auto Tune Center Freq 2.441750000 GHz
10 dB/4 10 dB/4 10.00	er Freq Re div Re	F 50 Ω 2.44175 f Offset 9.7 f 20.00 d	DC 00000 GH NFE P IF( 9 dB IBm	NO: Fast ↔ Gain:Low	Trig: Free #Atten: 3	ISE:INT Run O dB	#Avg Type Avg Hold:	ALIGN AUTO 2: RMS 1000/1000	03:50:55 P TRA TY D	22 1 2 3 4 5 6 PE M WWWW P P P P P P P	Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq
10 dB/( 00 RL 10.0 - -10.0 - -20.0 - -30.0 -	er Freq Re div Re	F 50 Ω 2.44175 f Offset 9.7 f 20.00 d	DC 00000 GH NFE P IF( 9 dB IBm	NO: Fast ↔ Gain:Low	Trig: Free #Atten: 3	ISE:INT Run O dB	#Avg Type Avg Hold:	ALIGN AUTO 2: RMS 1000/1000	03:50:55 P TRA TY D	22 1 2 3 4 5 6 PE M WWWW P P P P P P P	Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq 2.483500000 GHz CF Step
10 dB/c 10 dB/c 10.0 -10.0 -20.0	er Freq Re div Re	F 50 Ω 2.44175 f Offset 9.7 f 20.00 d	DC 00000 GH NFE P IF( 9 dB IBm	NO: Fast ↔ Gain:Low	Trig: Free #Atten: 3	ISE:INT Run O dB	#Avg Type Avg Hold:	ALIGN AUTO 2: RMS 1000/1000	03:50:55 P TRA TY D	22 1 2 3 4 5 6 PE M WWWW P P P P P P P	Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq 2.483500000 GHz
10 dB/d 10 dB/d 10.0 -10.0 -20.0 -30.0	er Freq Re div Re	F 50 Ω 2.44175 f Offset 9.7 f 20.00 d	DC 00000 GH NFE P IF( 9 dB IBm	NO: Fast ↔ Gain:Low	Trig: Free #Atten: 3	ISE:INT Run O dB	#Avg Type Avg Hold:	ALIGN AUTO 2: RMS 1000/1000	03:50:55 P TRA TY D	22 1 2 3 4 5 6 PE M WWWW P P P P P P P	Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq 2.483500000 GHz CF Step 8.350000 MHz
Kepsing     Resident      Resident	er Freq Re div Re	F 50 Ω 2.44175 f Offset 9.7 f 20.00 d	DC 00000 GH NFE P IF( 9 dB IBm	NO: Fast ↔ Gain:Low	Trig: Free #Atten: 3	ISE:INT Run O dB	#Avg Type Avg Hold:	ALIGN AUTO 2: RMS 1000/1000	03:50:55 P TRA TY D	22 1 2 3 4 5 6 PE M WWWW P P P P P P P	Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq 2.48350000 GHz CF Step 8.350000 MHz Auto Man Freq Offset

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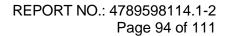


# APPENDIX G: TIME OF OCCUPANCY (DWELL TIME)

## **Test Result**

			FHSS Mode			
Test Mode	Antenna	Channel	Burst Width [ms]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.38	0.122	<=0.4	PASS
DH3	Ant1	Нор	1.64	0.262	<=0.4	PASS
DH5	Ant1	Нор	2.88	0.307	<=0.4	PASS
3DH1	Ant1	Нор	0.39	0.125	<=0.4	PASS
3DH3	Ant1	Нор	1.64	0.262	<=0.4	PASS
3DH5	Ant1	Нор	2.89	0.308	<=0.4	PASS

			AFHSS Mode			
Test Mode	Antenna	Channel	Burst Width [ms]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.38	0.061	<=0.4	PASS
DH3	Ant1	Нор	1.64	0.131	<=0.4	PASS
DH5	Ant1	Нор	2.88	0.1536	<=0.4	PASS
3DH1	Ant1	Нор	0.39	0.0624	<=0.4	PASS
3DH3	Ant1	Нор	1.64	0.131	<=0.4	PASS
3DH5	Ant1	Нор	2.89	0.154	<=0.4	PASS





## **Test Graphs**

	er - Swept SA 50 Ω DC			NSE:INT		ALIGN AUTO	04:03:00 PM	Aug 24, 2020	Frequency
Center Freq 2.44	NFE P	NO: Wide 🔸	, Trig: Vide	y-200.0 µs eo	#Avg Typ	e. RIVIS	TYPE		
	IF	Gain:Low	#Atten: 30	0 dB				PPPPP	Auto Tune
	00 dBm						ΔMkr2 38	80.0 μs .32 dB	
10 dB/div Ref 20.			<u> </u>		1				
									Center Freq
10.0			1						2.441000000 GHz
o.oo ↓1 ↓ <sup>2∆1</sup>								TRIG LVL	
				_			Τ		Start Freq
-10.0									2.441000000 GHz
-20.0									Stop Freq
-30.0									2.441000000 GHz
-40.0							+		CF Step 1.000000 MHz
									<u>Auto</u> Man
-50.0	and the second state of the second	a na an airtean	Internal loop of	and differences	القاربين المار	and blacks	al Itanawala	is all only a	
								authous, Ashi	Freq Offset
					1977) (1979) 1979) (1979) 1979) (1979)	११ मा मा मा म			0 Hz
-70.0		<u> </u>		<u>  li</u>	<b>├</b> ──	<u> </u>		<u> </u>	Scale Type
Center 2.4410000 Res BW 1.0 MHz	00 GHz	#\/B\A	/ 3.0 MHz			Sween 1	Sp 10.13 ms (8	oan 0 Hz	Log <u>Lin</u>
MSG		#¥UW	WIL12			SWEEP I		hra)	
				11 And	Llar				
Keysight Spectrum Analyze	er - Swent SA			H1_Ant	і_пор				
LXIRL RF	50 Ω DC	1-		NSE:INT <b>y-200.0 μs</b>	#Avg Typ	ALIGN AUTO	04:03:35 PM	Aug 24, 2020	Frequency
Center Freq 2.44	NFE P	NO: Wide 🔸		90	"CAR A		TYPE	1 2 3 4 5 6 WWWWW P P P P P P	
	IF	Gain:Low	#Atten. 3						Auto Tune
							ΔMkr2 1.6	337 ms	
10 dB/div Ref 20.	00 dBm					4	۵Mkr2 1.6 4	637 ms I.65 dB	
10 dB/div Ref 20.	00 dBm								
10 dB/div Ref 20.	00 dBm								Center Freq 2.441000000 GHz
Log	00 dBm							l.65 dB	Center Freq
Log									Center Freq 2.441000000 GHz
10.0 0.00								l.65 dB	Center Freq
10.0								l.65 dB	Center Freq 2.441000000 GHz Start Freq
10.0 0.00								l.65 dB	Center Freq 2.44100000 GHz Start Freq 2.441000000 GHz
10.0 0.00 -10.0 -20.0								l.65 dB	Center Freq 2.441000000 GHz Start Freq
10.0 0.00 -10.0								l.65 dB	Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz Stop Freq
10.0 10.0 10.0 10.0 -20.0 -30.0								l.65 dB	Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz Stop Freq 2.44100000 GHz CF Step
10.0 .000 .10.0 .20.0 .30.0									Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz 2.441000000 GHz 2.441000000 GHz CF Step 1.000000 MHz
10.0 .000 .10.0 .20.0 .30.0	201							1.65 dB	Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz           Auto
10.0 .000 .10.0 .20.0 .30.0 .50.0	201							1.65 dB	Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz           Auto
10.0 .0.00 .10.0 .20.0 .30.0 .40.0	201							1.65 dB	Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz           Auto
10.0 .0.0 .10.0 .20.0 .30.0 .50.0	201							1.65 dB	Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz           Auto           Freq Offset           0 Hz
Log 10.0 .0.00 .10.0 .20.0 .30.0 .60.0 .60.0	201							1.65 dB	Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz           Auto           Man           Freq Offset
Log 10.0 .0.0					uniterite				Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz           Auto           Freq Offset           0 Hz           Scale Type
Log 10.0 -10.0 -20.0 -30.0 -40.0 -60.0		an the second	3.0 MHz		uniterite				Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz           Auto           Freq Offset           0 Hz           Scale Type

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Contor	Fran	KF 50 Ω	ept SA		SE Tria Dala	NSE:INT	#Avg Typ		04:01:53 F	M Aug 24, 2020	Frequency
Center	Freq	2.4410	00000 G	PNO: Wide ↔ FGain:Low		eo			τγ □	CE 1 2 3 4 5 6 PE WWWWW ET P P P P P P	
				. Jam.LOW				4		.884 ms	Auto Tune
10 dB/di Log	v Re	ef 20.00	dBm							7.22 dB	
											Center Freq
10.0				▲2∆1							2.441000000 GHz
0.00										TRIG LVL	
-10.0											Start Freq 2.441000000 GHz
-10.0											
-20.0											Stop Freq
-30.0											2.441000000 GHz
-40.0											CF Step
-40.0											1.000000 MHz <u>Auto</u> Man
-50.0				nable of	III	dile and a		li di sere	1 . 1 .	to a le s le	
-60.0				an lander of the	n an the first of		and the states of	n an	an sala sa sa	PREPARE AND A	Freq Offset
70.0				A shirt a state of the	W ATA T					and the party of the	0 Hz
-70.0					'						Scale Type
L Center	2.441	000000 0	GHz							Span 0 Hz	Log <u>Lin</u>
Res BV				#VBV	V 3.0 MHz	!		Sweep 1	0.13 ms	(8000 pts)	
MSG						LIE Ant	1 Uan	STATU	S		
Keysigh		n Analyzer - Sw			D	H5_Ant					
Keysigh	F	LF 50 Ω	DC 00000 G		SE Trig Dela	NSE:INT ay-200.0 μs		ALIGN AUTO	04:10:51 F	MAug 24, 2020 CE 1 2 3 4 5 6	
Keysigh	F	LF 50 Ω	DC 00000 G NFE	HZ PNO: Wide ↔ FGain:Low	SE Trig Dela	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA TY D	CE 1 2 3 4 5 6 PE WWWWWW ET P P P P P P	Frequency
Keysigh Kal Center	· Freq	E 50 Ω 2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	MAug 24, 2020 CE 1 2 3 4 5 6 PE WWWWW ET P P P P P P 386.3 μs 3.95 dB	
Keysigh	· Freq	LF 50 Ω	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	се <u>1 2 3 4 5 6</u> РЕ WWWWW ЕТ Р Р Р Р Р Р 386.3 µS	Frequency Auto Tune
Keysigh M RL Center	· Freq	E 50 Ω 2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	се <u>1 2 3 4 5 6</u> РЕ WWWWW ЕТ Р Р Р Р Р Р 386.3 µS	Frequency
Keysigh A RL Center	· Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	се <u>1 2 3 4 5 6</u> РЕ WWWWW ЕТ Р Р Р Р Р Р 386.3 µS	Frequency Auto Tune Center Freq
Keysigh X RL Center 10 dB/di Log	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	се <u>1 2 3 4 5 6</u> РЕ WWWWW ЕТ Р Р Р Р Р Р 386.3 µS	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq
Keysigh A RL Center	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 1 2 3 4 5 6 PEWWWW ET P P P P P P P 386.3 μs 3.95 dB	Frequency Auto Tune Center Freq 2.441000000 GHz
Keysigh W RL Center	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 1 2 3 4 5 6 PEWWWW ET P P P P P P P 386.3 μs 3.95 dB	Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.441000000 GHz
Keysigh     Center	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 1 2 3 4 5 6 PEWWWW ET P P P P P P P 386.3 μs 3.95 dB	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq
10 dB/di	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 1 2 3 4 5 6 PEWWWW ET P P P P P P P 386.3 μs 3.95 dB	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz Stop Freq 2.44100000 GHz
Keysigh     Center	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 1 2 3 4 5 6 PEWWWW ET P P P P P P P 386.3 μs 3.95 dB	Frequency           Auto Tune           Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz
Keysigh     RL     Center     10.0     -20.0     -30.0	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 1 2 3 4 5 6 PEWWWW ET P P P P P P P 386.3 μs 3.95 dB	Frequency Auto Tune Center Freq 2.44100000 GHz 2.44100000 GHz 2.44100000 GHz CF Step
	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 1 2 3 4 5 6 PEWWWW ET P P P P P P P 386.3 μs 3.95 dB	Frequency           Auto Tune           Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz
Keysigh     RL     Center     10 dB/di     Conter     10.0     .000	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 123456 18 18 18 18 18 18 18 18 18 18 18 18 18	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz Stop Freq 2.44100000 GHz CF Step 1.00000 MHz Auto Man
	Freq	2.4410	DC 00000 G NFE	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo		ALIGN AUTO e: RMS	04:10:51 F TRA ΤΥ ΔΜkr2 3	CE 123456 EV 129456 EV 1297 S86.3 µs 3.95 dB TRO LVL	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz 2.44100000 GHz CF Step 1.00000 MHz Auto Man Freq Offset 0 Hz
Keysigh     RL     Center     Conter     Conter	v Re	F 20.00 0	dBm	PNO:Wide ↔	SE Trig Dela → Trig: Vid	nse:INT ay-200.0 µs eo	#Avg Typ	ALIGN AUTO e: RMS		CE 123456 WWWWWET P P P P P 386.3 µs 3.95 dB	Frequency         Auto Tune         Center Freq         2.441000000 GHz         Start Freq         2.441000000 GHz         Stop Freq         2.441000000 GHz         CF Stop         1.000000 MHz         Auto         Man         Freq Offset         0 Hz         Scale Type
Keysigh     RL     Center     Conter     Conter	2.441	r 2.44100 2.44100 r 20.00 0 1 1 0 0000000 €	dBm	PRO: Wide → FGain:Low	SE Trig Dela → Trig: Vid	NSE:INT ay-200.0 µs eo i0 dB	#Avg Typ	ALIGN AUTO e: RMS		CE 123456 EV 129456 EV 1297 S86.3 µs 3.95 dB TRO LVL	Frequency         Auto Tune         Center Freq         2.441000000 GHz         Start Freq         2.441000000 GHz         Stop Freq         2.441000000 GHz         CF Stop         1.000000 MHz         Auto         Man         Freq Offset         0 Hz         Scale Type

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	trum Analyzer - Sv RF 50 S	2 DC			NSE:INT		LIGN AUTO	04:13:45 P	M Aug 24, 2020	
Center Fre	eq 2.4410	00000 GI	NO: Wide		y-200.0 µs	#Avg Type		TRAC	DE 1 2 3 4 5 6 PE WWWWWW ET P P P P P P	Frequency
	Ref 20.00						2		. <mark>638</mark> ms 0.51 dB	Auto Tune
10.0										Center Freq 2.441000000 GHz
-10.0		2∆1							TRIG LVL	<b>Start Freq</b> 2.441000000 GHz
-20.0										Stop Freq 2.441000000 GHz
-30.0										CF Step
-50.0		h and the second second second second	la la contra c	ىرى مەركارلەر <u>لەر</u>	antonada di Is. A	lloundente burbeten	a a start of the star	յ են եւջեւտ	alling to be the	1.000000 MHz <u>Auto</u> Man
-60.0							ANDALIAN	at for the	an laha panyan	Freq Offset 0 Hz
Center 2.4		GHz							Span 0 Hz	Scale Type
Res BW 1.	U IVIMZ		#VBW 3	o.∪ IVIHZ		5	Sweep 1		(8000 pts)	
mad							SIATUS	3		
				20	L2 And	t1 Llon			_	
Keysight Spec	trum Analyzer - Sv	vept SA		3D	H3_Ant	t1_Hop				
Keysight Spec	RF 50 S	DC 000000 GI NFE P	NO: Wide	SEN Trig Dela Trig: Vide	vse:INT y-2.000 ms		ALIGN AUTO	TRAC	M Aug 25, 2020 DE 1 2 3 4 5 6 PE WWWWWW ET P P P P P P	Frequency
Center Fro	RF 50 S	00000 GI NFE P IF	NO: Wide	SEM	vse:INT y-2.000 ms		RMS	TRAC TYP DE	CE 1 2 3 4 5 6	
Center Fro	RF 50 S eq 2.4410	00000 GI NFE P IF	NO: Wide	SEP Trig Dela Trig: Vide #Atten: 30	vsE:INT y-2.000 ms eo 0 dB		RMS	TRAC TYP DE	ET P P P P P P P P P P P P P P P P P P P	Frequency
10 dB/div	RF 50 S eq 2.4410	00000 GI NFE P IF	NO: Wide	SEN Trig Dela Trig: Vide	vsE:INT y-2.000 ms eo 0 dB		RMS	TRAC TYP DE	ET P P P P P P P P P P P P P P P P P P P	Frequency Auto Tune Center Freq
D         RL           Center Fr           10 dB/div           0.0           -10.0           -20.0	RF 50 S eq 2.4410	00000 GI NFE P IF	NO: Wide	SEP Trig Dela Trig: Vide #Atten: 30	vsE:INT y-2.000 ms eo 0 dB		RMS	TRAC TYP DE	.888 ms 8.63 dB	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq
00 RL Center Fr 10 dB/div 10.0	RF 50 S eq 2.4410	00000 GI NFE P IF	NO: Wide	SEP Trig Dela Trig: Vide #Atten: 30	vsE:INT y-2.000 ms eo 0 dB		RMS	TRAC TYP DE	.888 ms 8.63 dB	Frequency           Auto Tune           Center Freq           2.441000000 GHz           Start Freq           2.441000000 GHz           Stop Freq           2.441000000 GHz           CF Step           1.000000 MHz
Description         RL         Center Fr           10.0	RF 50 S eq 2.4410	00000 GI NFE P IF	NO: Wide	SEP Trig Dela Trig: Vide #Atten: 30	vs::NT y-2.000 ms so 0 dB		2 RMS		23456 EV 23456 EV 2456 EV 24566 EV 2456 EV 24566 EV 245666 EV 245666 EV 245666 EV 245666 EV 2456666 EV 2456666 EV 2456666 EV 245	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz 2.44100000 GHz 2.44100000 GHz 1.00000 MHz Auto Man
Design RL         Center Fr           10.0	Ref 20.00	00000 GI NFE P IF	NO: Wide	SEP Trig Dela Trig: Vide #Atten: 30	vs::NT y-2.000 ms so 0 dB	#Avg Type	2 RMS		23456 EV 23456 EV 2456 EV 24566 EV 2456 EV 24566 EV 245666 EV 245666 EV 245666 EV 245666 EV 2456666 EV 2456666 EV 2456666 EV 245	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz 2.44100000 GHz CF Step 1.00000 MHz Auto Man Freq Offset 0 Hz
DOM RL         Center Fr           Center Fr         10.0           10.0	Ref 20.00	dBm	NO: Wide	24	VSE:INT y-2.000 ms so 0 dB 1 1 1 1 1 1 1 1 1 1 1 1 1				23456 EV 23456 EV 2456 EV 24566 EV 2456 EV 24566 EV 245666 EV 245666 EV 245666 EV 245666 EV 2456666 EV 2456666 EV 2456666 EV 245	Frequency Auto Tune Center Freq 2.44100000 GHz Start Freq 2.44100000 GHz 2.44100000 GHz 2.44100000 GHz 1.00000 MHz Auto Man



# APPENDIX H: BAND EDGE MEASUREMENTS

## **Test Result**

Test Mode	Antenna	Ch Name	Channel	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
		Low	2402	9.74	-49	<=-10.26	PASS
DH5	Ant1	High	2480	9.74	-51.03	<=-10.26	PASS
DHD	Anti	Low	Hop_2402	9.37	-50.84	-10.64	PASS
		High	Hop_2480	10.09	-50.18	-9.91	PASS
		Low	2402	7.69	-47.66	<=-12.31	PASS
3DH5	A set 1	High	2480	7.75	-50.23	<=-12.25	PASS
3005	Ant1	Low	Hop_2402	6.27	-50.65	-13.73	PASS
		High	Hop_2480	7.60	-50.2	-12.4	PASS

## **Test Graphs**



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Center Freg 2.5100		SENSE:INT	ALIGN AUTO #Avg Type: RMS	03:22:20 PM Aug 21, 2020	Frequency
Center Freq 2.5100	NFE PNO: Fast ↔ IFGain:Low	► Trig: Free Run #Atten: 30 dB	Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P P	
Ref Offset			Mkr	4 2.485 36 GHz	Auto Tune
10 dB/div Ref 20.00	0 dBm	The second secon		-51.031 dBm	
10.0					Center Freq
0.00					2.510000000 GHz
-10.0				DL1 -10.26 dBm	
-20.0					Start Freq
-30.0					2.470000000 GHz
-50.0	3€4	3			
-60.0	and a for a farmer a log of the second of		alanda haya maraliyi wa ayarata daga waka	Jan Manhan Manhan Manhanan Sala	Stop Freq 2.55000000 GHz
-70.0					2.55000000 GH2
Start 2.47000 GHz				Stop 2.55000 GHz	CF Step
#Res BW 100 kHz	#VB	W 300 kHz	-	1.000 ms (1001 pts)	8.000000 MHz Auto Man
MKR MODE TRC SCL 1 N 1 f	× 2.480 08 GHz	9.738 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f 3 N 1 f	2.483 50 GHz 2.500 00 GHz	-53.319 dBm -52.679 dBm			Freq Offset
4 N 1 f 5	2.485 36 GHz	-51.031 dBm		=	0 Hz
6 7 8 9					Doole Tree
					Scale Type
10 11					Log <u>Lin</u>
MSG		m	STATUS	3	
		DH5_Ant1_	High_2480		
Keysight Spectrum Analyzer - S					
	500000 GHz	SENSE:INT	ALIGN AUTO	03:33:17 PM Aug 21, 2020 TRACE 1 2 3 4 5 6	
LXIRL RF 50	)Ω DC		ALIGN AUTO	03:33:17 PM Aug 21, 2020 TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P	Frequency
KARE RE 50 Center Freq 2.352	20 Ω DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P P 2.392 820 GHz	
XX RL RF 50 Center Freq 2.352	9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P P P P P P	Frequency
RL         RF         50           Center Freq 2.352!         Ref Offset           10 dB/div         Ref Offset           10 dB/div         Ref 20.00           10.0         10.0	9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P P 2.392 820 GHz	Frequency Auto Tune Center Freq
RL         RF         50           Center Freq 2.352         Ref Offset 1           10 dB/div         Ref 20.00           Log         0.00	9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P P 2.392 820 GHz	Frequency Auto Tune
RL         RF         50           Center Freq 2.352!         Ref Offset !           10 dB/dlv         Ref 20.00           Log	9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 12 3 4 5 6 1 TYPE M WWWW DET P P P P P 2.392 820 GHz -50.844 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz
RL         RF         50           Center Freq 2.352         Ref Offset         State           10 dB/dlv         Ref 20.00         Ref 20.00           10.0         0.00         Ref 20.00	9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 12 3 4 5 6 1 TYPE M WWWW DET P P P P P P 2.392 820 GHz -50.844 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq
RL         RF         50           Center Freq 2.352!         Ref Offset :           10 dB/div         Ref 20.00           10.0	20 Ω DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE [1 2 3 4 5 6 TYPE [M WWWW DET   P P P P P 2.392 820 GHz -50.844 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz
RL         RF         50           Center Freq 2.352!         Ref Offset :           10 dB/div         Ref 20.00           -10.0	20 Ω DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE 12 3 4 5 6 1 TYPE M WWWW DET P P P P P P 2.392 820 GHz -50.844 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz
RL         RF         50           Center Freq 2.352!         Ref Offset 1           10 dB/div         Ref 20.00           10 0	20 Ω DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 2 3 4 5 6 TYPE [M WWWW DET   P P P P P 2.392 820 GHz -50.844 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq
RL         RF         50           Center Freq 2.352!         Ref Offset 1           10 dB/div         Ref 20.00           10.0	20 Ω DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 2 3 4 5 6 TYPE [M WWWW DET   P P P P P 2.392 820 GHz -50.844 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz Stop Freq
RL         RF         50           Center Freq 2.352!         Ref Offset:         Start 2.30000 GHz	2 02 DC 500000 GHz NFE PN0: Fast → IFGain:Low 9.64 dB 0 dBm	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 23 4 5 6 7 TPPE M WWWW DET P P P P P 2.392 820 GHz -50.844 dBm DL1-1064 dPm DL1-1064 dPm DL1-1064 dPm Stop 2.40500 GHz	Frequency Auto Tune Center Freq 2.352500000 GHz 2.300000000 GHz 2.405000000 GHz CF Step
RL         RF         50           Center Freq 2.352!         Ref Offset !           10 dB/div         Ref 20.00           10.0	2 Ω DC 500000 GHz NFE PN0: Fast → IFGain:Low 9.64 dB 0 dBm 	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 23 4 5 6 Type M www. Det P P P P P 2.392 820 GHz -50.844 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz Stop Freq 2.40500000 GHz
RL         RF         50           Center Freq 2.3523         Ref Offset         Ref Offset           10 dB/div         Ref Offset         Ref Offset           1         N         1	2 0 0 C 500000 GHz NFE PN0: Fast → IFGain:Low 9.64 dB 0 dBm 4 0 dBm 4 2.404 160 GHz	SENSE:INT     Trig: Free Run     #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 23 4 5 6 Type M www. Det P P P P P 2.392 820 GHz -50.844 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz 0.500000 MHz Auto Man
M         RL         RF         50           Center Freq 2.3525         Ref Offset         Ref Offset           Log         Ref Offset         Ref Offset           10 dB/div         Ref 20.00         Ref 20.00           10.0	2 0 0 0 C 500000 GHz NFE PN0: Fast → IFGain:Low 9.64 dB 0 dBm #VBN #VBN #VBN ***********************************	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 23 4 5 6 Type M www. Det P P P P P 2.392 820 GHz -50.844 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz 0.500000 MHz Auto Man
RL         RF         50           Center Freq 2.3523         Ref Offset         Ref Offset           10 dB/div         Ref Offset         Ref Offset           1         N         1	2 0 0 0 C 500000 GHz NFE PNO: Fast → IFGain:Low 9.64 dB 0 dBm #VB 2.404 160 GHz 2.404 160 GHz 2.404 000 GHz	SENSE:INT     Trig: Free Run     #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 23 4 5 6 Type M www. Det P P P P P 2.392 820 GHz -50.844 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz 0.500000 MHz Auto Man
M         RL         RF         50           Center Freq 2.3525         Ref Offset         Ref Offset           Log         Ref Offset         Ref Offset           10 dB/div         Ref 20.00         Ref 20.00           10 dB/div         Ref 20.00         Ref 20.00           10.0	2 0 0 0 C 500000 GHz NFE PN0: Fast → IFGain:Low 9.64 dB 0 dBm #VBA #VBA 2.404 160 GHz 2.390 000 GHz 2.390 000 GHz	SENSE:INT     SENSE:INT     Trig: Free Run     #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 23 4 5 6 Type M www. Det P P P P P 2.392 820 GHz -50.844 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm 0L1-10.64 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz 0.500000 MHz Auto Man Freq Offset 0 Hz
M         RL         RF         50           Center Freq 2.352!         Ref Offset:         50           0         B/div         Ref 2.3000           10	2 0 0 0 C 500000 GHz NFE PN0: Fast → IFGain:Low 9.64 dB 0 dBm #VBA #VBA 2.404 160 GHz 2.390 000 GHz 2.390 000 GHz	SENSE:INT     SENSE:INT     Trig: Free Run     #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 23 4 5 6 Type M www. Det P P P P P 2.392 820 GHz -50.844 dBm 0L1-10.64 dPm 0L1-10.64 dPm 0L1-10.64 dPm 2 5 5 2 5 2 5 5 2 5 5 2 5 5 2 5 5 2 5 5 5 2 5 5 5 5	Frequency         Auto Tune         Center Freq         2.352500000 GHz         Start Freq         2.300000000 GHz         Stop Freq         2.405000000 GHz         CF Step         10.500000 MHz         Auto         Freq Offset         0 Hz         Scale Type
RL         RF         50           Center Freq 2.3523         Ref Offset         Ref Offset           10 dB/div         Ref Offset         Ref Offset           1         N         1	2 0 0 0 C 500000 GHz NFE PN0: Fast → IFGain:Low 9.64 dB 0 dBm #VBA #VBA 2.404 160 GHz 2.390 000 GHz 2.390 000 GHz	SENSE:INT     SENSE:INT     Trig: Free Run     #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE [1 23 4 5 6 Type M www. Det P P P P P 2.392 820 GHz -50.844 dBm 0L1-10.64 dPm 0L1-10.64 dPm 0L1-10.64 dPm 2 5 5 2 5 2 5 5 2 5 5 2 5 5 2 5 5 2 5 5 5 2 5 5 5 5	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz 0.500000 MHz Auto Man Freq Offset 0 Hz

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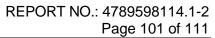


(X) RL RF 50 Ω		ALIGN AUTO	03:41:27 PM Aug 21, 2020	Frequency
Center Freq 2.51000	NFE PNO: Fast +++ IFGain:Low #Atten: 30 dB	#Avg Type: RMS Avg Hold:>300/300	TRACE 1 2 3 4 5 6 TYPE M WWW DET P P P P P P	
Ref Offset 9.7		Mkr4	2.543 12 GHz	Auto Tune
10 dB/div Ref 20.00 c			-50.182 dBm	
				Center Freq
				2.510000000 GHz
-10.0			DL1 -9.91 dBm	
-20.0				Start Freq
-40.0				2.470000000 GHz
-50.0	3	The March and the plant of the factor	mutheline	01-1 F-1-1
-60.0				Stop Freq 2.55000000 GHz
-70.0				
Start 2.47000 GHz	#\/D\# 000 \-\\-		Stop 2.55000 GHz	CF Step
#Res BW 100 kHz	#VBW 300 kHz	Sweep 3.1	000 ms (1001 pts)	8.000000 MHz <u>Auto</u> Man
1 N 1 f	2.474 08 GHz 10.086 dBm	PONCTION WIDTH		
2 N 1 f 3 N 1 f 4 N 1 f	2.483 50 GHz -51.721 dBm 2.500 00 GHz -53.047 dBm 2.543 12 GHz -50.182 dBm			Freq Offset
5	2.040 12 0112 -00.102 UDIN		Ξ.	0 Hz
6 7 8				Scale Type
9 10				Log <u>Lin</u>
11				<u> </u>
MSG		STATUS		
	DH5_Ant1_Hig	1 11 0400		
		gh_Hop_2480		
🔤 Keysight Spectrum Analyzer - Swe 🗶 RL RF 50 Ω	ept SA	ALIGN AUTO	03:24:32 PM Aug 21, 2020	
RL RF 50 Ω     Center Freq 2.35250	pt SA DC SENSE:INT 00000 GHZ NFE PN0: Fast →→ Trig: Free Run		03:24:32 PM Aug 21, 2020 TRACE 1 2 3 4 5 6 TYPE M WWWWY	Frequency
M RL RF 50 Ω Center Freq 2.35250	DC SENSE:INT DOODO GHZ NFE PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P P	
200 RL RF 50 Ω Center Freq 2.35250 Ref Offset 9.7 10 dB/div Ref 20.00 c	DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	03:24:32 PM Aug 21, 2020 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P P P P P 2.399 855 GHz -47.664 dBm	Frequency
202 RL RF 50 ହ Center Freq 2.35250 Ref Offset 9.7	DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P P 2.399 855 GHz	Frequency Auto Tune
20 RL RF 50 Ω Center Freq 2.35250 Ref Offset 9.7 10 dB/div Ref 20.00 c	DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P P 2.399 855 GHz	Frequency
20 RL RF 150 Ω Center Freq 2.35250 Ref Offset 9.7 10 dB/div Ref 20.00 c	DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P P 2.399 855 GHz	Frequency Auto Tune Center Freq
W         RL         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7           10 dB/div         Ref 20.00 c           10.0	DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	123456 TYPE MWWWW DET P P P P P P 2.399 855 GHz -47.664 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq
W         RL         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7         10 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c         0.00 </td <td>DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB</td> <td>ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300</td> <td>123456 TYPE MWWWW DET P P P P P P 2.399 855 GHz -47.664 dBm</td> <td>Frequency Auto Tune Center Freq 2.352500000 GHz</td>	DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	123456 TYPE MWWWW DET P P P P P P 2.399 855 GHz -47.664 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz
Mail         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7           10 dB/div         Ref 20.00 c           Log         10.0           0.00         10.0           -10.0         10.0           -20.0         10.0	DC SENSE:INT DOODO GHZ NFE PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 30 dB IBM	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 123456 TYPE MWWWWW DET PPPPP 2.399 855 GHz -47.664 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz
M         RL         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7         10 dB/div         Ref 20.00 c           10 dB/div         Ref 20.00 c         0.00 <td>DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB</td> <td>ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300</td> <td>2.399 855 GHz -47.664 dBm</td> <td>Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz Stop Freq</td>	DC SENSE:INT 00000 GHz NFE PNO: Fast →→ Trig: Free Run IFGain:Low #Atten: 30 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	2.399 855 GHz -47.664 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz Stop Freq
Ref         50 Ω           Center Freq 2.35250           Ref Offset 9.7           10 dB/div           Ref 20.00 c           0.0           .0.0	DC SENSE:INT DOODO GHZ NFE PNO: Fast ↔ Trig: Free Run IFGain:Low #Atten: 30 dB IBM	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 123456 TYPE MWWWWW DET PPPPP 2.399 855 GHz -47.664 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz
M         RL         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7         Ref Offset 9.7           10 dB/div         Ref 20.00 c         0           10.0	PS A DC DOODO GHZ NFE PNO: East → Trig: Free Run #Atten: 30 dB BM BM P3 dB BM P3 dB BM	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	2.399 855 GHz -47.664 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz Stop Freq 2.405000000 GHz
Ref         Sf 0 Ω           Center         Freq 2.35250           Center         Ref Offset 9.7           10 dB/div         Ref 20.00 c           Cog	PSA DC SENSE:INT DOODO GHZ NFE PNO: Fast P3 dB BM P3 dB P3 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	TRACE 12345 6 TYPE P P P P P 2.399 855 GHz -47.664 dBm 0L1-123 dBm 0L1-123 dBm 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz Stop Freq 2.40500000 GHz
M         RL         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10.0	Provide the sense of the sense	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 MKr5	TRACE 12345 6 TYPE P P P P P 2.399 855 GHz -47.664 dBm 0L1-123 dBm 0L1-123 dBm 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz Stop Freq 2.405000000 GHz
M         RL         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10.0	Process Sense:INT DC SENSE:INT DODOO GHZ NFE PNO: Fast →→ IFGain:Low P9 dB IBM P0 dB IBM IBM IBM IBM IBM IBM IBM IB	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	TRACE 12345 6 TYPE P P P P P 2.399 855 GHz -47.664 dBm 0L1-123 dBm 0L1-123 dBm 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz 2.405000000 GHz CF Step 10.500000 MHz Auto Man
M         RL         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7         Ref 20.00 c           O dB/div         Ref 20.00 c         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10.0         4         4         4           40.0         4         4         4           50.0         4         5         6           Start 2.30000 GHz         #Res BW 100 kHz         1         1           MRE MODE TRC SCL         1         1         1           3         1         1         1         1           3         1         1         1         1           3         1         1         1         1         1           3         1         1         1         1         1           4         1         1         1         1         1         1	PSA DC SENSE:INT DOODO GHZ NFE PNO: East → Trig: Free Run #Atten: 30 dB BBM BBM #BM #BM #Atten: 40 dB BBM #Atten: 40 dB #Atten: 40 dB #At	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	TRACE 12345 6 TYPE P P P P P 2.399 855 GHz -47.664 dBm 0L1-123 dBm 0L1-123 dBm 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Frequency Auto Tune Center Freq 2.352500000 GHz 2.300000000 GHz 2.405000000 GHz 2.405000000 GHz CF Step 10.500000 MHz Auto Man
M         RE         SO Ω           Center Freq 2.35250         Ref Offset 9.7           O dB/div         Ref Offset 9.7           O dB/div         Ref 20.00 c           Start 2.30000 GHz         Res BW 100 kHz           M dB/div         I f           I f         I f           I f         I f           I f         I f           I f         I f           I f         I f           I f         I f           R g         I f           I f         I f           I f         I f           I f           I	Sense:INT         Sense:INT           00000 GHz         Trig: Free Run IFGain:Low         Trig: Free Run #Atten: 30 dB           19 dB         IBm         IBm           29 dB         IBm         Image: Sense:INT           19 dB         Image: Sense:INT         Image: Sense:INT           10 dB         Image: Sense:INT         Image: Sense:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	TRACE 12345 6 TYPE P P P P P 2.399 855 GHz -47.664 dBm 0L1-123 dBm 0L1-123 dBm 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz CF Step 10.500000 MHz Auto Man Freq Offset 0 Hz
M         RE         SO Ω           Center Freq 2.35250         Ref Offset 9.7           O dB/div         Ref Offset 9.7           O dB/div         Ref 20.00 c           Start 2.30000 GHz         Res BW 100 kHz           M dB/div         I f           I f         I f           I f         I f           I f         I f           I f         I f           I f         I f           I f         I f           R g         I f           I f         I f           I f         I f           I f           I	Sense:INT         Sense:INT           00000 GHz         Trig: Free Run IFGain:Low         Trig: Free Run #Atten: 30 dB           19 dB         IBm         IBm           29 dB         IBm         Image: Sense:INT           19 dB         Image: Sense:INT         Image: Sense:INT           10 dB         Image: Sense:INT         Image: Sense:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	2.399 855 GHz -47.664 dBm 011 1234 56 47.664 dBm 011 1234 06 011 1234 06 010 1234 06 0100 1000 10000000000000000000000000	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz 2.405000000 GHz 0.500000 MHz Auto Man Freq Offset 0 Hz Scale Type
M         RL         RF         50 Ω           Center Freq 2.35250         Ref Offset 9.7         Ref 20.00 c           O dB/div         Ref 20.00 c         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10 dB/div         Ref 20.00 c         Ref 20.00 c           10.0         4         4         4           40.0         4         4         4           50.0         4         5         6           Start 2.30000 GHz         #Res BW 100 kHz         1         1           MRE MODE TRC SCL         1         1         1           3         1         1         1         1           3         1         1         1         1           3         1         1         1         1         1           3         1         1         1         1         1           4         1         1         1         1         1         1	Sense:INT         Sense:INT           00000 GHz         Trig: Free Run IFGain:Low         Trig: Free Run #Atten: 30 dB           19 dB         IBm         IBm           29 dB         IBm         Image: Sense:INT           19 dB         Image: Sense:INT         Image: Sense:INT           10 dB         Image: Sense:INT         Image: Sense:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	2.399 855 GHz -47.664 dBm 011 1234 56 47.664 dBm 011 1234 06 011 1234 06 010 1234 06 0100 1000 10000000000000000000000000	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz CF Step 10.500000 MHz Auto Man Freq Offset 0 Hz

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LX RL RF 50	Swept SA Ω DC	SENSE:INT	ALIGN AUTO	03:31:39 PM Aug 21, 2020	
Center Freq 2.510		Trig: Free Run #Atten: 30 dB	#Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE MWWWW DET P P P P P	Frequency
Ref Offset:			Mk	r4 2.499 28 GHz	Auto Tune
10 dB/div Ref 20.00				-50.227 dBm	
10.0					Center Freq
0.00					2.510000000 GHz
-10.0				DL1 12:25 dBm	
-20.0					Start Freq
-30.0					2.470000000 GHz
-40.0	2 <b>4</b>				
-50.0 Murrane M	2 marthanter been been	เพรารางหมู่ในการทำเทพบาลแกลล	monthesome	angle anaphenet many market with	Stop Freq
-60.0					2.550000000 GHz
-70.0					
Start 2.47000 GHz #Res BW 100 kHz	#\/D\M	300 kHz	Cwaan (	Stop 2.55000 GHz 3.000 ms (1001 pts)	CF Step 8.000000 MHz
#Res BW 100 KHZ	#VDW		Sweep .	· · ·	Auto Man
1 N 1 f	2.480 08 GHz	7.752 dBm	FONCTION WIDTH		
2 N 1 f 3 N 1 f	2.483 50 GHz 2.500 00 GHz	-53.071 dBm -53.503 dBm			Freq Offset
4 N 1 f	2.499 28 GHz	-50.227 dBm		E	0 Hz
6 7 8 9					Quelle Trees
8					Scale Type
10 11				-	Log <u>Lin</u>
<		m		•	
MSG			STATU	10	
Keysight Spectrum Arch	Sweet SA	3DH5_Ant1	_High_2480		
Keysight Spectrum Analyzer - IXI RL RF 50	Ω DC	3DH5_Ant1	ALIGN AUTO	03:42:10 PM Aug 21, 2020	Frequency
	Ω DC 500000 GHz NFE PNO: Fast ↔	SENSE:INT		TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
Center Freq 2.352	Ω DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P	[
Center Freq 2.352	Ω         DC           500000         GHz           NFE         PNO: Fast IFGain:Low           9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
XX         RF         50           Center Freq 2.352         Ref Offset           10 dB/div         Ref 20.00	Ω         DC           500000         GHz           NFE         PNO: Fast IFGain:Low           9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	ТRACE 1 2 3 4 5 6 Туре М ЖЖЖЖ DET Р Р Р Р Р Р 5 2.367 200 GHz	Frequency Auto Tune
02 RL № 50 Center Freq 2.3525 Center Freq 2.3525 Ref Offset: Log 10.0	Ω         DC           500000         GHz           NFE         PNO: Fast IFGain:Low           9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	ТRACE 1 2 3 4 5 6 Туре М ЖЖЖЖ DET Р Р Р Р Р Р 5 2.367 200 GHz	Frequency Auto Tune Center Freq
XX         RF         50           Center Freq 2.352         Ref Offset           10 dB/div         Ref 20.00	Ω         DC           500000         GHz           NFE         PNO: Fast IFGain:Low           9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	ТRACE 1 2 3 4 5 6 Туре М ЖЖЖЖ DET Р Р Р Р Р Р 5 2.367 200 GHz	Frequency Auto Tune
XM         RF         50           Center Freq 2.3525         Ref Offset:           10 dB/div         Ref 20.00           10.0         0.00	Ω         DC           500000         GHz           NFE         PNO: Fast IFGain:Low           9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE [1] 23 4 5 6           TYPE M           DET   P P P P P P           5 2.367 200 GHz           -50.652 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz
XM         RF         50           Center Freq 2.352!         Ref Offset:           10 dB/div         Ref 20.00           10.0	© DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE [1] 23 4 5 6           TYPE M           DET   P P P P P P           5 2.367 200 GHz           -50.652 dBm	Frequency Auto Tune Center Freq
XI         RF         50           Center Freq 2.352!         Ref Offset:           10 dB/div         Ref 20.00           10.0	© DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	TRACE [1 23 4 5 6 TYPE M WWWW DET   P P P P P P 5 2.367 200 GHz -50.652 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq
Image: Weight of the second state in the s	© DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300	TRACE [1] 23 4 5 6           TYPE M           DET   P P P P P P           5 2.367 200 GHz           -50.652 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz
M         RL         RF         50           Center Freq 2.3525         Ref Offset:         So           10 dB/div         Ref 20.00         Ref 20.00           10.0	© DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	TRACE [1 23 4 5 6 TYPE M WWWW DET   P P P P P P 5 2.367 200 GHz -50.652 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq
RL         RF         50           Center Freq 2.352!         Ref Offset:         Ref 20.00           Io dB/div         Ref 20.00         Ref 20.00           Io dB/div         Ref 20	© DC 500000 GHz NFE PNO: Fast ↔ IFGain:Low	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkr5	TRACE [1 23 4 5 6 TYPE M WWWW DET   P P P P P P 5 2.367 200 GHz -50.652 dBm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz Stop Freq
RL         RF         50           Center Freq 2.352!         Ref Offset:         So           10 dB/div         Ref 20.00         Ref 20.00           10.0	19: DC 500000 GHz NFE PN0: Fast →→ IFGain:Low 9.64 dB 0 dBm	SENSE:INT	ALIGN AUTO	TRACE [] 23 4 5 6 TYPE M WWWW DET   P P P P P 5 2.367 200 GHz -50.652 dBm 0L1-137 dbm 0L1-137 dbm 0L1-137 dbm 0L1-137 dbm	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz Stop Freq 2.40500000 GHz
RL         RF         50           Center Freq 2.352!         Ref Offset:         S0           10 dB/div         Ref 20.00         Ref 20.00           10.0	10 DC 500000 GHz NFE PN0: Fast →→ IFGain:Low 9.64 dB 0 dBm 9.64 dB 1 dBm 9.64 dB 1 dBm 9.64 dB 1 dBm 1	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf	TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz 2.405000000 GHz CF Step 10.500000 MHz
M         RL         RF         50           Center Freq 2.3525         Ref Offset:         Start 2.3000         Ref 20.00           10.0	19: DC 500000 GHz NFE PN0: Fast →→ IFGain:Low 9.64 dB 0 dBm	SENSE:INT	ALIGN AUTO	TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz 2.405000000 GHz CF Step 10.500000 MHz
M         RL         RF         50           Center Freq 2.3525         Ref Offset:         Start 2.3000         Ref 20.00           10.0	10 DC 500000 GHz NFE PNO: Fast → IFGain:Low 9.64 dB 0 dBm #VBW #VBW X 2.404 055 GHz 2.400 000 GHz	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf	TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz 2.405000000 GHz CF Step 10.500000 MHz
M         RL         RF         50           Center Freq 2.352!         Ref Offset:         50           0         B/div         Ref 2.3000           10	10 DC   500000 GHz NFE PNO: Fast → IFGain:Low 9.64 dB 0 dBm 9.64 dB 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf	TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz 2.405000000 GHz CF Step 10.500000 MHz Auto Man
M         RL         RF         50           Center Freq 2.3525         Ref Offset:         Start         <	10 DC	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf	TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz CF Step 10.50000 MHz Auto Man
M         RL         RF         50           Center Freq 2.352!         Ref Offset:         50           0         B/div         Ref 2.3000           10         0         0         0           0.00         0         0         0         0           0.00         0         0         0         0         0           0.00         0         0         0         0         0         0           20.0         0	10 DC   500000 GHz NFE PNO: Fast → IFGain:Low 9.64 dB 0 dBm 9.64 dB 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf	TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz CF Step 10.50000 MHz Auto Man
XM         RL         RF         50           Center Freq 2.352!         Ref Offset:         50           0         B/div         Ref 20.00           10         Ref 20.00         Ref 20.00           0.00         Ref 20.00         Ref 20.00           0         Ref 20.00         Ref 20.00         Ref 20.00           1         Ref 20.00         Ref 20.00         Ref 20.00           2         N         1         F           3         N         1         F <td>10 DC   500000 GHz NFE PNO: Fast → IFGain:Low 9.64 dB 0 dBm 9.64 dB 9.64 dB</td> <td>SENSE:INT</td> <td>ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf</td> <td>TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)</td> <td>Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz CF Step 10.500000 MHz Auto Man Freq Offset 0 Hz</td>	10 DC   500000 GHz NFE PNO: Fast → IFGain:Low 9.64 dB 0 dBm 9.64 dB 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf	TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.30000000 GHz 2.405000000 GHz CF Step 10.500000 MHz Auto Man Freq Offset 0 Hz
M         RL         RF         50           Center Freq 2.352!         Ref Offset:         Start         <	10 DC   500000 GHz NFE PNO: Fast → IFGain:Low 9.64 dB 0 dBm 9.64 dB 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf	TRACE [] 23 4 5 6           TYPE M WWWW           DET P P P P P P           5 2.367 200 GHz           -50.652 dBm           0L1-13.7 dbm           0L1-13.7 dbm           Stop 2.40500 GHz           3.867 ms (1001 pts)	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz Stop Freq 2.40500000 GHz CF Step 10.50000 MHz Auto Man Freq Offset 0 Hz Scale Type
XX         RL         RF         50           Center Freq 2.3525         Ref Offset:         100           Log         Ref 20.00         Ref 20.00           10.0         Ref 20.00         100           0.00         Ref 20.00         100           -10.0         Ref 20.00         100           -20.0         Ref 20.00         100           -30.0         Ref 20.00         100           -40.0         Ref 20.00         100           -50.0         Ref 20.00         100           -60.0         Ref 20.00         100           -70.0         Ref 20.00         100           Start 2.300000 GHz         Res 200         100           1         N         1         1           3         N         1         1           4         N         1         1           5         N         1         1           9         10         10         10	10 DC   500000 GHz NFE PNO: Fast → IFGain:Low 9.64 dB 0 dBm 9.64 dB 9.64 dB	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 300/300 Mkrf	TRACE [] 23 45 60 DET   P P P P P P 5 2.367 200 GHz -50.652 dBm 0 011-137 dBm 0 011-137 dBm 0 011-137 dBm 2 3 3 4 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Frequency Auto Tune Center Freq 2.352500000 GHz Start Freq 2.300000000 GHz Stop Freq 2.40500000 GHz CF Step 10.50000 MHz Auto Man Freq Offset 0 Hz Scale Type





RL         RF         50 Ω           Center Freq 2.510000         Center Freq 2.510000         Center Freq 2.510000		ALIGN AUTO 03:51:17 PM Aug 21, 20 #Avg Type: RMS TRACE 1 2 3 4 Avg Hold: 300/300 TYPE MWWW	Frequency
Ref Offset 9.75 10 dB/div Ref 20.00 dl	IFGain:Low #Atten: 30 dB	AvgiHold: 300/300 TYPE MWWW DETIPPPP Mkr4 2.490 00 GH -50.198 dB	Auto Tune
10.0 0.00 mm (Aspirlary)		DL1-12:40 0	Center Freq 2.510000000 GHz
-20.0	A4 2		<b>Start Freq</b> 2.470000000 GHz
-50.0 -60.0 -70.0			<b>Stop Freq</b> 2.550000000 GHz
Start 2.47000 GHz #Res BW 100 kHz	#VBW 300 kHz	Stop 2.55000 GI Sweep 3.000 ms (1001 pt NCTION FUNCTION WIDTH FUNCTION VALUE	
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5	2.473 12 GHz 7.598 dBm 2.483 50 GHz -53.093 dBm 2.500 00 GHz -52.861 dBm 2.490 00 GHz -50.198 dBm		Freq Offset
6 7 8 9			Scale Type
10 11 <	III		- Log <u>Lin</u>



# **APPENDIX I: CONDUCTED SPURIOUS EMISSION**

## **Test Result**

Test Mode	Antenna	Channel	Freq Range [MHz]	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
			Reference	9.76	9.76		PASS
		2402	30~1000		-63.201	<=-10.244	PASS
			1000~26500		-53.342	<=-10.244	PASS
			Reference	8.78	8.78		PASS
DH5	Ant1	2441	30~1000		-62.764	<=-11.221	PASS
			1000~26500		-54.29	<=-11.221	PASS
			Reference	9.43	9.43		PASS
		2480	30~1000		-63.33	<=-10.575	PASS
			1000~26500		-54.478	<=-10.575	PASS
			Reference	7.37	7.37		PASS
		2402	30~1000		-63.064	<=-12.631	PASS
			1000~26500		-53.971	<=-12.631	PASS
			Reference	6.06	6.06		PASS
3DH5	Ant1	2441	30~1000		-63.557	<=-13.937	PASS
			1000~26500		-54.382	<=-13.937	PASS
			Reference	7.47	7.47		PASS
		2480	30~1000		-63.317	<=-12.53	PASS
			1000~26500		-53.828	<=-12.53	PASS



## **Test Graphs**



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Center F	RF 50	DC DC	7		NSE:INT	#Avg Typ	ALIGN AUTO	03:20:17 P	M Aug 21, 2020 DE 1 2 3 4 5 6	Frequency
	Ref Offset 9	NFE P IF .79 dB	Z PNO: Fast ↔ Gain:Low	, Trig: Fre #Atten: 2	e Run 20 dB	Avg Hold	: 10/10	kr1 819	CE 1 2 3 4 5 6 PE M WWWW ET P P P P P P 68 MHz	Auto Tune
10 dB/div Log	Ref 19.79	dBm			<b>Y</b>			-62.7	64 dBm	Contor From
9.79										Center Freq 515.000000 MHz
-0.21									DL111-22-dBm	Start Freq 30.000000 MHz
-20.2										Stop Freq 1.00000000 GHz
-30.2										CF Step
-40.2										97.000000 MHz <u>Auto</u> Man
-60.2								<b>♦</b> <sup>1</sup>		Freq Offset 0 Hz
-70.2 <mark>Mahara</mark> Manjad	engelingsteptiolecturalise opdatigiseterikeritetura	n fil polynylligitte Grife legitelingete	er keryez kan bisandille 1946 (den dillegen dille	Alexi pitere de la vi Vita piteti i escati	n antar Ingenitary In takan pilapalaka	elleritgigererite Erindigigererite	n an	in nikksikais	lle geternenninglige om en de liefene de	Scale Type
Start 0.03 #Res BW			#VBW	300 kHz	<u>.</u>	s	weep 36		0000 GHz 30001 pts)	Log <u>Lin</u>
MSG							STATUS			
					nt1 2/	<u>/1_30~</u>				
	ectrum Analyzer - S	wept SA		DH5_A	nt1_24	41_30~^		5		
LXIRL	RF 50	R DC 0000000 0 NFE P	GHz PNO: Fast ↔	SE	NSE:INT		ALIGN AUTO	03:20:45 P	M Aug 21, 2020 DE 1 2 3 4 5 6 PE M WWWW ET P P P P P P	Frequency
Center F	RF 50	2 DC 0000000 C NFE P IF 79 dB	GHz	SE	NSE:INT	#Avg Tvp	1000 ALIGN AUTO re: RMS : 10/10	03:20:45 P TRA( TY D <b>26.496</b>	CE 1 2 2 4 5 6	
Center F	RF 50 Freq 13.750 Ref Offset 9	2 DC 0000000 C NFE P IF 79 dB	GHz PNO: Fast ↔	SE	NSE:INT	#Avg Tvp	1000 ALIGN AUTO re: RMS : 10/10	03:20:45 P TRA( TY D <b>26.496</b>	ET P P P P P P P P P P P P P P P P P P P	Frequency
Center F	RF 50 Freq 13.750 Ref Offset 9	2 DC 0000000 C NFE P IF 79 dB	GHz PNO: Fast ↔	SE	NSE:INT	#Avg Tvp	1000 ALIGN AUTO re: RMS : 10/10	03:20:45 P TRA( TY D <b>26.496</b>	ET P P P P P P P P P P P P P P P P P P P	Frequency Auto Tune Center Freq
20 RL Center F 10 dB/div Log 9.79 -0.21 -10.2 -20.2	RF 50 Freq 13.750 Ref Offset 9	2 DC 0000000 C NFE P IF 79 dB	GHz PNO: Fast ↔	SE	NSE:INT	#Avg Tvp	1000 ALIGN AUTO re: RMS : 10/10	03:20:45 P TRA( TY D 26.496	60 GHz 90 dBm	Frequency Auto Tune Center Freq 13.75000000 GHz Start Freq
20 dB/div 0 dB/div 9.79 -0.21 -10.2	RF 50 Freq 13.750 Ref Offset 9	2 DC 0000000 C NFE P IF 79 dB	GHz PNO: Fast ↔	SE	NSE:INT	#Avg Tvp	1000 ALIGN AUTO re: RMS : 10/10	03:20:45 P TRA( TY D 26.496	60 GHz 90 dBm	Frequency           Auto Tune           Center Freq           13.75000000 GHz           Start Freq           1.00000000 GHz           Stop Freq           26.50000000 GHz           CF Step           2.550000000 GHz
Image: Wide RL         Image: Center F           Center F         Image: Center F           10 dB/div         9.79           -0.21	RF 50 Freq 13.750 Ref Offset 9	2 DC 0000000 C NFE P IF 79 dB	GHz PNO: Fast ↔	SE	NSE:INT	#Avg Tvp	1000 ALIGN AUTO re: RMS : 10/10	03:20:45 P TRA( TY D 26.496	60 GHz 90 dBm	Frequency Auto Tune Center Freq 13.75000000 GHz Start Freq 1.00000000 GHz CF Step 2.55000000 GHz Auto Mar Freq Offset
Image: Weight of the second	RF 50 Freq 13.750 Ref Offset 9	2 DC 0000000 C NFE P IF 79 dB	GHz PNO: Fast ↔	SE	NSE:INT	#Avg Tvp	1000 ALIGN AUTO re: RMS : 10/10	03:20:45 P TRA( TY D 26.496	60 GHz 90 dBm	Frequency Auto Tune Center Freq 13.75000000 GHz Start Freq 1.00000000 GHz CF Step 2.550000000 GHz Auto Man Freq Offset 0 Hz
Image: Wide RL         Image: Center F           10 dB/div         9.79           -0.21	RF 50 Freq 13.750 Ref Offset 9 Ref 19.79	2 DC 0000000 C NFE P IF 79 dB	GHz PNO: Fast ↔	SE	NSE:INT	#Avg Tvp	1000 ALIGN AUTO re: RMS : 10/10	03:20:45 P	60 GHz 90 dBm	Frequency Auto Tune Center Freq 13.75000000 GHz Start Freq 1.00000000 GHz CF Step 2.55000000 GHz Auto Mar Freq Offset

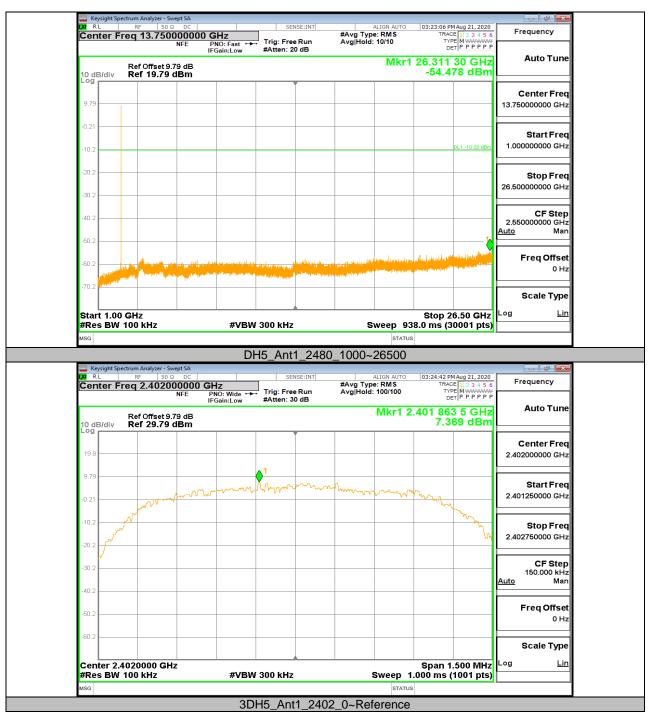


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	RF 50 Ω DC <b>2.480000000</b> NFE	GHz PNO: Wide ↔ IFGain:Low	Trig: Free Run #Atten: 30 dB	#Avg Type: RM Avg Hold: 100/	1S T	1 PM Aug 21, 2020 RACE 1 2 3 4 5 6 TYPE M DET P P P P P P	Frequency
10 dB/div	ef Offset 9.79 dB ef 29.79 dBm	II Gam.cow		M	(r1 2.480 1 9.	89 0 GHz 425 dBm	Auto Tune
19.8							<b>Center Freq</b> 2.480000000 GHz
9.79			www				Start Freq 2.479250000 GHz
-10.2	man man	w.m.			www.www.A.	Lange and a start and a start a	Stop Freq 2.480750000 GHz
-20.2							CF Step 150.000 kHz
-40.2							Auto Man Freq Offset
-50.2							0 Hz
Center 2.480	00000 GHz		300 kHz	Swa		1.500 MHz s (1001 pts)	Scale Type
#Res BW 10	0 kHz	#VDVV		3000	ep 1.000 m		
#Res BW 10	0 kHz				STATUS	5 (1001 pts)	
MSG					STATUS	5 (100 F pts)	
MSG Keysight Spectru	0 kHz m Analyzer - Swept SA RF 50 Ω DC 2 515.0000000 NFE	DH Hz PNO: Fast	15_Ant1_248	0_0~Refere	AUTO 03:22:3	9 PM Aug 21, 2020 RACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
MSG Keysight Spectru X RL Center Fred Conter Fred Conter Fred R 10 dB/div	m Analyzer - Swept SA RF 50 Ω DC <b>3 515.000000 M</b>	DH	15_Ant1_248	30_0~Refere	STATUS NCE AUTO 03:22:3 NS TI 0 Mkr1 92	9 PM Aug 21, 2020 RACE 1 2 3 4 5 6	Frequency
MSG Keysight Spectru ØVIRL Center Fred	m Analyzer - Swept SA ℝF 50 Ω DC 3 515.0000000 M NFE ef Offfset 9.79 dB	DH Hz PNO: Fast	15_Ant1_248	30_0~Refere	STATUS NCE AUTO 03:22:3 NS TI 0 Mkr1 92	9 PMAug 21, 2020 RACE 1 2 3 4 5 6 TYPE I WWWWW DET P P P P P P 3.37 MHz	Frequency
MSG Reysight Spectru RL Center Free 10 dB/div	m Analyzer - Swept SA ℝF 50 Ω DC 3 515.0000000 M NFE ef Offfset 9.79 dB	DH Hz PNO: Fast	15_Ant1_248	30_0~Refere	STATUS NCE AUTO 03:22:3 NS TI 0 Mkr1 92	9 PMAug 21, 2020 RACE 1 2 3 4 5 6 TYPE I WWWWW DET P P P P P P 3.37 MHz	Frequency Auto Tune Center Freq
MSG Keysight Spectru Di RL Center Fred 10 dB/div R. 10 dB/div R. R 10 dB/div R -0.21	m Analyzer - Swept SA ℝF 50 Ω DC 3 515.0000000 M NFE ef Offfset 9.79 dB	DH Hz PNO: Fast	15_Ant1_248	30_0~Refere	STATUS NCE AUTO 03:22:3 NS TI 0 Mkr1 92	9 PMAug 21, 2020 NACE 11 2 3 4 5 6 DET P P P P P 3.37 MHz 330 dBm	Frequency Auto Tune Center Freq 515.00000 MHz Start Freq 30.00000 MHz Stop Freq
MSG Keysight Spectru R RL Center Fred Conter Fred 10 dB/div R 9.79 -0.21 -10.2	m Analyzer - Swept SA ℝF 50 Ω DC 3 515.0000000 M NFE ef Offfset 9.79 dB	DH Hz PNO: Fast	15_Ant1_248	30_0~Refere	STATUS NCE AUTO 03:22:3 NS TI 0 Mkr1 92	9 PMAug 21, 2020 NACE 11 2 3 4 5 6 DET P P P P P 3.37 MHz 330 dBm	Frequency Auto Tune Center Freq 515.00000 MHz 30.00000 MHz Stop Freq 1.00000000 GHz CF Step
MSG Keysight Spectru 20 RL Center Free Conter Free 0 dB/div F -0.21 -10.2 -20.2 -30.2	m Analyzer - Swept SA ℝF 50 Ω DC 3 515.0000000 M NFE ef Offfset 9.79 dB	DH Hz PNO: Fast	15_Ant1_248	30_0~Refere	STATUS NCE AUTO 03:22:3 NS TI 0 Mkr1 92	9 PMAug 21, 2020 NACE 11 2 3 4 5 6 DET P P P P P 3.37 MHz 330 dBm	Frequency Auto Tune Center Freq 515.00000 MHz Start Freq 30.000000 MHz 1.00000000 GHz CF Step 97.00000 MHz Auto Man
MSG	m Analyzer - Swept SA RF 50 Ω DC 1 515.000000 M NFE ef Offset 9.79 dB lef 19.79 dBm	DH HZ IFGain:Low	IS_Ant1_248 SENSE:INT Trig: Free Run #Atten: 20 dB		 лосе ло	9 PMAug 21, 2020 MCE 1 - 3 + 5 6 TYPE P P P P P P 3.37 MHz 330 dBm DL 1 - 10 58 dBm	Frequency           Auto Tune           Center Freq           515.000000 MHz           Start Freq           30.000000 MHz           Stop Freq           1.00000000 GHz           CF Step           97.00000 MHz
MSG	m Analyzer - Swept SA RF 50 Ω DC 1 3 515.000000 M NFE ef Offset 9.79 dB lef 19.79 dBm 19.79 d	DH HZ IFGain:Low	IS_Ant1_248 SENSE:INT Trig: Free Run #Atten: 20 dB		 лосе алто 03:22:3 5 Мkr1 92 -63.	9 PMAug 21, 2020 MCE 1 - 3 + 5 6 TYPE P P P P P P 3.37 MHz 330 dBm DL 1 - 10 58 dBm	Frequency         Auto Tune         Center Freq         515.000000 MHz         Start Freq         30.000000 MHz         Stop Freq         1.000000000 GHz         97.000000 MHz         Auto         Man         Freq Offset         0 Hz         Scale Type

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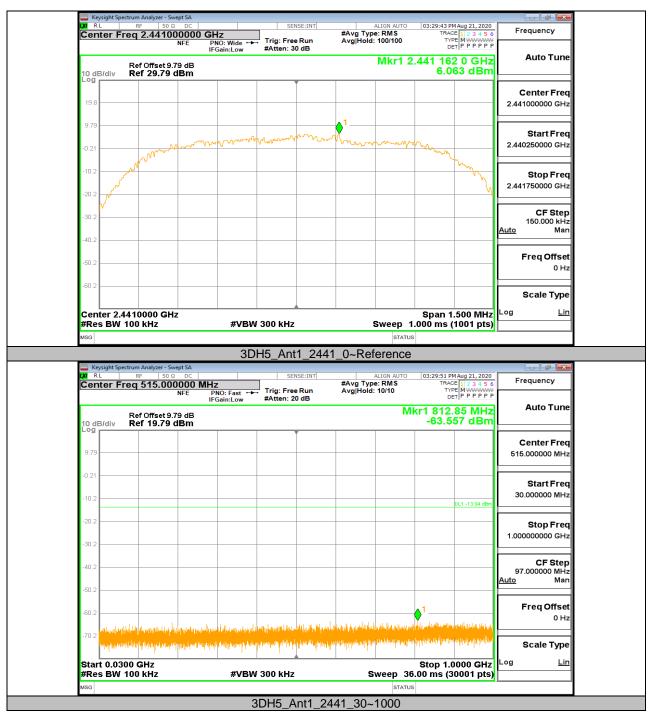
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LXI RL	ctrum Analyzer - Swep RF 50 Ω	DC		SENSE:INT	ALIGN A	JTO 03:24:50 PI	1 Aug 21, 2020	Erequency
Center Fr	°eq 515.0000	00 MHz		g: Free Run ten: 20 dB	#Avg Type: RMS Avg Hold: 10/10	TRAC TYP DE	E 1 2 3 4 5 6 E M WWWW T P P P P P P	Frequency
10 dB/div Log	Ref Offset 9.79 Ref 19.79 de	dB				Mkr1 882. -63.0	99 MHz 64 dBm	Auto Tune
9.79								Center Freq 515.000000 MHz
-0.21							DL1 -12.63 dBm	Start Freq 30.000000 MHz
-20.2								<b>Stop Freq</b> 1.000000000 GHz
-40.2 ———								CF Step 97.000000 MHz <u>Auto</u> Man
-50.2						1		Freq Offset 0 Hz
har and	ente percentantes de la p	alitation and the second	verities (1964-benderstel) Alberte (1964-benderstel)	na na sha na sha ka sh	na gala a gala sud paga da bahanga b Magala pana da galami sanu da bah	an land a state of a st	n cealadeallanda	Scale Type
Start 0.030 #Res BW 1			#VBW 300	kHz	Sweep	Stop 1.0 36.00 ms (3	0000 GHz 0001 pts)	Log <u>Lin</u>
MSG						TATUS		·
Keysight Spec	ctrum Analyzer - Swep	150	3DH:	5_Ant1_2	402_30~1000	)		- # <mark>-×</mark>
LXI RL	RF 50 Ω Teq 13.75000	DC   00000 GHz		SENSE:INT	ALIGN	TRAC	Aug 21, 2020 E 1 2 3 4 5 6	Frequency
					Avg Hold: 10/10	TY	E M MAAAAAAAAAA	
10 dB/div	Ref Offset 9.79 Ref 19.79 dE	IFGain: dB		ten: 20 dB		⊳⊧ kr1 26.382		Auto Tune
10 dB/div Log	Ref Offset 9.79	IFGain: dB				⊳⊧ kr1 26.382	TPPPPPP 70 GHz	Auto Tune Center Freq 13.75000000 GHz
Log	Ref Offset 9.79	IFGain: dB				⊳⊧ kr1 26.382	TPPPPPP 70 GHz	Center Freq
9.79 -0.21	Ref Offset 9.79	IFGain: dB				⊳⊧ kr1 26.382	₩₩₩₩₩₩₩₩ TPPPPPP 70 GHz 71 dBm	Center Freq 13.75000000 GHz Start Freq
9,79 -0.21 -10.2 -20.2 -30.2 -40.2	Ref Offset 9.79	IFGain: dB				⊳⊧ kr1 26.382	₩₩₩₩₩₩₩₩ TPPPPPP 70 GHz 71 dBm	Center Freq 13.75000000 GHz Start Freq 1.00000000 GHz Stop Freq
9.79 -0.21 -10.2 -20.2 -30.2	Ref Offset 9.79	IFGain: dB				kr1 26.382 -53.9	₩₩₩₩₩₩₩₩ TPPPPPP 70 GHz 71 dBm	Center Freq 13.75000000 GHz Start Freq 1.000000000 GHz Stop Freq 26.50000000 GHz 2.550000000 GHz
9.79 -0.21 -10.2 -20.2 -30.2 -40.2 -50.2	Ref Offset 9.79	IFGain: dB			M	kr1 26.382 -53.9	DL1-1283 dBm	Center Freq           13.75000000 GHz           Start Freq           1.00000000 GHz           Stop Freq           26.50000000 GHz           2.55000000 GHz           Auto           Freq Offset           0 Hz
9,79 -0.21 -10.2 -20.2 -30.2 -40.2 -50.2 -60.2	Ref Offset 9.79 Ref 19.79 dE	IFGain: dB 3m 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2				kr1 26.382 -53.9	El Munommer 70 GHz 71 dBm	Center Freq           13.75000000 GHz           Start Freq           1.00000000 GHz           Stop Freq           26.50000000 GHz           CF Step           2.55000000 GHz           Auto           Freq Offset

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	m Analyzer - Swept 5 RF 50 Ω [	DC 0		SENSE:INT		ALIGN AUTO	03:31:56 PM	Aug 21, 2020	Frequency
Center Free	q 515.0000 NF			ree Run : 20 dB	#Avg Typ Avg Hold:	e: RMS 10/10	TRACE TYPE DE	1 2 3 4 5 6 M P P P P P P P	Frequency
	tef Offset 9.79 d Ref 19.79 dB	яв				М	kr1 907. -63.31	95 MHz 17 dBm	Auto Tune
									Center Freq
9.79									515.000000 MHz
-0.21									Start Freq
-10.2								0L1 -12.53 dBm	30.000000 MHz
-20.2									<b>Stop Freq</b> 1.000000000 GHz
-30.2				_					
-40.2									CF Step 97.000000 MHz <u>Auto</u> Man
-50.2								1	FreqOffset
-60.2	and an and the second second	المرابع المرابع المرابع	in and the state of the	and the second states	an black the mounts		n de server de prise	undand	0 Hz
-70.2	n i hipitali and pi	and subset of the other	and the state of the	and with the	e pille per pille per pil	analytanlipoperta	h de la companya de l	homologia	Scale Type
Start 0.0300 #Res BW 10	GHz		/BW 300 kH					000 GHz	Log <u>Lin</u>
MSG		#	V BVV JUO KF	12	3	STATUS	· ·	500 i ptsj	
			3DH5_	Ant1_24	480_30~	1000			
LXI RL	m Analyzer - Swept S RF 50 Ω			SENSE:INT					
						ALIGN AUTO	03:32:23 PM	Aug 21, 2020	Frequency
Center Free	q 13.750000 NF			ree Run : 20 dB	#Avg Typ Avg Hold:	e: RMS 10/10	TRACE TYPE DE	1 2 3 4 5 6 MWWWW P P P P P P P	Frequency
R 10 dB/div		E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	TRACE TYPE DE 26.250	1 2 3 4 5 6 MWWWW P P P P P P P	Frequency Auto Tune
10 dB/div R	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	TRACE TYPE DE 26.250	1 2 3 4 5 6 MWWWW PPPPPP 95 GHz	Auto Tune Center Freq
10 dB/div R Log	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	TRACE TYPE DE 26.250	1 2 3 4 5 6 MWWWW PPPPPP 95 GHz	Auto Tune
9.79 -0.21	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	26.250 -53.82	95 GHz 8 dBm	Auto Tune Center Freq
9.79 -0.21	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	26.250 -53.82	1 2 3 4 5 6 MWWWW PPPPPP 95 GHz	Auto Tune Center Freq 13.75000000 GHz Start Freq 1.00000000 GHz
10 dB/div R Log	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	26.250 -53.82	95 GHz 8 dBm	Auto Tune Center Freq 13.75000000 GHz Start Freq
9.79 -0.21 -10.2 -30.2	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	26.250 -53.82	95 GHz 8 dBm	Auto Tune           Center Freq           13.75000000 GHz           Start Freq           1.00000000 GHz           Stop Freq           26.50000000 GHz           CF Step
9.79 -0.21 -10.2 -30.2 -40.2	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	26.250 -53.82	95 GHz 8 dBm	Auto Tune           Center Freq           13.75000000 GHz           Start Freq           1.00000000 GHz           Stop Freq           26.50000000 GHz
9.79 -0.21 -10.2 -30.2 -50.2	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	26.250 -53.82	95 GHz 8 dBm	Auto Tune
9.79 -0.21 -10.2 -20.2 -30.2 -40.2 -60.2	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	26.250 -53.82	95 GHz 8 dBm	Start Freq           13.75000000 GHz           Start Freq           1.00000000 GHz           Stop Freq           26.50000000 GHz           CF Step           2.55000000 GHz           Auto
9.79 -0.21 -10.2 -30.2 -50.2	NF	E PNO: Fas IFGain:Lo			#Avg Typ	e: RMS 10/10	26.250 -53.82	95 GHz 8 dBm	Auto Tune
9,79 0.21 10.2 20.2 30.2 40.2 50.2 50.2 40.2 40.2 40.2	NF tef Offset 9.79 d tef 19.79 dB	E PNO: Fas IFGain:Lo IB M		20 dB	#Avg Typ- Avg Hold:	e: RMS 10/10 MKr1		95 GHz 28 dBm 90111233 dBm	Auto Tune           Center Freq           13.75000000 GHz           Start Freq           1.00000000 GHz           Stop Freq           26.50000000 GHz           CF Step           2.55000000 GHz           Auto           Man           Freq Offset           0 Hz

# **END OF REPORT**

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