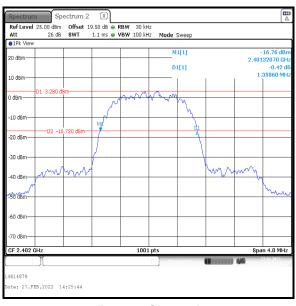
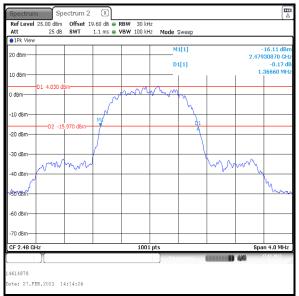
### Transmitter 20 dB Bandwidth (continued)

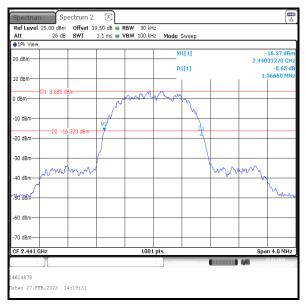
### Results: 3DH5 / SISO / Core 2

Channel	20 dB Bandwidth (kHz)	
Bottom	1358.600	
Middle	1366.600	
Тор	1366.600	





**Top Channel** 

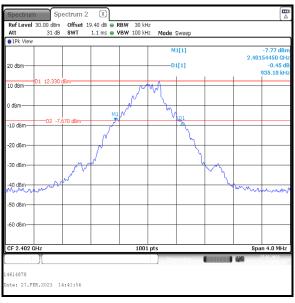


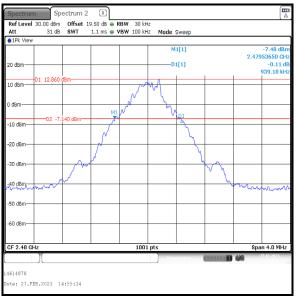
Middle Channel

### Transmitter 20 dB Bandwidth (continued)

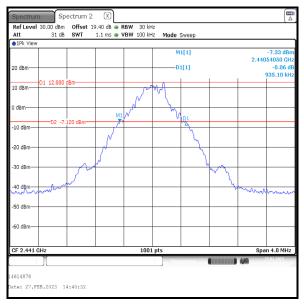
### Results: DH5 / Beamforming / Core 0

Channel	20 dB Bandwidth (kHz)	
Bottom	935.100	
Middle	935.100	
Тор	939.100	





**Top Channel** 

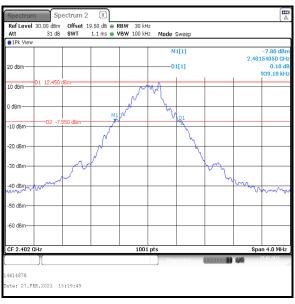


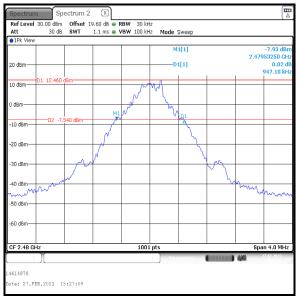
Middle Channel

### Transmitter 20 dB Bandwidth (continued)

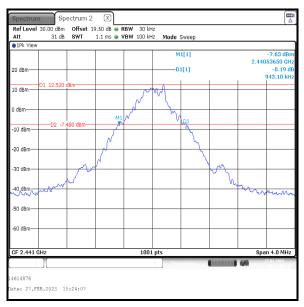
### Results: DH5 / Beamforming / Core 1

Channel	20 dB Bandwidth (kHz)	
Bottom	939.100	
Middle	943.100	
Тор	947.100	





**Top Channel** 

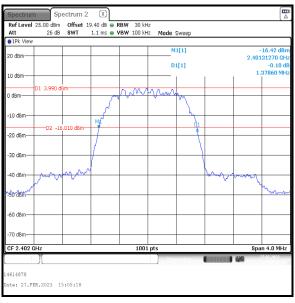


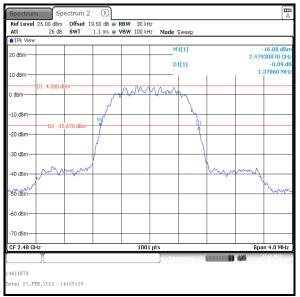
Middle Channel

### Transmitter 20 dB Bandwidth (continued)

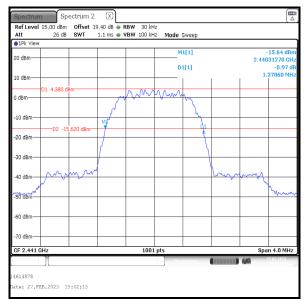
### Results: 2DH5 / Beamforming / Core 0

Channel	20 dB Bandwidth (kHz)	
Bottom	1378.600	
Middle	1378.600	
Тор	1378.600	





**Top Channel** 

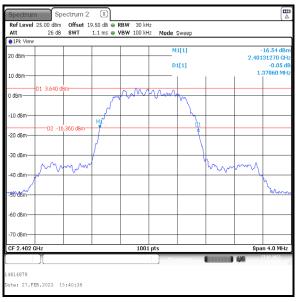


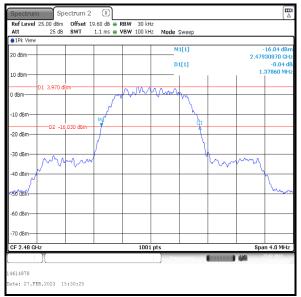
Middle Channel

### Transmitter 20 dB Bandwidth (continued)

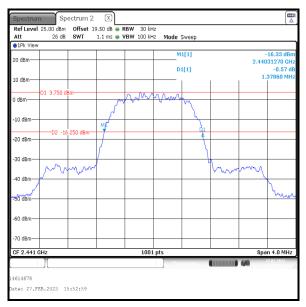
### Results: 2DH5 / Beamforming / Core 1

Channel	20 dB Bandwidth (kHz)	
Bottom	1378.600	
Middle	1378.600	
Тор	1378.600	





**Top Channel** 

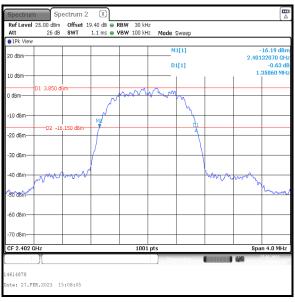


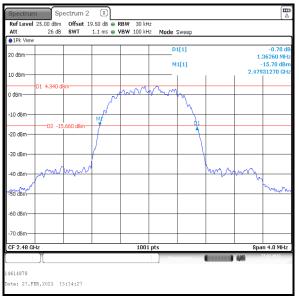
Middle Channel

### Transmitter 20 dB Bandwidth (continued)

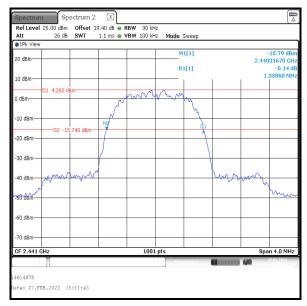
### Results: 3DH5 / Beamforming / Core 0

Channel	20 dB Bandwidth (kHz)	
Bottom	1358.600	
Middle	1358.600	
Тор	1362.600	





**Top Channel** 

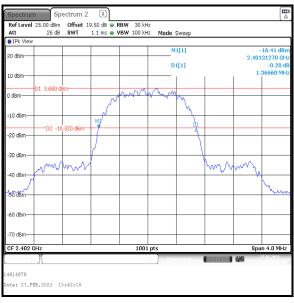


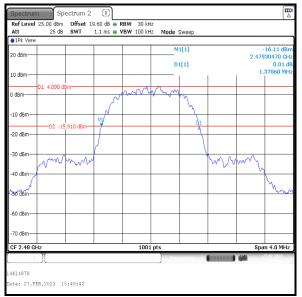
Middle Channel

### Transmitter 20 dB Bandwidth (continued)

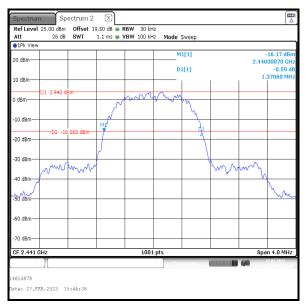
### Results: 3DH5 / Beamforming / Core 1

Channel	20 dB Bandwidth (kHz)	
Bottom	1366.600	
Middle	1370.600	
Тор	1370.600	





**Top Channel** 



Middle Channel

### **4.3 Transmitter Carrier Frequency Separation**

### **Test Summary:**

Test Engineers:	Matthew Botfield & Miriam Thompson	Test Date:	01 March 2023
Test Sample Serial Number:	M2662LV76V		

FCC Reference:	Part 15.247(a)(1)	
ISED Canada Reference:	RSS-247 5.1(b)	
Test Method Used:	ANSI C63.10 Section 7.8.2	

### **Environmental Conditions:**

Temperature (°C):	21
Relative Humidity (%):	37

### Note(s):

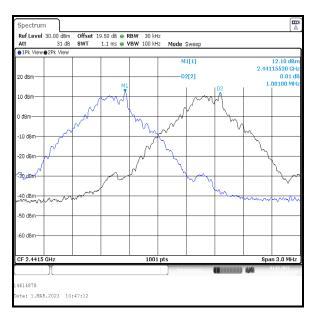
1. The 20 dB bandwidth measured for the middle channel operating at 2441 MHz was used to calculate the limit.

- 2. The signal analyser resolution bandwidth was set to 30 kHz and video bandwidth 100 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. The span was set to 3 MHz. A marker was placed at the centre of one signal and then a delta marker was placed in the same place on the second signal.
- 3. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable.

# Transmitter Carrier Frequency Separation (continued)

# Results: DH5 / SISO / Core 1

Carrier Frequency	Limit (²/₃ of 20 dB BW)	Margin	Result
Separation (kHz)	(kHz)	(kHz)	
1001.000	626.037	374.933	Complied



# Transmitter Carrier Frequency Separation (continued)

# Results: 2DH5 / SISO / Core 1

Carrier Frequency	Limit (²/₃ of 20 dB BW)	Margin	Result
Separation (kHz)	(kHz)	(kHz)	
1001.000	919.067	81.933	Complied



# Transmitter Carrier Frequency Separation (continued)

# Results: 3DH5 / SISO / Core 1

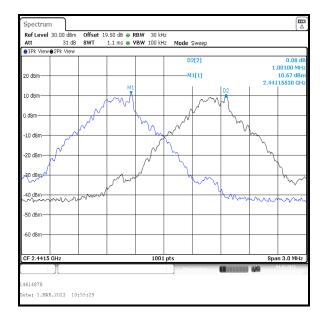
Carrier Frequency	Limit (²/₃ of 20 dB BW)	Margin	Result
Separation (kHz)	(kHz)	(kHz)	
998.000	913.733	84.267	Complied

Spectrum								
Ref Level 25.00 dBm Att 26 dB		9.50 dB 👄 🖡 1.1 ms 👄 🎙			Gwoon			
●1Pk View●2Pk View	3111	1.1 113 🖉 1	<b>DH</b> 100 KI	a moue	5weeb			
20 dBm-					1[1]		2.440	3.36 dBm 94560 GHz -0.04 dE
10 dBm		M1			2[2] 	I		998.00 kHz
0 dBm	$\sim \sim \sim$	×.	m	Jarra		han	m.	
-10 dBm			$- \wedge$	h			h	
-20 dBm				$\rightarrow$			(	
-30 dBm		ww	ſ		ham	mmum	~	
-40 dBm		A.4 . 0.			V- W	• • •	h	m
-50 dBm								
-60 dBm								
-70 dBm								
CF 2.4415 GHz			1001	pts			Spa	n 3.0 MHz
4614878				Mea	suring		446	01.03.2023
ate: 1.MAR.2023 10:	52:47							

# Transmitter Carrier Frequency Separation (continued)

# Results: DH5 / SISO / Core 2

Carrier Frequency	Limit (²/₃ of 20 dB BW)	Margin	Result
Separation (kHz)	(kHz)	(kHz)	
1001.000	623.400	377.600	Complied



# Transmitter Carrier Frequency Separation (continued)

# Results: 2DH5 / SISO / Core 2

Carrier Frequency Separation (kHz)	Limit (²/₃ of 20 dB BW) (kHz)	Margin (kHz)	Result
1001.000	919.067	81.933	Complied



# Transmitter Carrier Frequency Separation (continued)

# Results: 3DH5 / SISO / Core 2

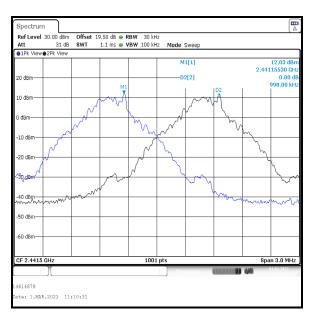
Carrier Frequency Separation (kHz)			Result
998.000	911.067	86.933	Complied

Spectrum								
Ref Level 25.00 dB								
Att 26 d		.1 ms 🍵 V	BW 100 kH	z Mode	Sweep			
The Alemester Ale Alemester Alemester Aleme	v 				1[1]			3.53 dBn
20 dBm-					1[1]		2.440	94560 GH
				D	2[2]			-0.03 di
10 dBm								998.00 kH:
	N.	11			D2	L.		
0 dBm	hant	Lan	m		h and	man	<u> </u>	
	'		7	M			[ *\	
-10 dBm	++		$-\lambda$	· 4			- X	
5			1	$  \rangle$			)	
-20 dBm	++		-(	$\rightarrow$			· · · · ·	<b>├</b> ──
				$  \rangle$				Ν
-30 dBm			ſ	$ \rightarrow $				$\left  \right\rangle$
m m	mm	ww			m	www	$\sim$	~~~
-40 dBm							M	
~50 dBm							h	man
-20 gRu-								
-60 dBm								
-00 ubiii								
-70 dBm								
CF 2.4415 GHz			1001	pts				n 3.0 MHz
				Mea	suring		4/4	11.03.2023
4614878								
ate: 1.MAR.2023 1	1.00.22							

# Transmitter Carrier Frequency Separation (continued)

Carrier Frequency	Limit (²/₃ of 20 dB BW)	Margin	Result
Separation (kHz)	(kHz)	(kHz)	
998.000	628.733	369.267	Complied

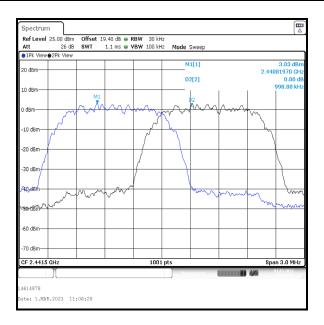
### Results: DH5 / Beamforming / Core 1



# **Transmitter Carrier Frequency Separation (continued)**

# Results: 2DH5 / Beamforming / Core 0

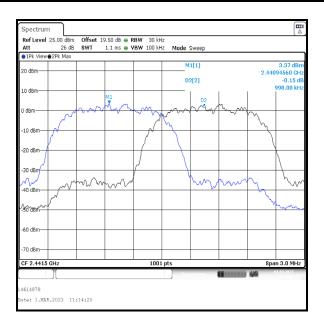
Carrier Frequency	Limit (²/₃ of 20 dB BW)	Margin	Result
Separation (kHz)	(kHz)	(kHz)	
998.000	919.067	78.933	Complied



# **Transmitter Carrier Frequency Separation (continued)**

# Results: 3DH5 / Beamforming / Core 1

Carrier Frequency	Limit (²/₃ of 20 dB BW)	Margin	Result
Separation (kHz)	(kHz)	(kHz)	
998.000	913.733	84.267	Complied



# <u>4.4 Transmitter Number of Hopping Frequencies and Average Time of Occupancy</u> Test Summary:

Test Engineers:	Matthew Botfield & Miriam Thompson	Test Date:	01 March 2023
Test Sample Serial Number:	M2662LV76V		

FCC Reference:Part 15.247(a)(1)(iii)	
ISED Canada Reference:	RSS-247 5.1(d)
Test Method Used:	ANSI C63.10 Sections 7.8.3 & 7.8.4

### **Environmental Conditions:**

Temperature (°C):	21
Relative Humidity (%):	37

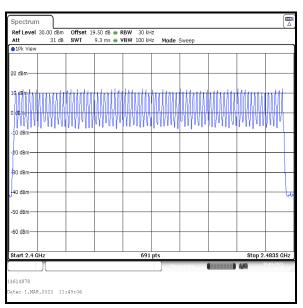
#### Note(s):

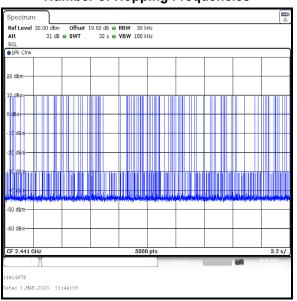
- 1. Tests were performed to identify the average time of occupancy in number of channels (79) x 0.4 seconds. The calculated period is 31.6 seconds.
- 2. The signal analyser was set up for the Number of Hopping Frequencies measurement as follows: the resolution bandwidth was set to 30 kHz and video bandwidth of 100 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. The span was set to 83.5 MHz.
- 3. The signal analyser was set up for the Emission Width measurement as follows: the resolution bandwidth was set to 30 kHz and video bandwidth of 100 kHz. A peak detector was used and sweep time was set to auto with a span of zero Hz. The signal analyser was set to trigger at 1 ms, with a marker placed at the start of the emission and a delta marked place at the end of the emission. The emission width is recorded in the table below
- 4. The signal analyser was set up for the Number of Hopping Frequencies in 32 seconds measurement as follows: the resolution bandwidth was set to 30 kHz and video bandwidth of 100 kHz. A peak detector was used and sweep time was set to 32 seconds. The EUT was set to transmit in a hopping frequency mode with zero span. The total number of hopping frequencies were recorded in the table below.
- 5. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable.

# Transmitter Number of Hopping Frequencies and Average Time of Occupancy (continued)

# Results: SISO / Core 1

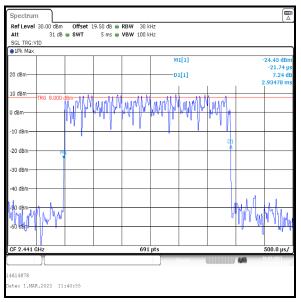
Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
2934.780	111	0.326	0.4	0.074	Complied





#### **Number of Hopping Frequencies**

Number of Hopping Frequencies in 32 s

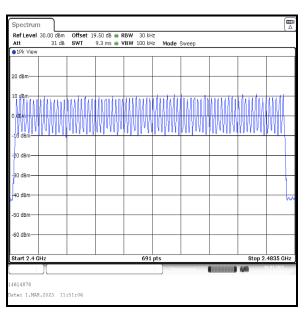


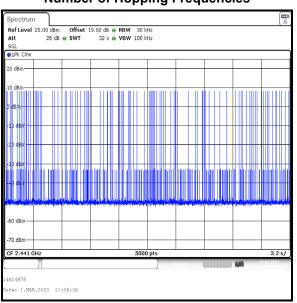
**Emission Width** 

# Transmitter Number of Hopping Frequencies and Average Time of Occupancy (continued)

# Results: SISO / Core 2

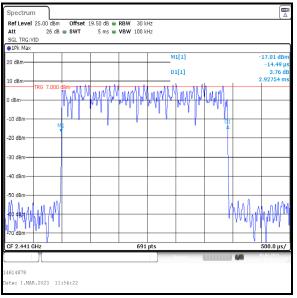
Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
2927.540	103	0.302	0.4	0.098	Complied





### Number of Hopping Frequencies

Number of Hopping Frequencies in 32 s

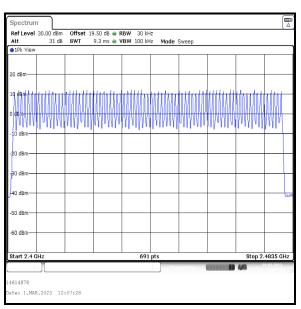


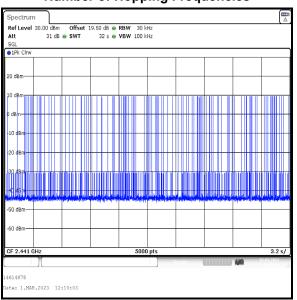
**Emission Width** 

# Transmitter Number of Hopping Frequencies and Average Time of Occupancy (continued)

# Results: Beamforming / Core 1

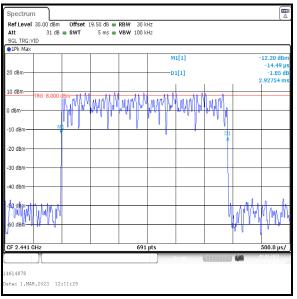
Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
2927.540	107	0.313	0.4	0.087	Complied





### Number of Hopping Frequencies

Number of Hopping Frequencies in 32 s



**Emission Width** 

### 4.5 Transmitter Maximum Peak Output Power

#### Test Summary:

Test Engineers:	Matthew Botfield & Miriam Thompson	Test Date:	01 March 2023
Test Sample Serial Number:	M2662LV76V		

FCC Reference:	Part 15.247(b)(1)		
ISED Canada Reference:	RSS-Gen 6.12 / RSS-247 5.4(b)		
Test Method Used:	ANSI C63.10 Section 7.8.5		

### **Environmental Conditions:**

Temperature (°C):	21
Relative Humidity (%):	37

#### Note(s):

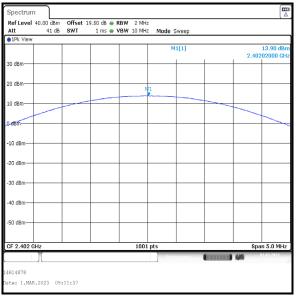
- 1. For BDR, the signal analyser resolution bandwidth was set to 2 MHz (>20 dB bandwidth) and video bandwidth of 10 MHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. The span was set to 5 MHz. A marker was placed at the peak of the signal and the results recorded in the tables below.
- 2. For EDR, the signal analyser resolution bandwidth was set to 2 MHz (>20 dB bandwidth) and video bandwidth of 10 MHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold. The span was set to 7 MHz. A marker was placed at the peak of the signal and the results recorded in the tables below.
- 3. For beamforming modes, conducted power was measured on Core 0 & Core 1 and then combined using the measure-and-sum technique stated in FCC KDB 662911 D01 Section E)1). For EIRP, the directional antenna gain was added to the conducted output power.
- 4. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF offset level was entered on the signal analyser to compensate for the loss of the attenuator and RF cable.

# Results: DH5 / SISO / Core 1

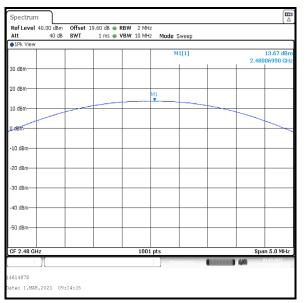
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	13.9	21.0	7.1	Complied
Middle	14.0	21.0	7.0	Complied
Тор	13.7	21.0	7.3	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	13.9	3.6	17.5	36.0	18.5	Complied
Middle	14.0	3.6	17.6	36.0	18.4	Complied
Тор	13.7	3.6	17.3	36.0	18.7	Complied

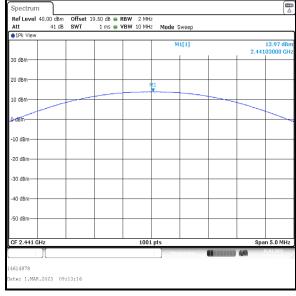
# Results: DH5 / SISO / Core 1



#### **Bottom Channel**



**Top Channel** 



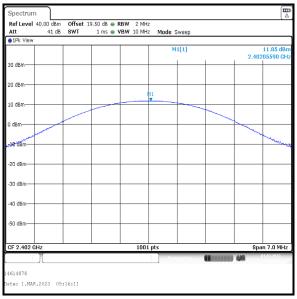
Middle Channel

# Results: 2DH5 / SISO / Core 1

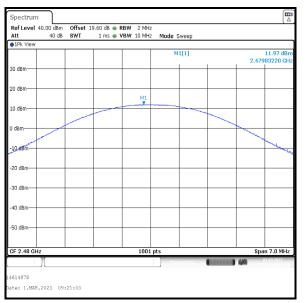
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	11.9	21.0	9.1	Complied
Middle	11.9	21.0	9.1	Complied
Тор	12.0	21.0	9.0	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	11.9	3.6	15.5	36.0	20.5	Complied
Middle	11.9	3.6	15.5	36.0	20.5	Complied
Тор	12.0	3.6	15.6	36.0	20.4	Complied

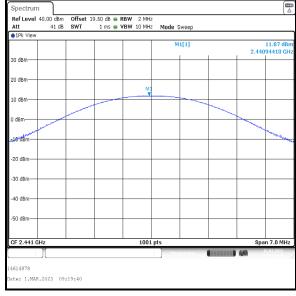
# Results: 2DH5 / SISO / Core 1



#### **Bottom Channel**



**Top Channel** 



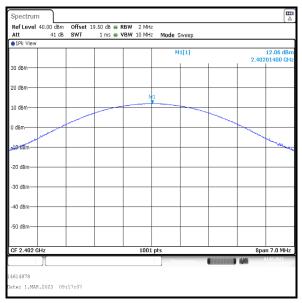
Middle Channel

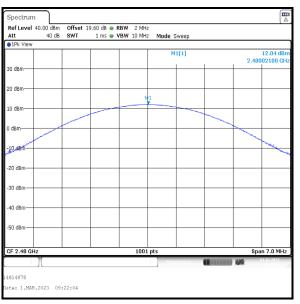
# Results: 3DH5 / SISO / Core 1

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	12.1	21.0	8.9	Complied
Middle	12.3	21.0	8.7	Complied
Тор	12.0	21.0	9.0	Complied

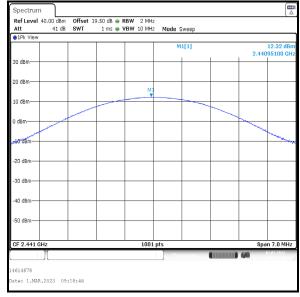
Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	12.1	3.6	15.7	36.0	20.3	Complied
Middle	12.3	3.6	15.9	36.0	20.1	Complied
Тор	12.0	3.6	15.6	36.0	20.4	Complied

# Results: 3DH5 / SISO / Core 1





**Top Channel** 



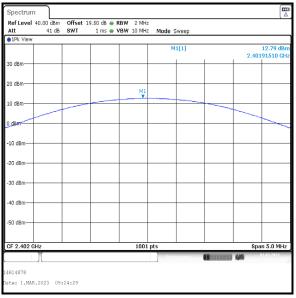
Middle Channel

# Results: DH5 / SISO / Core 2

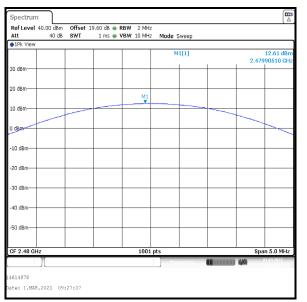
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	12.8	21.0	8.2	Complied
Middle	13.2	21.0	7.8	Complied
Тор	12.6	21.0	8.4	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	12.8	0.6	13.4	36.0	22.6	Complied
Middle	13.2	0.6	13.8	36.0	22.2	Complied
Тор	12.6	0.6	13.2	36.0	22.8	Complied

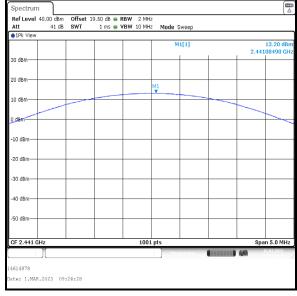
### Results: DH5 / SISO / Core 2



#### **Bottom Channel**



**Top Channel** 



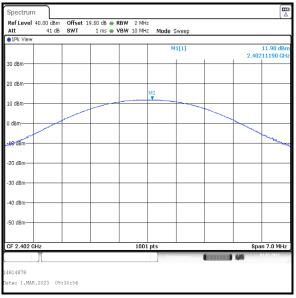
Middle Channel

# Results: 2DH5 / SISO / Core 2

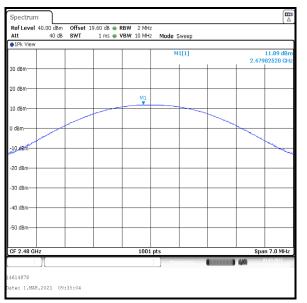
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	11.9	21.0	9.1	Complied
Middle	12.1	21.0	8.9	Complied
Тор	11.9	21.0	9.1	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	11.9	0.6	12.5	36.0	23.5	Complied
Middle	12.1	0.6	12.7	36.0	23.3	Complied
Тор	11.9	0.6	12.5	36.0	23.5	Complied

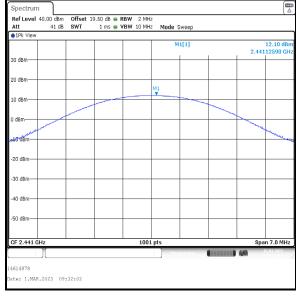
# Results: 2DH5 / SISO / Core 2



#### **Bottom Channel**



**Top Channel** 



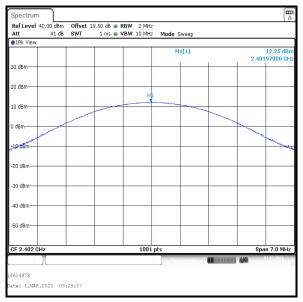
Middle Channel

# Results: 3DH5 / SISO / Core 2

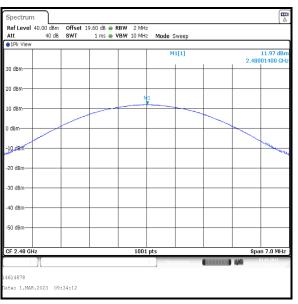
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	12.3	21.0	8.7	Complied
Middle	12.5	21.0	8.5	Complied
Тор	12.0	21.0	9.0	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	12.3	0.6	12.9	36.0	23.1	Complied
Middle	12.5	0.6	13.1	36.0	22.9	Complied
Тор	12.0	0.6	12.6	36.0	23.4	Complied

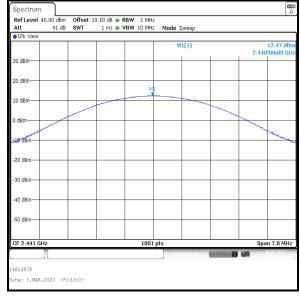
# Results: 3DH5 / SISO / Core 2



#### **Bottom Channel**



Top Channel



Middle Channel

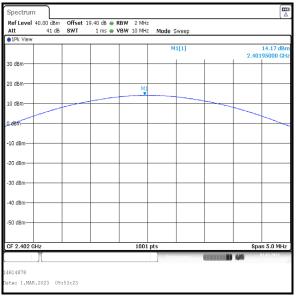
# Transmitter Maximum Peak Output Power (continued)

# Results: DH5 / Beamforming

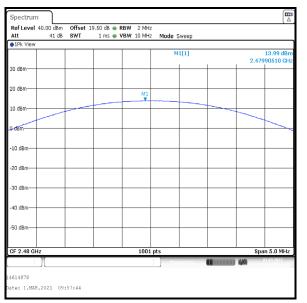
Channel	Conducted Peak Power Core 0 (dBm)	Conducted Peak Power Core 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	14.2	13.7	17.0	21.0	4.0	Complied
Middle	14.2	13.8	17.0	21.0	4.0	Complied
Тор	14.0	13.5	16.8	21.0	4.2	Complied

Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
Bottom	17.0	5.9	22.9	36.0	13.1	Complied
Middle	17.0	5.9	22.9	36.0	13.1	Complied
Тор	16.8	5.9	22.7	36.0	13.3	Complied

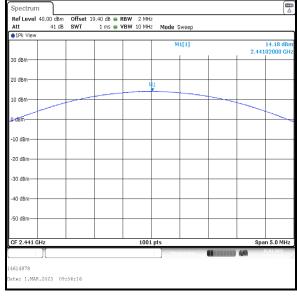
### Results: DH5 / Beamforming / Core 0



#### **Bottom Channel**



**Top Channel** 



Middle Channel