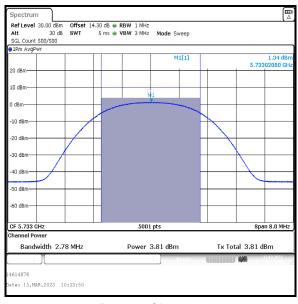
**TEST REPORT** 

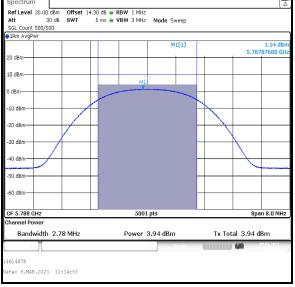
VERSION 1.0 ISSUE DATE: 17 APRIL 2023

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

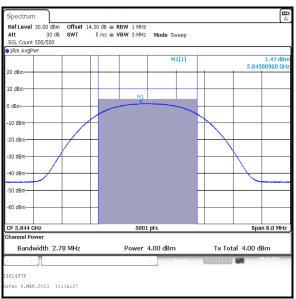
# Results: 4DH5 / SISO / Core 1 / iPA

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	3.8	30.0	26.2	Complied
Middle	5788	3.9	30.0	26.1	Complied
Тор	5844	4.0	30.0	26.0	Complied





Middle Channel

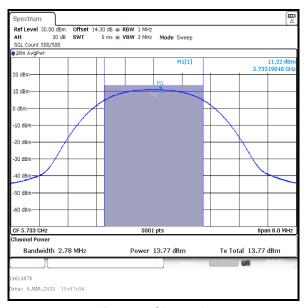


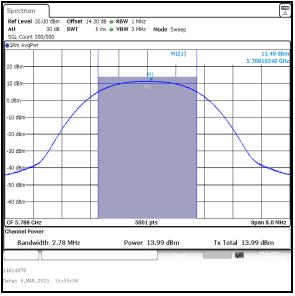
**Top Channel** 

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

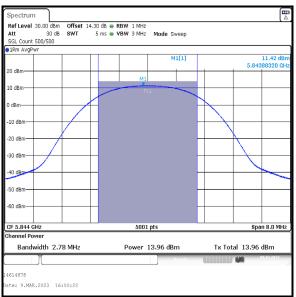
# Results: 4DH5 / SISO / Core 1 / ePA

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	13.8	30.0	16.2	Complied
Middle	5788	14.0	30.0	16.0	Complied
Тор	5844	14.0	30.0	16.0	Complied





**Middle Channel** 



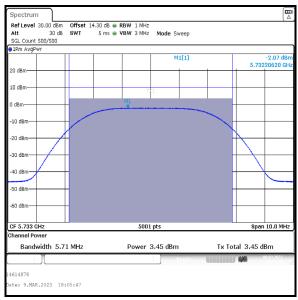
**Top Channel** 

**TEST REPORT** 

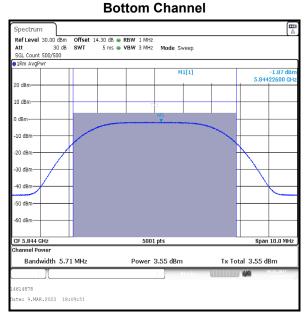
**VERSION 1.0** ISSUE DATE: 17 APRIL 2023

# Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued) Results: 8DH5 / SISO / Core 1 / iPA

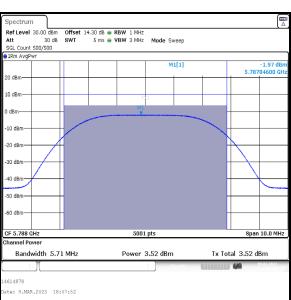
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	3.5	30.0	26.5	Complied
Middle	5788	3.5	30.0	26.5	Complied
Тор	5844	3.6	30.0	26.4	Complied







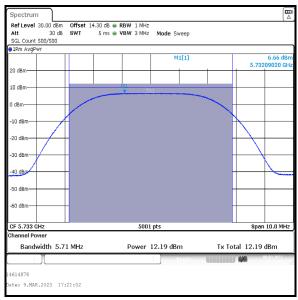
**Top Channel** 

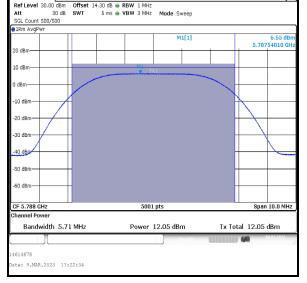


Middle Channel

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u> Results: 8DH5 / SISO / Core 1 / ePA

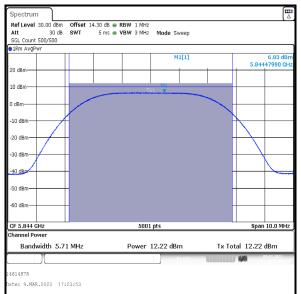
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	12.2	30.0	17.8	Complied
Middle	5788	12.1	30.0	17.9	Complied
Тор	5844	12.2	30.0	17.8	Complied





nnel Middle Channel





**Top Channel** 

TEST REPORT

VERSION 1.0 ISSUE DATE: 17 APRIL 2023

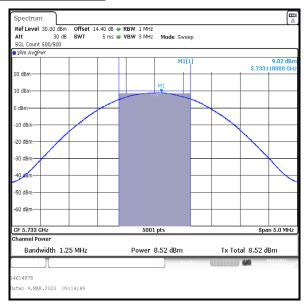
# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u> <u>Results: DH5 / Beamforming / Core 0 + Core 1 / iPA</u>

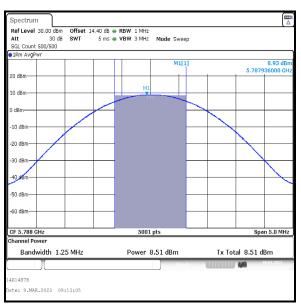
		Core 0			Core 1			
Channel	Frequency (MHz)	Conducted Power (dBm)	Duty Cycle correction factor (dB)	Corrected Conducted Power (dBm)	Conducted Power (dBm)	Duty Cycle correction factor (dB)	Corrected Conducted Power (dBm)	
Bottom	5733	8.5	1.1	9.6	7.6	1.1	8.7	
Middle	5788	8.5	1.1	9.6	7.5	1.1	8.6	
Тор	5844	8.8	1.1	9.9	7.8	1.1	8.9	

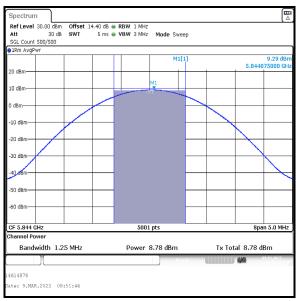
Channel	Frequency (MHz)	Corrected Conducted Power Core 0 (dBm)	Corrected Conducted Power Core 1 (dBm)	Combined Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	9.6	8.7	12.2	27.8	15.6	Complied
Middle	5788	9.6	8.6	12.1	27.8	15.7	Complied
Тор	5844	9.9	8.9	12.4	27.8	15.4	Complied

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

## Results: Core 0







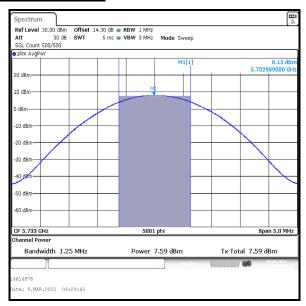
**Top Channel** 

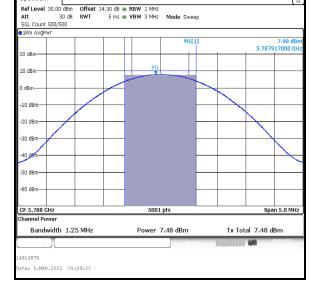
**Middle Channel** 

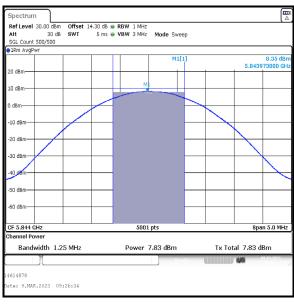
### Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)

### Results: DH5 / Beamforming / Core 0 + Core 1 / iPA

#### Results: Core 1







**Top Channel** 

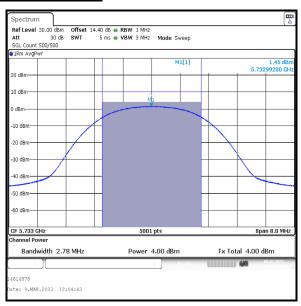
**Middle Channel** 

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

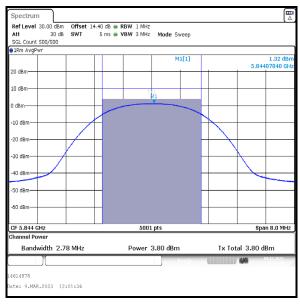
# Results: 4DH5 / Beamforming / Core 0 + Core 1 / iPA

Channel	Frequency (MHz)	Conducted Power Core 0 (dBm)	Conducted Power Core 1 (dBm)	Combined Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	4.0	2.5	6.3	27.8	21.5	Complied
Middle	5788	3.9	3.1	6.5	27.8	21.3	Complied
Тор	5844	3.8	3.0	6.4	27.8	21.4	Complied

#### Results: Core 0



# Ref Level 30.00 dBm Offset 14.40 dB ● RBW 1 MHz Att 30 dB SWT 5 ms ● VBW 3 MHz Mode Sweep SGL Count 500/500 5 ms 6 ms 7 ms < M1[1] 10 dBm -10 dBm -20 dBm -30 dBm 40 dBm -50 dBm Span 8.0 MHz CF 5.788 GHz 5001 pts Bandwidth 2.78 MHz Power 3.90 dBm Tx Total 3.90 dBm 4614878 te: 9.MAR.2023 12:03:12



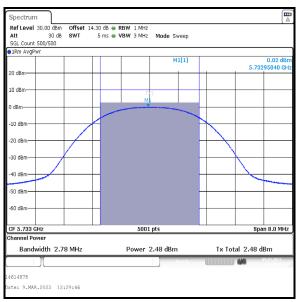
**Top Channel** 

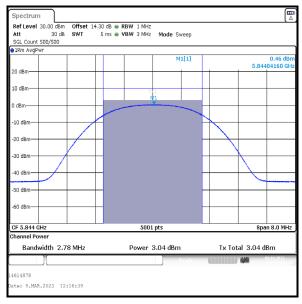
**Middle Channel** 

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

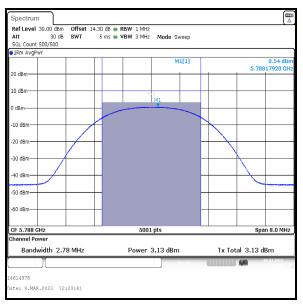
## Results: 4DH5 / Beamforming / Core 0 + Core 1 / iPA

#### Results: Core 1





**Top Channel** 



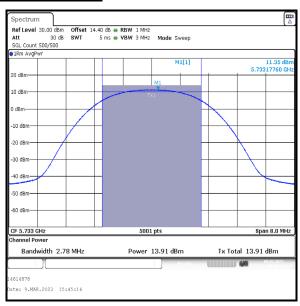
**Middle Channel** 

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

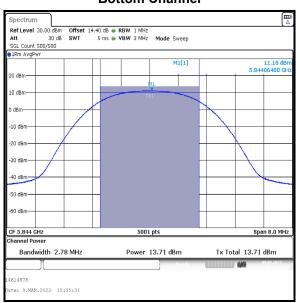
# Results: 4DH5 / Beamforming / Core 0 + Core 1 / ePA

Channel	Frequency (MHz)	Conducted Power Core 0 (dBm)	Conducted Power Core 1 (dBm)	Combined Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	13.9	13.1	16.5	27.8	11.3	Complied
Middle	5788	13.6	13.4	16.5	27.8	11.3	Complied
Тор	5844	13.7	13.8	16.8	27.8	11.0	Complied

#### Results: Core 0



# Ref Level 30.00 dBm Offset 14.40 dB • RBW 1 MHz Att 30 dB SWT 5 ms • VBW 3 MHz Mode Sweep SGL Count 500/500 800/500 1 MHz Mode Sweep M1[1] 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm--50 dBm Span 8.0 MHz CF 5.788 GHz 5001 pts Bandwidth 2.78 MHz Power 13.56 dBm Tx Total 13.56 dBm 4614878 te: 9.MAR.2023 15:37:49



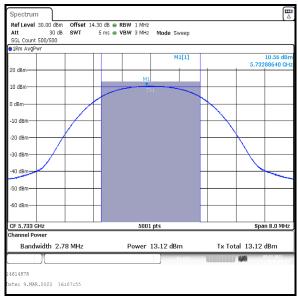
**Top Channel** 

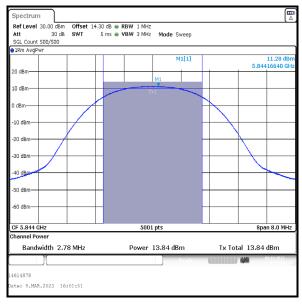
**Middle Channel** 

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

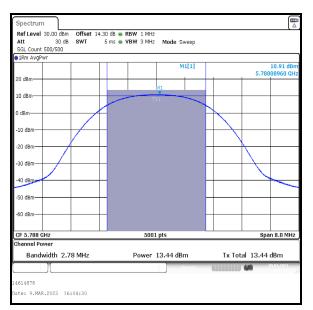
#### Results: 4DH5 / Beamforming / Core 0 + Core 1 / ePA

### Results: Core 1





**Top Channel** 



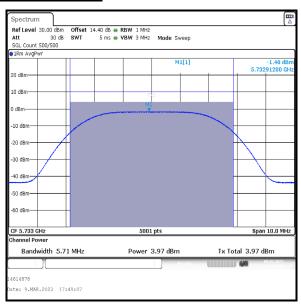
**Middle Channel** 

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

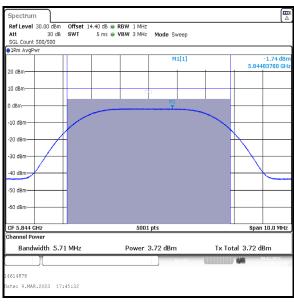
# Results: 8DH5 / Beamforming / Core 0 + Core 1 / iPA

Channel	Frequency (MHz)	Conducted Power Core 0 (dBm)	Conducted Power Core 1 (dBm)	Combined Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	4.0	2.5	6.3	27.8	21.5	Complied
Middle	5788	3.7	3.4	6.6	27.8	21.2	Complied
Тор	5844	3.7	3.3	6.5	27.8	21.3	Complied

#### Results: Core 0



# 



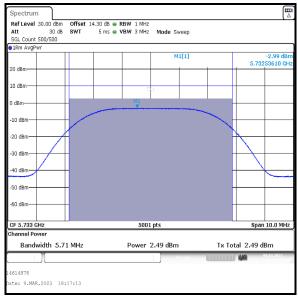
**Top Channel** 

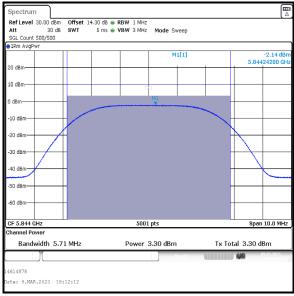
**Middle Channel** 

# Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)

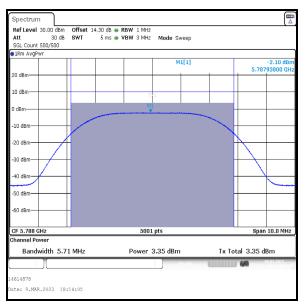
## Results: 8DH5 / Beamforming / Core 0 + Core 1 / iPA

### Results: Core 1





**Top Channel** 



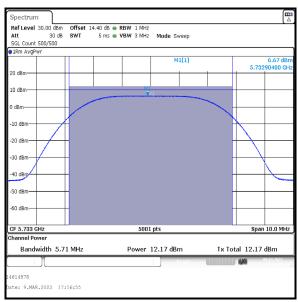
**Middle Channel** 

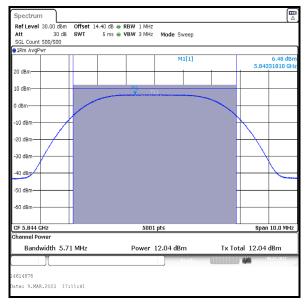
# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

# Results: 8DH5 / Beamforming / Core 0 + Core 1 / ePA

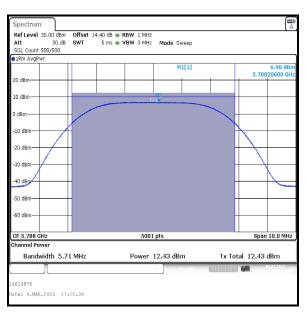
Channel	Frequency (MHz)	Conducted Power Core 0 (dBm)	Conducted Power Core 1 (dBm)	Combined Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5733	12.2	10.9	14.6	27.8	13.2	Complied
Middle	5788	12.4	12.1	15.3	27.8	12.5	Complied
Тор	5844	12.0	11.5	14.8	27.8	13.0	Complied

### Results: Core 0





**Top Channel** 

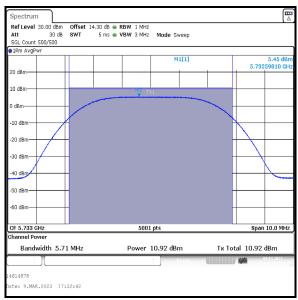


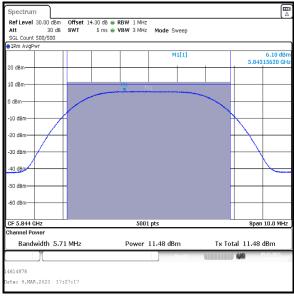
**Middle Channel** 

# <u>Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)</u>

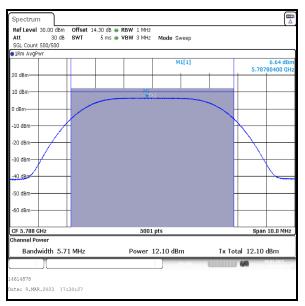
## Results: 8DH5 / Beamforming / Core 0 + Core 1 / ePA

### Results: Core 1





**Top Channel** 



**Middle Channel** 

#### 4.5 Transmitter Maximum Power Spectral Density

#### 4.5.1 5.15-5.25 GHz band

#### **Test Summary:**

Test Engineers:	Luis Pazos Perez & Jose Bayona	Test Dates:	07 March 2023 to 13 March 2023
Test Sample Serial Number:	RHKHHQ9YHK		

FCC Reference:	Part 15.407(a)(1)(iv)
Test Method Used:	KDB 789033 D02 Section II.F. referencing II.E.2.b) and II.E.2.d)

### **Environmental Conditions:**

Temperature (°C):	21 to 23
Relative Humidity (%):	32 to 42

#### Note(s):

- 1. Transmitter Maximum Power Spectral Density tests in all bands were performed using a signal analyser in accordance with KDB 789033 II. F referencing II.E.2.b) Method SA-1 and II.E.2.d) Method SA-2.
- 2. For DH5 where the EUT was transmitting at <98% duty cycle, the calculated duty cycle in Section 4.1 was added to the measured maximum power spectral density in order to compute the average maximum power spectral density during the actual transmission time.
- 3. FCC Part 15.407(a)(1)(iv) limit for PSD is <11 dBm/MHz.
- 4. For Beamforming modes, PSD was measured on both ports and then combined using the *measure and* sum spectral maxima across the outputs technique, stated in FCC KDB 662911 D01 Section E)2)b).
- 5. For details on antenna gains refer to Section 3.4 of this test report.
- 6. For SISO modes of operation, the antenna gain is < 6 dBi.
- 7. For Beamforming modes of operation presented in this section of the test report, the EUT has a directional antenna gain of 8.5 dBi. In accordance with Part 15.407(a)(1)(iv), the limit was reduced by the amount in dB the antenna gain exceeds 6 dBi. Therefore the limit of 11.0 dBm has been reduced by 2.5 dB to 8.5 dBm.
- 8. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF level offset was entered on the signal analyser to compensate for the loss of the attenuator and RF cable.
- 9. As the power spectral density test uses the same test method as the output power test, before the power is integrated across the 26 dB bandwidth, the conducted power spectral density plots are located in the conducted output power section 4.4 of this test report. The peak spectral density was measured by placing a marker on the peak of the signal and the results entered in the tables below.

# <u>Transmitter Maximum Power Spectral Density (5.15-5.25 GHz band) (continued)</u>

# Results: DH5 / SISO / Core 0 / iPA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Duty cycle correction factor (dB)	Corrected PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	9.1	1.1	10.2	11.0	0.8	Complied
Middle	5203	9.5	1.1	10.6	11.0	0.4	Complied
Тор	5245	9.4	1.1	10.5	11.0	0.5	Complied

#### Results: 4DH5 / SISO / Core 0 / iPA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	1.0	11.0	10.0	Complied
Middle	5203	1.2	11.0	9.8	Complied
Тор	5245	1.2	11.0	9.8	Complied

# Results: 4DH5 / SISO / Core 0 / ePA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	9.2	11.0	1.8	Complied
Middle	5203	9.2	11.0	1.8	Complied
Тор	5245	9.4	11.0	1.6	Complied

# Results: 8DH5 / SISO / Core 0 / iPA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	-1.4	11.0	12.4	Complied
Middle	5203	-1.5	11.0	12.5	Complied
Тор	5245	-1.5	11.0	12.5	Complied

#### Results: 8DH5 / SISO / Core 0 / ePA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	6.8	11.0	4.2	Complied
Middle	5203	6.7	11.0	4.3	Complied
Тор	5245	7.1	11.0	3.9	Complied

Page 128 of 176

# <u>Transmitter Maximum Power Spectral Density (5.15-5.25 GHz band) (continued)</u>

Results: DH5 / SISO / Core 1 / iPA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Duty cycle correction factor (dB)	Corrected PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	9.0	1.1	10.1	11.0	0.9	Complied
Middle	5203	9.3	1.1	10.4	11.0	0.6	Complied
Тор	5245	9.1	1.1	10.2	11.0	0.8	Complied

#### Results: 4DH5 / SISO / Core 1 / iPA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	1.0	11.0	10.0	Complied
Middle	5203	1.1	11.0	9.9	Complied
Тор	5245	1.4	11.0	9.6	Complied

# Results: 4DH5 / SISO / Core 1 / ePA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	9.0	11.0	2.0	Complied
Middle	5203	9.2	11.0	1.8	Complied
Тор	5245	9.1	11.0	1.9	Complied

# Results: 8DH5 / SISO / Core 1 / iPA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	-1.9	11.0	12.9	Complied
Middle	5203	-1.6	11.0	12.6	Complied
Тор	5245	-1.7	11.0	12.7	Complied

# Results: 8DH5 / SISO / Core 1 / ePA

Channel	Frequency (MHz)	PSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5162	6.9	11.0	4.1	Complied
Middle	5203	7.0	11.0	4.0	Complied
Тор	5245	6.6	11.0	4.4	Complied

Page 129 of 176

# Transmitter Maximum Power Spectral Density (5.15-5.25 GHz band) (continued)

Results: DH5 / Beamforming / Core 0 + Core 1 / iPA

		Core 0			Core 1			
Channel	Frequency (MHz)	PSD (dBm /MHz)	Duty Cycle correction factor (dB)	Corrected PSD (dBm /MHz)	PSD (dBm /MHz)	Duty Cycle correction factor (dB)	Corrected PSD (dBm /MHz)	
Bottom	5162	3.5	1.1	4.6	3.2	1.1	4.3	
Middle	5203	3.8	1.1	4.9	3.7	1.1	4.8	
Тор	5245	3.6	1.1	4.7	3.7	1.1	4.8	

Channel	Frequency (MHz)	Corrected PSD Core 0 (dBm /MHz)	Corrected PSD Core 1 (dBm /MHz)	Combined PSD (dBm /MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	5162	4.6	4.3	7.5	8.5	1.0	Complied
Middle	5203	4.9	4.8	7.9	8.5	0.6	Complied
Тор	5245	4.7	4.8	7.8	8.5	0.7	Complied

# Results: 4DH5 / Beamforming / Core 0 + Core 1 / iPA

Channel	Frequency (MHz)	PSD Core 0 (dBm /MHz)	PSD Core 1 (dBm /MHz)	Combined PSD (dBm /MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	5162	1.0	0.3	3.7	8.5	4.8	Complied
Middle	5203	1.4	0.6	4.0	8.5	4.5	Complied
Тор	5245	1.3	0.6	4.0	8.5	4.5	Complied

# Results: 4DH5 / Beamforming / Core 0 + Core 1 / ePA

Channel	Frequency (MHz)	PSD Core 0 (dBm /MHz)	PSD Core 1 (dBm /MHz)	Combined PSD (dBm /MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	5162	3.6	2.6	6.1	8.5	2.4	Complied
Middle	5203	3.6	2.8	6.2	8.5	2.3	Complied
Тор	5245	3.6	2.4	6.1	8.5	2.4	Complied

# Results: 8DH5 / Beamforming / Core 0 + Core 1 / iPA

Channel	Frequency (MHz)	PSD Core 0 (dBm /MHz)	PSD Core 1 (dBm /MHz)	Combined PSD (dBm /MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	5162	-1.9	-2.7	0.7	8.5	7.8	Complied
Middle	5203	-1.5	-2.4	1.1	8.5	7.4	Complied
Тор	5245	-1.8	-2.4	0.9	8.5	7.6	Complied

Page 130 of 176

ISSUE DATE: 17 APRIL 2023

# Transmitter Maximum Power Spectral Density (5.15-5.25 GHz band) (continued)

Results: 8DH5 / Beamforming / Core 0 + Core 1 / ePA

VERSION 1.0

Channel	Frequency (MHz)	PSD Core 0 (dBm /MHz)	PSD Core 1 (dBm /MHz)	Combined PSD (dBm /MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	5162	2.7	1.7	5.2	8.5	3.3	Complied
Middle	5203	2.6	2.1	5.4	8.5	3.1	Complied
Тор	5245	3.0	2.1	5.6	8.5	2.9	Complied

Page 131 of 176

TEST REPORT SERIAL NO: UL-RPT-RP14614878JD04A

VERSION 1.0 ISSUE DATE: 17 APRIL 2023

#### Transmitter Maximum Power Spectral Density (5.725-5.85 GHz band)

#### 4.5.2 5.725-5.85 GHz band

#### **Test Summary:**

Test Engineers:	Luis Pazos Perez & Jose Bayona	Test Dates:	09 March 2023 & 13 March 2023
Test Sample Serial Number:	RHKHHQ9YHK		

FCC Reference:	Part 15.407(a)(3)(i)
Test Method Used:	KDB 789033 D02 Section II.F. referencing II.E.2.b) and II.E.2.d)

#### **Environmental Conditions:**

Temperature (°C):	22 to 23
Relative Humidity (%):	35 to 41

#### Note(s):

- 1. Transmitter Maximum Power Spectral Density tests in all bands were performed using a signal analyser in accordance with KDB 789033 II. F referencing II.E.2.b) Method SA-1 and II.E.2.d) Method SA-2.
- 2. For DH5 where the EUT was transmitting at <98% duty cycle, the calculated duty cycle in Section 4.1 was added to the measured maximum power spectral density in order to compute the average maximum power spectral density during the actual transmission time.
- 3. FCC Part 15.407(a)(3)(i) limit for PSD in the 5.725-5.85 GHz operating band is <30 dBm/500 kHz.
- 4. In accordance with ANSI C63.10 Section 4.1.4.1, use of bandwidths greater than those specified can produce higher readings. Compliance against the applicable limits is shown using a 1 MHz resolution bandwidth. This was deemed worst case.
- 5. For Beamforming modes, PSD was measured on both ports and then combined using the *measure and* sum spectral maxima across the outputs technique, stated in FCC KDB 662911 D01 Section E)2)b).
- 6. For details on antenna gains refer to Section 3.4 of this test report.
- 7. For SISO modes of operation, the antenna gain is < 6 dBi.
- 8. For Beamforming modes of operation presented in this section of the test report, the EUT has a directional antenna gain of 8.2 dBi. In accordance with Part 15.407(a)(3)(i), the limit was reduced by the amount in dB the antenna gain exceeds 6 dBi. Therefore the limit of 30 dBm/500 kHz has been reduced by 2.2 dB to 27.8 dBm.
- 9. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF level offset was entered on the signal analyser to compensate for the loss of the attenuator and RF cable.
- 10. As the power spectral density test uses the same test method as the output power test, before the power is integrated across the 26 dB bandwidth, the conducted power spectral density plots are located in the conducted output power section 4.4 of this test report. The peak spectral density was measured by placing a marker on the peak of the signal and the results entered in the tables below.

# <u>Transmitter Maximum Power Spectral Density (5.725-5.85 GHz band) (continued)</u>

Results: DH5 / SISO / Core 0 / iPA

Channel	Frequency (MHz)	PSD (dBm / 1 MHz)	Duty cycle correction factor (dB)	Corrected PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	9.1	1.1	10.2	30.0	19.8	Complied
Middle	5788	9.2	1.1	10.3	30.0	19.7	Complied
Тор	5844	9.4	1.1	10.5	30.0	19.5	Complied

#### Results: 4DH5 / SISO / Core 0 / iPA

Channel	Frequency (MHz)	PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	1.5	30.0	28.5	Complied
Middle	5788	1.1	30.0	28.9	Complied
Тор	5844	1.5	30.0	28.5	Complied

# Results: 4DH5 / SISO / Core 0 / ePA

Channel	Frequency (MHz)	PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	11.5	30.0	18.5	Complied
Middle	5788	11.2	30.0	18.8	Complied
Тор	5844	11.5	30.0	18.5	Complied

# Results: 8DH5 / SISO / Core 0 / iPA

Channel	Frequency (MHz)	PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	-1.6	30.0	31.6	Complied
Middle	5788	-2.0	30.0	32.0	Complied
Тор	5844	-1.5	30.0	31.5	Complied

# Results: 8DH5 / SISO / Core 0 / ePA

Channel	Frequency (MHz)	PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	6.6	30.0	23.4	Complied
Middle	5788	7.0	30.0	23.0	Complied
Тор	5844	6.7	30.0	23.3	Complied

Page 133 of 176

# <u>Transmitter Maximum Power Spectral Density (5.725-5.85 GHz band) (continued)</u>

Results: DH5 / SISO / Core 1 / iPA

Channel	Frequency (MHz)	PSD (dBm / 1 MHz)	Duty cycle correction factor (dB)	Corrected PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	9.1	1.1	10.2	30.0	19.8	Complied
Middle	5788	8.9	1.1	10.0	30.0	20.0	Complied
Тор	5844	9.5	1.1	10.6	30.0	19.4	Complied

#### Results: 4DH5 / SISO / Core 1 / iPA

Channel	Channel Frequency (MHz)		PSD Limit (dBm / 1 MHz) (dBm / 500 kHz)		Result
Bottom	5733	1.3	30.0	28.7	Complied
Middle	5788	1.3	30.0	28.7	Complied
Тор	5844	1.5	30.0	28.5	Complied

# Results: 4DH5 / SISO / Core 1 / ePA

Channel	Channel Frequency (MHz)		Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	11.2	30.0	18.8	Complied
Middle	5788	11.5	30.0	18.5	Complied
Тор	5844	11.4	30.0	18.6	Complied

# Results: 8DH5 / SISO / Core 1 / iPA

Channel	Channel Frequency (MHz)		Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	-2.1	30.0	32.1	Complied
Middle	5788	-2.0	30.0	32.0	Complied
Тор	5844	-1.9	30.0	31.9	Complied

# Results: 8DH5 / SISO / Core 1 / ePA

Channel	Frequency (MHz)	PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	6.7	30.0	23.3	Complied
Middle	5788	6.6	30.0	23.4	Complied
Тор	5844	6.8	30.0	23.2	Complied

Page 134 of 176

# <u>Transmitter Maximum Power Spectral Density (5.725-5.85 GHz band) (continued)</u> Results: DH5 / Beamforming / Core 0 + Core 1 / iPA

		Core 0			Core 1			
Channel	Frequency (MHz)	PSD (dBm / 1 MHz)	Duty Cycle correction factor (dB)	Corrected PSD (dBm / 1 MHz)	PSD (dBm / 1 MHz)	Duty Cycle correction factor (dB)	Corrected PSD (dBm / 1 MHz)	
Bottom	5733	9.0	1.1	10.1	8.2	1.1	9.3	
Middle	5788	8.9	1.1	10.0	8.0	1.1	9.1	
Тор	5844	9.3	1.1	10.4	8.4	1.1	9.5	

Channel	Frequency (MHz)	Corrected PSD Core 0 (dBm / 1 MHz)	Corrected PSD Core 1 (dBm / 1 MHz)	PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	10.1	9.3	12.7	27.8	15.1	Complied
Middle	5788	10.0	9.1	12.6	27.8	15.2	Complied
Тор	5844	10.4	9.5	13.0	27.8	14.8	Complied

# Results: 4DH5 / Beamforming / Core 0 + Core 1 / iPA

Channel	Frequency (MHz)	PSD Core 0 (dBm / 1 MHz)	PSD Core 1 (dBm / 1 MHz)	Combined PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	1.5	0.0	3.8	27.8	24.0	Complied
Middle	5788	1.4	0.5	4.0	27.8	23.8	Complied
Тор	5844	1.3	0.5	3.9	27.8	23.9	Complied

# Results: 4DH5 / Beamforming / Core 0 + Core 1 / ePA

Channel	Frequency (MHz)	PSD Core 0 (dBm / 1 MHz)	PSD Core 1 (dBm / 1 MHz)	Combined PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	11.4	10.6	14.0	27.8	13.8	Complied
Middle	5788	11.0	10.9	14.0	27.8	13.8	Complied
Тор	5844	11.2	11.3	14.3	27.8	13.5	Complied

# Results: 8DH5 / Beamforming / Core 0 + Core 1 / iPA

Channel	Frequency (MHz)	PSD Core 0 (dBm / 1 MHz)	PSD Core 1 (dBm / 1 MHz)	Combined PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	-1.5	-3.0	0.8	27.8	27.0	Complied
Middle	5788	-1.8	-2.1	1.1	27.8	26.7	Complied
Тор	5844	-1.7	-2.1	1.1	27.8	26.7	Complied

TEST REPORT SERIAL NO: UL-RPT-RP14614878JD04A

# <u>Transmitter Maximum Power Spectral Density (5.725-5.85 GHz band) (continued)</u>

Results: 8DH5 / Beamforming / Core 0 + Core 1 / ePA

Channel	Frequency (MHz)	PSD Core 0 (dBm / 1 MHz)	PSD Core 1 (dBm / 1 MHz)	Combined PSD (dBm / 1 MHz)	Limit (dBm / 500 kHz)	Margin (dB)	Result
Bottom	5733	6.7	5.5	9.2	27.8	18.6	Complied
Middle	5788	7.0	6.6	9.8	27.8	18.0	Complied
Тор	5844	6.5	6.1	9.3	27.8	18.5	Complied

Page 136 of 176

# 5 Radiated Test Results

#### 5.1 Transmitter Out of Band Radiated Emissions <1 GHz

#### **Test Summary:**

Test Engineer:	Andrew Harding	Test Dates:	15 February 2023 & 16 February 2023
Test Sample Serial Number:	NQHHW969D9		

FCC Reference:	Parts 15.407(b)(1),(9),(10) & 15.209(a)
Test Method Used:	KDB 789033 II.G. & ANSI C63.10 Sections 6.3, 6.4 and 6.5
Frequency Range:	9 kHz to 1000 MHz

#### **Environmental Conditions:**

Temperature (°C):	19
Relative Humidity (%):	39

#### Note(s):

- 1. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
- 2. Pre-scans were performed with the EUT transmitting in the band 5.725 to 5.85 GHz band with a data rate of 4DH5 / Core 1 / ePA on middle channel in this band as it produced the highest output power and was therefore deemed worst case.
- 3. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the middle channel only.
- 4. All emissions shown on the pre-scan plots were investigated and found to be ambient, or >20 dB below the applicable limit or below the measurement system noise floor. Therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
- 5. Measurements below 30 MHz were performed in a semi-anechoic chamber (Asset Number K0001) at 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. The limit was extrapolated to 3 metres in accordance with ANSI C63.10 clause 6.4.3 using the method described in clause 6.4.4.2. ANSI C63.10 clause 5.2 states an alternative test site that can demonstrate equivalence to an open area test site may be used for measurements below 30 MHz. Therefore, measurements were performed in a semi-anechoic chamber. The correlation data between semi-anechoic chamber and an open field test site is available upon request.
- 6. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
- 7. Pre-scans were performed and markers placed on the highest measured levels. The test receiver was configured as follows: For 9 kHz to 150 kHz, the resolution bandwidth was set to 300 Hz and video bandwidth 1 kHz. A peak detector was used and trace mode was Max Hold. For 150 kHz to 30 MHz, the resolution bandwidth was set to 10 kHz and video bandwidth 30 kHz, trace mode was Max Hold. For 30 MHz to 1 GHz, the resolution bandwidth was set to 120 kHz and video bandwidth 500 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold.

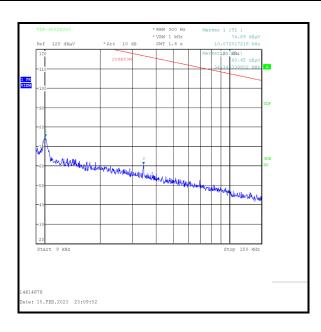
TEST REPORT

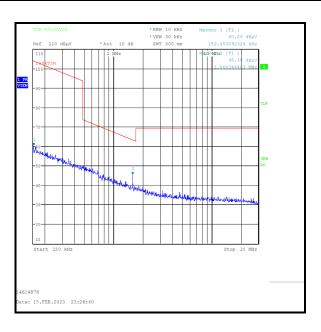
VERSION 1.0 ISSUE DATE: 17 APRIL 2023

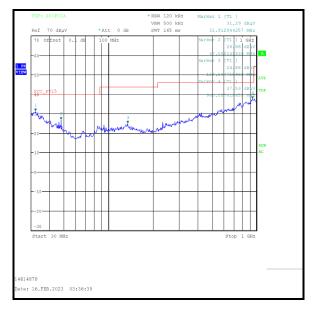
# <u>Transmitter Out of Band Radiated Emissions <1GHz (continued)</u>

# Results: Peak / Middle Channel / 4DH5 / SISO / Core 1 / ePA

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
940.057	Horizontal	37.5	46.0	8.5	Complied







#### 5.2 Transmitter Out of Band Radiated Emissions >1 GHz

#### 5.2.1 5.15-5.25 GHz band

#### <u>Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation)</u>

#### **Test Summary:**

Test Engineers:	Andrew Harding, John Ferdinand & Vi Van	Test Dates:	15 February 2023 & 17 February 2023
Test Sample Serial Number:	NQHHW969D9		

FCC Reference:	Part 15.407(b)(1),(10) & 15.209(a)
Test Method Used:	KDB 789033 II.G. & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

#### **Environmental Conditions:**

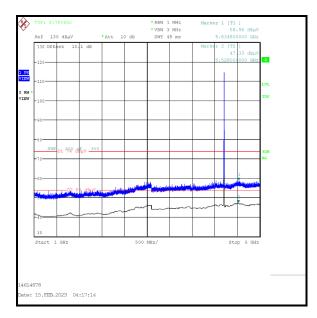
Temperature (°C):	19 to 22
Relative Humidity (%):	32 to 39

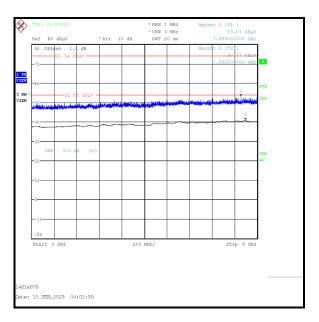
#### Note(s):

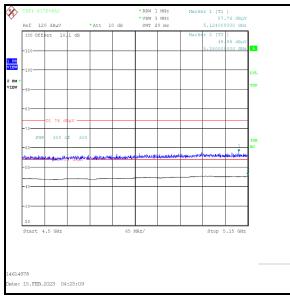
- 1. FCC Part 15.407(b)(1) states for transmitters operating in the band 5.15 to 5.25 GHz: all emissions outside of the 5.15 to 5.35 GHz band will not exceed -27 dBm/MHz. Part(b)(10) states the provisions of 15.205 apply e.g. restricted bands of operation.
- 2. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
- 3. All emissions shown on the pre-scan plots were investigated and found to be ambient, or 20 dB below the applicable limit or below the measurement system noise floor. Therefore the highest peak noise floor reading of the measuring receiver was converted to EIRP using a conversion factor of 95.2, in accordance with KDB 789033 G.2.c)(iii).
- 4. Appropriate RF filters and attenuators were used during pre-scans and final measurements. Insertion losses were entered on the spectrum analyser as RF levels offsets.
- 5. The emission shown on the 1 GHz to 6 GHz plot at approximately 5203 MHz is the EUT fundamental.
- 6. Measurements were performed across the two restricted bands (4.5 to 5.15 GHz & 5.35 to 5.46 GHz) closest to the band of operation with the EUT transmitting on the bottom channel in the 5.15 to 5.25 GHz band. The 4.5 to 5.15 GHz plot is included in this section of the test report. For the EUT transmitting on the top channel in the 5.15 to 5.25 GHz band, these plots were included as part of upper band edge measurements and can be found in section 5.3.1 of this test report.
- 7. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001/K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 m above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
- 8. Pre-scans were performed and a marker placed on the highest measured level of the appropriate plot. The test receiver resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. The sweep time was set to auto. Peak and average measurements were performed with their own appropriate detectors during the pre-scan measurements.

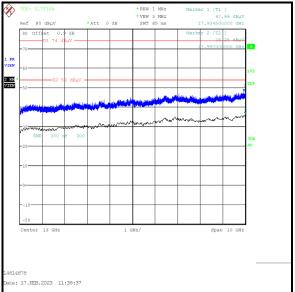
# <u>Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)</u> Results: 4DH5 / SISO / Core 1 / ePA / Middle Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
5534.500	Horizontal	-36.2	-27.0	9.2	Complied



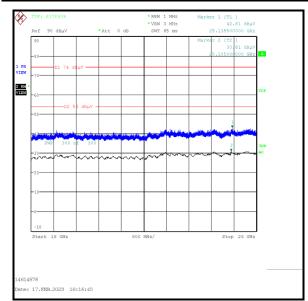


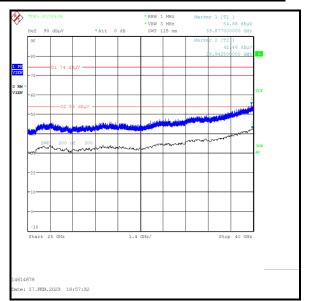




Restricted Band 4.5 GHz to 5.15 GHz

# Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)





#### 5.2.2 5.725-5.85 GHz band

#### <u>Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation)</u>

#### **Test Summary:**

Test Engineers:	Andrew Harding, John Ferdinand & Vi Van	Test Dates:	15 February 2023 & 17 February 2023
Test Sample Serial Number:	NQHHW969D9		

FCC Reference:	Part 15.407(b)(4)(i),(10) & 15.209(a)
Test Method Used:	KDB 789033 II.G. & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

#### **Environmental Conditions:**

Temperature (°C):	19 to 22
Relative Humidity (%):	32 to 39

#### Note(s):

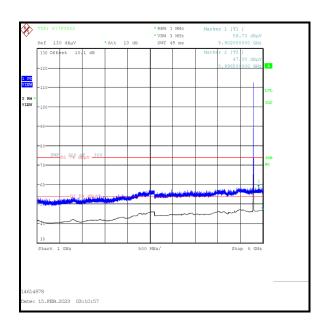
- 1. FCC Part 15.407(b)(4)(i) states for transmitters operating in the band 5.725 to 5.85 GHz: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. Part(b)(10) states the provisions of 15.205 apply e.g. restricted bands of operation.
- 2. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
- 3. All emissions shown on the pre-scan plots were investigated and found to be ambient, or 20 dB below the applicable limit or below the measurement system noise floor. Therefore the highest peak noise floor reading of the measuring receiver was converted to EIRP using a conversion factor of 95.2, in accordance with KDB 789033 G.2.c)(iii).
- 4. Appropriate RF filters and attenuators were used during pre-scans and final measurements. Insertion losses were entered on the spectrum analyser as RF levels offsets.
- 5. The emission shown on the 1 GHz to 6 GHz plot at approximately 5788 MHz is the EUT fundamental.
- 6. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001/K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. The EUT was placed at a height of 1.5 m above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
- 7. Pre-scans were performed and a marker placed on the highest measured level of the appropriate plot. The test receiver resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. The sweep time was set to auto. Peak and average measurements were performed with their own appropriate detectors during the pre-scan measurements.

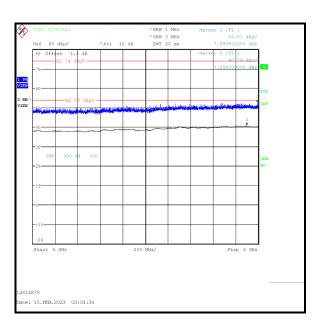
TEST REPORT

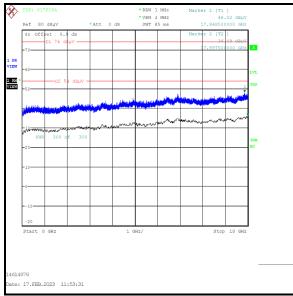
VERSION 1.0 ISSUE DATE: 17 APRIL 2023

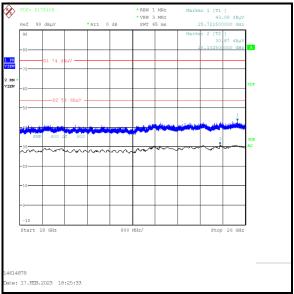
# <u>Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)</u> <u>Results: 4DH5 / SISO / Core 1 / ePA / Middle Channel / EIRP</u>

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
5902.000	Horizontal	-36.5	-27.0	9.5	Complied

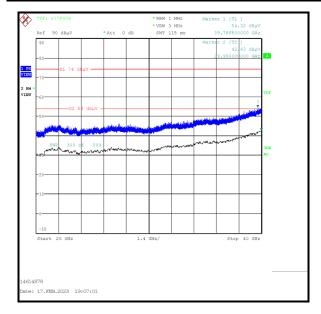








# Transmitter Out of Band Radiated Emissions (5.725-5.85 GHz band operation) (continued)



# **5.3 Transmitter Band Edge Radiated Emissions**

#### 5.3.1 5.15-5.25 GHz band

#### **Test Summary:**

Test Engineers:	Andrew Harding & John Ferdinand	Test Dates:	17 January 2023 & 18 January 2023
Test Sample Serial Number:	NQHHW969D9		

FCC Reference:	Parts 15.407(b)(1),(10), 15.205 & 15.209(a)	
Test Method Used:	ANSI C63.10 Section 6.10 & KDB 789033 II.G.	

#### **Environmental Conditions:**

Temperature (°C):	21
Relative Humidity (%):	31 to 36

#### Note(s):

- 1. Lower band edge measurements were performed with the EUT transmitting on the bottom channel. Upper band edge measurements were performed with the EUT transmitting on the top channel.
- 2. In addition, the lower and upper band edges were performed with the EUT configured in hopping mode. It was set to hop across the 79 channels closest to the applicable band edge. These plots are archived on the UL IT server and available for inspection if required.
- 3. For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also above the upper band edge at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply. Tests for at 4.5-5.15 GHz restricted band were performed and are included in section 5.2.1 of this test report.
- 4. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz. Field strength and EIRP results were found to be compliant with the restricted band limits and Part 15.407 out-of-band limits.

# Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

# Results: Static / DH5 / SISO / Core 0 / iPA

Results: Lower Band Edge / Peak

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5138.650	59.5	74.0	14.5	Complied
5150	57.4	74.0	16.6	Complied

## Results: Upper Band Edge / Peak

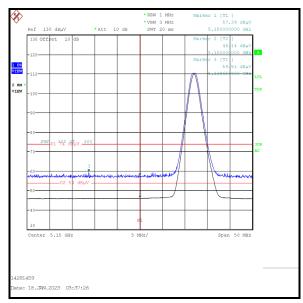
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5350	57.9	74.0	16.1	Complied
5448.340	58.8	74.0	15.2	Complied

# Results: Lower Band Edge / Average

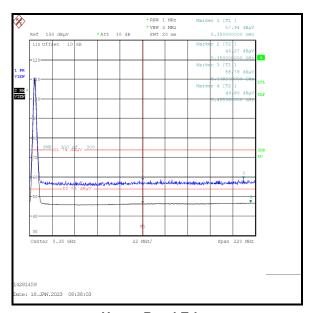
Frequency (MHz)	Level (dBμV/m)	Limit (dΒμV/m)	Margin (dB)	Result
5150	46.1	54.0	7.9	Complied

## Results: Upper Band Edge / Average

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5350	46.3	54.0	7.7	Complied
5455.380	46.8	54.0	7.2	Complied



**Lower Band Edge** 



**Upper Band Edge**