

4.8.5.45 Sample #2. Mode 1. U-NII-3.Modulation A20. Frequency range: 1 GHz – 8 GHz

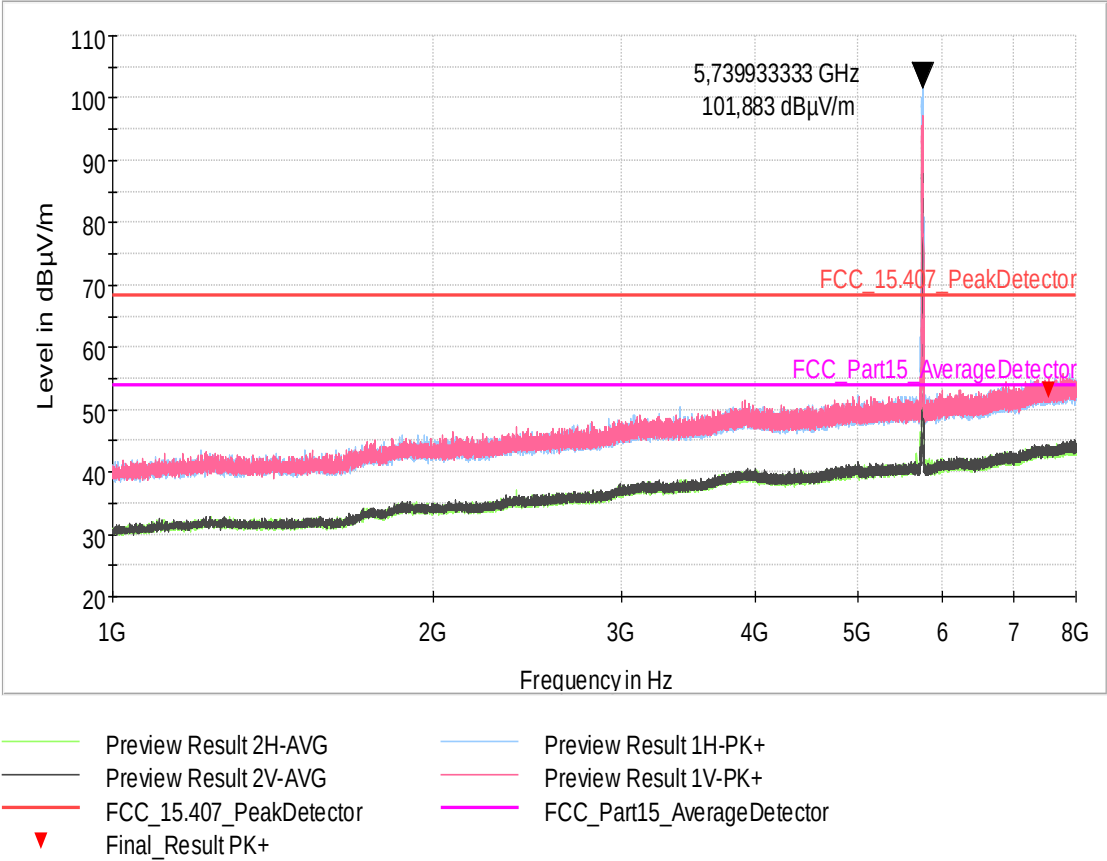


Fig. 337: Low Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV / m]	Limit [dBµV / m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB / m]
7541.970 ¹	53.2	68.23	15.0	168.0	V	262.0	10.3

Table 145: Low Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

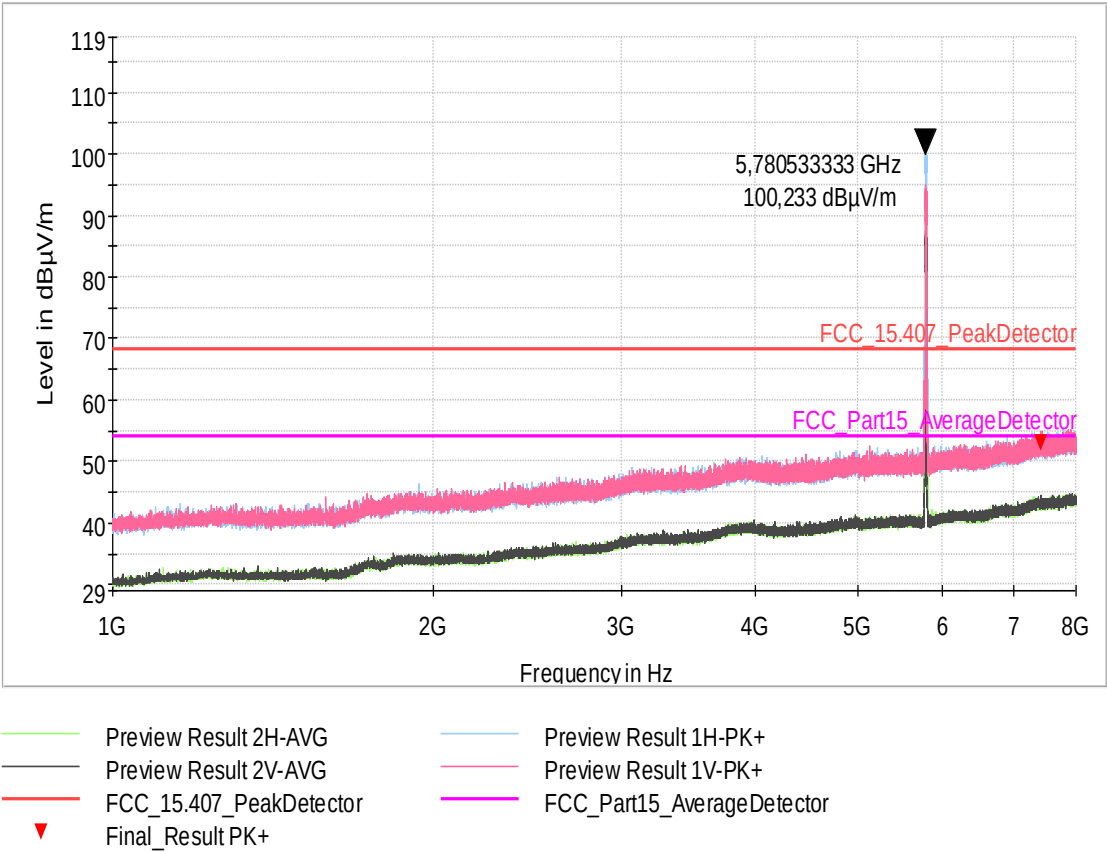


Fig. 338: Middle Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7423.670 ¹	52.9	68.23	15.2	123.0	V	50.0	10.2

Table 146: Middle Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

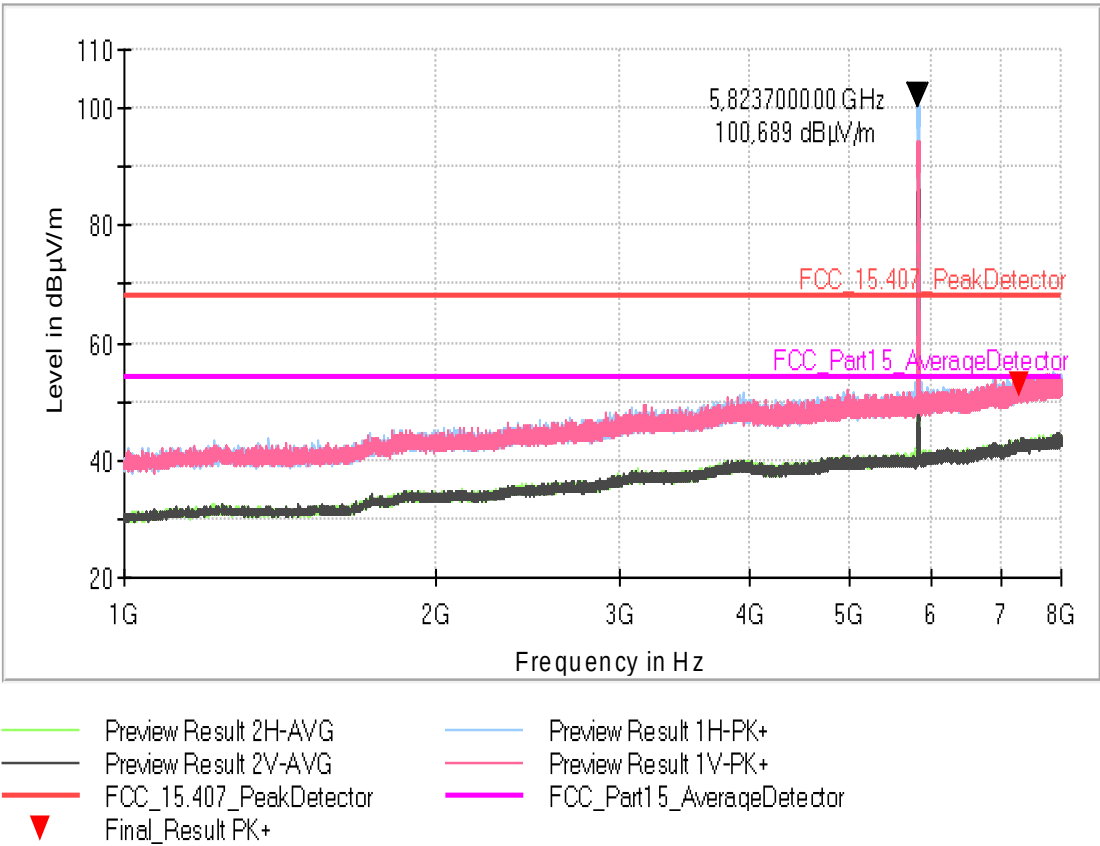


Fig. 339: High Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7418.530 ¹	52.4	68.23	15.8	350.0	V	71.0	10.2

Table 147: High Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.46 Sample #2. Mode 1. U-NII-3.Modulation A20. Frequency range: 8 GHz – 18 GHz

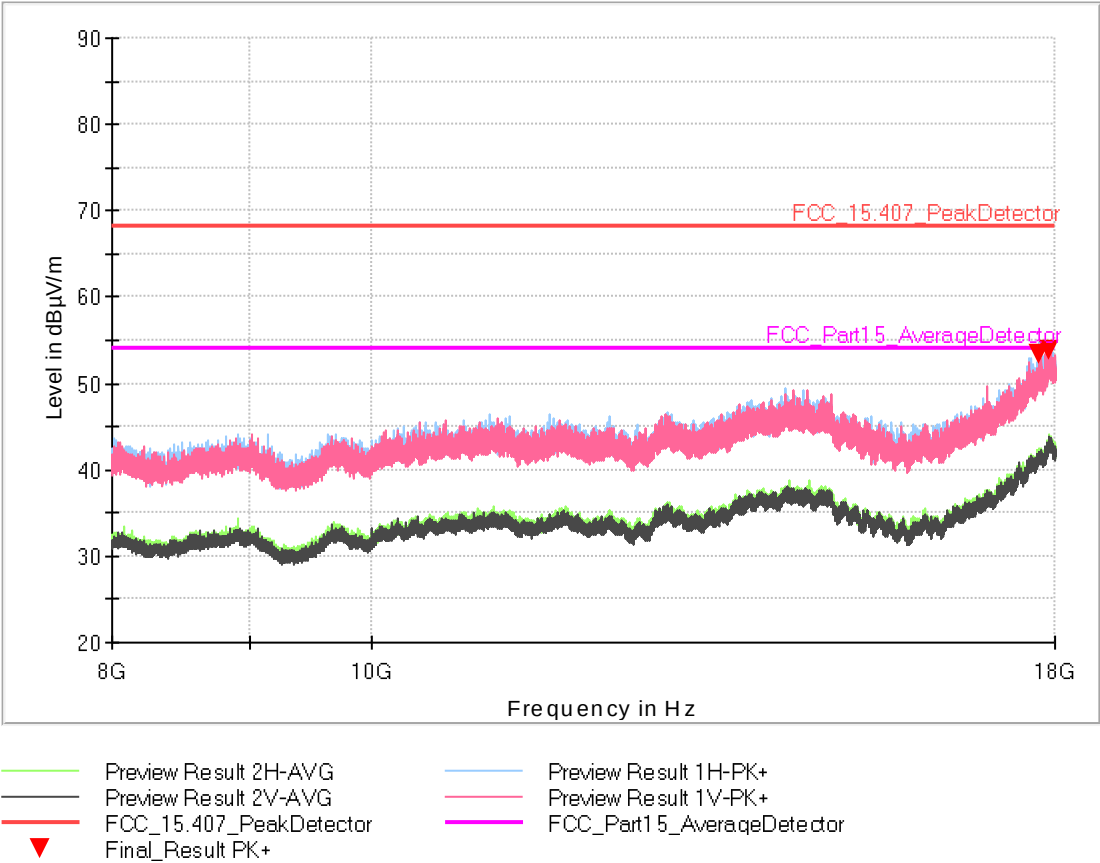


Fig. 340: Low Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17745.330 ¹	53.3	68.23	14.9	296.0	H	183.0	5.5
17913.000 ¹	53.7	68.23	14.4	181.0	H	322.0	6.5

Table 148: Low Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

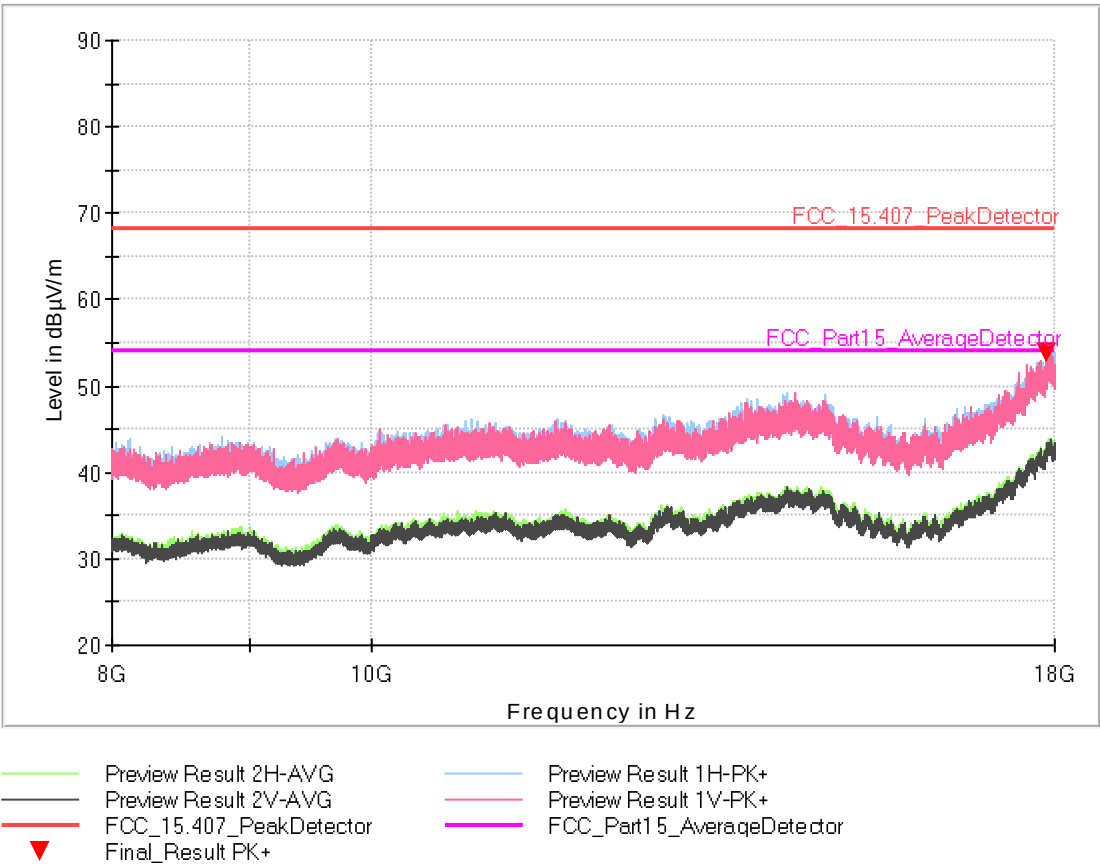


Fig. 341: Middle Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17889.000 ¹	53.7	68.23	15.4	316.0	V	342.0	6.3

Table 149: Middle Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

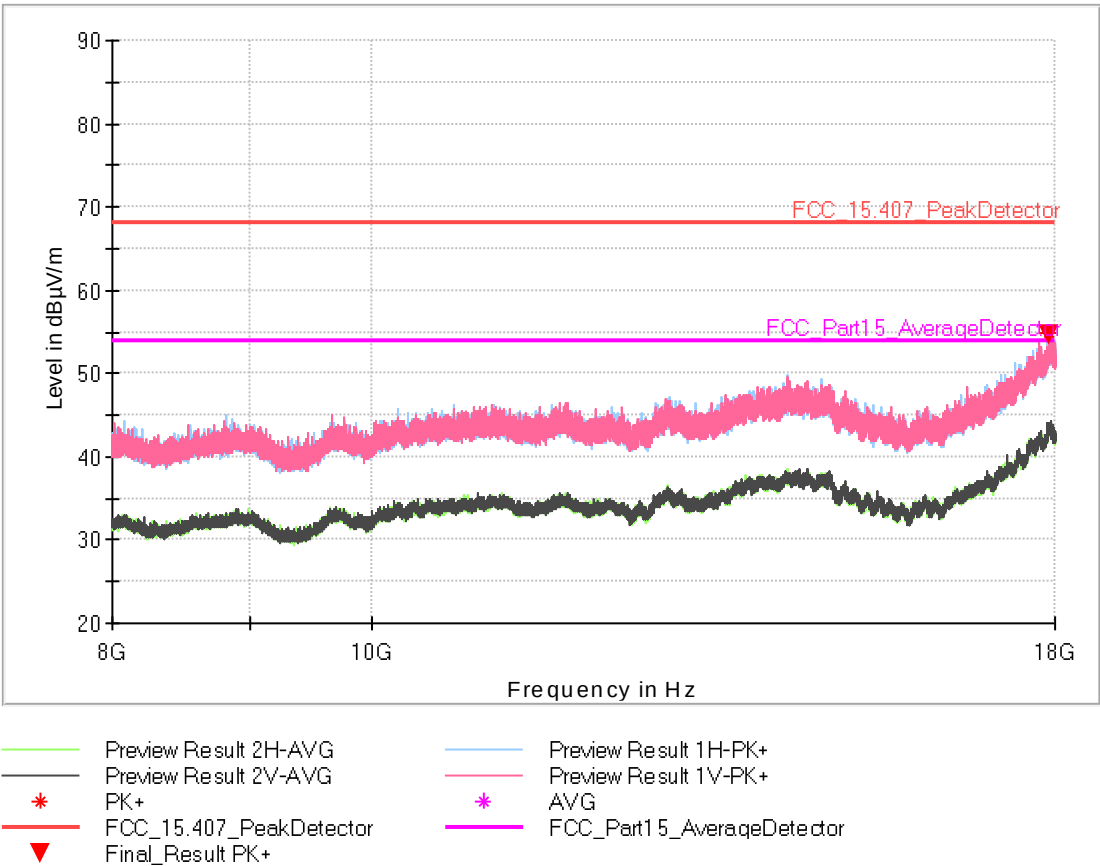


Fig. 342: High Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17922.330 ¹	54.6	68.23	13.6	350.0	V	47.0	6.5

Table 150: High Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.47 Sample #2. Mode 1. U-NII-3.Modulation N20. Frequency range: 1 GHz – 8 GHz

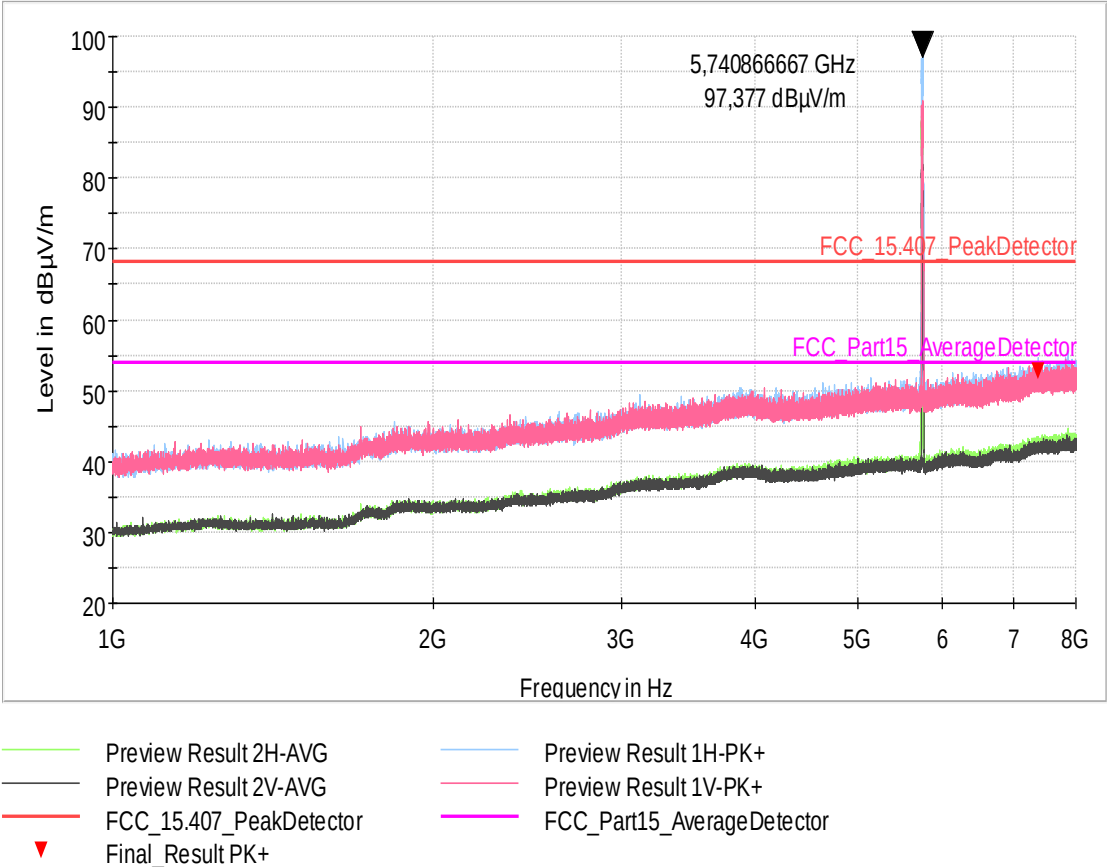


Fig. 343: Low Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7370.700 ¹	52.7	68.23	14.4	257.0	H	197.0	10.2

Table 151: Low Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

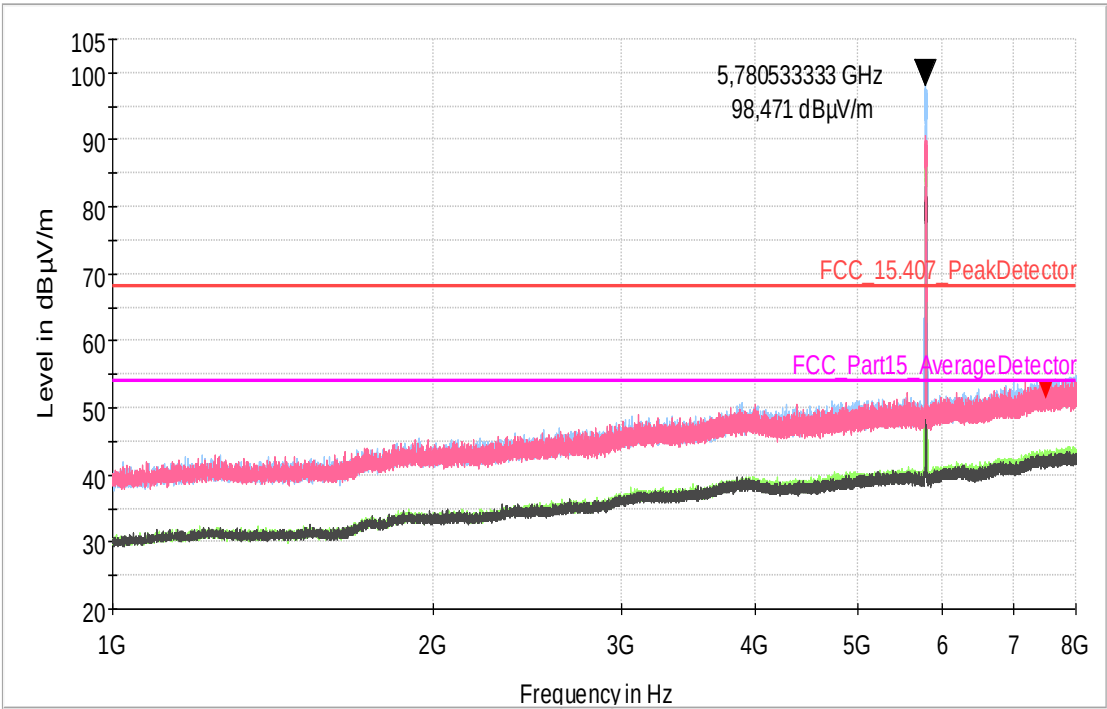


Fig. 344: Middle Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7504.400 ¹	52.5	68.23	15.7	105.0	V	166.0	10.2

Table 152: Middle Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

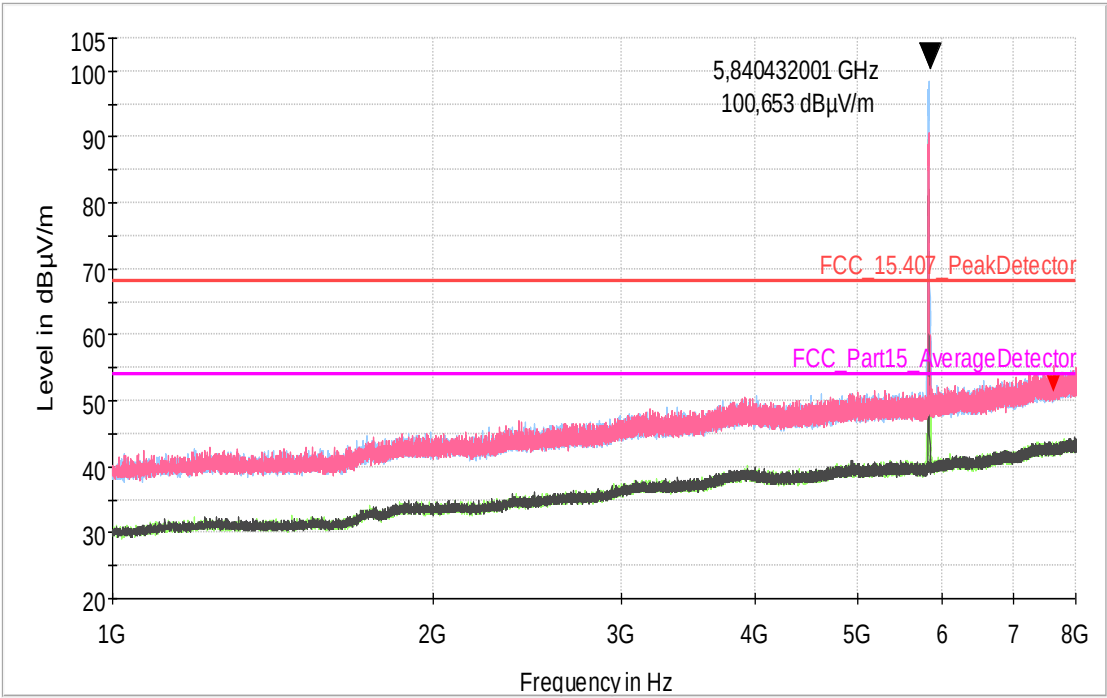


Fig. 345: High Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7634.370 ¹	52.5	68.23	15.7	119.0	V	213.0	10.3

Table 153: High Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.48 Sample #2. Mode 1. U-NII-3.Modulation N20. Frequency range: 8 GHz – 18 GHz

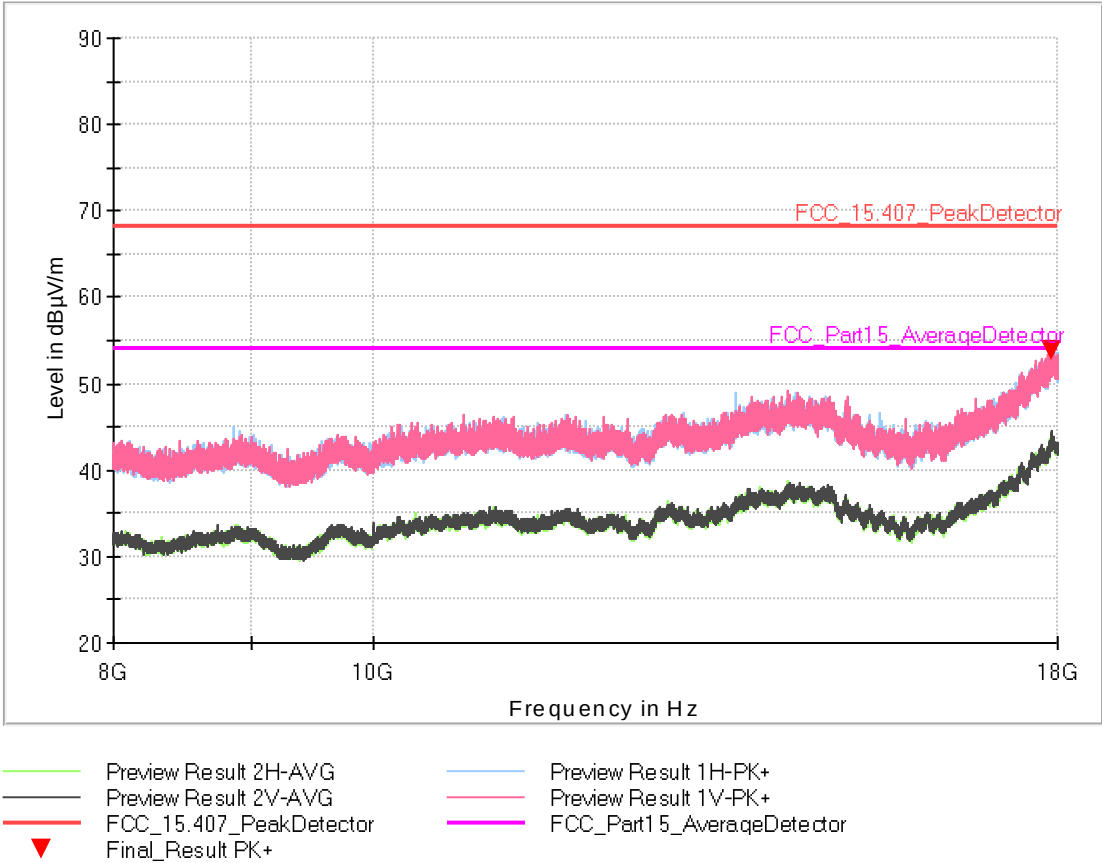


Fig. 346: Low Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17893.000 ¹	53.9	68.23	14.3	287.0	V	240.0	6.9

Table 154: Low Channel. Frequency range: 8 GHz – 18 GHz

Note 1: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

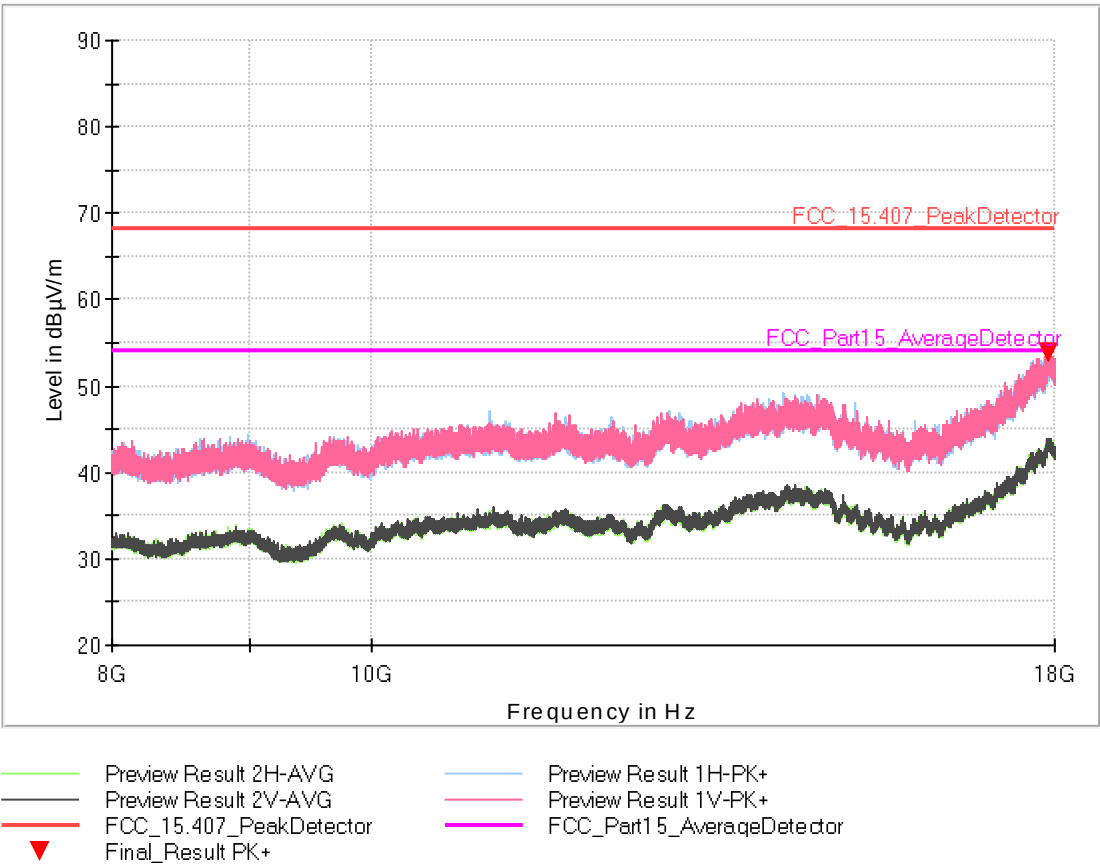


Fig. 347: Middle Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17936.670 ¹	54.2	68.23	13.8	314.0	H	226.0	6.6

Table 155: Middle Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

Fig. 348: High Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17906.330 ¹	54.00	68.23	14.23	341.0	H	2.0	6.4

Table 156: High Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.49 Sample #2. Mode 1. U-NII-3.Modulation AC20. Frequency range: 1 GHz – 8 GHz

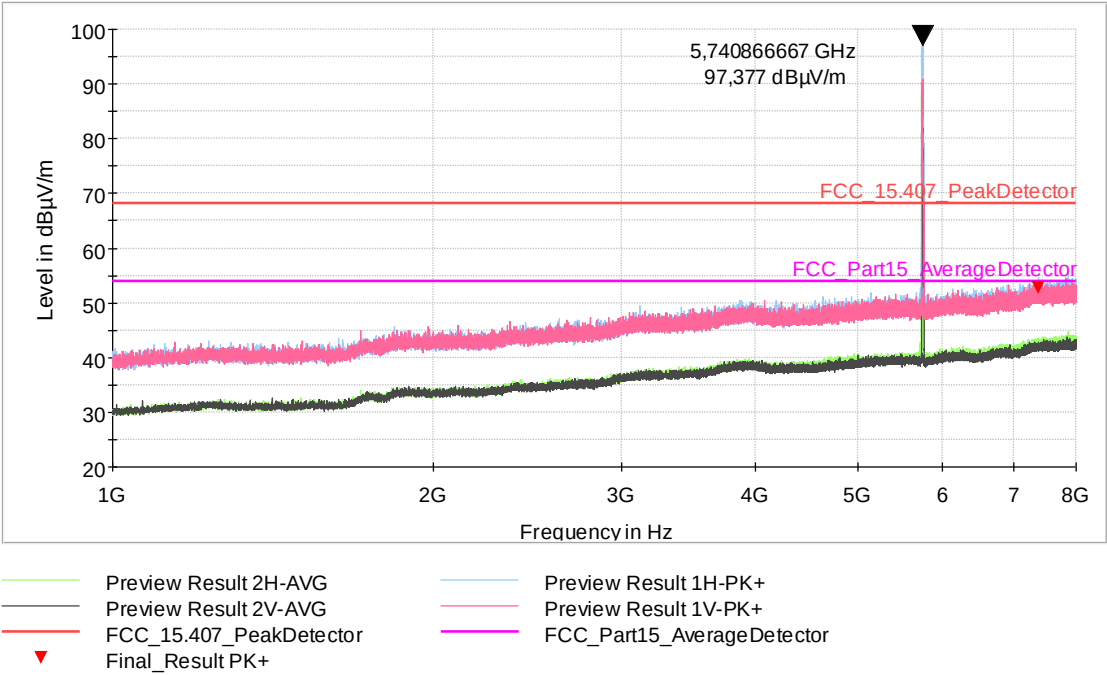


Fig. 349: Low Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7601.700 ¹	52.8	68.23	15.4	258.0	V	221.0	10.3

Table 157: Low Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

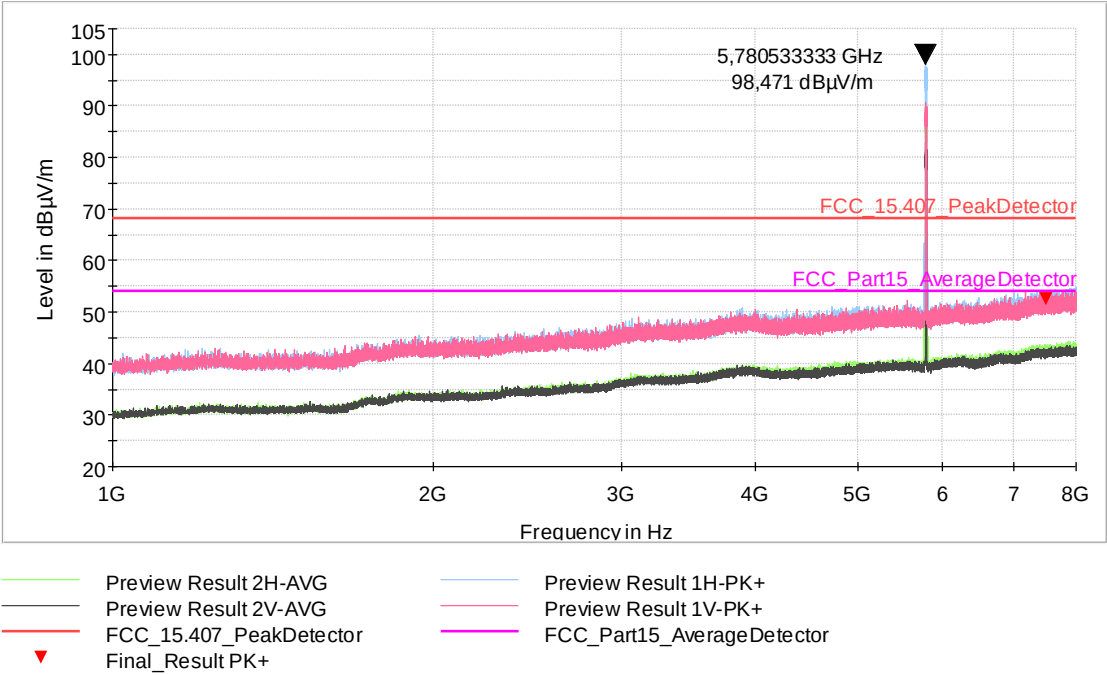


Fig. 350: Middle Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7552.930 ¹	52.8	68.23	15.4	215.0	V	0.0	10.3

Table 158: Middle Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

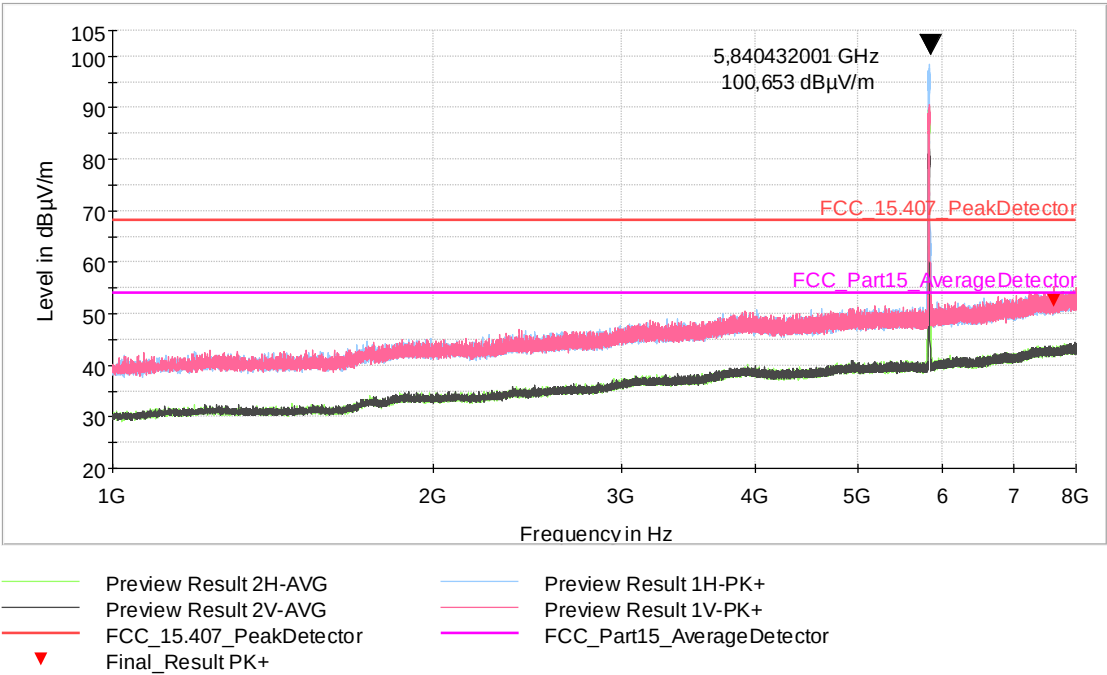


Fig. 351: High Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7466.830 ¹	53.0	68.23	15.2	174.0	V	348.0	10.2

Table 159: High Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.50 Sample #2. Mode 1. U-NII-3.Modulation AC20. Frequency range: 8 GHz – 18 GHz

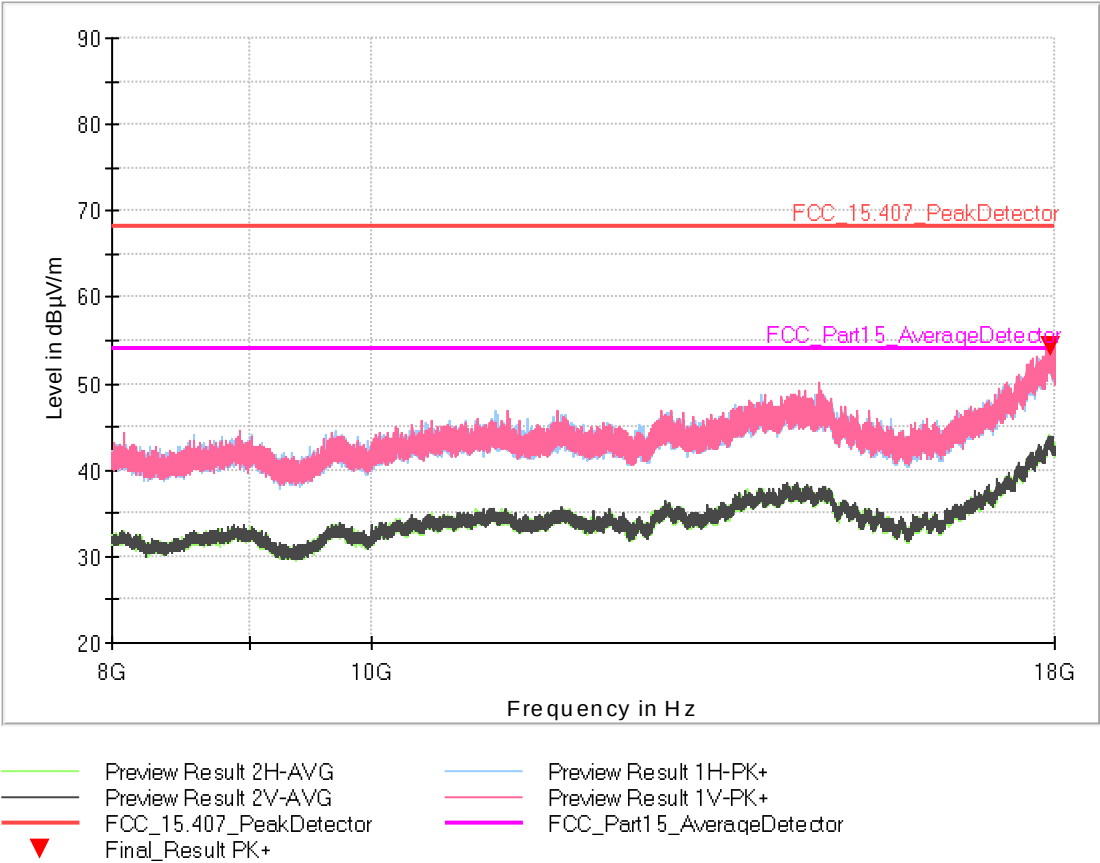


Fig. 352: Low Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17939.670 ¹	54.2	68.23	13.8	193.0	V	108.0	6.7

Table 160: Low Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

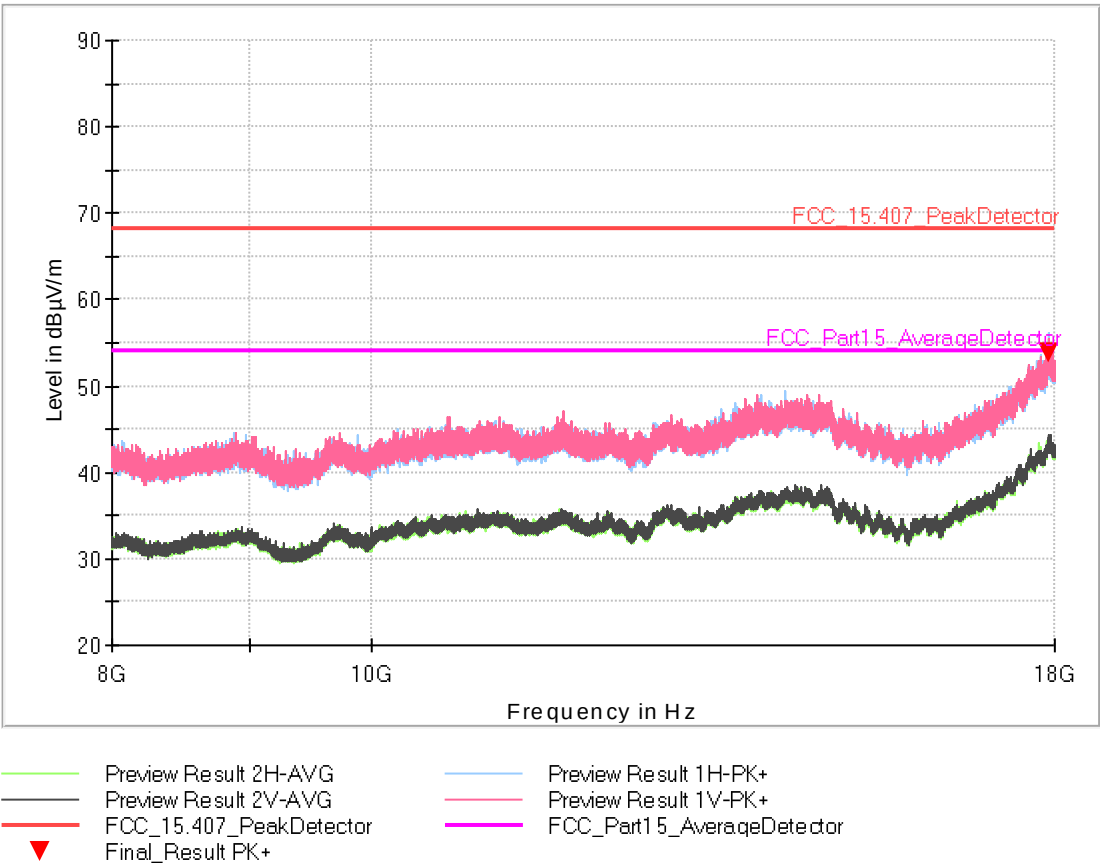


Fig. 353: Middle Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17904.670 ¹	54.5	68.23	13.73	314.0	H	204.0	6.4

Table 161: Middle Channel. Frequency range: 8 GHz – 18 GHz

*Note*¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

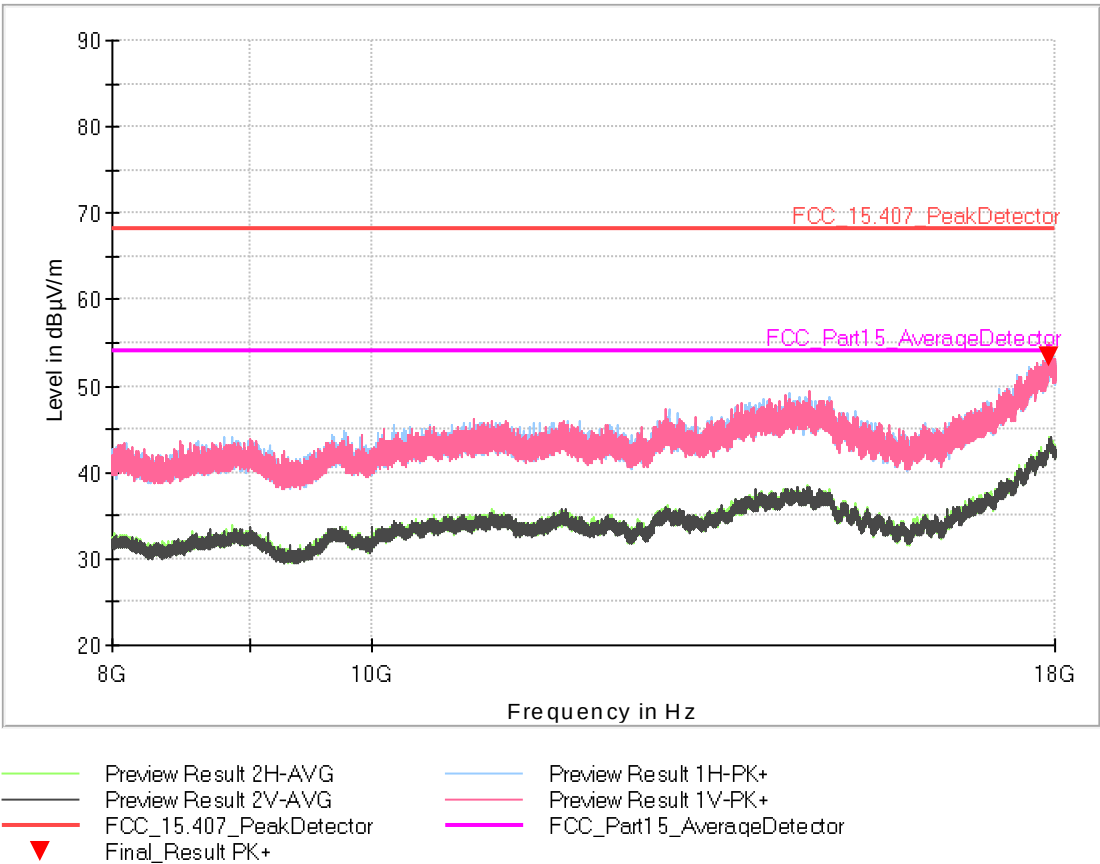


Fig. 354: High Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17778.000 ¹	52.99	68.23	15.24	261.0	H	146.0	6.2

Table 162: High Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.51 Sample #2. Mode 1. U-NII-3.Modulation N40. Frequency range: 1 GHz – 8 GHz

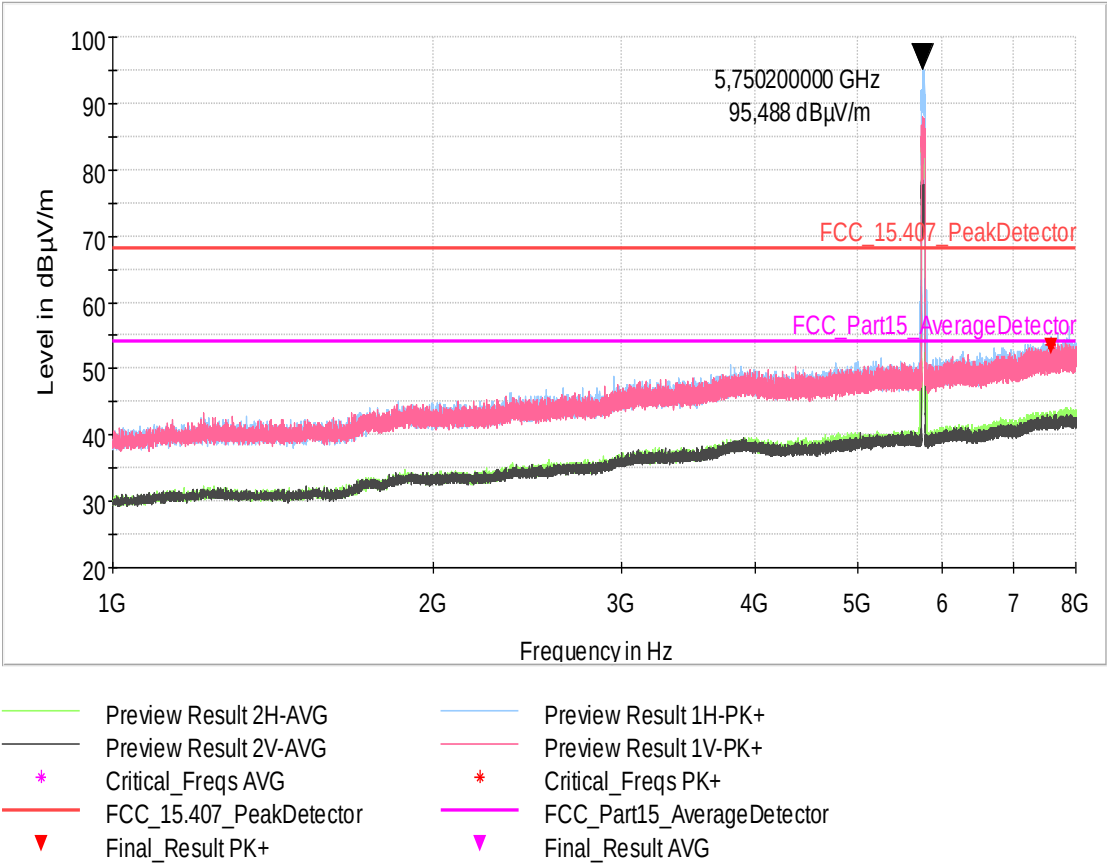


Fig. 355: Low Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV / m]	Limit [dBµV / m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB / m]
7577.430 ¹	52.2	68.23	13.9	100.0	V	33.0	10.3

Table 163: Low Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

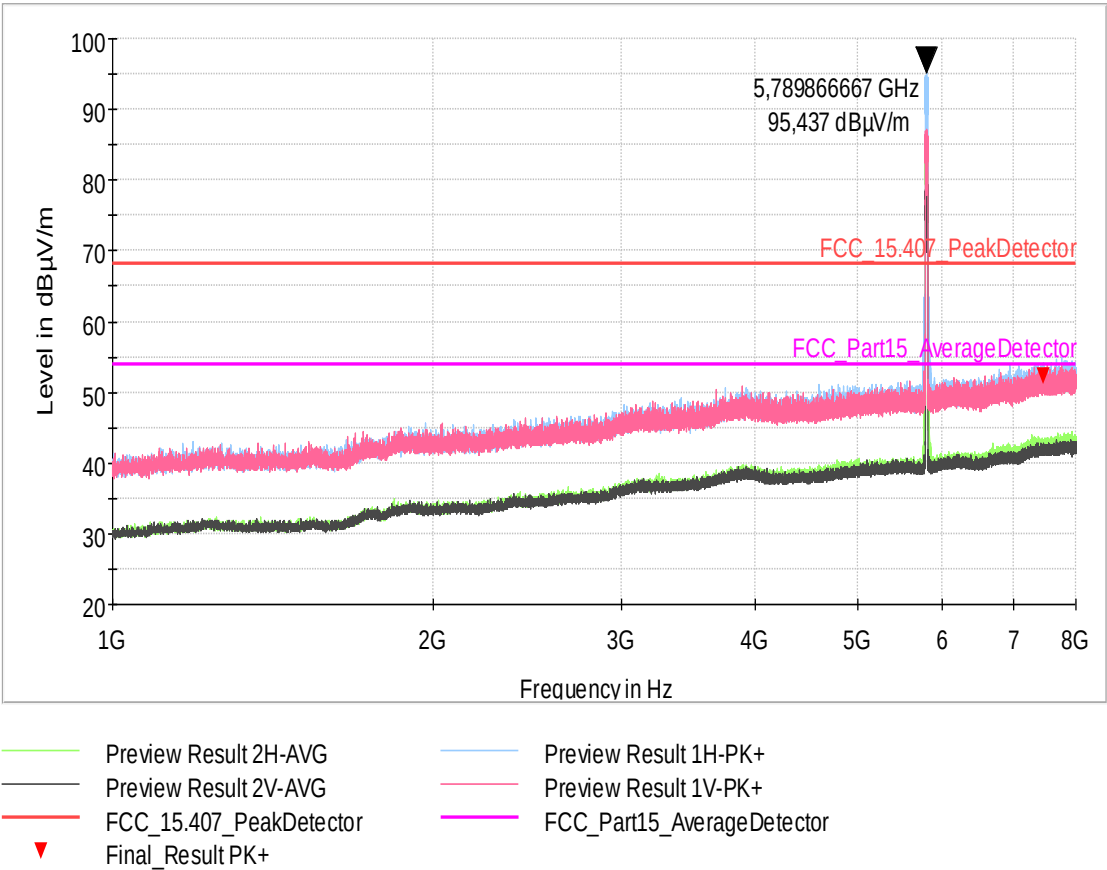


Fig. 356: High Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7457.500 ¹	52.2	68.23	16.0	166.0	H	118.0	10.2

Table 164: High Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.52 Sample #2. Mode 1. U-NII-3.Modulation N40. Frequency range: 8 GHz – 18 GHz

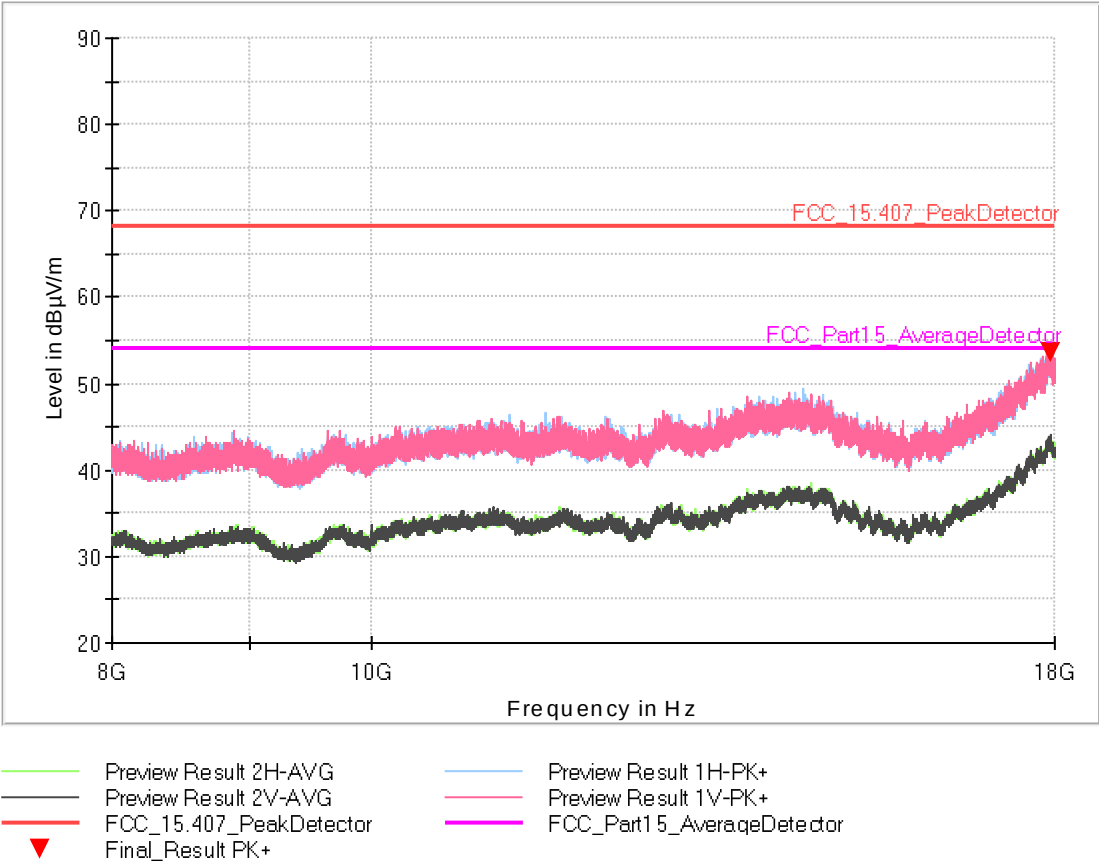


Fig. 357: Low Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17937.330 ¹	53.6	68.23	14.5	179.0	H	335.0	6.6

Table 165: Low Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

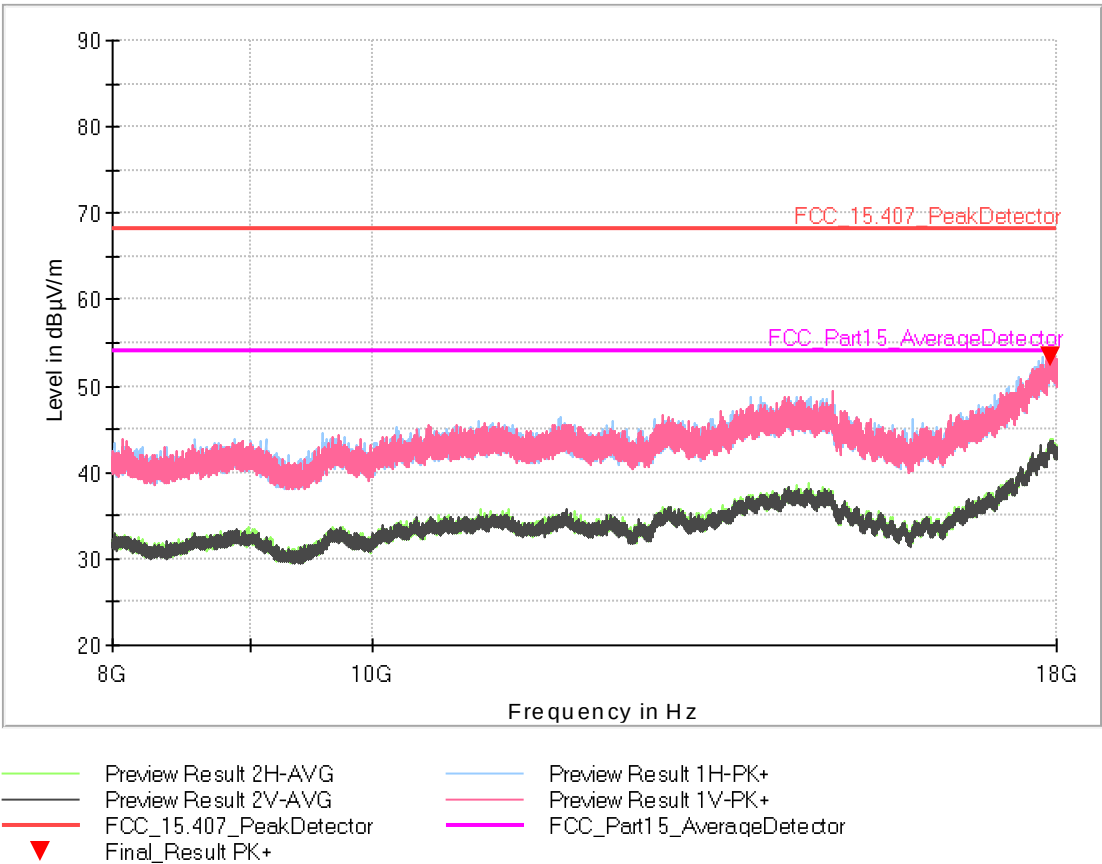


Fig. 358: High Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17897.670 ¹	53.4	68.23	14.7	276.0	V	219.0	6.4

Table 166: High Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.53 Sample #2. Mode 1. U-NII-3.Modulation AC40. Frequency range: 1 GHz – 8 GHz

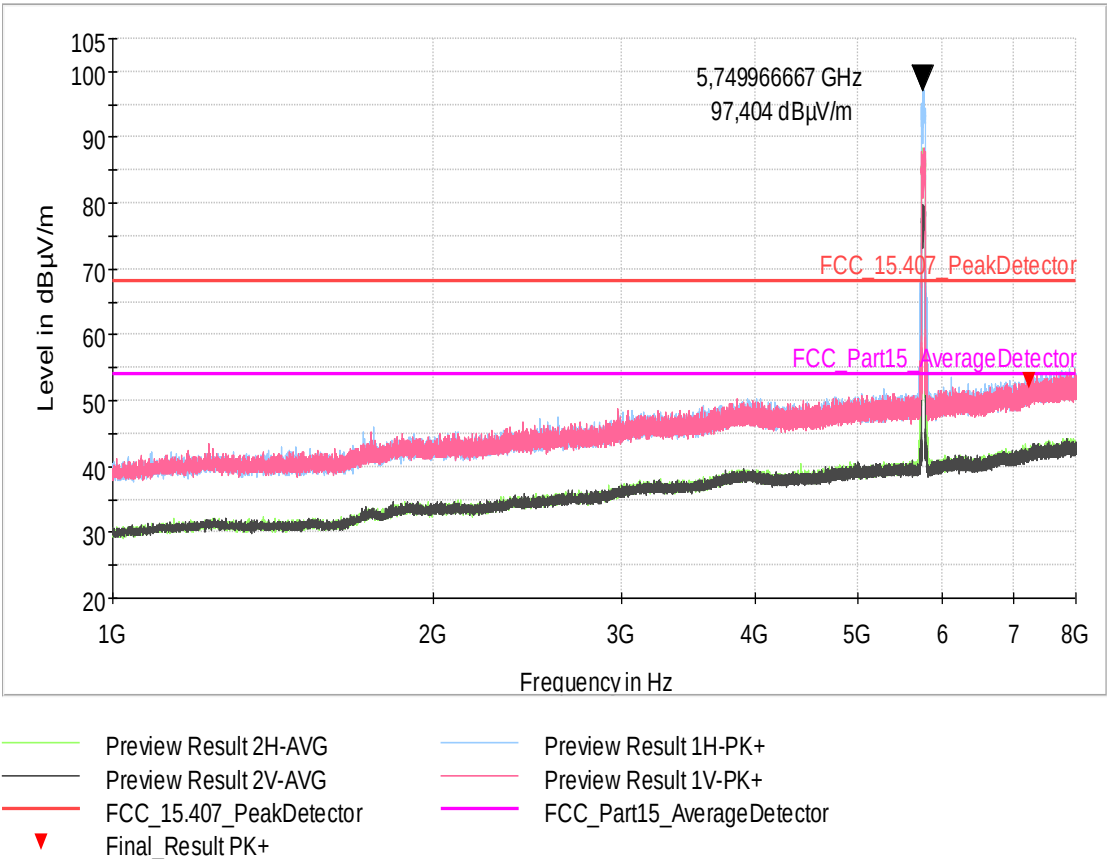


Fig. 359: Low Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/ m]	Limit [dBµV/ m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/ m]
7226.730 ¹	53.0	68.23	15.2	292.0	V	27.0	9.7

Table 167: Low Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

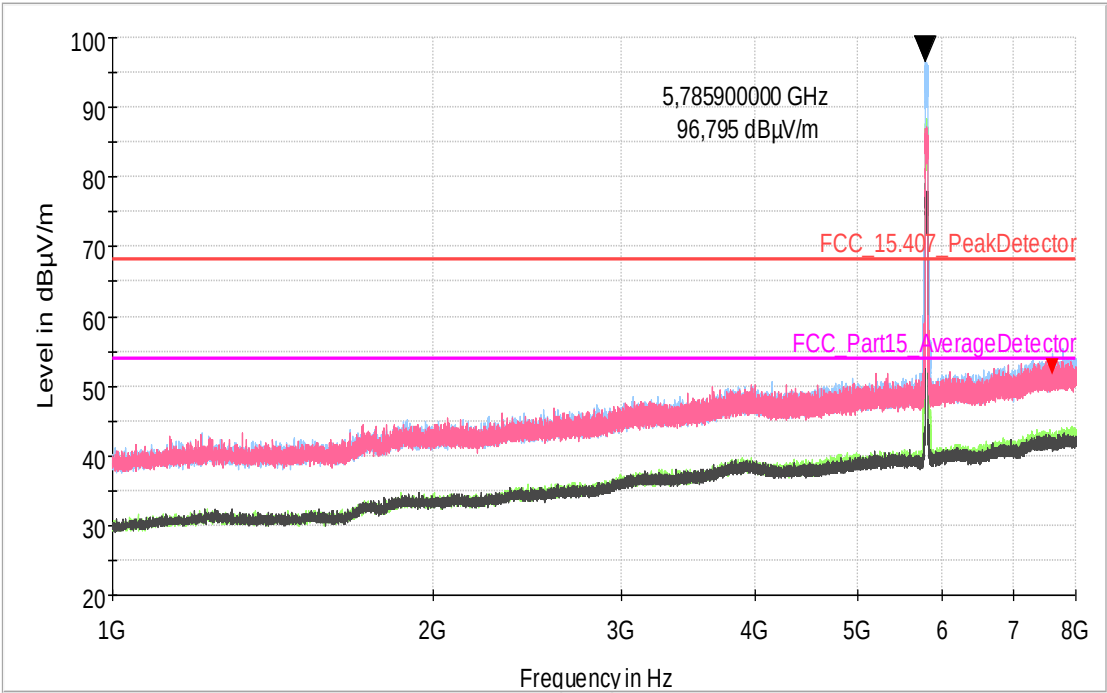


Fig. 360: High Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7597.500 ¹	52.7	68.23	15.2	153.0	H	88.0	10.3

Table 168: High Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.54 Sample #2. Mode 1. U-NII-3.Modulation AC40. Frequency range: 8 GHz – 18 GHz

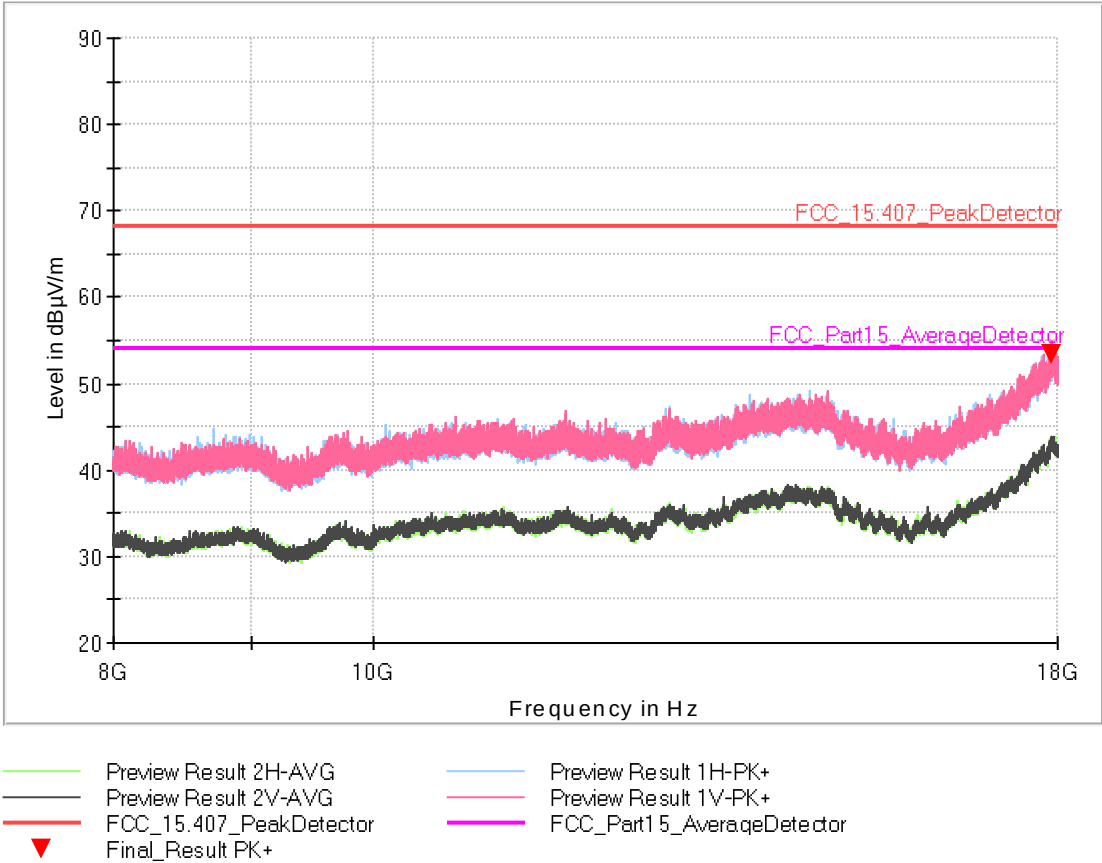


Fig. 361: Low Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17916.670 ¹	54.8	68.2	13.41	350.0	V	353.0	7.1

Table 169: Low Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

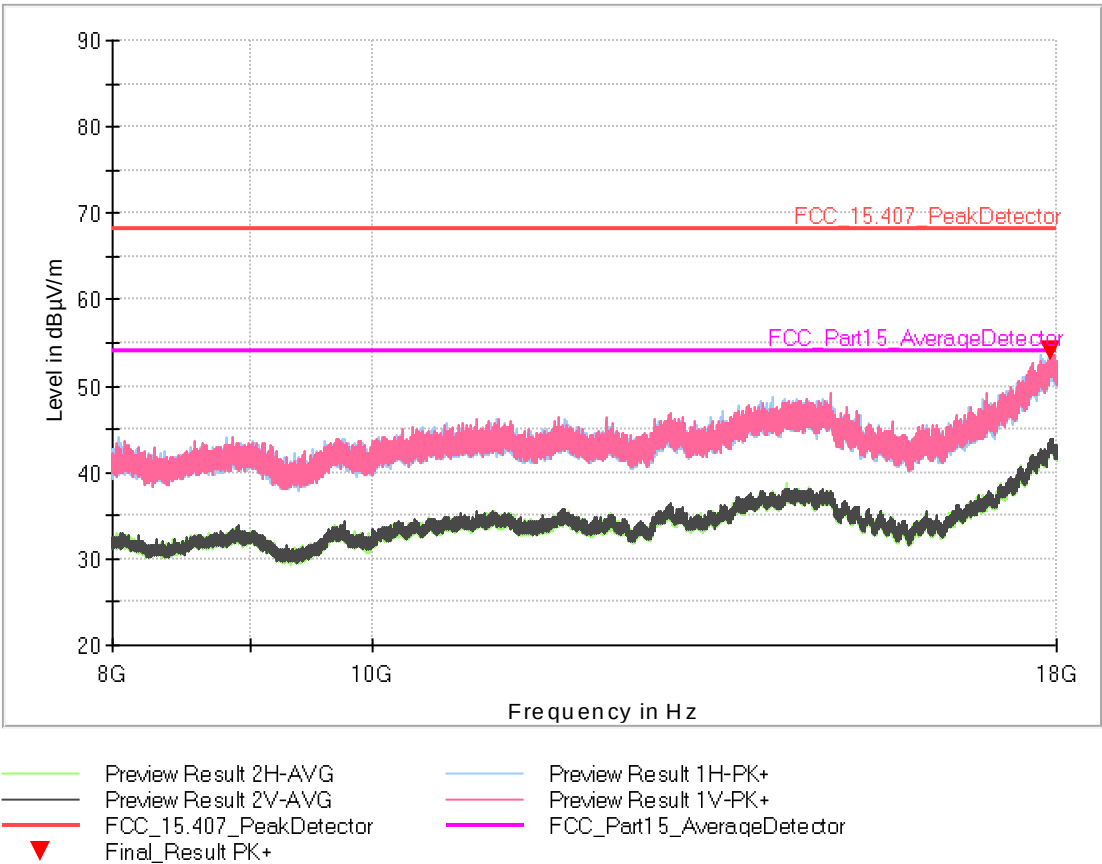


Fig. 362: High Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
17955.670 ¹	53.5	68.23	14.7	264.0	H	263.0	6.8

Table 170: High Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.55 Sample #2. Mode 1. U-NII-3.Modulation AC80. Frequency range: 1 GHz – 8 GHz

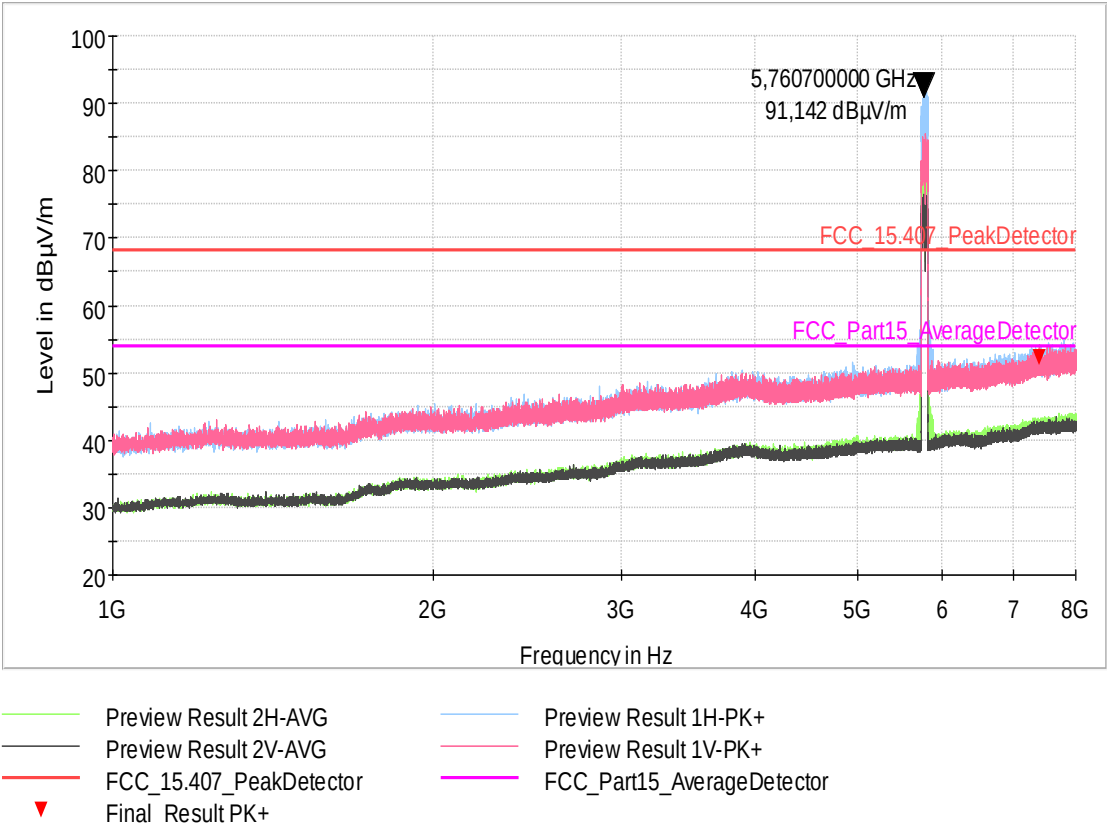


Fig. 363: Low Channel. Frequency range: 1 GHz – 8 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7403.830 ¹	52.2	68.23	15.9	274.0	V	359.0	10.2

Table 171: Low Channel. Frequency range: 1 GHz – 8 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.56 Sample #2. Mode 1. U-NII-3.Modulation AC80. Frequency range: 8 GHz – 18 GHz

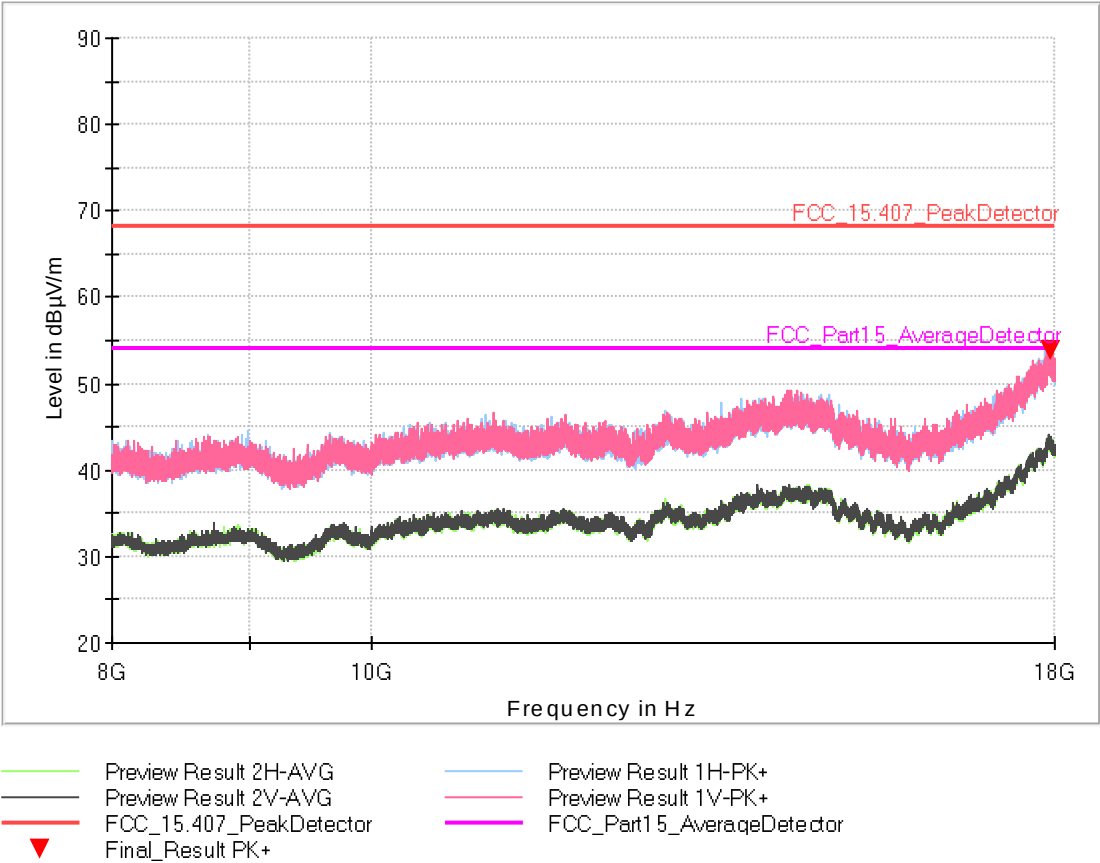


Fig. 364: Low Channel. Frequency range: 8 GHz – 18 GHz

FINAL MEASUREMENTS							
Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
7580.000 ¹	52.7	68.23	15.5	104.0	H	0.0	10.3

Table 172: Low Channel. Frequency range: 8 GHz – 18 GHz

Note ¹: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.5.57 Sample #2. Mode 1.All U-NII Bands/All modulation/All channel¹. Frequency range: 18 GHz – 26 GHz

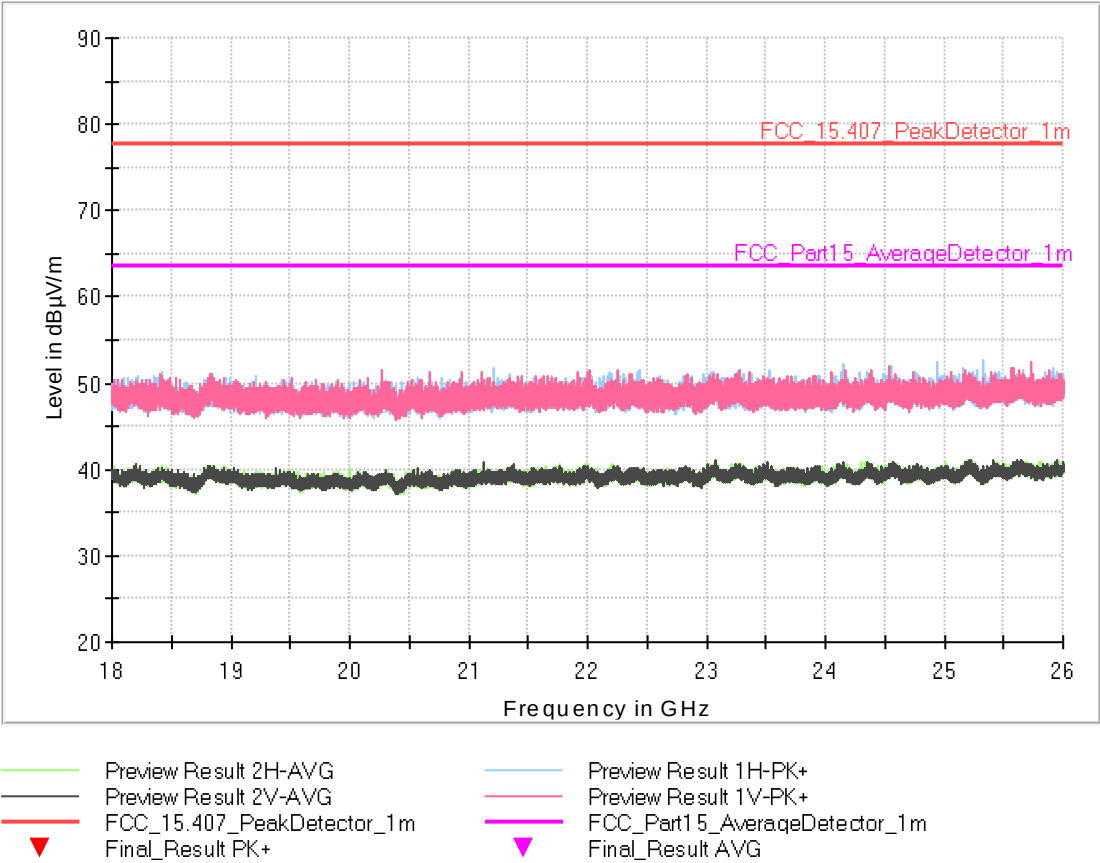


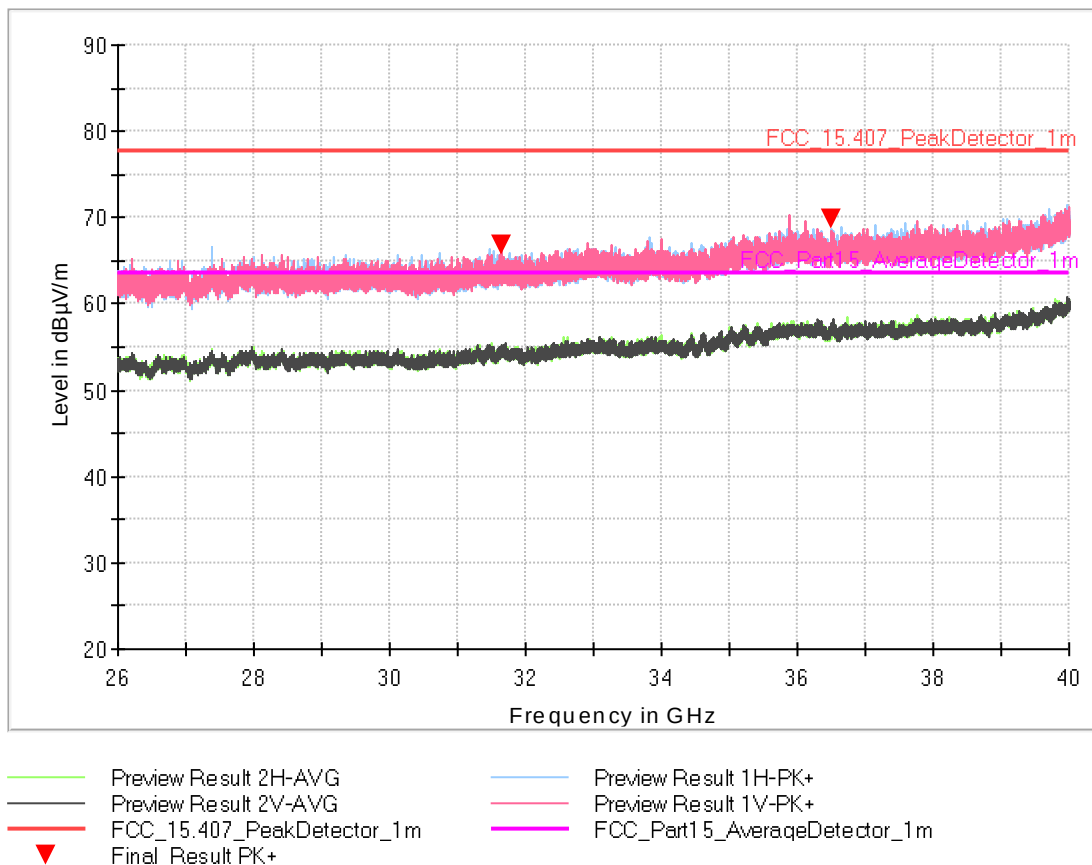
Fig. 365: All U-NII Bands/All Modulation/All Channel. Frequency range: 18 GHz – 26 GHz

FINAL MEASUREMENTS

No spurious detected. All emissions are below of the AVG limit

Note ¹: This frequency range has been measured in different channels and modulations for the all WiFi 5G U-NII bands supported by the equipment and the results obtained are very similar between them. Therefore, the radiated emissions in this frequency range do not depend on the channel and modulation configured
The above graph is taken as the most representative result.

4.8.5.58 Sample #2. Mode 1.All U-NII Bands/All modulation/All channel¹. Frequency range: 26 GHz – 40 GHz



All U-NII Bands/All Modulation/All Channel. Frequency range: 26 GHz – 40 GHz

FINAL MEASUREMENTS

Frequency [MHz]	MaxPeak [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Corr. [dB/m]
31635.470 ²	66.9	77.77	10.8	150.0	V	133.0	47.4
36489.270 ²	69.8	77.77	7.9	150.0	V	115.0	47.6

Note ¹: This frequency range has been measured in different channels and modulations for the all WiFi 5G U-NII bands supported by the equipment and the results obtained are very similar between them. Therefore, the radiated emissions in this frequency range do not depend on the channel and modulation configured
The above graph is taken as the most representative result.

Note ²: The final frequency measurements within the restricted band correspond to the ambient level as can be seen in the graphs above. Therefore, a maximization with peak detector as worst case is performed.

4.8.6 Test Equipment Used

Equipment	Brand	Model	Applus Ref.	Last Calibration	Next Calibration
ACTIVE LOOP ANTENNA	EMCO	6502	05-ER-019	04/10/2023	04/10/2024
BILOG ANTENNA	SCHWARZBECK	VULB 9162	1042740	08/11/2023	08/11/2024
HORN ANTENNA	EMCO	3115	05-ER-017	06/12/2023	06/12/2024
HORN ANTENNA	MVG	EH 1840	1042685	14/04/2022	14/04/2024
RF CABLE	HUBER+SUHNER	SF126E	1042728	21/08/2023	21/08/2024
3 DB ATTENUATOR	HUBER+SUHNER	6803.17.B	1042021	25/05/2023	25/05/2024
RF CABLE	RHODE & SCHWARZ	NA	1041502	09/10/2023	09/10/2024
RF CABLE	HUBER+SUHNER	SF104	1041964	22/06/2023	22/06/2024
HIGHPASS FILTER	WAINWRIGHT INSTRUMENTS	WHNX6-2765-3500-26500-40CC	1042511	12/05/2023	12/05/2024
RF CABLE	HUBER+SUHNER	SF104/11N/11N	1042585	12/05/2023	12/05/2024
RF AMPLIFIER	BONN ELEKTRONIK	BLMA 0118-M	1041733	12/05/2023	12/05/2024
RF CABLE	HUBER+SUHNER	SF102	1042546	18/05/2023	18/05/2024
RF CABLE	ASTROLAB	32026-29094-29094-24TC	1041565	16/05/2023	16/05/2024
EMI RECEIVER	R&S	ESW 26	1041791	14/11/2023	14/11/2024
EMI RECEIVER	R&S	ESU 40	1041155	04/08/2023	04/08/2025
THERMOHIGROMETER	PCE IBERICA	THB 40	1042022	07/11/2023	07/11/2024
TEST SOFTWARE	ROHDE & SCHWARZ	EMC32 v.10.50.00	104624	--	--
MAST-TABLE CONTROLLER	MATURO	NCD	1042758	--	--

Table 173: Test Instruments – Radio-frequency radiated emissions

4.8.7 Uncertainty

Test Type	Test Description	Uncertainty
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 9 kHz – 30 MHz	± 3.87 dB
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 30 MHz – 1 GHz	± 5.22 dB
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 1 GHz – 6 GHz	± 5.22 dB
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 6 GHz – 18 GHz	± 5.44 dB
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 18 GHz – 26 GHz	± 5.04 dB
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 26 GHz – 40 GHz	± 5.51 dB

Table 174: Uncertainties – Radio frequency radiated emissions

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by a coverage factor $k=2$, which for normal distribution corresponds to a coverage probability of approximately 95%.

4.9 DYNAMIC FREQUENCY SELECTION

4.9.1 Test Setup Required

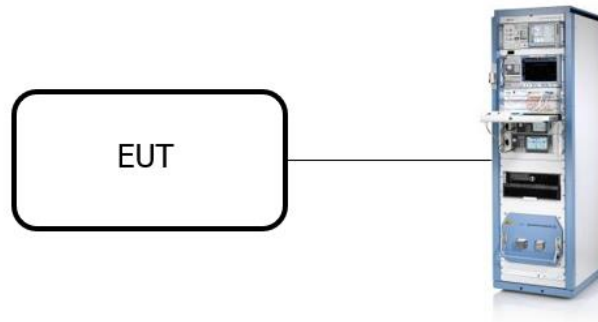


Fig. 366: Set-Up - DFS

4.9.2 Requirements

Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating with any part of its 26 dB emission bandwidth in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems. Operators shall only use equipment with a DFS mechanism that is turned on when operating in these bands. The device must sense for radar signals at 100 percent of its emission bandwidth. The minimum DFS detection threshold for devices with a maximum e.i.r.p. of 200 mW to 1 W is -64 dBm. For devices that operate with less than 200 mW e.i.r.p. and a power spectral density of less than 10 dBm in a 1 MHz band, the minimum detection threshold is -62 dBm. The detection threshold is the received power averaged over 1 microsecond referenced to a 0 dBi antenna. For the initial channel setting, the manufacturers shall be permitted to provide for either random channel selection or manual channel selection.

The DFS requirement applies to the following operational modes:

The requirement for channel availability check time applies in the master operational mode.

The requirement for channel move time applies in both the master and slave operational modes.

Channel Availability Check Time. A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed in paragraph (h)(2) of this section, is detected within 60 seconds.

Channel Move Time. After a radar's presence is detected, all transmissions shall cease on the operating channel within 10 seconds. Transmissions during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. In addition, intermittent management and control signals can be sent during the remaining time to facilitate vacating the operating channel.

Non-occupancy Period. A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.

4.9.3 EMI Receiver configuration

During the conducted test, the EMI receiver was set with the following configuration:

Central frequency [MHz]	Span [MHz]	Detector	Trace Mode	RBW [kHz]	VBW [kHz]
Channel frequency	Zero Span	Peak	Clear	3000	3000

Table 175: EMI Receiver configuration – DFS

4.9.4 Test Environmental Conditions

Test Date	Technician	Supervisor	Temperature [°C]	Humidity [%]	Atm. Pressure [mbar]
14/05/2024	Javier M. Nadales	-	21.4	44.7	998.1

Table 176: Test environmental conditions – DFS

4.9.5 Summary Test Results

4.9.5.1 U-NII-2A

Modulation	Operating Frequency [MHz]	Test Item	CMT [s]	Limit [s]	Results
Mode AC80	5290	Channel Move Time	0.0	10.0	PASS

Table 177: Summary Test Results – CMT -DFS

Modulation	Operating Frequency [MHz]	Test Item	CCTT Max [ms]	Limit [ms]	Results
Mode AC80	5290	Channel Closing Transmission Time	5.47	260	PASS

Table 178: Summary Test Results – CCTT -DFS

4.9.5.2 U-NII-2C

Modulation	Operating Frequency [MHz]	Test Item	CMT [s]	Limit [s]	Results
Mode AC80	5530	Channel Move Time	0	10	PASS

Table 179: Summary Test Results – CMT -DFS

Modulation	Operating Frequency [MHz]	Test Item	CCTT Max [ms]	Limit [ms]	Results
Mode AC80	5530	Channel Closing Transmission Time	0	260	PASS

Table 180: Summary Test Results – CCTT -DFS

4.9.5.3 Radar Level Verification

Description	Value	Unit
Type	0	-
Configured DUT EIRP	1000	Mw
Configured DUT PSD	-6.7	dBm/MHz
Requirement of the Detection threshold value	-64	dBm
Vector Generator level	-1.16	dBm
Configured overall pathlost from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	53.17	dB
Given additional level added to the amplitude of the waveform to account for variations in measurement equipment	1.00	dB
This results in the following radar signal level at the DUT	-54.33	dBm

Table 181: Radar Level Verification – DFS – U-NII-2A

Description	Value	Unit
Type	0	-
Configured DUT EIRP	1000	Mw
Configured DUT PSD	-6.2	dBm/MHz
Requirement of the Detection threshold value	-64	dBm
Vector Generator level	-1.06	dBm
Configured overall pathlost from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	55.01	dB
Given additional level added to the amplitude of the waveform to account for variations in measurement equipment	1.00	dB
This results in the following radar signal level at the DUT	-56.07	dBm

Table 182: Radar Level Verification – DFS – U-NII-2C

4.9.6 Test Results

4.9.6.1 Sample #1. Mode #2. U-NII-2A

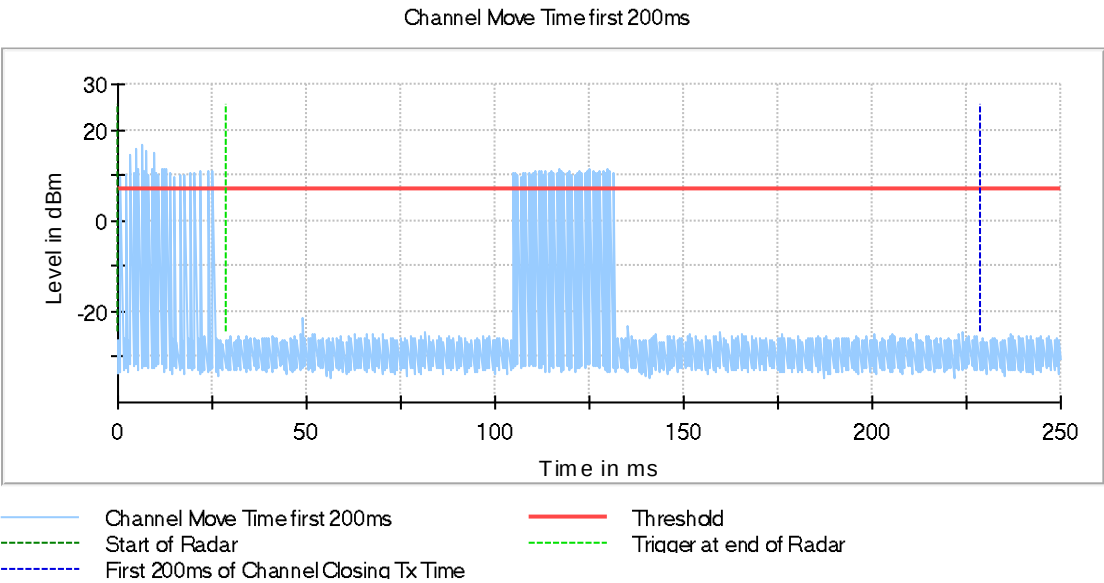


Fig. 367: Channel Move Time – Channel closing transmission time

4.9.6.2 Sample #1. Mode #2. U-NII-2C

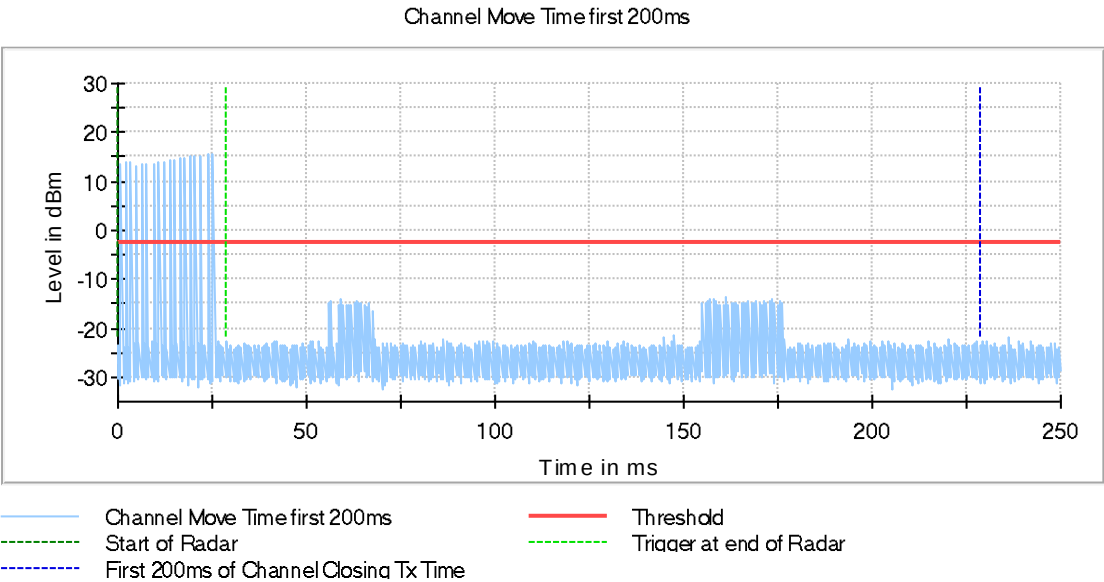


Fig. 368: Channel Move Time – Channel closing transmission time

4.9.7 Test Equipment Used

Equipment	Brand	Model	Applus Ref.	Last Calibration	Next Calibration
SIGNAL SPECTRUM ANALYZER	ROHDE & SCHWARZ	FSVA3044	1042700	23/02/2022	15/11/2024
RF SWICTH	ROHDE & SCHWARZ	OSP120 + OSPB157W8	1042701	08/04/2024	08/04/2026
RF CABLE 40 GHz	HUBERSUHNER	SF102	1042545	18/05/2023	18/05/2024
RF CABLE 40 GHz	HUBERSUHNER	SF102	1042546	18/05/2023	18/05/2024
RF CABLE	ASTROLAB	32026-29094-29094-24TC	1041565	16/05/2023	16/05/2024
ROUTER	ASUS	GT-AX11000	1042873	-	-
EMC32. EMC MEASUREMENT SOFTWARE	ROHDE & SCHWARZ	R&S. EMC32	104624	-	-
DIGITAL THERMO-HYGROMETER	TESTO	608-H1	1041916	09/02/2024	09/02/2025
SHIELDED CHAMBER SR0	ALBATROSS	SR	1042267	-	-

Table 183: Test Instruments – DFS