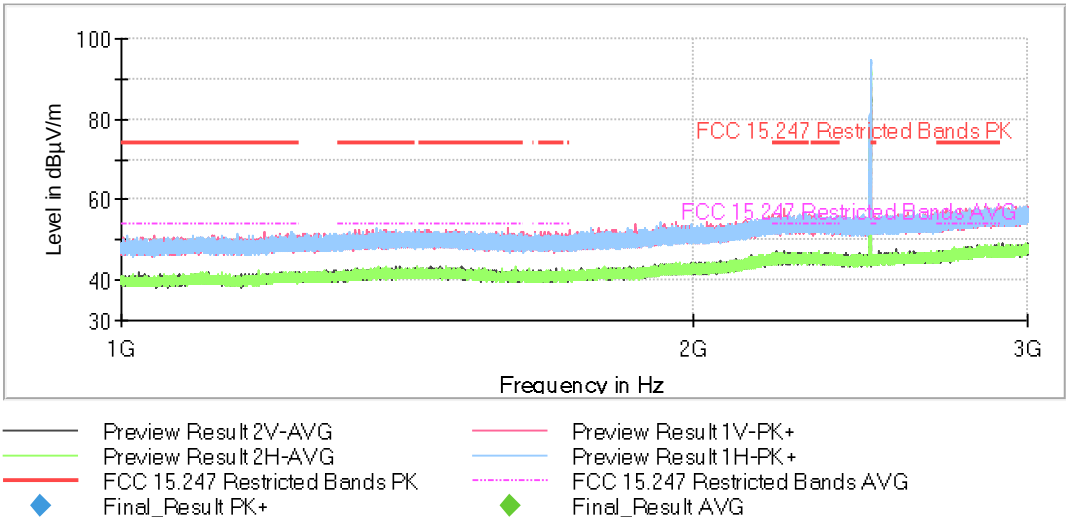


- High Channel:

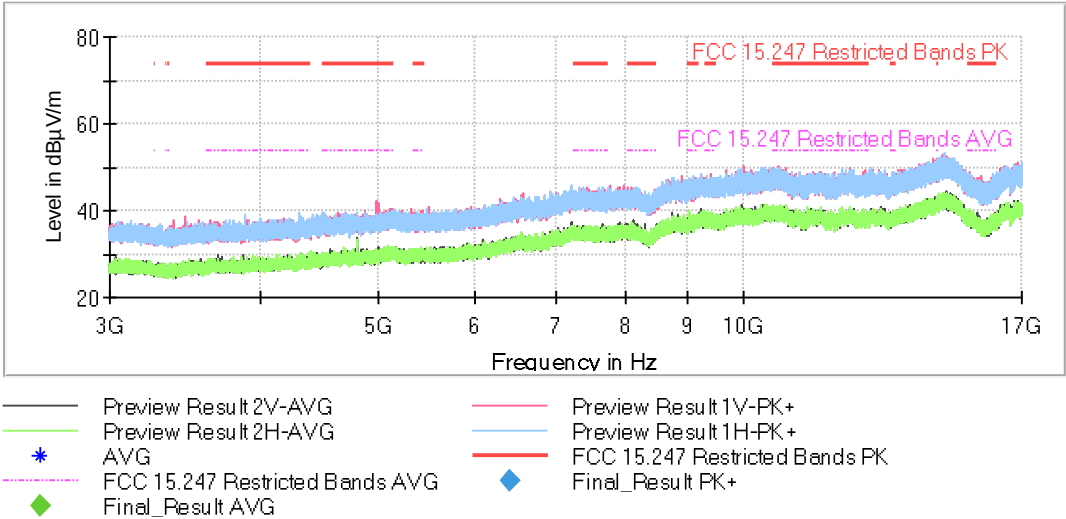


The peak above the limit is the carrier frequency.

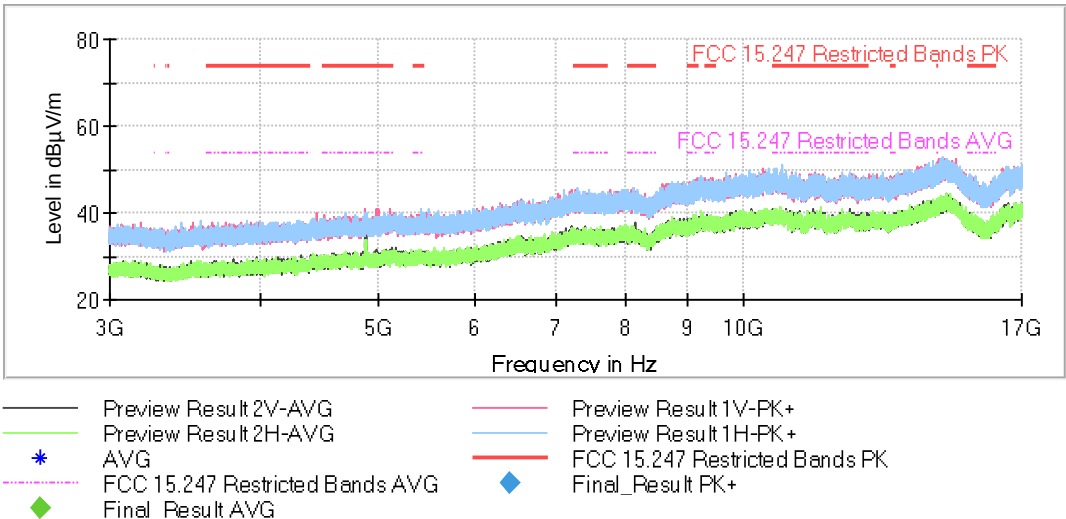
FREQUENCY RANGE 3 - 17 GHz

GFSK modulation (DH5)

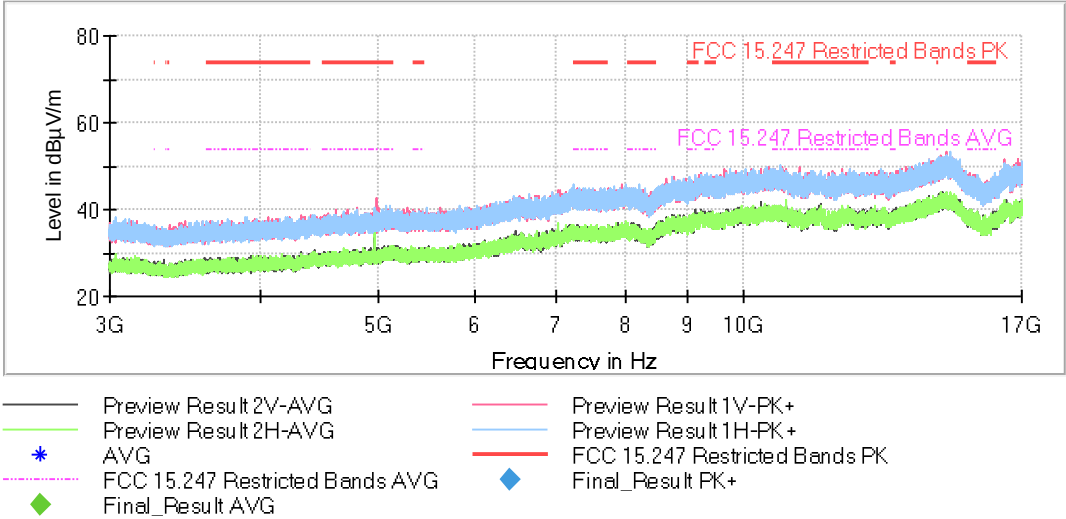
- Low Channel:



- Middle Channel:

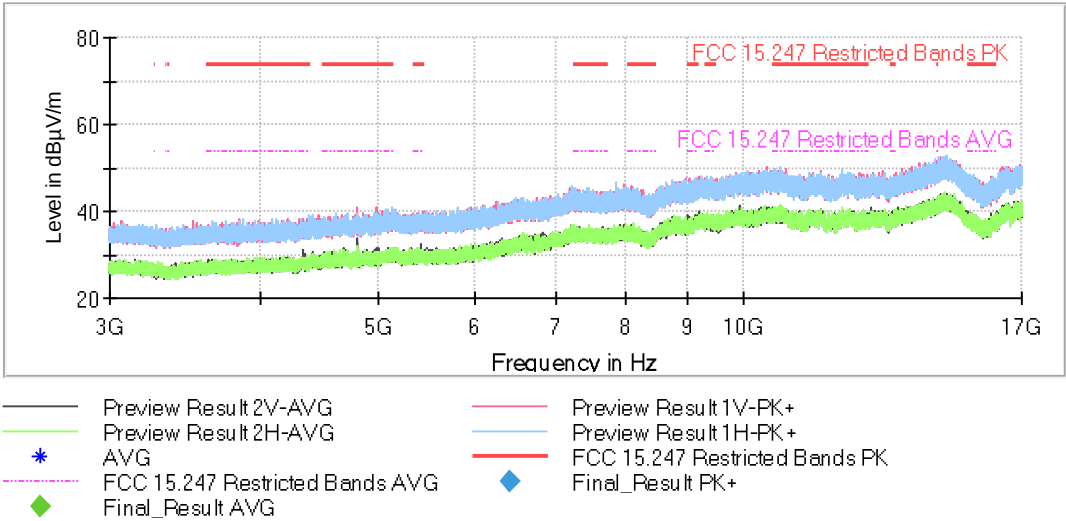


- High Channel:

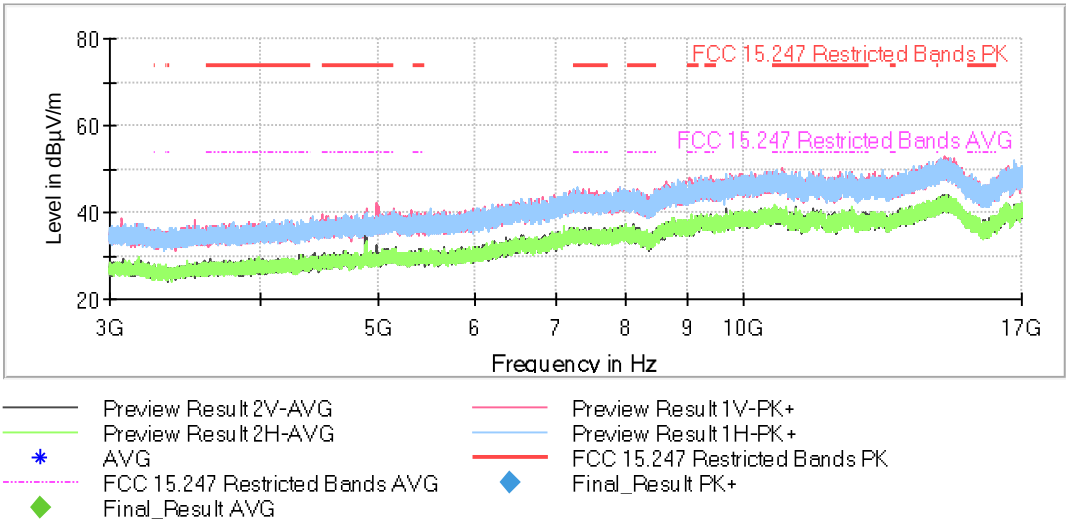


• **Pi/4-DQPSK modulation (2DH5)**

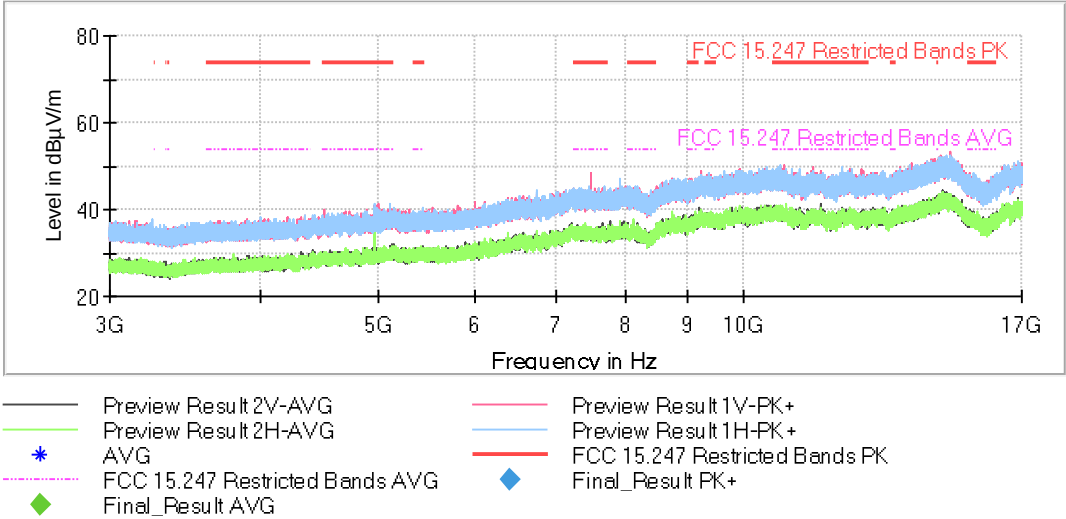
- Low Channel:



- Middle Channel:

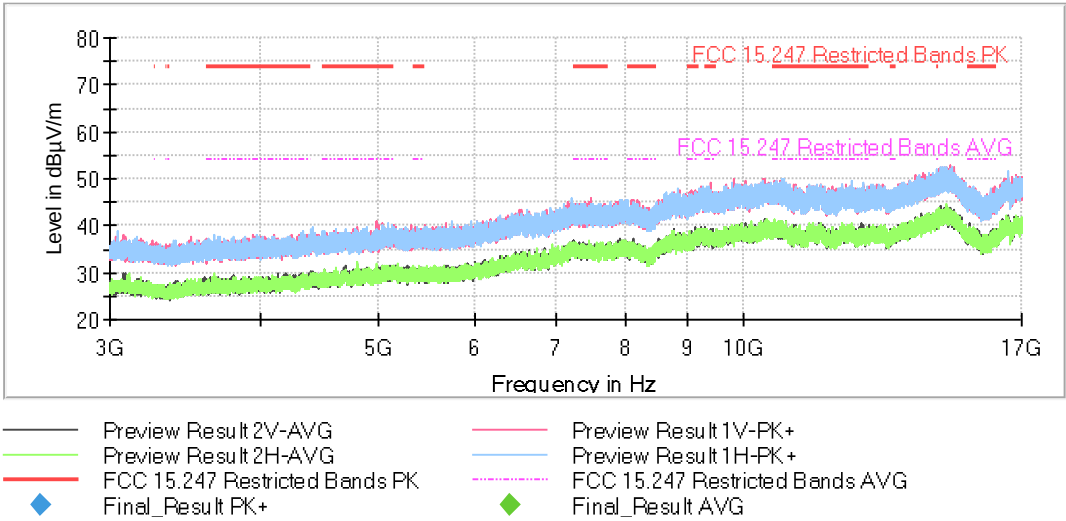


- High Channel:

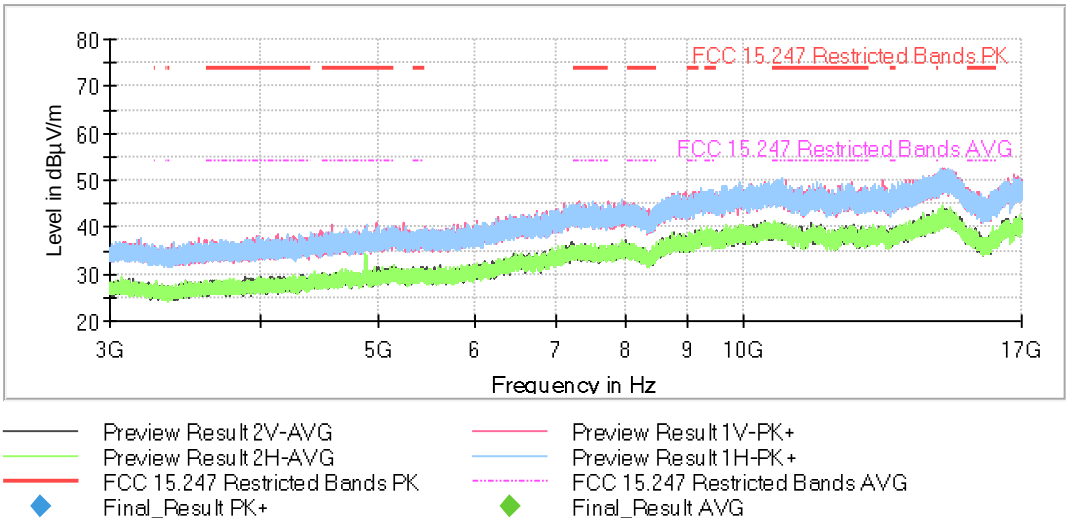


8-DPSK modulation (3DH5)

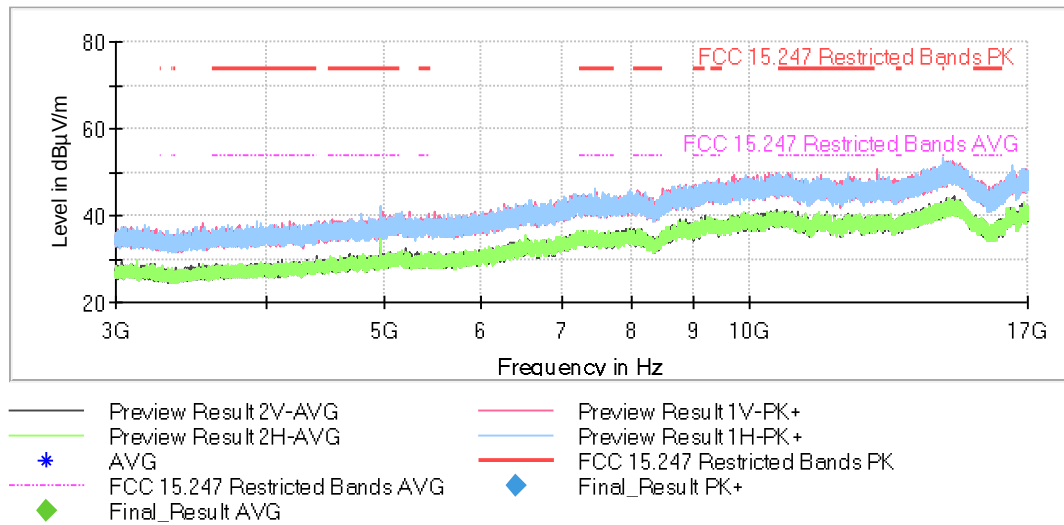
- Low Channel:



- Middle Channel:

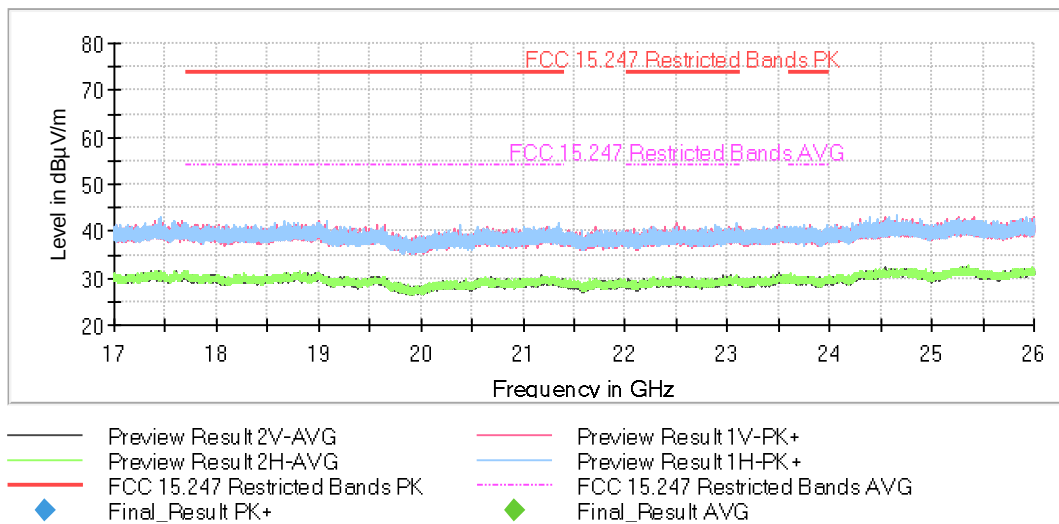


- High Channel:



FREQUENCY RANGE 17 - 26 GHz

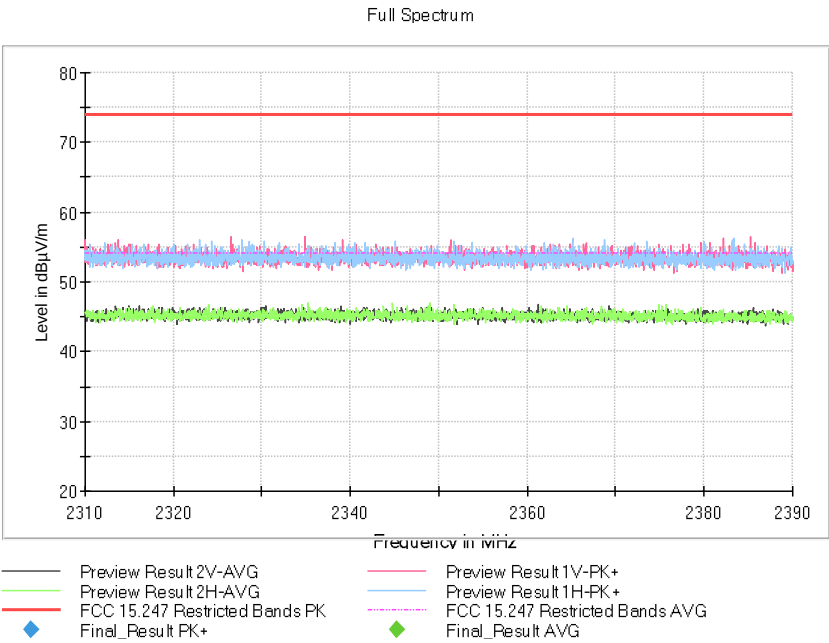
This plot is valid for Low, Middle and High Channels and all modulations.



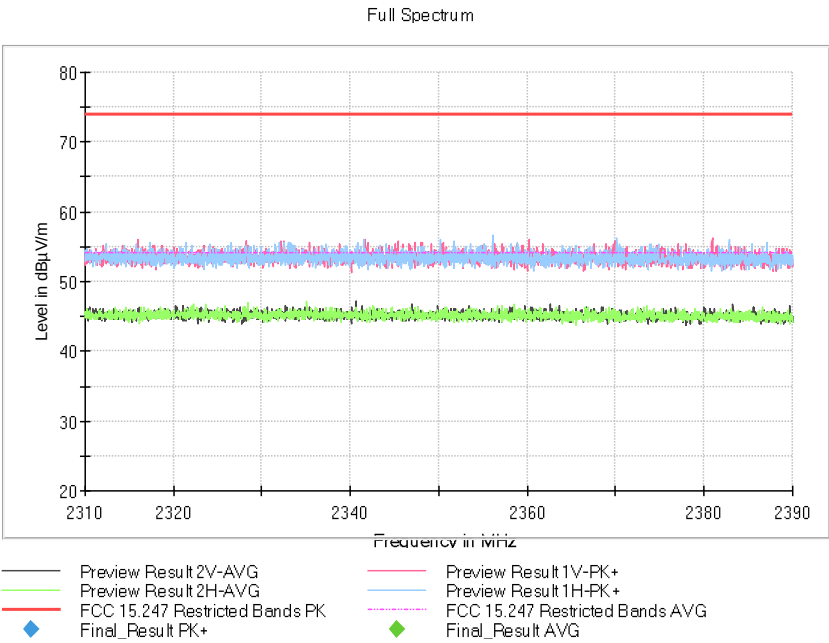
RESTRICTED BAND 2.31-2.39 GHz

GFSK modulation (DH5)

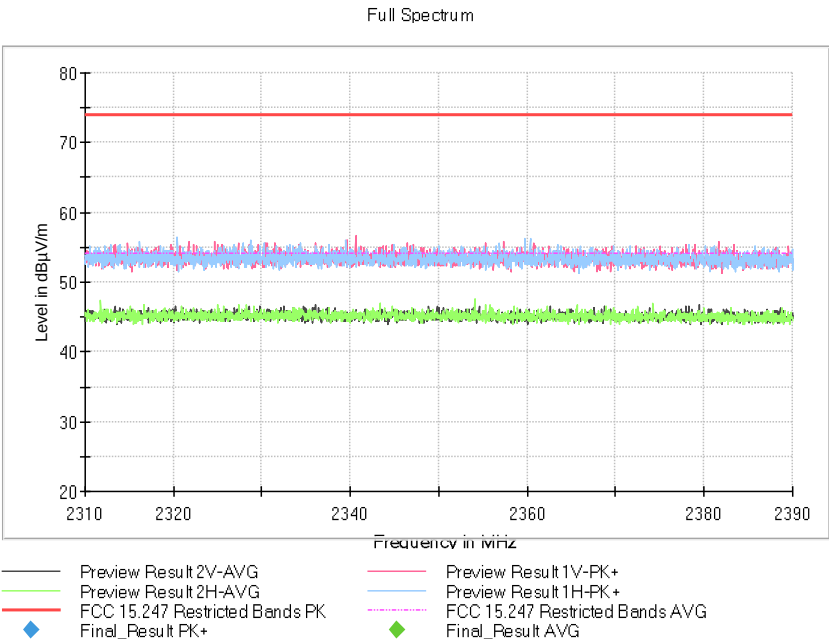
- Low Channel:



- Middle Channel:

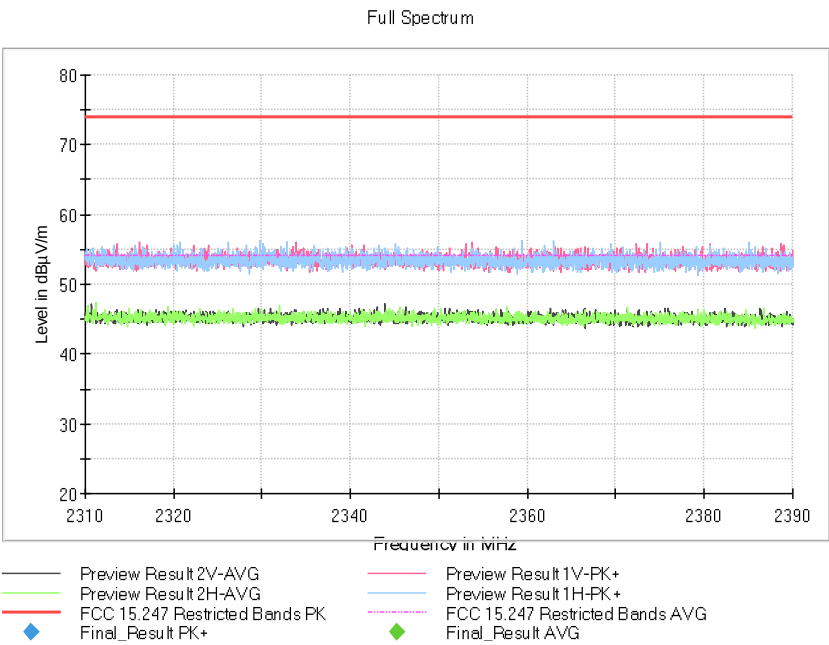


- High Channel:

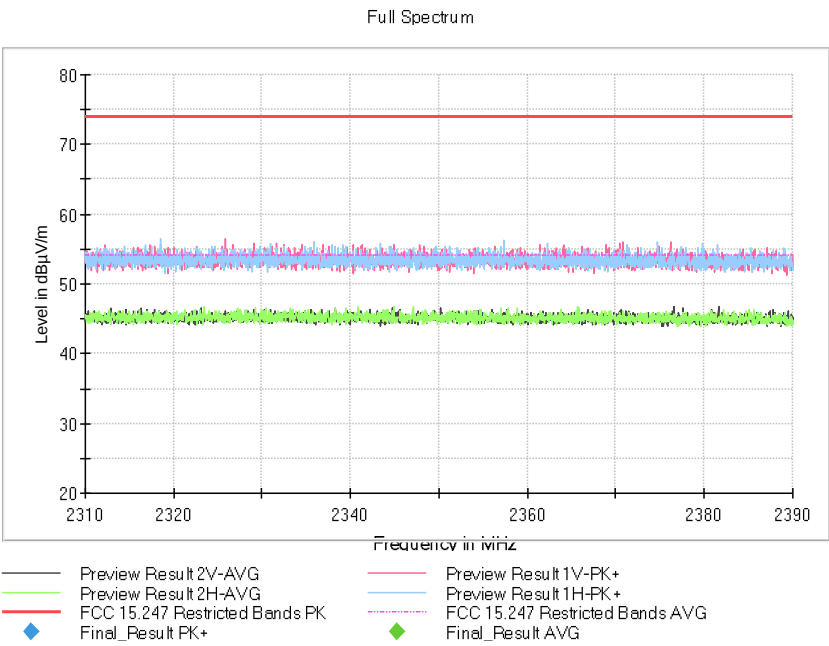


• Pi/4-DQPSK modulation (2DH5)

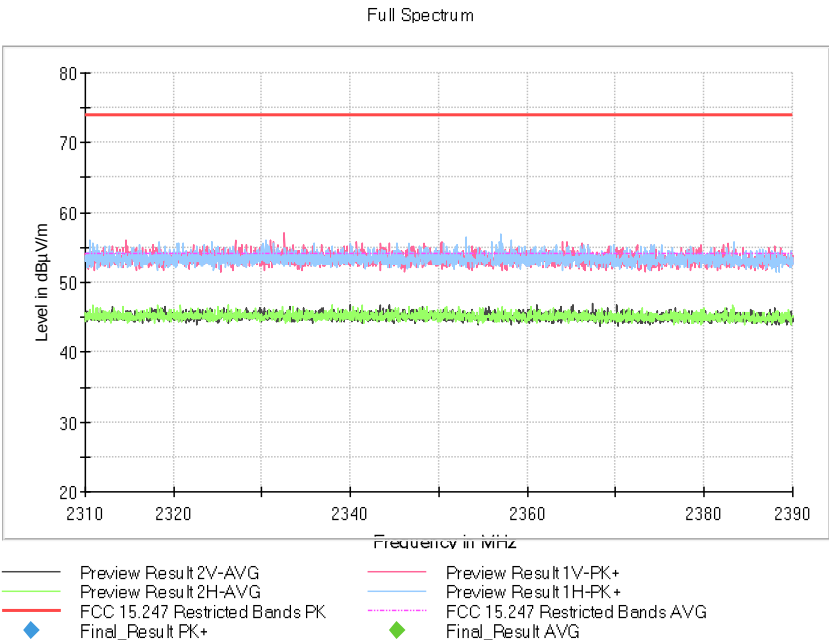
- Low Channel:



- Middle Channel:

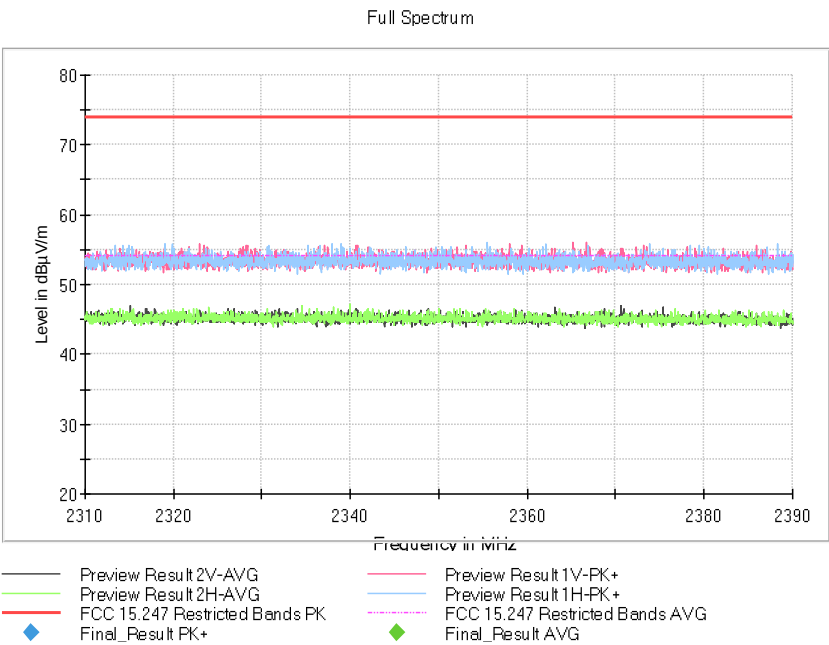


- High Channel:

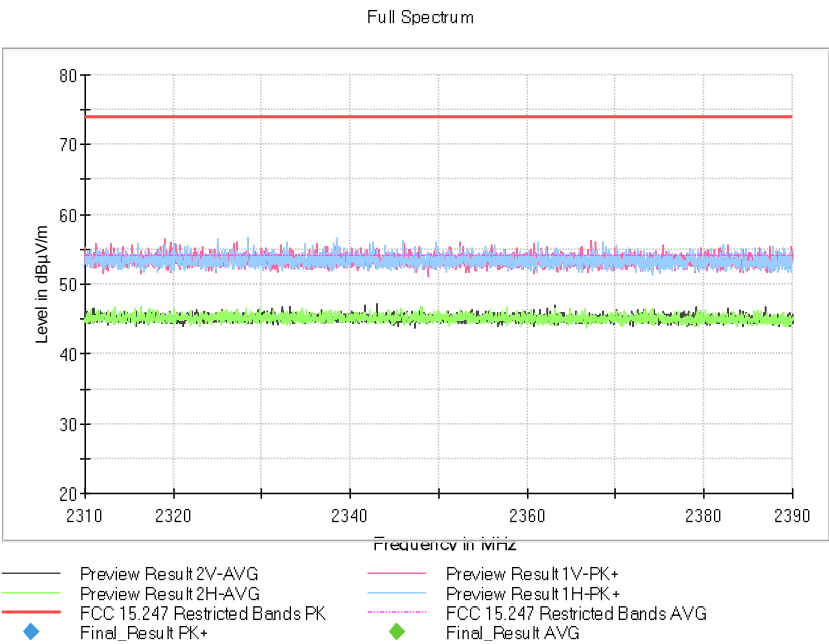


• 8-DPSK modulation (3DH5)

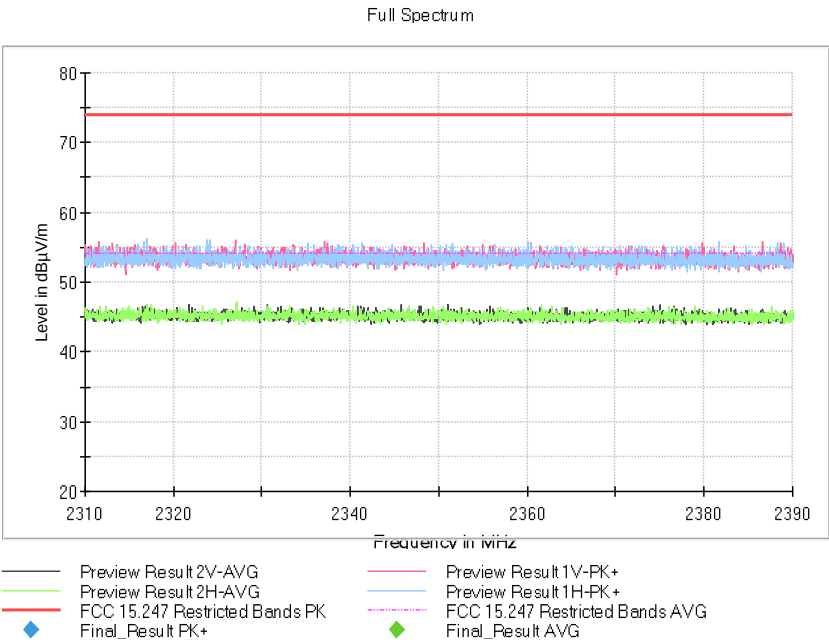
- Low Channel:



- Middle Channel:



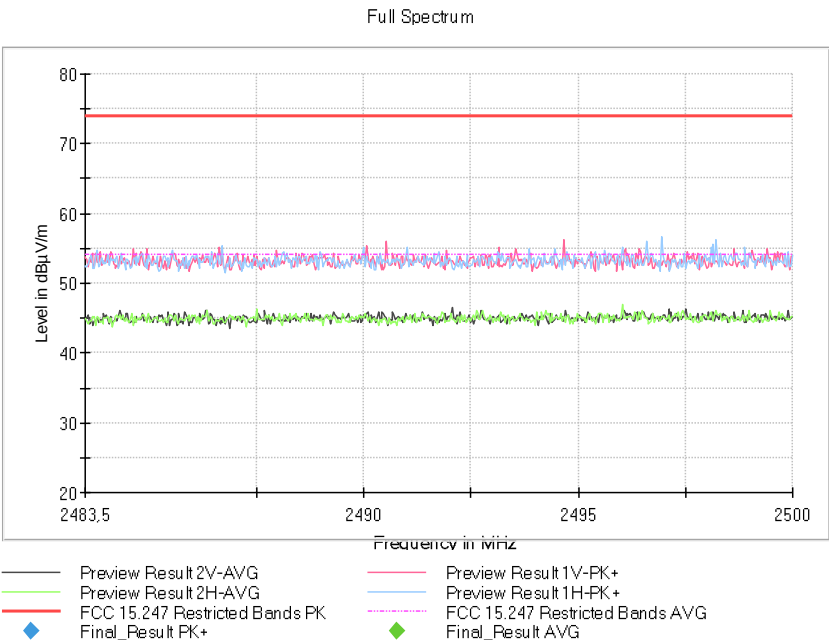
- High Channel:



RESTRICTED BAND 2.4835-2.5 GHz

GFSK modulation (DH5)

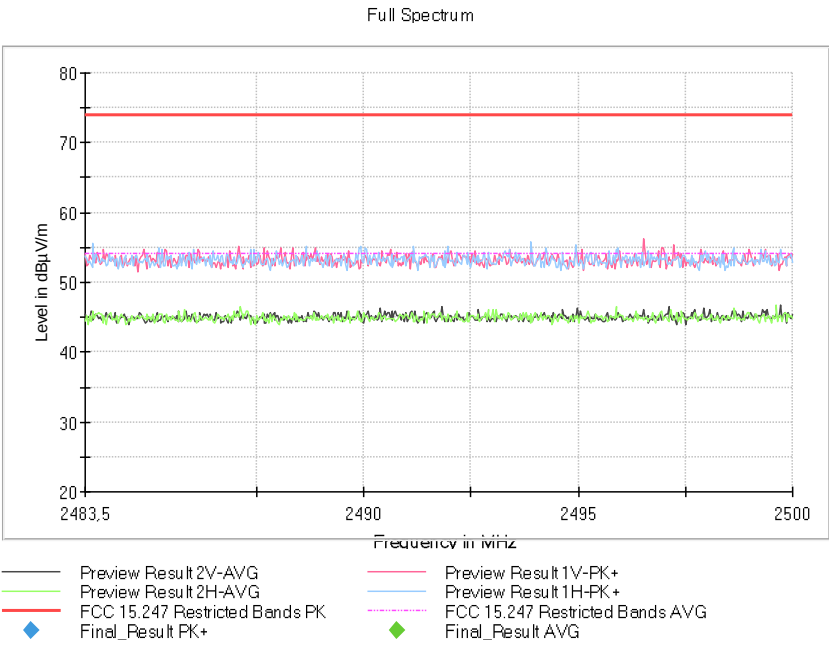
- Low Channel:



- Middle Channel:

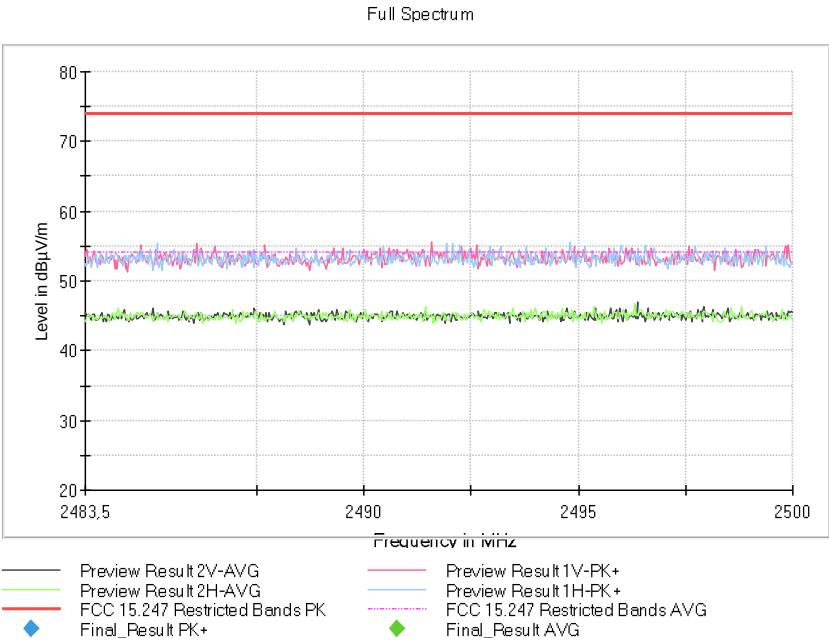


- High Channel:

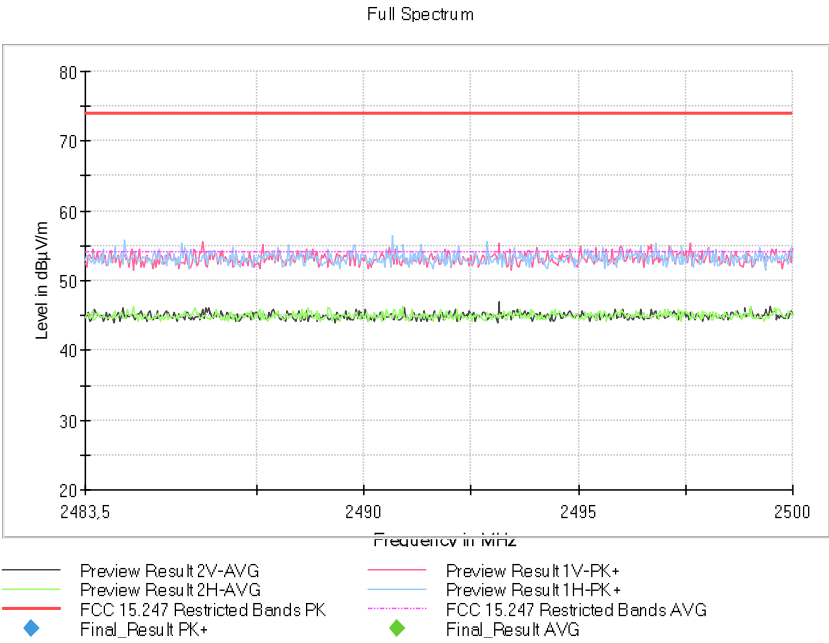


• Pi/4-DQPSK modulation (2DH5)

- Low Channel:



- Middle Channel:

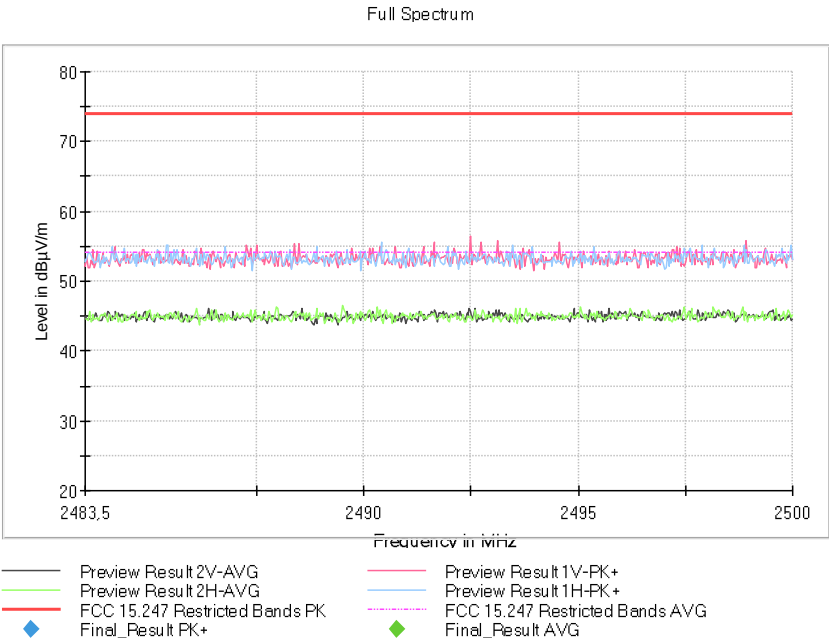


- High Channel:

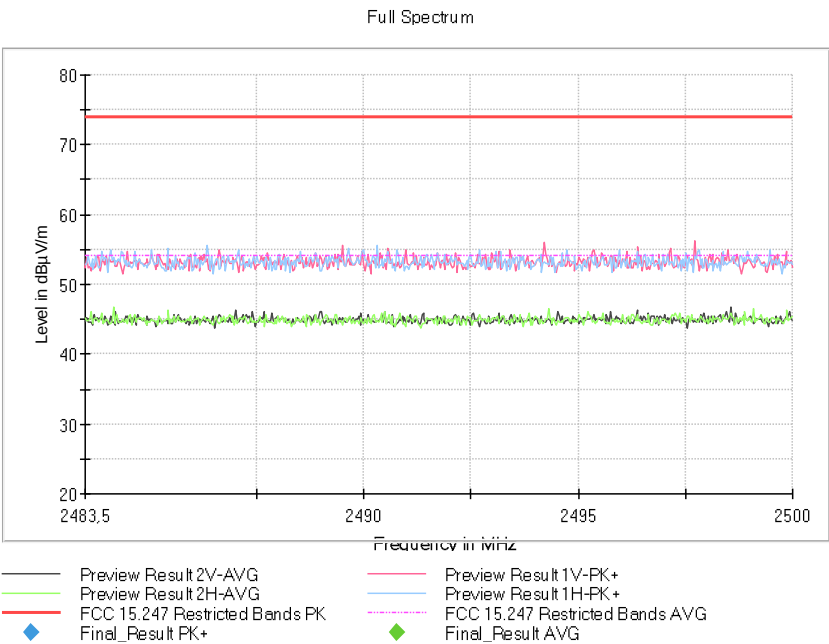


8-DPSK modulation (3DH5)

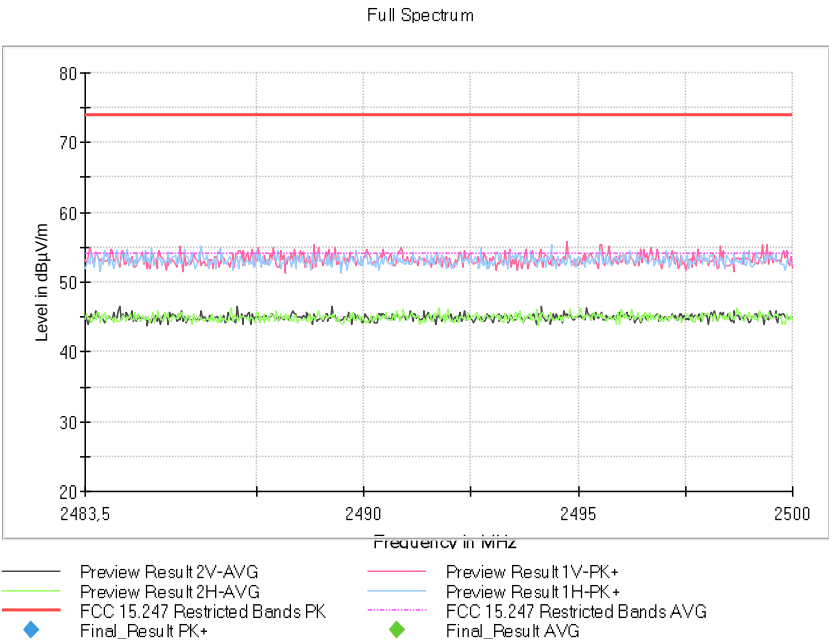
- Low Channel:



- Middle Channel:



- High Channel:



Appendix B: Test results. Bluetooth Low Energy 1M

TEST CONDITIONS.....	114
Occupied Bandwidth.....	117
FCC 15.247 (a)(2) / RSS-247 5.2 (a) 6 dB Bandwidth.....	121
FCC 15.247 (b) / RSS-247 5.4 (d) Maximum peak output power and antenna gain	125
FCC 15.247 (e) / RSS-247 5.2 (b) Power spectral density	129
FCC 15.247 (d) / RSS-247 5.5 Band-edge emissions compliance (Transmitter).....	133
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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

V nominal:	12 Vdc.
Type of Power Supply:	DC External (Car Battery).

ANTENNA (*):

Type of Antenna:	External.
Maximum Declared Antenna Gain:	+0.11 dBi

TEST FREQUENCIES (*):

Low Channel:	2402 MHz
Middle Channel:	2440 MHz
High Channel:	2480 MHz

During transmitter test the EUT was being controlled by the SW tool provided by the client to operate in a continuous transmit mode on the test channel as required and in each of the different modulation modes.

The EUT has four separate antennas which correspond to one port of the equipment.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and connected to the TS8997 test bench system using a low-loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



The DC supply voltage is applied using an external power supply with a multimeter.

RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz) and 1 GHz-18 GHz Double ridge horn antenna is situated at a distance of 3 m and a distance of 1.5 m for the frequency range 17 GHz-26 GHz (18 GHz-40 GHz horn antenna).

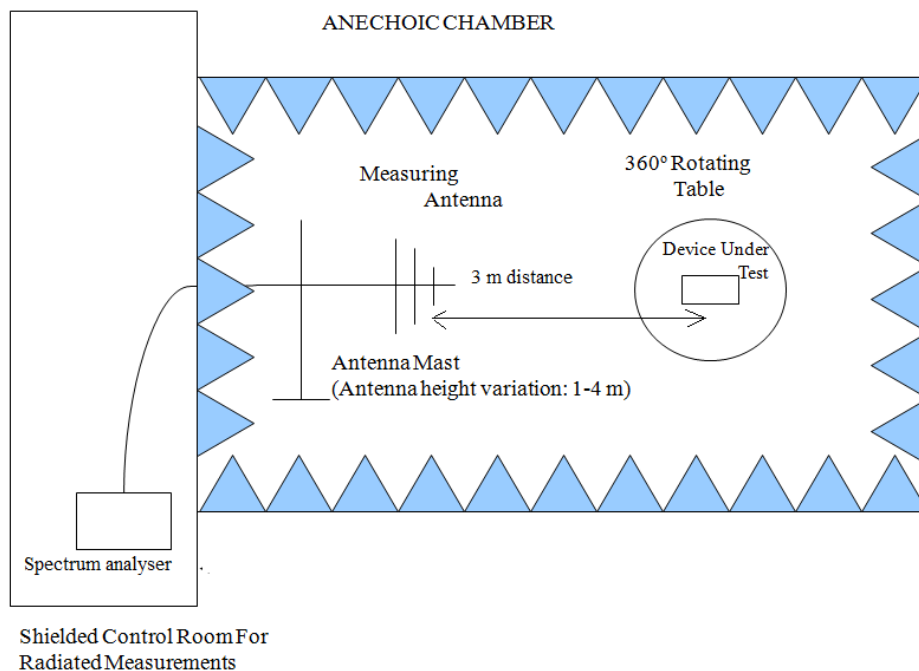
For radiated emissions in the range 17 GHz-26 GHz performed at a distance closer than the distance specified in the standard, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and its situation and orientation were varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission (up to 17 GHz).

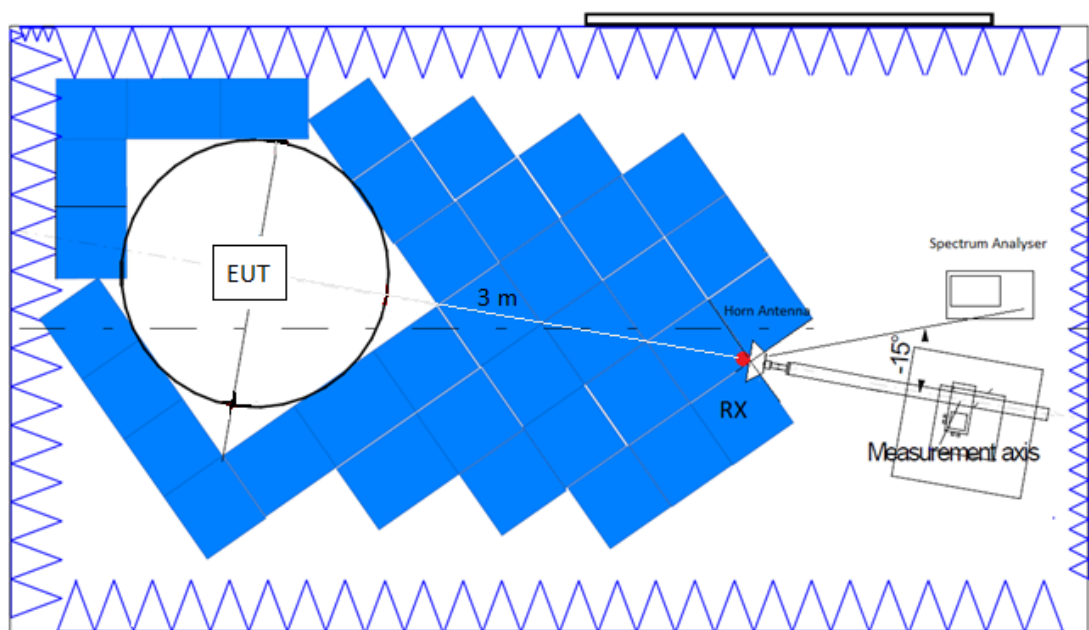
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth / video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

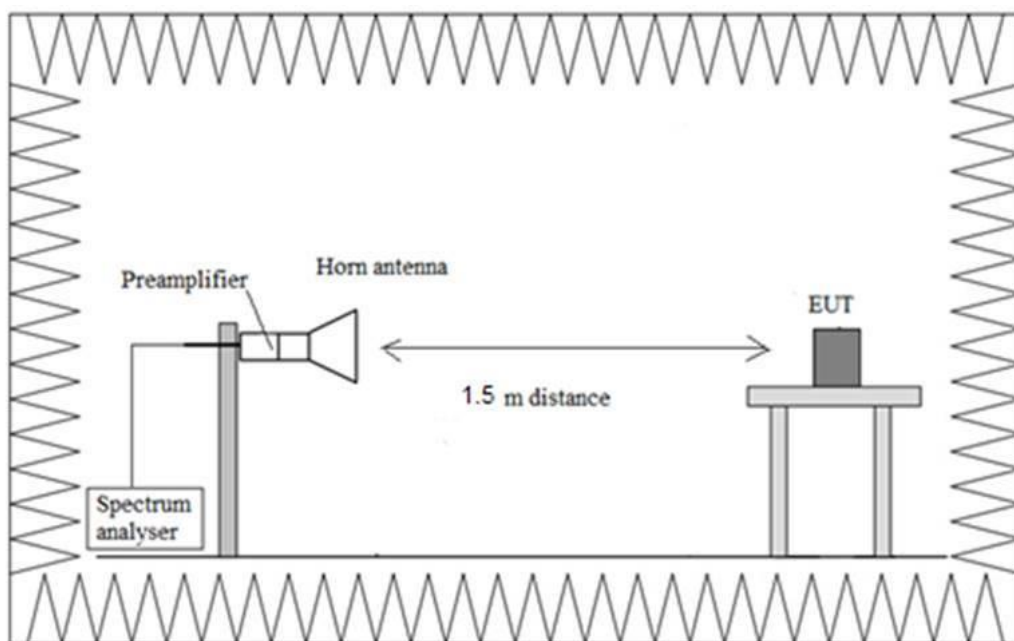
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



Occupied Bandwidth

Results

Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Frequency (MHz)	99% Occupied Channel Bandwidth (MHz)
2402.00	1.030
2440.00	1.030
2480.00	1.030

Attachments

Operation Band (MHz) = [2400, 2483.5], Frequency (MHz) = 2402.00, Equipment Type: Digital Transmission System (DTS), Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Figures:

