DEKRA Testing and Certification, S.A.U.
Parque Tecnológico de Andalucía
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
C.I.F. A29507456

Test Report No:

NIE: 72370.RRF008A1

Partial Test Report

USA FCC Part 15.247, 15.209

(*) Identification of item tested	CIVIC (Central In-Vehicle Infotainment Computer)
(*) Trademark	Bosch
(*) Model and /or type reference	MBCI2LS4PR1
Other identification of the product	FCC ID: 2AUXS-MBCI2LS4PR1
(*) Features	AM/FM/DAB/SIRIUS, GNSS, 2.4/5GHz WLAN, Bluetooth 5.1, Video/Audio etc HW version: D1.1 SW version: E23.3
Applicant	Robert Bosch GmbH Robert-Bosch-Strasse 200 31139, Hildesheim Germany
Test method requested, standard	USA FCC Part 15.247 (10-1-21 Edition): Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz. USA FCC Part 15.209 (10-1-21 Edition): Radiated emission limits; general requirements. CANADA RSS-247 Issue 2 (February 2017). CANADA RSS-Gen Issue 5 amendment 1 (March 2019). Guidance for Performing Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid Systems Devices Operating Under Section 15.247 of the FCC Rules. 558074 D01 Meas Guidance v05r02 dated April 2, 2019. ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Approved by (name / position & signature)	Rafael López Martín EMC Consumer & RF Lab. Manager 2022.10.20 17:33:35 +02'00'
Date of issue	2022-10-20
Report template No	FDT08_24 (*) “Data provided by the client”

Index

INDEX 2
ACRONYMS 3
COMPETENCES AND GUARANTEES 3
GENERAL CONDITIONS 3
UNCERTAINTY 4
DATA PROVIDED BY THE CLIENT 4
USAGE OF SAMPLES 5
TEST SAMPLE DESCRIPTION 6
IDENTIFICATION OF THE CLIENT 7
TESTING PERIOD AND PLACE 7
DOCUMENT HISTORY 7
ENVIRONMENTAL CONDITIONS 8
REMARKS AND COMMENTS 9
TESTING VERDICTS 10
SUMMARY 10
APPENDIX A: TEST RESULTS. BLUETOOTH EDR. CHIPSET 1 12
APPENDIX B: TEST RESULTS. BLUETOOTH EDR. CHIPSET 2 46
APPENDIX C: TEST RESULTS. BLUETOOTH LOW ENERGY 5.1 (1M, 2M). CHIPSET 1 80
APPENDIX D: TEST RESULTS. BLUETOOTH LOW ENERGY 5.1 (1M, 2M). CHIPSET 2 105
APPENDIX E: TEST RESULTS. WLAN 802.11 b/g/n20/ax20 130

Acronyms

Acronym ID	Acronym Description
# of Tx Chains	Number of Transmission Chains
Detector	Detector used
Equipment	Equipment Type
Freq	Frequency
Freq Rng	Frequency Range
Mod	Modulation
Pol	Polarization
QP	Quasi-Peak
Unwanted Freq	Unwanted Emissions Frequency
Unwanted Lvl	Unwanted Emissions Level

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación) to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that covers the performed tests in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the radiated emissions of EUT from 30 MHz to 1 GHz is: Measurement uncertainty ≤ ± 5.35 dB with factor (k = 2).

The total uncertainty of the measurement system for the radiated emissions of EUT from 1 GHz to 17 GHz is: Measurement uncertainty ≤ ± 4.32 dB with factor (k = 2).

The total uncertainty of the measurement system for the radiated emissions of EUT from 17 GHz to 26 GHz is: Measurement uncertainty ≤ ± 5.51 dB with factor (k = 2).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").

2. The sample consists of a CIVIC Central In-Vehicle Infotainment Computer, including WLAN/ Bluetooth, GPS, AM/FM/DAB receiver.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial No.	Date of Reception	Application
S/01	72370_1.1	CIVIC Central In-Vehicle Infotainment Computer LS4+	MBCI2LS4PR1	0006101	2022-05-17	Equipment Under Test
S/01	72370_10.1	Harness	--	--	2022-05-17	Equipment Under Test
S/01	72370_7.1	USB Cable	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_8.1	USB adapter	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_9.1	Connecting cable	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_27.1	BT/WLAN antenna	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_28.1	BT/WLAN antenna	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_29.1	BT/WLAN antenna	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_30.1	BT/WLAN antenna	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_31.1	FAKRA 4n1 cable	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_32.1	SMA 4n1 cable	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_34.1	FAKRA to SMA adapter	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_35.1	FAKRA to SMA adapter	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_36.1	FAKRA to SMA adapter	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_37.1	FAKRA to SMA adapter	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_38.1	DC Block	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_39.1	DC Block	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_42.1	DC Block	--	--	2022-05-17	Auxiliary Equipment
S/01	72370_43.1	FAKRA to SMA cable	--	--	2022-05-17	Auxiliary Equipment

Notes referenced to samples during the project:

Id	Type
S/01	Sample used for Radiated tests.

Test sample description

Ports…… :	Port name and description	Cable			
		Specified max length [m]	Attached during test	Shielded	Coupled to patient(3)
	Main Connector	2m	[X]	[ ]	[ ]
	Most Connector	2m	[X]	[ ]	[ ]
	Fakra Quad Connector AM/FM/DAB Fakra Single Connector GPS	.....	[X]	[X]	[ ]
	Fakra Quad Connector WLAN/BT	.....	[X]	[X]	[ ]
	.....	.....	[ ]	[ ]	[ ]
Supplementary information to the ports…… :	.....				

Rated power supply .....:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[ ]	AC:	[ ]	[ ]	[ ]	[ ]	[ ]
	[X]	DC: 9-16V nomimal 12 VDC by vehicle battery					

Rated Power .....:	.....	
Clock frequencies.....:	.....	
Other parameters .....:	.....	
Software version .....:	E23.3	
Hardware version .....:	D1.1	
Dimensions in cm (W x H x D) ....:	.....	
Mounting position .....:	[ ]	Table top equipment
	[ ]	Wall/Ceiling mounted equipment
	[ ]	Floor standing equipment
	[ ]	Hand-held equipment
	[X]	Other: Cluster in the car

Modules/parts.....:	Module/parts of test item	Type	Manufacturer
	.....	.....	.....

Accessories (not part of the test item) .....:	Description	Type	Manufacturer
	Antennas	.....	.....
	HUD	.....	.....
	SA2 Panel	.....	.....
	Cameras	.....	.....
	.....	.....	.....
Documents as provided by the applicant .....:	Description	File name	Issue date
	.....	.....	.....

(3) Only for Medical Equipment

Identification of the client

Robert Bosch GmbH
Robert-Bosch-Strasse 200
31139, Hildesheim, Germany

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2022-07-29
Date (finish)	2022-08-11

Document history

Report number	Date	Description
72370RRF.008	2022-10-08	First release.
72370RRF.008A1	2022-10-20	Second release. Modification of Hardware Version of sample tested and correction of minor typos. This modification of test report cancels and replaces the test report 72370RRF.008.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

In the semianechoic chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

Remarks and comments

The tests have been performed by the technical personnel: Miguel Manuel López Guzmán and Nicolás Salguero Camarena.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
6791	SEMIANECHOIC ABSORBER LINED CHAMBER IV	FACT 3 200 STP	ETS LINDGREN	2024-06-07
6792	SHIELDED ROOM	S101	ETS LINDGREN	N/A
7445	DC POWER SUPPLY 30V/5A	U8002A	KEYSIGHT TECHNOLOGIES	N/A
7760	DIGITAL MULTIMETER	175	FLUKE	2022-11-04
7817	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2023-12-30
6496	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK	2023-08-24
4657	HORN ANTENNA 18-40GHz	BBHA 9170	SCHWARZBECK	2023-05-05
6143	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2023-10-29
8856	PRE-AMPLIFIER G>30dB 18-40GHz	BLMA 1840-4A	BONN ELEKTRONIK	2022-09-08
3783	PRE-AMPLIFIER G>30dB 1GHz-18GHz	BLMA 0118-3A	BONN ELEKTRONIK	2022-12-01
6144	PRE-AMPLIFIER G>40dB 10MHz-6GHz	BLNA 0160-01N	BONN ELEKTRONIK	2023-03-17
4848	EMC/RF MEASUREMENT SOFTWARE	EMC32	ROHDE AND SCHWARZ	N/A

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P

Summary

1. Bluetooth EDR. Appendixes A and B

Requirement – Test case (FCC PART 15)	Verdict	Remark
FCC 15.247 (a) (1) 20 dB Bandwidth	N/M	(1)
FCC 15.247 (a) (1) Carrier Frequency Separation	N/M	(1)
FCC 15.247 (a) (1) (iii) Time of Occupancy (Dwell Time)	N/M	(1)
FCC 15.247 (b) Maximum peak output power and antenna gain	N/M	(1)
FCC 15.247 (a) (1) (iii) Number of hopping channels	N/M	(1)
FCC 15.247 (d) Band-edge emissions compliance (Transmitter)	N/M	(1)
FCC 15.247 (d) Emission limitations radiated (Transmitter)	P	--
Supplementary information and remarks: 1. Test not requested. Only radiated spurious emission test was requested.		

2. Bluetooth Low Energy 5.1 (1M, 2M). Appendixes C and D

Requirement – Test case (FCC PART 15)	Verdict	Remark
FCC 15.247 (a) (2) 6 dB Bandwidth	N/M	(1)
FCC 15.247 (e) Power spectral density	N/M	(1)
FCC 15.247 (b) Maximum output power and antenna gain	N/M	(1)
FCC 15.247 (d) Band-edge emissions compliance (Transmitter)	N/M	(1)
FCC 15.247 (d) Emission limitations radiated (Transmitter)	P	--
Supplementary information and remarks: 1. Test not requested. Only radiated spurious emission test was requested.		

3. 802.11 b/g/n20 MHz 1x1. Appendix E

Requirement – Test case (FCC PART 15)	Verdict	Remark
FCC 15.247 (a) (2) 6 dB Bandwidth	N/M	(1)
FCC 15.247 (e) Power spectral density	N/M	(1)
FCC 15.247 (b) Maximum output power and antenna gain	N/M	(1)
FCC 15.247 (d) Band-edge emissions compliance (Transmitter)	N/M	(1)
FCC 15.247 (d) Emission limitations radiated (Transmitter)	P	--
Supplementary information and remarks: 1. Test not requested. Only radiated spurious emission test was requested.		

Appendix A: Test results. Bluetooth EDR. Chipset 1

INDEX

TEST CONDITIONS 14

TEST CASES DETAILS 17

FCC 15.247 (d) Emission limitations radiated (Transmitter) 17

TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal:	12Vdc
Type of Power Supply:	External

ANTENNA (*):

Type of Antenna:	External antenna
Maximum Declared Antenna Gain:	2 dBi
RF Output Port:	3

TEST FREQUENCIES (*):

Low Channel:	2402 MHz
Middle Channel:	2441 MHz
High Channel:	2480 MHz

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

RADIATED MEASUREMENTS:

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

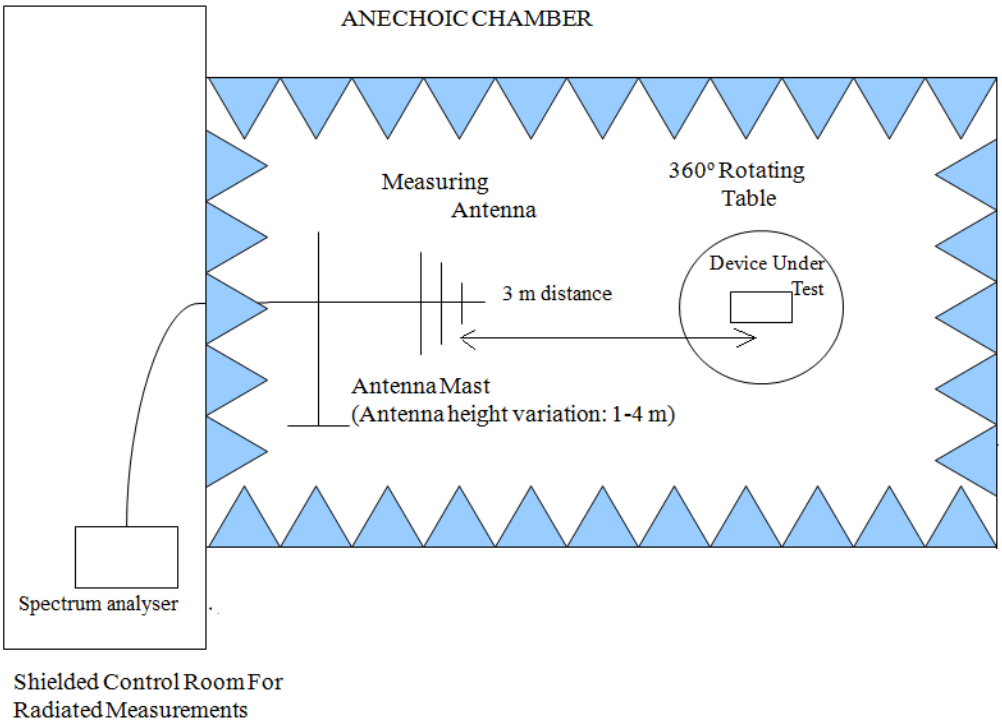
For radiated emissions in the range 17 GHz – 26 GHz performed at a distance closer than the distance specified in standard, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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 360º and the antenna height was varied from 1 to 4 meters (up to 17GHz) to find the maximum radiated emission.

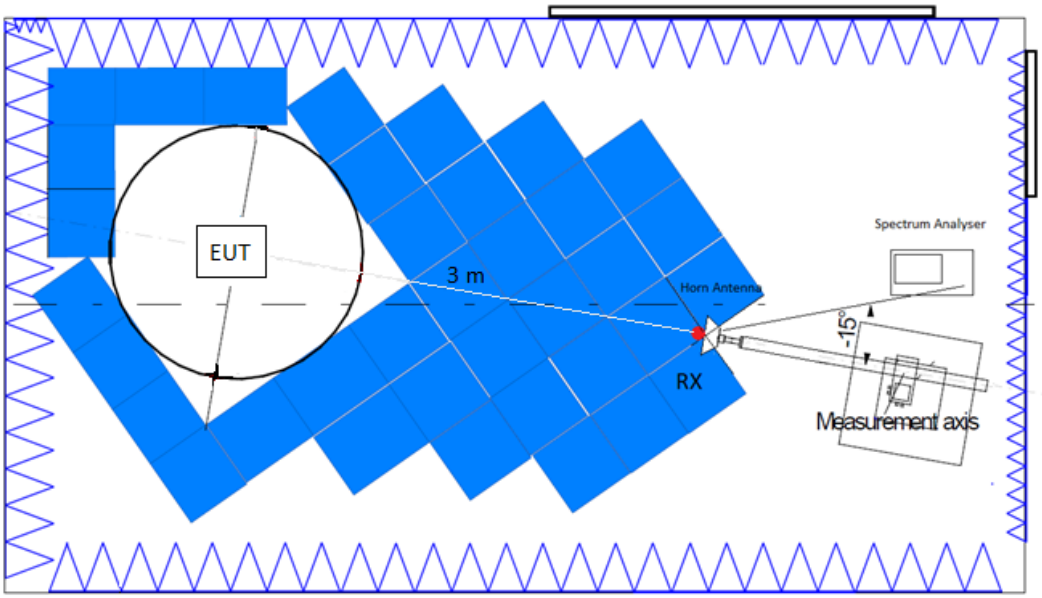
Measurements were made in both horizontal and vertical planes of polarization.

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.

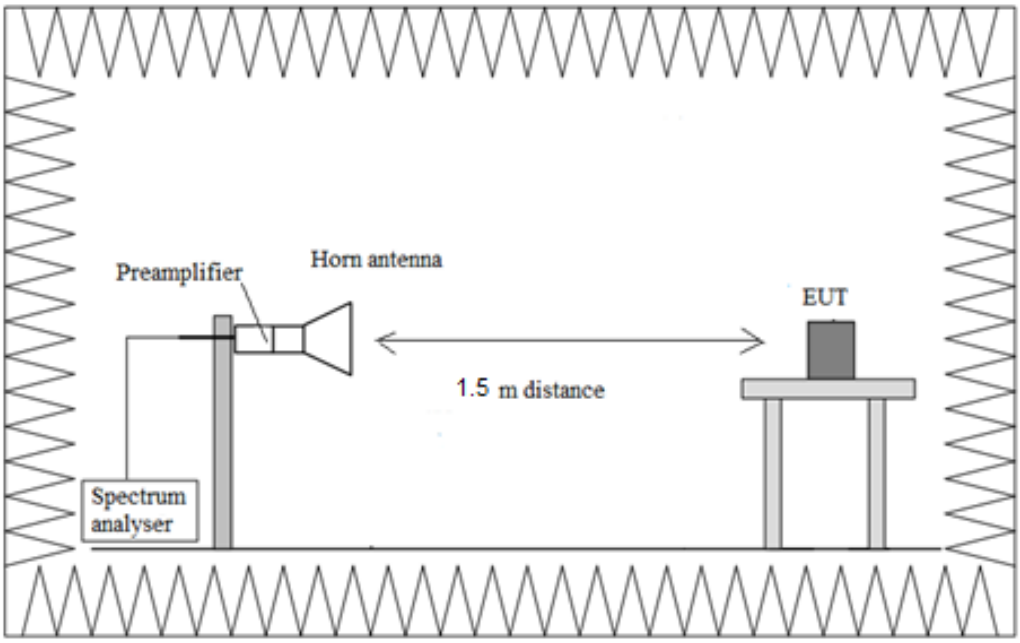
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup f > 17 GHz:



TEST CASES DETAILS

FCC 15.247 (d) Emission limitations radiated (Transmitter)

Limits

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)/RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

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

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table specified when measuring with peak detector function.

Results

Frequency range 30 MHz – 1 GHz:

The spurious frequencies detected do not depend on either the modulation or the operating channel.

Spurious frequencies detected at less than 20 dB below the limit:

Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[0.03, 1]	342.825	27.12	H	QP
	600.027	28.43	V	QP
	875.022	33.77	V	QP

Frequency range 1 GHz – 26 GHz:

Modulation: BT (GFSK 1-DH5)

Spurious frequencies detected at less than 20 dB below the limit:

Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[3, 17]	2402.0000	4896.160	43.33	V	Peak
		4983.100	43.00	V	Peak
		5381.120	46.01	V	Peak
	2441.0000	4785.000	43.13	H	Peak
		4968.540	42.89	V	Peak
		5074.100	42.36	V	Peak
	2480.0000	4987.720	43.53	V	Peak
		5050.160	43.53	H	Peak
		5121.980	42.98	H	Peak

Modulation: BT (Pi/4 DQPSK 2-DH5)

Spurious frequencies detected at less than 20 dB below the limit:

Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[3, 17]	2402.0000	4857.520	42.38	V	Peak
		5097.340	43.65	V	Peak
	2441.0000	4723.820	43.62	V	Peak
		5002.420	43.53	H	Peak
	2480.0000	4752.240	42.52	V	Peak

Modulation: BT (8DPSK 3-DH5)

Spurious frequencies detected at less than 20 dB below the limit:

Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[3, 17]	2402.0000	4680.560	43.53	V	Peak
		4790.460	41.81	V	Peak
		4910.440	42.14	V	Peak
	2441.0000	4733.340	45.30	V	Peak
		4785.840	42.43	H	Peak
		4871.520	42.67	H	Peak
		5005.500	43.00	V	Peak
	2480.0000	5004.300	44.92	V	Peak

Verdict

Pass

Attachments

The setting for each range of frequency is indicated in the tables below:

Subrange	**Step Size**	**Detectors**	**Bandwidth**	**Sweep Time**	**Preamp**
Receiver: [ESW 44] 30 MHz - 1 GHz	30,312 kHz	PK+	100 kHz	1 s	0 dB

Subrange	**Step Size**	**Detectors**	**Bandwidth**	**Sweep Time**	**Preamp**
Receiver: [ESW 44] 1 GHz - 3 GHz	30,769 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

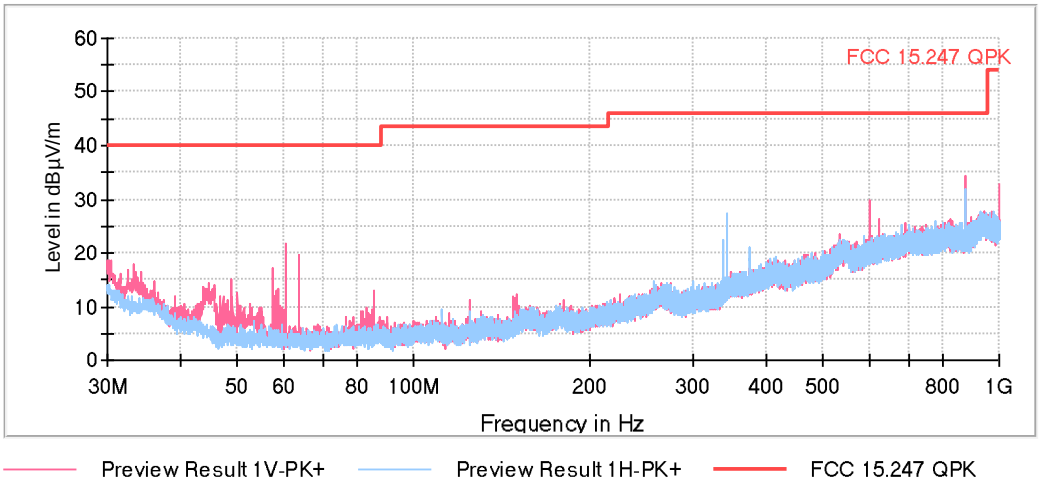
Subrange	**Step Size**	**Detectors**	**Bandwidth**	**Sweep Time**	**Preamp**
Receiver: [ESW 44] 3 GHz - 17 GHz	140 kHz	PK+ ; AVG	1 MHz	1 s	30 dB

Subrange	**Step Size**	**Detectors**	**Bandwidth**	**Sweep Time**	**Preamp**
Receiver: [ESW 44] 17 GHz - 26 GHz	300 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

Modulations: BT (GFSK 1-DH5), BT (Pi/4 DQPSK 2-DH5), BT (8DPSK 3-DH5)

Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Frequency Range (GHz) = [0.03, 1], Number of Transmission Chains = 1

Plots:

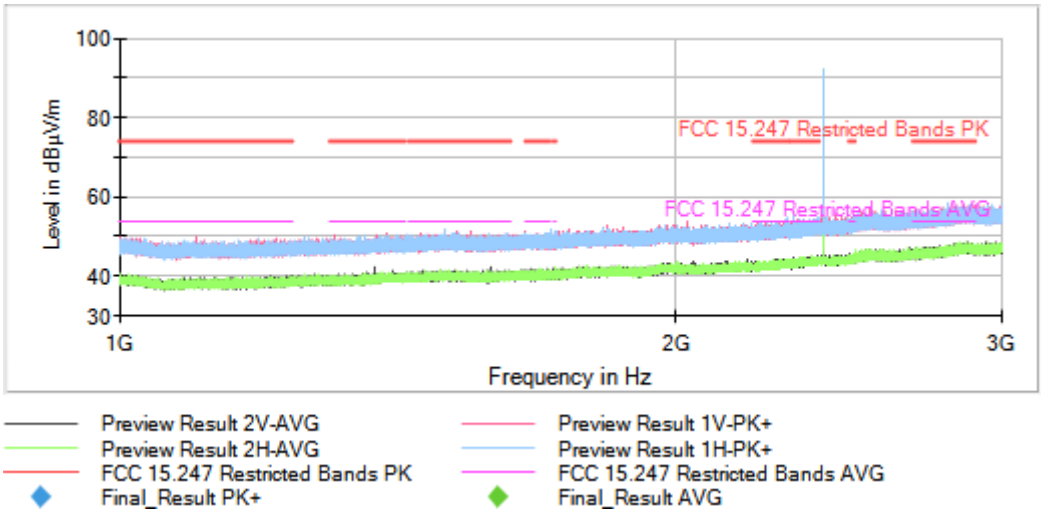


This plot is valid for Low, Middle and High Channels and all modulations

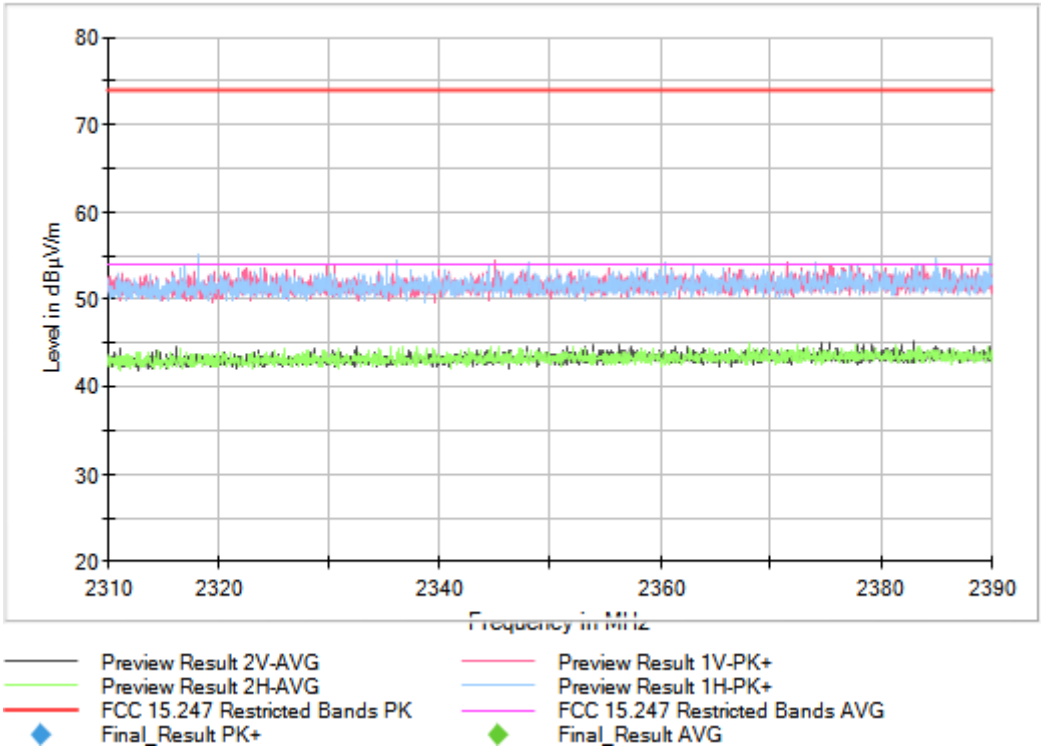
Modulation: BT (GFSK 1-DH5)

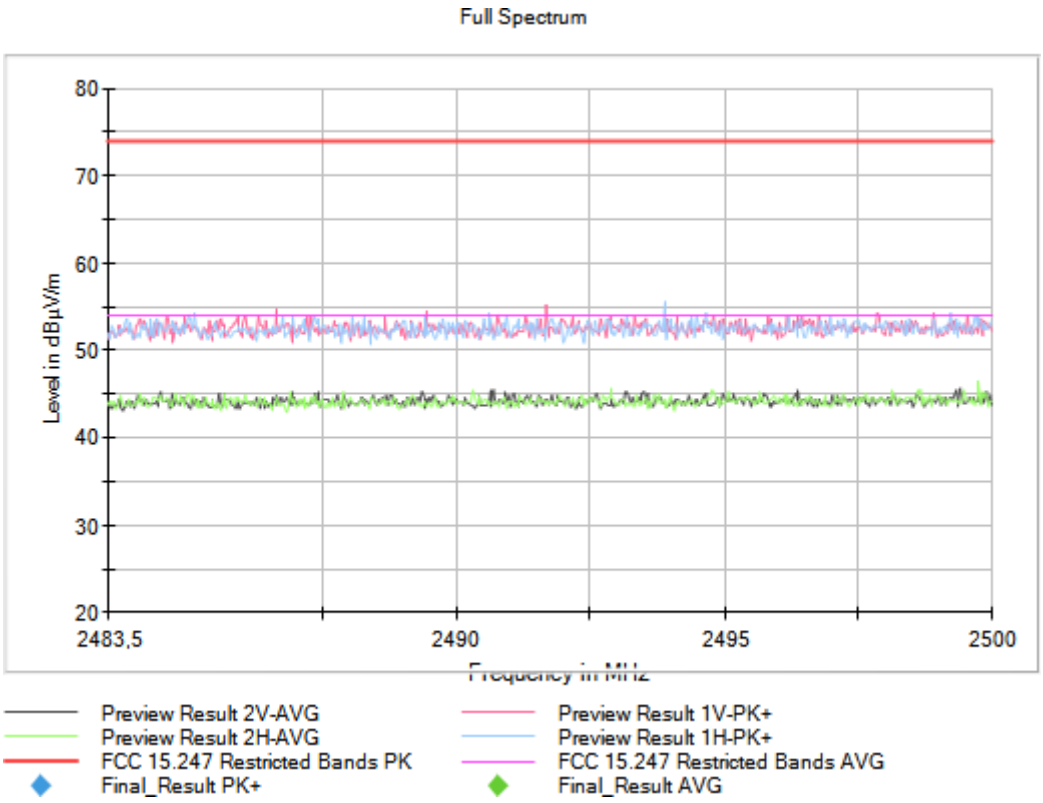
Frequency (MHz) = 2402.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (GFSK 1-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



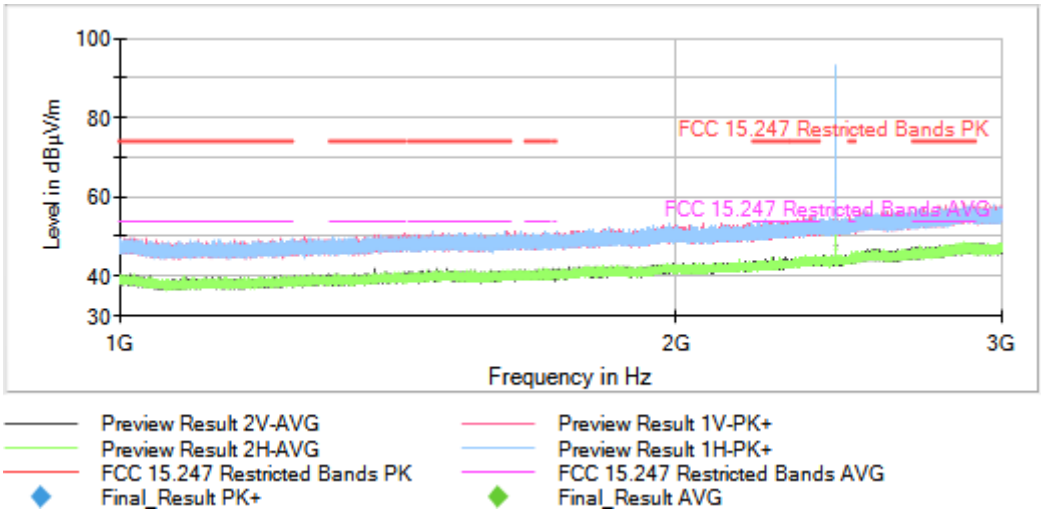
Full Spectrum



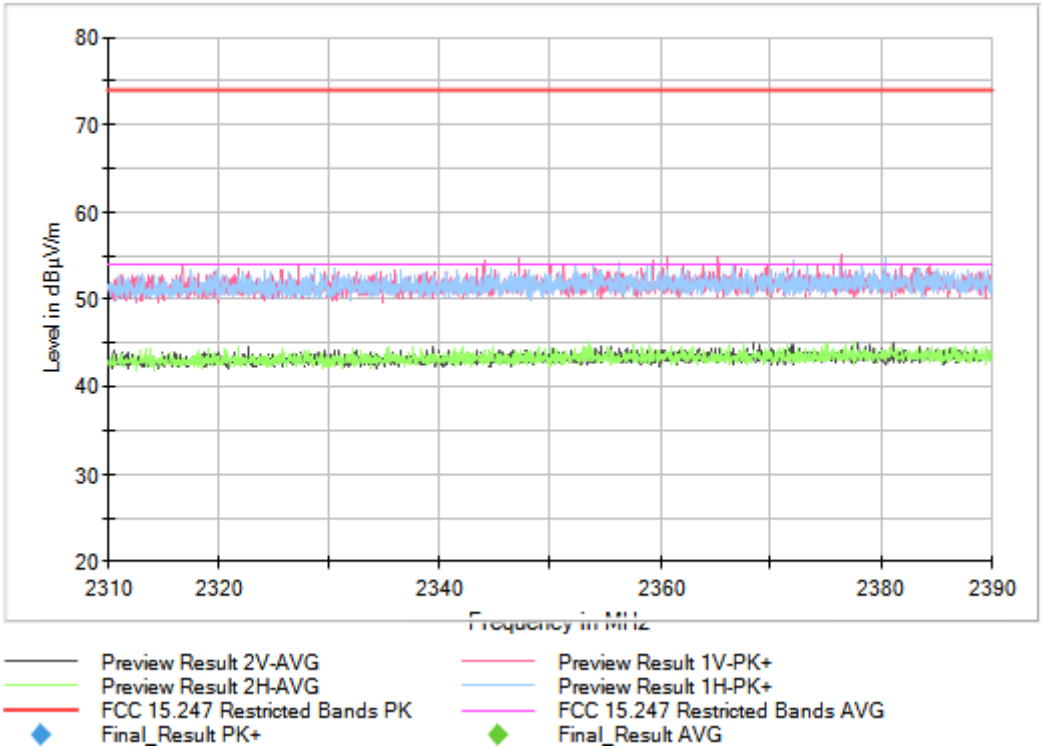

Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Frequency in MHz
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

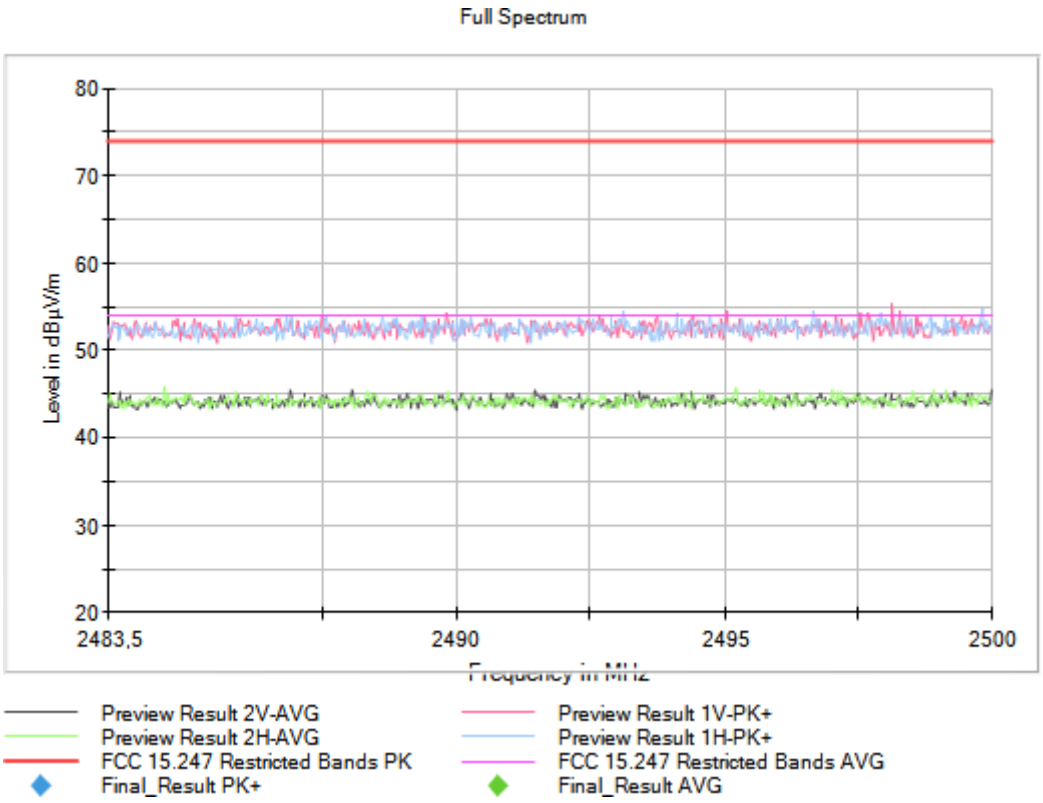
Frequency (MHz) = 2441.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (GFSK 1-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



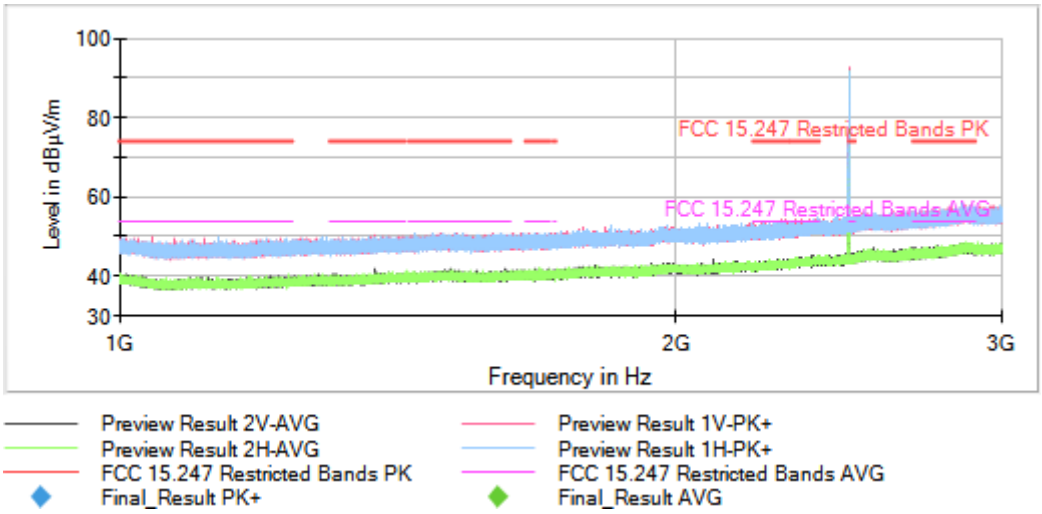
Full Spectrum



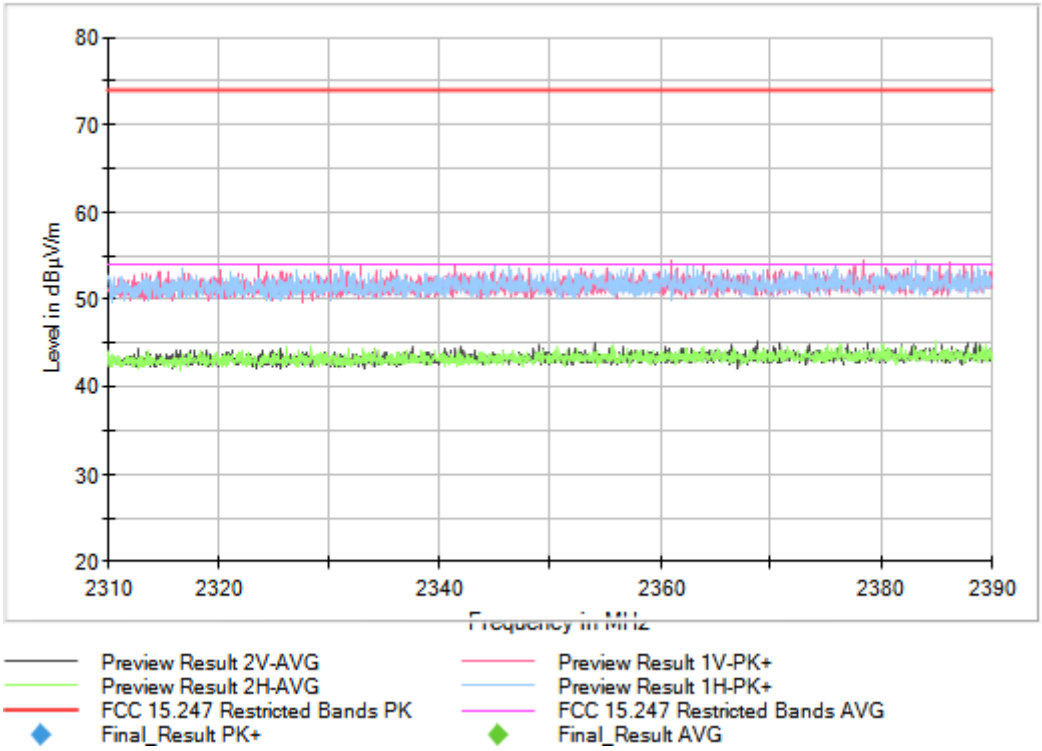

Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Frequency in MHz
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

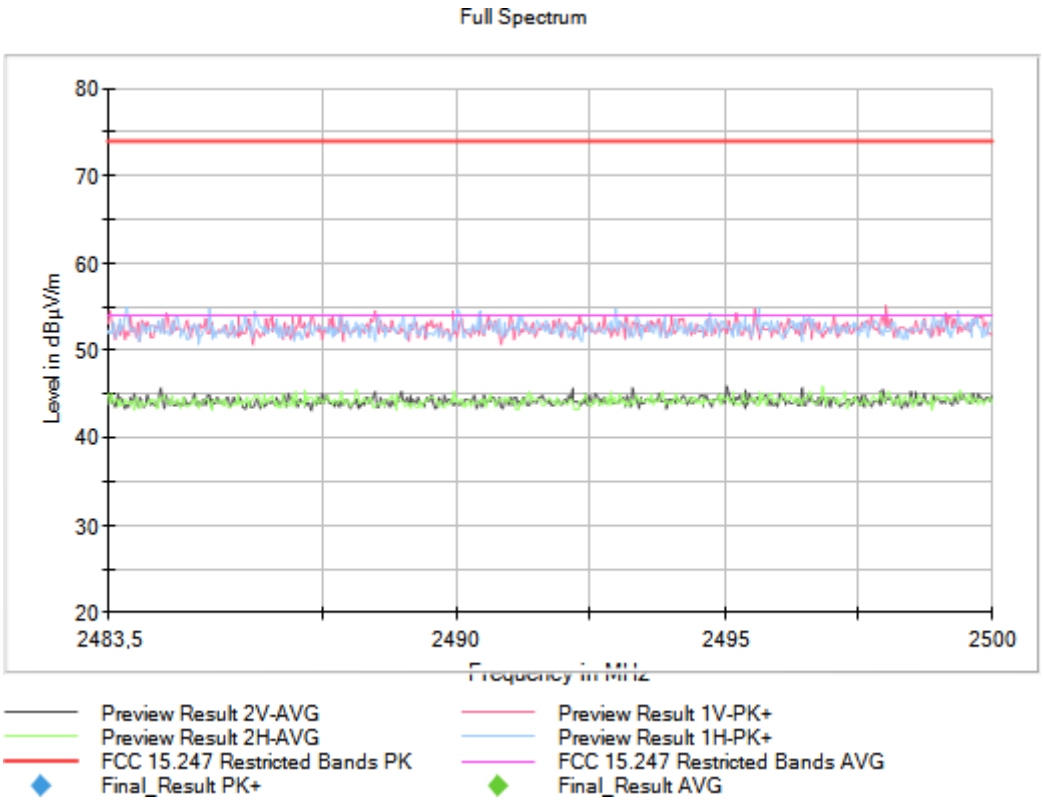
Frequency (MHz) = 2480.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (GFSK 1-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



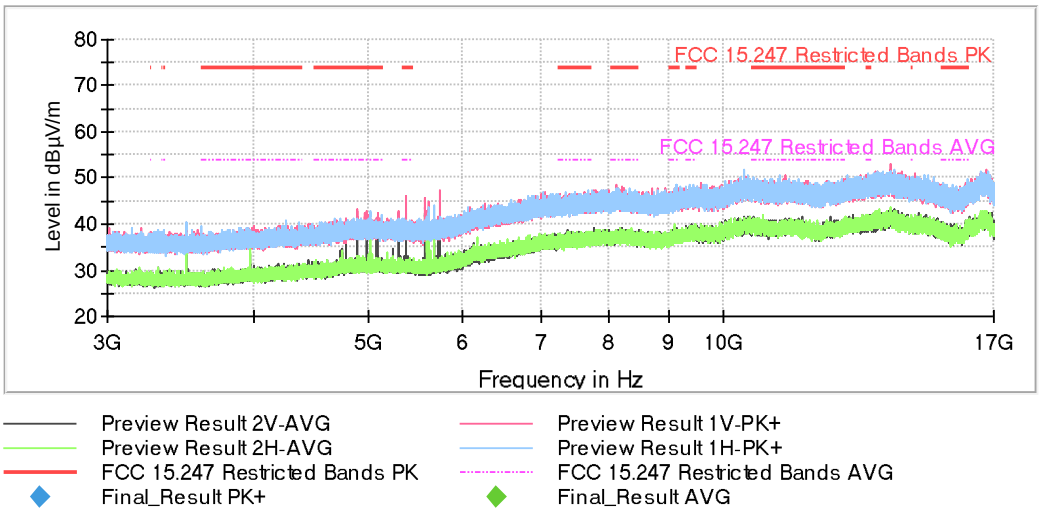
Full Spectrum




Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Frequency in MHz
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

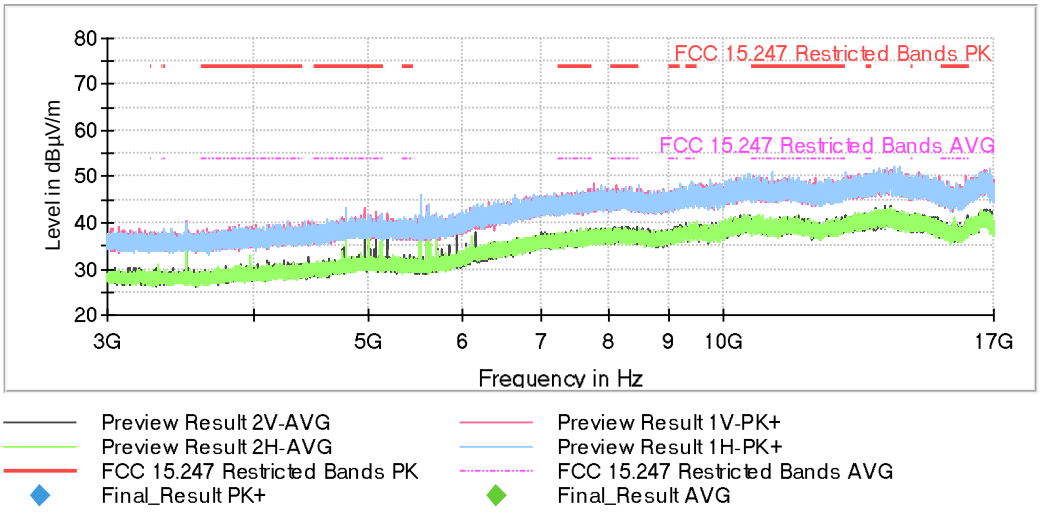
Frequency (MHz) = 2402.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (GFSK 1-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

Plots:



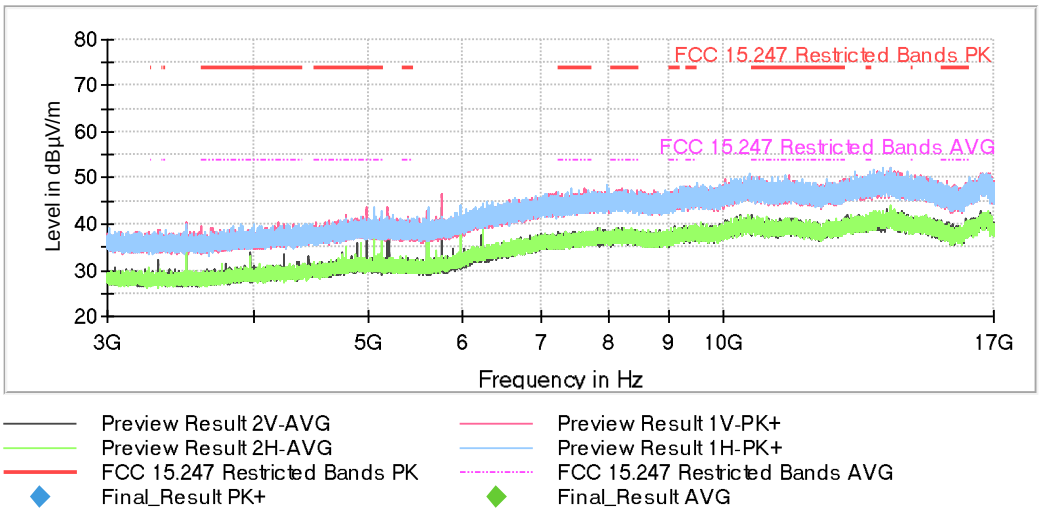
Frequency (MHz) = 2441.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (GFSK 1-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

Plots:



Frequency (MHz) = 2480.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (GFSK 1-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

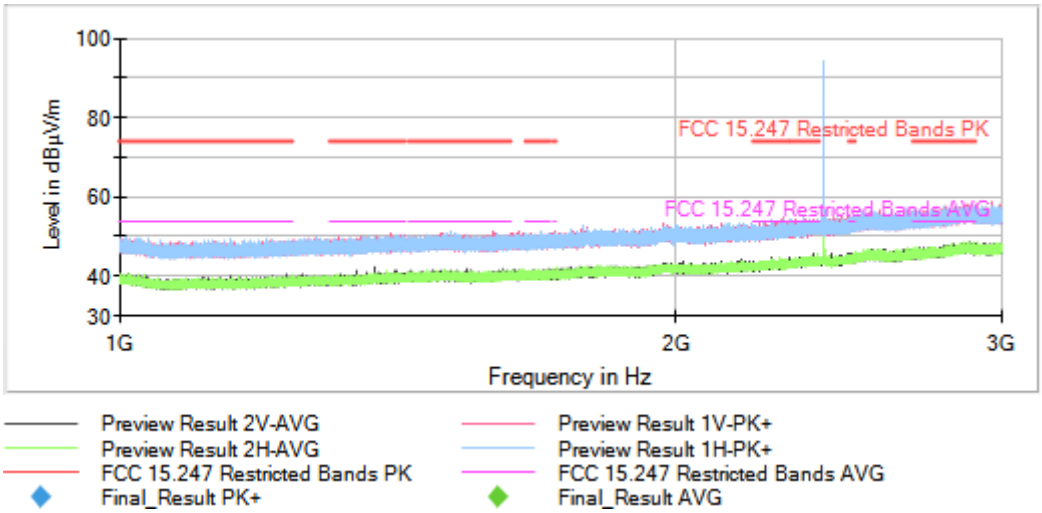
Plots:



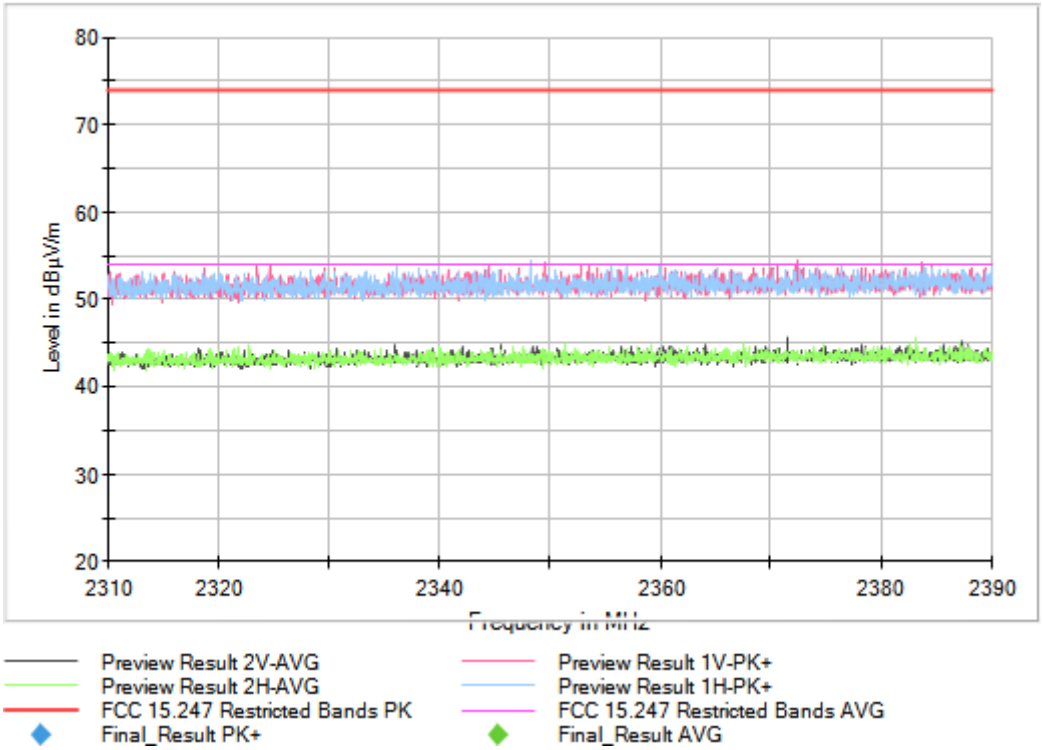
Modulation: BT (Pi/4 DQPSK 2-DH5)

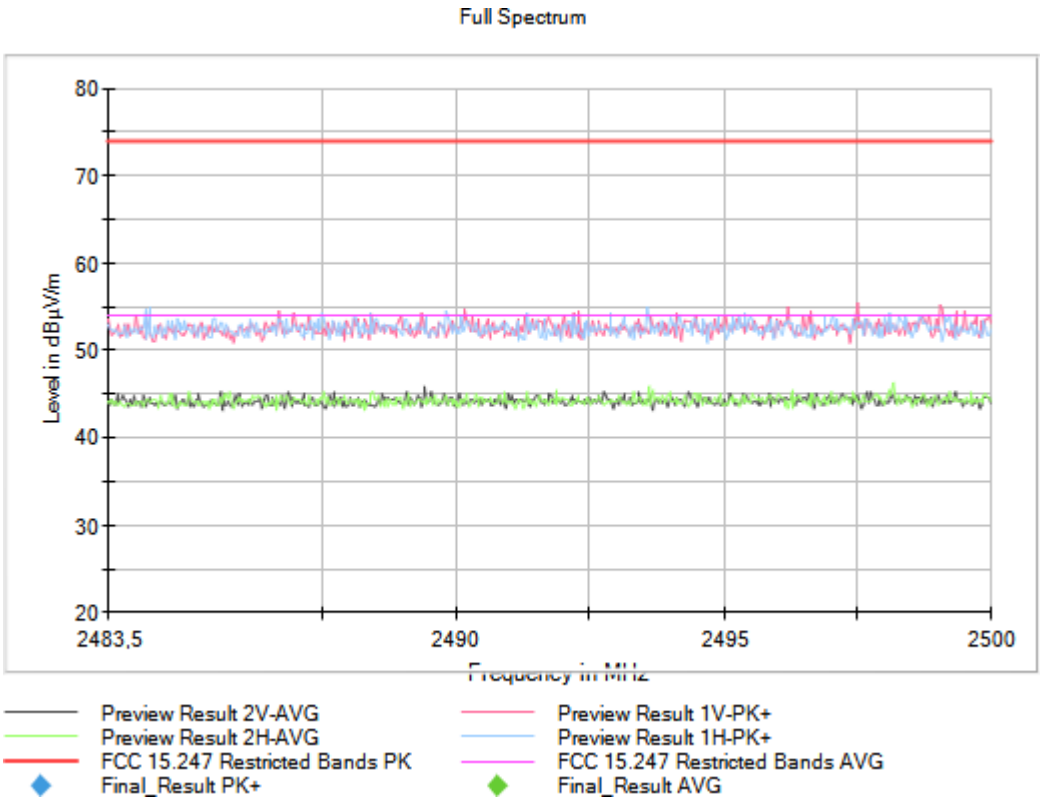
Frequency (MHz) = 2402.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (Pi/4 DQPSK 2-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



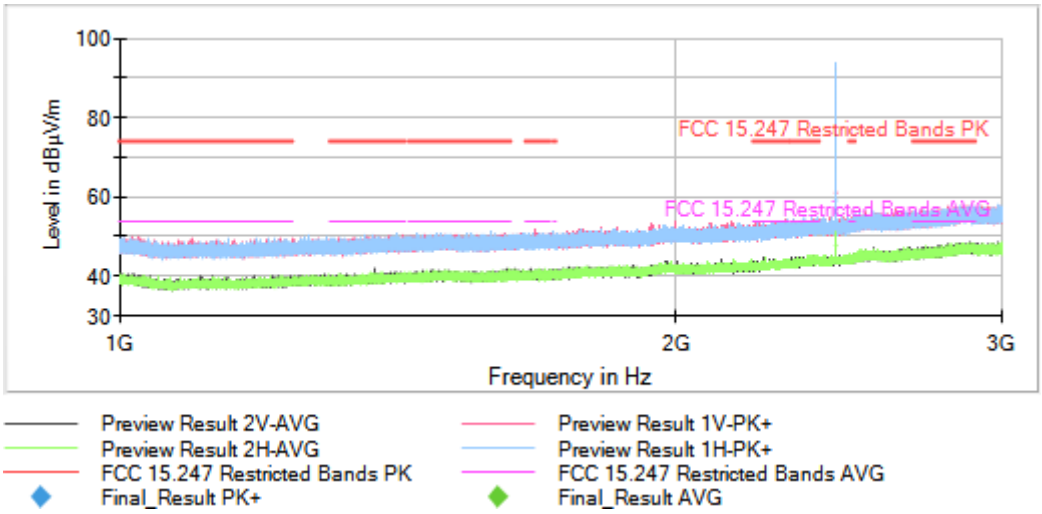
Full Spectrum



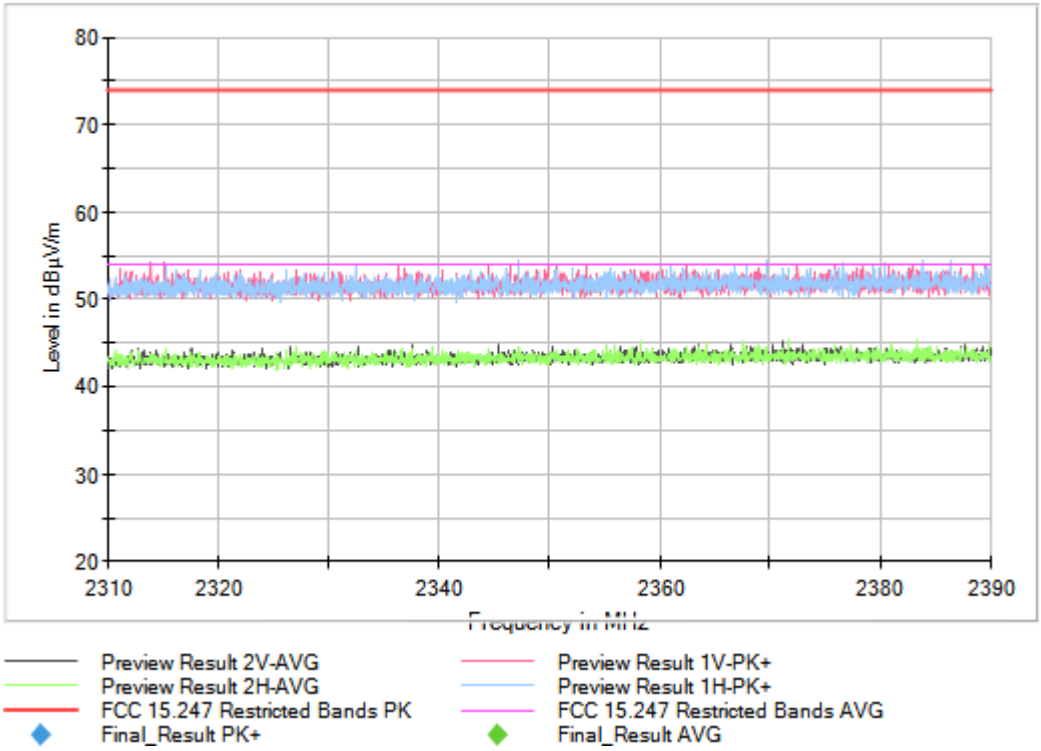

Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

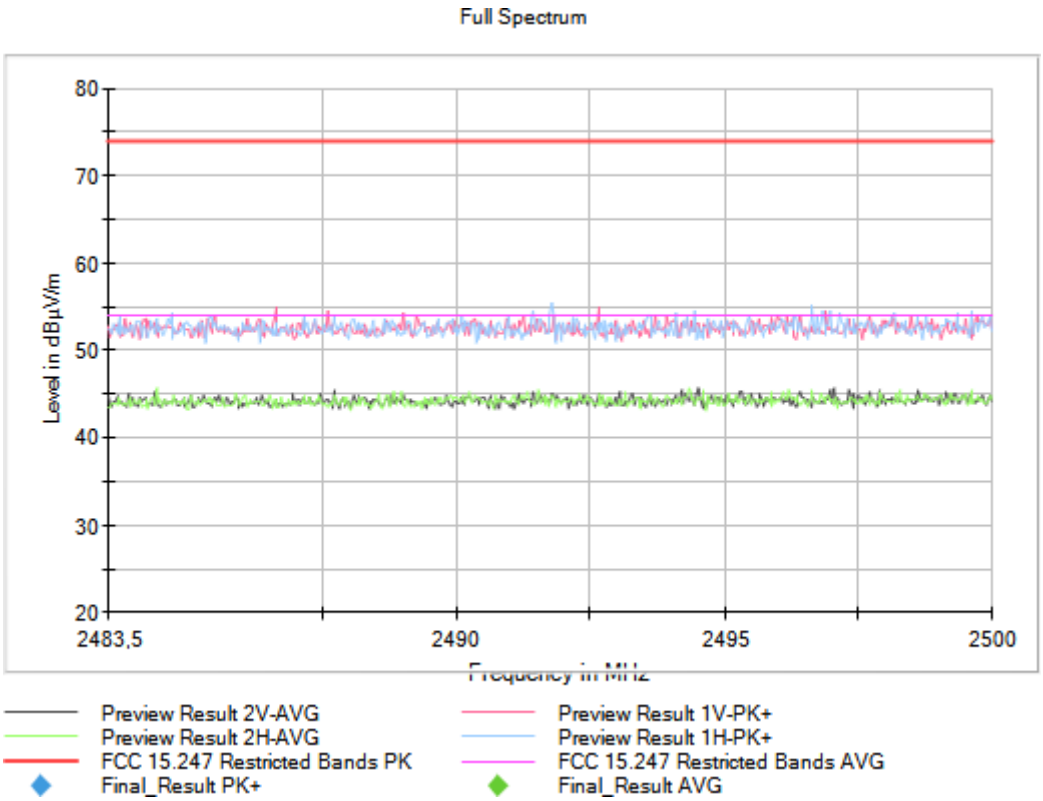
Frequency (MHz) = 2441.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (Pi/4 DQPSK 2-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



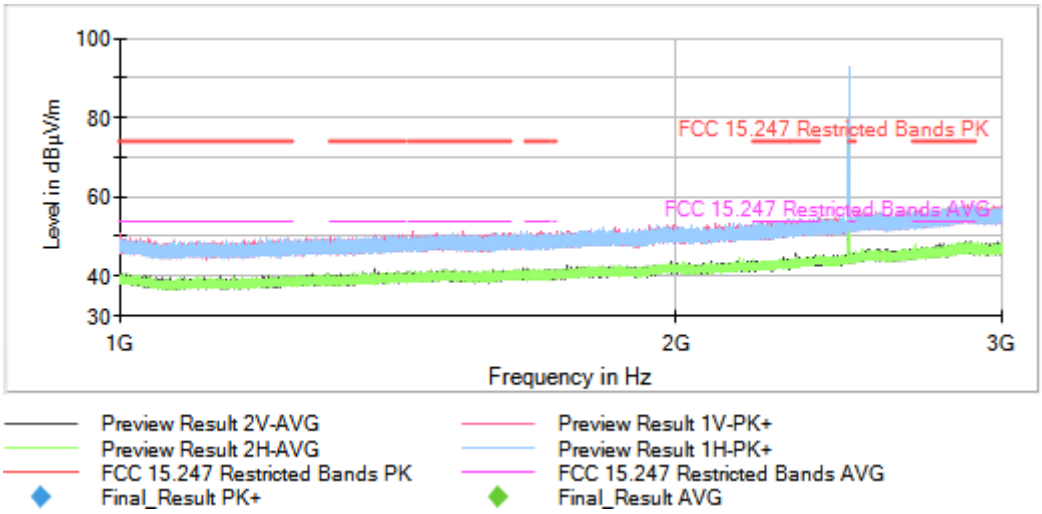
Full Spectrum



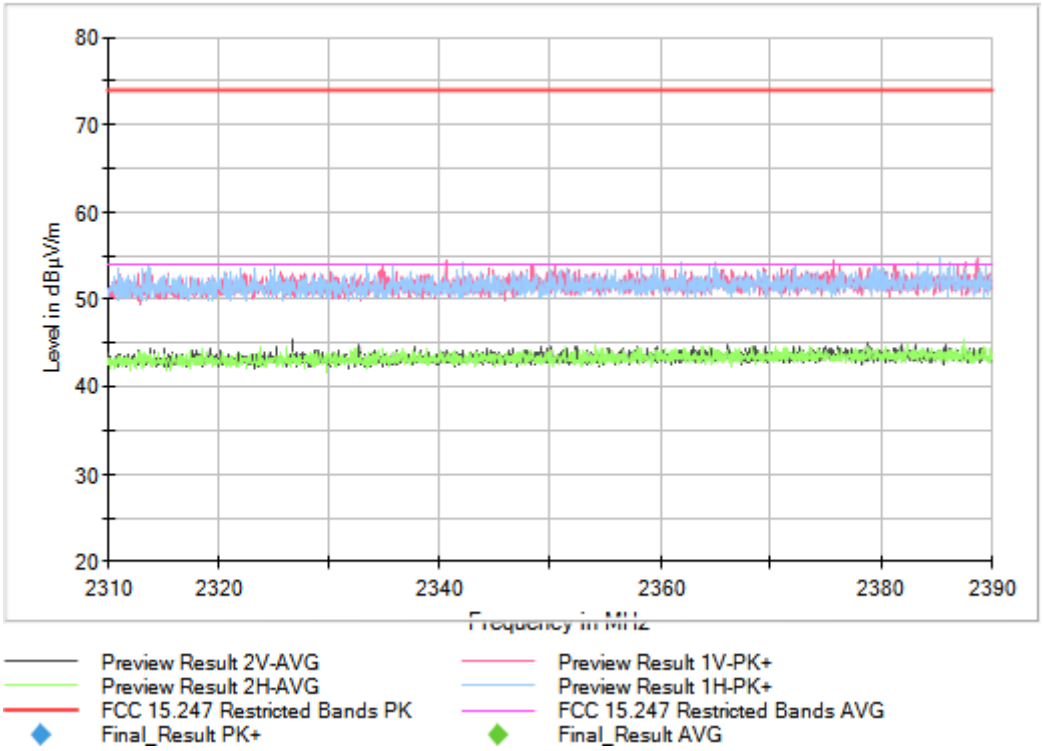

Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Frequency in MHz
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

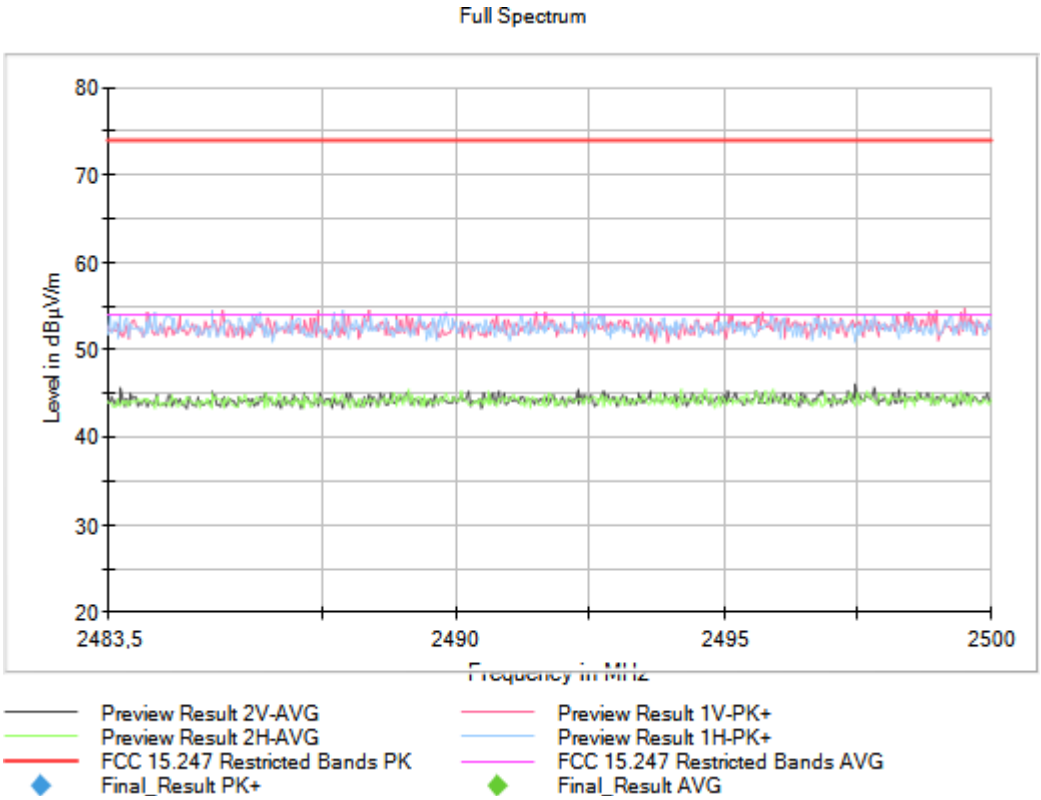
Frequency (MHz) = 2480.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (Pi/4 DQPSK 2-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



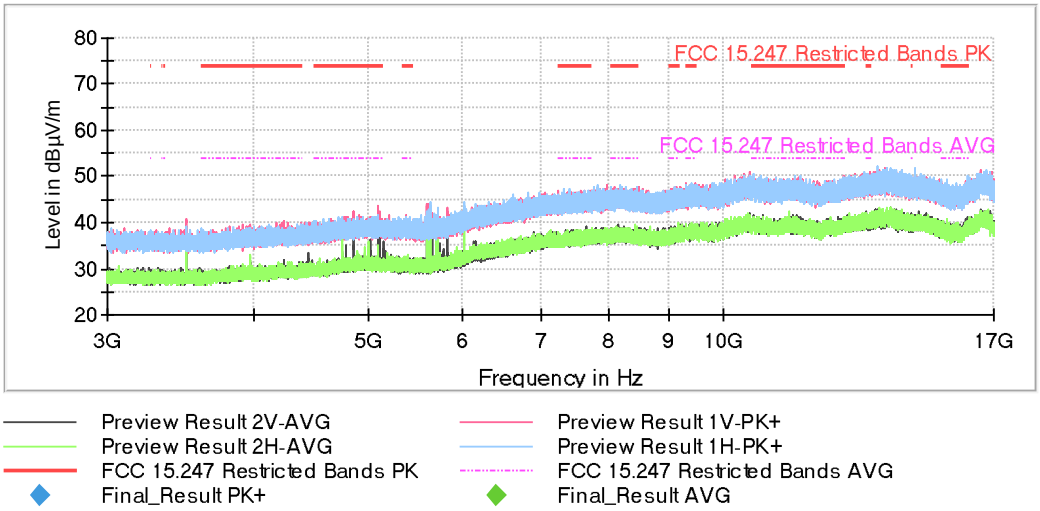
Full Spectrum




Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

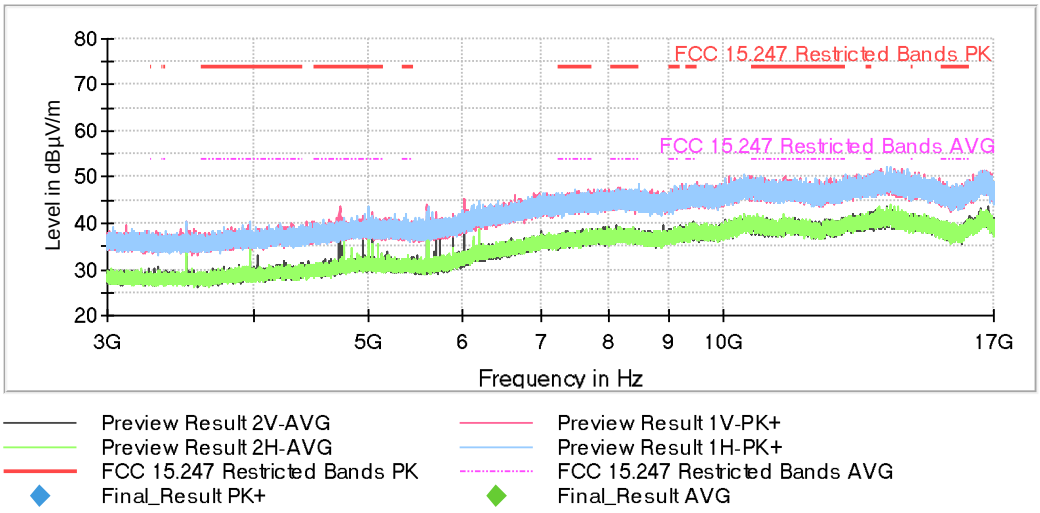
Frequency (MHz) = 2402.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (Pi/4 DQPSK 2-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

Plots:



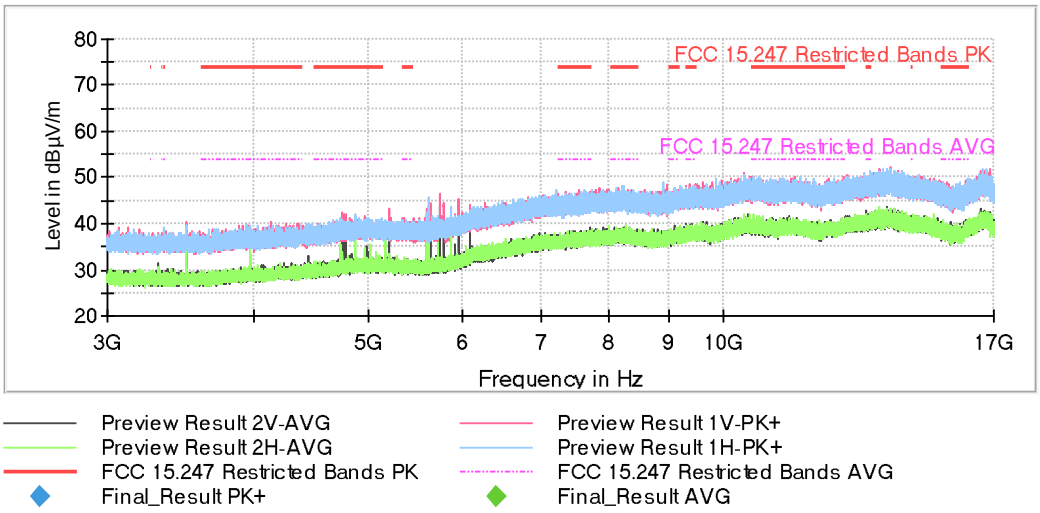
Frequency (MHz) = 2441.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (Pi/4 DQPSK 2-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

Plots:



Frequency (MHz) = 2480.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (Pi/4 DQPSK 2-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

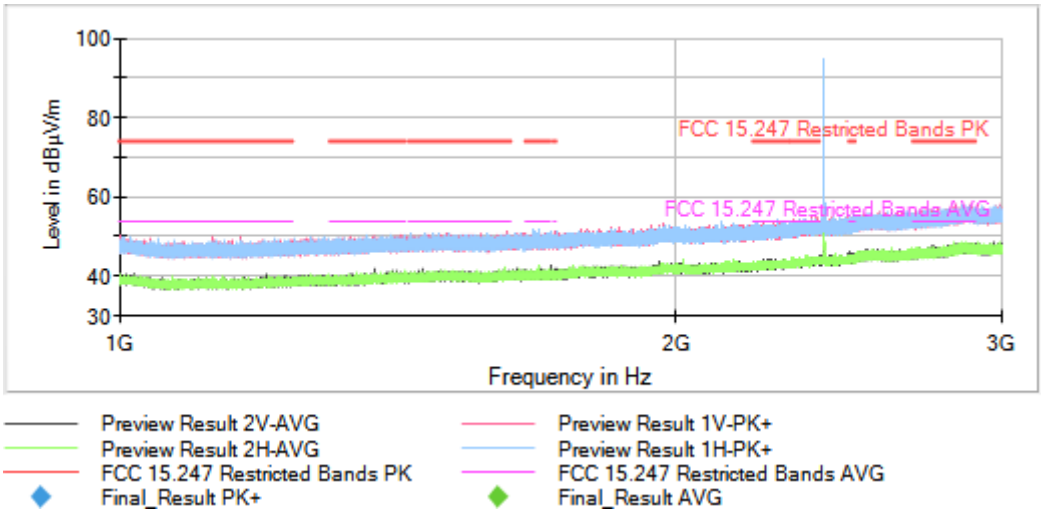
Plots:



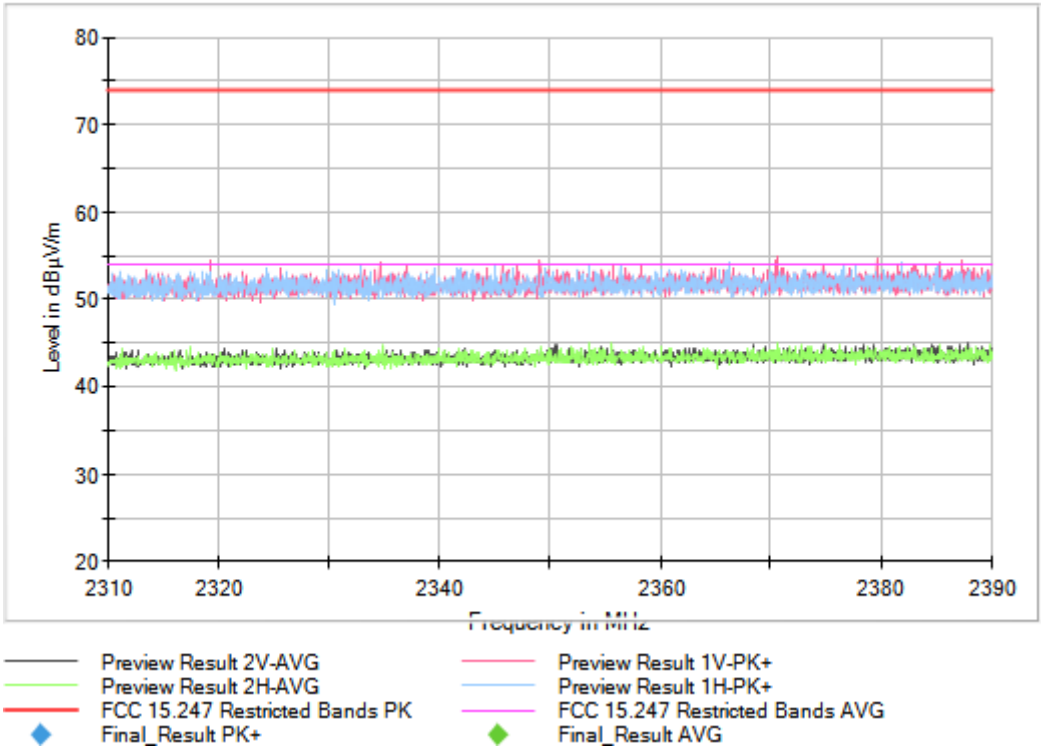
Modulation: BT (8DPSK 3-DH5)

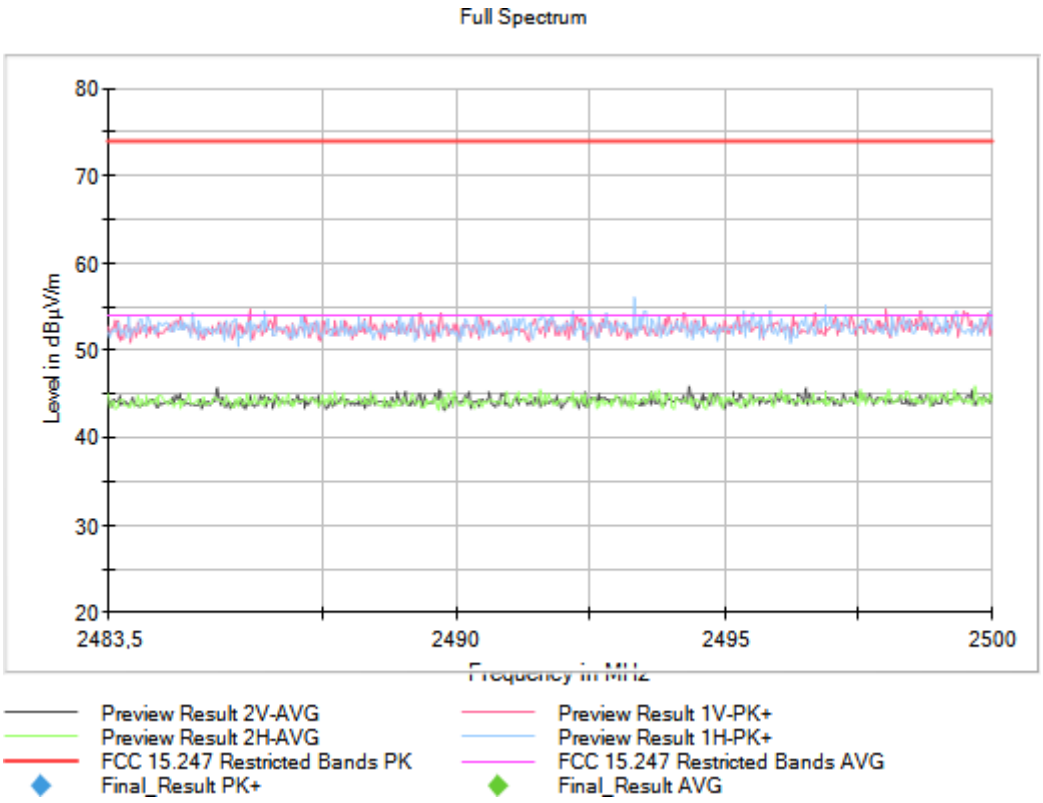
Frequency (MHz) = 2402.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (8DPSK 3-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



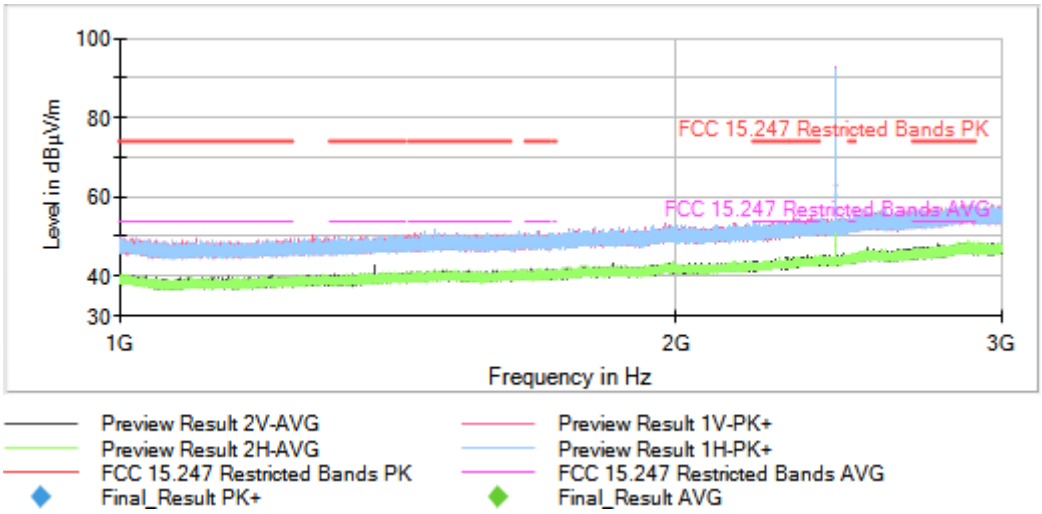
Full Spectrum



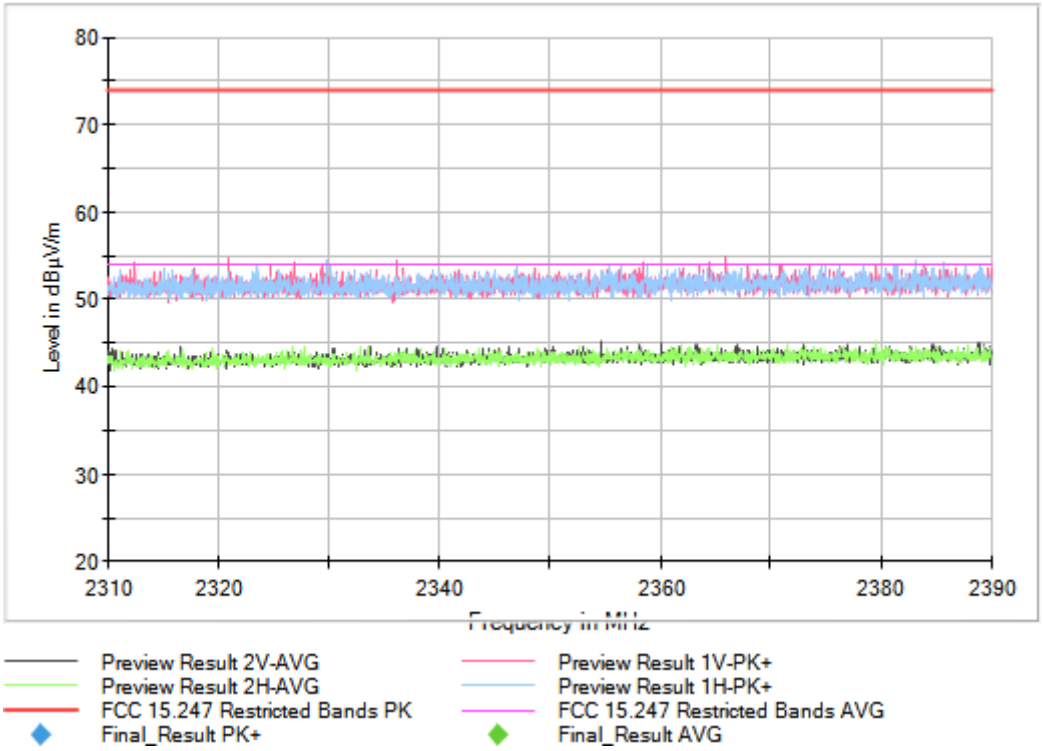

Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Frequency in MHz
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

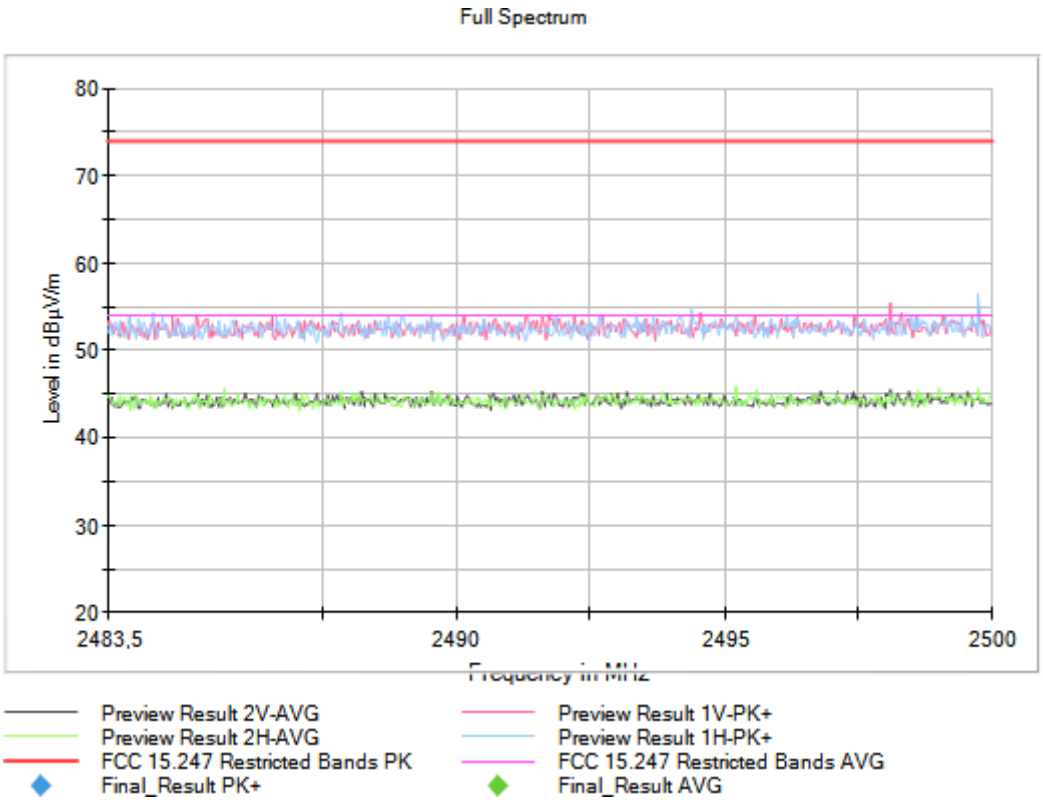
Frequency (MHz) = 2441.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (8DPSK 3-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



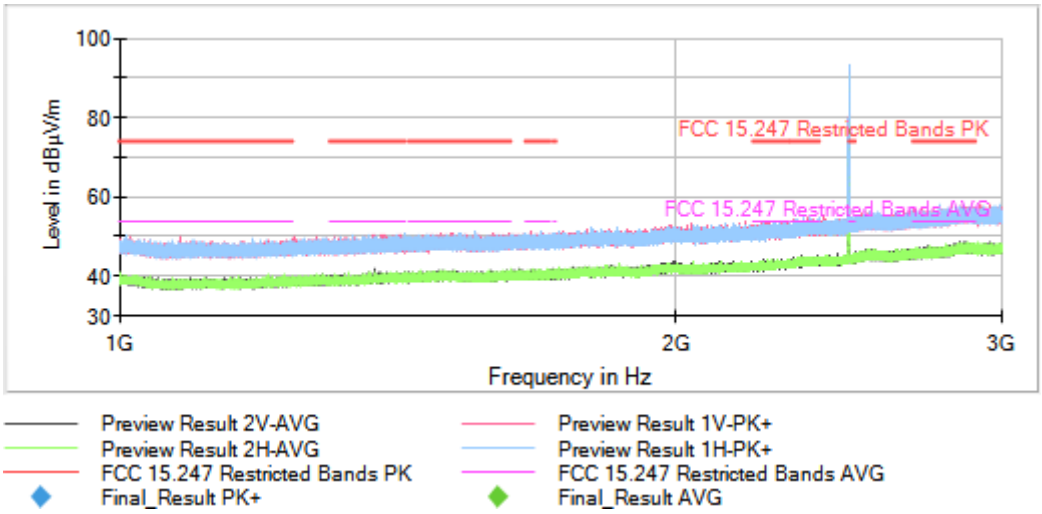
Full Spectrum



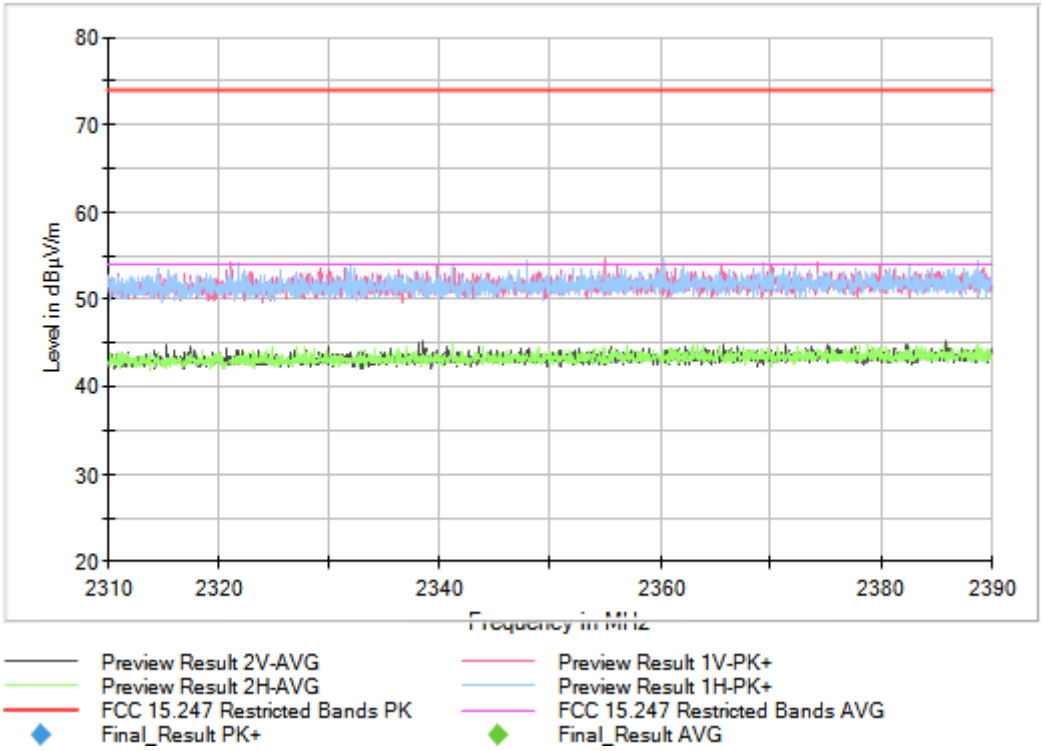

Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Frequency in MHz
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

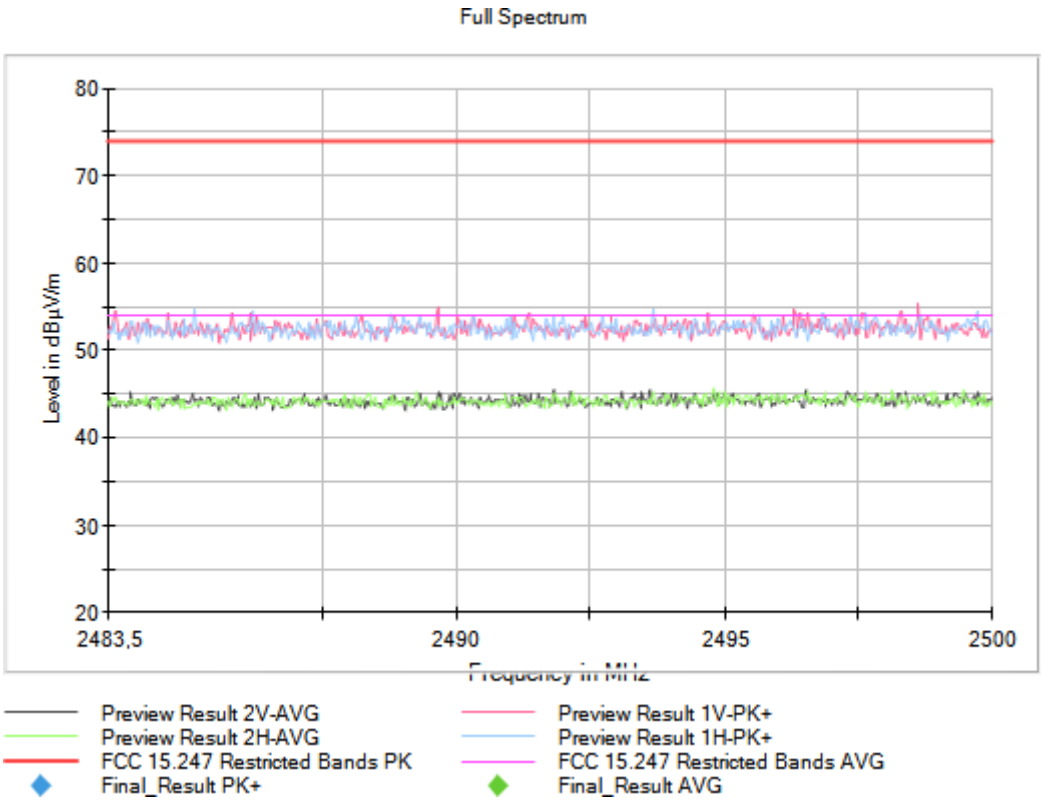
Frequency (MHz) = 2480.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (8DPSK 3-DH5), Frequency Range (GHz) = [1, 3], Number of Transmission Chains = 1

Plots:



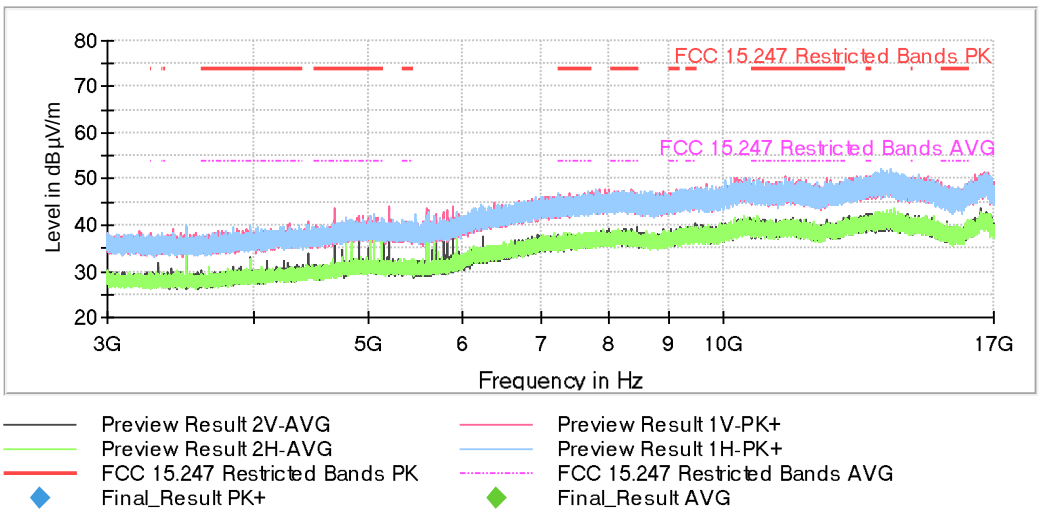
Full Spectrum




Full Spectrum
Level in dBµV/m
80
70
60
50
40
30
20
2483,5
2490
2495
2500
Frequency in MHz
Preview Result 2V-AVG
Preview Result 2H-AVG
FCC 15.247 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
FCC 15.247 Restricted Bands AVG
Final_Result AVG

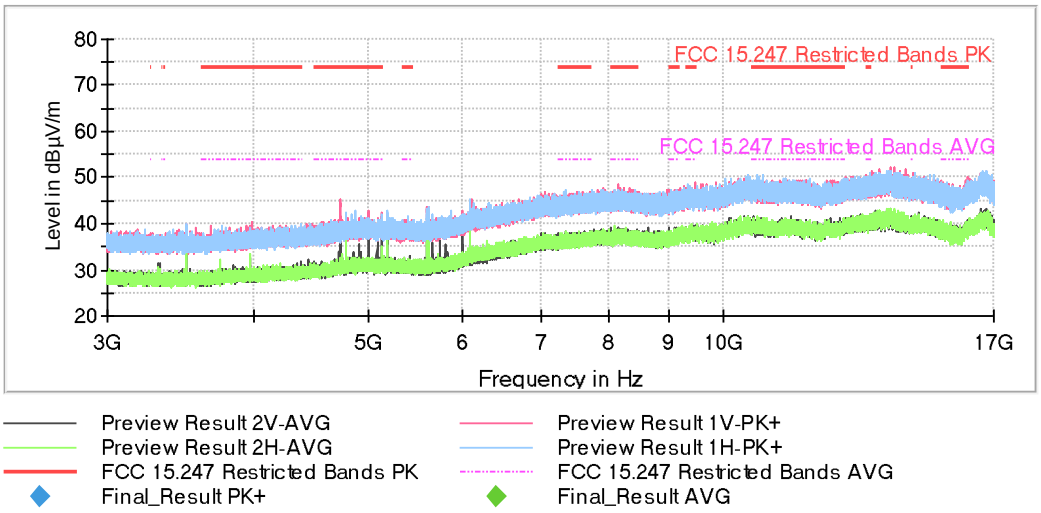
Frequency (MHz) = 2402.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (8DPSK 3-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

Plots:



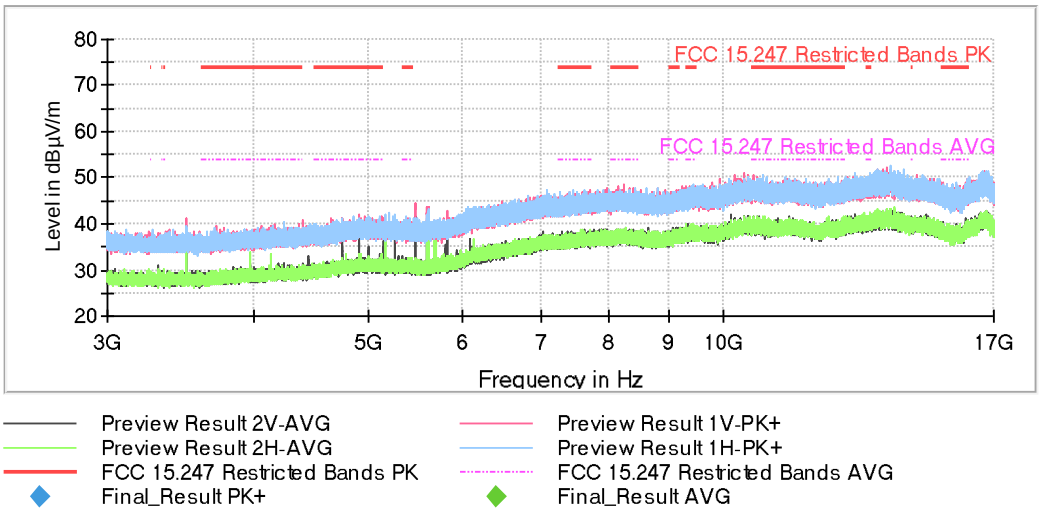
Frequency (MHz) = 2441.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (8DPSK 3-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

Plots:



Frequency (MHz) = 2480.00000, Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Modulation: BT (8DPSK 3-DH5), Frequency Range (GHz) = [3, 17], Number of Transmission Chains = 1

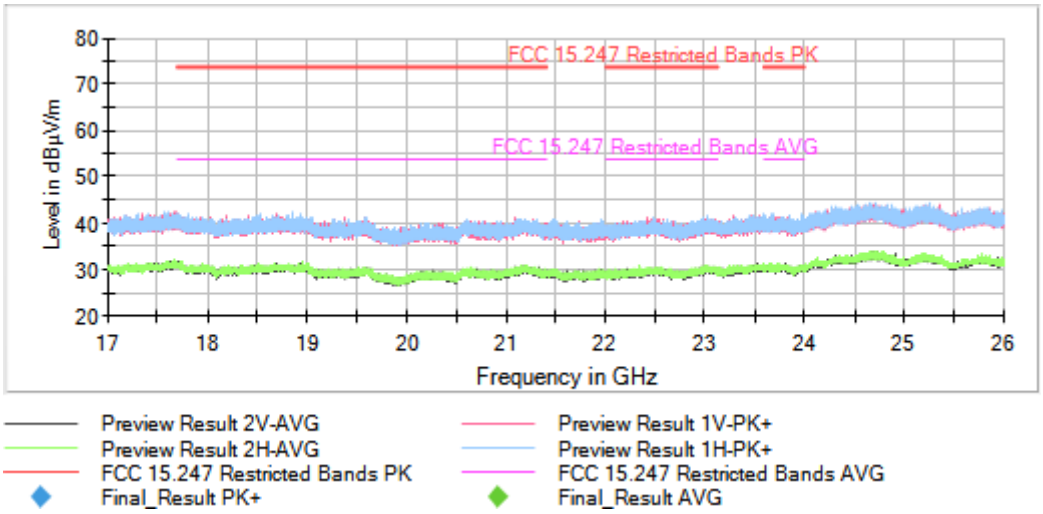
Plots:



Modulations: BT (GFSK 1-DH5), BT (Pi/4 DQPSK 2-DH5), BT (8DPSK 3-DH5)

Equipment Type: Frequency Hopping Spread Spectrum systems (DSS), Frequency Range (GHz) = [17, 26], Number of Transmission Chains = 1

Plots:



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

Appendix B: Test results. Bluetooth EDR. Chipset 2

INDEX

TEST CONDITIONS 48

TEST CASES DETAILS 51

FCC 15.247 (d) Emission limitations radiated (Transmitter) 51

TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal:	12Vdc
Type of Power Supply:	External

ANTENNA (*):

Type of Antenna:	External antenna
Maximum Declared Antenna Gain:	2 dBi
RF Output Port:	1

TEST FREQUENCIES (*):

Low Channel:	2402 MHz
Middle Channel:	2441 MHz
High Channel:	2480 MHz

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

RADIATED MEASUREMENTS:

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

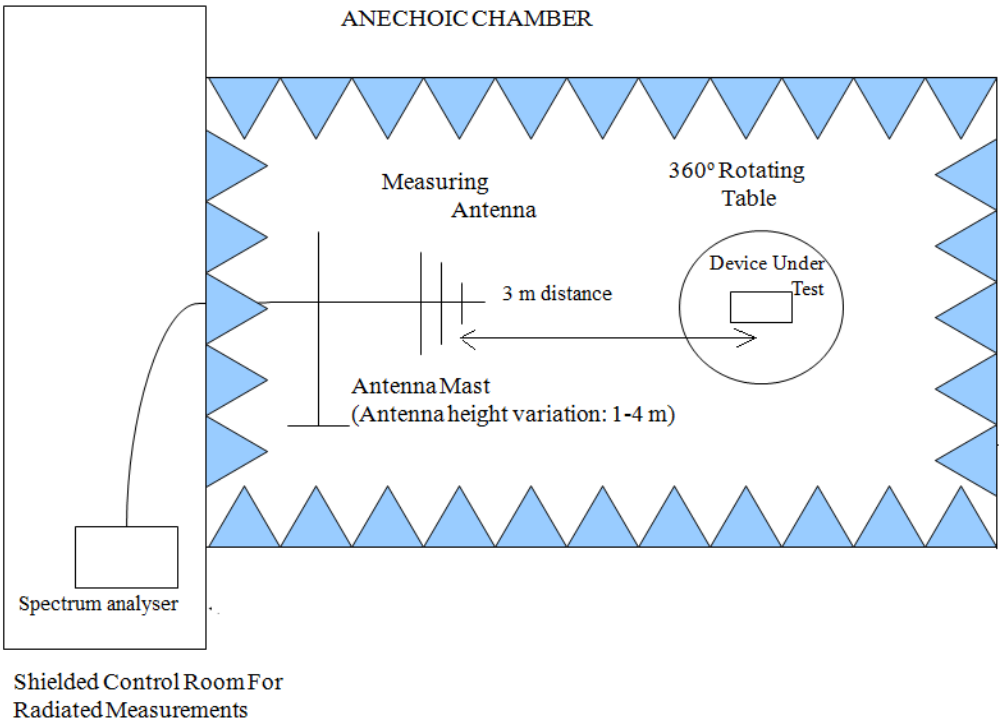
For radiated emissions in the range 17 GHz – 26 GHz performed at a distance closer than the distance specified in standard, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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 360º and the antenna height was varied from 1 to 4 meters (up to 17GHz) to find the maximum radiated emission.

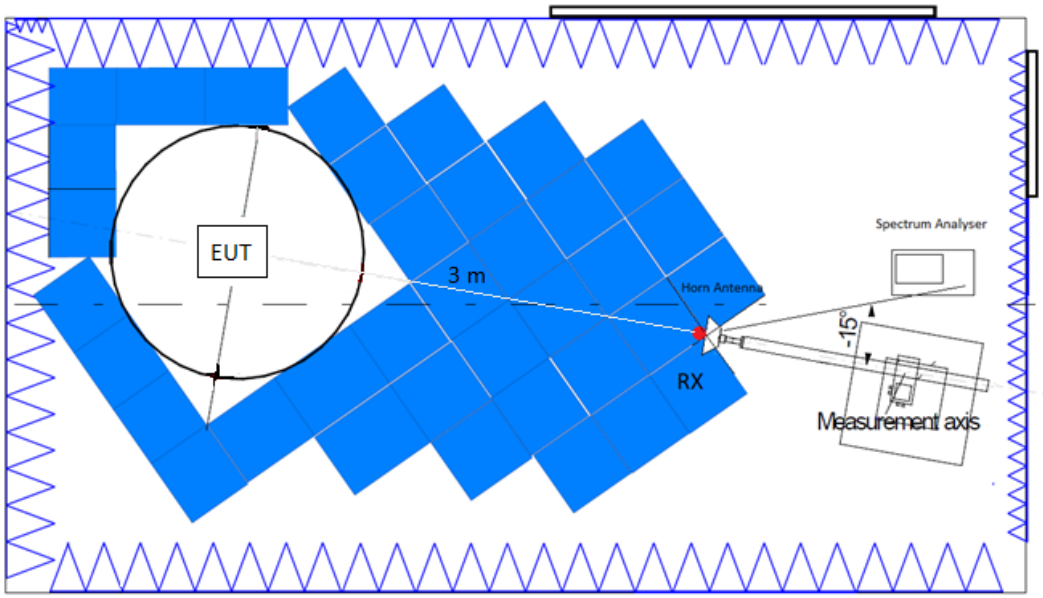
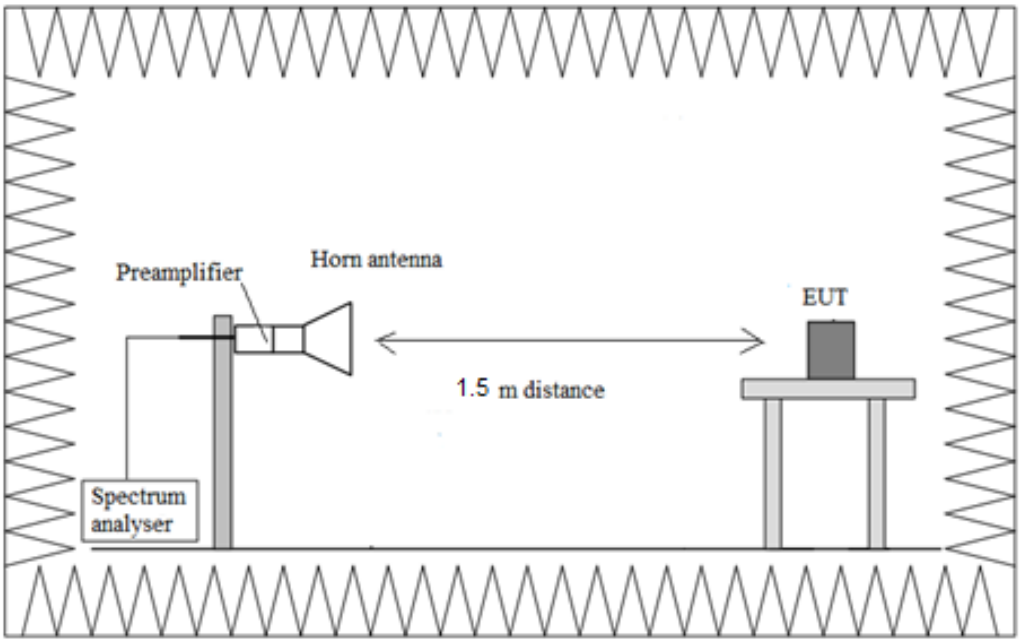
Measurements were made in both horizontal and vertical planes of polarization.

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: