

ISED CABid: ES1909

Test report No:

Lab. Company Number: 4621A

72232RRF.003

Test report

USA FCC Part 15.249, 15.209

CANADA RSS-210, RSS-Gen

(*) Identification of item tested	EASYZONE EZ8
(*) Trademark	AIRZONE
(*) Model and /or type reference	AZPV8CB2IAQ (USA)
(*) Derived model not tested	AZPV8CB1IAQ (EU)
Other identification of the product	FCC ID: SVS-CB-IAQ IC: 24685-CBIAQ
(*) Features	Features: SRD, Bluetooth (See data sheet) HW version: V1.0 SW version: Data not provided
Applicant	CORPORACIÓN EMPRESARIAL ALTRA S.L. C/ MARIE CURIE 21 29590, MÁLAGA, SPAIN
Test method requested, standard	USA FCC Part 15.249 (10-1-21 Edition): Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, 5725 - 5875 MHz, and 24.0 – 24.25 GHz. USA FCC Part 15.209 (10-1-21 Edition): Radiated emission limits; general requirements. CANADA RSS-210 Issue 10 (December 2019). CANADA RSS-Gen Issue 5 Amendment 2 (February 2021). ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	José Manuel Gómez Galván EMC Consumer & RF Lab. Manager 
Date of issue	2023-04-04
Report template No	FDT08_24 (*) "Data provided by the client"

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Competences and guarantees

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

DEKRA Testing and Certification S.A.U. is an ISED-recognized accredited testing laboratory, CABid: ES1909, Company Number: 4621A, with the appropriate scope of accreditation that covers the performed tests in this report.

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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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Uncertainty

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

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 an airzone motorized plenum with neck that mechanically adapts to the main ducted AC units. Communications via radio. Powered at 110/230 Vac.

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 N°	Date of Reception	Application
S/01	72232_7.1	Communication box	AZPV8CB2IAQ	0ACML2	2022-10-24	Element Under Test
S/01	72232_8.1	Communication cable	--	--	2022-10-25	Auxiliary Element
S/01	72082B_4.1	Power cord	--	--	2022-10-24	Auxiliary Element

Notes referenced to samples during the project:

Id	Type
S/01	Sample used for testing. The element 72232_7.1 is used with a firmware update.

Test sample description

Ports..... :	Port name and description		Cable				
			Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾	
	1 - Airzone connection bus		100	[X]	[X]	[]	
	2 - Automation bus		100	[X]	[X]	[]	
	3 - CAN connection bus		100	[]	[X]	[]	
	4 - AC unit bus		2	[]	[]	[]	
	5 - Actuator outputs		15	[X]	[]	[]	
	6 - Relay outputs		-	[]	[]	[]	
Supplementary information to the ports..... :	Complete description of the ports in the file "List of devices and Manual test"						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[X]	AC: 230 (EU)	[X]	[]	[]	[X]	[X]
	[X]	AC: 110 (USA)	[X]	[]	[]	[X]	[X]
[]	DC:						
Rated Power	4.1 W						
Clock frequencies							
Other parameters.....							
Software version							
Hardware version.....	V1.0						
Dimensions in cm (W x H x D).....	195 x 180 x 55,5 mm						
Mounting position.....	[]	Table top equipment					
	[X]	Wall/Ceiling mounted equipment					
	[]	Floor standing equipment					
	[]	Hand-held equipment					
	[]	Other:					
Modules/parts	Module/parts of test item		Type		Manufacturer		
	Central Easyzone EZ8		AZPV8CB2IAQ		AIRZONE		
Accessories (not part of the test item)	Description		Type		Manufacturer		
	Particle sensor		SN-GCJA5L		Panasonic		
	Thermostat		Think		Airzone		
	Ionizer		MHM314-02A		Murata		
	Webserver		AZX6WSC5GE		Airzone		
	Gateway		AZX6GTCD1		Airzone		
Documents as provided by the applicant.....	Description		File name		Issue date		
	Data sheet		FTAZEZ8_PLE				

⁽³⁾ Only for Medical Equipment

Identification of the client

CORPORACIÓN EMPRESARIAL ALTRA S.L.
C/ MARIE CURIE 21
29590, MÁLAGA, SPAIN

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2022-10-27
Date (finish)	2022-12-23

Document history

Report number	Date	Description
72232RRF.003	2023-04-04	First release

Environmental conditions

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

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

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

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

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

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

Remarks and comments

The tests have been performed by the technical personnel: Daniel Mejías and Victoria Olmedo.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
8130	SEMIANECHOIC ABSORBER LINED CHAMBER	P29419	ALBATROSS PROJECTS GMBH	N/A
8134	SHIELDED ROOM	P29419	ALBATROSS PROJECTS GMBH	N/A
5862	EMI TEST RECEIVER 9kHz-7GHz	ESR7	ROHDE AND SCHWARZ	2025-02-15
2932	HYBRID BILOG ANTENNA 30MHz-6GHz	JB6	SUNOL SCIENCES CORPORATION	2023-10-29
7769	PREAMPLIFIER 30dB 500MHz-18GHz	BBV 9718 C	SCHWARZBECK	2023-03-25
7763	HORN ANTENNA 1-18GHz	BBHA 9120D	SCHWARZBECK MESS-ELEKTRONIK	2026-01-16
4848	SOFTWARE FOR EMC/RF TESTING	EMC32	ROHDE AND SCHWARZ	N/A
8661	SHIELDED ROOM	--	SIEPEL	N/A
5862	EMI TEST RECEIVER 9kHz-7GHz	ESR7	ROHDE AND SCHWARZ	2025-02-15

Testing verdicts

Not applicable:	N/A
Pass:	P
Fail:	F
Not measured:	N/M

Summary

SRD 915MHz

FCC PART 15 PARAGRAPH / RSS-210			
Requirement – Test case		Verdict	Remark
15.249 (a) / RSS-210 B.10 (a)	Field strength of fundamental and harmonic emissions	P	--
15.249 (d) / RSS-210 B.10 (b)	Emissions radiated outside of the specific frequency bands	P	--
<u>Supplementary information and remarks:</u> None.			

Appendix A: Test results. SRD 915MHz

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TEST CONDITIONS

POWER SUPPLY (V) and ANTENNA:

V nominal:	110Vac
Type of Power Supply:	External power supply
Type of Antenna:	Monopole SMA
Declared Antenna Gain:	-1.3 dBi

TEST FREQUENCIES:

Low Channel:	915.2 MHz
High Channel:	917.2 MHz

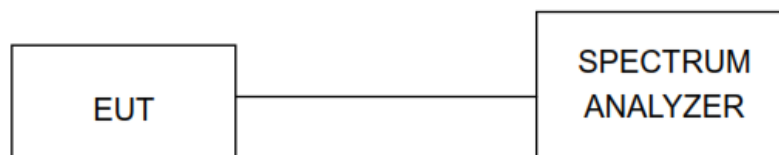
POWER SETTING:

The next power setting was used to configure the sample for the tests:

		Output Power
SRD 915MHz	Low Channel: 915.2 MHz	10dBm
	High Channel: 917.2 MHz	

CONDUCTED MEASUREMENTS

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



RADIATED MEASUREMENTS

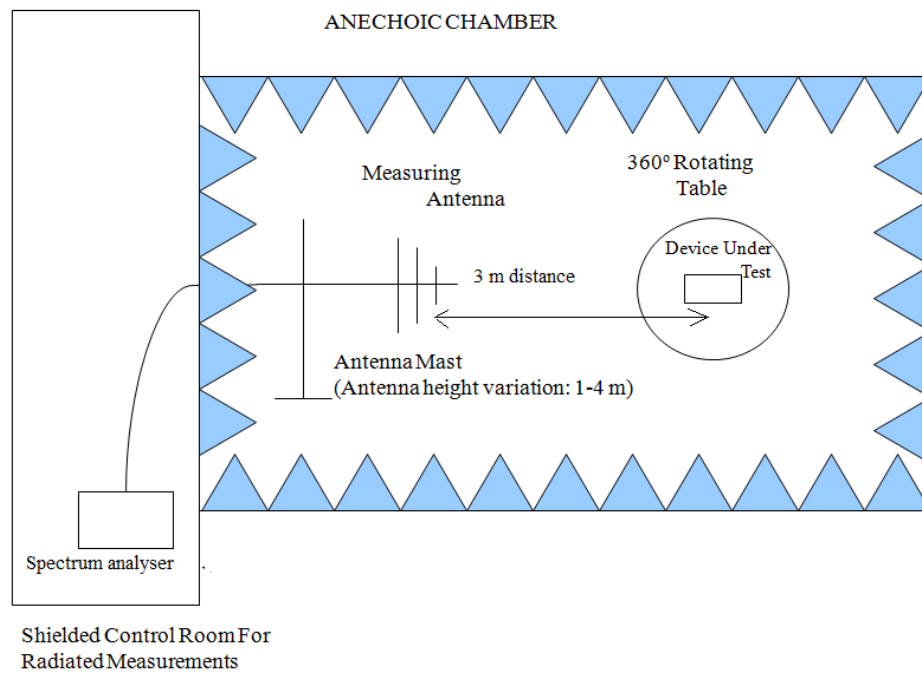
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-10 GHz Double ridge horn antenna) is situated at a distance of 3 m.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was 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.

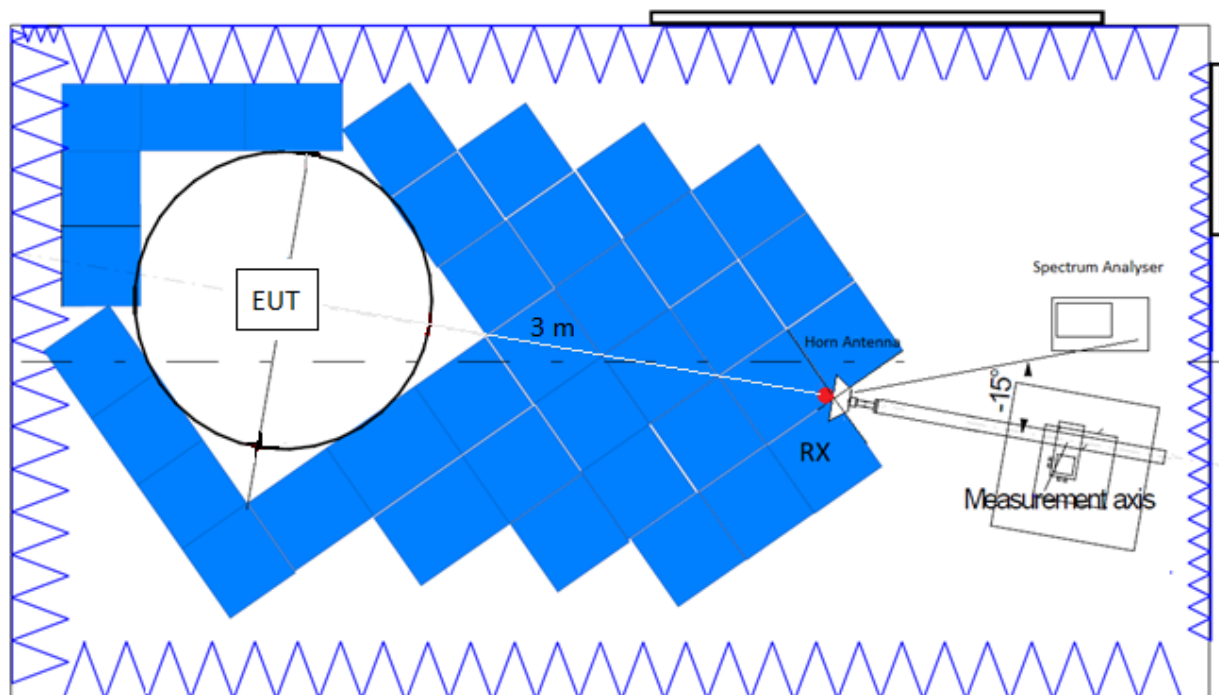
Measurements were made in both horizontal and vertical planes of polarization.

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 $f < 1$ GHz:



Radiated measurements setup from 1 GHz to 10 GHz:



Occupied Bandwidth

RESULTS:

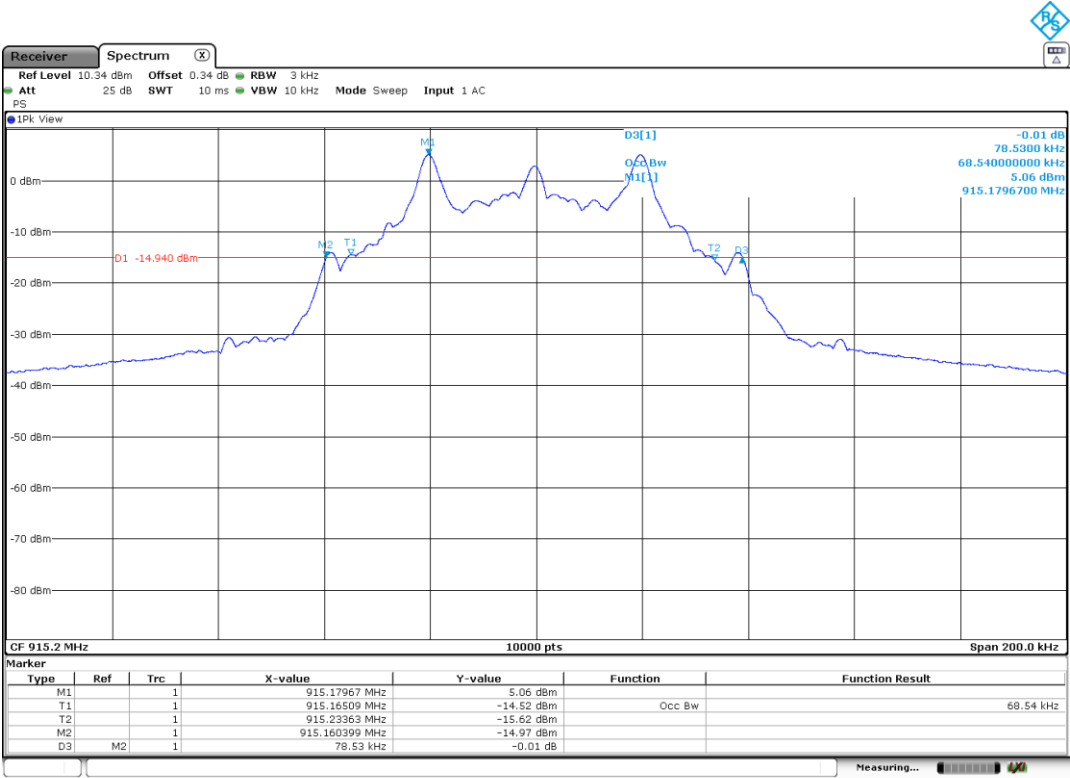
	Low Channel 915.2 MHz	High Channel 917.2 MHz
99% Bandwidth (kHz)	68.54	72.34
Measurement Uncertainty (%)	< 1.17	

Verdict: Pass

Attachments

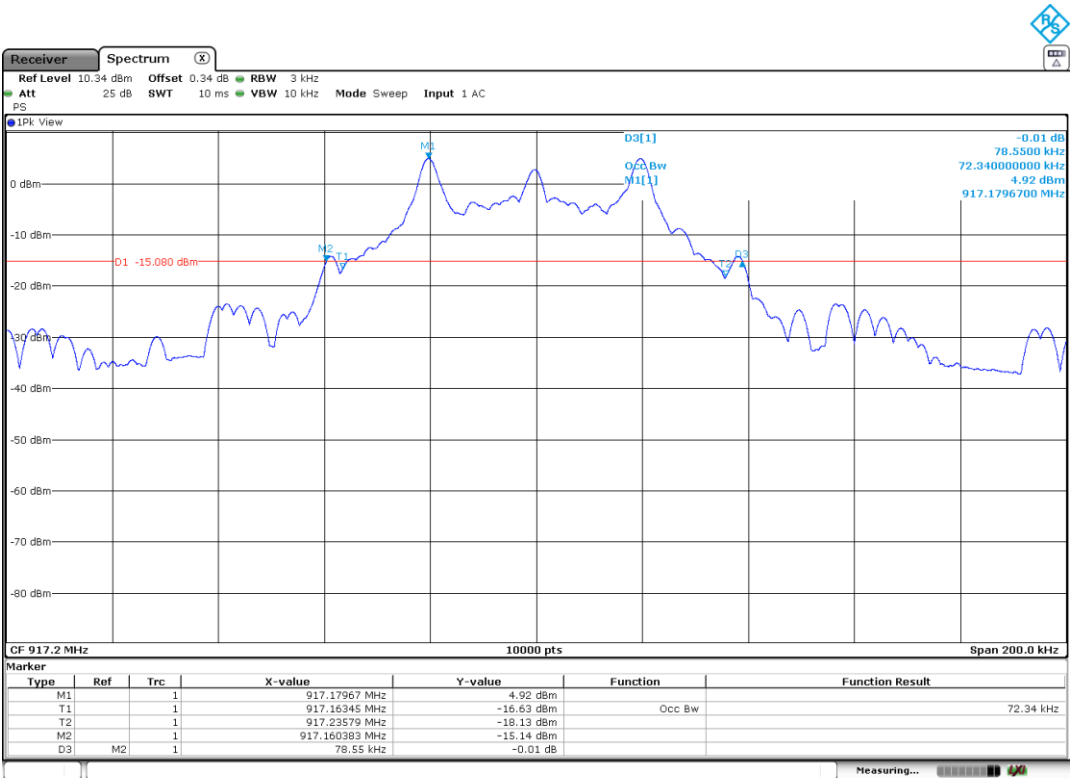
Frequency MHz = 915.2

Plots:



Frequency MHz = 917.2

Plots:



15.249 (a) / RSS-210 B.10 (a) Field strength of fundamental and harmonics emissions

SPECIFICATION:

The field strength of emissions from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of fundamental (mV/m)	Field strength (dBμV/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 – 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000-24250	250	107.96	3

For frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

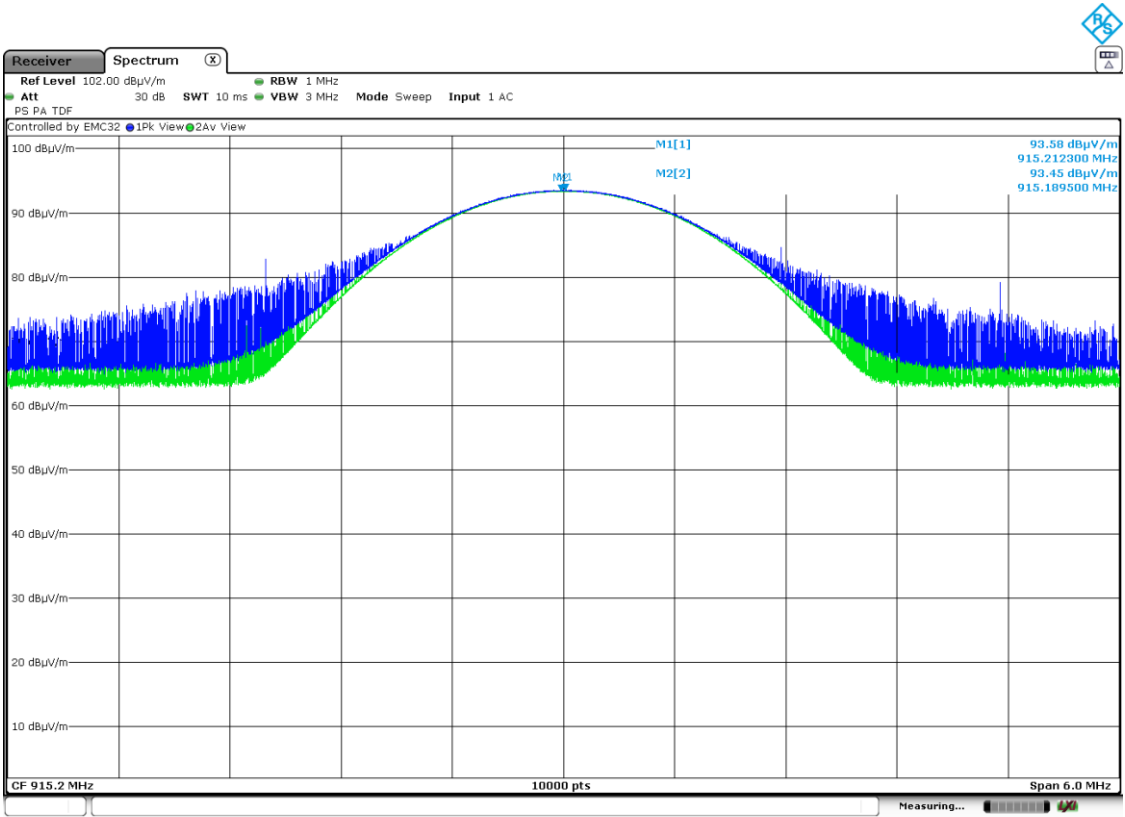
RESULTS:

	Low Channel 915.2 MHz	High Channel 917.2 MHz
Average Field Strength (dBμV/m)	93.45	92.89
Peak Field Strength (dBμV/m)	93.58	93.02
Measurement Uncertainty (dB)	±4.94	

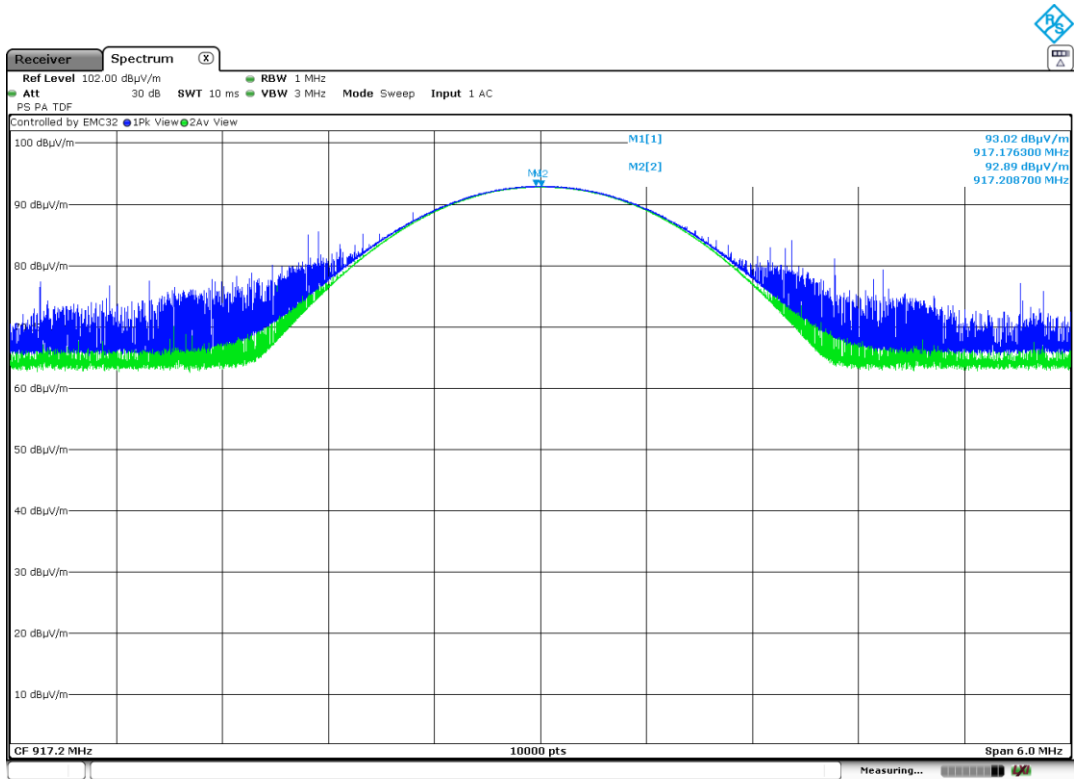
Verdict: Pass

Attachments

Frequency MHz = 915.2



Frequency MHz = 917.2



15.249 (d) / RSS-210 B.10 (b) Emissions radiated outside of the specific frequency bands

SPECIFICATION:

The field strength of harmonics from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of harmonics (μV/m)	Field strength of harmonics (dBμV/m)	Measurement distance (m)
902 - 928	500	54	3
2400 – 2483.5	500	54	3
5725 - 5875	500	54	3
24000-24250	2500	67.96	3

Emissions radiated outside of the specific frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits specified in section 15.209:

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
960 - 25000	500	54	3

Whichever is the lesser attenuation.

RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-10 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Frequency range 30 MHz - 1 GHz:

- Low Channel:

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

Spurious frequency (MHz)	Emission Level (dBμV/m)	Polarization	Detector
40.816	21.90	V	QP
46.296	22.25	V	QP
181.369	26.31	V	QP
187.140	31.87	V	QP
261.927	39.02	H	QP
266.243	38.34	H	QP
300.727	37.52	V	QP
427.312	30.15	V	QP

- High Channel:

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

Spurious frequency (MHz)	Emission Level (dBμV/m)	Polarization	Detector
41.106	24.43	V	QP
181.271	34.63	V	QP
187.043	30.46	V	QP
261.830	37.60	H	QP
295.004	38.13	V	QP
348.305	30.89	V	QP
400.152	29.29	V	QP
429.009	33.36	V	QP

Measurement Uncertainty $\leq \pm 4.94$ dB

Verdict: PASS

Frequency range 1 - 10 GHz:

Spurious signals with peak levels above the average limit (54 dB μ V/m at 3 m) are measured with average detector for checking compliance with the average limit.

Duty Cycle correction: +0.14 dB

- Low Channel:

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

Spurious frequency (GHz)	Emission Level (dB μ V/m)	Emission Level corrected (dB μ V/m)	Polarization	Detector
3.661	48.30	--	H	Peak
4.576	51.74	--	H	Peak
5.491	46.82	--	V	Peak
7.322	50.83	--	H	Peak
9.152	56.90	--	H	Peak
	44.34	44.48		Average

- High Channel:

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

Spurious frequency (GHz)	Emission Level (dB μ V/m)	Emission Level corrected (dB μ V/m)	Polarization	Detector
3.669	48.75	--	H	Peak
4.586	52.03	--	H	Peak
5.504	46.81	--	V	Peak
9.172	56.24	--	H	Peak
	48.55	48.69		Average

Measurement Uncertainty: $\leq \pm 4.32$ dB

Verdict: PASS

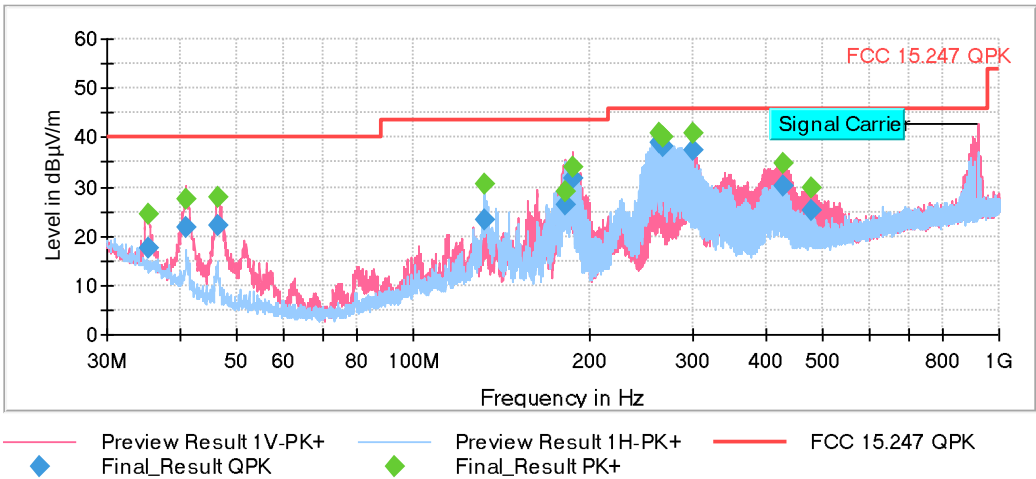
Attachments

Spectrum Analyzer Parameters:

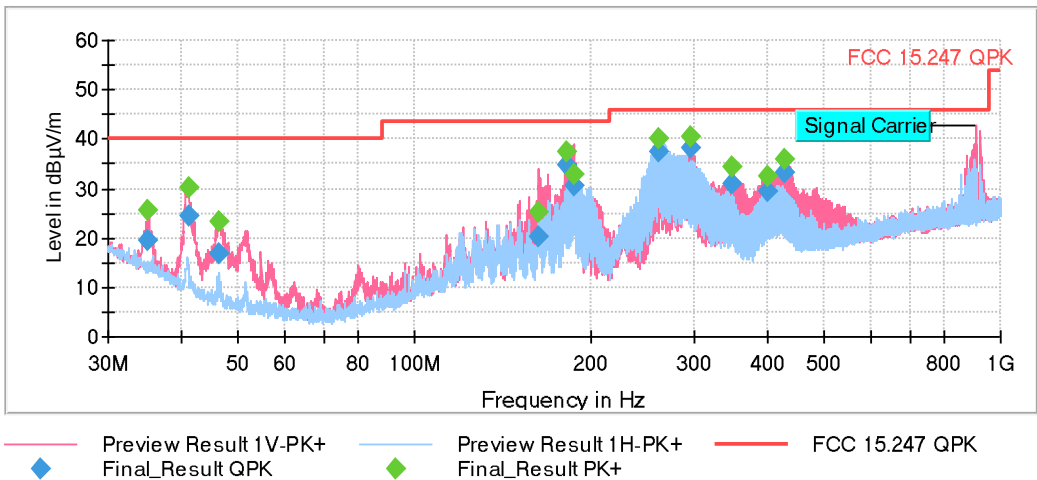
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESR 7] 30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	20 dB
Receiver: [FSV 40] 1 GHz - 10 GHz	300 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

FREQUENCY RANGE 30 MHz - 1 GHz

- Low Channel

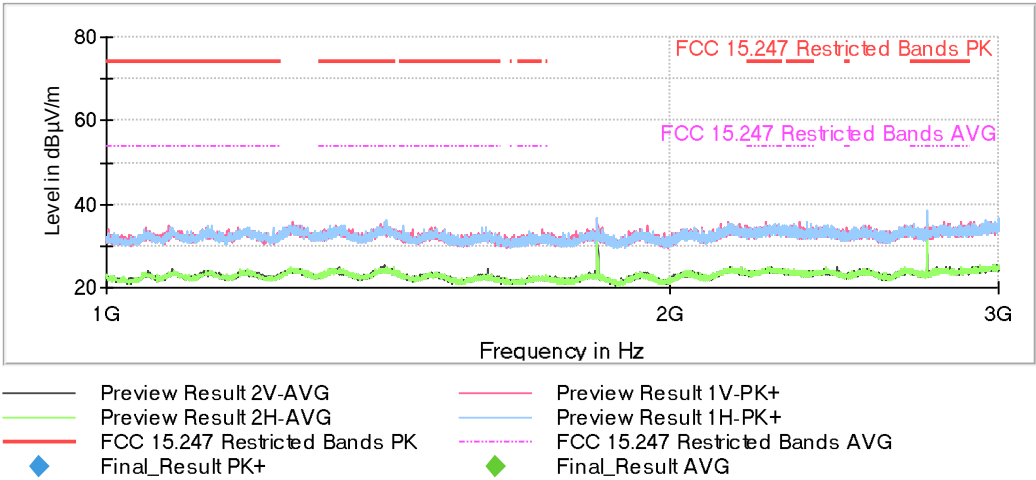


- High Channel

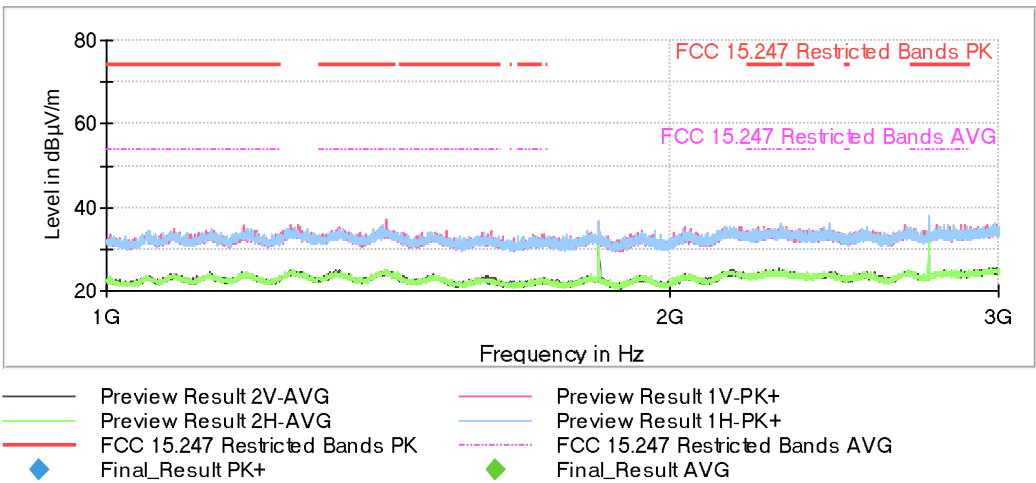


FREQUENCY RANGE 1 - 3 GHz

- Low Channel

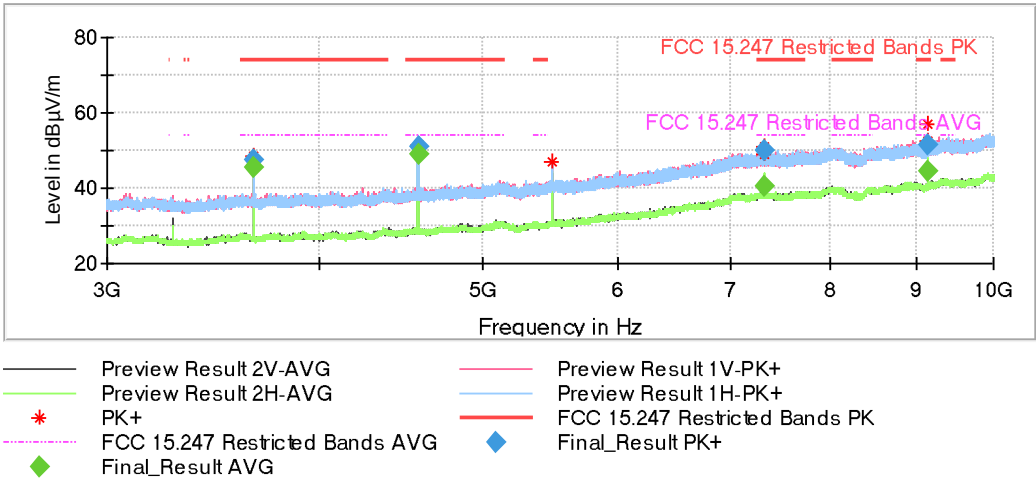


- High Channel



FREQUENCY RANGE 3 - 10 GHz

- Low Channel



- High Channel

