DEKRA Certification, Inc.
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Sterling, VA 20164
United States of America

ACCREDITED
Test Lab
Cert 2764.01

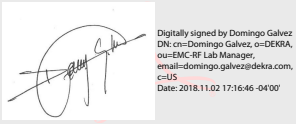
FCC LISTED, REGISTRATION NUMBER: 2764.01

ISED LISTED REGISTRATION NUMBER: 23595-1

Test report No:
2224ERM.002A1

Test report

USA FCC Part 15.247, 15.209, 15.207
Radio Frequency Devices. Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz.
Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

Identification of item tested	The 32001409 is a transceiver operating in the 902-928 MHz SRD Band optimized for very long range, low consumption applications, suitable for LPWA networks. Based on LoRa ™ RF Technology and LoRaWAN protocol it provides ultra-long range spread spectrum communication and high interference immunity.
Trademark	MIPOT
Model and /or type reference	32001409
Other identification of the product	FCC ID: 2AQJP-32001409
Features	N/A
Manufacturer	MIPOT SPA Via Corona,5 34071, Cormons (GO), Italy
Test method requested, standard	USA FCC Part 15.247, 10-1-17 Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz. / USA FCC Part 15.209, 10-1-17 Edition: Radiated emission limits; general requirements. Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 558074 D01 DTS Meas Guidance v04 dated 05/04/2017.ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager  Digitally signed by Domingo Galvez DN: cn=Domingo Galvez, o=DEKRA, ou=EMC-RF Lab Manager, email=domingo.galvez@dekra.com, c=US Date: 2018.11.02 17:16:46 -04'00'
Date of issue	2018-10-31
Report template No	FDT08_21

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Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

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

DEKRA Certification Inc. 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 at the time of performance of the test.

DEKRA Certification Inc. 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.

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 Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

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

Frequency (MHz)	U(k=2)	Units
30-180	3.82	dB
180-1000	2.61	dB
1000-18000	2.92	dB
18000-40000	2.15	dB

Data provided by the client

The 32001409 is a transceiver operating in the 902-928 MHz SRD Band optimized for very long range, low consumption applications, suitable for LPWA networks. Based on LoRa™ RF Technology and LoRaWAN protocol it provides ultra-long range spread spectrum communication and high interference immunity.

DEKRA 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.

Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
2224/11	LoRa Module used for Conducted Tests	32001409	0X0000010A	09/07/2018

1. Sample S/01 has undergone following test(s):

   All conducted tests indicated in appendix A.

Sample S/02 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
2224/02	LoRa Module used for Radiated Tests	32001409	0X00000105	07/16/2018

1. Sample S/02 has undergone following test(s):

   All radiated tests indicated in appendix A..

Test sample description

Ports…… :	Port name and description		Cable				
			Specified length [m]	Attached during test	Shielded		
	Mini USB Port		2m	☒	☐		
				☐	☐		
				☐	☐		
				☐	☐		
Supplementary information to the ports…… :	*Not provided data*						
Rated power supply ……:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: Battery Operated 3V					
	☒	DC: External supply voltage on M1 connector 2.4-3.7V					

Rated Power .....:			
Clock frequencies .....:	*32 MHz crystal for RF, 32.768 KHz for microcontroller RTC*		
Other parameters.....:			
Software version .....:	1.0		
Hardware version.....:	1.0		
Dimensions in cm (L x W x D) ....:	*85x90x30mm (evaluation board)*		
Mounting position.....:	☒	Table top equipment	
	☐	Wall/Ceiling mounted equipment	
	☐	Floor standing equipment	
	☐	Hand-held equipment	
	☐	Other:	
Modules/parts .....:	Module/parts of test item	Type	Manufacturer
	2 Eva boards with 32001409 modules (DUT) on-board		MIPOT
	2 Monopole Antenna (H1900005EUR)		Eurocavi
Accessories (not part of the test item) .....:	Description	Type	Manufacturer
	USB Cables		
	4xAA Batteries		GP
Documents as provided by the applicant.....:	Description	File name	Issue date
	Not provided data		

Copy of marking plate:

Identification of the client

MIPOT SPA

Via Corona,5 -34071, Cormons(GO), Italy

Testing period and place

Test Location	DEKRA Certification, Inc.
Date (start)	09-14-2018
Date (finish)	10-05-2018

Document history

Report number	Date	Description
2224ERM.002	2018-10-26	First release
2224ERM.002A1	2018-10-31	Modification to product information

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. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

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

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

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. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The tests have been performed by the technical personnel: Divya Adusumilli, Nasir Khan and Koji Nishimoto.

Modifications to the reference test report

It was introduced the following modifications in respect to the test report number 2224ERM.002 related with the same samples, in the next clauses and sub-clauses:

Clauses/ Sub-Clauses	Modification	Justification
Appendix A / Product Information	Removed RF Interface 1	Customer does not support Hybrid/FHSS mode

This modification test report cancels and replaces the test report 2224ERM.002.

Testing verdicts

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

Summary

FCC PART 15 PARAGRAPH				
Section	**15.247 Spec Clause**	**Test Description**	**Verdict**	**Remark**
A.1	§ 15.247 (a) (2)	6 dB Bandwidth	P	N/A
A.2	§ 15.247 (b) (3)	Average conducted output power and antenna gain	P	N/A
A.3	§ 15.247 (d)	Emission limitations conducted (Transmitter)	P	N/A
A.4	§ 15.247 (d)	Band-edge emissions compliance (Transmitter)	P	N/A
A.5	§ 15.247 (e)	Power spectral density	P	N/A
A.6	§ 15.247 (d)	Emission limitations radiated (Transmitter)	P	N/A
-	§15.207 (a)	Conducted Emission Limits	N/A	Refer 1

Supplementary information and remarks:

1. Testing is not applicable as the device is battery powered.

List of equipment used during the test

Conducted Measurements

Test system Rohde & Schwarz TS 8997:

CONTROL NUMBER	DESCRIPTION	LAST CALIBRATION	NEXT CALIBRATION
1039	Signal analyzer Rohde & Schwarz FSV40	2017/03	2019/03

Radiated Measurements

CONTROL NUMBER	DESCRIPTION	LAST CALIBRATION	NEXT CALIBRATION
1179	Semi anechoic Absorber Lined Chamber Frankonia SAC 3 plus “L”	N/A	N/A
1065	BiconicalLog antenna ETS LINDGREN 3142E	2017/03	2020/03
1058	Double-ridge Waveguide Horn antenna 1-18 GHz	2017/03	2019/03
1012	Rohde & Schwarz ESR26 EMI Test Receiver	2018/07	2020/07
1014	Spectrum analyzer Rohde & Schwarz FSV40	2017/03	2019/03
0980	RF pre-amplifier 30 MHz-6 GHz Bonn Elektronik BLMA 0360-01N	2017/05	2019/05
0981	RF pre-amplifier 1-18 GHz Bonn Elektronik BLMA 0118-2A	2017/05	2019/05
1015, 1017, 1019, 1020	Rohde & Schwarz EMC32 software	N/A	N/A

Appendix A: Test results

Appendix A Content

PRODUCT INFORMATION

The following information is provided by the client

Information	Description
Operation mode 1: RF Interface 1	
- Operating Frequency Range	903.0 – 914.2 MHz
- RF Output Power	+18 dBm
- Emission designator	Upstream 2
- Channel Bandwidth	500 KHz
- Modulations	LORA
- Channel Spacing	1.6 MHz
- No. of Channels	8
Operation mode 1: RF Interface 2	
- Operating Frequency Range	923.3 – 927.5 MHz
- RF Output Power	+18 dBm
- Emission designator	Downstream
- Channel Bandwidth	500 KHz
- Modulations	LORA
- Channel Spacing	600 KHz
- No. of Channels	8

Information	Description
Antenna type	Quarter wave monopole GSM 900/1800
Antenna gain	2.14 dBi
Frequency Band	GSM 900(890-960 MHz)
- Supply Voltage	3 Vdc / 2.4 -3.7V
- Type of power source	Battery Operated / DC External supply voltage

Test modes available:

- Continuous modulated carrier for upstream 1 at 902.3 MHz, 908.6 MHz, 914.9 MHz
- Continuous modulated carried for upstream 2 at 903 MHz, 908.6 MHz, 914.2 MHz
- Continuous reception for upstream 1 at 902.3 MHz, 908.6 MHz, 914.9 MHz
- Continuous reception for upstream 2 at 903 MHz, 908.6 MHz, 914.2 MHz

DESCRIPTION OF TEST CONDITIONS

TEST CONDITIONS	DESCRIPTION
TC#01 DTS MODE	Power supply (V): Battery Operated: 3V External Supply Voltage: 2.4 – 3.7V Type of power suppl: DC voltage from internal primary battery. Temperature (ºC): T_{nom} = +15 to + 35 T_{min} = N/A T_{max} = N/A The subscript nom indicates normal test conditions. The subscripts min and max indicate extreme test conditions (minimum and maximum respectively). N/A: Not Applicable. (*) Declared by applicant. Test Frequencies for Conducted tests: The Measurements were taken with a Spreading Factor of 8 as this constitutes the worst-case scenario. Lowest channel: 903 MHz Middle channel: 908.6 MHz Highest channel: 914.2 MHz Test Frequencies for Radiated tests: Lowest channel: 903 MHz Middle channel: 908.6 MHz Highest channel: 914.2 MHz

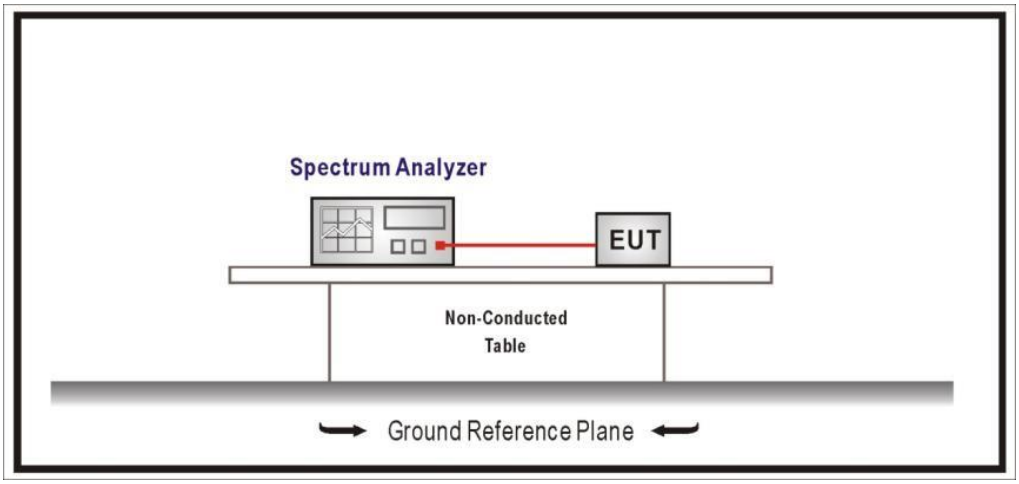
TEST A.1: 6DB BANDWIDTH

LIMITS:	Product standard :	Part 15 Subpart C §15.247
	Test standard :	Part 15 Subpart C §15.247(a)(2)

LIMITS

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST SETUP	

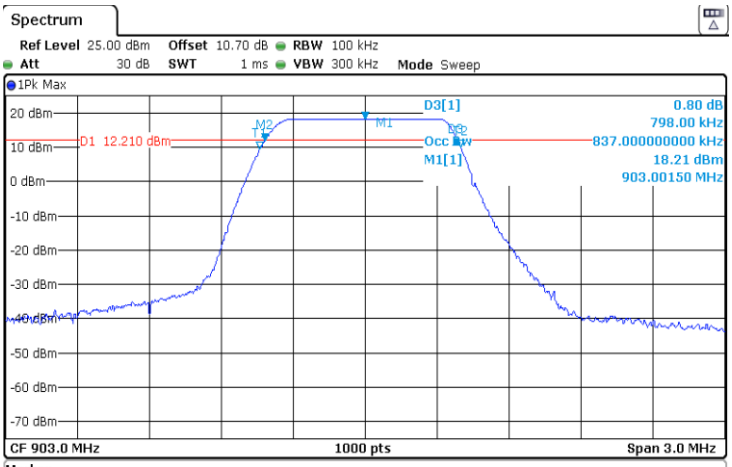


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS :	PASS

	Lowest frequency 903 MHz	Middle frequency 908.6 MHz	Highest frequency 914.2 MHz
6 dB Spectrum bandwidth (kHz)	798	795	795
Measurement uncertainty (kHz)	<±20.0		

TEST RESULTS (Cont.):	

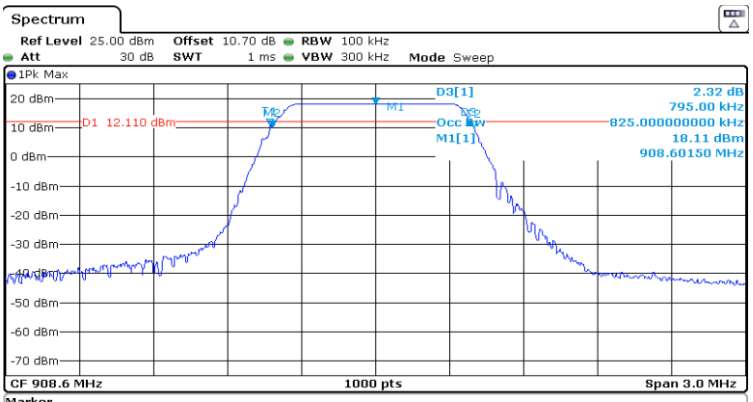
Lowest Channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	903.0015 MHz	18.21 dBm		
T1		1	902.5605 MHz	9.27 dBm	Occ Bw	837.0 kHz
T2		1	903.3975 MHz	9.97 dBm		
M2		1	902.5815 MHz	11.93 dBm		
D3	M2	1	798.0 kHz	0.80 dB		

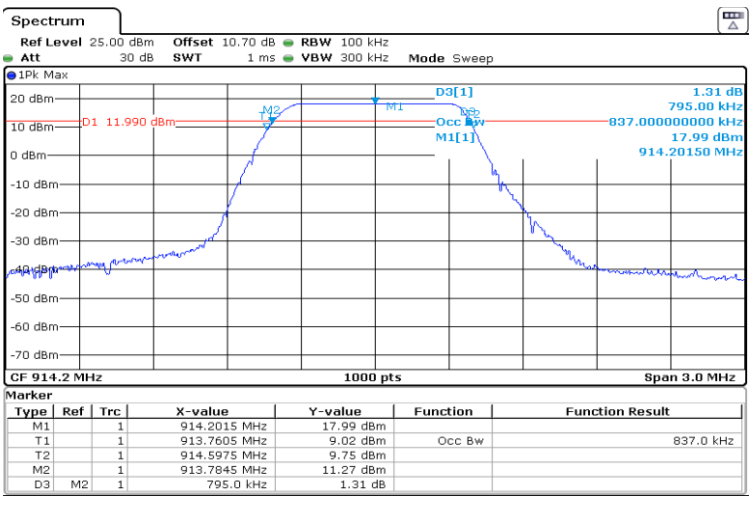
Middle Channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	908.6015 MHz	18.11 dBm		
T1		1	908.1725 MHz	10.82 dBm	Occ Bw	825.0 kHz
T2		1	908.9975 MHz	9.85 dBm		
M2		1	908.1845 MHz	10.38 dBm		
D3	M2	1	795.0 kHz	2.32 dB		

Highest Channel



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	914.2015 MHz	17.99 dBm		
T1		1	913.7605 MHz	9.02 dBm	Occ Bw	837.0 kHz
T2		1	914.5975 MHz	9.75 dBm		
M2		1	913.7845 MHz	11.27 dBm		
D3	M2	1	795.0 kHz	1.31 dB		

TEST A.2: AVERAGE CONDUCTED OUTPUT POWER AND ANTENNA GAIN

LIMITS:	Product standard :	Part 15 Subpart C §15.247
	Test standard :	Part 15 Subpart C §15.247(b)(3)

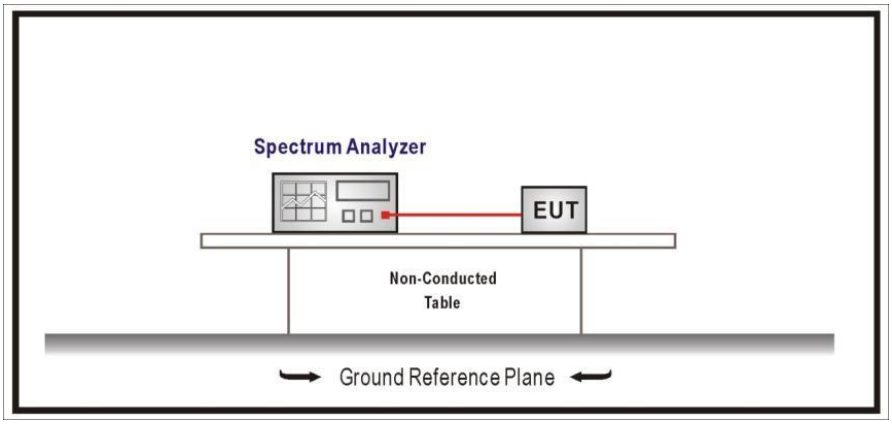
LIMITS

§15.247(b)(3): For systems using digital modulation in the 902-928 MHz band: 1 watt (30 dBm).

TEST SETUP	

The maximum peak conducted output power was measured using the method according to point 9.2.2.2. of Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 558074 D01 DTS Meas Guidance v04 dated 05/04/2017.

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power



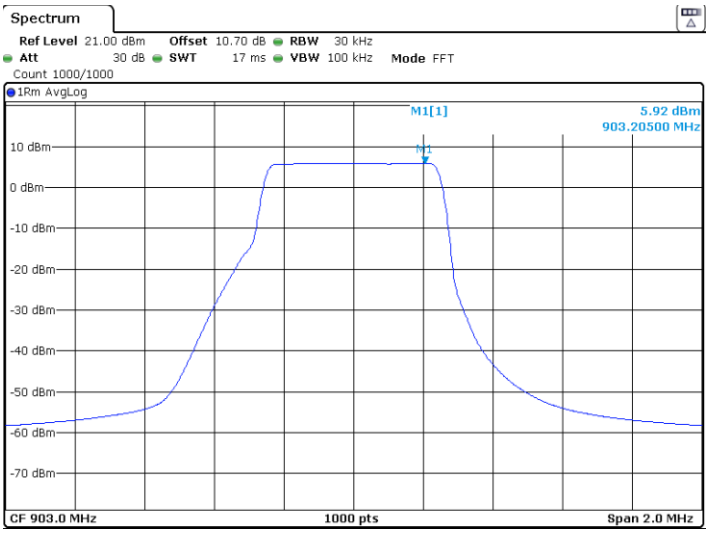
TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS :	PASS

	Lowest frequency 903 MHz	Middle frequency 908.6 MHz	Highest frequency 914.2 MHz
Maximum conducted power (dBm)	5.92	5.76	5.52
Maximum EIRP power (dBm)	8.06	7.90	7.66
Measurement uncertainty (dB)	<±0.78		

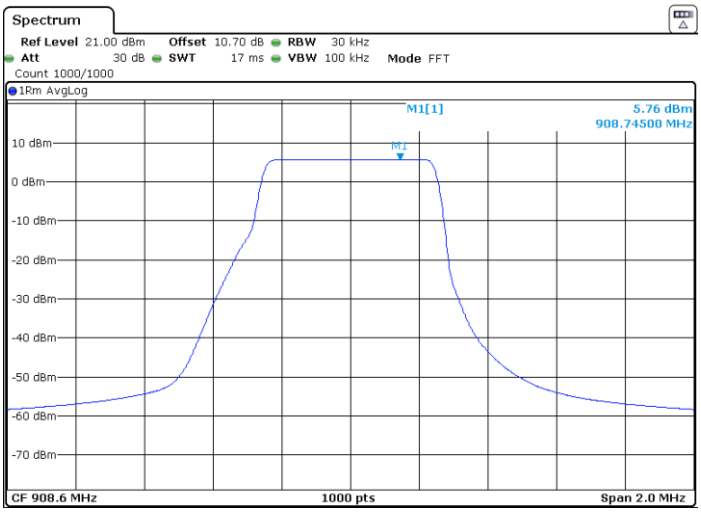
Maximum declared antenna gain: 2.14 dBi
The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

TEST RESULTS (Cont.):	CONDUCTED AVERAGE POWER

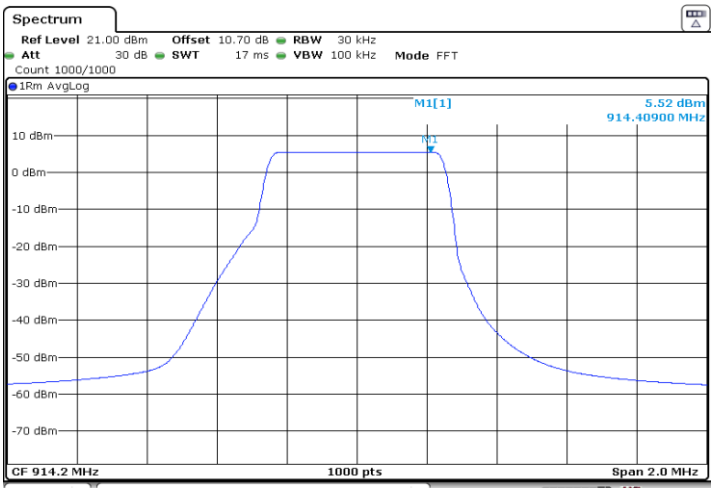
Lowest Channel



Middle Channel



Highest Channel



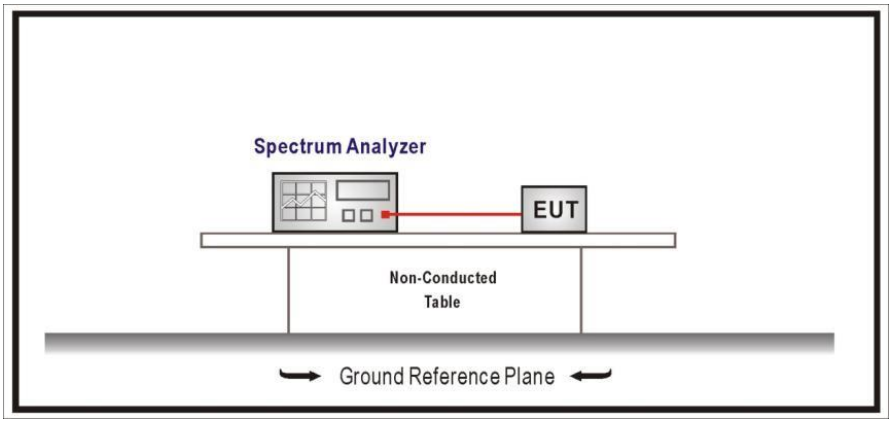
TEST A.3: EMISSION LIMITATIONS CONDUCTED (TRANSMITTER)

LIMITS:	Product standard :	Part 15 Subpart C §15.247
	Test standard :	Part 15 Subpart C §15.247(d)

LIMITS

In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB instead of 20 dB.

TEST SETUP	



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS :	PASS
TEST RESULTS (Cont.):	

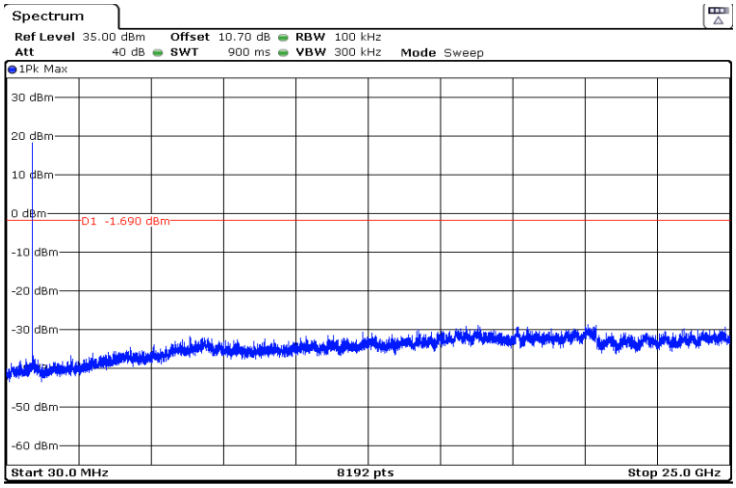
No conducted spurious signals were detected at less than 20 dB respect to the limit for the lowest, middle and highest operating channels.

Reference Level Measurement

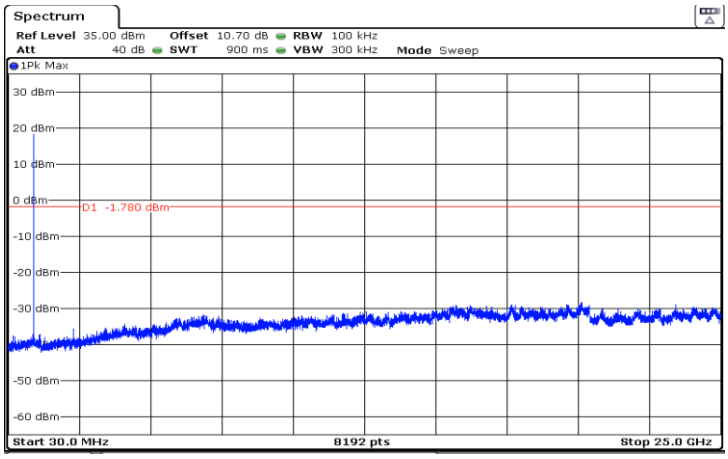
	Lowest frequency 903 MHz	Middle frequency 908.6 MHz	Highest frequency 914.2 MHz
Reference Level Measurement (dBm)	-2.52	-2.71	-2.88
Measurement uncertainty (dB)	<±0.78		

TEST RESULTS (Cont.):	

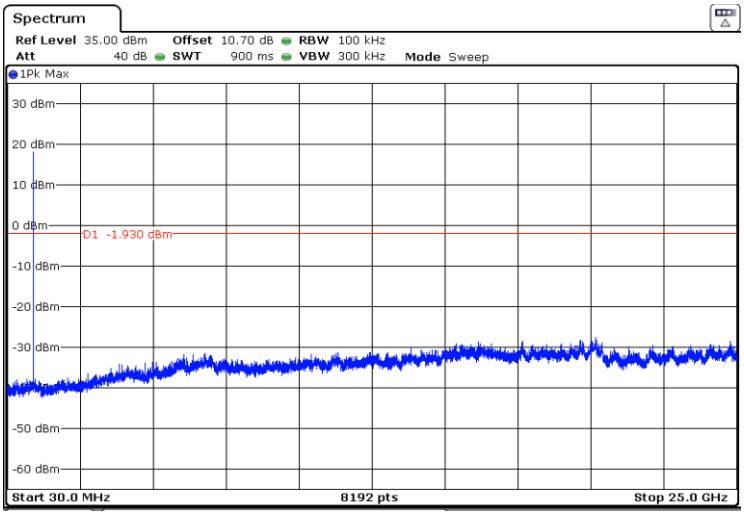
Lowest Channel



Middle Channel



Highest Channel



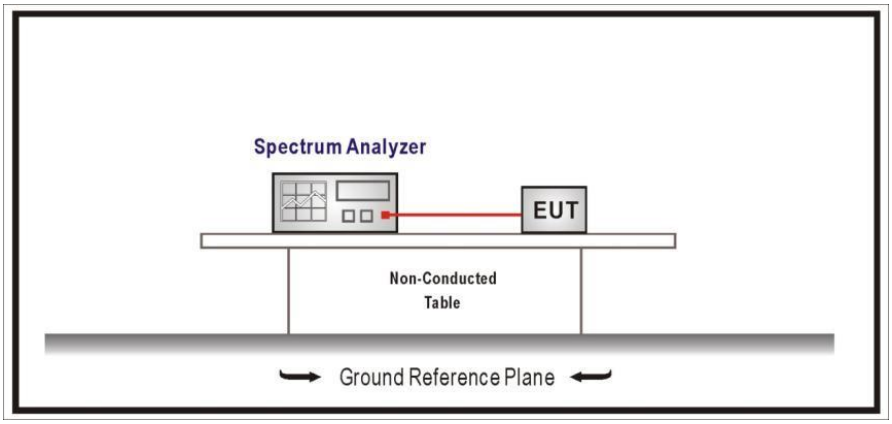
TEST A.4: BAND-EDGE EMISSIONS COMPLIANCE (TRANSMITTER)

LIMITS:	Product standard :	Part 15 Subpart C §15.247
	Test standard :	Part 15 Subpart C §15.247(d)

LIMITS

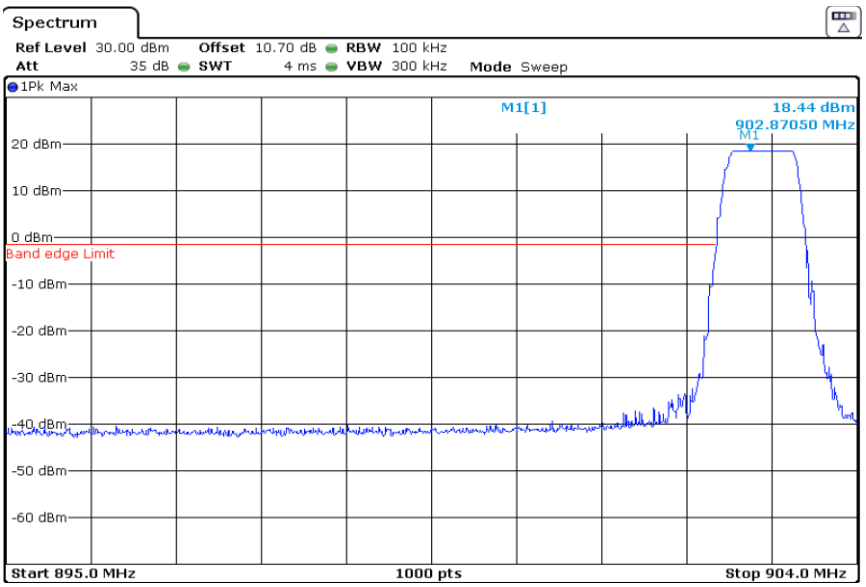
In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB instead of 20 dB.

TEST SETUP	

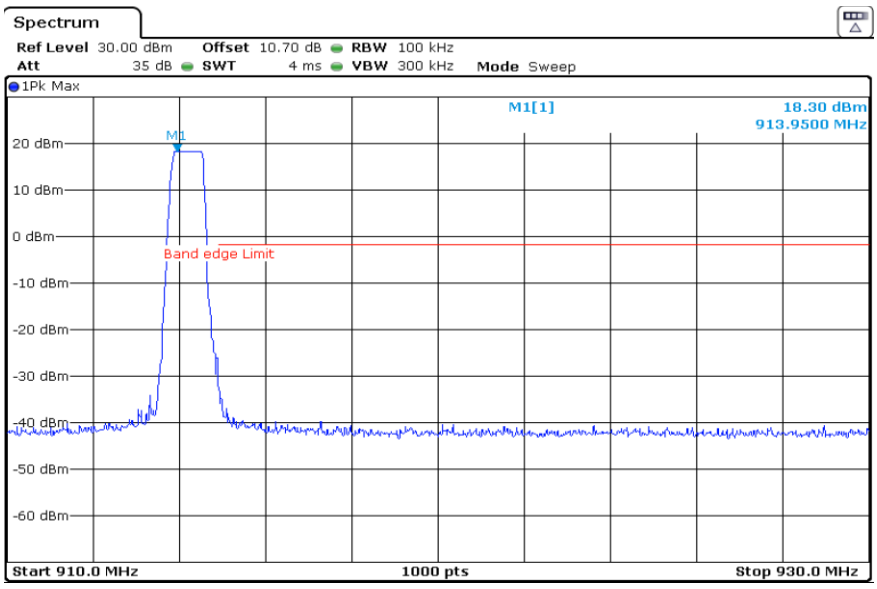


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS :	PASS

Lowest Channel



Highest Channel



TEST A.5: POWER SPECTRAL DENSITY

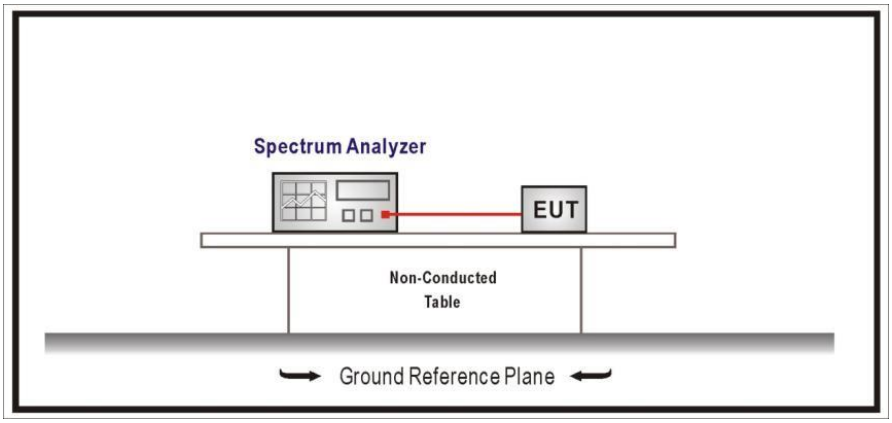
LIMITS:	Product standard :	Part 15 Subpart C §15.247
	Test standard :	Part 15 Subpart C §15.247(e)

LIMITS

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST SETUP	

The maximum power spectral density level in the fundamental emission was measured using the method AVGPSD (Peak PSD) according to point 10.3. of Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 558074 D01 DTS Meas Guidance v04 dated 05/04/2017.

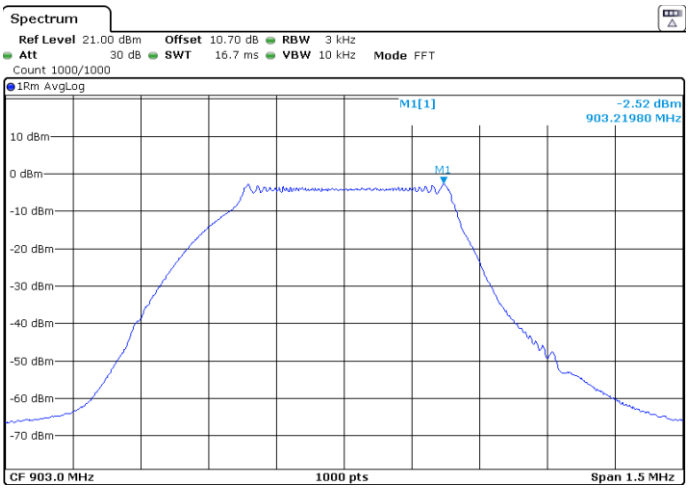


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS :	PASS

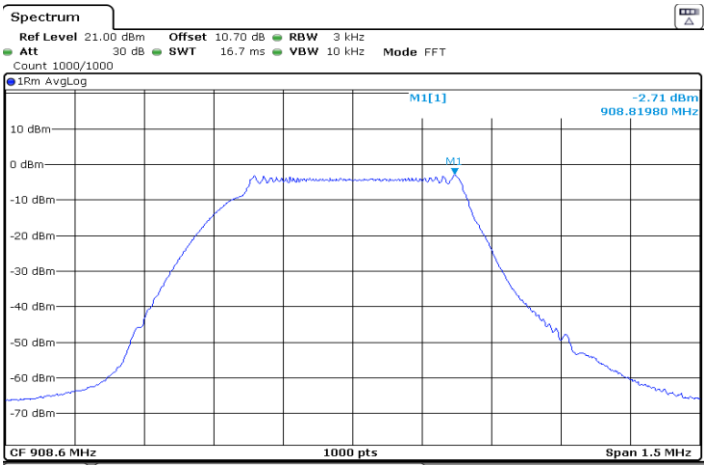
	Lowest frequency 903 MHz	Middle frequency 908.6 MHz	Highest frequency 914.2 MHz
Power spectral density (dBm)	-2.52	-2.71	-2.88
Measurement uncertainty (dB)	<±0.78		

TEST RESULTS (Cont.):	

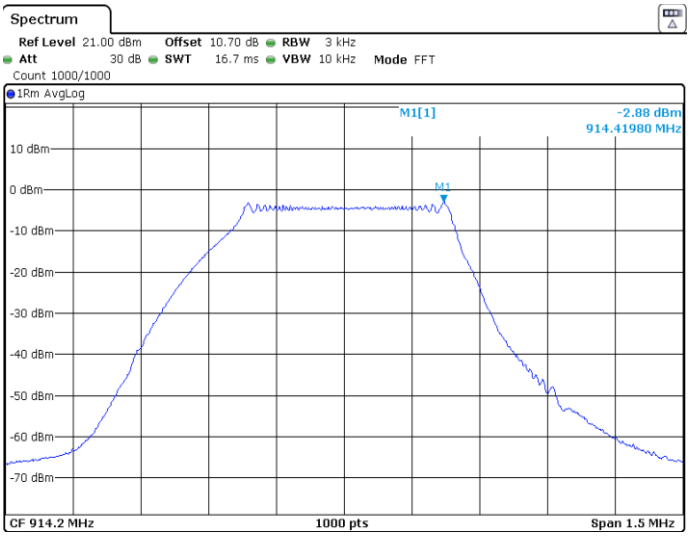
Lowest Channel



Middle Channel



Highest Channel



TEST A.6: EMISSION LIMITATIONS RADIATED (TRANSMITTER)

LIMITS:	Product standard :	Part 15 Subpart C §15.247
	Test standard :	Part 15 Subpart C §15.247(d)

LIMITS

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

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

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 is specified when measuring with peak detector function.

TEST SETUP

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

For radiated emissions in the range 1-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

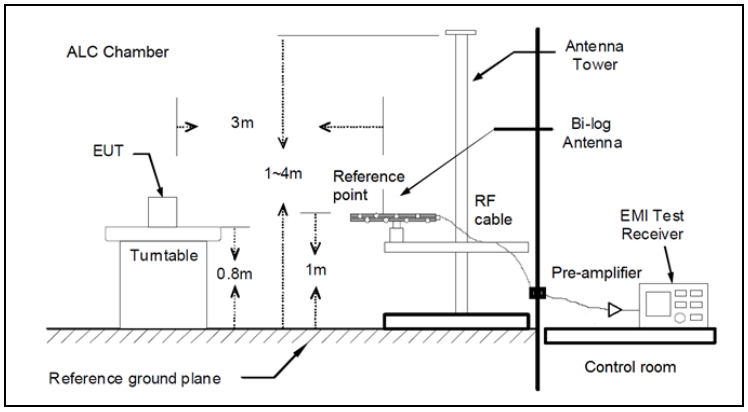
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

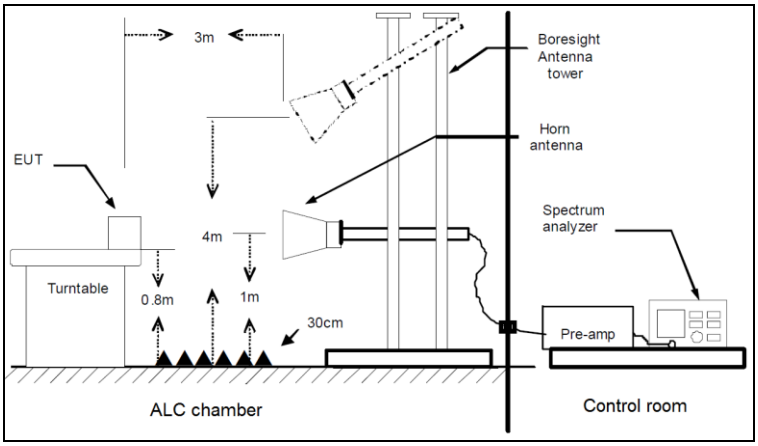
The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

TEST SETUP (CONT.)	

Radiated measurements Setup f < 1 GHz



Radiated measurements setup f > 1 GHz



TESTED SAMPLES:	S/02
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS :	PASS

Frequency range 30 MHz – 1000 MHz

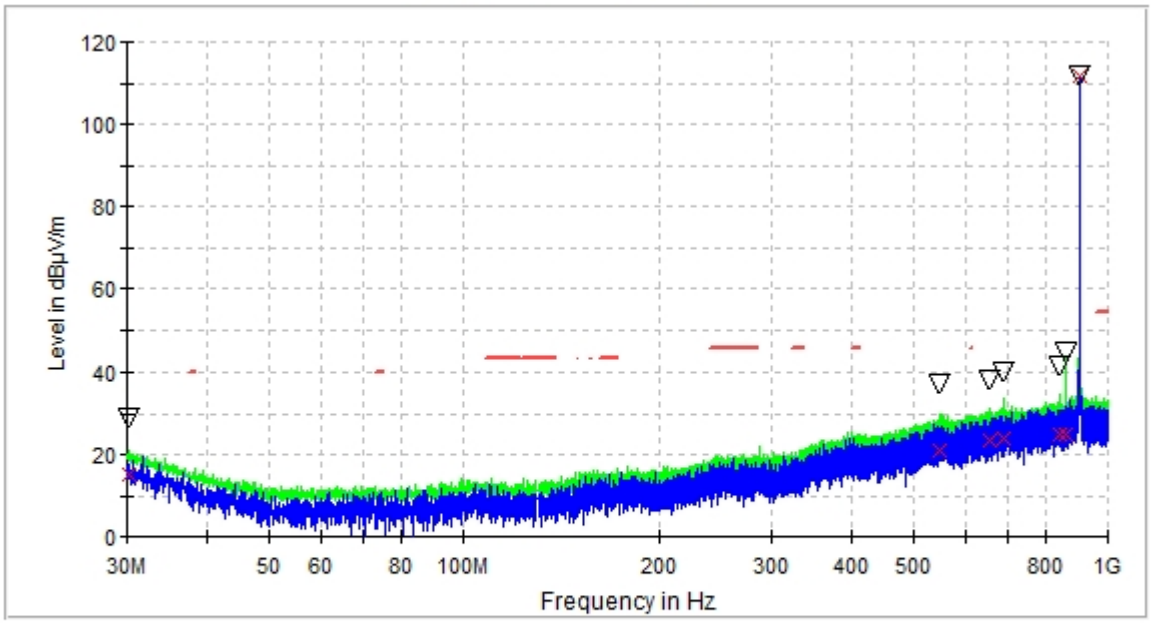
The spurious emissions below 1 GHz do not depend on the operating channel selected in the EUT.
No radiated spurious signals were detected at less than 20 dB respect to the limit for the lowest, middle and highest operating channels. Plots shown below.

Frequency range 1 GHz – 18 GHz

The spurious emissions above 1 GHz do not depend on the operating channel selected in the EUT.
No radiated spurious signals were detected at less than 20 dB respect to the limit for the lowest, middle and highest operating channels. Plots shown below.

TEST RESULTS (Cont.):	30-1000 MHz (Lowest Channel)

30MHz_1GHz_HP & VP_CH Low



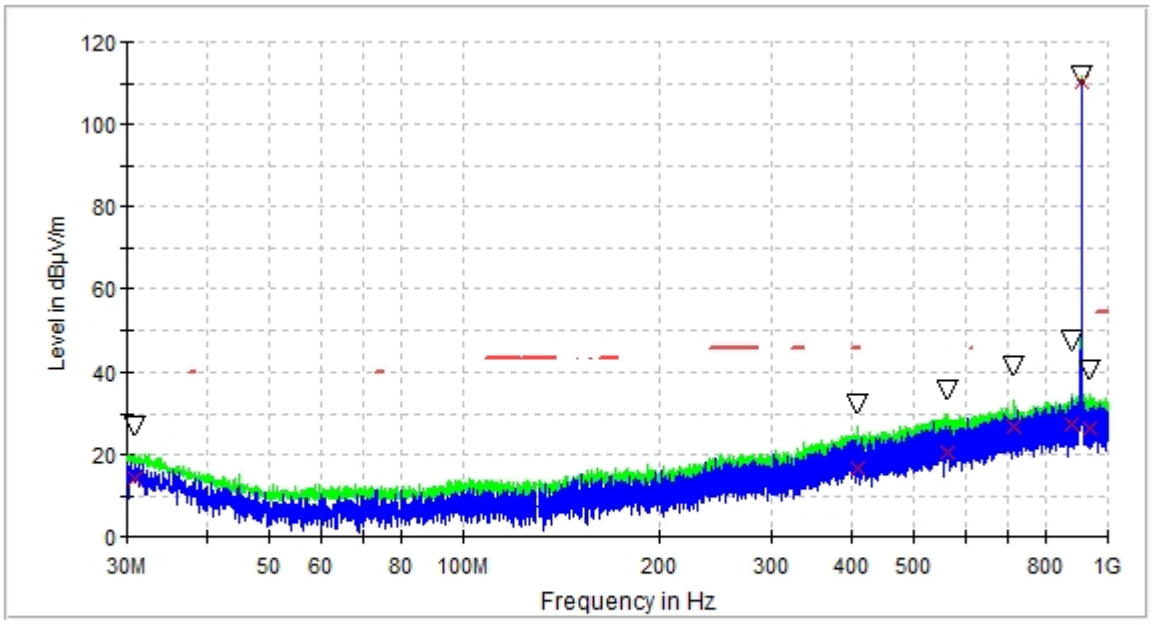
PK+_MAXH
PK+_CLRWR
TX limits to Spurious Emission FCC15.247 (30MHz to 1GHz) Restricted Bands QPK Limit
MaxPeak-PK+ (Single)
QuasiPeak-QPK (Single)

Result Table_Single

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Pol	Azimuth (deg)	Comment
30.145500	28.66	15.01	V	99.0	
547.204000	36.88	20.90	V	29.0	
653.758500	37.92	23.21	H	26.0	
688.145000	39.95	23.67	H	180.0	
844.412000	41.40	24.87	V	-170.0	
862.308500	44.40	25.09	V	-25.0	
903.242500	111.95	111.56	H	-159.0	Fundamental

TEST RESULTS (Cont.):	30-1000 MHz (Middle Channel)

30MHz_1GHz_HP & VP_CH Mid



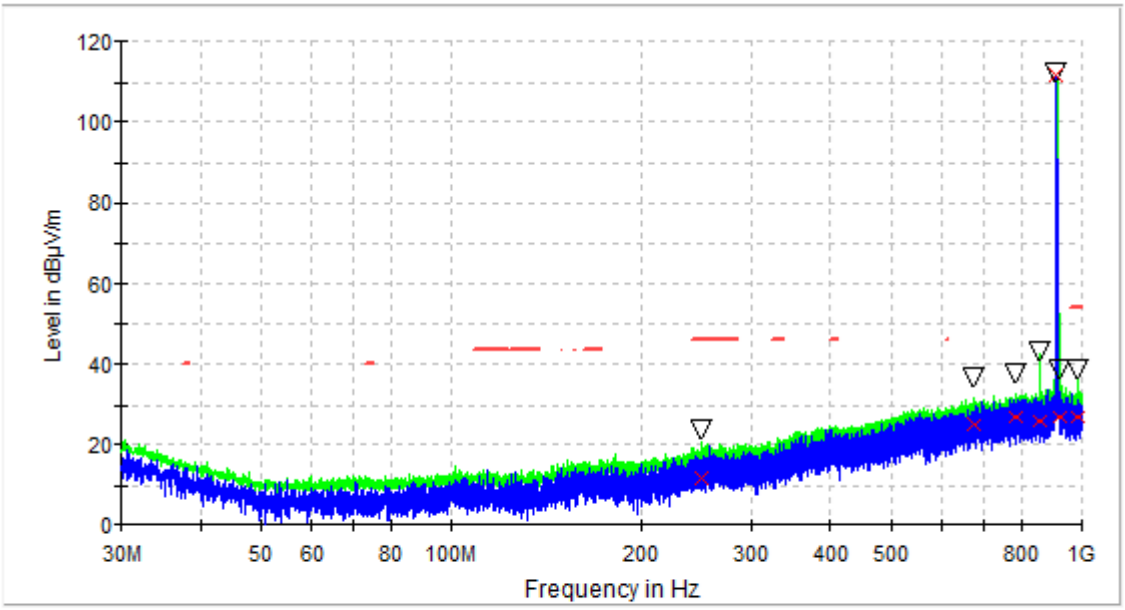
PK+_MAXH
PK+_CLRWR
TX limits to Spurious Emission FCC15.247 (30MHz to 1GHz) Restricted Bands QPK Limit
MaxPeak-PK+ (Single)
QuasiPeak-QPK (Single)

Result Table_Single

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Pol	Azimuth (deg)	Comment
30.921500	26.99	14.00	H	-131.0	
409.415500	32.38	16.44	V	8.0	
561.608500	35.67	20.36	H	95.0	
716.420500	41.30	26.97	H	9.0	
876.858500	47.08	27.12	H	-131.0	
908.868500	111.73	110.18	H	-148.0	Fundamental
940.393500	40.37	26.52	V	-91.0	

TEST RESULTS (Cont.):	30-1000 MHz (Highest Channel)

30MHz_1GHz_HP & VP_CH High

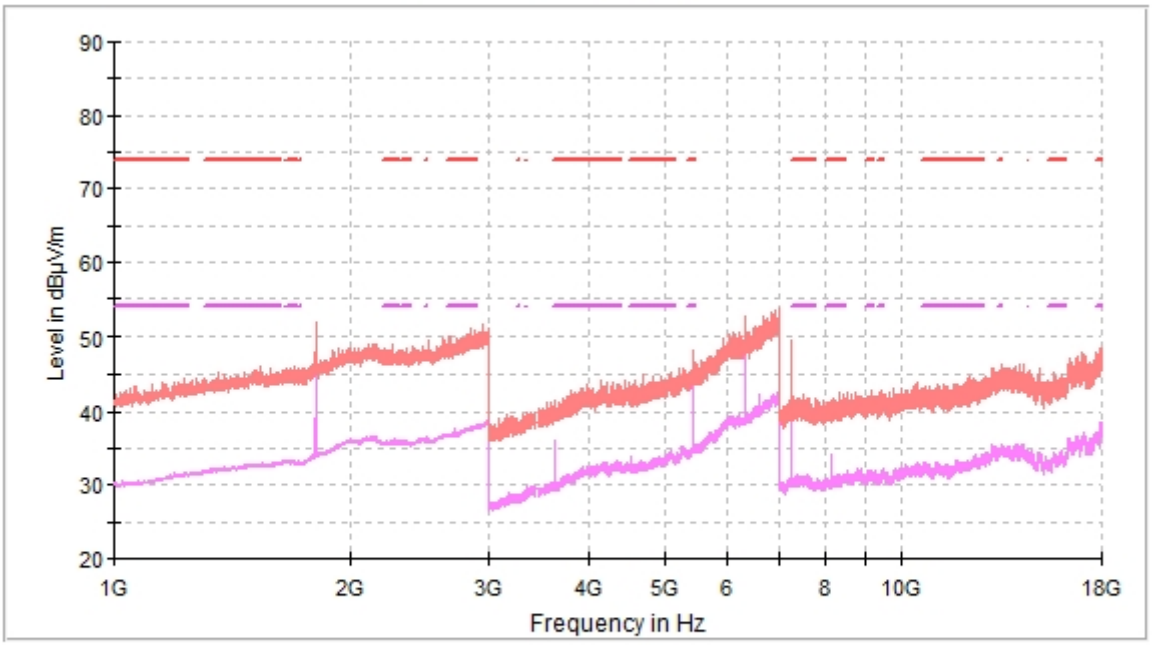


Result Table_Single

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Pol	Azimuth (deg)	Comment
248.589500	23.55	11.89	H	-112.0	
676.311000	36.48	24.87	V	19.0	
786.260500	37.64	26.93	H	-159.0	
858.234500	42.89	25.72	H	164.0	
914.058000	111.96	111.64	H	-151.0	Fundamental
927.250000	38.43	26.73	V	180.0	
986.420000	38.58	26.65	H	-177.0	

TEST RESULTS (Cont.):	1-18 GHz (Lowest Channel)

1GHz_18GHz_ HP & VP_CH Low

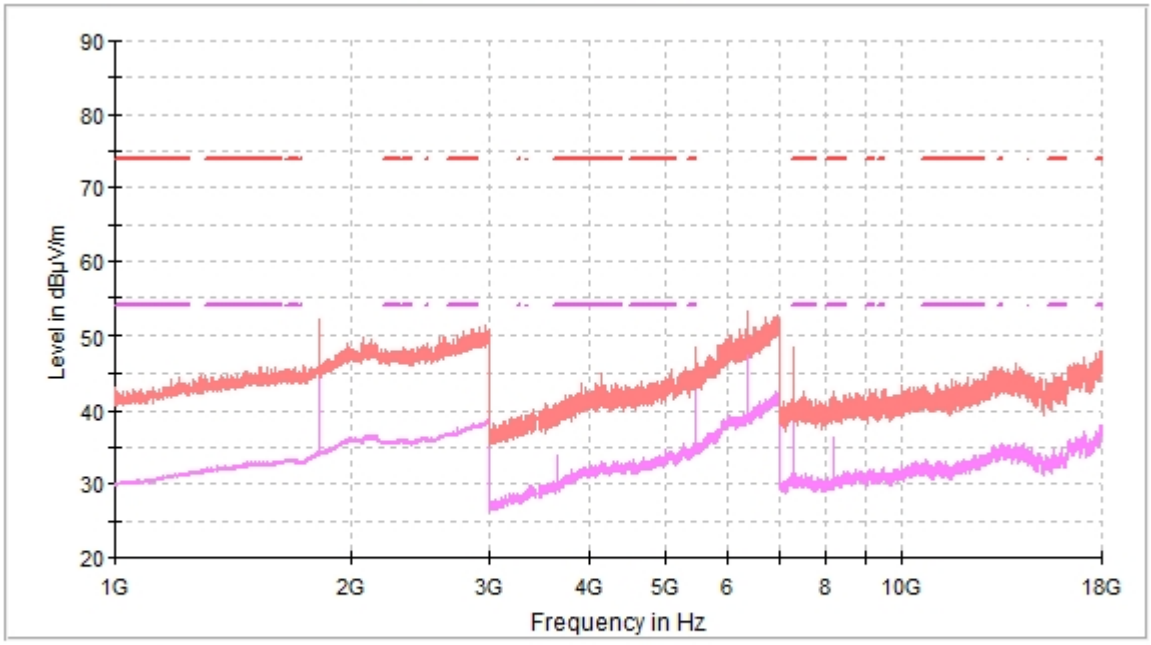


Maximizations

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)
1806.000000	52.00	48.68	H	-48.0
3611.000000	40.95	35.68	H	126.0
5417.500000	47.76	43.52	V	146.0
6320.500000	52.63	49.63	V	146.0
7224.500000	49.47	47.63	V	166.0
8125.000000	40.56	34.18	V	-128.0

TEST RESULTS (Cont.):	1-18 GHz (Middle Channel)

1GHz_18GHz_HP & VP_CH Mid

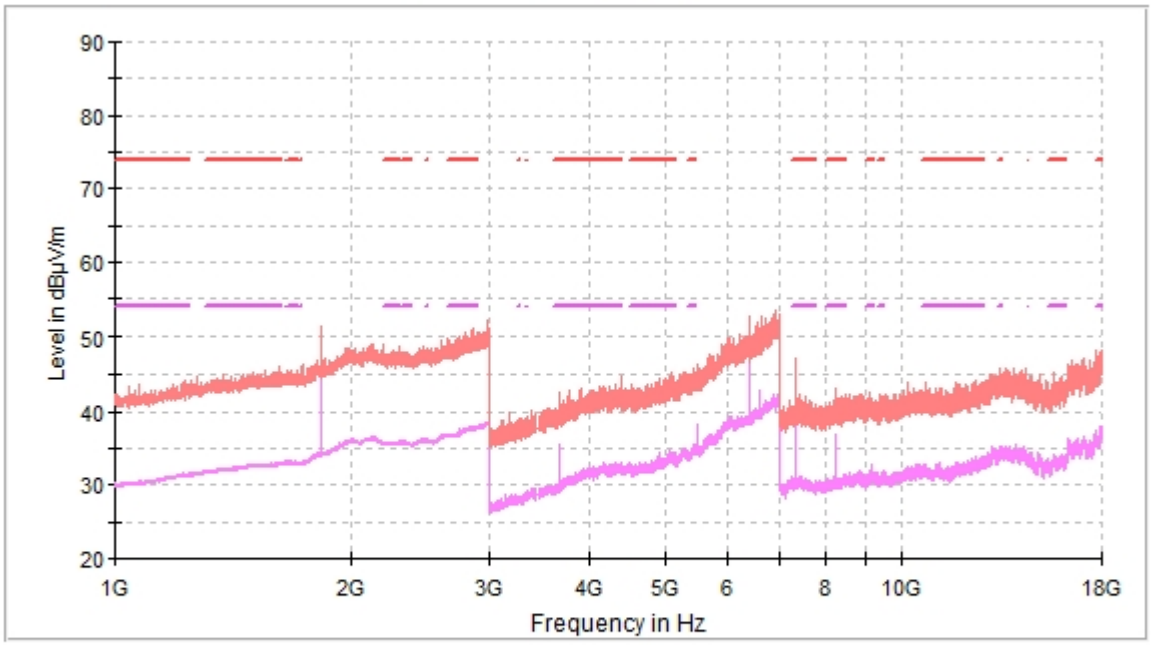


Maximizations

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)
1817.000000	52.23	48.17	H	-137.0
3634.000000	40.02	33.87	H	-122.0
5451.500000	48.70	44.29	V	60.0
6359.500000	53.17	49.25	V	60.0
7268.000000	47.99	45.96	V	-129.0
8175.500000	42.61	35.59	V	-147.0

TEST RESULTS (Cont.):	1-18 GHz (Highest Channel)

1GHz_18GHz_HP & VP_CH High

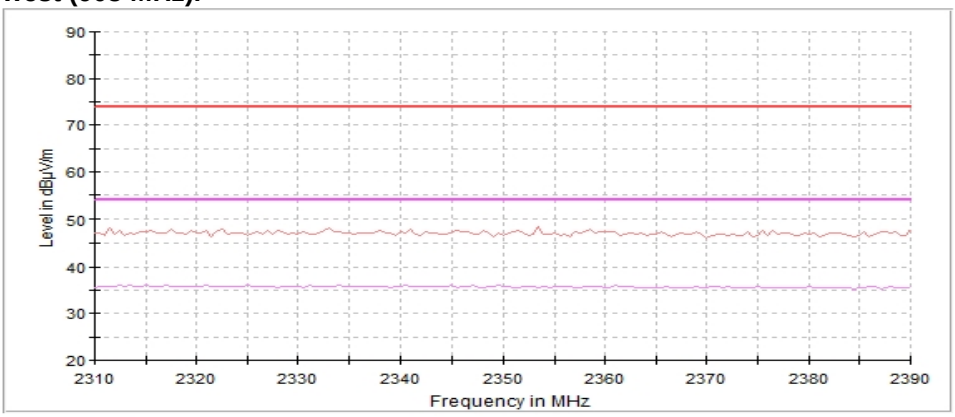


Maximizations

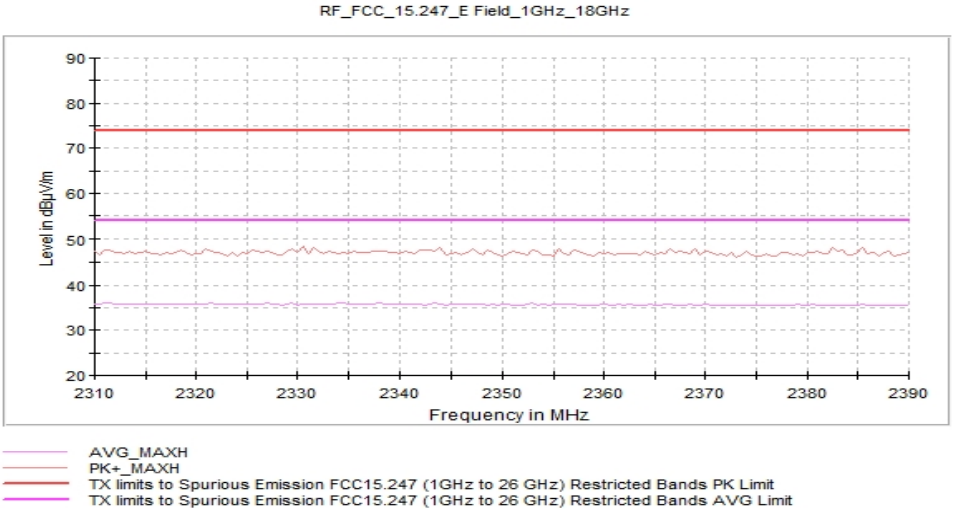
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)
1828.000000	51.29	48.04	H	-63.0
3657.000000	40.79	35.55	H	122.0
5486.500000	45.81	38.31	V	180.0
6400.500000	52.32	47.76	V	-179.0
7312.500000	47.31	44.39	V	180.0
8227.500000	41.95	36.38	V	-179.0

TEST RESULTS (Cont.):	RESTRICTED BAND (2.31 GHz to 2.39 GHz)

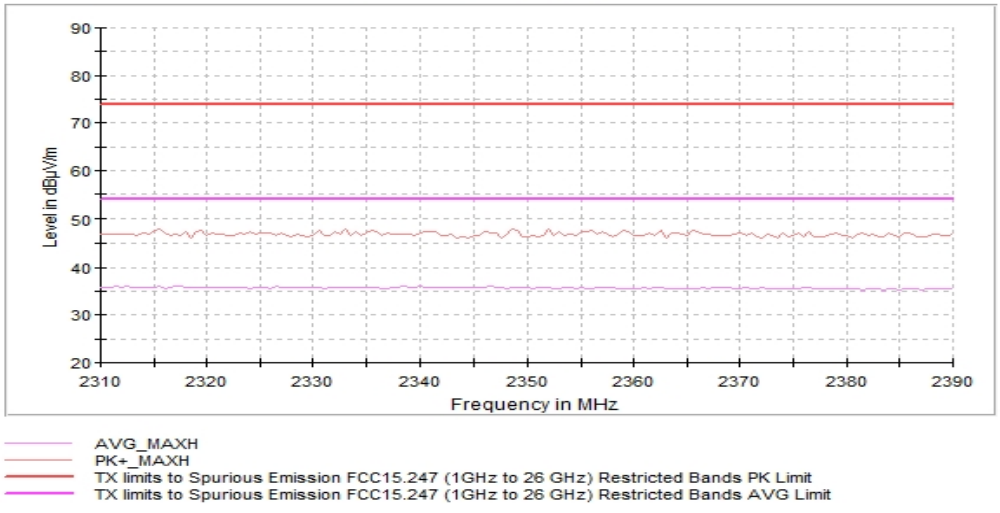
CHANNEL: Lowest (903 MHz).



CHANNEL: Middle (908.6 MHz).

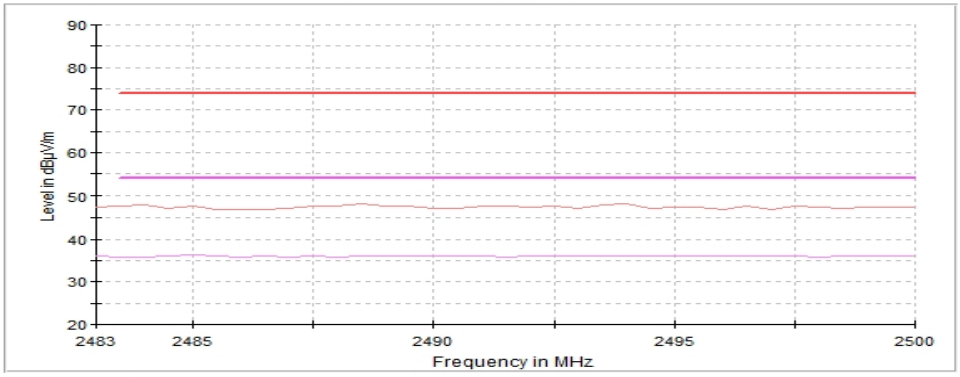


CHANNEL: Highest (914.2 MHz).



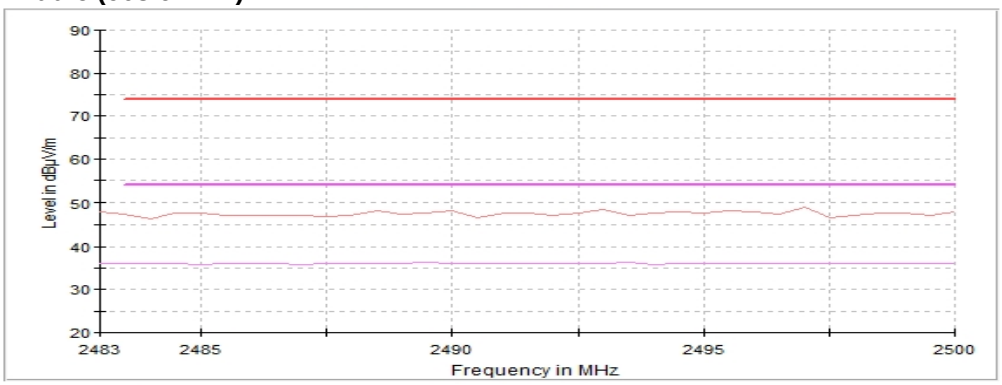
TEST RESULTS (Cont.):	RESTRICTED BAND (2.4835 GHz to 2.5 GHz)

CHANNEL: Lowest (903 MHz).



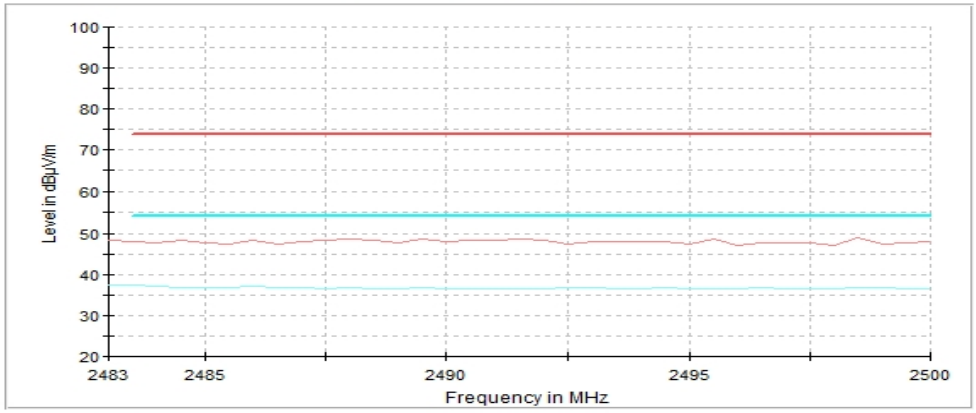
AVG_MAXH
PK+_MAXH
TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands PK Limit
TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands AVG Limit

CHANNEL: Middle (908.6 MHz).



AVG_MAXH
PK+_MAXH
TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands PK Limit
TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands AVG Limit

CHANNEL: Highest (914.2 MHz).



AVG_MAXH
PK+_MAXH
TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands PK Limit
TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands AVG Limit