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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 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.

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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 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 Certification internal document PODT000.

Frequency (MHz)	U(k=2)	Units
0,009 - 30	2.69	dB
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 test sample consist of an automotive head unit to be installed in cars with the following features: FM, AM, USB, Bluetooth, WLAN and GPS.

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 N°	Description	Model	Serial N°	Date of reception
2617/04	Car Radio Head Unit	NTG7 MID	HBM306KS000387	09/12/2019

1. Sample S/01 has undergone following test(s):.
All conducted tests indicated in appendix B & C.

Sample S/02 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
2617/24	Car Radio Head Unit w/o Raspberry board	NTG7 MID	HBM304K001660	09/19/2019
2617/03	Car Radio Head Unit	NTG7 MID	HBM306KS00387	09/12/2019

1. Sample S/02 has undergone following test(s):.
All radiated tests indicated in appendix B & C.

Sample S/01 & S/02 is composed of the following accessories:

Control N°	Description	Model	Serial N°	Date of reception
2617/12	BT/WLAN Antenna 1	LV19	005976	09/12/2019
2617/13	BT/WLAN Antenna 2	LV19	005948	09/12/2019
2617/14	BT/WLAN Antenna 3	LV19	005941	09/12/2019
2617/15	BT/WLAN Antenna 4	LV19	004666	09/12/2019
2617/06	Car Radio Display	NTG7	17148	09/12/2019
2617/05	Car Radio Display	NTG7	17159	09/12/2019
2617/23	Raspberry Board	3544931	--	09/12/2019

Test sample description

Ports..... :	Port name and description	Cable					
		Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾		
		<i>Car Connector A</i>	>3m ^(x1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<i>Car Connector B</i>	>3m ^(x1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<i>Display Connector CID/PIP / RVC</i>	>3m ^(x1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		<i>USB Connector</i>	<3m ^(x2)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		<i>Eth Connector</i>	>3m ^(x1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		<i>BT/WLAN-Antenna</i>	>3m ^(x1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
		<i>FM/AM, TV/SDARS Ant</i>	>3m ^(x1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<i>GNSS Antenna</i>	>3m ^(x1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Supplementary information to the ports..... :							
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	DC: 12V Car battery / attenuator (9,5-15,5V normal operation)					
<input type="checkbox"/>	DC:						
Rated Power	9,5-15,5V normal operation						
Clock frequencies	see schematics						
Other parameters..... :	See Technical Description						
Software version							
Hardware version..... :							
Dimensions in cm (W x H x D)..... :	182 x 78 x 160 mm						
Mounting position..... :	<input type="checkbox"/>	Table top equipment					
	<input type="checkbox"/>	Wall/Ceiling mounted equipment					
	<input type="checkbox"/>	Floor standing equipment					
	<input type="checkbox"/>	Hand-held equipment					
	<input checked="" type="checkbox"/>	Other: automotive headunit					

Modules/parts	Module/parts of test item	Type	Manufacturer
	n/a	-	
		-	
Accessories (not part of the test item)	Description	Type	Manufacturer
	Display	-	LG.
	HARMANeco RasPi	-	HBAS
	Cable harness	-	HBAS
	BT/WLAN-Antenna	-	Hirschmann
Documents as provided by the applicant.....	Description	File name	Issue date
	Technical Description		

Copy of marking plate:



Identification of the client

HARMAN BECKER AUTOMOTIVE SYSTEMS GMBH
BECKER-GOERING-STR. 16; 76307 KARLSBAD GERMANY

Testing period and place

Test Location	DEKRA Certification Inc.
Date (start)	2019-09-12
Date (finish)	2019-10-02

Document history

Report number	Date	Description
2617ERM.004	10-18-2019	First release
2617ERM.004A1	11-06-2019	Second release

Modifications to the reference test report

It was introduced the following modification in respect to the test report number 2617ERM.004 related with the same samples:

Clauses/ Sub-Clauses	Modification	Justification
Part 15 Subpart C §15.407(a) (1) (4) and RSS-247 6.2.1.1	Antenna Gain Value modified	Client Request

This modification test report cancels and replaces the test report 2617ERM.004A1.

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

In the semi-anechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
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 °C Max. = 35 °C
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, Koji Nishimoto and Poojita

Bhattu.

Testing verdicts

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

Summary

FCC PART 15 PARAGRAPH / RSS-247 (WIFI 5GHz) 5.15 GHz -5.25 GHz Band					
Report Section	15.407 Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
B.1	§ 15.403 (i) KDB 789033 D02	RSS 247 6.2.1	26dB Emission Bandwidth & Occupied Bandwidth	P	N/A
B.2	§ 15.407 (a) (1) (4)	RSS 247 6.2.1.1	Power Limits. Maximum Output Power	P	N/A
B.3	§ 15.407 (a) (1) (5)	RSS-247 6.2.1.1	Maximum Power Spectral Density	P	N/A
B.4	§ 15.407 (b) (1)	RSS-247 6.2.1.2	Band-edge radiated emissions compliance (Transmitter)	P	N/A
B.5	§ 15.407 (b)(6) § 15.207	RSS-Gen 8.8	Emission limitations Conducted (Transmitter)	N/A	N/A
B.6	§ 15.407 (b)(1)(6)(7) § 15.209 § 15.205	RSS-247 6.2.1.2 RSS-Gen 8.9 & 8.10	Undesirable radiated emissions (Transmitter)	P	N/A
--	§ 15.407 (g)	RSS-Gen 6.11 & 8.11	Frequency Stability	N/M	Refer 1

Supplementary information and remarks:

The test set-up was made in accordance to the general provisions of ANSI C63.10: 2013 and FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 dated 12/14/2017

- 1) The compliance is checked through a description of how this requirement is met that is provided by the applicant.

FCC PART 15 PARAGRAPH / RSS-247 (WIFI 5GHz) 5.725 GHz -5.85 GHz Band					
Report Section	15.247 Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
C.1	§ 15.403 (i) KDB 789033 D02	RSS 247 6.2.4	26dB Emission Bandwidth & Occupied Bandwidth	P	N/A
C.3	§ 15.407 (a)(3)(4)	RSS 247 6.2.4.1	Power Limits. Maximum Output Power	P	N/A
C.4	§ 15.407 (a)(3)(5)	RSS-247 6.2.4.1	Maximum Power Spectral Density	P	N/A
C.5	§ 15.407 (b)(4)	RSS-247 6.2.4.2	Band-edge radiated emissions compliance (Transmitter)	P	N/A
C.6	§ 15.407 (b)(6) § 15.207	RSS-Gen 8.8	Emission limitations Conducted (Transmitter)	N/A	N/A
C.7	§ 15.407 (b)(4)(6)(7) § 15.209 § 15.205	RSS-247 6.2.4.2 RSS-Gen 8.9 & 8.10	Undesirable radiated emissions (Transmitter)	P	N/A
--	§ 15.407 (g)	RSS-Gen 6.11 & 8.11	Frequency Stability	N/M	Refer 1
<p><u>Supplementary information and remarks:</u></p> <p>The test set-up was made in accordance to the general provisions of ANSI C63.10: 2013 and FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 dated 12/14/2017</p> <p>1) Acc. To FCC, Manufacturers of UNII devices are responsible for frequency stability compliance.</p>					

FCC PART 15 PARAGRAPH / RSS-247 (WIFI 5GHz) Common Requirements for all bands					
Report Section	15.247 Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
--	§ 15.407 (c)	--	Transmission in case of absence of information to transmit, or operational failure.	N/M	Refer 1
<p><u>Supplementary information and remarks:</u></p> <p>1) The compliance is checked through a description of how this requirement is met that is provided by the applicant.</p>					

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	2018/10	2020/10
1009	RF generator Rohde & Schwarz SMB100A	2019/08	2021/08
1042	RF generator Rohde & Schwarz SMBV100A	2018/01	2021/01
101	Climatic chamber Espec	2019/01	2020/01

Radiated Measurements

CONTROL NUMBER	DESCRIPTION	LAST CALIBRATION	NEXT CALIBRATION
1179	Semi anechoic Absorber Lined Chamber Frankonia SAC 3 plus "L"	N/A	N/A
1064	BiconicalLog antenna ETS LINDGREN 3142E	2017/03	2020/03
1057	Double-ridge Waveguide Horn antenna 1-18 GHz	2017/03	2020/03
1056	Double-ridge Waveguide Horn antenna 18-40 GHz	2017/03	2020/03
1014	Spectrum analyzer Rohde & Schwarz FSV40	2019/04	2021/04
0980	RF pre-amplifier 30 MHz-6 GHz Bonn Elektronik BLMA 0360-01N	2019/08	2021/05
0981	RF pre-amplifier 1-18 GHz Bonn Elektronik BLMA 0118-2A	2018/10	2021/05
1015, 1017, 1019, 1020	Rohde & Schwarz EMC32 software	N/A	N/A

Appendix A: DUT Description

DUT Description

The following information is provided by the client

Information	Description
Equipment type	WIFI 5GHz
Antenna Specification	Equipment with only one antenna
Operating Frequency Range	5150 - 5250 MHz / 5725- 5850 MHz
Nominal Channel Bandwidth	20 MHz/40MHz/80MHz
RF Output Power	14 dBm
Antenna type	Dedicated antenna (single)
Antenna gain	+4.5 dBi
Supply Voltage	13.5 Vdc
Modulation:	OFDM (QPSK, BPSK,16QAM,64QAM)
Transmit Data Rate:	IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n HT20: 7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65, 72.2 Mbps
Geo-location capability	No

Appendix B: Test results 5.15 GHz – 5.25 GHz Band

Appendix B Content

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DESCRIPTION OF TEST CONDITIONS

TEST CONDITIONS	DESCRIPTION
TC#01 ⁽¹⁾ (a mode)	<u>Power supply (V):</u> $V_{\text{nominal}} = 13.5 \text{ Vdc}$ <u>Test Frequencies for Conducted/Radiated tests: (20 MHz)</u> Lowest range: 5180 MHz Middle channel: 5200 MHz Highest range: 5240 MHz
TC#02 ⁽¹⁾ (n mode)	<u>Power supply (V):</u> $V_{\text{nominal}} = 13.5 \text{ Vdc}$ <u>Test Frequencies for Conducted/Radiated tests: (20 MHz)</u> Lowest channel: 5180 MHz Middle channel: 5200 MHz Highest channel: 5240 MHz <u>Test Frequencies for Conducted/Radiated tests: (40 MHz)</u> Lowest channel: 5190 MHz Highest channel: 5230 MHz
TC#03 ⁽¹⁾ (ac mode)	<u>Power supply (V):</u> $V_{\text{nominal}} = 13.5 \text{ Vdc}$ <u>Test Frequencies for Conducted/Radiated tests: (20 MHz)</u> Lowest channel: 5180 MHz Middle channel: 5200 MHz Highest channel: 5240 MHz <u>Test Frequencies for Conducted/Radiated tests: (40 MHz)</u> Lowest channel: 5190 MHz Highest channel: 5230 MHz <u>Test Frequencies for Conducted/Radiated tests: (80 MHz)</u> Lowest channel: 5210

Note (1): For spurious emissions for OFDM modes 802.11a and 802.11n20 a preliminary scan was performed to determine the worst case.

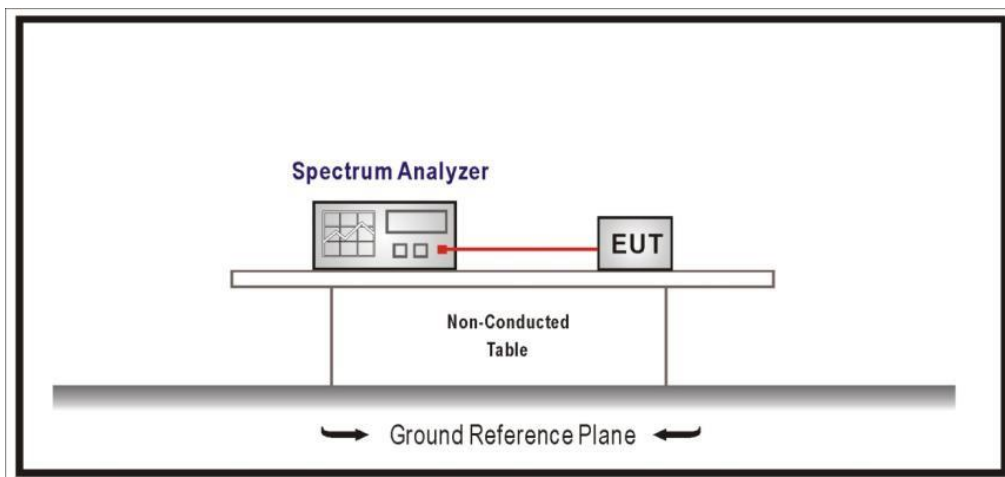
The data rates of 6Mb/s for 802.11a, HT0 (SISO) for 802.11n20 were selected based on preliminary testing that identified those rates corresponding to the worst cases.

TEST B.1: 26DB EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH

LIMITS:	Product standard:	Part 15 Subpart C §15.403 and RSS-247
	Test standard:	Part 15 Subpart C §15.403 and RSS-247 6.2.1

No requirements requested

TEST SETUP:



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01 (a mode)
TEST RESULTS:	PASS

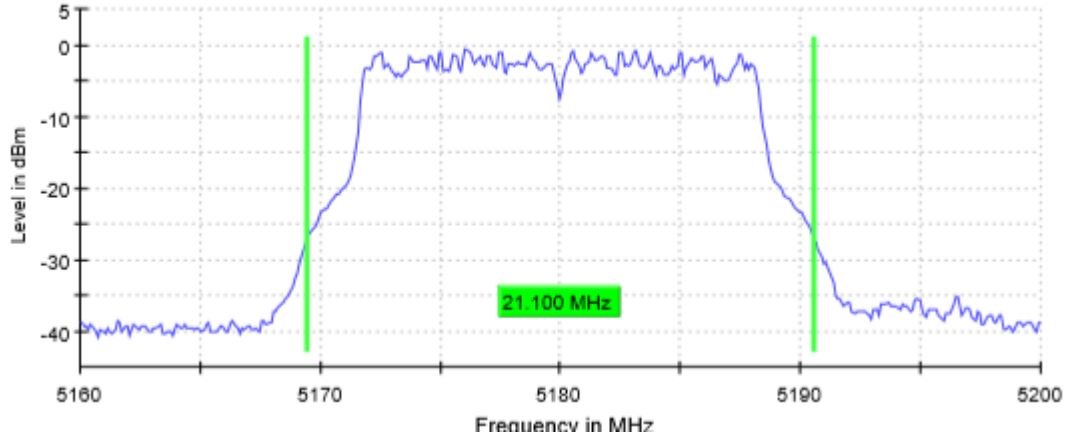
Bandwidth: 20 MHz

	Lowest frequency	Middle frequency	Highest frequency
	5180 MHz	5200 MHz	5240 MHz
26dB Bandwidth (MHz)	21.10	21.00	21.00
Occupied bandwidth (MHz)	16.50	16.60	16.50
Measurement uncertainty (kHz)	<± 8.33		

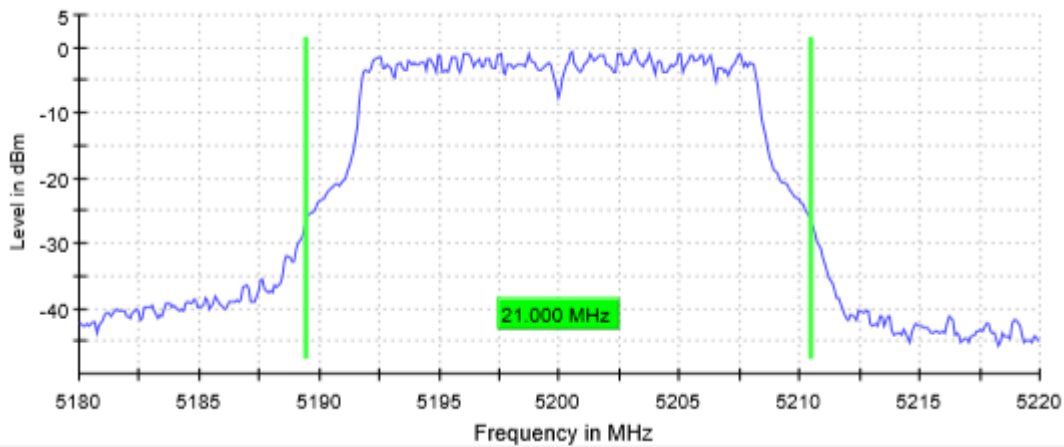
TEST RESULTS (Cont.):

26 dB BANDWIDTH

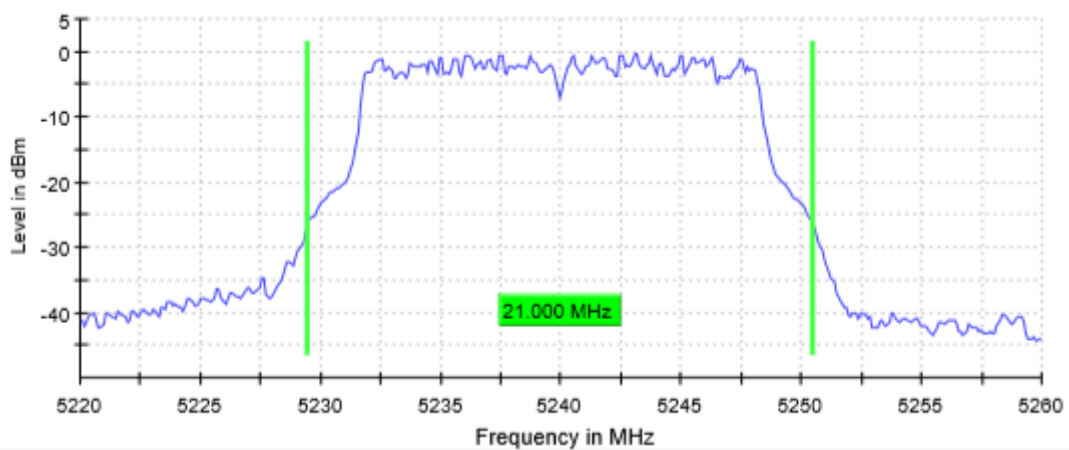
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

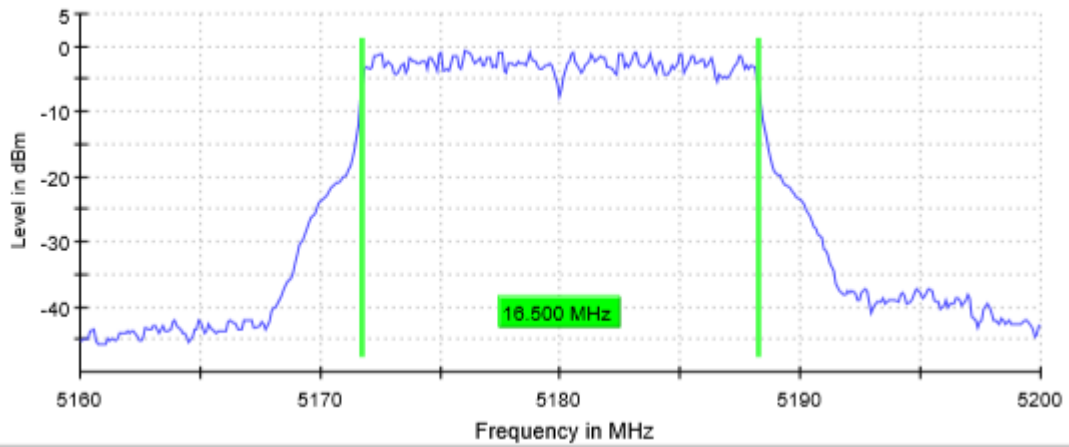
Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.16000 GHz	5.18000 GHz	5.22000 GHz
Stop Frequency	5.20000 GHz	5.22000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 KHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	200	400	400
Sweeptime	28.447 μ s	28.447 μ s	28.477 μ s
Reference Level	20.000 dBm	10.000 dBm	10.000 dBm
Attenuation	40.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	FFT	FFT	FFT
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	20 / max. 150	18 / max. 150	28 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.29 dB	0.21 dB	0.30 dB

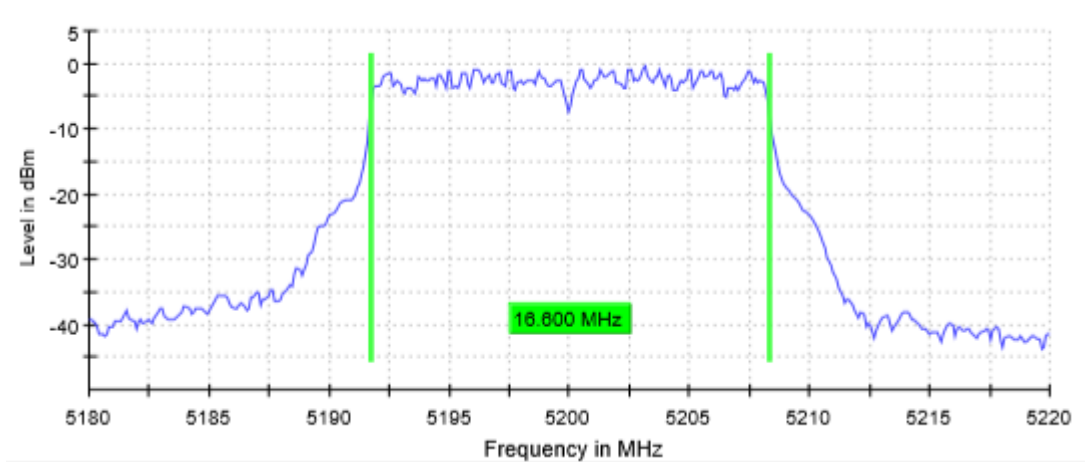
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

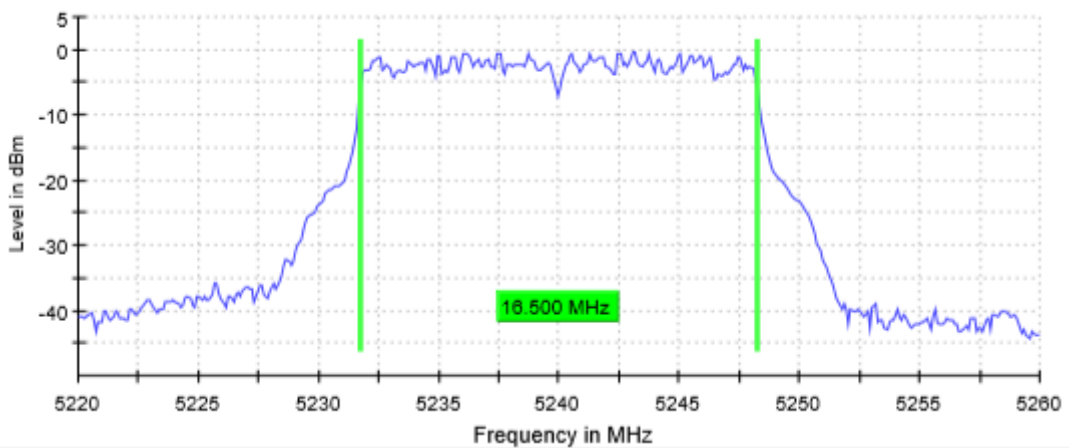
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.)

Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.16000 GHz	5.18000 GHz	5.22000 GHz
Stop Frequency	5.20000 GHz	5.22000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 KHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	200	200	200
Sweeptime	28.477 μ s	28.477 μ s	28.477 μ s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	18 / max. 150	30 / max. 150	17 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.06 dB	0.03 dB	0.06 dB

TESTED SAMPLES:	S/01
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TEST RESULTS (Cont.):	TC#01 (n mode)
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TEST RESULTS:	PASS
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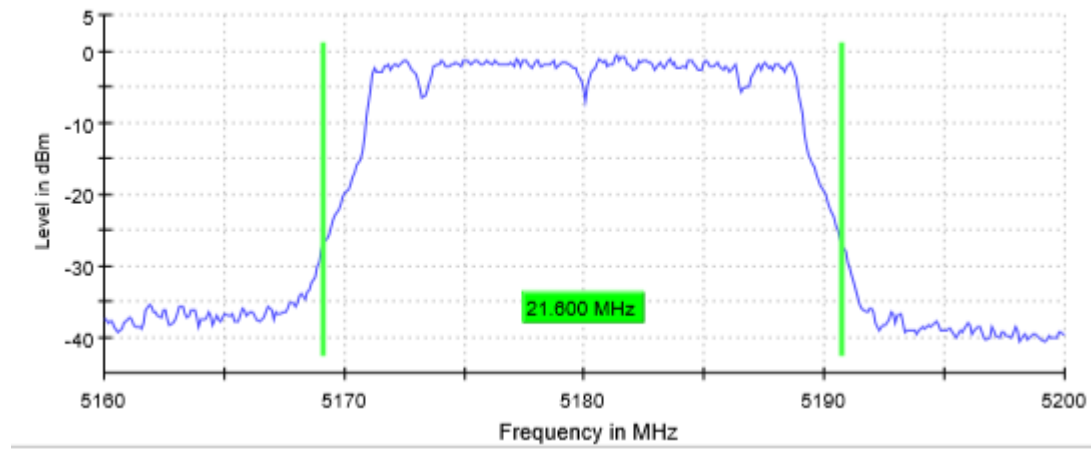
Bandwidth: 20 MHz

	Lowest frequency	Middle frequency	Highest frequency
	5180 MHz	5200 MHz	5240 MHz
26dB Bandwidth (MHz)	21.60	21.60	21.70
Occupied bandwidth (MHz)	17.90	17.90	17.90
Measurement uncertainty (kHz)	± 8.33		

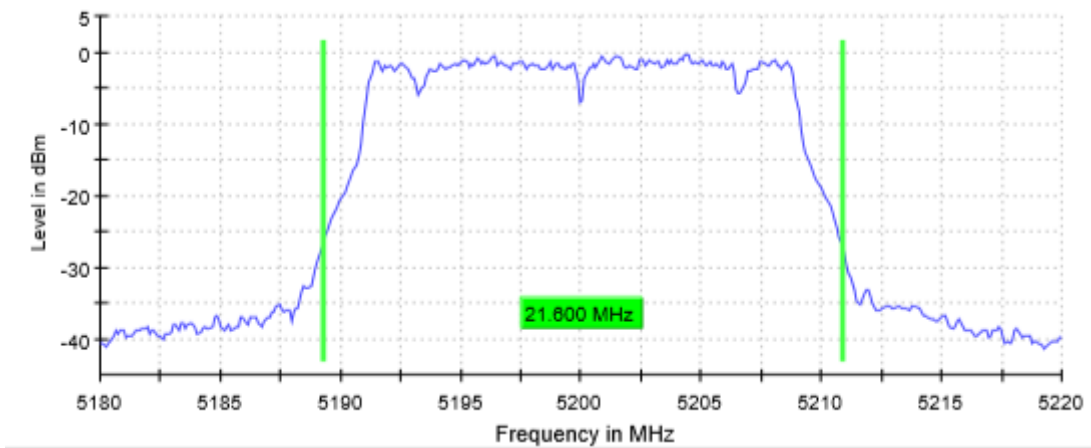
TEST RESULTS (Cont.):

26 dB BANDWIDTH

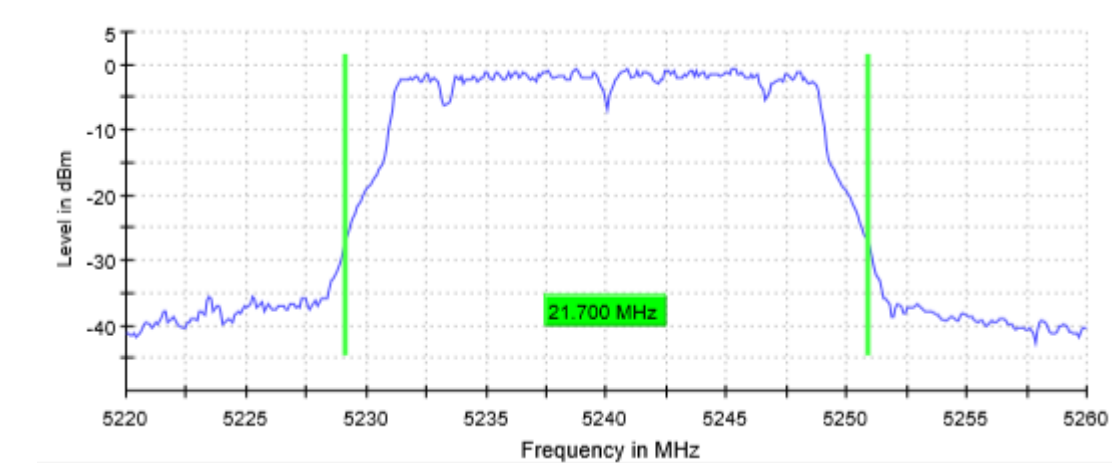
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

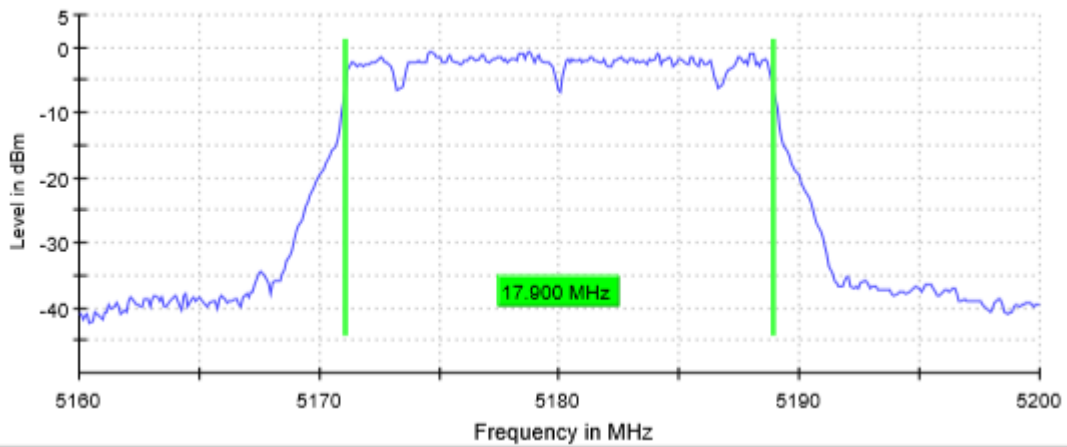
Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.16000 GHz	5.18000 GHz	5.22000 GHz
Stop Frequency	5.20000 GHz	5.22000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 KHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	28.477 μ s	28.477 μ s	28.477 μ s
Reference Level	20.000 dBm	10.000 dBm	10.000 dBm
Attenuation	40.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamp	Off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	71 / max. 150	110 / max. 150	66 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.29 dB	0.02 dB

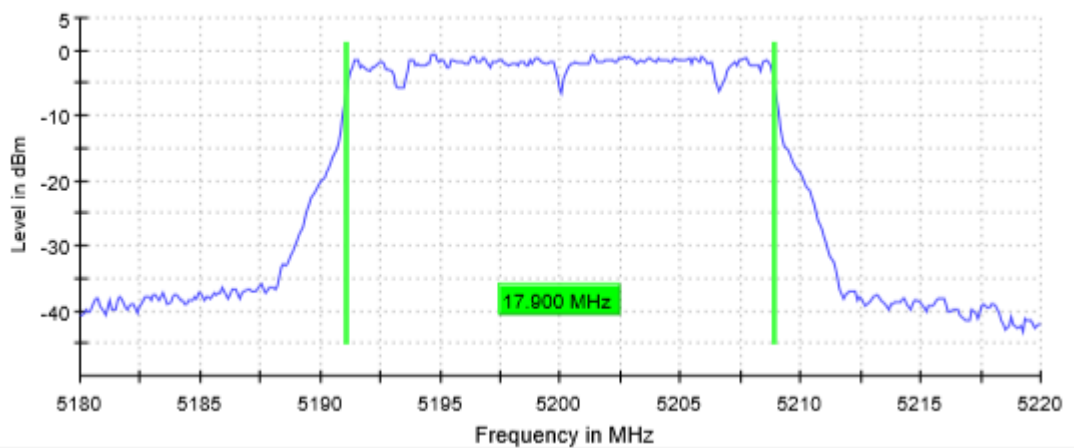
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

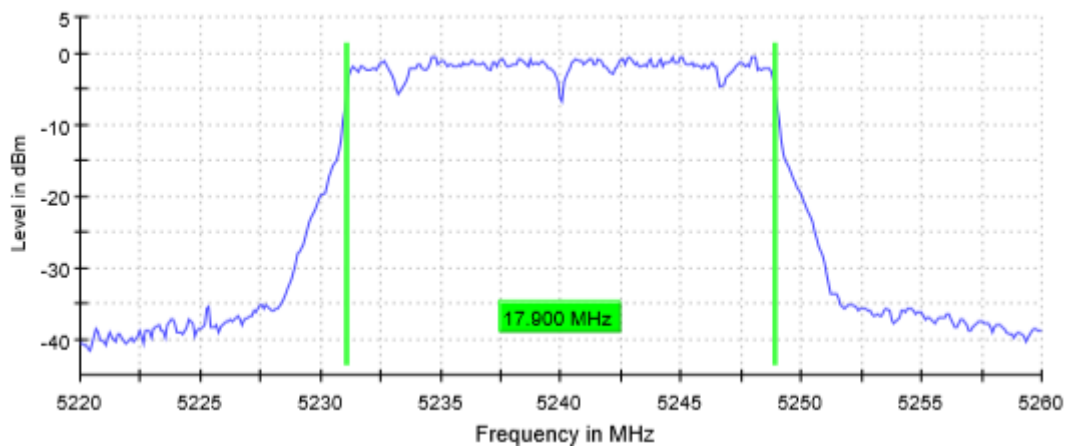
Lowest Channel



Middle Channel



Highest Channel

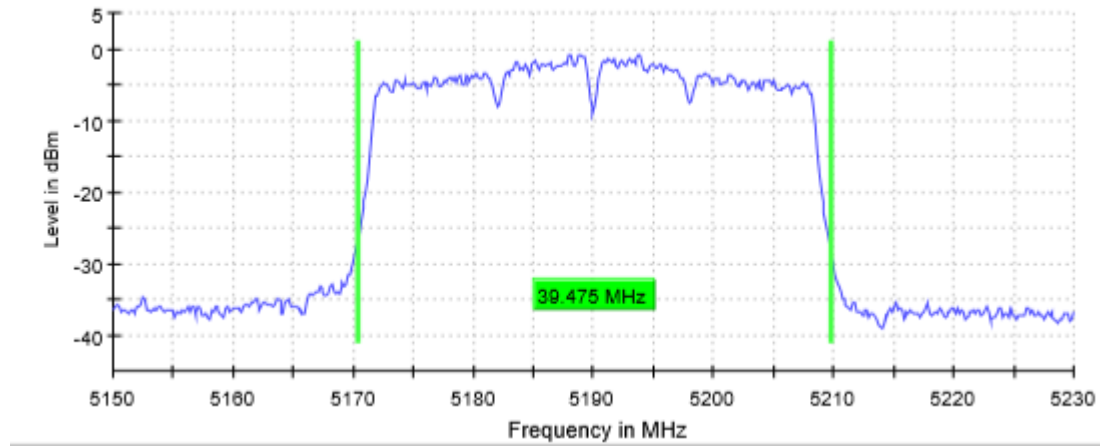


TEST RESULTS (Cont.)			
Measurement			
Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.16000 GHz	5.18000 GHz	5.22000 GHz
Stop Frequency	5.20000 GHz	5.22000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 KHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	28.477 μ s	28.477 μ s	28.477 μ s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	FFT	FFT	FFT
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	73 / max. 150	102 / max. 150	92 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.21 dB	0.00 dB
TESTED SAMPLES:		S/01	
TESTED CONDITIONS MODES:		TC#02 (n Mode)	
TEST RESULTS:		PASS	
Bandwidth: 40 MHz			
	Lowest frequency	Highest frequency	
	5190 MHz	5230 MHz	
26dB bandwidth (MHz)	39.475	39.474	
Occupied bandwidth (MHz)	36.250	36.250	
Measurement uncertainty (kHz)	$<\pm 8.33$		

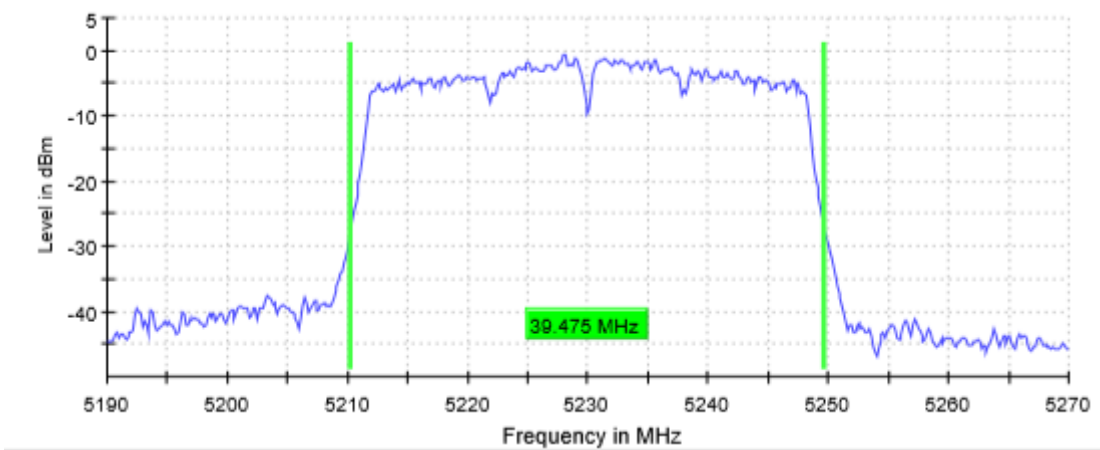
TEST RESULTS (Cont.):

26 dB BANDWIDTH

Lowest Channel



Highest Channel



TEST RESULTS (Cont.):

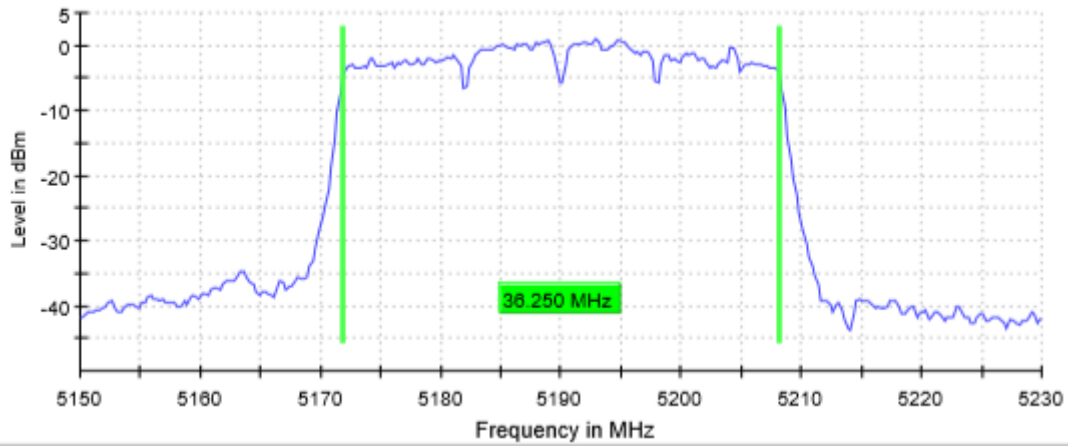
Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.16000 GHz	5.19000 GHz
Stop Frequency	5.23000 GHz	5.27000 GHz
Span	80.000 MHz	80.000 MHz
RBW	300.000 KHz	300.000 KHz
VBW	1.000 MHz	1.000 MHz
SweepPoints	533	533
SweepTime	31.621 μ s	31.621 μ s
Reference Level	20.000 dBm	10.000 dBm
Attenuation	40.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	FFT
Preamp	Off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	119 / max. 150	105 / max. 150
Stable	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.18 dB

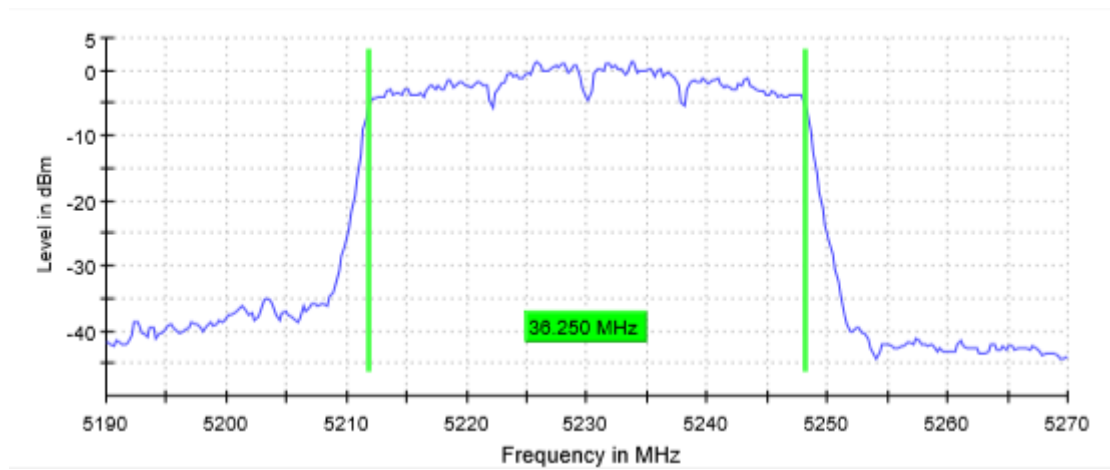
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

Lowest Channel



Highest Channel



TEST RESULTS (Cont.)

Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.15000 GHz	5.19000 GHz
Stop Frequency	5.23000 GHz	5.27000 GHz
Span	80.000 MHz	80.000 MHz
RBW	500.000 KHz	500.000 KHz
VBW	2.000 MHz	2.000 MHz
SweepPoints	320	320
Sweeptime	18.906 μ s	18.906 μ s
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	FFT
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	68 / max. 150	70 / max. 150
Stable	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.18 dB

TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

TC#03 (ac Mode)

TEST RESULTS:

PASS

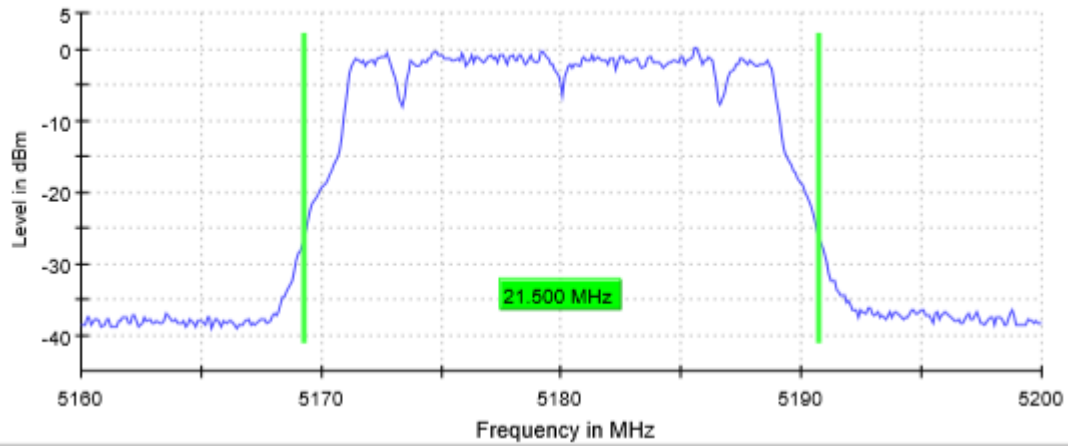
Bandwidth: 20 MHz

	Lowest frequency	Middle frequency	Highest frequency
	5180 MHz	5200 MHz	5240 MHz
26dB bandwidth (MHz)	21.50	21.40	21.50
Occupied bandwidth (MHz)	17.90	17.90	17.90
Measurement uncertainty (kHz)	± 8.33		

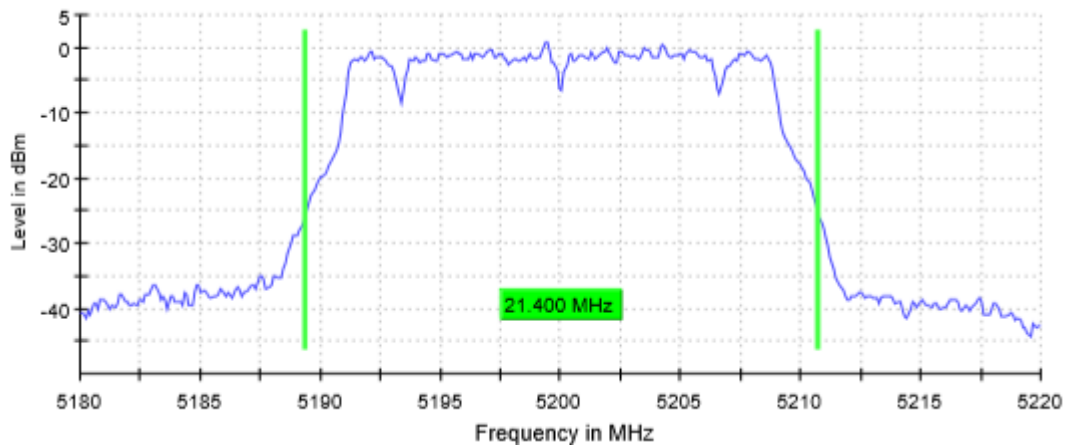
TEST RESULTS (Cont.):

26 dB BANDWIDTH

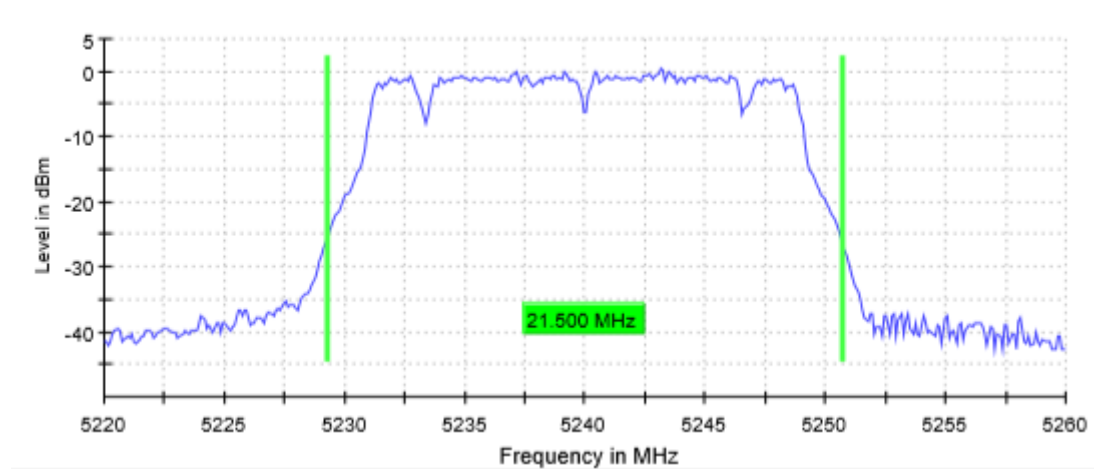
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

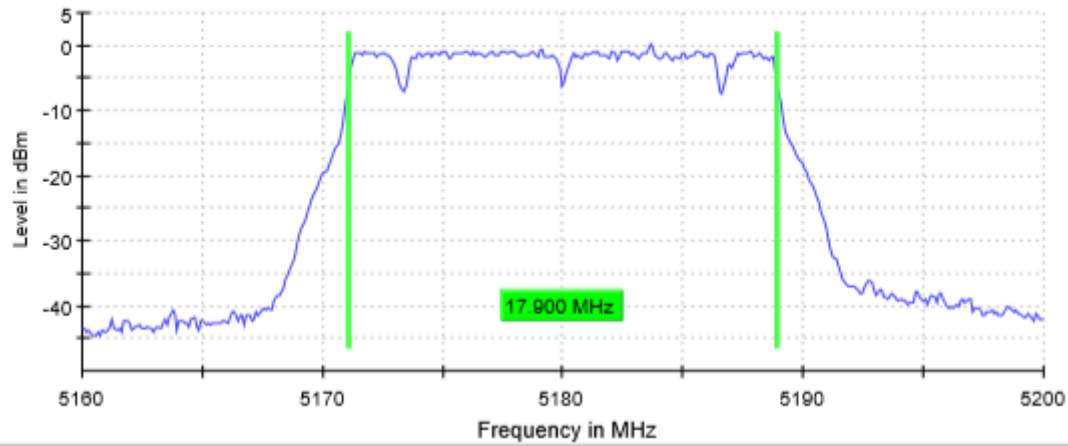
Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.16000 GHz	5.18000 GHz	5.22000 GHz
Stop Frequency	5.20000 GHz	5.22000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 kHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	28.477 μ s	28.477 μ s	28.477 μ s
Reference Level	20.000 dBm	10.000 dBm	10.000 dBm
Attenuation	40.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamp	Off	Off	Off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	99 / max. 150	79 / max. 150	87 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.24 dB	0.00 dB

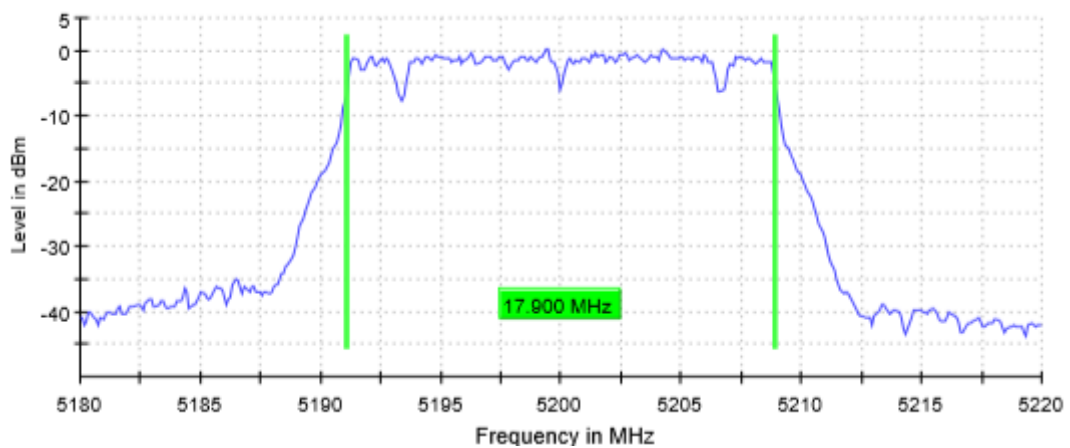
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

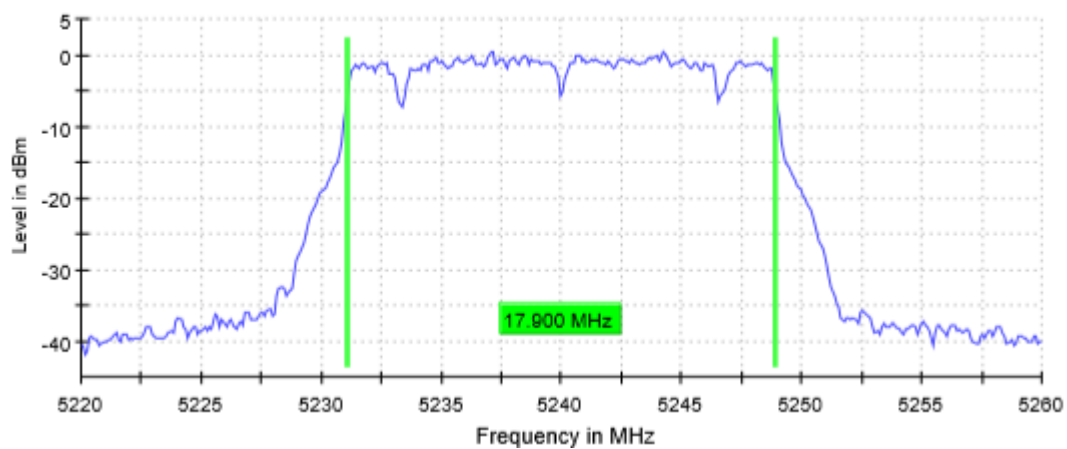
Lowest Channel



Middle Channel



Highest Channel

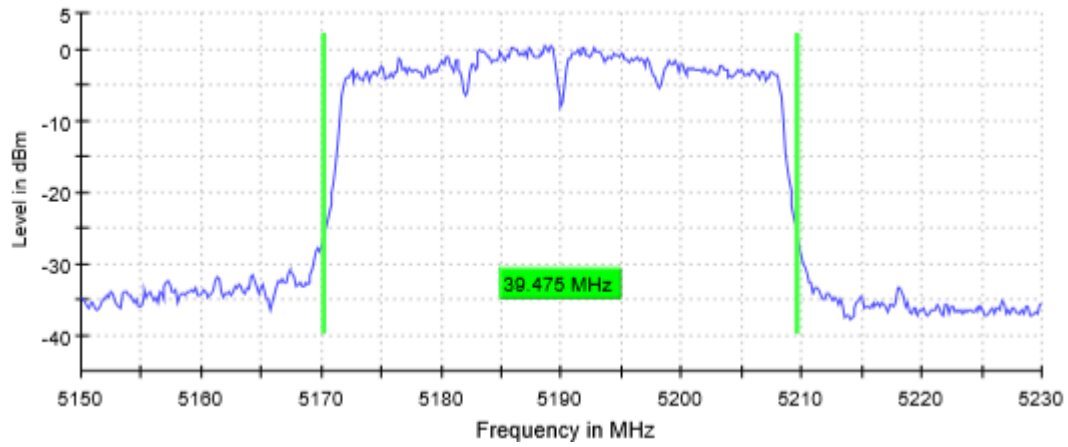


TEST RESULTS (Cont.)				
Measurement				
	Setting	Instrument Value	Instrument Value	Instrument Value
	Start Frequency	5.15000 GHz	5.18000 GHz	5.22000 GHz
	Stop Frequency	5.20000 GHz	5.22000 GHz	5.26000 GHz
	Span	40.000 MHz	40.000 MHz	40.000 MHz
	RBW	200.000 KHz	200.000 KHz	200.000 KHz
	VBW	1.000 MHz	1.000 MHz	1.000 MHz
	SweepPoints	400	400	400
	Sweeptime	28.477 μ s	28.477 μ s	28.477 μ s
	Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
	Attenuation	30.000 dB	30.000 dB	30.000 dB
	Detector	MaxPeak	MaxPeak	MaxPeak
	SweepCount	200	200	200
	Filter	3 dB	3 dB	3 dB
	Trace Mode	Max Hold	Max Hold	Max Hold
	Sweeptype	FFT	FFT	FFT
	Preamp	Off	off	off
	Stablemode	Trace	Trace	Trace
	Stablevalue	0.30 dB	0.30 dB	0.30 dB
	Run	147 / max. 150	94 / max. 150	99 / max. 150
	Stable	5 / 5	5 / 5	5 / 5
	Max Stable Difference	0.00 dB	0.00 dB	0.00 dB
TESTED SAMPLES:	S/01			
TESTED CONDITIONS MODES:	TC#03 (ac Mode)			
TEST RESULTS:	PASS			
Bandwidth: 40 MHz				
	Lowest frequency	Highest frequency		
	5190 MHz	5230 MHz		
26dB bandwidth (MHz)	39.474	39.324		
Occupied bandwidth (MHz)	36.250	36.250		
Measurement uncertainty (kHz)	$<\pm 8.33$			

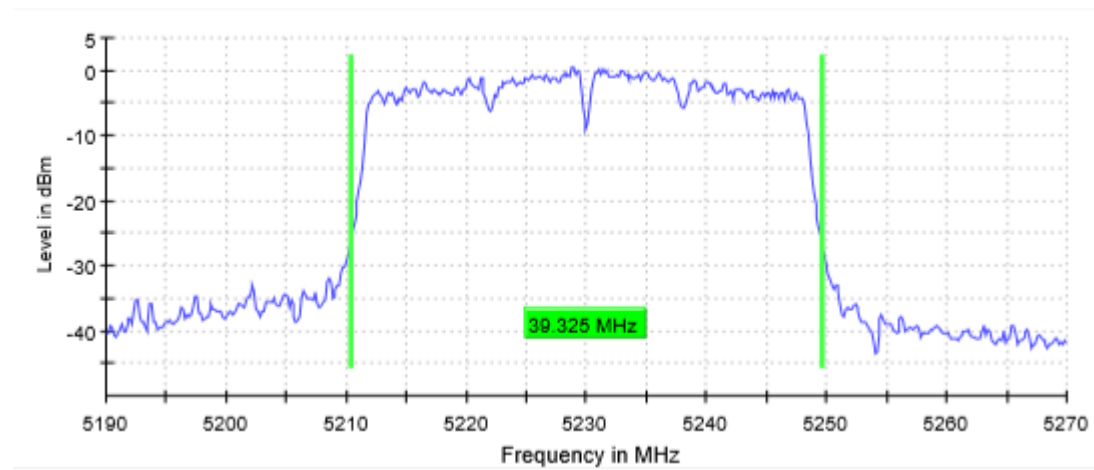
TEST RESULTS (Cont.):

26 dB BANDWIDTH

Lowest Channel



Highest Channel



TEST RESULTS (Cont.):

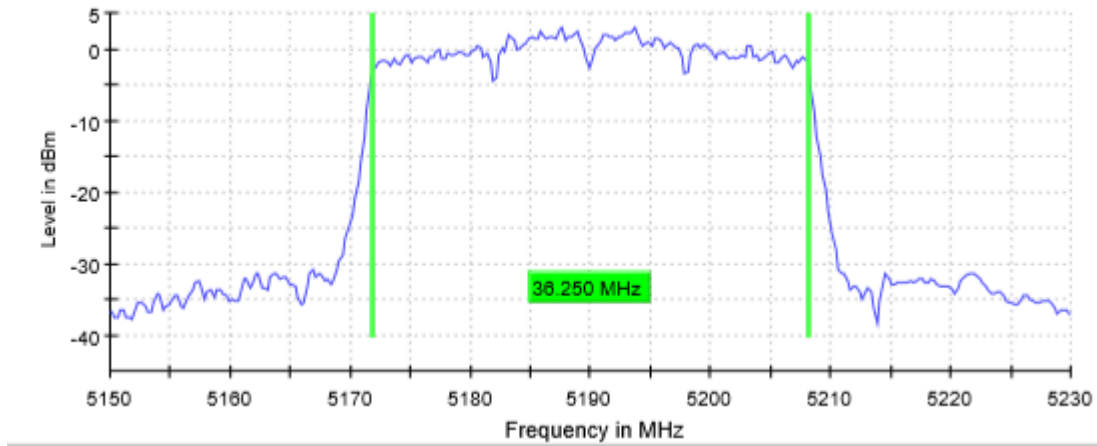
Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.15000 GHz	5.19000 GHz
Stop Frequency	5.23000 GHz	5.27000 GHz
Span	80.000 MHz	30.000 MHz
RBW	300.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz
SweepPoints	533	533
SweepTime	31.621 μ s	31.621 μ s
Reference Level	20.000 dBm	10.000 dBm
Attenuation	40.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	FFT
Preamp	Off	Off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	127 / max. 150	84 / max. 150
Stable	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.24 dB

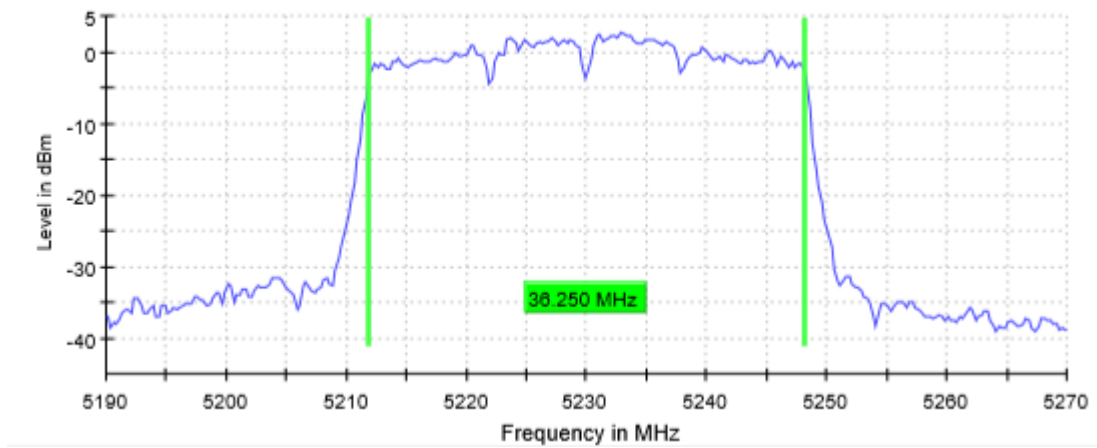
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

Lowest Channel



Highest Channel

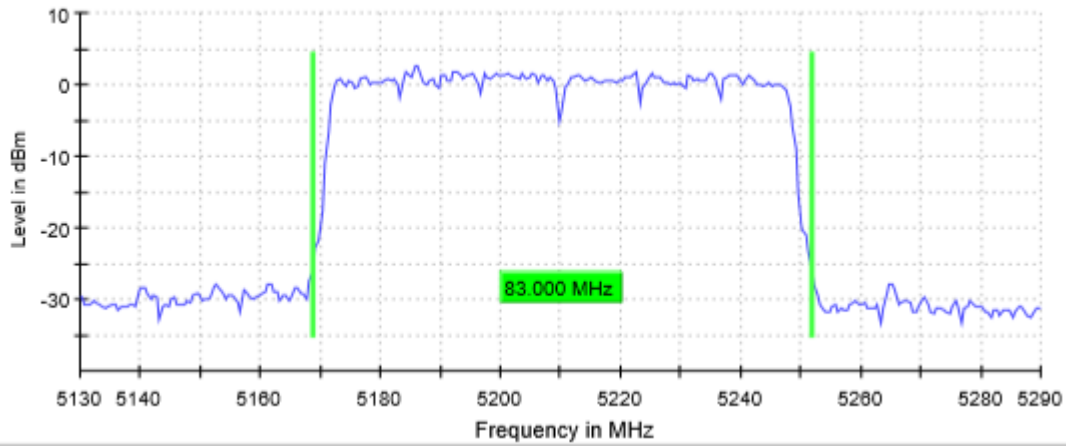


TEST RESULTS (Cont.)																																																																
Measurement																																																																
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Setting	Instrument Value	Instrument Value																																																														
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TESTED SAMPLES:	S/01																																																															
TESTED CONDITIONS MODES:	TC#03 (ac Mode)																																																															
TEST RESULTS:	PASS																																																															
Bandwidth: 80 MHz																																																																
	<table border="1"> <tbody> <tr> <td></td> <td>Lowest frequency 5210 MHz</td> </tr> <tr> <td>26dB bandwidth (MHz)</td> <td>83.00</td> </tr> <tr> <td>Occupied bandwidth (MHz)</td> <td>76.50</td> </tr> <tr> <td>Measurement uncertainty (kHz)</td> <td><\pm 8.33</td> </tr> </tbody> </table>		Lowest frequency 5210 MHz	26dB bandwidth (MHz)	83.00	Occupied bandwidth (MHz)	76.50	Measurement uncertainty (kHz)	< \pm 8.33																																																							
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TEST RESULTS (Cont.):

26 dB BANDWIDTH

Lowest Channel



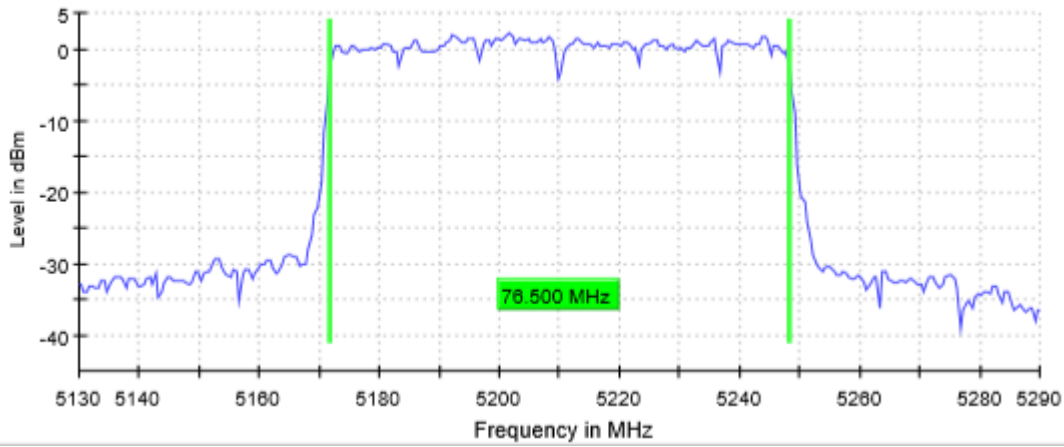
Measurement

Setting	Instrument Value
Start Frequency	5.13000 GHz
Stop Frequency	5.29000 GHz
Span	160.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	320
Sweeptime	22.875 μ s
Reference Level	20.000 dBm
Attenuation	40.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
SweepType	FFT
Preamp	Off
Stablemode	Trace
Stablevalue	0.30 dB
Run	124 / max. 150
Stable	5 / 5
Max Stable Difference	0.00 dB

TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

Lowest Channel



Measurement

Setting	Instrument Value
Start Frequency	5.13000 GHz
Stop Frequency	5.29000 GHz
Span	160.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	320
Sweeptime	22.875 μ s
Reference Level	10.000 dBm
Attenuation	30.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	FFT
Preamp	Off
Stablemode	Trace
Stablevalue	0.30 dB
Run	89 / max. 150
Stable	5 / 5
Max Stable Difference	0.08 dB

TEST B.2: POWER LIMITS. MAXIMUM OUTPUT POWER

LIMITS:	Product standard:	Part 15 Subpart C §15.407 and RSS-247
	Test standard:	Part 15 Subpart C §15.407(a) (1) (4) and RSS-247 6.2.1.1

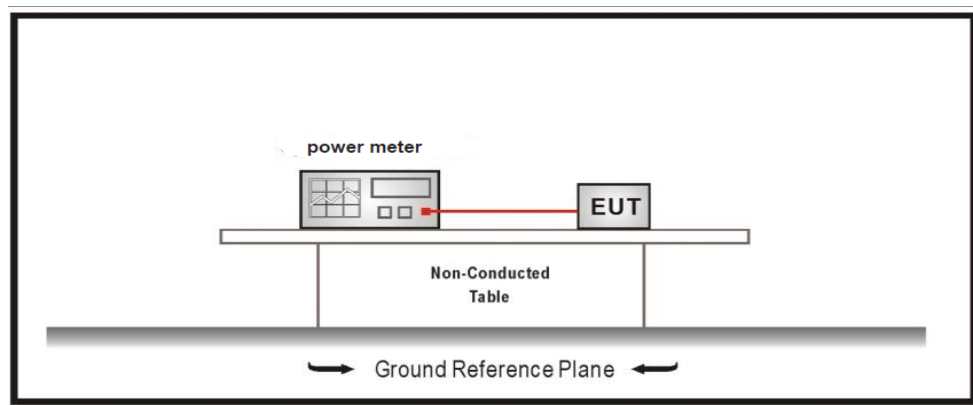
LIMITS

In band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST SETUP

Measured according to ANSI C63.10, Section 11.9.2.3.2 Method AVGPM-G

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 (a mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5180 MHz	Middle frequency 5200 MHz	Highest frequency 5240 MHz
Maximum conducted power (dBm)	10.3	10.5	10.5
Maximum EIRP power (dBm)	14.8	15	15
Measurement uncertainty (dB)	<±0.78		

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 OUTPUT POWER
Lowest Channel	
<p>Level in dBm</p> <p>Time in ms</p> <p>10.300 dBm</p>	
Middle Channel	
<p>Level in dBm</p> <p>Time in ms</p> <p>10.486 dBm</p>	
Highest Channel	
<p>Level in dBm</p> <p>Time in ms</p> <p>10.515 dBm</p>	

TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#02 (n mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

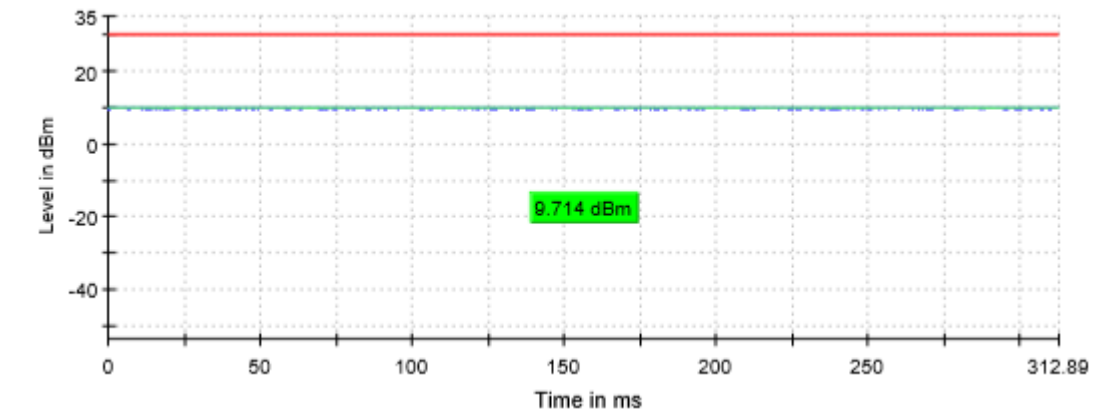
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5180 MHz	Middle frequency 5200 MHz	Highest frequency 5240 MHz
Maximum conducted power (dBm)	9.7	9.8	9.9
Maximum EIRP power (dBm)	14.2	14.3	14.4
Measurement uncertainty (dB)	<±0.78		

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.

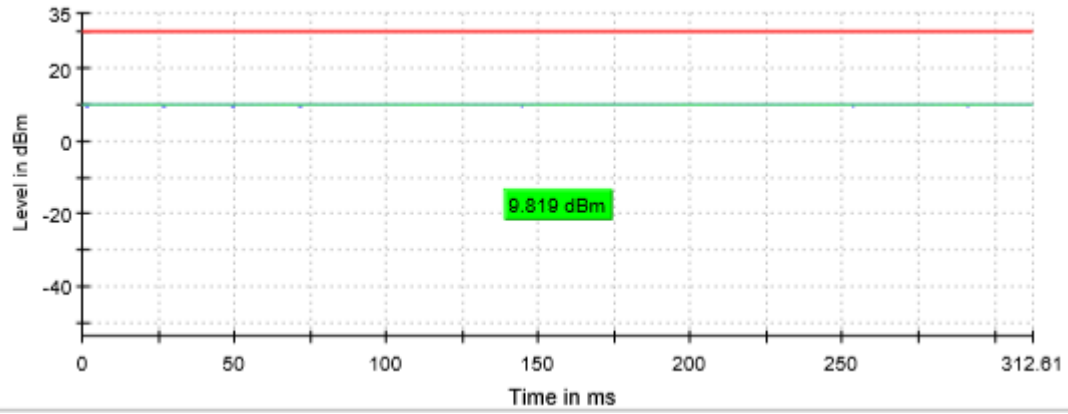
TEST RESULTS (Cont.):	CONDUCTED OUTPUT POWER
------------------------------	-------------------------------

Lowest Channel

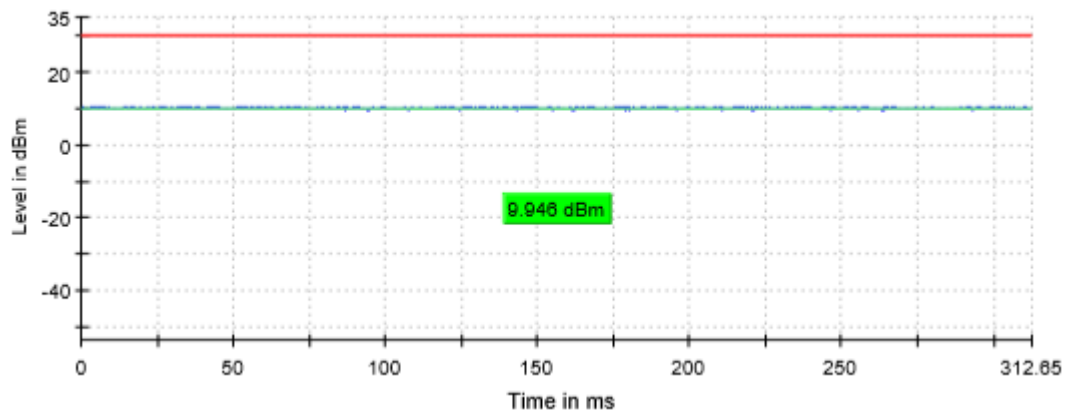


TEST RESULTS (Cont.)

Middle Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#02 (n mode)
TEST RESULTS:	PASS

Bandwidth: 40 MHz

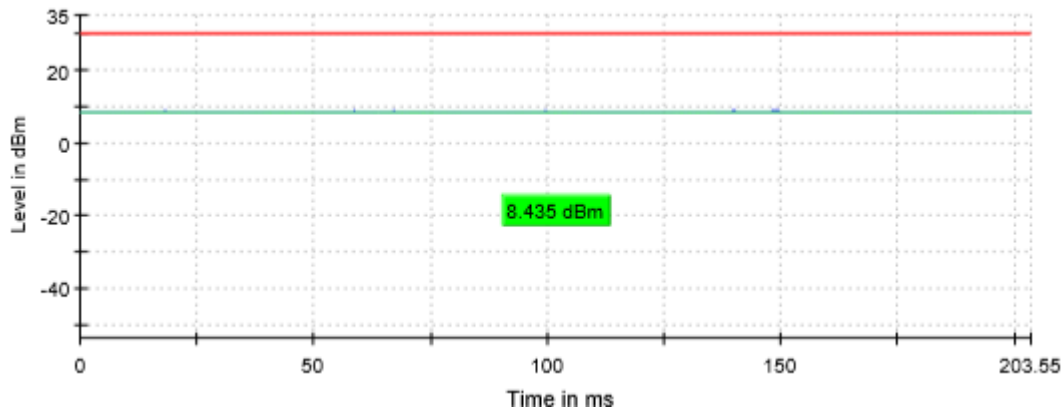
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5190 MHz	Highest frequency 5230 MHz
Maximum conducted power (dBm)	8.4	8.3
Maximum EIRP power (dBm)	12.9	12.8
Measurement uncertainty (dB)	<±0.78	

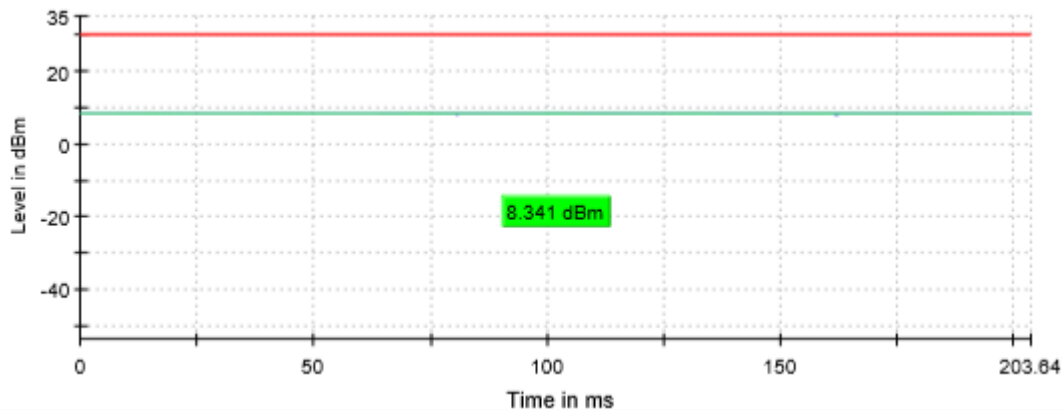
The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

TEST RESULTS (Cont.):	CONDUCTED OUTPUT POWER
------------------------------	-------------------------------

Lowest Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#03 (ac mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

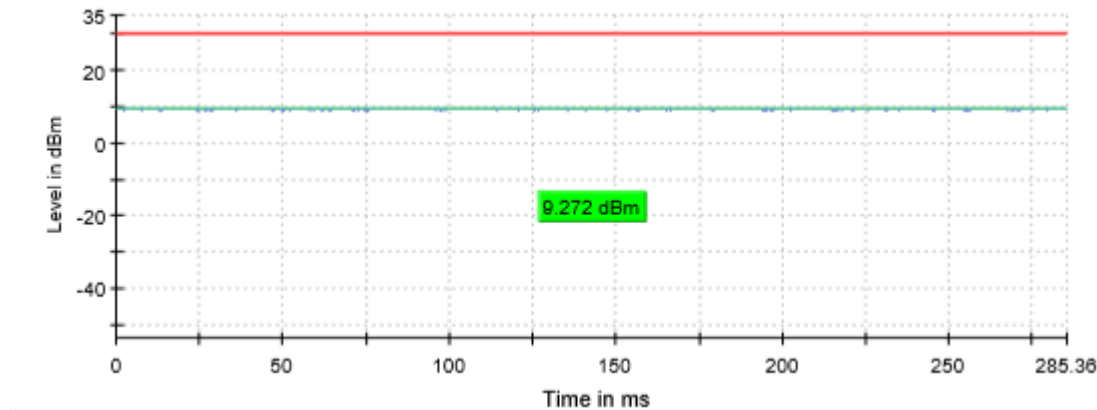
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5180 MHz	Middle frequency 5200 MHz	Highest frequency 5240 MHz
Maximum conducted power (dBm)	9.3	9.4	9.4
Maximum EIRP power (dBm)	13.8	13.9	13.9
Measurement uncertainty (dB)	<±0.78		

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.

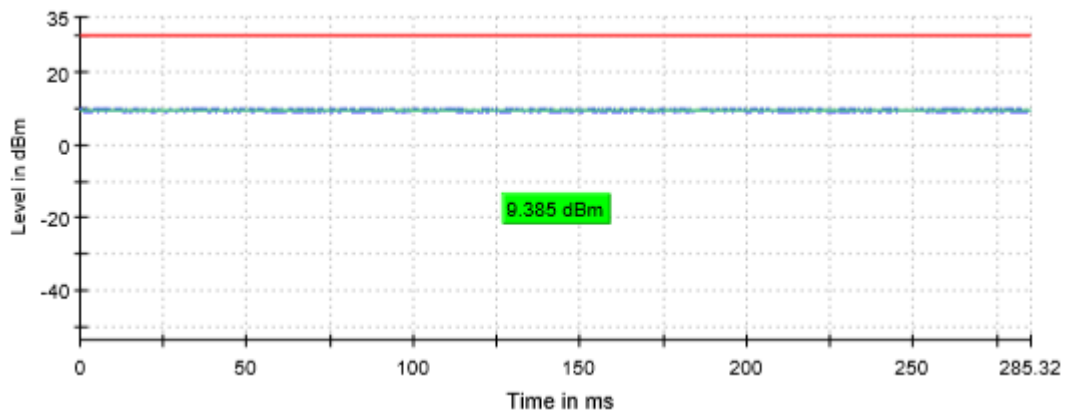
TEST RESULTS (Cont.):	CONDUCTED OUTPUT POWER
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Lowest Channel

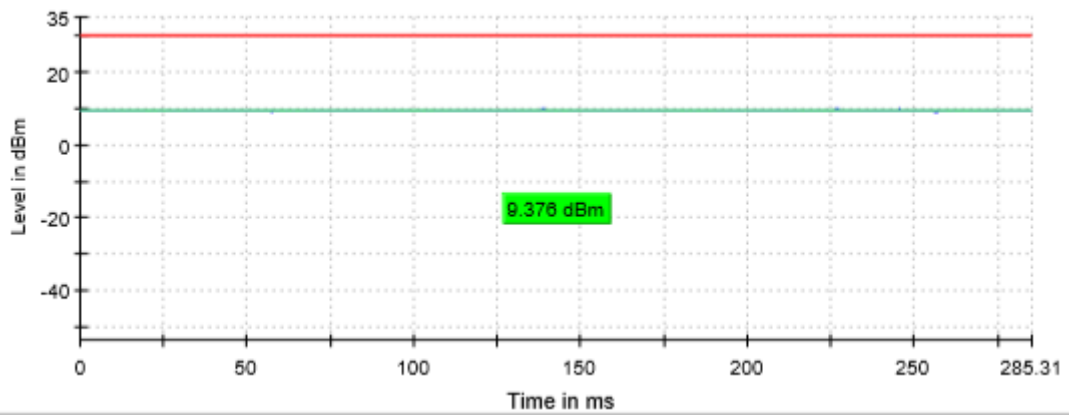


TEST RESULTS (Cont.)

Middle Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#03 (ac mode)
TEST RESULTS:	PASS

Bandwidth: 40 MHz

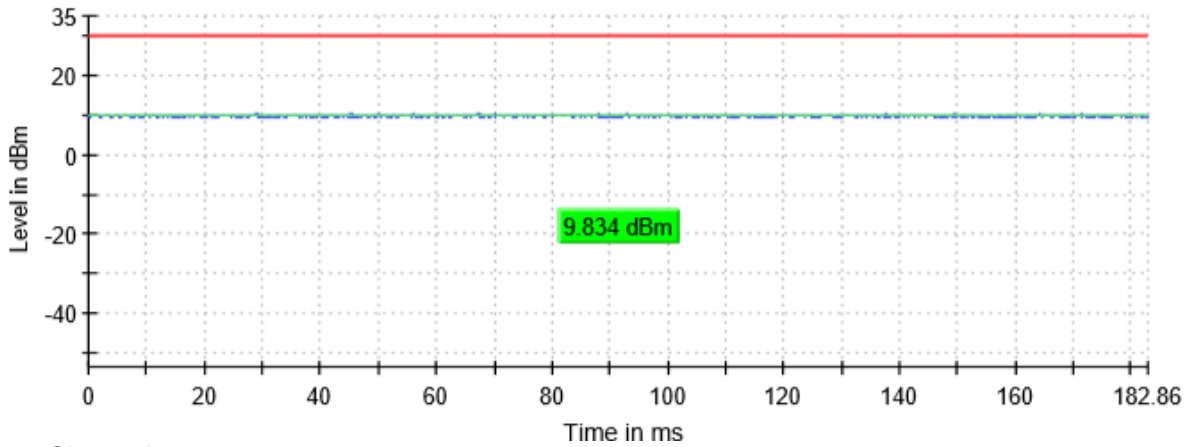
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5190 MHz	Highest frequency 5230 MHz
Maximum conducted power (dBm)	9.8	10
Maximum EIRP power (dBm)	14.3	14.5
Measurement uncertainty (dB)	<±0.78	

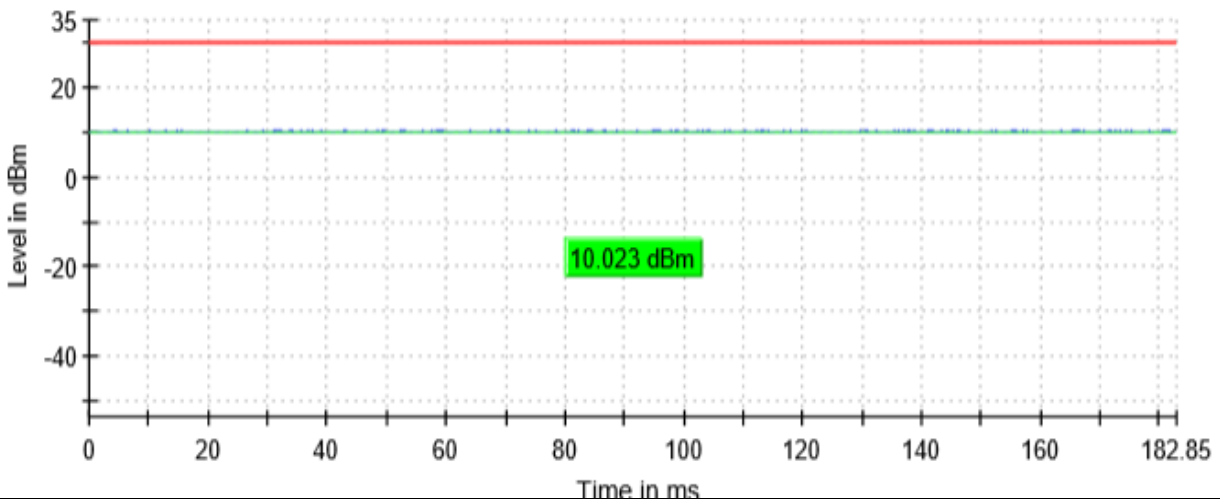
The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

TEST RESULTS (Cont.):	CONDUCTED OUTPUT POWER
------------------------------	-------------------------------

Lowest Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#03 (ac mode)
TEST RESULTS:	PASS

Bandwidth: 80 MHz

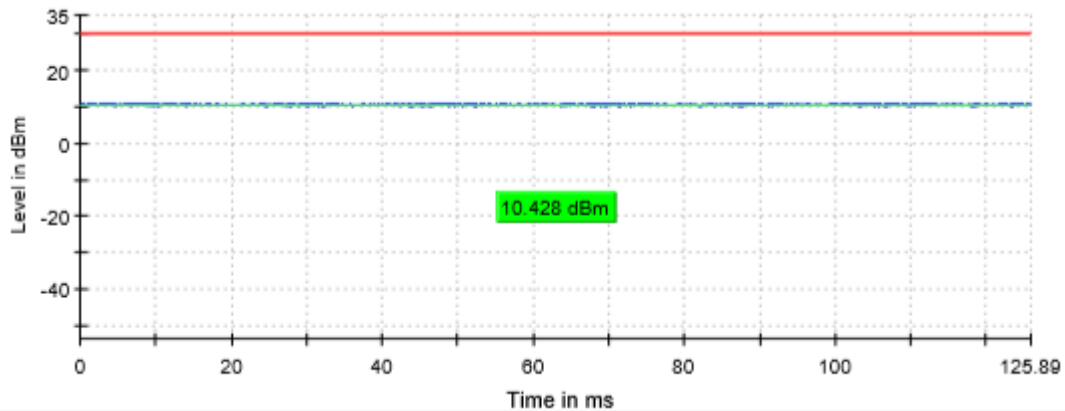
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5210 MHz
Maximum conducted power (dBm)	10.4
Maximum EIRP power (dBm)	14.9
Measurement uncertainty (dB)	<±0.78

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 OUTPUT POWER
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Lowest Channel



TEST B.3: POWER SPECTRAL DENSITY

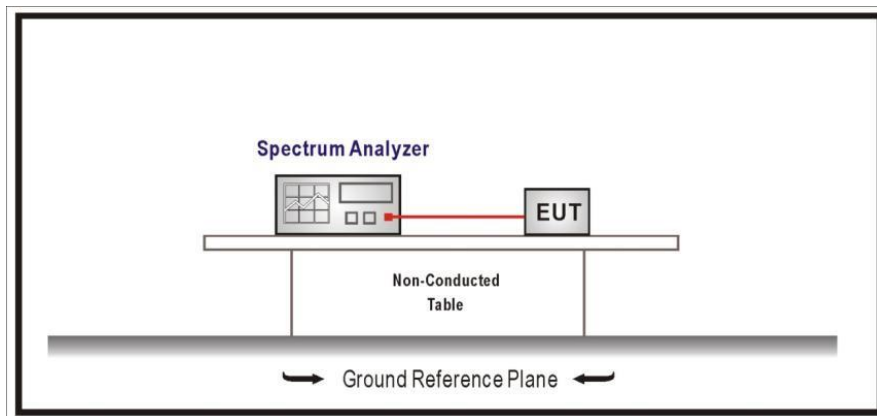
LIMITS:	Product standard:	Part 15 Subpart C §15.407 and RSS-247
	Test standard:	Part 15 Subpart C §15.407(a) (1) (5) and RSS-247 6.2.1.1

LIMITS

In the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST SETUP

For all modes, the maximum power spectral density level in the fundamental emission was measured using the method according to point F) (Method SA-1) of Guidance 789033 D02 General UNII Test Procedures New Rules v01.



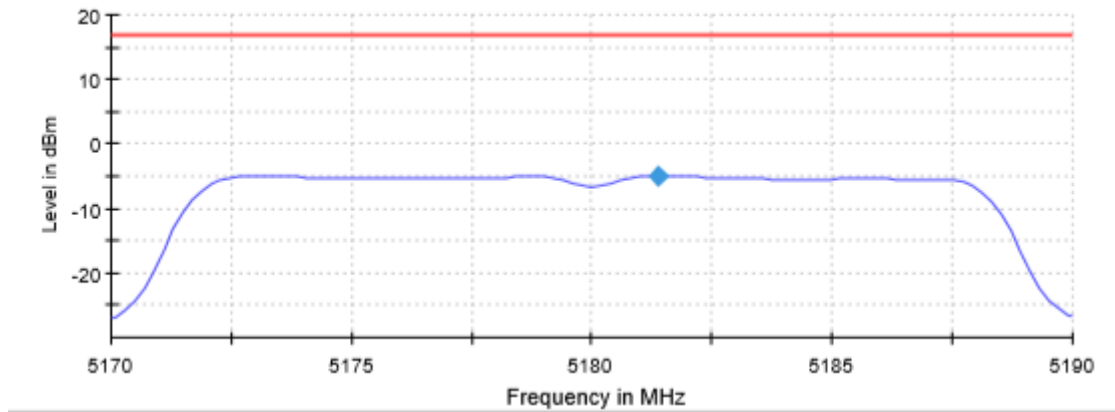
TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01 (a mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

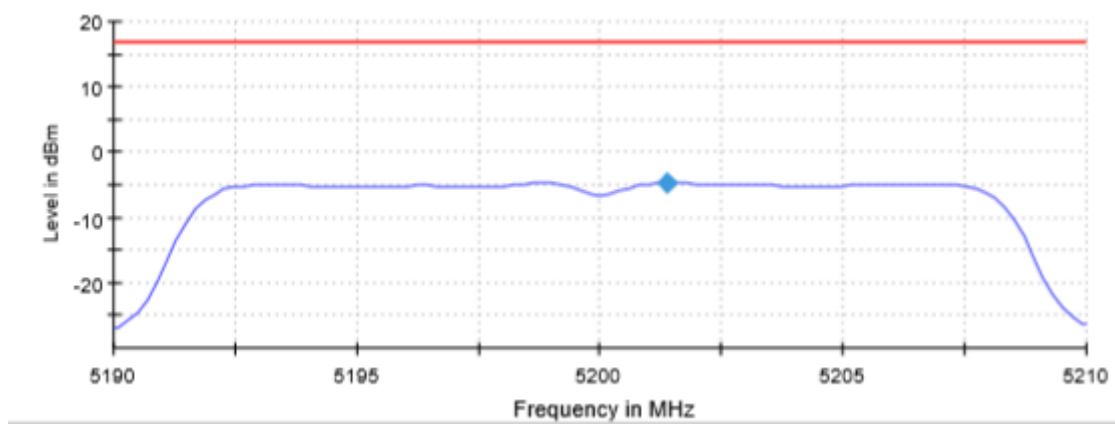
	Lowest frequency	Middle frequency	Highest frequency
	5180 MHz	5200 MHz	5240 MHz
Power spectral density (dBm)	-4.863	-4.734	-4.505
Measurement uncertainty (dB)	<±0.78		

TEST RESULTS (Cont.):

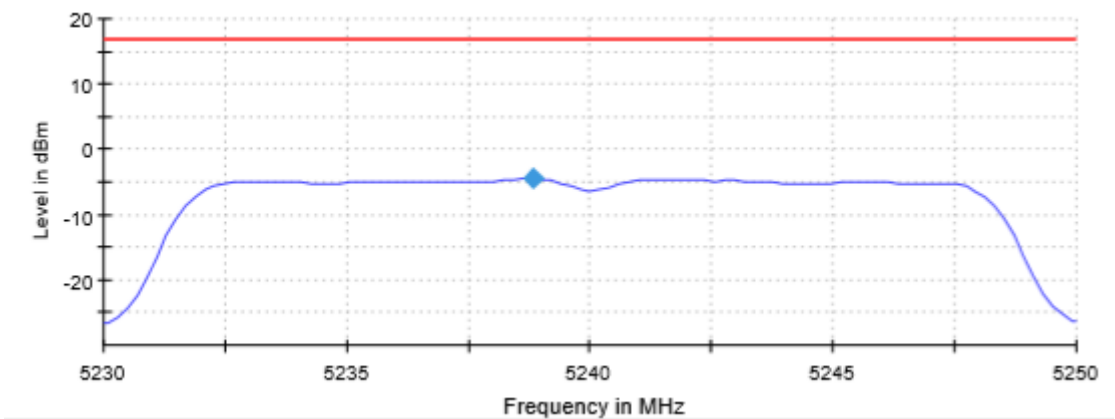
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.17000 GHz	5.19000 GHz	5.23000 GHz
Stop Frequency	5.19000 GHz	5.21000 GHz	5.25000 GHz
Span	20.000 MHz	20.000 MHz	20.000 MHz
RBW	1.000 MHz	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz	3.000 MHz
SweepPoints	101	101	101
SweepTime	2.020 s	2.020 s	2.020 s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	RMS	RMS	RMS
SweepCount	29703	29703	29703
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamplifier	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	4 / max. 150	4 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.02 dB	0.00 dB	0.05 dB

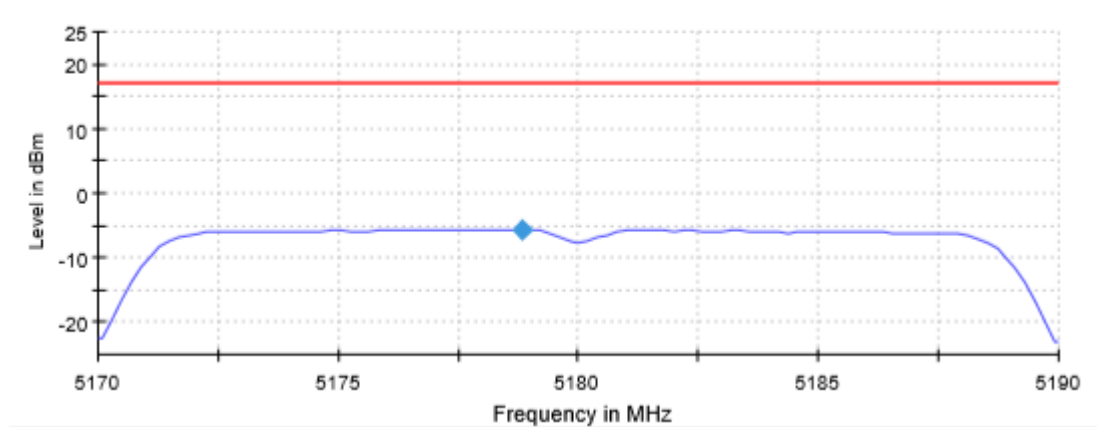
TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#02 (n mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

	Lowest frequency 5180 MHz	Middle frequency 5200 MHz	Highest frequency 5240 MHz
Power spectral density (dBm)	-5.566	-5.526	-5.089
Measurement uncertainty (dB)	<±0.78		

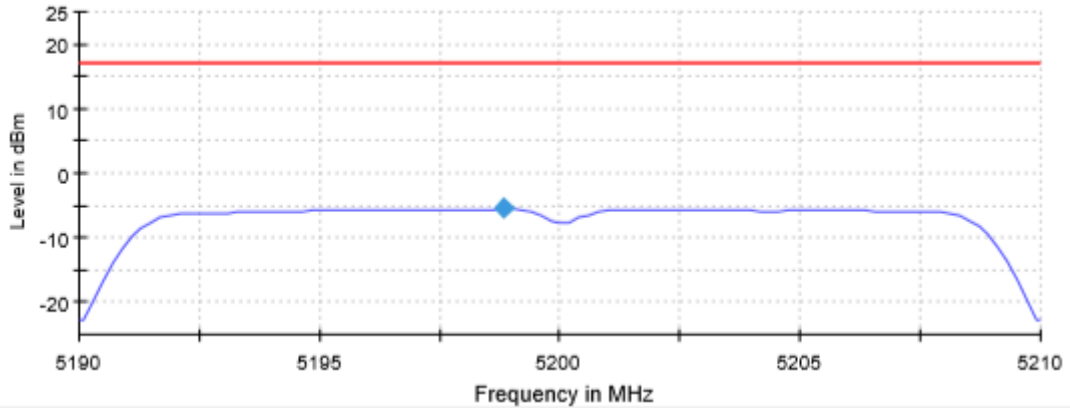
TEST RESULTS (Cont.):	
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Lowest Channel

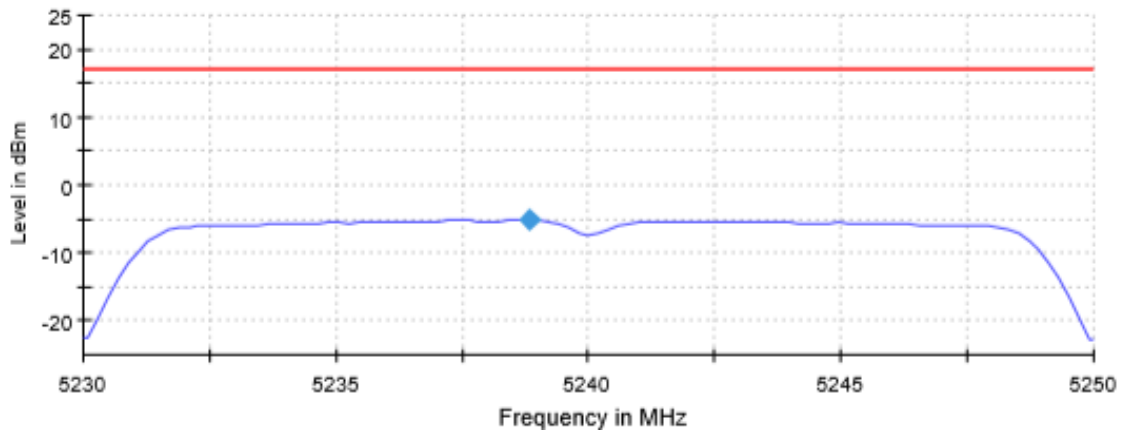


TEST RESULTS (Cont.):

Middle Channel



Highest Channel



TEST RESULTS (Cont.):

Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.17000	5.19000	5.23000
Stop Frequency	5.19000	5.21000	5.25000
Span	20.000 MHz	20.000 MHz	20.000 MHz
RBW	1.000 MHz	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz	3.000 MHz
SweepPoints	101	101	101
SweepTime	2.020 s	2.020 s	2.020 s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	RMS	RMS	RMS
SweepCount	29703	29703	29703
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	4 / max. 150	4 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.02 dB	0.07 dB	0.09 dB

TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

TC#02 (n mode)

TEST RESULTS:

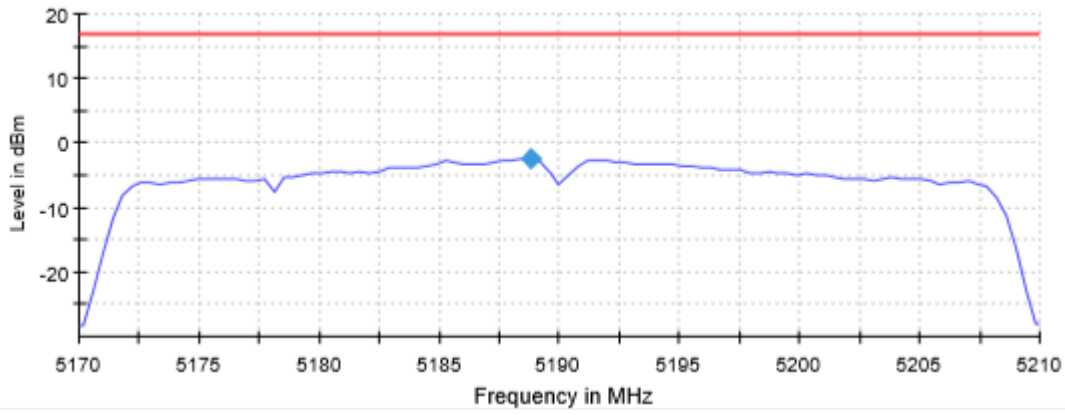
PASS

Bandwidth: 40 MHz

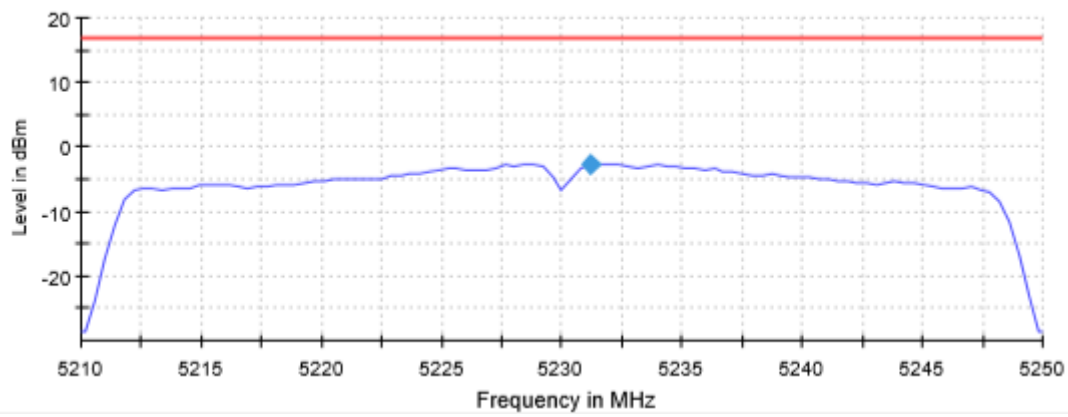
	Lowest frequency	Highest frequency
	5190 MHz	5230 MHz
Power spectral density (dBm)	-2.514	-2.618
Measurement uncertainty (dB)	<±0.78	

TEST RESULTS (Cont.):

Lowest Channel



Highest Channel



TEST RESULTS (Cont.):

Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.17000	5.19000
Stop Frequency	5.19000	5.21000
Span	40.000 MHz	40.000 MHz
RBW	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz
SweepPoints	101	101
Sweeptime	2.020 s	2.020 s
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB
Detector	RMS	RMS
SweepCount	29703	29703
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	FFT
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	4 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.20 dB	0.17 dB

TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

TC#03 (ac mode)

TEST RESULTS:

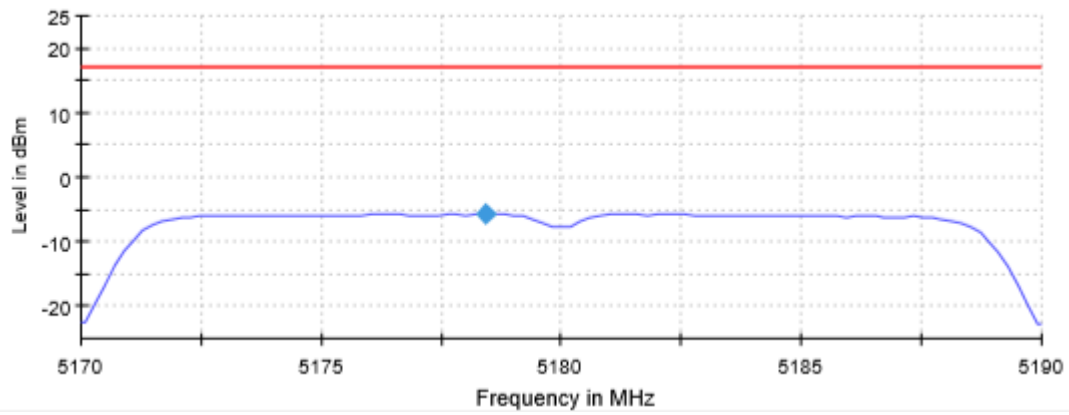
PASS

Bandwidth: 20 MHz

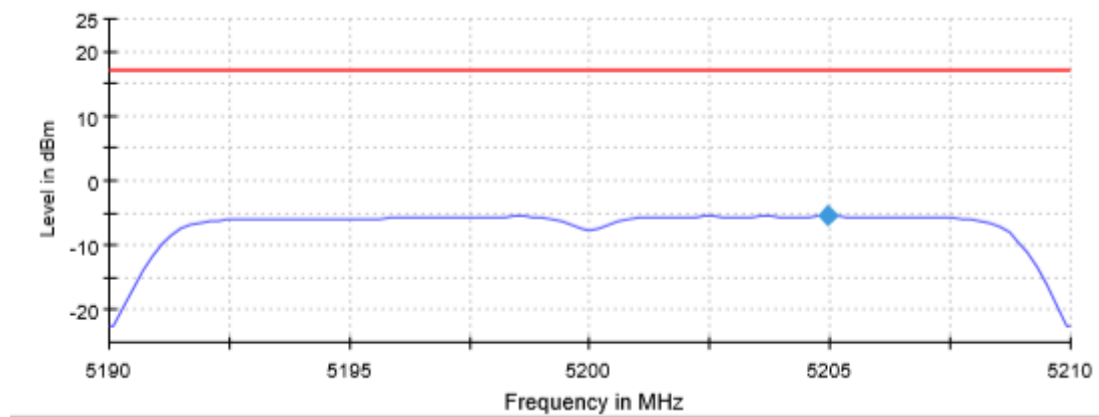
	Lowest frequency 5180 MHz	Middle frequency 5200 MHz	Highest frequency 5240 MHz
Power spectral density (dBm)	-5.702	-5.418	-5.467
Measurement uncertainty (dB)	<±0.78		

TEST RESULTS (Cont.):

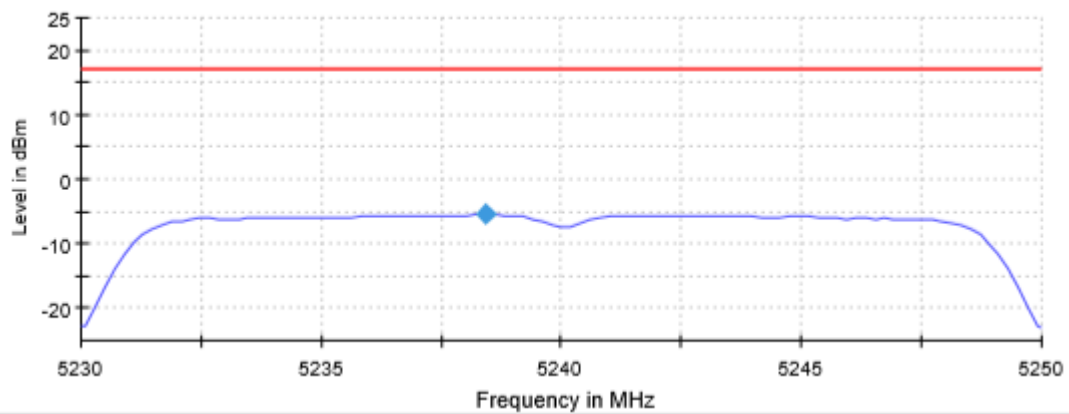
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.17000	5.19000	5.23000
Stop Frequency	5.19000	5.21000	5.25000
Span	20.000 MHz	20.000 MHz	20.000 MHz
RBW	1.000 MHz	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz	3.000 MHz
SweepPoints	101	101	101
Sweeptime	2.020 s	2.020 s	2.020 s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	RMS	RMS	RMS
SweepCount	29703	29703	29703
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	FFT	FFT	FFT
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	4 / max. 150	4 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.09 dB	0.05 dB	0.30 dB

TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

TC#03 (ac mode)

TEST RESULTS:

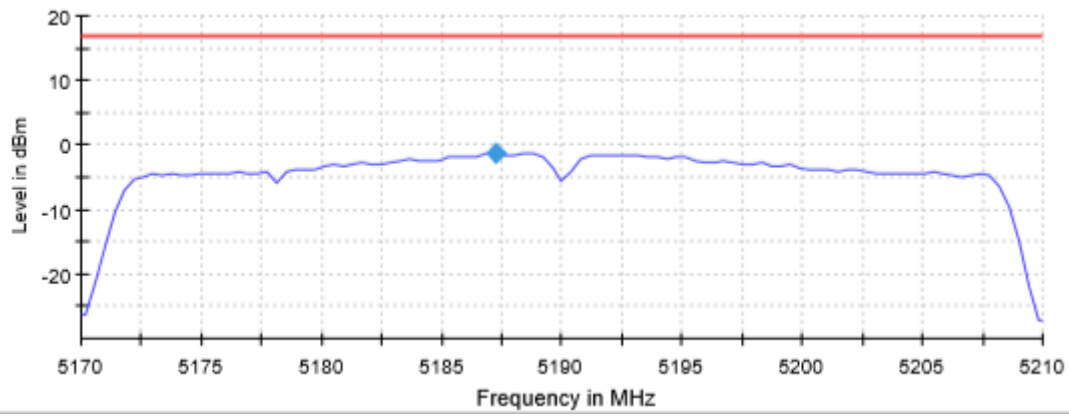
PASS

Bandwidth: 40 MHz

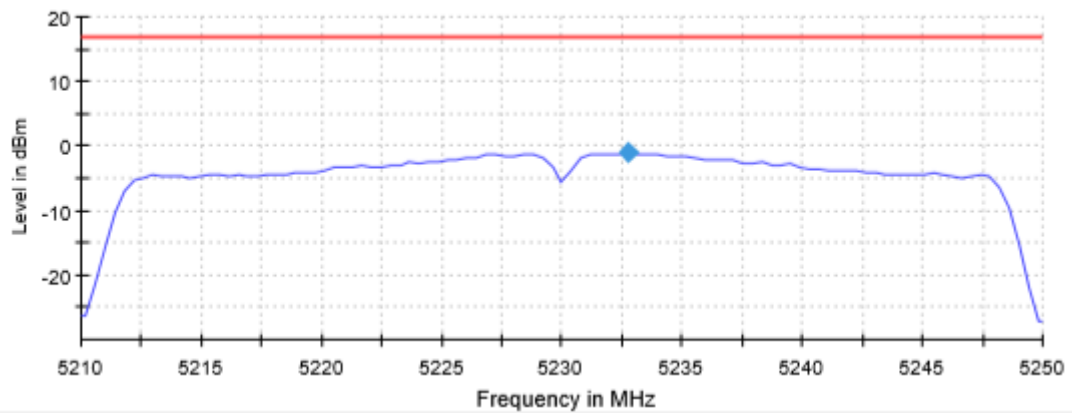
	Lowest frequency	Highest frequency
	5190 MHz	5230 MHz
Power spectral density (dBm)	-1.240	-1.132
Measurement uncertainty (dB)	<±0.78	

TEST RESULTS (Cont.):

Lowest Channel



Highest Channel



TEST RESULTS (Cont.):

Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.17000	5.19000
Stop Frequency	5.19000	5.21000
Span	40.000 MHz	40.000 MHz
RBW	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz
SweepPoints	101	101
SweepTime	2.020 s	2.020 s
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB
Detector	RMS	RMS
SweepCount	29703	29703
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	FFT
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	4 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.23 dB	0.22 dB

TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

TC#03 (ac mode)

TEST RESULTS:

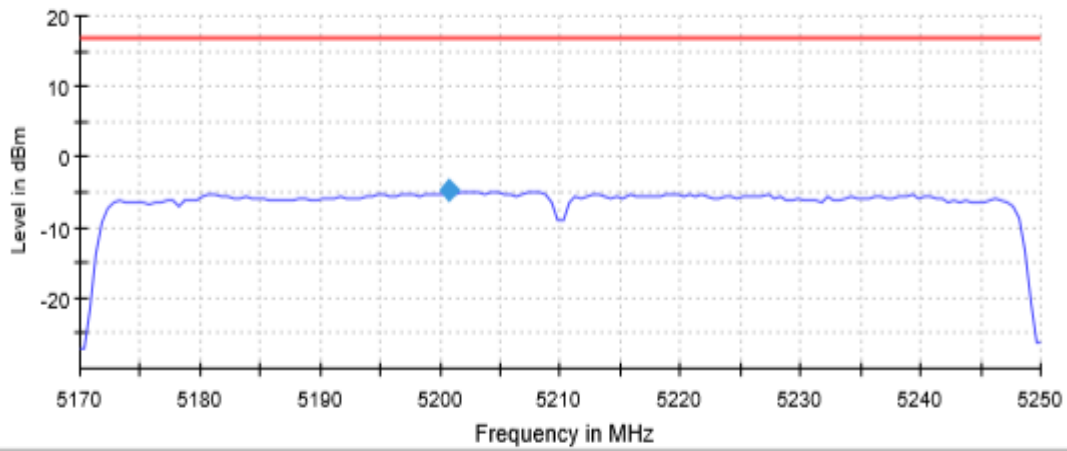
PASS

Bandwidth: 80 MHz

	Lowest frequency 5210 MHz
Power spectral density (dBm)	-4.787
Measurement uncertainty (dB)	<±0.78

TEST RESULTS (Cont.):

Lowest Channel



Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.17000	5.19000
Stop Frequency	5.25000	5.21000
Span	80.000 MHz	40.000 MHz
RBW	1.000 MHz	1.000 MHz
VBW	3.000 MHz	3.000 MHz
SweepPoints	160	101
Sweeptime	3.200 ms	2.020 s
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB
Detector	RMS	RMS
SweepCount	18751	29703
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	FFT
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	6 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.27 dB	0.22 dB

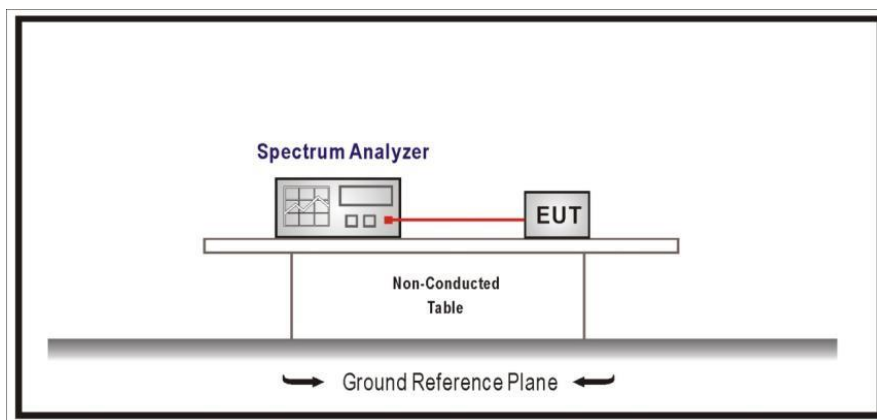
TEST B.4: BAND-EDGE RADIATED EMISSIONS COMPLIANCE (TRANSMITTER)

LIMITS:	Product standard:	Part 15 Subpart C §15.407 and RSS-247
	Test standard:	Part 15 Subpart C §15.407(b)(1) and RSS-247 6.2.1.2

LIMITS

For transmitters operating in the 5.15 – 5.25 GHz band: all emissions outside the frequency band shall not exceed an EIRP of -27 dBm /MHz

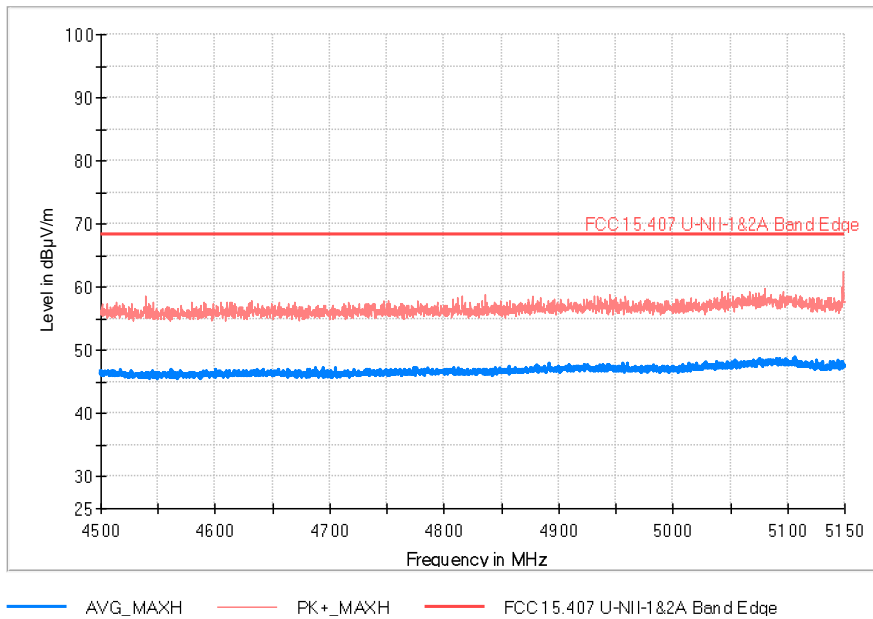
TEST SETUP



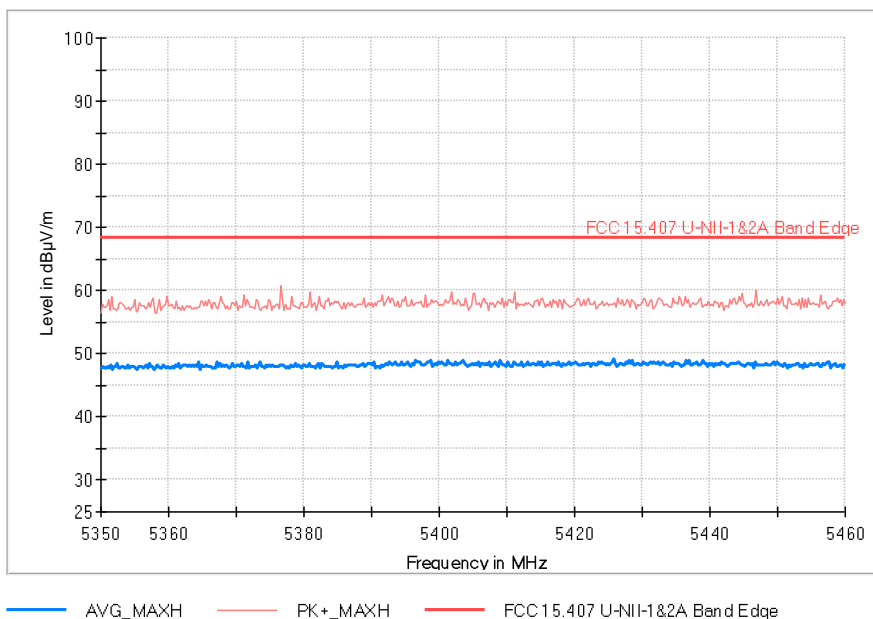
TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01 (a mode)
TEST RESULTS:	PASS

The plots below show the worst results obtained.

Lowest Channel



Highest Channel

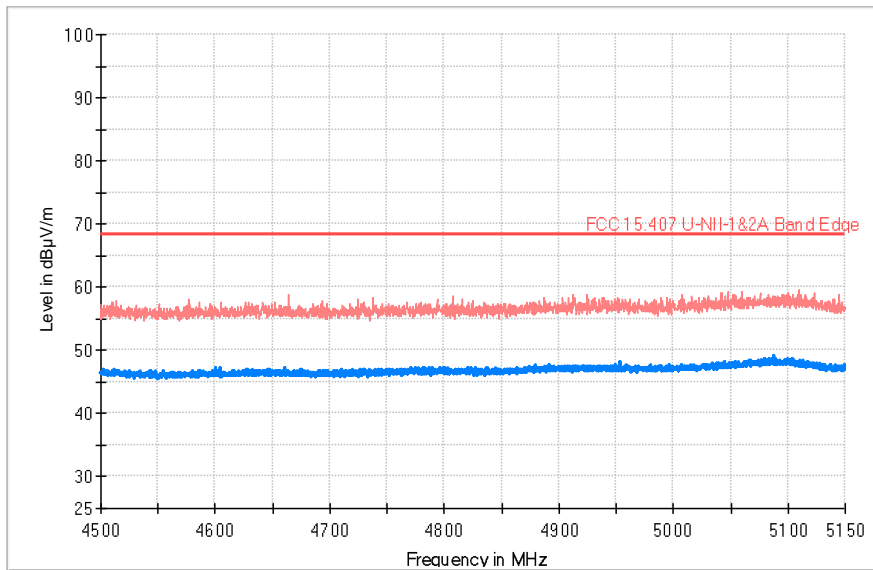


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#02 (n mode)
TEST RESULTS:	PASS

Bandwidth: 40 MHz

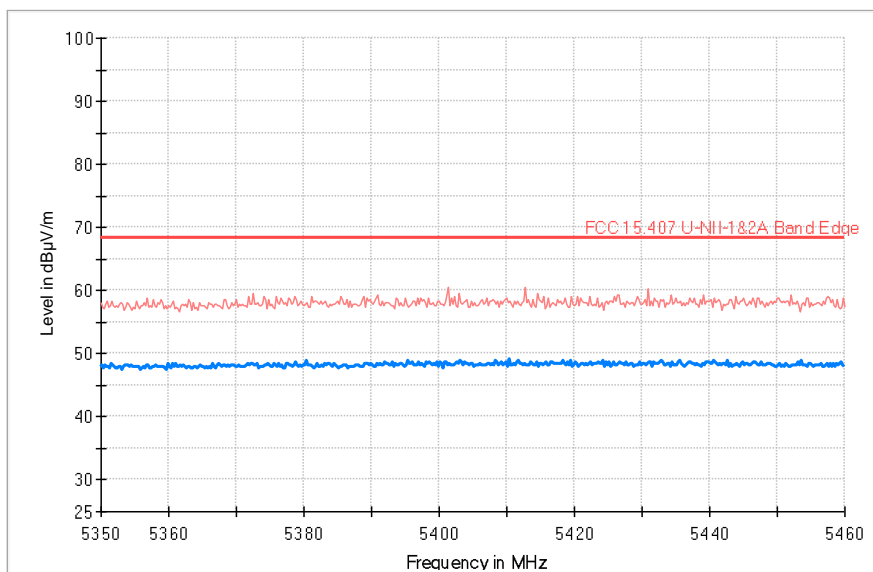
The plots below show the worst results obtained.

Lowest Channel



— AVG_MAXH — PK+_MAXH — FCC 15.407 U-NII-1&2A Band Edge

Highest Channel



— AVG_MAXH — PK+_MAXH — FCC 15.407 U-NII-1&2A Band Edge

TEST B.5: UNDESIRABLE RADIATED EMISSIONS (TRANSMITTER)

LIMITS:	Product standard:	Part 15 Subpart C §15.407 and RSS-247
	Test standard:	Part 15 Subpart C §15.407(b) (1)(6)(7) and RSS-247 6.2.1.2

LIMITS

For transmitters operating in the 5.15 – 5.25 GHz band: all emissions outside of the 5.15 – 5.25 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.23 dBμ V/m at 3m distance).

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) / 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
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 3 m for the frequency range 30-1000 MHz (Bilog antenna) and at 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.

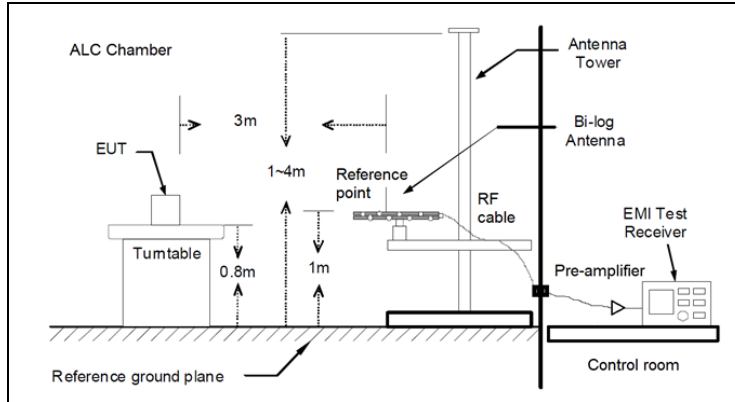
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

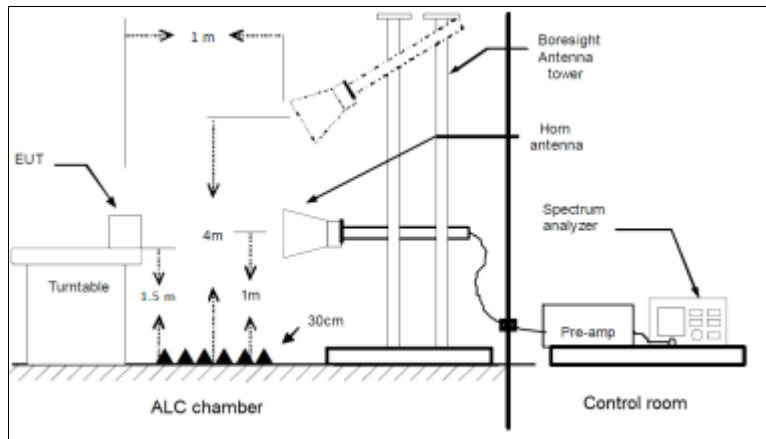
The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

TEST SETUP (CONT.)

Radiated measurements Setup $f < 1$ GHz



Radiated measurements setup $f > 1$ GHz



TESTED SAMPLES:	S/02
TESTED CONDITIONS MODES:	TC#01 (a mode)
TEST RESULTS:	PASS

Co-Location

The test was performed with the equipment transmitting first with only the WiFi 5 GHz (WLAN0 CORE0) radio and repeated with the 2.4 GHz BTEDR (WLAN 0), WiFi 2.4GHz (WLAN0 CORE1) radios transmitting simultaneously to check the impact of the co-location of the other radio interfaces. The results and plots below show the worst results obtained.

Frequency range 30 MHz – 1000 MHz

The spurious emissions below 1 GHz do not depend on the operating channel selected in the EUT. See worst operation mode selected for all channels as a worst case.

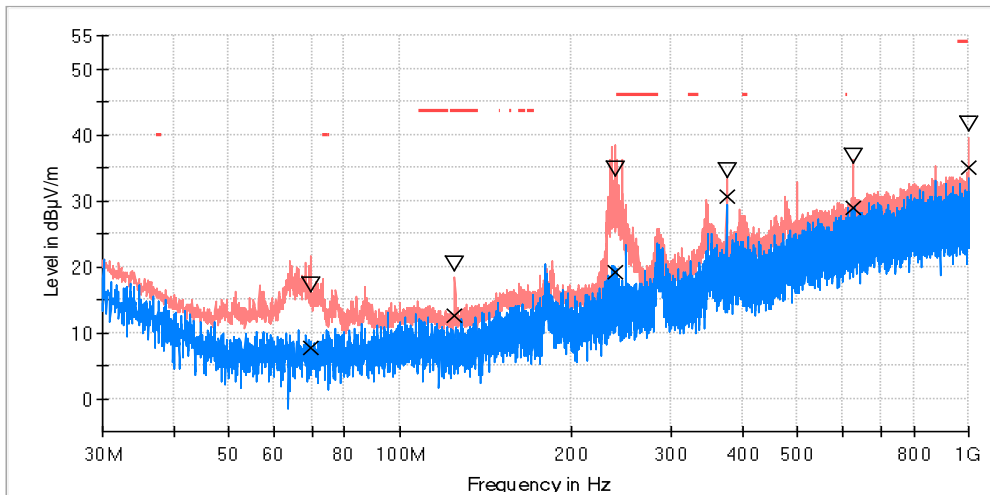
Frequency range 1 GHz – 40 GHz

The results and plots below show the maximum measured levels in the 1- 40 GHz range and the restricted band 4.5 –5.46 GHz.

TEST RESULTS (Cont.)	
FREQUENCY RANGE	30MHz – 1 GHz

Middle Channel

RF_FCC_15.407_E Field_30MHz_1GHz



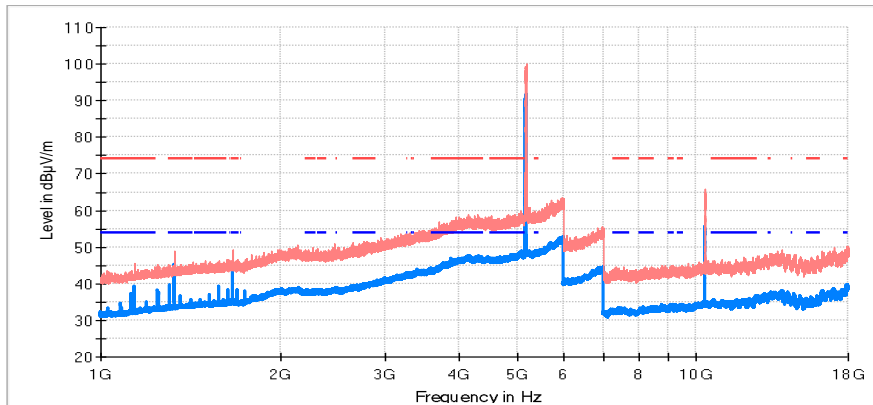
- PK+_MAXH
- PK+_CLRWR
- - - TX limits to Spurious Emission FCC15.407 (30MHz to 1GHz) Restricted Bands QPK Limit
- ▽ MaxPeak-PK+ (Single)
- × QuasiPeak-QPK (Single)

Maximizations

Frequency (MHz)	PK+_CLRWR (dBµV/m)	PK+_MAXH (dBµV/m)	Pol	Azimuth (deg)
69.527500	8.6	21.6	V	-158.0
124.963000	7.9	18.4	V	9.0
238.744000	16.5	38.4	V	76.0
374.980500	28.8	33.4	H	180.0
624.998000	26.4	36.3	V	54.0
1000.000000	33.5	39.6	V	-108.0

TEST RESULTS (Cont.)	
FREQUENCY RANGE	1 GHz – 18 GHz

Lowest Channel

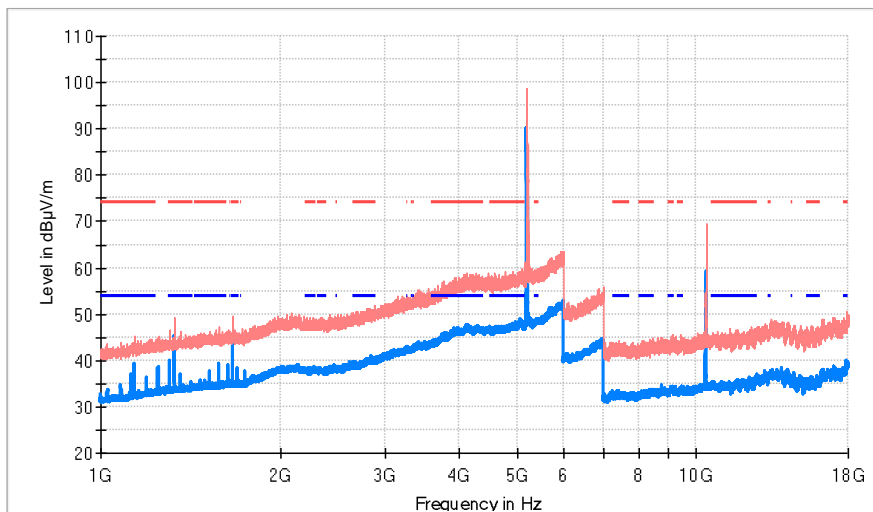


- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

Maximizations

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1138.863636	45.5	39.2	H	154.0	
1333.181818	49.0	45.3	H	-180.0	
1666.590909	49.1	45.5	V	146.0	
5178.863636	99.6	91.6	H	138.0	Fundamental
10354.909091	64.7	55.4	H	106.0	

Middle Channel



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

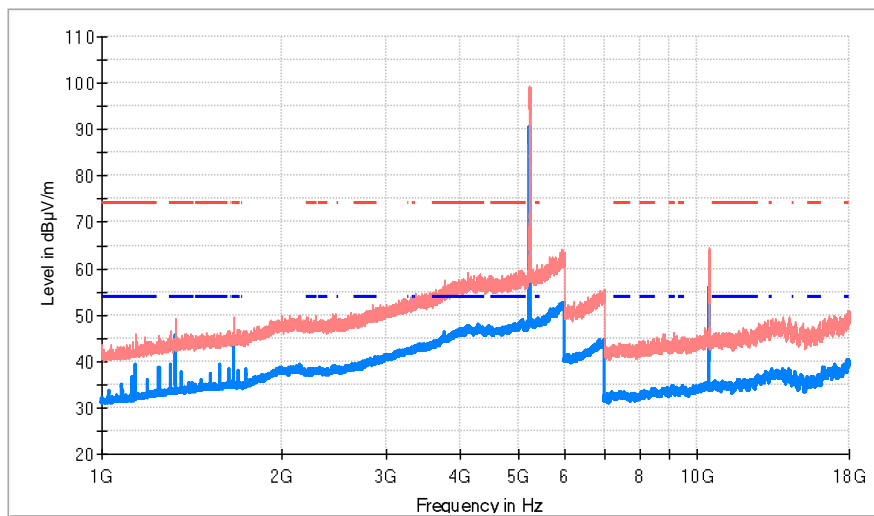
TEST RESULTS (Cont.)

FREQUENCY RANGE 1 – 18 GHz

Maximizations

Frequency (MHz)	PK+ _MAXH (dBµV/m)	AVG _MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
5198.863636	97.4	90.0	V	149.0	Fundamental
10401.272727	66.6	59.1	H	97.0	

Highest Channel



- AVG _MAXH
- PK+ _MAXH
- TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

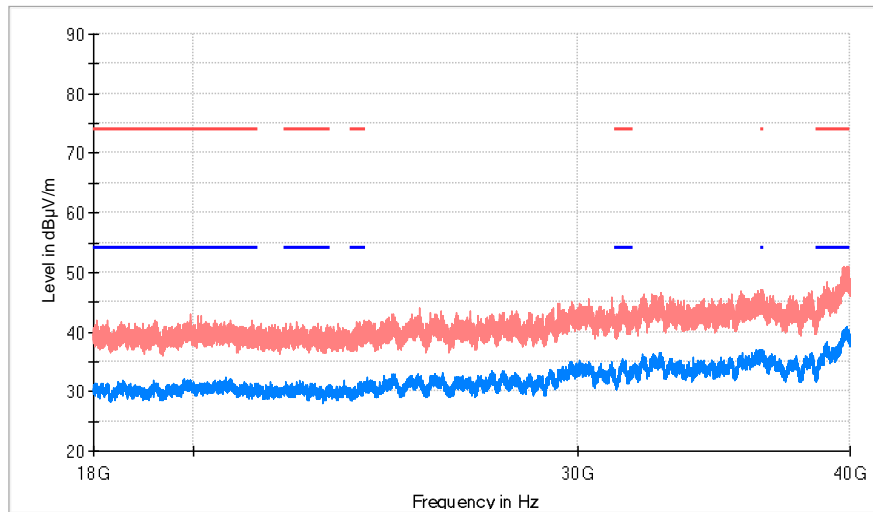
Maximizations

Frequency (MHz)	PK+ _MAXH (dBµV/m)	AVG _MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1138.863636	45.2	39.2	H	137.0	
1333.181818	48.7	45.5	H	137.0	
1666.590909	49.4	45.2	H	-146.0	
5238.863636	97.9	90.5	H	137.0	Fundamental
10482.000000	62.3	56.0	H	99.0	

TEST RESULTS (Cont.)

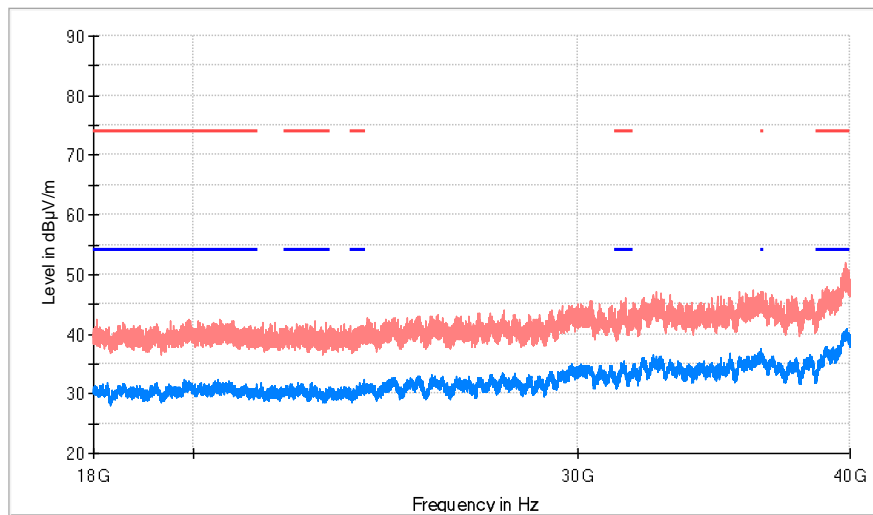
FREQUENCY RANGE 18 – 40 GHz

Lowest Channel



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

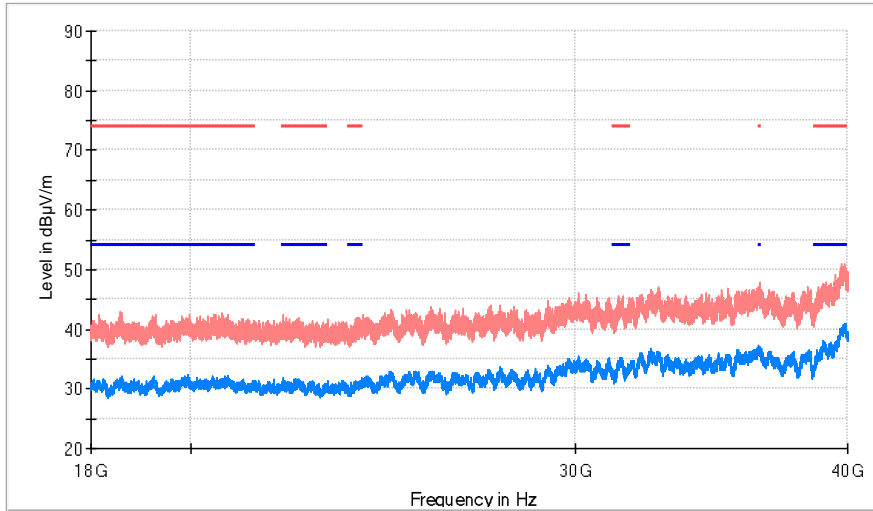
Middle Channel



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

TEST RESULTS (Cont.)	FREQUENCY RANGE 18 – 40 GHz
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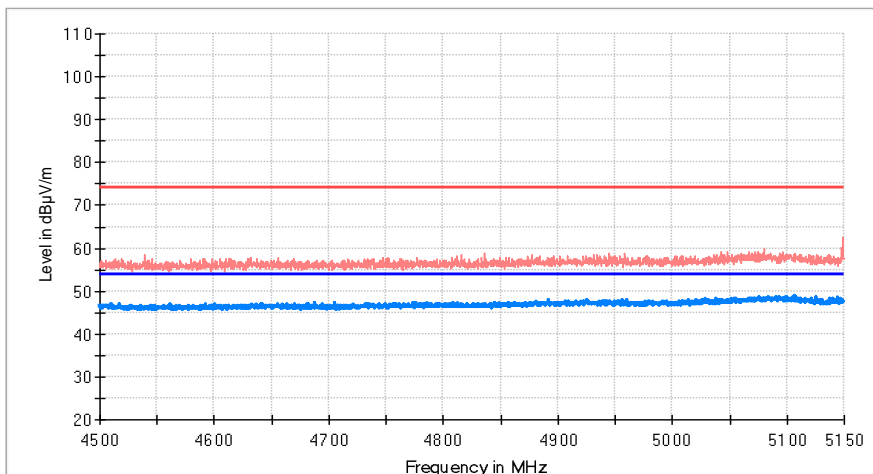
Highest Channel



- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

RESTRICTED BANDS	4.5 GHz – 5.15 GHz
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Low Channel

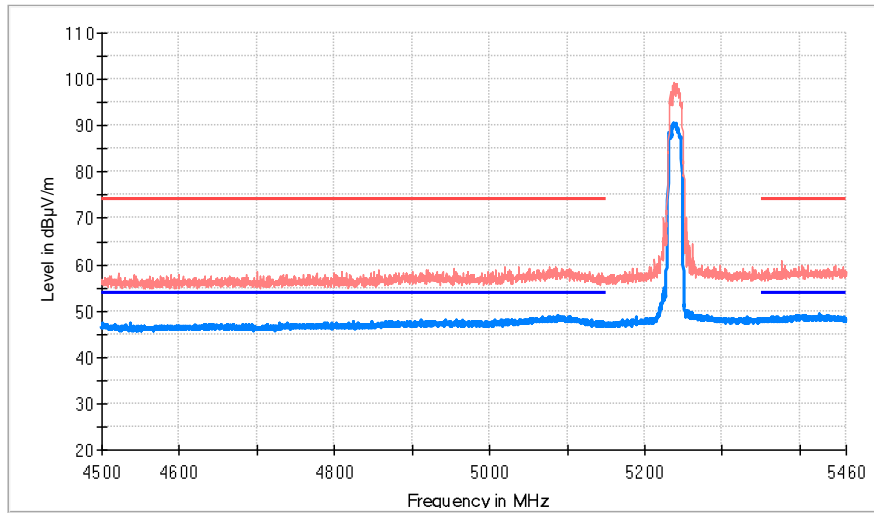


- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

RESTRICTED BANDS

4.5 GHz – 5.46 GHz

Highest Channel



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

TESTED SAMPLES:	S/02
TESTED CONDITIONS MODES:	TC#02 (n mode 40 MHz)
TEST RESULTS:	PASS

Co-Location

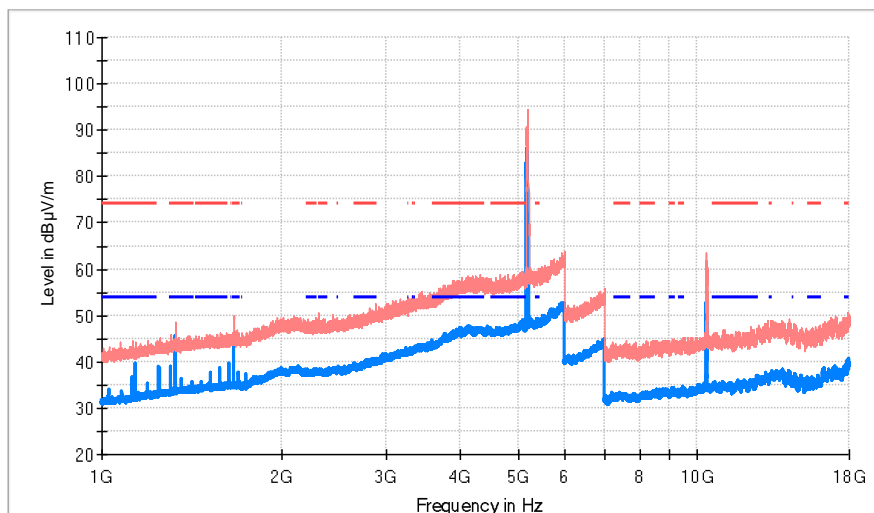
The test was performed with the equipment transmitting first with only the WiFi 5 GHz (WLAN0 CORE0) radio and repeated with the 2.4 GHz BTEDR (WLAN 0), WiFi 2.4GHz (WLAN0 CORE1) radios transmitting simultaneously to check the impact of the co-location of the other radio interfaces. The results and plots below show the worst results obtained.

Frequency range 1 GHz – 40 GHz

The results and plots below show the maximum measured levels in the 1- 40 GHz range and the restricted band 4.5 – 5.46 GHz.

TEST RESULTS (Cont.)	
FREQUENCY RANGE	1 GHz – 18 GHz

Lowest Channel



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC1 5.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

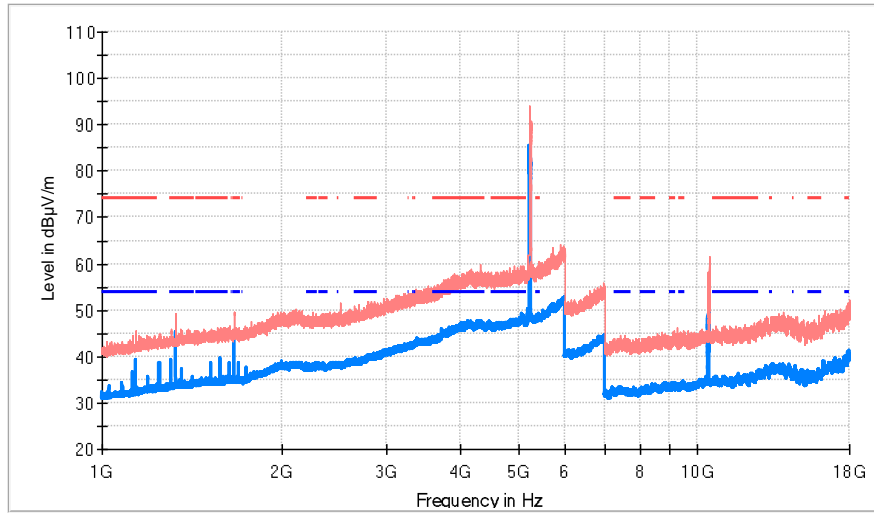
Maximizations

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1138.863636	44.2	39.5	H	142.0	
1333.181818	48.7	45.5	H	-180.0	
1666.590909	49.1	45.6	H	-162.0	
5188.181818	91.3	86.1	H	142.0	Fundamental
10375.636364	60.3	52.6	H	97.0	

TEST RESULTS (Cont.)

1 GHz – 18 GHz

Highest Channel



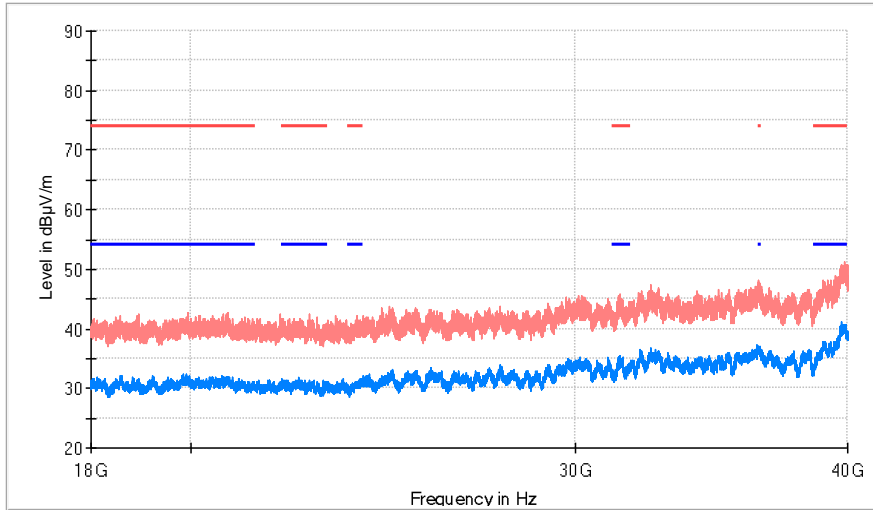
- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

Maximizations

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1138.863636	45.4	39.4	H	133.0	
1333.181818	49.2	45.4	V	-180.0	
1667.727273	45.2	35.4	V	158.0	
5232.045455	94.0	84.6	V	80.0	Fundamental
10461.818182	61.4	51.1	H	144.0	

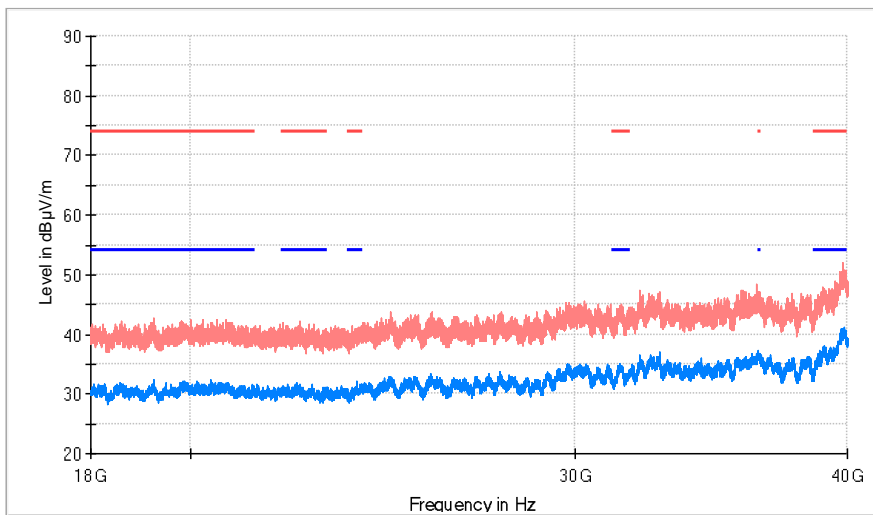
TEST RESULTS (Cont.)	
FREQUENCY RANGE	18 GHz – 40 GHz

Lowest Channel



- AVG_ MAXH
- PK+_ MAXH
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

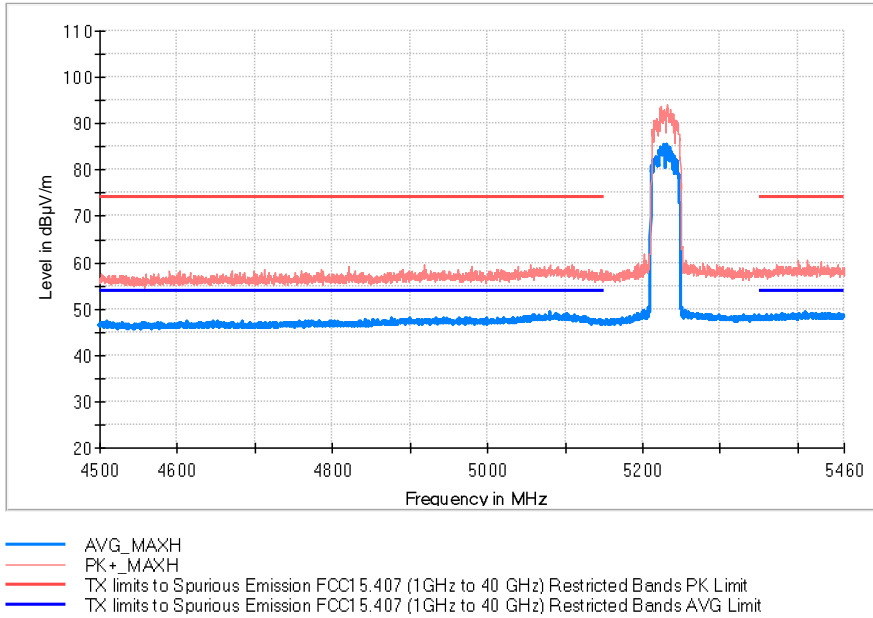
Highest Channel



- AVG_ MAXH
- PK+_ MAXH
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

RESTRICTED BANDS	4.5 GHz – 5.46 GHz
-------------------------	--------------------

Highest Channel



TESTED SAMPLES:	S/02
TESTED CONDITIONS MODES:	TC#03 (ac mode 80 MHz)
TEST RESULTS:	PASS

Co-Location

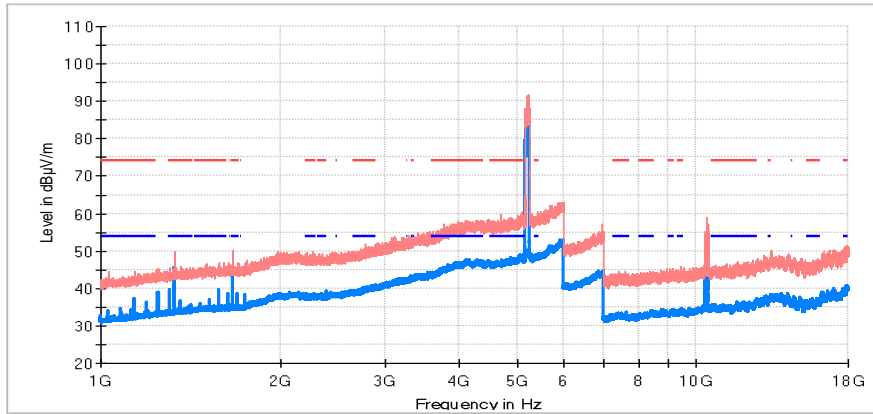
The test was performed with the equipment transmitting first with only the WiFi 5 GHz (WLAN0 CORE0) radio and repeated with the 2.4 GHz BTEDR (WLAN 0), WiFi 2.4GHz (WLAN0 CORE1) radios transmitting simultaneously to check the impact of the co-location of the other radio interfaces. The results and plots below show the worst results obtained.

Frequency range 1 GHz – 40 GHz

The results and plots below show the maximum measured levels in the 1- 40 GHz range.

FREQUENCY RANGE **1 GHz – 18 GHz**

Middle Channel



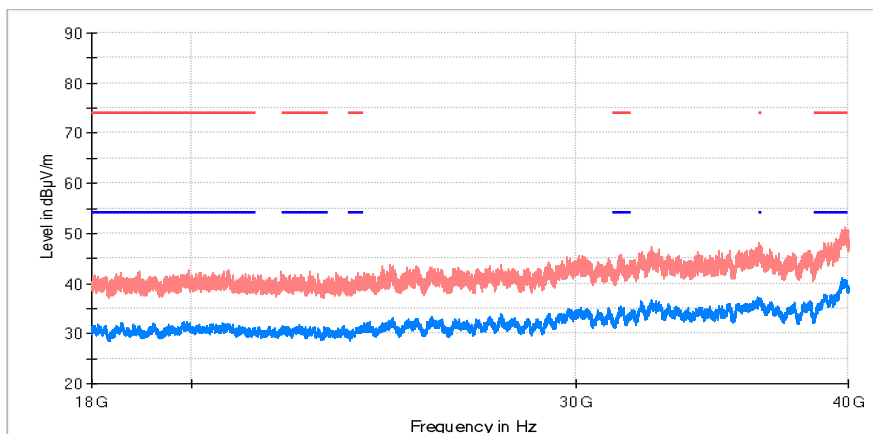
- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

Maximizations

Frequency (MHz)	PK+ MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1138.636364	44.3	37.3	H	180.0	
1333.181818	49.9	45.6	H	-180.0	
1666.590909	49.5	44.8	V	112.0	
5220.227273	91.8	81.7	V	83.0	Fundamental
10416.545455	57.1	50.1	H	109.0	

FREQUENCY RANGE **18 GHz – 40 GHz**

Middle Channel

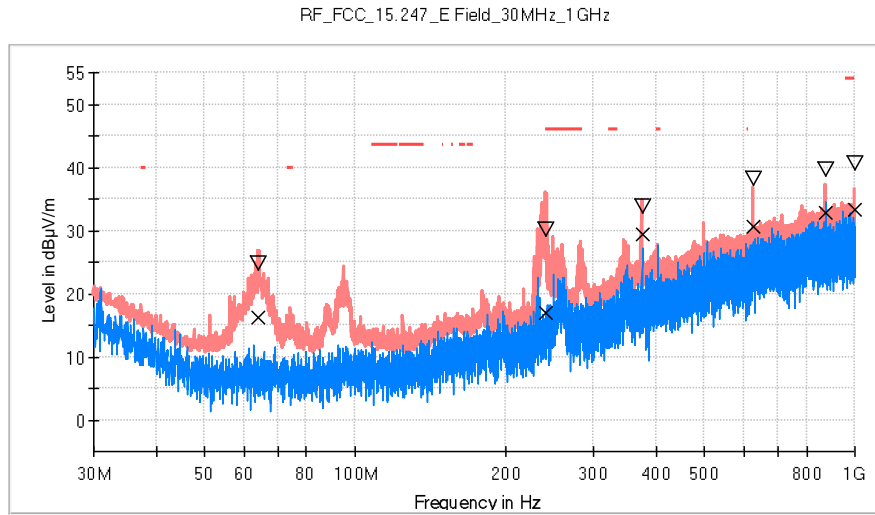


- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

TEST RESULTS (Cont.):	
FREQUENCY RANGE	30 MHz – 1 GHz (Co-Location)

TEST MODE: SISO

Middle Channel



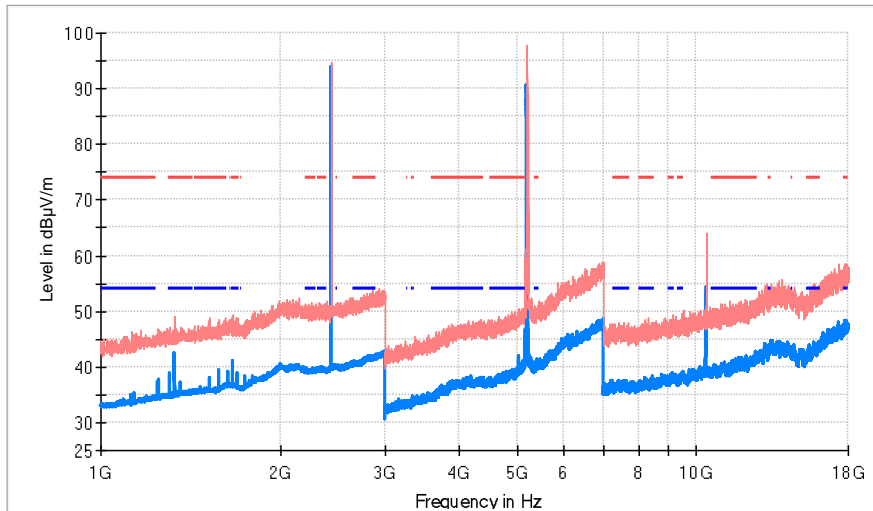
- PK+_MAXH
- PK+_CLRWR
- TX limits to Spurious Emission FCC15.247 (30MHz to 1GHz) Restricted Bands QPK Limit
- ▽ MaxPeak-PK+ (Single)
- × QuasiPeak-QPK (Single)

Maximizations

Frequency (MHz)	PK+_CLRWR (dBµV/m)	PK+_MAXH (dBµV/m)	Pol	Azimuth (deg)
64.095500	5.9	26.7	V	150.0
241.411500	15.0	36.1	V	180.0
374.980500	27.0	34.7	H	-48.0
625.046500	27.4	36.8	V	180.0
875.064000	34.3	37.2	H	180.0
1000.000000	29.3	36.7	V	5.0

TEST RESULTS(Cont.):	
FREQUENCY RANGE	1 GHz – 18 GHz (Co-Location)

Middle Channel



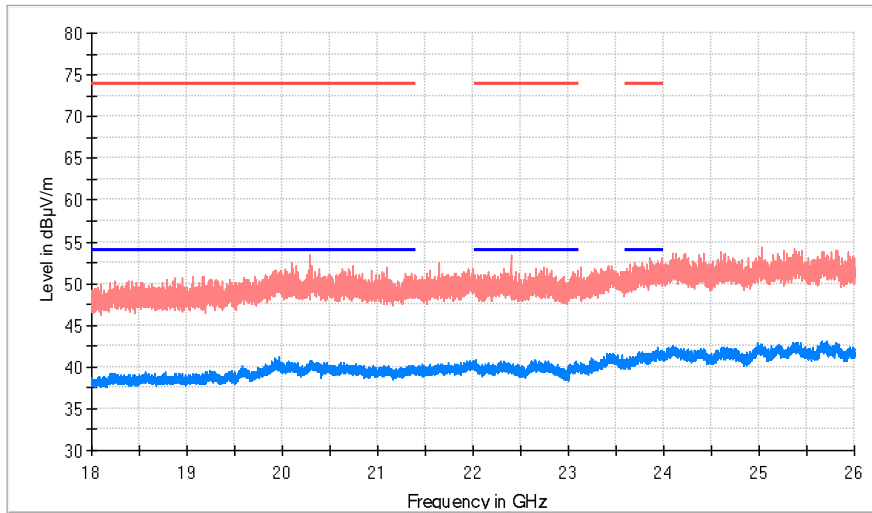
- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands AVG Limit

Maximizations

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1333.000000	49.2	42.4	V	-180.0	
1666.500000	49.3	41.1	V	-180.0	
2440.000000	94.7	94.0	V	-180.0	Bt & WiFi
5200.500000	97.5	90.6	V	173.0	WiFi Fundamental
10399.000000	60.9	54.3	V	173.0	

TEST RESULTS(Cont.):	
FREQUENCY RANGE	18 GHz – 26 GHz (Co-Location)

Middle Channel

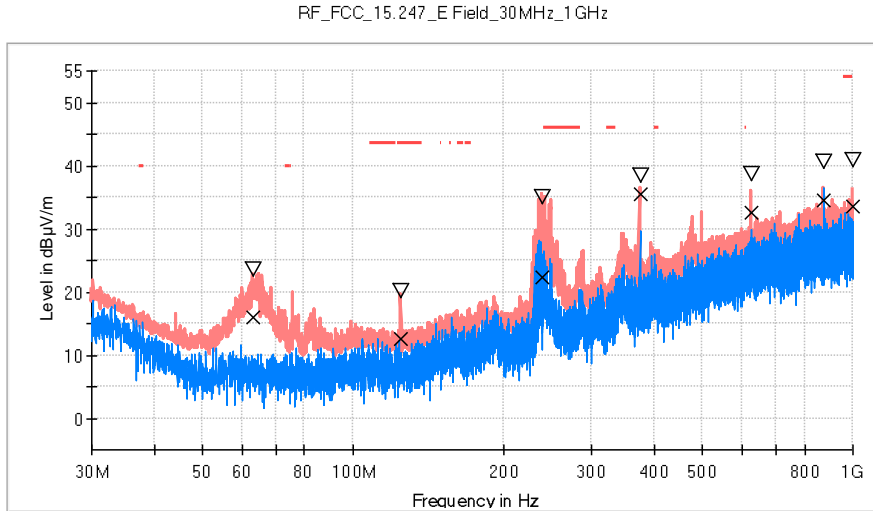


- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands AVG Limit

TEST RESULTS(Cont.):	
FREQUENCY RANGE	30 MHz – 1 GHz (Co-Location)

TEST MODE: MIMO

Middle Channel



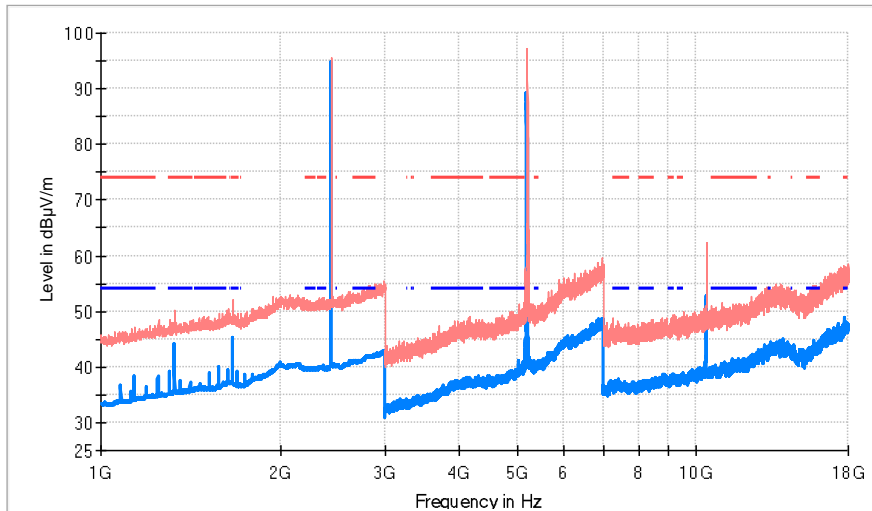
- PK+ MAXH
- PK+ CLRWR
- TX limits to Spurious Emission FCC15.247 (30MHz to 1GHz) Restricted Bands QPK Limit
- ▽ MaxPeak-PK+ (Single)
- x QuasiPeak-QPK (Single)

Maximizations

Frequency (MHz)	PK+_CLRWR (dBµV/m)	PK+_MAXH (dBµV/m)	Pol	Azimuth (deg)
62.931500	9.4	22.9	V	69.0
124.963000	10.4	19.5	V	-61.0
239.180500	23.7	35.4	H	162.0
374.980500	29.6	36.4	H	-180.0
625.046500	27.9	35.9	V	-108.0
875.015500	36.5	36.5	H	180.0
1000.000000	29.2	36.4	V	2.0

TEST RESULTS(Cont.):	
FREQUENCY RANGE	1 GHz – 18 GHz (Co-Location)

Middle Channel



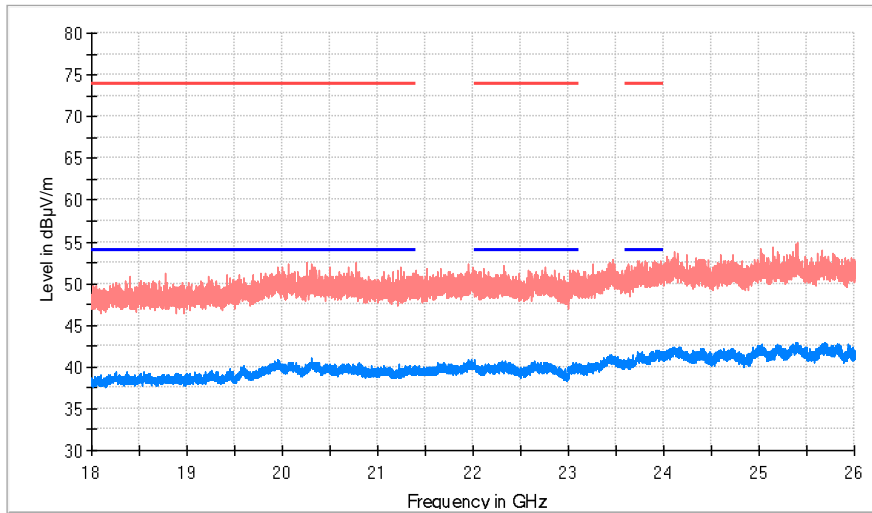
- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.247 (1GHz to 26 GHz) Restricted Bands AVG Limit

Maximizations

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1333.000000	50.2	44.1	H	-157.0	
1666.500000	51.5	45.3	H	122.0	
2440.000000	95.4	94.8	V	180.0	BT & WiFi
5200.500000	95.2	89.1	V	180.0	WiFi Fundamental
10397.000000	61.3	52.7	H	158.0	

TEST RESULTS(Cont.):	
FREQUENCY RANGE	18 GHz – 26 GHz (Co-Location)

Middle Channel



- 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

Appendix C: Test results

5.725 GHz – 5.850 GHz Band

Appendix C Content

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DESCRIPTION OF TEST CONDITIONS

TEST CONDITIONS	DESCRIPTION
TC#01 ⁽¹⁾ (a mode)	<u>Power supply (V):</u> $V_{\text{nominal}} = 13.5 \text{ Vdc}$ <u>Test Frequencies for Conducted/Radiated tests: (20 MHz)</u> Lowest range: 5745 MHz Middle channel: 5785 MHz Highest range: 5825 MHz
TC#02 ⁽¹⁾ (n mode)	<u>Power supply (V):</u> $V_{\text{nominal}} = 13.5 \text{ Vdc}$ <u>Test Frequencies for Conducted/Radiated tests: (20 MHz)</u> Lowest channel: 5745 MHz Middle channel: 5785 MHz Highest channel: 5825 MHz <u>Test Frequencies for Conducted/Radiated tests: (40 MHz)</u> Lowest channel: 5755 MHz Highest channel: 5795 MHz
TC#03 ⁽¹⁾ (ac mode)	<u>Power supply (V):</u> $V_{\text{nominal}} = 13.5 \text{ Vdc}$ <u>Test Frequencies for Conducted/Radiated tests: (20 MHz)</u> Lowest channel: 5745 MHz Middle channel: 5785 MHz Highest channel: 5825 MHz <u>Test Frequencies for Conducted/Radiated tests: (40 MHz)</u> Lowest channel: 5755 MHz Highest channel: 5795 MHz <u>Test Frequencies for Conducted/Radiated tests: (80 MHz)</u> Lowest channel: 5775

Note (1): For spurious emissions for OFDM modes 802.11a and 802.11n20 a preliminary scan was performed to determine the worst case.

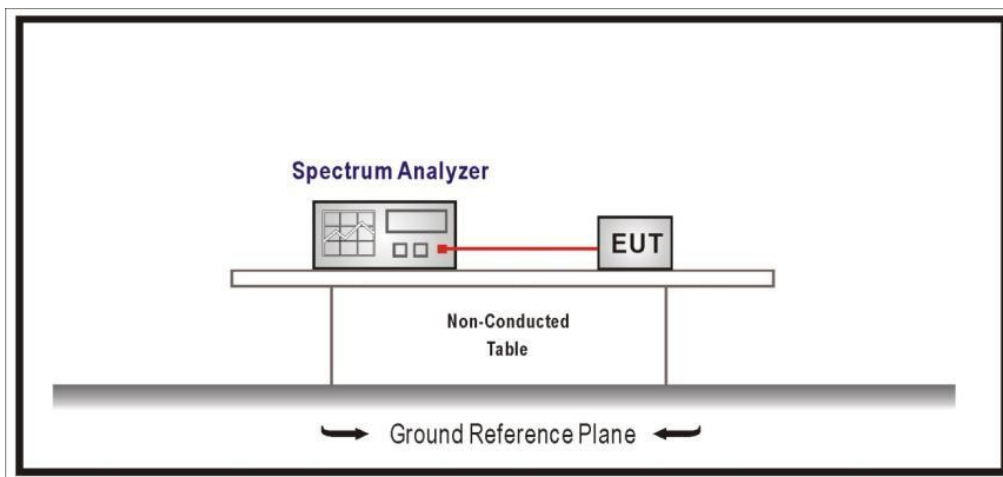
The data rates of 6Mb/s for 802.11a, HT0 (SISO) for 802.11n20 were selected based on preliminary testing that identified those rates corresponding to the worst cases.

TEST C.1: 26DB EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH

LIMITS:	Product standard:	Part 15 Subpart C §15.403 and RSS-247
	Test standard:	Part 15 Subpart C §15.403 and RSS-247 6.2.1

No requirements requested

TEST SETUP:



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01 (a mode)
TEST RESULTS:	PASS

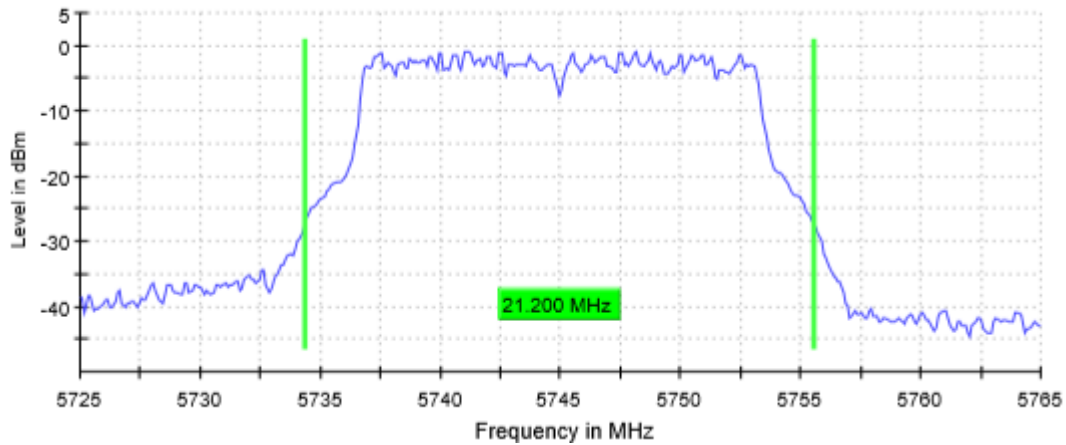
Bandwidth: 20 MHz

	Lowest frequency	Middle frequency	Highest frequency
	5745 MHz	5785 MHz	5825 MHz
26dB Bandwidth (MHz)	21.20	21.10	21.20
Occupied bandwidth (MHz)	16.50	16.50	16.50
Measurement uncertainty (kHz)	<± 8.33		

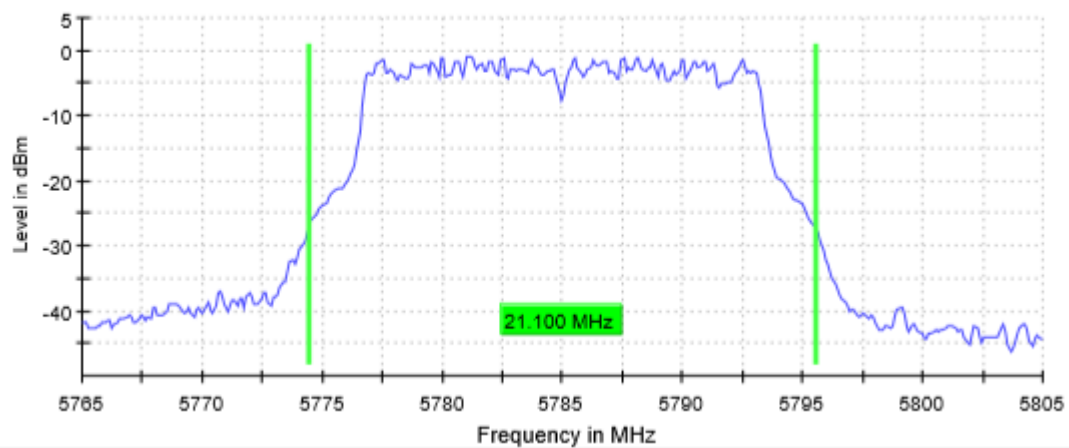
TEST RESULTS (Cont.):

26 dB BANDWIDTH

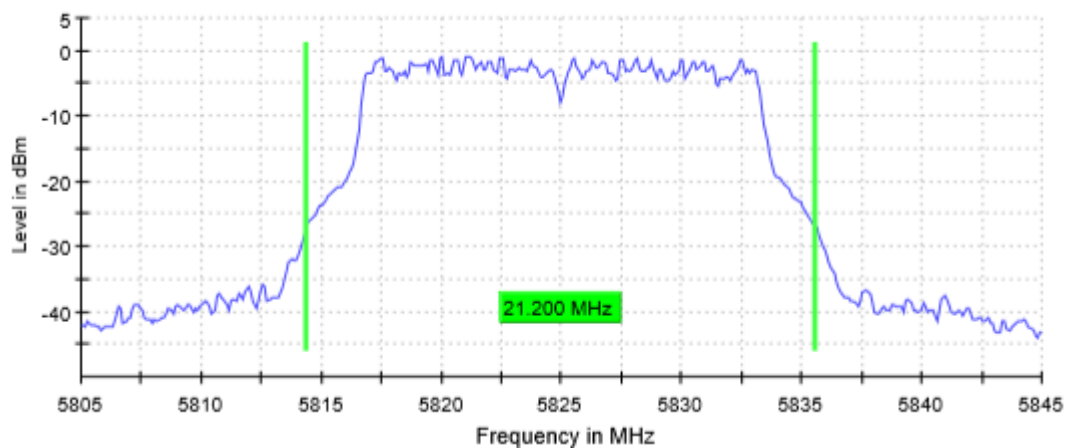
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

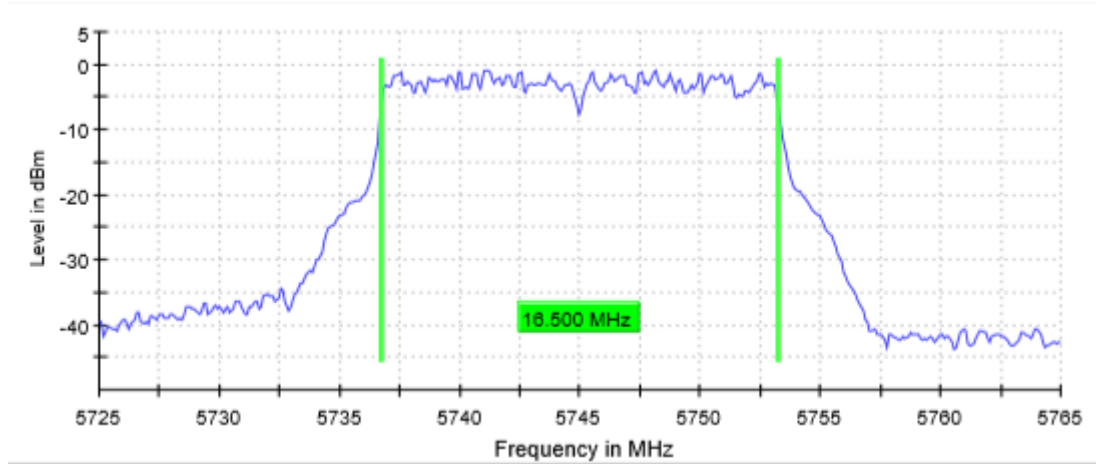
Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.72500 GHz	5.76500 GHz	5.80500 GHz
Stop Frequency	5.76500 GHz	5.80500 GHz	5.84500 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 kHz	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	28.447 μ s	28.447 μ s	28.477 μ s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	FFT	FFT	FFT
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	21 / max. 150	21 / max. 150	25 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.05 dB	0.01 dB	0.02 dB

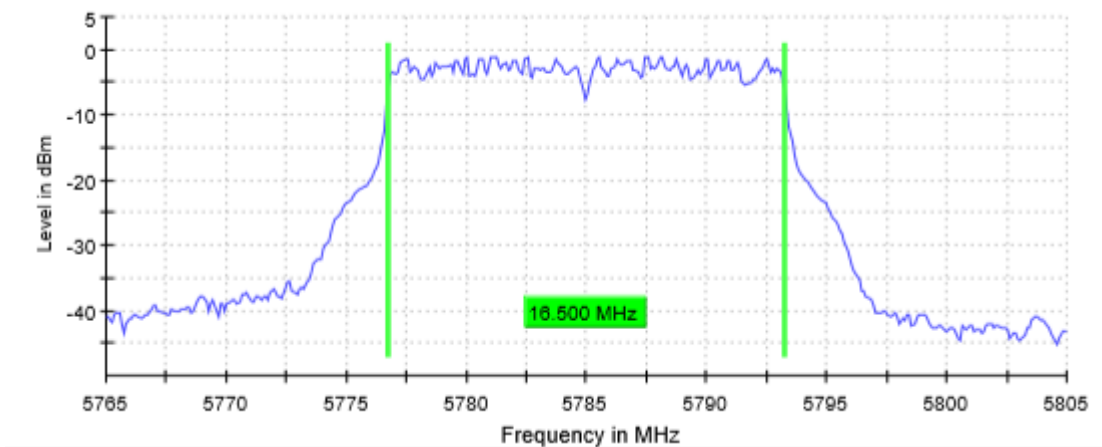
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

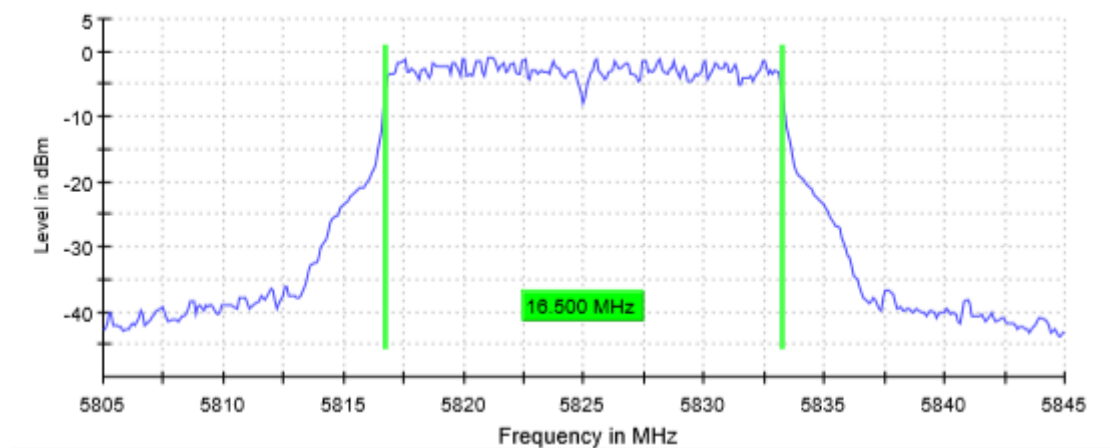
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.)

Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.72500 GHz	5.765000 GHz	5.80500 GHz
Stop Frequency	5.76500 GHz	5.80500 GHz	5.84500 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 KHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
SweepTime	28.477 μ s	28.477 μ s	28.477 μ s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	25 / max. 150	16 / max. 150	30 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.19 dB	0.07 dB	0.07 dB

TESTED SAMPLES:	S/01
TEST RESULTS (Cont.):	TC#01 (n mode)
TEST RESULTS:	PASS

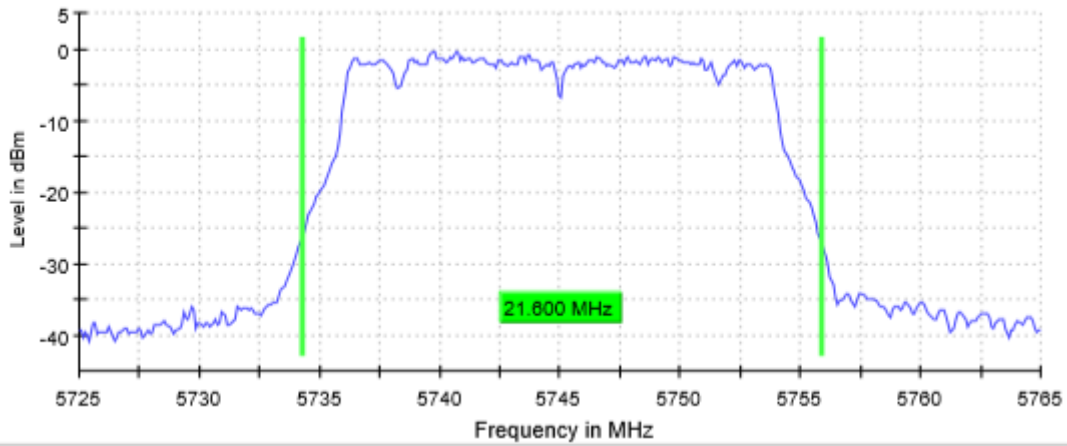
Bandwidth: 20 MHz

	Lowest frequency	Middle frequency	Highest frequency
	5745 MHz	5785 MHz	5240 MHz
26dB Bandwidth (MHz)	21.60	21.60	21.70
Occupied bandwidth (MHz)	17.90	17.90	17.90
Measurement uncertainty (kHz)	± 8.33		

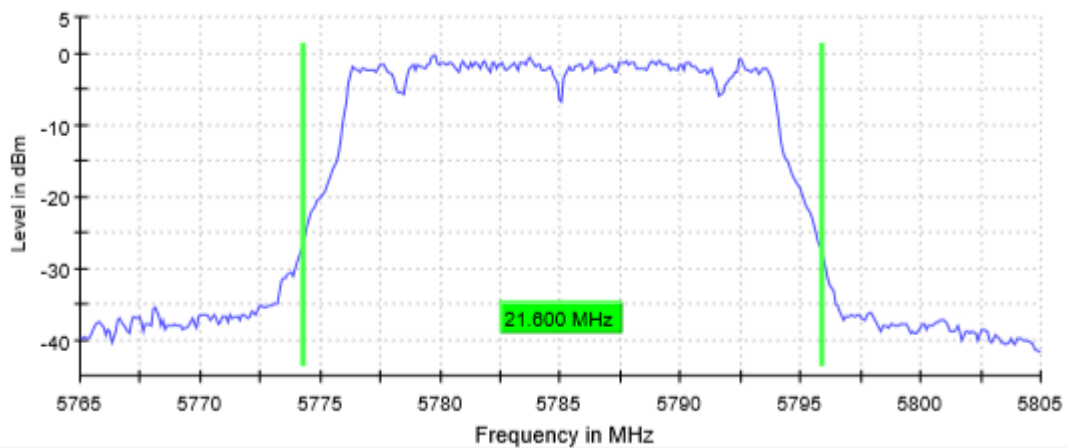
TEST RESULTS (Cont.):

26 dB BANDWIDTH

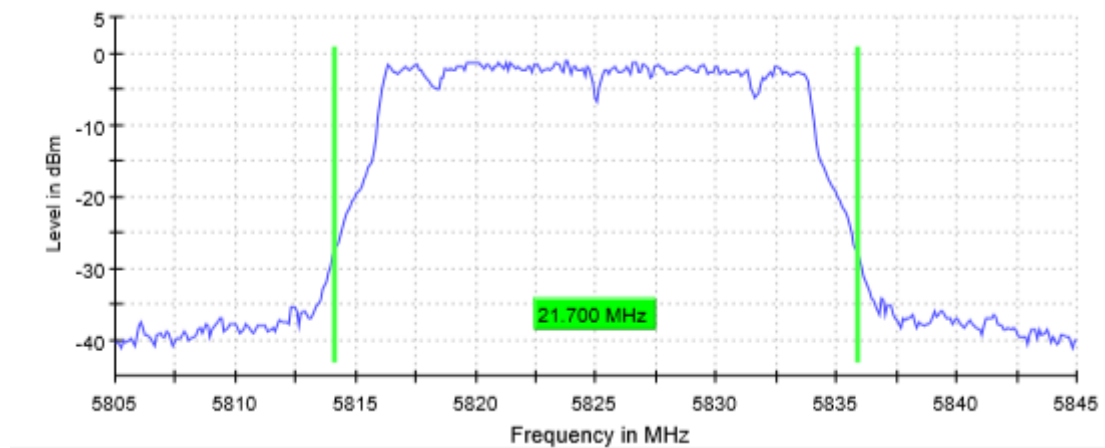
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

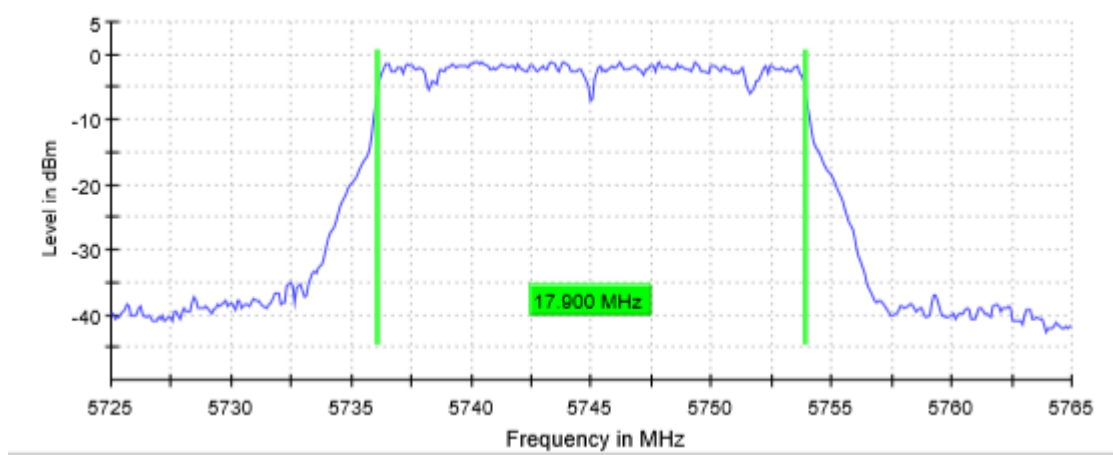
Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.72500 GHz	5.76500 GHz	5.80500 GHz
Stop Frequency	5.76500 GHz	5.80500 GHz	5.84500 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 KHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	28.447 μ s	28.447 μ s	28.477 μ s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamplifier	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	130 / max. 150	94 / max. 150	52 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.07 dB	0.23 dB

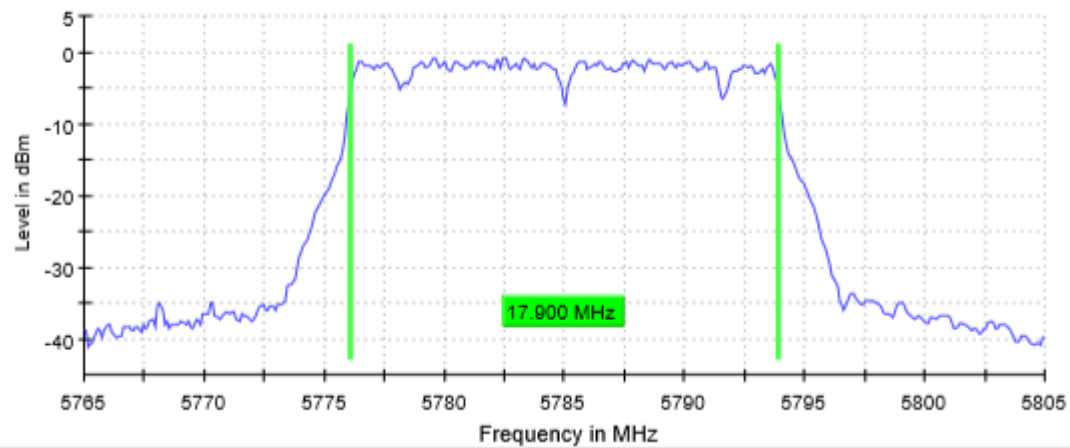
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

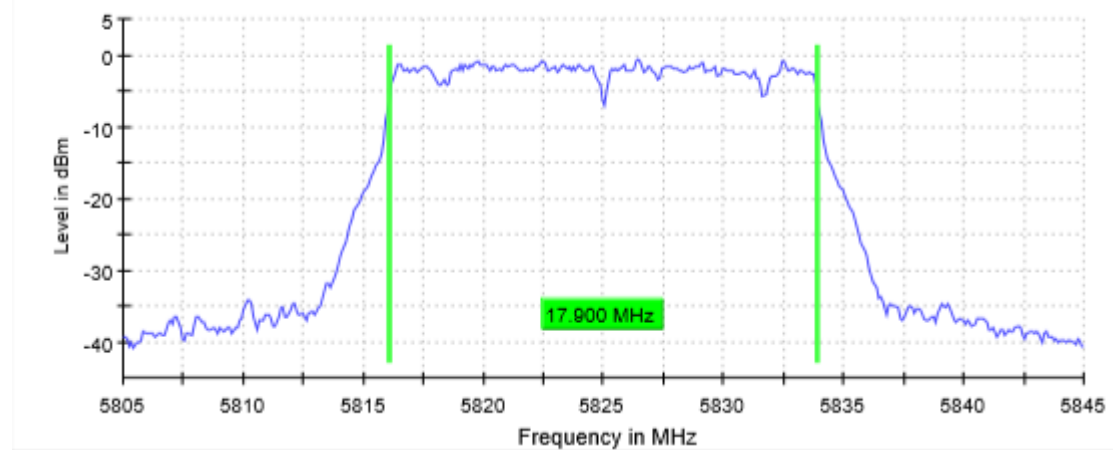
Lowest Channel



Middle Channel



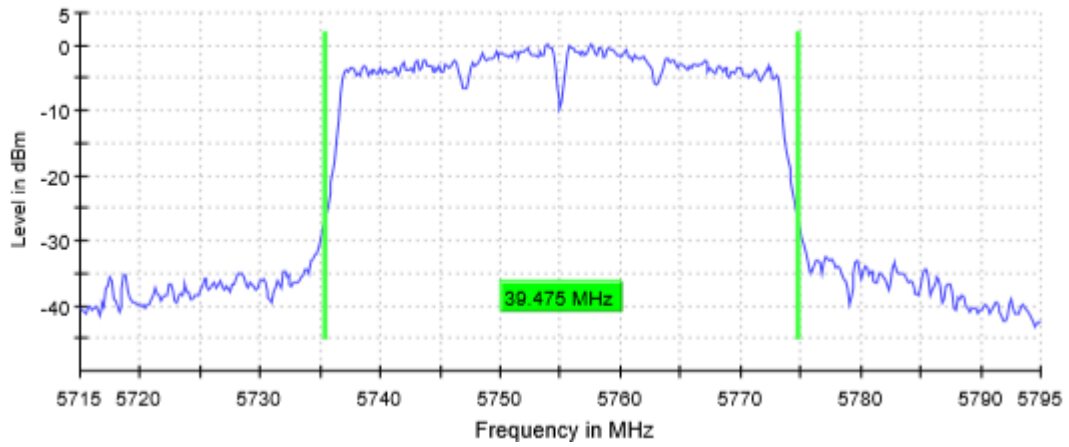
Highest Channel



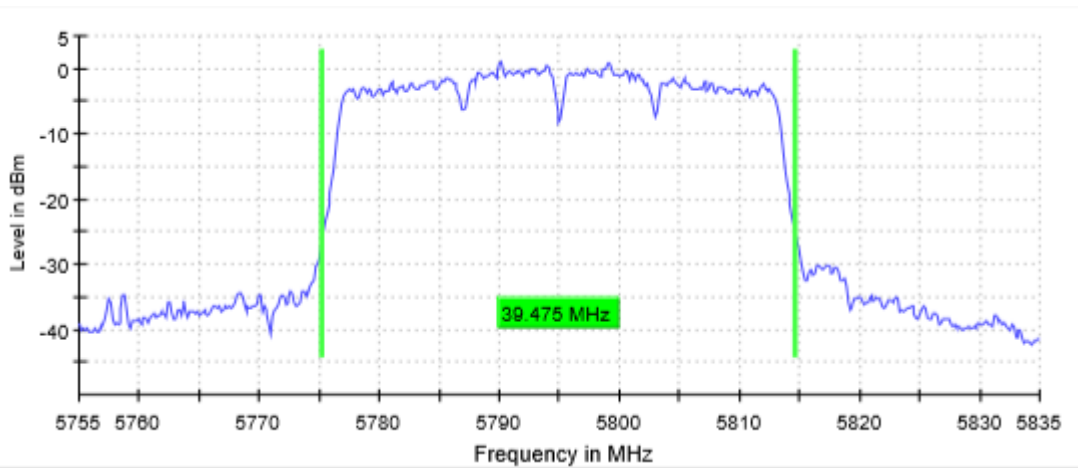
TEST RESULTS (Cont.):

26 dB BANDWIDTH

Lowest Channel



Highest Channel



TEST RESULTS (Cont.):

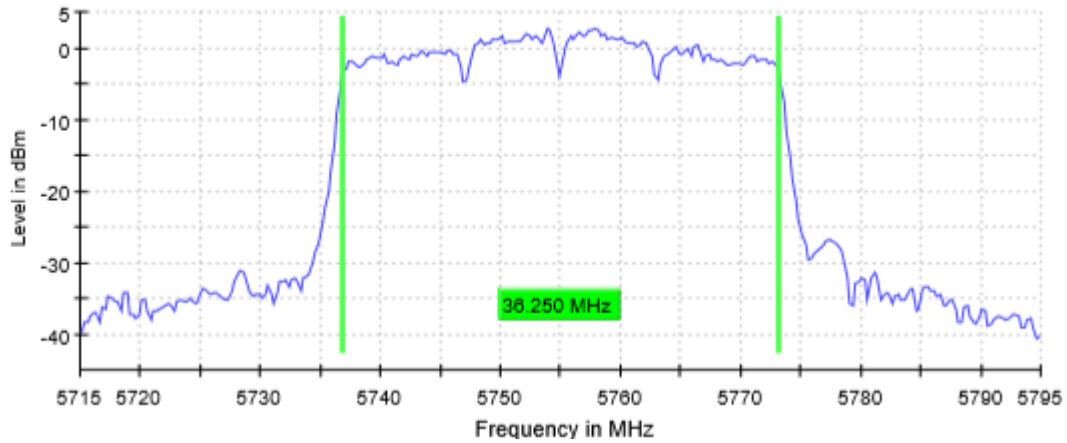
Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.71500 GHz	5.75500 GHz
Stop Frequency	5.79500 GHz	5.83500 GHz
Span	80.000 MHz	80.000 MHz
RBW	300.000 KHz	300.000 KHz
VBW	1.000 MHz	1.000 MHz
SweepPoints	533	533
Sweeptime	31.621 μ s	31.621 μ s
Reference Level	20.000 dBm	10.000 dBm
Attenuation	40.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	FFT
Preamplifier	Off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	52 / max. 150	133 / max. 150
Stable	5 / 5	5 / 5
Max Stable Difference	0.24 dB	0.0 dB

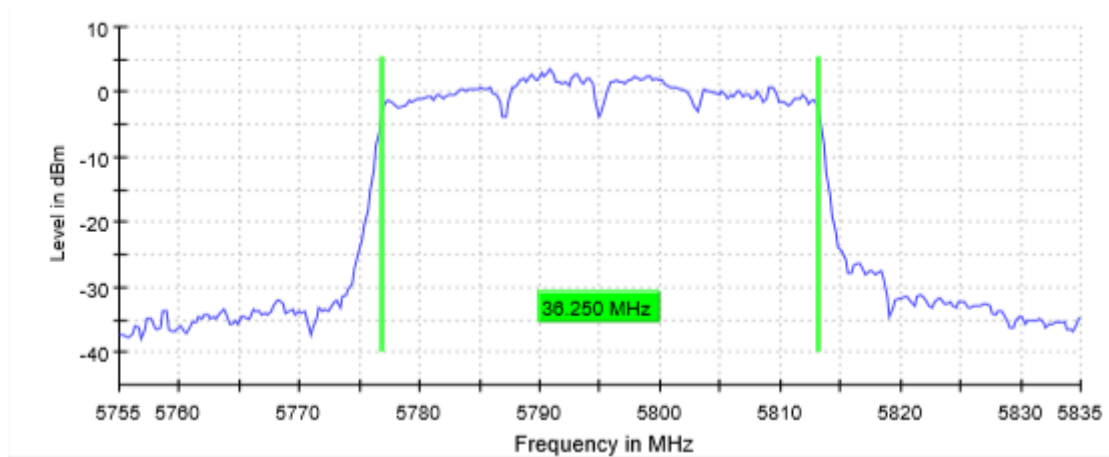
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

Lowest Channel



Highest Channel

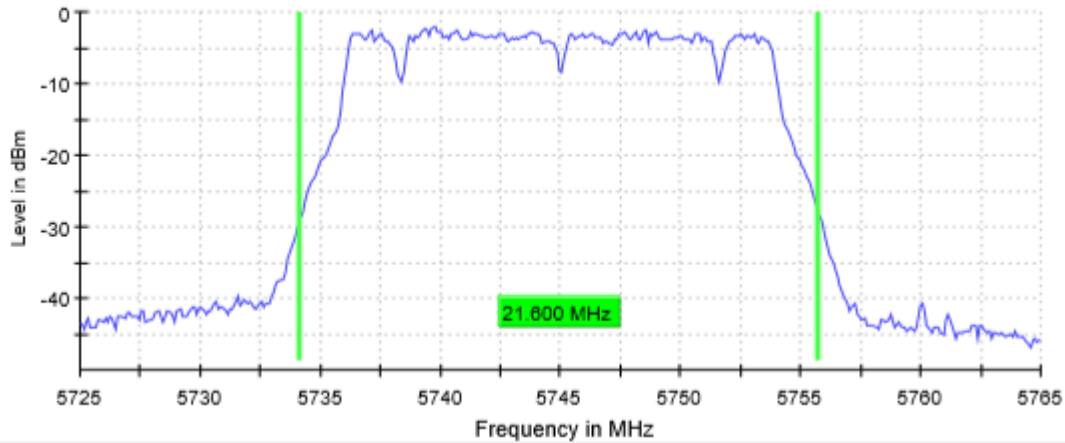


TEST RESULTS (Cont.)																																																																
Measurement																																																																
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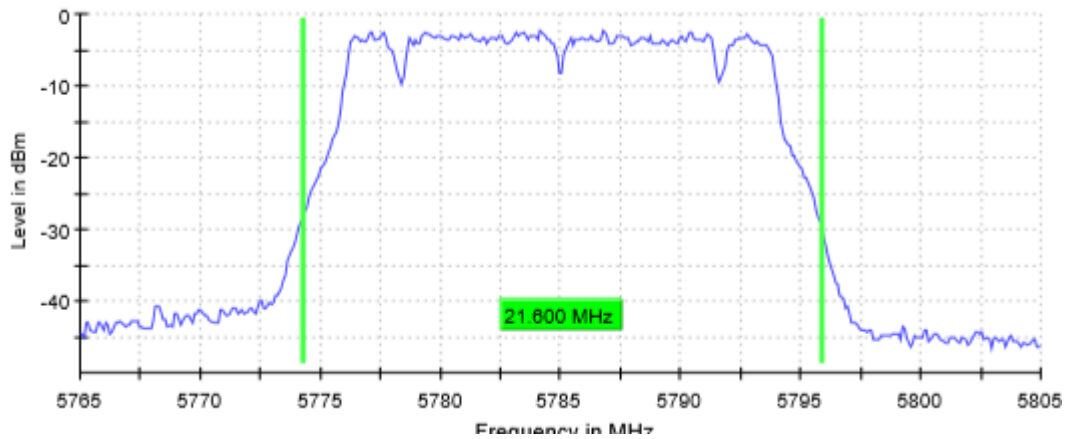
TEST RESULTS (Cont.):

26 dB BANDWIDTH

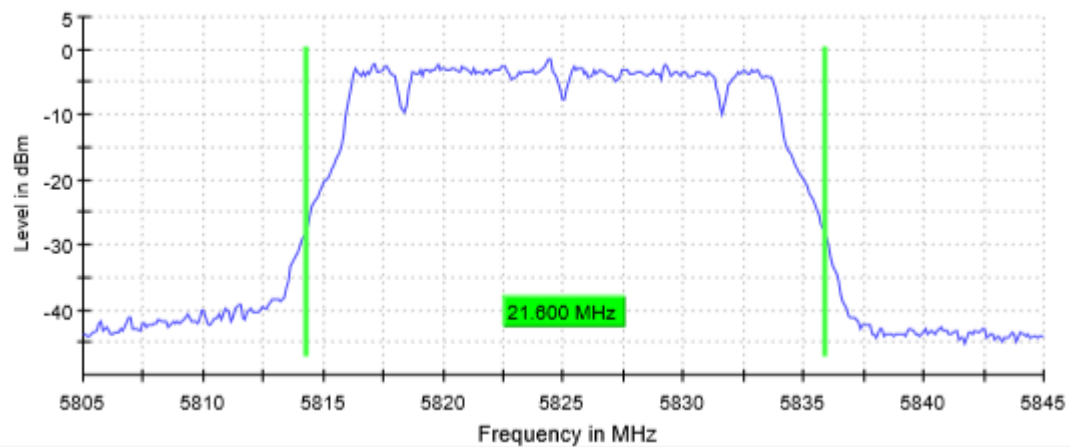
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

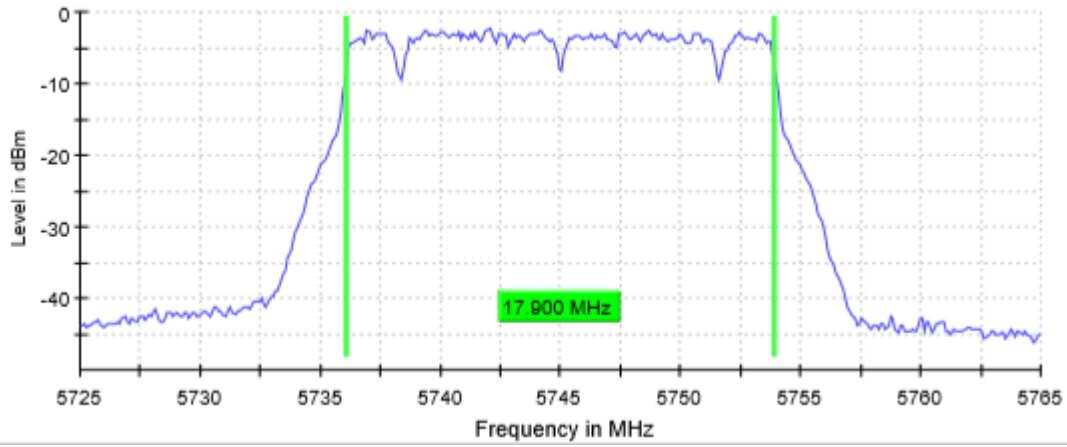
Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.72500 GHz	5.76500 GHz	5.80500 GHz
Stop Frequency	5.76500 GHz	5.80500 GHz	5.84500 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 KHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	28.447 μ s	28.447 μ s	28.477 μ s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	96/ max. 150	80 / max. 150	96 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.10 dB	0.00 dB

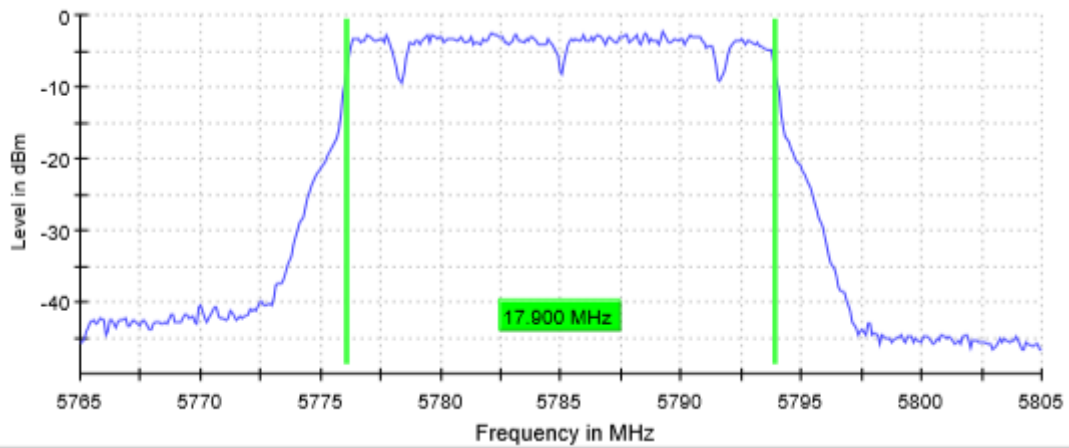
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

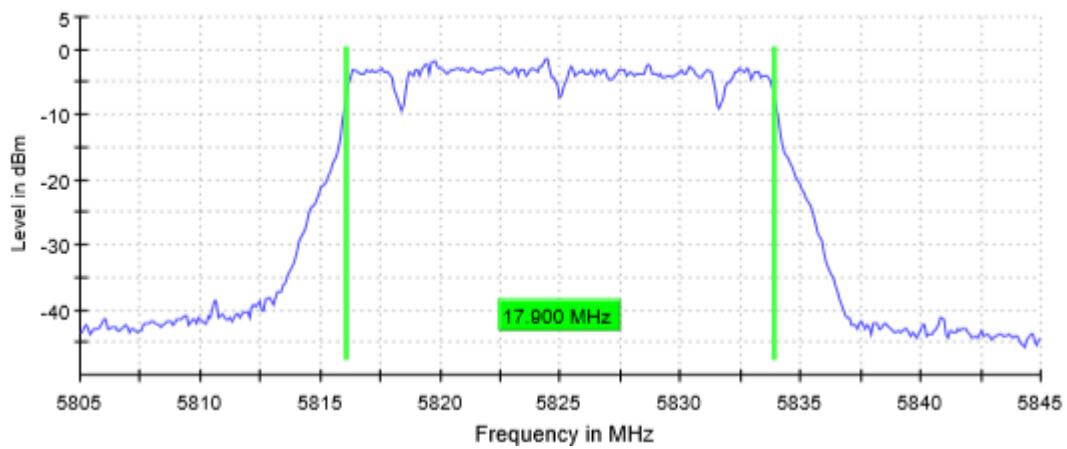
Lowest Channel



Middle Channel



Highest Channel

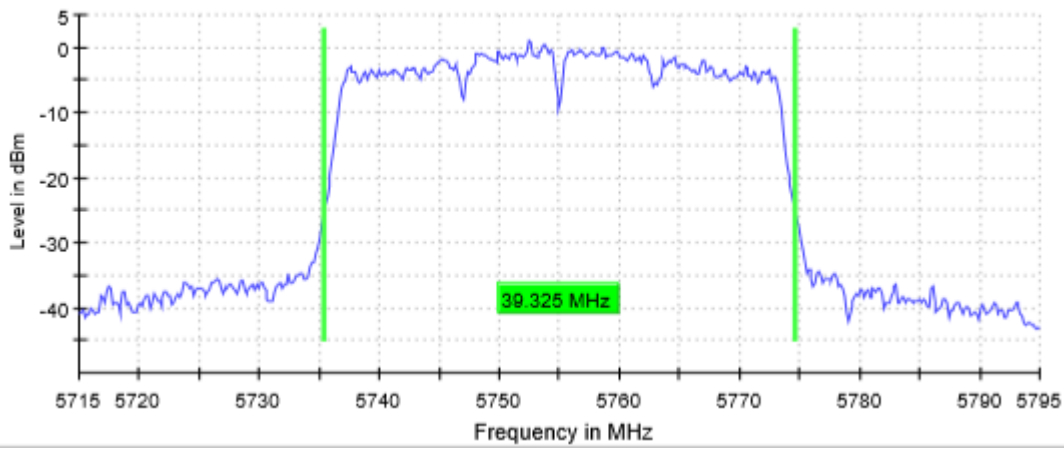


TEST RESULTS (Cont.)			
Measurement			
Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.72500 GHz	5.76500 GHz	5.80500 GHz
Stop Frequency	5.76500 GHz	5.80500 GHz	5.84500 GHz
Span	40.000 MHz	40.000 MHz	40.000 MHz
RBW	200.000 KHz	200.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
SweepTime	28.477 μ s	28.477 μ s	28.477 μ s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	200	200	200
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamp	Off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	95 / max. 150	99 / max. 150	121 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.00 dB	0.00 dB
TESTED SAMPLES:		S/01	
TESTED CONDITIONS MODES:		TC#03 (ac Mode)	
TEST RESULTS:		PASS	
Bandwidth: 40 MHz			
	Lowest frequency	Highest frequency	
	5755 MHz	5795 MHz	
26dB bandwidth (MHz)	39.325	39.625	
Occupied bandwidth (MHz)	36.250	36.250	
Measurement uncertainty (kHz)	$<\pm 8.33$		

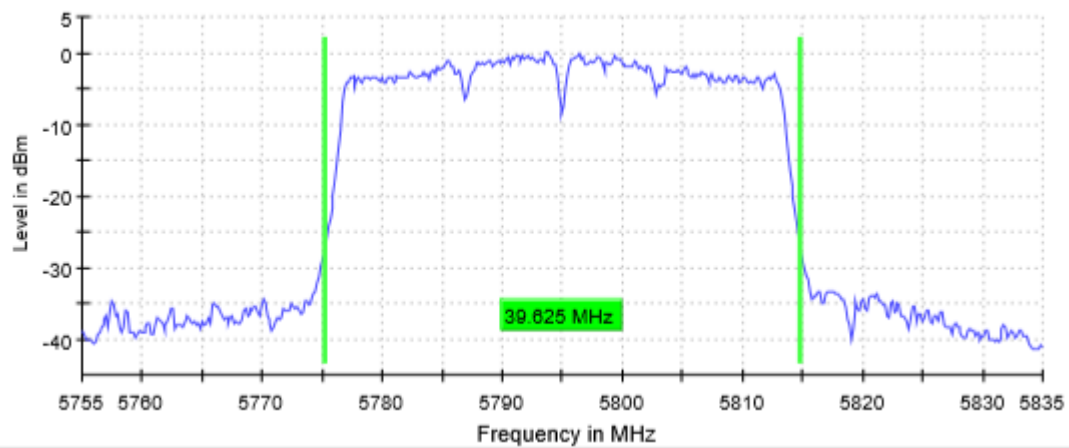
TEST RESULTS (Cont.):

26 dB BANDWIDTH

Lowest Channel



Highest Channel



TEST RESULTS (Cont.):

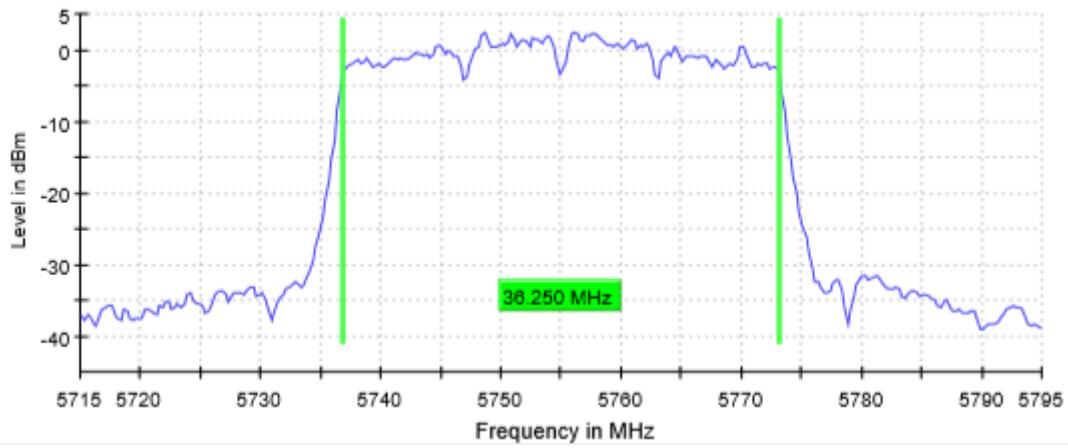
Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.71500 GHz	5.75500 GHz
Stop Frequency	5.79500 GHz	5.83500 GHz
Span	80.000 MHz	30.000 MHz
RBW	300.000 KHz	200.000 KHz
VBW	1.000 MHz	1.000 MHz
SweepPoints	533	533
SweepTime	31.621 μ s	31.621 μ s
Reference Level	20.000 dBm	10.000 dBm
Attenuation	40.000 dB	30.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	FFT
Preamp	Off	Off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	106 / max. 150	112 / max. 150
Stable	5 / 5	5 / 5
Max Stable Difference	0.00 dB	0.00 dB

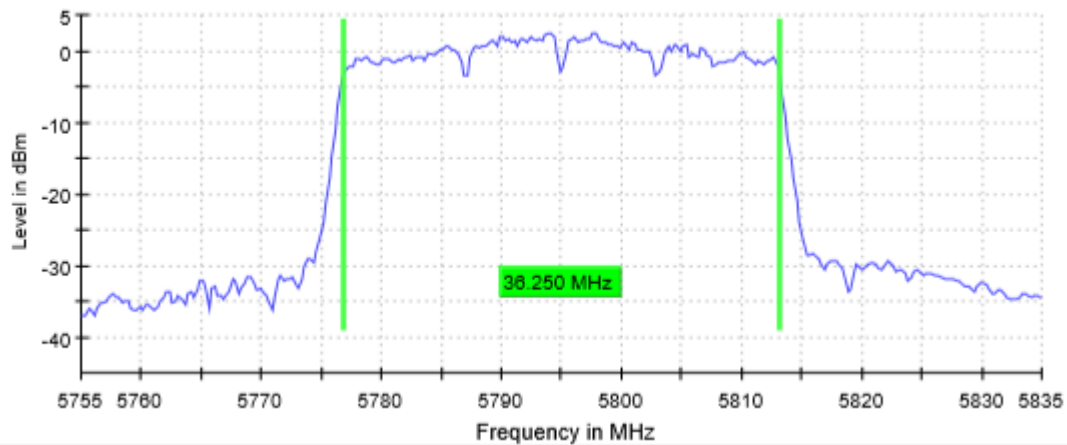
TEST RESULTS (Cont.):

OCCUPIED BANDWIDTH

Lowest Channel



Highest Channel

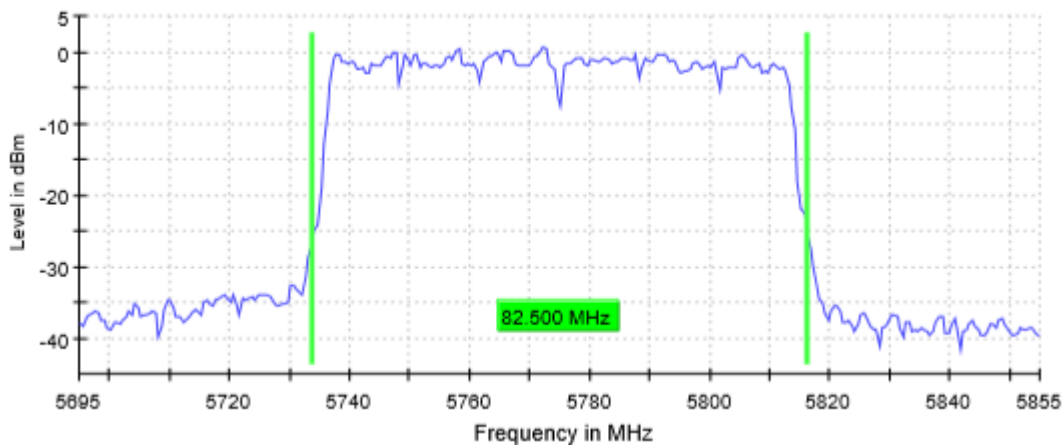


TEST RESULTS (Cont.)			
Measurement			
	Setting	Instrument Value	Instrument Value
	Start Frequency	5.71500 GHz	5.75500 GHz
	Stop Frequency	5.79500 GHz	5.83500 GHz
	Span	80.000 MHz	80.000 MHz
	RBW	500.000 KHz	500.000 KHz
	VBW	2.000 MHz	2.000 MHz
	SweepPoints	320	320
	SweepTime	18.906 μ s	18.906 μ s
	Reference Level	10.000 dBm	10.000 dBm
	Attenuation	30.000 dB	30.000 dB
	Detector	MaxPeak	MaxPeak
	SweepCount	200	200
	Filter	3 dB	3 dB
	Trace Mode	Max Hold	Max Hold
	SweepType	FFT	FFT
	Preamp	Off	Off
	Stablemode	Trace	Trace
	Stablevalue	0.30 dB	0.30 dB
	Run	111 / max. 150	121 / max. 150
	Stable	5 / 5	5 / 5
	Max Stable Difference	0.00 dB	0.00 dB
TESTED SAMPLES:	S/01		
TESTED CONDITIONS MODES:	TC#03 (ac Mode)		
TEST RESULTS:	PASS		
Bandwidth: 80 MHz			
		Lowest frequency 5775 MHz	
	26dB bandwidth (MHz)	82.50	
	Occupied bandwidth (MHz)	76.50	
	Measurement uncertainty (kHz)	< \pm 8.33	

TEST RESULTS (Cont.):

26 dB BANDWIDTH

Lowest Channel

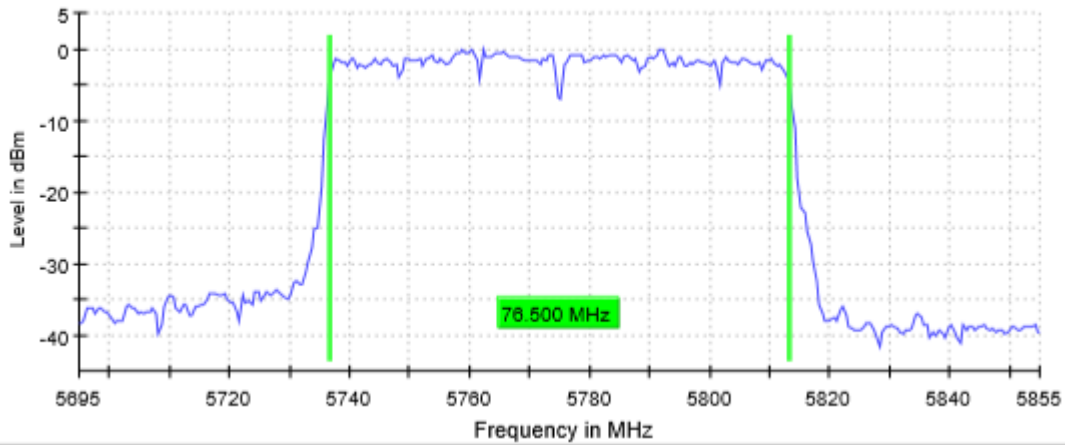


Measurement

Setting	Instrument Value
Start Frequency	5.69500 GHz
Stop Frequency	5.85500 GHz
Span	160.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	320
Sweeptime	22.875 μ s
Reference Level	20.000 dBm
Attenuation	40.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	FFT
Preamplifier	Off
Stablemode	Trace
Stablevalue	0.30 dB
Run	84 / max. 150
Stable	5 / 5
Max Stable Difference	0.00 dB

TEST RESULTS (Cont.):	OCCUPIED BANDWIDTH
------------------------------	---------------------------

Lowest Channel



Measurement

Setting	Instrument Value
Start Frequency	5.69500 GHz
Stop Frequency	5.85500 GHz
Span	160.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	320
Sweeptime	22.875 μ s
Reference Level	10.000 dBm
Attenuation	30.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	FFT
Preamp	Off
Stablemode	Trace
Stablevalue	0.30 dB
Run	92 / max. 150
Stable	5 / 5
Max Stable Difference	0.00 dB

TEST C.2: POWER LIMITS. MAXIMUM OUTPUT POWER

LIMITS:	Product standard:	Part 15 Subpart C §15.407 and RSS-247
	Test standard:	Part 15 Subpart C §15.407(a) (1) (4) and RSS-247 6.2.1.1

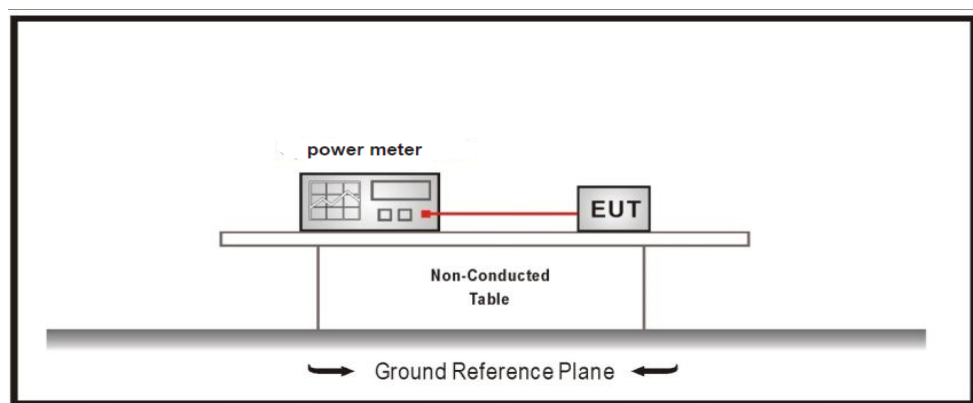
LIMITS

In band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST SETUP

Measured according to ANSI C63.10, Section 11.9.2.3.2 Method AVGPM-G

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 (a mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

Maximum declared antenna gain: 4.5 dBi

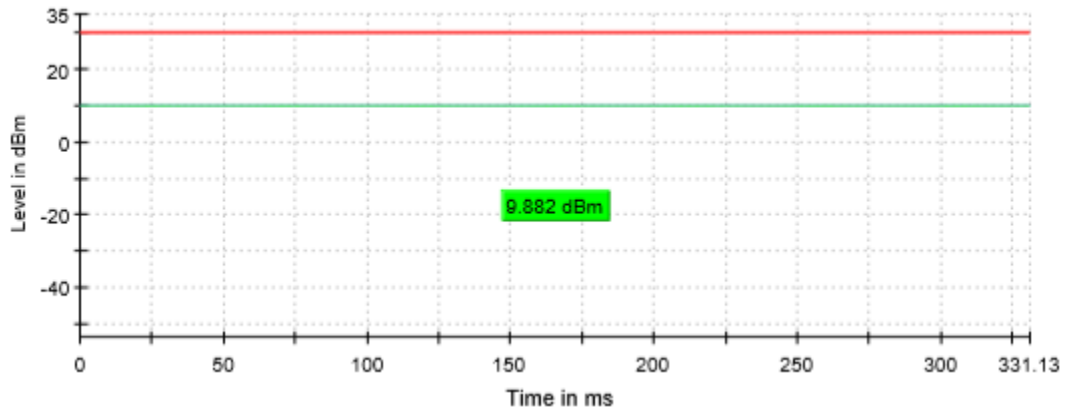
	Lowest frequency 5745 MHz	Middle frequency 5785 MHz	Highest frequency 5825 MHz
Maximum conducted power (dBm)	9.9	9.7	9.9
Maximum EIRP power (dBm)	14.4	14.2	14.4
Measurement uncertainty (dB)	<±0.78		

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

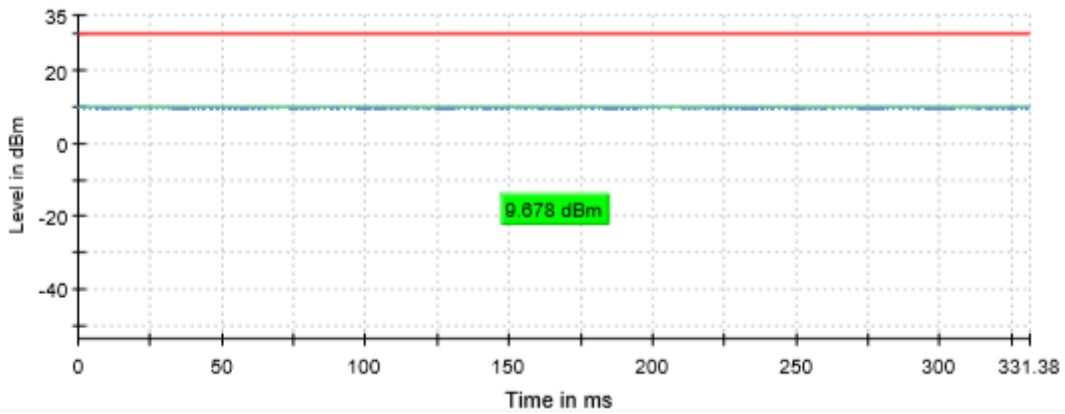
TEST RESULTS (Cont.):

CONDUCTED OUTPUT POWER

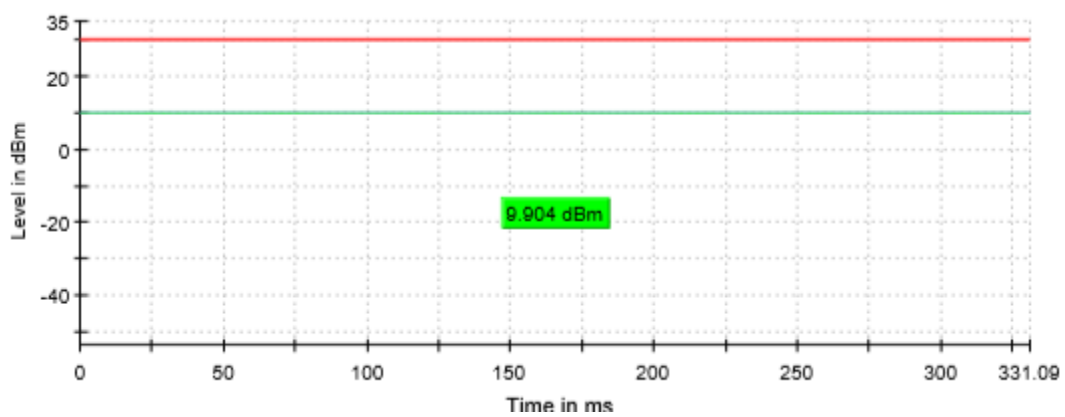
Lowest Channel



Middle Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#02 (n mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

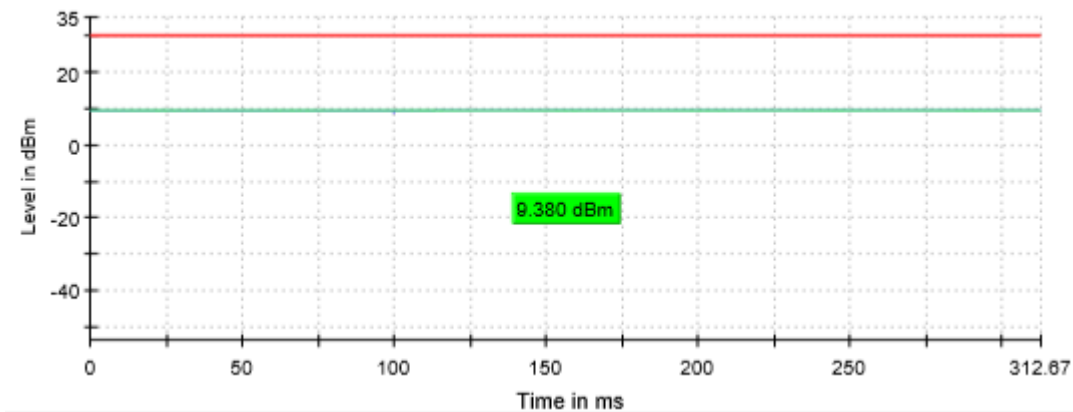
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5745 MHz	Middle frequency 5785 MHz	Highest frequency 5825 MHz
Maximum conducted power (dBm)	9.4	9.3	9.4
Maximum EIRP power (dBm)	13.9	13.8	13.9
Measurement uncertainty (dB)	<±0.78		

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.

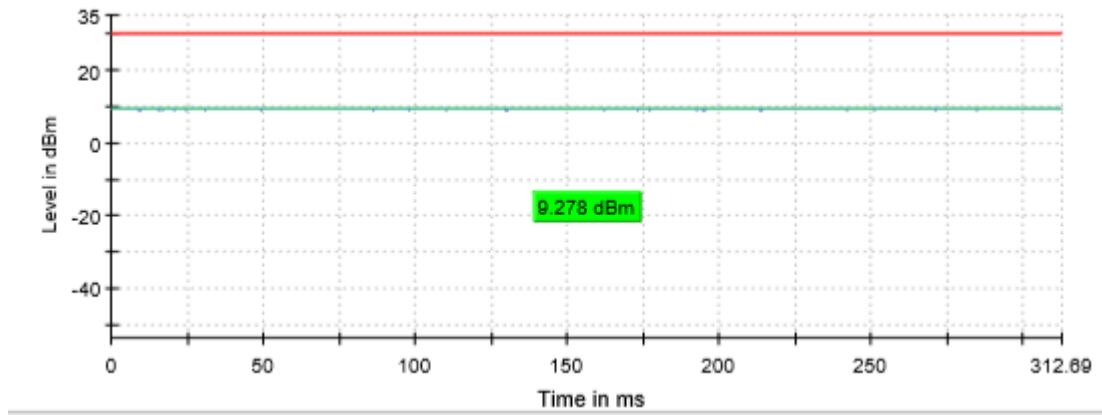
TEST RESULTS (Cont.):	CONDUCTED OUTPUT POWER
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Lowest Channel

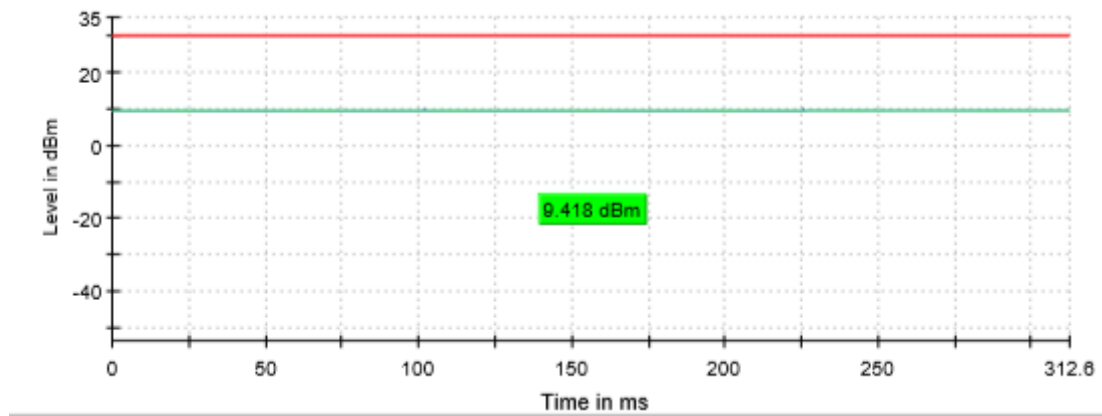


TEST RESULTS (Cont.)

Middle Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#02 (n mode)
TEST RESULTS:	PASS

Bandwidth: 40 MHz

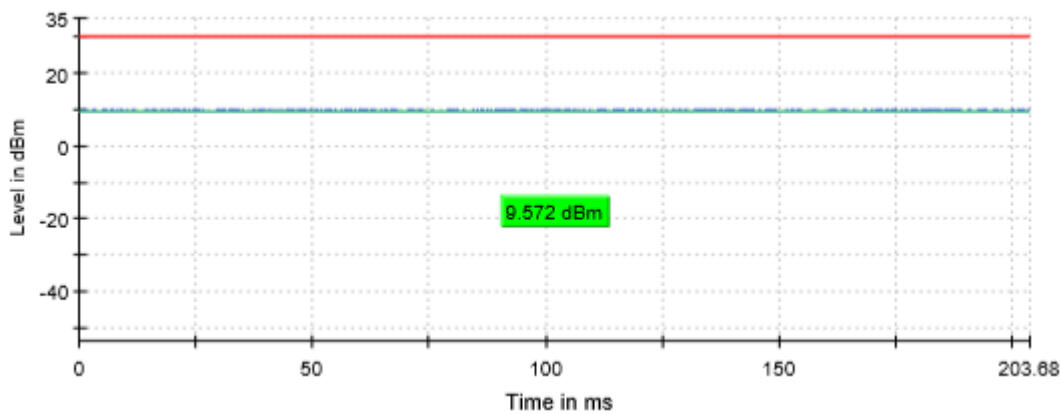
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5755 MHz	Highest frequency 5795 MHz
Maximum conducted power (dBm)	9.6	9.6
Maximum EIRP power (dBm)	14.1	14.1
Measurement uncertainty (dB)	<±0.78	

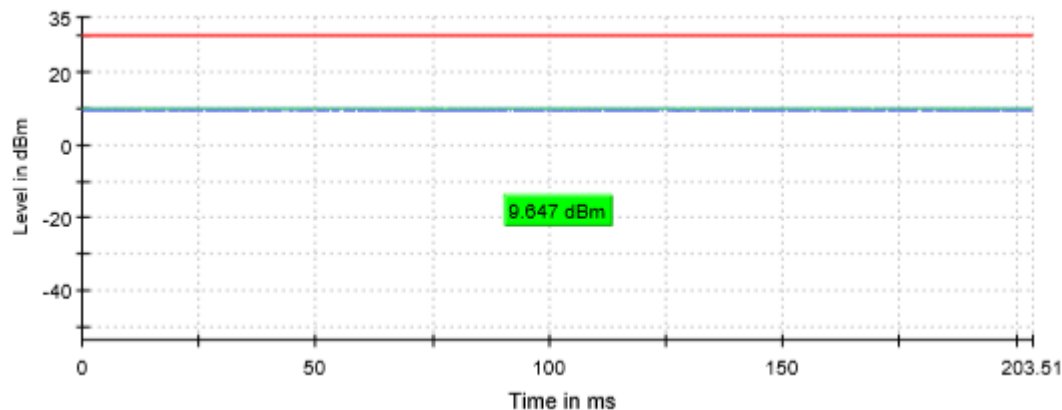
The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

TEST RESULTS (Cont.):	CONDUCTED OUTPUT POWER
------------------------------	-------------------------------

Lowest Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#03 (ac mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

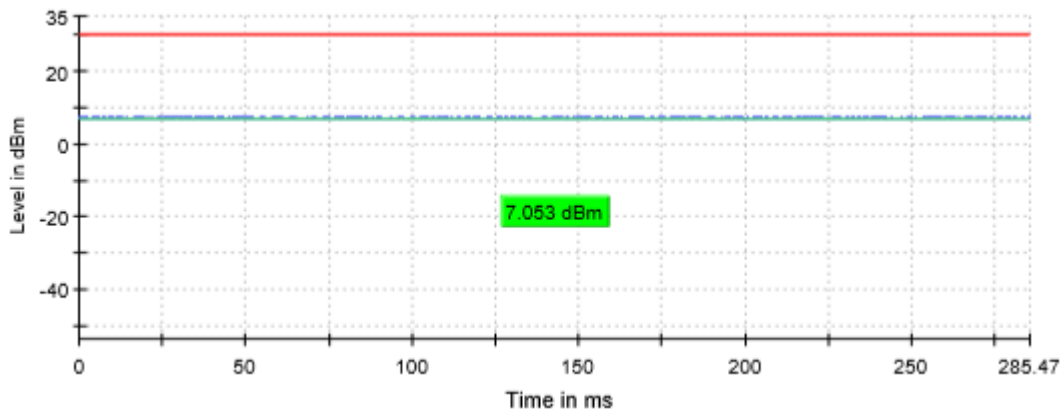
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5745 MHz	Middle frequency 5785 MHz	Highest frequency 5825 MHz
Maximum conducted power (dBm)	7.1	6.9	7.1
Maximum EIRP power (dBm)	11.6	11.4	11.6
Measurement uncertainty (dB)	<±0.78		

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.

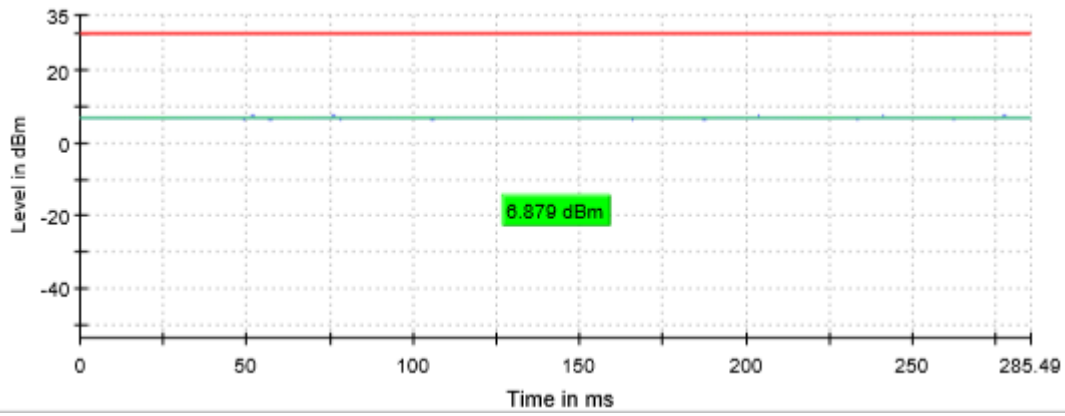
TEST RESULTS (Cont.):	CONDUCTED OUTPUT POWER
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Lowest Channel

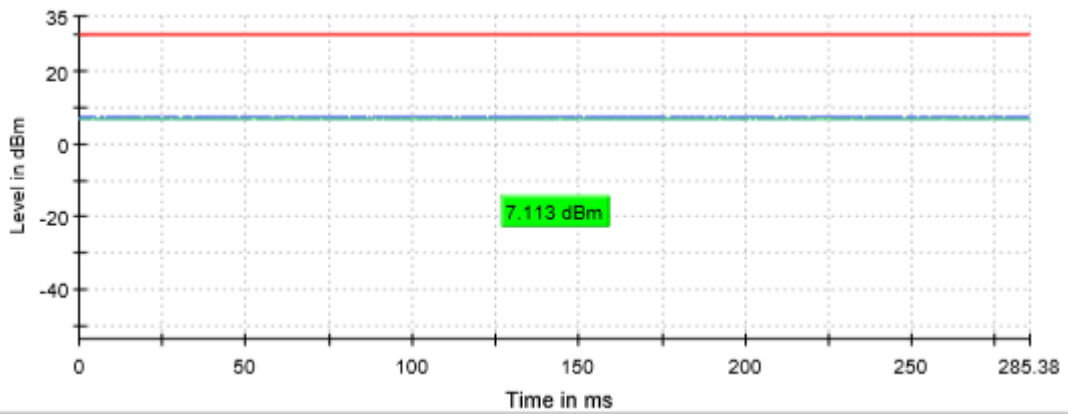


TEST RESULTS (Cont.)

Middle Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#03 (ac mode)
TEST RESULTS:	PASS

Bandwidth: 40 MHz

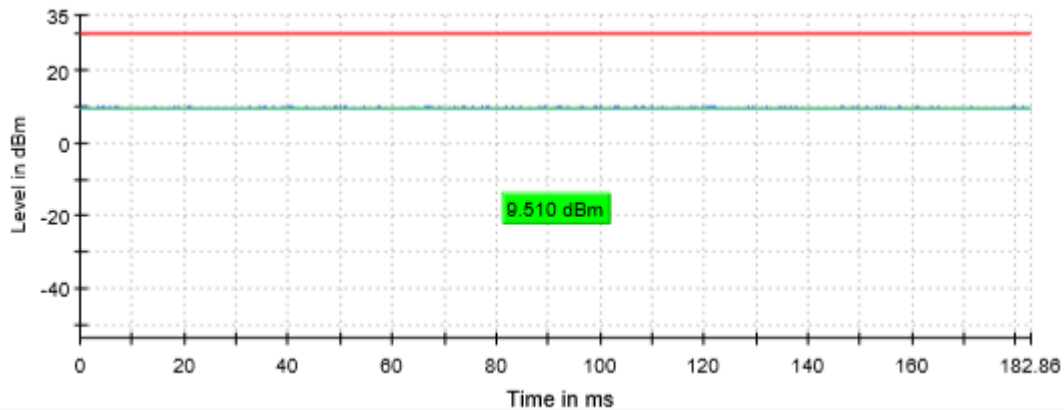
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5755 MHz	Highest frequency 5795 MHz
Maximum conducted power (dBm)	9.5	9.7
Maximum EIRP power (dBm)	14	14.2
Measurement uncertainty (dB)	<±0.78	

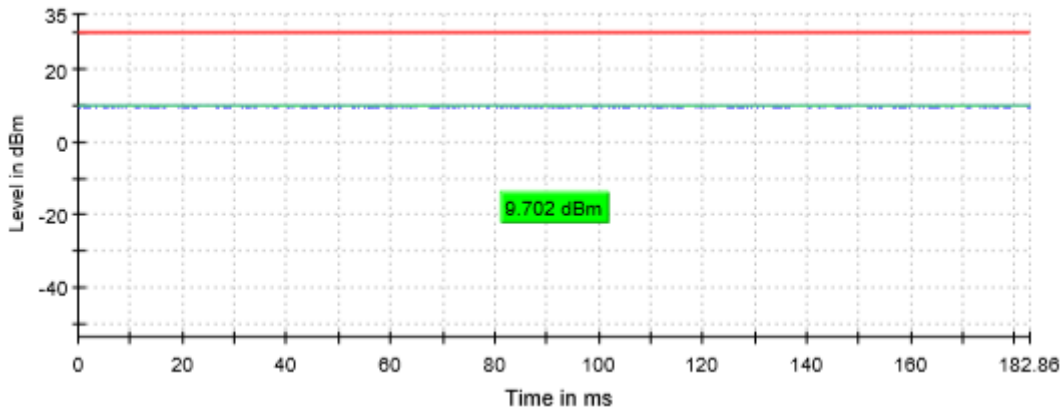
The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

TEST RESULTS (Cont.):	CONDUCTED OUTPUT POWER
------------------------------	-------------------------------

Lowest Channel



Highest Channel



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#03 (ac mode)
TEST RESULTS:	PASS

Bandwidth: 80 MHz

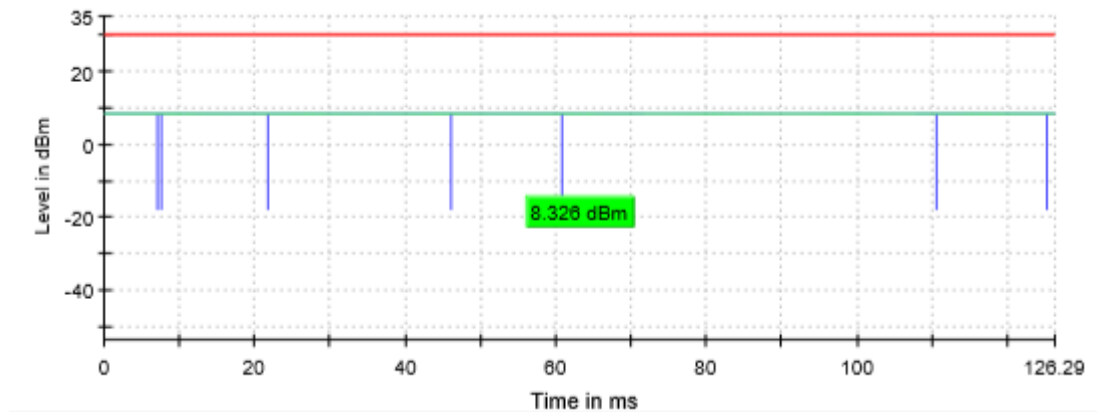
Maximum declared antenna gain: 4.5 dBi

	Lowest frequency 5755 MHz
Maximum conducted power (dBm)	8.3
Maximum EIRP power (dBm)	12.8
Measurement uncertainty (dB)	<±0.78

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 OUTPUT POWER
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Lowest Channel



TEST C.3: POWER SPECTRAL DENSITY

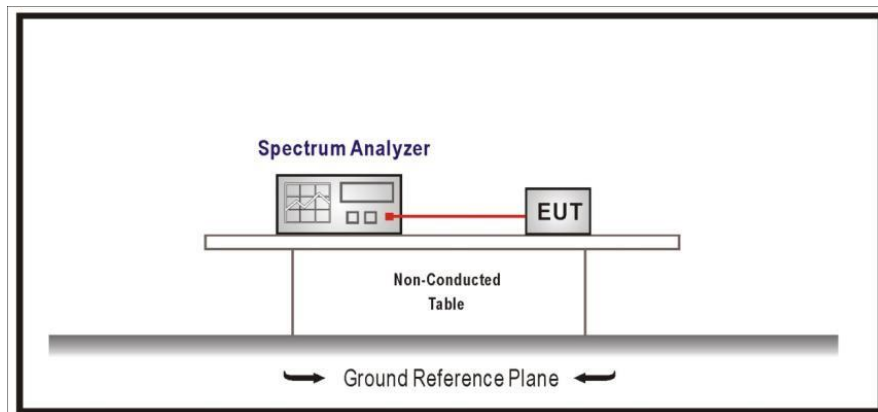
LIMITS:	Product standard:	Part 15 Subpart C §15.407 and RSS-247
	Test standard:	Part 15 Subpart C §15.407(a) (1) (5) and RSS-247 6.2.1.1

LIMITS

In the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST SETUP

For all modes, the maximum power spectral density level in the fundamental emission was measured using the method according to point F) (Method SA-1) of Guidance 789033 D02 General UNII Test Procedures New Rules v01.



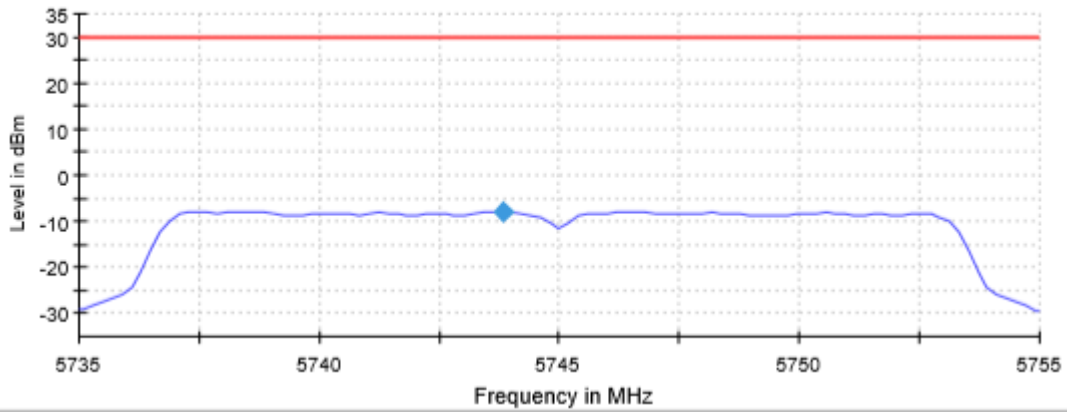
TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01 (a mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

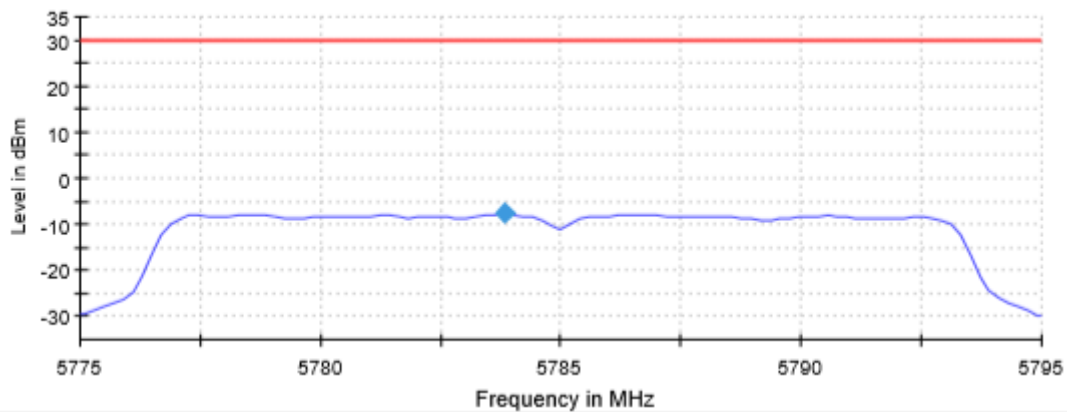
	Lowest frequency	Middle frequency	Highest frequency
	5745 MHz	5785 MHz	5825 MHz
Power spectral density (dBm)	-7.788	-7.691	-7.736
Measurement uncertainty (dB)	<±0.78		

TEST RESULTS (Cont.):

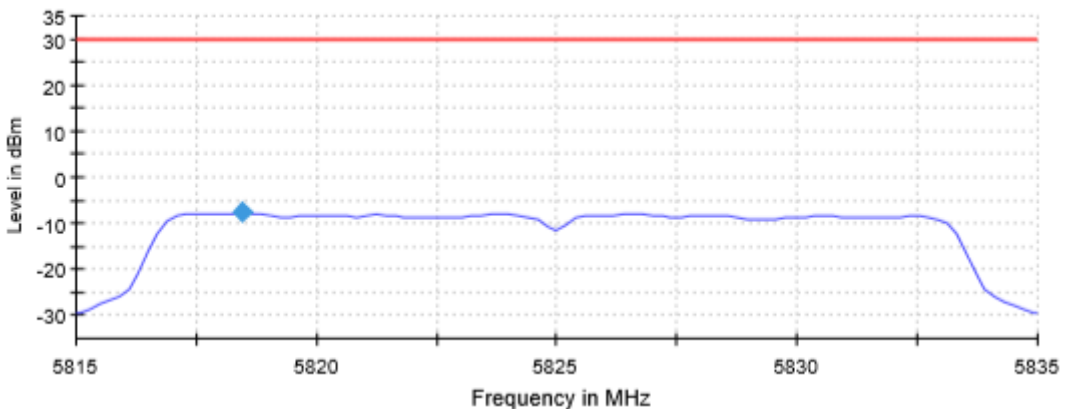
Lowest Channel



Middle Channel



Highest Channel



TEST RESULTS (Cont.):

Measurement

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	5.73500 GHz	5.775000GHz	5.81500 GHz
Stop Frequency	5.75500 GHz	5.79500 GHz	5.83500 GHz
Span	20.000 MHz	20.000 MHz	20.000 MHz
RBW	500.00 KHz	500.00 KHz	500.00 KHz
VBW	2.000 MHz	2.000 MHz	2.000 MHz
SweepPoints	101	101	101
SweepTime	2.020 s	2.020 s	2.020 s
Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB	30.000 dB
Detector	RMS	RMS	RMS
SweepCount	29703	29703	29703
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
SweepType	FFT	FFT	FFT
Preamplifier	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	4 / max. 150	4 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.03 dB	0.02 dB	0.01 dB

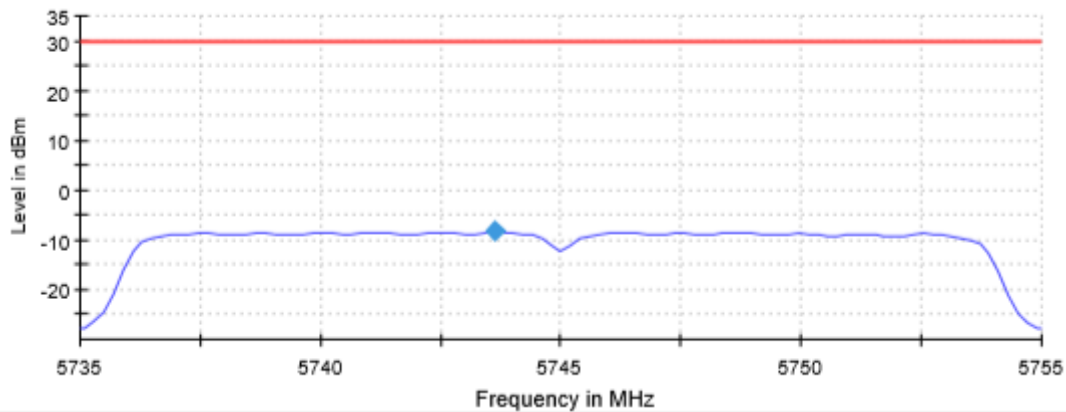
TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#02 (n mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

	Lowest frequency	Middle frequency	Highest frequency
	5745 MHz	5785 MHz	5825 MHz
Power spectral density (dBm)	-8.385	-8.222	-8.436
Measurement uncertainty (dB)	<±0.78		

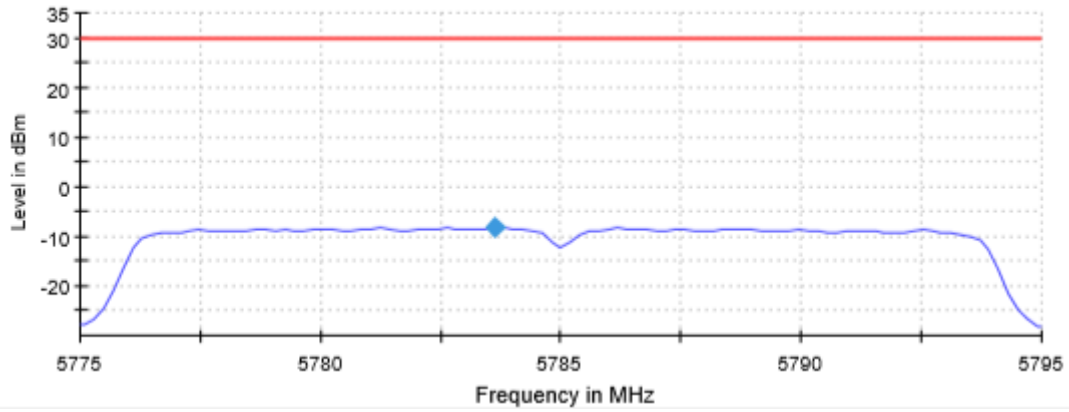
TEST RESULTS (Cont.):	
------------------------------	--

Lowest Channel

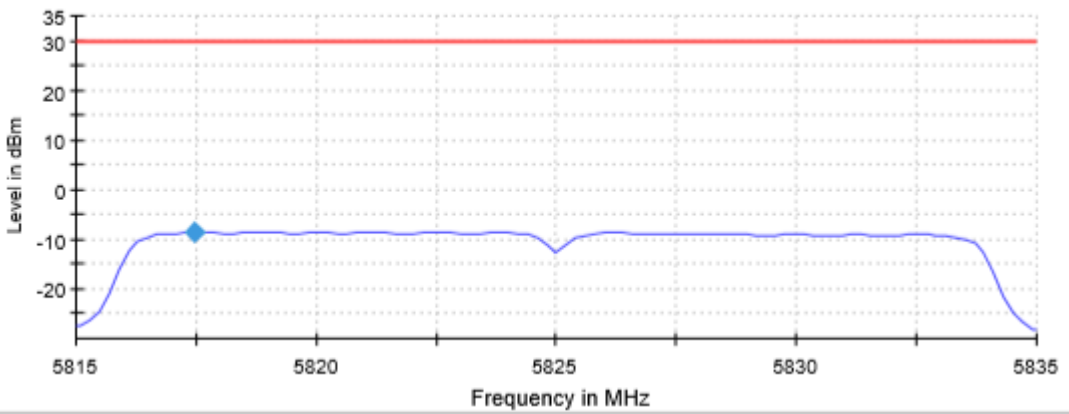


TEST RESULTS (Cont.):

Middle Channel



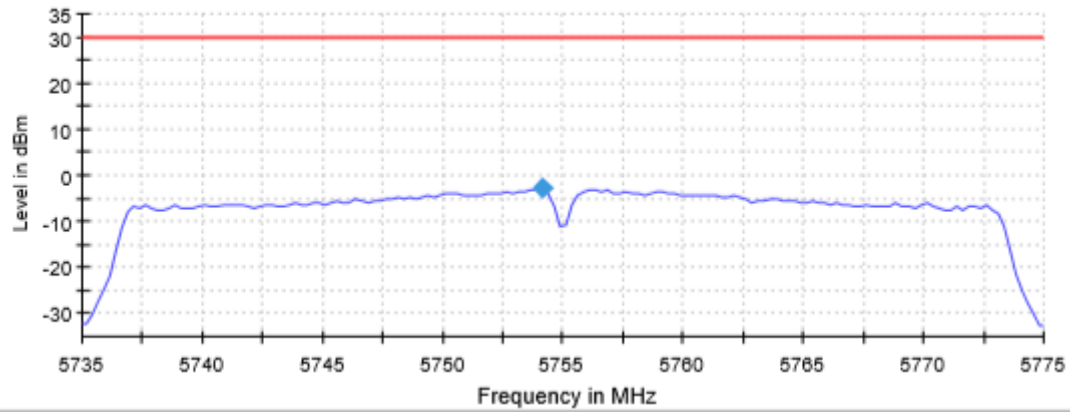
Highest Channel



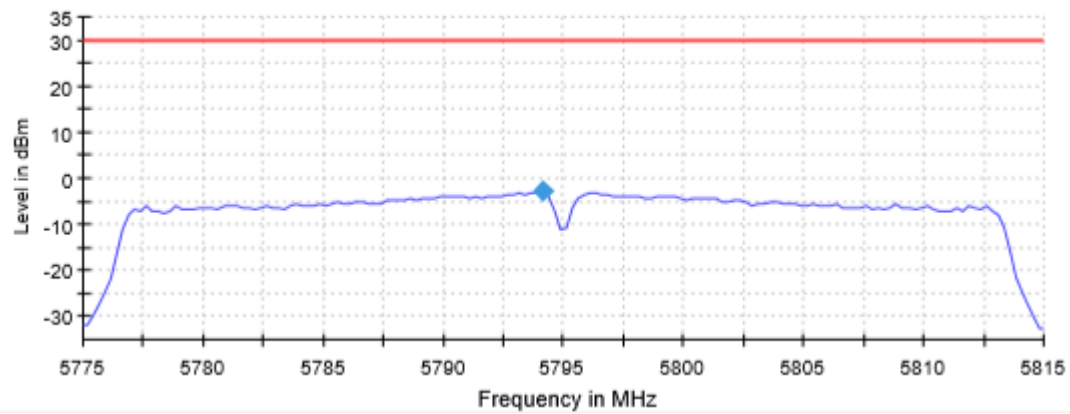
TEST RESULTS (Cont.):				
Measurement				
	Setting	Instrument Value	Instrument Value	Instrument Value
	Start Frequency	5.73500 GHz	5.77500 GHz	5.81500 GHz
	Stop Frequency	5.75500 GHz	5.79500 GHz	5.83500 GHz
	Span	20.000 MHz	20.000 MHz	20.000 MHz
	RBW	500.00 KHz	500.00 KHz	500.00 KHz
	VBW	2.000 MHz	2.000 MHz	2.000 MHz
	SweepPoints	101	101	101
	Sweeptime	2.020 s	2.020 s	2.020 s
	Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
	Attenuation	30.000 dB	30.000 dB	30.000 dB
	Detector	RMS	RMS	RMS
	SweepCount	29703	29703	29703
	Filter	3 dB	3 dB	3 dB
	Trace Mode	Max Hold	Max Hold	Max Hold
	Sweeptype	FFT	FFT	FFT
	Preamp	off	Off	Off
	Stablemode	Trace	Trace	Trace
	Stablevalue	0.30 dB	0.30 dB	0.30 dB
	Run	4 / max. 150	4 / max. 150	4 / max. 150
	Stable	3 / 3	3 / 3	3 / 3
	Max Stable Difference	0.05 dB	0.04 dB	0.08 dB
TESTED SAMPLES:	S/01			
TESTED CONDITIONS MODES:	TC#02 (n mode)			
TEST RESULTS:	PASS			
Bandwidth: 40 MHz				
		Lowest frequency	Highest frequency	
		5755 MHz	5795 MHz	
	Power spectral density (dBm)	-2.908	-2.870	
	Measurement uncertainty (dB)	<±0.78		

TEST RESULTS (Cont.):

Lowest Channel



Highest Channel



TEST RESULTS (Cont.):

Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.73500 GHz	5.77500 GHz
Stop Frequency	5.77500 GHz	5.81500 GHz
Span	40.000 MHz	40.000 MHz
RBW	500.000 KHz	500.000 KHz
VBW	2.000 MHz	2.000 MHz
SweepPoints	101	101
SweepTime	3.200 s	2.020 s
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB
Detector	RMS	RMS
SweepCount	18751	18751
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	FFT
Preamp	Off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	6 / max. 150	6 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.25 dB	0.26 dB

TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

TC#03 (ac mode)

TEST RESULTS:

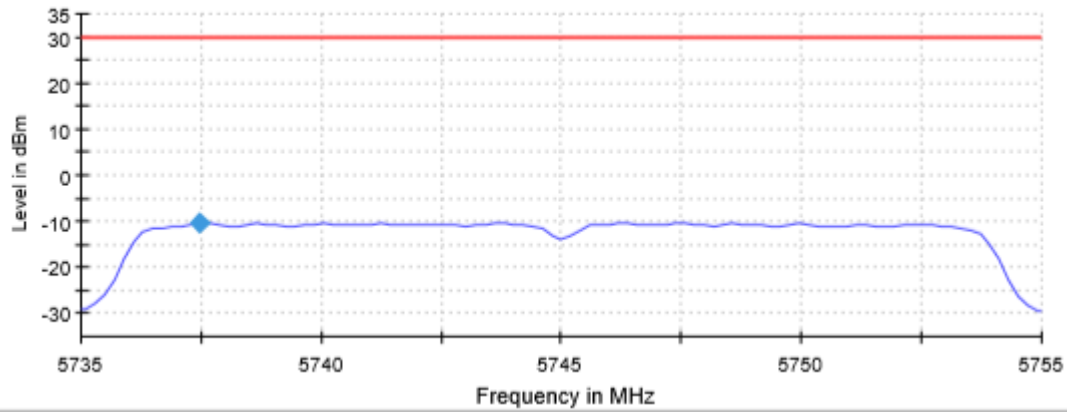
PASS

Bandwidth: 20 MHz

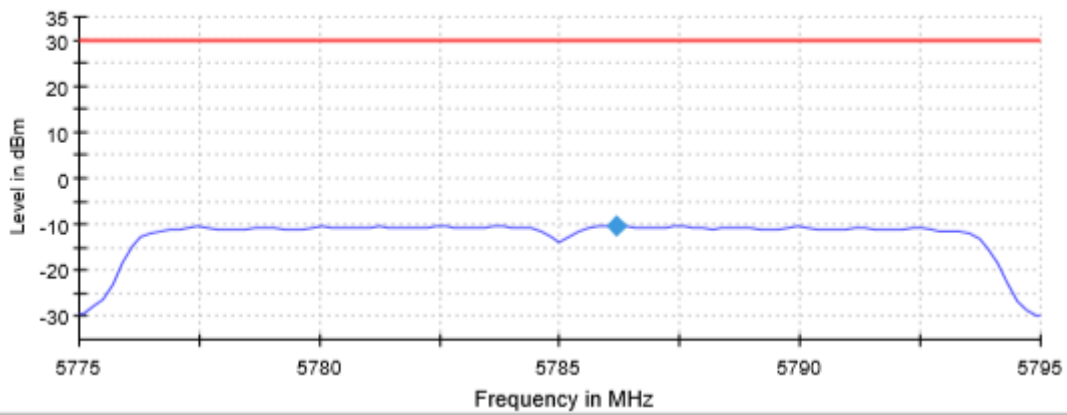
	Lowest frequency	Middle frequency	Highest frequency
	5745 MHz	5785 MHz	5825 MHz
Power spectral density (dBm)	-10.292	-10.324	-10.099
Measurement uncertainty (dB)	<±0.78		

TEST RESULTS (Cont.):

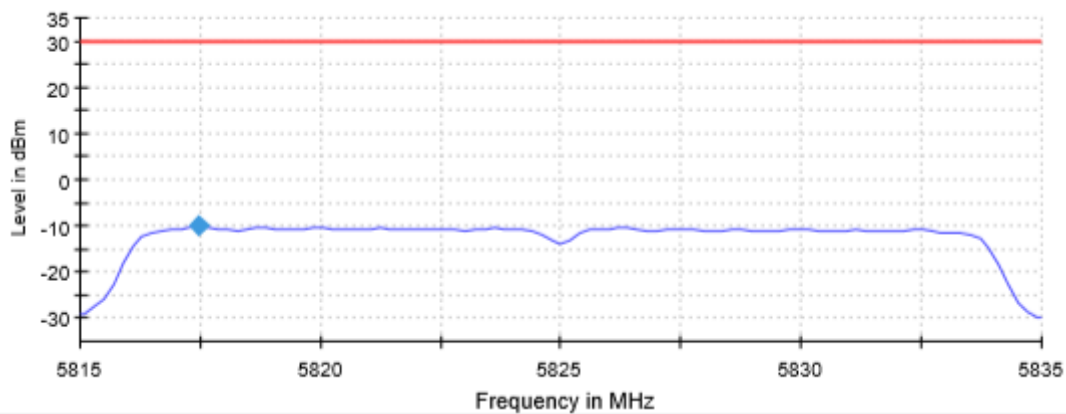
Lowest Channel



Middle Channel



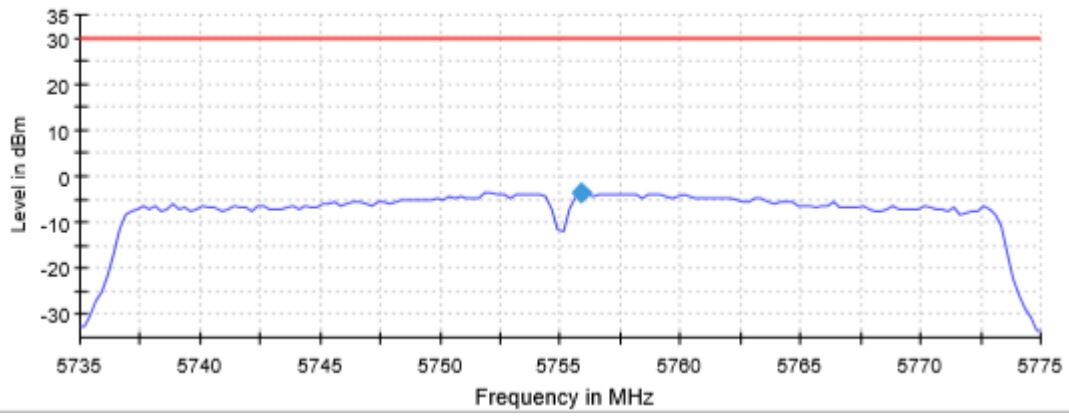
Highest Channel



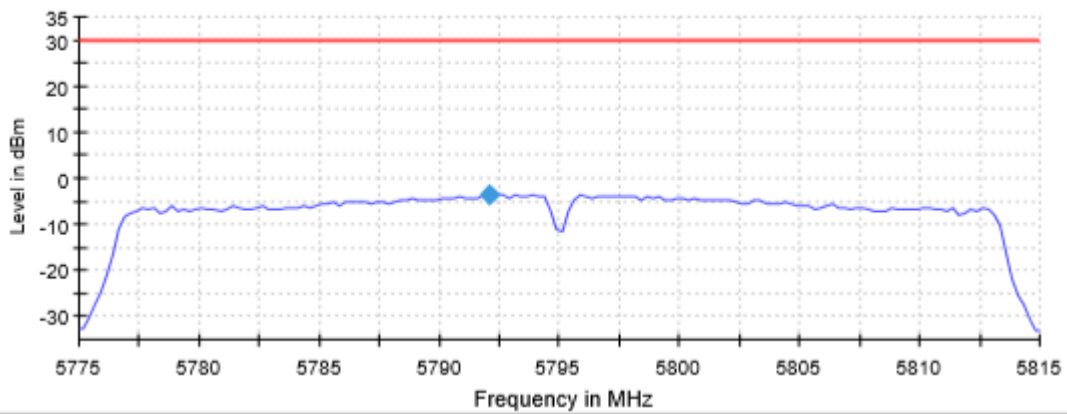
TEST RESULTS (Cont.):				
Measurement				
	Setting	Instrument Value	Instrument Value	Instrument Value
	Start Frequency	5.73500 GHz	5.77500 GHz	5.81500 GHz
	Stop Frequency	5.75500 GHz	5.79500 GHz	5.83500 GHz
	Span	20.000 MHz	20.000 MHz	20.000 MHz
	RBW	500.00 KHz	500.00 KHz	500.00 KHz
	VBW	2.000 MHz	2.000 MHz	2.000 MHz
	SweepPoints	101	101	101
	Sweeptime	2.020 s	2.020 s	2.020 s
	Reference Level	10.000 dBm	10.000 dBm	10.000 dBm
	Attenuation	30.000 dB	30.000 dB	30.000 dB
	Detector	RMS	RMS	RMS
	SweepCount	29703	29703	29703
	Filter	3 dB	3 dB	3 dB
	Trace Mode	Max Hold	Max Hold	Max Hold
	Sweeptype	FFT	FFT	FFT
	Preamp	off	Off	Off
	Stablemode	Trace	Trace	Trace
	Stablevalue	0.30 dB	0.30 dB	0.30 dB
	Run	4 / max. 150	4 / max. 150	4 / max. 150
	Stable	3 / 3	3 / 3	3 / 3
	Max Stable Difference	0.03 dB	0.03 dB	0.03 dB
TESTED SAMPLES:	S/01			
TESTED CONDITIONS MODES:	TC#03 (ac mode)			
TEST RESULTS:	PASS			
Bandwidth: 40 MHz				
		Lowest frequency	Highest frequency	
		5755 MHz	5795 MHz	
	Power spectral density (dBm)	-3.547	-3.435	
	Measurement uncertainty (dB)	<±0.78		

TEST RESULTS (Cont.):

Lowest Channel



Highest Channel



TEST RESULTS (Cont.):

Measurement

Setting	Instrument Value	Instrument Value
Start Frequency	5.73500 GHz	5.77500 GHz
Stop Frequency	5.77500 GHz	5.81500 GHz
Span	40.000 MHz	40.000 MHz
RBW	500.00 KHz	500.00 KHz
VBW	2.000 MHz	2.000 MHz
SweepPoints	160	160
Sweeptime	3.200 ms	3.200 ms
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	30.000 dB
Detector	RMS	RMS
SweepCount	18751	18751
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	sweep	sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	7 / max. 150	6 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.07 dB	0.16 dB

TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

TC#03 (ac mode)

TEST RESULTS:

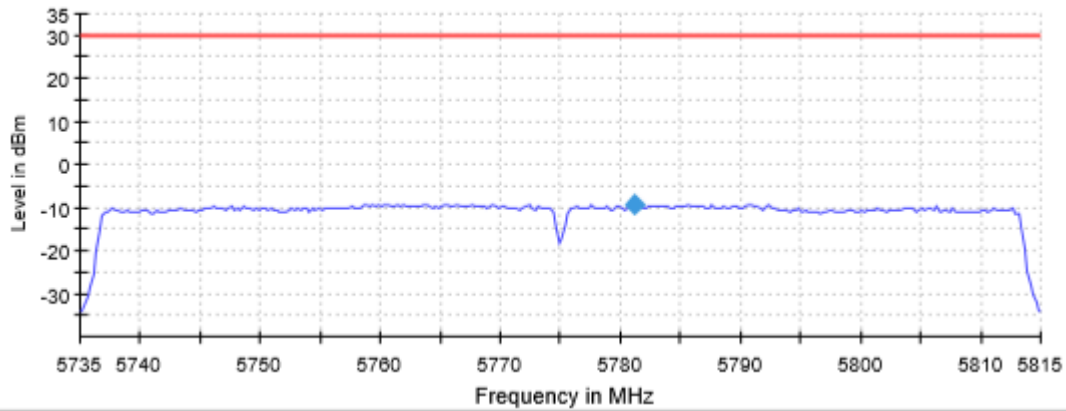
PASS

Bandwidth: 80 MHz

	Lowest frequency 5775 MHz
Power spectral density (dBm)	-9.114
Measurement uncertainty (dB)	<±0.78

TEST RESULTS (Cont.):

Lowest Channel



Measurement

Setting	Instrument Value
Start Frequency	5.73500 GHz
Stop Frequency	5.81500 GHz
Span	80.000 MHz
RBW	500.00 kHz
VBW	2.000 MHz
SweepPoints	320
Sweeptime	6.400 ms
Reference Level	10.000 dBm
Attenuation	30.000 dB
Detector	RMS
SweepCount	9376
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	11 / max. 150
Stable	3 / 3
Max Stable Difference	0.11 dB

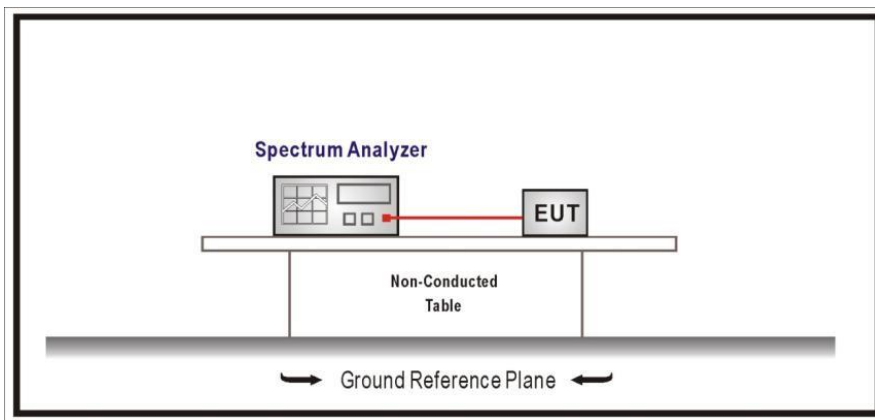
TEST B.4: BAND-EDGE RADIATED EMISSIONS COMPLIANCE (TRANSMITTER)

LIMITS:	Product standard:	Part 15 Subpart C §15.407 and RSS-247
	Test standard:	Part 15 Subpart C §15.407(b)(1) and RSS-247 6.2.1.2

LIMITS

For transmitters operating in the 5.725 – 5.850 GHz band: all emissions outside the frequency band shall not exceed an EIRP of -27 dBm /MHz

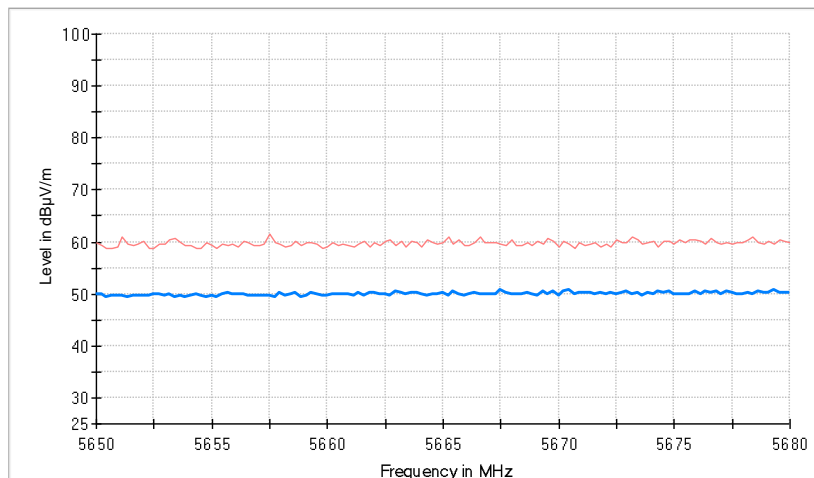
TEST SETUP



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01 (a mode)
TEST RESULTS:	PASS

The plots below show the worst results obtained.

Middle Channel



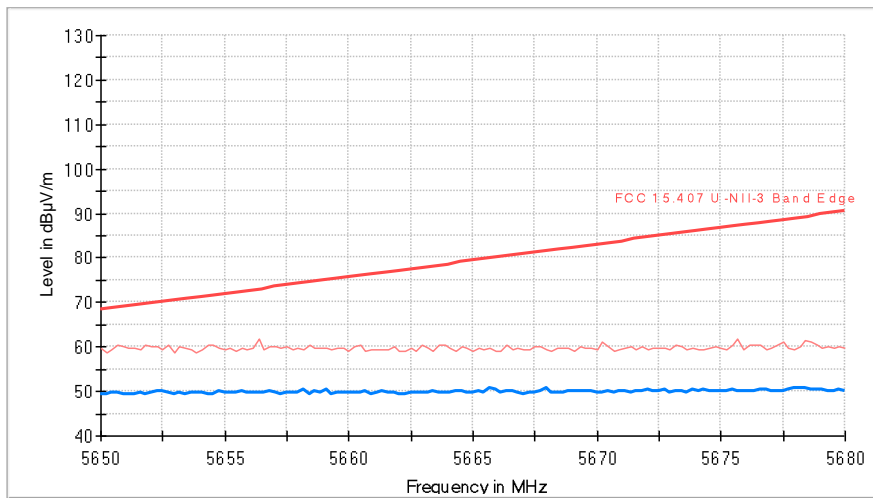
- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#02 (n mode)
TEST RESULTS:	PASS

Bandwidth: 20 MHz

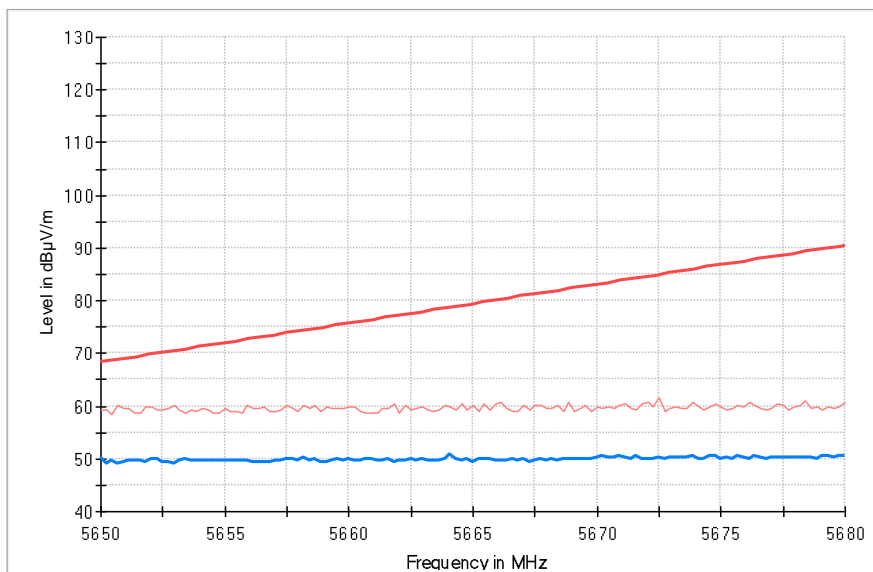
The plots below show the worst results obtained.

Lowest Channel



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit
- FCC 15.407 U-NII-3 Band Edge

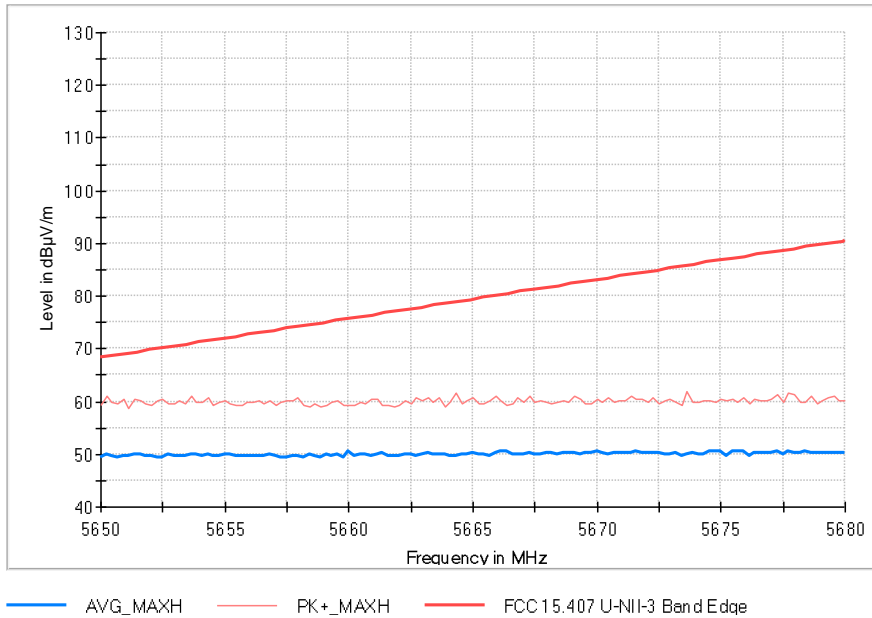
Middle Channel



- AVG_MAXH
- PK+_MAXH
- FCC 15.407 U-NII-3 Band Edge

TEST RESULTS (Cont):

High Channel



TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

TC#03 (ac mode)

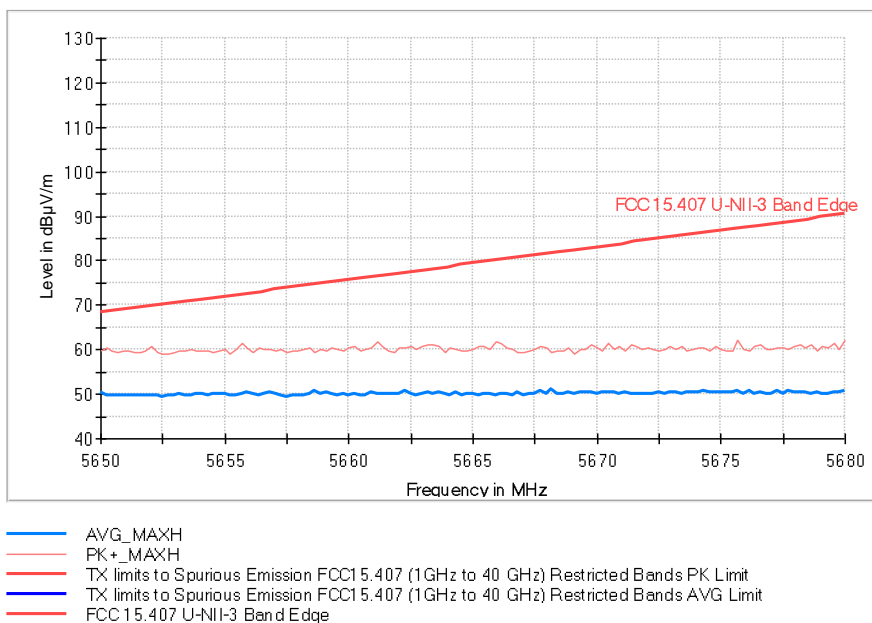
TEST RESULTS:

PASS

Bandwidth: 40 MHz

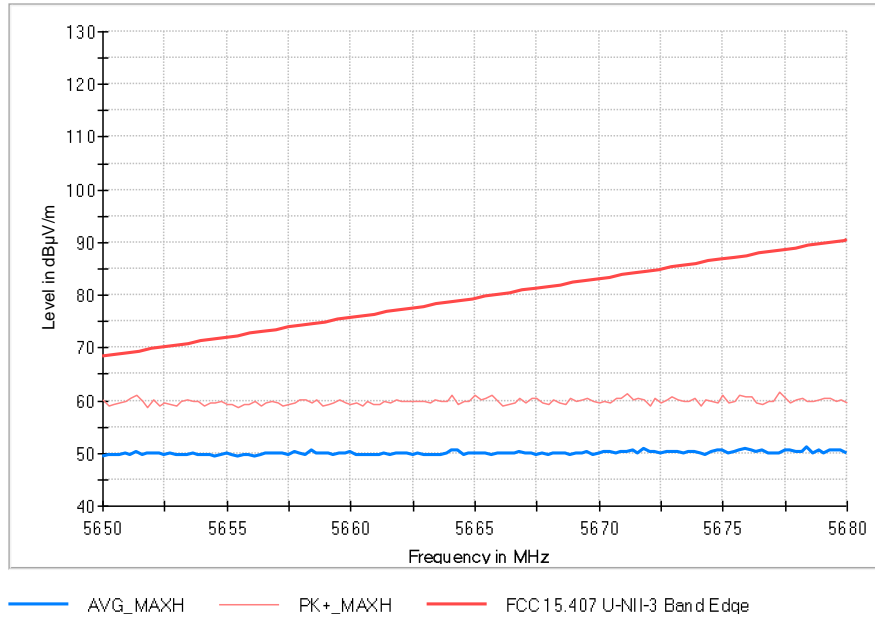
The plots below show the worst results obtained.

Low Channel



TEST RESULTS (Cont):

High Channel

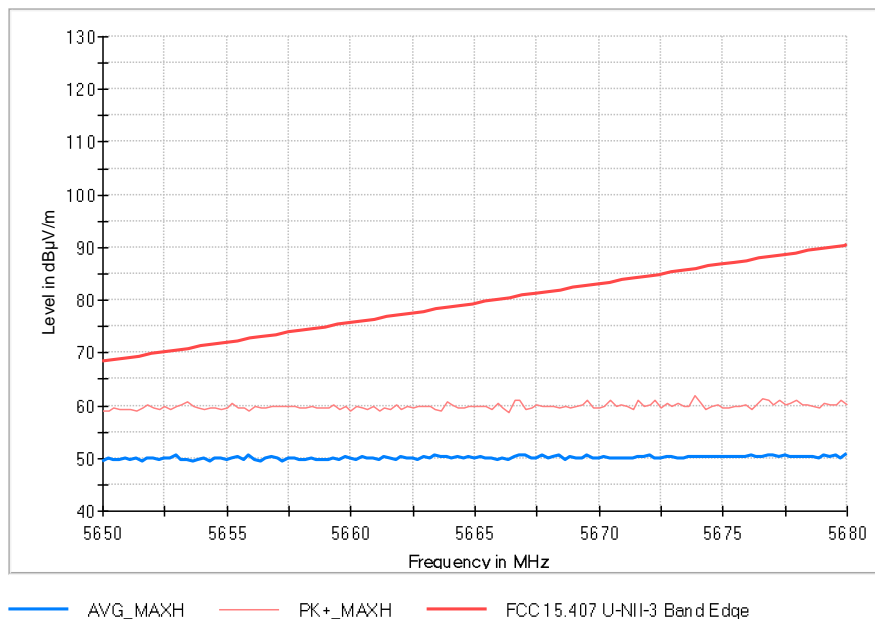


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#03 (ac mode)
TEST RESULTS:	PASS

Bandwidth: 80 MHz

The plots below show the worst results obtained.

Middle Channel



TEST C.5: UNDESIRABLE RADIATED EMISSIONS (TRANSMITTER)

LIMITS:	Product standard:	Part 15 Subpart C §15.407 and RSS-247
	Test standard:	Part 15 Subpart C §15.407(b) (1)(6)(7) and RSS-247 6.2.1.2

LIMITS

For transmitters operating in the 5.725 – 5.850 GHz band: all emissions outside of the 5.725 – 5.850GHz band shall not exceed an EIRP of -27 dBm/MHz (68.23 dBμ V/m at 3m distance).

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) / 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
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 3 m for the frequency range 30-1000 MHz (Bilog antenna) and at 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.

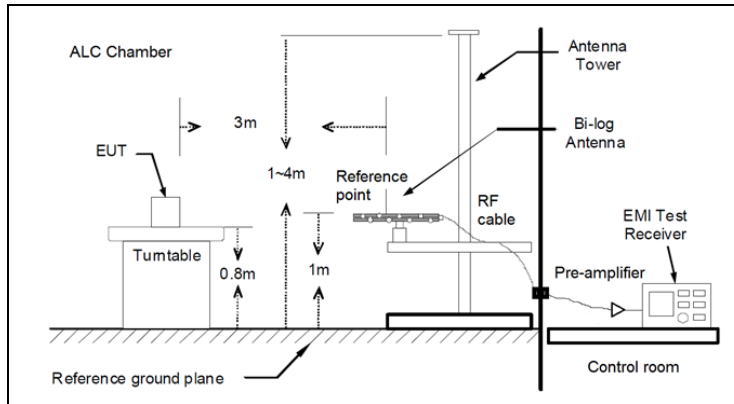
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

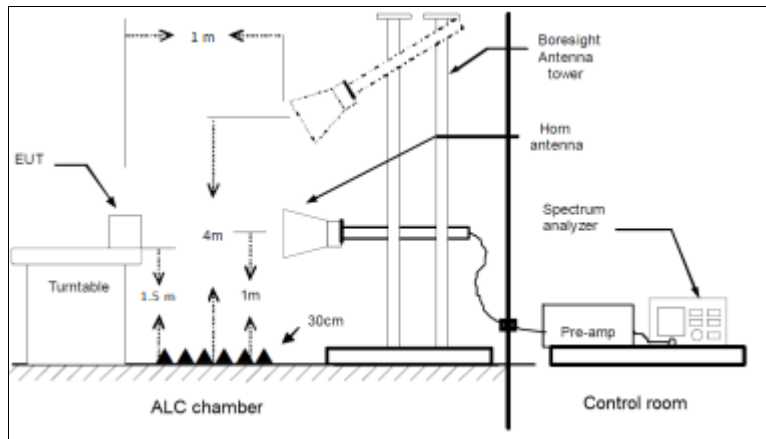
The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

TEST SETUP (CONT.)

Radiated measurements Setup $f < 1$ GHz



Radiated measurements setup $f > 1$ GHz



TESTED SAMPLES:	S/02
TESTED CONDITIONS MODES:	TC#02 (n mode 20 MHz)
TEST RESULTS:	PASS

Co-Location

The test was performed with the equipment transmitting first with only the WiFi 5 GHz (WLAN0 CORE0) radio and repeated with the 2.4 GHz BTEDR (WLAN 0), WiFi 2.4GHz (WLAN0 CORE1) radios transmitting simultaneously to check the impact of the co-location of the other radio interfaces. The results and plots below show the worst results obtained.

Frequency range 30 MHz – 1000 MHz

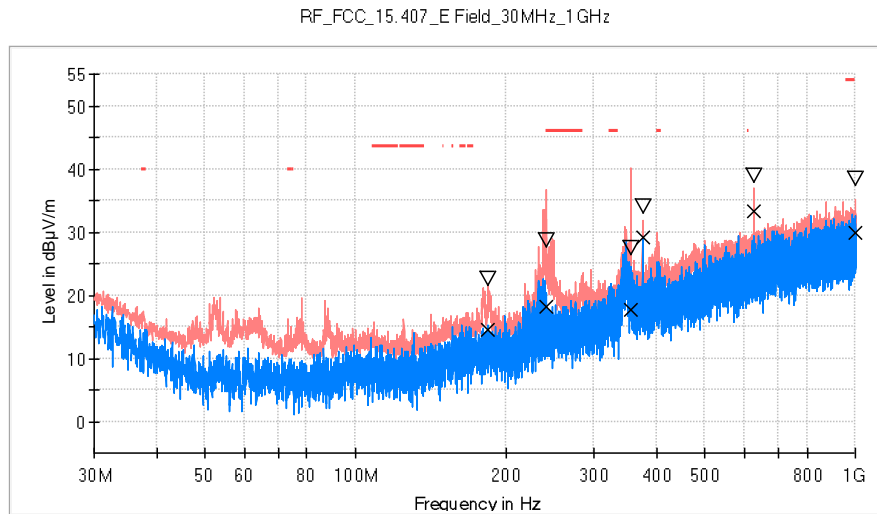
The spurious emissions below 1 GHz do not depend on the operating channel selected in the EUT. See worst operation mode selected for all channels as a worst case.

Frequency range 1 GHz – 40 GHz

The results and plots below show the maximum measured levels in the 1- 40 GHz range and the restricted band 4.5 –5.46 GHz.

TEST RESULTS (Cont.)	
FREQUENCY RANGE	30MHz – 1 GHz

Middle Channel



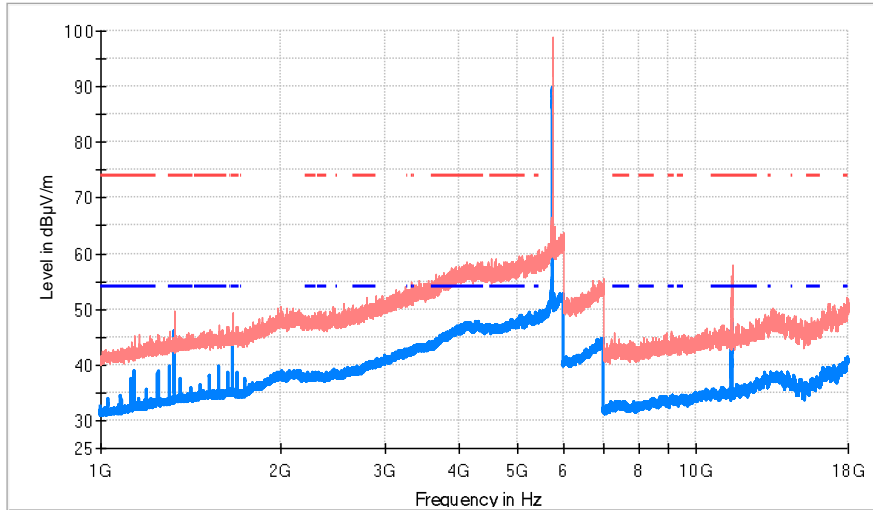
- PK+ MAXH
- PK+ CLRWR
- TX limits to Spurious Emission FCC15.407 (30MHz to 1 GHz) Restricted Bands QPK Limit
- ▽ MaxPeak-PK+ (Single)
- × QuasiPeak-QPK (Single)

Maximizations

Frequency (MHz)	PK+ CLRWR (dBµV/m)	PK+ MAXH (dBµV/m)	Poi	Azimuth (deg)
184.569500	11.6	21.7	V	-100.0
241.411500	13.0	36.6	V	-158.0
355.192500	21.2	40.2	H	-2.0
374.980500	28.9	31.8	H	-57.0
625.046500	27.1	36.9	H	46.0
1000.000000	32.1	35.3	H	-57.0

TEST RESULTS (Cont.)	
FREQUENCY RANGE	1 GHz – 18 GHz

Lowest Channel

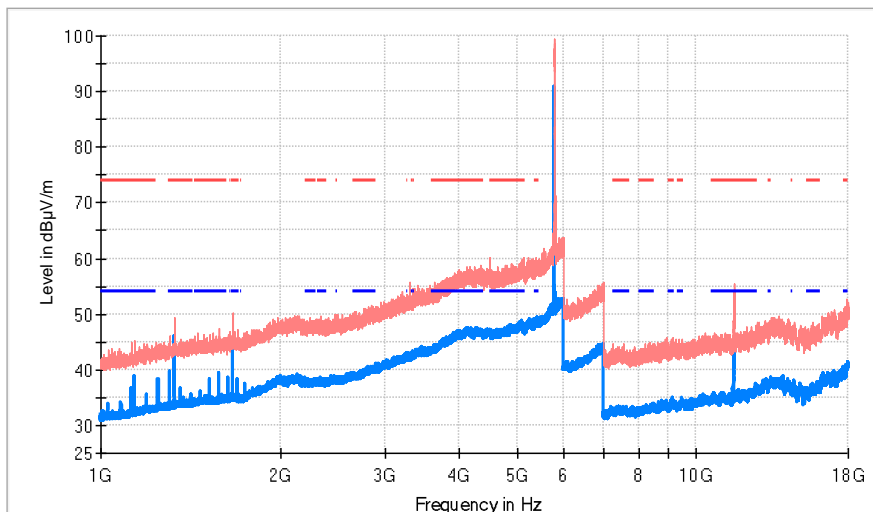


- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

Maximizations

Frequency (MHz)	PK+ MAX H	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1138.863636	45.2	38.8	H	139.0	
1333.181818	49.2	46.0	H	180.0	
1666.590909	49.2	45.3	H	-155.0	
5746.818182	96.3	89.8	V	78.0	Fundamental
11490.000000	57.1	47.3	V	119.0	

Middle Channel



- AVG_MAXH
- PK+_MAXH
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- - - TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

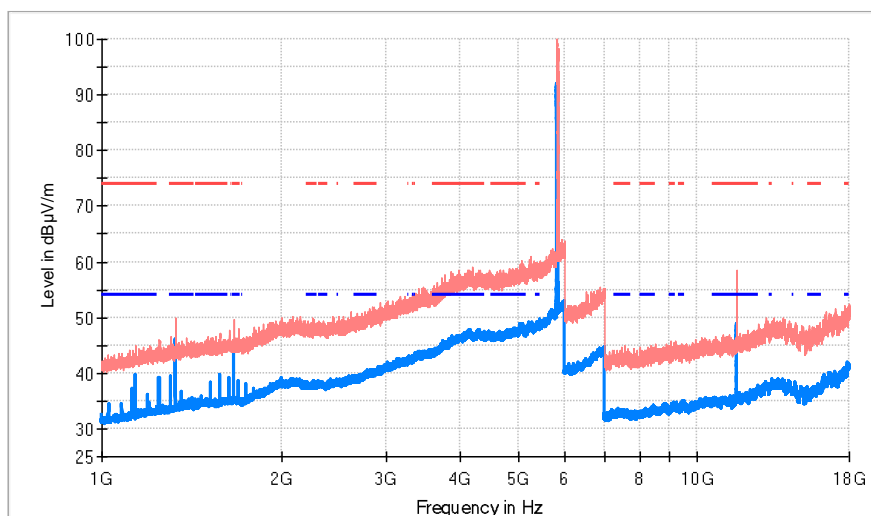
TEST RESULTS (Cont.)

FREQUENCY RANGE 1 – 18 GHz

Maximizations

Frequency (MHz)	PK+_MAX H	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1138.636364	43.3	38.8	H	138.0	
1333.181818	49.4	46.1	H	180.0	
1666.590909	49.3	45.2	H	-164.0	
5785.909091	97.6	90.8	V	112.0	Fundamental
11576.181818	53.8	44.3	V	90.0	

Highest Channel



- AVG_MAXH
- PK+_MAXH
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands PK Limit
- TX limits to Spurious Emission FCC15.407 (1GHz to 40 GHz) Restricted Bands AVG Limit

Maximizations

Frequency (MHz)	PK+_MAX H	AVG_MAXH (dBµV/m)	Pol	Azimuth (deg)	Comment
1138.863636	44.5	39.6	H	180.0	
1333.181818	49.5	46.0	H	180.0	
1666.590909	49.4	45.0	H	180.0	
5826.363636	98.8	91.9	V	81.0	Fundamental
11650.363636	56.6	48.9	V	83.0	