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Test report

337322-2TRFWL

Date of issue: November 9, 2017

Applicant:

Redline Communications

Product:

Broad-band wireless infrastructure product

Model:

RDL-3000-RMG3

FCC ID:

QC8-RDL3000RMG3

Specifications:

• FCC 47 CFR Part 15 Subpart E, §15.407

Unlicensed National Information Infrastructure Devises

Nemko Canada Inc., a testing laboratory, is accredited by the Standards Council of Canada. The tests included in this report are within the scope of this accreditation



FCC 15.407 and RSS-247 5.2 GHz.docx; Date: June 2015



Test location

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Province	QC
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Country	Canada
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Website	www.nemko.com
Site number	FCC: CA2041; IC: 2040G-5 (3 m semi anechoic chamber)

Tested by	Yong Huang Wireless/EMC Specialist		
Reviewed by	Kevin Rose, Wireless/EMC Specialist		
Review date	November 9, 2017		
Reviewer signature	the		

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Redline Communications
Address	302 Town Center Blvd.4 th floor
City	Markham
Province/State	Ontario
Postal/Zip code	L3R 0E8
Country	Canada

1.2 Test specifications

FCC 47 CFR Part 15, Subpart E, Clause 15.407 Unlicensed National Information Infrastructure Devises

1.3 Test methods

789033 D02 General UNII Test Procedures	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices
New Rules v01r04 (May 2, 2017)	Part 15, Subpart E
662911 D01 Multiple Transmitter Output v02r01 (October 31, 2013)	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
662911 D02 MIMO with Cross Polarized	Emissions testing of transmitters with multiple outputs in the same band (MIMO) with Cross Polarized
Antenna v01 (October 25, 2011)	Antenna
ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.5 Exclusions

None

1.6 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued



Section 2. Summary of test results

2.1 FCC Part 15 Subpart C, general requirements test results

Part	Test description	Verdict
§15.31(e)	Variation of power source	Pass ¹
§15.203	Antenna requirement	Pass ²
Notes: ¹ Measure	ements of the variation of the input power or the radiated signal level of the fund	amental frequency component of the emission, as

appropriate, was performed with the supply voltage varied between 85 % and 115 % of the nominal rated supply voltage. No noticeable output power variation was observed

²The EUT is professionally installed equipment.

2.2 FCC Part 15 Subpart E, test results

Part	Test description	Verdict
§15.403(i)	Emission bandwidth	Not applicable
§15.407(a)(1)	Power and density limits within 5.15–5.25 GHz band	Pass
§15.407(a)(2)	Power and density limits within 5.25–5.35 GHz and 5.47–5.725 GHz bands	Not applicable
§15.407(a)(3)	Power and density limits within 5.725–5.85 GHz band	Not applicable
§15.407(b)(1)	Undesirable emission limits for 5.15–5.25 GHz band	Pass
§15.407(b)(2)	Undesirable emission limits for 5.25–5.35 GHz band	Not applicable
§15.407(b)(3)	Undesirable emission limits for 5.47–5.725 GHz bands	Not applicable
§15.407(b)(4)	Undesirable emission limits for 5.725–5.85 GHz band	Not applicable
§15.407(b)(6)	Conducted limits for U-NII devices using an AC power line	Pass
§15.407(e)	Minimum 6 dB bandwidth of U-NII devices within the 5.725-5.85 GHz band	Not applicable
§15.407(g)	Frequency stability	Pass
§15.407(h)(1) ¹	Transmit power control (TPC)	Not applicable
§15.407(h)(2) ¹	Dynamic Frequency Selection (DFS)	Not applicable

Note: ¹DFS and TPC requirements are only applicable to 5.25–5.35 GHz and 5.47–5.725 GHz bands



Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	August 11, 2017
Nemko sample ID number	Item #1

3.2 EUT information

Product name	Broad-band wireless infrastructure product		
Model	RDL-3000-RMG3		
Serial number	150SC17180002		

3.3 Technical information

Frequency band	5150–5250 MHz			
Frequency Min (MHz)	5155(5 MHz channel); 5160 (10 MHz channel); 5170 (20 MHz channel)			
Frequency Max (MHz)	5247.5(5 MHz channel); 5245 (10 MHz channel); 5240 (20 MHz channel)			
Measured BW (MHz) (26 dB)	4.66 (5 MHz channel); 9.21 (10 MHz channel); 18.47 (20 MHz channel)			
Type of modulation	OFDM using 256-QAM, 128-QAM, 64-QAM, 16-QAM, QPSK and BPSK modulation for sub-carriers			
Emission classification (F1D, G1D, D1D)	W7D			
Transmitter spurious, Units @ distance	52.91dBμV/m @3m, average at 5.15 GHz			
Power requirements	48 V _{DC} PoE via 120 VAC, 60 Hz			
Antenna information	10 dBi Omni-directional Antenna Redline AOD-DB-0512-02 and L-Com HG5158DP-10U			
	24 dBi Dual Polarization Antenna 4.9–6.1 GHz, Redline 30-00362-00 and Redline 30-00328-50 Dual			
	Polarization Antenna (19dBi)			
	32 dBi Redline A3FT3204LTPD Parabolic Antenna, 4.9–5.8 GHz, 4 degree, dual polarity			
	The EUT is professionally installed.			

3.4 Product description and theory of operation

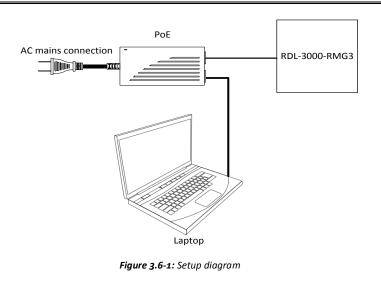
The EUT is a 2×2 MIMO point-to-multipoint (PMP) carrier grade broadband wireless infrastructure product, designed to operate outdoors in the 5150–5250 MHz band.

3.5 EUT exercise details

The EUT was controlled to transmit at desired frequency and modulation from laptop using web interface at IP address: 192.168.25.2



3.6 EUT setup diagram



3.7 EUT sub assemblies

Table 3.7-1: EUT sub assemblies

Description	Brand name	Model/Part number	Serial number
PoE	Cincon Electronics Co.	TRG60A-POE-L	004652



Section 4. Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.



Section 5. Test conditions

5.1 Atmospheric conditions

Temperature	15–30 °C
Relative humidity	20–75 %
Air pressure	860–1060 mbar

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.



Section 6. Measurement uncertainty

6.1 Uncertainty of measurement

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Test name	Measurement uncertainty, dB
All antenna port measurements	0.55
Conducted spurious emissions	1.13
Radiated spurious emissions	3.78
AC power line conducted emissions	3.55



7.1 Test equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Flush mount turntable	Sunol	FM2022	FA002550	_	NCR
Controller	Sunol	SC104V	FA002551	_	NCR
Antenna mast	Sunol	TLT2	FA002552	_	NCR
Spectrum analyzer	Rohde & Schwarz	FSV 40	FA002731	1 year	July 10/18
50 Ω coax cable	C.C.A.	None	FA002603	_	VOU
50 Ω coax cable	C.C.A.	None	FA002605	_	VOU
50 Ω coax cable	C.C.A.	None	FA002607	_	VOU
Bilog antenna (20–2000 MHz)	Sunol	JB1	FA002517	1 year	Oct. 5/17
Horn antenna (1–18 GHz)	EMCO	3115	FA001452	1 year	Oct. 26/17
Horn antenna (18–40 GHz)	EMCO	3116	FA002487	2 year	Aug. 16/18
Pre-amplifier (0.5–18 GHz)	COM-POWER	PAM-118A	FA002561	1 year	May 8/18
Pre-amplifier (18–40 GHz)	COM-POWER	PAM-840	FA002508	1 year	May 8/18
2400-2483 MHz Notch Filter	Microwave Circuits	N0324413	FA002693	_	VOU
50 Ω coax cable	HUBER+SUHNER	SUCOFLEX 100	FA002564	_	VOU
Power source	California Instruments	5001ix	FA001770	1 year	Feb 1/18
Power sensor	Rohde & Schwarz	NRP18S	FA002730	1 year	July 21/18
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 40	FA002071	1 year	May 3/18
Environmental Chamber	ESPEC	EPX-4H	FA002736	1 year	May 16/18
Multimeter	AMPPROBE	AM-530	FA002536	1 year	May 3/18

Note: NCR - no calibration required, VOU - verify on use

Report reference ID: 337322-2TRFWL



Table 7.1-1: Equipment list



Section 8. Testing data

8.1 FCC 15.403(i) Emission bandwidth

8.1.1 Definitions and limits

15.403(i) For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

8.1.2 Test summary

Test date	September 11, 2017	Temperature	24 °C
Test engineer	Yong Huang	Air pressure	1001 mbar
Verdict	Pass	Relative humidity	55 %

8.1.3 Observations, settings and special notes

Spectrum analyser settings:

Resolution bandwidth	approximately 1% of the EBW
Video bandwidth	> RBW
Detector mode	Peak
Trace mode	Max Hold

8.1.4 Test data

Table 8.1-1: Channel names description

Channel name	5 MHz channel	10 MHz channel	20 MHz channel
Low	5155	5160	5170
Mid	5200	5200	5200
High	5247.5	5245	5240

Table 8.1-2: 26 dB bandwidth results (in MHz)

Modulation	Channel	5 MHz channel	10 MHz channel	20 MHz channel
	Low	4.65	9.17	18.24
BPSK	Mid	4.58	9.10	18.23
	High	4.61	9.07	18.20
	Low	4.59	9.21	18.17
256-QAM	Mid	4.66	9.21	18.47
	High	4.62	9.10	18.13



8.1.4 Test data, continued

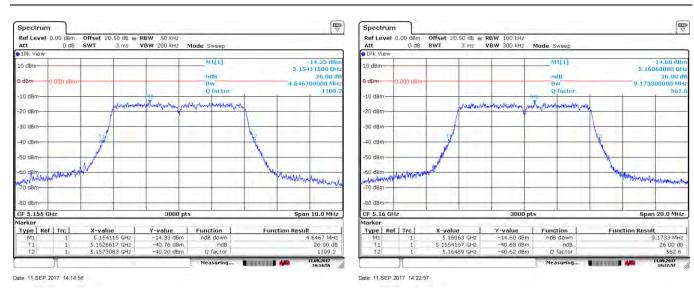
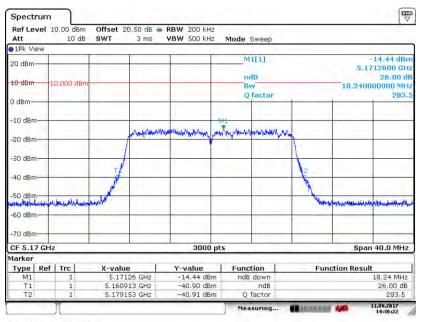


Figure 8.1-1: 26 dB bandwidth of the 5 MHz channel, sample plot

Figure 8.1-2: 26 dB bandwidth of the 10 MHz channel, sample plot



Date: 11 SEP 2017 14:36:22

Figure 8.1-3: 26 dB bandwidth of the 20 MHz channel, sample plot



8.2 FCC 15.407(a)(1) 5.15–5.25 GHz band output power and spectral density limits

8.2.1 Definitions and limits

(i) For an outdoor access point operating in the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30 dBm) 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.

The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

- (ii) For an indoor access point operating in the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30 dBm) 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.
- (iii) For fixed point-to-point access points operating in the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30 dBm). In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
- (iv) For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24 dBm) provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 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.

8.2.2 Test summary

Test date:	September 12, 2017 to September 17, 2017	Temperature:	24 °C
Test engineer:	Yong Huang	Air pressure:	1007 mbar
Verdict:	Pass	Relative humidity:	43 %



8.2.3 Observations, settings and special notes

As per manufacturer declaration, when EUT transmits from both antennas, the transmitter output signals are completely uncorrelated.

Output power was tested using RMS power meter. Spectrum analyzer settings for PSD measurement:

Resolution bandwidth	1 MHz
Video bandwidth	3 MHz
Frequency span	10 MHz (for 5 MHz channel), 50 MHz (for 10 MHz channel), 70 MHz (for 20 MHz channel)
Detector mode	RMS with gated triggering on full power pulses
Trace mode	Power Averaging over 100 sweeps

Combined average output power was calculated as follows: $P_{combined} = 10 \times log_{10} \left(\left(10^{P_{ch0}/10} \right) + \left(10^{P_{ch1}/10} \right) \right)$ EIRP was calculated as follows: $EIRP = P_{combined} + antenna gain$ Combined PPSD was calculated as follows: $PPSD_{combined} = 10 \times log_{10} \left(\left(10^{PSD_{ch0}/10} \right) + \left(10^{PSD_{ch1}/10} \right) \right)$ Note: cable loss is 0.7 dB Output power limit for 10 dBi antenna was calculated as follows: 30 dBm - (10 dBi - 0.7 dB - 6 dBi) = 26.70 dBm PPSD limit was calculated as follows: 17 - (10 - 0.7 - 6) = 13.70 dBm/MHz Output power limit for 24 dBi antenna was calculated as follows: 30 dBm - (24 dBi - 0.7 dB - 6 dBi) = 12.70 dBm PPSD limit was calculated as follows: 17 - (24 - .07 - 6) = -0.30 dBm/MHz

Output power limit for 32 dBi antenna was calculated as follows:30 dBm - (32 dBi - 0.7 dB - 6 dBi) = 4.70 dBmPPSD limit was calculated as follows:17 - (32 - 0.7 - 6) = -8.30 dBm/MHz

Table 8.2-1: Elevation vs gain for antennas

Antenna	Max Antenna Gain above 30° elevation, dBi	Max conducted output power, dBm	e.i.r.p above 30° elevation, dBm	Limit, dBm	Margin, dBm
L-Com HG5158DP-10U, 10 dBi antenna	-8	20.33	12.33	21	8.67
Redline AOD-DB-0512-02, 10 dBi antenna	-8	20.33	12.33	21	8.67
Redline 30-00328-50, 19 dBi antenna	9	5.89	14.89	21	6.11
Redline 30-00362-00, 24 dBi antenna	8	5.89	13.89	21	7.11
Redline A3FT3204LTPD, 32 dBi antenna	0	-2.15	-2.15	21	23.15



8.2.4 Test data

Table 8.2-2: Output power measurements results for 5 MHz channel, 10 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5155	9.81	9.96	12.90	26.70	13.80	9.3	22.20	36.00	13.80
BPSK	5200	16.11	16.22	19.18	26.70	7.52	9.3	28.48	36.00	7.52
	5247.5	15.82	15.77	18.81	26.70	7.89	9.3	28.11	36.00	7.89
	5155	9.79	9.82	12.82	26.70	13.88	9.3	22.12	36.00	13.88
256-QAM	5200	16.01	16.15	19.09	26.70	7.61	9.3	28.39	36.00	7.61
	5247.5	15.82	15.73	18.79	26.70	7.91	9.3	28.09	36.00	7.91

Note: Total antenna gain includes 0.7 dB loss of the cable

Table 8.2-3: Output power measurements results for 5 MHz channel, 24 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5155	0.41	0.61	3.52	12.70	9.18	23.30	26.82	36.00	9.18
BPSK	5200	0.51	0.43	3.48	12.70	9.22	23.30	26.78	36.00	9.22
	5247.5	0.36	0.44	3.41	12.70	9.29	23.30	26.71	36.00	9.29
	5155	0.46	0.59	3.54	12.70	9.16	23.30	26.84	36.00	9.16
256-QAM	5200	0.59	0.39	3.50	12.70	9.20	23.30	26.80	36.00	9.20
	5247.5	0.41	0.42	3.43	12.70	9.27	23.30	26.73	36.00	9.27

Note: Total antenna gain includes 0.7 dB loss of the cable

Table 8.2-4: Output power measurements results for 5 MHz channel, 32 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5155	-7.12	-7.22	-4.16	4.70	8.86	31.30	27.14	36.00	8.86
BPSK	5200	-7.31	-7.55	-4.42	4.70	9.12	31.30	26.88	36.00	9.12
	5247.5	-7.43	-7.62	-4.51	4.70	9.21	31.30	26.79	36.00	9.21
	5155	-7.23	-7.51	-4.36	4.70	9.06	31.30	26.94	36.00	9.06
256-QAM	5200	-7.35	-7.65	-4.49	4.70	9.19	31.30	26.81	36.00	9.19
	5247.5	-7.42	-7.66	-4.53	4.70	9.23	31.30	26.77	36.00	9.23

Note: Total antenna gain includes 0.7 dB loss of the cable

Table 8.2-5: Output power measurements results for 10 MHz channel, 10 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5160.0	16.87	16.92	19.91	26.70	6.79	9.30	29.21	36.00	6.79
BPSK	5200.0	16.89	16.87	19.89	26.70	6.81	9.30	29.19	36.00	6.81
	5245.0	16.59	16.62	19.62	26.70	7.08	9.30	28.92	36.00	7.08
	5160.0	16.84	16.89	19.88	26.70	6.82	9.30	29.18	36.00	6.82
256-QAM	5200.0	16.88	16.75	19.83	26.70	6.87	9.30	29.13	36.00	6.87
-	5245.0	16.61	16.71	19.67	26.70	7.03	9.30	28.97	36.00	7.03

Note: Total antenna gain includes 0.7 dB loss of the cable



Table 8.2-6: Output power measurements results for 10 MHz channel, 24 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5160.0	3.35	3.33	6.35	12.70	6.35	23.30	29.65	36.00	6.35
BPSK	5200.0	3.51	3.51	6.52	12.70	6.18	23.30	29.82	36.00	6.18
	5245.0	3.22	3.40	6.32	12.70	6.38	23.30	29.62	36.00	6.38
	5160.0	3.61	3.55	6.59	12.70	6.11	23.30	29.89	36.00	6.11
256-QAM	5200.0	3.58	3.61	6.61	12.70	6.09	23.30	29.91	36.00	6.09
	5245.0	3.18	3.22	6.21	12.70	6.49	23.30	29.51	36.00	6.49

Note: Total antenna gain includes 0.7 dB loss of the cable

Table 8.2-7: Output power measurements results for 10 MHz channel, 32 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5160.0	-4.64	-4.58	-1.60	4.70	6.30	31.30	29.70	36.00	6.30
BPSK	5200.0	-4.72	-4.69	-1.69	4.70	6.39	31.30	29.61	36.00	6.39
	5245.0	-4.81	-4.77	-1.78	4.70	6.48	31.30	29.52	36.00	6.48
	5160.0	-4.42	-4.45	-1.42	4.70	6.12	31.30	29.88	36.00	6.12
256-QAM	5200.0	-4.62	-4.56	-1.58	4.70	6.28	31.30	29.72	36.00	6.28
	5245.0	-4.73	-4.55	-1.63	4.70	6.33	31.30	29.67	36.00	6.33

Note: Total antenna gain includes 0.7 dB loss of the cable

Table 8.2-8: Output power measurements results for 20 MHz channel, 10 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5170.0	18.22	18.17	21.21	26.70	5.49	9.30	30.51	36.00	5.49
BPSK	5200.0	20.14	20.18	23.17	26.70	3.53	9.30	32.47	36.00	3.53
	5240.0	19.81	19.97	22.90	26.70	3.80	9.30	32.20	36.00	3.80
	5170.0	18.25	18.23	21.25	26.70	5.45	9.30	30.55	36.00	5.45
256-QAM	5200.0	20.25	20.33	23.30	26.70	3.40	9.30	32.60	36.00	3.40
-	5240.0	19.83	19.90	22.88	26.70	3.82	9.30	32.18	36.00	3.82

Note: Total antenna gain includes 0.7 dB loss of the cable

Table 8.2-9: Output power measurements results for 20 MHz channel, 24 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5170.0	5.59	5.89	8.75	12.70	3.95	23.30	32.05	36.00	3.95
BPSK	5200.0	5.61	5.67	8.65	12.70	4.05	23.30	31.95	36.00	4.05
	5240.0	5.32	5.44	8.39	12.70	4.31	23.30	31.69	36.00	4.31
	5170.0	5.55	5.87	8.72	12.70	3.98	23.30	32.02	36.00	3.98
256-QAM	5200.0	5.63	5.62	8.64	12.70	4.06	23.30	31.94	36.00	4.06
	5240.0	5.35	5.46	8.42	12.70	4.28	23.30	31.72	36.00	4.28

Note: Total antenna gain includes 0.7 dB loss of the cable



Table 8.2-10: Output power measurements results for 20 MHz channel, 32 dBi antenna

Modulation and data rate	Frequency, MHz	Output power on ch0, dBm	Output power on ch1, dBm	Combined power, dBm	Limit, dBm	Margin, dB	Tot. Gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB
	5170.0	-2.42	-2.15	0.73	4.70	3.97	31.30	32.03	36.00	3.97
BPSK	5200.0	-2.59	-2.33	0.55	4.70	4.15	31.30	31.85	36.00	4.15
	5240.0	-2.91	-2.60	0.26	4.70	4.44	31.30	31.56	36.00	4.44
	5170.0	-2.51	-2.21	0.65	4.70	4.05	31.30	31.95	36.00	4.05
256-QAM	5200.0	-2.55	-2.36	0.56	4.70	4.14	31.30	31.86	36.00	4.14
	5240.0	-2.89	-2.58	0.28	4.70	4.42	31.30	31.58	36.00	4.42

Note: Total antenna gain includes 0.7 dB loss of the cable

Table 8.2-11: PSD measurements results for 5 MHz channel, 10 dBi antenna

Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5155	4.98	4.93	7.97	13.7	5.73
BPSK	5200	10.74	9.30	13.09	13.7	0.61
	5247.5	9.52	8.95	12.25	13.7	1.45
	5155	4.97	4.93	7.96	13.7	5.74
256-QAM	5200	10.93	9.27	13.19	13.7	0.51
	5247.5	9.62	8.89	12.28	13.7	1.42

Table 8.2-12: PSD measurements results for 5 MHz channel, 24 dBi antenna

Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5155	-4.24	-3.88	-1.05	-0.3	0.75
BPSK	5200	-4.50	-3.84	-1.15	-0.3	0.85
	5247.5	-4.91	-4.12	-1.49	-0.3	1.19
	5155	-4.21	-3.99	-1.09	-0.3	0.79
256-QAM	5200	-4.31	-3.81	-1.04	-0.3	0.74
	5247.5	-4.95	-4.08	-1.48	-0.3	1.18

Table 8.2-13: PSD measurements results for 5 MHz channel, 32 dBi antenna

Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5155	-12.17	-11.93	-9.04	-8.3	0.74
BPSK	5200	-12.78	-11.74	-9.22	-8.3	0.92
	5247.5	-12.33	-12.03	-9.17	-8.3	0.87
	5155	-12.05	-11.89	-8.96	-8.3	0.66
256-QAM	5200	-12.10	-11.75	-8.91	-8.3	0.61
	5247.5	-11.99	-11.98	-8.97	-8.3	0.67

Table 8.2-14: PSD measurements results for 10 MHz channel, 10 dBi antenna

Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5160.0	9.79	9.76	12.79	13.7	0.91
BPSK	5200.0	8.98	10.28	12.69	13.7	1.01
	5245.0	9.31	8.81	12.08	13.7	1.62
	5160.0	9.66	9.82	12.75	13.7	0.95
256-QAM	5200.0	9.08	10.31	12.75	13.7	0.95
	5245.0	9.41	9.04	12.24	13.7	1.46



Table 8.2-15: PSD measurements results for 10 MHz channel, 24 dBi antenna

Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5160.0	-4.18	-4.03	-1.09	-0.3	0.79
BPSK	5200.0	-4.27	-4.05	-1.15	-0.3	0.85
	5245.0	-4.55	-4.92	-1.72	-0.3	1.42
	5160.0	-4.15	-4.74	-1.42	-0.3	1.12
256-QAM	5200.0	-4.22	-3.98	-1.09	-0.3	0.79
	5245.0	-4.61	-4.98	-1.78	-0.3	1.48

Table 8.2-16: PSD measurements results for 10 MHz channel, 32 dBi antenna

Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5160.0	-11.83	-11.88	-8.84	-8.3	0.54
BPSK	5200.0	-12.59	-11.98	-9.26	-8.3	0.96
	5245.0	-12.74	-12.05	-9.37	-8.3	1.07
	5160.0	-11.74	-11.91	-8.81	-8.3	0.51
256-QAM	5200.0	-12.55	-12.06	-9.29	-8.3	0.99
	5245.0	-12.88	-11.99	-9.40	-8.3	1.10

Table 8.2-17: PSD measurements results for 20 MHz channel, 10 dBi antenna

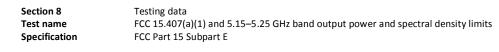
Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5170.0	7.42	7.71	10.58	13.7	3.12
BPSK	5200.0	9.88	9.98	12.94	13.7	0.76
	5240.0	9.11	9.05	12.09	13.7	1.61
	5170.0	7.45	7.81	10.64	13.7	3.06
256-QAM	5200.0	9.89	9.99	12.95	13.7	0.75
	5240.0	9.06	9.11	12.10	13.7	1.60

Table 8.2-18: PSD measurements results for 20 MHz channel, 24 dBi antenna

Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5170.0	-4.99	-4.70	-1.83	-0.3	1.53
BPSK	5200.0	-5.01	-4.98	-1.98	-0.3	1.68
	5240.0	-5.15	-5.22	-2.17	-0.3	1.87
256-QAM	5170.0	-4.95	-4.88	-1.90	-0.3	1.60
	5200.0	-4.99	-4.88	-1.92	-0.3	1.62
	5240.0	-5.16	-5.09	-2.11	-0.3	1.81

Table 8.2-19: PSD measurements results for 20 MHz channel, 32 dBi antenna

Modulation and data rate	Frequency, MHz	PSD on ch0, dBm/MHz	PSD on ch1, dBm/MHz	Combined PSD, dBm/MHz	Limit, dBm/MHz	Margin, dB
	5170.0	-12.72	-12.57	-9.63	-8.3	1.33
BPSK	5200.0	-12.88	-12.78	-9.82	-8.3	1.52
	5240.0	-12.95	-13.44	-10.18	-8.3	1.88
	5170.0	-12.86	-12.56	-9.70	-8.3	1.40
256-QAM	5200.0	-12.75	-12.79	-9.76	-8.3	1.46
	5240.0	-12.81	-12.96	-9.87	-8.3	1.57





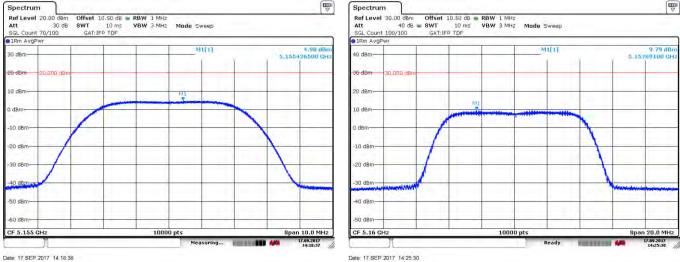
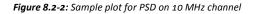


Figure 8.2-1: Sample plot for PSD on 5 MHz channel



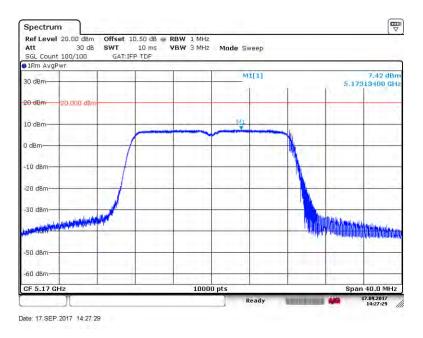


Figure 8.2-3: Sample plot for PSD on 20 MHz channel



8.3 FCC 15.407(b) Undesirable (unwanted) emissions

8.3.1 Definitions and limits

(1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.

(7) The provisions of § 15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

Frequency,	Field stre	ngth of emissions	Measurement distance,
MHz	μV/m	dBµV/m	m
0.009–0.490	2400/F (F in kHz)	67.6 – 20 × log ₁₀ (F) (F in kHz)	300
0.490-1.705	24000/F (F in kHz)	87.6 – 20 × log10(F) (F in kHz)	30
1.705-30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Table 8.3-1: FCC §15.209 Radiated emission limits

Notes: In the emission table above, the tighter limit applies at the band edges.

For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test

Table 8.3-2: FCC restricted frequency bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9–410	4.5-5.15
0.495-0.505	16.69475-16.69525	608–614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25–7.75
4.125-4.128	25.5-25.67	1300–1427	8.025-8.5
4.17725-4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725-4.20775	73–74.6	1645.5-1646.5	9.3–9.5
6.215-6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775-6.26825	108-121.94	1718.8–1722.2	13.25–13.4
6.31175-6.31225	123–138	2200–2300	14.47–14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7–21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975-12.52025	240–285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600–4400	Above 38.6
13.36-13.41			

8.3.2 Test summary

Test date:	September 12, 2017 to September 24, 2017	Temperature:	24 °C
Test engineer:	Yong Huang	Air pressure:	1007 mbar
Verdict:	Pass	Relative humidity:	43 %



8.3.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to 40 GHz while the EUT was transmitting on both MIMO chains simultaneously.

As per customer, the transmitter output signals on the two chains are completely uncorrelated.

Conducted measurements were performed on both of the 2 antenna ports, with the highest and the lowest data rate, the worse case is presented. All conducted plots below have been corrected with antenna gains, RF cable losses and multiple antenna correction factors.

Radiated measurements below 18 GHz were performed at a distance of 3 m.

Radiated measurements above 18 GHz and in the vicinity of the allocated band edges (around 5 GHz) were performed at a distance of 1 m. Cabinet radiation were performed while both antenna connectors were terminated with 50 Ω load. No emissions related to RF transmitter were detected within 6 dB below the limit.

Spectrum analyser for peak conducted measurements within restricted bands below 1 GHz:

Resolution bandwidth:	100 kHz
Video bandwidth:	300 kHz
Detector mode:	Peak
Trace mode:	Max Hold

Spectrum analyser for peak conducted measurements within restricted bands above 1 GHz:

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	Peak
Trace mode:	Max Hold

Spectrum analyser for average conducted measurements within restricted bands above 1 GHz for frequencies where peak results were above the average limit:

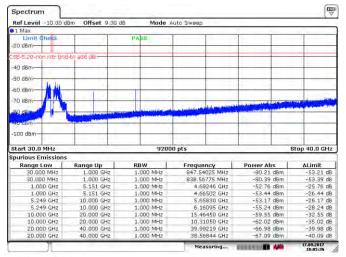
Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	RMS
Trace mode:	Power average
Number of averaging traces:	100

Spectrum analyser for peak conducted measurements outside restricted bands:

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	Peak
Trace mode:	Max Hold



8.3.4 Test data

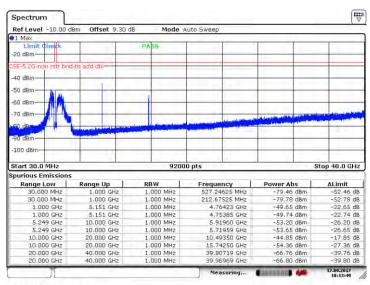


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1.000 GHz	1.000 MHz	346,53525 MHz	-80,04 dBm	-53.04 d
				-22.53 di
				-22.90 di
				-22.27 di
				-24.53 di
				-16.70 di
				-19.52 di
				-39.59 di -39.65 di
	Range Up 1.000 GHz	Page RBW Page 1.000 GHz 1.000 MHz 1.000 MHz 1.000 GHz 1.000 MHz 1.000 MHz 5.151 GHz 1.000 MHz 1.000 MHz 10.000 GHz 1.000 MHz 1.000 MHz 20.000 GHz 1.000 MHz 1.000 MHz 20.000 GHz 1.000 MHz 1.000 MHz 20.000 GHz 1.000 MHz 1.000 MHz 40.000 GHz 1.000 MHz 1.000 MHz	Project Project Bange Up RBW Frequency 1.000 GHz 1.000 MHz 787.10925 MHz 1.000 GHz 1.000 MHz 787.10925 MHz 1.000 GHz 1.000 MHz 346.55258 MHz 5.151 GHz 1.000 MHz 4.70257 GHz 10.000 GHz 1.000 MHz 5.68440 GHz 10.000 GHz 1.000 MHz 5.68448 GHz 20.000 GHz 1.000 MHz 5.68448 GHz 20.000 GHz 1.000 MHz 5.68496 GHz 20.000 GHz 1.000 MHz 5.68495 GHz 20.000 GHz 1.000 MHz 5.88450 GHz 20.000 GHz 1.000 MHz 5.88450 GHz	Hot add (80) 92000 pts 5 Range Up RBW Frequency Power Abs 1.000 GHz 1.000 MHz 787.10925 MHz -79.32 dbm 1.000 GHz 1.000 MHz 787.10925 MHz -79.32 dbm 1.000 GHz 1.000 MHz 346.53525 MHz -79.32 dbm 1.000 GHz 1.000 MHz 346.53525 MHz -79.32 dbm 1.000 GHz 1.000 MHz 5.751 GHz -49.90 dbm 0.000 GHz 1.000 MHz 5.05490 GHz -42.92 dbm 10.000 GHz 1.000 MHz 5.05490 GHz -45.53 dbm 10.000 GHz 1.000 MHz 5.05490 GHz -45.53 dbm 10.000 GHz 1.000 MHz 5.05490 GHz -45.52 dbm 10.000 GHz 1.000 MHz 5.95490 GHz -45.52 dbm 10.000 GHz 1.000 MHz 15.99850 GHz -45.52 dbm 10.000 GHz 1.000 MHz 9.64906 GHz -65.59 dbm

Date: 17 SEP 2017 18:05:36

Figure 8.3-1: Spurious emissions outside restricted bands for 10 dBi antenna, 5 MHz channel, low channel

Figure 8.3-2: Spurious emissions outside restricted bands for 10 dBi antenna, 5 MHz channel, mid channel

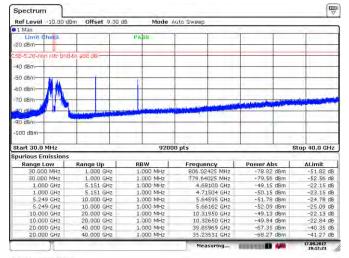


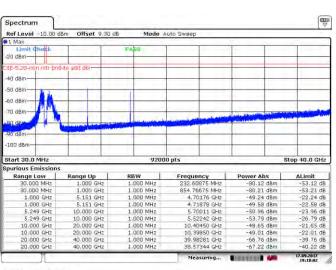
Date: 17 SEP 2017 18:13:09

Date: 17 SEP 2017 18:13:48

Figure 8.3-3: Spurious emissions outside restricted bands for 10 dBi antenna, 5 MHz channel, high channel Testing data FCC 15.407(b) Undesirable (unwanted) emissions FCC Part 15 Subpart E



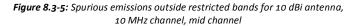


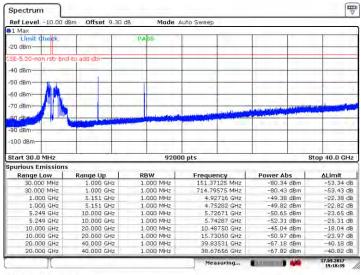


Date: 17 SEP 2017 19 17 22

Figure 8.3-4: Spurious emissions outside restricted bands for 10 dBi antenna, 10 MHz channel, low channel

Date: 17 SEP 2017 19 18:01

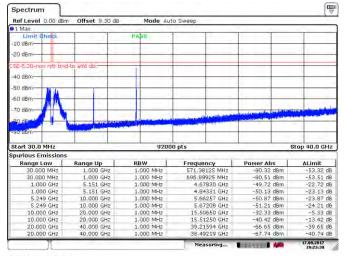


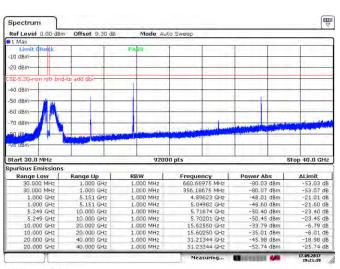


Date: 17.SEP.2017 19:18:38

Figure 8.3-6: Spurious emissions outside restricted bands for 10 dBi antenna, 10 MHz channel, high channel



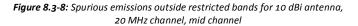




Date: 17 SEP 2017 19:23:30

Figure 8.3-7: Spurious emissions outside restricted bands for 10 dBi antenna, 20 MHz channel, Iow channel

Date: 17 SEP 2017 19:21:19



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Range Low	Range Up	RBW	Frequency	Power Abs	∆Limit
Range Low 30.000 MHz	1.000 GHz	1.000 MHz	460.21925 MHz	-79.23 dBm	-52,23 d
Range Low 30.000 MHz 30.000 MHz	1.000 GHz 1.000 GHz		460.21925 MHz 465.55425 MHz	-79.23 dBm -80.13 dBm	-52,23 di -53,13 di
Range Low 30.000 MHz 30.000 MHz 1.000 GHz	1.000 GHz 1.000 GHz 5.151 GHz	1.000 MHz 1.000 MHz 1.000 MHz	460.21925 MHz 465.55425 MHz 4.93193 GHz	-79.23 dBm -80.13 dBm -48.84 dBm	-52,23 d -53,13 d -21,84 d
Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz	1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz	1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	460.21925 MHz 465.55425 MHz 4.93193 GHz 4.75219 GHz	-79.23 dBm -80.13 dBm -48.84 dBm -49.39 dBm	-52.23 d -53.13 d -21.84 d -22.39 d
Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.249 GHz	1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	460.21925 MHz 465.55425 MHz 4.93193 GHz 4.75219 GHz 5.74952 GHz	-79,23 dBm -80,13 dBm -48,84 dBm -49,39 dBm -50,82 dBm	-52,23 d -53,13 d -21,84 d -22,39 d -23,82 d
Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz	1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz	1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	460.21925 MHz 465.55425 MHz 4.93193 GHz 4.75219 GHz	-79.23 dBm -80.13 dBm -48.84 dBm -49.39 dBm	-52.23 di -53.13 di -21.84 di -22.39 di -23.82 di -23.82 di -24.72 di
Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.249 GHz	1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	460.21925 MHz 465.55425 MHz 4.93193 GHz 4.75219 GHz 5.74952 GHz	-79,23 dBm -80,13 dBm -48,84 dBm -49,39 dBm -50,82 dBm	-52.23 di -53.13 di -21.84 di -22.39 di -23.82 di -23.82 di -24.72 di
Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.249 GHz 5.249 GHz	1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2 10,000 GH2 10,000 GH2	1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	460.21925 MHz 465.55425 MHz 4.93193 GHz 4.75219 GHz 5.74952 GHz 5.94003 GHz	-79,23 dBm -80,13 dBm -48,84 dBm -49,39 dBm -50,82 dBm -51,72 dBm	ΔLimit -52.23 df -53.13 df -21.84 df -22.39 df -23.82 df -24.72 df -15.59 df -16.89 df
30.000 MHz 30.000 MHz 1.000 GHz 5.249 GHz 5.249 GHz 10.000 GHz	1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20.000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	460.21925 MHz 465.55425 MHz 4.93193 GHz 4.75219 GHz 5.74952 GHz 5.94003 GHz 10.49150 GHz	-79.23 dBm -80.13 dBm -48.84 dBm -49.39 dBm -50.82 dBm -51.72 dBm -42.59 dBm	-52.23 di -53.13 di -21.84 di -22.39 di -23.82 di -24.72 di -15.59 di

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Figure 8.3-9: Spurious emissions outside restricted bands for 10 dBi antenna, 20 MHz channel, high channel



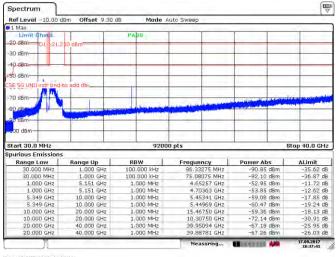
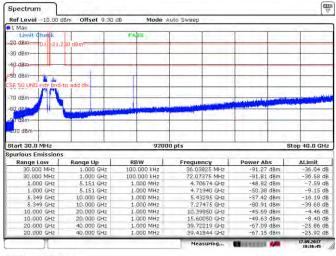
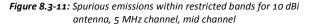


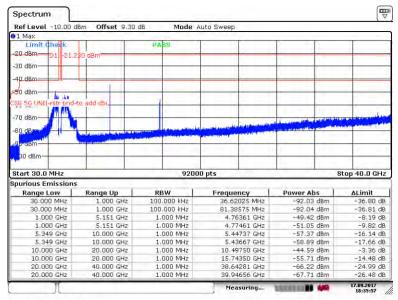


Figure 8.3-10: Spurious emissions within restricted bands for 10 dBi antenna, 5 MHz channel, low channel



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Figure 8.3-12: Spurious emissions within restricted bands for 10 dBi antenna, 5 MHz channel, high channel



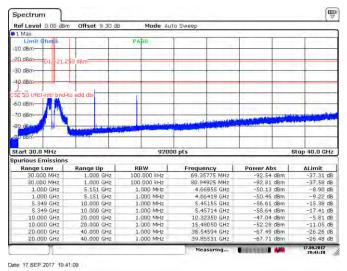


Figure 8.3-13: Spurious emissions within restricted bands for 10 dBi antenna, 10 MHz channel, low channel

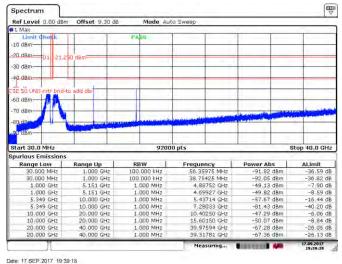


Figure 8.3-14: Spurious emissions within restricted bands for 10 dBi

antenna, 10 MHz channel, mid channel

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50 dBm		_	-		-	-		-
CSE 5G UNII-rstr bn	d-to add dbi	-	-				-	_
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.9 <mark>0 dBm</mark>	the second s			-				
-90' dBm								-
			9200	0 pts				Stop 40.0 GHz
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Start 30.0 MHz Spurious Emission Range Low 30.000 MHz	Range Up 1.000 GH	z 100	BW	Freque 84.05	325 MHz	-92.40	os dBm	∆Limit −37.17 dB
Start 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 MHz	Range Up 1.000 GH 1.000 GH	z 100 z 100	BW	Freque 84.05 60.62	325 MHz 775 MHz	-92.40 -92.96	os dBm dBm	ΔLimit -37.17 de -37.73 de
Stort 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz	Range Up 1.000 GH 1.000 GH 5.151 GH	z 100 z 100 z 1	BW	Freque 84.05 60.62 4.76	325 MHz 775 MHz 817 GHz	-92.40 -92.96 -49.40	os dBm dBm dBm	ΔLimit -37.17 dB -37.73 dB -8.17 dB
Stort 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz	Range Up 1.000 GH 1.000 GH 5.151 GH 5.151 GH	2 100 2 100 2 1 2 1 2 1	BW	Freque 84.05 60.62 4.76 4.94	325 MHz 775 MHz 817 GHz 542 GHz	-92.40 -92.96 -49.40 -50.77	dBm dBm dBm dBm dBm	ΔLimit -37.17 dB -37.73 dB -8.17 dB -9.54 dB
200 dBm Start 30.0 MHz Spurious Emissio Range Low 30.000 MHz 30.000 GHz 1.000 GHz 5.349 GHz	Range Up 1.000 GH 1.000 GH 5.151 GH 5.151 GH 10.000 GH	2 100 2 100 2 1 2 1 2 1 2 1 2 1	BW 1.000 kHz 1.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Freque: 84.05 60.62 4.76 4.94 5.45	325 MHz 775 MHz 817 GHz 542 GHz 248 GHz	-92,40 -92,96 -49,40 -50,77 -53,71	os dBm dBm dBm dBm dBm dBm	ALimit -37.17 dB -37.73 dB -8.17 dB -9.54 dB -12,48 dB
Stort 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GH 1.000 GH 5.151 GH 5.151 GH 10.000 GH 10.000 GH	2 100 2 100 2 1 2 1 2 1 2 1 2 1 2 1	BW 0.000 kHz 0.000 kHz 0.000 MHz 0.000 MHz 0.000 MHz	Freque 84.05 60.62 4.76 4.94 5.45 5.43	325 MHz 775 MHz 817 GHz 542 GHz 248 GHz 621 GHz	-92,40 -92,96 -49,40 -50,77 -53,71 -55,34	os dBm dBm dBm dBm dBm dBm dBm	ΔLimit -37.17 dB -37.73 dB -8.17 dB -9.54 dB -12.48 dB -14.11 dB
**************************************	Range Up 1.000 GH 1.000 GH 5.151 GH 5.151 GH 10.000 GH 10.000 GH 20.000 GH	2 100 2 100 2 1 2 1 2 1 2 1 2 1 2 1 2 1	BW 0.000 kH2 0.000 kH2 0.000 MH2 0.000 MH2 0.000 MH2 0.000 MH2 0.000 MH2	Freque 84.05 60.62 4.76 4.94 5.45 5.43 10.48	325 MHz 775 MHz 817 GHz 542 GHz 248 GHz 621 GHz 950 GHz	-92,40 -92,96 -49,40 -50,77 -53,71 -55,34 -49,91	os dBm dBm dBm dBm dBm dBm dBm dBm	ALimit -37.17 dB -37.73 dB -8.17 dB -9.54 dB -12.48 dB -14.11 dB -8.68 dB
Start 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz 10.000 GHz 10.000 GHz 10.000 GHz 10.000 GHz 10.000 GHz	Range Up 1.000 GH 1.000 GH 5.151 GH 5.151 GH 10.000 GH 10.000 GH 20.000 GH	2 100 2 100 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	BW	Freque: 84.05 60.62 4.76 4.94 5.45 5.43 10.48 15.73	325 MHz 775 MHz 817 GHz 542 GHz 248 GHz 621 GHz 950 GHz 050 GHz	-92,40 -92,96 -49,40 -50,77 -53,71 -55,34 -49,91 -57,53	05 dBm dBm dBm dBm dBm dBm dBm dBm	ΔLimit -37.17 de -37.73 de -8.17 de -9.54 de -12.48 de -14.11 de -8.68 de -16.30 de
**************************************	Range Up 1.000 GH 1.000 GH 5.151 GH 5.151 GH 10.000 GH 10.000 GH 20.000 GH	2 100 2 100 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	BW 0.000 kH2 0.000 kH2 0.000 MH2 0.000 MH2 0.000 MH2 0.000 MH2 0.000 MH2	Freque, 84.05 60.62 4.76 4.94 5.45 5.43 10.48 15.73 39.94	325 MHz 775 MHz 817 GHz 542 GHz 248 GHz 621 GHz 950 GHz	-92,40 -92,96 -49,40 -50,77 -53,71 -55,34 -49,91	05 dBm dBm dBm dBm dBm dBm dBm dBm	ALimit -37.17 dB -37.73 dB -8.17 dB -9.54 dB -12.48 dB -14.11 dB -8.68 dB

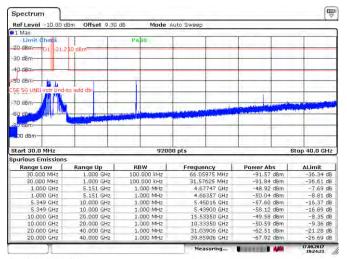
Figure 8.3-15: Spurious emissions within restricted bands for 10 dBi antenna, 10 MHz channel, high channel



Peak limit EIRP equivalent: 74 dB μ V/m – 95.23 dB = -21.23 dBm

Average limit EIRP equivalent: 54 dB μ V/m – 95.23 dB = -41.23 dBm

Plots below show EIRP trace measured using peak detector and compared with average limit. Where peak level of any emission has exceeded average limit line, that emission was then re-measured with RMS detector.



Ref Level -10.00	dBm Offset 9.30 (dB Mode #	auto Sweep		
1 Max		10 m			- C
Limit Check.		FAIL			
20 dBm D1 21.	2 BO dBm				
30 dBm					
Sec. 1 11					
40 dBm	-	-			-
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			and the second se	A A AND AND AND AND AND AND AND AND AND	and the second second second
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9 dBm					
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our dBm 00 dBm Start 30.0 MHz purious Emission				5	Stop 40.0 GHz
ourdBm D0 dBm Start 30.0 MHz purious Emission Range Low	Range Up	RBW	Frequency	S Power Abs	ΔLimit
20 dBm 30 dBm start 30.0 MHz purious Emission: Range Low 30.000 MHz	Range Up 1.000 GHz	RBW	Frequency 59.31825 MHz	Power Abs -92.06 dBm	ALimit -36.83 dB
av dBm D0 dBm purious Emission Range Low 30,000 MHz 30,000 MHz	Range Up 1.000 GHz 1.000 GHz	RBW	Frequency 59.31825 MHz 34,97125 MHz	Power Abs -92.06 dBm -92.77 dBm	ALimit -36.83 dB -37.54 dB
20 dBm 20 dBm itart 30.0 MHz purious Emission: Range Low 30.000 MHz 30,000 MHz 1.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz	Frequency 59.31825 MHz 34,97125 MHz 4.88212 GHz	Power Abs -92.06 dBm -92.77 dBm -47.76 dBm	ALimit -36.83 dB -37.54 dB -6.59 dB
20 dBm 30 dBm itort 30.0 MHz Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 59.31825 MHz 34,97125 MHz 4.88212 GHz 4.69761 GHz	Power Abs -92.06 dBm -92.77 dBm -47.62 dBm -48.53 dBm	ALimit -36.83 dB -37.54 dB -6.59 dB -7.30 dB
20 dBm 30 dBm itart 30.0 MHz purious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 59.31825 MHz 34.97125 MHz 4.88212 GHz 4.69761 GHz 5.44411 GHz	Power Abs -92.06 dBm -92.77 dBm -47.62 dBm -48.53 dBm -54.23 dBm	ALimit -36.83 dB -37.54 dB -6.59 dB -7.30 dB -13.00 dB
20 dBm 200 dBm tart 30.0 MHz purious Emission: Range Low 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHZ 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 59.31825 MHz 34.97125 MHz 4.88212 GHz 4.69761 GHz 5.494511 GHz 5.43853 GHz	Power Abs -92.06 dBm -92.77 dBm -48.53 dBm -54.23 dBm -54.23 dBm	ALimit -36.83 dt -37.54 dt -6.59 dt -7.30 dt -13.00 dt -13.06 dt
20 dBm 100 dBm 100 dBm 100 dBm 100 dBm 1000 dHz 1000 GHz 1.000 GHz 1.000 GHz 1.349 GHz 1.349 GHz 1.349 GHz 1.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 59:31825 MHz 34:97125 MHz 4:89761 GHz 5:44411 GHz 5:43853 GHz 15:59450 GHz*	Power Abs -92.06 dBm -92.77 dBm -47.92 dBm -48.53 dBm -54.23 dBm -54.59 dBm -29.54 dBm*	ALimit -36.83 dB -37.54 dB -6.59 dB -7.30 dB -13.00 dB -13.36 dB 11.69 dB
9 u dBm 500 dBm 500 dBm start 30.0 MHz 90,000 MHz 1,000 GHz 1,000 GHz 5,349 GHz 5,349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 59.31825 MHz 34.97125 MHz 4.88212 GHz 4.69761 GHz 5.494511 GHz 5.43853 GHz	Power Abs -92.06 dBm -92.77 dBm -48.53 dBm -54.23 dBm -54.23 dBm	ALimit -36.83 dB

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Figure 8.3-16: Spurious emissions within restricted bands for 10 dBi antenna, 20 MHz channel, low channel

Date: 17 SEP 2017 19:28:46

Figure 8.3-17: Spurious emissions within restricted bands for 10 dBi antenna, 20 MHz channel, mid channel

Note: Average value of the exceeding emission is -46.62 dBm.

1 Max			uto Sweep		
Limit Cherk		PASS			
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-30 dBm					
-50 Ubill					
-40 dBm					
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-BQ dela	sandin Association and a state		and the second se		
ab dBm					
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Start 30.0 MHz Spurious Emissions	,	9200	0 pts	ŝ	3top 40.0 GH
71413 RA747 AUE	Range Up	9200 RBW	0 pts Frequency	Power Abs	3top 40.0 G⊦ ∆Limit
Spurious Emission					
Spurious Emissions Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit -36.76 d
Range Low 30.000 MHz	Range Up 1.000 GHz	RBW 100.000 kHz	Frequency 57.52375 MHz	Power Abs -91.99 dBm	ΔLimit -36.76 d -36.84 d -7.03 d
Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz	Frequency 57, 52375 MHz 59,60925 MHz 4,93152 GHz 4,72770 GHz	Power Abs -91.99 dBm -92.07 dBm -48.26 dBm -48.75 dBm	ALimit -36.76 c -36.84 c -7.03 c -7.52 c
Spurious Emissions Range Low 30.000 MHz 30.000 MHz 10.000 GHz 1.000 GHz 5.349 GHz	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2 10.000 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 57.52375 MHz 59.60925 MHz 4.93152 GHz 4.72770 GHz 5.45528 GHz	Power Abs -91.99 dBm -92.07 dBm -48.26 dBm -48.75 dBm -53.51 dBm	ΔLimit -36.76 d -36.84 d -7.03 d -7.52 d -12.28 d
Spurious Emissions 30.000 MHz 30.000 MHz 30.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2 10.000 GH2 10.000 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 57.52375 MHz 59.60925 MHz 4.93152 GHz 4.72770 GHz 5.45528 GHz 7.28126 GHz	Power Abs -91,99 dBm -92,07 dBm -48,26 dBm -48,75 dBm -53,51 dBm -80,38 dBm	ΔLimit -36.76 c -36.84 c -7.03 c -7.52 c -12.28 c -39.15 c
Spurious Emissions Range Low 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2 10.000 GH2 20.000 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 57, 52375 MHz 59, 60925 MHz 4, 93152 GHz 4, 72770 GHz 5, 45528 GHz 7, 28126 GHz 10, 47650 GHz	Power Abs -91.99 dBm -92.07 dBm -48.26 dBm -48.75 dBm -53.51 dBm -80.38 dBm -44.82 dBm	ΔLimit -36.76 d -36.84 d -7.03 d -7.52 d -12.28 d -39.15 d -3.59 d
Spurious Emissions Range Low 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz 10.000 GHz 10.000 GHz 10.000 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 57, 52375 MHz 59, 60925 MHz 4, 93152 GHz 4, 72770 GHz 5, 45528 GHz 7, 20126 GHz 10, 47650 GHz 10, 48950 GHz	Power Abs -91,99 dBm -92,07 dBm -48,26 dBm -48,75 dBm -53,51 dBm -80,38 dBm -44,82 dBm -44,82 dBm	ΔLimit -36.76 d -36.84 d -7.03 d -7.52 d -12.28 d -39.15 d -35.9 d -4.71 d
Spurious Emissions Range Low 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2 10.000 GH2 20.000 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 57, 52375 MHz 59, 60925 MHz 4, 93152 GHz 4, 72770 GHz 5, 45528 GHz 7, 28126 GHz 10, 47650 GHz	Power Abs -91.99 dBm -92.07 dBm -48.26 dBm -48.75 dBm -53.51 dBm -80.38 dBm -44.82 dBm	ΔLimit

Date 17 SEP 2017 19 37 36

Figure 8.3-18: Spurious emissions within restricted bands for 10 dBi antenna, 20 MHz channel, high channel

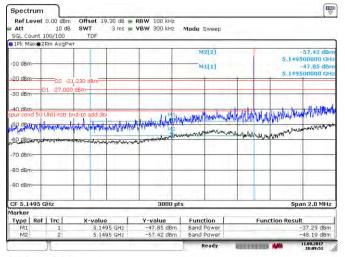
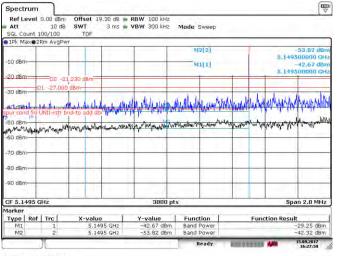




Figure 8.3-19: Lower band edge for 10 dBi antenna, 5 MHz channel



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Figure 8.3-21: Lower band edge for 10 dBi antenna, 10 MHz channel

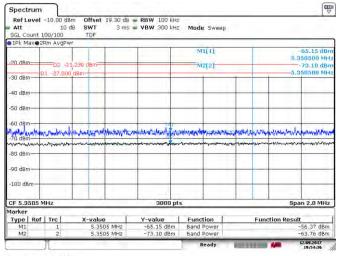
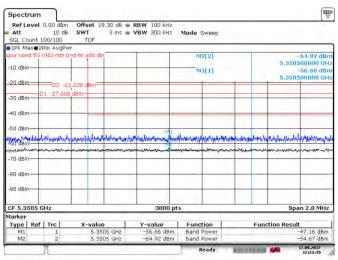




Figure 8.3-20: Upper band edge for 10 dBi antenna, 5 MHz channel



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Figure 8.3-22: Upper band edge for 10 dBi antenna, 10 MHz channel



64.13 dB

56.01 di

muluilly

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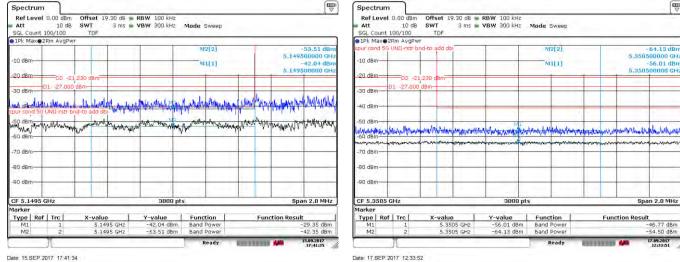
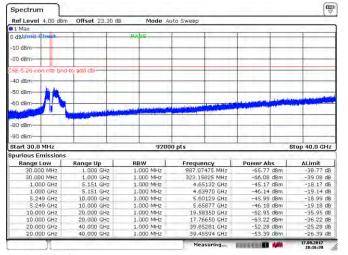


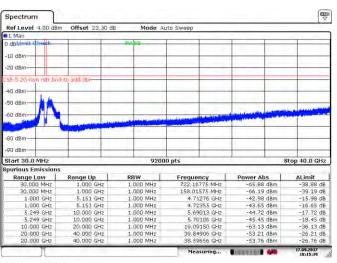
Figure 8.3-23: Lower band edge for 10 dBi antenna, 20 MHz channel

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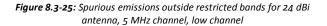
Figure 8.3-24: Upper band edge for 10 dBi antenna, 20 MHz channel



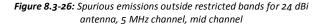


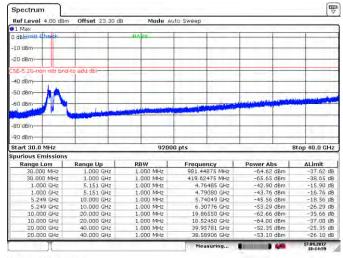


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Date: 17 SEP 2017 18:15:38

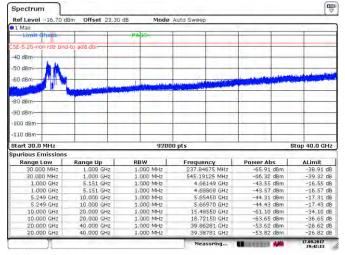


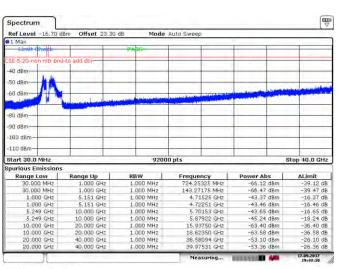


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Figure 8.3-27: Spurious emissions outside restricted bands for 24 dBi antenna, 5 MHz channel, high channel



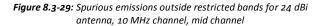




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Figure 8.3-28: Spurious emissions outside restricted bands for 24 dBi antenna, 10 MHz channel, low channel

Date: 17 SEP 2017 19:43:10

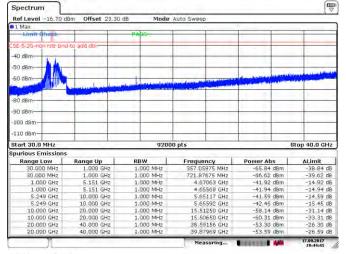


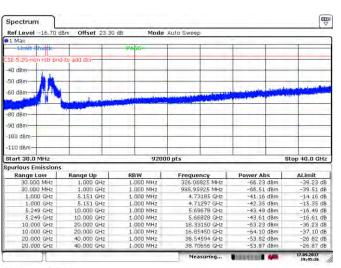
Spectrum					
Ref Level -16.70 d	iBm Offset 23.30	dB Mode	Auto Sweep		
1 Max	1				
Limit Sheek		PABO			
SE-5.2G-non rstr bno	t-to add dhi		-		-
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-60 dBm - 1				in and in called an electronic	AND IN COLORISATION OF A DAMAGE
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-100 dBm	_			-	
-110 dBm					
-110 08m			1	1	and here a second
Start 30.0 MHz		9200	0 pts	5	top 40.0 GH
Spurious Emissions	5				
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1,000 GHz	1.000 MHz	683.22225 MHz	-66.18 dBm	-39,18 d
30.000 MHz	1,000 GH2	1.000 MHz	331.35475 MHz	-66.74 dBm	-39.74 d
1.000 GHz	5,151 GHz	1,000 MHz	4.73517 GHz	~43.93 dBm	~16,93 d
1.000 GHz	5,151 GHz	1,000 MHz	4.74865 GHz	-44.48 dBm	-17,48 d
5.249 GHz	10.000 GHz	1.000 MHz	5,77992 GHz	-44,54 dBm	-17,54 d
5.249 GHz	10,000 GHz	1.000 MHz	5,73812 GHz	-45.89 dBm	-18,89 d
10.000 GHz	20.000 GHz	1.000 MHz	19.59450 GHz	-62.92 dBm	-35,92 d
10.000 GHz	20.000 GHz	1.000 MHz	17.47250 GHz	-63.22 dBm	-36,22 d
20.000 GHz	40,000 GHz	1.000 MHz	38.62406 GHz	-53.29 dBm	-26,29 d
20.000 GHz	40,000 GHz	1.000 MHz	39.86031 GHz	~53.32 dBm	-26.32 di
1			Measuring	E	17.09.2017 19:43:39

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Figure 8.3-30: Spurious emissions outside restricted bands for 24 dBi antenna, 10 MHz channel, high channel



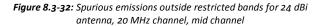




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Figure 8.3-31: Spurious emissions outside restricted bands for 24 dBi antenna, 20 MHz channel, low channel

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-80 dBm					
-90 dBm					
-100 dBm					
-110 dBm					
Start 30.0 MHz		9200	0 pts	S	top 40.0 GH
Spurious Emissions					
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	207.00075 MHz	-66.10 dBm	-39.10 d
30.000 MHz	1.000 GHz	1.000 MHz	217.96175 MHz	~66.27 dBm	-39.27 d
1.000 GHz	5.151 GHz	1.000 MHz	4.73766 GHz	~41.51 dBm	~14.51 d
1.000 GHz	5,151 GHz	1.000 MHz	4.72480 GHz	-41.73 dBm	-14.73 d
5.249 GHz	10.000 GHz	1.000 MHz	5.69441 GHz	-44.38 dBm	-17.38 d
5.249 GHz	10.000 GHz	1.000 MHz	5.74904 GHz	-44.54 dBm	-17.54 d
10.000 GHz	20.000 GHz	1.000 MHz	19.48050 GHz	-63.18 dBm	-36.18 d
10.000 GHz	20.000 GHz	1.000 MHz	18.25350 GHz	-63.94 dBm	-36.94 d
20.000 GHz	40.000 GHz	1,000 MHz	39.97656 GHz	-53.22 dBm -53.89 dBm	-26.22 di
20.000 GHz	40,000 GHz	1.000 MHz	39.12344 GHz		-26.89 d

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Figure 8.3-33: Spurious emissions outside restricted bands for 24 dBi antenna, 20 MHz channel, high channel



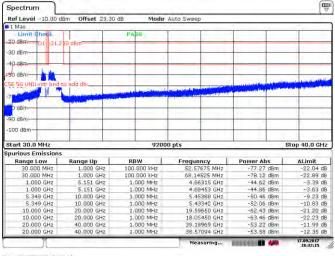
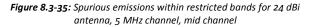




Figure 8.3-34: Spurious emissions within restricted bands for 24 dBi antenna, 5 MHz channel, low channel

Ref Level -10.00	dBm Offset 23.30	in all in all all all all all all all all all al	Auto Sweep			_
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-50 dBm						2-1-1-10
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-90 dBm						
-90 dBm						
-100 dBm Start 30.0 MHz		9200	0 pts		Stop	40.0 GH
-100 dBm Start 30.0 MHz Spurious Emission	5	9200	0 pts		Stop	40.0 GH
-100 dBm Start 30.0 MHz Spurious Emission Range Low	Range Up	RBW	Frequency	Power Ab	s A	Limit
-100 dBm Start 30.0 MHz Spurious Emission Range Low 30.000 MHz	Range Up 1.000 GHz	RBW	Frequency 55.72925 MH	-77.81	s 🛆 dBm	Limit -22.58 di
-100 dBm Start 30.0 MHz Spurious Emission Range Low 30.000 MHz 30,000 MHz	Range Up 1.000 GHz 1.000 GHz	RBW 100.000 kHz 100.000 kHz	Frequency 55.72925 MH 34.97125 MH	-77.91	s A dBm dBm	Limit -22.58 di -22.68 di
-100 dBm Start 30.0 MHz Spurious Emission Range Low 30.000 MHz 30,000 MHz 1.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz	Frequency 55.72925 MH 34.97125 MH 4.72978 GH	-77.81 -77.91 -45.57	s A dBm dBm dBm	Limit -22.58 di -22.68 di -4.34 di
-100 dBm Start 30.0 MHz Spurious Emission Range Low 30,000 MHz 1,000 GHz 1,000 GHz	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz	Frequency 55.72925 MH 34.97125 MH 4.72978 GH 4.70591 GH	-77.81 -77.91 -45.57 -45.22	s A dBm dBm dBm dBm	Limit -22.58 di -22.68 di -4.34 di -4.99 di
-100 dBm Start 30.0 MHz Spurious Emission 20,000 MHz 30,000 MHz 1,000 GHz 1,000 GHz 5,349 GHz	Range Up 1,000 GHz 1,000 GHz 5,151 GHz 5,151 GHz 10,000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 55.72925 MH 34.97125 MH 4.72978 GH 4.70591 GH 5.44969 GH	-77.81 -77.91 -45.57 -46.22 -50.25	s A dBm dBm dBm dBm dBm	Limit -22.58 di -22.68 di -4.34 di -4.99 di -9.02 di
-100 dBm- start 30.0 MHz Spurious Emission Range Low 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 55.72925 MH: 34.97125 MH: 4.72978 GH: 4.70591 GH: 5.44969 GH: 5.43249 GH:	-77.81 -77.91 -45.57 -46.22 -50.25 -50.57	s A dBm dBm dBm dBm dBm dBm dBm	Limit -22.58 di -22.68 di -4.34 di -4.99 di -9.02 di -9.34 di
-100 dBm Start 30.0 MHz Start 30.0 MHz 30.000 MHz 30.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 55.72925 MH: 34.97125 MH: 4.72978 GH: 4.70591 GH: 5.44969 GH: 5.44969 GH: 5.43249 GH: 19.88050 GH:	-77.81 -77.91 -45.57 -46.22 -50.25 -50.57 -63.64	s A dBm dBm dBm dBm dBm dBm dBm	Limit -22.58 di -22.68 di -4.34 di -4.99 di -9.02 di -9.34 di -22.41 di
-100 dBm- start 30.0 MHz spurious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz 10.000 GHz	Range Up 1,000 GHz 1,000 GHz 5,151 GHz 5,151 GHz 10,000 GHz 10,000 GHz 20,000 GHz 20,000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 55.72925 MH; 34.97125 MH; 4.72978 GH; 5.44969 GH; 5.43249 GH; 19.8950 GH; 16.95150 GH;	-77.81 -77.91 -45.57 -46.22 -50.25 -50.57 -63.64 -64.07	s A dBm dBm dBm dBm dBm dBm dBm dBm	Limit -22.58 d -22.68 d -4.34 d -4.99 d -9.02 d -9.34 d -22.41 d -22.84 d
-100 dBm Stort 30.0 MHz Stort 30.0 MHz 30,000 MHz 30,000 GHz 1,000 GHz 5,349 GHz 5,349 GHz 5,349 GHz 5,349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 55.72925 MH: 34.97125 MH: 4.72978 GH: 4.70591 GH: 5.44969 GH: 5.44969 GH: 5.43249 GH: 19.88050 GH:	-77.81 -77.91 -45.57 -46.22 -50.25 -50.57 -63.64 -64.07 -53.00	s A dBm dBm dBm dBm dBm dBm dBm dBm dBm dBm	Limit -22.58 di -22.68 di -4.34 di -4.99 di -9.02 di -9.34 di

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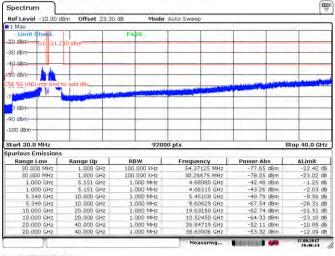


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Start 30.0 MHz		9200	10 pts		Stop 40.0 GH
acuit 00.0 miliz					
and the second second second	the second second				
apage press of the	Range Up	RBW	Frequency	Power Abs	ΔLimit
Spurious Emissions		RBW 100.000 kHz	Frequency 45.20475 MHz	Power Abs -78.63 dBm	
Spurious Emissions Range Low	Range Up				-23.40 di -23.43 di
Range Low 30.000 MHz	Range Up 1.000 GHz	100.000 kHz	45.20475 MHz	-78.63 dBm	-23.40 di -23.43 di
Range Low 30.000 MHz 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz	100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz	45.20475 MHz 76.34175 MHz 4.76174 GHz 4.74348 GHz	-78.63 dBm -78.66 dBm -45.59 dBm -46.03 dBm	-23.40 di -23.43 di -4.36 di -4.80 di
Spurious Emissions Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz	100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	45.20475 MHz 76.34175 MHz 4.76174 GHz 4.74348 GHz 5.44597 GHz	-78.63 dBm -78.66 dBm -45.59 dBm -46.03 dBm -50.85 dBm	-23.40 dl -23.43 dl -4.36 dl -4.80 dl -9.62 dl
Spurious Emissions Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz	100.000 kHz 100.000 kHz 1,000 MHz 1,000 MHz 1,000 MHz 1,000 MHz	45.20475 MHz 76.34175 MHz 4.76174 GHz 4.74348 GHz 5.44597 GHz 5.42132 GHz	-78.63 dBm -78.66 dBm -45.59 dBm -46.03 dBm -50.85 dBm -53.38 dBm	-23.40 di -23.43 di -4.36 di -4.80 di -9.62 di -12.15 di
Spurious Emissions Range Low 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20.000 GHz	100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	45.20475 MHz 76.34175 MHz 4.76174 GHz 4.74348 GHz 5.44597 GHz 5.42132 GHz 10.49550 GHz	-78.63 dBm -78.66 dBm -45.59 dBm -46.03 dBm -50.85 dBm -53.38 dBm -63.40 dBm	-23.40 di -23.43 di -4.36 di -4.80 di -9.62 di -12.15 di -22.17 di
Spurious Emissions Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20.000 GHz 20.000 GHz 20.000 GHz	100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	45,20475 MHz 76,34175 MHz 4,76174 GHz 4,74348 GHz 5,44597 GHz 5,42132 GHz 10,49550 GHz 19,90850 GHz	-78.63 dBm -78.66 dBm -45.59 dBm -46.03 dBm -50.85 dBm -53.38 dBm -63.40 dBm -63.54 dBm	-23.40 dl -23.43 dl -4.36 dl -4.80 dl -9.62 dl -12.15 dl -22.17 dl -22.31 dl
Spurious Emissions 30.000 MHz 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20.000 GHz	100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	45.20475 MHz 76.34175 MHz 4.76174 GHz 4.74348 GHz 5.44597 GHz 5.42132 GHz 10.49550 GHz	-78.63 dBm -78.66 dBm -45.59 dBm -46.03 dBm -50.85 dBm -53.38 dBm -63.40 dBm	ALimit -23.40 dt -4.36 dt -4.80 dt -12.15 dt -12.15 dt -22.17 dt -22.31 dt -10.74 dt -12.34 dt

Date: 17.SEP.2017 18.33.17

Figure 8.3-36: Spurious emissions within restricted bands for 24 dBi antenna, 5 MHz channel, high channel





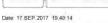
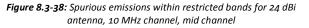


Figure 8.3-37: Spurious emissions within restricted bands for 24 dBi antenna, 10 MHz channel, low channel

	dBm Offset 23.3	u de Midde	Auto Sweep		
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dam-	Up-personal States				
1 dBm					
90 dBm					
-100 dBm					
Start 30.0 MHz		9200	Bots		Stop 40.0 GH
Start 30.0 MHz		9200	0 pts		Stop 40.0 GH
Spurious Emission				Dower Abr	
purious Emission Range Low	Range Up	RBW	Frequency	Power Abs	ALimit
Range Low 30.000 MHz	Range Up 1.000 GHz	RBW	Frequency 61.16125 MHz	-77.72 dBm	ALimit -22.49 di
Range Low 30.000 MHz 30,000 MHz	Range Up 1.000 GHz 1.000 GHz	RBW 100.000 kHz 100.000 kHz	Frequency 61.16125 MHz 87.69075 MHz	-77.72 dBm -78,64 dBm	ALimit -22.49 di -23.41 di
Range Low 30.000 MHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz	Frequency 61.16125 MHz 87.69075 MHz 4.70238 GHz	-77.72 dBm -78.64 dBm -43.27 dBm	ALimit -22.49 di -23.41 di -2.04 di
Range Low 30.000 MH2 30,000 MH2 1.000 GH2	Range Up 1.000 GHz 1.000 GHz	RBW 100.000 kHz 100.000 kHz	Frequency 61.16125 MHz 87.69075 MHz	-77.72 dBm -78,64 dBm	ALimit -22.49 di -23.41 di -2.04 di -2.64 di
Purious Emission Range Low 30.000 MH2 30,000 MH2 1.000 GH2 1.000 GH2	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 61.16125 MHz 87.69075 MHz 4.70238 GHz 4.69242 GHz	-77.72 dBm -78.64 dBm -43.27 dBm -43.87 dBm	ALimit -22.49 di -23.41 di -2.04 di -2.64 di -7.68 di
Purious Emission Range Low 30.000 MHz 30,000 MHz 1.000 GHz 1.000 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 61.16125 MHz 87.69075 MHz 4.70238 GHz 4.69242 GHz 5.45621 GHz	-77.72 dBm -78.64 dBm -43.27 dBm -43.87 dBm -43.87 dBm -48.91 dBm	ALimit -22.49 di -23.41 di -2.04 di -2.64 di -7.68 di -7.68 di
Range Low 30.000 MHz 30,000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 61.16125 MHz 87.69075 MHz 4.70238 GHz 4.69242 GHz 5.45621 GHz 5.45853 GHz	-77.72 dBm -78.64 dBm -43.27 dBm -43.87 dBm -48.91 dBm -51.83 dBm	ALimit -22.49 dl -23.41 dl -2.64 dl -7.68 dl -7.68 dl -10.60 dl -22.36 dl
Range Low 30,000 MHz 30,000 MHz 30,000 MHz 1,000 GHz 1,000 GHz 5,349 GHz 10,000 GHz 10,000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 61.16125 MHz 87.69075 MHz 4.70238 GHz 4.69242 GHz 5.45621 GHz 5.45621 GHz 19.87250 GHz	-77.72 dBm -78.64 dBm -43.27 dBm -43.87 dBm -48.91 dBm -51.83 dBm -63.59 dBm	ALimit -22.49 di -23.41 di -2.64 di -7.68 di -10.60 di -22.36 di -22.77 di
Purious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 20,000 GHz 20,000 GHz	RBW 100.000 kHz 1.000 NHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 61.16125 MHz 87.69075 MHz 4.70238 GHz 5.45621 GHz 5.45853 GHz 19.87250 GHz 15.59750 GHz	-77.72 dBm -78.64 dBm -43.27 dBm -43.87 dBm -48.91 dBm -51.83 dBm -63.59 dBm -64.00 dBm	-22.49 dt -23.41 dt -2.04 dt -2.64 dt -7.69 dt -10.60 dt -22.36 dt -22.37 dt -22.77 dt -12,49 dt

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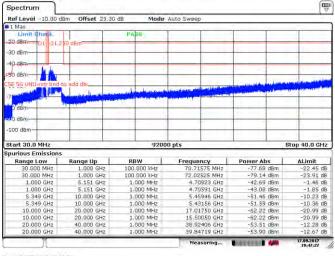


1 Max					
Limit there		PARS			
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	12 00 UDH				
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-40 d8m					
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-90 0611-					
-100 dBm-				2	
-100 dBm		9200	0 pts		Stop 40.0 GH:
-100 dBm	ns	9200	0 pts		Stop 40.0 GH
-100 dBm	ns Range Up	9200 RBW	0 pts Frequency	Power Abs	Stop 40.0 GH ALimit
-100 dBm Start 30.0 MHz Spurious Emissio					ΔLimit
100 dBm Start 30.0 MHz purious Emission Range Low 30,000 MHz 30,000 MHz	Range Up 1.000 GHz 1.000 GHz	RBW 100.000 kHz 100.000 kHz	Frequency 34.09825 MHz 59.12425 MHz	Power Abs -77.63 dBm -77.97 dBm	ΔLimit -22,40 di -22,74 di
Start 30.0 MHz purious Emission Range Low 30,000 MHz 30,000 MHz 1,000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz	Frequency 34.09825 MHz 59.12425 MHz 4.74908 GHz	Power Abs -77.63 dBm -77.97 dBm -44.28 dBm	ΔLimit -22,40 di -22,74 di -3,05 di
-100 dBm 	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz	Frequency 34.09825 MHz 59.12425 MHz 4.74908 GHz 4.73891 GHz	Power Abs -77.63 dBm -77.97 dBm -44.28 dBm -44.69 dBm	ΔLimit -22,40 di -22,74 di -3,05 di -3,46 di
-100 dBm Start 30.0 MHz Spurious Emissio Range Low 30,000 MHz 30,000 MHz 1,000 GHz 1,000 GHz 5,349 GHz	Range Up 1.000 GH2 1.000 GH2 5.151 GH2 5.151 GH2 10.000 GH2	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 34.09825 MHz 59.12425 MHz 4.74908 GHz 4.73891 GHz 5.44411 GHz	Power Abs -77.63 dBm -77.97 dBm -44.28 dBm -44.69 dBm -50.79 dBm	ΔLimit -22,40 di -22,74 di -3,05 di -3,46 di -9,56 di
-100 dBm start 30.0 MHz spurious Emissio Range Low 30,000 MHz 1,000 GHz 1,000 GHz 5,349 GHz 5,349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 34.09825 MH2 59.12425 MH2 4.74908 GH2 4.73891 GH2 5.44411 GH2 5.43760 GH2	Power Abs -77.63 dBm -77.97 dBm -44.28 dBm -44.69 dBm -50.79 dBm -51.27 dBm	ΔLimit -22.40 dl -22.74 dl -3.05 dl -3.46 dl -9.56 dl -10.04 dl
-100 dBm start 30.0 MHz spurious Emission Range Low 30,000 MHz 30,000 MHz 1,000 GHz 1,000 GHz 5,349 GHz 5,349 GHz 10,000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 34,09825 MHz 59,12425 MHz 4,74908 GHz 4,73891 GHz 5,44411 GHz 5,43760 GHz 15,73250 GHz	Power Abs -77.63 dBm -77.97 dBm -44.28 dBm -44.69 dBm -50.79 dBm -51.27 dBm -63.13 dBm	<u>ALimit</u> -22.40 dt -22.74 dt -3.05 dt -3.46 dt -9.56 dt -10.04 dt -21.90 dt
-100 dBm start 30.0 MHz spurious Emissio Range Low 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 10.000 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 34.09825 MH2 59.12425 MH2 4.74908 GH2 4.73891 GH2 5.44411 GH2 5.43760 GH2 15.73250 GH2 16.92750 GH2	Power Abs -77.63 dBm -44.28 dBm -44.28 dBm -50.79 dBm -51.27 dBm -63.13 dBm -63.47 dBm	ΔLimit -22,40 dl -22,74 dl -3,05 dl -3,46 dl -9,56 dl -10,04 dl -21,90 dl -22,24 dl
-100 dBm spurious Emissio Range Low 30,000 MHz 30,000 MHz 1,000 GHz 1,000 GHz 5,349 GHz 5,349 GHz 10,000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 34,09825 MHz 59,12425 MHz 4,74908 GHz 4,73891 GHz 5,44411 GHz 5,43760 GHz 15,73250 GHz	Power Abs -77.63 dBm -77.97 dBm -44.28 dBm -44.69 dBm -50.79 dBm -51.27 dBm -63.13 dBm	1.1.1

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Figure 8.3-39: Spurious emissions within restricted bands for 24 dBi antenna, 10 MHz channel, high channel



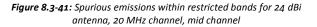


Date: 17 SEP 2017 19:47:26

Figure 8.3-40: Spurious emissions within restricted bands for 24 dBi antenna, 20 MHz channel, low channel

Ref Level -10.00	Bm Offset 23.30	dB Mode	Auto Sweep		
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-100 dBm Start 30.0 MHz Spurious Emission:					
-100 dBm Start 30.0 MHz Spurious Emission Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
-100 dBm Start 30.0 MHz Spurious Emission Range Low 30.000 MHz	Range Up 1.000 GHz	RBW	Frequency 70.42475 MHz	-77.45 dBm	ALimit -22.22 di
-100 dBm Start 30.0 MHz Spurious Emission: Range Low 30.000 MHz 30,000 MHz	Range Up 1.000 GHz 1.000 GHz	RBW 100.000 kHz 100.000 kHz	Frequency 70.42475 MHz 35,98975 MHz	-77.45 dBm -78.16 dBm	ALimit -22.22 di -22.93 di
-100 dBm Start 30.0 MHz Spurious Emission Range Low 30.000 MHz 30,000 MHz 1.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz	Frequency 70.42475 MHz 35,98975 MHz 4.69429 GHz	-77.45 dBm -78.16 dBm -41.25 dBm	ALimit -22.22 dt -22.93 dt -0.02 dt
-100 dBm Start 30.0 MHz Spurious Emission: Range Low 30,000 MHz 1,000 GHz 1,000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz	Frequency 70.42475 MHz 35,98975 MHz 4.69429 GHz 4.71172 GHz	-77.45 dBm -78.16 dBm -41.25 dBm -41.71 dBm	ALimit -22.22 dl -22.93 di -0.02 dl -0.48 di
-100 dBm Stort 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 70.42475 MHz 35,98975 MHz 4.69429 GHz 4.71172 GHz 5.44458 GHz	-77.45 dBm -78.16 dBm -41.25 dBm -41.71 dBm -48.11 dBm	ALimit -22.22 di -22.93 di -0.02 di -0.48 di -6.88 di
-100 dBm- start 30.0 MHz spurious Emission: Range Low 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 70.42475 MHz 35.98975 MHz 4.69429 GHz 4.71172 GHz 5.44458 GHz 5.45993 GHz	-77.45 dBm -78.16 dBm -41.25 dBm -41.71 dBm -48.11 dBm -50.24 dBm	ALimit -22.22 di -22.93 di -0.02 di -0.48 di -6.88 di -9 01 di
-100 dBm- start 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20,000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 70.42475 MHz 35.98975 MHz 4.69429 GHz 4.71172 GHz 5.44458 GHz 5.45933 GHz 15.59450 GHz	-77.45 dBm -78.16 dBm -41.25 dBm -41.71 dBm -48.11 dBm -50.24 dBm -62.00 dBm	ALimit -22.22 di -22.93 di -0.02 di -0.48 di -6.88 di -9.01 di -20.77 di
-100 dBm- start 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz 10.000 GHz	Range Up 1,000 GHz 1,000 GHz 5,151 GHz 5,151 GHz 10,000 GHz 10,000 GHz 20,000 GHz 20,000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 70.42475 MHz 35.98975 MHz 4.69429 GHz 4.71172 GHz 5.44458 GHz 5.45993 GHz 15.59450 GHz 19.85150 GHz	-77.45 dBm -78.16 dBm -41.25 dBm -41.71 dBm -48.11 dBm -50.24 dBm -63.08 dBm	ALimit -22.22 di -22.93 di -0.02 di -0.48 di -6.88 di -9.01 di -20.77 di -21.85 di
-100 dBm- Stort 30.0 MHz Spurious Emission Range Low 30.000 MHz 30.000 MHz 1.000 GHz 5.349 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz 20,000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 70.42475 MHz 35.98975 MHz 4.69429 GHz 4.71172 GHz 5.44458 GHz 5.45933 GHz 15.59450 GHz	-77.45 dBm -78.16 dBm -41.25 dBm -41.71 dBm -48.11 dBm -50.24 dBm -62.00 dBm	

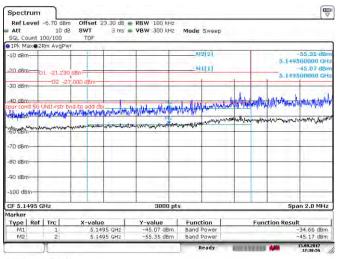
Date: 17 SEP 2017 19.46.45



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-100 dBm Start 30.0 MHz Spurious Emission:					۵Limit
-100 dBm Start 30.0 MHz Spurious Emission Range Low	Range Up	RBW	Frequency	Power Abs	ALimit -22.49 dB -22.93 dB
-100 dBm Start 30.0 MHz Spurious Emission Range Low 30.000 MHz	Range Up 1.000 GHz	RBW 100.000 kHz	Frequency 33.03125 MHz	Power Abs -77.72 dBm	ALimit -22.49 dB -22.93 dB
-100 dBm Start 30.0 MHz Spurious Emissions Range Low 30.000 MHz 30.000 MHz	Range Up 1.000 GHz 1.000 GHz	RBW 100.000 kHz 100.000 kHz	Frequency 33.03125 MHz 68.77575 MHz	Power Abs -77.72 dBm -78.16 dBm	ΔLimit -22.49 dB -22.93 dB -1.95 dB
-100 dBm Start 30.0 MHz spurious Emissions Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 33.03125 MHz 68.77575 MHz 4.71483 GHz 4.77814 GHz 5.45248 GHz	Power Abs -77.72 dBm -78.16 dBm -43.18 dBm -43.83 dBm -49.98 dBm	∆Limit -22.49 dB -22.93 dB -1.95 dB -2.60 dB -8.75 dB
-100 dBm start 30.0 MHz spurious Emission: Range Low 30.000 MHz 30.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 10.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 33.03125 MHz 68.77575 MHz 4.71483 GHz 4.77814 GHz 5.45248 GHz 5.45760 GHz	Power Abs -77.72 dBm -78.16 dBm -43.18 dBm -43.83 dBm -49.98 dBm -50.83 dBm	ALimit -22.49 db -22.93 db -1.95 db -2.60 db -8.75 db -9.60 db
-100 dBm Start 30.0 MHz fpurious Emissions Range Low 30.000 MHz 30.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 33.03125 MHz 68.77575 MHz 4.77814 GHz 5.45746 GHz 5.45760 GHz 10.48650 GHz	Power Abs -77,72 dBm -78.16 dBm -43.18 dBm -43.83 dBm -49.96 dBm -50.83 dBm -61.68 dBm	ΔLimit -22.49 dB -22.93 dB -1.95 dB -2.60 dB -8.75 dB -9.60 dB -20.45 dB
-100 dBm start 30.0 MHz spurious Emission: Range Low 30.000 MHz 30.000 MHz 1.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz 5.349 GHz 10.000 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 20.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 33.03125 MHz 68.77575 MHz 4.71483 GHz 4.77814 GHz 5.45760 GHz 10.48650 GHz 18.68450 GHz	Power Abs -77.72 dBm -78.16 dBm -43.18 dBm -43.98 dBm -50.83 dBm -61.69 dBm -62.78 dBm	ALimit -22.49 de -22.93 de -1.95 de -2.60 de -8.75 de -9.60 de -20.45 de -21.55 de
-100 dBm start 30.0 MHz Spurlous Emissions Range Low 30.000 MHz 30.000 GHz 1.000 GHz 5.349 GHz 5.349 GHz 10.000 GHz	Range Up 1.000 GHz 1.000 GHz 5.151 GHz 5.151 GHz 10.000 GHz 20.000 GHz	RBW 100.000 kHz 100.000 kHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz	Frequency 33.03125 MHz 68.77575 MHz 4.77814 GHz 5.45746 GHz 5.45760 GHz 10.48650 GHz	Power Abs -77,72 dBm -78.16 dBm -43.18 dBm -43.83 dBm -49.96 dBm -50.83 dBm -61.68 dBm	

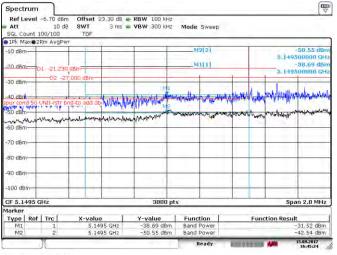
Date: 17 SEP 2017 19:46:07

Figure 8.3-42: Spurious emissions within restricted bands for 24 dBi antenna, 20 MHz channel, high channel



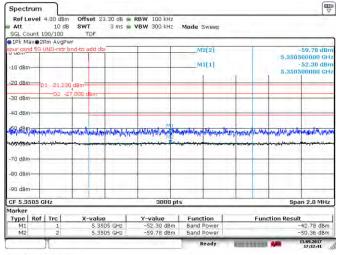
Date: 13.SEP 2017 17:30:57

Figure 8.3-43: Lower band edge for 24 dBi antenna, 5 MHz channel



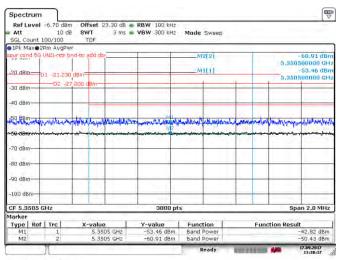
Date: 15 SEP 2017 16:45:24

Figure 8.3-45: Lower band edge for 24 dBi antenna, 10 MHz channel



Date: 13.SEP 2017 17:32:41

Figure 8.3-44: Upper band edge for 24 dBi antenna, 5 MHz channel

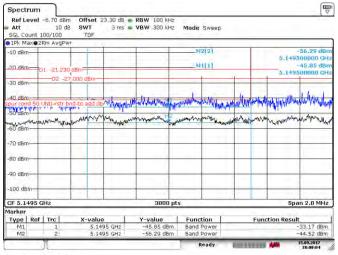


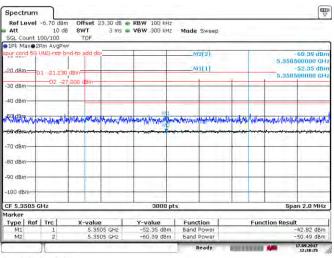
Date: 17 SEP 2017 13:30:18

Figure 8.3-46: Upper band edge for 24 dBi antenna, 10 MHz channel

Section 8	Testing data
Test name	FCC 15.407(b) Undesirable (unwanted) emissions
Specification	FCC Part 15 Subpart E







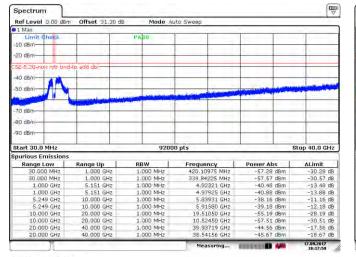
Date: 15,SEP 2017 18:00:04

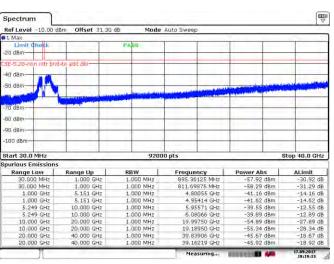
Figure 8.3-47: Lower band edge for 24 dBi antenna, 20 MHz channel

Date: 17 SEP 2017 12:38:35

Figure 8.3-48: Upper band edge for 24 dBi antenna, 20 MHz channel



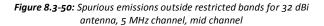




Date: 17 SEP 2017 18:17:49

Figure 8.3-49: Spurious emissions outside restricted bands for 32 dBi antenna, 5 MHz channel, low channel

Date: 17 SEP 2017 18 19 12

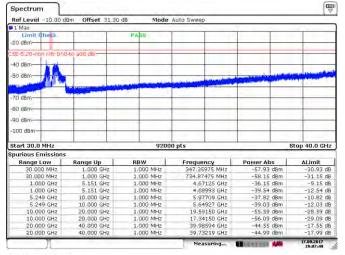


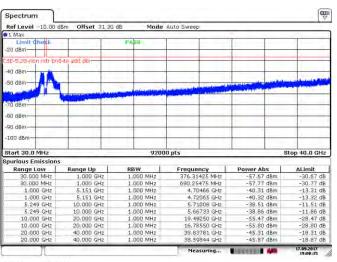
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-100 dBm						-			
Start 30.0 MH	Iz		-	9200	0 pts			S	top 40.0 GH
Spurious Emis	sions							-	
Range Low	1	Range Up	RI	aw	Freque	ncy	Power Al	os	ALimit
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30,000 N		1.000 GHz			517.64325 MHz		-58.21 dBm		-31.21 di
1.000 G		5.151 GHz		000 MHz		972 GHz	-39,82		-12.82 di
1.000 0		5.151 GHz		DOD MHz		863 GHz	-41.17		-14.17 di
5:249 0		10,000 GHz		DOD MHz		103 GHz	-39.37		-12.37 di
5.249 0		10.000 GHz		000 MHz		160 GHz	-39.41		-12.41 di
10.000 G		20.000 GHz		000 MHz		250 GHz	-54.89		-27.89 di
10.000 G		20.000 GHz		000 MHz		250 GHz	-57.75		-30.75 di
20.000 0		40.000 GHz		000 MHz		781 GHz	-44.58		-17.58 di
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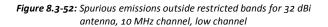
Figure 8.3-51: Spurious emissions outside restricted bands for 32 dBi antenna, 5 MHz channel, high channel



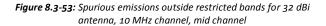




Date: 17 SEP 2017 19:07:49



Date: 17 SEP 2017 19:08:34



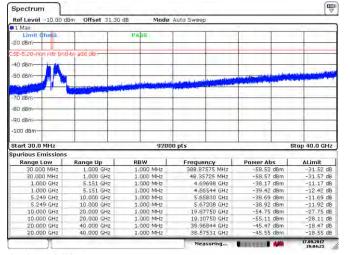
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		7	Contraction of the second s				
-70 dBm					-		
-80 dBm-	_				_	-	
-90 d8m		_			_		
-100 dBm				1			
-100 08/0		1				· · · · · · · · · · · · · · · · · · ·	
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Range Low		Range Up	RBW	Frequency	1	Power Abs	ALimit
30.000 M		1.000 GHz	1/000 MHz	242,50275 MHz		-57.56 dBm	-30.56 di
30.000 M		1.000 GHz	1,000 MHz	830.17725		-57.74 dBm	-30.74 di
1.000 G		5.151 GHz	1.000 MHz	4.76506		-38.94 dBm	-11.94 di
1.000 G		5.151 GHz	1/000 MHz	4.74078		-39.50 dBm	-12.50 di
5.249 G		10.000 GHz	1.000 MHz	5.88207		-39.19 dBm	-12.19 di
5.249 G		10.000 GHz	1.000 MHz	5.65925		-39.31 dBm	-12.31 di
10:000 G		20:000 GHz	1/000 MHz	19.58750		-54.66 dBm	-27.66 di
10.000 G		20.000 GHz	1,000 MHz	10.52350		-57.71 dBm	-30.71 di
20.000 G		40.000 GHz	1.000 MHz	39.82531		-43.99 dBm	-16.99 di
20:000 G	Hz	40.000 GHz	1.000 MHz	34.16844	GHz	-46.79 dBm	-19.79 d
	_				_		17.89.2017

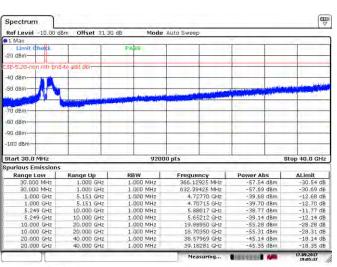
Date: 17 SEP 2017 19:09:12

Figure 8.3-54: Spurious emissions outside restricted bands for 32 dBi antenna, 10 MHz channel, high channel

FCC 15.407(b) Undesirable (unwanted) emissions FCC Part 15 Subpart E



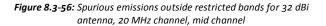




Date: 17 SEP 2017 19:04:21

Figure 8.3-55: Spurious emissions outside restricted bands for 32 dBi antenna, 20 MHz channel, low channel

Date: 17 SEP 2017 19:05:37



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-80 dBm							
-90 d8m							
-100 dBm							
-100 0000	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1.0			
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Spurious Emission	5						
Range Low	Range Up	RBW	Freque	ncy	Power Abs	1	ΔLimit
30.000 MHz	1,000 GHz	1.000 MHz	726.09	625 MHz	-58.14 de	3m	-31.14 d
30.000 MHz	1,000 GHz	1.000 MHz	387.22	67.5 MHz	~58.20 d8	3m	-31.20 df
1,000 GHz	5,151 GHz	1,000 MHz	4.74	1991 GHz	-39.91 de	3m	-12.91 di
1,000 GHz	5,151 GHz	1,000 MHz	4.75	614 GHz	-40.29 dt	3m	-13.29 di
5.249 GHz	10,000 GHz	1,000 MHz	5.71	1341 GHz	-37.86 dt	3m	-10.86 df
5.249 GHz	10,000 GHz	1.000 MHz	5,79	370 GHz	-38.87 de	Bm	-11.87 de
10.000 GHz	20.000 GHz	1.000 MHz	19.35	5350 GHz	-55.45 de	3m	-28.45 di
10.000 GHz	20.000 GHz	1.000 MHz	16,13	3150 GHz	-56.50 de	3m	-29.50 dt
20.000 GHz	40.000 GHz	1.000 MHz	38.13	8031 GHz	-45.29 de	3m	-18.29 di
20.000 GHz	40.000 GHz	1.000 MHz	39,82	219 GHz	-45,43 d8	Bm	~18,43 d

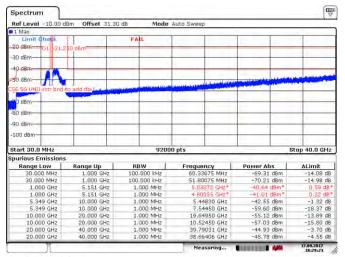
Date: 17 SEP.2017 19 06 44

Figure 8.3-57: Spurious emissions outside restricted bands for 32 dBi antenna, 20 MHz channel, high channel



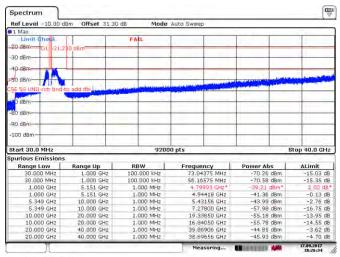
Average limit EIRP equivalent: 54 dB μ V/m – 95.23 dB = -41.23 dBm

Plots below show EIRP trace measured using peak detector and compared with average limit. Where peak level of any emission has exceeded average limit line, that emission was then re-measured with RMS detector.



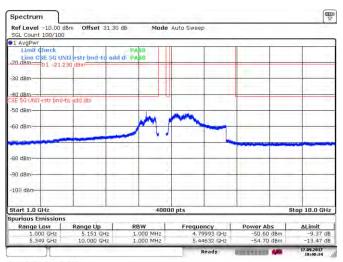
Date: 17 SEP 2017 18:29:23

Figure 8.3-58: Peak Spurious emissions within restricted bands for 32 dBi antenna, 5 MHz channel, low channel



Date: 17 SEP 2017 18:26:34

igure 8.3-60: Peak Spurious emissions within restricted bands for 32 dBi antenna, 5 MHz channel, mid channel



Date: 17.SEP.2017 18:40:35

Figure 8.3-59: Average Spurious emissions within restricted bands for 32 dBi antenna, 5 MHz channel, low channel

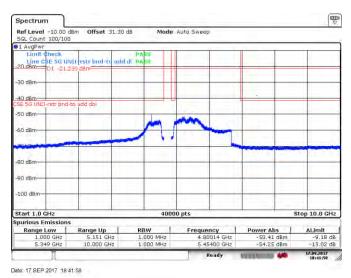
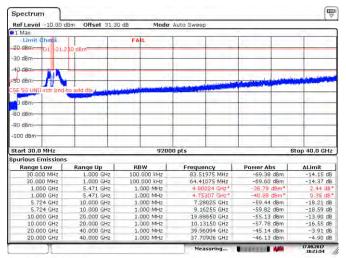


Figure 8.3-61: Average Spurious emissions within restricted bands for 32 dBi antenna, 5 MHz channel, mid channel



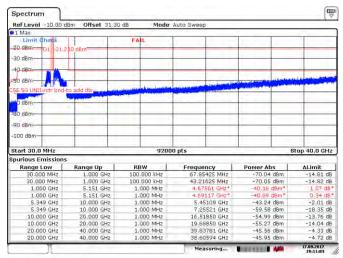
Average limit EIRP equivalent: 54 dB μ V/m – 95.23 dB = -41.23 dBm

Plots below show EIRP trace measured using peak detector and compared with average limit. Where peak level of any emission has exceeded average limit line, that emission was then re-measured with RMS detector.



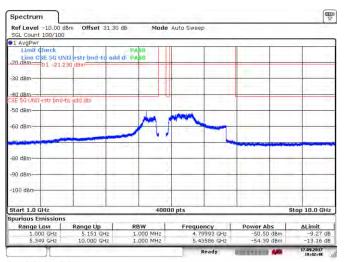
Date: 17 SEP 2017 18:21:53

Figure 8.3-62: Peak Spurious emissions within restricted bands for 32 dBi antenna, 5 MHz channel, high channel

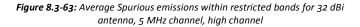


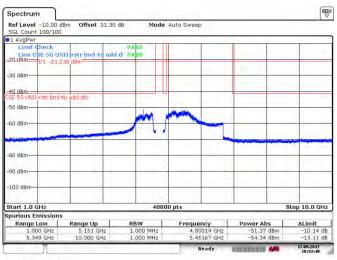
Date: 17 SEP 2017 19:11:02

Figure 8.3-64: Spurious emissions within restricted bands for 32 dBi antenna, 10 MHz channel, low channel



Date: 17 SEP 2017 18:42:48





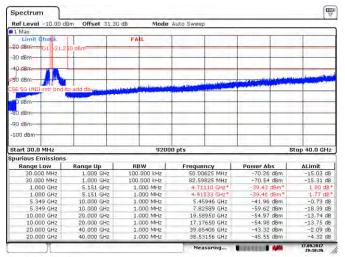
Date: 17 SEP 2017 18:53:48

Figure 8.3-65: Spurious emissions within restricted bands for 32 dBi antenna, 10 MHz channel, mid channel



Average limit EIRP equivalent: 54 dB μ V/m – 95.23 dB = -41.23 dBm

Plots below show EIRP trace measured using peak detector and compared with average limit. Where peak level of any emission has exceeded average limit line, that emission was then re-measured with RMS detector.



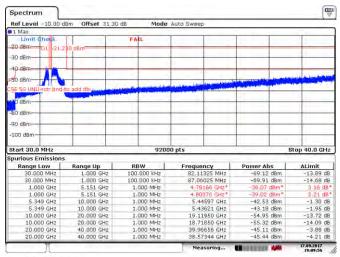
Spectrum Ref Level -10.00 dBm Offset 31.30 dB Mode Auto Sweep ount 100/100 01 AvgPwr E SG UNII str bnd-to add d PA 211 dBm-01 -21.2 30 dBm 40 dBm -50 dBm--60 dBm en dam 90 dBr -100 dBm Start 1.0 GHz Stop 10.0 GHz 40000 pts rious Emissions RBW 1.000 MHz 1.000 MHz Frequency 4.79993 GHz 5.44051 GHz
 Range Low
 Range Up

 1.000 GHz
 5.151 GHz

 5.349 GHz
 10.000 GHz
 Power Abs -50,42 dBm -55,50 dBm 1 ∆Limit dB -9.19 -14.27 ----17.09.2017

Date: 17 SEP 2017 19:10:36

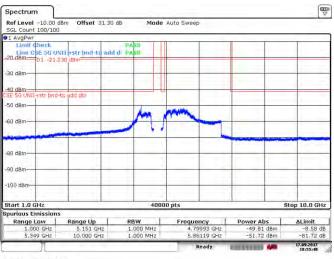
Figure 8.3-66: Spurious emissions within restricted bands for 32 dBi antenna, 10 MHz channel, mid channel



Date: 17 SEP 2017 19:09:55

Figure 8.3-68: Spurious emissions within restricted bands for 32 dBi antenna, 10 MHz channel, high channel

Figure 8.3-67: Spurious emissions within restricted bands for 32 dBi antenna, 10 MHz channel, mid channel



Date: 17 SEP 2017 18:55:48

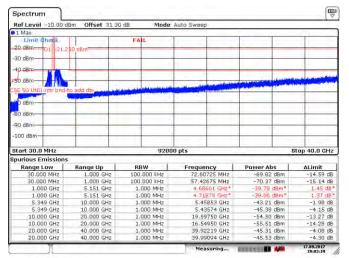
Date: 17 SEP 2017 18:54:51

Figure 8.3-69: Spurious emissions within restricted bands for 32 dBi antenna, 10 MHz channel, high channel



Average limit EIRP equivalent: 54 dB μ V/m – 95.23 dB = -41.23 dBm

Plots below show EIRP trace measured using peak detector and compared with average limit. Where peak level of any emission has exceeded average limit line, that emission was then re-measured with RMS detector.



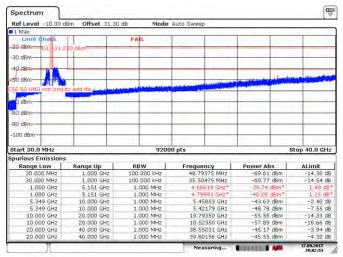
Spectrum Ref Level -10.00 dBm Offset 31.30 dB Mode Auto Sweep SGL Count 100/100 -211 dBm E SG UNIT str bnd-to add d PA 1 -21.23 30 dBm 40 dBm--50 dBm-VIW -60 dBm L 80 dBm 90 dBn -100 dBm Start 1.0 GHz Stop 10.0 GHz 40000 pts rious Emissions RBW 1.000 MHz 1.000 MHz Frequency 4,80034 GHz 5,70282 GHz Power Abs 2 -51,29 dBm 2 -52.01 dBm
 Range Low
 Range Up

 1.000 GHz
 5.151 GHz

 5.349 GHz
 10.000 GHz
 1 ∆Limit dB dB -10.06 17.09.2017 Date: 17 SEP 2017 18:57:26

Date: 17 SEP 2017 19:03:19

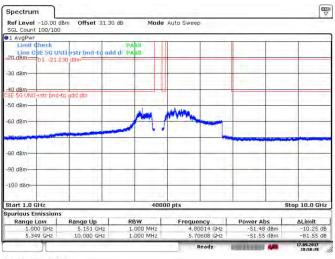
Figure 8.3-70: Spurious emissions within restricted bands for 32 dBi antenna, 20 MHz channel, low channel



Date: 17 SEP 2017 19:02:52

Figure 8.3-72: Spurious emissions within restricted bands for 32 dBi antenna, 20 MHz channel, mid channel

Figure 8.3-71: Spurious emissions within restricted bands for 32 dBi antenna, 20 MHz channel, low channel



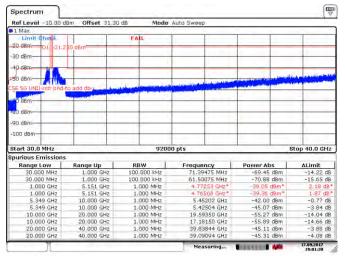
Date: 17 SEP 2017 18:58:38

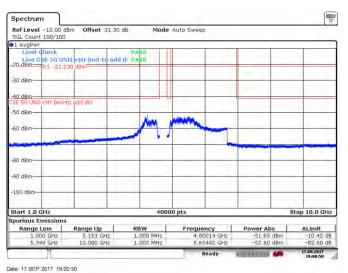
Figure 8.3-73: Spurious emissions within restricted bands for 32 dBi antenna, 20 MHz channel, mid channel



Average limit EIRP equivalent: 54 dB μ V/m – 95.23 dB = -41.23 dBm

Plots below show EIRP trace measured using peak detector and compared with average limit. Where peak level of any emission has exceeded average limit line, that emission was then re-measured with RMS detector.





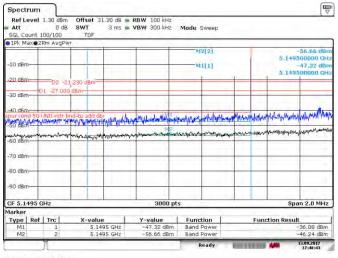
Date: 17 SEP 2017 19:01:29

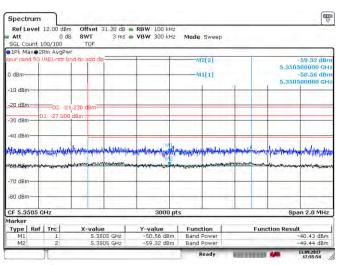
Figure 8.3-74: Spurious emissions within restricted bands for 32 dBi antenna, 20 MHz channel, high channel

Figure 8.3-75: Spurious emissions within restricted bands for 32 dBi antenna, 20 MHz channel, high channel



Peak limit EIRP equivalent: 74 dB μ V/m – 95.23 dB = -21.23 dBm Average limit EIRP equivalent: 54 dB μ V/m – 95.23 dB = -41.23 dBm





Date: 13.SEP.2017 17:48:44

Figure 8.3-76: Lower band edge for 32 dBi antenna, 5 MHz channel

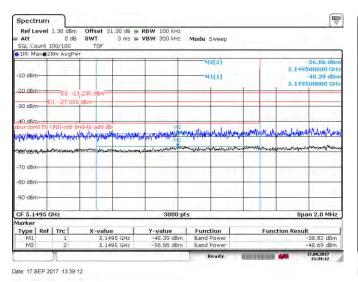
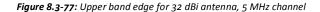


Figure 8.3-78: Lower band edge for 32 dBi antenna, 10 MHz channel

Date: 13.SEP 2017 17:55:54



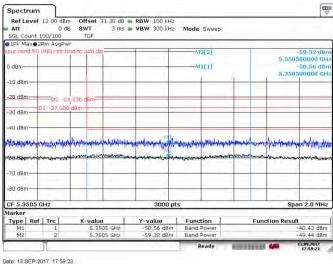


Figure 8.3-79: Upper band edge for 32 dBi antenna, 10 MHz channel



Peak limit EIRP equivalent: 74 dB μ V/m – 95.23 dB = -21.23 dBm Average limit EIRP equivalent: 54 dB μ V/m – 95.23 dB = -41.23 dBm

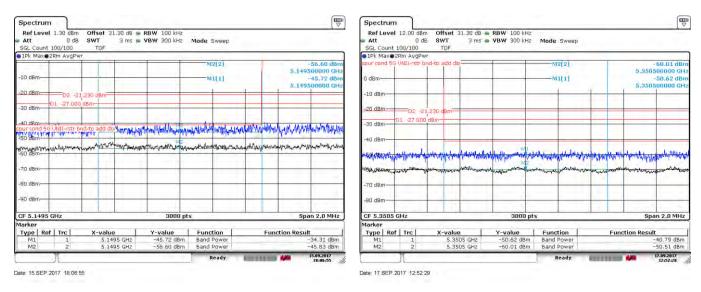


Figure 8.3-80: Lower band edge for 32 dBi antenna, 20 MHz channel

Figure 8.3-81: Upper band edge for 32 dBi antenna, 20 MHz channel



FCC 15.207(a) AC power line conducted emissions limits 8.4

8.4.1 Definitions and limits

FCC §15.407(6)(b):

Any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207

FCC §15.207(a):

Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Table 8.4-1: Conducted emissions limit

Frequency of emission	Conduct	ed limit (dBμV)
(MHz)	Quasi-peak	Average**
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50
Note: * - The level decreases linea	arly with the logarithm of the frequency.	

* - The level decreases linearly with the logarithm of the frequency.

** - A linear average detector is required.

Test summary 8.4.2

Test date:	September 15, 2017	Temperature:	24 °C
Test engineer:	Yong Huang	Air pressure:	1007 mbar
Verdict:	Pass	Relative humidity:	43 %



8.4.3 Observations, settings and special notes

The EUT was set up as tabletop configuration.

The spectral scan has been corrected with transducer factors (i.e. cable loss, LISN factors, and attenuators) for determination of compliance.

A preview measurement was generated with the receiver in continuous scan mode. Emissions detected within 6 dB or above limit were re-measured with the appropriate detector against the correlating limit and recorded as the final measurement.

Receiver settings for preview measurements:

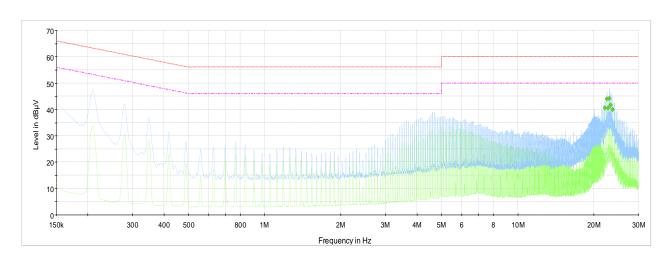
Resolution bandwidth	9 kHz
Video bandwidth	30 kHz
Detector mode	Peak and Average
Trace mode	Max Hold
Measurement time	100 ms

Receiver settings for final measurements:

Resolution bandwidth	9 kHz
Video bandwidth	30 kHz
Detector mode	Quasi-Peak and Average
Trace mode	Max Hold
Measurement time	100 ms



8.4.4 Test data



Plot 8.4-1: Conducted emissions on phase line

Frequency, MHz	Average result, dBμV	Limit, dBμV	Margin, dB	Meas. Time, ms	Bandwidth, kHz	Correction, dB
22.053	40.5	50.0	9.6	100	9	10.7
22.528	43.9	50.0	6.1	100	9	10.7
22.764	40.5	50.0	9.5	100	9	10.8
23.001	44.2	50.0	5.9	100	9	10.8
23.239	41.6	50.0	8.4	100	9	10.8
23.712	39.9	50.0	10.1	100	9	10.8

Table 8.4-2: Average conducted emissions results on phase line

Notes: 1 Result (dB μ V) = receiver/spectrum analyzer value (dB μ V) + correction factor (dB)

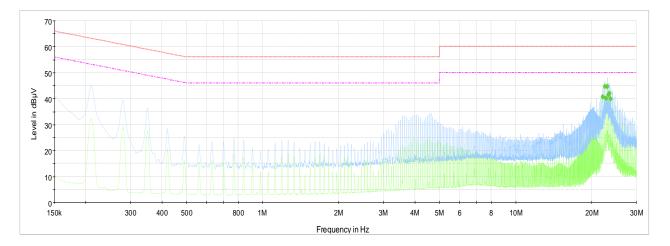
² Correction factor (dB) = LISN factor IL (dB) + cable loss (dB) + attenuator (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions have been recorded.

Sample calculation: 40.5 dBµV (result) = 29.8 dBµV (receiver reading) + 10.7 dB (Correction factor)

Testing data FCC 15.407(b)(6) AC power line conducted emissions limits FCC Part 15 Subpart E





Plot 8.4-2: Conducted emissions on neutral line

Table 8.4-3: Average conducted emissions results on neutral line

Frequency, MHz	Average result,	Limit,	Margin,	Meas. Time, ms	Bandwidth, kHz	Correction,
	dBμV	dBµV	dB			dB
22.056	40.7	50.0	9.3	100	9	10.8
22.530	44.7	50.0	5.3	100	9	10.8
22.767	40.1	50.0	9.9	100	9	10.8
23.003	44.7	50.0	5.3	100	9	10.8
23.241	41.4	50.0	8.6	100	9	10.8
23.478	42.0	50.0	8.0	100	9	10.8
23.714	39.9	50.0	10.1	100	9	10.8
Notes: ¹ Result (dB)	μV) = receiver/spectrum ana	lyzer value (dBµV) + c	orrection factor (dB)			

¹Result (dB μ V) = receiver/spectrum analyzer value (dB μ V) + correction factor (dB)

² Correction factor (dB) = LISN factor IL (dB) + cable loss (dB) + attenuator (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions have been recorded.

Sample calculation: 40.7 dBµV (result) = 29.9 dBµV (receiver reading) + 10.8 dB (Correction factor)



8.5 FCC 15.407(g) Frequency stability

8.5.1 Definitions and limits

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

8.5.2 Test summary

Test date:	September 25, 2017	Temperature:	25 °C
Test engineer:	Yong Huang	Air pressure:	1007 mbar
Verdict:	Pass	Relative humidity:	45 %

8.5.3 Observations, settings and special notes

Spectrum analyser settings:

Resolution bandwidth:	50 Hz
Video bandwidth:	50 Hz
Detector mode:	Peak
Trace mode:	Max Hold

8.5.4 Test data

Table 8.5-1: Frequency drift measurement

Test conditions	Nominal frequency, GHz	Frequency, GHz	Drift, Hz
+50 °C, Nominal	5.2000000	5.2000633	-21600
+40 °C, Nominal	5.2000000	5.2000665	-18400
+30 °C, Nominal	5.2000000	5.2000775	-7400
+20 °C, +15 %	5.2000000	5.2000849	0
+20 °C, Nominal	5.2000000	5.2000849	reference
+20 °C, –15 %	5.2000000	5.2000849	0
+10 °C, Nominal	5.2000000	5.2000989	14000
0 °C, Nominal	5.2000000	5.2001071	22200
–10 °C, Nominal	5.2000000	5.2001079	23000
–20 °C, Nominal	5.2000000	5.2000981	13200
–30 °C, Nominal	5.2000000	5.2000845	-400

Minimum lower band edge margin is more than 2.6 $\ensuremath{\mathsf{MHz}}$

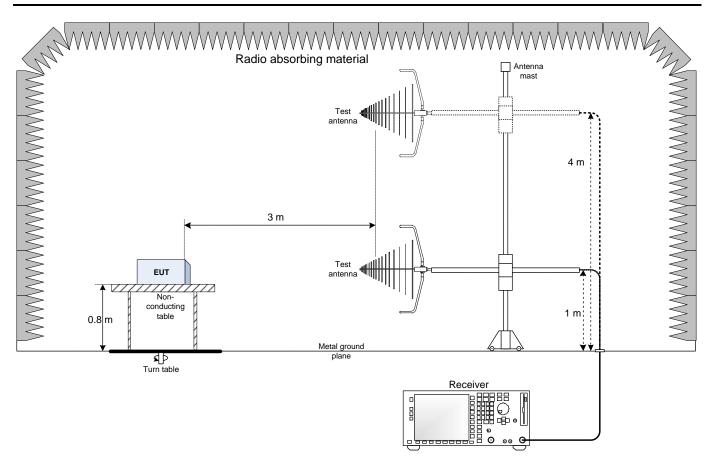
Minimum upper band edge margin is more than 175 kHz

The frequency drifts in above table are within these minimum margins, the emissions are deemed to maintain within the band of operation.



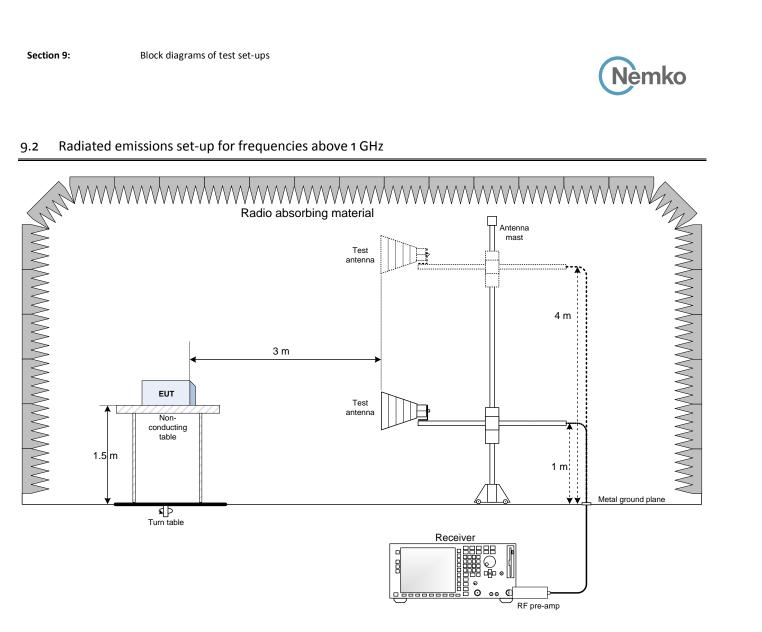
Section 9. Block diagrams of test set-ups

9.1 Radiated emissions set-up for frequencies below 1 GHz



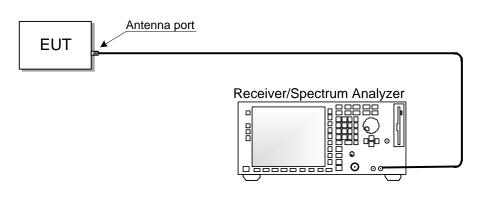


Radiated emissions set-up for frequencies above 1 GHz 9.2





9.3 Conducted antenna port set-up



9.4 Conducted emissions set-up

