

EMI - TEST REPORT

- FCC Part 15.407 and RSS210 -

Test Report No. : T36325-00-14HS

04 July 2014

Date of issue

Type / Model Name : SCALANCE W700 / MSN

Product Description : Industrial WLAN access point

Applicant : Siemens AG, Industrial Automation Division

Address : Gleiwitzer Strasse 555
90475 NUERNBERG, GERMANY

Manufacturer : Siemens AG, Automation & Drives

Address : Oestliche Rheinbrueckenstrasse 50
76187 KARLSRUHE, GERMANY

Licence holder : Siemens AG, Automation & Drives

Address : Oestliche Rheinbrueckenstrasse 50
76187 KARLSRUHE, GERMANY

Test Result according to the standards listed in clause 1 test standards:

POSITIVE



The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test results
without the written permission of the test laboratory.

Contents

1	<u>TEST STANDARDS</u>	3
2	<u>SUMMARY</u>	4
2.1	Test result summary	4
2.2	General remarks	5
2.3	Final assessment	8
3	<u>EQUIPMENT UNDER TEST</u>	9
3.1	Photo documentation of the EUT – Detailed photos see attachment C	9
3.2	Power supply system utilised	9
3.3	Short description of the equipment under test (EUT)	9
4	<u>TEST ENVIRONMENT</u>	10
4.1	Address of the test laboratory	10
4.2	Environmental conditions	10
4.3	Statement of the measurement uncertainty	10
4.1	Measurement protocol for FCC and IC	11
4.2	Determination of worst case measurement conditions	11
5	<u>TEST CONDITIONS AND RESULTS</u>	12
5.1	Conducted emissions	12
5.2	EBW and OBW	16
5.3	Maximum conducted output power	35
5.4	Peak power spectral density	41
5.5	Peak excursion	47
5.6	Undesirable emissions	51
5.7	Frequency stability	135
5.8	CDD functionality	140
5.9	Maximum permissible exposure (MPE)	143
5.10	Co-location and Co-transmission	147
5.11	Antenna application	147
6	<u>USED TEST EQUIPMENT AND ACCESSORIES</u>	149

Attachment C as separately supplement

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (September, 2013)

Part 15, Subpart A, Section 15.31	Measurement standards
Part 15, Subpart A, Section 15.33	Frequency range of radiated measurements
Part 15, Subpart A, Section 15.35	Measurement detector functions and bandwidths

FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (September, 2013)

Part 15, Subpart C, Section 15.203	Antenna requirement
Part 15, Subpart C, Section 15.204	External radio frequency power amplifiers and antenna modifications
Part 15, Subpart C, Section 15.205	Restricted bands of operation
Part 15, Subpart C, Section 15.207	Conducted limits
Part 15, Subpart C, Section 15.209	Radiated emission limits, general requirements
Part 15, Subpart C, Section 15.212	Modular transmitters

FCC Rules and Regulations Part 15, Subpart E – Unlicensed National Information Infrastructure Devices (September, 2013)

Part 15, Subpart E, Section 15.407	Operation within the bands 5.15 - 5.25 GHz, 5.25 - 5.35 GHz, 5.47 - 5.725 GHz and 5.725 - 5.825 GHz
------------------------------------	---

FCC Rules and Regulations Part 1, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969

Part 1, Subpart I, Section 1.1310	Radiofrequency radiation exposure limits
Part 1, Subpart 2, Section 2.1093	Radiofrequency radiation exposure evaluation: portable device

OET Bulletin 65, 65A, 65B, 65C Edition 97-01, August 1997 – Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

ET Docket No. 03-122, FCC 06-96	Released June 30, 2006, Memorandum Opinion and Order concerning DFS
ANSI C63.4: 2003	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
ANSI C95.1: 2005	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
CISPR 16-4-2: 2003	Uncertainty in EMC measurement
CISPR 22: 2005 EN 55022: 2006	Information technology equipment
KDB 789033 D01 v01r03	Guidelines for compliance testing of UNII-Devices – Part 15, Subpart E, April 08, 2013.
KDB 662911 D01 v02	Emission testing of transmitters with multiple outputs in the same band, 5/28/2013.

2 SUMMARY

2.1 Test result summary

WLAN devices using digital modulation:

Operating in the 5250 MHz – 5350 MHz band and 5470 MHz – 5725 MHz:

FCC Rule Part	RSS Rule Part	Description	Result
15.207(a)	RSS Gen, 7.2.4.	AC power line conducted emissions	passed
15.407(a)		EBW 26 dB	passed
15.407(a)	RSS210, A9.2	Conducted output power and PSD	passed
15.407(a)(6)		Peak excursion	passed
15.407(b)	RSS210, A9.2	Undesirable emissions	passed
15.205(a)	RSS-Gen, 7.2.2	Emissions in restricted bands	passed
15.407(g)	RSS-Gen, 7.2.6	Frequency stability	passed
15.407(f)	RSS102, 2.5.2	Maximum permissible exposure (MPE)	passed
15.407(h)(1)	RSS210, A9.2	TPC	not applicable
15.407(a)	RSS210, A9.2	Antenna requirement	passed
OET Bulletin 65	RSS102, 3.2	Co-location, Co-transmission	passed
	RSS210, A9.2	OBW 99 %	passed

The mentioned RSS Rule Parts in the above table are related to:

RSS Gen, Issue 3, December 2010

RSS 210, Issue 8, December 2010

RSS 102, Issue 4, March 2010

2.2 General remarks

The EUT is a 2-Port WLAN-access point. The firmware does not support ad-hoc modes. The possibility to choose the channel for data transmission or power setting in relation to the used antenna with antenna cable makes a professional installation necessary. The AP is compatible with 802.11h, 802.11n Standard. It supports the 2.4 GHz and 5 GHz frequency band and supports no beam forming.

Variants of the EUT

Variant	Device-Name	WLAN-Interfaces	LAN connector	Antenna Ports	Order numbers
V01	MSN-W1-RJ-E2	1	RJ45	2	6GK5734-1FX00-xxxx
V02	MSN-W1-M12-E2	1	M12	2	6GK5774-1FY00-xxxx

Operation frequency and channel plan

The operation frequency range is 5250 – 5350 MHz and 5470 MHz – 5725 MHz.

Channel plan:

802.11h, HT20:

Channel	Frequency
52	5260
56	5280
60	5300
64	5320
100	5500
104	5520
108	5540
112	5560
116	5580
120	5600
124	5620
128	5640
132	5660
136	5680
140	5700

HT40:

Channel	Frequency
52up	5270
60up	5310
100up	5510
108up	5550
116up	5590
124up	5630
132up	5670

Note: The marked channels are not supported by US and Canadian country settings.

Transmit operating modes

The module use OFDM modulation and is capable to provide following data rates:

- 802.11h 54, 48, 36, 24, 18, 12, 9, 6 Mbps
- 802.11n HT20, MCS 0 - 15
- 802.11n HT40, MCS 0 - 15

The module use OFDM modulation and is capable to provide following data rates:

- 802.11h 54, 48, 36, 24, 18, 12, 9, 6 Mbps
- 802.11n HT20, MCS 0 – 15
- 802.11n HT40, MCS 0 – 15

HT20

MCS Index	Modulation	R	$N_{BPSCS}(i_{SS})$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI (see NOTE)
0	BPSK	1/2	1	52	4	52	26	6.5	7.2
1	QPSK	1/2	2	52	4	104	52	13.0	14.4
2	QPSK	3/4	2	52	4	104	78	19.5	21.7
3	16-QAM	1/2	4	52	4	208	104	26.0	28.9
4	16-QAM	3/4	4	52	4	208	156	39.0	43.3
5	64-QAM	2/3	6	52	4	312	208	52.0	57.8
6	64-QAM	3/4	6	52	4	312	234	58.5	65.0
7	64-QAM	5/6	6	52	4	312	260	65.0	72.2

NOTE—Support of 400 ns GI is optional on transmit and receive.

MCS Index	Modulation	R	$N_{BPSCS}(i_{SS})$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI
8	BPSK	1/2	1	108	6	216	108	27.0	30.0
9	QPSK	1/2	2	108	6	432	216	54.0	60.0
10	QPSK	3/4	2	108	6	432	324	81.0	90.0
11	16-QAM	1/2	4	108	6	864	432	108.0	120.0
12	16-QAM	3/4	4	108	6	864	648	162.0	180.0
13	64-QAM	2/3	6	108	6	1296	864	216.0	240.0
14	64-QAM	3/4	6	108	6	1296	972	243.0	270.0
15	64-QAM	5/6	6	108	6	1296	1080	270.0	300.0

HT40

MCS Index	Modulation	R	$N_{BPSCS}(i_{SS})$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI
0	BPSK	1/2	1	108	6	108	54	13.5	15.0
1	QPSK	1/2	2	108	6	216	108	27.0	30.0
2	QPSK	3/4	2	108	6	216	162	40.5	45.0
3	16-QAM	1/2	4	108	6	432	216	54.0	60.0
4	16-QAM	3/4	4	108	6	432	324	81.0	90.0
5	64-QAM	2/3	6	108	6	648	432	108.0	120.0
6	64-QAM	3/4	6	108	6	648	486	121.5	135.0
7	64-QAM	5/6	6	108	6	648	540	135.0	150.0

MCS Index	Modulation	R	$N_{BPSCS}(i_{SS})$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI
8	BPSK	1/2	1	108	6	216	108	27.0	30.0
9	QPSK	1/2	2	108	6	432	216	54.0	60.0
10	QPSK	3/4	2	108	6	432	324	81.0	90.0
11	16-QAM	1/2	4	108	6	864	432	108.0	120.0
12	16-QAM	3/4	4	108	6	864	648	162.0	180.0
13	64-QAM	2/3	6	108	6	1296	864	216.0	240.0
14	64-QAM	3/4	6	108	6	1296	972	243.0	270.0
15	64-QAM	5/6	6	108	6	1296	1080	270.0	300.0

Symbol	Explanation
N_{SS}	Number of spatial streams
R	Coding rate
N_{BPS_C}	Number of coded bits per single carrier (total across spatial streams)
$N_{BPS_C}(i_{SS})$	Number of coded bits per single carrier for each spatial stream, $i_{SS} = 1, \dots, N_{SS}$
N_{SD}	Number of complex data numbers per spatial stream per OFDM symbol
N_{SP}	Number of pilot values per OFDM symbol
N_{CBPS}	Number of coded bits per OFDM symbol
N_{DBPS}	Number of data bits per OFDM symbol
N_{ES}	Number of BCC encoders for the DATA field
N_{TBPS}	Total bits per subcarrier

Antennas

Antennas intended for use are classified into 3 gain groups:

- Antenna gain group 1: Antennas 0 to 6 dBi
- Antenna gain group 2: Antennas 6 to 9 dBi
- Antenna gain group 3: Antennas 9 to 14 dBi

The following antennas shall be used with the EUT:

Number	Manufacturer Number	Characteristic	Model number	Connector	Frequency (GHz)	Gain 5GHz (dBi)	Cable loss (dB)	Effective gain 5 GHz (dBi)	Group
1	6GK5793-8DK00-0AA0	Directed	ANT 793-8DK	2x N-female	5 GHz	23	8.8	14.2	9-14 dBi
2	6GK5793-8DJ00-0AA0	Directed	ANT 793-8D	2x N-female	5 GHz	18	4.4	13.6	9-14 dBi
3	6GK5793-8DP00-0AA0	Directed	ANT 793-8DP	N-female	5 GHz	13.5	0	13.5	9-14 dBi
4	6GK5795-6DC00-0AA0	Wide angle	ANT 795-6DC	N-female	2.4 + 5 GHz	9	0	9	6-9 dBi
5	6GK5795-6DG00-0AA0	Wide angle	ANT 793-6DG	2x N-female	5 GHz	9	0	9	6-9 dBi
6	6GK5795-6MN10-0AA6	Omni	ANT 795-6MN	N-female	2.4 + 5 GHz	8	0	8	6-9 dBi
7	6GK5 793-4MN00-0AA6	Omni	ANT 793-4MN	N-female	5 GHz	6	0	6	0-6 dBi
8	6GK5795-4MD00-0AA3	Omni	ANT 795-4MD	N-male	2.4 + 5 GHz	5	0	5	0-6 dBi
9	6GK5795-4MC00-0AA3	Omni	ANT 795-4MC	N-male	2.4 + 5 GHz	5	0	5	0-6 dBi
10	6GK5795-4MA00-0AA3	Omni	ANT 795-4MA	R-SMA male	2.4 + 5 GHz	5	0	5	0-6 dBi
11	6GK5793-6MN00-0AA6	Omni	ANT 793-6MN	N-female	5 GHz	5	0	5	0-6 dBi
12	6XV1875-2D	Omni	IMLAN Rcoax 1/2"	N-female	5 GHz	0	0	0	0-6 dBi

Note: The directed antenna number 1 may be used only with minimum 10 m antenna cable, Type 6XV 1875-5CN10 with cable loss 8.8 dB at 5.7 GHz.
The directed antenna number 2 may be used only with minimum 5 m antenna cable, Type 6XV 1875-5CH50 with cable loss 4.4 dB at 5.7 GHz.

2.3 Final assessment

The equipment under test **fulfills** the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 3 March 2014

Testing concluded on : 28 April 2014

Checked by:

Tested by:

Klaus Gegenfurtner
Teamleader Radio

Hermann Smetana
Radio Team

3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT – Detailed photos see attachment C

3.2 Power supply system utilised

Power supply voltage : 100 - 120 VAC

$V_{nom} = 110\text{ V}$

$V_{min} = 100\text{ V}$

$V_{max} = 120\text{ V}$

3.3 Short description of the equipment under test (EUT)

The EUT is a 2-Port WLAN-access point. The firmware does not support ad-hoc modes. The possibility to choose the channel for data transmission or power setting in relation to the used antenna with antenna cable makes a professional installation necessary. The AP is compatible with 802.11h/n Standard. It supports the 5 GHz frequency band and has no beam forming.

Number of tested samples: 1

Serial number: VPDN198359

EUT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- WLAN transmission

- TX continuous mode

EUT configuration:

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurements:

- | | |
|--------------------------|-------------------|
| - LAN cable, 3m | Model : CAT5 |
| - Power supply cable, 1m | Model : Self-made |
| - | Model : |

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

**CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY**

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 °C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor $k = 2$. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 / 11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, CSA Group Bayern GmbH, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.1 Measurement protocol for FCC and IC

4.1.1 General information

The Open Area test site is a listed Open Site under the Canadian Test-Sites File-No:

IC 3009A

In compliance with RSS 210 testing for RSS compliance may be achieved by following the procedures set out in ANSI C63.4 and applying the CISPR 22 limits.

4.1.1.1 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left without termination. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

4.1.1.2 Details of test procedures

The test methods used comply with 47 CFR Part 15 Subpart A, Section 15.38. Testing for FCC compliance may be achieved by following the procedures set out in ANSI C63.4 and applying the CISPR 22 limits.

4.2 Determination of worst case measurement conditions

Measurements have been made in all three orthogonal axes and the settings of the EUT were changed to locate at which position and at what setting of the EUT produce the maximum of the emissions. For the further measurement the EUT is set on cap rail test rack.

The tests are carried out in the following frequency bands:

5.25 - 5.35 GHz, 5.47 – 5.725 GHz;

Preliminary tests are performed to find the worst case mode from all possible combinations between available modulations, data rates and small antenna system is determined through pre-scans. The maximum output power depends on used data rate. As worse case the HT20 mode (MCS0) and HT40 mode (MCS8) is used.

The EUT is controlled for several tests with special test software used for testing only where continuous signals are needed. For the tests a maximum duty cycle (x) is set.

Following channels and test modes were selected for the final test as listed below:

Technology	Available channels	Tested channels	Modulation	Modulation type	Data rate (Mbps)
802.11h	52 - 140	52, 56, 64 100, 116, 140	OFDM	BPSK	6 Mbps (BW=20 MHz)
802.11n, HT20	52 - 140	52, 56, 64 100, 116, 140	OFDM	BPSK	MCS0 (BW=20 MHz)
802.11n, HT40	52up – 132up	52up, 60up 100up, 108up, 132up	OFDM	BPSK	MCS8 (BW=40 MHz)

5 TEST CONDITIONS AND RESULTS

5.1 Conducted emissions

For test instruments and accessories used see section 6 Part A 4.

5.1.1 Description of the test location

Test location: Shielded Room S2

5.1.2 Photo documentation of the test set-up



5.1.3 Applicable standard

According to FCC Part 15C, Section 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.

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

5.1.4 Description of Measurement

The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a line impedance stabilization network (LISN) with 50Ω/50 μH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimetres above the floor and is positioned 40 centimetres from the vertical ground plane (wall) of the screen room. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver with quasi-peak and average detection and recorded.

To convert between dBμV and μV, the following conversions apply:

$$\text{dB}\mu\text{V} = 20 \log \mu\text{V}$$

$$\mu\text{V} = 10^{(\text{dB}\mu\text{V}/20)}$$

5.1.5 Test result

Frequency range: 0.15 MHz - 30 MHz

Min. limit margin -1.5 dB at 0.318 MHz

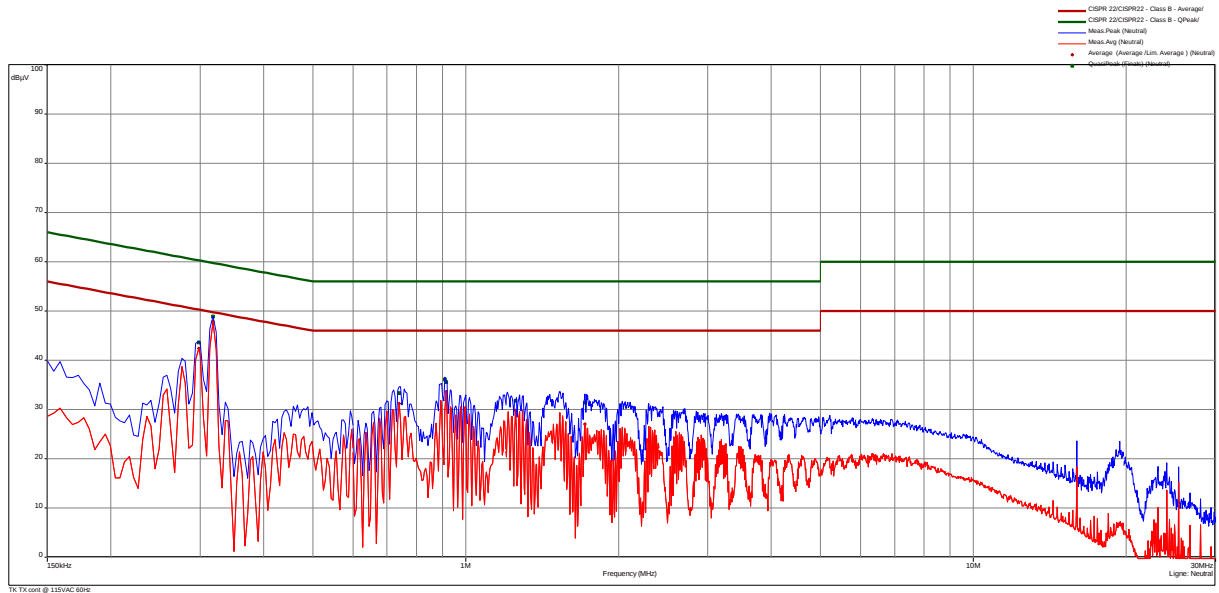
The requirements are **FULFILLED**.

Remarks: For detailed test result please see following test protocols.

5.1.6 Test protocol

Test point N
Operation mode: WLAN transmission
Remarks:

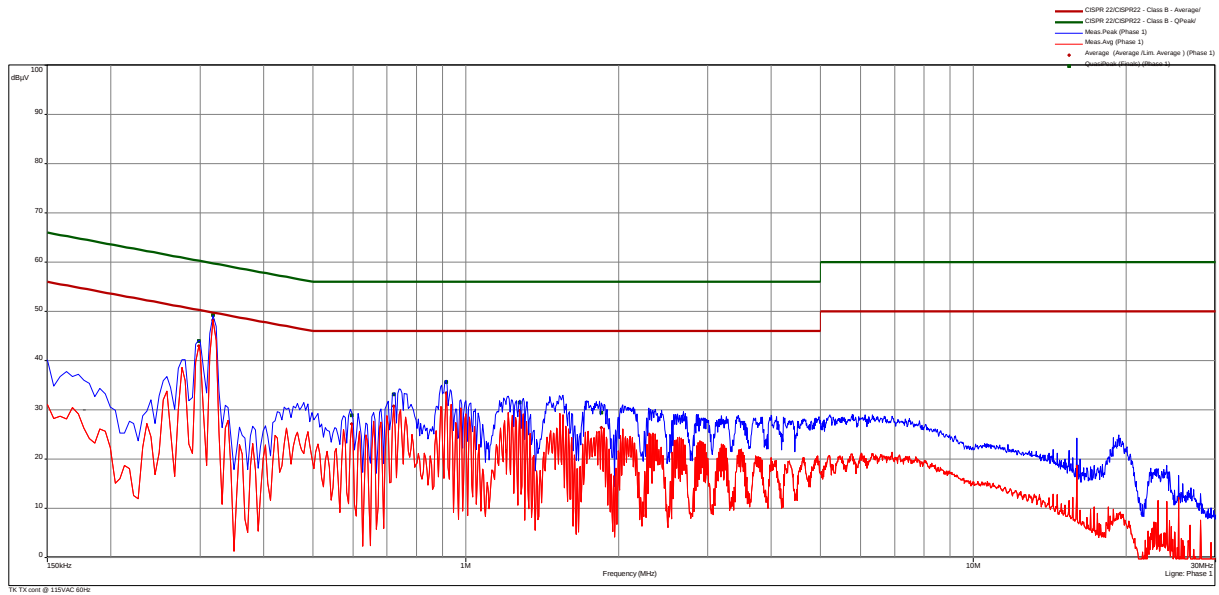
Result: passed



freq	SR	QP	margin	limit	AV	margin	limit	line
MHz		dB(μV)	dB	dB	dB(μV)	dB	dB	
0.299	1	43.7	-16.6	60.3	42.5	-7.8	50.3	Neutral
0.318	2	48.9	-10.9	59.8	47.8	-1.9	49.8	Neutral
0.740	3	33.3	-22.7	56.0	31.1	-14.9	46.0	Neutral
0.911	3	36.1	-19.9	56.0	30.1	-15.9	46.0	Neutral
0.915	3	35.6	-20.4	56.0	33.7	-12.3	46.0	Neutral
1.254	4	31.8	-24.3	56.0	29.7	-16.3	46.0	Neutral
1.718	4	31.4	-24.6	56.0	26.8	-19.2	46.0	Neutral

Test point L1
Operation mode: WLAN transmission
Remarks:

Result: passed



freq	SR	QP	margin	limit	AV	margin	limit	line
MHz		dB(μV)	dB	dB	dB(μV)	dB	dB	
0.299	9	44.0	-16.3	60.3	42.9	-7.4	50.3	Phase 1
0.318	10	49.2	-10.5	59.8	48.3	-1.5	49.8	Phase 1
0.597	10	28.9	-27.1	56.0	27.1	-18.9	46.0	Phase 1
0.722	11	33.2	-22.9	56.0	30.7	-15.3	46.0	Phase 1
0.915	11	35.7	-20.3	56.0	33.5	-12.5	46.0	Phase 1
1.277	12	31.5	-24.5	56.0	29.9	-16.2	46.0	Phase 1
1.853	12	29.5	-26.5	56.0	26.4	-19.6	46.0	Phase 1

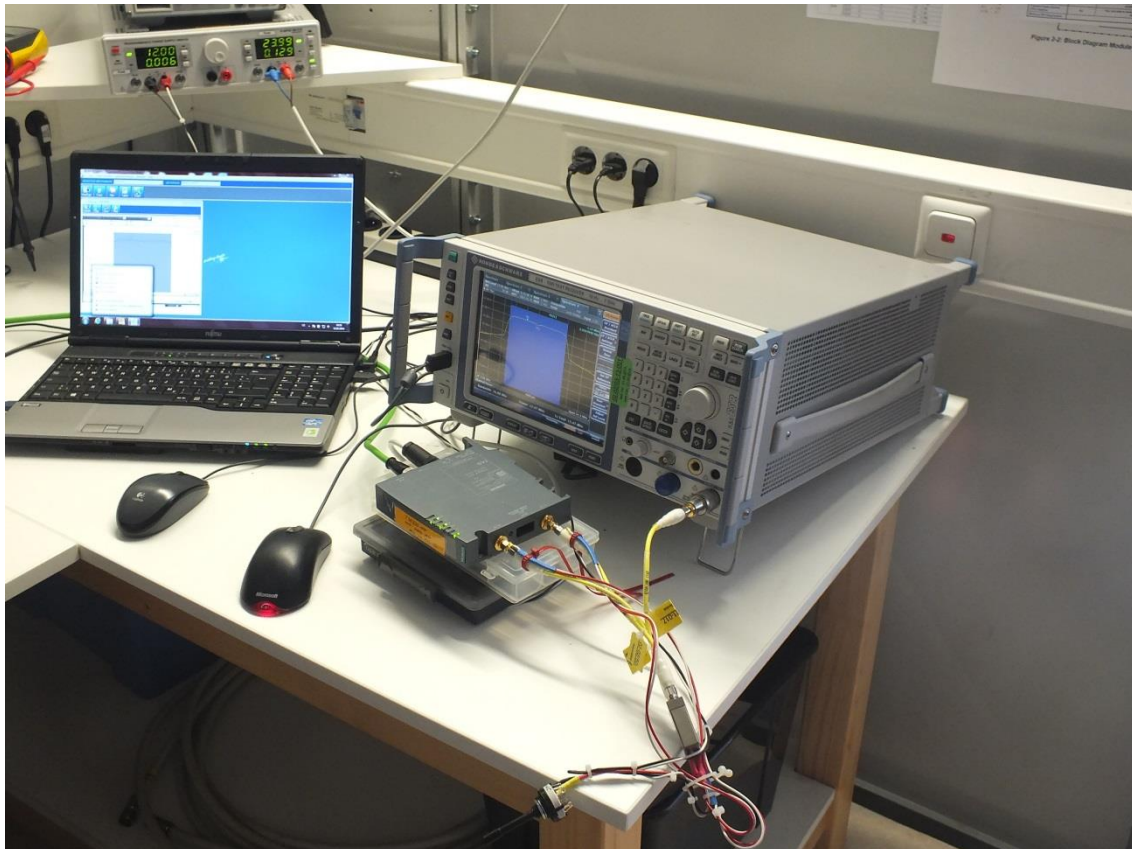
5.2 EBW and OBW

For test instruments and accessories used see section 6 Part MB.

5.2.1 Description of the test location

Test location: AREA 4

5.2.2 Photo documentation of the test set-up



5.2.3 Applicable standard

According to FCC Part 15E, Section 15.407(i):

The emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier centre frequency and one above the carrier centre frequency, that are 26 dB down relative to the maximum of the modulated carrier.

5.2.4 Description of Measurement

The bandwidth was measured at an amplitude level reduced from the reference level by a specified ratio of -26 dB. The reference level is the level of the highest amplitude of the signal observed from the transmitter frequency. The spectrum analyser function "n-dB-down" is used to determine the bandwidth.

5.2.5 Test result

802.11h, Mbps 6, Port1:

Spectrum analyser settings: RBW: 300 kHz VBW: 1 MHz Detector: Peak

Centre frequency	26 dB bandwidth	99% OBW
(MHz)	(MHz)	(MHz)
5260	25.920	16.980
5280	25.800	17.190
5320	26.400	16.920
5500	24.600	16.950
5580	24.840	16.770
5700	24.400	16.890

HT20 mode, MCS0, Port1:

Spectrum analyser settings: RBW: 300 kHz VBW: 1 MHz Detector: Peak

Centre frequency	26 dB bandwidth	99% OBW
(MHz)	(MHz)	(MHz)
5260	26.960	18.090
5280	24.600	18.180
5320	25.600	18.060
5500	26.040	18.090
5580	24.640	18.000
5700	27.400	17.970

HT40 mode, MCS8, Port1:

Spectrum analyser settings: RBW: 1 MHz VBW: 3 MHz Detector: Peak

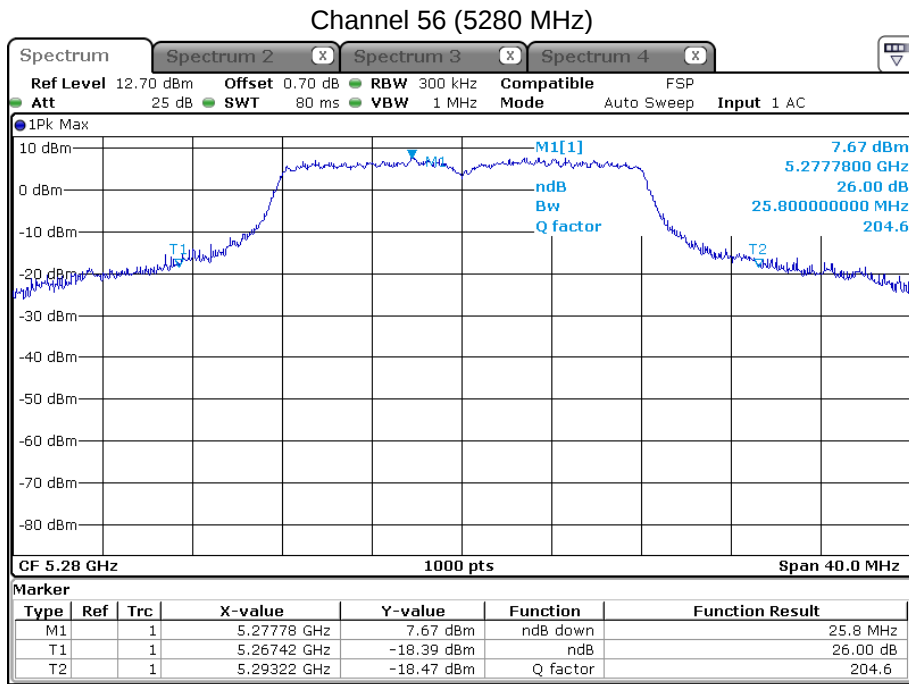
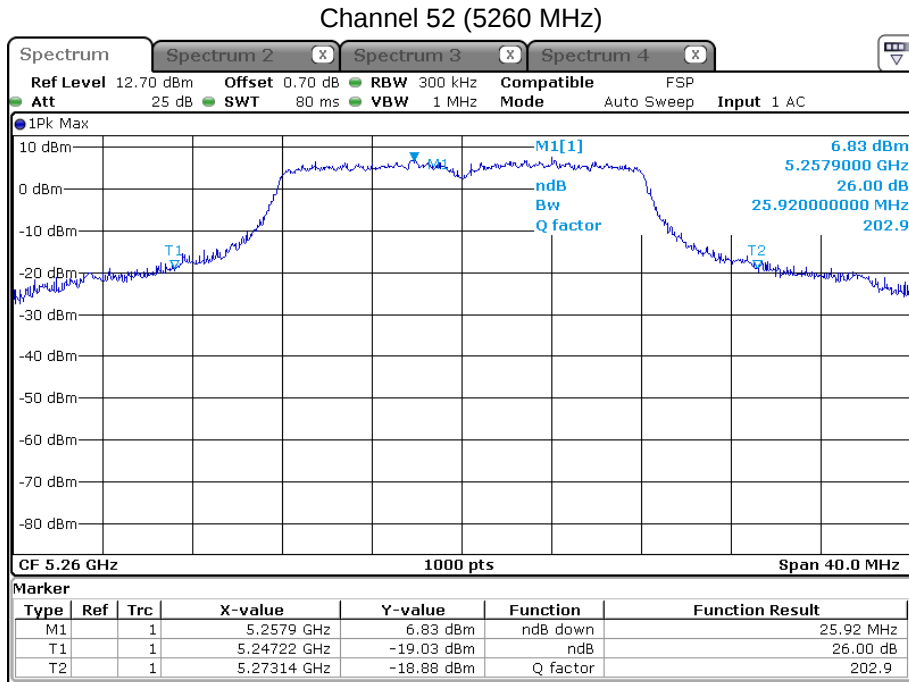
Centre frequency	26 dB bandwidth	99% OBW
(MHz)	(MHz)	(MHz)
5270	54.900	37.500
5310	52.970	37.920
5510	54.510	37.800
5550	52.510	37.770
5670	47.770	37.530

Remarks: For detailed test results please see the following test protocols. No limit is defined for EBW and

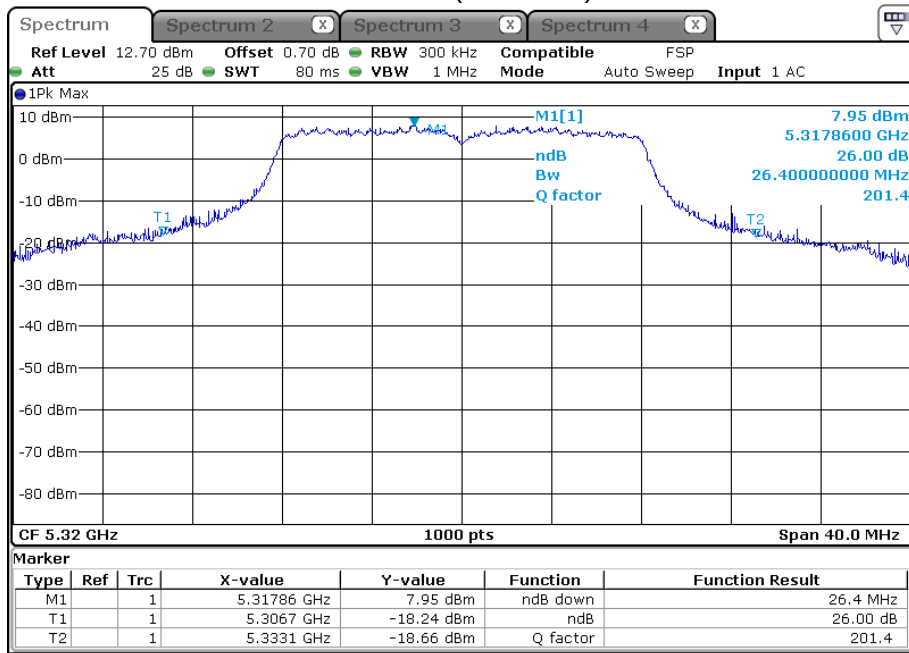
OBW!

5.2.6 Test protocol EBW (26dB bandwidth measurement)

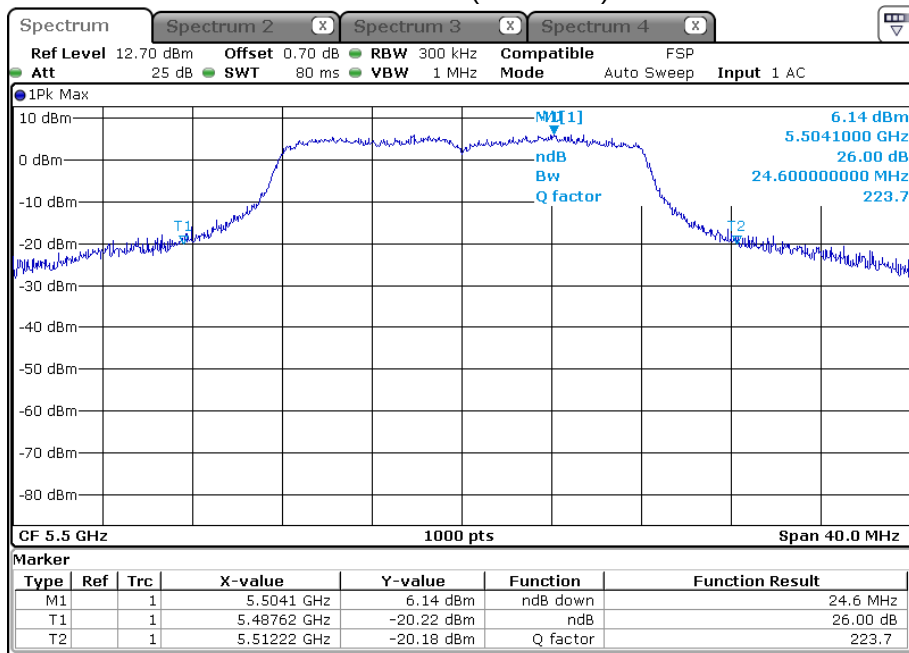
802.11h:



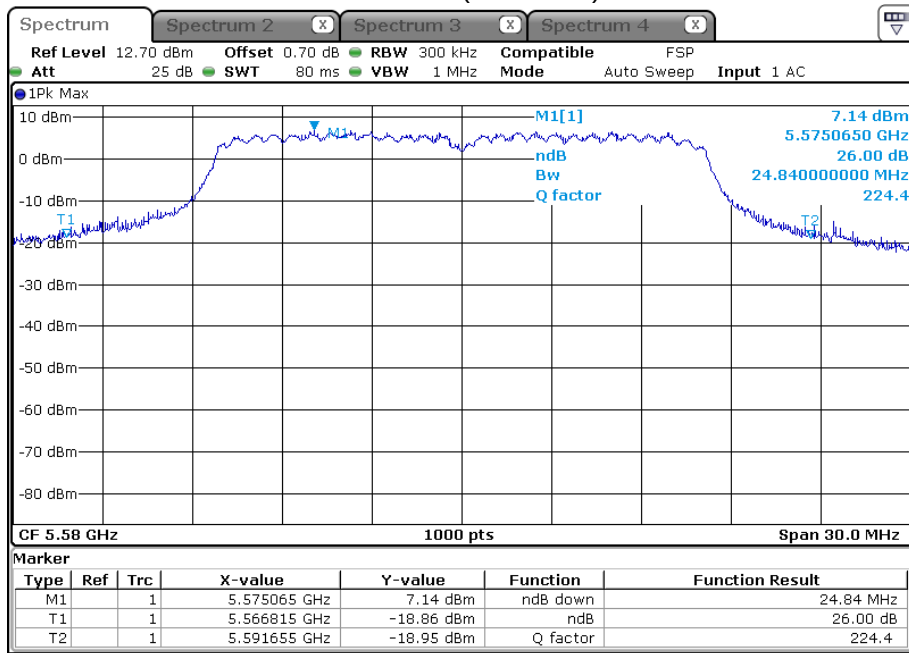
Channel 64 (5320 MHz)



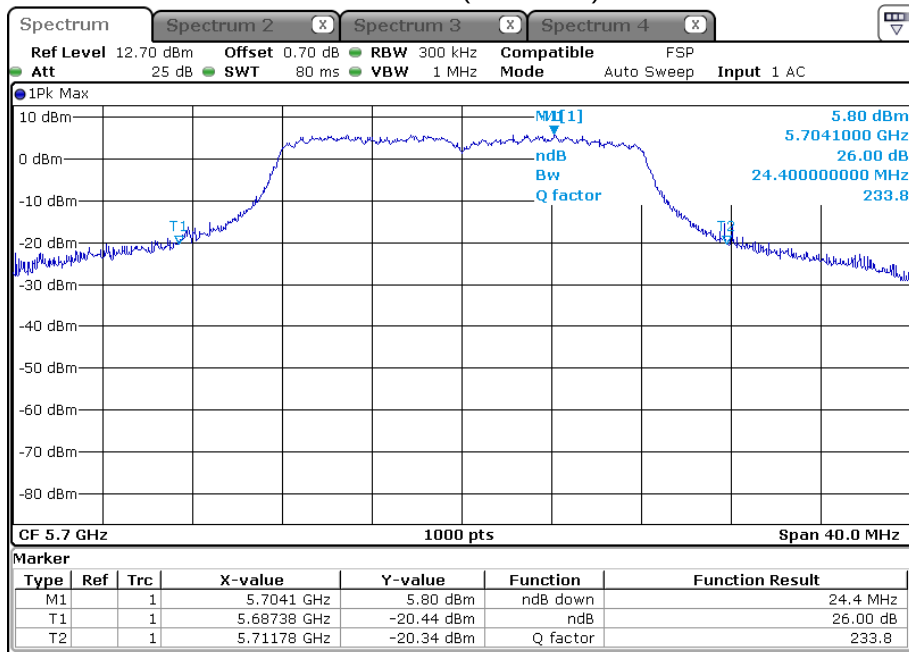
Channel 100 (5500 MHz)



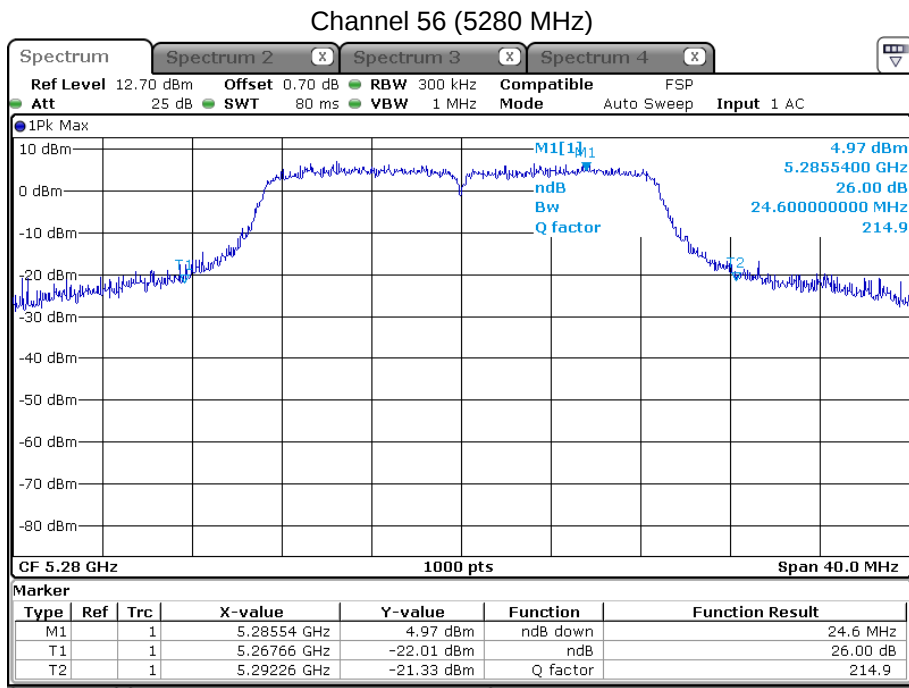
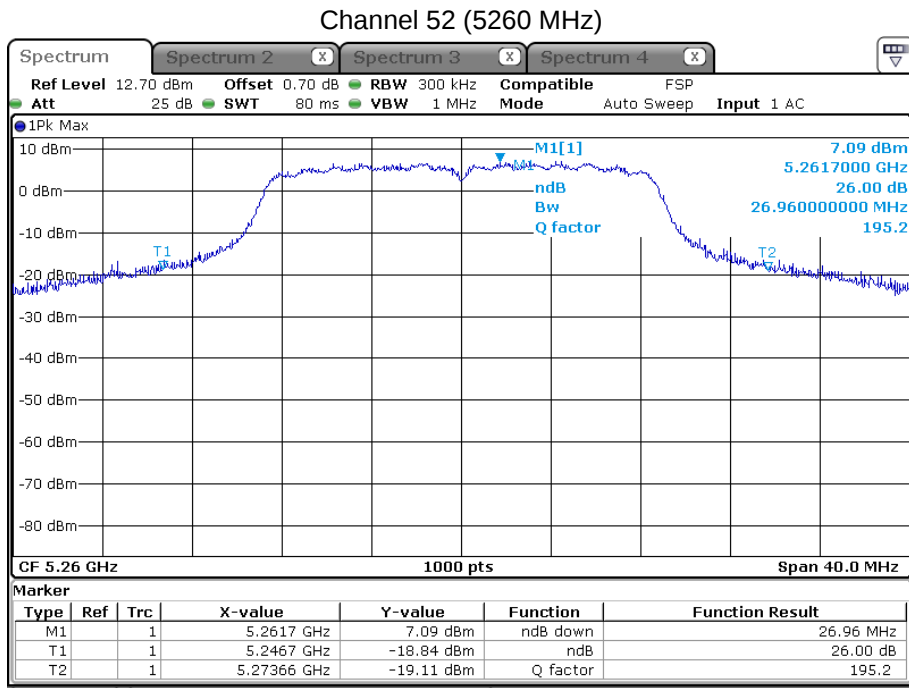
Channel 116 (5580 MHz)



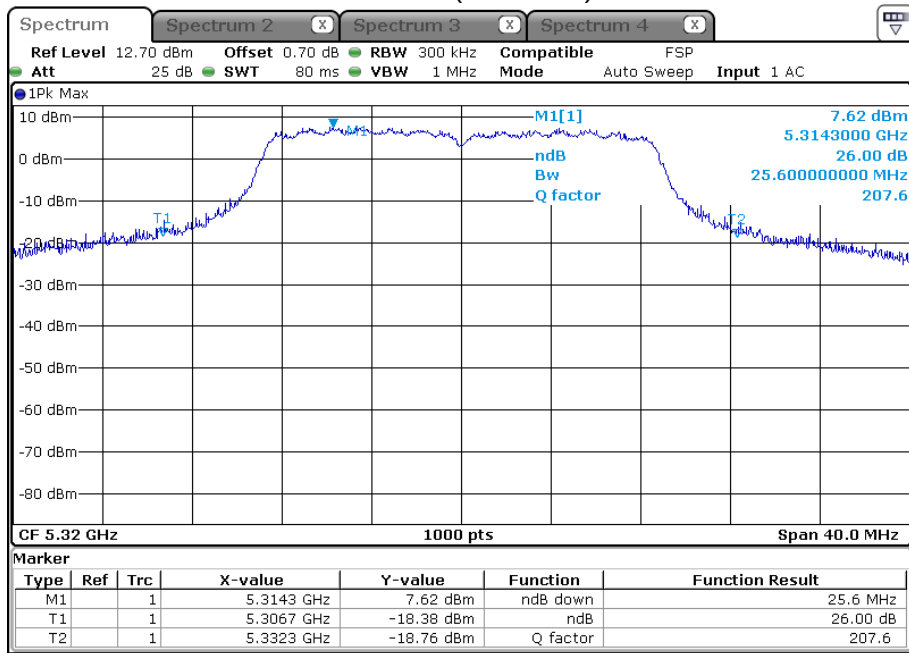
Channel 140 (5700 MHz)



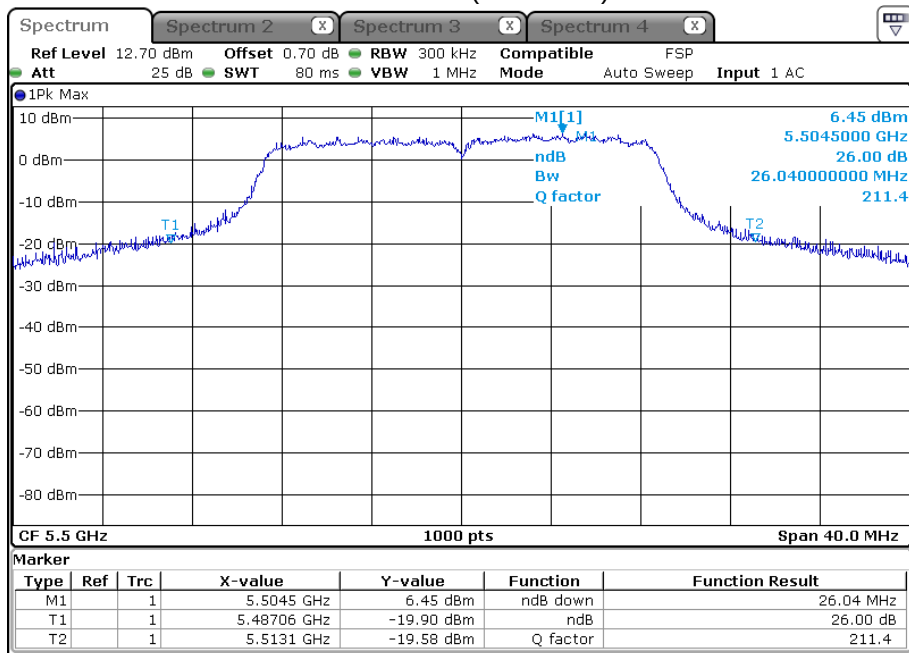
802.11n, HT20:



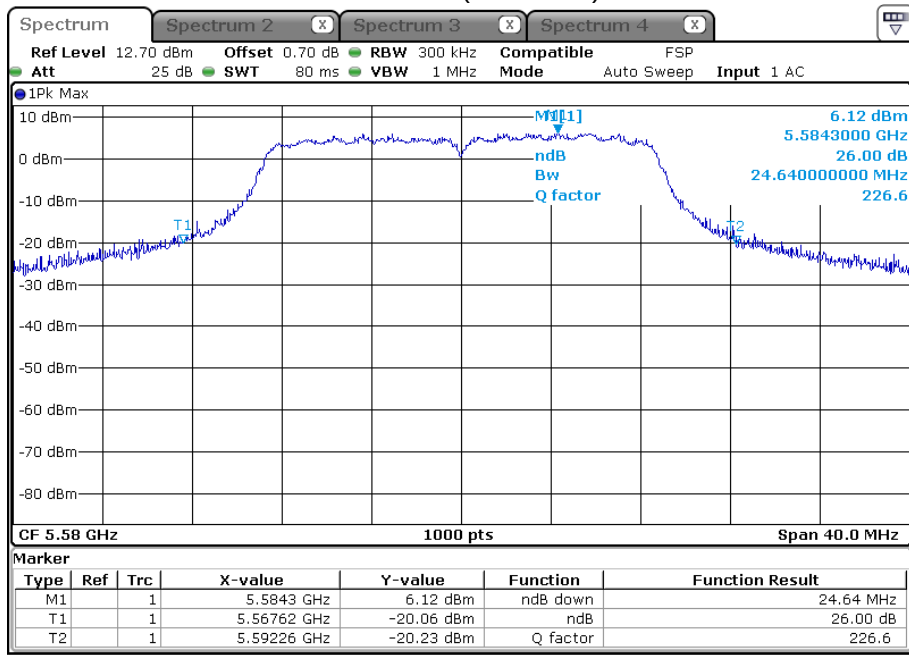
Channel 64 (5320 MHz)



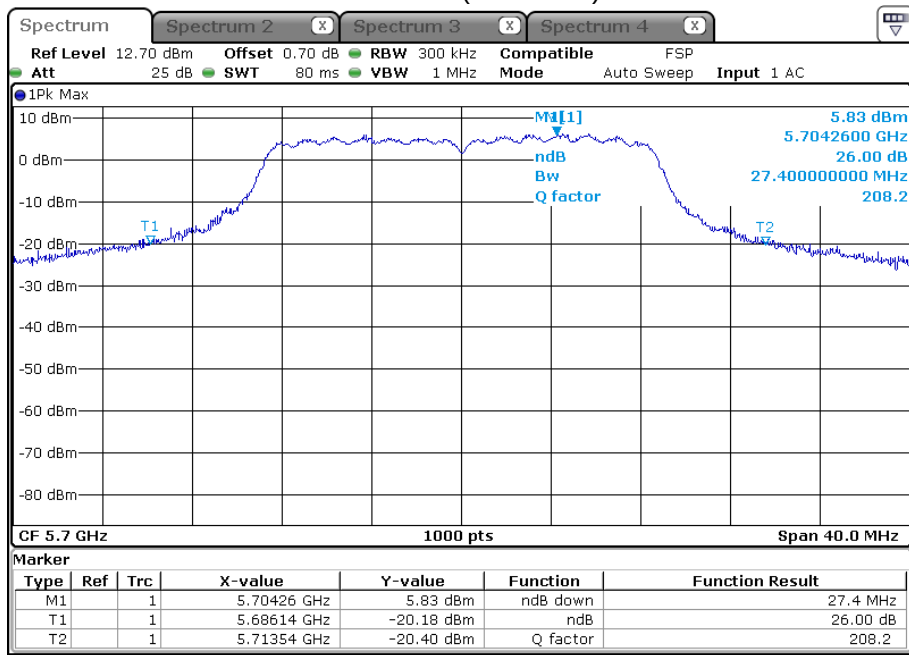
Channel 100 (5500 MHz)



Channel 116 (5580 MHz)

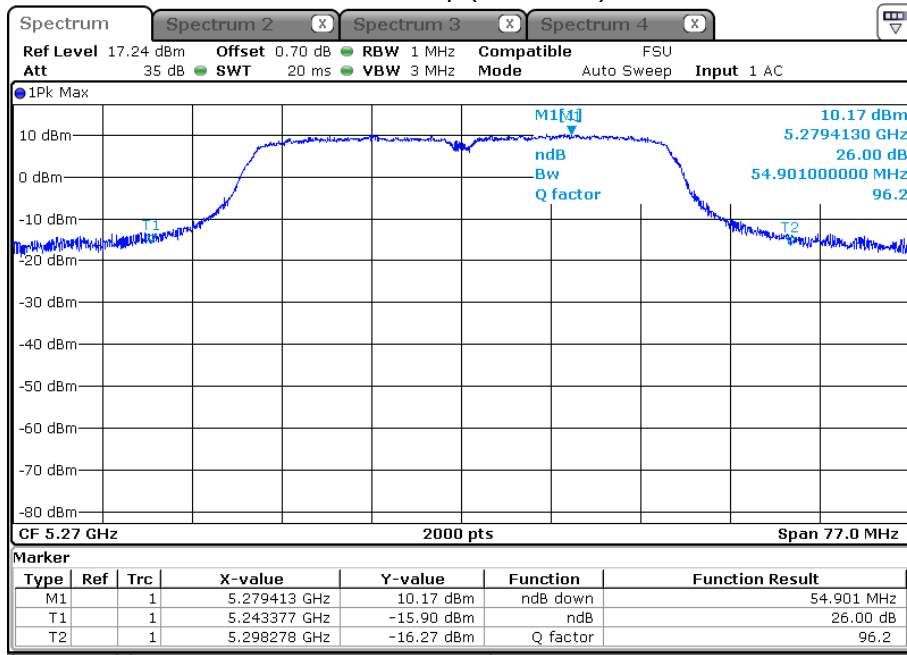


Channel 140 (5700 MHz)

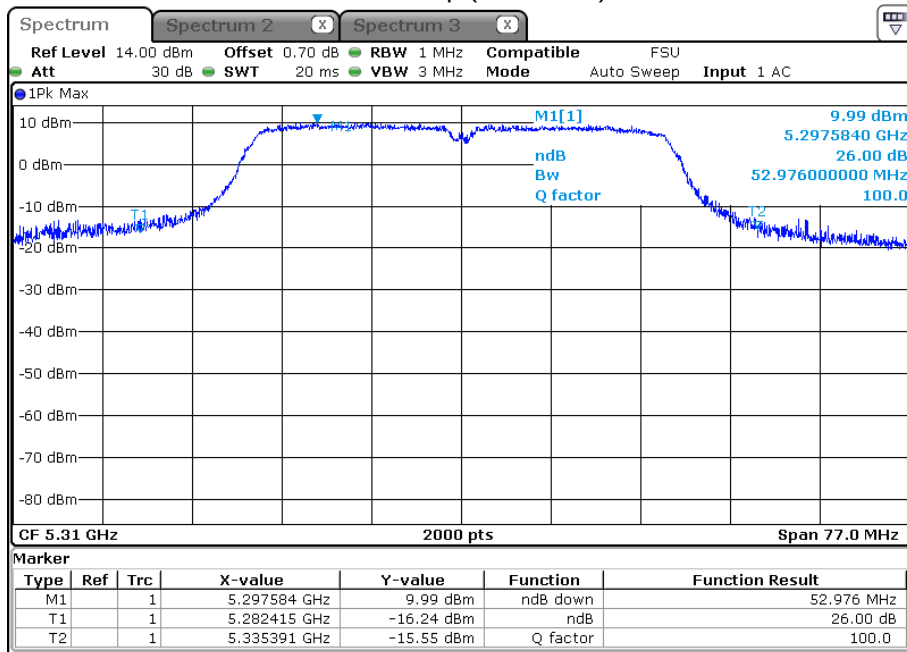


802.11n, HT40:

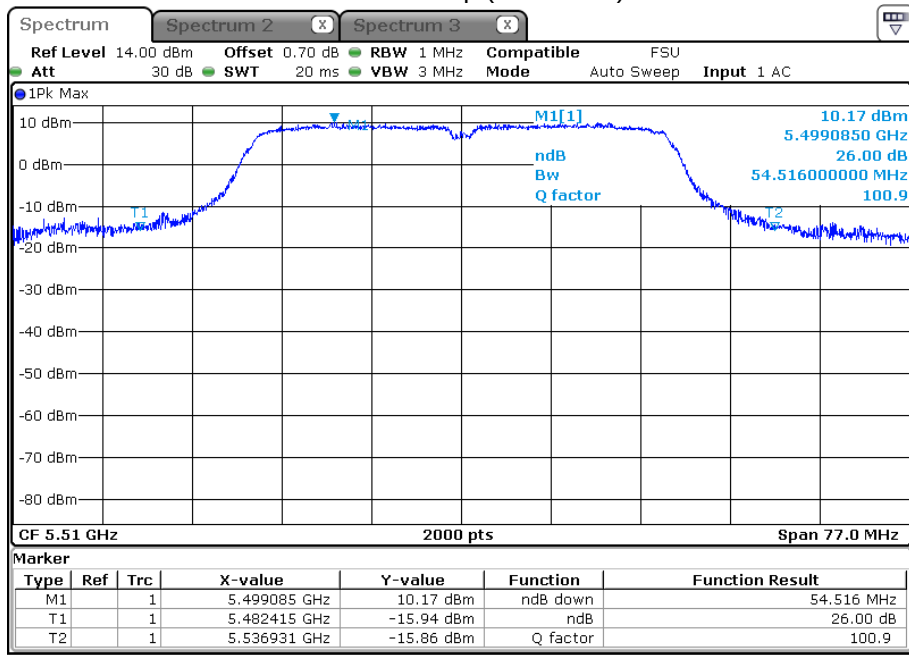
Channel 52up (5270 MHz)



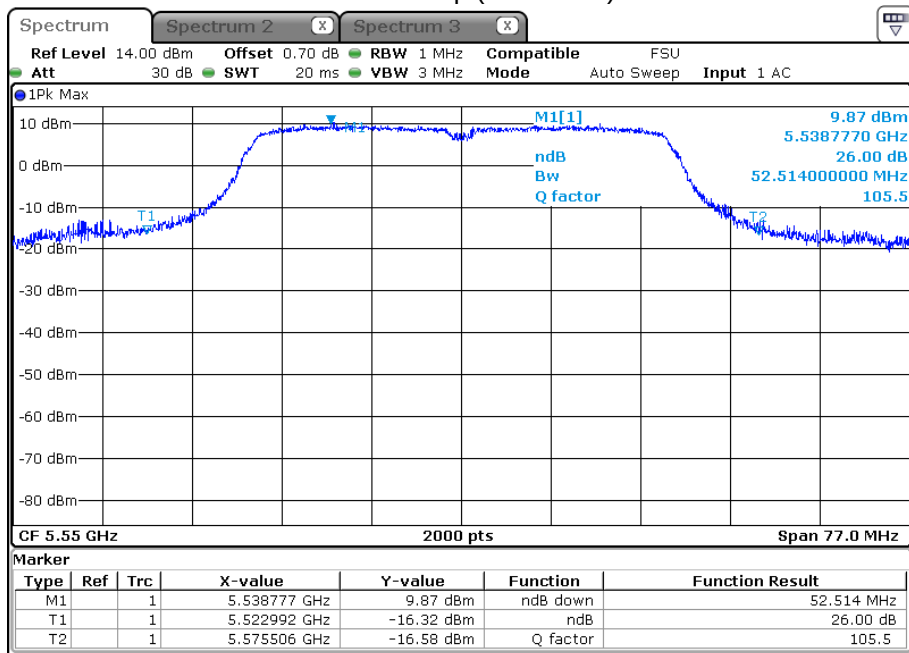
Channel 60up (5310 MHz)



Channel 100up (5510 MHz)

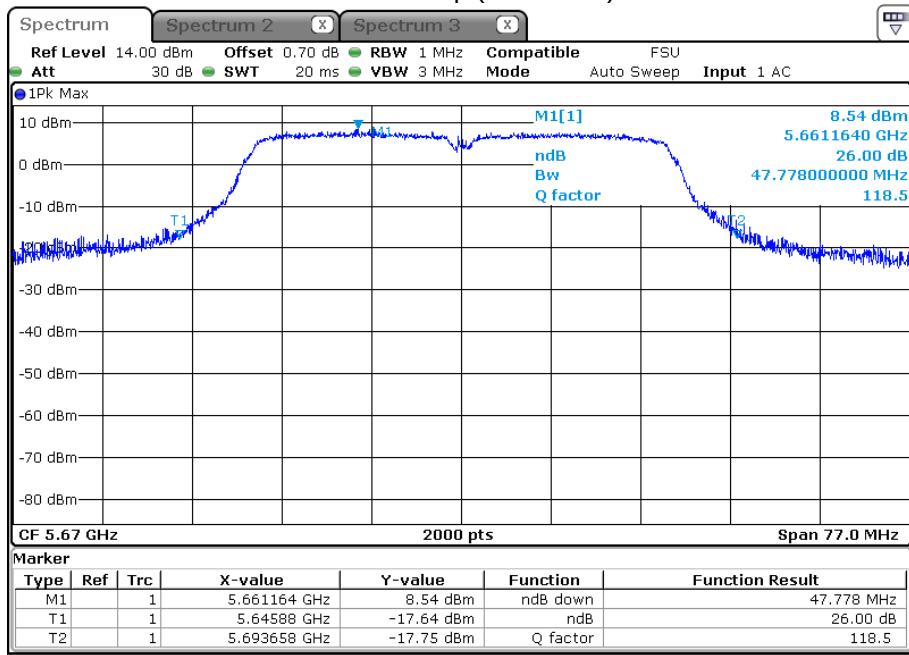


Channel 108up (5550 MHz)



FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

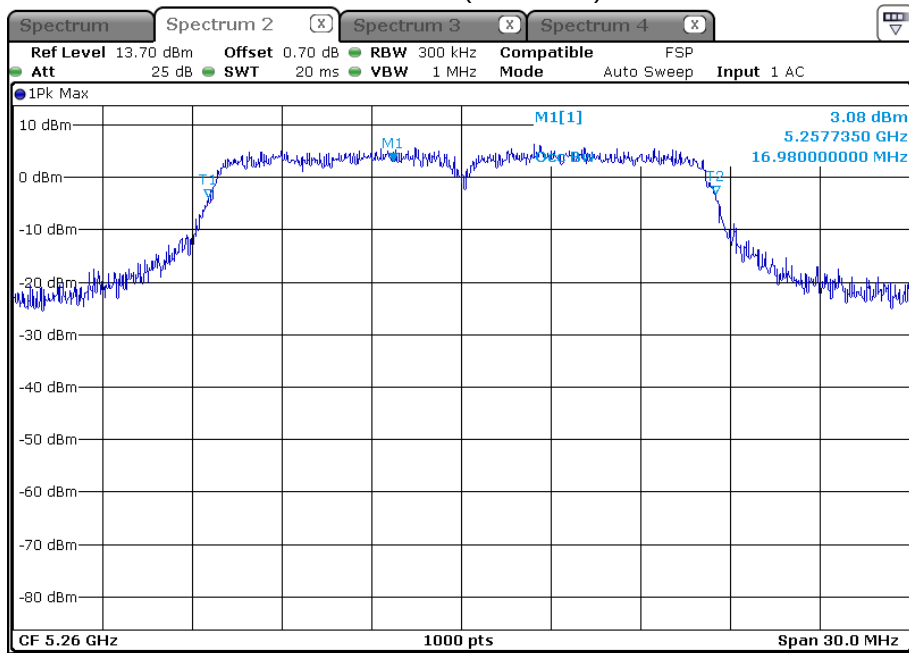
Channel 132up (5700 MHz)



5.2.7 Test protocol OBW

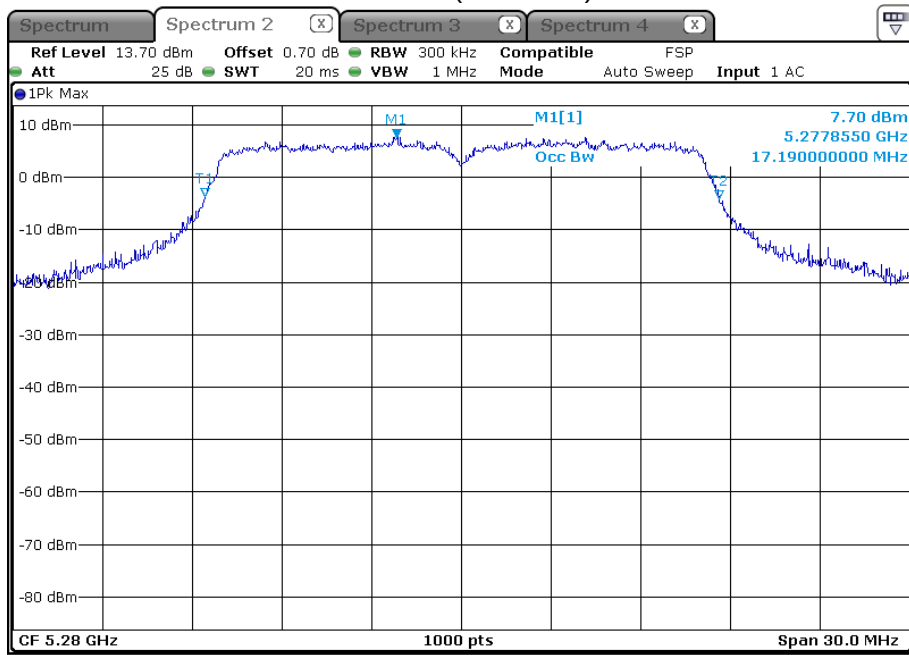
802.11h:

Channel 52 (5260 MHz)

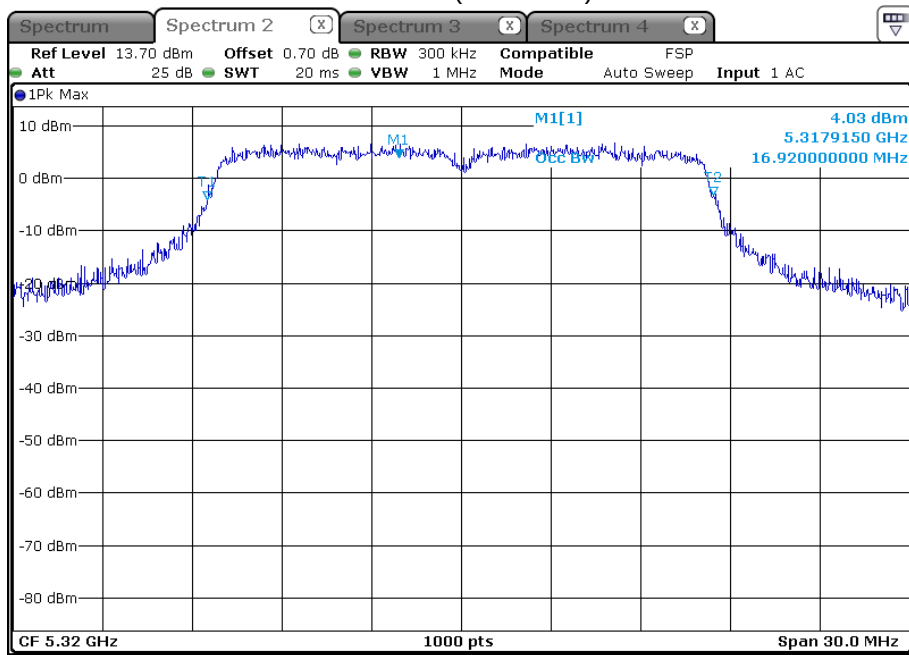


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Channel 56 (5280 MHz)

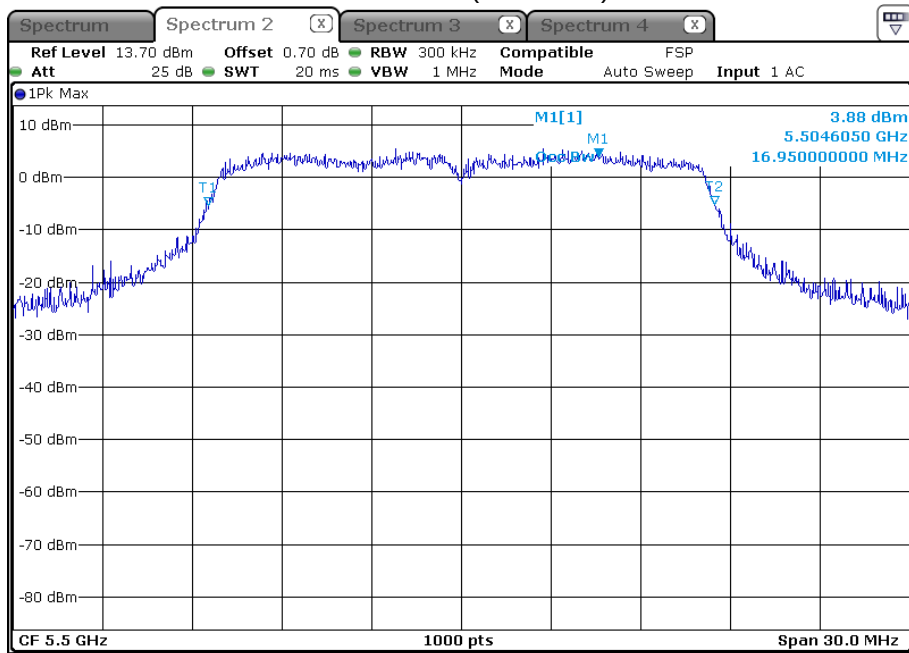


Channel 64 (5320 MHz)

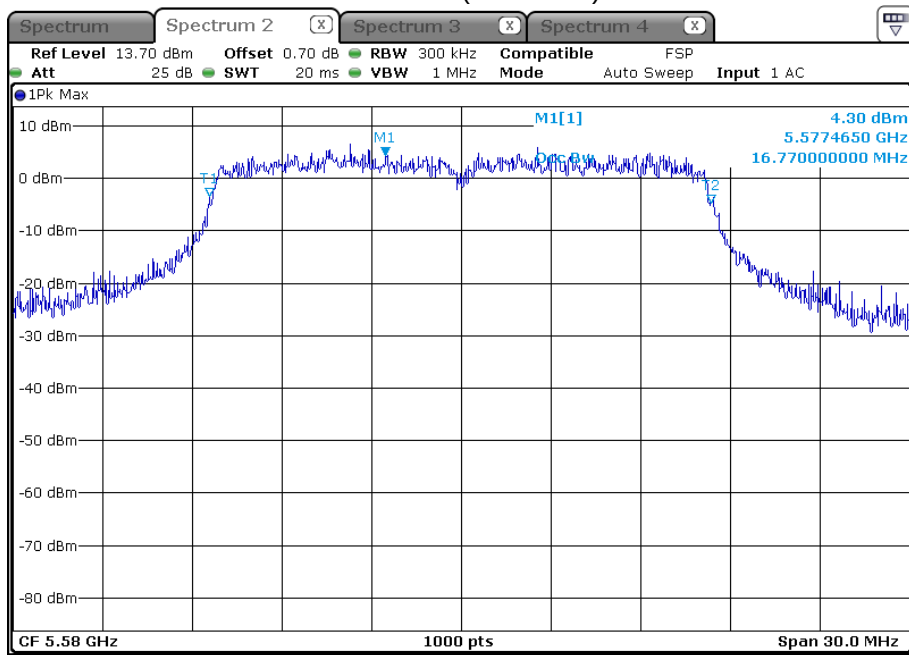


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

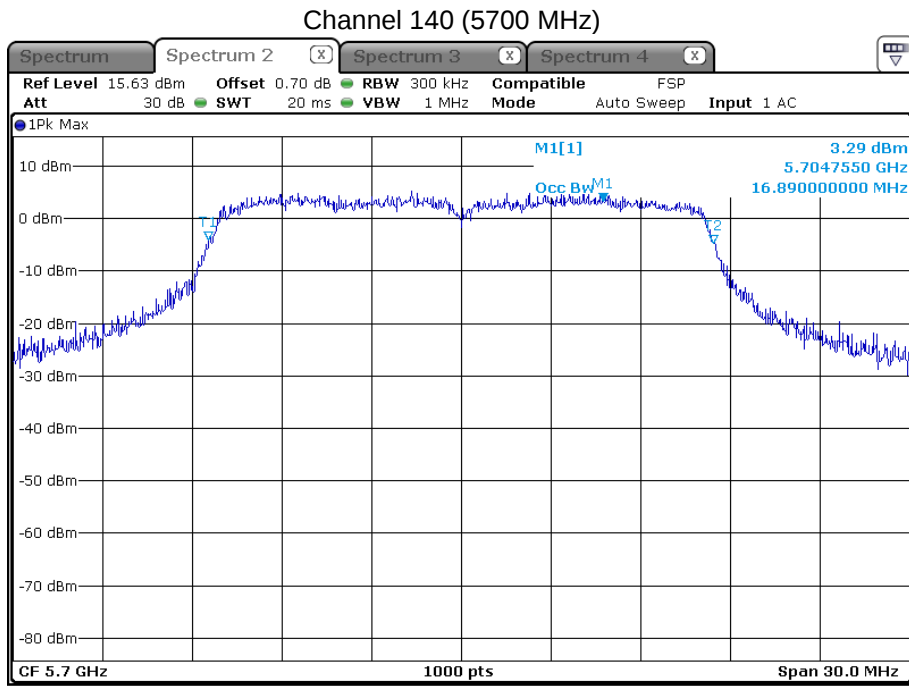
Channel 100 (5500 MHz)



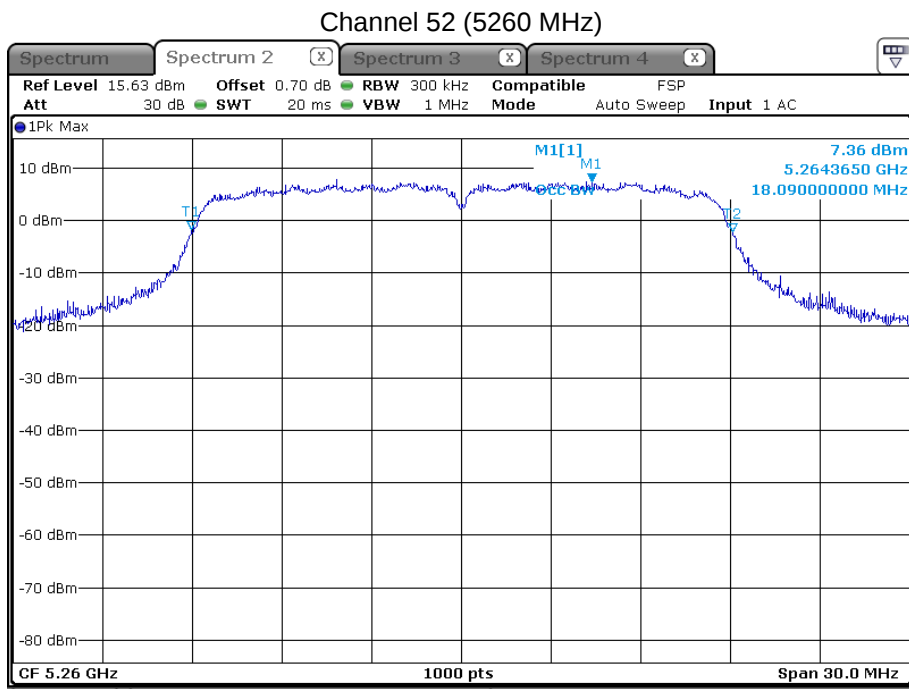
Channel 116 (5580 MHz)



FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

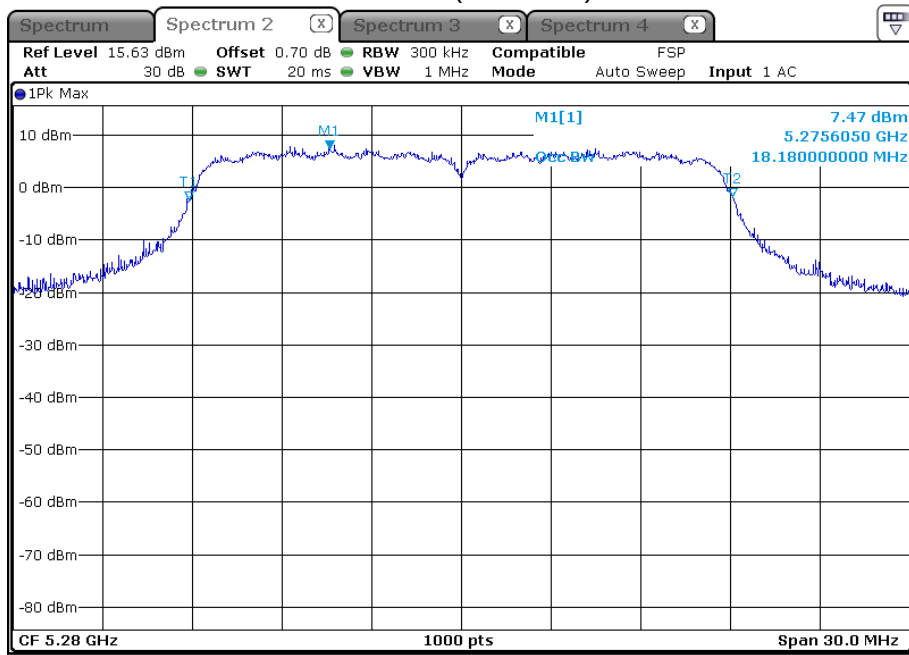


802.11n, HT20:

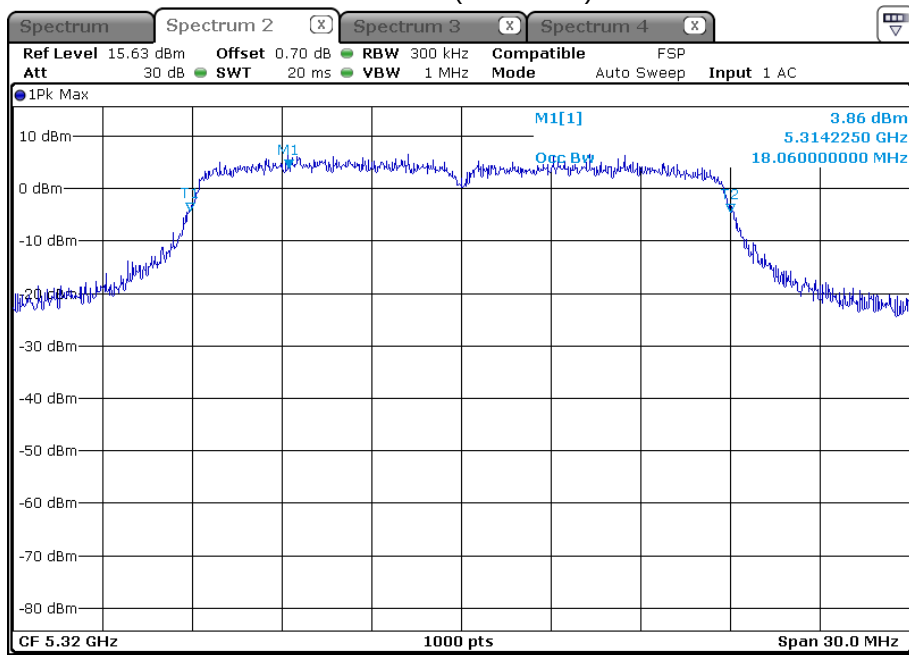


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Channel 56 (5280 MHz)

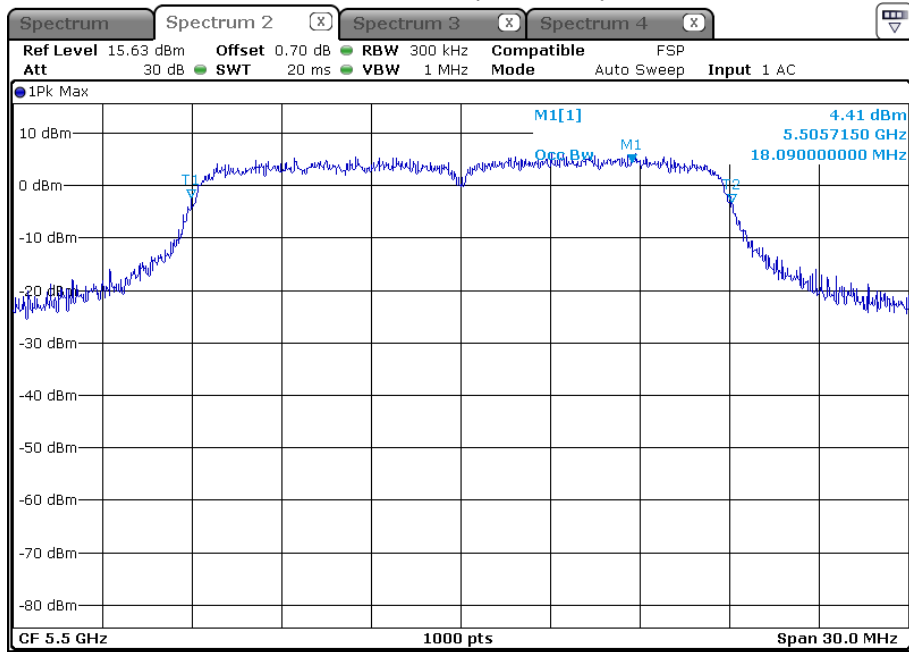


Channel 64 (5320 MHz)

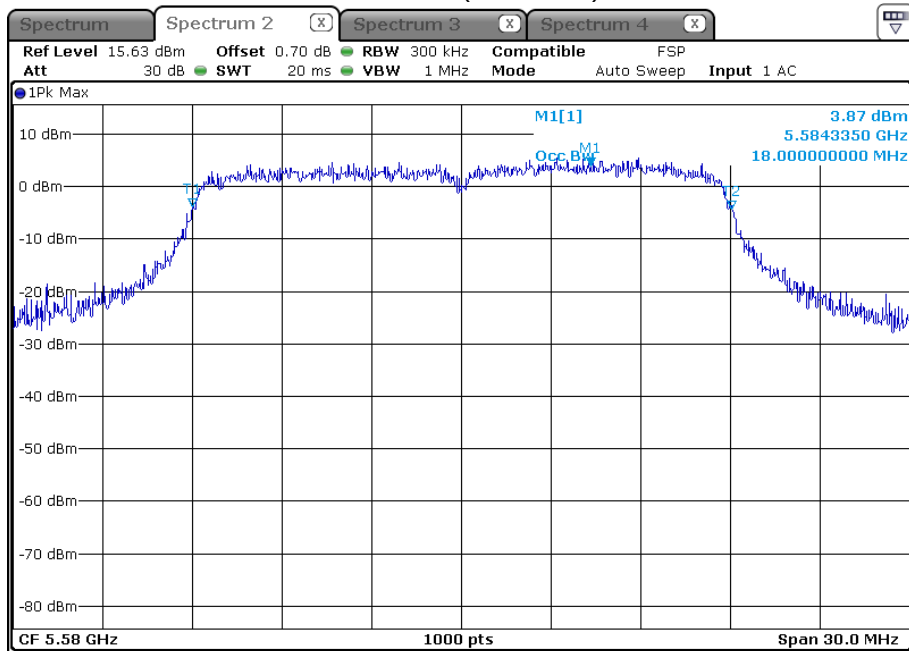


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

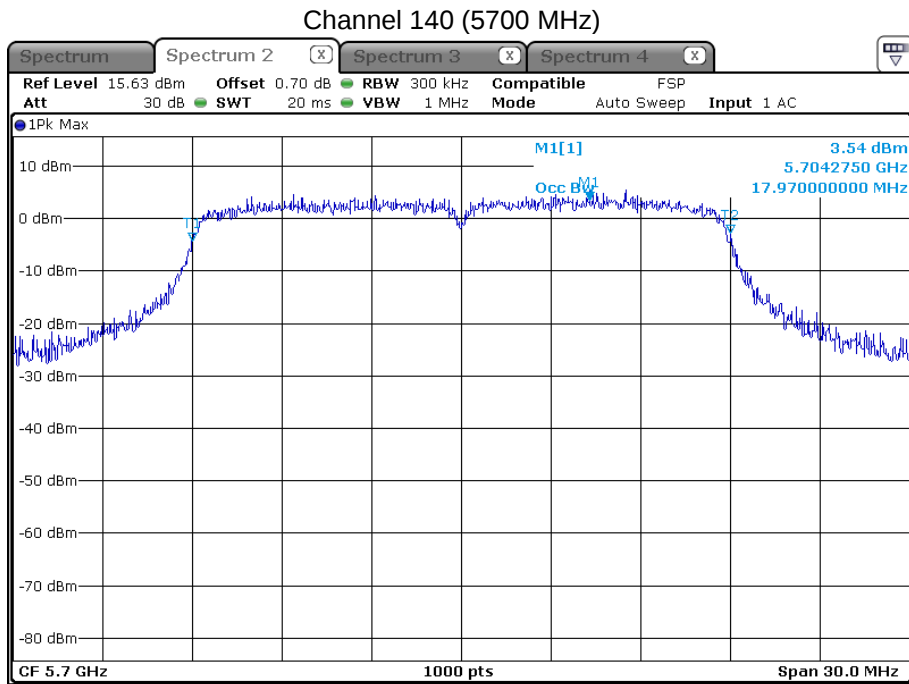
Channel 100 (5500 MHz)



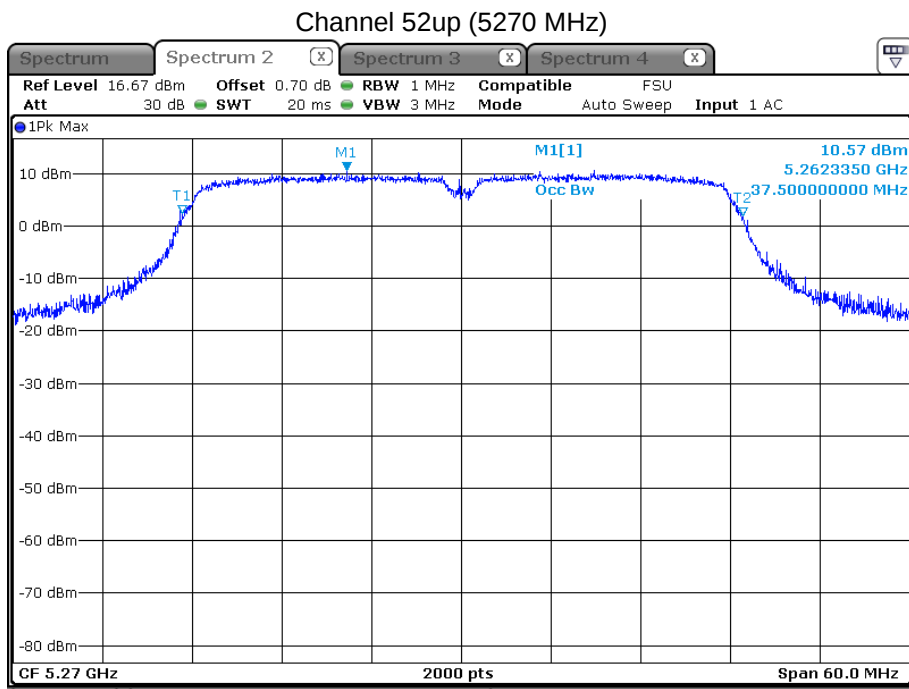
Channel 116 (5580 MHz)



FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

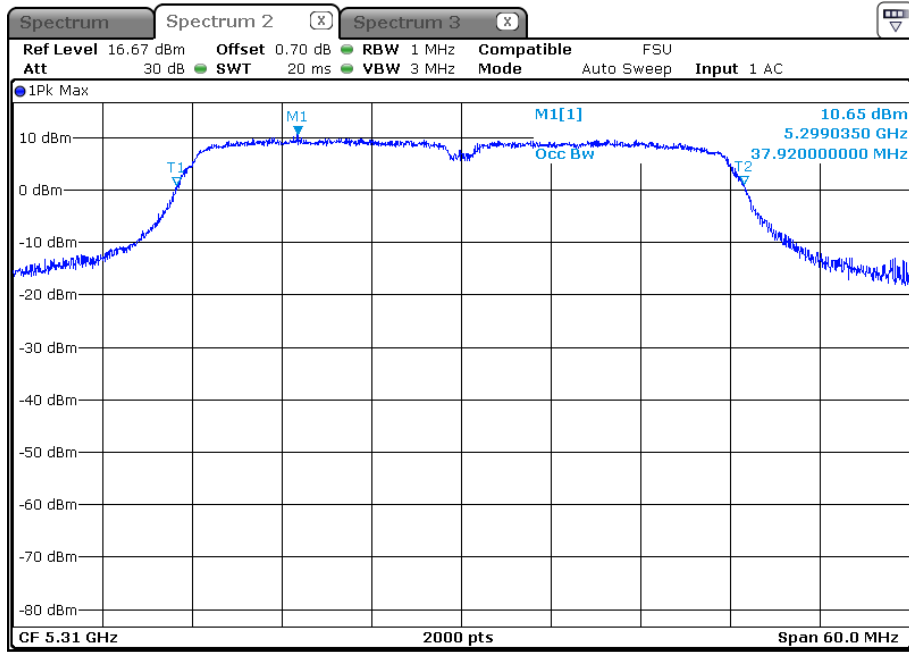


HT40:

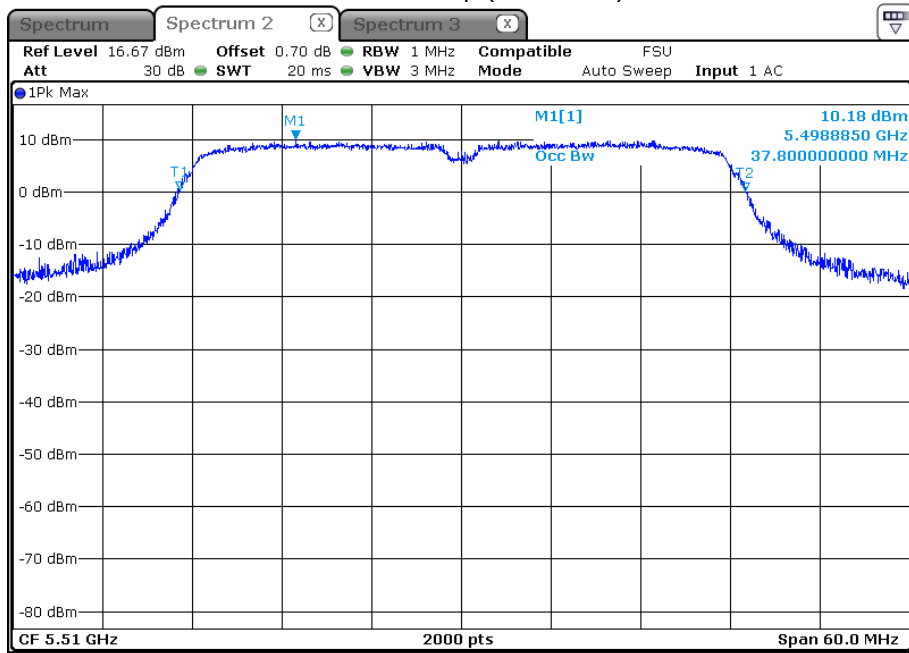


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Channel 60up (5310 MHz)

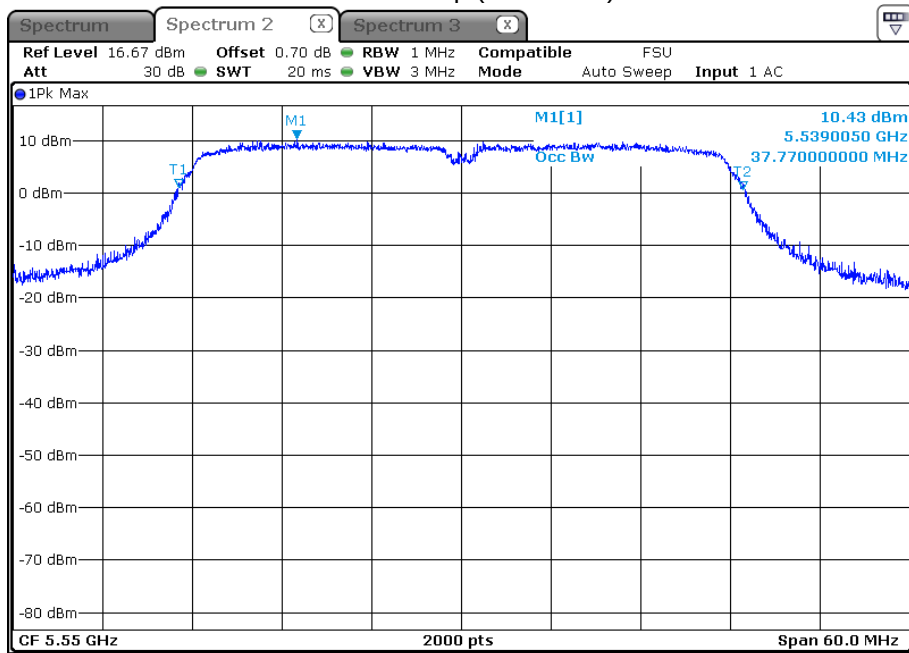


Channel 100up (5510 MHz)

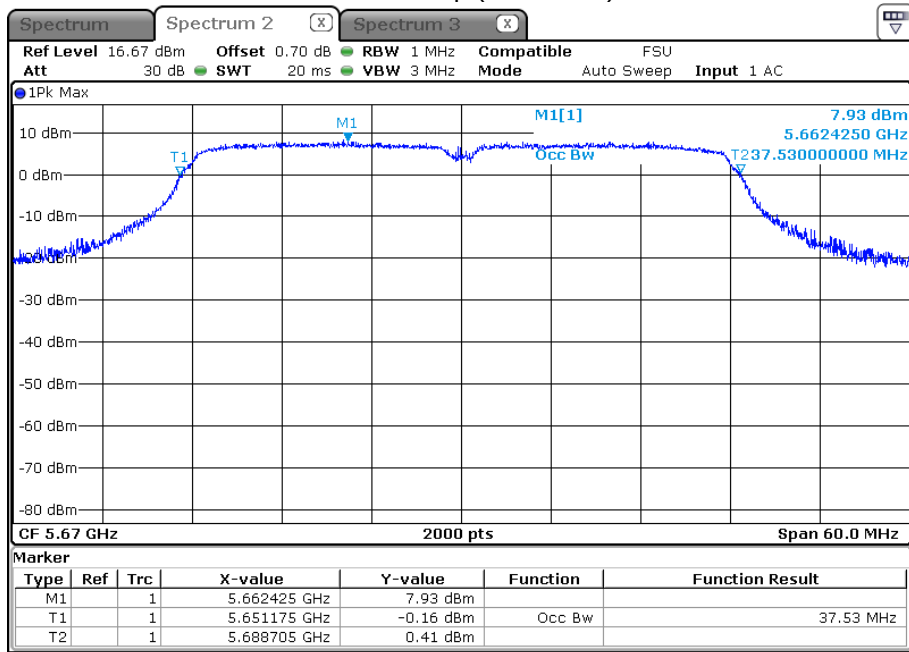


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Channel 108up (5550 MHz)



Channel 132up (5700 MHz)



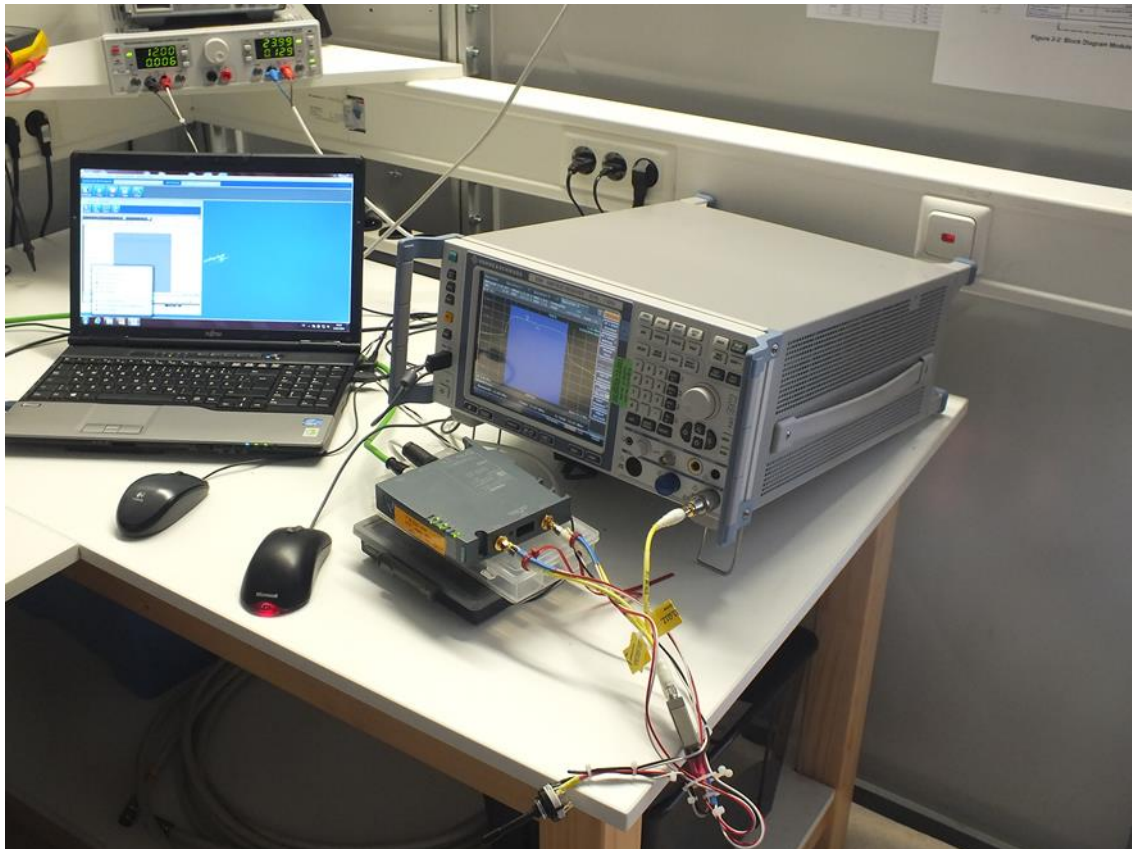
5.3 Maximum conducted output power

For test instruments and accessories used see section 6 Part **CPC 3**.

5.3.1 Description of the test location

Test location: AREA 4

5.3.2 Photo documentation of the test set-up



5.3.3 Applicable standard

According to FCC Part 15E, Section 15.407(a):

The maximum conducted output power over the frequency band of operation shall not exceed the effective values. If transmitting antennas of directional gain are greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.3.4 Description of Measurement

The output power is measured conducted using a spectrum analyser. The EUT has no constant duty cycle and may be smaller than 98% therefore the procedure according the OET 789033, item E g) Method SA-3 Alternative is followed. The EUT is set while measuring in TX continuous mode with a maximum duty cycle. The total output power is summed over all antenna terminals of the multiple antenna system. The insertion loss of the measurement cable and switch is taken into account with a amplitude offset while measuring.

Determination of the min VBW:

Transmission duration			
Standard	min puls in TX continuous mode	1/T	min VBW
	(ms)	(Hz)	
801.11a	2.000	500	1 kHz
801.11n, HT20	1.850	541	1 kHz
801.11n, HT40	0.455	2198	3 kHz

Spectrum analyser settings:

Channel power measurement function, TX channel bandwidth equal to OBW;

RBW: 1 MHz, VBW: 1 kHz, Sweep time: auto, Detector: PK, Trace: max hold;

5.3.5 Test result

Test conditions:			
801.11h, Mbps 6:		Test results	
	A [P14]	A [P17]	A [P20]
Chain1	(dBm)	(dBm)	(dBm)
CH52	7.7	10.2	13.1
CH56	9.1	11.9	13.1
CH64	7.9	10.6	13.1
CH100	8.3	10.7	12.0
CH116	7.5	10.0	12.2
CH140	7.3	9.6	11.8

Test conditions:			
801.11h, Mbps 6:		Test results	
	A [P14]	A [P17]	A [P20]
Chain2	(dBm)	(dBm)	(dBm)
CH52	7.8	10.8	13.0
CH56	8.8	11.9	12.7
CH64	7.3	10.5	12.4
CH100	8.8	11.6	12.0
CH116	8.1	10.6	11.5
CH140	7.1	9.9	11.2

Calculating the conducted power and EIRP:

CH52h	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	16.0	24.0	-8.0	22.0	30.0	-8.0
Ant_group2	P17	9.0	13.5	24.0	-10.5	22.5	30.0	-7.5
Ant_group3	P14	14.2	10.7	24.0	-13.3	24.9	30.0	-5.1

CH56h	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	15.9	24.0	-8.1	21.9	30.0	-8.1
Ant_group2	P17	9.0	14.1	24.0	-9.9	23.1	30.0	-6.9
Ant_group3	P14	14.2	11.3	24.0	-12.7	25.5	30.0	-4.5

CH64h	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	15.8	24.0	-8.2	21.8	30.0	-8.2
Ant_group2	P17	9.0	13.6	24.0	-10.4	22.6	30.0	-7.4
Ant_group3	P14	14.2	10.6	24.0	-13.4	24.8	30.0	-5.2

CH100h	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	15.0	24.0	-9.0	21.0	30.0	-9.0
Ant_group2	P17	9.0	14.2	24.0	-9.8	23.2	30.0	-6.8
Ant_group3	P14	14.2	11.5	24.0	-12.5	25.7	30.0	-4.3

CH116h	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	14.8	24.0	-9.2	20.8	30.0	-9.2
Ant_group2	P17	9.0	13.3	24.0	-10.7	22.3	30.0	-7.7
Ant_group3	P14	14.2	10.8	24.0	-13.2	25.0	30.0	-5.0

CH140h	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	14.5	24.0	-9.5	20.5	30.0	-9.5
Ant_group2	P17	9.0	12.7	24.0	-11.3	21.7	30.0	-8.3
Ant_group3	P14	14.2	10.2	24.0	-13.8	24.4	30.0	-5.6

Test conditions:

801.11n, HT20, MCS0:		Test results	
	A [P14]	A [P17]	A [P20]
Chain1	(dBm)	(dBm)	(dBm)
CH52	8.7	11.5	12.2
CH56	9.0	11.7	12.6
CH64	7.8	10.6	12.6
CH100	8.0	10.6	11.3
CH116	7.4	10.0	12.1
CH140	7.0	10.1	11.1

Test conditions:

801.11n, HT20, MCS0:		Test results	
	A [P14]	A [P17]	A [P20]
Chain2	(dBm)	(dBm)	(dBm)
CH52	9.2	11.3	11.8
CH56	8.7	11.5	12.2
CH64	7.4	10.3	11.9
CH100	8.6	11.1	11.2
CH116	8.1	10.4	11.5
CH140	7.2	9.7	10.6

Calculating the conducted power and EIRP:

CH52, HT20	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	15.0	24.0	-9.0	21.0	30.0	-9.0
Ant_group2	P17	9.0	14.4	24.0	-9.6	23.4	30.0	-6.6
Ant_group3	P14	14.2	11.9	24.0	-12.1	26.1	30.0	-3.9

CH56, HT20	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	15.4	24.0	-8.6	21.4	30.0	-8.6
Ant_group2	P17	9.0	14.6	24.0	-9.4	23.6	30.0	-6.4
Ant_group3	P14	14.2	11.8	24.0	-12.2	26.0	30.0	-4.0

CH64, HT20	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	15.3	24.0	-8.7	21.3	30.0	-8.7
Ant_group2	P17	9.0	13.5	24.0	-10.5	22.5	30.0	-7.5
Ant_group3	P14	14.2	10.6	24.0	-13.4	24.8	30.0	-5.2

CH100, HT20	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	14.3	24.0	-9.7	20.3	30.0	-9.7
Ant_group2	P17	9.0	13.9	24.0	-10.1	22.9	30.0	-7.1
Ant_group3	P14	14.2	11.3	24.0	-12.7	25.5	30.0	-4.5

CH116, HT20	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	14.8	24.0	-9.2	20.8	30.0	-9.2
Ant_group2	P17	9.0	13.8	24.0	-10.2	22.8	30.0	-7.2
Ant_group3	P14	14.2	10.8	24.0	-13.2	25.0	30.0	-5.0

CH140, HT20	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	13.9	24.0	-10.1	19.9	30.0	-10.1
Ant_group2	P17	9.0	12.9	24.0	-11.1	21.9	30.0	-8.1
Ant_group3	P14	14.2	10.1	24.0	-13.9	24.3	30.0	-5.7

Test conditions:			
801.11n, HT40, MCS8:		Test results	
	A [P14]	A [P17]	A [P20]
Chain1	(dBm)	(dBm)	(dBm)
52up	8.7	12.5	13.6
60up	8.3	11.3	12.4
100up	8.7	10.4	13.5
108up	8.5	11.3	13.4
132up	9.0	10.1	10.9

Test conditions:			
801.11n, HT40, MCS8:		Test results	
	A [P14]	A [P17]	A [P20]
Chain2	(dBm)	(dBm)	(dBm)
52up	9.5	12.3	13.4
60up	7.2	10.3	11.5
100up	9.0	11.0	12.8
108up	8.0	10.0	12.9
132up	6.7	9.6	11.5

Calculating the conducted power and EIRP:

CH52up	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	16.5	24.0	-7.5	22.5	30.0	-7.5
Ant_group2	P17	9.0	15.4	24.0	-8.6	24.4	30.0	-5.6
Ant_group3	P14	14.2	12.1	24.0	-11.9	26.3	30.0	-3.7

CH60up	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	15.0	24.0	-9.0	21.0	30.0	-9.0
Ant_group2	P17	9.0	13.8	24.0	-10.2	22.8	30.0	-7.2
Ant_group3	P14	14.2	10.8	24.0	-13.2	25.0	30.0	-5.0

CH100up	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	16.2	24.0	-7.8	22.2	30.0	-7.8
Ant_group2	P17	9.0	13.7	24.0	-10.3	22.7	30.0	-7.3
Ant_group3	P14	14.2	11.8	24.0	-12.2	26.0	30.0	-4.0

CH108up	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	16.2	24.0	-7.8	22.2	30.0	-7.8
Ant_group2	P17	9.0	13.7	24.0	-10.3	22.7	30.0	-7.3
Ant_group3	P14	14.2	11.3	24.0	-12.7	25.5	30.0	-4.5

CH132up	Test results							
	P set	Ant gain	A1 + A2	Limit	Margin	EIRP	Limit	Margin
Chain1 + 2		(dBi)	(dBm)	(dBm)	(dB)	(dBm)	(dBm)	(dB)
Ant_group1	P20	6.0	14.2	24.0	-9.8	20.2	30.0	-9.8
Ant_group2	P17	9.0	12.8	24.0	-11.2	21.8	30.0	-8.2
Ant_group3	P14	14.2	11.0	24.0	-13.0	25.2	30.0	-4.8

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Peak power limit according to FCC Part 15E, Section 15.407(a):

Frequency (GHz)	Conducted power limit		
		(dBm)	(dBm)
5.250 - 5.350	Legacy, $4 + 10 \log B =$	25.2	24.0
	HT20, $4 + 10 \log B =$	25.4	24.0
5.470 - 5.725	HT40, $4 + 10 \log B =$	28.4	24.0

Note: The lower limit applies!

The requirements are **FULFILLED**.

Remarks: The output power of the EUT is lower than 500 mW, no TPC is required.

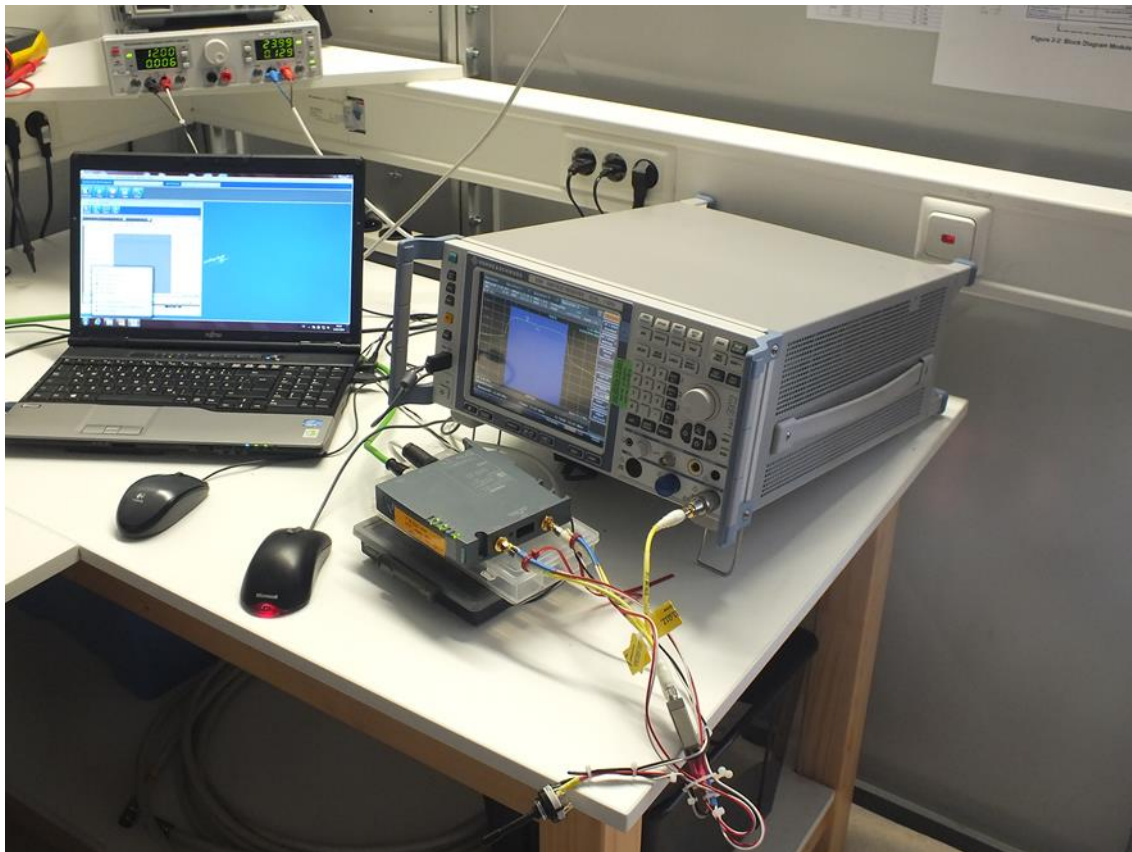
5.4 Peak power spectral density

For test instruments and accessories used see section 6 Part **CPC 3**.

5.4.1 Description of the test location

Test location: AREA 4

5.4.2 Photo documentation of the test set-up



5.4.3 Applicable standard

According to FCC Part 15E, Section 15.407(a):

For the defined operating bands the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than the appropriate limit in any 1 MHz band during any time interval of continuous transmission.

5.4.4 Description of Measurement

The bandwidth is measured conducted using a spectrum analyser and following the procedures according the OET 789033, item F. Since the method SA-3 alternative was used for channel power the spectrum analyser settings are the same as under item E)g). The marker function "Marker to max" is used to set at peak power spectral density. For this MIMO transmitter the antenna chain 1 and chain 2 is measured and summed in linear terms over all antenna terminals of the multiple antenna system. The insertion loss of the measurement cable and switch is taken into account with amplitude offset while measuring.

Spectrum analyser settings:

Channel power measurement function, TX channel bandwidth equal to OBW;

RBW: 1 MHz, VBW: 1 kHz, Sweep time: auto, Detector: PK, Trace: max hold;

5.4.5 Test result

Test conditions: 801.11h, Mbps 6										
Chain1 + 2	Power setting	Test results								
		D1	D2	D1 + D2	PPSD limit	Margin	Ant gain	EIRP PSD	EIRP PSD limit	Margin
		(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dB)	(dBi)	(dBm/MHz)	(dBm/MHz)	(dB)
CH52	P14	-3.6	-3.6	-0.6	11	-11.6	14.2	13.6	17.0	-3.4
	P17	-1.3	-0.5	2.1	11	-8.9	9.0	11.1	17.0	-5.9
	P20	2.0	1.7	4.8	11	-6.2	6.0	10.8	17.0	-6.2
CH56	P14	-2.1	-2.6	0.7	11	-10.3	14.2	14.9	17.0	-2.1
	P17	0.6	0.4	3.5	11	-7.5	9.0	12.5	17.0	-4.5
	P20	2.0	1.3	4.7	11	-6.3	6.0	10.7	17.0	-6.3
CH64	P14	-3.4	-4.0	-0.7	11	-11.7	14.2	13.5	17.0	-3.5
	P17	-0.4	-0.9	2.4	11	-8.6	9.0	11.4	17.0	-5.6
	P20	2.2	1.1	4.7	11	-6.3	6.0	10.7	17.0	-6.3
CH100	P14	-3.7	-2.5	0.6	11	-10.4	14.2	14.8	17.0	-2.2
	P17	-0.3	0.4	3.8	11	-7.2	9.0	12.8	17.0	-4.2
	P20	1.2	0.5	4.5	11	-6.5	6.0	10.5	17.0	-6.5
CH116	P14	-3.7	-3.2	0.3	11	-10.7	14.2	14.5	17.0	-2.5
	P17	-1.0	-0.6	2.9	11	-8.1	9.0	11.9	17.0	-5.1
	P20	1.1	0.5	4.5	11	-6.5	6.0	10.5	17.0	-6.5
CH140	P14	-3.8	-4.4	-0.4	11	-11.4	14.2	13.8	17.0	-3.2
	P17	-1.5	-1.4	2.2	11	-8.8	9.0	11.2	17.0	-5.8
	P20	0.4	0.0	3.9	11	-7.1	6.0	9.9	17.0	-7.1

Test conditions: HT20, MCS0										
Chain1 + 2	Power setting	Test results								
		D1	D2	D1 + D2	PPSD limit	Margin	Ant gain	EIRP PSD	EIRP PSD limit	Margin
		(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dB)	(dBi)	(dBm/MHz)	(dBm/MHz)	(dB)
CH52	P14	-2.4	-2.5	0.6	11	-10.4	14.2	14.8	17.0	-2.2
	P17	0.1	-0.2	2.9	11	-8.1	9.0	11.9	17.0	-5.1
	P20	0.9	0.0	3.5	11	-7.5	6.0	9.5	17.0	-7.5
CH56	P14	-2.4	-2.8	0.4	11	-10.6	14.2	14.6	17.0	-2.4
	P17	0.2	0.0	3.1	11	-7.9	9.0	12.1	17.0	-4.9
	P20	0.8	0.6	3.7	11	-7.3	6.0	9.7	17.0	-7.3
CH64	P14	-3.6	-4.2	-0.9	11	-11.9	14.2	13.3	17.0	-3.7
	P17	-0.9	-1.3	1.9	11	-9.1	9.0	10.9	17.0	-6.1
	P20	1.3	0.5	3.9	11	-7.1	6.0	9.9	17.0	-7.1
CH100	P14	-3.1	-2.9	0.4	11	-10.6	14.2	14.6	17.0	-2.4
	P17	-0.5	-0.5	2.9	11	-8.1	9.0	11.9	17.0	-5.1
	P20	-0.1	-0.7	3.0	11	-8.0	6.0	9.0	17.0	-8.0
CH116	P14	-3.8	-3.3	-0.2	11	-11.2	14.2	14.0	17.0	-3.0
	P17	-1.2	-1.1	2.2	11	-8.8	9.0	11.2	17.0	-5.8
	P20	1.0	0.0	3.9	11	-7.1	6.0	9.9	17.0	-7.1
CH140	P14	-4.2	-4.4	-0.9	11	-11.9	14.2	13.3	17.0	-3.7
	P17	-1.2	-1.8	1.9	11	-9.1	9.0	10.9	17.0	-6.1
	P20	-0.4	-0.7	2.8	11	-8.2	6.0	8.8	17.0	-8.2

Test conditions: HT40, MCS8										
Chain1 + 2	Power setting	Test results								
		D1	D2	D1 + D2	PPSD limit	Margin	Ant gain	EIRP PPSD	EIRP PPSD limit	Margin
		(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dBm/MHz)	(dB)	(dBi)	(dBm/MHz)	(dBm/MHz)	(dB)
CH52up	P14	-6.4	-5.3	-2.8	11	-13.8	14.2	11.4	17.0	-5.6
	P17	-2.1	-2.3	0.8	11	-10.2	9.0	9.8	17.0	-7.2
	P20	-1.2	-1.2	1.8	11	-9.2	6.0	7.8	17.0	-9.2
CH60up	P14	-6.1	-6.8	-3.4	11	-14.4	14.2	10.8	17.0	-6.2
	P17	-3.2	-4.8	-0.9	11	-11.9	9.0	8.1	17.0	-8.9
	P20	-2.5	-3.9	-0.1	11	-11.1	6.0	5.9	17.0	-11.1
CH100up	P14	-6.2	-5.6	-5.7	11	-16.7	14.2	8.5	17.0	-8.5
	P17	-5.0	-4.2	-4.3	11	-15.3	9.0	4.7	17.0	-12.3
	P20	-1.0	-2.3	-1.3	11	-12.3	6.0	4.7	17.0	-12.3
CH108up	P14	-6.1	-6.4	-6.0	11	-17.0	14.2	8.2	17.0	-8.8
	P17	-3.4	-5.2	-4.0	11	-15.0	9.0	5.0	17.0	-12.0
	P20	-0.9	-1.4	-0.9	11	-11.9	6.0	5.1	17.0	-11.9
CH132up	P14	-6.0	-8.7	-7.6	11	-18.6	14.2	6.6	17.0	-10.4
	P17	-5.1	-5.0	-5.4	11	-16.4	9.0	3.6	17.0	-13.4
	P20	-4.0	-2.9	-3.8	11	-14.8	6.0	2.2	17.0	-14.8

Peak power limit according to FCC Part 15E, Section 15.407(a):

Frequency	Peak power spectral density limit	EIRP PPSD limit
(GHz)	(dBm/MHz)	(dBm/MHz)
5.250 - 5.350	11.0	17.0
5.470 - 5.725	11.0	17.0

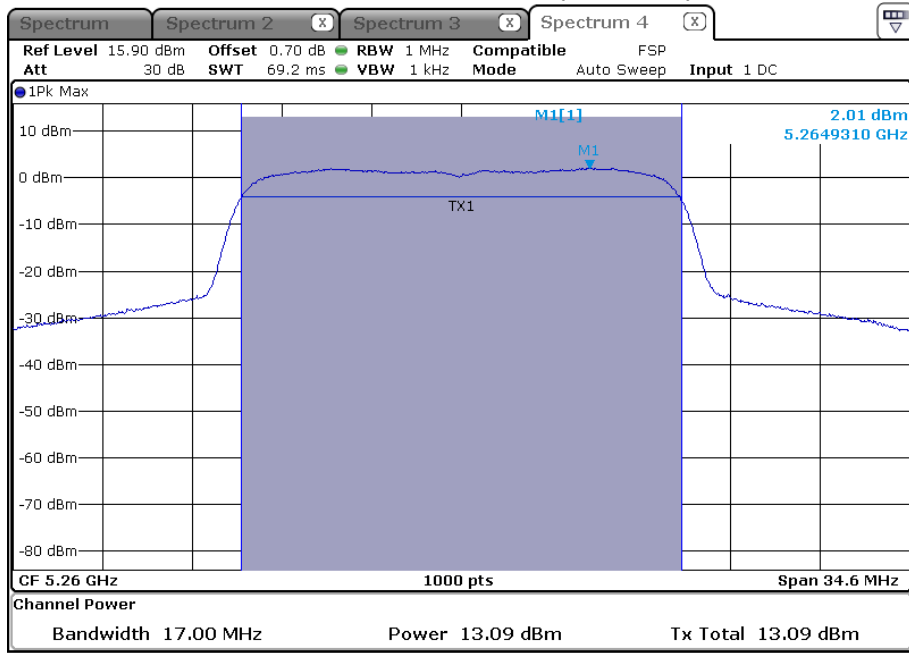
The requirements are **FULFILLED**.

Remarks: For detailed test results please refer to following test protocols. CH52 is listed only as representative channel.

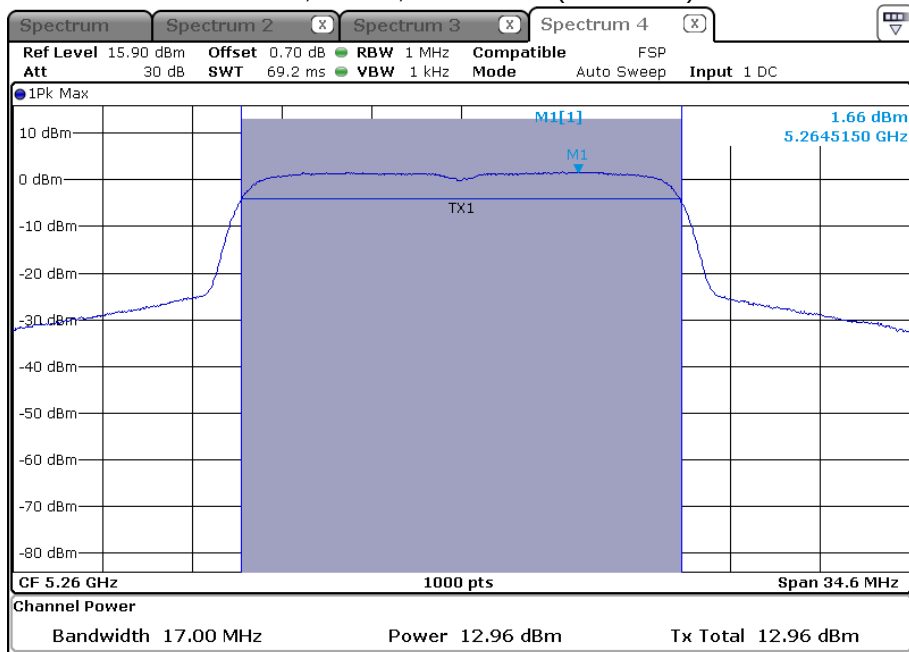
5.4.6 Peak Power spectral density plots

Power setting P20:

802.11h, chain1, Channel 52 (5260 MHz)

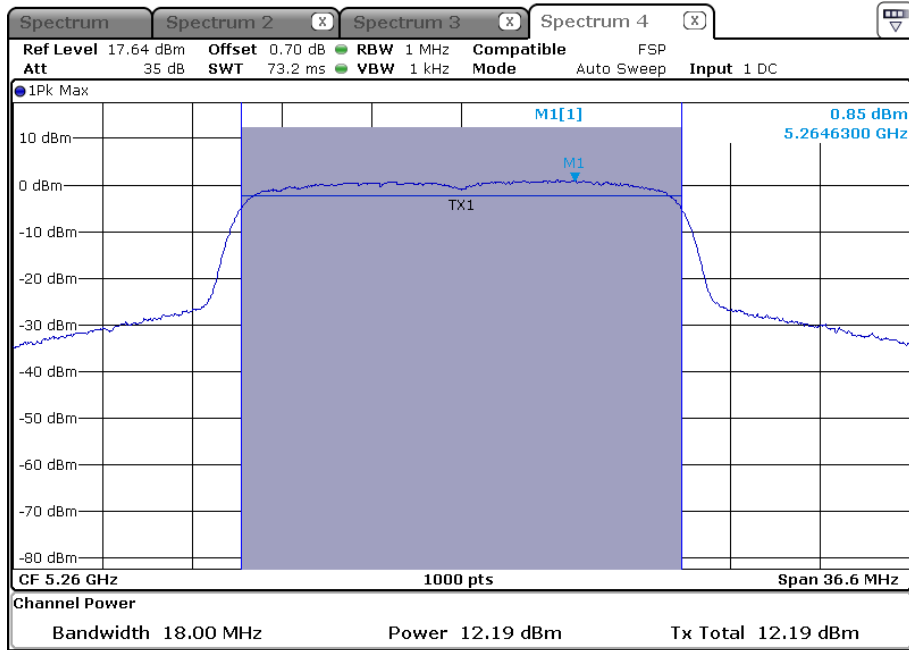


802.11h, chain2, Channel 52 (5260 MHz)

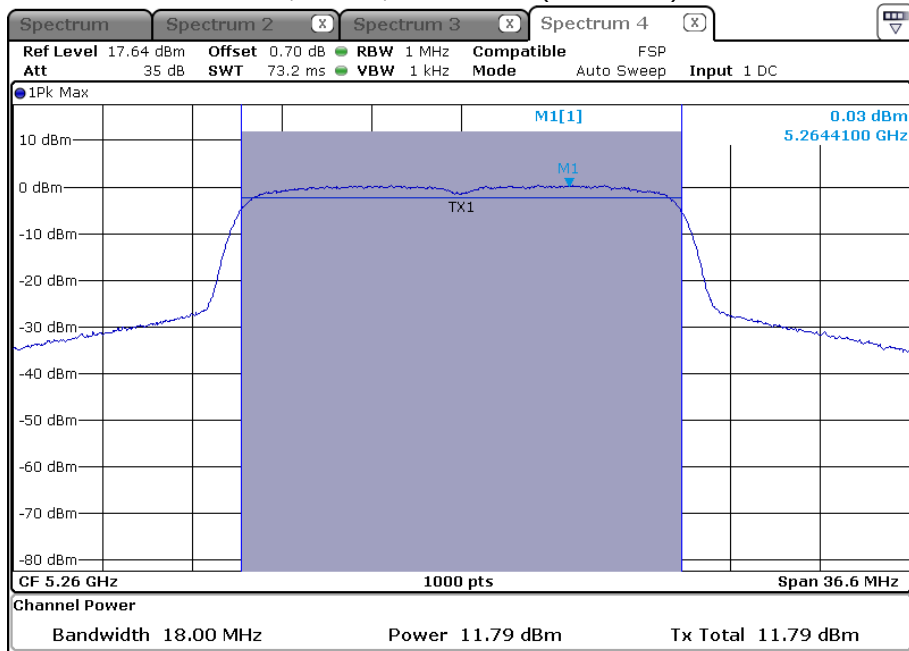


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

HT20, chain1, Channel 52 (5260 MHz)

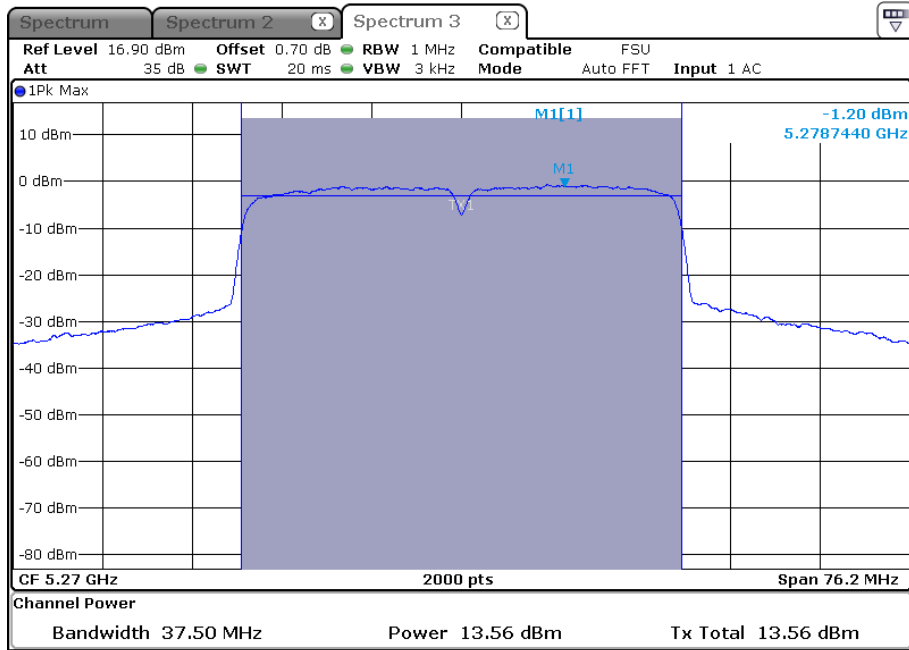


HT20, chain2, Channel 52 (5260 MHz)

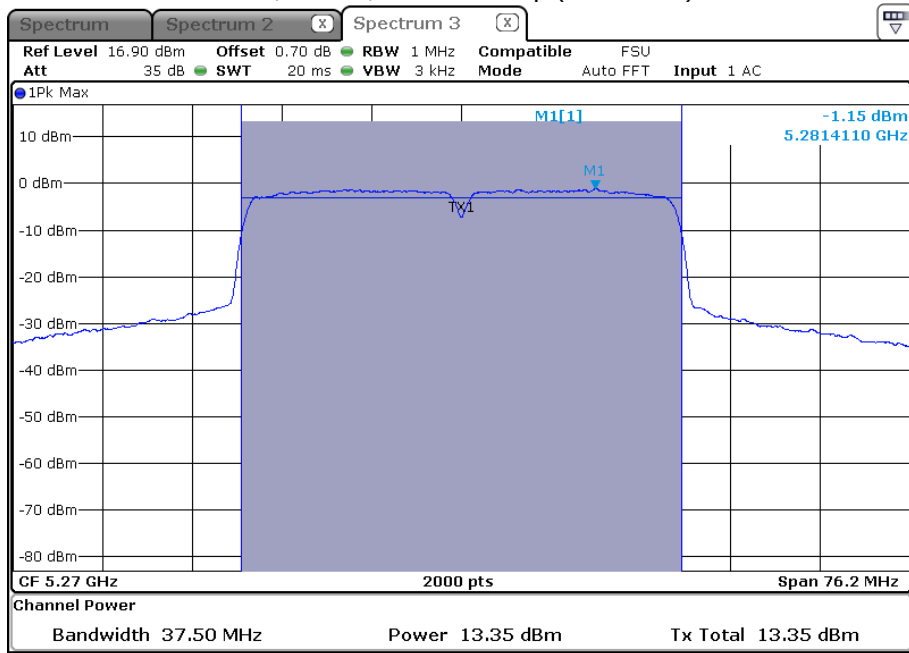


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

HT40, chain1, Channel 52up (5270 MHz)



HT40, chain2, Channel 52up (5270 MHz)



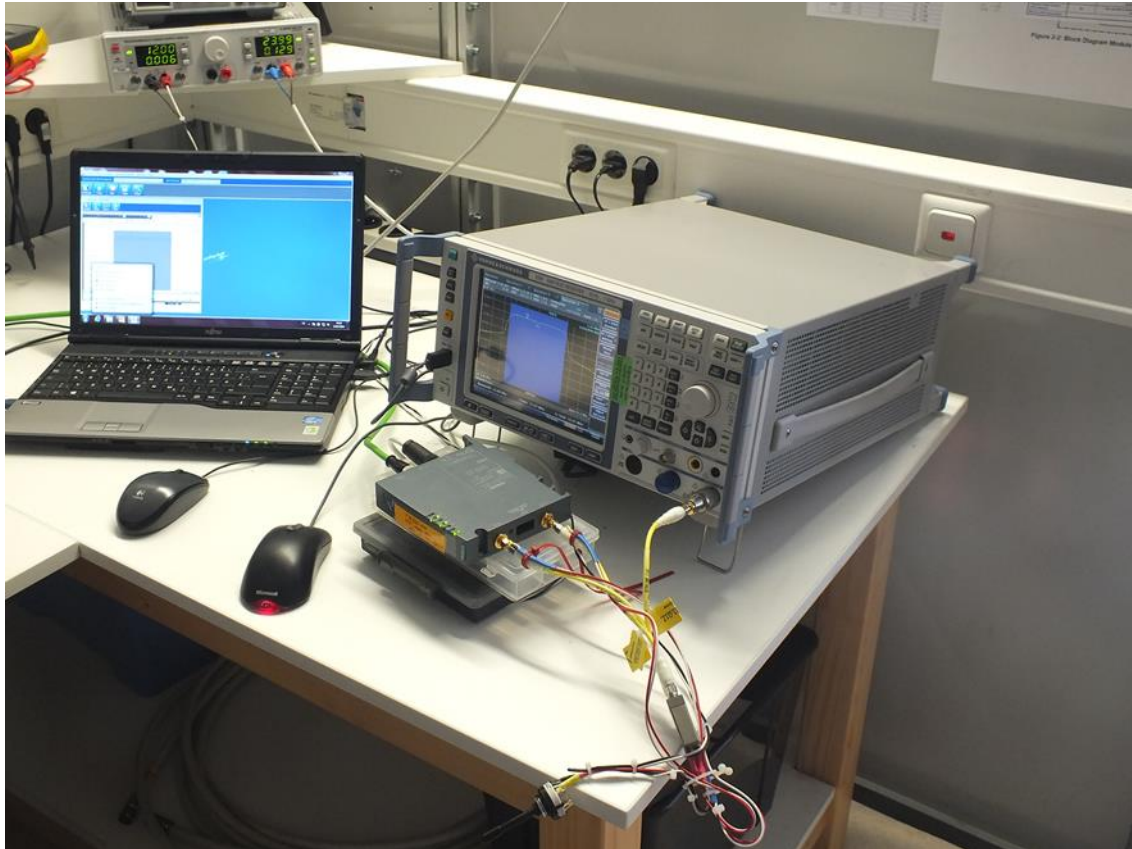
5.5 Peak excursion

For test instruments and accessories used see section 6 Part **MB**.

5.5.1 Description of the test location

Test location: AREA 4

5.5.2 Photo documentation of the test set-up



5.5.3 Applicable standard

According to FCC Part 15E, Section 15.407(a)(6):

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured like before) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

5.5.4 Description of Measurement

Peak excursion is measured using a spectrum analyser and following the procedures according the OET 789033, item G. The peak max spectrum is determined with the analyser setting mentioned below. The ratio between peak-max-hold spectrum and average spectrum is calculated and listed as PEX in the tables below.

Spectrum analyser settings:

RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto, Detector: PK, Trace: max hold;

5.5.5 Test result

Test conditions: 801.11h, Mbps 6, conducted						
801.11h, Mbps 6:	Test results					
Chain1	Power setting	PPSD	Level VBW=3 MHz	PEX	PEX limit	Margin
Channel		(dBm)	(dBm)	(dB)	(dB)	(dB)
CH52	P20	2.0	12.2	10.2	13.0	-2.8
CH56	P20	2.0	12.9	10.9	13.0	-2.2
CH64	P20	2.2	12.7	10.5	13.0	-2.5
CH100	P20	1.2	12.3	11.2	13.0	-1.9
CH116	P20	1.1	12.9	11.8	13.0	-1.2
CH140	P20	0.4	11.5	11.1	13.0	-1.9

Test conditions: HT20, MCS0, conducted						
801.11n, HT20, MCS0:	Test results					
Chain1	Power setting	PPSD	Level VBW=3 MHz	PEX	PEX limit	Margin
Channel		(dBm)	(dBm)	(dB)	(dB)	(dB)
CH52	P20	0.9	13.6	12.8	13.0	-0.2
CH56	P20	0.8	13.8	13.0	13.0	0.0
CH64	P20	1.3	12.7	11.5	13.0	-1.5
CH100	P20	-0.1	12.8	12.9	13.0	-0.1
CH116	P20	1.0	12.7	11.7	13.0	-1.3
CH140	P20	1.0	11.6	10.7	13.0	-2.3

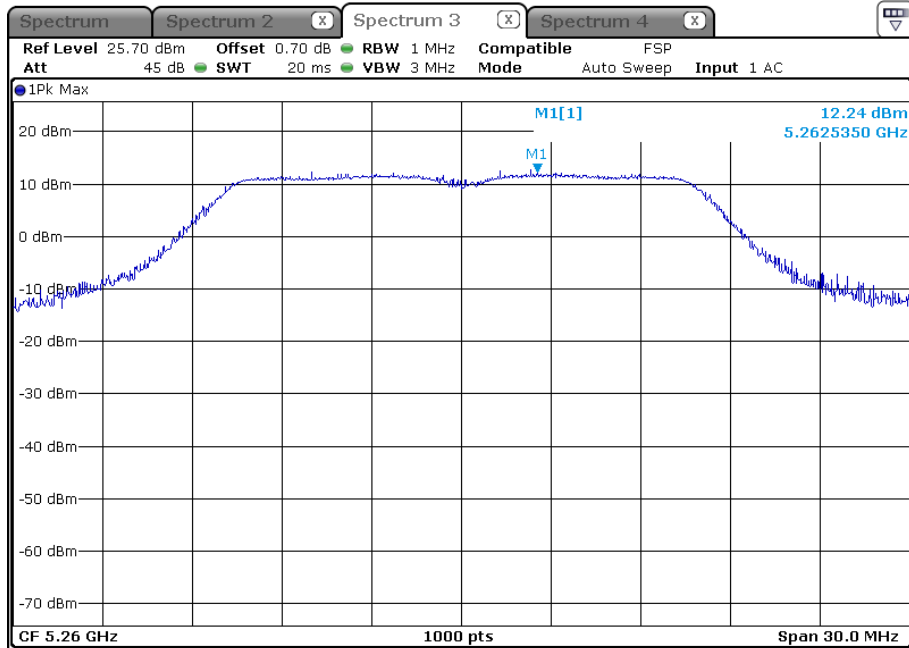
Test conditions: HT40, MCS16, conducted						
801.11n, HT40, MCS8:	Test results					
Chain1	Power setting	PPSD	Level VBW=3 MHz	PEX	PEX limit	Margin
Channel		(dBm)	(dBm)	(dB)	(dB)	(dB)
CH52up	P20	-1.2	10.5	11.7	13.0	-1.3
CH60up	P20	-2.5	9.7	12.2	13.0	-0.8
CH100up	P20	-1.0	10.2	11.1	13.0	-1.9
CH108up	P20	-0.9	10.4	11.3	13.0	-1.7
CH132up	P20	-4.0	7.9	12.0	13.0	-1.0

The requirements are **FULFILLED**.

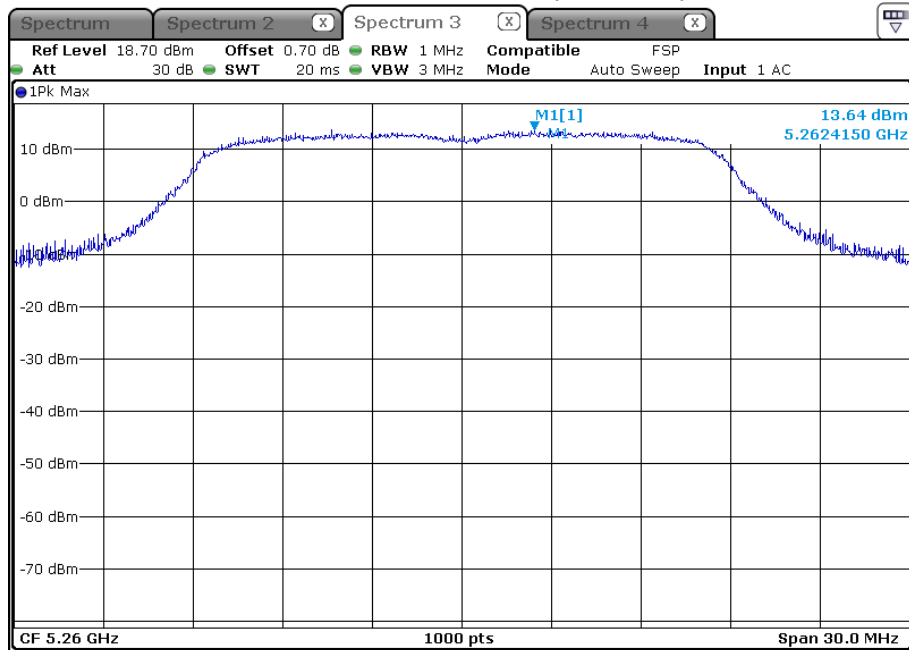
Remarks: For detailed test results please refer to following test protocols. CH52 is listed only as representative channel.

5.5.6 Peak excursion plots

802.11h, chain1, Channel 52 (5260 MHz)

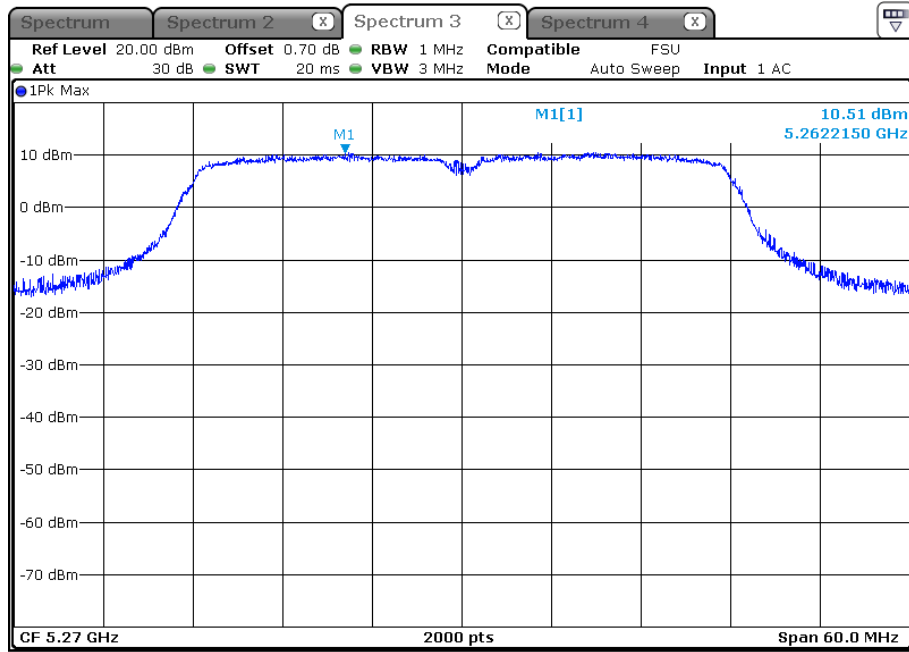


HT20, chain1, Channel 52 (5260 MHz)



FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

HT40, chain1, Channel 52up (5270 MHz)



5.6 Undesirable emissions

For test instruments and accessories used see section 6 Part **SER 1, SER 2 and SER 3.**

5.6.1 Description of the test location

Test location: OATS 1
Test location: Anechoic chamber 2
Test distance: 3 m

5.6.2 Photo documentation of the test set-up

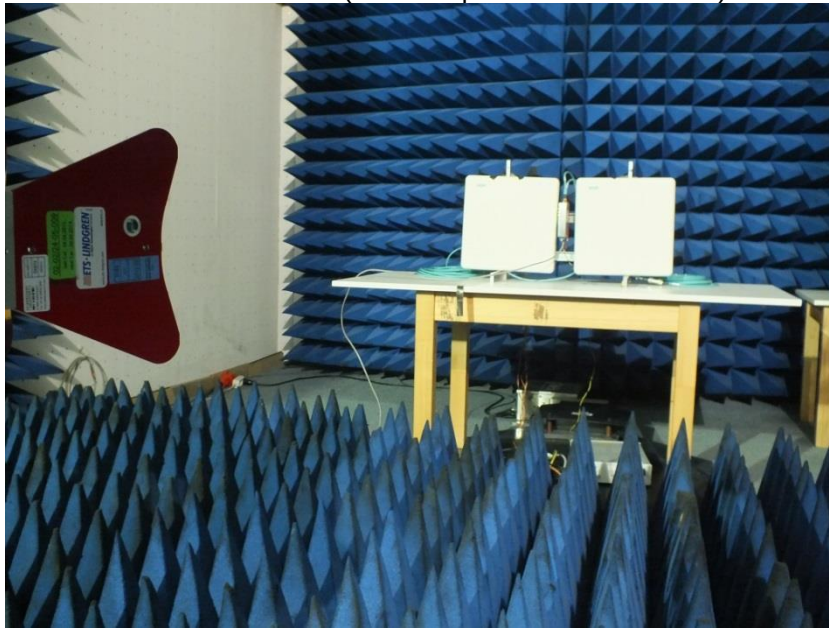
Open area test site (Test setup for 9 kHz – 30 MHz)



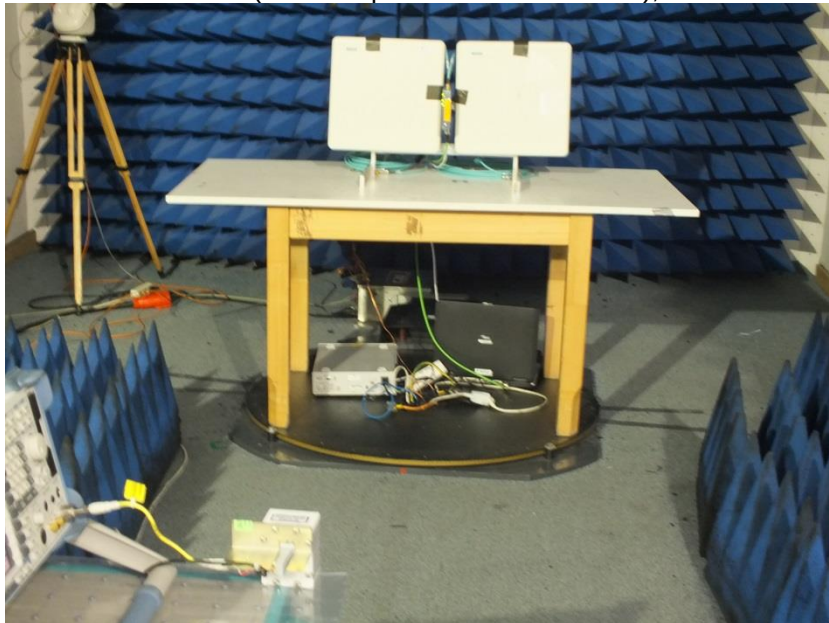
Open area test site (Test setup for 30 MHz – 1000 MHz)



Anechoic chamber (Test setup for 1 GHz – 18 GHz)



Anechoic chamber (Test setup for 18 GHz – 40 GHz), distance 3 m



5.6.3 Applicable standard

According to FCC Part 15E, Section 15.407(b):

For transmitters operating in the defined bands shall not exceed the appropriate emission limit outside of the operating bands.

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limit specified in Section 15.209(a) (see Section 15.205(c)).

5.6.4 Description of Measurement

Undesirable emissions are measured using a spectrum analyser and following the procedures according the OET 789033, item H. If the emission level of the EUT in peak mode complies with the average limit then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported. Up from 8 GHz a HP filter is used.

The measurement 18 – 40 GHz is done partly at 1 m distance. In this case the measurement distance is taken into account with -10 dB amplitude offset. Therefore the limit line is at the same value as at 3 m distance.

Spectrum analyser settings for peak values:

RBW: 1 MHz, VBW: 3 MHz, Detector: max peak, Sweep: Auto, Trace mode: max hold;

Spectrum analyser settings for average values:

RBW: 1 MHz VBW: 3 MHz Detector: RMS, Sweep: Auto, Trace mode: max hold;

5.6.5 Test result radiated emissions
5.6.5.1 0.009 - 30 MHz:

In the frequency range 9 kHz to 30 MHz no emission could be detected!

Frequency (MHz)	Reading PK dB(μV)	D factor dB(μV/m)	Level PK dB(μV/m)	Limit AV dB(μV/m)	Delta (dB)
0.047	52.0	-80.0	-28.0	34.2	-62.2
1.5	51.0	-40.0	11.0	24.1	-13.1
18.2	39.0	-40.0	-1.0	29.5	-30.5

Note: The table shows the noise level in this frequency range.

5.6.5.2 30 – 1000 MHz:

Frequency (MHz)	Reading Vert. (dBμV)	Reading Hor. (dBμV)	Correct. Vert. (dB)	Correct. Hor. (dB)	Level Vert. (dBμV/m)	Level Hor. (dBμV/m)	Limit (dBμV/m)	Dlimit (dB)
33.0	22.5	19.1	12.7	11.7	35.2	30.8	40.0	-4.8
35.3	22.2	19.2	13.1	12.0	35.3	31.2	40.0	-4.7
109.1	20.5	18.7	10.1	11.0	30.6	29.7	43.5	-12.9
189.0	21.4	18.6	11.9	12.3	33.3	30.9	43.5	-10.2
246.0	20.8	18.8	13.5	13.7	34.3	32.5	46.0	-11.7
350.0	19.8	19.0	17.7	17.2	37.5	36.2	46.0	-8.5
490.0	19.3	17.1	21.5	21.2	40.8	38.3	46.0	-5.2
670.0	12.9	12.0	25.2	24.7	38.1	36.7	46.0	-7.9
860.0	10.2	11.5	28.5	28.1	38.7	39.6	46.0	-6.4
950.0	8.6	10.2	29.5	28.9	38.1	39.1	46.0	-6.9

5.6.5.3 $f > 1000$ MHz :
5.6.5.3.1 Gain group 1

802.11h:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P20, 6 Mbps					EIRP	
Test results						
Start f (MHz)	Stop f (MHz)	RBW (kHz)	Maximum emission (MHz)	(dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
1000	5250	1000	5200	-38.2	-27.0	-11.2
5350	13000	1000	5400	-42.0	-27.0	-15.0
13000	18000	1000	17988	-34.4	-27.0	-7.4
18000	40000	1000	33960	-31.9	-27.0	-4.9
Measurement uncertainty				±6 dB		

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P20, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5200	-36.2	-27.0	-9.2
5350	13000	1000	7952	-35.1	-27.0	-8.1
13000	18000	1000	18000	-39.4	-27.0	-12.4
18000	40000	1000	33968	-33.1	-27.0	-6.1
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P20, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5240	-36.2	-27.0	-9.2
5350	13000	1000	7944	-34.6	-27.0	-7.6
13000	18000	1000	16488	-38.9	-27.0	-11.9
18000	40000	1000	33958	-33.6	-27.0	-6.6
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P20, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5410	-36.2	-27.0	-9.2
5725	13000	1000	7944	-34.3	-27.0	-7.3
13000	18000	1000	17988	-39.8	-27.0	-12.8
18000	40000	1000	33869	-34.9	-27.0	-7.9
Measurement uncertainty			±6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P20, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	1852	-31.7	-27.0	-4.7
5725	13000	1000	5920	-47.5	-27.0	-20.5
13000	18000	1000	16488	-36.5	-27.0	-9.5
18000	40000	1000	33873	-35.6	-27.0	-8.6
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P20, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	1120	-36.4	-27.0	-9.4
5725	13000	1000	11272	-34.6	-27.0	-7.6
13000	18000	1000	16536	-36.3	-27.0	-9.3
18000	40000	1000	33898	-36.2	-27.0	-9.2
Measurement uncertainty			±6 dB			

802.11n, HT20:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P20, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5170	-35.2	-27.0	-8.2
5350	13000	1000	7936	-35.2	-27.0	-8.2
13000	18000	1000	18000	-39.0	-27.0	-12.0
18000	40000	1000	33926	-36.9	-27.0	-9.9
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P20, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5200	-36.2	-27.0	-9.2
5350	13000	1000	6864	-35.5	-27.0	-8.5
13000	18000	1000	18000	-39.3	-27.0	-12.3
18000	40000	1000	33941	-36.5	-27.0	-9.5
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P20, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	4944	-38.6	-27.0	-11.6
5350	13000	1000	7960	-31.8	-27.0	-4.8
13000	18000	1000	18000	-38.9	-27.0	-11.9
18000	40000	1000	33953	-36.9	-27.0	-9.9
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P20, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5400	-35.2	-27.0	-8.2
5725	13000	1000	6648	-35.8	-27.0	-8.8
13000	18000	1000	17796	-39.3	-27.0	-12.3
18000	40000	1000	33929	-36.4	-27.0	-9.4
Measurement uncertainty			±6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P20, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	1594	-36.8	-27.0	-9.8
5725	13000	1000	5840	-48.3	-27.0	-21.3
13000	18000	1000	16512	-37.0	-27.0	-10.0
18000	40000	1000	33943	-36.8	-27.0	-9.8
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P20, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	2086	-36.6	-27.0	-9.6
5725	13000	1000	11032	-31.8	-27.0	-4.8
13000	18000	1000	16752	-36.0	-27.0	-9.0
18000	40000	1000	33958	-37.1	-27.0	-10.1
Measurement uncertainty			±6 dB			

802.11n, HT40:

Highest frequency: 5310 MHz						
Test conditions: 2 TX , P20, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	1618	-36.4	-27.0	-9.4
5350	13000	1000	11304	-37.8	-27.0	-10.8
13000	18000	1000	16524	-36.9	-27.0	-9.9
18000	40000	1000	33987	-35.6	-27.0	-8.6
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Lowest frequency: 5510 MHz						
Test conditions: 2 TX , P20, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	1996	-35.7	-27.0	-8.7
5725	13000	1000	11296	-47.0	-27.0	-20.0
13000	18000	1000	16512	-36.2	-27.0	-9.2
18000	40000	1000	33964	-35.8	-27.0	-8.8
Measurement uncertainty			±6 dB			

Highest frequency: 5550 MHz						
Test conditions: 2 TX , P20, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	1324	-36.1	-27.0	-9.1
5725	13000	1000	11440	-37.8	-27.0	-10.8
13000	18000	1000	16524	-34.0	-27.0	-7.0
18000	40000	1000	33965	-35.9	-27.0	-8.9
Measurement uncertainty			±6 dB			

Highest frequency: 5670 MHz						
Test conditions: 2 TX , P20, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	1222	-36.0	-27.0	-9.0
5725	13000	1000	11632	-37.8	-27.0	-10.8
13000	18000	1000	16476	-34.9	-27.0	-7.9
18000	40000	1000	33957	-36.1	-27.0	-9.1
Measurement uncertainty			±6 dB			

5.6.5.3.2 Gain group 2
802.11h:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P17, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5176	-32.1	-27.0	-5.1
5350	13000	1000	5344	-36.2	-27.0	-9.2
13000	18000	1000	16536	-34.8	-27.0	-7.8
18000	40000	1000	33963	-32.4	-27.0	-5.4
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P17, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5200	-33.6	-27.0	-6.6
5350	13000	1000	5352	-36.9	-27.0	-9.9
13000	18000	1000	16536	-34.9	-27.0	-7.9
18000	40000	1000	33978	-33.1	-27.0	-6.1
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P17, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5240	-32.3	-27.0	-5.3
5350	13000	1000	5392	-33.0	-27.0	-6.0
13000	18000	1000	16464	-34.9	-27.0	-7.9
18000	40000	1000	33986	-32.7	-27.0	-5.7
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P17, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5424	-32.1	-27.0	-5.1
5725	13000	1000	5850	-39.2	-27.0	-12.2
13000	18000	1000	16524	-35.0	-27.0	-8.0
18000	40000	1000	33981	-33.5	-27.0	-6.5
Measurement uncertainty			±6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P17, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	1594	-36.9	-27.0	-9.9
5725	13000	1000	5900	-40.2	-27.0	-13.2
13000	18000	1000	16512	-34.1	-27.0	-7.1
18000	40000	1000	33948	-34.0	-27.0	-7.0
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P17, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5344	-36.8	-27.0	-9.8
5725	13000	1000	5776	-33.0	-27.0	-6.0
13000	18000	1000	17076	-34.2	-27.0	-7.2
18000	40000	1000	33972	-36.2	-27.0	-9.2
Measurement uncertainty			±6 dB			

802.11n, HT20:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P17, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5176	-32.7	-27.0	-5.7
5350	13000	1000	5336	-35.9	-27.0	-8.9
13000	18000	1000	16536	-34.8	-27.0	-7.8
18000	40000	1000	33789	-35.9	-27.0	-8.9
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P17, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5192	-32.0	-27.0	-5.0
5350	13000	1000	5360	-35.8	-27.0	-8.8
13000	18000	1000	16536	-34.9	-27.0	-7.9
18000	40000	1000	33845	-36.1	-27.0	-9.1
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P17, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5240	-33.1	-27.0	-6.1
5350	13000	1000	5400	-32.9	-27.0	-5.9
13000	18000	1000	16524	-34.3	-27.0	-7.3
18000	40000	1000	33837	-36.3	-27.0	-9.3
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P17, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5424	-31.8	-27.0	-4.8
5725	13000	1000	5840	-38.8	-27.0	-11.8
13000	18000	1000	16536	-34.1	-27.0	-7.1
18000	40000	1000	33861	-35.5	-27.0	-8.5
Measurement uncertainty			±6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P17, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5360	-37.0	-27.0	-10.0
5725	13000	1000	5840	-39.2	-27.0	-12.2
13000	18000	1000	16488	-34.7	-27.0	-7.7
18000	40000	1000	33847	-35.8	-27.0	-8.8
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P17, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5280	-35.8	-27.0	-8.8
5725	13000	1000	5840	-32.9	-27.0	-5.9
13000	18000	1000	16524	-34.6	-27.0	-7.6
18000	40000	1000	33869	-36.1	-27.0	-9.1
Measurement uncertainty			±6 dB			

802.11n, HT40:

Lowest frequency: 5270 MHz						
Test conditions: 2 TX , P17, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5200	-28.2	-27.0	-1.2
5350	13000	1000	5880	-37.4	-27.0	-10.4
13000	18000	1000	17856	-37.9	-27.0	-10.9
18000	40000	1000	33984	-36.9	-27.0	-9.9
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Highest frequency: 5310 MHz						
Test conditions: 2 TX , P17, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5200	-35.2	-27.0	-8.2
5350	13000	1000	7904	-29.7	-27.0	-2.7
13000	18000	1000	17976	-37.6	-27.0	-10.6
18000	40000	1000	33986	-36.0	-27.0	-9.0
Measurement uncertainty			±6 dB			

Lowest frequency: 5510 MHz						
Test conditions: 2 TX , P17, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5280	-35.3	-27.0	-8.3
5725	13000	1000	7944	-35.7	-27.0	-8.7
13000	18000	1000	17616	-37.9	-27.0	-10.9
18000	40000	1000	33969	-35.1	-27.0	-8.1
Measurement uncertainty			±6 dB			

Highest frequency: 5550 MHz						
Test conditions: 2 TX , P17, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5280	-35.2	-27.0	-8.2
5725	13000	1000	7936	-29.7	-27.0	-2.7
13000	18000	1000	17796	-39.5	-27.0	-12.5
18000	40000	1000	33953	-35.6	-27.0	-8.6
Measurement uncertainty			±6 dB			

Highest frequency: 5670 MHz						
Test conditions: 2 TX , P17, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5280	-32.9	-27.0	-5.9
5725	13000	1000	7944	-29.7	-27.0	-2.7
13000	18000	1000	17964	-37.8	-27.0	-10.8
18000	40000	1000	33949	-37.3	-27.0	-10.3
Measurement uncertainty			±6 dB			

5.6.5.3.3 Gain group 3
802.11h:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P14, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5200	-41.2	-27.0	-14.2
5350	13000	1000	7928	-37.8	-27.0	-10.8
13000	18000	1000	17580	-50.2	-27.0	-23.2
18000	40000	1000	33835	-37.2	-27.0	-10.2
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P14, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5200	-33.2	-27.0	-6.2
5350	13000	1000	5368	-37.7	-27.0	-10.7
13000	18000	1000	17508	-38.7	-27.0	-11.7
18000	40000	1000	33968	-36.2	-27.0	-9.2
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P14, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5232	-32.2	-27.0	-5.2
5350	13000	1000	5408	-36.9	-27.0	-9.9
13000	18000	1000	17580	-39.1	-27.0	-12.1
18000	40000	1000	33869	-36.6	-27.0	-9.6
Measurement uncertainty			+6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P14, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5416	-34.0	-27.0	-7.0
5725	13000	1000	7900	-38.2	-27.0	-11.2
13000	18000	1000	17556	-39.3	-27.0	-12.3
18000	40000	1000	33948	-36.9	-27.0	-9.9
Measurement uncertainty			±6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P14, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5200	-40.2	-27.0	-13.2
5725	13000	1000	6800	-37.2	-27.0	-10.2
13000	18000	1000	17580	-38.4	-27.0	-11.4
18000	40000	1000	33956	-35.8	-27.0	-8.8
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P14, 6 Mbps					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5296	-38.5	-27.0	-11.5
5725	13000	1000	6656	-37.8	-27.0	-10.8
13000	18000	1000	17556	-39.4	-27.0	-12.4
18000	40000	1000	33889	-34.9	-27.0	-7.9
Measurement uncertainty			±6 dB			

802.11n, HT20:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P14, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5176	-31.3	-27.0	-4.3
5350	13000	1000	6760	-38.5	-27.0	-11.5
13000	18000	1000	17796	-39.2	-27.0	-12.2
18000	40000	1000	33856	-34.2	-27.0	-7.2
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P14, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5200	-32.4	-27.0	-5.4
5350	13000	1000	5360	-36.4	-27.0	-9.4
13000	18000	1000	17580	-38.7	-27.0	-11.7
18000	40000	1000	33946	-37.1	-27.0	-10.1
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P14, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5248	-32.4	-27.0	-5.4
5350	13000	1000	5704	-39.0	-27.0	-12.0
13000	18000	1000	17580	-39.1	-27.0	-12.1
18000	40000	1000	33956	-36.3	-27.0	-9.3
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P14, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5424	-33.4	-27.0	-6.4
5725	13000	1000	5760	-38.8	-27.0	-11.8
13000	18000	1000	17796	-38.9	-27.0	-11.9
18000	40000	1000	33981	-35.9	-27.0	-8.9
Measurement uncertainty			+6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P14, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5424	-37.8	-27.0	-10.8
5725	13000	1000	7900	-37.2	-27.0	-10.2
13000	18000	1000	17580	-39.9	-27.0	-12.9
18000	40000	1000	33978	-36.9	-27.0	-9.9
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P14, MCS0					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5336	-38.4	-27.0	-11.4
5725	13000	1000	6736	-38.0	-27.0	-11.0
13000	18000	1000	17556	-39.4	-27.0	-12.4
18000	40000	1000	33989	-36.6	-27.0	-9.6
Measurement uncertainty			±6 dB			

802.11n, HT40:

Lowest frequency: 5270 MHz						
Test conditions: 2 TX , P14, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5016	-39.5	-27.0	-12.5
5350	13000	1000	5448	-38.9	-27.0	-11.9
13000	18000	1000	17532	-40.3	-27.0	-13.3
18000	40000	1000	34000	-35.2	-27.0	-8.2
Measurement uncertainty			±6 dB			

Highest frequency: 5310 MHz						
Test conditions: 2 TX , P14, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5250	1000	5016	-39.4	-27.0	-12.4
5350	13000	1000	5632	-31.7	-27.0	-4.7
13000	18000	1000	17628	-39.2	-27.0	-12.2
18000	40000	1000	33968	-35.3	-27.0	-8.3
Measurement uncertainty			±6 dB			

Lowest frequency: 5510 MHz						
Test conditions: 2 TX , P14, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5328	-38.1	-27.0	-11.1
5725	13000	1000	5840	-39.2	-27.0	-12.2
13000	18000	1000	17580	-39.1	-27.0	-12.1
18000	40000	1000	33996	-35.1	-27.0	-8.1
Measurement uncertainty			±6 dB			

Highest frequency: 5550 MHz						
Test conditions: 2 TX , P14, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5168	-38.3	-27.0	-11.3
5725	13000	1000	6440	-31.7	-27.0	-4.7
13000	18000	1000	17568	-39.6	-27.0	-12.6
18000	40000	1000	33986	-35.6	-27.0	-8.6
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Highest frequency: 5670 MHz						
Test conditions: 2 TX , P14, MCS8					EIRP	
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBm/MHz)	(dBm/MHz)	(dB)
1000	5470	1000	5296	-39.7	-27.0	-12.7
5725	13000	1000	6264	-31.7	-27.0	-4.7
13000	18000	1000	17568	-39.4	-27.0	-12.4
18000	40000	1000	33945	-35.9	-27.0	-8.9
Measurement uncertainty			±6 dB			

Limit according to FCC Part 15E, Section 15.407(b) for undesirable emissions:

Operating Frequency range	Undesirable emission limit, EIRP
(MHz)	(dBm/MHz)
5250 - 5350	-27.0
5470 - 5725	-27.0

5.6.6 Test result radiated emissions in restricted bands

In the frequency range up from 18 GHz to 40 GHz only noise could be observed.

5.6.6.1 Gain group 1
802.11h:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P20, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4904	51.6	74.0	-22.4
5350	12000	1000	5400	53.2	74.0	-20.8
12000	18000	1000	17988	60.9	74.0	-13.2
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
12000	18000	1000	17988	49.0	54.0	-5.0
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P20, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4928	56.9	74.0	-17.1
5350	12000	1000	7500	59.0	74.0	-15.0
12000	18000	1000	18000	55.9	74.0	-18.1
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	4928	45.3	54.0	-8.8
7250	7750	1000	7500	48.0	54.0	-6.0
17700	21400	1000	18000	45.2	54.0	-8.9
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P20, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4950	56.0	74.0	-18.0
5350	12000	1000	7600	59.0	74.0	-15.0
12000	18000	1000	17990	55.0	74.0	-19.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	4950	46.0	54.0	-8.0
7250	7750	1000	7600	47.0	54.0	-7.0
17700	21400	1000	17990	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P20, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	4900	56.0	74.0	-18.0
5725	12000	1000	7600	57.0	74.0	-17.0
12000	18000	1000	17988	55.4	74.0	-18.6
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	4900	45.0	54.0	-9.0
7250	7750	1000	7600	48.0	54.0	-6.0
17700	21400	1000	17988	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P20, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	3800	63.0	74.0	-11.0
5725	12000	1000	11696	51.2	74.0	-22.8
12000	18000	1000	17900	57.0	74.0	-17.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
3600	4400	1000	3800	42.0	54.0	-12.0
17700	21400	1000	17900	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P20, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1600	57.0	74.0	-17.0
5725	12000	1000	11272	48.1	74.0	-25.9
12000	18000	1000	16100	57.0	74.0	-17.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1435	1626.5	1000	1600	41.0	54.0	-13.0
15350	16200	1000	16100	47.0	54.0	-7.0
Measurement uncertainty			±6 dB			

HT20:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P20, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	5000	56.0	74.0	-18.0
5350	12000	1000	5400	57.0	74.0	-17.0
12000	18000	1000	18000	56.2	74.0	-17.8
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	5000	46.0	54.0	-8.0
5350	5460	1000	5400	47.0	54.0	-7.0
17700	21400	1000	18000	45.2	54.0	-8.8
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P20, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4700	56.0	74.0	-18.0
5350	12000	1000	5400	57.0	74.0	-17.0
12000	18000	1000	18000	55.9	74.0	-18.1
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	4700	44.0	54.0	-10.0
5350	5460	1000	5400	46.0	54.0	-8.0
17700	21400	1000	18000	45.2	54.0	-8.8
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P20, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4944	59.7	74.0	-14.3
5350	12000	1000	5400	57.0	74.0	-17.0
12000	18000	1000	18000	56.4	74.0	-17.6
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	4944	45.5	54.0	-8.5
7250	7750	1000	5400	47.0	54.0	-7.0
17700	21400	1000	18000	44.3	54.0	-9.7
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P20, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5384	57.0	74.0	-17.0
5725	12000	1000	7500	58.0	74.0	-16.0
12000	18000	1000	17796	56.0	74.0	-18.1
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5384	46.4	54.0	-7.7
7250	7750	1000	7500	48.0	54.0	-6.0
17700	21400	1000	17796	44.2	54.0	-9.8
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P20, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1594	58.4	74.0	-15.6
5725	12000	1000	7500	46.0	74.0	-28.0
12000	18000	1000	17800	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1435	1626.5	1000	1594	41.7	54.0	-12.3
17700	21400	1000	17800	44.0	54.0	-10.0
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P20, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1120	58.5	74.0	-15.5
5725	12000	1000	7800	47.0	74.0	-27.0
12000	18000	1000	17900	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1120	41.0	54.0	-13.0
17700	21400	1000	17900	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

HT40:

Lowest frequency: 5270 MHz						
Test conditions: 2 TX , P20, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	1120	57.4	74.0	-16.6
5350	12000	1000	7700	45.0	74.0	-29.0
12000	18000	1000	18000	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1120	40.7	54.0	-13.3
17700	21400	1000	18000	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Highest frequency: 5310 MHz						
Test conditions: 2 TX , P20, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	1100	56.0	74.0	-18.0
5350	12000	1000	5400	47.0	74.0	-27.0
12000	18000	1000	17900	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	1100	41.0	54.0	-13.0
17700	21400	1000	17900	44.0	54.0	-10.0
Measurement uncertainty			±6 dB			

Lowest frequency: 5510 MHz						
Test conditions: 2 TX , P20, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1100	57.0	74.0	-17.0
5725	12000	1000	7700	45.0	74.0	-29.0
12000	18000	1000	17900	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	1100	40.0	54.0	-14.0
17700	21400	1000	17900	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Middle frequency: 5550 MHz						
Test conditions: 2 TX , P20, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1120	59.1	74.0	-14.9
5725	12000	1000	7700	46.0	74.0	-28.0
12000	18000	1000	17900	57.0	74.0	-17.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1120	40.9	54.0	-13.1
17700	21400	1000	17900	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

Highest frequency: 5670 MHz						
Test conditions: 2 TX , P20, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1120	57.9	74.0	-16.1
5725	12000	1000	7700	45.0	74.0	-29.0
12000	18000	1000	18000	58.0	74.0	-16.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1120	40.5	54.0	-13.5
7250	7750	1000	18000	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

5.6.6.2 Gain group 2
802.11h:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P17, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	1234	57.0	74.0	-17.0
5350	12000	1000	5370	56.0	74.0	-18.0
12000	18000	1000	16100	59.0	74.0	-15.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1234	40.2	54.0	-13.9
5350	5460	1000	5370	46.0	54.0	-8.0
15350	16200	1000	16100	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P17, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	1216	57.3	74.0	-16.8
5350	12000	1000	5352	58.3	74.0	-15.7
12000	18000	1000	18000	59.0	74.0	-15.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1216	40.8	54.0	-13.2
5350	5460	1000	5352	46.4	54.0	-7.6
17700	21400	1000	18000	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P17, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	1228	57.8	74.0	-16.2
5350	12000	1000	5392	58.1	74.0	-15.9
12000	18000	1000	16000	60.0	74.0	-14.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1228	42.3	54.0	-11.7
5350	5460	1000	5392	46.1	54.0	-7.9
15350	16200	1000	16000	49.0	54.0	-5.0
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P17, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1222	58.1	74.0	-15.9
5725	12000	1000	7200	52.0	74.0	-22.0
12000	18000	1000	16100	60.0	74.0	-14.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1222	42.5	54.0	-11.5
15350	16200	1000	16100	49.0	54.0	-5.0
Measurement uncertainty			±6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P17, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1120	57.4	74.0	-16.6
5725	12000	1000	7200	53.0	74.0	-21.0
12000	18000	1000	17800	57.0	74.0	-17.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1120	40.0	54.0	-14.1
17700	21400	1000	17800	47.0	54.0	-7.0
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P17, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1222	57.4	74.0	-16.6
5725	12000	1000	7200	52.0	74.0	-22.0
12000	18000	1000	17800	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1222	42.8	54.0	-11.3
17700	21400	1000	17800	47.0	54.0	-7.0
Measurement uncertainty			±6 dB			

HT20:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P17, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	1234	57.2	74.0	-16.8
5350	12000	1000	5400	57.0	74.0	-17.0
12000	18000	1000	18000	58.0	74.0	-16.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1234	40.9	54.0	-13.1
5350	5460	1000	5400	47.0	54.0	-7.0
17700	21400	1000	18000	47.0	54.0	-7.0
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P17, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	1228	56.6	74.0	-17.4
5350	12000	1000	5400	56.0	74.0	-18.0
12000	18000	1000	18000	57.0	74.0	-17.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1228	42.2	54.0	-11.8
5350	5460	1000	5400	47.0	54.0	-7.0
17700	21400	1000	18000	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P17, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	1228	56.9	74.0	-17.1
5350	12000	1000	5400	56.8	74.0	-17.2
12000	18000	1000	18000	57.0	74.0	-17.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1228	41.9	54.0	-12.1
5350	5460	1000	5400	48.3	54.0	-5.7
17700	21400	1000	18000	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P17, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	1120	57.1	74.0	-16.9
5725	12000	1000	7700	53.0	74.0	-21.0
12000	18000	1000	18000	58.0	74.0	-16.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
960	1240	1000	1120	40.3	54.0	-13.7
17700	21400	1000	18000	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P17, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5360	58.2	74.0	-15.8
5725	12000	1000	7700	54.0	74.0	-20.0
12000	18000	1000	18000	58.0	74.0	-16.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5360	47.3	54.0	-6.7
17700	21400	1000	18000	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P17, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5400	57.0	74.0	-17.0
5725	12000	1000	7700	54.0	74.0	-20.0
12000	18000	1000	17900	58.0	74.0	-16.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5400	47.0	54.0	-7.0
17700	21400	1000	17900	47.0	54.0	-7.0
Measurement uncertainty			±6 dB			

HT40:

Lowest frequency: 5270 MHz						
Test conditions: 2 TX , P17, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4700	52.0	74.0	-22.0
5350	12000	1000	7700	59.0	74.0	-15.0
12000	18000	1000	17856	57.4	74.0	-16.6
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
7250	7750	1000	7700	48.0	54.0	-6.0
17700	21400	1000	17856	45.9	54.0	-8.1
Measurement uncertainty			±6 dB			

Highest frequency: 5310 MHz						
Test conditions: 2 TX , P17, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4600	53.0	74.0	-21.0
5350	12000	1000	7504	58.7	74.0	-15.3
12000	18000	1000	17976	57.6	74.0	-16.4
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

Lowest frequency: 5510 MHz						
Test conditions: 2 TX , P17, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5100	55.0	74.0	-19.0
5725	12000	1000	7736	59.3	74.0	-14.7
12000	18000	1000	17976	57.4	74.0	-16.7
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	5100	47.0	54.0	-7.0
7250	7750	1000	7736	48.4	54.0	-5.6
17700	21400	1000	17976	46.2	54.0	-7.8
Measurement uncertainty			±6 dB			

Middle frequency: 5550 MHz						
Test conditions: 2 TX , P17, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	4800	52.0	74.0	-22.0
5725	12000	1000	7700	58.0	74.0	-16.0
12000	18000	1000	17796	55.7	74.0	-18.3
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
7250	7750	1000	7700	48.0	54.0	-6.0
17700	21400	1000	17796	46.5	54.0	-7.5
Measurement uncertainty			±6 dB			

Highest frequency: 5670 MHz						
Test conditions: 2 TX , P17, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5400	59.0	74.0	-15.0
5725	12000	1000	7700	58.0	74.0	-16.0
12000	18000	1000	17965	53.9	74.0	-20.1
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5400	50.0	54.0	-4.0
7250	7750	1000	7700	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

5.6.6.3 Gain group 3
802.11h:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P14, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4800	52.0	74.0	-22.0
5350	12000	1000	7400	56.0	74.0	-18.0
12000	18000	1000	17800	55.0	74.0	-19.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
7250	7750	1000	7400	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P14, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4900	55.0	74.0	-19.0
5350	12000	1000	5368	57.5	74.0	-16.5
12000	18000	1000	17800	54.5	74.0	-19.5
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	4900	46.0	54.0	-8.0
5350	5460	1000	5368	46.0	54.0	-8.1
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P14, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4900	56.0	74.0	-18.0
5350	12000	1000	5408	59.1	74.0	-14.9
12000	18000	1000	17800	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	4900	48.0	54.0	-6.0
5350	5460	1000	5408	42.9	54.0	-11.1
17700	21400	1000	17800	44.0	54.0	-10.0
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P14, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5416	61.3	74.0	-12.7
5725	12000	1000	7500	56.0	74.0	-18.0
12000	18000	1000	17800	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5416	51.0	54.0	-3.0
7250	7750	1000	7500	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P14, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5400	55.0	74.0	-19.0
5725	12000	1000	7500	56.0	74.0	-18.0
12000	18000	1000	17784	55.7	74.0	-18.4
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5400	46.0	54.0	-8.0
7250	7750	1000	7500	46.0	54.0	-8.0
17700	21400	1000	17784	43.9	54.0	-10.1
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P14, 6 Mbps						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5400	57.0	74.0	-17.0
5725	12000	1000	7700	59.1	74.0	-14.9
12000	18000	1000	17800	55.0	74.0	-19.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5400	48.0	54.0	-6.0
7250	7750	1000	7700	47.0	54.0	-7.0
17700	21400	1000	17800	46.0	54.0	-8.0
Measurement uncertainty			±6 dB			

HT20:

Lowest frequency: 5260 MHz						
Test conditions: 2 TX , P14, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	4900	56.0	74.0	-18.0
5350	12000	1000	7700	56.0	74.0	-18.0
12000	18000	1000	17796	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	4900	44.0	54.0	-10.0
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17796	44.4	54.0	-9.6
Measurement uncertainty			±6 dB			

Middle frequency: 5280 MHz						
Test conditions: 2 TX , P14, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	5100	55.0	74.0	-19.0
5350	12000	1000	7700	56.0	74.0	-18.0
12000	18000	1000	17800	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	5100	46.0	54.0	-8.0
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Highest frequency: 5320 MHz						
Test conditions: 2 TX , P14, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	5000	56.0	74.0	-18.0
5350	12000	1000	7700	56.0	74.0	-18.0
12000	18000	1000	17800	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	5000	46.0	54.0	-8.0
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Lowest frequency: 5500 MHz						
Test conditions: 2 TX , P14, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5424	61.8	74.0	-12.2
5725	12000	1000	7700	56.0	74.0	-18.0
12000	18000	1000	17796	56.3	74.0	-17.7
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5424	52.8	54.0	-1.2
7250	7750	1000	7700	47.0	54.0	-7.0
17700	21400	1000	17796	44.7	54.0	-9.3
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Middle frequency: 5580 MHz						
Test conditions: 2 TX , P14, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5424	57.4	74.0	-16.6
5725	12000	1000	7700	56.0	74.0	-18.0
12000	18000	1000	17808	55.1	74.0	-18.9
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5424	46.1	54.0	-7.9
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17808	44.5	54.0	-9.6
Measurement uncertainty			±6 dB			

Highest frequency: 5700 MHz						
Test conditions: 2 TX , P14, MCS0						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5450	56.0	74.0	-18.0
5725	12000	1000	7700	56.0	74.0	-18.0
12000	18000	1000	17800	55.0	74.0	-19.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
5350	5460	1000	5450	46.0	54.0	-8.0
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

HT40:

Lowest frequency: 5270 MHz						
Test conditions: 2 TX , P14, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	5016	55.8	74.0	-18.3
5350	12000	1000	7700	56.0	74.0	-18.0
12000	18000	1000	17800	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

Note: The marked frequency needs to be measured in AV.

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	5016	44.6	54.0	-9.4
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Highest frequency: 5310 MHz						
Test conditions: 2 TX , P14, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5250	1000	5016	55.9	74.0	-18.1
5350	12000	1000	7700	56.0	74.0	-18.0
12000	18000	1000	17784	55.5	74.0	-18.5
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	5016	43.9	54.0	-10.1
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17784	44.1	54.0	-9.9
Measurement uncertainty			±6 dB			

Lowest frequency: 5510 MHz						
Test conditions: 2 TX , P14, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5100	53.0	74.0	-21.0
5725	12000	1000	7700	57.0	74.0	-17.0
12000	18000	1000	17800	56.0	74.0	-18.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
7250	5150	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
31200	31800	1000	31200	48.0	54.0	-6.0
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Middle frequency: 5550 MHz						
Test conditions: 2 TX , P14, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5100	56.0	74.0	-18.0
5725	12000	1000	7700	57.0	74.0	-17.0
12000	18000	1000	17800	55.0	74.0	-19.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
4500	5150	1000	5100	45.0	54.0	-9.0
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

Highest frequency: 5670 MHz						
Test conditions: 2 TX , P14, MCS8						
			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
1000	5470	1000	5100	53.0	74.0	-21.0
5725	12000	1000	7700	57.0	74.0	-17.0
12000	18000	1000	17800	55.0	74.0	-19.0
18000	40000	1000	-	< 50	74.0	< -24
Measurement uncertainty			±6 dB			

AV-Measurement			Test results			
Start f	Stop f	RBW	Maximum emission		Limit	Margin
(MHz)	(MHz)	(kHz)	(MHz)	(dBμV/m)	(dBμV/m)	(dB)
7250	7750	1000	7700	46.0	54.0	-8.0
17700	21400	1000	17800	45.0	54.0	-9.0
Measurement uncertainty			±6 dB			

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

Radiated limits according to FCC Part 15C, Section 15.209(a):

Frequency (MHz)	Field strength of spurious emissions		Measurement distance
	($\mu\text{V/m}$)	dB($\mu\text{V/m}$)	(metres)
0.009 - 0.490	2400/F(kHz)		300
0.490 - 1.705	24000/F(kHz)		30
1.705 - 30	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

FCC Part 15C, Section 15.205, restricted bands of operation:

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

The requirements are **FULFILLED**.

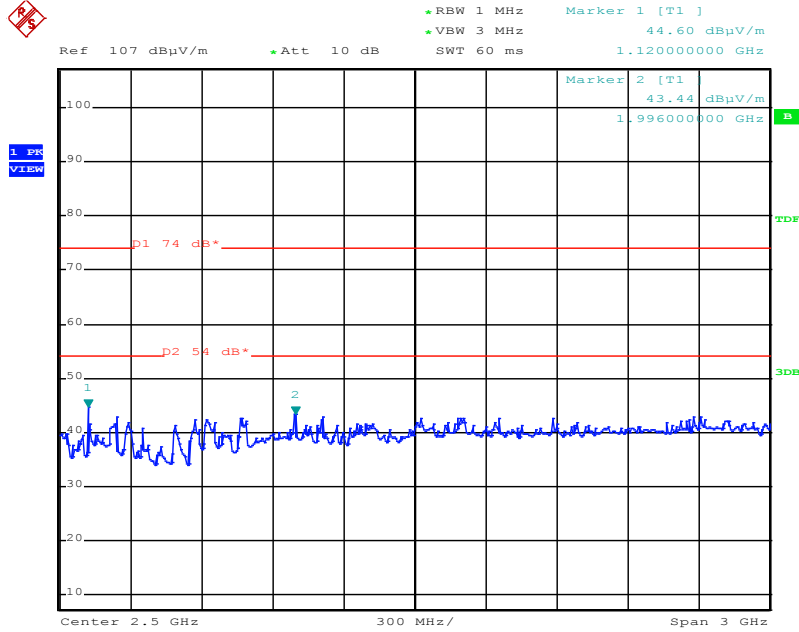
Remarks: The measurement is performed from 9 kHz up to 40 GHz. For detailed test results please see
the following test protocols. CH52 is listed only as representative channel.

5.6.7 Test protocols undesirable emission in restricted bands

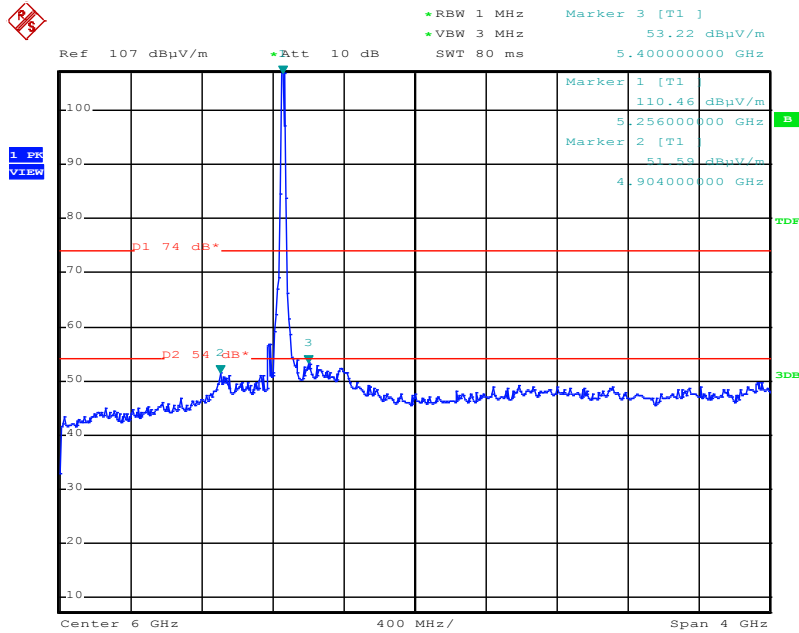
5.6.7.1 Gain group 1 (6 dBi)

802.11h, Channel 52 (5260 MHz)

1 GHz – 4 GHz

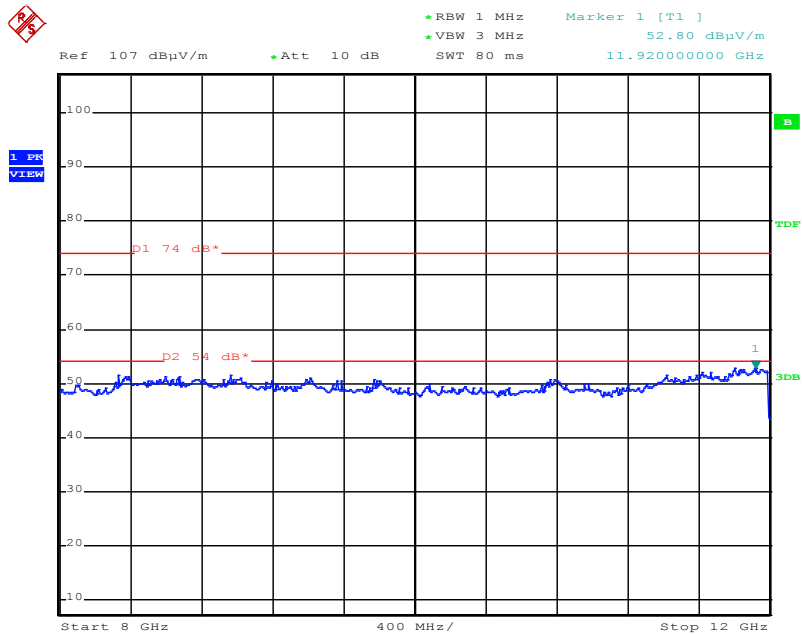


4 GHz – 8 GHz

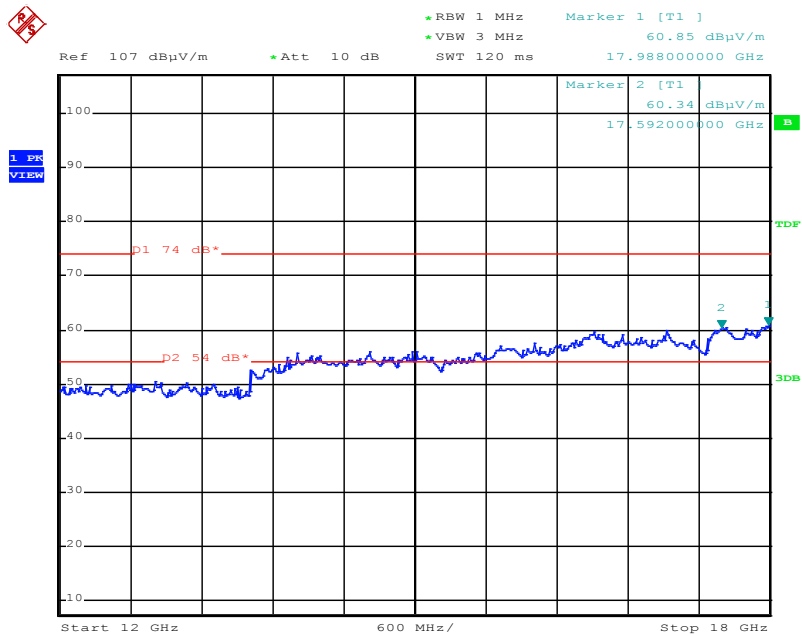


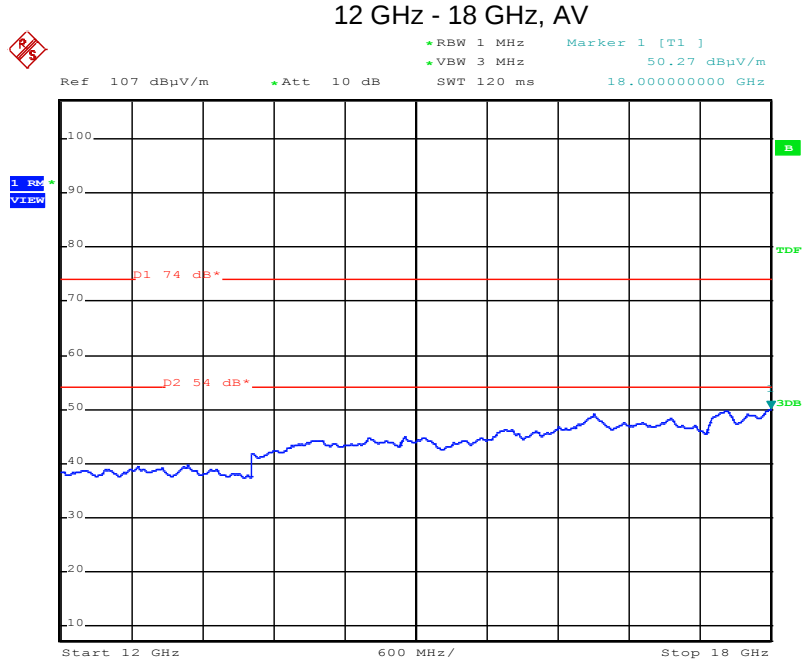
FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

8 GHz – 12 GHz



12 GHz - 18 GHz

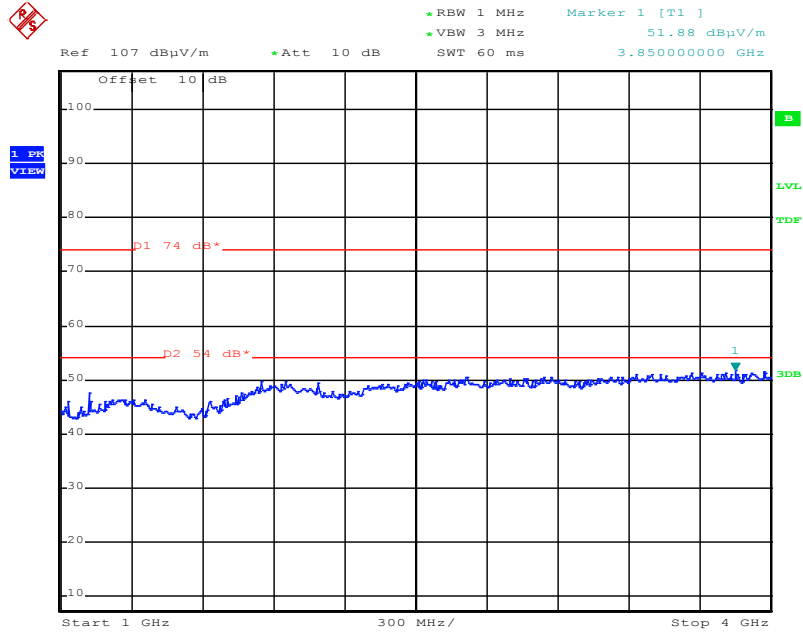




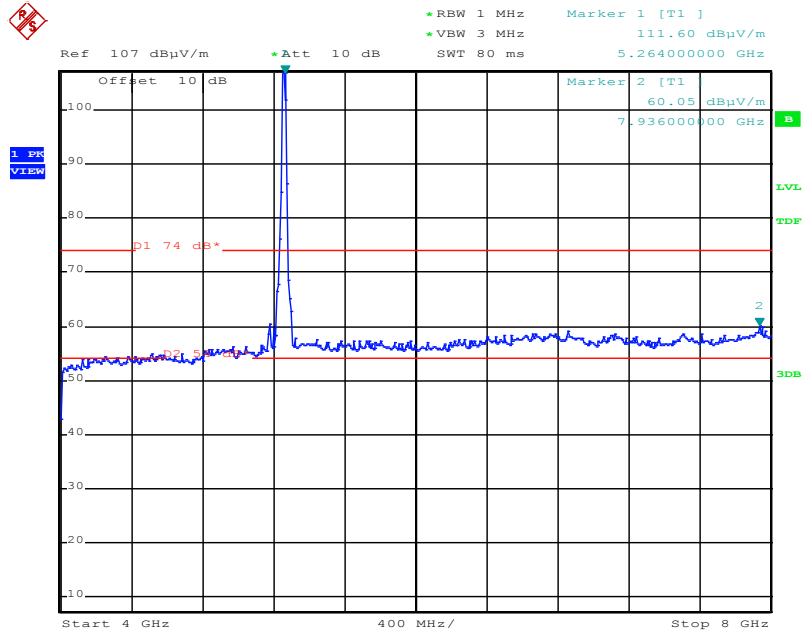
Note: in the frequency range from 18 GHz – 40 GHz noise only could be observed!

802.11n, HT20, Channel 52 (5260 MHz)

1 GHz – 4 GHz

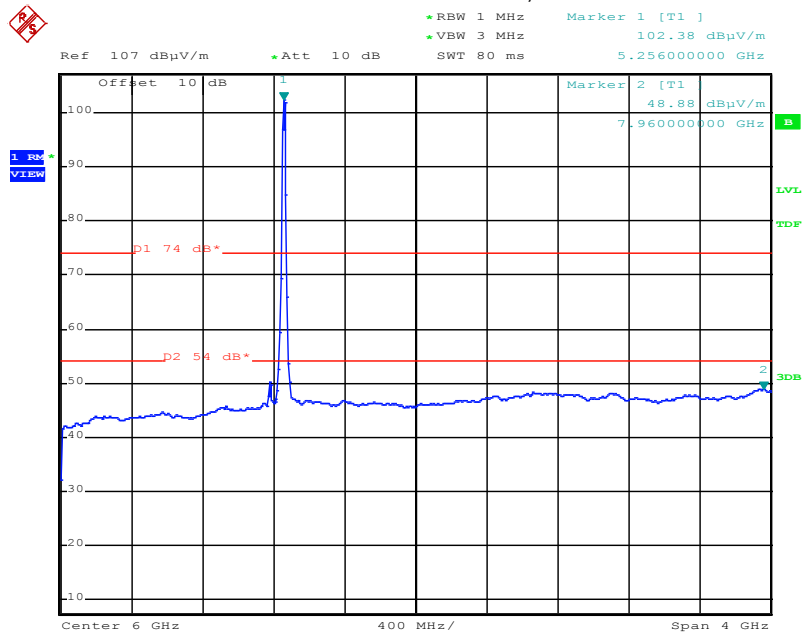


4 GHz – 8 GHz

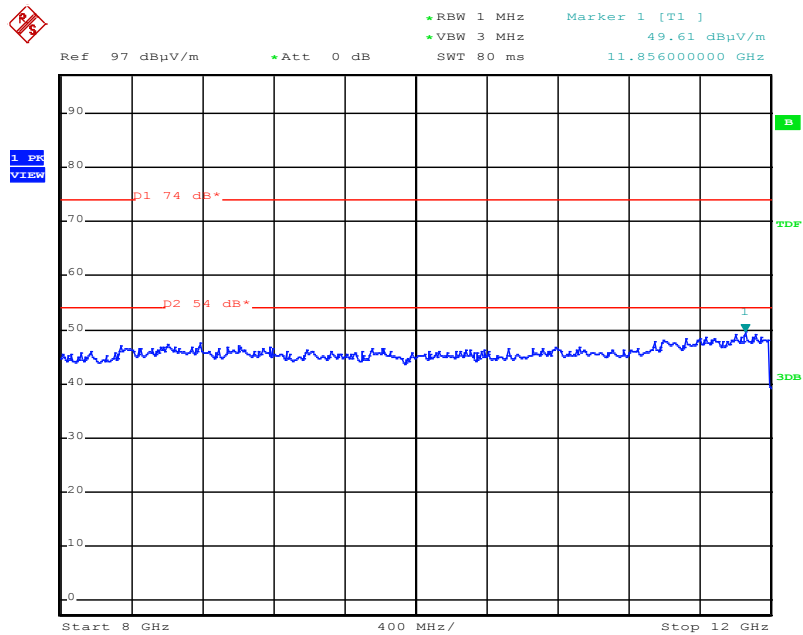


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

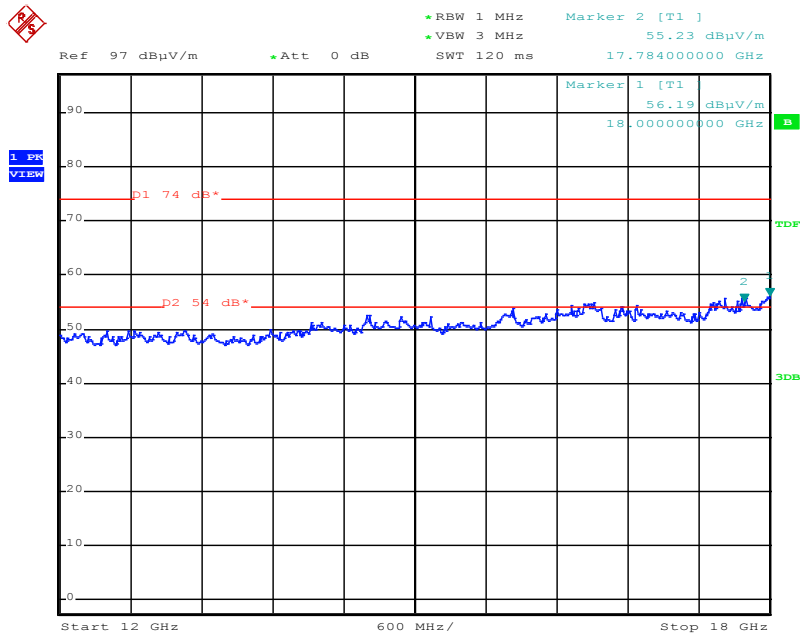
4 GHz – 8 GHz; AV



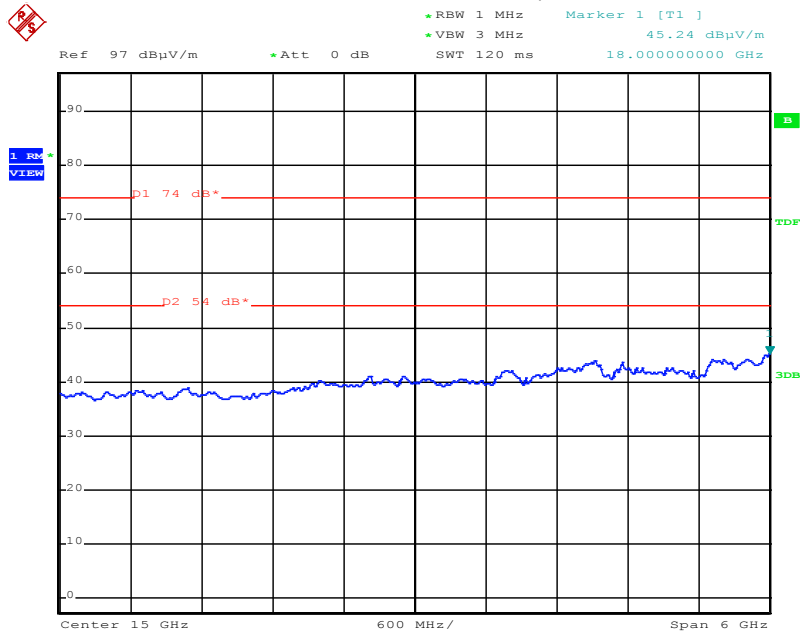
8 GHz - 12 GHz



12 GHz - 18 GHz

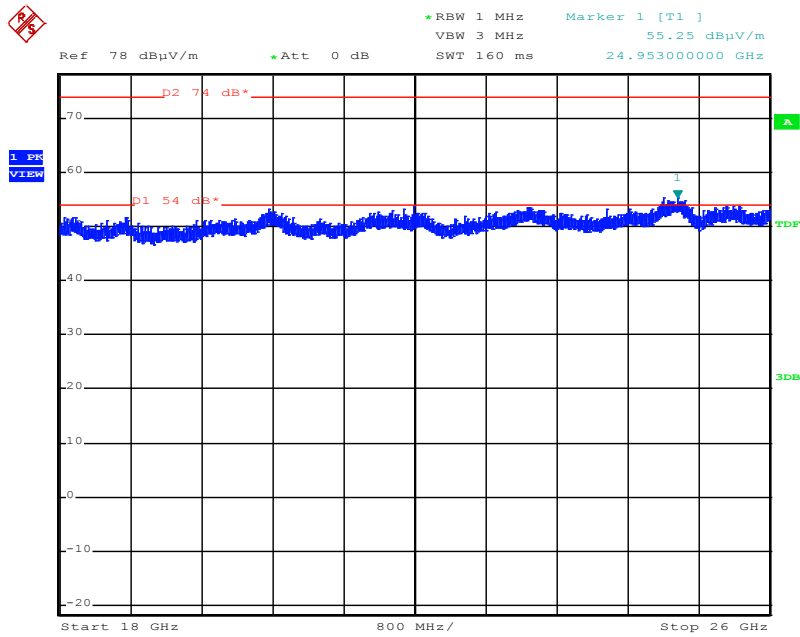


12 GHz - 18 GHz, AV

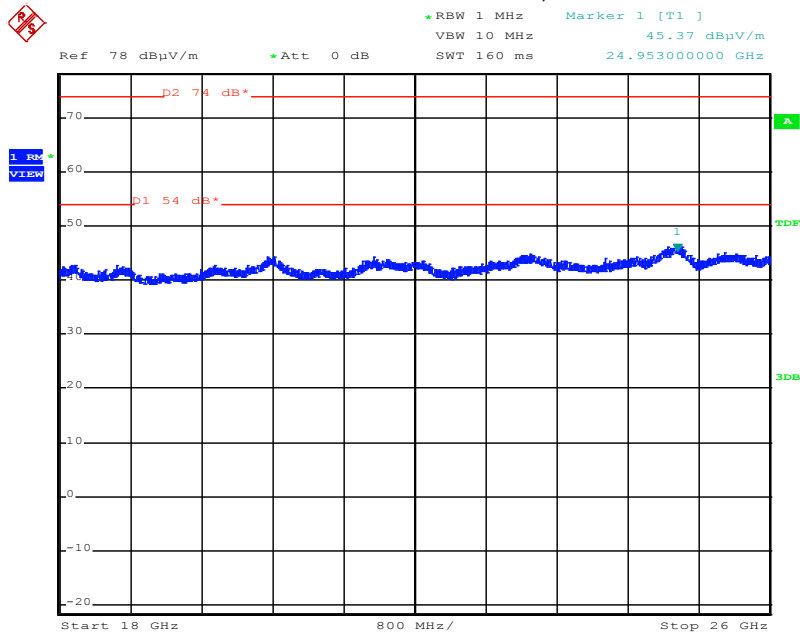


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

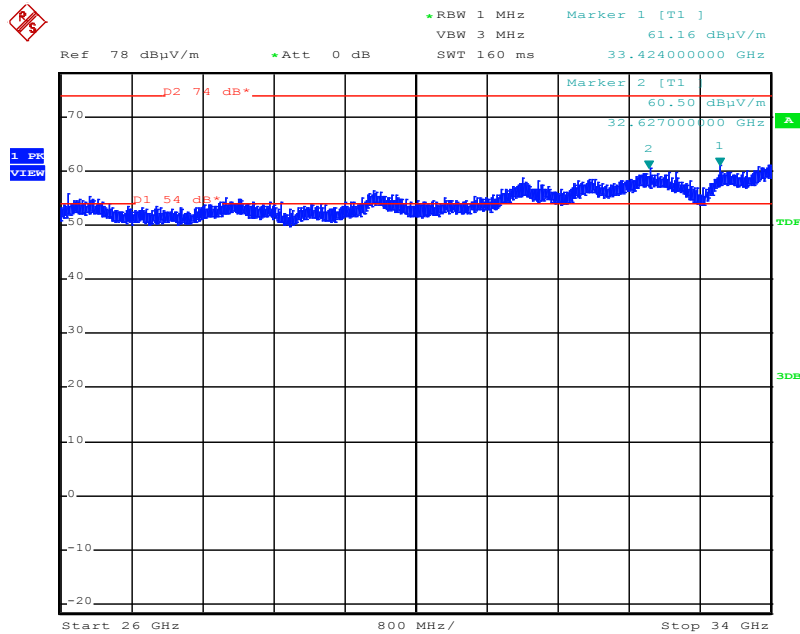
18 GHz – 26 GHz



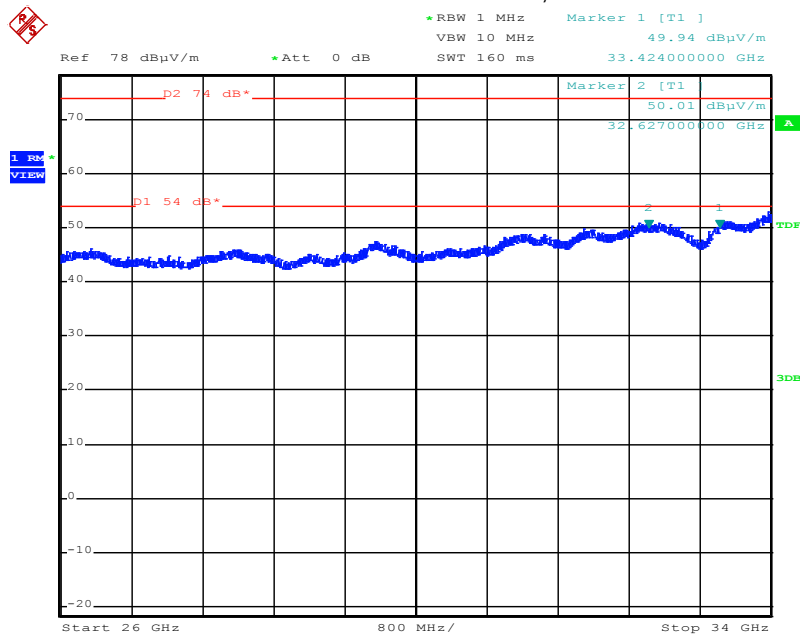
18 GHz – 26 GHz, AV



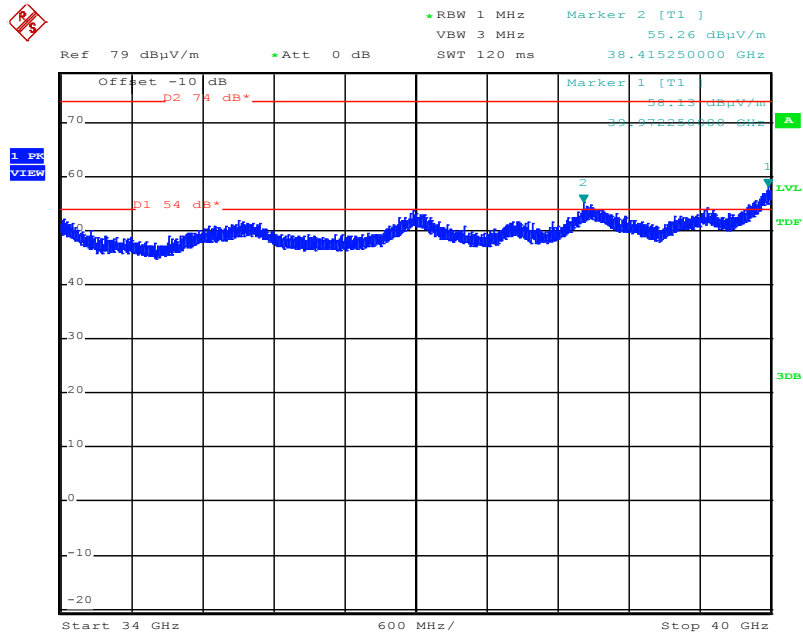
26 GHz – 34 GHz



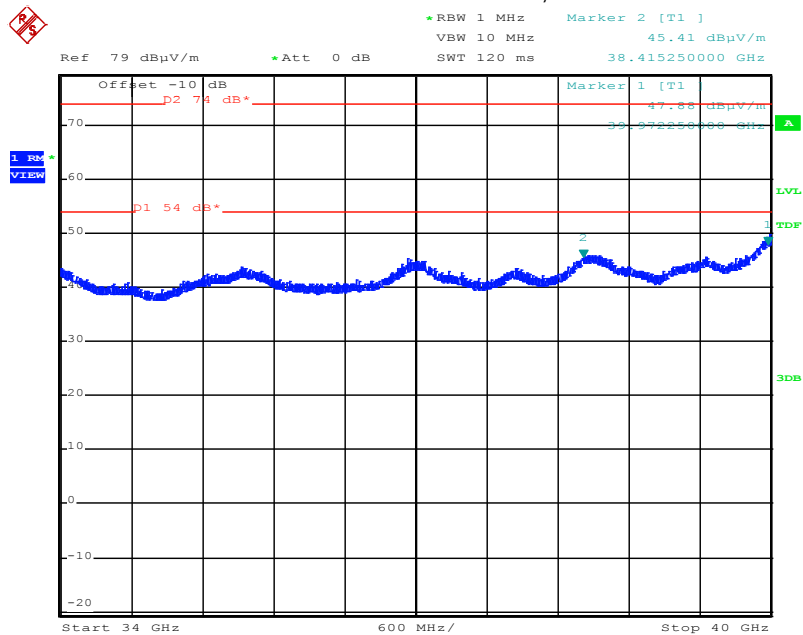
26 GHz – 34 GHz, AV



34 GHz – 40 GHz

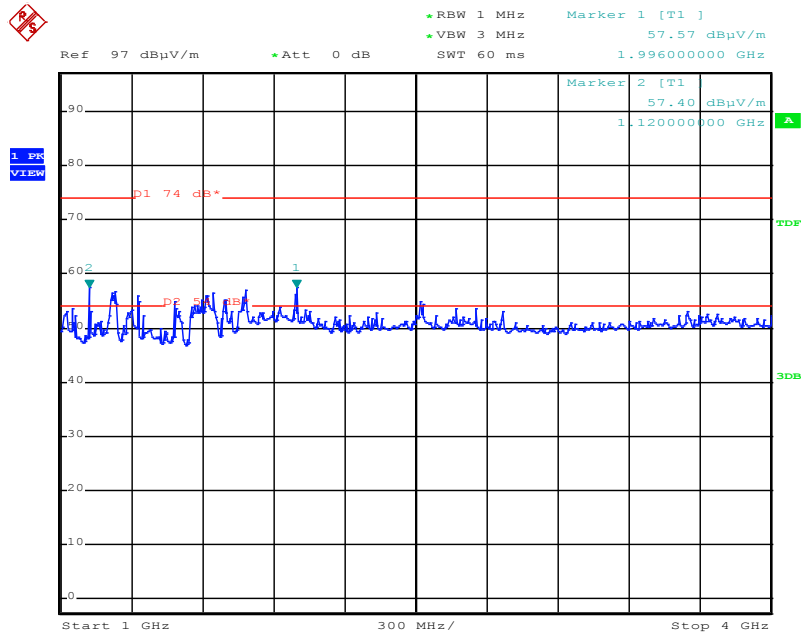


34 GHz – 40 GHz, AV

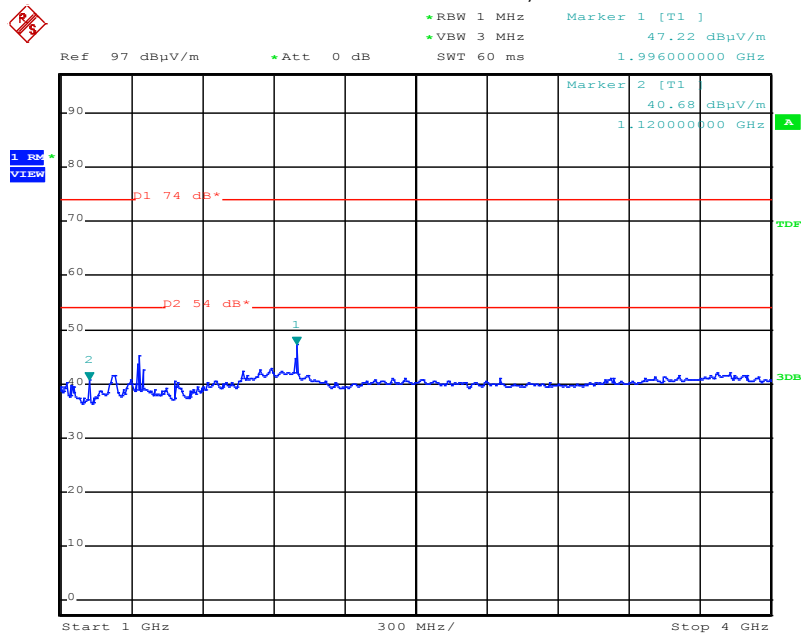


HT40, Channel 52up (5270 MHz)

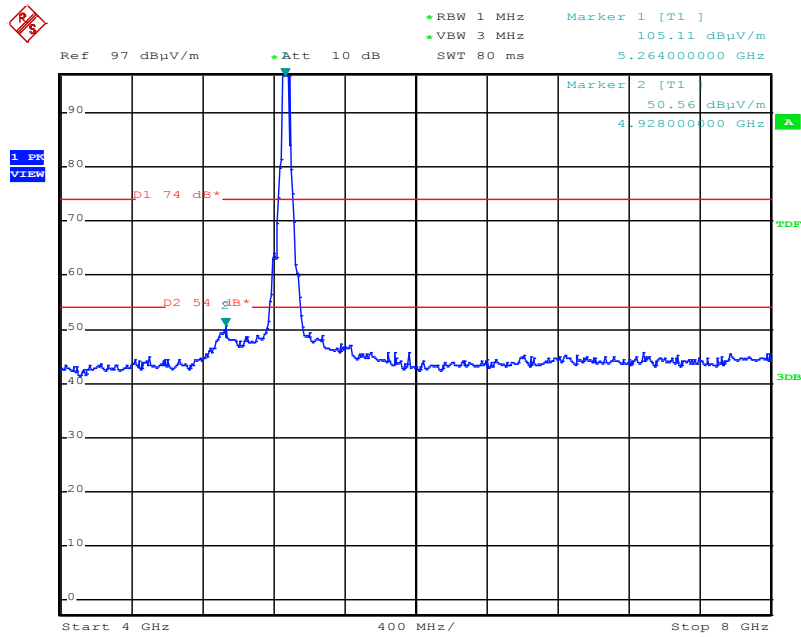
1 GHz – 4 GHz



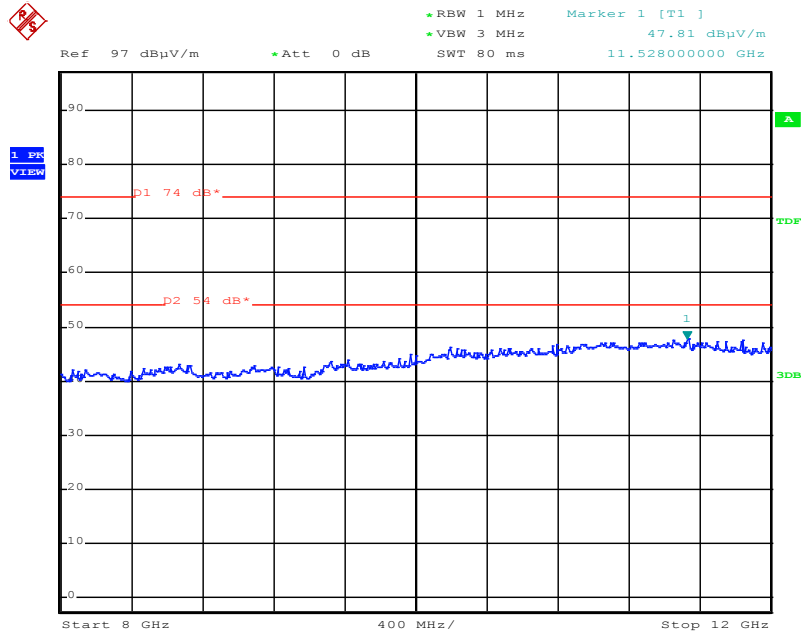
1 GHz – 4 GHz; AV



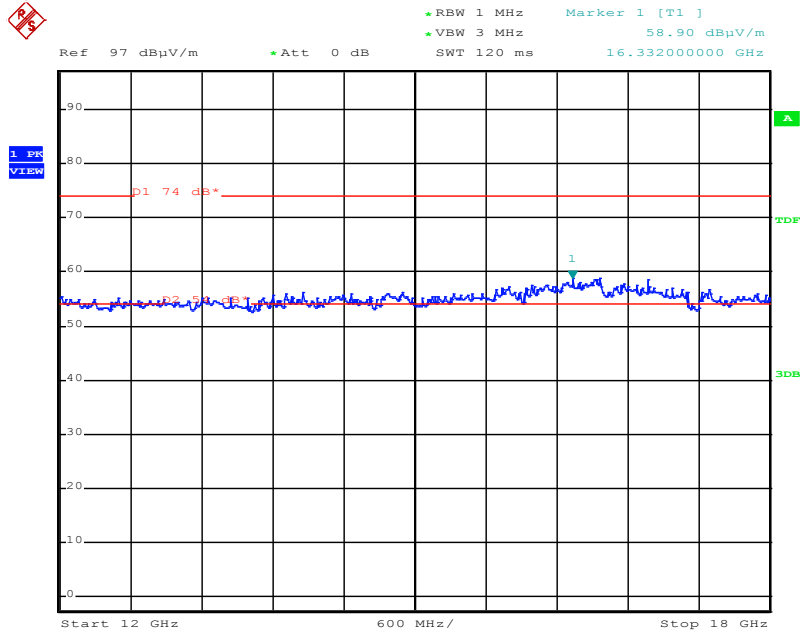
4 GHz – 8 GHz



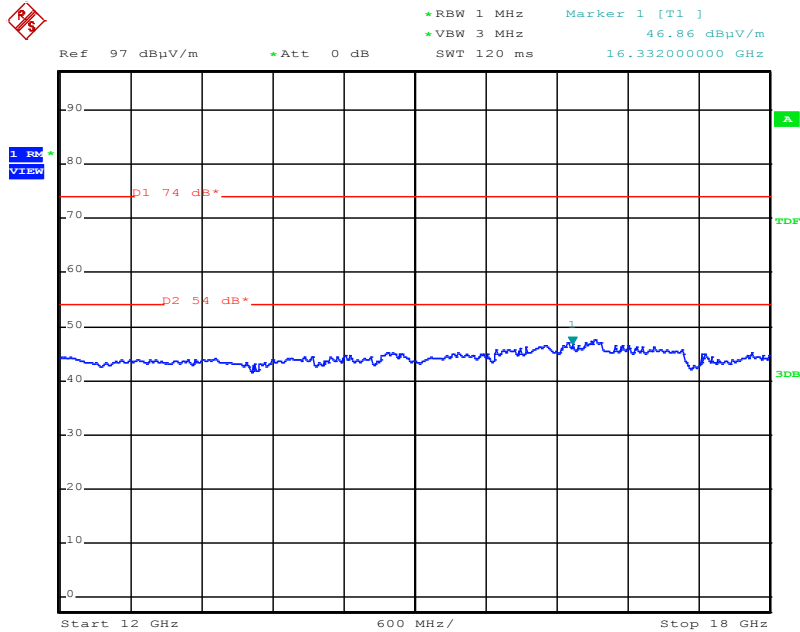
8 GHz - 12 GHz



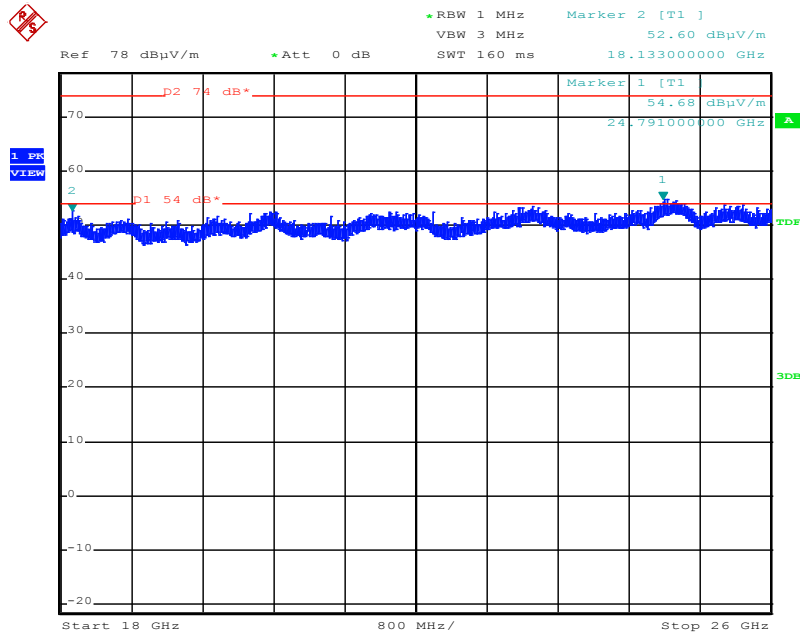
12 GHz - 18 GHz



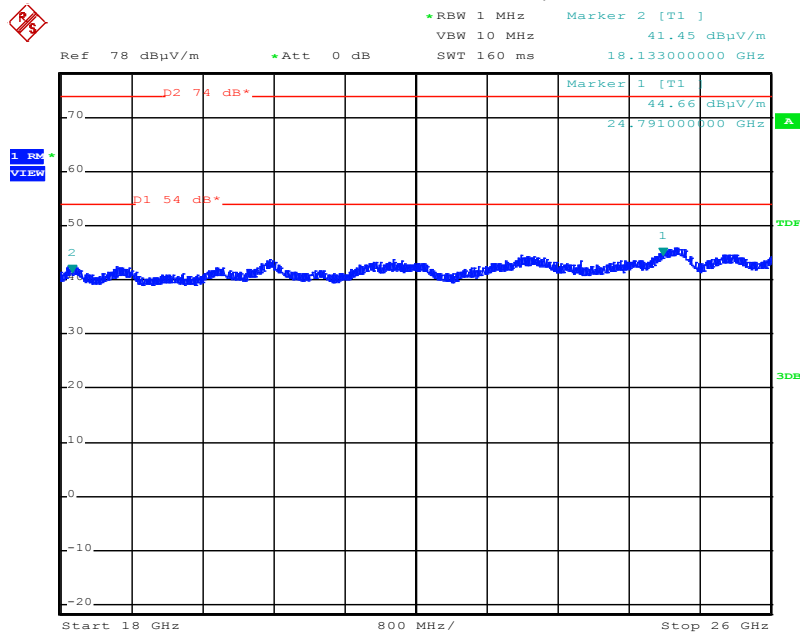
12 GHz - 18 GHz, AV



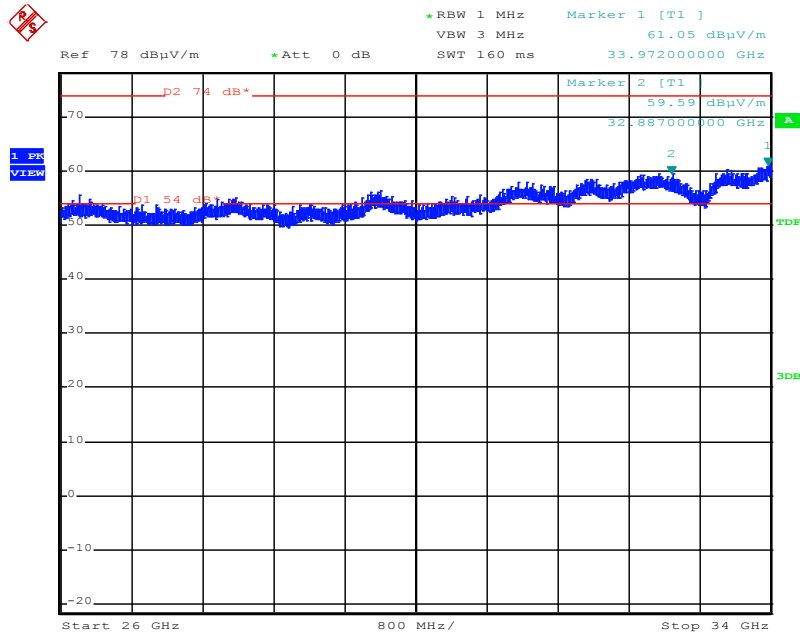
18 GHz – 26 GHz



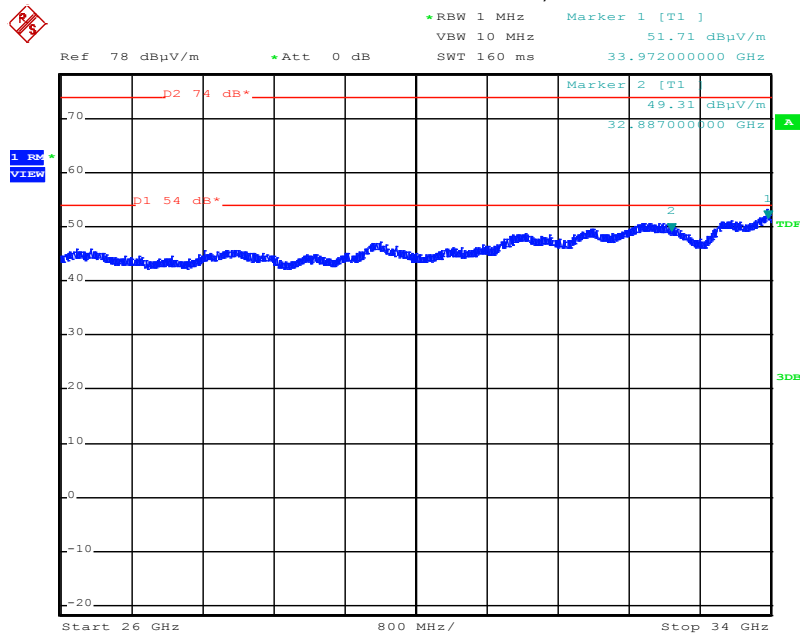
18 GHz – 26 GHz, AV



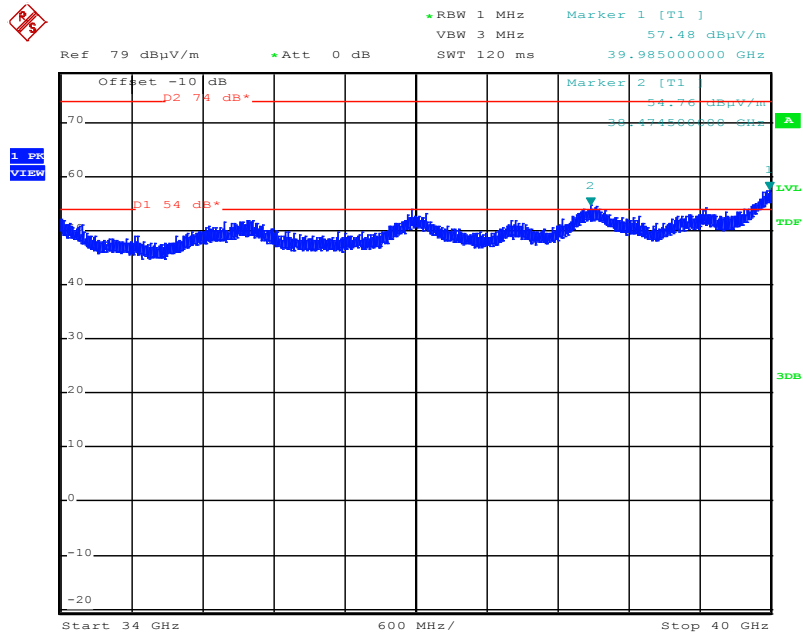
26 GHz – 34 GHz



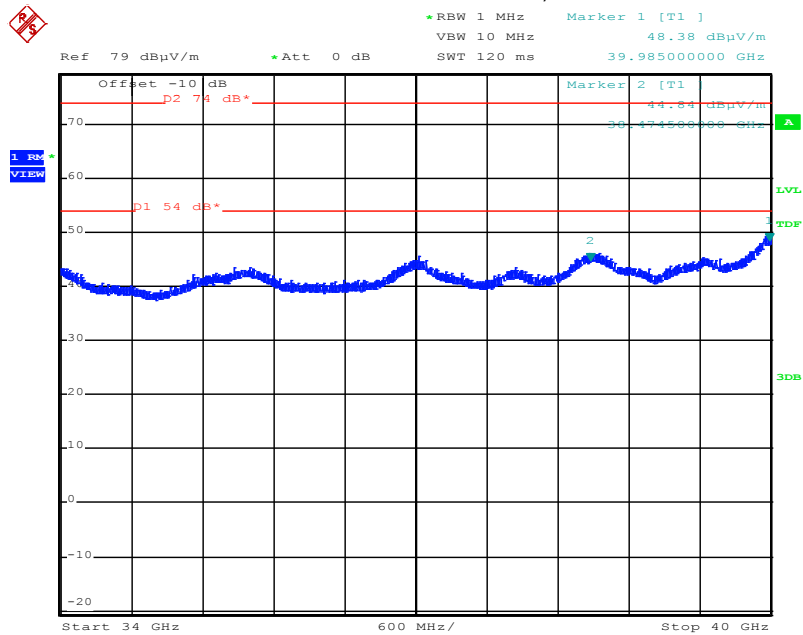
26 GHz – 34 GHz, AV



34 GHz – 40 GHz

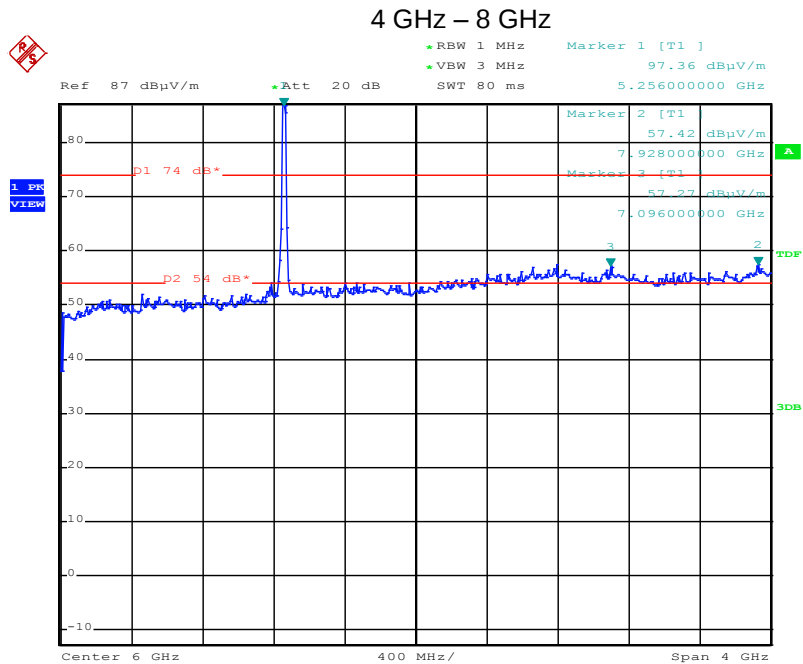
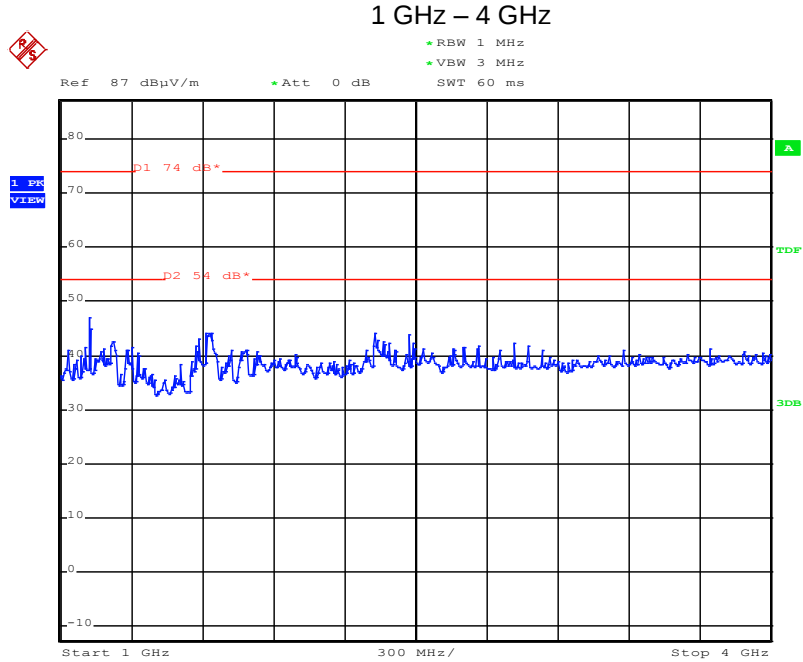


34 GHz – 40 GHz, AV

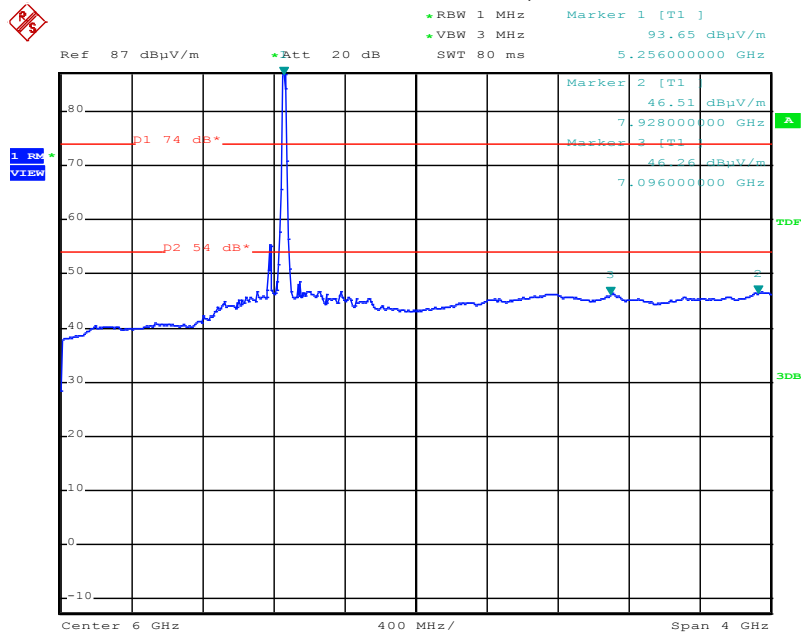


5.6.7.2 Gain group 2 (9 dBi)

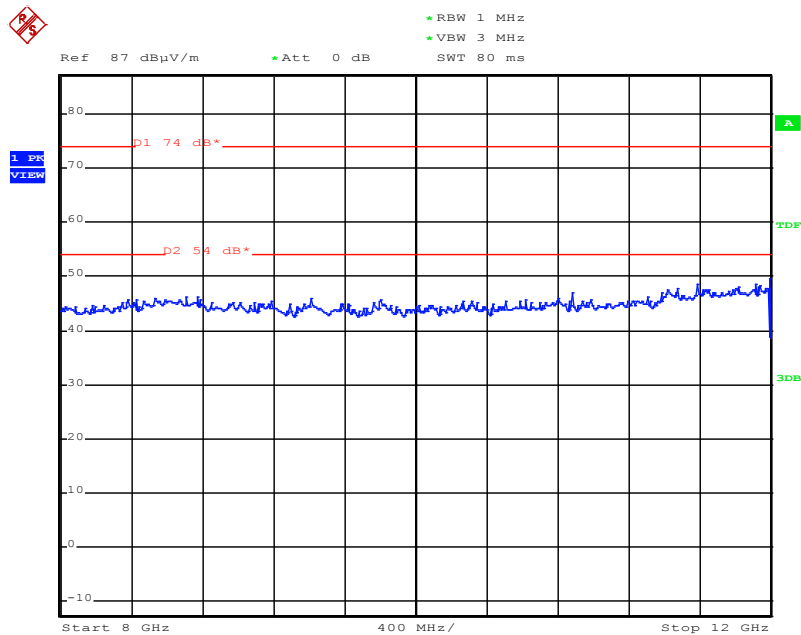
802.11h, Channel 52 (5260 MHz)

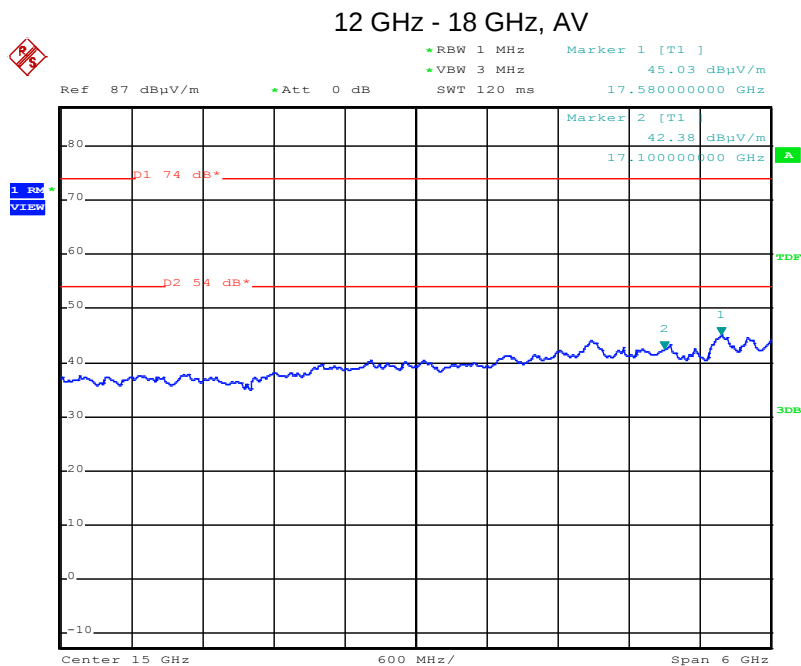
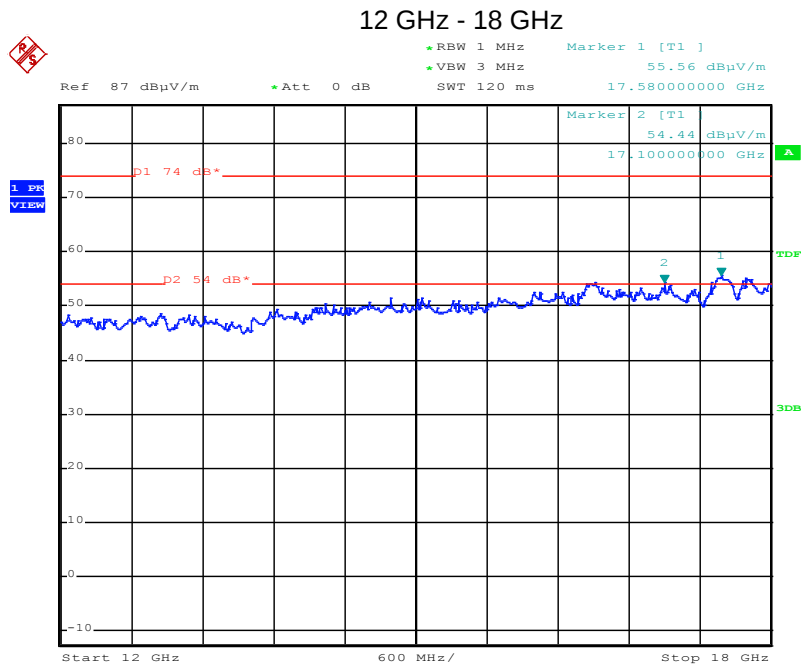


4 GHz – 8 GHz; AV



8 GHz - 12 GHz

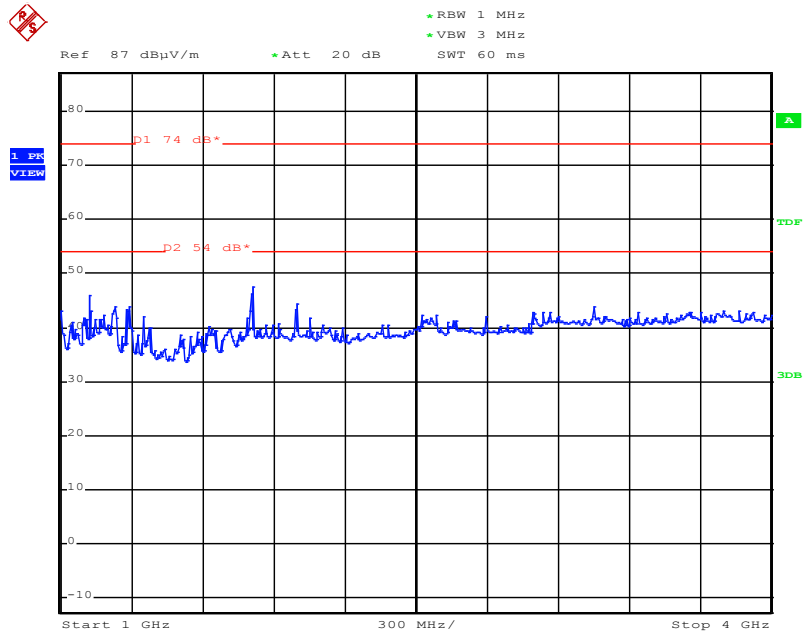




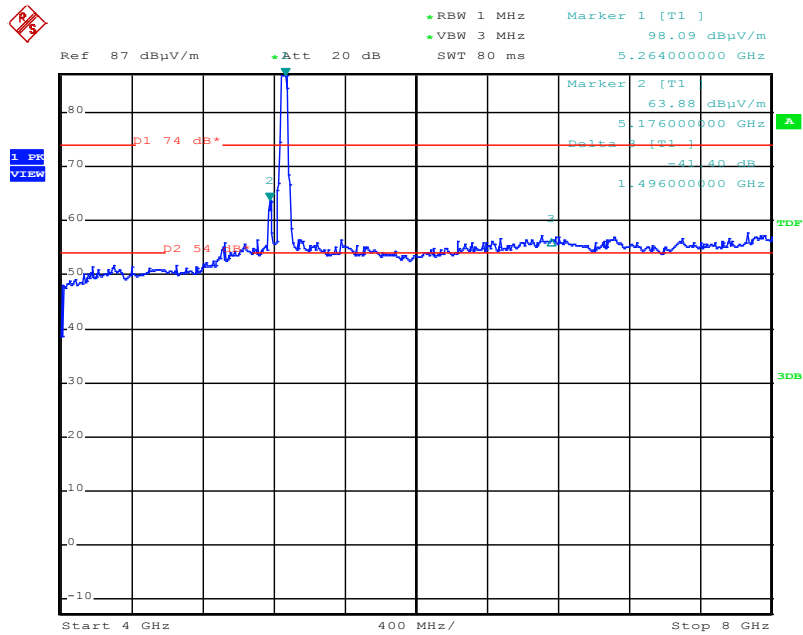
Note: in the frequency range from 18 GHz – 40 GHz noise only could be observed!

802.11n, HT20, Channel 52 (5260 MHz)

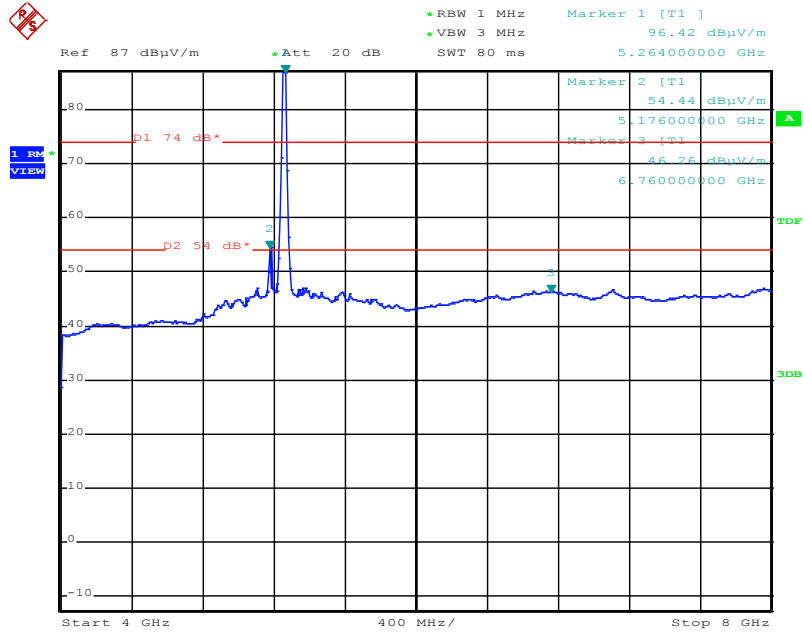
1 GHz – 4 GHz



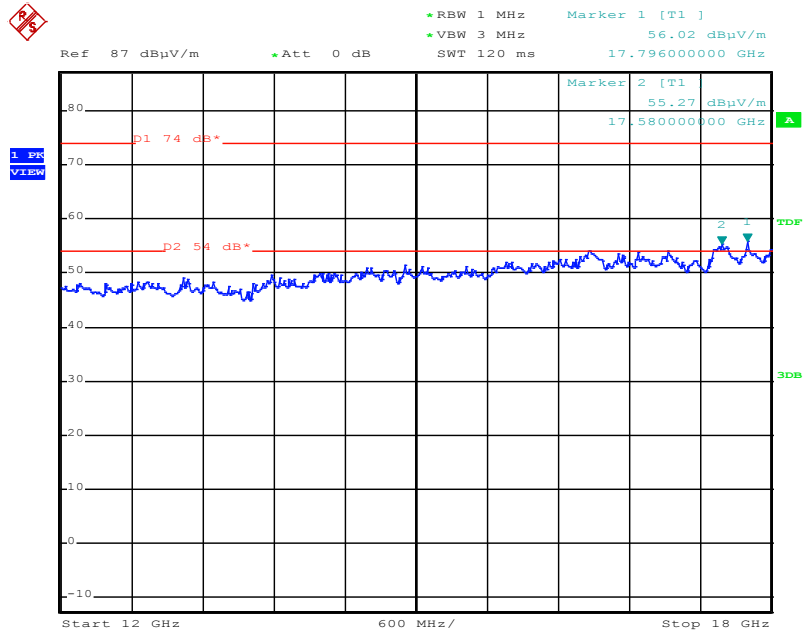
4 GHz – 8 GHz



4 GHz – 8 GHz; AV

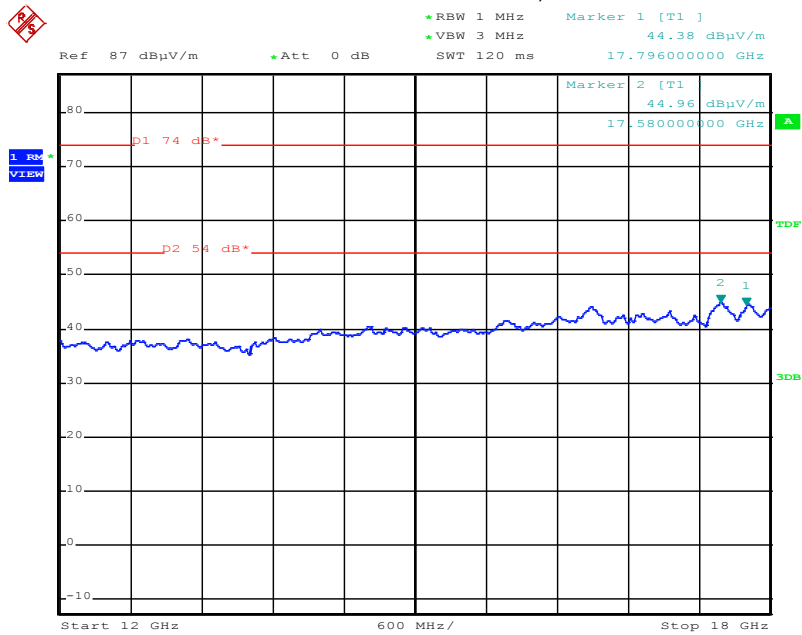


12 GHz - 18 GHz

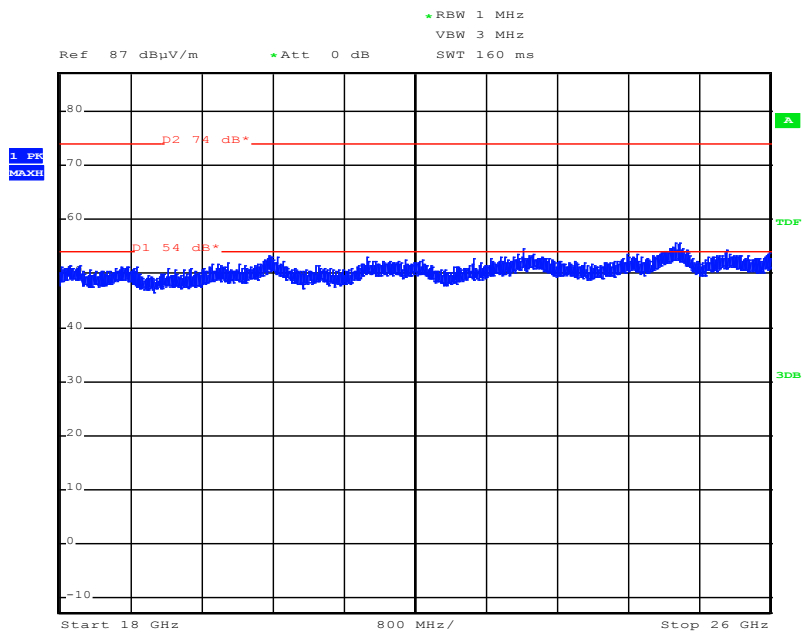


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

12 GHz - 18 GHz, AV

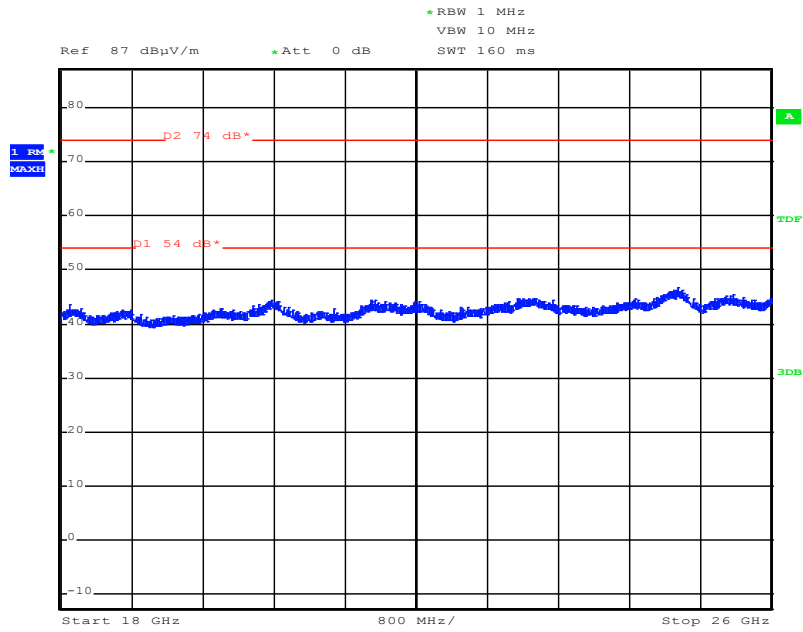


18 GHz - 26 GHz

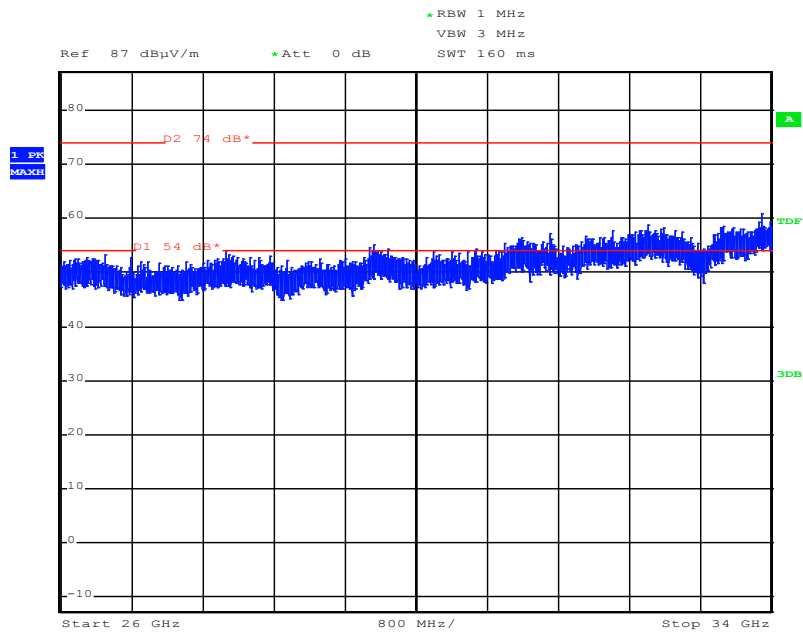


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

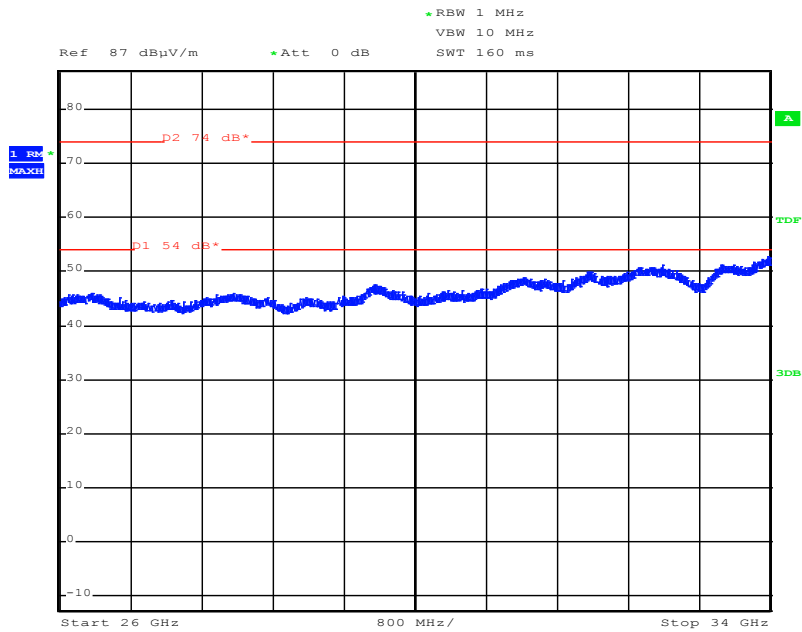
18 GHz – 26 GHz, AV



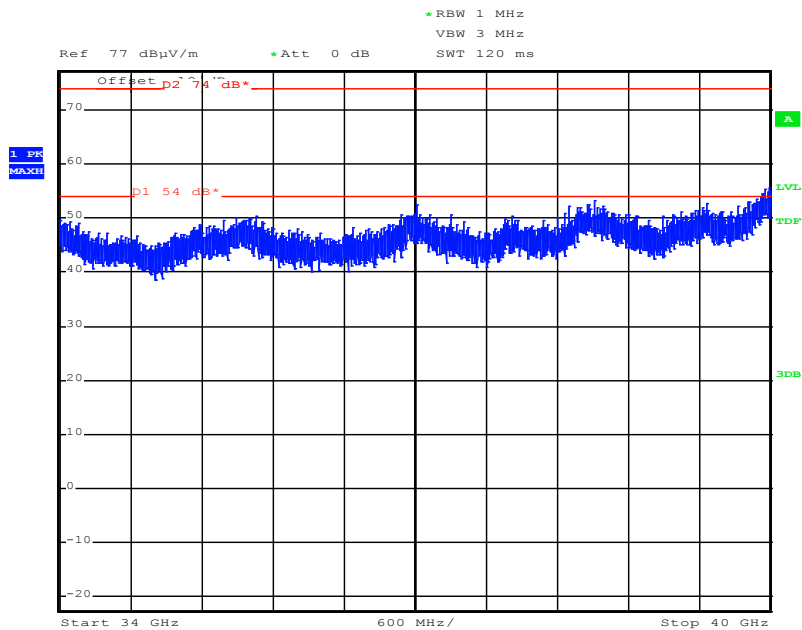
26 GHz – 34 GHz



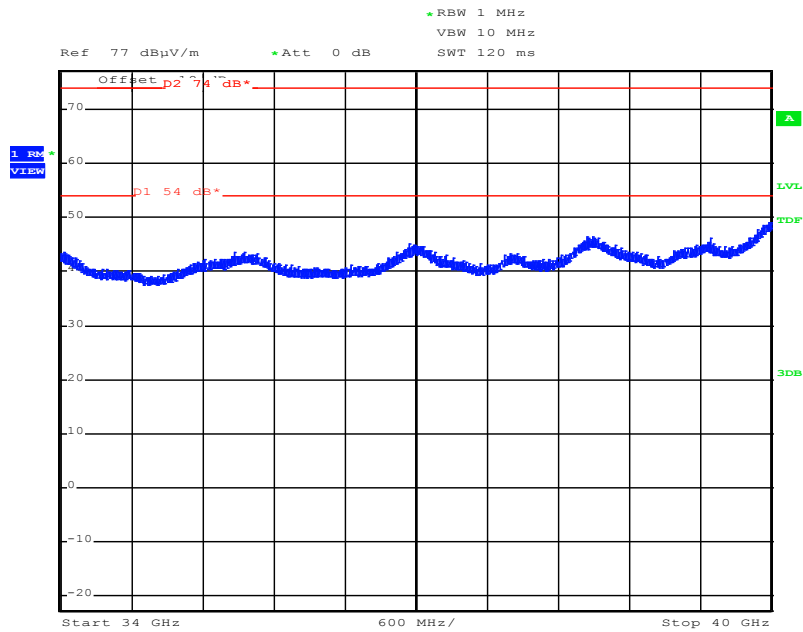
26 GHz – 34 GHz, AV



34 GHz – 40 GHz

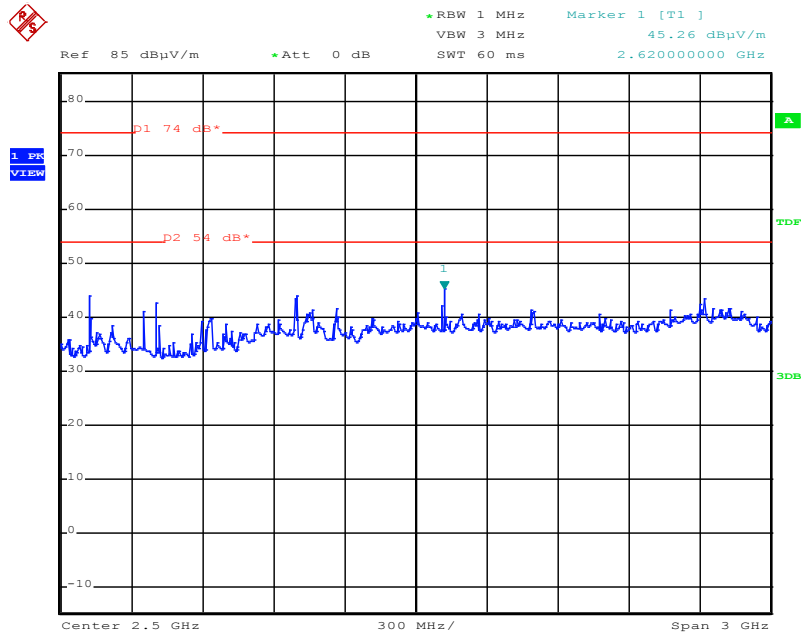


34 GHz – 40 GHz, AV

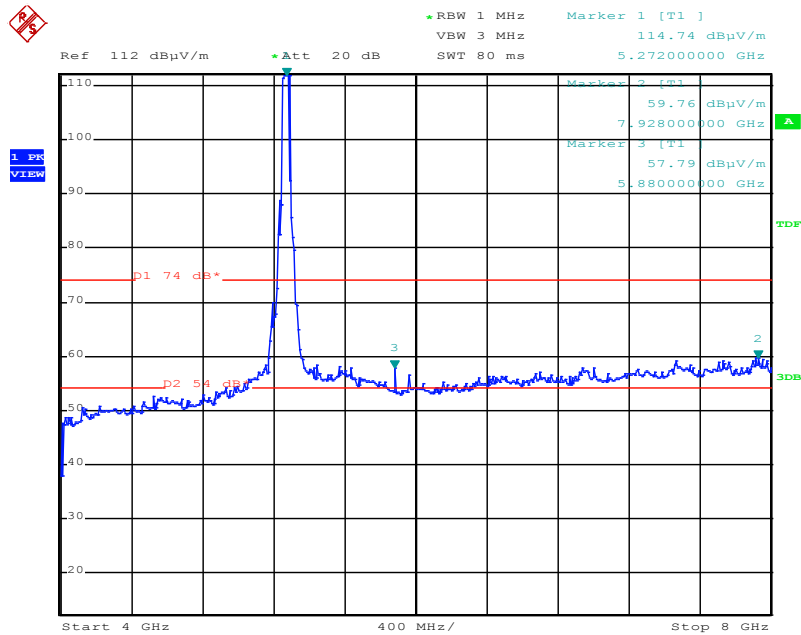


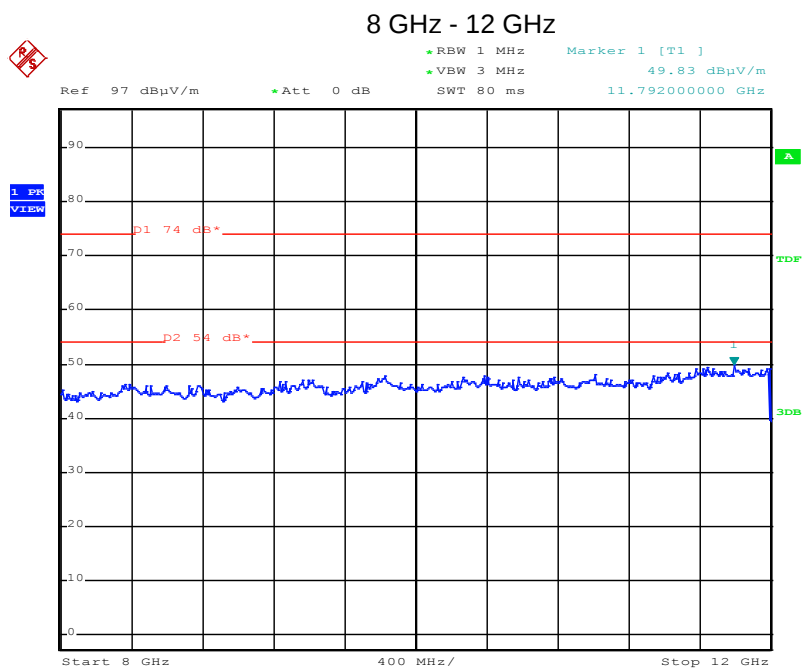
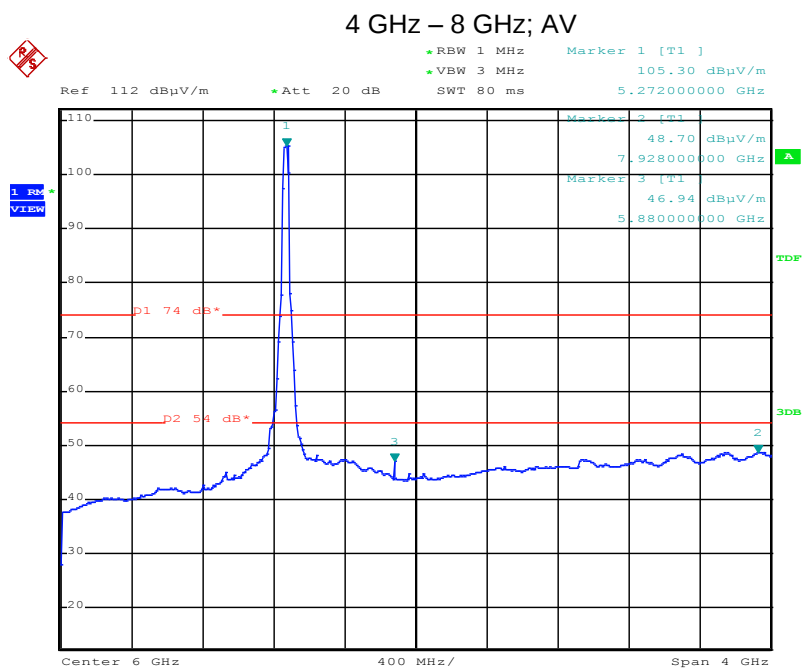
HT40, Channel 52up (5270 MHz)

1 GHz – 4 GHz

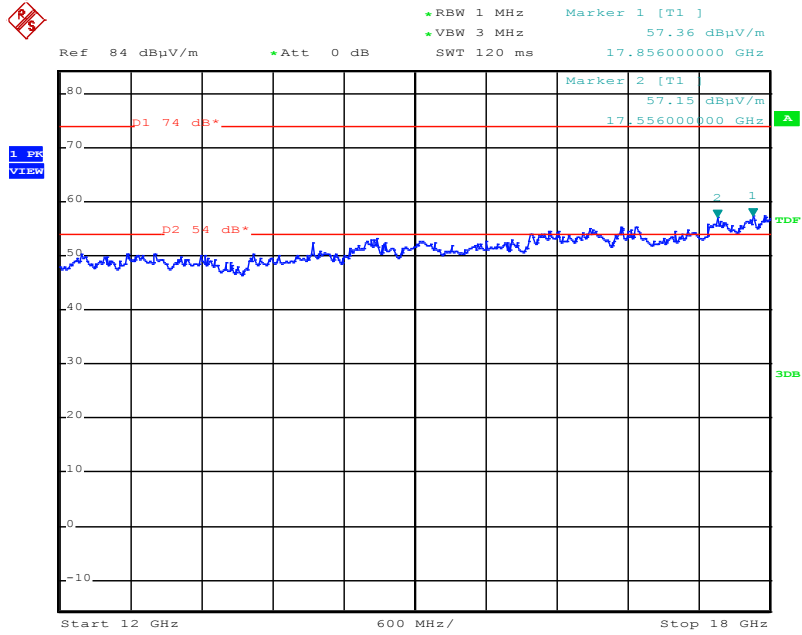


4 GHz – 8 GHz

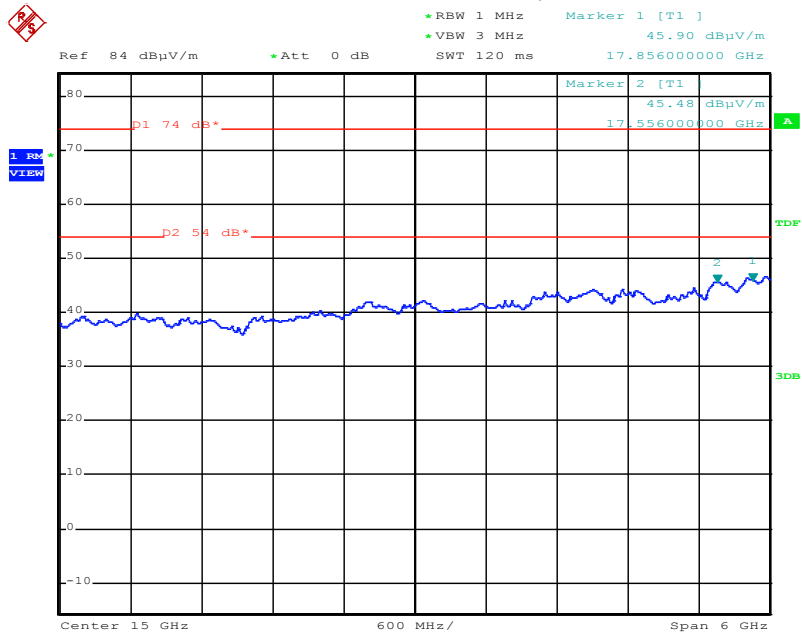


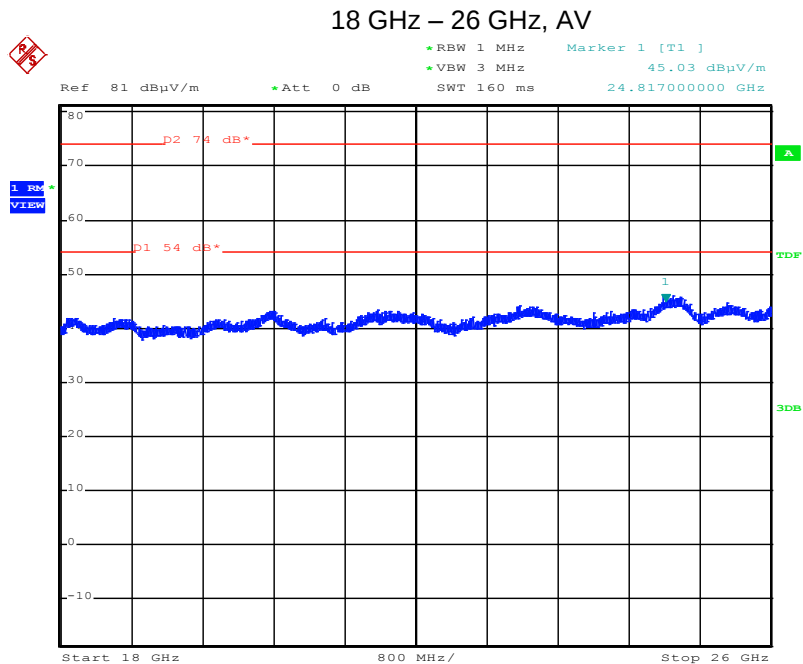
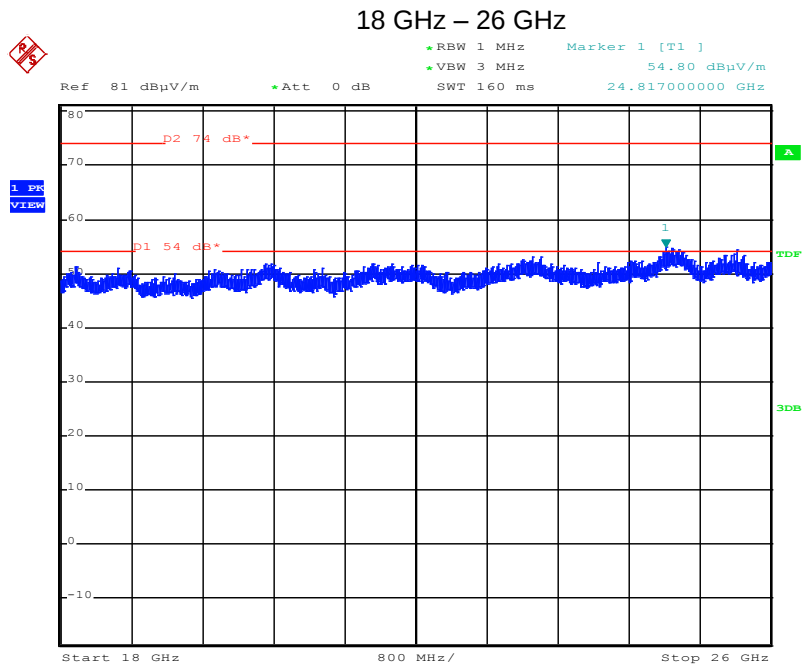


12 GHz - 18 GHz

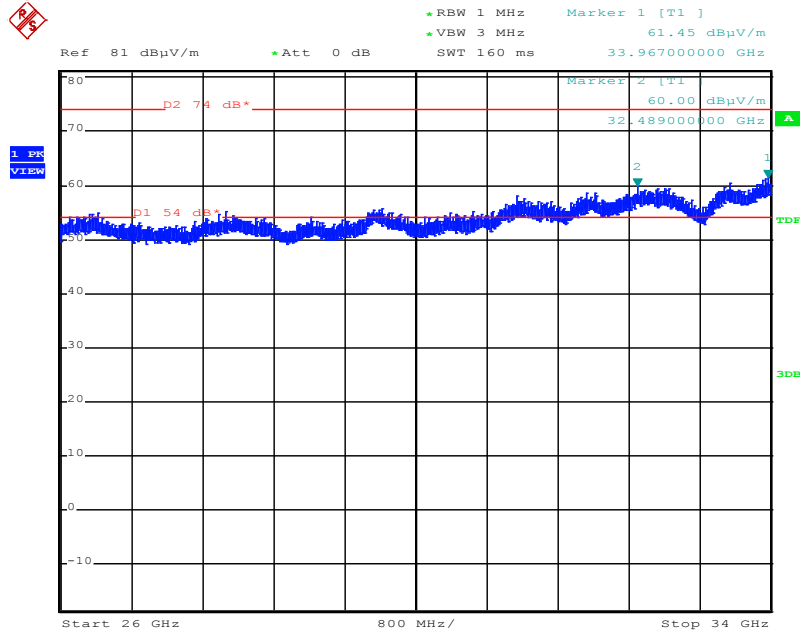


12 GHz - 18 GHz, AV

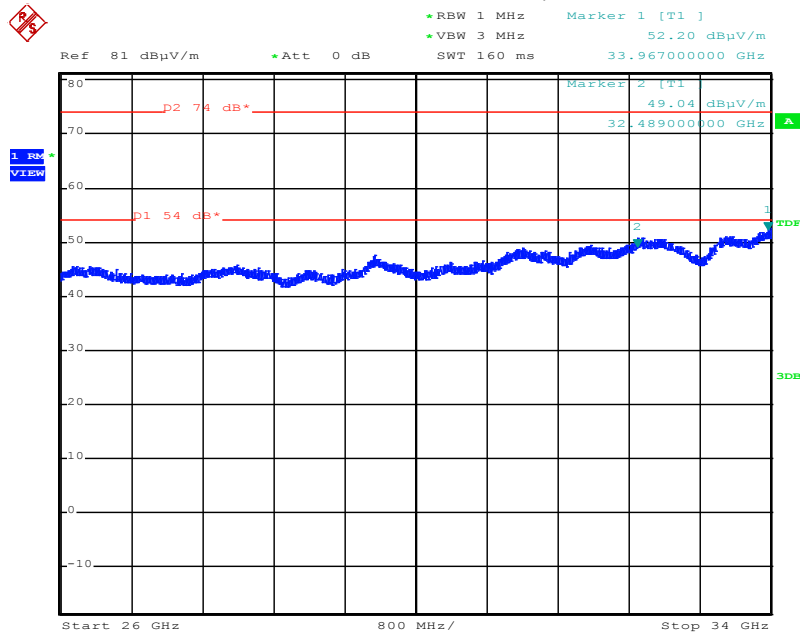




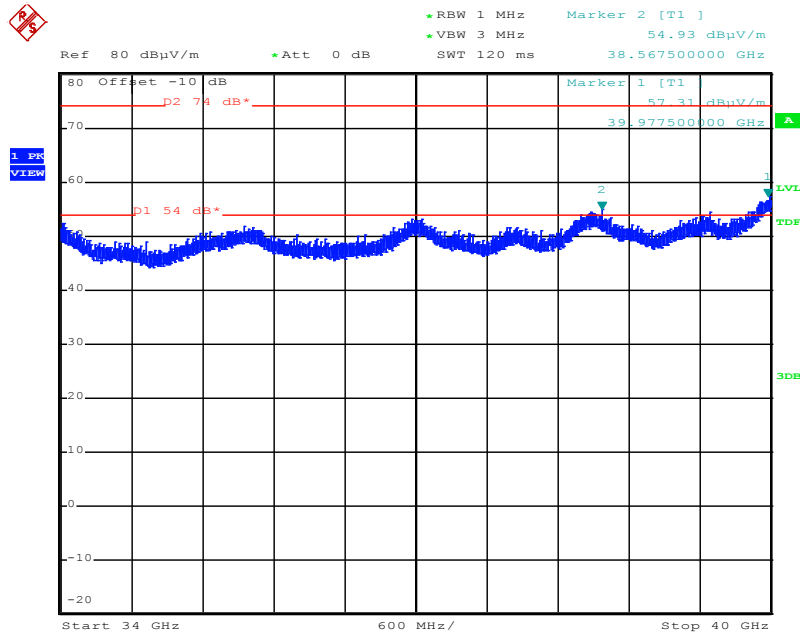
26 GHz – 34 GHz



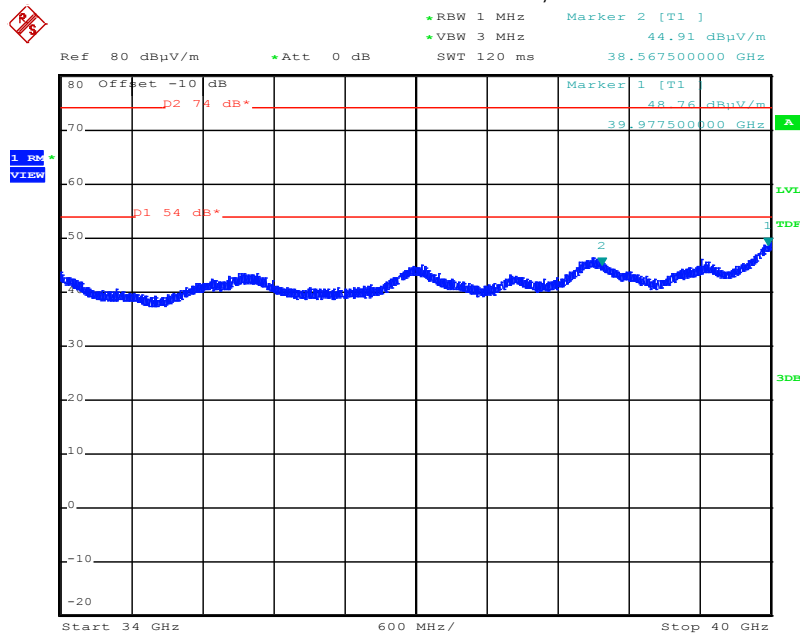
26 GHz – 34 GHz, AV



34 GHz – 40 GHz

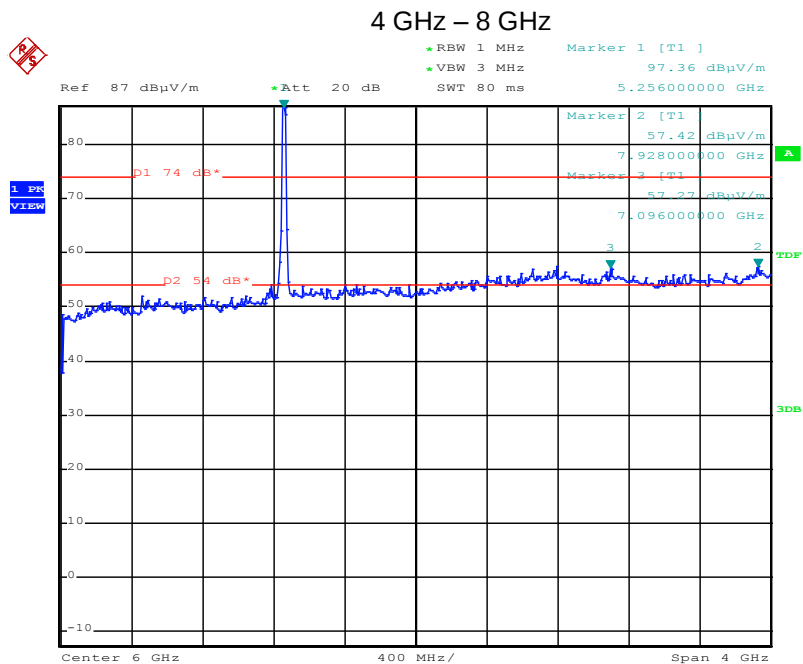
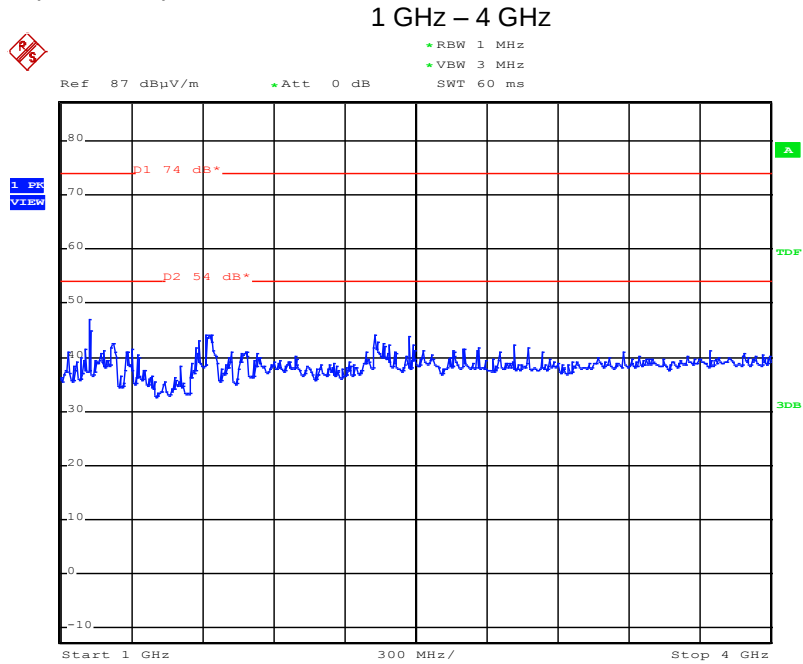


34 GHz – 40 GHz, AV

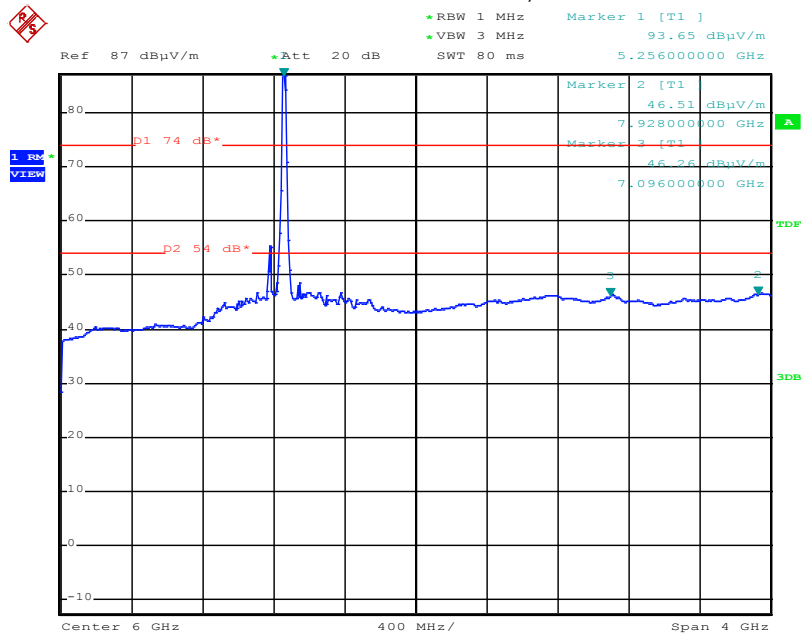


5.6.7.3 Gain group 3 (14 dBi)

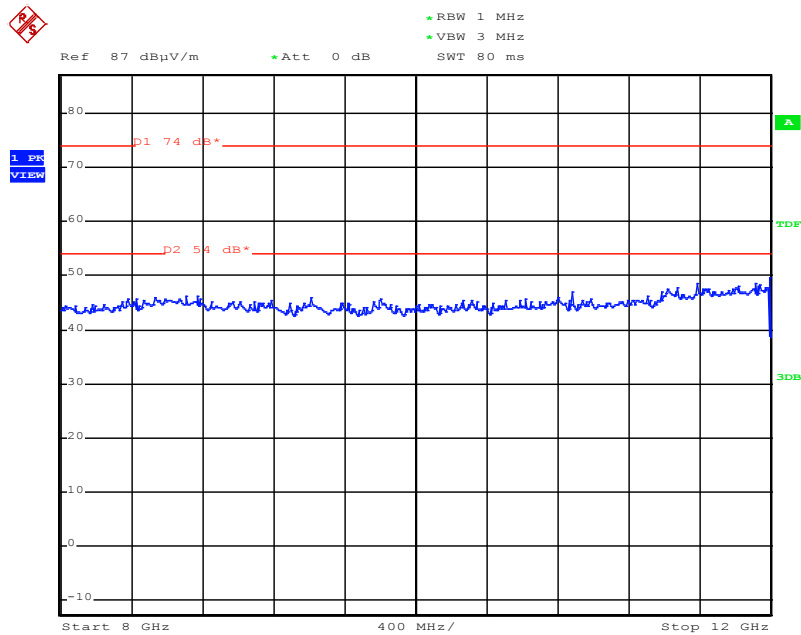
802.11h, Channel 52 (5260 MHz)



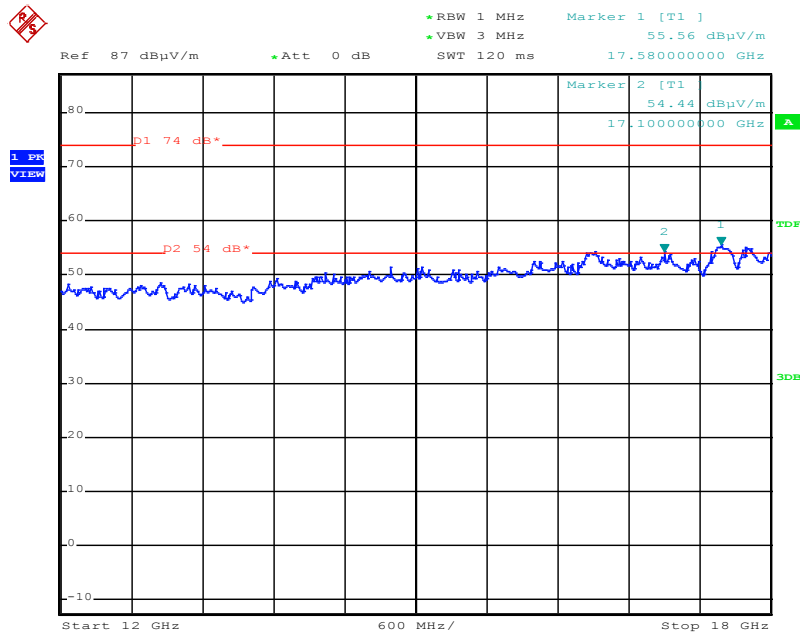
4 GHz – 8 GHz; AV



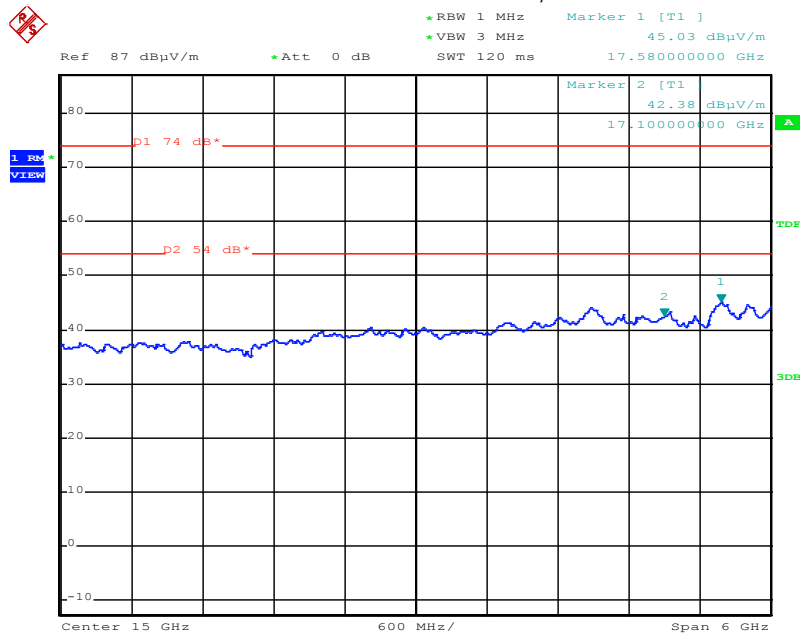
8 GHz – 12 GHz



12 GHz – 18 GHz



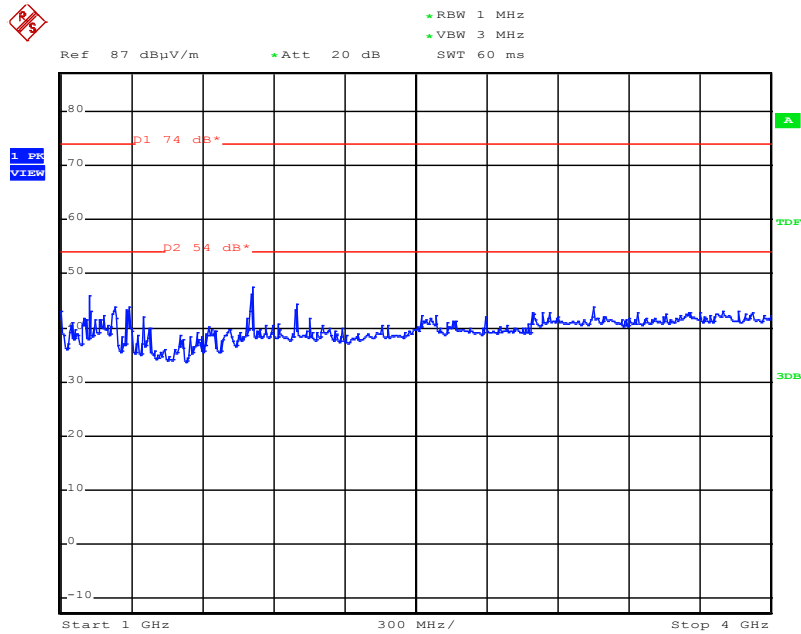
12 GHz - 18 GHz, AV



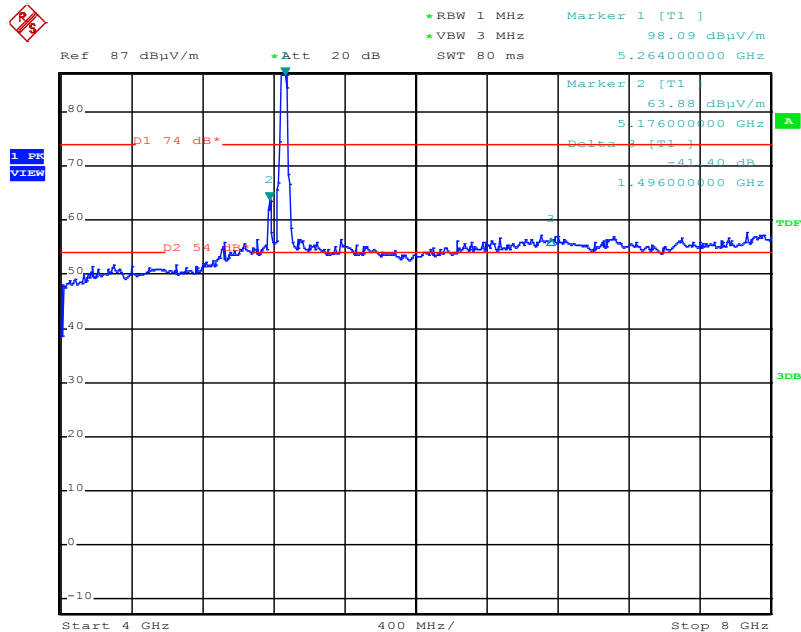
Note: in the frequency range from 18 GHz – 40 GHz noise only could be observed!

802.11n, HT20, Channel 52 (5260 MHz)

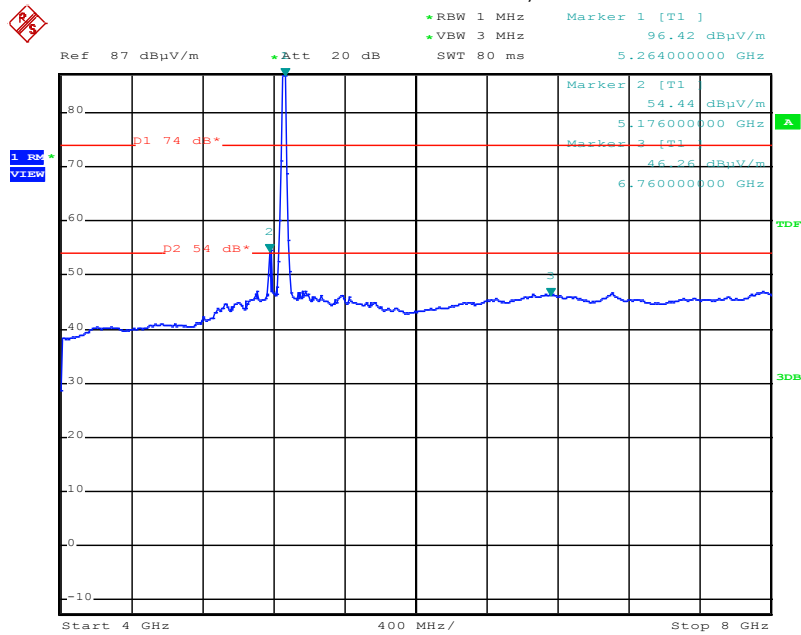
1 GHz – 4 GHz



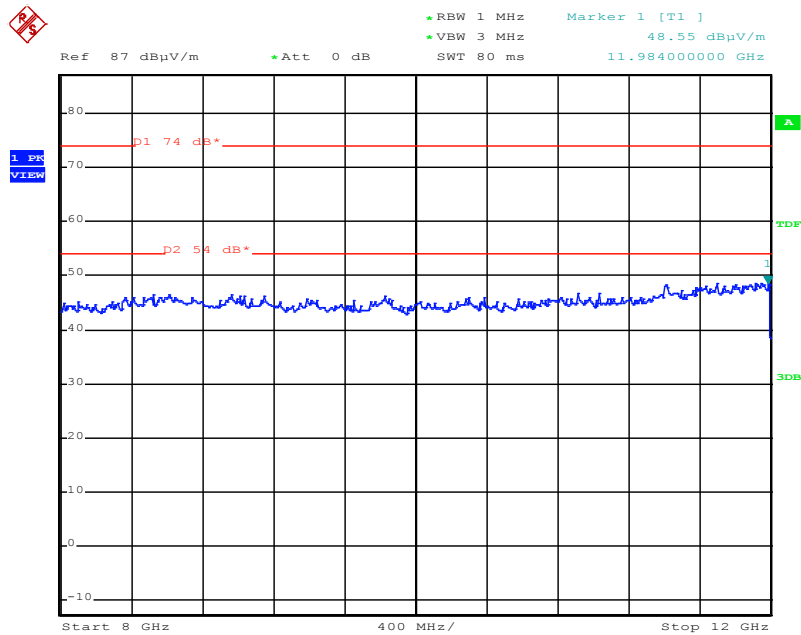
4 GHz – 8 GHz



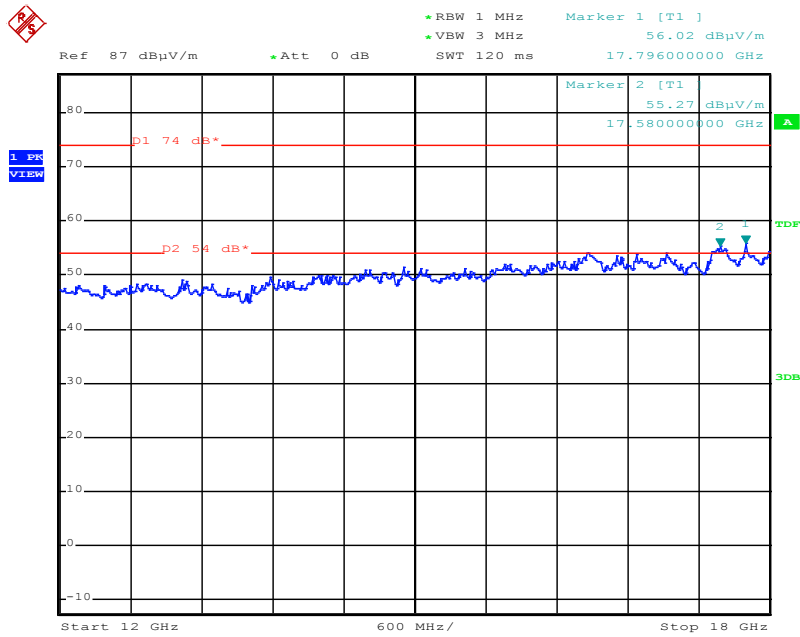
4 GHz – 8 GHz; AV



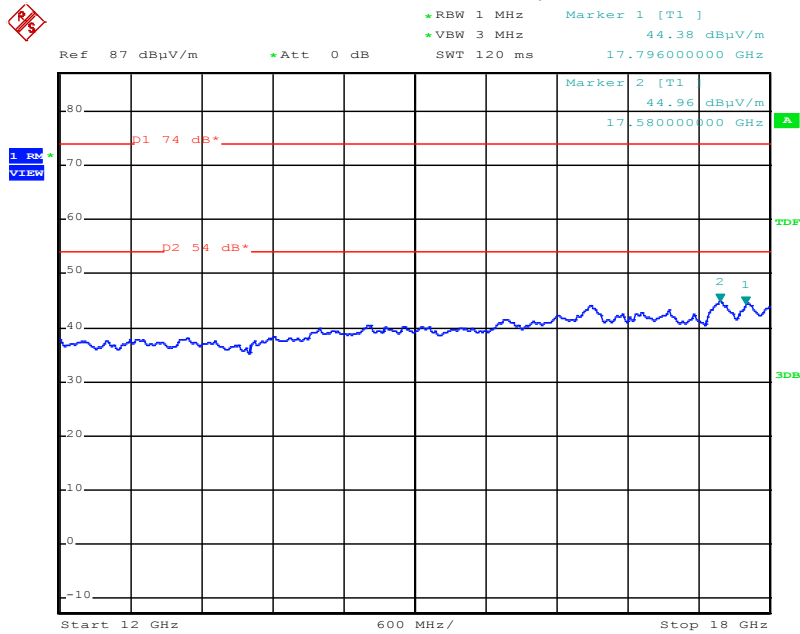
8 GHz – 12 GHz



12 GHz - 18 GHz

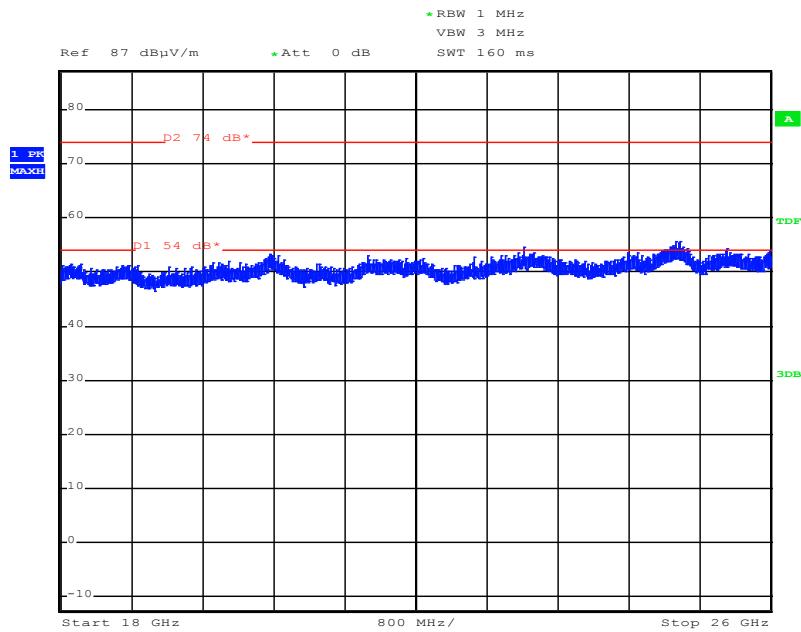


12 GHz - 18 GHz, AV

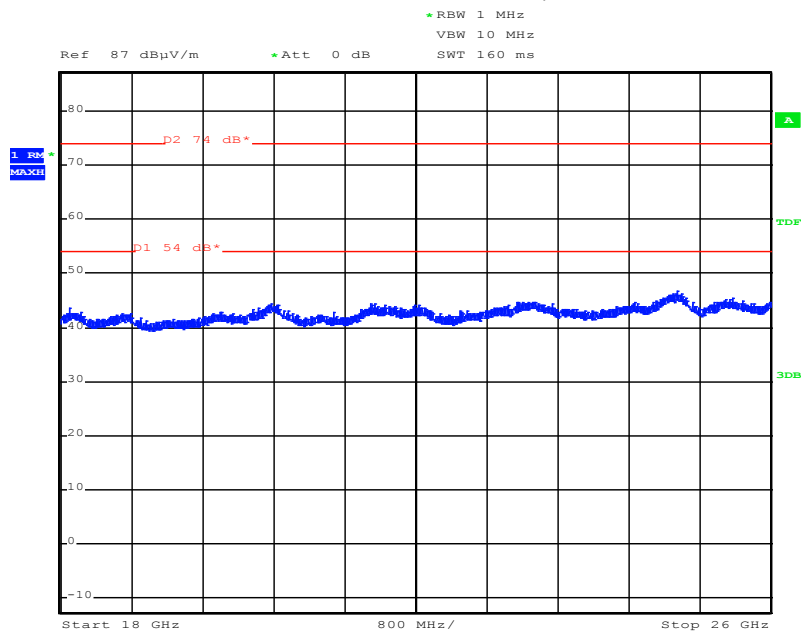


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

18 GHz – 26 GHz

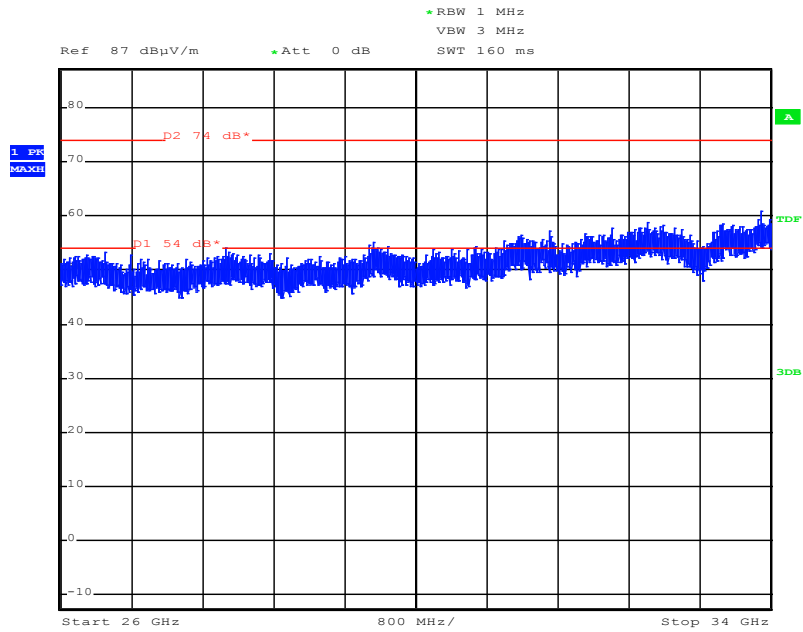


18 GHz – 26 GHz, AV

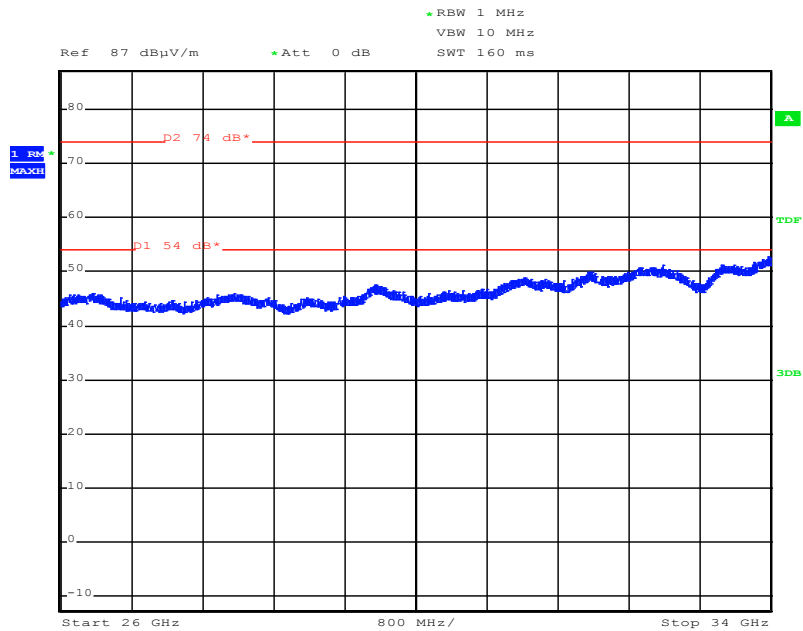


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

26 GHz – 34 GHz

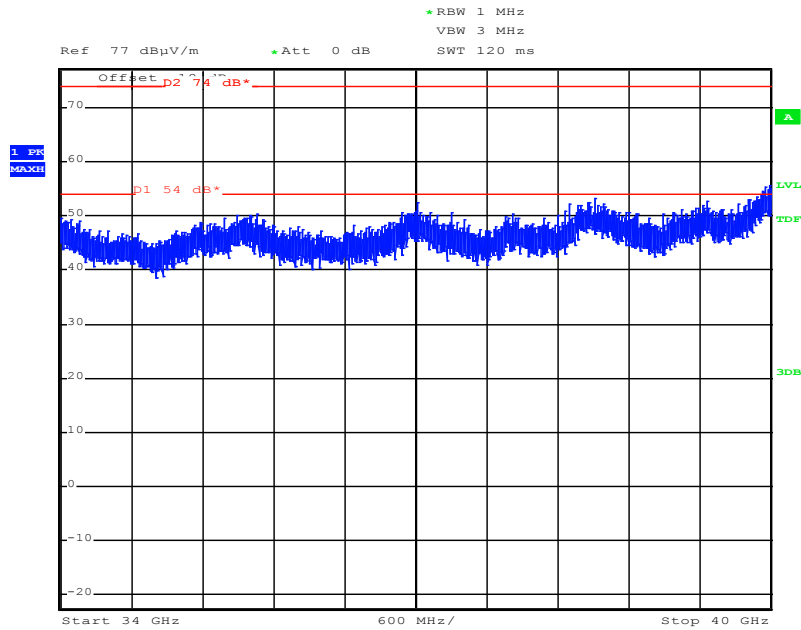


26 GHz – 34 GHz, AV

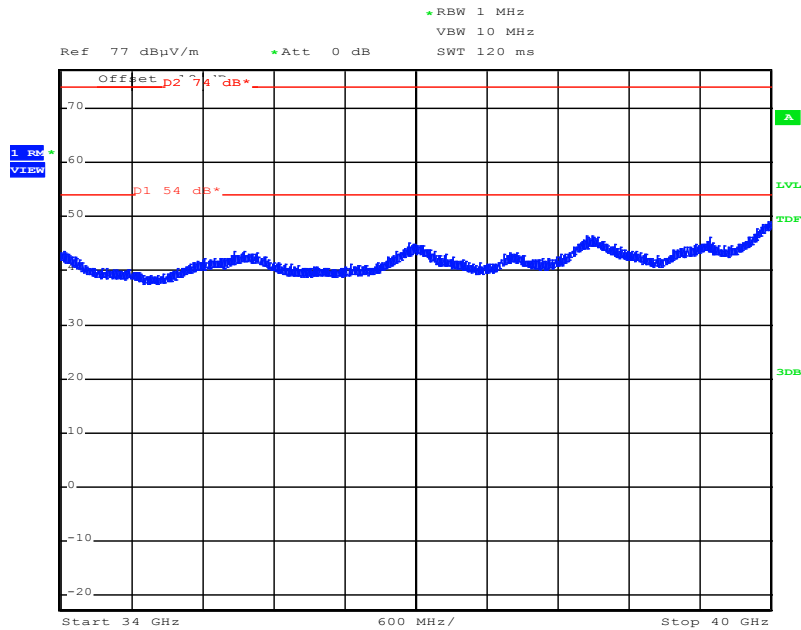


FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

34 GHz – 40 GHz

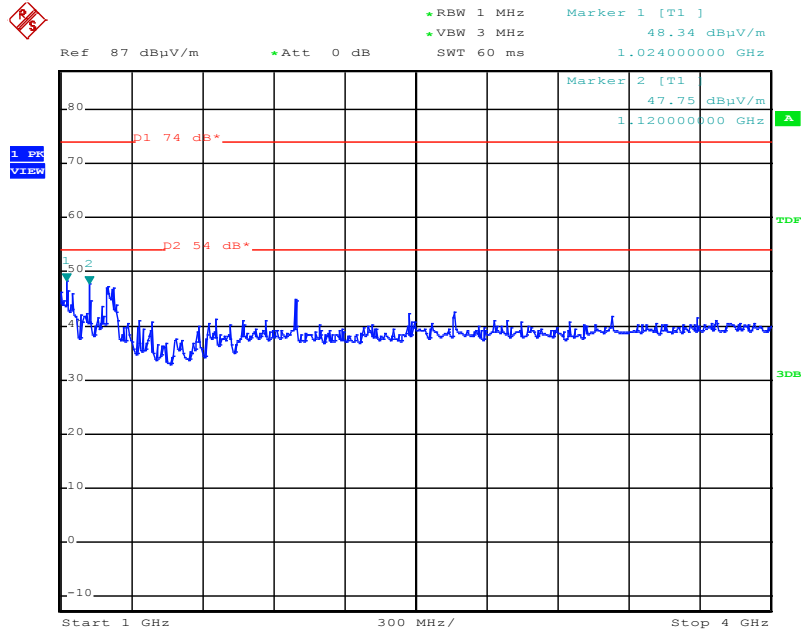


34 GHz – 40 GHz, AV

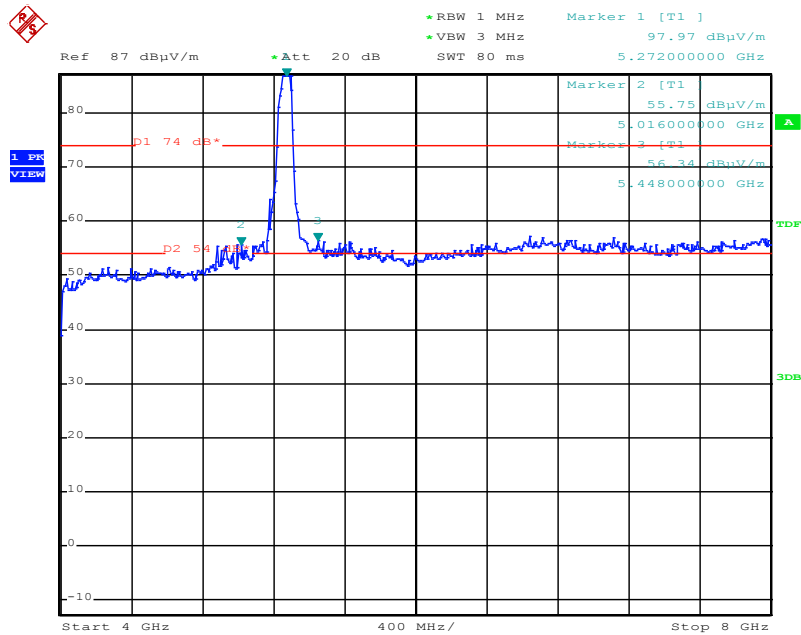


HT40, Channel 52up (5270 MHz)

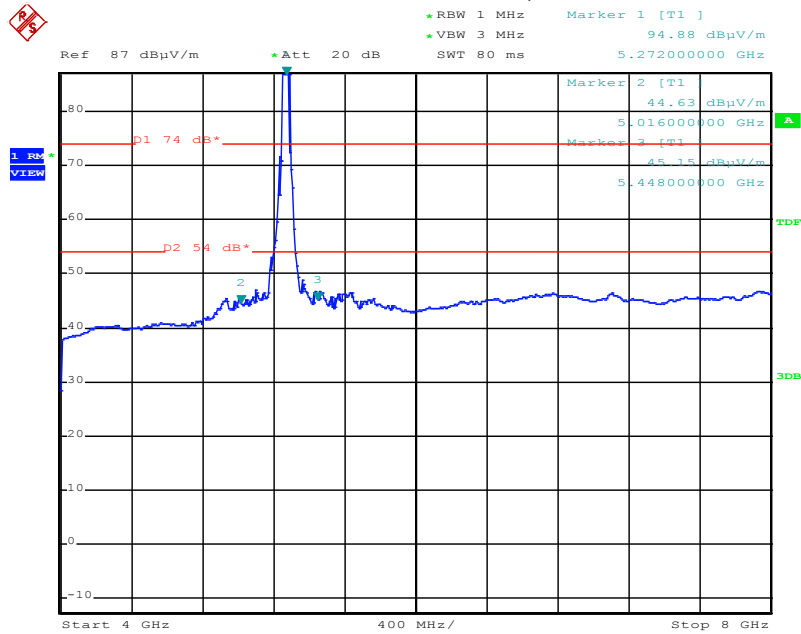
1 GHz – 4 GHz



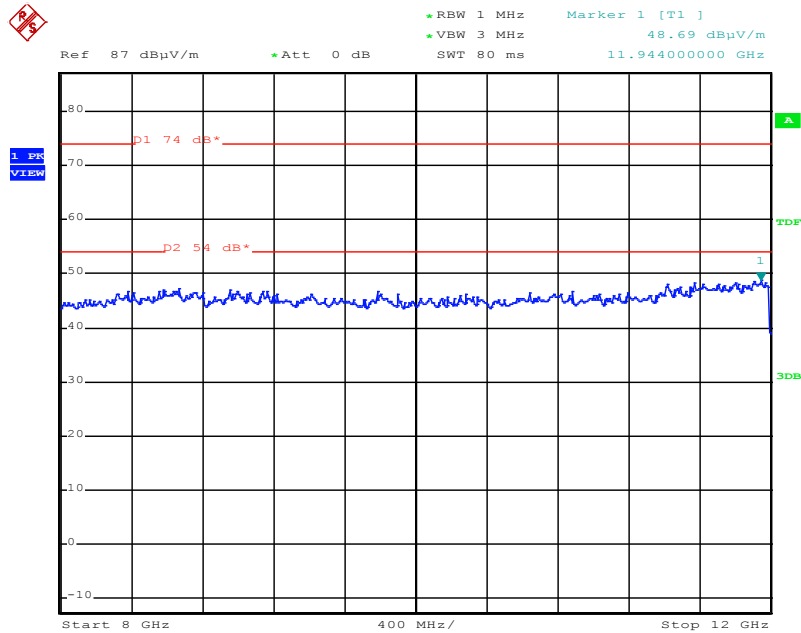
4 GHz – 8 GHz



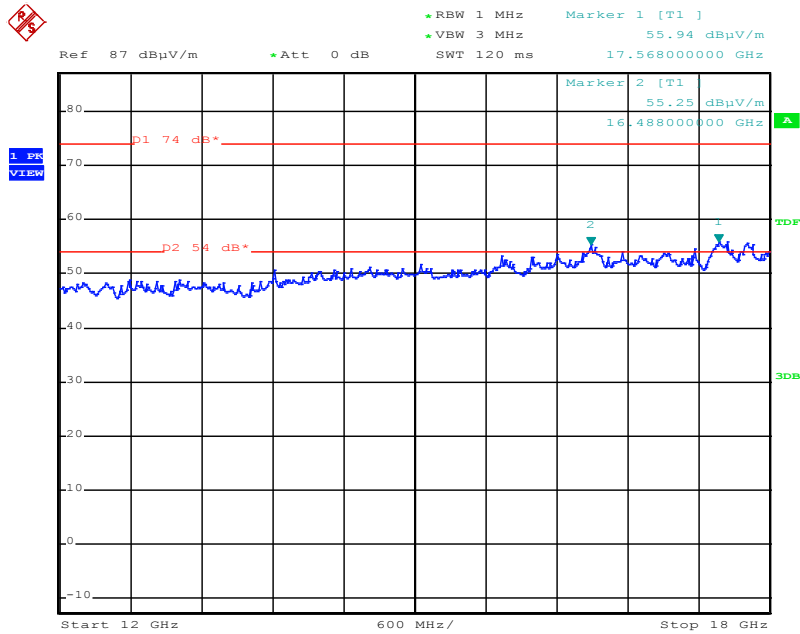
4 GHz – 8 GHz; AV



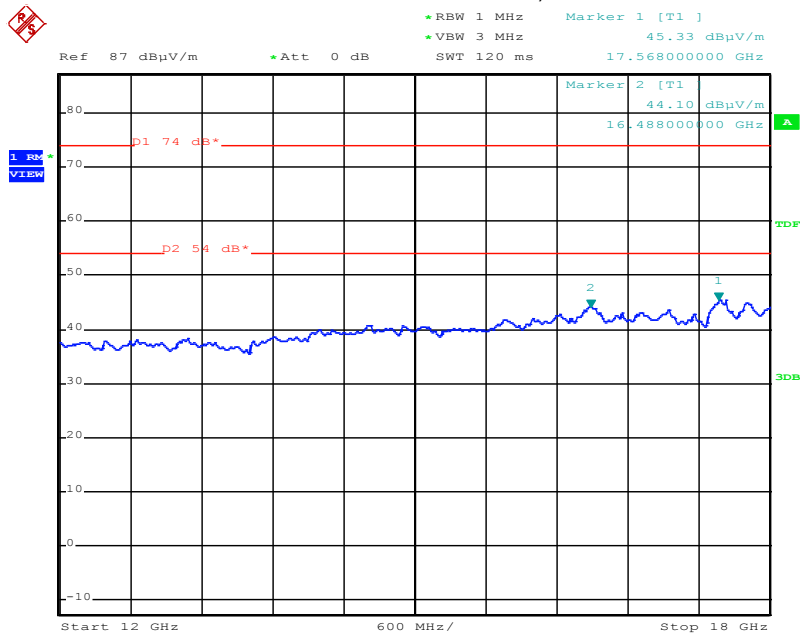
8 GHz – 12 GHz



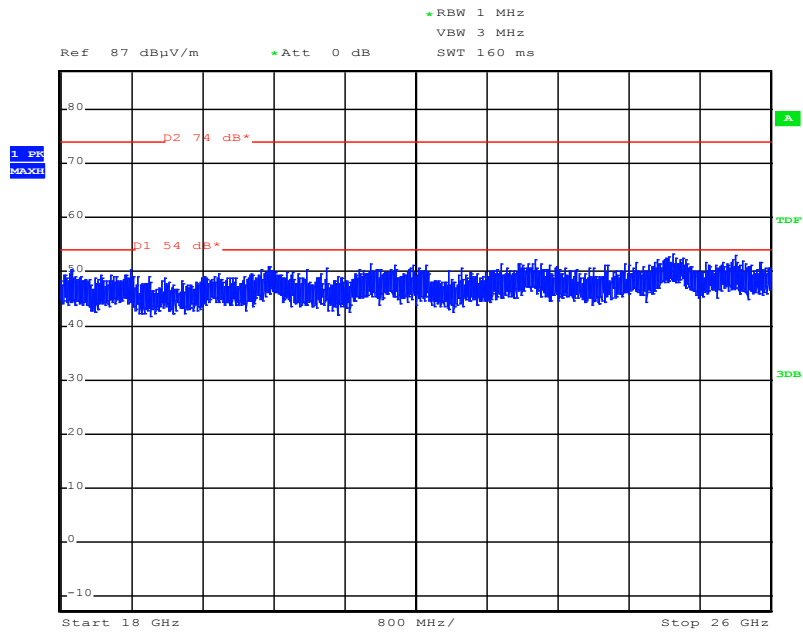
12 GHz - 18 GHz



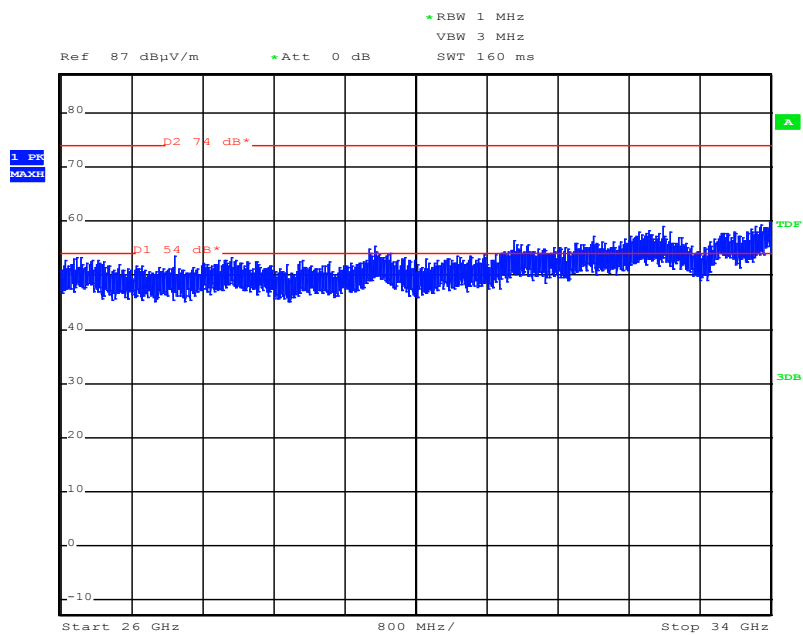
12 GHz - 18 GHz, AV



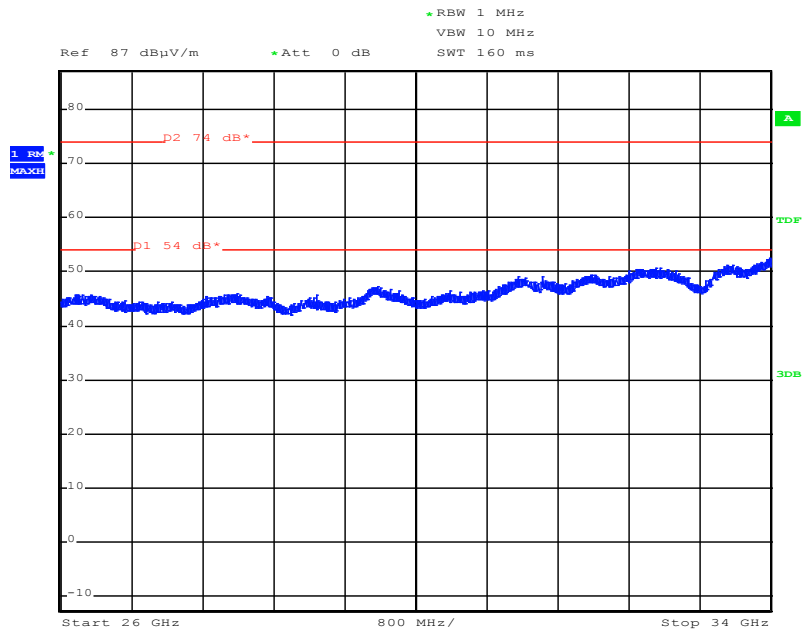
18 GHz – 26 GHz



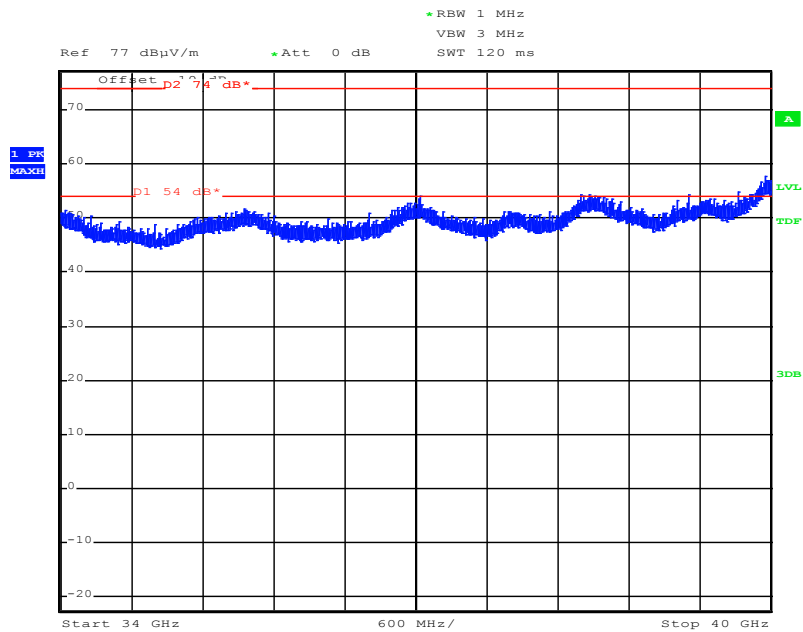
26 GHz – 34 GHz



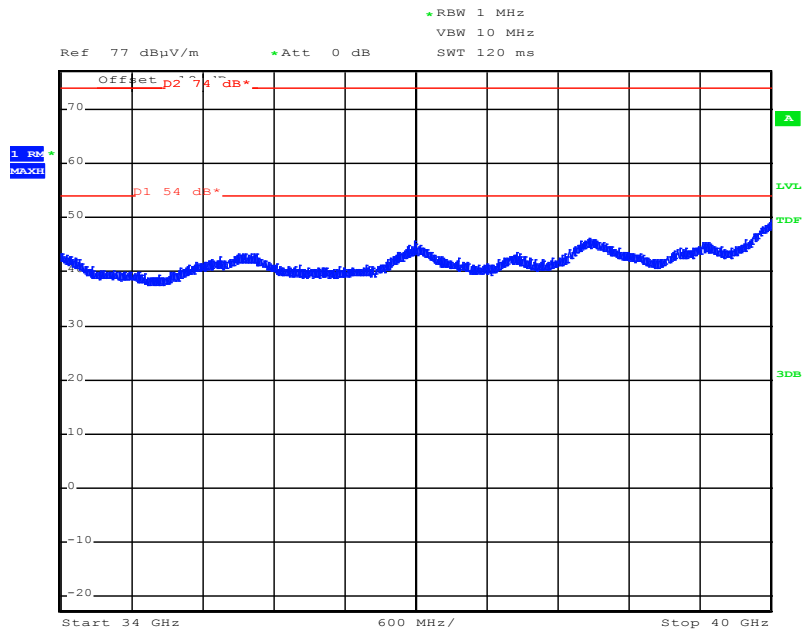
26 GHz – 34 GHz, AV



34 GHz – 40 GHz



34 GHz – 40 GHz, AV



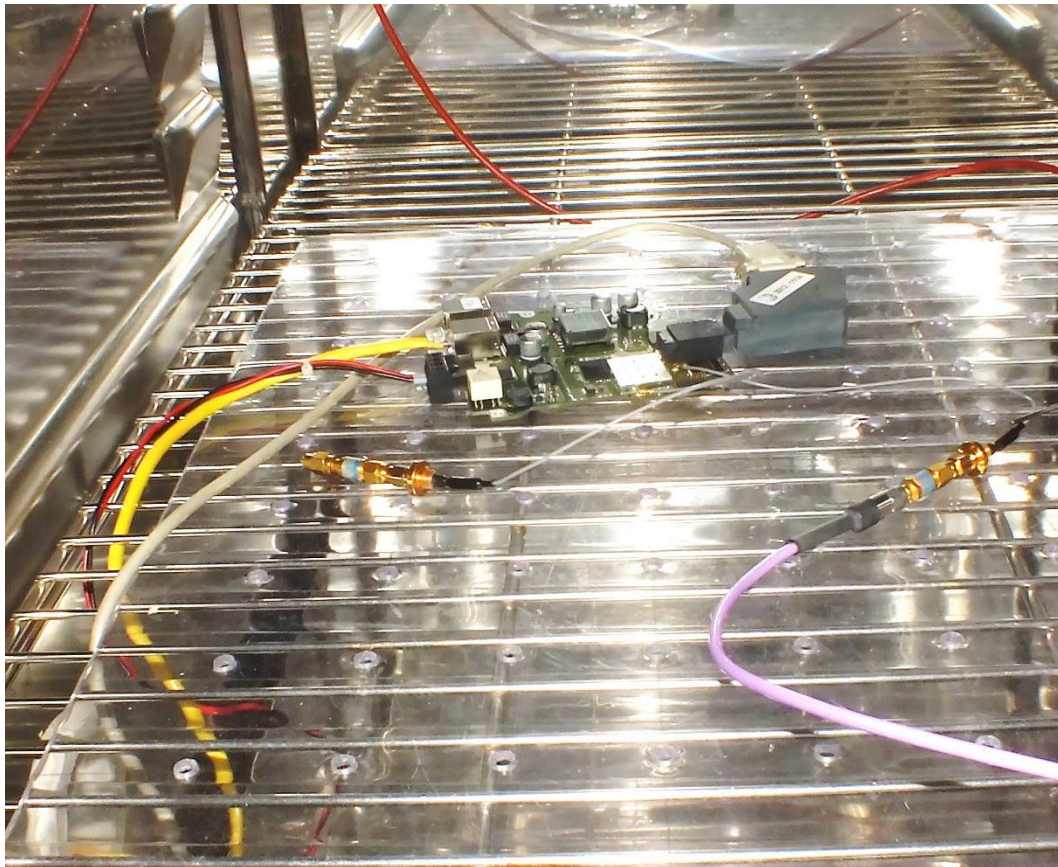
5.7 Frequency stability

For test instruments and accessories used see section 6 Part **MB**.

5.7.1 Description of the test location

Test location: AREA4

5.7.2 Photo documentation of the test setup



5.7.3 Applicable standard

According to FCC Part 15, Subpart E, Section 15.407 (g):

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.

5.7.4 Description of Measurement

This test is performed over variations in temperature and voltage. The lowest and the highest channel in the operating frequency bands are measured at the 20 dB bandwidth under following conditions:

1. Supply voltage from 100 VAC to 120 VAC at normal temperature
2. Extreme temperature from -40 °C to 70 °C at nominal voltage.

5.7.5 Test result
Frequency band 5250 – 5350 MHz:

802.11h, chain1

Test conditions		Test result			
		Frequency (MHz)			
T (-40°C)	V _{nom}	f _l	5251.963	f _h	5329.033
T (-30°C)	V _{nom}	f _l	5251.955	f _h	5329.025
T (-20°C)	V _{nom}	f _l	5251.949	f _h	5329.018
T (-10°C)	V _{nom}	f _l	5251.933	f _h	5329.011
T (0°C)	V _{nom}	f _l	5251.921	f _h	5328.399
T (10°C)	V _{nom}	f _l	5251.911	f _h	5328.393
T _{nom} (20°C)	V _{max}	f _l	5251.907	f _h	5328.382
	V _{min}	f _l	5251.907	f _h	5328.382
T (30°C)	V _{nom}	f _l	5251.903	f _h	5328.379
T (40°C)	V _{nom}	f _l	5251.905	f _h	5328.374
T (50°C)	V _{nom}	f _l	5251.908	f _h	5328.366
T (60°C)	V _{nom}	f _l	5251.916	f _h	5328.375
T (70°C)	V _{nom}	f _l	5251.931	f _h	5328.377
Measurement uncertainty		±1500 Hz			

Occupied spectrum envelope:

Measured frequency nearest f_l = 5251.903

Measured frequency nearest at the highest band edge: f_h = 5329.033

802.11n, HT20, chain1

Test conditions		Test result			
		Frequency (MHz)			
T (-40°C)	V _{nom}	f _l	5250.797	f _h	5329.040
T (-30°C)	V _{nom}	f _l	5250.789	f _h	5329.029
T (-20°C)	V _{nom}	f _l	5250.777	f _h	5329.012
T (-10°C)	V _{nom}	f _l	5250.751	f _h	5328.996
T (0°C)	V _{nom}	f _l	5250.744	f _h	5328.981
T (10°C)	V _{nom}	f _l	5250.736	f _h	5328.973
T _{nom} (20°C)	V _{max}	f _l	5250.723	f _h	5328.966
	V _{min}	f _l	5250.723	f _h	5328.966
T (30°C)	V _{nom}	f _l	5250.715	f _h	5328.985
T (40°C)	V _{nom}	f _l	5250.703	f _h	5328.990
T (50°C)	V _{nom}	f _l	5250.710	f _h	5329.030
T (60°C)	V _{nom}	f _l	5250.716	f _h	5329.077
T (70°C)	V _{nom}	f _l	5250.728	f _h	5329.126
Measurement uncertainty		±1500 Hz			

Occupied spectrum envelope:

Measured frequency nearest f_l = 5250.703

Measured frequency nearest at the highest band edge: f_h = 5329.077

802.11n, HT40, chain1

Test conditions		Test result			
		Frequency (MHz)			
T (-40°C)	V _{nom}	f _l	5250.895	f _h	5329.356
T (-30°C)	V _{nom}	f _l	5250.871	f _h	5329.375
T (-20°C)	V _{nom}	f _l	5250.859	f _h	5329.378
T (-10°C)	V _{nom}	f _l	5250.845	f _h	5329.383
T (0°C)	V _{nom}	f _l	5250.833	f _h	5329.391
T (10°C)	V _{nom}	f _l	5250.816	f _h	5329.395
T _{nom} (20°C)	V _{max}	f _l	5250.800	f _h	5329.415
	V _{min}	f _l	5250.800	f _h	5329.415
T (30°C)	V _{nom}	f _l	5250.786	f _h	5329.419
T (40°C)	V _{nom}	f _l	5250.771	f _h	5329.423
T (50°C)	V _{nom}	f _l	5250.791	f _h	5329.427
T (60°C)	V _{nom}	f _l	5250.812	f _h	5329.415
T (70°C)	V _{nom}	f _l	5250.823	f _h	5329.415
Measurement uncertainty		±1500 Hz			

Occupied spectrum envelope:

Measured frequency nearest : f_l = 5250.771

Measured frequency nearest at the highest band edge: f_h = 5329.427

Frequency band 5470 – 5725 MHz:

802.11h, chain1

Test conditions		Test result			
		Frequency (MHz)			
T (-40°C)	V _{nom}	f _l	5491.915	f _h	5708.370
T (-30°C)	V _{nom}	f _l	5491.902	f _h	5708.350
T (-20°C)	V _{nom}	f _l	5491.886	f _h	5708.330
T (-10°C)	V _{nom}	f _l	5491.871	f _h	5708.310
T (0°C)	V _{nom}	f _l	5491.868	f _h	5708.290
T (10°C)	V _{nom}	f _l	5491.863	f _h	5708.260
T _{nom} (20°C)	V _{max}	f _l	5491.850	f _h	5708.240
	V _{min}	f _l	5491.850	f _h	5708.240
T (30°C)	V _{nom}	f _l	5491.840	f _h	5708.260
T (40°C)	V _{nom}	f _l	5491.833	f _h	5708.290
T (50°C)	V _{nom}	f _l	5491.825	f _h	5708.320
T (60°C)	V _{nom}	f _l	5491.812	f _h	5708.380
T (70°C)	V _{nom}	f _l	5491.795	f _h	5709.407
Measurement uncertainty		±1500 Hz			

Occupied spectrum envelope:

Measured frequency nearest : f_l = 5491.812

Measured frequency nearest at the highest band edge: f_h = 5708.380

802.11n, HT20, chain1

Test conditions		Test result			
		Frequency (MHz)			
T (-40°C)	V _{nom}	f _l	5491.337	f _h	5708.985
T (-30°C)	V _{nom}	f _l	5491.321	f _h	5708.981
T (-20°C)	V _{nom}	f _l	5491.303	f _h	5708.978
T (-10°C)	V _{nom}	f _l	5491.299	f _h	5708.973
T (0°C)	V _{nom}	f _l	5491.295	f _h	5708.969
T (10°C)	V _{nom}	f _l	5491.291	f _h	5708.963
T _{nom} (20°C)	V _{max}	f _l	5491.290	f _h	5708.958
	V _{min}	f _l	5491.290	f _h	5708.958
T (30°C)	V _{nom}	f _l	5491.303	f _h	5708.969
T (40°C)	V _{nom}	f _l	5491.320	f _h	5708.982
T (50°C)	V _{nom}	f _l	5491.336	f _h	5708.991
T (60°C)	V _{nom}	f _l	5491.341	f _h	5709.010
T (70°C)	V _{nom}	f _l	5491.360	f _h	5709.030
Measurement uncertainty		±1500 Hz			

Occupied spectrum envelope:

Measured frequency nearest : f_l = 5491.290

Measured frequency nearest at the highest band edge: f_h = 5709.010

802.11n, HT40, chain1

Test conditions		Test result			
		Frequency (MHz)			
T (-40°C)	V _{nom}	f _l	5492.075	f _h	5688.165
T (-30°C)	V _{nom}	f _l	5492.066	f _h	5688.168
T (-20°C)	V _{nom}	f _l	5492.059	f _h	5688.169
T (-10°C)	V _{nom}	f _l	5492.051	f _h	5688.169
T (0°C)	V _{nom}	f _l	5492.042	f _h	5688.170
T (10°C)	V _{nom}	f _l	5492.035	f _h	5688.170
T _{nom} (20°C)	V _{max}	f _l	5492.020	f _h	5688.172
	V _{min}	f _l	5492.020	f _h	5688.172
T (30°C)	V _{nom}	f _l	5492.011	f _h	5688.175
T (40°C)	V _{nom}	f _l	5492.007	f _h	5688.181
T (50°C)	V _{nom}	f _l	5492.006	f _h	5688.185
T (60°C)	V _{nom}	f _l	5492.000	f _h	5688.189
T (70°C)	V _{nom}	f _l	5491.985	f _h	5688.195
Measurement uncertainty		±1500 Hz			

Occupied spectrum envelope:

Measured frequency nearest : f_l = 5492.000

Measured frequency nearest at the highest band edge: f_h = 5688.189

FCC ID: LYHMSN1V1 IC: 267AA-MSN1V1

According to FCC Part 15, Subpart E, Section 15.407 (g):

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.

Operating frequency range limit	
(MHz)	(MHz)
5250	5350
5470	5725

The requirements are **FULFILLED**.

Remarks:

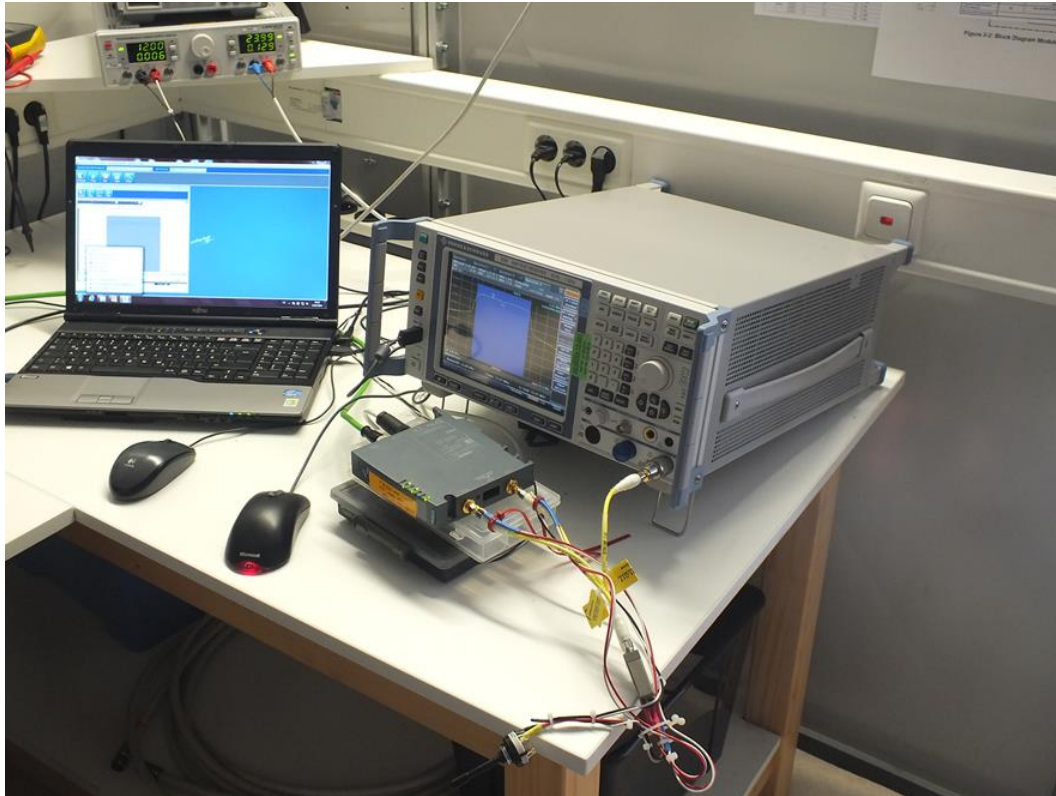
5.8 CDD functionality

For test instruments and accessories used see section 6 Part **CPC 3**.

5.8.1 Description of the test location

Test location: AREA 4

5.8.2 Photo documentation of the test set-up



5.8.3 Applicable standard

According to FCC KDB 662911 D01, accounting for directional and array gain.

5.8.4 Description of Measurement

5.8.5 Test result

Array gain:

The only correlated signal is sent in legacy mode. The spurious emission measurement is made radiated. Therefore it is accounted for the array gain.

Directional gain:

The directional gain calculation for in-band measurements:

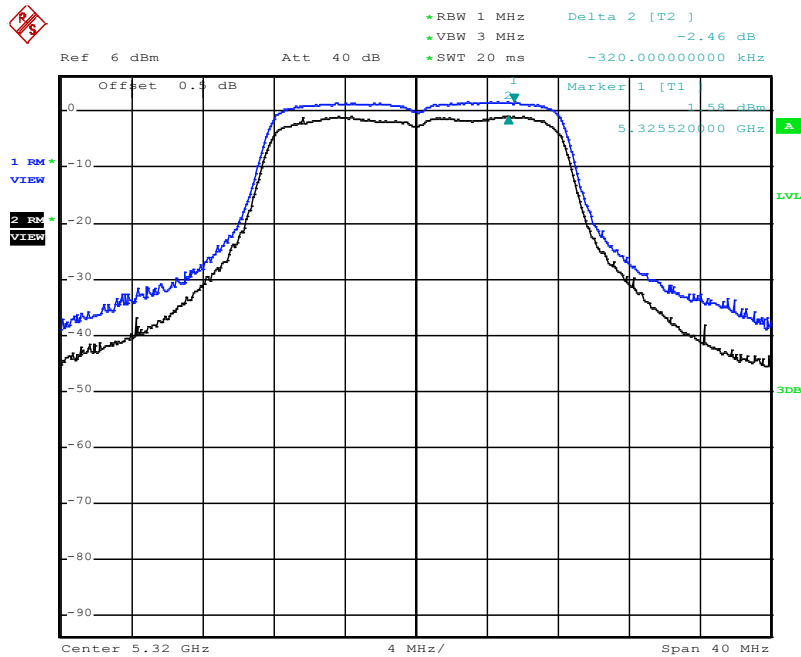
If any transmit signals are correlated with each other,

$$\text{Directional gain} = G_{\text{ANT}} + 10 \log (N_{\text{ANT}}) \text{ dBi};$$

If all transmit signals are completely uncorrelated with each other,
Directional gain = G_{ANT}

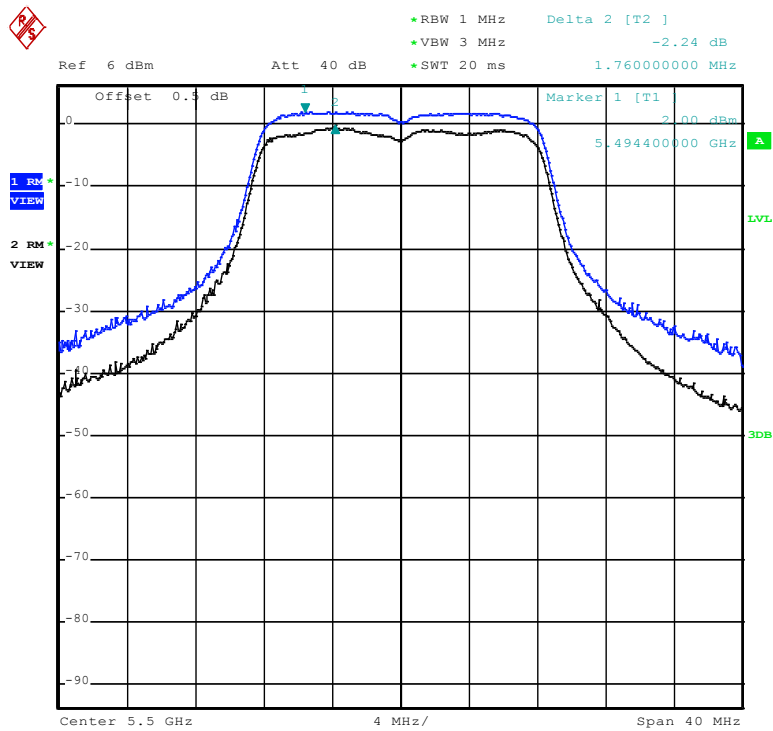
The directional gain appears when the transmission rate fall back from dual stream transmission to one stream or legacy mode. In this case the EUT reduce the output power 3 dB in order to be at the same as before.

802.11n, HT20, MCS15 ,(P14) , 1 chain to 2 chains
CH64



Trace1 (blue) MCS15, 1 Chain;
Trace2 (black) MCS15, 2 Chains;

802.11n, HT20, MCS15 (P14), 1 chain to 2 chains
CH100



Trace1 (blue) MCS15; 1 chain
Trace2 (black) MCS15; 2 chains

The requirements are **FULFILLED**.

Remarks:

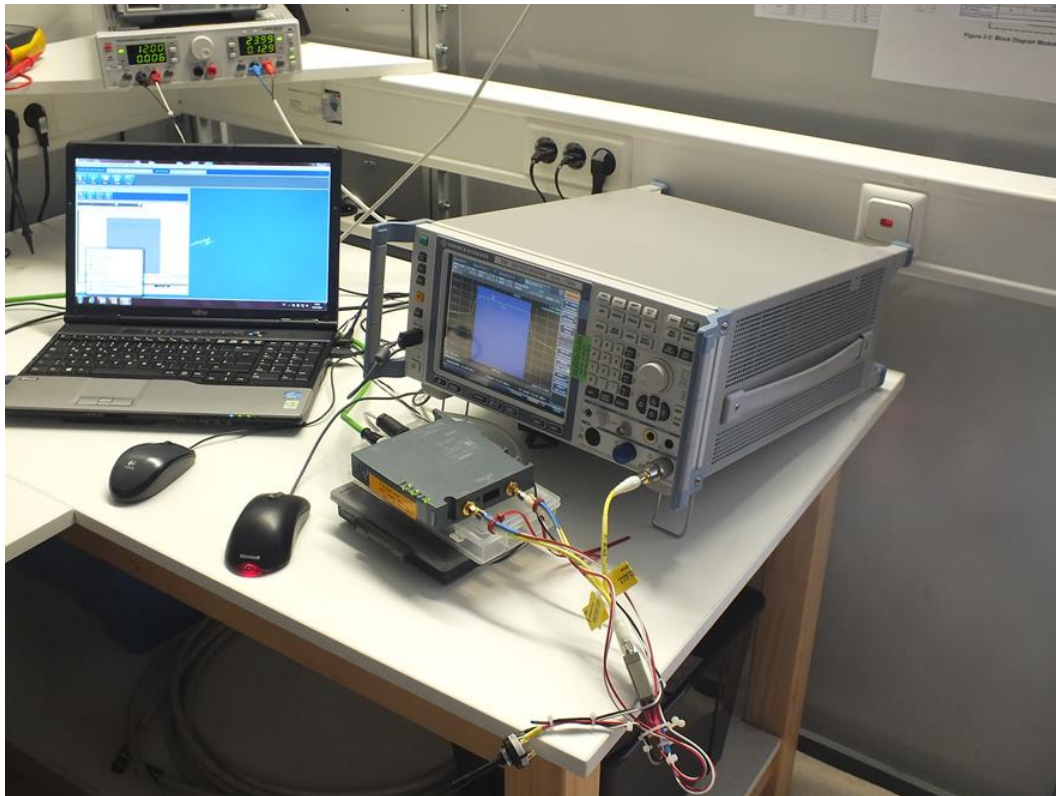
5.9 Maximum permissible exposure (MPE)

For test instruments and accessories used see section 6 Part **CPC 3**.

5.9.1 Description of the test location

Test location: AREA4

5.9.2 Photo documentation of the test set-up



5.9.3 Applicable standard

According to FCC Part 15, Section 15.407(f):

U-NII devices are subject to the radio frequency radiation exposure requirements specified in Section 1.1307(b), 2.1091 and 2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a “general population/uncontrolled” environment. The test methods used comply with ANSI/IEEE C95.1-2005, “IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”.

5.9.4 Description of Measurement

The maximum total power input to the antenna has been measured and conducted as described in clause 5.3 of this document. Through the Friis transmission formula, which is a far field assumption and the known maximum gain of the antenna, the maximum MPE at a defined distance away from the product, can be calculated.

Friis transmission formula:

$$P_d = \frac{P_{out} * G}{4 * \pi * r^2}$$

Where:

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna (linear scale)

r = distance between antenna and observation point (cm)

5.9.5 Test result

The EUT is defined as transmitting device designed to be used in fixed locations and is used in such a way that a separation distance is at least 20 cm is normally maintained between the transmitter's radiating structure and the body of the user or nearby persons. The following RF-Exposure is calculated for a distance $r = 20$ cm.

5.9.5.1 Gain group 1

Channel No.	Power setting	A1+A2 (dBm)	Antgain (dBi)	A (mW)	G linear	P (W)	S (mW/cm ²)	Limit S _{eq} (mW/cm ²)
52	P20	16.0	6.0	40.14	3.98	0.1598	0.0318	1.0
56	P20	15.9	6.0	39.18	3.98	0.1560	0.0310	1.0
64	P20	15.8	6.0	37.76	3.98	0.1503	0.0299	1.0
100	P20	15.0	6.0	31.84	3.98	0.1268	0.0252	1.0
116	P20	14.8	6.0	30.45	3.98	0.1212	0.0241	1.0
140	P20	14.5	6.0	28.37	3.98	0.1129	0.0225	1.0

Channel No.	Power setting	A1+A2 (dBm)	Antgain (dBi)	A (mW)	G linear	P (W)	S (mW/cm ²)	Limit S _{eq} (mW/cm ²)
52	P20	15.0	6.0	31.66	3.98	0.1260	0.0251	1.0
56	P20	15.4	6.0	34.47	3.98	0.1372	0.0273	1.0
64	P20	15.3	6.0	33.57	3.98	0.1336	0.0266	1.0
100	P20	14.3	6.0	26.61	3.98	0.1059	0.0211	1.0
116	P20	14.8	6.0	30.07	3.98	0.1197	0.0238	1.0
140	P20	13.9	6.0	24.51	3.98	0.0976	0.0194	1.0

Channel No.	Power setting	A1+A2 (dBm)	Antgain (dBi)	A (mW)	G linear	P (W)	S (mW/cm ²)	Limit S _{eq} (mW/cm ²)
52up	P20	16.5	6.0	44.33	3.98	0.1765	0.0351	1.0
60up	P20	15.0	6.0	31.75	3.98	0.1264	0.0251	1.0
100up	P20	16.2	6.0	41.42	3.98	0.1649	0.0328	1.0
108up	P20	16.2	6.0	41.62	3.98	0.1657	0.0330	1.0
132up	P20	14.2	6.0	26.19	3.98	0.1042	0.0207	1.0

5.9.5.2 Gain group 2

Channel	Power	A1+A2	Antgain	A	G	P	S	Limit S _{eq}
No.	setting	(dBm)	(dBi)	(mW)	linear	(W)	(mW/cm ²)	(mW/cm ²)
52	P17	13.5	9.0	22.37	7.94	0.1777	0.0353	1.0
56	P17	14.1	9.0	25.89	7.94	0.2056	0.0409	1.0
64	P17	13.6	9.0	22.78	7.94	0.1810	0.0360	1.0
100	P17	14.2	9.0	26.14	7.94	0.2076	0.0413	1.0
116	P17	13.3	9.0	21.47	7.94	0.1706	0.0339	1.0
140	P17	12.7	9.0	18.78	7.94	0.1492	0.0297	1.0

Channel	Power	A1+A2	Antgain	A	G	P	S	Limit S _{eq}
No.	setting	(dBm)	(dBi)	(mW)	linear	(W)	(mW/cm ²)	(mW/cm ²)
52	P17	14.4	9.0	27.55	7.94	0.2188	0.0435	1.0
56	P17	14.6	9.0	28.92	7.94	0.2297	0.0457	1.0
64	P17	13.5	9.0	22.17	7.94	0.1761	0.0350	1.0
100	P17	13.9	9.0	24.27	7.94	0.1928	0.0384	1.0
116	P17	13.8	9.0	24.26	7.94	0.1927	0.0383	1.0
140	P17	12.9	9.0	19.50	7.94	0.1549	0.0308	1.0

Channel	Power	A1+A2	Antgain	A	G	P	S	Limit S _{eq}
No.	setting	(dBm)	(dBi)	(mW)	linear	(W)	(mW/cm ²)	(mW/cm ²)
52up	P17	15.4	9.0	34.84	7.94	0.2768	0.0551	1.0
60up	P17	13.8	9.0	24.03	7.94	0.1908	0.0380	1.0
100up	P17	13.7	9.0	23.69	7.94	0.1882	0.0374	1.0
108up	P17	11.3	9.0	13.48	7.94	0.1071	0.0213	1.0
132up	P17	11.0	9.0	12.64	7.94	0.1004	0.0200	1.0

5.9.5.3 Gain group 3

Channel	Power	A1+A2	Antgain	A	G	P	S	Limit S _{eq}
No.	setting	(dBm)	(dBi)	(mW)	linear	(W)	(mW/cm ²)	(mW/cm ²)
52	P14	10.7	14.2	11.87	26.30	0.3123	0.0621	1.0
56	P14	11.3	14.2	13.47	26.30	0.3544	0.0705	1.0
64	P14	10.6	14.2	11.47	26.30	0.3018	0.0600	1.0
100	P14	11.5	14.2	14.27	26.30	0.3753	0.0747	1.0
116	P14	10.8	14.2	12.01	26.30	0.3158	0.0628	1.0
140	P14	10.2	14.2	10.51	26.30	0.2764	0.0550	1.0

Channel	Power	A1+A2	Antgain	A	G	P	S	Limit S _{eq}
No.	setting	(dBm)	(dBi)	(mW)	linear	(W)	(mW/cm ²)	(mW/cm ²)
52	P14	11.9	14.2	15.64	26.30	0.4115	0.0819	1.0
56	P14	11.8	14.2	15.30	26.30	0.4024	0.0801	1.0
64	P14	10.6	14.2	11.52	26.30	0.3030	0.0603	1.0
100	P14	11.3	14.2	13.52	26.30	0.3557	0.0708	1.0
116	P14	10.8	14.2	11.92	26.30	0.3135	0.0624	1.0
140	P14	10.1	14.2	10.19	26.30	0.2680	0.0533	1.0

Channel No.	Power setting	A1+A2 (dBm)	Antgain (dBi)	A (mW)	G linear	P (W)	S (mW/cm ²)	Limit S _{eq} (mW/cm ²)
52up	P14	12.1	14.2	16.28	26.30	0.4282	0.0852	1.0
60up	P14	10.8	14.2	11.93	26.30	0.3139	0.0624	1.0
100up	P14	11.8	14.2	15.18	26.30	0.3993	0.0794	1.0
108up	P14	11.3	14.2	13.48	26.30	0.3546	0.0705	1.0
132up	P14	11.0	14.2	12.64	26.30	0.3325	0.0661	1.0

Limits for maximum permissible exposure (MPE):

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(B) Limits for General Population / Uncontrolled Exposure				
0.3 – 3.0	614	1.63	100	30
3.0 – 30	824/f	2.19/f	180/ f ²	30
30 - 300	27.5	0.073	0.2	30
300-1500	---	---	f/1500	30
1500-100000	---	---	1.0	30

f = Frequency (MHz)

The requirements are **FULFILLED**.

Remarks: This test report shows the compliance with the limits for maximum permissible exposure (MPE) specified in FCC 1.1310 and the criteria to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in FCC 1.1307(b).

5.10 Co-location and Co-transmission

Applicable standard:

OET Bulletin 65, Edition 97-01, Section 2: Multiple-transmitter sites and complex environments

The MPE limits of FCC vary with frequency. Therefore, in mixed or broadband RF fields where several sources and frequencies are involved, the fraction of the recommended limit (in terms of power density or square of the electric or magnetic field strength) incurred within each frequency interval should be determined, and the sum of all fractional contributions should not exceed 1.0, or 100 % in terms of percentage.

There is no co-location issue the EUT provides with 2 TX streams simultaneously and use MIMO technique which is taken into consideration.

The requirements are **FULFILLED**.

Remarks:

5.11 Antenna application

5.11.1 Applicable standard

According to FCC Part 15C, Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit that broken antennas can be replaced by the user, but the use of a standard antenna jack is prohibited.

The EUT use the listed antennas for MIMO technique. The equipment connector is subject to the end product.

5.11.2 Antenna requirements

According to FCC Part 15E, Section 15.407(a):

The conducted output power limit specified in paragraph (a) of 15.407 is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from intentional radiator shall be reduced below the stated values in paragraph (a)(1), (a)(2) and (a)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds the effective value.

5.11.3 Defacto EIRP-Limit:

For the output power reduction of the used antennas see the following table. The limit is calculated as using following formula, $P_{out} = 30 - (G_x - 6)$;

Ant. group 3 antennas with max 9 to 14 dBi gain:

Antenna	G _x	Cond. limit	max. G	A [P14]	Limit P _{out}	Reduction
	(dBi)	(dBm)	(dBi)	(dBm)	(dBm)	(dB)
ANT793-8DK	14.2	24.0	6.0	12.0	15.8	-3.8
ANT793-8DJ	13.6	24.0	6.0	12.0	16.4	-4.4

Ant. group 2 antennas with max 6 to 9 dBi gain:

Antenna	Gx	Cond. limit	max. G	A [P17]	Limit P _{out}	Reduction
	(dBi)	(dBm)	(dBi)	(dBm)	(dBm)	(dB)
ANT793-6DT	9.0	24.0	6.0	14.9	21.0	-6.1
ANT793-6DG	9.0	24.0	6.0	14.9	21.0	-6.1
ANT795-6DC	9.0	24.0	6.0	14.9	21.0	-6.1
ANT795-6MN	8.0	24.0	6.0	14.9	22.0	-7.1
ANT795-6MT	7.0	24.0	6.0	14.9	23.0	-8.1

Ant. group 1 antennas with max 0 to 6 dBi gain:

Antenna	Gx	Cond. limit	max. G	A [P20]	Limit P _{out}	Reduction
	(dBi)	(dBm)	(dBi)	(dBm)	(dBm)	(dB)
ANT793-4MN	6.0	24.0	6.0	16.2	24.0	-7.8
ANT793-6MN	5.0	24.0	6.0	16.2	25.0	-8.8
ANT795-4MC	5.0	24.0	6.0	16.2	25.0	-8.8
ANT795-4MD	5.0	24.0	6.0	16.2	25.0	-8.8
ANT795-4MA	5.0	24.0	6.0	16.2	25.0	-8.8
A5E002280427-06	5.0	24.0	6.0	16.2	25.0	-8.8
Rcoax 5G	0.0	24.0	6.0	16.2	30.0	-13.8

Remarks: No power reduction results using the listed antennas in combination with the mentioned power setting.

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
A 4	ESHS 30	02-02/03-05-002	16/07/2014	16/07/2013		
	ESH 2 - Z 5	02-02/20-05-004	18/10/2014	18/10/2013		
	KEMA 801	02-02/22-05-016				
	N-4000-BNC	02-02/50-05-138				
	N-1500-N	02-02/50-05-140				
	ESH 3 - Z 2	02-02/50-05-155	05/04/2014	05/04/2013		
	SP 103 /3.5-60	02-02/50-05-182				
CPC 3	FSP 40	02-02/11-11-001	30/09/2014	30/09/2013		
	HM8143	02-02/50-10-016				
	KMS102-0,2 m	02-02/50-11-016				
	KMS102-0,2 m	02-02/50-11-017				
	KMS102-0,2 m	02-02/50-11-018				
MB	FSP 40	02-02/11-11-001	30/09/2014	30/09/2013		
	WK-340/40	02-02/45-05-001	31/05/2014	31/05/2013		
	HM8143	02-02/50-10-016				
	KMS102-0,2 m	02-02/50-11-016				
	KMS102-0,2 m	02-02/50-11-017				
	KMS102-0,2 m	02-02/50-11-018				
SER 1	FMZB 1516	01-02/24-01-018	14/02/2014	14/02/2013		
	ESCI	02-02/03-05-005	03/12/2014	03/12/2013		
	S10162-B	02-02/50-05-031				
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
	VLP-1602 PRO	02-02/50-10-015				
SER 2	ESVS 30	02-02/03-05-006	28/06/2014	28/06/2013		
	VULB 9168	02-02/24-05-005	11/04/2014	11/04/2013		
	S10162-B	02-02/50-05-031				
	NW-2000-NB	02-02/50-05-113				
	VLP-1602 PRO	02-02/50-10-015				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
SER 3	FSP 40	02-02/11-11-001	30/09/2014	30/09/2013		
	AMF-4F-04001200-15-10P	02-02/17-05-004				
	AFS5-12001800-18-10P-6	02-02/17-06-002				
	3117	02-02/24-05-009	04/04/2014	04/04/2013		
	R1 _ 18 - 40 GHz	02-02/30-09-002			08/01/2015	08/01/2014
	Sucoflex N-1000-SMA	02-02/50-05-072				
	Sucoflex N-1600-SMA	02-02/50-05-073				
	Sucoflex N-2000-SMA	02-02/50-05-075				
	VLP-1602 PRO	02-02/50-10-015				