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Limited Test report

351606-1R2TRFWL

Date of issue: June 25, 2018

Applicant:

Alcatel Lucent

Product:

MPT-HLC Point-to-Point Microwave Radio

Model: 3DB19060AB Model variant: 3DB19060AA

FCC ID: JF6-9558L-D, JF6-9558L IC Registration number: 6933B-9558L-D, 6933B-9558L

Specifications:

- FCC 47 CFR Part 15 Subpart E, §15.407 – partial (§15.407(b)(4) requirements only)
  Unlicensed National Information Infrastructure Devises
- RSS-247, Issue 2, Section 6, February 2017- partial (Sec. 6.2.4(2) requirements only)
  Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Test location

Company name:	Nemko USA Inc.
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Province:	California
Postal code:	92008
Country:	USA
Telephone:	+1 760 444 3500
Website:	www.nemko.com
FCC Site Number	Test Firm Registration Number: 392943 Designation Number: US5058
ISED Test Site	2040B-3

Tested by:	Nikolay Shtin, Senior Wireless Engineer
Reviewed by:	Juan Manuel Gonzalez, EMC & Wireless Business Development Manager
Date:	June 25, 2018
Signature:	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA's ISO/IEC 17025 accreditation.

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Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Alcatel Lucent
Address	3400 West Plano Parkway
City	Plano
Province/State	Texas
Postal/Zip code	75075
Country	U.S.A.

1.2 Test specifications

FCC 47 CFR Part 15, Subpart E, Clause 15.407	Unlicensed National Information Infrastructure Devises
RSS-247, Issue 2	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

1.3 Test methods

789033 D02 General UNII Test Procedures New Rules v02r01 (December 14, 2017)	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

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

See “Summary of test results” for full details.

1.5 Exclusions

None

1.6 Test report revision history

Revision #	Details of changes made to test report
1TRF	Original report issued
1R1TRF	Rev 1: Added section with calculated PSD / Rules updated in page 13/added Notes to Frequency stability/revised 99%OBW
1R2TRF	Rev 2: Added notes in section 8.2.4 to clarify the use of a 42.5dBi Antenna gain (EIRP Measurements)

Section 2. Summary of test results

2.1 FCC Part 15 Subpart C, general requirements test results

Part	Test description	Verdict
§15.31(e)	Variation of power source	Pass[1]
§15.203	Antenna requirement	Pass[2]

Notes: [1]Measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, was performed with the supply voltage varied between 85 % and 115 % of the nominal rated supply voltage. No noticeable output power variation was observed

[2]The EUT uses external antenna that will be professionally installed by the manufacturer or other responsible party.

2.2 FCC Part 15 Subpart E, test results

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

Notes: [1]Results from previous testing of the EUT according to FCC Part 15.247 apply. See Test Report: 2015 279131 FCC 15247 issued on 03-12-2015 by Nemko USA, Inc.

[2]DFS and TPC requirements are only applicable to 5.25–5.35 GHz and 5.47–5.725 GHz bands

[3] Calculated from Test Report: 2015 279131 FCC 15247 issued on 03-12-2015 by Nemko USA, Inc. using rules from KDB 789033 (3)(F)(5)

[4] Per customer declaration this test was performed under the exact same device and reported data under section 3.8 should be representative (report 3DB19060AAAAQZZZA section 2.8).

2.3 RSS-Gen, Issue 4, test results

Part	Test description	Verdict
6.6[5]	Occupied Bandwidth	Not tested
7.1.2[2]	Receiver radiated emission limits	Not applicable
7.1.3[2]	Receiver conducted emission limits	Not applicable
8.8[1]	Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus	Not tested
8.11[4]	Frequency stability	Not applicable

Notes: [1]Results from previous testing of the EUT according to FCC Part 15.247 apply. See Test Report: 2015 279131 FCC 15247 issued on 03-12-2015 by Nemko USA, Inc.

[2]According to sections 5.2 and 5.3 of RSS-Gen, Issue 4: if EUT does not have a stand-alone receiver neither scanner receiver, then its exempt from receiver requirements.

[3]According to section 8.11 of RSS-Gen, Issue 4: if the frequency stability of the licence-exempt radio apparatus is not specified in the applicable standard (RSS), measurement of the frequency stability is not required.

[4] Per customer declaration this test was performed under the exact same device and reported data under section 3.8 should be representative (report 3DB19060AAAAQZZZA section 2.8).

[5] Per customer declaration this test was performed under the exact same device and reported data under section 2.12 should be representative (report 3DB19060AAAAQZZZA section 2.12 QAM4 30MHz L6 GHz MPT-HL V2 30 MHz Profiles in FCM mode.)

2.4 IC RSS-247, Issue 2, test results

Section	Test description	Verdict
6.1 (1)[1]	Types of Modulation	Pass
6.2.1 (1)	Power limits for 5150–5250 MHz band	Not applicable
6.2.2 (1)	Power limits for 5250–5350 MHz band	Not applicable
6.2.3 (1)	Power limits for 5470–5600 MHz and 5650–5725 MHz bands	Not applicable
6.2.4 (1)[2]	Power limits for 5725–5850 MHz band	Not tested
6.2.4 (1)[2]	Minimum 6 dB bandwidth	Not tested
6.2.1 (2)	Unwanted emission limits for 5150–5250 MHz band	Not applicable
6.2.2 (2)	Unwanted emission limits for 5250–5350 MHz band	Not applicable
6.2.2 (2)	TPC requirements for devices with a maximum e.i.r.p. greater than 500 mW	Not applicable
6.2.2 (3)	e.i.r.p. at different elevations restrictions for 5250–5350 MHz band	Not applicable
6.2.3 (2)	Unwanted emission limits for 5470–5600 MHz and 5650–5725 MHz bands	Not applicable
6.2.4 (2)	Unwanted emission limits for 5725–5850 MHz band	Pass
6.3	Dynamic Frequency Selection (DFS) for devices operating in the bands 5250–5350 MHz, 5470–5600 MHz and 5650–5725 MHz	Not applicable

Notes: [1]The EUT employs digital modulations M-QAM.

[2]Results from previous testing of the EUT according to FCC Part 15.247 apply. See Test Report: 2015 279131 FCC 15247 issued on 03-12-2015 by Nemko USA, Inc.

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	April 11, 2018
Nemko sample ID number	N/A

3.2 EUT information

Product name	MPT-HLC
Model	3DB19060AB
Model variant	3DB19060AA
Serial number	BS1505UW0G3, BS1438UW0E6

3.3 Technical information

Applicant IC company number	6933B
IC UPN number	
All used IC test site(s) Reg. number	2040B-3
RSS number and Issue number	RSS-247 Issue 2, May 2017
Frequency band	5725–5850 MHz
Frequency Min (MHz)	5731 MHz
Frequency Max (MHz)	5844 MHz
RF power Min (W), Conducted/ERP/EIRP	N/A
RF power Max (W), Conducted/ERP/EIRP	0.918 W (29.63 dBm)
Field strength, Units @ distance	N/A
Measured BW (MHz) (99%) [1]	28.04
Calculated BW (kHz), as per TRC-43	N/A
Type of modulation	M-QAM
Emission classification (F1D, G1D, D1D)	W7D
Transmitter spurious, Units @ distance	N/A
Power requirements	20-60 VDC
Antenna information	The EUT uses unique external antenna that is professionally installed. All the antenna options are shown in the table 6-J below.

[1] Per customer declaration this test was performed under the exact same device and reported data under section 2.12 should be representative (report 3DB19060AAAAQZZZA section 2.12 QAM4 30MHz L6 GHz MPT-HL V2 30 MHz Profiles in FCM mode.)

Table 6-J. 5.8 GHz unlicensed antenna options

PARABOLIC	FLAT
MPT-HL/9558HC	**MPT-HL/9558HC**
2 ft parabolic – 29 dB/6°	1 ft flat panel – 23 dB/9°
4 ft parabolic – 35 dB/3°	2 ft flat panel – 28 dB/3.5°
6 ft parabolic – 38 dB/2°	—
8 ft parabolic – 41 dB/1.5°	—
10 ft parabolic – 42.5 dB/1.2°	—

3.4 Product description and theory of operation

EUT is a Alcatel Lucent Point-to-Point Microwave Radio which is a part of the Alcatel-Lucent 9500 Microwave Packet Radio (MPR) platform enabling the smooth transformation of transport networks from circuit to IP backhaul, thus seamlessly transporting TDM, ATM, IP and Ethernet over a Carrier Ethernet infrastructure.

3.5 EUT exercise details

EUT is configured via TCP/IP (Ethernet) using Nokia Wavence Web Interface. Once ethernet connection with the EUT is established, corresponding Radio settings were selected to set the EUT in continues transmission mode using channel, modulation and bandwidth.

3.6 EUT setup diagram

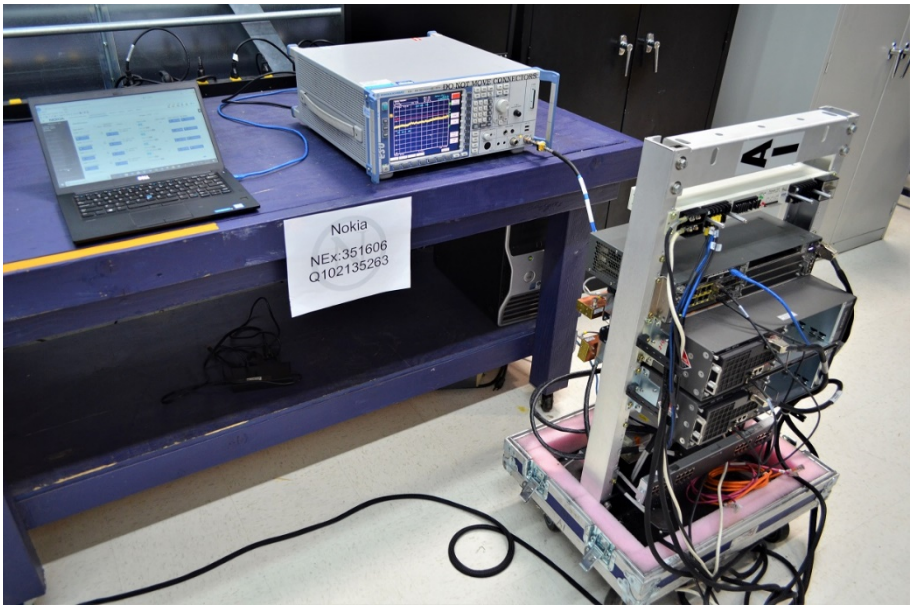

Figure 3.6-1: Setup diagram

3.7 EUT sub assemblies and support equipment

Table 3.7-1: EUT sub assemblies

Description	Brand name	Model/Part number	Serial number
Point-to-Point Microwave Radio	Nokia	3DB19060AB	BS1505UW0G3
Point-to-Point Microwave Radio	Nokia	3DB19060AB	BS1438UW0E6
TX/RX Diplexer	Nokia	3EM244458AC	-

Table 3.7-2: Support equipment

Description	Brand name	Model/Part number	Serial number	Rev.
Support Laptop	Dell	Latitude 7480	DJPFMH2	-
Fuse panel	Noran Tel	N250110-N/0803	S-124024	-
Microwave service switch	Alcatel Lucent	3DB18485DAAA01	VG143660014	-
Rectifier	GE Energy	150027891	S1:1	-

Section 4. Engineering considerations

4.1 Modifications incorporated in the EUT

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

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5. Test conditions

5.1 Atmospheric conditions

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

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

5.2 Power supply range

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

Section 6. Measurement uncertainty

6.1 Uncertainty of measurement

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

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

Section 7. Test equipment

7.1 Test equipment list

Table 7.1-1: Equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMC Test Receiver	Rohde & Schwarz	ESU 40	E1121	1 yr.	7/28/2018
Spectrum Analyzer	Rohde & Schwarz	FSV40	E1120	1 yr.	7/27/2018
Highpass filter	Wainwright Instruments GMBH	WHKX10-5850-6500-18000-40SS	N/A		VOU
Notch filter 5.15-5.85 GHz	Micro-Tronics	BRM50716-01	E1140		VOU
Highpass filter 15-26 GHz	SAGE Millimeter Inc.	SCF-15312340-42KFKF-H1	E1157		VOU
Highpass filter 22-40 GHz	SAGE Millimeter Inc.	SCF-22318340-28KFKF-H1	E1158		VOU
Attenuator 10 dB	Mini-Circuits	BW-K10-2W44+	-		VOU
Attenuator 6 dB	Mini-Circuits	BW-K6-2W44+	-		VOU
Attenuator 3 dB	Mini-Circuits	BW-K3-2W44+	-		VOU
Attenuator 2 dB	Mini-Circuits	VAT-2+	-		VOU

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

Section 8. Testing data

8.1 FCC 15.407(a)(3)(5) Power Limits (PSD)

8.1.1 Definitions and limits

FCC:

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

(5) The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

8.1.2 Test summary

Test performed under Test Report No.: 2015 279131 FCC 15247

8.1.3 Calculation based on Rules from KDB 789033 (3)(F)(5)

Maximum Power Spectral Density (PSD)

The rules requires “maximum power spectral density” measurements where the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission. Refer to III.A for additional guidance for devices that use channel aggregation.

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power….” (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:

a) If Method SA-2 or SA-2 Alternative was used, add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum.

b) If Method SA-3 Alternative was used and the linear mode was used in II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.

4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15−5.25 GHz, 5.25−5.35 GHz, and 5.47−5.725 GHz, the preceding procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725−5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). <u>If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:</u>

a) Set RBW ≥ 1/T, where T is defined in II.B.l.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the II.F.5.c) and II.F.5.d), since RBW=100 kHz is available on nearly all spectrum analyzers.

Table 8.1-1: Power Spectrum Density

Modulation	Frequency, MHz	PSD (dBm)		Limit (dBm)	Margin (dB)
		Measured @100KHZ	Calculated @500KHz		
4QAM	5731 (5MHZ)	13.96	20.96	30	9.04
	5731(10MHz)	10.61	17.61	30	12.39
	5741(30MHz)	5.87	12.87	30	17.13
	5781(5MHz)	13.64	20.64	30	9.36
	5781(10MHz)	10.93	17.93	30	12.07
	5771(10MHz)	6.36	13.36	30	16.64
	5844(5MHz)	13.3	20.3	30	9.7
	5844(10MHz)	10.31	17.31	30	12.69
	5834(30MHz)	5.51	12.51	30	17.49

8.2 FCC 15.407(b) and RSS-247 6.2.4 (2) Spurious (out-of-band) emissions

8.2.1 Definitions and limits

FCC:
(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of –27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
(7) The provisions of § 15.205 apply to intentional radiators operating under this section.
(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

ISED:
Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:
a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

8.2.2 Test summary

Test date:	April 12, April 16 and May 4, 2018	Temperature:	23 °C
Test engineer:	Nikolay Shtin	Air pressure:	1001 mbar
Verdict:	Pass	Relative humidity:	39 %

8.2.3 Observations, settings and special notes

- The spectrum was searched from 30 MHz to 40 GHz.
- EUT was set to transmit with 100 % duty cycle.
- The out-of-band emissions were verified using worst-case channel bandwidth of 5 MHz, all available bandwidths (5 MHz, 10 MHz and 30 MHz) were evaluated near the band-edges.
- In order to reduce the receiver noise floor, the measurements in the range from 1 GHz to 4.5 GHz were performed using a 5.15-5.85 GHz Notch filter.
- To avoid the saturation of the test receiver, a combination of the 5-15-5.85 GHz Notch and 6.4-18 GHz Highpass filters was used for the measurements above 6.4 GHz. Measurements above 18 GHz were performed using 15-26 GHz and 22-40 GHz Highpass filters.
- All measurements were performed considering an antenna gain of 42.5dBi (EIRP Worst Case).

Spectrum analyser for peak conducted measurements below 1 GHz:

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

Spectrum analyzer for peak conducted measurements above 1 GHz:

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

8.2.4 Test data

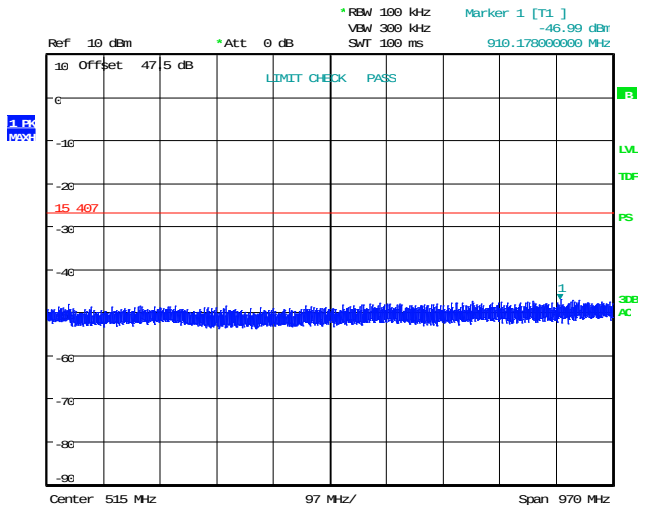

Figure 8.2-1: Conducted spurious emissions 30-1000 MHz, 5 MHz Channel BW, Low channel

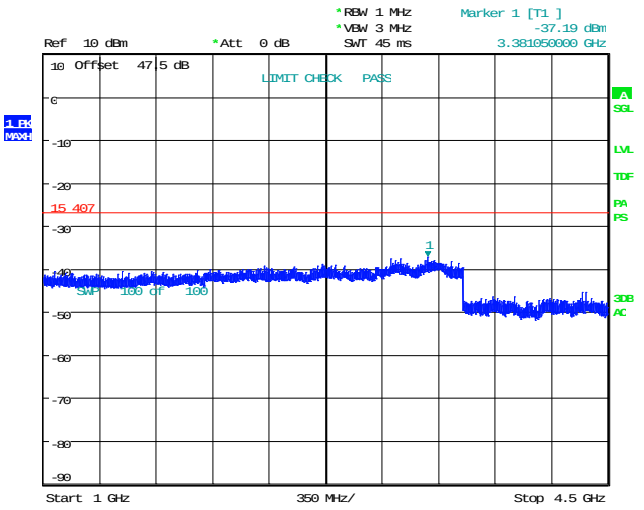

Figure 8.2-2: Conducted spurious emissions 1-4.5 GHz, 5 MHz Channel BW, Low channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

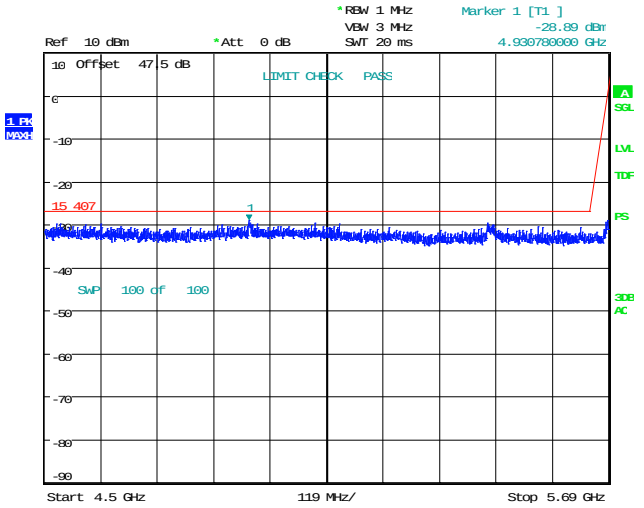

Figure 8.2-3: - Conducted spurious emissions 4.5-5.69 GHz, 5 MHz Channel BW, Low channel

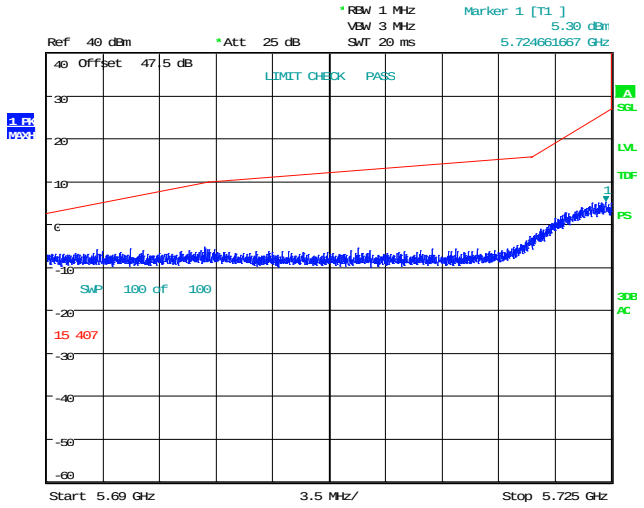

Figure 8.2-4: Conducted spurious emissions 5.69-5.725 GHz, 5 MHz Channel BW, Low channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

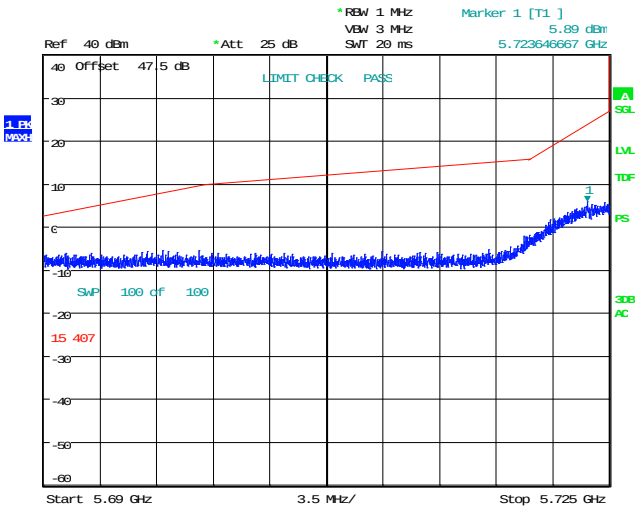

Figure 8.2-5: Conducted spurious emissions 5.69-5.725 GHz, 10 MHz Channel BW, Low channel

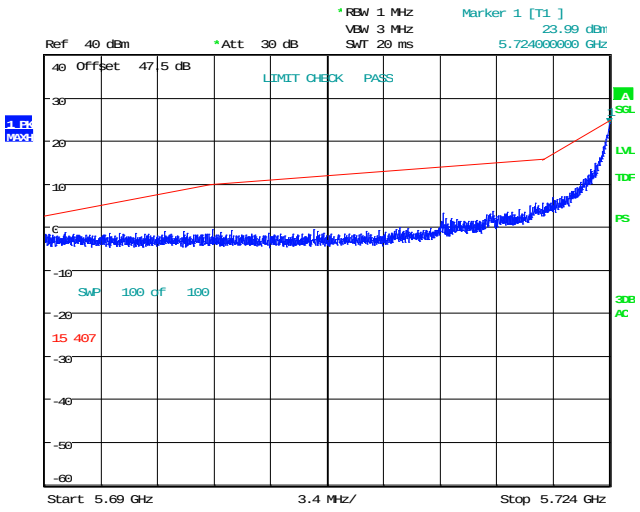

Figure 8.2-6: Conducted spurious emissions 5.69-5.724 GHz, 30 MHz Channel BW, Low channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

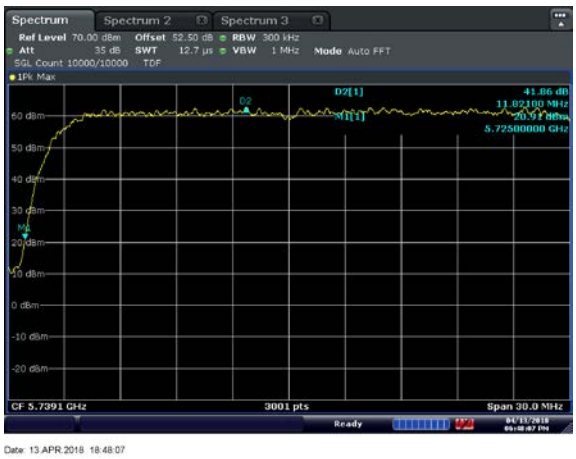

Figure 8.2-7: - Lower band edge emissions at 5725 MHz, 30 MHz Channel BW, Low channel (Marker-delta method)

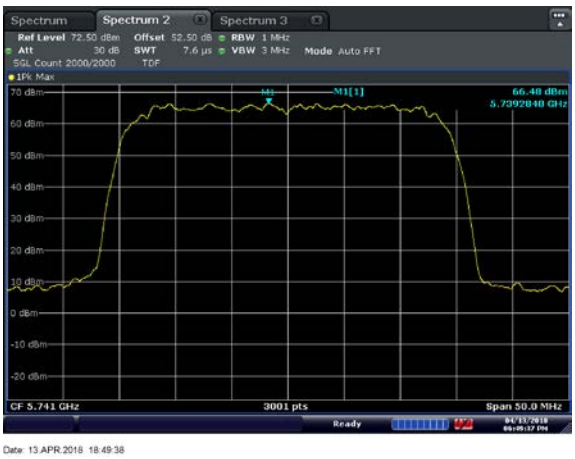

Figure 8.2-8: Lower band edge emissions at 5725 MHz, 30 MHz Channel BW, Low channel (Marker-delta method)

Note: Peak value: 66.48 – 41.86 = 24.62 dBm. Limit is 27 dBm. EUT complies.
Offsets of 52.5dBm(42.5dBi to simulate the antenna gain and 10 dBm from setup losses) +TDF were added (Cable loss).

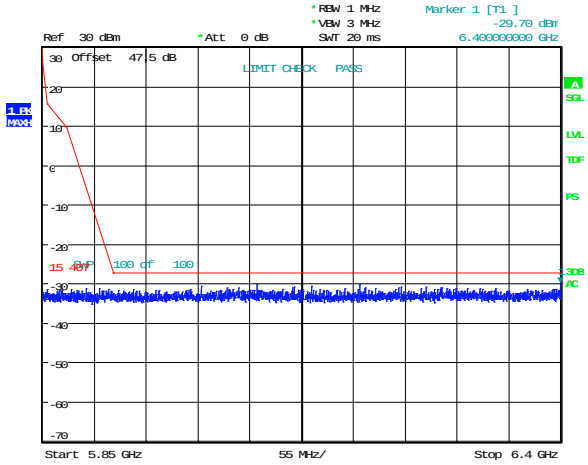

Figure 8.2-9: -Conducted spurious emissions 5.85-6.4 GHz, 5 MHz Channel BW, Low channel

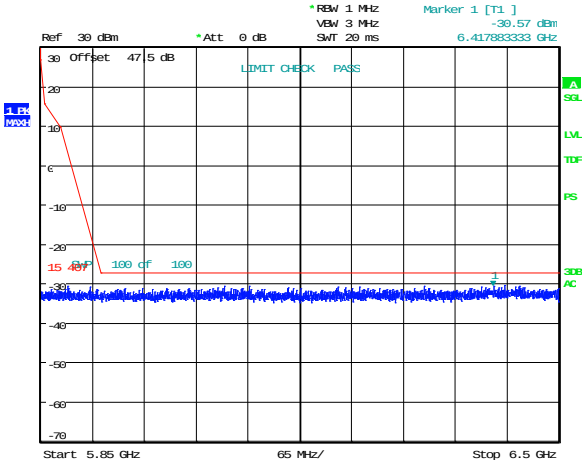

Figure 8.2-10: Conducted spurious emissions 5.85-6.4 GHz, 10 MHz Channel BW, Low channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

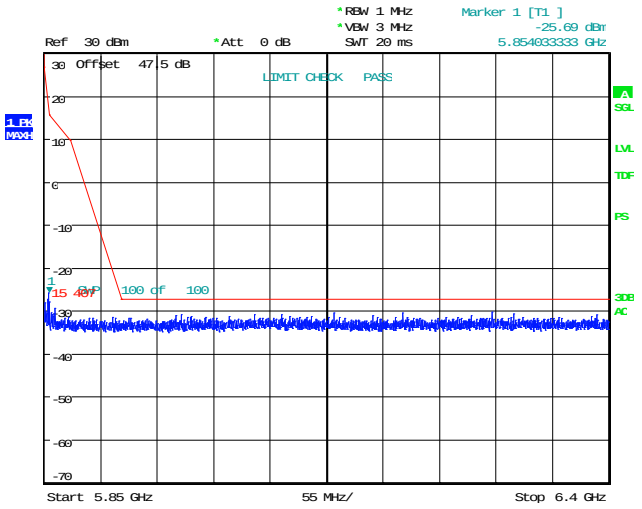

Figure 8.2-11: Conducted spurious emissions 5.85-6.4 GHz, 30 MHz Channel BW, Low channel

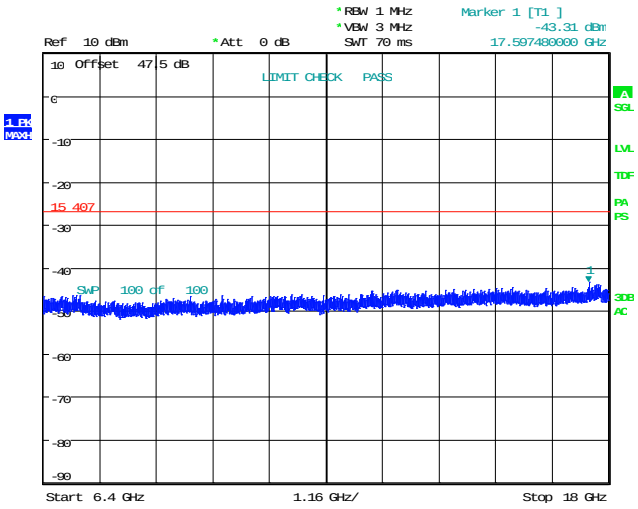

Figure 8.2-12: Conducted spurious emissions 6.4-18 GHz, 5 MHz Channel BW, Low channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

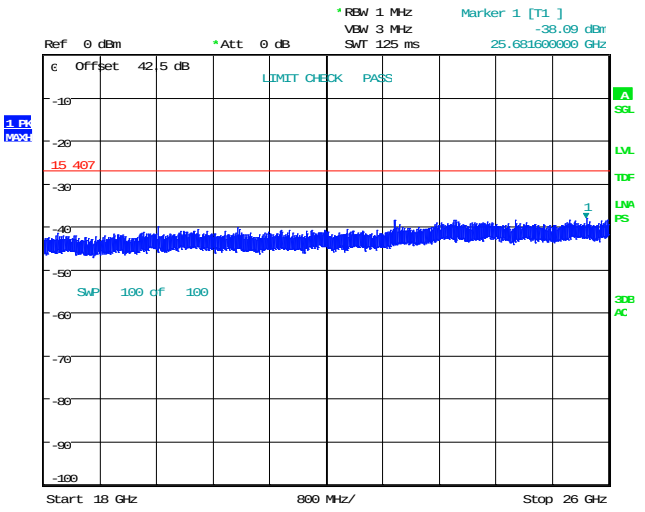

Figure 8.2-13: - Conducted spurious emissions 18-26 GHz, 5 MHz Channel BW, Low channel

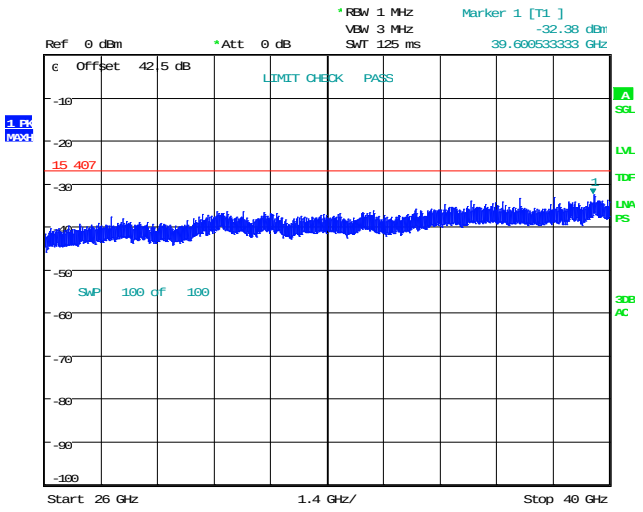

Figure 8.2-14: Conducted spurious emissions 26-40 GHz, 5 MHz Channel BW, Low channel

Note.- Offsets of 42.5dBm(42.5dBi to simulate the antenna gain) + TDF (Cable loss) were added

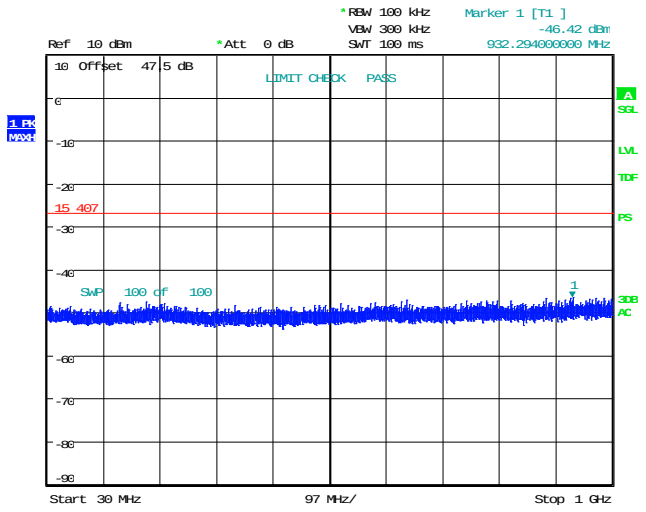

Figure 8.2-15: Conducted spurious emissions 30-1000 MHz, 5 MHz Channel BW, High channel

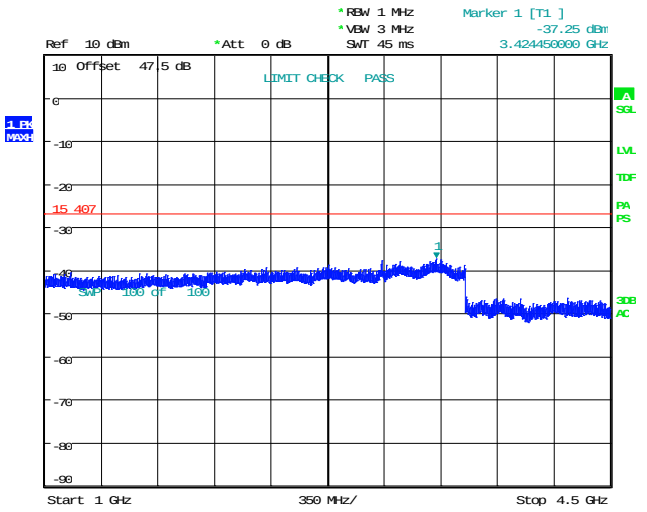

Figure 8.2-16: Conducted spurious emissions 1-4.5 GHz, 5 MHz Channel BW, High channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

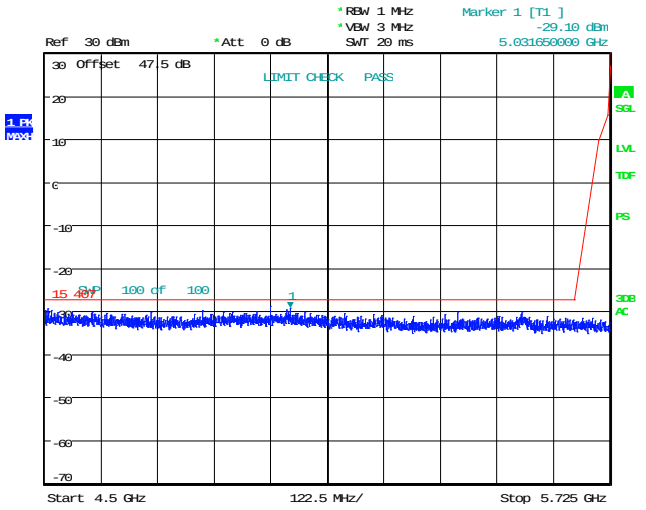

Figure 8.2-17: - Conducted spurious emissions 4.5-5.725 GHz, 5 MHz Channel BW, High channel

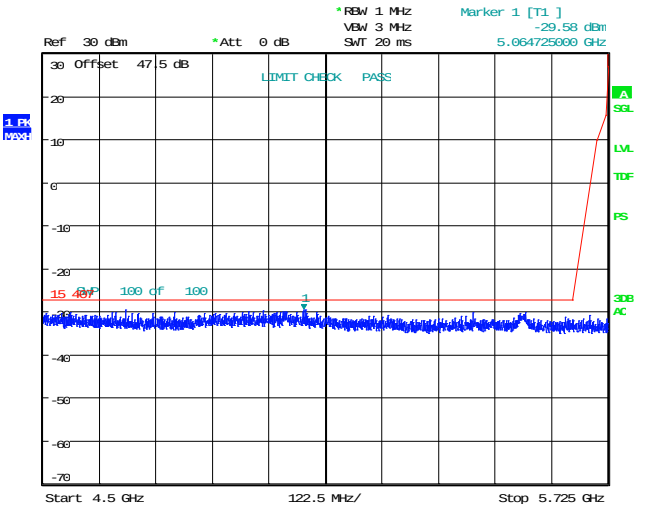

Figure 8.2-18: Conducted spurious emissions 4.5-5.725 GHz, 10 MHz Channel BW, High channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

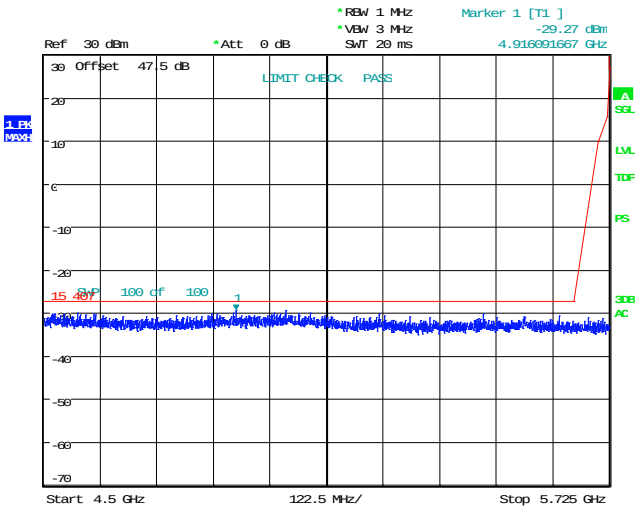

Figure 8.2-19: Conducted spurious emissions 4.5-5.725 GHz, 30 MHz Channel BW, High channel

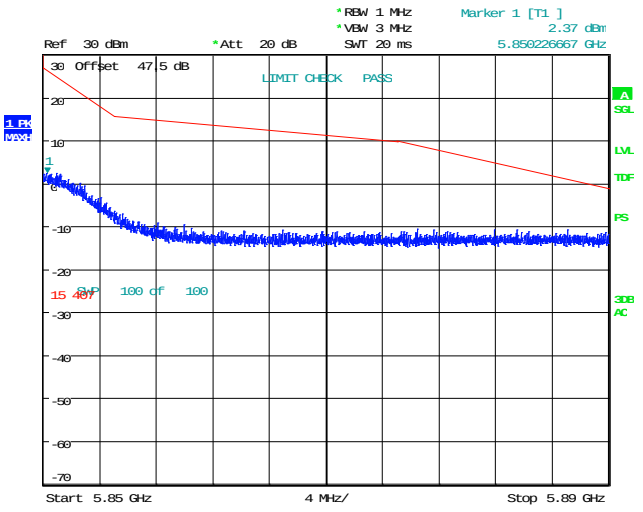

Figure 8.2-20: Conducted spurious emissions 5.85-5.89 GHz, 5 MHz Channel BW, High channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

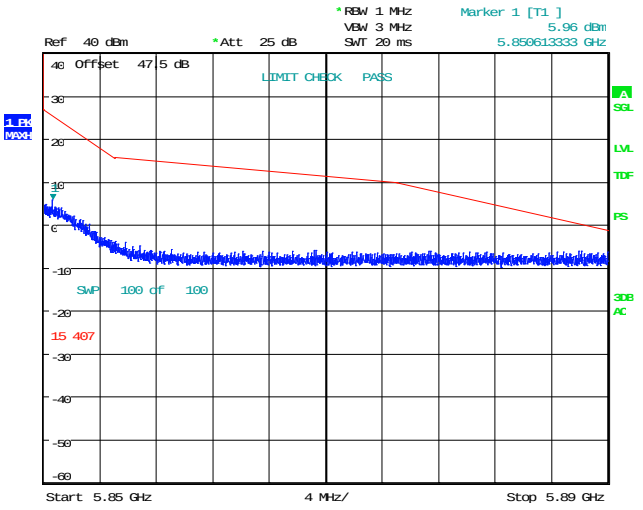

Figure 8.2-21: -Conducted spurious emissions 5.85-5.89 GHz, 10 MHz Channel BW, High channel

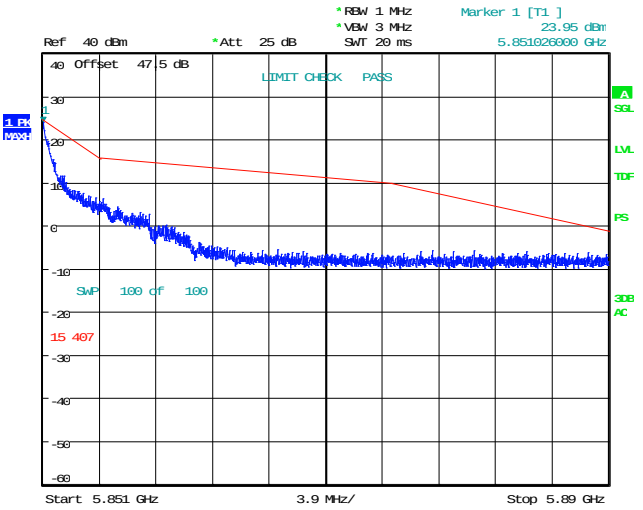

Figure 8.2-22: Conducted spurious emissions 5.85-5.89 GHz, 30 MHz Channel BW, High channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

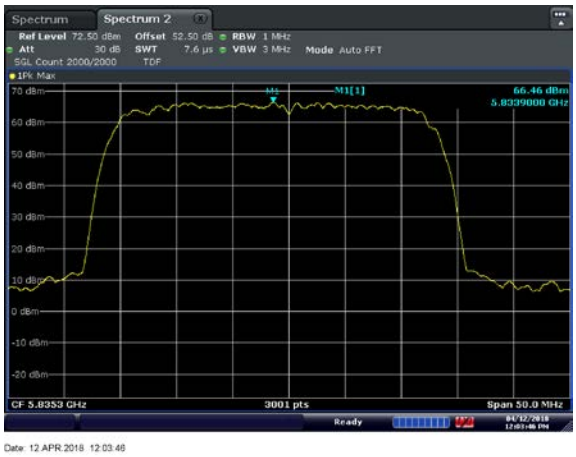

Figure 8.2-23: Upper band edge emissions at 5725 MHz, 30 MHz Channel BW, High channel (Marker-delta method)

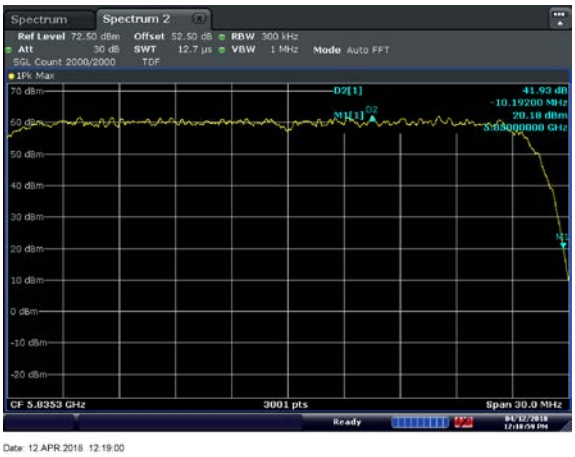

Figure 8.2-24: Upper band edge emissions at 5725 MHz, 30 MHz Channel BW, High channel (Marker-delta method)

Note: Peak value:66.46 – 41.93 = 24.53 dBm. Limit is 27 dBm. EUT complies.
Offsets of 52.5dBm (42.5dBi to simulate the antenna gain and 10 dBm from setup losses) +TDF were added (Cable loss)

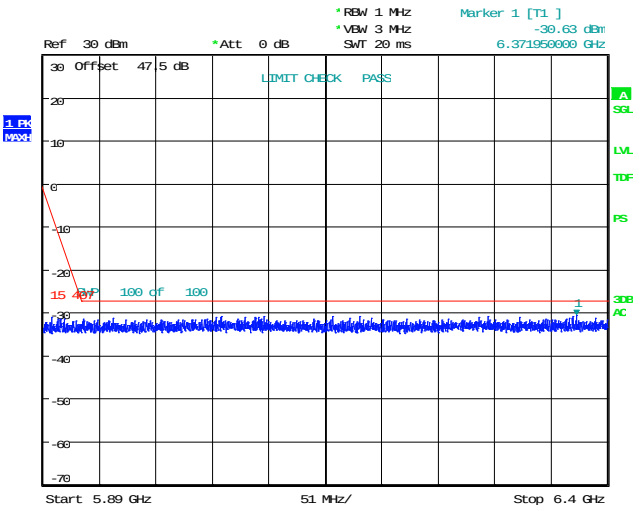

Figure 8.2-25: -Conducted spurious emissions 6.4-18 GHz, 5 MHz Channel BW, High channel

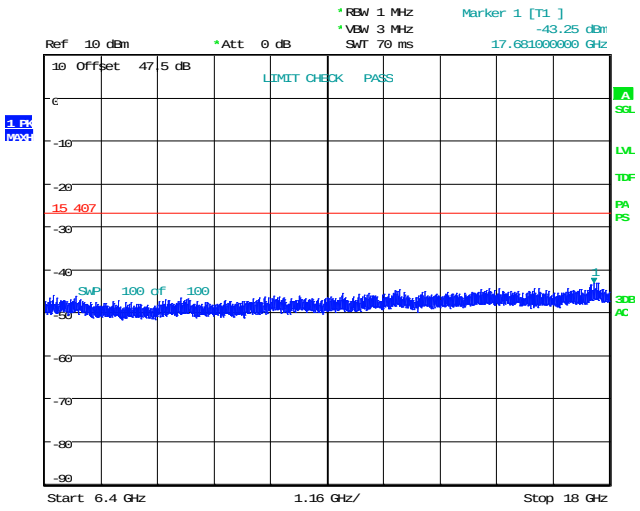

Figure 8.2-26: Conducted spurious emissions 6.4-18 GHz, 5 MHz Channel BW, High channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

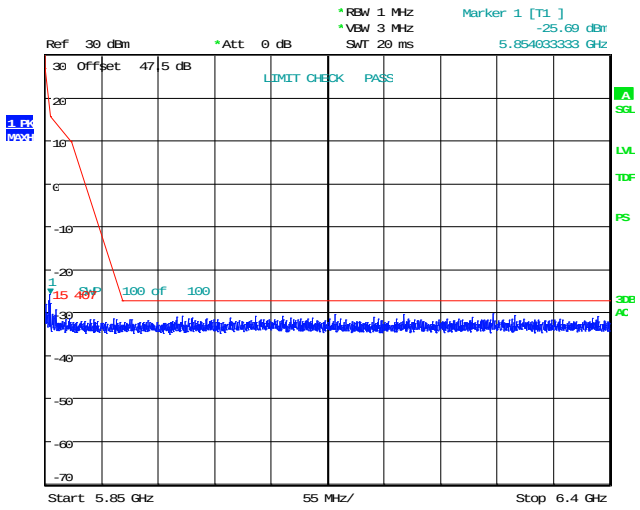

Figure 8.2-27: Conducted spurious emissions 5.85-6.4 GHz, 30 MHz Channel BW, High channel

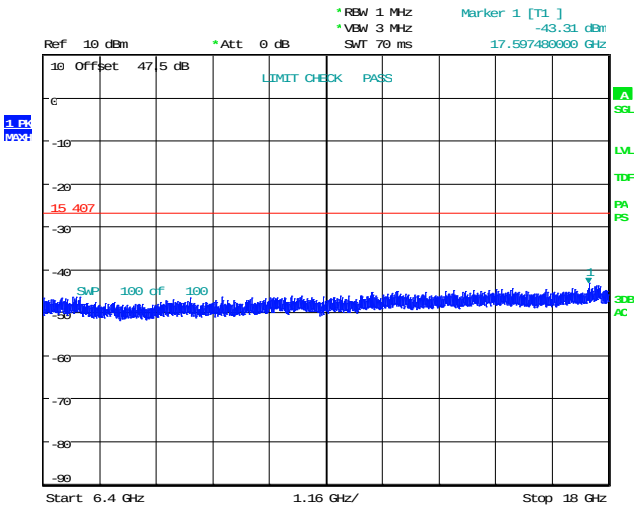

Figure 8.2-28: Conducted spurious emissions 6.4-18 GHz, 5 MHz Channel BW, High channel

Note.- Offsets of 47.5dBm(42.5dBi to simulate the antenna gain and 5 dBm from setup losses) +TDF were added (Cable loss)

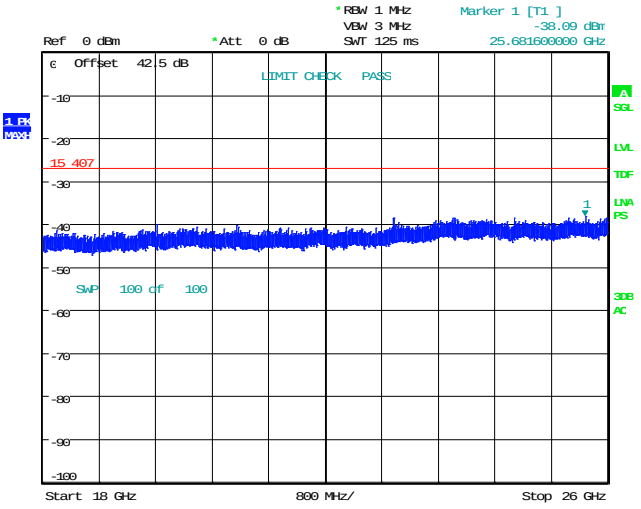

Figure 8.2-29: - Conducted spurious emissions 18-26 GHz, 5 MHz Channel BW, High channel

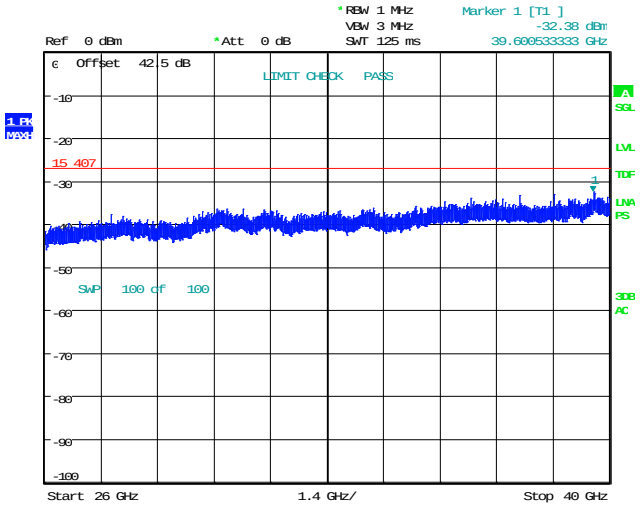

Figure 8.2-30: Conducted spurious emissions 26-40 GHz, 5 MHz Channel BW, High channel

Note.- Offsets of 42.5dBi to simulate the antenna gain +TDF were added (Cable loss)

Section 9. Block diagrams of test set-ups

9.1 Conducted emissions set-up