

ISED CABid: ES1909

Test Report No:
 NIE: 67283RRF.003

Partial Test Report

Reference Standard:

USA FCC Part 27

CANADA IC RSS-130, RSS-139

(*) Identification of item tested	Smart watch
(*) Trademark	Navigil
(*) Model and /or type reference	580
Other identification of the product	HW version: C SW version: 3.0.23 FCC ID: -- IC: --
(*) Features	LTE Cat-M1 modem, GNSS receiver, Bluetooth beacon receiver
Applicant	Navigil USA Corp. 3739 Pinehurst Drive, Holiday, FL 34691, USA
Test method requested, standard	USA FCC Part 27 (10-1-19 Edition). CANADA RSS-130 Issue 2, Feb. 2019. CANADA RSS-139 Issue 3, Jul. 2015. ANSI C63.26: 2015. KDB 971168 D01 Power Meas License Digital Systems v03r01, April 2018.
Approved by (name / position & signature)	Rafael López Martín EMC Consumer & RF Lab. Manager
Date of issue	2021-08-09
Report template No	FDT08_23 (*) "Data provided by the client"

Index

Competences and guarantees	3
General conditions	3
Uncertainty	3
Data provided by the client.....	3
Usage of samples	4
Test sample description	4
Identification of the client.....	5
Testing period and place.....	5
Document history	5
Environmental conditions	5
Remarks and comments	6
Testing verdicts.....	7
Summary	7
Appendix A: Test results for FCC Part 27 / RSS-130, RSS-139.....	8

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory competent to carry out the tests described in this report.

DEKRA Testing and Certification is a FCC-recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report.

DEKRA Testing and Certification S.A.U. is an ISED-recognized accredited testing laboratory, CABid: ES1909, with the appropriate scope of accreditation that covers the performed tests in this report.

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

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document. **IMPORTANT:** No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification S.A.U.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification and the Accreditation Bodies.

Uncertainty

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

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample of the model 580 is a smart wrist watch with LTE Cat-M1 communication, GNSS receiver, Bluetooth beacon receiver and analog watch.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: the client.

- Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
67283B/001	Smart watch	580	1200000609	2021/04/22

Sample S/01 has undergone the following test(s): The Radiated tests indicated in Appendix A.

Test sample description

Ports..... :	Port name and description	Cable			
		Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾
	Power supply	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supplementary information to the ports..... :	USB 5VDC power supply from provided AC wall charger. Connected to the watch via charging dock.				
Rated power supply	Voltage and Frequency				
	<input checked="" type="checkbox"/> DC:				
Rated Power	-				
Clock frequencies..... :	-				
Other parameters	-				
Software version	3.0.23				
Hardware version	C				
Dimensions in cm (W x H x D)	-				
Mounting position	<input type="checkbox"/> Table top equipment				
	<input type="checkbox"/> Wall/Ceiling mounted equipment				
	<input type="checkbox"/> Floor standing equipment				
	<input type="checkbox"/> Hand-held equipment				
	<input checked="" type="checkbox"/> Other:				
Modules/parts..... :	Module/parts of test item		Type	Manufacturer	
	-				
	-				
	-				
Accessories (not part of the test item)	Description		Type	Manufacturer	
	AC Wall charger		SWI5-5-I38	CUI Inc.	
Documents as provided by the applicant..... :	Description		File name	Issue date	
	-				
	-				
	-				

(3) Only for Medical Equipment

Identification of the client

Navigil Oy
Karaportti 5, 02610 Espoo, Finland

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2021-05-04
Date (finish)	2021-05-06

Document history

Report number	Date	Description
67283RRF.003	2021-08-09	First release.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

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

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

Remarks and comments

The tests have been performed by the technical personnel: Alfonso Gutiérrez, Miguel Manuel López and Cristina Calle.

Used instrumentation:

Radiated Measurements

	Last Calibration	Due Calibration
1. Semianechoic Absorber Lined Chamber ETS LINDGREN FACT 3 200 STP	N/A	N/A
2. Shielded Room ETS LINDGREN S101	N/A	N/A
3. Biconical/Log Antenna 30MHz - 6GHz ETS LINDGREN 3142E	2020/10	2023/10
4. Horn Antenna 1-18 GHz SCHWARZBECK MESS-ELEKTRONIK BBHA 9120 D	2020/08	2023/08
5. RF Preamplicifier G>30dB, 1-18GHz BONN ELEKTRONIK BLMA 0118-3A	2020/10	2021/10
6. Signal and Spectrum Analyzer 10 Hz - 40 GHz ROHDE AND SCHWARZ FSV40	2019/10	2021/10
7. EMI Test Receiver 7 GHz ROHDE AND SCHWARZ ESR7	2019/10	2021/10
8. Wideband Radio Communication Tester ROHDE AND SCHWARZ CMW500	N/A	N/A

Testing verdicts

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

Summary

FCC PART 27 / RSS-130, RSS-139 PARAGRAPH		
Requirement – Test case	Verdict	Remark
FCC 27.50 / RSS-130 4.6., RSS-139 6.5.: RF Output Power	N/M	(1)
FCC 2.1047 / RSS-130 4.1., RSS-139 6.2.: Modulation Characteristics	N/M	(1)
FCC 27.54 / RSS-130 4.5., RSS-139 6.4.: Frequency Stability	N/M	(1)
FCC 2.1049: Occupied Bandwidth	N/M	(1)
FCC 27.53 / RSS-130 4.7., RSS-139 6.6.: Spurious Emissions at Antenna Terminals	N/M	(1)
FCC 27.53 / RSS-130 4.7., RSS-139 6.6.: Radiated Emissions	P	
<u>Supplementary information and remarks:</u> (1) Test not requested.		

Appendix A: Test results for FCC Part 27 / RSS-130, RSS-139

INDEX

TEST CONDITIONS	10
Radiated Emissions	11

TEST CONDITIONS

POWER SUPPLY (*):

Vnominal: 5 Vdc

Type of Power Supply: USB.

(*): Declared by the Applicant.

TEST FREQUENCIES:

LTE Band 12: QPSK AND 16QAM MODULATIONS.

	Channel per Nominal Bandwidth (Frequency, MHz)			
	BW = 1.4 MHz	BW = 3 MHz	BW = 5 MHz	BW = 10 MHz
Low	23017 (699.7)	23025 (700.5)	23035 (701.5)	23060 (704.0)
Middle	23095 (707.5)	23095 (707.5)	23095 (707.5)	23095 (707.5)
High	23173 (715.3)	23165 (714.5)	23155 (713.5)	23130 (711.0)

LTE Band 4. QPSK AND 16QAM MODULATIONS.

	Channel per Nominal Bandwidth (Frequency, MHz)					
	BW = 1.4 MHz	BW = 3 MHz	BW = 5 MHz	BW = 10 MHz	BW = 15 MHz	BW = 20 MHz
Low	19957 (1710.7)	19965 (1711.5)	19975 (1712.5)	20000 (1715.0)	20025 (1717.5)	20050 (1720.0)
Middle	20175 (1732.5)	20175 (1732.5)	20175 (1732.5)	20175 (1732.5)	20175 (1732.5)	20175 (1732.5)
High	1754.3 (20393)	20385 (1753.5)	20375 (1752.5)	20350 (1750.0)	20325 (1747.5)	20300 (1745.0)

Radiated Emissions

SPECIFICATION:

FCC §27.53 (g):

For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

FCC §27.53 (h), RSS-139 Clause 6.6:

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. P in watts. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater.

RSS-130 Clause 4.7.1:

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log 10 p$ (watts), dB.

At P_o transmitting power, the specified minimum attenuation becomes $43+10 \log (P_o)$, and the level in dBm relative to P_o becomes:

$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mW}) - 30] = -13 \text{ dBm}$$

METHOD:

The measurement was performed with the EUT inside an anechoic chamber. The spectrum was scanned from 30 MHz to at least the 10th harmonic of the highest frequency generated within the equipment.

The EUT was placed on a non-conductive stand at a 3 meter distance from the measuring antenna for measurements from 30 MHz up to 18 GHz.

Detected emissions were maximized at each frequency by rotating the EUT and adjusting the measuring antenna height and polarization. The maximum meter reading was recorded.

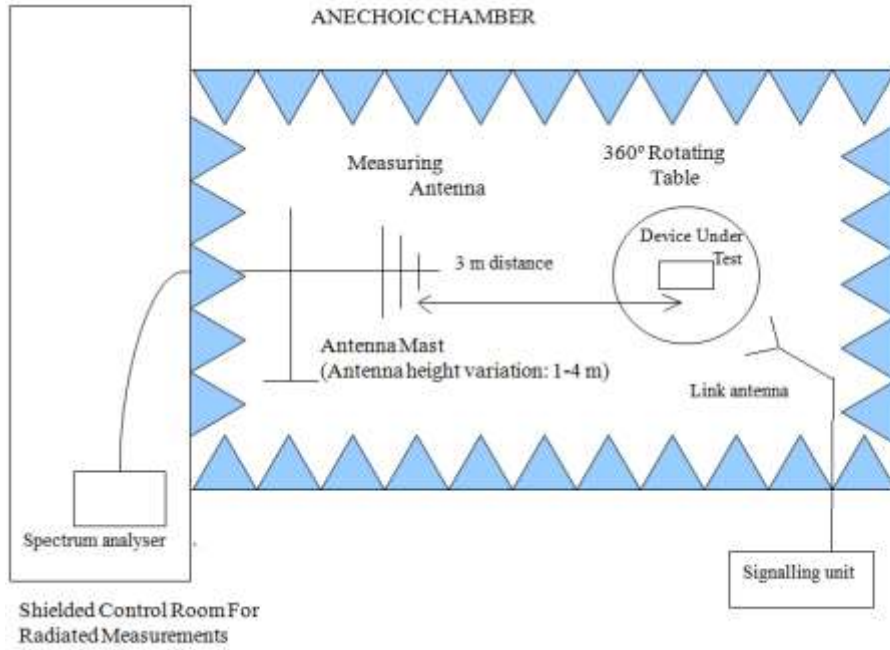
The maximum field strength (dB μ V/m) of each detected emission at less than 20 dB respect to the limit is converted to an equivalent EIRP level (dBm) according to ANSI C63.26 with the formula:

$$\text{EIRP (dBm)} = E(\text{dB}\mu\text{V/m}) + 20 \log (D) - 104.8$$

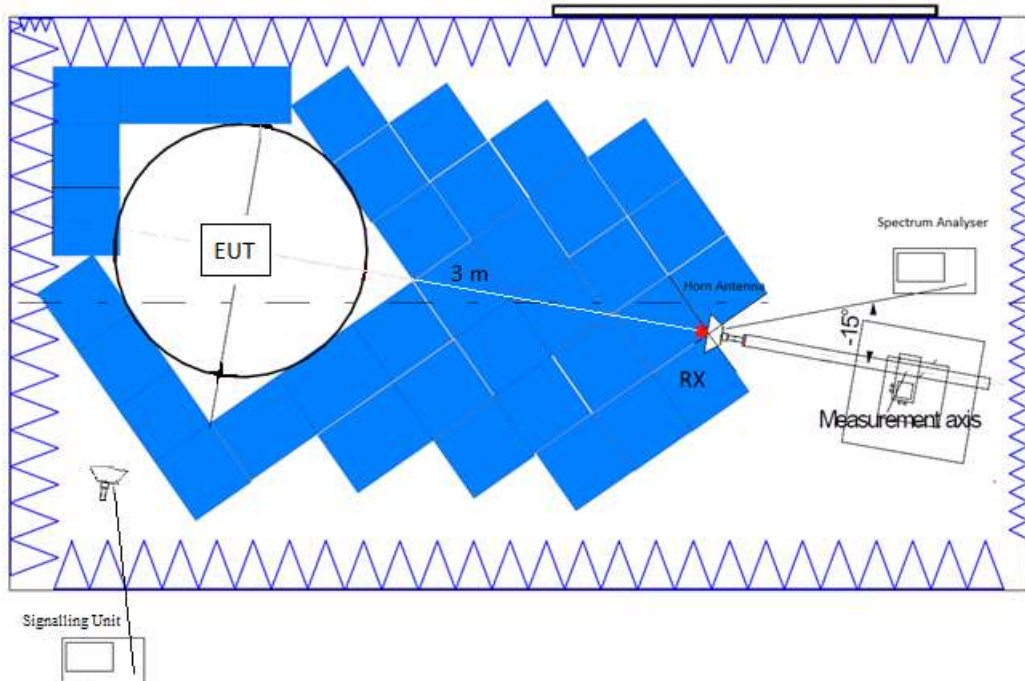
Where D is the measurement distance (in the far field region) in m. $D = 3$ m.

TEST SETUP:

Radiated measurements below 1 GHz.



Radiated measurements between 1 GHz and 18 GHz.



RESULTS:

LTE Band 4:

A preliminary scan determined the QPSK modulation, Nominal Bandwidth of 1.4 MHz, RB Size 6, RB Offset 0, Narrowband 0, as the worst-case.
The next results are for the worst-case.

- **LOW CHANNEL:**

Frequency range 30 MHz - 1 GHz

No spurious frequencies at less than 20 dB below the limit.

Frequency range 1 - 18 GHz

No spurious frequencies at less than 20 dB below the limit.

- **MIDDLE CHANNEL:**

Frequency range 30 MHz - 1 GHz

No spurious frequencies at less than 20 dB below the limit.

Frequency range 1 - 18 GHz

No spurious frequencies at less than 20 dB below the limit.

- **HIGH CHANNEL:**

Frequency range 30 MHz - 1 GHz

No spurious frequencies at less than 20 dB below the limit.

Frequency range 1 - 18 GHz

No spurious frequencies at less than 20 dB below the limit.

Measurement Uncertainty (dB):	<± 5.08 for f ≥ 30 MHz up to 1 GHz
	<± 5.13 for f ≥ 1 GHz up to 17 GHz
	<± 4.82 for f ≥ 17 GHz up to 20 GHz

Verdict: PASS

LTE Band 12:

A preliminary scan determined the 16QAM modulation, Nominal Bandwidth of 1.4 MHz, RB Size 6, RB Offset 0, Narrowband 0, as the worst-case.

The next results are for the worst-case.

- LOW CHANNEL:

Frequency range 30 MHz - 1 GHz

Spurious frequencies at less than 20 dB below the limit:

Spurious Frequency (MHz)	E.I.R.P (dBm)	Polarization	Detector
915.368	-16.27	V	Peak

Frequency range 1 - 8 GHz

No spurious frequencies at less than 20 dB below the limit.

- MIDDLE CHANNEL:

Frequency range 30 MHz - 1 GHz

Spurious frequencies at less than 20 dB below the limit:

Spurious Frequency (MHz)	E.I.R.P (dBm)	Polarization	Detector
924.744	-20.11	V	Peak

Frequency range 1 - 8 GHz

No spurious frequencies at less than 20 dB below the limit.

- HIGH CHANNEL:

Frequency range 30 MHz - 1 GHz

Spurious frequencies at less than 20 dB below the limit:

Spurious Frequency (MHz)	E.I.R.P (dBm)	Polarization	Detector
933.151	-32.79	V	Peak

Frequency range 1 - 8 GHz

No spurious frequencies at less than 20 dB below the limit.

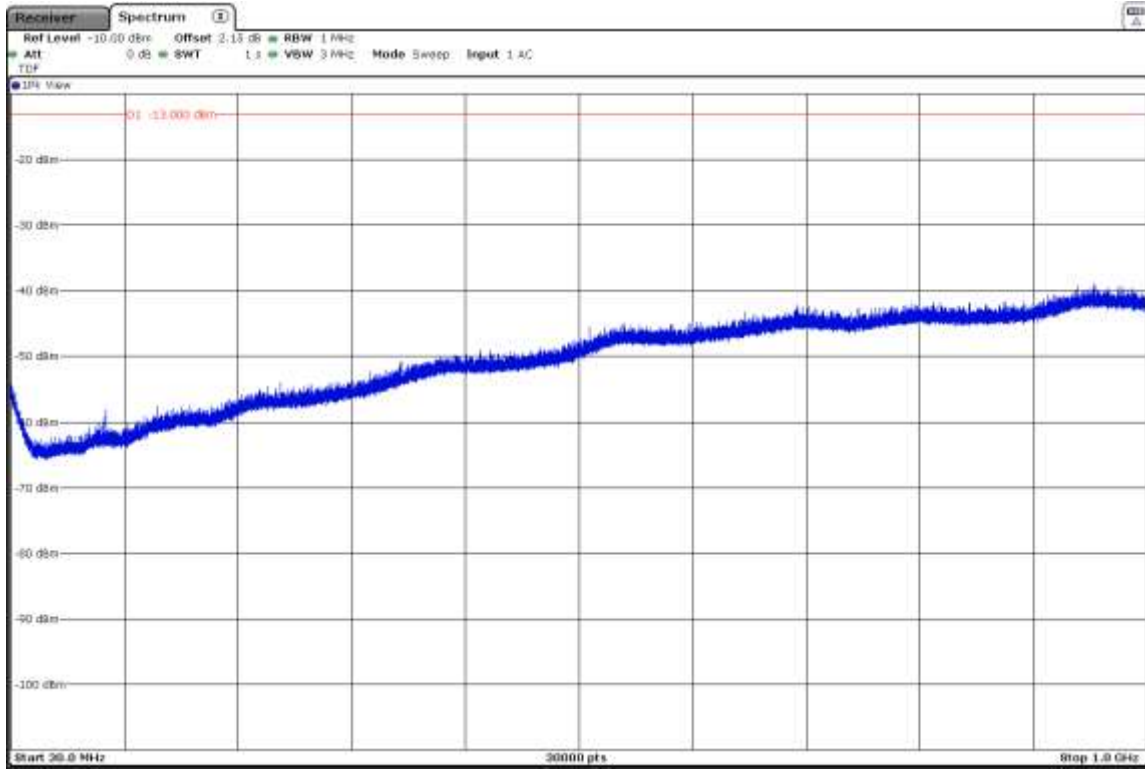
Measurement Uncertainty (dB): ± 5.08 for $f \geq 30$ MHz up to 1 GHz
 ± 5.13 for $f \geq 1$ GHz up to 17 GHz
 ± 4.82 for $f \geq 17$ GHz up to 20 GHz

Verdict: PASS

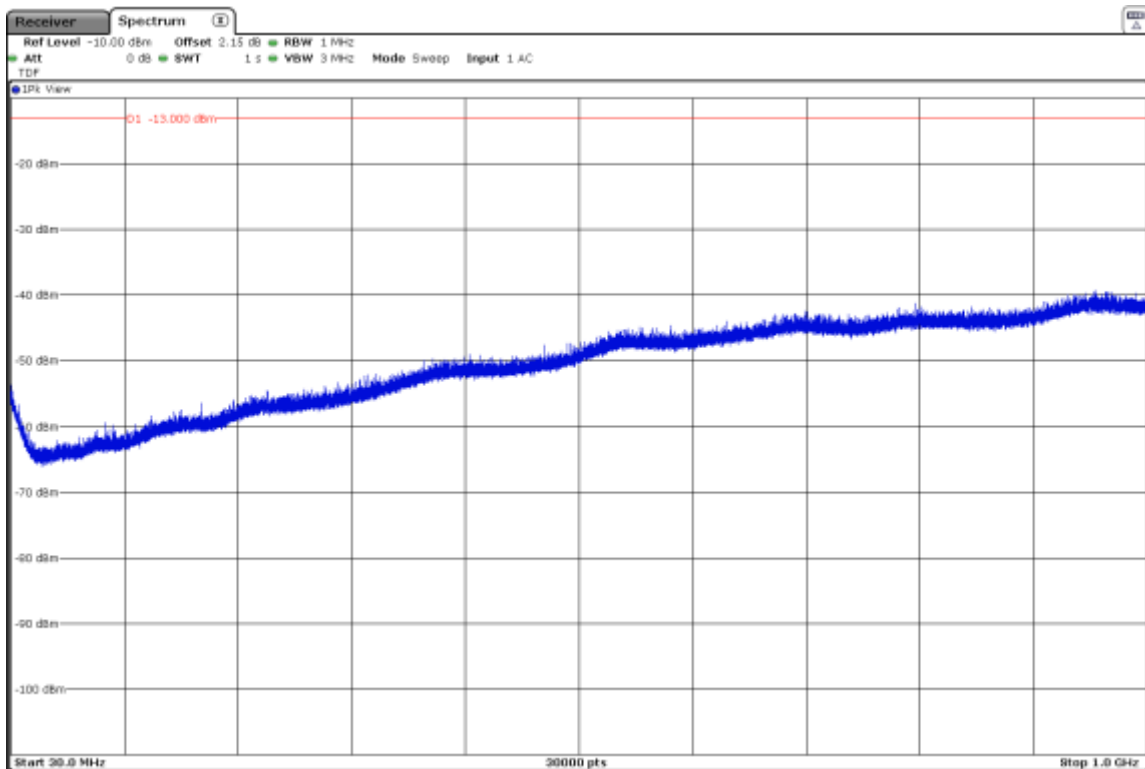
LTE Band 4. QPSK modulation, Nominal Bandwidth of 1.4 MHz, RB Size 6, RB Offset 0, Narrowband 0.

FREQUENCY RANGE 30 MHz - 1 GHz:

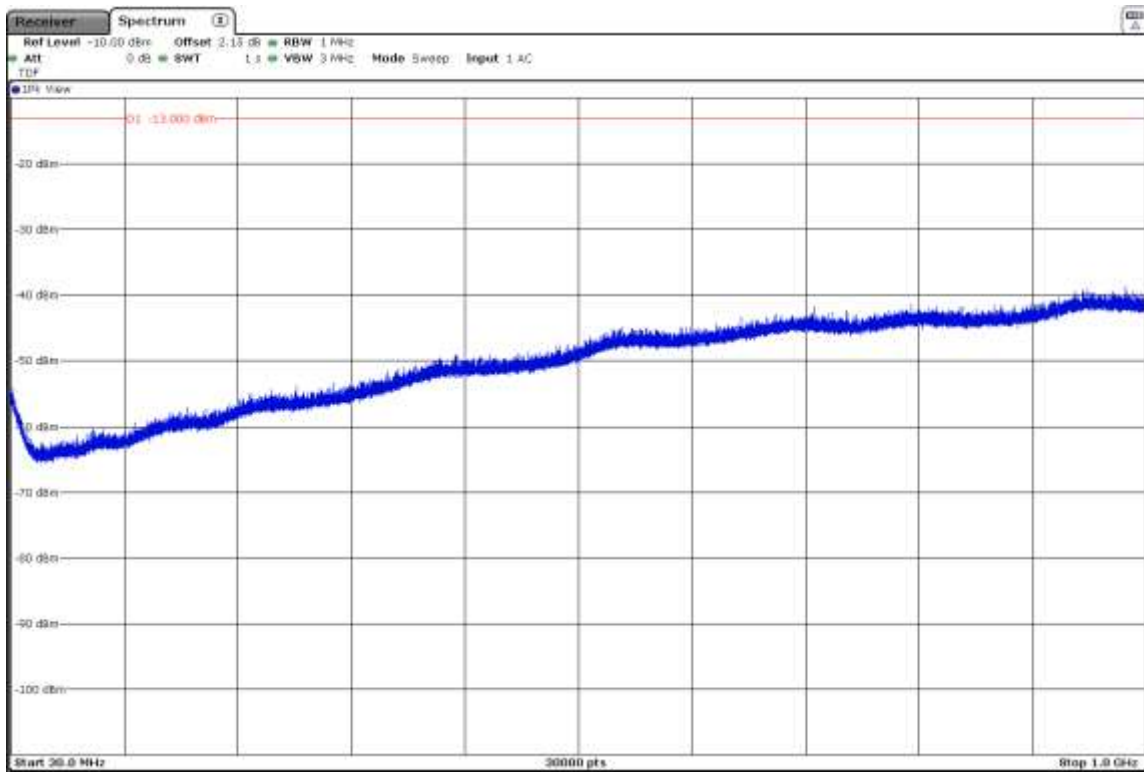
- Low Channel:



- Middle Channel:

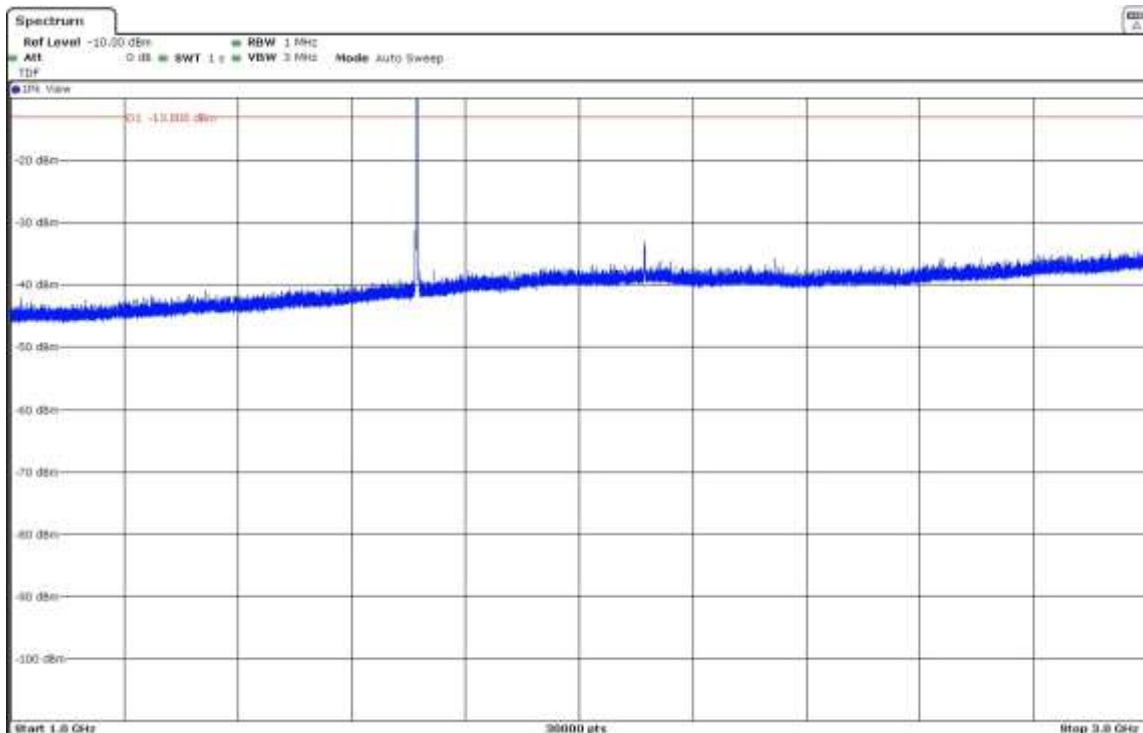


- High Channel:



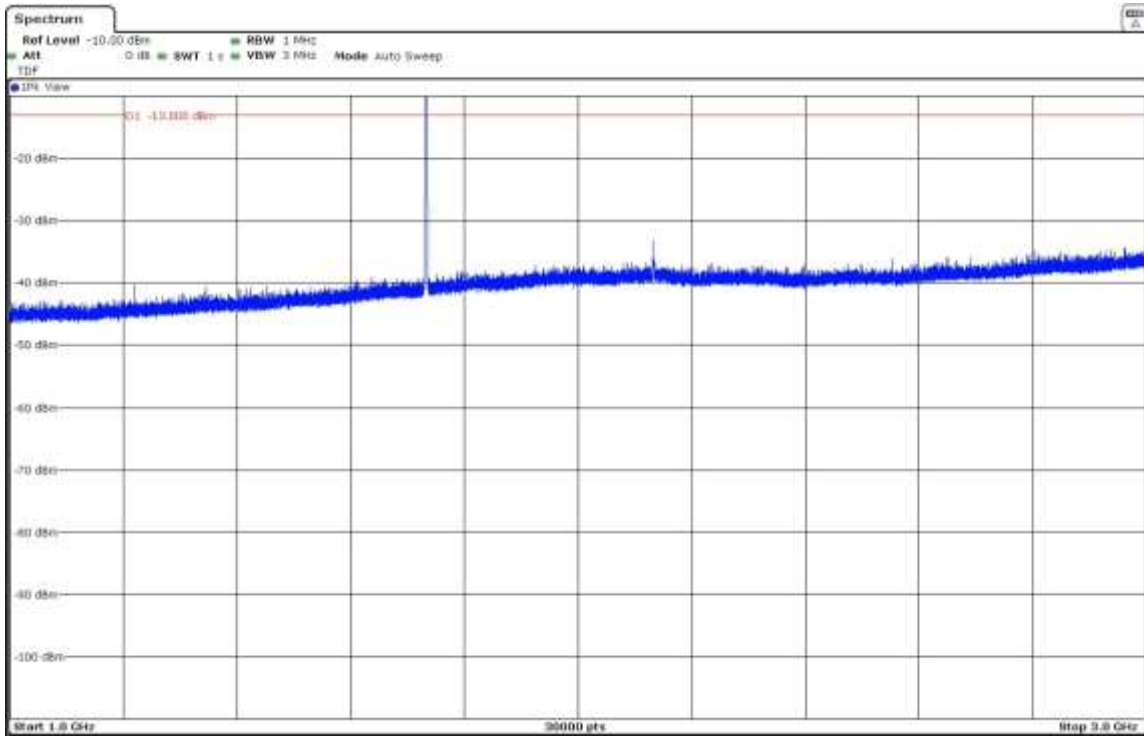
FREQUENCY RANGE 1 - 3 GHz:

- Low Channel:



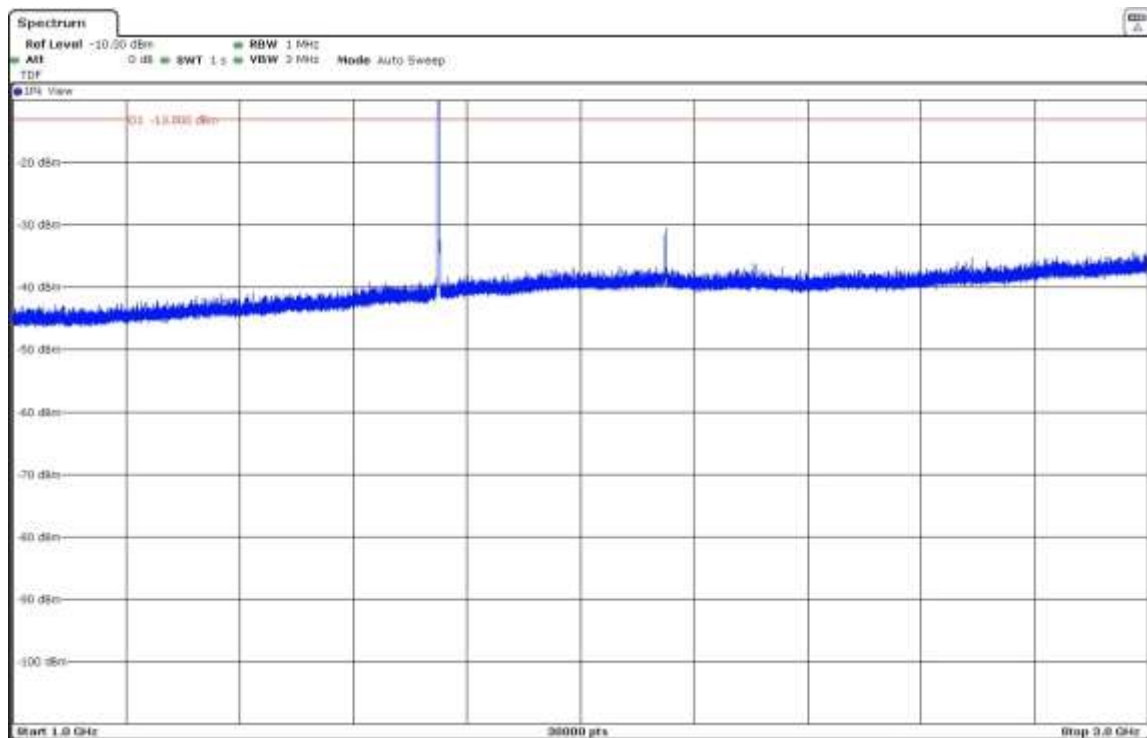
The peak above the limit is the carrier frequency. The other peak is the Downlink signal.

- Middle Channel:



The peak above the limit is the carrier frequency. The other peak is the Downlink signal.

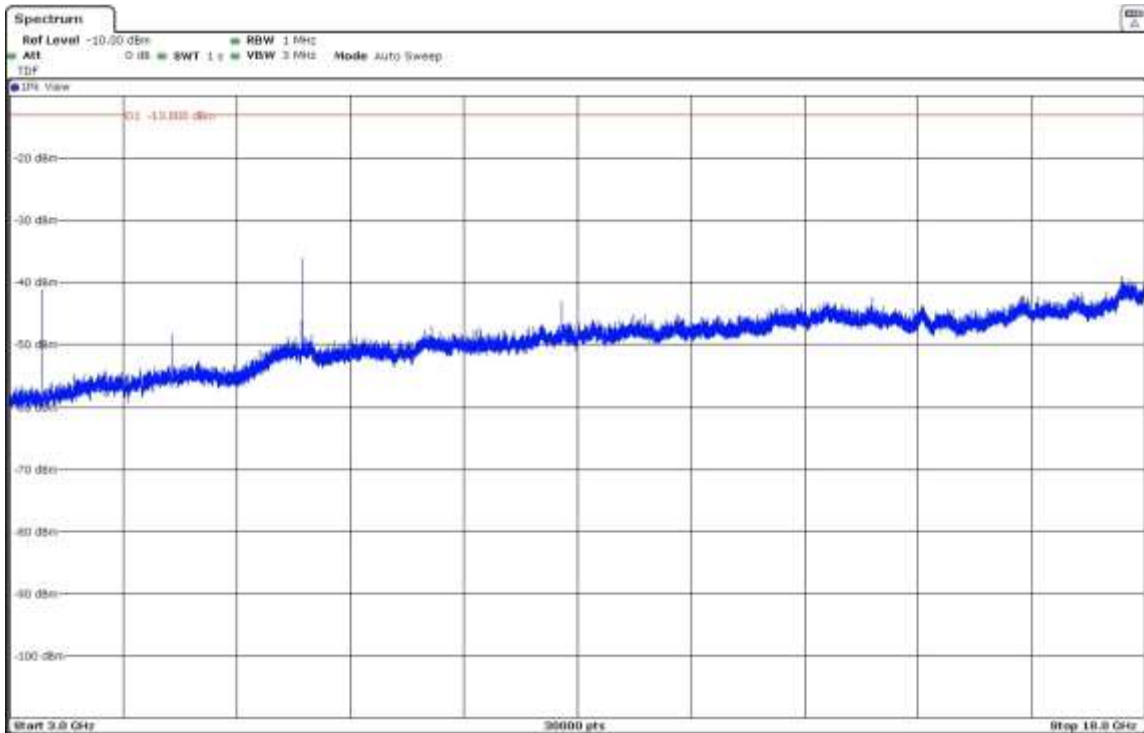
- High Channel:



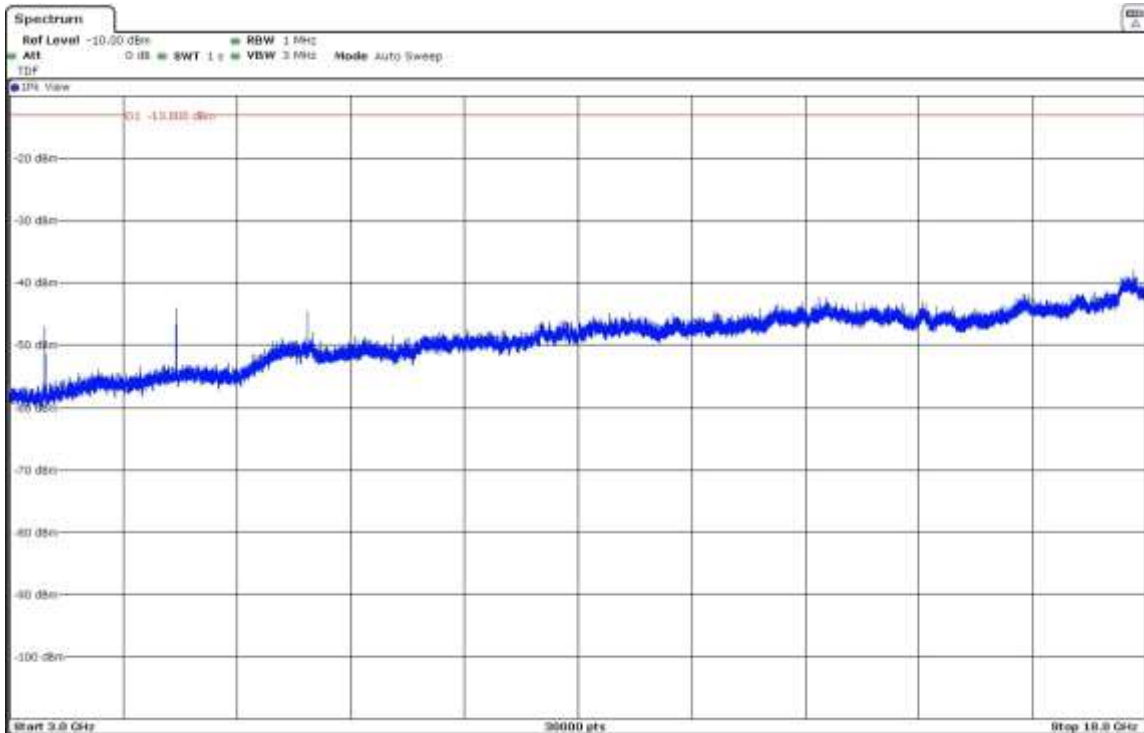
The peak above the limit is the carrier frequency. The other peak is the Downlink signal.

FREQUENCY RANGE 3 - 18 GHz:

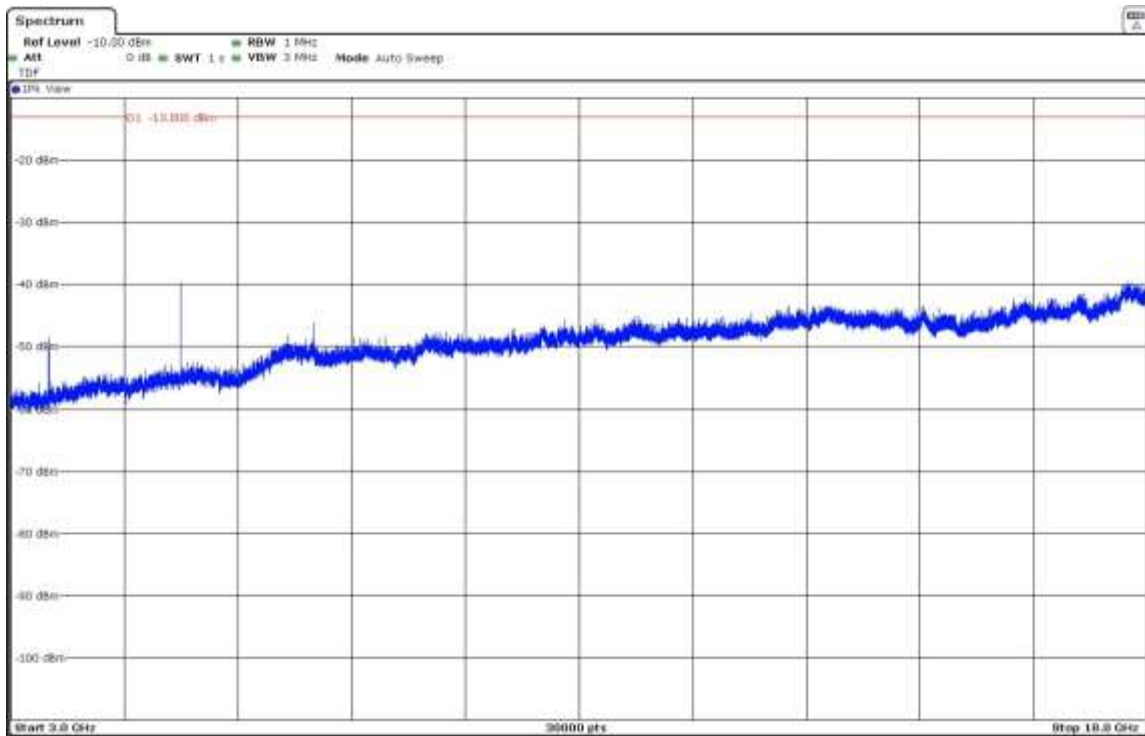
- Low Channel:



- Middle Channel:



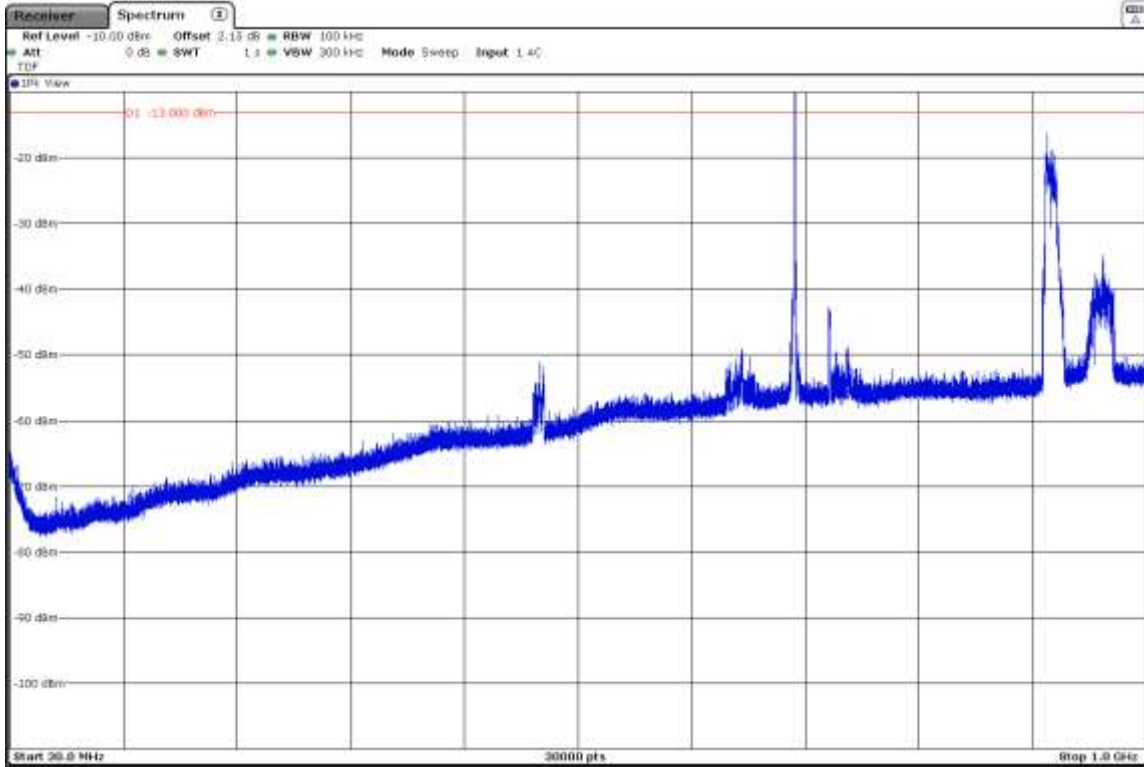
- High Channel:



LTE Band 12. 16QAM modulation, Nominal Bandwidth of 1.4 MHz, RB Size 6, RB Offset 0, Narrowband 0.

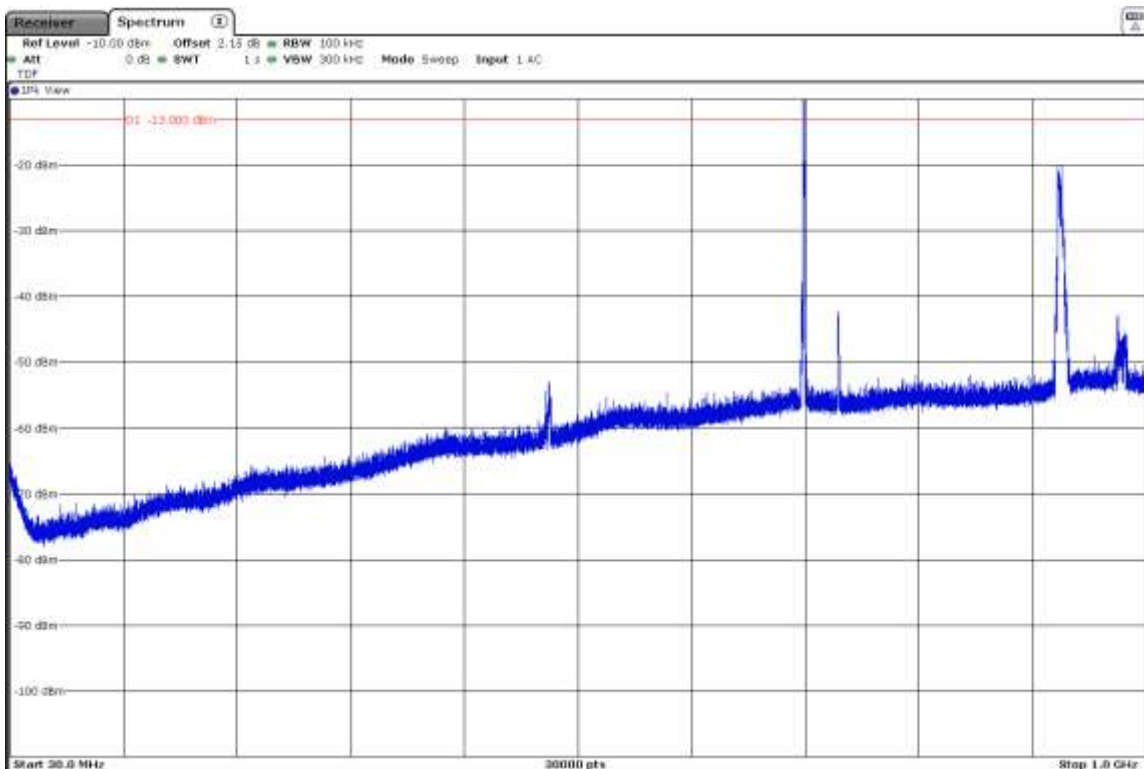
FREQUENCY RANGE 30 MHz - 1 GHz:

- Low Channel:



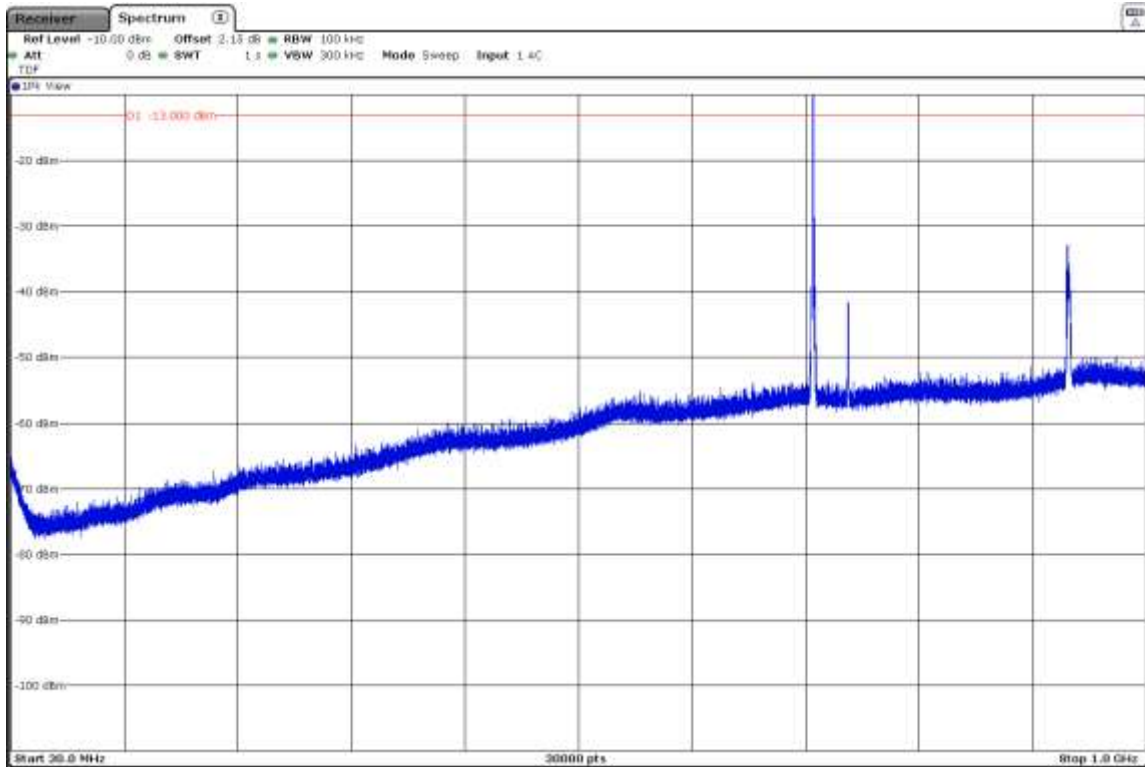
The peak above the limit is the carrier frequency. The other peak at 729MHz is the Downlink signal.

- Middle Channel:



The peak above the limit is the carrier frequency. The other peak at 737MHz is the Downlink signal.

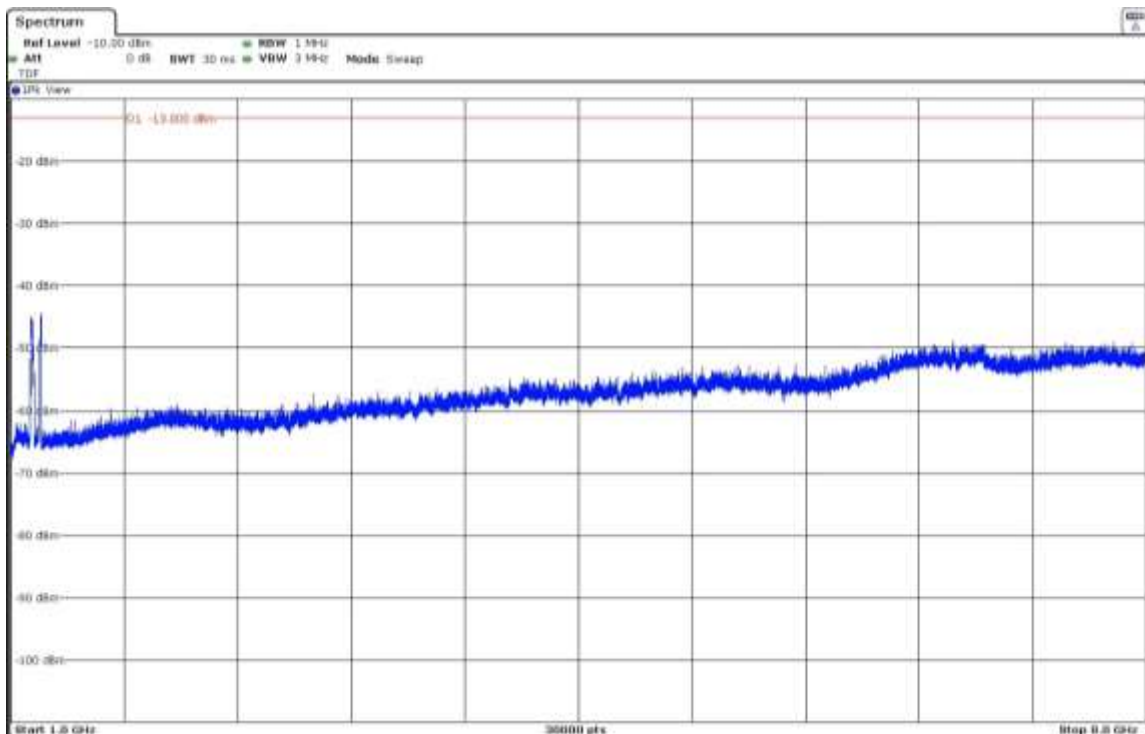
- High Channel:



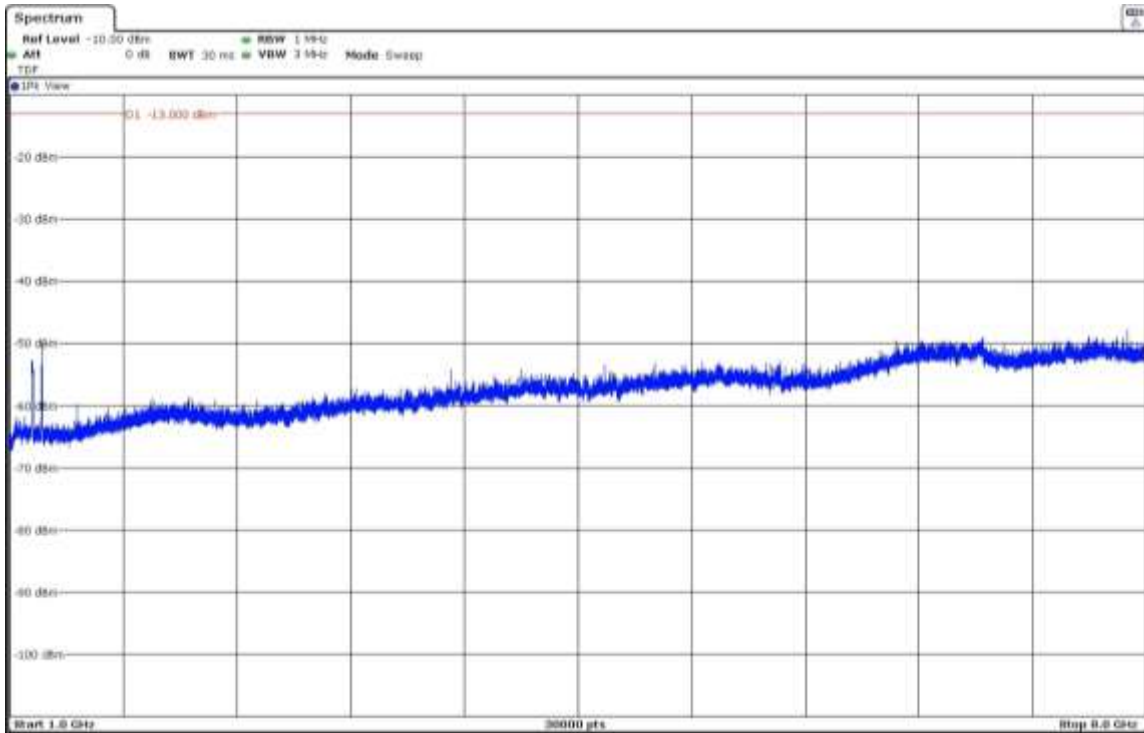
- The peak above the limit is the carrier frequency. The other peak at 745MHz is the Downlink signal.

FREQUENCY RANGE 1 - 8 GHz:

- Low Channel:



- Middle Channel:



- High Channel:

