

**FCC LISTED, REGISTRATION  
 NUMBER: 720267**

Test report No:

**ISED LISTED REGISTRATION  
 NUMBER 4621A-2**

**NIE: 56592RRF.001**

## Partial test report

### REFERENCE STANDARD: USA FCC Part 90 CANADA IC RSS-119

<b>Identificación del objeto ensayado.....:</b> Identification of item tested	RF Transceiver / Base Station Repeater
<b>Marca .....</b> Trade	PowerTrunk
<b>Modelo y/o referencia tipo .....</b> Model and /or type reference	BSR75 -K
<b>Other identification of the product .....</b>	D138K61PT FCC ID: WT7PTBSR75760B IC: 8624A-PTBSR75760B
<b>HW version .....</b>	CCP: 0.03.35.34.36
<b>SW version .....</b>	CCP: 0.03.35.34.36
<b>Características .....</b> Features	<u>Power Supply:</u> Nominal voltage: 27.4 VDC Operational voltage range: [21.6 - 28.0 VDC] <u>Frequency band:</u> TX: 763-776 MHz / RX: 793-806 MHz <u>RF output power (nominal):</u> TETRA: 48.75 dBm (75 W) / TI D-LMR: 48.75 dBm (75 W) See full details on pages 5 and 6
<b>Solicitante.....:</b> Applicant	TELTRONIC, S.A.U. Polígono Malpica, Calle C/F-Oeste (50016). Zaragoza (SPAIN).
<b>Método de ensayo solicitado, norma.....:</b> Test method requested, standard	USA FCC Part 90 10-01-17 Edition. <ul style="list-style-type: none"> <li>- Clause 90.205, 90.541, 90.635: RF output power.</li> <li>- Clause 90.543 (c): Out-of-Band Emission limit at antenna terminals.</li> <li>- Clause 90.543 (c) &amp; (f): Out-of-Band Emission limit (Radiated).</li> </ul> CANADA IC RSS-119 Issue 12, May 2015. <ul style="list-style-type: none"> <li>- RSS-119 Clause 5.4: Transmitter Output Power.</li> <li>- RSS-119 Clause 5.8.9.2: Out-of-Band Emission limit at antenna terminals.</li> <li>- RSS-119 Clause 5.8.9.2: Out-of-Band Emission limit (Radiated).</li> </ul> ANSI C63.26-2015. ANSI/TIA-603-E: 2016.

<b>Resultado</b> .....	IN COMPLIANCE
Summary	
<b>Aprobado por (nombre / cargo y firma)</b> .....	A. Llamas
Approved by (name / position & signature)	RF Lab. Manager
<b>Fecha de realización</b> .....	2018-03-23
Date of issue	
<b>Formato de informe No.</b> .....	FDT08_20
Report template No	

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## Competences and guarantees

DEKRA Testing and Certification is a laboratory with a measurement facility in compliance with the requirements of Section 2.948 of the FCC rules and has been added to the list of facilities whose measurements data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Registration Number: 720267.

DEKRA Testing and Certification is a laboratory with a measurement site in compliance with the requirements of RSS 212, Issue 1 (Provisional) and has been added to the list of filed sites of the Canadian Certification and Engineering Bureau. Reference File Number: ISED 4621A-2.

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

DEKRA Testing and Certification 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 at the time of performance of the test.

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

The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA 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 internal document PODT000.

## Usage of samples

Samples undergoing test have been selected by: **the client**.

Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
56592/002	RF Transceiver / Base Station Repeater	BSR75 -K	3265976	2018-02-14

1. Sample S/01 has undergone the test(s).  
All tests indicated in appendix A, except the following tests:  
Radiated emissions inside the band 1559-1610 MHz.

Sample S/02 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
56592/002	RF Transceiver / Base Station Repeater	BSR75 -K	3265976	2018-02-14
56592/004	Colinear antenna	4240.06.780.00	26889	2018-02-14

1. Sample S/02 has undergone the test(s).  
The following tests indicated in appendix A:  
Radiated emissions inside the band 1559-1610 MHz.

## Test sample description

The BSR75 (Base Station Repeater) is a digital RF transceiver aimed at providing the PowerTrunk-T Infrastructure with a TETRA carrier. It has been conceived as a module to be integrated in a PowerTrunk-T Cabinet with an SBS configuration (Site Base Station). The BSR75 -K operates in the frequency band 763-806 MHz and provides an RF output power of 75 W in the subband 763-776 MHz.

### Features:

#### Power Supply:

Nominal voltage: 27.4 VDC

Operational voltage range: [21.6 - 28.0 VDC]

#### Access scheme:

TDMA with 4 physical channels (time slots) per RF channel.

#### Modulation scheme:

$\pi/4$ -DQPSK with a modulation rate of 18 Ksym/s, equivalent to 36 Kbits/s. Based upon it, two digital communication systems are supported:

##### ○ TETRA:

Modulation low-pass filter: Square-root raised cosine filter with a roll-off factor of 0.35.

##### ○ TID-LMR:

Modulation low-pass filter: Square-root raised cosine filter with a roll-off factor of 0.2.

RF channel bandwidth (channel spacing):

25 KHz

Spectral efficiency:

One voice & data physical channel with a rate of 9 Kbits/s is allocated a 6.25 KHz equivalent channel bandwidth.

Frequency band:

TX: 763-776 MHz

RX: 793-806 MHz

RF output power (nominal):

TETRA: 48.75 dBm (75 W)

TI D-LMR: 48.75 dBm (75 W)

RF authorized bandwidth:

TETRA: 22 KHz

TI D-LMR: 20 KHz

Emission designators:

TETRA: 22K0D7D, 22K0D7E, 22K0D7W

TI D-LMR: 20K0D7D, 20K0D7E, 20K0D7W

Additional features:

Audio low-pass filter (root-raised cosine filter).

Options:

O485002PT: OPTION ENCRYPTION POWERTRUNK-T

## Identification of the client

TELTRONIC, S.A.U.

Polígono Malpica, Calle C/F-Oeste (50016). Zaragoza (SPAIN).

## Testing period

The performed test started on 2018-02-15 and finished on 2018-02-26.

The tests have been performed at DEKRA Testing and Certification.

## Environmental conditions

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

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 20 % Max. = 75 %
<b>Shielding effectiveness</b>	> 100 dB
<b>Electric insulation</b>	> 10 kΩ
<b>Reference resistance to earth</b>	< 1 Ω

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

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 20 % Max. = 75 %
<b>Air pressure</b>	Min. = 860 mbar Max. = 1060 mbar
<b>Shielding effectiveness</b>	> 100 dB
<b>Electric insulation</b>	> 10 kΩ
<b>Reference resistance to earth</b>	< 1 Ω
<b>Normal site attenuation (NSA)</b>	< ±4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
<b>Field homogeneity</b>	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 1000 MHz).

In the chamber for conducted measurements, the following limits were not exceeded during the test:

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 20 % Max. = 75 %
<b>Air pressure</b>	Min. = 860 mbar Max. = 1060 mbar
<b>Shielding effectiveness</b>	> 100 dB
<b>Electric insulation</b>	> 10 kΩ
<b>Reference resistance to earth</b>	< 1 Ω

## Remarks and comments

- 1: The tests have been performed by the technical personnel: Carlos Contreras and Carolina Postigo.
- 2: Used instrumentation.

### Conducted Measurements

		Last Cal. date	Cal. due date
1.	Spectrum analyser Agilent PSA E4440A	2017/10	2019/10
2.	DC power supply R&S NGPE 40/40	---	---
3.	Digital multimeter FLUKE 113	2017/05	2019/05
4.	Wideband Power sensor R&S NRP-Z81	2016/04	2018/04

### Radiated Measurements

	Last Cal. date	Cal. due date
1. Semianechoic Absorber Lined Chamber ETS FACT3 200STP	N.A.	N.A.
2. BiconicalLog antenna ETS LINDGREN 3142E	2015/06	2018/06
3. Multi Device Controller EMCO 2090	N.A.	N.A.
4. Double-ridge Guide Horn antenna 1-18 GHz SCHWARZBECK BBHA 9120 D	2016/11	2019/11
5. Spectrum analyser Rohde & Schwarz FSV40	2017/07	2019/07
6. EMI Test Receiver R&S ESU 40	2016/03	2018/03
7. RF pre-amplifier 20 MHz-7 GHz A. H. SYSTEMS PAM-0207	2017/09	2018/09
8. RF pre-amplifier 1-18 GHz Bonn Elektronik BLMA 0118-1M	2016/02	2018/02
9. DC power supply KEYSIGHT TECHNOLOGIES	---	---
10. Digital multimeter FLUKE 113	2017/05	2019/05

3: Test not requested.

### Testing verdicts

<b>Not applicable</b> .....	N/A
<b>Pass</b> .....	P
<b>Fail</b> .....	F
<b>Not measured</b> .....	N/M

FCC PART 90 / RSS-119 PARAGRAPH	VERDICT			
	NA	P	F	NM <sup>3</sup>
Clause 90.535 / RSS-119 Clause 5.2: Modulation characteristics				NM <sup>3</sup>
Clause 90.535 / RSS-119 Clause 5.5: Occupied Bandwidth				NM <sup>3</sup>
Clause 90.205, 90.541, 90.635 / RSS-119 Clause 5.4: RF output power		P		
Clause 90.543 (a) & (b) / RSS-119 5.5, 5.8.9.1.: Adjacent channel power				NM <sup>3</sup>
Clause 90.539 / RSS-119 Clause 5.3: Frequency stability				NM <sup>3</sup>
Clause 90.543 (c) / RSS-119 Clause 5.8.9.2: Out-of-Band Emission limit at antenna terminals		P		
Clause 90.543 (c) & (f) / RSS-119 Clause 5.8.9.2: Out-of-Band Emission limit (Radiated)		P		

3: see point "Remarks and comments".



## Appendix A – Test results

## INDEX

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## TEST CONDITIONS

Power supply (V):

$$V_{\text{nom}} = 27.40 \text{ Vdc}$$

$$V_{\text{max}} = \text{N/A}$$

$$V_{\text{min}} = \text{N/A}$$

The subscripts nom, min and max indicate voltage test conditions (nominal, minimum and maximum respectively, as declared by the applicant).

N/A: Not Applicable

Type of power supply = DC Voltage from external power supply

Rated RF Output Power:

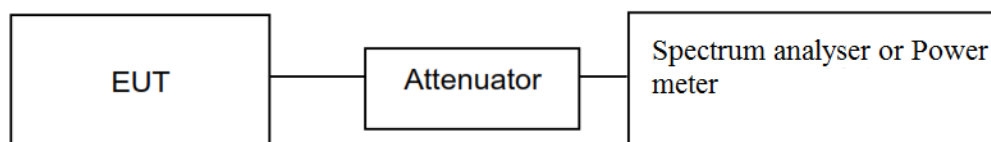
- Mode TETRA (22 kHz bandwidth): 75 W (+48.75 dBm)
- Mode TI D-LMR (20 kHz bandwidth): 75 W (+48.75 dBm)

TEST FREQUENCIES:

	<b>FCC 90: 769-775 MHz band</b>	<b>RSS-119: 768-776 MHz band</b>
Lowest channel	769.0125 MHz	768.0125 MHz
Highest channel	774.9875 MHz	775.9875 MHz

## CONDUCTED MEASUREMENTS

The equipment under test (EUT) was set up in a shielded room and it is connected to the spectrum analyzer or power meter through a calibrated attenuator and a low loss RF cable. The reading of the instrument is corrected taking into account the attenuator and cable loss.



## RADIATED MEASUREMENTS

The equipment under test was scanned for spurious emissions in the frequency range 30 to 8000 MHz.

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30 MHz-1000 MHz (30 MHz-1000 MHz Bilog antenna) and at a distance of 1m for the frequency range 1 GHz-8 GHz (1 GHz-18 GHz Double ridge horn antenna), except for the band 1559-1610 MHz where a distance of 3 m was used.

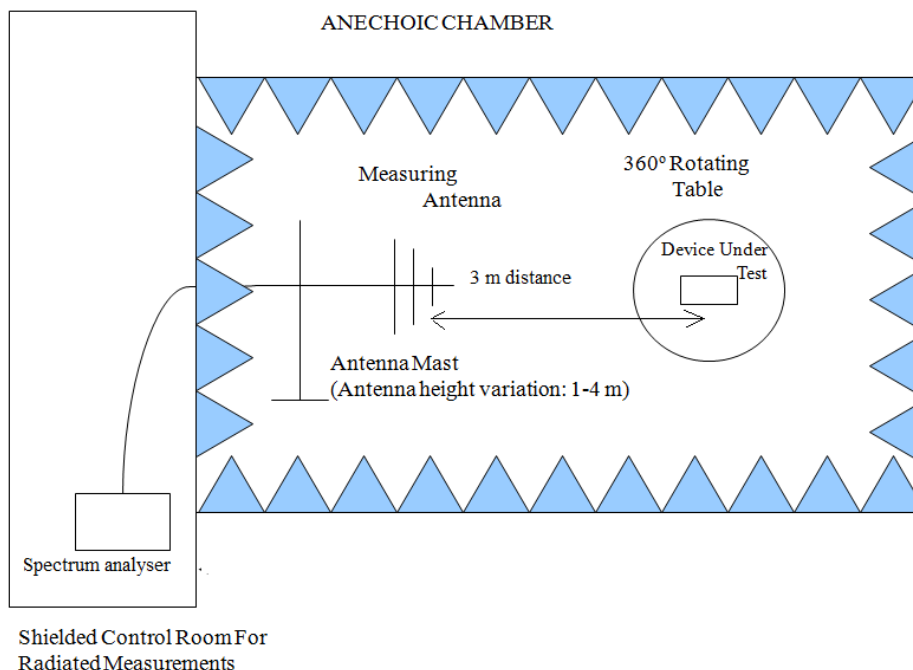
For emissions in the band 1559-1610 MHz the EUT was tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

For radiated emissions in the range 1 GHz-8 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

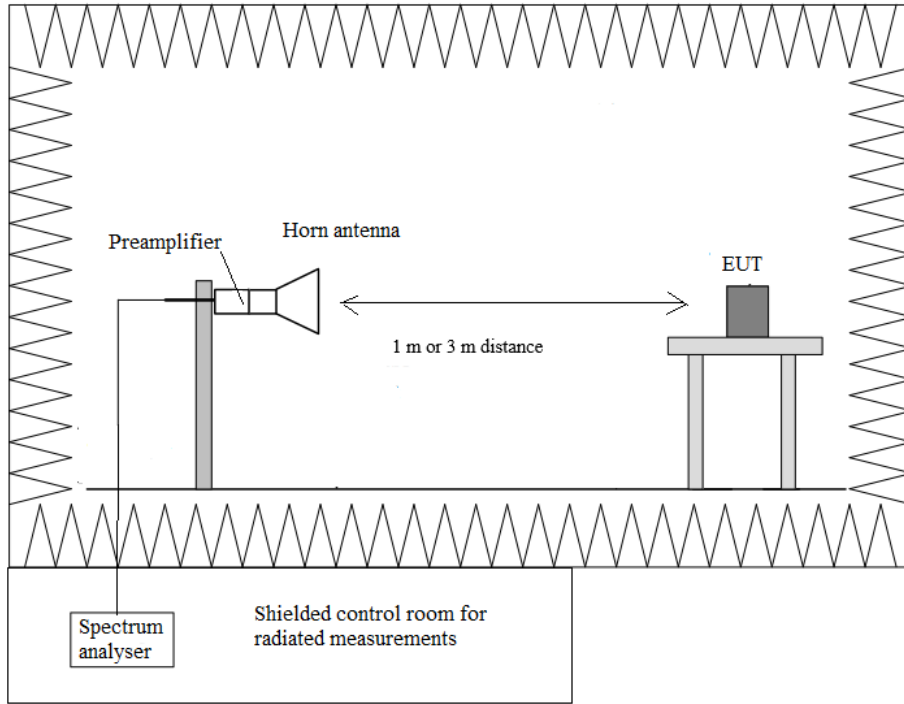
The equipment under test was set up on a non-conductive platform above the ground and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

### Radiated measurements setup $f < 1$ GHz



### Radiated measurements setup $f > 1$ GHz



## RF Output Power

### SPECIFICATION

FCC §90.205, §90.541 and §90.635. 769-775 MHz and 799-805 MHz bands.

The effective radiated power (E.R.P.) and antenna height for base stations may not exceed 1 kilowatt (30 dBw/60dBm) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

RSS-119 Clause 5.4. 768-776 MHz and 798-806 MHz bands

The output power shall be within  $\pm 1$  dB of the manufacturer's rated power listed in the equipment specifications.

The transmitter output power limits set forth in the following table will come into force upon the publication of Issue 12 of this standard and will apply to newly certified equipment.

Frequency Band (MHz)	Transmitter Output Power (W)	
	Base/Fixed Equipment	Mobile Equipment
768-776 and 798-806	See SRSP-511 for ERP limit	30 3 ERP for portable equipment

### METHOD

The conducted RF output power measurements were made at the RF output terminals of the EUT using an attenuator and a calibrated wideband power sensor.

### RESULTS

Type of equipment: RF Transceiver / Base Station Repeater.

Manufacturer's rated power: 75 W (48.75 dBm).

TI D-LMR. 20 kHz Bandwidth	Frequency (MHz)	Maximum average conducted power (dBm)	Maximum deviation (dB)
768-776 MHz band	768.0125	48.15	-0.60
	775.9875	48.30	-0.45
769-775 MHz band	769.0125	48.16	-0.59
	774.9875	48.35	-0.40
Measurement uncertainty (dB)		< $\pm 0.33$	

<b>TETRA. 22 kHz Bandwidth</b>	Frequency (MHz)	Maximum average conducted power (dBm)	Maximum deviation (dB)
768-776 MHz band	768.0125	48.75	0.00
	775.9875	48.80	0.05
769-775 MHz band	769.0125	48.79	0.04
	774.9875	48.78	0.03
Measurement uncertainty (dB)		<±0.33	

The sum of the system loss (dB) and antenna gain (dBd) for the worst case of conducted power (48.80 dBm) shall be such that the Effective Radiated Power (E.R.P.) shall not exceed the limits indicated above.

Verdict: PASS

## Spurious emissions at antenna terminals

### SPECIFICATION

FCC §90.543 (c). 769–775 and 799–805 MHz bands.

(c) Out-of-band emission limit. On any frequency outside of the frequency ranges covered by the ACP tables, the power of any emission must be reduced below the mean output power (P) by at least  $43 + 10\log(P)$  dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

RSS-119 Clause 5.8.9.2. 768-776 MHz and 798-806 MHz bands.

Out-of-band emission limit. On any frequency outside of the frequency ranges covered by the ACP tables, the power of any emission shall be attenuated below the mean output power P (W) by at least  $43 + 10\log(P)$  dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

### METHOD

The EUT RF output connector was connected to a spectrum analyser using a 50 ohm attenuator and the resolution bandwidth of the spectrum analyser was set to 100 kHz for frequencies < 1 GHz and 1 MHz for frequencies > 1 GHz. The spectrum was investigated from 9 kHz to 8 GHz.

The reading of the spectrum analyser is corrected with the attenuation loss of connection between output terminal of EUT and input of the spectrum analyzer.



RESULTS (see plots in next pages)

**TI D-LMR 20 kHz bandwidth. 769-775 MHz band.**

CHANNEL: LOWEST

Spurious signals outside the ACP ranges at less than 20 dB respect to the limit.

Spurious Frequency (MHz)	Level (dBm)	Uncertainty (dB)
1153.8	-25.05	$< \pm 2.03$
1538.4	-31.74	$< \pm 2.03$

CHANNEL: HIGHEST

Spurious signals outside the ACP ranges at less than 20 dB respect to the limit.

Spurious Frequency (MHz)	Level (dBm)	Uncertainty (dB)
1162.4	-24.23	$< \pm 2.03$

**TI D-LMR 20 kHz bandwidth. 768-776 MHz band.**

CHANNEL: LOWEST

Spurious signals outside the ACP ranges at less than 20 dB respect to the limit.

Spurious Frequency (MHz)	Level (dBm)	Uncertainty (dB)
1152.1	-25.34	$< \pm 2.03$
1535.8	-30.15	$< \pm 2.03$

CHANNEL: HIGHEST

Spurious signals outside the ACP ranges at less than 20 dB respect to the limit.

Spurious Frequency (MHz)	Level (dBm)	Uncertainty (dB)
807.35	-25.81	$< \pm 2.03$
1164.1	-24.89	$< \pm 2.03$

**TETRA 22 kHz bandwidth. 769-775 MHz band.**

CHANNEL: LOWEST

Spurious signals outside the ACP ranges at less than 20 dB respect to the limit.

Spurious Frequency (MHz)	Level (dBm)	Uncertainty (dB)
1153.8	-25.07	$< \pm 2.03$
1538.4	-29.66	$< \pm 2.03$

CHANNEL: HIGHEST

Spurious signals outside the ACP ranges at less than 20 dB respect to the limit.

Spurious Frequency (MHz)	Level (dBm)	Uncertainty (dB)
805.4	-24.27	$< \pm 2.03$
1162.4	-24.72	$< \pm 2.03$
1550.4	-32.03	$< \pm 2.03$

**TETRA 22 kHz bandwidth. 768-776 MHz band.**

CHANNEL: LOWEST

Spurious signals outside the ACP ranges at less than 20 dB respect to the limit.

Spurious Frequency (MHz)	Level (dBm)	Uncertainty (dB)
1152.1	-26.69	$< \pm 2.03$
1535.8	-31.08	$< \pm 2.03$

CHANNEL: HIGHEST

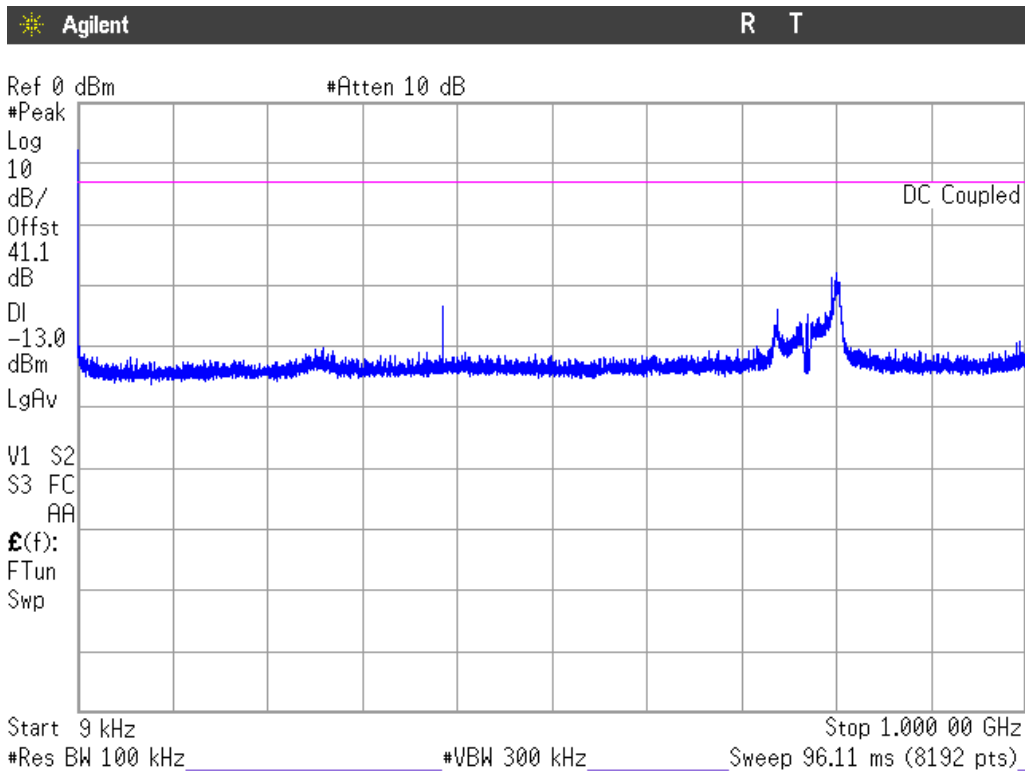
Spurious signals outside the ACP ranges at less than 20 dB respect to the limit.

Spurious Frequency (MHz)	Level (dBm)	Uncertainty (dB)
1164.1	-24.96	$< \pm 2.03$

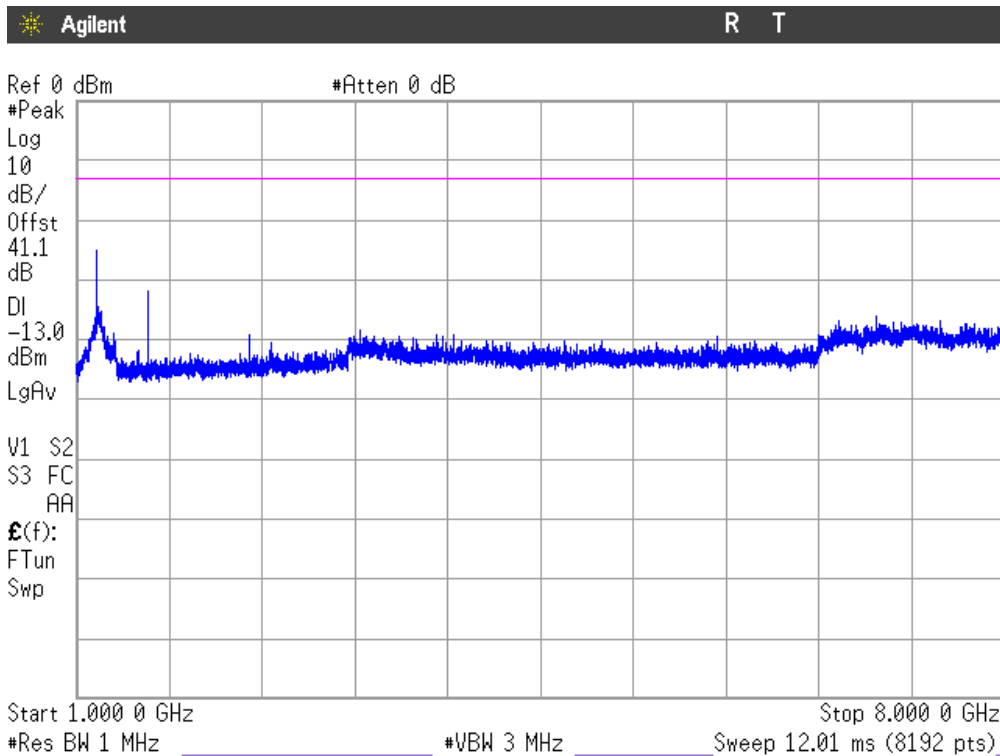
Verdict: PASS

**TI D-LMR 20 kHz bandwidth. 769-775 MHz band.**

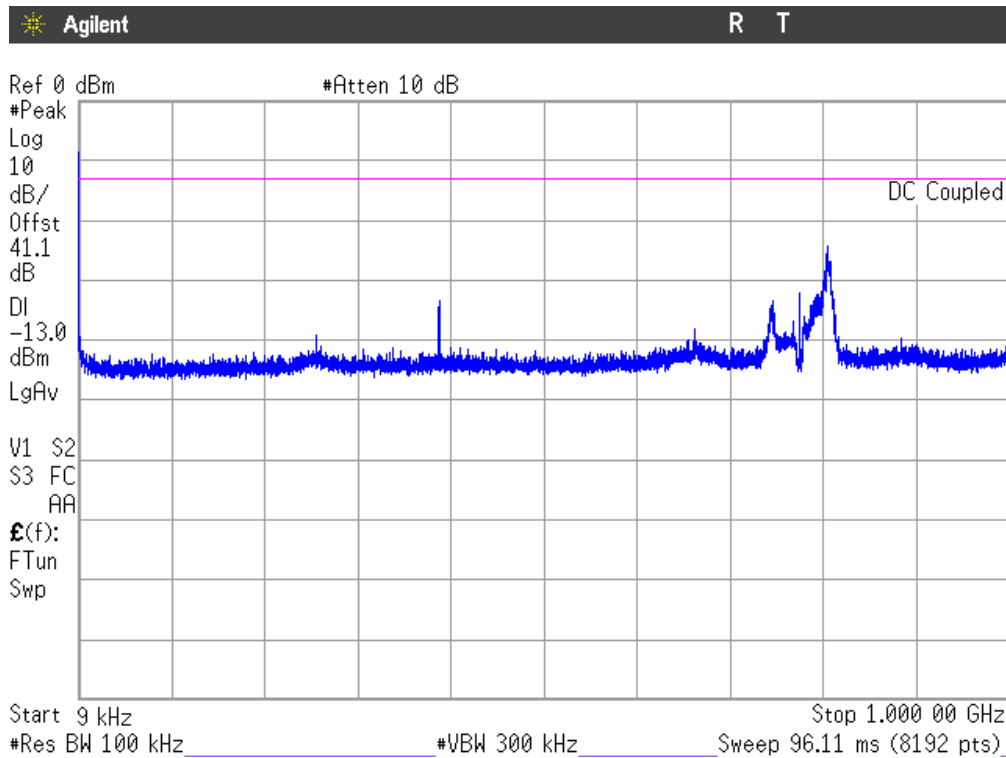
CHANNEL: LOWEST



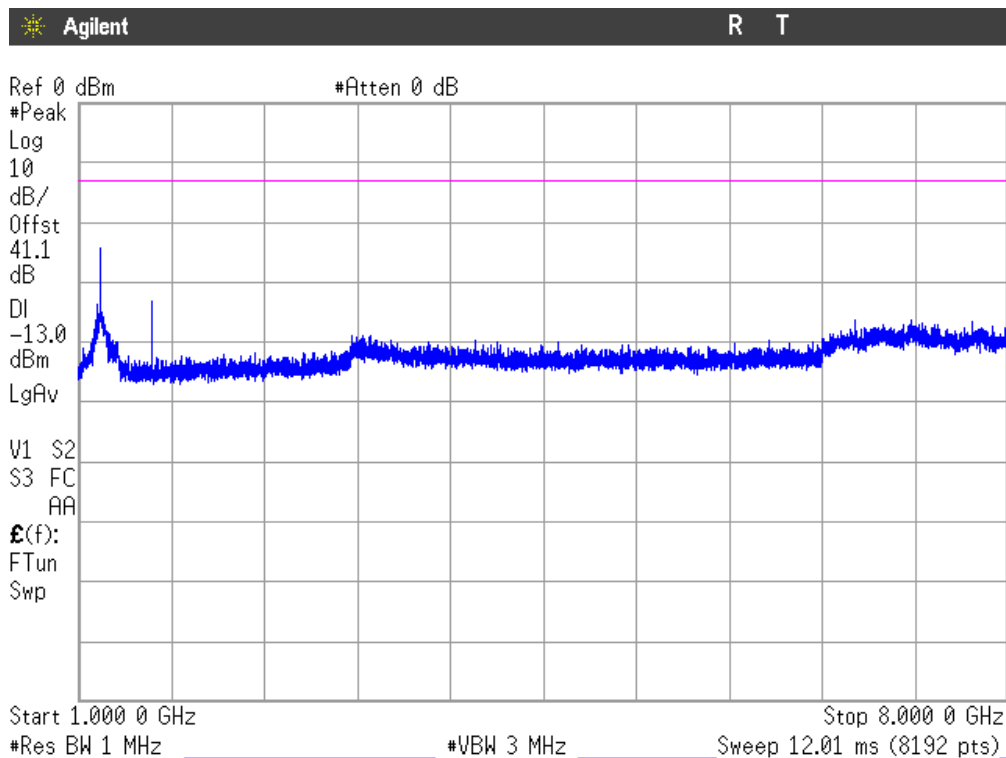
Note: The carrier frequency has been attenuated with a notch filter.



CHANNEL: HIGHEST

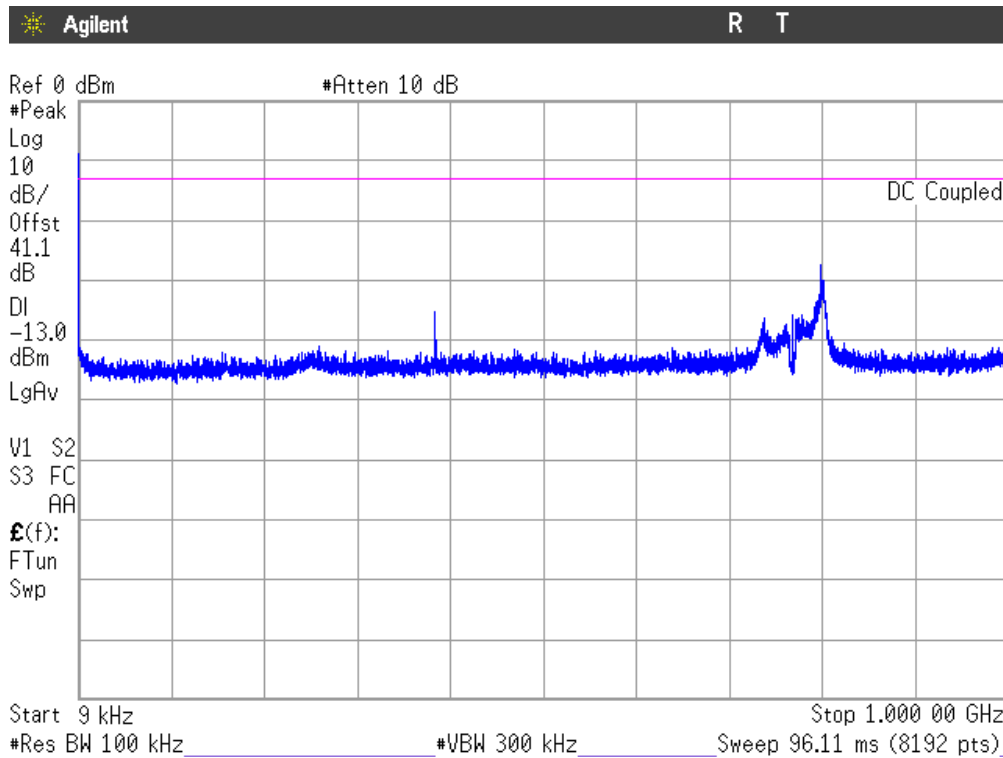


Note: The carrier frequency has been attenuated with a notch filter.

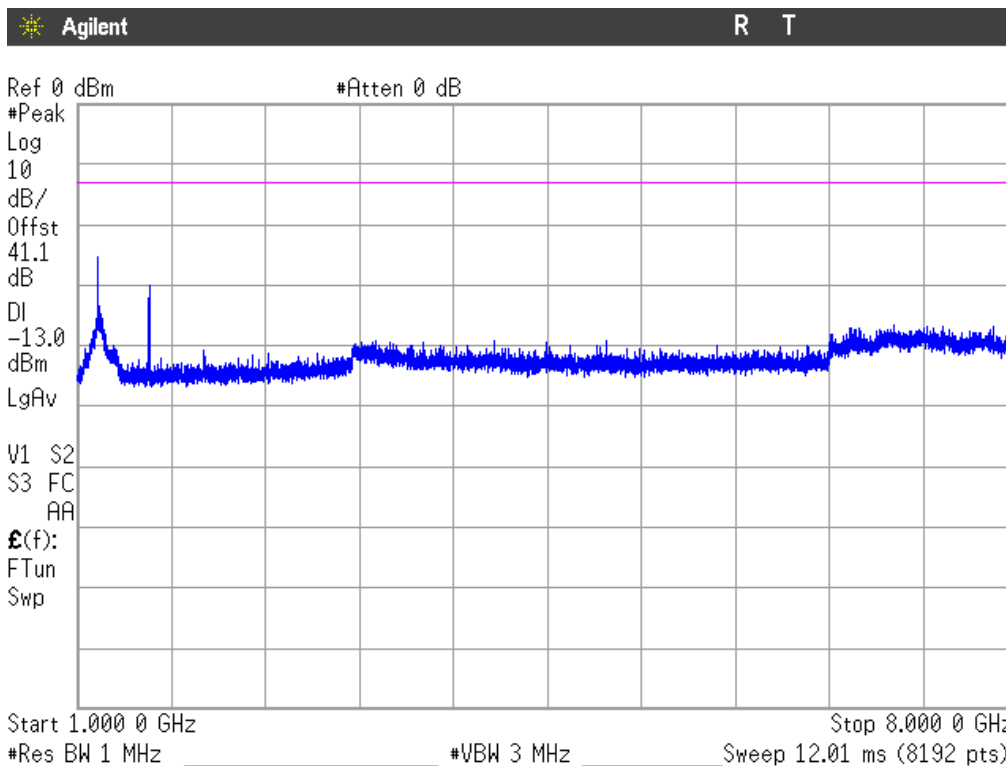


**TI D-LMR 20 kHz bandwidth. 768-776 MHz band.**

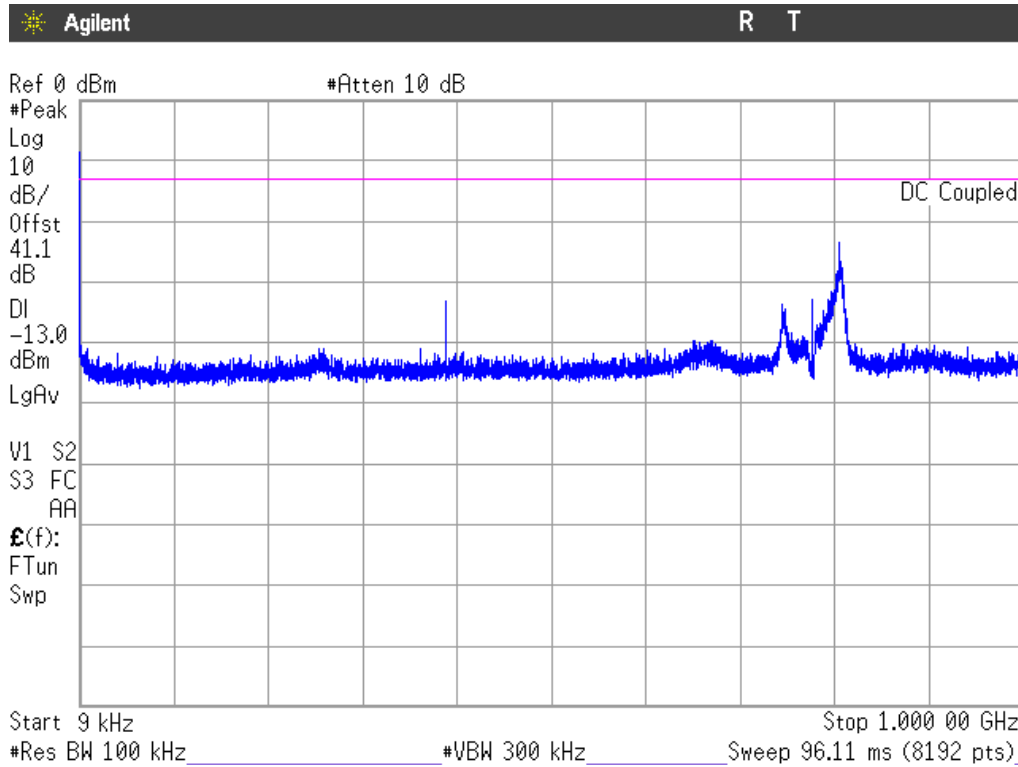
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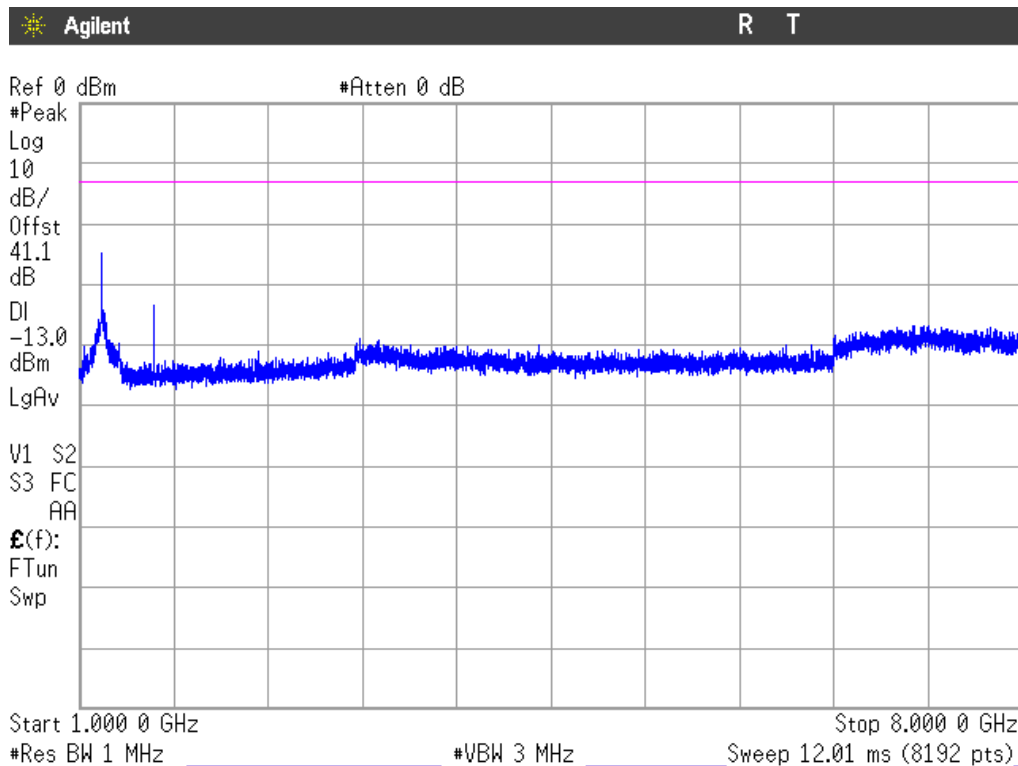
Note: The carrier frequency has been attenuated with a notch filter.



CHANNEL: HIGHEST

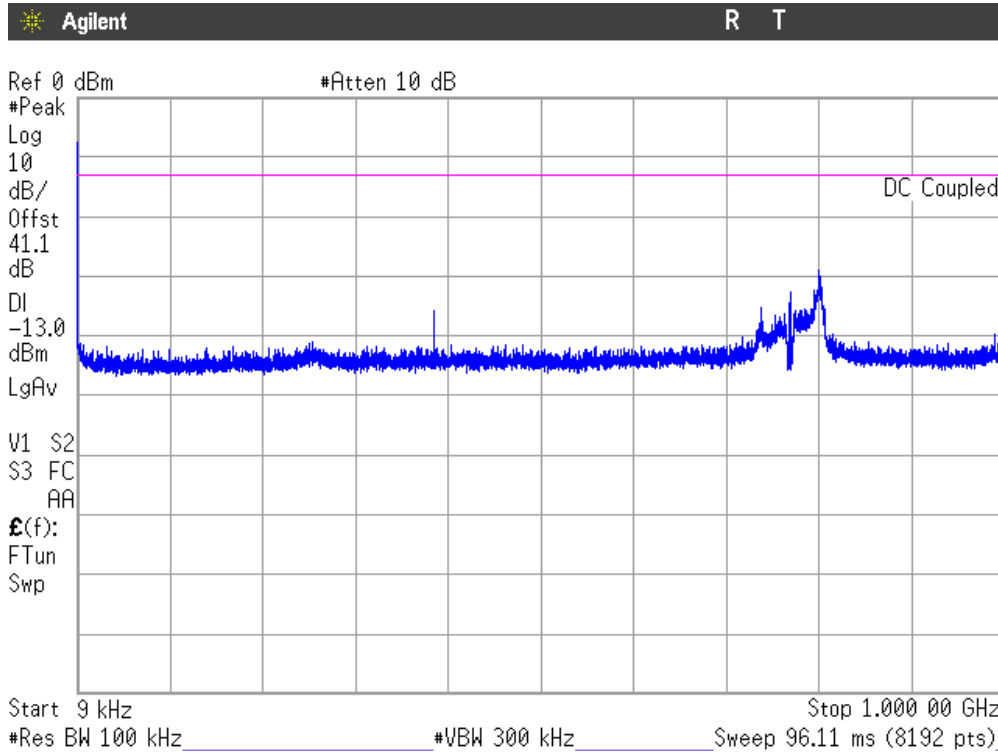


Note: The carrier frequency has been attenuated with a notch filter.

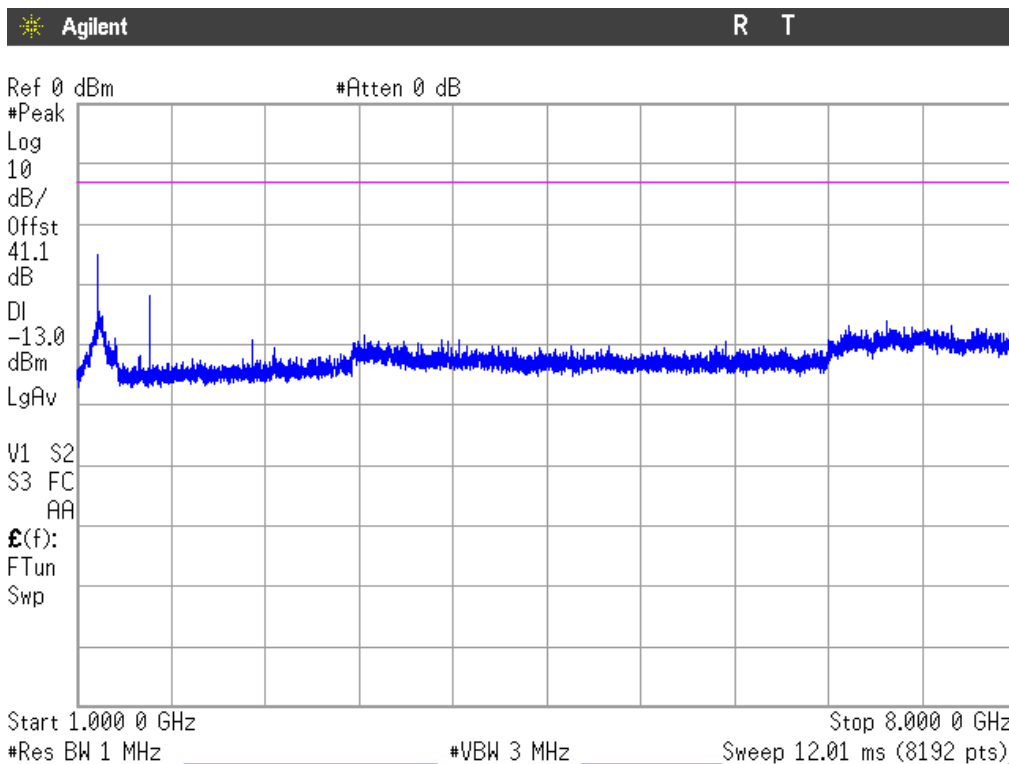


**TETRA 22 kHz bandwidth. 769-775 MHz band.**

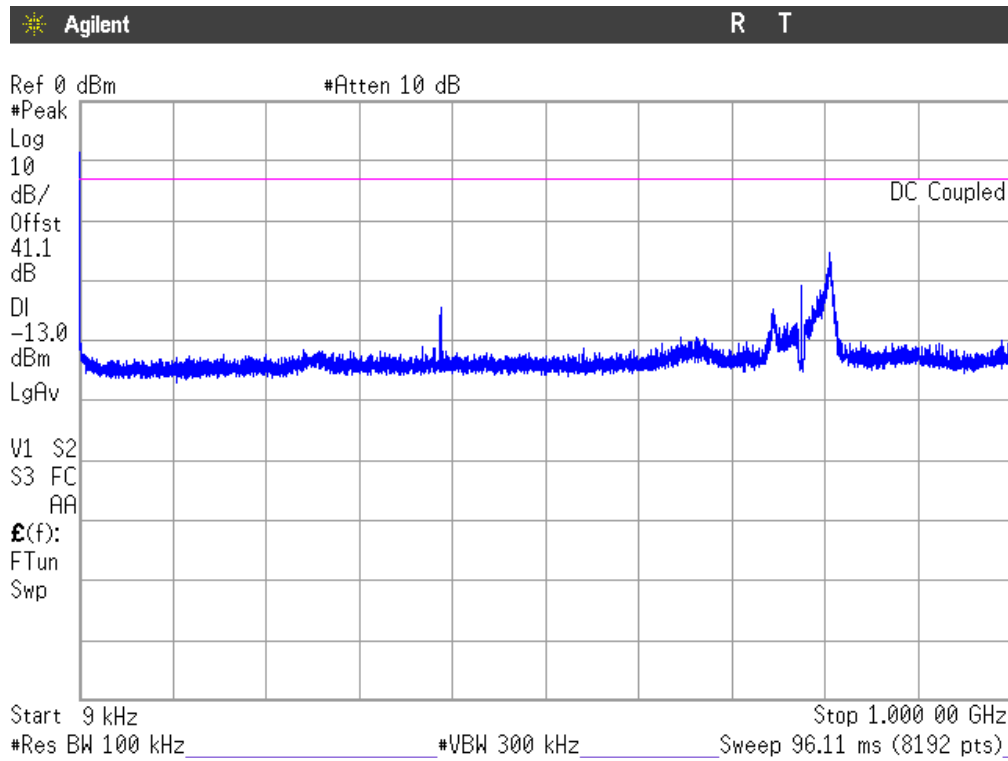
CHANNEL: LOWEST



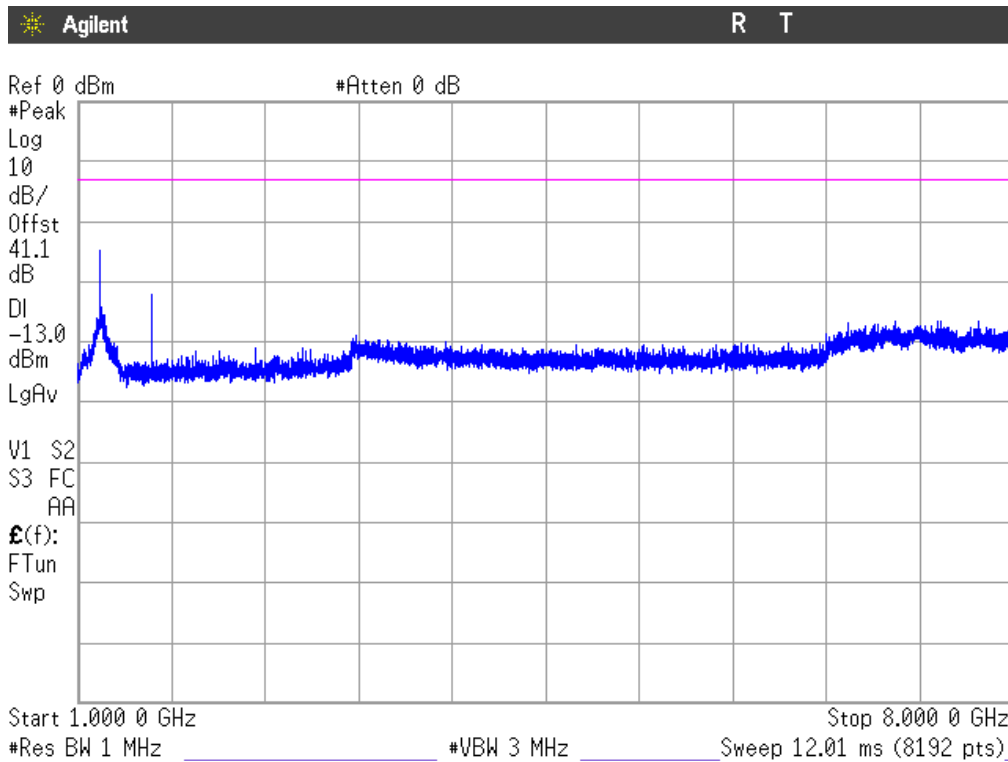
Note: The carrier frequency has been attenuated with a notch filter.



CHANNEL: HIGHEST



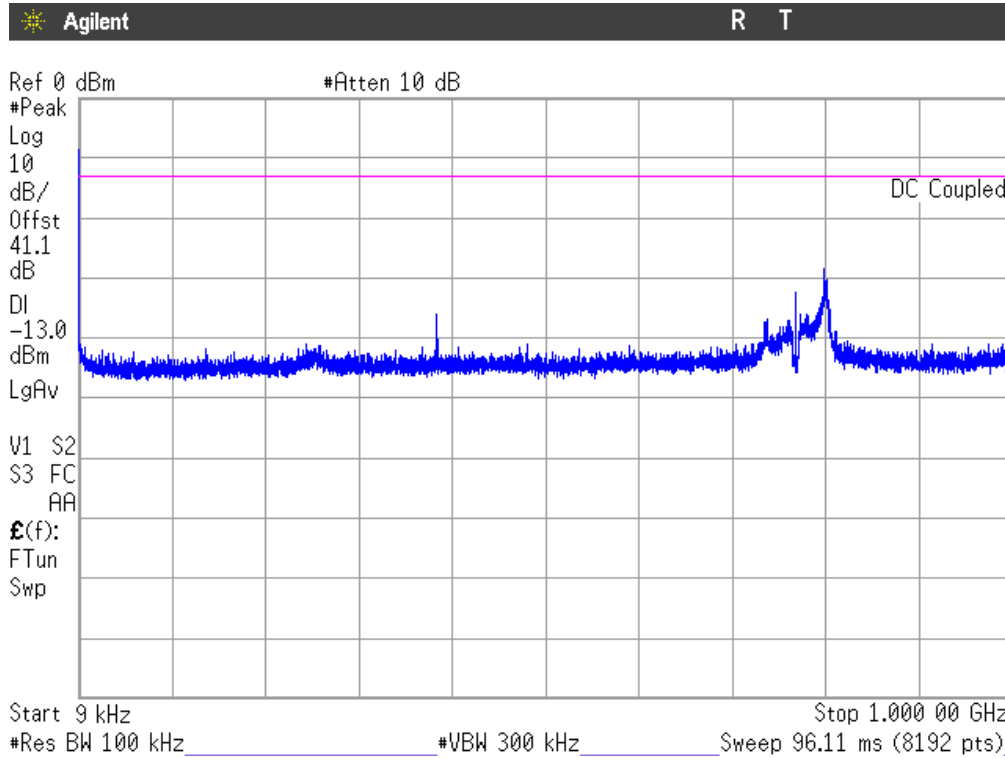
Note: The carrier frequency has been attenuated with a notch filter.



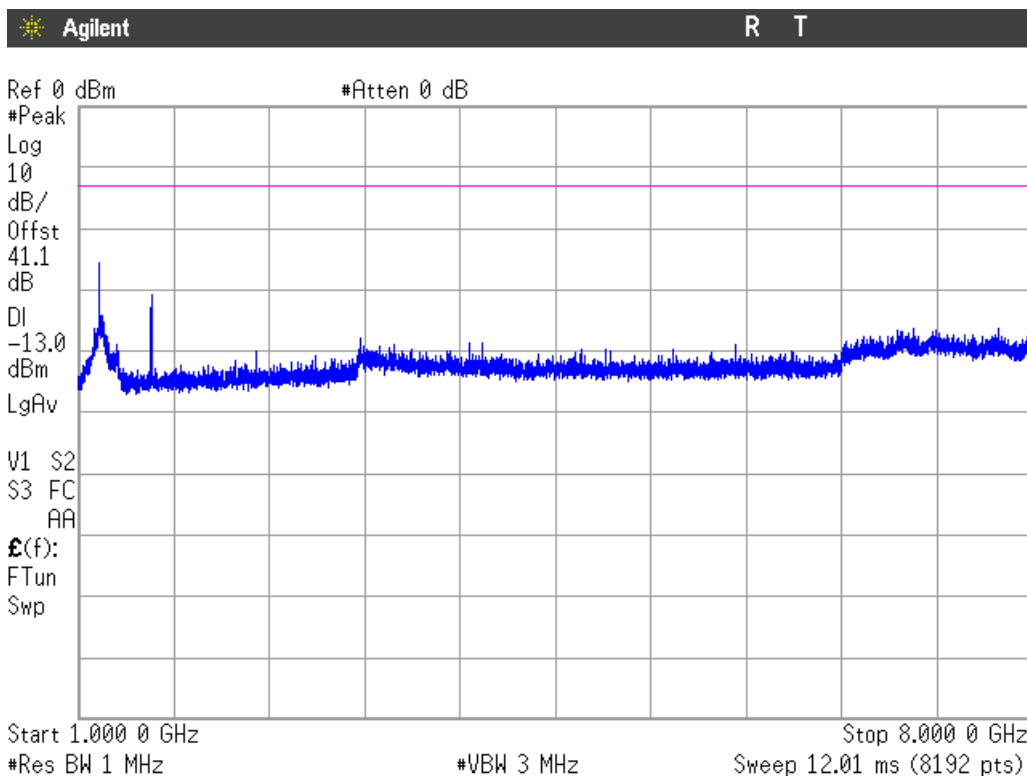


### TETRA 22 kHz bandwidth. 768-776 MHz band.

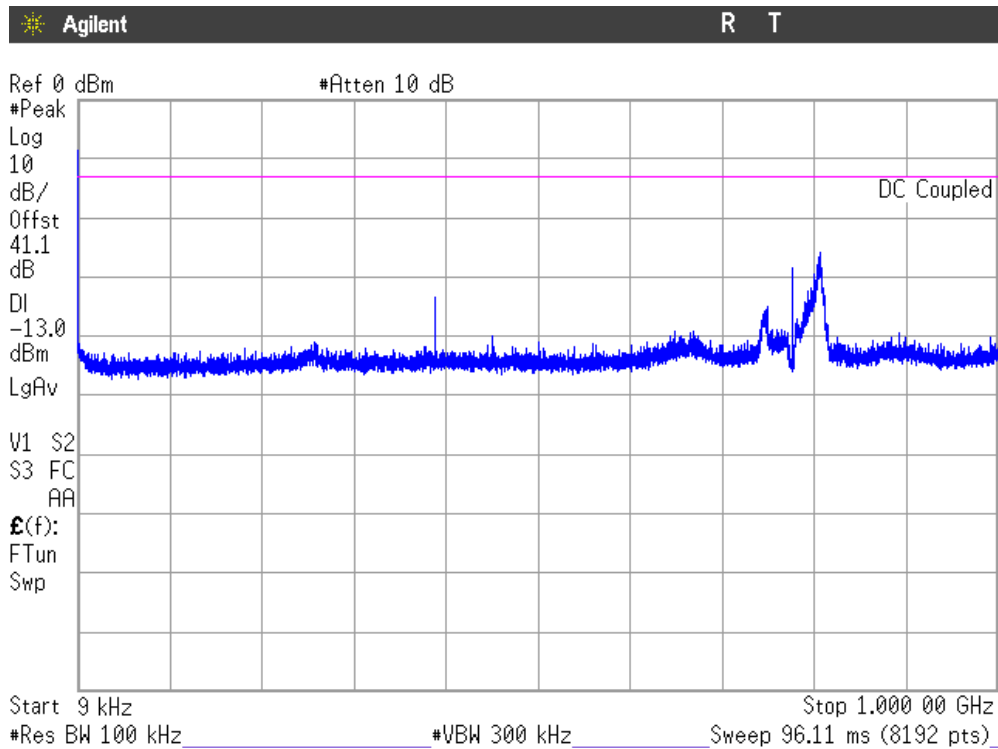
CHANNEL: LOWEST



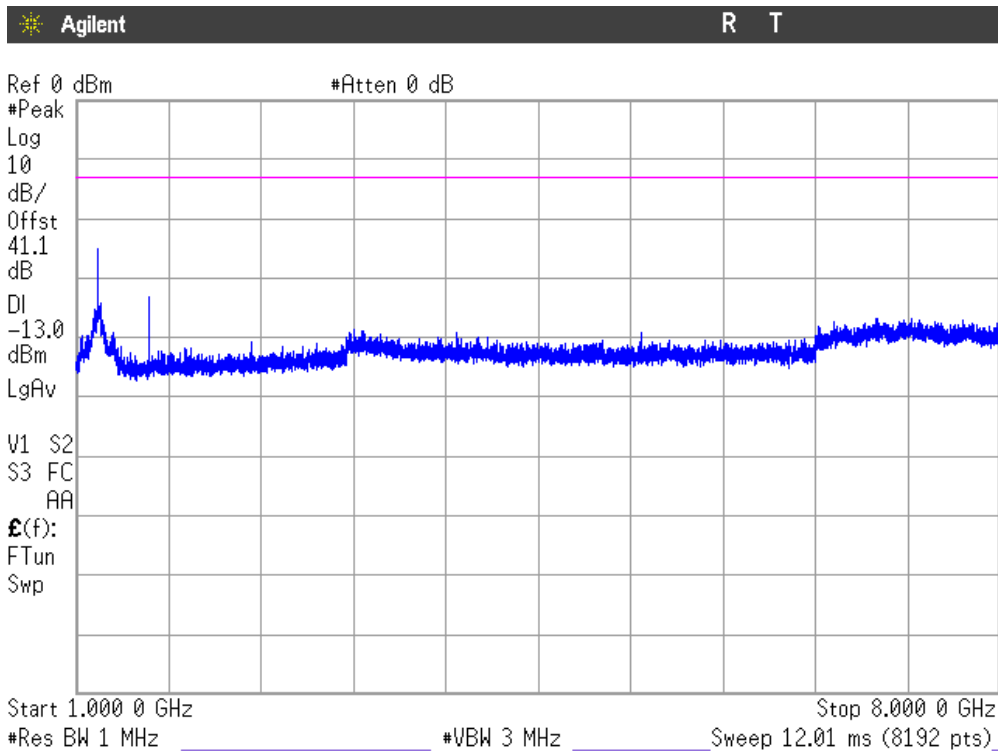
Note: The carrier frequency has been attenuated with a notch filter.



CHANNEL: HIGHEST



Note: The carrier frequency has been attenuated with a notch filter.



## Radiated emissions

### SPECIFICATION

FCC §90.543 (c) & (f). 769–775 and 799–805 MHz bands.

(c) Out-of-band emission limit. On any frequency outside of the frequency ranges covered by the ACP tables, the power of any emission must be reduced below the mean output power (P) by at least  $43 + 10\log(P)$  dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to  $-70$  dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and  $-80$  dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

RSS-119 Clause 5.8.9.2. 768-776 MHz and 798-806 MHz bands.

Out-of-band emission limit. On any frequency outside of the frequency ranges covered by the ACP tables, the power of any emission shall be attenuated below the mean output power P (W) by at least  $43 + 10\log(P)$  dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

In addition, for operations in the bands 768-776 MHz and 798-806 MHz, all emissions (including harmonics in the band 1559-1610 MHz), shall not exceed:

$-70$  dBW/MHz equivalent isotropically radiated power (e.i.r.p.) for wideband emissions, and

$-80$  dBW/kHz e.i.r.p. for discrete emissions of less than 700 Hz bandwidth.

### METHOD

The measurement was performed with the EUT inside an anechoic chamber. The RF output connector of the EUT is terminated with an attenuator and a 50 ohm load.

For emissions in the band 1559-1610 MHz the EUT was tested with an antenna that is representative of the type that will be used with the equipment in normal operation (Colinear antenna).

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 below 1 GHz and at 1 m distance for measurements above 1 GHz, except for the band 1559-1610 MHz where a distance of 3 m was used.

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.

Each detected emission is substituted by the Substitution method.

## RESULTS

I. FCC 90. 769-775 MHz band for 20 kHz and 22 kHz bandwidth.

A preliminary scan determined the TI D-LMR 20 kHz bandwidth as the worst case. The following tables and plots show the results for TI D-LMR 20 kHz bandwidth.

### 1. CHANNEL: LOWEST.

#### Substitution method data

Frequency (GHz)	Instrument reading (dBm)	RBW (kHz)	Detector	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gi (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) - (2) + (3)
2.42322	-27.25	1000	Peak	Vertical	-44.93	2.02	10.20	-36.75
2.46848	-29.28	1000	Peak	Horizontal	-46.98	2.10	10.40	-38.68
3.07632	-36.42	1000	Peak	Vertical	-52.40	2.52	11.00	-43.92
5.03828	-38.56	1000	Peak	Vertical	-50.03	3.48	11.60	-41.91
5.38328	-34.25	1000	Peak	Horizontal	-46.45	3.50	12.80	-37.15
6.15235	-38.09	1000	Peak	Vertical	-47.39	4.00	11.90	-39.49

### Frequency range 1559 MHz-1610 GHz.

#### Substitution method data

Frequency (GHz)	Instrument reading (dBm)	RBW (kHz)	Detector	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gi (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) - (2) + (3)
1.5617566	-51.86	1000	Peak	Vertical	-60.56	1.60	8.80	-53.36
1.5735563	-52.65	1000	Peak	Vertical	-61.29	1.62	8.86	-54.05
1.5846794	-54.14	1000	Peak	Vertical	-62.56	1.68	8.92	-55.32

No discrete emissions of less than 700 Hz bandwidth were found.

## 2. CHANNEL: HIGHEST.

### Substitution method data

Frequency (GHz)	Instrument reading (dBm)	RBW (kHz)	Detector	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gi (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) – (2) + (3)
2.45210	-31.12	1000	Peak	Horizontal	-48.62	2.10	10.20	-40.52
3.10012	-28.41	1000	Peak	Vertical	-44.27	2.54	10.90	-35.91
3.87525	-34.02	1000	Peak	Horizontal	-48.82	2.80	11.60	-40.02
4.65038	-37.44	1000	Peak	Horizontal	-50.24	3.30	11.90	-41.64
5.42505	-37.51	1000	Peak	Horizontal	-49.61	3.50	12.80	-40.31
6.20042	-35.38	1000	Peak	Vertical	-44.28	4.10	11.70	-36.68

## Frequency range 1559 MHz-1610 GHz.

### Substitution method data

Frequency (GHz)	Instrument reading (dBm)	RBW (kHz)	Detector	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gi (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) – (2) + (3)
1.5605020	-42.90	1000	Peak	Vertical	-51.60	1.60	8.80	-44.40
1.5607196	-52.92	1000	Peak	Vertical	-61.50	1.62	8.80	-54.32
1.5689017	-46.43	1000	Peak	Vertical	-54.93	1.65	8.85	-47.73

No discrete emissions of less than 700 Hz bandwidth were found.

## II. RSS-119. 768-776 MHz band for 20 kHz and 22 kHz bandwidth.

A preliminary scan determined the TI D-LMR 20 kHz bandwidth as the worst case. The following tables and plots show the results for TI D-LMR 20 kHz bandwidth.

### 1. CHANNEL: LOWEST.

#### Substitution method data

Frequency (GHz)	Instrument reading (dBm)	RBW (kHz)	Detector	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gi (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) – (2) + (3)
2.43138	-30.86	1000	Peak	Vertical	-48.51	2.05	10.20	-40.36
2.44888	-25.30	1000	Peak	Horizontal	-43.02	2.08	10.20	-34.90
3.07212	-27.65	1000	Peak	Vertical	-43.63	2.52	11.00	-35.15
3.84025	-37.80	1000	Peak	Vertical	-52.90	2.60	11.60	-43.90
5.37628	-36.67	1000	Peak	Vertical	-48.97	3.40	12.80	-39.57
6.14442	-39.68	1000	Peak	Vertical	-48.98	4.00	11.90	-41.08

### Frequency range 1559 MHz-1610 GHz.

#### Substitution method data

Frequency (GHz)	Instrument reading (dBm)	RBW (kHz)	Detector	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gi (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) – (2) + (3)
1.5611242	-43.87	1000	Peak	Vertical	-52.57	1.60	8.80	-45.37
1.5650478	-49.27	1000	Peak	Vertical	-57.89	1.62	8.84	-50.67
1.5722235	-52.13	1000	Peak	Vertical	-60.65	1.62	8.84	-53.43
1.5811145	-51.41	1000	Peak	Vertical	-59.86	1.67	8.92	-52.61

No discrete emissions of less than 700 Hz bandwidth were found.

## 2. CHANNEL: HIGHEST.

### Substitution method data

Frequency (GHz)	Instrument reading (dBm)	RBW (kHz)	Detector	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain $G_i$ (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) - (2) + (3)
2.45075	-22.12	1000	Peak	Horizontal	-39.62	2.10	10.20	-31.52
3.10408	-24.55	1000	Peak	Vertical	-40.43	2.52	10.90	-32.05
3.88015	-35.86	1000	Peak	Horizontal	-50.66	2.90	11.70	-41.86
4.65598	-38.67	1000	Peak	Horizontal	-51.37	3.40	11.90	-42.87
5.43205	-39.38	1000	Peak	Horizontal	-51.38	3.60	12.80	-42.18
6.20788	-32.13	1000	Peak	Vertical	-41.03	4.10	11.70	-33.43

### Frequency range 1559 MHz-1610 GHz.

### Substitution method data

Frequency (GHz)	Instrument reading (dBm)	RBW (kHz)	Detector	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain $G_i$ (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) - (2) + (3)
1.5626083	-45.20	1000	Peak	Vertical	-53.90	1.60	8.80	-46.70
1.5669977	-43.06	1000	Peak	Vertical	-51.66	1.62	8.82	-44.46
1.5780885	-45.16	1000	Peak	Vertical	-53.61	1.65	8.90	-46.36

No discrete emissions of less than 700 Hz bandwidth were found.

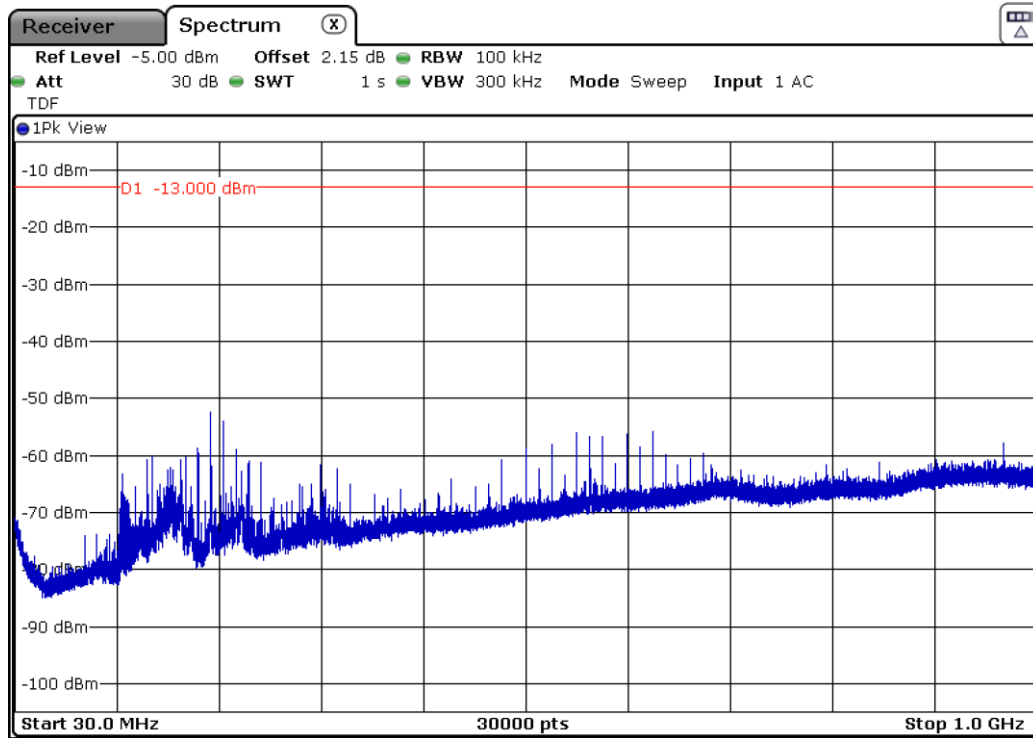
Measurement uncertainty (dB)	<±3.88 for $f < 1$ GHz <±4.87 for $f \geq 1$ GHz up to 18 GHz
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Verdict: PASS

FREQUENCY RANGE 30 MHz-1000 MHz.

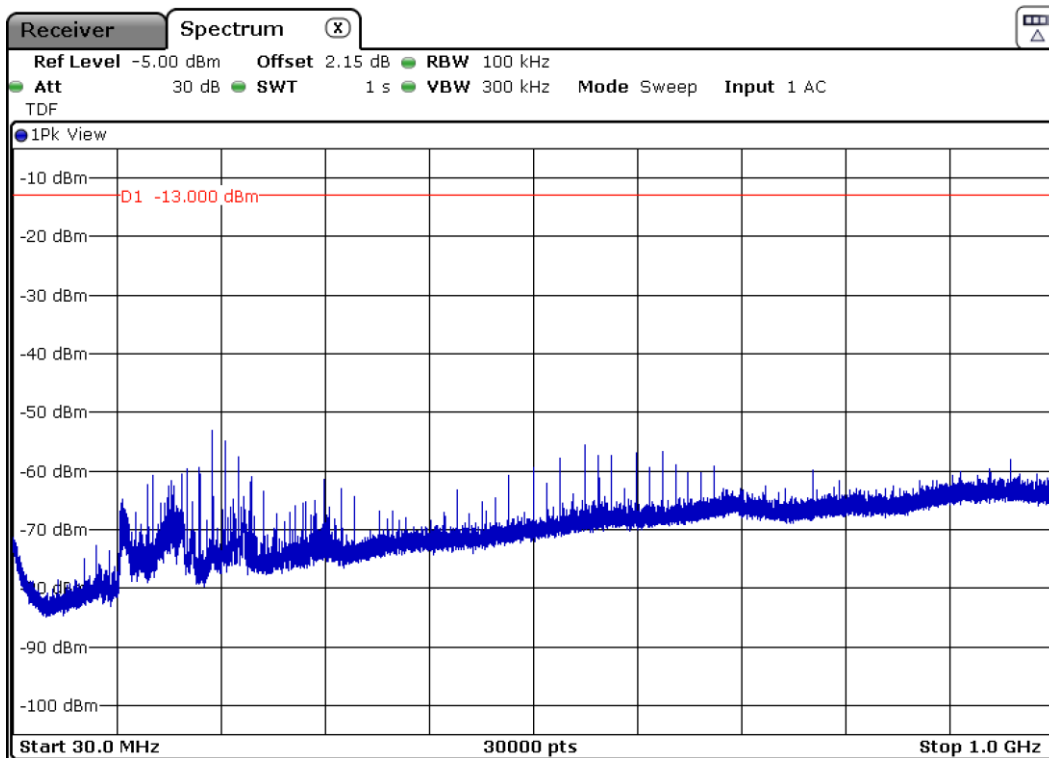
I. FCC 90 769-775 MHz band.

CHANNEL: LOWEST.



Note: The carrier is attenuated with a notch filter.

CHANNEL: HIGHEST.

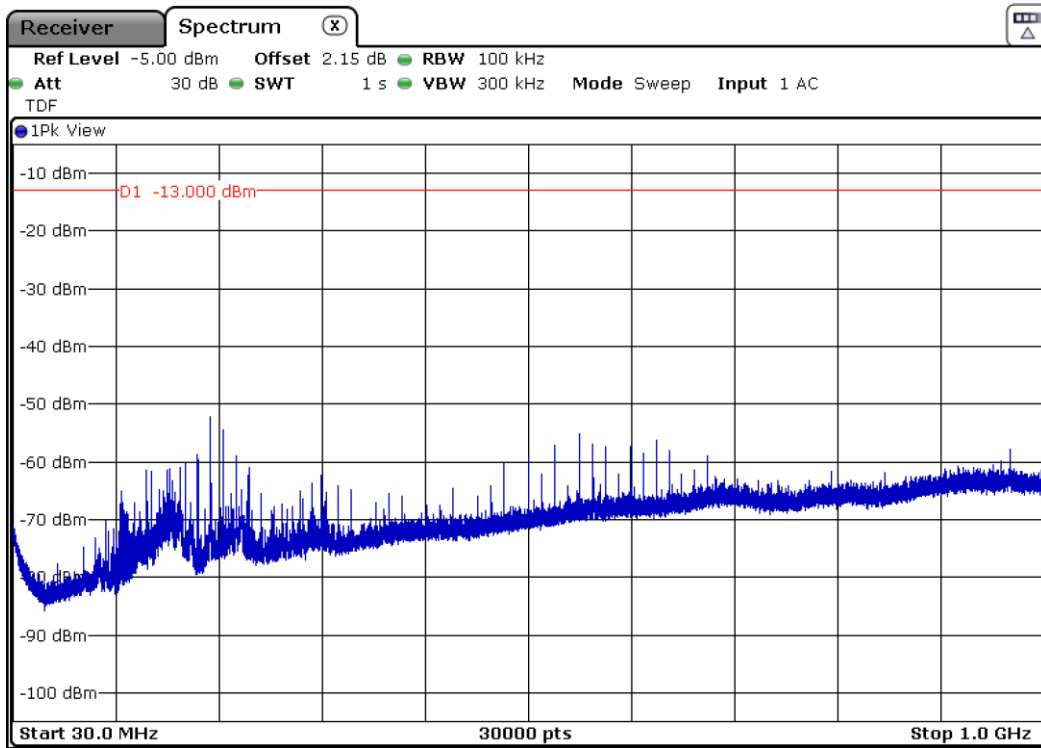


Note: The carrier is attenuated with a notch filter.



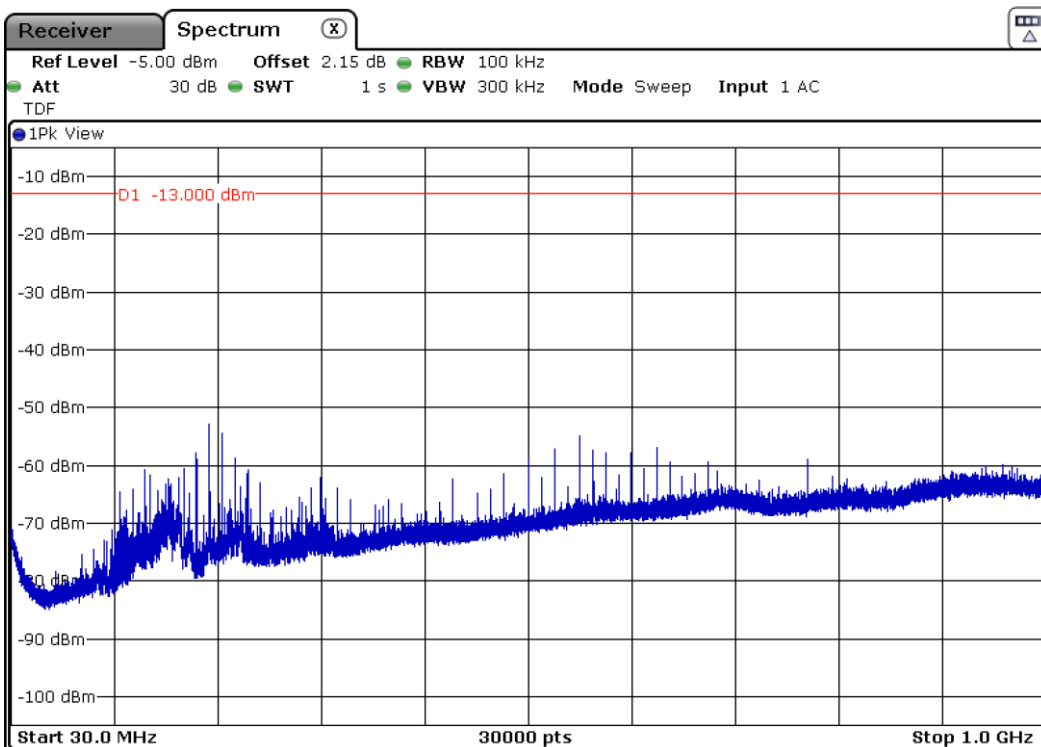
## II. RSS-119 768-776 MHz band.

CHANNEL: LOWEST.



Note: The carrier is attenuated with a notch filter.

CHANNEL: HIGHEST.

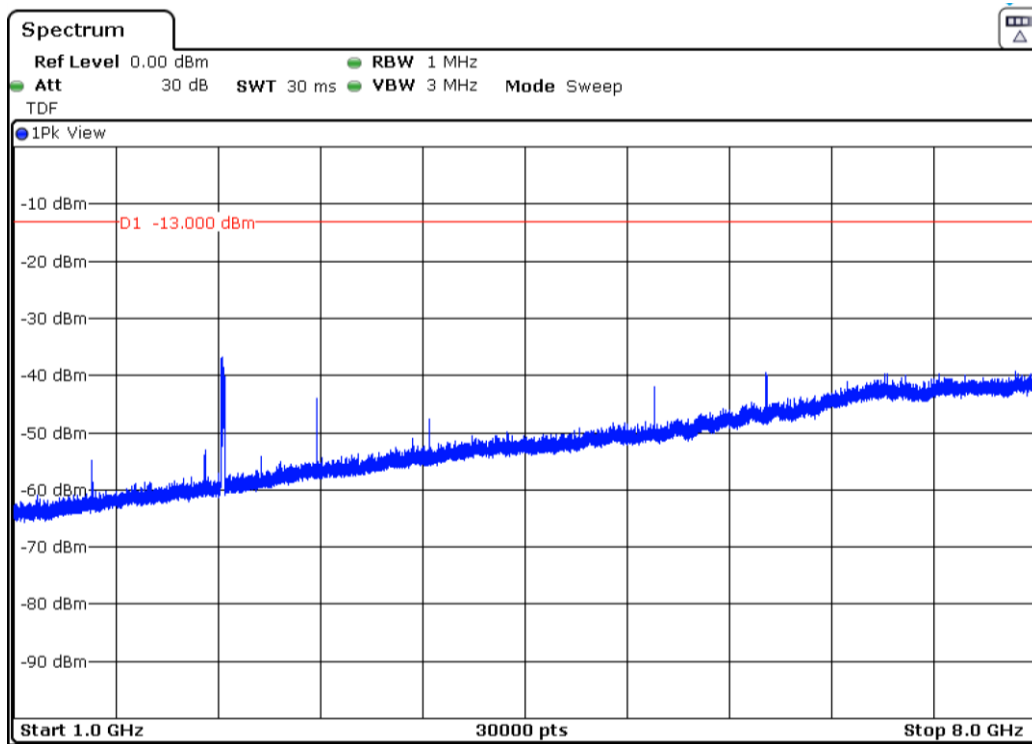


Note: The carrier is attenuated with a notch filter.

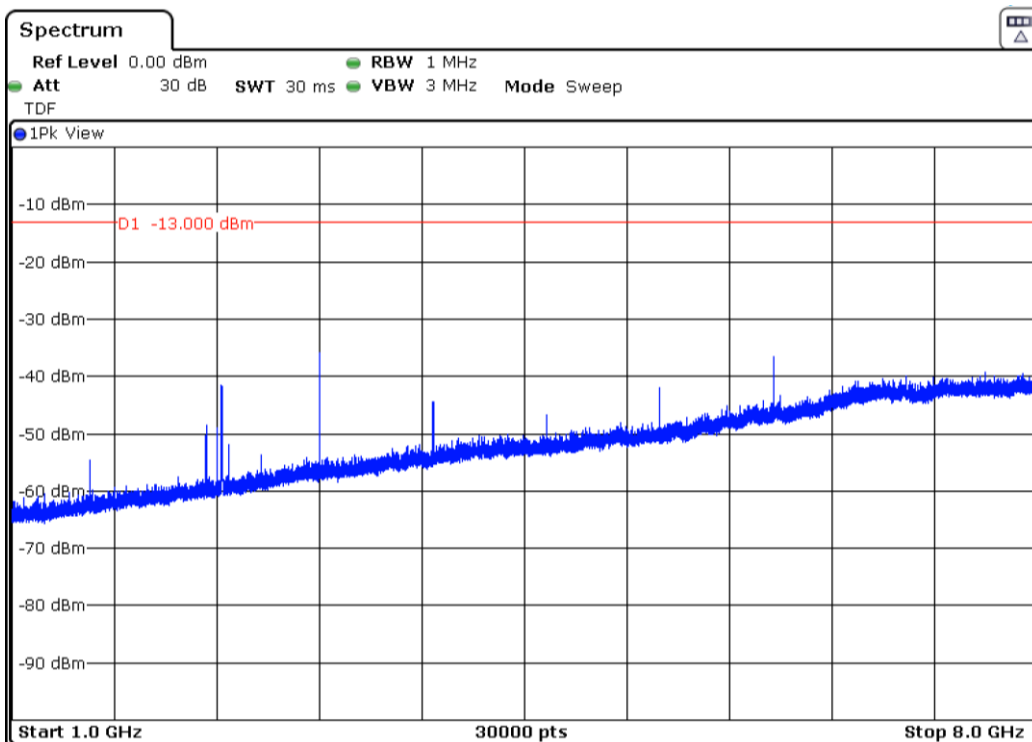
FREQUENCY RANGE 1 GHz to 8 GHz.

I. FCC 90. 769-775 MHz band.

CHANNEL: LOWEST.

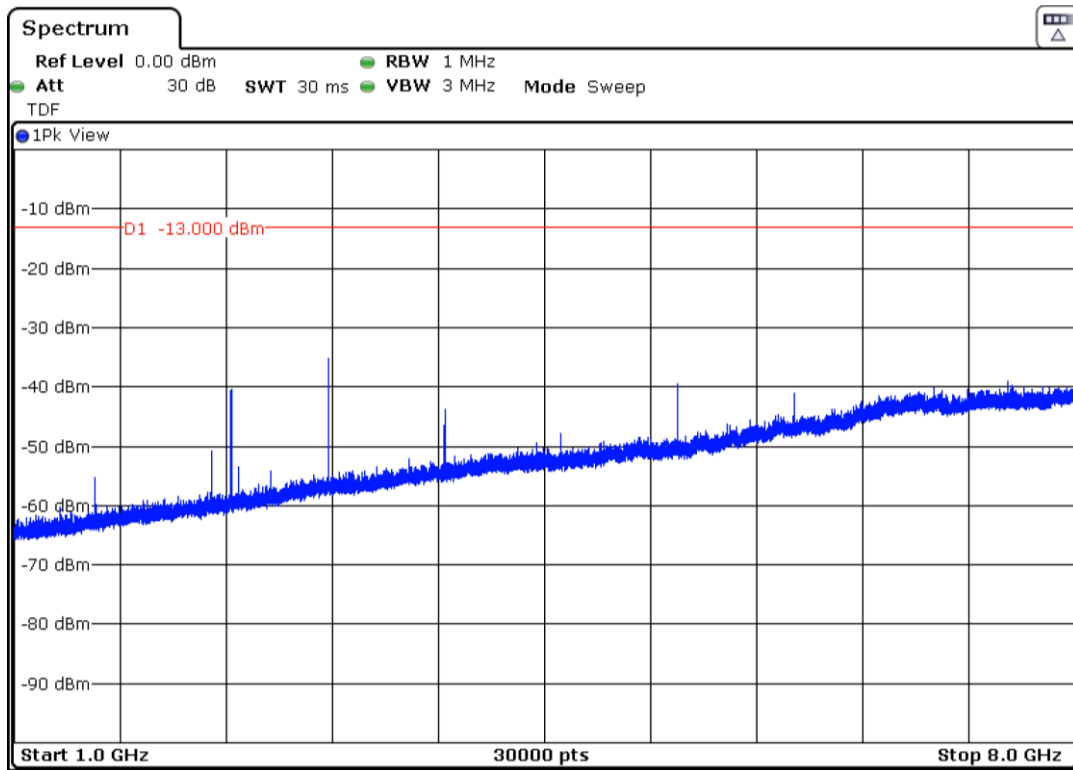


CHANNEL: HIGHEST.

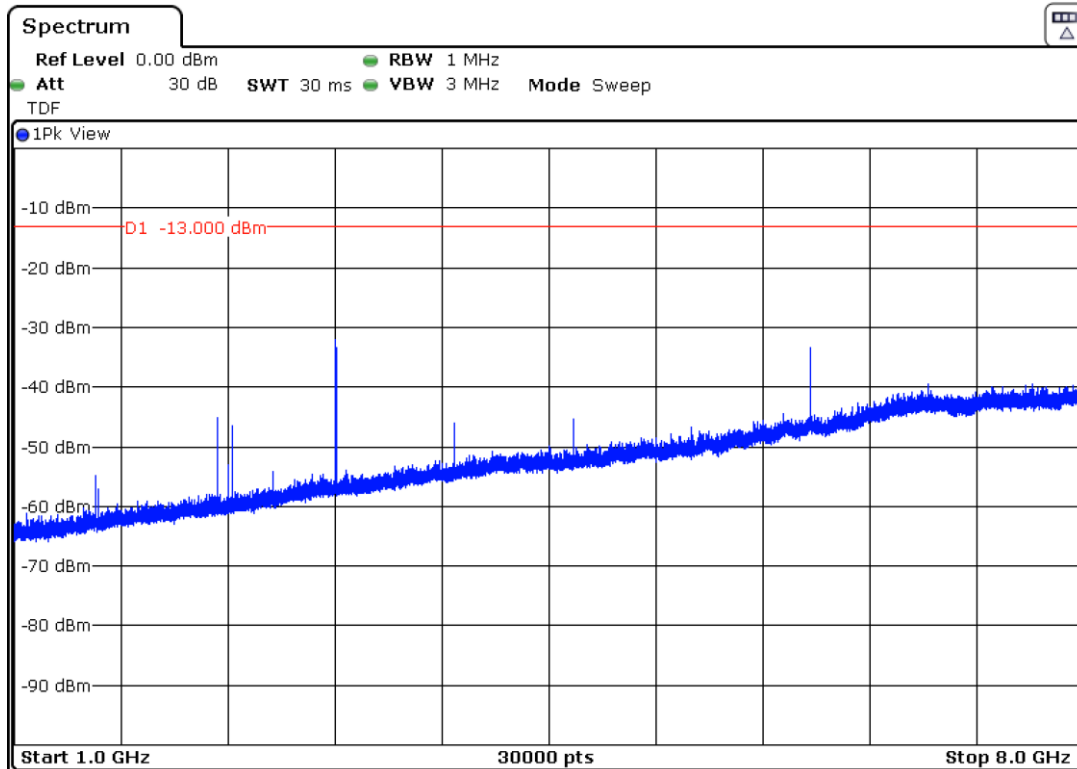


II. RSS-119. 768-776 MHz band.

CHANNEL: LOWEST.



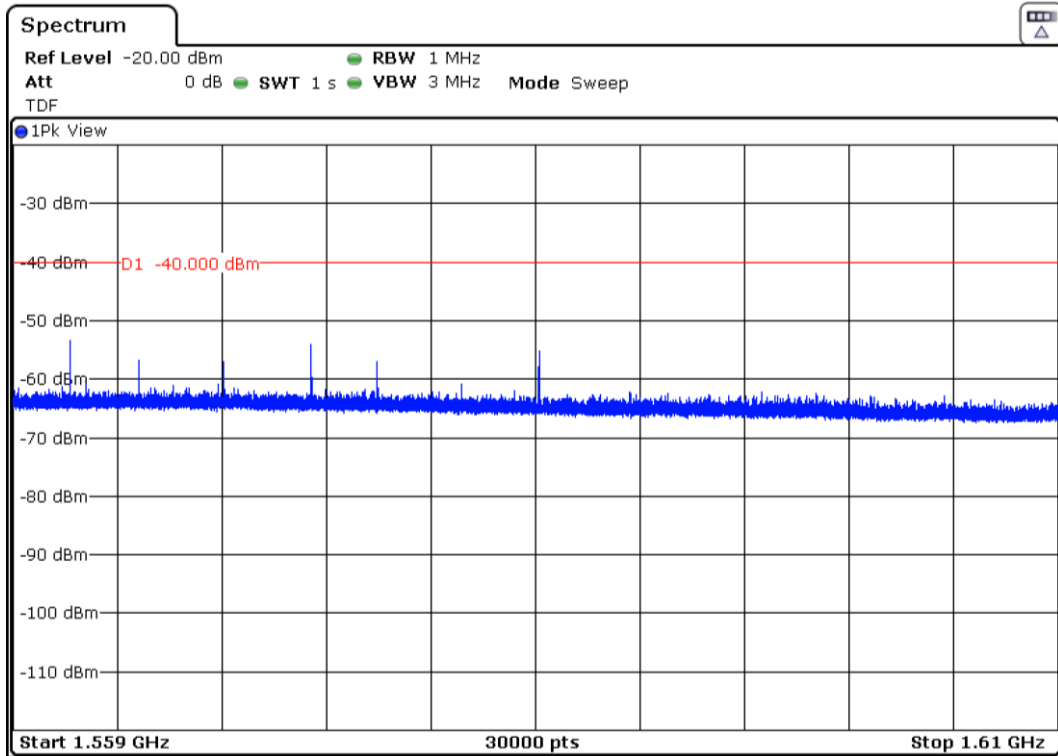
CHANNEL: HIGHEST.



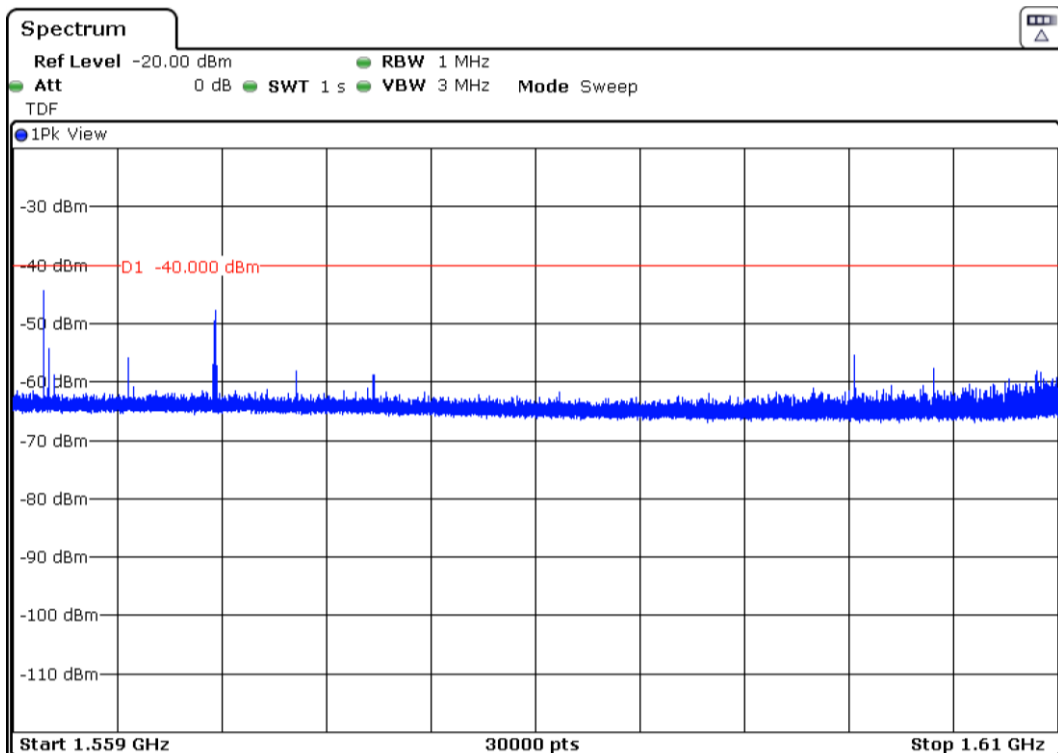
FREQUENCY RANGE 1559 MHz to 1610 MHz.

I. FCC 90. 769-775 MHz band.

CHANNEL: LOWEST.

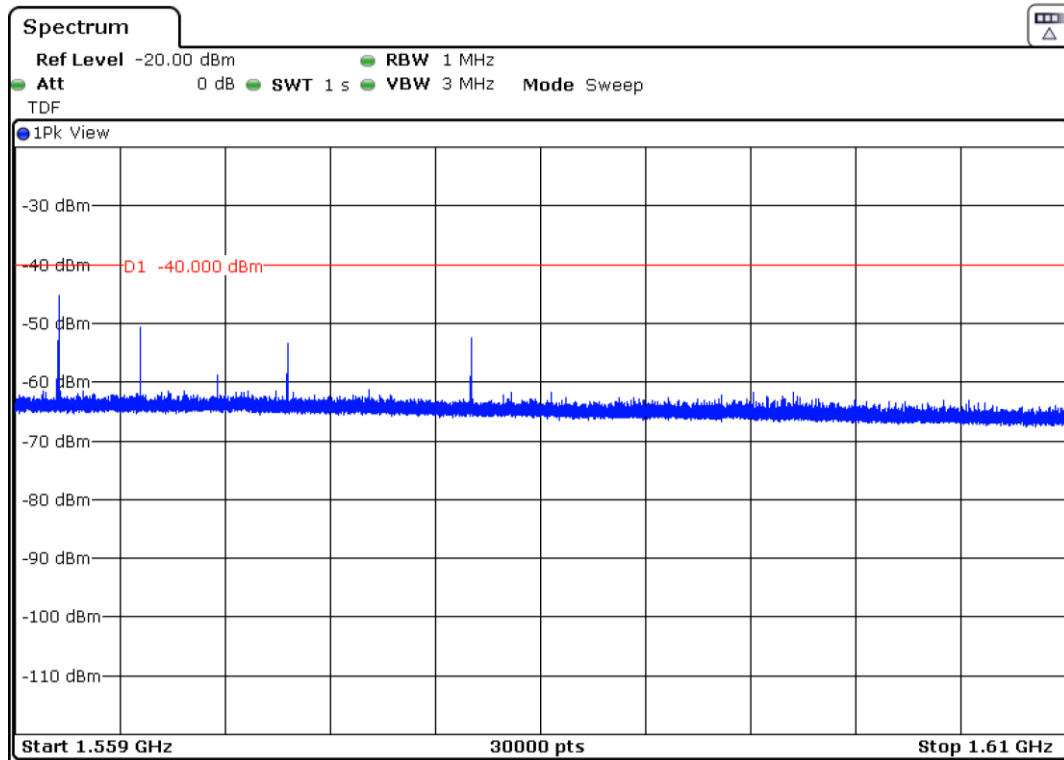


CHANNEL: HIGHEST.



## II. RSS-119. 768-776 MHz band.

CHANNEL: LOWEST.



CHANNEL: HIGHEST.

