



FCC LISTED, REGISTRATION
NUMBER: 720267

Informe de ensayo nº:
Test report No:

ISED LISTED REGISTRATION
NUMBER 4621A-2

NIE: 55489RRF.002

Test report

USA FCC Part 15.249 & 15.209

CANADA RSS-210, RSS-Gen

Radio Frequency Devices. Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz,
5725 - 5875 MHz, and 24.0 – 24.25 GHz.

Identificación del objeto ensayado.....: Identification of item tested	Wireless hearing instrument	
Marca Trademark	ReSound / Beltone / Interton / Danavox / GN Hearing	
Modelo y/o referencia tipo Model and /or type reference	BER13	
Other identification of the product	FCC ID: X26BER13 IC: 6941C-BER13	
Final HW version	PCBA, BERLIN RIE, V3.A, C5.0 rev. B	
Final SW version	Dooku1	
Características Features	Audio amplification, proprietary 2.4 GHz wireless functionality (Proximity) and Bluetooth 5.0.	
Solicitante Applicant	GN HEARING A/S Lautrupbjerg 7, 2750 Ballerup, DENMARK	
Método de ensayo solicitado, norma.....: Test method requested, standard	USA FCC Part 15.249 10-1-17 Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, 5725 - 5875 MHz, and 24.0 – 24.25 GHz. USA FCC Part 15.209 10-1-17 Edition: Radiated emission limits; general requirements. CANADA RSS-210 Issue 9 (August 2016). CANADA RSS-Gen Issue 4 (November 2014). ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.	
Resultado.....: Summary	IN COMPLIANCE	
Aprobado por (nombre / cargo y firma) Approved by (name / position & signature)	A. Llamas RF Lab. Manager	 Firmado digitalmente por ALEJANDRO LLAMAS RODRIGUEZ Fecha: 2018.06.27 11:36:15 +02'00'
Fecha de realización Date of issue	2018-06-27	
Formato de informe No.: Report template No	FDT08_20	

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Competences and guarantees

DEKRA Testing and Certification is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

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.

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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
55489F/062	Wireless hearing instrument	BER13	1800802011	2018-03-28

Auxiliary elements used with the sample S/01:

Control N°	Description	Model	Serial N°	Date of reception
52022B/259	USB cable	---	---	2017-04-28
55489F/089	Programming cable	---	---	2018-03-28
55489F/082	Programming module	SpeedLink	31461	2018-03-28
55489F/088	Power Cable DC	---	---	2018-03-28

- Sample S/01 has undergone following test(s).
All radiated tests indicated in appendix A and B.

Sample S/02 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
55489F/071	Wireless hearing instrument	BER13	1800801987	2018-03-28

Auxiliary elements used with the sample S/02:

Control N°	Description	Model	Serial N°	Date of reception
52022B/259	USB cable	---	---	2017-04-28
55489F/089	Programming cable	---	---	2018-03-28
55489F/082	Programming module	SpeedLink	31461	2018-03-28
55489F/088	Power Cable DC	---	---	2018-03-28

- Sample S/02 has undergone following test(s).
All conducted tests indicated in appendix A and B.

Test sample description

The test sample consists of a Wireless hearing instrument.

Identification of the client

GN HEARING A/S

Lautrupbjerg 7, 2750 Ballerup, Copenhagen DENMARK

Testing period

The performed test started on 2018-04-03 and finished on 2018-04-05.

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:

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

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 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 k Ω
Reference resistance to earth	< 1 Ω
Normal site attenuation (NSA)	< ± 4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Field homogeneity	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:

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

Remarks and comments

1; The tests have been performed by the technical personnel: Jose Alberto Aranda and Miguel Angel Torres.

2: Used instrumentation:

Conducted Measurements

	Last Cal. date	Cal. due date
1. Signal and spectrum analyzer R&S FSV40	2017/07	2019/07
2. DC power supply R&S NGPE 40/40	2018/02	2021/02

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	2017/04	2020/04
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. Broadband Horn antenna 18-40 GHz SCHWARZBECK BBHA 9170	2017/03	2020/03
6. EMI Test Receiver R&S ESU26	2018/02	2020/02
7. Spectrum analyser Rohde & Schwarz FSW50	2018/02	2020/02
8. RF pre-amplifier 30 MHz-6 GHz Bonn Elektronik BLNA 0360-01N	2017/07	2018/07
9. RF pre-amplifier 1-18 GHz Bonn Elektronik BLMA 0118-3A	2018/03	2020/03
10. RF pre-amplifier 18-40 GHz NARDA JS44-18004000-33-8P	2018/02	2019/02

Testing verdicts

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

1. BTLE

FCC PART 15 PARAGRAPH / RSS-210		VERDICT			
		NA	P	F	NM
FCC 15.249 Subclause (a) / RSS-210 B.10. (a)	Field strength of fundamental and harmonics emissions	P			
FCC 15.249 Subclause (d) / RSS-210 B.10. (b)	Emissions radiated outside of the specific frequency bands	P			

2. Proximity fitting radio

FCC PART 15 PARAGRAPH / RSS-210		VERDICT			
		NA	P	F	NM
FCC 15.249 Subclause (a) / RSS-210 B.10. (a)	Field strength of fundamental and harmonics emissions	P			
FCC 15.249 Subclause (d) / RSS-210 B.10. (b)	Emissions radiated outside of the specific frequency bands	P			

Appendix A – Test results (Bluetooth Low Energy)

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TEST CONDITIONS

Power supply (V):

$$V_{\text{nominal}} = 1.3 \text{ Vdc}$$

Type of power supply = DC voltage from from Battery.

Type of antenna = Integral antenna.

TEST FREQUENCIES:

Lowest channel: 2402 MHz

Middle channel: 2440 MHz

Highest channel: 2480 MHz

CONDUCTED MEASUREMENTS

The equipment under test was set up in a shielded room and it is directly connected to the spectrum analyzer.



The DC supply voltage is applied using an internal battery fully charged.

RADIATED MEASUREMENTS

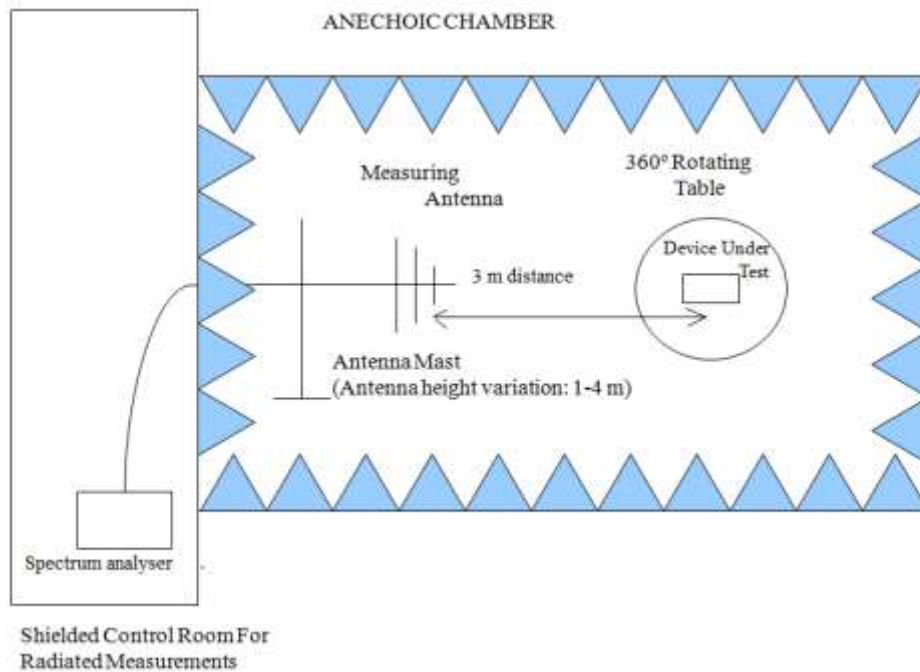
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30 MHz-1000 MHz (30 MHz-1000 MHz Bilog antenna) and at a distance of 1m for the frequency range 1 GHz-25 GHz (1 GHz-18 GHz Double ridge horn antenna and 18 GHz-40 GHz horn antenna).

For radiated emissions in the range 1 GHz-25 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.

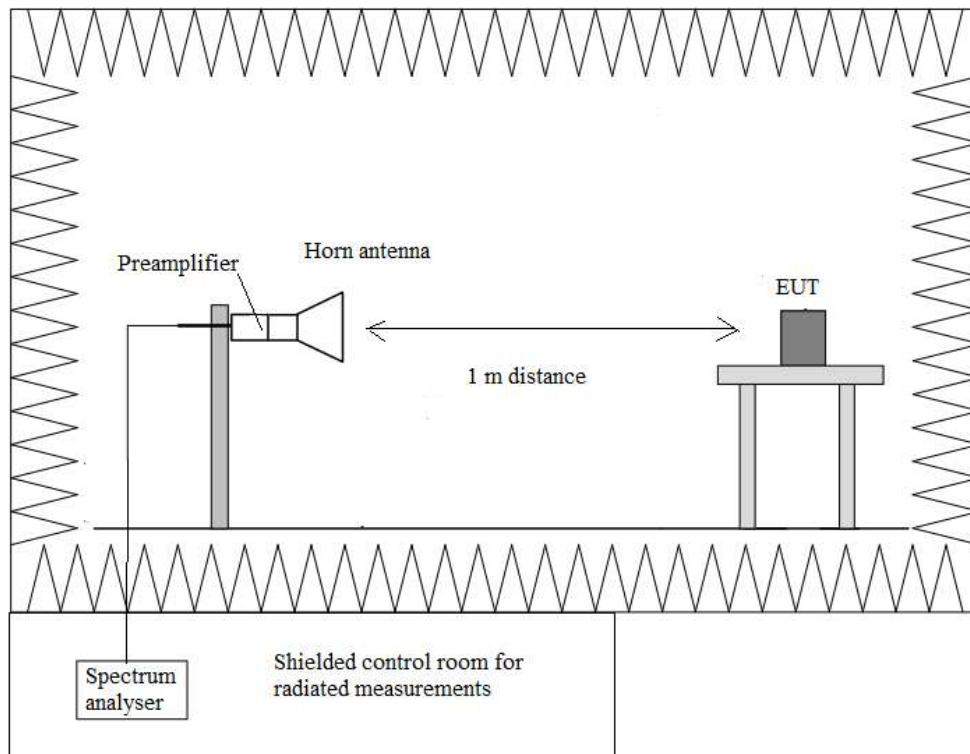
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

Radiated measurements setup $f < 1$ GHz



Radiated measurements setup $f > 1$ GHz



Occupied Bandwidth

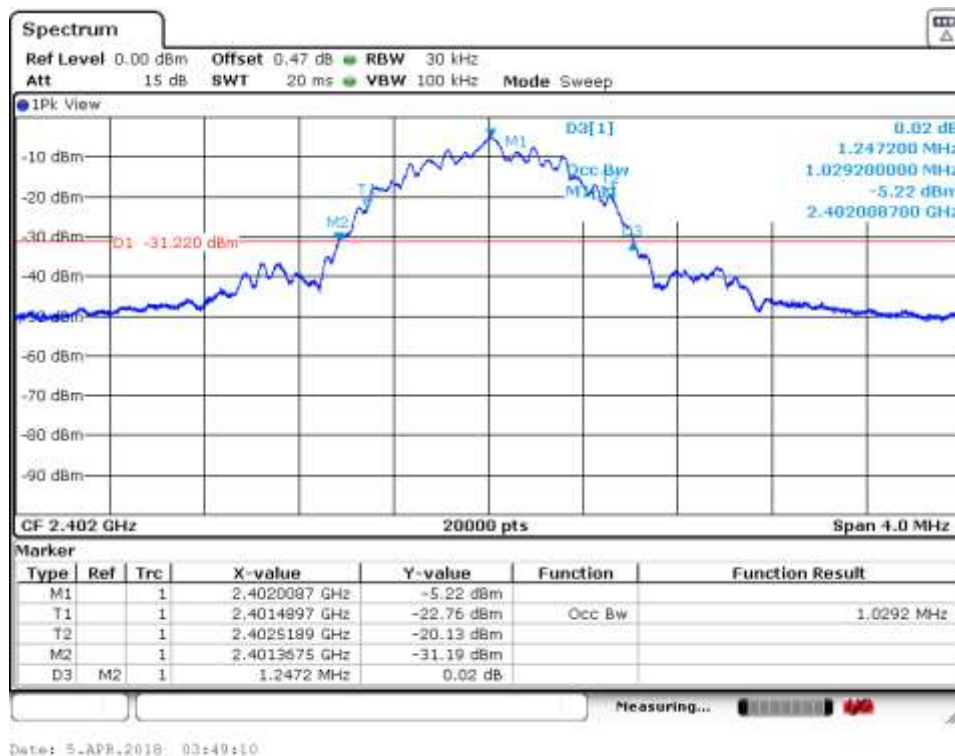
RESULTS

(see next plots).

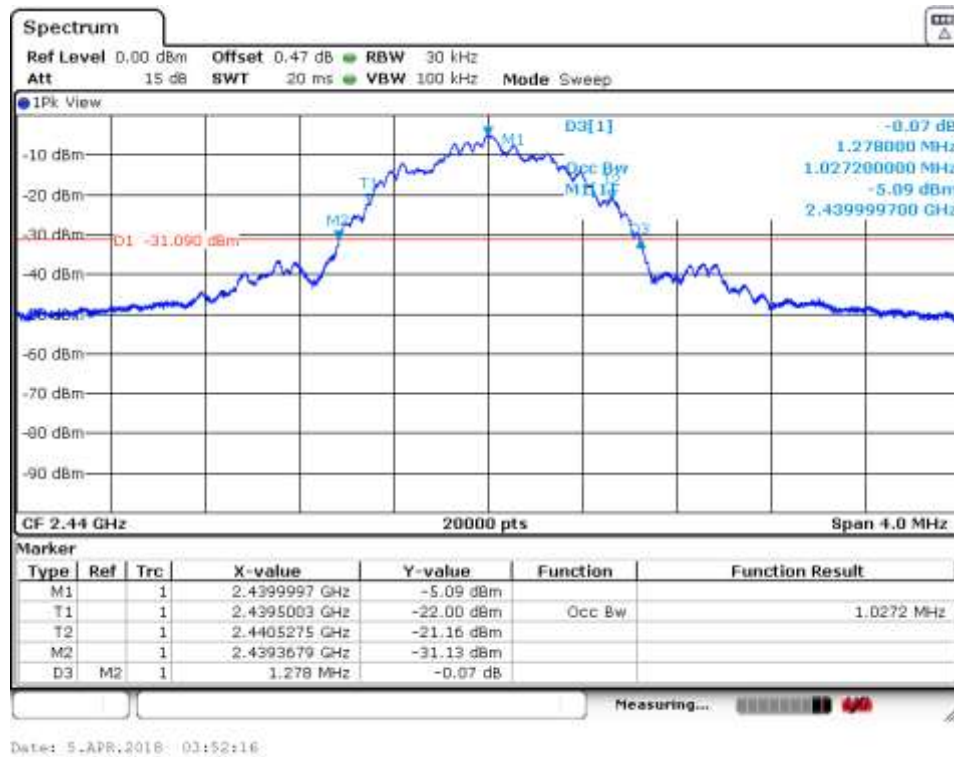
BTLE 1Mb

	Lowest frequency	Middle frequency	Highest frequency
	2402 MHz	2440 MHz	2480 MHz
99% bandwidth (MHz)	1.0292	1.0272	1.0238
-26 dBc bandwidth (MHz)	1.2472	1.2780	1.2686
Measurement uncertainty (kHz)	<±5.00		

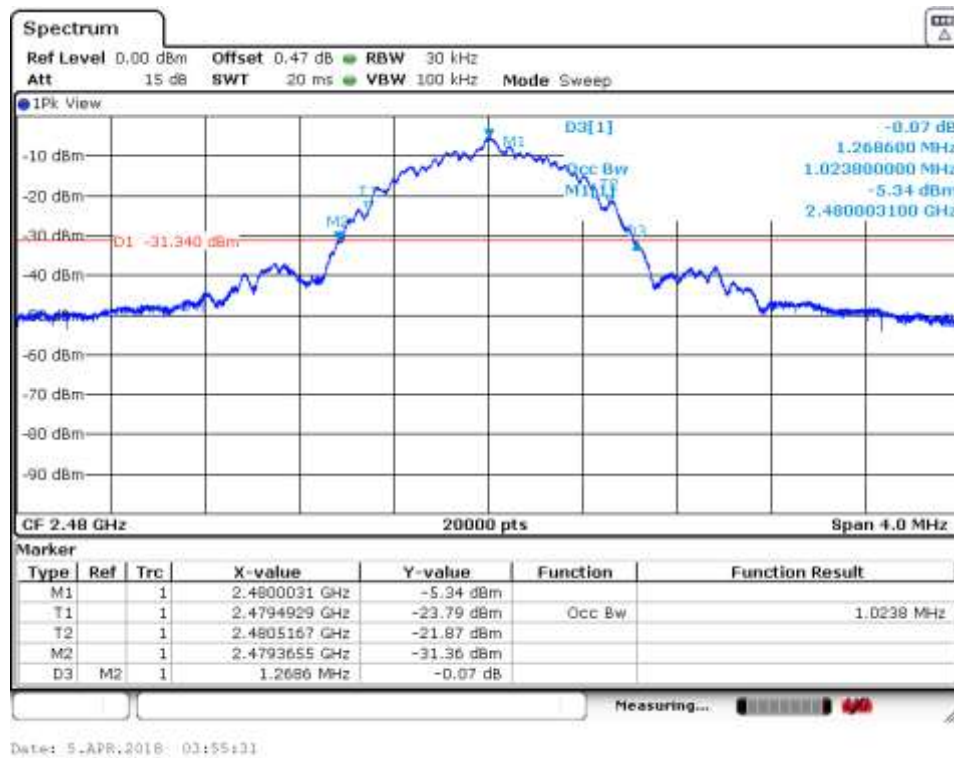
Lowest Channel



Middle Channel



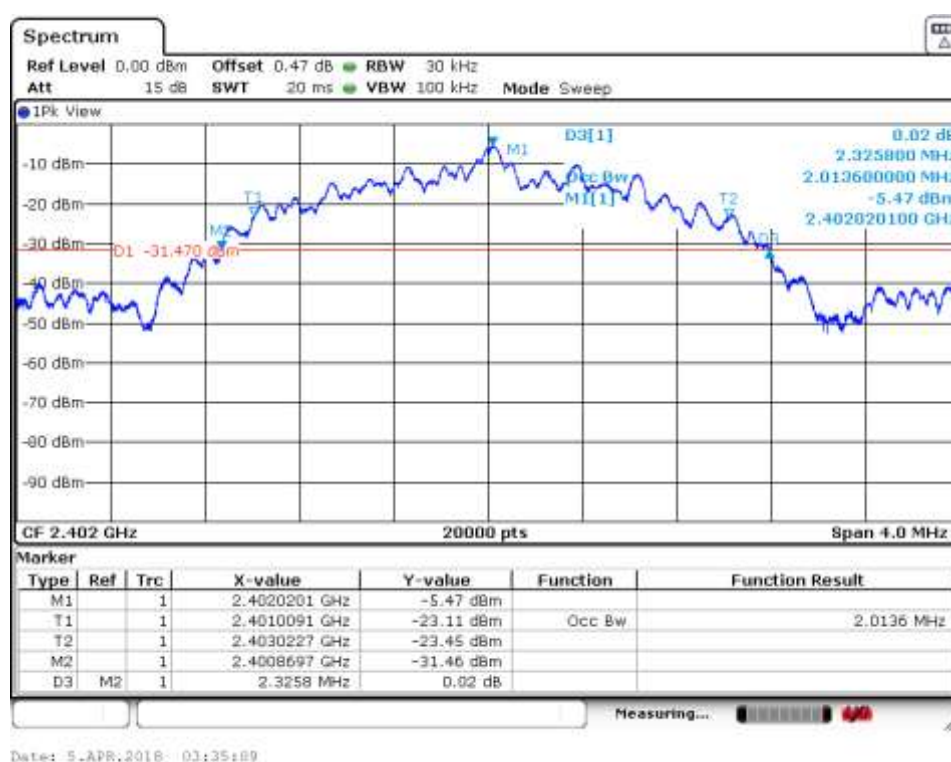
Highest channel



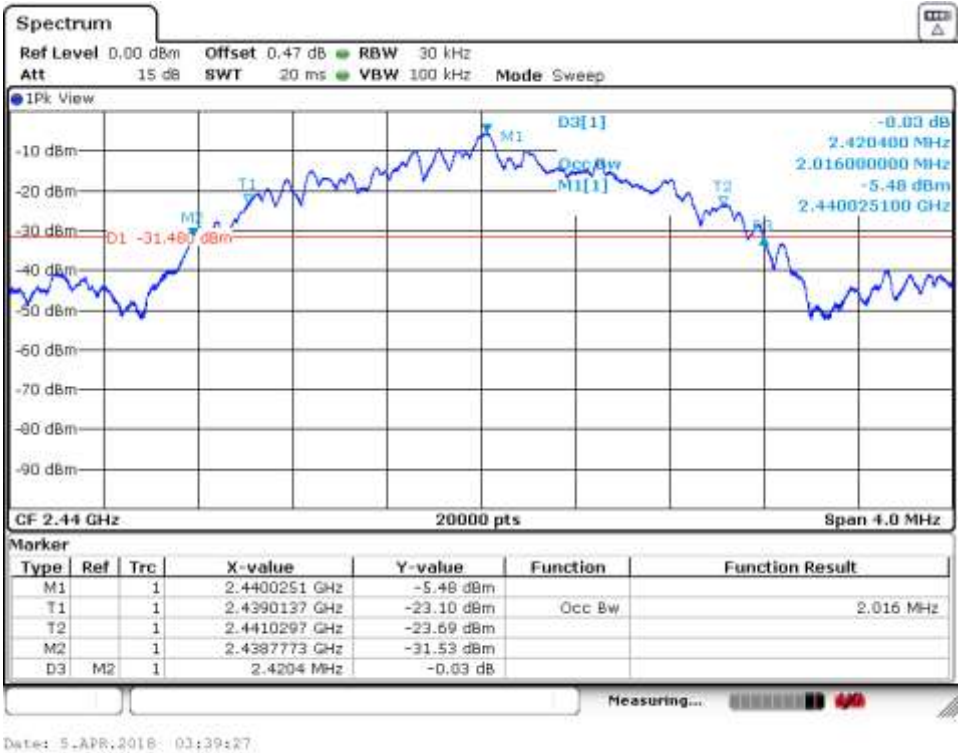
BTLE 2Mb

	Lowest frequency 2402 MHz	Middle frequency 2440 MHz	Highest frequency 2480 MHz
99% bandwidth (MHz)	2.0136	2.016	2.0042
-26 dBc bandwidth (MHz)	2.3258	2.4204	2.4048
Measurement uncertainty (kHz)	<±5.00		

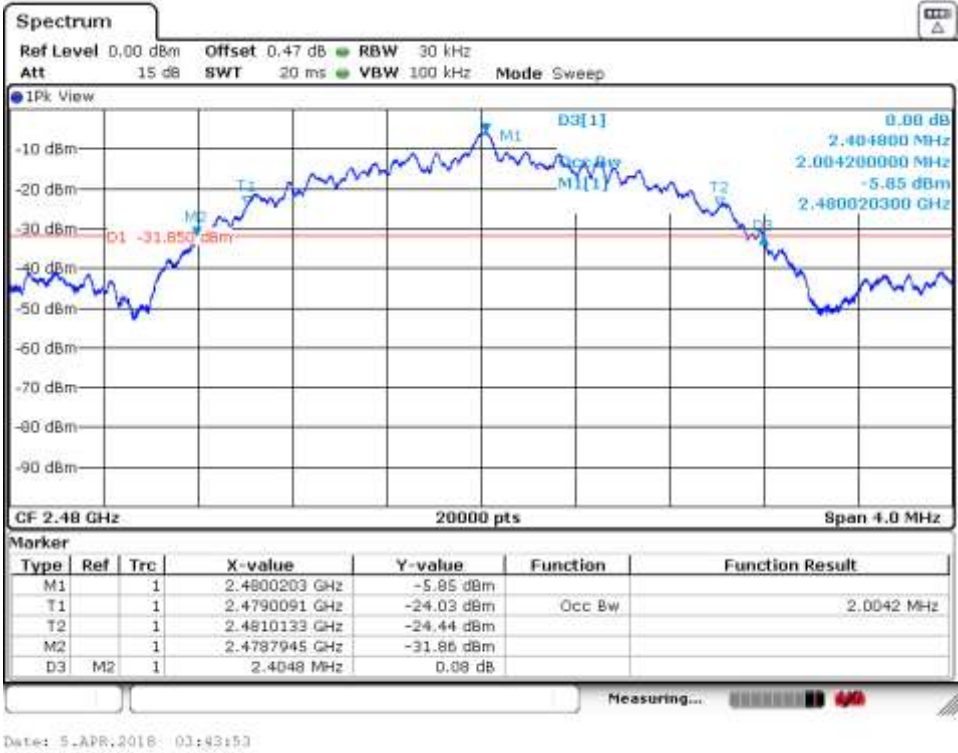
Lowest Channel



Middle Channel



Highest channel



Section 15.249 Subclause (a) / RSS-210 B.10 (a). Field strength of Fundamental

SPECIFICATION

The field strength of emissions from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of fundamental (mV/m)	Field strength (dB μ V/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 – 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000-24250	250	107.96	3

For frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

RESULTS(see next plot)

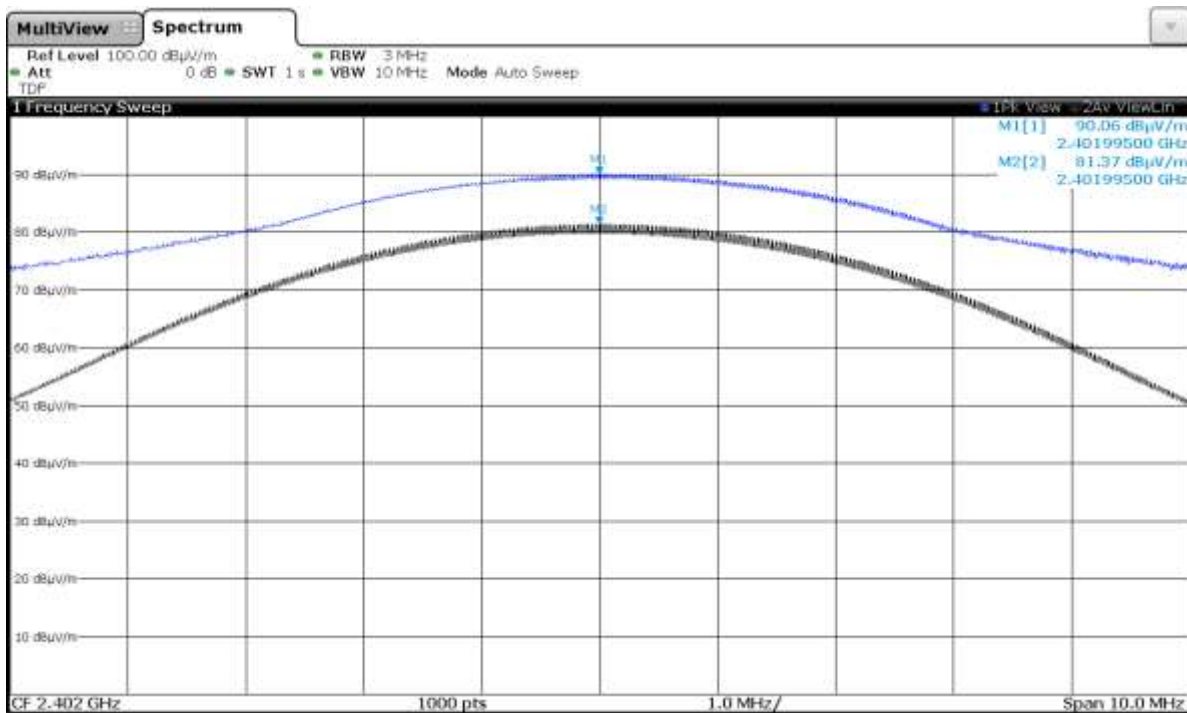
BTLE 1Mb

	Lowest frequency 2402 MHz	Middle frequency 2440 MHz	Highest frequency 2480 MHz
Field strength (dB μ V/m) average	81.37	81.32	81.13
Field strength (dB μ V/m) peak	90.06	90.61	89.74
Measurement uncertainty (dB)	< $\pm$ 4.87		

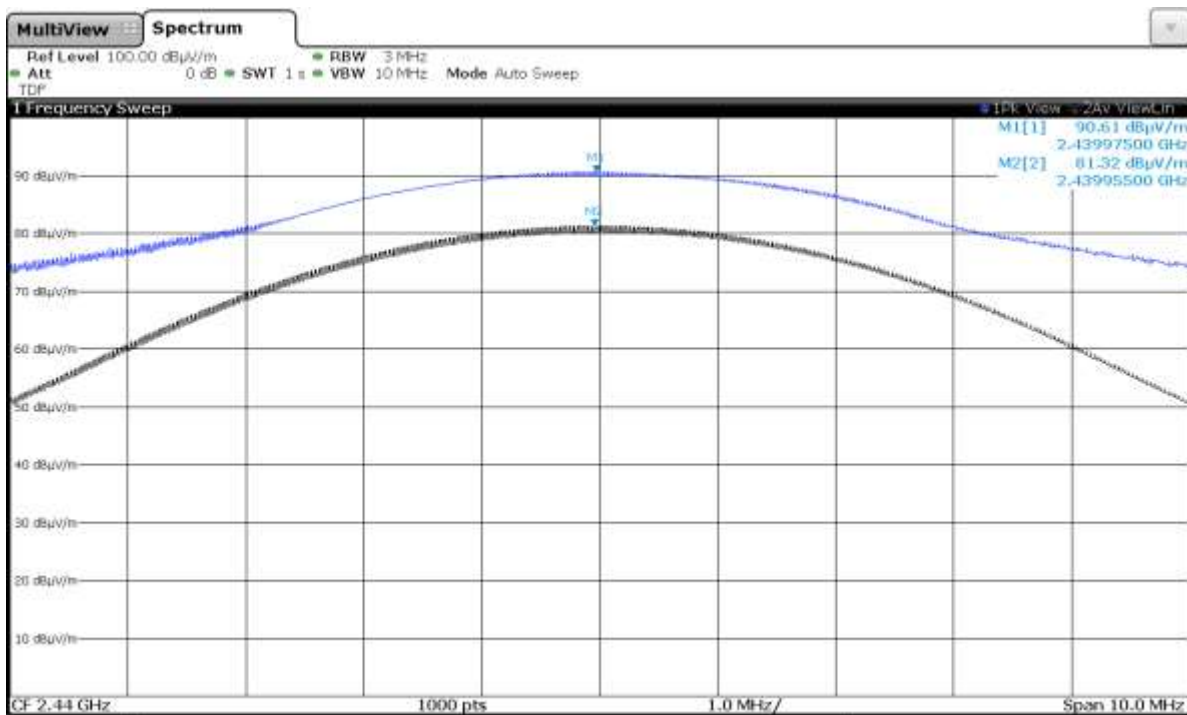
Verdict: PASS

FIELD STRENGTH

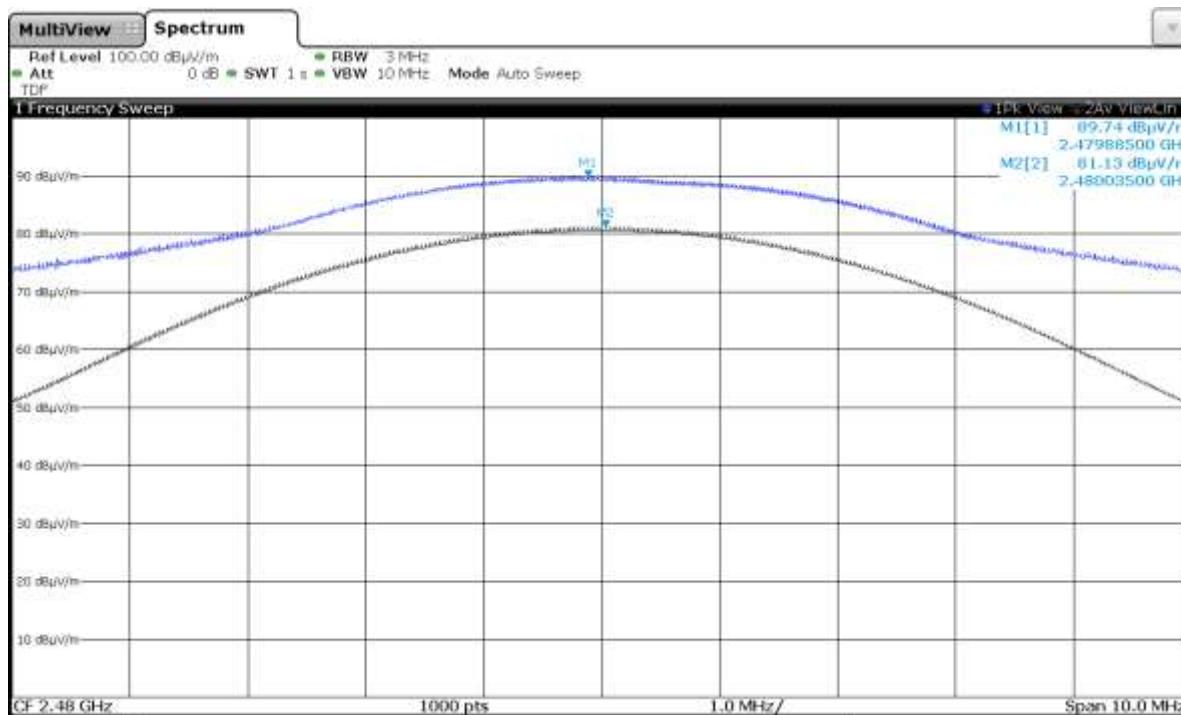
Lowest Channel



Middle Channel



Highest channel



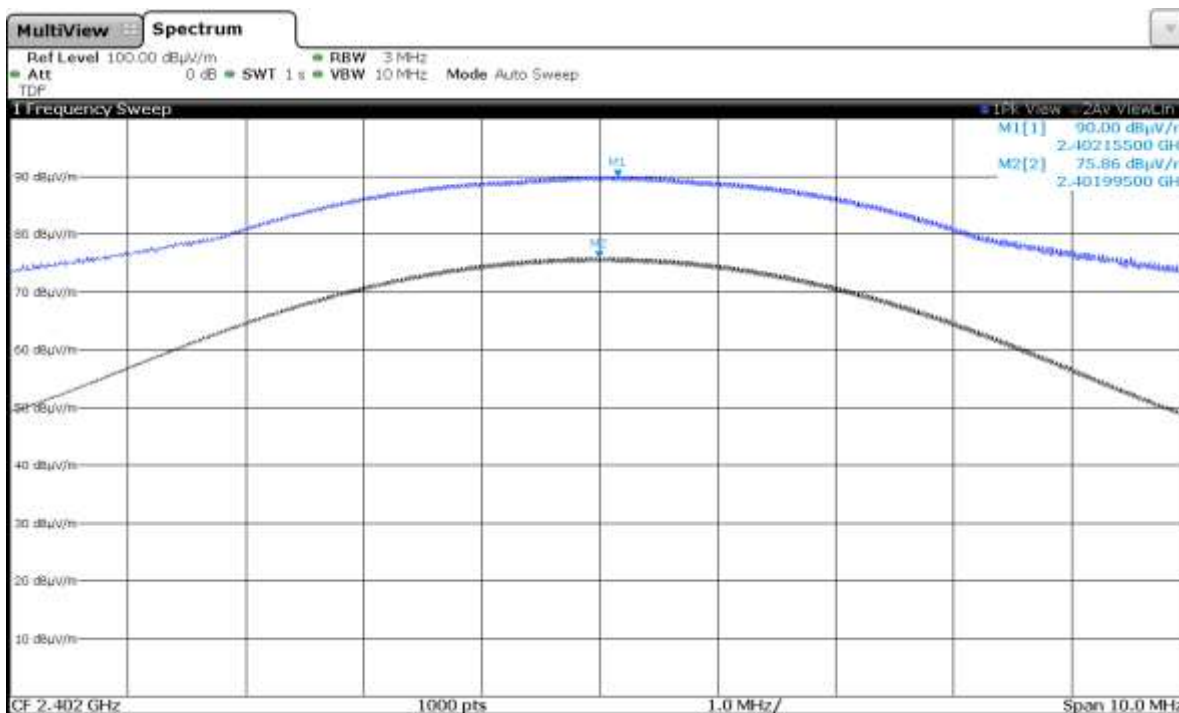
BTLE 2Mb

	Lowest frequency 2402 MHz	Middle frequency 2440 MHz	Highest frequency 2480 MHz
Field strength (dBμV/m) average	90.00	90.69	89.77
Field strength (dBμV/m) peak	75.86	76.66	75.40
Measurement uncertainty (dB)	<±4.87		

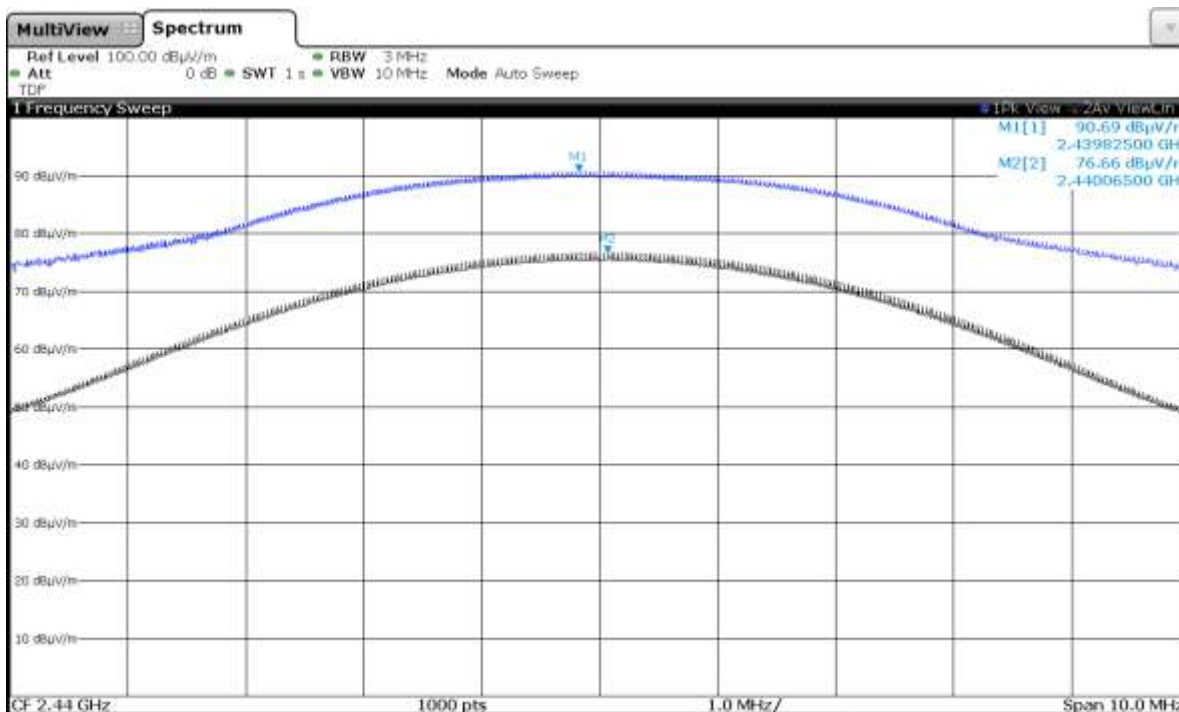
Verdict: PASS

FIELD STRENGTH

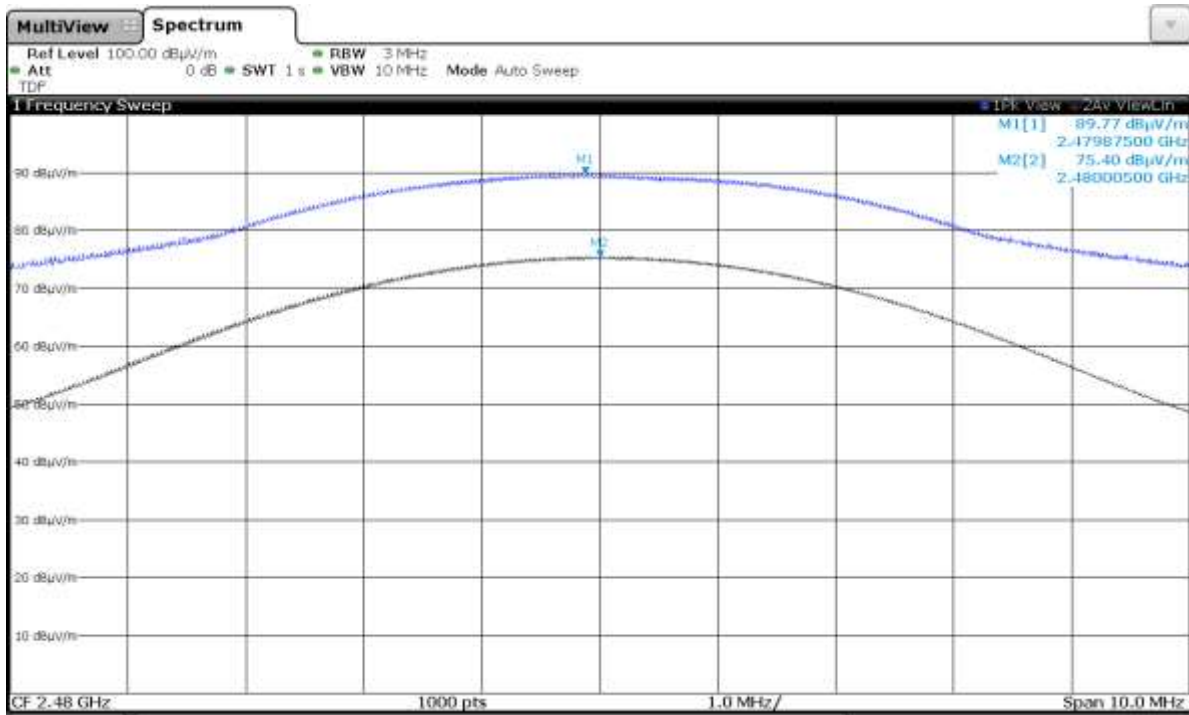
Lowest Channel



Middle Channel



Highest channel



Section 15.249 Subclause (a) / RSS-210 B.10 (b). Emissions limitations radiated (Transmitter)

SPECIFICATION

The field strength of harmonics from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of harmonics ($\mu\text{V/m}$)	Field strength of harmonics ($\text{dB}\mu\text{V/m}$)	Measurement distance (m)
902 - 928	500	54	3
2400 – 2483.5	500	54	3
5725 - 5875	500	54	3
24000-24250	2500	67.96	3

Emissions radiated outside of the specific frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits specified in section 15.209:

Frequency Range (MHz)	Field strength ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	Measurement distance (m)
0.009-0.490	$2400/F(\text{kHz})$	-	300
0.490-1.705	$24000/F(\text{kHz})$	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

RESULTS:

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.

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-1000 MHz and at distance of 1 m for the frequency range 1 GHz-25 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

BTLE 1Mb

Frequency range 30 MHz-1000 MHz.

No radiated spurious signals were detected at less than 20 dB from the limit.

Frequency range 1 GHz-25 GHz

The results in the next tables show the maximum measured levels in the 1-25 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz (see next plots).

Spurious signals with peak levels above the average limit (54 dB μ V/m at 3 m) are measured with average detector for checking compliance with the average limit.

Lowest Channel

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.389132	H	Peak	57.83	< $\pm$ 4.87
		Average	37.64	< $\pm$ 4.87
2.489995	H	Peak	50.94	< $\pm$ 4.87
4.803750	V	Peak	54.98	< $\pm$ 4.87
		Average	52.50	< $\pm$ 4.87

Middle Channel

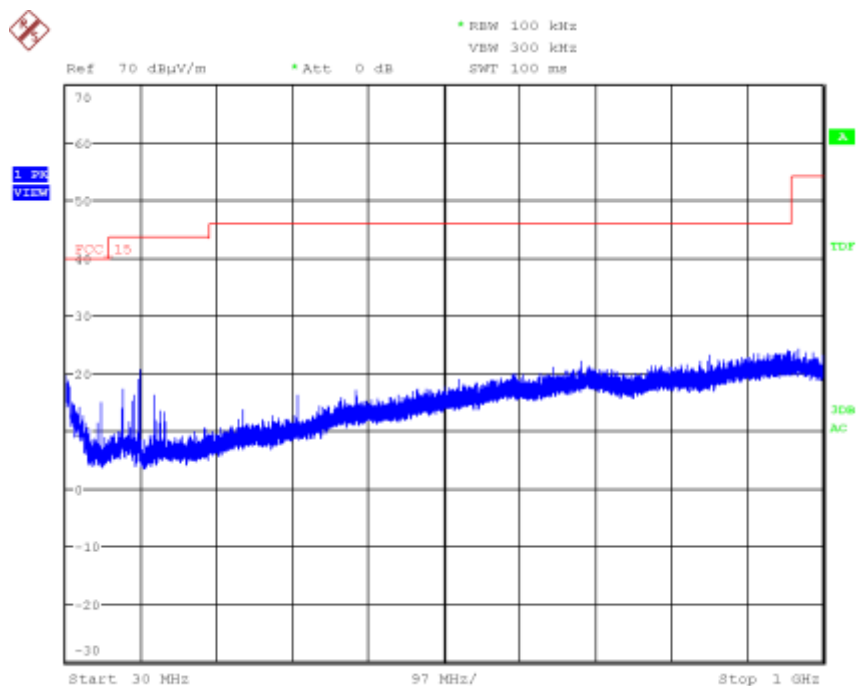
Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.362385	H	Peak	51.24	< $\pm$ 4.87
2.490611	V	Peak	50.51	< $\pm$ 4.87
4.880750	H	Peak	51.78	< $\pm$ 4.87

Highest Channel

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.362321	V	Peak	50.48	< $\pm$ 4.87
2.482323	V	Peak	68.69	< $\pm$ 4.87
		Average	41.43	< $\pm$ 4.87
4.960750	V	Peak	46.82	< $\pm$ 4.87

Verdict: PASS

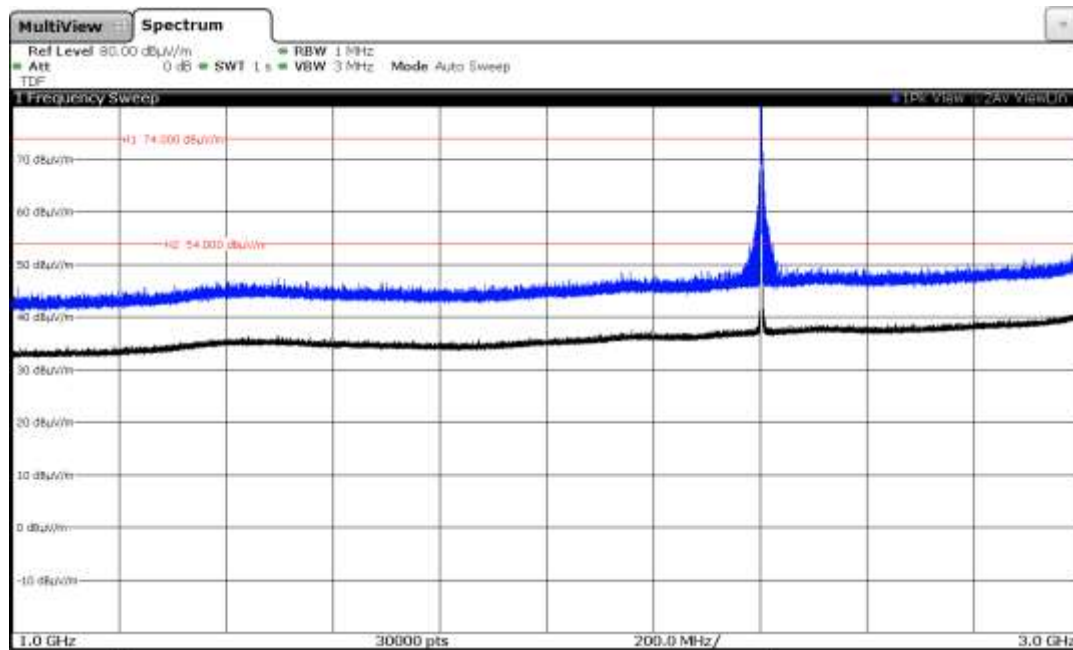
FREQUENCY RANGE 30 MHz-1000 MHz.



(This plot is valid for all three channels).

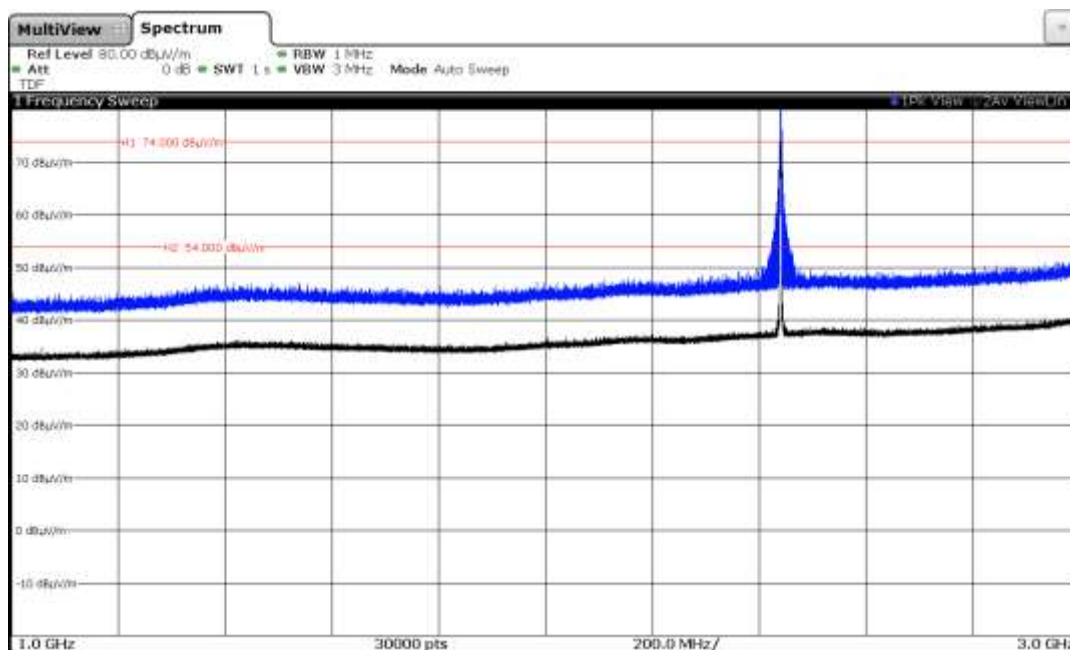
FREQUENCY RANGE 1 GHz to 3 GHz.

Lowest Channel



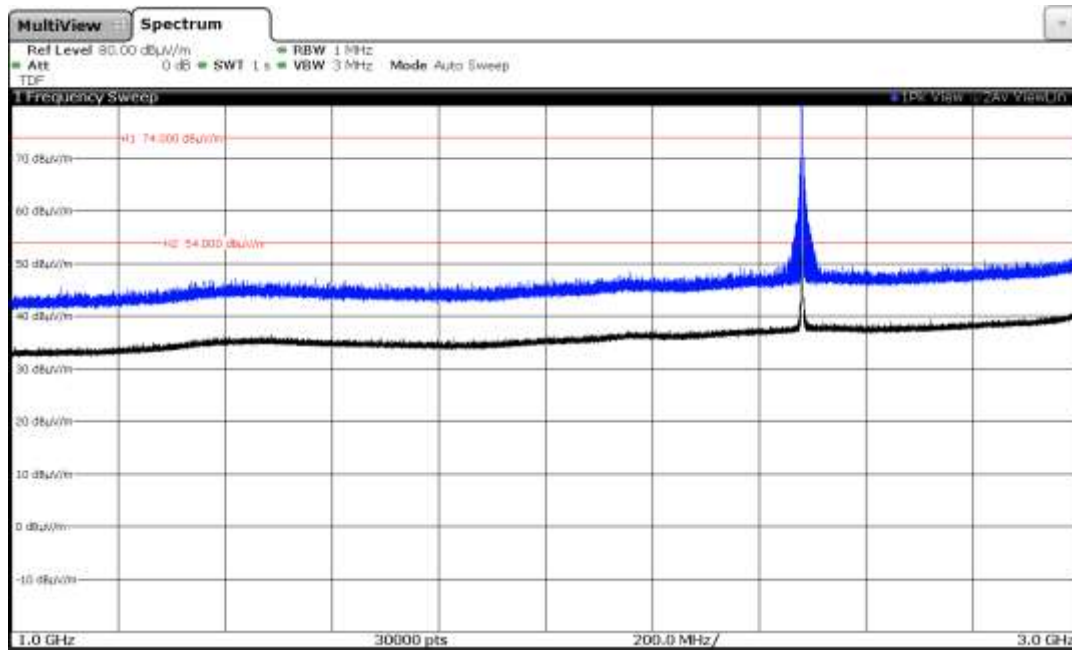
Note: The peak shown in the plot above the limit is the carrier frequency.

Middle Channel



Note: The peak shown in the plot above the limit is the carrier frequency.

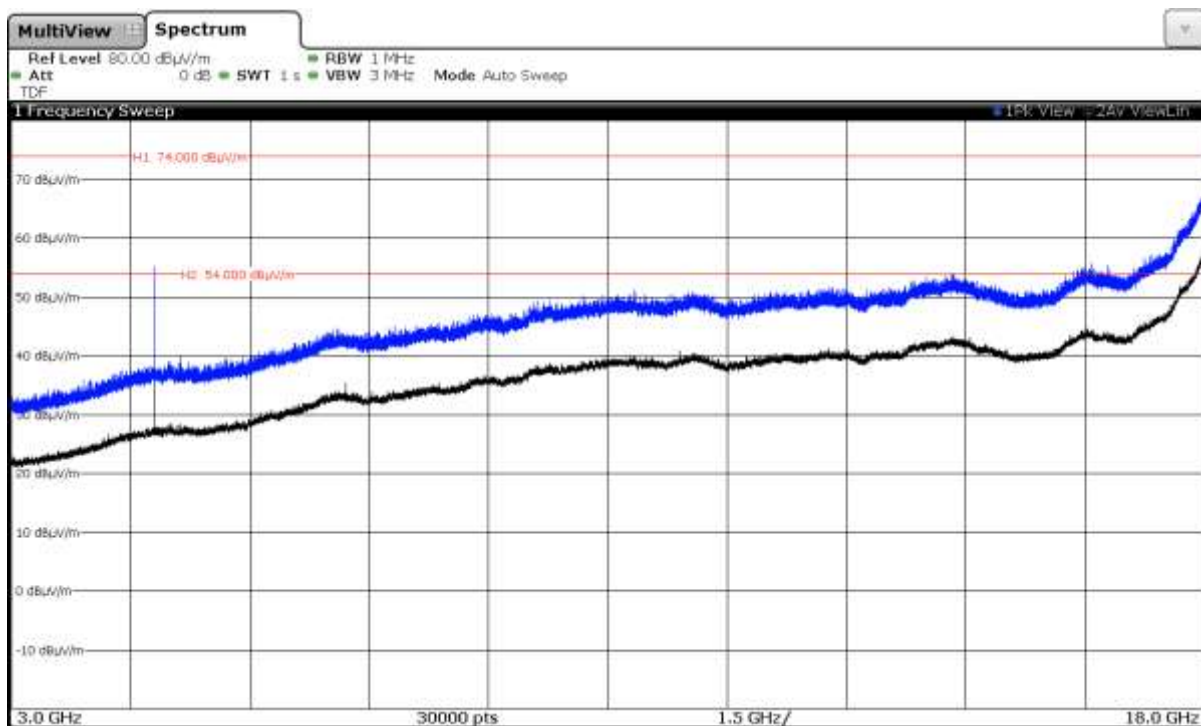
Highest channel



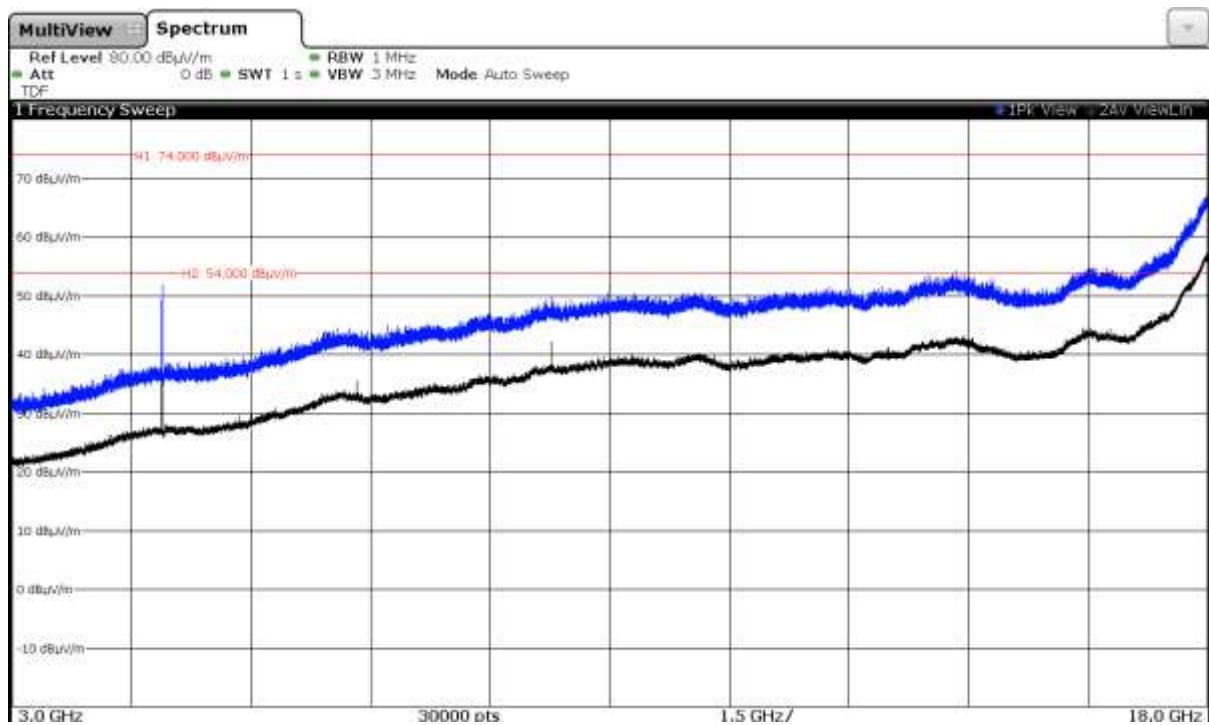
Note: The peak shown in the plot above the limit is the carrier frequency.

FREQUENCY RANGE 3 GHz to 18 GHz.

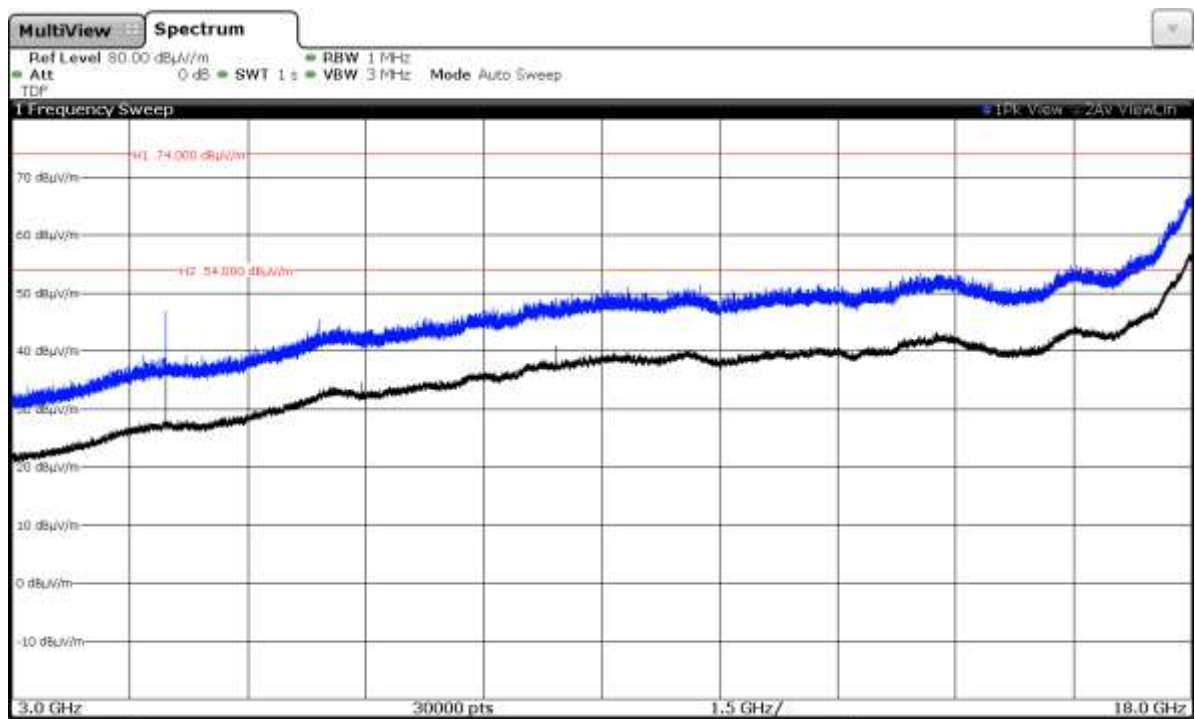
Lowest Channel



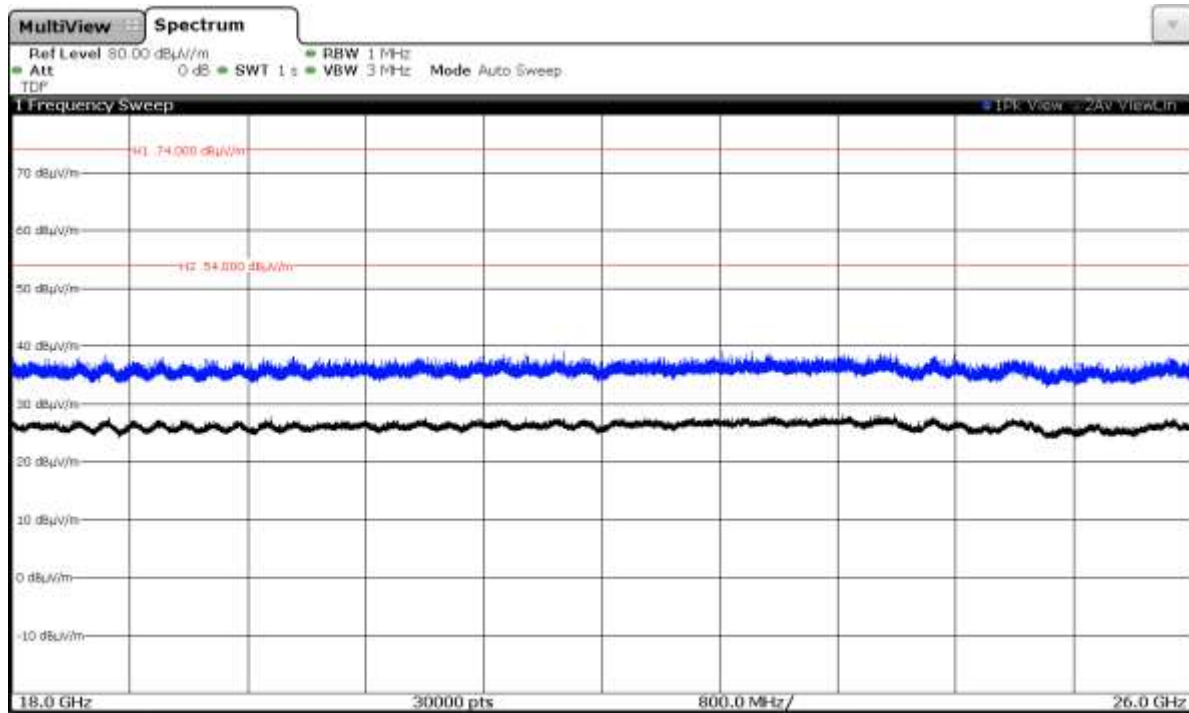
Middle Channel



Highest channel



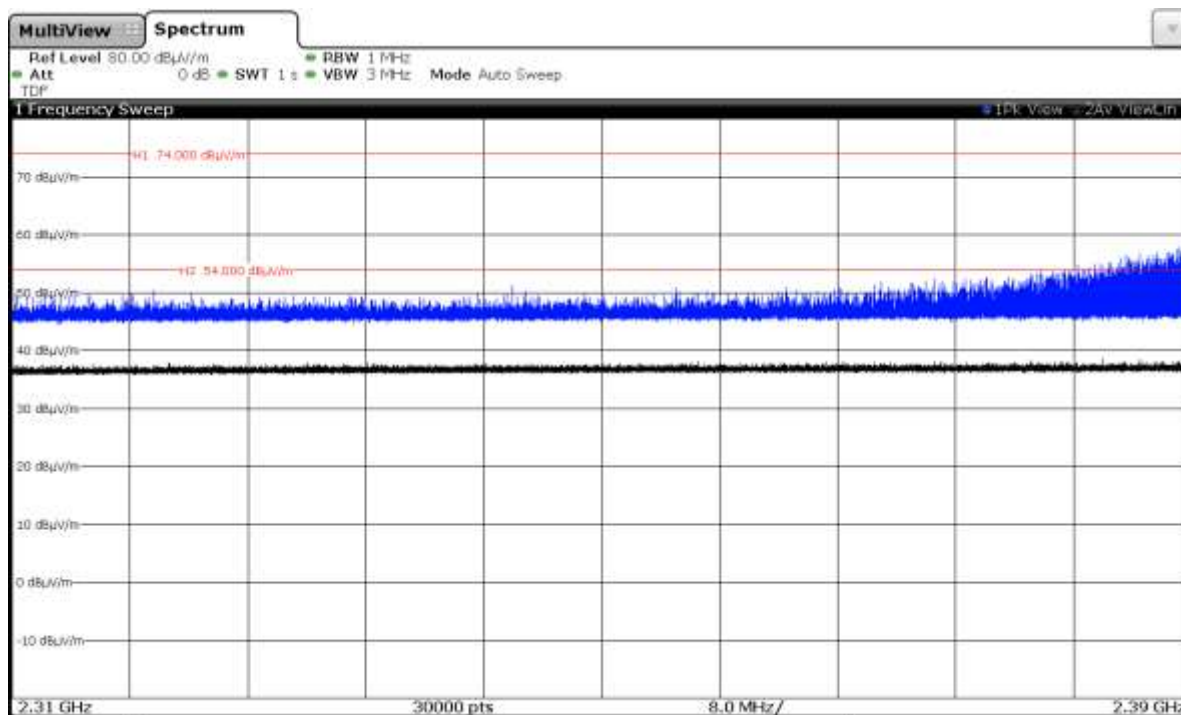
FREQUENCY RANGE 18 GHz to 26 GHz.



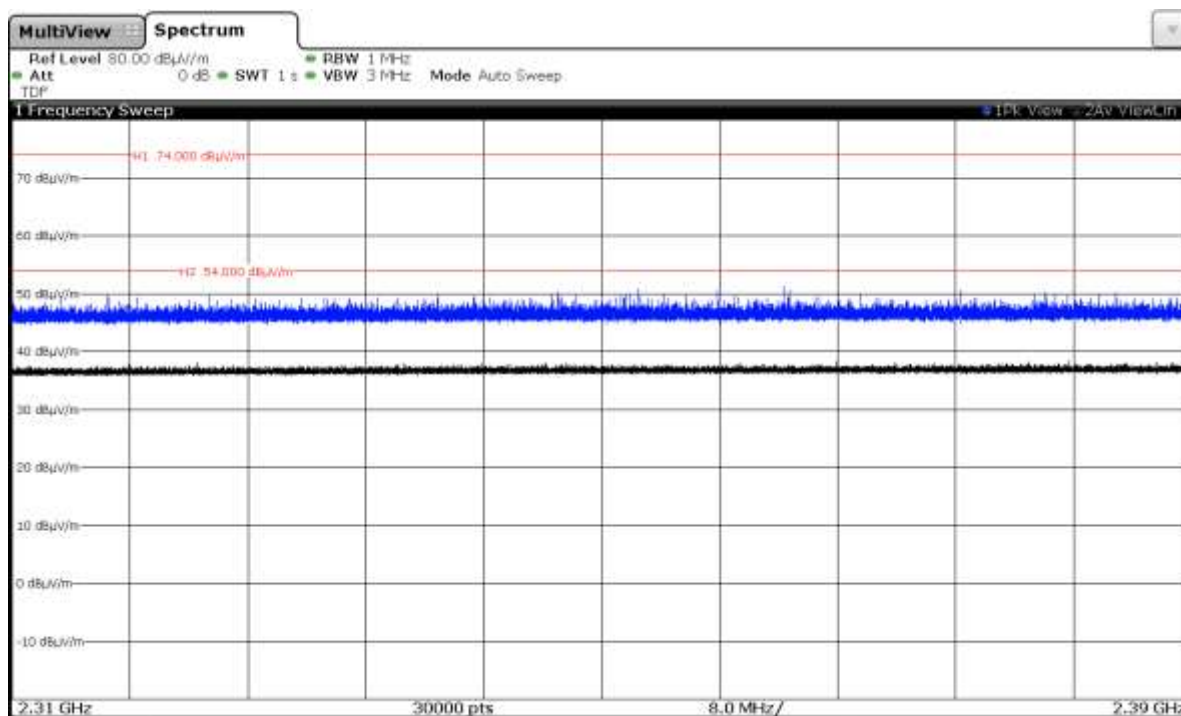
(This plot is valid for all three channels).

FREQUENCY RANGE 2.31 GHz to 2.39 GHz. (RESTRICTED BAND)

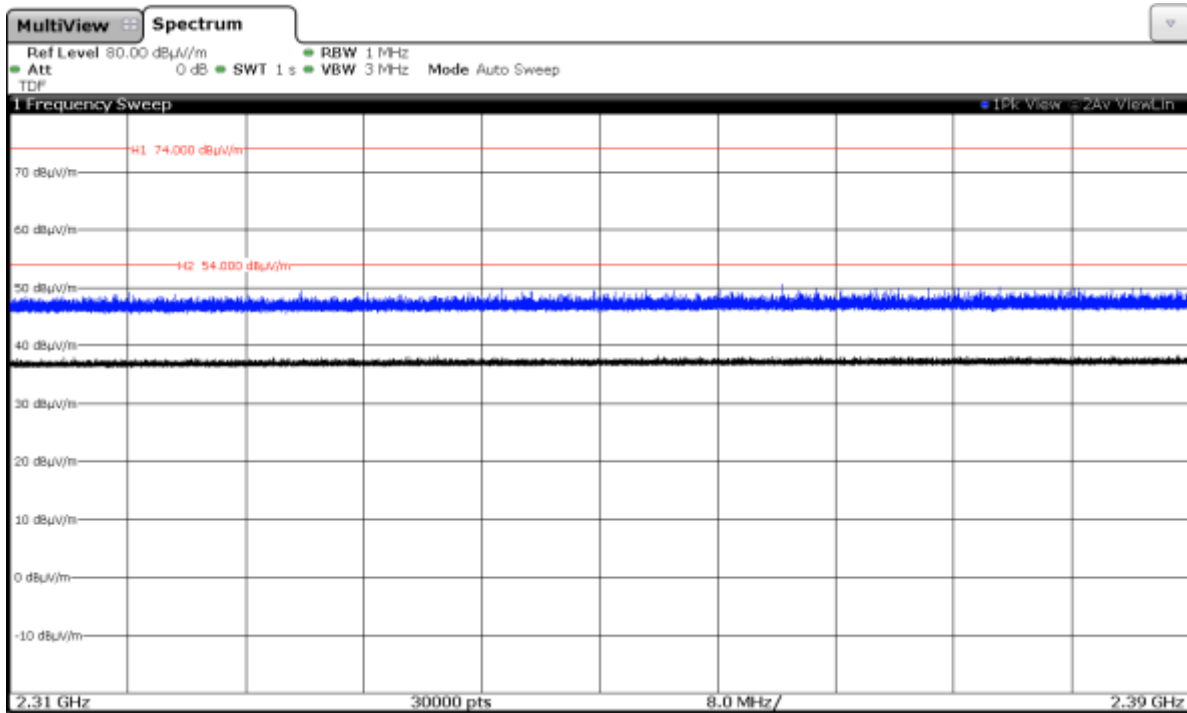
Lowest Channel



Middle Channel

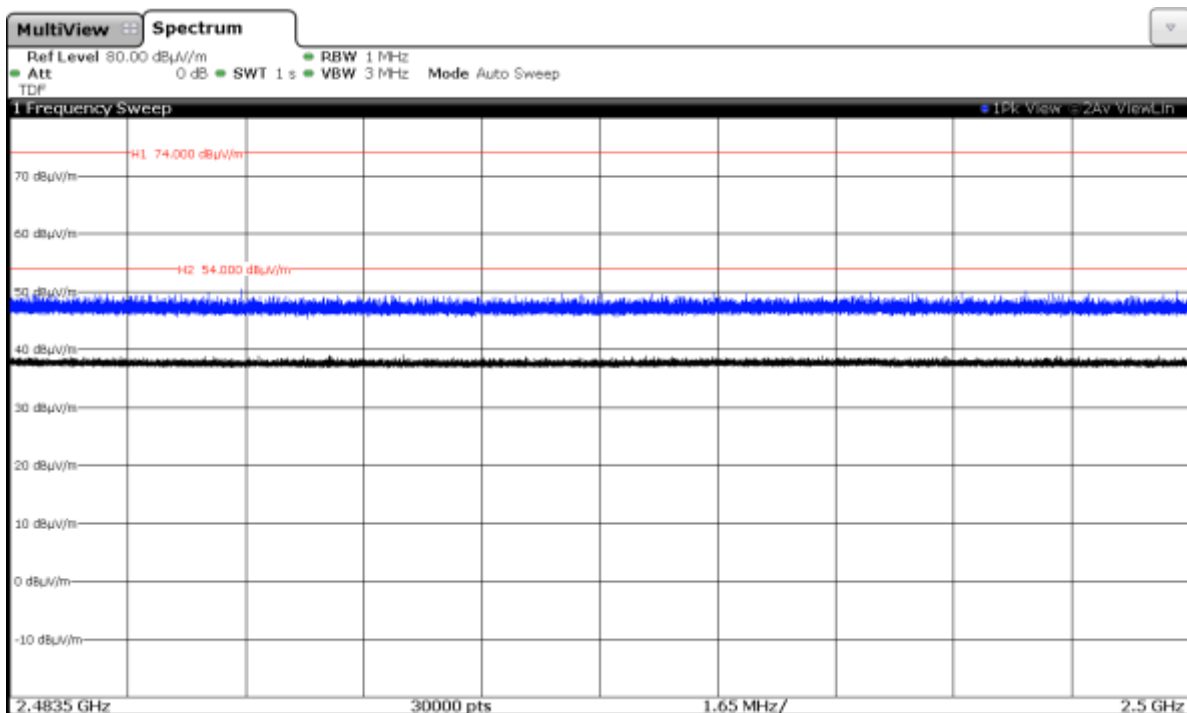


Highest channel

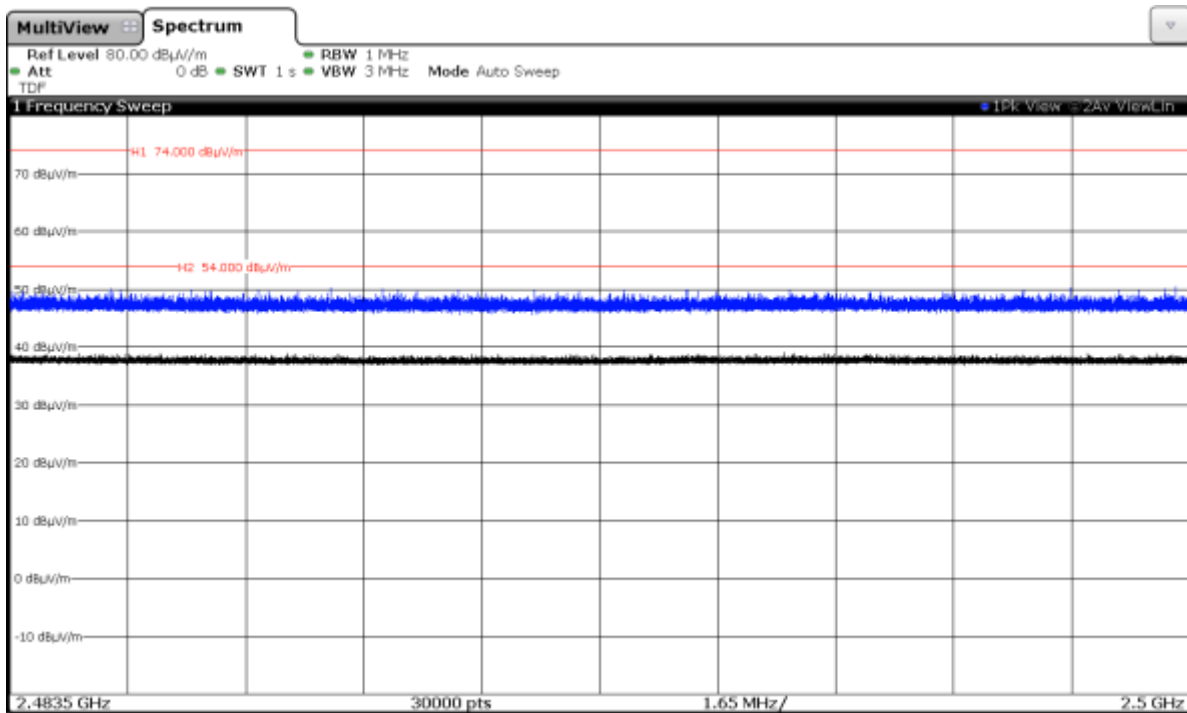


FREQUENCY RANGE 2.4835 GHz to 2.5 GHz. (RESTRICTED BAND).

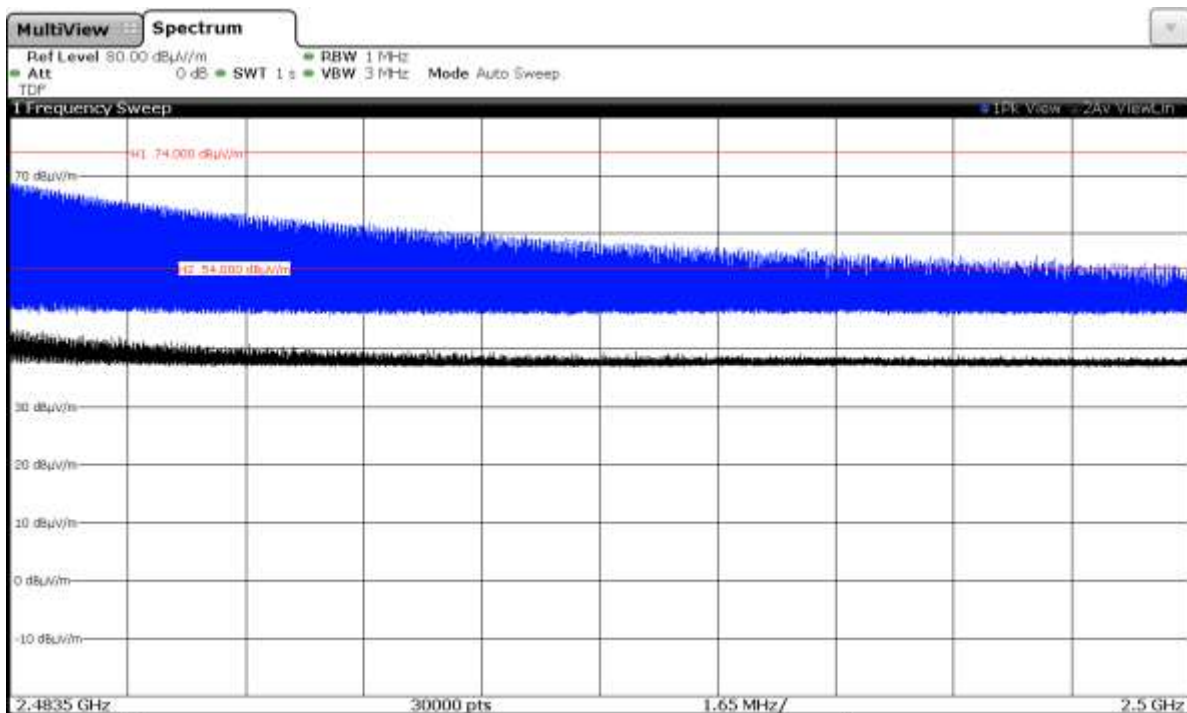
Lowest Channel



Middle Channel



Highest Channel



BTLE 2Mb

Frequency range 30 MHz-1000 MHz.

No radiated spurious signals were detected at less than 20 dB from the limit.

Frequency range 1 GHz-25 GHz

The results in the next tables show the maximum measured levels in the 1-25 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz (see next plots).

Spurious signals with peak levels above the average limit (54 dB μ V/m at 3 m) are measured with average detector for checking compliance with the average limit.

Lowest Channel

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.388959	H	Peak	57.47	< $\pm$ 4.87
		Average	37.27	< $\pm$ 4.87
2.485924	H	Peak	50.39	< $\pm$ 4.87
4.805250	H	Peak	53.96	< $\pm$ 4.87

Middle Channel

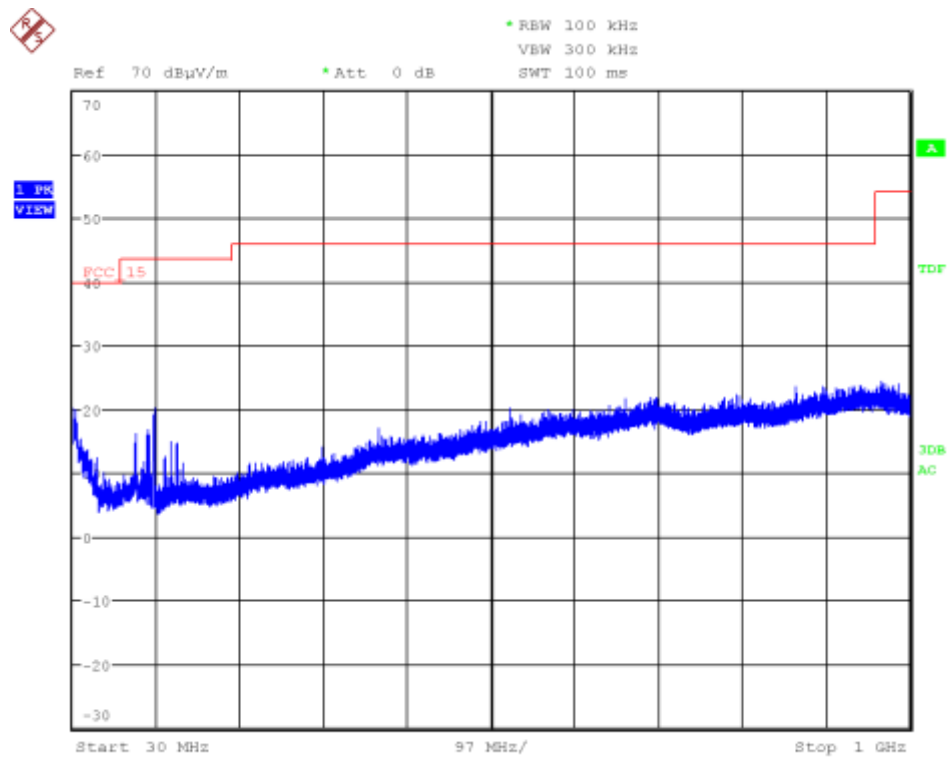
Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.371793	H	Peak	51.00	< $\pm$ 4.87
2.493395	V	Peak	50.49	< $\pm$ 4.87
4.879250	H	Peak	51.80	< $\pm$ 4.87

Highest Channel

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.362409	H	Peak	49.97	< $\pm$ 4.87
2.483551	H	Peak	68.68	< $\pm$ 4.87
		Average	41.89	< $\pm$ 4.87
4.958750	V	Peak	45.94	< $\pm$ 4.87

Verdict: PASS

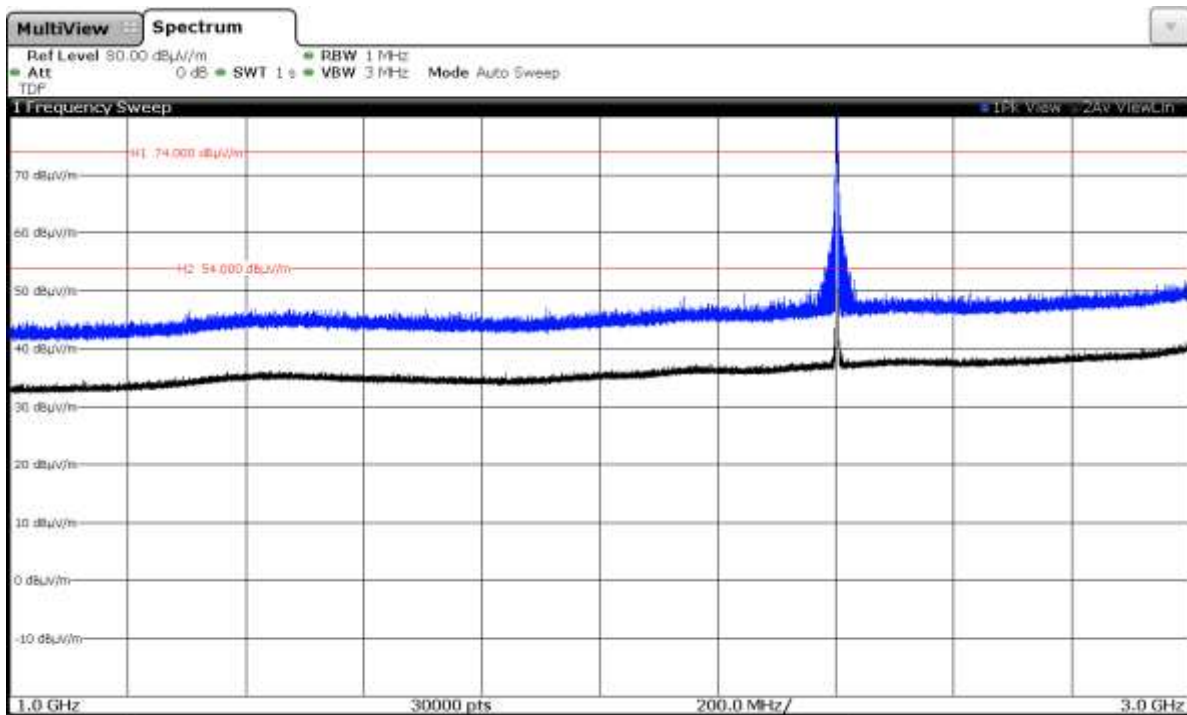
FREQUENCY RANGE 30 MHz-1000 MHz.



(This plot is valid for all three channels).

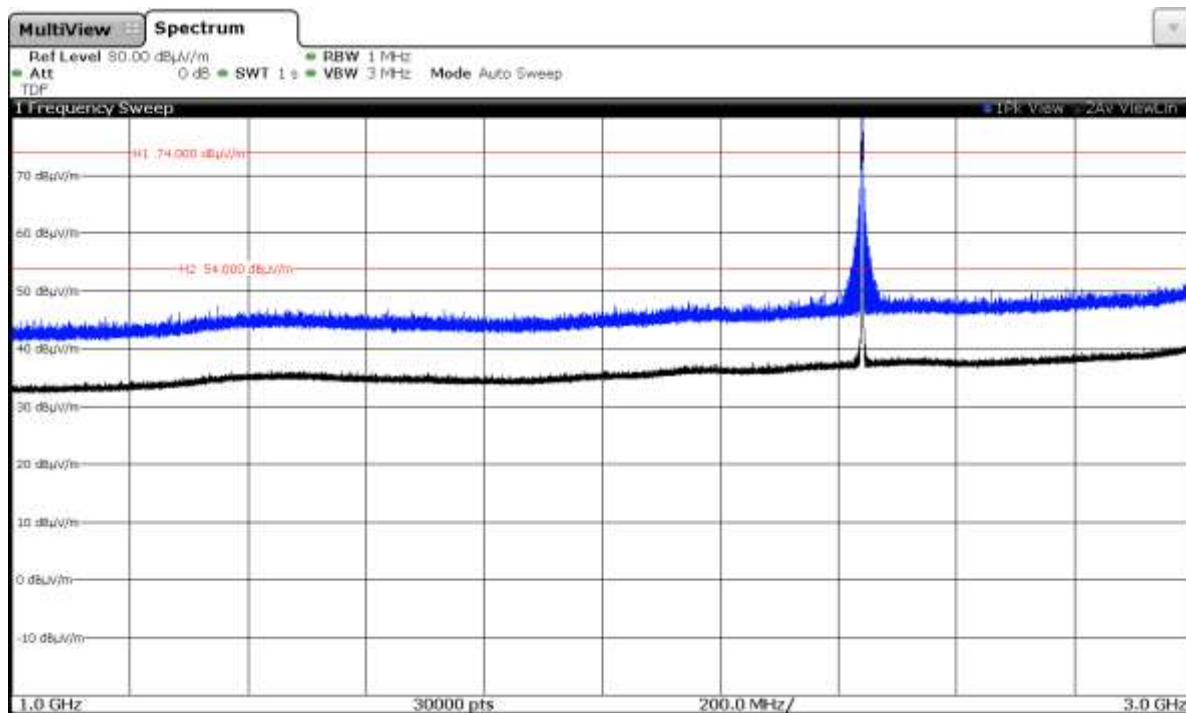
FREQUENCY RANGE 1 GHz to 3 GHz.

Lowest Channel



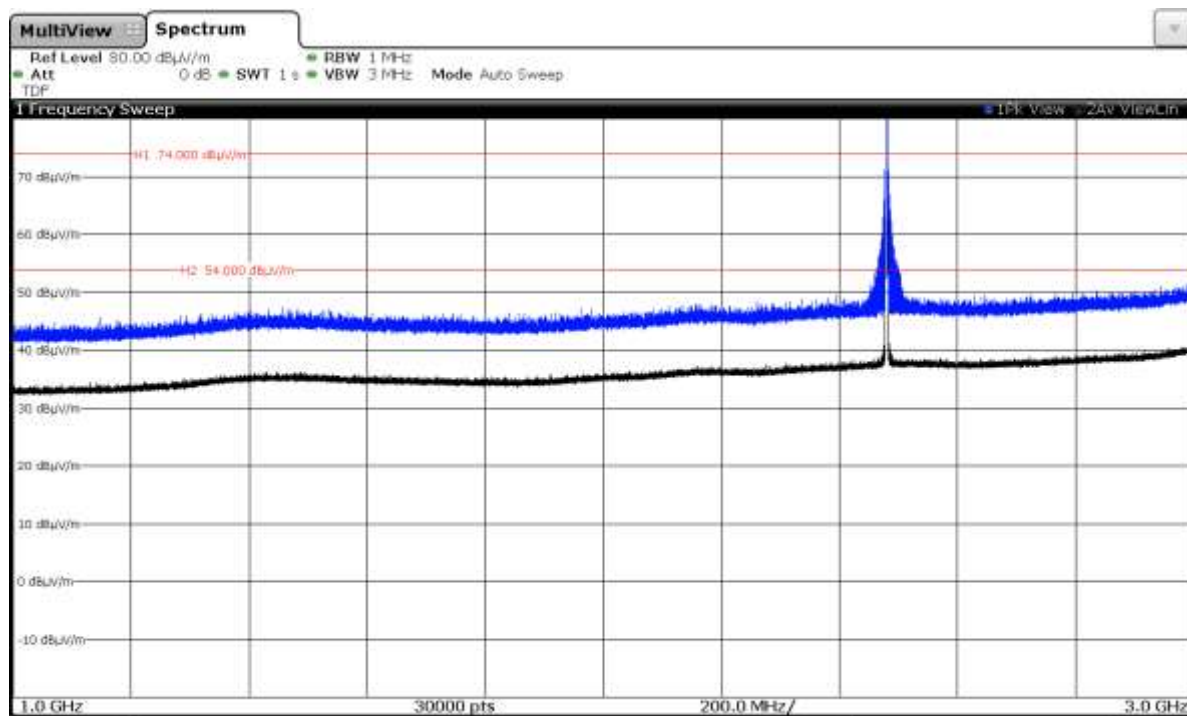
Note: The peak shown in the plot above the limit is the carrier frequency.

Middle Channel



Note: The peak shown in the plot above the limit is the carrier frequency.

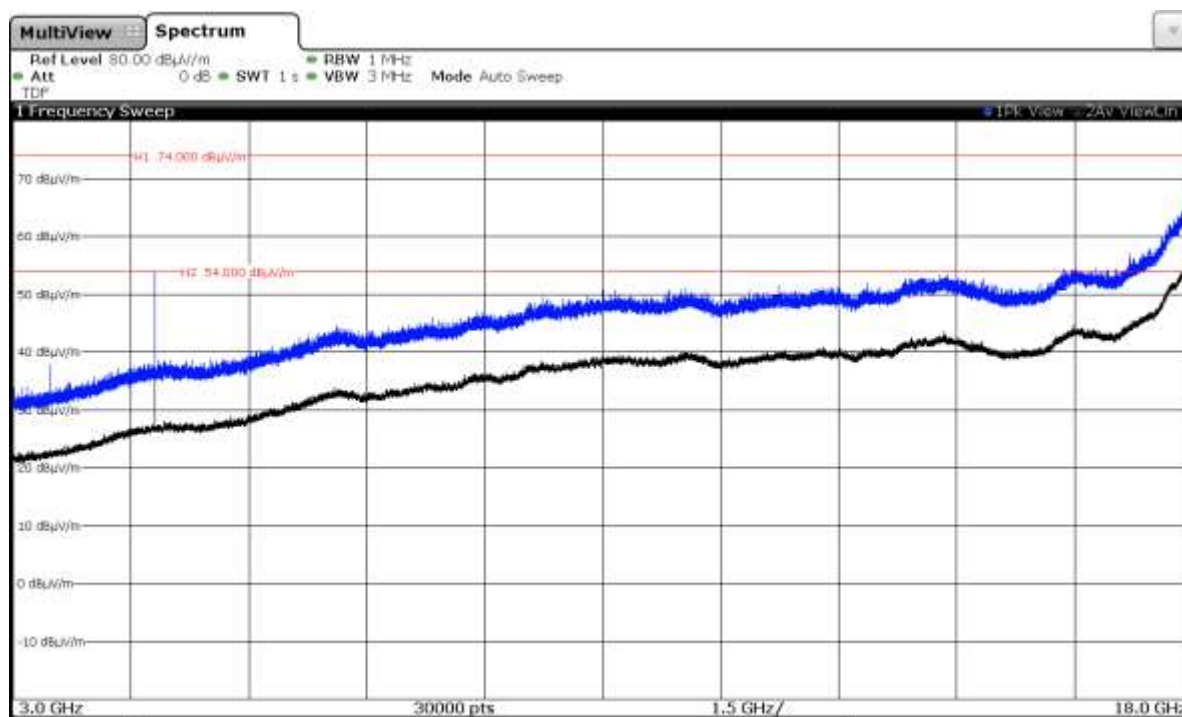
Highest channel



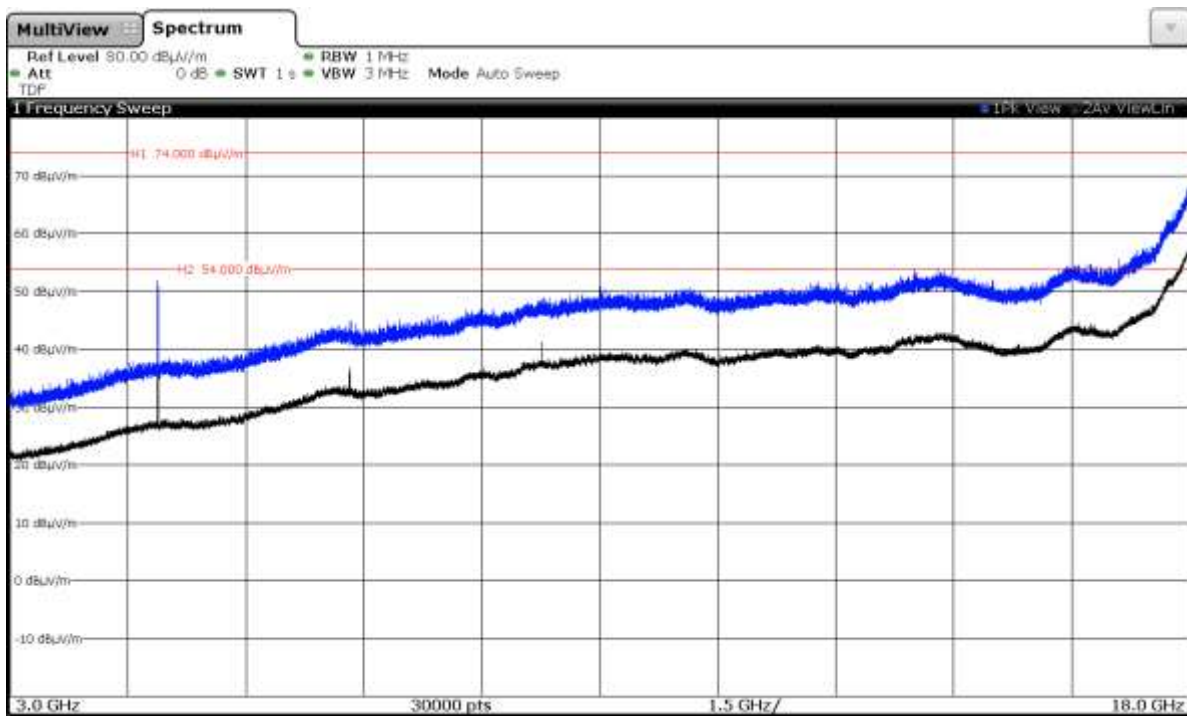
Note: The peak shown in the plot above the limit is the carrier frequency.

FREQUENCY RANGE 3 GHz to 18 GHz.

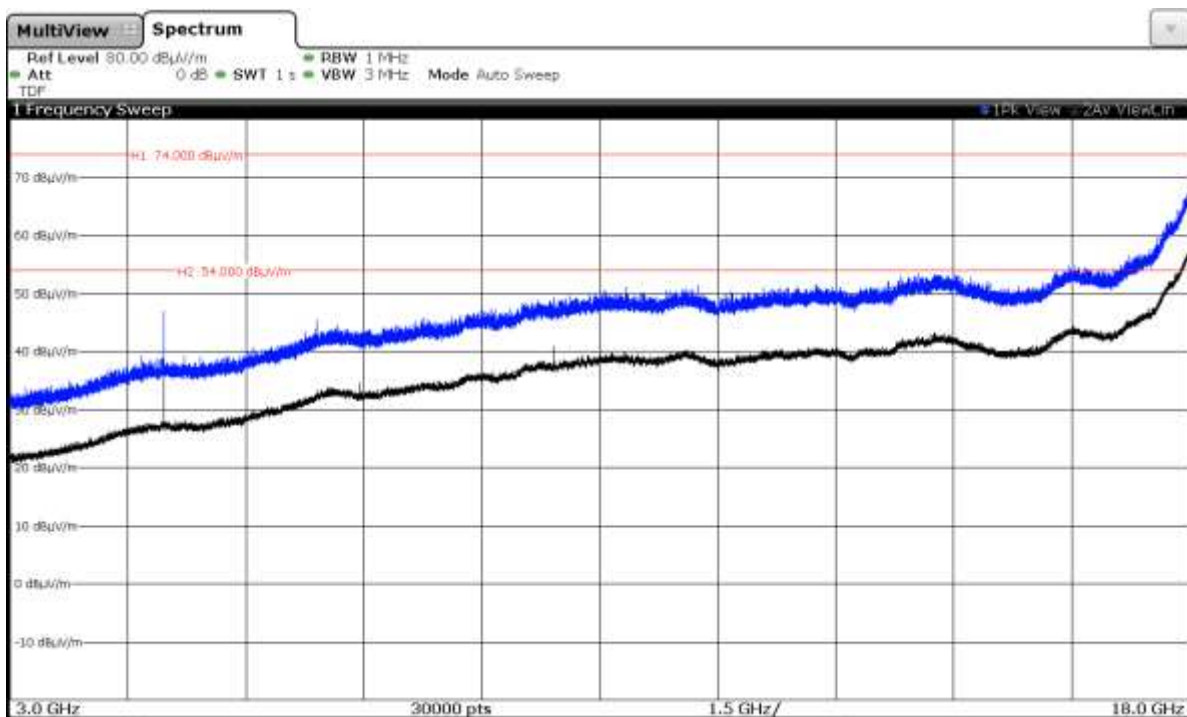
Lowest Channel



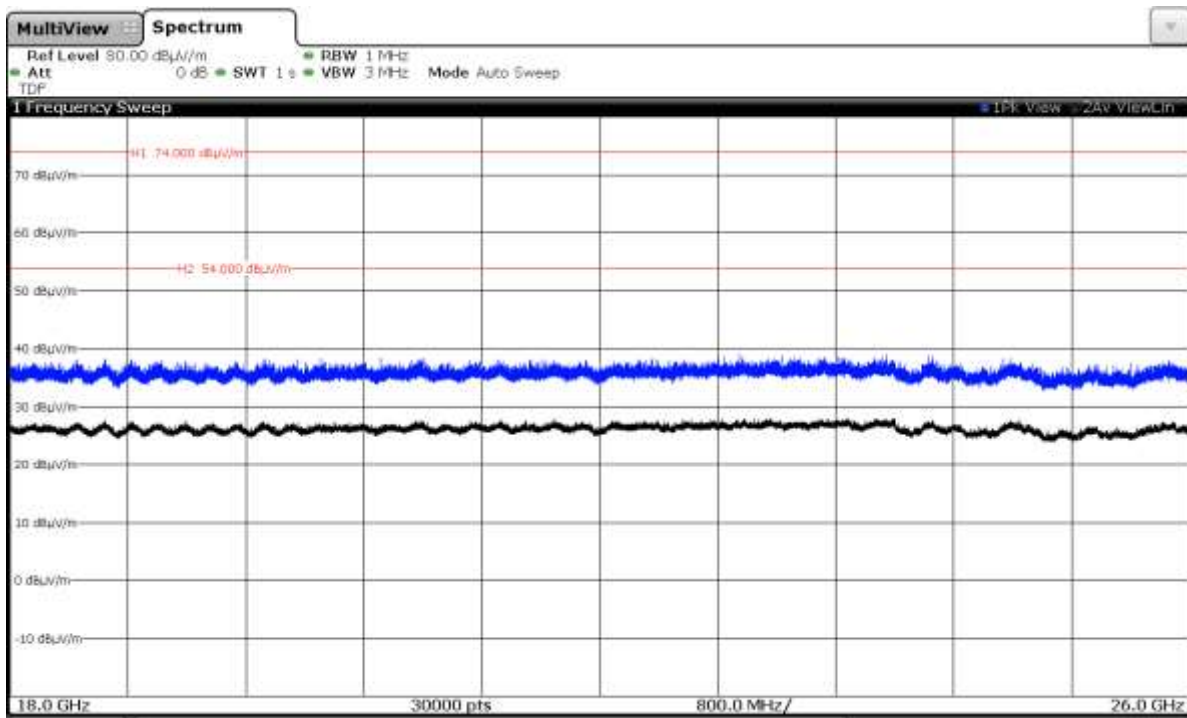
Middle Channel



Highest channel



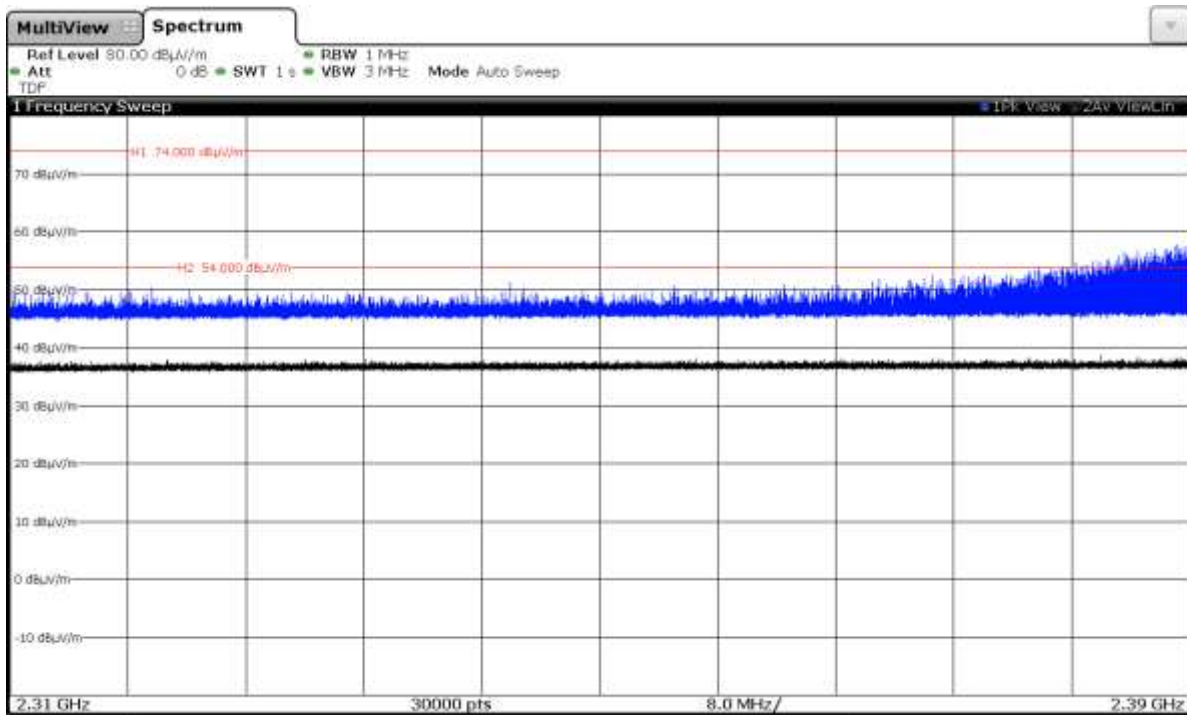
FREQUENCY RANGE 18 GHz to 26 GHz.



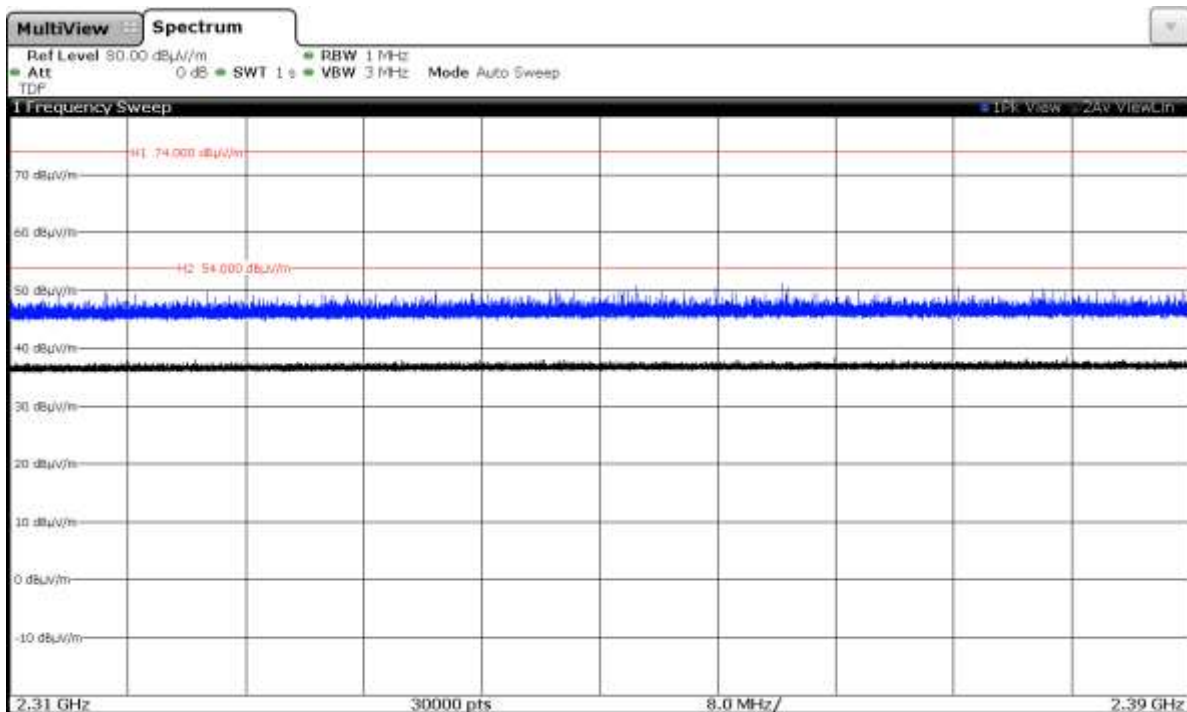
(This plot is valid for all three channels).

FREQUENCY RANGE 2.31 GHz to 2.39 GHz. (RESTRICTED BAND)

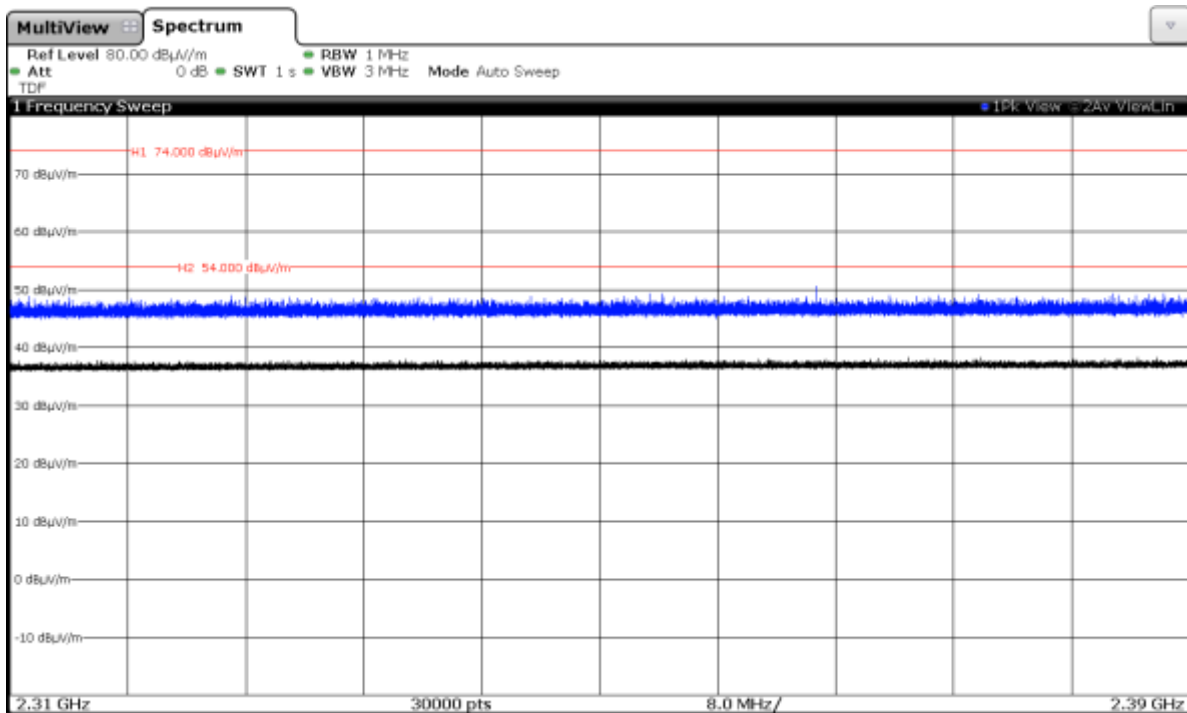
Lowest Channel



Middle Channel

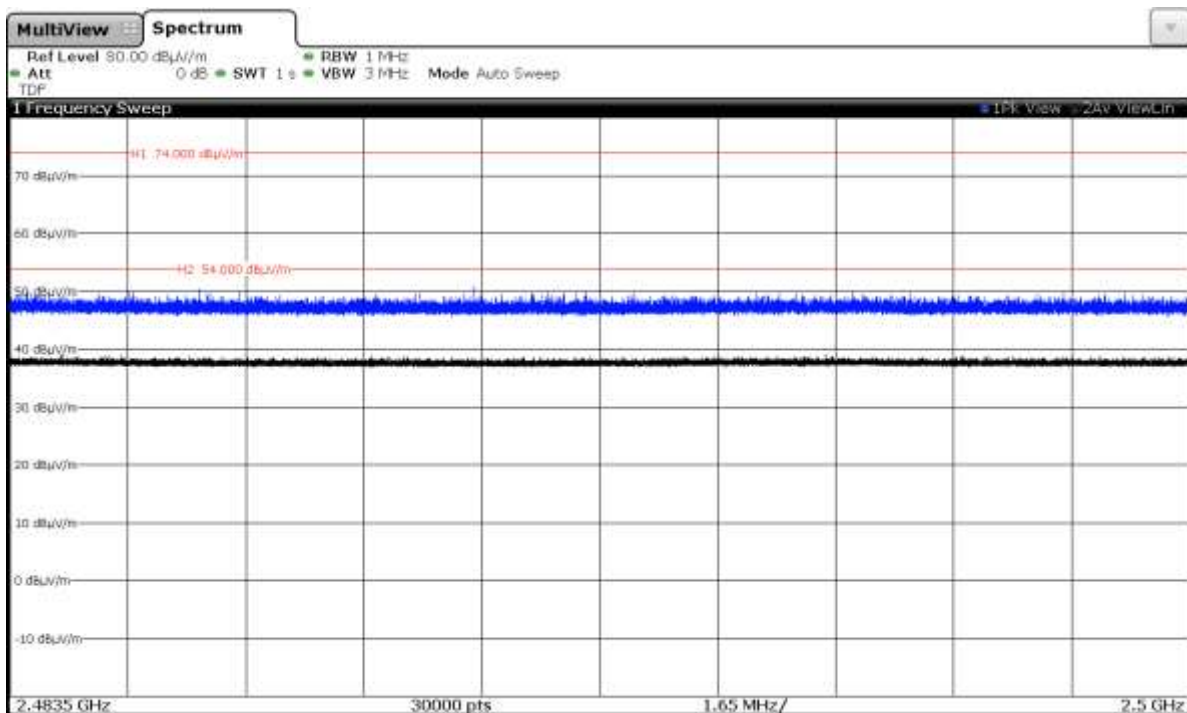


Highest channel

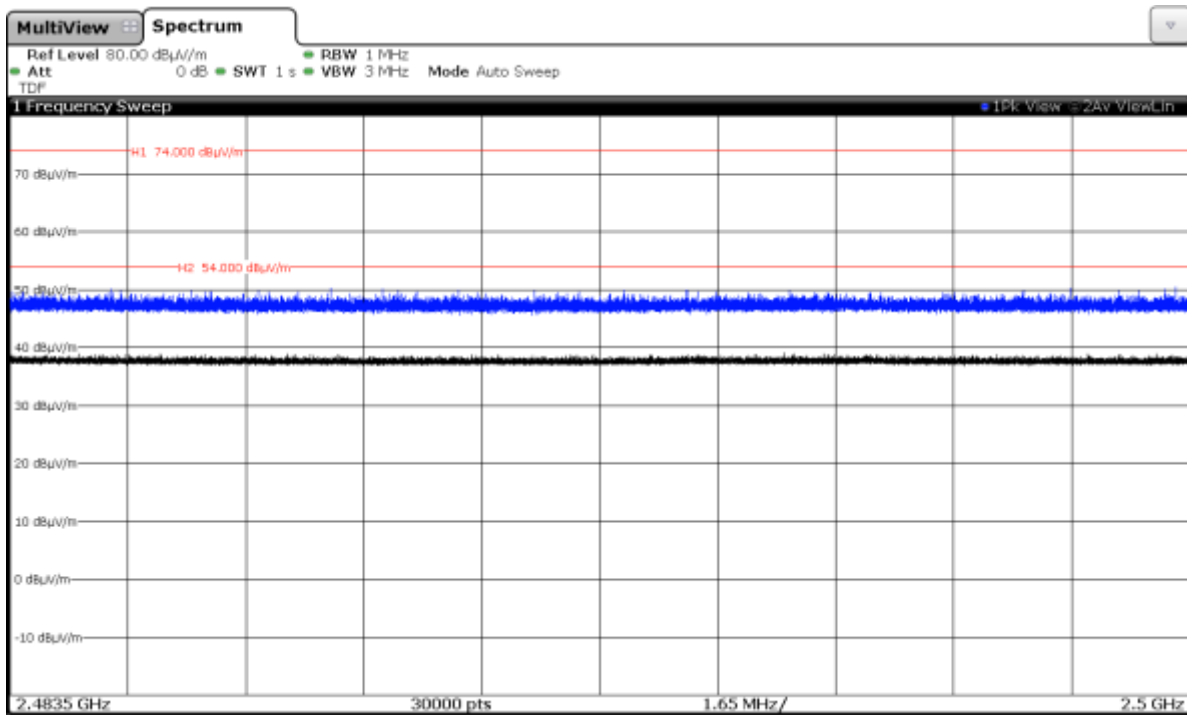


FREQUENCY RANGE 2.4835 GHz to 2.5 GHz. (RESTRICTED BAND).

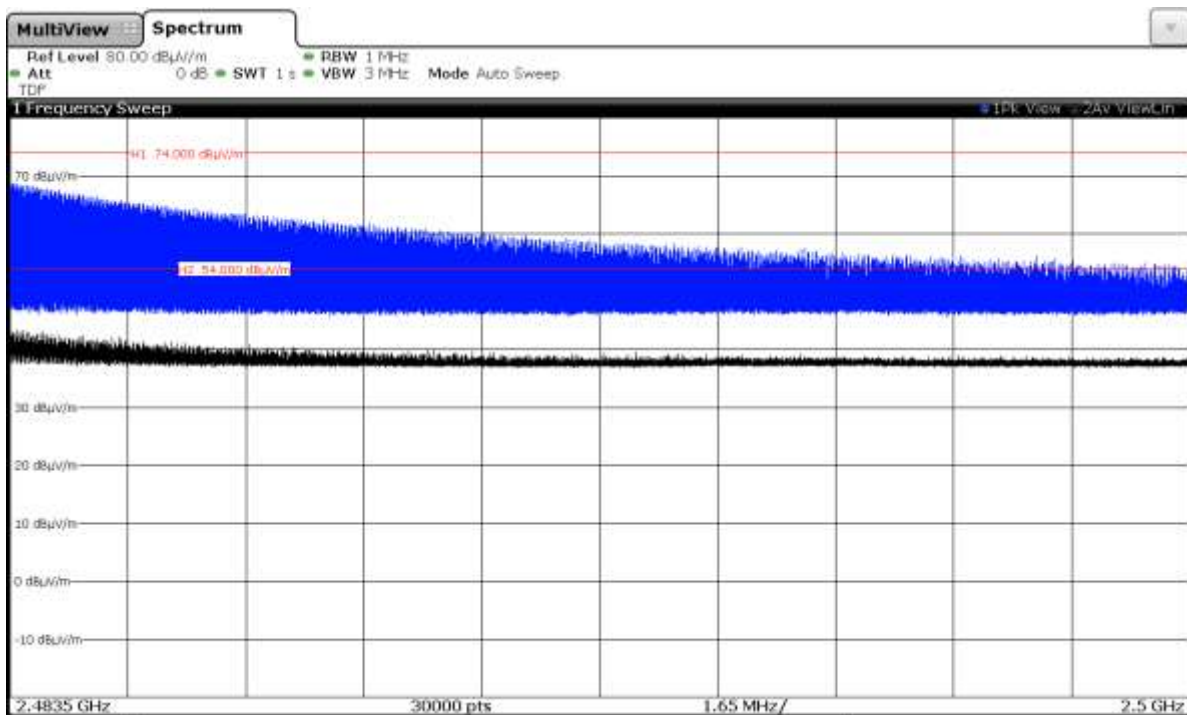
Lowest Channel



Middle Channel



Highest Channel



Appendix B – Test result (Proximity fitting radio)

INDEX

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TEST CONDITIONS

Power supply (V):

$$V_{\text{nominal}} = 1.3 \text{ Vdc}$$

Type of power supply = DC voltage from from Battery.

Type of antenna = Integral antenna.

TEST FREQUENCIES:

Lowest channel: 2402 MHz

Middle channel: 2440 MHz

Highest channel: 2480 MHz

CONDUCTED MEASUREMENTS

The equipment under test was set up in a shielded room and it is directly connected to the spectrum analyzer.



RADIATED MEASUREMENTS

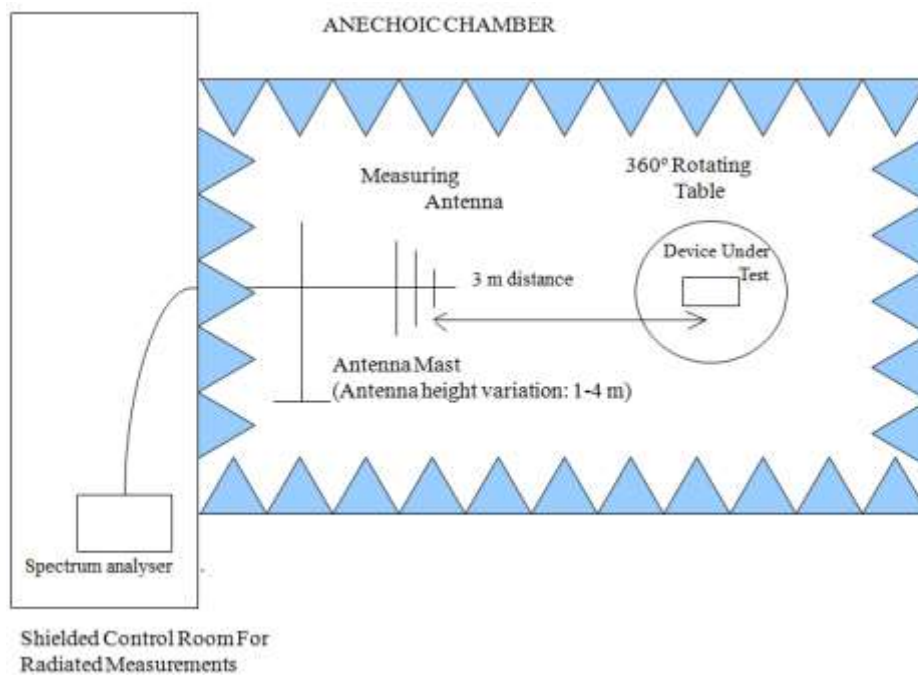
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30 MHz-1000 MHz (30 MHz-1000 MHz Bilog antenna) and at a distance of 1m for the frequency range 1 GHz-25 GHz (1 GHz-18 GHz Double ridge horn antenna and 18 GHz-40 GHz horn antenna).

For radiated emissions in the range 1 GHz-25 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.

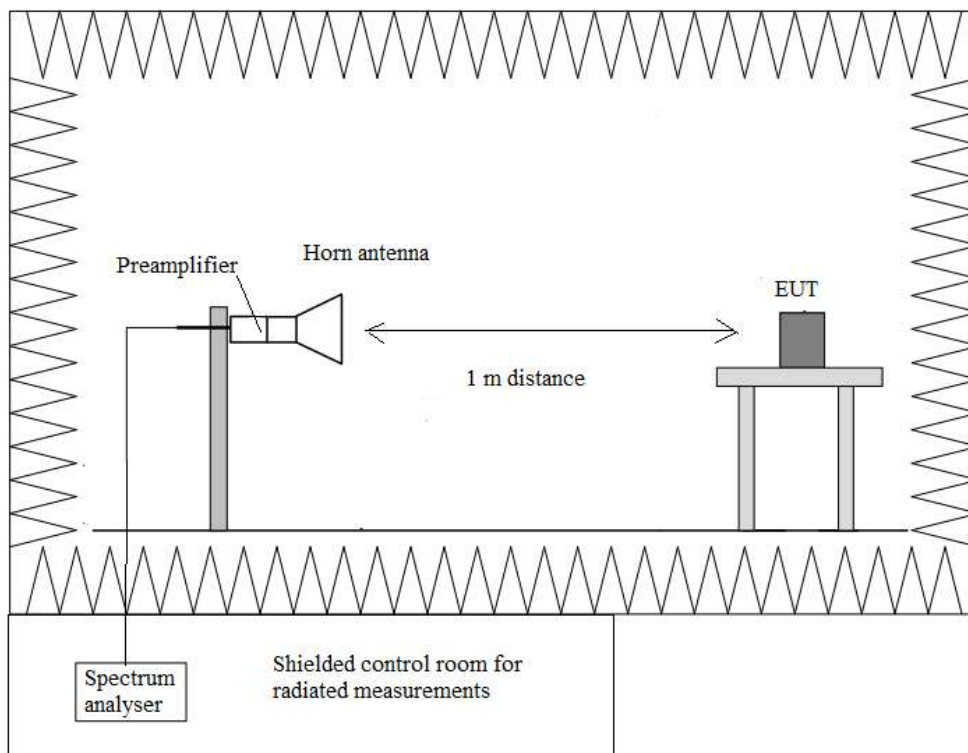
The equipment under test was set up on a non-conductive (wooden) platform one meter above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

Radiated measurements setup $f < 1$ GHz



Radiated measurements setup $f > 1$ GHz



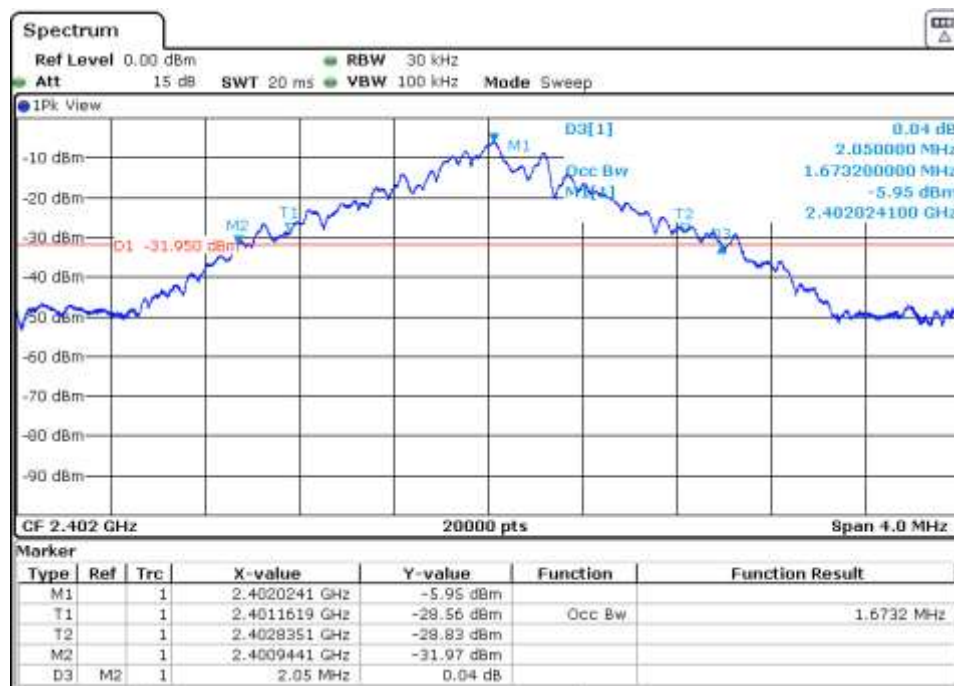
Occupied Bandwidth

RESULTS

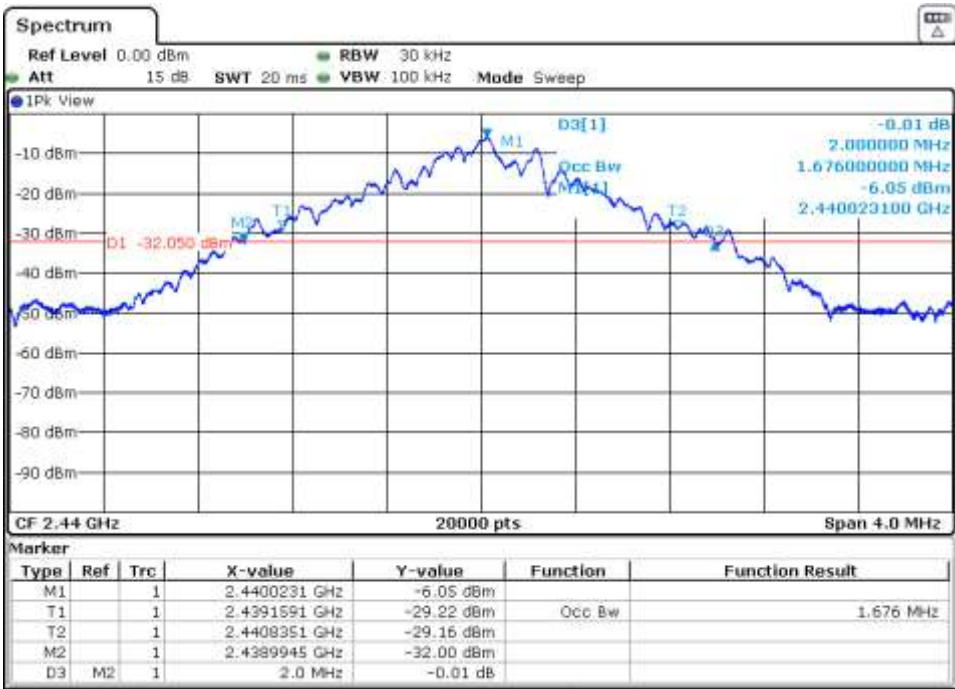
(see next plots).

	Lowest frequency 2402 MHz	Middle frequency 2440 MHz	Highest frequency 2480 MHz
99% bandwidth (MHz)	1.673	1.676	1.676
-26 dBc bandwidth (MHz)	2.050	2.000	2.124
Measurement uncertainty (kHz)	<±5.00		

Lowest Channel



Middle Channel



Highest channel



Section 15.249 Subclause (a) / RSS-210 B.10 (a). Field strength of Fundamental

SPECIFICATION

The field strength of emissions from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of fundamental (mV/m)	Field strength (dB μ V/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 – 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000-24250	250	107.96	3

For frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

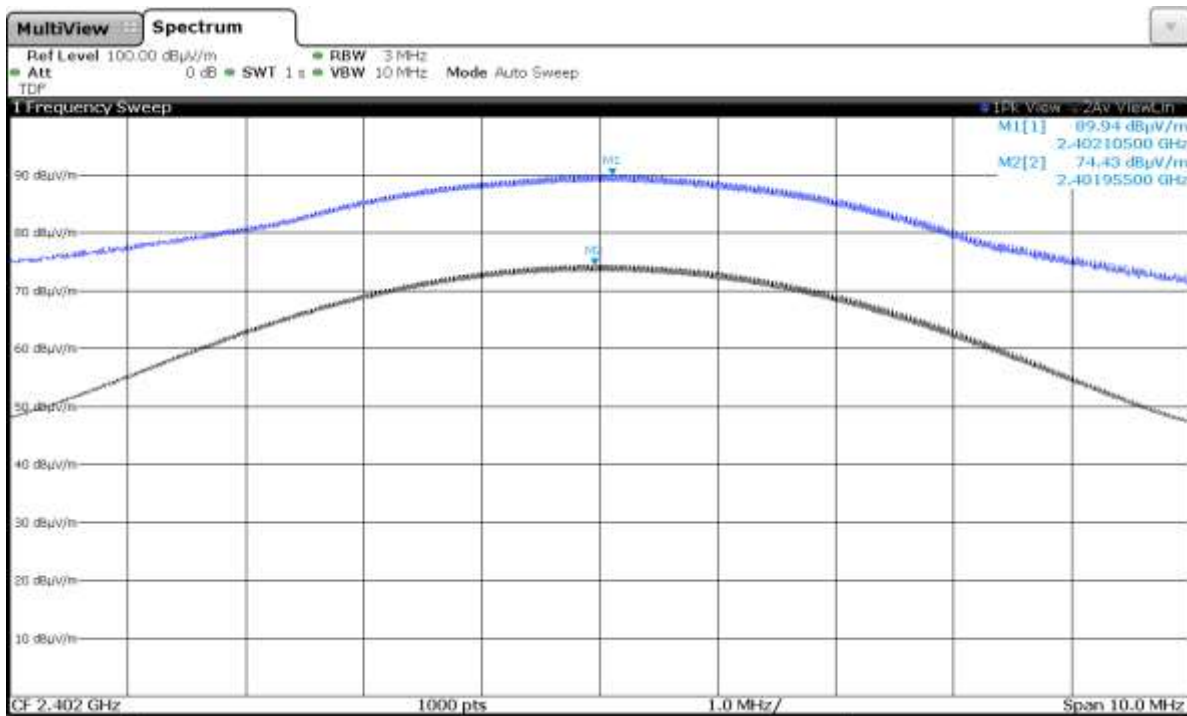
RESULTS

	Lowest frequency 2402 MHz	Middle frequency 2440 MHz	Highest frequency 2480 MHz
Field strength (dB μ V/m) average	74.43	75.03	75.06
Field strength (dB μ V/m) peak	89.94	90.48	90.52
Measurement uncertainty (dB)	< $\pm$ 4.87		

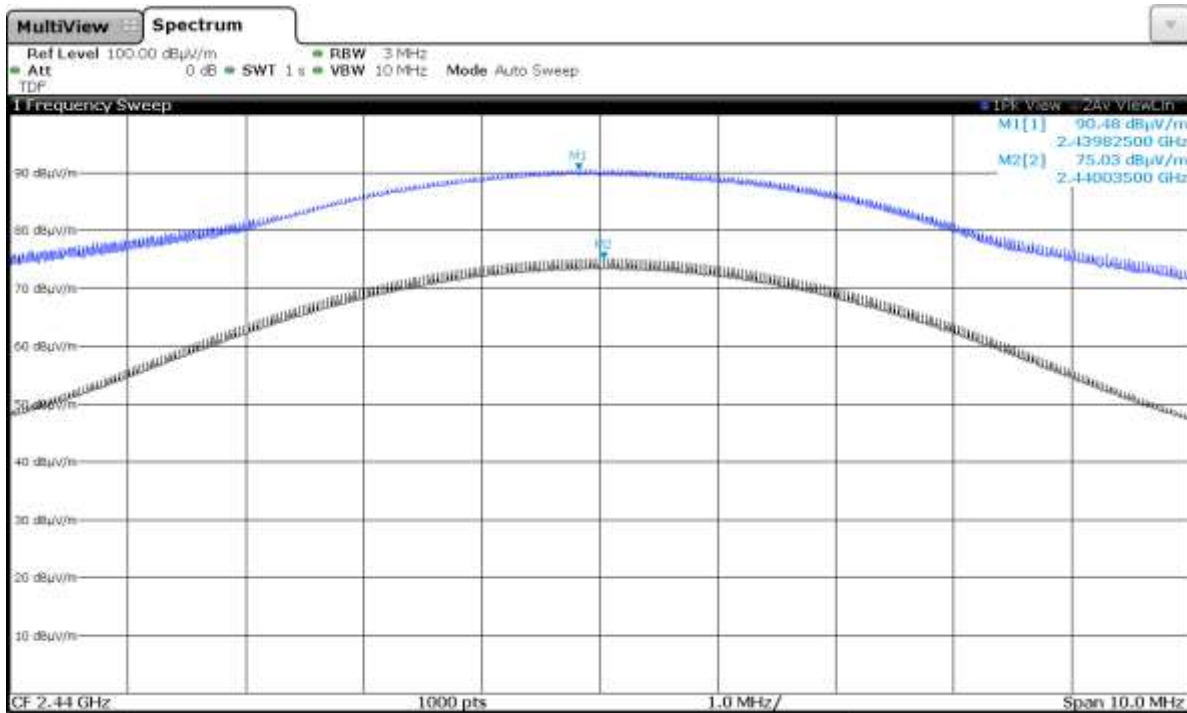
Verdict: PASS

FIELD STRENGTH

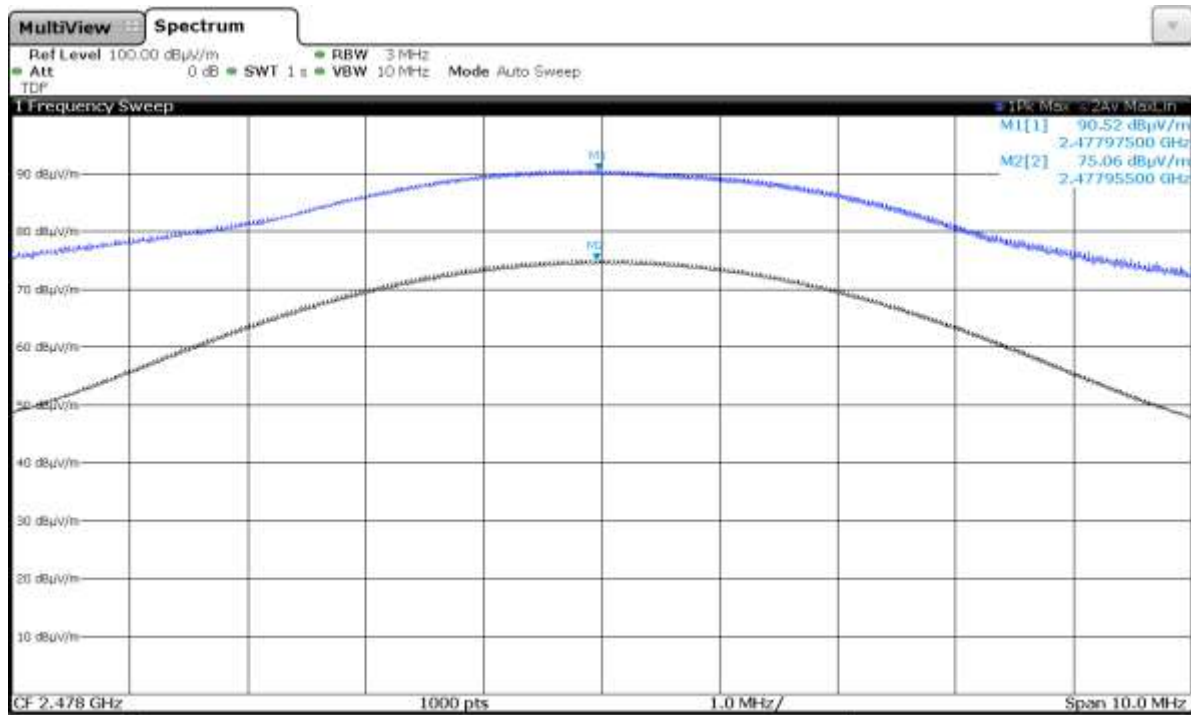
Lowest Channel



Middle Channel



Highest Channel



Section 15.249 Subclause (a) and (d) / RSS-210 B.10 (b). Emissions limitations radiated (Transmitter)

SPECIFICATION

The field strength of harmonics from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of harmonics ($\mu\text{V/m}$)	Field strength of harmonics ($\text{dB}\mu\text{V/m}$)	Measurement distance (m)
902 - 928	500	54	3
2400 – 2483.5	500	54	3
5725 - 5875	500	54	3
24000-24250	2500	67.96	3

Emissions radiated outside of the specific frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits specified in section 15.209:

Frequency Range (MHz)	Field strength ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	Measurement distance (m)
0.009-0.490	$2400/F(\text{kHz})$	-	300
0.490-1.705	$24000/F(\text{kHz})$	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

Whichever is the lesser attenuation.

RESULTS:

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.

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-1000 MHz and at distance of 1m for the frequency range 1 GHz-25 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Frequency range 30 MHz-1000 MHz.

No radiated spurious signals were detected at less than 20 dB from the limit.

Frequency range 1 GHz-25 GHz

The results in the next tables show the maximum measured levels in the 1-25 GHz range including the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz (see next plots).

Spurious signals with peak levels above the average limit (54 dB μ V/m at 3 m) are measured with average detector for checking compliance with the average limit.

1. CHANNEL: LOWEST (2402 MHz).

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.388716	H	Peak	60.43	< $\pm$ 4.87
		Average	38.5	< $\pm$ 4.87
2.485301	H	Peak	50.97	< $\pm$ 4.87
4.803250	H	Peak	55.17	< $\pm$ 4.87
		Average	48.83	< $\pm$ 4.87

2. CHANNEL: MIDDLE (2440 MHz).

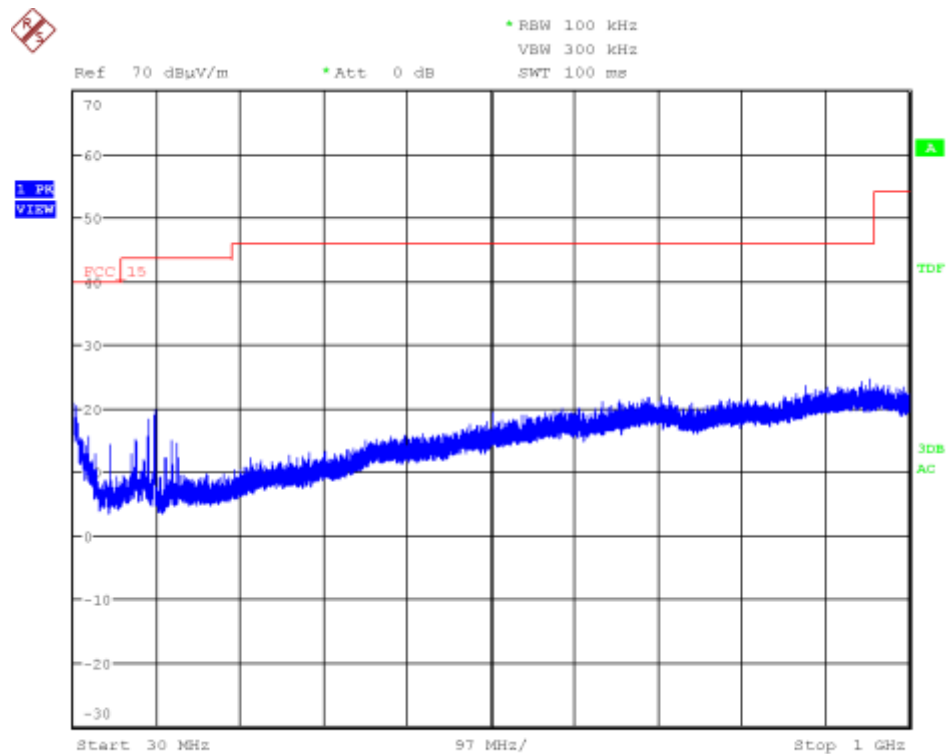
Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.385711	H	Peak	51.13	< $\pm$ 4.87
2.484649	H	Peak	51.23	< $\pm$ 4.87
4.879250	V	Peak	51.24	< $\pm$ 4.87

3. CHANNEL: HIGHEST (2480 MHz).

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB μ V/m)	Measurement Uncertainty (dB)
2.351663	V	Peak	49.86	< $\pm$ 4.87
2.483507	H	Peak	62.85	< $\pm$ 4.87
		Average	38.98	< $\pm$ 4.87
4.879250	V	Peak	51.24	< $\pm$ 4.87

Verdict: PASS

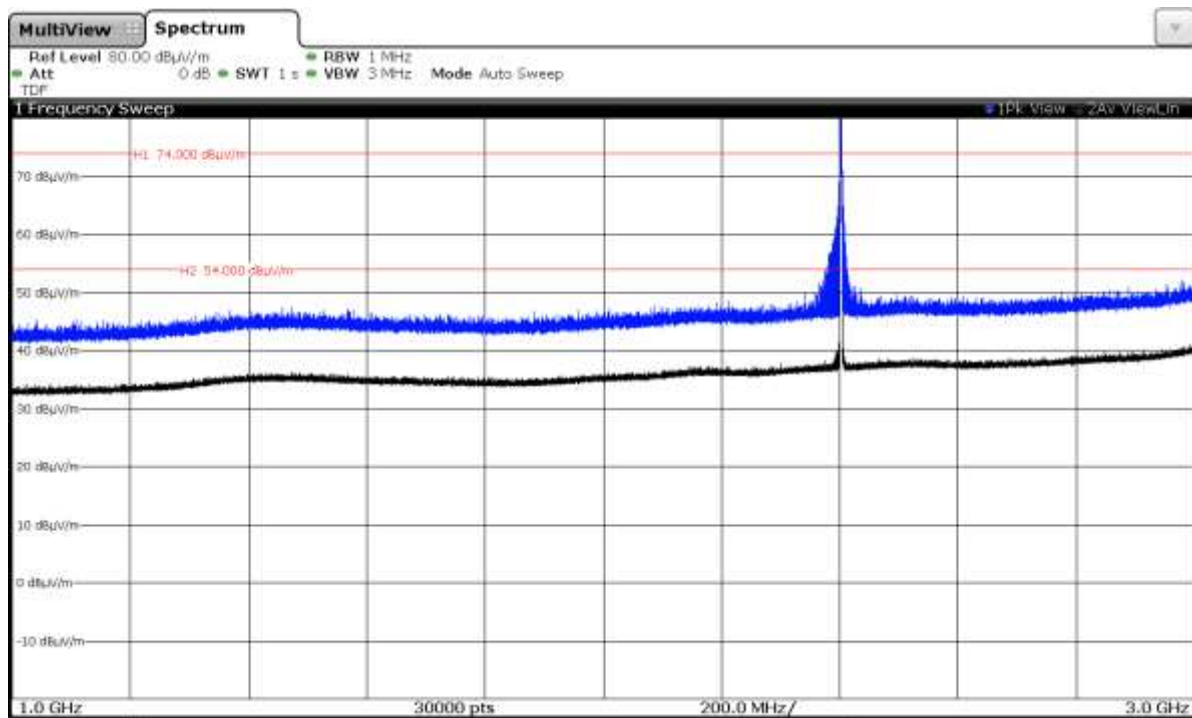
FREQUENCY RANGE 30 MHz-1000 MHz.



(This plot is valid for all three channels).

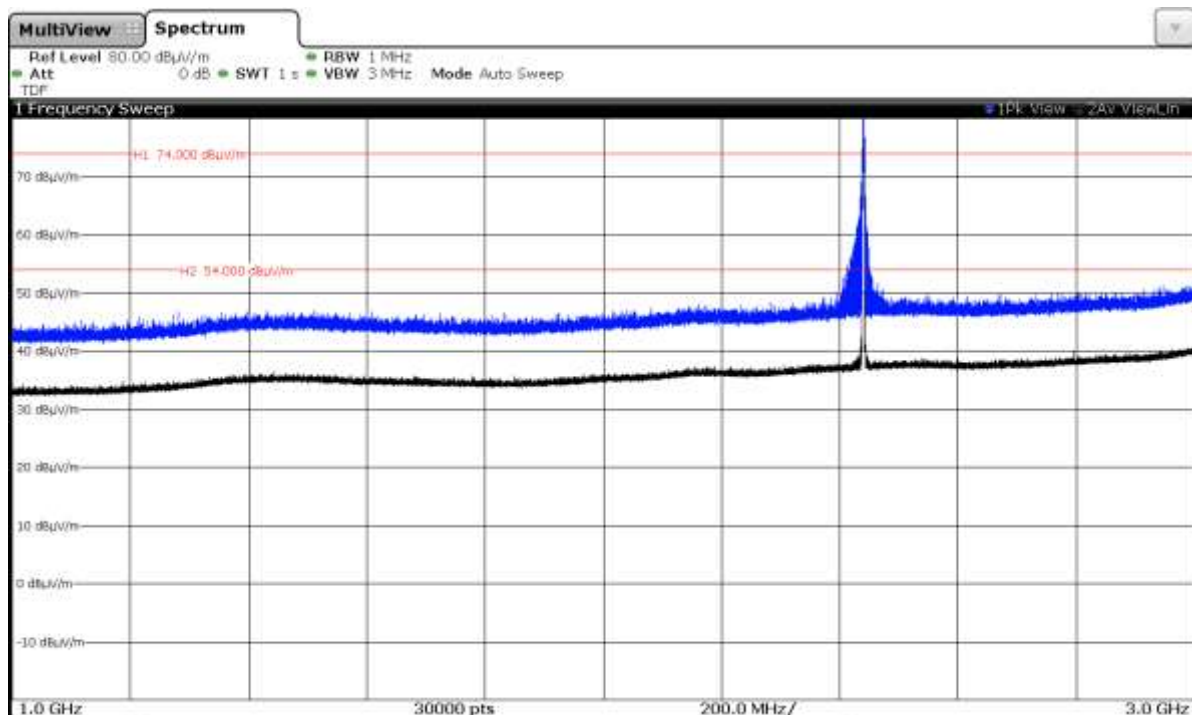
FREQUENCY RANGE 1 GHz to 3 GHz.

CHANNEL: Lowest (2402 MHz).



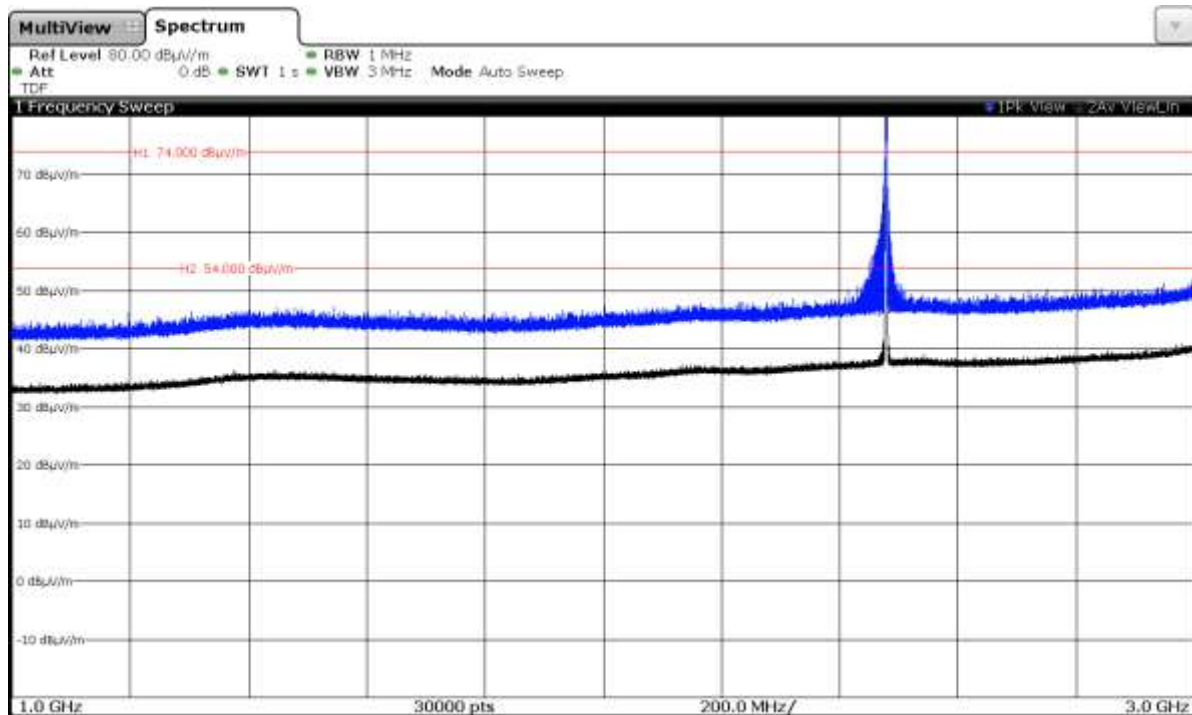
Note: The peak shown in the plot above the limit is the carrier frequency.

CHANNEL: Middle (2440 MHz).



Note: The peak shown in the plot above the limit is the carrier frequency.

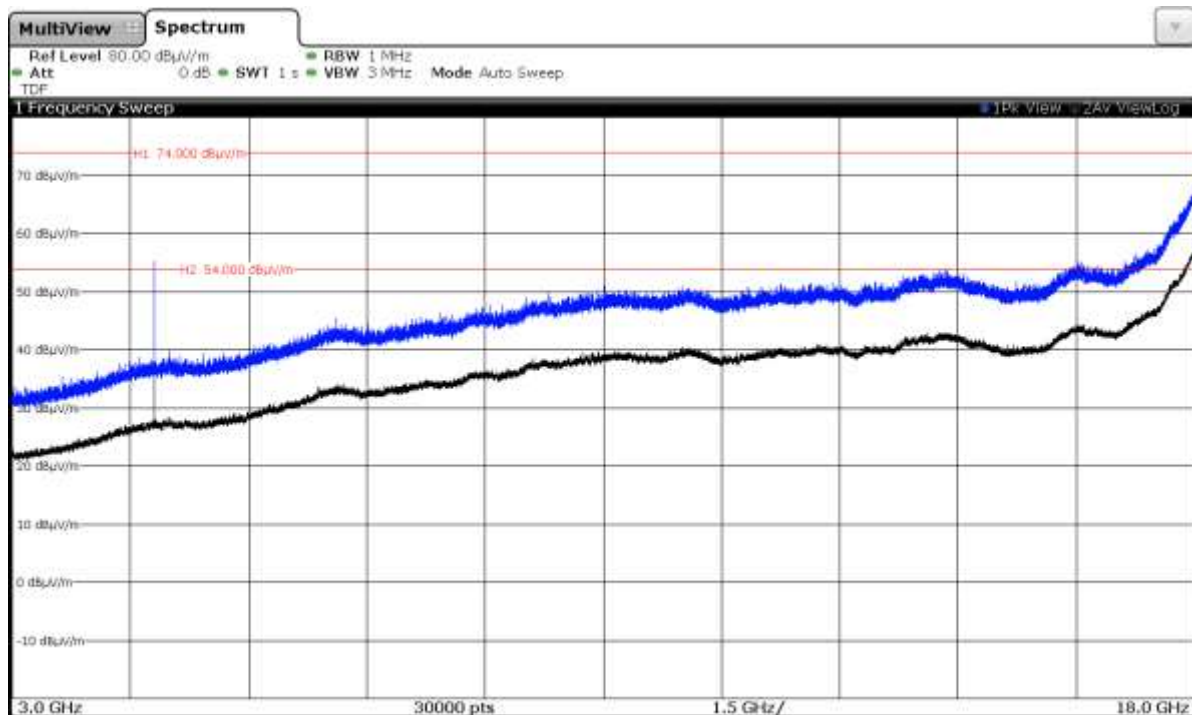
CHANNEL: Highest (2480 MHz).



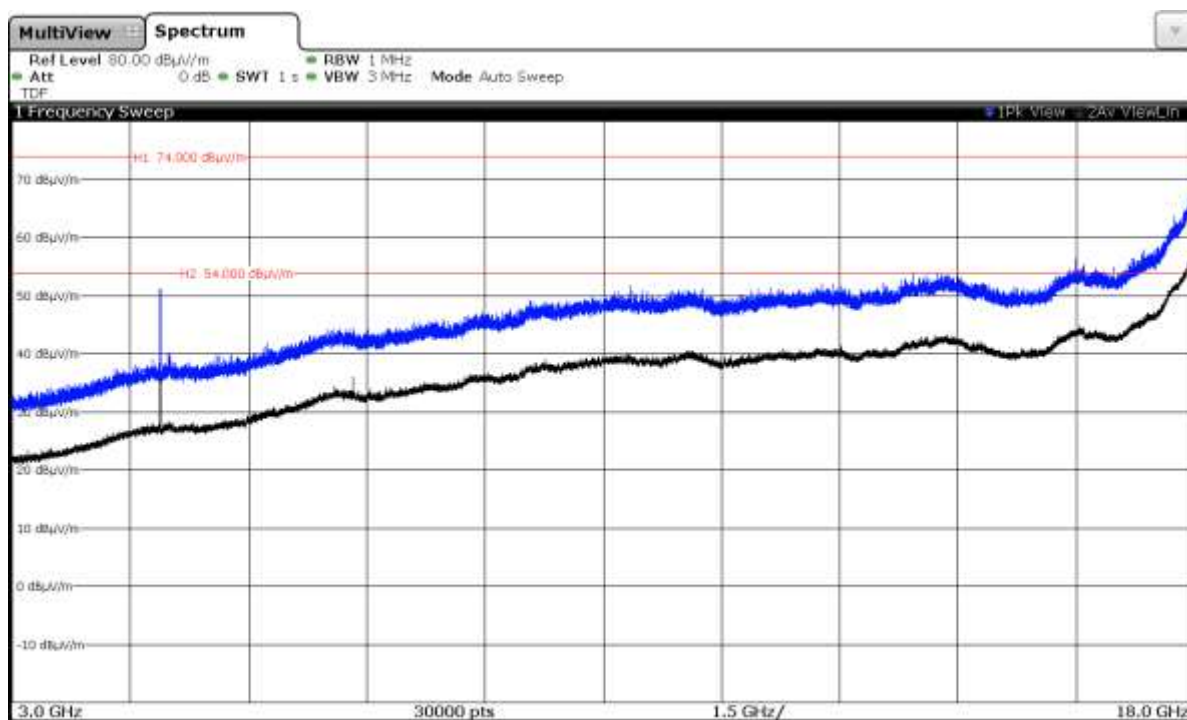
Note: The peak shown in the plot above the limit is the carrier frequency.

FREQUENCY RANGE 3 GHz to 18 GHz.

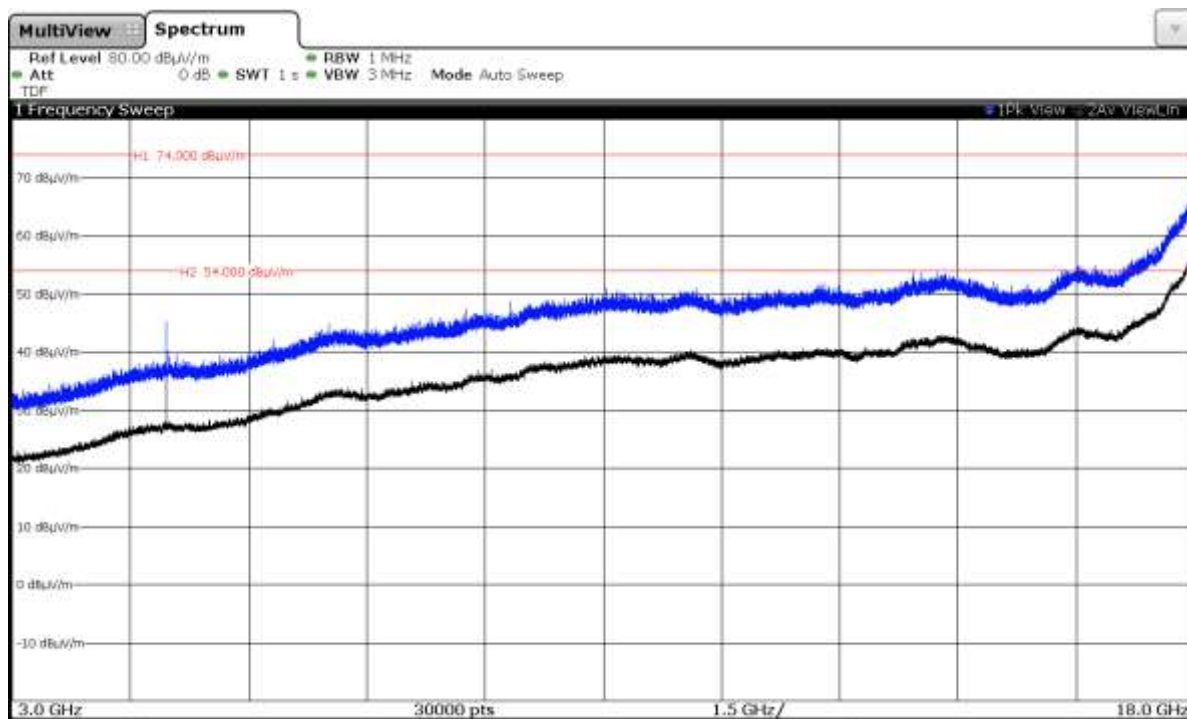
CHANNEL: Lowest (2402 MHz).



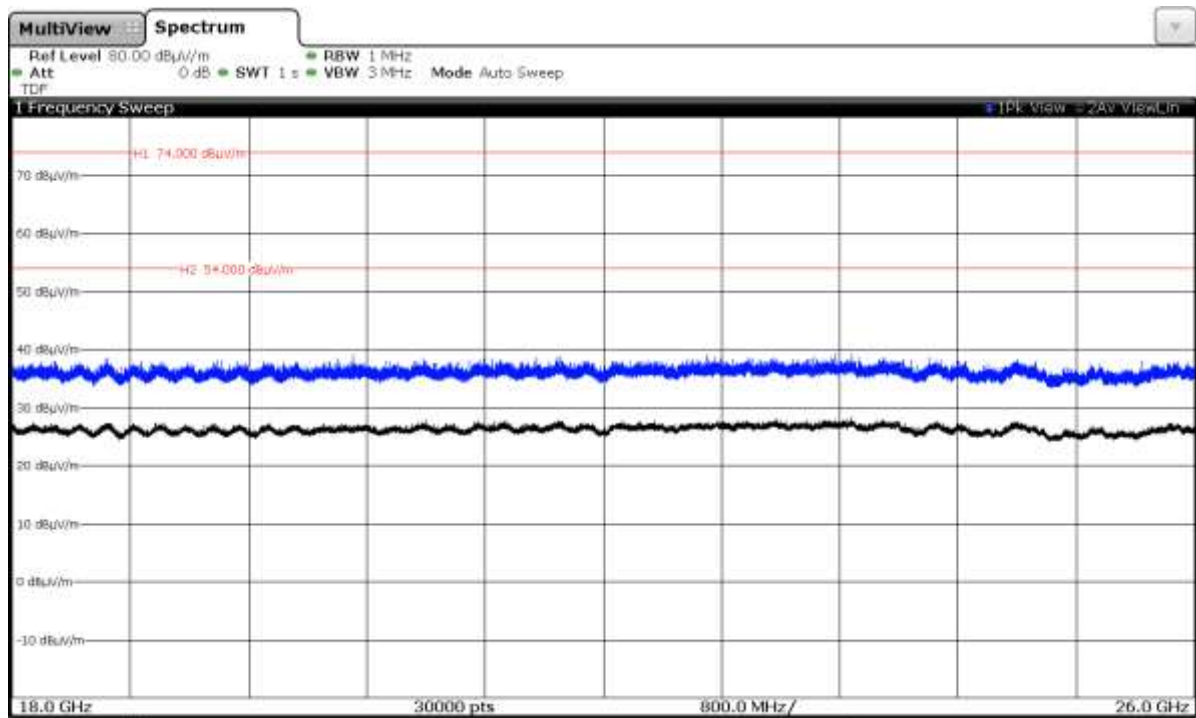
CHANNEL: Middle (2440 MHz).



CHANNEL: Highest (2480 MHz).



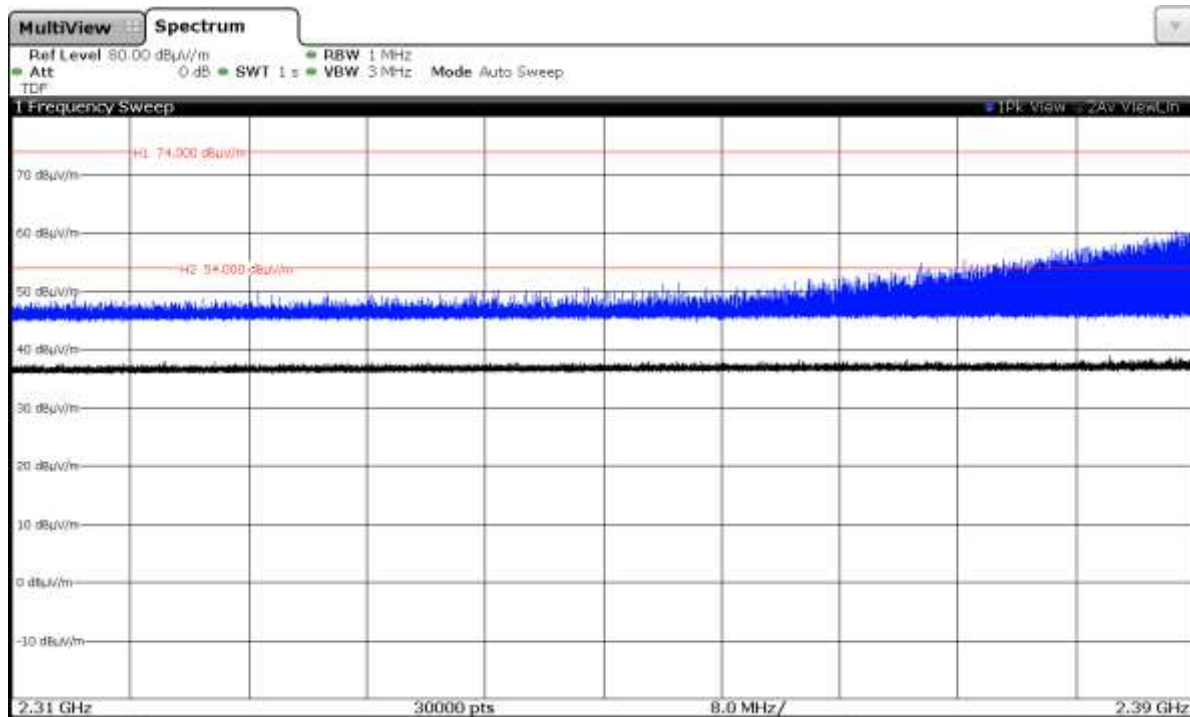
FREQUENCY RANGE 18 GHz to 26 GHz.



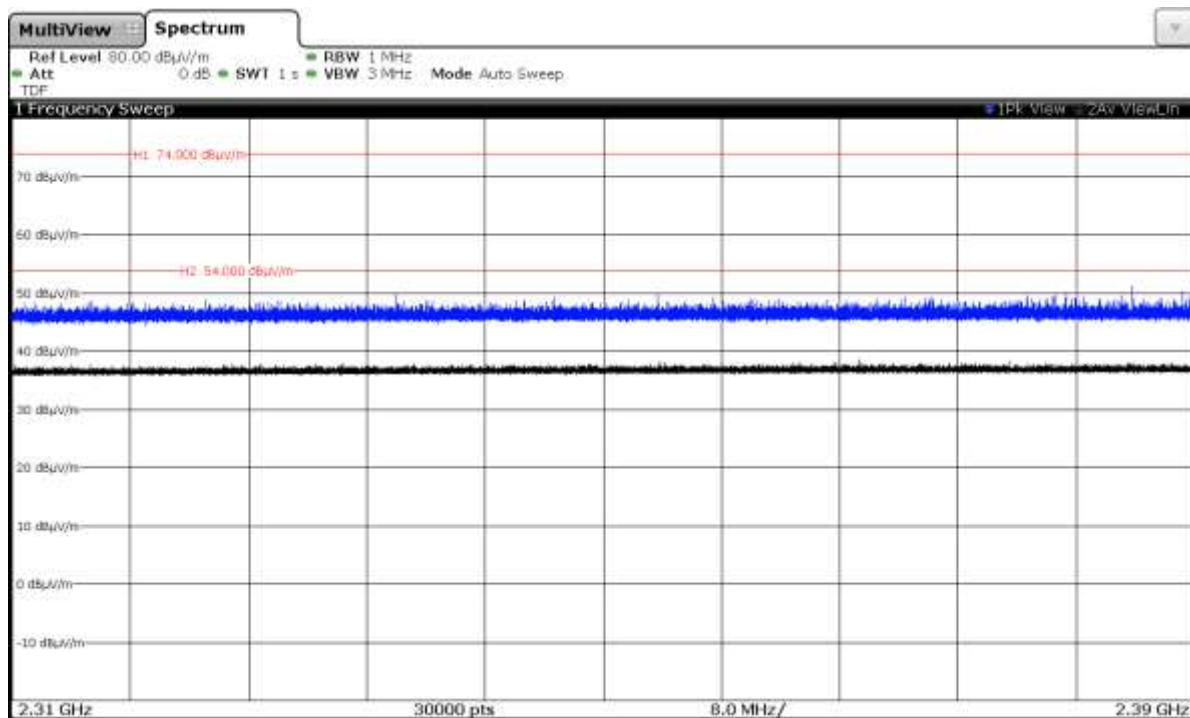
(This plot is valid for all three channels).

FREQUENCY RANGE 2.31 GHz to 2.39 GHz. (RESTRICTED BAND)

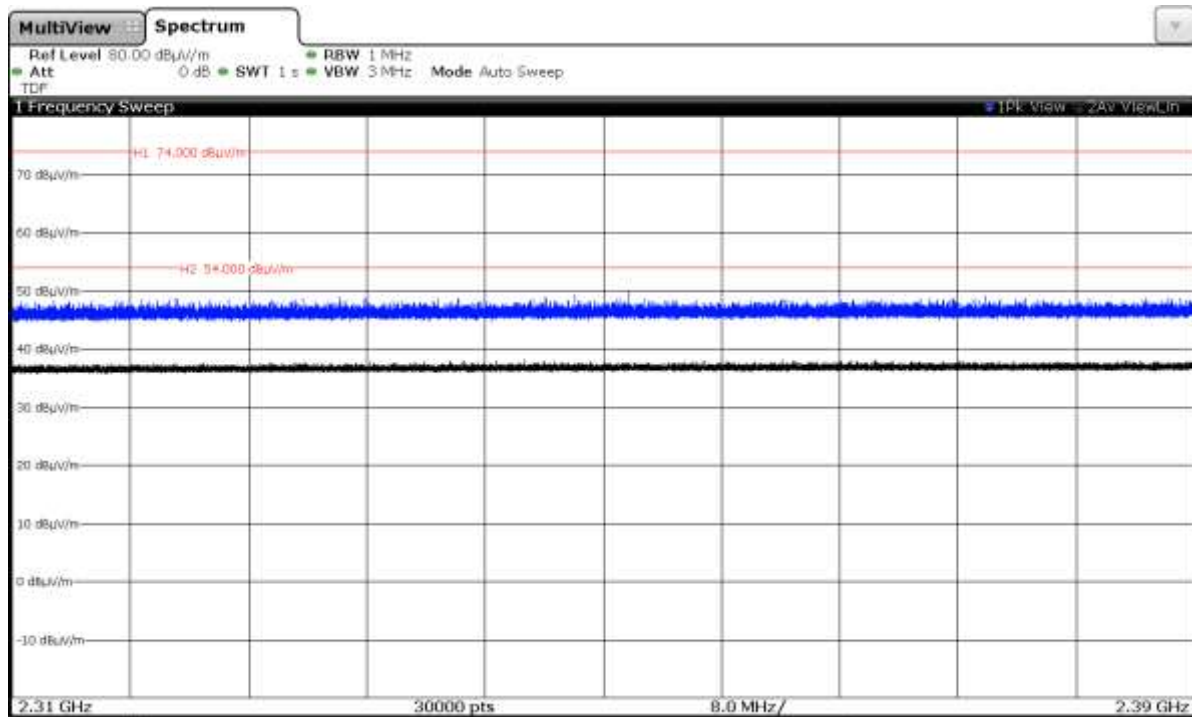
CHANNEL: Lowest (2402 MHz).



CHANNEL: Middle (2440 MHz).

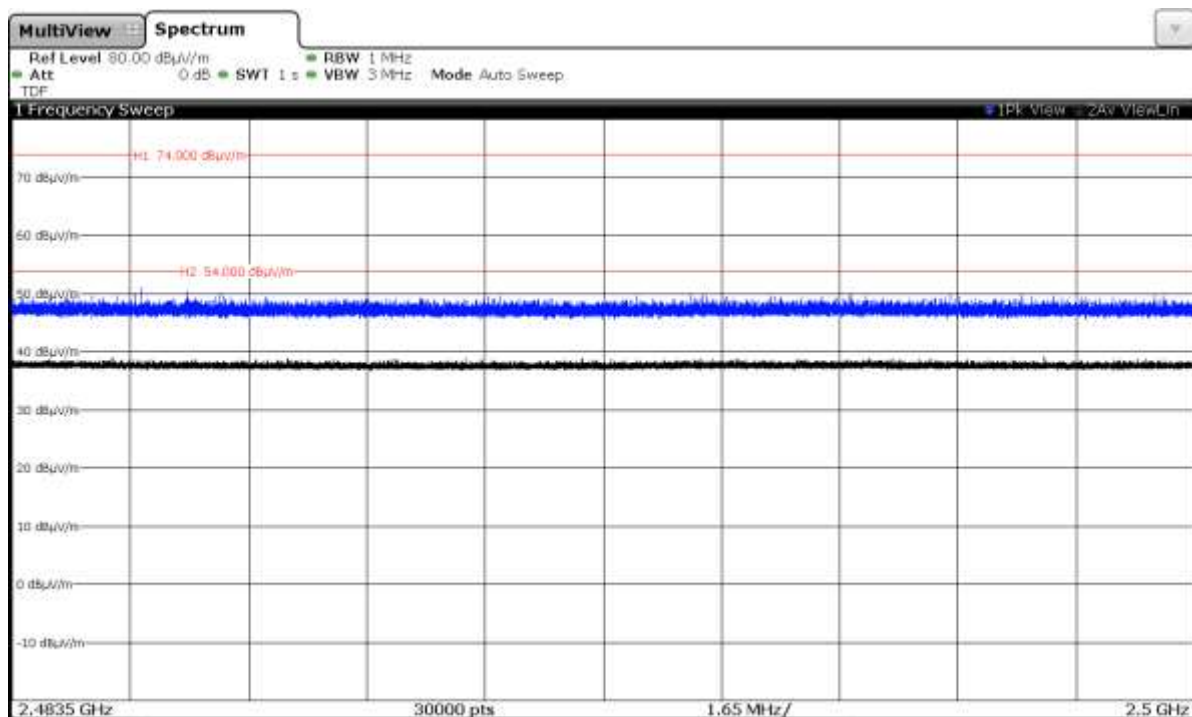


CHANNEL: Highest (2480 MHz).

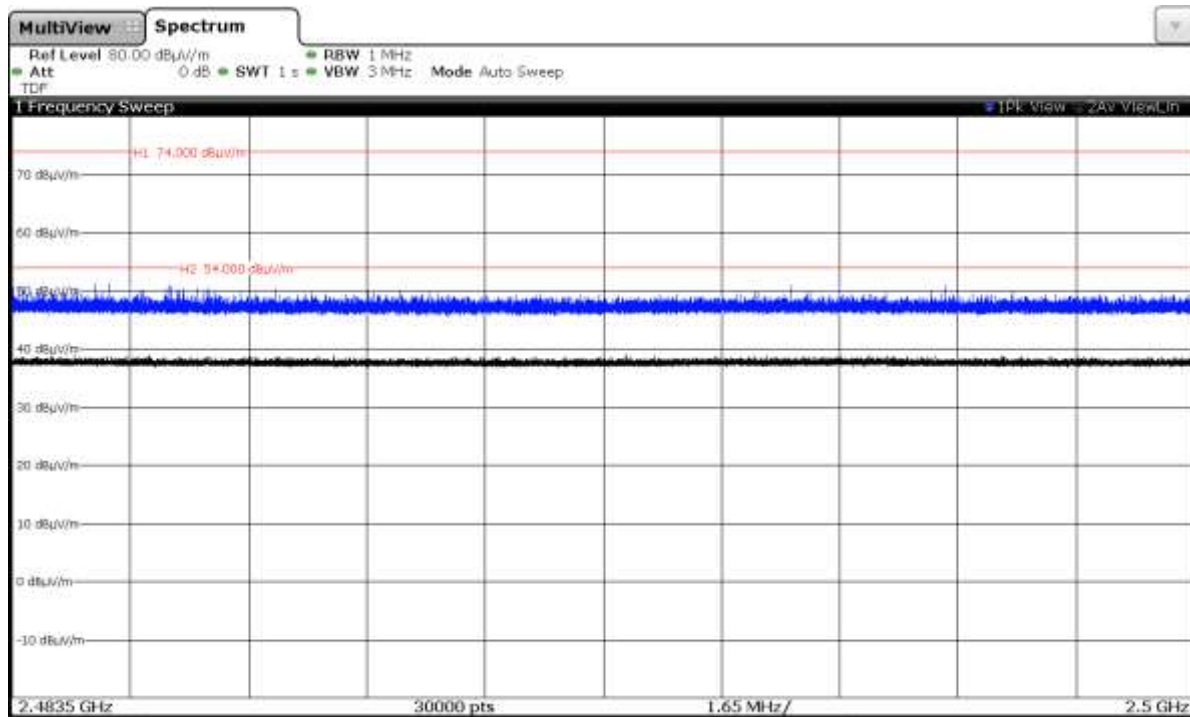


FREQUENCY RANGE 2.4835 GHz to 2.5 GHz. (RESTRICTED BAND)

CHANNEL: Lowest (2402 MHz).



CHANNEL: Middle (2440 MHz).



C

HANNEL: Highest (2480 MHz).

