Prüfbericht - Nr.: *Test Report No.:*	**CN21Z86V 001**	**Auftrags-Nr.:** *Order No:*	**180207104**	Seite 1 von 50 *Page 1 of 50*
Kunden-Referenz-Nr.: *Client Reference No.:*	N/A	**Auftragsdatum:** *Order date:*	2021.04.30	
Auftraggeber: *Client:*	Loctek Ergonomic Technology Corp. 588 Qihang South Road, Binhai Industrial Zone Yinzhou District, Ningbo Zhejiang, China			
Prüfgegenstand: *Test item:*	Remote Control module			
Bezeichnung / Typ-Nr. : *Identification / Type No. :*	NF-03			
Auftrags-Inhalt: *Order content:*	TÜV Rheinland – FCC Service			
Prüfgrundlage: *Test specification:*	FCC Part 15: Subpart C Section 15.209 FCC Part 15: Subpart C Section 15.247		CFR47 FCC Part 2: Section 2.1093 CFR47 FCC Part 1: Section 1.1310	
Wareneingangsdatum: *Date of receipt:*	2021.04.30	*Refer to attachment*		
Prüfmuster-Nr.: *Test sample No.:*	A003041790-001			
Prüfzeitraum: *Testing period:*	2021.06.10-2021.06.15			
Ort der Prüfung: *Place of testing:*	Refer to section 1.1.			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.			
Prüfergebnis*: *Test result*:*	Pass			

geprüft von / *tested by:*			**kontrolliert von** / *reviewed by:*		
2021.08.12	Caidong Xie/PE	Caidong Xie	2021.08.12	Feng Liang/TC	Feng Liang
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges/ *Other:*
FCCID: 2ARK8-NF03

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery :*	Prüfmuster vollständing und unbeschädigt *Test item complete and undamaged*

*Legende:	1= Sehr gut	2 = gut	3= befriedigend	4= ausreichend	5 = mangelhaft
	P(ass) =entspricht o.g. Prüfgrundlage(n)		F(ail)= entspricht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T =nicht getestet
Legend:	*1= very good*	*2 = good*	*3= satisfactory*	*4= sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail)= failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Test Summary

4.1.1 ANTENNA REQUIREMENT
Result:
Pass
4.1.2 6DB BANDWIDTH MEASUREMENT
Result:
Pass
4.1.3 MAXIMUM PEAK CONDUCTED OUTPUT POWER
Result:
Pass
4.1.4 PEAK POWER SPECTRAL DENSITY
Result:
Pass
4.1.5 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH
Result:
Pass
4.1.6 CONDUCTED EMISSION (AC POWER-LINE)
Result:
N.A
4.1.7 RADIATED SPURIOUS EMISSION
Result:
Pass
5.1.1 ELECTROMAGNETIC FIELDS
Result:
Pass

Contents

1 Test Sites

1.1 Test Facilities

Laboratory: TÜV Rheinland /CCIC(Ningbo) Co., Ltd.

1st Floor, Building 11, Scholar Innovation Park, No.1188 Zhongguan Road, Zhenhai District, Ningbo 315200 P.R. China.

The used test equipment is in accordance with CISPR 16-1 series standards for measurement of radio interference.

1.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

No.	Equipment	Model	Inventory no.	Last cal. date	Cal. due date
1.	EMI test receiver	ESR7	101929	2020.11.25	2021.11.11
2.	Spectrum analyzer	FSV40	101412	2020.11.25	2021.11.11
3.	Pre-amplifier	SCU-18F	180051	2020.11.25	2021.11.11
4.	Bilog Antenna	CBL6112D	49033	2021.04.12	2024.03.15
5.	Horn antenna	HF907	102653	2020.11.25	2023.07.21
6.	Broad-Band Horn Antenna	BBHA 9170	899	2021.01.11	2024.01.12
7.	Pre-amplifier	LNPA_1840G-50	SK2021040801	2021.05.05	2022.05.06

1.3 Measurement Uncertainty

Test Item	Expanded Measurement Uncertainty (k=2)
Conducted Emission (9-150kHz)	3.70dB
Conducted Emission (150k-30MHz)	3.30dB
Radiated Emission (30-1000MHz)	4.39dB
Radiated Emission (1-18GHz)	4.67dB

2 General Product Information

2.1 Product Function and Intended Use

The EUT(equipment under test) is a Remote Control module operated at 2400-2483.5MHz. For the further information, refer to the user's manual.

Model list:

Model name	Function
NF-03	Operating at 2.4GHz

2.2 Ratings and System Details

Rated voltage : DC 3.3V
Protection Class : III
FCC ID : 2ARK8-NF03

Technical Specification of EUT

Technical Specification			
Data rate	250Kbps	1Mbps	2Mbps
Operating Frequency band	2402 – 2482MHz		
Extreme Temperature Range	0℃ ~ 40℃		
Modulation	FSK	FSK	GFSK
Antenna Type	PCB Layout Antenna		
Antenna Gain(dBi)	2.0		
Channel	2402MHz, 2405MHz, 2425MHz, 2450MHz, 2480Mhz, 2482MHz		

2.3 Independent Operation Modes

The basic operation modes are:
Mode A: Transmitting continuously of 250bps or 1Mbps data rate

1. Channel 2402MHz
2. Channel 2450MHz
3. Channel 2482MHz

Mode B: Transmitting continuously of 2Mbps data rate

1. Channel 2402MHz
2. Channel 2450MHz
3. Channel 2482MHz

2.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit diagram for further information.

2.5 Submitted Documents

Circuit diagram, PCB layout, Labels, user's manual, etc.

3 Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The Mode Cs were adapted accordingly in reference to the instructions for use.

3.2 Test Operation and Test Software

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power was selected according to the instruction given by the manufacturer. The setting of the RF output power expected by the customer shall be fixed on the firmware of the final end product.

All testing were performed according to the procedures in ANSI C63.10: 2013.

Test Software EMC32 V10.30 was used in the radiated emission test.

3.3 Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model No.
notebook	Lenovo	T420

3.4 Countermeasures to achieve EMC Compliance

The tested sample contained noise suppression components as specified in the circuit diagram. No special measure is employed to achieve the requirement.

3.5 Test set-up

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

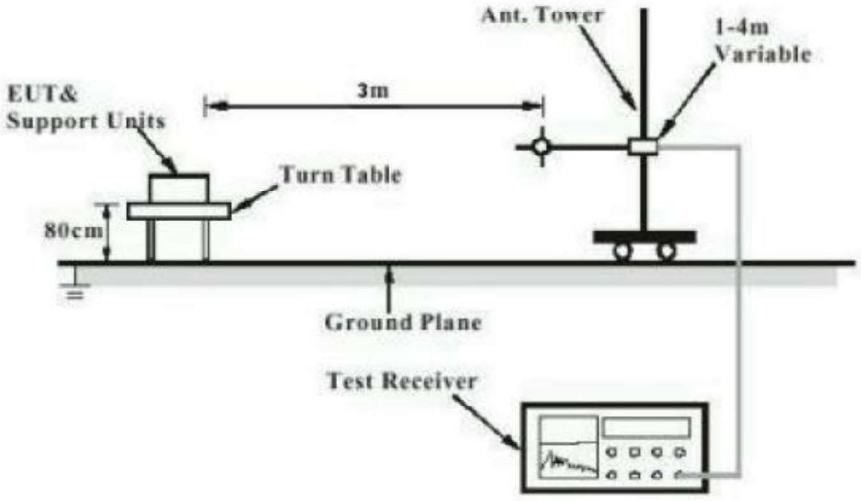


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

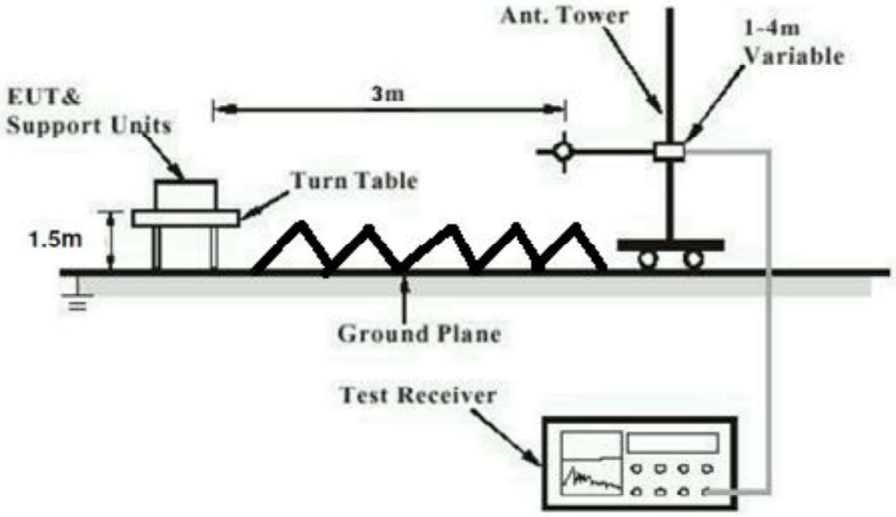
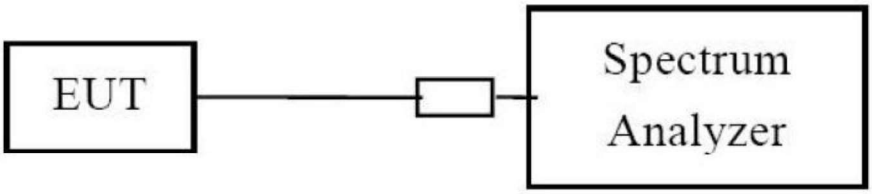


Diagram of Measurement Configuration for Conducted Transmitter Measurement



4 Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

Result: **Pass**

Test Specification
Test standard : FCC Part 15.203

The EUT has an internal antennas, which permanently attached and no consideration of replacement. Therefore, the EUT is considered sufficient to comply with the provision.

4.1.2 6dB Bandwidth Measurement

Result: **Pass**

Test Specification

Test standard	:	FCC Part 15.247 (a)(2)
Basic standard	:	ANSI C63.10: 2013
Limits	:	At least 500kHz
Kind of test site	:	Shielded Room

Test Setup

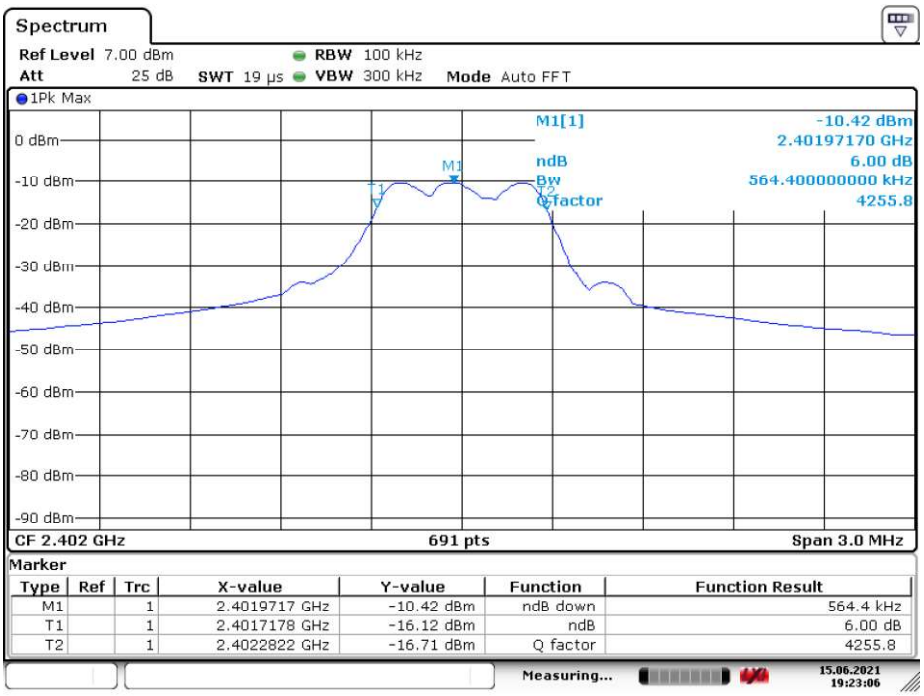
Date of testing	:	2021.06.15
Input voltage	:	DC 3.3V
Operational mode	:	A.1, A.2, A.3, B.1, B.2, B.3
Temperature	:	23°C
Relative humidity	:	56%
Atmospheric pressure	:	101.2 kPa

Table 2: Test result of 6dB Bandwidth

Mode	Channel Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
A.1	2402	564.40	500	Pass
A.2	2450	573.10	500	Pass
A.3	2482	560.10	500	Pass
B.1	2402	955.10	500	Pass
B.2	2450	962.40	500	Pass
B.3	2482	940.70	500	Pass

Figure 1: 6dB Bandwidth Measurement

A.1



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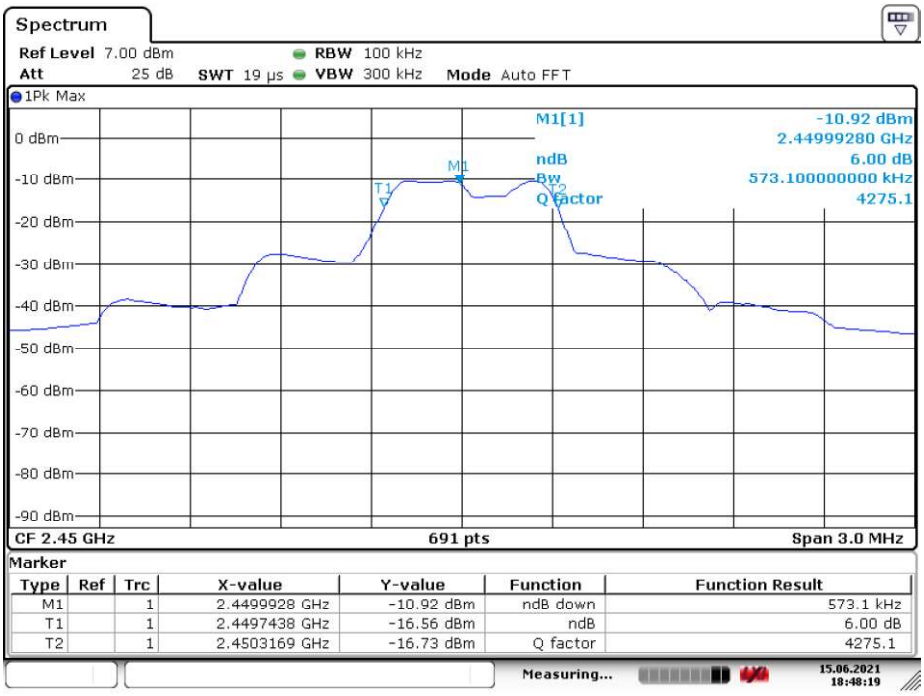

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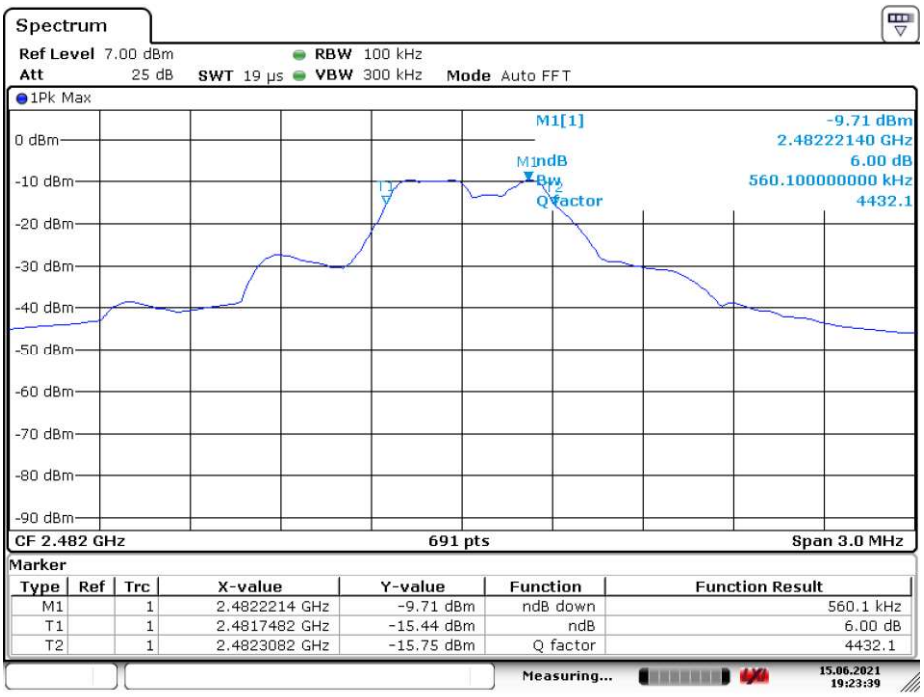

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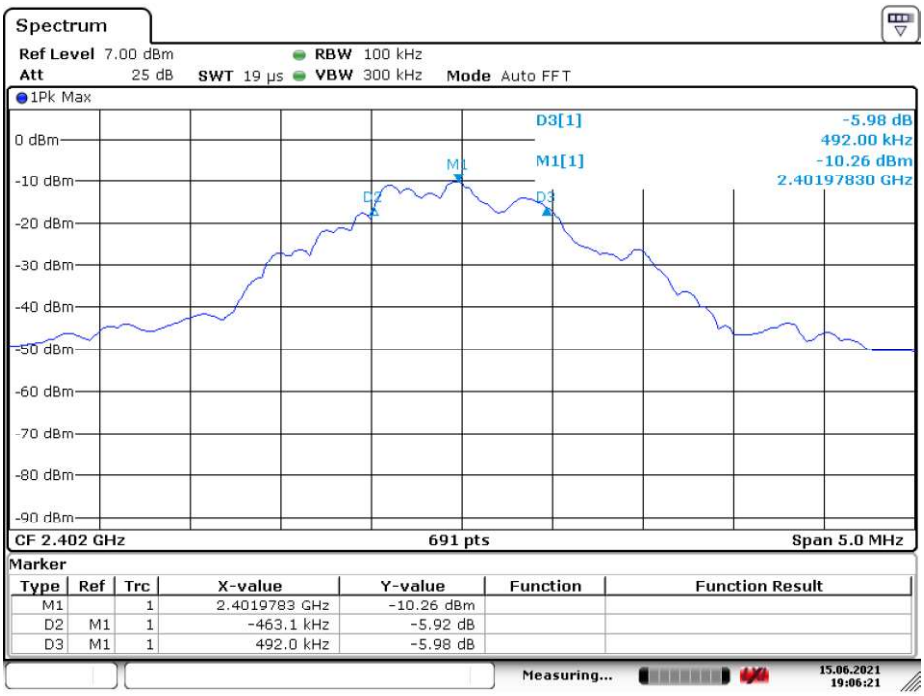

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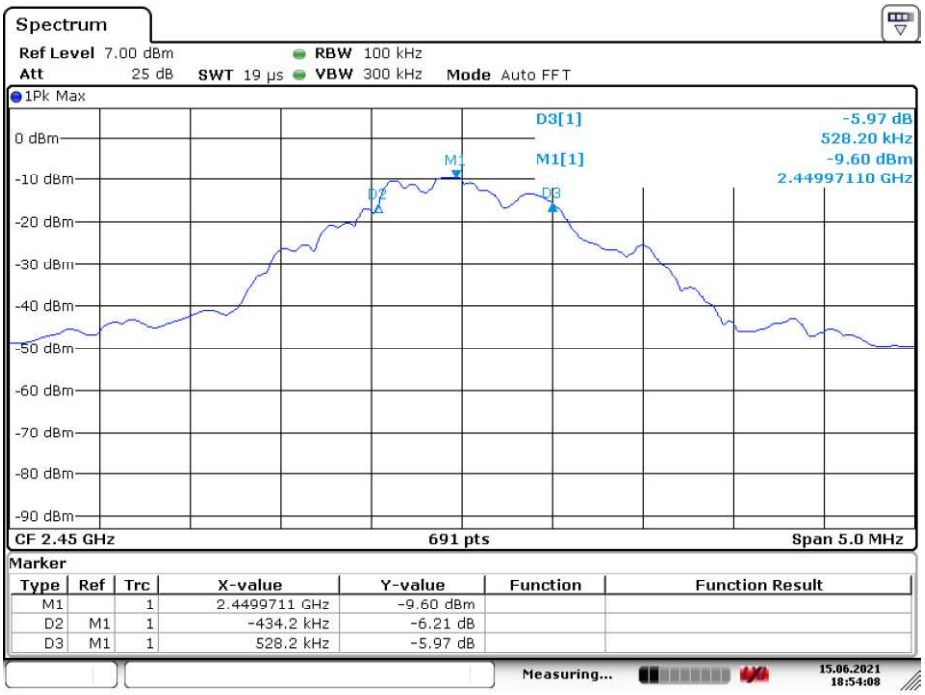

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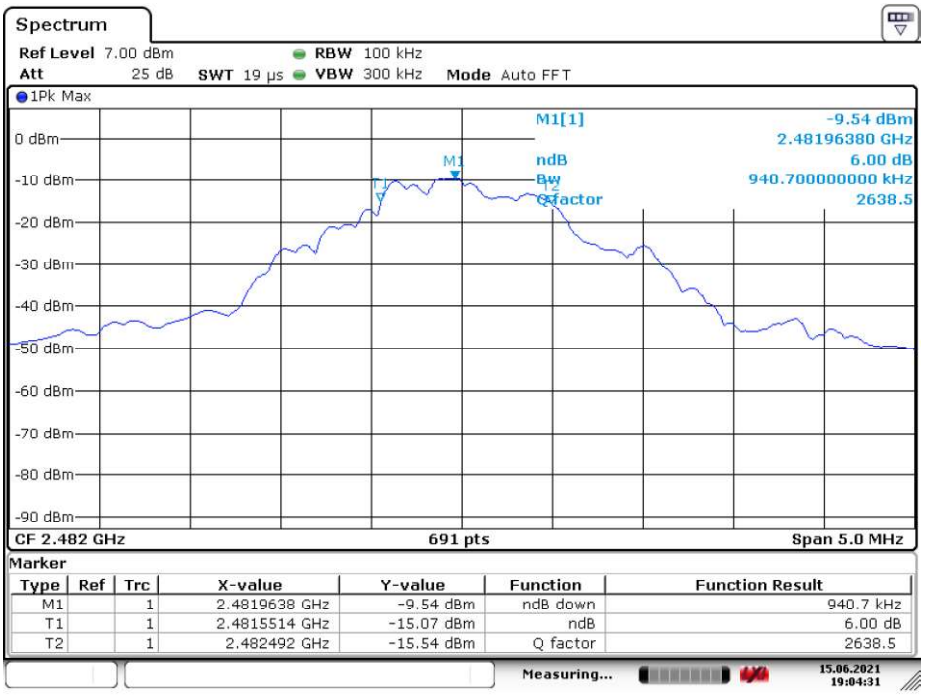


Date: 15.JUN.2021 19:04:31

4.1.3 Maximum Peak Conducted Output Power

Result: **Pass**

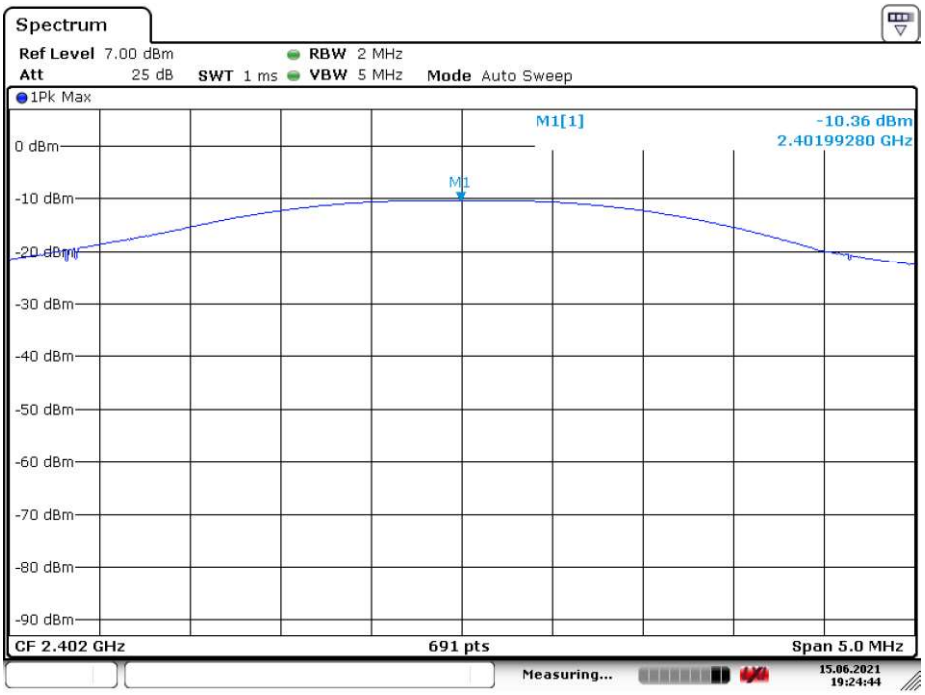
Test Specification		
Test standard	:	FCC Part 15.247(b)(3)
Basic standard	:	ANSI C63.10: 2013
Limits	:	Not more than 1Watt(30dBm)
Kind of test site	:	Shielded Room
Test Setup		
Date of testing	:	2021.06.15
Input voltage	:	DC 3.3V
Operational mode	:	A.1, A.2, A.3, B.1, B.2, B.3
Temperature	:	23 °C
Relative humidity	:	56%
Atmospheric pressure	:	101.2 kPa

Table 3: Test result of Maximum Peak Output Power

Mode	Channel Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
A.1	2402	-10.36	30
A.2	2450	-9.50	30
A.3	2482	-9.66	30
B.1	2402	-10.22	30
B.2	2450	-9.74	30
B.3	2482	-9.50	30

Figure 2: Maximum peak Conducted Output Power Measurement

A.1



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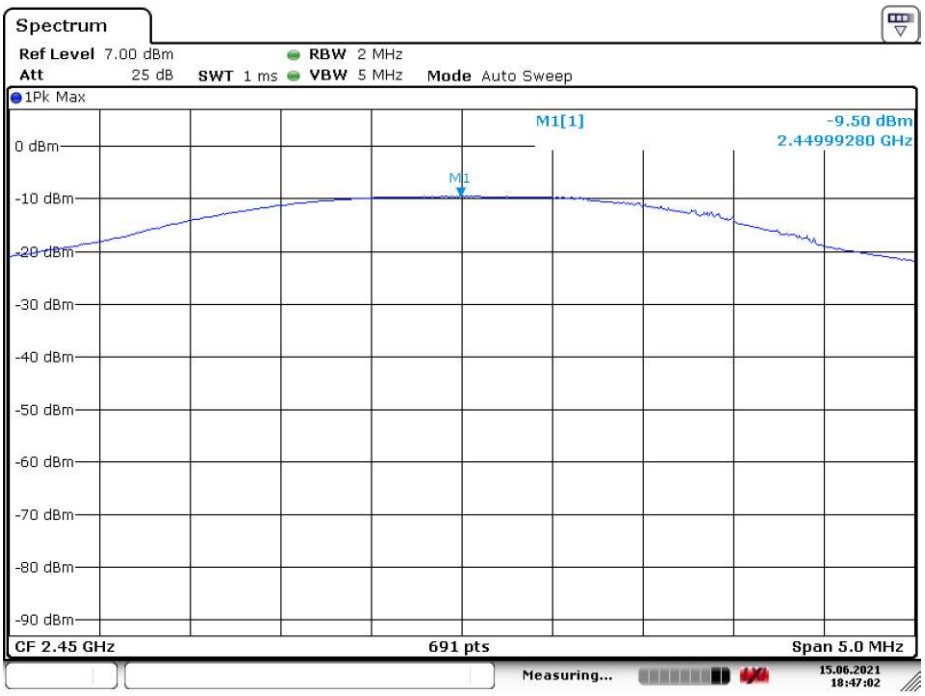

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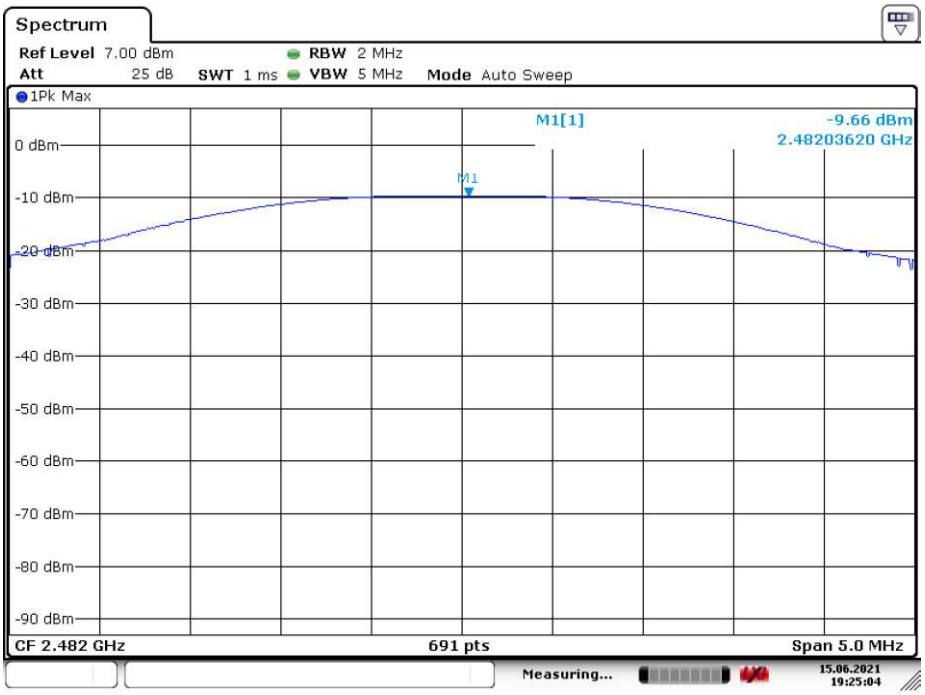

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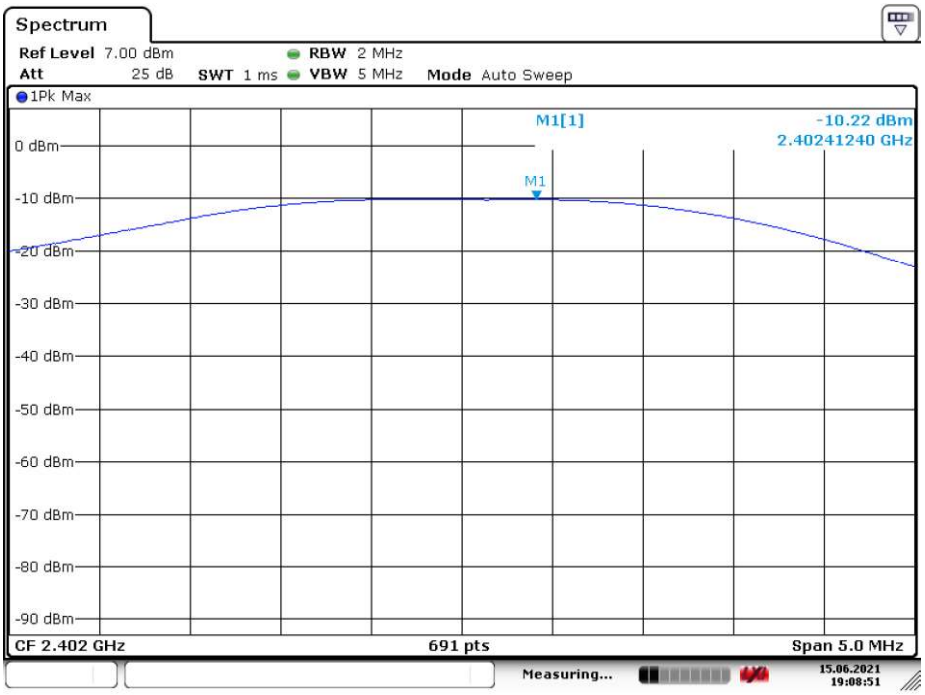
B.1



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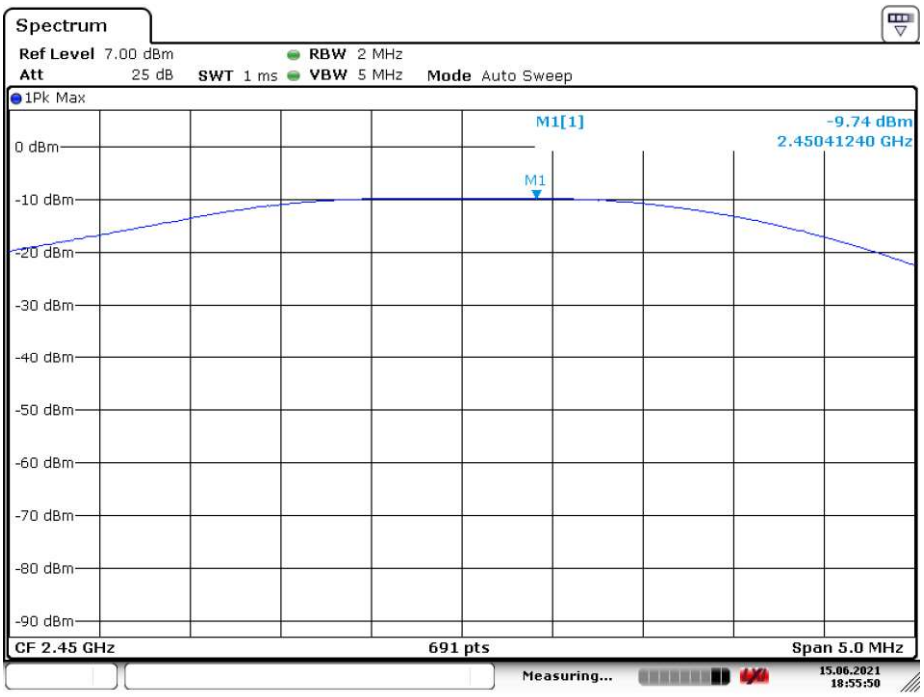

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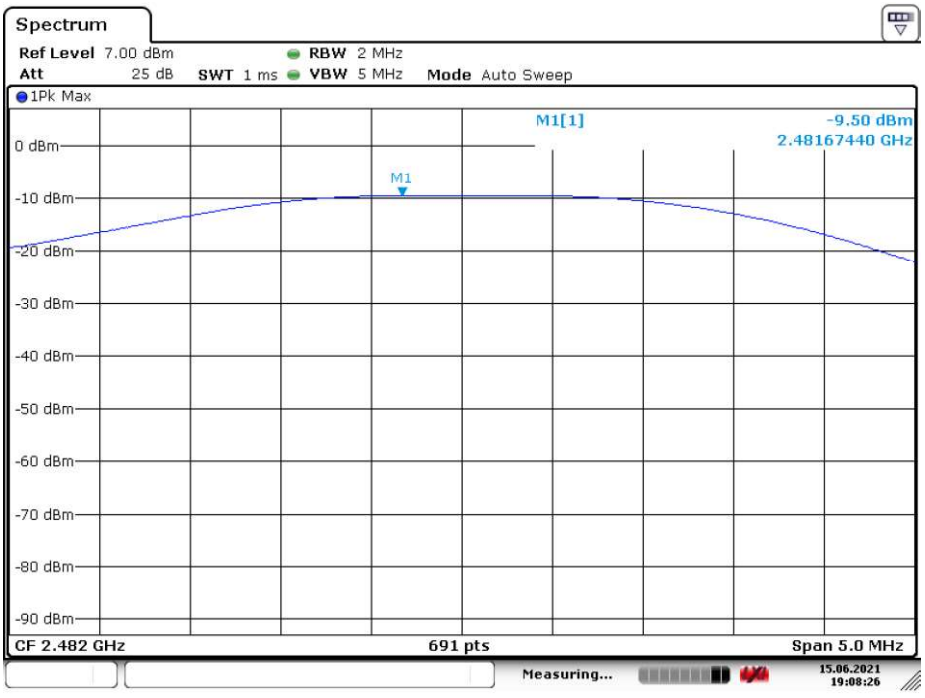


Date: 15.JUN.2021 19:08:26

4.1.4 Peak Power Spectral Density

Result: **Pass**

Test Specification

Test standard	:	FCC Part 15.247(e)
Basic standard	:	ANSI C63.10: 2013
Limits	:	Not more than 8 dBm in any 3 kHz band
Kind of test site	:	Shielded Room

Test Setup

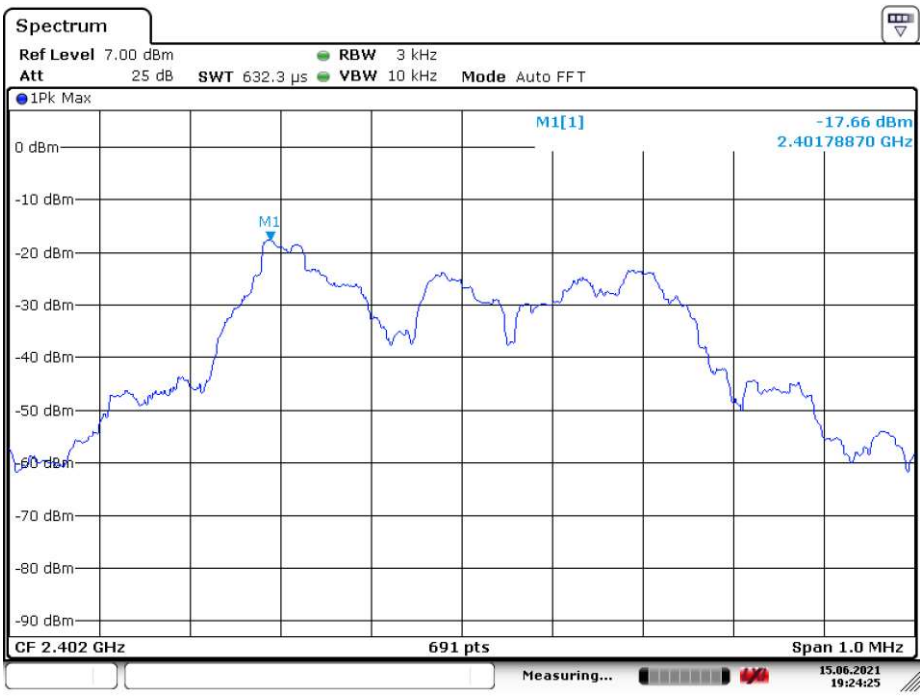
Date of testing	:	2021.06.15
Input voltage	:	DC 3.3V
Operational mode	:	A.1, A.2, A.3, B.1, B.2, B.3
Temperature	:	23°C
Relative humidity	:	56%
Atmospheric pressure	:	101.2 kPa

Table 4: Test result of Power Spectral Density

Mode	Channel Frequency(MHz)	Measured Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
A.1	2402	-17.66	8.0	Pass
A.2	2450	-16.65	8.0	Pass
A.3	2482	-16.91	8.0	Pass
B.1	2402	-22.44	8.0	Pass
B.2	2450	-26.18	8.0	Pass
B.3	2482	-25.67	8.0	Pass

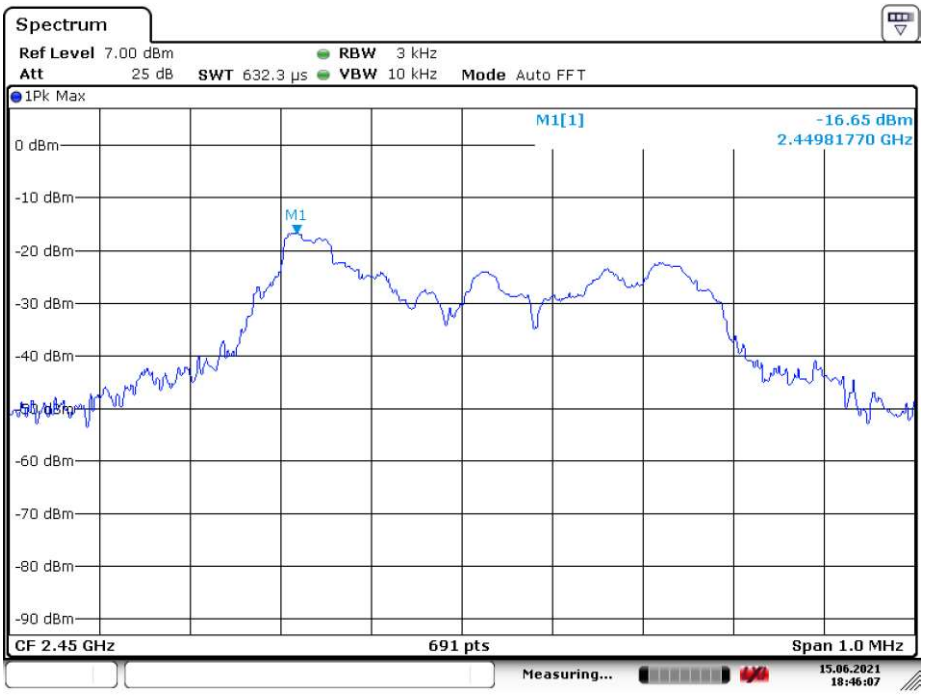
Figure 3: Power Spectral Density Measurement

A.1



Date: 15.JUN.2021 19:24:25

A.2

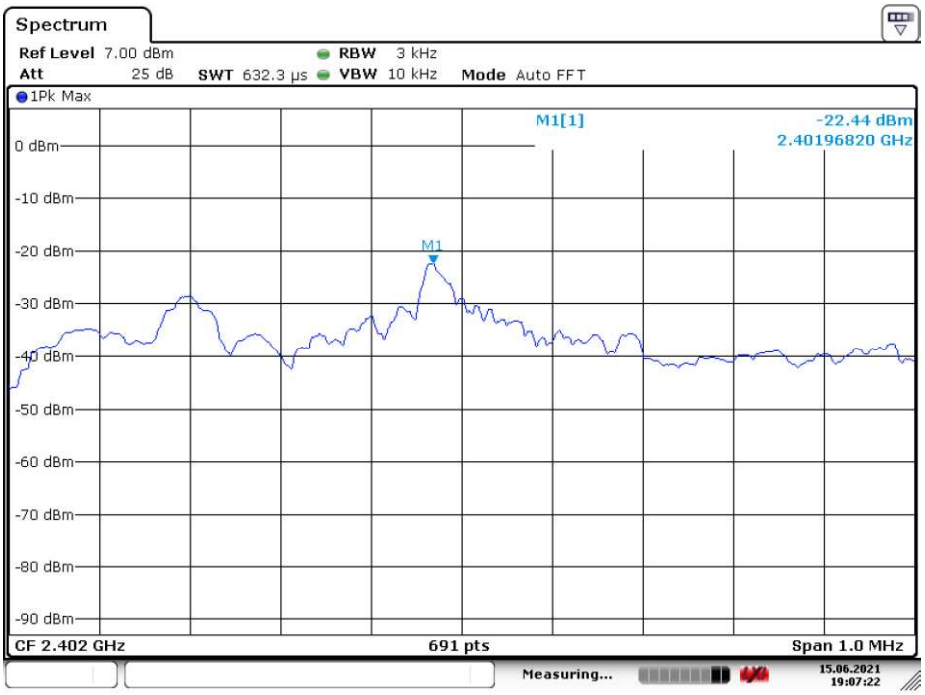


Date: 15.JUN.2021 18:46:07

A.3

Date: 15.JUN.2021 19:24:07

B.1



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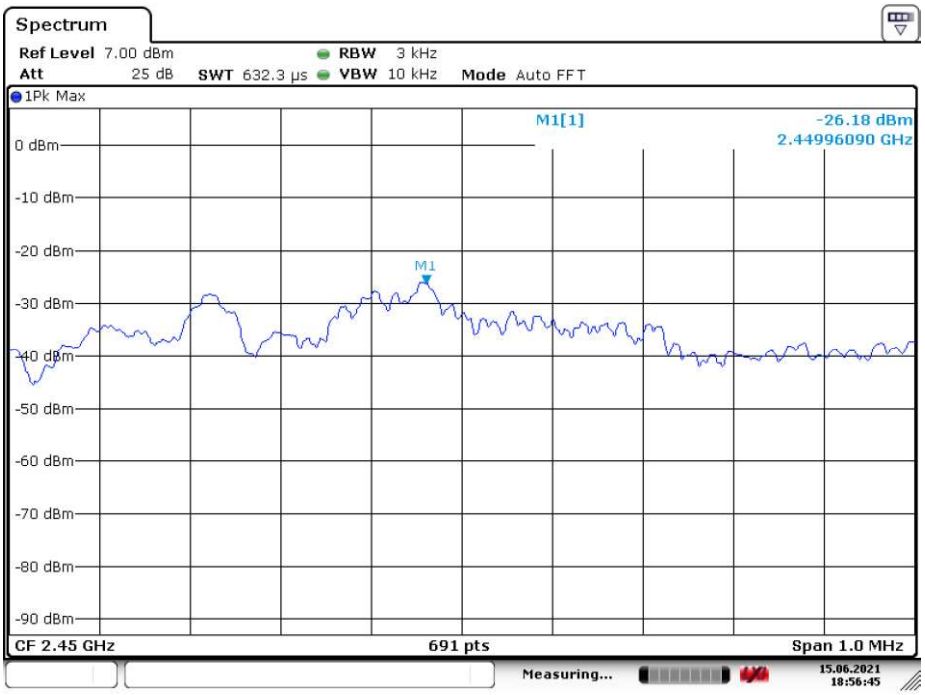
B.2



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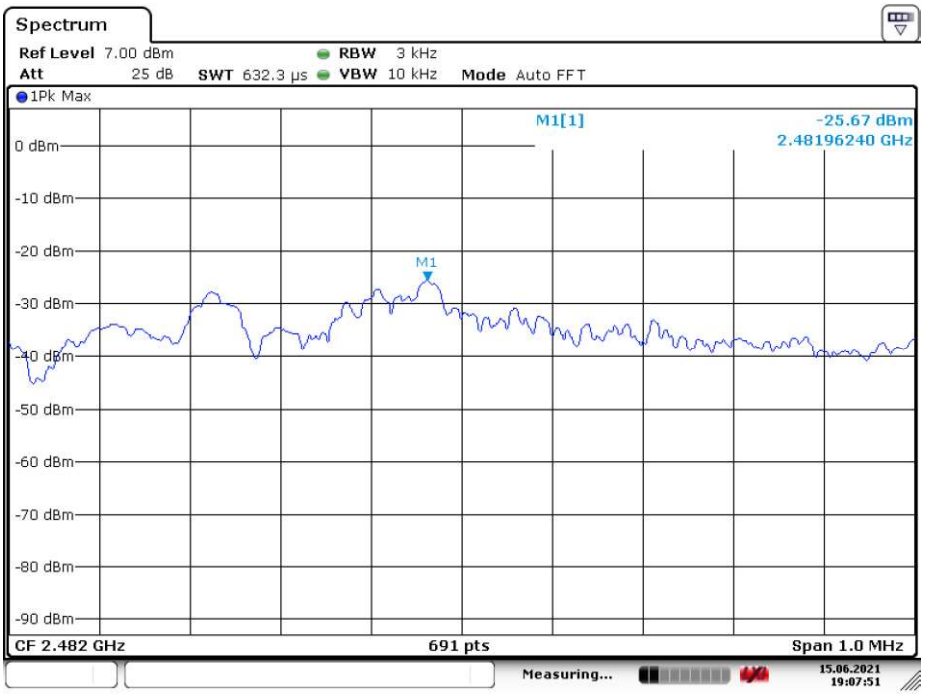
B.3



Date: 15.JUN.2021 19:07:51

4.1.5 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Result: **Pass**

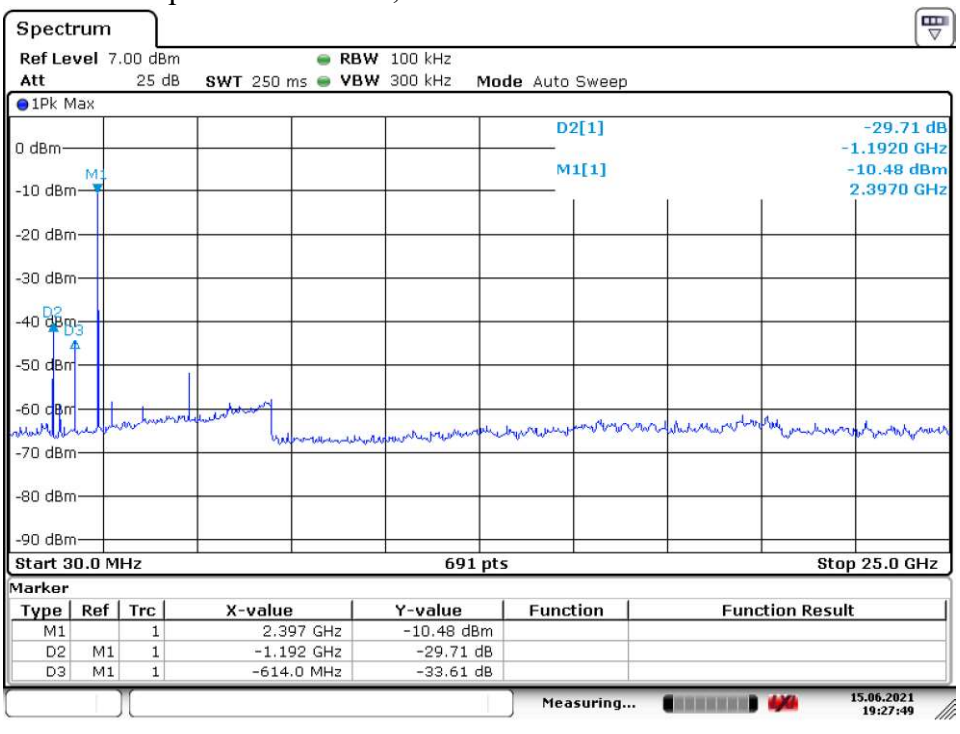
Test Specification		
Test standard	:	FCC Part 15.247(d)
Basic standard	:	ANSI C63.10: 2013
Limits	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power);
Kind of test site	:	Shielded Room

Test Setup

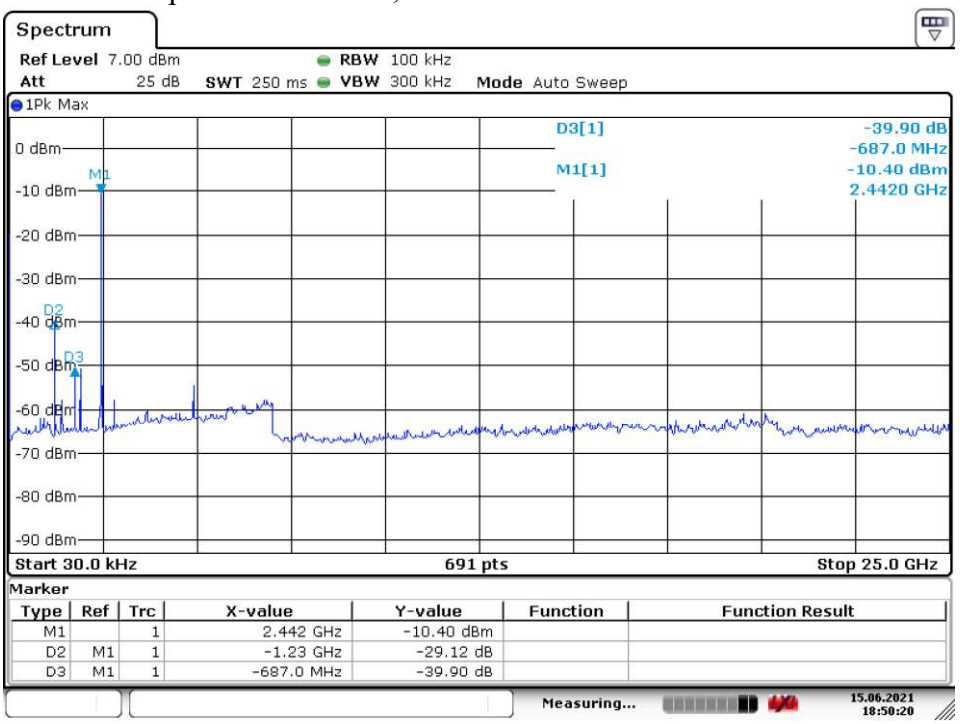
Date of testing	:	2021.06.15
Input voltage	:	DC 3.3V
Operational mode	:	A.1, A.2, A.3, B.1, B.2, B.3
Temperature	:	23°C
Relative humidity	:	56%
Atmospheric pressure	:	101.2 kPa

Figure 4: Conducted Spurious Emission Measurement

Conducted Spurious Emission, A.1

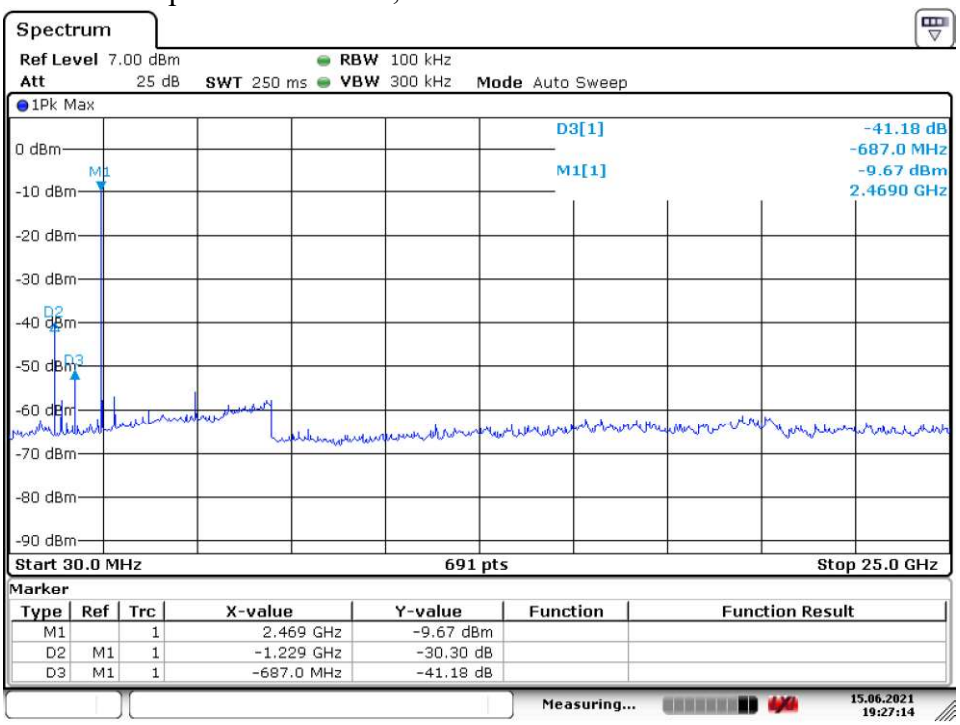


Conducted Spurious Emission, A.2



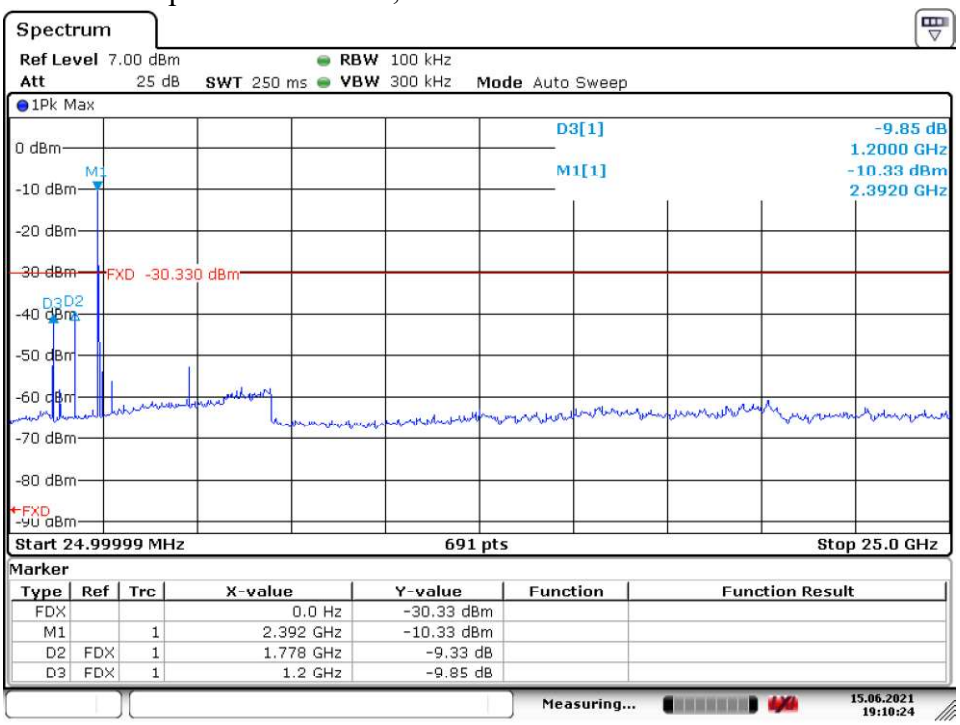
Date: 15.JUN.2021 18:50:20

Conducted Spurious Emission, A.3



Date: 15.JUN.2021 19:27:14

Conducted Spurious Emission, B.1



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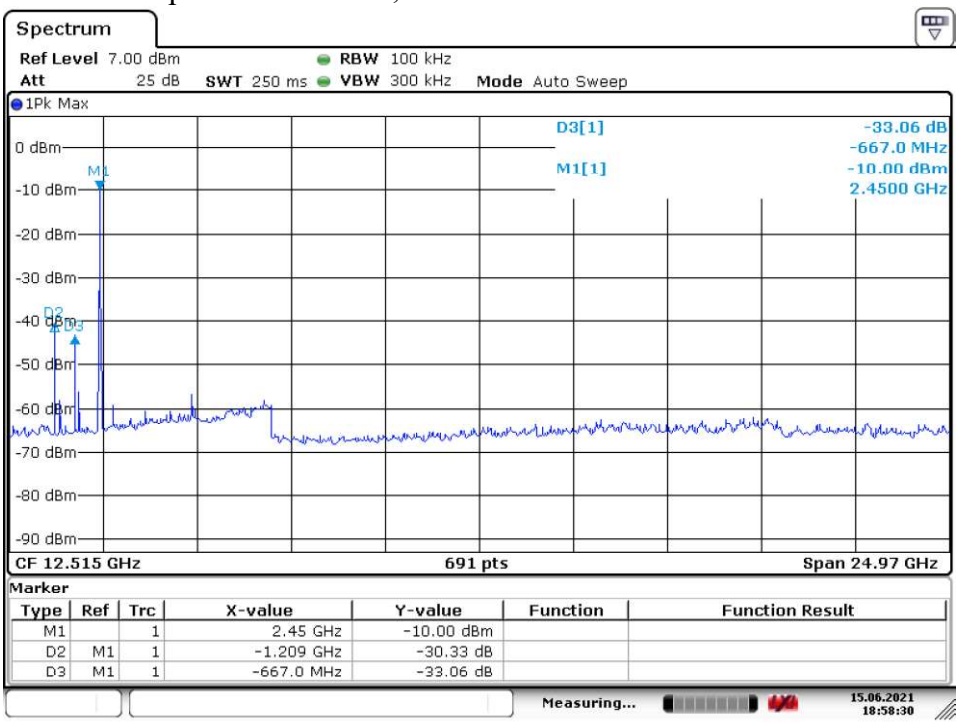
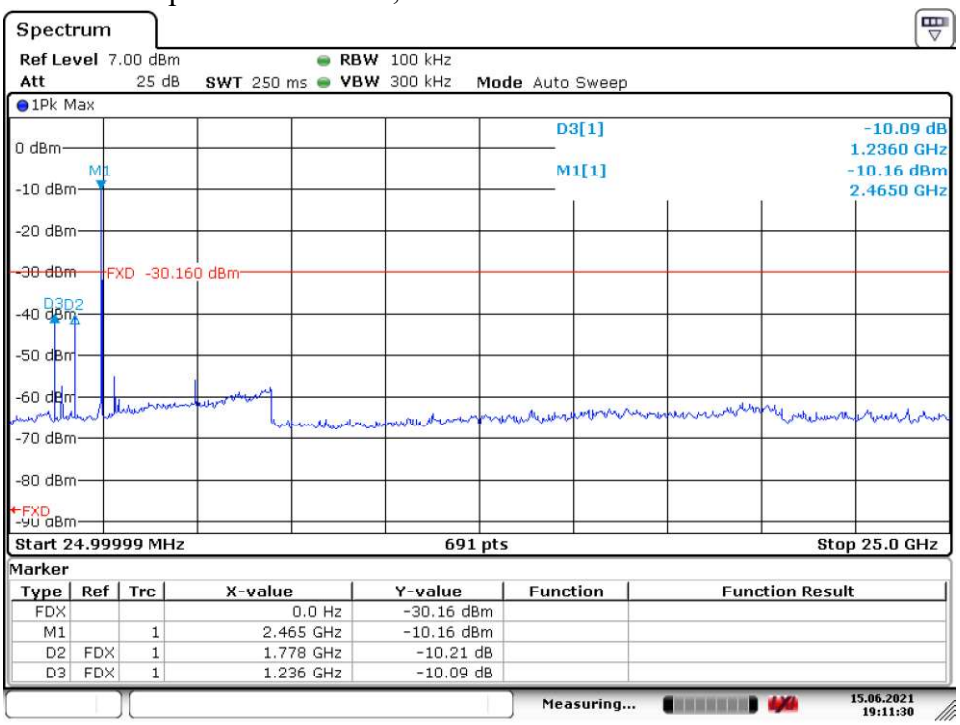
Conducted Spurious Emission, B.2



Date: 15.JUN.2021 18:58:30

Conducted Spurious Emission, B.3



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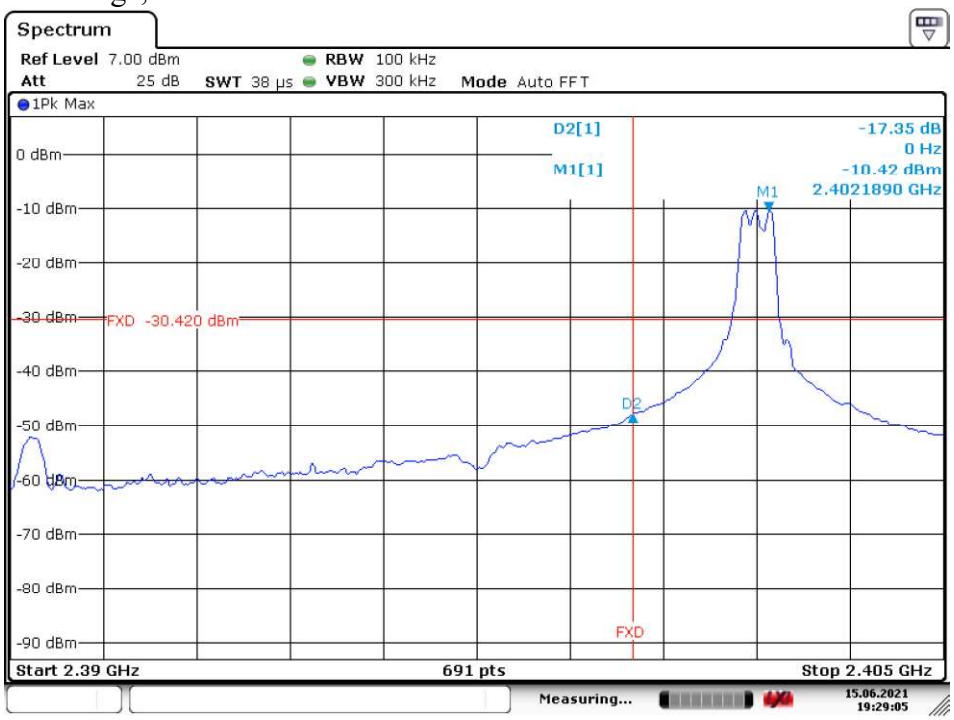
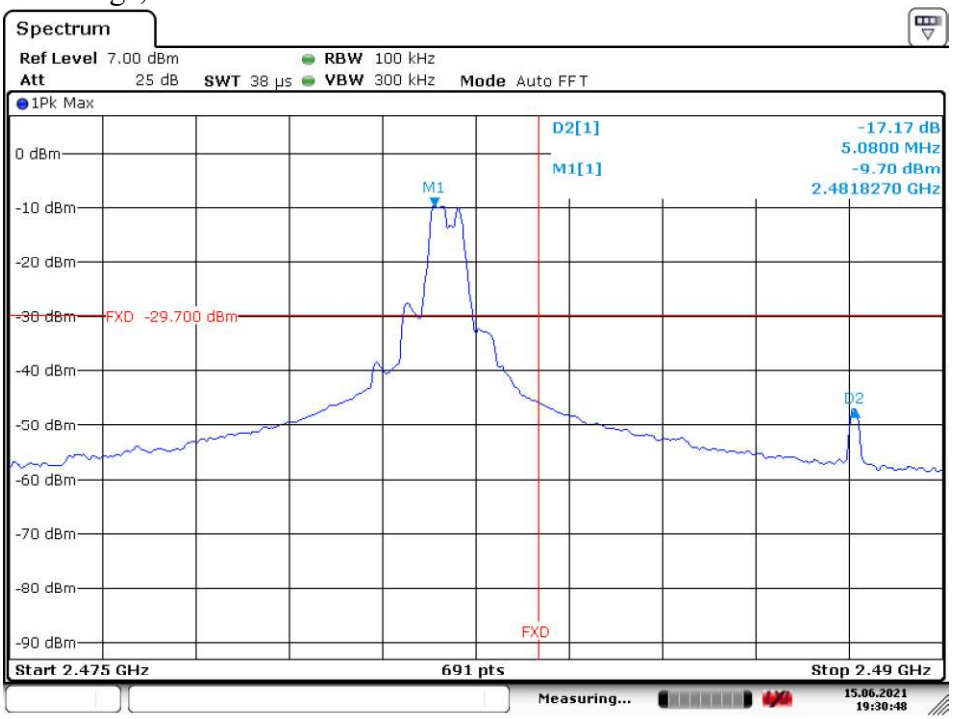
Band edge, A.1



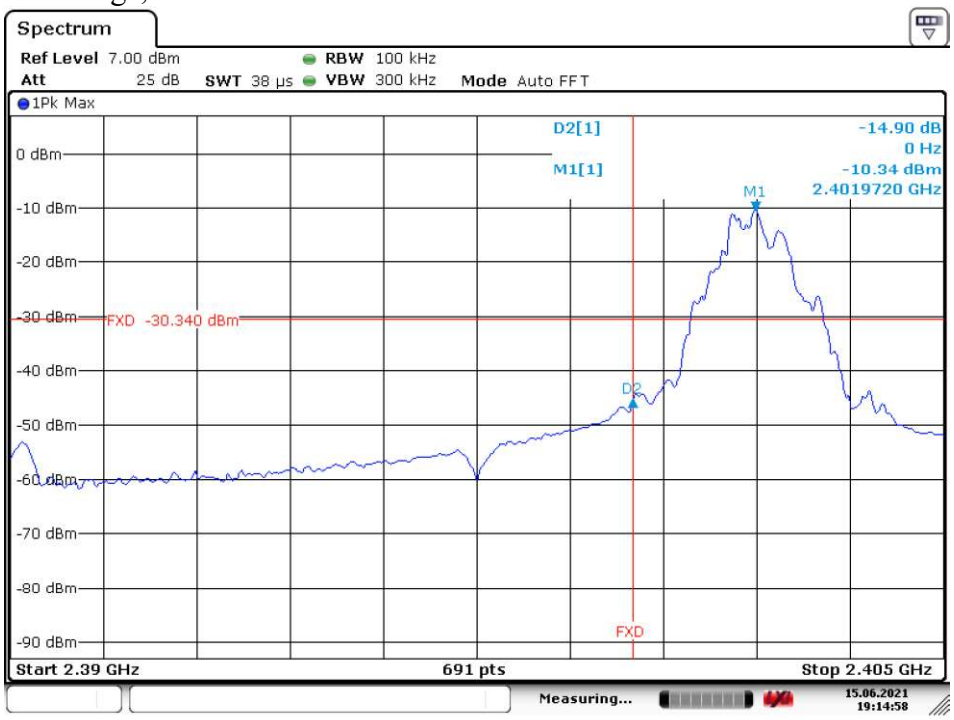
Date: 15.JUN.2021 19:29:06

Band edge, A.3



Date: 15.JUN.2021 19:30:49

Band edge, B.1



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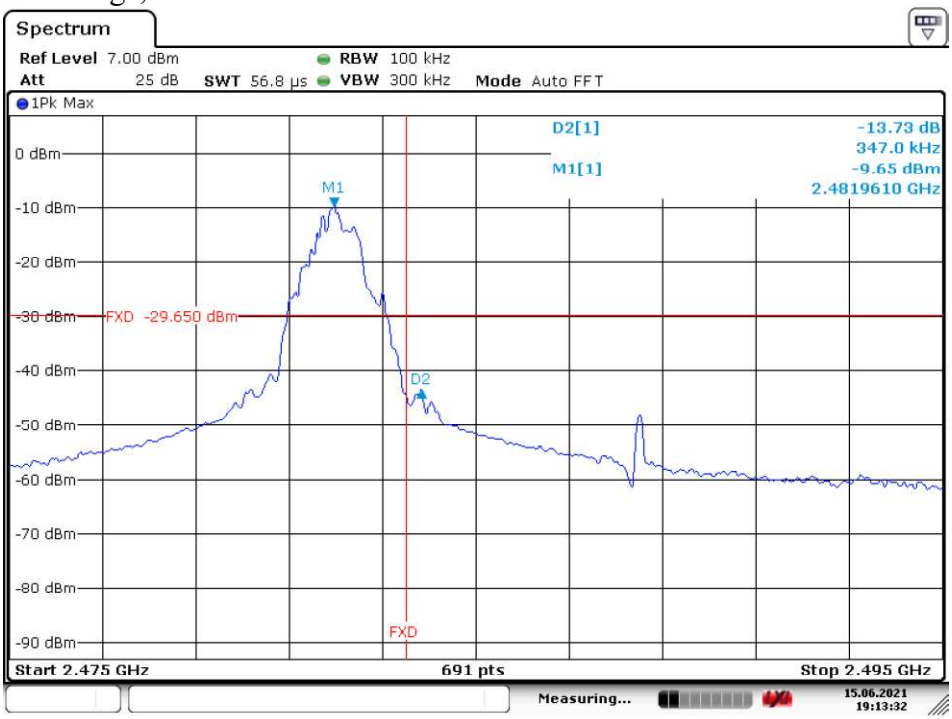
Band edge, B.3



Date: 15.JUN.2021 19:13:33

4.1.6 Conducted Emission (AC power-line)

Result: **N.A**

Test Specification		
Test standard	:	FCC Part 15.207
Basic standard	:	ANSI C63.10: 2013, clause 6.2
Port	:	Mains
Frequency range	:	0.15 – 30MHz
Limits	:	FCC part 15.207(a)
Kind of test site	:	3m Semi-anechoic Chamber

The EUT is supplied by battery and it cannot be connected to the public low-voltage distribution systems. Therefore, no disturbance voltage test is performed.

4.1.7 Radiated Spurious Emission

Result: **Pass**

Test Specification

Test standard	:	FCC Part 15.209
Basic standard	:	ANSI C63.10: 2013
Port	:	Enclosure
Frequency range	:	30MHz-25000MHz
Limits	:	FCC part15.209(a)
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

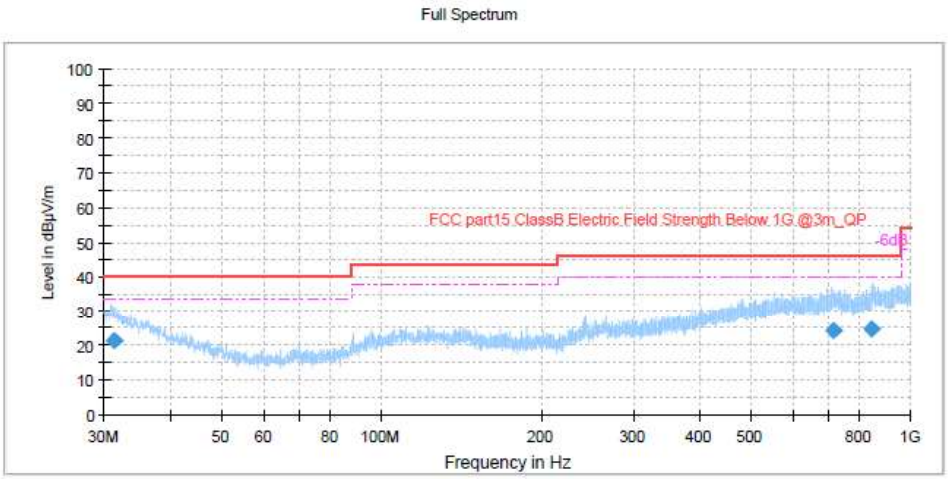
Date of testing	:	2021.06.10
Input voltage	:	DC 3.3V
Operational mode	:	A.1, A.2, A.3, B.1, B.2, B.3
Temperature	:	21°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Remark:
Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case emissions configuration of the each mode were reported.

The measurement result is calculated based on the following formula by the test software:
Emission Level = Reading level + Correction (Antenna factor + Cable loss – Preamplifier)

Figure 5: Spectral Diagrams, Radiated Spurious Emission, 30MHz-1000MHz, Horizontal, mode A.1

Full Spectrum

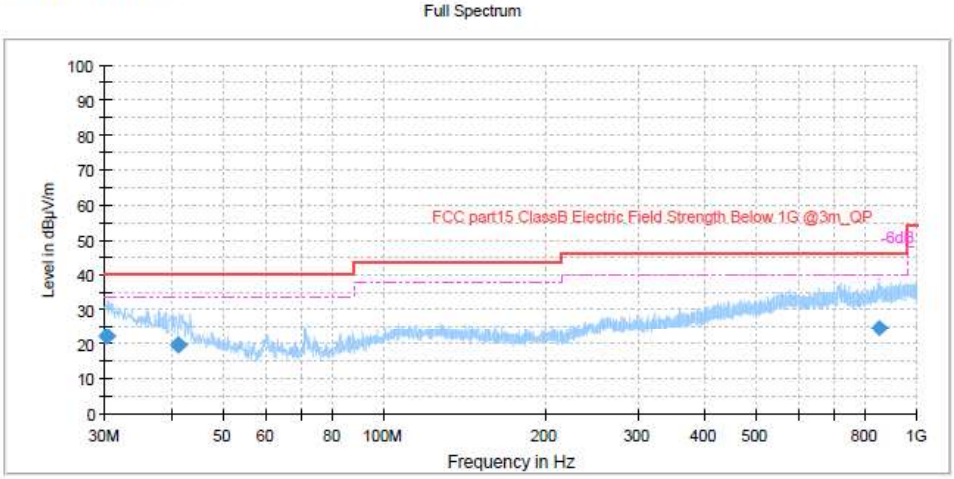


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.270000	21.16	40.00	18.84	1000.0	120.000	111.0	H	55.0	25.1
713.981111	24.16	46.00	21.84	1000.0	120.000	133.0	H	83.0	27.8
844.781667	24.61	46.00	21.39	1000.0	120.000	120.0	H	6.0	29.4

Figure 6: Spectral Diagrams, Radiated Spurious Emission, 30MHz-1000MHz, Vertical, mode A.1

Full Spectrum

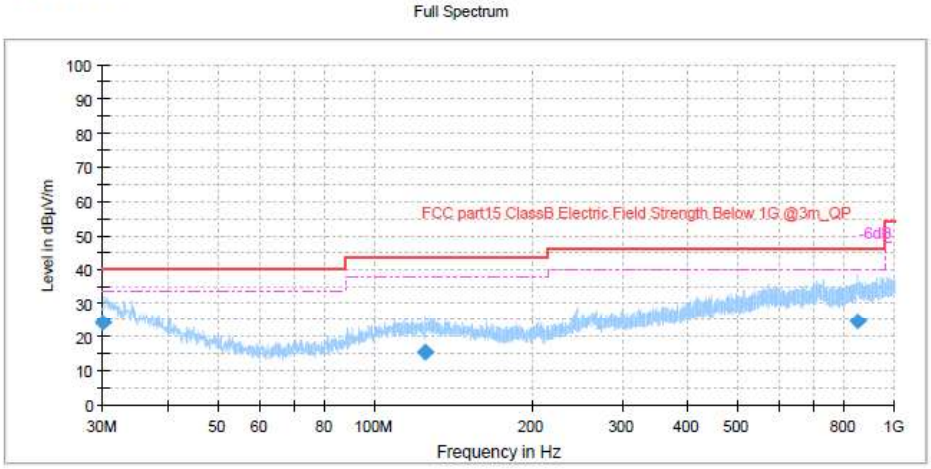


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.211111	22.17	40.00	17.83	1000.0	120.000	141.0	V	275.0	25.8
41.164444	19.67	40.00	20.33	1000.0	120.000	100.0	V	186.0	19.2
845.536111	24.59	46.00	21.41	1000.0	120.000	339.0	V	244.0	29.3

Figure 7: Spectral Diagrams, Radiated Spurious Emission, 30MHz-1000MHz, Horizontal, mode A.3

Full Spectrum

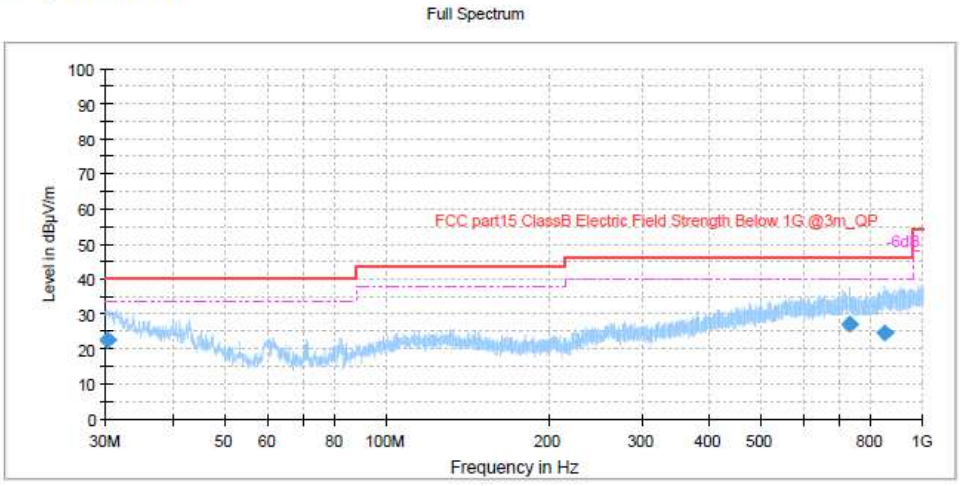


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.000000	24.26	40.00	15.74	1000.0	120.000	104.0	H	342.0	26.0
125.215556	15.35	43.50	28.15	1000.0	120.000	115.0	H	210.0	19.1
846.177778	24.65	46.00	21.35	1000.0	120.000	108.0	H	236.0	29.3

Figure 8: Spectral Diagrams, Radiated Spurious Emission, 30MHz-1000MHz, Vertical, mode A.3

Full Spectrum

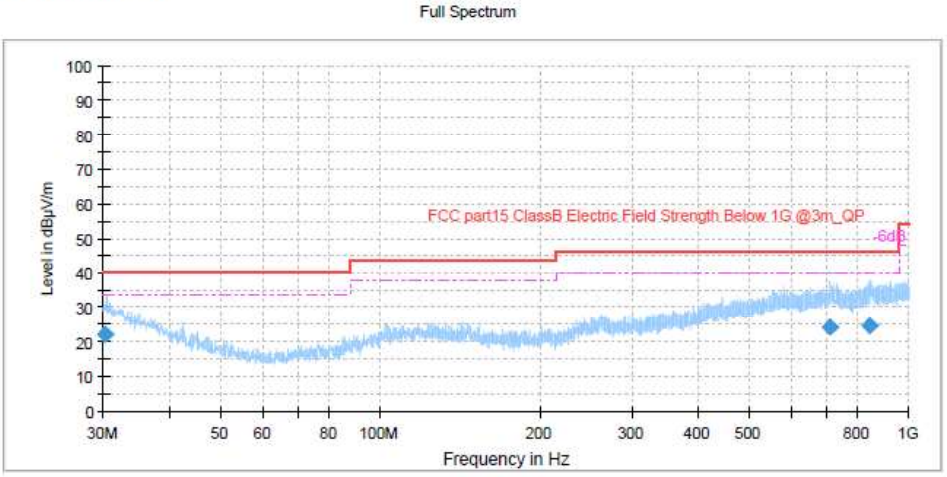


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.120000	22.70	40.00	17.30	1000.0	120.000	100.0	V	50.0	25.9
729.967222	27.04	46.00	18.96	1000.0	120.000	150.0	V	91.0	28.1
850.235000	24.56	46.00	21.44	1000.0	120.000	144.0	V	258.0	29.3

Figure 9: Spectral Diagrams, Radiated Spurious Emission, 30MHz-1000MHz, Horizontal, mode B.1

Full Spectrum

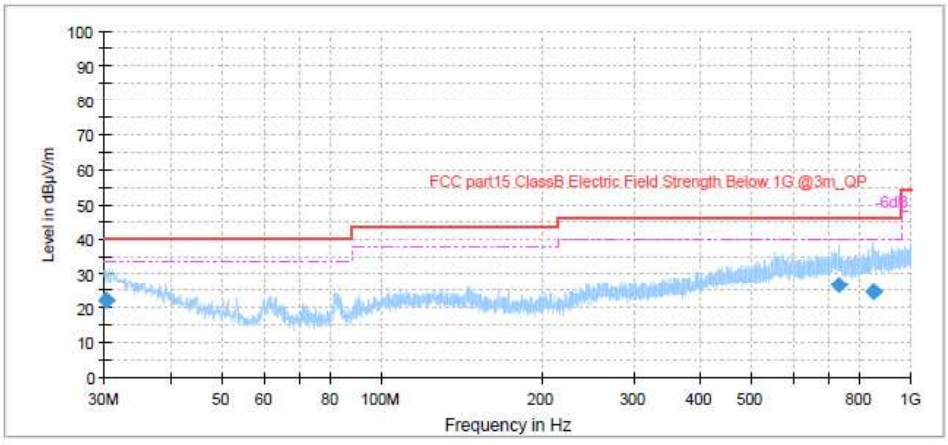


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.185000	21.98	40.00	18.02	1000.0	120.000	100.0	H	237.0	25.9
710.661111	24.18	46.00	21.82	1000.0	120.000	104.0	H	257.0	27.8
844.780000	24.62	46.00	21.38	1000.0	120.000	150.0	H	189.0	29.4

Figure 10: Spectral Diagrams, Radiated Spurious Emission, 30MHz-1000MHz, Vertical, mode B.1

Full Spectrum

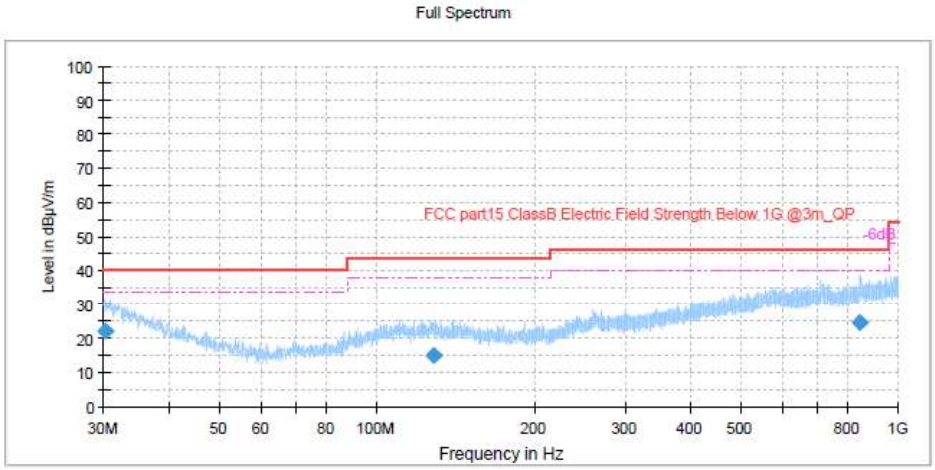


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.292778	22.01	40.00	17.99	1000.0	120.000	150.0	V	90.0	25.8
729.023333	26.95	46.00	19.05	1000.0	120.000	134.0	V	221.0	28.0
845.411111	24.64	46.00	21.36	1000.0	120.000	117.0	V	341.0	29.3

Figure 11: Spectral Diagrams, Radiated Spurious Emission, 30MHz-1000MHz, Horizontal, mode B.3

Full Spectrum

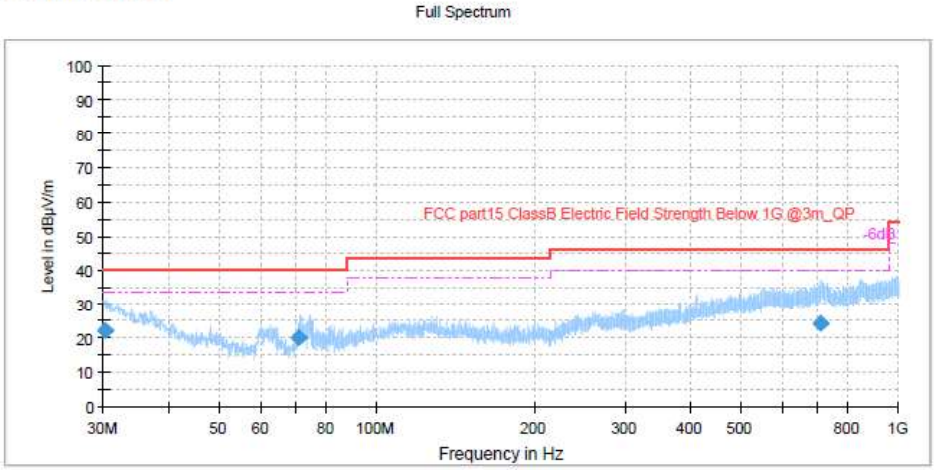


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.200000	22.00	40.00	18.00	1000.0	120.000	130.0	H	124.0	25.8
128.933889	15.15	43.50	28.35	1000.0	120.000	140.0	H	304.0	18.9
844.673889	24.61	46.00	21.39	1000.0	120.000	142.0	H	59.0	29.4

Figure 12: Spectral Diagrams, Radiated Spurious Emission, 30MHz-1000MHz, Vertical, mode B.3

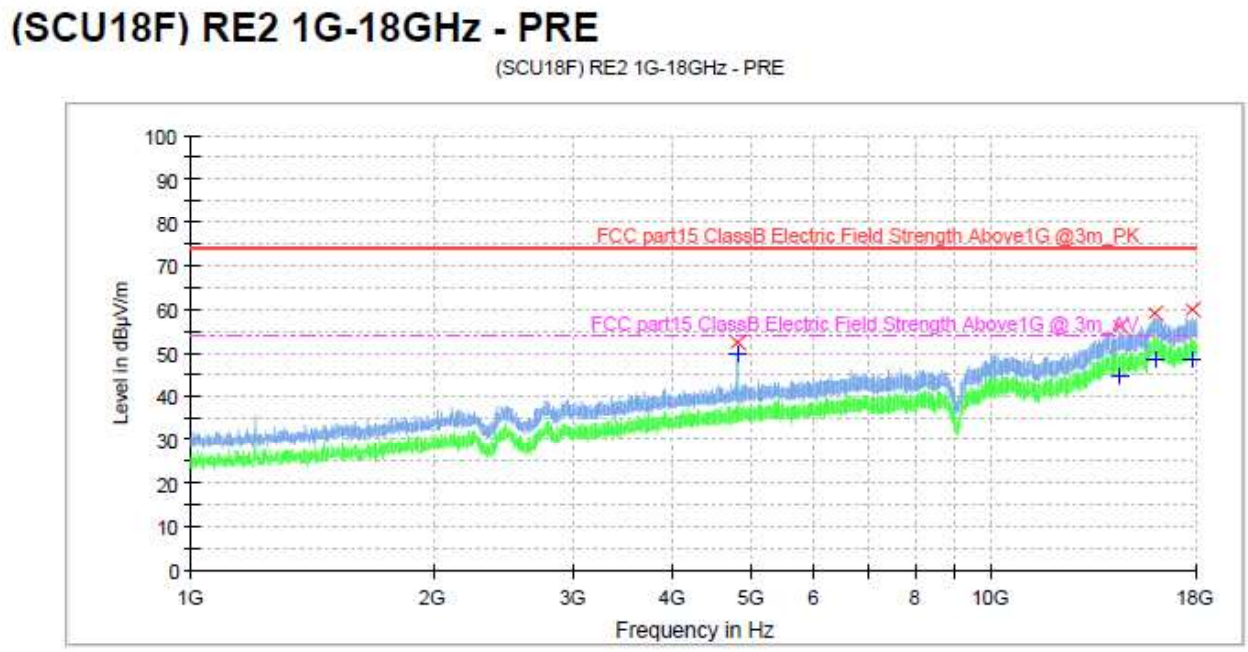
Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.160000	22.16	40.00	17.84	1000.0	120.000	150.0	V	64.0	25.9
71.112778	19.99	40.00	20.01	1000.0	120.000	111.0	V	350.0	13.1
709.141667	24.10	46.00	21.90	1000.0	120.000	100.0	V	146.0	27.8

Figure 13: Spectral Diagrams, Radiated Spurious Emission, 1000MHz-18000MHz, Horizontal, mode A.1



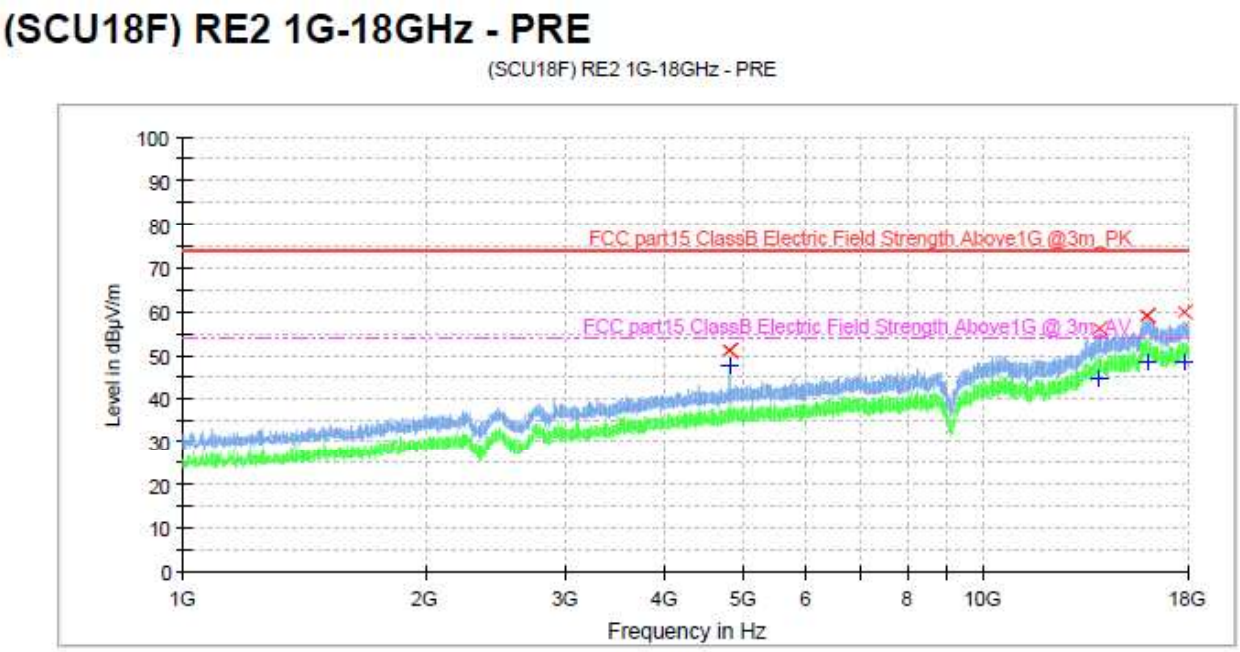
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4803.750000	52.4	1000.0	1000.000	H	2.9	21.6	74.0
14486.845000	56.0	1000.0	1000.000	H	18.4	18.1	74.0
16016.310000	58.9	1000.0	1000.000	H	22.1	15.1	74.0
17759.875000	59.6	1000.0	1000.000	H	22.9	14.4	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4803.750000	49.9	1000.0	1000.000	H	2.9	4.1	54.0
14486.845000	44.9	1000.0	1000.000	H	18.4	9.1	54.0
16016.310000	48.6	1000.0	1000.000	H	22.1	5.4	54.0
17759.875000	48.6	1000.0	1000.000	H	22.9	5.5	54.0

Figure 14: Spectral Diagrams, Radiated Spurious Emission, 1000MHz-18000MHz, Vertical, mode A.1



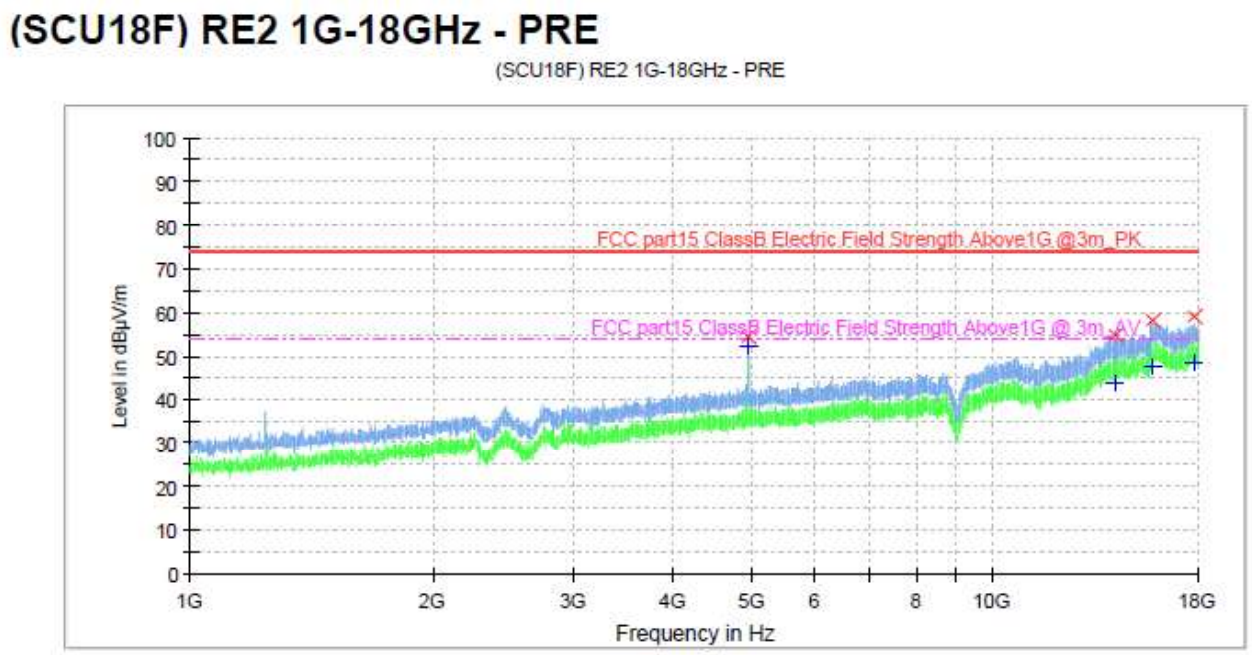
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4803.750000	50.9	1000.0	1000.000	V	2.9	23.1	74.0
13971.530000	56.0	1000.0	1000.000	V	18.0	18.0	74.0
15956.810000	59.1	1000.0	1000.000	V	21.8	14.9	74.0
17757.220000	59.8	1000.0	1000.000	V	22.9	14.2	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4803.750000	47.7	1000.0	1000.000	V	2.9	6.3	54.0
13971.530000	44.9	1000.0	1000.000	V	18.0	9.2	54.0
15956.810000	48.5	1000.0	1000.000	V	21.8	5.5	54.0
17757.220000	48.6	1000.0	1000.000	V	22.9	5.4	54.0

Figure 15: Spectral Diagrams, Radiated Spurious Emission, 1000MHz-18000MHz, Horizontal, mode A.3



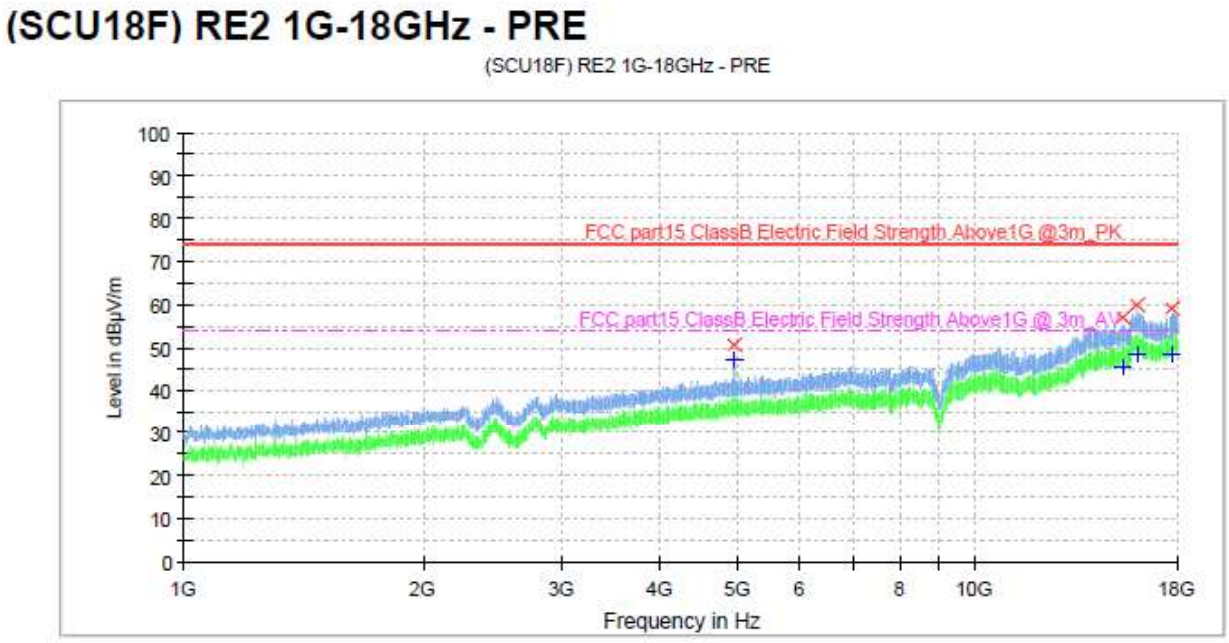
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4959.935000	54.5	1000.0	1000.000	H	3.4	19.5	74.0
14212.720000	54.6	1000.0	1000.000	H	18.2	19.4	74.0
15767.685000	58.0	1000.0	1000.000	H	20.4	16.0	74.0
17796.000000	58.9	1000.0	1000.000	H	23.0	15.1	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4959.935000	52.2	1000.0	1000.000	H	3.4	1.8	54.0
14212.720000	43.7	1000.0	1000.000	H	18.2	10.3	54.0
15767.685000	47.6	1000.0	1000.000	H	20.4	6.4	54.0
17796.000000	48.5	1000.0	1000.000	H	23.0	5.5	54.0

Figure 16: Spectral Diagrams, Radiated Spurious Emission, 1000MHz-18000MHz, Vertical, mode A.3



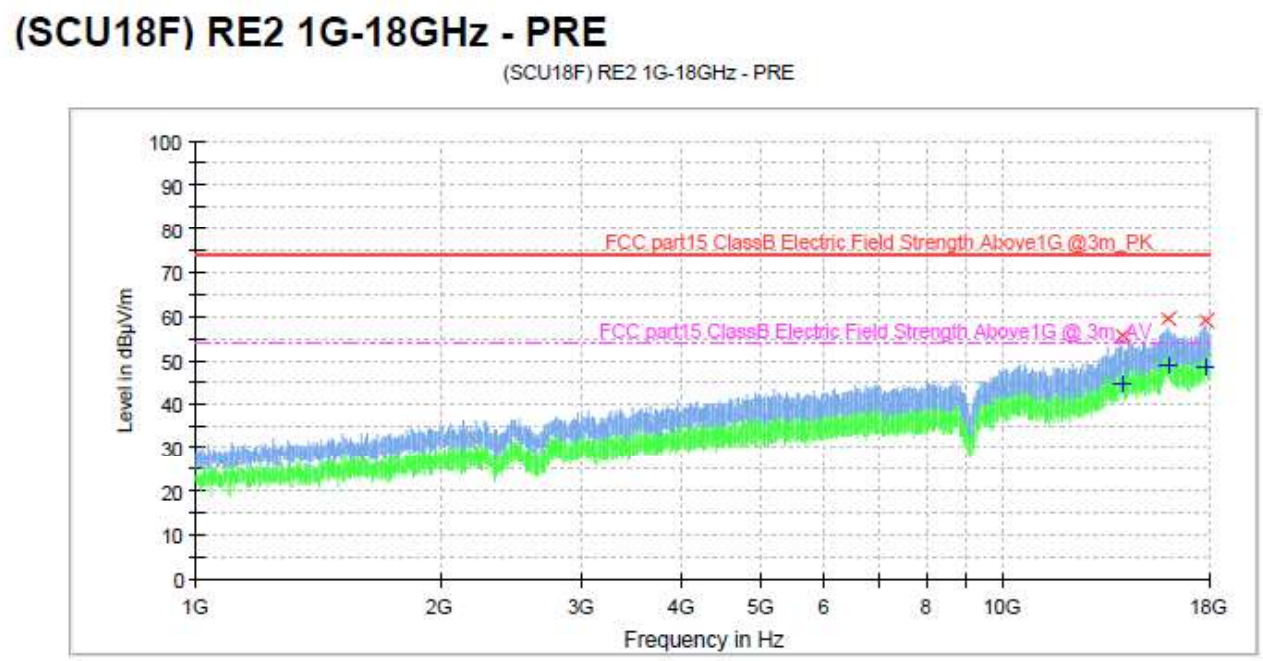
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4959.405000	50.7	1000.0	1000.000	V	3.4	23.3	74.0
15331.530000	56.9	1000.0	1000.000	V	18.3	17.1	74.0
16003.030000	59.9	1000.0	1000.000	V	22.2	14.1	74.0
17726.935000	59.1	1000.0	1000.000	V	22.8	14.9	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4959.405000	47.4	1000.0	1000.000	V	3.4	6.6	54.0
15331.530000	45.5	1000.0	1000.000	V	18.3	8.5	54.0
16003.030000	48.5	1000.0	1000.000	V	22.2	5.5	54.0
17726.935000	48.6	1000.0	1000.000	V	22.8	5.4	54.0

Figure 17: Spectral Diagrams, Radiated Spurious Emission, 1000MHz-18000MHz, Horizontal, mode B.1



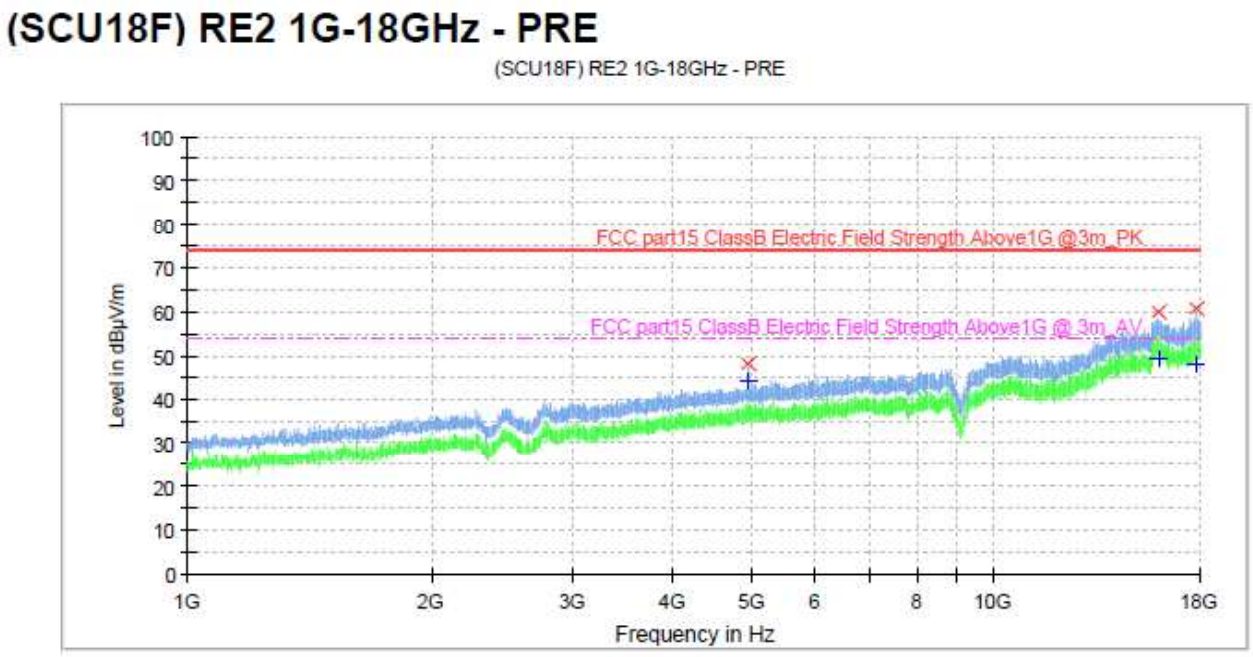
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
14023.595000	55.6	1000.0	1000.000	H	18.1	18.4	74.0
15962.125000	59.3	1000.0	1000.000	H	21.9	14.7	74.0
17824.685000	59.0	1000.0	1000.000	H	23.1	15.0	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
14023.595000	44.7	1000.0	1000.000	H	18.1	9.3	54.0
15962.125000	48.8	1000.0	1000.000	H	21.9	5.2	54.0
17824.685000	48.4	1000.0	1000.000	H	23.1	5.6	54.0

Figure 18: Spectral Diagrams, Radiated Spurious Emission, 1000MHz-18000MHz, Vertical, mode B.1



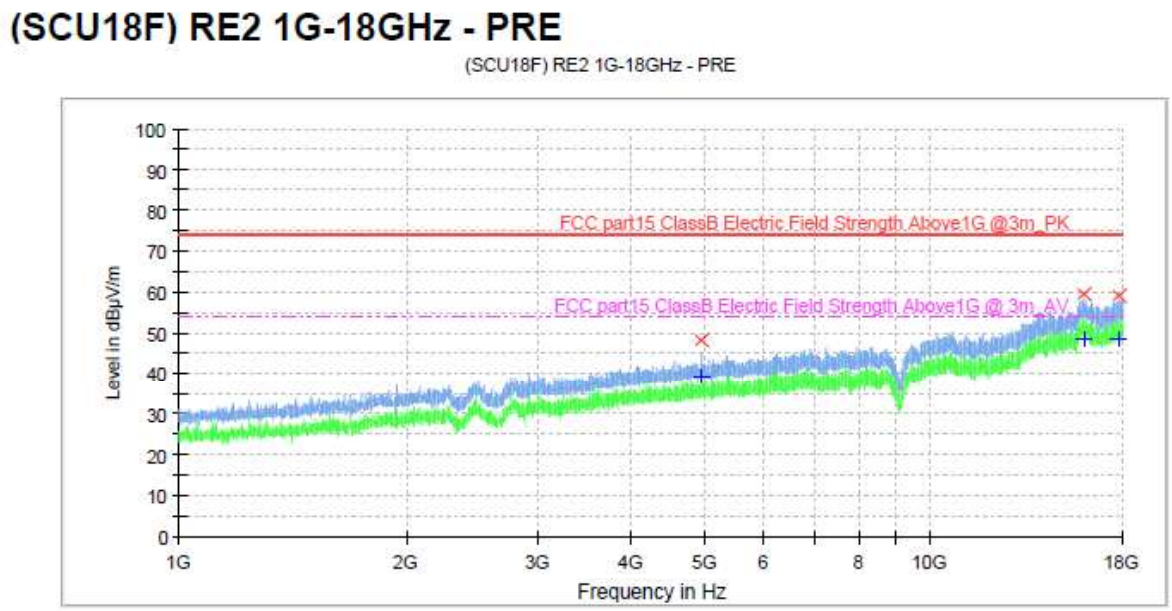
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4803.335000	48.1	1000.0	1000.000	V	3.4	25.9	74.0
16002.235000	59.7	1000.0	1000.000	V	22.2	14.3	74.0
17821.354000	60.6	1000.0	1000.000	V	23.1	13.4	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4803.335000	44.4	1000.0	1000.000	V	3.4	9.6	54.0
16002.235000	49.4	1000.0	1000.000	V	22.2	4.6	54.0
17821.354000	48.1	1000.0	1000.000	V	23.1	5.9	54.0

Figure 19: Spectral Diagrams, Radiated Spurious Emission, 1000MHz-18000MHz, Horizontal, mode B.3



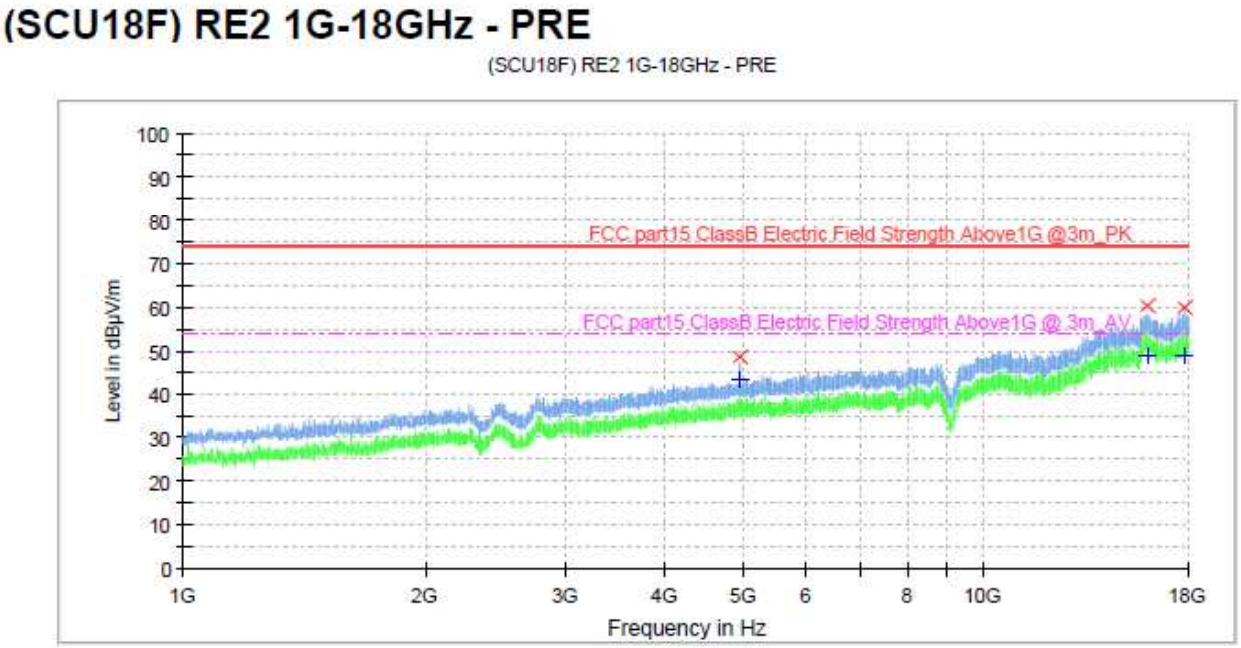
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4960.470000	48.2	1000.0	1000.000	H	3.4	25.8	74.0
15949.905000	59.6	1000.0	1000.000	H	21.8	14.4	74.0
17809.280000	59.0	1000.0	1000.000	H	23.0	15.0	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4960.470000	39.3	1000.0	1000.000	H	3.4	14.7	54.0
15949.905000	48.7	1000.0	1000.000	H	21.8	5.3	54.0
17809.280000	48.3	1000.0	1000.000	H	23.0	5.7	54.0

Figure 20: Spectral Diagrams, Radiated Spurious Emission, 1000MHz-18000MHz, Vertical, mode B.3



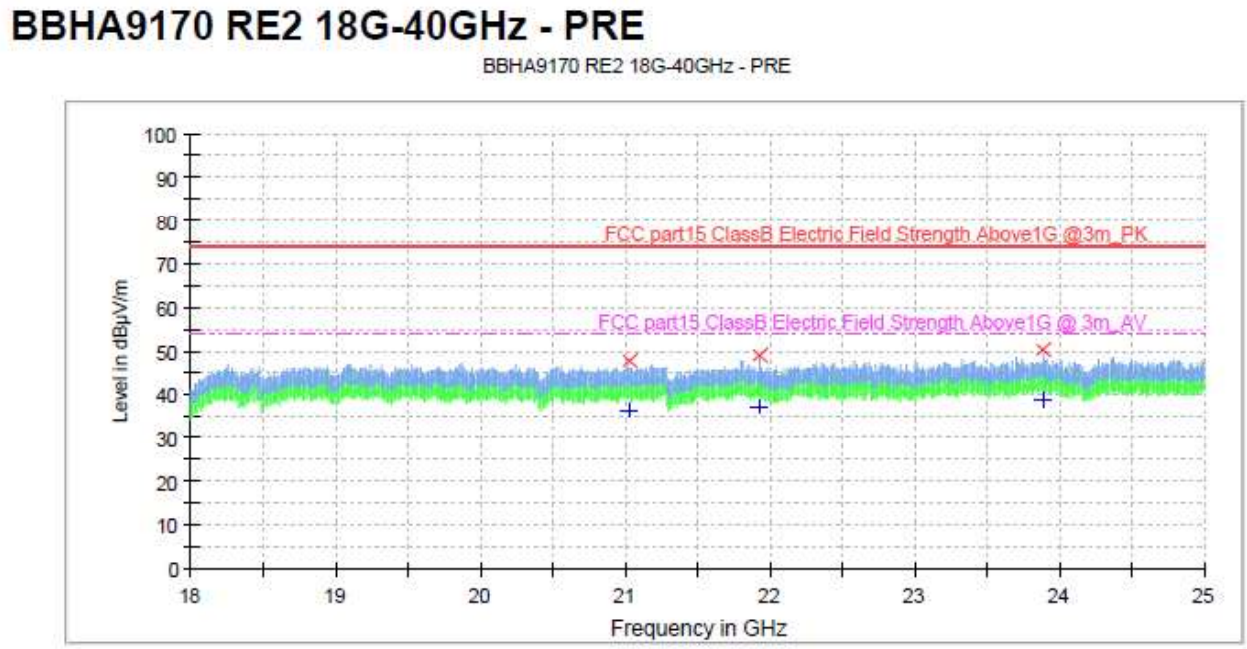
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
4959.935000	48.5	1000.0	1000.000	V	3.4	25.5	74.0
16001.435000	60.2	1000.0	1000.000	V	22.2	13.8	74.0
17822.560000	59.6	1000.0	1000.000	V	23.1	14.4	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
4959.935000	43.4	1000.0	1000.000	V	3.4	10.6	54.0
16001.435000	49.0	1000.0	1000.000	V	22.2	5.0	54.0
17822.560000	48.8	1000.0	1000.000	V	23.1	5.2	54.0

Figure 21: Spectral Diagrams, Radiated Spurious Emission, 18000MHz-25000MHz, Horizontal, mode A.1



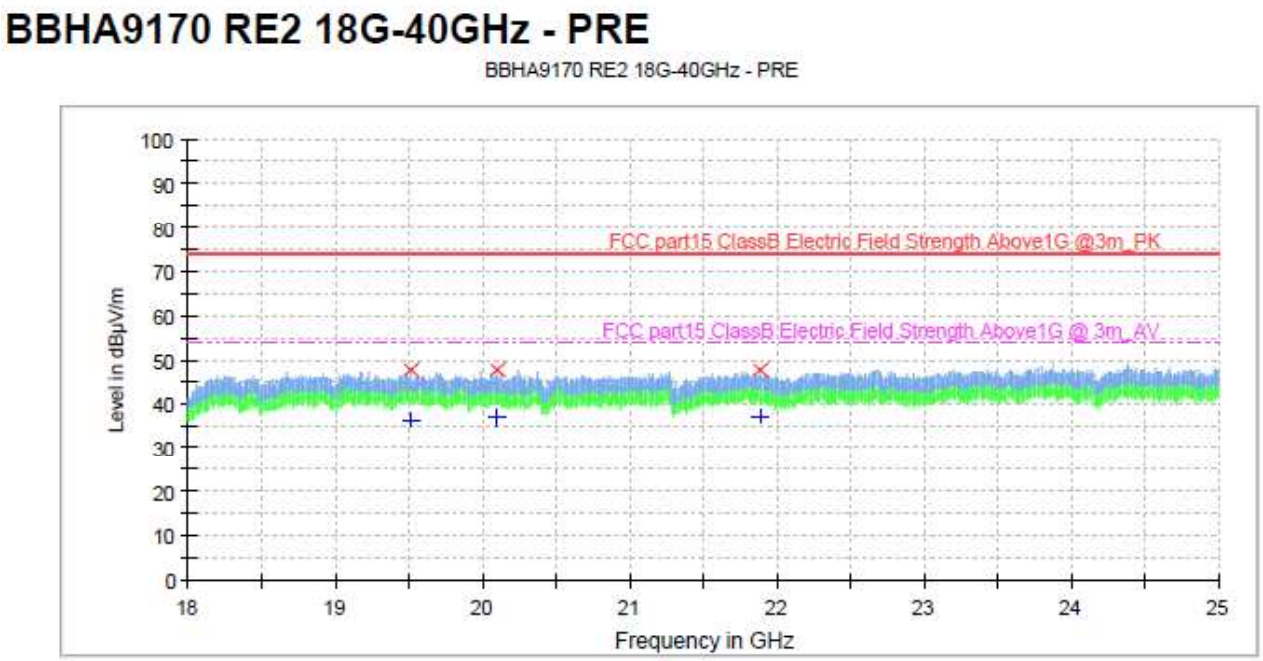
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
21024.435000	47.7	1000.0	1000.000	H	-8.7	26.3	74.0
21923.280000	49.0	1000.0	1000.000	H	-7.7	25.0	74.0
23887.875000	50.1	1000.0	1000.000	H	-5.6	23.9	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
21024.435000	36.6	1000.0	1000.000	H	-8.7	17.4	54.0
21923.280000	37.1	1000.0	1000.000	H	-7.7	16.9	54.0
23887.875000	38.8	1000.0	1000.000	H	-5.6	15.2	54.0

Figure 22: Spectral Diagrams, Radiated Spurious Emission, 18000MHz-25000MHz, Vertical, mode A.1



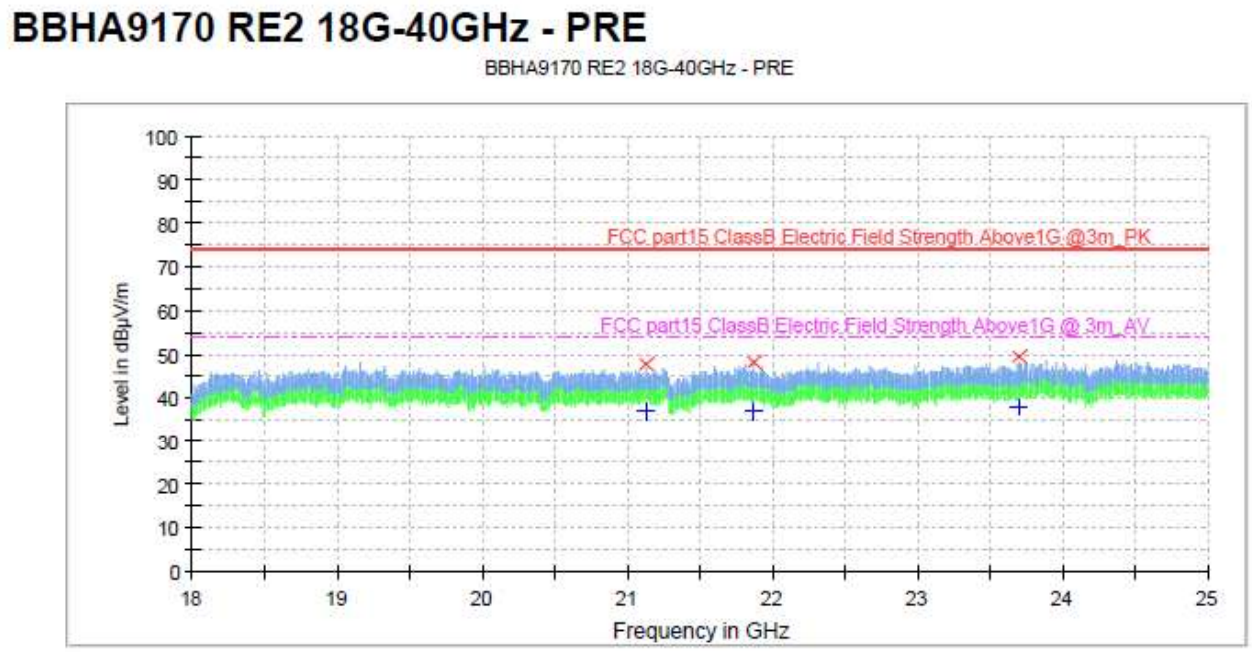
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
19514.185000	47.9	1000.0	1000.000	V	-9.7	26.1	74.0
20096.720000	47.7	1000.0	1000.000	V	-9.5	26.3	74.0
21888.500000	47.9	1000.0	1000.000	V	-7.8	26.1	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19514.185000	36.6	1000.0	1000.000	V	-9.7	17.4	54.0
20096.720000	37.0	1000.0	1000.000	V	-9.5	17.0	54.0
21888.500000	37.0	1000.0	1000.000	V	-7.8	17.0	54.0

Figure 23: Spectral Diagrams, Radiated Spurious Emission, 18000MHz-25000MHz, Horizontal, mode A.3



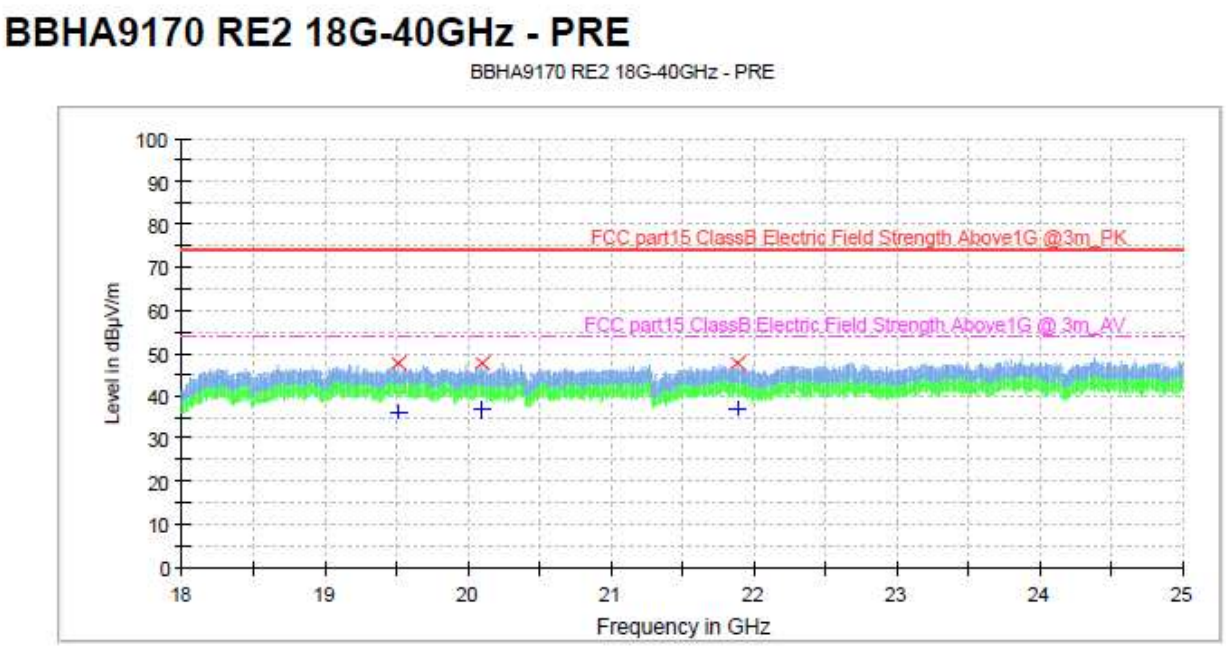
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
21134.905000	47.7	1000.0	1000.000	H	-8.5	26.3	74.0
21871.000000	48.1	1000.0	1000.000	H	-7.8	25.9	74.0
23704.125000	49.2	1000.0	1000.000	H	-5.6	24.8	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
21134.905000	36.9	1000.0	1000.000	H	-8.5	17.2	54.0
21871.000000	36.9	1000.0	1000.000	H	-7.8	17.1	54.0
23704.125000	38.0	1000.0	1000.000	H	-5.6	16.0	54.0

Figure 24: Spectral Diagrams, Radiated Spurious Emission, 18000MHz-25000MHz, Vertical, mode A.3



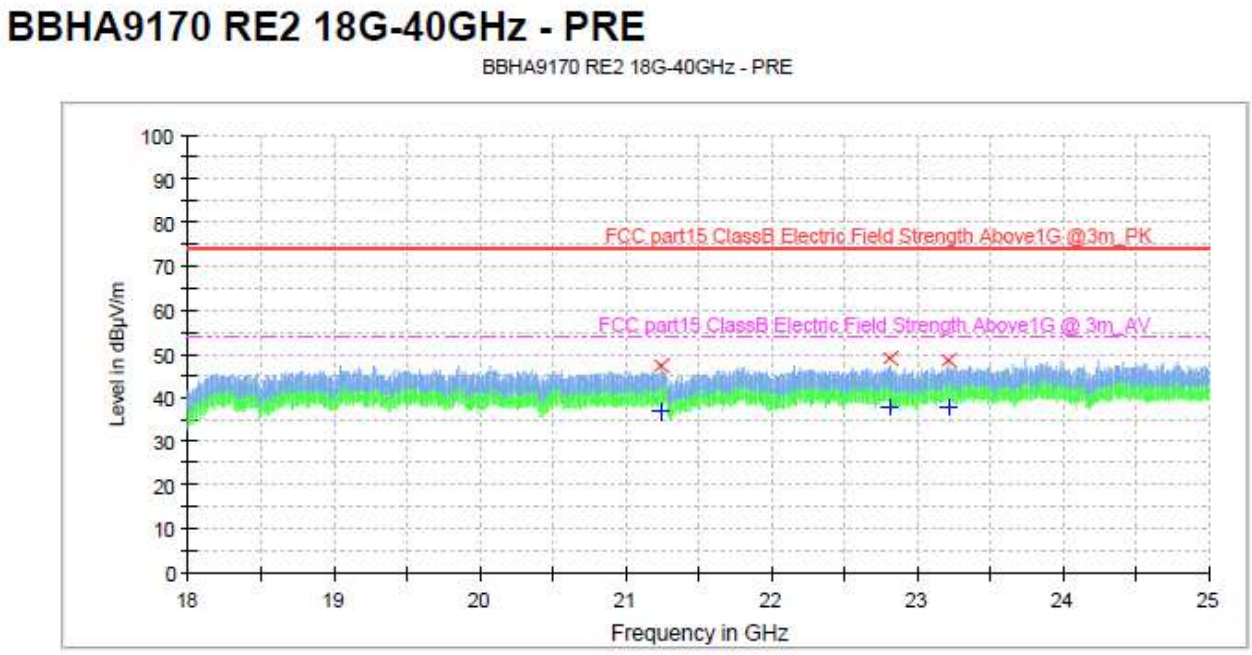
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
19514.185000	47.9	1000.0	1000.000	V	-9.7	26.1	74.0
20096.720000	47.7	1000.0	1000.000	V	-9.5	26.3	74.0
21888.500000	47.9	1000.0	1000.000	V	-7.8	26.1	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19514.185000	36.6	1000.0	1000.000	V	-9.7	17.4	54.0
20096.720000	37.0	1000.0	1000.000	V	-9.5	17.0	54.0
21888.500000	37.0	1000.0	1000.000	V	-7.8	17.0	54.0

Figure 25: Spectral Diagrams, Radiated Spurious Emission, 18000MHz-25000MHz, Horizontal, mode B.1



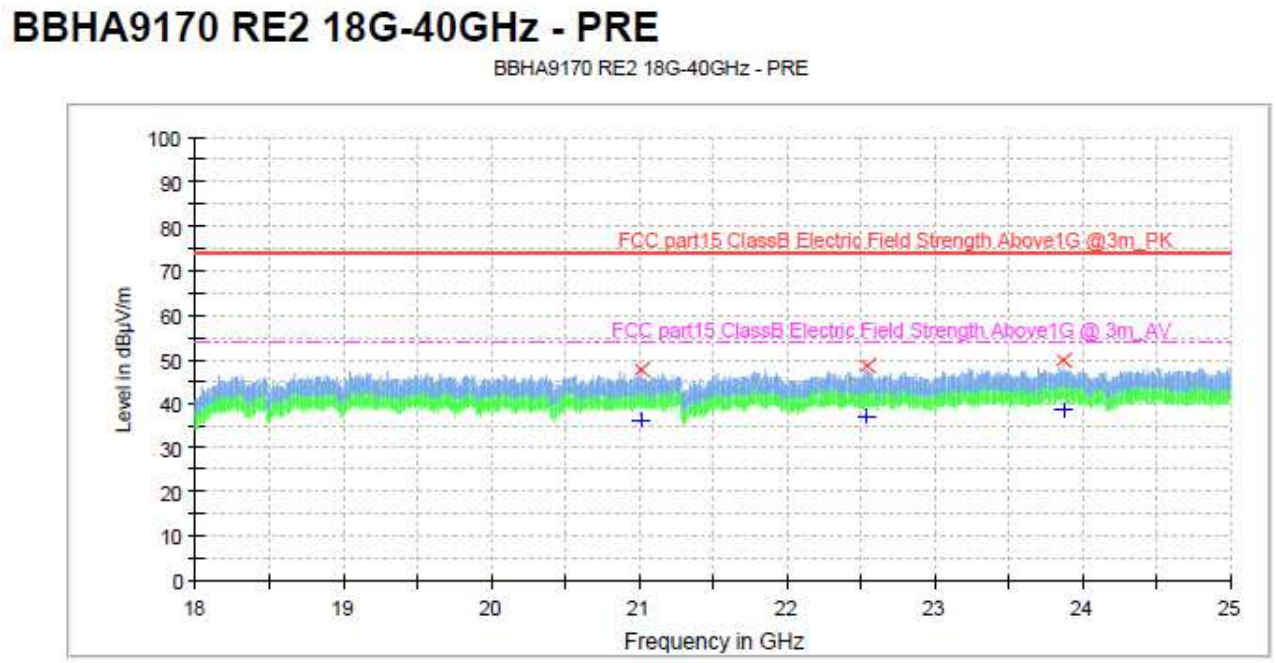
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
21244.060000	47.4	1000.0	1000.000	H	-8.4	26.6	74.0
22817.750000	48.9	1000.0	1000.000	H	-6.2	25.1	74.0
23219.155000	48.6	1000.0	1000.000	H	-5.7	25.4	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
21244.060000	36.9	1000.0	1000.000	H	-8.4	17.1	54.0
22817.750000	38.1	1000.0	1000.000	H	-6.2	15.9	54.0
23219.155000	38.1	1000.0	1000.000	H	-5.7	15.9	54.0

Figure 26: Spectral Diagrams, Radiated Spurious Emission, 18000MHz-25000MHz, Vertical, mode B.1



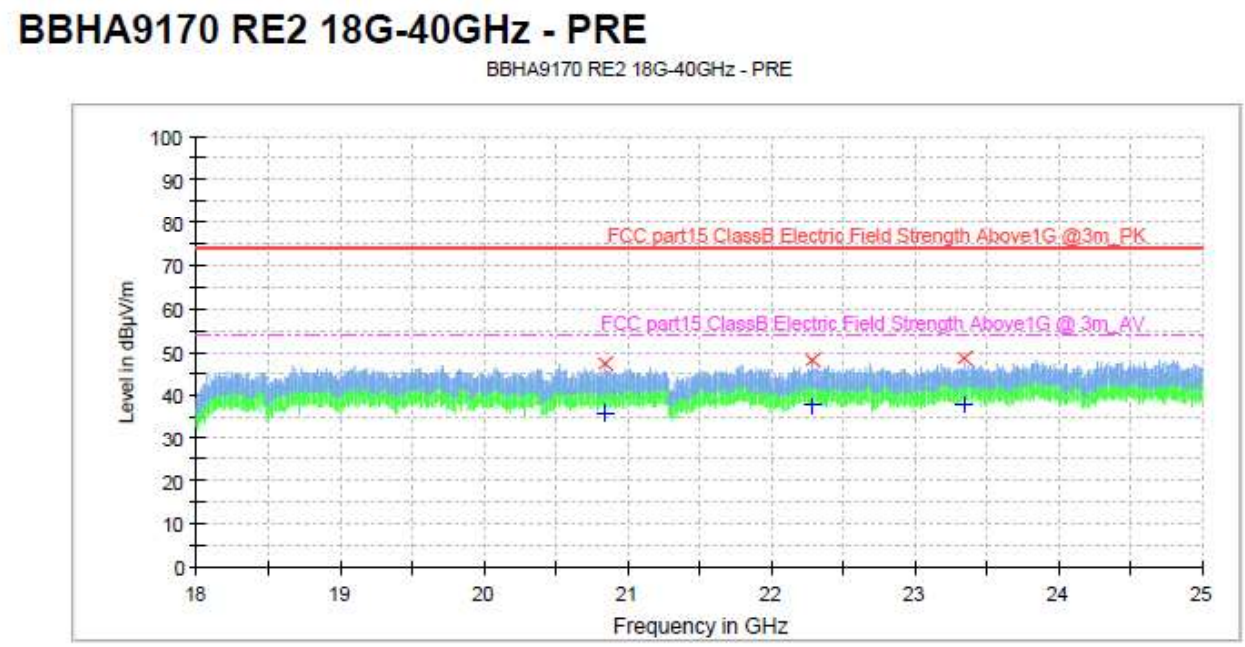
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
21015.685000	47.8	1000.0	1000.000	V	-8.7	26.2	74.0
22544.530000	48.5	1000.0	1000.000	V	-6.8	25.5	74.0
23871.250000	49.8	1000.0	1000.000	V	-5.6	24.2	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
21015.685000	36.6	1000.0	1000.000	V	-8.7	17.4	54.0
22544.530000	37.4	1000.0	1000.000	V	-6.8	16.6	54.0
23871.250000	38.7	1000.0	1000.000	V	-5.6	15.4	54.0

Figure 27: Spectral Diagrams, Radiated Spurious Emission, 18000MHz-25000MHz, Horizontal, mode B.3



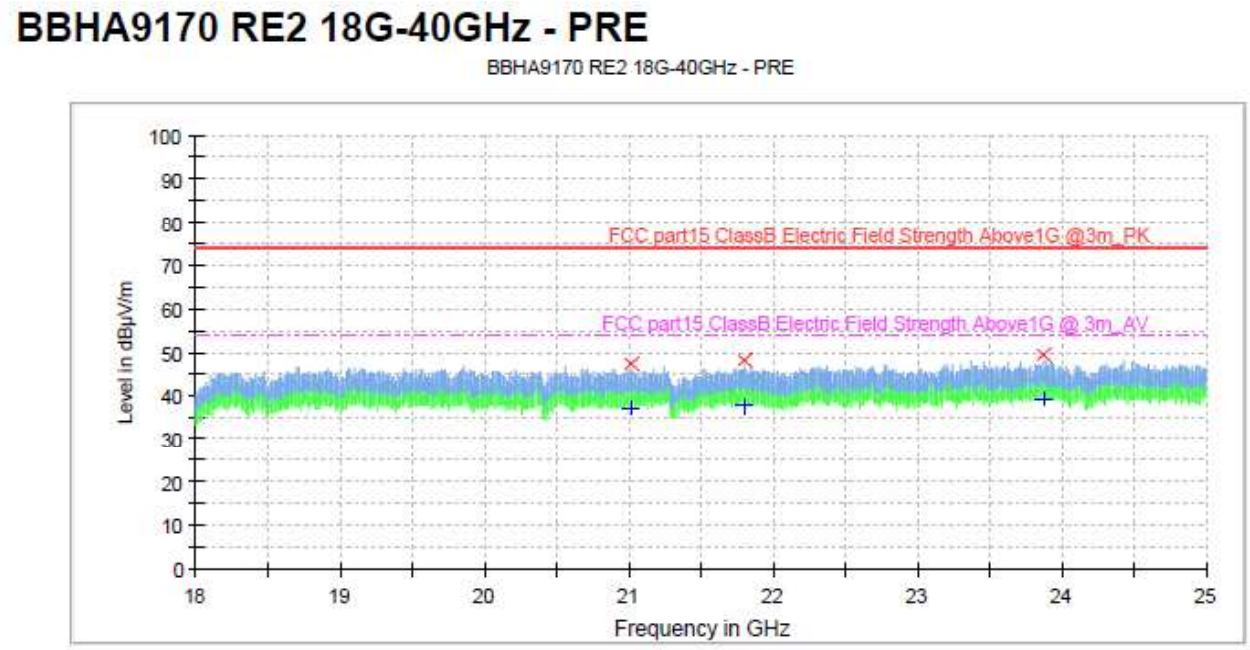
Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
20847.685000	47.2	1000.0	1000.000	H	-8.9	26.8	74.0
22284.435000	48.2	1000.0	1000.000	H	-7.2	25.8	74.0
23341.220000	48.7	1000.0	1000.000	H	-5.7	25.3	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
20847.685000	36.1	1000.0	1000.000	H	-8.9	17.9	54.0
22284.435000	37.5	1000.0	1000.000	H	-7.2	16.5	54.0
23341.220000	38.0	1000.0	1000.000	H	-5.7	16.0	54.0

Figure 28: Spectral Diagrams, Radiated Spurious Emission, 18000MHz-25000MHz, Vertical, mode B.3



Limit and Margin-PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
21009.345000	47.3	1000.0	1000.000	V	-8.7	26.7	74.0
21805.375000	48.1	1000.0	1000.000	V	-7.8	25.9	74.0
23872.560000	49.3	1000.0	1000.000	V	-5.6	24.7	74.0

Limit and Margin-AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
21009.345000	37.1	1000.0	1000.000	V	-8.7	16.9	54.0
21805.375000	37.6	1000.0	1000.000	V	-7.8	16.4	54.0
23872.560000	39.5	1000.0	1000.000	V	-5.6	14.6	54.0

5 Safety Human Exposure

5.1 Radio Frequency Exposure Compliance

5.1.1 Electromagnetic Fields

Result: **Pass**

Test Specification
Test standard : CFR47 FCC Part 2: Section 2.1093
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498 v06, section 7

EUT RF Exposure Evaluation, Worst Case mode

Test Mode	Measured conducted Power		Threshold power @5mm		Verdict
	dBm	mW	dBm	mW	
B.3	-9.5	0.112	10	10	Compliant

6 List of Tables

7 List of Figures

-- The END --